Testing Tomorrow's Technology

Application for

Certification
Per

FCC Part 25 and
IC RSS-170

for the

Numerex Corp.

Model: SXL1

FCC ID: TWV-SXL1FLEX
IC: 6322A-SXL1FLEX

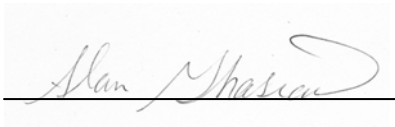
Issue Date: May 17, 2011
UST Project No: 11-0086

Number of pages contained in his report: 47

3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com

I certify that I am authorized to sign for the test facility and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

US TECH (Agent Responsible For Test):

By: 

Name: Alan Ghasiani

Title: Consulting Engineer - President

Date: May 17, 2011

3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com

TABLE OF CONTENTS

Paragraph Title **Page**

LIST OF FIGURES

LIST OF TABLES

1 General Information

1.1 Product Description

The SXL1 is a satellite based asset tracking device. The device uses the GPS satellite constellation to determine the devices location and the Globalstar satellite network to relay the location information to Numerex's FELIX servers. The SXL1 reports on a configurable interval or on the detection of motion. The SXL1 has 906 MHz ISM band transceiver that is used for configuration of the device as well as a communications link to the SXL1 sensor interface. Information from the sensor interface is sent over the Globalstar network to Numerex's FELIX servers.

The EUT was configured to operate at 1611.25 and 1616.25 MHz.

For the purpose of this test the EUT was placed into a (+18 dBm) constant TX mode of operation.

1.2 Related Approvals

The EUT is subject to the following authorizations:

a) Certification as a Non-Broadcast Station Transmitter.
b) Verification as a Digital Device.

2 Test and Measurements

2.1 Configuration of Tested System

A block diagram of the tested system is shown in Figure 1. Test configuration photographs for spurious emissions measurements are shown in Figure 2 and 3.

2.2 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and registered with the FCC under designation number US5117.Additionally, this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number 2982A-1.

2.3 Test Equipment

Table 2 describes test equipment used to evaluate this product.

2.4 Modifications to Equipment under Test (EUT)

No modifications were made by US Tech to bring the EUT into compliance with FCC and IC requirements.

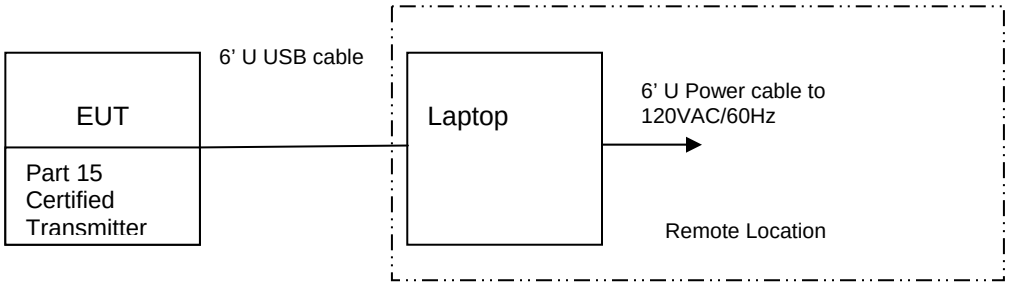


Figure 1 - Test Configuration

Table 1 - EUT and Peripherals

PERIPHERAL	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Part 15 Certified Transmitter	SXL1	--	TWV-SXL1 (pending)	--
Transmitter (EUT)	SXL1	--	TWV-SXL1FLEX (pending)	6' U USB
Laptop	T34	--	--	6' U Power cable

s = shielded
u = unshielded

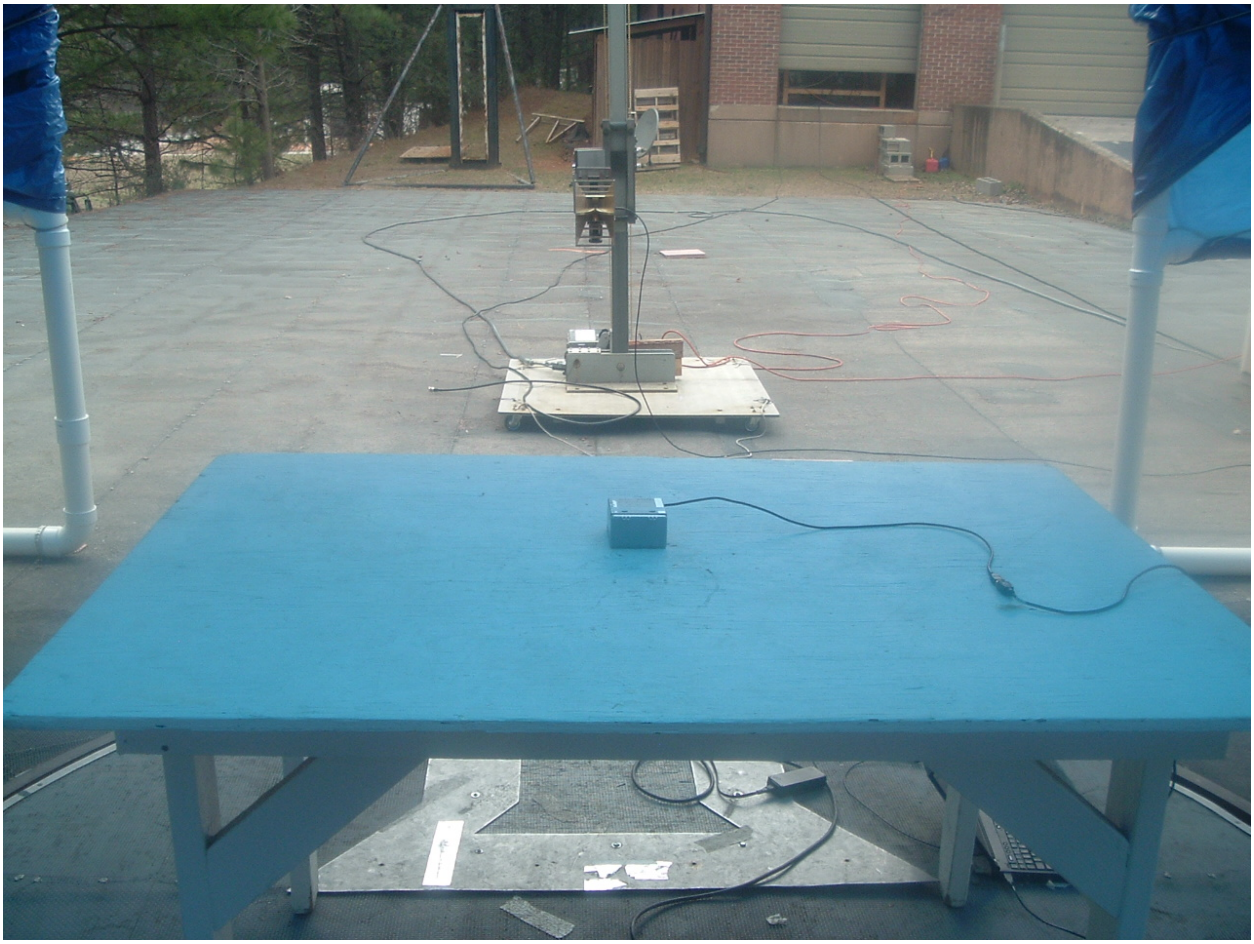


Figure 2 – Photograph of Spurious Emissions Measurement Setup - Rear View

Figure 3 - Photograph of Spurious Emissions Measurement Setup - Front View

Table 2 - Test Instruments

TEST INSTRUMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	DATE OF LAST CALIBRATION
SPECTRUM ANALYZER	8593E	HEWLETT-PACKARD	3205A00124	10/18/2010
SPECTRUM ANALYZER	8566B	HEWLETT-PACKARD	2410A00109	10/29/10
RF PREAMP 100 kHz to 1.3	8447D	HEWLETT-PACKARD	2944A06291	9/7/10
BICONICAL ANTENNA	BIA25	Electro-Metrics	2451	12/29/09 2 Year
LOG PERIODIC 100 MHz to 1000	3146	EMCO	3110-3236	1/22/10 2 Year
HORN ANTENNA 1 GHz to 18 GHz	SAS-571	A. H. Systems	605	2/9/2010 2 Year
PREAMP 1 GHz to 26.5 GHz	8449B	HEWLETT-PACKARD	3008A00480	9/21/10
CALCULATION PROGRAM	N/A	N/A	Ver. 6.0	N/A

Note: The calibration interval of the above test instruments is 12 months unless stated otherwise and all calibrations are traceable to NIST/USA.

2.5 Antenna Description

The EUT incorporates a Satellite transmit antenna: 44 mm square dual mode (Gstar/GPS) ceramic patch, +5 dB_i gain antenna. Mfg: Spectrum Controls part number PA451615-1575SB.

2.6 RF Power Output (FCC Section 2.1046, 25.204)

In bands shared co-equally with terrestrial radio communications services, the equivalent isotropic radiated power (EIRP) 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.

For angles of elevation of the horizon greater than 5 degrees there shall be no restriction as to the equivalent isotropic radiated power transmitted by an earth station towards the horizon.

Limit = EIRP < +40 dBW (+70 dBm) in any 4 kHz band for θ = 0 degrees

The manufacturer has stated that the EUT has a maximum output power of +18 dBm.

This data is found herein.

Table 3 - RF Power Output

Frequency of Fundamental (MHz)	Measurement (dBm)	Cable Loss (dB)	Adjusted Measurement (dBm)	Limit (dBm)
1611.25	19.2	0.5	19.7	+70
1616.25	17.8	1.5	19.3	+70

Note: Given the output power and antenna gain of +5 dBi, even the direct lobe of radiation meets the FCC's EIRP Requirement for $\theta = 0$ (+40 dBW, +70 dBm)

Test Date: May 13 and 16, 2011

Tester Signature:  **Name: George Yang**

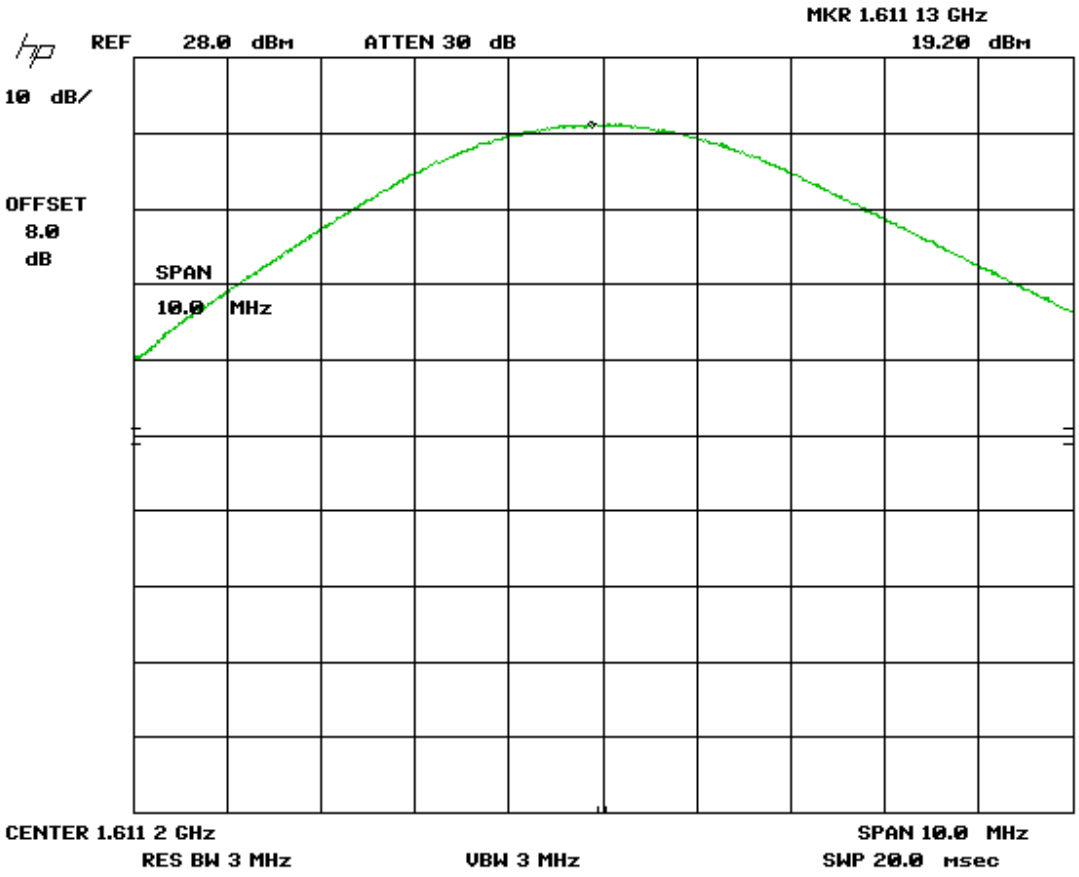


Figure 4 - RF Power Output Channel A

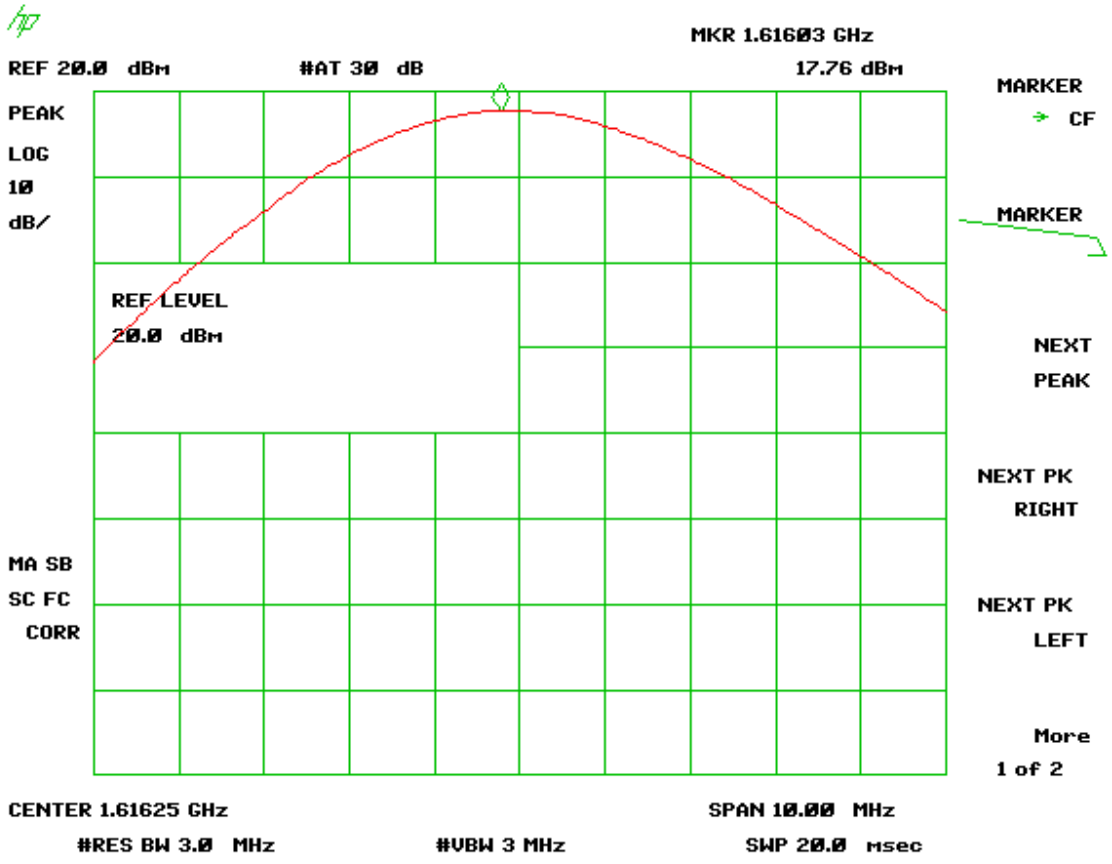


Figure 5 - RF Power Channel C

2.7 Modulation Characteristics (FCC Section 2.1047)

The EUT uses digital modulation techniques only, which were employed during the tests for occupied bandwidth.

2.8 Occupied Bandwidth and Emission Limitations (FCC Sec. 2.1049, 25.202(f))

2.8.1 The EUT was modulated by its own internal sources. Both Low and High Channels were tested. The bandwidth of the fundamental was measured using a spectrum analyzer. The results are shown in Figures 6 and 8 below. Long sweep times were applied at frequencies near the fundamental to ensure that a good signal was obtained.

2.8.2 Out-of-band emissions at 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), should be attenuated by at least 25 dB. See figures 7 and 9 below.

2.8.3 Out-of-band emissions at frequencies removed from the midpoint of the assigned frequency by more than 100% (2.5 MHz to 6.25 MHz) up to and including 250% of the authorized bandwidth (2.5 MHz), should be attenuated by at least 35 dB. See figures 7 and 9 below.

2.8.4 Out-of-band emissions at frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz), should be attenuated by at least 43 + 10 log (P_{Watts}) dB below the mean power of the transmitter.

For Lowest Channel = 43 + 10 log (0.063) = 31.0 dB, Limit = 18.0 – 31.0 = - 13 dBm.
For Highest Channel = 43 + 10 log (0.063) = 31.0 dB, Limit = 18.0 – 31.0 = - 13 dBm.
The results are shown in figure 10 through Figure 15.

Note: A 10 kHz RBW was used instead. This was deemed to meet the 4 kHz RBW requirement.

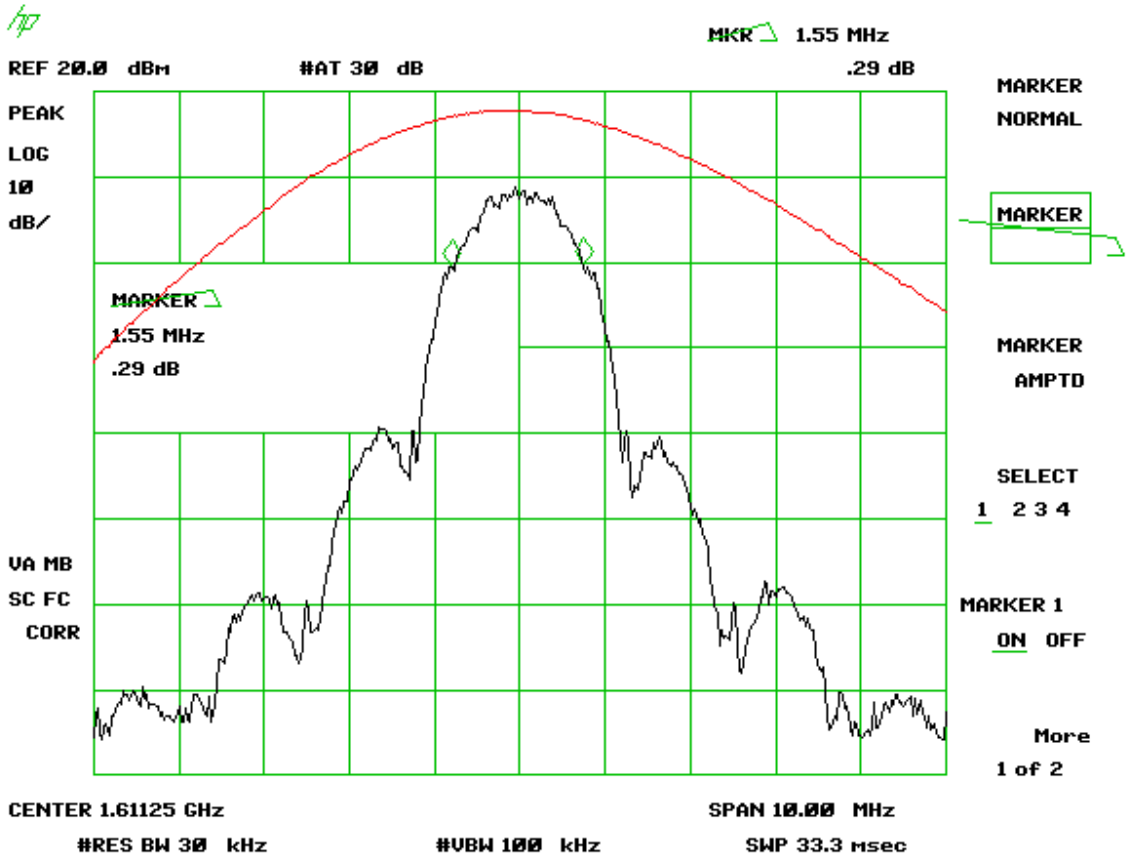


Figure 6 - Occupied Bandwidth – Low Channel A

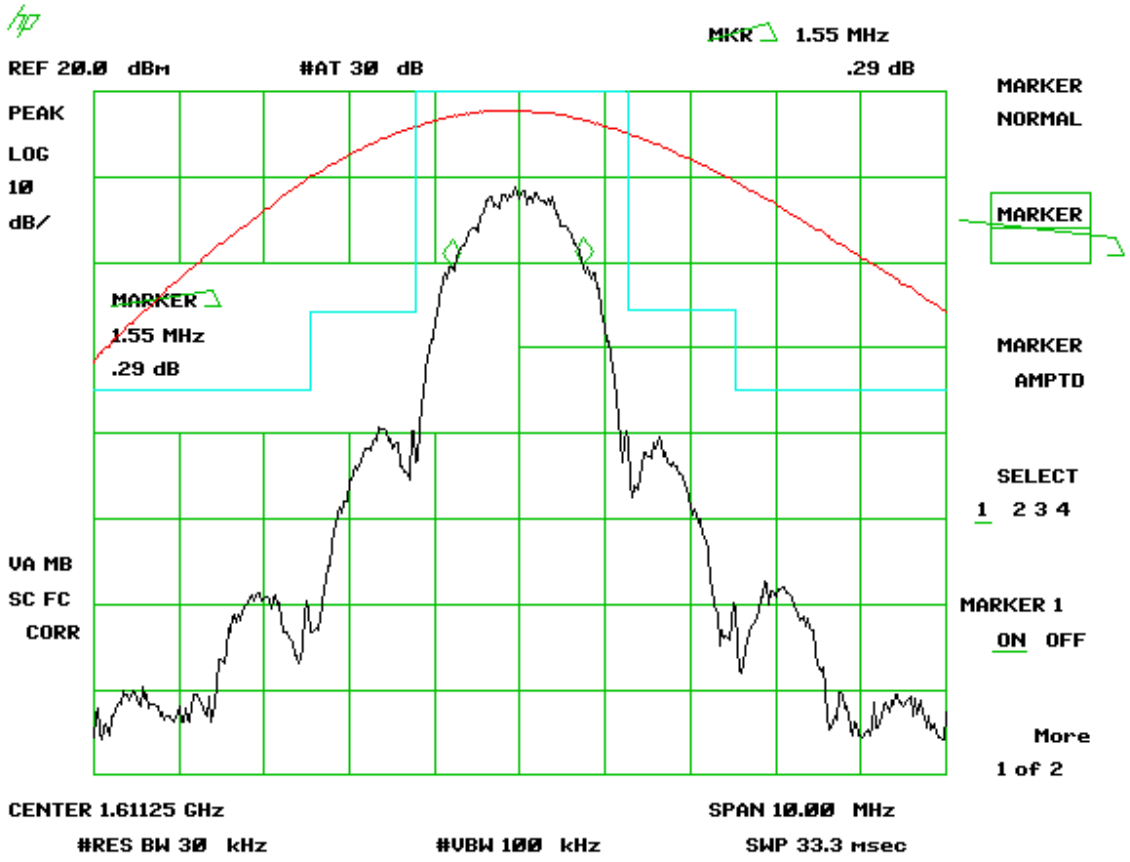


Figure 7 - Emission Limitation, 50% to 100% from mid frequency, Low Channel A

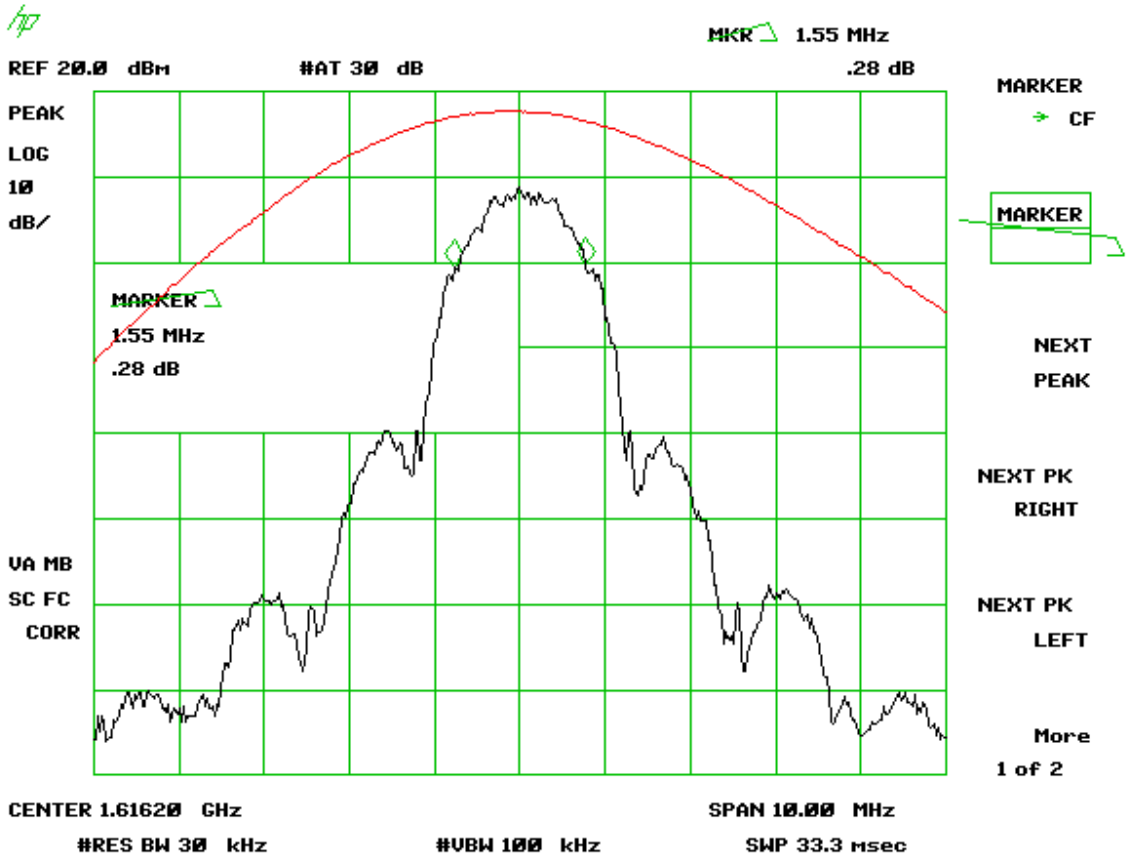


Figure 8 - Occupied Bandwidth, High Channel C

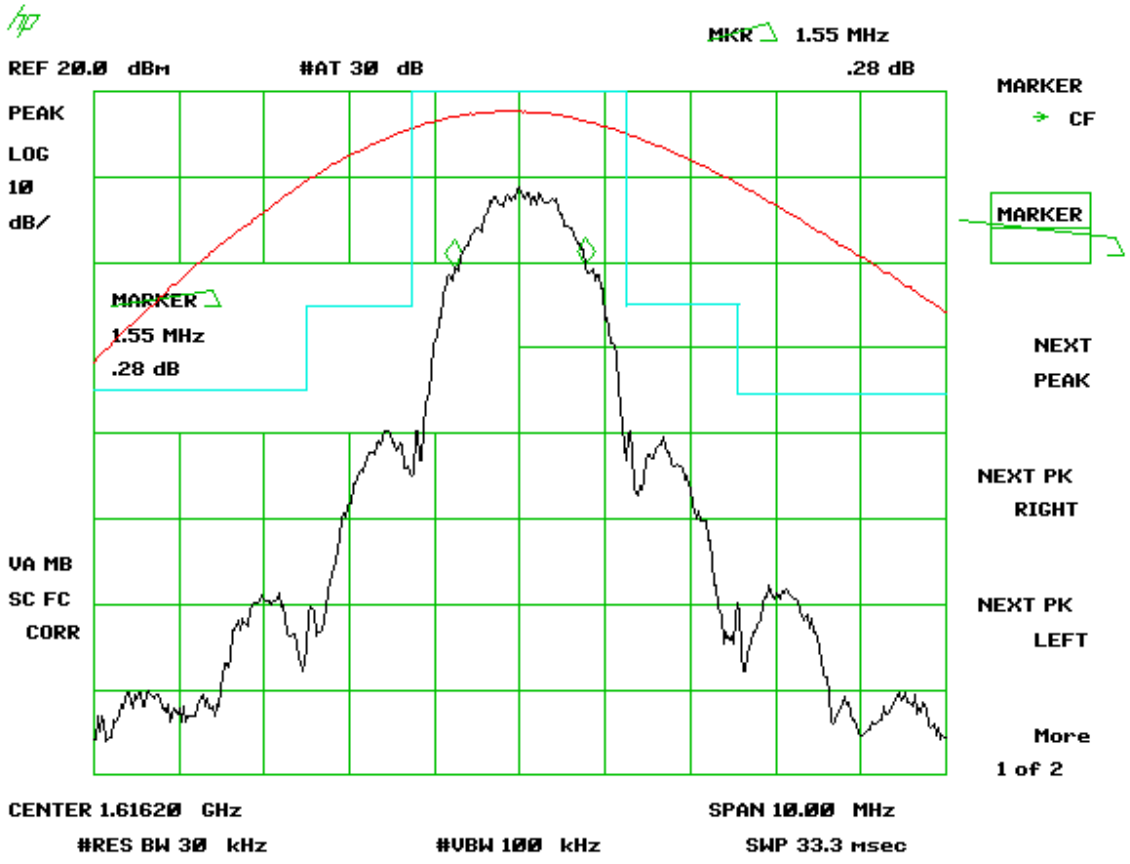


Figure 9 - Emission Limitation, 50% to 100% from mid frequency, High Channel C.

2.9 Spurious Emissions at Antenna Terminals (FCC Section 2.1051)

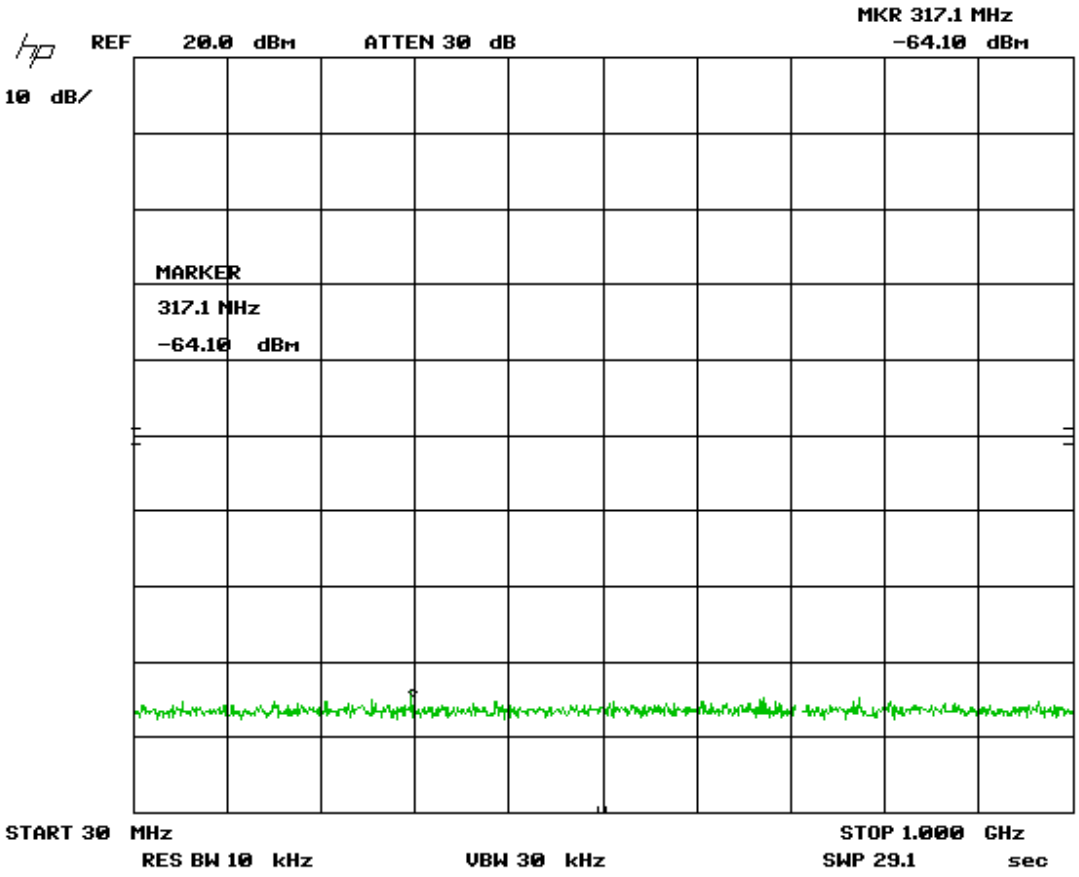
Out-of-band emissions at frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz) shall be attenuated by at least:

$43 + 10 \log (P_{Watts})$ dB below the mean power of the transmitter.

For Lowest Channel = $43 + 10 \log (0.063) = 31.0$ dB down, limit = - 13 dBm
For Highest Channel = $43 + 10 \log (0.053) = 31.0$ dB down, limit = - 13 dBm

Note: A 10 kHz RBW was used instead of 4 kHz. This was deemed to be a worst case for the required 4 kHz RBW.

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. Results are shown in Figures 10-15 below.



Limit = - 13 dBm

Figure 10 - Spurious Emissions at Antenna Terminals - Channel A

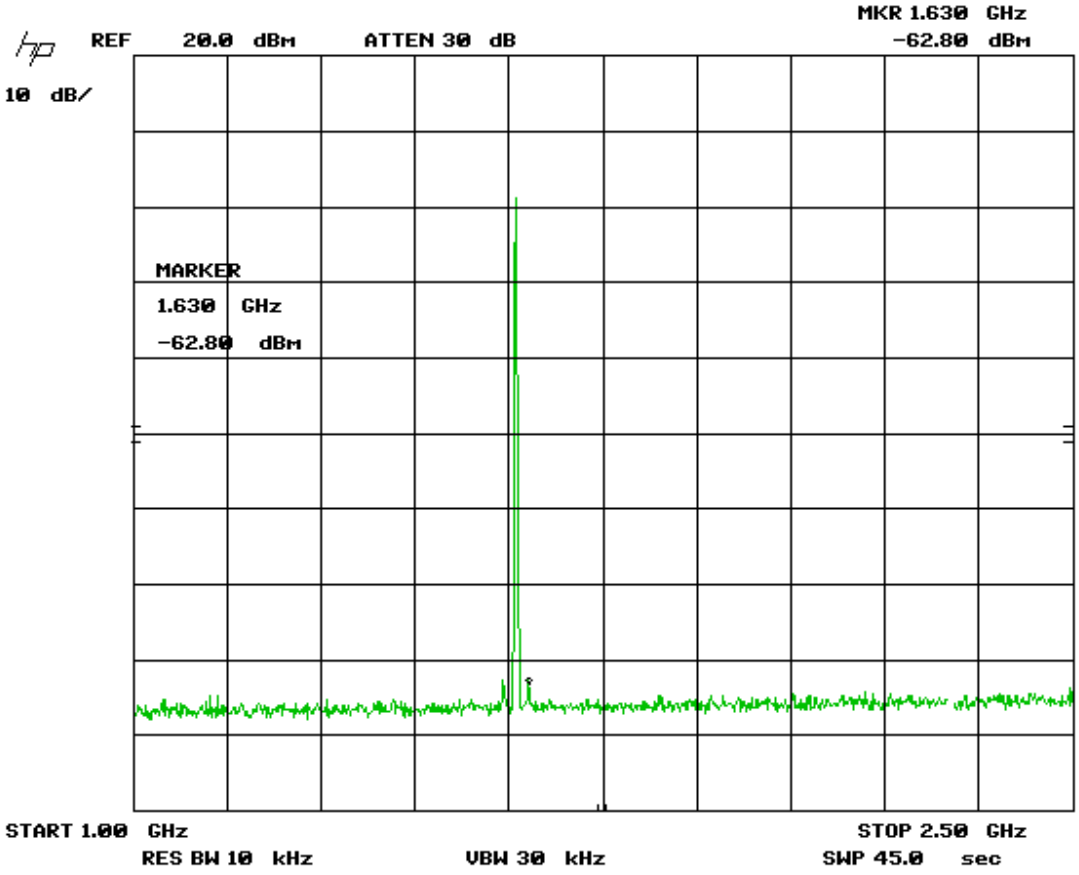


Figure 11 - Spurious Emissions at Antenna Terminals - Channel A

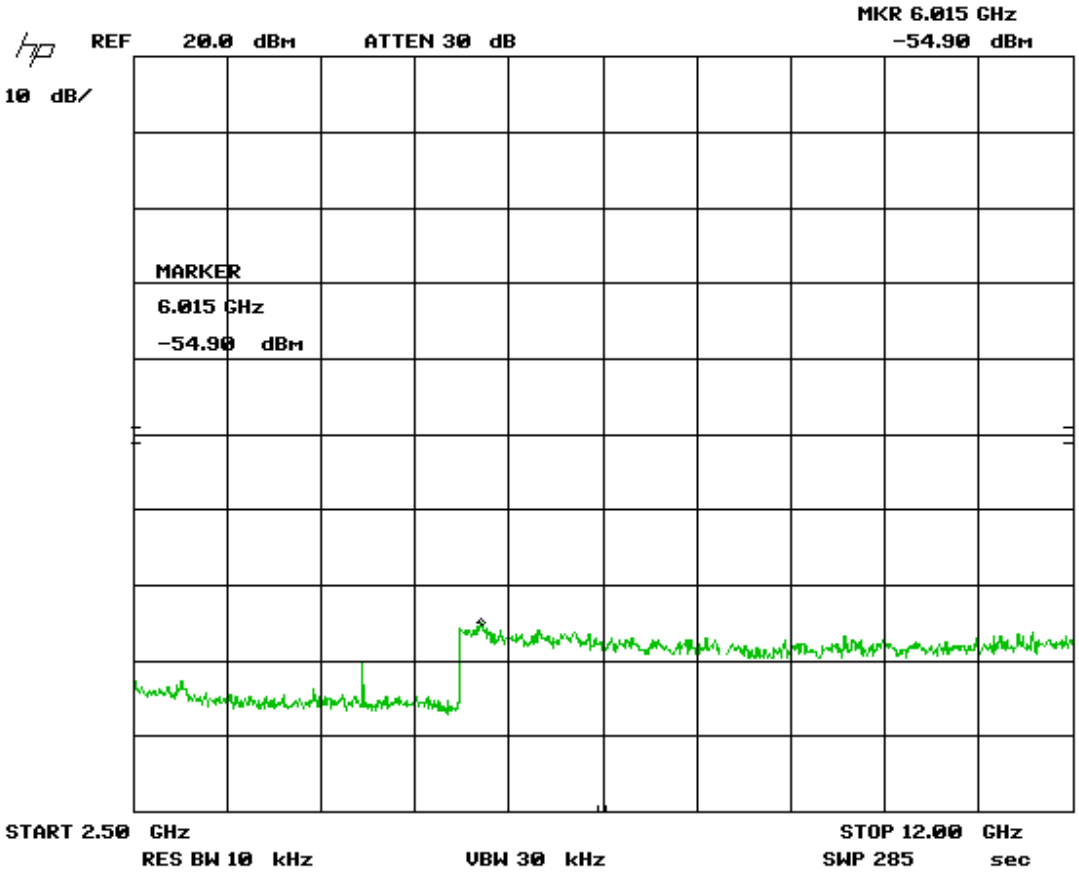


Figure 12 - Spurious Emissions at Antenna Terminals - Channel A

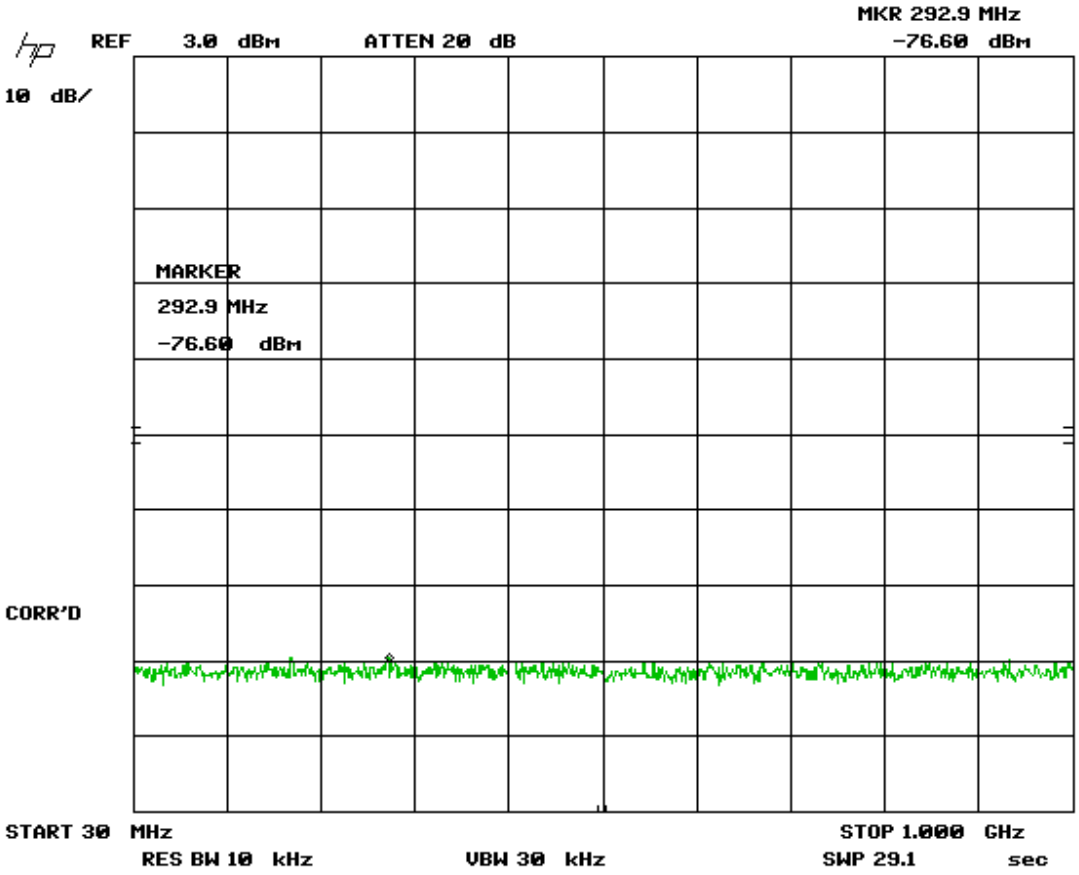


Figure 13 - Spurious Emissions at Antenna Terminals - Channel C

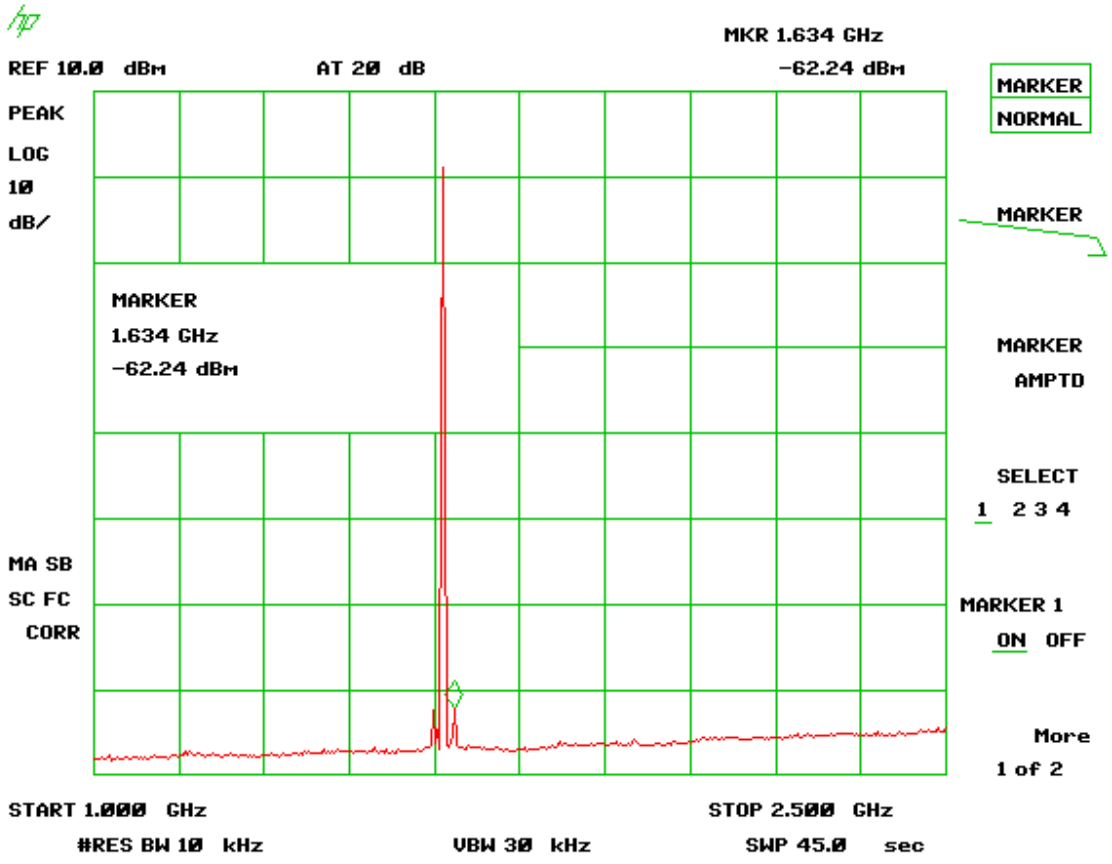


Figure 14 - Spurious Emissions at Antenna Terminals - Channel C

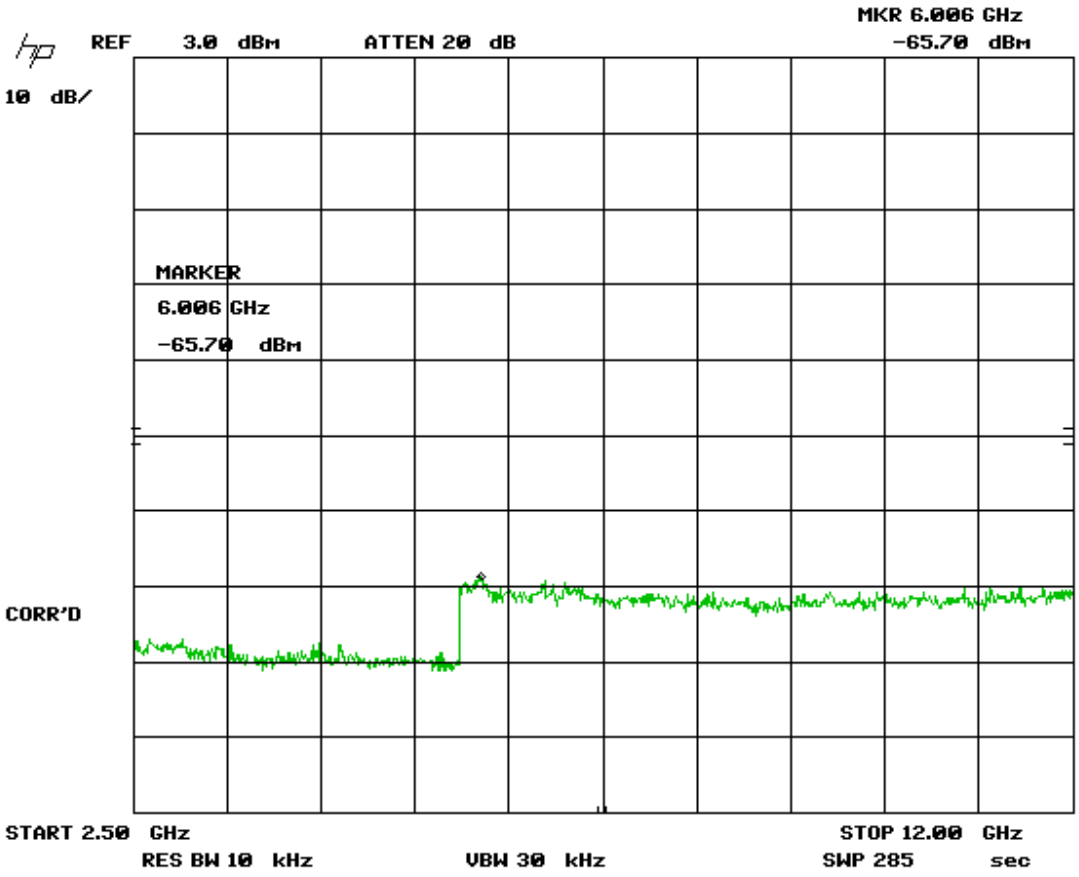


Figure 15 - Spurious Emissions at Antenna Terminals - Channel C

2.10 Field Strength of Spurious Radiation (FCC Section 2.1053, 25.202(f))

2.10.1 Spurious emissions were evaluated from 30 MHz to 16.2 GHz at an EUT to antenna distance of either 1 or 3 meters. The EUT was tested with an external power source and modulated by its own internal sources. Both low and high channels were tested.

2.10.2 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 the 30 MHz to 1000 MHz frequency range 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 worst case results are shown in Table 4.

2.10.3 For out-of-band emissions at frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (2.5 MHz), signals must be attenuated by at least:

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

Low channel radiated power = 18.00 dBm = 0.063 watts
High channel radiated power = 18.00 dBm = 0.063 watts
Limits:
For Lowest Channel = $43 + 10 \log (P_{Watts}) = 43 + 10 \log (0.063) = 31.0$ dB attenuation
For Highest Channel = $43 + 10 \log (P_{watts}) = 43 + 10 \log (0.063) = 31.0$ dB attenuation

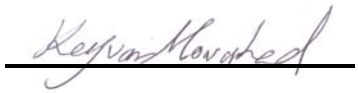
Limits:
18.00 dBm – 31.00 dB = -13 dBm
18.00 dBm – 31.00 dB = -13 dBm

Table 4 - Field Strength of Spurious Radiation

Frequency	Maximum RX Reading (Units A)	Recreated Reading During Substitution (Using Same Units A) - Ideally 0	Difference Column A - B	TX Gain (dBi)	TX Gain Relative to Dipole (dB)	RF Power into TX antenna (Corrected for any CL and Pads to antenna Feed Point) (dBm) (SG Value-CL)	RF Power into substitution TX antenna corrected by TX Gain Relative to Dipole (dBm)	Limits (dBm)	Margin Below Limit (dB)
The following applies information from test as performed									
1611.18	82.92	83.78	-0.86	7.8	5.66	11.18	15.98	70	54.02
6445.17	61.28	60.22	1.06	11.3	9.16	-41.32	-31.1	-13	18.10
9667.42	49.33	50.1	-0.77	11.8	9.66	-35.35	-26.46	-13	13.46
1618.15	83.65	78.39	5.26	7.8	5.66	4.86	15.78	70	54.22
6472.1	53.2	53.5	-0.3	11.3	9.16	-41.4	-32.54	-13	19.54

Sample Calculation:
EIRP = Power into TX antenna – Cable loss + substitution antenna gain + Difference Column A –B
EIRP = 11.18 + 5.66 + -0.86 = 15.98

Test Date: March 2, 2011

Tester Signature:  **Name: Keyvan Muvahhid**

2.11 Frequency Stability (FCC Section 2.1055 and 25.202(d))

The frequency tolerance of the carrier signal was measured while the ambient temperature was varied from -30 to + 50 degrees centigrade. The frequency tolerance was verified at 10 degree increments. Additionally, the supply voltage was varied from 85% to 115% of the nominal value (except for hand carried, battery powered equipment that was measured at battery endpoint). The carrier frequency of Earth Stations shall be maintained within 0.001 percent = 10 parts per million. Test data are found in tables 5 through 8 below. Because of the modulation, the measurements were done for frequencies below the center of the high channel where response was 20 dB down.

Table 5 - Frequency Stability versus Temperature at Start-up

Frequency Stability vs. Temperature (At Startup)		
Temperature (degrees C)	Measured Frequency (MHz)	Deviation (ppm)
-30	1617.0380	0.0
-20	1617.0500	7.4
-10	1617.0380	0.0
0	1617.0380	0.0
10	1617.0380	0.0
20	1617.0380	0.0
30	1617.0250	-8.0
40	1617.0250	-8.0
50	1617.0380	0.0

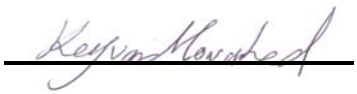
Test Date: February 5, 2011
Tested by
Signature:  **Name: Keyvan Muvahhid**

Table 6 - Frequency Stability versus Temperature 2 mins after start-up

Frequency Stability vs. Temperature (At Startup)		
Temperature (degrees C)	Measured Frequency (MHz)	Deviation (ppm)
-30	1617.0380	0.0
-20	1617.0500	7.4
-10	1617.0350	-1.9
0	1617.0380	0.0
10	1617.0380	0.0
20	1617.0380	0.0
30	1617.0250	-8.0
40	1617.0250	-8.0
50	1617.0250	-8.0

Test Date: March 5, 2011

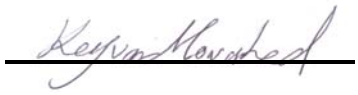
Tested by
Signature:  **Name: Keyvan Muvahhid**

Table 7 - Frequency Stability versus Temperature 5 mins after start-up

Frequency Stability vs. Temperature (At Startup)		
Temperature (degrees C)	Measured Frequency (MHz)	Deviation (ppm)
-30	1617.0500	7.4
-20	1617.0500	7.4
-10	1617.0350	-1.9
0	1617.0380	0.0
10	1617.0250	-8.0
20	1617.0380	0.0
30	1617.0250	-8.0
40	1617.0250	-8.0
50	1617.0250	-8.0

Test Date: March 5, 2011

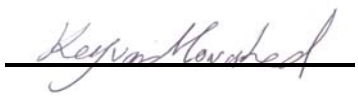
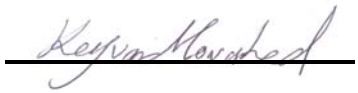
Tested by
Signature:  **Name: Keyvan Muvahhid**

Table 8 - Frequency Stability versus Temperature 10 mins after start-up

Frequency Stability vs. Temperature (At Startup)		
Temperature (degrees C)	Measured Frequency (MHz)	Deviation (ppm)
-30	1617.0500	7.4
-20	1617.0380	0.0
-10	1617.0380	0.0
0	1617.0380	0.0
10	1617.0250	-8.0
20	1617.0380	0.0
30	1617.0250	-8.0
40	1617.0250	-8.0
50	1617.0250	-8.0

Test Date: March 5, 2011

Tested by
Signature:  **Name: Keyvan Muvahhid**

2.12 Emissions from Mobile Earth Stations for Protection of Aeronautical Radio navigation-Satellite Service. (FCC 25.216)

25.216c(1) Emissions from the EUT were evaluated from 1559 MHz – 1605 MHz and did not exceed the limit at -70 dBW/MHz, averaged over 2 milliseconds, shown in figure 16.

25.216c(2) Emissions of less than 1KHz Bandwidth from the EUT were evaluated from 1559 MHz – 1605 MHz and did not exceed the limit at -80dBW, averaged over 2 milliseconds, shown in figure 17.

25.216 f & g(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, shown in Figure 18.

25.216 g(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, shown in Figure 19.

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). Emissions were measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable (Cable Loss = 0.25 dB) to the antenna output terminal with the Resolution Bandwidth set to 1 MHz. Results are shown in Figure 20.

Limit = - 70 dBW/MHz - 5 dBi = - 45 dBm

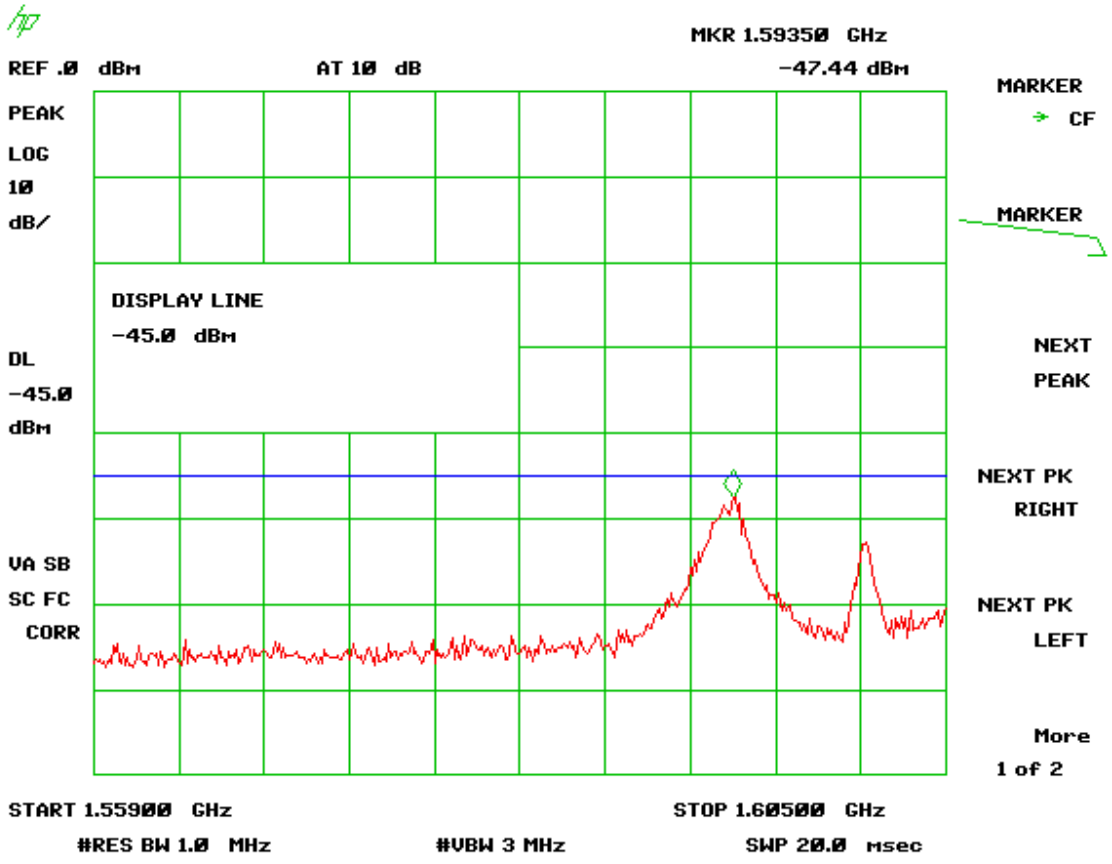


Figure 16 - Emissions from Mobile Earth Stations for Protection of Aeronautical Radio-navigation-Satellite Service (25.216(c) (1))

Limit = -80 dBW - 5 dB_i = - 55dBm

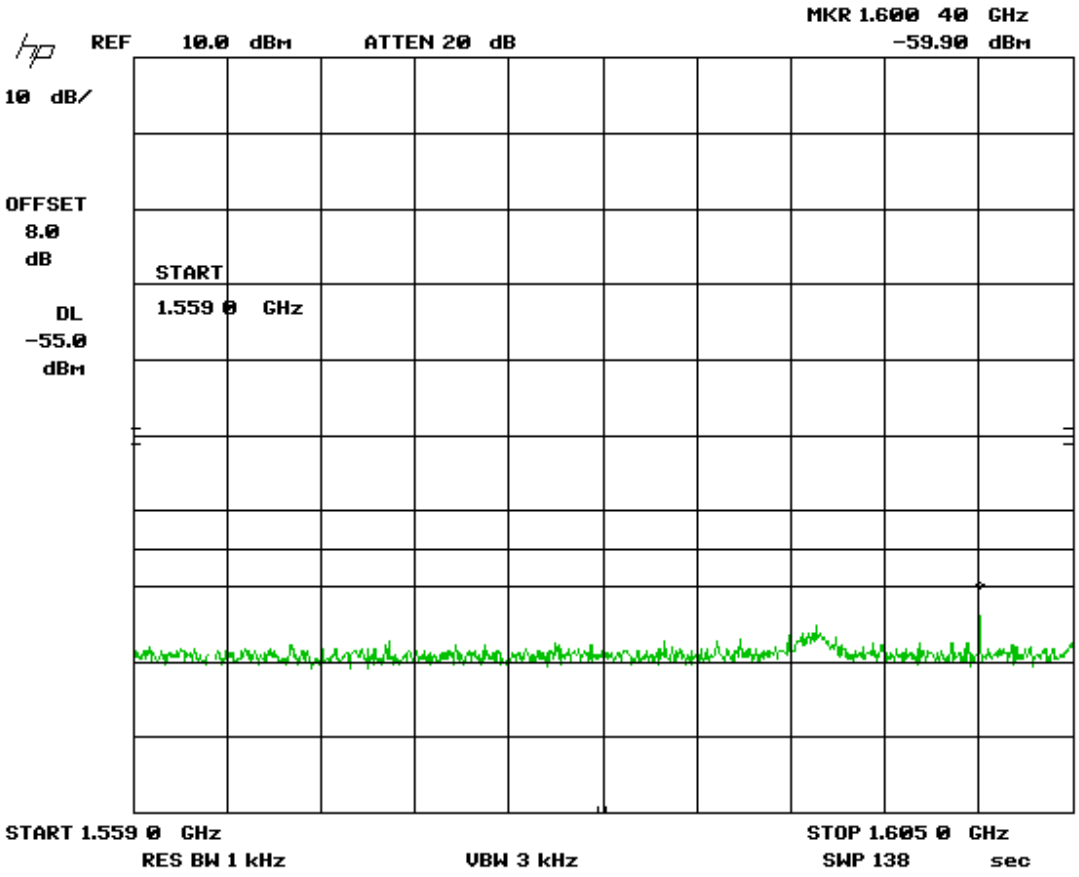


Figure 17 - Emissions from Mobile Earth Stations for Protection of Aeronautical Radio-navigation-Satellite Service (FCC 25.216(c) (2))

Limit = -70 dBW/MHz at 1605 MHz to –10 dBW/MHz at 1610 (-45 dBm to 15 dBm)

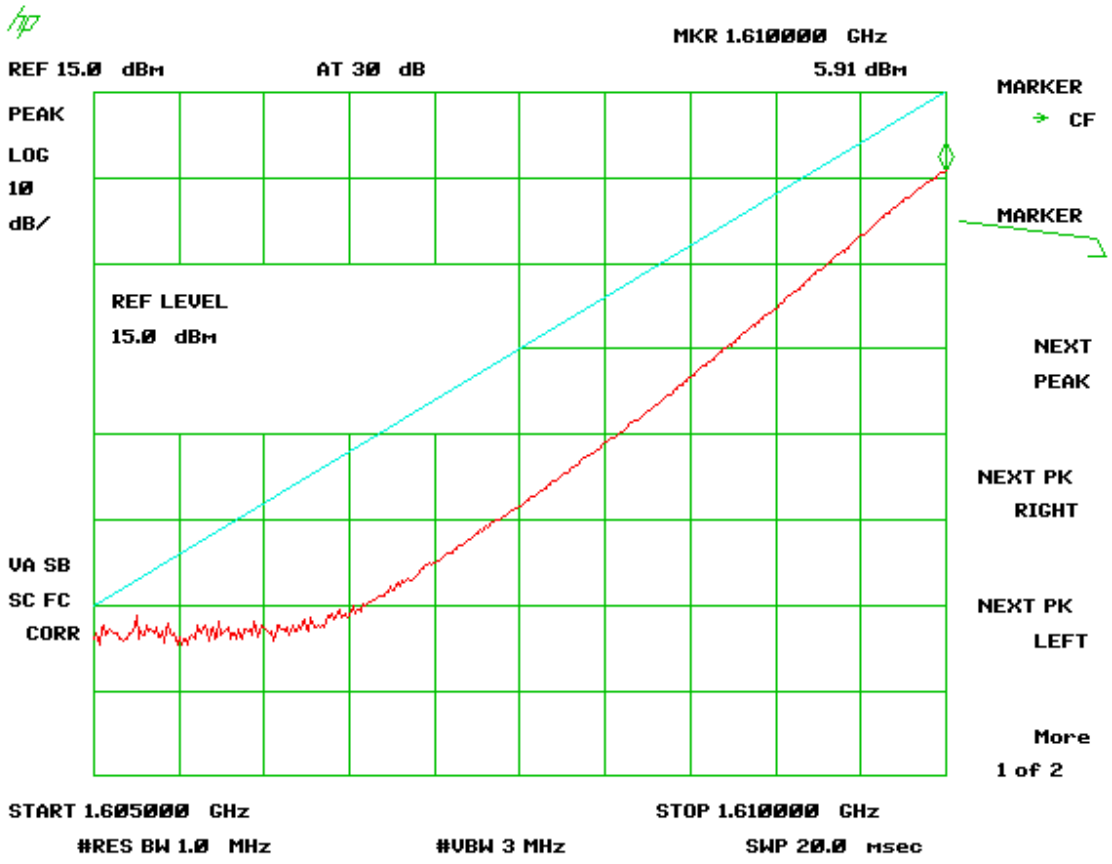


Figure 18 - Emissions from Mobile Earth Stations for Protection of Aeronautical Radio-navigation-Satellite Service (FCC 25.216(g)(1))(RSS-170, 5.4.3.2.1(1))

Limit = -80 dBW/MHz at 1605 MHz to –20 dBW/MHz at 1610 (-55 dBm to 5 dBm)

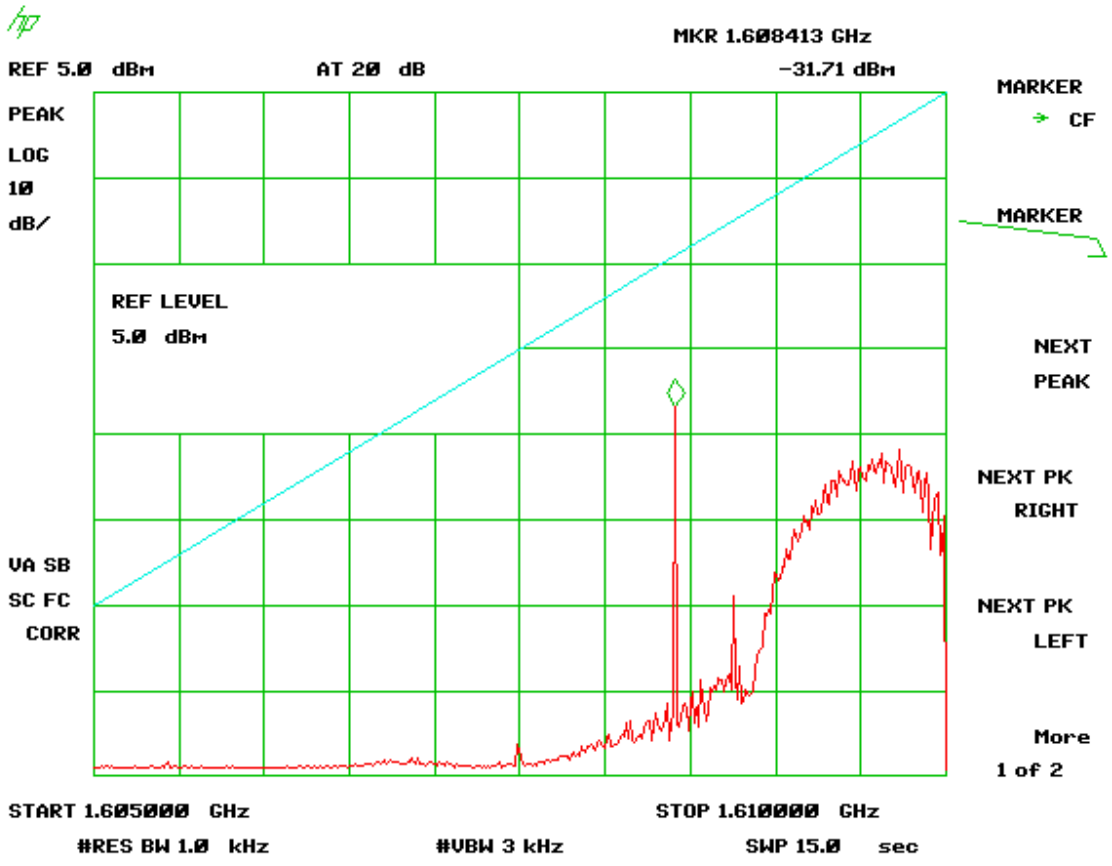


Figure 19 - Emissions from Mobile Earth Stations for Protection of Aeronautical Radio-navigation-Satellite Service (FCC 25.216(g)(2))(RSS-170, 5.4.3.2.1(2))

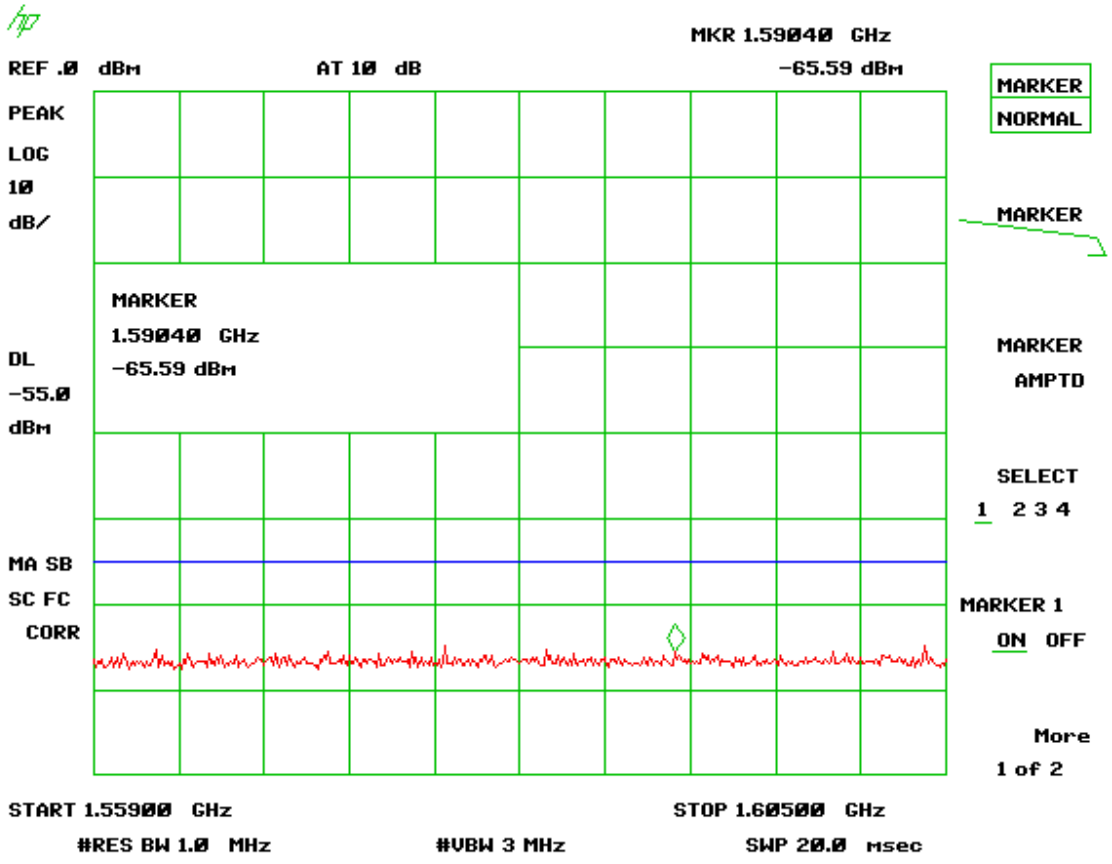


Figure 20 - Emissions from Mobile Earth Stations for Protection of Aeronautical Radio-navigation-Satellite Service (FCC 25.216(i))

2.13 Unintentional Radiator, Radiated Emissions (CFR 15.109)(RSS-170, 5.4, 5.5, RSS-Gen)

The transceiver has a receiver and is controlled by digital processes; therefore, Verification of the Digital Device for radiated emissions per CFR15.109 and power line conducted emissions per CFR 15.107 were measured.

The radiated measurements were performed over the frequency range of 30 MHz to 16.5 GHz according to the procedures of ANSI C63.4. The EUT was set up on the OATS site for 3 meter testing. It was placed on a non-conductive table at a height of 80 cm above the ground plane on a 3 meter, diameter turn-table. The EUT was positioned along the Z-axis facing the measurement antenna. The measurement antenna was connected to the receiving device, a Spectrum Analyzer with quasi-peak adaptor, through an RF preamplifier by 50 Ohm, double-shielded, coaxial cable.

The Spectrum Analyzer Resolution and video bandwidths and frequency span controls were adjusted according to the detector used and the frequency range being examined. Below 1 GHz, a resolution bandwidth of 120 kHz was used. Above 1 GHz, the resolution bandwidth was set to 1 MHz. The video bandwidth was coupled to the resolution bandwidth. The Quasi-peak adaptor box was placed in bypass mode for the scanning activities.

During the search for radiated digital device emissions, when a candidate emission was found, the antenna was raised and lowered from 1 meter to 4 meters in height in an attempt to maximize the emission. Also, the turntable was rotated through 360 degrees in an attempt to maximize the emission. If there was a question of the emission being a real digital device emission, the EUT was turned OFF and then back ON while watching the Spectrum Analyzer display for the signal to disappear and then re-appear. After manipulation of the antenna and turntable to maximize the signal, the EUT was re-oriented in the three mutually exclusive orthogonal planes in an attempt to further maximize the signal.

The final readings of digital emissions were made with a peak or quasi-peak detector. Because the limits are Quasi-peak, the peak readings were first used for comparison to the limit. If the peak signals passed the QP limit then QP measurements were not performed. Otherwise QP measurements were performed for comparison to the QP limit. The same process was repeated for the other antenna polarization (Vertical or Horizontal). At least six (6) readings were gathered for reporting purposes. Test results are included in Table 6 below.

Table 9 - Unintentional Radiator, Radiated Emissions (CFR 15.109)

Tested by:	Test: FCC 15.109			Date:02/28/11		Client: Numerex Corp			
KM	Project: 11-0086			Class B		Model: SXL1			
Frequency **MHz**	Analyzer Reading **dBuV**	AF+CL+ DC-PA **dB/m**	Corrected Results **dBuV/m**	Quasi-peak Limit **dBuV/m**	Margin **dB**	Detector used	Antenna Distance/ Polarization	Turntable Position **Degrees**	Antenna height **meters**
63.4500	26.00	9.41	35.41	40.0	4.6	**PK**	3m./VERT	0.0	1.0
119.9800	23.70	13.99	37.69	43.5	5.8	**QP**	3m./VERT	180.0	1.0
207.7800	24.20	14.52	38.72	43.5	4.8	**PK**	3m./HORZ	0.0	1.0
278.4840	22.60	17.47	40.07	46.0	5.9	**PK**	3m./HORZ	0.0	1.0
455.9280	18.60	21.47	40.07	46.0	5.9	**PK**	3m./HORZ	120.0	1.0
480.0030	15.20	22.03	37.23	46.0	8.8	**PK**	3m./HORZ	120.0	2.0
443.9610	17.70	20.73	38.43	46.0	7.6	**PK**	3m./VERT	180.0	1.0
456.2300	16.30	21.28	37.58	46.0	8.4	**PK**	3m./VERT	180.0	1.0
479.9990	17.10	21.83	38.93	46.0	7.1	**PK**	3m./VERT	180.0	1.0
525.2300	15.70	22.68	38.38	46.0	7.6	**PK**	3m./VERT	45.0	2.0

SAMPLE CALCULATION:
RESULTS: At 63.45 MHz: = 26.00+ 9.41 = 35.41 dBuV/m @ 3m
Margin = (40 – 35.41) = 4.6 dB

Test Date: February 28, 2011

Tested by
Signature: Sina Sobhaniyan **Name: Sina Sobhaniyan**

Table 10 - Unintentional Radiator, Radiated Emissions (CFR 15.109)-Above 1 GHz

Unintentional Radiator, Radiated Emissions							
Test By: K.M.	Test: FCC Part 15.109, 15.209			Client: Numerex Corp			
	Project: 11-0086 Class: B			Model: SXL1			
Frequency (MHz)	Test Data (dBuV)	AF+CL-PA (dB)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	DETECTOR PK / QP
Tested over the 1 GHz to 16.5 GHz range							
1440.80	48.42	-8.42	40.00	54.0	3.0m./H	14.0	**PK**
3578.65	46.30	0.17	46.47	54.0	3.0m./H	7.5	**PK**
6763.45	36.68	10.02	46.70	54.0	3.0m./H	7.3	**AVG**
2306.35	50.04	-3.01	47.03	54.0	3.0m./V	7.0	**PK**
2364.55	44.26	-2.53	41.73	54.0	3.0m./V	12.3	**AVG**

No other emissions detected within 20 dB of the FCC Part 15.109 limits
AF is antenna factor. CL is cable loss. PA is preamplifier gain

SAMPLE CALCULATION:
RESULTS: At 1440.80 MHz: = ((48.42+ (-8.42) = 40.00 dBuV/m @ 3m
Margin = (54.0 – 40.0) = 14.0 dB

Test Date: February 28, 2011

Tested by
Signature: Sina Sobhaniyan **Name: Sina Sobhaniyan**

2.14 Unintentional Radiator Power Lines Conducted Emissions (CFR 15.107)(RSS-170, 5.5)

The test data provided herein is to support the Verification requirement for the digital apparatus. The power line conducted voltage measurements for Receiver and Digital Devices have been carried out in accordance with CFR 15.107 and ANSI C63.4, Paragraph 7, with a spectrum analyzer connected to an LISN and the EUT placed into an idle condition or a continuous mode of receive (non-transmitting).

Table 11 – Power line Conducted Emissions Data, 15.107.

Power Line Conducted Emissions							
Test By: K.M.	**Test:** FCC Power Line Conducted Emissions 150 KHz – 30 MHz , Hot Phase			**Client:** Numerex Corp.			
	Project: 11-0086	Sect. 15.107 Class: B		**Model:** SXL1			
Frequency (MHz)	**Test Data (dBuV)**	**IL+CL -PA (dB)**	**Results (dBuV)**	**AVG Limits (dBuV)**	**Phase /Neutral**	**Margin (dB)**	**PK / QP**
Hot Line							
0.1520	50.40	0.46	50.86	55.9	Phase	5.0	**PK**
0.5374	36.00	0.10	36.10	46.0	Phase	9.9	**PK**
1.0240	34.70	0.10	34.80	46.0	Phase	11.2	**PK**
6.5950	32.30	0.10	32.40	50.0	Phase	17.6	**PK**
10.0400	29.40	0.10	29.50	50.0	Phase	20.5	**PK**
28.4400	24.50	0.40	24.90	50.0	Phase	25.1	**PK**
Neutral Line							
0.1569	45.80	0.40	46.20	55.6	Neutral	9.4	**PK**
0.5004	38.30	0.20	38.50	46.0	Neutral	7.5	**PK**
1.3000	33.70	0.15	33.85	46.0	Neutral	12.1	**PK**
7.2100	35.50	0.10	35.60	50.0	Neutral	14.4	**PK**
10.3800	33.20	0.20	33.40	50.0	Neutral	16.6	**PK**
24.1800	28.60	0.40	29.00	50.0	Neutral	21.0	**PK**

Tested from 150 kHz to 30 MHz.
SAMPLE CALCULATIONS: at 0.152 MHz, 50.0 dBuV + (- 0.46) = 50.86 dBuV

Test Date: March 12, 2011

Tester
Signature:  Name: Keyvan Muvahhid

3 Measurement Uncertainty

3.1 Radiated Emissions Measurement Uncertainty:

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is ±5.3 dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is ±5.1 dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is ±5.1 dB.

The data listed in this test report does not have sufficient margin to negate the effects of uncertainty, therefore this test is conditionally acceptable.

3.2 Conducted Emissions Measurement Uncertainty:

Measurement Uncertainty (within a 95% confidence level) for this test is ±2.8 dB.

The data listed in this test report has sufficient margin to negate the effects of uncertainty. This measurement unconditionally passes.

4 Photographs

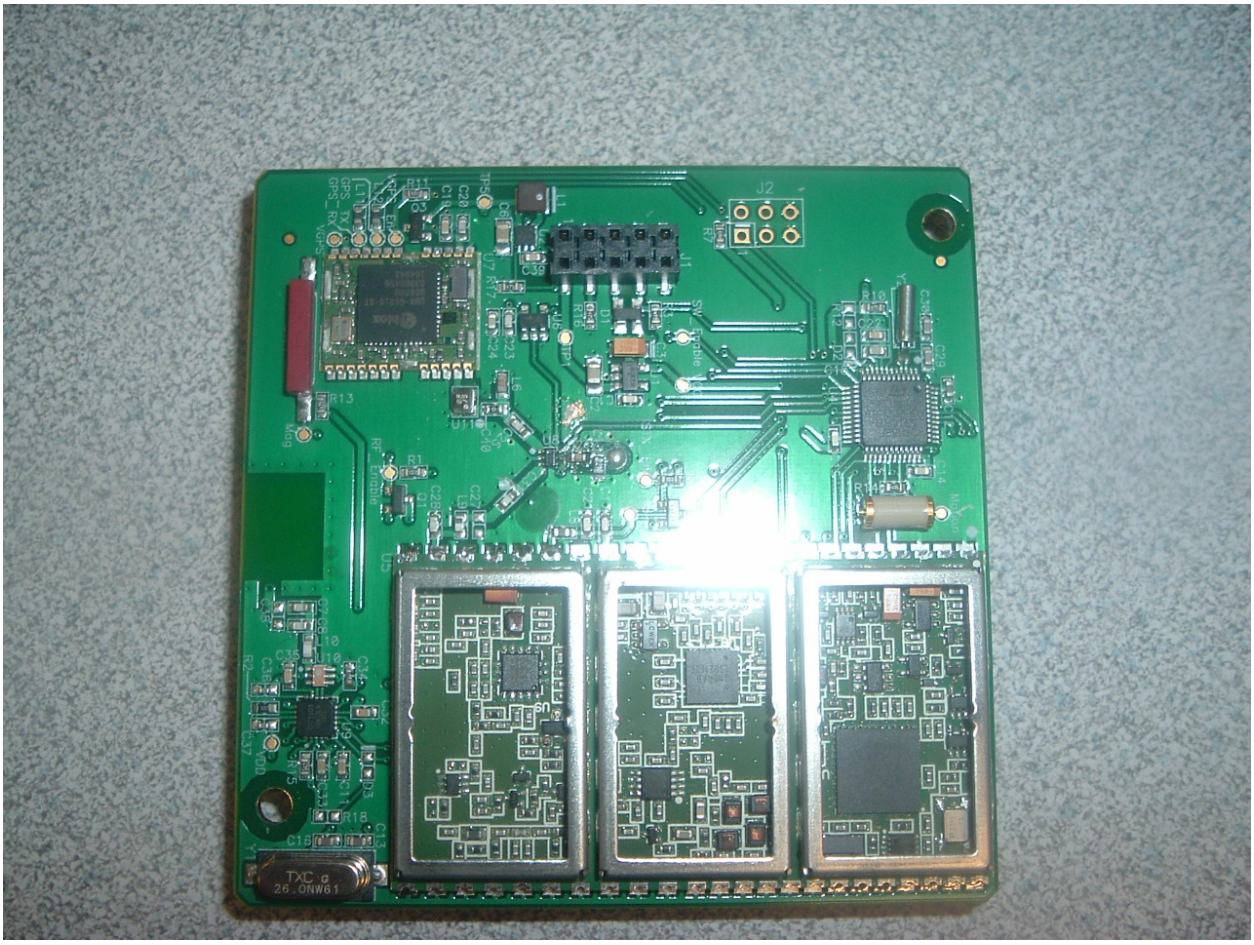


Figure 21 - Top View of EUT

Figure 22 - Bottom View of EUT

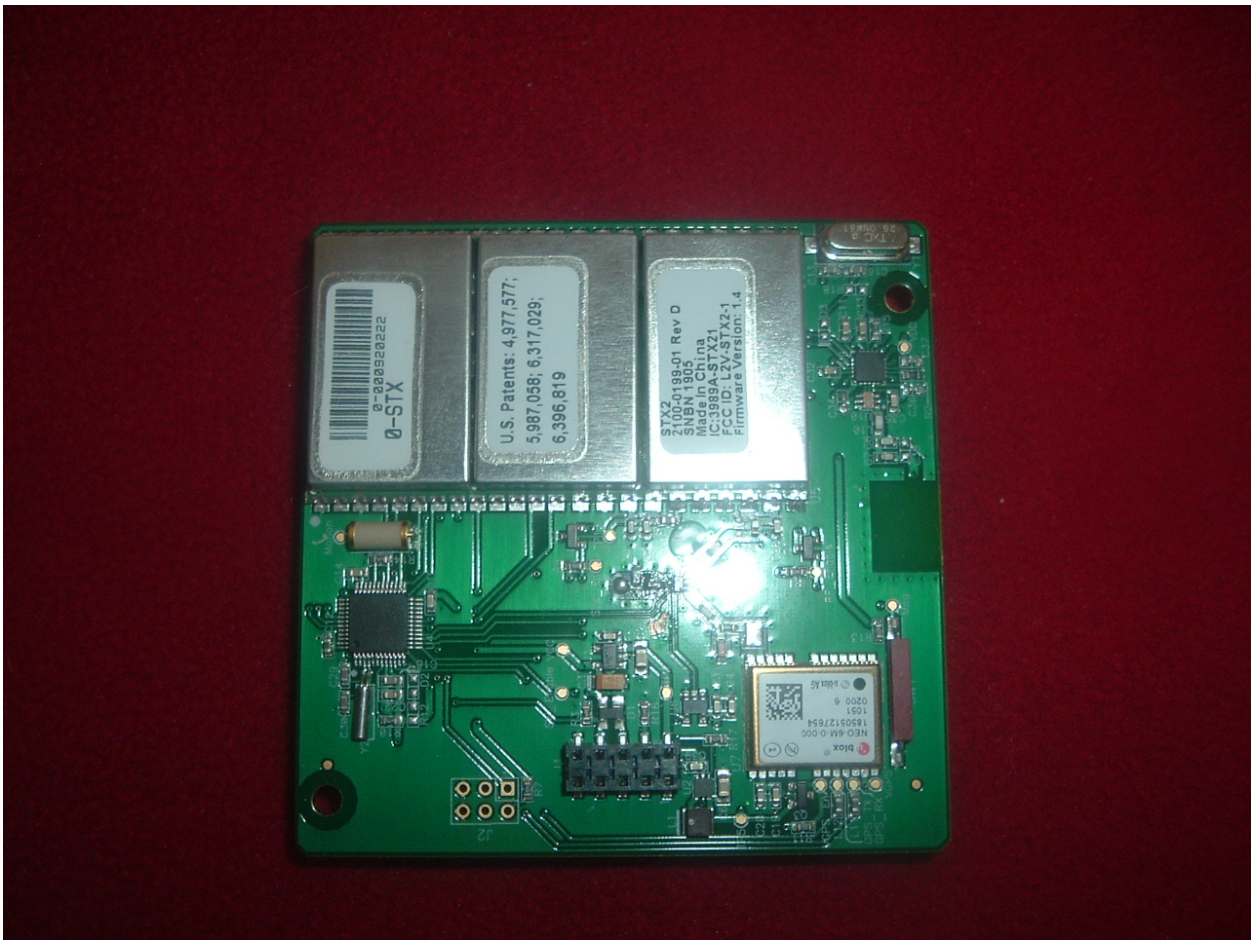


Figure 23 - Transmitter Module with Shield in Place

5 RF Exposure Information

The maximum exposure level to the public from the RF power of the EUT shall not exceed a power density, **S**, of 1 mW/cm^2 at a distance, d, of 20 cm from the EUT.

Therefore, for:

Peak Power (Watts) = 19.7 dBm (0.093 Watts) (from Table 3, herein)
Gain of Transmit Antenna = 5.0 dB_i = 3.16, numeric (from Paragraph 2.5, herein)
d = Distance = 20 cm = 0.2 m

S = (PG/ $4\pi d^2$) = EIRP/4A = 0.093(3.16)/4*π*0.2*0.2
=0.2939/0.502 = 0.5854 W/m^2
= 0.05854 mW/cm^2

Which is << less than 1 mW/cm^2