Ericsson Inc
Current UWB Sharing Criteria Are Not Appropriate

In the past year, the Federal Communications Commission ("Commission") has taken significant steps toward permitting the marketing and operation of new products incorporating ultra-wideband ("UWB") technology.[1] Ericsson Inc ("Ericsson") supports the introduction of new technologies that holds promise for a vast array of new applications that may provide significant consumer benefits. Further, Ericsson is generally supportive of the flexible use of spectrum because such policies encourage innovation and competition and ensure that scarce spectrum is used to its fullest potential.

To achieve these goals, however, it is important to make sure that necessary spectrum can support, and that existing services can withstand, the introduction of new technologies. The FCC must establish discrete sharing criteria and conduct comprehensive coexistence studies and interference testing before allowing the deployment of new technologies in spectrum bands. If such measures are not in place, innovation and competition are thwarted and the public interest is not served. On the contrary, consumers suffer because harmful interference causes service interruption and compromises the ability of systems to operate at full capacity. The proposed introduction of UWB technologies into spectrum that is already being used to offer other services illustrates the need for rational and reasonable coexistence rules particularly well.

Three factors demonstrate that UWB technologies should not be introduced at this time: (1) Ericsson's independent evaluations of UWB emissions limits (both individually and in the aggregate), which show that the Commission's sharing criteria are not appropriate or sufficient; (2) the filing of numerous Petitions for Reconsideration in ET

Docket # 98-153 (collectively referred to as the "Petitions for Reconsideration") identifying factual and legal concerns regarding the impropriety of overlaying UWB technology in accordance with existing guidelines; and (3) the release of the Staff Report *"Measured Emissions Data For Use in Evaluating The Ultra-Wideband Emissions Limits In the Frequency Bands Used By the Global Positioning System"* ("Staff Report") on October 22, 2002 that was based on an inappropriate testing methodology and produced inapplicable data. Each of these factors indicate that there are still many significant concerns regarding the appropriateness of the emission limits set by the Commission, the feasibility of operating UWB devices in spectrum that is currently licensed for other uses, and the relevance of the tests performed and data gathered by the Staff for its Report. Prior to the resolution of these open questions, Ericsson does not support the operation of any UWB devices in licensed spectrum.

I. Ericsson's Evaluations

In its First Report and Order, the Commission established average UWB emissions in the form of application-based emission masks.[2] Numerous parties expressed concern over whether the limits set were adequate to protect current Licensees. To test the appropriateness of the UWB emission limits set by the Commission, Ericsson conducted independent analyses of the impacts of operating UWB devices within the PCS band. Ericsson selected these bands because harmful interference in these bands could directly affect the ability of consumers to communicate.

Ericsson's calculations indicate that the Commission's emission level of –53.3dB for operation within the 1610-1900 MHz bands is at least 20-30dB too high. If UWB

[1] *See In the Matter of Revision of Part 15 of the Commissions Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket 98-153, *First Report and Order* (rel. April 22, 2002).

devices operate in these bands, in accordance with the emission levels now in place, they will unacceptably interfere with the performance and capacity of existing PCS systems. As a result, consumers will experience service interruptions, an inability to access the network to place calls, and degradation in signal quality. UWB technology must not be authorized at the expense of existing services.

A. Ericsson's Model

Ericsson evaluated both the interference of a single UWB transmitter with a close-in generic victim receiver and that resulting from multiple UWB devices. Ericsson's initial findings regarding aggregate interference from multiple UWB devices are set forth in a separate report entitled "*First Investigations of the Impact of Aggregated UWB Interference on the Uplink of Radio Access Networks*" ("Aggregate Interference Report"), attached hereto as Exhibit A and introduced in greater detail in Section D. In this filing, Ericsson concentrates on a deterministic model, detailed below, that focuses on interference from a single UWB device on a technology independent, generic portable victim device.

In calculating the interference of a single UWB transmitter with a generic portable device, Ericsson assigned a noise factor of 9 dB to the victim receiver. This noise factor is typical for the type of devices with which UWB devices are likely to interfere in the 1610-1900 MHz bands. Ericsson expressed "generic" power levels in dBm/MHz. Ericsson calculated UWB power spectral density limits for 1dB and 3dB cellular handset link budget degradation, for separation distances ranging from 20 cm to 1m. Ericsson then compared these values to current emission limits for UWB indoor and outdoor

[2] *Id.* at ¶¶ 50, 52, 54, 63, 65 and 67.

devices. According to Ericsson's deterministic analysis and its preliminary aggregate simulations, the Commission's rules are not sufficient to protect existing licensed services, like cellular services, from harmful interference. More specifically, Ericsson's calculations reveal that the Commission's rules already allow emissions for UWB that are at least 20-30 dB too high to protect existing systems from harmful interference.

1. Proximity

UWB devices are expected to operate in very close proximity to existing wireless devices, like those receiving service through cellular, cordless or WLAN systems ("victim receivers"). In fact, UWB devices and victim receivers may even be integrated in or connected to the same laptop or PC.[3] Therefore, the Commission must take into account very small separation distances, from 20 cm to 1m (r = 20cm to 1m), in establishing appropriate emissions limits. As discussed in more detail below, the Commission Staff failed to take this fundamental measurement parameter into consideration in its Report.

2. Free Space Propagation

In addition, with very small separation distances, free space propagation will likely be experienced. However, this propagation condition is limited to when UWB transmitters and victim receivers are in the same room. Therefore, in its calculations, Ericsson assumed that only a small number of UWB transmitters indoors would experience free space propagation paths to the victim receiver.

[3] Operation in close proximity to one another is especially true indoors. However, UWB devices and existing wireless devices are also very likely to be used near one another outdoors.

3. Strongest Interferer Dominates

Ericsson also assumed that, in circumstances where there was a separation distance ranging from 20cm to 1m between UWB transmitters and a victim receiver, the strongest UWB interferer would dominate all other UWB interferers. Accordingly, Ericsson's calculations analyze interference from only one UWB device with an existing indoor subscriber unit operating on a cellular, cordless or WLAN system. See Figure 1 below.

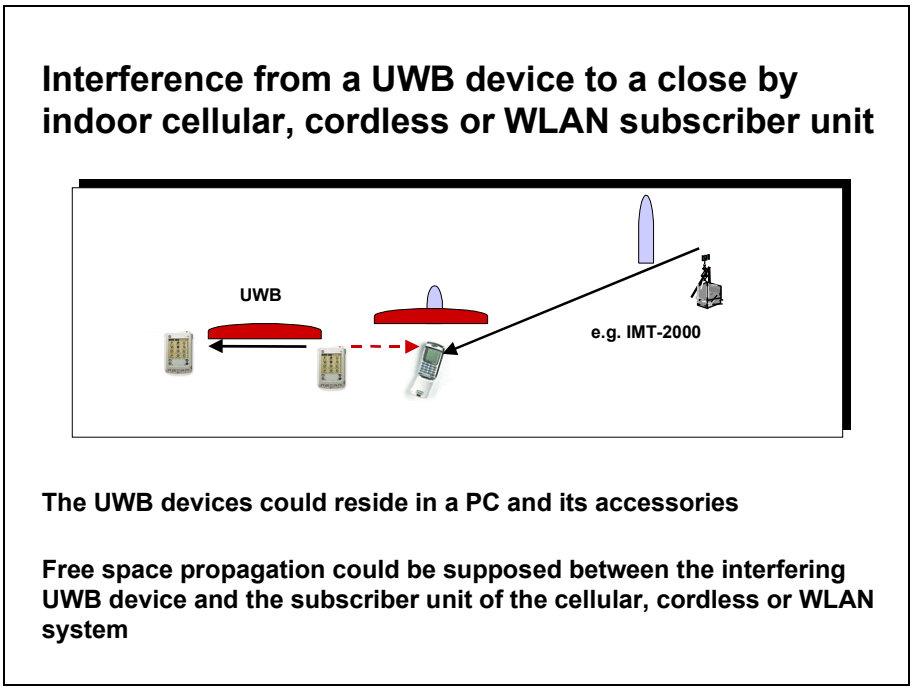

Figure 1. Example of single UWB device interfering with an indoor wireless subscriber unit.

4. Additional Considerations

Moreover, UWB interference will add to the receiver noise floor. This will impact the link budget as well as the capacity of an existing system. As a result, the degradation of an existing (protected) systems caused by even a single new UWB

transmitter must be small to ensure signal quality and system performance. This is of particular importance at the edge of coverage and indoors.

B. Ericsson's Findings

Ericsson's calculations assessing the impact of UWB interference where devices operate in extremely close proximity are set forth in full below. Ericsson expressed "generic" power levels in dBm/MHz as follows:

Thermal noise level: $N_{thermal}$ = -114 [dBm/MHz]
Receiver noise level: $N_{receiver}$ = -114 + Receiver Noise Factor [dBm/MHz]

The Receiver Noise Factor is typically 5dB for base stations and 9dB for portables. Thus:

$N_{receiver}$ for base stations: Typically -109 [dBm/MHz];
$N_{receiver}$ for portables: Typically -105 [dBm/MHz];
Receiver UWB interference level: I_{UWB} [dBm/MHz].

The ratio between the UWB interference power and the receiver noise power determines the amount of signal degradation experienced by a victim receiver. This ratio (I_{UWB} / $N_{receiver)}$ is the UWB interference power (I_{UWB}) at the victim receiver divided by the receiver noise power ($N_{receiver}$) of the victim receiver. If the I_{UWB} value is much less than the $N_{receiver}$ value, there will be little impact on the victim (*e.g.*, cellular) system. However, if the I_{UWB} value is greater than or equal to the $N_{receiver}$ value, there will be severe impact on the victim (*e.g.*, cellular) system link budget. For example:

I_{UWB} = $N_{receiver}$ will give 3dB link budget degradation.
I_{UWB} = $N_{receiver}$ - 6dB will give 1dB link budget degradation.

Ericsson's calculations demonstrate that potential interference that could cause 1 - 3dB link budget degradation must be regarded definitively as harmful. This level of degradation is unacceptable and could result in a loss of coverage within large parts of a cell. This conclusion is illustrated in Figure 2 below.

In Figure 2, Ericsson has plotted the UWB emission limits $P_{UWB}=I_{UWB}+L$ for the allowed UWB interference I_{UWB} and for the victim receiver path loss L:

- Allowed I_{UWB} [dBm/MHz] levels for $I_{UWB} = N_{receiver}$ (3dB link budget degradation);
- Allowed I_{UWB} [dBm/MHz] levels for $I_{UWB} = N_{receiver}$ - 6dB (1dB link budget degradation) for a cellular indoor handset with $N_{receiver}$ = -105 [dBm/MHz] (i.e. with typical 9dB receiver noise factor);
- Separation distances r to the interferer of 1m and 0.2m, supposing a free space propagation path loss: $L= -20\log_{10}(\lambda/4\pi) +20\log_{10}(r)$ dB; and
- The Commission's current emission limits for indoor and outdoor UWB devices.
- The curves of Ericsson's evaluation are sloped due to the $20^* \log_{10}(f)$ "law of free space propagation." The sloped curves result from the assumption of a frequency independent antenna gain at the victim receiver (0dBi), that causes a decrease in the effective antenna aperture of $20^* \log_{10}(f)$. In contrast, the Commission's masks are essentially flat, apart from the steps that are introduced to protect some services. The Commission's flat mask corresponds to a frequency independent effective antenna aperture. Such antenna characteristic implies that the directivity increases with frequency. This assumption is not true for mobile/portable victim receivers, where an omni-directional antenna is used. Therefore, Ericsson's evaluation assumed that the victim receiver employed such an antenna.

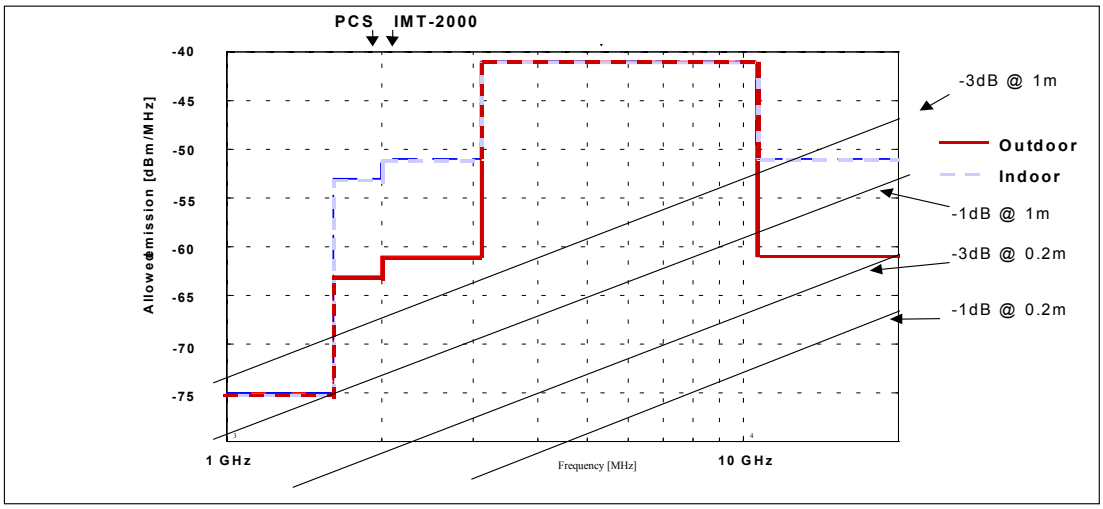

Figure 2. UWB power spectral density limits for 1dB and 3dB link budget degradation for 1m and 0.2m separation distances compared to current emission limits for UWB indoor and outdoor devices.

C. Ericsson's Conclusions

The results shown in Figure 2 above confirm that the Commission's current rules are insufficient to protect existing systems, such as licensed cellular services. They allow *at least* 20-30dB too high emission levels. Thus, the Commission's current rules allow UWB emissions levels that will cause harmful interference.

UWB proponents have argued that because a fading margin is sometimes used for cellular systems, this margin can be used to allow higher UWB interference. The fading margin cannot be used for this purpose. This margin is used to combat influence of fading on the wanted signal relative to the receiver noise and interference. If a receiver's noise floor increases due to increased interference, the fading margin is still required to maintain signal quality and thus the received signal level has to be increased accordingly to compensate.

UWB proponents have also argued that there will typically be some mismatch between the UWB antenna and the victim receiver antenna. This is true. In fact, the mismatch varies and could correspond to, for instance, an additional attenuation from 0 to 8 dB. Ericsson's recommended decrease in the Commission's emissions limits appropriately accounts for this mismatch.

In conclusion, to fully address the consequence of causing harmful interference to existing services, a 20-30dB decrease in the Commission's current emissions levels is necessary, particularly because a 1-3dB link budget loss corresponds to loss of coverage over large parts of a cell.

D. Ericsson's Model Is Generally Applicable

While Ericsson focused its evaluation on the 1610-1900 MHz bands, the principles upon which Ericsson's analysis is founded and the conclusions derived from the results, are equally applicable to *all* of the bands for which the Commission has set UWB emission limits. Accordingly, Ericsson urges the Commission to consider the above generic analysis and attached Aggregate Interference Report and perform similar testing of the emission limits it selected for all of the bands in which UWB is expected to operate, before authorizing UWB devices.

Moreover, as noted above, the foregoing analysis only evaluated the interference from a single UWB device on a single victim receiver. However, there is likely to be more than one UWB and one wireless device, receiving service through cellular, cordless or WLAN systems, operating in close proximity. As Motorola emphasized in its filing, "it is clear, however, from the proceeding that UWB has the potential to interfere with a wide variety of radio services and it is important that a complete understanding of the

impact that UWB will have is developed prior to any Commission action that would allow wide-spread UWB deployment." Based on the initial simulation results documented in the attached Aggregate Interference Report, Ericsson agrees with Motorola that it is imperative that the Commission also evaluate the effects of aggregate interference.

As a starting point, the Commission can look to Ericsson's Aggregate Interference Report, which examines the effect of aggregated interference from multiple UWB devices by using statistical analysis.[4] Aggregate interference has the most significant effect where the variance of the pathloss from the victim receiver to the UWB devices is small and where it is assumed that UWB devices are distributed in a virtually infinite area. These conditions are more often experienced with an outdoor base station of a radio access network (RAN) than from an indoor victim receiver. As a result, the Aggregate Interference Report focuses on the cumulative UWB interference received by an outdoor macro base station (BS) in a suburban scenario and two urban scenarios, where the urban scenarios model indoor and outdoor UWB transmitters.[5]

The Aggregate Interference Report concludes that the cumulative interference impacts to the uplink of the RAN *increases* with the density of active UWB transmitters. UWB transmitter density is assumed to correlate spatially with that of mobile stations (MS) of the RAN. These effects cause the tolerable UWB PSD *per transmitter* to be –87 dBm/MHz, –75.5 dBm/MHz and –65.3 dBm/MHz for urban (indoor), urban (outdoor) and suburban environments, respectively. The stricter PSD limit (-87 dBm/MHz) is

[4] "*First Investigations of the Impact of Aggregated UWB Interference on the Uplink of Radio Access Networks,*" attached hereto as Exhibit A.
[5] For micro and pico BSs significantly different models apply. This issue should be addressed at a future time.

significantly smaller than the limits of -63/-53 dBm/MHz for indoor/outdoor UWB transmitters proposed by the Commission for the PCS1900 MHz band. [6] Thus, like its calculations of the impact of interference from a single UWB transmitter, Ericsson's Aggregate Interference Report indicates that the Commission's current indoor and outdoor emissions limits are inappropriate.

Ericsson urges the Commission to conduct similar analyses of its indoor and outdoor emissions limits, particularly the impact of aggregate interference of UWB transmitters. This action will ensure that the Commission has fully evaluated the impact of the level of interference it has authorized. Further, comprehensive testing will ensure that the Commission's emission limits are rational, reasonable, and sufficiently protect existing services.

II. The Petitions For Reconsideration Raise Important Concerns That The Commission Must Resolve Before Authorizing UWB Deployment

The Petitions for Reconsideration raise a number of important issues, which the Commission must consider in order to fully assess the impacts of UWB devices on existing operations. The Petitions for Reconsideration suggest that the Commission's decision is based on inaccurate and incomplete information. Therefore, the Petitioners argue, the Commission's emission limits are inappropriate.

For example, the Commission determined that a PCS received signal level of -96dBm adequately characterized a low level PCS signal based on real world applications. However, Qualcomm submitted test data to the Commission that demonstrated that the real world signal levels of PCS are routinely -100dBm. The

[6] Further results for other UWB transmitter densities can be found in Table 4 of the Aggregate Interference Report.

Commission never articulated why it rejected Qualcomm's data or how its determination of –96dBm was a more accurate measurement of real world PCS signal levels. Because the strength of a PCS signal materially affects its susceptibility to interference, the Petitions for Reconsideration ask that the Commission reconcile the discrepancy in signal strength measurements before fully authorizing UWB, to ensure that its decision is based on accurate technical measurements.

In addition, the Petitions for Reconsideration ask the Commission to reexamine its fundamental assumptions and findings about the expected operational characteristics of UWB devices and victim receivers. In response to Motorola's earlier Petition for Reconsideration the Commission found that:

> Protecting the PCS receiver to a level 6 dB below the thermal threshold of the receiver is not reasonable because it represents the ideal performance of the receiver and is not representative of typical operating conditions. In practice, PCS receivers will normally receive signals well above the thermal threshold of the receiver. Thus, Motorola's analysis affects receivers operating at the fringe of a reception area. In addition, it is likely that intervening objects would provide significant attenuation to UWB emissions. Thus, we do not believe that Motorola's calculations provide a reasonable representation of the interference potential of UWB to PCS operations.

FCC R&O.[7] Several facts demonstrate that the Commission's analysis is misleading and its findings are inaccurate.

First, contrary the Commission's conclusion, Motorola's analysis did not "represent the ideal performance of the receiver." Motorola used a noise figure of 10 dB typical for mobile handsets (*see* section 1. UWB-to-Mobile Case Table 1 in [x]), which is far from ideal. In many systems, 10 dB may be a typical value. In others, however, it is much worse than the typical or even the worst case number.

Second, many receivers, especially when indoors, will operate (at least part of the time), "at the fringe of the reception area" or close to it. Attenuation caused by reinforced concrete walls, floors etc. make it too expensive for service providers to plan 100% indoor coverage. Therefore, a substantial part of indoor users will operate at wanted signal levels, which are at or close to the fringe area levels, because such levels are found somewhere in most buildings.

Third, contrary to the Commission's conclusion, it is not always likely "that intervening objects would provide significant attenuation to UWB emissions." Given that many wireless devices are portable, an equally (if not more) likely scenario is that devices will operate in such close proximity that there will not be *any* intervening objects to provide attenuation. For example, a typical user may have a PCS handset in his breast pocket at his desk, while sitting in front of a PC that communicates via UWB with the keyboard, mouse and/or wall LAN socket. In this case, interfering distances may be between 0.2 m and 1 m with no intervening objects.

In such circumstances, there will likely be some mismatch (polarization, antenna pattern, frequency dependence etc.) in the victim antenna. To account for this factor, Motorola's analysis assigns a victim receiver gain of -8 dBi, which is a reasonable, indeed expected, consequence when UWB and other wireless devices operate in close proximity to one another. Thus, the Commission's conclusion that Motorola's calculations do not "provide a reasonable representation of the interference potential of

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[7] *In the Matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket 98-153, First Report and Order, ¶ 154 (April 22, 2002).

UWB to PCS operations" is incorrect. In fact, as Ericsson has shown herein, there are relevant scenarios more critical than those exemplified by Motorola.

Further, the Petitions for Reconsideration contend that the UWB emission levels do not reflect an awareness of the important factors that influence emissions and the likelihood that a signal will experience harmful interference. For example, the Petitions for Reconsideration assert that an indoor emissions threshold of -53.3dBm (for 1610-1900MHz) ignores building attenuation, which causes victim signals to weaken and become more prone to interference. Further, the Petitions for Reconsideration note that the indoor emissions benchmark is 10 dB less stringent than outdoor usage, even though UWB devices are more likely to interfere with existing operations indoors.

The Petitions for Reconsideration contend that the Commission improperly ignored these material influences in its analysis and selection of emission limits. Accordingly, the Petitions for Reconsideration ask the Commission to reevaluate the emission limits. Specifically, the Petitions for Reconsideration request that the Commission take into account the myriad conditions impacting whether interference is harmful that were not addressed in its *First Report and Order* to ensure that it has considered all aspects of the interference issue in selecting appropriate limits.

Last, the Petitions for Reconsideration raise specific legal questions related to the Commission's decision to authorize UWB. Generally, the Petitions for Reconsideration challenge the propriety of permitting UWB to be deployed in licensed bands when the Commission has not: 1) evaluated whether UWB will compromise carriers' ability to achieve existing Commission mandates, like E911; 2) considered the aggregate effects of interference; and 3) relied on reasonable and realistic separation distances in setting

emission levels. The Petitions for Reconsideration urge the Commission to refrain from allowing UWB devices to be deployed until the foregoing issues have been adequately considered and addressed by the Commission.

Ericsson agrees with the Petitions for Reconsideration that the resolution of the foregoing issues is extremely important to ensure that existing services can operate without serious service interruption once UWB devices are deployed. Ericsson concurs that without rational coexistence rules, UWB devices will unreasonably interfere with the performance and capacity of existing systems; thereby harming consumers by increasing the incidents of dropped calls and creating an uncertain environment for location based services. In light of the problems raised by the Petitions for Reconsideration and the result of Ericsson's own independent calculations, Ericsson suggests that the Commission proceed cautiously. Ericsson proposes that the Commission permit the deployment of UWB devices only after it has carefully defined the appropriate constraints for UWB transmissions so that UWB devices do not cause any degradation of the performance of existing systems.

III. The Staff Report Is Fundamentally Flawed

Throughout the UWB proceeding, there was significant disagreement regarding whether the Commission's emission limits were appropriate. In particular, the appropriateness of –75.3dBm for the 960-1610 MHz bands was actively disputed. This emission limit was predicated based on the protection of current and future Global Positioning System (GPS) operations in these bands. To address lingering concerns about this emission level for GPS, Commission Staff investigated the assumptions upon which the Commission relied in setting this limit. Staff's findings were released in the

Staff Report *"Measured Emissions Data For Use in Evaluating The Ultra-Wideband Emissions Limits In the Frequency Bands Used By the Global Positioning System."* Rather than address the concerns of the industry, a Staff Report was released which was unrelated and inconclusive because no actual UWB devices were tested. Ericsson concurs with the analyses of RF Metrics Corporation, Qualcomm Inc. and Cingular Wireless, LLC that without the appropriate real world testing, Staff's methodology can only be considered fundamentally flawed.

A. Staff's Measurements Do Not Address Whether UWB Will Cause Harmful Interference To Existing Systems

In evaluating the propriety of –75.3dBm for GPS, Staff was significantly hampered by the fact that no UWB devices that would operate in 960-1610MHz were available for it to test. As a result, Staff made no measurements of the actual interference caused by UWB devices. Instead, Staff conducted a variety of other tests, ostensibly designed to aid the Commission in determining whether the emission limits sufficiently protect existing and expected GPS operations. Staff's testing primarily consisted of measuring the levels of ambient radio noise that exists in the GPS frequency.

Based on these measurements, Staff concluded that the GPS frequency bands generally have very low levels of ambient radio noise in outdoor environments.[8] For indoor environments, however, Staff concluded that the GPS bands have high levels of ambient radio noise well above the UWB emission limits.[9] Consequently, the Staff Report suggested that existing UWB emission limits are too conservative and could be

[8] Cites

[9]

relaxed without causing harm to GPS signals. There is no support for Staff's conclusions in the Report or the record of UWB proceedings.

1. Staff Did Not Discriminate Between Intentional And Incidental Emissions

As with Cingular Wireless, LLC, Ericsson cautions the Commission against altering the UWB emission limits to allow higher dB emissions at this time based solely on the results of Staff's testing. Ericsson's independent calculations of the 1610-1900 MHz emission limits, comments filed in response to the Staff Report, and the Report itself demonstrate that the Staff has not yet developed a methodology that accurately quantifies and assesses the possibility of harmful interference from UWB devices. Cingular Wireless, LLC notes that the Staff failed to employ a systematic approach to take measurements, its measurements merely reflect a snap shot of the RF emissions on a certain date, and time at a certain location. Therefore, the UWB emissions measurements made by Staff do not provide any useful data about whether UWB devices will cause harmful interference with existing systems or whether the limits set by the Commission sufficiently protect existing services.

A comparison between incidental and intentional noise, such as that conducted by Staff is inappropriate. The potential harm created by unintentional emissions from consumer devices (such as computers, electric drills or hair dryers) is *not* the same as the potential harm created by intentional emissions from consumer devices that can be connected to one another depending on the application, i.e. communications, tracking, or imaging. Past experience with similar technologies demonstrates that there is a connectivity progression with such devices that results in concentration or densification of intentional emissions. This of particular concern if UWB will be a success since the expected density of the devices will increase as will the time each device is in use. Assuming certain services, UWB devices may even be transmitting continually.

2. Staff Did Not Adequately Consider The Effects Of Aggregation

In addition, there remains considerable debate on how noise aggregation from cooperative and non-cooperative networks operating in close proximity will affect the overall noise floor. Experience with the 2.4 GHz band, used by Part 15 unlicensed consumer devices other than UWB devices, indicates that aggregation is a very substantial problem. In fact, network aggregation has caused severe degradation of the noise floor in unlicensed bands. Ericsson's Aggregate Interference Report noted above underscores the concern with respect to aggregate interference on existing services. Appropriately modeling the harm to commercial UWB is equally important to the emerging UWB industry as it is to existing systems due to proposed shared spectrum use. Specifically, without addressing real UWB systems, the Commission lacks a scientific basis for determining the levels and operating frequencies that can accommodate this technology on a non-interfering basis. Likewise, without addressing real UWB systems, the Commission lacks sufficiently reliable information to determine the power levels that are necessary to the development of viable UWB products.

Because neither parameter is adequately defined, the Commission's efforts to allow flexible use of spectrum are irrelevant. If there is no framework for a commercially viable business or service model, Industry will not develop new services or products for the spectrum. The spectrum will not support a new service in the long-term. Therefore, the Commission's efforts to facilitate flexible and novel use of spectrum will not produce the intended outcome.

B. A Peer Reviewed Methodology Is Essential To Evaluate Appropriate Emissions Limits

If emissions testing is to serve as the basis for regulatory decisions that will affect a broad range of existing technologies, services, industries, and consumers, including public safety operations, the scientific methodology relied on must be subject to peer review. This is the only way for the Commission to validate whether the method to be used for testing will render credible and reliable measurements of the emissions of actual UWB devices. As RF Metrics Corporation points out, an appropriate testing procedure is imperative to ensure that the FCC's measurement techniques are adequate and that test results can be reproduced. Further, this approach to developing a testing methodology is necessary to ensure that it will provide the Commission with useful and relevant data on the potential of UWB devices to cause harmful interference to existing systems. Because a peer reviewed methodology does not underlie the Staff Report, it is fundamentally suspect and the Commission should not rely on it to justify any alteration to existing emission limits.

IV. Conclusion

Based on the foregoing, Ericsson respectfully requests that the Commission refrain from allowing deployment of UWB devices in presently licensed spectrum until it has established more conclusive sharing criteria and performed comprehensive coexistence studies and interference testing of these criteria. As Ericsson's own calculations of UWB power spectral density limits in indoor environments reveal, the current emission levels are insufficient to protect existing systems. In fact, Ericsson's calculations indicate that current limits are at least 20-30dB too permissive. Accordingly, Ericsson requests that the Commission, rather than relax its current emission levels, take

the opposite action and decrease its current emissions levels by 20-30dB. Further, Ericsson urges the Commission to examine and reconcile the aggregate interference effects of multiple UWB devices. Such action is necessary to avoid harmful interference between UWB devices and existing cellular, cordless or WLAN systems. Last, Ericsson requests that the Commission resolve the open questions raised by the Petitions for Reconsideration and the commenters to the Staff Report before permitting UWB devices to operate in any licensed bands. In this way, the Commission will ensure that it has established rational and reasonable sharing criteria based on reliable, relevant and appropriate technical, regulatory and legal considerations.

DATED this 20th day of December, 2002.

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