NATIONAL RADIO ASTRONOMY OBSERVATORY
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25 December 2010

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF	)	ET Docket No. 10-235

Comments of the
National Radio Astronomy Observatory
Charlottesville, VA 22903

1. The National Radio Astronomy Observatory ("NRAO" or "the Observatory") is pleased to provide comments responding to the Commission's Notice of Proposed Rulemaking, FCC 10-196 ("the NPRM") proposing new rules for use of spectrum presently allocated to the Broadcasting Service.

2. NRAO (http://www.nrao.edu), operated by Associated Universities, Inc., (http://www.aui.edu) under a cooperative agreement with the National Science Foundation, is the largest observatory dedicated to radio astronomy and one of the largest observatories of any kind in the world. NRAO operates one dozen radio astronomy stations in rural and remote regions of the United States (see Appendix 1), all of which observe in the TV channel 37 spectrum band at 608 – 614 MHz whose protection is discussed in the NPRM.

3. NRAO is grateful that the Commission proposes to retain and protect the allocation of TV channel 37 at 608 – 614 MHz to radio astronomy.

4. At ¶15 of the NPRM, the Commission requests comment on measures that would lessen the potential for interference to radio astronomy operations in the channel 37 band, when individual TV channels are shared among broadcasters. Given that shared broadcasting will occur only on channels other than 37, it is spurious emissions that might directly affect radio astronomy operations. Such emissions are lessened at radio astronomy sites when transmitters are well separated and strongly shielded by intervening terrain.

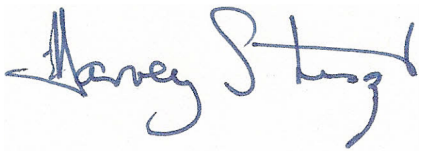
5. All other things being equal, protection of radio astronomy operations can be enhanced by minimizing TV broadcasting in channels 36 and 38. If TV channels are vacated when others are shared, protection of radio astronomy operations could be enhanced by preferentially vacating channels 36 and or 38.

6. However, if vacating channels 36 and or 38 serves to increase use of channel 36 and 38 spectrum by other devices, for instance unlicensed personal/portable devices that may easily be carried into the immediate vicinity of radio astronomy stations, protection of radio astronomy operations overall could suffer. Recently the Commission issued a Notice of Inquiry (FCC 10-198) in ET Docket 10-237 concerning dynamic spectrum access, as may be employed in devices that access the so-called whitespace in the TV broadcast bands, including channels 36 and 38. At ¶28 of that NOI the Commission asks whether " … the appropriate out-of-band emissions standard might be much more stringent when operating in a band that is adjacent to a service that relies on reception of extremely weak signals." Protecting radio astronomy use of channel 37 is an obvious example where this is likely to be the case.

7. Therefore NRAO respectfully requests that the Commission view protection of radio astronomy use of channel 37 spectrum in the broadest possible terms when the TV broadcast bands are re-purposed and re-allocated.

Respectfully submitted,

National Radio Astronomy Observatory
By:



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Appendix 1

NRAO Instruments

NRAO Telescope	West Longitude	North Latitude	Height
Robert C. Byrd Green Bank Telescope (GBT)	79° 50' 24"	38° 25' 59"	825 m
Expanded Very Large Array (eVLA)	107° 37' 04"	34° 04' 44"	2126m
Very Long Baseline Array (VLBA):			
Brewster, WA	119°40' 55"	48° 07' 53"	255 m
Fort Davis, TX	103° 56' 39"	30° 38' 06"	1615m
Hancock, NH	71° 59' 12"	42° 56' 01"	309 m
Kitt Peak, AZ	111° 36' 42"	31° 57' 22"	1916m
Los Alamos, NM	106° 14' 42"	35° 46' 30"	1967m
Mauna Kea, HI	155° 27' 29"	19° 48'16"	3720m
North Liberty, IA	91° 34' 26"	41° 46' 17"	241 m
Owens Valley, CA	118° 16' 34"	37° 13' 54"	1207m
Pie Town, NM	108° 07' 07"	34° 18' 04"	2371m
St. Croix, VI	64° 35' 03"	17°45’31"	16m