

Cutting Edge Industrial Design Inc

GL-2100

Class II Permissive Change Compliance Test Report

Per

FCC CFR47 Part 25 & IC RSS-170 Issue1

FCC ID: YHUGL2100
IC ID: 9040A-GL2100

Revision 1.0

August 18th, 2010

Approval		
Checked By:	Amandeep Singh	Date
	Amandeep Singh, EMC Eng.	Aug 18 th , 2010

Protocol Data Systems Inc, EMC Lab,
Abbotsford BC, Canada.
SCC ISO/17025 (CAN-P-4E) Accredited Laboratory No. 612
FCC O.A.T.S. Registration Number 96437
Industry Canada O.A.T.S. Registration Number IC3384

This report is for the exclusive use of Protocol Data Systems Customer and is provided pursuant to the agreement between Protocol and its Customer. Protocol's responsibility and liability are limited to the terms and conditions of the agreement. Protocol assumes no liability to any party, other than to the Customer in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Customer is authorized to copy or distribute this report and then only in its entirety. Any use of the Protocol Data Systems name for the sale or advertisement of the tested material, product or service must first be approved in writing by Protocol Data Systems. The observations and test results in this report are relevant only to the sample/s tested.

Index

Section I:	Report of Measurements Testing Information.....	3
Section II:	Report of Measurements Test Procedure	5
Section III:	Power Line Conducted Emissions.....	6
Section IV:	Radiated Emission Testing.....	7
Section V:	Report of Maximum Permissible Exposure	8
Section VI:	RF Output Power.....	9
Section VII:	Occupied Bandwidth.....	10
Section VII:	Spurious Emissions at Antenna Terminals	11
Section VIII:	Field Strength of Spurious Radiation.....	12
Section IX:	Emissions from Mobile Earth Stations for Protection of.....	13
Appendix A:	Measurement Plots- Maximum RF Output.....	14
Appendix B:	Occupied Bandwidth Plots	15
Appendix C:	Spurious Emission at antenna terminal.....	17
Appendix D:	Measurements Data for Emissions from Mobile	24
Appendix E:	Field Strength of Spurious Emission	29
Appendix F:	Measurement Data AC Mains Conducted Emissions	30
Appendix G:	Test Set-up Picture.....	32

Section I: Report of Measurements Testing Information

GENERAL INFORMATION:

Applicant Company Name	Cutting Edge Industrial Design Inc
Address	2502 Laurentian Place
	Prince George , British Columbia V2N 1Z3, Canada
	Phone: 250-961-0674
	Fax:
Contact Person	Mr. Garry Vinje
Email	gvinje@ceid.ca
Product Name	GL-2100
FRN	0020120283
Applicable Standard	FCC Part 25 and IC RSS 170
Test Results	Pass
Related Report/s Approval	03499_Rev 1.0.pdf
Statement of Compliance	This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of our knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards. — Signature on Front Cover Page.

EQUIPMENT UNDER TEST SPECIFICATIONS:

Manufacturer	Cutting Edge Industrial Design Inc
Product Description	Satellite mobile earth station
FCC ID	YHUGL2100
IC Number	9040A-GL2100
Model Number	GL21000
Name	GL21000
Operating Frequency	1611.25 -1616.22 MHz
EUT Power Source	120Vac/60Hz and 230Vac/50Hz
Test Item	Production Unit
Type of Equipment	Mobile
Antennas	Patch Antenna
Antenna Connector	Detachable
Test Voltage	120Vac/60Hz and 230Vac/50Hz

TEST DATA:

Test Facility	Protocol Data Systems Inc.
	28945 McTavish Road
	Abbotsford, BC V4X 2E7
	Phone: 604-607-0012
	Fax: 604-607-0019
	Email: info@protocol-emc.com
	Website: www.protocol-emc.com
Test Facility ID's	SCC ISO/17025 (CAN-P-4E) Accredited Laboratory No. 612
	FCC O.A.T.S. Registration Number 96437
	Industry Canada O.A.T.S. Registration Number IC3384
Date Tested	22 nd July 2010
Tested By	Amandeep Singh Jathaul

TEST SET-UP

Test Supporting Equipment	Not required
Test Exercise E.g. software description, test signal, etc.	The EUT was set for continuous transmit mode of operation. It only has 1 frequency. The options were for a CW and modulated frequency.
Deviation from Standard/s	No deviation from Standard
Modification to the EUT	No modifications were made.

TEST EQUIPMENT LIST

Manufacturer	Model	Equipment Description	Serial No.	Next Cal
HP	85650A	CDN Quasi-Peak Adapter	2811A01080	12/08/10
HP	85662A	Spectrum Analyzer Display	2152A03569	11/08/10
HP	8566B	Spectrum Analyzer RF Section	2241A02102	11/08/10
HP	85685A	RF-Preselector	3107A01222	11/08/10
EMCO	3146	Ant Log Periodic 200-1000MHZ	9611-4699	08/08/10
EMCO	3110B	Ant Biconical 20-300MHz	9401-1850	08/08/10
EMCO	3115	Horn Antenna 1-18GHz	9403-4251	20/08/10
EMCO	3825/2	LISN	2470	20/07/10
Rhientech	Custom	Antenna Mast	N/A	N/A
Protocol EMC	Custom	Turntable	N/A	N/A

MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Total RF power, conducted	$\pm 1,5$ dB
RF power density, conducted	± 3 dB
Spurious emissions, conducted	± 3 dB
All emissions, radiated	± 3 dB
Temperature	$\pm 1^\circ\text{C}$
Humidity	± 5 %
DC and low frequency voltages	± 3 %

Section II: Report of Measurements Test Procedure

RADIATION INTERFERENCE:

Prepared in accordance with the requirements of the FCC Rules and Regulations Part 2 and 25. All measurements are peak unless stated otherwise using an Agilent model 8566B spectrum analyzer, a model 85685A Preselector, a model 85650A quasi-peak adapter, and the appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100kHz with an appropriate sweep speed and the video bandwidth was 300kHz up to 1GHz and 1MHz with a VBW greater than or equal to the RBW above 1GHz. When an emission was found, the table was rotated to produce the maximum, signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The EUT was re-positioned to produce the highest emission level. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

FORMULA OF CONVERSION FACTORS:

The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB μ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the spectrum analyzer meter reading.

Example:

$$\begin{array}{lllll} \text{Freq (MHz)} & \text{Meter Reading} & +\text{ACF} & +\text{CL} & = \text{FS} \\ 330 & 20 \text{ dB}\mu\text{V} & +10.36 \text{ dB} & +0.5 & = 30.86 \text{ dB}\mu\text{V/m} @ 3\text{m} \end{array}$$

Where the field strength was too low to get an accurate reading at the required distance of 3meters, the Antenna was moved closer to 1 meter. The resulting measurement was distance corrected for 3 meters by using the formula:

$$(1 \text{ meter result}) - (20\text{Log(measured distance/required distance)}) = (3 \text{ meter result})$$

Example:

$$\begin{aligned} 1 \text{ meter result} + \text{distance correction} &= 3 \text{ meter result} \\ 54.5 \text{ dB}\mu\text{V} + -9.54\text{dB} &= 45 \text{ dB}\mu\text{V} \end{aligned}$$

POWER LINE CONDUCTED INTERFERENCE:

The procedure used was ANSI C63.4-2003 using a 50 μ H LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30MHz. The measurement was performed on an Open Air Test Site at 0.8meters above the horizontal ground plane.

OCCUPIED BANDWIDTH:

A sample of the transmitter output detected by an antenna was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to 10dB per division.

ANSI C63.4-2003 MEASUREMENT PROCEDURES:

The EUT was placed in a horizontal orientation, lying flat, on top of a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

Due to the construction of the EUT, the EUT was also placed in a vertical orientation and rotated on its axis and the emissions were maximized again to identify the highest emission level. Frequencies less than 1GHz were measured using the Quasi-Peak receiver. Frequencies equal to and greater than 1GHz were measured using the Average receiver

Section III: Power Line Conducted Emissions

DATE: October 31, 2008

TEST STANDARD: FCC CFR47, Part 15, Subpart and ICES-003 Issue 4

TEST VOLTAGE: 120Vac, 60Hz

MINIMUM STANDARD: Class B Limit

Frequency (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note 1 The lower limit shall apply at the transition frequencies
Note 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

TEST SETUP: The EUT was connected to the conducted emissions LISN apparatus while in transmit and receive modes of operation.

METHOD OF MEASUREMENT: Measurements were made using a spectrum analyzer with 10kHz RBW, Peak detector. Any emissions that are close to the limit are measured using a test receiver with 10kHz bandwidth, CISPR Quasi-Peak detector as well as an averaging meter.

DEVICE DESCRIPTIONS: As described in the Equipment under Test Section, above.

MEASUREMENT DATA: See Appendix F for plots and test data.

EMISSIONS DATA: See Tables 1 & 2 in Appendix F for corresponding frequencies.

PERFORMANCE: Complies.

Section IV: Radiated Emission Testing

DATE: October 31, 2008

TEST STANDARD: FCC CFR47, Part 15, Subpart B and ICES-003 Issue 4

TEST VOLTAGE: 120Vac, 60Hz

MINIMUM STANDARD: Class B Limit FCC CFR47, Part 15

Frequency (MHz)	Field Strength	
	uV/m @ 3-m	dB μ V/m at 3m
30 – 88	100	40.0
88 – 216	150	43.5
216 - 960	200	46.0
960 – 1000	500	54.0

Class B Limit ICES-003 Issue 4

Frequency (MHz)	Maximum Field Strength	
	dB μ V/m at 10 m	
30 – 230	30.0	
230 – 1000	37.0	

Note 1. The lower limit shall apply at the transition frequency
 Note 2. Additional provisions may be required for cases where interference occurs

TEST SETUP: The equipment was set up in a 3-meter open field test site. Emissions in both horizontal and vertical polarization were measured while rotating the EUT on a turntable to maximize the emissions signal strength.

DEVICE DESCRIPTIONS: Refer to the Equipment Under Test Section, above, for EUT Descriptions.

CABLING DETAILS: The EUT was set up using the manufacturer's specified normal cabling configuration.

MEASUREMENT DATA: See Appendix E for Table 3-4 for plots.

CABLE DESCRIPTIONS: Refer to Equipment Under Test Section for Cabling.

PERFORMANCE: Complies with standard requirements.

Section V: Report of Maximum Permissible Exposure

Rules Part No.: Pt 1.1310 and 2.1091

Requirements: General Population/Uncontrolled Exposure : 1mW/cm²

Calculation:
$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

S = Power Density

P = Power at Antenna Terminal

G = Gain of the Transmit Antenna

EIRP = Effective Isotropic Radiated power

r = Measurement Distance

EIRP Measurement at 3m at 1MHz RBW (peak) = 89.70dBuV

Conversion to dBm (dBuV – 107) = -17.3 dBm at 300 cm

Conversion to 20cm (-17.3 + (20log (300/20))) = 6.22 dBm at 20 cm

Conversion to mW EIRP ($10^{\frac{6.22}{10}}$) = 4.19mW EIRP at 20cm

Power Density = $\frac{4.19}{4\pi(20)^2}$ = 0.000834 mW/ cm² at 20cm

Recommendations: Based on these worst case calculations the EUT is well below the maximum permissible exposure limit of 1mW/cm² at 20cm.

Section VI: RF Output Power

TEST DATE: July 22nd 2010

TEST STANDARD: FCC Part 2.1046, FCC 25.204 and IC RSS 170

REQUIREMENTS: In bands shared coequally with terrestrial radio communications services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands between 1 and 15 GHz, shall not exceed the limits below.

- EIRP < +40dBW in any 4kHz band for $\theta = 0$ degrees.

TEST DATA:

Channel	Freq (MHz)	Output Power (dBm)	Cable Loss (dB)	Corrected Output Power (dBm)	watts
Low	1611.25	18	1.2	19.2	0.083
High	1616.22	18	1.2	19.2	0.083

MEASUREMENT PLOTS: See Appendix A for Plots 1-2.

MODIFICATIONS: No modifications were made to pass this test.

PERFORMANCE: Maximum Peak conducted output power for Low and High channels complies with standard requirement since the output power is less than the limit. Given the output power and antenna gain of 4 dBi, the maximum direct lobe radiation meets the FCC's EIRP requirements for $\theta = 0$ degrees (+40dBW)

Section VII: Occupied Bandwidth

TEST DATE:	July 24 th 2010
TEST STANDARD:	FCC Section 2.1049, FCC section 25.202(f) and IC RSS 170
REQUIREMENTS:	<p>For out-of band emissions for frequencies removed from the midpoint of the assigned frequency by more than 50% up to and including 100% of the authorized bandwidth (2.5 MHz), at least 25 dB.</p> <p>For out of band emissions for frequencies removed from the midpoint of the assigned frequency by more than 100% up to and including 250% of the authorized bandwidth (2.5 MHz, at least 35 dB.</p> <p>For out of band emissions for frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz), at least</p> <p>43 + 10 Log (P _{Watts}) attenuation below the mean power of the transmitter,</p> <p>For Low Channel = 43 + 10 log (0.139) = 34.4 dB For High Channel = 43 + 10 log (0.105) = 33.2 dB</p>
MEASUREMENTS PLOTS:	See Appendix B for Plots 3-6.
MODIFICATIONS:	No modifications were made to the EUT to pass this test.
PERFORMANCE:	Complies with the standard requirements.

Section VII: Spurious Emissions at Antenna Terminals

TEST DATE: July 24th 2010

TEST STANDARD: FCC Part 2.1051, FCC Part 25.202(f) and IC RSS 170

REQUIREMENTS: Spurious emissions appearing at the antenna terminals were measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable to the antenna output terminals or across the antenna leads on the PCB as specified by the manufacturer.

FCC Minimum Standard (FCC Part 25.202(f))

For out of band emissions for frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz), at least

$43 + 10 \log (P_{\text{Watts}})$ attenuation below the mean power of the transmitter,

For Low Channel = $43 + 10 \log (0.139) = 34.4 \text{ dB}$

For High Channel = $43 + 10 \log (0.105) = 33.2 \text{ dB}$

FCC Minimum Standard (FCC Part 25.213(b))

Protection of the radio-navigation-satellite service. Mobile earth stations operating in the 1610-1626.5 MHz band shall limit out-of-band emissions in the 1574.397-1576.443 MHz band so as not to exceed an e.i.r.p. density level of -70 dB (W/MHz) averaged over any 20 ms period. The e.i.r.p. of any discrete spurious emission (i.e., bandwidth less than 600 Hz) in the 1574.397-1576.443 MHz band shall not exceed -80 dBW.

TEST DATA: See Appendix C for Plot 7-13 for Low Channel and Plot 14-20 for High Channel spurious emissions at antenna terminals.

MODIFICATIONS: No modifications were made to the EUT to pass this test.

PERFORMANCE: Complies with the standard requirement.

Section VIII: Field Strength of Spurious Radiation

TEST DATE: July 26th 2010

TEST STANDARD: FCC Part 2.1053 and FCC Part 25.202(f)

REQUIREMENTS: Spurious emissions were evaluated from 30 MHz to 16.2 GHz at an EUT to antenna distance of 1 or 3 meters. The EUT was tested with an external power source and modulated by its own internal sources. Both a low and high channel were tested. The EUT was placed on an open area test site and the spurious emissions tested with the Substitution Method as stipulated by EIT/TIA-603: 1992 section 2.2.12. Measurements for 30 to 1000 MHz were made with the analyzer's bandwidth set to 120 kHz. Measurements above 1 GHz were made with the analyzer's bandwidth set to 1 MHz. The worse case results are shown in Table 4.

FCC Minimum Standard (FCC Section 25.202(f)) For out-of-band emissions for frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz), at least $43 + 10 \log (P\text{Watts})$ attenuation below the mean power of the transmitter.

For Lowest Channel = $43 + 10 \log (0.139) = 34.4 \text{ dB}$

For Highest Channel = $43 + 10 \log (0.105) = 33.2 \text{ dB}$

TEST DATA: See Appendix E(Table 1-2) for spurious radiated emissions.

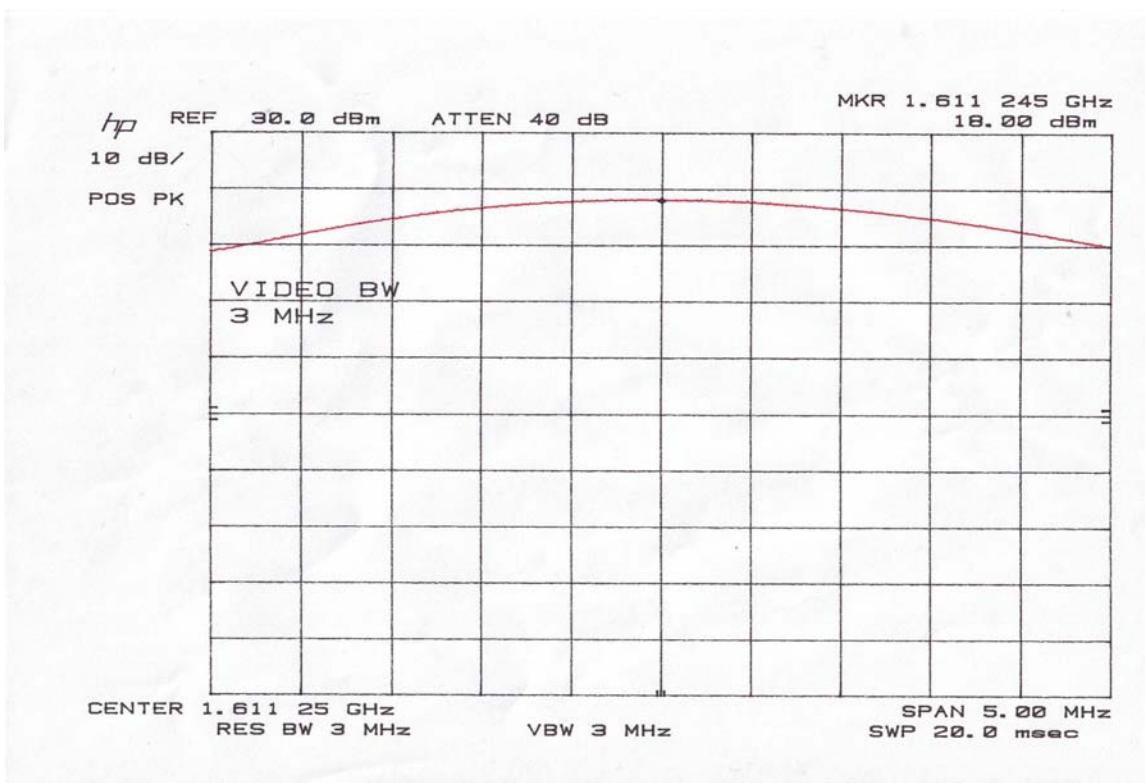
MODIFICATIONS: No modifications were made to the EUT to pass this test.

PERFORMANCE: Complies with the standard requirement.

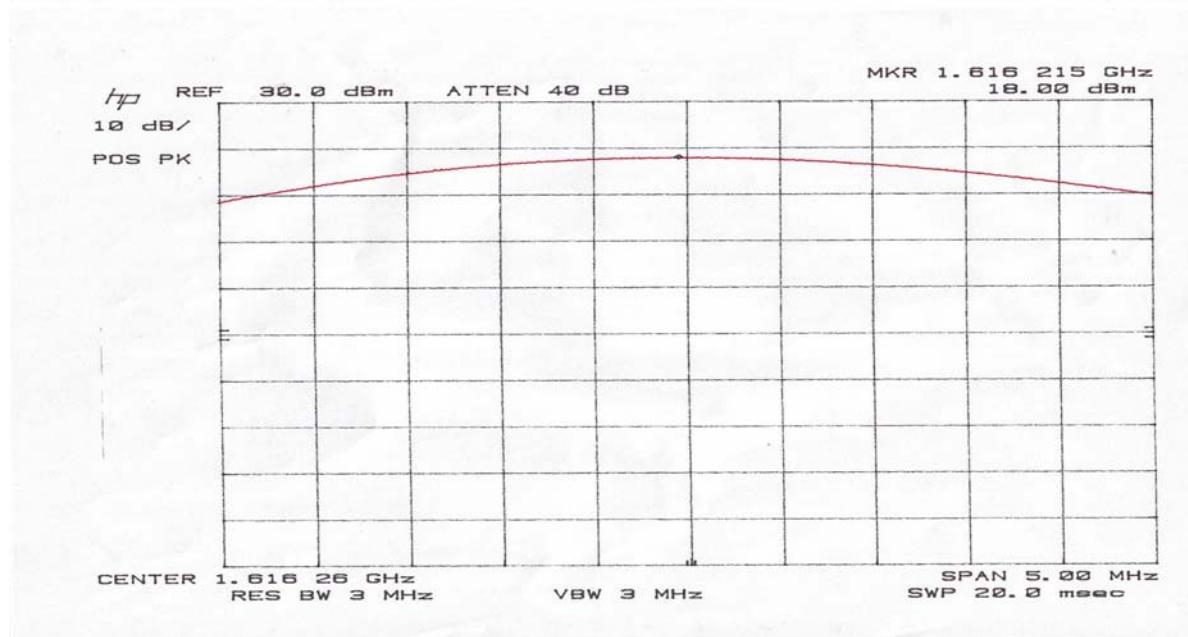
Section IX: Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service.

DATE:	July 26, 2008
TEST STANDARD:	FCC Section 25.216 and IC RSS 170
TEST VOLTAGE:	120Vac, 60Hz
REQUIREMENT:	<p>25.216c(1) Emissions from the EUT were evaluated from 1559 MHz – 1605 MHz and did not exceed the limit at -70dBW/MHz, averaged over 20 milliseconds.</p> <p>25.216c(2) Emissions from the EUT were evaluated from 1559 MHz – 1605 MHz and did not exceed the limit at -80dBW/MHz, averaged over 20 milliseconds.</p> <p>25.216g(1) Emissions from the EUT were evaluated from 1605 MHz – 1610 MHz and did not exceed the limits ranging from –70 dBW/MHz at 1605 MHz to –10dBW/MHz at 1610 MHz, averaged over 2 milliseconds.</p> <p>25.216g(2) Emissions from the EUT were evaluated from 1605 MHz – 1610 MHz and did not exceed the limits ranging from -80 dBW/MHz at 1605 MHz to –20dBW/MHz at 1610 MHz, averaged over 2 milliseconds.</p> <p>25.216(i) Emissions from the EUT were evaluated from 1559 MHz – 1605 MHz and did not exceed –80 dBW/MHz over any 2 millisecond active transmission interval. (carrier off)</p>
	Emissions were measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable to the antenna output terminal with the Resolution Bandwidth set to 1 MHz.
DEVICE DESCRIPTIONS:	As described in the Equipment Under Test Section, above.
CABLE DESCRIPTIONS:	cables as specified in Section 1 - CABLING
MEASUREMENT DATA:	See Appendix D for corresponding plots.
PERFORMANCE:	Complies.

Appendix A: Measurement Plots- Maximum RF Output

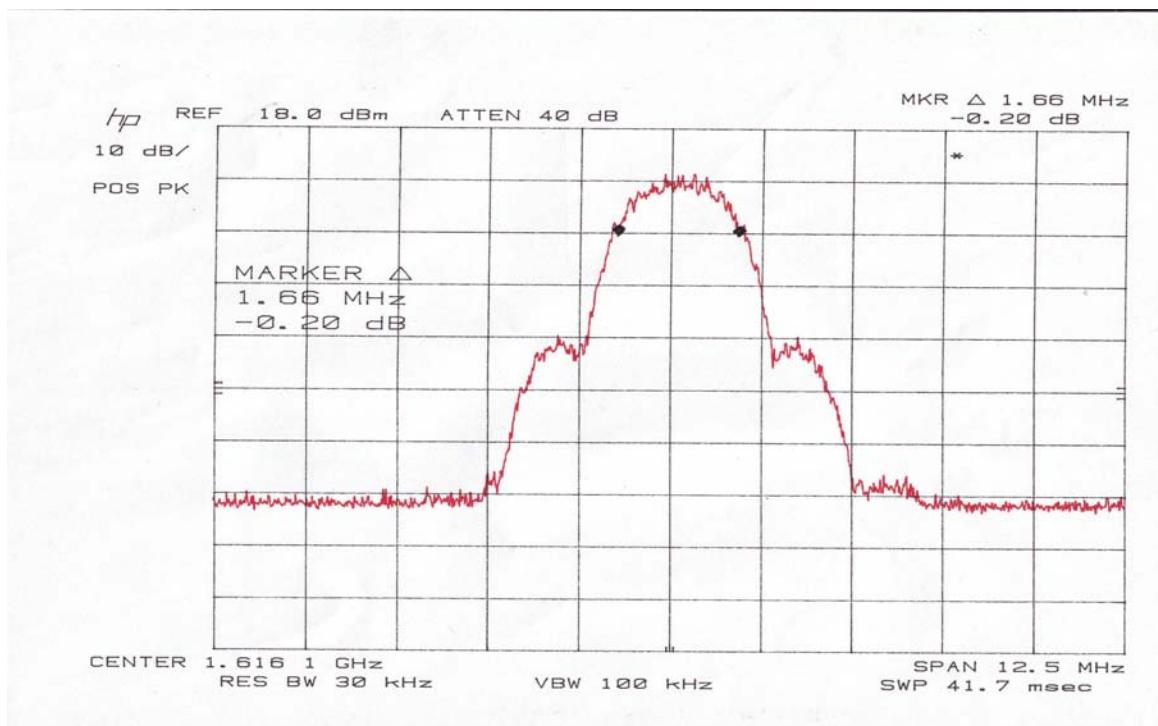


Plot 1: Low Channel (1611.245 MHz) Maximum Peak Conducted Output Power

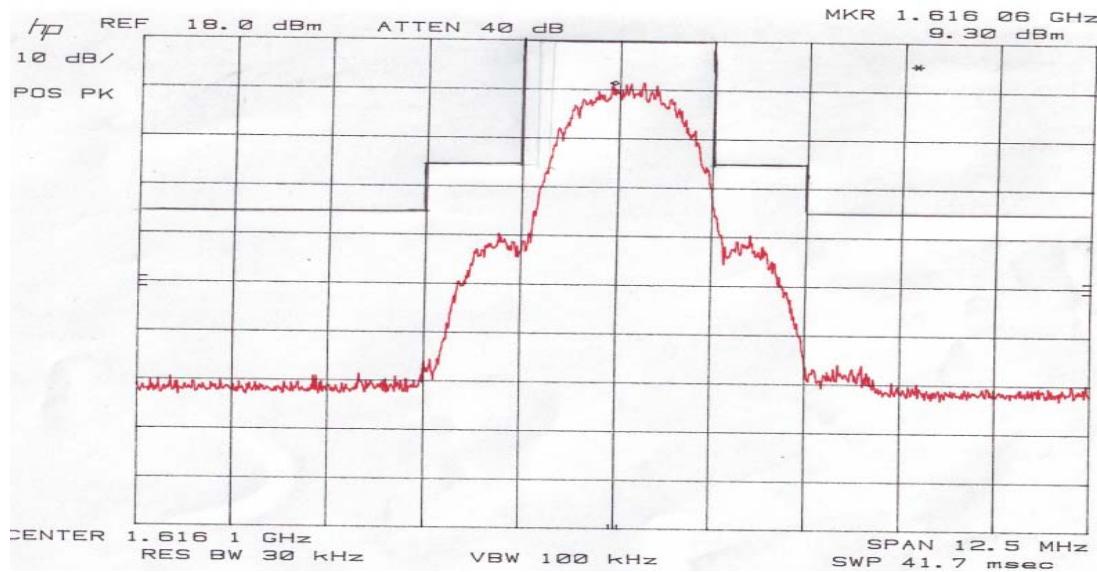


Plot 2: High Channel (1616.215 MHz) Maximum Peak Conducted Output Power

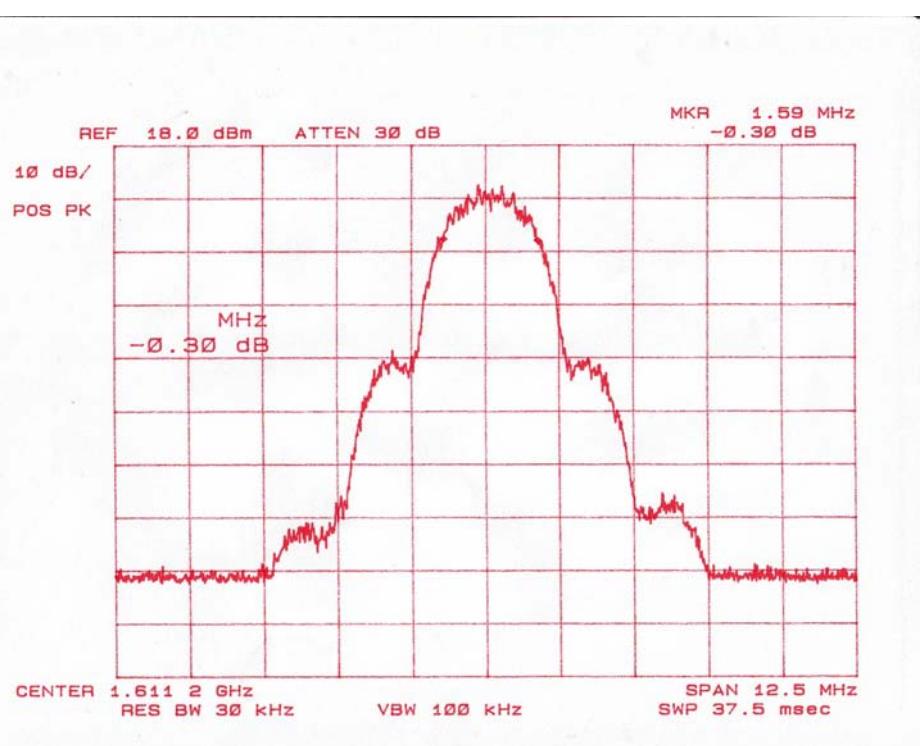
Appendix B: Occupied Bandwidth Plots



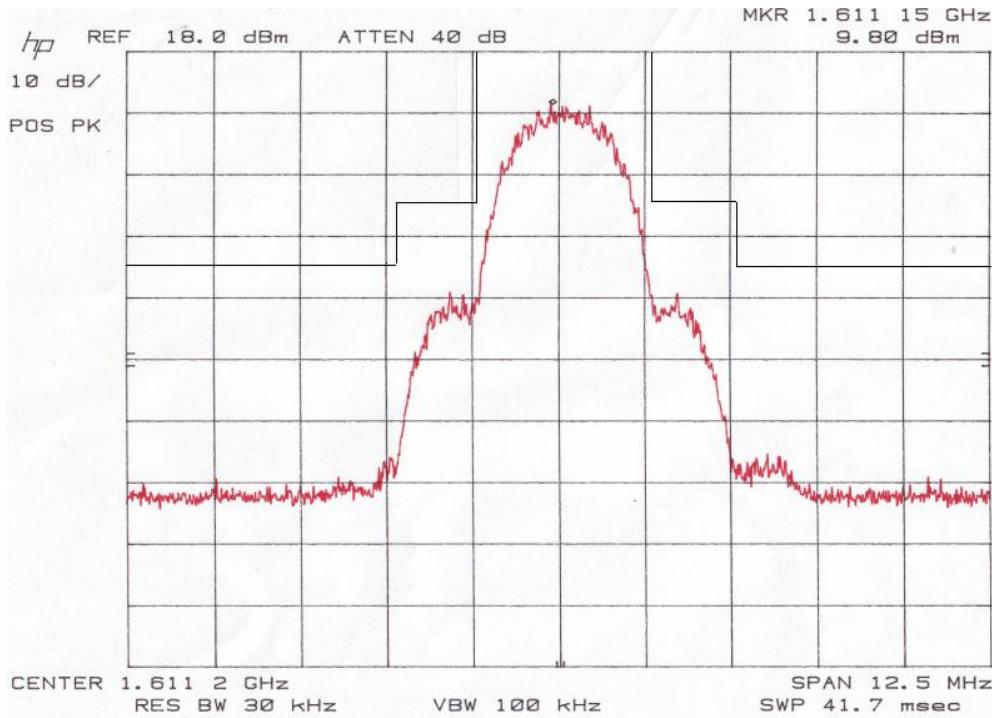
Plot 3: 99% Occupied Bandwidth-Highest Channel (1616 MHz)



Plot 4: Occupied Bandwidth > 50% From Edge Authorized Bandwidth-Highest Channel

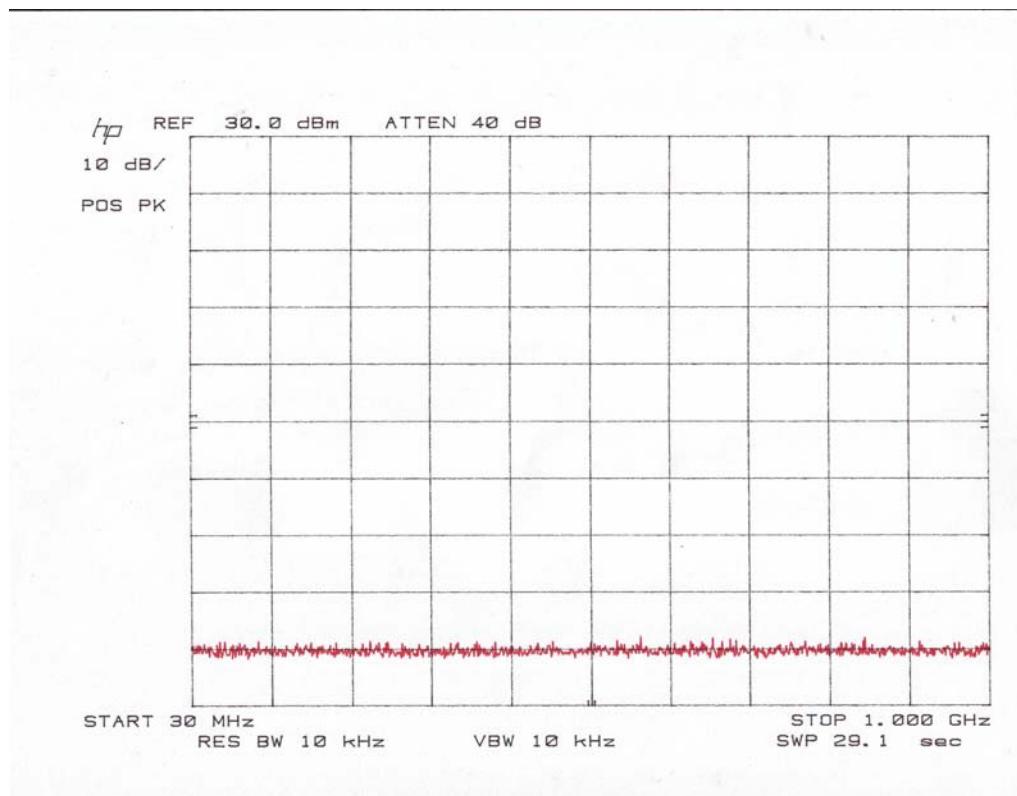


Plot 5: 99% Occupied Bandwidth-Low Channel (1611 MHz)

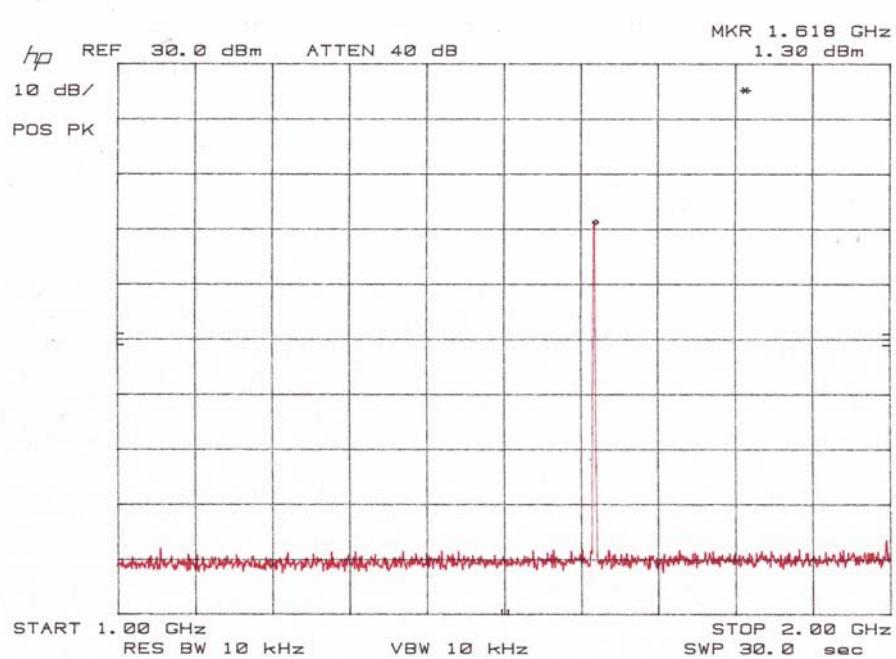


Plot 6: Occupied Bandwidth > 50% From Edge Authorized Bandwidth-Lowest Channel

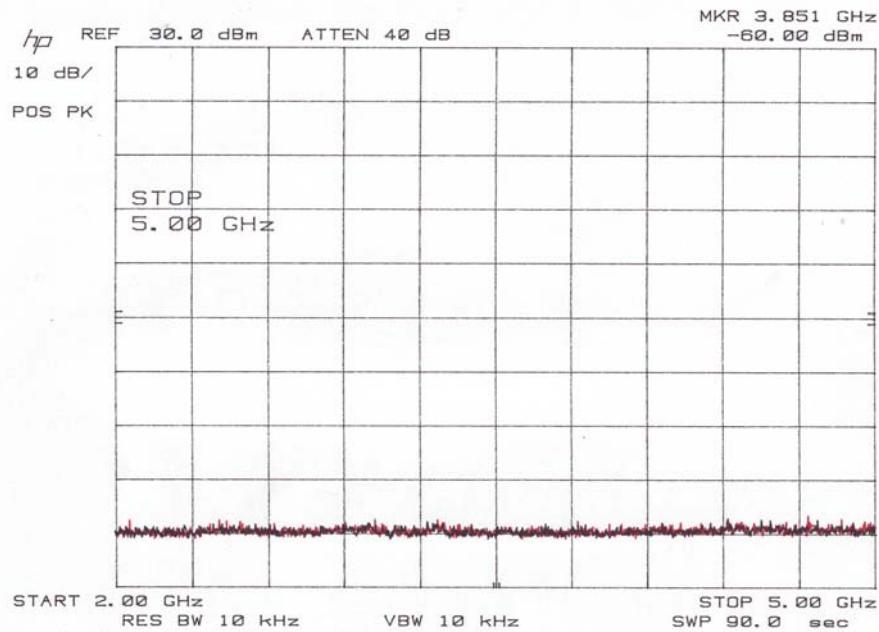
Appendix C: Spurious Emission at antenna terminal



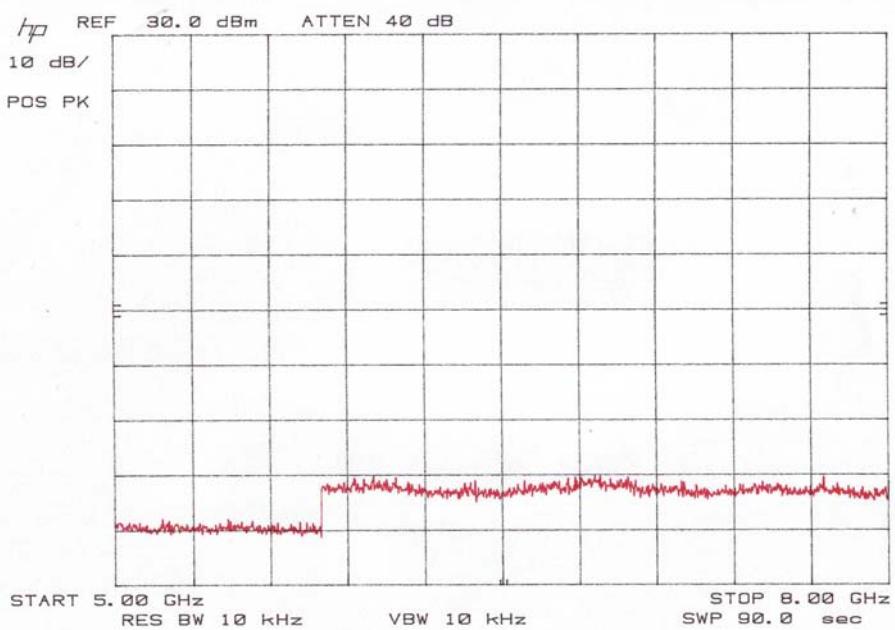
Plot 7: Spurious Emissions at Antenna Terminal (Low Channel)



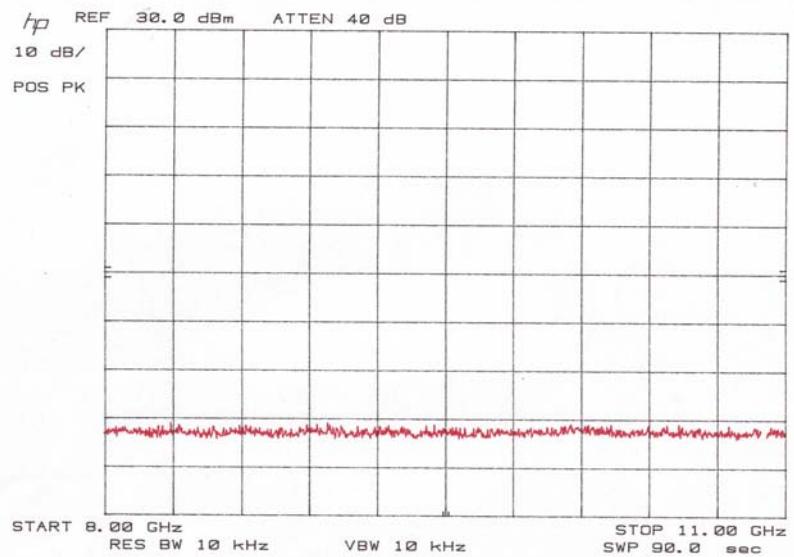
Plot 8: Spurious Emissions at Antenna Terminal (Low Channel)



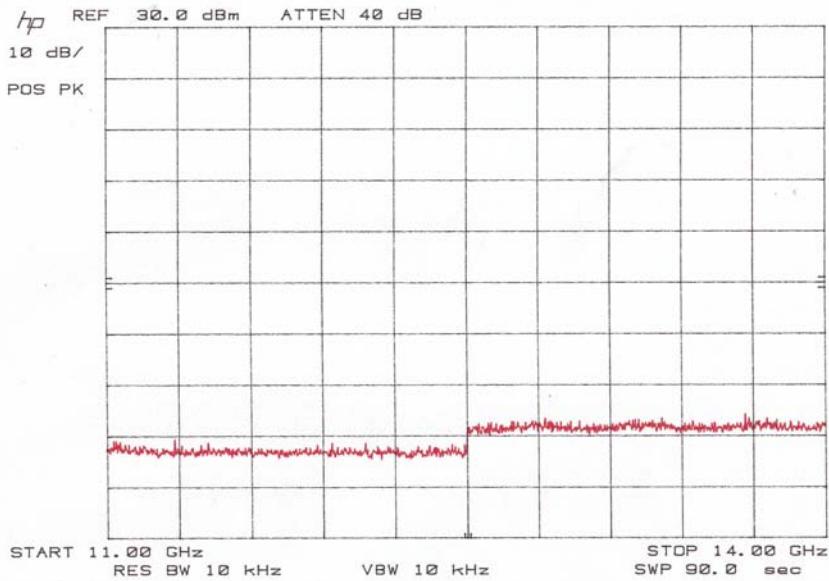
Plot 9: Spurious Emissions at Antenna Terminal (Low Channel)



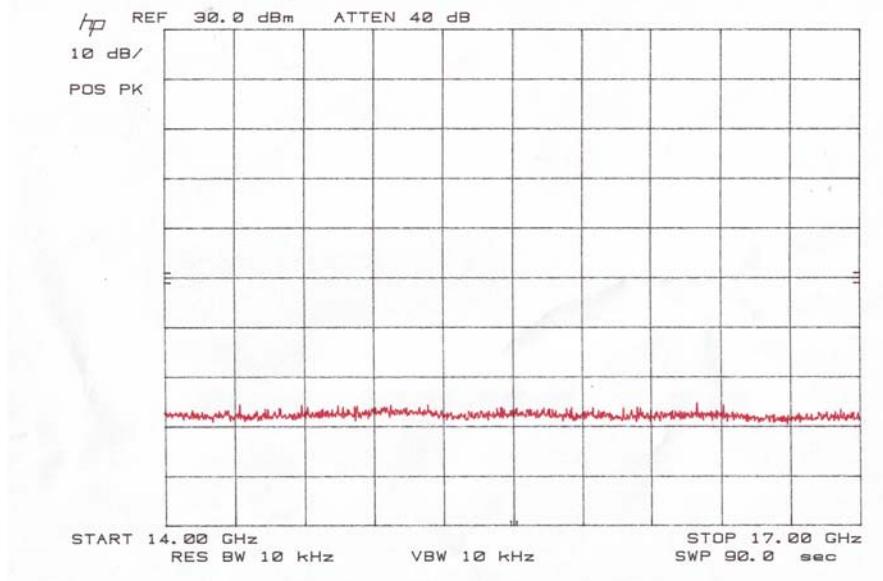
Plot 10: Spurious Emissions at Antenna Terminal (Low Channel)



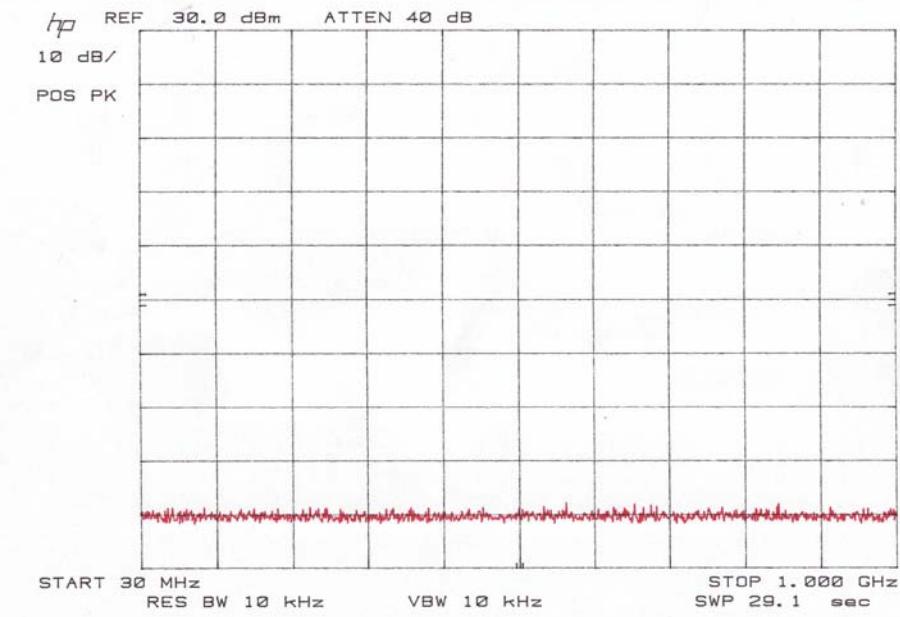
Plot 11: Spurious Emissions at Antenna Terminal (Low Channel)



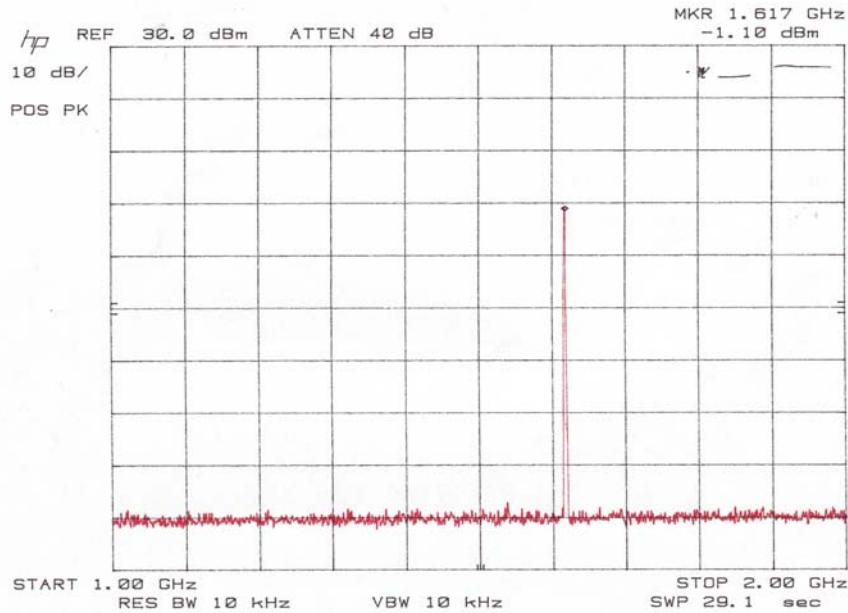
Plot 12: Spurious Emissions at Antenna Terminal (Low Channel)



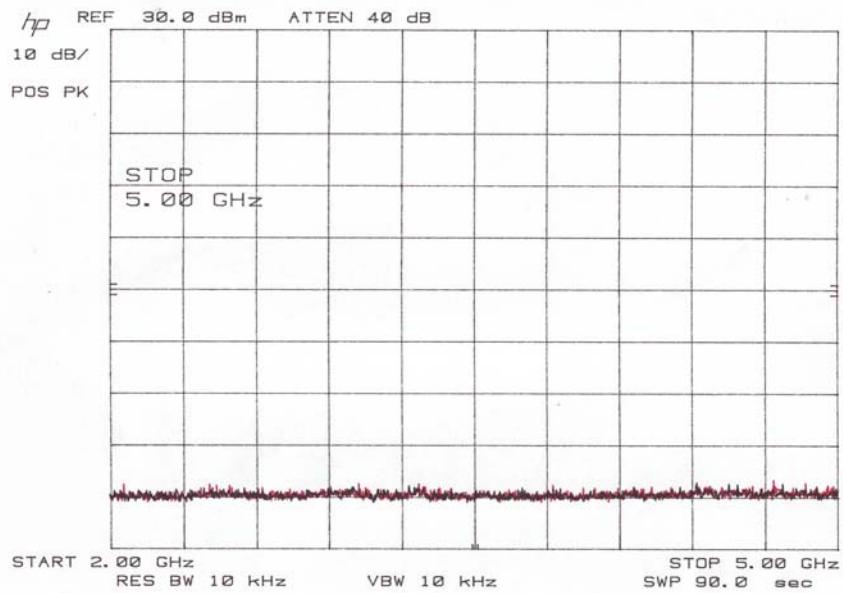
Plot 13: Spurious Emissions at Antenna Terminal (Low Channel)



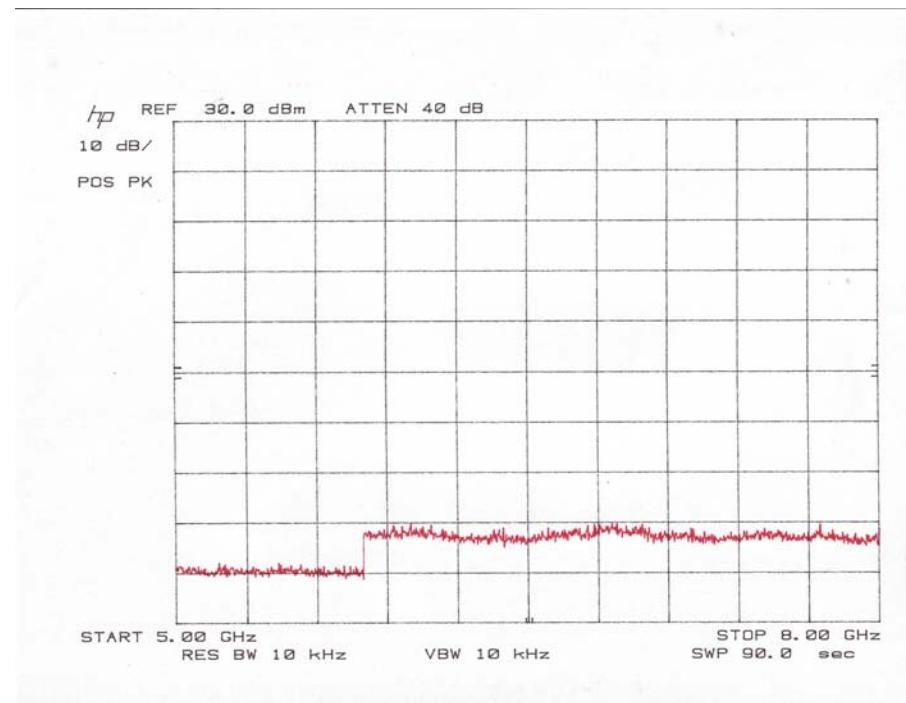
Plot 14: Spurious Emissions at Antenna Terminal (High Channel)



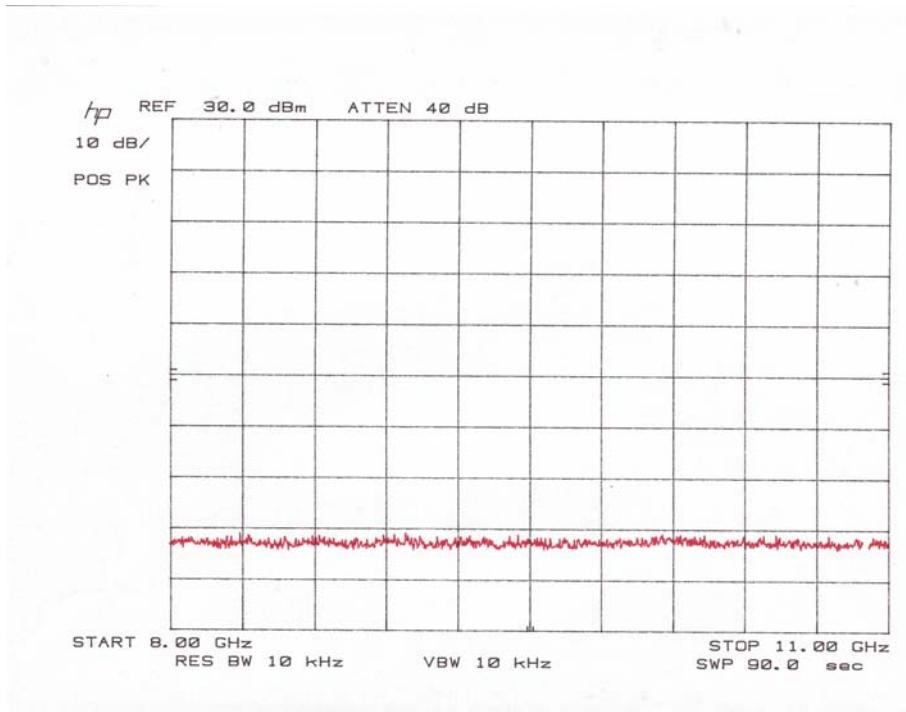
Plot 15: Spurious Emissions at Antenna Terminal (High Channel)



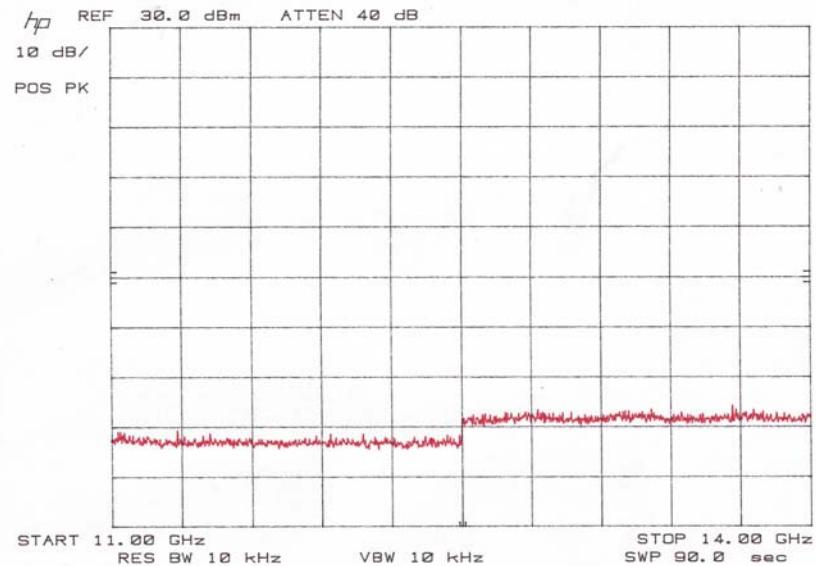
Plot 16: Spurious Emissions at Antenna Terminal (High Channel)



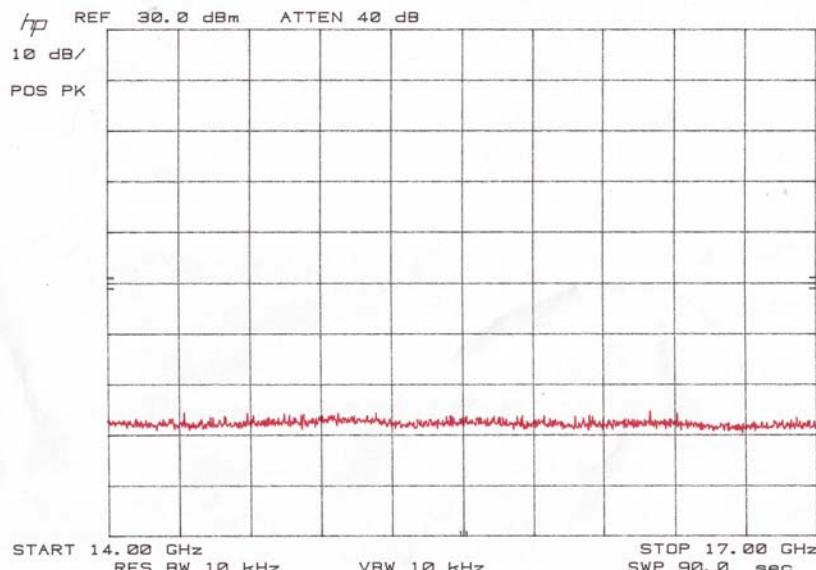
Plot 17: Spurious Emissions at Antenna Terminal (High Channel)



Plot 18: Spurious Emissions at Antenna Terminal (High Channel)



Plot 19: Spurious Emissions at Antenna Terminal (High Channel)

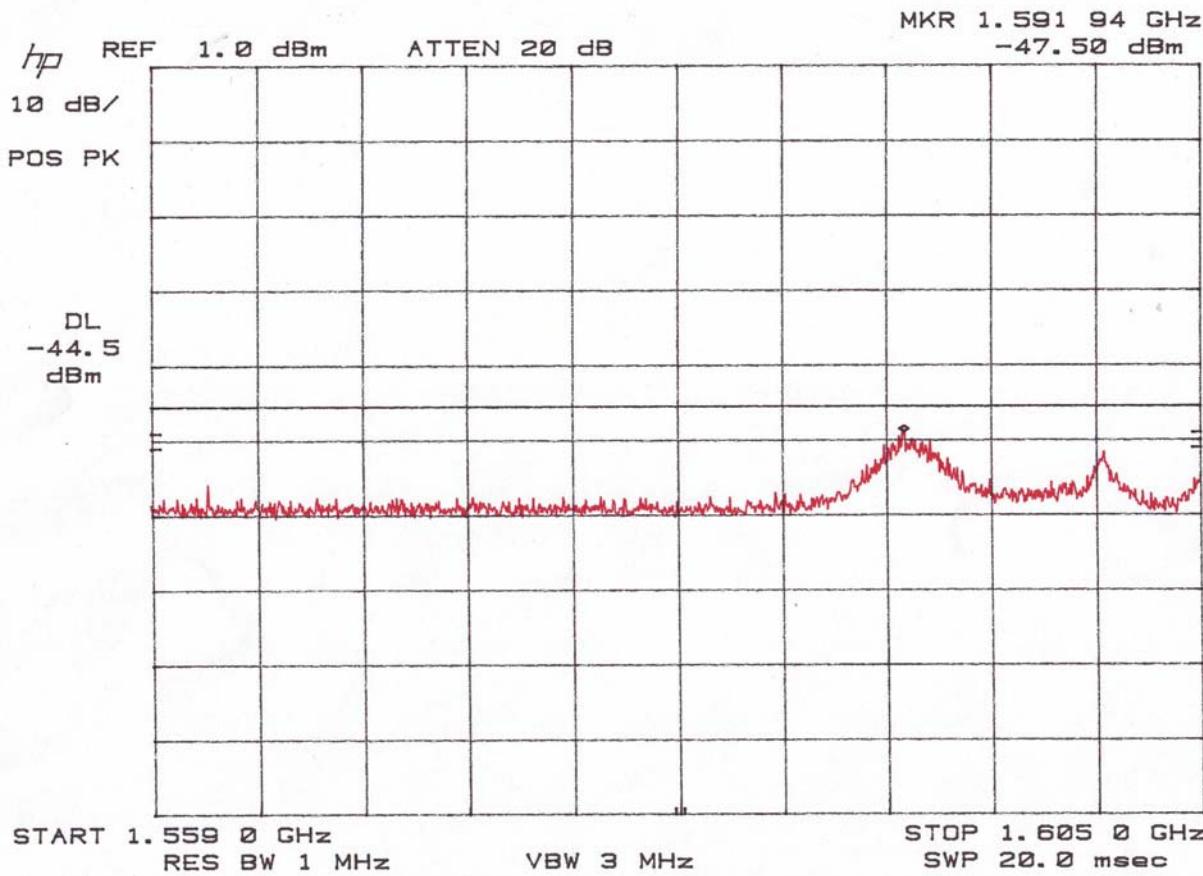


Plot 20: Spurious Emissions at Antenna Terminal (High Channel)

Appendix D: Measurements Data for Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service.

Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service (25.216(c)(1))

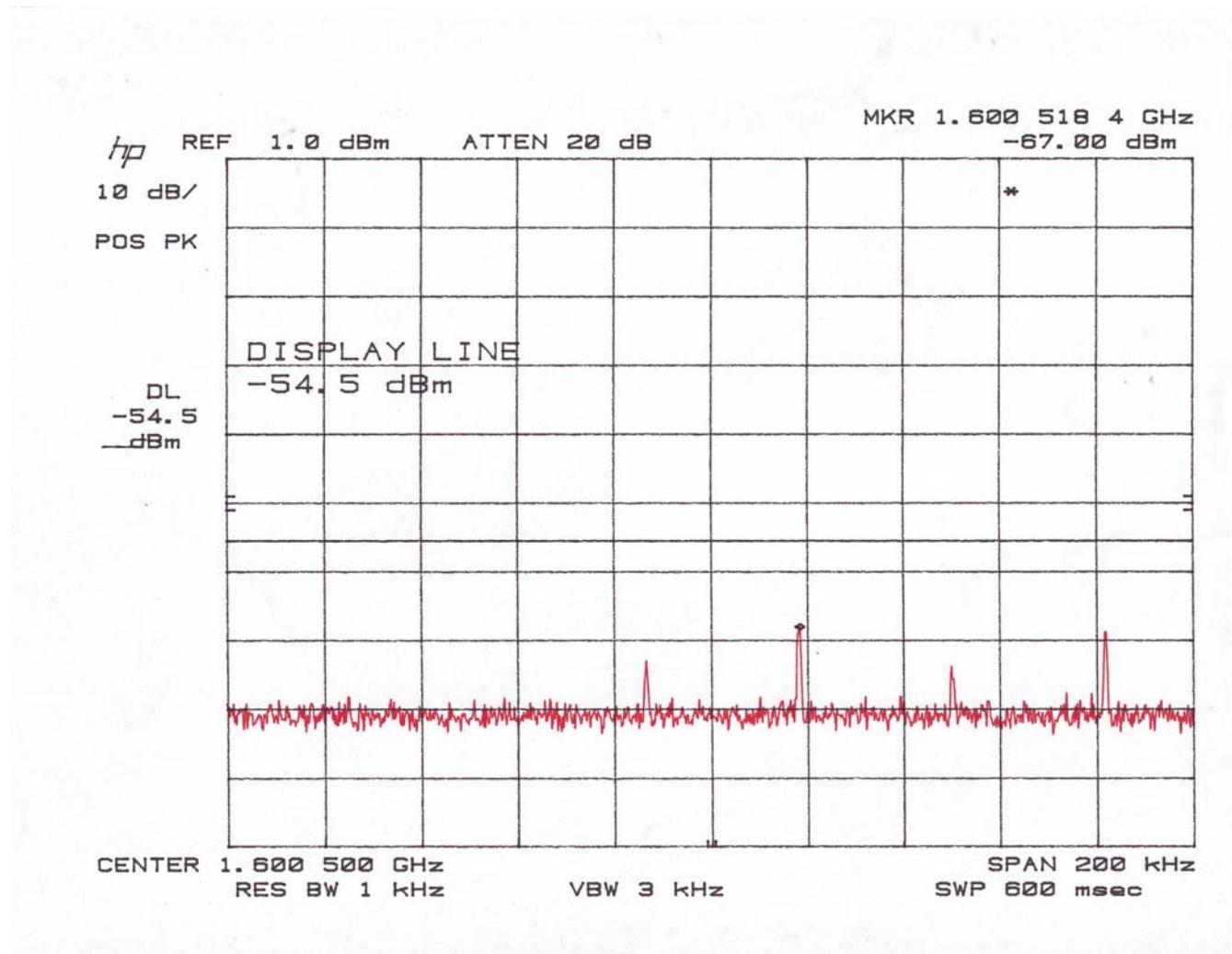
Limit = - 70 dBW/MHz + 4.5 dBi (-44.5 dBm) Measured Value



Measured Value = -47.56 + 1.2 = -46.3 dBm

Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(c)(2))

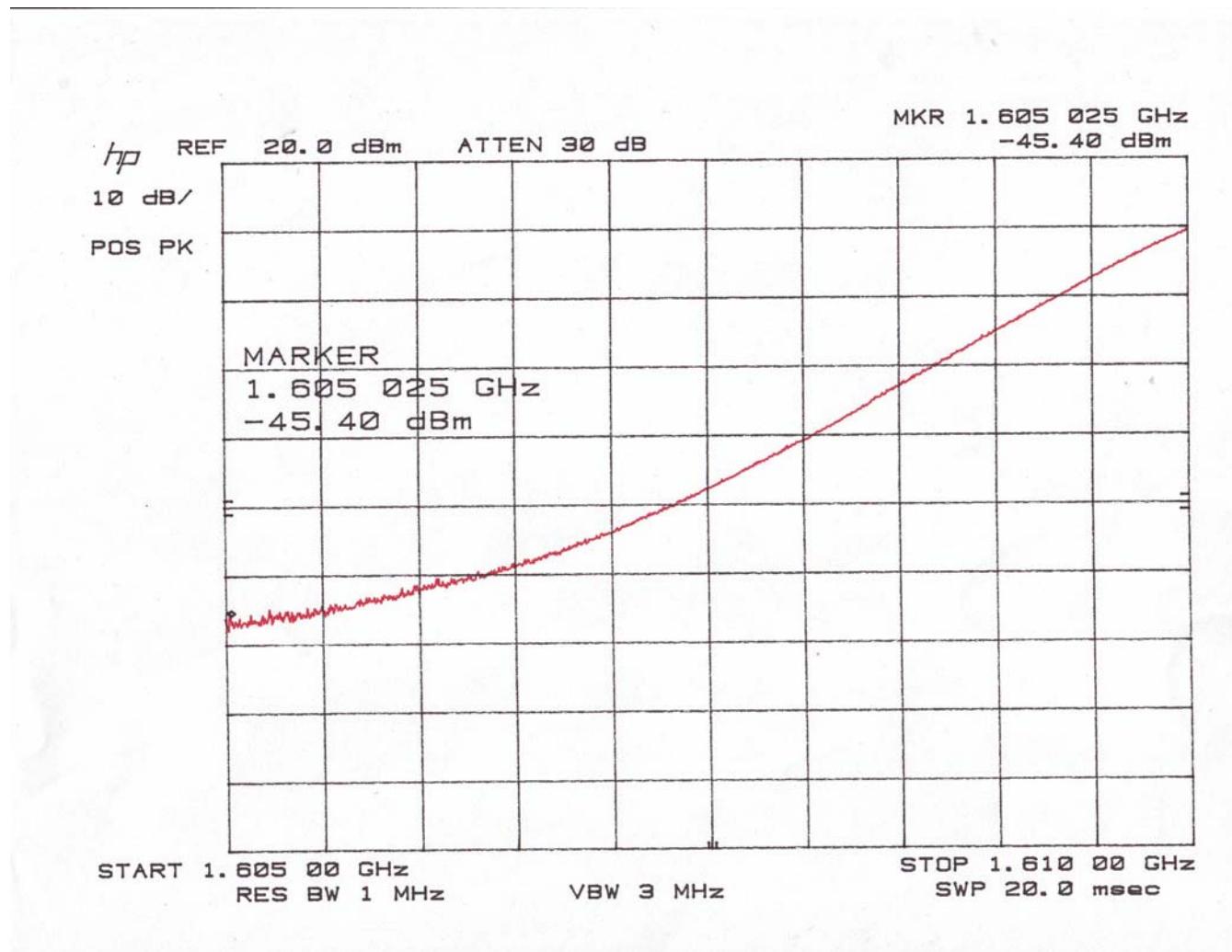
Limit = -80 dBW + 4.5 dBi = -54.5dBm



Measured Value is $-67 + 1.2$ (cable loss) = -65.8 dBm

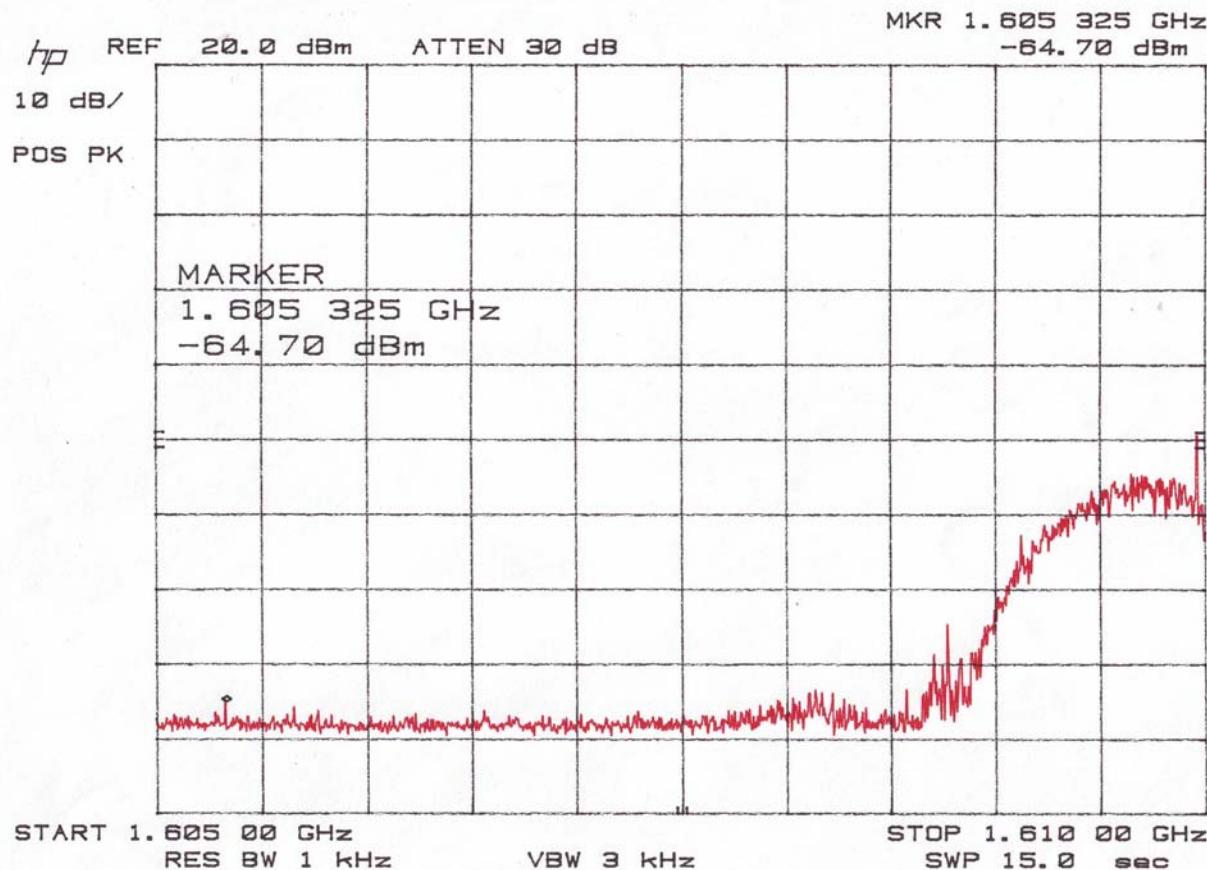
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(g)(1))

Limit = -70 dBW/MHz at 1605 MHz to -10 dBW/MHz at 1610 (-44.5 dBm to 15.5 dBm)



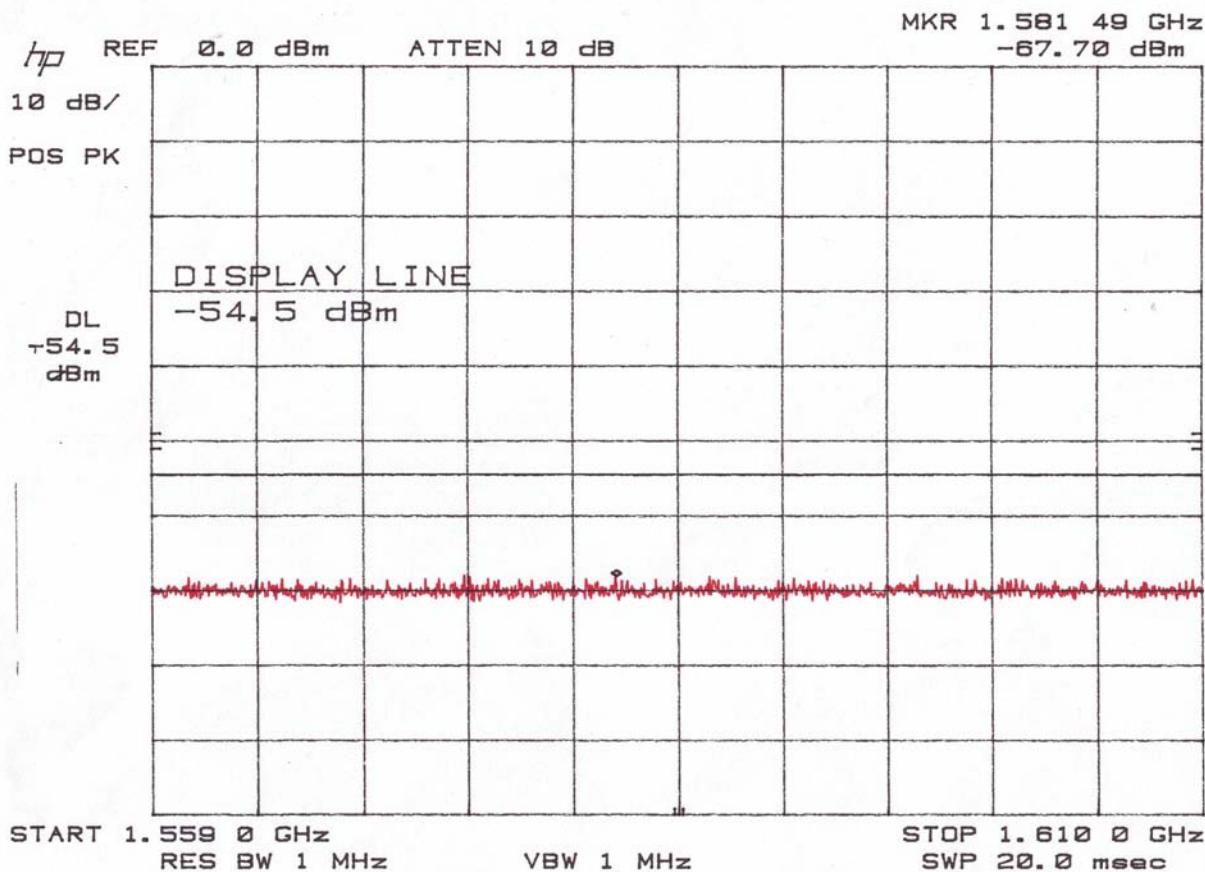
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(g)(2))

Limit = -80 dBW/MHz at 1605 MHz to -20 dBW/MHz at 1610 (-54 dBm to 5.5 dBm)



Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(i) (carrier off)

Limit = -80 dBW/MHz + 4.5 dBi (-54.5 dBm)



Appendix E: Field Strength of Spurious Emission

Table 1: Low Channel Spurious Emissions

Frequency (MHz)	Pol. (V/H)	Total Correction Factor (dB)	Measured Value at 3m (dBm)	Corrected Value (dBm)	Limit (dBm)	Margin (dB)
3222.5	V	37.5	-85.8	-48.3	32.1	-80.4
4833.75	V	35.1	-86.1	-51	32.1	-83.1
6445	V	37.2	-80.2	-43	32.1	-75.1
8056.25	V	39.5	-81.1	-41.6	32.1	-73.7
9667.5	V	40.6	-80.9	-40.3	32.1	-72.4

Table 2: High Channel Spurious Emissions

Frequency (MHz)	Pol. (V/H)	Total Correction Factor (dB)	Measured Value at 3m (dBm)	Corrected Value (dBm)	Limit (dBm)	Margin (dB)
3.232	V	37.5	-43.2	-5.7	32.1	-37.8
4.848	V	35.1	-34.9	0.2	32.1	-31.9
6.465	V	37.2	-45.3	-8.1	32.1	-40.2
8.081	V	39.5	-53.1	-13.6	32.1	-45.7
9.697	V	40.6	-55.2	-14.6	32.1	-46.7
11.313	V	41.3	-64.7	-23.4	32.1	-55.5
12.93	V	42.5	-62.5	-20	32.1	-52.1

Table 3: IC Class B Radiated Emissions

Frequency (MHz)	Pol (V/H)	Hgt (m)	Angle (deg)	Uncor-Pk (dBuV)	Tot Corr (dB)	Peak (dBuV/m)	QP Lmt (dBuV/m)	DelLim-Pk (dB)	QP (dBuV/m)	DelLim-QP (dB)
44.09	V	1	180	14.3	13.98	28.28	39.5	-11.22	22.6	-16.9
112.6	V	1	90	17.9	14.21	32.11	39.5	-7.39	27.4	-12.1
123.2	V	1	180	14	14.22	28.22	39.5	-11.28	25	-14.5

Table 4: FCC Class B Radiated Emissions

Frequency (MHz)	Pol (V/H)	Hgt (m)	Angle (deg)	Uncor-Pk (dBuV)	Tot Corr (dB)	Peak (dBuV/m)	QP Lmt (dBuV/m)	DelLim-Pk (dB)	QP (dBuV/m)	DelLim-QP (dB)
44.09	V	1	180	14.3	13.98	28.28	40	-11.72	22.6	-17.4
112.6	V	1	90	17.9	14.21	32.11	43.5	-11.39	27.4	-16.1
123.2	V	1	180	14	14.22	28.22	43.5	-15.28	25	-18.5

Appendix F: Measurement Data AC Mains Conducted Emissions

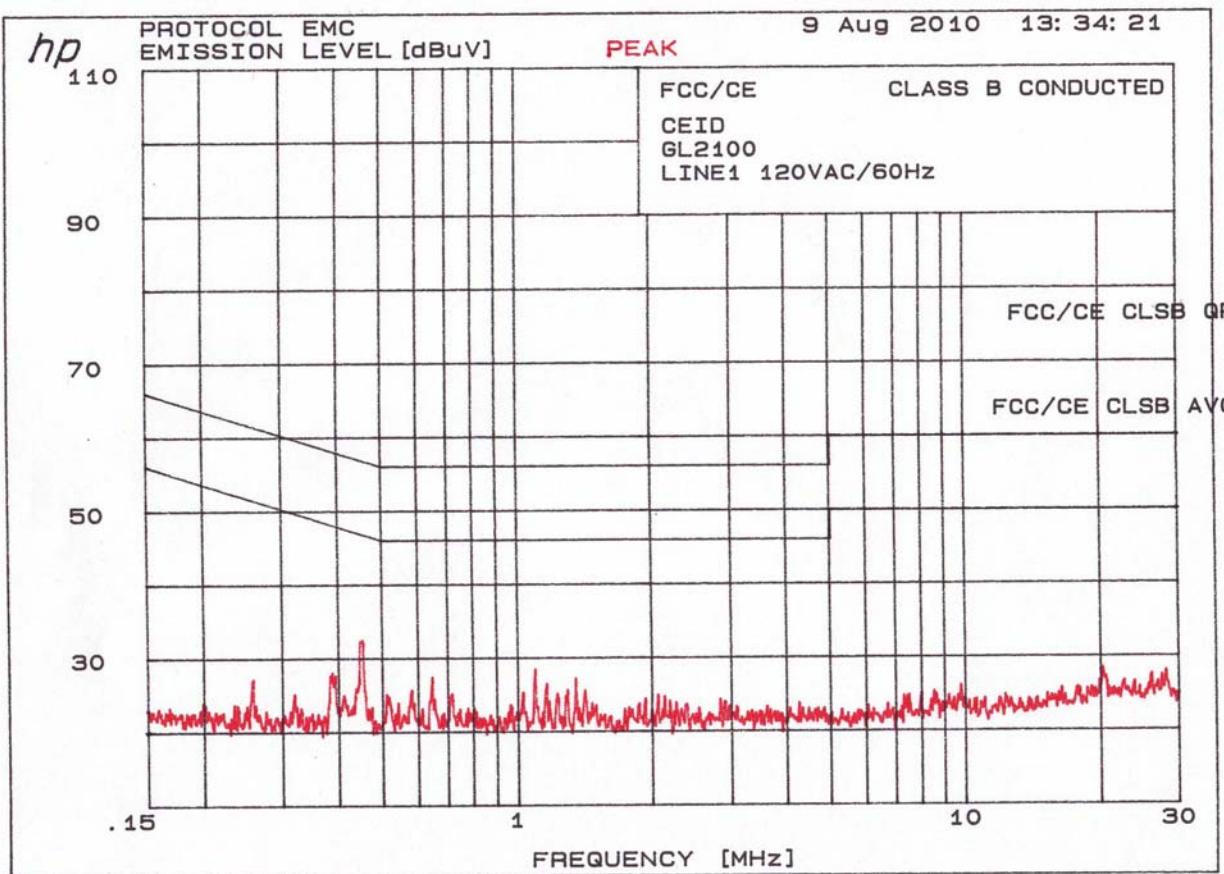
FCC/IC Class B Conducted Emissions

Table 1: Line 1 AC Mains 120Vac, 60Hz Peaks

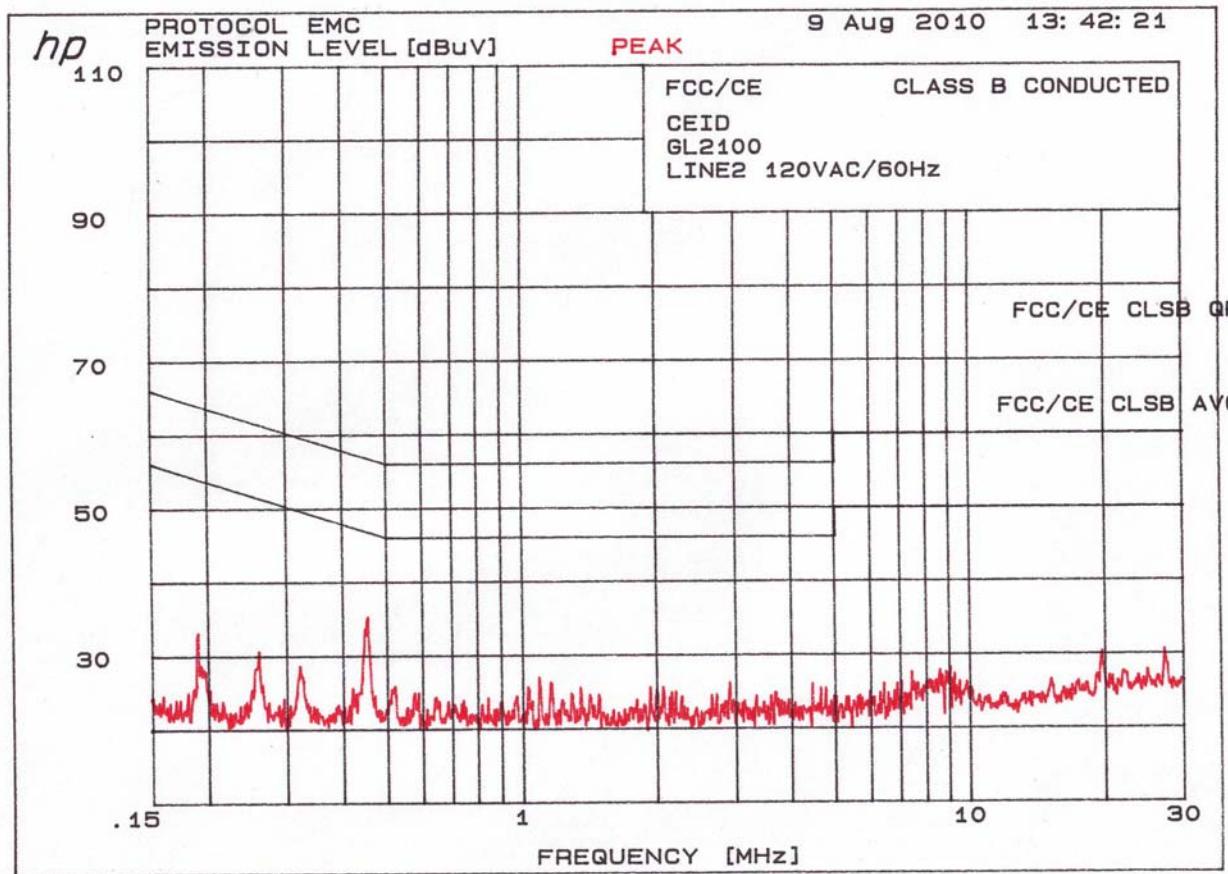
Frequency	Peak	DeLLim-Pk
(MHz)	(dB μ V)	(dB)
0.4534	32.4	-14.4
1.098	28.4	-17.6
0.6465	27.4	-18.6
1.349	27.2	-18.8
0.2587	27.1	-24.3

Table 2: Line 2 AC Mains 120Vac, 60Hz Peaks

Frequency	Peak	DeLLim-Pk
(MHz)	(dB μ V)	(dB)
0.4559	35.2	-11.5
1.092	27	-19
2.907	26.2	-19.8
0.1914	33.1	-20.8
0.2601	30.6	-20.8
0.3214	28.6	-21



Plot 21: (Line1 120Vac/60Hz) AC Mains Conducted Emissions



Plot 22: (Line2 120Vac/60Hz) AC Mains Conducted Emissions

Appendix G: Test Set-up Picture



Pic 1: AC Mains Conducted Emissions Test Setup



Pic 2: Radiated Emissions Test Set-up