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Federal Communications Commission,  
Wireless Bureau Applications,  
P.O. Box 358 130,  
Pittsburgh, PA 15251-5130,  
4 August, 2008

Re: Request for a Waiver of Part 87 Rules to Allow Certification of Thales Top Flight  
Satellite Data Unit KV6TFS-SDU82155D

Dear Sir,

Thales Avionics Ltd. ("Thales") wishes to submit an application for FCC certification of its Top Flight Satcom (TFS) System Satellite Data Unit (SDU), Type Number 82155D, FCC ID: KV6TFS-SDU82155D. The SDU is intended to support the new Inmarsat SwiftBroadBand class 7 aeronautical communications service.

During testing to the Federal Communications Commission's ("FCC's") applicable requirements of the Part 87 rules Thales encountered one issue that requires a request for a waiver. Thales therefore request a waiver against the test method used for the measurement of the SDU for Conducted Spurious Emissions to the requirements of FCC 47 CFR Parts 2.1051 and 87.139 (i) (1). Thales have previously applied for this waiver and been successful for the SDU intended for Inmarsat class 3A use – FCC ID: KV6-TFS-SDU82155A.

Thales Avionics request that the Commission grant this waiver that the SDU complies with the Conducted Emissions limits as specified in 47 CFR Section 87.139 (i)1 for an Antenna Terminal **but** with measurements made at the SDU High Power Amplifier (HPA) Output, that is before the Diplexer/Low Noise Amplifier (DLNA), with the resultant spurious signals at the Antenna derived by calculation, based on the known attenuation of the DLNA.

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## **Technical Discussion**

### **87.139 (i) (1) Conducted Emissions Measurement**

The requirements of FCC 47 CFR Part 87.139 (i) (1) are such that the conducted spurious emissions are to be measured at the antenna output. For the SDU transmit power, these requirements are physically impossible to measure. For example, the spurious emissions limit, in the frequency band 1525 to 1559 MHz is stated as an attenuation of 203 dB relative to the carrier level, measured in a 4 kHz bandwidth. For the antenna transmitter rated output of 15 dBW EIRP, this translates to an absolute power level of -158 dBm in 4 kHz, which is lower than thermal noise for temperatures above 3 Kelvin.

Thales has concluded that the only practical way to measure conducted spurious emissions is to make the measurement at the HPA output, before the DLNA, and compute the resultant spurious at the antenna by including the attenuation of the DLNA at the appropriate frequencies.

The DLNA is purchased as part of the antenna subsystem, and is not manufactured by Thales. The DLNA attenuation assumed is per the standards for a "Modified Type A" DLNA published in ARINC Characteristic 741 (this is the type of DLNA used in the TFS system). It is worth noting that this is the same type of DLNA as used on many thousands of existing installations already approved by the FCC.

A technical test report will be submitted as part of the Thales Avionics overall submission to the FCC for approval of the TFS SDU. This Exhibit contains plots of the Conducted Spurious Emissions measured at the DLNA antenna port and contains a detailed table showing the calculation of new limits referred to the HPA output.

## **Conclusion**

From the results detailed in this technical report Thales have concluded that by using this alternative method it is possible to show that the SDU Type Number 82155D meets the Conducted Spurious Emission limits of FCC 47 CFR Parts 2.1051 and 87.139(i) (1).

Thales therefore request a waiver against the test method used for the measurement of the Conducted Spurious Emissions for SDU FCC ID: KV6TFS-SDU82155D.

Sincerely,



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