Exhibit 06

MOTOROLA

Integrated Information Systems Group
8201 E. McDowell Road
Scottsdale, AZ 85252-1417

Report No. WSSD211200

Exhibit 6 – Test Report

DSMODEM/RTC

Wireless - LAN

FCC ID: E9UDSMODEM-RTC

Model No. DSMODEM/RTC

Equipment Manufacturer:	**Motorola Smartcard Solutions Korea, Ltd** **9/F Rodamco Building** **679-4, Yeoksam-Dong, Kangnam-Ku** **Seoul, South Korea, 135-080**
Tests Conducted by:	**Motorola IISG** **EMC Test Facility** **8201 E. McDowell Rd.** **Scottsdale, AZ 85252**
Tests Period:	**December 1st to December 15th, 2000**
Test Summary:	**Complies with FCC Part 15, Subpart C, Unlicensed Low Power Transmitters**

The Motorola IISG EMC/TEMPEST Laboratory is accredited through the

NVLAP®

NVLAP Lab Code 100405-0

6.0 Introduction

6.0.1 Product Description

The DSMODEM/RTC is a wireless-LAN manufactured by Motorola Smartcard Solution Korea (MSSK) that receives and transmits data in the Industrial, Scientific and Medical (ISM) band of 902 to 928 MHz by half-duplex mode. The DSMODEM/RTC wireless-LAN uses a standard RS-232C serial data external interface that can be driven asynchronously. The DSMODEM/RTC wireless-LAN uses direct sequence spread spectrum technology implemented with WINBOND Spread Spectrum Technology (SST) chip (W9310F). This device can be applied for multiple-access networking or point-to-point, point-to-multiple, and multiple-to-multiple communication. Figure 6.0-1 shows the functional block diagram of the DSMODEM/RTC wireless-LAN. Figure 6.0-2 shows a typical setup. A more detailed schematic is depicted in Exhibit 5.

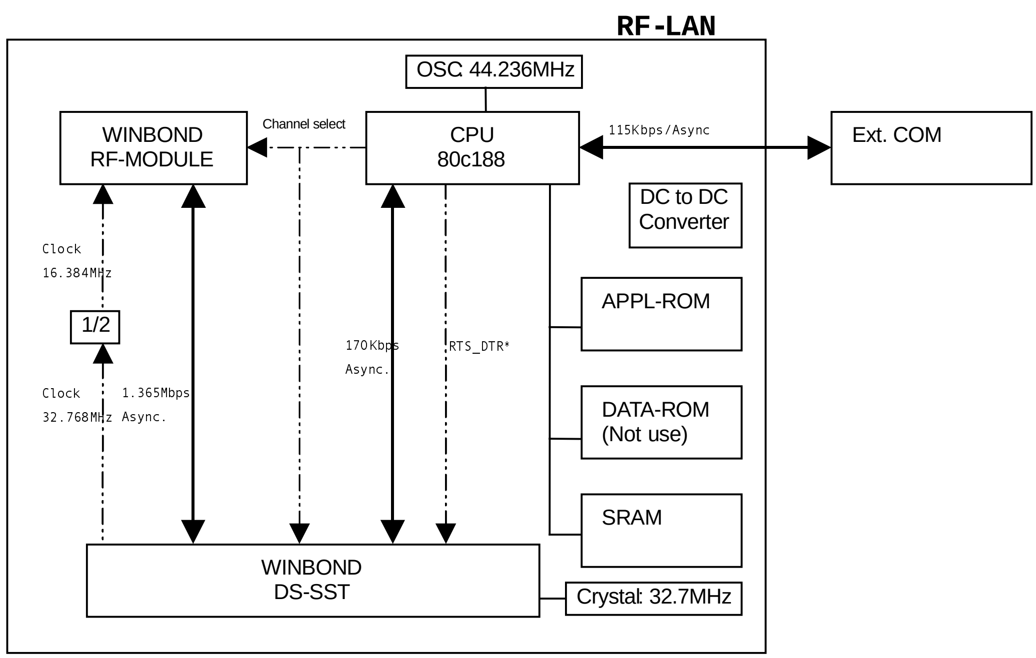

Figure 6.0-1 DSMODEM/RTC wireless-LAN Functional Block Diagram

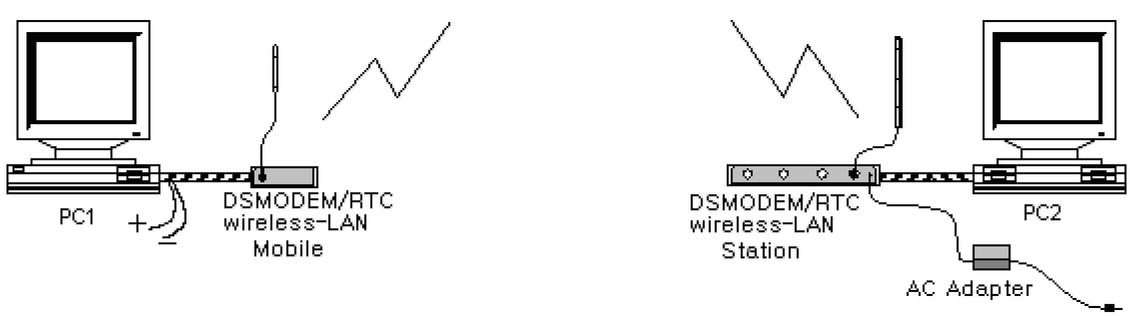

Figure 6.0-2 Typical DSMODEM/RTC wireless-LAN Setup

6.0.2 Facility Description

EMI testing of the DSMODEM/RTC wireless-LAN was performed at the Motorola Integrated Information Systems Group's (IISG) EMI/TEMPEST Test Laboratory. This test laboratory is located in the southeast wing of the Hayden building at 8201 E. McDowell Road, Scottsdale, AZ.

Motorola IISG Test Facility Address:
Motorola, Inc.
Integrated Information Systems Group
Hayden EMC Facility
8201 E. McDowell Rd. M/D H2550
Scottsdale, AZ 85252

The facility has been found to be in compliance with the requirements of Section 2.948 of the FCC rules, per FCC letter 31040/SIT, 1300F2, dated October 6, 1998. 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, 2001.

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
- System Solution Group of Motorola Quality Six Sigma Program.

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 15	Code of Federal Regulations, Title 47, Part 15, "Radio Frequency Devices" Subpart C, "Intentional Radiators"
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

The DSMODEM is subject to FCC Part 15, Subpart C and Part 2 for FCC Certification for units marketed within the United States. The following tests, as specified in FCC Part 2, with limits as defined in FCC Part 15, and shown in Table 6.1-1 below were performed on DSMODEM.

Table 6.1-1 Tests Required for Certification of the DSMODEM/RTC

Test Requirement	Applicable FCC Section	Comments
RF Power Output (conducted)	15.247 (b)	3 Channels (1, 6, & 10)
Carrier Emission Bandwidth	15.247 (a) (2)	6 dB BW > 500 kHz
Conducted Spurious Emissions, 30MHz – 10 GHz	15.247 (c)	3 Channels
Radiated Spurious Emissions, 9kHz – 10 GHz	15.209	Restricted Bands (3 Channels)
Radiated Emissions, Standby, 30 MHz – 1 GHz	15.109	
AC Powerline Conducted Emissions 450 kHz – 30 MHz	15.207	Station Modem Only
Power Spectral Density	15.247 (d)	3 Channels
Processing Gain	15.247 (e)	PG >10 dB BER required for test
Radiation Hazard – MPE	2.1091	

6.1.2 Operational Configuration

The DSMODEM was tested in its typical operational configuration. The modem was set up and operated at the frequency channels 1,6, or 10 and at its maximum rated output power for all tests. A general test setup is shown as Figure 6.1-2.

6.1.3 Measurement Equipment

Table 6.1-2 contains a list of test equipment used during the testing of the DSMODEM/RTC.

Table 6.1-2 Table of Test Equipment

Test Equipment Nomenclature	Motorola Item Number	Manufacturer	Model Number	Cal. Date	Cal. Due
Biconilog Antenna	T47085	EMCO	3142B	10/31/00	10/31/01
Biconilog Antenna	T47086	EMCO	3142B	10/31/00	10/31/01
H-Field Loop Antenna	T36610	Electro Metrics	ALP-70	NCR	NCR
Antenna Mast	0003-2246	EMCO	2070-2	NCR	NCR
Antenna Controller	G72315	EMCO	2090	NCR	NCR
Spectrum Analyzer/ EMI Receiver	G68094	Rhode & Schwarz	ESI - 40	5/01/00	5/31/01
EMI Receiver	G53133	Rhode & Schwarz	ESMI	10/9/00	10/31/01
Signal Generator	G12351	Hewlett Packard	3325A	10/5/00	4/30/01
Spectrum Analyzer/ EMI Receiver	G71791	Rhode & Schwarz	ESI - 7	8/29/00	8/31/01
Directional Coupler (2)	n/a	Narda 3001-10	n/a	n/a	n/a
Step Attenuator	T36656	Hewlett Packard	HP 8496B	12/6/99	12/31/01
Step Attenuator	T18799	Hewlett Packard	HP 8464B	3/10/99	3/31/01
Signal Generator	T47674	Rhode & Schwarz	SMIQ	6/19/00	6/30/01
Oscilloscope	G48202	Tektronix	TDS 420	2/20/00	2/28/01
E-Field Probe	T57980	Narda	8741	4/26/00	4/30/01
EM Survey Meter	G49076	Narda	8718	3/7/00	3/31/01

6.1.4 RF Power Output (conducted)

RF power output was measured by direct connection of a spectrum analyzer to the RF output of the base and mobile stations. A Resolution Bandwidth (RBW) of 2 MHz and a Video Bandwidth of 2 MHz were selected to perform the measurement. The max peak detector was used along with the max hold trace function. The measurement cable loss was accounted for by either a reference level offset or the use of a transducer correction file available internal to the spectrum analyzer.

6.1.5 Carrier Emission Bandwidth

Carrier emission bandwidth was measured by direct connection of a spectrum analyzer to the RF output of the base and mobile stations. A RBW of 0.1 MHz and a VBW of 0.1 MHz were selected to perform the measurement. The max peak detector was used along with the max hold trace function. The measurement cable loss was accounted for by either a reference level offset or the use of a transducer correction file available internal to the spectrum analyzer.

Two display lines were used to make the carrier emission bandwidth measurement. The first line was place on the peak of the waveform. The second display line was placed 6dB below the first display line. A delta frequency measurement was then performed were the second display line intersected the carrier waveform.

6.1.6 Conducted Spurious Emissions, 30 MHz to 10 GHz

Conducted spurious emissions were measured by direct connection of a spectrum analyzer to the RF output of the base and mobile stations. A RBW of 0.1 MHz and a VBW of 0.1 MHz were selected to perform the measurement. The max peak detector was used along with the max hold trace function. The measurement cable loss was accounted for by either a reference level offset or the use of a transducer correction file available internal to the spectrum analyzer.

To determine the limit, an initial scan was performed ± 1.5 MHz centered at the carrier. A display line was then set 20 dB below the peak of the carrier. This is the limit used for the conducted spurious emissions at the RF output port.

6.1.7 Radiated Spurious Emissions Procedure, 9 kHz to 10 GHz

Radiated spurious emission were measured over the frequency range of 9 kHz to 10 GHz in an anecohic chamber (20ft x 24ft x 16ft). Open Area Test Site (OATS) measurements were repeated over the frequency range of 30 MHz to 1 GHz. Refer to Figure 6.1-1 and 6.1-2 for test setups.

The radiated emissions between 9 kHz and 30 MHz were measured in the anechoic chamber using a shielded magnetic loop antenna at a 3 meter distance. The levels were extrapolated to the required test distance defined in 47 CFR Part 15 using the square of an inverse linear distance formula. These emissions were maximized by rotating the equipment on the turntable. When the using the magnetic loop antenna, it was also rotated along its vertical axis.

The radiated emissions 30 MHz to 1 GHz were initially measured in the semi-anechoic shield room in order to identify the emissions 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 also taken with an Rohde & Schwarz EMI Receiver System with preselector at a 3 meter test distance from the receiving antenna. The DSMODEM/RTC was placed on a 0.8 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 1 GHz to 10 GHz were measured in the semi-anechoic shield as allowed by ANSI C63.4-1992 paragraph 8.2.4.

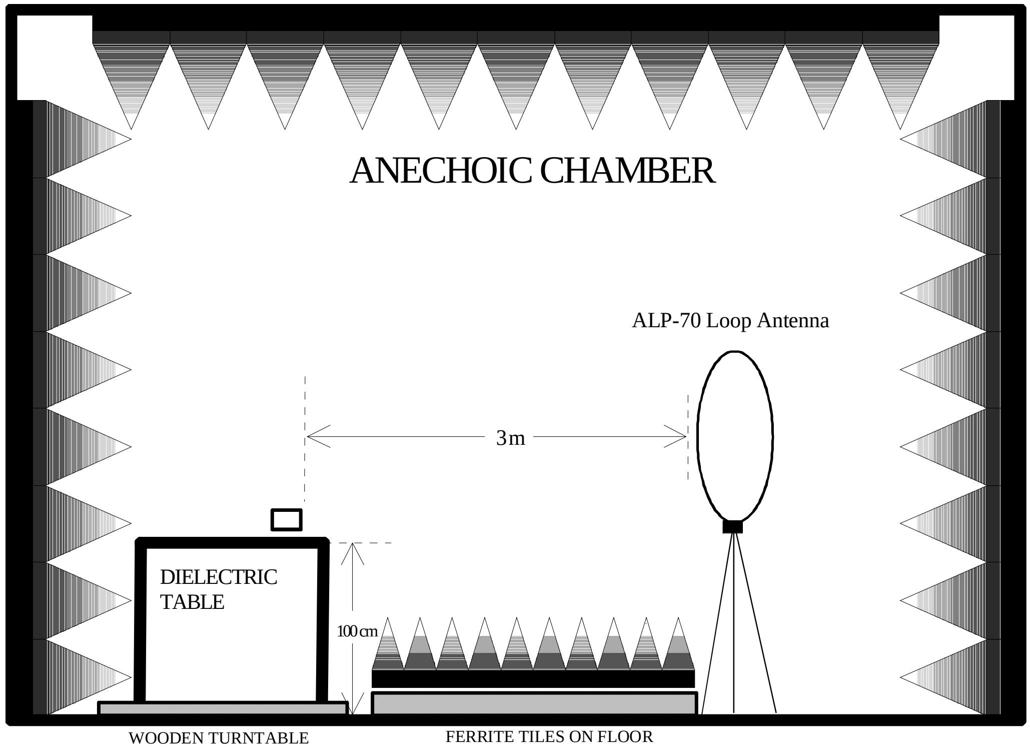

Figure 6.1-1 Radiated Spurious Emissions Test Setup - Chamber

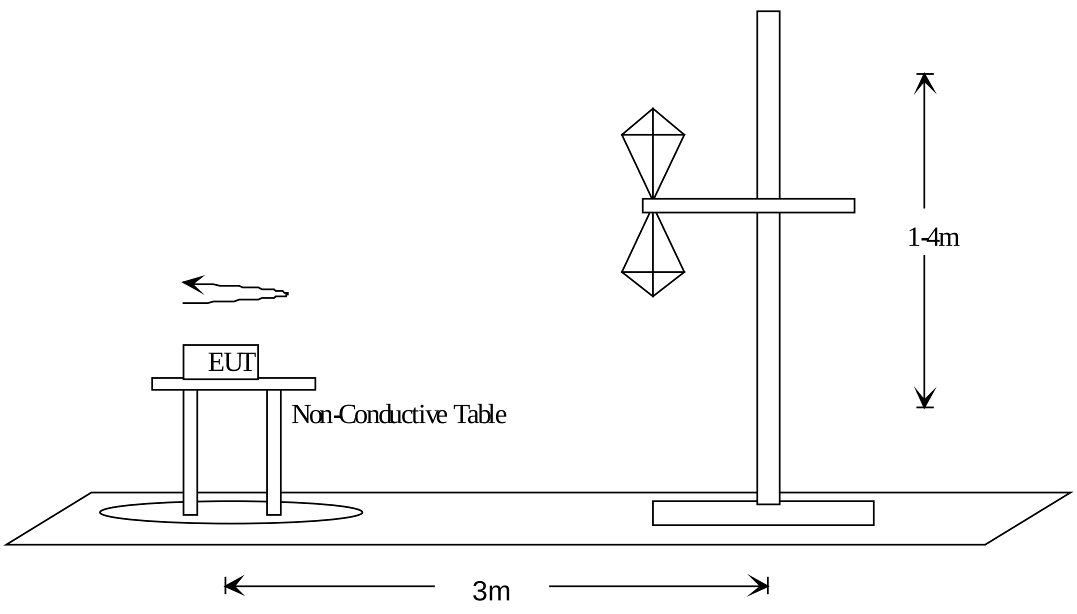

Figure 6.1-2 Radiated Spurious Emissions Test Setup -OATS

6.1.8 Radiated Emissions Standby, 30 MHz to 1 GHz

The normal mode of operation of base and mobile stations include a period transmission for interrogation purposes. Therefore, radiated emissions measurements in a standby mode were not possible. However, with the exception of the intentional carrier all spurious radiated emissions in the DSMODEM's normal mode of operation met the standby emission requirements.

6.1.9 AC Powerline Conducted, 450 kHz to 30 MHz

AC power line conducted emissions were performed using the Rhode & Schwarz EMI receiver and a Line Impedance Stabilization Network (LISN). Both AC high and neutral were tested.

6.1.10 Power Spectral Density

Power spectral density was measured by direct connection of a spectrum analyzer to the RF output of the base and mobile stations. A RBW of 3 kHz and a VBW of 30 kHz were selected to perform the measurement. The max peak detector was used along with the max hold trace function. The measurement cable loss was accounted for by either a reference level offset or the use of a transducer correction file available internal to the spectrum analyzer.

6.1.11 Processor Gain

Processor Gain was measured by direct RF connection of the base and mobile stations. Directional couplers were inserted into the RF path to allow for the injection of the jammer signal and the monitoring of the signal and jammer levels. A minimum BER of 10^{-3} was assumed for system operation. The system loss was assumed to be the maximum of 2 dB. Figure 6.1-3 shows the test setup for the measurement of the jamming to signal ratio (J/S). The following equation was used to calculate the G_P:

$$Gp = \left(\frac{S}{N}\right)_{Output} + \left(\frac{J}{S}\right) + L_{system}$$

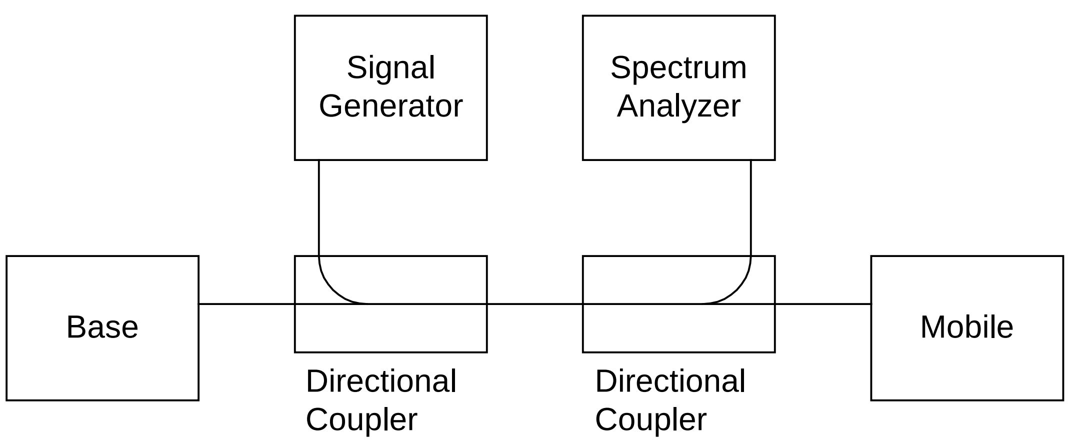

Figure 6.1-3 Processor Gain Test Setup

The J/S ratio was measured at 50 kHz increments across the carrier emission bandwidth. The lowest 20% J/S ratios were discarded and the lowest remaining J/S was used in calculating the G_P.

6.1.12 Radiation Hazard MPE

Measurements were made to establish the safety of human exposure to electromagnetic fields from the DSMODEM base and mobile stations. Tests were run with a broadband measurement device. Measurements are made from all surfaces at a minimum starting separation distance of 20cm.

6.2 Test Results

Summary of the test results is shown in Table 6.2-1. The DSMODEM is fully compliant with the applicable FCC requirements.

Table 6.2-1 Summary of Test Results for the DSMODEM/RTC

Test Requirement	Applicable FCC Section	Pass/Fail
RF Power Output (conducted)	15.247 (b)	Pass
Carrier Emission Bandwidth	15.247 (a) (2)	Pass
Conducted Spurious Emissions, 30MHz – 10 GHz	15.247 (c)	Pass
Radiated Spurious Emissions, 9kHz – 10 GHz	15.209	Pass
Radiated Emissions, Standby, 30 MHz – 1 GHz	15.109	Not Applicable
AC Powerline Conducted Emissions 450 kHz – 30 MHz	15.207	Pass
Power Spectral Density	15.247 (d)	Pass
Processing Gain	15.247 (e)	Pass
Radiation Hazard – MPE	2.1091	Pass

6.2.1 RF Power Output (conducted) Test Results

The RF power output was measure for both the base and mobile stations while transmitting on channels 1, 6, and 10. Table 6.2-2 contains the measurement data. Appendix A contains the spectrum analyzer screen prints of the measured data. The test setup photo is shown as Figure H-1.

Table 6.2-2 RF Power Output Test Results

Station	Channel	RF Power Output (dBm)	Limit (dBm)
Base	1	18.54	30
Base	6	18.26	30
Base	10	18.05	30
Mobile	1	18.06	30
Mobile	6	17.86	30
Mobile	10	17.93	30

6.2.2 Carrier Emission Bandwidth Test Results

The carrier emission bandwidth was measure for both the base and mobile stations while transmitting on channels 1, 6, and 10. Table 6.2-3 contains the measurement data. Appendix A contains the spectrum analyzer screen prints of the measured data. The test setup photo is shown as Figure H-1.

Table 6.2-3 Carrier Emission Bandwidth Test Results

Station	Channel	Carrier Emission Bandwidth (MHz)	Limit (MHz)
Base	1	1.12	> 0.5
Base	6	1.15	> 0.5
Base	10	1.50	> 0.5
Mobile	1	0.952	> 0.5
Mobile	6	0.980	> 0.5
Mobile	10	0.974	> 0.5

6.2.3 Conducted Spurious Emissions, 30 MHz to 10 GHz Test Results

The conducted spurious emissions were measured for both the base and mobile stations while transmitting on channels 1, 6, and 10. The requirement for conducted spurious emissions is 20dB below the peak carrier level measured with a 100 kHz bandwidth (BW). The DSMODEM meets this requirement.

Appendix B contains the spectrum analyzer screen prints of the measured data for the base station transmitting on channel 6. Due to the absence of any spurious emission, data for the other channels and for the mobile station have not been included in this report. The test setup photo is shown as Figure H-1.

6.2.4 Radiated Spurious Emissions Measurement Test Results

All measurements were made with the DSMODEM transmitting at its maximum rated output power. Most of the measurements displayed significant margin to the limits and, therefore, were not re-measured using a Quasi-Peak detector but, rather, displayed as a worst case, max peak emission. The exceptions were emissions that were within 6 dB of the limit. These were re-measured using the Quasi-Peak detector and noted as such in the data sheet.

The radiated emissions for the frequency range of 9 kHz to 30 MHz were all below the applicable limits of 47 CFR 15.209 including the carrier harmonics. These measurements were performed in an anechoic chamber at a distance of 3 meters and extrapolated to the required distances defined in 15.209. These scans were taken with an automated EMI Receiver system using scan tables setup specifically for the requirement conditions including bandwidth, transducer factors, and distance correction. The worst case emissions graph is shown as Figure C-1 and C-2 for base and mobile stations, respectively.

Measurements for 30 MHz to 1 GHz were taken first in the semi-anechoic chamber in order to identify the critical frequencies. Signals that were within 10 dB of the limit were recorded and their final measurement was taken on the OATS. The measurements were taken at a test distance of 3 meters per the specification. The final OATS measurements are provided in Figures E-1 and E-2 for base and mobile stations, respectively. All emissions in this range were below the specification limits of 47 CFR Section 15.209.

Additionally, this equipment complies with the requirements of 47 CFR Section 15.205 on Restricted Bands of Operation. The DSMODEM operating frequency of 902 - 928 MHz is outside of any of the restricted bands specified in 15.205. Spurious emissions are permitted in these bands with the condition that they comply with the same requirements of 15.209 as tested.

The test setup photos are shown as Figures H-2 through H-10.

6.2.5 AC Powerline Conducted, 450 kHz to 30 MHz Test Results

The AC powerline conducted emissions were measured for the base stations while transmitting. Appendix F contains the EMI receiver plots of the measured data. The test setup photo is shown as Figure H-11.

6.2.6 Power Spectral Density Test Results

The power spectral density was measure for both the base and mobile stations while transmitting on channels 1, 6, and 10. Table 6.2-4 contains the measurement data. Appendix A contains the spectrum analyzer screen prints of the measured data.

Table 6.2-4 Power Spectral Density Test Results

Station	Channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Base	1	5.31	8.0
Base	6	6.88	8.0

Base	10	6.51	8.0
Mobile	1	5.69	8.0
Mobile	6	7.44	8.0
Mobile	10	5.05	8.0

6.2.7 Processor Gain Test Results

The theoretical $\left(\frac{S}{N}\right)_{Output}$ for Gaussian Minimum Shift Keying (GMSK) modulation was calculated to be 8.5 dB for a Bit Error Rate (BER) of 10^{-3}. The minimum $\left(\frac{J}{S}\right)$ after the rejection of 20% of the measured data was 0.7dB. $_{system}$ was assumed to be 2dB. Table 6.2. contains the raw $\left(\frac{J}{S}\right)$ data. Therefore, the measured G_P for the DSMODEM is 11.2 dB. This meets the FCC requirement of a minimum of 10 dB.

6.2.8 Radiation Hazard MPE Test Results

The radiation hazard was measure for both the base and mobile stations while transmitting on channels 1, 6, and 10. The peak level measure for the base station was 0.12 mW/cm^2 and for the mobile station was 0.09 mW/cm^2. Appendix F contains the measured data.

Table 6.2-5 Jamming to Signal Ratio Data

Frequency (MHz)	S (dBm)	J (dBm)	J/S (dB)
912.489	-38.5	-34.2	4.3
912.539	-38.5	-35.5	3
912.589	-38.5	-36.3	2.2
912.639	-38.5	-36.7	1.8
912.689	-38.5	-36.8	1.7
912.739	-38.5	-37.0	1.5
912.789	-38.5	-37.1	1.4
912.839	-38.5	-37.4	1.1
912.889	-38.5	-37.7	0.8
912.939	-38.5	-37.9	~~0.6~~
912.989	-38.5	-38.1	~~0.4~~
913.039	-38.5	-38.0	~~0.5~~
913.089	-38.5	-37.7	0.8
913.139	-38.5	-37.4	1.1
913.189	-38.5	-37.3	1.2
913.239	-38.5	-37.4	1.1
913.289	-38.5	-37.4	1.1
913.339	-38.5	-37.7	0.8
913.389	-38.5	-38.0	~~0.5~~
913.439	-38.5	-38.0	~~0.5~~
913.489	-38.5	-37.7	0.8
913.539	-38.5	-37.4	1.1
913.589	-38.5	-37.1	1.4
913.639	-38.5	-37.1	1.4
913.689	-38.5	-37.4	1.1
913.739	-38.5	-37.8	0.7
913.789	-38.5	-37.9	~~0.6~~
913.839	-38.5	-37.9	~~0.6~~
913.889	-38.5	-37.5	1
913.939	-38.5	-37.1	1.4
913.989	-38.5	-36.9	1.6
914.039	-38.5	-36.7	1.8
914.089	-38.5	-36.4	2.1
914.139	-38.5	-36.3	2.2
914.189	-38.5	-36.2	2.3
914.239	-38.5	-35.9	2.6
914.289	-38.5	-35.5	3
914.339	-38.5	-34.5	4
914.389	-38.5	-33.3	5.2
914.439	-38.5	-32.7	5.8
914.489	-38.5	-38.4	~~0.1~~

Note:
Strike throughs are the 20% rejected data points. The shaded entry is the lowest J/S of the remaining entries

Appendix A

RF Power Output,

Carrier Emission Bandwidth,

and Power Spectral Density Data

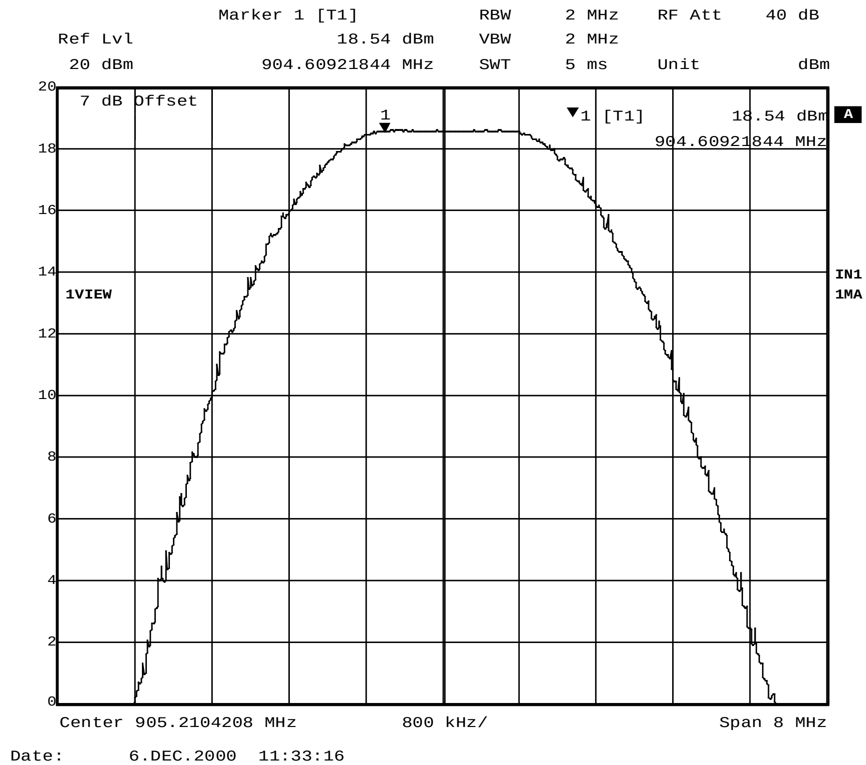

Figure A - 1 Base Station; Channel 1; RF Power Output

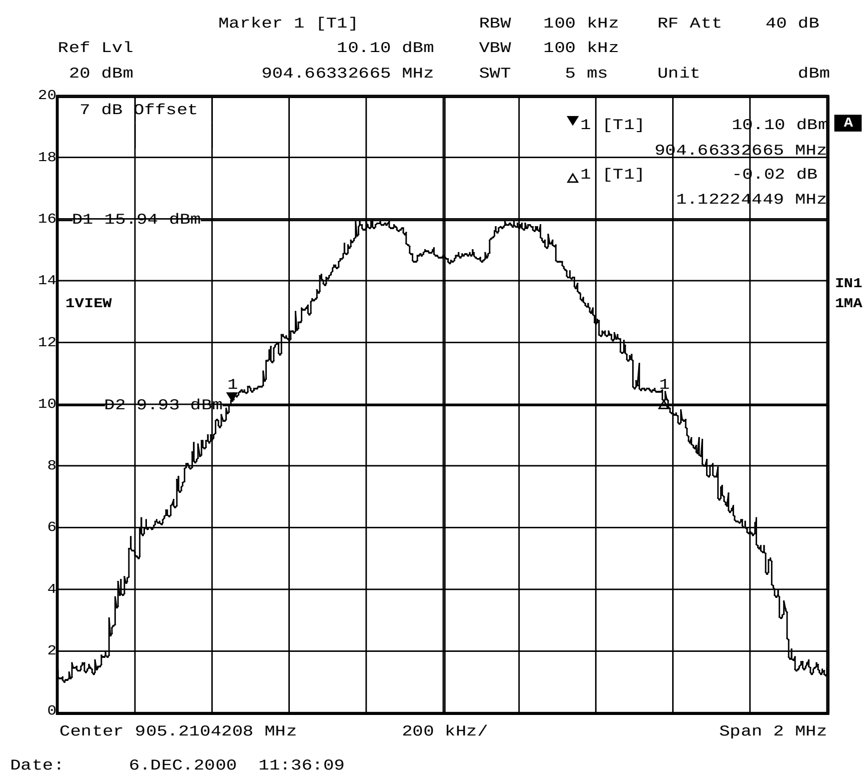

Figure A - 2 Base Station; Channel 1; Carrier Emission Bandwidth

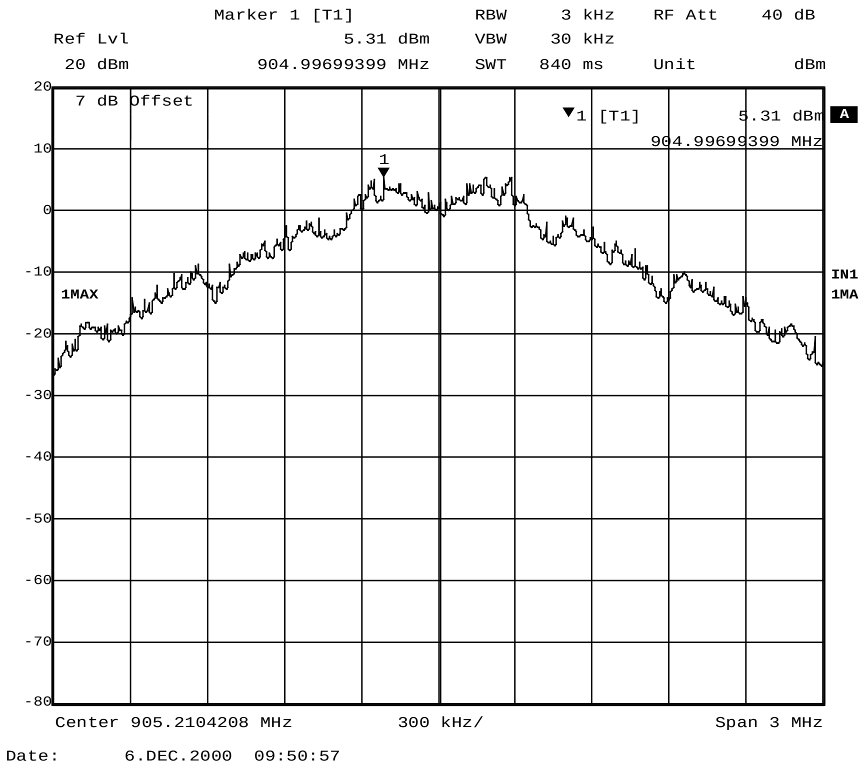

Figure A - 3 Base Station; Channel 1; Power Spectral Density

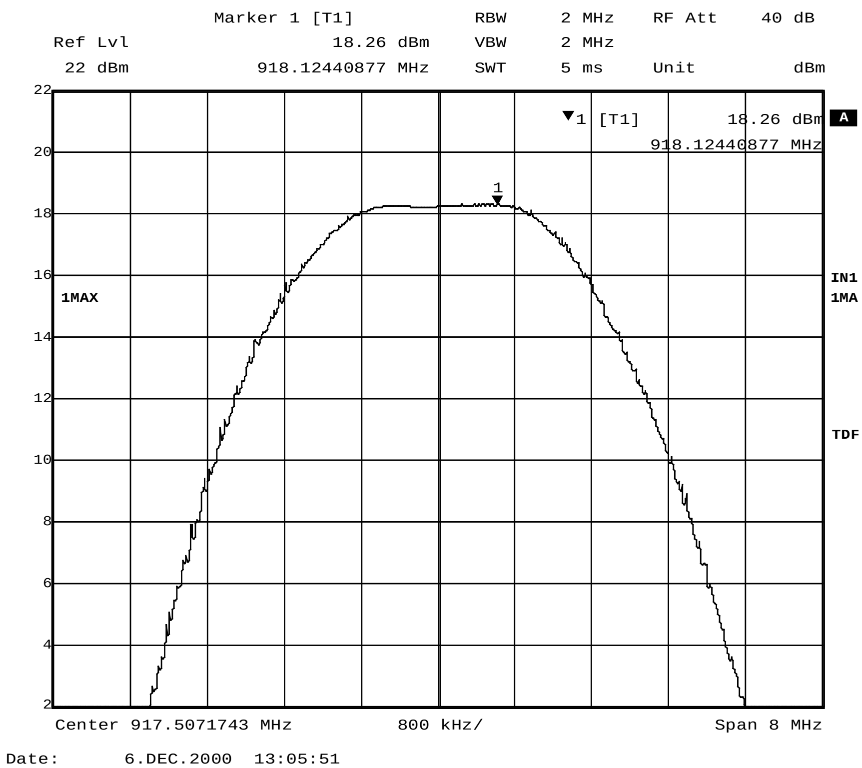

Figure A - 4 Base Station; Channel 6; RF Power Output

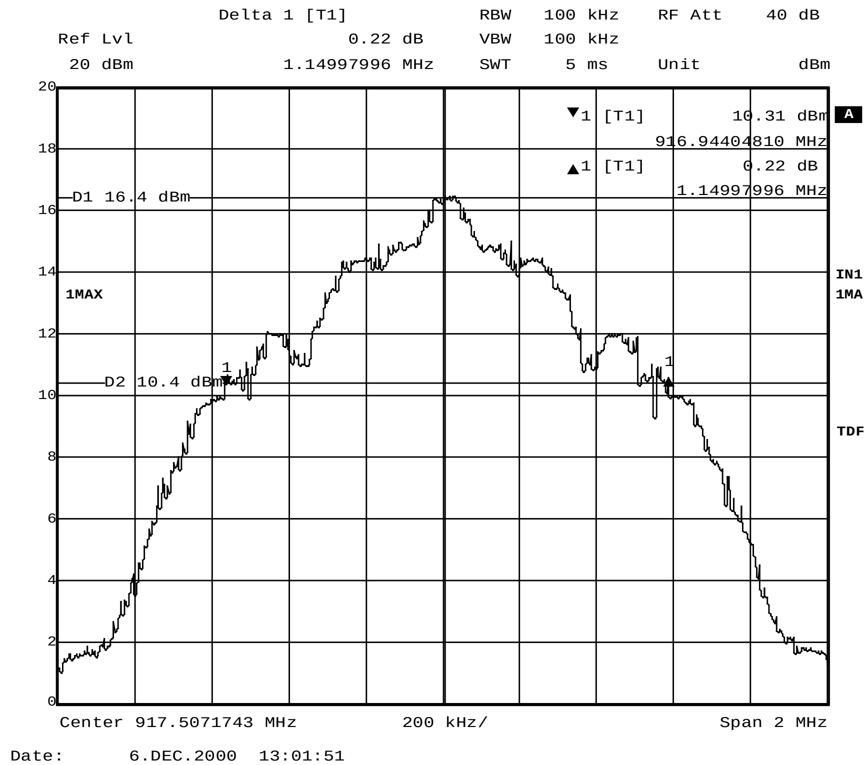

Figure A - 5 Base Station; Channel 6; Carrier Emission Bandwidth

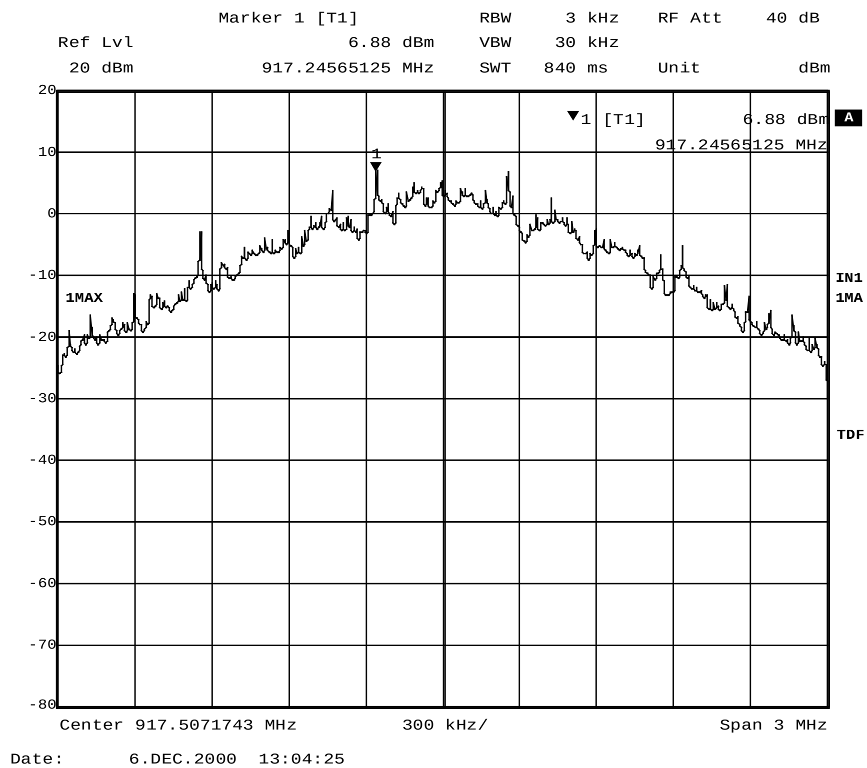

Figure A - 6 Base Station; Channel 6; Power Spectral Density

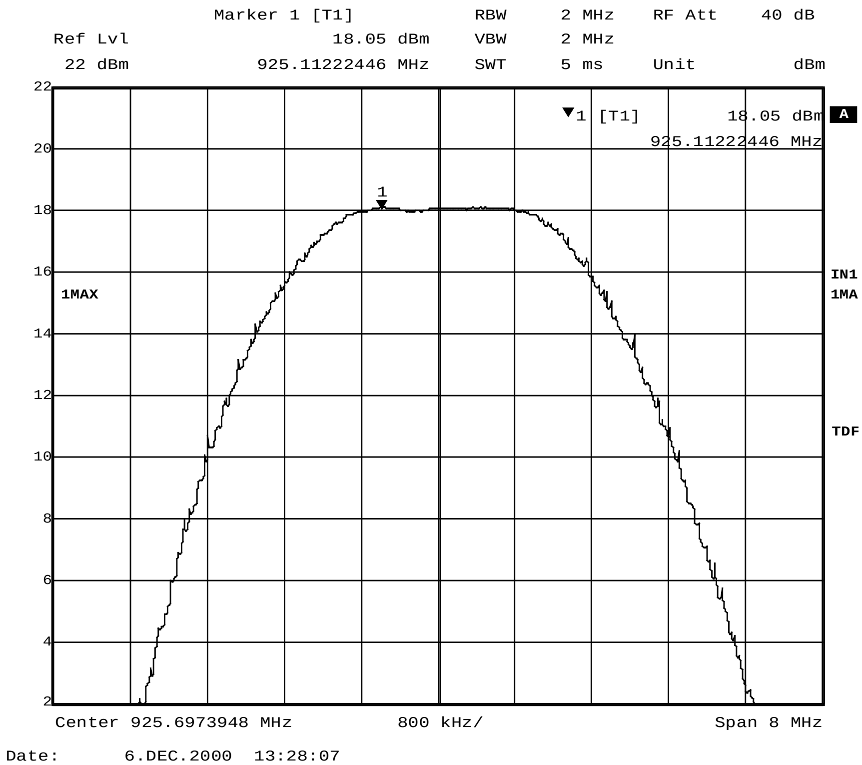

Figure A - 7 Base Station; Channel 10; RF Power Output

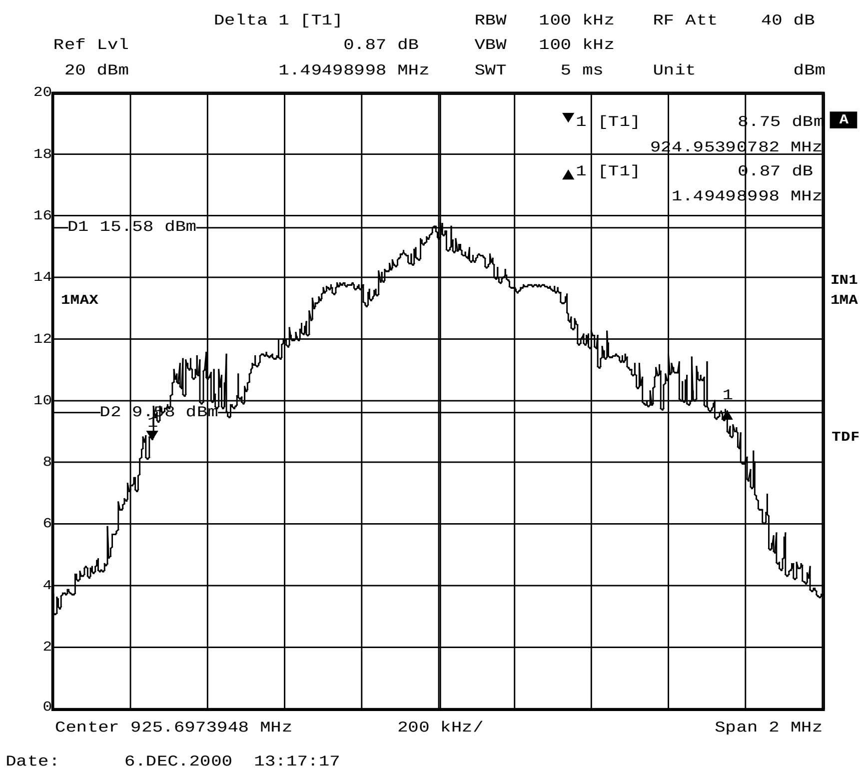

Figure A - 8 Base Station; Channel 10; Carrier Emission Bandwidth

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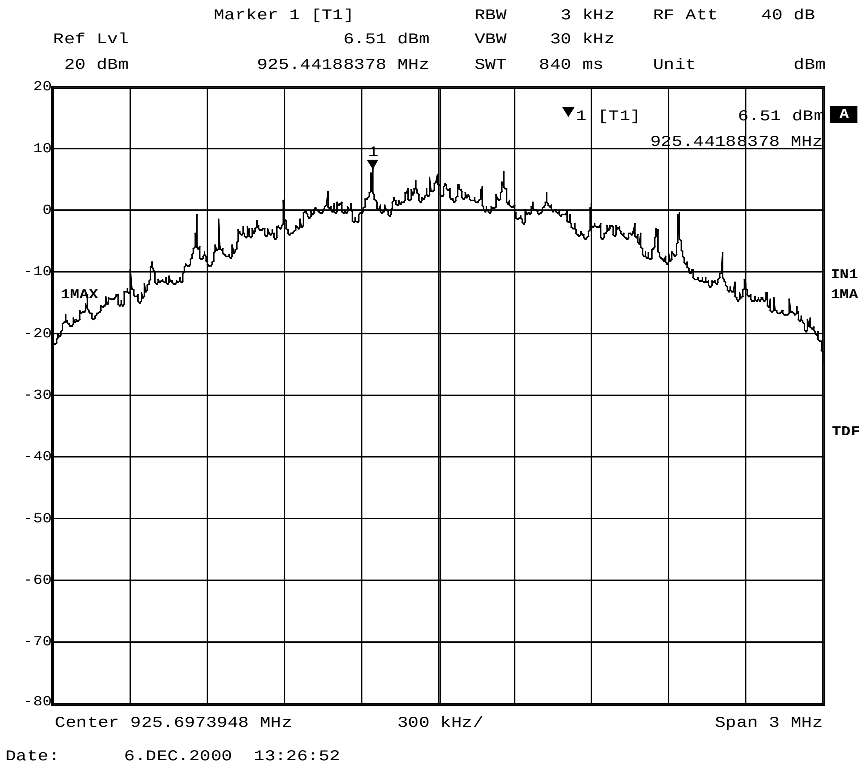

Figure A - 9 Base Station; Channel 10; Power Spectral Density

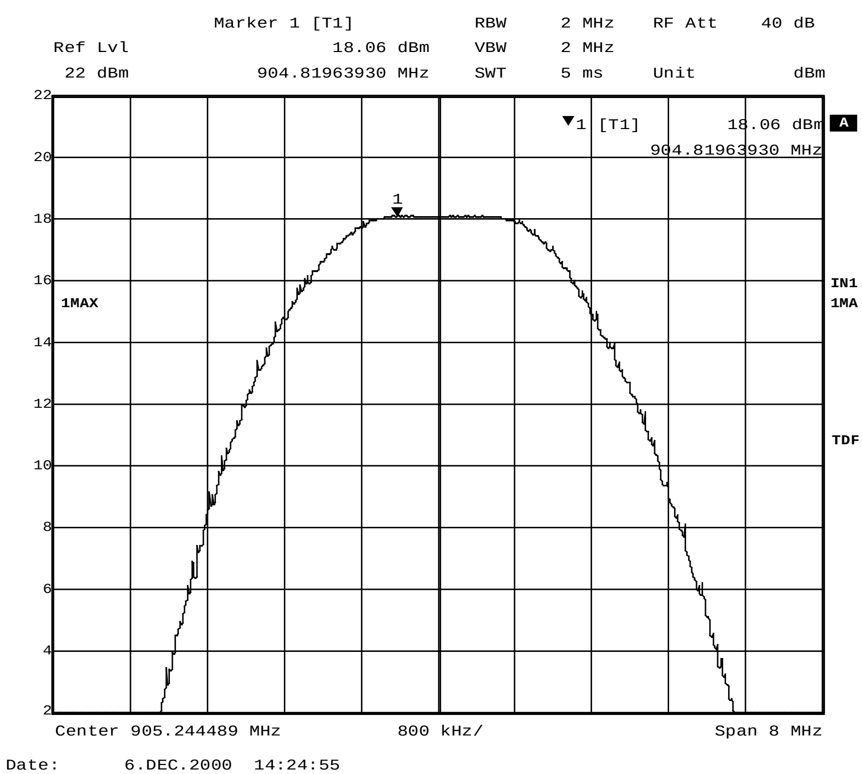

Figure A - 10 Mobile Station; Channel 1; RF Power Output

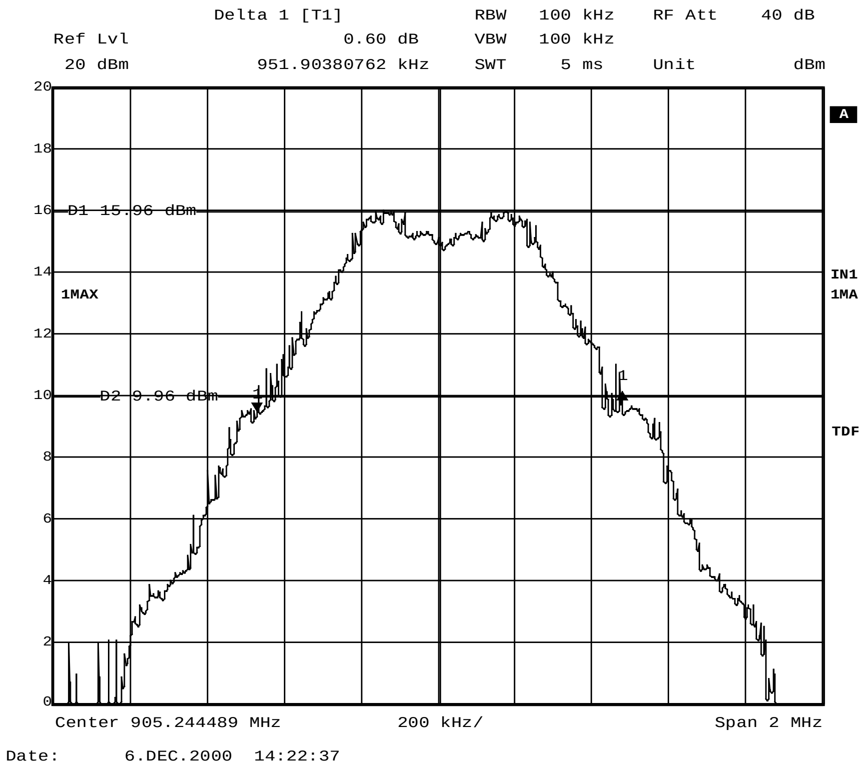

Figure A - 11 Mobile Station; Channel 1; Carrier Emission Bandwidth

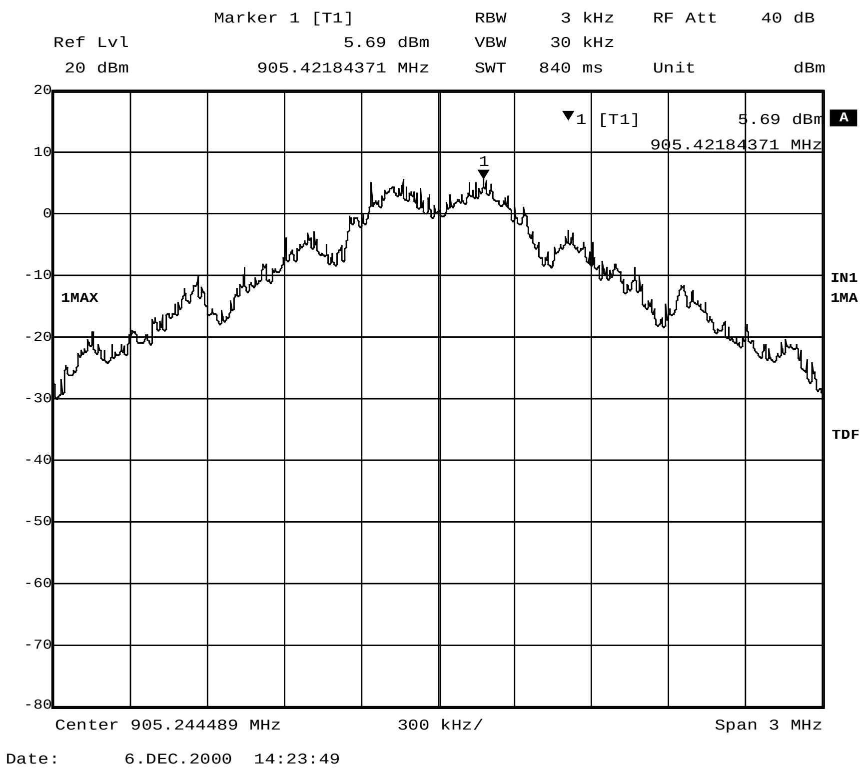

Figure A - 12 Mobile Station; Channel 1; Power Spectral Density

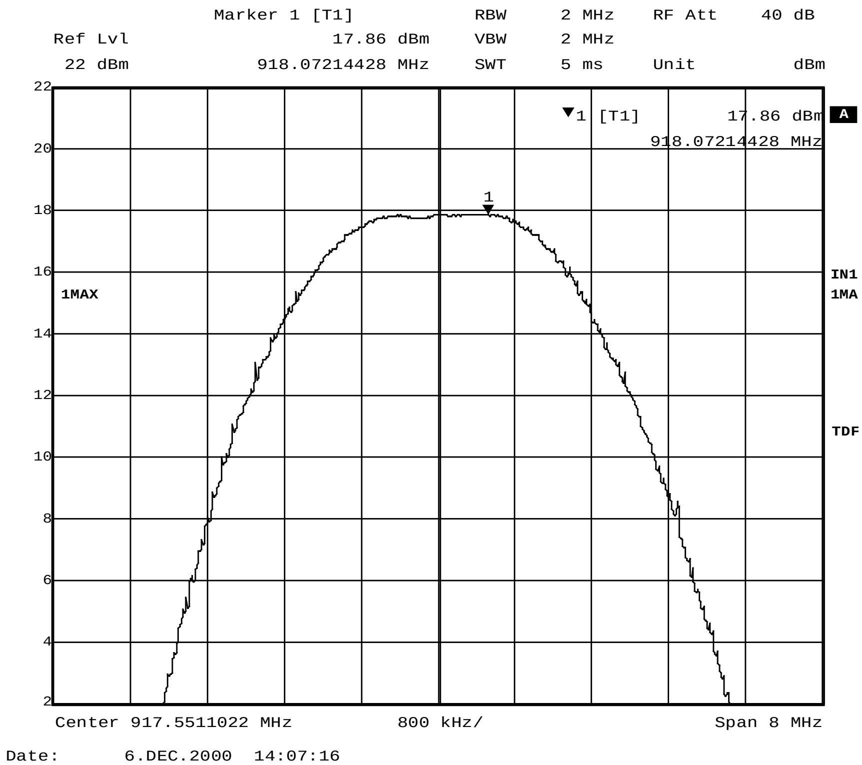

Figure A - 13 Mobile Station; Channel 6; RF Power Output

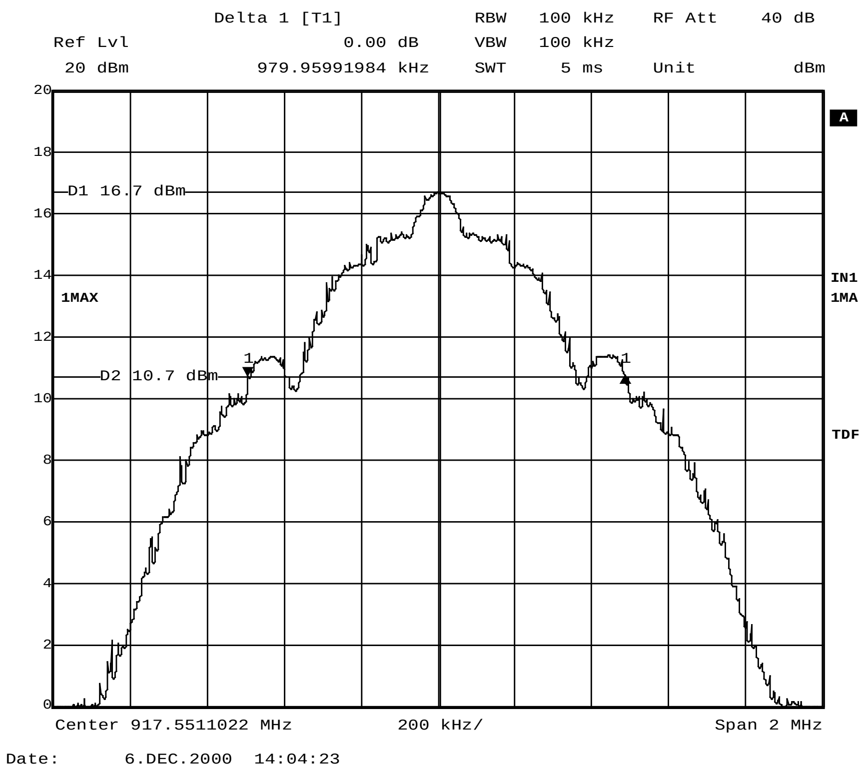

Figure A - 14 Mobile Station; Channel 6; Carrier Emission Bandwidth

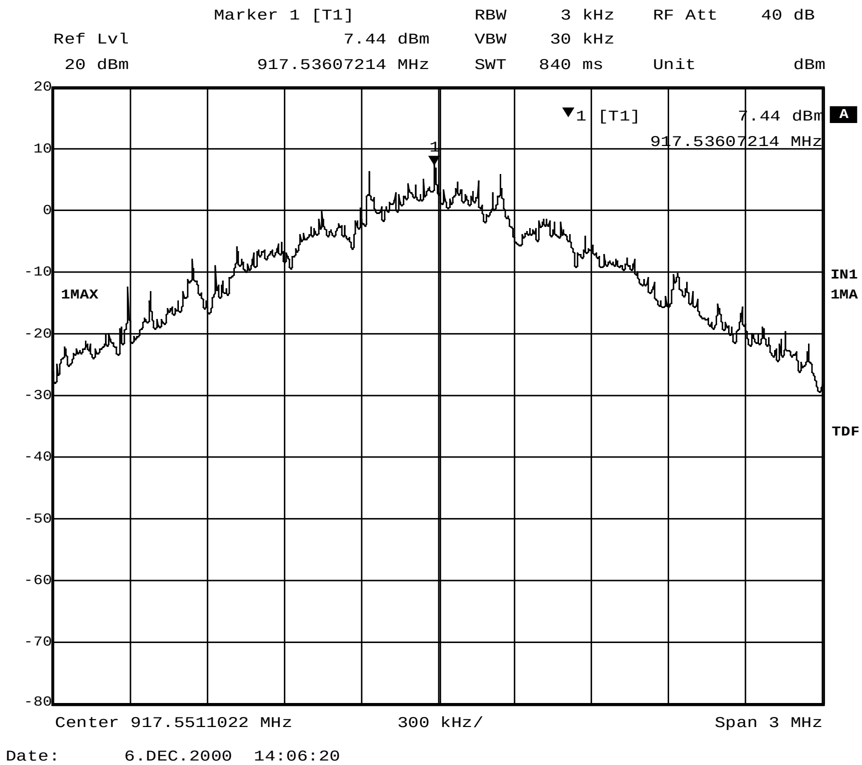

Figure A - 15 Mobile Station; Channel 6; Power Spectral Density

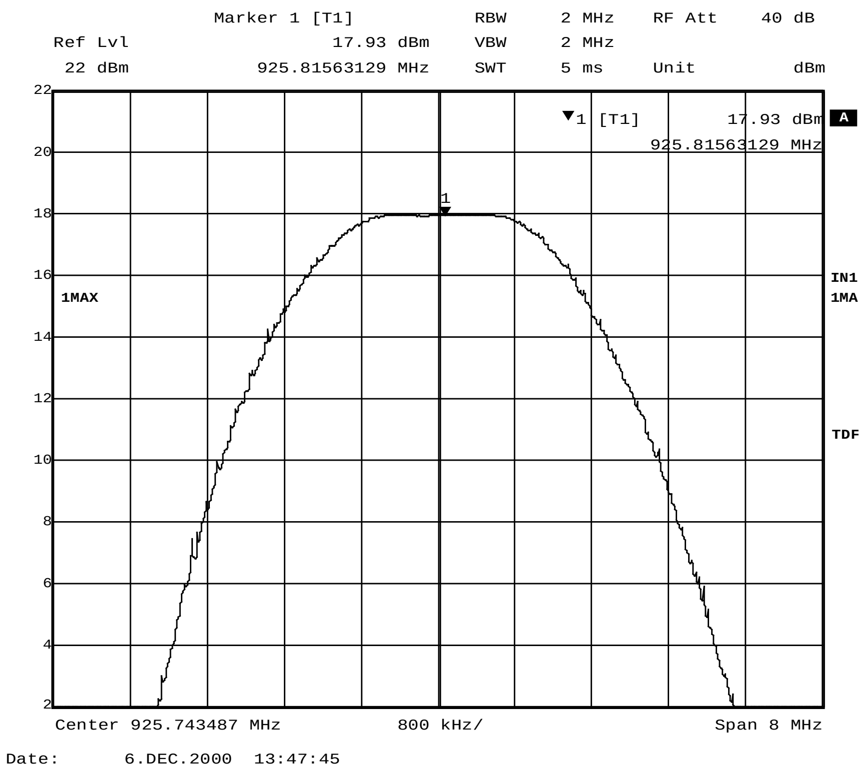

Figure A - 16 Mobile Station; Channel 10; RF Power Output

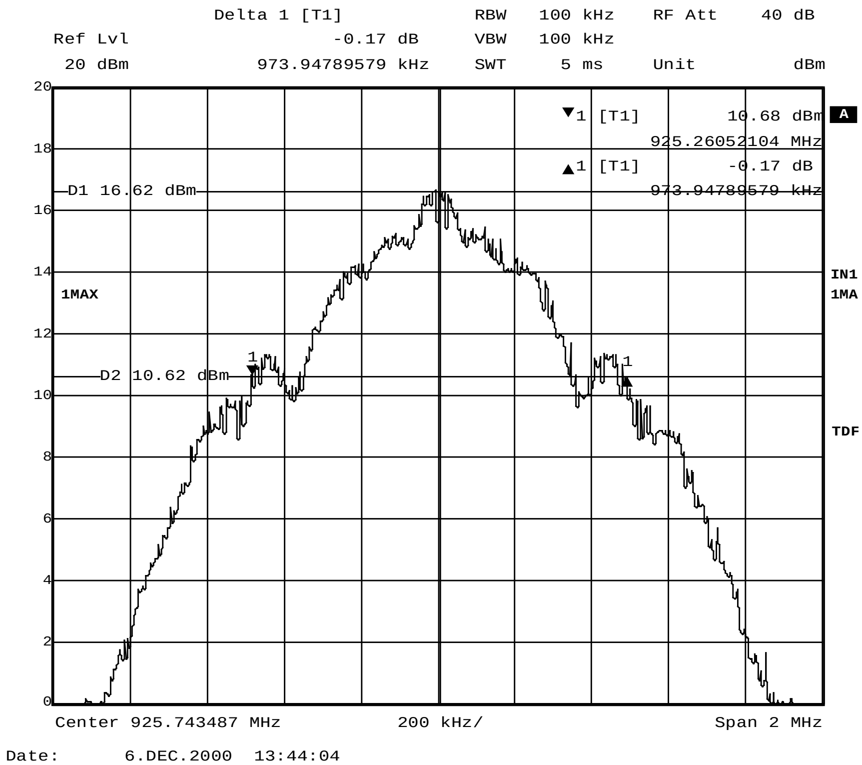

Figure A - 17 Mobile Station; Channel 10; Carrier Emission Bandwidth

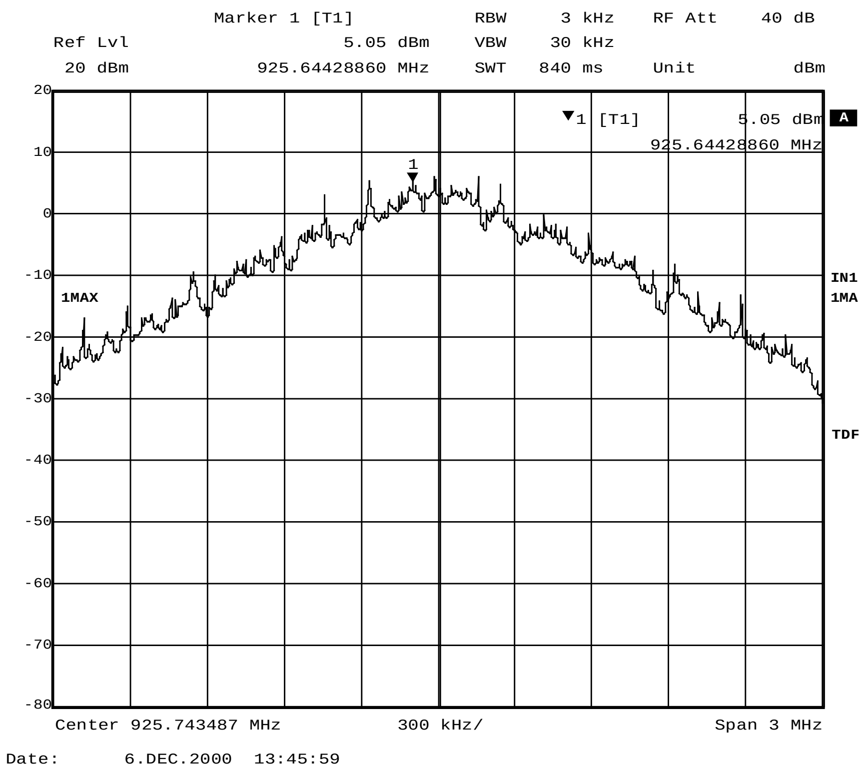

Figure A - 18 Mobile Station; Channel 10; Power Spectral Density

Appendix B

Conducted Spurious Emission

30 MHz to 10 GHz

Exhibit 06

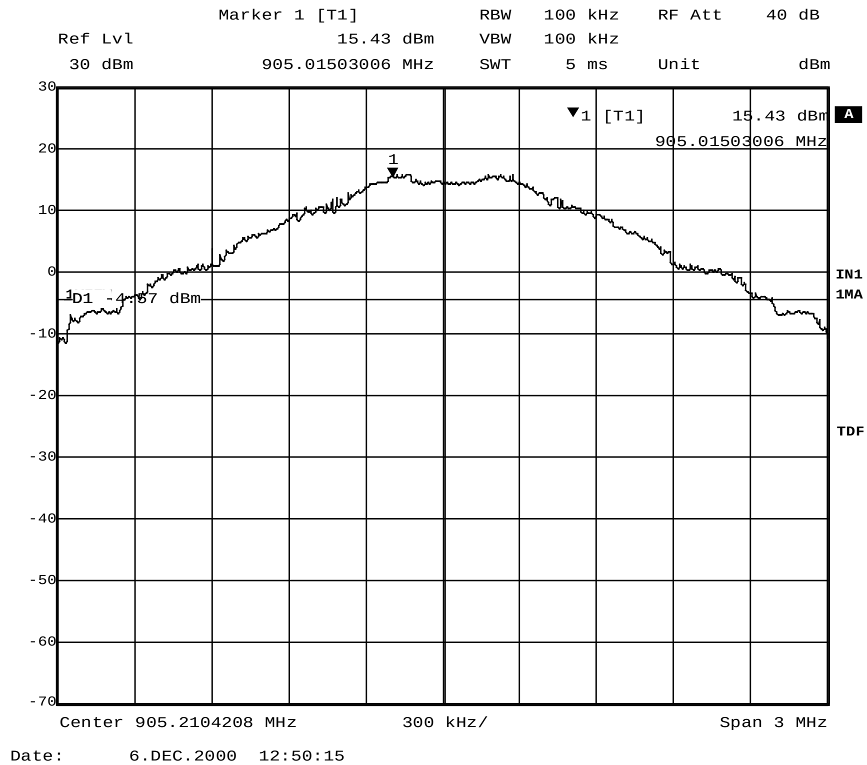

Figure B - 1 Base Station, Channel 1, Conducted Spurious Emission, Reference Level

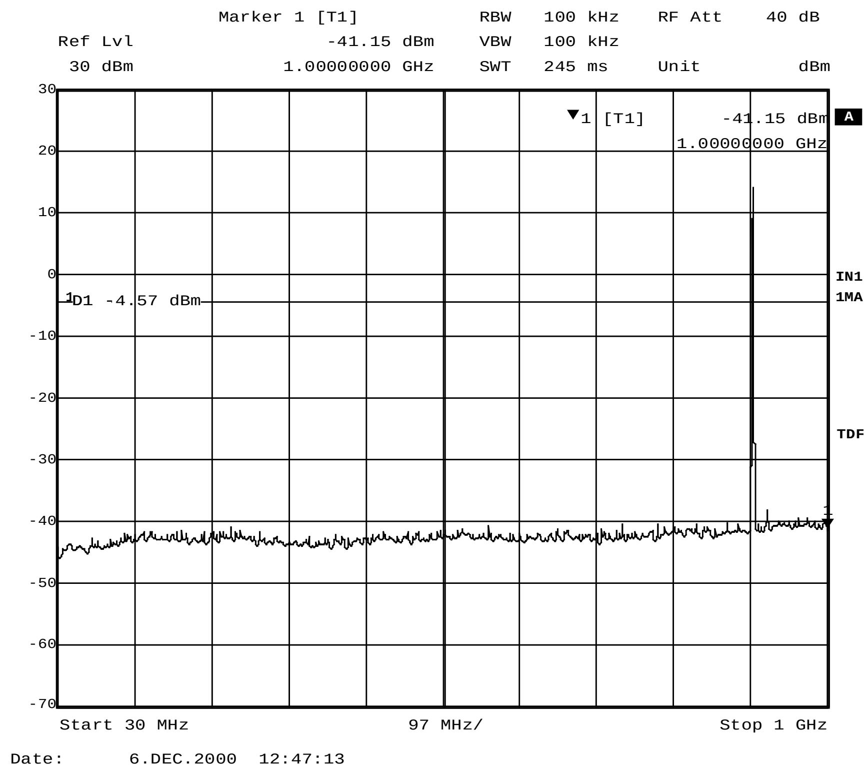

Figure B - 2 Base Station, Channel 1, Conducted Spurious Emission, 30 MHz - 1GHz

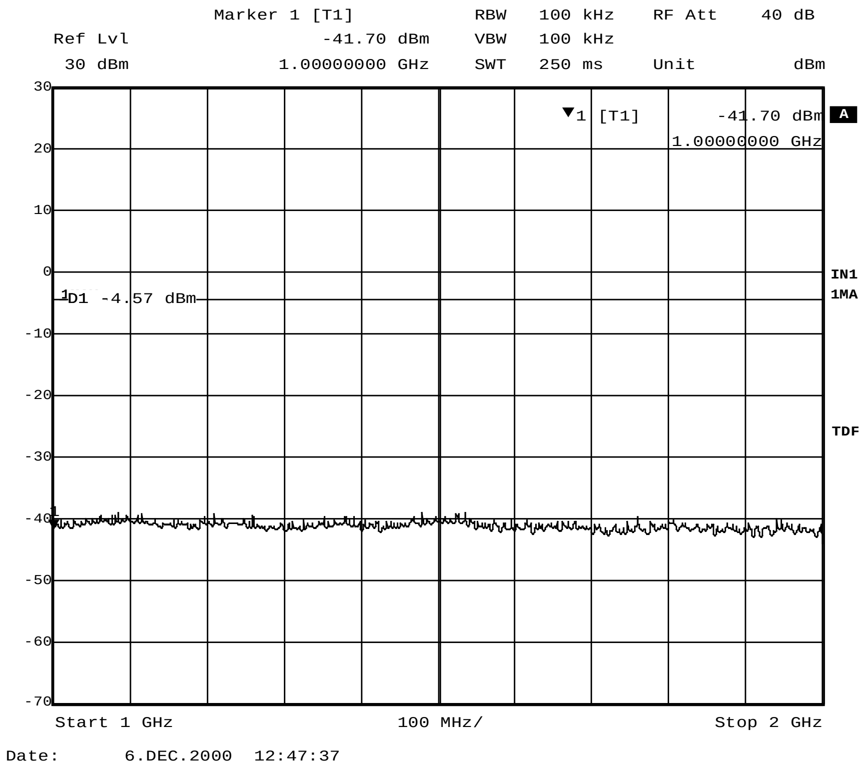

Figure B - 3 Base Station, Channel 1, Conducted Spurious Emission, 1GHz - 2GHz

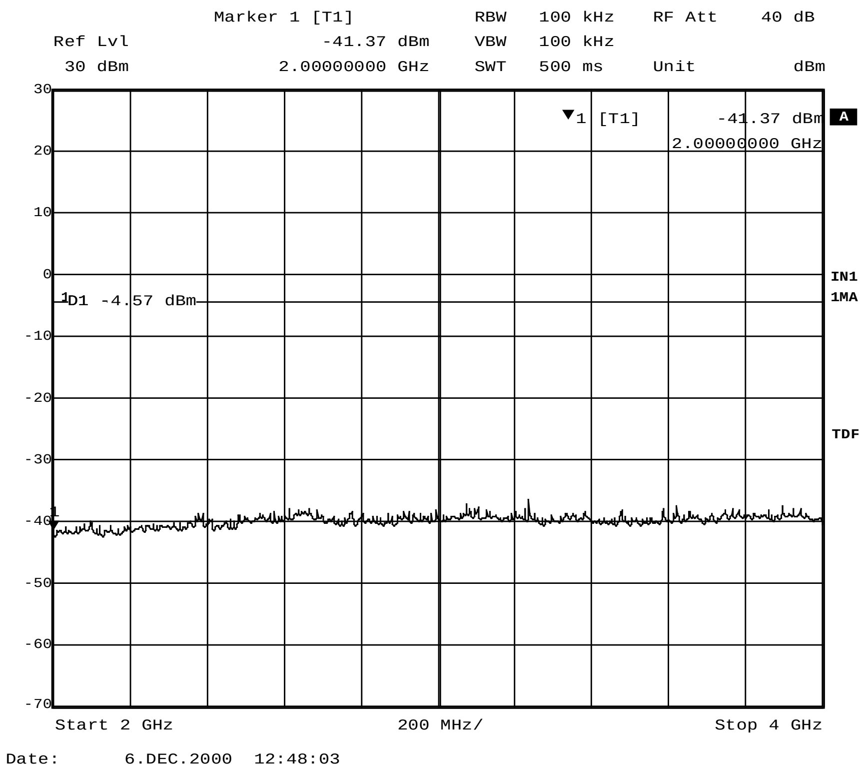

Figure B - 4 Base Station, Channel 1, Conducted Spurious Emission, 2GHz - 4GHz

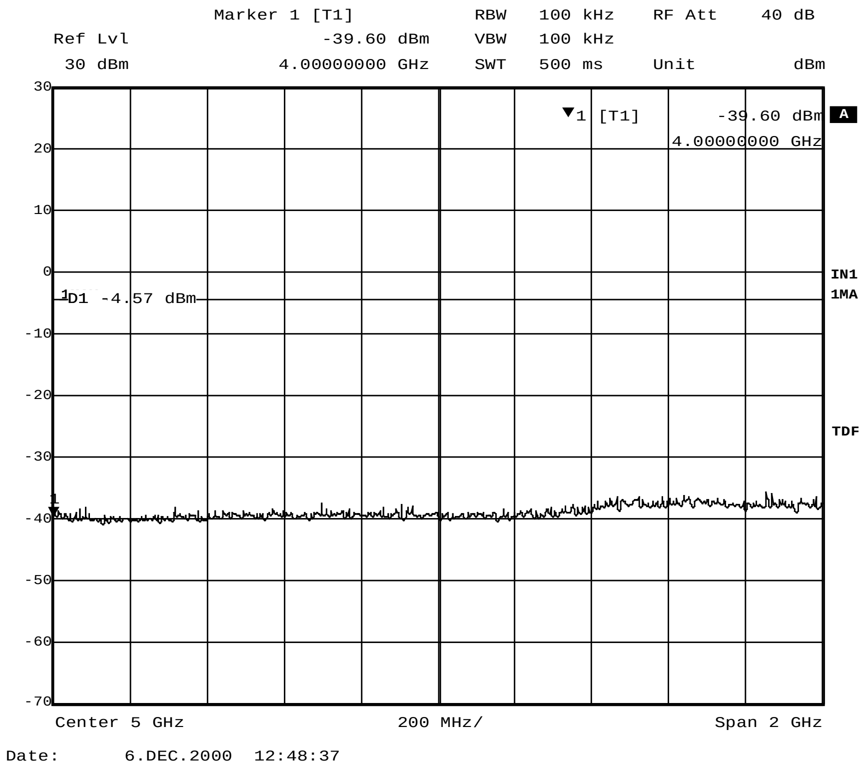

Figure B - 5 Base Station, Channel 1, Conducted Spurious Emission, 4GHz - 6GHz

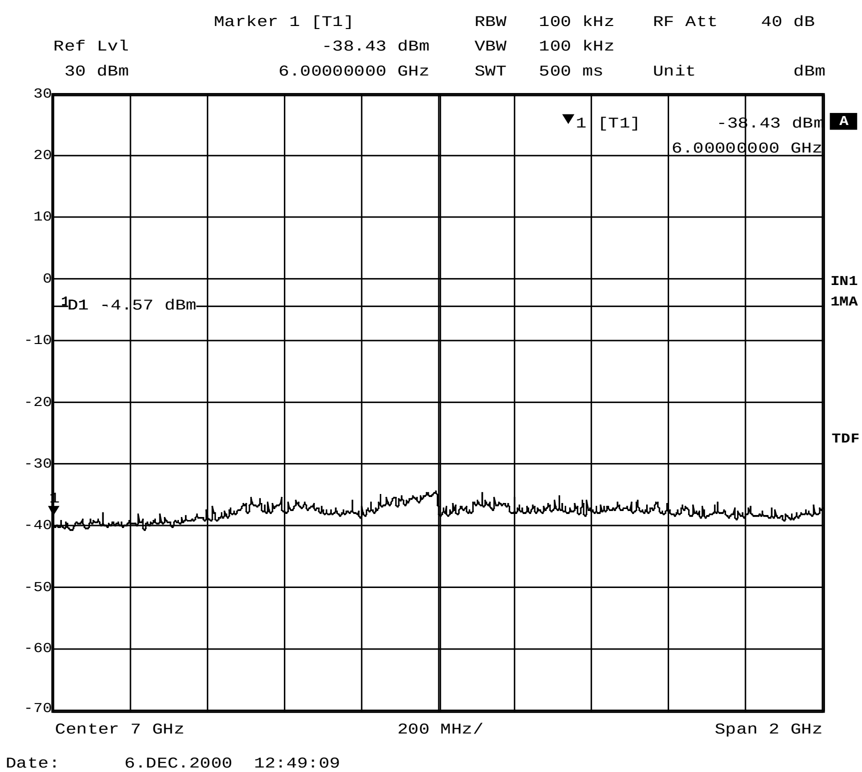

Figure B - 6 Base Station, Channel 1, Conducted Spurious Emission, 6GHz - 8GHz

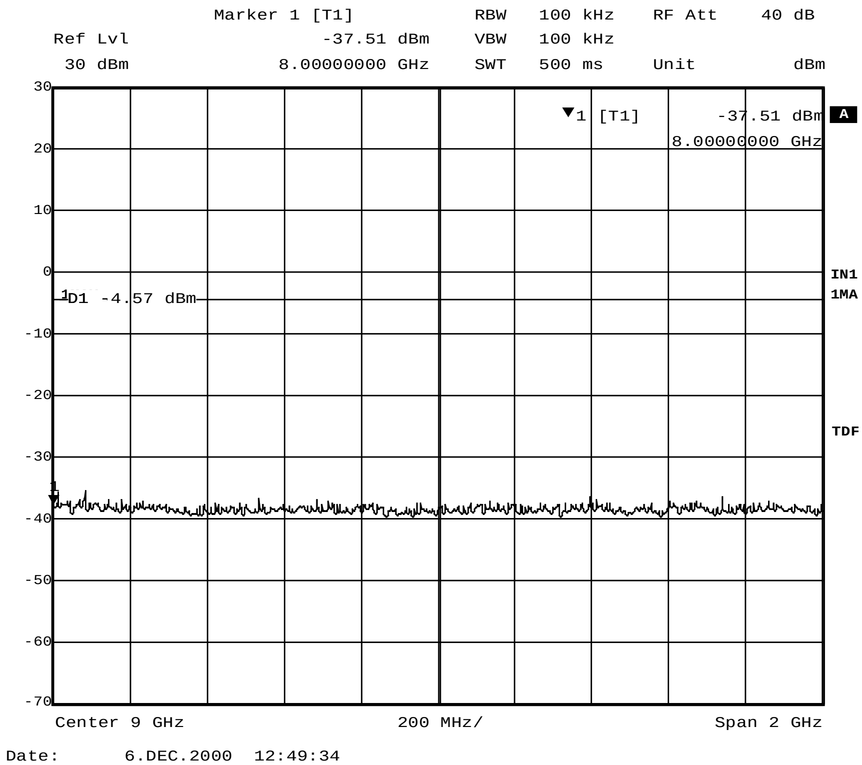

Figure B - 7 Base Station, Channel 1, Conducted Spurious Emission, 8GHz - 10GHz

Appendix C

Radiated Spurious Emission Measurements

9kHz to 30 MHz

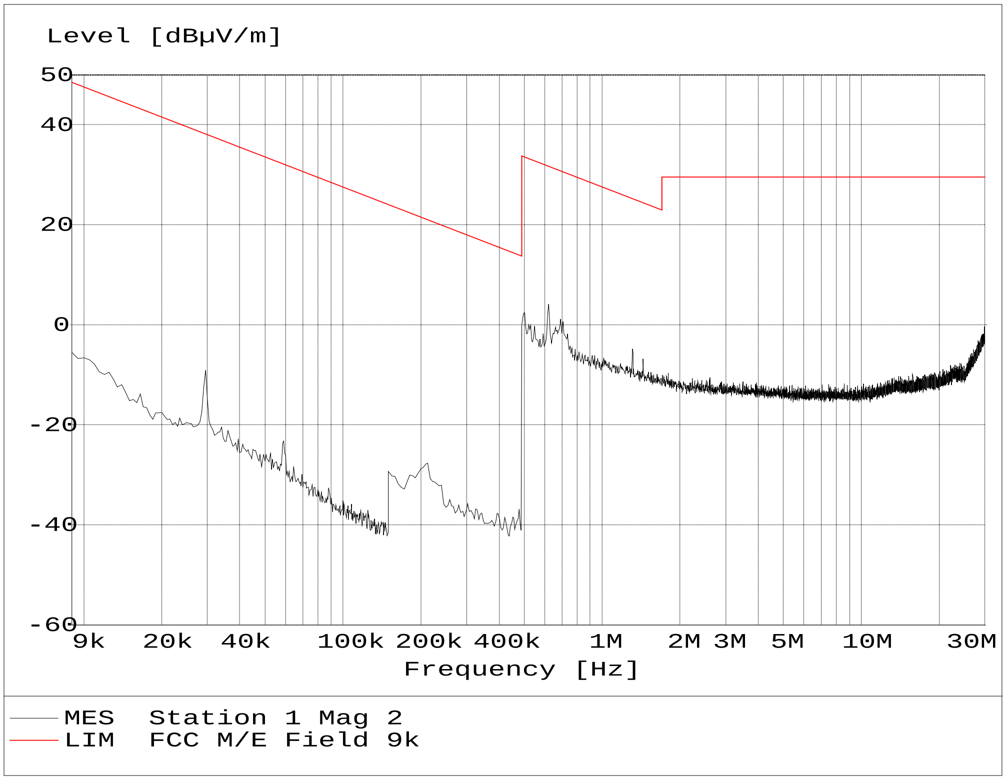

Figure C – 1 Base Station; Radiated Spurious Emissions, 9 kHz to 30 MHz, Loop Antenna

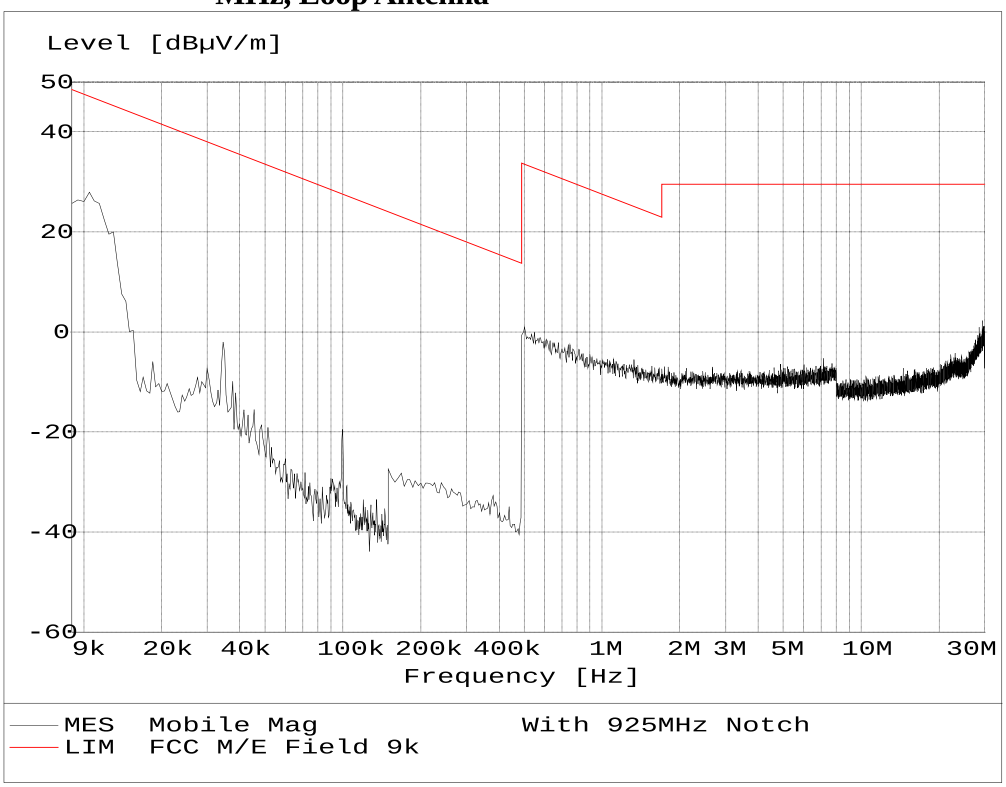

Figure C – 2 Mobile Station; Radiated Spurious Emissions, 9 kHz to 30 MHz, Loop Antenna

Appendix D

Radiated Spurious Emission Measurements

30 MHz to 1 GHz

MOTOROLA IISG TEST DATA SHEET

FCC Radiated Test Results

Equip.: DS Station Modem
Mode: On
Model#: UK
Serial #: E.M.01

Test Date: 11/3/00
Test Technician: R. Johnston
Measurement Distance (m): 3
Equipment Class: B

Bold Reading are Quasi Peak.
67° Hum 40.% BP 29.93 F

Frequency MHz	SA Reading (dBuV)	Az	Ht cm	Pol	Antenna Factor	Cable/Attn. Loss	Pre Amp dB	Emission (dBuV/m)	Spec Limit (dBuV/m)	Deviation from Spec. Limit (dB)
44.242	11.5	B	100	V	9.8	8.0	0.0	29.2	40.0	-10.8
66.364	21.0	B	100	V	7.6	8.8	0.0	37.4	40.0	-2.6
88.487	**14.8**	R	100	V	7.9	8.7	0.0	31.4	43.5	-12.1
199.069	**18.8**	B	205	H	10.4	10.0	0.0	39.3	43.5	-4.2
926.132	65.9	BL	115	V	23.2	12.9	0.0	102.0	46.0	56.0
926.132	**55.6**	BL	115	V	23.2	12.9	0.0	91.7	46.0	45.7
906.693	67.1	F	125	V	23.4	12.7	0.0	103.2	46.0	57.2
906.693	**51.9**	F	125	V	23.4	12.7	0.0	88.0	46.0	42.0
181.660	15.5	R	105	V	9.4	9.4	0.0	34.4	43.5	-9.1
815.865	9.6	FR	252	V	21.8	12.7	0.0	44.1	46.0	-1.9

Figure D – 1 Base Station; Radiated Spurious Emissions; OATS Data; 30MHz to 1GHz

FCC Radiated Test Results

Equip.	DS Modem Mobile Unit	Test Date:	12/6/00
Mode:	Transmit	Test Technician:	J. Dykema
Model#:	Engineering Model	Measurement Distance (m)	3
Serial #:	001	Equipment Class	B

Bold Reading are Quasi Peak — 35.5° Hum 28.% BP 73 F

Frequency MHz	SA Reading (dBuV)	Az	Ht cm	Pol	Antenna Factor	Cable/Attn. Loss	Pre Amp dB	Emission (dBuV/m)	Spec Limit (dBuV/m)	Deviation from Spec. Limit (dB)
905.263	74.5	CE	118	V	23.4	14.5	36.9	75.6	46.0	29.6
39.180	15.8	CE	118	V	11.7	8.7	0.0	36.2	40.0	-3.8
176.950	7.0	RS	100	V	9.4	9.5	0.0	25.9	43.5	-17.6
101.560	2.0	RS	100	V	8.2	8.9	0.0	19.1	43.5	-24.4
221.190	17.0	TP	152	H	11.2	10.0	0.0	38.2	46.0	-7.8
265.420	6.8	RS	148	H	12.7	10.4	0.0	29.9	46.0	-16.1
353.900	8.5	TP	153	H	15.7	11.0	0.0	35.1	46.0	-10.9
442.370	10.0	CE	100	H	16.6	11.8	0.0	38.4	46.0	-7.6

Figure D – 2 Mobile Station; Radiated Spurious Emissions; OATS Data; 30MHz to 1GHz

Appendix E

Radiated Spurious Emission Measurements

1 GHz to 10 GHz

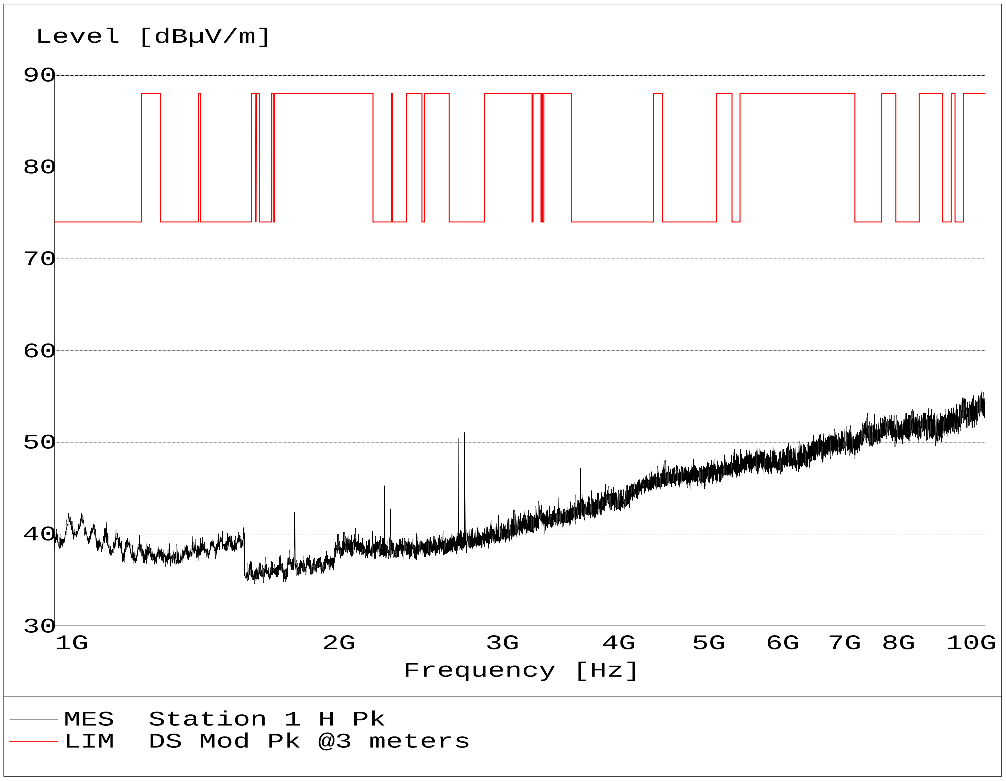

Figure E – 1 Base Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 1

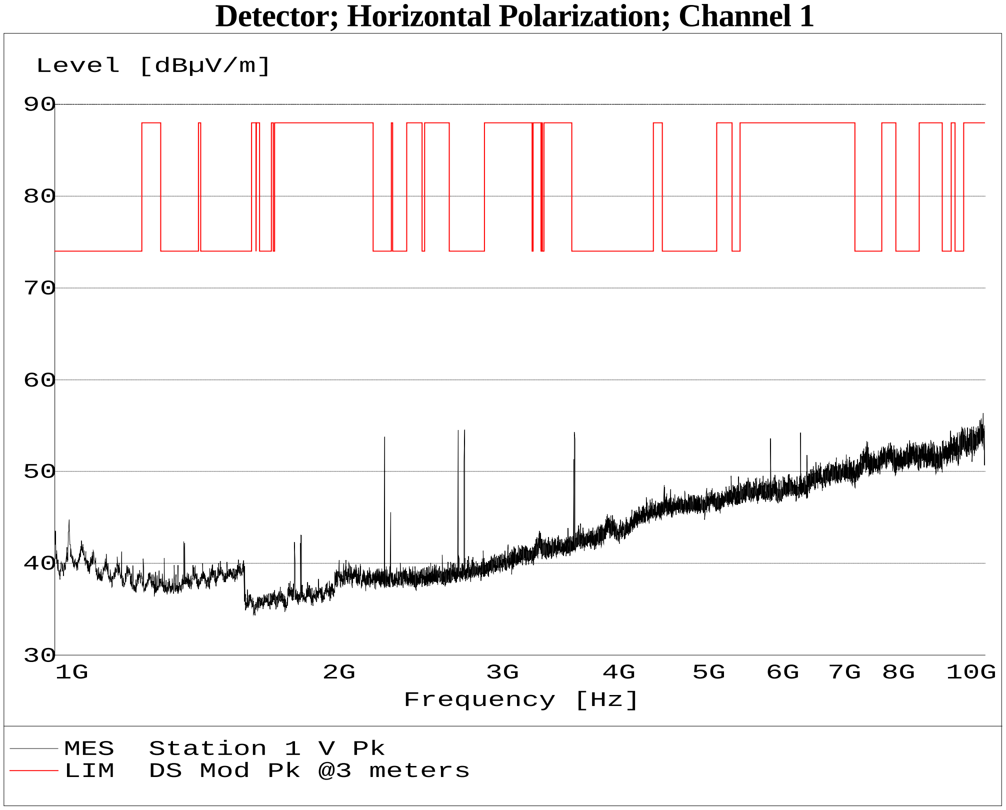

Figure E – 2 Base Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 1

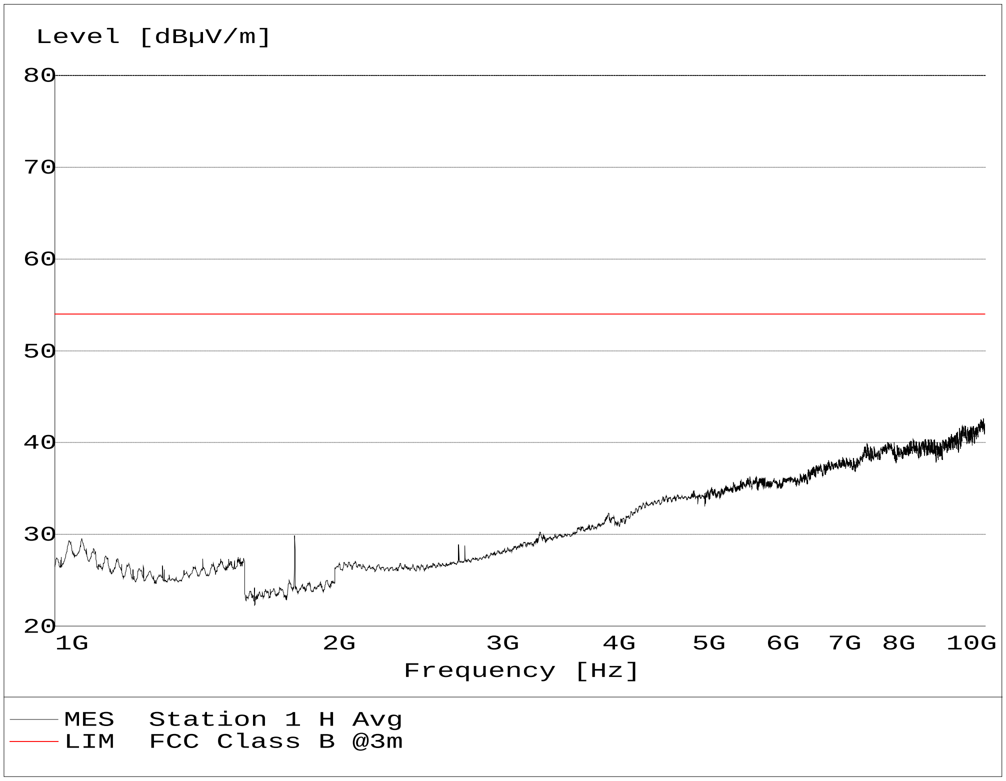

Figure E – 3 Base Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 1

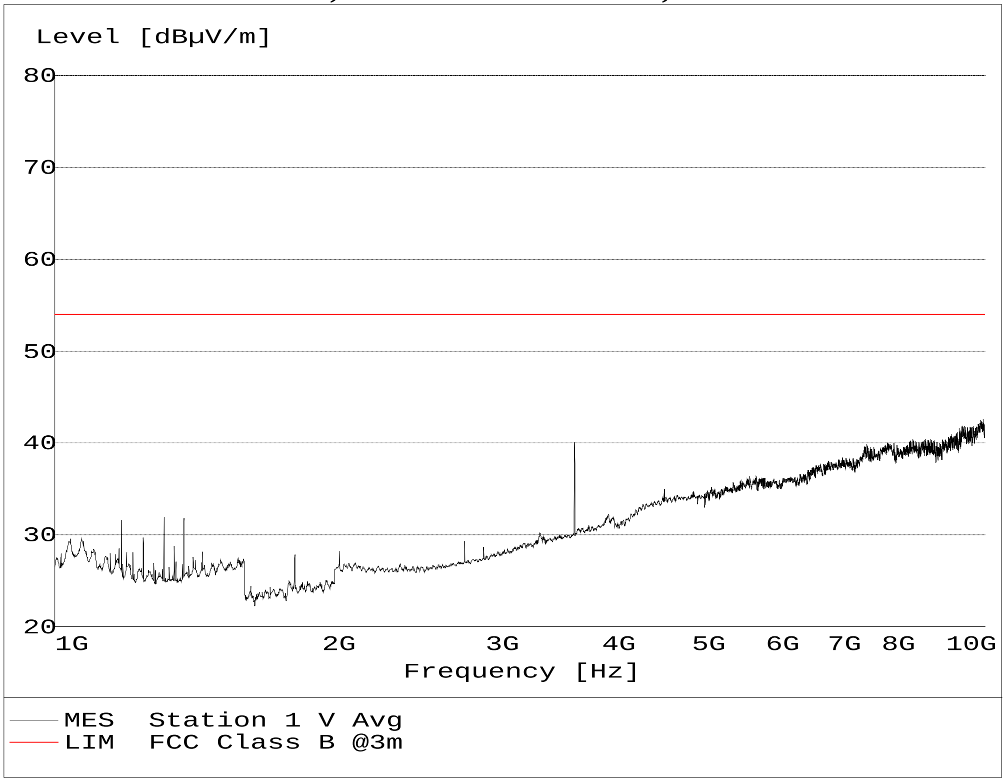

Figure E – 4 Base Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 1

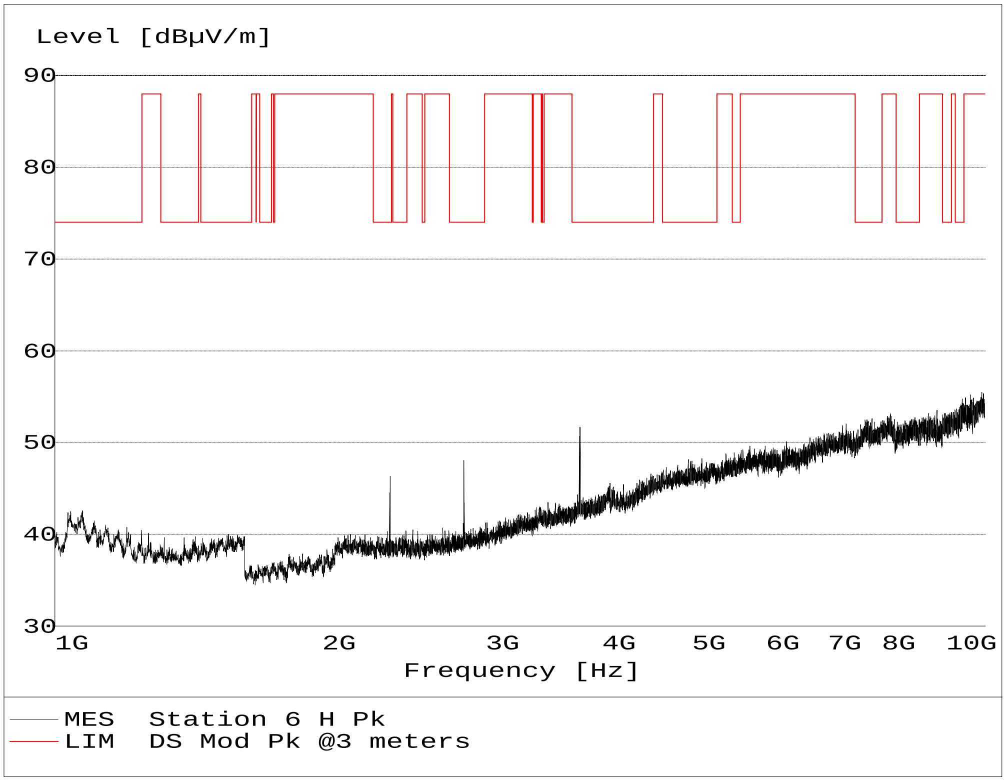

Figure E – 5 Base Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 6

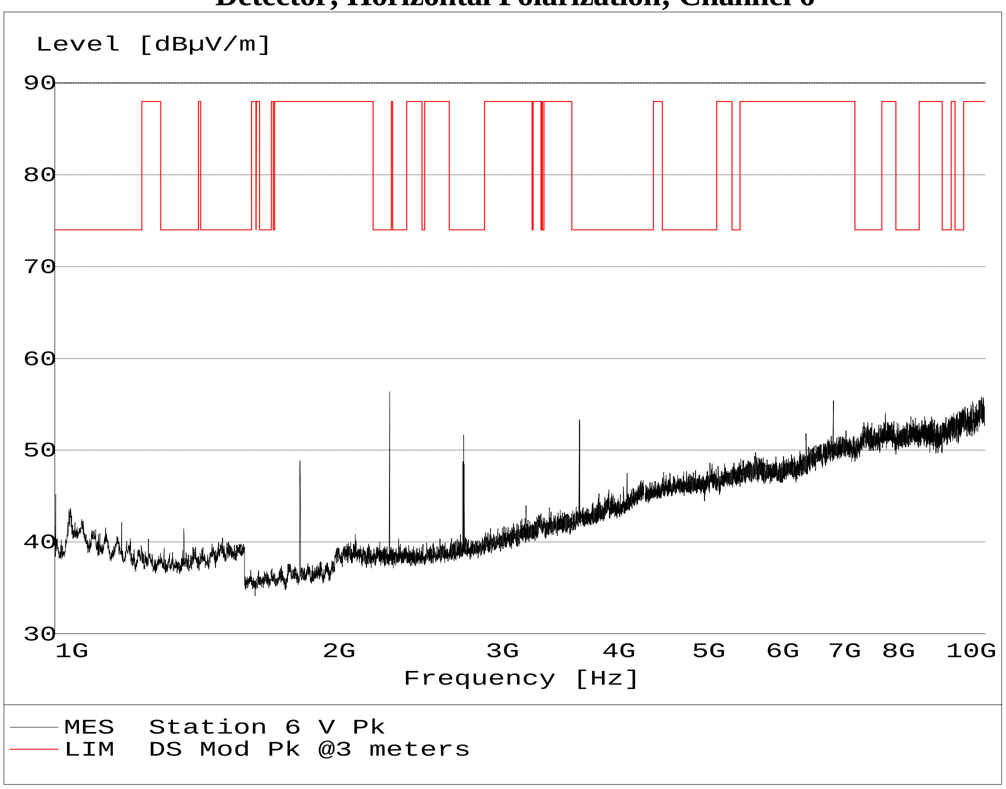

Figure E – 6 Base Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 6

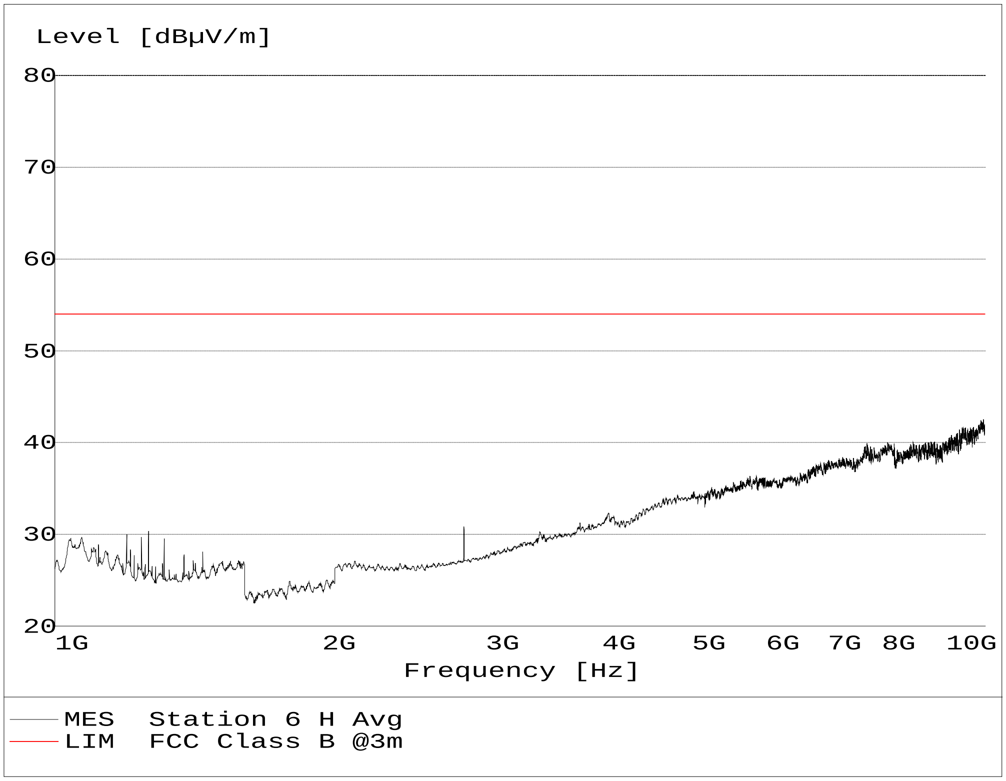

Figure E – 7 Base Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 6

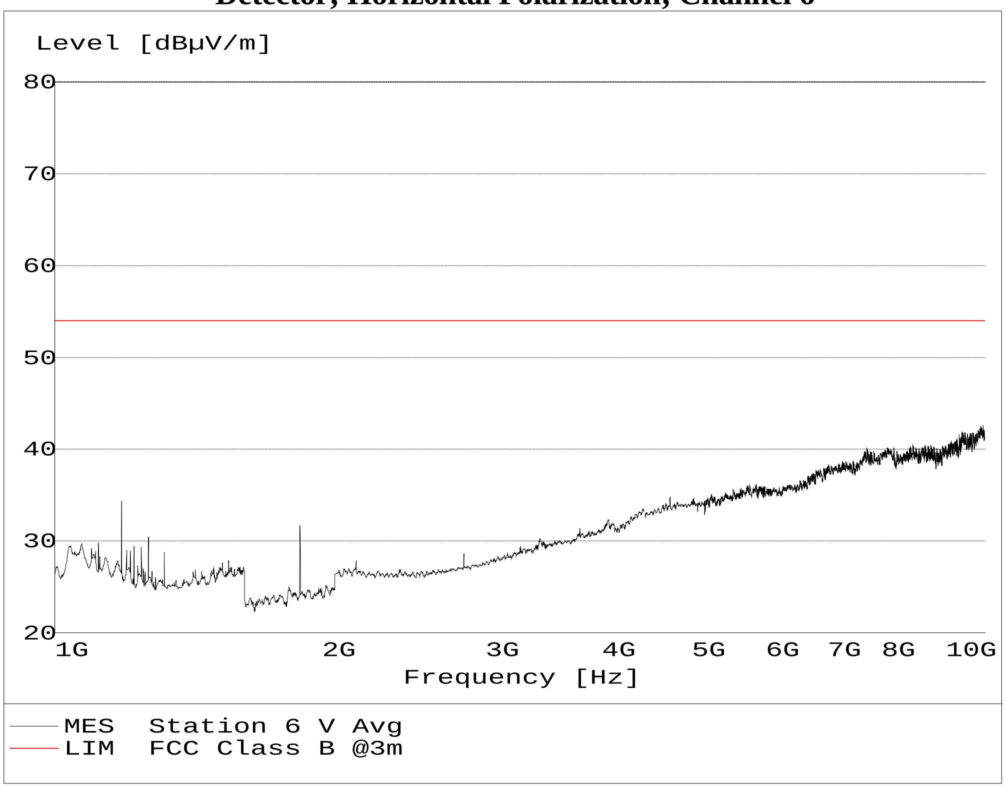

Figure E – 8 Base Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 6

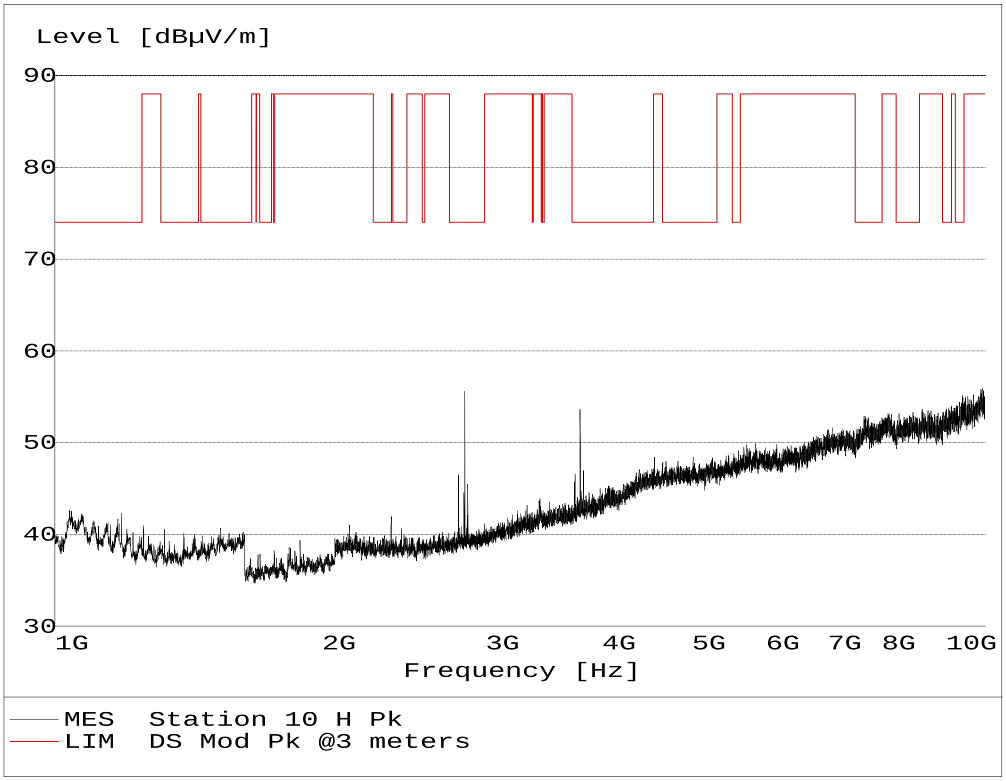

Figure E – 9 Base Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 10

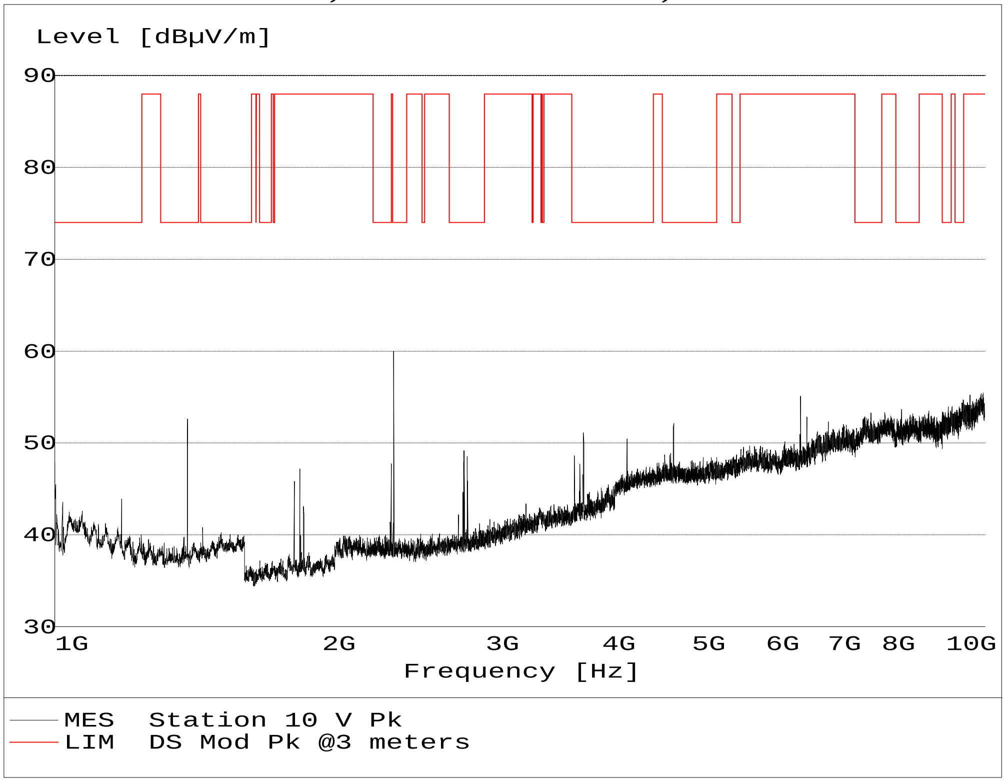

Figure E – 10 Base Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 10

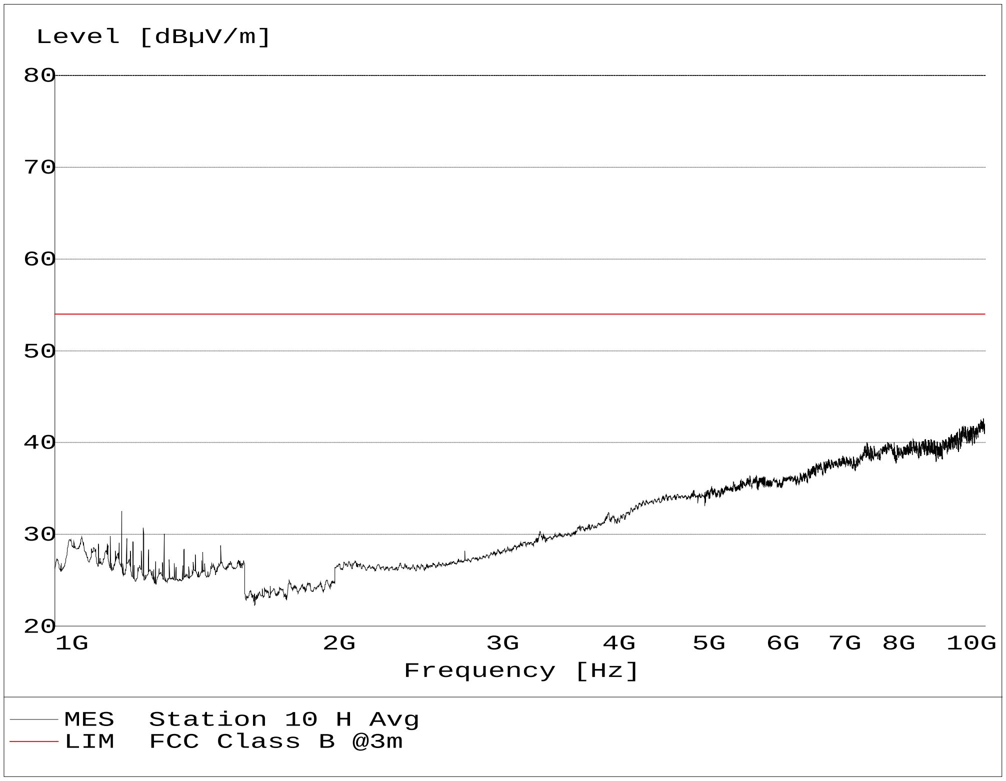

Figure E – 11 Base Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 10

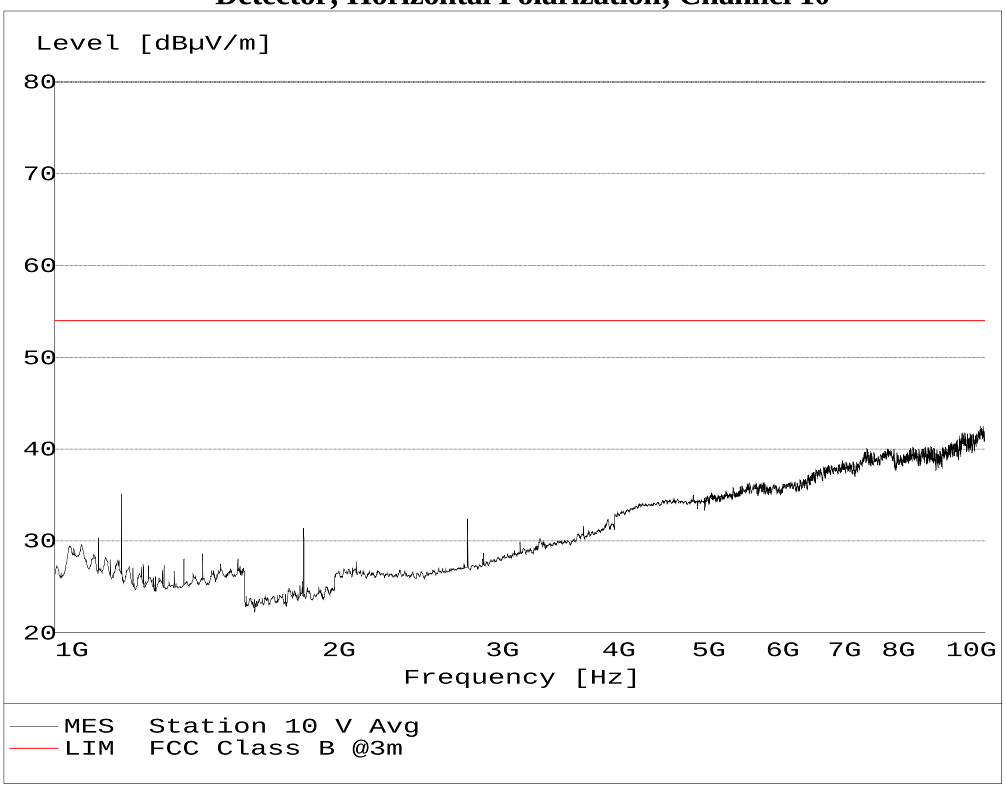

Figure E – 12 Base Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 10

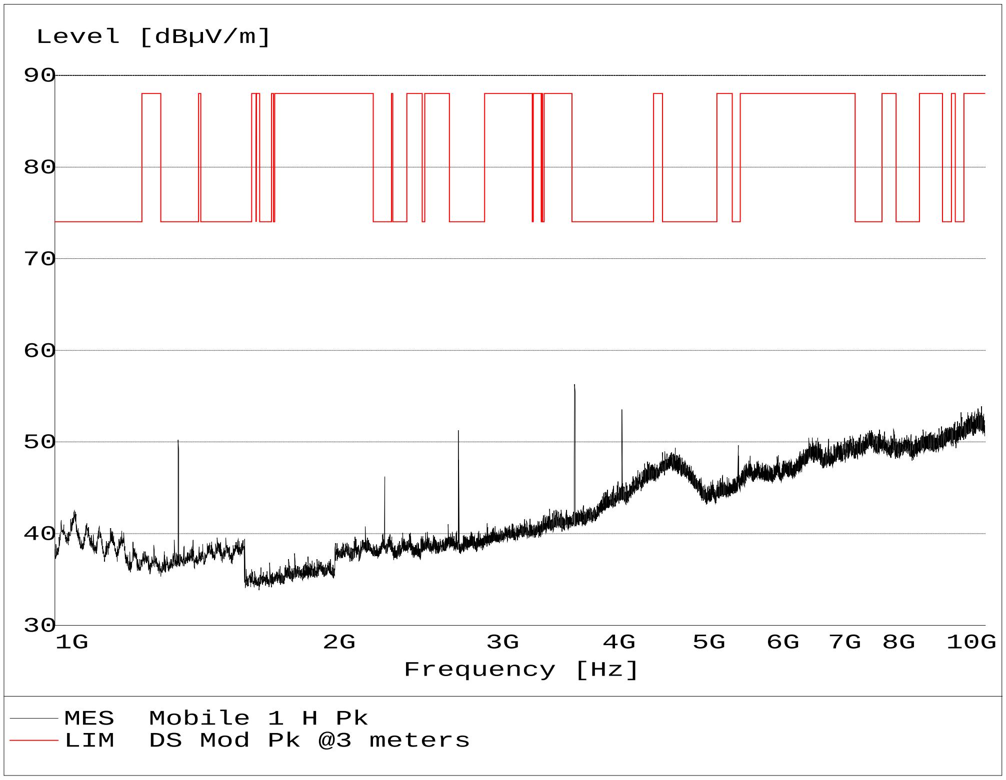

Figure E – 13 Mobile Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 1

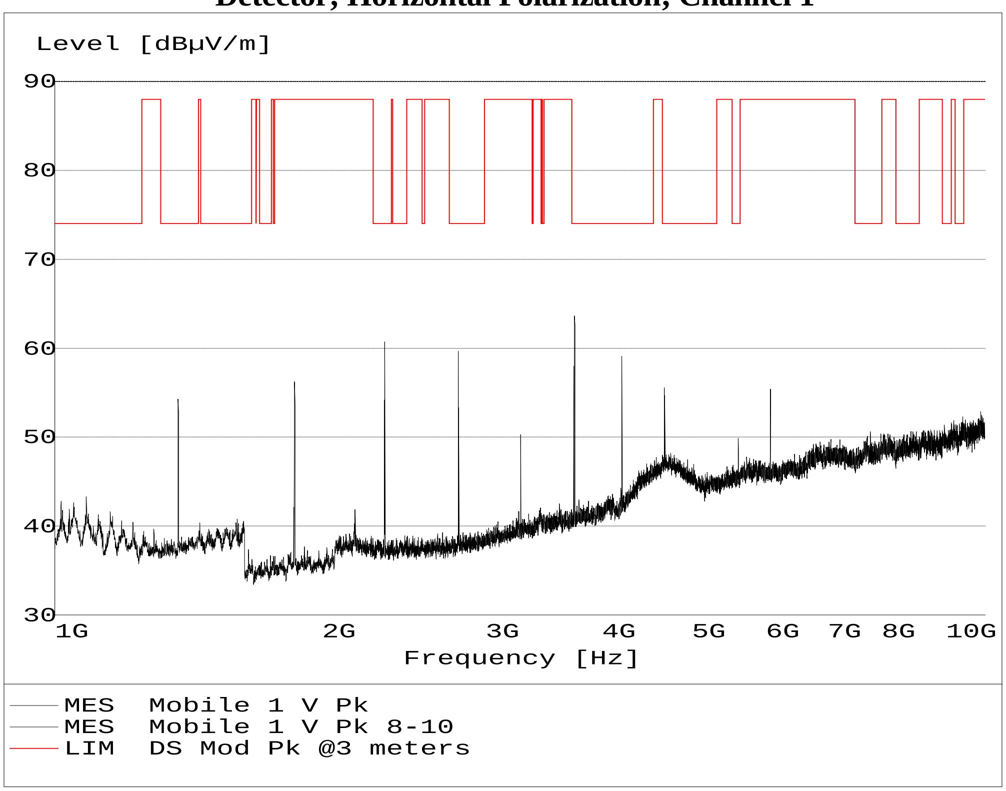

Figure E – 14 Mobile Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 1

Exhibit 06

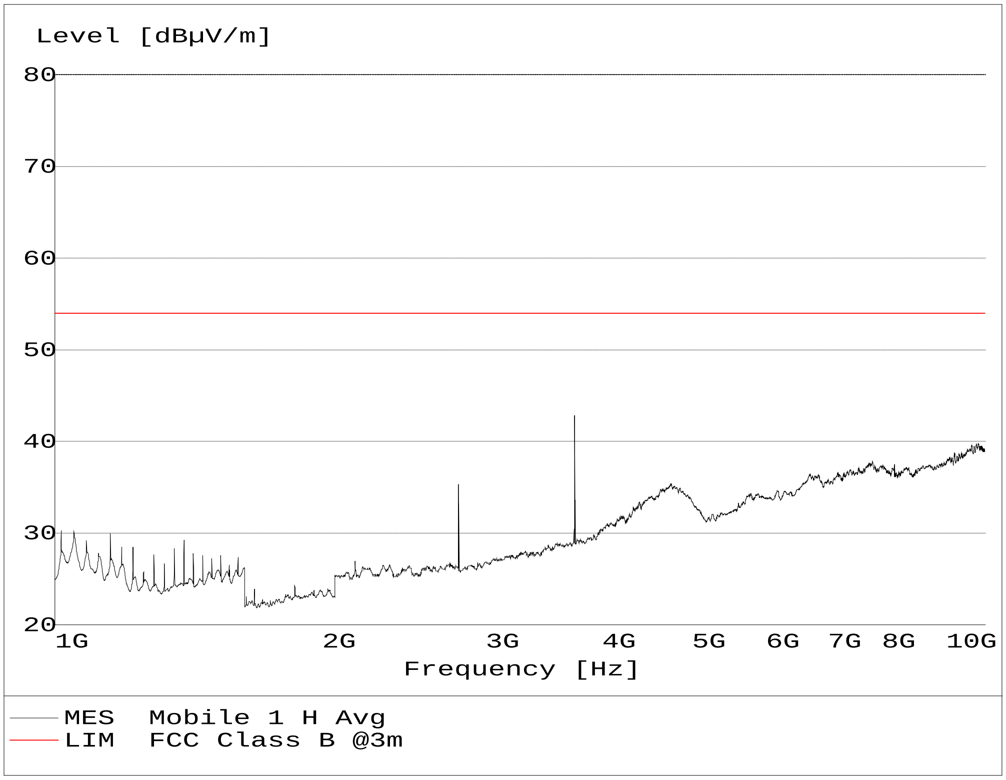

Figure E – 15 Mobile Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 1

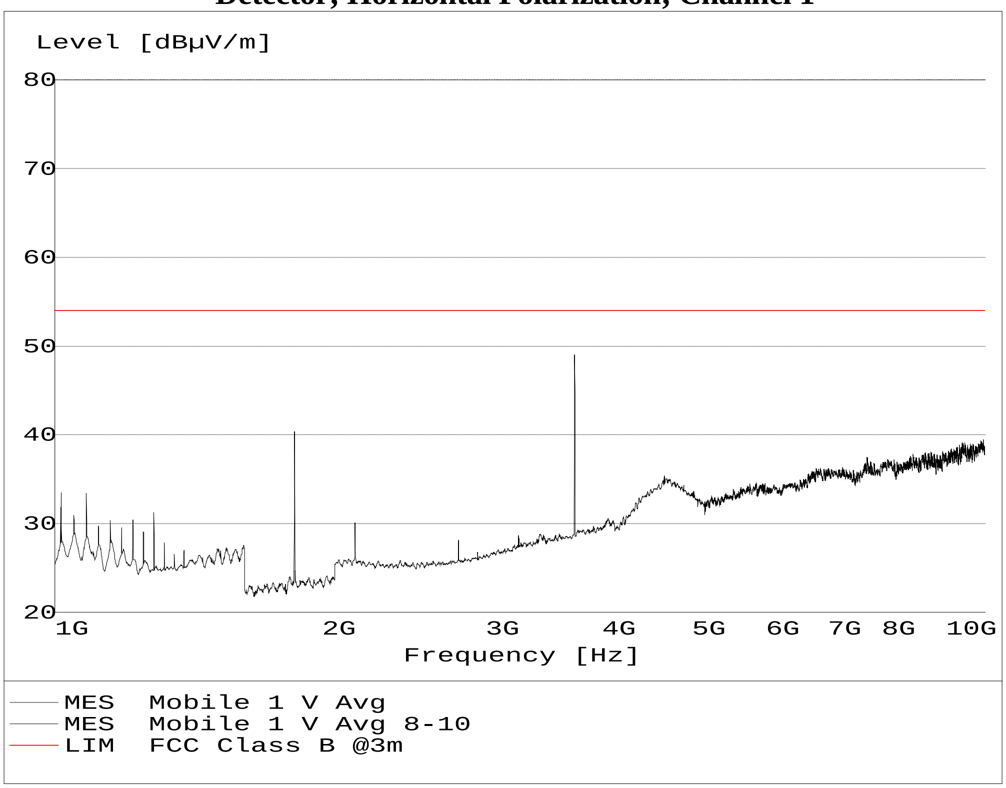

Figure E – 16 Mobile Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 1

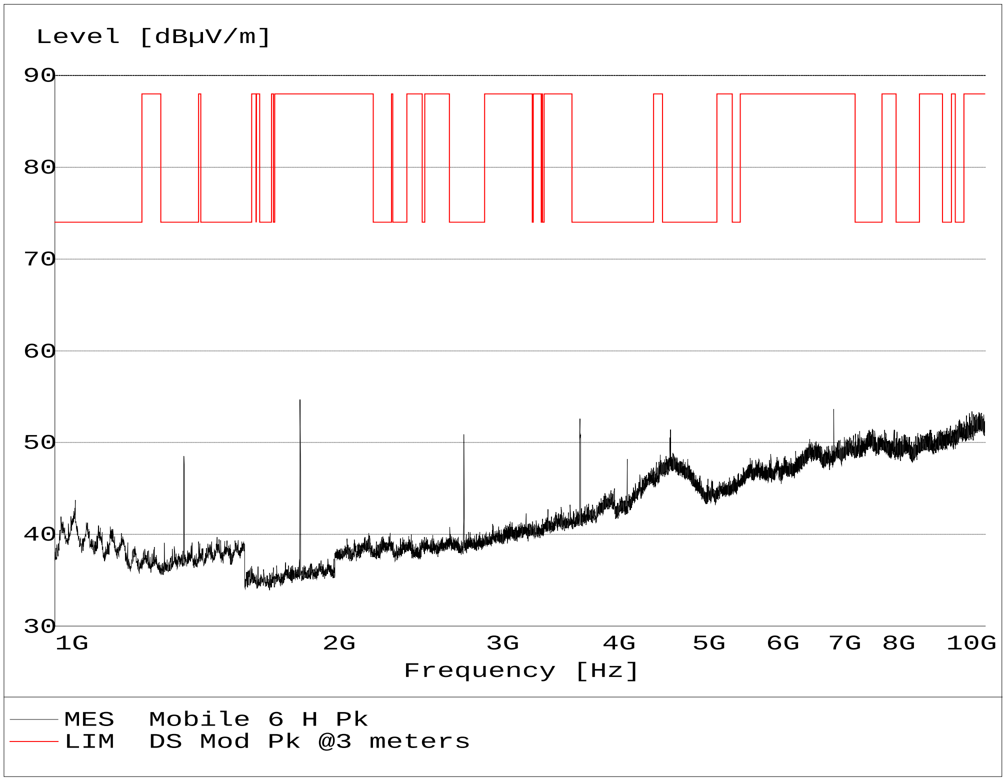

Figure E – 17 Mobile Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 6

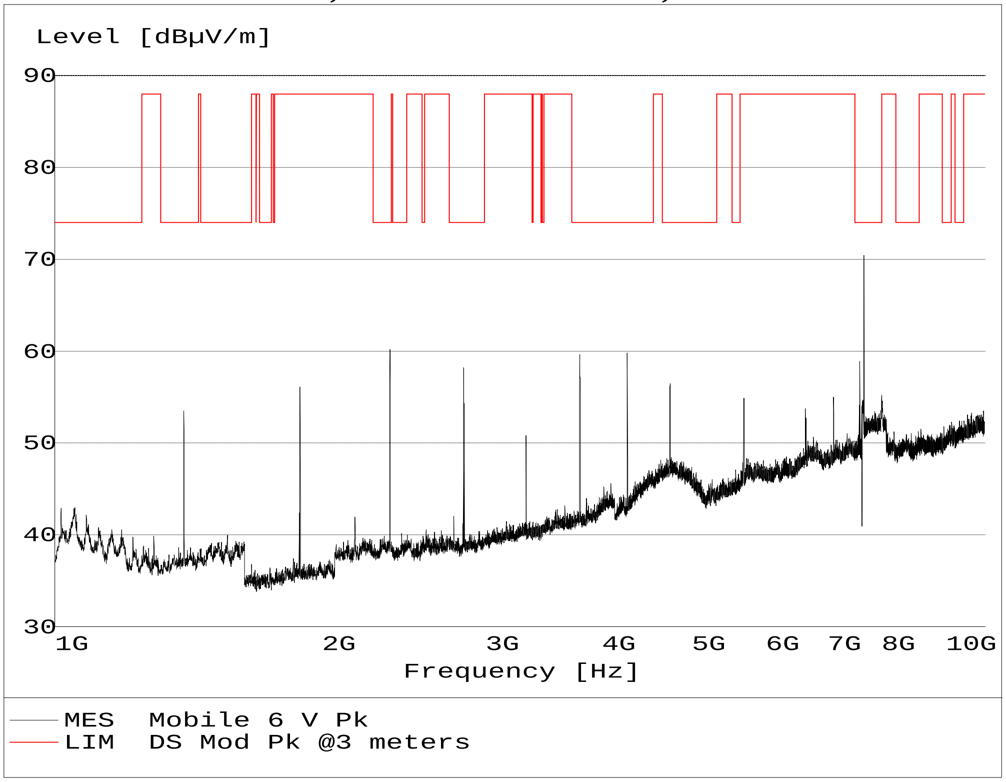

Figure E – 18 Mobile Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 6

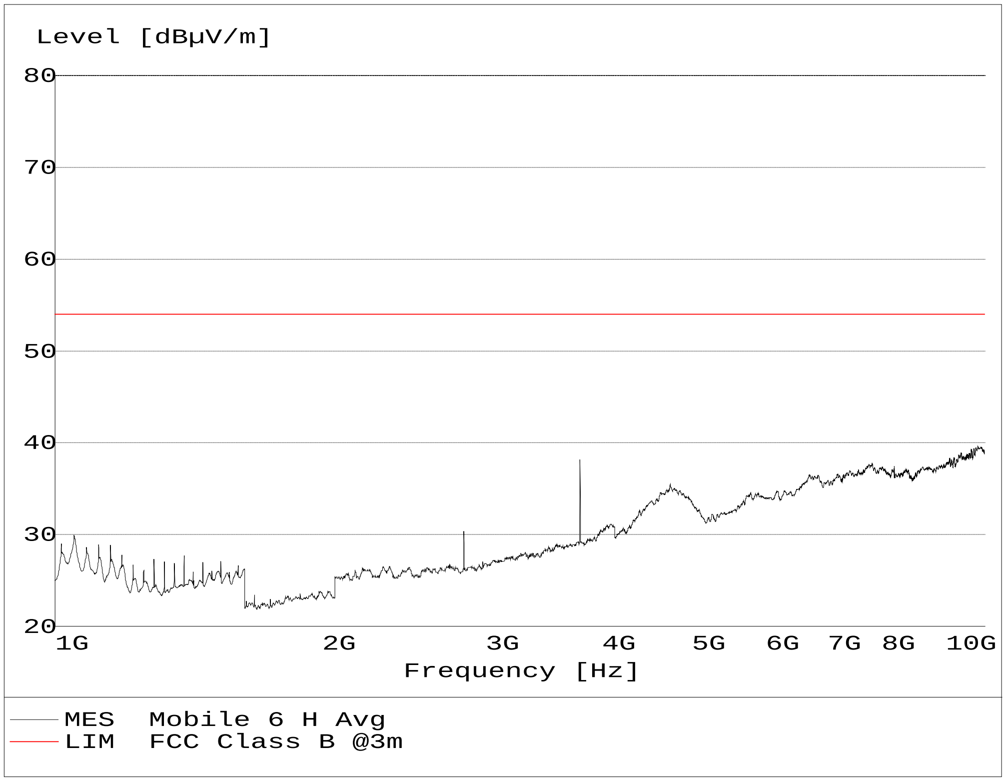

Figure E – 19 Mobile Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 6

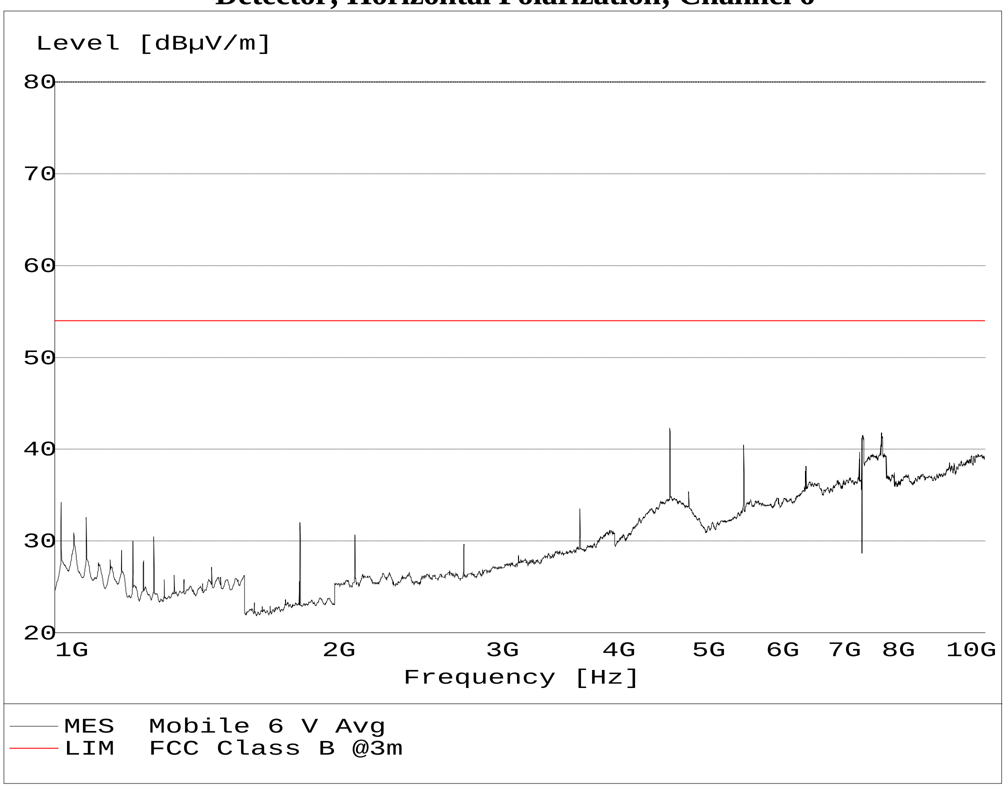

Figure E – 20 Mobile Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 6

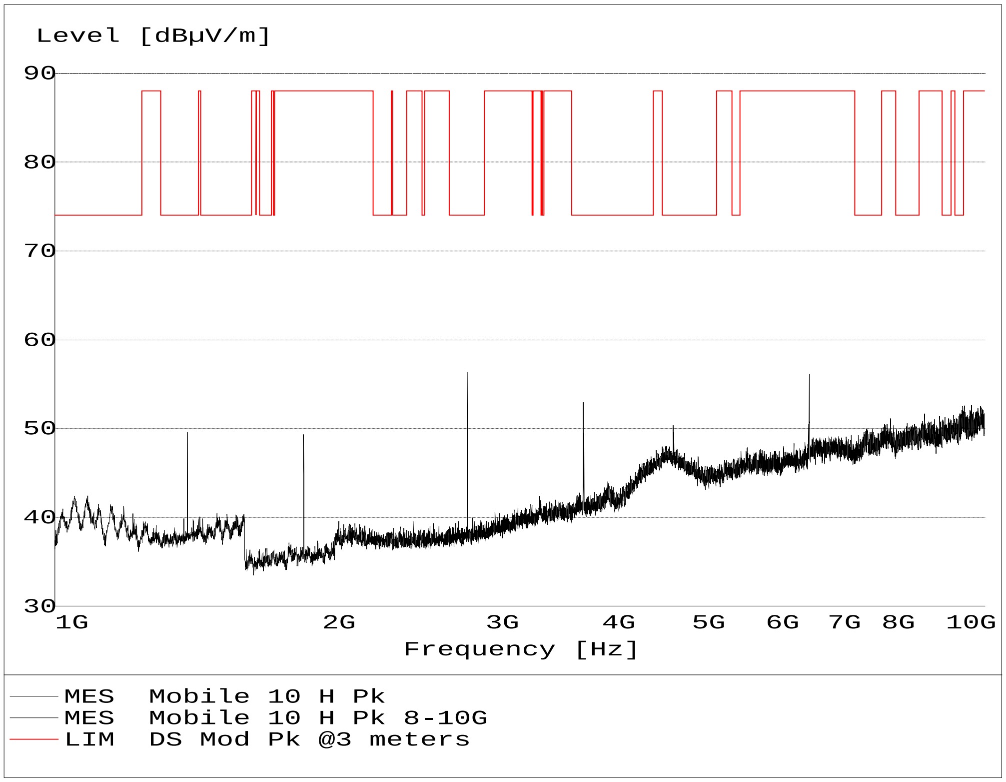

Figure E – 21 Mobile Station; Radiated Spurious Emissions; Peak Detector; Horizontal Polarization; Channel 10

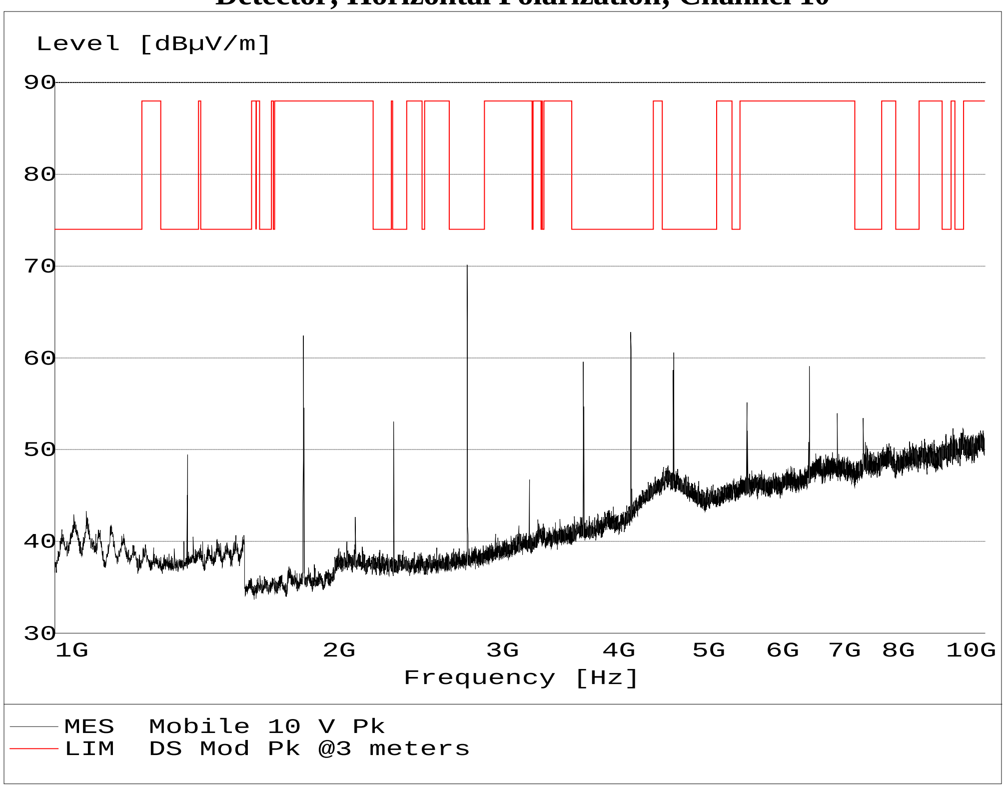

Figure E – 22 Mobile Station; Radiated Spurious Emissions; Peak Detector; Vertical Polarization; Channel 10

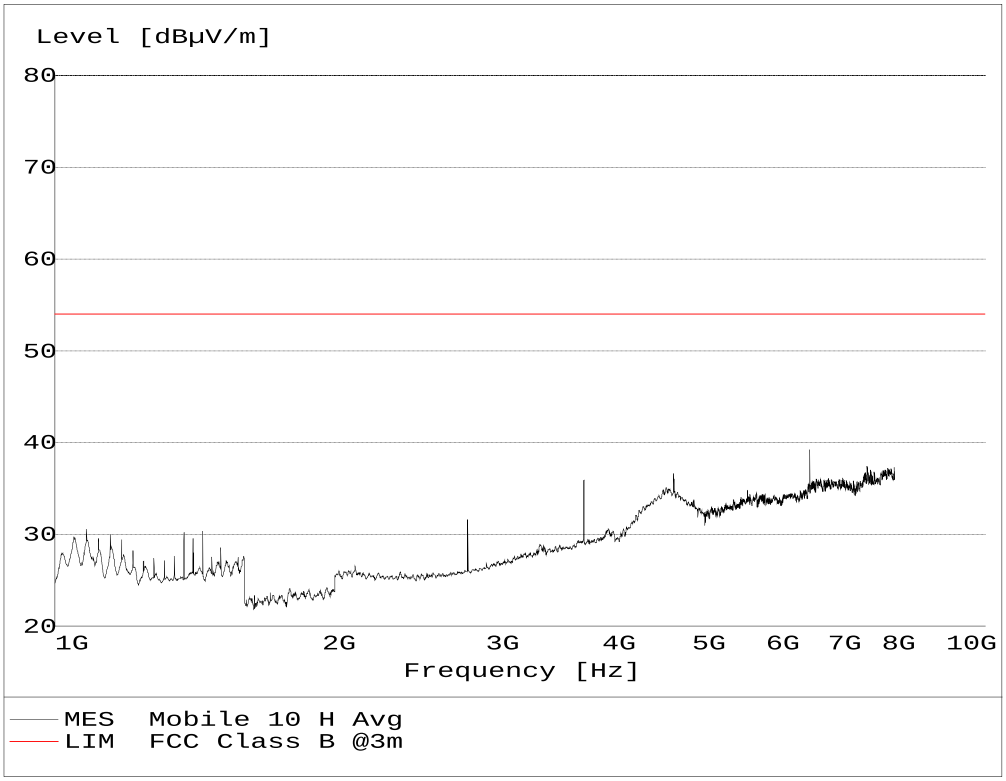

Figure E – 23 Mobile Station; Radiated Spurious Emissions; Average Detector; Horizontal Polarization; Channel 10

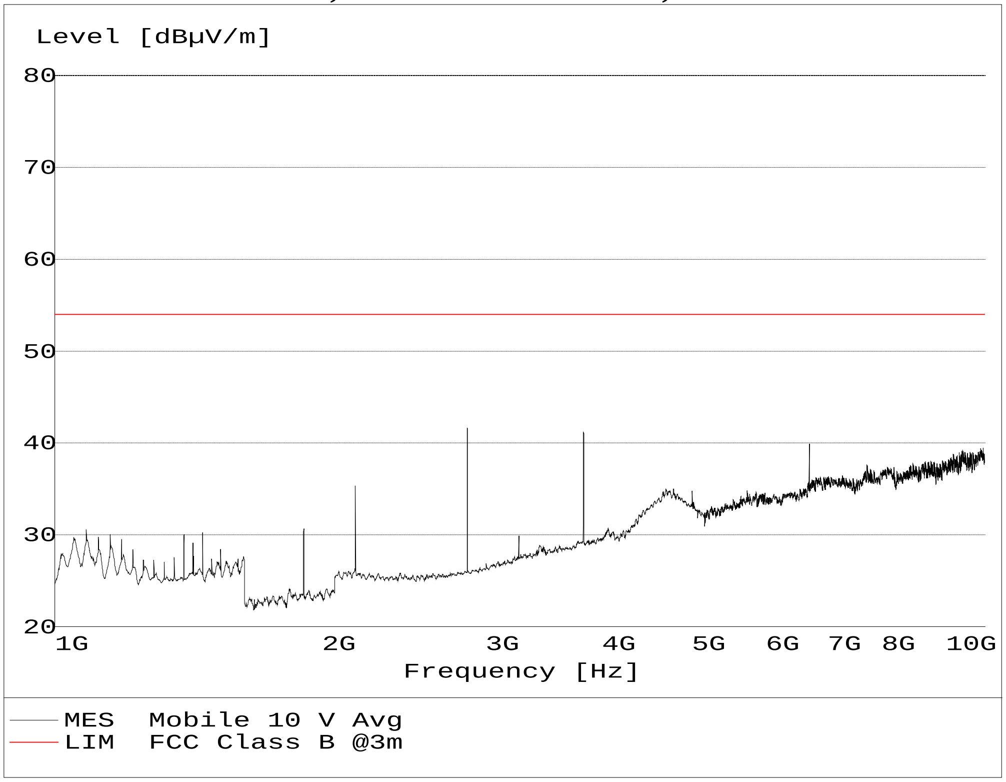

Figure E – 24 Mobile Station; Radiated Spurious Emissions; Average Detector; Vertical Polarization; Channel 10

Appendix F

AC Power Line Conducted

450 kHz - 30 MHz

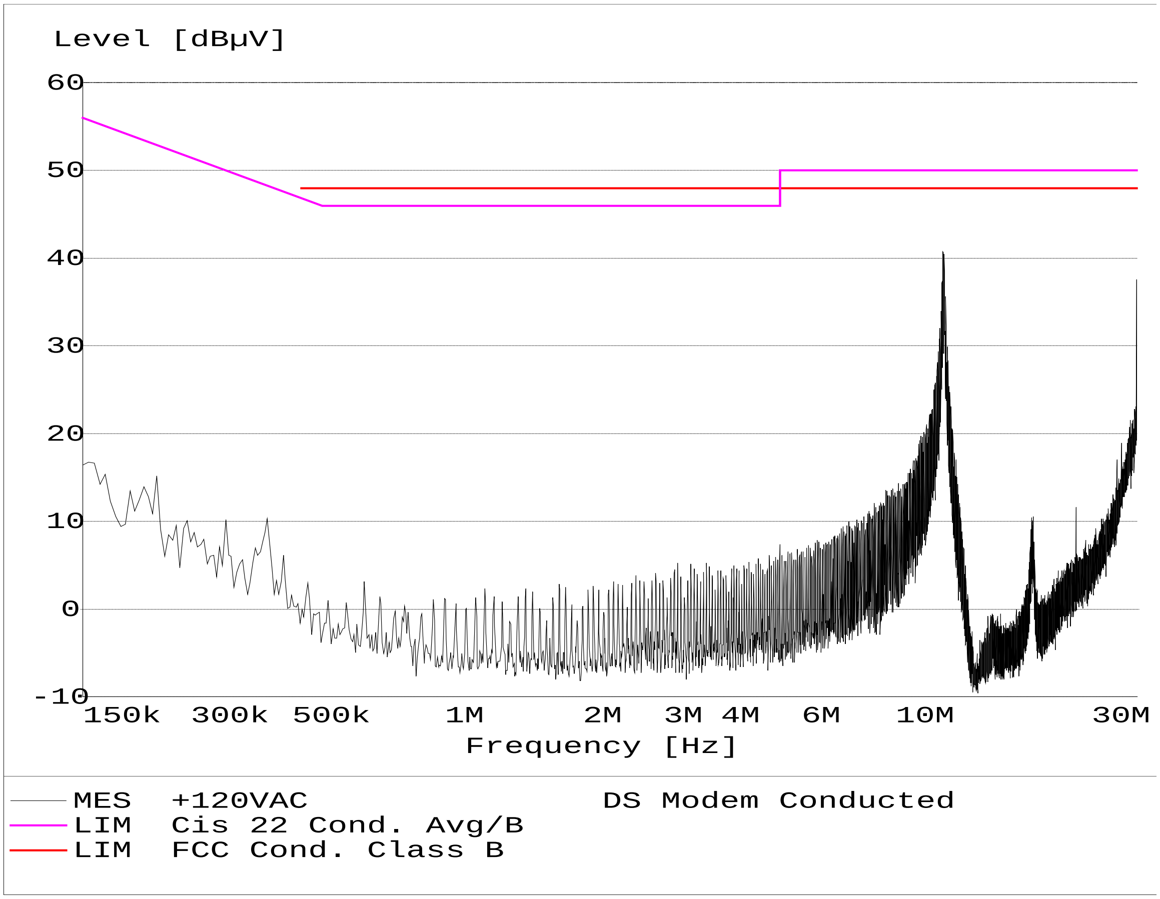

Figure F – 1 AC High Powerline Conducted Emissions; 450 kHz - 30 MHz

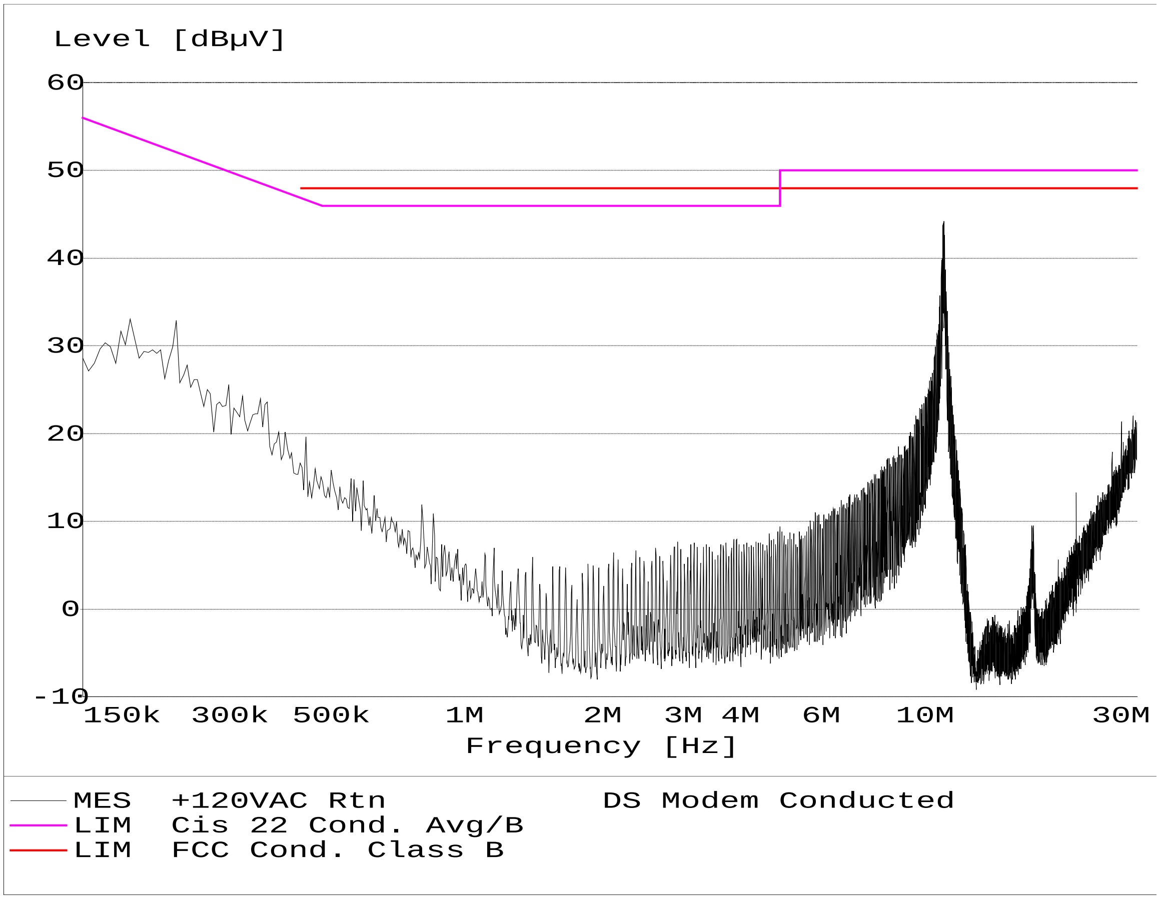

Figure F – 2 AC Neutral Powerline Conducted Emissions; 450 kHz - 30 MHz

Appendix G

Radiation Hazard - MPE

RF Energy Exposure Assessment Record

Product or Equipment Name:	DS Modem	Date:	6 Nov 2000
Program/Project Contact Person:	Geoff Day	Phone:	(408) 383-7548
		M/D:	CA48
Location of Product/Equipment:	Fixed locations		

1. RF Emitting Product or Equipment Description

Manufacturer: Motorola Indala

Model:	RTC Station (DS Modem Station) RTC (DS Modem Mobile)	Serial Number:	69946 (Station) NA (Mobile)

Describe the product or equipment, the environment(s) where it is used, and information about operators and others who might be exposed to its emitted RF energy.

The Mobile DS Modem is a low power Direct Sequence Spread Spectrum (DSSS) device intended for use in public transportation vehicles. It will provide a wireless local area network (WLAN) connection to an associated Station DS Modem. The typical installation of the mobile DS Modem is generally intended to be used in such a way that a separation of at least 20 cm is normally maintained between the antenna and any person as specified in 47 CFR 2.1091(b).

Frequencies of Operation (MHz): 902 – 928 MHz

Maximum Output Power Level (Watts): 20 $\pm$ 2 dBm

Modulation Characteristics: GMSK

If pulsed; Pulse duration: N/A Pulse repetition frequency (PRF): N/A

Duty cycle: N/A

Antenna description: Omni - directional (50 ohms)

Antenna gain: Unknown

Failure Modes

Are there credible failure modes in the product or equipment (hardware, software) or operations (controls, procedures, human error) that could cause the average output power to increase above the normal operating level?

Yes ________ No **X** If Yes, describe the failure mode, probability of occurrence of the failure, and the expected level of output power.

2. Maximum Permissible Exposure (MPE) Levels

MPE Levels based on ANSI/IEEE C95.1-1992 and 47 CFR 1.1310, Table 1 requirements, unless otherwise specified.

	Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Plane Wave Equiv. Power Density (S) (mW/cm^2)	Specific Absorption Rate (SAR) (mW/g)
Uncontrolled Environment	902-928	N/A	N/A	0.61	N/A

3. Measurement Results

Applicable Document: Radio Frequency (RF) Energy Exposure Test Procedure, Rev E.

DS Modem Station	Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Plane Wave Equiv. Power Density (S) (mW/cm^2)	Specific Absorption Rate (SAR) (mW/g)
Uncontrolled Environment	902-928	N/A	N/A	0.12	N/A

DS Modem Mobile	Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Plane Wave Equiv. Power Density (S) (mW/cm^2)	Specific Absorption Rate (SAR) (mW/g)
Uncontrolled Environment	902-928	N/A	N/A	0.09	N/A

Is the Maximum Permissible Exposure Level for an uncontrolled environment exceeded?

Yes ________ No __**X**__ If Yes, provide drawings to show the boundaries of the Restricted Access Area.

Is the Maximum Permissible Exposure Level for a controlled environment exceeded?

Yes ________ No __**X**__ If Yes, define and implement necessary controls.

4. RF Energy Measurement Equipment

Manufacturer	Description	Model	Asset No.	Date of Last Cal.	Cal. Due Date
Narda	Probe, E-Field, 300kHz-40GHz	8741	T57980	04/26/00	04/30/01
Narda	Electromagnetic Survey Meter	8718	G49076	03/07/00	03/31/01

Measurements made by: Steve Gooding Date: 6 Nov 2000

5. Required Hazard Controls

Fully describe all hazard controls to be implemented. Provide drawings and other attachments, as necessary, to describe Restricted Access Areas.

None required for its present configuration and intended state of use.

6. Review & Approval

______________________________ Date: ____________________

Gil Estrella
EMC Engineer

______________________________ Date: ____________________

Dwayne Awerkamp
EMC Engineering Manager

______________________________ Date: ____________________

Brent Marking
SSS RF Engineer