

United Airlines, Inc.
Application for 180-Day Experimental Special Temporary Authority:
T-PED Interference Ground Testing at
George Bush Intercontinental Airport (Houston, TX)

NARRATIVE DESCRIPTION

United Airlines, Inc. (“United Airlines”) hereby requests a 180-day experimental special temporary authorization (“STA”) to conduct Transmitting Portable Electronic Device (“T-PED”) ground testing in support of Panasonic Avionics Corporation’s (“Panasonic”) “eXConnect” Ku-band earth stations aboard aircraft (“ESAA”) system, which provides broadband connectivity for T-PEDs onboard United Airlines aircraft in flight. United Airlines requests an experimental STA be granted to conduct limited testing in Wi-Fi frequency bands only onboard parked aircraft at the George Bush Intercontinental Airport in Houston, Texas commencing on or about February 6, 2017.

I. Background

United Airlines’ proposed T-PED testing will be conducted as part of its partnership with Panasonic, which is authorized to perform T-PED electromagnetic compatibility (“EMC”) tests at airfields throughout the United States in various frequency bands.¹ Here, United Airlines seeks a temporary authorization to perform intermittent, experimental operations similar to those authorized by the Commission and conducted by Panasonic for aircraft certification purposes. The proposed testing will be conducted onboard parked Boeing 737 and Boeing 777 commercial aircraft in Wi-Fi bands only to establish that passenger and crew using T-PEDs with Panasonic’s eXConnect system will not adversely affect the operation and integrity of the aircraft. United Airlines will conduct testing at the following specific locations within the George Bush

¹ See Panasonic Avionics Corporation, File No. 0103-EX-ML-2016 (Call Sign WH2XCJ) and associated filings and applications.

International airport airfield:

- 29° 59' 18.85" N, 95° 19' 40.44" W
- 29° 59' 20.65" N, 95° 19' 35.15" W
- 29° 59' 20.83" N, 95° 19' 28.88" W
- 29° 59' 20.51" N, 95° 19' 23.30" W

United Airlines will test and gather electromagnetic interference data on T-PED RF transmissions in the aircraft cabin in the 2400-2497 MHz frequency band. All tests will be conducted inside closed cabins onboard aircraft parked at remote locations within the airfield.

II. Testing Plan

United Airlines will conduct T-PED interference testing in Wi-Fi only frequencies from 2400-2497 MHz, using a single 1 MHz uplink test frequency while performing the test.² In the Technical Appendix, United Airlines provides information on its ground testing procedure, including the wireless standards, the uplink band (T-PED transmit) of the standard, the test frequency in the uplink band that will be used to assess the aircraft systems for compatibility, the modulation of the test frequency that will be used and the maximum effective isotropic radiated power (“EIRP”) allowed by regulation.

United Airlines confirms that there are no Educational Broadband Service (“EBS”) or Fixed Microwave (“FM”) service licensees within the applicable radius of operations (1 kilometer) that require coordination. In addition, while United Airlines has identified one affected Broadband Radio Service (“BRS”) licensee within the radius of operations, there is no potential for interference to the subject BRS licensee because United Airlines proposed operations in the 2400-

² United Airlines will limit its testing to the following 1 MHz test frequencies: 2412 MHz, 2437 MHz and 2462 MHz.

2497 MHz band will be limited to a maximum of 1 MHz at 2462 MHz, well below the BRS licensee operations in the 2496-2502 MHz band.³ United Airlines has coordinated with the local Society of Broadcast Engineers (“SBE”) coordinator in the Houston, Texas, area for its proposed operations in the 2400-2497 MHz band and has received approval for the tests. A copy of the SBE approval memo is attached. The Commission may grant the requested 180-day STA request subject to the existing condition to coordinate with any potentially affected operations prior to conducting T-PED testing in Wi-Fi frequencies at George Bush Intercontinental Airport in Houston, Texas.

Aeronautical connectivity is a central component of United Airline’s in-flight offering, where it provides passengers and crew broadband access using Panasonic’s eXConnect Ku-band ESAA system. The devices used with this offering operate in unlicensed Wi-Fi frequency bands and there is substantial understanding of the technical and regulatory conditions associated with W-Fi use. Although the technical aspects of such operations are well-understood, United Airlines conducts EMC testing in order to satisfy FAA certification requirements taking into account the specific ESAA system architecture in each aircraft type. Accordingly, in Technical Appendix, United Airlines’ provides an in-depth overview of its proposed operations, including detailed equipment records and antenna location drawings for the Boeing 737 and Boeing 777 Series aircraft, to demonstrate compliance with FAA regulations. Moreover, United Airlines’ operations will be conducted on an unprotected, non-interference basis and will otherwise comply with Part 5 of the FCC Rules.

³ See Broadband Radio Service License, PCTV Gold II, LLC (Call Sign B196), <http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2593534> (accessed on January 6, 2017).

III. Public Interest

Grant of the requested authority will serve the public interest by allowing United Airlines to satisfy FAA certification requirements and to assist with the development of an innovative ESAA system that can enable in-flight voice and broadband Internet access to passengers and crew. In addition, United Airlines has demonstrated that its proposed experimental operations raise no concern regarding potential interference to co-frequency EBS, FM and BRS services, and any necessary coordination with other potentially affected users (through the SBE) will be completed prior to commencing T-PED testing at this airport facility. There is extensive precedent to allow United Airlines to conduct the proposed tests because the Commission has previously authorized Panasonic to conduct broader T-PED frequency testing at similarly situated airfield locations across the United States, including for the herein proposed Wi-Fi frequency band.

United Airlines seeks this experimental license in an effort to help streamline T-PED testing with its aeronautical partners. As Panasonic has explained in its previous applications, its access to aircraft for testing purposes is commonly dependent upon United Airlines making aircraft available. Thus, rather than having to coordinate testing times and dates with Panasonic, this 180-STA will allow United Airlines to conduct T-PED testing with Panasonic's ESAA system on as-needed basis as soon as an aircraft becomes available. 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.

III. Conclusion

Based on the foregoing, United Airlines respectfully requests that the Commission grant this application for a 180-day special temporary authorization to permit limited T-PED testing in

the Wi-Fi band identified above at George Bush Intercontinental Airport in Houston, Texas, commencing no later than February 6, 2017.