Radio Test Report

FCC Part 90 Subpart Z
(3650–3700 MHz)

Model: Mercury 3650 Spread Spectrum XCVR

FCC ID: E5MDS-MERCURY3651

COMPANY: GE MDS LLC
175 Science Parkway
Rochester, NY 14620

TEST SITE(S): Elliott Laboratories
684 W. Maude Avenue
Sunnyvale, CA 94085

And

41039 Boyce Road.
Fremont, CA. 94538-2435

REPORT DATE: October 1, 2009

FINAL TEST DATES: July 23, July 24 and August 15, 2008 and
September 28 and September 29, 2009

AUTHORIZED SIGNATORY:

Mark Briggs
Staff Engineer
Elliott Laboratories.

Testing Cert #2016-01

REVISION HISTORY

Rev#	Date	Comments	Modified By
	October 2, 2009	First Release	

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SCOPE

Tests have been performed on the GE MDS LLC model Mercury 3650 Spread Spectrum XCVR, pursuant to the relevant requirements of the following standard(s) in order to obtain device certification against the regulatory requirements of the Federal Communications Commission and Industry Canada.

- Code of Federal Regulations (CFR) Title 47 Part 2
- CFR 47 Part 90 (Private Land Mobile Radio Service)

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
ANSI TIA-603-C August 17, 2004

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

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 Mercury 3650 Spread Spectrum XCVR 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, the device requires certification. Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification.

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 Mercury 3650 Spread Spectrum XCVR complied with the requirements of the standards and frequency bands declared in the scope of this test report.

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS

FCC Part 90Z – Base and Fixed Stations, 3650 – 3700 MHz

FCC	Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics				
§2.1033 (c) (5) § 90.1321(b)	Frequency ranges (Listed for each channel spacing)	5 MHz 3652-3673 MH MHz 3653-3672 MH IHz 3653-3672 MH IHz 3654-3671 MH MHz 3656-3669 MH MHz 3658-3667 MH	3650-3675 MHz Note 1	Complies
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 § 90.1321	EIRP – Total power (Maximum for each channel spacing)	1.75 MHz 1.585 W 3.5 MHz 2.754 W 5 MHz 3.981 W 7 MHz 5.623 W 10 MHz 5.248 W 14 MHz 5.012 W	25 Watts (Base and fixed stations)	Complies
	EIRP – PSD (Maximum)	30dBm/MHz	30 dBm/MHz	Complies
§2.1033 (c) (4) §2.1047 § 90.210	Emission types	G1D	Information only	-
	Emission mask	Device complies with spectral mask – refer to test data	Mask B	Complies
§2.1049	Occupied (99%) Bandwidth	1.75MHz: 1.70MHz 3.5 MHz: 3.20MHz 5 MHz: 4.60MHz 7 MHz: 6.40MHz 10 MHz: 9.20MHz 14 MHz: 12.7 MHz	Information only	-
Transmitter spurious emissions				
§2.1051 §2.1057 §90.1323	At the antenna terminals	-35.8dBm	-13 dBm/MHz	Complies
	Radiated (eirp)	-45.2dBm (50.1dBuV/m at 3m)		Complies
Receiver spurious emissions				
15.109	Field strength	Not applicable, note 2		
Other details				
§90.1319	Policies of use	Refer to operational description for details of the implementation.	Device must employ a contention-based protocol.	Complies
§2.1055 §90.213(a)	Frequency stability	< 0.2 ppm	To be specified in the station authorization	-
§1.1307(b) §2.1093 §90.1335	RF Exposure	Although RF exposure compliance is addressed at the time of licensing an MPE calculation has been provided to demonstrate compliance with limits at distances of 22cm or more from the antennas.		
§2.1033 (c) (8)	Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range	5Vdc 2Amps	Information only	-
-	Antenna Gain	This application is submitted for antennas of 18dBi and 10dBi gain. All calculations assume a minimum loss of 3dB for the feed cable between antenna terminal on the device and the antenna.		

Notes

1) The upper part of the allocated band from 3675 – 3700 MHz requires the device to use an unrestricted contention-based protocol. This system does not have such a protocol and so cannot use the upper portion of the band.
2) Receiver spurious emissions requirements only apply to devices that operate (tune) below 960MHz.

EXTREME CONDITIONS

Frequency stability is determined over extremes of temperature and voltage. The extremes of voltage were 85 to 115 percent of the nominal value. The extremes of temperature were -30°C to +50°C as specified in FCC §2.1055(a)(1).

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 (based on a coverage factor (k=2) and were calculated in accordance with NAMAS document NIS 81 and M3003.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF frequency	Hz	25 to 7,000 MHz	1.7×10^{-7}
RF power, conducted	dBm	25 to 7,000 MHz	± 0.52 dB
Conducted emission of transmitter	dBm	25 to 40,000 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 40,000 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 40,000 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1,000 MHz 1 to 40 GHz	± 3.6 dB ± 6.0 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The GE MDS LLC model Mercury 3650 Spread Spectrum XCVR is a broadband wireless transceiver which is designed to transmit and receive data in the 3.65 - 3.675 GHz band. Normally, the EUT would be placed on a tabletop or in a rack during operation. The EUT was, therefore, placed on a table during emissions testing to simulate the end user environment. The electrical rating of the EUT is 10-30Vdc, 2.5 Amps.

The sample was received on July 23, 2008 and tested on July 23, July 24 and August 15, 2008. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number
GE MDS LLC	Mercury 3650	Digital UHF Radio	Not serialized

A second sample was received on September 28, 2009 and tested on September 28 and September 29, 2009. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number
GE MDS LLC	Mercury 3650-A	Digital UHF Radio	1234567

OTHER EUT DETAILS

The Mercury 3650 can be used with antennas of 13dBi or 18 dB. The test data accounted for a minimum feed cable loss of 3dB between the devices rf port and the antenna when calculating the eirp values for power and power spectral density from the values measured at the device's rf terminal.

ENCLOSURE

The EUT enclosure is primarily constructed of die cast metal. It measures approximately 20cm wide by 11cm deep by 5cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at Elliott.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
IBM	Thinkpad	Laptop	L3-C3706	DoC
MECA	465-1	50 ohm termination	-	-

The following equipment was used as remote support equipment for emissions testing:

Company	Model	Description	Serial Number	FCC ID
Netgear	RP114	Router	RP14BC452759	DoC

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Antenna	50 ohms Termination	-	-	-
Data Interface	Laptop	DB25	Shielded	2.0
GPS	Terminator	Coax	Shielded	2.0
LAN	Router	CAT 5	Unshielded	10.0
DC Power	13.8V DC Source	2 wire	Unshielded	2.0

EUT OPERATION

During emissions testing the EUT was set to transmit mode. The device was transmitting continuously using either an unmodulated or modulated signal as required for testing.

All bandwidth, mask, radiated spurious emissions and conducted spurious emissions were measured with the output power set to the highest setting (setting 23) using the sample provided in July 2008. Power and power spectral density measurements were made on the sample provided in September 2009 at the highest power setting that complied with the eirp requirements, without exceeding setting 23. It was verified that the output power at the antenna terminals at setting 23 for the second sample was consistent (within 0.5dB) of the values measured on the first sample.

Preliminary measurements on all different data rates indicated that BPSK and QAM were representative of the highest power, highest power spectral density and widest signal bandwidths for all modulations, therefore final measurements were made using these two modulations.

TESTING

GENERAL INFORMATION

Antenna port measurements were taken at the Elliott Laboratories test site located at 684 West Maude Ave, Sunnyvale, CA 94085-3518 and 41039 Boyce Road, Fremont, CA 94538-2435.

Radiated spurious emissions measurements were taken at the Elliott Laboratories Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4: 2003 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4:2007 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are on file with the FCC and industry Canada.

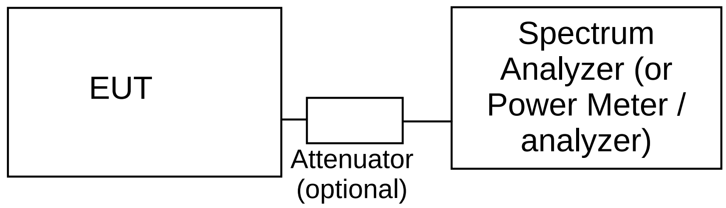
Site	Registration Numbers		Location
	FCC	Canada	
SVOATS #2	90593	IC 2845A-2	684 West Maude Ave, Sunnyvale CA 94085-3518

In the case of Open Area Test Sites, ambient levels are at least 6 dB below the specification limits with the exception of predictable local TV, radio, and mobile communications traffic.

Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements.

RF PORT MEASUREMENT PROCEDURES

Conducted measurements are performed with the EUT's rf input/output connected to the input of a spectrum analyzer, power meter or modulation analyzer. When required an attenuator, filter and/or dc block is placed between the EUT and the spectrum analyzer to avoid overloading the front end of the measurement device. Measurements are corrected for the insertion loss of the attenuators and cables inserted between the rf port of the EUT and the measurement equipment.



Test Configuration for Antenna Port Measurements

For devices with an integral antenna the output power and spurious emissions are measured as a field strength at a test distance of (typically) 3m and then converted to an eirp using a substitution measurement (refer to RADIATED EMISSIONS MEASUREMENTS). All other measurements are made as detailed below but with the test equipment connected to a measurement antenna directed at the EUT.

OUTPUT POWER

Output power is measured using a power meter and an average sensor head, a spectrum analyzer or a power meter and peak power sensor head as required by the relevant rule part(s). Where necessary measurements are gated to ensure power is only measured over periods that the device is transmitting.

Power measurements made directly on the rf power port are, when appropriate, converted to an EIRP by adding the gain of the highest gain antenna that can be used with the device under test, as specified by the manufacturer.

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. The measurement bandwidth is set to be at least 1% of the instrument's frequency span.

CONDUCTED SPURIOUS EMISSIONS

Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode measurements). Where the limits are expressed as an average power the spectrum analyzer is tunes to that frequency with a narrow span (wide enough to capture the emission and its sidebands) and the resolution and video bandwidths are adjusted as required by the reference measurement standards. For transmitter measurements the appropriate detector (average, peak, normal ,sample, quasi-peak) is used when making measurements for licensed devices. For receiver conducted spurious measurements the detector is set to peak.

TRANSMITTER MASK MEASUREMENTS

The transmitter mask measurements are made using resolution bandwidths as specified in the pertinent rule part(s). Where narrower bandwidths are used the measurement is corrected to account for the reduced bandwidth by either using the adjacent channel power function of the spectrum analyzer to sum the power across the required measurement bandwidth. The frequency span of the analyzer is set to ensure the fundamental signal and all significant sidebands are displayed.

The top of the mask may be set by the total output power of the signal, the power of the unmodulated signal or the peak value of the signal in the reference bandwidth being used for the mask measurement.

FREQUENCY STABILITY

The EUT is placed inside a temperature chamber with all support and test equipment located outside of the chamber. The temperature is varied across the specified frequency range in 10 degree increments with frequency measurements made at each temperature step. The EUT is allowed enough time to stabilize at each temperature variation.

The spectrum analyzer is configured to give a 5- or 6-digit display for the marker-frequency function. The spectrum analyzer's built-in frequency counter is used to measure the maximum deviation of the fundamental frequency at each temperature. Where possible the device is set to transmit an unmodulated signal. Where this is not possible the frequency drift is determined by finding a stable point on the signal (e.g. the null at the centre of an OFDM signal) or by calculating a centre frequency based on the upper and lower XdB points (where X is typically 6dB or 10dB) on the signal’s skirts.

RADIATED EMISSIONS MEASUREMENTS

Receiver radiated spurious emissions measurements are made in accordance with ANSI ANSI C63.4:2003 by measuring the field strength of the emissions from the device at a specific test distance and comparing them to a field strength limit. Where the field strength limit is specified at a longer distance than the measurement distance the measurement is extrapolated to the limit distance.

Transmitter radiated spurious emissions are initially measured as a field strength. The eirp or erp limit as specified in the relevant rule part(s) is converted to a field strength at the test distance and the emissions from the EUT are then compared to that limit. Emissions within 20dB of this limit are the subjected to a substitution measurement.

All radiated emissions measurements are performed in two phases. A preliminary scan of emissions is conducted in either an anechoic chamber or on an OATS during which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed across the complete frequency range of interest and at each operating frequency identified in the reference standard. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode).

During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit. For transmitter spurious emissions, where the limit is expressed as an effective radiated power, the eirp or erp is converted to a field strength limit.

Final measurements are made on an OATS or in a semi-anechoic chamber at the significant frequencies observed during the preliminary scan(s) using the same process of rotating the EUT and raising/lowering the measurement antenna to find the highest level of the emission. The field strength is recorded and, for receiver spurious emissions, compared to the field strength limit. For the final measurement the appropriate detectors (average, peak, normal, sample, quasi-peak) are used. For receiver measurements below 1GHz the detector is a Quasi-Peak detector, above 1GHz a peak detector is used and the peak value (RB=VB=1MHz) and average value (RB=1MHz, VB=10Hz) are recorded.

For transmitter spurious emissions, the radiated power of all emissions within 20dB of the calculated field strength limit are determined using a substitution measurement. The substitution measurement is made by replacing the EUT with an antenna of known gain (typically a dipole antenna or a double-ridged horn antenna), connected to a signal source. The output power of the signal generator is adjusted until the maximum field strength from the substitution antenna is similar to the field strength recorded from the EUT. The erp of the EUT is then calculated.

INSTRUMENTATION

An EMI receiver as specified in CISPR 16-1-1 is used for radiated emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7000 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.

For measurements above the frequency range of the receivers and for all conducted measurements a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Measurement bandwidths for the test instruments are set in accordance with the requirements of the standards referenced in this document.

Software control is used to correct the measurements for transducer factors (e.g. antenna) and the insertion loss of cables, attenuators and other series elements to obtain the final measurement value. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are exported in a graphic and/or tabular format, as appropriate.

FILTERS/ATTENUATORS

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

ANTENNAS

A combination of biconical, log periodic or bi-log antennas are used to cover the range from 30 MHz to 1000 MHz. Broadband antennas or tuned dipole antennas are used over the entire 25 to 1000 MHz frequency range as the reference antenna for substitution measurements.

Above 1000 MHz, a dual-ridge guide horn antenna or octave horn antenna are used as reference and measurement antennas.

The antenna calibration factors are included in site factors that are programmed into the test receivers and instrument control software when measuring the radiated field strength.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

Table mounted devices are placed on a non-conductive table at a height of 80 centimeters above the floor. Floor mounted equipment is 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. The EUT is positioned on a motorized turntable to allow it to be rotated during testing to determine the angel with the highest level of emissions.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED SPURIOUS EMISSIONS

Measurements are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

R_r = Measured value in dBm
S = Specification Limit in dBm
M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH

Measurements of radiated field strength are compared directly to the specification limit (decibel form). The receiver and/or control software 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 is sued when measurements are made at a test distance that is different to the specified limit distance by using the following formula:

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

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

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:

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

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 –RADIATED POWER

The erp/eirp limits for transmitter spurious measurements are converted to a field strength in free space using the following formula:

$$E = \frac{\sqrt{30\,P\,G}}{d}$$

where:

E = Field Strength in V/m
P = Power in Watts
G = Gain of isotropic antenna (numeric gain) = 1
D = measurement distance in meters

The field strength limit is then converted to decibel form (dBuV/m) and the margin of a given emission peak relative to the limit is calculated (refer to *SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH*).

When substitution measurements are required (all signals with less than 20dB of margin relative to the calculated field strength limit) the eirp of the spurious emission is calculated using:

$$P_{EUT} = P_S - (E_S - E_{EUT})$$

and

$$P_S = G + P_{in}$$

where:

P_S = effective isotropic radiated power of the substitution antenna (dBm)
P_{in} = power input to the substitution antenna (dBm)
G = gain of the substitution antenna (dBi)
E_S = field strength the substitution antenna (dBm) at eirp P_S
E_{EUT} = field strength measured from the EUT

Where necessary the effective isotropic radiated power is converted to effective radiated power by subtracting the gain of a dipole (2.2dBi) from the eirp value.

Appendix A Test Equipment Calibration Data

Radiated Emissions, 30 - 37,000 MHz, 23-Jul-08

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-09
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	13-Dec-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	Head (Inc W1-W4, 1143, 1144) Red	84125C	1145	16-Nov-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Red)	3160-09 (84125C)	1150	05-Nov-08
EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Red)	3160-10 (84125C)	1151	05-Nov-08
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT 010	1826	29-May-09
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E	CH5273	20-Sep-08

Environmental Test, 24-Jul-08

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E	CH5273	20-Sep-08

Power, PSD, BW and Spurious, 15-Aug-08

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	25-Aug-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E	CH5273	20-Sep-08

Radio Antenna Port (Power and Spurious Emissions), 28-Sep-09

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	10-Feb-10

Radio Antenna Port (Power and Spurious Emissions), 29-Sep-09

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	26-Feb-10

Appendix B Test Data

T76967 30 Pages
T76941 14 Pages

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		-
Emissions Standard(s):	FCC Part 90	Class:	A
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

GE MDS LLC

Model

Mercury 3650

Date of Last Test: 8/15/2008

Note - data in this data log whas been taken from J72039, T72175

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

FCC Part 90
Frequency Stability

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.

General Test Configuration
The EUT's rf port was connected to the measurement instrument's rf port, via an attenuator or dc-block if necessary. EUT was place inside an environmental chamber.

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Result	Value / Margin
1-2	Frequency and Voltage Stability	Part 90.213	Pass	Highest Drift: 783 Hz (0.2ppm)

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.

Elliott An NTS company

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1: Temperature Vs. Frequency (Fixed stations in the 3650-3675 MHz band)

Note 1:	For all tests: Unmodulated signal using mode BPSK at frequency (3662MHz) with power setting of 23dBm was used. Analyzer settings were as follow: RBW=VBW= 1kHz and Span=5kHz.
Note 2:	Frequency stability is to be specified in the station authorization.

Temperature	Reference Frequency	Measured frequency	Drift	Limit	Drift
(Celsius)	(MHz)	(MHz)	(Hz)	(Hz)	(ppm)
-30	3662.002705	3662.002205	500	Note 2	0.1
-20	3662.002705	3662.002622	83	Note 2	0.0
-10	3662.002705	3662.002405	300	Note 2	0.1
0	3662.002705	3662.002922	217	Note 2	0.1
10	3662.002705	3662.003405	700	Note 2	0.2
20	3662.002705	3662.002705	0	Note 2	0.0
30	**3662.002705**	**3662.003488**	**783**	**Note 2**	**0.2**
40	3662.002705	3662.002738	33	Note 2	0.0
50	3662.002705	3662.002196	509	Note 2	0.1

Run #2: Voltage Vs. Frequency

Nominal Voltage is 13.8Vdc.

Voltage	Reference Frequency	Frequency Drift	Drift	Limit
(Dc)	(MHz)	(MHz)	(Hz)	(Hz)
85%	3662.002705	3662.002638	67	Note 2
115%	3662.002705	3662.002630	75	Note 2

Worst case drift: **783.0 Hz**
0.21 ppm

Elliott
An NTS company

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

FCC Part 90Z
Power, PSD, Occupied Bandwidth and Spurious Emissions

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: 8/14 and 8/15/2008
Test Engineer: M. Birgani, D. Bare
Test Location: Chamber #2

Config. Used: 1
Config Change: None
EUT Voltage: 13.8VDC

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

	8/14/2008	8/15/5008
Temperature:	22 °C	21 °C
Rel. Humidity:	36 %	40 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Maximim Output Power	-	-	Refer to T76941
2	99% Bandwidth	Information Only	-	1.75MHz: 1.70 MHz 3.5 MHz: 3.20 MHz 5.0 MHz: 4.60 MHz 7.0 MHz: 6.40 MHz 10.0 MHz: 9.20 MHz 14.0 MHz: 12.7 MHz
3	Unwanted emissions (Mask)	FCC Part 90 - Mask B	Pass	See plots
4	Antenna Port Conducted Spurious Emissions 30 - 5500 MHz	FCC Part 90Z (90.1323)	Pass	-35.8dBm @ 250349MHz (-22.8dB)

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.

Elliott
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Radio Test Data

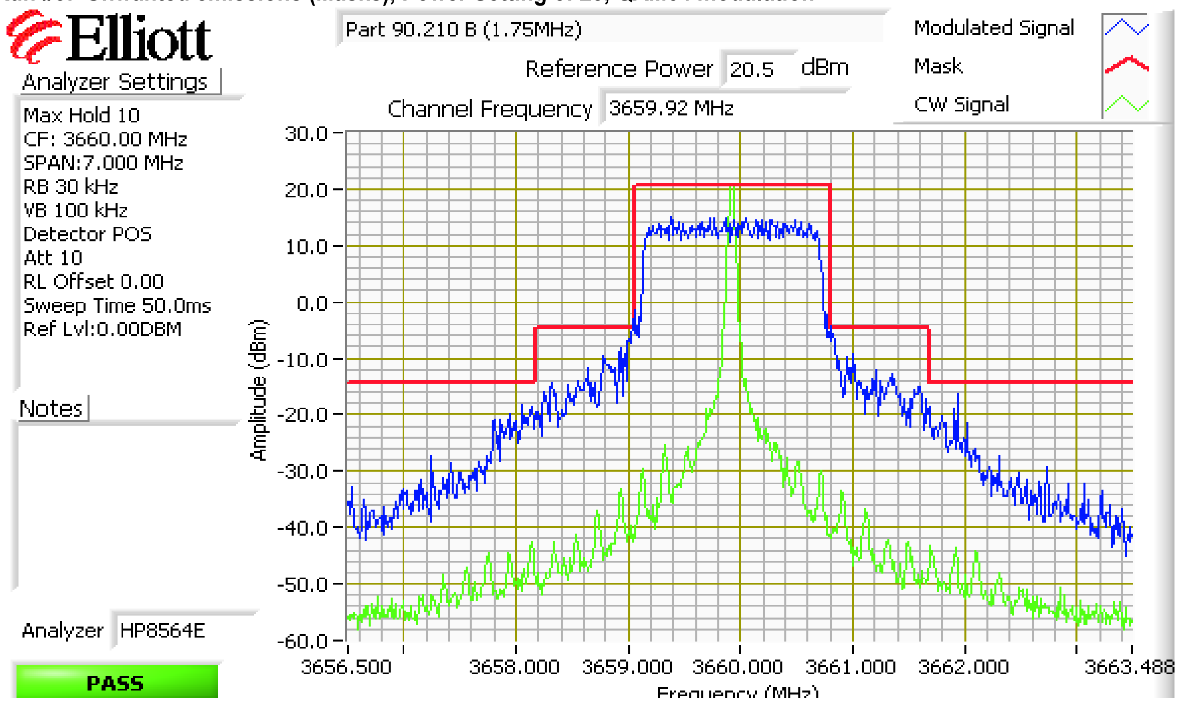
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

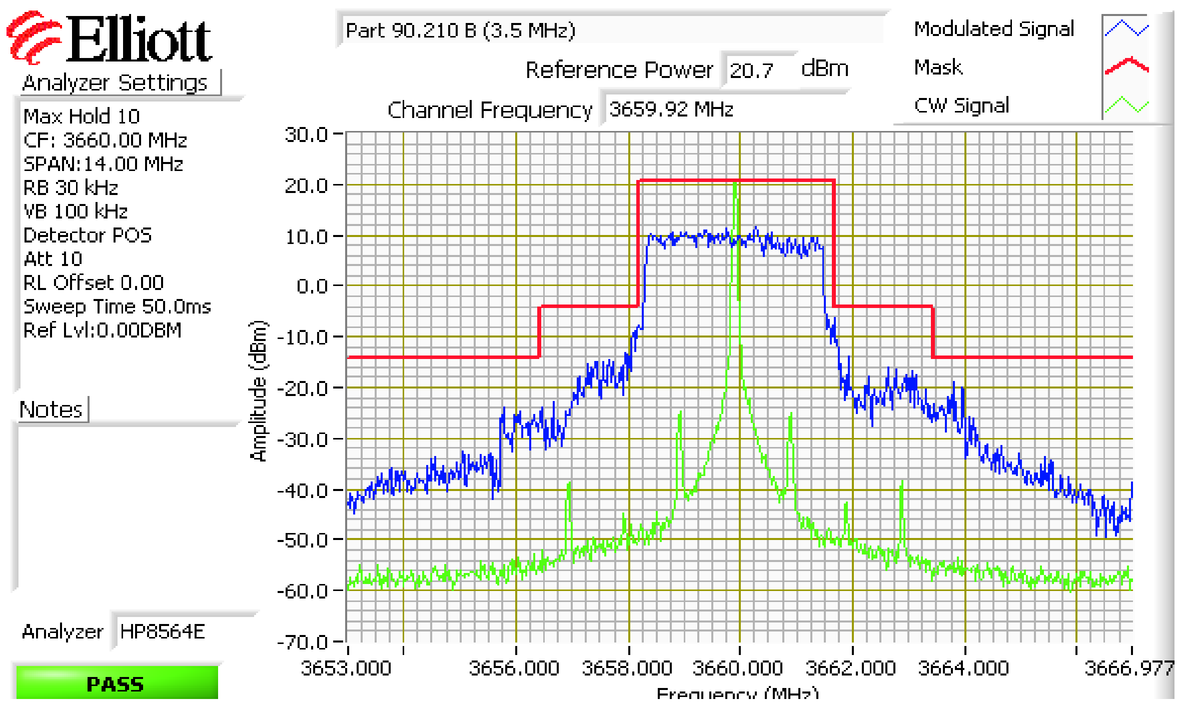
Run #2: Signal Bandwidth

Mod Type	BW Type	Frequency (MHz)	Resolution Bandwidth	99% BW (MHz)
BPSK	1.75 MHz	3652	100 kHz	1.7
BPSK	1.75 MHz	3662	100 kHz	1.7
BPSK	1.75 MHz	3673	100 kHz	1.7
QAM64	1.75 MHz	3652	100 kHz	1.7
QAM64	1.75 MHz	3662	100 kHz	1.7
QAM64	1.75 MHz	3673	100 kHz	1.7
BPSK	3.5 MHz	3653	100 kHz	3.2
BPSK	3.5 MHz	3662	100 kHz	3.2
BPSK	3.5 MHz	3672	100 kHz	3.2
QAM64	3.5 MHz	3653	100 kHz	3.2
QAM64	3.5 MHz	3662	100 kHz	3.2
QAM64	3.5 MHz	3672	100 kHz	3.2
BPSK	5.0 MHz	3653	100 kHz	4.6
BPSK	5.0 MHz	3662	100 kHz	4.5
BPSK	5.0 MHz	3672	100 kHz	4.6
QAM64	5.0 MHz	3653	100 kHz	4.5
QAM64	5.0 MHz	3662	100 kHz	4.6
QAM64	5.0 MHz	3672	100 kHz	4.6
BPSK	7.0 MHz	3654	100 kHz	6.3
BPSK	7.0 MHz	3662	100 kHz	6.3
BPSK	7.0 MHz	3671	100 kHz	6.3
QAM64	7.0 MHz	3654	100 kHz	6.4
QAM64	7.0 MHz	3662	100 kHz	6.3
QAM64	7.0 MHz	3671	100 kHz	6.3
BPSK	10.0 MHz	3656	300 kHz	9.2
BPSK	10.0 MHz	3662	300 kHz	9.2
BPSK	10.0 MHz	3669	300 kHz	9.2
QAM64	10.0 MHz	3656	300 kHz	9.2
QAM64	10.0 MHz	3662	300 kHz	9.2
QAM64	10.0 MHz	3669	300 kHz	9.2
BPSK	14.0 MHz	3658	300 kHz	12.6
BPSK	14.0 MHz	3662	300 kHz	12.6
BPSK	14.0 MHz	3667	300 kHz	12.7
QAM64	14.0 MHz	3658	300 kHz	12.7
QAM64	14.0 MHz	3662	300 kHz	12.6
QAM64	14.0 MHz	3667	300 kHz	12.5

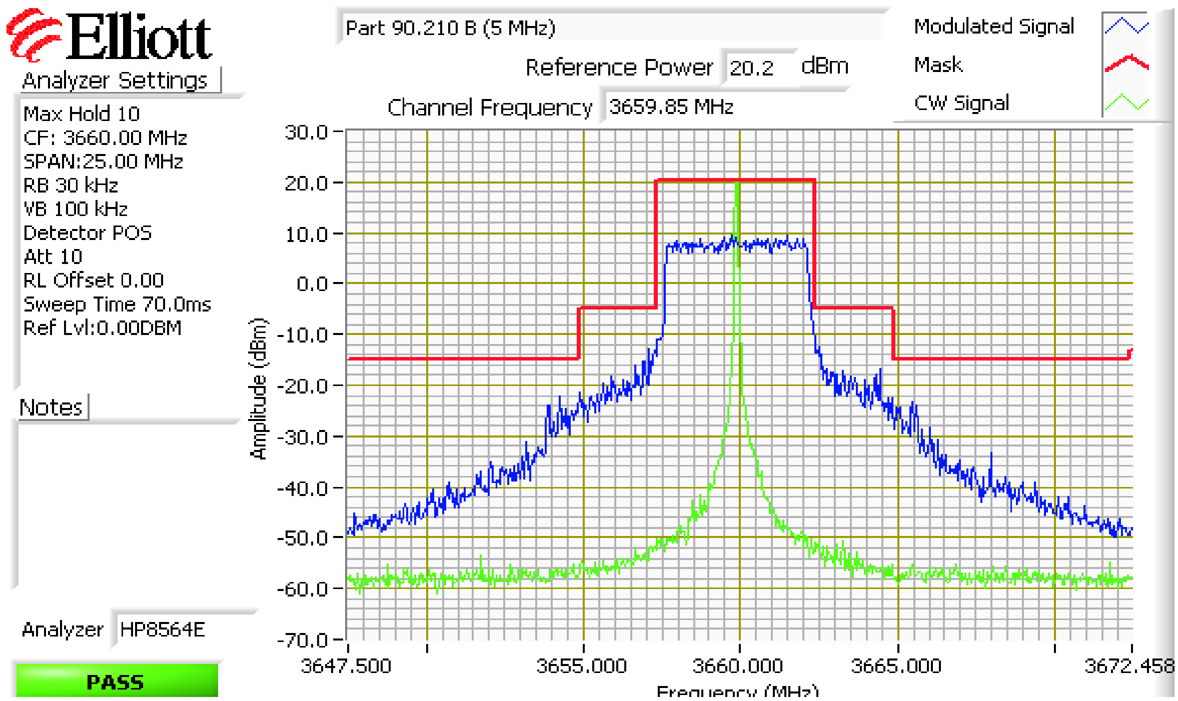
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

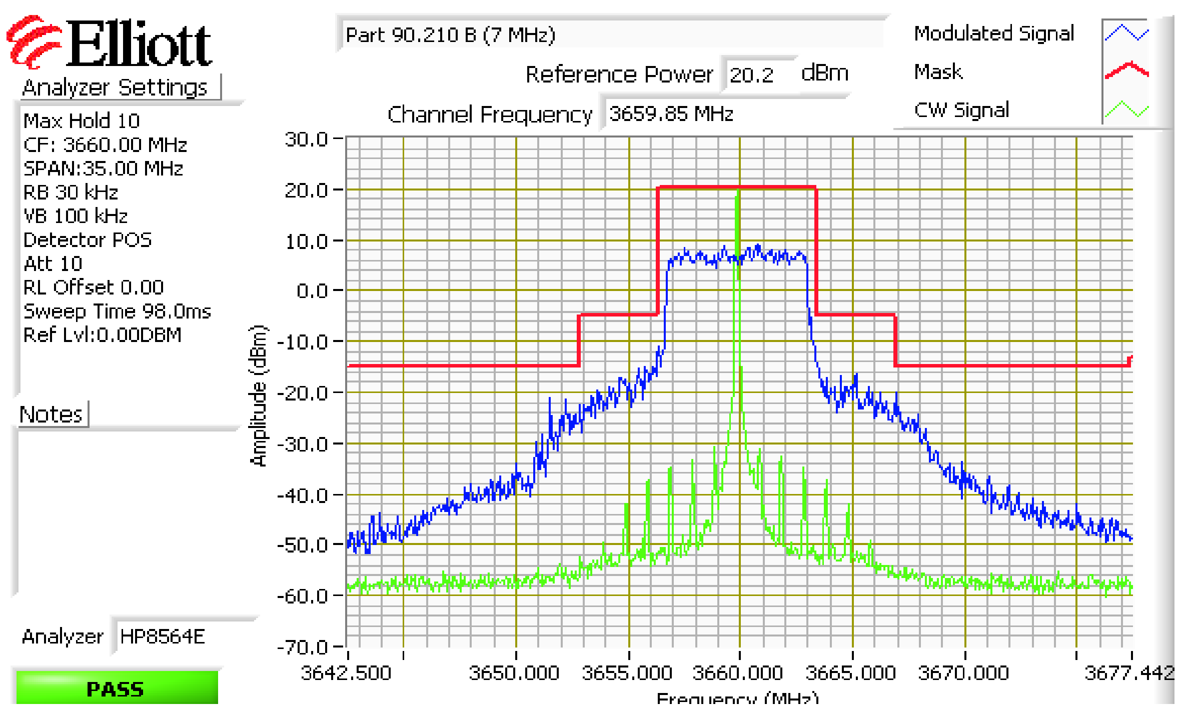
Run #3: Unwanted emissions (Masks), Power Setting of 23, QAM64 modulation





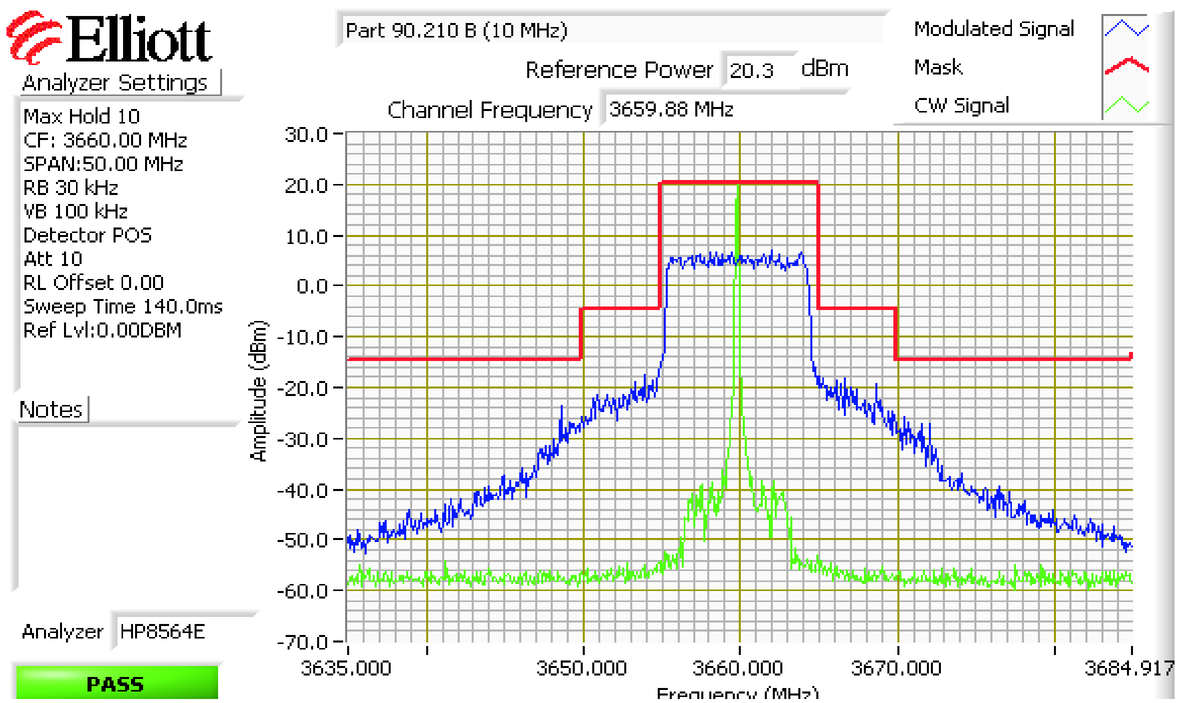
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

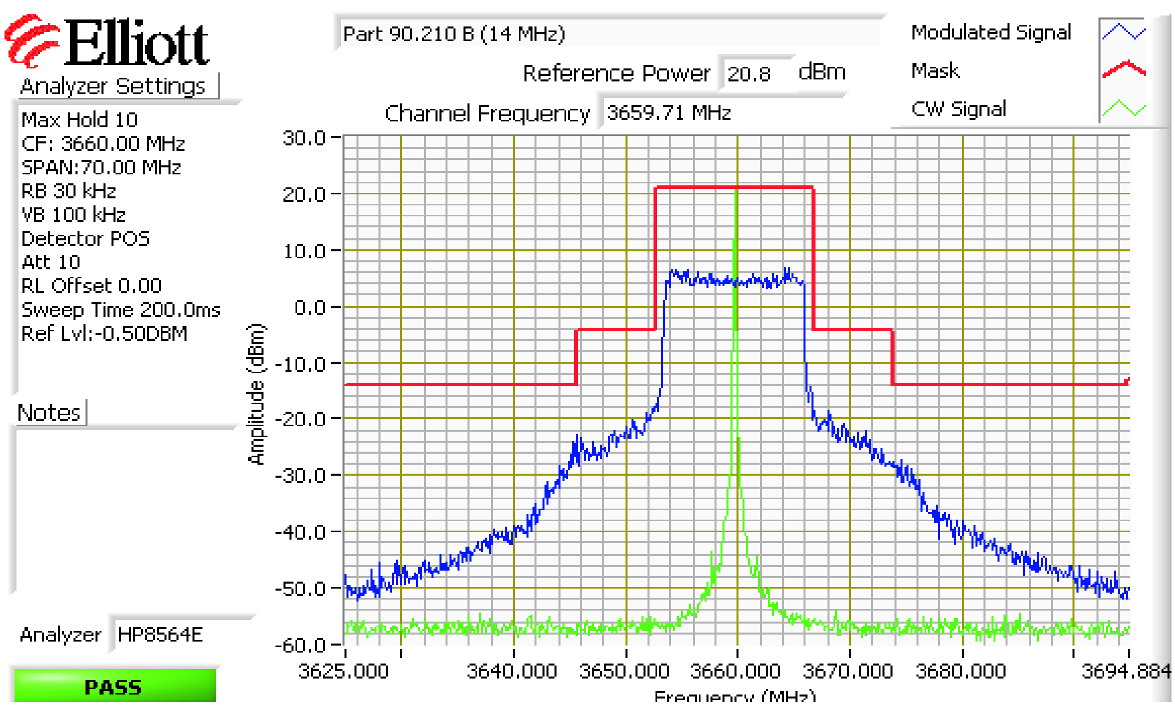




Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

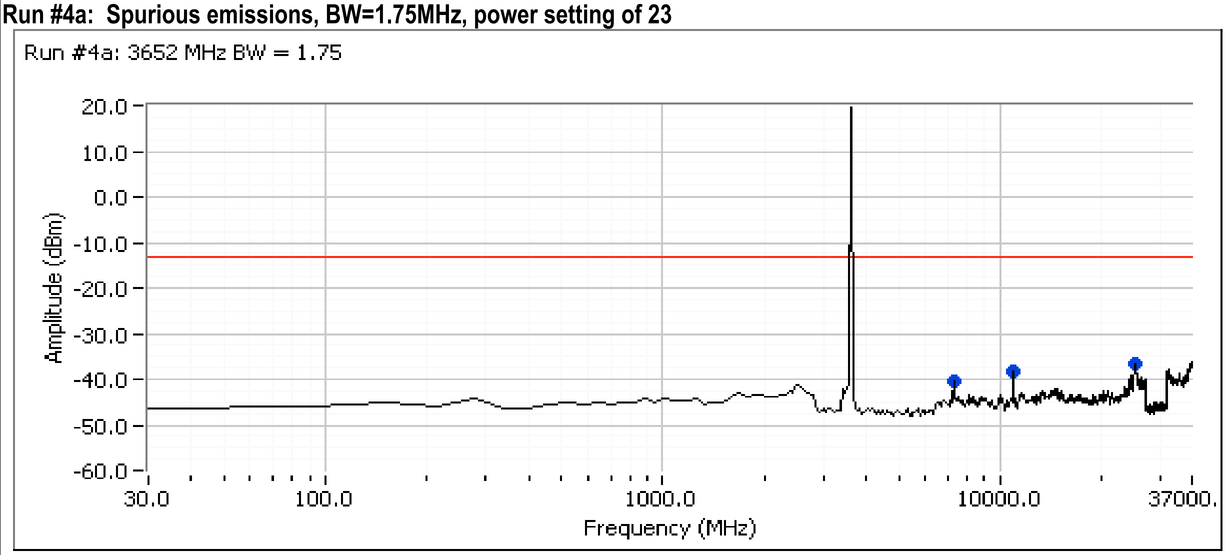


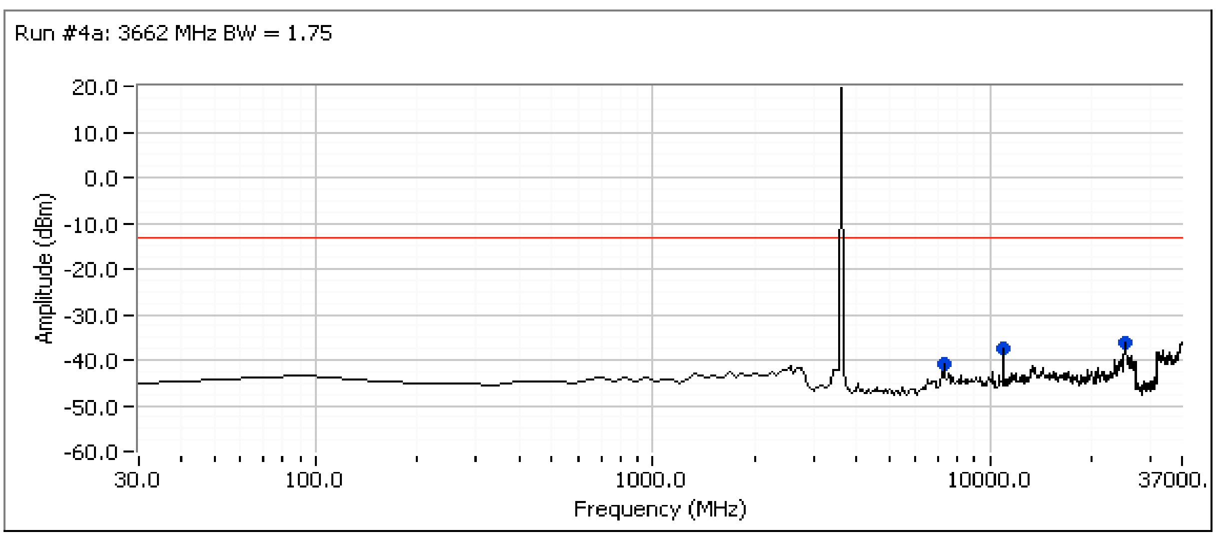


Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

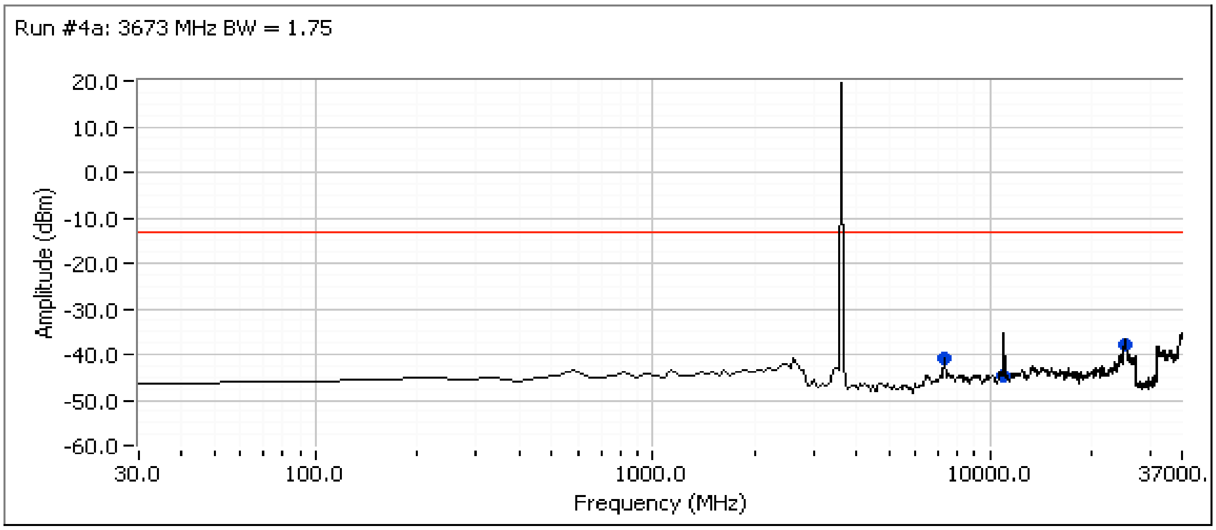
Run #4: Antenna Port Conducted Spurious Emissions 30 - 37000 MHz

Run #4a: Spurious emissions, BW=1.75MHz, power setting of 23





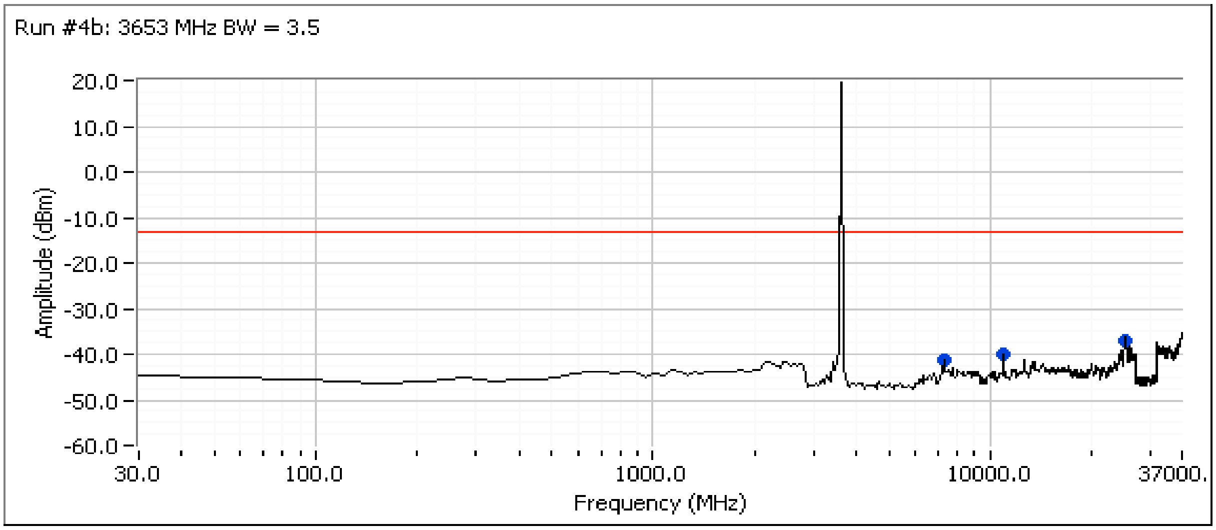
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

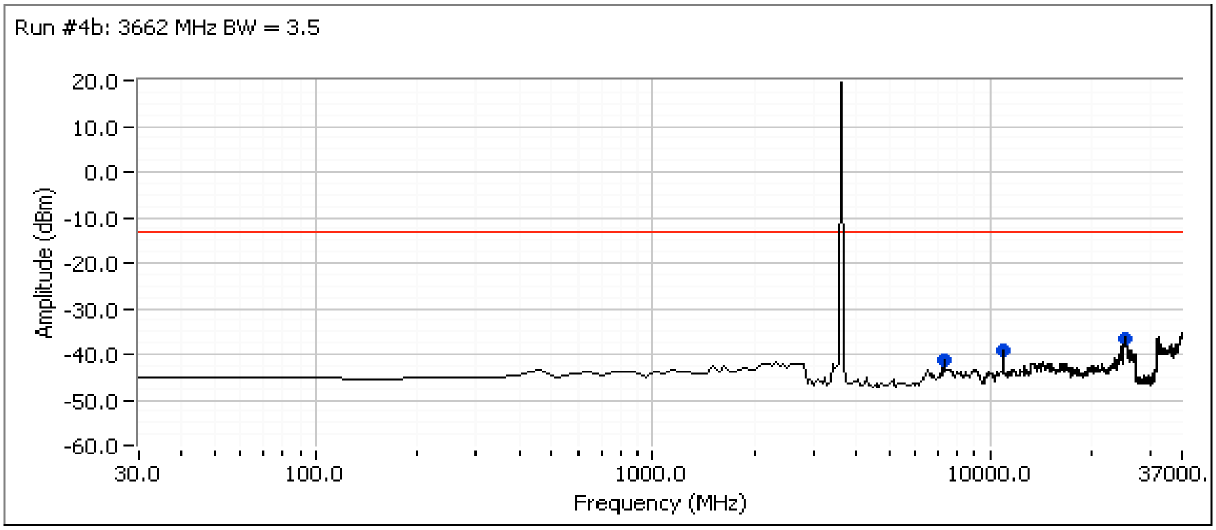


Frequency MHz	Level dBm	Port	FCC Part 90 Limit	Margin	Detector	Channel	Mode	Comments
7304.460	-40.3	RF Port	-13.0	-27.3	Peak	3652	BPSK	1.75 MHz
10956.450	-38.2	RF Port	-13.0	-25.2	Peak	3652	BPSK	1.75 MHz
25083.990	-36.8	RF Port	-13.0	-23.8	Peak	3652	BPSK	1.75 MHz
7324.000	-40.7	RF Port	-13.0	-27.7	Peak	3662	BPSK	1.75 MHz
10979.830	-37.5	RF Port	-13.0	-24.5	Peak	3662	BPSK	1.75 MHz
25050.460	-36.3	RF Port	-13.0	-23.3	Peak	3662	BPSK	1.75 MHz
7347.520	-41.0	RF Port	-13.0	-28.0	Peak	3673	BPSK	1.75 MHz
11019.500	-44.5	RF Port	-13.0	-31.5	Peak	3673	BPSK	1.75 MHz
25056.920	-38.0	RF Port	-13.0	-25.0	Peak	3673	BPSK	1.75 MHz

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #4b: Spurious emissions, BW=3.5MHz, power setting of 23





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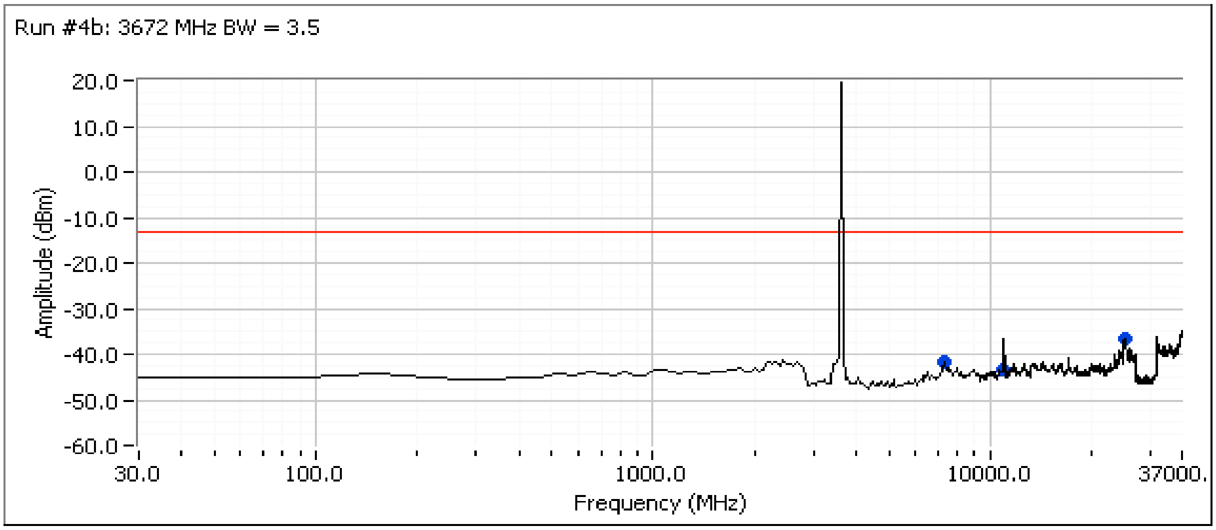
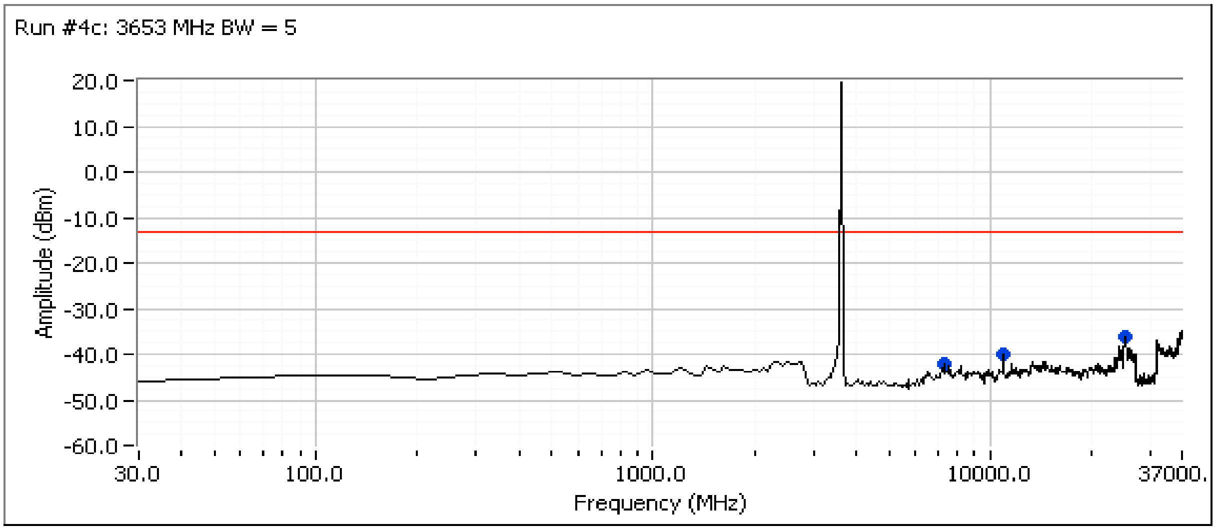
Radio Test Data

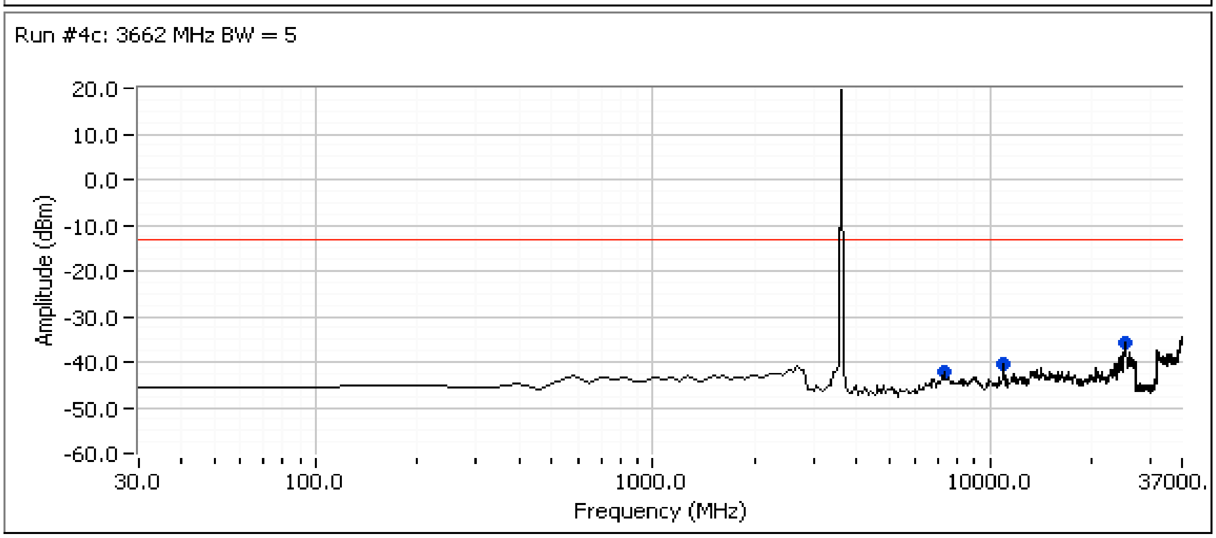
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A



Frequency MHz	Level dBm	Port	FCC Part 90 Limit	Margin	Detector	Channel	Mode	Comments
7305.690	-41.3	RF Port	-13.0	-28.3	Peak	3653	BPSK	3.5 MHz
10960.140	-39.8	RF Port	-13.0	-26.8	Peak	3653	BPSK	3.5 MHz
25047.080	-37.0	RF Port	-13.0	-24.0	Peak	3653	BPSK	3.5 MHz
7324.450	-41.2	RF Port	-13.0	-28.2	Peak	3662	BPSK	3.5 MHz
10983.820	-39.0	RF Port	-13.0	-26.0	Peak	3662	BPSK	3.5 MHz
25070.150	-36.5	RF Port	-13.0	-23.5	Peak	3662	BPSK	3.5 MHz
7344.750	-41.5	RF Port	-13.0	-28.5	Peak	3672	BPSK	3.5 MHz
11014.270	-43.5	RF Port	-13.0	-30.5	Peak	3672	BPSK	3.5 MHz
25101.520	-36.8	RF Port	-13.0	-23.8	Peak	3672	BPSK	3.5 MHz

Run #4c: Spurious emissions, BW=5MHz, power setting of 23





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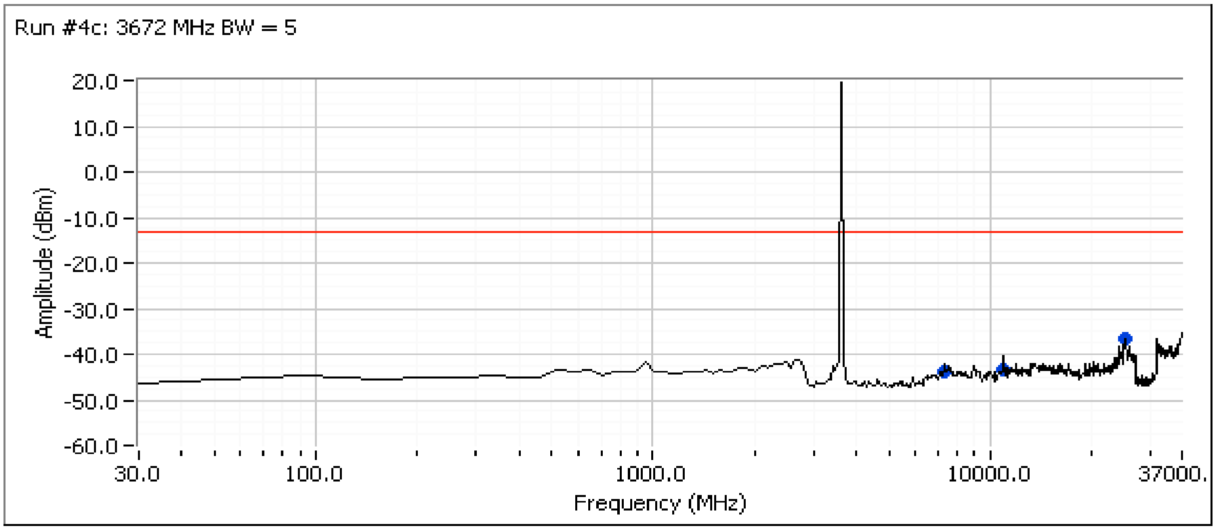
Radio Test Data

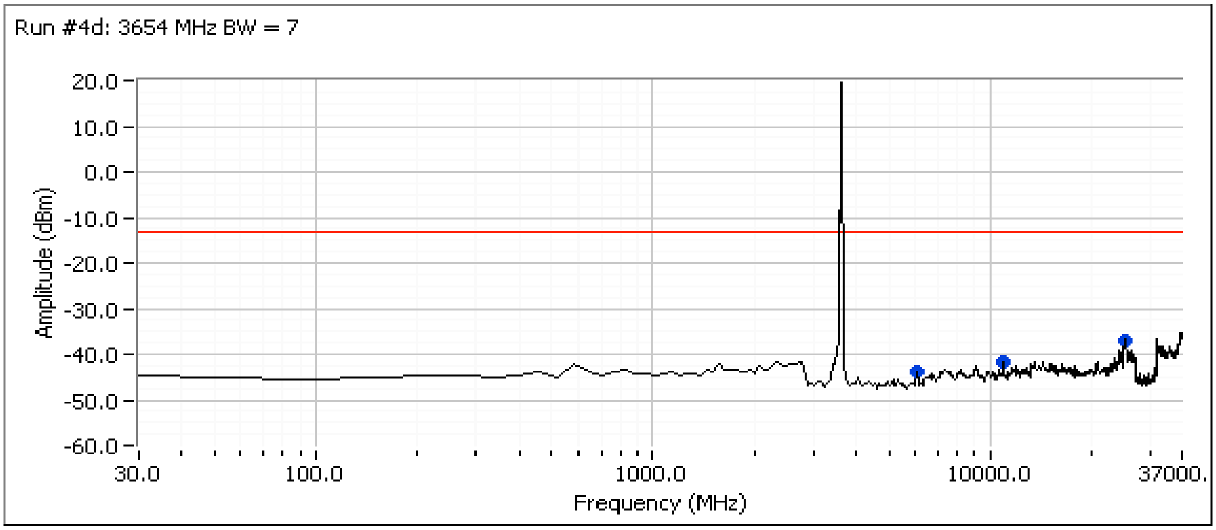
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

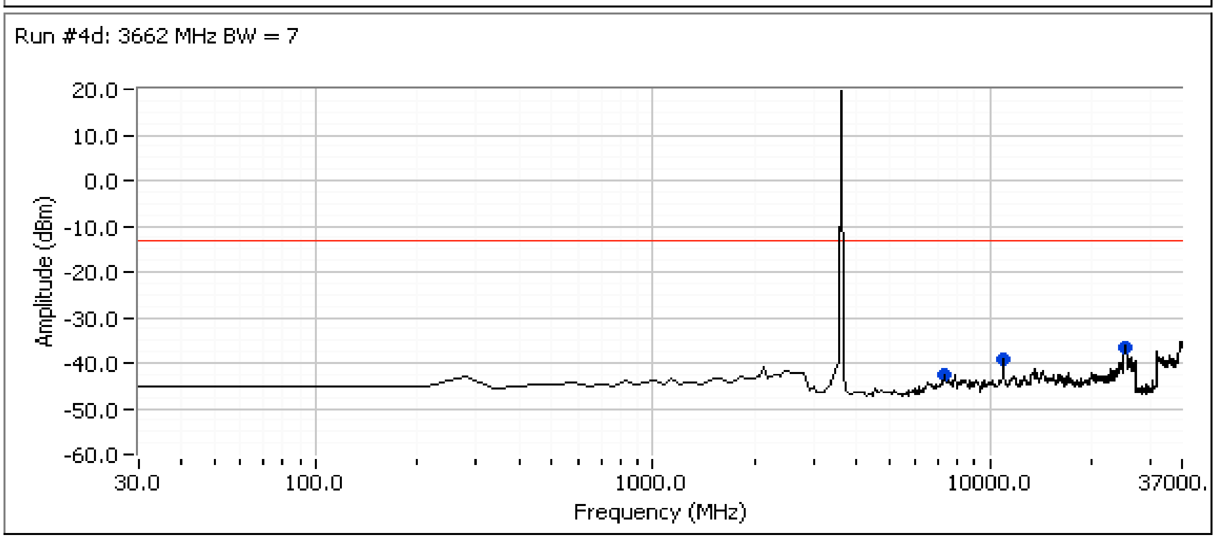


Frequency	Level	Port	FCC Part 90		Detector	Channel	Mode	Comments
MHz	dBm		Limit	Margin				
7306.920	-42.3	RF Port	-13.0	-29.3	Peak	3653	BPSK	5 MHz
10957.070	-40.2	RF Port	-13.0	-27.2	Peak	3653	BPSK	5 MHz
25048.620	-36.0	RF Port	-13.0	-23.0	Peak	3653	BPSK	5 MHz
7323.220	-42.2	RF Port	-13.0	-29.2	Peak	3662	BPSK	5 MHz
10988.130	-40.3	RF Port	-13.0	-27.3	Peak	3662	BPSK	5 MHz
25034.160	-35.8	RF Port	-13.0	-22.8	Peak	3662	BPSK	5 MHz
7344.140	-43.8	RF Port	-13.0	-30.8	Peak	3672	BPSK	5 MHz
11013.660	-43.2	RF Port	-13.0	-30.2	Peak	3672	BPSK	5 MHz
25061.840	-36.7	RF Port	-13.0	-23.7	Peak	3672	BPSK	5 MHz

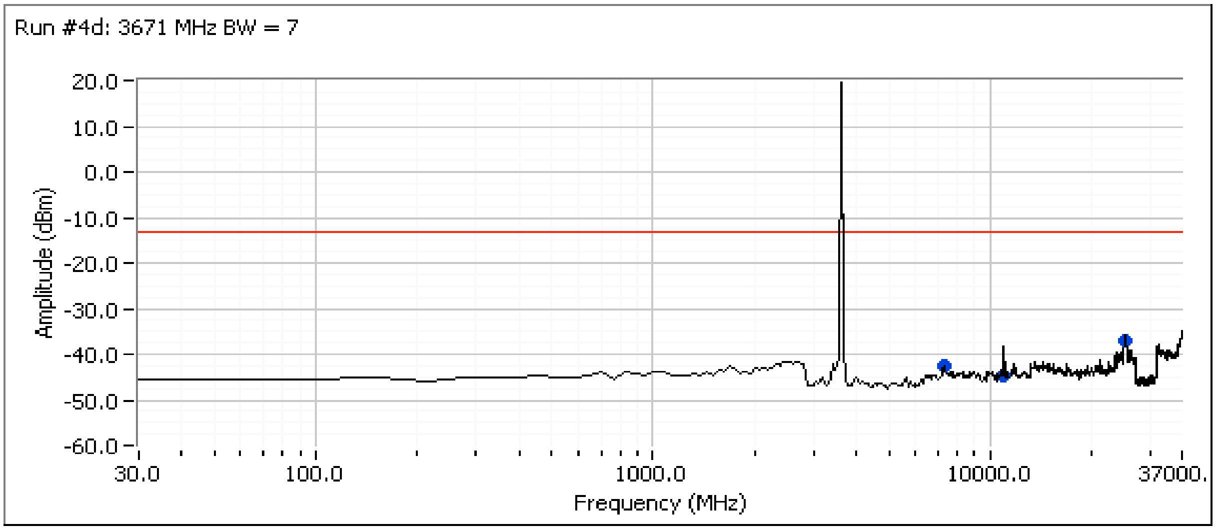
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #4d: Spurious emissions, BW=7MHz, power setting of 23





Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

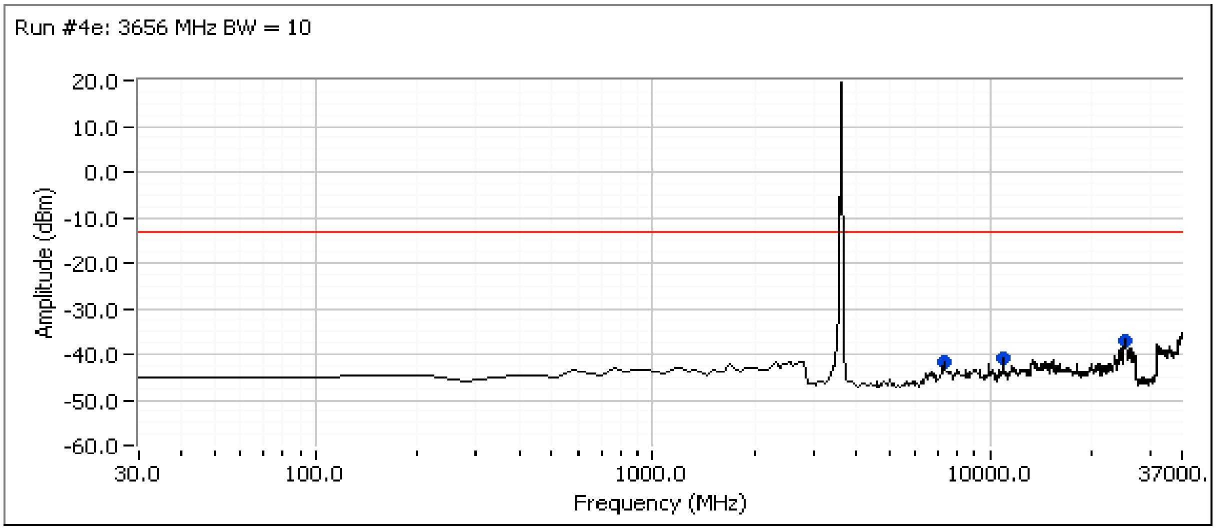


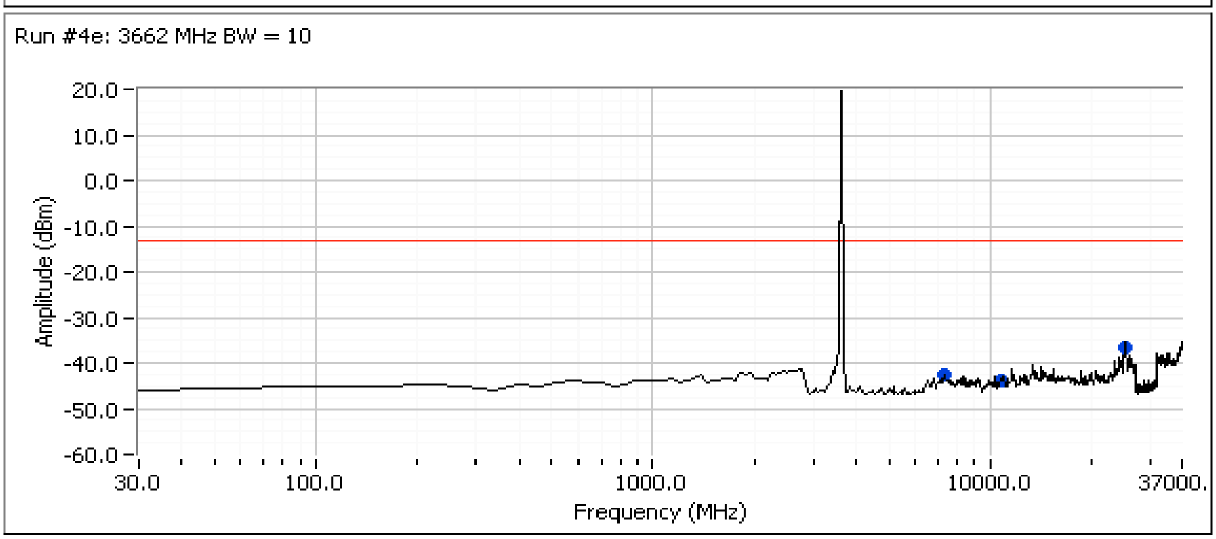
Frequency MHz	Level dBm	Port	FCC Part 90 Limit	FCC Part 90 Margin	Detector	Channel	Mode	Comments
7310.150	-43.8	RF Port	-13.0	-30.8	Peak	3654	BPSK	7 MHz
10959.220	-41.8	RF Port	-13.0	-28.8	Peak	3654	BPSK	7 MHz
25087.990	-37.2	RF Port	-13.0	-24.2	Peak	3654	BPSK	7 MHz
7324.760	-42.7	RF Port	-13.0	-29.7	Peak	3662	BPSK	7 MHz
10987.510	-39.3	RF Port	-13.0	-26.3	Peak	3662	BPSK	7 MHz
25046.470	-36.5	RF Port	-13.0	-23.5	Peak	3662	BPSK	7 MHz
7342.600	-42.5	RF Port	-13.0	-29.5	Peak	3671	BPSK	7 MHz
11013.970	-44.7	RF Port	-13.0	-31.7	Peak	3671	BPSK	7 MHz
25067.690	-37.2	RF Port	-13.0	-24.2	Peak	3671	BPSK	7 MHz

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

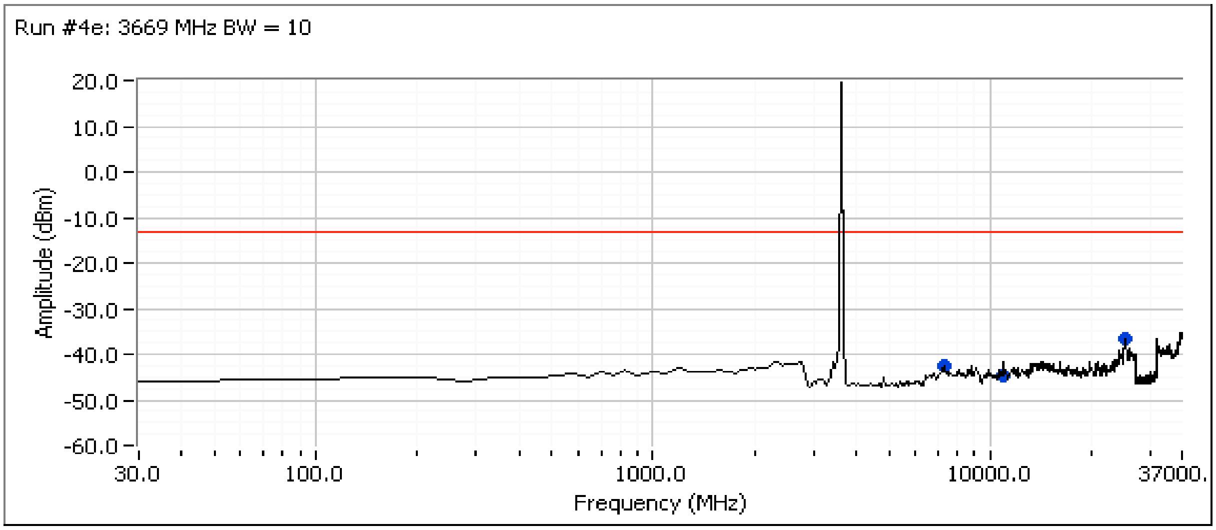
Run #4e: Spurious emissions, BW=10MHz, power setting of 23





Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A



Frequency MHz	Level dBm	Port	FCC Part 90 Limit	Margin	Detector	Channel	Mode	Comments
7312.000	-41.5	RF Port	-13.0	-28.5	Peak	3656	BPSK	10 MHz
10968.060	-40.7	RF Port	-13.0	-27.7	Peak	3656	BPSK	10 MHz
25073.840	-37.0	RF Port	-13.0	-24.0	Peak	3656	BPSK	10 MHz
7324.150	-42.7	RF Port	-13.0	-29.7	Peak	3662	BPSK	10 MHz
10986.620	-44.0	RF Port	-13.0	-31.0	Peak	3662	BPSK	10 MHz
25062.150	-36.5	RF Port	-13.0	-23.5	Peak	3662	BPSK	10 MHz
7338.290	-42.7	RF Port	-13.0	-29.7	Peak	3669	BPSK	10 MHz
11007.510	-44.7	RF Port	-13.0	-31.7	Peak	3669	BPSK	10 MHz
25070.150	-36.7	RF Port	-13.0	-23.7	Peak	3669	BPSK	10 MHz

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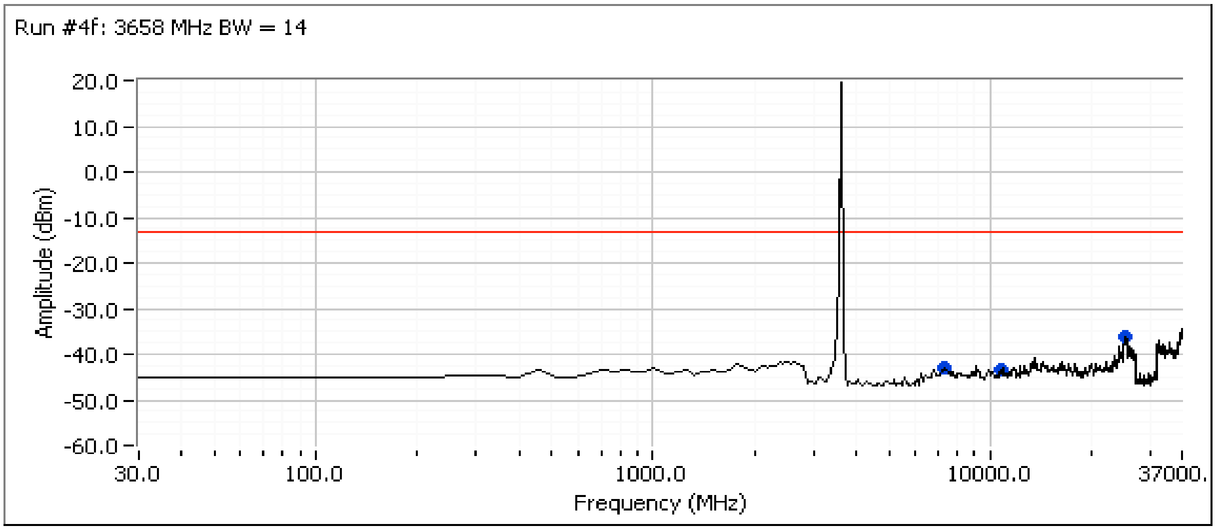
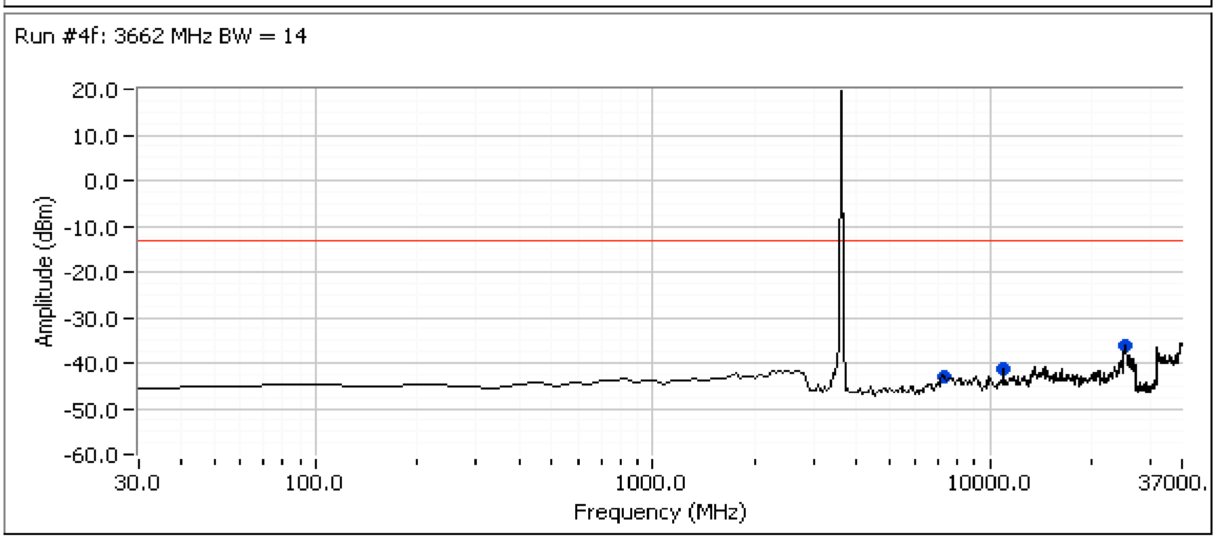
Radio Test Data

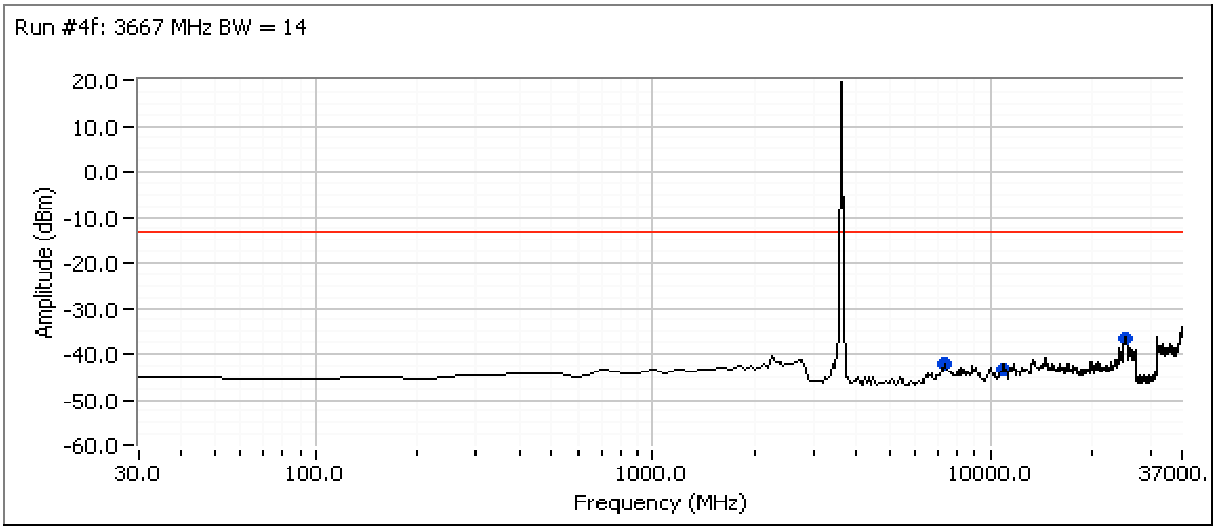
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #4f: Spurious emissions, BW=14MHz, power setting of 23





Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A



Frequency	Level	Port	FCC Part 90		Detector	Channel	Mode	Comments
MHz	dBm		Limit	Margin				
7315.840	-42.8	RF Port	-13.0	-29.8	Peak	3658	BPSK	14 MHz
10974.610	-43.3	RF Port	-13.0	-30.3	Peak	3658	BPSK	14 MHz
25064.300	-36.3	RF Port	-13.0	-23.3	Peak	3658	BPSK	14 MHz
7323.690	-43.0	RF Port	-13.0	-30.0	Peak	3662	BPSK	14 MHz
10988.030	-41.2	RF Port	-13.0	-28.2	Peak	3662	BPSK	14 MHz
25074.150	-36.3	RF Port	-13.0	-23.3	Peak	3662	BPSK	14 MHz
7333.730	-42.3	RF Port	-13.0	-29.3	Peak	3667	BPSK	14 MHz
11001.050	-43.2	RF Port	-13.0	-30.2	Peak	3667	BPSK	14 MHz
25081.730	-36.8	RF Port	-13.0	-23.8	Peak	3667	BPSK	14 MHz

EMC Test Data

Elliott — An NTS company

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

FCC Part 90Z
Spurious Emissions

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: 7/23/2008
Test Engineer: Mehran Birgani
Test Location: Refer to each run

Config. Used: 1
Config Change: None
EUT Voltage: 13.8Vdc

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 12 °C
Rel. Humidity: 75 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Transmit Mode, 30 - 37000 MHz	FCC 90.1323 -13dBm erp	Pass	50.1dBμV/m @ 10958.9MHz (-32.1dB)

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.

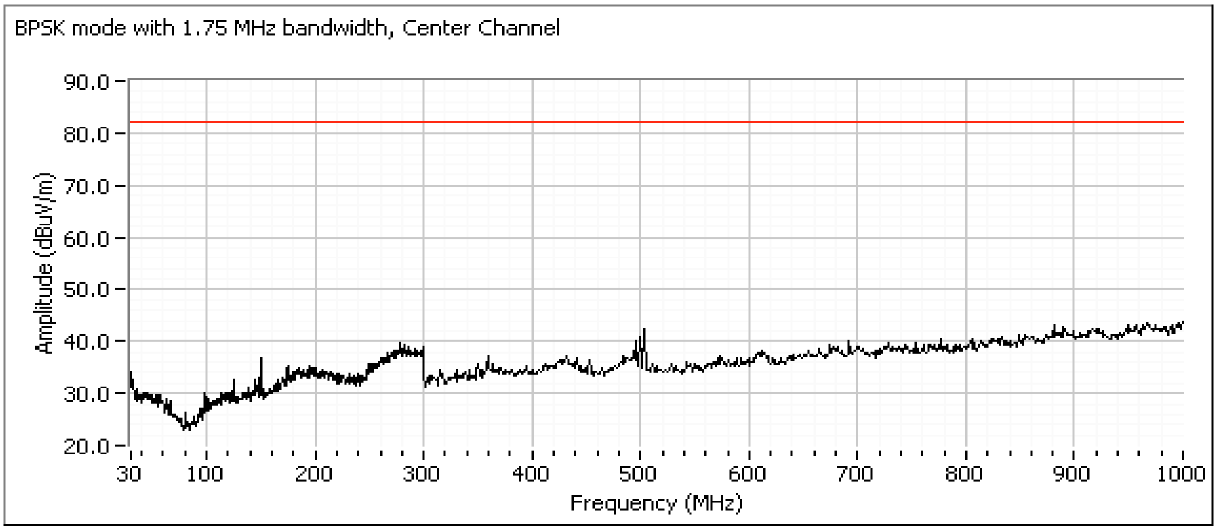
Elliott — An NTS company

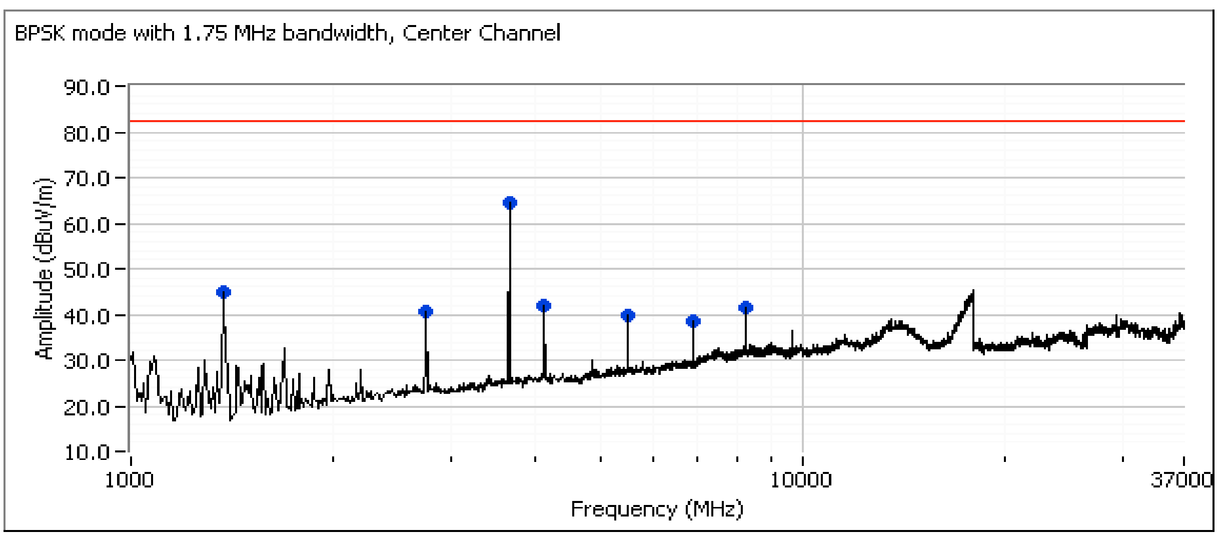
EMC Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1: Radiated Spurious Emissions, Transmit Mode, 30 - 37000 MHz (Perform at chamber #2)

Run #1a: 3662 GHz with power setting of 23 with bandwidth 1.75 MHz (Center Channel)

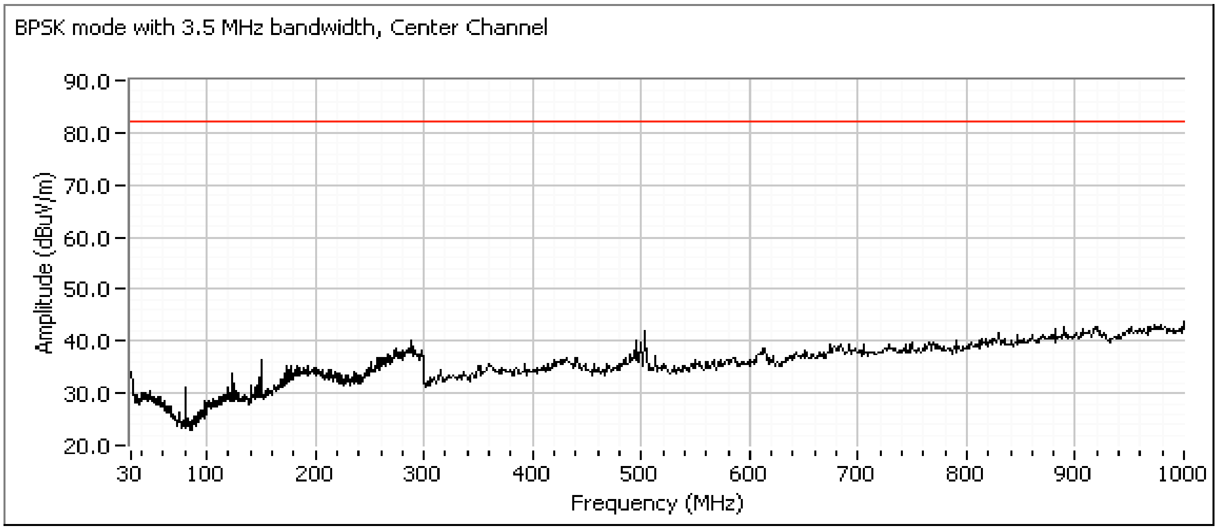


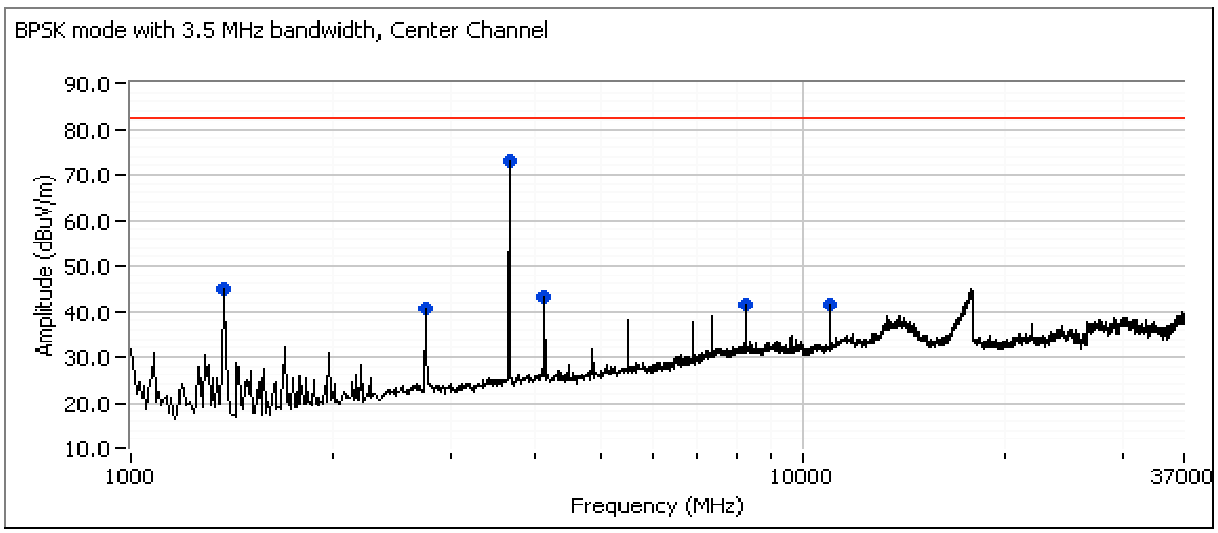


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3661.900	64.6	V	N/A	N/A	Peak	121.0	1.7	Fundamental
1376.970	45.1	V	82.2	-37.1	Peak	290.0	1.7	
4130.590	42.1	V	82.2	-40.1	Peak	220.0	1.7	
8258.930	41.6	V	82.2	-40.6	Peak	305.0	1.7	
2753.760	40.8	V	82.2	-41.4	Peak	280.0	1.7	
5507.060	39.6	V	82.2	-42.6	Peak	270.0	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1b: 3662 GHz with power setting of 23 with bandwidth 3.5 MHz (Center Channel)

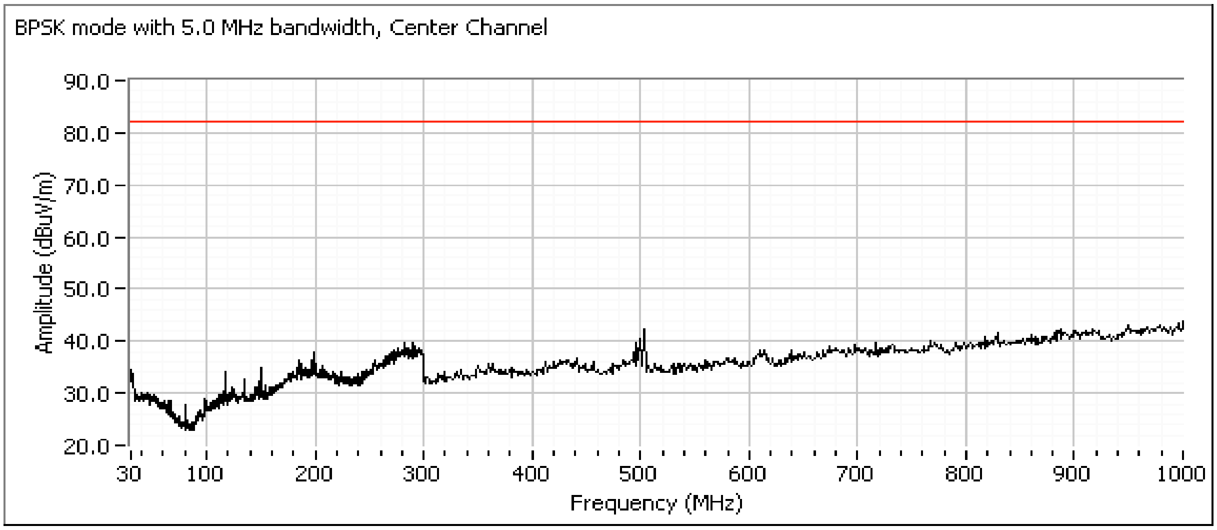


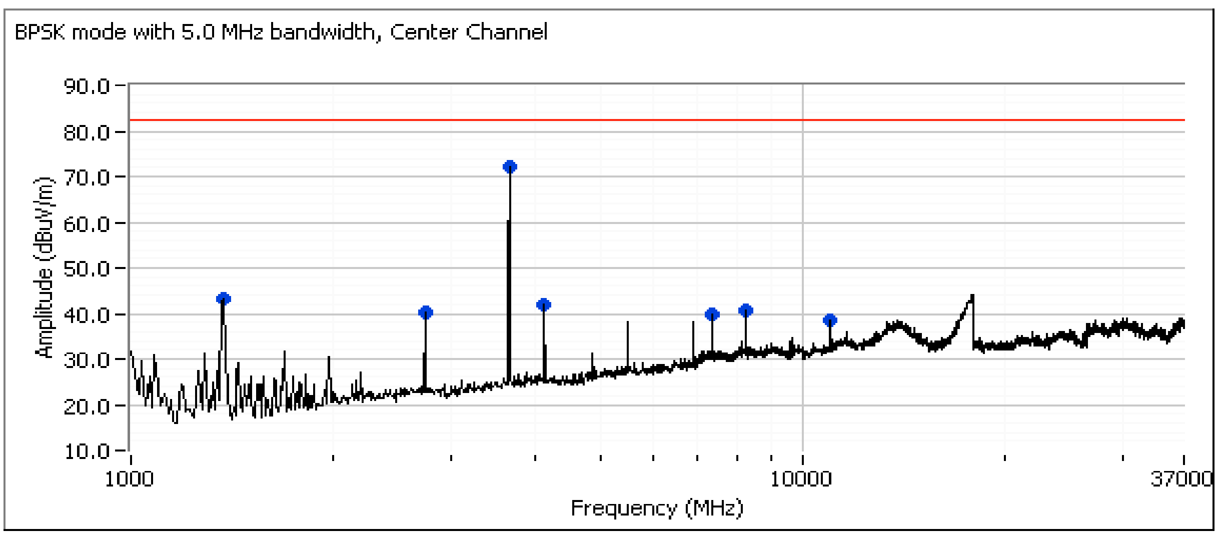


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3661.990	73.1	V	N/A	N/A	Peak	121.0	1.7	Fundamental
1376.260	44.7	V	82.2	-37.5	Peak	288.0	1.7	
4128.270	43.1	V	82.2	-39.1	Peak	243.0	1.7	
8257.770	41.7	V	82.2	-40.5	Peak	296.0	1.7	
10986.400	41.5	V	82.2	-40.7	Peak	235.0	1.7	
2751.920	40.6	V	82.2	-41.6	Peak	278.0	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1c: 3662 GHz with power setting of 23 with bandwidth 5.0 MHz (Center Channel)

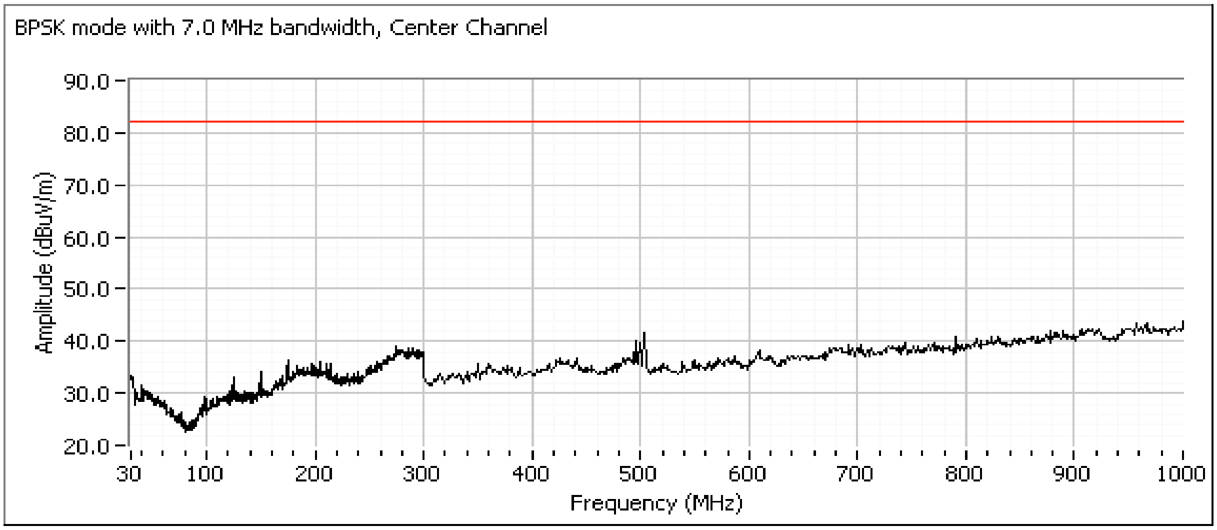


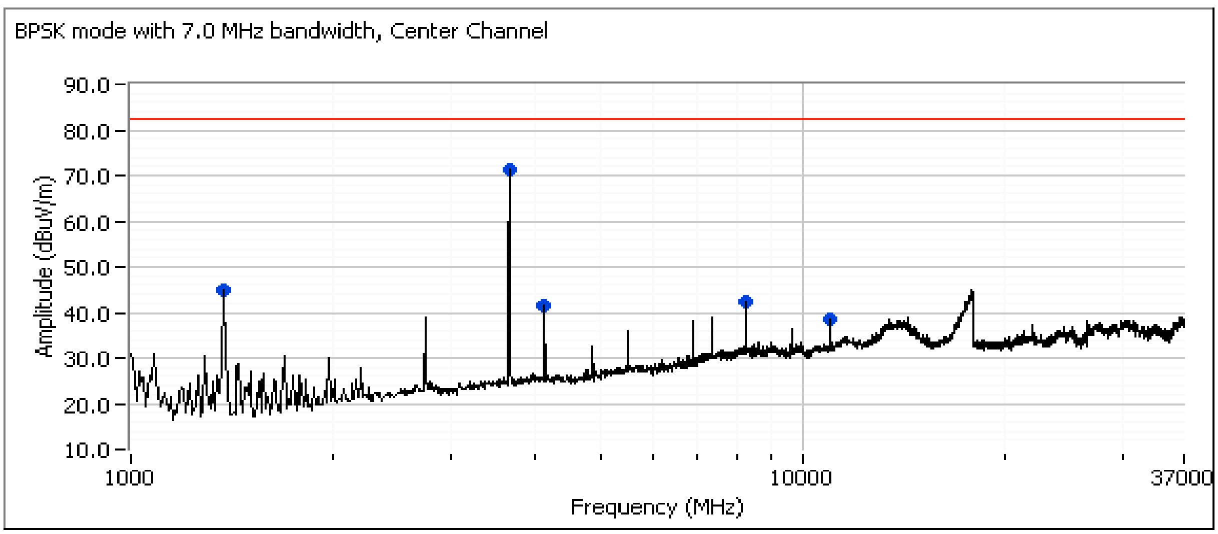


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3661.870	72.1	V	N/A	N/A	Peak	147.0	1.7	Fundamental
1375.830	43.1	V	82.2	-39.1	Peak	271.0	1.7	
4127.600	41.8	V	82.2	-40.4	Peak	252.0	1.7	
8253.620	40.6	V	82.2	-41.6	Peak	293.0	1.7	
2751.530	40.3	V	82.2	-41.9	Peak	262.0	1.7	
7324.840	39.6	V	82.2	-42.6	Peak	272.0	1.7	
10986.400	38.7	V	82.2	-43.5	Peak	231.0	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1d: 3662 GHz with power setting of 23 with bandwidth 7.0 MHz (Center Channel)

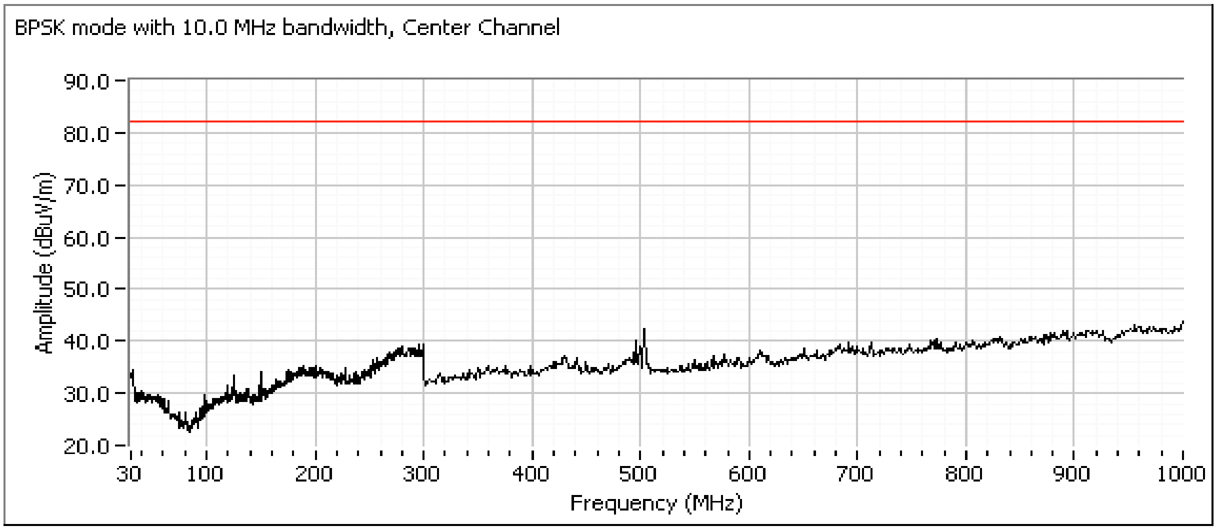


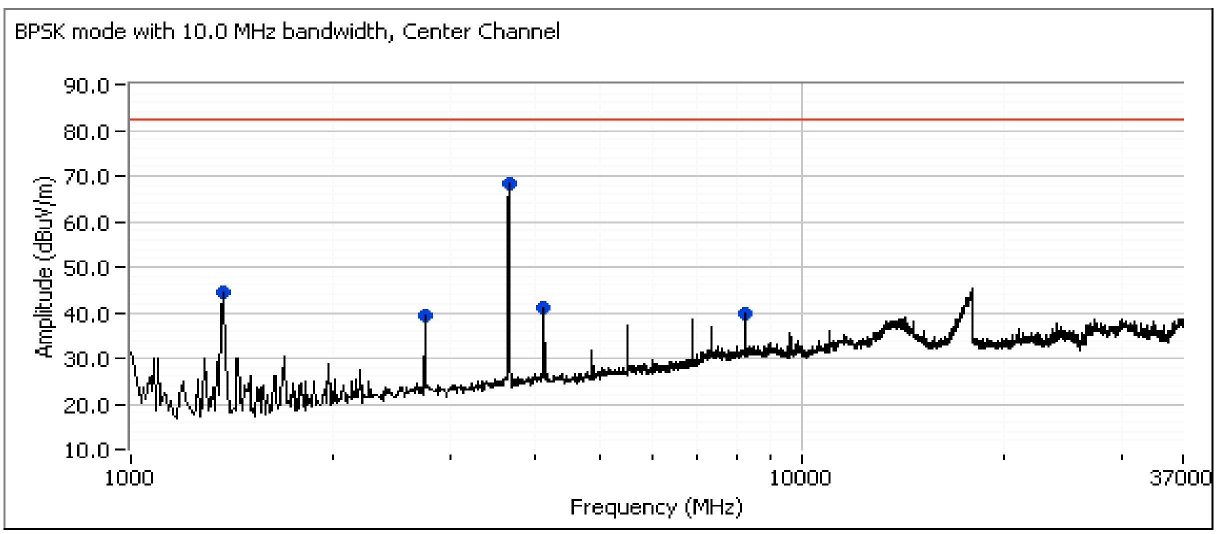


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3661.810	71.4	V	N/A	N/A	Peak	154.0	1.7	Fundamental
1376.380	44.9	V	82.2	-37.3	Peak	293.0	1.7	
8256.640	42.4	V	82.2	-39.8	Peak	289.0	1.7	
4128.760	41.6	V	82.2	-40.6	Peak	239.0	1.7	
10986.640	38.3	V	82.2	-43.9	Peak	34.0	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1e: 3662 GHz with power setting of 23 with bandwidth 10.0 MHz (Center Channel)

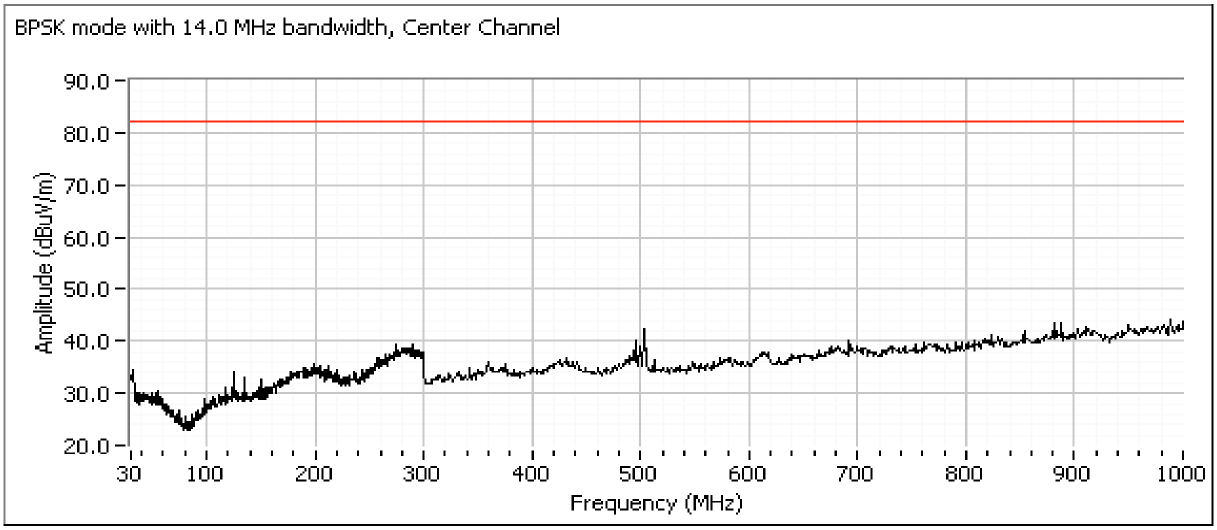


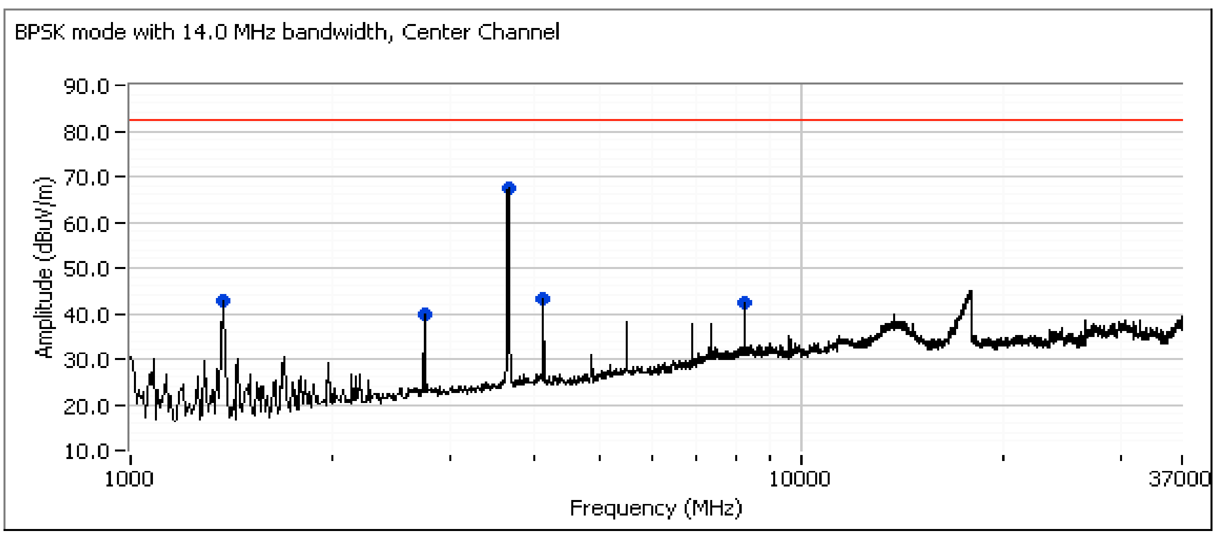


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3662.050	68.4	V	N/A	N/A	Peak	142	1.7	Fundamental
1375.590	44.6	V	82.2	-37.6	Peak	282	1.7	
4126.750	41.0	V	82.2	-41.2	Peak	301	1.7	
8252.830	39.9	V	82.2	-42.3	Peak	294	1.7	
2751.130	39.4	V	82.2	-42.8	Peak	262	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1f: 3662 GHz with power setting of 23 with bandwidth 14.0 MHz (Center Channel)

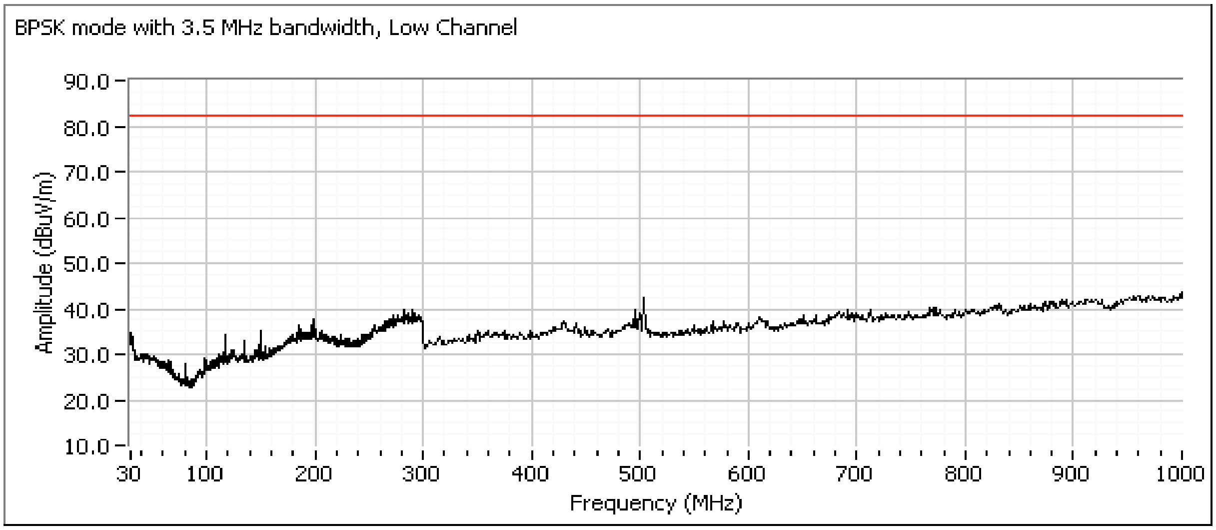


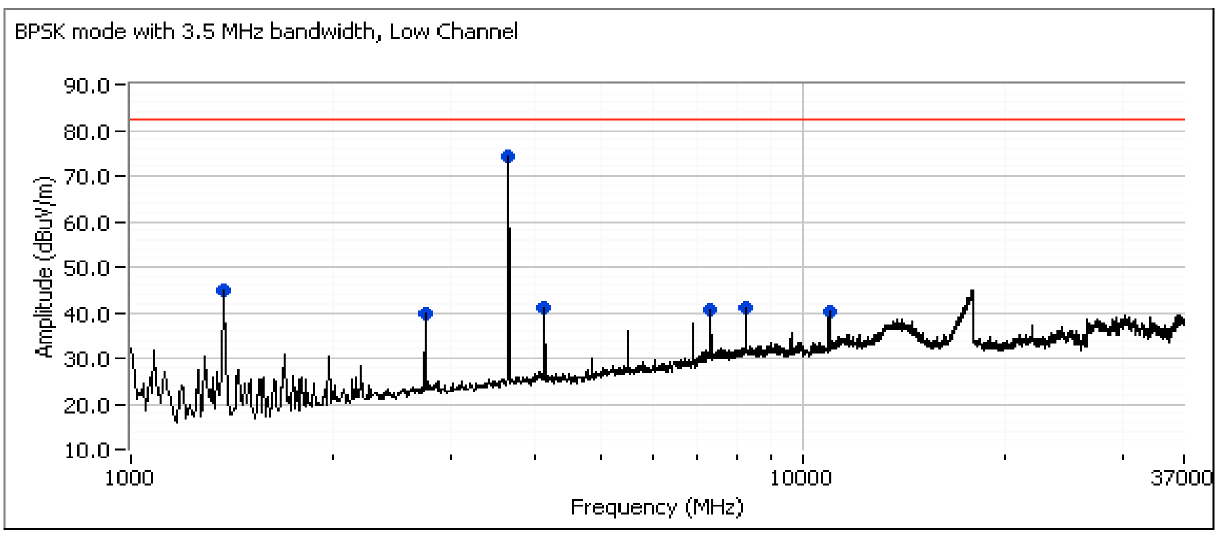


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3661.870	67.6	V	N/A	N/A	Peak	158	1.7	Fundamental
4126.500	43.0	V	82.2	-39.2	Peak	243	1.7	
1375.460	42.7	V	82.2	-39.5	Peak	256	1.7	
8252.020	42.4	V	82.2	-39.8	Peak	290	1.7	
2750.880	39.6	V	82.2	-42.6	Peak	276	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1g: 3653 GHz with power setting of 23 with bandwidth 3.5 MHz (Low Channel)

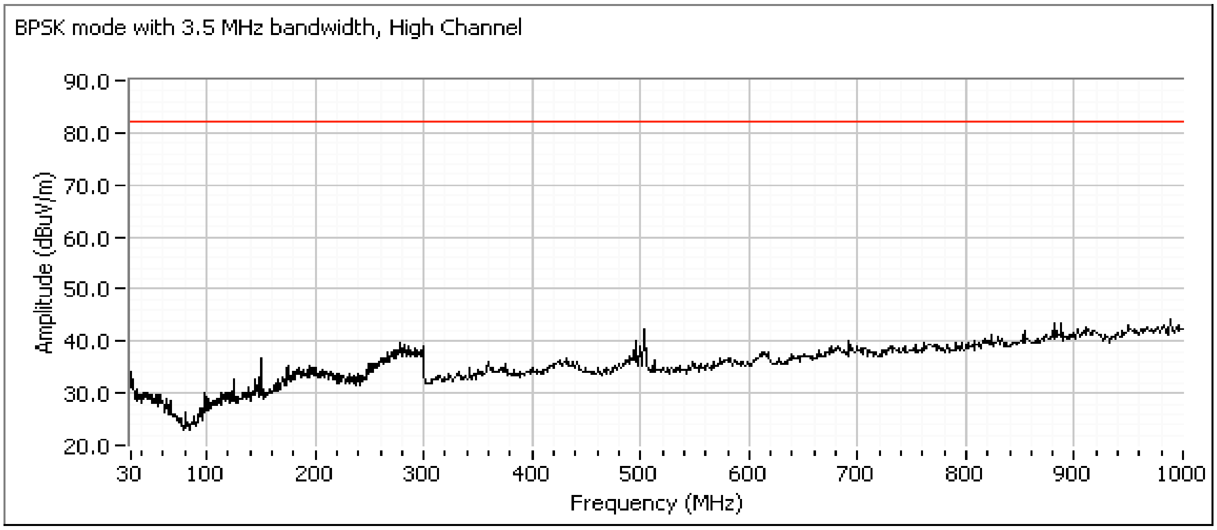


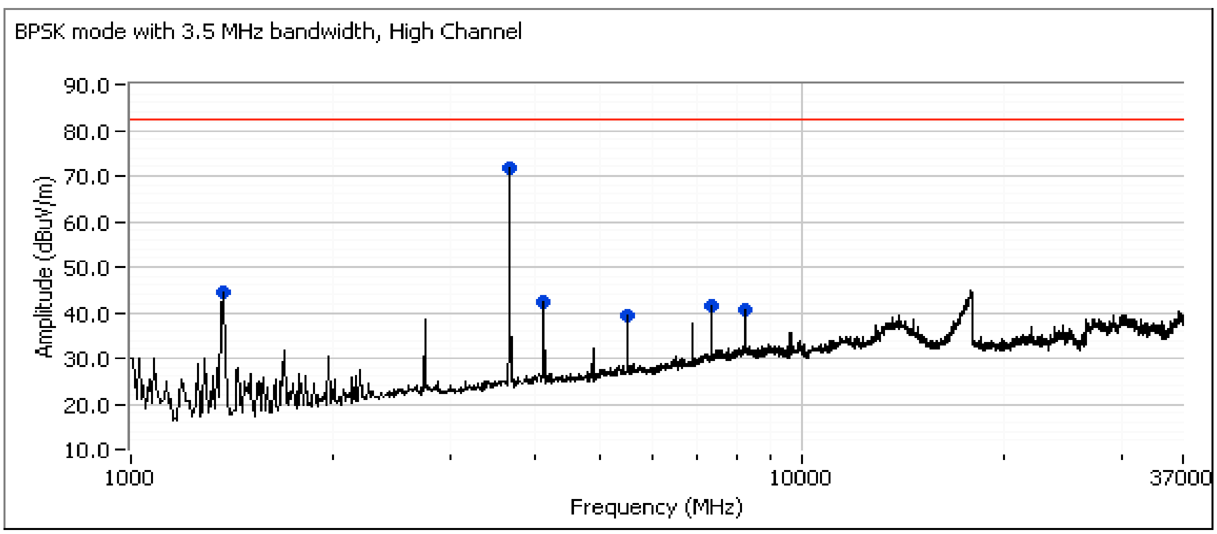


Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3652.950	74.1	V	N/A	N/A	Peak	146	1.7	Fundamental
1375.950	45.1	V	82.2	-37.1	Peak	276	1.7	
4127.720	41.0	V	82.2	-41.2	Peak	295	1.7	
8253.610	40.9	V	82.2	-41.3	Peak	295	1.7	
7306.240	40.7	V	82.2	-41.5	Peak	269	1.7	
10958.940	40.2	V	82.2	-42.0	Peak	255	1.7	
2751.490	39.9	V	82.2	-42.3	Peak	265	1.7	

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #1h: 3672 GHz with power setting of 23 with bandwidth 3.5 MHz (High Channel)





Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3671.890	71.9	V	N/A	N/A	Peak	158	1.7	Fundamental
1375.520	44.6	V	82.2	-37.6	Peak	297	1.7	
4126.800	42.5	V	82.2	-39.7	Peak	268	1.7	
7344.040	41.3	V	82.2	-40.9	Peak	266	1.7	
8251.680	40.7	V	82.2	-41.5	Peak	292	1.7	
5501.980	39.3	V	82.2	-42.9	Peak	268	1.7	

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EMC Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76967
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90	Class:	N/A

Run #2: Radiated Spurious Emissions, Transmit Mode: Final Field Strength and Substitution Measurements
Test performed at SVOATS #2
Based on results above, spurious emissions at highest and lowest channels for each BW were considered unnecessary

Frequency	Level	Pol	FCC 90.210		Detector	Azimuth	Height	Comments	Operating
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		Frequency
1376.970	40.6	V	82.2	-41.6	PK	200	1.0	Run 1a	3662MHz, 1.75BW
2750.880	39.9	V	82.2	-42.3	PK	203	1.3	Run 1g	3653MHz, 3.5BW
4130.590	41.5	V	82.2	-40.7	PK	203	1.1	Run 1a	3662MHz, 1.75BW
5507.060	44.6	V	82.2	-37.6	PK	258	1.0	Run 1a	3662MHz, 1.75BW
7306.240	46.8	V	82.2	-35.4	PK	304	1.0	Run 1h	3672MHz, 3.5BW
8252.020	47.5	V	82.2	-34.7	PK	192	1.0	Run 1g	3653MHz, 3.5BW
8258.930	47.7	V	82.2	-34.5	PK	187	1.0	Run 1a	3662MHz, 1.75BW
10958.940	**50.1**	**V**	**82.2**	**-32.1**	PK	219	1.0	Run 1h	3672MHz, 3.5BW

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
All signals were more than 20dB below the computed FS limit										

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
All signals were more than 20dB below the computed FS limit										

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		-
Emissions Standard(s):	FCC Part 90Z	Class:	A
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

GE MDS LLC

Model

Mercury 3650

Date of Last Test: 9/29/2009

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

FCC Part 90Z
Power and PSD

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: 9/28 & 29/2009
Test Engineer: Mehran Birgani
Test Location: FT Chamber #4

Config. Used: 1
Config Change: None
EUT Voltage: 13.8VDC

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 20-24 °C
Rel. Humidity: 32-48 %

Summary of Results

Channel Spacing	Test Performed	Limit	Pass / Fail	Result / Margin
1.75 MHz	Power EIRP	FCC Part 90Z	Pass	32.0 dBm (1.585W)
	PSD EIRP	Part 90Z (30dBm/MHz)		30.0 dBm/MHz
3.50 MHz	Power EIRP	FCC Part 90Z	Pass	34.4 dBm (2.754W)
	PSD EIRP	Part 90Z (30dBm/MHz)		29.6 dBm/MHz
5.00 MHz	Power EIRP	FCC Part 90Z	Pass	36.0 dBm (3.981W)
	PSD EIRP	Part 90Z (30dBm/MHz)		29.9 dBm/MHz
7.00 MHz	Power EIRP	FCC Part 90Z	Pass	37.5 dBm (5.623W)
	PSD EIRP	Part 90Z (30dBm/MHz)		29.9 dBm/MHz
10.00 MHz	Power EIRP	FCC Part 90Z	Pass	37.2 dBm (5.248W)
	PSD EIRP	Part 90Z (30dBm/MHz)		27.9 dBm/MHz
14.00 MHz	Power EIRP	FCC Part 90Z	Pass	37.0 dBm (5.012W)
	PSD EIRP	Part 90Z (30dBm/MHz)		26.8 dBm/MHz

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 LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

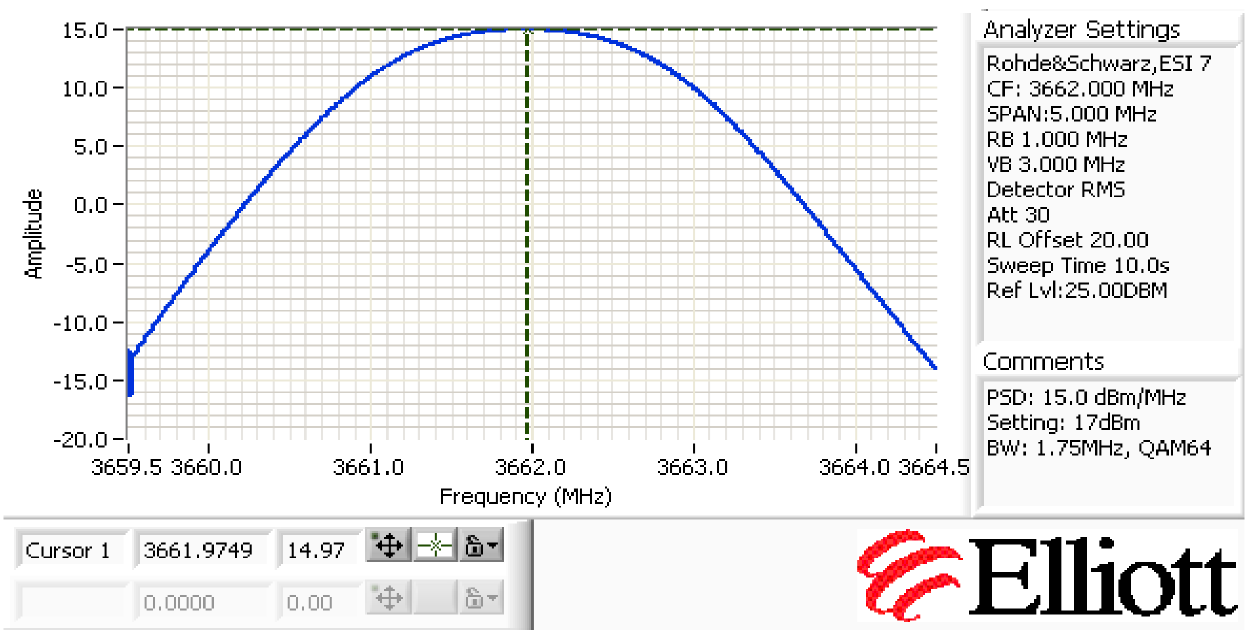
Run #1: Power (conducted and EIRP) and PSD (conducted and EIRP) Measurements
1.75 MHz Channel Spacing

Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3652	BPSK	1.75 MHz	22	21.6	19.6	10.0	29.6	31.6
3662	BPSK	1.75 MHz	22	20.9	19.5	10.0	29.5	30.9
3673	BPSK	1.75 MHz	22	20.8	19.4	10.0	29.4	30.8
3652	QAM64	1.75 MHz	22	**22.0**	19.8	10.0	29.8	**32.0**
3662	QAM64	1.75 MHz	22	21.5	19.5	10.0	29.5	31.5
3673	QAM64	1.75 MHz	22	21.5	19.4	10.0	29.4	31.5
3652	BPSK	1.75 MHz	17	16.4	15.0	15.0	30.0	31.4
3662	BPSK	1.75 MHz	17	16.8	14.8	15.0	29.8	31.8
3673	BPSK	1.75 MHz	17	16.7	14.8	15.0	29.8	31.7
3652	QAM64	1.75 MHz	17	16.9	14.9	15.0	29.9	31.9
3662	QAM64	1.75 MHz	17	16.9	**15.0**	15.0	**30.0**	31.9
3673	QAM64	1.75 MHz	17	16.2	14.8	15.0	29.8	31.2

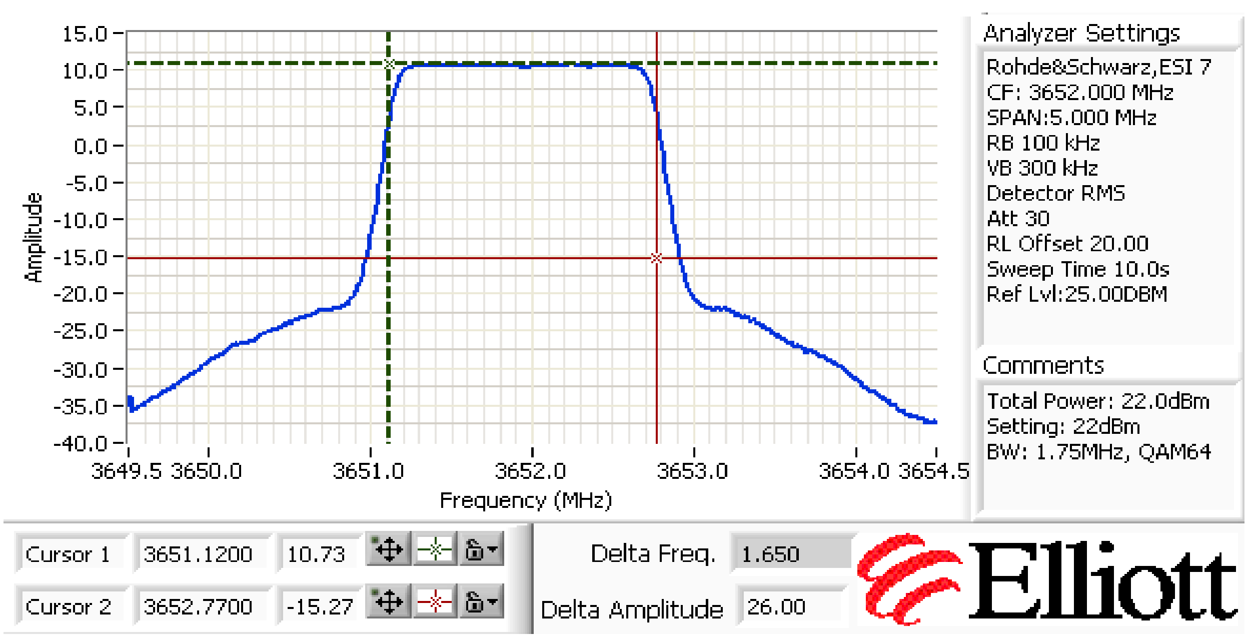
Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	These are the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (top) Power Plot (Bottom)



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Radio Test Data

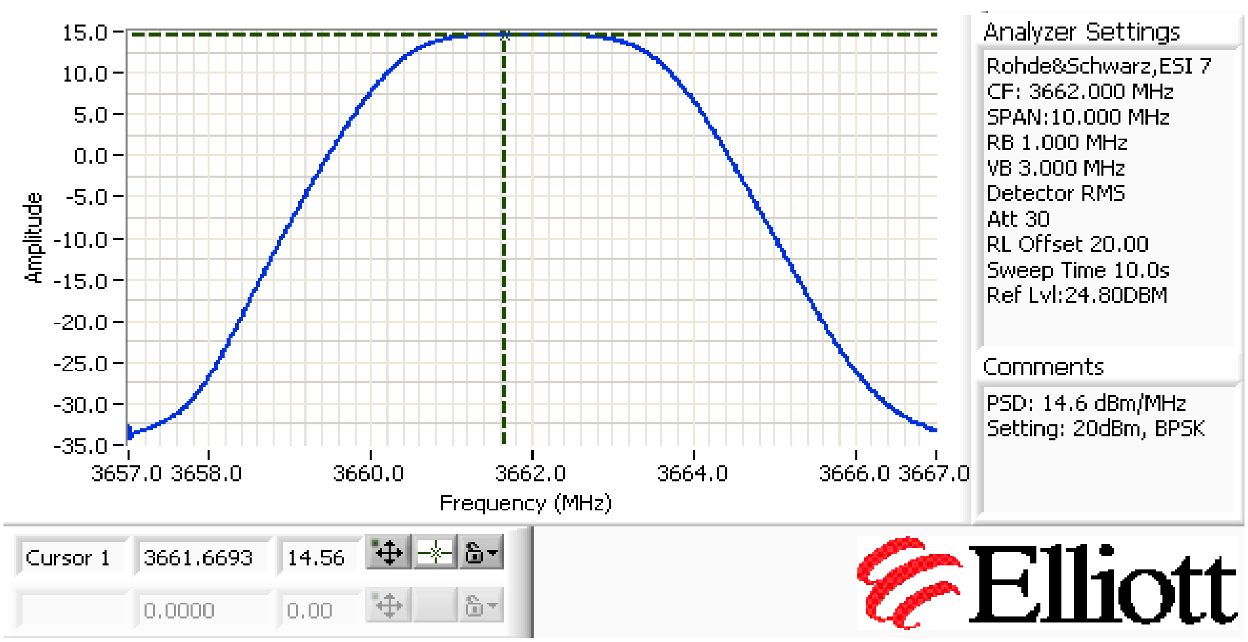
Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

3.5 MHz Channel Spacing

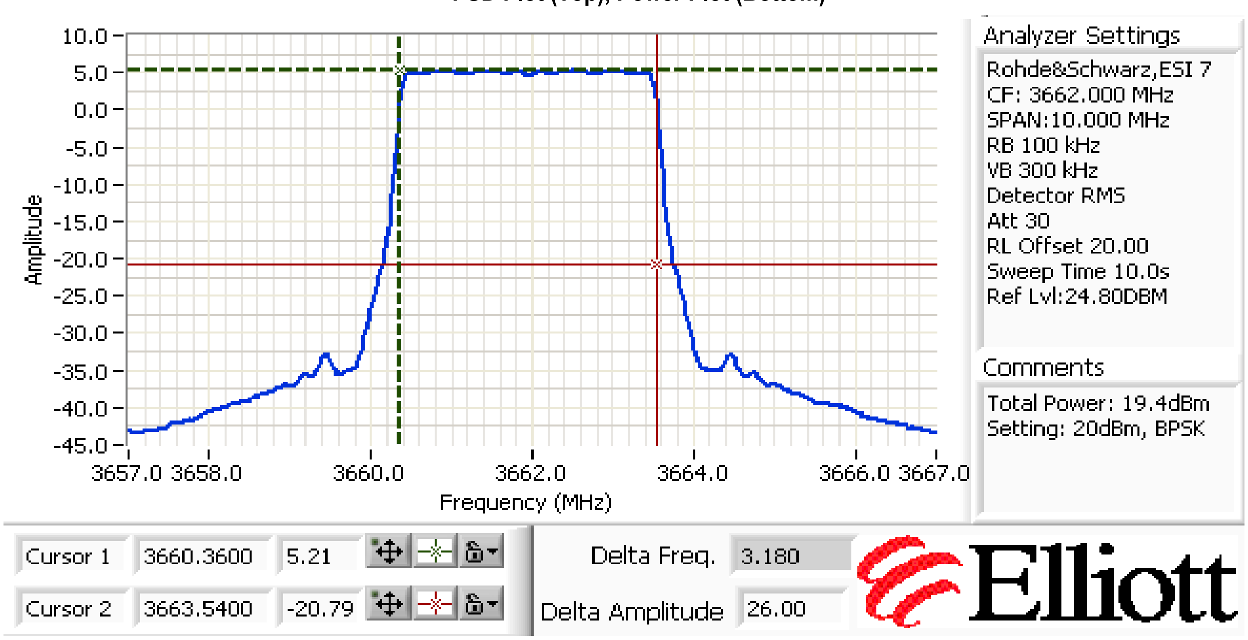
Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3653	BPSK	3.50 MHz	23	22.4	17.7	10.0	27.7	32.4
3662	BPSK	3.50 MHz	23	22.5	17.6	10.0	27.6	32.5
3672	BPSK	3.50 MHz	23	22.4	17.5	10.0	27.5	32.4
3653	QAM64	3.50 MHz	23	22.3	17.5	10.0	27.5	32.3
3662	QAM64	3.50 MHz	23	22.4	17.7	10.0	27.7	32.4
3672	QAM64	3.50 MHz	23	22.4	17.6	10.0	27.6	32.4
3653	BPSK	3.50 MHz	20	19.3	14.5	15.0	29.5	34.3
3662	BPSK	3.50 MHz	20	19.4	14.6	15.0	**29.6**	**34.4**
3672	BPSK	3.50 MHz	20	19.3	14.5	15.0	29.5	34.3
3653	QAM64	3.50 MHz	20	19.2	14.4	15.0	29.4	34.2
3662	QAM64	3.50 MHz	20	19.4	14.6	15.0	29.6	34.4
3672	QAM64	3.50 MHz	20	19.4	14.6	15.0	29.6	34.4

Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	These are the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (Top), Power Plot (Bottom)



Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

5 MHz Channel Spacing

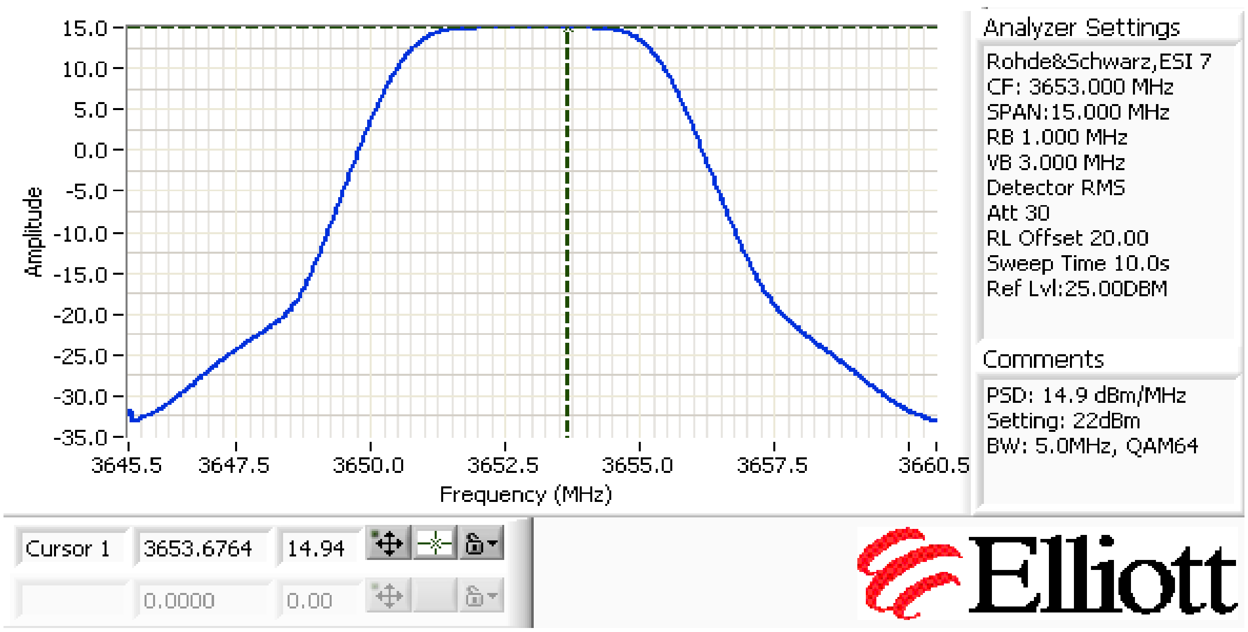
Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3653	BPSK	5.00 MHz	23	22.0	15.9	10.0	25.9	32.0
3662	BPSK	5.00 MHz	23	21.9	15.8	10.0	25.8	31.9
3672	BPSK	5.00 MHz	23	21.8	15.7	10.0	25.7	31.8
3653	QAM64	5.00 MHz	23	22.0	15.9	10.0	25.9	32.0
3662	QAM64	5.00 MHz	23	21.9	15.8	10.0	25.8	31.9
3672	QAM64	5.00 MHz	23	21.9	15.7	10.0	25.7	31.9
3653	BPSK	5.00 MHz	22	21.0	14.9	15.0	29.9	36.0
3662	BPSK	5.00 MHz	22	20.9	14.8	15.0	29.8	35.9
3672	BPSK	5.00 MHz	22	20.8	14.7	15.0	29.7	35.8
3653	QAM64	5.00 MHz	22	21.0	14.9	15.0	**29.9**	**36.0**
3662	QAM64	5.00 MHz	22	21.0	14.8	15.0	29.8	36.0
3672	QAM64	5.00 MHz	22	20.9	14.8	15.0	29.8	35.9

Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	These are the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

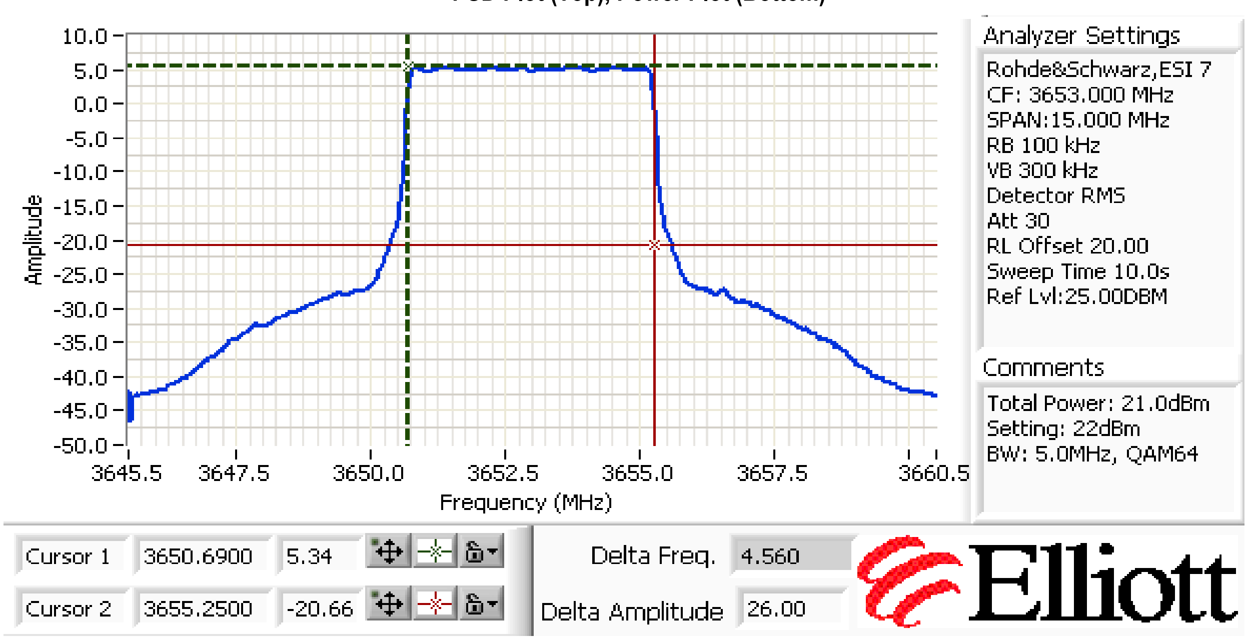
Elliott An NTS company

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (Top), Power Plot (Bottom)



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An NTS company

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

7 MHz Channel Spacing

Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3654	BPSK	7.00 MHz	23	22.5	14.8	10.0	24.8	32.5
3662	BPSK	7.00 MHz	23	22.2	14.7	10.0	24.7	32.2
3671	BPSK	7.00 MHz	23	22.2	14.6	10.0	24.6	32.2
3654	QAM64	7.00 MHz	23	22.4	14.9	10.0	24.9	32.4
3662	QAM64	7.00 MHz	23	22.3	14.8	10.0	24.8	32.3
3671	QAM64	7.00 MHz	23	22.2	14.7	10.0	24.7	32.2
3654	BPSK	7.00 MHz	23	**22.5**	14.8	15.0	29.8	**37.5**
3662	BPSK	7.00 MHz	23	22.2	14.7	15.0	29.7	37.2
3671	BPSK	7.00 MHz	23	22.2	14.6	15.0	29.6	37.2
3654	QAM64	7.00 MHz	23	**22.4**	**14.9**	15.0	**29.9**	37.4
3662	QAM64	7.00 MHz	23	22.3	14.8	15.0	29.8	37.3
3671	QAM64	7.00 MHz	23	22.2	14.7	15.0	29.7	37.2

Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	These are the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

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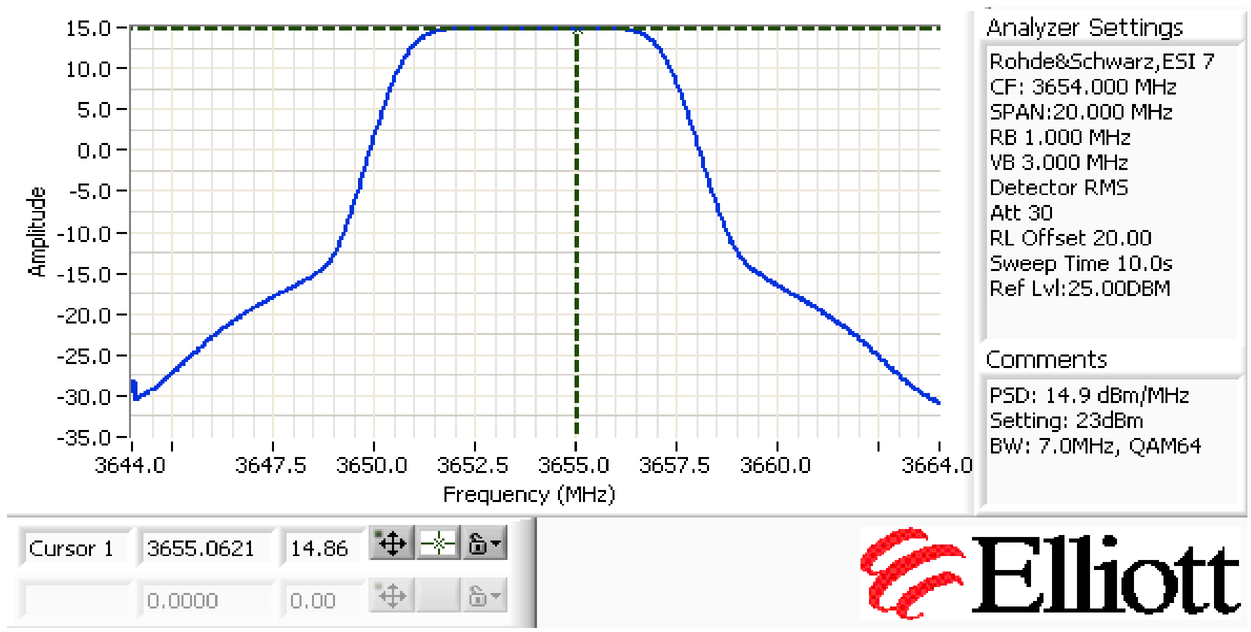
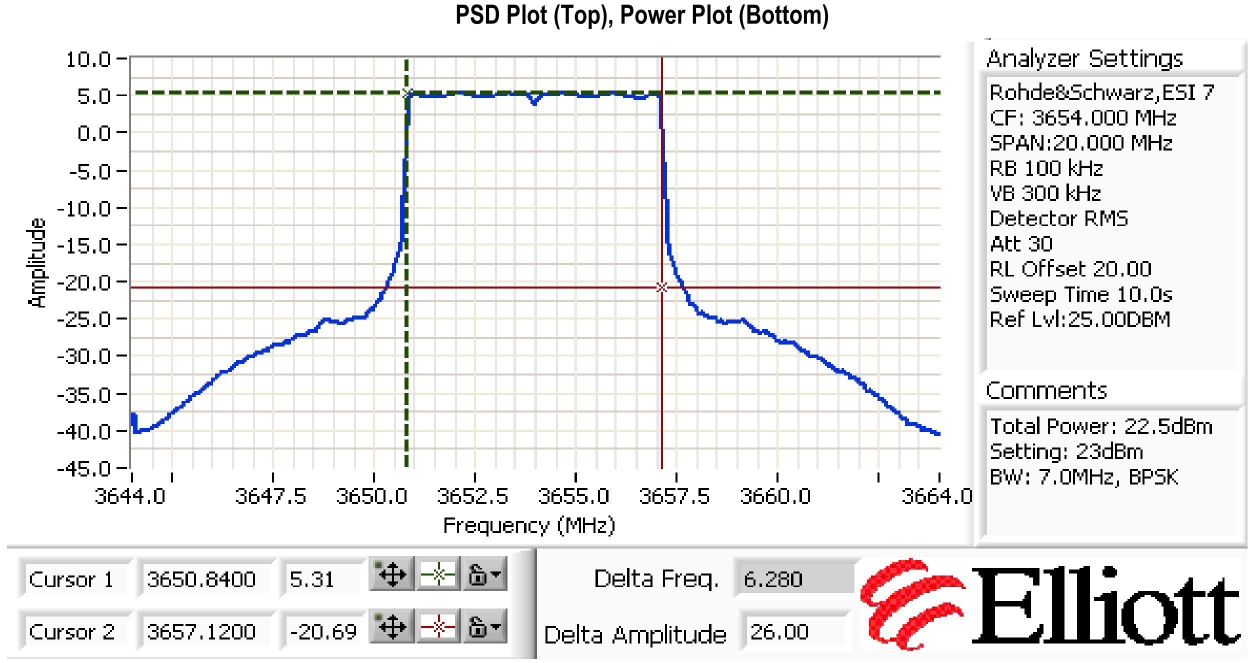
Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (Top), Power Plot (Bottom)



Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

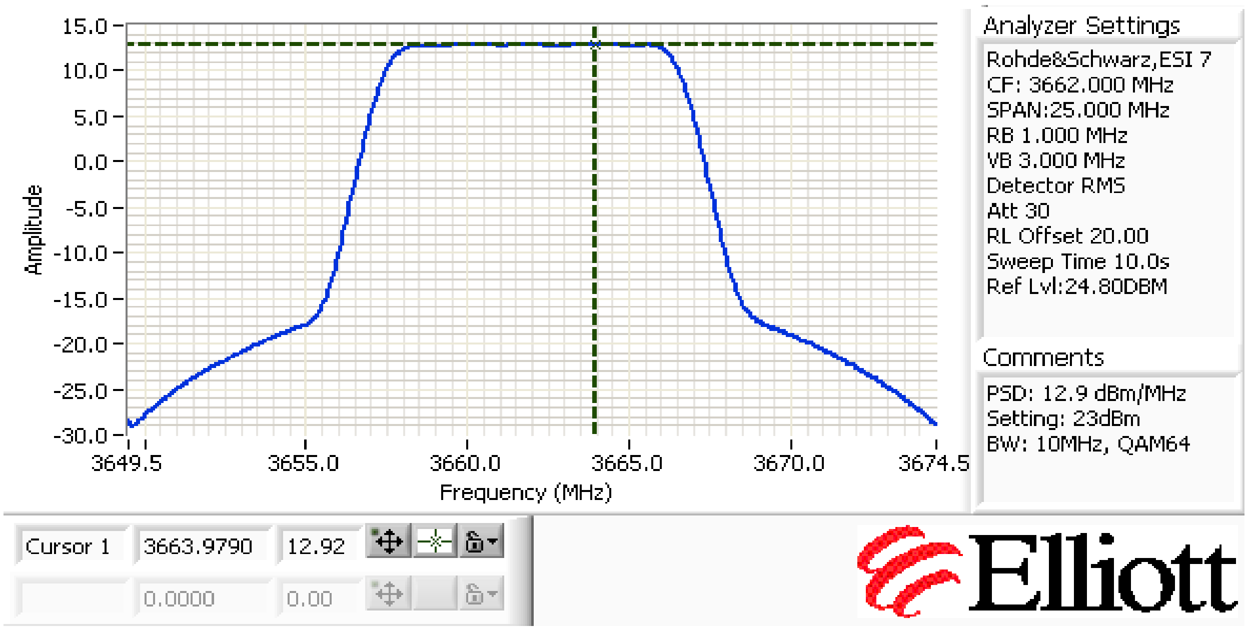
10 MHz Channel Spacing

Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3656	BPSK	10.00 MHz	23	21.9	12.7	10.0	22.7	31.9
3662	BPSK	10.00 MHz	23	22.0	12.8	10.0	22.8	32.0
3669	BPSK	10.00 MHz	23	22.0	12.7	10.0	22.7	32.0
3656	QAM64	10.00 MHz	23	22.1	12.9	10.0	22.9	32.1
3662	QAM64	10.00 MHz	23	22.2	12.9	10.0	22.9	32.2
3669	QAM64	10.00 MHz	23	22.1	12.9	10.0	22.9	32.1
3656	BPSK	10.00 MHz	23	21.9	12.7	15.0	27.7	36.9
3662	BPSK	10.00 MHz	23	22.0	12.8	15.0	27.8	37.0
3669	BPSK	10.00 MHz	23	22.0	12.7	15.0	27.7	37.0
3656	QAM64	10.00 MHz	23	22.1	12.9	15.0	27.9	37.1
3662	QAM64	10.00 MHz	23	22.2	12.9	15.0	**27.9**	**37.2**
3669	QAM64	10.00 MHz	23	22.1	12.9	15.0	27.9	37.1

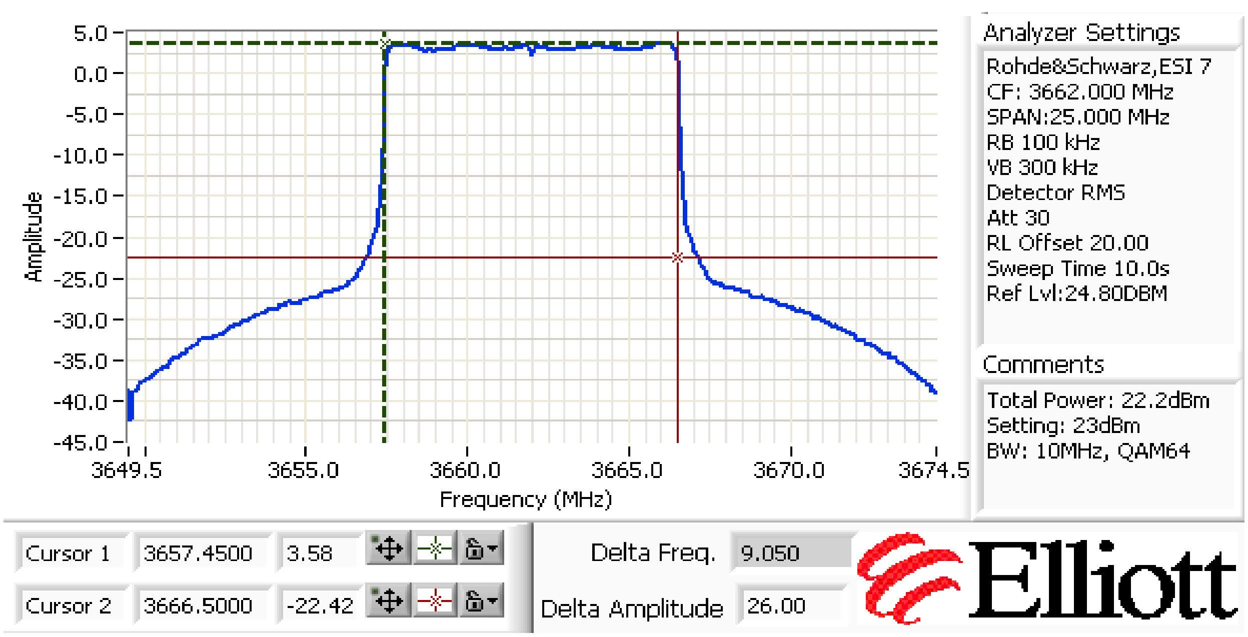
Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	These are the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (Top), Power Plot (Bottom)



Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A

14 MHz Channel Spacing

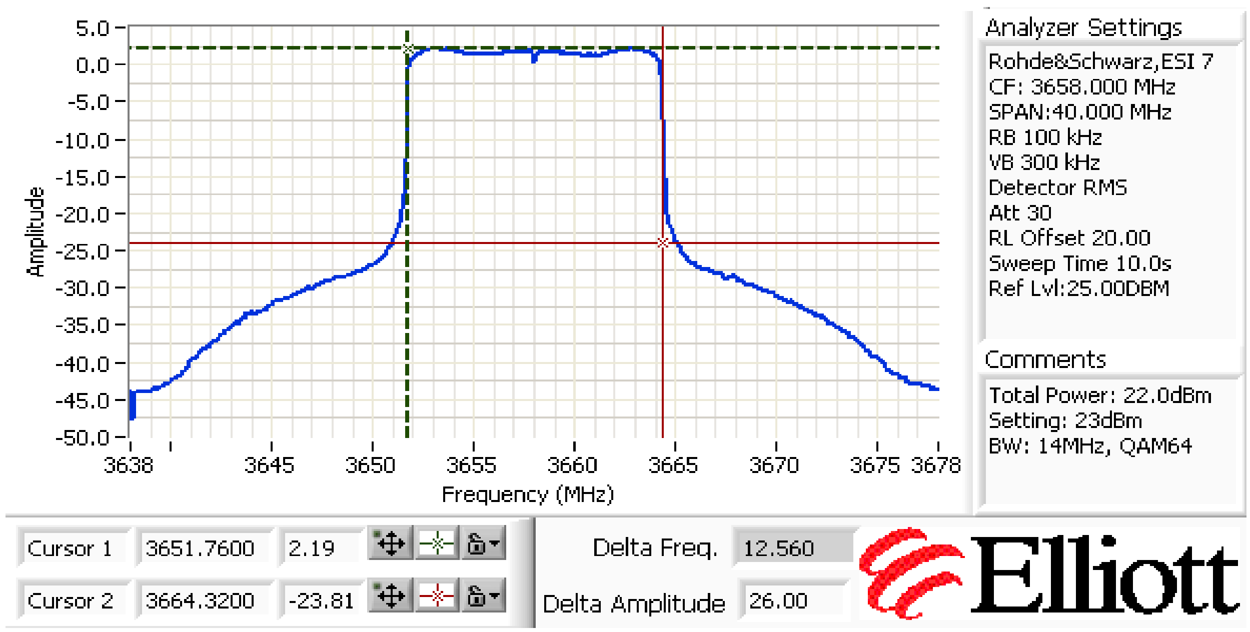
Freq. (MHz)	Modulation	Channel bandiwdth	Software setting[1]	Power[2] (dBm)	PSD[3] dBm/MHz	Gain[4] (dBi)	EIRP PSD[5] dBm/MHz	EIRP[6] dBm
3658	BPSK	14.00 MHz	23	21.9	11.8	10.0	21.8	31.9
3662	BPSK	14.00 MHz	23	21.8	11.7	10.0	21.7	31.8
3667	BPSK	14.00 MHz	23	21.8	11.7	10.0	21.7	31.8
3658	QAM64	14.00 MHz	23	22.0	11.8	10.0	21.8	32.0
3662	QAM64	14.00 MHz	23	21.9	11.8	10.0	21.8	31.9
3667	QAM64	14.00 MHz	23	21.9	11.7	10.0	21.7	31.9
3658	BPSK	14.00 MHz	23	21.9	11.8	15.0	26.8	36.9
3662	BPSK	14.00 MHz	23	21.8	11.7	15.0	26.7	36.8
3667	BPSK	14.00 MHz	23	21.8	11.7	15.0	26.7	36.8
3658	QAM64	14.00 MHz	23	22.0	11.8	15.0	**26.8**	**37.0**
3662	QAM64	14.00 MHz	23	21.9	11.8	15.0	26.8	36.9
3667	QAM64	14.00 MHz	23	21.9	11.7	15.0	26.7	36.9

Note 1:	Power setting is the software setting used to set the output power.
Note 2:	Output power measured using RBW=100kHz VBW=300kHz and detector set to RMS, max hold enabled. The total power was integrated over the span (span > 2x channel bandwidth). Plot for channel with the highest power provided below.
Note 3:	The psd was measured using the following analyzer settings: RB=1MHz, VB=3MHz, detector = rms, sweep time 5 seconds, max hold. Multiple sweeps were made until the display had no new "peaks". Plot for channel with the highest power provided below.
Note 4:	This column contains the effective antenna gain (actual antenna gain minus feed cable loss). Two values are being evaluated - an effective gain of 10dBi and an effective gain of 15dBi. These two values include a cable loss of 3dB so the actual gain of the antennas are 13dBi and 18dBi.
Note 5,6:	This column contains the eirp power spectral density (measured power density plus effective antenna gain) and power (measured power plus effective antenna gain). The maximum permitted psd is 30dBm/MHz.

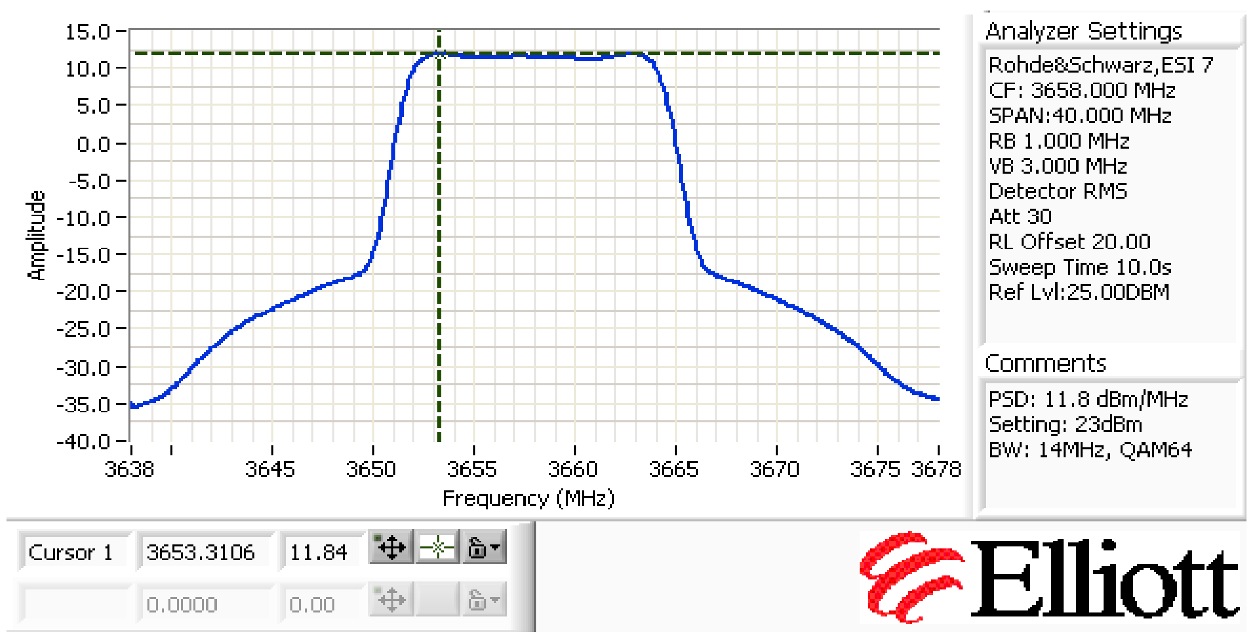
Elliott An NTS company

Radio Test Data

Client:	GE MDS LLC	Job Number:	J76926
Model:	Mercury 3650	T-Log Number:	T76941
		Account Manager:	Susan Pelzl
Contact:	Dennis McCarthy		
Standard:	FCC Part 90Z	Class:	N/A



PSD Plot (Top), Power Plot (Bottom)



Appendix C Photographs

Uploaded as a separate exhibit

Appendix D Proposed FCC ID Label & Label Location

Uploaded as a separate exhibit

Appendix E Detailed Photographs

Uploaded as a separate exhibit

Appendix F Operator's Manual

Uploaded as a separate exhibit

Appendix G Block Diagram

Uploaded as a separate exhibit

Appendix H Schematic Diagrams

Uploaded as a separate exhibit

Appendix I Theory of Operation

Uploaded as a separate exhibit

Appendix J Tune-up Procedure

Not applicable – the device is factory tuned with no user-accessible, or user required, tuning.

Appendix K Parts List

Uploaded as a separate exhibit