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Electromagnetic Emissions Test Report and Application for Grant of Equipment Authorization Class II Permissive Change pursuant to Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7 FCC Part 15 Subpart C on the GE MDS LLC Transmitter Model: MERCURY900

FCC ID: E5MDS-MERCURY900

GRANTEE: **GE MDS LLC** 175 Science Parkway Rochester, NY 14620

TEST SITE: Elliott Laboratories, Inc. 684 W. Maude Ave Sunnyvale, CA 94086

REPORT DATE: October 10, 2007

FINAL TEST DATE:

September 14, September 18 and September 24, 2007

AUTHORIZED SIGNATORY:

Mark E. Hill Staff Engineer



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REVISION HISTORY

Revision #	Date	Comments	Modified By
1	November 2, 2007	Initial Release	David Guidotti

TABLE OF CONTENTS

COVER PAGE	1
REVISION HISTORY	2
TABLE OF CONTENTS	3
SCOPE	5
OBJECTIVE	6
STATEMENT OF COMPLIANCE	6
TEST RESULTS SUMMARY	7
DIGITAL TRANSMISSION SYSTEMS (902 – 928 MHz) GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS	8
MEASUREMENT UNCERTAINTIES	9
EQUIPMENT UNDER TEST (EUT) DETAILS	10
GENERAL	
ANTENNA SYSTEM	
ENCLOSURE	
SUPPORT EQUIPMENT	
EUT INTERFACE PORTS	
EUT OPERATION	
PROPOSED MODIFICATION DETAILS	12
GENERAL	12
TEST SITE	13
GENERAL INFORMATION	
RADIATED EMISSIONS CONSIDERATIONS	
MEASUREMENT INSTRUMENTATION	14
RECEIVER SYSTEM	14
INSTRUMENT CONTROL COMPUTER	
FILTERS/ATTENUATORS	
ANTENNAS ANTENNA MAST AND EQUIPMENT TURNTABLE	13
INSTRUMENT CALIBRATION	
TEST PROCEDURES	16
EUT AND CABLE PLACEMENT	16
RADIATED EMISSIONS	
RADIATED EMISSIONS	
BANDWIDTH MEASUREMENTS	
SPECIFICATION LIMITS AND SAMPLE CALCULATIONS.	
GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS	
OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS	
TRANSMIT MODE SPURIOUS RADIATED EMISSION STSTEMS	
SAMPLE CALCULATIONS - CONDUCTED EMISSIONS	
SAMPLE CALCULATIONS - RADIATED EMISSIONS	21
SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION	22

TABLE OF CONTENTS (Continued)

EXHIBIT 1: Test Equipment Calibration Data	.1
EXHIBIT 2: Test Measurement Data	
EXHIBIT 3: Photographs of Test Configurations	.3
EXHIBIT 4: RF Exposure Information	
1 5	

SCOPE

An electromagnetic emissions test has been performed on the GE MDS LLC model MERCURY900 pursuant to the following rules:

Industry Canada RSS-Gen Issue 2 RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the GE MDS LLC model MERCURY900 and therefore apply only to the tested sample. The sample was selected and prepared by Dennis McCarthy of GE MDS LLC.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of GE MDS LLC model MERCURY900 complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 2 RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart B (Receivers) FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

TEST RESULTS SUMMARY

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses DSSS techniques	-	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	-	>500kHz	Note 1
	RSP100	99% Bandwidth	-	Information only	Note 1
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power, 902 – 928 MHz	Power level was verified to ensure output was equivalent to granted levels	1 Watt, EIRP limited to 4 Watts.	Note 1
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-	8dBm/3kHz	Note 1
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 9.28 GHz	-	< -20dBc	Note 1
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 9.28 GHz	53.9dBµV/m (495.5µV/m) @ 3792.0MHz (-0.1dB)	15.207 in restricted bands, all others < -20dBc	Complies

DIGITAL TRANSMISSION SYSTEMS (902 – 928 MHz)

Note 1: Test/Evaluation not performed. Not applicable to a permissive change for a new antenna.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Unit is professional installed	Requirement	Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	45.1dBμV/m (179.9μV/m) @ 299.984MHz		Complies (- 0.9 dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	-	-	Note 1
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non- interference	Note 1
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding detachable antenna	Note 1

Note 1: Test/Evaluation not performed. Not applicable to a permissive change for a new antenna.

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions Radiated Emissions	0.15 to 30 0.015 to 30	$\begin{array}{c} \pm 2.4 \\ \pm 3.0 \end{array}$
Radiated Emissions Radiated Emissions	30 to 1000 1000 to 40000	$\begin{array}{c} \pm 3.6 \\ \pm 6.0 \end{array}$

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The GE MDS LLC model MERCURY900 is a wireless transceiver which is designed to transmit and receive data. Normally, the EUT would be placed on a tabletop or rack mount during operation. The EUT was, therefore, placed in this position during emissions testing to simulate the end user environment. The electrical rating of the EUT, + 10-30 Vdc @ 3 amps max

The sample was received on September 14, 2007 and tested on September 14, September 18 and September 24, 2007. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
GE MDS LLC	MERCURY900	half duplex	-	E5MDS-
		wireless data		MERCURY900
		transceiver		

ANTENNA SYSTEM

There are two antenna's being evaulated: Kathrein, model OGB9-915, Omnidirectional antenna, 9 dBd (11.2 dBi) and Kathrein, model MF-900B, Half Parabolic Antenna, 14 dBd (16.2 dBi)

ENCLOSURE

The EUT enclosure is primarily constructed of diecast enclosure. It measures approximately. Dimensions: $5.715 \text{ H} \times 20 \text{ W} \times 12.382 \text{ D} \text{ cm}$. (2.25 H x 7.875 W x 4.875 D in.)

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

The following equipment was used as local support during testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	-	Laptop	-	DoC
TopWard	3603D	DC Power	-	-
-		Supply		

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Dort	Connected To	Cable(s)			
Port Connected To		Description	Shielded or Unshielded	Length(m)	
Serial	Computer	4 wire	Unshielded	1.0	
DC Power	DC Power Supply	2 wire	Unshielded	2.0	
RF Port	Antenna	Coax	Shielded	1.0	

EUT OPERATION

The EUT was configured to continuously transmit on the desired frequency. The output power level was also adjusted, as needed.

PROPOSED MODIFICATION DETAILS

GENERAL

This section details the modifications to the GE MDS LLC model MERCURY900 being proposed. All performance and construction deviations from the characteristics originally reported to the FCC are addressed.

There are two new antennas being added to the original MERCURY900 approval. All other elements of the device are identical to the original approval.

Kathrein, model OGB9-915, Omnidirectional antenna, 9 dBd (11.2 dBi) and Kathrein, model MF-900B, Half Parabolic Antenna, 14 dBd (16.2 dBi)

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on September 14, September 18 and September 24, 2007 at the Elliott Laboratories Open Area Test Site #Chamer 4 and OATS 4 or semi anechoic chamber #Chamer 4 and OATS 4 located at 684 West Maude Avenue, Sunnyvale, California or 41039 Boyce Road, Fremont, California Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a nonconductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

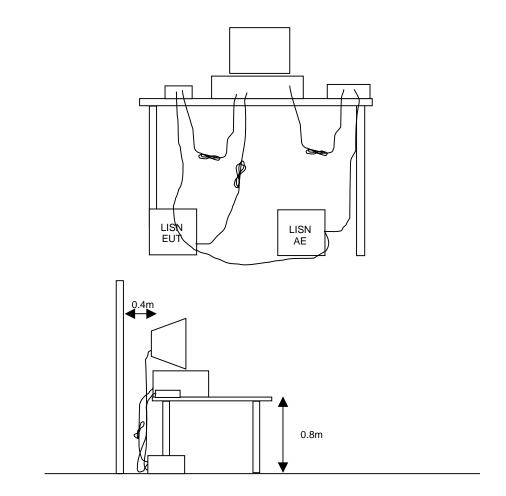
INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.



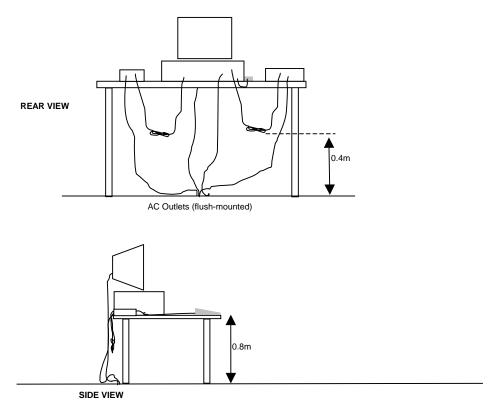
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



Typical Test Configuration for Radiated Field Strength Measurements

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	2400/F _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	24000/F _{KHz} @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 - 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 - 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 - 5850	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 - 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

 $R_r =$ Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

 $\begin{array}{lll} F_d &=& \text{Distance Factor in } dB \\ D_m &=& \text{Measurement Distance in meters} \\ D_s &=& \text{Specification Distance in meters} \end{array}$

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

 $M = R_c - L_s$

where:

 R_r = Receiver Reading in dBuV/m

- F_d = Distance Factor in dB
- R_c = Corrected Reading in dBuV/m
- L_S = Specification Limit in dBuV/m
- M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

 $E = \frac{1000000 \sqrt{30 P}}{3}$ microvolts per meter 3 where P is the eirp (Watts) EXHIBIT 1: Test Equipment Calibration Data

1 Page

Radiated Emissions, 30 - 2,800 MHz, 14-Sep-07 Engineer: Mehran Birgani

Engineer: Menran Birga	ani		
Manufacturer	Description	Model #	Asset # Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263 16-Mar-08
EMCO	Antenna, Horn, 1-18 GHz	3115	786 28-Nov-07
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	787 21-Dec-07
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630 11-Jan-08
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632 25-May-08
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657 03-May-08

Radiated Emissions, 1500 - 10,000 MHz, 18-Sep-07 Engineer: Suhaila Khushzad

Engineeri eanan				
Manufacturer	<u>Description</u>	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	16-Mar-08
EMCO	Antenna, Horn, 1-18 GHz	3115	786	28-Nov-07
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	30-Sep-07
Hewlett Packard	High Pass filter, 1.5 GHz (Purple System)	P/N 84300-80037 (84125C)	1769	08-Nov-07

EXHIBIT 2: Test Measurement Data

20 Pages

Elliott

EMC Test Data

v			
Client:	GE MDS LLC	Job Number:	J69053
Model:	Mercury HMR (FCC ID: E5MDS-MERCURY900) with	T-Log Number:	T69301
	9dBd Omni and 14dBd Parabolic Antenna	Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		-
Emissions Standard(s):	15.209, 15.247, RSS 210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

GE MDS LLC

Model

Mercury HMR (FCC ID: E5MDS-MERCURY900) with 9dBd Omni and 14dBd Parabolic Antenna

Date of Last Test: 10/26/2007

Elliott EMC Test Data Job Number: J69053 Client: GE MDS LLC Model: Mercury HMR (FCC ID: E5MDS-MERCURY900) with T-Log Number: T69301 9dBd Omni and 14dBd Parabolic Antenna Account Manger: Susan Pelzl Contact: Dennis McCarthy Emissions Standard(s): 15.209, 15.247, RSS 210 Class: Environment:

EUT INFORMATION

General Description

The EUT is a wireless transceiver which is designed to transmit and receive data. Normally, the EUT would be placed on a tabletop or rack mount during operation. The EUT was, therefore, placed in this position during emissions testing to simulate the end user environment. The electrical rating of the EUT, + 10-30 Vdc @ 3 amps max

Fauipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID							
GE MDS LLC	MERCURY900	Half Duplex wireless data	-	E5MDS-MERCURY900							

EUT Antenna (Intentional Radiators Only)

There are two antenna's being evaulated: Kathrein, model OGB9-915, Omnidirectional antenna, 9 dBd (11.2 dBi) and Kathrein, model MF-900B, Half Parabolic Antenna, 14 dBd (16.2 dBi)

The EUT requires professional installation and therefore is exempt from the requirement of 15.203. The output power is configured for each antenna to ensure the EIRP does not exceed 4 Watts, and the output power at the rf connector cannot exceed the maximum value reported in this test data. Radiated emissions were measured with the output power set to maximum and with the EUT antennas connected via a short length of cable, with negligible loss at the fundamental frequency.

EUT Enclosure

The EUT enclosure is primarily constructed of diecast enclosure. It measures approximately. Dimensions: 5.715 H x 20 W x 12.382 D cm. (2.25 H x 7.875 W x 4.875 D in.)

Modification History

Mod. #	Test	Date	Modification
1			
2			
3			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Immunity Standard(s): -

Client	GE MDS LLC		Job Number:	169053
	Mercury HMR (FCC ID: E5	MDS-MERCURY900) with	T-Log Number:	
Model.	9dBd Omni and 14dBd Par	-	Account Manger:	
Contact:	Dennis McCarthy			
	15.209, 15.247, RSS 210		Class:	-
Immunity Standard(s):	-		Environment:	-
	Te	st Configuration	#1	
	1	ocal Support Equipme		
Manufacturer	Model	Description	Serial Number	FCC ID
Dell	-	Laptop	-	DoC
TopWard	3603D	DC Power Supply	-	-
Manufacturer	Re Model	mote Support Equipme	ent Serial Number	FCC ID
-	-	-	-	-
Dut	Quantati	Cabling and Ports		
Port	Connected To	Description	Cable(s) Shielded or Unshield	lad Langth/m
Serial	Computer	4 wire	Unshielded	led Length(m) 1.0
DC Power	DC Power Supply	2 wire	Unshielded	2.0
RF Port	Antenna	Coax	Shielded	1.0
	, internet	ooux	Officiada	110
ie EUT was configured	•	eration During Emission the desired frequency. The		so adjusted, as needed.

	EIII	ott			ΕM	IC Test L
	GE MDS LLC			J	ob Number:	J69053
Model:	Mercury HMR	(FCC ID: E5MDS-MERCUR	Y900) with 9dBd Omni	T-L	og Number:	T69301
	and 14dBd Pa	arabolic Antenna		Accou	nt Manager:	Susan Pelzl
	Dennis McCa	5				
Standard:	15.209, 15.24	7, RSS 210			Class:	N/A
Da Test Test General	te of Test: 9/2 Engineer: Raf Location: Fre Test Config nd all local sup	e objective of this test sessior cification listed above. 4/2007 ael Varelas mont Chamber #4	Config. Used: Config Change: EUT Voltage: on the turntable for radi	: 1 : None : 15.8VDC		
		sting the measurement anten		s from the El	JT.	
Ambient	Conditions	: Temperature: Rel. Humidity:	23.7 °C 48 %			
	y of Results	;				
Summary	-		Limit	Pass / Fail		/ Margin
Summary Rur	ו #	Test Performed	Limit			lBµV/m

Deviations From The Standard

No deviations were made from the requirements of the standard.

	Εl	lic	ott	I				EMC Test Data
	GE MDS I						J	ob Number: J69053
Madal	Mercury H	IMR (FC	C ID: E5MD	S-MERCUF	RY900) with 9	dBd Omni	T-L	og Number: T69301
Model:	-	14dBd Parabolic Antenna						nt Manager: Susan Pelzl
Contact:	Dennis Mo	ennis McCarthy						
Standard:	15.209, 15	5.247, RS	SS 210					Class: N/A
				30 - 10000	MHz Opera	ting Mode: 1	75 MHz B	
tun #1a: L UT at 1.75 undamen	₋ow Chanr 5 MHz RF E tal Signal	nel @ 90 BW, Omi Field Str	3 MHz ni antenna, rength: Pea	Power set k value me	ting 30 asured in 10	0kHz		
requency		Pol	15.209/		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
903.000 903.000	128.4 107.9	V H	-	-	PK PK	307 201	1.7 1.7	RB = VB = 100kHz RB = VB = 100kHz
903.000	107.9	п		-	FN	201	1.7	RD = VD = 100R12
			@ 3m in 100 ide of restric		1	dBµV/m dBµV/m	Limit is -20	dBc (Peak power measurement)
90.0 80.0	p-							
(w/m) 60.0 50.0 40.0								
 	í		T	•				
월 50.0 북동)-							
ية 40.0 30.0	MU	mannel	showing	Lumm			ogenner fan brekel	مى ئەتىرىنى ئەتىرىكى ئەتىرىكى ئەستىرىنىڭ ئەستىرىنىڭ ئەتىرىكى ئەتىرىكى ئەتىرىكى ئەتىرىكى ئەتىرىكى ئەتىرىكى ئەتى ئىلەر ئىلەر ئەتىرىكى ئ
) 1500 2000		3000	4000	5000	6000 ency (MHz)	7000	8000 9000 10000
20.1								
ther Spur	rious Emis		15 200	15 247	Dotostor	Azimuth	Uniobt	Commonte
ther Spur	Level	Pol	15.209 /		Detector	Azimuth	Height	Comments
ther Spur requency MHz	Level dBµV/m	Pol v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments
ther Spur requency MHz 3792.010	Level dBµV/m 53.1	Pol v/h V	Limit 54.0	Margin -0.9	Pk/QP/Avg AVG	degrees 219	meters 1.0	Comments
ther Spur requency MHz 3792.010 2712.660	Level dBµV/m	Pol v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments
ther Spur requency MHz 3792.010 2712.660 2712.660	Level dBµV/m 53.1 52.7	Pol v/h V V	Limit 54.0 54.0	Margin -0.9 -1.3	Pk/QP/Avg AVG AVG	degrees 219 184	meters 1.0 1.1	Comments
ther Spur requency MHz 3792.010 2712.660 2712.660 3615.890	Level dBµV/m 53.1 52.7 69.8	Pol V/h V V V H H	Limit 54.0 54.0 74.0	Margin -0.9 -1.3 -4.2	Pk/QP/Avg AVG AVG PK	degrees 219 184 184	meters 1.0 1.1 1.1	Comments
ther Spur requency MHz 3792.010 2712.660 2712.660 3615.890 3615.890 3792.010	Level dBµV/m 53.1 52.7 69.8 68.4 46.9 54.8	Pol V/h V V V H H V	Limit 54.0 54.0 74.0 74.0 54.0 74.0	Margin -0.9 -1.3 -4.2 -5.6 -7.1 -19.2	Pk/QP/Avg AVG AVG PK PK AVG PK	degrees 219 184 184 99 99 99 219	meters 1.0 1.1 1.1 1.3 1.3 1.0	
ther Spur requency MHz 3792.010 2712.660 2712.660 2712.660 3615.890 3615.890 3792.010	Level dBµV/m 53.1 52.7 69.8 68.4 46.9	Pol V/h V V V H H	Limit 54.0 54.0 74.0 74.0 54.0	Margin -0.9 -1.3 -4.2 -5.6 -7.1	Pk/QP/Avg AVG AVG PK PK AVG	degrees 219 184 184 99 99	meters 1.0 1.1 1.1 1.3 1.3	Comments
Other Spur	Level dBµV/m 53.1 52.7 69.8 68.4 46.9 54.8 86.0 For emissi the level o	Pol v/h V V H H V V v ions in re	Limit 54.0 54.0 74.0 74.0 54.0 74.0 108.4 estricted ban damental ar	Margin -0.9 -1.3 -4.2 -5.6 -7.1 -19.2 -22.4 ids, the limi ad measure	Pk/QP/Avg AVG PK PK AVG PK PK Peak t of 15.209 w d in 100kHz.	degrees 219 184 184 99 99 219 219	meters 1.0 1.1 1.3 1.3 1.0 1.6 r all other e	Non-restricted missions, the limit was set 20dB bel

C										
Client:	GE MDS	LLC					J	lob Number:	J69053	
Ma dal	Mercury H	IMR (FC	C ID: E5MD	S-MERCU	RY900) with 9	dBd Omni	T-L	og Number:	T69301	
Model:			olic Antenna		,			-	Susan Pelzl	
Contact:	Dennis Me	cCarthy						5		
	15.209, 1	,	SS 210					Class:	N/A	
Run #1b:(EUT at 1.75			914 MHz ni antenna,	Power set	tina 30					
					asured in 10	OkHz				
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
914.000	128.8	V	-	-	PK	306	1.7	RB = VB =		
914.000	106.5	Н	-	-	PK	149	2.5	RB = VB =	100kHz	
<u> </u>		<u> </u>	<u> </u>		100.0		Ì			
	ntal emissi	on level	@ 3m in 100			dBµV/m				
										. `
80. 70.	0-		ide of restric	cted bands:	108.8	dBµV/m	Limit is -20	ldBc (Peak p	ower measure	ement)
80. 70. (ɯ/ʌnɡp) spnɪjidɯ¥ 30.		Ladaya waa	-			James		u, say jurada a s	-	u.e.l.e.
80. 70. (W/\ngp) ppnjijdwy 30.		Ladaya waa	-			James		u, say jurada a s	ower measure	u.e.l.e.
80. 70. (m/\ngp) apnilidumy 50. 950. 40. 40. 20.		Ladaya waa	3000			6000		u, say jurada a s	-	u.e.l.e.
80. 70. (m/\ngp) apnilidumy 50. 950. 40. 40. 20.		L MJ Y L M V	3000	4000	۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰	6000 ency (MHz)		8000	-	u.e.l.e.
80, 70, (Jan 20, 20, 70, 80, 70, 20, 70, 70, 70, 20, 70, 70, 70, 70, 70, 70, 70, 70, 70, 7	0 - 0 - 0 - 0 - 0 - 0 - 1500 200	lund y y y y y y y y y y y y y y y y y y y	3000	4000	5000 Frequ	6000 ency (MHz) Azimuth	7000	8000	-	u.e.l.e.
80. 70. (Jan 20. 20. 70. 80. 70. 80. 80. 80. 80. 80. 80. 80. 80. 80. 8	0 - 0 - 0 - 0 - 0 - 0 - 1500 200	lund y y y y y y y y y y y y y y y y y y y	3000	4000	5000 Frequ	6000 ency (MHz) Azimuth	7000	8000	-	u.e.l.e.
80. 70. (m/ ngp) 900 100 100 100 100 100 100 100 100 100	0 - 0 - 0 - 0 - 0 - 0 - 1500 2000 Level dBµV/m ing 20	0 Pol V/h V	15.209 J Limit	4000 / 15.247 Margin	5000 Frequ Detector Pk/QP/Avg	6000 ency (MHz) Azimuth degrees	7000 Height meters	8000	-	u.e.l.e.
80. 70. (m) (m) 60. (m) 60. (m) 50. 30. 30. 20. 70 (m) 7) (m) 7) (m) 7)	0 - 0 - 0 - 0 - 0 - 0 - 1500 200 Level dBμV/m ing 20 53.6	l dul y un d o Pol V	15.209 / Limit	/ 15.247 Margin -0.4	5000 Frequ Detector Pk/QP/Avg	6000 ency (MHz) Azimuth degrees	7000 Height neters	8000	-	u.e.l.e.
80, 70, (III) 60, PD 50, PD 50, 30, 30, 20, 20, Trequency MHz 20, 20, 20, 20, 20, 20, 20, 20, 20, 20,	0 - 0 - 0 - 0 - 0 - 0 - 1500 200 Level dBµV/m ing 20 53.6 53.3	0 Pol V/h V	15.209 Limit 54.0 54.0	4000 / 15.247 Margin -0.4 -0.7	5000 Frequ Detector Pk/QP/Avg AVG AVG	6000 ency (MHz) Azimuth degrees 169 164	Topoo Height meters 1.3 1.1	8000	-	u.e.l.e.
80. 70. (J) ngp) = 50. 50. 30. 20.	0 - 0 - 0 - 0 - 0 - 0 - 1500 200 Level dBµV/m ing 20 53.6 53.3 53.0	Pol V V V	15.209 Limit 54.0 54.0 54.0	4000 / 15.247 Margin -0.4 -0.7 -1.0	5000 Frequ Detector Pk/QP/Avg AVG AVG AVG	6000 ency (MHz) Azimuth degrees 169 164 157	Height 1.3 1.1 1.6	8000	-	u.e.l.e.

			ott	l				EM	C Test Data
Client:	GE MDS I	LLC					J	ob Number:	J69053
	Mercury H	IMR (FC	C ID: E5MD	S-MERCUF	RY900) with 9	9dBd Omni	T-L	og Number:	T69301
Model:			lic Antenna				Accou	nt Manager:	Susan Pelzl
Contact:	Dennis Mo	cCarthy							
	15.209, 15	,	SS 210					Class:	N/A
	igh Chanr								
			ni antenna,	Power set	tina 30				
					asured in 10	0kHz			
requency	× ·	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
927.000	129.3	V	-	-	PK	293	1.7	RB = VB =	
927.000	104.6	Н	-	-	PK	223	1.0	RB = VB =	100kHz
<u> </u>		<u> </u>	<u> </u>		100.0	15.1.0	1		
			@ 3m in 100			dBµV/m	Limitic 20	dDa (Daalar	Notice manage manage
LIMI	i iui emissi	UNS OUIS	ide of restric	Lieu Danus:	109.3	dBµV/m	Limit is -20	ивс (реак р	ower measurement)
		T		•					
	100		3000	4000	5000	6000 ency (MHz)	7000	**************** *	9000 10000
30.0 20.0) - 1500 2000)	3000		5000	6000	7000		9000 10000
30.0 20.0 Other Spur)	sions			5000 Freque	6000 ency (MHz)	7000	8000	9000 10000
30.0 20.0)ther Spur) - 1500 2000)		4000	5000	6000	7000 Height meters		9000 10000
30.0 20.0 Other Spur Frequency MHz)) 1500 2000 ious Emis Level	sions Pol	15.209	4000	5000 Freque Detector	6000 ency (MHz) Azimuth	7000 Height	8000	9000 10000
30.0 20.0 Dther Spur Trequency MHz 3792.000) - 1500 2000 ious Emis Level dBμV/m	sions Pol v/h	15.209 / Limit	4000 / 15.247 Margin	5000 Frequi Detector Pk/QP/Avg	6000 ency (MHz) Azimuth degrees	7000 Height meters	8000	9000 10000
30.0 20.0 0ther Spur Trequency MHz 3792.000 2712.210	ious Emis Level dBμV/m 53.9	sions Pol v/h V V V	15.209 Limit 54.0	4000 / 15.247 Margin -0.1	5000 Frequi Detector Pk/QP/Avg AVG AVG PK	6000 ency (MHz) Azimuth degrees 222 169 274	7000 Height meters 1.3	8000	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBμV/m 53.9 53.2 73.0 52.1	sions Pol v/h V V V V V	15.209 / Limit 54.0 54.0 74.0 54.0	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9	5000 Freque Detector Pk/QP/Avg AVG AVG PK AVG	6000 ency (MHz) Azimuth degrees 222 169 274 274	7000 Height meters 1.3 1.0 1.3 1.3	8000	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBμV/m 53.9 53.2 73.0 52.1 68.2	sions Pol V/h V V V V V V	15.209 Limit 54.0 54.0 74.0 54.0 74.0 74.0	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8	5000 Frequi Pk/QP/Avg AVG AVG PK AVG PK	6000 ency (MHz) Azimuth degrees 222 169 274 274 169	7000 Height meters 1.3 1.0 1.3 1.3 1.3 1.0	8000	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBμV/m 53.9 53.2 73.0 52.1 68.2 55.5	sions Pol V/h V V V V V V V V	15.209 Limit 54.0 54.0 74.0 54.0 74.0 74.0 74.0	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5	5000 Freque Pk/QP/Avg AVG AVG PK AVG PK PK PK	6000 ency (MH2) Azimuth degrees 222 169 274 274 169 222	7000 Height neters 1.3 1.0 1.3 1.3 1.0 1.3	8000 Comments	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBμV/m 53.9 53.2 73.0 52.1 68.2 55.5 87.1	sions Pol v/h V V V V V V V V V V	15.209 J Limit 54.0 54.0 74.0 54.0 74.0 74.0 74.0 109.3	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5 -22.2	5000 Freque Pk/QP/Avg AVG AVG PK PK PK PK Peak	6000 ency (MHz) Azimuth degrees 222 169 274 274 169 222 217	7000 Height 1.3 1.0 1.3 1.3 1.0 1.3 1.3 1.3 1.3	8000	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBµV/m 53.9 53.2 73.0 52.1 68.2 55.5 87.1 32.3	sions Pol v/h V V V V V V V V V V V V	15.209 / Limit 54.0 54.0 74.0 54.0 74.0 74.0 74.0 109.3 46.0	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5 -22.2 -13.7	5000 Freque Pk/QP/Avg AVG AVG PK AVG PK PK PK Peak QP	6000 ency (MHz) Azimuth degrees 222 169 274 274 274 169 222 217 220	7000 Height neters 1.3 1.0 1.3 1.3 1.0 1.3 1.3 1.3 2.8	8000 Comments	9000 10000
30.0 20.0 20.0 20.0 20 20 20 20 20 20 20 20 20 20 20 20 20	ious Emis Level dBμV/m 53.9 53.2 73.0 52.1 68.2 55.5 87.1 32.3 22.2	sions Pol V/h V V V V V V V V V V V V V V V H	15.209 / Limit 54.0 54.0 74.0 54.0 74.0 74.0 74.0 109.3 46.0 46.0	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5 -22.2 -13.7 -23.8	5000 Frequi Pk/QP/Avg AVG AVG PK AVG PK PK PK PK Peak QP QP	6000 ency (MHz) Azimuth degrees 222 169 274 274 274 169 222 217 220 360	7000 Height meters 1.3 1.0 1.3 1.3 1.0 1.3 1.3 1.3 2.8 1.0	8000 Comments	9000 10000
30.0 20.0 20.0 20.0 20.0 20.0 200 200 200	ious Emis Level dBµV/m 53.9 53.2 73.0 52.1 68.2 55.5 87.1 32.3 22.2 For emiss	sions Pol V/h V V V V V V V V V V V V V V V	15.209 Limit 54.0 54.0 74.0 54.0 74.0 74.0 74.0 109.3 46.0 46.0 estricted bar	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5 -22.2 -13.7 -23.8 ids, the limi	5000 Freque Pk/QP/Avg AVG AVG PK AVG PK PK PK PK PEak QP QP t of 15.209 w	6000 ency (MHz) Azimuth degrees 222 169 274 274 169 222 217 220 360 vas used. Fo	7000 Height meters 1.3 1.0 1.3 1.3 1.0 1.3 1.3 1.3 2.8 1.0	8000 Comments	9000 10000
30.0 20.0 20.0 20.0 20.0 20.0 200 200 200	ious Emis Level dBµV/m 53.9 53.2 73.0 52.1 68.2 55.5 87.1 32.3 22.2 For emiss the level of	Sions Pol V/h V V V V V V V V V V V V I I ons in re	15.209 Limit 54.0 54.0 74.0 74.0 74.0 74.0 74.0 109.3 46.0 46.0 estricted bar damental ar	4000 / 15.247 Margin -0.1 -0.8 -1.0 -1.9 -5.8 -18.5 -22.2 -13.7 -23.8 nds, the limi ad measure	5000 Freque Pk/QP/Avg AVG AVG PK PK PK PK PK PK PK PK QP QP t of 15.209 w d in 100kHz.	6000 ency (MHz) Azimuth degrees 222 169 274 274 169 222 217 220 360 vas used. Fo	7000 Height meters 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.0 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	8000	9000 10000

Client:GE MDS LLCJob Number:J69053Model:Mercury HMR (FCC ID: E5MDS-MERCURY900) with 9dBd Omni
and 14dBd Parabolic AntennaT-Log Number:T69301Contact:Dennis McCarthyAccount Manager:Susan PelzIStandard:15.209, 15.247, RSS 210Class:N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions (Parabolic Antenna)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/18/2007 Test Engineer: Suhaila Khushzad Test Location: SVOATS #4 Config. Used: 1 Config Change: None EUT Voltage: 15.8VDC

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:	Temperature:	24 °C
	Rel. Humidity:	49 %

Summary of Results

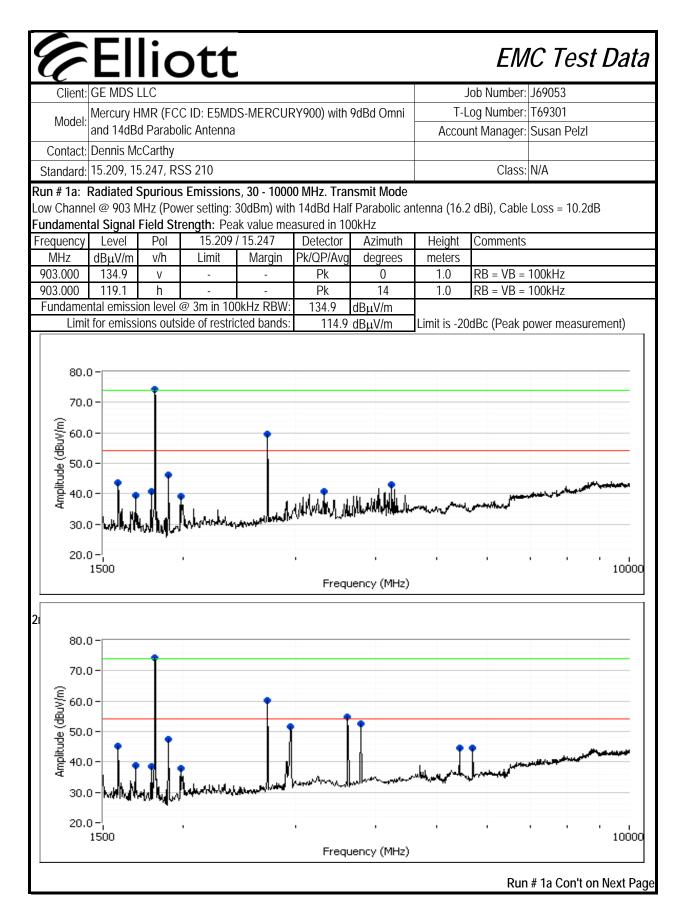
Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	RE, 1500 - 10000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	53.6dBµV/m (478.6µV/m) @ 960.000MHz (-0.4dB)

Modifications Made During Testing

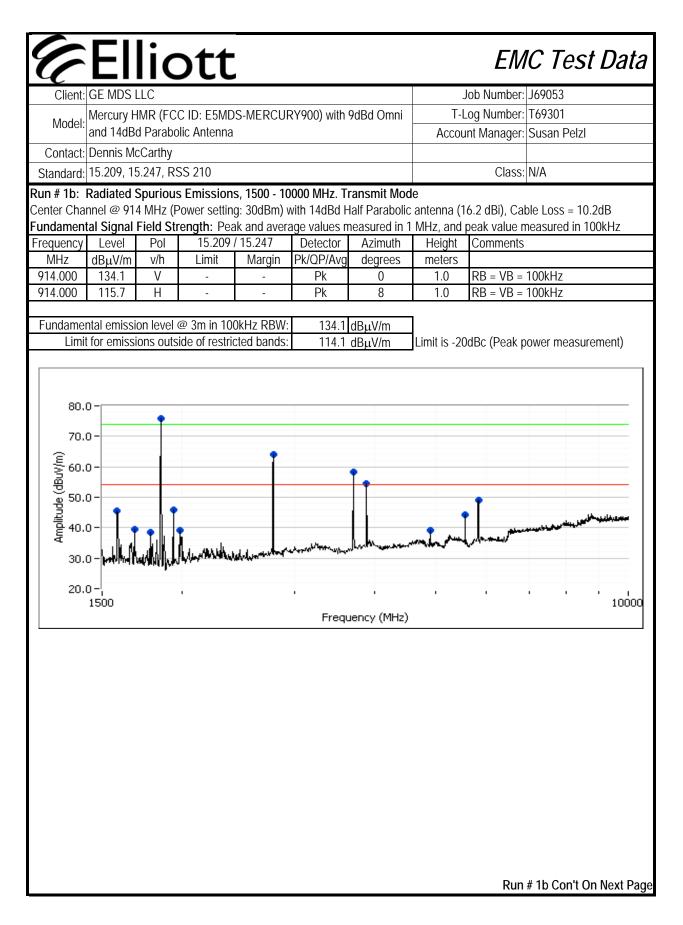
No modifications were made to the EUT during testing

Deviations From The Standard

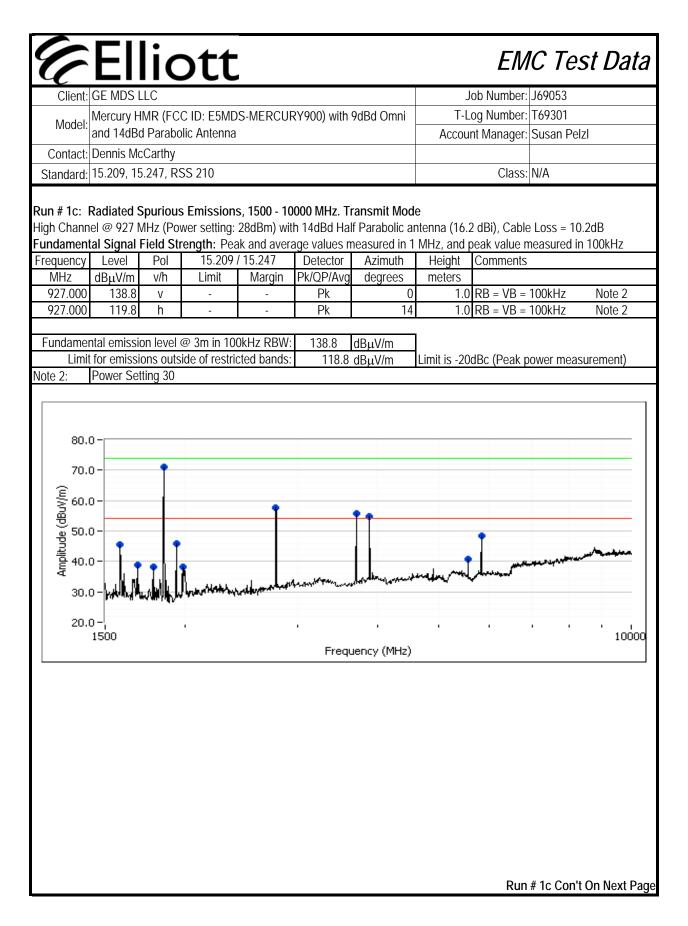
No deviations were made from the requirements of the standard.



Client:	GE MDS L	LC		1			~	Job Number:	J69053
	Mercury H	MR (FC	CID: F5MD	S-MERCUE	RY900) with 9	dBd Omni	T-L	og Number:	T69301
Model:	5	-	lic Antenna	0 MERCOOI	(1700) with 2		Account Manager:		
Contact	Dennis Mo						710000	int manager.	
		,	25 210		Class:	NI/A			
Standard: 15.209, 15.247, RSS 210 Run # 1a: Radiated Spurious Emissions, 1500 - 10000 MHz. Transmit Mod								01833.	N/A
					14dBd Half				
Other Spur		-	ver setting.	SUUDIII) WIU	I 140DU Hall	Paladulic al		2 UDI)	
Frequency	Level	Pol	15 209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
2711.8	50.8	V	54.0	-3.2	AVG	191	1.32		
2711.8	67.3	V	74.0	-6.7	PK	191	1.32		
3614.9	62.8	H	74.0	-11.2	PK	85	1.52	1	
3614.9	42.2	Н	54.0	-11.8	AVG	85	1.52		
1583.9	31.5	V	54.0	-22.5	AVG	112	0.99		
5405.4	29.4	V	54.0	-24.6	AVG	161	1.25		
3791.9	26.9	V	54.0	-27.1	AVG	192	1.31		
1681.2	25.5	Н	54.0	-28.5	AVG	176	0.99		
5405.4	40.5	V	74.0	-33.5	PK	161	1.25		
3791.9	37.9	V	74.0	-36.1	PK	192	1.31		
1583.9	37.4	V	74.0	-36.6	PK	112	0.99		
1681.2	33.9	H	74.0	-40.1	PK	176	0.99		
1807.5	74.2	H	114.9	-40.7	Peak	143	1	Non Restric	
2938.8	51.5	V V	114.9	-63.4	Peak	355	0.98	Non Restric	
1896.0	47.6	V V	114.9 114.9	-67.3 -70.4	Peak	152	1.01	Non Restric	
5688.0 1782.0	44.5 38.5	V	114.9	-70.4	Peak Peak	166 182	1.58 1.31	Non Restric	
1980.0	38.5	V	114.9	-76.9	Peak	196	1.01	Non Restric	
1700.0	50	v	117.7	-70.7	TEak	170	1.01	NOTITESTIC	sicu
lote 1:				-	t of 15.209 w d in 100kHz.	as used. Fo	r all other e	missions, the	e limit was set 20dB belo



Model: and Contact: De Standard: 15. Run # 1b: Rac Center Charne Other Spuriou Other Spuriou E MHz dB 3879.920 S 2776.910 S 3703.420 C 1583.930 C 3879.920 S 1583.930 C 4912.150 C	MDS LL ercury HW d 14dBd I ennis McC 0.209, 15.2 diated Sp el @ 914 I us Emissi Level BµV/m 53.6 51.1 69.8 48.9 65.9 45.4	C Paraboli arthy 247, RS: 247, RS: 000000000000000000000000000000000000	ID: E5MD c Antenna S 210 Emission: ower setting 15.209 / Limit 54.0 54.0	S-MERCUF s, 1500 - 10 g: 28dBm) v (15.247 <u>Margin</u> -0.4		ansmit Mod alf Parabolic Azimuth	T-L Accou	Class:	T69301 Susan Pelzl
Model: Me and Contact: De Standard: 15. Run # 1b: Rac Center Charner Other Spuriou Differ Spuriou E MHz dB 3879.920 E 3703.420 C 2776.910 E 3879.920 E 3703.420 C 3879.920 E 3879.920 E 3879.920 E 3879.920 E 3879.920 E 3879.920 E 1583.930 C 4912.150 C	ercury HW d 14dBd I ennis McC .209, 15.2 diated Sp el @ 914 I us Emissi Level BμV/m 53.6 51.1 69.8 48.9 65.9 45.4	IR (FCC Paraboli arthy 247, RS2 Purious MHz (Po ons Pol V/h V V V V V	c Antenna S 210 Emissions ower setting 15.209 / Limit 54.0 54.0	s, 1500 - 10 g: 28dBm) v ⁷ 15.247 <u>Margin</u> -0.4	0000 MHz. Tr with 14dBd H	ansmit Mod alf Parabolic Azimuth	T-L Accou e antenna (1)	og Number: nt Manager: Class: 6.2 dBi), Cal	T69301 Susan Pelzl N/A
Model: and Contact: De Standard: 15. Run # 1b: Rac Center Charne Other Spuriou Other Spuriou E MHz dB 3879.920 S 2776.910 S 3703.420 C 1583.930 C 3879.920 S 1583.930 C 4912.150 C	d 14dBd l ennis McC .209, 15.2 diated Sp el @ 914 l Js Emissi Level BµV/m 53.6 51.1 69.8 48.9 65.9 45.4	Paraboli arthy 247, RS 247, RS	c Antenna S 210 Emissions ower setting 15.209 / Limit 54.0 54.0	s, 1500 - 10 g: 28dBm) v ⁷ 15.247 <u>Margin</u> -0.4	0000 MHz. Tr with 14dBd H	ansmit Mod alf Parabolic Azimuth	Accou e antenna (1-	Class: Class: 6.2 dBi), Cal	Susan Pelzl N/A
Contact: De Standard: 15. Run # 1b: Rac Center Charne Other Spuriou Dther Spuriou E MHz dB 3879.920 £ 2776.910 £ 3703.420 4 2776.910 £ 3703.420 4 2879.920 £ 1583.930 4 4912.150 2	ennis McC .209, 15.2 diated Sp el @ 914 l us Emissi Level BμV/m 53.6 51.1 69.8 48.9 65.9 45.4	arthy 247, RS2 wurious MHz (Po ons Pol V/h V V V V V V V	S 210 Emissions ower setting 15.209 / Limit 54.0 54.0	g: 28dBm) v / 15.247 Margin -0.4	with 14dBd H Detector	alf Parabolic Azimuth	e antenna (1	Class: 6.2 dBi), Cal	N/A
Standard: 15. Run # 1b: Rac Center Channe Other Spuriou Dther Spuriou L MHz dB 3879.920 2 2776.910 2 3703.420 0 2776.910 2 2776.910 2 1583.930 2 4879.920 2 1583.930 2 4912.150 2	.209, 15.2 diated Sp el @ 914 l us Emissi Level BμV/m 53.6 51.1 69.8 48.9 65.9 45.4	247, RS purious MHz (Pc ons Pol V/h V V V V V V	Emissions ower setting 15.209 / Limit 54.0 54.0	g: 28dBm) v / 15.247 Margin -0.4	with 14dBd H Detector	alf Parabolic Azimuth	antenna (1	6.2 dBi), Cal	
Run # 1b: Rac Center Charne Other Spuriou Dther Spuriou L MHz dB 3879.920 S 2776.910 S 3703.420 C 2776.910 S 3703.420 C 1583.930 C 3879.920 S 1583.930 C 4912.150 C	diated Sp el @ 914 l us Emissi Eevel BµV/m 53.6 51.1 69.8 48.9 65.9 45.4	Vertice of the second s	Emissions ower setting 15.209 / Limit 54.0 54.0	g: 28dBm) v / 15.247 Margin -0.4	with 14dBd H Detector	alf Parabolic Azimuth	antenna (1	6.2 dBi), Cal	
Center Charner Other Spurie Frequency L MHz dB 3879.920 5 2776.910 5 3703.420 6 3703.420 6 2776.910 6 1583.930 6 3879.920 5 1583.930 6 4912.150 2	el @ 914 μs Emissi Level BμV/m 53.6 51.1 69.8 48.9 65.9 45.4	MHz (Po ons Pol v/h V V V V V V	0 15.209 15.209 Limit 54.0 54.0	g: 28dBm) v / 15.247 Margin -0.4	with 14dBd H Detector	alf Parabolic Azimuth	antenna (1	-	ble Loss = 10.2dB
MHz dB 3879.920 9 2776.910 9 3703.420 6 3703.420 6 2776.910 6 1583.930 6 4912.150 2	BμV/m 53.6 51.1 69.8 48.9 65.9 45.4	v/h V V V V	Limit 54.0 54.0	Margin -0.4			Height	Comments	
3879.920 9 2776.910 9 3703.420 0 3703.420 0 2776.910 0 1583.930 0 3879.920 9 1583.930 0 4912.150 2	53.6 51.1 69.8 48.9 65.9 45.4	V V V V	54.0 54.0	-0.4	Pk/QP/Avg	doaross			
2776.910 ! 3703.420	51.1 69.8 48.9 65.9 45.4	V V V	54.0			degrees	meters		
3703.420 4 3703.420 4 2776.910 6 1583.930 4 3879.920 5 1583.930 4 4912.150 2	69.8 48.9 65.9 45.4	V V			AVG	181	1.0		
3703.420 4 2776.910 6 1583.930 4 3879.920 5 1583.930 4 4912.150 2	48.9 65.9 45.4	V	740	-2.9	AVG	154	1.0		
2776.910 4 1583.930 4 3879.920 5 1583.930 4 4912.150 2	65.9 45.4		74.0	-4.2	PK	197	1.0		
1583.93043879.92091583.93044912.1502	45.4		54.0	-5.1	AVG	197	1.0		
3879.92051583.93044912.1502		V	74.0	-8.1	PK	154	1.0		
1583.93044912.1502		V	54.0	-8.6	AVG	204	1.0		
4912.150	55.0	V	74.0	-19.0	PK	181	1.0		
	47.8	V	74.0	-26.2	PK	204	1.0		
	27.1	V	54.0	-26.9	AVG	136	1.0		
	22.2	Н	54.0	-31.8	AVG	207	1.0		
	38.7	V	74.0	-35.3	PK	136	1.0		
	76.0	Н	114.1	-38.1	Peak	142	1.3	Non-restric	ted
	35.0 48.9	H V	74.0 114.1	-39.0	PK	207	1.0 1.9	Non-restric	tod
	48.9	V	114.1	-65.2 -68.3	Peak Peak	176 166	1.9	Non-restric	
	43.8	V	114.1	-69.7	Peak	176	1.0	Non-restric	
	39.2	V	114.1	-74.9	Peak	196	1.9	Non-restric	
	38.6	V	114.1	-74.9	Peak	190	1.0	Non-restric	
1702.010	30.0	v	114.1	-75.5	TEak	101	1.5	NULLESUIC	icu
					t of 15.209 w <u>d in 100kHz.</u>	as used. Fo	r all other ei	missions, the	e limit was set 20dB belov



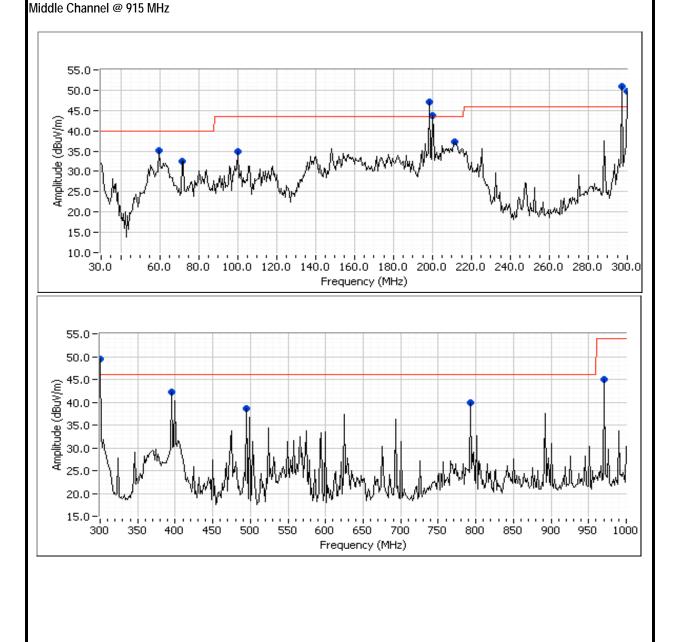
Client:	GE MDS I	LC					Job Number:		J69053
	Mercurv H	MR (FC	C ID: E5MD	S-MERCU	RY900) with 9	9dBd Omni	T-Log Number:		T69301
Model:	-		lic Antenna				Account Manager:		
Contact	Dennis Mo						7.0004	managon	
	15.209, 15	5	\$ 210			Class:	NI/Λ		
Standard:	15.209, 15).Z47, KS	53 210					Class.	N/A
High Chann	el @ 927 N	//Hz (Po\			000 MHz. Tr h 14dBd Half			2 dBi), Cable	e Loss = 10.2dB
Other Spur		Pol	15.209	15 247	Detector	Azimuth	Hoight	Comments	
Frequency MHz	Level dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	Height meters	COMMENTS	
960.000	ивµv/ш 53.6	VII	54.0	-0.4	QP	0	1.0	Power Sett	ing 30
2777.600	53.6	V	54.0 54.0	-0.4 -0.4	AVG	154	1.0		
2777.600	67.6	V	74.0	-0.4 -6.4	PK	154	1.0		
3703.710	66.0	V	74.0	-8.0	PK	148	1.6		
3703.710	45.0	V	54.0	-9.0	AVG	148	1.6		
1583.930	44.5	V	54.0	-9.5	AVG	149	1.0		
960.000	42.4	Ĥ	54.0	-11.6	QP	14	1.0	Power Sett	ina 30
1682.990	37.4	V	54.0	-16.6	AVG	216	1.7		
1583.930	46.9	V	74.0	-27.1	PK	149	1.0		
3892.920	26.8	V	54.0	-27.2	AVG	149	1.0		
1682.990	41.0	V	74.0	-33.0	PK	216	1.7		
3892.920	38.5	V	74.0	-35.5	PK	149	1.0		
1852.110	71.2	Н	118.8	-47.6	Peak	220	1.0	Non-restric	ted
5820.020	48.5	V	118.8	-70.3	Peak	177	1.9	Non-restric	ted
1940.030	45.8	V	118.8	-73.0	Peak	141	1.9	Non-restric	ted
5554.800	40.7	V	118.8	-78.1	Peak	149	1.0	Non-restric	ted
1979.980	38.2	V	118.8	-80.6	Peak	194	1.0	Non-restric	ted
1782.030	38.1	V	118.8	-80.7	Peak	191	1.0	Non-restric	ted
Jote 1:					t of 15.209 w d in 100kHz.	as used. For	r all other e	missions, the	e limit was set 20dB belo

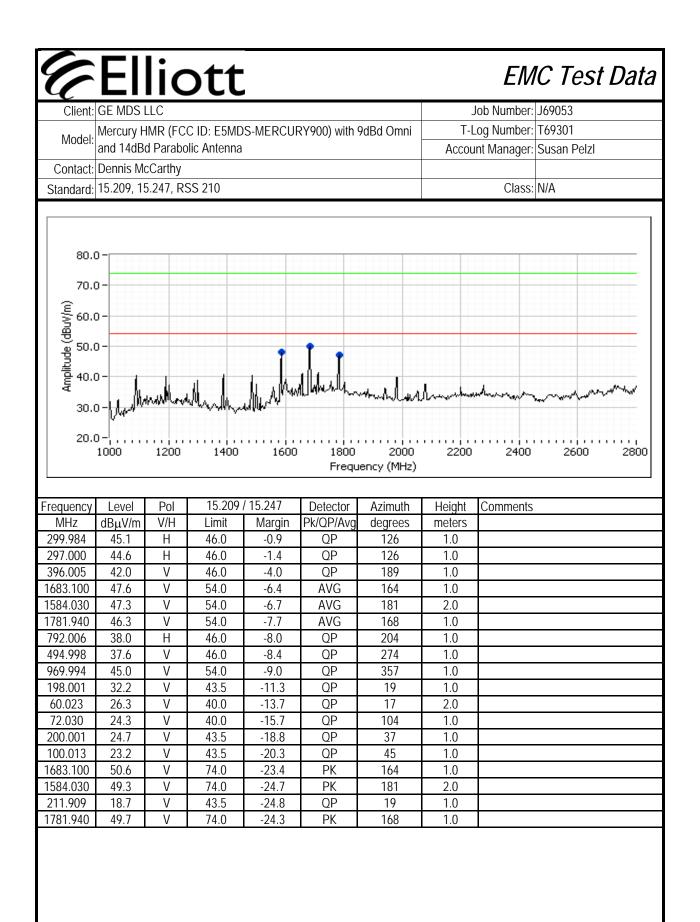
Client: GE MDS	llc IMR (FCC ID: E5MDS-MERCURY	900) with 9dRd Omni) Number:) Number:	
	d Parabolic Antenna		-	Susan Pelzl	
Contact: Dennis M Standard: 15.209, 1	5		Class:	N/A	
RSS	210 and FCC 15.24 (Para	7 Radiated Solic Antenn	-	s Emi	ssions
Test Specific Det	ails				
Objective:	The objective of this test session is specification listed above.	s to perform final qualif	ication testing	of the EU	T with respect to the
Date of Test: Test Engineer: Test Location:		Config. Used: Config Change: EUT Voltage:	None		
General Test Cor The EUT and all loc	ifiguration al support equipment were located	on the turntable for ra	diated spuriou	is emissioi	ns testing.
For radiated emission	ons testing the measurement anter	nna was located 3 mete	ers from the E	UT.	
Ambient Conditio	ons: Temperature: Rel. Humidity:	23 °C 49 %			
Summary of Res	ults				
Run #	Test Performed	Limit	Pass / Fail		Result / Margin
	RE, 30 - 2,800 MHz Spurious Emissions	RSS 210	Pass		9.984MHz (-0.9dB) @
1					
Modifications Ma	de During Testing ere made to the EUT during testing				
Modifications Ma No modifications we Deviations From	ere made to the EUT during testing				
Modifications Ma No modifications we Deviations From	ere made to the EUT during testing The Standard				
Modifications Ma No modifications we Deviations From	ere made to the EUT during testing The Standard				
Modifications Ma No modifications we Deviations From	ere made to the EUT during testing The Standard				

Elliott

Client:	GE MDS LLC	Job Number:	J69053
Madal	Mercury HMR (FCC ID: E5MDS-MERCURY900) with 9dBd Omni and 14dBd Parabolic Antenna	T-Log Number:	T69301
MUUEI.	and 14dBd Parabolic Antenna	Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	15.209, 15.247, RSS 210	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 2,800 MHz. Rx Mode Parabolic antenna



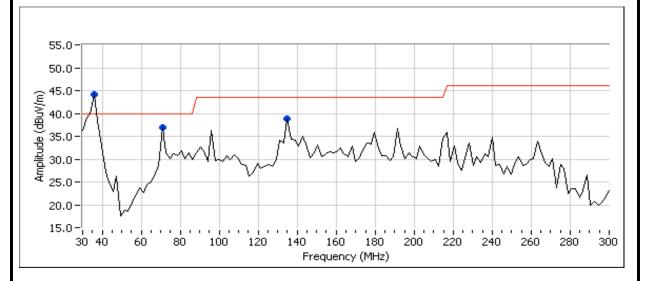


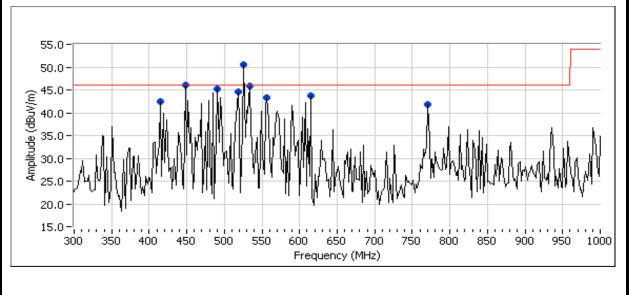
Client: GE MDS I			Job	Number:	J69053
NINNALL	MR (FCC ID: E5MDS-MERCUR) d Parabolic Antenna	(900) with 9dBd Omni	9	Number: Manager:	T69301 Susan Pelzl
Contact: Dennis Mo			Account	Manager:	Susan Peizi
Standard: 15.209, 15	5.247, RSS 210			Class:	N/A
RSS 210) and FCC 15.247 I	Radiated Spu Antenna)	rious E	missi	ons (Omni
	ails The objective of this test session specification listed above.	is to perform final qualif	ication testing	of the EU	IT with respect to the
Date of Test: Test Engineer:	9/14/2007	Config. Used: Config Change: EUT Voltage:	None		
	figuration al support equipment were locate ons testing the measurement ante		-		ns testing.
Ambient Conditio	Rel. Humidity:	23 °C 51 %			
Summary of Resu	llts				
Run # 1	Test Performed RE, 30 - 2,800 MHz Spurious Emissions	Limit RSS 210	Pass / Fail Pass	37.4dl	Result / Margin 3µV/m (74.1µV/m) @ .020MHz (-2.6dB)
No modifications we	de During Testing re made to the EUT during testing The Standard made from the requirements of th	-			

Elliott

Client:	GE MDS LLC	Job Number:	J69053
Madal	Mercury HMR (FCC ID: E5MDS-MERCURY900) with 9dBd Omni	T-Log Number:	T69301
MOUEI.	and 14dBd Parabolic Antenna	Account Manager:	Susan Pelzl
	Dennis McCarthy		
Standard:	15.209, 15.247, RSS 210	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 2,800 MHz. Rx Mode 9dB Omni antenna Middle Channel @ 915.16 MHz





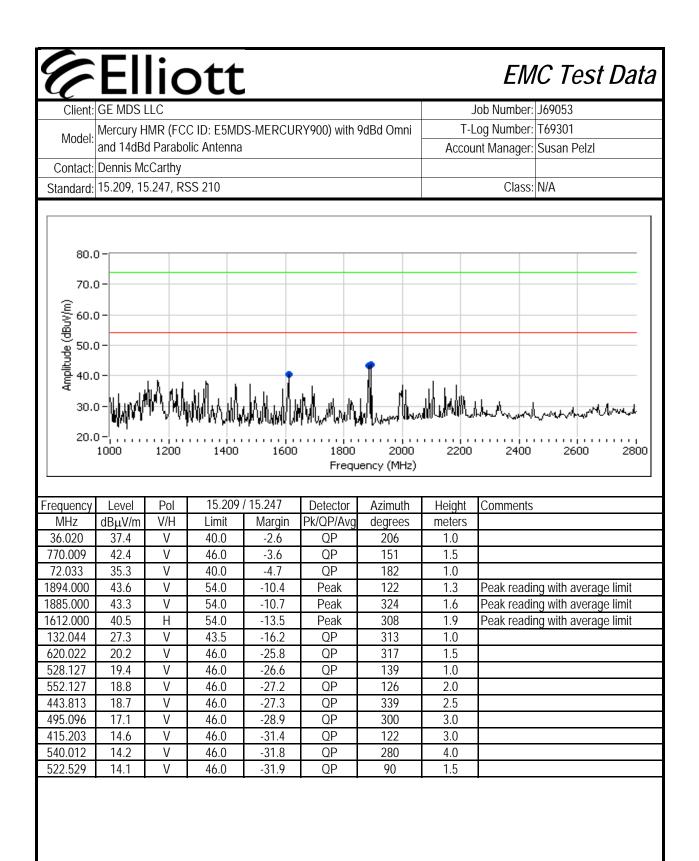


EXHIBIT 3: Photographs of Test Configurations

2 Pages

EXHIBIT 4: RF Exposure Information

1 Page