

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Amendment of Part 27 of the Commission's)	
Rules to Govern the Operation of Wireless)	WT Docket No. 07-293
Communications Services in the 2.3 GHz Band)	
)	
Establishment of Rules and Policies for the)	IB Docket No. 95-91
Digital Audio Radio Satellite Service in the)	GEN Docket No. 90-357
2310-2360 MHz Frequency Band)	RM-8610

**OPPOSITION OF THE WCS COALITION
TO PETITION OF SIRIUS XM RADIO INC.
FOR PARTIAL RECONSIDERATION AND CLARIFICATION**

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EXECUTIVE SUMMARY

Sirius XM does little more than advance the same positions that it and its predecessors have been advancing for years – proposing restrictions on the 2.3 GHz WCS band that the Commission has properly concluded are unnecessary to avoid harmful interference to SDARS but which, if adopted, would hamper the use of WCS for the provision of broadband services.

The Commission properly balanced competing interests in establishing the new stepped spectral mask for mobile and portable WCS devices. Sirius XM would have the Commission mandate that OOB be attenuated by at least $70 + 10 \log (P)$ dB across the entire SDARS band. However, the record establishes Sirius XM's proposal to be preclusive of viable mobile and portable broadband offerings, and the *Report and Order* rejects it as “not necessary to protect satellite radio operations.” In addition, the *Report and Order* refutes the repetitive arguments set forth by Sirius XM and the record clearly supports the Commission's decision to reject Sirius XM's proposed $70 + 10 \log (P)$ dB attenuation requirement.

Altering the duty cycle requirements as proposed by Sirius XM would be contrary to public interest. Sirius XM calls for a wholesale tightening of the Commission's new duty cycle requirements. However, the WCS Coalition continues to believe that duty cycle requirements are unnecessary to protect SDARS, on reconsideration the WCS Coalition did not challenge the imposition of new duty cycle requirements, but merely sought an appropriate duty cycle for LTE systems and elimination of the unnecessary bias in the new rules against FDD technologies. The Commission properly decided that duty cycle compliance should be measured based upon the frame structure employed by the WCS technology utilized.

The Commission has correctly concluded, contrary to Sirius XM's belief, that no guardband is necessary to protect SDARS receivers from interference from fixed WCS CPE. When the WCS service was established, WCS licensees were permitted to operate at much greater power levels with no guardband in place and Sirius XM never objected. In the *Report and Order*, the Commission substantially reduced the maximum power levels permitted for fixed WCS CPE to 20 watts within any 5 megahertz of authorized bandwidth, while providing a 5 dB reduction in the required OOB attenuation factor, the later, a proposal set forth by Sirius and endorsed by XM. In addition, the record supports the Commission's decision to apply the stepped OOB mask to WCS fixed CPE operating at 2 watts average EIRP or less.

Time and time again the Commission has rejected Sirius XM's proposal to impose a ground level emission limit on WCS fixed stations, and it correctly does so again in the *Report and Order*. On reconsideration, Sirius XM has yet to establish the need for imposing any ground level emissions limit on WCS. The current assertion by Sirius XM that new restrictions on WCS ground level field strength are necessary to avoid interference cannot be squared with Sirius' admission that both Sirius and XM built and deployed their systems to withstand interference that could be anticipated from Part 27-compliant systems since the current rules do not restrict field strength at ground level.

The parties duty to cooperate and the notification process set forth in the *Report and Order* must not be converted into an opportunity for Sirius XM to delay deployment of WCS broadband service. The WCS community fully supports *mutual* obligations imposed on WCS licensees and Sirius XM to exchange WCS base station and SDARS terrestrial repeater technical parameters, and to fully cooperate in good faith to mitigate harmful interference where it occurs. What the WCS

community objects to, however, is Sirius XM's advocacy of one-sided rules and policies that allow it to frustrate the deployment of WCS-based broadband systems, including Sirius XM's demand that the WCS licensees provide it with an opportunity to participate in base station testing, the concept that Sirius XM can interject itself into the WCS base station site acquisition process, and Sirius XM's call for a requirement that WCS licensees make pre-sale consumer devices available for testing.

Sirius XM's proposal to gut the definition of "potentially affected licensee" could slow WCS deployment, compromise the quality of WCS service, and subject WCS subscribers to potential interference. In proposing its 5 kilometer benchmark, Sirius XM is merely rehashing an argument it has previously advanced, and that the *Report and Order* soundly rejected and fails to provide any engineering basis for establishing such a standard.

The WCS Coalition does not object to exempting very low power SDARS deployments from the notification requirements in Section 25.263, *provided that the Commission makes a parallel modification to Section 27.72(b) and (c) to exempt WCS mobile base stations operating at less than 2 watts EIRP.*

While more must be done before the Commission's rules meet the objective of the National Broadband Plan, the record clearly establishes that revisiting the *Report and Order* as proposed by Sirius XM would effectively doom WCS as a viable source of wireless broadband services. Thus, except as noted above, the Commission should reject Sirius XM's call for modification of the *Report and Order*.

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**OPPOSITION OF THE WCS COALITION
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The WCS Coalition, by its attorneys and pursuant to Section 1.429(f) of the Commission’s Rules, hereby opposes in part the petition filed by Sirius XM Radio Inc. (“Sirius XM”) seeking partial reconsideration and clarification of the *Report and Order and Second Report and Order* in this proceeding.¹ As will be discussed in detail below, Sirius XM does little more than advance the same positions that it and its predecessors have been advancing for years – proposing restrictions on the 2.3 GHz band Wireless Communications Service (“WCS”) that the Commission has properly concluded are unnecessary to avoid harmful interference to the satellite Digital Audio Radio Service (“SDARS”) but which, if adopted, would hamper the use of WCS for the provision of broadband services.

**I. THE COMMISSION PROPERLY BALANCED COMPETING INTERESTS
IN ESTABLISHING THE NEW STEPPED SPECTRAL MASK FOR MOBILE
AND PORTABLE WCS DEVICES.**

From the perspective of those WCS licensees desiring to provide innovative new mobile and portable broadband services, no component of the *Report and Order* is more critical than the Commission’s decision to revisit the obsolete rule that had required mobile and portable devices to

¹ Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, *Report and Order and Second Report and Order*, FCC 10-82 (rel. May 20, 2010); *Erratum* (rel. June 8, 2010); *Second Erratum* (rel. July 14, 2010) [collectively “*Report and Order*”].

attenuate out-of-band emissions (“OOBE”) into the 2320-2345 MHz SDARS band by a factor of $110 + 10 \log (P)$ dB. The Commission has found that, while the WCS band has had a mobile allocation since WCS was created in 1997, this OOBE limit constituted a *de facto* preclusion of mobile services in the WCS band. The *Report and Order* concludes that “this situation [is] unacceptable because it effectively makes valuable spectrum unusable for the provision of mobile broadband services” despite ample evidence in the record that the $110 + 10 \log (P)$ limit is far more stringent than required to avoid harmful interference to SDARS subscribers.²

To alleviate this unnecessary preclusion of valuable broadband services, the *Report and Order* imposes on WCS mobile and portable devices operating at no greater than 250 mW the requirement that OOBE attenuation into the SDARS band be not less than $55 + 10 \log (P)$ dB in 2320-2324 MHz and 2341-2345 MHz, not less than $61 + 10 \log (P)$ dB in 2324-2328 MHz and 2337-2341 MHz, and not less than $67 + 10 \log (P)$ dB in 2328-2337 MHz.³ Even with this loosening of the WCS spectral mask, OOBE from WCS mobile and portable devices will be “less than that of nearly any other mobile devices.”⁴ While these new OOBE limits are more stringent than the WCS Coalition would have preferred, they should not preclude the development and deployment of viable, cost-effective mobile and portable devices for use in the U.S. market.⁵

On reconsideration, Sirius XM urges the Commission to scuttle the new WCS mobile and portable spectral mask in favor of one far less benign. Instead, Sirius XM would have the Commission mandate that OOBE be attenuated by at least $70 + 10 \log (P)$ dB across the entire

² *Id.* at ¶ 108.

³ *See id.* at ¶ 100. In addition, such devices are required to employ automatic transmit power control and maintain at least a 2.5 MHz guardband around the SDARS band, affording SDARS receivers even greater protection. *See* 47 C.F.R. § 27.50(a)(3).

⁴ Commission Staff Requests That Interested Parties Supplement The Record On Draft Interference Rules For Wireless Communications Service And Satellite Digital Audio Radio Service, *Public Notice*, 25 FCC Red 3319, 3320 (2010).

⁵ *See* Comments of the WCS Coalition, WT Docket No. 07-293, at 4-5 (filed Apr. 23, 2010), *cited in Report and Order* at ¶ 97.

SDARS band.⁶ This proposal is nothing new; it was previously advocated by Sirius XM,⁷ the record establishes it to be preclusive of viable mobile and portable broadband offerings,⁸ and the *Report and Order* rejects it as “not necessary to protect satellite radio operations.”⁹

Paragraphs 83 through 113 of the *Report and Order* refute the arguments now being rehashed by Sirius XM and thus in the interest of brevity those arguments need not be addressed in depth here. However, several points are worth making in response:

- Sirius XM once again mischaracterizes the WCS Coalition’s position, asserting that “the WCS Coalition concedes . . . [the new OOB limits adopted by the Commission] will cause harmful interference to satellite radio consumers even when the victim receiver and the interfering WCS device are separated by significant distances.”¹⁰ **The WCS Coalition has said no such thing!** What the WCS Coalition has said is that the OOB limits adopted by the Commission could, under isolated worst-case conditions, result in ephemeral interference to SDARS that would not rise to the level of harmful interference.¹¹ As the WCS Coalition has had to remind Sirius XM countless times in this proceeding, when the Commission established WCS it made clear that the desire for a high quality SDARS must “be balanced with the need to provide reasonable operating parameters for adjacent services” and thus the Commission’s objective in governing WCS must be “to limit the potential for interference to a reasonable level -- not to provide a pure, interference-free environment.”¹² As the *Report and Order* has properly

⁶ See Petition of Sirius XM Radio Inc. for Partial Reconsideration and Clarification, WT Docket No. 07-293, at 13 (filed Sept. 1, 2010) [“Sirius XM Petition”].

⁷ As the Commission has recognized, Sirius XM has flipped-flopped throughout this proceeding as to the WCS OOB limits required to protect its subscribers. See *Report and Order* at ¶¶ 86-87.

⁸ See Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 3-4 (filed Jan. 29, 2010) [“WCS Coalition January 29 Letter”].

⁹ *Report and Order* at ¶ 108.

¹⁰ Sirius XM Petition at 11 (citation omitted).

¹¹ See, e.g., Comments of the WCS Coalition, WT Docket No. 07-293 at 11 (filed Feb. 14, 2008) [“WCS Coalition Comments on NPRM”] (“Is the possibility of interference from WCS to some SDARS subscriber under every conceivable scenario completely foreclosed under our proposal? No, no more so than interference from a SDARS terrestrial repeater to a WCS base station or WCS subscriber is precluded under the WCS Compromise Proposal. As noted above, however, the Commission must engage in a balancing act in this proceeding, and the Commission has made clear that SDARS cannot reasonably expect either absolute protection from interference or *carte blanche* to cause interference to WCS.”); Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at Att. 15-17 (filed Aug. 19, 2009); Letter from Mary N. O’Connor, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 1 (filed Aug. 4, 2010) [“WCS Coalition August 4 Letter”].

¹² Amendment of the Commission’s Rules to Establish Part 27, the Wireless Communications Service (“WCS”), *Memorandum Opinion and Order*, 12 FCC Rcd 3977, 3991 (1997) [“1997 WCS MO&O”]. Not surprisingly, then, the 2007 *Notice of Proposed Rulemaking and Second Further Notice of Proposed Rulemaking* in these

acknowledged, the Commission's objective here is not to eliminate all potential for fleeting interference, but rather to mitigate interference that "repeatedly disrupts or seriously degrades service."¹³ The WCS Coalition's consistent position has been that the OOB limits adopted by the *Report and Order* will not result in harmful interference to SDARS subscribers.

- While Sirius XM complains that the *Report and Order* ignores a Sirius XM commissioned study,¹⁴ the *Report and Order* not only acknowledges that study,¹⁵ but finds it sorely wanting. Among the flaws cited by the Commission are that it grossly overstates the percentage of vehicles that will be utilizing the Sirius XM service, ignores the likely presence of terrestrial repeaters in high-traffic urban areas where close spacing of WCS and SDARS is most likely to occur, fails to consider the beneficial impact of the SDARS receiver buffer, presumes that all WCS transmissions will be in the spectrum closest to the SDARS band, employs an unrealistic path loss model that understates attenuation between a potentially interfering WCS mobile and a SDARS receiver, and considers a link margin reduction as constituting harmful interference, even where no muting occurs.¹⁶
- Sirius XM continues to cite to its own testing in Ashburn, VA as evidence that the Commission's new WCS spectral mask will cause adjacent channel interference and that a more restrictive OOB limit is required.¹⁷ However, the Commission staff correctly observed that "the interference to SDARS receivers was dominated by overload interference since the presence of OOB did not seem to have any material effect on SDARS reception at practical distances between the vehicle installations."¹⁸ Similarly, Sirius XM makes too much of the fact that there was one isolated instance of interference during the real world testing conducted by the WCS Coalition in Ashburn.¹⁹ As the

proceedings makes clear that the Commission's goal at this juncture is to craft rules "that would allow SDARS terrestrial repeaters and WCS operation to coexist in adjacent bands." Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band *Notice of Proposed Rulemaking and Second Further Notice of Proposed Rulemaking*, 22 FCC Rcd 22123, 22146 (2007) ["2007 NPRM"]. See also *id.* at 22124.

¹³ *Report and Order* at ¶ 62.

¹⁴ See Sirius XM Petition at 12.

¹⁵ See *Report and Order* at ¶ 98.

¹⁶ See *id.* at ¶¶ 103-106. See also Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 2-3 n.4 (filed May 13, 2010) ["WCS Coalition May 13 Letter"] (observing, in addition to the flaws noted by the *Report and Order*, that: (a) the model overestimates by 25-50% the likely number of WCS subscribers and appears to wrongly assume that all WCS usage will be in vehicles, overstating the number of interfering sources that will be on a road segment at a given time; (b) the simulation does not appear to account for the reduction in OOB that occurs when transmit power control reduces the transmit power of mobile devices, and thus exaggerates the level of OOB that will actually be received by SDARS receivers; and (c) the simulation only considers potential impact to the old XM Radio Inc. ("XM") system, and the results cannot necessarily be applied to the former Sirius Satellite Radio Inc. ("Sirius") system.).

¹⁷ See Sirius XM Petition at 11.

¹⁸ *Report and Order* at ¶ 96. The WCS Coalition has previously identified a series of other flaws with Sirius XM's testing in Ashburn. See, e.g., WCS Coalition August 4 Letter at Exh. B.

¹⁹ See Sirius XM Petition at 11.

Report and Order recognizes, this single momentary muting occurred at only one location during the drive route when the worst case WCS transmit frequency was tested, and only when the system was simulating a worst case, high data rate file upload.²⁰ That fleeting mute hardly rose to the level of harmful interference that “repeatedly disrupts or seriously degrades service,” and thus cannot serve as the basis for adopting a spectral mask that effectively precludes mobile and portable broadband services.²¹

- While Sirius XM continues to assert that a filter is available that would permit WCS to meet the overly stringent proposed mask, it again sidesteps fundamental questions the WCS Coalition has raised regarding these filters.²² Sirius XM has yet to establish that the filter it advocates is of appropriate size for incorporation into handheld devices. Nor has it established, as a practical matter, that such a filter can be incorporated into viable handheld devices. The record suggests that the additional insertion loss associated with the proposed filter would require a larger, more expensive linear power amplifier that would generate more heat and drain the device battery more quickly. Sirius XM has failed to provide any information regarding the risk of increased bandpass ripple or the shoulder rolloff specification. Moreover, the Commission cannot lose sight of the fact that WCS devices already need substantial filtering not only for the SDARS segment, but also to meet the new, stricter OOB requirement at upper end of the WCS band. Yet, Sirius XM has never addressed the issues associated with the cascaded filter design (bandpass plus notch) that would be needed to meet its proposed mask. The bottom line is that adding additional filtering to placate Sirius XM is not only unnecessary, but will effectively preclude the offering of mobile and portable WCS-based broadband services.

In short, the record supports the Commission’s decision to reject Sirius XM’s proposed $70 + 10 \log (P)$ dB attenuation requirement and instead adopt the stepped mask now incorporated into Section 27.53(a)(4) of the Commission’s Rules.

²⁰ *Report and Order* at 26.

²¹ *Id.* at ¶ 62.

²² See WCS Coalition January 29 Letter at 4. See also Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 2 (filed Apr. 30, 2010) (noting that to meet a $70+10\log (p)$ benchmark at both ends of the WCS band would be highly problematic, as the resulting filter insertion loss would have material battery life and device cost implications, as well as delay deployments, because a higher power amplifier output would have to be incorporated into devices, and concluding that “the vendor community can satisfy a $70+10\log(p)$ attenuation requirement 5 MHz from band-edge at one end, with some pain, but requiring it at both ends jeopardizes the viability of the mobile service.”). The same holds true, of course, if WCS mobile devices must meet this standard at both the upper end of the band (as now required), and at the two boundaries with SDARS.

II. ALTERING THE DUTY CYCLE REQUIREMENTS AS PROPOSED BY SIRIUS XM WOULD BE CONTRARY TO THE PUBLIC INTEREST.

A. Duty Cycle Limits For WCS Subscriber Devices Should Not Be Reduced.

During the months leading up to adoption of the *Report and Order*, Sirius XM sought to burden WCS operations with restrictive duty cycle requirements that effectively would preclude the provision of WCS-based broadband services envisioned by the Commission. While the WCS Coalition continues to believe that duty cycle requirements are unnecessary to protect SDARS,²³ on reconsideration the WCS Coalition did not challenge the imposition of new duty cycle requirements, but merely sought an appropriate duty cycle for Long Term Evolution (“LTE”) systems and elimination of the unnecessary bias in the new rules against frequency division duplex (“FDD”) technologies.²⁴ In contrast, Sirius XM calls for a wholesale tightening of the Commission’s new duty cycle requirements. Contending that the maximum 38 percent duty cycle applied to time division duplex (“TDD”) technologies “is unsupported by any technical data on the record,” Sirius XM demands that the maximum duty cycle be reduced to at least 35 percent.²⁵

Sirius XM’s argument is predicated on the incorrect presumption that the Commission cannot adopt a new WCS OOB rule unless it has tested the specific technical parameters reflected in that

²³ See, e.g., Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 2 (filed May 12, 2010); Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Julius Knapp *et al.*, FCC, WT Docket No. 07-293, at 1 (filed Mar. 31, 2010) (“The record does not support the need to impose any restriction on the duty cycle of mobile devices that are otherwise limited to a maximum of 250 milliwatts of power and required to utilize transmit power control.”) [“WCS Coalition March 31 Letter”]. The WCS Coalition is hardly alone in this regard. See, e.g., Comments of Telecommunications Industry Association, WT Docket No. 07-293, at 4 (filed Apr. 23, 2010) (“TIA agrees with the WCS Coalition that the Commission should abandon any limitations based on duty cycle.”) (citation omitted); Comments of Ericsson Inc., WT Docket No. 07-293, at 4 (filed Apr. 22, 2010) (“To avoid conflicts with the standards with TD-LTE and potentially other technologies, Ericsson urges the Commission not to specify any duty cycle.”); Letter from Paul Kenefick, Vice President, Alcatel-Lucent, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 3 (filed May 13, 2010) [“Alcatel-Lucent Letter”] (“The Commission should rely on . . . OOB restrictions and guard bands to address the interference issues and only consider other remedies, such as duty cycle constraints, in the event OOB limitations and guard bands are proven insufficient.”).

²⁴ See Petition of the WCS Coalition for Partial Reconsideration, WT Docket No. 07-293, at 7 (filed Sept. 1, 2010) [“WCS Coalition Petition”].

²⁵ Sirius XM Petition at 2, 4.

rule.²⁶ Yet, Sirius XM points to no statute or case law imposing such a requirement. That is not surprising, since as the Commission has recognized, “it has never been a requirement under our rules that field testing be carried out prior to allowing a new service to begin operation. All that is required is that the Commission consider the facts on the record and create rules to protect primary users of the spectrum from harmful interference.”²⁷ Paragraphs 70 through 72 of the *Report and Order* demonstrate the Commission did just that, as they summarize the ample support in the record for the proposition that SDARS subscribers are protected against harmful interference under the 38 percent duty cycle.

Moreover, although the WCS Coalition had initially reported that the WiMAX testing at Ashburn was conducted with a 35 percent duty cycle, that was at a time when there was no consensus among the parties and the Commission staff as to how “activity factor” and “duty cycle” were to be calculated for TDD technologies. Subsequently, after a consensus methodology for calculating duty cycle and activity factor had developed (which is reflected in footnote 184 to the *Report and Order*), the WCS Coalition made clear that its Ashburn tests were conducted with a 37.03 percent duty cycle.²⁸ Indeed, as the report by TeleWorld Solutions (“TeleWorld”) submitted by the WCS Coalition notes, the vendor community does not support any 35 percent duty cycle for WiMAX TDD, but does support the 37.03 percent duty cycle that was used in Ashburn.²⁹ As TeleWorld made clear, because a 35 percent duty cycle is not supported by the IEEE 802.16e standard, adoption of the Sirius XM

²⁶ See *id.* at 13-14.

²⁷ Amendment of Parts 2 and 25 of the Commission’s Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, *Fourth Memorandum Opinion and Order*, 18 FCC Rcd 8428, 8460 (2003), *affirmed Northpoint Technology Ltd. v. FCC*, 414 F.3d 61 (D.C. Cir. 2005).

²⁸ See, e.g., WCS Coalition March 31 Letter at 1-2 (“when the WCS Coalition conducted the only real world testing utilizing an operational WCS system, it demonstrated that, save for one isolated instance, a mobile device operating with a 37% duty cycle over a 5 MHz channel at 250 milliwatts did not cause interference to DARS reception, not even when that operation was as close as 2.5 MHz from the DARS band edge.”).

²⁹ See *id.* Att. at 2, 4.

proposal would force those using TDD WiMAX technology to default to the lower 30.86 percent duty cycle.³⁰ And that, in turn would limit upload speeds in a manner that would put WCS at a competitive disadvantage relative to other services that are not similarly constrained.

B. The Commission Properly Decided That Duty Cycle Compliance Should Be Measured Based Upon The Frame Structure Employed By The WCS Technology.

Sirius XM also rehashes its proposals to require the measurement of the new WCS duty cycle every 5 milliseconds and to limit the transmissions by fixed, mobile and portable subscriber equipment to every other frame³¹ -- proposals the WCS community has discredited at every turn.³² Sirius XM's proposals were fully considered and, not surprisingly given the record, rejected in the *Report and Order*.³³ Acknowledging the serious adverse consequences that such requirements would have on WCS licenses, the Commission instead correctly concludes that measurement of the duty cycle "in a manner that is referenced directly to the frame duration for the technology in use [strikes] an appropriate balance between our goals of protecting SDARS receivers from harmful interference and enabling the provision of WCS mobile broadband services using different technologies."³⁴

On reconsideration, the Commission should confirm its decision. The record unambiguously demonstrates both that while WiMAX technologies under IEEE 802.16e employ a 5 millisecond

³⁰ See *id.* Att. at 3.

³¹ See Sirius XM Petition at 14-15; Comments of Sirius XM Radio Inc., WT Docket No. 07-293, at 30-31 and Exh. A at 7-8 (filed Apr. 23, 2010) ["Sirius XM April 23 Comments"].

³² See, e.g., Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at 2 (filed Mar. 15, 2010) ["WCS Coalition March 15 Letter"] (reporting that during an *ex parte* meeting, "[t]he participants also discussed how the proposed 5 millisecond frame for measuring the duty cycle was WiMAX 802.16e-specific, and that other 4G standards utilize other frame rates. The WCS Coalition suggested that to prevent these rules from being technology-specific, the duration be tied directly to the frame duration for the technology in use."); WCS Coalition May 13 Letter at 2-3; Letter from Thomas Gutierrez, Counsel to Horizon Wi-Com, LLC, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, at Att. (filed May 12, 2010) ["Horizon Wi-Com Letter"]; Alcatel-Lucent Letter at 4 ("Sirius XM's proposal is not supported by any standard technology currently in existence. Uplink/downlink ratios are established at the network level, and current standards-based systems do not allow for control of individual mobile devices in the manner that would be required to implement Sirius XM's proposal.").

³³ *Report and Order* at ¶¶ 59, 73.

³⁴ *Id.* at ¶ 73.

frame, other technologies do not, and that use of these other technologies would be unnecessarily precluded by adoption of the Sirius XM proposal to require all measurements in a 5 millisecond timeframe.³⁵ Particularly now that LTE has become a marketplace reality, it is essential that the WCS rules be competitively neutral, and not inadvertently force use of any particular 4G technology for the provision of WCS-based broadband services.

The record is similarly supportive of the Commission's rejection of Sirius XM's proposal to limit mobile transmissions to every other frame. The WCS Coalition has previously established that:

Sirius XM's proposal for the Commission to preclude WCS mobile devices from transmitting during the portion of every other frame allocated for mobile transmissions mischaracterizes a prior WCS Coalition statement, misrepresents the open and transparent live WiMAX testing that the WCS Coalition demonstrated in Ashburn, VA to the Commission and Sirius XM, is unnecessary to provide Sirius XM subscribers with protection, is unsupported by any 4G standard or by any technology available in the marketplace, and, as a result, likely would effectively preclude the use of WCS for viable wireless broadband services.³⁶

Yet, the Sirius XM Petition fails to address, much less refute, any of these concerns. As such, the *Report and Order* should stand undisturbed.

III. THE COMMISSION SHOULD REJECT SIRIUS XM'S PROPOSAL TO FURTHER LIMIT FIXED WCS CPE.

A. The Commission Has Correctly Concluded That No Guardband Is Necessary To Protect SDARS Receivers From Interference From Fixed WCS CPE.

Under the initial WCS rules adopted by the Commission in 1997, fixed WCS consumer premises equipment ("CPE") could operate at a power level of up 2000 watts peak EIRP, subject to

³⁵ See, e.g., WCS Coalition March 31 Letter Att. at 6; WCS Coalition March 15 Letter at 2; Horizon Wi-Com Letter at Att.

³⁶ WCS Coalition May 13 Letter at 3 (citation omitted). It is particularly disturbing that no matter how clear the WCS Coalition states that the testing in Ashburn was conducted with the WCS mobile device transmitting during every frame, and not restricted to every other frame, Sirius XM continues to mischaracterize the testing and claim otherwise. See Horizon Wi-Com Letter at Att.

compliance with an $80 + 10 \log (P)$ dB attenuation factor into the 2320-2345 MHz SDARS band.³⁷ With the *Report and Order*, the Commission has substantially reduced the maximum power levels permitted for fixed WCS CPE to 20 watts within any 5 megahertz of authorized bandwidth, while providing a 5 dB reduction in the required OOB attenuation factor. Sirius XM contends, however, that “[n]o reliable record evidence supports the Commission’s decisions with respect to fixed CPE” and urges the Commission to entirely bar fixed WCS CPE from operating in the 2.5 MHz of either side of the SDARS band.³⁸ The WCS Coalition begs to differ.

There is ample record support for the Commission decision to reduce the fixed WCS CPE attenuation factor from $80 + 10 \log (P)$ dB to $75 + 10 \log (P)$ dB. Indeed, in its Petition for Rulemaking that led to the 2007 NPRM, Sirius proposed that 5 dB reduction.³⁹ XM, among others, subsequently endorsed that proposal,⁴⁰ which Sirius reiterated in response to the *Notice of Proposed Rulemaking* in WT Docket No. 07-293.⁴¹ Sirius XM can hardly now complain that the *Report and Order* adopts the very same $75 + 10 \log (P)$ dB attenuation factor for high-powered fixed WCS CPE that Sirius and XM had endorsed.⁴²

Nor, for that matter, can Sirius XM legitimately complain that its receivers will suffer overload interference from WCS fixed CPE unless the Commission for the first time bars fixed WCS CPE use of the 2317.5-2320 MHz and 2345-2347.5 MHz bands. As noted above, when the Commission first

³⁷ See *1997 WCS MO&O*, 12 FCC Rcd at 3983.

³⁸ Sirius XM Petition at 5-9.

³⁹ See Petition of Sirius Satellite Radio Inc. for Rulemaking and Comments, IB Docket No. 95-91, App. B at 4 (filed Oct. 17, 2006) [“Sirius 2007 Petition”].

⁴⁰ See Letter from Bruce Jacobs, Counsel to XM Radio Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 95-91 (filed Jan. 5, 2007). See also WCS Coalition Comments on NPRM at 21-22.

⁴¹ See Comments of Sirius Satellite Radio Inc., WT Docket No. 07-293, Exh. A at 13-14 (filed Feb. 14, 2008) [“Sirius Comments on NPRM”] (“Sirius proposes that all fixed user terminals be subject to an OOB limit of $75+10 \log(P)$ (-45 dBm power), measured in a 1 MHz bandwidth. This requirement is 5 dB less stringent than currently in force.”).

⁴² See *Report and Order* at ¶ 136 (“both WCS and SDARS licensees urge us to lower the current $80 + 10 \log (P)$ dB OOB attenuation factor by 5 dB to $75 + 10 \log (P)$ dB.”).

established WCS in 1997, it allowed WCS fixed CPE to operate across the entire WCS band at power levels far in excess of the maximum imposed by the *Report and Order*.⁴³ Although SDARS interests participated extensively in that proceeding, they never sought a guardband to protect SDARS receivers from overload from fixed WCS CPE.

As Sirius and XM deployed their satellite and terrestrial networks and developed their receivers, they were on notice that the Commission's Part 27 regulatory regime allowed WCS licensees to deploy high-power fixed CPE across the band, without any guardband surrounding the SDARS band.⁴⁴ And they were on notice that it would be up to the SDARS licensees to develop their own mechanisms to protect against fixed CPE overload interference, since the rules provided SDARS with no recourse. One can only assume that their silence during the rulemaking resulted from either an acknowledgement that SDARS would have to accept some levels of interference from the co-equal WCS service or confidence that their receivers were sufficiently robust to avoid overload interference from fixed WCS CPE. Indeed, the current claim by Sirius XM that new guardbands are necessary, notwithstanding the Commission's decision to substantially reduce the maximum permissible power at which fixed WCS CPE operates⁴⁵ cannot be squared with Sirius' 2008 admission that:

The technical parameters imposed on WCS transmitters by the FCC were based on sound physics whose principles remain unchanged. Satellite radio operators relied on those policies and standards. *Both satellite radio licensees designed, built and deployed their systems to withstand interference that could be anticipated from Part 27-compliant systems.*⁴⁶

⁴³ See 1997 WCS MO&O, 12 FCC Rcd at 3983.

⁴⁴ The record before the Commission establishes that had the consumer market for fixed wireless broadband services developed in the manner that was anticipated when the WCS and SDARS auctions took place in 1997, the WCS point-to-multipoint hubs likely would have generated signal levels at ground level similar to that which is generated by base stations used in cellular networks. See Reply Comments of the WCS Coalition, WT Docket No. 07-293, at 19 n.43 and 33 n.73 (filed Mar. 17, 2008) ["WCS Coalition Reply Comments on NPRM"].

⁴⁵ See Sirius XM Petition at 2, 5-8.

⁴⁶ Sirius Comments on NPRM at 17 (emphasis added).

The Commission's rejection of guardbands for WCS fixed CPE is amply supported by the additional factors identified in Paragraphs 140-142 of the *Report and Order*. The Commission has correctly recognized that even without the guardband applied to mobile uses, the potential for harmful interference to SDARS is quite limited. Specifically, the *Report and Order* finds that, compared to the vehicle-to-vehicle scenario, there is likely to be substantially greater WCS signal attenuation due to increased separation between SDARS receivers and WCS fixed CPE, and blockages are likely to exist between fixed WCS CPE devices and SDARS receivers.⁴⁷ Sirius XM fails to present any credible evidence to support its assertion that SDARS receivers will suffer harmful interference from fixed WCS CPE absent the imposition of guardbands. To the contrary, Sirius XM merely cites to "testing" it purportedly undertook at the eleventh hour under the cloak of darkness, without giving the Commission or the WCS community advance notice or an opportunity to participate. Testing conducted in secret, without full disclosure of the details as to how the transmission and reception facilities were configured or operated, simply is not credible (particularly given Sirius XM's track record in this proceeding).⁴⁸ Certainly, it cannot be the foundation for imposing a guardband on WCS fixed CPE operations where none has previously been required.⁴⁹

⁴⁷ See *Report and Order* at ¶¶ 136, 142. While Sirius XM makes much of the fact that "attenuation caused by indoor transmitter placement varies greatly depending on the location of the antenna and structural characteristics of the building" (Sirius XM Petition at 7 (citation omitted)), Sirius XM does not seriously dispute the Commission's underlying observation that there will be additional attenuation given the likely increased distances in the fixed scenario compared to the vehicular scenario.

⁴⁸ See Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293 (filed Feb. 21, 2009); Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293 (filed Mar. 19, 2009); WCS Coalition January 29 Letter at 1-2.

⁴⁹ See Sirius XM Petition at 6-7.

B. The Record Supports The Commission's Decision To Apply The Stepped OOB Mask To WCS Fixed CPE Operating At 2 Watts Average EIRP Or Less.

As discussed in the first section of this pleading, there is ample record evidence to support the Commission's conclusion that WCS mobile and portable CPE operating at or below 250 mW will not cause harmful interference to SDARS under the new stepped OOB mask under which emissions into the SDARS band must be attenuated by not less than $55 + 10 \log(P)$ dB in 2320-2324 MHz and 2341-2345 MHz, not less than $61 + 10 \log(P)$ dB in 2324-2328 MHz and 2337-2341 MHz, and not less than $67 + 10 \log(P)$ dB in 2328-2337 MHz. Similarly, there is ample evidence to support the *Report and Order's* conclusion that WCS fixed CPE comporting with that mask will not cause harmful interference, so long as the fixed CPE is operated at no more than 2 watts average EIRP pursuant to newly-adopted Section 27.53(a)(3) and utilizes automatic transmit power control pursuant to Section 27.53(a)(2).

While Sirius XM contends that “[t]he Commission . . . cannot justify applying the same stepped OOB mask to fixed CPE devices operating with a 2 W per 5 MHz average EIRP as it applies to 250 mW mobile and portable devices,”⁵⁰ the *Report and Order* sets out ample justification. Specifically, after a review of the record,⁵¹ the Commission concludes that:

⁵⁰ *Id.* at 8 (citation omitted).

⁵¹ For example, the WCS Coalition filed with the Commission a report by ATECS, LLC which establishes that the additional path loss resulting from the distance a fixed WCS CPE is likely to be removed from an automobile outfitted with a SDARS receiver, as compared with a vehicle-to-vehicle scenario, is greater than the 9 dB difference between the 250 mW mobile CPE power limit and the 2 W fixed CPE power limit. *See* WCS Coalition Reply Comments on *NPRM* Att. B at 20-21. The report established, for example, that whether one looks at the calculated free space loss from a WCS CPE or the measurements that were taken, the path loss at 30 feet distances (likely the minimum distance between a fixed WCS CPE and an automobile) is at least 9 dB greater than the path loss at 10 feet (which has been accepted in this proceeding as a reasonable assumption for vehicle-to-vehicle analysis). Because that testing was conducted to explore path loss between mobile devices, the test methodology did not reflect that there will likely be off-axis discrimination in the fixed CPE case, since high-power fixed WCS CPE is likely to employ a directional antenna oriented somewhat skyward (towards an elevated base station) rather than towards street level. Thus, as a practical matter it is likely that 9 dB in excess path loss will occur at separation distances substantially less than even 30 feet.

In a fixed scenario, there exists an increased separation distance between WCS CPE and SDARS receivers than would exist in a vehicle-to-vehicle scenario. Furthermore, structural blockages are more likely to exist between fixed WCS CPE devices and SDARS receivers. The increased propagation losses that result from these factors allow for greater flexibility in establishing technical limits for WCS fixed CPE devices operating at or below 2-W per 5-megahertz average EIRP. We therefore adopt the stepped OOB attenuation factors proposed by the WCS Coalition for mobile and portable devices' OOB into the SDARS band.⁵²

As such, Section 27.53(a)(3) should not be revised as suggested by Sirius XM.

C. The Commission Should Not Modify The WCS Fixed CPE Power Limit.

As noted above, the *Report and Order* substantially reduced the power levels at which WCS fixed CPE can operate from 2000 watts peak EIRP to 20 watts within any 5 MHz of spectrum pursuant to Section 27.50(a)(2). Not satisfied, Sirius XM asks the Commission on reconsideration to further restrict WCS fixed CPE operations, limiting the power level to 20 watts peak EIRP within any 5 MHz of spectrum.⁵³ For the reasons set forth in the opposition being filed today by AT&T Inc., the Commission should reject Sirius XM's proposal and retain the current formulation of the rule.

IV. THE COMMISSION CORRECTLY REJECTED SIRIUS XM'S PROPOSAL TO IMPOSE A GROUND LEVEL EMISSION LIMIT ON WCS FIXED STATIONS.

Sirius' 2006 petition to revise the WCS and SDARS rules proposed limiting emissions from WCS base stations to no more than -44 dBm measured two meters from the ground at a distance from the base station that is equal to or greater than the effective antenna height, except that a base station would be permitted up to an average power level of -32 dBm measured at 2 meters above ground level within areas designated by the WCS licensee of up to 20,000 square meters (with no contiguous area greater than 8,000 square meters), as measured from the base of the base station between (i) the

⁵² *Report and Order* at ¶ 142.

⁵³ *See* Sirius XM Petition at 9-10.

radiation center height above ground level and (ii) 5000 meters.⁵⁴ Recognizing both the practical difficulties associated with any ground-based emission limit and the adverse consequences for WCS were the Commission to adopt the specific limit that Sirius XM proposed, the *Report and Order* concludes:

[W]e decline to adopt ground-level emission limits for WCS base stations as proposed by Sirius XM because of the difficulties associated with characterizing and quantifying the case-specific propagation environment's effects on an RF signal's field strength that could influence the interference potential at each fixed site. The rules that would result from an attempt to deal with the anomalies associated with field strength levels, moreover, would be overly complex and difficult for licensees to comply with and would be difficult, at best, for the Commission to enforce. Furthermore, we believe that the revised power limits that we are establishing, together with a $75 + 10 \log (P)$ dB OOB attenuation factor, will provide SDARS operations reasonable interference protection while affording WCS licensees additional flexibility to offer mobile services to the public.⁵⁵

On reconsideration, Sirius XM has yet to establish the need for imposing any ground level emissions limit on WCS. Sirius XM's request for reconsideration must be read against the backdrop of the rules that have governed WCS for the thirteen years prior to the *Report and Order*— rules that have been relied upon by WCS licensees as they have developed their current business plans and that SDARS has represented to be non-interfering.

⁵⁴ See Sirius 2007 Petition App. B at 1. Like so many proposals advanced by Sirius XM and its predecessors, this proposal morphed over the course of the proceeding in a variety of directions. For example, in their comments in response to the 2007 NPRM, XM and Sirius not only continued to call for a 100 dB μ V/m ground level field strength limit for A and B Block WCS licensees, but proposed to drop the ground level field strength limit for C and D Block WCS licensees to 90 dB μ V/m — *just one tenth of that permitted for the A and B Block WCS licensees*. See Sirius Comments on NPRM at 29; Comments of XM Radio Inc., WT Docket No. 07-293, at 34 (filed Feb. 14, 2008). Then, in its comments on the *Technical PN*, Sirius XM modified its proposal and suggested that “the FCC should require that the WCS network be deployed with a cell density such that a power level greater than -44 dBm would not be present for greater than 100 meters of continuous road surface on major and secondary roads.” Sirius XM April 23 Comments at 32 (citation omitted). In violation of Section 1.429(c), the Sirius XM petition does not specify with particularity which of these proposals it would have the Commission adopt on reconsideration, but appears to be supporting the initial Sirius proposal. See Sirius XM Petition at 16. For purposes of this filing, the WCS Coalition will presume that to be the case, but reserves the right to advance additional argument should Sirius XM seek other relief.

⁵⁵ *Report and Order* at ¶ 136.

When the Commission first established WCS in 1997, it imposed no restriction whatsoever on ground level emissions.⁵⁶ As noted above, SDARS interests participated extensively in that proceeding, yet they never sought a field strength limit to protect SDARS receivers from WCS interference. While Sirius and XM were designing and deploying their satellite and terrestrial networks and developed their receivers, they knew that the WCS licensees were free to deploy fixed cellularized networks that would generate relatively high field strength levels near the ground.⁵⁷ And, Sirius and XM were on notice that it would be up to them to develop their own mechanisms to protect against WCS overload interference from those base station emissions, since the Commission's rules provided SDARS with no recourse. As such, the current assertion by Sirius XM that new restrictions on WCS ground level field strength are necessary to avoid "crippling overload interference"⁵⁸ cannot be squared with Sirius' admission that "[b]oth satellite radio licensees designed, built and deployed their systems to withstand interference that could be anticipated from Part 27-compliant systems."⁵⁹

Since the current Part 27 rules do not restrict field strength at ground level,⁶⁰ the WCS community has relied on those rules to develop their business plans,⁶¹ and the quoted language establishes that XM and Sirius immunized their system designs against overload interference, there is no public interest benefit in imposing ground level field strength limits that would undermine the ability of WCS licensees to provide broadband services to the public.

⁵⁶ See Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS"), *Report and Order*, 12 FCC Rcd at 10785, 10864 (1997).

⁵⁷ See *supra* at note 44.

⁵⁸ See Sirius XM Petition at 17.

⁵⁹ Sirius Comments on *NPRM* at 17.

⁶⁰ While Sirius XM complains that the Commission failed to consider its observations of the ground level signal levels generated by the Clearwire Corporation 2.5 GHz band system in Philadelphia (*see* Sirius XM Petition at 3, 16-17), that line of argument misses the point. Under the rules adopted for WCS in 1997, WCS licenses were free to have even higher emissions levels at ground level than were measured in Philadelphia. *See supra* at pp. 10-11. Having represented to the Commission that the SDARS systems were designed to accommodate the interference that was possible under the initial WCS rules, SDARS cannot now be heard complaining that the signal levels generated by WCS might cause interference. Such potential interference was known to SDARS before the SDARS auction, and is a risk that Sirius XM has assumed.

⁶¹ See WCS Coalition Comments on *NPRM* at 27-28.

This is particularly true given the substantial record that imposition of the proposed ground level emissions limit would undermine use of the 2.3 GHz band for the delivery of broadband services. For example, as the WCS Coalition noted when it submitted its own proposed rules shortly after the Sirius filing:

First, Sirius has correctly recognized that the rules be ‘simple to administer and maximize flexibility in system design.’ We agree, and believe that the best way to accomplish that objective is through the simple expedient of limiting EIRP and imposing appropriate spectral masks. Particularly in light of the inherent variability of power flux density readings over time and space due to changes in fading conditions, the Sirius proposal is just too difficult to implement and to verify. Moreover, the metrics proposed by Sirius lack sufficient specificity to be meaningful. If the dBm metric is to be utilized, it is essential that measurement bandwidth, antenna gain and antenna aperture be specified – again, complicating any rule.

In addition, Sirius’ proposed -44 dBm (100 dB μ V/m) ground level emission restriction would effectively preclude the introduction of the very WiMAX systems based on the IEEE 802.16-2005 standard that the Commission has sought to promote in the WCS band. It is obvious why Sirius’ proposed restriction would be acceptable to the DARS licensees – they operate one-way broadcast systems with transmission antennas that tend to be mounted relatively far above ground and have minimal downtilt. By contrast, the nature of the WiMAX systems contemplated for the WCS band requires a very different network design. With WiMAX (or any other two-way cellularized service) base stations will tend to be relatively low to the ground and to utilize significant downtilt to facilitate spectrum reuse and assure ubiquitous coverage. While these base stations usually transmit at far lower power levels than DARS repeaters, the lower height and downtilt factors make it difficult for WCS to meet Sirius’ proposed ground level restrictions. Thus, the WCS Coalition believes that the better approach to regulating WCS and DARS is to govern EIRP without regard to any ground signal limit.⁶²

Subsequent filings by the WCS Coalition expanded on these themes, and establish beyond peradventure that adoption of the ground level signal strength proposals advocated by Sirius XM would undermine the ability of WCS licensees to provide broadband services to the public.⁶³ The record establishes that base stations in a cellularized network will tend to be low to the ground and

⁶² Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 95-91, at 3-4 n.7 (filed July 9, 2007) [“WCS Coalition July 9 Letter”] (citation omitted).

⁶³ See, e.g., WCS Coalition Comments on *NPRM* at 29-32; WCS Coalition Reply Comments on *NPRM* at 32-34; Letter from Paul J. Sinderbrand, Counsel to WCS Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-293, Att. at 11-13 (filed May 5, 2008).

utilize significant downtilt to facilitate spectrum reuse and assure ubiquitous coverage, making it difficult for WCS to meet a 100 dB μ V/m ground level signal strength restriction and still provide the sort of high quality, ubiquitous service the public demands.⁶⁴ Indeed, the WCS Coalition demonstrated that were WCS licensees required to comport with Sirius XM's proposed ground level field strength limit, the number of base stations to provide equivalent metropolitan area coverage would at least double compared to deployments under the original rules.⁶⁵ At the risk of putting too fine a point on it, the initial capital expenditures and ongoing costs that would be incurred were the Commission to adopt Sirius XM's proposal would make it impossible for the resulting WCS system to be a commercial success in the marketplace.⁶⁶

Given this record, the Commission's decision to reject Sirius XM's proposed ground level emissions requirement was the proper one.

V. SIRIUS XM'S PROPOSALS FOR REVISING THE NOTIFICATION AND COORDINATION REQUIREMENTS SHOULD BE REJECTED.

A. The Commission Must Not Convert The Parties' Duty To Cooperate Into An Opportunity For Sirius XM To Delay Deployment of WCS Broadband Services.

If there is one thing on which the WCS community agrees with Sirius XM, it is that the Commission needs to address on reconsideration whether Sirius XM will be able to distort the

⁶⁴ See WCS Coalition Comments on *NPRM* at 31-32.

⁶⁵ See *id.* at 32-34. See also *id.* at Att. D and E.

⁶⁶ In a discussion that is anything but clear, Sirius XM continues to harp on its dissatisfaction with footnote 315 of the *Report and Order* because the Commission employs the COST 231 propagation model. See Sirius XM Petition at 17-18. In footnote 315, the Commission illustrates that allowing A and B Block WCS licensees to operate their fixed and base stations at up to 2000 watts average EIRP within any 5 megahertz of authorized bandwidth, but subject to a limit of 400 watts within any 1 megahertz of authorized bandwidth, is less likely to cause overload interference than the initial WCS rules that allowed C and D Block licensees to transmit at 2000 watts peak EIRP, but without any spectral density limit. Although Sirius XM contends that the Commission should not have employed the COST 231 propagation model in its analysis, Sirius XM never claims, much less demonstrates, that the Commission's decision to modify the maximum permissible power level for WCS A and B Blocks will cause a greater risk of interference than under the initial rules applicable to the C and D Blocks. While the distances cited in the Commission's example may change if another model is employed (just as they would if a different WCS base station height were assumed), the point of the footnote should not change with the introduction of a different propagation model.

obligation of WCS licensees to cooperate in resolving harmful interference into a SDARS veto power over WCS base station siting, network design, testing procedures, deployment timing, whether or not to engage in market trials, equipment selection and other matters that are, quite frankly, none of Sirius XM's business unless harmful interference occurs.⁶⁷

The WCS community fully supports *mutual* obligations imposed on WCS licensees and Sirius XM to exchange WCS base station and SDARS terrestrial repeater technical parameters, and to fully cooperate in good faith to mitigate harmful interference where it occurs. What the WCS community objects to, however, is Sirius XM's advocacy of one-sided rules and policies that allow it to frustrate the deployment of WCS-based broadband systems. Particularly given the competitive threat that mobile broadband-delivered music services like Pandora and Slacker pose to Sirius XM, Sirius XM has every incentive to slow the deployment of WCS base stations if the Commission gives it an opening. The *Report and Order* correctly finds that "the potential for interference between WCS and SDARS can be mitigated by a *streamlined* notification process, whereby WCS licensees share information regarding new or modified WCS base station operations,"⁶⁸ and SDARS licensees have a concomitant obligation with regard to their repeaters.⁶⁹ What Sirius XM asks for, however, is anything but mutual or streamlined.

For example, the position of the WCS Coalition with respect to allowing Sirius XM to interject itself into the WCS base station site acquisition process was clearly stated in the WCS Coalition's petition for partial reconsideration of the *Report and Order*:

If WCS licensees are to provide the levels of service required by the Commission (even if those levels are modified as suggested above), there is simply no time to allow Sirius XM to routinely interject itself into the middle of the WCS site acquisition process, with the attendant delays. The WCS Coalition appreciates that under Section 27.72(e), the Commission will be taking into consideration coordination efforts should

⁶⁷ See Sirius XM Petition at 19-21; WCS Coalition Petition at 22-24.

⁶⁸ *Report and Order* at ¶ 151 (emphasis added).

⁶⁹ See *id.* at ¶¶ 277-279.

it be called upon to address interference complaints; thus, WCS licensees have every incentive to consult with Sirius XM as early in the site acquisition process as practicable in those cases where there is a potential for interference. However, requiring such consultation in all cases, even where the potential for interference is inconsequential, will merely slow WCS deployments and harm consumers who are anxious for access to additional sources of high speed broadband services. By relying on marketplace incentives and eliminating the italicized language, the Commission can have the best of both worlds – advance consultation will occur where it is likely to be of benefit, but unnecessary delays will be avoided.⁷⁰

For the same reasons, the WCS Coalition vehemently objects to Sirius XM's demand that the WCS licensees provide it with an opportunity to participate in "base station testing . . . before commencing commercial service on any new or modified base stations."⁷¹ Sirius XM is entitled under the new rules to ten days advance notice of new base stations, and five days advance notice of modified base stations, and that affords it ample opportunity to use readily available RF modeling tools to ascertain the impact of new or modified facilities on its operations. It has yet to explain what legitimate purpose will be served by drive testing before the commercial launch of service from the new or modified facility.

Once a commercial WCS broadband system has begun to provide service to the public, it is simply not possible for Sirius XM to engage in mystery "testing" new or modified base stations before they become operational. For example, once the network has launched, new in-fill base stations that are added to enhance capacity through frequency reuse or to eliminate coverage gaps generally undergo little, if any, "testing" before they become operational. The design of the new base station, and the modifications to existing base stations, are developed using RF design tools. Because neighboring base stations often require modifications that reduce their coverage to avoid interference to or from the new in-fill base station, the entire implementation process must occur very quickly (often in the middle of the night) so that consumers are not frustrated by unacceptable service

⁷⁰ WCS Coalition Petition at 24.

⁷¹ Sirius XM Petition at 19-20.

interruptions. Along similar lines, when an antenna is adjusted to fill in coverage gaps, the transmission system often must be turned off, the antenna quickly reoriented, and the system re-energized. Because the process often results in a large coverage gap while the station is turned off, it is imperative that the entire process occur quickly, without interference from Sirius XM personnel who have no incentive to see the base station put back into service quickly.

Even more outrageous is Sirius XM's call for a requirement that WCS licensees "make pre-sale WCS consumer devices available to Sirius XM for testing."⁷² Not surprisingly, Sirius XM is silent as to why it needs to test WCS consumer devices. Suffice it to say that the Commission's equipment certification process will assure that all WCS consumer equipment comports with the applicable technical rules. The Office of Engineering and Technology likely does not require Sirius XM's assistance in that process. Indeed, the Commission should be requiring Sirius XM to provide its receivers to WCS and the Commission so they can monitor whether Sirius XM is complying with the Commission's expectation that Sirius XM will "adjust to the changed RF environment in the 2.3 GHz band so that over time, the potential for interference to SDARS receivers will diminish even further as these receivers' susceptibility to interference decreases."⁷³ Particularly given how Sirius XM and its predecessors thumbed their corporate noses at the Commission's call for the development SDARS interoperable receivers, the Commission must carefully monitor to assure that Sirius XM follows through on the directive to improve receiver robustness, a factor that is not evaluated during the standard equipment certification process.

The Commission should also reject Sirius XM's proposal that WCS licensees be required to establish a single point of contact to interface with Sirius XM.⁷⁴ There are only 13 WCS licensees and lessees (adjusting for the fact that some entities hold licenses in more than one corporate entity),

⁷² *Id.* at 21.

⁷³ *Report and Order* at ¶ 82.

⁷⁴ *See* Sirius XM Petition at 20.

and Sirius XM has provided no explanation of why it cannot interact separately with this small number of companies. Establishing a single entity to deal with Sirius XM will take time and money, resources the WCS community would prefer to devote to deploying their networks and providing broadband service to America. Moreover, it will be tremendously inefficient – potential interference issues will arise on a base station-by-base station basis, and are best addressed on a licensee-by-licensee basis without involvement of some third party. Given the Commission’s objective of reducing administrative burdens on WCS licensees, Sirius XM’s proposal should be rejected.⁷⁵

B. Sirius XM’s Proposed Modification Of The Definition Of A “Potentially Affected WCS Licensee” In Sections 25.202(h)(3) and 25.214(d) Should Be Rejected.

Recognizing that Sirius XM deployed terrestrial repeaters pursuant to various special temporary authorizations that do not comport with the new Part 25 power and OOB restrictions on SDARS terrestrial repeaters, the *Report and Order* requires Sirius XM to bring its facilities into compliance with the new rules within 180 days of notice by a potentially affected WCS licensee that the WCS licensee intends to commence commercial operations within a year.⁷⁶ That procedure is incorporated into Sections 25.202(h)(3) (regarding OOB limits) and 25.214(d) (regarding power limits) of the Commission’s Rules.⁷⁷ Although the WCS Coalition would have preferred to see all SDARS terrestrial repeaters brought into compliance within a year of adoption of the *Report and Order*,⁷⁸ it did not seek reconsideration of the Commission’s approach.

⁷⁵ See, e.g., *Report and Order* at ¶ 150.

⁷⁶ See *id.* at ¶ 257.

⁷⁷ 47 C.F.R. §§ 25.202(h)(3) (regarding OOB limits) and 25.214(d) (regarding power limits). The Commission should note that while Sirius XM objects to the definition of “potentially affected WCS licensee” as it relates the process for bringing SDARS repeaters into compliance with the Part 25 power and OOB limits under these two rules, it does not seek reconsideration of that definition, as set forth in Section 25.263(b), for purposes of Section 25.144(e)(3), which requires advance notice before any new or modified repeaters are deployed. Thus, regardless of how the Commission resolves the Sirius XM Petition, it should not modify Section 25.263(b).

⁷⁸ See WCS Coalition Comments on *NPRM* at 41-42; WCS Coalition July 9 Letter at 13-14.

Sirius XM, however, proposes on reconsideration that the definition of what constitutes a “potentially affected WCS licensee” be gutted in such a way that Sirius XM could continue operating in excess of 12 kW average EIRP or with excessive OOB E unless the WCS licensee proposes to deploy a base station within 5 kilometers of the SDARS repeater.⁷⁹ If adopted, Sirius XM’s proposal could slow WCS deployment, compromise the quality of WCS service, and subject WCS subscribers to potential interference.

In proposing its 5 kilometer benchmark, Sirius XM is merely rehashing an argument it has previously advanced, and that the *Report and Order* soundly rejected. The Commission has clearly stated:

We decline to adopt the alternate definition of ‘potentially affected WCS licensee’ proposed by Sirius XM. Sirius XM argues that the definition of ‘potentially affected’ that we adopt today is overbroad, because REAGs are large service areas and may require Sirius XM to modify repeater operations far outside of areas in which the WCS licensee intends to commence commercial service. Instead, Sirius XM urges adoption of a proximity-based approach – rather than a market approach based on the market of the notifying WCS licensee – and proposes a distance of 5 km between an SDARS repeater and a planned WCS base station before a WCS licensee is ‘potentially affected’ by the repeater. Sirius XM does not, however, provide an engineering basis for its proposed 5-km distance, and the record does not provide sufficient evidence for establishing a proximity-based approach. Furthermore, the approach based on the WCS licensing market we adopt today provides greater regulatory certainty to SDARS and WCS licensees of which repeaters would be required to modify operations in light of imminent WCS commercial deployments and is easier to administer. Although the approach based on licensing market may over-include the number of repeaters that need to be modified, this is consistent with the public interest in having as many SDARS repeaters as possible authorized through a blanket license according to the power level and OOB E standards adopted today. These standards are the most effective means of ensuring coexistence of SDARS and WCS operations in the 2.3 GHz band, and we prefer to err on the side of over-inclusion.⁸⁰

⁷⁹ See Sirius XM Petition at 22.

⁸⁰ *Report and Order* at ¶ 262 (citations omitted).

The Sirius XM Petition again fails to provide any engineering basis for establishing a 5 kilometer distance or to otherwise address the Commission's objections to its proposal.⁸¹ That said, the WCS Coalition recognizes that for purposes of Sections 25.202(h)(3) and 25.214(d), and for purposes of those sections only, the definition of "potentially affected WCS licensee" may be excessive in some extreme cases. Therefore, the WCS Coalition would not object to modification of those sections to eliminate references to MEAs and REAGs, and simply provide that upon notice from any WCS licensee preparing to deploy a fixed or base station within 25 kilometers of a non-compliant repeater, Sirius XM must bring that repeater into compliance with the new power and OOB limits within 180 days.

C. The WCS Coalition Does Not Object To Exempting Very Low Power Deployments From The Notification Requirements.

Sirius XM urges the Commission to "clarify" that terrestrial repeaters operating at less than 2 watts EIRP should be exempted from the requirement in Section 25.263 that it provide potentially affected WCS licensees with advance notice before commencing operations of new repeaters or modifying existing repeaters.⁸² The WCS Coalition has no objection to modifying Section 25.263 as proposed, *provided that the Commission makes a parallel modification to Section 27.72(b) and (c) to exempt WCS mobile base stations operating at less than 2 watts EIRP.*⁸³ Just as very low power

⁸¹ See, e.g., WCS Coalition Comments on *NPRM* at 48-50 and Att. F; WCS Coalition Reply Comments on *NPRM* at 20. Sirius XM makes much of the fact that the rules only require Sirius XM to provide notice with respect to a terrestrial repeater in one MEA or REAG to WCS licensees of a neighboring MEA or REAG if the repeater is within 5 kilometers of the MEA or REAG border. See Sirius XM Petition at 22-23. What Sirius XM ignores, however, is that SDARS terrestrial repeaters tend not to be located near MEA or REAG borders because those borders are generally in rural areas. Thus, while the 5 kilometer benchmark is too small, as a practical matter WCS licensees will not suffer interference from non-compliant terrestrial repeaters just five kilometers away. It is for this reason that the WCS Coalition did not object to the 5 kilometer limitation, notwithstanding the fact that a repeater located within 5 kilometers of a WCS base station may cause harmful interference.

⁸² See Sirius XM Petition at 25.

⁸³ Such very low power WCS base stations will be deployed in the same fashion current mobile service providers deploy femtocells or similar devices at locations where improved signal coverage or extreme

terrestrial SDARS repeaters pose little threat of interference to WCS, very low power WCS base stations pose very little threat to SDARS and should be equally exempt from the notification requirements.

* * *

The National Broadband Plan recognizes that WCS can and should play a key role in meeting America's pressing demand for broadband spectrum.⁸⁴ While more must be done before the Commission's rules meet the objective of the National Broadband Plan,⁸⁵ the record clearly establishes that revisiting the *Report and Order* as proposed by Sirius XM would effectively doom WCS as a viable source of wireless broadband services. Thus, except as noted above, the Commission should reject Sirius XM's call for modification of the *Report and Order*.

Respectfully submitted,

THE WCS COALITION

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frequency reuse is necessary, including indoor shopping malls, convention and conference centers, arenas, and stadia.

⁸⁴ Federal Communications Commission Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan*, at 86 (2010).

⁸⁵ See generally WCS Coalition Petition; Petition of AT&T Inc. for Partial Reconsideration, WT Docket No. 07-293, at 13-14 (filed Sept. 1, 2010).

CERTIFICATE OF SERVICE

I, Jennifer Canose, hereby certify under penalty of perjury that the foregoing Opposition of the WCS Coalition was served this 18th day of October, 2010 by depositing a true copy thereof with the United States Postal Service, first class postage pre-paid, addressed to:

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