TEST REPORT

Report Number: 100910813MPK-002
Project Number: G100910813
October 30, 2012

Testing performed on the
ATX502
Model Number: ADS-ATX502
FCC ID: PYK-ADS-TX502

to

FCC Part 90

for

Adaptive Digital Systems, Inc.

Test Performed by:	**Test Authorized by:**
Intertek	Adaptive Digital Systems, Inc.
1365 Adams Court	20322 SW Acacia St # 200
Menlo Park, CA 94025	Newport Beach, CA 92660, USA

Prepared by: _____ **Date:** October 30, 2012
Krishna K Vemuri

Reviewed by: _____ **Date:** October 30, 2012
Ollie Moyrong

Report No. 100910813MPK-002

Equipment Under Test:	ATX502
Trade Name:	Adaptive Digital Systems, Inc.
Model No.:	ADS-ATX502
Serial No.:	500356
FCC ID:	PYK-ADS-TX502
Applicant:	Adaptive Digital Systems, Inc.
Contact:	Attila Mathe
Address:	20322 SW Acacia St # 200 Newport Beach, CA 92660
Country	USA
Tel. Number:	(949) 955-3116
Email:	amathe@ix.netcom.com
Applicable Regulation:	FCC Part 90
Test Site Location:	ITS - Site 1 1365 Adams Drive Menlo Park, CA 94025
Date of Test:	September 13 to 28, 2012

We attest to the accuracy of this report:

Krishna K Vemuri	Ollie Moyrong
EMC Senior Staff Engineer	Engineering Manager

TABLE OF CONTENTS

1.0 Introduction

1.1 Product Description

The Equipment Under Test (EUT), model ADS-ATX502, is a VHF body-worn Transmitter.

Radio Specifications	
Type	ATX502
Rated RF Output Power	0.759W
Frequency Range	150-174MHz
Type of Modulation	FM
Channel Bandwidth	12.5 kHz
Antenna & Gain	1/4 wavelength, wire and sleeve with MMCX connector, 0 dBi
Detachable Antenna	Yes
External Input	Audio
Operating Temperature	From -30^0C to $+60^0$C

EUT receive date: September 13, 2012
EUT receive condition: The prototype version of the EUT was received in good condition with no apparent damage. As declared by the Applicant it is identical to the production units.
Test start date: September 13, 2012
Test completion date: September 28, 2012

1.2 Summary of Test Results

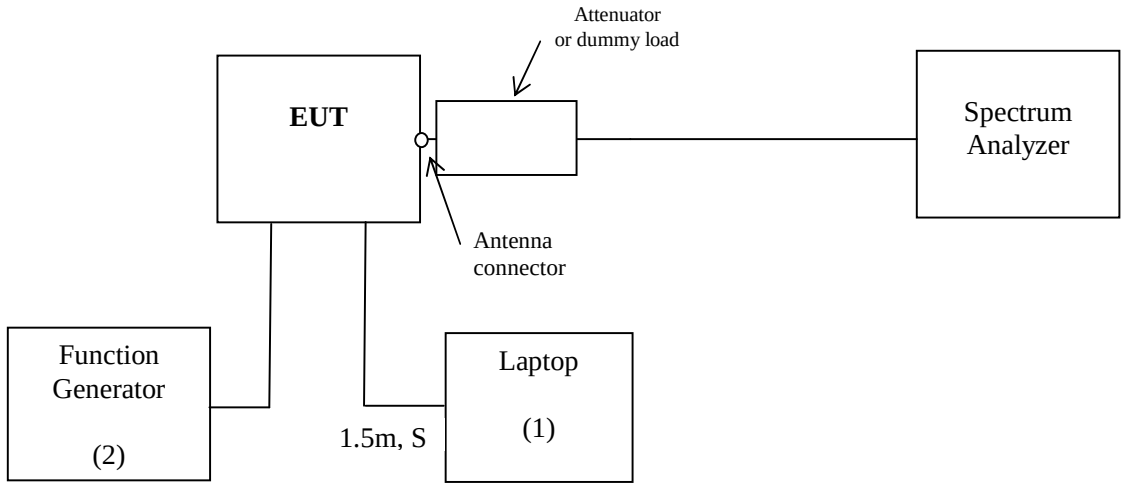
FCC Rule	RSS-119 Rule	Description of Test	Result
2.1046	4.1	RF Power Output	Complies
90.205(d)	-	ERP	Complies
2.1047, 90.207	-	Modulation Characteristics	Complies
2.1049, 90.209	RSS-GEN	Occupied Bandwidth	Complies
90.210	5.8	Emission Masks	Complies
2.1051, 90.210	5.8	Out of Band Emissions at Antenna Terminals	Complies
2.1053, 90.210	5.8	Spurious Radiation	Complies
2.1055, 90.213	5.3	Frequency Stability vs. Temperature and Voltage	Complies
90.214	5.9	Transient Frequency Behavior	Complies
15.109, 15.111	RSS-GEN	Emissions from Digital Parts and Receiver	Complies

1.3 Test Configuration

1.3.1 Support Equipment

Item #	Description	Model No.	S/N
1	HP Compaq laptop	nc6400	CND7062PVK
2	Leader Function Generator	LFG-1300S	1040423

1.3.2 Block Diagram of Test Setup



S = Shielded **U** = Unshielded	**F** = With Ferrite **m** = Length in Meters

* The EUT is intended to connect to a computer or a laptop through a USB cable for charging purpose only. In normal operation the EUT does not contain any USB cable. The USB cable was used for setup purposes only which allowed control of the radio by test software. Radiated emission tests were performed without this cable.

1.4 Related Submittal(s) Grants

None

2.0 RF Power Output
FCC 2.1046

2.1 Test Procedure

The EUT RF output was connected as shown on the diagram in report section 1.3.2. The EUT was setup to transmit continuously the maximum power.

The spectrum analyzer was setup to measure the Average power. The attenuation and cable loss were added to the spectrum analyzer reading by using OFFSET function.

Measurements were performed at three frequencies (low, middle, and high channels).

2.2 Test Equipment

Rohde & Schwarz ESU Spectrum Analyzer.

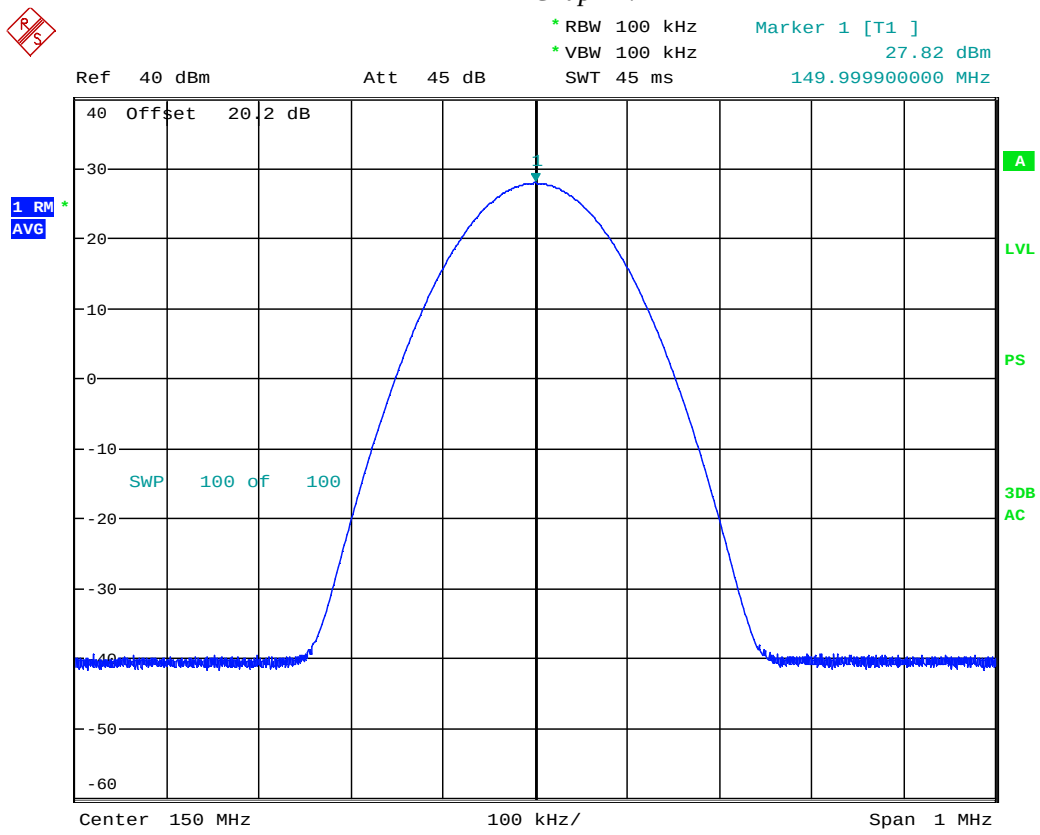
2.3 Test Results

Frequency (MHz)	Measured Output Power (dBm)	Measured Output Power (Watt)	Graph
150.0	27.8	0.603	2.1
162.0	28.3	0.676	2.2
174.0	28.8	0.759	2.3

Refer to the attached graphs.

Result	Complies

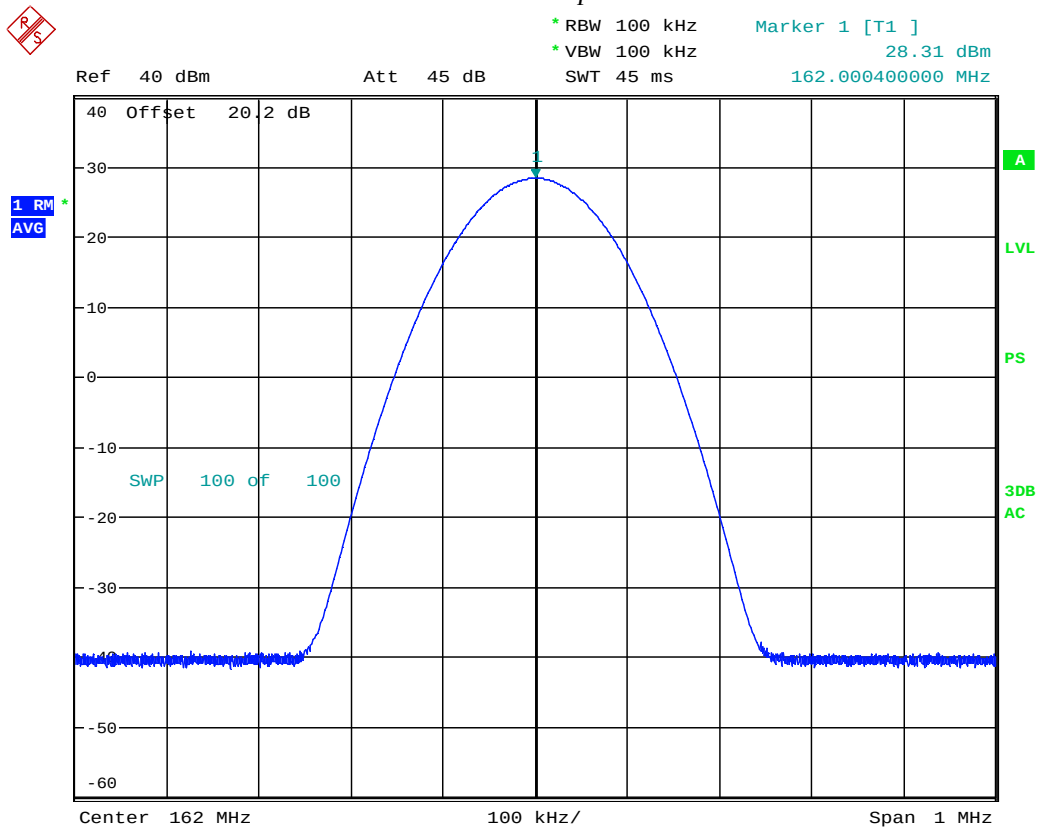
Graph 2. 1



Power output

Date: 13.SEP.2012 15:37:58

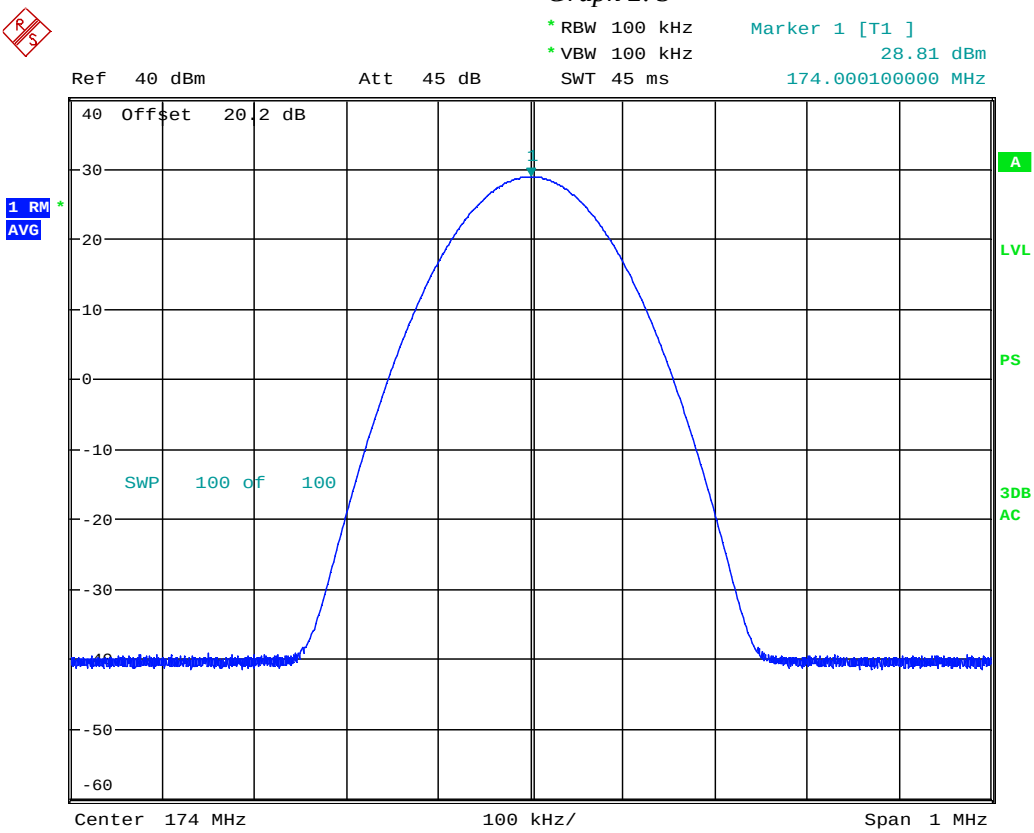
Graph 2. 2



Power output

Date: 13.SEP.2012 15:41:59

Graph 2. 3



Power output

Date: 13.SEP.2012 15:40:42

3.0 Radiated Power

3.1 Requirement

FCC 90.205(d)

The maximum Effective Radiated Power (ERP) is 500 Watts.

3.2 Test Procedure

The ERP was calculated by adding the antenna gain to the output power in dBm.

$ERP = P_{max} + G_{dBd}$

3.3 Test Equipment

None.

3.4 Test Results

According to the Installation Guide, a typical 0 dBi (-2.1 dBd) gain antenna is used with the EUT; therefore, the calculated peak radiated power is:

ERP = 28.8 – 2.1 = 26.7 dBm (or 0.468 W).
EIRP= 28.8 + 0 = 28.8 dBm (or 0.759 W).

Result	**Complies**

4.0 Modulation Limiting and Audio Frequency Response

FCC 2.1047, 90.207

4.1 Requirement

Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.

When F3E emission is used, the modulation percentage must not exceed 100 percent.

4.2 Test Procedure

Modulation Limiting:
The EUT RF output was connected as shown on the diagram in section 1.3.2. The EUT was setup to transmit the maximum power at the middle frequency of 162 MHz with full rated system deviation. The input of the EUT was set to 1 kHz and the level was adjusted to provide 60% of the full rated system deviation. Increase the level from the audio frequency generator by 20dB in one step and note down the worst case reading of instantaneous and steady-state positive deviations. Maintain the generator level constant vary the audio frequency from 300Hz to 3000Hz and observe the instantaneous and steady-state positive deviations. Repeat the above procedure for negative deviation and note down the instantaneous and steady-state negative deviations

Audio Frequency Response (Constant Input Method):
The EUT RF output was connected as shown on the diagram in section 1.3.2. The EUT was setup to transmit the maximum power at the middle frequency of 162 MHz with full rated system deviation. The input of the EUT was set to 1 kHz and the level was adjusted to provide 20% of the full rated system deviation and record the receiver deviation as DEV_{REF}. Maintain the generator level constant vary the audio frequency from 100Hz to 5000Hz and observe the receiver deviation as DEV_{FREQ}. Calculate the audio frequency response at present frequency as $20 \log_{10} (DEV_{FREQ}/ DEV_{REF)}$.

4.4 Test Results

Maximum Modulation

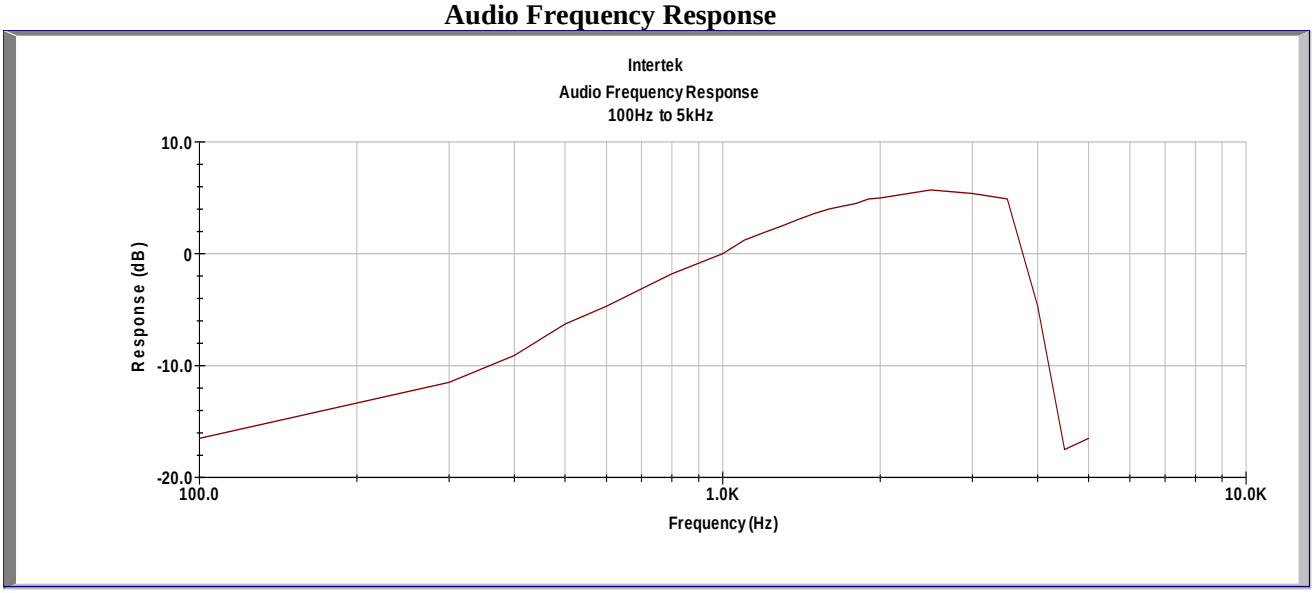
Audio Frequency (Hz)	Positive peak deviation (kHz)	Maximum instantaneous and steady-state positive deviations (kHz)
300	1.75	2.60
600	1.86	2.59
800	1.52	2.31
1000	1.80	2.12
1300	2.0	2.15
1500	1.94	2.12
1800	1.65	1.72
2000	1.34	1.45
2500	1.63	1.59
3000	1.56	1.57

Maximum Modulation

Audio Frequency (Hz)	Negative peak deviation (kHz)	Maximum instantaneous and steady-state positive deviations (kHz)
300	1.83	2.35
600	1.72	2.12
800	1.60	2.02
1000	1.80	1.91
1300	1.7	1.81
1500	1.74	1.71
1800	1.8	1.81
2000	1.4	1.5
2500	1.6	1.55
3000	1.5	1.56

Result	**Complies**

Audio Frequency Response



Result	Complies

5.0 Occupied Bandwidth

FCC 2.1049, 90.209(b)(5)

5.1 Test Procedure

The EUT RF output was connected as shown on the diagram in section 1.3.2. The EUT was setup to transmit the maximum power. The EUT was modulated by 2.5 KHz Sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 3.0 kHz (12.5 kHz channel spacing).

The spectrum analyzer was setup to measure the Occupied Bandwidth (defined as the 99% Power Bandwidth). The Occupied Bandwidth was measured at 150 MHz, 162 MHz and 174 MHz.

5.2 Test Equipment

Rohde & Schwarz ESU Spectrum Analyzer

5.3 Test Results

Complies	Refer to the following Graphs

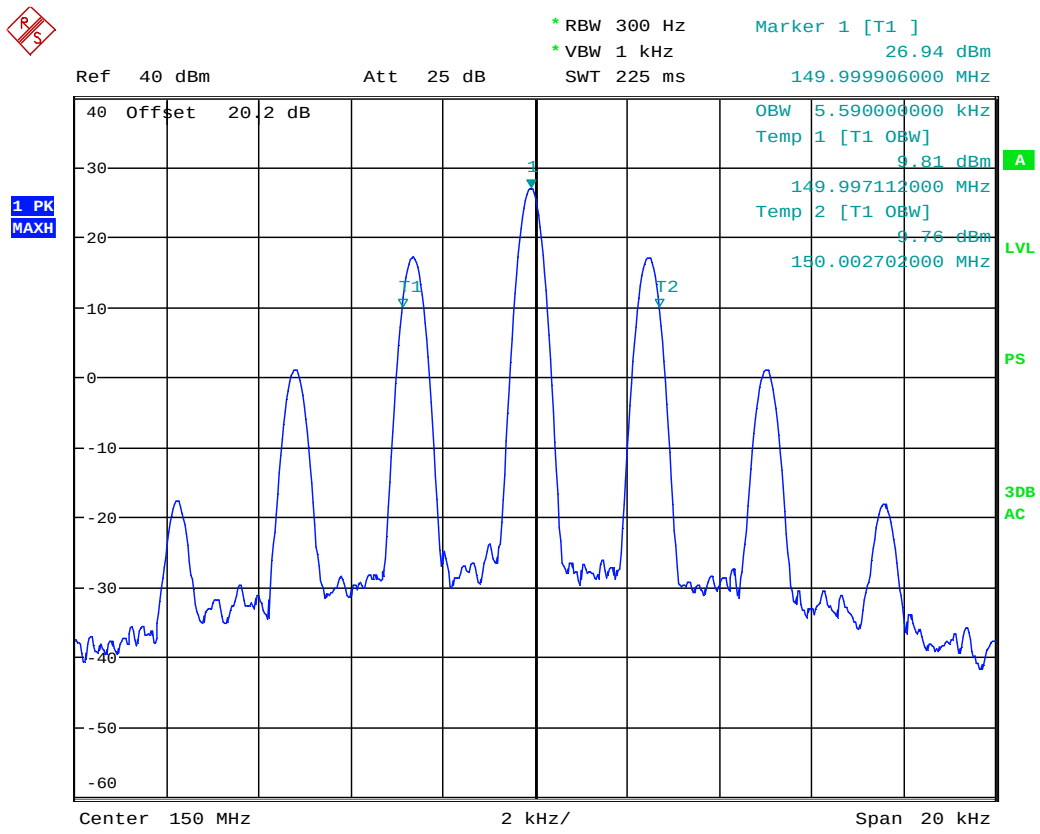
The following Emission Designators were determined:

5K84F3E

The test results are summarized in the following table and presented on the Graphs 3.1 – 3.3.

Frequency (MHz)	Measured Occupied Bandwidth (kHz)	Graph
150.0	5.590	3.1
162.0	5.668	3.2
174.0	5.840	3.3

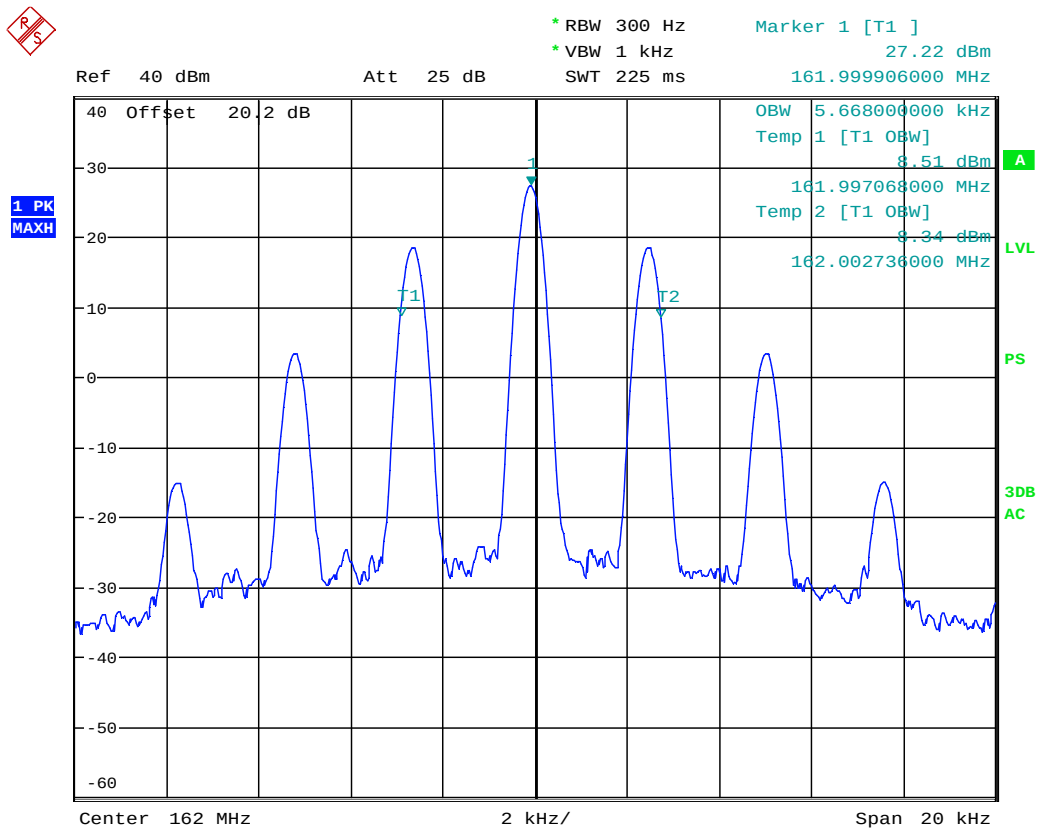
Graph 4. 1



Occupied bandwidth

Date: 13.SEP.2012 18:37:40

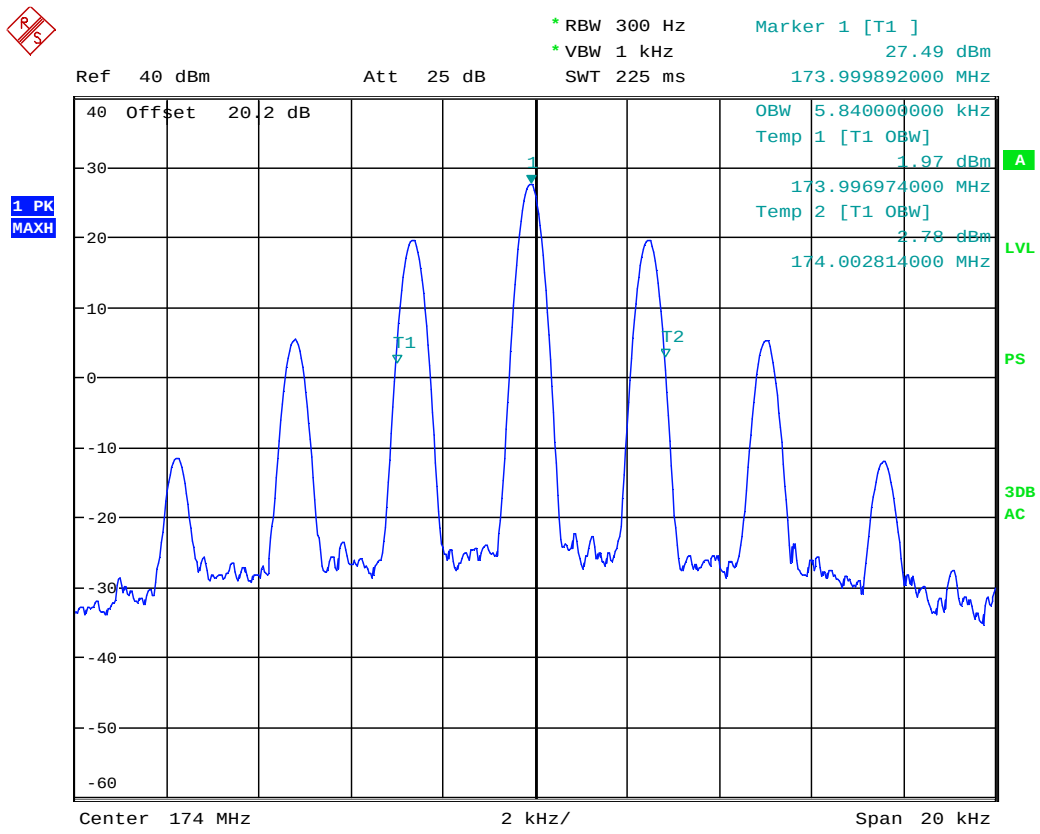
Graph 4. 2



Occupied bandwidth

Date: 13.SEP.2012 18:40:30

Graph 4. 3



Occupied bandwidth

Date: 13.SEP.2012 18:41:18

6.0 Emission Mask

FCC 90.210

6.1 Requirement

Equipment designed to operate with a 25 kHz channel bandwidth must meet the requirements of Emission Mask C (for equipment without audio low pass filter).

Equipment designed to operate with a 12.5 kHz channel bandwidth must meet the requirements of Emission Mask D.

Equipment designed to operate with a 6.25 kHz channel bandwidth must meet the requirements of Emission Mask E.

6.2 Test Procedure

The EUT RF output was connected as shown on the diagram in section 1.3.2. The EUT was setup to transmit the maximum power. The EUT was modulated by 2.5 kHz Sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 3.0 kHz (12.5 kHz channel spacing).

The spectrum analyzer was setup to measure the Emission at frequencies ± 100 kHz from the fundamental frequency – for Mask C, ± 31.25 kHz – for Mask D, ± 22.5 kHz – for Mask E. The peak detector is used for these measurements.

The Emission Mask was measured at 150 MHz, 162 MHz and 174 MHz with 12.5 kHz channel spacing.

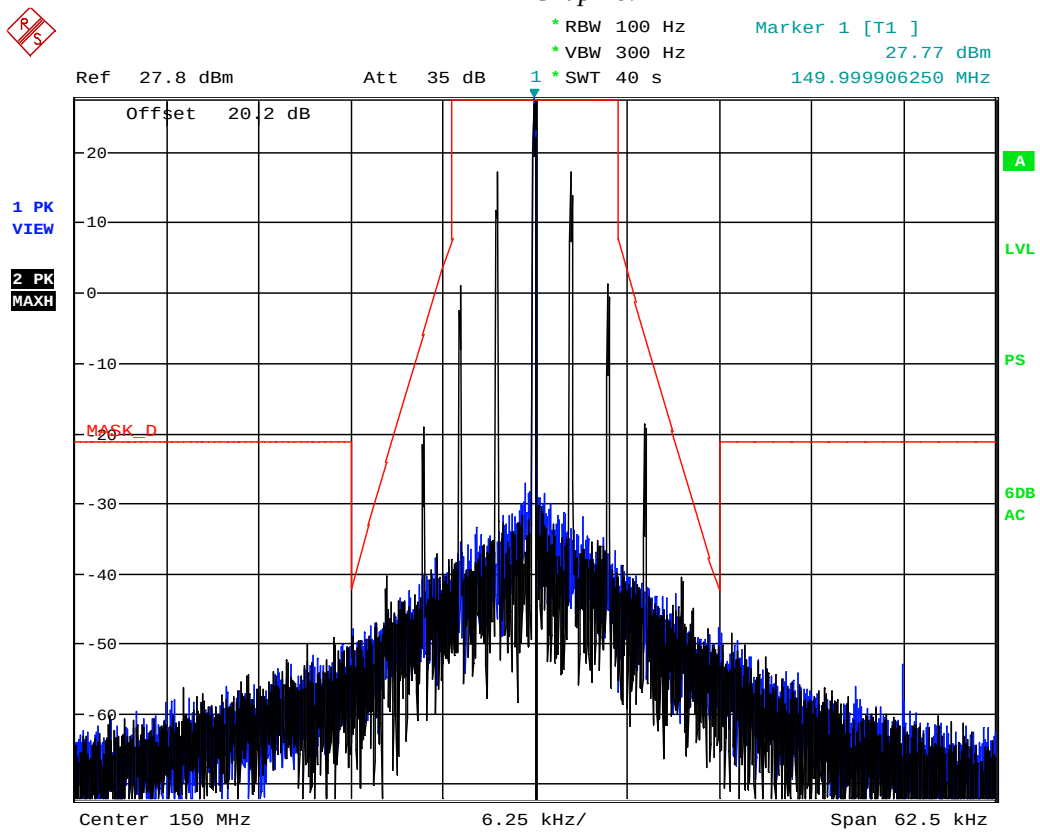
6.3 Test Equipment

Rohde & Schwarz ESU Spectrum Analyzer

6.4 Test Results

Complies	Refer to the following Graphs

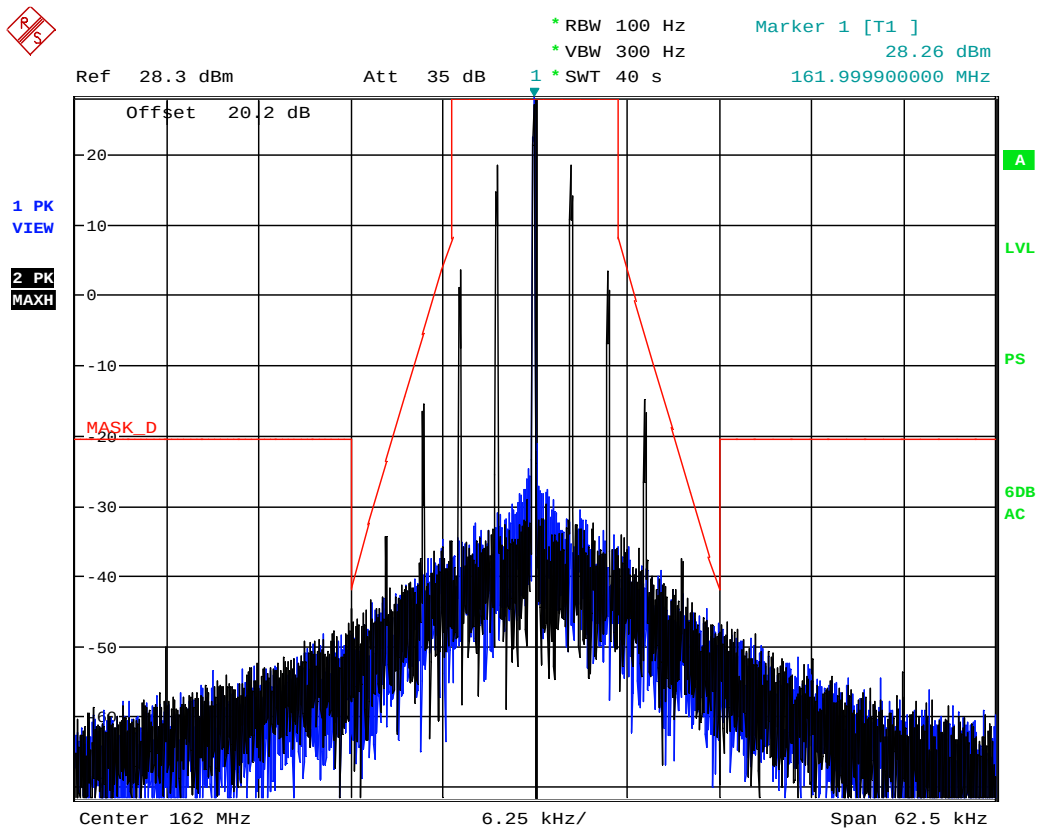
Graph 6. 1



Emission Mask

Date: 13.SEP.2012 20:28:18

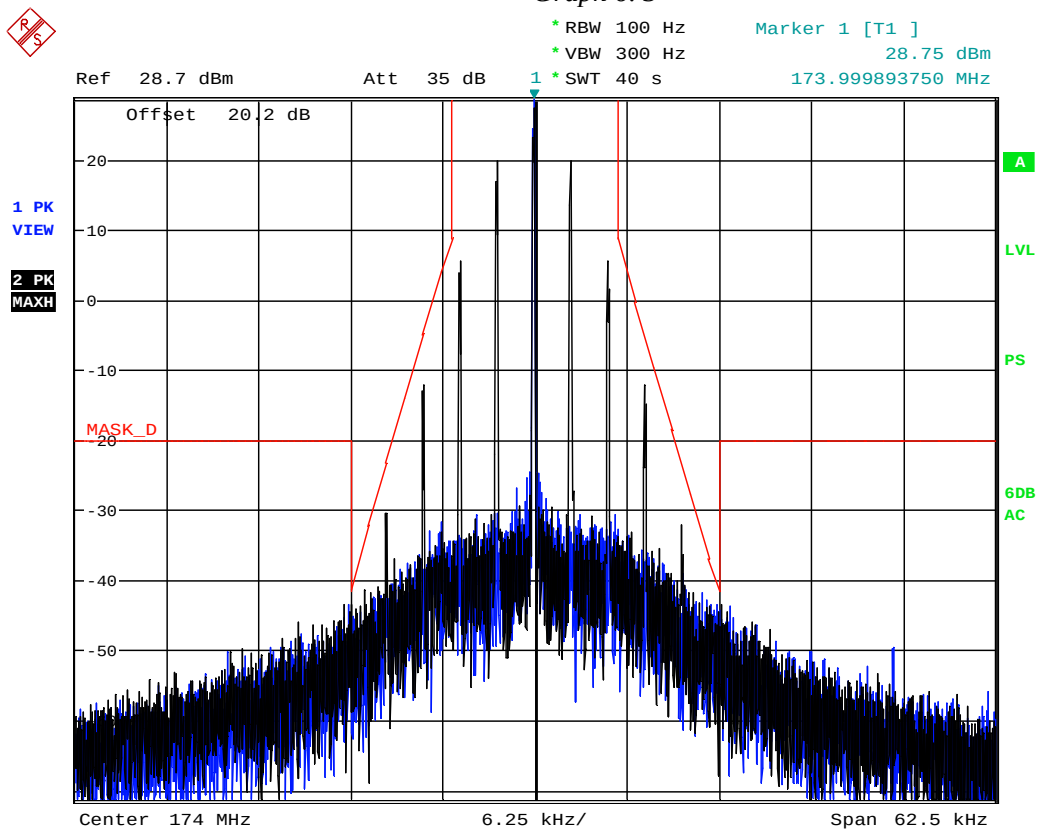
Graph 6. 2



Emission Mask

Date: 13.SEP.2012 20:38:05

Graph 6. 3



Emission Mask

Date: 13.SEP.2012 20:23:04

7.0 Spurious Emissions at Antenna Terminals

FCC 2.1051, 90.210

7.1 Requirement

Emission Mask D

The power of any emissions must be attenuated below the unmodulated carrier output power (P) on any frequency removed from the center of the authorized bandwidth by more than 12.5 kHz:
at least (50 + 10 log P) dB or 70 dB, whichever is lesser attenuation.

Note: Attenuation of (50 + 10 log P) dB corresponds to the level of -20 dBm for any out-of-band and spurious emissions.

7.2 Test Procedure

The EUT RF output was connected as shown on the diagram in report section 1.3.2. The EUT was setup to transmit the maximum power.

For measurements at frequencies below 1 GHz, the spectrum analyzer resolution bandwidth was set to 100 kHz. For measurements at frequencies above 1 GHz, the spectrum analyzer resolution bandwidth was set to 1 MHz. Peak detector is used for these measurements.

Sufficient scans were taken to show the spurious emissions up to 10th harmonic.

Measurements were performed at different modulations and channel bandwidths. The worst case data was reported.

7.3 Test Equipment

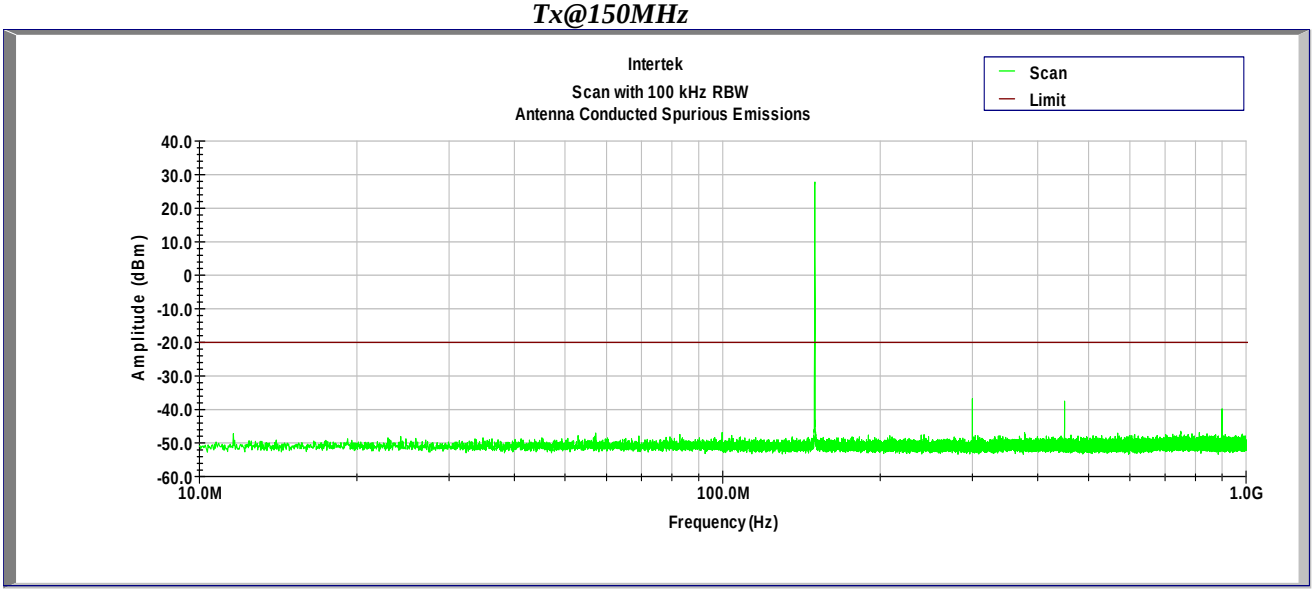
Rohde & Schwarz ESU Spectrum Analyzer

7.4 Test Results

Complies	Refer to the following Graphs

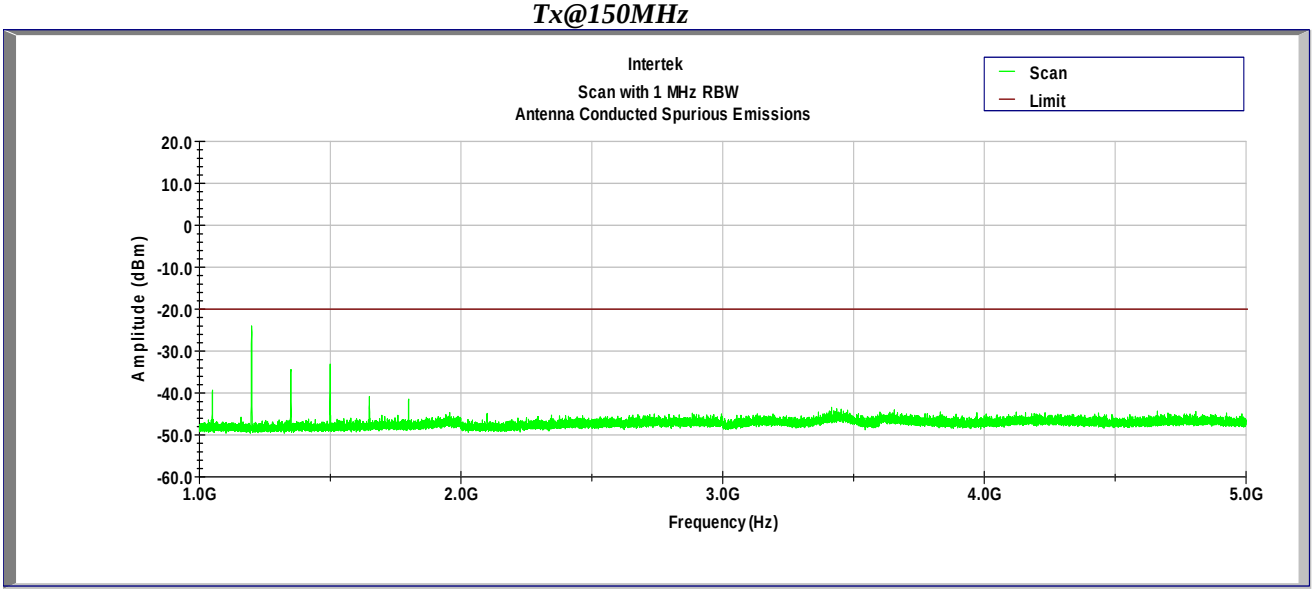
Graph 7. 1

Tx@150MHz



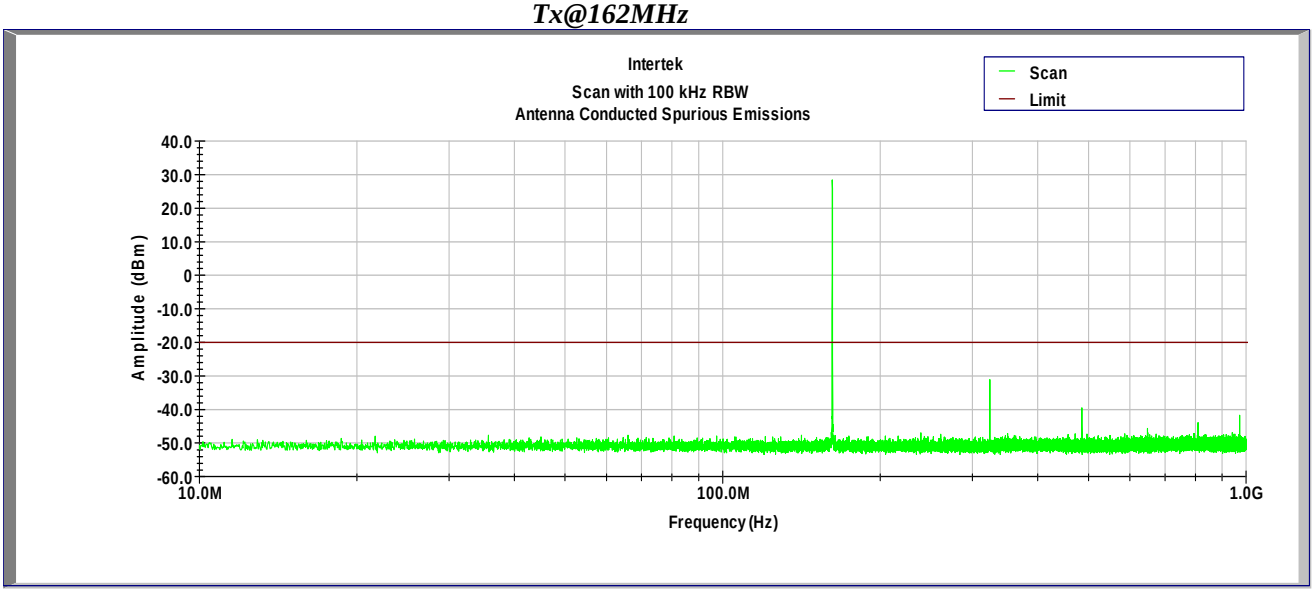
Graph 7. 2

Tx@150MHz



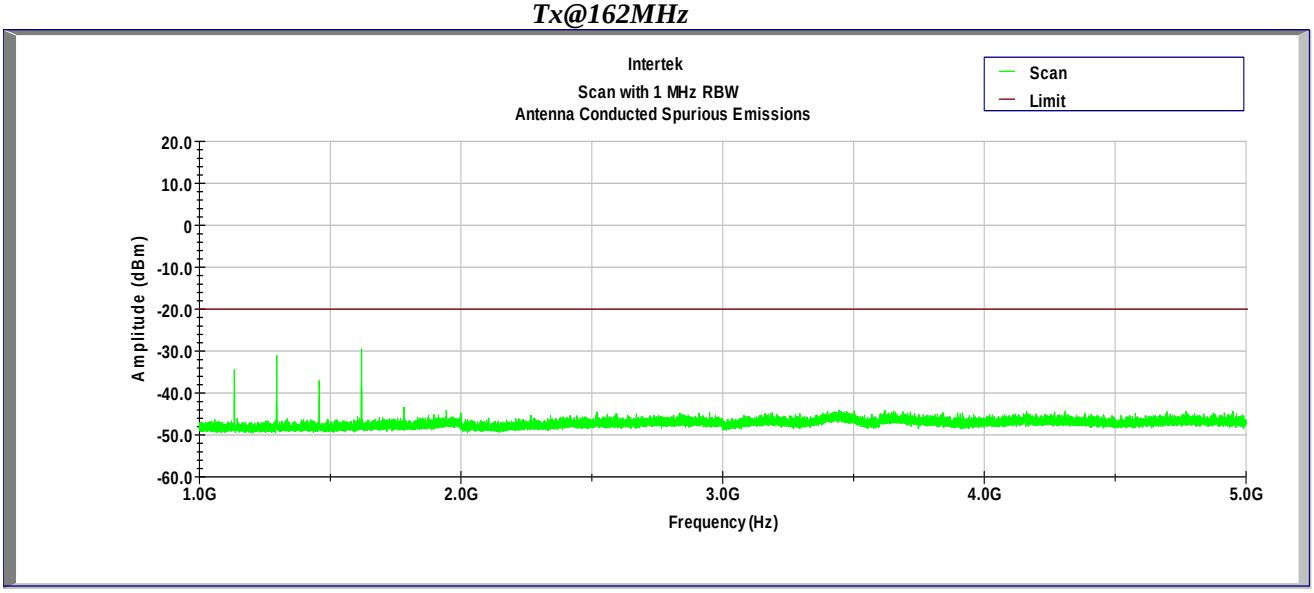
Graph 7. 3

Tx@162MHz



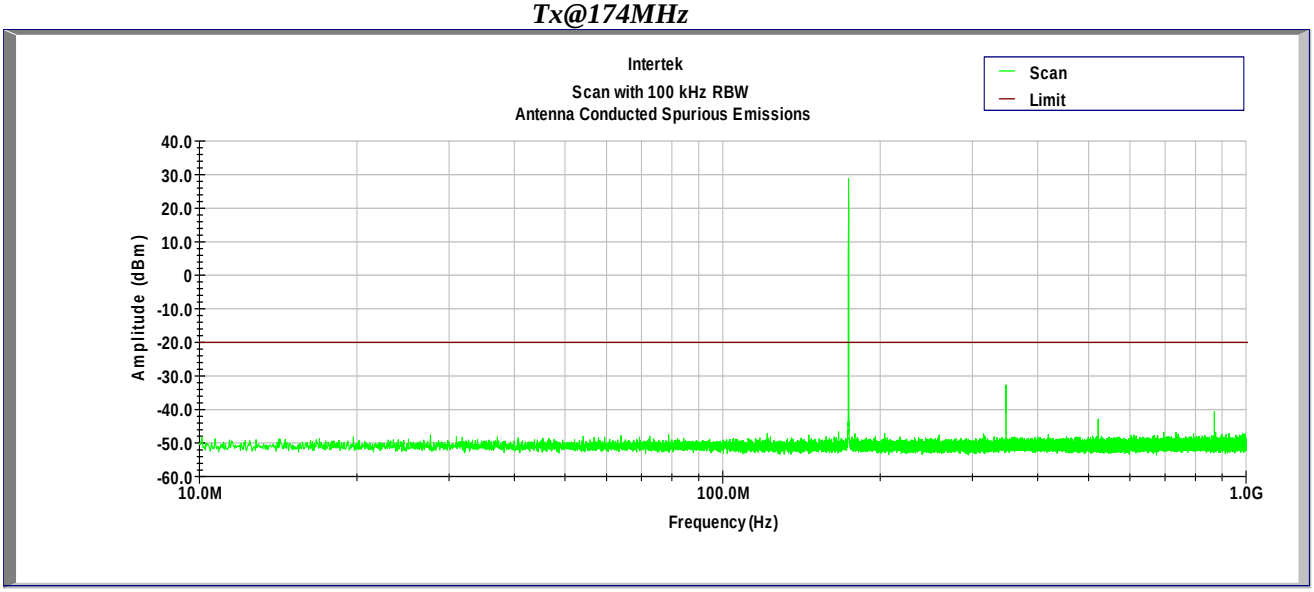
Graph 7. 4

Tx@162MHz



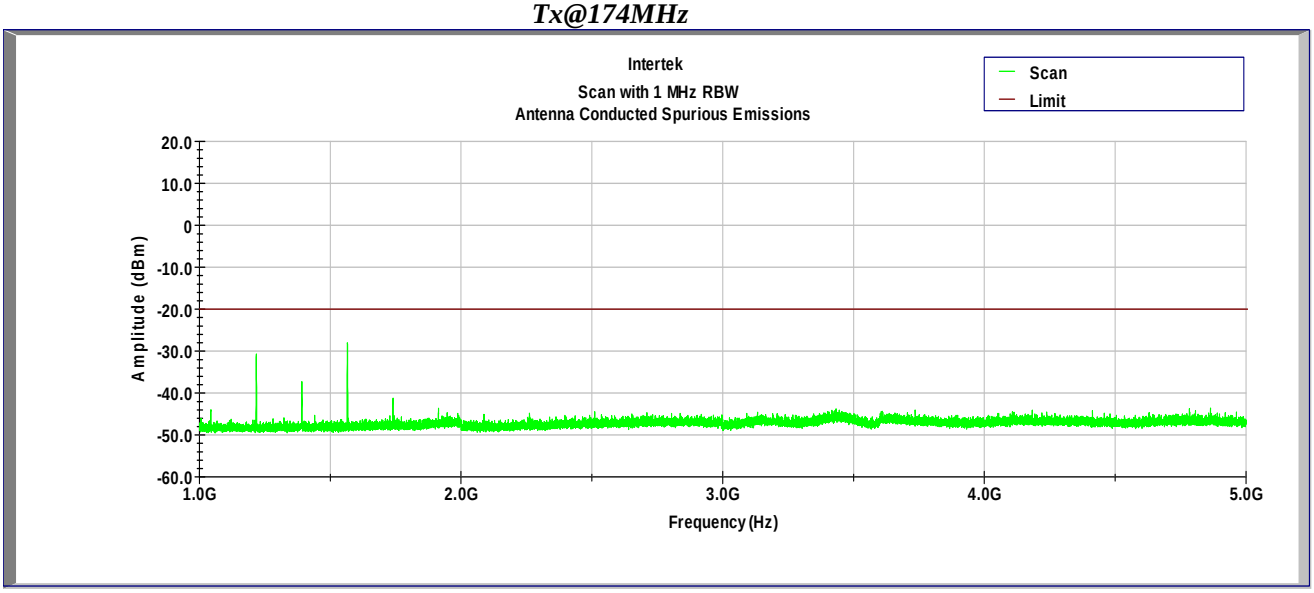
Graph 7. 5

Tx@174MHz



Graph 7. 6

Tx@174MHz



8.0 Spurious Radiation

FCC 2.1053, 90.210

8.1 Requirement

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least (50 + 10 log P) dB or 70 dB, whichever is the lesser attenuation.

Note: Attenuation of (50 + 10 log P) dB corresponds to the level of -20 dBm for any out-of-band and spurious emissions.

8.2 Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to 10th harmonic was investigated. The worst case of emissions were reported.

For spurious emissions attenuation, the substitution method was used. The EUT was substituted by a reference antenna (half-wave dipole - below 1 GHz, or Horn antenna - above 1GHz), connected to a signal generator. The signal generator output level ($\mathbf{V_g}$ in dBm) was adjusted to obtain the same reading as from EUT. The ERP at the spurious emissions frequency was calculated as follows.

$$ERP_{(dBm)} = \mathbf{V_g + G_{(dBd)}}$$

The spurious emissions attenuation is the difference between the ERP level at the fundamental frequency (see report section 3) and the level of the spurious emissions.

8.3 Test Equipment

Roberts Antenna
EMCO 3115 Horn Antennas
Rohde & Schwarz ESU Spectrum Analyzer
Low Pass Filter
Preamplifiers

8.4 Test Results

Spurious Radiated Emissions

Frequency	SA Reading (from EUT)	Signal Generator Output required to have the same SA Reading as from EUT	ERP*	ERP Limit	ERP Margin
MHz	**dB(µV)**	**V_g dBm**	**dBm**	**dBm**	**dB**
Tx 150 MHz					
33.23	28.2	-72.6	-72.6	-20.0	-52.6
137.51	38.2	-69.8	-69.8	-20.0	-49.8
300.0	60.3	-43.4	-43.4	-20.0	-23.4
450.0	63.3	-37.3	-37.3	-20.0	-17.3
458.42	38.1	-62.0	-62.0	-20.0	-42.0
601.49	43.6	-54.5	-54.5	-20.0	-34.5
750.0	41.4	-53.9	-53.9	-20.0	-33.9
859.35	32.2	-61.5	-61.5	-20.0	-41.5
900.0	49.6	-44.1	-44.1	-20.0	-24.1
1050.0	62.2	-49.1	-44.3	-20.0	-24.3
1200.0	66.7	-43.4	-38.5	-20.0	-18.5
1350.0	68.1	-41.3	-36.1	-20.0	-16.1
1500.0	67.7	-42.4	-36.3	-20.0	-16.3
1650.0	56.0	-55.1	-48.0	-20.0	-28.0
1800.0	54.7	-56.0	-48.6	-20.0	-28.6
1950.0	53.5	-54.7	-48.2	-20.0	-28.2
2100.0	52.9	-52.2	-46.8	-20.0	-26.8
2250.0	52.2	-55.4	-48.4	-20.0	-28.4
2400.0	55.3	-53.6	-45.6	-20.0	-25.6
2550.0	46.0	-61.8	-54.0	-20.0	-34.0
2700.0	38.5	-68.5	-60.8	-20.0	-40.8
4650.0	39.5	-62.8	-53.9	-20.0	-33.9
4800.0	38.6	-63.0	-54.1	-20.0	-34.1
4950.0	38.0	-62.7	-53.7	-20.0	-33.7

* ERP is calculated as: $ERP_{(dBm)} = V_{g(dBm)} + G_{(dBd)}$

All other emissions not reported are more than 20 dB below the limit.

Spurious Radiated Emissions

Frequency	SA Reading (from EUT)	Signal Generator Output required to have the same SA Reading as from EUT	ERP*	ERP Limit	ERP Margin
MHz	dB(µV)	V_g dBm	dBm	dBm	dB
Tx 162 MHz					
36.47	29.2	-71.9	-71.9	-20.0	-51.9
191.67	33.7	-73.7	-73.7	-20.0	-53.7
324.0	55.5	-47.5	-47.5	-20.0	-27.5
458.42	37.8	-62.3	-62.3	-20.0	-42.3
486.0	50.9	-48.6	-48.6	-20.0	-28.6
648.0	43.2	-53.8	-53.8	-20.0	-33.8
810.0	46.2	-49.1	-49.1	-20.0	-29.1
859.35	31.6	-62.1	-62.1	-20.0	-42.1
972.0	49.5	-42.9	-42.9	-20.0	-22.9
1134.0	60.9	-49.8	-44.9	-20.0	-24.9
1296.0	66.5	-42.9	-37.9	-20.0	-17.9
1458.0	64.2	-45.6	-39.8	-20.0	-19.8
1620.0	60.6	-50.3	-43.4	-20.0	-23.4
1782.0	53.0	-57.8	-50.4	-20.0	-30.4
1944.0	53.1	-55.4	-48.7	-20.0	-28.7
2106.0	50.9	-54.4	-48.9	-20.0	-28.9
2268.0	51.5	-56.4	-49.2	-20.0	-29.2
2430.0	53.3	-55.4	-47.5	-20.0	-27.5
2592.0	46.0	-61.3	-53.7	-20.0	-33.7
2916.0	33.6	-74.1	-65.6	-20.0	-45.6
4698.0	39.5	-62.5	-53.7	-20.0	-33.7
4860.0	37.8	-63.5	-54.5	-20.0	-34.5

* ERP is calculated as: $ERP_{(dBm)} = V_{g(dBm)} + G_{(dBd)}$

All other emissions not reported are more than 20 dB below the limit.

Spurious Radiated Emissions

Frequency	SA Reading (from EUT)	Signal Generator Output required to have the same SA Reading as from EUT	ERP*	ERP Limit	ERP Margin
MHz	dB(µV)	V_g dBm	dBm	dBm	dB
Tx 174 MHz					
37.28	29.6	-71.6	-71.6	-20.0	-51.6
348.0	53.9	-48.1	-48.1	-20.0	-28.1
401.83	34.9	-66.5	-66.5	-20.0	-46.5
458.42	38.2	-61.9	-61.9	-20.0	-41.9
522.0	43.2	-55.4	-55.4	-20.0	-35.4
696.0	49.5	-46.8	-46.8	-20.0	-26.8
713.85	35.5	-61.1	-61.1	-20.0	-41.1
802.77	32.7	-62.8	-62.8	-20.0	-42.8
859.35	31.9	-61.8	-61.8	-20.0	-41.8
870.0	37.7	-56.6	-56.6	-20.0	-36.6
1044.0	57.2	-54.1	-49.3	-20.0	-29.3
1218.0	58.0	-52.0	-47.0	-20.0	-27.0
1392.0	59.6	-49.7	-44.4	-20.0	-24.4
1566.0	55.9	-54.7	-48.1	-20.0	-28.1
1740.0	54.2	-56.8	-49.4	-20.0	-29.4
1914.0	45.0	-64.6	-57.4	-20.0	-37.4
2088.0	53.4	-51.9	-46.5	-20.0	-26.5
2262.0	51.2	-56.5	-49.4	-20.0	-29.4
2436.0	52.3	-56.3	-48.4	-20.0	-28.4
2610.0	43.9	-63.3	-55.7	-20.0	-35.7
2784.0	34.1	-73.4	-65.3	-20.0	-45.3
4698.0	35.5	-66.5	-57.7	-20.0	-37.7

* ERP is calculated as: $ERP_{(dBm)} = V_{g(dBm)} + G_{(dBd)}$

All other emissions not reported are more than 20 dB below the limit.

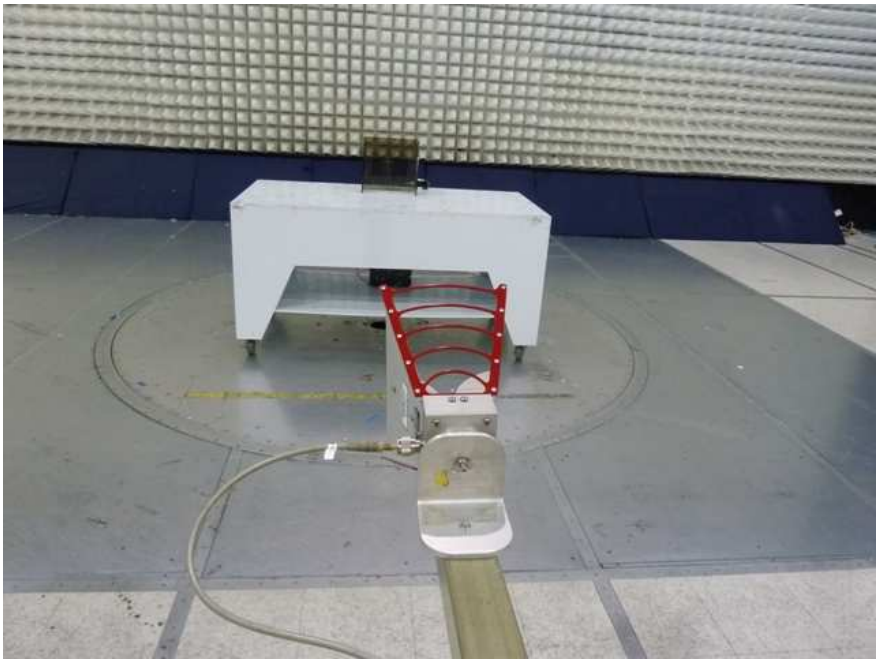
Result	Complies

8.5 Test Setup Photographs

Radiated Emission Test Setup

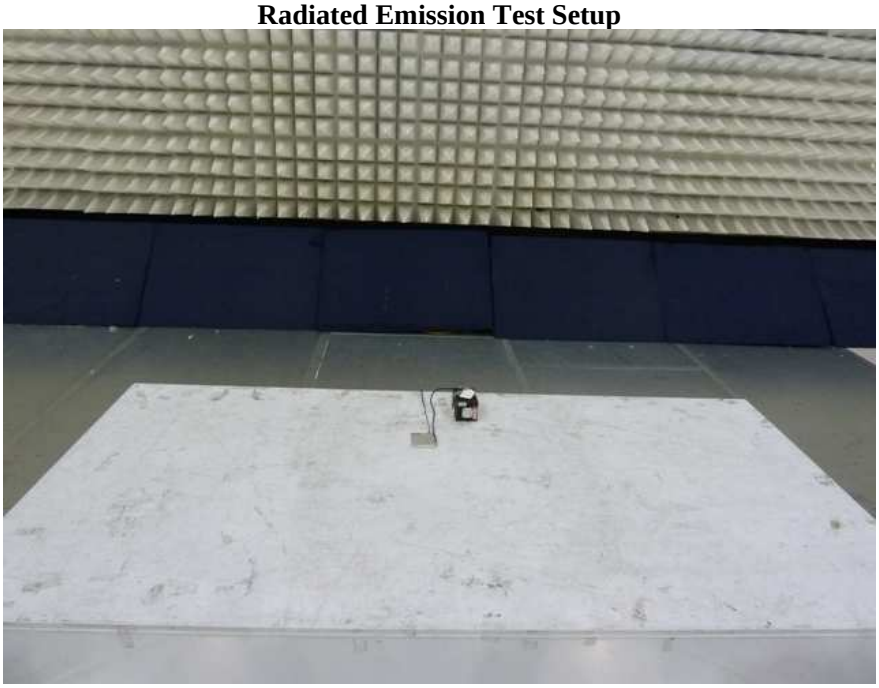
8.5 Test setup photographs

Radiated Emission Test Setup



8.5 Test setup photographs

Radiated Emission Test Setup



9.0 Transient Frequency Behavior

FCC 90.214

9.1 Requirement

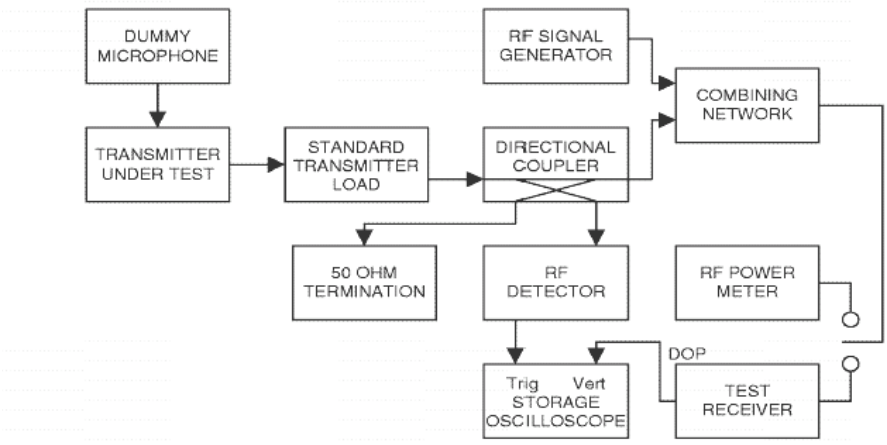
Time Interval	Maximum Frequency Difference	Time
Transient Frequency Behavior for equipment designed to operate on 25 kHz channels		
t1*	±25 kHz	10 ms
t2	±12.5 kHz	25 ms
t3*	±25 kHz	10 ms
Transient Frequency Behavior for equipment designed to operate on 12.5 kHz channels		
t1*	±12.5 kHz	10 ms
t2	±6.25 kHz	25 ms
t3*	±12.5 kHz	10 ms

ton is the instant when a 1 kHz test signal is completely suppressed
t1 is time period immediately following **t**on
t2 is time period immediately following **t**1
t3 is time period from the instant when the transmitter is turned off until **t**off
toff is the instant when the 1 kHz test signal start to rise

* If the transmitter carrier output power rating is 6 Watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

9.2 Test Procedure

The test was performed according to the block diagram below.

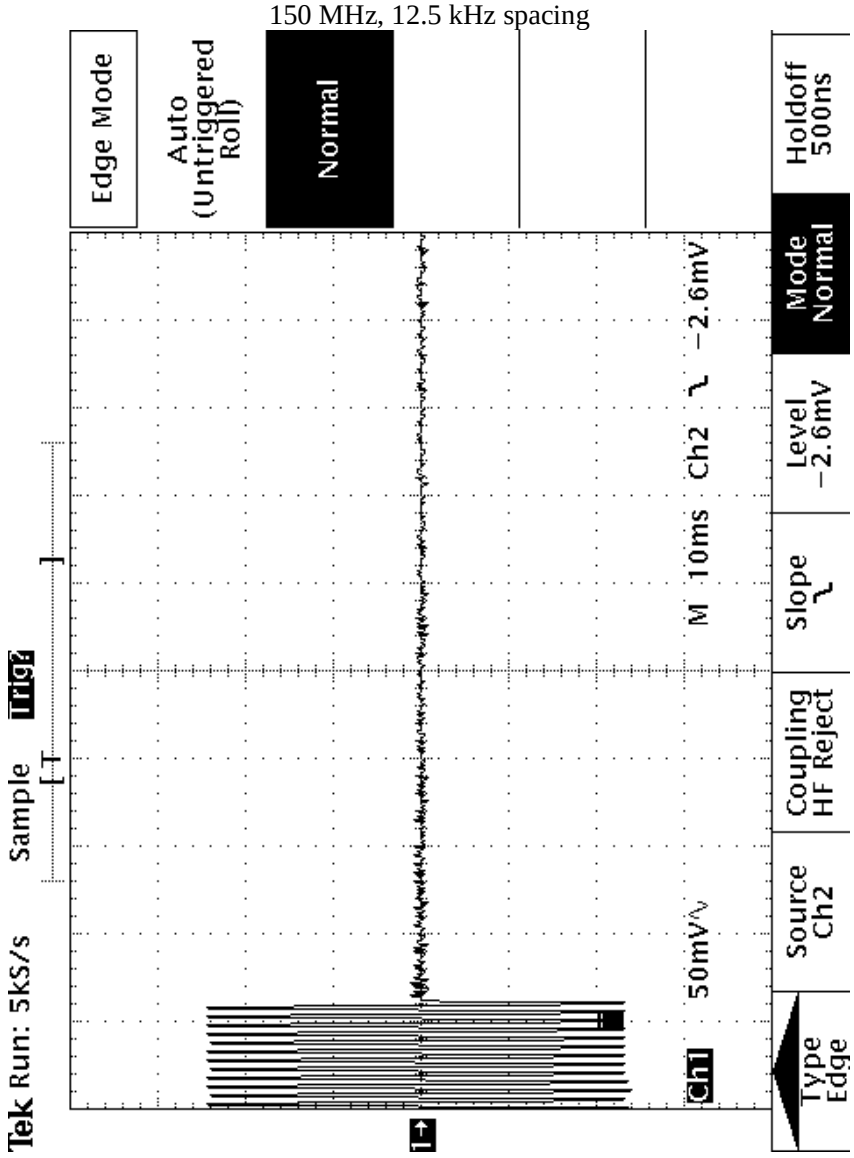


8.2 Test Results

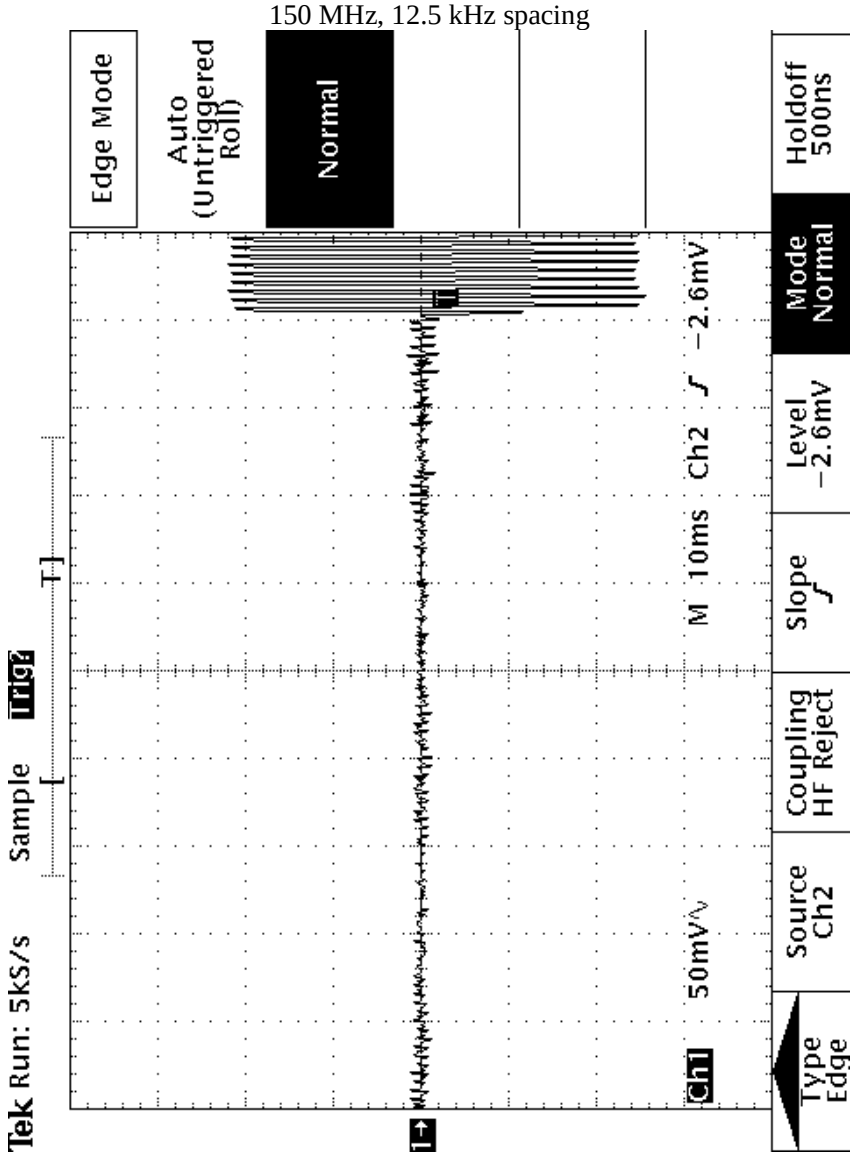
Result	Complies

Refer to the attached Graphs

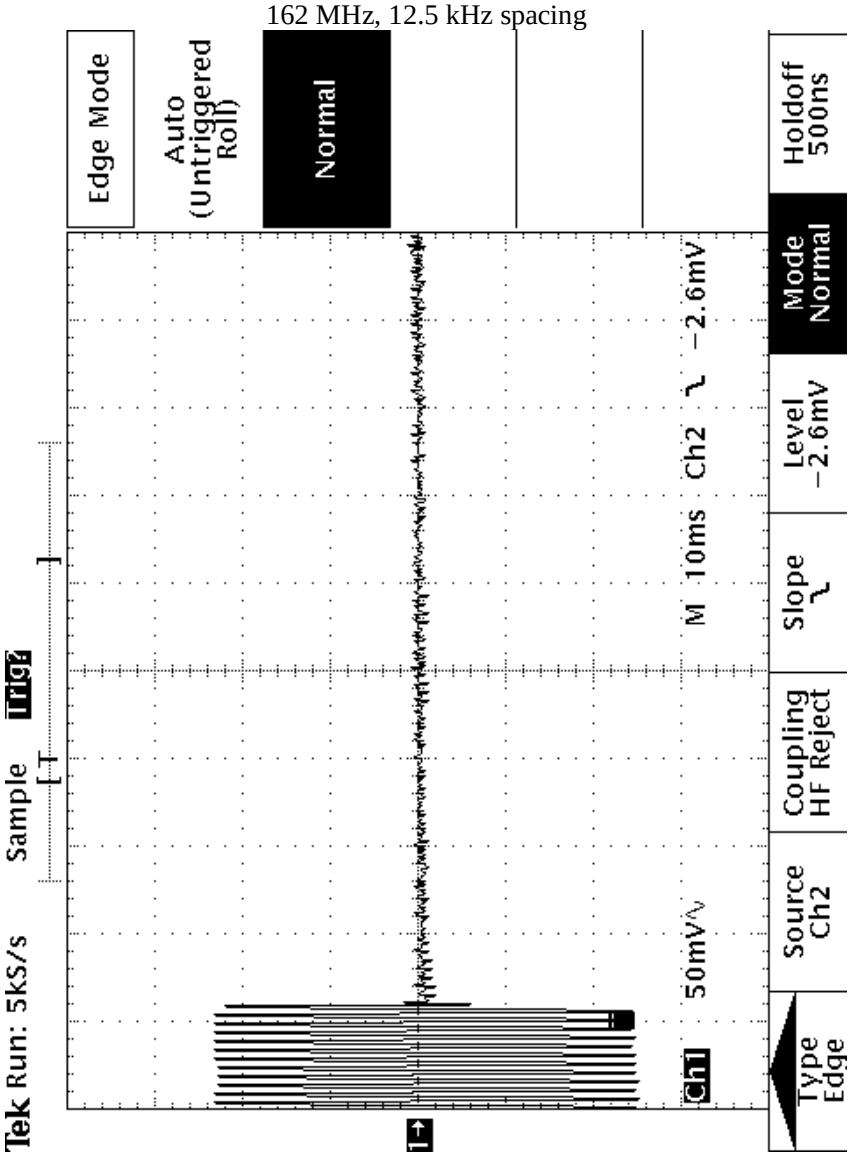
150 MHz, 12.5 kHz spacing



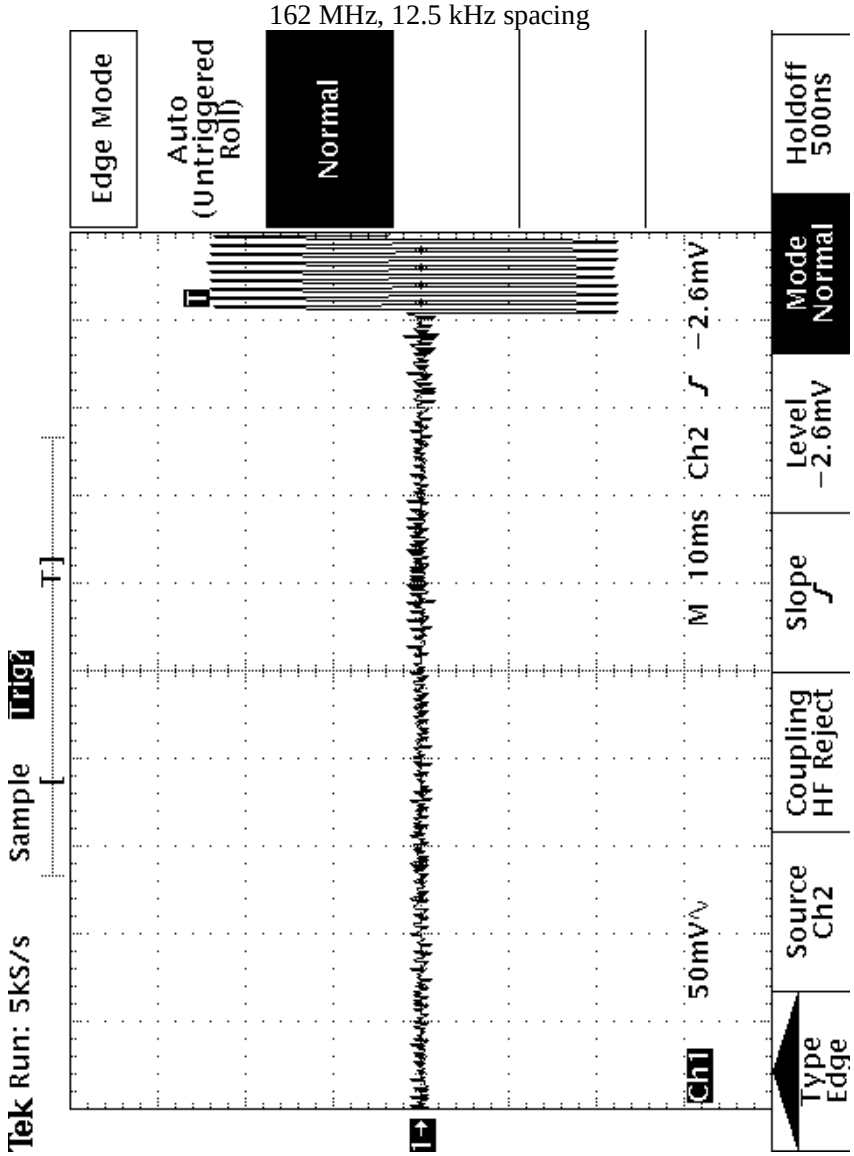
150 MHz, 12.5 kHz spacing



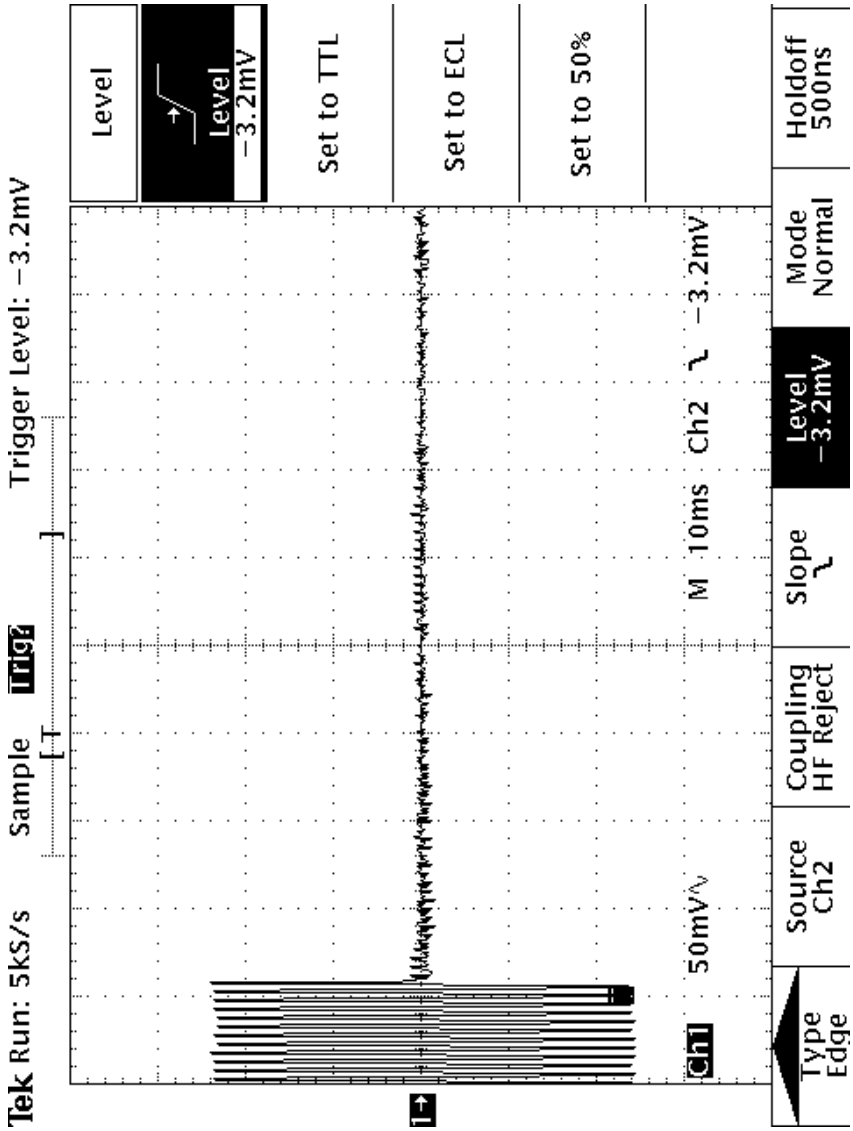
162 MHz, 12.5 kHz spacing



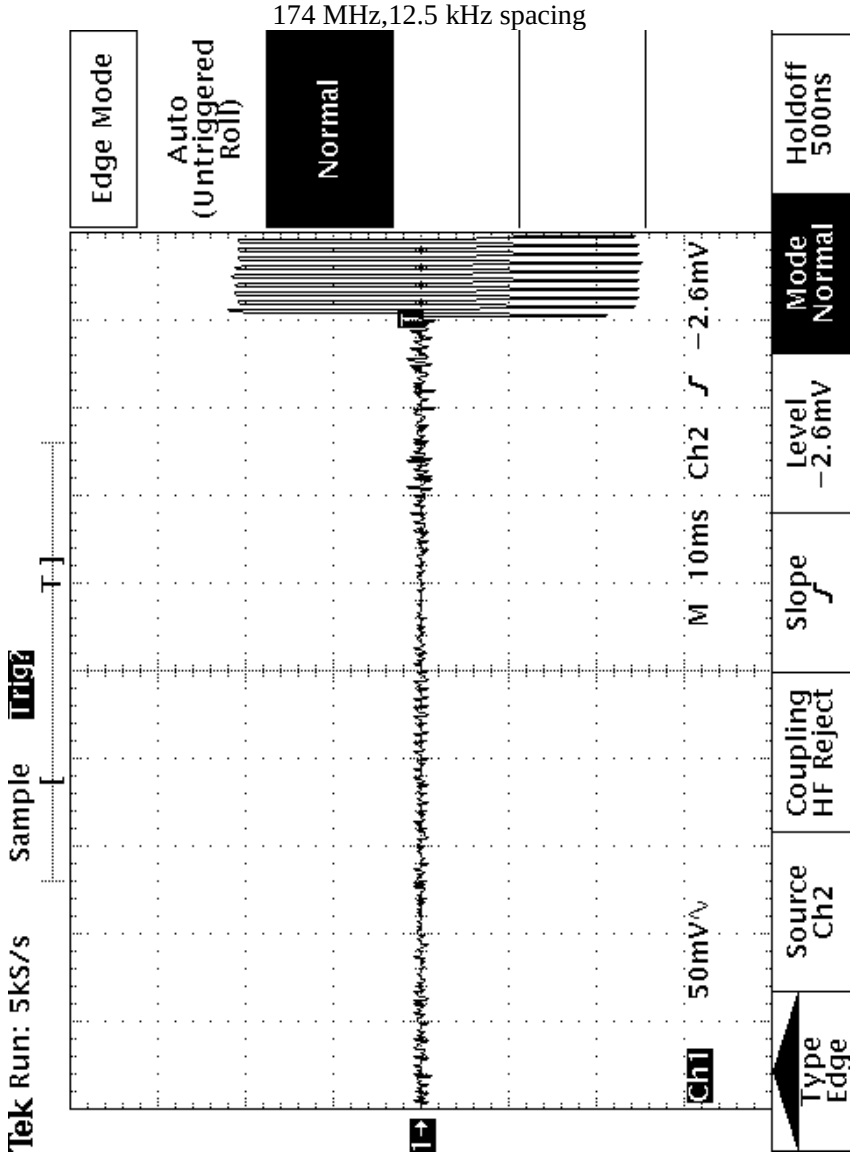
162 MHz, 12.5 kHz spacing



174 MHz, 12.5 kHz spacing



174 MHz,12.5 kHz spacing



10.0 Frequency Stability vs Temperature and Voltage
FCC 2.1055, 90.213

10.1 Requirement

In the 150–174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 5.0 ppm.

10.2 Test Procedure

The EUT was placed inside the temperature chamber. The RF power output was connected to frequency counter. The EUT was setup to transmit the maximum power.

After the temperature stabilized for approximately 20 minutes, the transmitting frequency was measured by the frequency counter and recorded.

At the room temperature, the frequency was measured when the EUT was powered with the nominal voltage and with 85% and 115% of the nominal voltage.

10.3 Test Equipment

Temperature Chamber
Frequency Counter

10.4 Test Results

Nominal frequency: 150 MHz

Temperature (°C)	**Maximum deviation from frequency at 20°C,** Hz	**Maximum deviation from frequency at 20°C,** ppm
-30	-9	-0.06
-20	-8	-0.05
0	5	0.03
20	0	0.0
40	-4	-0.03
60	-8	-0.05

Nominal frequency: 162 MHz

Temperature (°C)	**Maximum deviation from frequency at 20°C,** Hz	**Maximum deviation from frequency at 20°C,** ppm
-30	3	0.02
-20	2	0.01
0	3	0.02
20	0	0.0
40	-6	-0.04
60	-12	-0.07

Nominal frequency: 174 MHz

Temperature (°C)	**Maximum deviation from frequency at 20°C,** Hz	**Maximum deviation from frequency at 20°C,** ppm
-30	12	0.07
-20	4	0.02
0	1	0.01
20	0	0.0
40	-7	-0.04
60	-13	-0.07

Nominal frequency: 150 MHz

DC Voltage, V	Maximum deviation from nominal, Hz	Maximum deviation from nominal, ppm
3.2	-86	-0.57
3.7	-82	-0.55
4.3	-93	-0.62

Nominal frequency: 162 MHz

DC Voltage, V	Maximum deviation from nominal, Hz	Maximum deviation from nominal, ppm
3.2	-91	-0.61
3.7	-87	-0.58
4.3	-99	-0.66

Nominal frequency: 174 MHz

DC Voltage, V	Maximum deviation from nominal, Hz	Maximum deviation from nominal, ppm
3.2	-99	-0.66
3.7	-94	-0.63
4.3	-100	-0.67

Result	Complies

11.0 AC Line Conducted Emission
FCC 15.207

11.1 Requirement

Frequency Band MHz	Class B Limit dB (µV)	
	Quasi-Peak	Average
0.15-0.50	66 to 56 Decreases linearly with the logarithm of the frequency	56 to 46 Decreases linearly with the logarithm of the frequency
0.50-5.00	56	46
5.00-30.00	60	50

Note: At the transition frequency the lower limit applies.

11.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

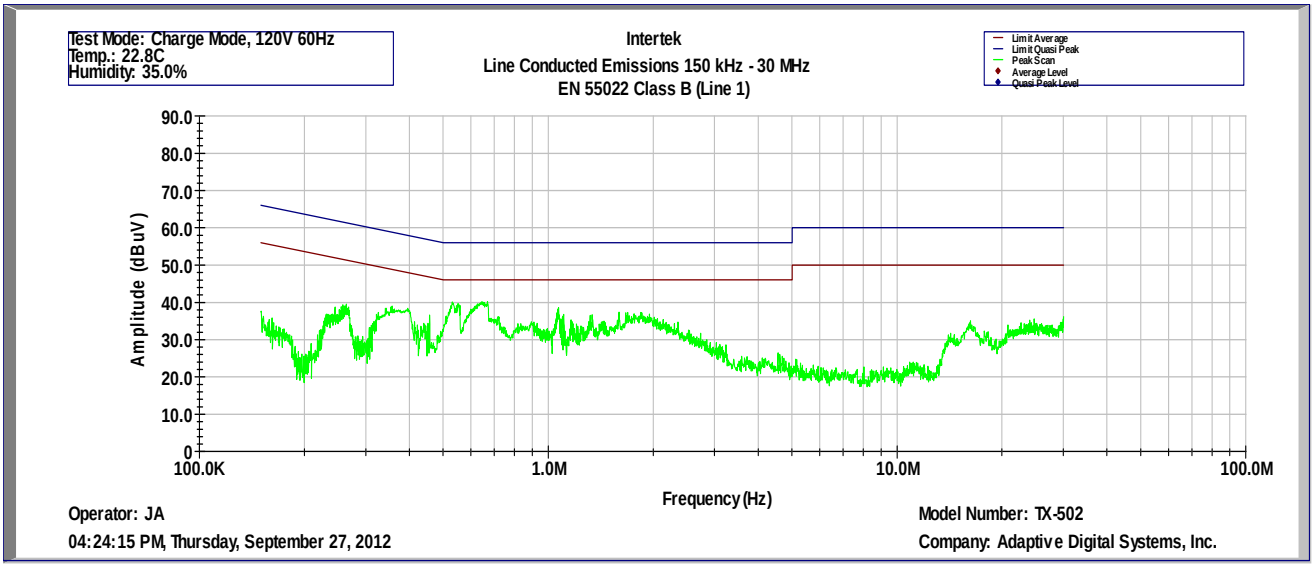
The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

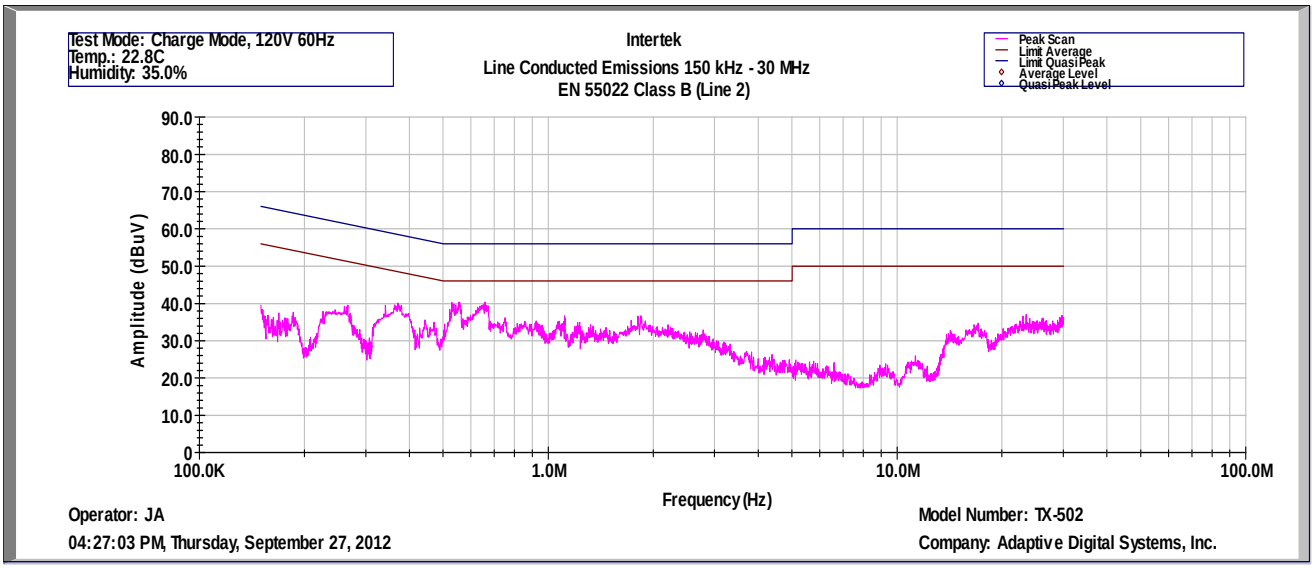
Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.4.

11.3 Test Result

Conducted Disturbance at AC Mains



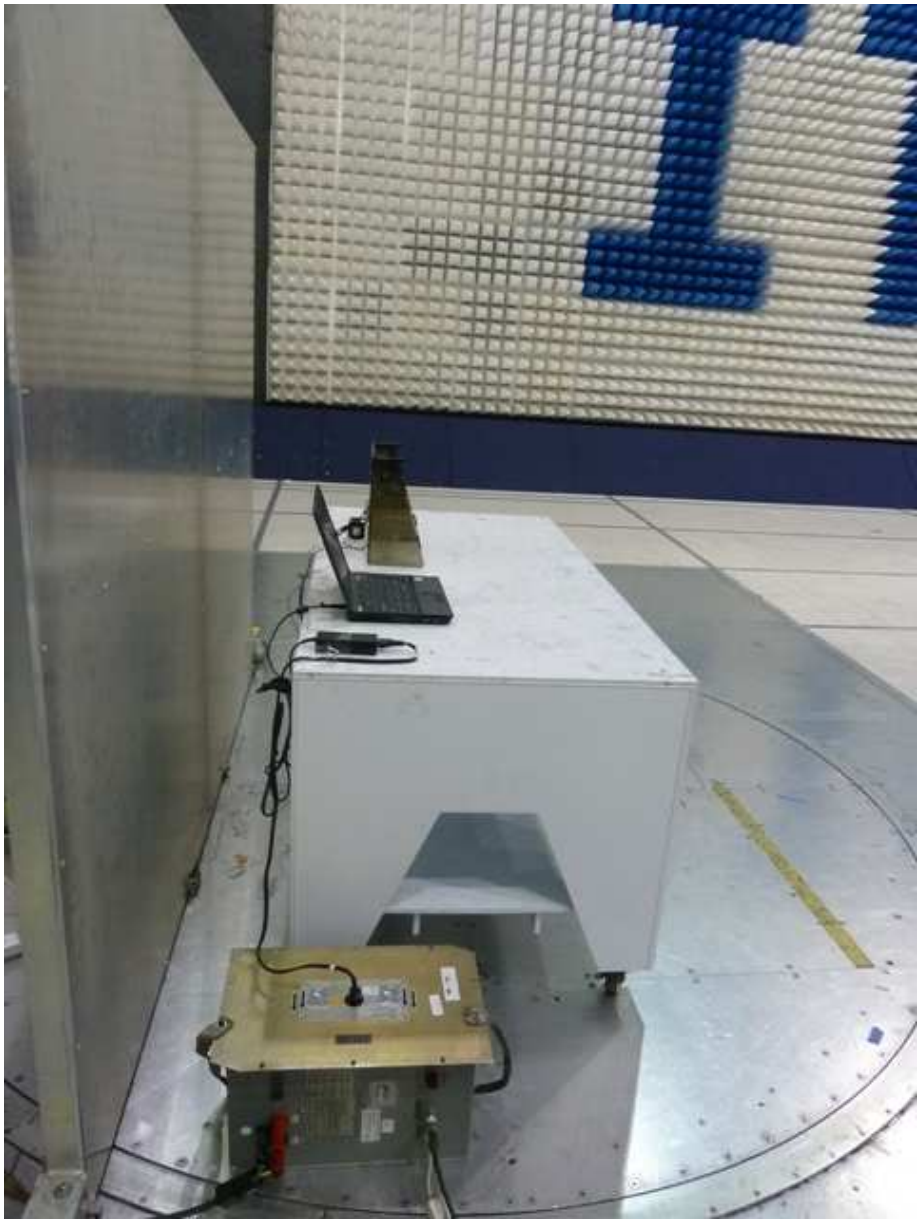


Results	**Complies** by 5.7dB

11.4 Test Configuration Photographs

The following photographs show the testing configurations used.

11.4 Test Configuration Photographs (continued)



12.0 List of Test Equipment

Measurement equipment used for compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	03/09/13
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	03/09/13
Spectrum Analyzer	Rohde&Schwarz	FSU	200482	12	03/22/13
Spectrum Analyzer	Rohde&Schwarz	FSP-40	100030	12	11/09/12
Spectrum Analyzer	Rohde&Schwarz	ESU	100172	12	10/04/12
BI-Log Antenna	ARA	LPB-2513/A	1154	12	07/12/13
Horn Antenna	EMCO	3115	9107-3712	12	11/16/12
Horn Antenna	EMCO	3115	00126795	12	11/03/12
Pyramidal Horn Antenna	EMCO	3160-09	Not Labeled	#	#
Pyramidal Horn Antenna	EMCO	3160-10	Not Labeled	#	#
Pre-Amplifier	Sonoma	310N	293620	12	11/11/12
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	09/01/12
Pre-Amplifier	Miteq	JSD44-18004000-30-5P	1071636	12	05/11/13
Signal Generator	Hewlett Packard	SMR40	100445	12	09/01/12
Function Generator	Leader	LFG-1300S	1040423	12	09/17/13
Signal Generator	Rohde&Schwarz	845.4002.44	883983/010	12	02/13/13
Modulation Analyzer	HP	8901B	2441A00392	12	01/31/13
Oscilloscope	Tektronix	TDS 380	B013236	12	03/27/13
LISN	FCC	FCC-LISN-50-50-M-H	2011	12	02/02/13

No Calibration required

13.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / G100910813	KK	October 30, 2012	Original document