

Expedited Action Requested

NARRATIVE DESCRIPTION

The Boeing Company (“Boeing”) requests a 21-day extension of its existing experimental special temporary authorization (“STA”), Call Sign WC9XCX, File No. 0144-EX-ST-2005, from September 21, 2005 to October 12, 2005, to support additional testing and demonstration of an airborne picocell system on Boeing’s Connexion One aircraft (a specially equipped 737 used to test and demonstrate the Connexion by BoeingSM system). In addition, Boeing seeks to modify its present authority to conduct experiments throughout the continental United States (“CONUS”) by removing certain frequency bands, substantially reducing the number of active handsets, and conducting such operations over international waters.

As the Commission is aware, Boeing, in coordination with one or more terrestrial wireless carriers, has been conducting experimentations to verify the operation of a dual-technology (CDMA2000 and GSM) picocell network onboard aircraft, and to demonstrate the benefits of a picocell system in mitigating the potential interference to terrestrial wireless networks. This program of experimentation will assist the industry in assessing the potential interference issues associated with the use of picocells and wireless technology onboard commercial passenger aircraft, and in developing technical and operational requirements necessary to mitigate any interference concerns.

Because the significant public benefits of these experimental operations are well understood, the technical parameters of the more limited experiments are identical to those previously authorized by the Commission and the extended STA period is brief, this narrative focuses primarily on the new element of Boeing’s request – experimental operation over international waters.¹

I. Description of Experiments

Boeing’s proposed program of experimentation involves operating a GSM picocell and a limited number of specially equipped handsets on the Connexion One aircraft while the aircraft is airborne over international waters. Specifically, Boeing intends to conduct demonstration flights from London, Copenhagen, Stockholm and

¹ The experiments proposed by Boeing are similar to those previously authorized by the Commission. *See* File Nos. 0144-EX-ST-2005 (Call Sign WC9XCX) and 0320-EX-ST-2004 (Call Sign WB9XWP). Boeing hereby incorporates by reference the full narrative description and public interest arguments supporting its original experimental STA request. *See* File No. 0144-EX-ST-2005 (Call Sign WC9XCX). Boeing acknowledges and accepts the conditions placed on that prior experimental STA, including that the operations are subject to immediate shut down in the event of harmful interference. *See id.* at Special Condition 2.

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Reykjavik during the first week of October to demonstrate the picocell technology onboard Connexion One.

The in-flight testing will be conducted using only GSM picocell base stations and five (5) GSM handsets operating in the 1900 MHz band within the Connexion One aircraft cabin.² While airborne, the use of the spectrum will be limited to communications with the picocell base stations only, which operate in such a way that the power levels of handsets will be controlled to very low levels when compared to operating with a traditional terrestrial base station. The operating frequencies for the proposed experiments include:

Mode	Emission Designator	Freq Band	Unit	Freq (MHz)	# Units	Power (EIRP)	Power (ERP)	Experimental
GSM	270KGXW	PCS	Mobile	1850 – 1910	5	30 dBm (1.000 W)	27.83 dBm (0.607 W)	No
GSM	270KGXW	PCS	Fixed	1930 - 1990	1	20 dBm (0.100 W)	17.83 dBm (0.061 W)	Yes

As a precaution, the small number of handsets used for these experiments will be provided by Boeing (no outside user handsets will be utilized) and are equipped with a specially designed SIM card that allow the handsets to connect and communicate with the onboard picocells only. Thus, there is no possibility that the handsets will connect with a terrestrial base station on the ground.

Moreover, the picocell networks will be activated only at altitudes well above 10,000 feet and only when the Connexion One aircraft is located over international waters. Because the Commission has exclusive jurisdiction of U.S.-registered aircraft (such as Connexion One) in international airspace, foreign sovereignty and related issues are not implicated by Boeing's request.³ Further, Boeing will ensure that its flight routes avoid potentially affected ground stations. The altitude and geographic restrictions for the proposed experimental operations, as well as the use of handsets that are unable to communicate with terrestrial base stations, preclude the possibility that the experiments will have any adverse interference impact on foreign terrestrial services.

² Boeing's originally experimental STA included authority to operate up to 50 GSM and 50 CDMA handsets.

³ Off-board communications between the onboard picocells to the terrestrial fixed network will be carried by the satellite-based Connexion by BoeingSM Aeronautical Mobile-Satellite ("AMSS") system, which has been authorized by the Commission to operate over international waters. See Call Sign WC2XVE (various file numbers).

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II. Waiver Requests

Boeing notes that Special Condition 3 of its existing experimental STA requires Boeing to file a progress report at the end of the six month STA period and submit a report of its findings in WT Docket 04-435.⁴ Given that Boeing seeks to extend the term of this STA, the reporting requirement should be extended by the same period of time (*i.e.*, 21 days). Boeing also should be afforded a reasonable period of time to prepare and submit the required information to the Commission after expiration of the STA.

In addition, to the extent necessary (Boeing does not seek authority to operate in the cellular band), a limited waiver of Section 22.925 of the Commission's Rules is requested to conduct the experimental operations described herein. For the reasons described herein, and in Boeing prior STA request, there is good cause for granting the requested waiver. Furthermore, the Commission's previous grant of Boeing's STA request and a similar experimental STA, as well as the absence of harmful interference from those prior experimental operations, demonstrate that the Commission's Rules will not be undermined by grant of a limited waiver in this case. Finally, Boeing respectfully requests that the Commission waive any other rule that would be necessary to conduct the experimental operations described herein.

⁴ See File No. 0144-EX-ST-2005 (Call Sign WC9XCX) at Special Condition 2.