Panasonic Avionics Corporation
Application for 2-Year Experimental License

NARRATIVE DESCRIPTION

Panasonic Avionics Corporation ("Panasonic") requests a two-year experimental license, commencing on or about April 15, 2012, to conduct ground testing in support of Panasonic's Global Communications Suite ("GCS") featuring the "eXConnect" Ku-band aeronautical mobile-satellite service ("AMSS") system to provide broadband connectivity onboard aircraft in flight. It is requested that the license be granted to conduct the testing on location at five airports around the United States: the Melbourne International Airport, Melbourne, FL; the Griffiss International Airfield, Rome, NY; the San Francisco International Airport, San Francisco, CA; the Denver International Airport, Denver, CO; and the O'Hare International Airport, Chicago, IL.

Background

On November 2, 2010, the FCC granted a two-year experimental license (Call Sign WF2XLF), effective until November 1, 2012, to conduct two types of testing: (1) electromagnetic interference ("EMI") ground testing of multiple, simulated transmit portable electronic devices ("T-PEDs") RF transmissions in the aircraft cabin in multiple frequency bands: GSM, cellular, Wi-Fi and others; and (2) picocell system operations in the aircraft cabin for enabling GSM phone communications for passengers and crew.

Call Sign WF2XLF authorizes testing onboard parked aircraft at four sites: (1) Southern California Logistics Airport, Victorville, CA; (2) Paine Field Airport, Everett, WA; (3) Piedmont-Triad International Airport, Greensboro, NC; and (4) TSTC Wace Airport, Waco, TX.[1] Subsequent to the grant of Call Sign WF2XLF, Panasonic has sought and obtained a series of separate, but related experimental STAs at additional airfields: (1) Call Sign WE9XMG, granted August 1, 2010, to conduct T-PED testing in certain Wi-Fi bands at the Hartsfield-Jackson International Airport in Atlanta, GA; (2) Call Sign WE9XVM, granted April 18, 2011, to conduct T-PED and picocell testing at the Roswell Industrial Air Center, Roswell, NM; (3) Call Sign WF9XCS, granted September 9, 2011, to conduct T-PED interference testing in certain Wi-Fi bands at Paine Field Airport, Everett, WA (Call Sign WF9XCS); and (4) Call Sign WF9XGL, granted on December 1, 2011, to conduct T-PED interference testing in multiple frequencies at the Melbourne, FL International Airport. Currently pending is an application (File No. 0123-EX-ST-2012) for an experimental STA at the Griffiss International Airfield in Rome, NY, which proposes to use the same test frequencies as authorized for Melbourne, FL (Call Sign WF9XGL).

[1] Prior to the application for and grant of Call Sign WF2XLF, in November 2009, the FCC granted an experimental STA for the same frequencies at these four sites (Call Sign WE9XDS). The application materials for WE9XDS include a detailed description of the proposed T-PED and picocell testing. For the Commission's reference, a copy of Pansonic's narrative statement accompanying the application for this earlier experimental STA is attached hereto as Attachment 1.

Need for a Two-Year License

The development of the eXConnect AMSS system to provide inflight broadband connectivity requires extensive testing under very specific circumstances: It must be done onboard functional, service-ready commercial aircraft. These aircraft are constantly on the move for their primary purpose of commercial passenger and freight transportation. When they do become available for ground testing, it is usually for short periods and on short notice. In the past, as detailed in the background section above, Panasonic has requested authority for these tests through a series of applications for short-duration Special Temporary Authority (STA). However, the pace and unpredictability of aircraft availability makes such a piecemeal approach administratively and economically inefficient for all parties.

Therefore, through this two-year license application, Panasonic intends to consolidate the licensing process and promote administrative efficiency by identifying a slate of test sites and test frequencies that represent the majority of likely test scenarios over the next two years.

Request for Experimental License

Panasonic is seeking the requested two-year license to conduct T-PED interference ground testing at five sites:[2]

- Melbourne International Airport, Melbourne, FL (28° 06' 10" N.; 80° 38' 43" W.);
- Griffiss International Airfield, Rome, NY (43° 14' 01" N.; 75° 24' 25" W.);
- San Francisco International Airport, San Francisco, CA (37° 38' 10" N.; 122° 23' 57" W.);
- Denver International Airport, Denver, CO (39° 50' 57" N.; 104° 40' 25" W.); and
- O'Hare International Airport, Chicago, IL (42° 0' 30" N.; 87° 55' 22" W.),

Panasonic will conduct T-PED interference testing in the identified frequencies (see below) using a signal generator to simulate the operation of multiple T-PEDs. The proposed testing will be conducted onboard parked aircraft, composed of various models of a Boeing 747-400. Authorization is sought commencing April 15, 2012.

As Panasonic has explained in its previous applications, its access to aircraft is dependent upon the manufacturer, airline or other owner making the airplane available at a time convenient

[2] Panasonic acknowledges that that FCC's Rules provide that experimental STAs may be extended pursuant to the filing of an application for an experimental two-year license at least 15 days prior to the expiration of the experimental STA. FCC Rule 5.61(b) (47 C.F.R. § 5.61(b)). Panasonic also acknowledges that the current experimental STA for Melbourne, FL (Call Sign WF9XGL) does not expire until June 2012, and the application for the Rome, NY (File No. 0123-EX-ST-2012) site remains pending. However, in the interest of administrative efficiency, Panasonic requests that the instant two-year experimental license application also include these two sites. The proposed test frequencies are the same for all five requested sites.

for them. Panasonic has only a short window – in most cases only a few days – once an airplane is available to conduct the testing before the airplane must be returned to the owner. Testing and re-testing in the authorized frequencies will be conducted at scheduled intervals during the periods that the airplanes are available within the authorized testing period.

Testing Plan and Frequencies

Attachment 2 is the draft T-PED Susceptibility Test Frequency Plan (Testing Plan) developed by Panasonic's contractor, Armstrong Aerospace, for the planned tests. As noted in the Testing Plan, the proposed tests will be performed in accordance with FAA and industry-developed guidelines for T-PED operation in airplanes: RTCA/DO-294C – Guidance on Allowing Transmitting Portable Electronic Devices (T-PEDs) on Aircraft.[3] In addition, the testing will be conducted on a parked aircraft generally on a remote part of the tarmac and with access limited to authorized personnel.

Table 1 below lists the proposed test frequency bands. Also listed are the proposed wireless standards and associated technical information for each test band: modulation (pulse or continuous wave), maximum EIRP, maximum ERP, emission designator, among others. A single 1 MHz test frequency in each uplink band, also identified, will be used for testing. (The proposed test bands and associated technical information are nearly the same as previously authorized in the experimental STA for Melbourne, FL (Call Sign WF9XGL).)

Panasonic is not seeking any changes in the other technical aspects of proposed tests in these bands as previously authorized and as described in the attached copy of the earlier experimental STA application (Call Sign WE9XDS) (Attachment 1). Finally, Panasonic acknowledges and accepts that the Special Conditions previously attached to the Melbourne, FL experimental STA (Call Sign WF9XGL) would apply to any experimental STA granted for the proposed tests at the additional sites in Melbourne, Rome, San Francisco, Denver, and Chicago.

Included as Attachment 3 is the "Stop Buzzer" contact for the proposed tests.[4]

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For the reasons described above, Panasonic respectfully requests the grant of a two-year experimental license for the five test sites listed above, commencing on or about April 15, 2012.

[3] A copy of this document is available from RTCA: www.rtca.org.

[4] Panasonic will update the "Stop Buzzer" contact as may necessary upon grant of the requested two-year experimental license and prior to the scheduled start of any tests.

Table 1 - T-PED EMI Test Frequencies / Transmit Power Requirements

Wireless Standard	Frequency start of band (MHz)	Frequency end of band (MHz)	Test Frequency (MHz)	Modulation	Test Waveform	Target EIRP (dBm)	Target EIRP (W)	Target ERP (W) ❷	Emission Code
CDMA 2000	410	420	415	CW	2	42.0	15.8	13.7	N0N
GSM 400	450.4	457.6	454	Pulse	1	45.0	31.7	29.5	P0N
CDMA 2000	450	460	455	CW	2	42.0	15.8	13.7	N0N
CDMA 2000	479	484	482	CW	2	42.0	15.8	13.7	N0N
CDMA 2000	776	794	785	CW	2	42.0	15.8	13.7	N0N
CDMA 2000	806	849	828	CW	2	42.0	15.8	13.7	N0N
CDMAone	824	849	828	CW	2	42.0	15.8	13.7	N0N
UMTS FDD	824	849	828	CW	2	36.0	15.8	13.7	N0N
GSM 850	824	849	828	Pulse	1	45.0	31.7	29.5	P0N
IS-136	824	849	828	Pulse	1	39.8	31.7	29.5	P0N
UMTS TDD	824	849	828	Pulse	1	36.0	31.7	29.5	P0N
CDMA 2000	870	925	898	CW	2	42.0	15.8	13.7	N0N
GSM 900	876	915	913	Pulse	1	45.0	31.7	29.5	P0N
Mobile Sat	1613.8	1626.5	1626	Pulse	1	42.0	15.8	13.7	P0N
CDMA 2000	1710	1785	1748	CW	2	42.0	15.8	13.7	N0N
DCS 1800	1710	1785	1748	Pulse	1	42.0	15.8	13.7	P0N
CDMA 2000	1850	1910	1884	CW	2	42.0	15.8	13.7	N0N
UMTS FDD	1850	1910	1884	CW	2	36.0	15.8	13.7	N0N
CDMAone	1850	1910	1884	CW	2	42.0	15.8	13.7	N0N
UMTS TDD	1850	1910	1884	Pulse	1	36.0	15.8	13.7	P0N
PCS 1900	1850	1910	1884	Pulse	1	42.0	15.8	13.7	P0N
IS-136	1850	1910	1884	Pulse	1	39.8	15.8	13.7	P0N
UMTS TDD	1900	1920	1910	Pulse	1	36.0	4.0	1.8	P0N

Wireless Standard	Frequency start of band (MHz)	Frequency end of band (MHz)	Test Frequency (MHz)	Modulation	Test Waveform	Target EIRP (dBm)	Target EIRP (W)	Target ERP (W) ❷	Emission Code
CDMA 2000	1920	1980	1949	CW	2	42.0	15.8	13.7	N0N
UMTS FDD	1920	1980	1949	CW	2	36.0	15.8	13.7	N0N
UMTS TDD	2010	2025	2018	Pulse	1	36.0	4.0	1.8	P0N
UMTS/3G/PCN	2110	2170	2140	CW	2	36.0	4.0	1.8	N0N
802.11b/g	2400	2497	2412	Pulse	1	37.0	5.0	2.9	P0N
802.11b/g			2437	Pulse	1	37.0	5.0	2.9	P0N
802.11b/g			2462	Pulse	1	37.0	5.0	2.9	P0N
802.11b/g									
FDD LTE	2500	2685	2595	Pulse/CW	1,2	42.0	15.8	13.7	P0N/N0N
Wi-Max	3400	3600	3450	Pulse/CW	1,2	42.0	15.8	13.7	P0N/N0N
802.11a/n	5150	5250	5170	Pulse	1	37.0	5.0	2.9	P0N
802.11a/n	5250	5350	5300	Pulse	1	37.0	5.0	2.9	P0N
802.11a	5470	5725	5580	Pulse	1	37.0	5.0	2.9	P0N
802/11a/n	5725	5825	5825	Pulse	1	37.0	5.0	2.9	P0N