



Panasonic
Panasonic Avionics Corporation



**COORDINATION AGREEMENT FOR THE JOINT USAGE OF THE
BAND 14.0 - 14.5 GHz BETWEEN THE NATIONAL SCIENCE
FOUNDATION AND PANASONIC AVIONICS CORPORATION**

Version 1.1

December 18, 2009

**Coordination Agreement for the Joint Usage
of the Band 14.0 - 14.5 GHz Between the National
Science Foundation and Panasonic Avionics Corporation**

Panasonic Avionics Corporation (PAC) is applying for authority to operate a global Aeronautical Mobile-Satellite Service (AMSS) network in the 14.0-14.5 GHz Fixed-Satellite Service (FSS) band. The AMSS terminals will be installed aboard commercial aircraft and operate with commercial geostationary satellites. This coordination agreement and the pending Federal Communications Commission (FCC) license comply with FCC Part 25 rules and the recommendations of the International Telecommunication Union (ITU) as a product of the World Radiocommunication Conference WRC-03.

1. Overview

- 1.1 The band 14.47-14.5 GHz is used by the radio astronomy service in accordance with footnotes US342 to the U.S. Table of Frequency Allocations
- 1.2 The band 14.0-14.5 GHz has been allocated to mobile-satellite service including AMSS on a secondary basis with the provision that government services, including the radio astronomy service in the 14.47-14.50 GHz band, be protected from interference from the AMSS service.
- 1.3 PAC filed an application with the FCC on July 24, 2009 for experimental authority to operate two types of transmit/receive aircraft earth stations (AES) and also plans to submit a commercial license application to the FCC.
- 1.4 The AMSS operations will allow AESs to transmit and receive information from a ground earth station via a transponder on geostationary satellites arc under the control of a ground-based network operation center in Miramar, FL.
- 1.5 This Coordination Agreement ensures that the PAC AMSS system complies with both Part 25 FCC requirements and ITU recommendations for radio astronomy protection.
- 1.6 Negotiation and signatures of this agreement are to be executed by PAC and the Electromagnetic Spectrum Management Unit of the National Science Foundation (NSF) for the Radio Astronomy sites identified in Section 2.1.

2. National Science Foundation Radio Astronomy Observatories

2.1 Radio Astronomy Site Listing

The Radio Astronomy sites under NSF support and listed in Table 2-1 make measurements in the 14.47-14.50 GHz band. These sites, including sites associated with the Very Long Baseline Array (VLBA), are to be protected during their operation in accordance with the description provided in Section 3.

Table 2-1 Current Radio Astronomy Sites

Observatory	Latitude (D,M,S)	Longitude (D,M,S)
<u>National Astronomy and Ionosphere Center (NAIC) site:</u>		
Arecibo, PR	18 20 39	66 45 10
<u>National Radio Astronomy Observatory OIRAO sites:</u>		
Green Bank Telescope, WV	38 25 59	79 50 23
Very Large Array, Socorro, NM	34 04 44	107 37 06
<u>VLBA Sites:</u>		
St. Croix, VI	17 45 24	64 35 01
Hancock, NH	42 56 01	71 59 11
N. Liberty, IA.....	41 46 17	91 34 27
Ft. Davis, TX	30 38 06	103 56 41
Los Alamos, NM	35 46 30	106 14 44
Pie Town, NM	34 18 04	108 07 09
Kitt Peak, AZ	31 57 23	111 36 45
Owens Valley, CA	37 13 54	118 16 37
Brewster, WA	48 07 52	119 41 00
Mauna Kea, HI	19 48 05	155 27 20

2.2 Additional Radio Astronomy Sites

NSF may add new radio astronomy sites to the list given in Table 2-1. In this case NSF shall give PAC at least 2 months notice of modifications to existing sites, or the inclusion of any additional Radio Astronomy sites to operate in the 14.47 -14.5 GHz band.

3. Operational Coordination Agreement

NSF and PAC agree to the following stipulations:

- 3.1 To provide protection to the Radio Astronomy sites listed in Table their operational period, the following aggregate power flux density the 14.47-14.50 GHz band shall be no greater than:
 - (a) -221 dB (W/m²/Hz) for the Arecibo, Green Bank and Socorro sites
 - (b) -189 dB (W/m²/Hz) for the ten VLBA sites
- 3.2 Within a year following initiation of the licensed PAC AMSS service, authorized NSF and PAC personnel shall periodically review the terms of this Coordination

Agreement. If required, modifications of this Coordination Agreement will be negotiated and instituted.

3.3 Any changes in the points of contact given in Section 5 shall be identified and reported by the respective party in a reasonable period.

PAC agrees to the following stipulations:

3.4 PAC will respond promptly to any NSF request for protection as described above for interference occurring at any site listed in Table 2-1.

NSF agrees to the following stipulations:

3.5 Provide PAC points of contact given in Section 5 a current schedule of Radio Astronomy measurements to be conducted in the 14.47-14.5 GHz band for the sites identified in Table 2-1.

3.6 Via the National Astronomy and Ionosphere Center (NAIC) and the National Radio Astronomy Observatory (NRAO) provide PAC points of contact given in Section 5 any data that is not in accordance with the provisions in this Coordination Agreement.

4. Termination Conditions

4.1 This Coordination Agreement shall be binding for PAC and NSF.

4.2 Either party providing a written notice of six months may execute termination of this Coordination Agreement.

5. Points of Contact

5.1 Points of contact for this Coordination Agreement are:

Name: Dr. Andrew W. Clegg	Name: Paul Sarraffe
Organization: National Science Foundation	Organization: Panasonic Avionics
Title: Program Director, ESMU	Title: eXConnect System Engineering
Address: 4201 Wilson Boulevard, Room 1030	Address: 262000 Enterprise Way
City State Zip: Arlington VA 22230	City State Zip: Lake Forest, CA 92630
Phone: (703) 292-4892	Phone: (949) 672-2589
Fax: (703) 292-9034	Fax: (949) 462-7101
E-mail: esm@nsf.gov	E-mail: paul.sarraffe@panasonic.aero

5.2 Points of contact for Radio Astronomy observation schedules are:

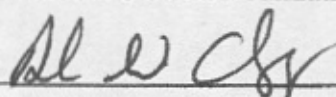
Dr.	Dr. Harvey Liszt	Name:	Paul Sarraffe
Title:	Spectrum Manager	Title:	eXConnect System Engineering
Organization:	NRAO	Organization:	eXConnect
Address:	NRAO 520 Edgemont Rd. Charlottesville, VA 22903-2475	Address:	Panasonic Avionics Corporation 262000 Enterprise Way Lake Forest, CA 92630
Phone	434-296-0344	Phone:	(949) 672-2589
Fax:	434-296-0278	Fax:	(949) 462-7101
E-mail:	hliszt@nrao.edu	E-mail:	paul.sarraffe@panasonic.aero

6. Signatures

This Agreement is being made in good faith by both parties and is effective on the date on which the last -party signs it.

For the National Science Foundation

For Panasonic Avionics Corporation

By: 

By: 

Name: Dr. Andrew W. Clegg
Title: Program Director, Electromagnetic
Spectrum Management Unit

Name: Anita Kartic
Title: Senior Director, Strategic Partnerships
and eXConnect Regulatory Affairs

Date: December 18, 2009

Date: December 18, 2009