

Compatibility Analysis of UHF Emissions from the NM Tech Ground Station to NMTSat

For the use of the contemplated UIHF to transmit from the ground station located at New Mexico Tech in Socorro, New Mexico to the NMTSat satellite the following considerations are offered as to why the risk of interference is acceptably small:

1. The NMT Tech Ground Station at the Socorro site is the only one that will be used to transmit to the satellite.
2. Per the Point Radius Search in Appendix 1, there are no licensed or pending to be licensed, operating systems within the UHF frequency range.
3. Per email in Appendix 2, this is compatible with operations at White Sands Missile Range, and Richard Wyman, DOD Area Frequency Coordinator, has notified IRAC of this fact. This is conditional on the following terms which NM Tech is committed to meet:
 - a. We will sector blank the NM Tech Ground Station antenna, limiting the azimuthal pointing angle to 195 degrees Reference True North (RTN), clockwise through 0 degrees (True North), to 75 degrees RTN – basically avoiding pointing southeast towards White Sands.
 - b. We will notify AFC-WSMR when the CubeSat has been deployed, and ground station tracking operations will begin, in order to provide AFC-WSMR with Situational Awareness. Coordination will be via e-mail to the AFC-WSMR group account at usarmy.wsmr.imcom-central.list.dodafc@mail.mil, and will be at least 96 hours in advance.
 - c. Operations will be on a non-interference basis. We will provide a local Cease Buzzer POC to Richard Wyman.

Appendix 1 Point Radius Search – FCC Market Survey



[Site / Frequency / Market Search Results](#)

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Site / Frequency / Market Search Results

Search Criteria: Frequency Range = 431.7 MHz through 431.9 MHz, Computed Box
Based on Point/Radius: Center = 34° 3' 58" N 106° 54' 29" W, Radius = 400
Kilometers, Currently Licensed and Pending Facilities

No Records found for this search criteria

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* Indicates points outside the point/radius circle, within the computed box.

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Appendix 2 Coordination of NM Tech Ground station UHF Transmissions with DOD / White Sands Missile Range

On Tue, 21 Nov 2017 22:16:13 +0000, "Wyman, Richard J CIV USARMY NETCOM (US)" wrote:
CLASSIFICATION: UNCLASSIFIED

Mike - Below is my final response to my Army IRAC reps.

Thanks for your cooperation in this matter.

V/R,

Richard J. Wyman
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DoD Area Frequency Coordinator
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-----Original Message-----

From: Wyman, Richard J CIV USARMY NETCOM (US)
Sent: Tuesday, November 21, 2017 3:15 PM
To: Poppenhager, Lori A CIV USARMY HQDA CIO G-6 (US)
; Sanchez, Edwin (Ed) CIV USARMY NETCOM
(US) ; Ford, Melvin Ray CIV USARMY HQDA CIO G-6
(US)
Cc: Austin, Gary L CIV USARMY NETCOM (US)
Subject: RE: [Non-DoD Source] [faslist] 0514-EX-ST-2017 / COB November 14,
2017 (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Lori/Ed/Melvin:

1. AFC-WSMR concurs with the use of M148.8 as the CubeSat downlink, as the output power is low, the expected distance is 500 km, and a high-gain ground-based antenna is required. Any ground-to-air applications will use a higher power transmit antenna, and will overpower any signal from the CubeSat. The likelihood of interference to the NM Tech ground station is

much more likely than any interference to DoD operations in the area. Furthermore, the CubeSat will only be overhead for approximately 5-6 passes per day with a transmit duration of 10 minutes per pass.

2. AFC-WSMR concurs with the use of M431.8 as a ground-station uplink, provided they avoid radiating towards White Sands Missile Range (WSMR).

3. AFC-WSMR concurs with FCC STA request 0514-EX-ST-2017, provided the following limitations and coordination procedures are followed;

a. The user must sector-blank their UHF Ground Station antenna, limiting the azimuthal pointing angle to 195 degrees Reference True North (RTN), clockwise through 0 degrees (True North), to 75 degrees RTN - basically avoiding pointing southeast towards White Sands. There are no limitations to the elevation pointing angle.

b. The user must notify AFC-WSMR when the CubeSat has been deployed, and ground station tracking operations will begin, in order to provide AFC-WSMR with Situational Awareness. Coordination will be via e-mail to the AFC-WSMR group account at usarmy.wsmr.imcom-central.list.dodaafc@mail.mil, and should be at least 96 hours in advance.

c. Operations will be on a non-interference basis. New Mexico Tech shall provide a local Cease Buzzer POC.

V/R,

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