



Exhibit: Supplemental Information
Purpose: Antenna Registration Question 4: Directional Antenna Information

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1. Purpose

This exhibit provides supplemental Information in support of an application for a New or Modified Experimental Radio Station Authorization.

2. Applicable HIRF Directives

This Experimental Radio Station Authorization is required to conduct testing necessary to support aircraft certification for High Intensity Radiated Fields (HIRF). The test data will be used to assure compliance with HIRF requirements as specified by the following directives.

2.1. Applicable Code of Federal Regulations (CFR)

14CFR 23.1308	High-intensity Radiated Fields (HIRF) Protection
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2.2. FAA Guidance

AC20-158	The Certification of Electrical and Electronic Systems for Operation In The High Intensity Radiated Fields (HIRF) Environment.
FAA 8110.71	Guidance for the Certification of Aircraft Operating in High Intensity Radiated Field (HIRF) Environments

2.3. Industry Guidance

RTCA DO-160E/F/G	Environmental Conditions and Test Procedures for Airborne Equipment
ED90A	Radio Frequency Susceptibility Test Procedure
ED107	Guide to Certification of Aircraft in a High Intensity Field (HIRF) Environment
SAE ARP5583A	Guide to Certification of Aircraft in a High Intensity Radiated Field (HIRF) Environment.

3. Equipment Information

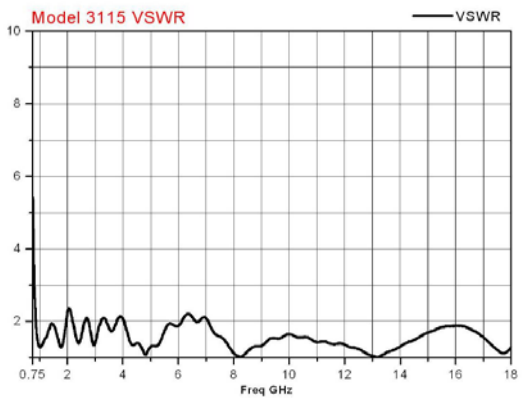
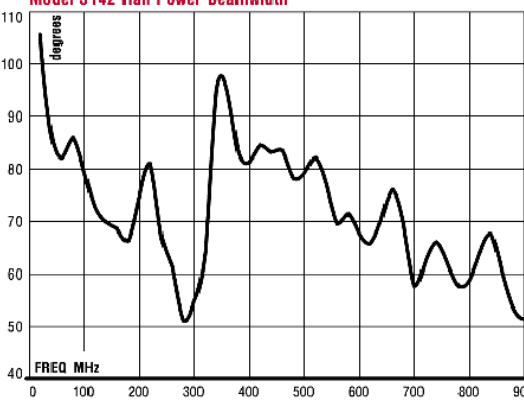
All primary field generation and monitoring equipment is listed in Table 1 below.

Table 1: Equipment List

Item	Manufacturer	Model (See note)
Generator	Agilent	E8257D
Spectrum Analyzer	Agilent	E4440A
HF Amplifier	ENI	5100L
Microwave Amplifier	Miteq	100M-20G 30dB 20dBm Amplifier
Coax Cables	Miscellaneous	100MHz-18GHz Low Loss Coax
Fiber Optic Receiver System	PPM	Fiber optic processing system
Fiber Optic Cable	Miscellaneous	Fiber optic cables
Directional Coupler	Amplifier Research	DC2500
Current Probe	Eaton	94111-1
Horn Antenna	ETS Lindgren	3115
Dipole Antenna	Custom	10MHz Dipole Antenna
Bi-Log Antenna	ETS Lindgren	3142C
D-dot Sensor	EG & G	ACD-10A
Broadband Rx Antenna	Custom	100M-18GHz Rx Antenna

Note: Equivalent equipment may be substituted as necessary

Table 2: Antenna VSWR and 3dB Beamwidth

Antenna Model	VSWR	3dB Beamwidth
3115 Horn		
3142 Bi-Log	2:1 Average above 80MHz	



4. Transmitted Signal Information

Frequency

The HIRF directives referenced in Section 2 of this exhibit provide guidance as to how to perform Low Level Coupling (LLC) testing. This guidance specifies the use of a signal generator and receiver system setup in a tracking generator configuration such that the test frequency is swept continuously across a specified frequency band. Testing using swept frequencies rather than widely spaced discrete frequencies allows for more accurate measurement of aircraft and wiring resonant frequencies. This method also simplifies the test setup and minimizes frequency dwell time. The effective dwell time at each swept frequency is on the order of 1ms. We request permission to perform swept frequency testing across all approved test frequency bands as listed in the application. Frequencies reserved for emergency services or local aircraft control will be omitted from the test.

Modulation

All testing is performed using a Continuous Wave (CW) signal (i.e. no modulation). Therefore, no actual data is being transmitted during the test.

Power

Transmitted power must be high enough to allow accurate monitoring using a sensitive receiver system. All transmitted power levels will remain less than the specified band specific Effective Radiated Power (ERP) as specified in the application.

The power levels requested are for maximum Effective Isotropic Radiated Power (EIRP) at the transmitter. Coordination with the local FCC and FAA can be accomplished as necessary.

5. “Stop Buzzer” Contacts

The following contacts can be contacted at any time to stop the test in case of a conflict.

Steve Haycock, Engineer
Desk: 913-440-2284

Aaron Jones, Engineer
Desk: 913-440-5065

David Kerr, Engineer
Desk: 913-440-5208

Prat Patel, Engineer
Desk: 913-440-5422

Brad Fischer, Flight Operations
Desk: 913-440-8421