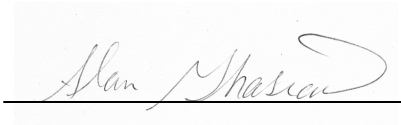
FCC Part 25, Permissive Change
of the
Axonn, LLC
Satellite Personal Tracker Model: SPT

Issue Date: December 27, 2007
UST Project No: 07-0319

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 manufacturer 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: Operations & Engineering

Date: December 27, 2007

Axonn LLC
19349 North 12th Street
Covington, LA 70433

By: _____

Name: _____

Title: _____

Date: _____

MEASUREMENT/TECHNICAL REPORT

This report concerns (check one): Original grant_X
Class II change_____

Equipment type: **SatelliteTransciever**

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes_____ No_X

If yes, defer until:_____
date

__N.A.__ agrees to notify the Commission by__N.A.__
date
of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
Fax Number: (770) 740-1508

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1. GENERAL INFORMATION

1.1 Product Description

The Equipment Under Test (EUT) is the Axonn LLC, Satellite Personal Tracker. The EUT is a personal tracking device providing for the location of a person in routine and emergency situations. The device receives location information via the GPS satellite constellation and transmits the information to the Globalstar satellite constellation for relay to the end user or their designated recipient.

The Unit operates at the following 4 transmit frequencies: 1611.25, 1613.75, 1616.26 and 1618.25 MHz. Once service is established with Globalstar, SPT sends information to Globalstar satellites which relay the information to ground stations. The processed information is then available. The device is delivered complete and ready-to-go with no need for an external antenna or power source.

The EUT was configured to operate at 1611.25, 1613.75 and 1618.25 MHz, 255 Symbols, BPSK Demod on continuous transmit mode.

For the purpose of this test the EUT was placed into a (+22 dBm) constant TX mode of operation.

1.2 Related Submittal(s)/Grant(s)

The EUT is subject to the following authorizations:

a) Certification as a transceiver as specified by Part 25.

The information contained in this report is presented for the Part 25 Certification authorization(s) for the EUT.

2. TEST AND MEASUREMENTS

2.1 Configuration of Tested System

Prepared in accordance with the requirements of the FCC Rules and Regulations Part 2 & 25. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. A block diagram of the tested system is shown in Figure 1. Test configuration photographs for spurious emissions are shown in Figure 2.

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 US5115. 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

No modifications were made by US Tech to bring the EUT into compliance with FCC Part 25 limits for the transmitter portion of the EUT.

FIGURE 1

TEST CONFIGURATION

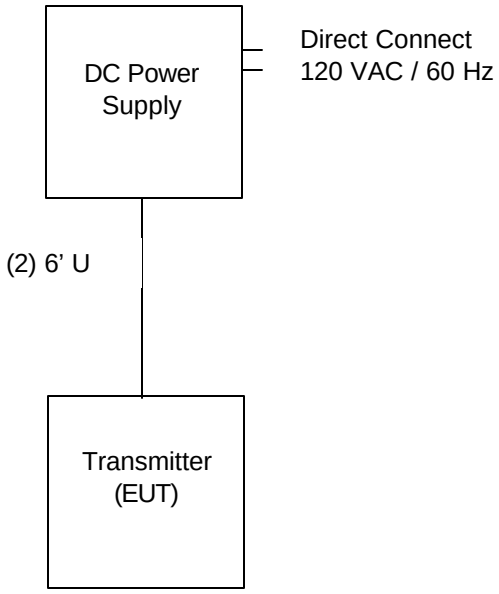


TABLE 1.

EUT and Peripherals

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Satellite Personal Tracker Axonn LLC (EUT)	SPT	None	None	(2) 6' U DC Leads
DC Power Supply	Any	None	N/A	6'U 120 VAC / 60 Hz Source

TABLE 2.
TEST INSTRUMENTS

EQUIPMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	DATE OF LAST CALIBRATION
SPECTRUM ANALYZER	8558B	HEWLETT-PACKARD	2332A10055	3/28/07
SPECTRUM ANALYZER	8593E	HEWLETT-PACKARD	3205A00124	7/16/07
SPECTRUM ANALYZER	FSP 3	ROHDE & SCHWARZ	101290	8/14/07
RF PREAMP	8447D	HEWLETT-PACKARD	2944A07436	6/14/07
RF PREAMP	8449B	HEWLETT-PACKARD	3008A00480	8/21/07
LOG PERIODIC ANTENNA	3146	EMCO	3236	11/21/07
LISN (x 2) 8028-50-TS24-BNC	8028	SOLAR ELE.	910494 & 910495	5/10/07
HORN ANTENNA	3115	HEWLETT-PACKARD	9107-3723	10/16/06 2 Yr.
CALCULATION PROGRAM	N/A	N/A	EMCCALC	N/A

2.5 Antenna Description

The EUT will incorporate a Satellite transmit antenna: 25 mm ceramic patch, +4 dBi gain. GPS receive antenna: ceramic patch, passive.

2.6 RF Power Output (FCC Section 2.1046)

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.

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

FCC Minimum Standard (FCC Section 25.204)

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 +22.5 dBm.

TABLE 3.
RF POWER OUTPUT

Frequency of Fundamental (MHz)	Measurement (dBm)*	Measurement (Watt)
1611.160	21.95	.157
1613.640	21.77	.150
1618.730	21.25	.133

*Measurement includes 0.1 dB for cable loss

Note: Given the output power and antenna gain of +4 dBi, even the direct lobe of radiation meets the FCC's EIRP Requirement for $\theta = 0$ (+40 dBW)

Test Date: August 14, 2007

Tester Signature:  **Name: Daniel Aparaschivei**

Figure 2a.
RF Power Output Low

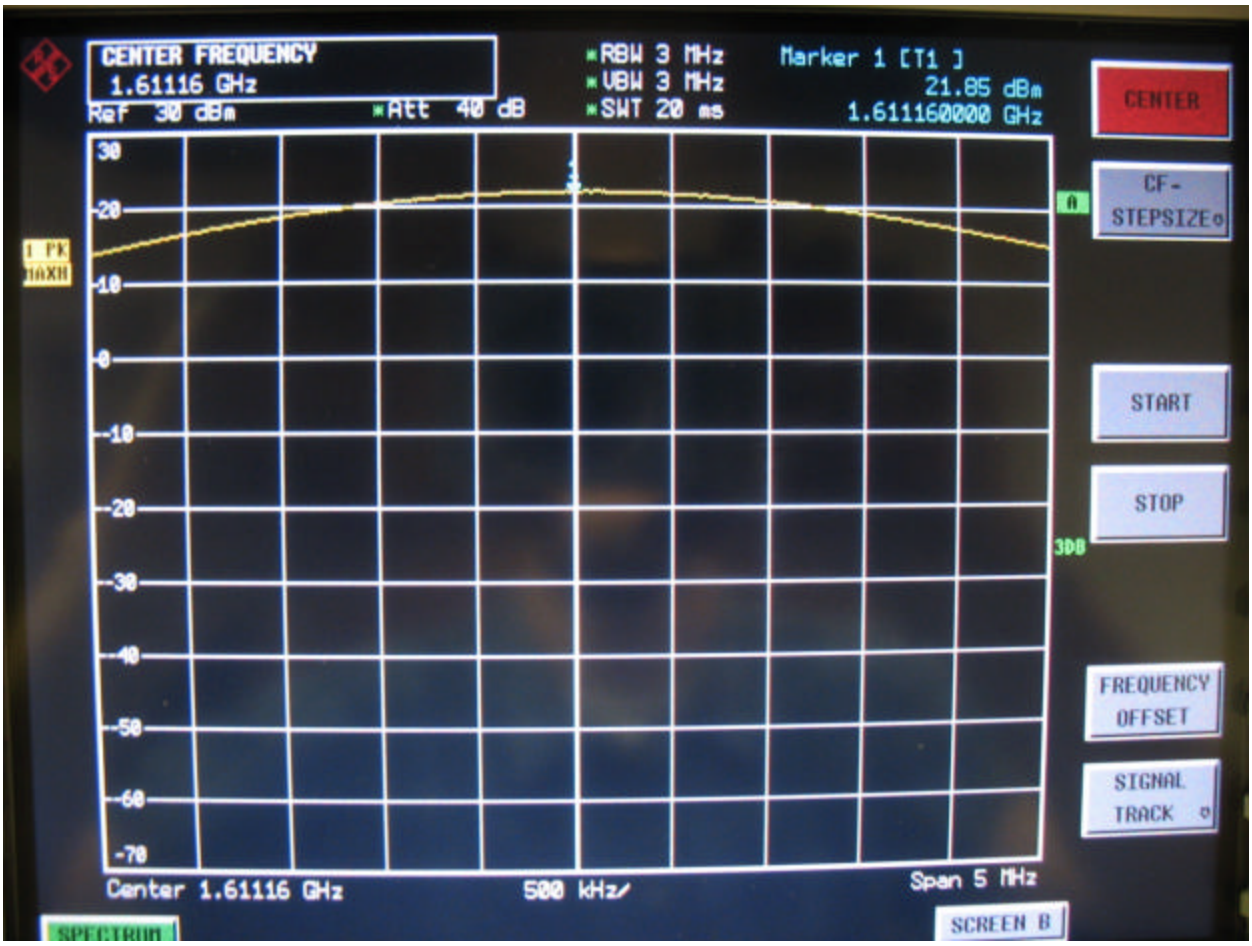


Figure 2b.
RF Power Output Mid

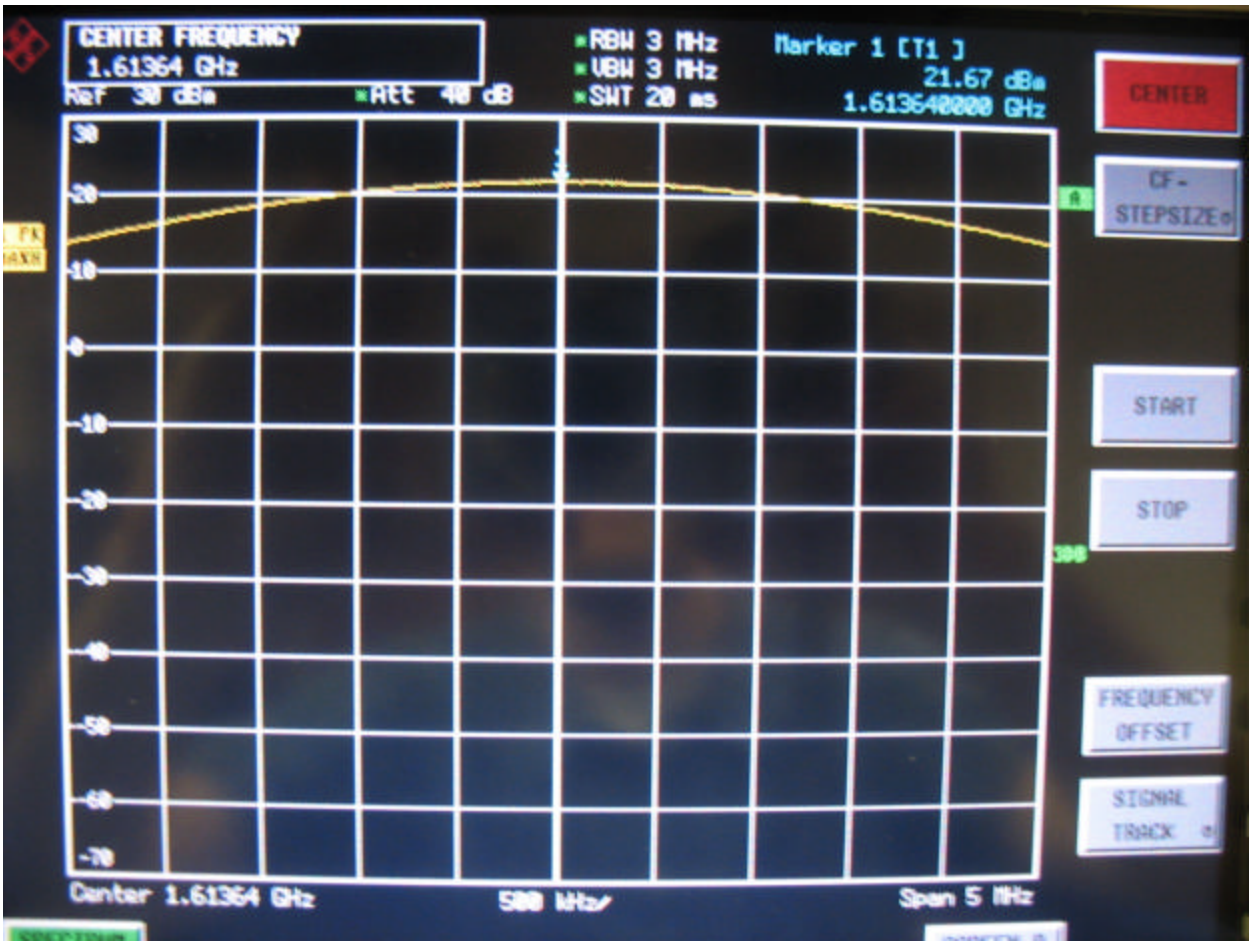
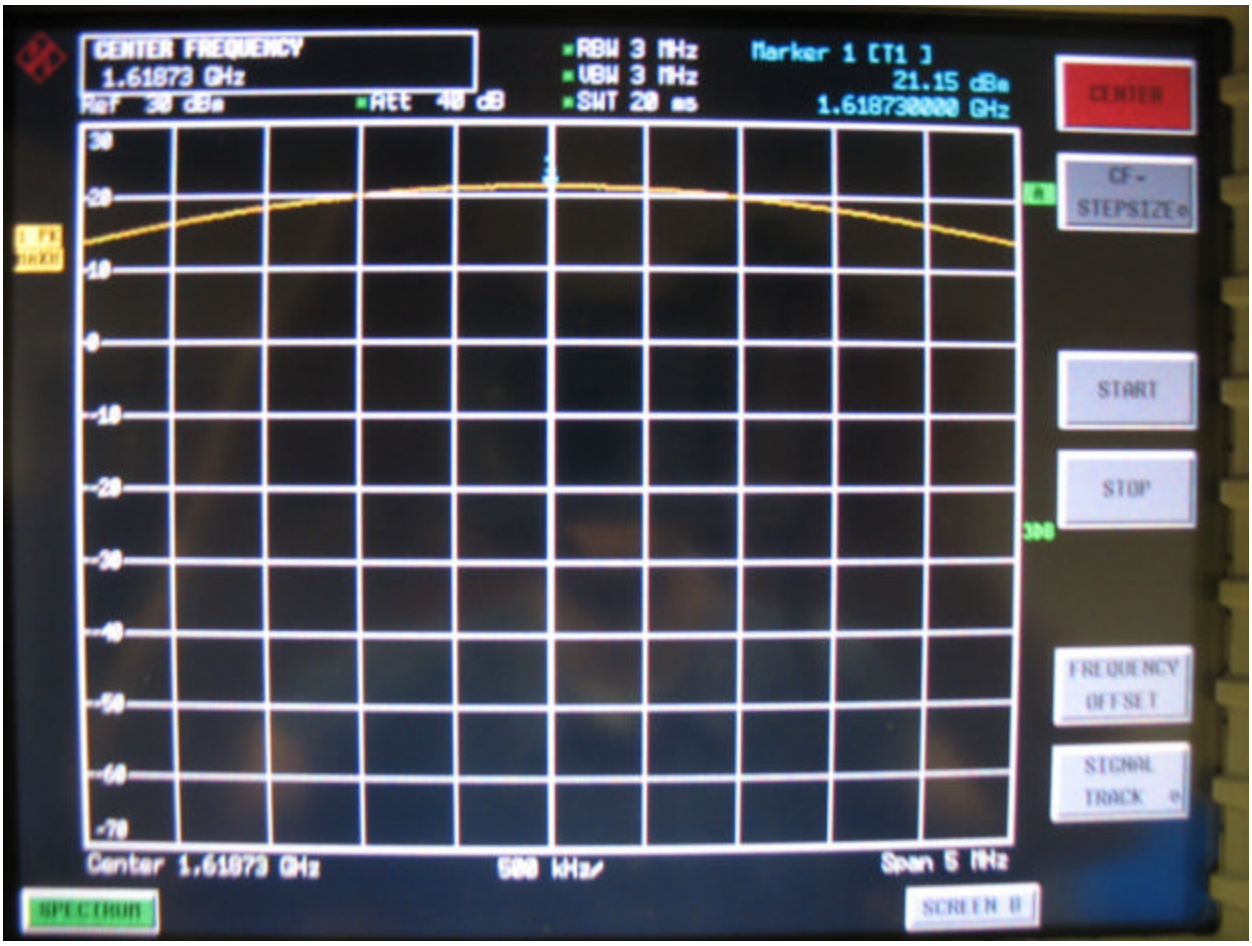


Figure 2c.
RF Power Output High



2.7 Modulation Characteristics (FCC Section 2.1047)

Since the device incorporates digital modulation techniques, this information is not necessary.

Figure 3.
Modulation Characteristics

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

2.8 Occupied Bandwidth (FCC Section 2.1049)

EUT was modulated by its own internal sources. Low , First Mid, and High Channels were tested. The bandwidth of the fundamental was measured using a spectrum analyzer. The results are shown in Figure 4a through Figure 4d. Long sweep times were applied near to the fundamental to ensure a good signal was obtained.

FCC Minimum Standard (FCC Section 25.202(f))

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.

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.

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

For Lowest Channel = 43 + 10 log (0.157) = 35 dBW = 65 dBm
For Highest Channel = 43 + 10 log (0.133) = 34.2 dBW = 64.2 dBm

Note:
A 30 kHz RBW was used instead. This was deemed to meet the 4 kHz RBW requirement.

Figure 4a.
99 % Occupied Bandwidth – Low

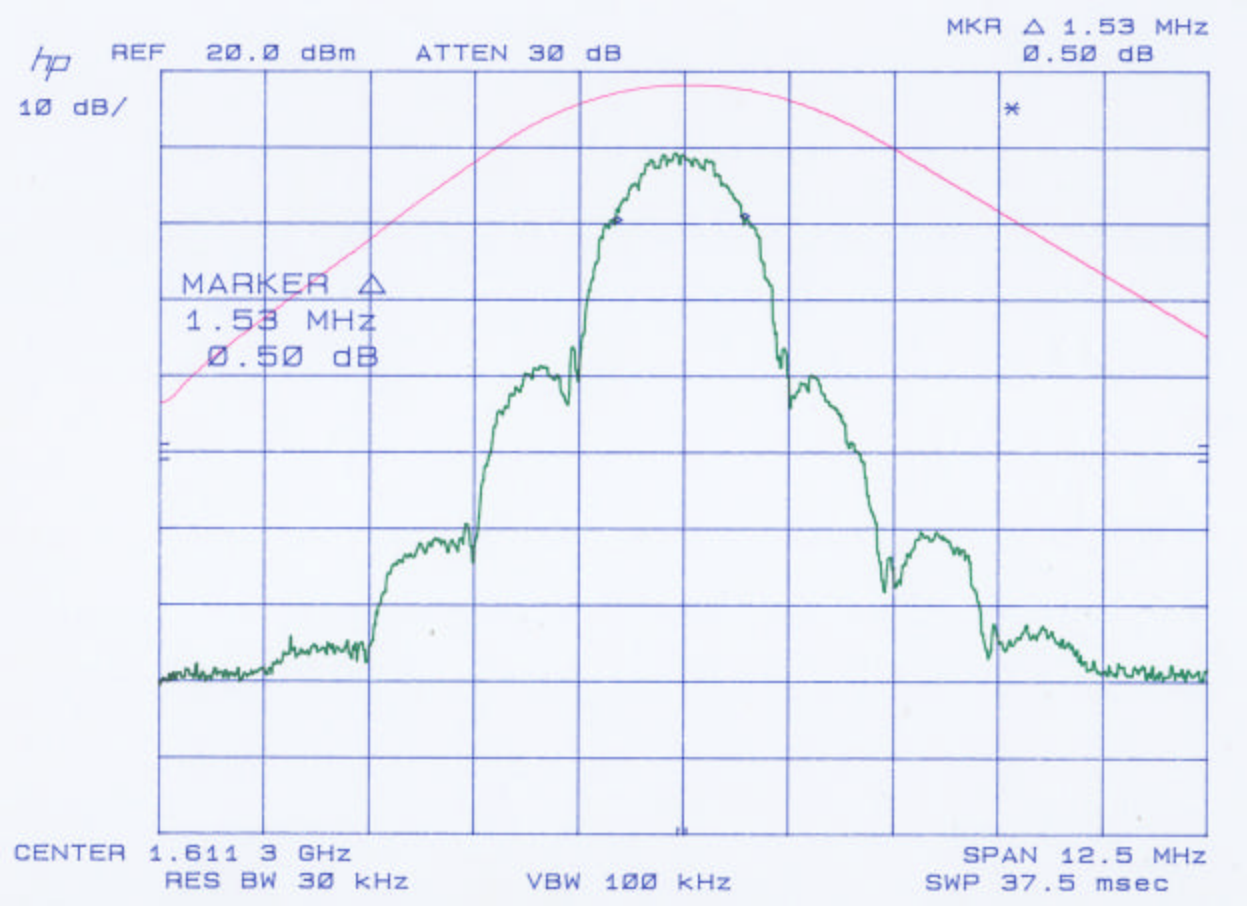


Figure 4b.
Occupied Bandwidth > 50% From Edge of Authorized Bandwidth – Low

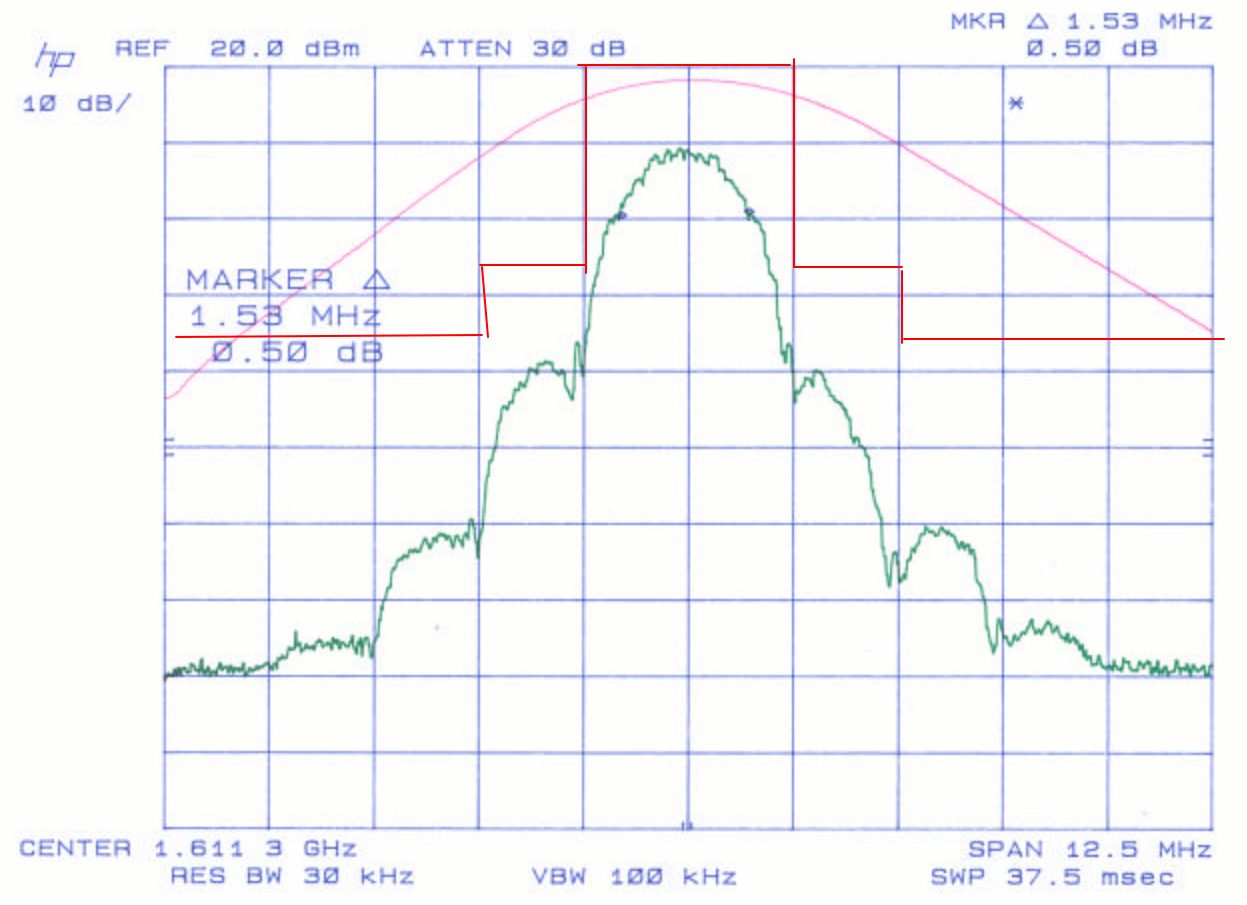


Figure 4c.
99% Occupied Bandwidth – High

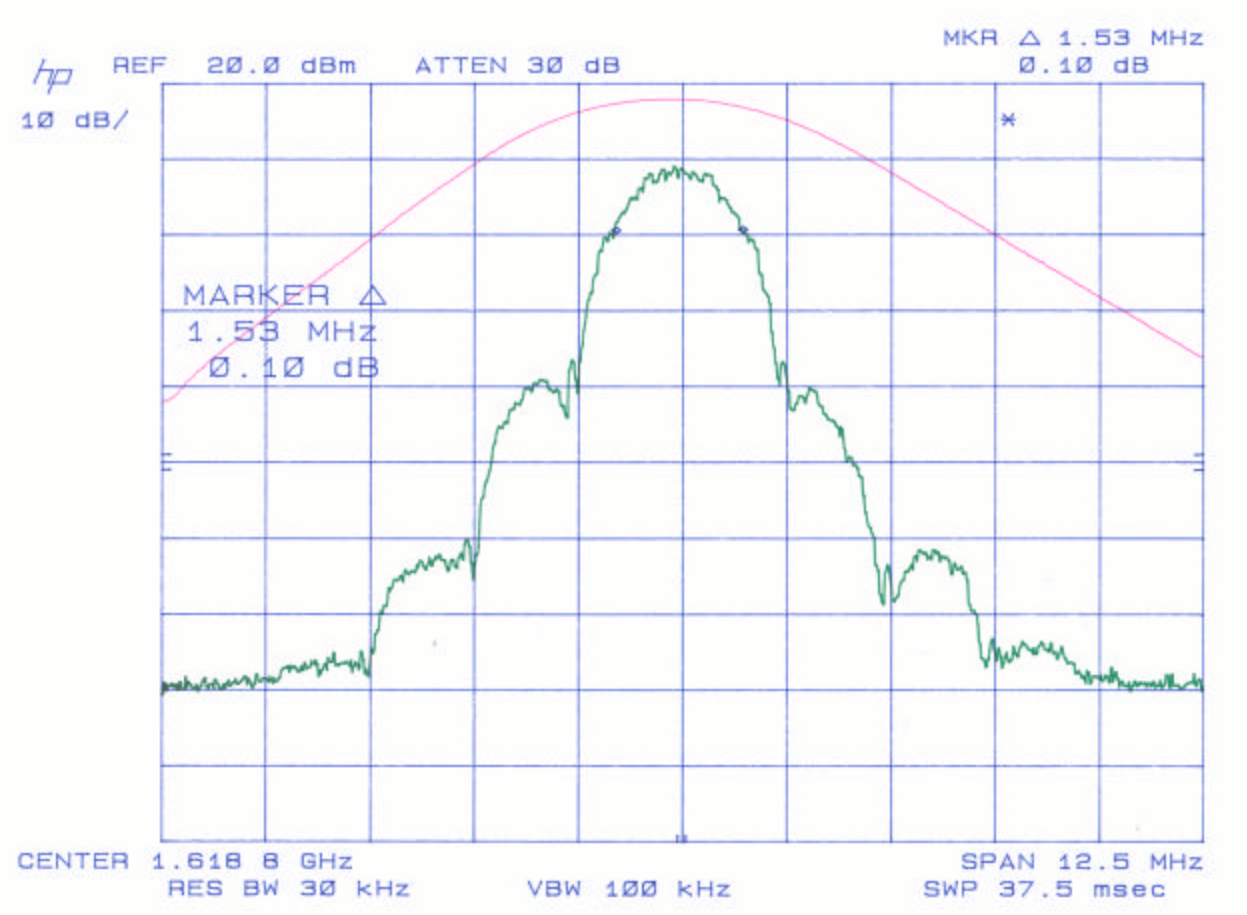
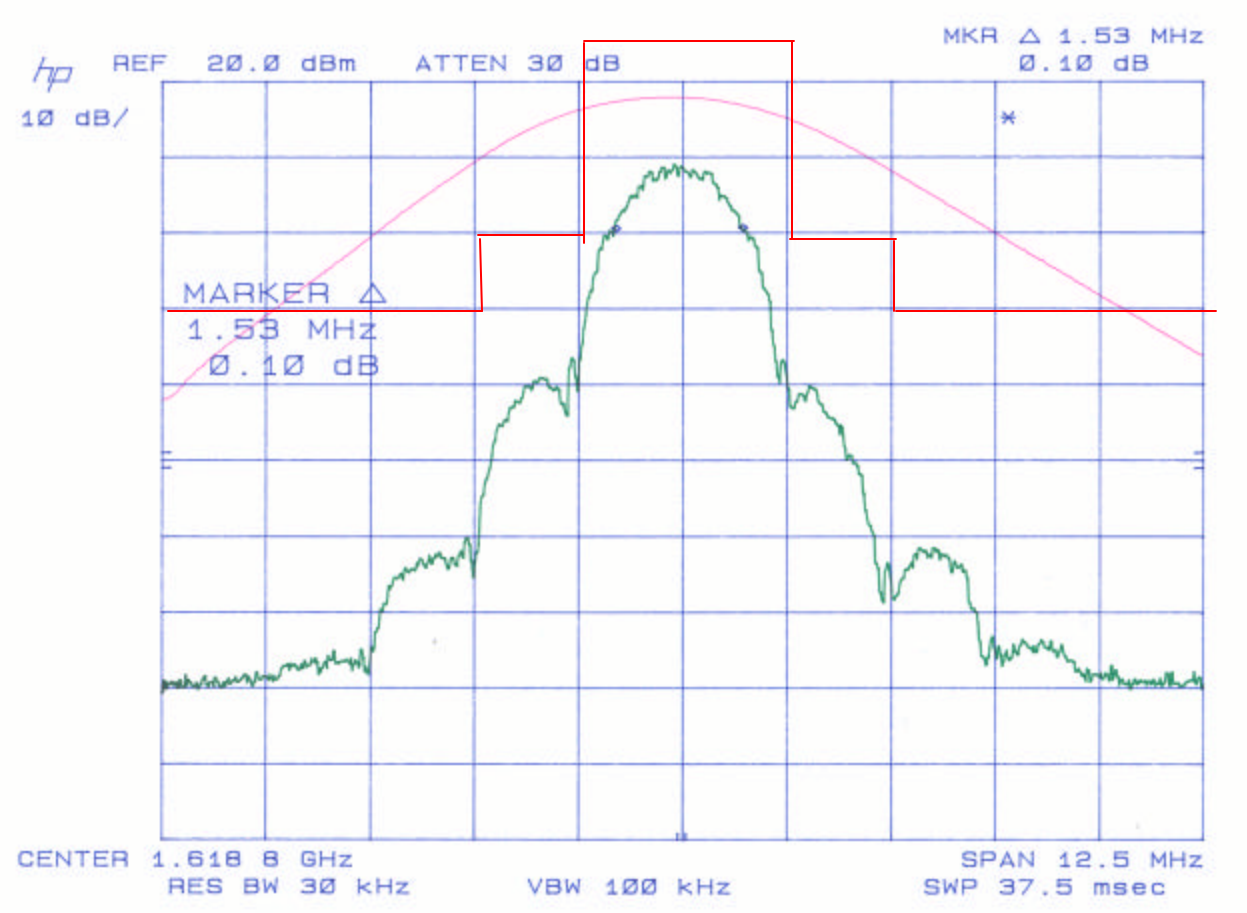


Figure 4d.
Occupied Bandwidth > 50% From Edge of Authorized Bandwidth – High



2.9 Spurious Emissions at Antenna Terminals (FCC Section 2.1051)

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 5a – 5n.

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 EIRP 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.

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

For Lowest Channel = 43 + 10 log (0.157) dB = 35 dB
10(log(Pin=157 mW) – 35 dB = -13 dBm
For Highest Channel = 43 + 10 log (0.133)dB = 34.2 dB
10(log(Pin=157 mW) – 35 dB = -13 dBm

Note:
A 10 kHz RBW was used instead. This was deemed to be comparable to 4 kHz RBW.

Additional requirement for 1574.397 - 1576.443 MHz

- 80 dBW (- 50 dBm)

See section 2.12

Figure 5a.
Spurious Emissions at Antenna Terminals – Low Channel

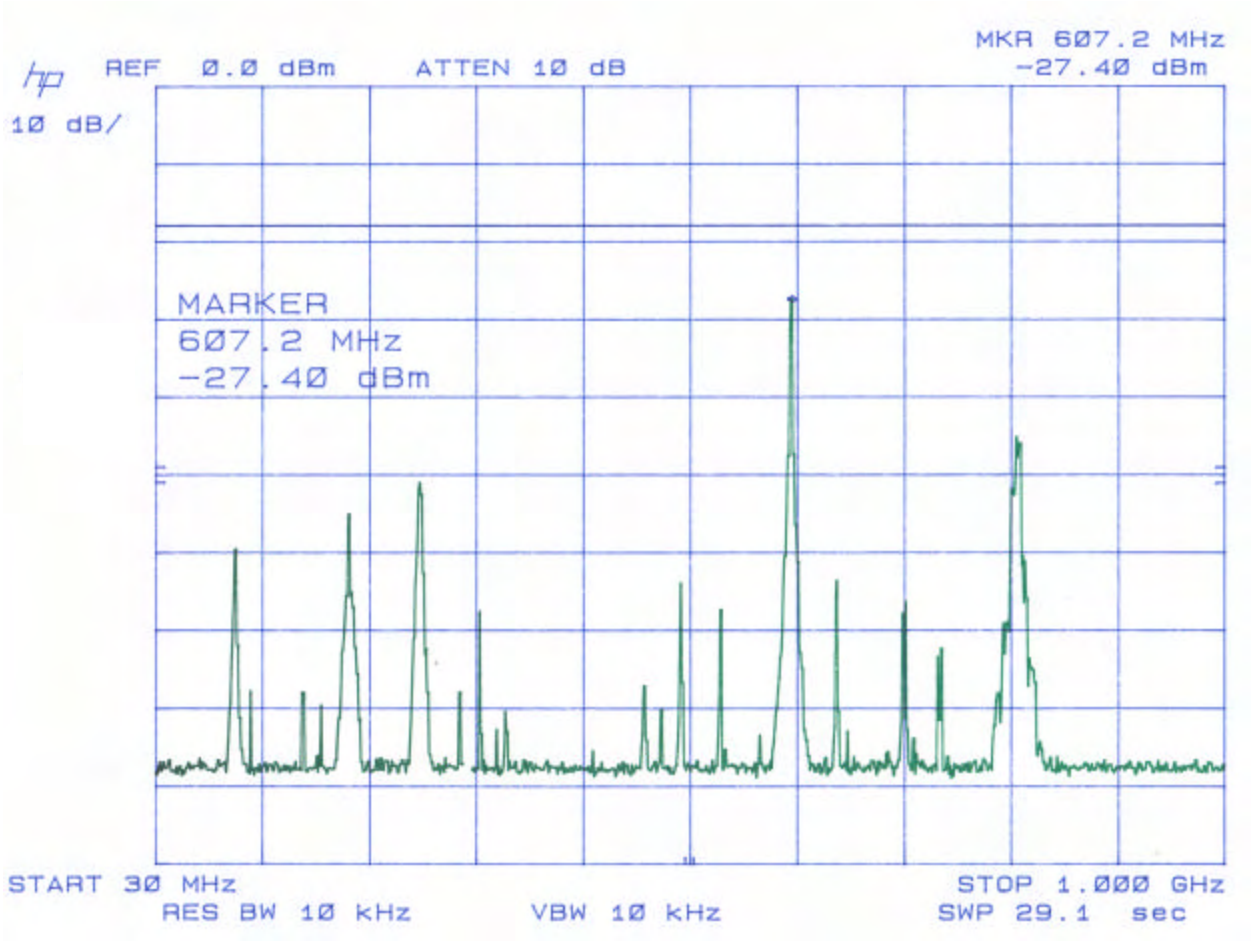


Figure 5b.
Spurious Emissions at Antenna Terminals – Low Channel

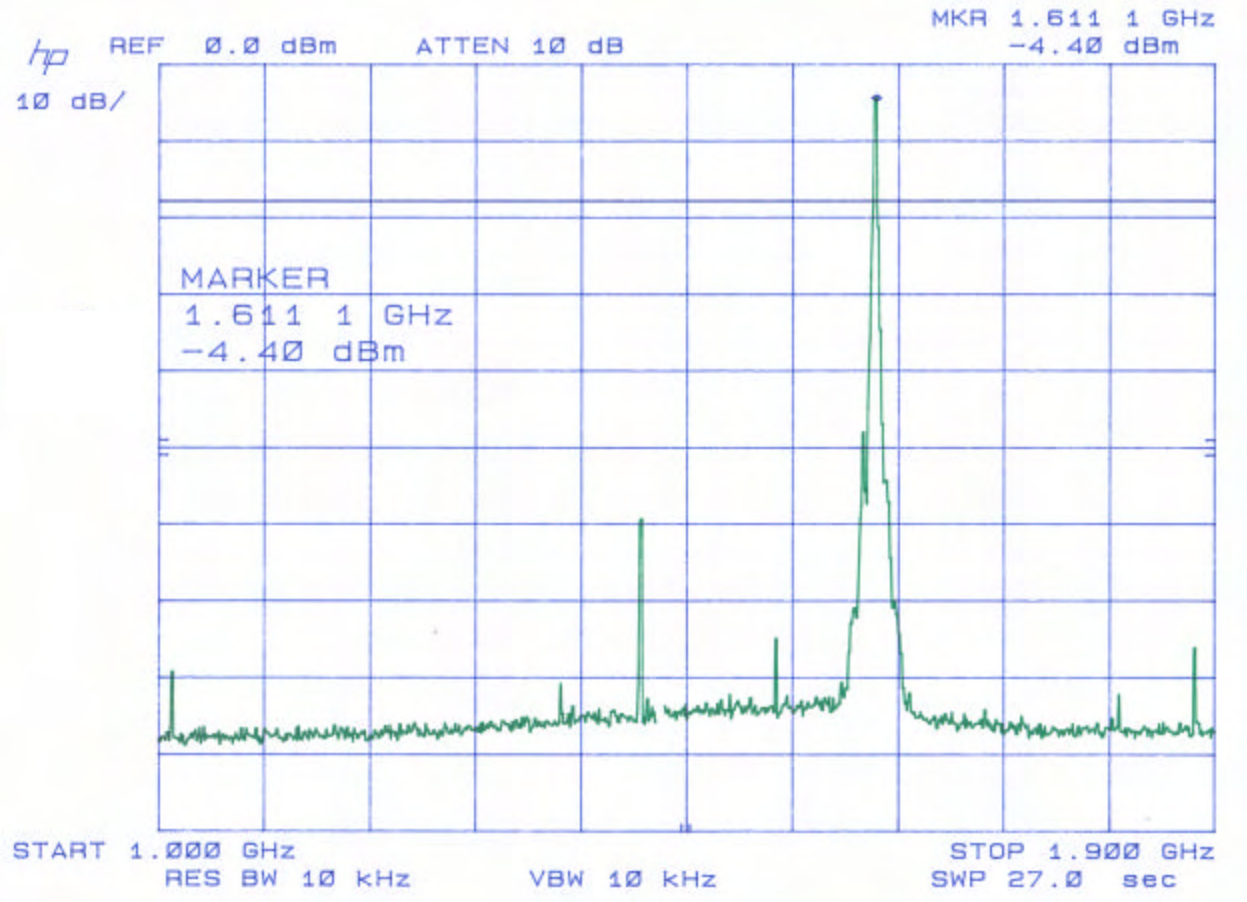


Figure 5c.
Spurious Emissions at Antenna Terminals – Low Channel

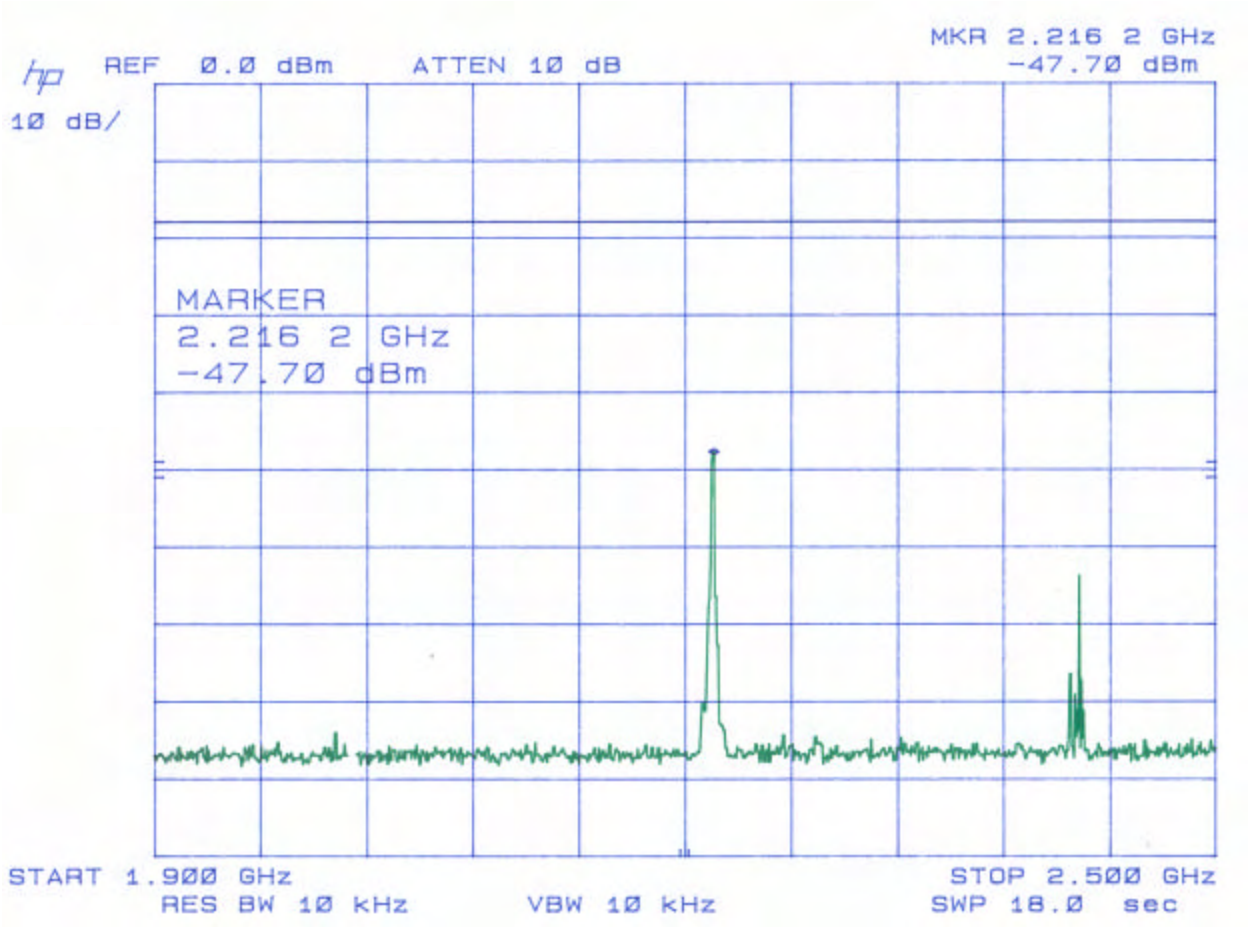


Figure 5d.
Spurious Emissions at Antenna Terminals – Low Channel

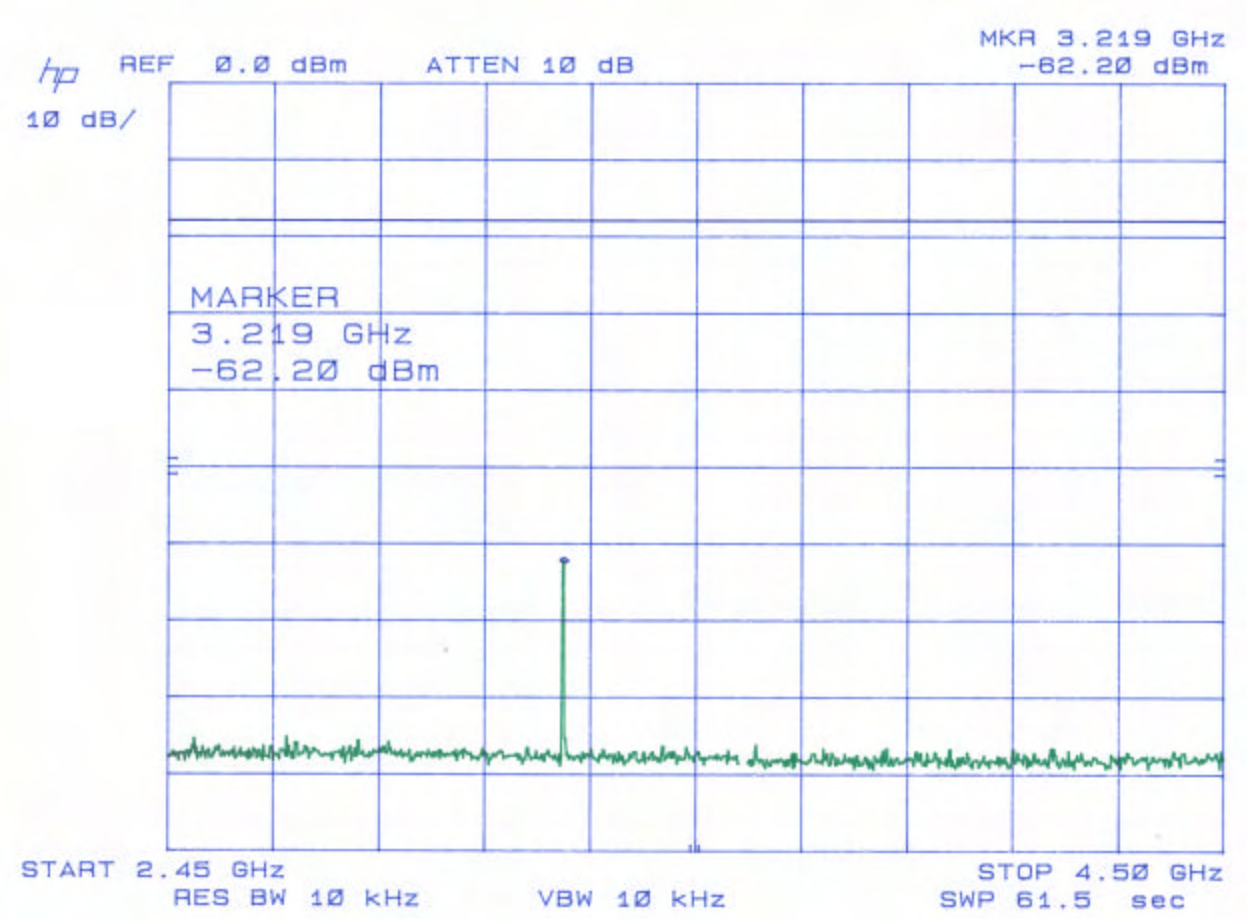


Figure 5e.
Spurious Emissions at Antenna Terminals – Low Channel

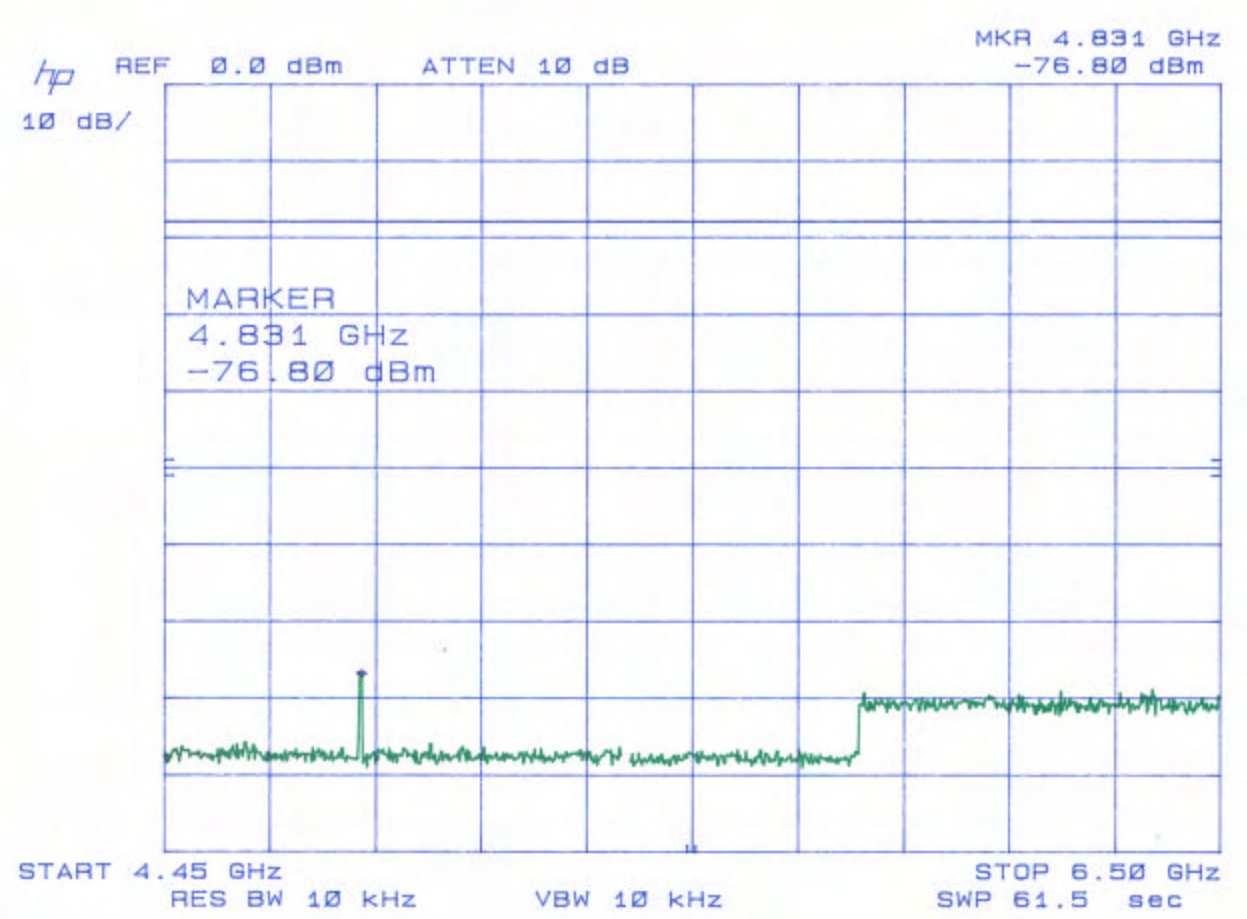


Figure 5f.
Spurious Emissions at Antenna Terminals – Low Channel

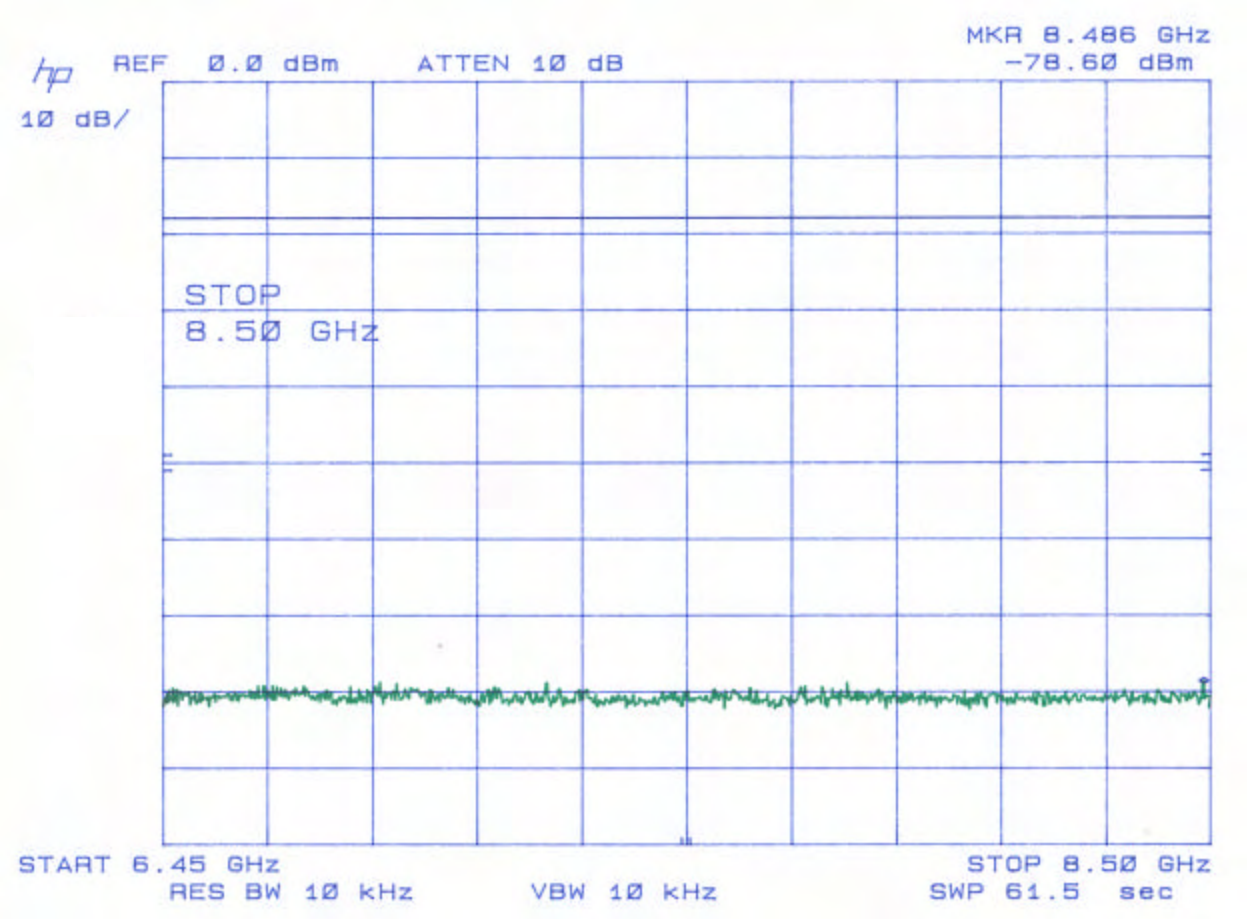


Figure 5g.
Spurious Emissions at Antenna Terminals – Low Channel

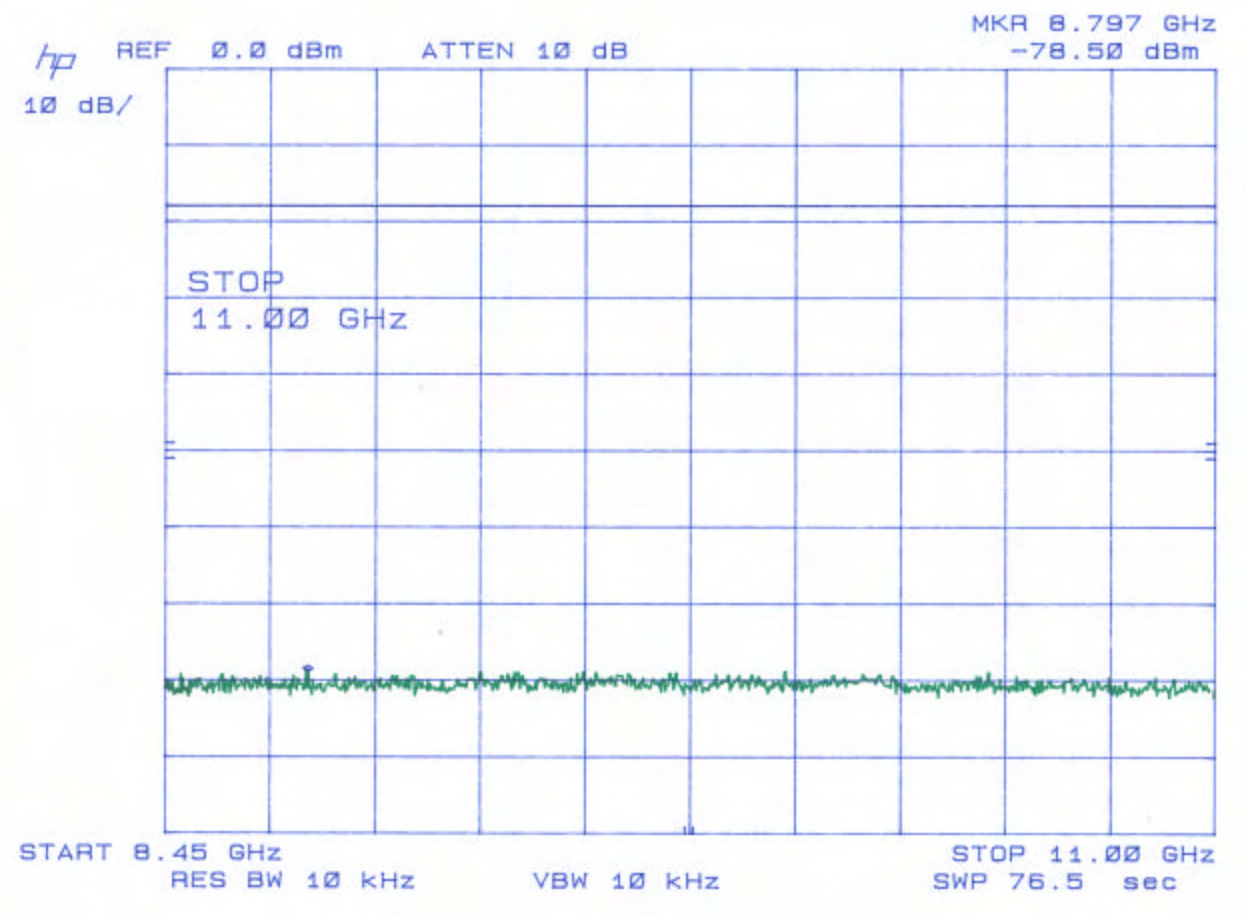


Figure 5h.
Spurious Emissions at Antenna Terminals – Low Channel

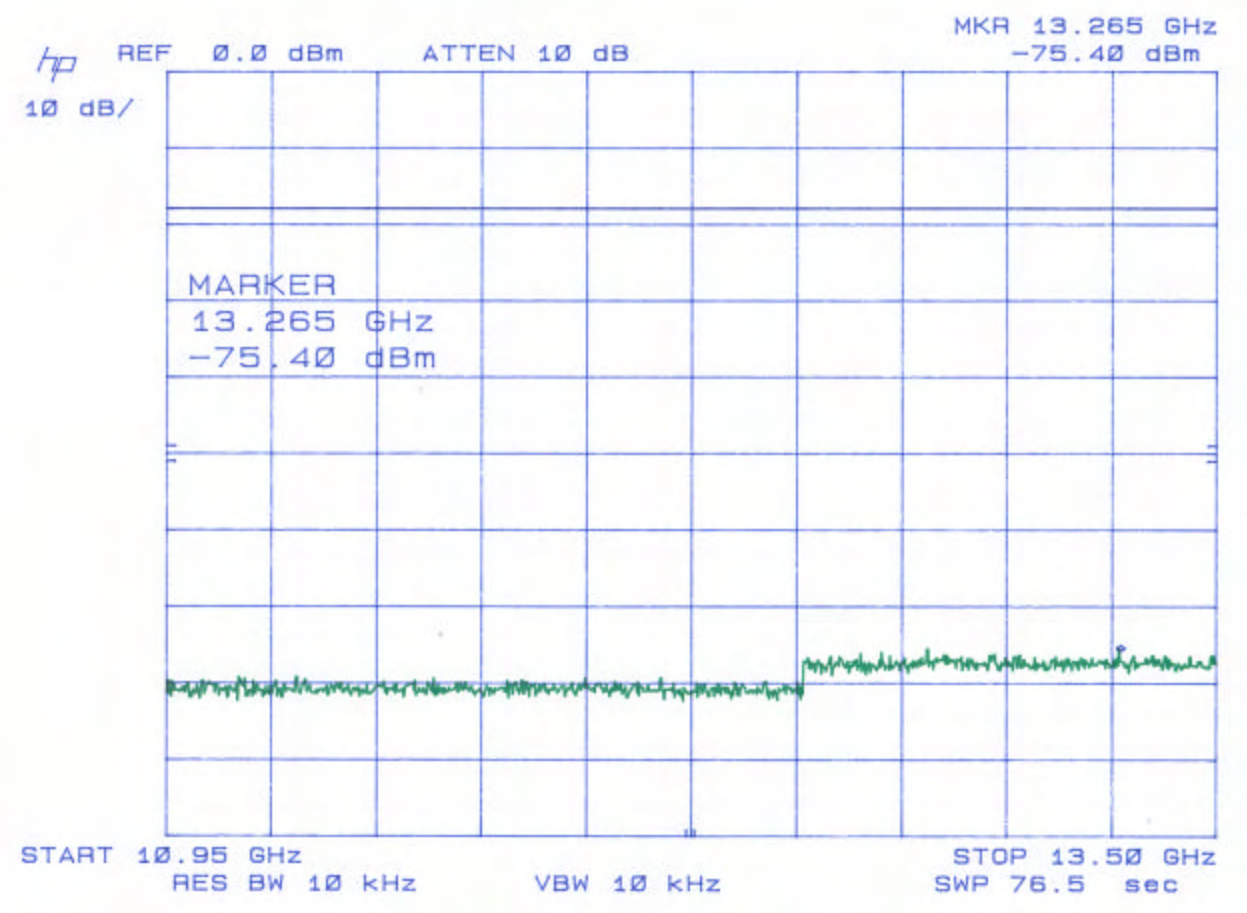


Figure 5i.
Spurious Emissions at Antenna Terminals – Low Channel

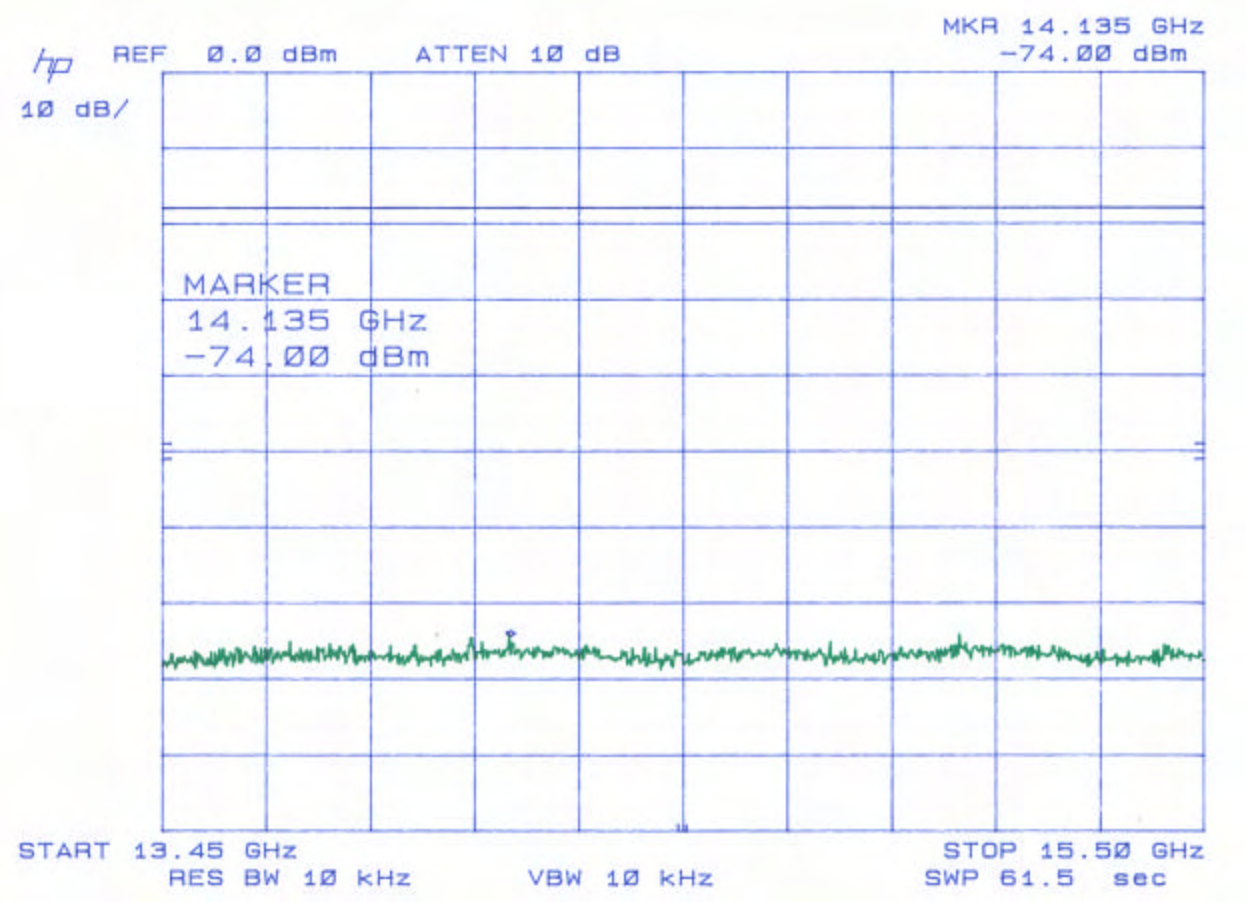


Figure 5j.
Spurious Emissions at Antenna Terminals – Low Channel

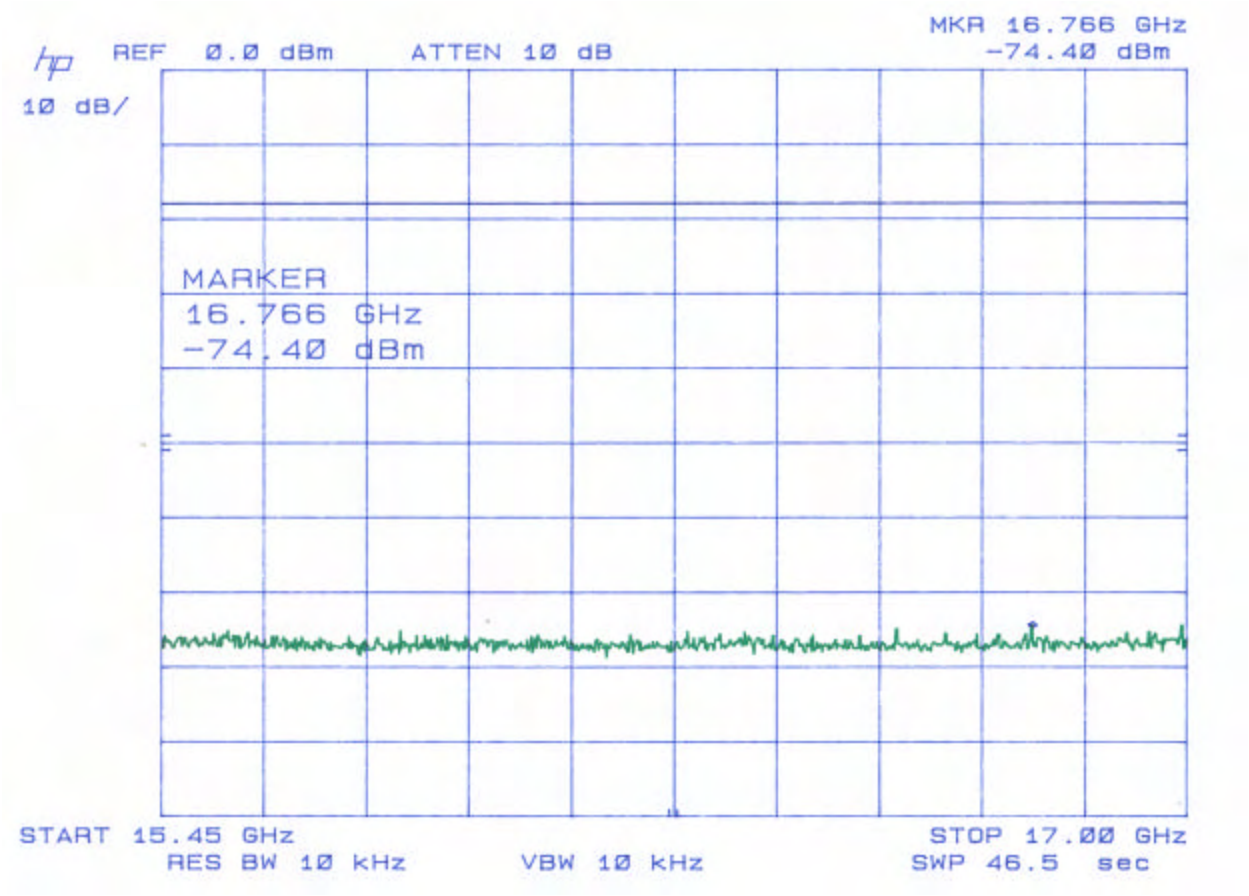


Figure 5k.
Spurious Emissions at Antenna Terminals - High Channel

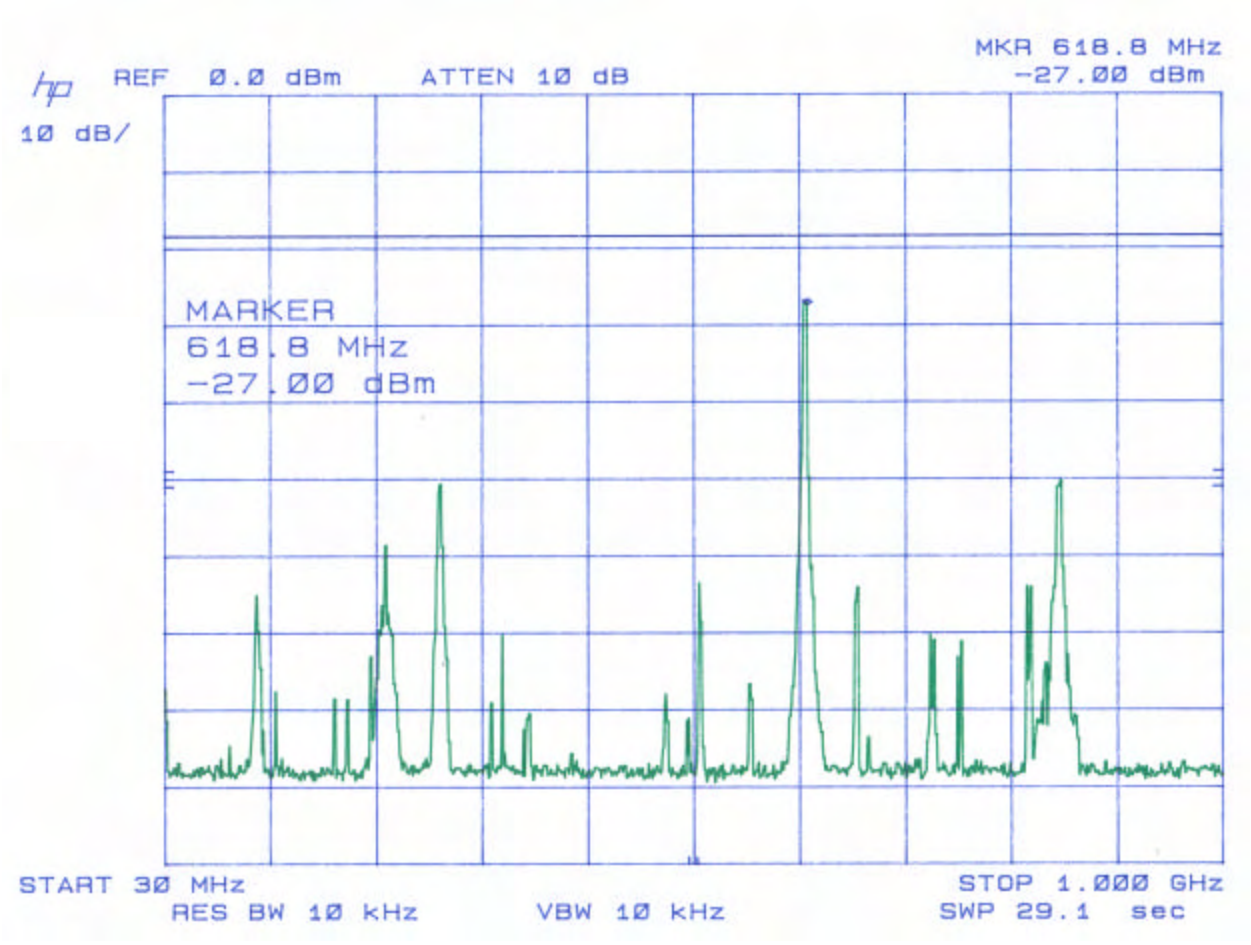
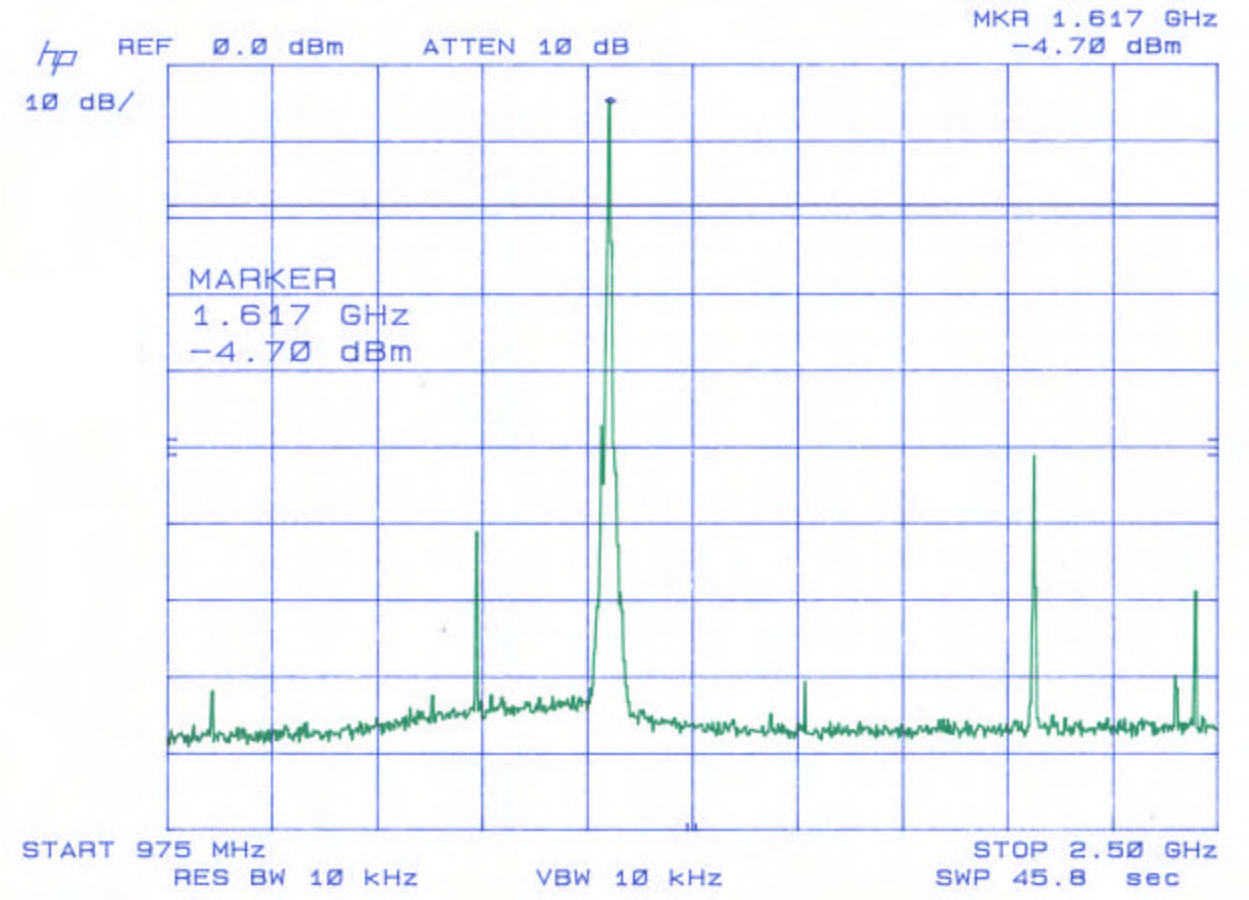


Figure 5l.
Spurious Emissions at Antenna Terminals



NOTE: Marker shows Fundamental Frequency

Figure 5m.
Spurious Emissions at Antenna Terminals – High Channel

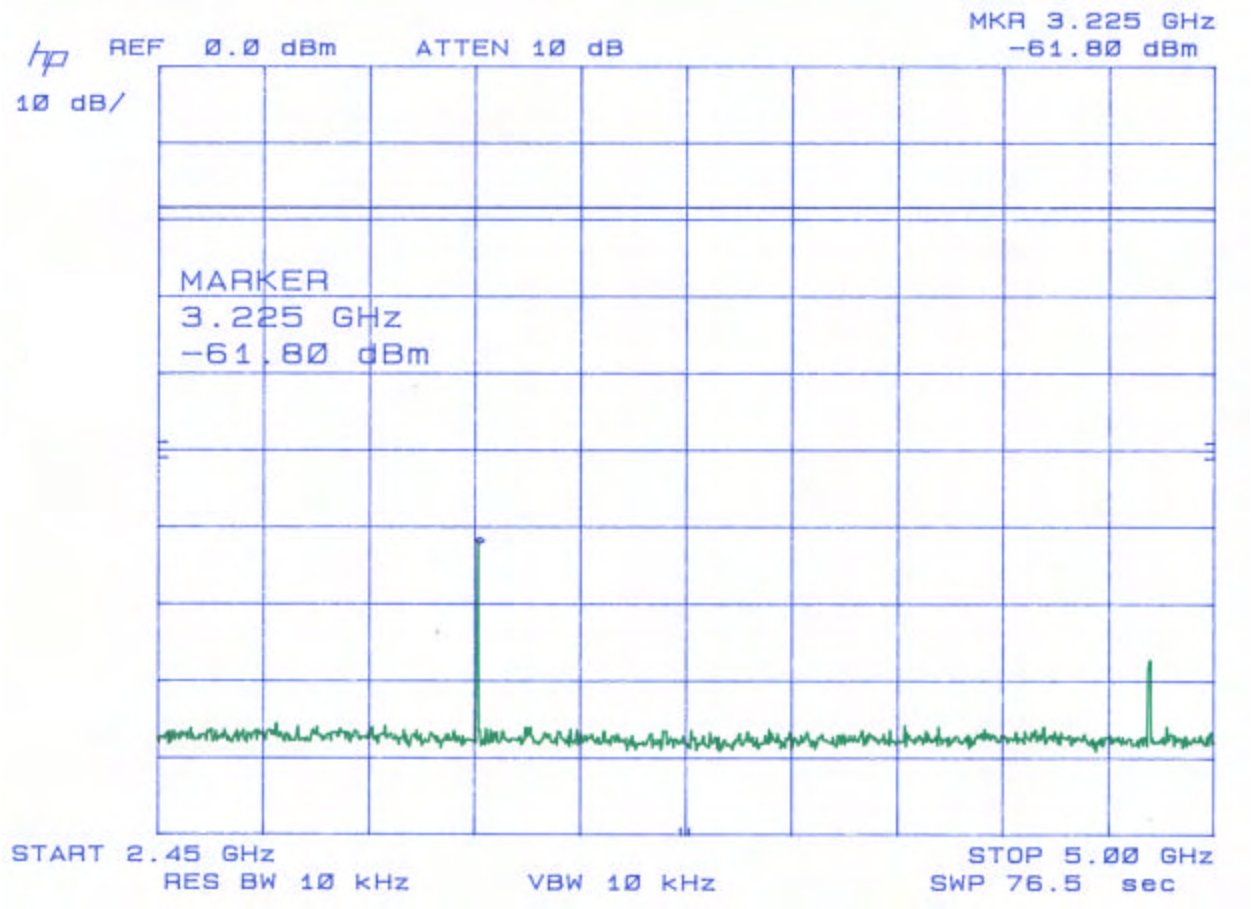


Figure 5n.
Spurious Emissions at Antenna Terminals – High Channel

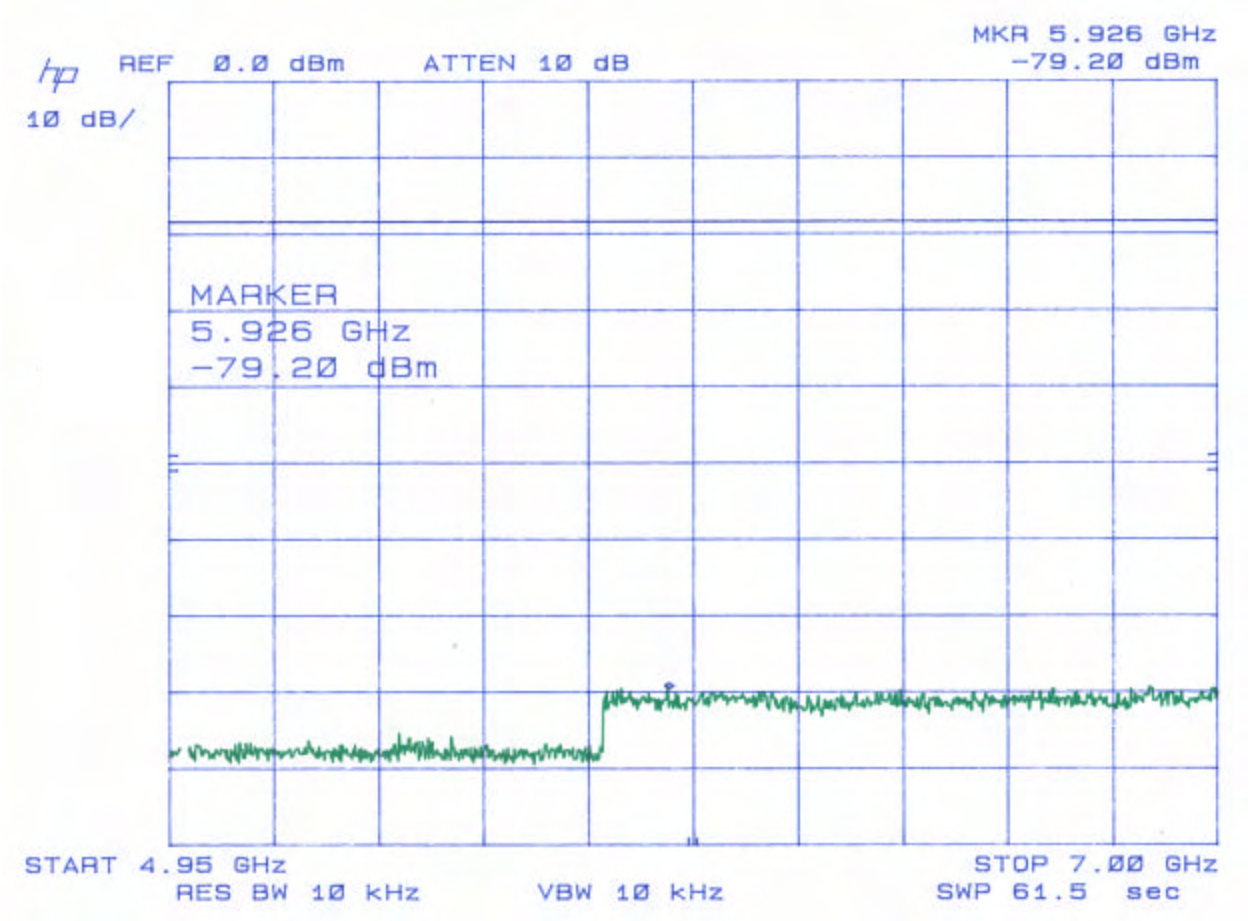


Figure 5o.
Spurious Emissions at Antenna Terminals – High Channel

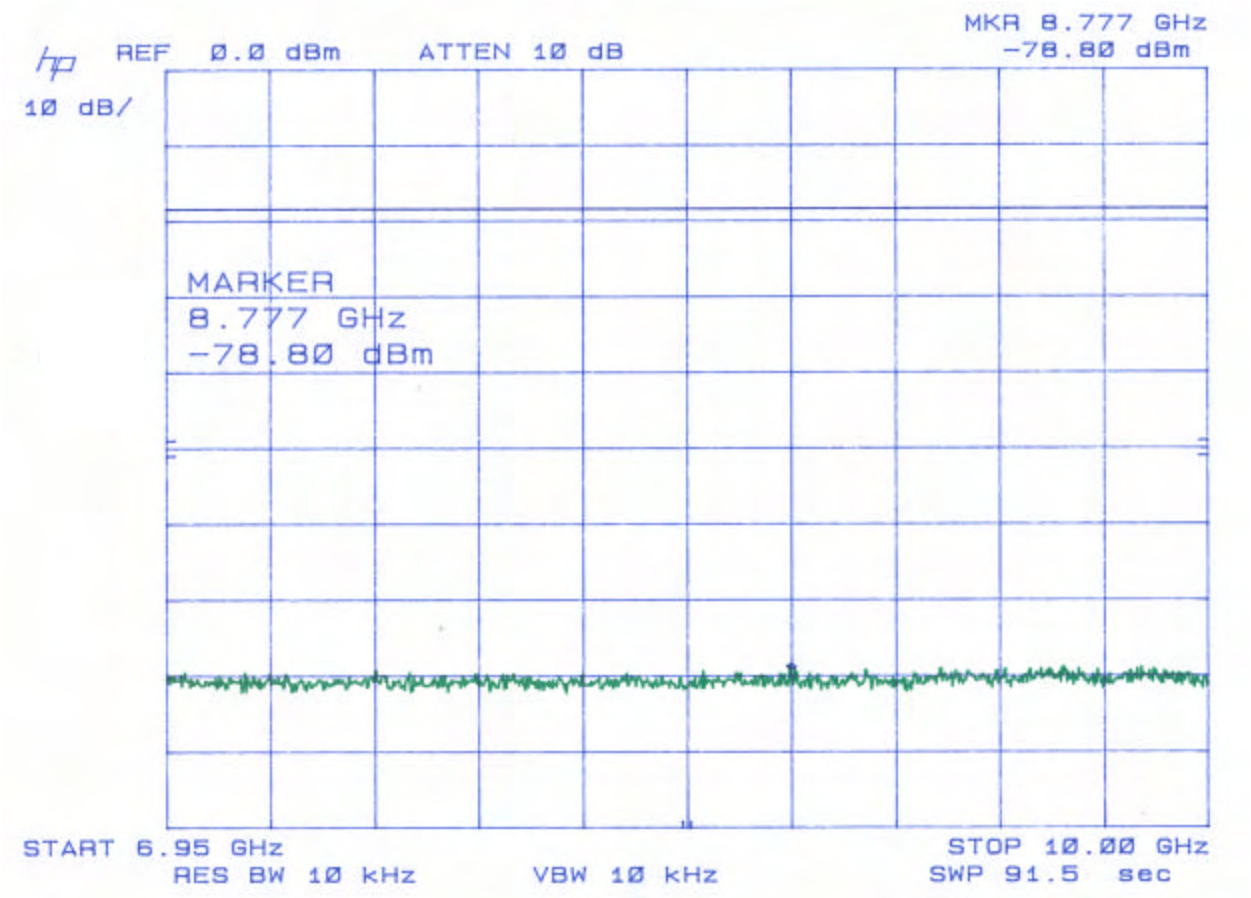


Figure 5p.
Spurious Emissions at Antenna Terminals – High Channel

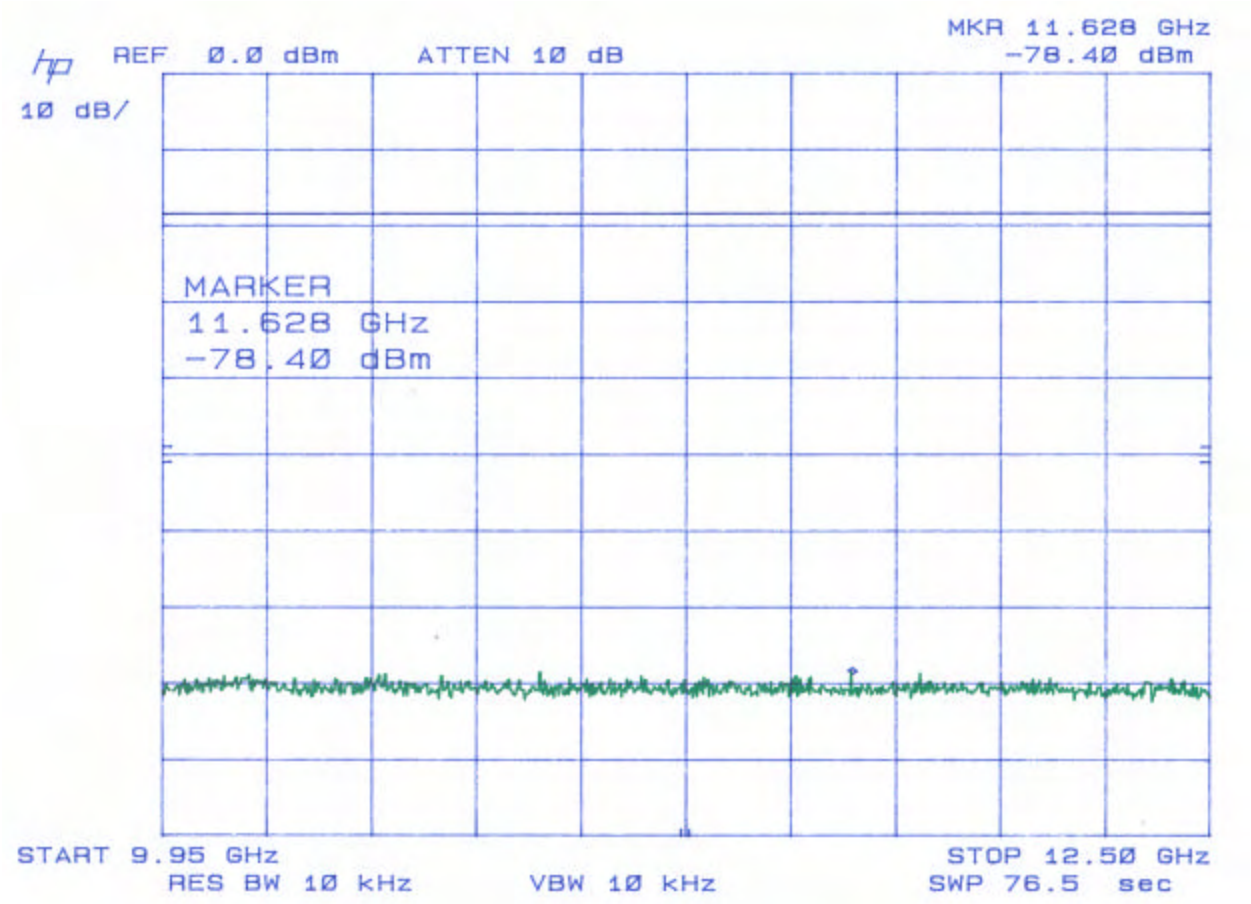


Figure 5q.
Spurious Emissions at Antenna Terminals – High Channel

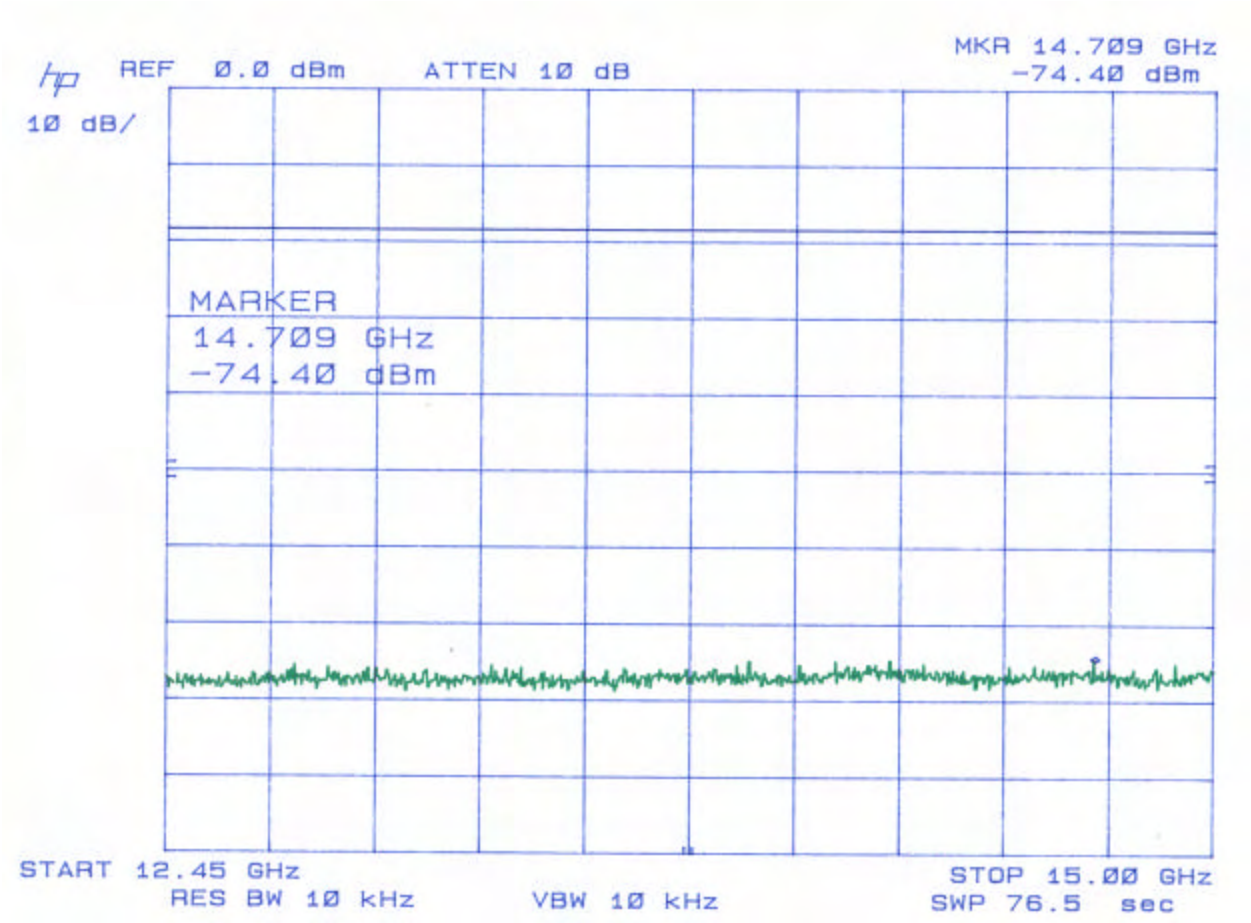
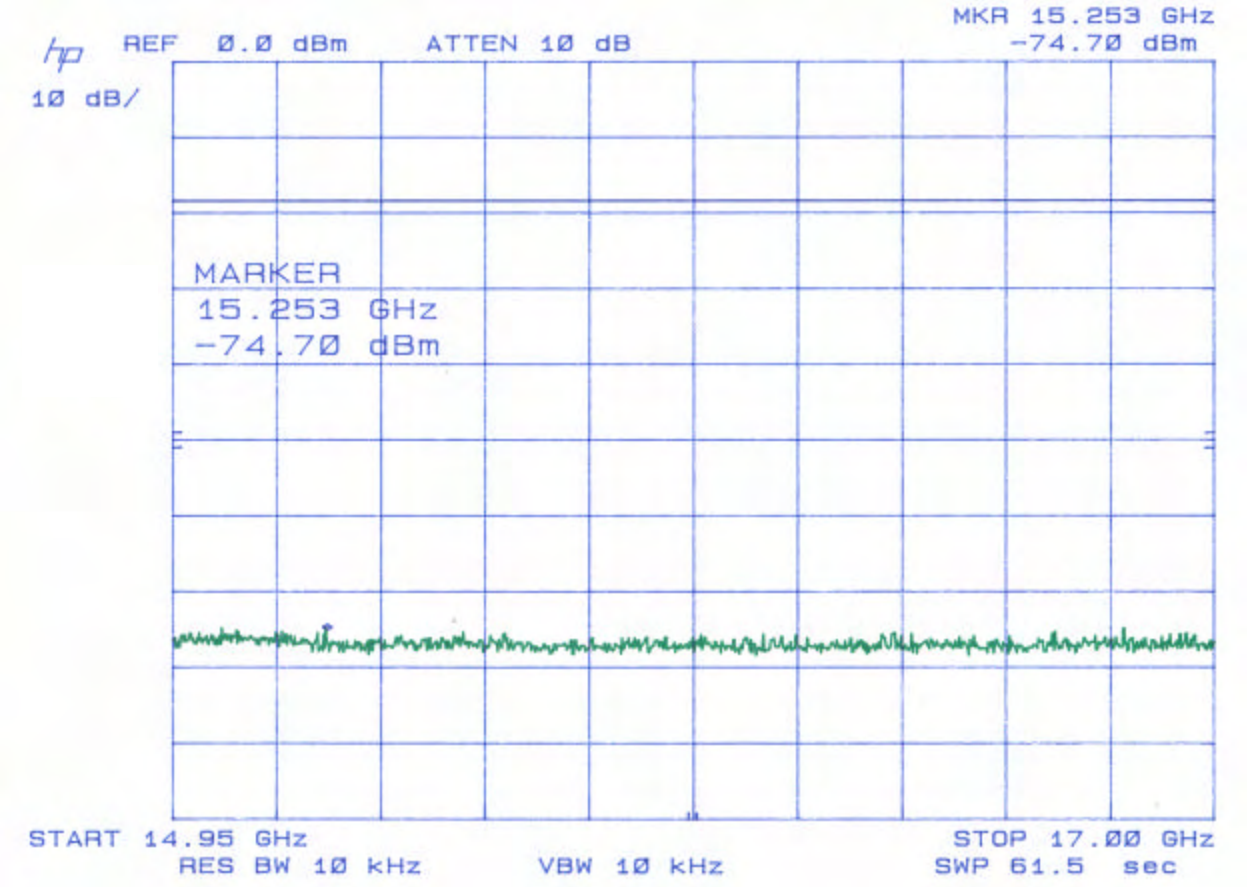


Figure 5r.
Spurious Emissions at Antenna Terminals – High Channel



2.10 Field Strength of Spurious Radiation (FCC Section 2.1053)

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

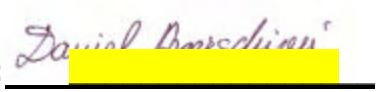
For Lowest Channel = 43 + 10 log (0.157) = 35 dB
For Highest Channel = 43 + 10 log (0.133) = 34.2 dB

TABLE 4 FIELD STRENGTH OF SPURIOUS RADIATION

Limit : Attenuation = 43 + 10 log (P_{Watts}) = 43 + 10 log (0.157 W) = 35.0 dB ; Limit = 10*log(157 mW) – 35.0 dB = -13 dBm
Attenuation = **43 + 10 log (P**watts**)= 43 + 10 log (0.133 W) = 34.4 dB ; Limit = 10*log(133 mW) – 34.4 dB = -13 dBm**

Frequency	Maximum RX Reading (Units A)	Recreated Reading During Substitution (Using Same Units A)	Difference Column A – B - Ideally 0	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 corected by TX Gain Relative to Dipole (dBm)
Low							
3222.99	-63.2	-63.1	-0.1	10	7.86	-70.74	-62.98
4833.54	-58.8	-61.5	2.7	11	8.86	-59.52	-47.96
6445	-70.6	-67.53	-3.07	12.1	9.96	-69.87	-62.98
Mid							
3227.24	-62.4	-57.18	-5.22	10	7.86	-65.08	-62.44
4841.04	-59.3	-61.54	2.24	11	8.86	-59.54	-48.44
6455	-68.7	-67.27	-1.43	12.1	9.96	-70	-61.47
High							
3237.26	-62.1	-57.48	-4.62	10	7.86	-65.17	-61.93
4856.21	-62.8	-60.89	-1.91	11	8.86	-59.89	-52.94
6474.94	-70.7	-66.65	-4.05	12.1	9.96	-69.71	-63.8

Test Date: October 11, 2007

Tester Signature:  **Name: Daniel Aparaschivei**

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

The frequency tolerance of the carrier signal was measured by while 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 which was additionally measured at battery endpoint).

FCC Minimum Standard

None

TABLE 5a Frequency Stability

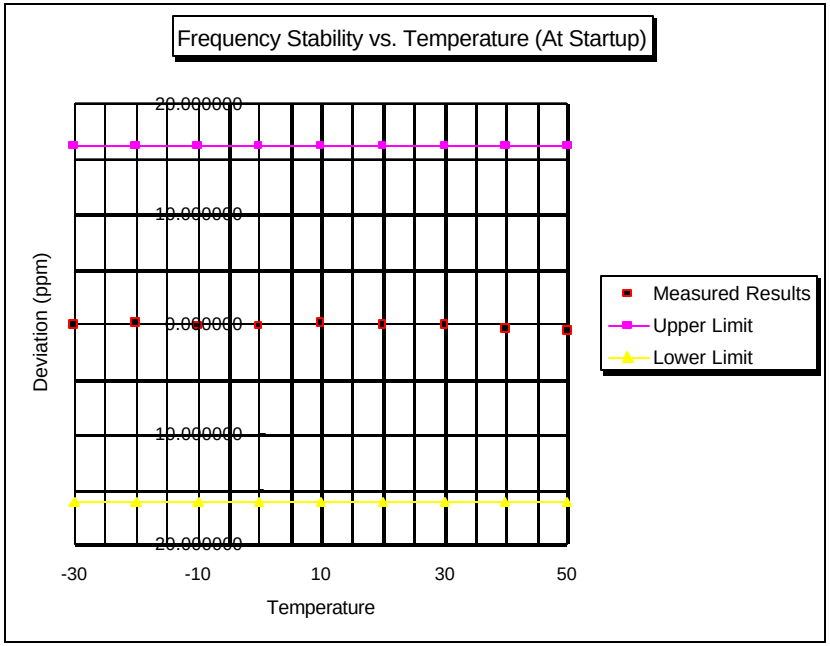
(15.202 a) Maximum Deviation = 0.001% of Reference Frequency = 0.00001* 1611.001788 MHz = 16110 Hz = 16. kHz

FCC
Certification
Axonn, LLC Model SPT
Frequency Stability vs. Temperature (At Startup)

Test Results Reviewed By:

Louis A. Feudi

Temperature (degrees C)	Measured Frequency (MHz)	Deviation kHz
-30	1611.001750	-0.038000
-20	1611.001964	0.176000
-10	1611.001602	-0.186000
0	1611.001656	-0.132000
10	1611.001874	0.086000
20	1611.001788	0.000000
30	1611.001736	-0.052000
40	1611.001390	-0.398000
50	1611.001300	-0.488000



Actual TX Frequency was: 1611.001788 MHz

Reference Point from 20 degrees C:
1611.001788 MHz

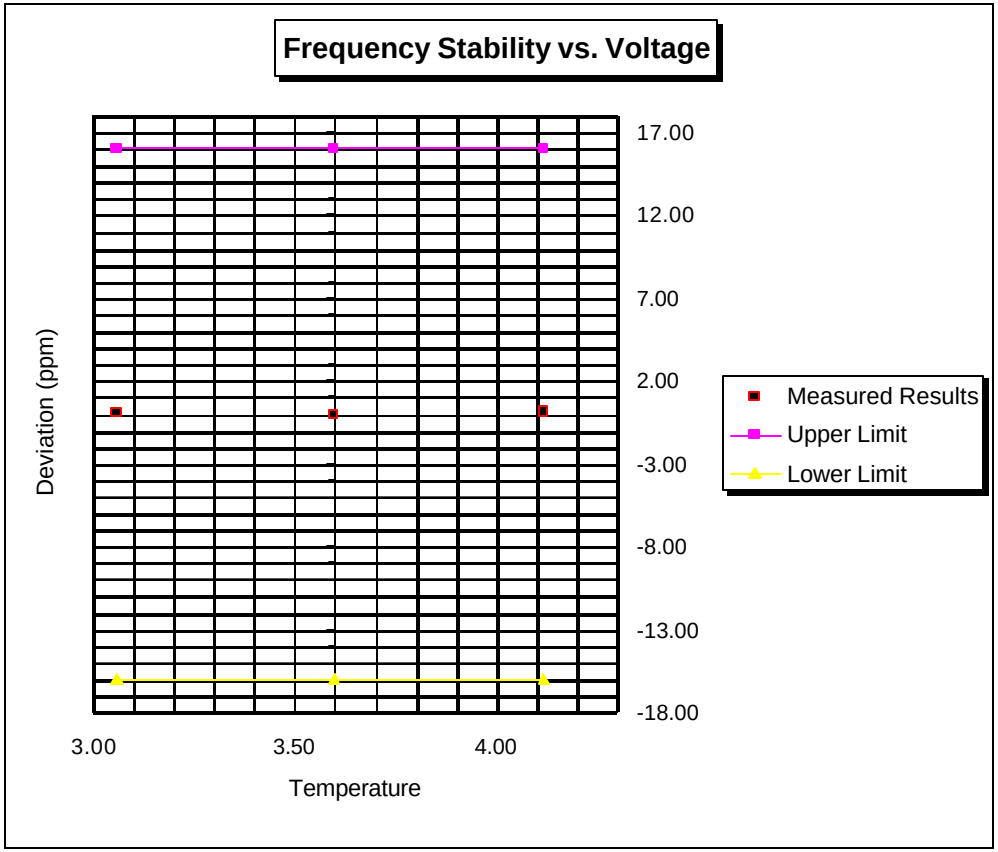
TABLE 5b Frequency Stability cont.

(15.202 a) Maximum Deviation = 0.001% of Reference Frequency = 0.00001* 1611.001340 MHz
= 16110 Hz = 16.1 kHz
FCC Certification
Axonn, LLC Model SPT
Frequency Stability vs. Voltage

Test Results Reviewed By:

Louis A. Feudi

Voltage (V DC)	Measured Frequency (MHz)	Deviation kHz
3.06	1611.001364	0.024000
3.6	1611.001340	0.000000
4.12	1611.001508	0.168000



Actual TX Frequency was: 1611.001340 MHz

Maximum Deviation = 0.0001% or 16.1 kHz

Reference Point From 20 degrees C: 1611.001340 MHz

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

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.

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.

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.

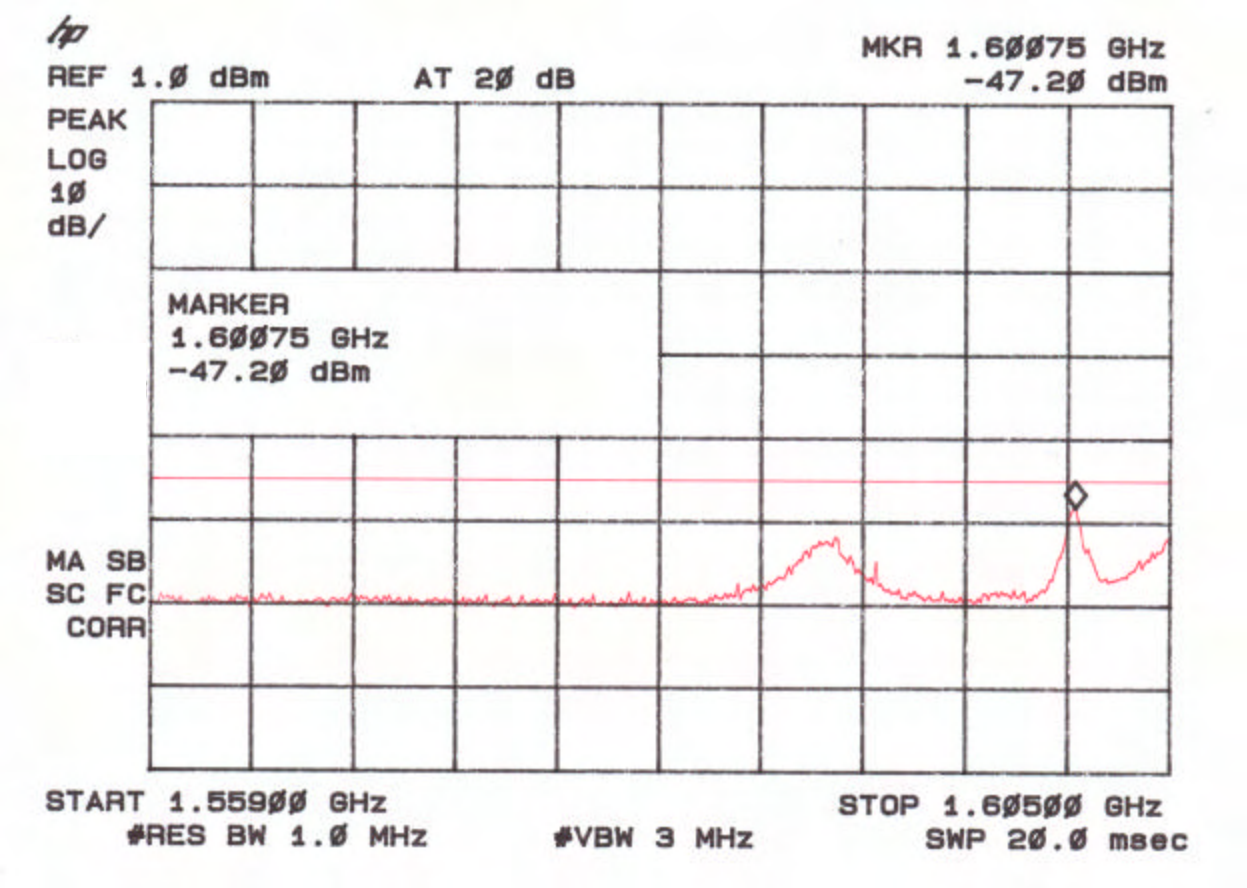
25.216g(2) Emissions from the EUT were evaluated from 1605 MHz – 1610 MHz and did not exceed the limits ranging from -80 dBW/MHz at 1605 MHz to –20dBW/MHz at 1610 MHz, averaged over 2 milliseconds.

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 to the antenna output terminal with the Resolution Bandwidth set to 1 MHz. Results are shown on Figures 6a -6f.

Figure 6a.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service (25.216(c)(1))

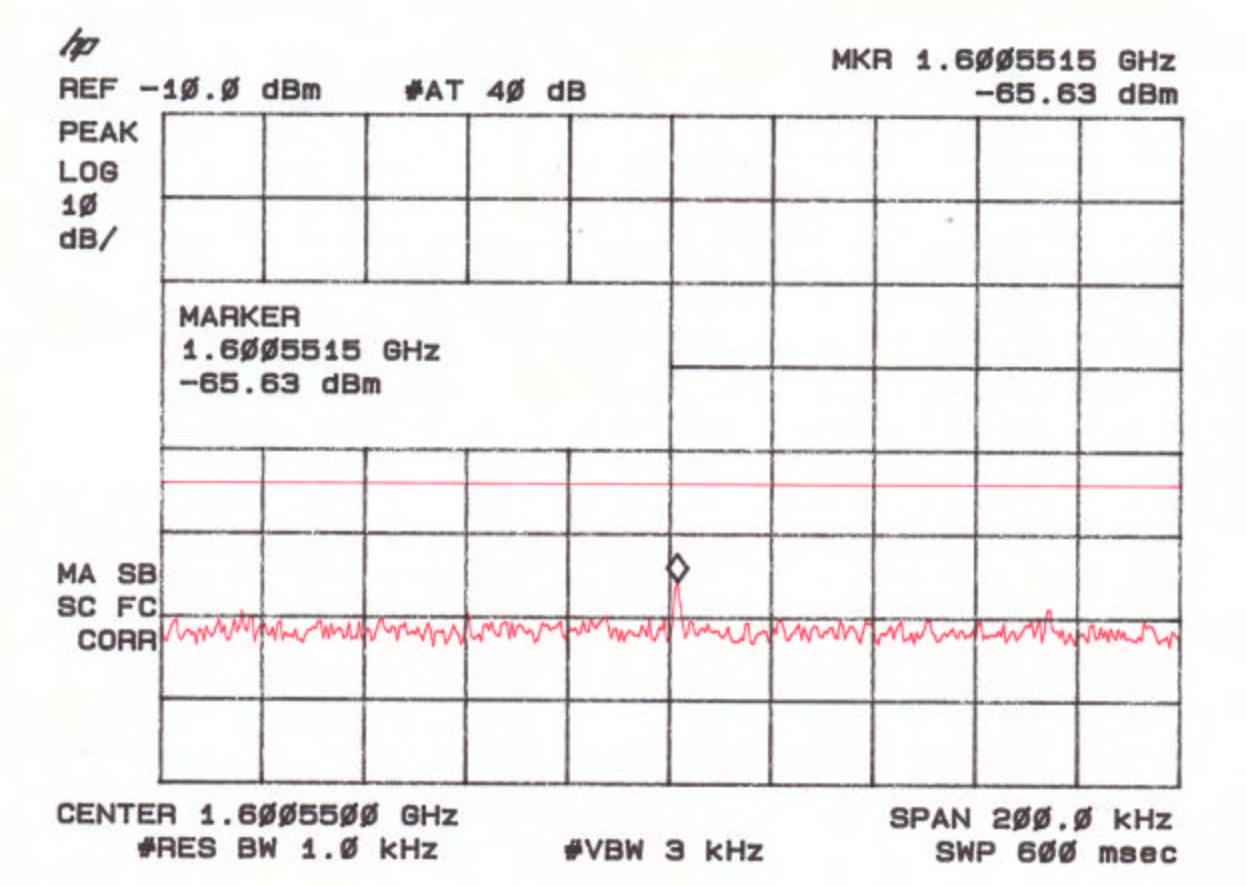
Limit = - 70 dBW/MHz + 4 dBi (-44 dBm)



Measured Value = -47.20 + 0.25 = -46.95

Figure 6b.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(c)(2))

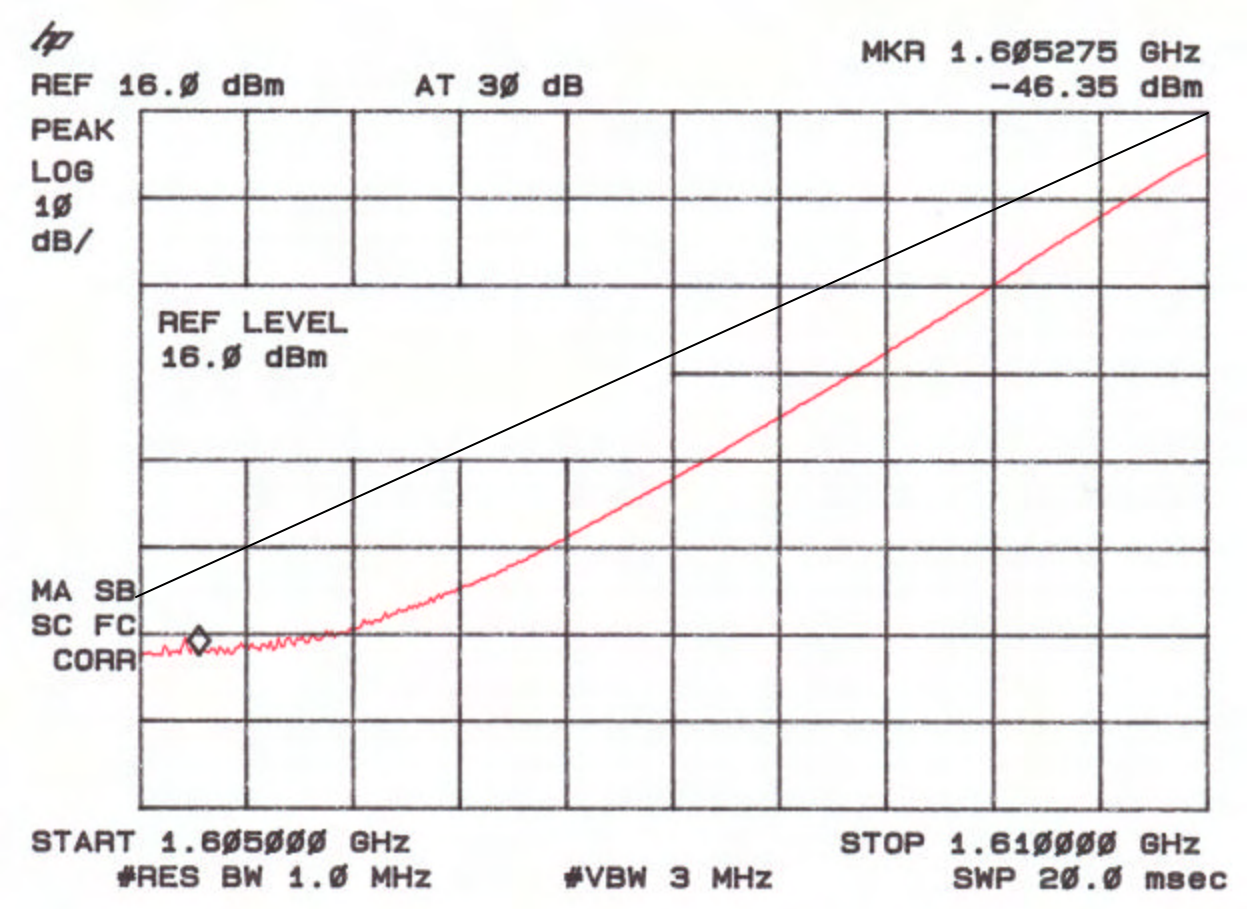
Limit = -80 dBW + 4 dBi = -54dBm



Measured Value is –65.63 + 0.25 (cable loss) = -65.38

Figure 6c.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(g)(1))

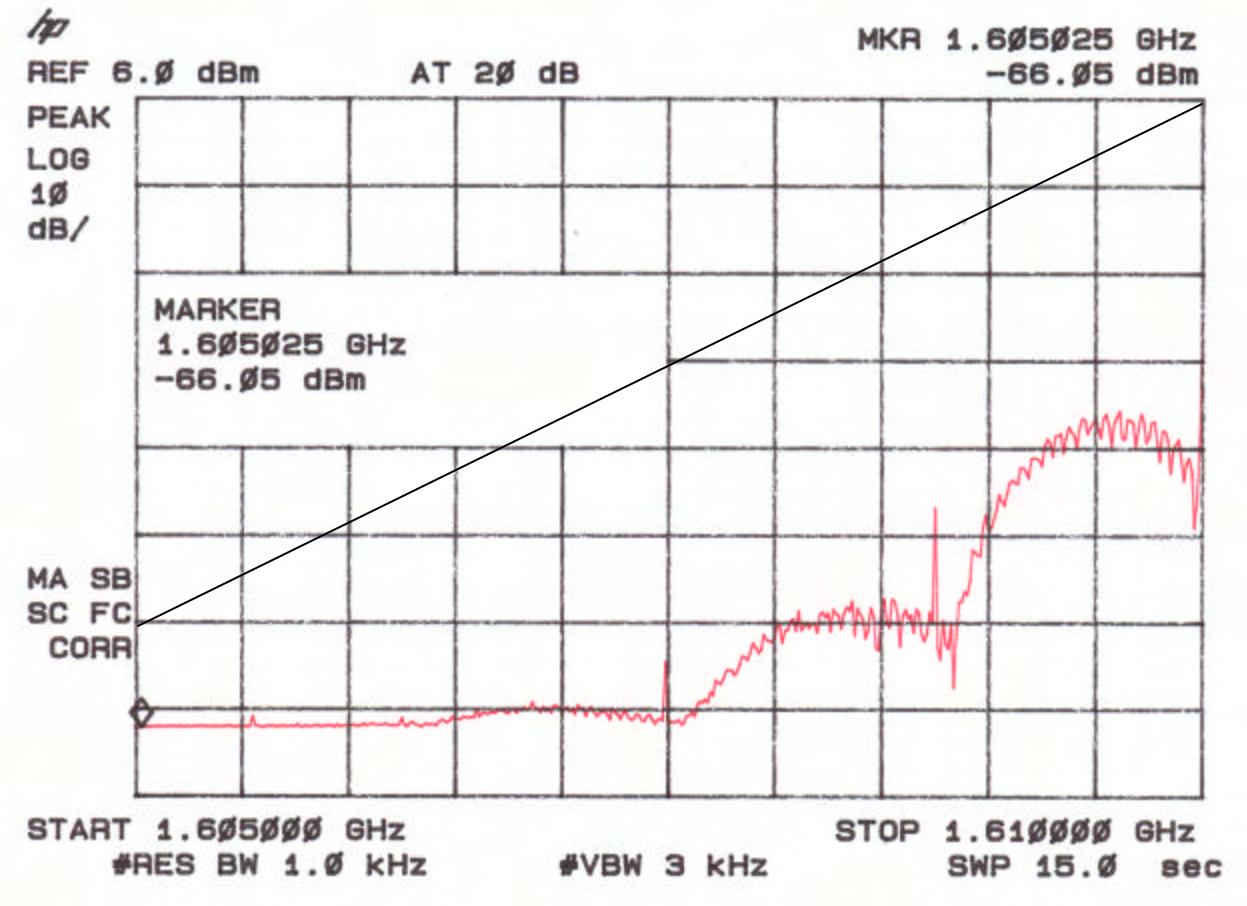
Limit = -70 dBW/MHz at 1605 MHz to –10 dBW/MHz at 1610 (-44 dBm to 16 dBm)



Measured Value is –46.35 + 0.25 (cable loss) = -46.10

Figure 6d.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(g)(2))

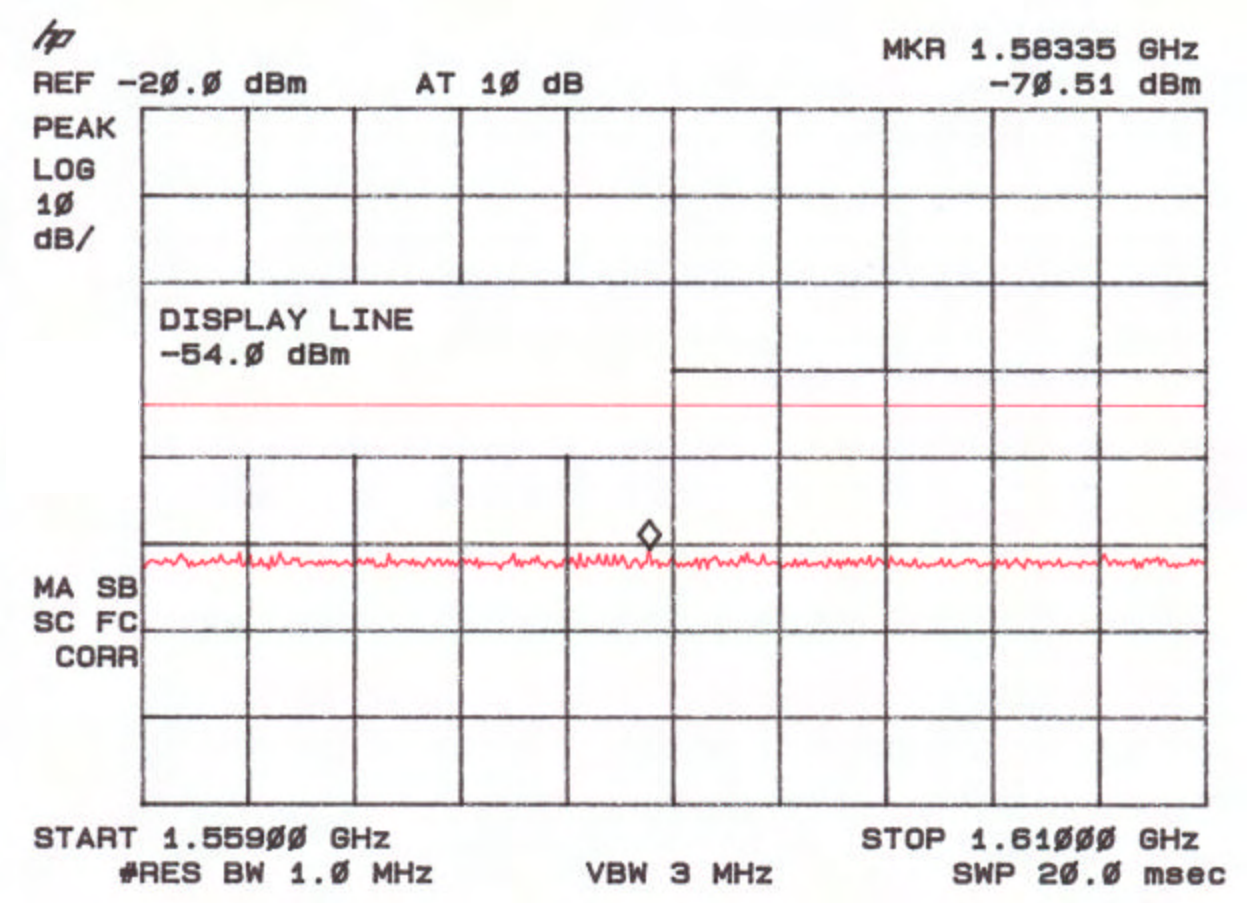
Limit = -80 dBW/MHz at 1605 MHz to –20 dBW/MHz at 1610 (-54 dBm to 6 dBm)



Measured Value is –66.05 + 0.25 (cable loss) = -65.80 dBm

Figure 6e.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(i) (carrier off)

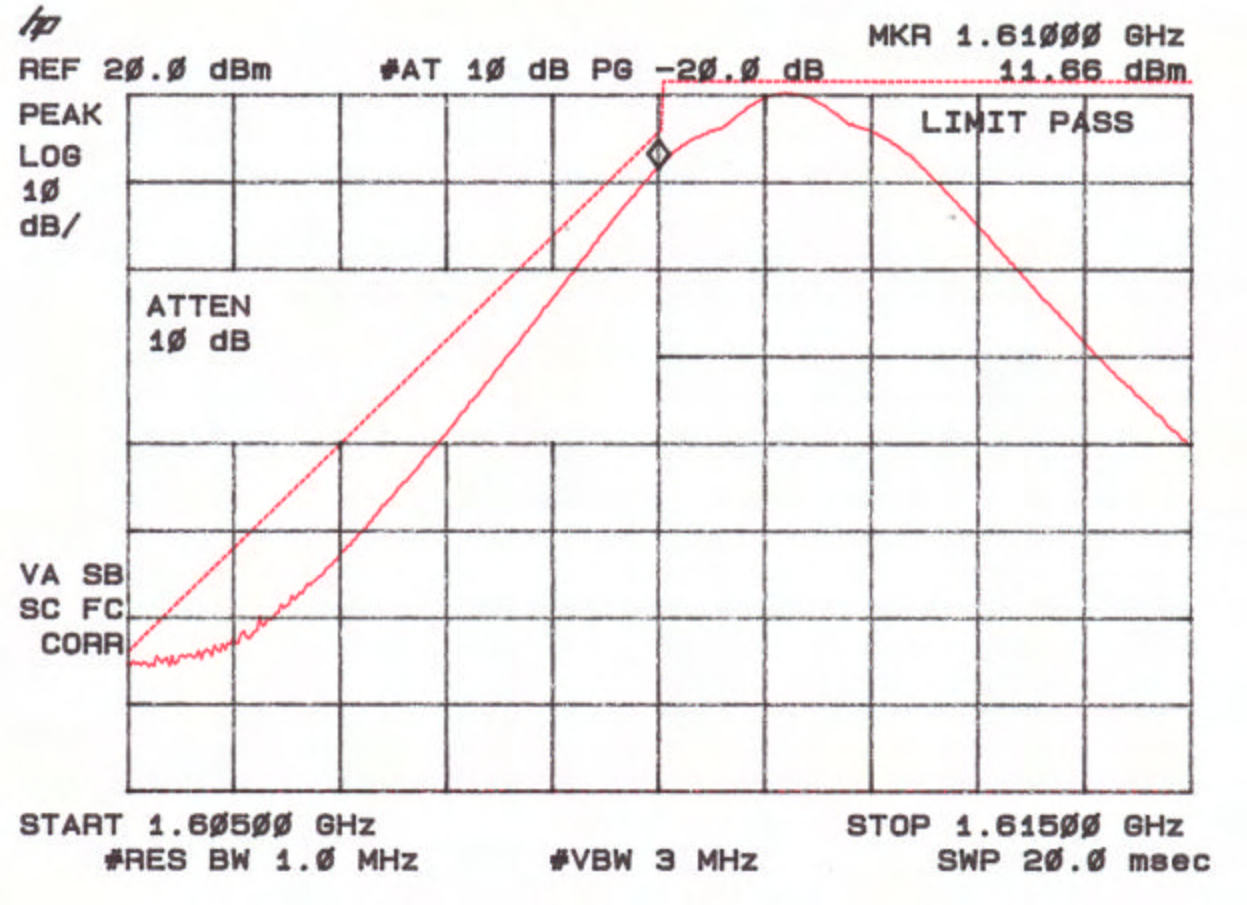
Limit = -80 dBW/MHz + 4 dBi (-54 dBm)



Measured Value is –71.51 + 0.25 (cable loss) = -71.26 dBm

Figure 6f.
Emissions from Mobile Earth Stations for Protection of Aeronautical Radionavigation-Satellite Service(25.216(i) (carrier off)

Limit = -80 dBW/MHz + 4 dBi (-54 dBm)



Measured Value is 11.66 + 0.25 (cable loss) =11.91 dBm

TABLE 6. RADIATED EMISSIONS DATA
(Digital Device & Receiver)

CLASS B

Radiated Emissions									
Test By:	**Test:**	FCC Part 15				**Client:**	Axonn, LLC		
DA	**Project:**	07-0319		**Class:**	**B**	**Model:**	Satellite Personal Tracker Model: SPT		
Frequency	**Test Data**	**AF**	**Test Data**	**AF+CA-AMP**	**Results**	**Limits**	**Distance**	**Margin**	**PK = n**
(MHz)	**(dBm)**	**Table**	**(dBuV)**	**(dB)**	**(uV/m)**	**(uV/m)**	**Polarity**	**(dB)**	**/ QP**
527.05	-88.0	1LP3mH	19.0	22.8	122.8	200.0	3m./HORZ	**4.2**	**QP**
527.615	-90.0	1LP3mV	17.0	22.2	91.5	200.0	3m./VERT	**6.8**	**QP**
No other emissions seen within 20 dB of the limit									

Test Date: October 4, 2007

Tester Signature: Daniel Aparaschivei **Name: Daniel Aparaschivei**