

**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 Systems in the 77-81 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 RM-11555
)	
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)	WT Docket No. 11-202
)	
)	

To the Commission:

Comments of Nickolaus E. Leggett, N3NL

I am a certified electronics technician and an Extra Class amateur radio operator (call sign N3NL). I also hold an FCC General Radiotelephone Operator License with a Ship Radar Endorsement. I am an inventor holding three U.S. Patents. My latest patent is a wireless bus for digital devices and computers (U.S. Patent # 6,771,935). I have a Master of Arts degree in Political Science from the Johns Hopkins University.

I am one of the original petitioners for the establishment of the Low Power FM (LPFM) radio broadcasting service (RM-9208 July 7, 1997 subsequently included in MM Docket 99-25). I am also one of the petitioners in the docket to establish a low power radio service on the AM broadcast band (RM-11287). I have filed a total of over 200 formal comments with the FCC over the years since the 1970s. I have filed comments with other Federal agencies as well including the USPTO, FAA, FERC, EPA, and the TSA.

Amateur Radio and the Millimeter Waves

The millimeter waves offer a major opportunity for amateur radio experimentation and invention. For example, several years ago I published a basic protocol that would allow amateur radio stations to establish communications easily despite the very narrow beam-width used by microwave and higher frequency stations. Refer to Reference One. This protocol will allow large numbers of stations to establish and conduct two-way communications on the microwaves and the millimeter waves.

In addition, millimeter waves can be used for the remote control of unmanned drones and surface vehicles. Amateur radio operators can invent and develop control wands that allow the remote control operator to point at a location and the model vehicle will travel to that designated location.

Amateur radio experimenters can establish very high resolution millimeter wave radar devices for the study of birds, bats, and insects in flight. This specialized radar would be enabled by the very short wavelength of the millimeter waves. This type of experimental radar would also be useful for visually-impaired people navigating city streets.

Amateur radio scientists can build their own radio telescopes to observe celestial phenomenon radiating in the millimeter waves.

Keeping Amateur Radio on the Millimeter Waves

Amateur radio needs continuing millimeter wave allocations. In Paragraph 66, the Commission asks about the movement of the amateur radio service from the 76-81 GHz band to a new allocation at 75.5-76 GHz. While this step would be preferable to having no allocation for amateur radio in this area of the millimeter waves, certainly there are enough frequencies available in the vast millimeter waves so that the allocation for amateur radio could be larger.

It has been noted by analysts that the high absorption of the signals on this band probably makes such a drastic step unnecessary.

As the population grows and the urban population grows, the millimeter waves will be increasingly valuable for amateur radio communications. In addition, tiny highly-directional antennas for this frequency range can be easily accommodated in the urban living environment. For example, a highly directional millimeter wave antenna can be easily accommodated outside of an apartment window.

Radio Astronomy

Radio telescopes receive very weak broadband radio emissions from natural celestial radio sources. This basic aspect of radio astronomy makes it very vulnerable to interference. Furthermore, the transmission frequencies of natural radio sources cannot be changed. So radio astronomers are limited to the existing frequencies regardless of the man-made interference present.

The use of literally millions of automobile radars would prevent amateur scientists from setting up radio telescopes in residential areas. Professional radio astronomers in their more

remote locations would still be line-of-sight of some automobile radar which would greatly inhibit their sensitive observations.

The Commission should take the initiative of setting up exparte sessions with both professional and amateur radio astronomers to explore these interference issues in detail. We cannot allow radio astronomy to be swept off this spectrum due to massive radar interference. Society just cannot afford to move radio astronomy to the presumably radio-quiet back side of the Moon. We need to accommodate both amateur and professional radio astronomy here on Earth.

Respectfully Submitted,

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February 10, 2015

Reference One: Nickolaus E. Leggett, N3NL, ‘A “Lighthouse” Protocol for Random Microwave Contacts’, QEX, ARRL, Newington CT, July 2004, Page 60