

RECORD OF ORAL HEARING
U.S. PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2024-00431 (Patent 7,295,518 B1)

Oral Hearing Held: June 4, 2025

Before JON M. JURGOVAN, SCOTT B. HOWARD, and
AARON W. MOORE, Administrative Patent Judges.

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The above-entitled matter came on for hearing Monday, June 4, 2025, commencing at 10:0 p.m., at the U.S. Patent and Trademark Office, Southwest Regional Outreach Office, 207 S. Houston Street, Suite 159, Dallas, Texas.

P-R-O-C-E-E-D-I-N-G-S

(1:00 p.m.)

JUDGE JURGOVAN: Okay. This is the trial hearing for IPR2024-00431 concerning U.S. Patent Number 7,295,518 B1. It is June 4, approximately 2:00 p.m. Eastern. On the panel today are Judges Howard, Moore, and myself, Jon Jurgovan.

Would the parties please enter their appearances, starting with the Petitioner, please?

MR. QUALEY: Paul Qualey from Banner Witcoff, for Comcast Cable Communications. With me are Wesley Jones and Fred Meeker.

JUDGE JURGOVAN: Great. Thank you.

And for Patent Owner?

MR. HALVERSON: Erik Halverson from K&L Gates, on behalf of Patent Owner Entropic Communications, LLC. With me today is our LEAP practitioner Jared Lund, and lead counsel Jason Engel. Also here is Vincent Galluzzo, also from K&L Gates.

JUDGE JURGOVAN: Okay. Thank you. As stated in the hearing order, each party gets 60 minutes to present their arguments. Petitioner has the burden, so Petitioner starts, followed by the Patent Owner. You each can reserve rebuttal time limited to the opposing party's presentation.

Your demonstratives, I think you're going to share those on the screen, so we'll be able to follow along, but if you don't or there is some problem, just let us know what you're referring to as you're

1 going through your presentation so that we can follow along and also
2 so that the record will be clear as to what you're referring to.

3 Let's see. There may be third parties listening on the public
4 line. I don't know if that's the case today, but if it is, just please be
5 cognizant of that. There may be -- you know, if you need to discuss
6 confidential information for any reason, let us know in advance, so we
7 can close of the public line.

8 I believe there was a LEAP request from Patent Owner, but
9 that's withdrawn, correct? Is that withdrawn? I believe --

10 MR. HALVERSON: No. It was not withdrawn.

11 JUDGE JURGOVAN: Okay.

12 MR. HALVERSON: That was for this morning.

13 JUDGE JURGOVAN: Okay.

14 MR. HALVERSON: Mr. Blair's request was withdrawn
15 because he was not feeling well.

16 JUDGE JURGOVAN: I see.

17 MR. HALVERSON: We would love the 15 minutes for
18 Mr. Lund.

19 JUDGE JURGOVAN: I've set -- so you get 15 minutes for --
20 and your name again?

21 MR. LUND: Jared Lund.

22 JUDGE JURGOVAN: Jared Lund, thank you.

23 MR. LUND: Yes.

24 JUDGE JURGOVAN: Okay. Petitioner, do you have a LEAP
25 practitioner today? It doesn't appear you do.

1 MR. QUALEY: We do not.

2 JUDGE JURGOVAN: Okay. Thank you.

3 Okay. So Patent Owner will get an additional 15 minutes of
4 argument time. Are there any questions before we begin?

5 (No response.)

6 JUDGE JURGOVAN: Okay. How much time would you like
7 to reserve for rebuttal Petitioner?

8 MR. QUALEY: Ten minutes, please.

9 JUDGE JURGOVAN: Ten minutes, okay. Thank you.
10 And Patent Owner?

11 MR. HALVERSON: Ten minutes as well, please.

12 JUDGE JURGOVAN: Okay. Petitioner, when you're ready,
13 you can begin.

14 MR. QUALEY: Good afternoon, Your Honors. Your
15 reference to the public line made me recall that, actually, from
16 Comcast, we have listening Vice President and Senior Deputy General
17 Counsel for Intellectual Property Heather Faltin, and also Assistant
18 Deputy General Counsel Kevin Chung.

19 JUDGE JURGOVAN: Thank you. Welcome.

20 MR. QUALEY: Now, the Petition in this IPR sets forth that
21 Claims 1 through 4 of the '518 Patent are obvious in view of the
22 combination of the Afshary and Mirfakhraei prior art references.
23 Now, Patent Owner does not dispute that all of the claim limitations
24 are shown by the references. Patent Owner's arguments are entirely
25 directed to whether one of ordinary skill in the art would be motivated

1 and able to make the combination. Now, the evidence of record
2 shows that the combination is proper and that the claims are invalid.

3 Turn to Slide 2. So, on Slide 2, we see a brief overview of the
4 '518 Patent, Claim 1 shown on the left. Now, Claim 1 recites a data
5 communication network, shown in Figure 2 of the '518 Patent on the
6 upper-right of the slide, and it includes certain components. So,
7 Claim 1 recites at least two network devices, each including a multi-
8 carrier modulator and an upconverter. And so, the multi-carrier -- the
9 modulator and the upconverter are essentially handling the data to be
10 transmitted by the network device. And each network device also
11 includes a downconverter and a demodulator, so each essentially
12 handling the data received by the device.

13 Now, in our figure on the upper-right, the LAN network
14 devices are the LAN modems shown in orange. Claim 1 further
15 recites cable wiring comprising a splitter, shown here in pink, with a
16 common port and a plurality of tap ports, as indicated in red on the
17 topmost splitter. So, the cable wiring also includes segments of
18 coaxial cable, shown here in blue.

19 Now, Claim 1 further recites the network devices communicate
20 with each other using multi-carrier signaling and that they transmit
21 probe messages through the cable through the cable wiring and
22 analyze the received probe messages to determine channel
23 characteristics, such as signal-to-noise ratio. The bit loading used by
24 multi-carrier signals is selected based on those determined channel
25 characteristics.

1 So, looking at Figure 10 in the lower right, we see an example
2 where the figure shows frequency bands across the x-axis, and the
3 signal-to-noise ratio, or also referred to as SNR, is the channel
4 characteristic is shown by the y-axis and the curved lines. So, based
5 on the SNR, the selected bit loading for each subchannel or band is
6 selected. So, bit loading refers to how many bits can be sent per
7 symbol, which is based on a modulation scheme chosen for each
8 subchannel. So, more bits per symbol means a higher data
9 transmission rate.

10 And here, the bit loading is shown in various colors. Starting
11 on the left, we see in blue, QAM, or quadrature amplitude modulation
12 256, which so that's capable of carrying 8 bits of data per symbol.
13 And then going from down to the lower -- sorry -- to the right, we see,
14 in red, there is only a QAM 4 which is only capable of carrying 2 bits
15 per symbol. And then for a few frequency bands, you see that the
16 signal-to-noise ratio is so low that they go unused in the bit-loading
17 scheme.

18 Turn to Slide 3. So, on Slide 3, we see the Invalidity Grounds
19 on the right: Ground A, that Claims 1 through 4 are obvious in view
20 of Afshary and Mirfakhraei, and Ground B, an alternate ground for
21 Ground 2, that it's obvious in view of Afshary, Mirfakhraei, and
22 Welles.

23 Now, on the left, briefly summarized are Patent Owner's
24 arguments against the grounds. And those are that Mirfakhraei is
25 purportedly not analogous art to the '518 Patent and that there is not a

1 motivation to combine Afshary and Mirfakhraei. Again, for both
2 grounds, Patent Owner does not argue any particular claim elements
3 are missing from the combination, only that the combination is
4 allegedly improper.

5 So, turning to Slide 4. Now, Slide 4 again, we see Claim 1 of
6 the '518 Patent on the left, and prior art reference Afshary's Figure 1
7 on the right. So Afshary shows a coaxial cable network that allows
8 user devices to communicate with each other through the network
9 using cable LAN adapters.

10 So, briefly, Claim 1's data communication is shown by
11 Afshary's cable network. And the claimed network devices are
12 Afshary's cable LAN adapters, shown here in orange. Afshary also
13 shows cable wiring, including splitters shown in pink. And as
14 indicated on the lowermost one, Afshary's splitters also have one
15 common port and multiple tap ports. And each of the cable LAN
16 adapters are connected with segments of coaxial cable, shown in blue.

17 Turn to Slide 5. Now, on Slide 5, we can see just roughly how
18 similar the network architecture of Afshary is to that of the '518
19 Patent. On the left is the '518's coaxial network, and on the right is
20 Afshary's, and you can see from the color coding on the basic
21 architecture matches up.

22 Now, turning to Slide 6. So, Slide 6 shows Afshary's Figure 4
23 on the right-hand side, depicting components within the cable LAN
24 adapter, so the claimed network device.

1 And now, looking again at the at least two network devices
2 limitation on the left, Claim 1 recites a modulator. Afshary has a
3 modulator, shown here in red as Element 96. Claim 1 has an
4 upconverter. Afshary has an upconverter, shown inside the purple
5 dash lines. Claim 1 recites a downconverter, and Afshary's
6 downconverter is shown inside the orange dash lines. And Claim 1
7 also recites a demodulator, and Afshary's demodulator is shown as
8 Element 98, in green. The sole difference between Afshary and Claim
9 1 is that Afshary uses single-carrier modulation, not multi-carrier
10 modulation where probe messages are used to determine bit loading.
11 And that's where Mirfakhraei comes in.

12 So, turning to Slide 7. Slide 7 shows Mirfakhraei's transceiver,
13 Figure 1 of Mirfakhraei, here on the right. Mirfakhraei discloses a
14 data network with transceivers employing multi-carrier modulation,
15 specifically discrete muti-tone, also referred to as DMT. So, in
16 Mirfakhraei's network here, this is one network element; you're going
17 to have another network element that we connected to this.

18 So DMT. Returning to DMT, it uses multiple carrier
19 frequencies, where each carrier frequency corresponds to a
20 subchannel. And as shown here, we have a multi-carrier demodulator
21 in green and a multi-carrier modulator in red inside of Mirfakhraei's
22 transceiver.

23 So, Mirfakhraei also uses bit loading as part of its multi-carrier
24 modulation. Mirfakhraei's RF handshake module 170, here on the
25 left, and TX handshake module 120, on the right, use a probing signal

1 to determine channel characteristics -- for example, signal-to-noise
2 ratio -- in order to determine the proper bit loadings for each carrier.
3 Now, again, there's another transceiver. So, the multi-carrier
4 modulator of Mirfakhraei is not talking -- on the right, is not talking to
5 the demodulator on the left. It's talking to another unit that has an
6 identical architecture.

7 And now, there's no dispute that Afshary discloses the claimed
8 architecture of the '518 Patent and that Mirfakhraei teaches multi-
9 carrier modulation in determining bit loading through the use of probe
10 messages. Patent Owner disputes that there's a motivation to combine
11 Afshary and Mirfakhraei in order to implement Mirfakhraei's multi-
12 carrier bit loading teachings into Afshary's LAN adapters. But in fact,
13 there's ample motivation to combine.

14 Turning to Slide 8. So, under KSR, the obvious analysis --
15 obviousness analysis is a flexible one. And as further discussed in the
16 Unwired Planet case cited in our papers, the motivation can be either
17 from the references themselves or from the background knowledge of
18 a person of ordinary skill in the art. And here, the motivation to
19 combine Afshary and Mirfakhraei is shown in both of these ways.

20 So, Slide 8 shows an excerpt from Petitioner's Opening Expert
21 Declaration. Mr. Bertonis explains that Afshary discloses a network
22 that suffers from certain channel impairments, like attenuation and
23 reflections. And well, let's jump ahead to Slide 13 for just a moment
24 for a little bit of background.

1 So, as a little background, Patent Owner repeatedly tries to
2 narrow the discussion regarding motivation to combine solely to
3 problems with coaxial networks, and particularly to problems caused
4 by splitters in coaxial networks. But as stated in the Honeywell case
5 in our Reply at page 12, motivation to combine references need not be
6 the same as that of the inventor. But in any event, Afshary describes
7 problems caused by splitters in its network.

8 So, first, looking at the upper quote here on the slide, contrary
9 to an argument made by Patent Owner, Afshary does not extol coaxial
10 networks as being free from channel impairments and thus not
11 requiring improvement. As shown here, Afshary states that the cables
12 themselves are a clean, clear medium. And the word themselves is
13 critical. Afshary's network is not made up of only cables. So, we saw
14 in Figure 1 of Afshary, back on Slide 4, the network includes splitters,
15 filters, and other components that may introduce various kinds of
16 channel impairments. As shown here in the second quote on the
17 lower portion of Slide 13, Afshary explicitly recognizes that splitters
18 cause attenuation and that filters in the system may cause reflections.

19 All right. Let's go back to Slide 8. So, now, based on Afshary
20 acknowledging their channel impairments caused by splitters, a
21 person of ordinary skill in the art would be motivated to improve
22 Afshary using Mirfakhraei's bit-loaded multi-carrier modulation that
23 helps address those types of impairments.

24 So, specifically, Mirfakhraei describes issues with variable
25 frequency-dependent attenuation in signals with large bandwidths, so

1 large bandwidths like the single-carrier signals of Afshary. And this
2 is addressed in paragraphs 2 and 3 of Mirfakhraei. And so, multi-
3 carrier modulation can address those issues, thereby increasing data
4 transmission rate and resulting in more robust communication.

5 So, turning to Slide 9. Slide 9 shows some further opinions
6 regarding motivation to combine, as provided by Mr. Bertonis, about
7 how a person of ordinary skill in the art would be motivated to use
8 Mirfakhraei to address problems in Afshary's network. But, we don't
9 need to take Mr. Bertonis's word for it because, in addition to Afshary
10 and Mirfakhraei, other references show that problems with coaxial
11 networks were known to those of ordinary skill, and that multi-carrier
12 modulation was known to help address them.

13 So, we turn to Slide 10. So, Slide 10 shows an example of a
14 person of ordinary skill in the art's background knowledge that
15 Mr. Bertonis also uses to show that there was a motivation to
16 combine. So, as evidenced by Exhibit 1018, what we refer to as the
17 Jacobsen 94 reference, it was known to those of skill in the art that
18 coaxial cable networks suffered from channel impairments. So, as
19 you see here on the top-left of the slide, it discusses how the hardware
20 in the cable networks is not ideal. Taps, amplifiers, and splitters can
21 all cause signals to be reflected at their insertion points. It talks about
22 how splitters in subscriber homes are known to have poor isolation
23 characteristics.

24 JUDGE JURGOVAN: So, Counsel, so Jacobsen is not part of
25 either ground.

1 MR. QUALEY: Correct.

2 JUDGE JURGOVAN: So, you're relying on it as the general
3 knowledge of the person of ordinary skill; is that the case?

4 MR. QUALEY: Exactly. As KSR instructs.

5 So, is there -- so, Jacobsen identifies problems with the coaxial
6 network, both on the in -- in sort of the components within the
7 network itself, the splitters, and then they identify a second source of
8 signal degradation, which is interference from other signals,
9 essentially that other signals, usually radio signals -- so, here, it refers
10 to ham radio -- can infiltrate into the cable network because it's not
11 necessarily sealed -- shielded very well, and there's the possibility
12 there also results in signal degradation.

13 Turning to Slide 11. Now, Slide 11 is another example again
14 for Jacobsen 94 and relied on by Mr. Bertonis. It was known to use
15 multi-carrier modulation, including bit loading, in a coaxial cable
16 network to address these kind of problems.

17 So, on the left, Jacobsen notes that multi-carrier may be applied
18 to a coaxial cable network. And on the right, Jacobsen describes how
19 bit loading can adapt to attenuation by having the subchannels with
20 less attenuation or noise carry more bits. So, it doesn't actually use
21 the phrase, words bit loading, but it talks about bits are assigned to
22 subchannels. So, that's the loading part of bit loading. And then it
23 refers to just after training during system initialization. So, the
24 training would be the probe messages detecting how the signal-to-
25 noise ratio is present in the network.

1 And then, just below the highlight, it talks about how, as a
2 result, the subchannels that suffer from little attenuation or little noise
3 carry more bits, while the subchannels that are severely attenuated
4 carry less bits or maybe even not at all.

5 And another example cited by Mr. Bertonis is Exhibit 1010,
6 which is the Jacobsen 97 reference, which discusses how DMT could
7 be used in multi-point applications.

8 Now, turning to Slide 12, so not only was multi-carrier
9 modulation known to be used with coaxial networks, it was also
10 known to be superior to this kind of single-carrier modulation used in
11 Afshary. So, on the left here, we have Jacobsen 94 again, and it states
12 that there's two practical options for coaxial networks, so single-
13 carrier quadrature amplitude modulation or multi-carrier modulation.

14 Now, as a brief sidenote, Afshary discusses using quadrature
15 phase shift keying for its single-carrier modulation, that's in paragraph
16 26, for example. And as Mr. Bertonis explained in his Opening
17 Declaration in paragraph 42, QPSK is also called 4 QAM. So,
18 Afshary is using single-carrier QAM.

19 Now, Jacobsen 94 explains that single-carrier does not perform
20 well on channels with deviations in their frequency response
21 magnitudes, but the multi-carrier does because it can divide the larger
22 channel into subchannels so that the frequency response is roughly flat
23 in each subchannel. So, and looking at Figure 1 from Jacobsen 97,
24 Exhibit 1010 on the right here, we can see that visually.

1 So, the whole figure shows the large channel that would be
2 used in a single-carrier scheme. And as you can see, the frequency
3 response, while pretty good and pretty flat on the left, sort of starts,
4 toward the middle of the figure, starts declining rapidly off towards
5 the right. So, we have an issue; it's where your -- that's the frequency
6 variable attenuation.

7 So, but when multi-carrier is used and the large channel is
8 partitioned into the smaller subchannels, frequency response within
9 each subchannel is much flatter than that of the full channel. And
10 thus, bit loading can be used in higher bit rates across the better
11 subchannels, so particularly the subchannels on the left, and lower bit
12 rates on the weaker subchannels. So, this is something that's not
13 possible in single-carrier. In single-carrier, you're limited to one
14 modulation scheme across the entire broad channel.

15 And so, based on a person of ordinary skill in the art's
16 background knowledge, they would've been motivated to improve
17 Afshary using Mirfakhraei's multi-carrier modulation with bit loading.

18 And furthermore, as explained in the Randall Manufacturing
19 case in our Reply at page 12, the Federal Circuit says that this kind of
20 evidence of a person of ordinary skill in the art's background
21 knowledge must be considered in the obviousness analysis.

22 And notably, here, neither of the Jacobsen references, Exhibits
23 1018 and 1010, were addressed by Patent Owner's expert, Mr. Garrett,
24 as he admitted in his deposition, Exhibit 1032, at pages 35 and 36.

1 And Patent Owner does not simply address them in its Patent Owner
2 Response or its Sur-reply.

3 Now, Patent Owner does raise a number of arguments against
4 the combination. We've addressed all of them in our papers, but I'll
5 discuss some of them here.

6 So, turning to Slide 13, we talked about Afshary does not say
7 that the whole network is clean and clear, so let's move on to Slide 14.

8 Now, Patent Owner argues that the purported cost and
9 complexity of the combination of Afshary and Mirfakhraei would
10 deter the combination. Patent Owner is incorrect. First, as discussed
11 in the Orthopedic Equipment case on page 16 of our Reply Brief,
12 Federal Circuit has held that whether a businessman would or would
13 not make the combination for economic reasons is not relevant to
14 obviousness.

15 And furthermore, even assuming cost would be considered, as
16 shown here on Slide 14 -- we see, up at the top, that's paragraph 6
17 from Afshary -- only one of Afshary's objectives is cost. It talks about
18 how there's a need to transmit data around the home and elsewhere in
19 cost-effective, quick, and secure fashion. So, it's also seeking quick
20 and secure data transmission. So, a person of ordinary skill in the art
21 would've recognized the trade-offs and had made choices between
22 these objectives, accordingly, as was noted in the Institution Decision.

23 So, the increased throughput provided by Mirfakhraei's multi-carrier
24 modulation would advance Afshary's goal of quick data transmission,
25 even assuming there was some increase in cost.

1 And now, finally, in the lower quotation shown here, again
2 from Jacobsen 94, so the evidence shows that the computational
3 complexity of Mirfakhraei's multi-carrier solution may be less than
4 that of Afshary's single-carrier scheme. And as it relates here, as the
5 interference increases in the system, that reduced complexity
6 advantage of multi-carrier over single-carrier also increases.

7 Turning to Slide 15. Patent Owner also argues that Mirfakhraei
8 teaches a point-to-point connection between a headend and an end
9 user, whereas Afshary's network is multi-point, where three or more
10 nodes connect to each other. Thus, according to Patent Owner, a
11 POSITA would not know how to send Mirfakhraei's handshaking
12 probe message in Afshary's network. But Afshary teaches how to
13 communicate in such a multi-point network.

14 In Afshary's preferred embodiment, with all nodes connected to
15 the network, a message can still be sent from one particular network
16 device to another particular network device. So, specifically, as
17 shown here in the upper quote on Slide 15, Afshary discloses the
18 transmission of a message to a designated adapter, indicating the
19 ability of Afshary's network devices to communicate with each other
20 directly in a non-broadcast mode. And Mr. Garrett agreed that
21 Afshary was not limited to a broadcast scenario.

22 Now this kind of device-to-device communication is
23 accomplished through addressing the message, by identifying the
24 sender and intended recipient in the message, which was a well-
25 known aspect of LAN communication, as Mr. Bertonis discusses in

1 paragraph 48 of his Reply Declaration. And, Mr. Garrett admitted in
2 his deposition, Exhibit 1032, on pages 45 and 46, as well as 49. So,
3 Mirfakhraei's handshake probe messages will be sent and received in
4 the same manner Afshary teaches for sending messages directly
5 between network devices.

6 On the -- as another minor note here, there's nothing about
7 multi-point in the claims. The claims actually only require two
8 network devices. It says at least two network devices, so not 3. And
9 they make no mention of broadcast transmissions.

10 Turning to Slide 16, now, Patent Owner also argues that
11 Afshary's network is already robust and would not benefit from the
12 multi-carrier modulation of Mirfakhraei. However, a person of
13 ordinary skill in the art would understand that multiple mechanisms to
14 address channel impairments are typically and beneficially used in
15 network communications.

16 So, as Mr. Bertonis explains here in his Reply Declaration, each
17 of Afshary, Mirfakhraei, and the '518 Patent teach the use of multiple
18 mechanisms. So, Afshary describes using filters and error correction
19 protocols. Mirfakhraei describes using filters and error correction
20 codes but also uses multi-carrier with bit loading. And then similarly,
21 the '518 Patent uses multiple methods, power control, error correction,
22 in addition to multi-carrier modulation. It's simply not realistic to say
23 that a person of ordinary skill in the art would discard all the evidence
24 suggesting use of multi-carrier and coax just because Afshary is
25 already using filters and error correction.

1 Now, the Intel v. PACT and LBT v. Apple cases cited in our
2 Reply Brief -- that's at pages 14 and 15 -- confirm that addressing the
3 same problem in different ways does not defeat obviousness. The
4 LBT case, while it's non-precedential, I think that the fact pattern is
5 fairly similar to what we have here. The primary reference there has
6 one power-saving mechanism, and the secondary reference had
7 another. And the Federal Circuit found no issue with adding the
8 second power-saving mechanism, since the two mechanisms saved
9 power in different ways. Similarly, here, filters, error correction, and
10 multi-carrier address channel impairment in different ways. It would
11 be obvious to use them together.

12 Turning to Slide 17, Patent Owner also argues that the
13 combination is inoperable because Afshary and Mirfakhraei describe
14 transmitting signals in different frequency bands. This also is relevant
15 to Dependent Claim 3 that requires the use of a frequency band above
16 the cable television service. So, as shown on Slide 17, Afshary
17 transmits its signals in a band above the cable provider range. So the
18 green box on the left is highlighting where the cable provider network
19 traffic is. So, that's your regular cable television kind of thing and
20 cable modem signals. And on the right, in red, is the range where
21 Afshary operates, including the blue box showing what its preferred
22 embodiment shows a particular frequency.

23 Now, in the combination of Afshary and Mirfakhraei, the multi-
24 carrier signals would be sent in this upper band as taught by Afshary.
25 And as we discussed previously, Afshary has the necessary up-and-

1 downconverters to convert the frequency of the signals to and from
2 that desired band. So, that's shown here on the right in the orange and
3 green boxes.

4 So, finally, the frequency band used in Mirfakhraei's preferred
5 embodiment is based on the example medium of twisted pair, not any
6 limitation on multi-carrier bit loading. And that's discussed in
7 Mr. Bertonis's Second Declaration at paragraphs 59 through 61.

8 Now, Patent Owner also maintains that Mirfakhraei should be
9 disregarded as non-analogous prior art. So, here, on Slide 18, this set
10 forth the two-pronged legal tests for what constitutes analogous art.
11 So, prior art is analogous if it's from the same field of endeavor as the
12 claimed invention or if it's reasonably pertinent to the problem faced
13 by the inventor. Now, only one of these prongs need be met in order
14 to establish that a reference is analogous art that is available for
15 consideration in the obviousness analysis. The Institution Decision
16 found that Mirfakhraei meets both, and the Board should maintain that
17 finding.

18 Now, in its Sur-reply, Patent Owner objected to Petitioner
19 responding to its analogous art arguments in Petitioner's Reply. But
20 as the Corephotonics v. Apple case -- this is cited on page two of our
21 Reply -- makes clear a petitioner is not required to anticipate and
22 address in its petition non-analogous art arguments that a patent owner
23 may raise in its patent owner response. Petitioner's rebuttal of such
24 arguments in its Reply is permissible.

1 Turn to Slide 19. So, now dealing with prong one on field of
2 endeavor. The case law directs us to look to the disclosure of the
3 reference, including the title, field of invention, and claims in view of
4 the common sense of a person of ordinary skill. So, this is discussed
5 in the Airbus and Biggio cases cited in our papers. As we see here on
6 Slide 19, Mirfakhraei states that its field is that of network
7 communication systems, so that's the highlight in the middle of the
8 slide. And it's not limited to twisted pair, telephone line, or DSL
9 protocol. For example, neither the title, field of invention, or claims
10 are limited to twisted pair, and only a single one of its 17 claims,
11 Claim 14, makes a reference to DSL.

12 Now, that Mirfakhraei describes its preferred embodiment
13 using twisted pair wiring does not place the '518 Patent and
14 Mirfakhraei in different fields, especially because Mirfakhraei
15 cautions that its described embodiments do not limit the application of
16 its invention. And as we see in the claims, that the 16 and the 17
17 Claims are not limited to twisted pair or DSL either.

18 Now, Patent Owner attempts to narrow its asserted field of
19 endeavor for the '518 Patent strictly to coaxial cable for the purpose of
20 excluding the relevant teachings of Mirfakhraei. Now, in doing so,
21 Patent Owner ignores the Federal Circuit's admonition that the field of
22 endeavor of a patent is not limited to the specific point of novelty, the
23 narrowest possible conception of the field, or the particular focus
24 within a given field. That's a direct quote from the Unwired Planet
25 decision discussed in our Reply at 4 to 5.

1 Now furthermore, even if the '518 Patent field were so narrow,
2 Mirfakhraei's field is broad. It encompasses use of multi-carrier to
3 improve network communications in general, which would include
4 improving coaxial networks using multi-carrier.

5 JUDGE JURGOVAN: Does it actually say that though,
6 Mirfakhraei?

7 MR. QUALEY: It does not make specific reference to
8 Mirfakhraei -- or I'm sorry -- to coaxial cable.

9 JUDGE JURGOVAN: To coax, right.

10 MR. QUALEY: But from the, again, the common sense of one
11 ordinary skill in the art, we know that multi-carrier is applicable to
12 coaxial cable. It's demonstrated, for example, by the Jacobsen
13 reference.

14 Now and we also have the '518 Patent itself acknowledges the
15 relevance of DSL. So, turning to Slide 20, it incorporates by
16 reference multiple prior references disclosing multi-carrier
17 modulation, both in coax and in twisted pair networks. So, as seen
18 here on the slide, the '518 inventors recognize the relevance of multi-
19 carrier DSL to their invention. It's incorporating, by reference here,
20 two books -- or well, they may be articles. I apologize. They may be
21 articles that are directed to DSL.

22 And as another example, at the bottom of column 3 of the '518
23 Patent, it references U.S. Patent Number 5,959,967 to Humphrey,
24 which is a multi-carrier OFDM system over twisted pair. So, these
25 are further evidence that the '518 Patent's field of endeavor is not

1 limited to coaxial cable networks even if its claims are so limited.

2 And again I refer back to the Unwired Planet decision where the field
3 is not limited to the point of novelty.

4 Now, turning to Slide 21, here we have some exemplary
5 citations to other record evidence. As I mentioned a moment ago, the
6 Jacobsen 94 and 97 on the left-hand side. And also, on the right-hand
7 side, this is the Isaksson '174 patent, so Exhibit 1029, which is also
8 incorporated by reference in the '518 Patent at column 8, lines 19 to
9 23. And here, it's referencing specifically -- I direct your attention to
10 the lower highlight -- enable premises distribution of VDSL signals
11 over coaxial cable. So, here, the '518 Patent is acknowledging DSL
12 over coax.

13 So, all of this knowledge, which would be part of the person of
14 ordinary skill in the art's common sense approach to field of endeavor,
15 support the '518 Patent's focus on coaxial cable networks does not
16 place it in a field of endeavor distinct from that of Mirfakhraei.

17 Now, I also want to quickly address something that came up in
18 Patent Owner's Sur-reply. They cite to a district court order; that's
19 Exhibit 2005. It's cited to in the Sur-reply at page 23 as support for
20 their argument that Mirfakhraei -- or excuse me -- that the '518 Patents
21 field is limited to coaxial cables. I want to make two quick points
22 there.

23 First, the district court order is dealing with an analysis under
24 Section 101 eligibility, which is focused on the problem addressed by
25 the claims, and it doesn't have anything to do, any analysis related to

1 analogous art and the field of endeavor. Second, the quote that the
2 Patent Owner included in their Sur-reply is the court relaying what
3 Patent Owner's argument was to the court. It's not -- that's not the
4 court's specific opinion on the claim.

5 Now, turning to Slide 22, so here, now we're talking about
6 prong two, the reasonably pertinent problem. And Mirfakhraei is
7 reasonably pertinent to the problems that the '518 Patent addresses.
8 So, Slide 22 shows that Mirfakhraei addresses a problem faced by the
9 '518 Patent adapting to channel impairments and attenuation across
10 channels. So, this quote from the top, on the top of the slide here, is
11 from the '518 Patent and talks about the problem of multi-path and
12 high attenuation. Mirfakhraei addresses attenuation, as shown in the
13 lower one; conventional phone lines have frequency-dependent
14 attenuation through the use of bit-loaded multi-carrier modulation in
15 order to utilize the subchannels that are less impaired, as we've
16 discussed.

17 Now, Patent Owner alleges that the problem faced by the '518
18 Patent is specific to splitters. While splitters may be a cause, the
19 actual problems are the signal attenuation and multi-path. And those
20 problems occur in all sorts of networks. And notably, the '518 Patent
21 does not attempt to change the splitters themselves. It's changing the
22 way the modulation occurs across the network to compensate for
23 those problems. And they do that through bit loading.

1 Now multi-carrier, as a side note, multi-carrier is also useful to
2 address multi-path, not just attenuation, and that's explained by
3 Mr. Bertonis in paragraphs 127 and 139 of his First Declaration.

4 So, finally, Patent Owner seems to be ignoring that reasonably
5 pertinent does not mean limited to the very same context addressed by
6 the '518 Patent. You know, quite frankly, the phrase reasonably kind
7 of cues us into that. And the impairments the '518 Patent addresses
8 are by no means unique to coaxial networks.

9 Turning to Slide 23, I want to briefly touch on the dependent
10 claims. So this is Dependent Claim 2 of the '518 Patent. And here
11 we're talking about the backup combination of Afshary, Mirfakhraei,
12 and Welles, Ground B. And Mirfakhraei has two things going on. It's
13 a means for determining signal activity and then selecting a frequency
14 band for operation that's not used by other services. As we discussed
15 before, Afshary clearly shows using a different signal band. And in
16 Welles -- we have Figure 4 cropped here at the bottom -- discloses a
17 network device that uses envelope detectors to determine signal
18 activity in a network in order to select an unused frequency band for
19 the network device to use.

20 And as noted here, Patent Owner doesn't really dispute that
21 these limitations are met. They continue to argue against the
22 combination of Afshary and Mirfakhraei.

23 JUDGE JURGOVAN: So, Counsel, I think you offered some
24 construction for what this means for determining signal activity is.

1 MR. QUALEY: Yes. In the '518 Patent, it discloses an
2 envelope detector -- and that's at column 11, lines 24 to 26 -- as a
3 means for -- it's a way to detect signal activity. And here, Welles has
4 that same structure with the envelope detector.

5 JUDGE JURGOVAN: So you, in the Petition, identified this as
6 what? The --

7 MR. QUALEY: Yes.

8 JUDGE JURGOVAN: The correspondence? Thank you.

9 MR. QUALEY: Yes. I'm afraid I don't have a pin cite to the
10 Petition for you. I'm sorry.

11 Now, turning to Slide 24, so this is Dependent Claim 3. And
12 again, we touched on this before where it's requiring that the
13 upconverter translate the modulated data to an RF carrier frequency
14 above the frequency used by the cable television service. This is
15 shown in Afshary. And the Mirfakhraei multi-carrier signals would
16 be modulated -- or excuse me, no -- would be up-converted to this
17 band and down-converted when being received, in accordance with
18 what is disclosed in Afshary.

19 And finally, turning to Slide 25, this is another Independent
20 Claim, Claim 4. It has two means plus function elements, but it's
21 actually, it's claiming just the network device rather than the whole
22 system which is claimed in Independent Claim 1. Again, Patent
23 Owner does not make any arguments particular to Claim 4. We did
24 address these means plus function elements in our Brief. And in both

1 cases, the means elements are essentially computer processors with an
2 algorithm.

3 And here, I do have pin cite for you at Petition page 25, 26. I'm
4 pretty confident that the means element for Claim 2 is probably at that
5 same pin cite. And in both cases, these means elements are shown by
6 Mirfakhraei's computer or processor, discussed in our Petition at
7 pages 63 and 68.

8 I'm happy to take any questions from the board.

9 JUDGE JURGOVAN: None from me right now. I don't see
10 any from Judges Moore and Howard.

11 JUDGE HOWARD: I don't have any questions.

12 JUDGE JURGOVAN: So, we'll go to Patent Owner.

13 MR. HALVERSON: Good afternoon, you, Honors.

14 Erik Halverson from K&L Gates, on behalf of Patent Owner. With
15 me today is going to be Mr. Jared Lund, who's going to be handling
16 the analogous art portion of today's argument. But before we get into
17 that portion, I want to give a little bit of background and groundwork
18 on what the '518 Patent is and what the prior art is.

19 So, turning to Slide 2, the '518 Patent is a specific network
20 performing specific functionality. And so, it's a coax-specific patent
21 claiming specific components, specific hardware, and that network,
22 local area network, having a coaxial splitter connected to coaxial
23 wiring and network devices, is something the Petitioner sets aside
24 throughout its analysis. And what I mean by that is, the whole crux of

1 the '518 Patent is where and how this data communication is
2 happening.

3 And so, we look at Slide 3; we see Claim 1 of the '518 Patent.
4 And I want to focus on that middle callout of Claim 1, the cable
5 wiring. So, this cable wiring has to comprise a splitter with a
6 common port -- that's the input -- plurality of tap ports -- those are the
7 outputs -- and a plurality of segments of coaxial cable connecting
8 between the splitter tap ports and the network devices. And then what
9 happens?

10 So, the second highlighted portion here on Slide 3 is those
11 network devices are transmitting signals back and forth to each other
12 in the form of probe messages. Those probe messages travel through
13 the tap ports of that splitter to each other. And the network devices
14 analyze those received probe messages and are able to determine
15 channel characteristics.

16 But it's unquestionable that the communication of Claim 1 is
17 happening over that splitter. Mirfakhraei simply doesn't have that
18 kind of a disclosure in it. It's fundamentally different technology. It's
19 not analogous, as Mr. Lund will talk about in a second, but it's a
20 twisted pair DMT, discrete multi-tone reference. Throughout the
21 entire specification, Mirfakhraei explains how its telephone network
22 or how its DMT transceivers are functioning. So, Mirfakhraei does
23 not describe a transmitter or a receiver that could function over a
24 coaxial splitter such as is required in the claims of the '518 Patent.

1 So, if we flip ahead to Slide 4, so why does the '518 Patent do
2 this? Well, the '518 Patent is solving for impairments that the
3 inventors of the '518 Patent found to be present in home wiring that
4 restricted high-bandwidth communication between network devices in
5 the home. Now, the proposed solution there was to transmit probe
6 messages to estimate channel characteristics. There are a lot of other
7 things that are also proposed as solutions in the specification of the
8 '518 Patent. But the claims themselves are specific to this probe
9 message implementation. And what does the '518 Patent do with that?
10 It solves for various problems that exist in these multi-path
11 environments.

12 Turning to Slide 5, we see an example of where one -- or how
13 one of these networks is set up. And so, on Slide 5, we have Figure 1
14 of the '518 Patent. There's a very similar disclosure for Figure 2 of the
15 '518 Patent as well. But the crux of today's conversation is about
16 those coax splitters and what it is that they are and what it is that they
17 do.

18 So, here we see splitters with various tap ports. The splitter at
19 the top of this figure has three tap ports, two that go down to other
20 splitters, one that goes down to a television. And each of those
21 downstream splitters have two separate tap ports each. On the left, we
22 see one that splits the signal to go to a TV and to a cable modem, and
23 on the right, we see one that splits a signal to go to the FM receiver
24 and a television. And so, what is happening here is these network
25 devices are sending probe messages to each other in order to ascertain

1 certain quality information about the communication path between
2 those two.

3 And so, what do we see in the prior art? Well, Afshary, on
4 Slide 6, we see Figure 1 of Afshary on the left-hand side, an annotated
5 version of it. And so, Afshary has multiple splitters. Again, it's got
6 various cable LAN adapters, but Afshary is a single-carrier reference,
7 and it's intentionally done that way. And we'll get to that in a little bit
8 more detail after Mr. Lund. And on the right-hand side, we see what
9 Mirfakhraei is, and Mirfakhraei is a transceiver-to-transceiver
10 communication. It's a point-to-point DMT connection. There's no
11 disclosures of splitters. There's no disclosures of coax cables.

12 And we'll just dive in, after Mr. Lund, into why it is that a
13 person of ordinary skill in the art reading these two references, which
14 are the references of the challenge that the Petitioner put together,
15 why a Petitioner -- or a person of ordinary skill in the art reading these
16 two references would not have been motivated to combine them to
17 arrive at the claims of the '518 Patent.

18 Briefly, before we hand the podium over, I want to talk about
19 the level of skill in the art. So, the '518 Patent is replete with
20 references to coax cables: the title, the abstract, the claims, technical
21 background. There's a lot of detail, a lot of description, a lot of
22 limitations tied to coax cables. And because of this, a person of
23 ordinary skill in the art in the field of the '518 Patent has to have coax-
24 specific knowledge. And Mr. Bertoni agrees. Mr. Bertoni said, yes,

1 that's part of what his proposed level of skill in the art has. It's not
2 explicit.

3 And so, it's our position that it needs to be explicitly articulated.
4 But we're not saying that Mr. Bertonis is unable to opine from the
5 level of a perspective -- or from the perspective of somebody with that
6 type of coaxial cable experience. But it is important that we
7 remember as we're analyzing both the analogous art, as well as the
8 obviousness positions that are advanced in the Petition, that this
9 person has that coax-specific knowledge.

10 So Mr. Lund is going to handle -- briefly.

11 MR. LUND: Good afternoon, Your Honors. Jared Lund for
12 Patent Owner Entropic Communications. As Mr. Halverson
13 introduced, I'll be covering the issue of analogous art.

14 Turning to that issue, starting on Slide 11, both parties apply the
15 same two-pronged test. One, whether the reference is reasonably
16 pertinent to the particular problem of the '518 Patent, and two,
17 whether the reference is from the same field of endeavor. Mirfakhraei
18 is not analogous art because it does not satisfy either of these two
19 prongs.

20 Starting with the first prong on Slide 12, Mirfakhraei is not
21 reasonably pertinent to the problems addressed by the '518 Patent.
22 Before we dive in, I want to briefly introduce Mirfakhraei, which is a
23 secondary reference the Petitioner uses in their grounds to challenge
24 Independent Claim 1 of the '518 Patent. This reference is directed to
25 bit loading for multi-carrier modulation, and at a high level, it

1 determines noise on each subchannel and applies a corresponding bit
2 loading.

3 On Slide 48, you could also see Figure 1, which is a transceiver
4 which applies such a process in Mirfakhraei.

5 We can turn back to Slide 13, and I'll get into the substance of
6 this prong, starting with the '518 Patent. The '518 Patent addresses
7 impairments that are specific to an in-home Network. On Slide 13 on
8 the left-hand side, you see a callout which is Exhibit 1001, the '518
9 Patent, lines 4 -- or column 4, lines 36 to 46, which states the present
10 invention uses a form of multi-carrier modulation OFDM to transmit
11 digital data signals through the coaxial cable wiring installed in
12 homes.

13 And this type of in-home network is distinguished from the
14 prior art, as you can see on the right-hand column. There, the '518
15 Patent states the prior art references address communicating between
16 a cable headend in in-home units but does not address the
17 impairments present in the home wiring. And these two exemplary
18 callouts show that the '518 Patent is specific to an in-home network.

19 And those impairments, going to Slide 14, include inter-tap port
20 isolation. The left-hand callout gives a good summary of the issues of
21 inter-tap port isolation, which Mr. Halverson introduced earlier. But
22 at a high level, these terminal devices in a LAN are required to
23 communicate with one another across the tap ports of splitters. Based
24 off this communication, there's undesirable signal loss. And this issue
25 is directly captured in Claim 1 of the '518 Patent.

1 Claim 1 of the '518 Patent includes -- or recites cable wiring
2 comprising a splitter and a plurality of segments of coaxial cable.
3 And it further requires the network devices to communicate with each
4 other through this cable wiring. Slide 13 and 14 do a good job of
5 showing how the type of Network in the '518, an in-home network, is
6 specifically tethered to the issues that it faces. In other words,
7 because the in-home network has this type of configuration which
8 requires network devices to communicate across coaxial splitters, the
9 network is faced with inter-tap port isolation.

10 Turning to Slide 15, Patent Owner's position is further
11 confirmed by the technical field of the '518 Patent. The technical
12 field, which is the left-hand callout on Slide 15, specifically requires,
13 or states, this invention relates to broadband communication networks
14 and specifically to communications using coaxial cable building
15 wiring. This is also reflected in each embodiment of the '518 Patent.
16 And an example there is shown in Figure 1, which introduces the in-
17 home network configuration. We highlighted the customer premise,
18 and as you can see, and as you saw earlier, you'll have the splitters
19 with the various terminal devices.

20 JUDGE JURGOVAN: Counsel, just one question, and that is
21 are splitters ever used between the headend and the home or building?
22 Is that in the record at all?

23 MR. LUND: Sorry. I might be misinterpreting your question.
24 Are splitters ever used between the headends and the terminal
25 devices?

1 JUDGE JURGOVAN: Yeah, in the home or the building? So,
2 in other words, in the distribution network, not, you know, outside of
3 the home or outside of the building?

4 MR. LUND: Yes, I believe splitters are used in distributing
5 signals. But as far as I'm aware, there's nothing in the record that
6 suggests that the coaxial splitters that are claimed have this type of
7 network where the terminal devices communicate across those
8 splitters.

9 JUDGE JURGOVAN: Can you explain what you mean by
10 across the splitter?

11 MR. LUND: Yeah. So, turning to Slide 15, we have the
12 splitter on the top.

13 JUDGE JURGOVAN: Yep.

14 MR. LUND: And I guess more precisely, it's across the tap
15 ports. So, while there is, for example, splitters that distribute signals
16 downstream to various buildings, these splitters don't have tap ports,
17 and we don't have terminal devices communicating across these tap
18 ports.

19 JUDGE JURGOVAN: Thank you.

20 MR. LUND: Turning to the second prong, which is Slide 16,
21 the '518 Patent and Mirfakhraei are from different fields of endeavor.

22 Starting with Slide 17, each aspect of the '518 Patent is specific
23 to coaxial cabling. Contrary to Petitioner's argument, the Patent
24 Owner does not limit the '518 to its specific point of novelty.
25 Everywhere you turn in the '518 Patent, they specify the physical

1 medium. And this is important, going back to its disclosure on they're
2 implementing a network communication over existing coaxial cables
3 in an in-home network -- the title, abstract, claims, and finally the
4 technical field. And collectively, when you dig into the '518 Patent,
5 you're left with the conclusion that its field of endeavor is specific to
6 coaxial cabling.

7 Turning to Slide 18, Mr. Bertonis's -- Petitioner's expert --
8 analysis is unreliable. If I could turn your attention to the table there,
9 specifically the far right column, Mr. Bertonis uses the title, field of
10 invention, and claims to conclude that Mirfakhraei is not limited to
11 twisted pair. In essence, he argues that because Mirfakhraei does not
12 specify the physical medium in these aspects, its field of endeavor is
13 broader. I have two points there.

14 First, if that same approach is applied to the '518, you're left
15 with the conclusion that the '518 Patent is specific to coaxial cable.
16 When you consider the same aspects, the title, field of invention, and
17 claims, again, you come to the conclusion that the field of endeavor is
18 specific to coaxial cable.

19 My second point is in a reference to Institution Decision.
20 There, the Board found that Mirfakhraei was not limited to twisted
21 pair. But again, when you dig into Mirfakhraei -- and that brings me
22 to Slide 19 -- you're left with the conclusion that it's specific to twisted
23 pair.

24 Here, on the top callout, Mirfakhraei recites, hybrid circuit 150
25 transmits the analog signal from DAC 140 to telephone lines 152

1 coupled to the hybrid circuit 150. And while yes, there are broad
2 aspects of Mirfakhraei -- the title and the preamble -- a POSITA
3 reading Mirfakhraei would understand this single exemplary
4 embodiment, which has specific hardware components that are
5 designed to function over twisted pair, does not encompass the coaxial
6 cable network of the '518 Patent.

7 And for these reasons, Patent Owner submits that Mirfakhraei
8 is not analogous, and it does not share the same field of endeavor of
9 coaxial cables of the '518 Patent.

10 Unless the board has any other questions, I'll submit the rest of
11 my time to Mr. Halverson.

12 MR. HALVERSON: Thank you.

13 JUDGE JURGOVAN: None from me.

14 MR. HALVERSON: I just want to briefly clarify one thing on
15 splitters outside in the record. And so, there are devices that are in
16 references that are part of the record where a signal is divided outside
17 of the home. We see that, for example, at the tap here, which is just as
18 the cable drop into the house. That's a different -- there is no record
19 that that component out there is the same as the splitter that is
20 claimed, which we see in the rest of the figures where you have a
21 common port and a plurality of tap ports.

22 And the reason that Mr. Lund was talking about communicating
23 across is, while the '518 Patent and, indeed, Afshary describe how one
24 device within the home may communicate with another device in the
25 home, there's nothing in the record describing how one device in one

1 home would communicate with another device in another home. And
2 that across would be across the tap, the cable drop, and that's what's
3 lacking. And so, to answer Judge Jurgovan's question with a little bit
4 more of a finer point, the claimed splitter and the claimed
5 communication doesn't appear outside of the home anywhere in the
6 record other than the '518 Patent.

7 JUDGE JURGOVAN: Just a follow-up on that, so would this
8 tap introduce sort of these multi-path and other issues that a coaxial
9 cable network within a LAN would also have?

10 MR. HALVERSON: So, the multi-path issues arise in the LAN
11 because the signal is going through the tap port. So, those tap ports
12 are isolated ports in the coaxial splitter. And so, when you're
13 communicating downstream from the cable headend to the devices,
14 those ports are isolated to ensure that the signal going to one isn't
15 interfering with the signal going to another.

16 But when you start trying to communicate upstream and then
17 back downstream, that isolation starts to cause problems and
18 reflections on that signal. And so, that's the reflection and issue that
19 exists. It's only when you come back in the other direction and then
20 try to come back down to the other network device. The tap port has
21 either stuff coming through it in one direction or through it in the
22 other direction, but you're not looping back.

23 JUDGE JURGOVAN: Yeah. So, Afshary does disclose these
24 splitters though in the home, right?

1 MR. HALVERSON: Yes. So 38 is a coax splitter. We see it
2 in the middle, on Slide 6, of Figure 1, on the left-hand side. And 22 is
3 a coax splitter.

4 But in Afshary, what Afshary does is its communications goes
5 through the tap ports, but it has its own way of solving for the
6 problems that exist in the Afshary network. And it is a single-carrier
7 network. And so, Afshary proposes and adopts forward error
8 correction, other filtering techniques, and through the processes that
9 the cable LAN adapters of Afshary have, Afshary's network works
10 perfectly for what Afshary is doing. And so, there's no reason, there's
11 no motivation to go and try to add something else, add that additional
12 complexity. And I've got a little bit more detail on the complexity,
13 but to add that additional complexity for what is otherwise a very
14 straightforward, basic single-carrier, for lack of a better word, dumb
15 network.

16 JUDGE JURGOVAN: Thank you.

17 MR. HALVERSON: So, Afshary is pretty clear. And on Slide
18 23, we have a couple of callouts for what it is that Afshary has
19 identified and what it is that it is trying to solve for and cost-effective,
20 quick, secure transmissions throughout its local area networks. But at
21 its core what it's doing is a very basic implementation of device-to-
22 device communications. And so, Mr. Bertonis, in his deposition,
23 Exhibit 2006, at page 42, confirmed that this is one of what Afshary
24 was trying to maintain and manage.

1 Now, from the Institution Decision -- or before the Institution
2 Decision, when it was prepared, the Board did not have the advantage
3 of Mr. Garrett's testimony. And so, some pieces of evidence that are
4 now before the Board that were not before the Board at Institution are
5 Mr. Garrett's opinions about how there are technical drawbacks
6 related to the addition of the cost and complexity that would have led
7 a person of ordinary skill in the art not to make the proposed
8 combination, suggesting that the Petition's theories are driven by
9 hindsight to try to arrive at the '518 claims.

10 Mr. Garrett also provides some detail around the issues and
11 modifications that would need to be made to incorporate Mirfakhraei's
12 multi-carrier modulation into Afshary's much more simple, cost-
13 effective network.

14 And then Mr. Bertonis now is relying on this catch-all
15 knowledge of skill in the art, or within the skill of a person of skill in
16 the art, to try to push aside Mr. Garrett's analysis. And so, there's
17 some examples of that in his Supplemental Declaration, his being
18 Mr. Bertonis, and for example, paragraph 52.

19 And so, Mr. Garrett, in his Opening Declaration, Exhibit 2001
20 -- we're now on Slide 26 -- confirmed some of these costs and
21 complexities that would have been added if this proposed combination
22 were to happen. And then he goes on to explain why that's not the
23 case, why you wouldn't have done those. And so, he concludes, or
24 sets forth in paragraph 83 of his Declaration, that these requirements

1 that would have to be accounted for add unwanted complexity and
2 cost to Afshary's network.

3 And so, Counsel for Petitioner brought up a case about whether
4 or not a businessman would make a decision. And this has nothing to
5 do with the businessman. These are costs that are associated with the
6 technical implementation. So, there are costs that would be associated
7 with conveying to a user in the home that they need to go make these
8 changes to their cable LAN adapters. There are costs in the form of
9 electrical consumption, costs in the form of time for transmission. All
10 of these things are other costs that would need to be accounted for.

11 So, if we turn to Slide 27, here's an example of one of those
12 costs. So, Mr. Garrett's Declaration, at paragraph 90, explains there is
13 this complex parallel processing that requires precise gain, frequency,
14 and phase control in order to do this higher-order QAM modulation.
15 These processing costs are contrary to what it is that Afshary is very
16 clear its goal is. Now, in Petitioner slides -- Yes, sir.

17 JUDGE MOORE: Yeah, excuse me, Counsel. This is
18 Judge Moore. I understand your argument that a person of skill in the
19 art would not do this, but is there anything in the record indicating that
20 they could not do it, that it would not be feasible to do it?

21 MR. HALVERSON: I don't believe that there is.

22 JUDGE MOORE: They couldn't make it work?

23 MR. HALVERSON: I don't believe that there is any evidence
24 in the record that they could not do it. But I also don't believe that

1 there is any evidence in the record that they could do it. And so, we
2 would submit that that's a barrier to meeting the Petitioner's burden.

3 So, Petitioner's Slide 14 has a callout on it from Jacobsen 94.
4 And I don't have that available for the screen, so I just want to call out
5 it's Jacobsen 94, page 306, which is Exhibit 1018. And the bottom
6 highlight there reads, in contrast, the single-carrier system requires an
7 enormous increase in complexity to achieve a data throughput
8 comparable to the multi-carrier system -- multi-carrier systems,
9 excuse me.

10 Now, what that's describing is a very specific model that
11 Jacobsen was running in this academic paper to compare a specific
12 form of equalization that was being used with a specific
13 implementation of multi-carrier transmissions. So, respectfully, the
14 slide kind of short-circuits what it is that Jacobsen 94 was actually
15 analyzing. And it's not really fair to read that one sentence in isolation
16 and say that single-carrier systems have an enormous increase in
17 complexity. While the text does indeed have those words, it needs to
18 be read in the context of what Jacobsen 94 actually is proposing and
19 the conclusions that it was drawing.

20 So, if we flip forward to Slide 28, we see some additional
21 evidence about the time cost associated with the proposed
22 combination in the Petition. So this time cost associated with
23 packetizing, defining a preamble, defining the handshake signal, these
24 are additional costs that a person of ordinary skill in the art would
25 look at and go okay, this is going to steer me in a different direction.

1 It doesn't make sense for me to try to incorporate these teachings of
2 Mirfakhraei into the simple, low-cost, straightforward network of
3 Afshary.

4 And if we go to Slide 29, we see a couple of more examples of
5 this time cost and the difficulties associated with the proposed
6 combination that are unaddressed by Mr. Bertonis. And so, Afshary,
7 which is a simple, straightforward network, Mr. Bertonis agrees that
8 this proposed combination would both add processing costs as well as
9 financial costs. But the argument here is not that it is limited to
10 financial costs.

11 Now, Petitioner or the Petition has shifted a little bit as far as
12 what this implementation would look like. So, in the Petition, it
13 advances a theory that you would incorporate Mirfakhraei's multi-
14 carrier modulators and demodulators into an ASIC. But there's really
15 not any development of what that looks like or how that would look
16 like.

17 And so, when the argument was made in the Patent Owner
18 Response at page 40, the Petitioner came back and said, well, it's just
19 all within the capabilities of a person of ordinary skill in the art. It's a
20 very conclusory section of the Reply. It's a very conclusory section of
21 Mr. Bertonis's Second Declaration as far as how this implementation
22 would actually work.

23 And so, if you look back at the Petition at 43 and 44, there's
24 simply no argument that this would be within the skill of a person of
25 ordinary skill in the art. Rather, what the Petition is doing at 43 and

1 44 is simply parroting back KSR factors. There's no analysis there,
2 there's no development there of how or why the alleged modifications
3 to Afshary's ASIC are well within the capabilities of a person of
4 ordinary skill in the art.

5 So, if we flip forward a little bit to Slide 34, there are a couple
6 of non-existent problems that the Petition relies on as a basis to make
7 this combination which simply underscore the hindsight that drives
8 the Petition's analysis. First is the addition of Mirfakhraei's
9 modulation would allegedly improve the reliability and robustness of
10 Afshary. And the second that we'll talk about is the addition of
11 Mirfakhraei's modulation would address variable frequency response
12 in the harsh coax cable medium of Afshary.

13 So, on Slide 35, first, there's no indication that there were any
14 problems with reliability or robustness in Afshary. Afshary was
15 pretty clear. It has a robust network. It has a reliable network. So
16 why is it that a person of ordinary skill in the art reading these two
17 references would have then gone forth and tried to make that
18 combination? Afshary always -- already has achieved what it is that it
19 was trying to do. Its goal of a cost-effective network means that a
20 person of ordinary skill in the art reading Afshary would understand
21 that it was specifically set up to accomplish those goals. Now, the
22 Petition simply --

23 JUDGE HOWARD: This is Judge Howard. So, is it your
24 argument that no person of ordinary skill in the art would ever try to

1 improve that reference because it's perfect? Is that -- am I
2 understanding that as your argument?

3 MR. HALVERSON: No, I think that's taken a little bit too far
4 to the extreme. I think the argument is these --

5 JUDGE HOWARD: And the reason why you think it's taken to
6 extreme is that persons of ordinary skill in the art are always going to
7 look to what comes later to see whether there are improvements that
8 can be made to what exists, even if it works quick enough. And that's
9 what the Supreme Court tells us in KSR.

10 MR. HALVERSON: That is what the Supreme Court says in
11 KSR. Correct. But I do think that --

12 JUDGE HOWARD: So --

13 MR. HALVERSON: Sorry. Go ahead.

14 JUDGE HOWARD: So, why does it -- so, it shouldn't matter
15 that Afshary says that it, you know, meets whatever requirements it's
16 trying to meet? The question before us is whether a person of skill in
17 the -- ordinary skill in the art, it would have been obvious to modify it.
18 And so, I guess there's a disconnect in your reasoning.

19 MR. HALVERSON: Well, and so the hang-up here is why is
20 the person of ordinary skill in the art doing that? What is it about the
21 references themselves and the skill of that person -- or that knowledge
22 of that person of ordinary skill in the art that drives that change? And
23 that's just not described well enough in this proceeding to set aside
24 what Afshary says in plain English in its text to make such a
25 fundamental change to what Afshary is. And so, sure, we can sit here

1 today, and we can say multi-carrier modulation; it's great; it's all over
2 the place. But at the time, there's simply no evidence that people were
3 looking at doing this or putting it into a coaxial network in the home.

4 And so, we look at the forward error correction encoder, for
5 example, 92 of Afshary, or the other filters that are described
6 elsewhere in Afshary -- I believe it's paragraphs 44 and 45 -- that help
7 address the very problems that the Petitioner said would have driven
8 somebody to go look somewhere else. And so, it's a little bit
9 disingenuous to say, look, there are problems, and ignore the rest of
10 the teachings of Afshary that solve those problems and then rely on
11 those problems. Now, maybe there's a different reason to go look to
12 multi-carrier references, but not the reasons that are already addressed
13 in Afshary.

14 JUDGE HOWARD: So, I have a problem because I've been
15 reversed by the Federal Circuit for doing the analysis that you've just
16 said. I've had -- and I believe it was the Qualcomm case, where the
17 Petitioner had relied on something that was in the background of the
18 prior art section of a patent and that the patent itself went to cure.
19 And I went and said, as you're saying, well, the prior art -- the record
20 as a whole is already curing this problem. Why would someone of
21 ordinary skill in the art go and look at this?

22 And the Federal Circuit said that you're wrong. Just the fact
23 that somebody managed to come up with a better solution somewhere
24 else or in the reference doesn't mean you still can't look at what the
25 reference -- something else in the reference and trying to improve it.

1 MR. HALVERSON: So, I don't have any -- or there's no
2 concern or argument that you can't improve upon a reference that has
3 already solved a problem. The issue here is why is it that you're doing
4 that? And if you're trying to improve upon a reference for the same
5 reasons that the reference exists, that can't be the reason to improve
6 upon that reference. So, if Afshary exists because in part it proposes
7 using forward error correction to achieve a robust network, you can't
8 rely on the fact that maybe you want a more robust network to then
9 advance and bring in something else because that's what Afshary has
10 already done.

11 JUDGE HOWARD: Why not? Can't you make it even more
12 robust than Afshary has already done? And that might be -- there's
13 your motivation. Just because you've made it more robust, made the
14 system robust, doesn't mean the person of skill in the art doesn't want
15 to make it even more robust.

16 MR. HALVERSON: Perhaps. I don't know that that's the
17 argument that's been raised here. I think the argument that was raised
18 by the Petition was we want to make it robust, not we want to make it
19 more robust. And I think there's a difference there. And I don't think
20 it's semantics. I do think the difference between using the reason why
21 the reference exists and what the reference purports to advance upon,
22 its state of the art for the underlying motivation versus trying to build
23 upon that, I think is important. And that's a distinction that I think is
24 getting lost.

1 And so, if we turn to Slide 37, so the other reason that the
2 Petitioner alleges the combination would be have -- would be made
3 was to address variable frequency response. Well, variable frequency
4 response is unbelievably broad. There's variable frequency responses
5 in every single network that exists out there. That's not a problem
6 that's tied to anything in the proceeding, as much as all references
7 everywhere. And so, Afshary again already addresses variable
8 frequency response. But you kind of think about this like treating the
9 symptom versus treating the disease.

10 So, variable frequency response is kind of like a fever. And so,
11 you can have a fever because you have a whole host of different
12 problems with you, but that doesn't mean that you're going to address
13 those problems in a certain way just because you have a fever. You
14 have to figure out what the underlying disease is because you treat
15 each disease differently. So, variable frequency response being a
16 fever doesn't mean that you're going to use the treatment for the flu.
17 You're not going to take Tamiflu. If you have a fever from some
18 completely unrelated problem, you have an infection, Tamiflu is not
19 going to do anything for your infection.

20 And I want to briefly go back to Petitioner Slide 10 where they
21 identify, again, Jacobsen 94. And on Petitioner Slide 10, there are
22 certain problems that were being modeled -- again, in Jacobsen 94 --
23 that there's no evidence in the record that they are at all applicable to
24 what's going on in Afshary, in Mirfakhraei, or in the '518 Patent.

1 And so, the Petition really amounts to, hey, here's a bunch of
2 stuff. We've got a network over here that has coax. We have multi-
3 carrier processing over here. This network describes over-splitter
4 communications. This reference doesn't. This is a completely
5 different communication protocol; this is DMT. And then over here,
6 we've got other references that talk about coax in the abstract,
7 handling multi-carrier reference or multi-carrier communications.
8 And so, we're just going to throw everything together and say, look, it
9 was known, and therefore it's obvious, but that's not the obviousness
10 test.

11 And so, these problems that we see on Slide 38 again, repeated,
12 are simply not problems that would have motivated a person of
13 ordinary skill in the art to actually have made or in the direction of the
14 combination that was proposed.

15 Now, on Slide 40, we see again Figure 1, and Afshary's
16 network is -- Afshary's disclosure is pretty clear. It says, look, we
17 have a very clear, clean medium here. And using this very clear,
18 clean medium, we're going to send signals from one cable end adapter
19 to another cable end adapter in order to identify -- or in order to
20 communicate across the different components.

21 Now, the '518 Patent goes one step further and says we're going
22 to transmit probe messages because we're going to use those probe
23 messages for a specific reason. These probe messages are going to be
24 used to determine the bit-loading scheme based on what it is that we

1 get back. But these probe messages, again, go through the cable
2 wiring that we saw at the very beginning of the day.

3 Conversely, Mirfakhraei is a point-to-point network. There is
4 no discussion. There is no disclosure. There is no examples of how
5 that would work in a coax local area network, over a tap port of a
6 splitter, and then back through the same tap port of that splitter. Now,
7 Mirfakhraei is a DMT reference, and DMT at the time was indeed a
8 point-to-point reference -- or point-to-point communication protocol.
9 And so, implementing this specific scheme from Mirfakhraei into
10 Afshary would have led to probe messages that would have been
11 unable to accurately identify a specific channel.

12 Now, Mr. Bertonis confirmed his analysis didn't go in and
13 explain how that would work. He said that you're going to use this
14 handshake protocol in order to achieve bit loading. But all he said
15 when asked about it in deposition was, well, it'd be up to, you know,
16 whoever it was -- doesn't provide enough detail to explain how and
17 why a person of ordinary skill in the art would have made the
18 proposed combinations.

19 And then finally, Mr. Bertonis's opinions are riddled with
20 hindsight. As he was going through what he was doing in his
21 Declaration, his Opening Declaration, he was looking at the '518
22 Patent. He was comparing the '518 Patent to Afshary and trying to
23 find ways to map the similarities to what was missing. And then, he
24 then again compared what it was in Mirfakhraei back to the disclosure

1 of the '518 Patent and combined these two things. And that's an
2 incorrect way of going through the obviousness analysis.

3 Now, briefly, I want to talk about Claim 3, which has a specific
4 limitation in it tied to where in the frequency spectrum the
5 communications are happening. So Claim 3 recites wherein the
6 network shares the cable wiring with a cable television service and the
7 network device upconverter translates the modulated data into an RF
8 carrier frequency above the frequency used by the cable television
9 service.

10 Now, the Petitioner, at its Slide 24, put up a slide from Afshary
11 and said here we have the client data operating frequency in the left-
12 hand side of Figure 3 of Afshary, and then on the right-hand side of
13 Figure 3, we have what the adapter signal operating frequency is. But
14 what it doesn't have on here is the disclosure from Mirfakhraei about
15 where its communications operate or how its communications --
16 where on the frequency spectrum its communications work.

17 Mirfakhraei is pretty clear. If you look in the paragraphs 2 and
18 4 of Mirfakhraei, it explains that high frequencies are difficult to
19 accurately transmit using systems such as conventional telephone
20 lines. And that's Mirfakhraei at paragraph 2. It goes on and says, in
21 paragraph 4, specifically, subchannels having low carrier frequencies
22 may perform differently from subchannels having high carrier
23 frequencies.

24 A person of ordinary skill in the art reading Mirfakhraei is
25 going to understand that the DMT that's described in Mirfakhraei is

1 specific to the conventional telephone lines that are described
2 consistently and repeatedly throughout Mirfakhraei. And so, because
3 of that, you're not going to arrive at a situation where, as the Petition
4 alleges, you're putting the carrier frequencies up at that much, much,
5 much higher band in Figure 3, as they have on their Slide 24. And as
6 a result, a person of ordinary skill in the art would not have combined
7 Mirfakhraei and Afshary to arrive at the subject matter of Dependent
8 Claim 3.

9 Unless there are any questions, I reserve my 10 minutes.

10 JUDGE JURGOVAN: None from me. Okay.

11 Let's go to Petitioner for a rebuttal.

12 MR. QUALEY: Thank you, your honors. First, I'd like to
13 address analogous arguments that were raised by Patent Owner.

14 So, we're looking here at Slide 17 of Patent Owner's
15 demonstratives. They've highlighted down here, in the lower right-
16 hand corner, specifically to communications using coaxial building
17 wiring. But the first part of the sentence states the invention relates to
18 broadband communication networks, and Patent Owner's attempt to
19 limit the field goes against the Federal Circuit's precedent in Unwired
20 Planet not to limit to a particular focus. So, here, while the focus may
21 be coax, the field is broadband communications.

22 Now, Patent Owner also made an argument that the '518 Patent
23 says that the prior art fails to address in-home impairments, but in
24 fact, there's prior art in the record. Any piece of -- excuse me -- any
25 communication network going from the headend to an in-home device

1 necessarily transits the splitters, filters, and other components within
2 the home. Jacobsen 94 specifically notes that coax splitters in
3 subscriber homes cause impairments. That's at page 305 of Exhibit
4 1018.

5 I also wanted to address that Patent Owner alleges that
6 Petitioner is setting forth some sort of new theory or new argument
7 based on the capabilities of a POSITA to implement the system. To
8 the contrary, in the Petition and in paragraphs 141 to 146 of
9 Mr. Bertonis's First Declaration explain that a POSITA would be able
10 to incorporate Mirfakhraei's techniques for multi-carrier bit loading
11 into Afshary's ASIC and that it would be well within the standard
12 skillset of POSITA. So, Patent Owner's Counsel admitted that there's
13 not evidence in the record that a person of ordinary skill in the art
14 could not do it, but there is record that they could do it. Mr. Bertonis's
15 testimony shows that they could do it.

16 Now, I also wanted to address, we heard a lot from Patent
17 Owner about how Afshary's goal is cost-effectiveness, but in fact, as
18 laid forth -- as set forth in paragraph 6 of Afshary, it lists cost-
19 effective, quick, and secure fashion. So quick data communications, a
20 desire for quick data communications is an invitation to improve the
21 device through better communication, which is provided by the multi-
22 carrier advantages of Mirfakhraei.

23 Also, I wanted to address that there was a statement about
24 Afshary working perfectly for its intended purposes. And Afshary
25 itself, in paragraph 42, talks about signal attenuation due to splitters

1 and reflections present in the network. So, obviously, it's not working
2 perfectly. And Afshary shows the communication across tap ports
3 that Patent Owner emphasized in its presentation.

4 There was also, on Slide 37, of Patent Owner's demonstratives
5 they talk about Afshary allegedly addressing variable frequency
6 response. But the discussion here is entirely about reflections, and
7 reflections are -- they are a channel impairment, but they're a different
8 kind of channel impairment than variable frequency response. And as
9 we discussed on our presentation, variable frequency response is an
10 issue with large single-carrier systems, which Afshary is using a
11 single-carrier modulation channel, and addressing that is done as
12 shown by the prior art and particularly talked about in the Jacobsen
13 references, by breaking that large channel into subchannels.

14 There was an allegation that Petitioner and Mr. Bertoni, in
15 particular, engaged in hindsight in putting together the combination.
16 Petitioner does not use, and Mr. Bertoni did not use the '518 Patent to
17 show a motivation to combine. We use it in a couple of particular
18 places, first to address analogous art because the case law requires
19 considering the challenged patent when you're addressing analogous
20 art. Mr. Bertoni did use it to show similarities between the prior art
21 and the '518 Patent's embodiment. As we showed, the architecture of
22 Afshary's network and the architecture of the '518 Patent are nearly
23 the same. So that was just confirming that the claim limitation was
24 met. It had nothing to do with the motivation of the person to do it.

1 And finally, we also -- it was also discussed in our papers
2 briefly to demonstrate what the POSITA's skillset would be, again,
3 not the motivation. And in his deposition, Mr. Bertonis even
4 confirmed that a person of ordinary in the skill in the art would not
5 need to see the '518 Patent to make the combination. And that's at
6 Exhibit 2006, page 47.

7 Patent Owner also alleged that Petitioner did not explain how
8 multi-carrier would work in a multi-point environment. But as we
9 discussed previously, the person of ordinary skill would know how to
10 address those messages, identifying the sender and the intended
11 recipient in the message, based on what Afshary already shows and on
12 the knowledge of a person of ordinary skill in the art, as discussed by
13 Mr. Bertonis and admitted by Mr. Garrett in his deposition.

14 And also, Afshary actually also describes that when encoding
15 data to be sent, there's network control data that specifies routing can
16 be added to that data, and that's paragraph 36. So Mirfakhraei's
17 handshake probe messages will be sent and received in the same
18 manner that Afshary already teaches for sending messages.

19 I want to turn back. Patent Owner also said that there was no
20 evidence in the record that people were looking at multi-carrier for
21 coaxial networks. But that's not the case. That's exactly what the
22 Jacobsen reference is talking about. That's, again, Exhibit 1018 and
23 1010. They both talk about it. There's a couple other references that
24 touch on it in our papers.

1 And finally, as I mentioned before, Mr. Garrett did not address
2 these Jacobsen references in his report. So, Patent Owner's arguments
3 here today about Jacobsen are all attorney argument. And as I
4 mentioned before, Jacobsen was not discussed substantively in their
5 papers. So those are new arguments.

6 Any questions from the Board?

7 JUDGE JURGOVAN: Regarding Afshary, did I understand
8 you to say that multi-path is not a problem in Afshary because it's
9 single-carrier?

10 MR. QUALEY: No.

11 JUDGE JURGOVAN: Okay. Good. All right. Good.

12 MR. QUALEY: No, I'm not --

13 JUDGE JURGOVAN: Because I think -- well, there's two
14 problems that would be addressed, I would guess. One, you said
15 there's a variable frequency response, and the other is the problem
16 with reflections.

17 (Simultaneous speaking.)

18 MR. QUALEY: Correct. Afshary talks about compensating
19 for reflections using filters.

20 JUDGE JURGOVAN: Yeah, and forward error correction.

21 MR. QUALEY: Right.

22 JUDGE JURGOVAN: Right.

23 MR. QUALEY: It uses filters and error correction to address
24 impairments, reflections, and attenuation.

25 JUDGE JURGOVAN: Okay.

1 MR. QUALEY: But as I mentioned previously, one of ordinary
2 -- in these systems, there's -- it's, I guess, network engineers operate
3 from a belt-and-suspenders perspective, and they put in multiple
4 things. You see multiple ways of addressing these kind of problems
5 in Mirfakhraei, in Afshary, and in the '518 Patent.

6 JUDGE JURGOVAN: Okay. I misheard what you said earlier,
7 so thank you for that clarification.

8 MR. QUALEY: Sorry about that.

9 JUDGE JURGOVAN: No, that's okay.

10 MR. QUALEY: And one thing from your question before,
11 back in my original presentation, I just wanted to give you the case
12 cite related to using background as for a POSITA.

13 JUDGE JURGOVAN: Oh, thank you.

14 MR. QUALEY: The Unwired Planet 841 F.3d 995 and the pin
15 site is 1003.

16 JUDGE JURGOVAN: Okay, thank you. Appreciate it,
17 Counsel. Let's go to surrebuttal from Patent Owner.

18 MR. HALVERSON: Thank you, your honor. Eric Halverson
19 on behalf of Patent Owner, a couple of points briefly.

20 So, on the screen now, we have Patent Owner's Slide 17. This
21 was discussed by counsel for Petitioner, limited only to the bottom
22 right-hand callout and what the quote/unquote invention relates to.
23 But we shouldn't lose sight of what the rest of the patent -- how the
24 rest of the patent is set up. The title, the abstract, and the claims are
25 all very clearly limited to coaxial cable networks.

1 Second point, and now up on the screen, or shortly up on the
2 screen, is Mr. Bertonis's Supplemental Declaration, Exhibit 1036.
3 And Mr. Bertonis's Declaration is clear. Applying Mirfakhraei's
4 teachings to Afshary would yield an operable system for the same
5 reasons as the alleged invention of the '518 Patent. Can't get any more
6 clear than that. What he did was he used the '518 Patent as a basis to
7 try to implement his combination. He says, look, the network
8 architectures of Afshary and the '518 Patent are essentially identical.

9 And because of that, he goes on -- bear with me while I scroll --
10 he goes on to talk about how, well, the bit loading multi-carrier
11 modulation techniques of Mirfakhraei and the '518 Patent are also
12 essentially the same. And so, as a result, you make the combination.

13 But that's not how obviousness works. We don't get to look at
14 the art in view of the patent. We don't take the patent and say, well,
15 this is the same and this is the same, so they must have gone together
16 because the patent put them together. What's lacking in any reference
17 or in anybody other than Mr. Bertonis and the Petition's attorney
18 characterization is disclosure of multi-carrier modulation signals over
19 a coax splitter. It's just not there.

20 So, unless the board has any other questions, thank you very
21 much.

22 JUDGE JURGOVAN: None from me. Well, thank you both
23 sides. Appreciate your presentations today. They'll be very helpful to
24 us. We'll issue the final written in due course and do appreciate your
25 time today, and again, thank you for your presentations.

1 MR. QUALEY: Thank you, Your Honor.
2 (Whereupon, the above-entitled matter went off the record at
3 2:35 p.m.)

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