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Axonn L.L.C.
FCC Part 15, Certification Application
AXC550 (External), Rev B Transmitter

UST Project: 02-0267
September 12, 2002

MEASUREMENT/TECHNICAL REPORT

COMPANY NAME: **Axonn L.L.C.**

MODEL: **AXC550 (External), Rev B Transmitter**

FCC ID: **L2VAXC550EXT**

DATE: **September 12, 2002**

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

Equipment type: ___**Direct Sequence Spread Spectrum (Modular)**___

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:

United States Technologies, Inc.
3505 Francis Circle
Alpharetta, GA 30004

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

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SECTION 1

GENERAL INFORMATION

GENERAL INFORMATION

1.1 Product Description

The Equipment Under Test (EUT) is the Axonn L.L.C.'s, Model AXC550 (External), Rev B Transmitter. The EUT utilizes direct sequence spread spectrum technology for communication on the following channels: 905.58, 908.58, 911.58, 914.58, 917.58, 920.58, 923.58, and 926.58 MHz. The transmitter modulation incorporates BPSK modulation for generating a direct-sequence, spread spectrum carrier. The data modulation for the device utilizes either OOK or BPSK data modulation techniques as selectable by the user application.

The EUT it identical to a previously approved version (which was modularly approved under FCC ID: L2VAX550) with the exception that one of the regulators has been removed from the transmitter board and is to be implemented by the outside host devices and this version also incorporates external antennas. This application is being submitted in order to approve the EUT as a stand-alone limited modular approval (limited for use within Axonn L.L.C. products only) since Axonn will maintain control of the final products and ensure that the transmitter module is fully supplied with the proper external regulated voltage. Please refer to the following letter from Axonn L.L.C.

AXONN L.L.C

2021 Lakeshore Dr. Suite 500 □ New Orleans, Louisiana 70122 □ (504) 282-8119

July 2, 2002

Federal Communication Commission
Equipment Authorization Division
7435 Oakland mills Road
Columbia, MD 21046

Dear Sir or Madam

This letter requests that the attached filing (FCC ID L2VAXC550EXT) and be submitted for Limited Modular Approval. In reference to FCC Public Notice DA 00-1407, the following is stated:

1. All components except the antennas are enclosed by the metal shielding and ground plane.
2. All data inputs are buffered. The AXC550EXT provides buffering for all of it's external inputs and outputs obtainable by the end user through connectors J1 and J2. No direct connection between any of the AXC550EXT RF circuitry is provided without on-board buffering. The inputs and outputs to the AXC550EXT are digital, with the exception of the +5 Volt, DC supply input. Through specification and interaction with the end user this +5 volt input is closely controlled. The digital inputs to the AXC550 are buffered through the AX602 transmit controller ASIC (U9), the TIP processor (U5), or by dedicated circuitry intended for that purpose. Please refer to the theory of operations document that is supplied with this report for further discussion of these functions
3. The device was submitted as a stand-alone unit for testing.

4. Limited – Modular Approval conditions:

Axonn is launching a product family that incorporates radio products that have previously received modular approval from the FCC. The new Axonn product number is AXC550EXT, which is being combined with a product family marketed under an Axonn part number of AX16xxI where the xx is replaced with numerals denoting specific hardware configurations not impacting radio operation.

The embedded radio to be used in this product family has been previously evaluated as modular compliant and assigned FCC ID of L2VAXC550. A slight power supply modification is necessary to accommodate battery operation in the AX16xxI product

family making it necessary to re-evaluate the overall unit for FCC compliance in light of Public Notice (DA 00-1407, Released: June 26, 2000) item 3 which states:

3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.

Our intention is to re-certify the radio operation of the unit seeking limited-modular approval. It is the intention of this letter to fully explain the justification for this action.

Circuit Change:

The radio module L2VAXC550 incorporates a linear regulator as the power conditioning circuit. Provisions were made on the copper of the existing device to remove this regulator and bypass it with a wire jumper. This forces the line regulation of the radio device to the outside host and negates the modular approval of the device.

The L2VAXC550EXT will be combined with the L2VAX16xxI product family that takes the identical regulator removed from the radio transceiver and locates it with isolation switches on the host carrier board. This is to provide for complete power shutdown of the device to preserve battery life. While in operation mode, the isolation switches are closed and the regulator operates exactly as designed into the radio product.

There exists no other load on the regulator. The regulator on the host board provides power only for the radio device providing an electrical equivalence to the original configuration.

Failsafe operation of the radio is assured through lock detect circuitry in the radio product. If power fails on the device or on the host carrier board, the radio will disable the transmit section thus protecting the device from transmitting outside the band of allocation.
Additionally, testing of the configuration indicates there is no impact to output power either in band or out of band and to all measurable means any difference in operation of the radio device as a whole.

Intent and Action:
It is therefore our desire to seek limited-modular approval of the L2VAXC550EXT and device as provided for in the Public Notice. This device will only be used with Axonn products.

Sincerely,
Gary Naden

Gary Naden
V.P. Engineering
Axonn LLC

1.2 Related Submittal(s)/Grant(s)

The EUT will be used with part of a system to send/receive data. The transmitter presented in this report will be used with similar transceivers or previously approved receivers.

The EUT is subject to the following authorizations:

a) Certification as a transmitter (limited modular approval)

The information contained in this report is presented for the certification authorization for the EUT.

SECTION 2

TESTS AND MEASUREMENTS

TEST AND MEASUREMENTS

2.1 Configuration of Tested System

The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992). Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. 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. 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 and fundamental emissions are shown in Figure 2.

The sample used for testing was received by U.S. Technologies on July 30, 2002 in good condition.

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 submitted to the FCC, and accepted in their letter marked 31040/SIT. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number IC2982.

2.3 Test Equipment

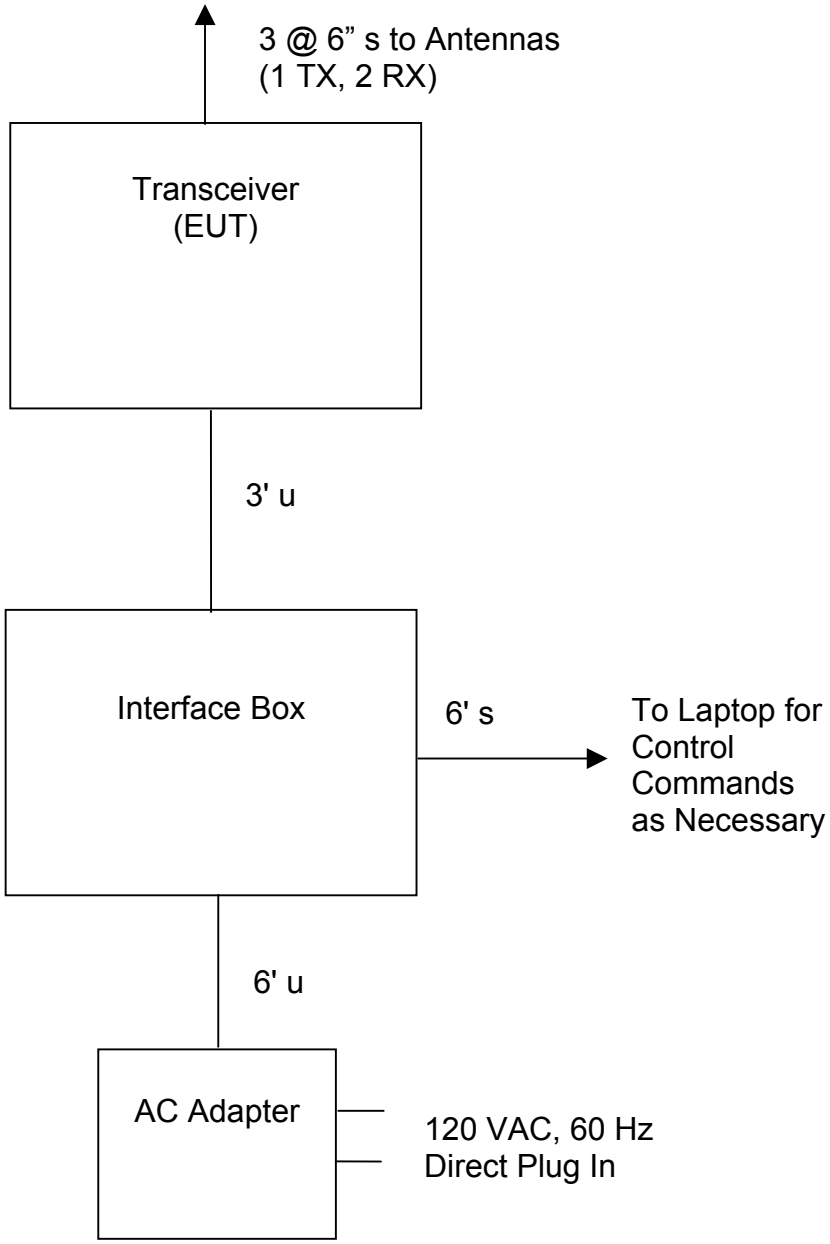
Table 2 describes test equipment used to evaluate this product.

2.4 Modifications

No modifications were made by US Tech, to bring the EUT into compliance with FCC Part 15 limits for the transmitter portion of the EUT.

FIGURE 1

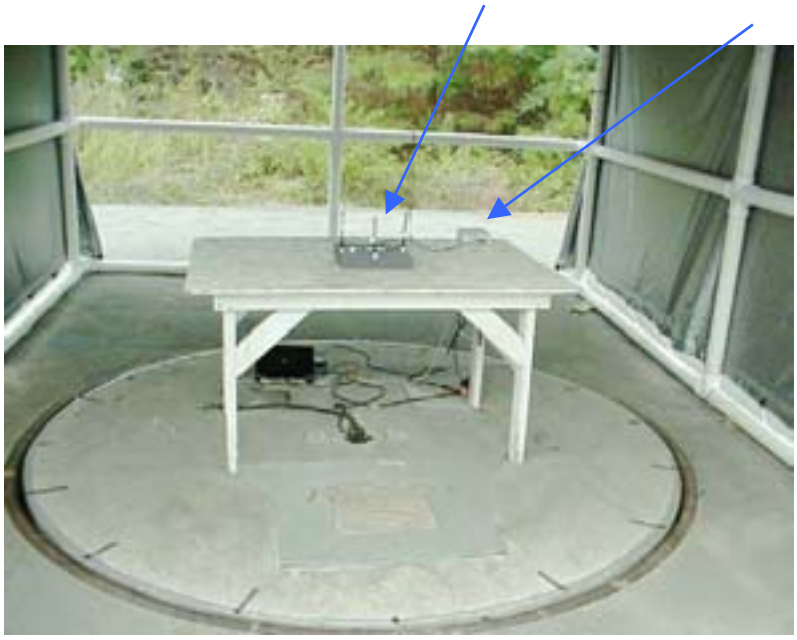
TEST CONFIGURATION



Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2a

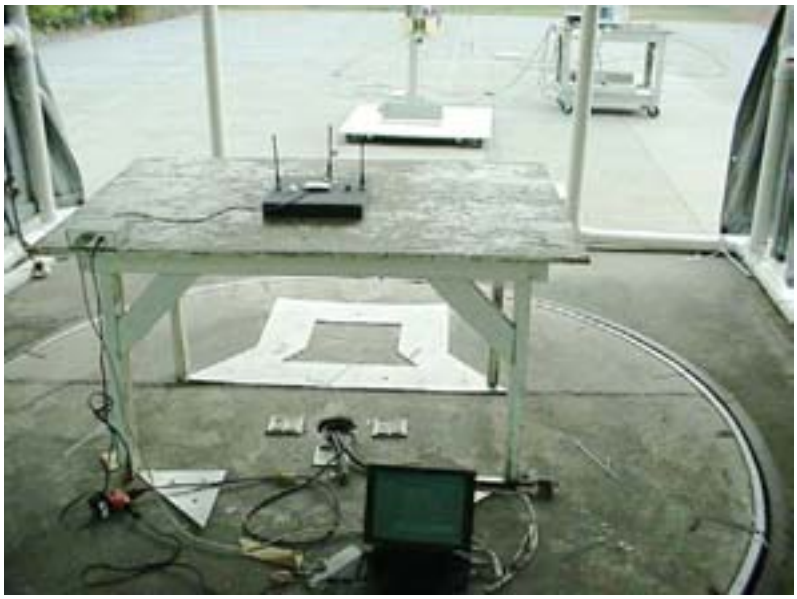
Photograph(s) for Spurious Emissions (Front)



Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2b

Photograph(s) for Spurious Emissions (Back)



Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2c

Photograph(s) for Digital Device/Receiver Emissions (Front)

Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2d

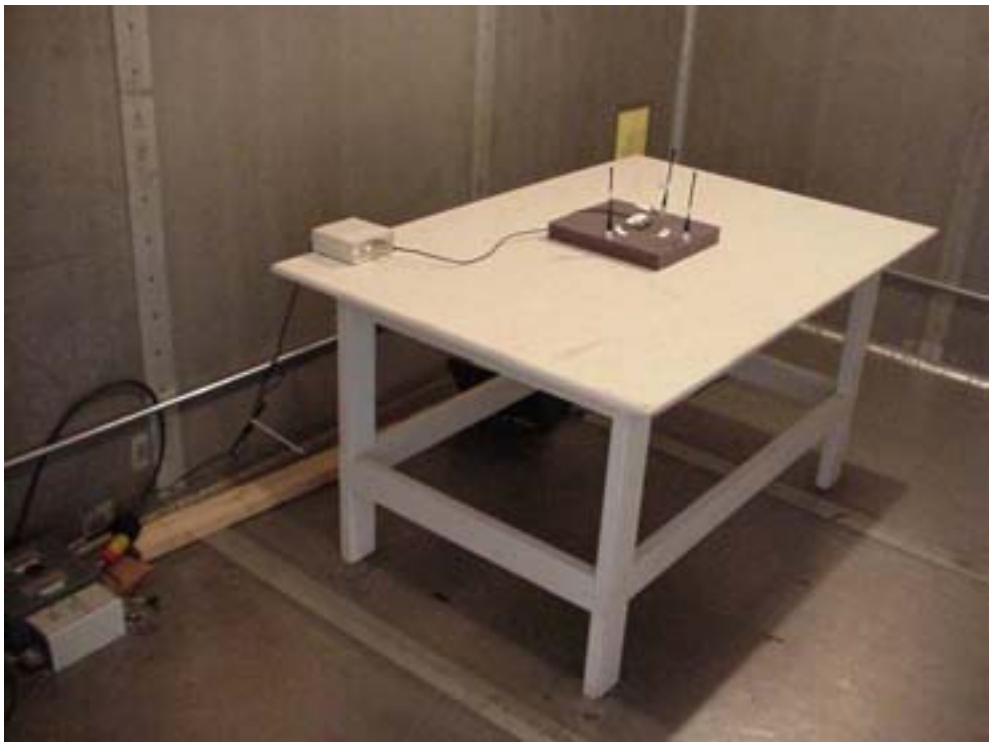
Photograph(s) for Digital Device/Receiver Emissions (Back)

Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2e

Photograph(s) for Conducted Emissions

Transmitter



Test Date: August 5 - August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

FIGURE 2f

Photograph(s) for Conducted Emissions

Receiver

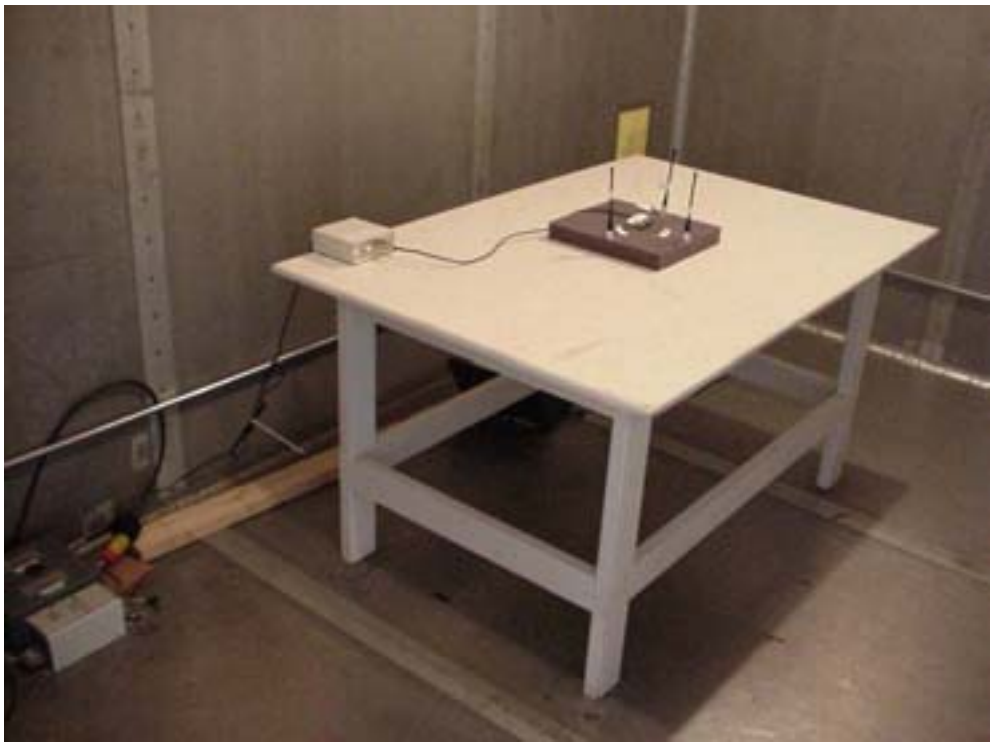


TABLE 1

EUT and Peripherals

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Modular TX Board Axonn L.L.C.	AXC550 (External), Rev B	None	L2VAXC550EXT (pending)	3’u
Interface Box Axonn L.L.C.	None	None	None	6’s
AC Adapter View Port Technology, Inc.	DV-91A	None	None	6' u

TABLE 2
TEST INSTRUMENTS

TYPE	MANUFACTURER	MODEL	SN.
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	3205A00124
SPECTRUM ANALYZER	HEWLETT-PACKARD	8558B	2332A09900
S A DISPLAY	HEWLETT-PACKARD	853A	2404A02387
COMB GENERATOR	HEWLETT-PACKARD	8406A	1632A01519
RF PREAMP	HEWLETT-PACKARD	8447D	1937A03355
RF PREAMP	HEWLETT-PACKARD	8449B	3008A00480
HORN ANTENNA	EMCO	3115	3723
BICONICAL ANTENNA	EMCO	3110	9307-1431
LOG PERIODIC ANTENNA	EMCO	3146	9110-3600
BILOG	CHASE	CBL6112A	2238
LISN	SOLAR ELE.	8028	910494
LISN	SOLAR ELE.	8028	910495

2.6 Antenna Description (Paragraph 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The Axonn L.L.C. Model AXC550 (External), Rev B Transmitter incorporates one of 3 styles of half wave dipoles. Please refer to the following letter from Axonn.

AXC550EXT External Antenna Gain

The antennas used on the AXC550EXT are two receiving antennas and one transmit antenna.

The antennas that will be used is from the family that has the following characteristics and specifications:

1. The gain shall be 2.5 dBi or less.
2. The antenna type is a half wave, dipole, omni directional, portable antenna.
3. The antenna length will be approximately 6 inches.
4. The antennas used shall have a non standard connector such as reverse thread SMA or reverse polarity in order to comply with FCC part 15.

List of antennas that were selected that meet the above specifications;

MFG	Part Number	Gain
Astron	AXH92RTSM	2.2dBi
Astron	AXH92RTSMS	2.2dBi
Antenex	DEXP92RTSM	2.5dBi

Note:

Axonn has the right to use any antenna on the AXC550EXT that meets the above specifications and come from the same family.

Sincerely,

Ahmad H. Abdelmajid

Axonn LLC

2.7 Peak Power Within the Band 902 - 928 MHz per FCC Section 15.247(b)

Peak power within the band 902 - 928 MHz has been 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. The spectrum analyzer was set for a 50 Ω impedance with the VBW ≥ RBW 6 dB bandwidth. The results of the measurements are given in Table 3 and Figure 3a through Figure 3c.

The EUT did not incorporate any antennas of directional gain greater than 6 dBi, therefore the output power has not been reduced as required by 15.247(b)(3).

TABLE 3
PEAK POWER OUTPUT

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

Frequency of Fundamental (MHz)	Measurement (dBm)*	Measurement (Watt)*	FCC Limit (Watt)
905.58	20.9	0.123	1.0
914.58	21.2	0.132	1.0
926.58	21.3	0.135	1.0

*** Measurement cable considered negligible**

Tester Signature:  **Name: David Blethen**

Figure 3a
Peak Power per FCC Section 15.247(b) - low

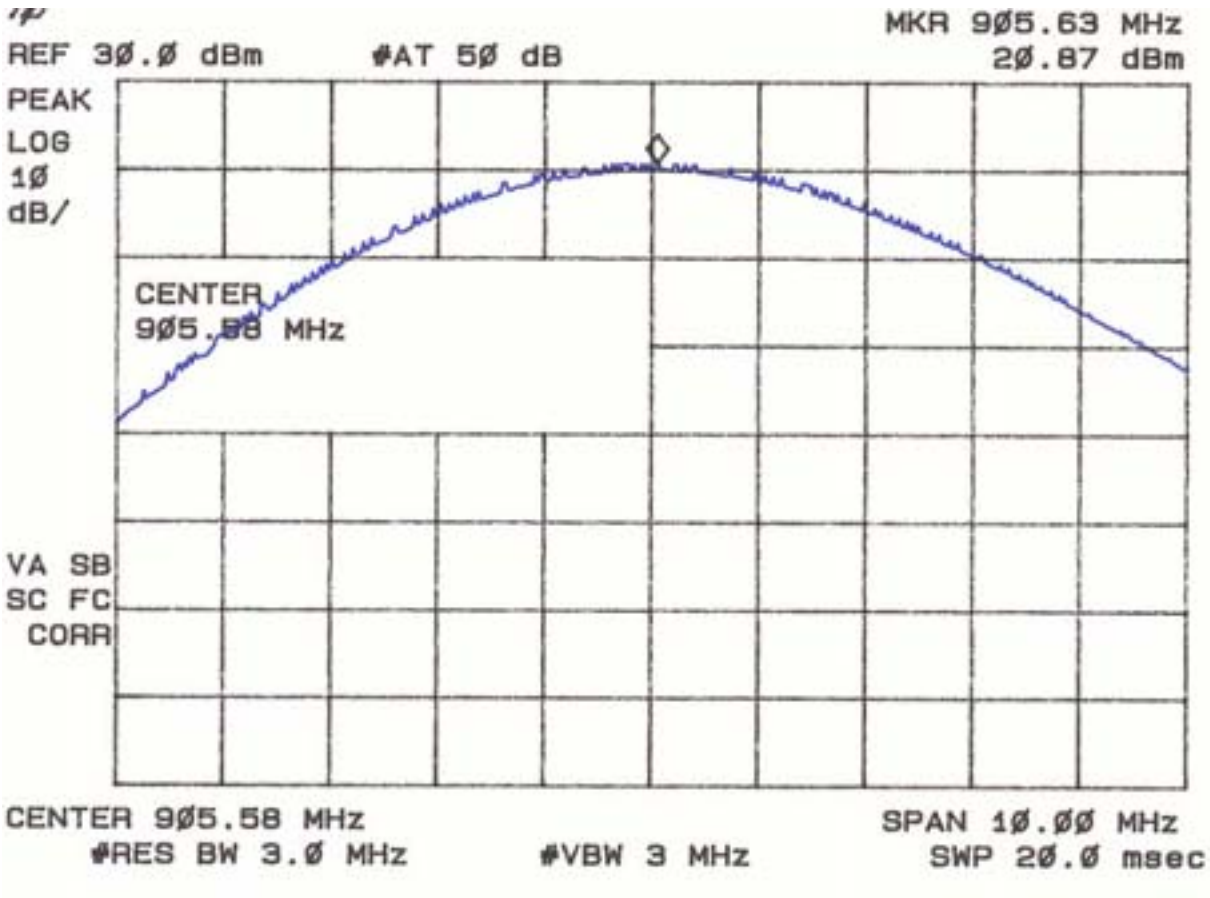


Figure 3b
Peak Power per FCC Section 15.247(b) - mid

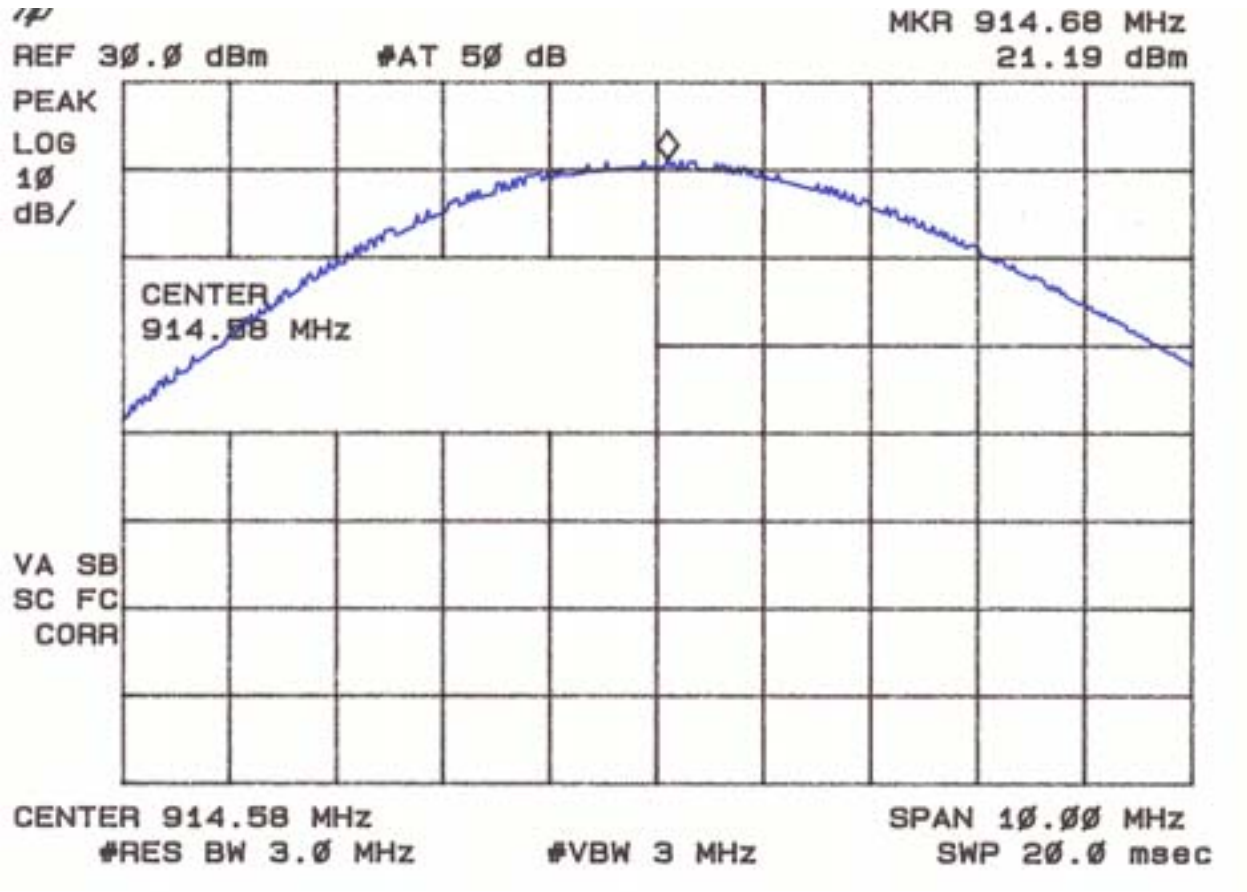
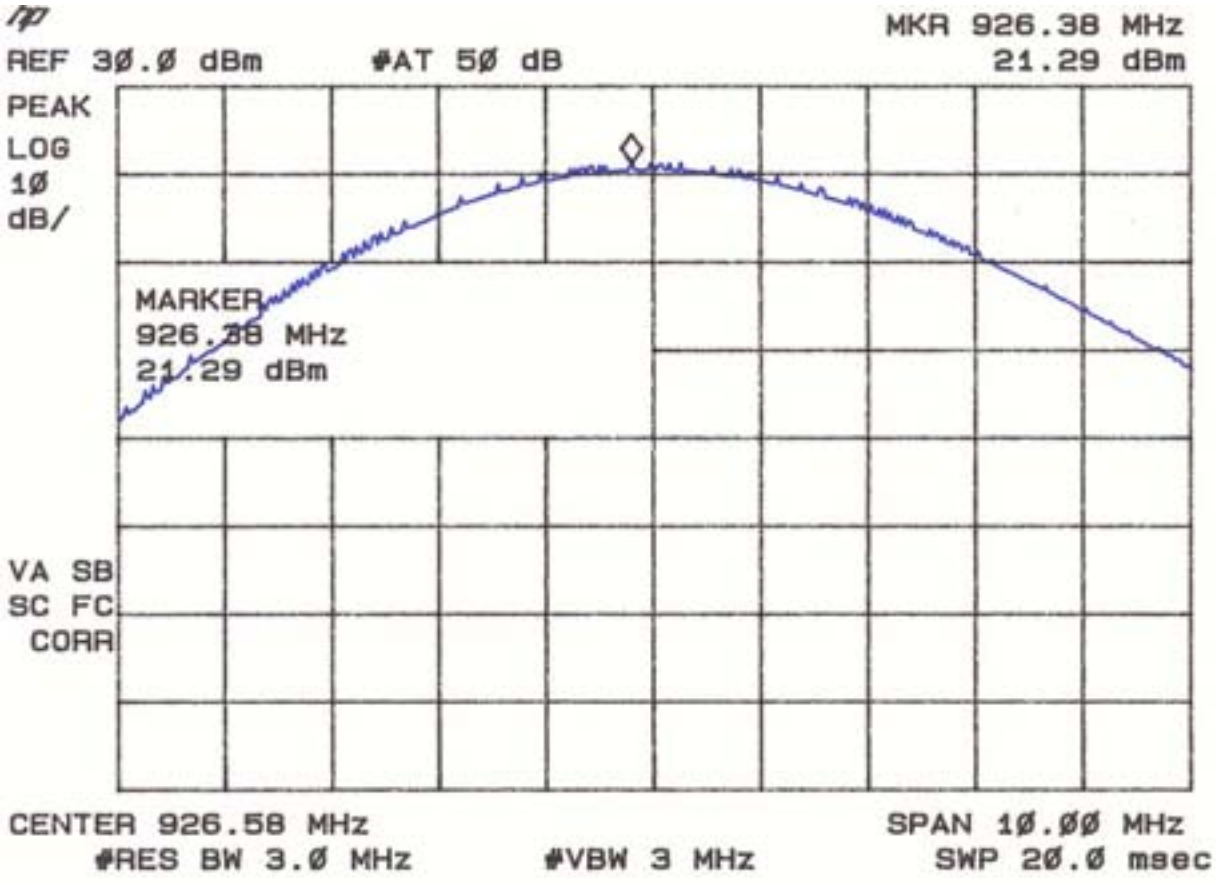


Figure 3c
Peak Power per FCC Section 15.247(b) - high



2.8 Antenna Conducted Spurious Emission in the Frequency Range 30 - 25000 MHz (FCC Section 15.247(c))

Antenna Conducted spurious emissions in the frequency range 30 - 25000 MHz have been 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. The spectrum analyzer was set for a 50 Ω impedance with the RBW = 100 kHz & VBW > RBW. All spurious emissions were measured to be greater than 20 dB down from the fundamental. The results of conducted spurious emissions are given in Figure 4a through Figure 4l.

Figure 4a
Antenna Conducted Spurious Emissions 15.247(c) Low

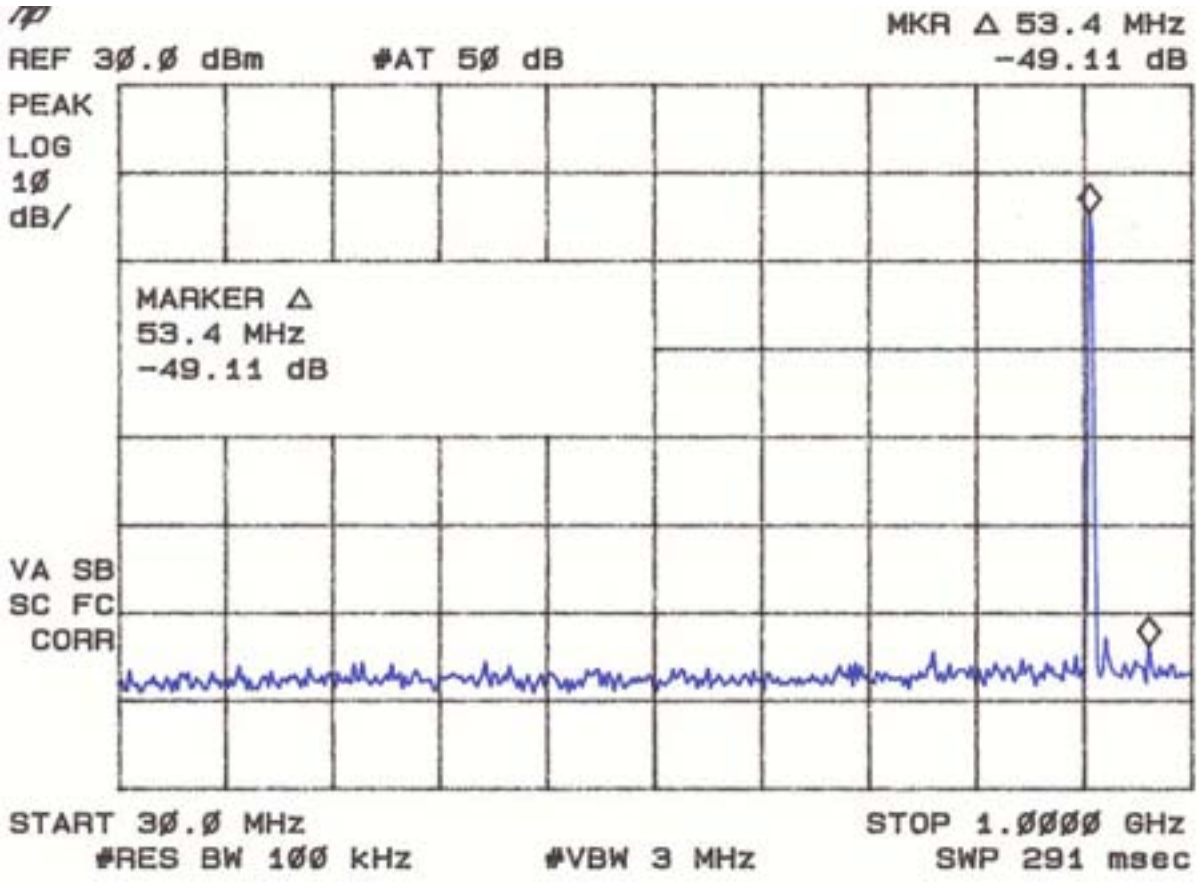


Figure 4b
Antenna Conducted Spurious Emissions 5.247(c) Low

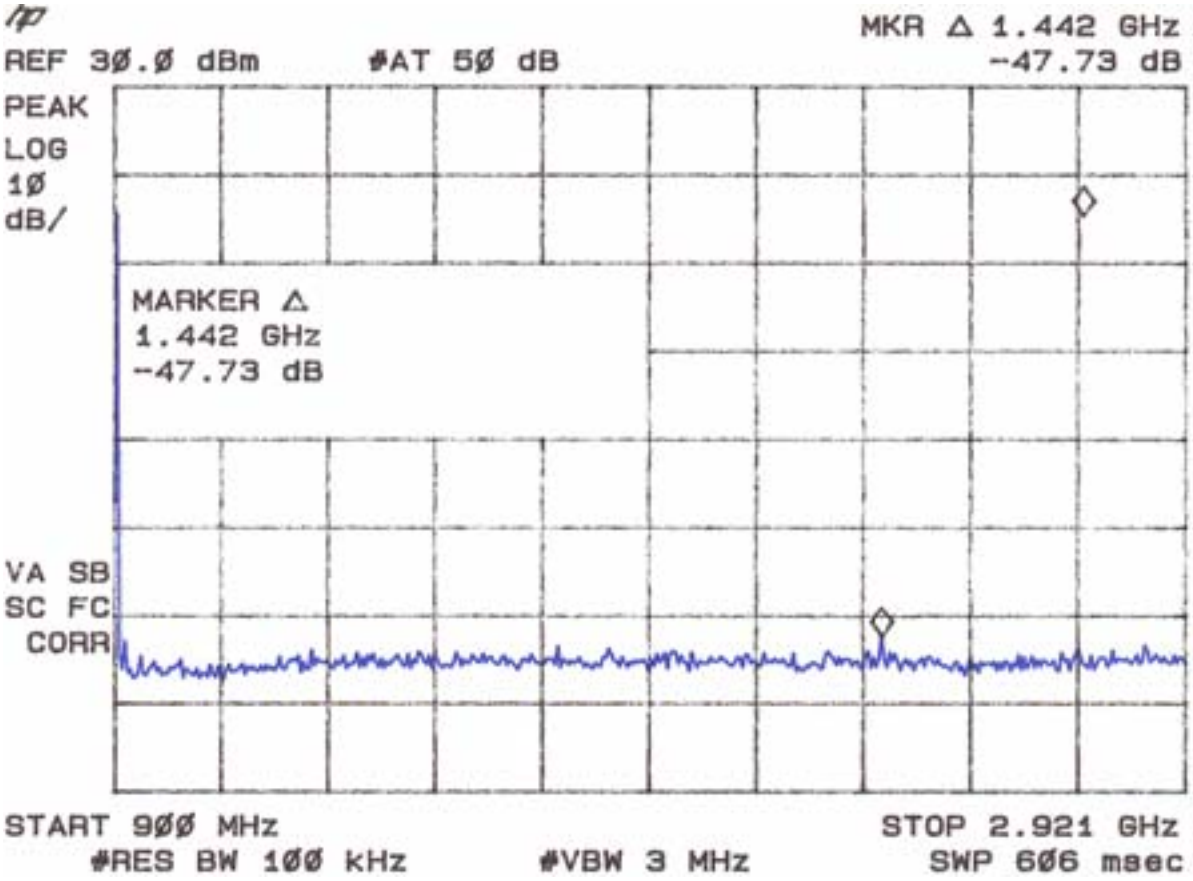


Figure 4c
Antenna Conducted Spurious Emissions 15.247(c) Low

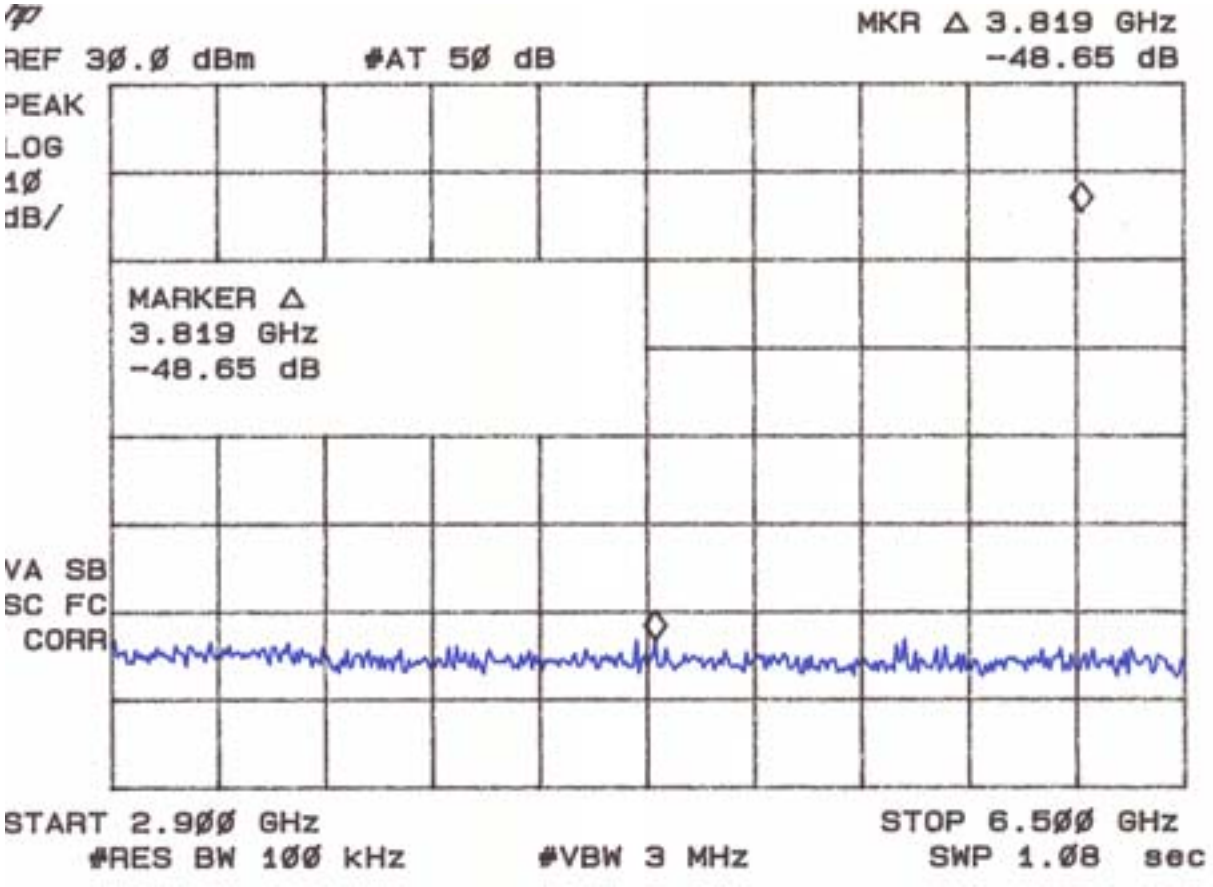


Figure 4d
Antenna Conducted Spurious Emissions 15.247(c) Low

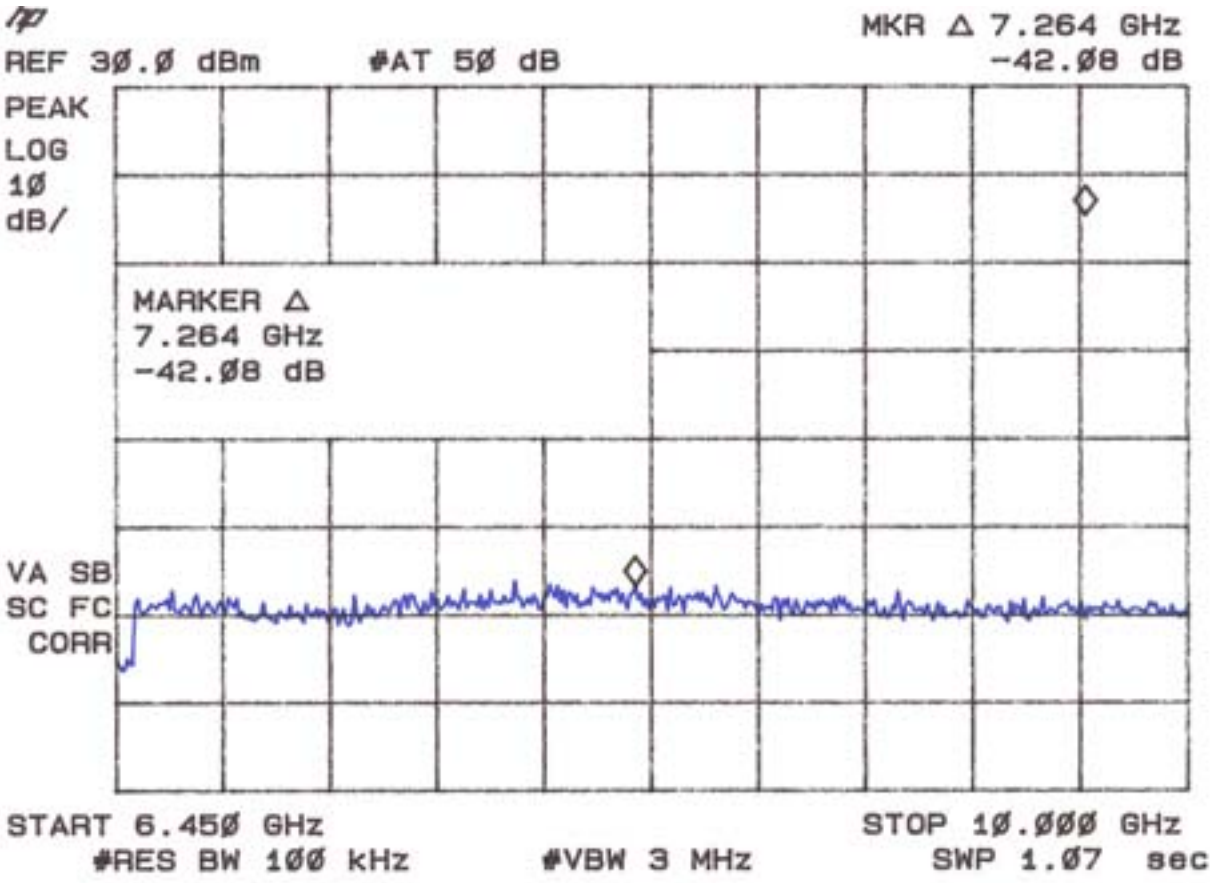


Figure 4e
Antenna Conducted Spurious Emissions 15.247(c) Mid

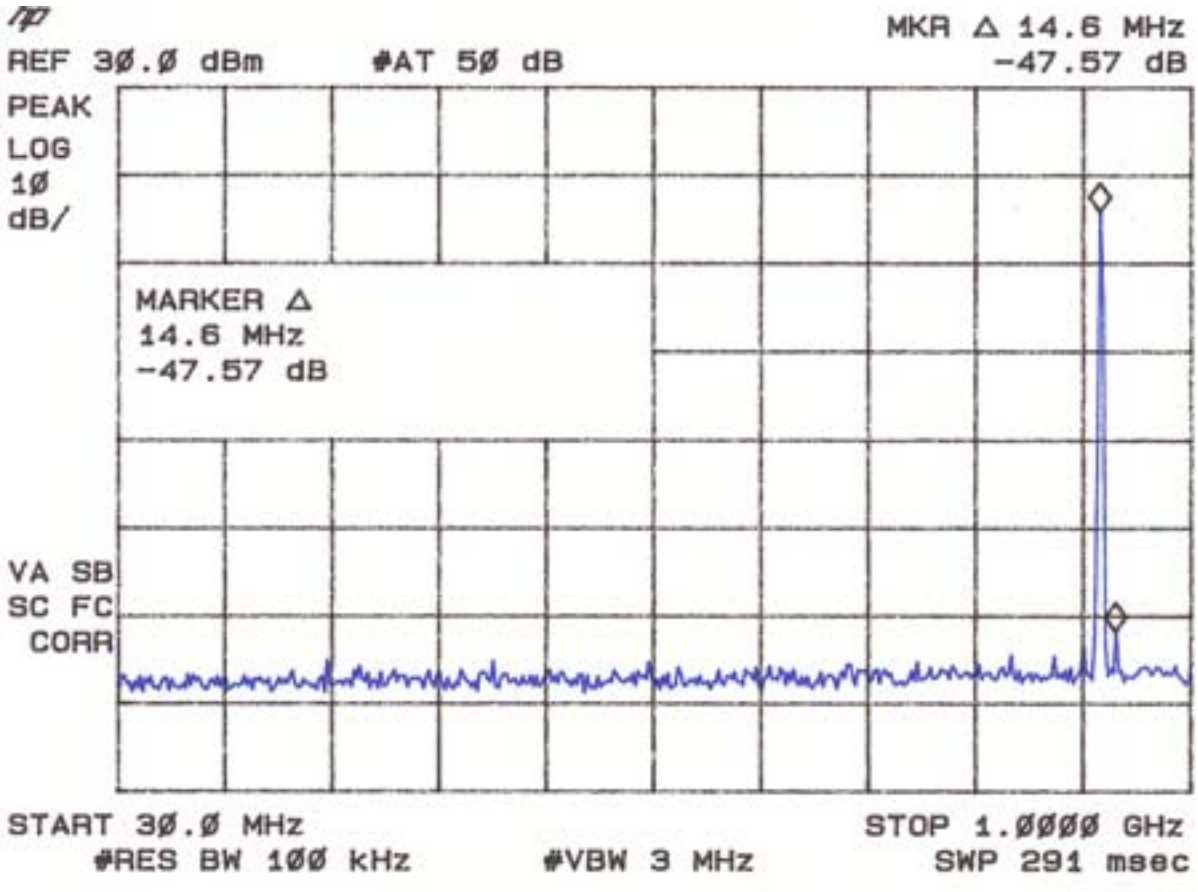


Figure 4f
Antenna Conducted Spurious Emissions 15.247(c) Mid

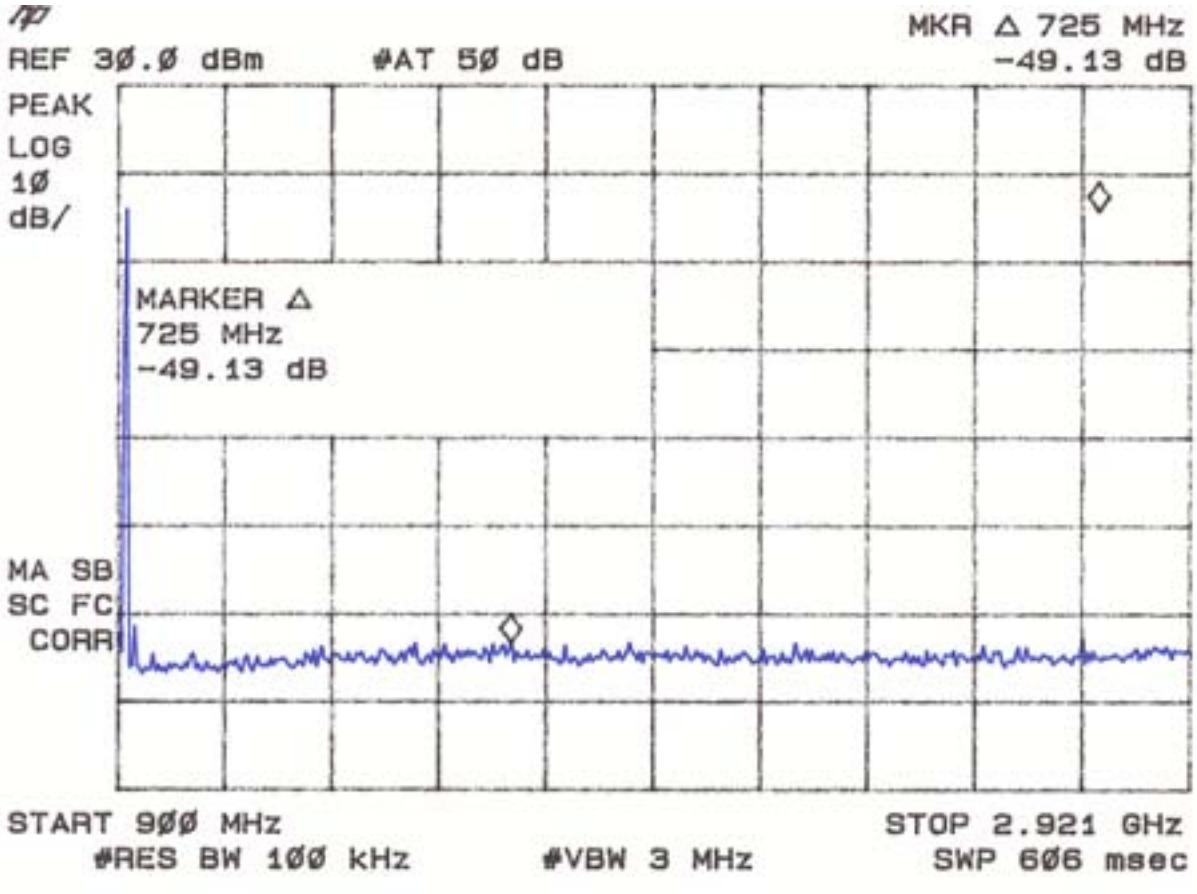


Figure 4g
Antenna Conducted Spurious Emissions 15.247(c) Mid

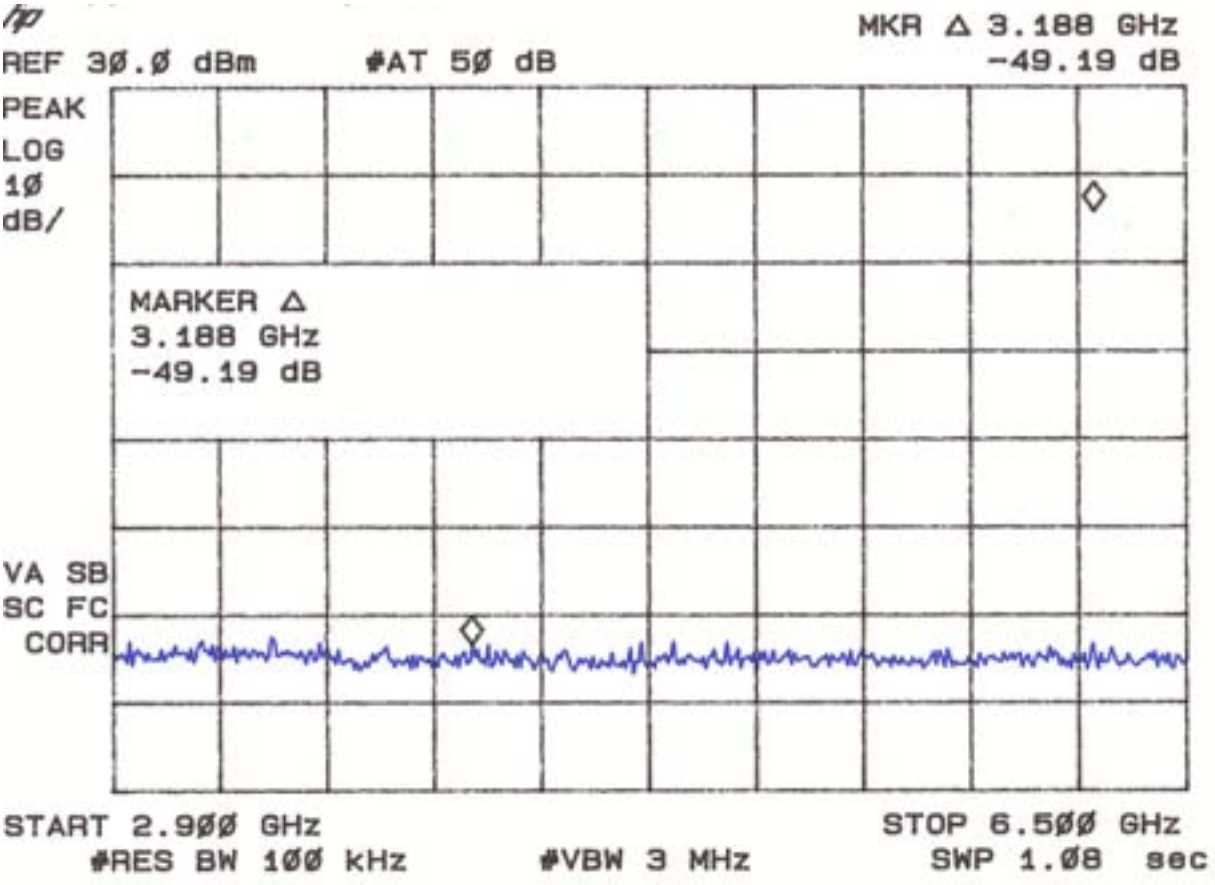


Figure 4h
Antenna Conducted Spurious Emissions 15.247(c) Mid

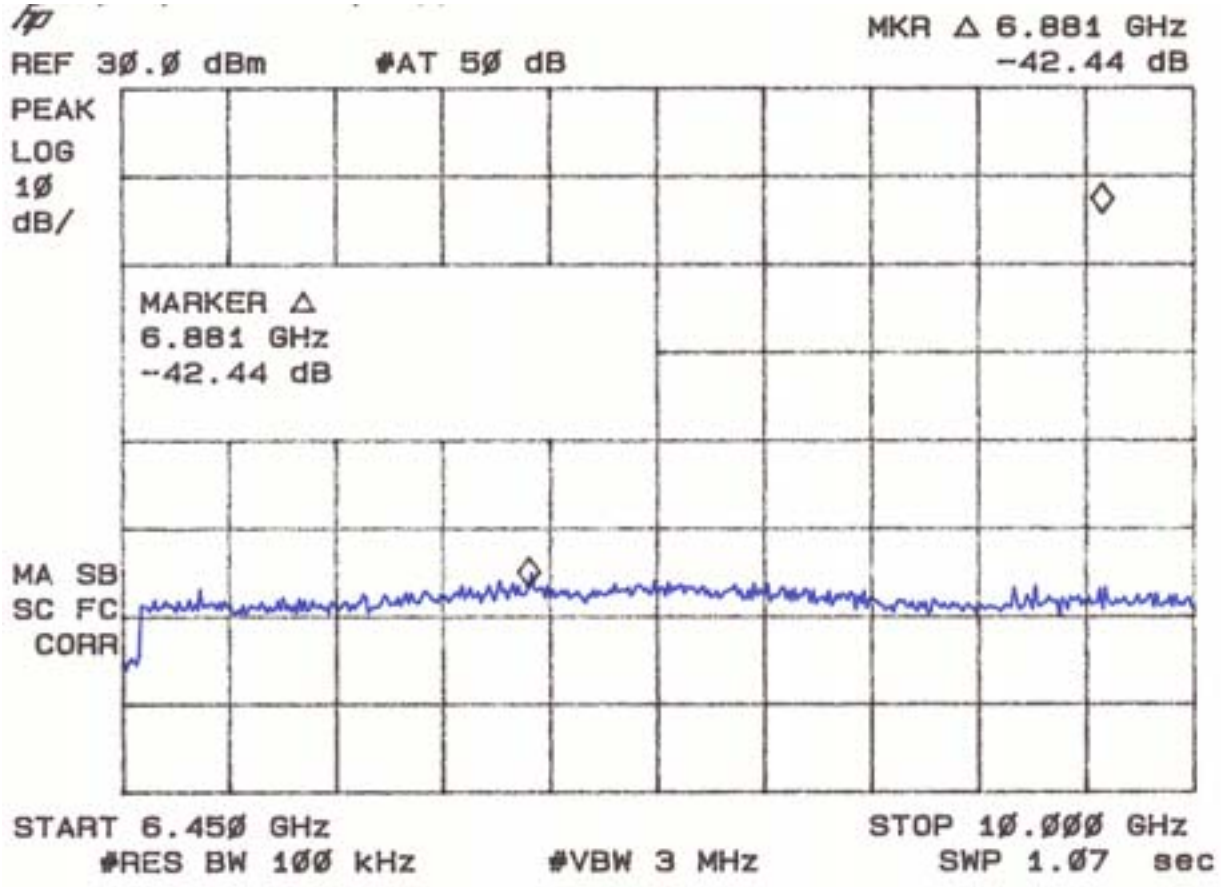


Figure 4i
Antenna Conducted Spurious Emissions 15.247(c) High

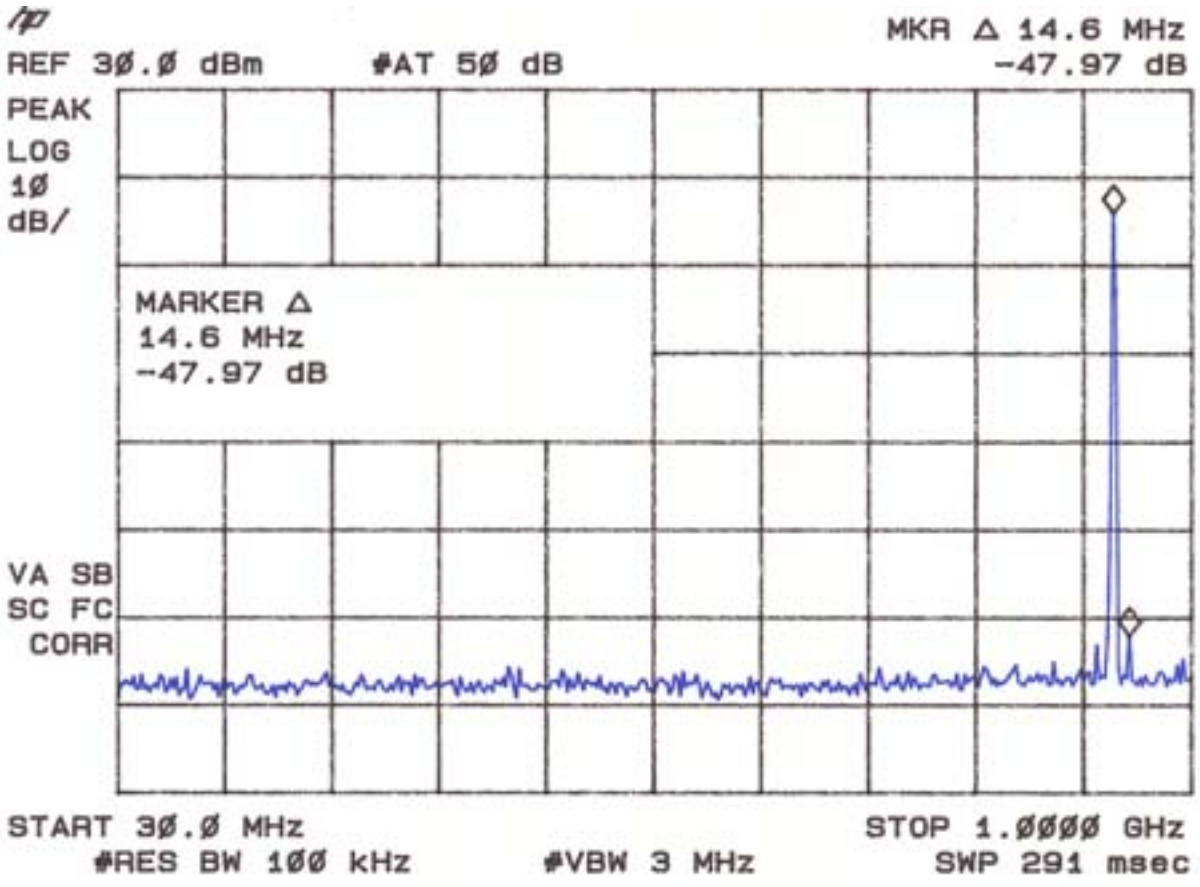


Figure 4j
Antenna Conducted Spurious Emissions 15.247(c) High

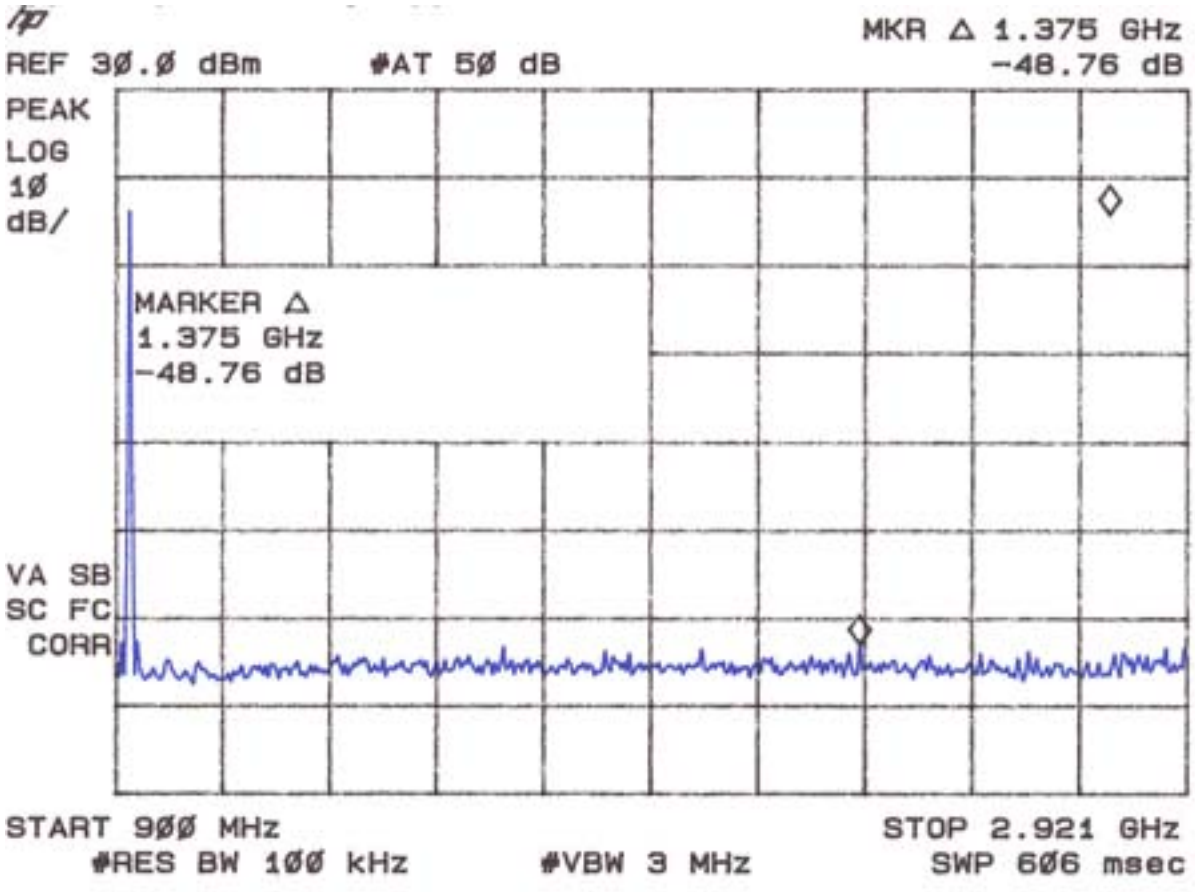


Figure 4k
Antenna Conducted Spurious Emissions 15.247(c) High

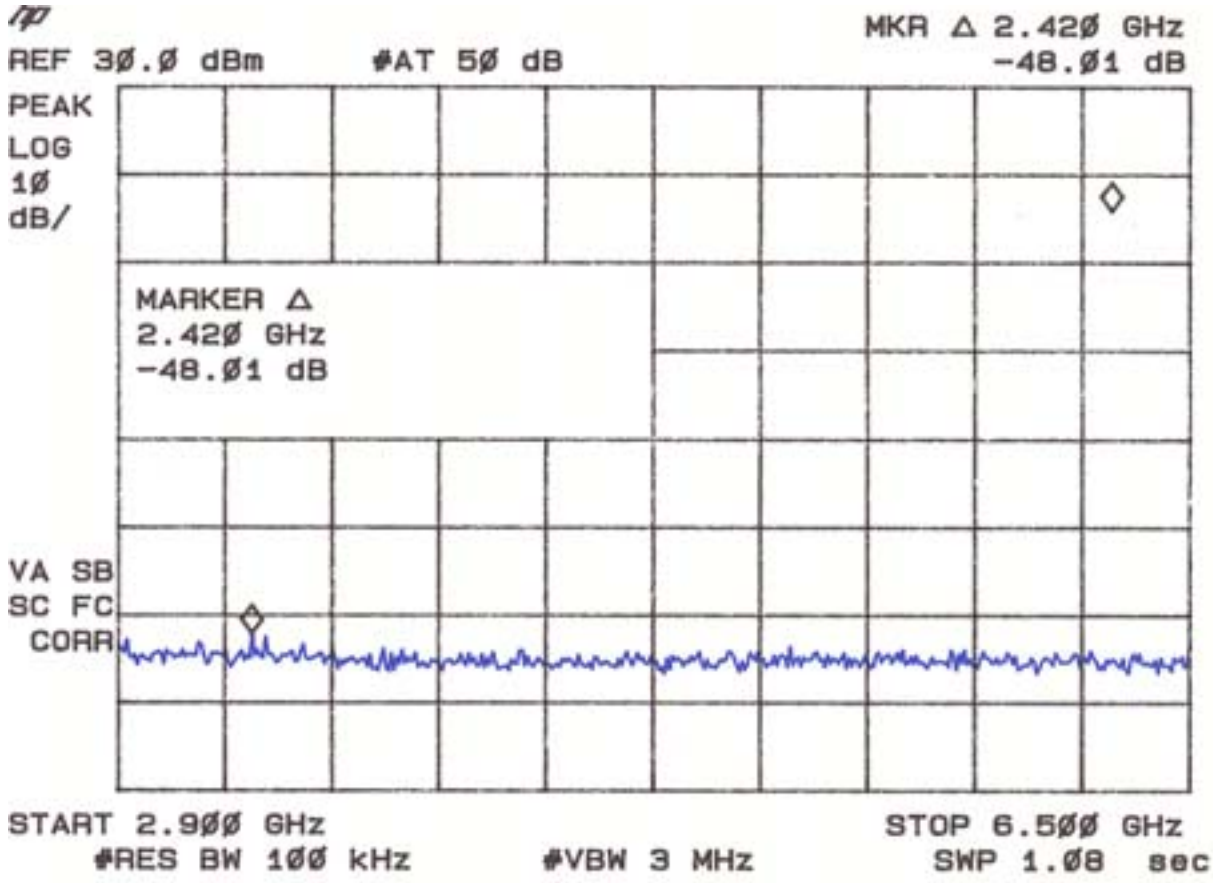
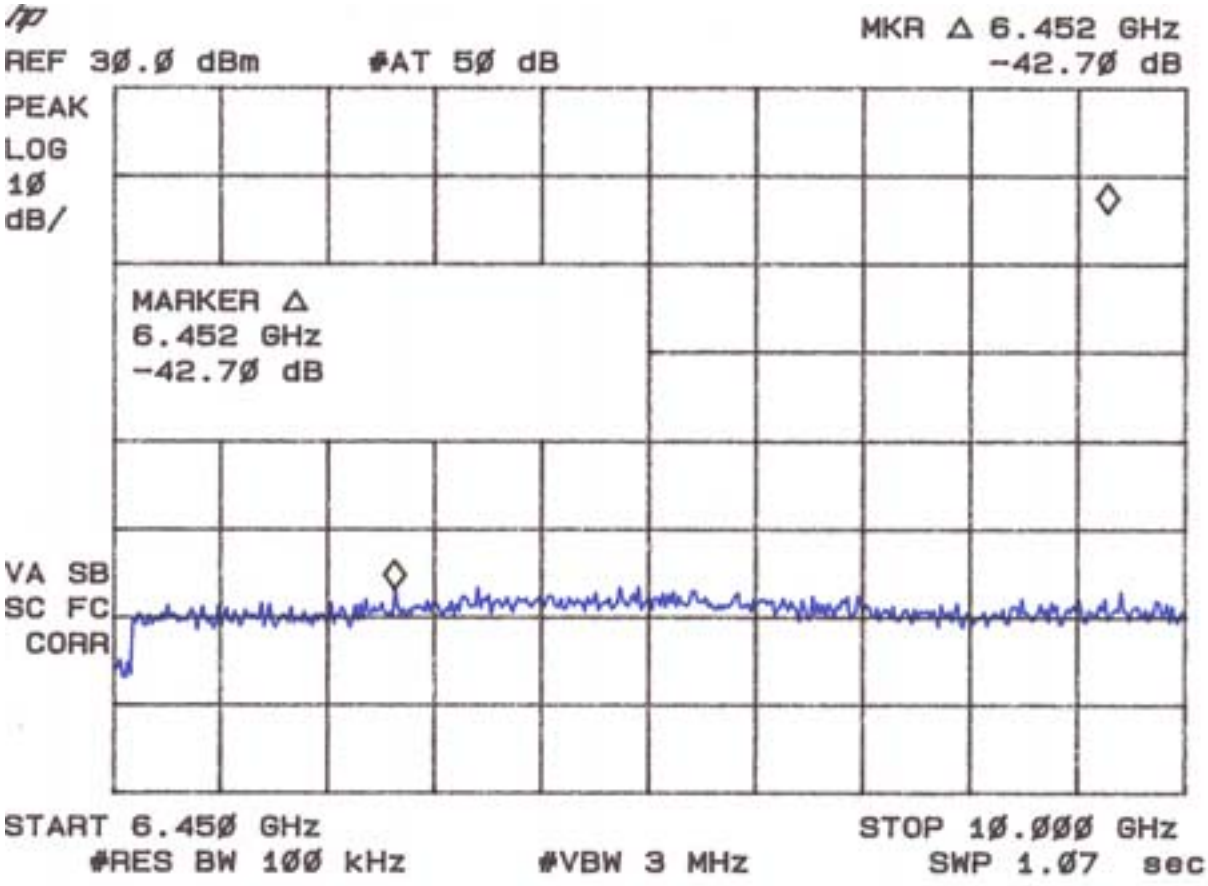


Figure 4l
Antenna Conducted Spurious Emissions 15.247(c) High



2.9 Peak Radiated Spurious Emission in the Frequency Range 30 -10000 MHz (FCC Section 15.247(c))

A preliminary scan was performed on the EUT to determine frequencies that were caused by the transmitter portion of the product. Significant emissions that fell within restricted bands were then measured on an OAT's site. Radiated measurements below 1 GHz were tested with a RBW = 120 kHz. Radiated measurements above 1 GHz were measured using a RBW = VBW = 1 MHz. The results of peak radiated spurious emissions falling within restricted bands are given in Table 4a through Table 4c and Figure 5a-5d.

Figure 5a
Peak Radiated Spurious Emission 15.247(c) - Low

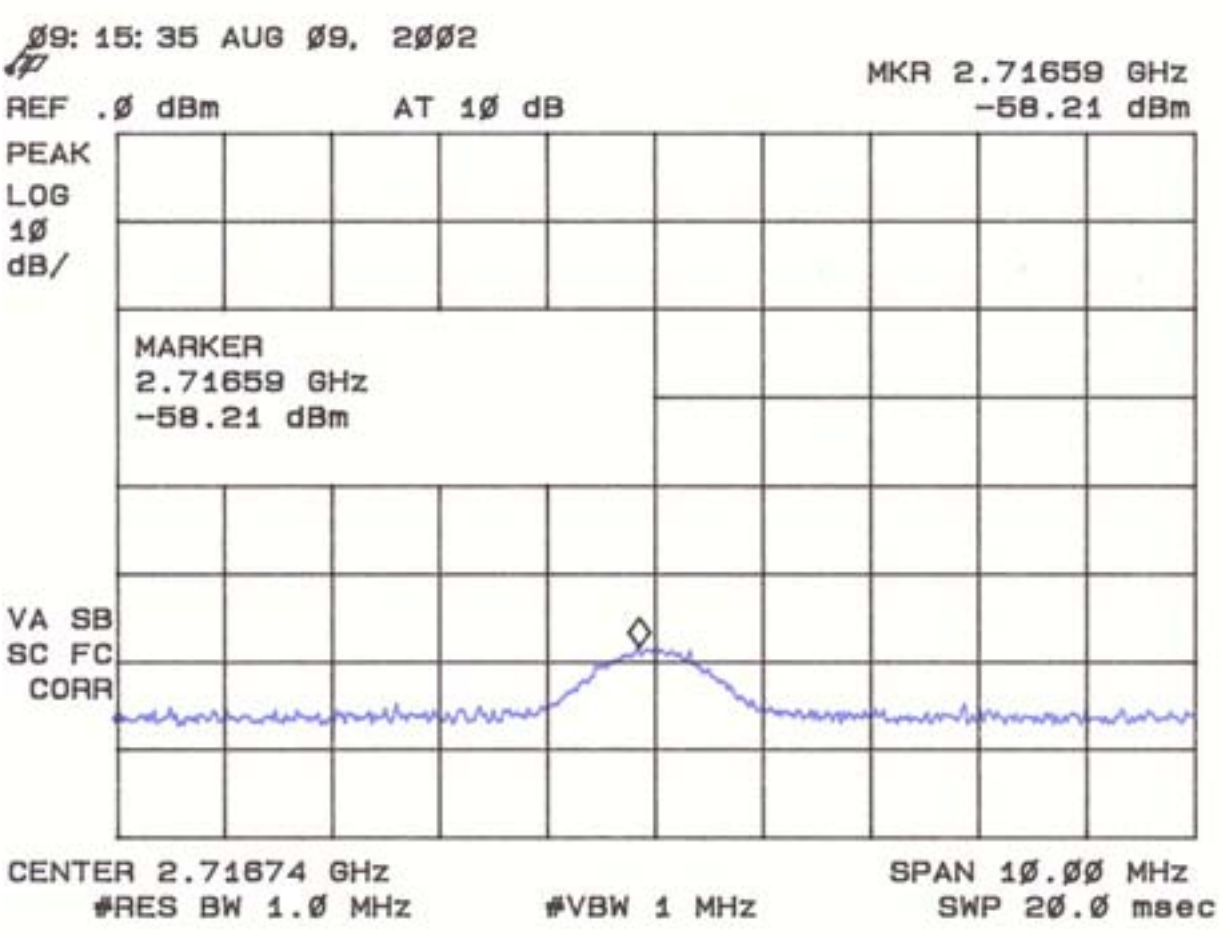


Figure 5b
Peak Radiated Spurious Emission 15.247(c) - Low

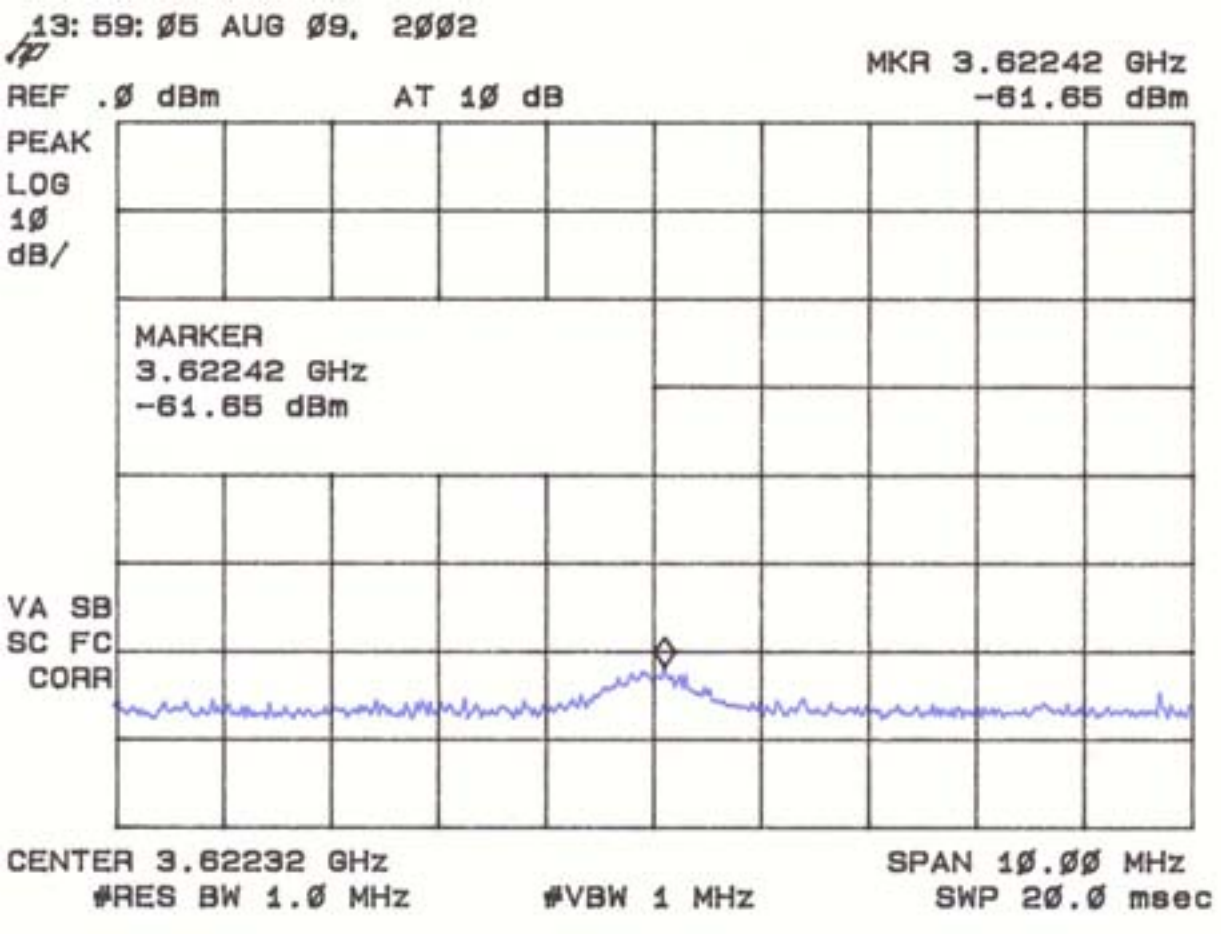


Figure 5c
Peak Radiated Spurious Emission 15.247(c) - Mid

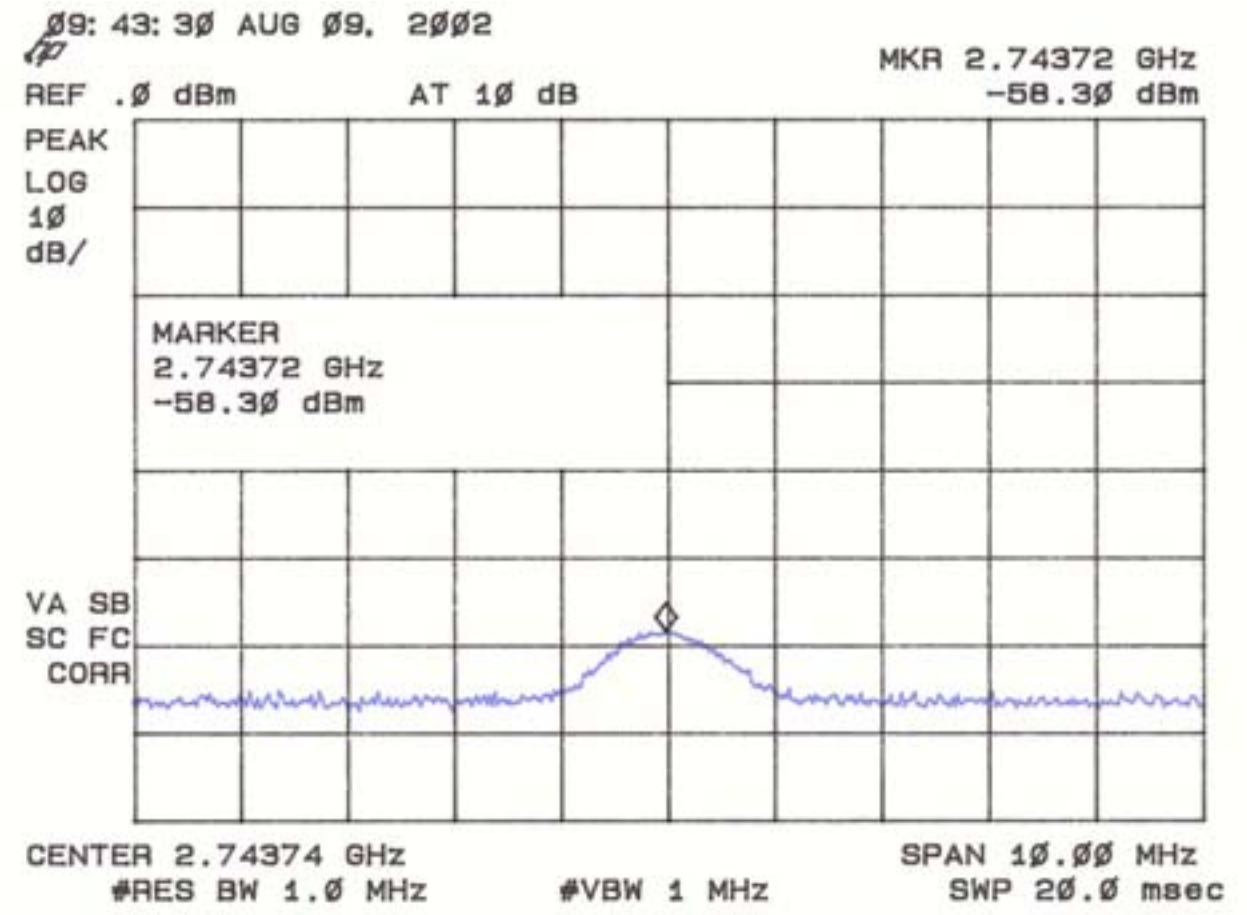


Figure 5d
Peak Radiated Spurious Emission 15.247(c) - High

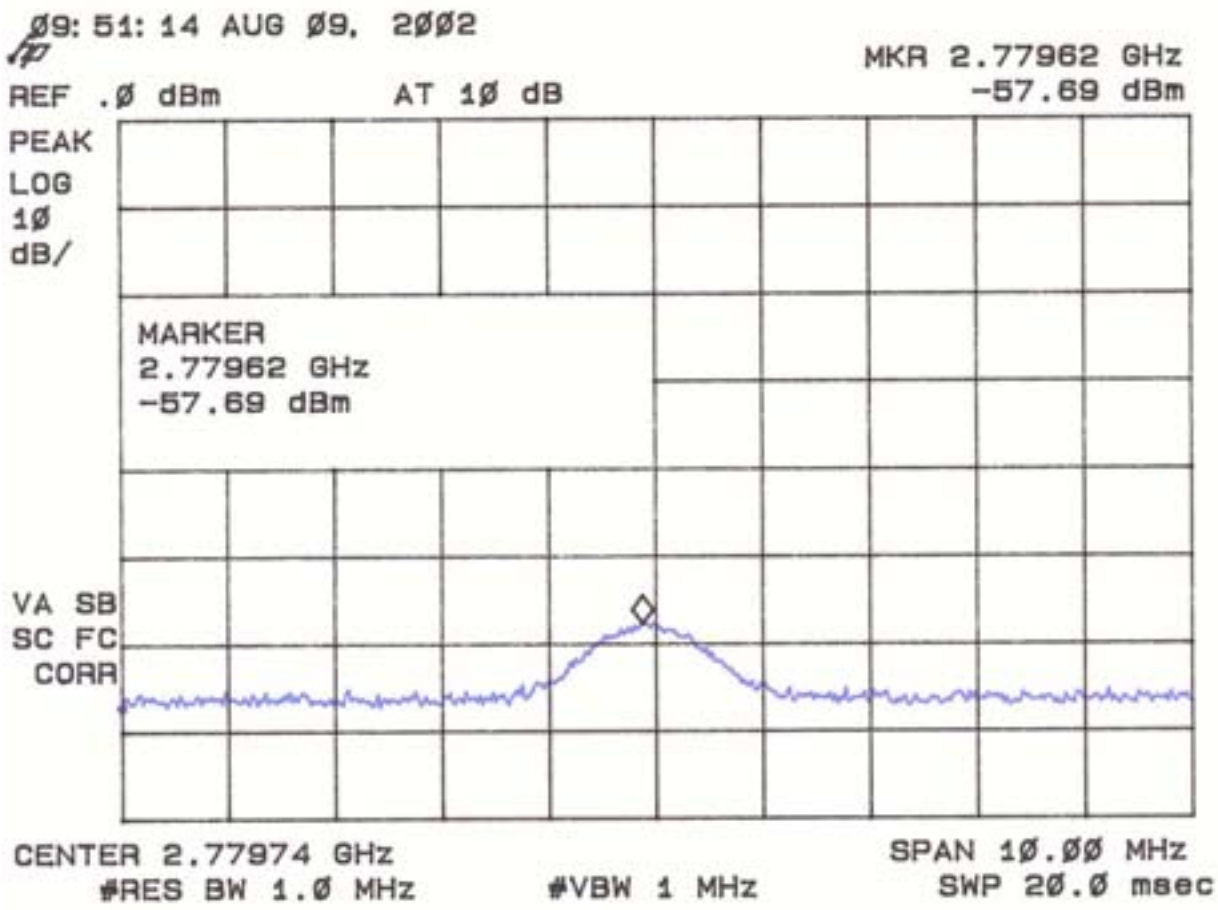


TABLE 4a. PEAK RADIATED SPURIOUS EMISSIONS

Test Date: August 19, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Peak Measurements > 1GHz (Low)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.716	-57.2	34.2	30.7	3.8	319.9	5000.0
3.622	-60.7	33.8	33.1	4.9	334.9	5000.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-57.2 - 34.2 + 30.7 + 3.8 + 107)/20) = 319.9
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature: David P. Blethen **Name:** David Blethen

TABLE 4b. PEAK RADIATED SPURIOUS EMISSIONS

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Peak Measurements > 1GHz (Mid)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.743	-57.3	34.2	30.8	3.8	319.9	5000.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-57.3 - 34.2 + 30.8 + 3.8 + 107)/20) = 319.9
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature: David P. Blethen **Name:** David Blethen

TABLE 4c. PEAK RADIATED SPURIOUS EMISSIONS

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Peak Measurements > 1GHz (High)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.779	-56.7	34.1	30.8	3.9	350.8	5000.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-56.7 - 34.1 + 30.8 + 3.9 + 107)/20) = 350.8
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature: David P. Blethen **Name:** David Blethen

2.10 Average Spurious Emission in the Frequency Range 30 - 10000 MHz (FCC Section 15.247(c))

The results of average radiated spurious emissions falling within restricted bands are given in Table 5a through Table 5c and Figure 6a through Figure 6d.

Duty Cycle Correction During 100 msec:

Duty cycle correction has not been applied to the measurement data.

Figure 6a
Average Radiated Spurious Emission 15.247(c) - Low

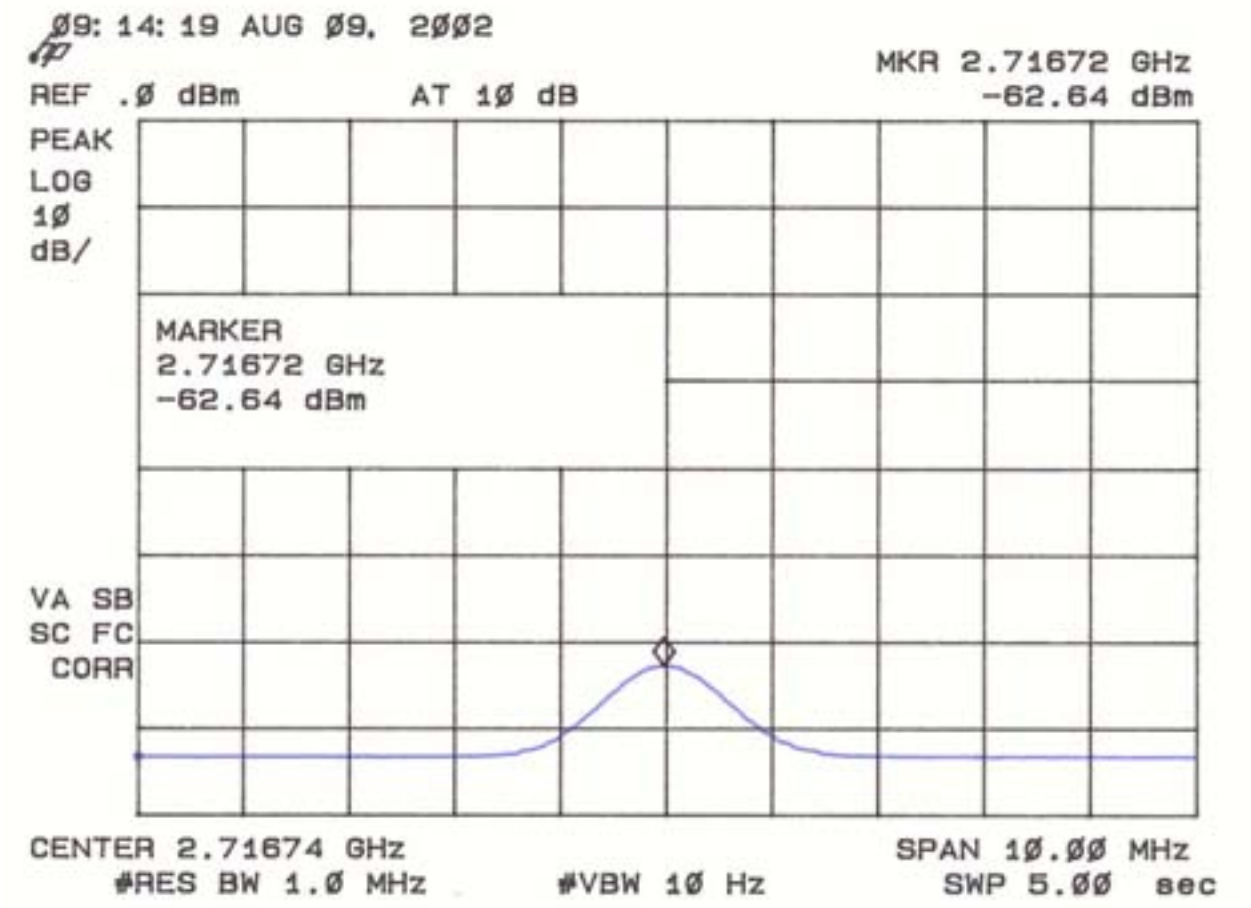


Figure 6b
Average Radiated Spurious Emission 15.247(c) - Low

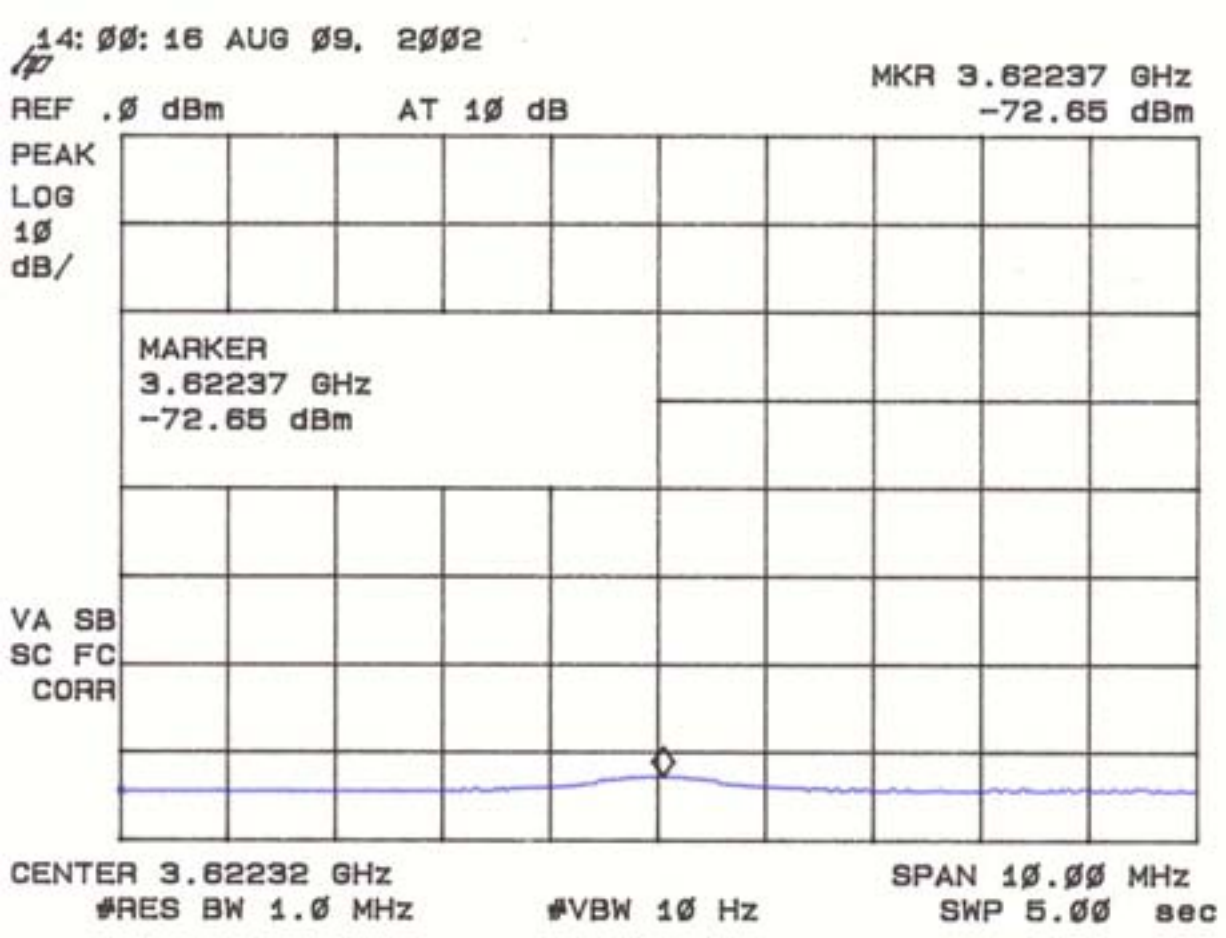


Figure 6c
Average Radiated Spurious Emission 15.247(c) - Mid

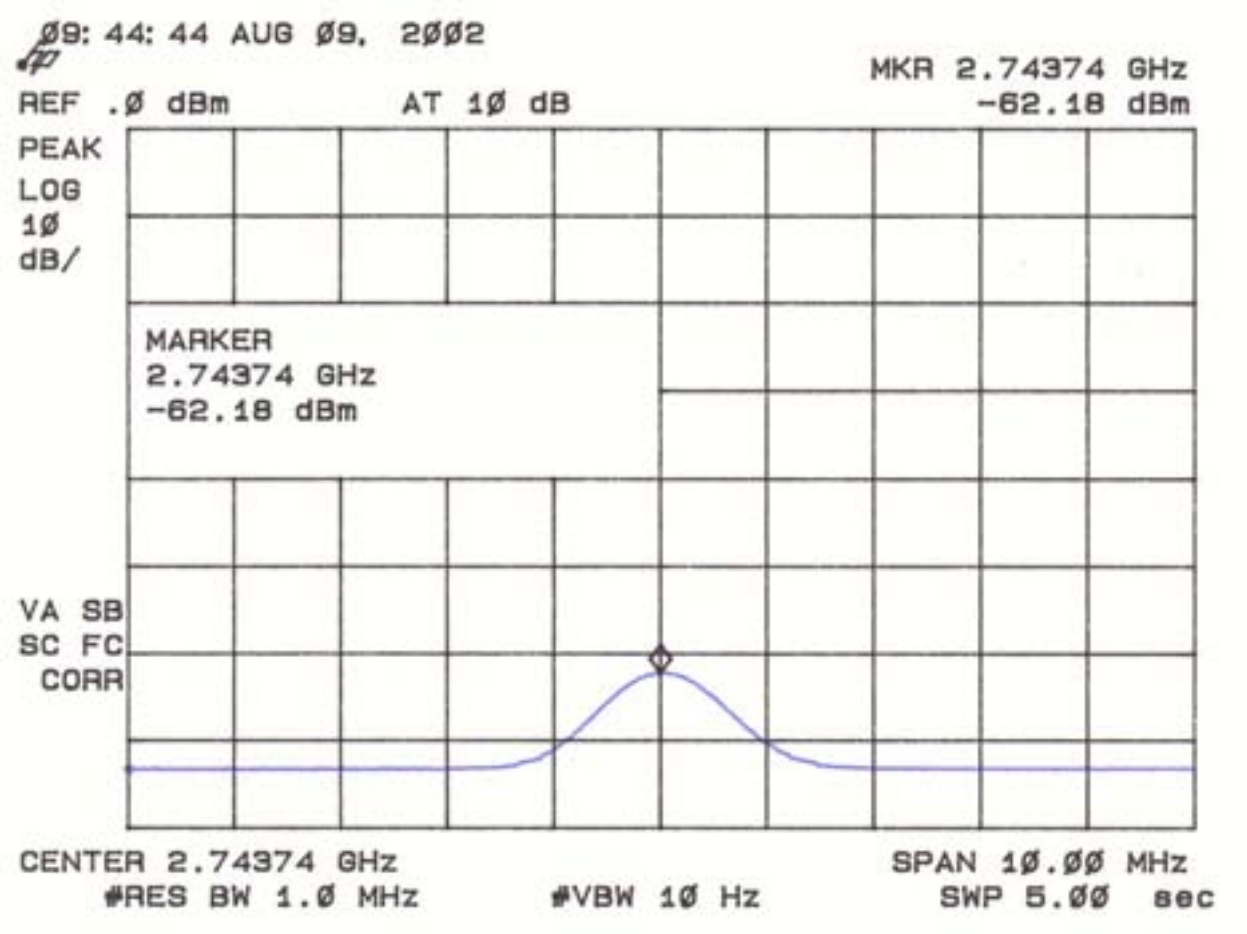


Figure 6d
Average Radiated Spurious Emission 15.247(c) - High

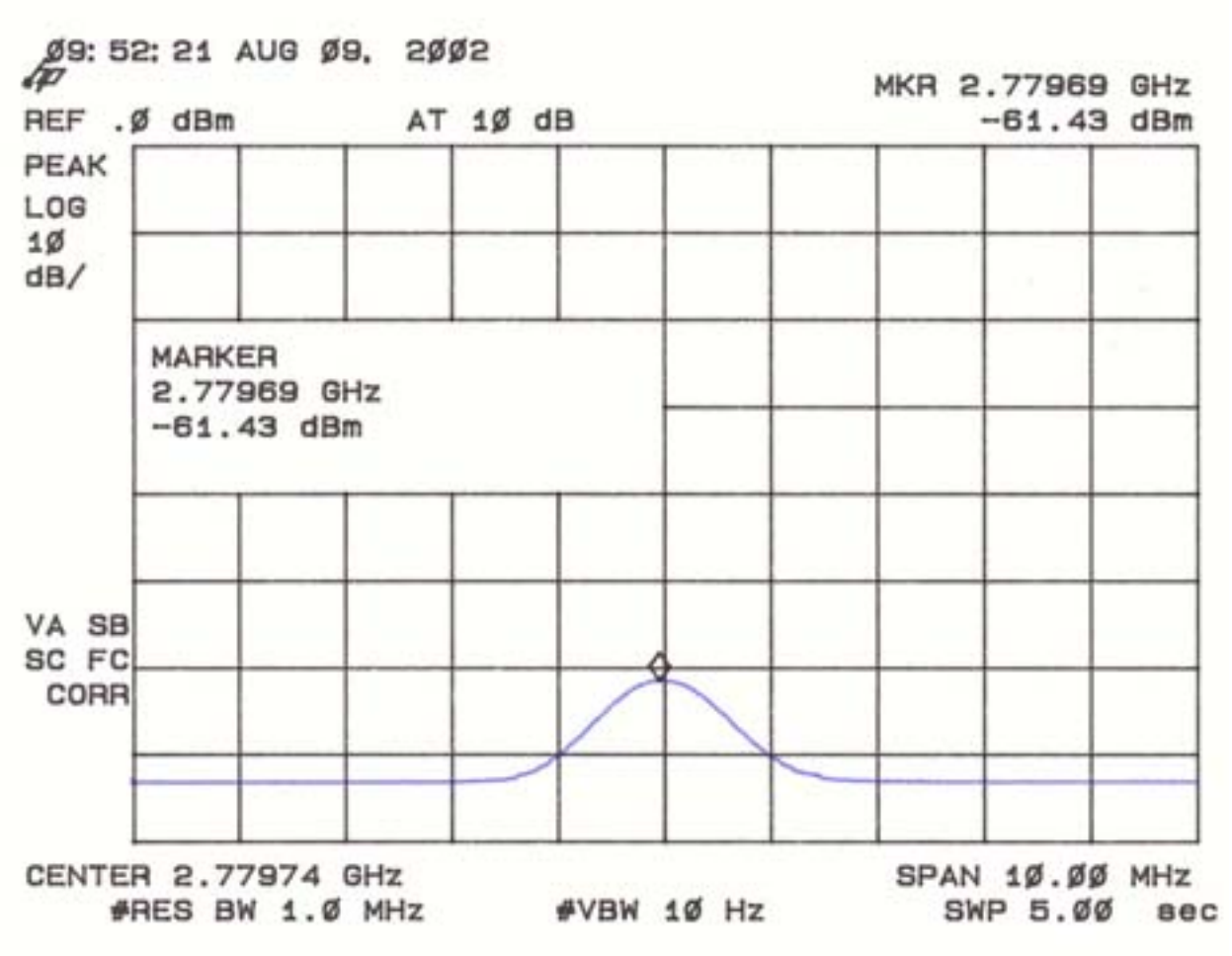


TABLE 5a. AVERAGE RADIATED SPURIOUS EMISSIONS

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Average Measurements > 1GHz (Low)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.716	-61.6	34.2	30.7	3.8	192.8	500.0
3.622	-71.6	33.8	33.1	4.9	95.5	500.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-61.6 - 34.2 + 30.7 + 3.8 + 107)/20) = 192.8
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature:  **Name: David Blethen**

TABLE 5b. AVERAGE RADIATED SPURIOUS EMISSIONS

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Average Measurements > 1GHz (Mid)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.743	-61.1	34.2	30.8	3.8	206.5	500.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-61.1 - 34.2 + 30.8 + 3.8 + 107)/20) = 206.5
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature: David P. Blethen **Name: David Blethen**

TABLE 5c. AVERAGE RADIATED SPURIOUS EMISSIONS

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Average Measurements > 1GHz (High)

FREQ. (GHz)	TEST DATA* (dBm) @ 3m	AMP GAIN (dB)	ANT. FACTOR (dB)	CABLE LOSS (dB)	RESULTS (uV/m) @ 3m	FCC LIMITS (uV/m) @ 3m
2.779	-60.4	34.1	30.8	3.9	229.1	500.0

*** = Data above 1 GHz adjusted by + 1 dB for high pass filter**

SAMPLE CALCULATION:
RESULTS (uV/m @ 3m) = Antilog ((-60.4 - 34.1 + 30.8 + 3.9 + 107)/20) = 229.1
CONVERSION FROM dBm TO dBuV = 107 dB

Tester Signature: David P. Blethen **Name: David Blethen**

2.11 Minimum 6 dB Bandwidth per FCC Section 15.247(a)(2)

The minimum requirement is given in Figure 7a through 7c. If the EUT incorporates different spreading codes or data rates these were each investigated and the one which produced the smallest 6 dB bandwidth was selected for test.

Figure 7a
6 dB Bandwidth per FCC Section 15.247(a)(2) - low

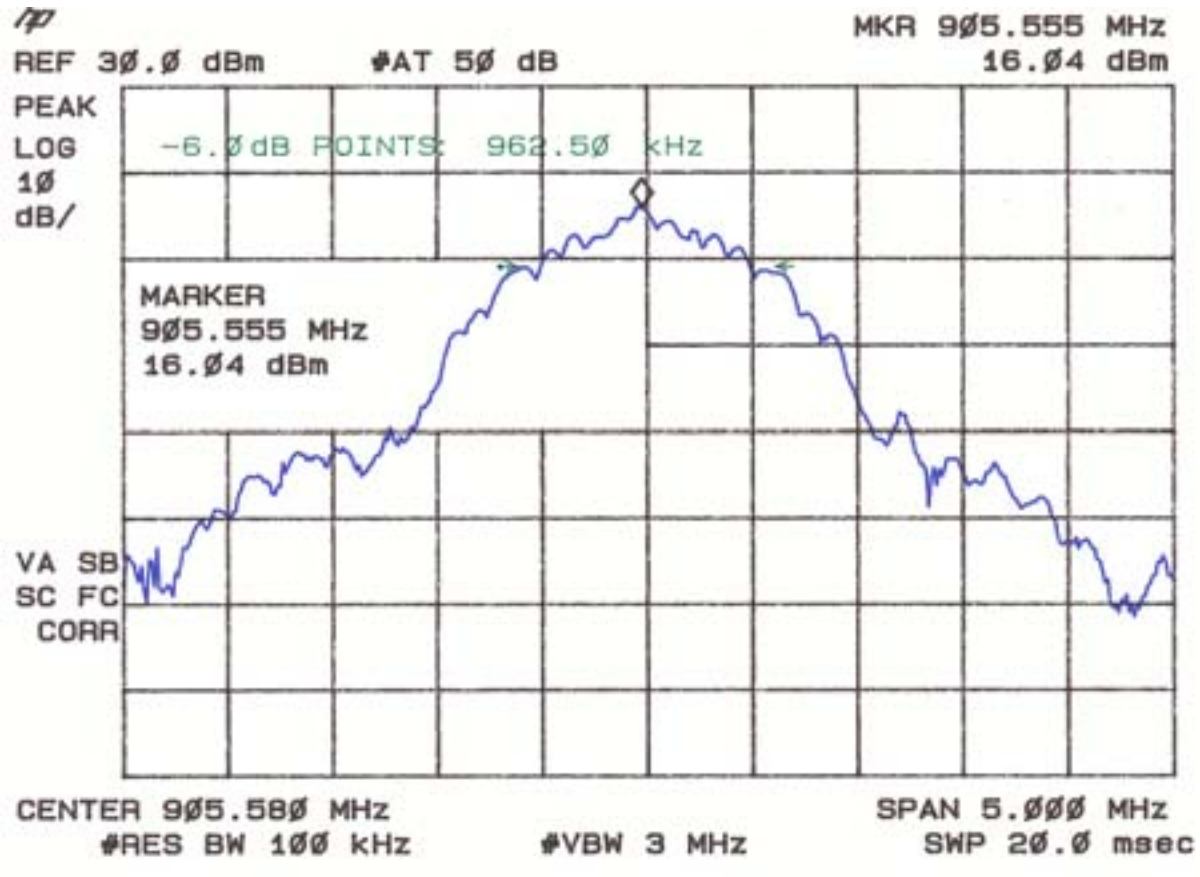
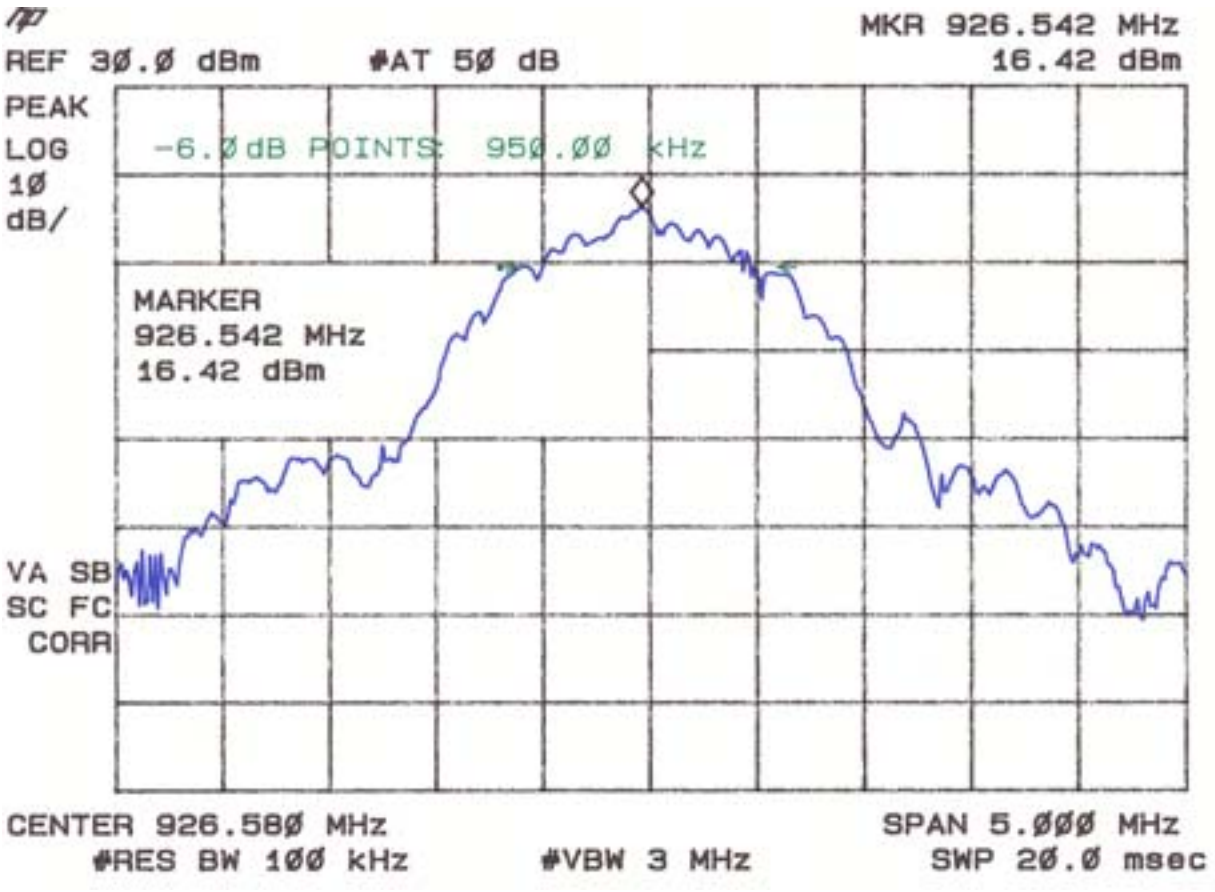


Figure 7b
6 dB Bandwidth per FCC Section 15.247(a)(2) – mid

Figure 7c
6 dB Bandwidth per FCC Section 15.247(a)(2) - high



2.12 Power Spectral Density FCC Section 15.247(d)

The transmitter power spectral density averaged over any 1 second interval is given in Table 7 and Figure 8a through 8c. If the EUT incorporates different spreading codes or data rates these were each investigated and the one which produced the smallest 6 dB bandwidth was selected for test.

This measurement was made on the antenna port cable by tuning a spectrum analyzer to the highest point of the maximized fundamental emission and zooming in on this portion of the emission utilizing the following spectrum analyzer settings: RBW = 3 kHz, VBW > RBW, span = 300 kHz, sweep = 100 seconds. The maximized point obtained by this method was then used to calculate the power spectral density as shown in Table 7.

TABLE 6
POWER SPECTRAL DENSITY

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Model: AXC550 (External), Rev B Transmitter

Frequency (MHz)	Test Data (dBm) Normalized to 1 Hz	Results (dBm)	FCC Limit (dBm)
905.4	4.3	4.3	8.0
914.4	5.0	5.0	8.0
926.4	5.6	5.6	8.0

*** Measurement cable considered negligible**

Tester Signature:  **Name: David Blethen**

Figure 8a
Power Spectral Density 15.247(d) - low

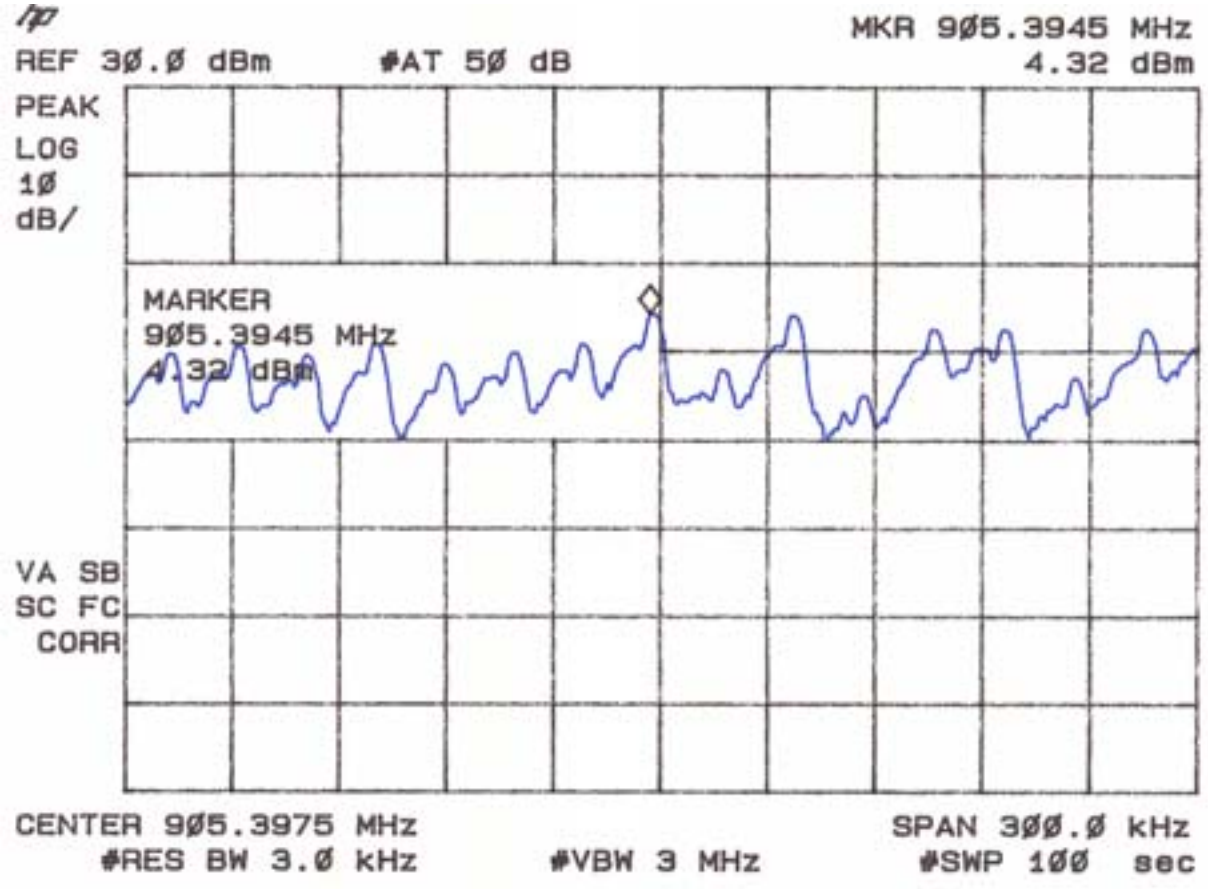


Figure 8b
Power Spectral Density 15.247(d) - mid

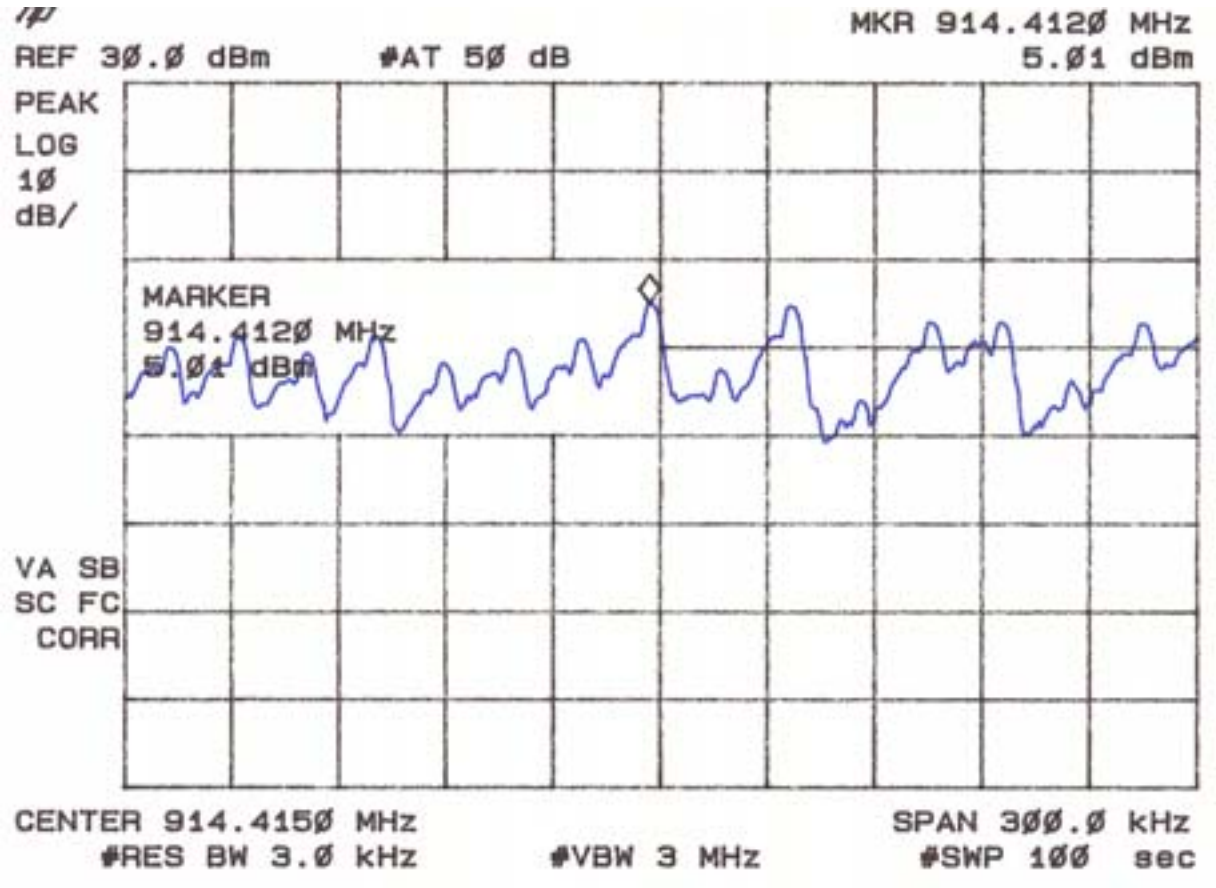
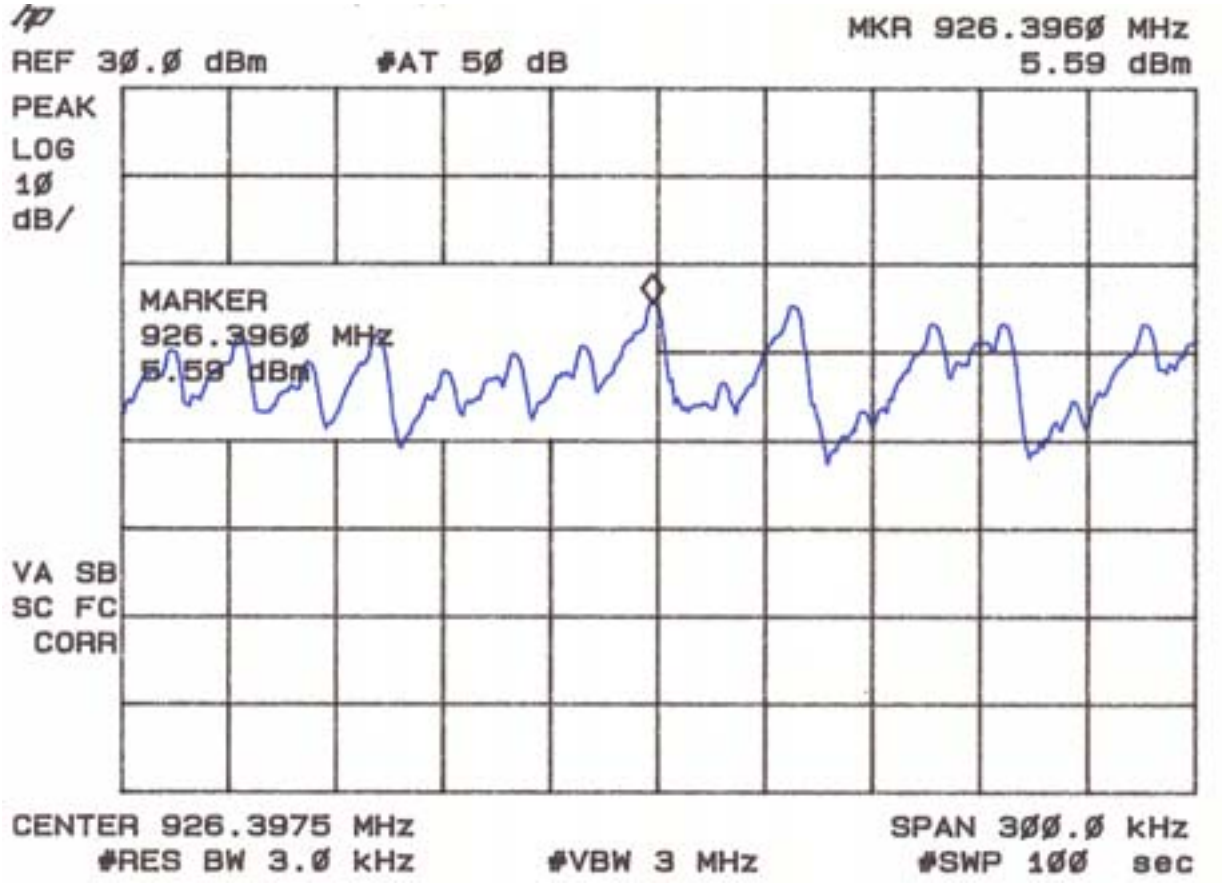


Figure 8c
Power Spectral Density 15.247(d) – high



2.13 Power Line Conducted Emissions for Transmitter FCC Section 15.207

The conducted voltage measurements have been carried out in accordance with FCC Section 15.207, with a spectrum analyzer connected to a LISN and the EUT placed into a continuous mode of transmit. The results are given in Table 7.

TABLE 7. CONDUCTED EMISSIONS DATA
CLASS B

Test Date: August 2, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

FREQ. (MHz)	TEST DATA (dBuV) PHASE	TEST DATA (dBuV) NEUTRAL	LISN LOSS (dB) PHASE	LISN LOSS (dB) NEUTRAL	CABLE FACTOR (dB)	RESULTS (dBuV) PHASE	RESULTS (dBuV) NEUTRAL	FCC LIMITS (dBuV)	MARGIN BELOW LIMIT (dB) PHASE	MARGIN BELOW LIMIT (dB) NEUTRAL
0.15	45.9	47.0	0.3	0.3	0.1	46.3	47.4	56.0	9.75	8.6
4.76	35.4	37.7	0.1	0.1	0.4	35.9	38.2	46.0	10.1	7.8
4.96	32.0	33.2	0.1	0.1	0.4	32.5	33.7	46.0	13.5	12.3
5.16	25.3	27.1	0.1	0.1	0.4	25.8	27.6	50.0	24.2	22.4
6.02	N/M	22.6	N/M	0.1	0.4	N/M	23.1	50.0	N/M	26.9
14.32	37.2	37.4	0.1	0.1	0.6	37.9	38.1	50.0	12.1	11.9
22.28	28.6	N/M	0.1	N/M	0.8	29.5	N/M	50.0	20.5	N/M

Note: EN55022 Limits were used since they are considered more restrictive than the current FCC Limits and also to show compliance with the New Harmonized Limits that will soon be implemented by the FCC.

N/M = Not Measured
*** - Quasi-Peak**

SAMPLE CALCULATIONS:
RESULTS dBuV = 45.9 + 0.3 + 0.1 = 46.3

Tested by
Signature: _____ **Name:** David Blethen

2.14 Radiated Emissions (47 CFR 15.109a)

Radiated emissions were evaluated from 30 to 5000 MHz. Measurements were made with the analyzer's bandwidth set to 120 kHz measurements made less than 1 GHz and 1 MHz are shown in Table 8.

TABLE 8. RADIATED EMISSIONS DATA

CLASS B

Test Date: August 9, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

Frequency (MHz)	Receiver Reading (dBm) @3m	Correction Factor (dB)	Corrected Reading (uV/m)	FCC Limit (uV/m) @3m
No emissions were detected within 10 dB of the FCC Limit				

Tester Signature: David P. Blethen **Name:** David Blethen

2.15 Power Line Conducted Emissions for Digital Device FCC Section 15.107

The conducted voltage measurements have been carried out in accordance with FCC Section 15.107, with a spectrum analyzer connected to a LISN and the EUT placed into a continuous mode of transmit. The results are given in Table 9.

TABLE 9. CONDUCTED EMISSIONS DATA – DIGITAL DEVICE

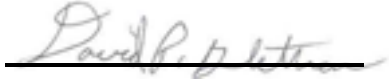
Test Date: August 2, 2002
UST Project: 02-0267
Customer: Axonn L.L.C.
Product: AXC550 (External), Rev B Transmitter

FREQ. (MHz)	TEST DATA (dBuV) PHASE	TEST DATA (dBuV) NEUTRAL	LISN LOSS (dB) PHASE	LISN LOSS (dB) NEUTRAL	CABLE FACTOR (dB)	RESULTS (dBuV) PHASE	RESULTS (dBuV) NEUTRAL	FCC LIMITS (dBuV)	MARGIN BELOW LIMIT (dB) PHASE	MARGIN BELOW LIMIT (dB) NEUTRAL
0.15	45.9	47.0	0.3	0.3	0.1	46.3	47.4	56.0	9.75	8.6
4.76	35.4	37.7	0.1	0.1	0.4	35.9	38.2	46.0	10.1	7.8
4.96	32.0	33.2	0.1	0.1	0.4	32.5	33.7	46.0	13.5	12.3
5.16	25.3	27.1	0.1	0.1	0.4	25.8	27.6	50.0	24.2	22.4
6.02	N/M	22.6	N/M	0.1	0.4	N/M	23.1	50.0	N/M	26.9
14.32	37.2	37.4	0.1	0.1	0.6	37.9	38.1	50.0	12.1	11.9
22.28	28.6	N/M	0.1	N/M	0.8	29.5	N/M	50.0	20.5	N/M

Note: EN55022 Limits were used since they are considered more restrictive than the current FCC Limits and also to show compliance with the New Harmonized Limits that will soon be implemented by the FCC.

N/M = Not Measured
*** - Quasi-Peak**

SAMPLE CALCULATIONS:
RESULTS dBuV = 45.9 + 0.3 + 0.1 = 46.3

Tested by
Signature:  **Name: David Blethen**