

Exhibit 2

EXHIBIT 2 – U.S. Patent No. 7,676,194

Plaintiff asserts the following “Accused RAN Instrumentalities” infringe the Asserted Claims of U.S. 7,676,194

- i) Massive MIMO Radio (e.g., 4T4R, 8T8R, 16T16R, 32T32R, 64T64R) for TDD, FDD, dual-band (AWS/PCS);
- ii) Citizens Broadband Radio Service (CBRS) Radio (e.g., 16T16R - C-Band/CBRS Dual-Band (Mid-Band Aggregation));
- iii) Compact Macro Radio (e.g., access unit); and
- iv) 5G Link Cell (e.g., Link Cell, Link HubPro, Link Hub).

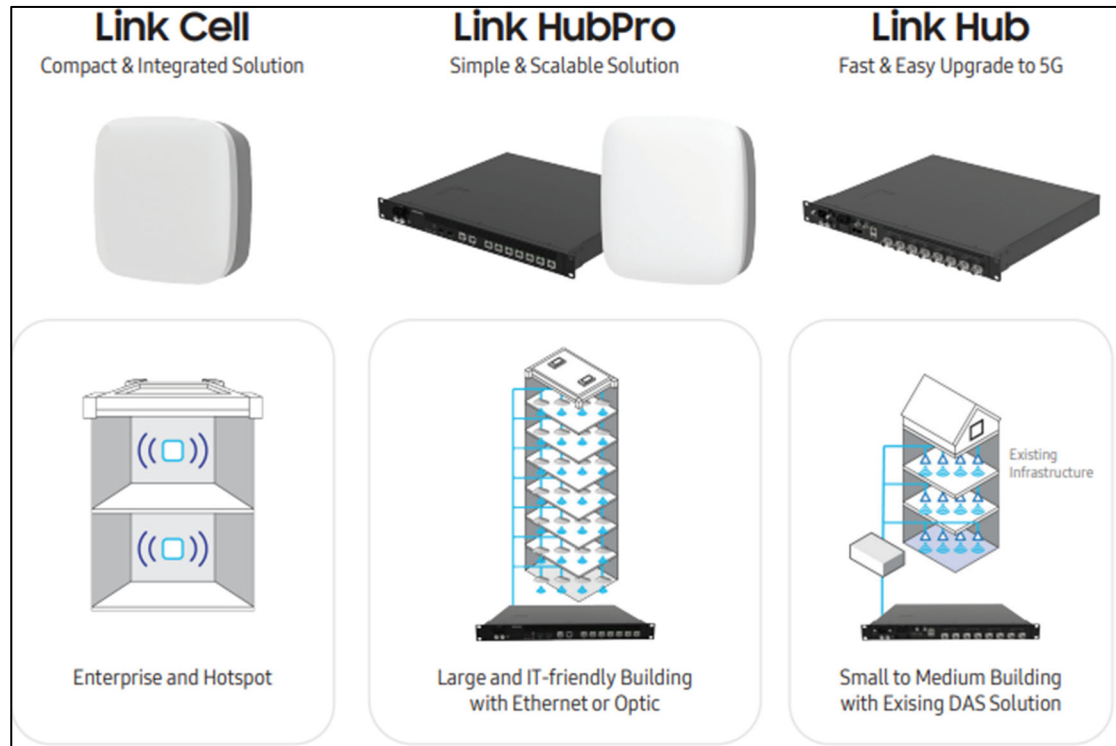
Claim 1	Accused RAN Instrumentalities ¹
[1PRE] A broadband wireless repeater, comprising:	The Accused RAN Instrumentalities act as a wireless repeater to broadcast received wireless signals to connected devices via, for example, a 5G cellular network, and to receive and forward wireless signals received from the connected devices to the Internet via a 5G cellular network. Samsung describes Accused RAN Instrumentalities as “a variety of multi-band Massive MIMO radios, including one that supports both CBRS and C-band, another that supports both low and mid-band frequencies, and another that supports multiple high bands. Samsung’s radios support both FDD and TDD bands, and its multi-band radios can support 2G, 4G and 5G. New to the lineup, is Samsung’s dual-band mmWave Compact Macro, which supports both 28GHz and 39GHz in a small, integrated form factor.” See https://www.samsung.com/global/business/networks/insights/blog/0822-the-power-of-multi-band-radios-unlocking-faster-speeds-better-coverage-and-a-smaller-footprint/ Massive MIMO Radio:

¹ Unless indicated otherwise, the evidence cited in this table is representative of the operation of the Accused RAN Instrumentalities and upon information and belief, the Accused RAN Instrumentalities function in a substantially similar manner for purposes of this chart.

	Massive MIMO Radio Samsung's Massive MIMO Radios are a crucial part of 5G networks. With cutting-edge technologies our solution provides a vast level of coverage, capacity and performance with an optimal form factor. See www.samsung.com/global/business/networks/products/radio-access/massive-mimo-radio/; and https://www.samsung.com/global/business/networks/products/radio-access/5g-ran/ Citizens Broadband Radio Service (CBRS) Radios: CBRS Enterprises with access to CBRS have an efficient way to build private networks that can open up new business opportunities using the mid-band frequency. CBRS Radios enable communication of 150MHz of shared spectrum in Band 48 (otherwise known as the 3.5GHz C-Band). See https://insights.samsung.com/2022/11/04/what-is-cbrs-and-how-is-it-transforming-enterprise-networks-2/; https://www.samsung.com/global/business/networks/products/radio-access/cbrs/; and https://www.samsung.com/global/business/networks/products/radio-access/5g-ran/ Compact Macro: Compact Macro Samsung's Compact Macro integrates mmWave 5G technical innovations into a single form factor. It supports all frequencies within the mmWave spectrum and boasts high performance, low power consumption, compact size and light weight.
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See <https://www.samsung.com/global/business/networks/products/radio-access/5g-ran/>; and [networks/insights/brochures/1221-5g-fixed-wireless-access-a-powerful-alternative-to-fiber-to-the-home/5g-fixed-wireless-access-a-powerful-alternative-to-fiber-to-the-home.pdf](https://www.samsung.com/global/business/networks/insights/brochures/1221-5g-fixed-wireless-access-a-powerful-alternative-to-fiber-to-the-home/5g-fixed-wireless-access-a-powerful-alternative-to-fiber-to-the-home.pdf)

The Samsung 5G Link Cell products include at least the Link Cell, Link HubPro, and Link Hub.

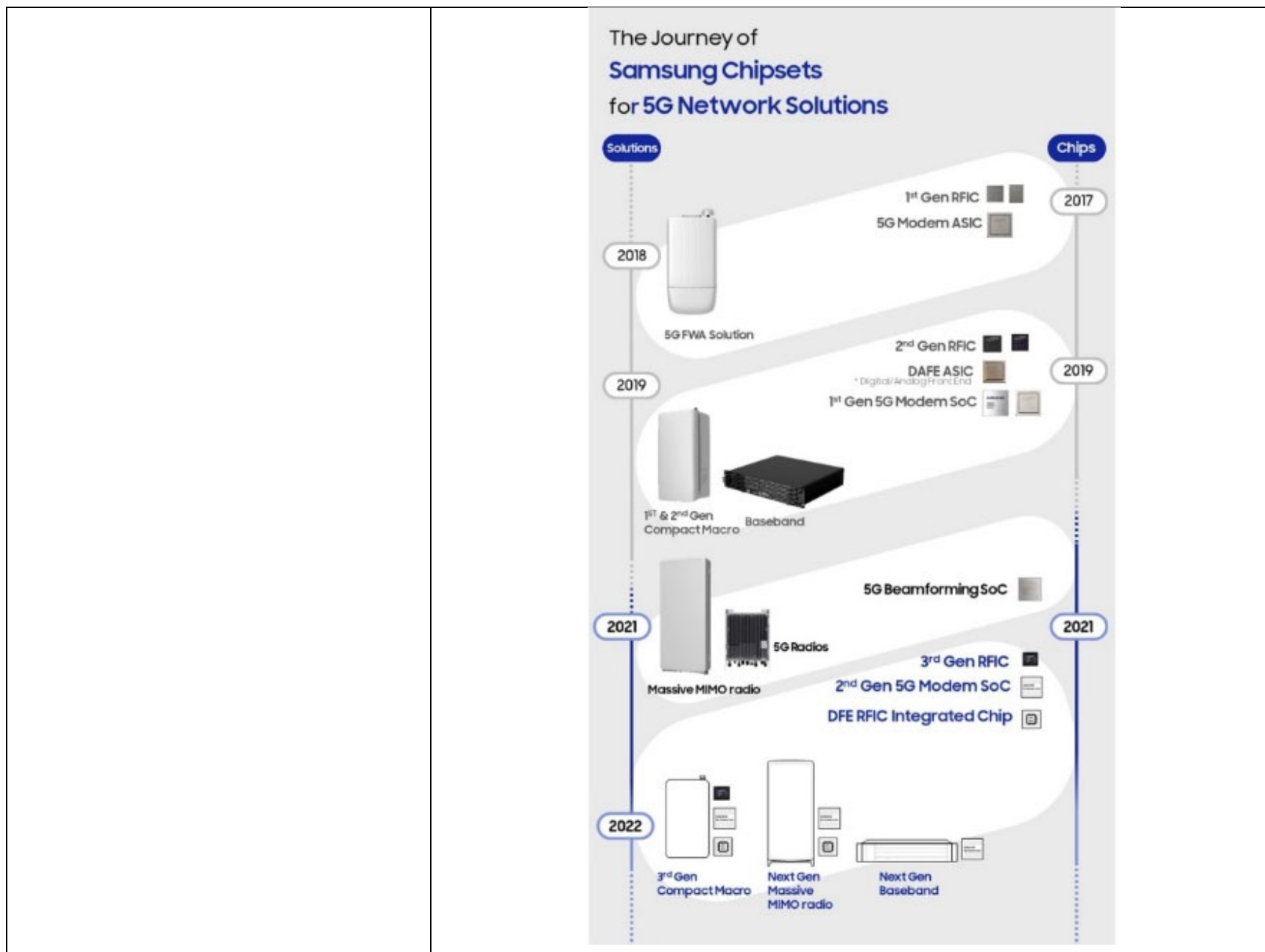


<https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/brochures/bringing-5g-indoors-the-critical-next-step-in-5gs-evolution/Samsung-Link-Series.pdf>

	Samsung describes the Link Cell as supporting “strong 5G performance in the mmWave spectrum for indoor applications. The product has integrated the baseband, radio and antenna into a single unit, connecting back to the network via fiber. Despite its small form factor, Samsung’s Link Cell provides Gbps data throughput and is suitable for hotspots and high traffic areas, where high capacity and low latency are a necessity.” See https://www.samsung.com/global/business/networks/products/radio-access/indoor-solutions/ Samsung describes the Link HubPro as providing “scalable indoor deployment for both LTE and 5G. The solution is comprised of indoor radio units and a radio hub connected through PoE which enables easier installation as the indoor radio doesn’t require extra power cables. Moreover, operators can design the number of indoor radios and hubs to be linked. Furthermore, the multiple indoor radios can act as single cell to widen 5G coverage, and later they can be used as individual cells to secure performance and coverage for hotspot areas. Therefore Link HubPro can be a coverage expansion solution for large venues such as office buildings or subway stations at early deployment stage and later a capacity solution to adapt increasing traffic demands.” See <i>id.</i> Samsung further describes the Link Hub as “a radio interface unit that bridges the baseband unit and the passive DAS headend, converting data traffic into radio signals for the DAS system. It supports both LTE and 5G with dual-band or single-band options for low and mid-band spectrums. If a building already has an existing DAS system, operators can easily upgrade their indoor network to 5G and reuse legacy infrastructure to save both time and cost.” See <i>id.</i>
[1A] at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband ² wireless devices in a network, and	The Accused RAN Products include a receiver or transceiver for receiving electronic signals at least some of which are sent by one or more ultrawideband wireless devices in a network.

² “Ultrawideband” is defined in the ’194 Patent specifically as “any type of electromagnetic signal that have an instantaneous or overall occupied bandwidth of 100 MHz or more and that are used to communicate or to position-locate between two or more devices.” ’194 Patent at col. 3:57-60.

	For example, the accused products comprise a mmWave Radio Frequency Integrated Circuit (RFIC) chipsets, which comprise at least one receiver or transceiver for signal or data reception from a connected device, over a 5G cellular network. SEOUL, Korea – June 22, 2021 – Samsung Electronics. Co., Ltd. today unveiled a range of new chipsets that will be embedded into the company's next generation 5G solutions. The new 3GPP Rel.16 compliant chipsets consist of a third generation mmWave Radio Frequency Integrated Circuit (RFIC) chip, a second generation 5G modem System-on-Chip (SoC), and a Digital Front End (DFE)-RFIC integrated chip. The company's latest chips will power Samsung's next-generation products for 5G build out, including the next generation 5G Compact Macro, Massive MIMO radios, and baseband units, which will all be commercially available in 2022. See www.samsung.com/global/business/networks/insights/press-release/0621-samsung-unveils-new-chipsets-to-enhance-next-generation-5g-ran-portfolio/ An integrated circuit package (e.g., 5G system-on-a-chip) may comprise a plurality of functionalities within a single IC package such as signal encoding/decoding by a modem, frequency tuning by a front-end module, and/or transmitter/receiver by a transceiver. The IC is in communication with one or more antennas or an antenna array to wirelessly transmit and receive wireless data over a cellular network.
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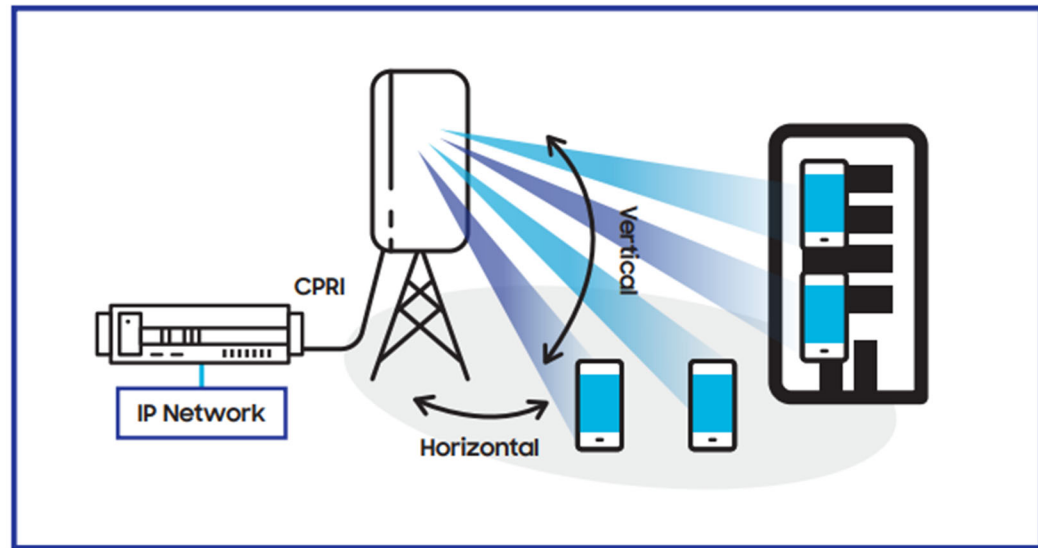


[1B] at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and	The Accused RAN Products include a transmitter or transceiver for transmitting received, modified, or stored electronic signals or data to one or more devices. For example, the RFIC chipsets in the Accused RAN Products include at least one transmitter or transceiver for signal or data transmission to the connected device. See www.samsung.com/global/business/networks/insights/press-release/0621-samsung-unveils-new-chipsets-to-enhance-next-generation-5g-ran-portfolio/ See claim element [1A] above.
[1C] a controller, which is either pre-programmed or programmable with network information which at least identifies said one or more ultrawideband wireless devices,	The Accused RAN Instrumentalities comprise a controller, which is either pre-programmed or programmable with network information which at least identifies said one or more ultrawideband wireless devices. For example, the controller (e.g., processor) in the Accused RAN Instrumentalities can be programmed with an ID for the connected ultrawideband device, which is an example of “network information which at least identifies” the connected ultrawideband device. The ID can be, for example, the IMEI (International Mobile Equipment Identity) number, the IMSI (International Mobile Subscriber Identity) number, the IP address, and/or the MAC address of the connected ultrawideband device. The Accused RAN Instrumentalities need the connected device’s ID in order to communicate with the connected device via 5G. See amitkhandelwal.medium.com/understanding-5g-eab4a660d3ab; interlir.com/2024/08/01/the-impact-of-5g-on-ip-resource-management/
[1D] which controls the screening of data received by said at least one receiver, and	The controller in the Accused RAN Instrumentalities is configured to control screening of data received by said at least one receiver, and either passes, ignores, rejects, redirects, modifies, or kills received data.

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In one example, the controller of the Accused RAN Instrumentalities ignores and/or filters signals to filter interference from receive signals by beamforming and spatial filtering.

LTE Advanced introduced advanced beamforming as a capability that helps massive MIMO antenna systems optimize spectral efficiency, support groups of users in an area, and reduce interference. Technically, radio resources operate in two dimensions – time and frequency, and beamforming adds a third – spatial filtering. With beamforming, a base station is now aiming what it is transmitting in a particular direction instead of broadcasting the signal across a much larger area. Early implementations focused beams in horizontal patterns, but Samsung's solution creates a 3-dimensional beam by adjusting vertical and horizontal transmissions to aim the signal towards the users, similar to a focused beam of light created by a searchlight.



See

https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/samsung-delivers-the-promises-of-massive-mimo/white-paper_samsung-delivers-the-promises-of-massive-mimo.pdf

In another example, the Accused RAN Instrumentalities “incorporates zero-forcing beamforming (ZFBF) to minimize interference that would otherwise be caused by

	overlapping of signals of adjacent beams.” See https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/case-study/samsung-16-layer-massive-mimo-increases-cell-capacity-in-commercial-network/samsung-16-layer-massive-mimo-increases-cell-capacity-in-commercial-network.pdf
[1E] said controller providing such data screening in order to differentiate between desired and undesired data for network security, network management, or interference mitigation purposes for said network,	The controller of the Accused RAN Instrumentalities provides such data screening in order to differentiate between desired and undesired data for network security, network management, or interference mitigation purposes for said network. For example, the Accused RAN Instrumentalities “incorporates zero-forcing beamforming (ZFBF) to minimize interference that would otherwise be caused by overlapping of signals of adjacent beams.” See https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/case-study/samsung-16-layer-massive-mimo-increases-cell-capacity-in-commercial-network/samsung-16-layer-massive-mimo-increases-cell-capacity-in-commercial-network.pdf See claim element [1D] above.
[1F] said controller controlling reception of electronic signals or data by said at least one receiver from said one or more ultrawideband wireless devices and transmission by said at least one transmitter to said one or more ultrawideband wireless devices,	The controller of the Accused RAN Instrumentalities controls reception of electronic signals or data by said at least one receiver from said one or more ultrawideband wireless devices and transmission by said at least one transmitter to said one or more ultrawideband wireless devices. See claim element [1D], [1E] above and [1G] below.
[1G] said controller further providing for the collecting, reporting, or storing of network usage, network statistics, or network information for said network.	The controller of the Accused RAN Instrumentalities, among other things, stores the IDs of the connected ultrawideband wireless device, which is an example of “network information for said network.” Additionally, the Accused RAN Instrumentalities adaptively improve beamforming based on users. See brochures/0804_samsungs-massive-mimo-radios-for-an-outstanding-5g-experience/0804_samsungs-massive-mimo-radios-for-an-outstanding-

	5g-experience_r2.pdf. To adaptively beamform, the Accused RAN Products need to know where uses are located, which is an example of network information.																														
Claim 4	Accused RAN Instrumentalities																														
[4] The broadband repeater of claim 1 further comprising a buffer memory for storing received or to be transmitted electronic signals for processing by said controller.	The Accused RAN Instrumentalities comprise a buffer memory for storing received or to be transmitted electronic signals for processing by said controller. For example, the Accused RAN Instrumentalities comprise an intelligent scheduler buffers information and chooses an optimal group of users to serve on resource blocks to maximize the collective data rate, while ensuring fairness for all users. See https://images.samsung.com/is/content/samsung/p5/global/business/networks/insights/white-papers/1208_massive-mimo-for-new-radio/MassiveMIMOforNRTechnicalWhitePaper-v1.2.0.pdf Table 2. Parameters for system level simulation <table><tr><th>Category</th><th>Parameter</th><th>Value</th></tr><tr><td rowspan="2">System configuration</td><td>Carrier frequency</td><td>3.5 GHz</td></tr><tr><td>Channel bandwidth</td><td>100 MHz</td></tr><tr><td rowspan="6">Spatial channel model</td><td>Channel model</td><td>3D Urban Macro</td></tr><tr><td>Inter-site distance</td><td>500 m</td></tr><tr><td>Base station antenna height</td><td>25 m</td></tr><tr><td>UE antenna configuration</td><td>4 Rx with cross-polarization (+/-45°)</td></tr><tr><td>UE antenna height</td><td>1.5 m ~ 22.5 m for indoor UE (80%) 1.5 m for outdoor UE (20%)</td></tr><tr><td>Base-station Transmit power</td><td>100 Watt for all types of radios</td></tr><tr><td rowspan="4">User configuration</td><td>Velocity</td><td>3 km/h</td></tr><tr><td>SRS periodicity</td><td>40 msec to hop over the entire bandwidth</td></tr><tr><td>PMI feedback</td><td>Wideband PMI with 40 msec periodicity</td></tr><tr><td>DL traffic model</td><td>Full buffer traffic</td></tr></table>	Category	Parameter	Value	System configuration	Carrier frequency	3.5 GHz	Channel bandwidth	100 MHz	Spatial channel model	Channel model	3D Urban Macro	Inter-site distance	500 m	Base station antenna height	25 m	UE antenna configuration	4 Rx with cross-polarization (+/-45°)	UE antenna height	1.5 m ~ 22.5 m for indoor UE (80%) 1.5 m for outdoor UE (20%)	Base-station Transmit power	100 Watt for all types of radios	User configuration	Velocity	3 km/h	SRS periodicity	40 msec to hop over the entire bandwidth	PMI feedback	Wideband PMI with 40 msec periodicity	DL traffic model	Full buffer traffic
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	See id.																														

Claim 7	Accused RAN Instrumentalities
[7] The broadband repeater of claim 1 wherein said controller permits one or more network information to be modified and support of position location capabilities for use by a network.	The controller of the Accused RAN Instrumentalities permits one or more network information to be modified and support of position location capabilities for use by a network. The controller of the Accused RAN Instrumentalities is configured to modify the transmission of the downlink signal to the user based on the position location of the user. (“Pin-pointing the focused beam to a particular user located in the cell edge can improve the quality of received DL signal and increase cell coverage. Furthermore, because the signal power is highly focused on the user, it can reduce the level of interference toward other users in the same cell and the adjacent cells”) https://images.samsung.com/is/content/samsung/p5/global/business/networks/insights/white-papers/1208_massive-mimo-for-new-radio/MassiveMIMOforNRTechnicalWhitePaper-v1.2.0.pdf
Claim 8	Accused RAN Instrumentalities
[8] The broadband repeater of claim 1 wherein said controller either or both a) uses adaptive or steerable antennas or MIMO technologies to control the direction or coverage zones or capacity or quality of transmissions or reception, and b) directs undesired user or intruder information to be passed to other components of a network from said at least one transmitter using either wireless or wired connectivity.	The controller of the Accused RAN Instrumentalities employs at least a) adaptive or steerable antenna technologies or MIMO technology to control the direction or coverage zones or capacity or quality of transmissions or reception. The Accused RAN Instrumentalities control the direction or coverage zones or capacity or quality of transmissions or reception through adaptive antenna technology by at least beamforming, antenna selection, and/or spatial filtering. For example, the Accused RAN Instrumentalities can use multiple antennas in MIMO technology to direct wireless RF signals in a specific direction based on information from the controller, select an antenna of multiple antennas to send or receive signals based on signal strength, or use multiple antennas to filter or ignore interference. In another example, Samsung’s website further states, “[t]o maximize 5G performance in the mid-band, Samsung’s 64T64R Massive MIMO Radios make full use of innovative technologies such as multi-user MIMO.” See

	www.samsung.com/global/business/networks/products/radio-access/massive-mimo-radio/ In another example, Samsung’s website describes that a “Massive MIMO Radio supports various beamforming modes including SRS (Sounding Reference Signal) mode, PMI (Precoding Matrix Index) mode and MU-MIMO mode, to deliver the best quality signals, no matter the mobile environment. For example, when a user device is located at the cell edge, Samsung’s Massive MIMO provides coordinated beamforming that adjusts the beam patterns of adjacent cells during SRS mode to decrease interference. To further enhance user performance in mobile environments, Samsung’s Mobility Enhancer combines AI and advanced signal processing technology to improve beamforming accuracy of a moving user.” See <i>id</i>; In another example, the Massive MIMO products are configured to split mode operation, Carrier aggregation, and multi-user MIMO.
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	Samsung's Massive MIMO Solution Benefits Samsung Massive MIMO Unit (MMU): The key product in the solution is the Samsung Massive MIMO Unit (MMU), which is operating in the 2.5 GHz and CBRS (3.5 GHz) spectrum bands. This product also supports the following RAN technologies: • 4G LTE • 5G NR • Co-deploy 4G LTE and 5G NR. A key differentiator of Samsung's MMU is its ability to support LTE and 5G NR simultaneously. The "split mode" configuration allocates 32 of the 64 transmit-receiver pairs to each of the RAN technologies. This unique capability reduces the CAPEX spend by MNOs for co-deployment of LTE and 5G in those sites, as the existing equipment supports both technologies in the existing footprint. High-Density Antenna System with Integrated Radio Control: The high-density antenna 64T64R option allows MNOs to reduce CAPEX as they now need fewer products to cover the same area. When operating in 2.5 GHz markets, the MMU leverages five 10 Gbps CPRI links, while the solution for CBRS markets uses four 10 Gbps CPRI links. Carrier Aggregation: This MMU supports carrier aggregation and offers different options based on the deployment. For 2.5GHz, Carrier Aggregation supports up to three 20 MHz carriers, creating up to 60MHz of downlink bandwidth, while deployments in CBRS spectrum supports up to five 20MHz channels, offering up to 100 MHz of downlink bandwidth. MIMO and MU-MIMO: In addition to supports 2x2 and 4x4 single-user MIMO, the MMU supports multi-user MIMO with by allowing up to 16 layers, or independent streams, of downlink transmission for up to 16 users. For 2.5 GHz deployments, the MMU supports up to 2 layers for uplink MU-MIMO transmissions for multi-user MIMO, while the CBRS solution in the 3.5 GHz spectrum allows up to 8 layers for uplink transmissions. See https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/samsung-delivers-the-promises-of-massive-mimo/white-paper_samsung-delivers-the-promises-of-massive-mimo.pdf See claim element [1H] above and claim [9] below.
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Claim 9	Accused RAN Instrumentalities
[9] The broadband repeater of claim 1 where network provisioning information is passed to or pre-programmed with said controller, for purposes of network traffic provisioning, wherein said controller uses said provisioning information to prioritize either or both reception of data and transmission of data to or from said repeater.	The controller of the Accused RAN Instrumentalities is configured for provisioning information to prioritize either or both reception of data and transmission of data to or from said repeater. The controller of the Accused RAN Instrumentalities is configured to receive CSI measurements from the user device for PMI. The controller calculates beamforming weights from PMI feedback to allocated multiple layers (e.g., network traffic provisioning) to the same user.

If a user supports SRS TAS (e.g., T1R4), in DL MU-MIMO, it is possible for the user to be allocated with multiple layers or for a user-specific precoding to be applied as to maximize the receive performance of the user. With this assumption, the channel matrix size increases as $(4K \times M)$. The number of layers per user and the BF weights are determined to minimize the interference to the other users and to maximize the MIMO capacity to the desired user.

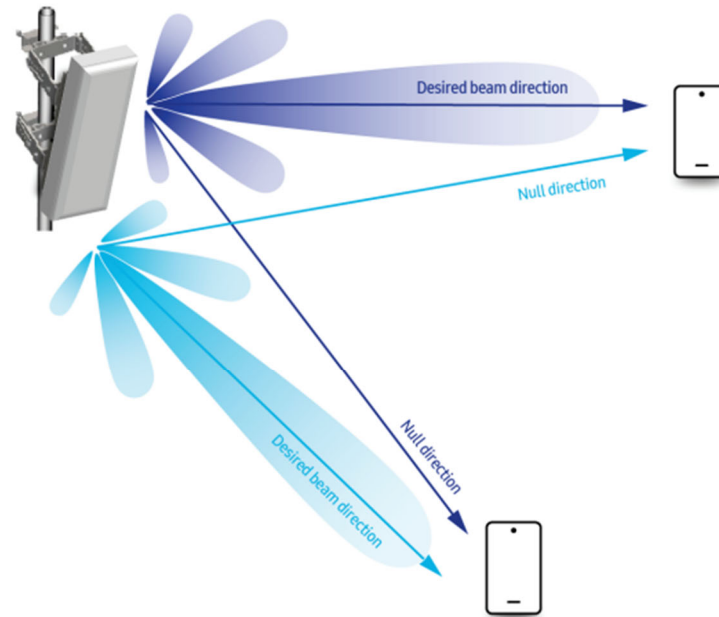


Figure 10. Beam Relation for DL MU-MIMO

See

https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/samsung-delivers-the-promises-of-massive-mimo/white-paper_samsung-delivers-the-promises-of-massive-mimo.pdf

Claim 12

Accused RAN Instrumentalities

[12PRE] A broadband wireless repeater, comprising:

See claim element [1PRE] above.

[12A] at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband wireless devices in a network, and	See claim elements [1A] and [1B] above.
[12B] at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and	See claim elements [1A] and [1B] above.
[12C] a controller which is either pre-programmed or programmable with provisioning information which at least identifies said one or more ultrawideband wireless devices for purposes of network traffic provisioning,	The controller of the Accused Hotspot Instrumentalities is pre-programmed or programmable with provisioning information which at least identifies said one or more ultrawideband wireless devices for purposes of network traffic provisioning. See claim element [1C] above and [12D] below.
[12D] wherein said controller uses said provisioning information to prioritize either or both reception of data by said at least one receiver and transmission of data by said at least one transmitter to said one or more ultrawideband wireless devices,	See claim [9] above.
[12E] said controller controlling reception of electronic signals or data by said at	See claim element [1F] above.

least one receiver and transmission of electronic signals or data by said at least one transmitter to said one or more ultrawideband wireless devices.	
Claim 13	Accused RAN Instrumentalities
[13] The broadband repeater of claim 12 wherein said provisioning information prioritizes by one or more of network user, type of data being received by said at least one receiver, type of data being transmitted by said at least one transmitter, and the particular type of application being used by one or more users of the network being transmitted by said at least one transmitter.	The controller of the Accused RAN Instrumentalities prioritizes by one or more of network user, type of data being received by said at least one receiver, type of data being transmitted by said at least one transmitter, and the particular type of application being used by one or more users of the network being transmitted by said at least one transmitter. The controller of the Accused RAN Instrumentalities is configured to receive CSI measurements from the user device for PMI. The controller calculates beamforming weights from PMI feedback to allocated multiple layers (e.g., network traffic provisioning) to the same user.

If a user supports SRS TAS (e.g., T1R4), in DL MU-MIMO, it is possible for the user to be allocated with multiple layers or for a user-specific precoding to be applied as to maximize the receive performance of the user. With this assumption, the channel matrix size increases as $(4K \times M)$. The number of layers per user and the BF weights are determined to minimize the interference to the other users and to maximize the MIMO capacity to the desired user.

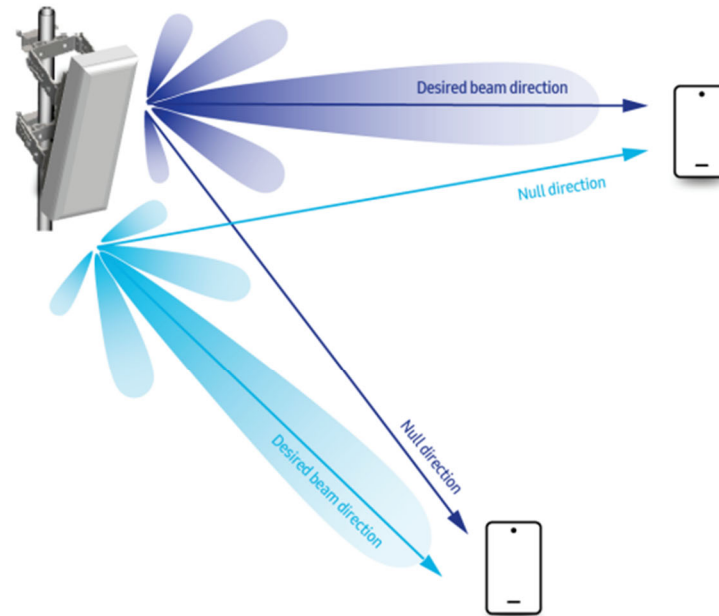


Figure 10. Beam Relation for DL MU-MIMO

See

https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/samsung-delivers-the-promises-of-massive-mimo/white-paper_samsung-delivers-the-promises-of-massive-mimo.pdf

In another example, controller of the Accused RAN Instrumentalities is configured to use dynamic spectrum sharing to prioritize certain types of application traffic.

	Radio Access Network (RAN) QoS Capabilities TS 38.300 defines the New Radio (NR) interface, which includes QoS mechanisms specifically for the 5G RAN. NR introduces support for ultra-reliable low-latency communication (URLLC) and advanced radio resource management. Features like Dynamic Spectrum Sharing, Massive MIMO, and beamforming are standardised to improve network efficiency and ensure QoS at the radio layer. This enables 5G networks to meet the stringent requirements of real-time applications, such as factory automation and V2X (vehicle-to-everything) communications. https://emblasoft.com/blog/understanding-5g-qos-how-5g-qos-mechanisms-relate-to-3gpp-standards
Claim 14	Accused RAN Instrumentalities
[14] The broadband repeater of claim 12 further comprising a buffer memory for storing received or to be transmitted electronic signals or data for processing by said controller.	See claim [4] above.
Claim 17	Accused RAN Instrumentalities
[17] The broadband repeater of claim 12 wherein said controller permits one or more of provisioning information to be modified and support of position location capabilities for use by a network.	See claim [7] above.
Claim 20	Accused RAN Instrumentalities
[20] The broadband repeater of claim 12 wherein said controller either or both	See claim [8] above.

a) uses adaptive or steerable antennas or MIMO technologies to control the direction or coverage zones or capacity or quality of transmissions or reception, and b) directs undesired user or intruder information to be passed to other components of a network from said at least one transmitter using either wireless or wired connectivity.	
Claim 22	Accused RAN Instrumentalities
[22PRE] A broadband wireless repeater, comprising:	See claim element [1PRE] above.
[22A] at least one receiver for receiving electronic signals at least some of which are sent by one or more ultrawideband wireless devices in a network, and	See claim elements [1A] and [1B] above. The radio chipset in the Accused RAN Products receives electronic signals from, and transmits electronic signals to, a connected ultrawideband device via, for example, at least 5G cellular.
[22B] at least one transmitter for transmitting received, modified, or stored electronic signals or data, wherein said at least one receiver and at least one transmitter may be separate components or be combined as a transceiver, and wherein said at least one receiver and at least one transmitter may be dedicated receive only and transmit only or may function alternatively as a receiver and as a transmitter; and	See claim elements [1A] and [1B] above.

[22C] a controller which is either pre-programmed or programmable to collect traffic information or security information related to received and transmitted data at least some of which is received from or sent to said one or more ultrawideband wireless devices in said network,	See claim elements [1C] and [1G] above.
[22D] said controller controlling reception of electronic signals or data by said at least one receiver and transmission by said at least one transmitter.	See claim element [1F] above.
Claim 23	Accused RAN Instrumentalities
[23] The broadband repeater of claim 22 further comprising one or more of a means for exporting traffic information or security information to one or more computer processors or devices, and a means for adjusting one or more operations of said controller based on said traffic information or security information.	See claims [9] and [13] above. The structure in the Accused Hotspot Instrumentalities that exports or transmits the traffic information or security information to one or more computer processors or devices is the transceiver. The structure in the Accused Hotspot Instrumentalities that adjusts the one or more operations of said controller based on said traffic information or security information is a hardware memory unit that stores instructions to adjust the operation of the controller.