

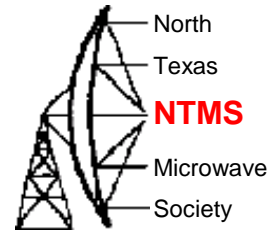
The 3300 to 3500 MHz Band

W5LUA

Feb 5, 2020

ARRL Bulletin ARLB003

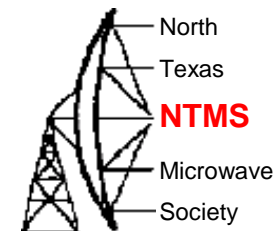
Jan 24, 2020



- At its January meeting, the ARRL Board of Directors instructed the League's FCC counsel to prepare a strong response to protect amateur access to spectrum in the 3 GHz range. In its Notice of Proposed Rulemaking (NPRM) in WT Docket 19-348, the FCC proposed to relocate **all non-federal operations, including amateur uses**, to spectrum outside the 3.3 - 3.55 GHz band. The Commission anticipates auctioning this spectrum to expand commercial use of 5G cellular and wireless broadband services, if agreement can be reached on relocation of "or sharing with" the federal incumbents that operate in the same band. Publication of the NPRM in the Federal Register on January 22 established deadlines of **February 21 for comments** and March 23 for reply comments.

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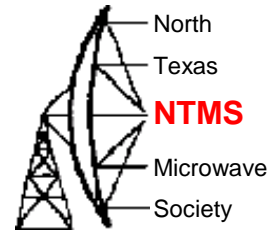
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- The FCC has requested comment on the uses radio amateurs make of the spectrum and appropriate relocation options. Complicating matters is the fact that radio amateurs must consider the possibility that the immediately adjacent **3.1 - 3.3 GHz** band is included in the spectrum that Congress has identified for similar study. FCC Commissioner Michael O'Rielly, in a December statement, referenced the fact that the lower band may also be considered for non-federal reallocation, potentially limiting relocation possibilities.

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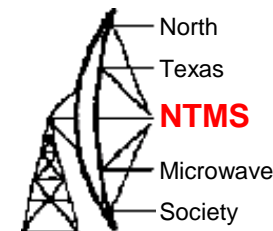
Jan 24, 2020



- Amateurs make substantial use of the 3.3 - 3.5 GHz band that would be hard to replicate elsewhere, and they have filed more than 150 comments before the designated comment period even began. Among users looking at options are those who use this spectrum for Earth-Moon-Earth (moonbounce) communication, mesh networks, experiments with communication over long distances, radiosport, and amateur television. A portion of the band also is designated for use by amateur satellites in ITU Regions 2 and 3 (the Americas and Asia/Pacific). (3400 to 3410 MHz)

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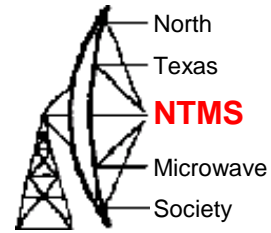
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- A report is due by March 23 from the National Telecommunications and Information Administration (NTIA) evaluating the feasibility of having federal users share all or part of the 3.1 - 3.55 GHz band with commercial wireless services. This report is required by the Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless (MOBILE NOW) Act. The results of the NTIA report will impact how much spectrum ultimately may be re-allocated for auction to wireless providers.

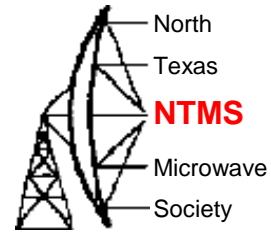
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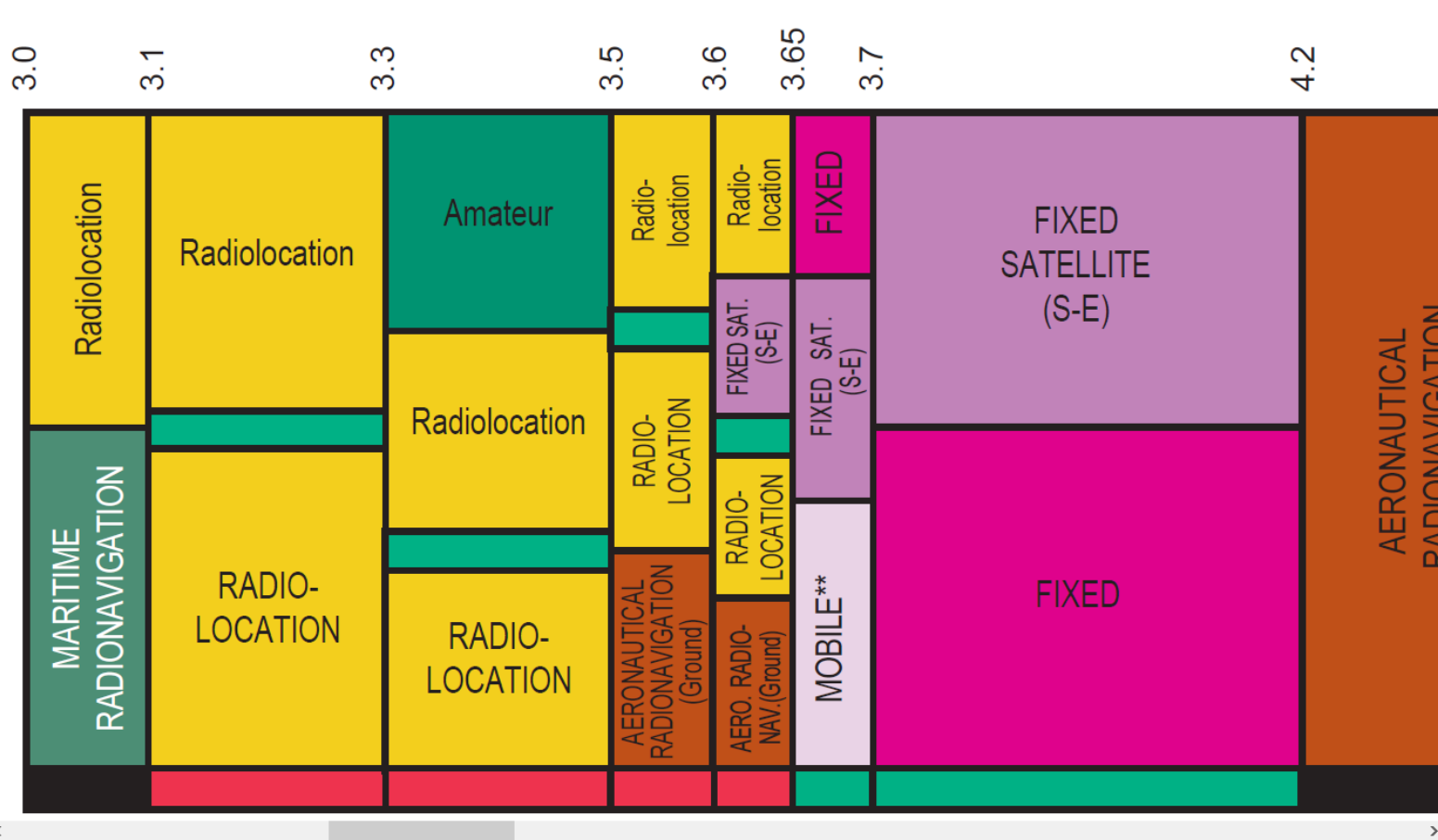
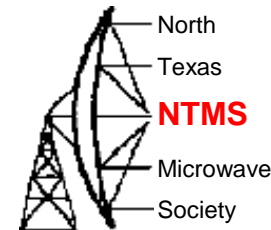
- ARRL urges amateurs who comment to inform the FCC about the uses they make of the 3 GHz spectrum. Short comments and longer statements may be filed electronically. Visit the FCC "How to Comment on FCC Proceedings" page for more information. Commenters should reference WT Docket 19-348.
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- The how-to comment page can be found at, <https://www.fcc.gov/consumers/guides/how-comment> .

WT Docket No. 19-348

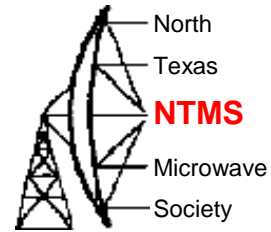


- <https://www.fcc.gov/document/fcc-considers-facilitating-shared-use-31-355-ghz-band-0>
- <https://www.federalregister.gov/documents/2020/01/22/2020-00535/facilitating-shared-use-in-the-31-355-ghz-band>

Spectrum from 3 to 4.2 GHz

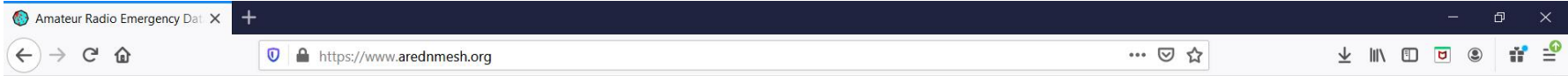
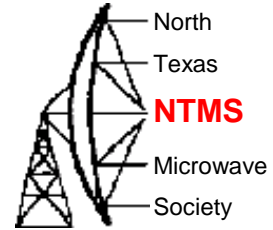


From FCC 19-130



5.149 5.412	Space research (passive) 5.149	Space research (passive) 5.149	US205	US385	
2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340 5.422 2700-2900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation			US246 2700-2900 METEOROLOGICAL AIDS AERONAUTICAL RADIONAVIGATION 5.337 US18 Radiolocation G2	2700-2900	Aviation (87)
5.423 5.424 2900-3100 RADIOLOCATION 5.424A RADIONAVIGATION 5.426			5.423 G15 2900-3100 RADIOLOCATION 5.424A G56 MARITIME RADIONAVIGATION	5.423 US18 2900-3100 MARITIME RADIONAVIGATION Radiolocation US44	Maritime (80) Private Land Mobile (90)
5.425 5.427			5.427 US44 US316	5.427 US316	
3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active)			3100-3300 RADIOLOCATION G59 Earth exploration-satellite (active) Space research (active)	3100-3300 Earth exploration-satellite (active) Space research (active) Radiolocation	Private Land Mobile (90)
5.149 5.428			US342	US342	
3300-3400 RADIOLOCATION	3300-3400 RADIOLOCATION Amateur Fixed Mobile	3300-3400 RADIOLOCATION Amateur	3300-3500 RADIOLOCATION	3300-3500	
5.149 5.429 5.429A 5.429B 5.430	5.149 5.429C 5.429D	5.149 5.429 5.429E 5.429F			
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432 5.432B	US342	US342	

AREDN



Amateur Radio Emergency Data Network

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AREDN Offers 2 Non-Shared Channels on 2.4 GHz

2.4 GHz	Channel	-2	-1	0*	1	2	3	4	5	6
	Status	Ham Band			Shared Ham and ISM/WiFi Band					
	Freq	2.397	2.402	2.407	2.412	2.417	2.422	2.427	2.432	2.437

*Not available for use

24 Non-Shared Channels on 3.4 GHz

3.4 GHz	Channel	76	77	78	79	80	81	82	83	84	85	86	87
	Status	Ham Band											
	Freq	3.380	3.385	3.390	3.395	3.400	3.405	3.410	3.415	3.420	3.425	3.430	3.435
		88	89	90	91	92	93	94	95	96	97	98	99
	Freq	3.440	3.445	3.450	3.455	3.460	3.465	3.470	3.475	3.480	3.485	3.490	3.495

Refer to your local band plan for coordination

Alerts

AREDN highly recommends upgrading to AREDN security release v3.19.3.0
 For more information: <https://www.arednmesh.org/content/aredn-v31930-available>

News

Ham Radio Now on FCC Reallocation of 3/5 GHz

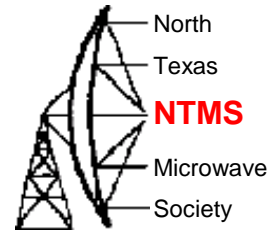
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https://www.arednmesh.org/#



Comment from amateur



- Comment in response to Docket 19-348 (3Ghz)
- I am an Amateur Radio Operator, callsign _____.
- I am opposed to the approval of this docket.
- I use the Part 97, 3 GHz allocation to build and operate high-speed data network for use by emergency/disaster agencies to send
 - texts, email
 - video surveillance
 - video conference
 - voice-over-IP telephony
 - access to served agency applications on local and remote (cloud-based) servers
 - Other (specify) _____

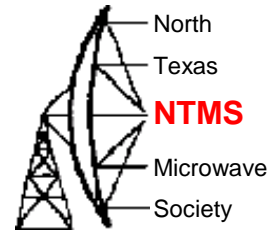
This network is possible because of _____ 3 GHz radios I operate between 3.3 and 3.5 GHz.

- A total of \$_____, has been invested in building these networks obtained from the following sources:
 - _____% grant money
 - _____% donated by local Amateurs/Club
 - _____% the served agencies
 - _____% my own personal money

The amount of time invested designing, building, and maintaining the network by me and other hams in this project exceeds _____ hours, for which no compensation has been received.

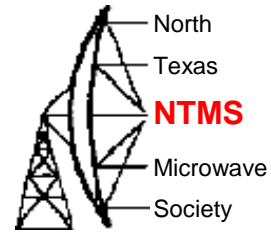
- My network installation connects to other compatible network equipment in the surrounding area, provided by other radio amateurs. All together the extended network covers an area of _____ square miles and a population base of _____

Comment from amateur (con't)



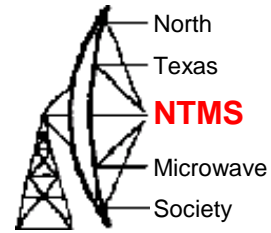
- Here is a list of the government agencies and NGOs my network serves:
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
- These networks are built on technology developed and provided by AREDN (Amateur Radio Emergency Data Network, Inc., a non-profit, 501(c)(3)) which leverages devices manufactured for the commercial Wireless ISP industry. AREDN empowers Amateurs to repurpose these devices into the Part 97 allocation by providing custom firmware which we use in place of that intended by the original manufacturer.
- Reallocating Amateur services out of the 3.3 and 3.5 GHz sub-band will have a detrimental effect on the operation of these networks and a negative impact on the agencies being served.
- AREDN is investigating whether the existing hardware might be converted to the 3.1 to 3.3 GHz sub-band. If this NPRM is approved and AREDN concludes that it is not possible to move into this sub-band, then I would request a reimbursement of the costs to deploy this network in an amount of \$_____. Note that this does not include compensation for the impact the removal of this network will have to agencies that have come to depend on it.

Comment from Agency using AREDN



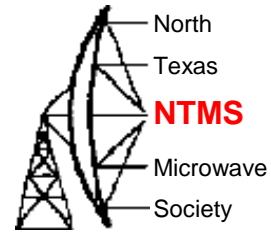
- Comment in response to Docket 19-348 (3Ghz)
- I represent _____, an agency which utilizes the services of local Amateur Radio operators (Hams) and their emergency high-speed data network they refer to as “AREDN.”
- We are located in _____. The Hams have brought this Docket to our attention and the negative impact its approval would have on the services we have come to rely upon.
- The Hams in our area have designed and implemented this network, which depends on the 3 GHz Ham band to operate to deliver “when all else has failed” communications services.
- I am opposed to the approval of this docket.
- If this NPRM is approved and it is not possible for the Hams to continue to operate this network, then during a disaster, we may find ourselves without a means to communicate and coordinate our agency’s response. Please do not take this valuable service away from us.
- Sincerely,
-

Approach to commenting



- Although we only require a small bandwidth for weak signal work, we should show support for the approach taken by AREDN for the need to keep the entire 200 MHz band.
- In the event that should fail, I plan to request a smaller hunk of the band that correlates with the rest of the world except maybe VK which centers around 3400 MHz.
- Third option is at 3390 to 3400 MHz or down at 3090 to 3100 MHz
- I have no idea what the interference levels will be when we are that close to 5G.
- We need to retain something even if it is closer to 10cm!

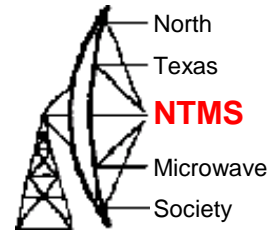
My comments (1)



My name is Al Ward. I am an amateur radio operator with the Amateur Extra license and the call sign of W5LUA. I have been an amateur radio operator for 54 years. I object to the removal of the 3300 MHz to 3500MHz band from amateur radio use. One of the major amateur users of the band is the Amateur Radio Emergency Data Network (AREDN) which provides public service with an additional communications network in emergency situations. www.arednmesh.org. My personal use of this band is for weak signal long distance communication via terrestrial modes on 3456 MHz and using EME (Earth-Moon-Earth) where I have bounced signals off the moon to communicate with 38 countries around the world. EME operation normally occurs at 3400 MHz. as it is an international allocation. Our weak signal work uses very narrow bandwidth modulation schemes including voice, telephony and digital modes.

My personal financial investment since I became operational on this amateur band over the last 33 years amounts to thousands of dollars with an enormous amount of time and effort put into designing, building and maintaining equipment and antennas. The North Texas Microwave Society (W5HN) www.ntms.org of which I am the station trustee, has also invested thousands of dollars into a local beacon system on 3456.380 MHz and other microwave frequencies which we use for equipment check-out and propagation studies.

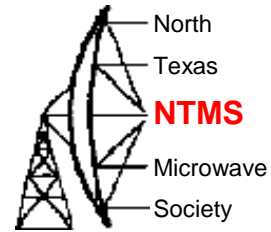
My comments (2)



Amateur radio operators who work in the electronics industry have often made great contributions to the electronics field including contributing to advances in antenna design, propagation studies, microwave component technology and digital signal processing. Having access to a band like 3300 MHz and other microwave bands as well allows us to continue our research.

While I can appreciate the need for additional frequencies for 5G below 6 GHz, as a minimum, I would like to have the FCC consider leaving a small piece of the band for our weak signal work in the US. Other countries mainly in Europe including Great Britain have migrated amateur operation to the 3400 – 3410 MHz frequency range. It seems to have been a solution for not losing the band entirely. Another option for weak signal amateur radio communication would be a narrow segment around 3300 MHz. Either change would necessitate redesigning equipment to work on the lower frequencies

Bottom Line



- Even if you are not on the 3300 MHz band, consider supporting your fellow microwavers who are on the band and write a response.
- If we loose this band, which one will be next?
- Please file on line no later than Feb 21, 2020
- Questions and/or comments?