

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Amendment of Parts 1, 2, 15, 90 and 95 of the Commission's Rules to Permit Radar Services in the 76-81 GHz Band)	ET Docket No. 15-26
)	
Amendment of Part 15 of the Commission's Rules to Permit the Operation of Vehicular Radar Services in the 77-78 GHz Band)	RM-11666
)	
Amendment of Sections 15.35 and 15.253 of the Commission's Rules Regarding Operation of Radar Systems in the 76-77 GHz Band)	ET Docket No. 11-90
)	
Amendment of Section 15.253 of the Commission's Rules to Permit Fixed Use of Radar in the 76-77 GHz Band)	ET Docket No. 10-28
)	
Amendment of the Commission's Rules to Permit Radiolocation Operations in the 78-81 GHz Band)	

To: The Commission

**COMMENTS OF ARRL,
THE NATIONAL ASSOCIATION FOR AMATEUR RADIO**

ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated (ARRL), by its Chief Technology Officer and pursuant to Section 1.415 of the Commission's Rules (47 C.F.R. §1.415), hereby respectfully submits its comments in response to the *Notice of Proposed Rule Making and Reconsideration Order*, FCC 15-16, 80 Fed. Reg. 12120, released February 5, 2015 (the Notice).¹ The Notice proposes to substantially modify the Commission's Part 15 and 95 rules and the domestic Table of Allocations with respect to the 76-81 GHz band in order to accommodate the development of

¹ Because the Notice in this proceeding was published in the Federal Register on March 6, 2015, these comments are timely filed.

and to authorize radar applications in that band in the United States. The Commission also seeks to develop a regulatory framework that will allow various services to operate on an interference-protected basis in the band. The Notice also considers service rules that provide for the deployment of various radar applications in this band domestically. The Commission initiated this proceeding in response a petition for rulemaking filed by Robert Bosch, LLC (Bosch), RM-11666. For its comments in response to the Notice proposals and in the interests of the Amateur Radio Service in continued access to and effective use of the band 77-81 GHz, ARRL states as follows:

I. Introduction and Background.

1. In this proceeding, the Commission proposes specifically: (1) to expand radar operations in the 76-81 GHz band; (2) to modify the domestic Table of Frequency Allocations to provide a new domestic, co-primary (with the Amateur Service and the Amateur Satellite Service) allocation for the radiolocation service in the 77.5-78 GHz band in the United States; (3) to authorize the proposed, expanded radar operations on a blanket, or “licensed-by-rule” basis under Part 95 (rather than on a Part 15 unlicensed basis as is the case now with respect to 76-77 GHz automotive radars); and (4) to evaluate the compatibility of incumbent operations, including that of the Amateur Radio Service and radioastronomy, with radar applications (especially automotive radar applications) in the 77-81 GHz band. This combination of Commission proposals, including the evaluation of the compatibility between Amateur Radio and radar installations at 77-81 GHz, is undertaken in large part on the Commission’s own initiative. There is not, anywhere in the four corners of the Bosch Petition for Rule Making or in any comments that have been filed thus far in response to RM-11666, any suggestion that there is any

incompatibility between Amateur Radio operation and automotive radars.² Quite the contrary: compatibility between short range automotive radars and Amateur Radio compatibility has been definitively established by a credible, current ITU study discussed below. However, the Commission's proposal to unilaterally permit unspecified fixed radar systems in the entirety of the 76-81 GHz band based only on its own assumptions of compatibility, without the benefit of any completed, definitive studies relative to the compatibility of fixed radar systems with automotive radar, radioastronomy and/or Amateur Radio in this band is both premature and poor spectrum management. Simply put, there is no submission from any private sector entity that indicates either: (1) any necessity to permit *generalized*, fixed radar installations at 77-81 GHz; or (2) that Amateur Radio is in any sense incompatible with radioastronomy or automotive radar at 77-81 GHz.³ It is ARRL's position that there should be no change in the Amateur Radio domestic primary allocation at 77.5-78 GHz, or in the secondary amateur allocation at 77-77.5 GHz or 78-81 GHz in order to accommodate automotive radar systems at 77-81 GHz. Nor are any additional Part 97 rules necessary to accommodate compatible sharing of that band between radio amateurs and automotive radar systems. Indeed, that is the position of the United States in

² Quite to the contrary, Bosch notified the Commission's Office of Engineering and Technology beginning in approximately 2010 at a series of meetings dealing with the band 77-81 GHz that it intended to submit a Petition for Rule Making proposing the modification of Section 15.253 of the Commission's rules to permit the operation of automotive short range radars (SRRs) in the 77-81 GHz band [in addition to 76-77 GHz which is now permitted by that rule Section for use by automotive long range radars (LRRs)]. Bosch and other members of the 79 GHz Project have reached out to the radioastronomy community and to ARRL in order to determine and to ensure compatibility between those services and unlicensed SRR automotive radar systems at 77-81 GHz. Bosch on behalf of the 79 GHz Project participants committed to the continuation of cooperative interference-avoidance efforts to insure spectrum compatibility with incumbent radiocommunication services as the 77-81 GHz band becomes available for unlicensed SRR systems. Bosch stated its commitment to establishing private-sector interference avoidance protocols in order to insure compatible sharing and ARRL is satisfied with those commitments.

³ The Commission states that other than the Bosch Petition, this proceeding is based on two Petitions for Reconsideration in ET Docket Nos. 11-90 and 10-28; See, Navtech, Petition for Partial Reconsideration, filed Sept. 5, 2012 dealing with Fixed Radar operations at 76-77 GHz only; and Honeywell, Petition for Partial Reconsideration, filed Oct. 10, 2012, which dealt with use of mobile radars in the band 76-77 GHz only mounted on aircraft wings and which are proposed to be used only while such aircraft were located on the ground on airport runways and taxiways to avoid wingtip collisions. Neither of those Petitions for Reconsideration addressed the 77-81 GHz band whatsoever, nor did any other aspect of those two docket proceedings.

anticipation of consideration of WRC-15 agenda item 1.18 later this year.⁴ Thus, any current consideration of fixed radar operation should be limited to the segment where such operation has already been considered, at 76-77 GHz, as urged by Navtech and Honeywell in their petitions for reconsideration in Docket 11-90. Finally, any consideration of fixed radars at 77-81 GHz should await the completion of conclusive, refereed compatibility studies that credibly establish compatibility with incumbent services.

2. The Bosch Petition asserted (based on extensive discussions and technical evaluations between ARRL and Bosch in advance of the filing of the Bosch Petition) that making available spectrum at 77-81 GHz for automotive radars would have no significant impact on the Amateur Radio Service. Bosch did not propose a domestic spectrum *allocation* for vehicular radar devices and systems, but rather only the modification of Section 15.253 of the Commission's rules to permit the operation of vehicular radars to operate at 78-81 GHz on the same basis that vehicular radars are now operated in the United States at 76-77 GHz: on a non-allocated basis, premised on non-interference to licensed services, and on the acceptance of interference from allocated services in the band. ARRL's understanding is that this model has worked well for automotive radars in the 76-77 GHz band, and that only the single, Part 15 rule required modification is necessary in order to permit this expanded use of 77-81 GHz for automotive radars in the United States.

3. Neither did Bosch's Petition propose any change to the primary Amateur Service allocation at 77.5-78 GHz or to the secondary Amateur Service allocations at 77-77.5 GHz or 78-81 GHz. Bosch did, however, propose the *reinstatement* of a *separate* allocation to the Amateur

⁴ Simultaneously filed as *Exhibit A* is a copy of the current iteration of the United States proposal for WRC-15 agenda item 1.18, to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band in accordance with Resolution 654 (WRC 12). The United States proposal is for a co-primary allocation to the radiolocation service and the amateur service at 77.5-78.0 GHz and to continue the secondary allocation for the Amateur Service at 76-77.5 GHz and 78-81 GHz.

Service at 75.5-76 GHz, so as to permit international harmonization of that segment with ongoing uses by European radio amateurs who have access to that band, and an accommodation for those United States amateur operators whose experimental operations might be subject to noise from extraordinarily high aggregate densities of vehicular radars in certain geographic areas.

4. Given the foregoing, and for the reasons stated below, ARRL urges the Commission to make no change in the domestic table of allocations in the band 76-81 GHz. ARRL's coordination with Bosch and a finalized international study (ITU-R Report M.2322-0)⁵ discussed below establish that there is compatibility in this frequency range between short-range automotive radar, and Amateur Radio. That ITU report should be considered determinative. However, should any decision be made to change the table of allocations or to otherwise displace the Amateur Radio Service domestically from any portion of the 76-81 GHz band and to provide equivalent replacement spectrum for Amateur Radio purposes, Bosch's proposal for an *additional* allocation for the Amateur Service at 75.5-76 GHz as alternative spectrum for Amateur Radio experimentation should be considered.⁶ This band was formerly allocated to the Amateur Service on a primary basis but that primary allocation was relocated to 77.5-78 GHz due to actions taken at WRC-03 (see No. 5.559A of the Table of Allocations in the ITU Radio Regulations (RR). The amateur allocation at 75.5-76 GHz was removed after 2006 in the United States. As a separate matter, RR No. 5.561A states that the band 81-81.5 GHz is also allocated to the Amateur and Amateur-Satellite Services. That band should be considered as a component of replacement spectrum in the vicinity of 75.5-81.5 GHz if necessary. However, a continued allocation for Amateur Radio in the entirety of 77-81 GHz is reasonable and a 500 MHz primary

⁵ This Report was approved by ITU-R Study Group 5 in November 2014.

⁶ This would harmonize the European and United States Amateur Radio operation in this frequency range and encourage additional Earth-moon-Earth operation and future Amateur Satellite Service operation in the band.

allocation in that range is both necessary and, based on a definitive study, compatible with automotive radars.

II. Amateur Radio and Automotive Radar Operation are Compatible in the 77-81 GHz Band.

5. At paragraph 31 of the Notice, the Commission stated that it: “believe(s) that the spectrum identified by Bosch – the 77-81 GHz band – is a good fit for vehicular radar. At these millimeter wave frequencies, radio propagation losses increase more rapidly with distance than at lower frequencies and antennas that can narrowly focus transmitted energy are practical and of modest size.⁷ While the limited range of such transmissions might appear to be a major disadvantage for many applications, it does allow the reuse of frequencies within very short distances and, thereby enables a higher concentration of transmitters to be located in a geographic area than is possible at lower frequencies.” Indeed, the very high level of frequency re-use in this band in particular also contributes to the compatibility between Amateur Radio and automotive radar.

6. The characteristics of automotive radar systems also contribute to this compatibility. In normal operation, motor vehicles are moving along the lanes of a road. Vehicular radar sensors are mounted, at the highest, 1.5 meters above the ground. The antenna patterns of vehicular radar sensors utilize very low elevation angles. This, and the effects of terrain shielding (which are profoundly high in this frequency range) create a substantial interference buffer. By contrast, Amateur Radio operation in this band is largely oriented toward propagation experimentation

⁷ *Citing* Millimeter Wave Propagation: Spectrum Management Implications, OET Bulletin No. 70 (July 1997) and Federal Communications Commission Spectrum Policy Task Force, Report of the Unlicensed Devices and Experimental Licenses Working Group, November 12, 2002, at 14 (available at <http://transition.fcc.gov/sptf/files/E&UWGFfinalReport.pdf>).

from hilltops and mountaintops using temporary fixed, portable equipment.⁸ Operation is centered near 78.192 GHz, though there has been some Earth-moon-Earth communications experimentation recently (starting in 2013) in the vicinity of 77.1 GHz.⁹ Amateur Radio operation in this band is not extensive at present, though there is a large and increasing investment in equipment for this band by those who conduct experiments in the band. For example, Brian Justin of Forest, Virginia, licensee of Amateur Radio station WA1ZMS, reports to ARRL an expenditure of \$4750 to obtain equipment (including, without limitation, transmitters, amplifiers, and highly directional antennas) necessary to conduct communications in the 4 mm band over the last 17 years. Thomas Williams, licensee of Amateur Radio station WA1MBA, reports an expenditure of nearly \$7000 for the same equipment and purposes, and has constructed equipment provided to 26 other United States Amateur Radio licensees and a number of radio amateurs in other countries.

7. ITU Report M.2322-0, a copy of which is simultaneously filed as *Exhibit B*, was developed in preparation for consideration of WRC-15 Agenda Item 1.18 to consider a co-primary allocation for the radiolocation service at 77.5-78 GHz. The Report studied, *inter alia*, the compatibility between vehicular radars and the Amateur Radio Service and Amateur Satellite Service in this frequency range. The conclusion is that automotive radar systems are compatible with incumbent Amateur Radio operation. At Section 6.1.3 of that study, the following conclusions are summarized relative to Amateur Radio Service compatibility with automotive radar systems:

⁸ Citing an ECC Report (56), ITU Report M.2322-0 at Section 6.1.3 describes typical Amateur Radio operation in these frequency ranges as follows: “antennas are in general mounted on masts as high as practical, high buildings, hills or mountaintops in order to obtain the least obstruction towards the horizon in order to make long distance contacts possible”. That is an accurate assessment.

⁹ A substantial amount of Amateur Radio experimentation in this band has occurred from hilltops in the National Radio Quiet Zone in Green Bank, West Virginia on a coordinated basis, with no reports of interference to any radioastronomy operations from the National Radio Astronomy Observatory.

A. The operation of the amateur service in the mountain top scenario is not expected to be significantly constrained by the radiolocation service.

B. With a careful choice of the building atop which an amateur receiver might be installed, it is still possible to operate amateur stations.

C. The allocation of the band 77.5-78 GHz to the radiolocation service is not expected to impose severe constraints on the radio amateur service.

D. Minimum coupling loss (MCL) calculations demonstrate that the distances over which interference could be expected are small and are all less than 200 meters for the scenarios considered. The MCL calculations consider the spatial average scenarios. The worst case scenario would be where the transmitter and receiver are directly facing each other. This would result in large protection distances. However, the probability of this is very low due to the highly directional antennas used by radio amateurs and the narrow beamwidths of those antennas. No mitigation was used in those calculations. Direct line-of-sight was used between the interferer and the victim without considering any terrain parameters (buildings, trees, hills etc.) which will considerably attenuate the signal.

These conclusions are based in part on a tabulation (at Table 3 of Report M.2322-0) of the technical parameters of amateur stations operating in this band and those operating parameters which might be used in future operations. Transmitter power used by radio amateurs is quite low as a practical matter due to the difficulty and cost of achieving higher power in this frequency range.

TABLE 3

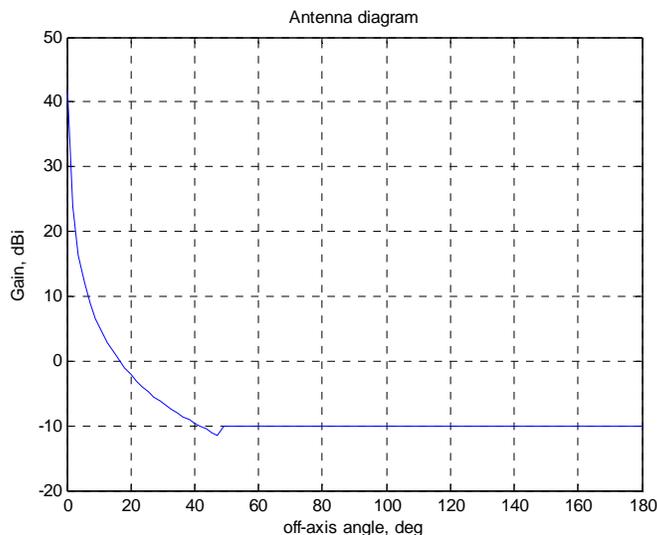
Technical parameters of amateur receivers

Parameter	Units	Value			
Mode of operation		Morse telegraphy	Single sideband telephony	FM telephony	Multimedia (Data, TV)
Frequency band	MHz	77 500-78 000	77 500-78 000	77 500-78 000	77 500-78 000
Necessary bandwidth and class of emission (emission designator)		150HA1A	2K70J3E	11K0F3E, 16K0F3E, 20K0F3E	10M5F7W
Transmitter power	dBW	-30 – -17	-30 – -17	-30 – -17	-30 – -17
Feeder loss	dB	1	1	1	1
Transmitting antenna gain	dB _i	42	42	42	42
Typical e.i.r.p.	dBW	11-24	11-24	11-24	11-24
Antenna polarization		Horizontal	Horizontal	Vertical	Vertical
Receiver IF bandwidth	kHz	0.4	2.7	9, 15	10 500
Receiver noise figure (assumes use of low noise preamplifier)	dB	3-7	3-7	3-7	3-7

Antenna gain is typically high, and as can be seen from Figure 2 of Report M.2322-0, antenna beamwidths are extremely narrow:

FIGURE 2

Radiation diagram of the amateur receiving antenna



Given (a) these parameters; (b) the fact that virtually all 77-81 GHz Amateur radio operation takes place from high elevation locations away from roadways; (c) the typically low duty cycles of Amateur Radio transmissions at temporary fixed locations; (d) the low transmitter power and narrow antenna beamwidths used in Amateur Radio operation in this band; and (e) the aforementioned downward orientation and low mounting position of automotive radar antennas, it is apparent that there are no likely scenarios in which there will be an Amateur Radio transmit and receive antenna within the boresight of SRR automotive radar antennas and vice-versa. Therefore, there is no technical basis for an assumption that there will be any incompatibility between automotive SRRs and ongoing Amateur Radio operation in the 77-81 GHz band. The minimum coupling loss calculations of Report M.2322-0 strongly indicate that the probability of interaction between Amateur Satellite Service communications and automotive SRRs is “very low”. For this reason, the United States position with respect to WRC-15 Agenda Item 1.18 is for no change in the Amateur Service and Amateur Satellite Service primary and secondary

allocations in the 76-81 GHz band.¹⁰ Domestically, the Commission has no basis for a contrary conclusion.

8. At paragraph 36 of the Notice, the Commission notes Bosch's argument that no interference issues are expected between Amateur Radio operation and vehicular radar operations at 77-81 GHz (citing Bosch's conclusion that "amateur operations in the band tend to be experimental, occurring in geographic areas such as mountaintops and other rural areas where motor vehicle operation is not typical"). However, the Notice claims that the Commission "has previously recognized evidence (sic) of potential interference conflicts" between the Amateur Satellite Service and vehicular radar systems in the 76-77 GHz band.¹¹ Given that similar propagation characteristics exist at 76-77 GHz and at 77-81 GHz, the Notice states a concern about the potential for compatibility issues to exist between the Amateur Satellite Service and vehicular radar systems above 77 GHz. ARRL would suggest, however that ITU Report M.2322-0 is and should be viewed as dispositive of this issue. There are no studies known to ARRL which are at variance with it.

9. Nowhere in the 2004 Report and Order in Docket 03-102 cited by the Commission, was there any actual "evidence" of any incompatibility between Amateur Service or Amateur-Satellite Service operations and LRRs at 76-77 GHz (and no evidence at all was adduced with respect to potential interaction between Amateur Radio and SRRs at 77-81 GHz). Rather, there were only hypothetical concerns about such interaction:

In addition, we find evidence of potential interference conflicts between the amateur-satellite service and vehicular radar systems. Specifically, amateur stations are operated by hobbyists (sic) who could deploy their earth stations anywhere and amateurs are permitted great flexibility in the type of antenna and the power they use

¹⁰ See Exhibit A, simultaneously filed.

¹¹ *Citing* Amendment of Part 2 of the Commission's Rules to Realign the 76-81 GHz band and the Frequency Range Above 95 GHz Consistent with International Allocation Changes, ET Docket No. 03-102, *Report and Order*, 19 FCC Rcd 3212, 3218, para. 18 (2004).

to transmit. On this basis, we anticipate that an amateur earth station could either receive interference to its operations or cause interference to a passing vehicular radar device. Therefore, we are not implementing the proposed secondary amateur-satellite allocation for the 76-77 GHz band at this time. We will, however, retain the existing secondary amateur service allocation. We note that the existing secondary amateur service allocation in this band is currently suspended and restricted until technical sharing criteria are developed to address potential sharing problems in this band. We continue to find that not allowing amateur operations in the 76-77 GHz band is not a significant burden on this service because amateurs typically do not operate at these higher frequencies and they are permitted to operate in the adjacent 77-81 GHz band.

Thus, the Commission was comfortable continuing the suspension of Amateur Radio operation at 76-77 GHz as LRRs were developing in that band *not* because of an affirmative finding of interference potential but instead because of the absence in 2004 of criteria to address unspecified “potential sharing problems”. There was no substantial burden on Amateur Radio operators from that continued suspension at 76-77 GHz, said the Commission because the entirety of the 77-81 GHz band continued to be available for Amateur Radio operation.¹² There was then and there now is no “evidence” of any incompatibility at all. ARRL suggests that the only definitive study of this subject now exists in ITU Report M.2322-0 and that the Commission’s concern in the Notice should be resolved by no change to the domestic table of allocations or in the Part 97 Service Rules relative to Amateur Service operation at 76-81 GHz. In fact, due to the absence of any evidence of incompatibility between Amateur Radio operation and LRRs at 76-77 GHz, there is no longer any need to continue the suspension of Amateur Service operation in that segment.

9. At Paragraph 63 of the Notice, the Commission states its intent “to develop a comprehensive policy for use of the 76-81 GHz band” and asks for comment on an appropriate regulatory structure for future amateur “4 mm band” use. It incorrectly postulates a “continuing

¹² The 1998 restriction on 76-77 GHz Amateur Radio operation, codified at 47 C.F.R. §97.303 was imposed in Docket 94-124. See, *Amendment of Parts 2, 15, and 97 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Third Report ad Order*, 13 FCC Rcd 15074 (1998).

lack of technical sharing criteria or any other evidence of compatibility,” and based on that, asks whether the 76-77 GHz amateur suspension created in 1998 should be extended to the entire 76-81 GHz band. From the foregoing discussion, it is apparent that this question is asked without reference to ITU Report M.2322-0, which studied the precise case currently under consideration using technical sharing criteria documented in relevant ITU Recommendations and agreed by amateur and automotive interests contributing to the Report. Based on the Report, there is no contrary indication or technical evidence of incompatibility, and the 1998 suspension of amateur operation and the 2004 extension of that suspension to include amateur satellite operation were each based on vague, nonspecific concerns about potential interaction without any substantiation at all. There is therefore no basis for a finding that the current amateur suspension of use of the 76-77 GHz band should continue or that amateur allocations should be removed from the 76-81 GHz band.

10. Alternatively, the Commission asks whether it would be possible to lift the suspension of the Amateur Service and conduct both amateur and vehicular radar operations in the entire 76-81 GHz band. ARRL suggests, based on Report M.2322-0 that this is absolutely the proper course and that any diminution in the ability of amateur stations to use any portion of the 77-81 GHz band in any environment due to aggregate noise floor level increases could be ameliorated by access to the 76-77 GHz band, the 75.5-76 GHz band and/or the 81-81.5 GHz band.

11. The Notice tentatively concludes that there is no apparent technical reason to treat the 76-77 GHz and the 77-81 GHz bands differently in terms of compatibility with other Services and thus for regulatory treatment. It asks commenters who believe differently to explain why there should be disparate regulatory treatment of the two band segments. ARRL notes in this

regard only that the 76-77 GHz band is now and will continue to be used for LRRs, typically forward-looking automotive radars, with slightly longer ranges and higher power, while the 77-81 GHz band will be used for wider bandwidth, higher discrimination SRRs with considerably shorter effective ranges which contribute to higher frequency re-use. Further, the power spectral density of automotive radar systems in the 77-81 GHz band will be lower due to wider bandwidths. For this reason, the compatibility case is even stronger in the 77-81 GHz band than in the 76-77 GHz band, where no actual incompatibility has been demonstrated.

12. The Commission also seeks comment on any other regulatory approaches that would achieve compatibility between the amateur and radiolocation services within the 76-81 GHz band. There is no need for any additional restrictions in the Amateur Service rules on Amateur or Amateur Satellite Service operations. Power limits are in this frequency range limited to very low levels by the inherent technical difficulty, cost and impracticality of developing high-power transmitters, and because of the high levels of atmospheric attenuation. Additional Amateur Service rules are therefore unnecessary.

III. Should the Commission Conclude That Displacement Spectrum for the Amateur Service is Necessary, the bands 75.5-76 GHz and 81-81.5 GHz Should be Allocated to the Amateur Service Domestically.

13. Bosch's recommendation for an *additional* allocation for the Amateur Service in the 75.5-76 GHz band is well-taken. Restoring an amateur allocation in this segment would facilitate international harmonization of Amateur Service operation in this frequency range, and would be necessary should the Commission make the unjustified decision to displace Amateur Radio from the band 77-81 GHz.

14. More importantly, however, and pursuant to the existing footnote (RR 5.561A), the band 81-81.5 GHz is also allocated to the Amateur and Amateur Satellite Services. That band

should be considered a component of a replacement spectrum allocation domestically in the vicinity of 75.5-81.5 GHz. The 81-81.5 GHz band has a number of co-primary service allocations, and normal coordination processes similar to those which apply to other amateur allocations should be sufficient to ensure compatibility. Thus, while there is no reason to displace Amateur Radio or the Amateur Satellite Service from the 77-81 GHz band, should the Commission decide to do so for any reason, the 75.5-76 GHz band and the 81-81.5 GHz band are both necessary (but not alone sufficient) candidates for components of an equivalent replacement spectrum allocation for the Amateur and Amateur Satellite Services.

IV. Conclusions.

The Commission should proceed with authorizing SRR for automotive applications in the 77-81 GHz band pursuant to the Part 15 regulatory paradigm proposed by Bosch. In this process, the Commission should, as proposed in the Appendix to the Notice, make no change in the Amateur Radio domestic allocation in the 76-81 GHz band and impose no additional regulatory constraints on Amateur or Amateur Satellite operation in the band. The Commission should not, until definitive studies are available on the effect of fixed radars in this band on incumbent services, including the Amateur Service and the Amateur Satellite Service. Finally, if there is any unjustified displacement of the Amateur or Amateur Satellite Services from any portion of the 76-81 GHz band, there must be equivalent spectrum allocated for those services. Two components of this replacement spectrum should include 75.5-76 GHz and 81.0-81.5 GHz.

Therefore, the foregoing considered, ARRL, the national association for Amateur Radio respectfully requests that the Commission resolve this proceeding in accordance with the recommendations contained in these comments, and not otherwise.

Respectfully submitted,

ARRL, the national association for Amateur Radio

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A handwritten signature in purple ink, appearing to read "B. T. Price", is written above a horizontal line.

By: _____
Brennan T. Price
Its Chief Technology Officer

April 6, 2015