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TrueNorth Avionics LLC
Experimental FCC License

Overview

TrueNorth Avionics LLC requests an Experimental FCC license in accordance with CFR 47 Part 5 Experimental Radio Service for the purpose of product development and testing of an airborne GSM picocell operating in the GSM 1800 band. Associated with the GSM 1800 voice communications, emissions in other cellular bands of low level band-limited noise is also required to prevent reception of ground based cellular base stations.

Background

While not authorized in USA airspace, GSM picocells on board aircraft in high altitude flight (10,000 feet and higher) have been authorized by the CEPT (European Conference of Postal and Telecommunications Administration) ECC Decision 06(07) and other national telecommunications bodies in the GSM 1800 band. TrueNorth Avionics manufactures aircraft telecommunications systems that utilize various satellite communications links such as Inmarsat, Viasat, and Iridium. TrueNorth Avionics is developing an airborne GSM picocell and has a need to perform lab testing at our NJ lab and also conduct product demonstrations for prospective customers at the same location. All transmissions will be at very low power, below 10mW and mostly at the 1mW level or lower.

GSM Picocell System Details

The TrueNorth GSM picocell has 2 major components:

1) GSM BTS operating in the GSM 1800 band, transmitting 1805-1880MHz and receiving 1710-1785. Transmit power will be no more than 10mW. Mobile handsets associating with the BTS will transmit 1710-1785MHz and receive 1805-1880MHz and will be controlled by the BTS to a power level of 1mW (0dBm).

2) Network Control Unit (NCU). The NCU transmits a low level of band limited white noise in the cellular bands that could be received by an airborne mobile handset. The purpose of the NCU is to raise the noise floor of any mobile handsets on board the aircraft to prevent the handsets from receiving transmissions from ground based cellular base stations. This prevents the mobile handset from attempting to associate with the ground networks and prevents the mobile handset from generating any emissions higher than 1 mW (0dBm) which will prevent ant interference with onboard aircraft systems. The NCU transmission is only enabled above 10,000 feet when in use in the aircraft, and transmits in the following bands by consulting a geographical database of cellular frequencies in use: 460-470MHz, 791-821MHz, 921-960MHz, 1805-1880MHz, 2110-2170MHz, 2500-2690MHz. The NCU transmits white noise only in the aforementioned bands at a level no greater than 0dBm/band (1mW).

Operational Information

It is anticipated that most development and testing activities will be conducted with RF loads on the BTS and NCU, with no RF transmissions. However, testing with actual mobile handsets will be needed to test system performance, and occasional demonstrations conducted for visiting customers. In all cases the minimum transmit power needed to establish communications within the office environment will be used. Additionally, the BTS will appear to any mobile handsets in the vicinity as a roaming carrier, and will not be attached to by any mobile handsets other than test handsets in the lab environment that have been enabled to roam onto the test network.

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