

IPR2018-01557
Patent 6,760,590

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HTC Corporation and HTC America, Inc.,
Petitioners

v.

INVT SPE LLC,
Patent Owner

Case No. IPR2018-01557
U.S. Patent No. 6,760,590

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit	Description
2001	U.S. Patent No. 6,760,590 Disclaimer
2002	Office Action Response dated 11-1-2006
2003	Declaration of Ray Nettleton
2004	Scheduling Order for 337-TA-1138

I. Preliminary Statement

The Petition filed by HTC Corporation and HTC America, Inc. (collectively, “Petitioners”) falls significantly short of demonstrating a reasonable likelihood of success on any of the asserted grounds. Specifically, the Petition should be denied for the following five reasons: (1) Petitioners ignored the Board’s order to remedy a defect in their filing, where such actions justify denial; (2) the Petition fails to establish the Gils reference was publicly available; (3) the Petition fails to identify each limitation of the Challenged Claims in the Asserted References; (4) the Petition misconstrues the teachings of the Asserted References; and (5) even if all limitations of the Challenged Claims were identified in the Asserted References (they were not), the Petition fails to explain why a person of ordinary skill in the art (“POSITA”) at the time of the invention would have been motivated to combine or modify the Asserted References to achieve the claimed invention.

As a preliminary matter, Petitioners ignored a Notice of Accord of Filing Date issued by the Board on August 22, 2018. The Notice identified a defect in Petitioners’ filing, including exhibit list discrepancies. To date, Petitioners have provided no response to the Board’s Notice. Failure to respond to the Notice and correct discrepancies is basis enough to deny institution.

The Petition’s Ground 1 argues that the combination of PCT App. No. PCT/US98/23428 to Padovani et al. (“*Padovani*”) in view of W. van Gils, “Design

of error-control coding schemes for three problems of noisy information transmission, storage and processing,” Ph.D., dissertation, Eindhoven Univ. of Technology, Eindhoven, the Netherlands, 1988. (“*Gils*”) renders claims 1-4 obvious. The Petition’s Ground 2 argues that the combination of *Padovani* and *Gils* in further view of U.S. Pat. No. 6,167,031 to Olofsson et al. (“*Olofsson*”) (collectively, the “Asserted References”) renders claims 5-8 obvious.¹

For purposes of this Patent Owner Preliminary Response, Claim 3 is representative of claims 3, 4, 7, and 8 (collectively, the “Challenged Claims”).²

¹ INVT SPE LLC (“INVT” or “Patent Owner”) disclaimed claims 1, 2, 5, and 6 of the ’590 patent, a copy of the disclaimer filed with the U.S. Patent and Trademark Office is attached as Exhibit 2001. Accordingly, no *inter partes* review should be instituted based on these claims. 37 C.F.R. § 42.107(e).

² Independent claim 7 recites a substantially similar limitation as claim 3: “a method . . . wherein each of a plurality of communication terminal apparatuses: encodes information that is used for the assignment of the downlink channel and composed of a plurality of digits including an upper digit and a lower digit such that the upper digit is assigned a larger number of bits than the lower digit” In the interest of brevity, this Patent Owner Preliminary Response focuses on the

With respect to claim 3, the Petition fails to demonstrate that the Asserted References—in either Ground 1 or 2—disclose the requisite “coder that encodes the information such that the upper digit is assigned a larger number of bits than the lower digit.”

None of the Asserted References disclose encoding any information “such that the upper digit is assigned a larger number of bits than the lower digit,” as required by the Challenged Claims. Specifically, *Padovani* discloses using a single (8,4) error correcting code, and *Gils* discloses using a single LUEP code, where using a single LUEP code or single error correcting code does not result in the upper digit being assigned a larger number of bits than the lower digit. The Petition does not rely on or even cite to *Olofsson* in support of its obviousness contentions. Because the Petition fails to identify this claim element in the Asserted References, it fails to demonstrate a reasonable likelihood that at least one of the Challenged Claims is obvious, which “requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003).

limitations as worded in claim 3, but all arguments presented herein apply with equal force to claim 7. Claims 4 and 8 depend from claims 3 and 7, respectively. Accordingly, all arguments presented herein also apply to claims 4 and 8.

The Petition also fails to meet its burden of establish that one of the Asserted References, *Gils*, qualifies as prior art. The Petition generically asserts that “*Gils* was published January 1, 1998,” seemingly based on a page that is not part of the original *Gils* thesis. Paper 1 at 20; Ex. 1010 at 1. The Petition does not, however, include any contention that *Gils* was actually publicly available at that time, where simply being “published” does not qualify as public availability. Indeed, the Petition itself cites no evidence whatsoever in support of the assertion that *Gils* qualifies as publicly available prior art, and considering the uncited evidence that Petitioners filed with their Petition (but never actually cite) would amount to an impermissible incorporation by reference, in violation of 37 C.F.R. § 42.24. Because *Gils* is a required reference for every Asserted Ground, removal of *Gils* should result in denial of the entire Petition.

Finally, the Petition fails to substantiate the proposed obviousness combination with an adequate motivation to combine the references to achieve the claimed invention. Petitioners and their expert provide only unsupported, conclusory allegations of obviousness, and their contentions lack well-reasoned explanation of motivation, supported by objective evidence. For example, substantial portions of paragraphs 124-133, on which the Petition relies extensively to support its proposed motivation to combine, are limited to unsupported and unexplained expert testimony under 37 C.F.R. § 42.65.

Moreover, the Petition warps the teachings of the references in an attempt to construct a motivation to combine where none exists. Specifically, the Petition selects, without explanation, two different coding schemes from *Gils*, in spite of *Gils*' explicit teaching that a ***single*** linear unequal error protection ("LUEP") code should be used. The Petition's failure to explain the proposed combination, reliance on unsupported expert testimony, and mischaracterization of the references fatally undermines the Petition as these arguments are integral parts of the Petition's rationale. Without the benefit of the proffered conclusory and misleading expert testimony, the Petition's argument lacks the "rational underpinning" necessary to demonstrate a likelihood that the Challenged Claims are obvious.

Thus, as detailed below, the Petition fails to meet the burden of showing a reasonable likelihood that any of the Challenged Claims are unpatentable.

II. Factual Background Of The '590 Patent

A. Overview Of Cellular Communications Technology

Modern cellular communications began around 1980, when the first generation ("1G") cellular (i.e., wireless) systems and networks were deployed and 1G-compliant mobile phones were introduced to the public. These phones used frequency division multiplexing ("FDM") to transmit voice calls using analog frequency modulation ("FM").

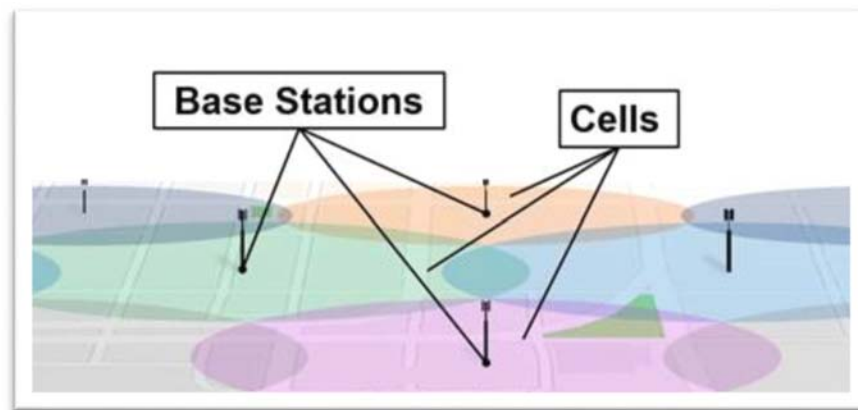
In the 1990s, second generation (“2G”) systems emerged based on improvements to 1G systems. Phones that operated in 2G systems used digital technology, which permitted more efficient use of the radio spectrum than their analog 1G predecessor did. While 2G systems were originally designed only for voice, they were later enhanced to include data transmission, but could only achieve low data rates.

During this growth period for 2G communications systems, overall use of the Internet also increased. In response to user demand for higher data rates, third generation (“3G”) phones emerged in the late 1990’s. While voice calls traditionally dominated the traffic in cellular communications, the increasing number of mobile devices and the advancement of mobile device technology with increased features and data-hungry applications drove demand for faster and more reliable data transmissions. Data traffic over cellular networks has therefore increased dramatically since the mid to late 2000s.

Given the increased demand for data and the limited available radio spectrum, cellular communications developers created a standard that, compared with 3G, offered higher data rates, lower latency and improved overall user experience. Fourth generation (“4G”) is the result of this development.

The technology disclosed and claimed in the ’590 patent generally relates to wireless communications technologies used in 3G and 4G cellular communications

systems. At a high level and as illustrated below, cellular (i.e., wireless) communications systems generally include three components: (1) user equipment (“UE”), (2) base stations and (3) cells. UE can refer to cellular phones, tablet computers and smartwatches, or other devices that allow users to communicate across a network. UEs connect to and communicate through base stations, where the geographic coverage of a given base station in turn defines a cell.



Exemplary Cellular Communications System

Both 3G and 4G cellular communications systems are capable of transferring (*e.g.*, uploading and downloading) data. Data is used for applications such as connecting to the Internet, streaming videos, and email. 3G technologies for transmitting data include the Universal Mobile Telecommunications System (“UMTS”) standard. UMTS includes Wideband Code Division Multiple Access (“WCDMA”), High Speed Packet Access (“HSPA”), and HSPA+ standards. HSPA+ is an advancement on HSPA and, as such, incorporates and builds upon

the full HSPA standard. 4G technologies for transmitting data include Long Term Evolution (LTE) and Long Term Evolution-Advanced (“LTE-A,” also referred to as “LTE+”) standards. LTE+ is an advancement on LTE and, as such, incorporates and builds upon the full LTE standard.

Today, mobile communications use 3G and/or 4G communications systems. Because interoperability is important for communications devices, the majority of cellular communications devices presently sold in the United States comply with each of the UMTS, HSPA, HSPA+, LTE, and LTE+ standards.

B. Overview Of The ’590 Patent

To alleviate system strain due to higher data demands of mobile devices, a number of strategies developed to improve transmission efficiency (*e.g.*, the amount of data that can be reliably transmitted over a given period of time in mobile communications). See Ex. 1001 at 1:14-18. One such strategy is called High Data Rate (“HDR”) by which a base station performs scheduling to allocate communication resources to UEs by time division and sets a transmission rate for each UE according to the downlink channel quality. *Id.* at 1:19-26.

According to the invention of the ’590 patent, the UE measures the downlink channel quality based on a pilot signal received from the base station and selects a transmission rate based on that measurement. *Id.* at 1:30-34. The base station transmits the pilot signal at predetermined intervals. *Id.* at 4:54-56. Within the base

station, the pilot signal is modulated by a modulator and spread by a spreading section before being output to a multiplexer. *Id.* at 6:38-41. The spread pilot signal is then transmitted to a transmit RF section, which converts the pilot signal into radio frequency and transmits that resulting radio frequency to the UEs from an antenna. *Id.* at 6:42-46.

As an illustrative figure, Figure 14 of the '590 patent illustrates one embodiment of how the UEs receive a radio signal including the converted pilot signal via an antenna. *Id.* at 6:47-49. The UE converts the received pilot signal from radio frequency to baseband frequency, despreads the pilot signal, and transmits it to a CIR [carrier-to-interference ratio] measurement section. *Id.* at 6:47-54. The CIR measurement section measures the CIR of the pilot signal. *Id.* at 6:31-34.

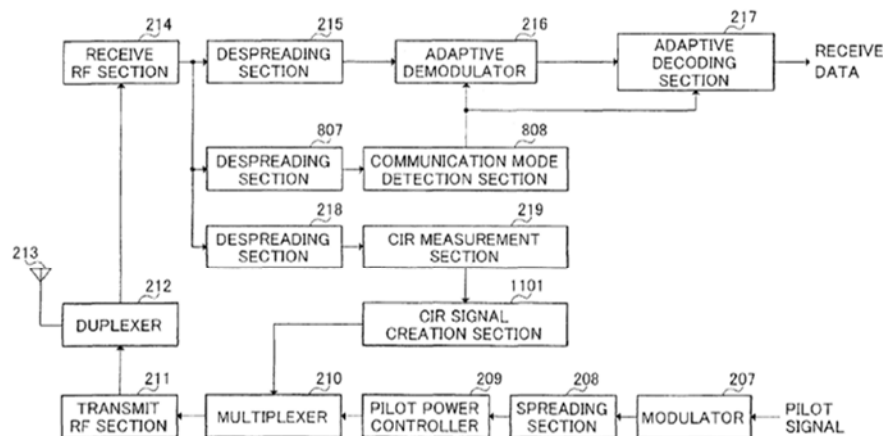


FIG.14

A CIR measurement is a measurement of a “carrier-to-interference ratio” and is one example of a measurement of channel quality information. *Id.* at 1:30-35, 24:41-45. The CIR measurement may be in the form of a two-digit number, *e.g.*, 8.7 dB where the 8 is an “upper digit” and the 7 is a “lower digit.” *Id.* at 19:45-49. However, CIR measurements do not need to be in the two digit format and can be represented by a plurality of digits. *Id.* at 24:55-60. The modulation method and coding method that the data channel can support depends on the value of this CIR measurement. *Id.* at 5:26-30. As further explained below, the ’590 patent recognized that it is critical that the UE and the base station have consistent information regarding modulation and encoding methods to ensure that data can be understood by the receiving device. *Id.* at 2:14-23.

Once the CIR measurement has been generated, the ’590 patent discloses a number of possibilities for how the CIR measurement can be processed. According to some embodiments described in the ’590 patent, the CIR measurement may be encoded into a “CIR signal” and transmitted back to the base station. *Id.* at 20:20-23. For example, a CIR signal creation section of the UE may separately encode the different digits of the CIR measurement to generate a resulting CIR signal (*i.e.*, encode the upper digit using one coding section and encode the lower digit using a different coding section). *Id.* at 20:46-54. One example of such encoding is

demonstrated by Figure 15 of the '590 Patent illustrates one example of such encoding.

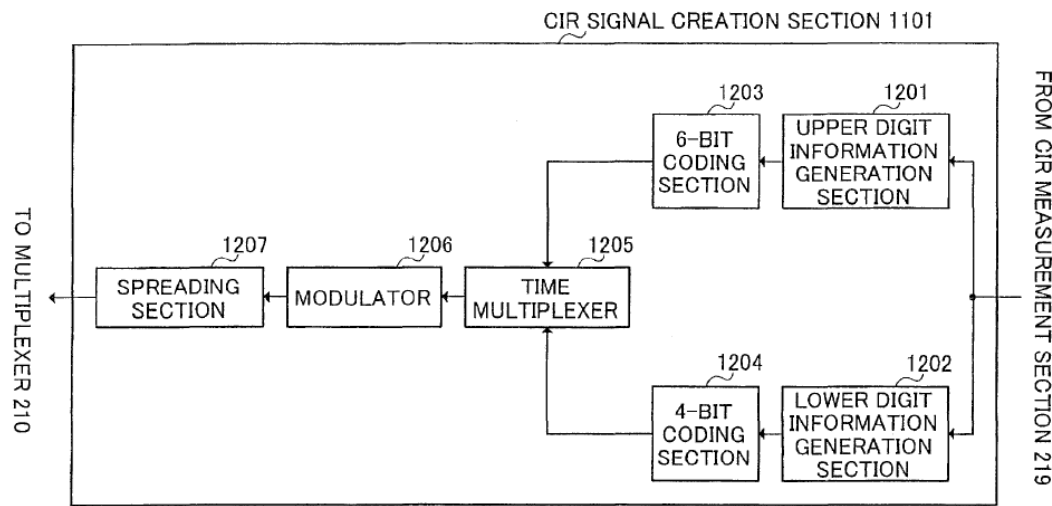


FIG.15

In other cases, the upper digit can be encoded to generate a longer code word than the code word generated for the lower digit. *Id.* The CIR signal may have a limit on the number of bits that it can include. For example, in the context of the '590 patent, the CIR signal may be limited to ten bits. *Id.* at 20:64-67. However, the '590 patent is not limited to the 10-bit example.

The '590 patent also describes some embodiments in which the CIR measurement is used to determine a communication mode, which is then encoded as a data rate control ("DRC") signal and transmitted back to the base station. *Id.* at 1:27-41, 6:55-61. The communication mode (represented by a "DRC number") is an index value that indicates a combination of modulation method and coding

method to be used in communications based on the CIR measurement. *Id.* at 5:27-31. In some embodiments of the '590 patent, higher CIR measurements (better channel quality) correspond to higher DRC numbers and better modulation and coding methods. *Id.* at 1:42-67.

The DRC signal or the CIR signal is the means by which the UE transmits channel quality information back to the base station. *See id.* at 1:49-56. The base station determines various transmission parameters based on the DRC signal, such as the packet length, modulation method, coding method, and transmission rate. *Id.* at 1:42-49. Moreover, if the DRC signal is received erroneously by the base station, then the base station may use a different communication mode than the UE is expecting, and as a result, the UE may not be able to demodulate or decode any data received from the base station. *Id.* at 2:14-22.

Similar to the CIR signal described above, there may be limited bits available for transmitting the DRC signal. *See id.* at Figure 7 (showing a maximum of nine bits per code word). In turn, the limited number of bits available to encode the CIR or DRC signal means there are limited resources for ensuring the relevant signal is received correctly by the base station. Thus, the relevant challenge addressed by the '590 patent is how to ensure accurate reception of the CIR or DRC signal within the allowed number of bits.

The '590 patent solves, among other problems, the complicated issues discussed above with an elegant solution. The '590 patent recognized that the upper digit (*e.g.*, the integer portion) of the measurement (8 in the above CIR example) is more important for ensuring that the correct communication mode is selected than the other digit (*e.g.*, the decimal portion) (7 in the above example). *Id.* at 19:49-58. This is because the change per unit of the upper digit is ten times the change per unit of the lower digit. *Id.* at 19:44-58.

In other words, each incremental change in the upper digit is equal to ten incremental changes in the lower digit. *Id.* For instance, in the above example, if the 8 is received correctly, but the 7 is received incorrectly (*e.g.*, if the base station receives 8.1), there is still a high likelihood that the base station will select the correct communication mode. *Id.* at 21:11-20. However, if the base station receives the upper digit incorrectly (*e.g.*, if the base station receives 5.7), then the base station will select a data rate that is significantly below the maximum supportable data rate because 5.7 is much further below 8.7 than 8.1. *Id.*

The '590 patent discloses a number of ways to ensure that the upper digit is transmitted with the greatest likelihood of being correctly decoded by the base station. Particularly relevant to the Challenged Claims, the '590 patent discloses an example embodiment in which the upper digit is encoded by a 6-bit encoder, which outputs a 6-bit code word, and the lower digit is encoded by a 4-bit encoder, which

outputs a 4-bit code word. *Id.* at 20:39-53 (*see also id.* at Fig. 15, cited above). By employing a longer code word for the upper digit, the '590 patent provides additional protection that will make the upper digit more likely to be correctly decoded in the presence of errors upon receipt at the base station. *Id.* at 21:21-34.

The Challenged Claims embody the advancements in the relevant art described above. Claim 3 of the '590 Patent recites:

3. A communication terminal apparatus comprising:
a measurer that measures a downlink channel quality and
outputs information that is generated in association with said
downlink channel quality and composed of a plurality of digits
including an upper digit and an[sic] lower digit;
***a coder that encodes the information such that the upper digit
is assigned a larger number of bits than the lower digit;*** and
a transmitter that transmits the encoded information to a base
station apparatus.

Id. at Cl. 3 (emphasis added). Specifically, claim 3 recites “a measurer” that measures downlink channel quality (*e.g.*, a CIR measurement) and outputs information “composed of a plurality of digits including an upper digit and a lower digit.” Claim 3 further recites that the information is encoded by a coder such that “the upper digit is assigned a larger number of bits than the lower digit.” Thus,

claim 3 of the '590 patent recites applying a specific type of encoding (“the upper digit is assigned a larger number of bits than the lower digit”) to particular information (“information that is generated in association with [the] downlink channel quality”) that is in a particular format (“including an upper digit and a lower digit”). Such enhanced protection for the upper digit can be accomplished via either applying different coding schemes to the upper and lower digits, or the same encoding scheme to both digits, if that single encoding scheme encodes both digits such that the upper digit is assigned a larger number of bits than the lower digit.

During the prosecution of a related patent, U.S. Patent No. 7,206,587 (the “’587 patent”), the inventors of the ’590 and ’587 patents emphasized the importance of encoding all of the plurality of digits according to the particularly claimed method of encoding. *See* Ex. 2002 at 10. Thus, the inventors of the ’587 and ’590 patents distinguished the claimed encoding methods over other types of encoding.

As discussed in further detail below, the Asserted References do not render the claimed invention obvious because they fail to disclose the particularly claimed encoding method recited in the Challenged Claims.

III. Claim Construction

The Petition does not assert any claim term of any of the Challenged Claims³ requires construction. Paper 1 at 15-16. Patent Owner similarly does not believe that any claim terms in the Challenged Claims require express construction to deny the Petition. Patent Owner does not waive, however, any argument regarding the proper scope of the Challenged Claims.

IV. Summary Of The Asserted References

A. Padovani

Padovani describes a method of high rate packet data transmission. *Padovani* at 1:8-10. According to *Padovani*, one or more base stations sends a paging message to a mobile station, indicating that the base stations have data to transmit to the mobile station. *Id.* at 9:25-28. Upon receiving the paging messages, the mobile station measures the carrier to interference ratio (“C/I”) and generates a data request message (“DRC message”). *Id.* at 9:34-10:6.

In the exemplary embodiment of *Padovani*, the mobile station determines a supported data rate based on the C/I measurement. *Id.* at 27:30-31. The mobile station determines a C/I index which represents the supported data rate that can be

³ The only claim term for which Petitioners propose a construction was only present in claims 1 and 5, which Patent Owner has disclaimed. Ex. 2001.

represented as a 3-bit number. *Id.* at 46:15-38; *see also id.* at 27:35-36 (“the number of supported data rates is seven and a 3-bit rate index is used to identify the requested data rate”). The 3-bit DRC message is encoded for transmission back to the base station by a DRC encoder. *Id.* at 45:16-17.

According to *Padovani*, the “DRC encoder 626 is a rate (8,4) CRC block encoder which encodes the 3-bit DRC message into an 8-bit code word.” *Id.* at 45:21-22. An “(8,4)” encoder generally means that the encoder encodes a 4-bit data word to generate an 8-bit code word, with all bits of the encoded word receiving the same level of error protection. Ex. 1001 at 45:20-22. Thus, *Padovani* uses a single code to encode the DRC message, and does not teach using multiple codes to encode different portions of the DRC message. *See id.* The base station then decodes the DRC message and transmits the data at the requested rate. *Id.* at 48:5-8.

B. *Gils*

Gils purports to be a Ph.D. thesis entitled “Design of Error-Control Coding Schemes for Three Problems of Noisy Information Transmission, Storage and Processing.” *Gils* at iii. The thesis appears to have been submitted to the Eindhoven University of Technology in The Netherlands. *Id.*

As explained by *Gils*, generally, when a code word is transmitted, the receiver can correct a certain number of bits in the code word that are received

erroneously, and also detect a certain number of additional errors. *Id.* at 4. *Gils* teaches the use of particular types of codes called linear unequal protection (“LUEP”) codes, which “provide more protection for select positions in the input message words than is guaranteed by the minimum distance⁴ of the code.” *Id.* at 13. Using *Gils*’ LUEP codes ensures that certain bits can be corrected, even if the code word is received with more erroneous bits than the minimum distance would normally allow to be corrected. *Id.* at 14. *Gils* provides this enhanced error protection through unique generator matrices. *See id.* at 55-64. However, the matrices in *Gils* do not provide enhanced error protection for certain bits by assigning more bits to upper digits. *Id.* Further, *Gils* teaches that the use of a single LUEP code presents an improvement over using multiple types of codes to provide unequal error protection. *Id.* at v.

Table 1 of *Gils* provides a number of exemplary LUEP codes. *Id.* at 25. One exemplary code provided in Table 1 is provided below:

⁴ “Distance” is a term of art in coding theory that *Gils* defines as the number of bit positions in which two code words differ. *Gils* at 2. *Gils* defines “minimum distance” as the minimum distance between two different code words within the set of code words that make up a code *C*. *Id.*

n	k	$d(n, k)$	separation vector
6	4	2	A 3222

Id. at 25. In this example, the length of the code word (“ n ”) is 6. *Id.* at 24. The length of the data word to be encoded (“ k ”) is 4. *Id.* “ $d(n, k)$ ” denotes the maximum minimum distance of the code (*e.g.*, the largest number of bits that can be different between any two valid code words). *Id.* Thus, in the example above, for any two valid code words, the largest number of bits that can possibly be different between the two code words is two. *Id.*

Table 1 also identifies the “separation vector” for each of the codes listed therein. *Id.* In the above example, the separation vector is 3222. *Id.* Each value in the separation vector corresponds to a bit of the data word and denotes how many errors can occur in the received code word while still guaranteeing that the bit in the data word is correctly decoded. *Id.* at 14 (“complete nearest neighbour decoding guarantees the correct interpretation of the i th message digit if no more than $(s_i - 1)/2$ errors have occurred in the transmitted codeword,” where s_i is the separation vector values). Thus, the first bit in the data word can be correctly interpreted if no more than one of the bits in the code word is received erroneously. *See id.* at 16 ($((3 - 1)/2 = 1$ bit). Errors in the remaining bits can be detected, but not corrected. *Id.* ($((2 - 1)/2 = 1/2$, where $1/2$ is rounded down to 0 bits).

In sum, *Gils* discloses using a single LUEP code that provides enhanced

protection for individual bit positions within the data word.

C. *Olofsson*

Olofsson is directed to a communication system that supports multiple modulation and channel coding schemes. *Olofsson* at Abstract. According to *Olofsson*, a mobile station measures downlink channel quality. *Id.* at 11:33-35. The mobile station then determines statistically a distribution of the channel characteristics, such as the mean values and variances of the link quality parameters. *Id.* at 11:40-45. The mobile station then performs a mapping function that maps the channel characteristic measurements to different possible modulation and encoding schemes to determine “user quality values.” *Id.* at 11:46-52.

The user quality values indicate the likely quality of the received data in terms of data throughput for different modulation and encoding schemes, given the channel quality measurement. *Id.* at 11:63-66. Based on the user quality values, the mobile station selects the optimal combination of modulation and channel encoding schemes. *Id.* at 11:66-12:2. The mobile station can then transmit the selected modulation and encoding schemes to the base station, which transmits data according to the selected parameters. *Id.* at 12:8-13.

V. Legal Standard

A claimed invention is obvious only “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a

whole would have been obvious at the time the invention was made to a person of ordinary skill in the art.” 35 U.S.C. §103(a). As set out by the Supreme Court, the framework for an obviousness inquiry requires determining “the scope and content of the prior art,” the “differences between the prior art and the claims at issue,” and “the level of skill in the pertinent art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)). “[O]bviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Further, obviousness determinations must be made without “any hint of hindsight.” *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011). The patent-in-suit may not be used “as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.” *In re NTP, Inc.*, 654 F. 3d 1279, 1299 (Fed. Cir. 2011).

At the petition stage, it is Petitioners’ “burden to demonstrate both that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (internal citation and quotation omitted); see also *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Petitioners cannot satisfy their burden through “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record” that supports an obviousness determination. *In re Magnum Oil Tools*, 829 F.3d at 1380; see also *KSR*, 550 U.S. at 418 (“[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Moreover, Petitioners cannot satisfy their burden with unsupported and conclusory expert testimony. See 37 C.F.R. § 42.65(a) (“[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight”); see also *Initiative for Medicines, Access & Knowledge (I-MAK), Inc. v. Gilead Pharmasset LLC*, Case No. IPR2018-00390, Paper No. 7 at 14 (Jul. 19, 2018) (denying institution where expert testimony “merely repeats verbatim the conclusory statements set forth in the Petition, without providing any factual analysis or citing any supporting objective proof.”). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools*, 829 F.3d at 1380.

VI. The Petition Should Be Denied Because Petitioners Have Ignored The Board's Order Without Good Cause.

On August 29, 2018, the Board issued a Notice of Accord of Filing Date of the Petition filed August 22, 2018. Paper 3. The Notice identified a defect in the Petition—a discrepancy between the exhibit list in the Petition and the actual filings of the exhibits. *Id.* at 2. The Notice gave Petitioners five business days to correct the Petition. *Id.* Those five days expired on September 5, 2018. To date, 92 days since the Board issued its Notice, Petitioners have not corrected the identified defects.

Failure to abide by a Board order is cause for dismissal. *DealerSocket, Inc. v. AutoAlert LLC*, Case No. CBM2014-00142, Paper 10 at 10 (P.T.A.B. Sep. 8, 2014). The Board has the discretion to impose sanctions, including denying institution of a petition, for failure to provide good cause for failure to abide by a Board order. 37 C.F.R. § 42.12. For example, in *DealerSocket*, the Board dismissed a petition for covered business method review where petitioner delayed 74 days after the Board issued an order to correct defects in the Petition. Case No. CBM2014-00142, Paper 10 at 10 (P.T.A.B. Sep. 8, 2014).

Here, Petitioners have not identified any good cause for their failure to respond promptly to the Board's order. Moreover, Patent Owner submits that Petitioners cannot identify any good cause. Since the Board issued its order,

Petitioners and their counsel have been active in other litigation with Patent Owner including filing documents with the International Trade Commission (“ITC”) and serving and responding to discovery requests in connection with that investigation. *See Certain LTE- and 3G-Compliant Cellular Communications Devices*, ITC Inv. No. 337-TA-1138.

As Petitioners have not taken any steps to respond to the Board Notice, Patent Owner submits that no good cause exists as to why Petitioners did not heed the Board’s order and correct their Petition. Accordingly, Patent Owner requests that the Board exercise its authority to impose sanctions under 37 C.F.R. § 42.12 to deny institution of *inter partes* review.

VII. The Petition Fails To Demonstrate A Reasonable Likelihood Of Prevailing On Ground 1.

A. The Petition Fails To Establish That *Gils* Qualifies As Prior Art.

The Petition generically asserts that “*Gils* was published January 1, 1998,” seemingly based on a page that is not part of the original *Gils* thesis. Paper 1 at 20; Ex. 1010 at 1. A mere statement that a reference was “published,” without any corroborating evidence or explanation, however, is insufficient to demonstrate that a reference qualifies as publicly available prior art. *Apotex Inc. v. Celgene Corp.* Case No. IPR2018-00685, Paper 8 at 29 (P.T.A.B. Sep. 27, 2018). To that end, the Petition does not cite **any** evidence at all tending to show that *Gils* was publicly

available, nor do Petitioners even **allege** “public availability” in the Petition. See Paper 1 at 20.

Petitioners bear the burden of establishing—in the Petition—that the purported reference was publicly available, and have failed to do so. *NVIDIA Corp. v. Samsung Elecs. Co., LTD.*, Case No IPR2015-01316, Paper 10 at 7 (P.T.A.B. Dec. 9, 2015); 37 C.F.R. § 42.104(b)(5) (“The petition must set forth: . . . The exhibit number of the supporting evidence relied upon to support the challenge and the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.”).

The Board’s role is not “to play archeologist with the record.” Rather, it is Petitioners’ burden to put all evidence in the Petition. *DirectTV, LLC v. Qurio Holdings, Inc.*, Case No. IPR2015-02007, Paper 6 at 15 (P.T.A.B. Apr. 4, 2016) (citing *Cisco Sys., Inc. v. C-Cation Techs., LLC*, Case No. IPR2014-00454, Paper 12 at 10 (P.T.A.B. Aug. 29, 2014)). Because the Petition does not include any evidence in support of the contention that *Gils* is a prior art printed publication, the burden is not met.

Moreover, though Petitioners filed multiple exhibits related to *Gils*, the Petition does not cite those exhibits, nor does the Petition identify where in those voluminous exhibits the pertinent evidence is located that allegedly establishes *Gils* as a printed publication as of the date they contend. Uncited evidence is not

entitled to any weight. *Trane U.S., Inc. v. Tas Energy Inc.*, Case No. IPR2015-01665, Paper 12 at n. 7 (P.T.A.B. Feb. 4, 2016) (citing 37 C.F.R. § 42.22(a)(2)).

Further, any reliance on the uncited evidence amounts to an impermissible incorporation by reference, in violation of 37 C.F.R. § 42.6(a)(3). Even if the Petition were modified it would effectively need to incorporate by reference to meet the word limit. According to Petitioners, the Petition is 13,473 words, just 527 words short of the 14,000 word limit for Petitions. Paper 1 at 67. But the Declaration of Ximena Solano, which purports to address the public availability of *Gils*, is nearly 1,800 words alone.

Petitioners also provide numerous other declarations, screen captures of websites, and copies of correspondence that number in the thousands of words. Any attempt by Petitioners to actually explain this evidence in the petition would need to be incorporated by reference because there simply are not enough words left to use. Thus, this evidence should not be considered. *Amazon.com v. Broadcom Corp.*, Case No. IPR2017-00814, paper 10 at 22 (P.T.A.B. Aug. 18, 2017) (“a declaration . . . is not a vehicle through which a petitioner may make an argument that should have been made in the petition”).

The Petition simply fails to establish that *Gils* is a prior art printed publication, and the Petition should be denied in full on this basis.

B. The Asserted References In Ground 1 Fail To Disclose “A Coder That Encodes The Information Such That The Upper Digit Is Assigned A Larger Number Of Bits Than The Lower Digit.”

The Petition fails to demonstrate a reasonable likelihood that the Challenged Claims are invalid as obvious because the Petition fails to show that “a coder that encodes the information such that the upper digit is assigned a larger number of bits than the lower digit” was known or would have been obvious to a POSITA at the time the invention of the ’590 patent was made.

The Petition first attempts to rely on *Padovani* to disclose “a coder that encodes the information,” but concedes that the encoder of *Padovani* does not disclose the claimed coding method by admitting that the coder of *Padovani* does not encode information “such that the upper digit is assigned a larger number of bits than the lower digit.” Paper 1 at 34. As such, the Petition contends that a POSITA would have selected two different coding schemes from *Gils* to perform the claimed encoding. *Id.*

As explained below, however, *Gils* does not suggest using two different LUEP coding schemes—it teaches using only one such coding scheme. In fact, *Gils* teaches away from using two different LUEP coding schemes. Thus, the Petition fails to identify any type of coding scheme where “the upper digit is assigned a larger number of bits than the lower digit.”

Even more, the Petition distorts the teachings of the Asserted References to

extend the prior art beyond what a POSITA would reasonably understand them to disclose. Based on these shortcomings, the Petition should be denied.

1. *Padovani* Does Not Disclose A Coder That Encodes Information “Such That The Upper Digit Is Assigned A Larger Number Of Bits Than The Lower Digit.”

According to the Petition, *Padovani* “contemplates transmitting information . . . represented by a plurality of digits that include an upper digit (e.g., 3) and a lower digit (e.g., 5).” Paper 1 at 34. Specifically, the Petition contends that *Padovani* discloses encoding a C/I measurement that “may comprise a value that includes a decimal integer portion and a decimal fraction portion, e.g., 3.5 dB.” Paper 1 at 36. Thus, according to the Petition, the C/I measurement corresponds to the claimed “information” that is encoded. *See id.*

The Petition further states that “*Padovani* also contemplates encoding binary representations of such information.” *Id.* The Petition acknowledges, however, that “*Padovani* describes using a ‘rate (8,4) CRC block encoder that encodes the 3-bit DRC message into an 8-bit code word.’” Paper 1 at 35. The Petition does not contend that the (8,4) CRC block encoder of *Padovani* encodes information “such that the upper digit is assigned a larger number of bits than the lower digit.” *See* Paper 1 at 35.

Rather, the Petition argues that “it would have been obvious to a POSITA to have combined *Padovani* and *Gils* such that the DRC encoder of *Padovani* could be

configured to encode the C/I measurement in accordance with one or more of the coding schemes set forth in Gils.” *Id.* Thus, the Petition does not argue, let alone establish, that *Padovani* discloses a coder that encodes information “such that the upper digit is assigned a larger number of bits than the lower digit.”

Instead, the Petition alleges that it would have been obvious to combine *Padovani* and *Gils* to achieve the claimed invention because *Gils* allegedly described the claimed encoding method. However, as set forth in further detail below, *Gils* does not disclose the claimed encoding and in fact teaches away from the claimed method.

2. *Gils* Does Not Disclose A Coder That Encodes Information “Such That The Upper Digit Is Assigned A Larger Number Of Bits Than The Lower Digit.”

In light of the shortcomings in *Padovani*, which the Petition acknowledges, the Petition turns to *Gils* to allegedly disclose the claimed encoding method. Paper 1 at 34-39. According to the Petition, “it would have been obvious to a POSITA to have combined *Padovani* with *Gils* such that the DRC encoder of *Padovani* could be configured to encode the C/I measurement in accordance with one or more of the coding schemes set forth in *Gils*.” Paper 1 at 35. *Gils*, however, teaches away from using two separate code schemes. Moreover, the Petition does not explain how *Gils* “assigns” bits to digits, as recited in the claims.

i. The Petition Does Not Establish That *Gils* Teaches Using Two Separate Codes To Encode Information.

The Petition contends that the “different coding schemes in *Gils* . . . result in code words that have different lengths” and “[a] POSITA would have naturally understood that greater error protection (vis-à-vis longer code word length) should or could have been provided to a digit the greater the significance a digit has.” *Id.* Specifically, the Petition points to Table 1 of *Gils*, which shows a number of binary optimal LUEP codes having a length less than or equal to 15. *Id.* at 37; *see also Gils* at 25-27. According to the Petition, a POSITA would have “naturally” known to select an (8,4) code for the upper digit of *Padovani*’s C/I measurement and to select a (6,4) code for the lower digit, as shown below in the annotated Table 1 from the Petition. *Id.* at 37-38.

n	k	$d(n, k)$	separation vector
4	2	2	A 32
5	2	3	A 42
5	3	2	A 322
6	2	4	A 52
6	3	3	A 422
6	4	2	A 3222
7	2	4	A 62, I 54
7	3	4	A 522
7	4	3	A 4222
7	5	2	A 32222
8	2	5	A 72, I 64
8	3	4	A 622, C 544
8	4	4	A 5222
8	5	2	A 42222, J 33332
8	6	2	A 322222
9	2	6	A 82, I 74
9	3	4	A 722, C 644, G 554
9	4	4	A 6222, C 5444
9	5	3	A 52222, J 44442, B 43333
9	6	2	A 422222, J 333322
9	7	2	A 3222222
10	2	6	A 92, I 84, I 76
10	3	5	A 822, C 744, L 664
10	4	4	A 7222, C 6444, G 5544
10	5	4	A 62222, C 54444
10	6	3	A 522222, J 444422, J 433332
10	7	2	A 4222222, J 3333222
10	8	2	A 32222222
11	2	7	A 10.2, I 94, I 86
11	3	6	A 922, C 844, K ₁ 764
11	4	5	A 8222, C 7444, E 6644
11	5	4	A 72222, C 64444, G 55444

Table I: The separation vectors of all binary optimal LUEP codes of length less than or equal to 15.

To be clear, neither the (8,4) code nor the (6,4) code from *Gils* would individually result in the claimed encoding of the upper digit being “assigned a larger number of bits than the lower digit,” nor does the Petition make this

argument. *See id.* Rather, the Petition says to use both an (8,4) and (6,4) coding scheme, one for the upper digit and one for the lower digit. Paper 1 at 37-38. However, *Gils*, when considered in its entirety, does not teach the use of two encoding systems.

A prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, (Fed. Cir. 1983). Further, “[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

Gils does not teach using two different encoding schemes, as alleged by the Petition. The Petition does not and cannot point to any example in *Gils* where more than one of the LUEP codes of Table 1 are applied in the piecemeal fashion suggested in the Petition. Instead, citing unsupported expert testimony, the Petition simply argues that “[a] POSITA would have “known to select the two coding schemes,” *i.e.*, the (8,4) code for the upper digit of *Padovani*’s C/I measurement and the (6,4) code for the lower digit. Paper 1 at 38.

The Petition, however, does not explain how a POSITA would have known to select these two different coding schemes. The petition must provide more than

mere conclusory statements that a claimed feature was known. *LifeWave, Inc. v. Blendermann*, Case No. IPR2016-00571, Paper 7 at 19 (P.T.A.B. Apr. 11, 2018). Thus, the Petition, on its face, fails to identify any teaching in *Gils* that would have led a POSITA to select two different coding schemes for a single data word.

ii. *Gils* Teaches Away From Using Two Separate Codes To Encode Information.

In contrast to the Petitions unsupported assertions, *Gils* actually teaches away from using two different LUEP coding schemes. *Gils* generally seeks “to give parts of mutually different importance different protection against errors,” and states “this can be done by using different coding schemes for the different parts, ***but more elegantly by using a single so-called Unequal Error Protection coding scheme.***” *Gils* at v (emphasis added). By describing a single LUEP coding scheme as “more elegant[],” *Gils* directs a POSITA to use a ***single*** LUEP code and ***not*** to employ different coding schemes from Table 1 for different portions of a single data word. *See id*; Ex. 2003 [Declaration of Raymond Nettleton, Ph.D] at ¶ 41. Yet as noted above, no single LUEP code in *Gils* results in the claimed encoding such that the “upper digit is assigned a larger number of bits than the lower digit,” and the Petition does not purport to point to any such single LUEP code.

The remainder of *Gils* is directed to the identification of the LUEP codes that *Gils* characterizes as “more elegant[],” when used individually. *See generally*,

Gils. *Gils* never describes using any of the LUEP codes it derives as being used in combination with one another. *Id.*

Thus, *Gils* does not teach a POSITA to select the two different coding schemes from Table 1 that could be used to derive code words for a 4-bit data word,” as argued by the Petition. Paper 1 at 38. In fact, *Gils* would lead a POSITA “in a divergent direction from the path that was taken” in the Challenged Claims. *Id.*; Ex. 2003 at ¶ 42; *In re Gurley*, 27 F.3d at 553. Based on *Gils*’s statement that a single LUEP is “more elegant” than using different code schemes, a POSITA would have understood that the codes described in *Gils* should be used individually and **not** stitched together as asserted by the Petition. *Id.*; Ex. 2003 at ¶ 42. Therefore, *Gils* teaches away from using the LUEP codes disclosed therein in combination with one another, as asserted by the Petition.

C. The Petition Fails To Set Forth An Adequate Motivation To Combine The Asserted References.

Even if *Gils* or *Gils* in combination with *Padovani* showed each and every element was present in the prior art, which they do not, the Petition still fails to set forth an adequate motivation to combine. As discussed in detail above, the Challenged Claims require “a coder that encodes the information such that the upper digit is assigned a larger number of bits than the lower digit.” See Ex. 1001 at Cl. 3. The Petition contends that it would have been obvious for a POSITA to

apply an (8,4) code from *Gils* to the decimal integer portion of a C/I measurement of *Padovani* (corresponding to an upper digit) and to apply a (6,4) code from *Gils* to *Padovani*'s decimal fraction portion (corresponding to a lower digit) of a C/I measurement. Paper 1 at 38. According to the Petition, “[a] POSITA would have known to select the two coding schemes that could be used to derive code words for a 4-bit data word.” *Id.*

The Petition's motivation to combine contentions fail for at least four reasons. First, the Petition relies on unsupported expert testimony to support key elements of their alleged motivation to combine. Second, the Petition does not explain why a POSITA would chose the specific two coding schemes from *Gils* presented by the Petition. Third, the Petition does not explain why a POSITA would have been motivated to use two different coding schemes from *Gils*. Fourth, the Petition's alleged motivation to combine is based on impermissible hindsight. The Petition should be denied accordingly.

1. The Petition Relies On Unsupported Expert Testimony.

i. Unsupported Expert Testimony Is Entitled To Little Or No Weight.

The Petition's proffered expert testimony is unsupported and, therefore, entitle to little or no weight. “Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no

weight.” 37 C.F.R. § 42.65(a). The Board routinely denies petitions for *inter partes* review where the Petition relies on unsupported expert testimony. *See, e.g., Apple Inc. v. Uniloc Luxembourg S.A.*, IPR2017-02041, Paper 10 at 30 (P.T.A.B. Mar. 8, 2018) (denying institution where “unexplained and unsupported testimony” “lack[ed] probative value”); *see also Apple Inc. v. Uniloc Luxembourg S.A.*, IPR2017-02202, Paper 8 at 16-17 (P.T.A.B. May. 1 2018) (“we are not persuaded by Petitioner’s contention Petitioner’s evidentiary support for that contention consists only of an unsupported verbatim statement in the declaration of [Petitioner’s expert]”); *Apple Inc. v. Uniloc Luxembourg S.A. et al.*, IPR2015-00161, Paper 18 at 14 (P.T.A.B. May. 8, 2015) (“We do not credit this conclusory and unsupported testimony regarding a key factual issue”); *Apple Inc. v. Valencell, Inc.*, IPR2017-00316, Paper 9 at 3-4 (P.T.A.B. Jul. 20, 2017) (“Testimony that is not supported by sufficient underlying facts fails to persuade”). “Lack of factual support for expert opinion going to factual determinations” that underpin an obviousness determination “may render the testimony of little probative value in a validity determination.” *Knowledge (I-MAK), Inc. v. Gilead Pharmasset LLC*, Case No. IPR2018-00390, Paper No. 7 at 14-15 (Jul. 19, 2018) (quoting *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985)).

ii. Dr. Min Repeats The Conclusory Allegations Of The Petition Without Any Factual Analysis Or Citation Of Objective Proof

The Petition relies extensively on Petitioners' expert, Dr. Min, to support arguments relating to obviousness and motivation to combine. However, the cited testimony from Dr. Min consists only of conclusory statements lacking factual analysis, foundation, or further explanation. To that end, unsupported expert testimony that merely repeats *verbatim* the allegations of the Petition without providing any factual analysis or citing to any supporting objective proof is not entitled to any weight. *Knowledge (I-MAK), Inc.*, Case No. IPR2018-00390, Paper No. 7 at 14. Given the cursory and conclusory nature of Dr. Min's testimony, the testimony should be given no weight.

For example, the following table illustrates a number of exemplary instances in which Dr. Min's testimony simply repeats the conclusory allegations of the Petition, *verbatim*, without citing any corroborating evidence:

The Petition	Dr. Min's Declaration (Ex. 1017)
"It would have been obvious for a POSITA to have modified the DRC encoder of Padovani by using an	"It would have been obvious for a POSITA to have modified the DRC encoder of Padovani by using an

The Petition	Dr. Min’s Declaration (Ex. 1017)
encoder configured to implement a coding scheme, like those disclosed by Gils, in order to ensure that error probability of the encoded DRC message is sufficiently low.” Paper 1 at 26 (citing Ex. 1017 at ¶ 125).	encoder configured to implement a coding scheme, like those disclosed by Gils, in order to ensure that error probability of the encoded DRC message is sufficiently low”. Ex. 1017 at ¶ 125.
“It would have been obvious to a POSITA to have combined Padovani and Gils such that the DRC encoder of Padovani could be configured to encode the C/I measurement in accordance with one or more of the coding schemes set forth Gils directed to providing unequal error protection for portions of a data word.” Paper 1 at 35 (citing Ex. 1017 at ¶ 146).	“It would have been obvious to a POSITA to have combined Padovani and Gils such that the DRC encoder of Padovani could be configured to encode the C/I measurement in accordance with one or more of the coding schemes set forth in Gils, which are directed to providing unequal error protection for portions of a data word.” Ex. 1017 at ¶146.
“When transmitting actual C/I measurements, a POSITA would have	“When transmitting actual C/I measurements, a POSITA would have

The Petition	Dr. Min's Declaration (Ex. 1017)
recognized that the DRC encoder of Padovani would benefit from the improved error protection provided by Gils.” Paper 1 at 36 (citing Ex. 1017 at ¶ 148).	recognized that the DRC encoder of Padovani would benefit from the improved error protection provided by Gils.” Ex. 1017 at ¶ 148.
“Gils seeks to solve the very same issue set forth in the ’590 Patent, and solves the issue in a very similar way.” Paper 1 at 36 (citing Ex. 1017 at ¶ 149).	“Gils seeks to solve the very same issue set forth in the ’590 Patent, and solves the issue in a very similar way.” Ex. 1017 at ¶ 149.
“A POSITA would have known to select the two coding schemes that could be used to derive code words for a 4-bit data word.” Paper 1 at 38 (citing Ex. 1017 at ¶ 152).	“A POSITA would have known to select the two coding schemes that could be used to derive code words for a 4-bit data word.” Ex. 1017 at ¶ 152.
“[A] POSITA would have known to encode different portions of data to be encoded in accordance with coding	“[A] POSITA would have known to encode different portions of data to be encoded in accordance with coding

The Petition	Dr. Min's Declaration (Ex. 1017)
schemes that result in different code word minimum distances.” Paper 1 at 38 (citing Ex. 1017 at ¶ 153).	schemes that result in different code word minimum distances.” Ex. 1017 at ¶ 153.

Dr. Min provides no corroborating or objective evidence to support his assertions in any of the above examples. Because Dr. Min simply repeats *verbatim* the allegations of the petition, without any citation to corroborating or supporting evidence, these statements are entitled to little or no weight by the Board. 37 C.F.R. § 42.65(a); *Knowledge (I-MAK), Inc.*, Case No. IPR2018-00390, Paper No. 7 at 14.

iii. The Petition's Reliance On Unsupported Expert Testimony Is Fatal To The Petition.

Without the benefit of Dr. Min's unsupported expert testimony, the Petition fails to demonstrate that a POSITA would have been motivated to combine the Asserted References as claimed. Specifically, each of the unsupported statements described above pertains to whether a POSITA would have been motivated to combine *Padovani* and *Gils* as asserted by the Petition. Whether it would have been obvious to combine *Padovani* and *Gils* is an essential element to Petitioners' obviousness contentions. See *In re Magnum Oil Tools*, 829 F.3d at 1381 (“[i]t was [petitioner's] burden to demonstrate both that a skilled artisan would have been

motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so”) (citations omitted).

Without any objective support for his conclusory allegations, Petitioners’ expert has simply ordained that the claimed invention was obvious. Such unsupported expert testimony on key questions of obviousness is entitled to little or no weight. 37 C.F.R. § 42.65; *see also* *Keurig Green Mountain, Inc. v. Touch Coffee & Beverages, LLC*, Case No. IPR2018-01392, Paper 18 at 11 (P.T.A.B. Jan 4, 2018) (denying institution where Petitioner’s expert failed to support a claim that modifications to the asserted references would have been obvious).

iv. Dr. Min’s Citations To The Asserted References Do Not Remedy The Shortcoming Of His Unsupported Testimony.

Dr. Min’s testimony should be further questioned because even where Dr. Min does cite to the Asserted References to allegedly support his assertions, the cited portions of the Asserted References are often unrelated or contrary to the point Dr. Min is attempting to establish. For example, in support of the proposition that a “POSITA would have been motivated to provide greater protection for the decimal integer portion,” Dr. Min points to *Padovani* at 23:29-24:02. Ex. 1017 at ¶ 127. The cited portion of *Padovani*, however, is unrelated to the level of protection given to digits based on their significance. Rather, the cited portion of *Padovani* is

concerned with using hysteresis to determine whether the mobile station should switch to a different base station that has a better C/I measurement. *Padovani* at 23:29-24:02.

Dr. Min does not explain how a POSITA would have understood *Padovani*'s discussion of hysteresis to convey information about the level of protection given to digits of different significance. *Padovani* requires that the new base station have a better C/I measurement of at least 1.0 to trigger a transition to the new base station. *Id.* *Padovani* is completely silent in the cited portions as to how the C/I measurements are encoded to be transmitted back to the base stations and whether certain digits are afforded more protection when encoded than others are. Yet, again, Dr. Min does not explain this citation or how *Padovani* supports his statement regarding a POSITA's motivation. Indeed, in addition to being nonsensical, Dr. Min's testimony is also unsupported because it "does not disclose the underlying facts . . . on which the opinion is based." 37 C.F.R. § 42.65.

Where, as here, a reference contradicts an expert's otherwise unsupported assertions, the expert's testimony is entitled to no weight. *Tyco Fire Products LP v. Victualic Co.*, Case No. IPR2016-00276, Paper 12 at 6 (P.T.A.B. Sep. 30, 2016) (denying rehearing and institution where the expert "did not address aspects of [the reference] that potentially contradict his opinion"). Because Dr. Min's cited evidence does not, in fact, support his testimony, such testimony is also entitled to

little or no weight, and the Petition should be denied. *See id.*, *see also* 37 C.F.R. § 42.65.

Accordingly, the Petition should be denied due to its failure to demonstrate a reasonable likelihood that the Challenged Claims are unpatentable where its alleged motivation to combine is based on unsupported expert testimony.

2. The Petition Fails To Show That A POSITA Would Have Been Motivated To Use Two Different Encoding Schemes From *Gils*

The Petition also fails to establish that the proposed combination of references would have led a POSITA to make the claimed invention with a reasonable expectation of success. To establish a motivation to combine, the “factual inquiry” into the reasons for “combin[ing] references must be thorough and searching, and the need for specificity pervades.” *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381–82 (Fed. Cir. 2016). This applies equally to instances where a party proposes combining multiple discrete embodiments from the same reference. *Abiomed, Inc. v. Maquet Cardiovascular, LLC*, Case No. IPR2017-01204, -01205, Paper 8 at 8-12 (P.T.A.B. Oct. 23, 2017)].

Thus, to meet its burden, the Petition must identify, with specificity, the reason why a POSITA would have been motivated to use two distinct encoding schemes from *Gils* to encode the two separate digits of the C/I measurement of *Padovani*. The Petition does not meet this burden.

i. *Padovani* Does Not Provide A Motivation To Use Two Different Coding Schemes.

First, *Padovani* teaches to use a single encoding scheme. *Padovani* at 45. Specifically, *Padovani* uses a rate (8,4) CRC block encoder to encode a 3-bit DRC message. *Padovani* at 45:20-22. Thus, *Padovani* teaches encoding a 3-bit data word to generate an 8-bit code word. *Id.* *Padovani* does not disclose any other encoding scheme. *See id.* Nor does *Padovani* disclose using two different coding schemes on different parts of either the 3-bit DRC message or the C/I measurement. *See id.*

In fact, the Petition does not cite any teachings of *Padovani* that would tend to show that a POSITA would have understood the (8,4) CRC block encoder should have or could have been replaced with two different coding schemes, as contended by the Petition. *See* Paper 1 at 24-30. Rather, to make the argument that the single encoding scheme in *Padovani* would have replaced with two different coding schemes from *Gils*, the Petition cites to unsupported expert testimony. *Id.* at 26-27. Specifically, Dr. Min states, without citation, that “POSITA would have understood that the use of one coding scheme versus another would depend on, e.g., the type of data to be encoded and/or the amount of error protection desired.” Ex. 1017 at ¶ 157. This conclusory statement does not explain how the type of data encoded in *Padovani* would require or benefit from two different coding schemes,

or what specific considerations would have led a POSITA to such a conclusion.

To the contrary, by specifically identifying the (8,4) CRC block encoder, *Padovani* makes clear that the inventors of *Padovani* believed a single code scheme would have been sufficient. Accordingly, the Petition points to nothing in *Padovani* that would have motivated a POSITA to employ two different coding schemes to encode the different digits of the C/I measurement and the Petition does not point to any such teachings.

ii. Gils Does Not Provide A Motivation To Use Two Different Coding Schemes.

Second, *Gils* – the purported source of the two encoding schemes – actually teaches that “it is natural to give different parts of mutually different importance different protection against errors. This can be done by using different coding schemes for the different parts, ***but more elegantly by using a single so-called Unequal Error Protection coding scheme.***” *Gils* at v (emphasis added). As discussed above, *Gils* teaches that using a single LUEP coding scheme should be employed to encode data having parts of different import instead of using multiple coding schemes. The Petition provides no evidence supporting the proposition that a POSITA would have understood this reference to teach or even suggest that multiple LUEP coding schemes, such as those described in Table 1 of *Gils*, could or should be used to encode different digits of a C/I measurement.

Importantly, the Petition does not explain why a POSITA would have understood the general statement in *Gils* that “[t]his can be done by using different coding schemes for the different parts” to supersede the very next clause expressly stating that a single LUEP was better than using two different coding schemes. See *Gils* at v. “Obviousness concerns whether a skilled artisan not only **could** have made, but **would** have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.” *Samsung Electronics Co., LTD. v. Red Rock Analytics, LLC*, Case No. IPR2018-00555, paper 16 at 20-21 (P.T.A.B. Aug. 30, 2018) (emphasis added).

Thus, even if the Petition were correct that two different coding schemes of *Gils* could have been used, *Gils*’ statement that a single scheme should be used would have motivated a POSITA to employ a single LUEP code scheme, not two different schemes. Ex. 2003 at ¶ 42. The Petition’s contention that a POSITA would have been motivated to use two separate code schemes is incorrect, as *Gils* explicitly discloses that a single LUEP should be used.

3. The Petition Does Not Explain Why A POSITA Would Use The Exact Codes Presented In The Petition In Light Of Numerous Alternatives.

Even if the above combination of codes (*Gils*’s (8,4) and (6,4) codes) **could** have been made, the Petition resorts to hindsight reasoning because it fails to explain how a POSITA, without the benefit of the ’590 patent, **would** have known

to select the particular codes from *Gils* that the Petition identifies to protect the digits of the C/I measurement. *Samsung Electronics Co., LTD. v. Red Rock Analytics, LLC*, Case No. IPR2018-00555, Paper 16 at 20-21 (P.T.A.B. Aug. 30, 2018) (“Obviousness concerns whether a skilled artisan not only **could** have made, but **would** have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention”).

Table 1 in *Gils* contains 78 different possible codes. *Gils* at 25-27. Ten of those codes encode 4-bit data words. *Id.* Moreover, as discussed above in Section VII.B.2, *Gils* teaches that one **should not** use two code schemes. Contrary teachings notwithstanding, even assuming a POSITA would have been motivated to apply two codes to the two 4-bit digits, as the Petition contends, there are still **100 different combinations** of codes that a POSITA could employ (10 possible codes for the first 4-bit digit and 10 possible codes for the second 4-bit digit).

Where a broad selection of choices are available to a POSITA, the claimed invention is not obvious, absent some motivation suggest to a POSITA to pursue the claimed course of action. *Rolls-Royce, PLC v. United Techs. Corp.*, 603 F.3d 1325, 1339 (Fed. Cir. 2010). The Petition does not point to any particular motivation that would direct a POSITA to select the two codes identified by the Petition from the broad selection of choices available.

Indeed, the number of possible codes is even higher when a POSITA

considers codes that encode 8-bit data words. Table 1 in *Gils* defines six different codes that encode 8-bit data words. *Id.* Thus, a POSITA seeking to encode an 8-bit data word, or two 4-bit data words, has 106 possible combinations of codes to choose from based on Table 1 of *Gils* alone. The above calculation does not even factor in all of the other possible types of codes beyond the *Gils*' LUEP codes (*e.g.* non-LUEP codes, such as the (8,4) CRC block encoder disclosed in *Padovani*) that a POSITA could have potentially employed to encode the DRC message of *Padovani*. When these are considered, the number of possibilities become staggering.

The Petition simply fails to show how a POSITA **would** have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention. Thus, there is no motivation to combine the Asserted References to meet the limitations.

4. The Petition's Alleged Motivation To Combine Is Based On Impermissible Hindsight.

In light of the above, the Petition impermissibly resorts to improper hindsight reasoning in an attempt to reconstruct the claimed invention using the claim language itself "as a guide through the maze of prior art references." See *Apple Inv. v. Uniloc Luxembourg S.A.*, Case No. IPR2017-02041, paper 10 at 23 (P.T.A.B. 2018).

Specifically, the Petition does not explain why a POSITA would have been motivated to select the two specific code schemes from *Gils* and apply them to the C/I measurement in *Padovani*, but rather offers only conclusory allegations that attempt to map the prior art references to the claims without any analysis of why a POSITA would have combine the references. This is textbook hindsight reasoning.

For example, the Petition does not explain why a POSITA would have known to apply the (8,4) code specifically to the decimal integer digit and the (6,4) code specifically to the decimal fraction digit. The Petition seemingly plucks these two codes from *Gils* out of thin air and applies them to particular digits of *Padovani*'s C/I measurement solely because they appear to match the claim limitation of "the upper digit is assigned a larger number of bits than the lower digit."

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). The Petition's unsupported expert testimony that the particular codes identified by the Petition would have been obvious to a POSITA offers no substantive rationale beyond conclusory allegations. Thus, the Petition's unexplained selection of codes from *Gils* is not based on any reasoning having some rational underpinning, but on impermissible hindsight.

The Petition fails to identify an adequate motivation to combine the Asserted References because the Petition relies on unsupported testimony, the references contradict the Petition's proposed combination, and the proposed combination is based on impermissible hindsight. The Petition should be denied accordingly.

VIII. The Petition Fails To Demonstrate A Reasonable Likelihood Of Prevailing On Ground 2.

The Petition's Ground 2 asserts that claims 5-8 are obvious over the combination of *Padovani* in view of *Gils* and *Olofsson*. As discussed above, claims 5 and 6 have been disclaimed and claims 7 and 8 include substantially similar elements to those discussed above with respect to Ground 1. Therefore, the arguments presented above with respect to Ground 1 and the combination of *Padovani* and *Gils* apply with equal force to claims 7 and 8.

With respect to *Olofsson*, the Petition provides only a general overview of *Olofsson*. Paper 1 at 50-51. The Petition provides no substantive application of *Olofsson* to any of the Challenged Claims. *Id.* Petitioner bears the burden of explaining how the Asserted References teach the claimed features. 37 C.F.R. § 42.108(c). The Petition does not cite *Olofsson* in support of any of its arguments that the elements of claims 7 and 8 were known or obvious. *See id.* at 52-65 (containing no citations to Ex. 1053 (*Olofsson*)). Because the Petition fails to provide a single citation to *Olofsson* where the Petition contends *Olofsson*

discloses a claimed element or otherwise informs the knowledge of POSITA at the time of the claimed invention, the Petition fails to meet its burden. *Elec. Frontier Found. v. Personal Audio, LLC*, Case No. IPR2014-00070, paper 28 at 2 (P.T.A.B. May 29, 2014) (denying rehearing and institution where Petitioner “failed to cite to evidence in the [exhibits] as to where the elements of the claims can be found”).

Moreover, as discussed above with respect to Ground 1, the combination of *Padovani* and *Gils* alone also fails to teach the claimed invention. Thus, the Petition does not demonstrate that there is a reasonable likelihood that any of the Challenged Claims is unpatentable under Ground 2.

IX. The Parallel ITC Investigation Will Be Resolved Before Any Trial Instituted on this Petition

The Petition should also be denied for efficiency purposes because trial in the parallel ITC investigation will complete before the conclusion of any instituted trial in this proceeding. The predecessors to the Patent Owner originally asserted the '590 patent against Petitioners in a complaint filed in the District of Delaware in early 2017. *See* Complaint, *Inventergy, Inc. v. HTC Corporation et al.*, 1-17-cv-00200 (D. Del. Feb. 27, 2017). Patent Owner then refiled and served the complaints asserting the '590 patent in the District of New Jersey a matter months later. *See* Complaint, *Inventergy, Inc. v. HTC Corporation et al.*, 1-17-cv-00200 (D. Del. Feb. 27, 2017); *see also* Complaint, *INVT SPE LLC v. HTC Corporation*

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et al., 2-17-cv-03740 (D.N.J. May 25, 2017). Patent Owner also filed an ITC Section 337 action against Petitioners on September 13, 2018. *See In the Matter of Certain LTE- AND 3G-Compliant Cellular Communications Devices*, Inv. No. 337-TA-1138. The Petition was filed on August 22, 2018. Paper 1.

Institution of *inter partes* review is discretionary. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016). Under 35 U.S.C. § 314(a), the Board may exercise its discretion to deny institution where institution would result in inefficient use of Board resources or inefficiencies in the patent system under the AIA. *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, Case No. IPR2016-01357, Paper 19 at 16 (P.T.A.B. Sept. 6, 2017). In particular, the Board may consider the stage of parallel proceedings in other forums when determining whether it would be efficient to institute a proceeding under § 314(a). *NHK Spring Co., LTD., v. Intri-Plex Technologies, Inc.*, Case No. IPR2018-00752, Paper 8 at 19 (P.T.A.B. Sept. 12, 2018) (declining to institute *inter partes* review where district court proceedings would end before IPR trial). Where parallel proceedings are likely to conclude prior to the conclusion of an *inter partes* review, the Petition should be denied. *Id.*

Here, the Board should deny institution because ongoing parallel proceedings at the ITC would make *inter partes* review of the '590 patent inefficient. As noted above, the '590 Patent is currently asserted before the ITC in

a Section 337 Investigation between the same parties to the Petition. This parallel ITC Investigation, is now well underway and will complete before the conclusion of any instituted trial in this proceeding. Indeed, the parties will complete discovery in January 2019 and an evidentiary hearing has been scheduled for May 2019. Ex. 2004 (ITC Scheduling Order). Petitioner must disclose any prior art it seeks to rely upon in the ITC proceeding by December 7, 2018 – just after this POPR is filed and long before the Board must decide whether to institute. It is highly likely Petitioner will seek to rely upon the same prior art in the ITC that it has cited in its IPR request (indeed, it is required to cite all art that it is aware of at the time of such request). Unless Petitioner confirms it will not rely upon the prior art in the IPR Petition during the ITC proceeding, conducting an IPR on that prior art will be repetitive to the ITC proceeding. Once the ITC decision is rendered, essentially all the Board can do is redundantly confirm the ITC's finding, or reach an inconsistent agency decision for competing appeals to the Federal Circuit.

For these reasons, instituting trial on the '590 patent would result in inefficient use of Board resources or inefficiencies in the patent system under the AIA. *General Plastic*, Case No. IPR2016-01357, Paper 19 at 16; *NHK Spring*, Case No. IPR2018-00752, Paper 8 at 19. Institution should be denied.

X. Conclusion

Based on the deficiencies identified above, the Petition does not demonstrate a reasonable likelihood of prevailing on any of their proposed grounds, and claims 1, 2, 5, and 6 have been disclaimed. Thus, Patent Owner respectfully submits that the Board should decline to institute an *inter partes* review proceeding based on the Petition.

Dated: November 29, 2018

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION

I hereby certify that the above Patent Owner's Response consists of 12,097 words in 14 point Times New Roman font as calculated by the word count feature Microsoft Office 2016, in compliance with 37 C.F.R. § 42.24(a)(i) and (b)(1). This word count is inclusive of all text and footnotes but not including a table of contents, a table of authorities, mandatory notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on November 29, 2018, a copy of PATENT OWNER’S PRELIMINARY RESPONSE was served in its entirety by electronic mail on Petitioner’s counsel at the following address indicated in Petitioner’s Mandatory Notices:

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