

Summary of HIRDLS IFC EMI/EMC Testing Results

(to be appended to Astrium report EMC-TR 010500)

The In-Flight Calibrator Subsystem underwent EMI/EMC testing at Astrium in Stevenage, UK on 19-22 June 2000. There were the following test results that exceeded the levels specified in the GIRD document:

Conducted Emissions Outages Listed:

+5V line and return (20KHz – 50MHz)

1. 619.6KHz at 25dB μ A above specification limit (CE22-33)
2. 1.239MHz at 10dB μ A above specification limit (CE22-33)
3. 25MHz at 6dB μ A above specification limit (CE22-23, CE25-28)

Conducted Emissions Outages Reviewed:

1. The outage at ~ 615-645 KHz was found to be the power supply used to generate the +5VDC in the GSE equipment. This investigation was completed at Oxford. A coil was used to search the inside of the BEU box in order to find the source of the emissions. Nothing was found in the BEU. A time domain test at the output of the bench supplies found the 620KHz there. We terminated the output of the +5V supply with a resistive load to simulate the BEU and found that the offending signal was generated by the power supply itself. We were able to reduce the amplitude of the signal by placing a large wet slug tantalum capacitor across the power supply terminals.

2. The 1.239MHz is the 2nd harmonic of the 620MHz signal. The variance in the frequency was dependent on how the GSE cable used to simulate the IPS/IFC interface was arranged. It is relevant to note that this cable was not equivalent to the harness to be used in the flight configuration. The flight cable is expected to be far superior in its construction and grounding configuration.

3. The 25 MHz outage appears to be from the PC used in the test equipment - ref. CE29.

Radiated Emissions Outages Listed:

1. 120MHz at 6dB μ V above specified limit (horizontal) (REE05)
2. 20.9MHz at 4dB μ V above specified limit (vertical) (REE09)
3. 46 MHz at 5dBmV above specified limit (horizontal) (REE04)
4. 92 MHz at 3dBmV above specified limit (horizontal) (REE04)

Radiated Emissions Outages Reviewed:

1. The 120MHz outage during radiated emissions can be attributed to the clock frequency of the PC used for the IFC GSE ref. REE06 and REE14.

2. The 20.9MHz outage is also an emission generated by the test equipment - ref REE10.

3. The 46 MHz outage is also due to emission generated by the test equipment - ref REE06.

4. The 92 MHz outage is also due to emission generated by the test equipment - ref REE06.