

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C. 20554

In the Matter of)
)
Revision of Part 15 of the Commission's Rules) ET Docket No. 98-153
Regarding Ultra-Wideband Transmission)
Systems)

To: The Commission

**CONSOLIDATED OPPOSITION TO, AND
COMMENTS IN SUPPORT OF, PETITIONS FOR RECONSIDERATION**

U.S. GPS INDUSTRY COUNCIL

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July 31, 2002

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The U.S. GPS Industry Council ("Council"), by its attorneys and pursuant to Section 1.429(f) of the Commission's rules, 47 C.F.R. § 1.429(f), hereby opposes certain petitions for reconsideration of the Commission's order permitting the limited marketing and operation of ultra-wideband ("UWB") devices, and files comments in support of other petitioners.¹

I. Summary and Introduction

The petitions opposed by the Council request relaxation of various technical standards and operating restrictions adopted by the Commission specifically to counter the risk of harmful interference from UWB devices to existing services.² The Commission, in a difficult decision, adopted rules that are necessary to protect the integrity and continued operation of existing radio

¹ *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, FCC 02-48, ET Docket No. 98-153 (released April 22, 2002) ("*UWB Order*").

² The Council specifically opposes the following petitions for reconsideration: Time Domain Corporation Petition for Reconsideration, ET Docket No. 98-153 (filed June 17, 2002) ("Time Domain Petition"); Petition for Partial Reconsideration of GPR Service Providers Coalition, ET Docket No. 98-153 (filed June 17, 2002) ("GPR Providers Petition"); Petition for Partial Reconsideration of the Ground Penetrating Radar Industry Coalition, ET Docket No. 98-153 (filed June 17, 2002) ("GPRIC Petition"); Petition of the American Gas Association and the American Public Gas Association for Reconsideration of the Final Rule, ET Docket No. 98-153 (filed June 17, 2002) ("AGA/APGA Petition"); Letter from Thomas J. Henkels, President, National Utility Contractors Association, to the Honorable Michael K. Powell, Chairman, Federal Communications Commission, ET Docket No. 98-153 (dated June 13, 2002) ("NUCA Petition").

services that would potentially be significantly interfered with by applications of UWB technology. Introduction of new radiocommunication technology is a privilege not a right, and a privilege has to be earned. Until the UWB proponents are able to show, through open and transparent tests based on operational UWB devices or working prototypes, that relaxation of the rules adopted in the *UWB Order* will not endanger the operation of existing services or those who justifiably rely upon these services, there is absolutely no rational basis for relaxation of the rules. No such showing has been -- nor could it be -- made to date. As a result, the Commission must reject these petitions, and continue to make protection of the U.S. Global Positioning System ("GPS") and other critical safety services a priority objective of this proceeding.

In a related vein, and in keeping with the Commission's policy determination to protect existing services from the potential devastation that is threatened by the introduction of UWB devices in unspecified applications, the Council also supports those petitions for reconsideration that seek to limit UWB operations which would otherwise adversely affect the services of existing licensees.³ In particular, the Council supports the petitions of the PCS and cellular carriers, whose uninterrupted operations are necessary to ensure a viable E911 service, and the petition of the satellite digital audio radio service ("DARS") licensees, all of whom correctly believe that aggregated emissions from widely deployed UWB devices at the levels authorized in the new rules pose an unacceptable risk of harmful interference to existing services.

³ The Council specifically supports the following petitions for reconsideration: Petition for Reconsideration of Aeronautical Radio, Inc. and the Air Transport Association of America, Inc., ET Docket No. 98-153 (filed June 17, 2002); Petition for Reconsideration of Cingular Wireless LLC, ET Docket No. 98-153 (filed June 17, 2002) ("Cingular Wireless Petition"); Qualcomm Incorporated's Petition for Reconsideration, ET Docket No. 98-153 (filed June 17, 2002) ("Qualcomm Petition"); Petition for Reconsideration of Satellite Industry Association, ET Docket No. 98-153 (filed June 17, 2002); Joint Petition for Partial Reconsideration of Sirius Satellite Radio Inc. and XM Radio Inc., ET Docket No. 98-153 (filed June 17, 2002) ("Sirius/XM Petition"); and Sprint Petition for Reconsideration, ET Docket No. 98-153 (filed June 17, 2002) ("Sprint Petition").

From the outset of this proceeding, the Council and many others parties expressed their view that, while applications of UWB technology undoubtedly hold promise, the existing understanding of the effects of that technology on established services, including the receivers associated with the GPS and the E911 service, is severely limited. One of the hallmarks of the Commission's order is the adoption of responsible standards designed to ensure that existing and planned radio services, particularly safety services such as GPS, are adequately protected from operation of all UWB devices (including peer-to-peer and networks).⁴

The Council continues to believe that the Commission's commitment to protect existing services and licensees from the latest new technology development -- no matter how sensational the marketing literature makes that technology out to be -- is the only conscientious and rational regulatory course of action. The proponents of UWB clearly envision a technology that would be widely available and ubiquitously deployed, and the petitions seeking reconsideration of the *UWB Order* throw more fuel on this particular fire. Notwithstanding the looming conflagration, however, the fact remains that, in the absence of the sensible technical standards and operational restrictions adopted by the Commission in the *UWB Order*, users of the GPS and other existing services, which themselves are ubiquitously deployed in millions of receivers in hundreds of different safety and commercial applications, would face the unacceptable prospect of harmful interference from potentially millions of UWB transmitters in myriad applications.

The Council has stressed from the beginning that comprehensive testing is needed to prove the compatibility of UWB communication signals and the signals of existing services. The public and private testing done over the last few years absolutely justifies the rules adopted in the

⁴ *UWB Order* at ¶ 1.

UWB Order.⁵ Before there can be any relaxation of those rules to accommodate particular UWB applications or classes of applications, it is essential that operational UWB devices first be conducted under “real world” conditions in a manner that is both transparent and open to validation by all affected parties.⁶ Until such testing is done and the results are scientifically validated, it is absolutely premature for the Commission to consider any relaxation of its rules.⁷

For the reasons set out below, the Council opposes the petitions of the UWB proponents, and urges the Commission to reject them outright. The rules adopted in the *UWB Order* properly reflect the Commission’s rational approach toward the implementation of a new technology for which little substantive operational data -- or even a cognizable set of valid operational assumptions -- exists. As the Commission itself stated in paragraph 183 of the *UWB Order*, this approach is “[b]ased on the limited information in the record and our lack of operation[a]l experience with UWB devices” In addition, the adopted standards reflect the Commission’s unequivocal commitment to its longstanding policy objective of protecting critical public safety services. The Council, on the other hand, supports the petitions that request additional or increased limits on UWB operations where existing services would otherwise be adversely affected. The Commission should defer to the expertise of the affected existing licensees who,

⁵ For example, Motorola demonstrated that PCS competitors operate as much as 27-35 dB below Part 15 levels in order to self-regulate the preservation of their noise floor. Motorola Ex Parte Presentation, ET Docket 98-153 (February 1, 2002). This is a model of responsible spectrum use that is to be encouraged in this increasingly complex spectrum usage environment. The ability of other such arrangements to be reached in intra- and inter-service bases should be maintained.

⁶ See, e.g., Ex Parte Presentation of Pulse-Link, ET Docket No. 98-153 (February 2, 2002)(criticizing UWB tests that are not based on “real world” UWB operations). Unfortunately, at this time, real world UWB devices/prototypes are not available for testing or are being withheld from testing by putative UWB operators.

⁷ It is clear to the Council, and should be clear as well to the Commission, that the type of real world testing that would need to be done before any relaxation of the rules could take place will not be able to be there on the six-to-twelve month clock anticipated by the Commission in the *UWB Order*. See *UWB Order* at ¶ 1.

more so than any other parties to this proceeding, know exactly the level of protection necessary to maintain their services.

II. The Commission Should Deny The Petition Of Time Domain, Which Seeks To Include Communication Devices Within The Definition Of “Imaging Systems” And To Increase Through-The-Wall Emission Limits.

Section 15.503(e) of the Commission’s Rules, adopted in the *UWB Order*, excludes from the definition of “imaging system” those systems designed to detect the location of tags or systems used to transfer voice or data information.⁸ Time Domain Corporation (“Time Domain”) has petitioned the Commission to revise this definition to specify an exception to allow tags used to locate firefighting personnel to be operated at the Class B general emission limits for unlicensed consumer operations.⁹ Time Domain also requested that these same general emission limits be applied to through-the-wall devices operated by public safety personnel.¹⁰ The Council opposed both of Time Domain's requests.

The Council opposes Time Domain’s request to operate unlicensed tags below 3 GHz. While the benefits of tracking firemen are obvious and beyond question, this goal can be achieved in more benign ways using existing non-UWB technologies. Tags are, by design, UWB communication devices. Such devices were limited by the Commission to operate on an unlicensed basis only above 3.1 GHz, due to their propensity to disrupt established services in lower bands. Tags and all other UWB communications devices must not be allowed below 3.1 GHz, as test data demonstrates that harmful interference will be caused thereby to ubiquitously

⁸ 47 C.F.R. § 15.503(e).

⁹ Time Domain Petition at 8.

¹⁰ *Id.* at 2.

deployed GPS receivers, including those deployed by firefighters and other public safety personnel.¹¹

The National Telecommunications and Information Administration (“NTIA”) and Department of Transportation (“DoT”) studies found that UWB waveforms vary greatly and have very different effects on GPS receivers. In short, NTIA found that 88 percent of their test cases showed interference for UWB power levels below pre-*UWB Order* FCC Part 15 levels (i.e., below -71 dBW/MHz). The number of pulses per second (or pulse repetition frequency/PRF) determines how harmful pulse-like interference is to GPS. For example, at 100 kHz (100,000 pulses per second), 5 of the 12 test cases showed that harmful interference occurred at power levels below -71 dBW/MHz. At 1 MHz (1 million pulses per second), 20 of 21 cases indicated harmful interference at power levels below this same level. At 5 MHz, 19 of 20 test cases showed that harmful interference occurred at power levels below this level. At 20 MHz, 21 of 21 cases showed that harmful interference occurred at power levels below this level.

The Radio Technical Commission Aeronautics (“RTCA”) also developed operational scenarios based on aircraft landing. It considered Category I/II/III landing and placed the UWB transmitter on the airport surface or just outside of the airport property. To protect the continuity of these operations, RTCA found that the UWB signal must be no more than -100 dBW/MHz in the GPS band. In other words, safe conduct of these operations require that the UWB power in the GPS band to be 800 times weaker than the -71 dBW/MHz power level requested by UWB proponents. RTCA has also begun an investigation of mobile E911 operations. Even though this work is ongoing, RTCA notes that these emergency E911 operations may require the UWB

¹¹ GPS plays a vital role in numerous public safety operations. Just recently, for example, a high precision GPS system was used to pinpoint the drill site used to rescue the nine miners trapped in a collapsed Pennsylvania mine. See Jeff Goodall, *The Man Behind the Miracle*, at <http://www.cnn.com/2002/US/07/28/mine.turning.point/index.html> (last visited July 30, 2002).

power level in the GPS band to be up to one million times weaker than the level favored by UWB proponents.

The operational scenarios most susceptible to UWB interference include survey operations and other current GPS operations, such as E911. The UWB waveforms that are used for communications must operate at levels between 575 and 4000 times weaker than those in the FCC Part 15 limits (i.e., -71 dBW/MHz).

Additionally, the Council is concerned that, at this early stage of UWB implementation, it is unwise to begin carving out exceptions to newly adopted rules that have not yet been put into practice. Denying Time Domain's petition would enable the Commission to avoid establishing precedent for what could prove to be the first of many "exceptions" to the rule defining imaging systems. And when one considers the *real* economic motivator driving the effort to allow deployment of communications devices, the risks associated with relaxation of the Commission's adopted UWB standards are magnified dramatically. UWB proponents may couch their requests for expanded operations in modest terms, but the Commission should not be misled as to their ultimate objective -- namely, the establishment of extensive communication networks capable of transmitting significant bits of data.¹² If these schemes are ever realized, GPS and other safety services will undoubtedly encounter harmful interference resulting from the aggregated emissions of millions of UWB transmissions. Accordingly, the Commission should consider carefully the significant public safety risks that would result from rule changes that permit deployment of UWB communication devices.

The Council also strongly opposes Time Domain's request to relax the emission limits applicable to firefighter tracking and through-the-wall systems, which as adopted are stricter than

¹² See *Watch This Airspace*, The Economist Technology Quarterly (June 22, 2002).

the general Part 15 Class B limits Time Domain favors which have been shown to cause harmful interference. Through-the-wall systems already have an emission limit roughly 20 dB higher than other UWB devices, and have unlimited PRF which is why they must be licensed as know interferers to protect public safety.¹³ Because firefighters use and rely upon GPS equipment in the performance of their duties, and the emissions from through-the-wall devices are already at interfering levels, it is essential that such devices be licensed and operationally restricted in the manner decided by the Commission in the *UWB Order*.

The Council additionally observes that Multispectral Solutions, Inc. (“MSSI”) argues in its Petition for Reconsideration that the current staff interpretation of Section 15.35 of the rules regarding the applicability of a “pulse desensitization factor” above 1 GHz and the calculation of peak power using the full UWB bandwidth would result in UWB power levels that are 41.25 dB higher than those specified in the rule.¹⁴ While MSSI’s concern is related to frequencies above 3.1 GHz, where unlicensed UWB operations at Part 15 limits, including unlimited PRF, its rationale validly applies to bolster the Commission’s decision to preclude peak power UWB devices on an unlicensed basis, including unlimited PRF and high peak power, below 3.1 GHz.

III. The Commission Should Deny The Various Petitions That Seek Rule Changes To Expand Unlicensed GPR Operations, Which, If Adopted, Would Threaten Public Safety Services.

Several petitioners affiliated with or reliant upon the ground penetrating radar (“GPR”) industry seek revision of the UWB rules, which they view as too restrictive and incapable of supporting many potential GPR uses.¹⁵ While one petitioner broadly describes these revisions as

¹³ See *UWB Order* at ¶¶ 50-54.

¹⁴ Petition for Reconsideration of Multispectral Solutions, Inc., ET Docket 98-153, at 7 (filed June 14, 2002; corrected June 18, 2002). The use of such a fader adds 41.25 dB of additional power. *Id.*

¹⁵ See GPR Providers Petition; GPRIC Petition; AGA/APGA Petition; NUCA Petition.

“minor,”¹⁶ they in fact propose far-reaching changes, all on an unlicensed basis, including: relaxation of the adopted emission limits applicable to GPR devices; elimination of the required coordination of imaging systems with NTIA; expansion of eligible users of GPRs; elimination of the automatic shut-down switch requirement; and expansion of the frequency ranges available to GPR applications. The Council opposes each of these proposed revisions as contrary to the Commission’s goal of protecting established public safety services.

A. The emission limits established in the *UWB Order* must not be relaxed.

Two GPR industry groups have petitioned the Commission to revise the power constraints applicable to GPRs. The Ground Penetrating Radar Industry Coalition (“GPRIC”) asks the Commission to apply the general Class B emission limits to GPR devices.¹⁷ Relatedly, the GPR Service Providers Coalition (“GPR Providers”) urge the Commission either (i) to define GPR radiation other than that directed at the ground as unintentional, and then apply a Class B emission level to GPRs; or (ii) to recognize that GPR emissions have interference potential comparable to those of a computer, and adopt a consistent emission constraint.¹⁸ For the reasons set forth below, both petitions lack merit and must be denied.

In adopting the existing GPR power limits, the Commission recognized that appropriate emission levels and associated operational conditions are necessary in order to control harmful interference from UWB devices.¹⁹ The Council believes that, in the absence of testing that supports increased emission limits, the Commission must not revise the levels it has adopted. It notes that for GPRs to operate above 1 GHz, higher power (including peak power) would be

¹⁶ GPR Providers Petition at 1.

¹⁷ GPRIC Petition at 16.

¹⁸ GPR Providers Petition at 19.

¹⁹ *UWB Order* at ¶172.

entailed if the same features of GPRs are to be maintained. Therein lies the danger to GPS. The GPR proponents, however, ask the Commission to place the cart before the horse by advocating that testing be conducted after revisions have already been made.²⁰ This cavalier request is inconsistent with the cautious approach taken by the Commission and with the realization of the serious threat that UWB technology poses to existing services. Notwithstanding the “confidence” of the GPR Providers that such after-the-fact testing will confirm the lack of potential for interference to GPS receivers, the Council believes that the Commission must maintain the regulatory status quo until such time as objective and scientifically valid testing determines that any adjustment to the relaxed emission limits can be safely accommodated.

The Commission should reject the argument advanced by GPR Providers that the same Class B emission level which is applied to computers be applied to GPRs, on the theory that GPR emissions are effectively as “unintentional” as those of a computer.²¹ GPR Providers’ computer analogy fails under any examination. The unintentional interference (such as that resulting from a computer) can readily be cured at the source because it is unintentional -- that is, the interference is not necessary for the proper function of the relevant device. In contrast, intentional radiation from a UWB device *is* necessary to the device’s intended function, and so any cure would necessarily disrupt that function. Thus, GPR Providers are plainly wrong in concluding that computer and GPR emissions “both are unintentional by-products of the intended function of the devices.”²²

²⁰ See GPR Providers Petition at 18 (offering “to make typical GPR equipment available to NTIA and the FCC to test the potential for interference between GPR and GPS under typical operating conditions and parameters”).

²¹ GPR Providers Petition at 19.

²² *Id.*

B. The Commission should continue to require coordination of UWB imaging systems with NTIA.

GPR Providers and GPRIC next challenge the Commission’s requirement that UWB imaging systems be coordinated with NTIA, principally out of a concern regarding the infeasibility of obtaining coordination in emergency GPR situations and because of the administrative burdens involved.²³ The Council believes that these concerns are overstated. First, the Commission has already contemplated the prospect of emergency GPR situations, and has indicated that a “notification process may be used in lieu of coordination.”²⁴ Since both GPRs and GPS may be deployed in response to the same emergency, coordination is essential to ensure that harmful interference does not occur. Second, coordination should not prove to be the administrative burden forecast by the GPR proponents provided the class of unlicensed eligible users remains strictly limited. Third, as demonstrated in Sprint's Petition for Reconsideration, the pulsed nature of the interference from UWB imaging systems would make it very difficult to locate interference sources if there is no meaningful prior coordination.²⁵ To this end, the Commission should retain the limits on eligible GPR users as discussed in Section III.C below. The Council notes that GPS is now a primary resource for safety service providers, and thus must not be compromised.²⁶

GPRIC separately asserts that the NTIA coordination requirement was adopted by the Commission in violation of the Administrative Procedure Act (“APA”). Although there are limits under the APA on which proposals the Commission can adopt in a rulemaking proceeding,

²³ GPR Providers Petition at 10; GPRIC Petition at 15.

²⁴ See *UWB Order* at ¶184. The Commission also plans to implement a procedure similar to that contained in Section 2.405(a)-(e) of its rules to facilitate the emergency operation of UWB imaging devices. *Id.* at n.274.

²⁵ Sprint Petition at 23.

²⁶ See, e.g., n. 11, *supra*.

the APA does *not* require an agency to publish in advance every precise proposal that it may ultimately adopt as a rule, provided that the final rule is a “logical outgrowth” of an agency proposal.²⁷ For a rule to constitute a logical outgrowth of an agency proposal, the rule must be sufficiently related to the notice given so that interested parties “should have anticipated that such a requirement might be imposed.”²⁸

In the factual context of the instant proceeding, GPRIC should have anticipated the NTIA coordination requirement. The operation of GPRs and other imaging systems was the predominant focus of the Notice of Proposed Rule Making (“NPRM”) addressing UWB operations, which specifically invited “broad comment” so that the Commission could provide for the introduction of that technology.²⁹ Furthermore, the NPRM contained specific references to NTIA coordination, which belie any notion that the prospect of such coordination caught GPRIC by surprise. First, the NPRM noted that existing requests for waivers of the Part 15 rules to permit UWB operations had been granted after the operations were “coordinated closely” with NTIA.³⁰ Second, the NPRM indicated the prior request of one commenter for authorization of unlicensed UWB devices that meet the emission limits for Class A digital devices, provided those devices were coordinated with NTIA.³¹ Given these references in the NPRM, as well as its stated “broad” nature, GPRIC and all other parties were certainly put on notice regarding the prospect of NTIA coordination. At a minimum, that prospect was undoubtedly a “logical

²⁷ *1998 Biennial Regulatory Review - 47 C.F.R. Part 90 - Private Land Mobile Radio Services*, Memorandum Opinion and Order and Second Report and Order, 2002 FCC LEXIS 2559, at ¶ 13 (released May 23, 2002).

²⁸ *Id.*

²⁹ *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, Notice of Proposed Rulemaking, FCC 00-163, ET Docket No. 98-153, at ¶ 1 (released May 11, 2000).

³⁰ *NPRM* at ¶ 6.

³¹ *Id.* at ¶ 17.

outgrowth” of the proposed UWB rules. GPRIC had ample opportunity to comment on the issue of coordination with NTIA, and chose not to do so. It must live with its decision.

Rather than attack the coordination issue on administrative law grounds, GPR Providers offer an alternative coordination plan whereby each GPR user would register initially with the Commission, specify an area of intended operations, and supply identifying information regarding its equipment.³² Registered users under this scheme would be free to operate throughout their registered service areas except within defined “sensitive areas” established by NTIA.³³ This proposal is unduly complex, and incapable of addressing real-time, for-the-moment concerns of safety service users. This proposal must be rejected.

C. The class of service providers eligible to use GPRs on an unlicensed basis should not be increased beyond the classes identified in the UWB Order.

Several petitioners urge the Commission to expand the class of users eligible to use GPRs. The American Gas Association and American Public Gas Association jointly request that the Commission allow use of GPRs by natural gas pipeline operators.³⁴ The National Utility Contractors Association seeks “clarification” that the rule identifying eligible GPR users includes underground facility owners and operators, and the utility locators that work for them.³⁵ GPR Providers and GPRIC believe the list of eligible GPR users excludes the vast majority of existing and projected users of GPR devices.³⁶ To account for these allegedly overlooked

³² GPR Providers Petition at 12.

³³ *Id.* at 13.

³⁴ AGA/APGA Petition at 5.

³⁵ NUCA Petition at 3.

³⁶ GPR Providers Petition at 9; GPRIC Petition at 14.

groups, GPR Providers offer a revised definition of eligible users that includes an expanded list of commercial entities (i.e., “subsurface testing eligibles”).³⁷

The Council opposes expanding the list of eligible GPR users as proposed by the UWB proponents. In order to protect GPS, the Commission properly indicated a preference for limiting the proliferation of imaging systems and for controlling use “to a narrow range of applications that should not present interference concerns.”³⁸ Consequently, any increase in the number of GPR systems beyond that which the Commission originally established will necessarily pose a likely unacceptable risk of interference into the GPS bands

Expanding the list of eligible users would also impose a significant administrative burden -- a point that the GPR proponents indirectly concede. In their petitions, GPRIC and GPR Providers observe that existing eligible GPR users would require at least 100,000 coordinations per year -- a figure described as a “staggering burden on both the Commission and NTIA.”³⁹ Axiomatically, increasing the number of eligible users would necessarily add to this “staggering burden,” and raise it to a level beyond the ability of the agencies to handle. For this reason alone, the Commission should deny the UWB proponents’ petitions seeking to expand the number of eligible users.⁴⁰ If it is appropriate to do so, the Commission could, in a future proceeding, consider licensing GPR systems on an individual basis.

³⁷ GPR Providers Petition at 9.

³⁸ *UWB Order* at ¶ 56.

³⁹ GPRIC Petition at 15; GPR Providers Petition at 11.

⁴⁰ The Commission should also reject GPRIC’s argument that the limitations on who may operate GPRs should be rescinded because they were never proposed for public comment as required by the APA. GPRIC Petition at 9. In the NPRM, the Commission specifically sought comment on whether the operation of through-the-wall imaging systems should be limited to parties eligible for licensing under the Public Safety Pool of frequencies in Part 90 of the Commission’s rules, as was required under an earlier waiver to Time Domain. *NPRM* at ¶ 26. Furthermore, as discussed above, the NPRM was intended to be a broad proceeding, and one that focus primarily on GPRs and other imaging systems. GPRIC was clearly on notice as to the potential limitation on eligible GPR operators.

This same rationale also supports the Council’s opposition to the GPR Providers’ request that the Commission revisit its decision regarding UWB’s impact on small businesses. GPR Providers maintain that the “vast majority” of GPR operations today require operation above 960 MHz -- a band where imaging operations have been restricted.⁴¹ The Council opposes this request because the Commission properly deemed it necessary to limit the number of eligible GPR users, and opening the door to additional small commercial users would upset this sound policy decision.

D. The automatic shut-down switch requirement should be retained because of the unavoidable risk of human error.

GPR Providers seek reconsideration of the Commission’s requirement that imaging system equipment include an automatic shut-down switch.⁴² They believe that this requirement, intended to ensure that operations occur only when GPRs are directed towards the ground, is unnecessary (because GPR systems are operated by “trained professionals”), counterproductive (because the accidental release of the switch could compromise testing), and burdensome (because owners would be forced to retrofit existing GPR units).⁴³ In lieu of an automatic shut-down switch, GPR Providers suggest that the Commission’s rules require that imaging systems be operated “only under the immediate control and supervision (whether manual or remote) of an eligible operator.”⁴⁴

The Council opposes this request because it overlooks the element of human error inherent to the manual operation of GPR equipment -- an element effectively eliminated by the

⁴¹ GPR Providers Petition at 20.

⁴² *Id.* at 14.

⁴³ *Id.* at 14-15.

⁴⁴ *Id.* at 16.

automatic shut-down switch requirement. GPR Providers tacitly acknowledge the risk of human error by stating its willingness to rely on “trained professionals” to direct GPR radiation towards the ground on the one hand, but then warning of the problems associated with the inadvertent release by these same professionals of the shut-down switch on the other. In other words, as GPR Providers themselves make plain, accidents *do* happen -- and *will* happen whenever operations are conducted manually. Requiring an automatic shut-down switch simply reduces to an acceptable level the risk of human error associated with GPR operations.

The Council also believes that the burdens cited by GPR Providers in support of their request fail to outweigh the recognized need to protect public safety services from stray GPR transmissions. Simply put, the Commission must not place the nominal time and expense associated with the retrofitting of existing equipment above the integrity of critical services provided by the GPS and E911 services.

E. The Commission should maintain the restrictions on the frequency bands available to UWB devices.

In the *UWB Order*, the Commission determined that GPRs and wall imaging systems must operate with their –10 dB bandwidth below 960 MHz or in the 3.1-10.6 GHz frequency band.⁴⁵ GPRIC requests that the Commission eliminate the requirement that the UWB bandwidth lie below 960 MHz, and rely instead on “reasonable” emission limits to prevent interference.⁴⁶ GPR Providers maintains that the requirement that imaging system bandwidth lie below 960 MHz effectively eliminates entire classes of GPR operations.⁴⁷

⁴⁵ *UWB Order* at ¶ 21.

⁴⁶ GPRIC Petition at 19

⁴⁷ GPR Providers Petition at 17.

The Council opposes the recommendations of the GPR proponents for two reasons. First, as previously discussed in Section III.A, the emission limits favored by GPRIC would, if adopted, contradict the Commission's stated policy of protecting public safety services. Second, as the Council indicated in its reply comments, co-frequency operation of GPR devices and GPS is infeasible and cannot responsibly be permitted.⁴⁸ Even with strict operational requirements and licensing-type regulation, GPS operators will not be provided the required assurance that they will be free from co-frequency interference caused by UWB devices.⁴⁹

The Commission struck the proper balance in the *UWB Order*. It should uphold its decision and reject the reconsideration petitions of the GPR parties.

IV. The Council Supports The Petitions Seeking To Protect Existing Licensed Services From Unlicensed UWB Devices.

A number of entities that are or would be directly affected by unlicensed UWB operations submitted petitions for reconsideration seeking to restrict such operations beyond the limits set forth in the *UWB Order*.⁵⁰ These petitioners raise valid concerns regarding the impact that the new UWB rules would have on their respective user communities. Accordingly, the Council believes that existing licensees impacted by UWB operations should be accorded the level of protection requested in their petitions.

A. Wireless carriers require uninterrupted operations to maintain the critical E911 service.

Favorable action on requests for further limitations on UWB operations is especially warranted in the case of Sprint Corporation ("Sprint") and Cingular Wireless LLC ("Cingular

⁴⁸ Reply Comments of the U.S. GPS Industry Council, ET Docket No. 98-153, at 4 (filed October 27, 2000).

⁴⁹ GPR Providers claim that the proposed restrictions on frequency bands is unwarranted because no evidence of any potential harm from GPRs exists. GPR Providers Petition at 17. This claim is absurd. The lack of evidence results from the lack of adequate testing of GPR devices to date.

⁵⁰ See n. 3 *supra*.

Wireless”), whose PCS and cellular networks comprise part of the critical E911 service. The Commission has indicated from the outset of this proceeding that it intends to protect E911.⁵¹ To achieve this goal, the Commission should accede to the requests of Sprint and Cingular Wireless, who correctly maintain that the success of E911 requires reliance on uninterrupted cellular and PCS operations, and who best understand the level of protection necessary to achieve continuous service.⁵² If the Commission is to take any risks at this early stage of UWB, it should risk erring on the side of providing too much, rather than too little, protection of the E911 service. It should be incumbent on UWB providers to prove, based on empirical testing rather than conjecture, that any relaxation of current protection criteria is warranted.

The Council also notes that Sprint and Cingular Wireless have been licensed for and assigned spectrum within designated geographical areas.⁵³ As noted above, this had led the PCS licenses to self-regulate the noise floor and levels that render them sensitive to additional interference sources.⁵⁴ These licenses, which were assigned through auctions, have incentivized the PCS licensees to maximize the efficiency of their use of spectrum.

Permitting unlicensed UWB operations within this assigned spectrum would violate clear Commission precedent and pronouncements. The fact that Part 15 transmitters currently are, as the Commission observes,⁵⁵ permitted to operate within the cellular and PCS frequency bands is beside the point because the Part 15 rules apply only to narrowband operations for unintentional

⁵¹ See *UWB Order* at ¶ 191.

⁵² Sprint Petition at 25; Cingular Wireless Petition at 21. See also Qualcomm Petition at 12-13 (noting that “reliable, robust, and highly accurate” E911 service requires protection of both the GPS band and the communications links in the PCS band).

⁵³ Sprint Petition at 4; Cingular Wireless Petition at 16.

⁵⁴ See *ii. 5, supra*.

⁵⁵ *UWB Order* at ¶ 271.

emitters that are not permitted to cause interference -- and therefore not to UWB operations, which are both wideband and interfering at Part 15 levels.⁵⁶ Equitable considerations are also at issue. Unlike cellular and PCS licensees, who obtained their authority to use the spectrum through the competitive bidding process, UWB operators will access the spectrum resource for free.

B. Satellite DARS licensees, and other existing service providers, will be adversely affected by the aggregate emissions of UWB communication devices.

The Council supports the petition for reconsideration jointly filed by the satellite DARS licensees, Sirius Satellite Radio Inc. (“Sirius”) and XM Radio Inc. (“XM”). In their petition, Sirius and XM, *inter alia*, take exception with the Commission’s conclusion that “any [UWB] interference at close distances can be easily remedied by moving the devices a short distance away.”⁵⁷ This conclusion, the joint petitioners contend, impermissibly shifts the burden to the operator of a licensed system to avoid interference.⁵⁸ The Council concurs. Part 15 of the Commission’s Rules clearly stipulates that the operator of an unlicensed system has an obligation to cease operations in the event of harmful interference.⁵⁹ The notion of requiring a licensed operator and its millions of users, to avoid harmful interference not of their making by running away directly contradicts the policies underlying the Part 15 rules, and is completely absurd. This alone shows that categorizing UWB devices as legitimate Part 15 devices is the first step on a very dangerous, slippery slope.

⁵⁶ See Sprint Petition at 5; Cingular Wireless Petition at 18.

⁵⁷ Sirius/XM Petition at 12, *citing UWB Order* at ¶ 159.

⁵⁸ *Id.*

⁵⁹ 47 C.F.R. § 15.5(c).

Next, the Council agrees with the observation by Sirius and XM that the Commission failed to account for aggregate UWB interference in the *UWB Order*. The Commission's adopted rules "allow widespread proliferation of hand-held devices, indoor communications devices, and surveillance devices, all of which are very likely to be in close proximity to satellite radio receivers."⁶⁰ Such proliferation also poses severe risks for GPS, or any other ubiquitously deployed service. As noted above, UWB proponents advocate a regulatory framework that entails few restraints on their proposed operations, and envision a regime that ultimately permits communication networks. The Council reiterates its position that the unchecked deployment of UWB communication devices should not be permitted until the consequences of such deployment are fully understood through thorough, verifiable and transparent testing.

V. Conclusion

In the *UWB Order*, the Commission adopted a rational, responsible approach that provides for limited UWB operations prior to determining, through comprehensive testing, the full impact of UWB devices on existing services. The Council applauds the Commission for its exercise of restraint on this point, and urges it to continue to proceed cautiously by rejecting the petitions for reconsideration that seek to expand UWB operations. The fact of the matter is that UWB prototypes are not available today, and may not be available for many years. As the Commission itself recognizes, until operational experience can be gained with UWB devices and networks, it is premature to relax in any way the rules adopted in the *UWB Order*.

Furthermore, allowing the ambiguity that MSSSI has identified to continue to exist would add considerable uncertainty to spectrum use and the viability of commercial and public safety applications. This example reconfirms the importance of retaining the 3.1 GHz line that is drawn

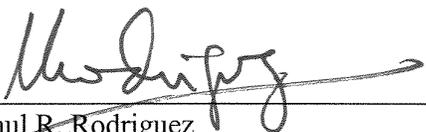
⁶⁰ Sirius/XM Petition at 22.

in the *UWB Order*. Substantial operational experience is needed to understand whether spectral efficiency has been achieved through the existing rules.

Separately, the Commission should look favorably upon those petitions that request addition protection from UWB devices, which providers of wireless and satellite radio services are convinced are necessary to ensure uninterrupted operations. Here, the question is whether sufficient protection was provided by the Commission to incumbent services. Where such protection has been shown to be lacking, the rules should be tightened. Petitions making this showing should thus be granted.

Respectfully submitted,

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July 31, 2002

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CERTIFICATE OF SERVICE

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