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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	E080051USU1
		Application Number	
Title of Invention	Receiver Determined Probe		
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Application Information:

Title of the Invention	Receiver Determined Probe		
Attorney Docket Number	E080051USU1	Small Entity Status Claimed	☐
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Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	E080051USU1
		Application Number	
Title of Invention	Receiver Determined Probe		

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Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Title:

RECEIVER DETERMINED PROBE

Inventor(s):

DAVID BARR

Entropic Docket No.: E080051USU1

Sheets of Drawings: 6

RECEIVER DETERMINED PROBE

Cross-Reference to Related Applications

[0001] This application claims the benefit of U.S. Provisional Applications No. 61/122,687, filed December 15, 2008, and No. 61/179,454, filed May 19, 2009, each of which is herein incorporated by reference.

Technical Field

[0002] The presently disclosed method and apparatus relates generally to communication networks, and more particularly, some embodiments relate to channel assessment probes.

Description of the Related Art

[0003] A home network may include multiple types of subscriber equipment configured to deliver subscriber services throughout the home. These subscriber services include delivering multimedia content, such as streaming audio and video, through the home network to subscriber equipment, where it is presented to a user. As the number of available subscriber services has increased and they become more popular, the number of devices being connected within each home network has also increased. The increase in the number of services and devices increases the complexity of coordinating communication between the network nodes as each node may experience different access conditions along its portion of the network.

[0004] This increase in complexity, further increases the likelihood that network problems may develop. When problems with subscriber services develop, subscriber service content providers are typically required to diagnosis the source of the network problem. Often, this requires sending a technician to the physical location of the home network to personally assess the network and diagnose the problem. Accordingly, as the number of homes with subscriber services incorporated into their home networks increases, so does the amount of resources a service provider must devote to technical support and network maintenance.

[0005] In many instances in which a network is established, it is helpful to characterize the communication channel over which data is to be sent between nodes of the network. It should be noted that for the purposes of this disclosure, a “channel” is the communication link between a first node of a network and a second node of a network in one particular direction. Therefore, there is a first channel from a first node 1 to a second node 2 and a second unique channel from the second node 2 to the first node 1. In some instances, probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node. These probes are typically well defined. Accordingly, the receiving node knows before reception what reference signal was transmitted. By comparing the reference probe with the actual received probe, the receiver can determine some of the characteristics of the channel between the transmitting and receiving node. However, requiring the transmitting node to send a predetermined probe reduces the amount flexibility of the characterization process.

Nonetheless, this reduction in the flexibility must be suffered because it is critical to the process that the receiving node knows the precise form of the transmitted probe.

Brief Summary

[0006] According to various embodiments of the disclosed method and apparatus, nodes on a network (also referred to as network devices) are programmed to generate a probe transmission in response to a request from the nodes that will be receiving the probe. The receiving node may generate a probe request that specifies a plurality of parameters to be used in such a “receiver determined” probe to generate a probe having the “form” specified by these parameters. Accordingly, the probe request specifies a plurality of parameters associated with the generation and transmission of a probe, including the content of a payload of the probe. In one embodiment, the parameters further include: the modulation profile for the probe; the payload content of the probe; the number of times to transmit the probe; the number of symbols for the payload of the probe; the preamble type for the probe; the cyclic-prefix length for the payload of the probe; the transmit power for the probe; and the transmit power scaling factor for the payload of the probe. Accordingly, the probe that is transmitted in response to the probe request will have a form dictated by the parameters specified in the probe request.

[0007] In various embodiments, these receiver determined probes may be used in a variety of applications. For example, the probes may be used to reach or discover hidden nodes; in networks employing orthogonal frequency division multiple access (OFDMA), the probes may be used for OFDMA sub-channel assessment; or in networks accessible by content providers, the probes may be used for off-site network diagnosis.

[0008] An embodiment of the disclosed method comprises: a) receiving in a first node, a probe request specifying a plurality of parameters associated with the generation and transmission of a probe, including the content of a payload of the probe; and b) transmitting from the first node to a second node the probe having a form dictated by the parameters specified by the probe request.

[0009] In a further embodiment of the method and apparatus, at least one of the probe parameters indicates: a) a modulation profile for the probe; b) the payload content of the probe; c) the number of times to transmit the probe; d) the number of symbols for the payload of the probe; e) the preamble type for the probe; f) the cyclic-prefix length for the payload of the probe; g) the transmit power for the probe; and h) the transmit power scaling factor for the payload of the probe.

[0010] Other features and aspects of the disclosed method and apparatus will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the features in accordance with embodiments of the disclosed method and apparatus. The summary is not intended to limit the scope of the claimed invention, which is defined solely by the claims attached hereto.

Brief Description of the Drawings

[0011] The disclosed method and apparatus, in accordance with one or more various embodiments, is described in detail with reference to the following figures. The drawings are provided for purposes of illustration only and merely depict either typical

embodiments or examples of particular embodiments. These drawings are provided to facilitate the reader's understanding of the disclosed method and apparatus and shall not be considered limiting of the breadth, scope, or applicability of the claimed invention. It should be noted that for clarity and ease of illustration these drawings are not necessarily made to scale.

[0012] Figure 1 illustrates an example of one environment in which some embodiments of the disclosed method and apparatus may be implemented.

[0013] Figure 2 illustrates an example of one embodiment of a network topology of the disclosed method and apparatus.

[0014] Figure 3 illustrates a transmitter module that may be employed in some embodiments of the disclosed method and apparatus to generate PHY packets.

[0015] Figure 4 illustrates a method of operation according to an embodiment of the disclosed method and apparatus.

[0016] Figure 5 illustrates examples of parameters that may be modified or determined for generating a probe request according to an embodiment of the disclosed method and apparatus.

[0017] Figure 6 illustrates an example computing module that may be used in implementing various features of embodiments of the disclosed method and apparatus.

[0018] The figures are not intended to be exhaustive or to limit the claimed invention to the precise form disclosed. It should be understood that the disclosed method and apparatus can be practiced with modification and alteration, and that the claimed invention should be limited only by the claims and the equivalents thereof.

Detailed Description

[0019] Before describing the disclosed method and apparatus in detail, it is useful to describe an example of an environment in which the disclosed method and apparatus can be implemented. The network of Figure 1 will be described for this purpose. A wired communications medium 100 is shown. In some embodiments, the wired communications medium might be a coaxial cable system, a power line system, a fiber optic cable system, an Ethernet cable system, or other similar communications medium. Alternatively, the communications medium might be a wireless transmission system. In the illustrated embodiment, the communications medium 100 is preinstalled coaxial cabling deployed within a residence 101.

[0020] The network comprises a plurality of network nodes 102, 103, 104, 105, 106 in communication according to a communications protocol. For example, the communications protocol might comprise a networking standard, such as the Multimedia over Coax Alliance (MoCA) standard. In the illustrated embodiment, the communications protocol specifies a packet based communications system. In this embodiment, physical layer (PHY) packets comprise preambles and payloads. A PHY preamble is typically inserted at the beginning of each packet to assist receivers in detecting and acquiring the physical layer parameters to properly receive and decode the

packet. The communications protocol may have a plurality of pre-defined PHY preambles to use with different types of network communications. For example, one type of preamble may be used when transmitting in a diversity mode (a communication mode in which little is known about the communication channel). Another type of preamble may be used when transmitting a media access plan (MAP) message. Another type of preamble may comprise a specified subset of subcarrier frequencies. Other types of packets may use other types of preambles.

[0021] A PHY payload is used to transmit the data content of the packet. In some cases, the PHY payload has a predetermined format. For example, in a MoCA network, network maintenance messages and MAP messages each have a format that is determined by the MoCA protocol. In other cases, the PHY payload may have undetermined format. For example, the PHY payload of a media streaming transmission might comprise an embedded Ethernet packet or a portion thereof.

[0022] In some embodiments, activity on the network is controlled by a network coordinator (NC) node. In one such embodiment, one of the nodes is selected to perform the functions of the NC based upon a process defined by the communications protocol. In networks employing an NC, the NC schedules network communications between network nodes using a MAP message. The MAP is sent as a packet. Such MAP packets are sent on a regular basis. MAPs are generated in response to reservation requests by the nodes of the network. The NC's MAP message may precisely schedule probe transmissions. The NC also performs admission procedures when a new node requests admission to the network.

[0023] Nodes described herein can be associated with a variety of devices. For example, in a system deployed in a residence 101, a node may be a network communications module associated with one of the computers 109 or 110. Such nodes allow the computers 109, 110 to communicate on the communications medium 100. Alternatively, a node may be a module associated with a television 111 to allow the television to receive and display media streamed from the internet, or from one or more other network nodes. A node might also be associated with a speaker or other media playing devices 103 that plays music. A node might also be associated with a module configured to interface with an internet or cable service provider 112, for example to provide Internet access, digital video recording capabilities, media streaming functions, or network management services to the residence 101.

[0024] In many embodiments, network probes are used to perform various channel assessment or network maintenance procedures. For example, in a wired network, network node mobility may be fairly low and new nodes joining the network may be a relatively rare occurrence. In contrast to highly dynamic networks, such as wireless networks, wired networks are more stable, i.e., the channel conditions do not change frequently. In stable networks probing can be used to profile the channel conditions without introducing unacceptable network overhead. However, even with more dynamic networks, network probes can be used to diagnose problems. For example, a probe can replicate a potential problem, reach or discover a distant or previously undetected node on the network, or assist with network admissions procedures.

[0025] In some embodiments, network communications use orthogonal frequency division multiplexing (OFDM). In OFDM, a communications channel comprises a plurality of orthogonal subcarrier frequencies. In one embodiment, transmissions are modulated onto these subcarriers using quadrature amplitude modulation (QAM), where symbols are modulated onto the subcarrier by modifying the amplitude of an in-phase and independently modifying the amplitude of a quadrature portion of the subcarrier transmission. Each OFDM symbol is formed from the collection of all of the QAM symbols modulated onto each of the used subcarriers in the same time slot. In some embodiments, each subcarrier is modulated with the same modulation scheme. For example, an OFDM symbol may comprise a plurality of subcarriers each modulated with 4-QAM. In another embodiment, transmissions on different subcarriers may utilize different QAM schemes. For example, a first subcarrier may be modulated using 2-QAM (otherwise known as binary phase shift keying (BPSK)), a second subcarrier may be modulated using 64-QAM, and so on. In yet another embodiment, different transmission types may utilize different types of OFDM symbols. For example, during network admissions processes, transmissions may utilize OFDM symbols where each subcarrier is modulated with 2-QAM, and once the network node has been admitted to the network, it may utilize an adaptable bitloading profile for its OFDM symbols.

[0026] In some embodiments, OFDMA may be employed to allow multiple nodes to have simultaneous access to the channel. In OFDMA, disjoint subsets of subcarriers, referred to as sub-channels, are assigned to the nodes participating in the OFDMA communications. In some embodiments employing NCs, OFDMA is used for the

communications between the non-NC nodes and the NC. In these embodiments, the NC may partition the channel into sub-channels and assign these sub-channels to the participating network nodes. In a particular embodiment, the sub-channels are configured such that the bitloading on each sub-channel is the same. In this embodiment, because different subcarriers may accommodate different modulation schemes, the sub-channels may not all have the same number of subcarriers. However, in other embodiments, different sub-channel bitloading and partitioning schemes may be employed.

[0027] Figure 2 illustrates a full mesh topology between four example nodes. In some embodiments, network conditions may vary according to the particular channel, and even according to the direction of the channel. For example, network conditions for the channel from node 1 to node 2 can differ from the conditions for the channel from node 2 to node 1. These can each be different from the conditions of the channel from node 2 to node 3, and so on. Accordingly, different modulation schemes may be employed for each channel. In one embodiment, probes are used during a network profiling period to determine the modulation schemes to be used for the different links. For example, node 1 may transmit a probe request to each of nodes 2, 3, and 4 specifying a bitloading per subcarrier and a raw data sequence to be used in transmitting the probe. Each of nodes 2, 3, and 4 would then generate the probe with the requested bitloading and raw data sequence and transmit the probe to node 1. By analyzing this return probe and repeating the process if necessary, node 1 can develop bitloading profiles for use on the subcarriers used to communicate with each of nodes 2, 3, and 4.

[0028] In one embodiment employing OFDMA, a receiving node sends a probe request that indicates which sub-carriers are to be used to send a probe from a particular transmitting node and the bitloading profiles applied across those sub-carriers. For example, in one embodiment, node 1 may be an NC, and may receive reservation requests from nodes 2, 3, and 4 simultaneously using OFDMA. If node 1 were to establish a potential sub-channel with node 2, node 1 can transmit a probe request specifying a bitloading profile in which the subcarriers that are not in the potential sub-channel are left untransmitted. Accordingly, the bitloading profile would indicate modulating only the subcarriers that are in the potential sub-channel. In this case, the probe generated by node 2 in response to the probe request from node 1 would emulate an OFDMA transmission from node 2 to node 1. Node 1 could then use the information derived from the probe in its OFDMA sub-channel allocation procedure.

[0029] In another embodiment, node 1 could transmit one or more probe requests that request probes to be transmitted by some or all of the OFDMA participant nodes simultaneously on the subcarriers assigned to be used by each OFDMA participant node.

[0030] Figure 3 illustrates a transmitter module 150 used within a node, such as the nodes 102, 103, 104, 105, 106 shown in Figure 1. The transmitter module 150 generates PHY packets in accordance with one embodiment of the disclosed method and apparatus. The module 150 has a frequency domain payload 160 and/or a time domain payload 161. A subcarrier mapper 163 maps the payload 161 to a plurality of assigned subcarriers according to a predetermined bitloading profile for the channel (or sub-channel in the case of an OFDMA transmission). The transmitter module 150 uses a

frequency domain preamble generator module 162 to insert a frequency domain PHY preamble before the frequency domain payload 160. Accordingly, a preamble specified in the frequency domain may be “prepended” to the payload after the subcarrier mapper 163. The combined signal is then modulated onto the OFDM symbol by a modulator module 164. The modulated signal is then filtered and upconverted to the channel’s predetermined radio frequencies by the filter 165 and an RF upconverter 166.

[0031] When the transmitting module 150 is generating a time domain packet, the frequency domain modulation is not necessary. However, in one embodiment the frequency domain modulation is used even when generating a time domain packet. A time domain payload 161 having a time domain preamble generated by a time domain preamble generator module 167 is filtered and RF upconverted for transmission on the channel.

[0032] Figure 4 illustrates a method of operation according to an embodiment of the disclosed method and apparatus. In block 200, one or more nodes transmit a probe request specifying probe parameters to one or more nodes that will be transmitting the eventual probe(s) having a form that is dictated by the specified parameters. In one embodiment, the probe is transmitted by a single node and received by a single node (point-to-point) or received by several nodes (point-to-multipoint, such as multicast or broadcast). In another embodiment, the probe is simultaneously transmitted by multiple nodes and received by a single node (multipoint-to-point, such as OFDMA). In other OFDMA embodiments, multiple nodes might share the communications channel for

multi-point to multi-point communications. In such a case, multiple nodes can transmit probe requests, and multiple nodes can receive probes, all simultaneously.

[0033] In block 201, the probe transmitter or transmitters receive the probe request or requests. In one embodiment, the probe request specifies a plurality of parameters for the probe that will dictate the form of the probe to be transmitted. These parameters are discussed in more detail below with respect to Figure 5. In block 202, the probe transmitter uses the specified probe parameters to generate a probe having a form that complies with the specified parameters. In block 203, the probe transmitter transmits the generated probe to the probe requester at a specified time. Alternatively, the probe transmitter can transmit the probe to any other probe base upon one of the parameters of the probe request or based upon information that previously existed within the transmitting node. In some embodiments, the requested probe may exceed certain capabilities of the transmitter.

[0034] In one embodiment, the probe transmitter's RMS error (signal fidelity) requirements may be relaxed if the requested probe specifies a power output that exceeds the transmitting node's nominal total output power. As another example, the probe transmitter may have restrictions on how many time domain probes it is allowed to send, and will send a time domain probe only if the probe transmitter determines that the time domain probe will not negatively impact other network operations.

[0035] In block 204, the requesting node receives the probe generated according to its earlier probe request. The received probe may then be used in further processing in

block 205. In one embodiment, the received probe may be used in channel analysis to determine a bitloading table, FEC and other communication parameters for OFDM or OFDMA signals for future transmissions from the probe transmitter. In another embodiment, post reception processing might comprise generating a report from the probe and transmitting this probe report to the requesting node or to a designated entity. For example, the probe report could contain bitloading, FEC and other communication parameters to be used subsequently by the transmitting node when communicating to the receiving node. In another example, the probe report could be conveyed to an offsite network administrator for remote management purposes. For example, the parameters of the requested probe can be determined by an off-site network administrator, and conveyed to a probe requestor. The resulting probe, post-processing, and probe report can be used to assist in diagnosing a network problem possibly involving the probe requestor or the probe transmitter. In one such case, a probe report is sent to the network administrator.

[0036] In other embodiments, the probe request might be transmitted by a different node than the probe receiver. For example, in Figure 2, node 2 might generate a probe request for node 3 to generate and transmit a specified probe to node 1. In some embodiments, this is used to determine how communications between node 3 and node 1 could impact communications between node 2 and node 4. This might occur, for example, in an OFDMA system in which a sub-channel between node 1 and node 3 and a second sub-channel between node 2 and node 3 are active at the same time. In another embodiment, an NC can generate a probe request for a probe to be transmitted between

two other nodes with an instruction that a probe report be transmitted to the NC. This might be used by an off-site network manager that can communicate with only some of the network nodes, but suspects that communications between other network nodes may be causing a network problem.

[0037] Figure 5 illustrates examples of parameters that may be modified or determined for generating a probe request according to an embodiment of the disclosed method and apparatus. A probe request may specify a bitloading profile or constellation profile to be used in the probe (block 260). For example, in OFDM networks, the bitloading profile or constellation profile may specify which QAM constellations to use for which channel subcarriers. In some embodiments, the specified bitloading profile may specify a QAM constellation or QAM scheme to use for each subcarrier. In other embodiments, the bitloading profile specifies QAM schemes for only a subset of the available subcarriers and the probe generating node will not transmit the remaining subcarriers.

[0038] In various embodiments, the bitloading profile includes indications to leave certain subcarriers untransmitted. For example, in one embodiment, in which the network conforms to an industry standard established by MoCA, 100MHz/512 versions of MoCA's Type II Frequency Domain Tone Probes can be accommodated without the need to specifically define the probes in the MoCA specification. This could be accomplished in part by generating a probe request for a probe having two modulated subcarriers, while specifying that the remaining subcarriers of the probe be untransmitted. As another example, an OFDMA transmission from a single node could be emulated by

instructing the node to transmit a probe in which only subcarriers belonging to a certain sub-channel are transmitted, while leaving the remaining subcarriers untransmitted. Additionally, simultaneous OFDMA transmissions may occur in response to probe requests to multiple nodes. In one embodiment, each of the multiple probe requests is sent to one of a plurality of nodes. Each probe request specifies a bitloading profile specific to the particular probe-transmitting node, such that the simultaneously transmitted probes from the multiple nodes comprise an OFDMA transmission to the requesting node.

[0039] In accordance with the embodiment shown in Figure 5, in block 261, the probe request specifies a raw data sequence for the probe (or for just the probe's payload). In some embodiments, a network communications protocol specifies that various techniques, such as data-scrambling, bin-scrambling, forward error correction, or encryption be used in network communications. In some such embodiments, these techniques are specified in the probe request. In alternative embodiments, these techniques are not used in the specified data sequence for simplicity.

[0040] In block 262, a probe request specifies a number of symbols for the probe payload length. In one embodiment, the number of symbols and the raw data sequence will be determined such that the serialized bit stream corresponding to the raw data sequence fully occupies the requested number of symbols using the requested bitloading profile. Additionally, in embodiments using OFDM communications, or other embodiments with multi-path channel characteristics, a cyclic prefix length may be specified. In some embodiments, the cyclic prefix length may be the same for each

symbol of the specified number of symbols. In other embodiments, the cyclic prefix length may be assigned in a symbol specific manner or may otherwise vary between symbols of the probe.

[0041] In block 264, a probe request further specifies a preamble type to use in the probe. As discussed above, some networks operate according to protocols that specify a variety of available packet preambles. These packet preambles can be used for packet identification or can contain information useful in receiving and decoding the packet's payload. In some embodiments, different preambles may be utilized according to channel conditions, such as a long and robust preamble when the channel conditions are unknown, or a short and efficient preamble when the channel conditions are known to be good. In some embodiments using OFDMA transmissions, a preamble type may be used in which each simultaneous transmitter contributes a portion of the composite preamble corresponding to the particular subcarriers assigned to each participating transmitter. In some embodiments, nodes may be restricted from using certain preamble types. For example, in a network utilizing MAP packets, a MAP packet preamble may be specified, and nodes may be restricted from requesting that a probe utilize a MAP packet preamble. This can serve to reduce the likelihood that a probe might adversely affect the operation of other nodes not involved in the probing procedure. In other embodiments, the type of preamble available is not restricted, or the restriction can be overcome in certain circumstances. For example, diagnostic probe requests could be unrestricted in terms of the available preambles while network maintenance or assessment or channel assessment probe requests could be restricted in terms of their available preambles.

Additionally, in some embodiments, only certain probe parameters can be requested under certain conditions. For example, in an OFDMA network, the network protocol may specify that a particular OFDMA preamble be used in all OFDMA transmissions. Therefore, if a probe request specifies an OFDMA probe, then the probe request will specify that the particular OFDMA preamble be used in the OFDMA probe. In another embodiment, the probe request also specifies that the same subcarriers remain untransmitted in the preamble as in the OFDMA packet payload. In another embodiment, the probe transmitting node may perform this operation automatically.

[0042] In the embodiment of Figure 5, block 265 indicates that a probe request specifies a transmit power setting for the probe. In some embodiments, the network protocol may establish a range of transmit power settings that are available for various transmissions. In a particular embodiment, a range of transmit power (attenuation) settings is between 0 and 30 dB for normal transmissions, and between -12dB (corresponding to amplification) to 45dB for OFDMA transmissions, or transmissions with an OFDMA specifying preamble. In some embodiments, a node conforms to these predetermined settings in generating probe requests. In other embodiments, the different settings available for different transmission types may be exploited to generate particular probes. For example, a probe request could request an amplified non-OFDMA probe in order to reach or identify a distant or hidden node.

[0043] In block 266, a probe request further specifies a power scaling factor for the payload relative to the preamble. In embodiments employing this scaling factor, probe payloads can be transmitted with different power characteristics than the probe

preambles. In one particular embodiment, the scale factor varies from 0 to 17 dB of amplification in the payload relative to the preamble. This might be used in a variety of different requested probes. For example, 100MHz / 512-subcarrier versions of MoCA's Type II Frequency Domain Tone Probes can be emulated, in part, by applying an appropriate payload scale factor. For example, a probe request may specify a payload that modulates only a single subcarrier with the maximum available payload scaling factor (amplification) in order to reach or identify a distant or hidden node. In another example, a payload scale factor may be requested which produces a probe transmission which exceeds the transmitting node's nominal total output power, in order to reach or identify a distant or hidden node. Alternatively, the probe request may specify an OFDMA emulating probe in which the payload is modulated on a set of subcarriers that comprises a potential sub-channel for OFDMA communications. The scaling factor can be determined such that the payload is transmitted at the power level of a normal OFDMA sub-channel, even though the preamble does not specify that the communication is an OFDMA sub-channel. In one embodiment, such probes might be used to assess a channel and thus allow an NC to pre-determine which OFDMA sub-channels should be used if a node leaves or joins the network. For example, an NC could establish four potential sub-channels for a network having three current nodes. This would avoid overhead if a fourth node were to join the network. In some embodiments, packet power restrictions may impact what scaling factors are available in terms of the specified transmit power setting. In a particular embodiment, the payload symbol scaling factor minus the transmit power (attenuation) setting is restricted to less than or equal to 12 dB.

[0044] In block 267, a probe request specifies the number of times the generated probe should be transmitted. For example, a probe request may specify that the generated probe be repeated to allow improved channel assessment or to diagnosis a particular network issue. In one embodiment, the amount of delay between repetitions is specified. In further embodiments, the probe request may specify that certain probe parameters vary in subsequent transmissions. For example, the probe request may specify that the transmitter transmit three subsequent probes with equivalent parameters except for an increasing power transmit setting. In some embodiments, this is used to avoid repetitious probe requests.

[0045] In some alternative embodiments, the probe requests specify time-domain probes. For example, a probe request may specify a time domain probe to generate a square wave or other easily analyzed signal for channel estimate purposes. In some embodiments, factors similar to those employed in the embodiments described with respect to Figure 5 may be employed in a time domain probe request, except that the bitloading profile and raw data bit-sequence are replaced with a time series for the transmitted probe. In some embodiments, the allowed time domain sequences are restricted, for example to prevent a mal-formed packet from disrupting other network communications. In other embodiments, probe transmitters are programmed to evaluate a received time-domain probe request to determine if the corresponding time-domain probe would disrupt the network.

[0046] In various embodiments, allowing a probe receiving node to specify the parameters for a probe from the probe transmitting node allows various features to be

implemented. Furthermore, in some embodiments, networks implementing these embodiments may simplify their shared communications standards. For example, a network standard may forgo specifying particular assessment probes and allow a receiving node to determine its own assessment probe. In one embodiment, the receiving node may utilize this ability to specify the characteristics of an error vector measurement (EVM) probe or echo profile probe (EPP). Furthermore, this may simplify the shared communications standard by allowing proprietary aspects of the probe signal processing to be confined to particular receivers. Allowing the receiving node to specify the characteristics of the probe also supports future extensibility (e.g., new probe signals could be supported by older transmitters). In addition to allowing a network to improve its functioning, this may also allow legacy nodes to better interoperate with nodes operating according to future standards. For example, if an improved EVM probe type were developed for a future network, nodes implementing this embodiment will be capable of transmitting the improved probe, even if they themselves are not able to process these probes and are restricted to using a legacy EVM probe. Additionally, some nodes may be capable of downloading or receiving new probe types from outside entities. In networks implementing an embodiment of the disclosed method and apparatus, these new probes may be uploaded to the capable nodes, which can then request the updated probes to be transmitted from nodes that would not otherwise have the upgraded capabilities.

[0047] As used herein, the term module might describe a given unit of functionality that can be performed in accordance with one or more embodiments of the

disclosed method and apparatus. As used herein, a module might be implemented utilizing any form of hardware, software, or a combination thereof. For example, one or more processors, controllers, ASICs, PLAs, PALs, CPLDs, FPGAs, logical components, software routines or other mechanisms might be implemented to make up a module. In implementation, the various modules described herein might be implemented as discrete modules or the functions and features described can be shared in part or in total among one or more modules. In other words, as would be apparent to one of ordinary skill in the art after reading this description, the various features and functionality described herein may be implemented in any given application and can be implemented in one or more separate or shared modules in various combinations and permutations. Even though various features or elements of functionality may be individually described or claimed as separate modules, one of ordinary skill in the art will understand that these features and functionality can be shared among one or more common software and hardware elements, and such description shall not require or imply that separate hardware or software components are used to implement such features or functionality.

[0048] Where components or modules of the disclosed method and apparatus are implemented in whole or in part using software, in one embodiment, these software elements can be implemented to operate with a computing or processing module capable of carrying out the functionality described with respect thereto. One such example computing module is shown in Figure 6. Various embodiments are described in terms of this example-computing module 300. After reading this description, it will become

apparent to a person skilled in the relevant art how to implement the disclosed method and apparatus using other computing modules or architectures.

[0049] Referring now to Figure 6, computing module 300 may represent, for example, computing or processing capabilities found within desktop, laptop and notebook computers; hand-held computing devices (PDA's, smart phones, cell phones, palmtops, etc.); mainframes, supercomputers, workstations or servers; or any other type of special-purpose or general-purpose computing devices as may be desirable or appropriate for a given application or environment. Computing module 300 might also represent computing capabilities embedded within or otherwise available to a given device. For example, a computing module 300 might be found in electronic devices such as, for example, digital cameras, navigation systems, cellular telephones, portable computing devices, modems, routers, wireless access points (WAPs), terminals and other electronic devices that might include some form of processing capability.

[0050] Computing module 300 might include, for example, one or more processors, controllers, control modules, or other processing devices, such as a processor 304. Processor 304 might be implemented using a general-purpose or special-purpose processing engine such as, for example, a microprocessor, controller, or other control logic. In the illustrated example, processor 304 is connected to a bus 302, although any communication medium can be used to facilitate interaction with other components of computing module 300 or to communicate externally.

[0051] Computing module 300 might also include one or more memory modules, simply referred to herein as main memory 308. For example, preferably random access memory (RAM) or other dynamic memory, might be used for storing information and instructions to be executed by processor 304. Main memory 308 might also be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 304. Computing module 300 might likewise include a read only memory (“ROM”) or other static storage device coupled to bus 302 for storing static information and instructions for processor 304.

[0052] The computing module 300 might also include one or more various forms of information storage mechanism 310, which might include, for example, a media drive 312 and a storage unit interface 320. The media drive 312 might include a drive or other mechanism to support fixed or removable storage media 314. For example, a hard disk drive, a floppy disk drive, a magnetic tape drive, an optical disk drive, a CD or DVD drive (R or RW), or other removable or fixed media drive might be provided. Accordingly, storage media 314 might include, for example, a hard disk, a floppy disk, magnetic tape, cartridge, optical disk, a CD or DVD, or other fixed or removable medium that is read by, written to or accessed by media drive 312. As these examples illustrate, the storage media 314 can include a computer usable storage medium having stored therein computer software or data.

[0053] In alternative embodiments, information storage mechanism 310 might include other similar instrumentalities for allowing computer programs or other instructions or data to be loaded into computing module 300. Such instrumentalities

might include, for example, a fixed or removable storage unit 322 and an interface 320. Examples of such storage units 322 and interfaces 320 can include a program cartridge and cartridge interface, a removable memory (for example, a flash memory or other removable memory module) and memory slot, a PCMCIA slot and card, and other fixed or removable storage units 322 and interfaces 320 that allow software and data to be transferred from the storage unit 322 to computing module 300.

[0054] Computing module 300 might also include a communications interface 324. Communications interface 324 might be used to allow software and data to be transferred between computing module 300 and external devices. Examples of communications interface 324 might include a modem or softmodem, a network interface (such as an Ethernet, network interface card, WiMedia, IEEE 802.XX or other interface), a communications port (such as for example, a USB port, IR port, RS232 port Bluetooth® interface, or other port), or other communications interface. Software and data transferred via communications interface 324 might typically be carried on signals, which can be electronic, electromagnetic (which includes optical) or other signals capable of being exchanged by a given communications interface 324. These signals might be provided to communications interface 324 via a channel 328. This channel 328 might carry signals and might be implemented using a wired or wireless communication medium. Some examples of a channel might include a MoCA channel over coaxial cable, phone line, power line, a cellular link, an RF link, an optical link, a network interface, a local or wide area network, and other wired or wireless communications channels.

[0055] In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to media such as, for example, memory 308, storage unit 320, media 314, and channel 328. These and other various forms of computer program media or computer usable media may be involved in carrying one or more sequences of one or more instructions to a processing device for execution. Such instructions embodied on the medium, are generally referred to as "computer program code" or a "computer program product" (which may be grouped in the form of computer programs or other groupings). When executed, such instructions might enable the computing module 300 to perform features or functions of the disclosed method and apparatus as discussed herein.

[0056] While various embodiments of the disclosed method and apparatus have been described above, it should be understood that they have been presented by way of example only, and not of limitation. Likewise, the various diagrams may depict an example architectural or other configuration for the disclosed method and apparatus, which is done to aid in understanding the features and functionality that can be included in the disclosed method and apparatus. The claimed invention is not restricted to the illustrated example architectures or configurations, but the desired features can be implemented using a variety of alternative architectures and configurations. Indeed, it will be apparent to one of skill in the art how alternative functional, logical or physical partitioning and configurations can be implemented to implement the desired features of the disclosed method and apparatus. Also, a multitude of different constituent module names other than those depicted herein can be applied to the various partitions.

Additionally, with regard to flow diagrams, operational descriptions and method claims, the order in which the blocks are presented herein shall not mandate that various embodiments be implemented to perform the recited functionality in the same order unless the context dictates otherwise.

[0057] Although the disclosed method and apparatus is described above in terms of various exemplary embodiments and implementations, it should be understood that the various features, aspects and functionality described in one or more of the individual embodiments are not limited in their applicability to the particular embodiment with which they are described, but instead can be applied, alone or in various combinations, to one or more of the other embodiments of the disclosed method and apparatus, whether or not such embodiments are described and whether or not such features are presented as being a part of a described embodiment. Thus, the breadth and scope of the claimed invention should not be limited by any of the above-described embodiments which are presented as mere examples for illustration only.

[0058] Terms and phrases used in this document, and variations thereof, unless otherwise expressly stated, should be construed as open ended as opposed to limiting. As examples of the foregoing: the term “including” should be read as meaning “including, without limitation” or the like; the term “example” is used to provide exemplary instances of the item in discussion, not an exhaustive or limiting list thereof; the terms “a” or “an” should be read as meaning “at least one,” “one or more” or the like; and adjectives such as “conventional,” “traditional,” “normal,” “standard,” “known” and terms of similar meaning should not be construed as limiting the item described to a

given time period or to an item available as of a given time, but instead should be read to encompass conventional, traditional, normal, or standard technologies that may be available or known now or at any time in the future. Likewise, where this document refers to technologies that would be apparent or known to one of ordinary skill in the art, such technologies encompass those apparent or known to the skilled artisan now or at any time in the future.

[0059] The presence of broadening words and phrases such as “one or more,” “at least,” “but not limited to” or other like phrases in some instances shall not be read to mean that the narrower case is intended or required in instances where such broadening phrases may be absent. The use of the term “module” does not imply that the components or functionality described or claimed as part of the module are all configured in a common package. Indeed, any or all of the various components of a module, whether control logic or other components, can be combined in a single package or separately maintained and can further be distributed in multiple groupings or packages or across multiple locations.

[0060] Additionally, the various embodiments set forth herein are described in terms of exemplary block diagrams, flow charts and other illustrations. As will become apparent to one of ordinary skill in the art after reading this document, the illustrated embodiments and their various alternatives can be implemented without confinement to the illustrated examples. For example, block diagrams and their accompanying description should not be construed as mandating a particular architecture or configuration.

Claims

1. A method comprising:
 - a) receiving in a first node, a probe request specifying a plurality of parameters associated with the generation and transmission of a probe, including the content of a payload of the probe; and
 - b) transmitting from the first node to a second node the probe having a form dictated by the parameters specified by the probe request.
2. The method of Claim 1, further including using within the first node, at least one of the probe parameters to determine a modulation profile for the probe.
3. The method of Claim 1, wherein at least one of the probe parameters indicates:
 - a) a modulation profile for the probe;
 - b) the number of times to transmit the probe;
 - c) a number of symbols for the payload of the probe;
 - d) a preamble type for the probe;
 - e) a cyclic-prefix length for the payload of the probe;
 - f) a transmit power for the probe; and
 - g) a transmit power scaling factor for the payload of the probe.
4. The method of Claim 3, wherein the probe request identifies a hidden node.
5. The method of Claim 1, wherein the modulation profile for the probe emulates an orthogonal frequency division multiple access (OFDMA) transmission.

6. The method of Claim 1, wherein the probe request is generated by the second node.
7. The method of Claim 1, wherein the probe request requests a probe that assists in diagnosing a network problem.
8. The method of Claim 7, wherein the probe request is generated by a network operator and uploaded to the second node.
9. A method comprising:
 - a) a first node transmitting a probe request to a second node, the probe request specifying a plurality of probe parameters for a physical layer probe, the probe parameters comprising a form for the probe including a modulation profile for the probe; and
 - b) the first node receiving the probe from the second node.
10. The method of Claim 9, wherein the probe request is configured such that the probe emulates an OFDMA transmission.
11. The method of Claim 9, further comprising:
 - a) the first node transmitting a second probe request to a third node;
 - b) and the first node receiving a second probe from the third node, wherein the second probe is generated according to the second probe request;and wherein the first probe and second probe are transmitted simultaneously using OFDMA.

12. The method of Claim 9, wherein the probe parameters further comprises:
 - a) an indication of the number of times to transmit the probe;
 - b) a number of symbols for the payload of the probe; a preamble type for the probe;
 - c) a cyclic-prefix length for the payload of the probe; a transmit power for the probe;
and
 - d) a transmit power scaling factor for the payload of the probe.
13. The method of Claim 12, wherein the probe request is configured such that the probe identifies a hidden node.
14. The method of Claim 9, wherein the probe request is generated by the first node.
15. The method of Claim 9, wherein the probe request is configured to diagnose a network problem.
16. The method of Claim 15, wherein the probe request is generated by a network operator and uploaded to the first node.
17. A system, comprising:
 - a) a first node on a communications network, the first node comprising a first processor and a first computer executable program code embodied on a first computer readable medium, the first computer executable program code configured to transmit a probe request to a second node on the communications network, the probe request specifying a plurality of probe parameters that dictate

- a form for a physical layer probe, the probe parameters comprising at least a payload content for the probe and a modulation profile for the probe; and
- b) the second node on the communications network, the second node comprising a second processor and a second computer executable program code embodied on a second computer readable medium, the second executable program code configured to receive the probe request, generate the probe having a form dictated by the received probe request, and transmit the probe to the first node.
18. The system of Claim 17, wherein the probe request is configured such that the probe emulates an OFDMA transmission.
19. The system of Claim 17, wherein the first executable program code is further configured to transmit a second probe request to a third node on the communications network, the second probe request specifying a second plurality of probe parameters for a second physical layer probe, the second probe parameters comprising a second payload content for the second probe and a second modulation profile for the probe; and further comprising a third node on the communications network, the third node comprising a third processor and a third computer executable program code embodied on a third computer readable medium, the third executable program code configured to receive the second probe request, generate the second probe according to the received probe request, and transmit the second probe to the first node on the communications network; and wherein the first probe and second probe are transmitted simultaneously using OFDMA.

20. The system of Claim 17, wherein the probe parameters further comprises:
- a) an indication of the number of times to transmit the probe;
 - b) a number of symbols for the payload of the probe;
 - c) a preamble type for the probe;
 - d) a cyclic-prefix length for the payload of the probe;
 - e) a transmit power for the probe; and
 - f) a transmit power scaling factor for the payload of the probe.
21. The system of Claim 20, wherein the probe request is configured such that the probe identifies a hidden node.
22. The system of claim 17, wherein the probe request is generated by the first node.
23. The system of Claim 17, wherein the probe request is configured to diagnose a network problem.
24. The system of Claim 23, wherein the probe request is generated by a network operator and uploaded to the first node.

ABSTRACT

According to various embodiments of the disclosed method and apparatus, nodes on a network are programmed to generate a probe transmission in response to a request from the node that will be receiving the probe. The receiving node may generate a probe request that specifies a plurality of parameters, such as a modulation profile for the probe; the payload content of the probe; the number of times to transmit the probe; a number of symbols for the payload of the probe; a preamble type for the probe; a cyclic-prefix length for the payload of the probe; a transmit power for the probe; and a transmit power scaling factor for the payload of the probe.

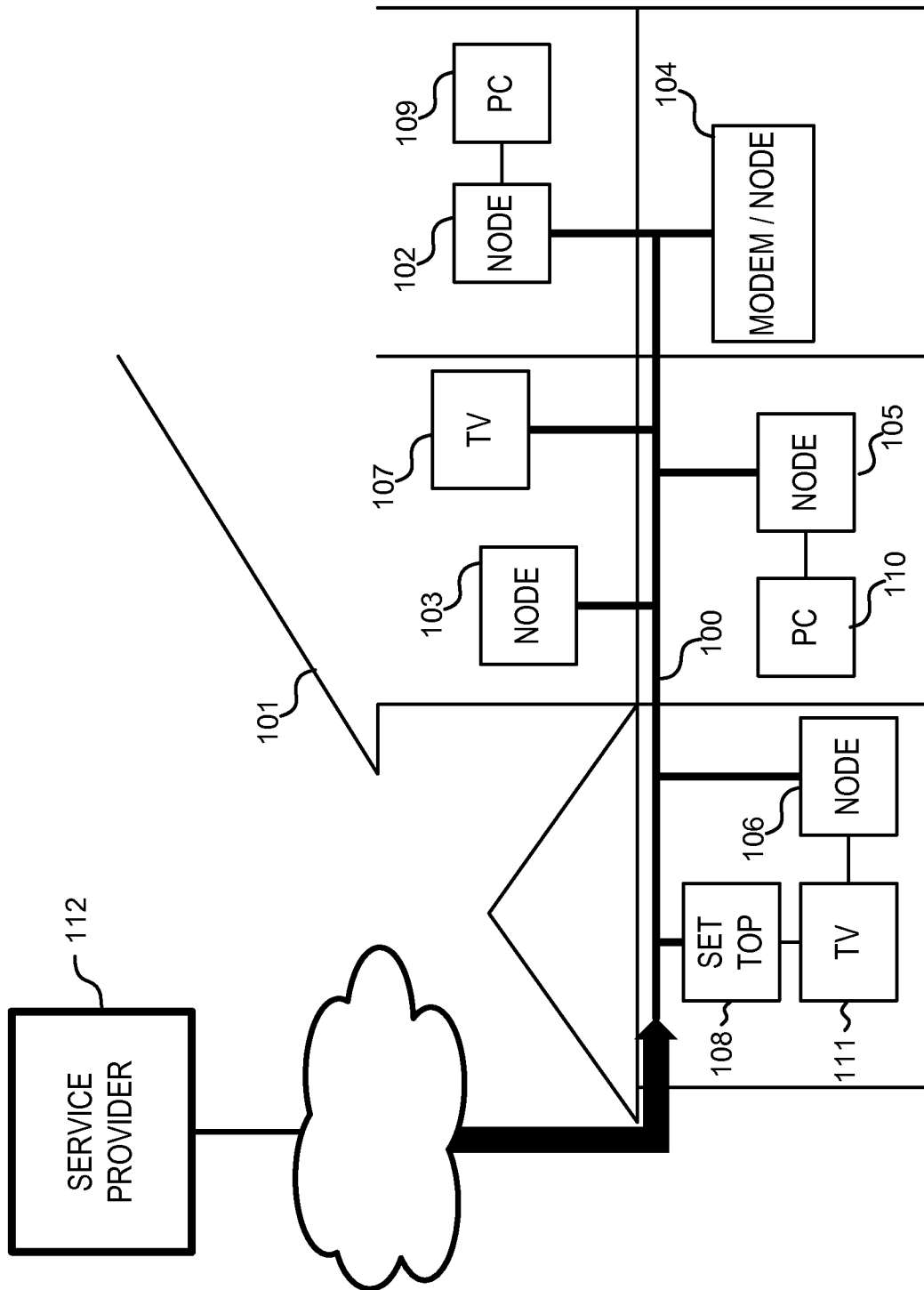


Fig. 1

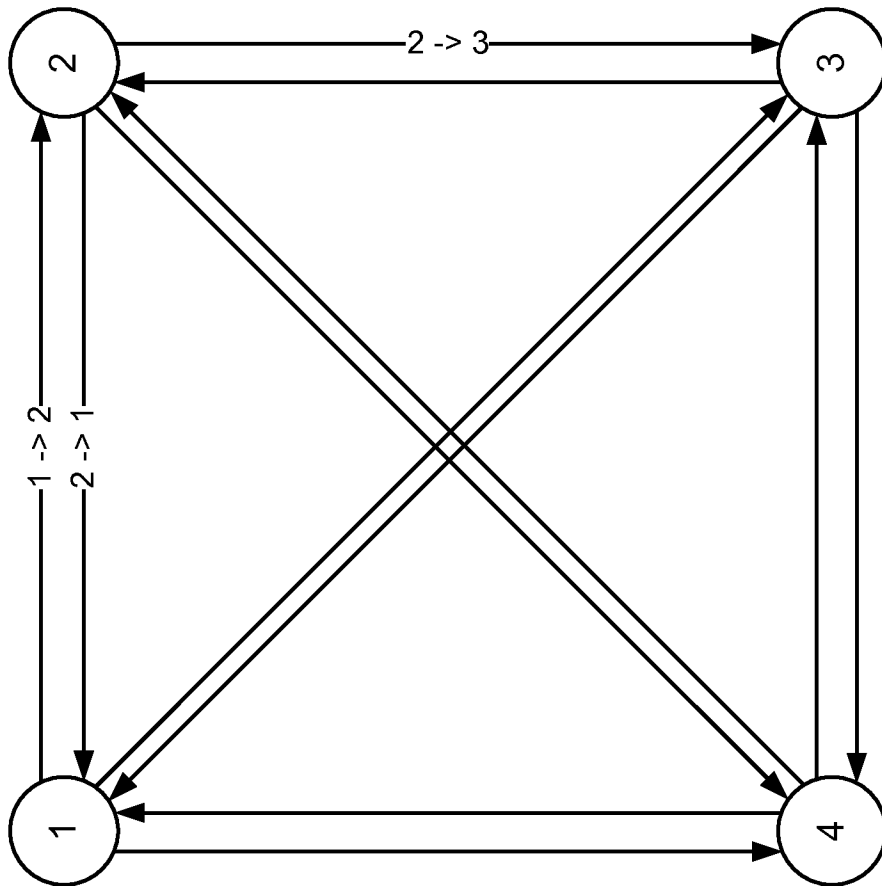


Fig. 2

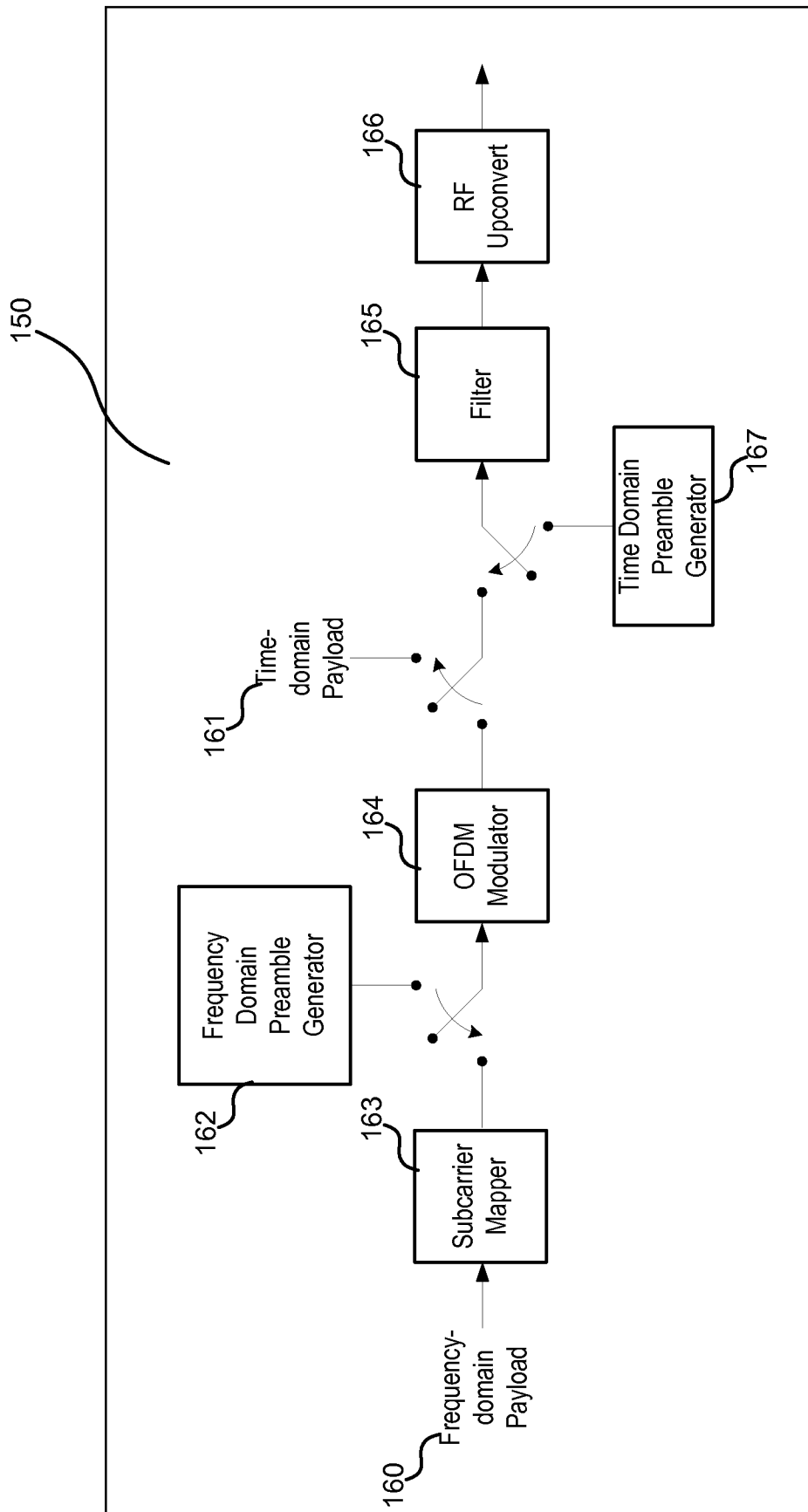


Fig. 3

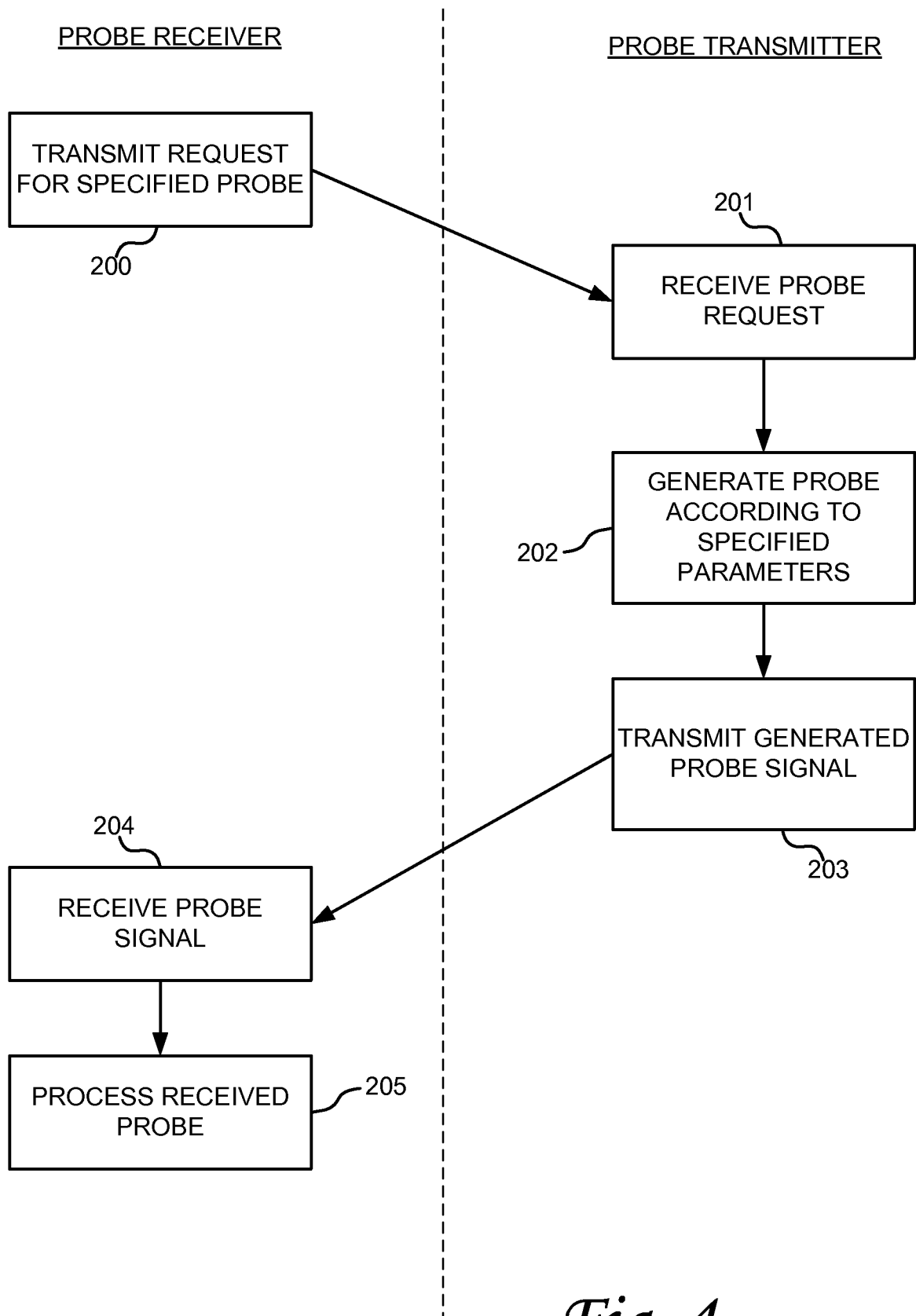


Fig. 4

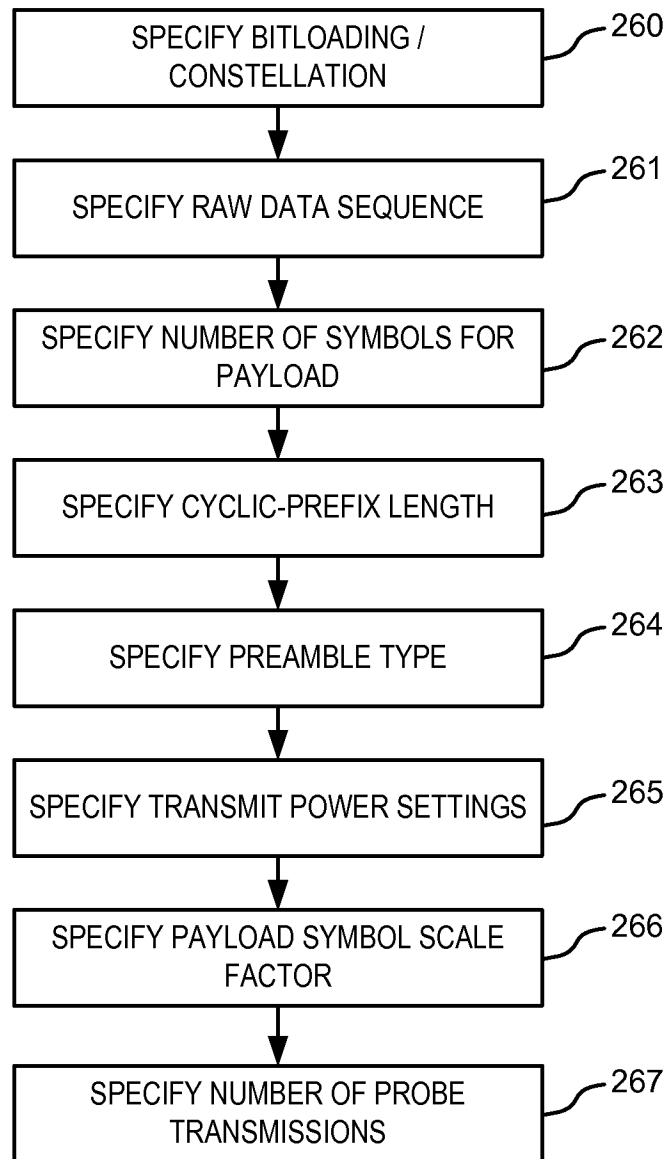


Fig. 5

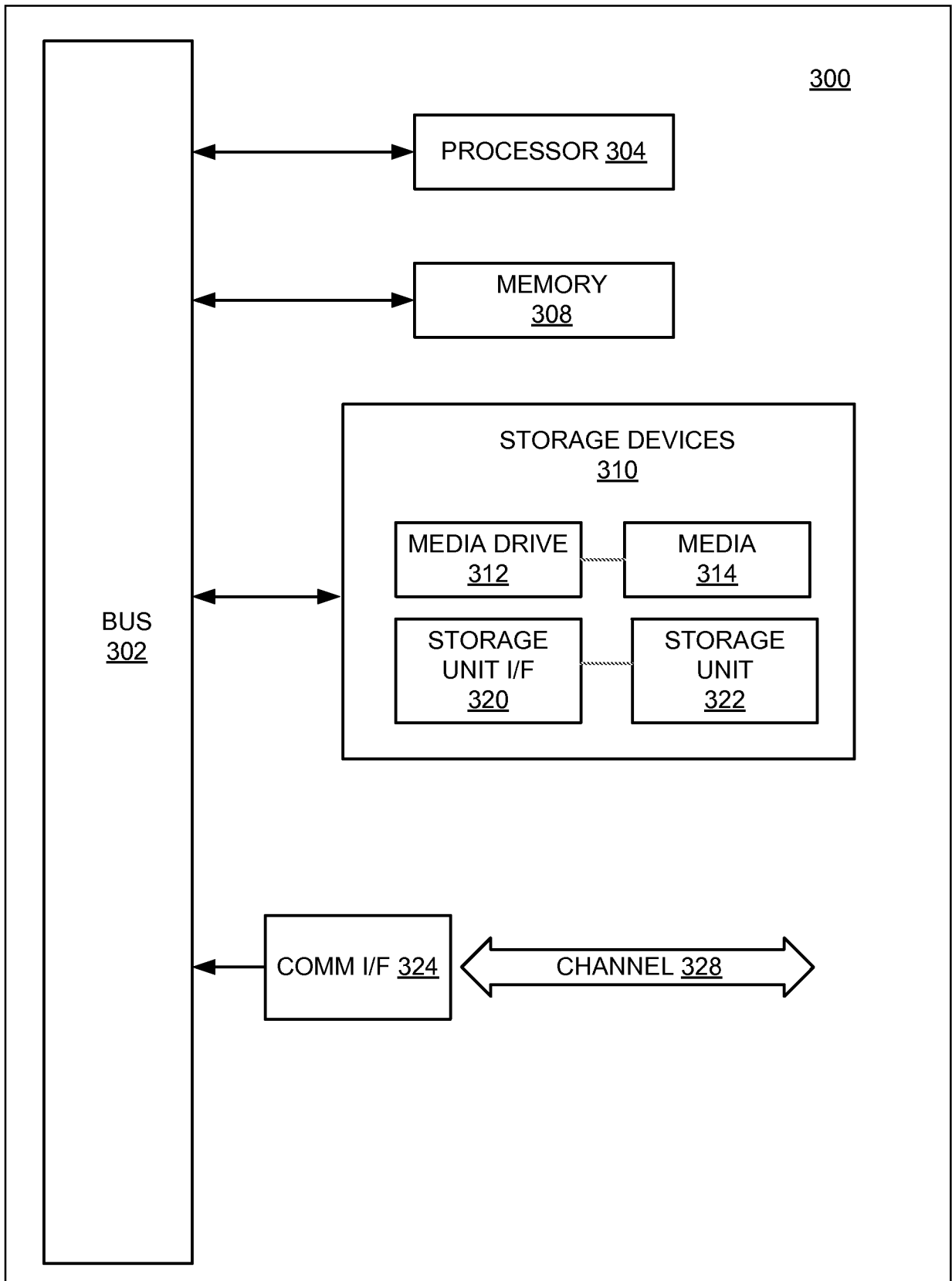


Fig. 6

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Receiver Determined Probe		
First Named Inventor/Applicant Name:		David BARR		
Filer:		Bruce Wayne Greenhaus/Tim Ellis		
Attorney Docket Number:		E080051USU1		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Claims in excess of 20	1202	4	52	208
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1428

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EFS ID:	6615717
Application Number:	12635649
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Confirmation Number:	9743
Title of Invention:	Receiver Determined Probe
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
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Attorney Docket Number:	E080051USU1
Receipt Date:	10-DEC-2009
Filing Date:	
Time Stamp:	20:56:41
Application Type:	Utility under 35 USC 111(a)

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Payment Type	Deposit Account
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RAM confirmation Number	5619
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	E080051USU1_App-Data-Sheet_12-10-09.pdf	1539892	no	4
			4c59398fc37a96bca83b535268336d97fd9da69d		
Warnings:					
Information:					
2		E080051USU1_App-as-Filed_12-10-09.pdf	186789	yes	35
			6dc758b1b60a0fb155e6e7642356ca6685364177		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	29	
	Claims		30	34	
	Abstract		35	35	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	E080051USU1_Drwgs-as-Filed_12-10-09.pdf	82187	no	6
			8744d18f8bf7d8c51db24e83663407f744964706		
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	37750	no	2
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12/635,649	12/10/2009	2472	1428	E080051USU1	24	3

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OC000000039407505

Date Mailed: 01/04/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

David BARR, San Jose, CA;

Assignment For Published Patent Application

ENTROPIC COMMUNICATIONS, INC., San Diego, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/122,687 12/15/2008
and claims benefit of 61/179,454 05/19/2009

Foreign Applications

If Required, Foreign Filing License Granted: 12/29/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/635,649**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

Title

Receiver Determined Probe

Preliminary Class

370

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	E080051USU1

CONFIRMATION NO. 9743

FORMALITIES LETTER



OC000000039407506

77330
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Date Mailed: 01/04/2010

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/cvorachack/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

12/10/09

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number

12/635,649**APPLICATION AS FILED – PART I**

(Column 1)

(Column 2)

SMALL ENTITY

OR

OTHER THAN
SMALL ENTITY

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(i))	24 minus 20 =	* 4
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

RATE (\$)	FEE (\$)
N/A	
N/A	
N/A	
X 26=	
X 110=	
N/A	
TOTAL	

OR

RATE (\$)	FEE (\$)
N/A	330
N/A	540
N/A	220
X 52=	208
X 220=	
N/A	
TOTAL	1298

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

SMALL ENTITY

OR

OTHER THAN
SMALL ENTITY

AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(i))	*	Minus **	=
Independent (37 CFR 1.16(h))	*	Minus ***	=
Application Size Fee (37 CFR 1.16(s))			
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			

RATE (\$)	ADDI- TIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

OR

OR

OR

OR

OR

RATE (\$)	ADDI- TIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

(Column 1)

(Column 2)

(Column 3)

AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(i))	*	Minus **	=
Independent (37 CFR 1.16(h))	*	Minus ***	=
Application Size Fee (37 CFR 1.16(s))			
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			

RATE (\$)	ADDI- TIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

OR

OR

OR

OR

OR

RATE (\$)	ADDI- TIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	E080051USU1

CONFIRMATION NO. 9743

FORMALITIES LETTER

77330
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121



Date Mailed: 01/04/2010

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

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<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

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/cvorachack/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Electronic Acknowledgement Receipt

EFS ID:	6833323
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	Receiver Determined Probe
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E080051USU1
Receipt Date:	19-JAN-2010
Filing Date:	10-DEC-2009
Time Stamp:	13:34:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	E080051USU1_Oath- POA_Signed_1-19-2010.pdf	72452 709155409c08428585d7ce68f6ee326f1c971dba	no	1

Warnings:

Information:

2	Applicant Response to Pre-Exam Formalities Notice	E080051USU1_Missing-Parts_1-4-2010.pdf	52106 31e61b12fff1b7e3317cca6a8f3be1ecec17ef0f	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			124558		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

COMBINED DECLARATION / POWER OF ATTORNEY

AS BELOW NAMED INVENTOR, I HEREBY DECLARE THAT: This Declaration is of the following type:

☒ Original ☐ Supplemental ☐ Continuation-In-Part ☐ Divisional
☐ Continuation ☐ National Stage of PCT

My residence, post office address and citizenship are as stated below next to my name: I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention **Receiver Determined Probe**. The specification of which:

- ☐ is attached hereto.
☒ was filed on **December 10, 2009** as Serial No. **12/635,649**.
☐ was amended on (if applicable).
☐ was described and claimed in PCT International Application No. filed on and as amended under PCT Article 19 on

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Sec. 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119 of any foreign application(s) for patent or inventor's certificate or of any PCT International application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT International application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

				Priority Claimed
(Country)	(Application No.)	(Day/Month/Year/Filed)	(Yes)	(No)

I hereby claim the benefit under Title 35 USC 119(e) of any United States provisional application(s) listed below:

(Serial No.)	(Filing Date)
<u>61/122,687</u>	<u>December 15, 2008</u>

I hereby claim the benefit under Title 35 USC 120 of the United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC 112, I acknowledge the duty to disclose material information as defined in Title 37 CFR 1.56(a) which occurred between the filing date of the prior application and the national or PCT International filing date of this application:

(Serial No.)	(Filing Date)	(Status)

I, the undersigned, hereby appoint the attorneys and/or agents associated with Customer No. 77330 to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith. Please direct all telephone calls to Tim Ellis at (858) 768-3835 and address all correspondence to: Entropic Communications, Inc., C/O Tim Ellis, 6290 Sequence Drive, San Diego, California 92121.

I, the undersigned, hereby declare under penalty of perjury that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Joint Inventor David Barr	Inventor Signature <i>David Barr</i>	Date 19-Jan-2010
Residence 5062 Durban Ct., San Jose, California 95138	Citizenship US	
Post Office Address		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In Re Application of:
David Barr**

Serial No.: 12/635,649

Filed: 10-DEC-2009

For: Receiver Determined Probe.

Group Art Unit: 2472

Confirmation No. 9743

Miscellaneous Letter for Replacement of Previously Filed OATH/POA

**MAIL STOP Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450**

Dear Sir or Madam:

Attached is a corrected Oath/Power of Attorney to an earlier filed Oath/Power of Attorney submitted by EFS on January 19, 2010, with the U.S.P.T.O. In that previously submitted Oath/Power of Attorney an error was made by omitting one of the applications to which priority was claimed in the first paragraph of the application and application data sheet, Provisional Application Number 61/179,454 filed May 19, 2009, which has been corrected in the attached Supplemental Oath/Power of Attorney by changing: (Correction begins on Page 2 of this paper)

I hereby certify that this correspondence is being electronically deposited with the Commissioner for Patents through the USPTO electronic filing system, on:

January 19, 2010

(Date of Deposit)

Tim Ellis

(Name of Person Making Deposit)

/Tim Ellis/

(Signature)

From:

I hereby claim the benefit under Title 35 USC 119(e) of any United States provisional application(s) listed below:

<u>61/122,687</u>	<u>December 15, 2008</u>
(Serial No.)	(Filing Date)

To:

I hereby claim the benefit under Title 35 USC 119(e) of any United States provisional application(s) listed below:

<u>61/122,687</u>	<u>December 15, 2008</u>
(Serial No.)	(Filing Date)
<u>61/179,454</u>	<u>May 19, 2009</u>
(Serial No.)	(Filing Date)

If for any reason there is a question regarding this submission, please feel free to contact Bruce W. Greenhaus, attorney of record, at (619) 980-2612.

Respectfully submitted,

Dated: January 19, 2010

By: /Bruce W. Greenhaus/
Bruce W. Greenhaus
Attorney for Applicants
Registration No. 37,339

Entropic Communications, Inc.
6290 Sequence Drive
San Diego, California 92121
Telephone: (619) 980-2612
e-mail address: patentteam@entropic.com

COMBINED DECLARATION / POWER OF ATTORNEY

AS BELOW NAMED INVENTOR, I HEREBY DECLARE THAT: This Declaration is of the following type:

☒ Original
 ☐ Supplemental
 ☐ Continuation-In-Part
 ☐ Divisional
☐ Continuation
 ☐ National Stage of PCT

My residence, post office address and citizenship are as stated below next to my name: I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention **Receiver Determined Probe**. The specification of which:

- ☐ is attached hereto.
☒ was filed on **December 10, 2009** as Serial No. **12/635,649**.
☐ was amended on (if applicable).
☐ was described and claimed in PCT International Application No. filed on and as amended under PCT Article 19 on .

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Sec. 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119 of any foreign application(s) for patent or inventor's certificate or of any PCT International application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT International application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

				Priority Claimed	
(Country)	(Application No.)	(Day/Month/Year/Filed)	(Yes)	(No)	

I hereby claim the benefit under Title 35 USC 119(e) of any United States provisional application(s) listed below:

61/122,687 (Serial No.)	December 15, 2008 (Filing Date)
61/179,454 (Serial No.)	May 19, 2009 (Filing Date)

I hereby claim the benefit under Title 35 USC 120 of the United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC 112, I acknowledge the duty to disclose material information as defined in Title 37 CFR 1.56(a) which occurred between the filing date of the prior application and the national or PCT International filing date of this application:

(Serial No.)	(Filing Date)	(Status)
--------------	---------------	----------

I, the undersigned, hereby appoint the attorneys and/or agents associated with Customer No. 77330 to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith. Please direct all telephone calls to Tim Ellis at (858) 768-3835 and address all correspondence to: Entropic Communications, Inc., C/O Tim Ellis, 6290 Sequence Drive, San Diego, California 92121.

I, the undersigned, hereby declare under penalty of perjury that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Joint Inventor David Barr	Inventor Signature <i>David Barr</i>	Date 19-Jan-2010
Residence 5062 Durban Ct., San Jose, California 95138		Citizenship US
Post Office Address		

Electronic Acknowledgement Receipt

EFS ID:	6834650
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	Receiver Determined Probe
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E080051USU1
Receipt Date:	19-JAN-2010
Filing Date:	10-DEC-2009
Time Stamp:	14:39:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	E090024USP1_Misc_Ltr_Correction_OATH-POA_01-19-2010.pdf	79822 4d4d22426247125a2f0e422f2f78ed296a6ce08a	no	2

Warnings:

Information:

2	Oath or Declaration filed	E080051USU1_Oath- POA_Signed_1-19-2010.pdf	452348 8a5de9e72753ca216685998f21f4aa26431d 1d76	no	1
Warnings:					
Information:					
Total Files Size (in bytes):				532170	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/635,649	12/10/2009	2472	1428	E080051USU1	24	3

CONFIRMATION NO. 9743

UPDATED FILING RECEIPT

77330
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121



Date Mailed: 01/27/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

David BARR, San Jose, CA;

Assignment For Published Patent Application

ENTROPIC COMMUNICATIONS, INC., San Diego, CA

Power of Attorney: The patent practitioners associated with Customer Number 77330

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/122,687 12/15/2008
and claims benefit of 61/179,454 05/19/2009

Foreign Applications

If Required, Foreign Filing License Granted: 12/29/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/635,649**

Projected Publication Date: 06/17/2010

Non-Publication Request: No

Early Publication Request: No

Title

Receiver Determined Probe

Preliminary Class

370

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12635649	
	Filing Date		2009-12-10	
	First Named Inventor	David Barr		
	Art Unit	2472		
	Examiner Name	Not Yet Assigned		
	Attorney Docket Number	E080051USU1		

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7124199	B2	2006-10-17	MILLER et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

Add

U.S.PATENT APPLICATION PUBLICATIONS						Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20080117833	A1	2008-05-22	BORRAN et al.	
	2	20070183383	A1	2007-08-09	BITRAN et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

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FOREIGN PATENT DOCUMENTS								Remove
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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NON-PATENT LITERATURE DOCUMENTS								Remove
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	12635649
Filing Date	2009-12-10
First Named Inventor	David Barr
Art Unit	2472
Examiner Name	Not Yet Assigned
Attorney Docket Number	E080051USU1

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	12635649
Filing Date	2009-12-10
First Named Inventor	David Barr
Art Unit	2472
Examiner Name	Not Yet Assigned
Attorney Docket Number	E080051USU1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Bruce W. Greenhaus/	Date (YYYY-MM-DD)	2010-06-10
Name/Print	Bruce W. Geenhaus	Registration Number	37339

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: BRUCE GREENHAUS
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year)

10 MAR 2010

Applicant's or agent's file reference

E080051WOP1

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/US2009/067586

International filing date
(day/month/year)

10 December 2009

Applicant

ENTROPIC COMMUNICATIONS, INC.

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest against payment of (an) additional fee(s) under Rule 40.2,** the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

Telephone No. 571-272-7774

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference E080051WOP1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2009/067586	International filing date (<i>day/month/year</i>) 10 December 2009	(Earliest) Priority Date (<i>day/month/year</i>) 15 December 2008
Applicant ENTROPIC COMMUNICATIONS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 4
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/067586

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 11/30 (2010.01)

USPC - 370/252

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - G06F 11/30 (2010.01)

USPC - 370/252

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO Full-Text and Image Database , MicroPatent, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/0117833 A1 (BORRAN et al) 22 May 2008 (22.05.2008) entire document	1-3, 5-12, 14-20, 22-24
--		
Y		4, 13, 21
Y	US 7,124,199 B2 (MILLER et al) 17 October 2006 (17.10.2006) entire document	4, 13, 21
A	US 2007/183383A1 (BITRAN et al) 09 August 2007 (09.08.2007) entire document	1-24

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

31 January 2010

Date of mailing of the international search report

10 MAR 2010

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: BRUCE GREENHAUS
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

10 MAR 2010

Applicant's or agent's file reference
E080051WOP1

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2009/067586

International filing date (day/month/year)

10 December 2009

Priority date (day/month/year)

15 December 2008

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G06F 11/30 (2010.01)

USPC - 370/252

Applicant ENTROPIC COMMUNICATIONS, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Date of completion of this opinion 01 February 2010	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
---	--	---

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/US2009/067586

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*. 1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - ☐ on paper
 - ☐ in electronic form
 - b. (time)
 - ☐ in the international application as filed
 - ☐ together with the international application in electronic form
 - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2009/067586

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
1. Statement				
Novelty (N)	Claims	4, 13, 21		YES
	Claims	1-3, 5-12, 14-20, 22-24		NO
Inventive step (IS)	Claims	None		YES
	Claims	1-24		NO
Industrial applicability (IA)	Claims	1-24		YES
	Claims	None		NO
2. Citations and explanations:				
Claims 1-3, 5-12, 14-20, and 22-24 lack novelty under PCT Article 33(2) as being anticipated by Borran et al. (hereinafter "Borran"). Regarding claim 1, Borran teach a method comprising: a) receiving in a first node (para. [0010] receive an indication of excessive other-sector interference (OSI) from an access point in a set of acquired access points, i.e. nodes), a probe request specifying a plurality of parameters (para. [0044] "In system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system) associated with the generation and transmission of a probe (Applicant's Application teaches para. [0005] "probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node", and thus, Borran teaches transmissions between access nodes via a forward and reverse link to estimate the channel response, i.e., determine characteristics of the channel between the receiving and the transmitting node; para. [0006] "In such a system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors"; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span); para. [0074] "The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response."), including the content of a payload of the probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet."; Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are widely deployed to provide various types of communication content such as voice, data, video, and so on."; para. [0045] data and control symbols; paras. [0076, 0081, 0091] "decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc."); and b) transmitting from the first node to a second node the probe having a form dictated by the parameters specified by the probe request (paras. [0006, 0045, 0063] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme; FIG. 10). Regarding claim 2, Borran teach the invention of claim 1 and further teach using within the first node (paras. [0010, 0036-0037, 0083] nodes, access points), at least one of the probe parameters to determine a modulation profile for the probe (para. [0007] Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code domain; para. [0074] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme; para. [0085] "Additionally, access point 1202 can comprise a receiver 1210 that receives information from receive antenna 1206. In one example, the receiver 1210 can be operatively associated with a demodulator (Demod) 1212, or substantially any other electronic appliance, that demodulates received information. Demodulated symbols can then be analyzed by a processor 1214.").				
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Form PCT/ISA/237 (Box No. V) (July 2009)

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Box V

Regarding claim 3, Borran teach the invention of claim 1 and further teach using wherein at least one of the probe parameters indicates: a) a modulation profile for the probe (paras. [0007, 0074, 0085] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); b) the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); c) a number of symbols for the payload of the probe (para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); d) a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a frame, and a superframe contains K=25 frames (and a preamble)); e) a cyclic-prefix length for the payload of the probe (para. [0073] Alternatively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); f) a transmit power for the probe (para. [0073] threshold, channel quality in

Regarding claim 5, Borran teach the invention of claim 1 and further teach wherein the modulation profile for the probe emulates an orthogonal frequency division multiple access (OFDMA) transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] "In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins, ...), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM".mbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 6, Borran teach the invention of claim 1 and further teach wherein the probe request is generated by the second node (paras. [0006, 0045, 0063, 0083] FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108; FIG. 10).

Regarding claim 7, Borran teach the invention of claim 1 and further teach wherein the probe request requests a probe that assists in diagnosing a network problem (Abstract, determining an indication of other-sector interference (OSI); para. [0044] "In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements."; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 8, Borran teach the invention of claim 7 and further teach wherein the probe request is generated by a network operator and uploaded to the second node (FIGS. 9-12, network and access points; paras. [0006, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235).

Regarding claim 9, Borran teach a) a first node transmitting a probe request to a second node (Applicant's Application teaches para. [0005] "probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node", and thus, Borran teaches transmissions between access nodes via a forward and reverse link a to estimate the channel response, i.e., determine characteristics of the channel between the receiving and the transmitting node; para. [0006] "In such a system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors"; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span); para. [0074] The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response; FIG. 10), the probe request specifying a plurality of probe parameters for a physical layer probe (para. [0044] "In system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer), the probe parameters comprising a form for the probe including a modulation profile for the probe (para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and b) the first node receiving the probe from the second node (para. [0010] receive an indication of excessive other-sector interference (OSI) from an access point in a set of acquired access points, i.e. nodes; paras. [0006, 0045, 0063, 0083]; FIG. 10).

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Regarding claim 10, Borran teach the invention of claim 9 and further teach wherein the probe request is configured such that the probe emulates an OFDMA transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins, ...), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 11, Borran teach the invention of claim 9 and further teach wherein a) the first node transmitting a second probe request to a third node (FIGS. 9-12, network and multiple access points; paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; b) and the first node receiving a second probe from the third node (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10), wherein the second probe is generated according to the second probe request (para. [0044, 0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and wherein the first probe and second probe are transmitted simultaneously using OFDMA (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; [0006-0007] A wireless multiple-access communication system can simultaneously support communication for multiple, Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code domain. wireless terminals; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins, ...), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 12 Borran teach the invention of claim 9 and further teach wherein the probe parameters further comprises: a) an indication of the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); b) a number of symbols for the payload of the probe(para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a frame, and a superframe contains K=25 frames (and a preamble)); c) a cyclic-prefix length for the payload of the probe (para. [0073] Alternatively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); a transmit power for the probe (para. [0073] threshold, channel quality indicators, or cell traffic load. In another aspect, the communication resource can correspond to a transmission power or power spectral density (PSD)); and d) a transmit power scaling factor for the payload of the probe (paras. [0045, 0063] AP 250 can send a resource assignment to terminal 220. Such resource assignment conveys information on communication resources such as power level and/or power spectral density, packet format, modulation, etc., that AT 220 can employ to conduct a communication with AP 250.).

Regarding claim 14, Borran teach the invention of claim 9 and further teach wherein the probe request is generated by the first node (para. [0006] "In such a system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors"; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span); para. [0074] The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response; FIG. 10).

Regarding claim 15, Borran teach the invention of claim 9 and further teach wherein the probe request is configured to diagnose a network problem (para. [0044] "In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements."; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 16, Borran teach the invention of claim 15 and further teach wherein the probe request is generated by a network operator and uploaded to the first node (FIGS. 9-12, network and access points; paras. [0006, 0045, 0063, 0083] "An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 2350").

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Regarding claim 17, Borran teach a system, comprising: a) a first node on a communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the first node comprising a first processor and a first computer executable program code embodied on a first computer readable medium (paras. [0012, 0015]), the first computer executable program code configured to transmit a probe request to a second node on the communications network (paras. [0006, 0012, 0045, 0063, 0083] "FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108"; FIGS. 2, 9-10), the probe request specifying a plurality of probe parameters that dictate a form for a physical layer probe (para. [0044] "in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system"; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer; para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), the probe parameters comprising at least a payload content for the probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet."; Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are widely deployed to provide various types of communication content such as voice, data, video, and so on."; para.[0045] data and control symbols; paras. [0076, 0081, 0091] decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc.) and a modulation profile for the probe (para. [0074] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and b) the second node on the communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the second node comprising a second processor and a second computer executable program code embodied on a second computer readable medium (paras. [0012, 0015, 0035] two or more computers, network), the second executable program code configured to receive the probe request (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10); generate the probe having a form dictated by the received probe request (para. [0044, 0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), and transmit the probe to the first node (paras. [0006, 0012, 0015, 0045, 0063, 0083; FIGS. 2, 9-10).

Regarding claim 18, Borran teach the invention of claim 17 and further teach wherein the probe request is configured such that the probe emulates an OFDMA transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins, ...), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

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Regarding claim 19, Borran teach the invention of claim 17 and further teach wherein the first executable program code is further configured to transmit a second probe request to a third node on the communications network (paras. [0006, 0012, 0045, 0063, 0083] "FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108"; FIGS. 2, 9-10, multiple access points), the second probe request specifying a second plurality of probe parameters for a second physical layer probe (para. [0044] "in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system"; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer; para. [0074] "The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme"; FIG. 10), the second probe parameters comprising a second payload content for the second probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet."; Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are widely deployed to provide various types of communication content such as voice, data, video, and so on."; para.[0045] data and control symbols; paras. [0076, 0081, 0091] decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc.; FIG. 10 multiple access points) and a second modulation profile for the probe (para. [0074] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and further comprising a third node on the communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the third node comprising a third processor and a third computer executable program code embodied on a third computer readable medium (paras. [0012, 0015, 0035] two or more computers, network),, the third executable program code configured to receive the second probe request (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10), generate the second probe according to the received probe request (paras. [0044, 0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), and transmit the second probe to the first node on the communications network (paras. [0006, 0012, 0015, 0035, 0045, 0063, 0083; FIGS. 2, 9-10).; and wherein the first probe and second probe are transmitted simultaneously using OFDMA (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; paras. [0006-0007] A wireless multiple-access communication system can simultaneously support communication for multiple, Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code domain. wireless terminals; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins, ...), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 20, Borran teach the invention of claim 17 and further teach wherein the probe parameters further comprises: a) an indication of the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); b) a number of symbols for the payload of the probe (para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); c) a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a frame, and a superframe contains K=25 frames (and a preamble)); d) a cyclic-prefix length for the payload of the probe (para. [0073] Alternatively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); e) a transmit power for the probe (para. [0073] threshold, channel quality indicators, or cell traffic load. In another aspect, the communication resource can correspond to a transmission power or power spectral density (PSD)); and f) a transmit power scaling factor for the payload of the probe (paras. [0045, 0063] AP 250 can send a resource assignment to terminal 220. Such resource assignment conveys information on communication resources such as power level and/or power spectral density, packet format, modulation, etc., that AT 220 can employ to conduct a communication with AP 250.).

Regarding claim 22, Borran teach the invention of claim 17 and further teach wherein the probe request is generated by the first node (paras. [0006, 0045, 0063] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235); para. [0083] FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108; FIGS. 9, 11-12, access points).

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Previous Supplemental Box

Regarding claim 23, Borran teach the invention of claim 17 and further teach wherein the probe request is configured to diagnose a network problem (para. [0044]) In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements.; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 24, Borran teach the invention of claim 23 and further teach wherein the probe request is generated by a network operator and uploaded to the first node (FIGS. 9, 11-12, network and access points; paras. [0006, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL (reverse link) 235).

Claims 4, 13 and 21 lack an inventive step under PCT Article 33(3) as being obvious over Borran in view of Miller et al. (hereinafter "Miller").

Regarding claim 4, Borran teach the invention of claim 3. Borran do not teach wherein the probe request identifies a hidden node. Miller is in the field of to network search algorithms, and in particular, to a method, apparatus, and article of manufacture for improving the handling of turn restrictions in a network search algorithm (col. 1, lines 19-22) and teach wherein the probe request identifies a hidden node (Abstract; col. 5, lines 18-20 "When the hidden node has been reached, the node is no longer "hidden" and the Local search is cancelled."; FIG.3). It would have been obvious at the time of the invention to one skilled in the art to modify Borran to include wherein the probe request identifies a hidden node as taught by Miller to mitigate other-sector interference (Borran, Abstract).

Regarding claims 13 and 21, Borran teach the invention of claims 12 and 20, respectively. Borran do not teach wherein the probe request is configured such that the probe identifies a hidden node. Miller is in the field of to network search algorithms, and in particular, to a method, apparatus, and article of manufacture for improving the handling of turn restrictions in a network search algorithm (col. 1, lines 19-22) and teach wherein the probe request is configured such that the probe identifies a hidden node. (Abstract; col. 5, lines 18-20 "When the hidden node has been reached, the node is no longer "hidden" and the Local search is cancelled."; FIG.3). It would have been obvious at the time of the invention to one skilled in the art to modify Borran to include wherein the probe request is configured such that the probe identifies a hidden node as taught by Miller to mitigate other-sector interference (Borran, Abstract).

Claims 1-24 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Electronic Acknowledgement Receipt

EFS ID:	7785432
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	Receiver Determined Probe
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E080051USU1
Receipt Date:	10-JUN-2010
Filing Date:	10-DEC-2009
Time Stamp:	12:07:48
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	E080051USU1_IDS_Response_6-10-2010.pdf	95525 e270e68902b9a8ed4dc49bd1e983d4a13457ab00	no	2

Warnings:

Information:

2	Information Disclosure Statement (IDS) Filed (SB/08)	E080051USU1_IDS_Form_6-10- 2010.pdf	620688 df6872a2f38383fbf1ba4a473b15ae366b9e5a4e	no	4
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	E080051WOP1_ISR_3-10-2010. pdf	810508 c806faaa8dbf86709e65843d908a42dc1b20b567	no	11
Warnings:					
Information:					
Total Files Size (in bytes):			1526721		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

I hereby certify that this correspondence is being electronically deposited with the Commissioner for Patents through the USPTO electronic filing system, on:

Attorney Docket No.: E080051USU1

June 10, 2010

(Date of Deposit)

Tim L. Ellis

(Name of Person Making Deposit)

/Tim L. Ellis/

(Signature)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In Re Application of:
David BARR**

For: Receiver Determined Probe

Serial No.: 12/635,649

Group Art Unit: 2472

Filed: 10-Dec-2009

Information Disclosure Statement Under 37 CFR § 1.97 and § 1.98

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: **Not Yet Assigned**
Examiner

Dear Sir or Madam:

The references cited on attached form, PTO/SB/08a, are being provided for consideration during examination of the above-identified patent application. It is respectfully requested that all cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the “references cited” on any patent to issue from this application

Enclosed is a copy of the following International Search Report: (1) ISR dated March 10, 2010, which was issued in corresponding PCT application serial number PCT/US2009/067586 filed December 10, 2009, and in which these references were cited.

I hereby certify that this correspondence is being electronically deposited with the Commissioner for Patents through the USPTO electronic filing system, on:

Attorney Docket No.: E080051USU1

June 10, 2010

(Date of Deposit)

Tim L. Ellis

(Name of Person Making Deposit)

/Tim L. Ellis/

(Signature)

As provided for by 37 CFR § 1.97 (g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no representation is being made that a search has been conducted, or that this statement encompasses all the possible relevant information.

The Applicants provide this Information Disclosure Statement before the issuance of an Office Action on the merits, therefore, Applicants believe that no fee is required for submission of this statement; however, if a fee is required the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account Number 50-4613. Please deduct any additional fees from, or credit any overpayment to the above-noted Deposit Account as well.

Should any questions arise, a telephone call to the Applicants' representative is invited.

Respectfully submitted,

Dated: June 10, 2010

By: /Bruce W. Greenhaus/
Bruce W. Greenhaus
Attorney for Applicants
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	E080051USU1

CONFIRMATION NO. 9743

PUBLICATION NOTICE



OC000000042141912

77330
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Title:Receiver Determined Probe

Publication No.US-2010-0150016-A1

Publication Date:06/17/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/635,649

12/10/2009

David BARR

E080051USU1

9743

77330 7590 12/21/2011
ENTROPIC COMMUNICATIONS, INC.
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SAN DIEGO, CA 92121

EXAMINER

HAN, CLEMENCE S

ART UNIT

PAPER NUMBER

2464

MAIL DATE

DELIVERY MODE

12/21/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 12/635,649	Applicant(s) BARR, DAVID	
	Examiner CLEMENCE HAN	Art Unit 2464	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-24 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-24 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) ☐ Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 5 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 5 recites the limitation "the modulation profile" in line 1. There is insufficient antecedent basis for this limitation in the claim.
4. Regarding claim 19, the phrase "a third node" in line 6 renders the claim indefinite because it is unclear whether it is the same third node recited in the line 2 or not.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-3, 5-12, 14-20, and 22-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Borran et al. (US Pub. 2008/0117833).

Regarding claim 1, Borran teach a method comprising: a) receiving in a first node (para. [0010] receive an indication of excessive other-sector interference (OSI) from an access point in a set of acquired access points, i.e. nodes), a probe request specifying a plurality of parameters (para. [0044] "in system 100, reverse link interference and

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resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system”) associated with the generation and transmission of a probe (Applicant's Application teaches para. [0005] "probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node", and thus, Borran teaches transmissions between access nodes via a forward and reverse link to estimate the channel response, i.e., determine characteristics of the channel between the receiving and the transmitting node; para. [0006] “in such a system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors”; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span); para. [0074] "The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response."), including the content of a payload of the probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet."; Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are widely deployed to provide various types of communication content such as voice, data, video, and so on."; para. [0045] data and

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control symbols; paras. [0076, 0081, 0091] "decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc."); and b) transmitting from the first node to a second node the probe having a form dictated by the parameters specified by the probe request (paras. [0006, 0045, 0063] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL (reverse link) 235; para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme; FIG. 10).

Regarding claim 2, Borran teach the invention of claim 1 and further teach using within the first node (paras. [0010, 0036-0037, 0083] nodes, access points), at least one of the probe parameters to determine a modulation profile for the probe (para. [0007] Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code

domain; para. [0074] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme; para. [0085] "Additionally, access point 1202 can comprise a receiver 1210 that receives information from receive antenna 1206. In one example, the receiver 1210 can be operatively associated with a demodulator (Demod) 1212, or substantially any other electronic appliance, that demodulates received information. Demodulated symbols can then be analyzed by a processor 1214.").

Regarding claim 3, Borran teach the invention of claim 1 and further teach using wherein at least one of the probe parameters indicates: a) a modulation profile for the probe (paras. [0007, 0074, 0085] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); b) the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); c) a number of symbols for the payload of the probe (para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); d) a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a

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frame, and a superframe contains $K=25$ frames (and a preamble)); e) a cyclic-prefix length for the payload of the probe (para. [0073] Alternatively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); f) a transmit power for the probe (para. [0073] threshold, channel quality indicators, or cell traffic load. In another aspect, the communication resource can correspond to a transmission power or power spectral density (PSD)); and g) a transmit power scaling factor for the payload of the probe (paras. [0045, 0063] AP 250 can send a resource assignment to terminal 220. Such resource assignment conveys information on communication resources such as power level and/or power spectral density, packet format, modulation, etc., that AT 220 can employ to conduct a communication with AP 250.).

Regarding claim 5, Borran teach the invention of claim 1 and further teach wherein the modulation profile for the probe emulates an orthogonal frequency division multiple access (OFDMA) transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] "In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins), each of which can be modulated with data. Typically, modulation symbols are sent in the

frequency domain with OFDM and in the time domain with SC-FDM").mbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 6, Borran teach the invention of claim 1 and further teach wherein the probe request is generated by the second node (paras. [0006, 0045, 0063, 0083] FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 11 04 via an antenna 1108; FIG. 10).

Regarding claim 7, Borran teach the invention of claim 1 and further teach wherein the probe request requests a probe that assists in diagnosing a network problem (Abstract, determining an indication of other-sector interference (OSI); para. [0044] =In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements."; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 8, Borran teach the invention of claim 7 and further teach wherein the probe request is generated by a network operator and uploaded to the second node (FIGS. 9-12, network and access points; paras. [0006, 0045.0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL (reverse link) 235).

Regarding claim 9, Borran teach a) a first node transmitting a probe request to a second node (Applicant's Application teaches para. [0005] "probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node", and thus, Borran teaches transmissions between access nodes via a forward and reverse link a to estimate the channel response, i.e., determine characteristics of the channel between the receiving and the transmitting node; para. [0006] "In such a system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors"; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in

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a frame time-span); para. [0074] The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response; FIG. 10), the probe request specifying a plurality of probe parameters for a physical layer probe (para. [0044] "in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer), the probe parameters comprising a form for the probe including a modulation profile for the probe (para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and b) the first node receiving the probe from the second node (para. [0010] receive an indication of excessive other-sector interference (OSI) from an access point in a set of acquired access points, i.e. nodes; paras. [0006, 0045, 0063, 0083]; FIG. 10).

Regarding claim 10, Borran teach the invention of claim 9 and further teach wherein the probe request is configured such that the probe emulates an OFDMA transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA,

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TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 11, Borran teaches the invention of claim 9 and further teaches wherein a) the first node transmitting a second probe request to a third node (FIGS. 9-12, network and multiple access points; paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235); b) and the first node receiving a second probe from the third node (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10), wherein the second probe is generated according to the second probe request (para. [0044, 0074]

The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and wherein the first probe and second probe are transmitted simultaneously using OFDMA (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; [0006-0007] A wireless multiple-access communication system can simultaneously support communication for multiple, Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code domain, wireless terminals; para. [004 1] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 12 Borran teach the invention of claim 9 and further teach wherein the probe parameters further comprises: a) an indication of the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-

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0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); b) a number of symbols for the payload of the probe(para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a frame, and a superframe contains K=25 frames (and a preamble)); c) a cyclic-prefix length for the payload of the probe (para. [0073] alliteratively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); a transmit power for the probe (para. [0073] threshold, channel quality indicators, or cell traffic load. In another aspect, the communication resource can correspond to a transmission power or power spectral density (PSD)); and d) a transmit power scaling factor for the payload of the probe (paras. [0045, 0063] AP 250 can send a resource assignment to terminal 220. Such resource assignment conveys information on communication resources such as power level and/or power spectral density, packet format, modulation, etc., that AT 220 can employ to conduct a communication with AP 250.).

Regarding claim 14, Borran teach the invention of claim 9 and further teach wherein the probe request is generated by the first node (para. [0006] "In such a

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system, each terminal can communicate with one or more sectors via transmissions on the forward and reverse links. The forward link (or downlink) refers to the communication link from the sectors to the terminals, and the reverse link (or uplink) refers to the communication link from the terminals to the sectors"; para. [0058] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span); para. [0074] The pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response; FIG. 10).

Regarding claim 15, Borran teach the invention of claim 9 and further teach wherein the probe request is configured to diagnose a network problem (para. [0044] "In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements."; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 16, Borran teach the invention of claim 15 and further teach wherein the probe request is generated by a network operator and uploaded to the first

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node (FIGS. 9-12, network and access points; paras. [0006, 0045.0063, 0083] "An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL (reverse link) 2350").

Regarding claim 17, Borran teach a system, comprising: a) a first node on a communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the first node comprising a first processor and a first computer executable program code embodied on a first computer readable medium (paras. [0012, 0015]), the first computer executable program code configured to transmit a probe request to a second node on the communications network (paras. [0006, 0012, 0045, 0063, 0083] "FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 11 04 via an antenna 1108"; FIGS. 2, 9-10), the probe request specifying a plurality of probe parameters that dictate a form for a physical layer probe (para. : [0044] =in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system"; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI

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indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer; para. [0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), the probe parameters comprising at least a payload content for the probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet." Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are i widely deployed to provide various types of communication content such as voice, data, video, and so on."; para.[0045] data and control symbols; paras. [0076, 0081, 0091] decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc.) and a modulation profile for the probe (para. [0074] The multiplexed pilot and ceded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and b) the second node on the communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the second node comprising a second processor and a second computer executable

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program code embodied on a second computer readable medium (paras. [0012, 0015, 0035] two or more computers, network), the second executable program code configured to receive the probe request (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10); generate the probe having a form dictated by the received probe request (para. [0044, 0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), and transmit the probe to the first node (paras. [0006, 0012, 0015, 0045, 0063, 0083; FIGS. 2, 9-10).

Regarding claim 18, Borran teach the invention of claim 17 and further teach wherein the probe request is configured such that the probe emulates an OFDMA transmission (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes.... OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division

Multiplexing (SC-FDM). OFDM and SC-FDM can partition the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 19, Borran teach the invention of claim 17 and further teach wherein the first executable program code is further configured to transmit a second probe request to a third node on the communications network (paras. [0006, 0012, 0045, 0063, 0083] "FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108"; FIGS. 2, 9-10, multiple access points), the second probe request specifying a second plurality of probe parameters for a second physical layer probe (para. [0044] "in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS) parameters for the system"; paras. [0047, 0051, 0072] In aspect, a non-serving access point (e.g., AP 280) conveys the OSI indication to an access terminal (e.g., AT 220) over a dedicated forward link (e.g., FL 295) physical channel. Such channel can be embodied in a fast OSI control channel, FL physical layer; para. [0074] "The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel

response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme"; FIG. 10), the second probe parameters comprising a second payload content for the second probe (Applicant's Application, para. [0021] defines "A PHY payload is used to transmit the data content of the packet."; Borran teaches data content of the packet transmitted via the payload in para. [0006] "wireless systems are widely deployed to provide various types of communication content such as voice, data, video, and so on."; para. [0045] data and control symbols; paras. [0076, 0081, 0091] decoding adapted data packet formats employed for transmission in view of the OSI indication, A code segment can be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. can be passed, forwarded, or transmitted using any suitable means including memory sharing, message passing, token passing, network transmission, etc.; FIG. 10 multiple access points) and a second modulation profile for the probe (para. [0074] The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme); and further comprising a third node on the communications network (FIGS. 2, 9-10 networks 200, 900, and access points), the third node comprising a third processor and a third computer executable program code embodied on a third computer readable medium (paras. [0012, 0015, 0035] two or more computers, network),, the third executable program code configured to receive the second probe request (paras. [0006, 0012, 0045, 0063, 0083] An access terminal (AT) 220 communicates with a serving access

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point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL(reverse link) 235; FIGS. 2, 9-10), generate the second probe according to the received probe request (paras. [0044, 0074] The pilot data is typically a known data pattern (i.e., form) that is processed in a known manner and can be used at the receiver system to estimate the channel response. The multiplexed pilot and coded data for each data stream is then modulated (e.g., symbol mapped) based on a particular modulation scheme), and transmit the second probe to the first node on the communications network (paras. [0006, 0012, 0015, 0035, 0045, 0063, 0083; FIGS. 2, 9-10).; and wherein the first probe and second probe are transmitted simultaneously using OFDMA (para. [0005] Examples of such multiple-access systems include ... Orthogonal Frequency Division Multiple Access (OFDMA) systems; paras. [0006-0007] A wireless multiple-access communication system can simultaneously support communication for multiple, Multiple terminals can simultaneously transmit on the reverse link by multiplexing their transmissions to be orthogonal to one another in the time, frequency, and/or code domain, wireless terminals; para. [0041] In an example, system 100 can utilize one or more multiple-access schemes, such as CDMA, TDMA, FDMA, OFDMA, Single-Carrier FDMA (SC-FDMA), and/or other suitable multiple-access schemes OFDMA utilizes Orthogonal Frequency Division Multiplexing (OFDM), and SC-FDMA utilizes Single-Carrier Frequency Division Multiplexing (SC-FDM). OFDM and SC-FDM can partition

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the system bandwidth into multiple orthogonal subcarriers (e.g., tones, bins), each of which can be modulated with data. Typically, modulation symbols are sent in the frequency domain with OFDM and in the time domain with SC-FDM).

Regarding claim 20, Borran teach the invention of claim 17 and further teach wherein the probe parameters further comprises: a) an indication of the number of times to transmit the probe (para. [0052] It is noted that such frames span a specific amount of time dictated by the specifications of the wireless system; paras. [0074, 0076, 0078-0079] At the transmitter system 910, traffic data for a number of data streams can be provided from a data source 912 to transmit (TX) data processor 914....The data rate, coding, and modulation for each data stream may be determined by instructions executed by processor 930, the instructions as well as the data may be stored in memory 932); b) a number of symbols for the payload of the probe (para. [0015] the time scales dictated by a symbol numerology of a wireless system; para. [0041] modulation symbols); c) a preamble type for the probe (para. [0052] an aspect, symbol numerology determines the time span. As an example, in 3 G UMB, frames can span nearly 1 ms, including the various numbers of cyclic prefixes in a frame, and a superframe contains $K=25$ frames (and a preamble)); d) a cyclic-prefix length for the payload of the probe (para. [0073] Alternatively, or in addition, the communication resource can correspond to a modulation scheme, a bandwidth, a number of subcarriers, cyclic prefix duration, etc.); e) a transmit power for the probe (para. [0073] threshold, channel quality indicators, or cell traffic load. In another aspect, the communication resource can correspond to a transmission power or power spectral

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density (PSD)); and f) a transmit power scaling factor for the payload of the probe (paras. [0045, 0063] AP 250 can send a resource assignment to terminal 220. Such resource assignment conveys information on communication resources such as power level and/or power spectral density, packet format, modulation, etc., that AT 220 can employ to conduct a communication with AP 250.).

Regarding claim 22, Borran teach the invention of claim 17 and further teach wherein the probe request is generated by the first node (paras. [0006, 0045, 0063] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL (reverse link) 235); para. [0083] FIG. 11 is a block diagram of a system 1100 that coordinates reverse link communication resources and interference level maintenance in a wireless communication system in accordance with various aspects described herein. In one example, system 1100 includes an access terminal 1102. As illustrated, access terminal 1102 can receive signal(s) from one or more access points 1104 and transmit to the one or more access points 1104 via an antenna 1108; FIGS. 9, 11-12, access points).

Regarding claim 23, Borran teach the invention of claim 17 and further teach wherein the probe request is configured to diagnose a network problem (para. [0044] In accordance with another aspect, in system 100, reverse link interference and resources control can result in a guaranteed minimum system stability and quality of service (QoS)

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parameters for the system. As an example, decoding error probability of reverse link (RL) acknowledgement messages can result in an error floor for all forward link transmissions. By employing tight interference control on the RL, system 100 can facilitate power efficient transmission of control and QoS traffic and/or other traffic with stringent error requirements.; para. [0051] packet error in the sector serviced by the access point).

Regarding claim 24, Borran teach the invention of claim 23 and further teach wherein the probe request is generated by a network operator and uploaded to the first node (FIGS. 9, 11-12, network and access points; paras. [0006, 0045.0063, 0083] An access terminal (AT) 220 communicates with a serving access point (AP) 250, which can transmit data and control code symbols to AT 220 over forward link (FL) 265 and can receive data and control through reverse link (RL) 235....Resource assignments can be managed by scheduler 254 which can determine assignments based on feedback information received from AT 220 over RL_ (reverse link) 235).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borran et al. in view of Miller et al. (US 7,124,199).

Regarding claim 4, Borran teach the invention of claim 3. Borran, however, does not teach wherein the probe request identifies a hidden node. Miller teaches wherein the probe request identifies a hidden node (Abstract; col. 5, lines 18-20 "When the hidden node has been reached, the node is no longer "hidden" and the Local search is cancelled."; FIG.3). It would have been obvious to one skilled in the art to modify Borran to include wherein the probe request identifies a hidden node as taught by Miller to mitigate other-sector interference (Borran, Abstract).

Regarding claims 13 and 21, Borran teach the invention of claims 12 and 20, respectively. Borran, however, does not teach wherein the probe request is configured such that the probe identifies a hidden node. Miller teaches wherein the probe request is configured such that the probe identifies a hidden node. (Abstract; col. 5, lines 18-20 "When the hidden node has been reached, the node is no longer "hidden" and the Local search is cancelled."; FIG.3). It would have been obvious to one skilled in the art to modify Borran to include wherein the probe request is configured such that the probe identifies a hidden node as taught by Miller to mitigate other-sector interference (Borran, Abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLEMENCE HAN whose telephone number is (571)272-3158. The examiner can normally be reached on Monday-Friday 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Clemence Han/
Primary Examiner, Art Unit 2464

Notice of References Cited	Application/Control No. 12/635,649	Applicant(s)/Patent Under Reexamination BARR, DAVID	
	Examiner CLEMENCE HAN	Art Unit 2464	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,124,199 B2	10-2006	Miller et al.	709/238
*	B	US-2007/0183383 A1	08-2007	Bitran et al.	370/338
*	C	US-2008/0117833 A1	05-2008	Borran et al.	370/252
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	65	david with barr.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/17 15:36
L2	5	probe and 1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/17 15:37
L3	3	("20070183383" "20070183383" "7124199" "7124199" "20080117833" "20080117833").PN.	US-PGPUB; USPAT	OR	ON	2011/12/17 16:34

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CONFIRMATION NO. 9743

SERIAL NUMBER 12/635,649	FILING or 371(c) DATE 12/10/2009 RULE	CLASS 370	GROUP ART UNIT 2464	ATTORNEY DOCKET NO. E080051USU1		
APPLICANTS David BARR, San Jose, CA; ** CONTINUING DATA ***** This appln claims benefit of 61/122,687 12/15/2008 and claims benefit of 61/179,454 05/19/2009 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 12/29/2009						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/CLEMENCE S HAN/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 6	TOTAL CLAIMS 24	INDEPENDENT CLAIMS 3
ADDRESS ENTROPIC COMMUNICATIONS, INC. 6290 SEQUENCE DRIVE SAN DIEGO, CA 92121 UNITED STATES						
TITLE Receiver Determined Probe						
FILING FEE RECEIVED 1428	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Search Notes 	Application/Control No. 12635649	Applicant(s)/Patent Under Reexamination BARR, DAVID
	Examiner CLEMENCE HAN	Art Unit 2464

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
inventor search	12/17/2011	ch
see Search History printout	12/17/2011	ch

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Receipt date: 06/10/2010

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Doc description: Information Disclosure Statement (IDS) Filed

12635649 - GAIL: 2464

Approved for use through 07/31/2012. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12635649	
	Filing Date		2009-12-10	
	First Named Inventor	David Barr		
	Art Unit	~~2472~~		
	Examiner Name	Not Yet Assigned		
	Attorney Docket Number	E080051USU1		

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7124199	B2	2006-10-17	MILLER et al.	

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	1	20080117833	A1	2008-05-22	BORRAN et al.	
	2	20070183383	A1	2007-08-09	BITRAN et al.	

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Receipt date: 06/10/2010 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12635649	12635649 - GAU: 2464
	Filing Date		2009-12-10	
	First Named Inventor	David Barr		
	Art Unit	~~2472~~ 2472		
	Examiner Name	Not Yet Assigned		
	Attorney Docket Number	E080051USU1		

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¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

<i>Index of Claims</i> 	Application/Control No. 12635649	Applicant(s)/Patent Under Reexamination BARR, DAVID
	Examiner CLEMENCE HAN	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	12/17/2011							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
	9	✓							
	10	✓							
	11	✓							
	12	✓							
	13	✓							
	14	✓							
	15	✓							
	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							
	21	✓							
	22	✓							
	23	✓							
	24	✓							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: BARR, David	Docket No.: 05JM-151616
Application No.: 12/635,649	Confirmation No.: 9743
Filed: December 10, 2009	Art Unit: 2464
For: RECEIVER DETERMINED PROBE	Examiner: HAN, Clemence S.

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.111

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INTRODUCTORY COMMENTS

The following is submitted in response to the Office Action, mailed December 21, 2011, deadline for which to respond is extended by 2 months to May 21, 2012, in view of the petition to extend to time included herewith. Claims 1-24 are pending in this application. After careful consideration of the grounds for rejection, Applicant respectfully requests that the Examiner reconsider the rejections in view of the amendments and discussion submitted.

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method comprising:

a) receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify including the content of a content payload of the probe and a second node;

b) determining a second plurality of parameters associated with generation and transmission of the probe;

c) generating the probe in accordance with the first plurality of parameters and the second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters; and

[[b]] d) transmitting the probe from the first node to [[a]] the second node the probe having a form dictated by the parameters specified by the probe request.

2. (Original) The method of claim 1, further including using within the first node, at least one of the probe parameters to determine a modulation profile for the probe.

3. (Original) The method of claim 1, wherein at least one of the probe parameters indicates:

a) a modulation profile for the probe;

b) the number of times to transmit the probe;

c) a number of symbols for the payload of the probe;

d) a preamble type for the probe;

- e) a cyclic-prefix length for the payload of the probe;
 - f) a transmit power for the probe; and
 - g) a transmit power scaling factor for the payload of the probe.
4. The method of claim 3, wherein the probe request identifies a hidden node.
5. (Currently Amended) The method of claim ~~[[1]]~~ 3, wherein the modulation profile for the probe emulates an orthogonal frequency division multiple access (OFDMA) transmission.
6. (Original) The method of claim 1, wherein the probe request is generated by the second node.
7. (Original) The method of claim 1, wherein the probe request requests a probe that assists in diagnosing a network problem.
8. (Original) The method of claim 7, wherein the probe request is generated by a network operator and uploaded to the second node.
9. (Currently Amended) A method comprising:
- a) a first node transmitting a probe request to a second node, the probe request specifying a first plurality of probe parameters for a physical layer probe, the first plurality of probe parameters comprising a form for the probe including a modulation profile for the probe;
 - b) the first node receiving the probe from the second node, wherein the probe is generated in accordance with the first plurality of parameters and in accordance with a second plurality of parameters determined by the second node.
10. (Original) The method of claim 9, wherein the probe request is configured such that the probe emulates an OFDMA transmission.
11. (Original) The method of claim 9, further comprising:
- a) the first node transmitting a second probe request to a third node;

b) and the first node receiving a second probe from the third node, wherein the second probe is generated according to the second probe request; and

wherein the first probe and second probe are transmitted simultaneously using OFDMA.

12. (Original) The method of claim 9, wherein the probe parameters further comprises:

a) an indication of the number of times to transmit the probe;

b) a number of symbols for the payload of the probe; a preamble type for the probe;

c) a cyclic-prefix length for the payload of the probe; a transmit power for the probe; and

d) a transmit power scaling factor for the payload of the probe.

13. (Original) The method of claim 12, wherein the probe request is configured such that the probe identifies a hidden node.

14. (Original) The method of claim 9, wherein the probe request is transmitted at a specific time.

15. (Original) The method of claim 9, wherein the probe request is configured to diagnose a network problem.

16. (Original) The method of claim 15, wherein the probe request is generated by a network operator and uploaded to the first node.

17. (Currently Amended) A system, comprising:

a) a first node on a communications network, the first node comprising a first processor and a first computer executable program code embodied on a first a computer readable medium, the first computer executable program code configured to transmit a probe request to a second node, on the communications network, the probe request specifying a first plurality of probe parameters ~~that dictate a form~~ for a physical layer probe, wherein the first plurality of probe parameters comprising at least a payload content for the probe and a modulation profile for the probe; and

b) the second node on the communications network, the second node comprising a second processor and a second computer executable program code embodied on a second computer readable medium, the second executable program code configured to:

receive the probe request;[[,]]

determine a second plurality of parameters associated with generation and transmission of the probe;

generate the probe ~~having~~ in accordance with the first plurality of parameters and the second plurality of parameters, wherein the probe has a form dictated by the received probe request first plurality of parameters;[[,]] and

transmit the probe to the first node.

18. (Original) The system of claim 17, wherein the probe request is configured such that the probe emulates an OFDMA transmission.

19. (Currently Amended) The system of claim 17, wherein the first executable program code is further configured to transmit a second probe request to a third node on the communications network, the second probe request specifying a ~~second~~ third first plurality of probe parameters for a second physical layer probe, the ~~second~~ third plurality of probe parameters comprising a second payload content for the second probe and a second modulation profile for the probe, the second probe request further specifying a different second plurality of parameters associated with the generation and transmission of the second probe; and

further comprising [[a]] the third node on the communications network, the third node comprising a third processor and a third computer executable program code embodied on a third computer readable medium, the third executable program code configured to receive the second probe request, generate the second probe according to the received probe request, and transmit the second probe to the first node on the communications network; and wherein the first probe and second probe are transmitted simultaneously using OFDMA.

20. (Original) The system of claim 17, wherein the probe parameters further comprises:

- a) an indication of the number of times to transmit the probe;
 - b) a number of symbols for the payload of the probe;
 - c) a preamble type for the probe;
 - d) a cyclic-prefix length for the payload of the probe;
 - e) a transmit power for the probe; and
 - f) a transmit power scaling factor for the payload of the probe.
21. (Original) The system of claim 20, wherein the probe request is configured such that the probe identifies a hidden node.
22. (Original) The system of claim 17, wherein the probe request is generated by the first node.
23. (Original) The system of claim 17, wherein the probe request is configured to diagnose a network problem.
24. (Original) The system of claim 23, wherein the probe request is generated by a network operator and uploaded to the first node.

REMARKS

Upon entry of the foregoing amendment, the status of the claims is as follows:

- Pending claims: 1-25
- Amended claims: 1, 5, 9, 17, 19
- Independent claims: 1, 9, 17

In view of the above amendments and following remarks, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Claim Rejections**A. Rejections under 35 U.S.C. § 112, second paragraph**

Claims 5 and 19 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

Applicant has amended claim 5 and 19 to provide proper antecedent basis, thereby obviating their rejection under 35 U.S.C. § 112.

B. Rejections under 35 U.S.C. § 102(a)

Claims 1-3, 5-12, 14-20 and 22-24 stand rejected under 35 U.S.C. § 102(a) as allegedly being anticipated by Borran (US 2008/0117833) ("Borran"). Applicant respectfully traverses based on the following.

1. Independent claim 1

Claim 1 as amended is patentable over Borran because Borran does not teach, disclose or suggest (a) "receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify including the content of a content payload of the probe and a second node," (b) "determining a second plurality of parameters associated with generation and transmission of [a] probe," or (c) "generating [a] probe in accordance with [a] first plurality of

parameters and [a] second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters,” as recited by amended claim 1.

Borran relates to “management of interference and communication resources,” and more specifically, describes managing “other-sector interference (OSI) and communication resources ...by adjusting an offset (delta) value associated with the resources in response to receiving an indication of other-sector interference. ...The adjusted delta value is communicated to a serving access point, which reassigns communication resources in order to mitigate other-sector interference.” Borran, Abstract.

Borran describes “management of interference and communication resources” in the context of “[a] wireless multiple-access communication system,” where “each terminal can communicate with one or more sectors via transmissions on the forward and reverse links.” *Id.*, paragraph [0006]. According to Borran, “a determination of an effective interference metric relies on measured values of interference levels on a set of time-frequency resources[,]
...[where] the measured values can correspond to measurements on each time-frequency resource (e.g., a single frame, a single carrier), or to measurements that probe an average condition of a subset of time-frequency resources, such as a tile (e.g., 16 subcarriers in a frame time-span).” *Id.*, paragraph [0058].

Borran further describes “a multiple-input multiple-output (MIMO) system” where “each data stream is transmitted over a respective transmit antenna,” a “TX data processor ...formats, codes, and interleaves the traffic data for each data stream based on a particular coding scheme,” and where “[t]he coded data for each data stream may be multiplexed with pilot data using OFDM techniques.” *See, Id.*, paragraph [0074]. Barron notes that “[t]he pilot data is typically a known data pattern that is processed in a known manner and can be used at the receiver system to estimate the channel response.” *Id.*

Barron, however, is completely silent regarding “**a probe request** specifying a first plurality of parameters associated with the generation and transmission of a probe,” as required by amended claim 1, and mentions nothing of “determining **a second plurality of parameters** associated with generation and transmission of [a] probe” and “generating [a] probe in accordance with [a] first plurality of parameters and [a] second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters,” as also required by amended claim 1.

For at least these reasons, claim 1 is patentable over Barron and Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw the rejection of claim 1 under 35 U.S.C. § 102(a).

2. Independent claims 9 and 17

Independent claims 9 and 17 as amended recite limitations similar to, or in accordance with, those recited in amended claim 1. As such, claims 9 and 17 are patentable over Borran for at least the same reasons provided above with respect to claim 1, and further in view of their own limitations. Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw the rejection of claims 9 and 17 under 35 U.S.C. § 102(a).

3. Dependent claims 2-3, 5-8, 10-12, 14-16, 18-20 and 22-24

Claims 2-3, 5-8, 10-12, 14-16, 18-20 and 22-24 depend one of claims 1, 9 and 17. In view of this, claims 2-3, 5-8, 10-12, 14-16, 18-20 and 22-24 are patentable over Borran for at least the same reasons provided above with respect to their respective base claim, and further in view of their own limitations. Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw the rejection of claims 2-3, 5-8, 10-12, 14-16, 18-20 and 22-24 under 35 U.S.C. § 102(a).

C. Rejections under 35 U.S.C. § 103(a)

Claims 4, 13 and 21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Borran in view of Miller et al. (U.S. Pat. 7,124,199) ("Miller"). Applicant respectfully traverses based on the following.

Claims 4, 13, and 21 depend one of claims 1, 9 and 17 and, as such, are patentable over Borran for at least the same reasons provided above with respect to their respective base claim. Additionally, claims 4, 13, and 21 are patentable over Miller because Miller fails to cure the deficiencies of Borran.

Miller relates to “determin[ing] a path on a network” and discloses commencing “[a] Global search ...for one or more Global paths on the network” and detecting “a hidden node that is not reachable from [a] first node” “when a turn restriction on [the] first node on the network exists.” *See*, Miller, Abstract. Miller also discloses commencing “[a] Local search ... from the

hidden node in a reverse direction creating a Local search path” and converting “[a] Local search path ...to a new Global path” “when the Local search can connect to the Global search” *Id.*

Nowhere does Miller ever teach, disclose, or suggest “receiving in a first node, a probe request specifying a first plurality of parameters associated with the generation and transmission of a probe, wherein the first plurality of parameters at least specify including the content of a content payload of the probe and a second node,” “determining a second plurality of parameters associated with generation and transmission of [a] probe,” or “generating [a] probe in accordance with [a] first plurality of parameters and [a] second plurality of parameters, wherein the probe has a form dictated by the first plurality of parameters,” as recited by claim 1, and similarly recited by claims 9 and 17, from which claims 4, 13 and 21 depend.

For at least these reasons, claims 4, 13 and 21 are patentable over Borran and Miller, whether considered alone or in combination. Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw the rejection of claims 4, 13 and 21 under 35 U.S.C. § 103(a).

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided. Prompt and favorable consideration of this Response is respectfully requested.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 19-1853 referencing docket 05JM-151616. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: May 21, 2012

Respectfully submitted,

By: /Anup Suresh/
Anup Suresh, Reg. No. 65,338

SHEPPARD MULLIN RICHTER & HAMPTON LLP
12275 El Camino Real, Suite 200
San Diego, California 92130
Telephone: (858) 720-8900
Facsimile: (858) 509-3691

Electronic Patent Application Fee Transmittal				
Application Number:		12635649		
Filing Date:		10-Dec-2009		
Title of Invention:		Receiver Determined Probe		
First Named Inventor/Applicant Name:		David BARR		
Filer:		Daniel N. Yannuzzi/Anup Suresh		
Attorney Docket Number:		E080051USU1		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with \$0 paid	1252	1	560	560

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				560

Electronic Acknowledgement Receipt

EFS ID:	12830878
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	Receiver Determined Probe
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Daniel N. Yannuzzi/Anup Suresh
Filer Authorized By:	Daniel N. Yannuzzi
Attorney Docket Number:	E080051USU1
Receipt Date:	21-MAY-2012
Filing Date:	10-DEC-2009
Time Stamp:	23:32:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 560
RAM confirmation Number	7489
Deposit Account	504562
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		DOC.PDF	81202	yes	2
			1265241c3bd2c251bbf5f3b775a0d8352fa112d2		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	1	
	Extension of Time		2	2	
Warnings:					
Information:					
2		405233047_3_1.PDF	51407	yes	11
			0821e0bd78ecd7ab4b549b2323077ab906ac9c5c		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	6	
	Applicant Arguments/Remarks Made in an Amendment		7	11	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30367	no	2
			48e9e489ba26254511260186b696dbac09be9131		
Warnings:					
Information:					
Total Files Size (in bytes):			162976		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**Amendment Transmittal & Petition for Extension
of Time under 37 CFR 1.136(a)**

Docket Number

05JM-151616

Address To
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Title of Invention**RECEIVER DETERMINED PROBE**

First Named Inventor	HAN, Clemence S.
Application No.	12/635,649
Filing Date	December 10, 2009
Examiner	HAN, Clemence S.
Art Unit	2464

Transmitted herewith is an amendment in the above-identified application.

This is also a petition under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as shown below (check time period desired).

Fee Calculation**Extension of Time Fee**

☐ One month (37 CFR 1.17(a)(1)) ☒ Two months (37 CFR 1.17(a)(2)) ☐ Three months (37 CFR 1.17(a)(3))
☐ Four months (37 CFR 1.17(a)(4)) ☐ Five months (37 CFR 1.17(a)(5))

Claims as Amended

For	#Filed	#Previously Paid For	#Extra	Rate	Fee
Total Claims	24	- 24 =	0	x 60 =	0
Total Indep. Claims		- 3 =		x 250 =	

Multiple Dependent Claims (check if applicable) ☐

Extension Fee (from above)

\$560

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL

\$560

Method of Payment

☒ Deposit Account ☐ Credit Card ☐ Check ☐ Money Order ☐ Other: _____

Deposit Account Number 50-4562

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

- ☒ Charge the fee(s) set forth above
☐ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17
☐ Charge fee(s) indicated above, **except for the filing fee**
☒ Credit any overpayments
☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to the Deposit Account above.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on form PTO-2038.

Amount Grand Total

\$560

Amendment Transmittal & Petition for Extension of Time under 37 CFR 1.136(a)	Docket Number
	05JM-151616

Correspondence Address			
Customer Number	77882		
-OR-			
Name			
Address			
City		State	
Country		Postal Code	
Phone Number			
E-mail Address			

Certificate of Mailing by Express Mail I hereby certify that this Amendment and Petition for Extension of Time, accompanying documents, and fee are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below: _____ (Date of Mailing) _____ (Typed or Printed Name of Person Mailing Correspondence) _____ (Signature of Person Mailing Correspondence) _____ ("Express Mail" Mailing Label Number)
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Certificate of Transmission I hereby certify that this Amendment and Petition for Extension of Time, accompanying documents, and fee authorization are being facsimile transmitted to the United States Patent and Trademark Office on the date indicated below: _____ (Date of Transmission) (Name of Person Transmitting Correspondence) _____ (Signature of Person Transmitting Correspondence)
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Signature Instructions Select the name of the person who will electronically sign the Amendment and Petition for Extension of Time from the drop-down box below. If a practitioner is not present in the drop-down list, you must close this form and select 'Add Practitioner...' in the Form Manager's Utility menu. Verify that the signatory information is correct and press the 'eSign' button to electronically sign the submission. If you prefer to sign the form manually, simply do not click the 'eSign' button; just print and manually sign. Signatory Drop-Down Box Anup A. Suresh

Name	Anup A. Suresh		Registration Number	65,338
Signatory Capacity	Attorney for Applicant(s)	E-mail Address		
eSign			Date Signed	5/21/12



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NOTICE OF ALLOWANCE AND FEE(S) DUE

77330 7590 06/11/2012
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

EXAMINER

HAN, CLEMENCE S

ART UNIT

PAPER NUMBER

2464

DATE MAILED: 06/11/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/635,649

12/10/2009

David BARR

E080051USU1

9743

TITLE OF INVENTION: RECEIVER DETERMINED PROBE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	09/11/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
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or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

77330 7590 06/11/2012
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/635,649 12/10/2009 David BARR E080051USU1 9743

TITLE OF INVENTION: RECEIVER DETERMINED PROBE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1740 \$300 \$0 \$2040 09/11/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
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HAN, CLEMENCE S 2464 370-252000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/635,649	12/10/2009	David BARR	E080051USU1	9743

77330	7590	06/11/2012
ENTROPIC COMMUNICATIONS, INC.		
6290 SEQUENCE DRIVE		
SAN DIEGO, CA 92121		

EXAMINER	
HAN, CLEMENCE S	

ART UNIT	PAPER NUMBER
2464	

DATE MAILED: 06/11/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 253 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 253 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	12/635,649	BARR, DAVID	
	Examiner	Art Unit	
	CLEMENCE HAN	2464	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 05/21/2012.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-24.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has **THREE MONTHS FROM THE "MAILING DATE"** of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. ☐ Notice of Informal Patent Application 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____. 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other ____. |
|--|--|

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-24 are allowed.
2. The following is an examiner's statement of reasons for allowance: The present invention is directed to a method for generating a probe in a network. The prior arts in the record fail to teach or make obvious to a method comprising generating the probe in accordance with the first plurality of parameters and the second plurality of parameters within a structure of the claim. These features are claimed in the independent claims 1, 9 and 17 and render them allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLEMENCE HAN whose telephone number is (571)272-3158. The examiner can normally be reached on Monday-Friday 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Clemence Han/
Primary Examiner, Art Unit 2464

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	261	probe with receiver with determined	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:34
L2	234	1 and @ad<"20081215"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:34
L3	96	1 and @rlad<"20081215"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:34
L4	241	2 3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:35
L13	10447	370/252.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:51
L14	16401	709/224.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:51
L15	26429	13 14	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:51
L16	5	4 and 15	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:51
L17	10100	probe with receiver	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:52
L18	8725	17 and @ad<"20081215"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:52
L19	3126	17 and @rlad<"20081215"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:52
L20	9261	18 19	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:52

L21	98	15 and 20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/02 01:53
S1	65	david with barr.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/17 15:36
S2	5	probe and S1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/17 15:37
S3	3	("20070183383" "20070183383" "7124199" "7124199" "20080117833" "20080117833").PN.	US-PGPUB; USPAT	OR	ON	2011/12/17 16:34

6/ 2/ 2012 2:07:14 AM
C:\ Users\ chan\ Documents\ EAST\ Workspaces\ 12635649.wsp

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	527	(probe with receiv\$4 same ((determin\$4 select\$4) with second)).clm.	USPAT; UPAD	OR	ON	2012/06/02 01:37
L10	244	(probe with transmit\$4 same ((determin\$4 select\$4) with second)).clm.	USPAT; UPAD	OR	ON	2012/06/02 01:38
L12	151	9 and 10	USPAT; UPAD	OR	OFF	2012/06/02 01:39

6/ 2/ 2012 2:07:26 AM
C:\ Users\ chan\ Documents\ EAST\ Workspaces\ 12635649.wsp

Search Notes 	Application/Control No. 12635649	Applicant(s)/Patent Under Reexamination BARR, DAVID
	Examiner CLEMENCE HAN	Art Unit 2464

SEARCHED			
Class	Subclass	Date	Examiner
370	252 text search only	6/2/2012	ch
709	224 text search only	6/2/2012	ch

SEARCH NOTES		
Search Notes	Date	Examiner
inventor search	12/17/2011	ch
see Search History printout	12/17/2011	ch
see Search History printout	6/2/2012	ch

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
	see Interference Search printout	6/2/2012	ch

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<i>Index of Claims</i> 	Application/Control No. 12635649	Applicant(s)/Patent Under Reexamination BARR, DAVID
	Examiner CLEMENCE HAN	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	12/17/2011	06/02/2012						
	1	✓	=						
	2	✓	=						
	3	✓	=						
	4	✓	=						
	5	✓	=						
	6	✓	=						
	7	✓	=						
	8	✓	=						
	9	✓	=						
	10	✓	=						
	11	✓	=						
	12	✓	=						
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	14	✓	=						
	15	✓	=						
	16	✓	=						
	17	✓	=						
	18	✓	=						
	19	✓	=						
	20	✓	=						
	21	✓	=						
	22	✓	=						
	23	✓	=						
	24	✓	=						

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/635,649		Filing Date 12/10/2009		☒ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$	=	OR	X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	05/21/2012	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 24	Minus	** 20	= 4	X \$	=	OR	X \$60=	240
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$	=	OR	X \$250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	240
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=	OR	X \$	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=	OR	X \$	=
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

Legal Instrument Examiner:
/MONICA FRANCIS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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77330 7590 06/11/2012
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Certificate of Mailing or Transmission Via EFS-Web

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Tim Ellis	(Depositor's name)
/Tim Ellis/	(Signature)
September 11, 2012	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

12/635,649

12/10/2009

David BARR

E080051USU1

9743

TITLE OF INVENTION: RECEIVER DETERMINED PROBE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional

NO

\$1740

\$300

\$0

\$2040

09/11/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
HAN, CLEMENCE S	2464	370-252000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Bruce W. Greenhaus

2 Daniel Yannuzzi

3 Michael Febbo

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Entropic Communications, Inc.

San Diego, California

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☒ Payment by U.S.P.T.O. Deposit Account #504613

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 504613 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Richard A. Bachand/

Date September 11, 2012

Typed or printed name Richard A. Bachand

Registration No. 25107

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		12635649		
Filing Date:		10-Dec-2009		
Title of Invention:		RECEIVER DETERMINED PROBE		
First Named Inventor/Applicant Name:		David BARR		
Filer:		Richard A. Bachand/Tim Ellis		
Attorney Docket Number:		E080051USU1		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1740	1740
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2040

Electronic Acknowledgement Receipt

EFS ID:	13710039
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	RECEIVER DETERMINED PROBE
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Richard A. Bachand/Tim Ellis
Filer Authorized By:	Richard A. Bachand
Attorney Docket Number:	E080051USU1
Receipt Date:	11-SEP-2012
Filing Date:	10-DEC-2009
Time Stamp:	13:43:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 2040
RAM confirmation Number	12836
Deposit Account	504613
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	E080051USU1_Issue-Fee-Payment_9-11-2012.pdf	96776 8aafb863d5b22ebf9a8fc8f576c44f7022918451	no	1

Warnings:**Information:**

2	Fee Worksheet (SB06)	fee-info.pdf	31929 38bd6e1f88cc2c20d241195decc21c16f2473728	no	2
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Warnings:**Information:**

Total Files Size (in bytes):			128705
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/635,649	10/09/2012	8284690	E080051USU1	9743

77330 7590 09/19/2012
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 253 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

David BARR, San Jose, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:



Practitioners associated with the Customer Number:

23446

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:



The address associated with Customer Number:

23446

OR

☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone			Email

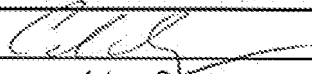
Assignee Name and Address:

Entropic Communications, LLC.
2051 Palomar Airport Road, Suite 100
Carlsbad, CA 92011

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	6/5/15
Name	Adam Spice	Telephone	
Title	Chief Financial Officer		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	23031076
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	RECEIVER DETERMINED PROBE
First Named Inventor/Applicant Name:	David BARR
Customer Number:	77330
Filer:	Christopher C. Winslade/Deb Wilson
Filer Authorized By:	Christopher C. Winslade
Attorney Docket Number:	E080051USU1
Receipt Date:	27-JUL-2015
Filing Date:	10-DEC-2009
Time Stamp:	15:02:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	29269US01_373b_Statement_s b96.pdf	430962 5eae0aa4121ac6fba4909c975ecec5998c5ba8398	no	2

Warnings:

Information:

2	Power of Attorney	Entropic_POA_PreAIA.pdf	340881	no	2
			8107f4c6d5473b527f97e45769199b81a37aad1b		
Warnings:					
Information:					
Total Files Size (in bytes):				771843	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: David BARR

Application No./Patent No.: 12635649 Filed/Issue Date: 12/10/2009

Titled: RECEIVER DETERMINED PROBE

Entropic Communications, LLC, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: David BARR To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 023809, Frame 0163, or for which a copy thereof is attached.

2. From: EXCALIBUR ACQUISITION CORPORATION To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 035706, Frame 0267, or for which a copy thereof is attached.

3. From: ENTROPIC COMMUNICATIONS, INC. and EX To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 035717, Frame 0628, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Christopher C. Winslade/

07/27/2015

Signature

Date

Christopher C. Winslade, Reg. No. 36308

Attorney for Applicant

Printed or Typed Name

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	E080051USU1

CONFIRMATION NO. 9743

POA ACCEPTANCE LETTER

23446
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661



Date Mailed: 08/05/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/27/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mbeyene/



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	E080051USU1

CONFIRMATION NO. 9743

POWER OF ATTORNEY NOTICE

77330
ENTROPIC COMMUNICATIONS, INC.
6350 SEQUENCE DRIVE
SAN DIEGO, CA 92121



OC000000076653767

Date Mailed: 08/05/2015

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/27/2015.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mbeyene/

To: mhmpato@mcandrews-ip.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 23446

Aug 05, 2015 05:33:05 AM

Dear PAIR Customer:

MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 23446 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
12635649	N570	08/05/2015	E080051USU1
	N570	08/05/2015	E080051USU1

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒

Practitioners associated with Customer Number:

23,446

OR

☐

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒

The address associated with Customer Number:

23,446

OR

☐

Firm or individual name

Address

City

State

Zip

Country

Telephone

Email

Assignee name and address: ENTROPIC COMMUNICATIONS, LLC
1345 AVENUE OF THE AMERICAS, 46TH FLOOR
NEW YORK, NY 10105

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature /Andrea L. Gothing/

Date 2021-05-04

Name Andrea L. Gothing

Telephone 415-830-0613

Title Licensing Officer and Authorized Signatory, Entropic Communications, LLC

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	43318555
Application Number:	12635649
International Application Number:	
Confirmation Number:	9743
Title of Invention:	RECEIVER DETERMINED PROBE
First Named Inventor/Applicant Name:	David BARR
Customer Number:	23446
Filer:	Ronald H. Spuhler/Deborah Wilson
Filer Authorized By:	Ronald H. Spuhler
Attorney Docket Number:	E080051USU1
Receipt Date:	22-JUL-2021
Filing Date:	10-DEC-2009
Time Stamp:	13:06:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	29269US01_373c_Statement_A IA-96.pdf	124625 df0b1a3a71fde793688297b9e44db276c1360aaa	no	3

Warnings:

Information:					
2	Power of Attorney	Entropic- POA_General_Assignee_Entrop icCommunications_ALG.pdf	487892 51444e06ae84b241bfc127dc47c5d6c6469 44dd7	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			612517		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: ENTROPIC COMMUNICATIONS, LLCApplication No./Patent No.: 12/635,649 Filed/Issue Date: 2009-12-10Titled: RECEIVER DETERMINED PROBEENTROPIC COMMUNICATIONS, LLC, a limited liability company

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: David BARR To: ENTROPIC COMMUNICATIONS, INC.The document was recorded in the United States Patent and Trademark Office at
Reel 023809, Frame 0163, or for which a copy thereof is attached.2. From: EXCALIBUR ACQUISITION CORPORATION, ENTROPIC COMMUNICATIONS, INC. To: ENTROPIC COMMUNICATIONS, INC.The document was recorded in the United States Patent and Trademark Office at
Reel 035706, Frame 0267, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: ENTROPIC COMMUNICATIONS, INC., EXCALIBUR SUBSIDIARY, LLC To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 035717, Frame 0628, or for which a copy thereof is attached.

4. From: ENTROPIC COMMUNICATIONS, LLC To: MAXLINEAR COMMUNICATIONS LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 055776, Frame 0482, or for which a copy thereof is attached.

5. From: MAXLINEAR COMMUNICATIONS LLC To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 055899, Frame 0291, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Ronald H. Spuhler/

2021-07-22

Signature

Date

Ronald H. Spuhler

52245

Printed or Typed Name

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/635,649	12/10/2009	David BARR	29269US01

23446
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

CONFIRMATION NO. 9743
POA ACCEPTANCE LETTER



Date Mailed: 07/26/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/22/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/nrhayden/

To: mhmpto@mcandrews-ip.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 23446

Jul 26, 2021 04:04:13 PM

Dear PAIR Customer:

MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 23446 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
12635649	N570	07/26/2021	29269US01

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been
filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO. 2:22-cv-125	DATE FILED 4/27/2022	U.S. DISTRICT COURT Eastern District of Texas
PLAINTIFF ENTROPIC COMMUNICATIONS, LLC		DEFENDANT CHARTER COMMUNICATIONS, INC., ET AL
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,223,775	7/17/2012	Entropic Communications, LLC
2 8,284,690	10/9/2012	Entropic Communications, LLC
3 8,792,008	7/29/2014	Entropic Communications, LLC
4 9,210,362	12/8/2015	Entropic Communications, LLC
5 9,825,826	11/21/2017	Entropic Communications, LLC

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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DOCKET NO. 2:22-cv-125	DATE FILED 4/27/2022	U.S. DISTRICT COURT Eastern District of Texas
PLAINTIFF ENTROPIC COMMUNICATIONS, LLC		DEFENDANT CHARTER COMMUNICATIONS, INC., ET AL
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 10,135,682	11/20/2018	Entropic Communications, LLC
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy