

Schulze, Ron

From: Holtmeyer, Darryl J [darryl.j.holtmeyer@boeing.com]
Sent: Friday, July 16, 2010 11:45 AM
To: Schulze, Ron
Cc: Asongwed, Anthony FCC; Fishel, Beth; Kennedy, John; Ruth Taylor; Stephen Buenzow
Subject: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

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This e-mail is your AFTRCC coordination.

The coordination includes this header information, DOD Area Frequency Coordinator comments, and AFTRCC comments. These messages must not be separated.

This recommendation is advisory only and not binding on the FCC. Applicants are advised that this coordination does not constitute a judgment that a recommended frequency is best suited to the applicant's purpose nor that the frequency is exclusive to the applicant. Flight Test frequencies are shared and may be subject to scheduling with other agencies.

In return for AFTRCC's processing of the applicant's coordination request, the applicant agrees to release and hold harmless AFTRCC, its officers, directors, members, agents and representatives from any claims, losses or expenses which may arise as a result of the applicant's use of these frequencies.

This coordination is not an authorization to operate. The FCC must grant the applicant authorization to transmit. A copy of this coordination must accompany your application to the FCC.

~~~~~

-----Original Message-----

From: Richardson, Joseph L CIV NAVAIR, 52370MD [mailto:joseph.l.richardson@navy.mil]
Sent: Thursday, July 15, 2010 12:06 PM
To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Higdon Ronald O DoD AFC 2; Maldonado Rene Civ 96 CG/SCWF; kenneth.wong@conus.army.mil; Donald Baldwin WSMR DOD AFC; Mary Kay Hayden; Ralph Walborn; richard.wyman@us.army.mil; WSMR DoD AFC; Connolley, Scott; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXF; timothy.woodall@elmendorf.af.mil; William.Krick@ELMENDORF.af.mil; Hall, Randall S CIV NMCSO PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613; AFMO CONUS; Ed Sanchez; Luis Sanchez; richard.work@pentagon.af.mil; Beckes Ryan W SSgt 99 CS/SCML; Kegeler, Rachael S SSgt USAF ACC 99 CS/SCOTS; Pack Sr., Dennis DOD AFC Nellis AFB; Goddard, Robert N. CIV NAVAIR 5.1.1.3; Ryan, Mikel R. USNUNK NAVAIR 5.2.3.3
Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

DoD WAFC concurs with ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY). WAFC coordination number WAFC 290-10.

Vr,
Joseph L. Richardson
DoD Western Area Frequency Coordinator(WAFC) Naval Air & Weapons Division(NAWD) 130 Easy Road
M/S 3008 China Lake, CA 93555-6109

NIPR: joseph.l.richardson@navy.mil
SIPR: joseph.richardson@navy.smil.mil

DSN: 437-6832
COMM: (760) 939-6832
CELL: (760) 382-8861
FAX: (760) 939-0384
SXXI: WAFB

-----Original Message-----

From: Higdon, Ronald O Mr CIV USAF AFMC 96 CG/SCXF [mailto:Ronald.Higdon@EGLIN.AF.MIL]
Sent: Thursday, July 15, 2010 9:56 AM
To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Maldonado, Rene CIV USAF AFMC 96 CG/SCXF; kenneth.wong@conus.army.mil; Donald Baldwin WSMR DOD AFC; Mary Kay Hayden; Ralph Walborn; richard.wyman@us.army.mil; WSMR DoD AFC; Connolley, Scott D Civ USAF AFSPC 45 SCS/SCXSF; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXSF; Woodall, Timothy P Civ USPACOM ALCOM JTF-AK/J64 - RM 301; Krick, William S CTR USN ALCOM JTF-AK/J64 - RM 301; Hall, Randall S CTR NCTAMS PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613; AFMO CONUS; Ed Sanchez; Luis Sanchez; Work, Richard A. Civ AFFMA/DOO; Beckes, Ryan W SSgt USAF ACC 99 CS/SCOTS; Kegeler, Rachael S TSgt USAF ACC 99 CS/SCOTS; 99 CS/SCOTS Frequency Management; goddardrn@navair.navy.mil; Ryan, Mikel Mid-Atlantic AFC; Giangrosso, Joseph P Mr CTR USAF AFMC 96 CG/SCXF
Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

The DoD GAFC concurs with AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY). GAFC Coordination Number GAFC 2010-026.

Thanks,
Ronald O. Higdon, YD-03
DoD Gulf Area Frequency Coordinator
96 Communications Group/SCXF
Eglin AFB, FL 32542
Comm. 850-883-5982
DSN 875-5982

-----Original Message-----

From: Wong, Kenneth K Mr CIV USA [mailto:kenneth.wong@us.army.mil]
Sent: Thursday, July 15, 2010 12:31 PM
To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Higdon Ronald O DoD AFC 2; Maldonado Rene Civ 96 CG/SCWF; Baldwin, Donald Mr CIV USA; Hayden, Mary K CIV USA IMCOM; Walborn, Ralph L CIV US USA; Wyman, Richard Mr CIV USA NETCOM/9TH SC A; WSMR DODAFB; Connolley, Scott; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXF; timothy.woodall@elmendorf.af.mil; William.Krick@ELMENDORF.af.mil; Hall, Randall S CTR NCTAMS PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613; AFMOCONUS; Sanchez, Edwin CIV USA; Sanchez, Luis G CIV USA; Work, Richard A. Civ AFFMA/DOO; Beckes Ryan W SSgt 99 CS/SCML; Kegeler, Rachael S SSgt USAF ACC 99 CS/SCOTS; Pack Sr., Dennis DOD AFC Nellis AFB; goddardrn@navair.navy.mil; Ryan, Mikel Mid-Atlantic AFC
Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan
Subject: RE: AFTRCC ICN 1344-10/3972 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Darryl,

DOD AFC-AZ concurs with ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY). Coordination number is 10071501.

Thanks.

Kenneth Wong
DOD Area Frequency Coordinator
State of Arizona
(520) 538-6423

-----Original Message-----

From: Wyman, Richard Mr CIV USA NETCOM/9TH SC A [mailto:richard.wyman@us.army.mil]
Sent: Thursday, July 15, 2010 1:26 PM
To: Holtmeyer, Darryl J; Porter, Roger D. (GSFC-4500)
Subject: RE: AFTRCC ICN 1344-10/3972 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Roger - I assume that you worked the frequency issues for the Lunar Reconnaissance Orbiter (LRO). If so, does NASA have permanent assignments for it, and what are the Serial Numbers? I know that NASA has some balloon frequencies in this band.

Darryl - Have you coordinated with Randy Minyard at DOE? They have some assignments in this band at Sandia Labs.

V/R,

Richard J. Wyman
DoD Area Frequency Coordinator
White Sands Missile Range, NM
Phone - Comm: (575) 678-3402
Alt Phone: (575) 678-5417
Phone - DSN: 258-3402
Fax - Comm (575) 678-5281
Cell - (575) 993-0867
NIPR: richard.wyman@us.army.mil
SIPR: richard.wyman@us.army.smil.mil

-----Original Message-----

From: Connolley, Scott D Civ USAF AFSPC 45 SCS/SCXS [mailto:Scott.Connolley@patrick.af.mil]
Sent: Thursday, July 15, 2010 1:22 PM
To: Holtmeyer, Darryl J
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

EAFC concurs with the temporary request as stated below on a non-interference basis

Scott Connolley
DoD Eastern Area Frequency
Coordination Office
45 Space Communications Squadron
Patrick Air Force Base Florida
(321) 494-5838 , Fax: 8715, DSN 854

-----Original Message-----

From: Marois, Gary R CIV PACOM J613 [mailto:gary.marois@pacom.mil]
Sent: Thursday, July 15, 2010 12:10 PM

To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Higdon Ronald O DoD AFC 2; Maldonado Rene Civ 96 CG/SCWF; kenneth.wong@conus.army.mil; Donald Baldwin WSMR DOD AFC; Mary Kay Hayden; Ralph Walborn; richard.wyman@us.army.mil; WSMR DoD AFC; Connolley, Scott; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXF; timothy.woodall@elmendorf.af.mil; William.Krick@ELMENDORF.af.mil; Hall, Randall S CIV NMCSO PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; AFMO CONUS; Ed Sanchez; Luis Sanchez; richard.work@pentagon.af.mil; Beckes Ryan W SSgt 99 CS/SCML; Kegeler, Rachael S SSgt USAF ACC 99 CS/SCOTS; Pack Sr., Dennis DOD AFC Nellis AFB; Goddard, Robert N. CIV NAVAIR 5.1.1.3; Ryan, Mikel R. USNUNK NAVAIR 5.2.3.3
Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

Darryl

JFMO PAC concurs with ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY).

Regards

Gary R Marois
USPACOM J613/JFMOPAC
COMM (808) 477-7234
DSN (315) 477-7234
SIPR: gary.marois@pacom.smil.mil
NIPR: gary.marois@pacom.mil

-----Original Message-----

From: Krick, William S CTR USN ALCOM JTF-AK/J64 - RM 301
[mailto:William.Krick@elmendorf.af.mil]
Sent: Thursday, July 15, 2010 11:49 AM
To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Higdon, Ronald O Mr CIV USAF AFMC 96 CG/SCXF; Maldonado, Rene CIV USAF AFMC 96 CG/SCXF; kenneth.wong@conus.army.mil; Donald Baldwin WSMR DOD AFC; Mary Kay Hayden; Ralph Walborn; richard.wyman@us.army.mil; WSMR DoD AFC; Connolley, Scott D Civ USAF AFSPC 45 SCS/SCXSF; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXSF; Woodall, Timothy P Civ USPACOM ALCOM JTF-AK/J64 - RM 301; Hall, Randall S CTR NCTAMS PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613; AFMO CONUS; Ed Sanchez; Luis Sanchez; Work, Richard A. Civ AFFMA/DOO; Beckes, Ryan W SSgt USAF ACC 99 CS/SCOTS; Kegeler, Rachael S TSgt USAF ACC 99 CS/SCOTS; 99 CS/SCOTS Frequency Management; goddardrn@navair.navy.mil; Ryan, Mikel Mid-Atlantic AFC
Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

Darryl,

JFMO-Alaska concurs with AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY).

v/r

William "Scott" Krick
JFMO Alaska/J642
Elmendorf AFB, AK
DSN: 317-552-7184
Comm:(907)552-7184

-----Original Message-----

From: Sanchez, Luis G CIV USA [mailto:Luis.Sanchez@us.army.mil]

Sent: Thursday, July 15, 2010 8:06 AM
To: Holtmeyer, Darryl J
Cc: Sanchez, Edwin CIV USA
Subject: RE: AFTRCC ICN 1344-10/3972 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO//SENSITIVE

Darryl,

Use privies coordination.

"AFMO CONCUR WITH AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY). COORDINATION NUMBER AFMO 10-0405//GUILLO-LUIS.SANCHEZ@US.ARMY.MIL-210-221-0454//".

V/R
Guillo
210-221-0454

-----Original Message-----

From: Work, Richard A. Civ AFFMA/DOO [mailto:WORKR@pentagon.af.mil]
Sent: Thursday, July 15, 2010 2:47 PM
To: Holtmeyer, Darryl J
Cc: Wyatt, Michael D Civ USAF AFFMA
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

AFFMA concurs with ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY).

-----Original Message-----

From: Beckes, Ryan W SSgt USAF ACC 99 CS/SCOTS [mailto:Ryan.Beckes@nellis.af.mil]
Sent: Thursday, July 15, 2010 3:02 PM
To: Holtmeyer, Darryl J
Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

Mr. Holtmeyer,

Nellis DOD AFC concurs. NAFC 4638-10 has been assigned.

Thanks,

SSgt Ryan Beckes
Nellis AFB Frequency Manager
DSN: 682-3417
COMM: (702) 652-3417
FAX: 682-7354

-----Original Message-----

From: Ryan, Mikel R. USNUNK NAVAIR 5.2.3.3 [mailto:mikel.ryan@navy.mil]
Sent: Friday, July 16, 2010 10:09 AM
To: Holtmeyer, Darryl J; Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Higdon Ronald O DoD AFC 2; Maldonado Rene Civ 96 CG/SCWF; kenneth.wong@conus.army.mil; Donald Baldwin WSMR DOD AFC; Mary Kay Hayden; Ralph Walborn; richard.wyman@us.army.mil; WSMR DoD AFC; Connolley, Scott; Trexler, Timothy R TSgt USAF AFSPC 45 SCS/SCXF; timothy.woodall@elmendorf.af.mil; William.Krick@ELMENDORF.af.mil; Hall, Randall S CIV NMCSO PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613; AFMO CONUS; Ed Sanchez; Luis Sanchez; richard.work@pentagon.af.mil; Beckes Ryan W SSgt 99 CS/SCML;

Kegeler, Rachael S SSgt USAF ACC 99 CS/SCOTS; Pack Sr., Dennis DOD AFC Nellis AFB; Goddard, Robert N. CIV NAVAIR 5.1.1.3

Cc: Fagan, Tom; Hankins, Danny; Hoehn, Don; Morris, Wayne; Cramer, Joseph; Simpson, John; Maynard, Wayne (Lockheed Martin); Jablonski, Dan

Subject: RE: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

Darryl,

I agree that this looks pretty benign. Concur with request.

Very Respectfully,

Mr. Mikel R. Ryan

Head Mid-Atlantic Area Frequency Coordination Office Code 5.2.2.2, Unit 4, Bldg. 2118

23013 Cedar Point Road

NAVAIRWARCENACDIV Patuxent River MD 20670-1183 USA TELEPHONE NUMBER: 301-342-1532/1194 FAX

NUMBER: 301-342-1200, DSN PREFIX: 342- EMAIL ADDRESS: mikel.ryan@navy.mil SIPRNET ADDRESS:

mikel.ryan@navy.smil.mil "You can accomplish anything when you have vision, determination, and an endless supply of expendable labor." -- Ramses II

From: Holtmeyer, Darryl J

Sent: Thursday, July 15, 2010 7:51 AM

To: Hernandez, Michael A NAVAIR; Richardson, Joseph L CIV NAVAIR, 52370MD; Higdon Ronald O DoD AFC 2; Maldonado Rene Civ 96 CG/SCWF; Kenneth Wong (kenneth.wong@conus.army.mil);

Donald Baldwin WSMR DOD AFC; 'Mary Kay Hayden'; 'Ralph Walborn'; Richard Wyman

(richard.wyman@us.army.mil); 'WSMR DoD AFC'; Connolley, Scott; Trexler, Timothy R TSgt USAF

AFSPC 45 SCS/SCXF; timothy.woodall@elmendorf.af.mil; William.Krick@ELMENDORF.af.mil; Hall,

Randall S CTR NCTAMS PAC, N3SO; Harris, Dave D CIV, NMCSO PAC; Marois, Gary R CIV PACOM J613;

'AFMO CONUS'; 'Ed Sanchez'; 'Luis Sanchez'; Richard Work (richard.work@pentagon.af.mil);

Beckes Ryan W SSgt 99 CS/SCML; Kegeler, Rachael S SSgt USAF ACC 99 CS/SCOTS; Pack Sr., Dennis

DOD AFC Nellis AFB; goddardrn@navair.navy.mil; Ryan, Mikel Mid-Atlantic AFC

Cc: 'Fagan, Tom'; 'Hankins, Danny'; 'Hoehn, Don'; 'Morris, Wayne'; Cramer, Joseph;

'Simpson, John'; 'Maynard, Wayne (Lockheed Martin)'; 'Jablonski, Dan'

Subject: AFTRCC ICN 1344-10/3972 (JHUAPL/Experiment - Morehead, KY)

All,

By way of introduction to the longest coordination request I've ever worked, I ask that you review all the material below and hopefully provide favorable coordination. AFTRCC data show there is not a sensitive telemetry ground station within 100 miles of the uplink transmitter, which will have a narrow beamwidth transmission toward the moon. As you will see below, our AFTRCC technical expert Dr. Dan Jablonski does not believe that the signal being returned to earth from the moon will exceed the protection criteria which has been used to evaluate possible interference to telemetry systems for 20 years now. I wanted to make all of you aware of this proposed use though, because at a very low signal level, the transmission from the moon could be visible to aeronautical telemetry ground stations with high gain antennas that are aimed at the moon. Thank you in advance for your assistance with this request.

Darryl

AFTRCC ICN 1344-10/3972

To: AFC 1

Western Area Frequency Coordinator

joseph.l.richardson@navy.mil

michael.hernandez@navy.mil

AFC 2

DOD Gulf Area Frequency Coordinator

ronald.higdon@eglin.af.mil<mailto:ronald.higdon@eglin.af.mil>

rene.maldonado2@eglin.af.mil<mailto:rene.maldonado2@eglin.af.mil>

larry.parsons@eglin.af.mil

AFC 3

DOD Area Frequency Coordinator, State of Arizona

kenneth.wong@conus.us.army.mil<mailto:kenneth.wong@conus.us.army.mil>

AFC 4

DOD Area Frequency Coordinator, WSMR

richard.wyman@us.army.mil<mailto:richard.wyman@us.army.mil>

tom.banks@us.army.mil<mailto:tom.banks@us.army.mil>

donald.baldwin@us.army.mil<mailto:donald.baldwin@us.army.mil>

marykay.hyden@us.army.mil<mailto:marykay.hyden@us.army.mil>

dod-afc@wsmr.army.mil<mailto:dod-afc@wsmr.army.mil>

AFC 5

DOD Eastern Area Frequency Coordinator

scott.connolley@patrick.af.mil

timothy.trexler@patrick.af.mil<mailto:timothy.trexler@patrick.af.mil>

AFC 6

Joint Frequency Management Office, Pacific

heriberto.rivera@pacom.mil<mailto:heriberto.rivera@pacom.mil>

Joint Frequency Management Office, Alaska

timothy.woodall@elmendorf.af.mil<mailto:timothy.woodall@elmendorf.af.mil>

william.krick@elmendorf.af.mil<mailto:william.krick@elmendorf.af.mil>

robert.craig@elmendorf.af.mil

AFC 7

Army Frequency Management Office, Continental US

edwin.sanchez1@us.army.mil<mailto:edwin.sanchez1@us.army.mil>

luis.sanchez@us.army.mil<mailto:luis.sanchez@us.army.mil>

afmo-conus@samhouston.army.mil<mailto:afmo-conus@samhouston.army.mil>

AFC 8

HQ USAF Frequency Management Agency

richard.work@pentaton.af.mil<mailto:richard.work@pentaton.af.mil>

m1a-affma-afttrcc@pentagon.af.mil<mailto:m1a-affma-afttrcc@pentagon.af.mil>

AFC 9

DOD Area Frequency Coordinator, Nellis AFB

dennis.pack@nellis.af.mil<mailto:dennis.pack@nellis.af.mil>

rachael.kegeler@nellis.af.mil<mailto:rachael.kegeler@nellis.af.mil>

ryan.beckes@nellis.af.mil<mailto:ryan.beckes@nellis.af.mil>

dodafc@nellis.af.mil<mailto:dodafc@nellis.af.mil>

AFC 10

Mid-Atlantic Area Frequency Coordinator

mikel.ryan@navy.mil<mailto:mikel.ryan@navy.mil>

robert.n.goddard@navy.mil<mailto:robert.n.goddard@navy.mil>

AFTRCC concurs and requests coordination of the 2360-2390 MHz band for a Special Temporary Authority (STA) on a non-interference basis as follows:

Usage: Earth/Moon Communications System Demonstration with Lunar Reconnaissance Orbiter (LRO)

Applicant:

Morehead State University

200 A.B.Chandler Place

Morehead, KY 40351

POC Ronald Schulze (Mini-RF Systems Lead) (Tel) 443-778-4924 Ron.schulze@jhuapl.edu

Frequencies: 2370 to 2390 MHz

Emission: 20K0L0N

Uplink Power: 100.0 Watts

Downlink Power: 0.023 Watt

Class: FX

Area of operation: 10 MIRAD (16.2 kmRAD) of:

Morehead, KY (38-11-30N / 083-26-20W)

Dates of operation: 09/01/2010 through 12/31/2010

AFTRCC recommendations: None

Please comment via e-mail reply stating concurrence, non-concurrence, scheduling requirements or recommendations.

Signed by:

Darryl J. Holtmeyer

Telemetry Coordinator AFTRCC

St. Louis, MO

coord_tm@aftrcc.org<mailto:coord_tm@aftrcc.org>

www.aftrcc.org<http://www.aftrcc.org>

314-233-1117

314-545-2503 Soft Phone

FAX 314-545-8527

Office Location/Hours:

Home Office, Mon., 6:30 AM - 4:00 PM

St. Louis Office, Tue thru Thurs, 6:30 AM 4:00 PM Home Office, Friday 6:30 AM - 10:30 AM

Darryl,

Per our phone conversation last Friday...here is some more info related to our STA application.

Mini-RF is a synthetic aperture radar instrument currently investigating the Moon's surface aboard NASA's Lunar Reconnaissance Orbiter (LRO). LRO was launched on June 18, 2009 and is using its seven instruments to explore the Moon from a 50-kilometer (31 mile) polar orbit.1 Mini-RF operates at both 2,380 and 7,140 MHz frequencies and includes a communications demonstration mode. The LRO/Mini-RF instrument is operated by the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, MD. Specifically, Mini-RF is used to map the poles of the Moon and search for water ice in permanent-shadow regions. In addition, it

serves as a technical demonstration of a unique, miniaturized, dual-use RF instrument (radar and communications).

In order to infer science products from the radar data collected with the Mini-RF instrument, a series of in-flight measurements were performed using the Arecibo Radio Telescope (ART), Green Bank Telescope (GBT), and the Space Tracking Antenna at Morehead State University (MSU). The GBT and ART ground stations are used to characterize transmit and receive paths of the LRO Mini-RF instrument at 2,380 MHz. The MSU facility was configured to support characterization of Mini-RF transmit and receive paths at 7,140 MHz. The STA that was submitted was in support of our desire to outfit the MSU Space Tracking Antenna to uplink a pulsed CW tone to Mini-RF so that we can calibrate the receive path of Mini-RF. A NTIA license was submitted and approved during 2009 for Mini-RF to transmit back to Earth via LRO program office out of NASA Goddard. If I understand our conversation correctly the ability for Mini-RF to transmit in the band 2379-2381 MHz is the main concern. This downlink test (Mini-RF to GBT) has been run 101 times over the past year, based on the license application that was filed via LRO program. The Mini-RF is a low power radar system, the EIRP of Mini-RF is approximately 70.5 dBm. We have capability to program our transmit frequency if that can help with the frequency coordination. These events are well-planned activities however we do not have the ability to stop transmission after they commence.

Let me know if you need anymore info.

Ron Schulze
Principal Staff Engineer
Johns Hopkins University
Applied Physics Laboratory
Space Department
RF Engineering Group
11100 Johns Hopkins Road
MS 4-324
Laurel, MD 20723
443-955-3168 (mobile)
443-778-4924 Baltimore
240-228-4924 Washington
443-778-5883 Fax

-----Original Message-----

From: Jablonski, Daniel G. [mailto:Dan.Jablonski@jhuapl.edu]
Sent: Monday, July 12, 2010 2:42 PM
To: Holtmeyer, Darryl J
Cc: Jablonski, Daniel G.
Subject: RE: AFTRCC coordination request from APL

Darryl,

I've been peripherally involved with mini-RF at various times over the past couple of years, and know the APL participants; we're in the same department at APL, and have worked together on NASA programs.

The uplink, although high power at an EIRP of 23 megawatts, shouldn't be a problem due to geographical factors.

The downlink will be visible to any high gain AMT antennas that have the moon in view. However, it looks to me as though the pfd at the ground will be -171 dBW per meter-squared before any bandwidth adjustments are made to normalize it to 4 kHz (the Recommendation M.1459 reference bandwidth). When averaged over a typical 1 MHz aircraft channel, the mini-RF downlink will fall below the Rec. M.1459 protection levels., even at low elevation angles

where the AMT protection levels are at their highest levels.

The mini-RF signal will be detectable by the space-surveillance antennas because they are larger (54 dB gain as opposed to AMT's typical 40 dB gain antennas), and because the receiver bandwidths can be tightened up to a couple of hundred kilohertz for the deviation factors listed in the coordination request.

Danny Hankins can doublecheck this to provide a non-APL perspective.

Also, the use of this band for telemetry links from the moon for a NASA-funded project seems to me to be an aerospace and flight test radio application, and that this particular allocation differs from that for an ordinary test aircraft allocation only because it is detectable over half the planet.

Thanks,

Dan J.