

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner

v.

S.M.R INNOVATIONS LTD and Y.M.R TECH LTD
Patent Owners

Inter Partes Review Case No. IPR2024-01048
U.S. Patent No. 10,547,648

**SUPPLEMENTAL DECLARATION OF DR. SAYFE KIAEI
IN SUPPORT OF PETITION *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,547,648**

TABLE OF CONTENTS

<i>I.</i>	<i>INTRODUCTION AND QUALIFICATIONS</i>	<i>1</i>
<i>II.</i>	<i>METHODOLOGY; MATERIALS CONSIDERED</i>	<i>1</i>
<i>III.</i>	<i>IDENTIFYING “AVAILABLE” DEVICES – CLAIM 1(B)</i>	<i>2</i>
<i>IV.</i>	<i>ZHANG’S HOMERF IMPLEMENTATION</i>	<i>8</i>
<i>V.</i>	<i>CONCLUSION</i>	<i>17</i>

CLAIM LISTING

Claim 1:

Claim 1[Pre]: A method of informing a device about an availability of media content at a mobile device connected to a local area network (LAN), comprising:

Claim 1(a): using the mobile device for:

Claim 1(b): identifying one or more available devices compatible to handle the media content and connected to the LAN;

Claim 1(c): wirelessly communicating information to an intermediate routing device connected to the LAN for indirectly routing messages or media content to at least one of the one or more available devices via said intermediate routing device; and

Claim 1(d): wirelessly signaling the one or more available devices indicating an availability of a media content at the mobile device;

Claim 1(e): wherein the media content is originated from an external source disconnected from the LAN;

Claim 1(f): wherein the media content selected from a group consisting of: audio content and video content.

Claim 5:

The method of claim 1, wherein the media content is a phone call; further comprising routing the phone call to the one or more available devices in response to a receipt of a response to the signaling received from the one or more device.

Claim 6:

The method of claim 1, wherein the media content is a phone call; further comprising routing the phone call to the one or more available devices while the phone call is ongoing using the mobile device.

Claim 7:

The method of claim 1, wherein the one or more available devices is triggered by the signaling to perform one or more of the following: flash light, ring, and play a loudspeaker sound.

Claim 8:

The method of claim 1, further comprising setting up a wireless communication link between the at least one of the one or more available devices based on a user interaction made with the mobile device or the one or more available devices and causing a routing of the media content to the at least one device via the wireless communication link.

Claim 10:

The method of claim 1, wherein the identifying comprises triggering a display of a menu by the one or more available devices or the mobile device to allow a user to perform a user interaction.

Claim 11:

The method of claim 1, wherein the one or more available devices are triggered by the signaling to inform a user about an availability of media content at the mobile device.

Claim 13:

The method of claim 1, further comprising encrypting and routing the media content to the one or more available devices.

Claim 15:

Claim 15[Pre]: A mobile apparatus for informing a device about an availability of media content, comprising:

Claim 15(a): a receiver adapted to receive wirelessly, from an external source, media content selected from a group consisting of: audio content and video content; and

Claim 15(b): a controller adapted to identify one or more available devices connected to a local area network (LAN) and compatible to handle the media content;

Claim 15(c): wherein the controller is adapted to instruct communicating wirelessly information to an intermediate routing device connected to the LAN for indirectly routing messages or media content to at least one of the one or more available devices via said intermediate routing device;

Claim 15(d): wherein the controller is adapted to wirelessly signaling the one or more available devices indicating an availability of the media content at the mobile device;

Claim 15(e): wherein the media content is originated from an external source disconnected from the LAN.

Claim 16:

The mobile apparatus of claim 15, wherein the one or more available devices is triggered by the mobile device to perform one or more of the following: flash light, ring, and play a loudspeaker sound.

Claim 18:

The mobile apparatus of claim 15, wherein the media content is audio content selected from a group consisting of: a phone call data, bidirectional voice data, bidirectional audio data and a radio broadcast.

Claim 19:

Claim 19[Pre]: A computer program product for a device for informing a user about an availability of media content at a mobile device, the computer program product comprising:

Claim 19(a): a non-transitory computer readable storage medium having stored thereon:

Claim 19(b): first program instructions executable by a processor to wirelessly communicating information to an intermediate routing device connected to a local area network (LAN) for indirectly receive messages or media content routed from one or more available devices connected to the LAN via the intermediate routing device; and

Claim 19(c): second program instructions executable by the processor to wirelessly receive signal from the mobile device indicating an availability of a media content at the mobile device;

Claim 19(d): third program instructions executable by the processor to inform the user of said device about an availability of a media content at the mobile device with one or more of the following: flash light, ring, and play a loudspeaker sound;

Claim 19(e): wherein the media content is originated from an external source disconnected from the LAN;

Claim 19(f): wherein the media content selected from a group consisting of:
audio content, text content and video content.

I, Sayfe Kiaei, declare as follows:

I. INTRODUCTION AND QUALIFICATIONS

1. I am over the age of 21 and am competent to make this declaration. I make this declaration based on facts and matters within my own knowledge and on information provided to me by others, and, if called as a witness, I could and would competently testify to the matters set forth herein.

II. METHODOLOGY; MATERIALS CONSIDERED

2. I have relied upon my education, knowledge, and experience with the technology of communication networks, as well as the other materials as discussed in this declaration in forming my opinions. This supplemental declaration supplements the opinions set forth in my original declaration submitted in support of the Petition. My background, discussion of the legal standards I have applied, and other foundational topics are set forth in that original declaration, which I understand was submitted as Ex. 1003.

3. In developing my opinions relating to the '648 Patent, I have considered the materials cited or discussed herein, including those listed below.

- All materials referenced in my previous Declaration (Ex. 1003)
- Excerpts from the transcript of the deposition of Dr. Nathaniel Polish, conducted in connection with S.M.R Innovations LTD & Y.M.R Tech LTD v. Apple Inc., 6:23-cv-00479-ADA (W.D. Tex.) (Ex. 2013)
- Technical Overview, HomeRF Working Group (available at <https://www.cazitech.com/Technical%20HomeRF%20Overview.htm>) (Ex. 2016)

- HomeRF Specification Revision 2.0 dated 7 May 2001. The HomeRF™ Technical Committee. (Ex. 1038) (“*HomeRF Specification*”)
- Kevin J. Negus et al. “HomeRF: Wireless Networking for the Connected Home.” IEEE Personal Communications. February 2000. (Ex. 1039) (“*Negus*”)

4. I have considered these materials from the viewpoint of a POSITA as of the priority date of the '648 Patent. For the purposes of this declaration, I have been asked to assume that the priority date of the '648 Patent is July 25, 2002. I note that my opinions provided in this declaration are made from the perspective of a POSITA as of this priority date of the '648 Patent, unless expressly stated otherwise. To the extent that I use any verb tense in this declaration that is present tense (e.g., “a POSITA would understand” instead of “a POSITA would have understood”), such verb tense should be understood to be my opinion as of the '648 Patent's priority date (again, unless expressly stated otherwise). I merely use the present verb tense for ease of reading.

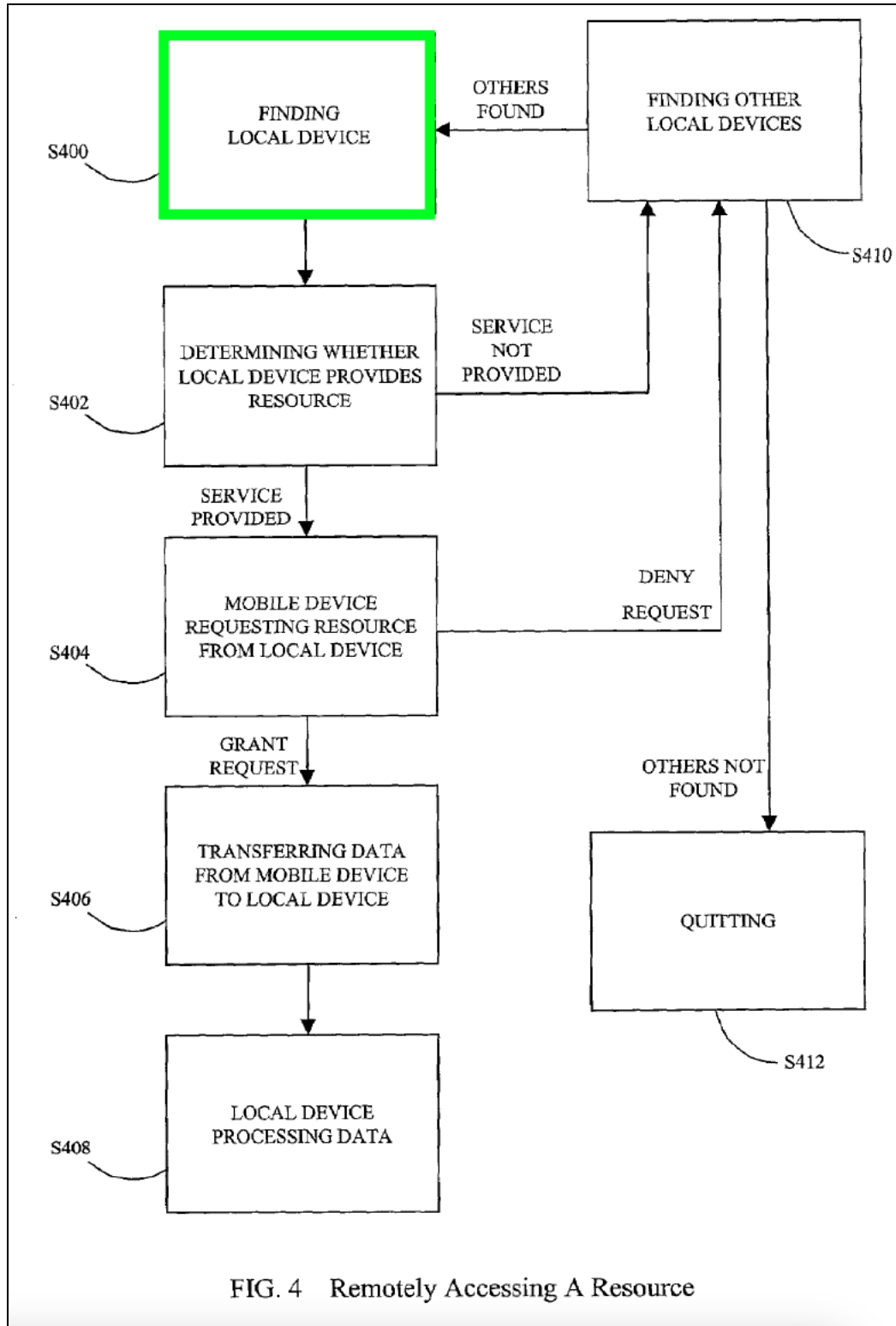
III. IDENTIFYING “AVAILABLE” DEVICES – CLAIM 1(B)

5. I have been asked to assess whether *Zhang's* device discovery process satisfies an interpretation of the claims where claim 1(b)'s requirement that a mobile device identify an “available” device does not require confirming the device is *immediately/currently* free to receive rerouted media but instead merely requires

determining that a device is turned on and able to communicate via the network.¹ In my opinion, *Zhang*'s device discovery process alone satisfies this interpretation of claim 1(b).

6. *Zhang* teaches performing device discovery to identify nearby helper servers. Paper 1 (Petition), 14-15; Ex. 1003, 99-102; *Zhang* (Ex. 1004), 3:44-56, 6:40-44, 3:61-4:5. *Zhang* teaches that in the device discovery process, "First, a local device that offers a helper service is found S400." Step S400 is depicted in Fig. 4 below:

¹ I take no position as to whether this is a correct interpretation of claim 1(b).



Zhang, Fig. 4 (annotated).

7. A POSITA would have understood that *Zhang's* device discovery process alone is sufficient for the mobile device to determine that a helper server is powered on and connected to the network. *Zhang* is unambiguous that the device discovery process step confirms that helper server(s) are powered on, connected to the network, and able to communicate with the mobile device.

8. Under the interpretation of Claim 1(b) discussed above, *Zhang's* device discovery process in step S400 would have determined that a helper server is turned on and able to communicate with the mobile device via the network. Further, *Zhang's* device discovery step S400 provides the mobile device with the capabilities of helper servers.

9. In particular, *Zhang* describes a device discovery process where both the existence and capabilities of helper servers are communicated during device discovery. For example, *Zhang* teaches that the mobile device maintains an “environment capability” table from service discovery. *Zhang*, 6:6-20. *Zhang* also teaches the helper servers “register with the Bluetooth² service discovery database

² While the specific description references Bluetooth communications, a POSITA would have understood a similar process would be performed using 802.11 or HomeRF communications. As I set forth in my original declaration (and as I reiterate in ¶10 below), *Zhang* expressly discussed both an 802.11 and a HomeRF implementation, and those embodiments are the focus of my analysis in this case.

(SDDb) about its *existence and capabilities*.” *Zhang*, 6:21-27 (emphasis added).

Thus, in *Zhang*, when a helper server is identified/discovered in step S400, the mobile device already knows of the device’s capabilities because such information was already transmitted prior to the request to initiate a helper service (e.g., rerouting a phone call). After the existence and capabilities of nearby helper servers are identified, *Zhang*’s service query step S402 “determine[s] whether there is a helper device in its environment that can fulfill *the requested task*.” Paper 1, 15 (emphasis added); *Zhang*, 4:35-45; Ex. 1003, 91-95, 100-01, 113-14. Thus, step S402 determines if a device is *currently/immediately* available to handle the task.

10. It is my opinion that the aforementioned interpretation of Claim 1(b) is satisfied under an implementation where *Zhang* utilizes 802.11 or HomeRF WLAN service discovery processes (i.e., non-Bluetooth processes) instead of Bluetooth. As I opined in my original declaration (Ex. 1003), *Zhang* contemplates implementing its invention using IEEE 802.11 or HomeRF. Ex. 1003, 96-97, 99, 106-107 (opining that *Fillebrown* also expressly contemplates using HomeRF for its WLAN); *Zhang* (Ex. 1004), 4:42-58.

The framework can be built on top of many different kinds of communication media, for example but not by way of limitation, Bluetooth™ wireless technology, IEEE 802.11 wireless LAN, infrared, HomeRF™, or even wired networks such as Ethernet. Some of these media, such as Bluetooth™ wireless technology, may support link-

layer device discovery and service query mechanisms that can be taken advantage of in structuring a helper environment. Because of these advantages, as well as others, an exemplary embodiment will be described using Bluetooth™ wireless technology as the link layer. It should be noted, however, that the overall system framework remains the same across different link-layer protocols.

Zhang, 4:46-58 (cited at Paper 1 (Petition), 13, 22, 42; also cited at Ex. 1003, 111, 146).

11. A POSITA would have understood that when implementing *Zhang's* framework using an IEEE 802.11 or HomeRF setup, *Zhang's* device discovery process would have been performed in an 802.11 or HomeRF setup instead of according to Bluetooth. Ex. 1003, 99-102. In my opinion, *Zhang's* device discovery process according to a HomeRF/802.11 implementation would also have (1) informed a mobile device about the presence/availability of helper servers and (2) informed a mobile device about the capabilities of a helper server.

12. For example, in HomeRF, I-nodes (e.g., wireless headset, *Zhang's* helper servers) utilize a protocol called DECT NWK (Digital Enhanced Cordless Telecommunications Network Layer) to (1) **perform an initial registration** at a control point (e.g., *Zhang's* mobile device) so the control point learns of each I-node's existence and (2) **perform location registration** so the system knows "which I-nodes are able to receive calls." This informs the control point of the capabilities

of each I-node. *HomeRF Specification*, 65, 55-57 (Figure 8 at p. 57 depicts an exemplary I-node architecture including DECT NWK). A POSITA would have understood that when implementing *Zhang* using HomeRF, a device discovery process pursuant to *Zhang* would have communicated both the existence/availability and capabilities of a helper server to a mobile device, which would have met the interpretation of Claim 1(b) I discussed above. The HomeRF system supports capabilities for “A HomeRF-profiled version of the DECT GAP DLC, network (NWK) and Interworking Unit (IWU) layers” and a “voice interface.” *HomeRF Specification*, 55-57.

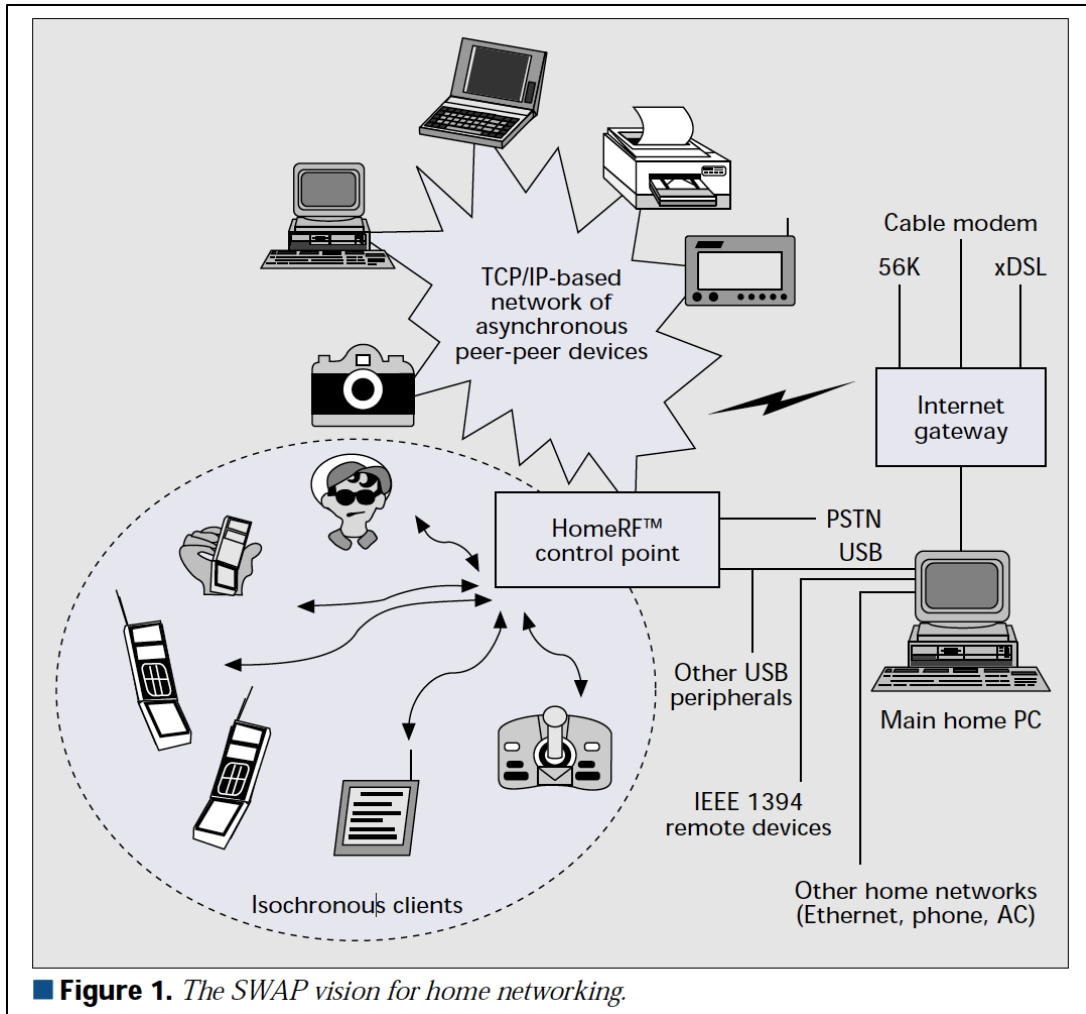
IV. ZHANG’S HOMERF IMPLEMENTATION

13. As discussed in my original declaration, *Zhang* expressly contemplates HomeRF as its wireless local area network, which necessarily means its devices (i.e., mobile device and helper servers) were HomeRF-compliant. *See* Ex. 1003, ¶¶96-97, 99, 106, 109, 115. I have been asked to assess whether *Zhang*’s HomeRF-compatible devices would have been capable of transcoding voice call audio in *Zhang*’s mobile device to convert from the voice encoding used in the cellular network to voice encoding compliant with the local HomeRF wireless network (i.e., the link between *Zhang*’s mobile device and audio helper server). For example, HomeRF has voice encoding, voice companding including compression and decompression, and a ADPCM voice transcoder. *HomeRF Specification*, 406-408. In my opinion,

HomeRF would indeed have provided the functionality for transmitting phone call audio from *Zhang's* mobile phone to *Zhang's* helper server (via a wireless router, such as taught by *Fillebrown*, which also teaches HomeRF). Paper 1, 13-14, 16-23, 42. Below, I discuss HomeRF in more detail.

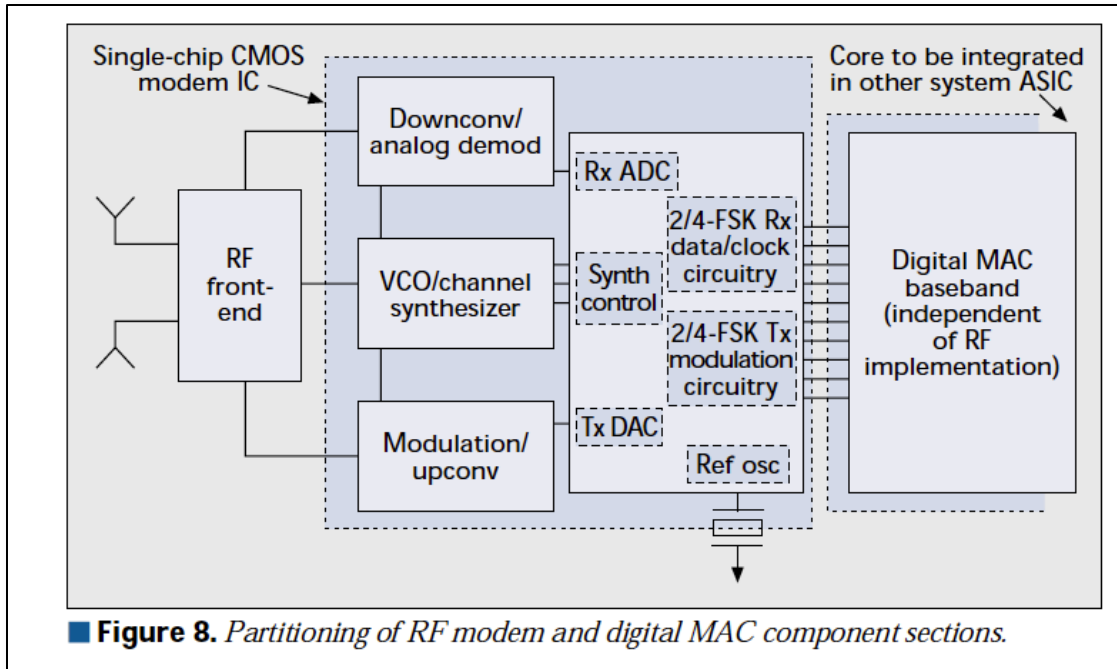
14. HomeRF was a wireless local area network (WLAN) standard similar to 802.11, but HomeRF also included support for DECT (Digital Enhanced Cordless Telecommunications), which was a well-known telephony standard for transmitting digital phone call audio. *Negus*, 4. HomeRF “leverages the existing PC-industry infrastructure around the Internet, TCP/IP, and Ethernet, and adds a standard way to connect to the PSTN for voice telephony.” *Negus*, 1. Further, HomeRF was “optimized for the home environment and is designed to carry both voice and data traffic and interoperate with the PSTN using a subset of the Digital Enhanced Cordless Telecommunications (DECT) standard.” *Negus*, 4.

15. HomeRF systems included a “control point” that was used as an intermediary routing device to route toll quality voice (phone calls), audio, video, and data to a wireless node, such as an isochronous node (I-node) including a mobile phone, cordless telephone, and wireless headset. *Negus*, 2-3. *Negus's* Fig. 2 below depicts a control point in communication with various networks (e.g., PSTN, Internet) and a variety of isochronous devices such as the aforementioned wireless headset and cordless telephones.



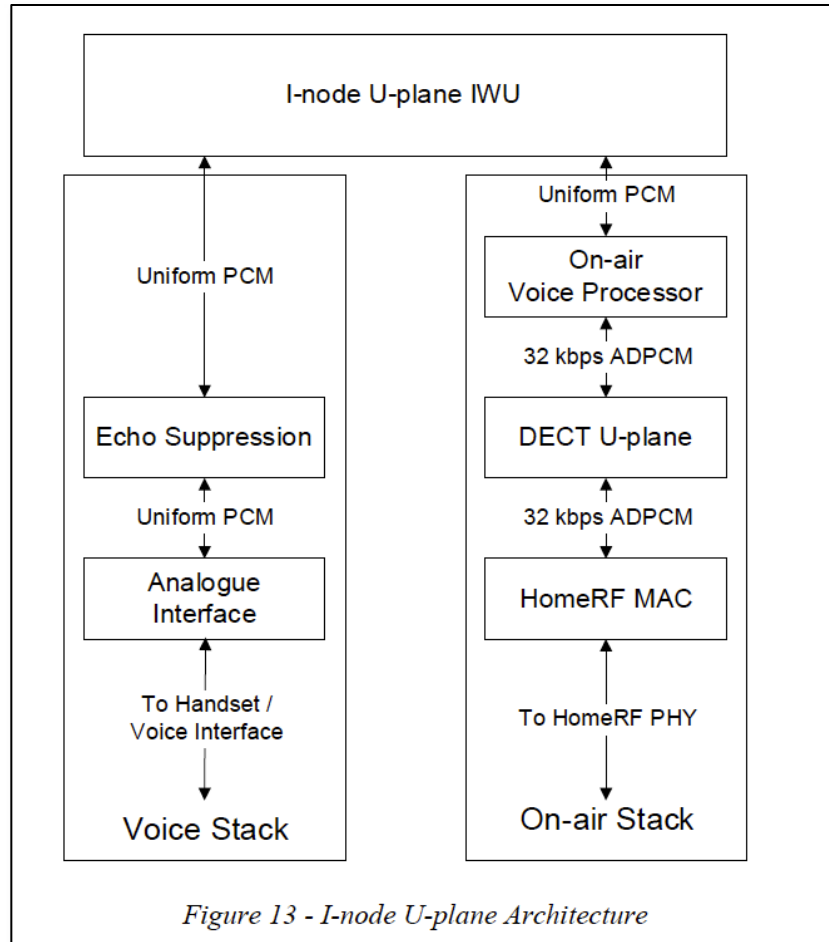
Negus, 2 (“Figure 1”).

16. HomeRF-compatible devices included hardware and software for networking, audio compression companding, μ -law and A-law compression, and transcoding functionality, such as ADPCM. Such functionality was required to perform the processing necessary to transmit toll quality phone call audio between devices. An exemplary HomeRF chip for devices is depicted below, where components for performing HomeRF networking, modulation, and analog to digital (ADC) and digital to analog (DAC) functions are included:



Negus, 7 (“Figure 8”).

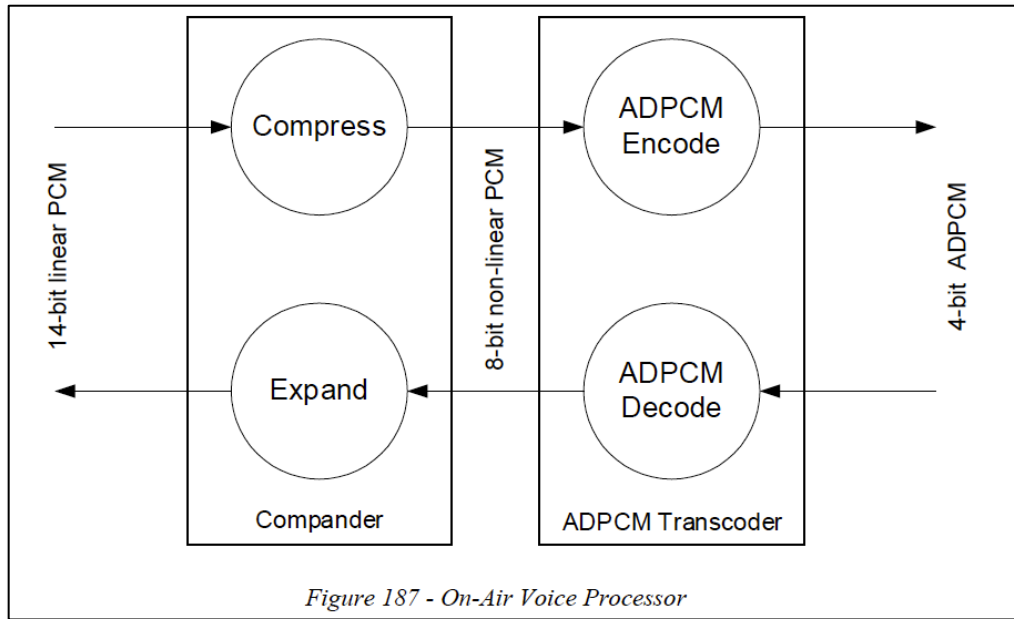
17. The HomeRF specification provides additional details on the I-node architecture. For example, Fig. 13 below depicts I-node architecture as including a voice stack (left) going to and from the handset/voice interface and including PCM (Pulse Code Modulation) audio encoding and an analog interface to receive audio from a microphone or render audio at a device’s speaker. The I-node architecture also includes an on-air stack (right) that includes ADPCM (Adaptive Differential Pulse Code Modulation) audio encoding as well as DECT U-plane encoding, where the on-air stack is used for transmitting to and receiving from a control point, for example. The I-node U-plane Interworking Unit (IWU) in an I-node device ties the stacks together.



HomeRF Specification, 62 (“Figure 13”), 57 (including Fig. 8 depicting I-node architecture).

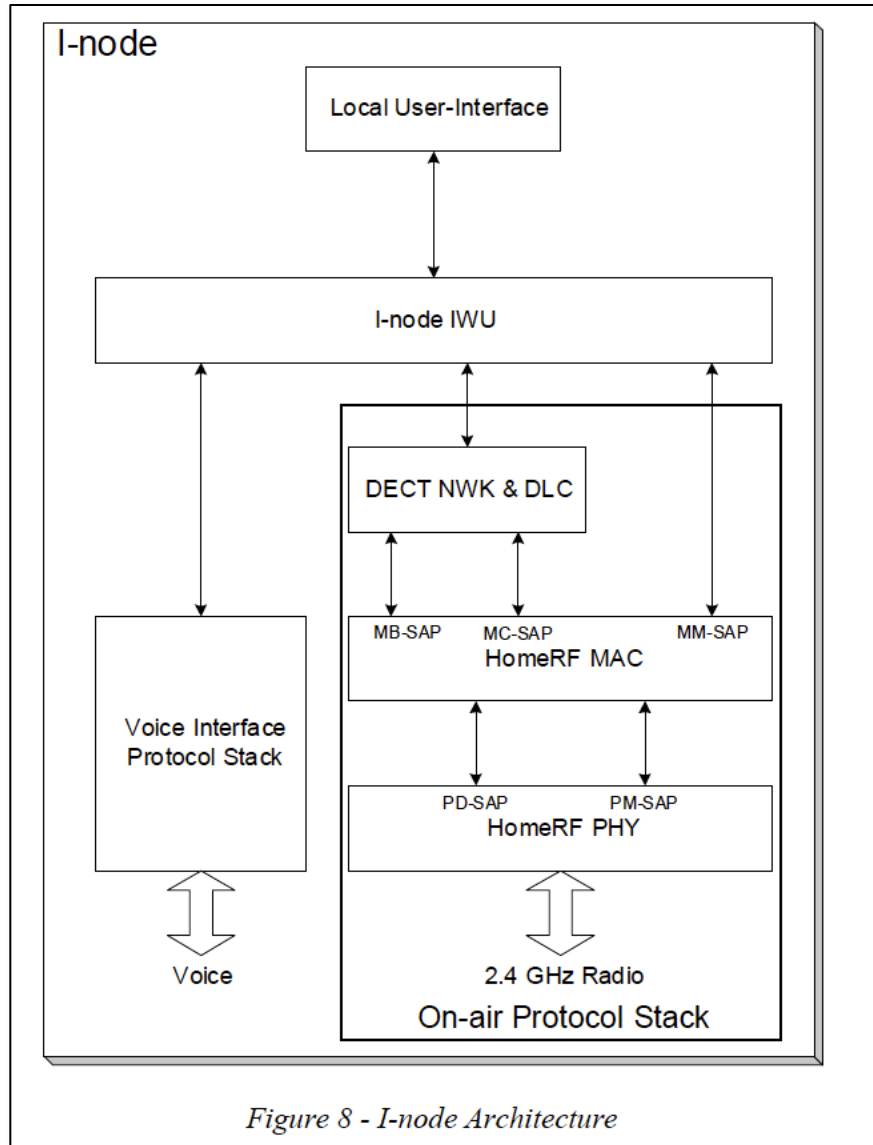
18. I-node devices also included hardware/software such as the On-Air Voice Processor for performing audio processing. The On-Air Voice Processor in the I-node device provided a “comparer” (compressor/expander) for compressing and expanding audio as well as an ADPCM transcoder for encoding and decoding ADPCM audio. Thus, any HomeRF-enabled I-node device (e.g., wireless headset, cordless telephone, speaker, mobile phone) would necessarily have included the

CODECs and capabilities for processing and transmitting toll quality voice over a wireless network connection (e.g., *Zhang's HomeRF WLAN*).



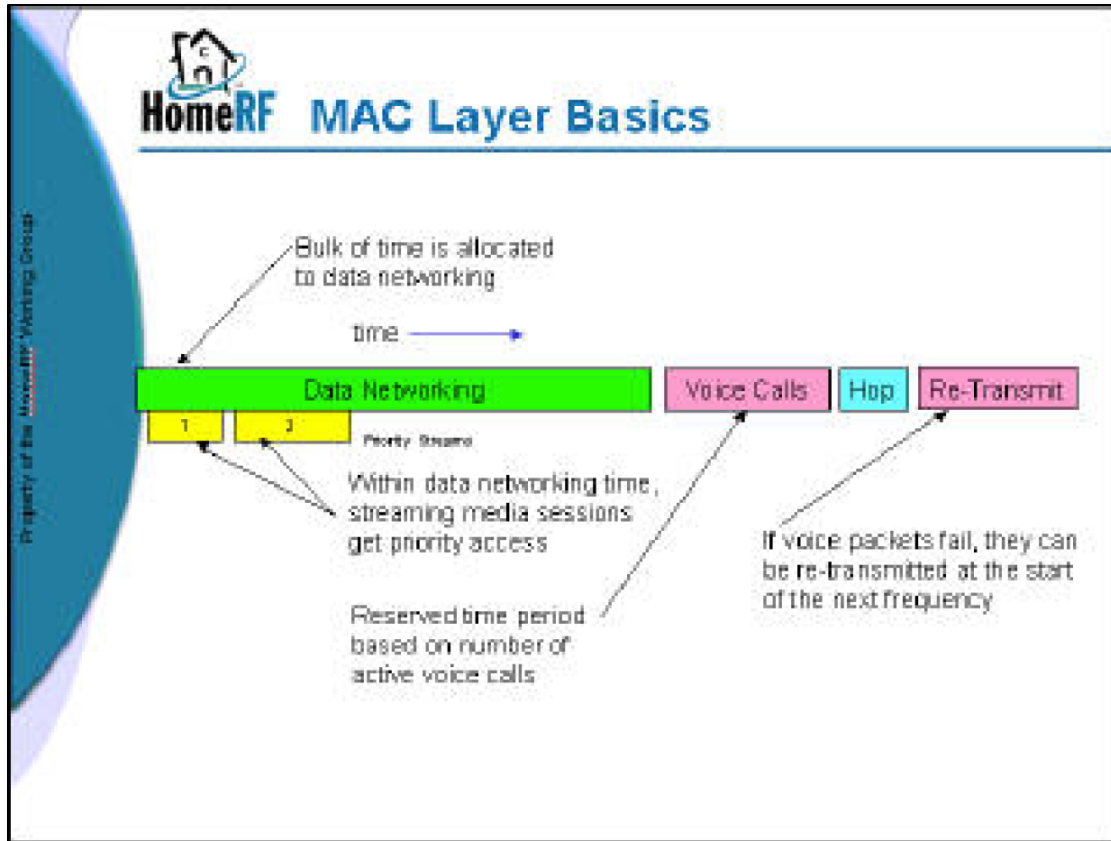
HomeRF Specification, 407.

19. As I discussed above, I also note that in HomeRF, I-nodes (e.g., a wireless headset) utilize a protocol called DECT NWK (Digital Enhanced Cordless Telecommunications Network Layer) to (1) perform an initial registration at a control point (e.g., *Zhang's mobile device*) so the control point learns of each I-node's existence and (2) perform location registration so the system knows "which I-nodes are able to receive calls," which informs the control point of the capabilities of each I-node. *HomeRF Specification*, 65, 57 (Figure 8 depicts an exemplary I-node architecture including DECT NWK).



HomeRF Specification, 57 (“Figure 8”).

20. I note that Patent Owner’s Ex. 2016 teaches HomeRF was capable of transmitting streaming media and audio including toll quality voice, and teaches that the data was transmitted in the same frames with interleaving. Ex. 2016, 2-3, 7. The slide below from Ex. 2016 depicts such interleaving, with data networking and voice calls being transmitted in particular time period slots.



Ex. 2016, 2.

21. Therefore, a POSITA would have understood that an audio device compatible with HomeRF, such as the mobile device and audio helper servers in *Zhang* would have included all the hardware, software, or other necessary components for transcoding and transmitting audio between devices over a WLAN, such as *Zhang*'s HomeRF WLAN. Thus, a POSITA would have had a reasonable expectation of success when modifying *Zhang* to receive a phone call at the mobile device, perform HomeRF processing, and reroute the ongoing phone call to a helper server (e.g., wireless headset, wireless speaker, etc.). *See generally* Paper 1, Claims 1, 15.

22. Lastly, I note that Patent Owner has pointed to deposition testimony from Apple's expert in a parallel proceeding. POR, 35-36. Patent Owner argues the deposition testimony indicates that streaming audio was not common in the prior art due to bandwidth concerns. In my opinion, a POSITA would have understood that telephone calls on wireless local area networks were well-developed and did not require as much bandwidth as streaming audio or video files. For example, I-nodes utilized a 32 kbps data rate for ADPCM phone call audio versus much higher data bandwidths for streaming audio files, video, or other data over an Asynchronous connection (e.g., 800 kbps, 1.6 Mbps, 5 Mbps, 10 Mbps). *HomeRF Specification*, 62-65, 422, 42 (teaching data rates for Asynchronous connection), 70. As I discussed above, HomeRF provided support for toll quality phone call audio, which would have indicated to a POSITA that the prior art technology was developed enough to handle rerouting phone call audio between devices, such as those in the *Zhang* combination laid out in the Petition (Paper 1).

V. CONCLUSION

23. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1001. If called to testify as to the truth of the matters stated herein, I could and would testify competently.

Date: August 11, 2025

Respectfully submitted:

A handwritten signature in cursive script, appearing to read "Sayfe Kiaei".

By:

Dr. Sayfe Kiaei