Exhibit 2

COMPLETED PRE-COORDINATION WITH FAA

From: Lorena.Carvajal@faa.gov [mailto:Lorena.Carvajal@faa.gov]
Sent: Wednesday, November 12, 2014 4:55 PM
To: Rummel, Jeffrey
Cc: rodney.murphy@faa.gov; David.Harris@faa.gov; timothy.j.pawlowitz@faa.gov
Subject: RE: BAE Systems - Request for Further Review of Operations With Effective Range of 336-364 MHz and Significantly Reduced Power - White Paper Attached

Jeff,

The FAA conditionally concurs with the pre-coordination request on the use of 350 MHz for the test of the Array Self Synchronization (AS2) system. When applying, please have the following conditions added to the FCC license:

- The FAA concurs with a one-time test of the AS2 system on 350 Mhz. Subsequent development, testing and operation of the AS2 system must be performed on a different frequency that does not interfere with any aviation band.
- The signal characteristics (bandwidth, power, modulation, etc.) should correspond to the information provided by BAE systems in the attached white paper.
- BAE systems should contact the FAA (Mr. David Harris at 603-881-1151) to provide the date/time when the test will be conducted. Also, BAE system should provide a point of contact to be used if the testing interferes with aviation operations and has to be stopped.

This email can be used as proof of pre-coordination with the FAA but not as an approval for the use of the frequency. The corresponding license has to be obtained from the FCC after coordination with the MAG and approval from NTIA .

Regards,

Lorena Carvajal
Federal Aviation Administration
Spectrum Engineering Office AJW-1C2
202-267-7051

Clarification of Array Self Synchronization RF Emission and Analysis of Potential Interference with Local FAA Systems

24 October 2014

ReACT

(Retroactive Array for Coherent Transmission)

Contract No. HR0011-14-C-0064

Prepared for:

ESA Spectrum Engineering Team
Federal Aviation Agency

Prepared by:

BAE SYSTEMS

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1) Introduction

The original application for a STA for the Array Self Synchronization (AS2) signal was at 350 MHz, the with an emission designator of 40M1X1X, and an ERP of 0.5 Watts (+27 dBm). In this paper, we describe a narrower bandwidth, lower ERP and a change in emission designation. Thus we will request a STA with an emission designation of 28M0G1DBT and ERP of 0.008W (+9dBm).

We further show how these changes make the AS2 compliant with the FAA protection requirement to be below -104 dBm for surrounding airport ILS and communication channels.

2) Justification for Modification of STA

In the original application for a STA for the Array Self Synchronization (AS2) signal at 350 MHz, the system was in early stages of research and an emission designator of 40M1X1X was requested as it was indeterminate what the signal structure would be. That research has been completed and more specific definition for the signal that will occupy the channel can now be created. We believe with this additional clarification the perceived risk of interference with adjacent or in-band systems is eliminated.

The developed waveform is a binary phase shift keyed (BPSK) signal, chipped at 17.5M elements / second during a time slot assigned as part of a time division multiple access (TDMA) protocol. The TDMA protocol ensures that only one station is transmitting at any given time, so from an interference perspective only the power level of a single station need be considered. The current protocol supports up to 40 stations, so the average power of any individual station is 16dB below the carrier power. The TDMA slot in the current design is 100uSec which is within the response time of many RF receivers, so carrier power is used in the interference analysis rather than average power.

According to http://www.ntia.doc.gov/files/ntia/publications/redbook/2013/J_13.pdf NTIA red book Annex J, the necessary bandwidth for Phase Shift Keying with 2 states is $B=2RK/\log_2 S$. At R=17.5M using K=0.8 and S=2 the necessary bandwidth is 28.0 MHz. No additional necessary bandwidth for transmit carrier frequency uncertainty is included as the system under test uses an Ovenized Crystal Oscillator (OCXO) with a frequency error of < 1e-7 yielding a carrier frequency error at 350MHz of 35Hz. Therefore the revised emission designator requested for this STA is 28M0G1DBT. In the previous application, an ERP of 0.5W (+27dBm) was requested. Based on the previous research and the required RF output power for effective system operation, the requested power level is reduced to 0.008W (+9dBm).

3) Compliance with FAA Protection Level

Further clarification of the details of the emission and spectral control are included to demonstrate that the emission complies with the FAA protection level of -104dBm for surrounding airport ILS and communication channels.

Figure 1 illustrates the calculated power spectral density (PSD) of the 17.5MChip/sec waveform normalized to the total carrier power. Raised cosine pulse shaping and output RF filtering have been applied. The emission characteristic was then analyzed to determine the amount of total carrier power emitted in the ILS band and for a 25KHz UHF Voice Grade Channel receiver near the carrier frequency by integrating the power spectral density over the bandwidths of interest.

ILS band power (Raised Cosine) = -32.1 dBc
UHF VG channel (25 KHz) power (worst case) (Raised Cosine) = -26.9.0 dBc

The transmit antenna is a D3000N disc cone antenna mounted with vertical polarization. This antenna features an omni-directional pattern and broad bandwidth (200MHz to 3000MHz) with a nominal gain of 2dBi at the horizon at 350MHz.

ILS potential interference. The nearest airfield to the proposed test area is Boire Field in Nashua, approximately 3.71Km away. At a range of 3.71Km, free space loss at 350MHz is -94.7dB. Transmit antenna gain is +2.0dBi. Transmit power at the antenna input is +9dBm. Portion of carrier power in the ILS band is -32.1dBc. This yields -115.8dBm into the ILS receiver (worst case), well below the -104dBm protection standard requested with an 11.8dB margin.

UHF communication channel potential interference. At a range of 3.71Km free space loss at 350MHz is -94.7dB (note ground to ground loss is much greater). Transmit antenna gain is +2.0dBi. Transmit power at the antenna input is +9dBm. The portion of carrier power in a UHF VGC is -26.5 dBc. This yields -110.2dBm (-94.7dB + 2dBi + 9dBm – 26.5dBc) into the UHF VGC receiver (worst case), below the -104dBm protection standard requested with a 6.2dB margin.

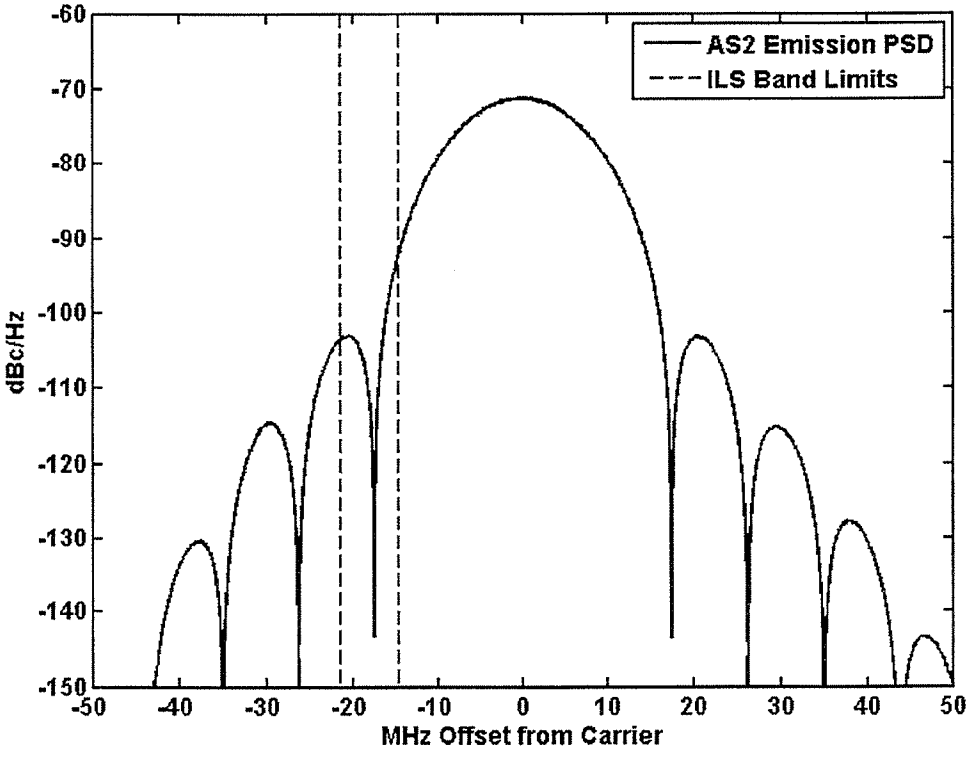

Figure 1 Predicted power spectral density of the array self-synchronization (AS2) waveform. The waveform consists of a 17.5M element/second binary phase shift keying modulated carrier utilizing pulse shaping and RF filters to minimize interference. The ILS band limits are set relative to a nominal 350MHz carrier frequency.