

Amendment Statement
Valley TV Coop Displacements

The National Radio Astronomy Observatory has submitted the attached letter.
It is appended to the displacement applications for Valley TV Cooperative.



NATIONAL RADIO ASTRONOMY OBSERVATORY

POST OFFICE BOX 2
GREEN BANK, WV 24944-0002
NRQZ OFFICE TELEPHONE (304) 456-2107
HTTP://WWW.GB.NRAO.EDU/

FAX (304) 456-2276
NRQZ@NRAO.EDU

July 11, 2018
Page 1 of 2
NRQZ ID: 11381_21FEB2018

FCC Regulatory Group
Valley TV Cooperative
PO Box 151
Moorefield, WV 26836-0151

Reference Copy

Application Reason/Purpose	Prior coordination notification
File Numbers	Shall be provided by applicant
Applicant Name	Addressee
Call Sign	11381 CH24 WTTG; W46BR-D
	11381 CH27 WRC; W50BD-D
	11381 CH33 WHSV; W40AS-D
Site Name or Loc	Moorefield
Nearest City/State	Moorefield, WV
N Latitude	38 58 57.3
W Longitude	78 54 30.0
Ground Elevation (m) / AGL (m)	995 / 6
Freq. Band (MHz)	530 – 536 MHz; 548 – 555 MHz; 584 – 590 MHz
Emission Designator	DTV
Transmit output power	10 Watts detuned to meet QZ coordination requirements
System Configuration	See attached "Final Engineering"
Previous NRAO Coordination No.	NRQZ ID 11192
Current NRAO Coordination No.	NRQZ ID 11381_21FEB2018

Dear Applicant:

The National Radio Quiet Zone (NRQZ) has evaluated these facilities to determine the interference impact on our highly sensitive radio astronomy operations.

Special Condition:

The National Radio Astronomy Observatory (NRAO), Green Bank, WV, objects unless the Applicant's license is restricted to an Effective Radiated Power (ERP) of 0.02, 0.017 and 0.016 Watts respective of frequency band at Azimuth 233.3 degrees True North.

To meet this Special Condition, the Applicant shall:

1. Use the final engineering submitted by Jim McDonald indicating that all facilities meet the ERP restriction.
2. Arrange for the requested site inspection to verify the implementation of this Special Condition.
3. Post a copy of this document and associated attachments at the Transmit facility.
4. Provide a Construction Notification as defined by the FCC for your specific radio service.



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Regulatory

The NRQZ Office requests that:

1. The FCC places the Special Condition on the Station License.
2. This Letter of Concurrence be attached to the FCC application.
3. The applicant provides the NRQZ Office with notice of its official filing with the FCC per section 47CFR1.924 (a) (2).

The National Radio Astronomy Observatory (NRAO) site located at Green Bank, Pocahontas County, WV, has no objection to this frequency assignment provided the special conditions are met.

The Sugar Grove Research Station, the former Naval Radio Research Observatory (NRRO), located at Sugar Grove, Pendleton County, WV has no objections to this frequency assignment.

This letter constitutes coordination of assignment in the National Radio Quiet Zone as required by the FCC Rules and Regulations 47CFR1.924.

If I may be of assistance, please feel free to contact me.

Sincerest regards,

Paulette W. Woody
NRQZ Office Administrator
PWW:pww

cc: Jim McDonald

file: 11381.docx

Attachments: Final Engineering
Site Specific Data

This concurrence remains valid provided the data contained within is consistent with the applicant's filing at the Commission. Any discrepancy in system parameters, such as geographical coordinates (Latitude, Longitude, AMSL), antenna height above ground level (AGL), antenna gains or directivity (orientation), channel (operating frequency or frequency bands), emission type, and power requires re-coordination. If the Commission has questions regarding the validity of this or any concurrence, please direct inquiries to nrqz@nrao.edu or 304-456-2107.

NRQZ ID	Site Name	Max TX Pwr (W)	Max Gain (dBd)	Antenna Model	Lat N NAD83	Lon W NAD83	MSL (m)	AGL (m)	Freq Low (MHz)	Freq High (MHz)	Bandwidth BW (MHz)	AZ ° True	Mechanical-DT	Electrical-DT	NRAO AERPd (W)	Max ERPd of facility
11381 CH24	Moorefield, WV - Channel 24	10	17.1	MCI 955514	38 58 57.3	78 54 38.0	995	6	530	536	6	350	7	0	0.020	100.0
11381 CH27	Moorefield, WV - Channel 27	10	17.1	MCI 955514	38 58 57.3	78 54 38.0	995	6	548	555	6	350	7	0	0.017	100.0
11381 CH33	Moorefield, WV - Channel 33	10	17.1	MCI 955514	38 58 57.3	78 54 38.0	995	6	584	590	6	350	7	0	0.016	100.0

NRQZ# 11192

Magnetic Declination Correction

° West

Location: W50BD

<http://www.ngdc.noaa.gov/geomagmodels/IGRFWMM.jsp>

Latitude: 38 58 57.3 (ddmmss.s)

Longitude: 78 54 30.0 (ddmmss.s)

Ground Elev.: 3245 Feet AMSL

Antenna Ht.: 20 Feet AGL

Frequency: Ch 24: 530 - 536 MHz

Ch 27: 548 - 555 MHz

Ch: 33 584 - 590 MHz

989.076
6.096

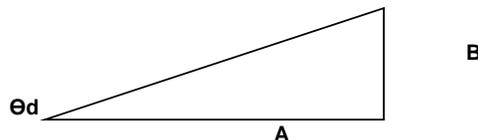
NRAO AERP (watts) Channel 24	<u>0.020</u>	watts at	<u>233.3</u> ° True (Φd)
NRAO AERP (watts) Channel 27	<u>0.017</u>	watts at	<u>233.3</u> ° True
NRAO AERP (watts) Channel 33	<u>0.016</u>	watts at	<u>233.3</u> ° True

Dominant Path Diffraction

Sector	Channel 24	Channel 27	Channel 33
a. Antenna Type	MCI 955514	MCI 955514	MCI 955514
b. Maximum Antenna Gain	<u>17.1</u> dBd	<u>17.1</u> dBd	<u>17.1</u> dBd
c. Antenna Azimuth (° True or "omni")	<u>350</u> °T	<u>350</u> °T	<u>350</u> °T
Antenna Azimuth (Mag)	<u>359.6</u> °Mag	<u>359.6</u> °Mag	<u>359.6</u> °Mag
d. Az to GBT on Antenna Pattern	<u>243.3</u> °	<u>243.3</u> °	<u>243.3</u> °
e. Antenna Gain to GBT (b - f)	<u>17.10</u> dB	<u>17.10</u> dB	<u>17.10</u> dB
f. Antenna Gain to GBT Below Maximum	<u> </u> dB	<u> </u> dB	<u> </u> dB
g. Mechanical Downtilt (Φbt)	<u>7</u> °	<u>7</u> °	<u>7</u> °
h. Loss to GBT Due to Mechanical Downtilt	<u> </u> dB	<u> </u> dB	<u> </u> dB
i. Transmitter Output Power (DETUNED)	<u>3.852</u> watts	<u>3.852</u> watts	<u>3.852</u> watts
j. System Losses: Combiner/Duplexer	<u> </u>	<u> </u>	<u> </u>
Lightning Arrestor	<u>0</u>	<u>0</u>	<u>0</u>
Main Line	<u>-3</u>	<u>-3</u>	<u>-3</u>
RF Filter	<u> </u>	<u> </u>	<u> </u>
Misc. connectors, etc.	<u> </u>	<u> </u>	<u> </u>
j. System Loss	<u>(3.00)</u> dB	<u>(3.00)</u> dB	<u>(3.00)</u> dB
k. Power to Antenna (ix j)	<u>1.93</u> watts	<u>1.93</u> watts	<u>1.93</u> watts
Main Beam Power (k x b)	<u>99.01</u> watts	<u>99.01</u> watts	<u>99.01</u> watts
m. ERPd to GBT (l x (f + h)) or (l x (e - (h + j)))	<u>0.0099</u> watts	<u>0.0099</u> watts	<u>0.0099</u> watts

	<u>3.85</u>	<u>3.85</u>	<u>3.85</u>
Power at input to hardline:	<u>3.85</u>	<u>3.85</u>	<u>3.85</u>
Power at bottom jumper:	<u> </u>	<u> </u>	<u> </u>

TECHNICAL NOTES:
Relative Field Values at 240-250 degrees = 0.01



Enter 1st Obstacle Information:

57.65 km to 1st Obstacle
3265 TX AMSL
4064.76 AMSL 1st Obstacle

Θd = Angle to 1st Obstacle
A = Distance to 1st Obstacle in Feet 189140
B = Ant Ht AMSL minus Ht of 1st Obs -799.76
Θd = arctan(B/A) = -0.24 °
A -Θd value indicates that the first obstacle is above the horizon
A +Θd value indicaes that the first obstacle is below the horizon

Effective mechanical downtilt adjustment:

	<u>2.9</u>	<u>0.0</u>	<u>2.9</u>
Effective Elevation = Θd - Θbt cos(Φd - Φbt) =	<u>3</u> °	<u>0</u> °	<u>3</u> °
Effective Elevation Adjustment =	<u> </u>	<u> </u>	<u> </u>

Definitions:

- Φd = Azimuth to GBT
- Φbt = Azimuth of mechanical beam tilt
- Θd = Elevation to 1st obstacle (negative above horizon)
- Θbt = Elevation of antenna mechanical beam tilt (neg. above horizon)

Note: No adjustments for electrical beam tilt are required because the pattern data already accounts for this

Effective azimuth on horizontal pattern = Φd - Antenna Azimuth (True) {If AZ<0, then add 360}
Effective elevation on vertical pattern = Θd - Θbt cos(Φd - Φbt) {IF ELEV<0, then add 360}

Antenna Gain = HPAT(Eff AZ) + VPAT(Eff ELEV) + Max Gain

Reference Copy