Exhibit 6 – Test Report

SATELLITE SYSTEMS DISTRIBUTION (SSD)

Active Iridium Antenna

FCC ID: MIJAD510

Model No. AD510-10

Equipment Applicant:	**Satellite Systems Distribution (SSD)** **Burlingham House, Hewett Road** **Gapton Hall Estate, Great Yarmouth** **Norfolk, UK** **NR31 ONN**
Tests Conducted By:	**General Dynamics Decision Systems** **EMC Test Facility** **8201 E. McDowell Rd.** **Scottsdale, Arizona 85252**
Tests Date:	**January 28th – March 4th , 2003**
Test Summary:	**Complies with FCC Part 25, Satellite Communications**

The General Dynamics Decision Systems EMC Laboratory is accredited through the

NVLAP®

NVLAP Lab Code 100405-0

6.0 Introduction

6.0.1 Product Description

The IRIDIUM® Subscriber Units (ISU) were originally designed to operate with passive antennae , either an element attached directly to the handset, or a remote aerial connected with a short length of coaxial cable. Unfortunately, a signal loss of more than 3dB in a remote antenna's connecting cable degrades performance due to attenuation of both the received and transmitted signals. A 3dB loss corresponds to approximately 10m of RG213U or 3m of RG58U coaxial cable, lengths that clearly restrict the mounting options for the antenna using standard down-leads.

The AD510-10 active Iridium antenna is designed for use with 30m (98 feet) or 40m (131 feet) of RG213U coaxial cable terminated with type 'N' connectors. Designed for harsh environments, the AD510-10 consists of two RHCP dipole antennae housed within 4mm thick GRP radomes mounted on a common base. One antenna is for signal transmission and one for reception. A linear power amplifier within the base and connected to the transmitting antenna compensates for signal loss incurred mainly by the connecting cable. Similarly, a low noise amplifier is attached to the receiving antenna via a low loss inter-digital filter to boost the signal sent to the telephone. The inter-digital filter has a bandwidth of 12 MHz centered on the Iridium band designed to attenuate any out of band interference that may arise.

Using manufacturing techniques proven for a range of extremely rugged GPS/DGP active antennae, the antenna base is milled from aluminum and hard anodized, giving an attractive green finish, which is mechanically resilient and resistant to corrosion. The antenna's mass is 2.6kg.

6.0.2 Facility Description

All testing reported herein was performed at the General Dynamics Decision Systems (GDDS) EMI/TEMPEST Test Facility, located in Scottsdale, AZ.

GDDS EMC Test Facility Address:

GENERAL DYNAMICS
Decision Systems

Hayden EMC Facility, M/D H2550

8201 E. McDowell Rd.
Scottsdale, AZ 85252-1417

The test facility includes a certified three-meter and ten-meter Open Area Test Site (OATS) and several shielded enclosures. The facility has been found to be in compliance with the requirements of Section 2.948 of the FCC rules, per Registration Number 90811, dated October 1, 2001. The facility has also been issued a Certificate of Accreditation through the National Voluntary Laboratory Accreditation Program (NVLAP) by NIST. This is under NVLAP Code: 100405-0 and is effective through September 30, 2003. The facility is in compliance with all CISPR 16 requirements.

The NIST NVLAP accreditation is evidence of a quality test facility. However, with the exception of the standard Radiated Emissions Testing, the specific test methods required for certification of this equipment is not within the current NVLAP scope of accreditation.

6.0.3 Quality System

The EMI/TEMPEST Test Laboratory maintains a Quality Manual that describes the quality assurance program of the EMC/TEMPEST Facility to set forth procedures covering all quality assurance functions. This manual has been constructed to reflect a quality program in compliance with the requirements of the following:

- National Institute of Standards & Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP)
- NIST/NVLAP EMC MIL-STD 462 Program Handbook (Apr. 1994)
- NVLAP EMC and Telecommunications FCC Methods Handbook 150-11 (Apr. 1995)
- MIL-Q-9858A, MIL-STD 461, 462, 463, 461D, 462D
- National Security Agency Technical and Security Requirements Document for the Endorsed TEMPEST Test Services Program, NSA TSRD No. 88-8B, 5 Oct. 1993

6.0.4 Standard References

47 CFR 2	Code of Federal Regulations, Title 47, Part 2, “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
47 CFR 25	Code of Federal Regulations, Title 47, Part 25, “Satellite Communications” Subpart C, "Technical Standards"
C63.4-1992	American National Standards Institute (ANSI), “Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”

6.1 Test Procedures

6.1.1 Requirements

It was determined that the AD510-10, being an active antenna containing a power amplifier and LNA, is subject to the requirements relevant to an external amplifier or “booster”. This includes the standard spurious emissions requirements of Part 25, Subpart C, and additionally a non-typical 3-tone intermodulation test.

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Table 6.1-1 Tests Required for Certification of the AD510 Antenna System

Test Parameter	FCC Part 2 Paragraph Number	FCC Part 25 Paragraph Number	FCC Part 25 Limit
Radiated Spurious Emissions	2.1053	25.202	**Frequency Offset** **Atten.** 20.833-41.667 kHz 25 dBc 41.667-104.16 kHz 35 dBc **> 104.67 kHz** **43+10log(Pt)**
3-Tone Intermodulation	N/A	N/A	**82.3 dBuV/m (-13 dBm)**

6.1.2 Operational Configuration

The AD510-10 (S/N 011) active antenna system was configured for typical operation with the antenna interface box, AD510-30 (S/N 007), and 30 meters of RG213U coaxial cable. Three ISU sources were configured for maximum output power and modulated with internally DE-QPSK modulation using pseudo random data. The sources were coupled into the common antenna input via two directional couplers. The sources were configured for operation at three (3) different frequencies, i.e. two in close proximity at the lower end of the passband and the one at the outer edge of the passband.

General test setup is shown as Figures 6.1-1.

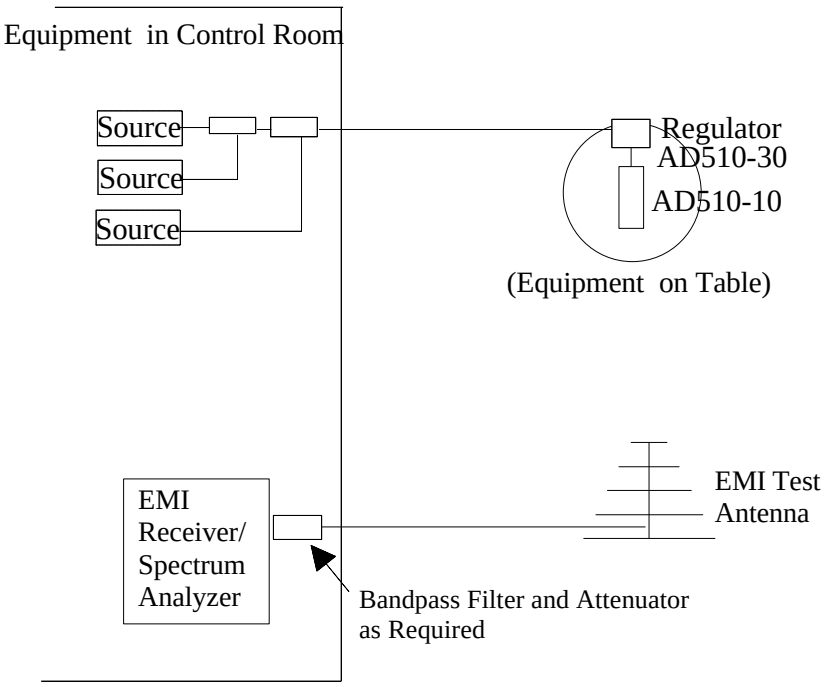


Figure 6.1-1 General Radiated Test Setup for Tests

6.1.3 Measurement Equipment

Test Equipment Nomenclature	Item Number	Manufacturer	Model Number	Cal. Date	Cal. Due
Biconilog Antenna	T47085	EMCO	3142B	01/07/02	01/31/03
Biconilog Antenna	T47086	EMCO	3142B	01/07/02	01/31/03
Horn Antenna	G43961	EMCO	3115	06/20/02	06/30/03
Antenna Mast	G72315	EMCO	2070-2	NCR	NCR
Antenna Controller	G72315.1	EMCO	2090	NCR	NCR
Spectrum Analyzer/ EMI Receiver	G68094	Rohde & Schwarz	ESI40	07/26/02	07/31/03
Software, EMI Controller(1999), Service Pack 1	G68094.3	Rohde & Schwarz	ES-K1.60	N/A	N/A
Bios Firmware 3.3	G68094.1	"	ESI40	N/A	N/A
Analyzer Firmware 4.01	G68094.2	Rohde & Schwarz	ESI40	N/A	N/A

6.1.4 Radiated Spurious Emissions Procedure

Radiated spurious emissions were measured over the frequency range of 30 MHz to 16.3 GHz in an anecohic chamber (20ft x 24ft x 16ft) and an open area test site (OATS). Refer to Figures 6.1-2 and 6.1-3 for general test setups.

The radiated emissions between 30 MHz and 1 GHz were initially measured in a semi-anechoic shield room in order to identify the emissions in an ambient free environment before proceeding to the open area test site (OATS). This provides the capability of taking accurate measurements in a higher ambient environment such as at the rooftop OATS. The Rohde & Schwarz EMI Receiver System was used for the pre-scans. Typically, signals within approximately 10 dB of the limit are noted for measurements on the OATS.

Final measurements on the OATS were taken with a Rohde & Schwarz EMI Receiver System receiver system at a 3-meter test distance from the receiving antenna. The AD510-10/40 was placed on a .8-meter high non-conductive table on a rotating turntable that is flush with the site ground plane. The receiving antenna was scanned over a height range from 1 to 4 meters in both antenna polarities, and the turntable was rotated 360 degrees. The highest emissions were recorded and the final field strength level determined using the following formula:

Field Strength (dBuV/m) = Measured Level (dBuV) + Cable Loss (dB) + Antenna Factor (dB)

The radiated emissions between above 1 GHz were measured in an anechoic chamber using a EMCO 3115 Horn antenna at a 3-meter distance. The emissions were maximized by rotating the equipment on the turntable and by changing polarities of the antenna.

The test methods of ANSI 63.4 were used for performing the Radiated Emissions tests.

6.1.5 3-Tone Intermodulation Procedure

The 3-Tone intermodulation testing was conducted using three (3) ISU sources coupled into the common RF input of the AD510-10 via two directional couplers. The source input levels were maintained at a common amplitude and around the maximum rated power level. Two of the sources were setup at the lower edge of the passband, specifically 1616.104 MHz and 1616.813 MHz. The third source was introduced at the upper edge of the passband at 1625.896 MHz.

The spectrum was scanned from 30 MHz to the tenth harmonic of the carrier. The level of the carrier and the various spurious and/or harmonic emissions were measured by means of a calibrated receiver system.

6.1.6 Radiated Spurious and Intermodulation Limit Derivation

The limit is given as: 43 +10 Log(Pwatts) = -13 dBm = 5.0e-5 Watts.
The field strength limit is calculated by using the plane wave relation: $E_{V/m}$ = v30GP/R where
G = 1.64 (dipole for <1GHz) or 1.0 (isotropic for >1GHz)
And P = 5.0e-5 Watts; R = 3 meters
For emissions $\leq$ 1 GHz, the limit = 84.4 dBuV/m
For emissions > 1 GHz, the limit = 82.3 dBuV/m

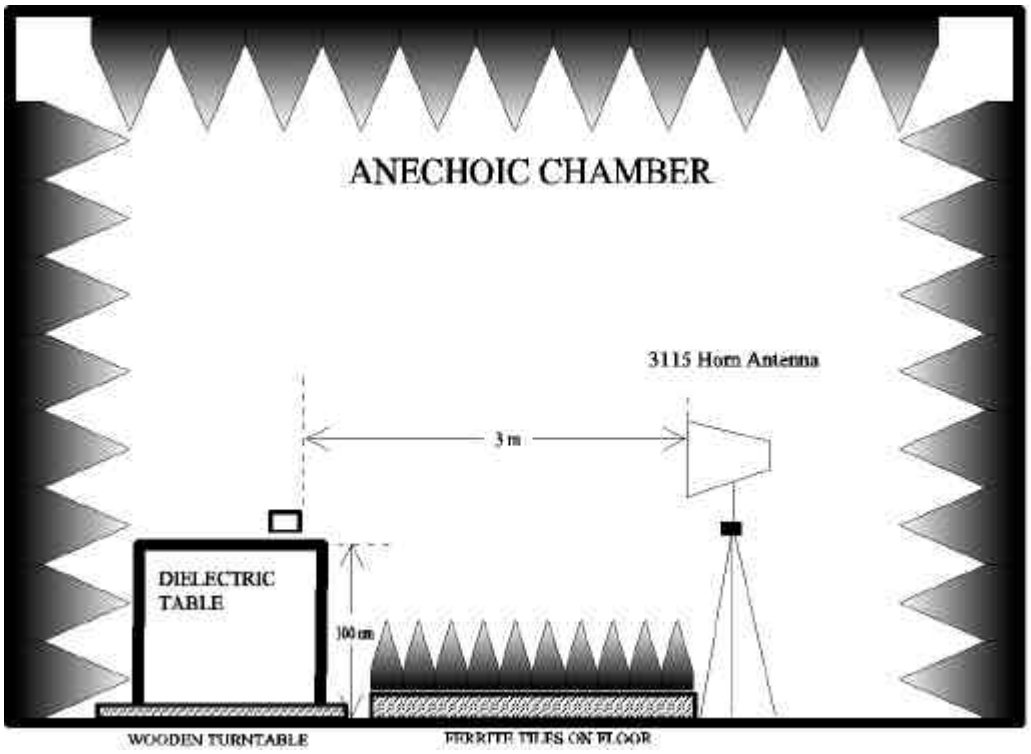


Figure 6.1-2 Radiated Spurious Emissions Test Setup - Chamber

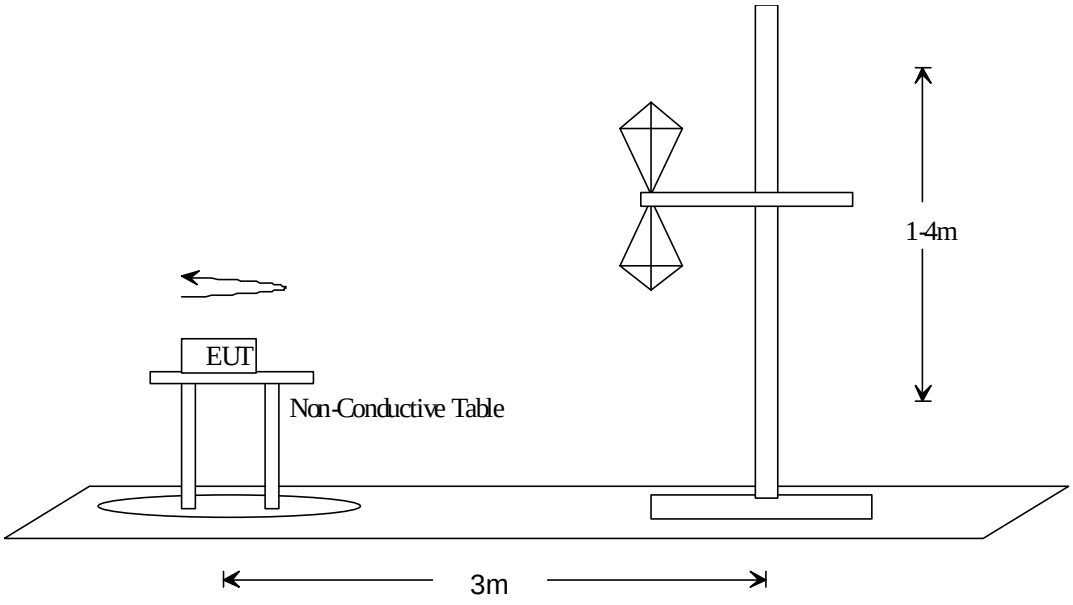


Figure 6.1-3 Radiated Spurious Emissions Test Setup -OATS

6.2 Test Results

6.2.1 Radiated Spurious Emissions Measurement Test Results

All measurements were made with the AD510 antenna system transmitting at its maximum rated output power. Most of the measured signals displayed significant margin, >20 dB, as compared to the appropriate limits. All of the measured signals were below the required limits. For this reason, it was not necessary to re-measure any of these signals using the specified Quasi-Peak or Average detectors.

The measured signals are shown in the graphs of Appendix A. These graphs illustrate the worst-case composite from several scans covering multiple positions and both antenna polarities.

6.2.2 Intermodulation Emissions Measurement Test Results

The intermodulation emissions were measured on the AD510 active antenna system and were below the required spurious emission limits. The graph in Appendix B illustrates the final measurement results. This graph is a worst-case composite of several scans taken to capture the maximum levels of the intermodulation products and including both antenna polarities.

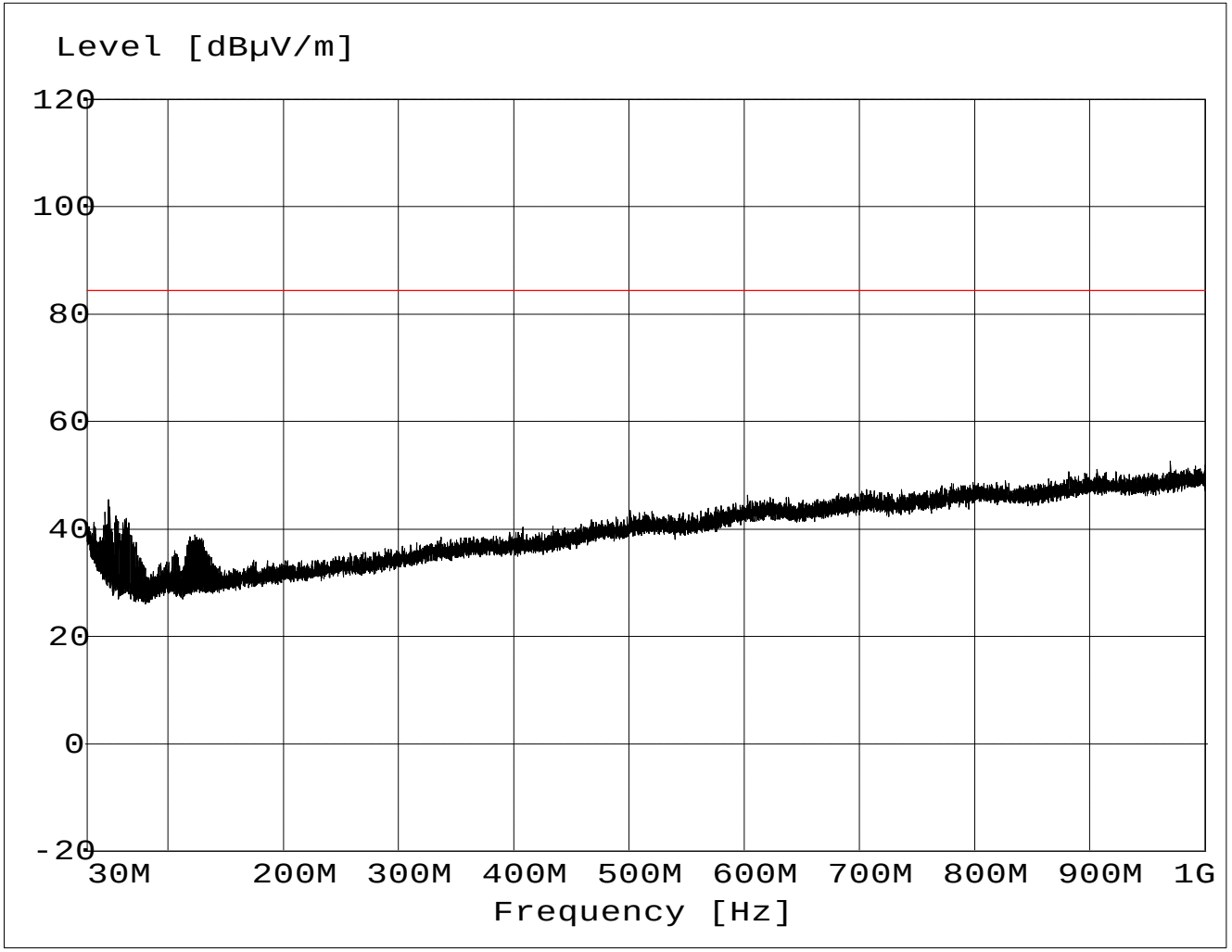
6.2.3 Signal Integrity Measurement

A measurement was performed to evaluate the quality of the signal output from the AD510-10 in comparison to the standard passive antenna still using the 40 meters of coaxial cable . This signal plots are shown in Appendix C. The spectrum from both antennas are similar and there is no deviation in the output bandwidth in using the AD510-10 active antenna.

Appendix A

Radiated Spurious Emission Measurements

30 MHz to 16.3 GHz



RADIATED EMISSIONS, MAX LEVELS OF AD510-10/30

Source Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)
Source Frequency Range: 1616 to 1626.5 MHz (240 Channels)
Channels Tested: Channels #3, #20, and #238 (worst case emissions presented)
***Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)**

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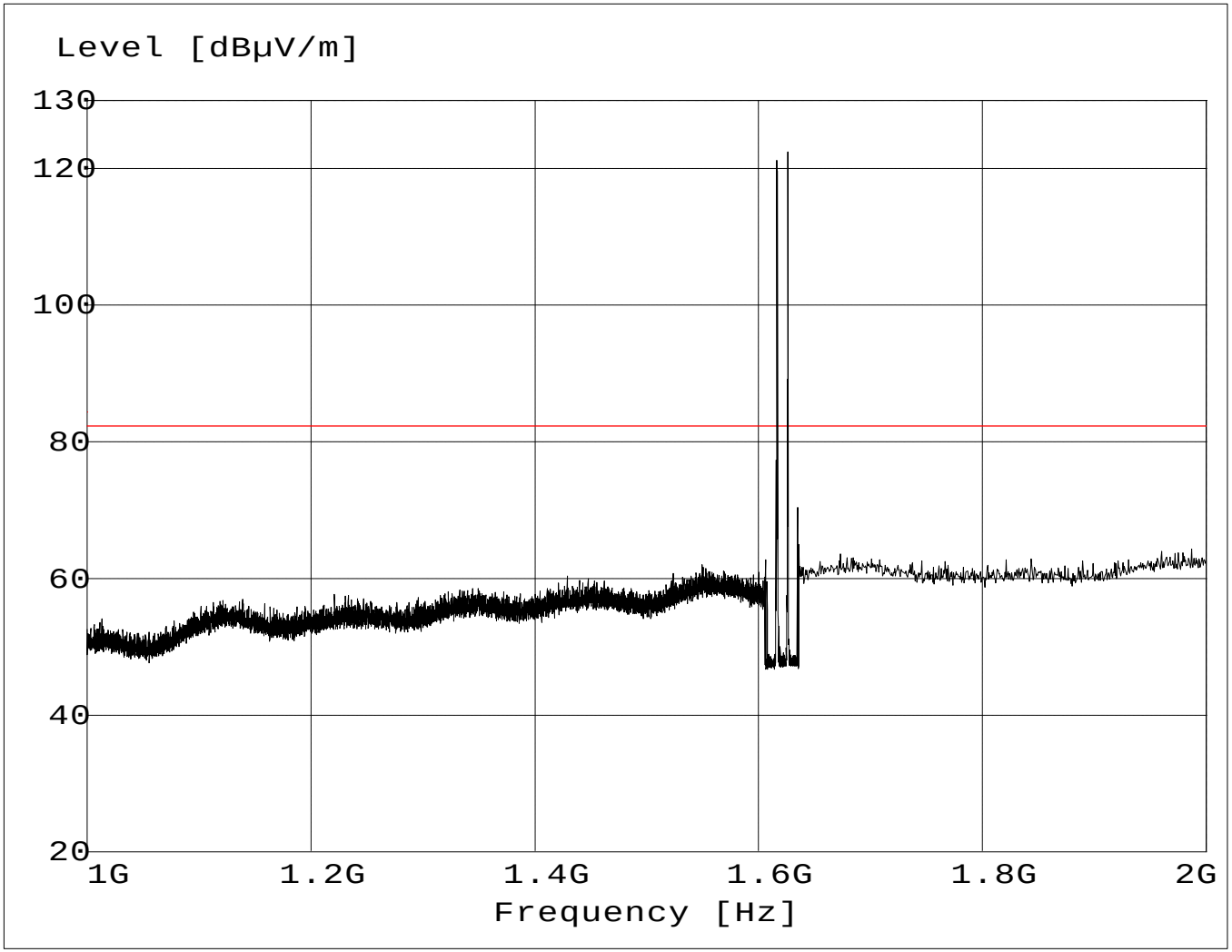

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Source Frequency Range: 1616 to 1626.5 MHz (240 Channels)
Channels Tested: Channels #3, #20, and #238 (worst case emissions presented)
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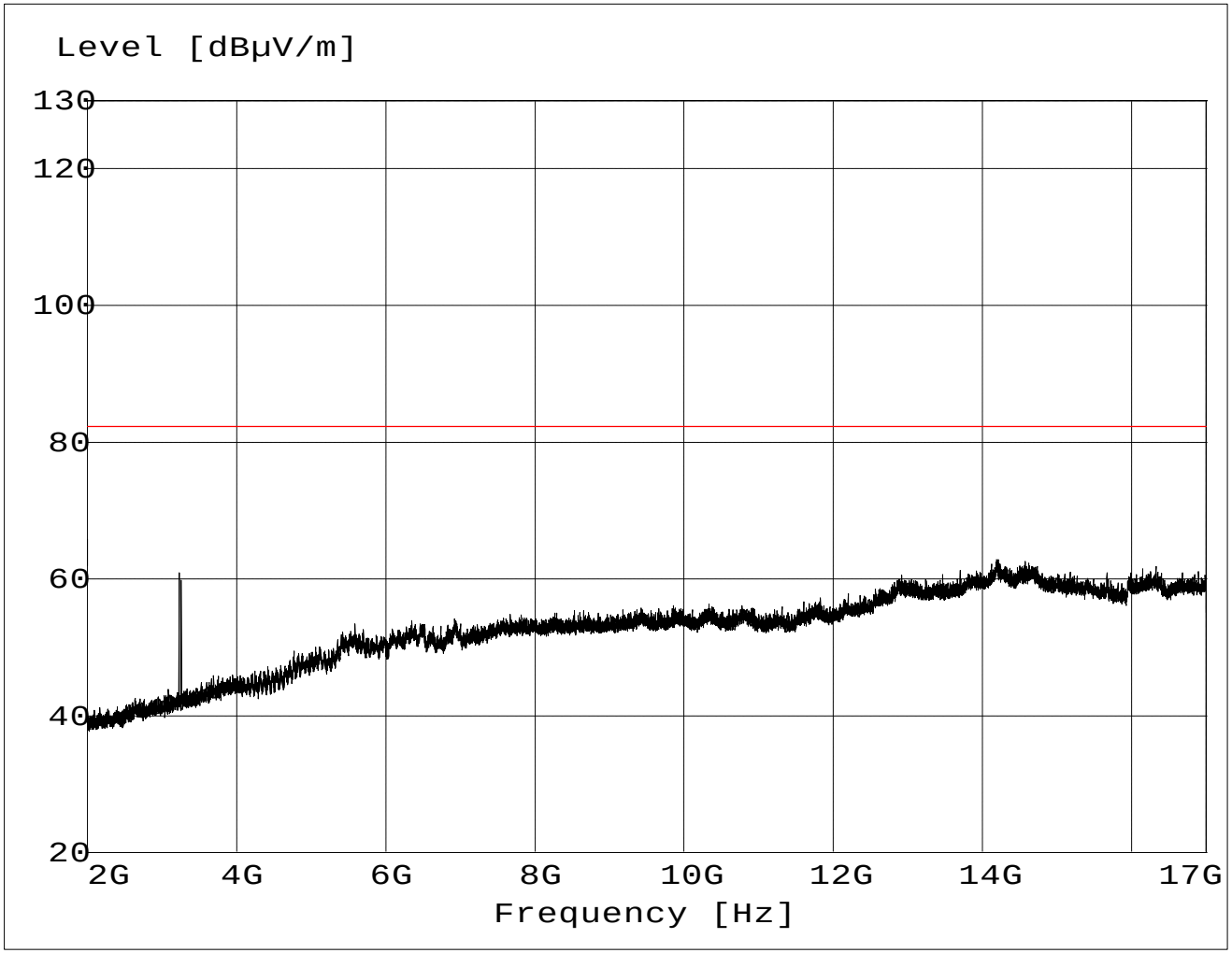

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Source Frequency Range: 1616 to 1626.5 MHz (240 Channels)
Channels Tested: Channels #3, #20, and #238 (worst case emissions presented)
***Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)**

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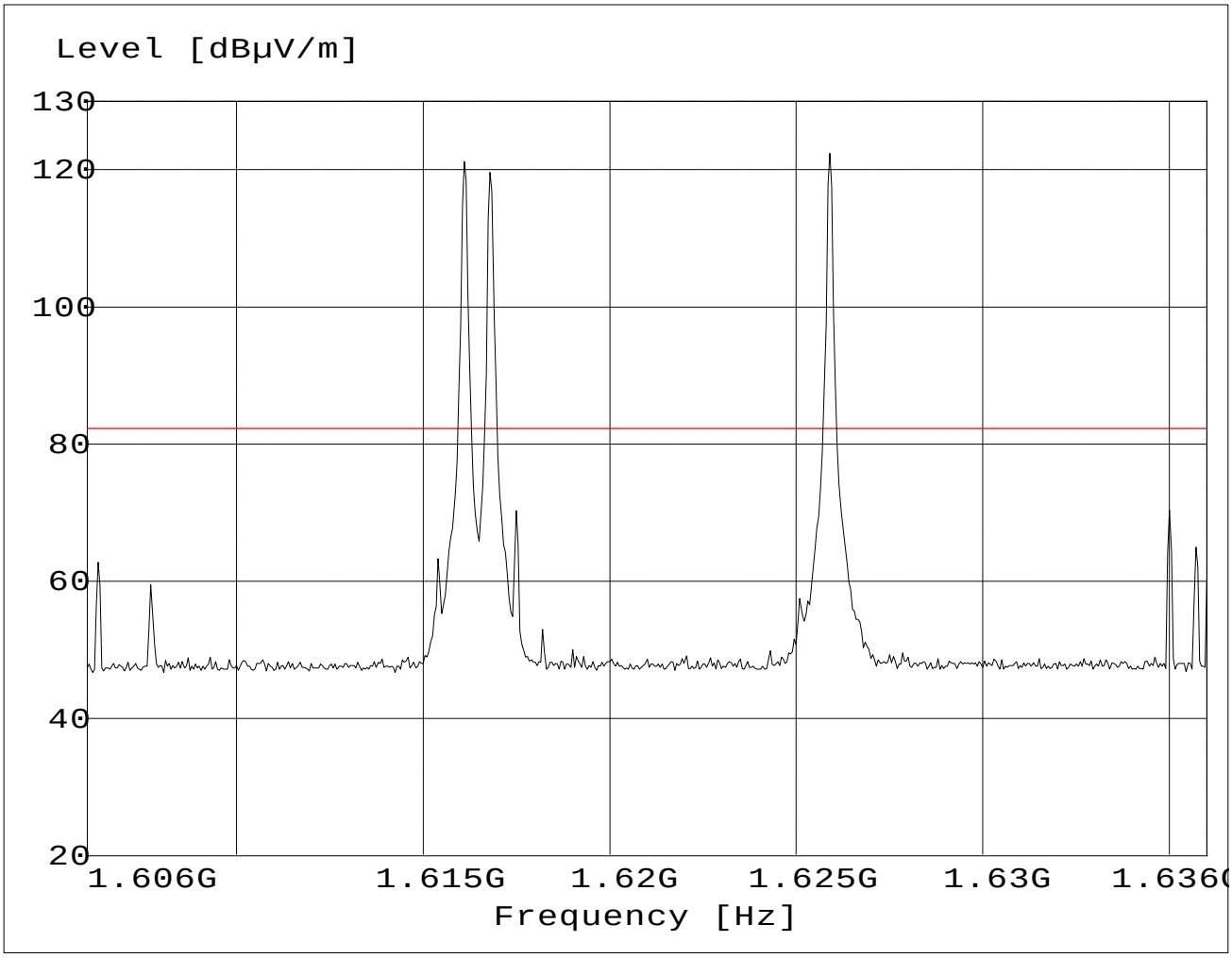
Appendix B

Intermodulation



INTERMODULATION PRODUCTS, SOURCE CHANNELS #3, 20, 238

Carrier Power: +28.45 dBm
Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)
ISU Sources Set To: Channels #3, #20, and #238

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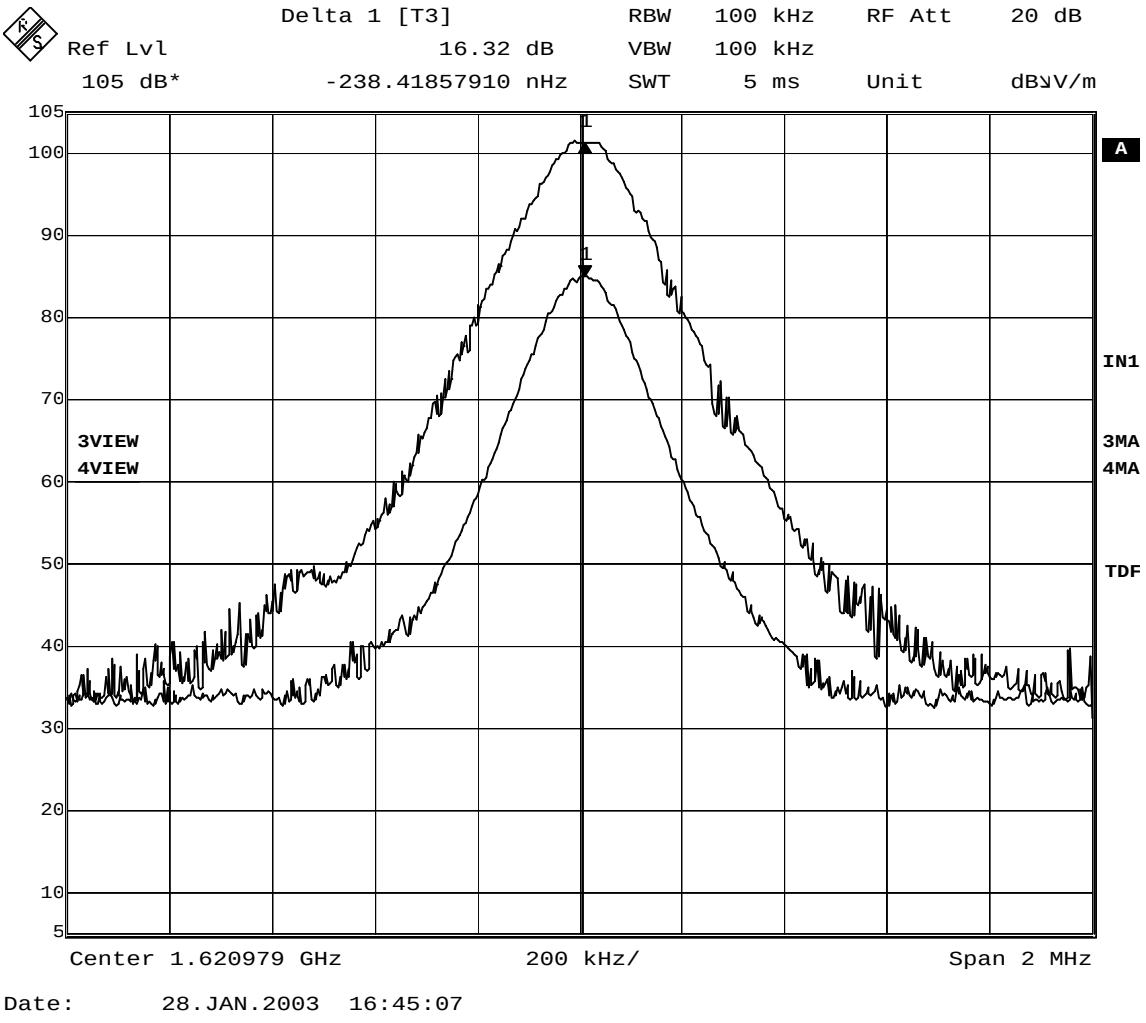
Appendix C

Signal Integrity



Signal Output of AD510-10 (Top) vs. Signal Output Std Passive Antenna (Bottom)