



TEST REPORT

Applicant: OXTOP (DONG GUAN) ELECTRONICS CO., LTD
Address of Applicant: No. 15, Kai-Toh Road, New Industrial Zone, Shitanpu, Tangxia Town, Dongguan City
Equipment Under Test (EUT)
Product Name: Wireless Surround
Model No.: F/X Wireless Surround
Operation Frequency: 2404MHz to 2478MHz
FCC ID: W4AFXWS
IC: 9020A-FXWS
Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247:2009
IC standards RSS-GEN (Issue 2, June 2007)
IC standards RSS-210 (Issue 7, June 2007)
Date of Receipt: 10 Aug., 2010
Date of Test: 10 Aug.-14 Sep., 2010
Date of Issue: 19 Sep., 2010
Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

2 Contents

	Page
1 COVER PAGE	1
2 CONTENTS	2
3 TEST SUMMARY	3
4 GENERAL INFORMATION	4
4.1 CLIENT INFORMATION	4
4.2 GENERAL DESCRIPTION OF E.U.T.	4
4.3 TEST ENVIRONMENT AND MODE.....	6
4.4 TEST FACILITY.....	6
4.5 TEST LOCATION	6
4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
4.7 TEST INSTRUMENTS LIST	7
5 TEST RESULTS AND MEASUREMENT DATA.....	8
5.1 ANTENNA REQUIREMENT:	8
5.2 CONDUCTED PEAK OUTPUT POWER.....	9
5.3 6dB OCCUPY BANDWIDTH.....	12
5.4 POWER SPECTRAL DENSITY.....	15
5.5 BAND EDGE.....	18
5.6 RF ANTENNA CONDUCTED SPURIOUS EMISSIONS	20
5.7 RADIATED EMISSION	27
5.7.1 Radiated emission below 1GHz.....	29
5.7.2 Transmitter emission above 1GHz.....	30
5.8 CONDUCTED EMISSIONS.....	33

3 Test Summary

Test Item	Section in CFR 47	Section in RSS-GEN or RSS-210	Result
Antenna requirement	15.203/15.247 (c)	N/A	Passed
Conducted Peak Output Power	15.247 (b)(3)	A8.2 (4)	Passed
6dB Occupied Bandwidth	15.247 (a)(2)	A8.2 (a)	Passed
Power Spectral Density	15.247 (e)	A8.2 (b)	Passed
Band Edge	15.247(d)	A8.5	Passed
RF antenna conducted spurious emissions	15.247(d)	A8.5	Passed
Radiated Emission	15.205/15.209	A8.5	Passed
Conducted Emission	15.207	7.2.2	Passed
RF Exposure Compliance Requirement	15.247(b)(4)& TCB Exclusion List (7 July 2002)	N/A	Passed

Remark:

- *Passed: The EUT complies with the essential requirements in the standard.*
- *Failed: The EUT does not comply with the essential requirements in the standard.*
- *Tx: In this whole report Tx (or tx) means Transmitter.*
- *Rx: In this whole report Rx (or rx) means Receiver.*

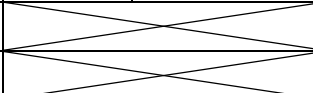
4 General Information

4.1 Client Information

Applicant:	OXTOP (DONG GUAN) ELECTRONICS CO., LTD
Address of Applicant:	No. 15, Kai-Toh Road, New Industrial Zone, Shitanpu, Tangxia Town, Dongguan City
Manufacturer:	OXTOP (DONG GUAN) ELECTRONICS CO., LTD
Address of Manufacturer:	No. 15, Kai-Toh Road, New Industrial Zone, Shitanpu, Tangxia Town, Dongguan City

4.2 General Description of E.U.T.

Product Name:	Wireless Surround
Model No.:	F/X Wireless Surround
Operation Frequency:	2404MHz to 2478MHz
Channel numbers:	38
Channel separation:	2MHz
Modulation type:	Direct Sequence Spread Spectrum (DSSS)
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	Input: 100-240V ac 50/60Hz; Output1: 12V 600mA; Output2: 5.0V 500mA.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz		
10	2422MHz	20	2442MHz	30	2462MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2404MHz
The middle channel	2440MHz
The Highest channel	2478MHz

4.3 Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	1010mbar
Test mode:	
Transmitting mode	Keep the EUT in transmitting mode with modulation.

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 600491**

Global United Technology Service Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 600491, July 20, 2010.

● **Industry Canada (IC)**

The 3m Semi-anechoic chamber of Global United Technology Service Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A.

4.5 Test Location

All tests were performed at:
Global United Technology Service Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China Tel: 0755-27798480 Fax: 0755-27798960

4.6 Other Information Requested by the Customer

None.

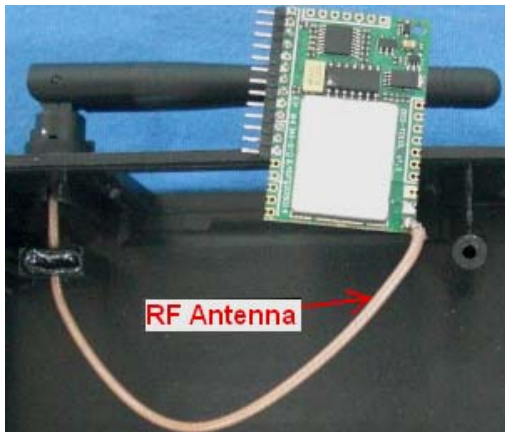
4.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS201	Mar. 30 2010	Mar. 30 2011
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS202	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sep. 10 2010	Sep. 10 2011
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Sep. 10 2010	Sep. 10 2011
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	June 30 2010	June 30 2011
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2010	Apr. 01 2011
8	Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2010	Apr. 01 2011
9	Coaxial cable	GTS	N/A	GTS402	Apr. 01 2010	Apr. 01 2011
10	Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2010	Apr. 01 2011
11	Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2010	Apr. 01 2011
12	Amplifier(10KHz-5GHz)	Sonnoma Instrument	305-1052	GTS210	Aug. 03 2010	Aug. 03 2011
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS231	Aug. 03 2010	Aug. 03 2011

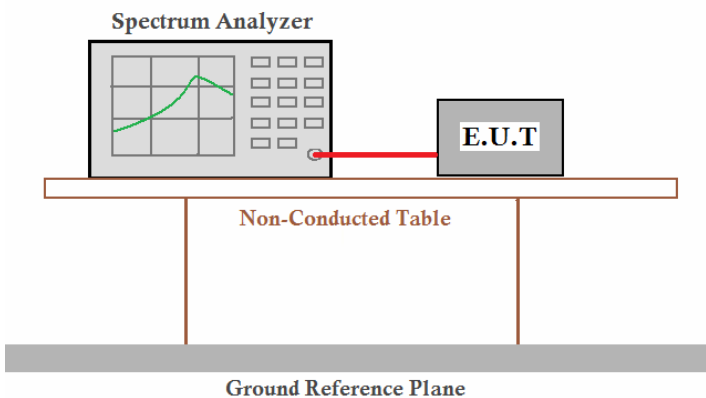
Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS206	Apr. 10 2010	Apr. 10 2011
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sep. 14 2010	Sep. 14 2011
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS209	Sep. 14 2010	Sep. 14 2011
4	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2010	Apr. 14 2011
5	Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2010	Apr. 01 2011
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

5 Test results and Measurement Data

5.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement: <i>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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i></p> <p>15.247(c) (1)(i) requirement: <i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i></p>	
E.U.T Antenna:	
<p>The antenna is integrated antenna and no consideration of replacement. The best case gain of the antenna is 2dBi.</p>	
	

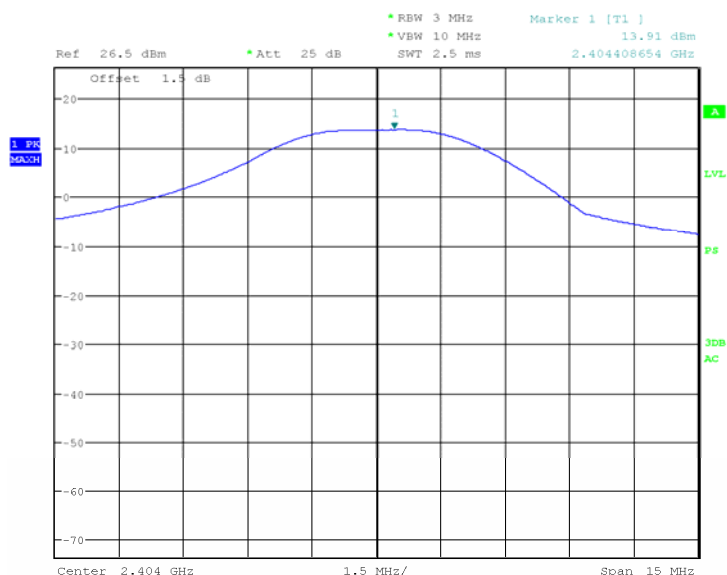
5.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3) RSS-210 A8.4 (4)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	30dBm
Test setup:	 <p><i>Remark: Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>
Test Instruments:	Refer to section 4.7 for details
Test mode:	Refer to section 4.3 for details
Test results:	Passed

Measurement Data			
Operating mode			
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	13.91	30.00	Pass
Middle	10.90	30.00	Pass
Highest	10.39	30.00	Pass

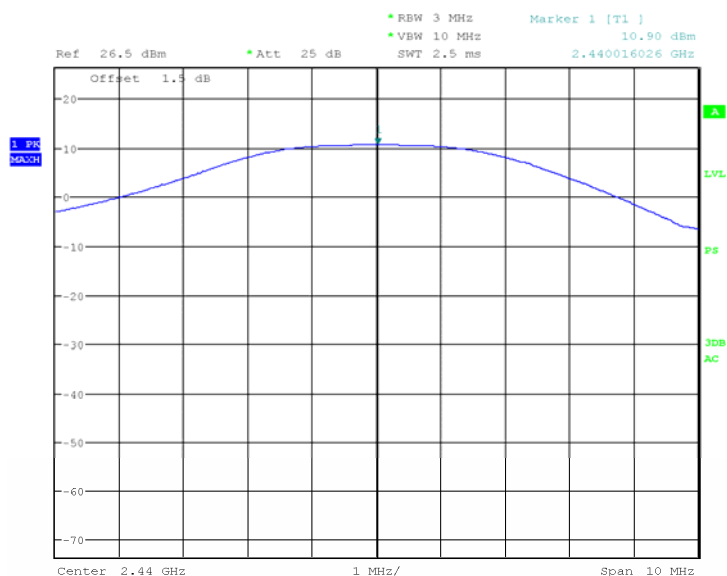
Test plot as follows:

Test channel:	Lowest
---------------	--------



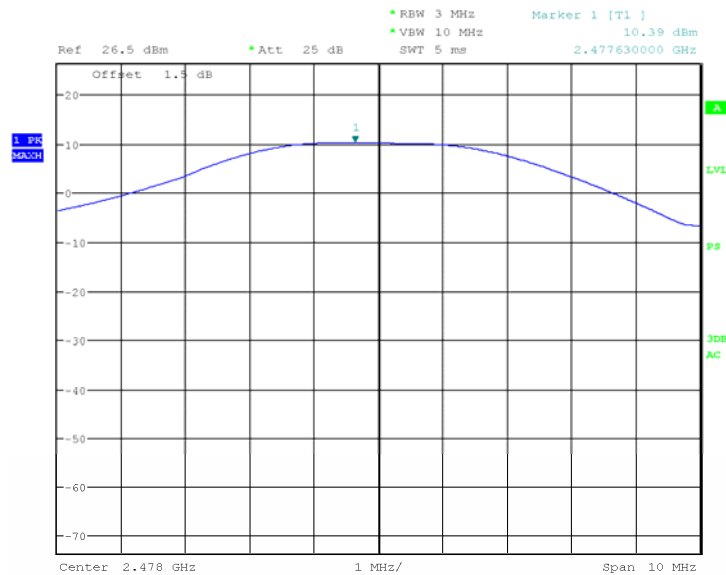
Date: 25.AUG.2010 19:46:42

Test channel:	Middle
---------------	--------



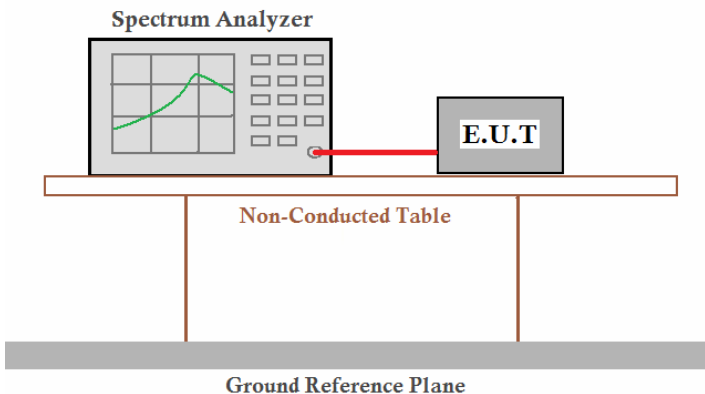
Date: 7.SEP.2010 08:57:01

Test channel:	Highest
---------------	---------



Date: 7.SEP.2010 09:26:02

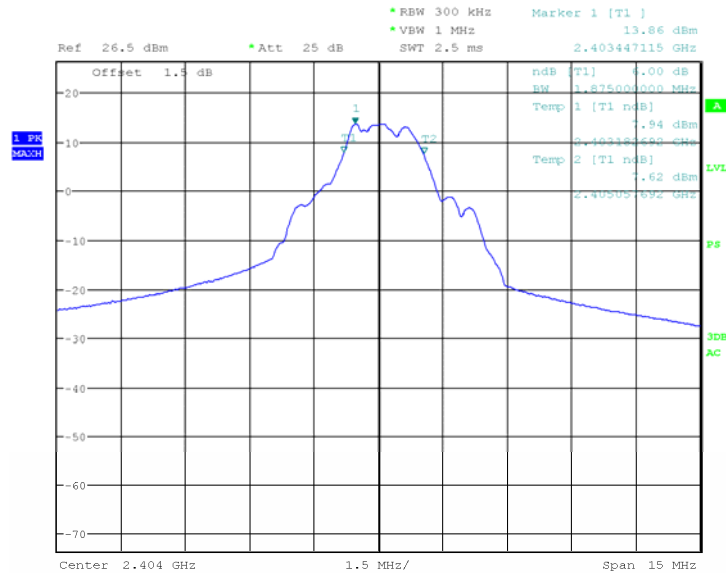
5.3 6dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2) RSS-210 A8.2 (a)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test mode:	Refer to section 4.3 for details
Test results:	Passed

Measurement Data			
Operating mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (KHz)	Result
Lowest	1.875	>500	Pass
Middle	1.410	>500	Pass
Highest	1.400	>500	Pass

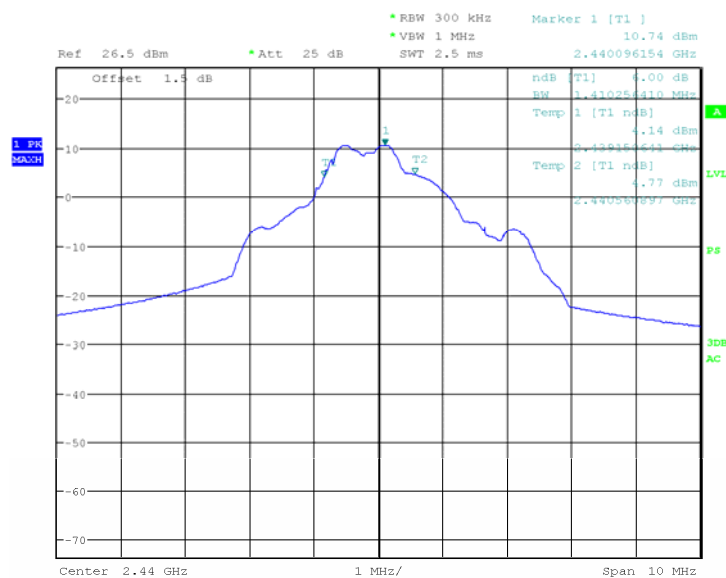
Test plot as follows:

Test channel:	Lowest
---------------	--------



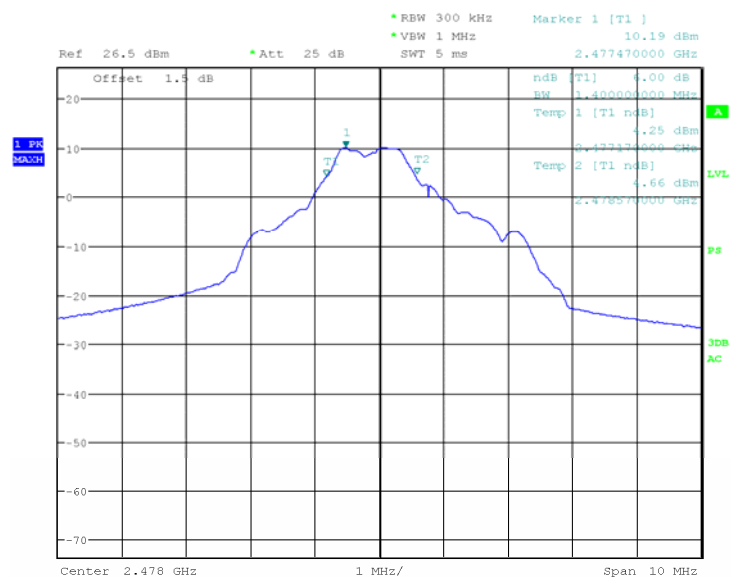
Date: 25.AUG.2010 19:53:36

Test channel:	Middle
---------------	--------



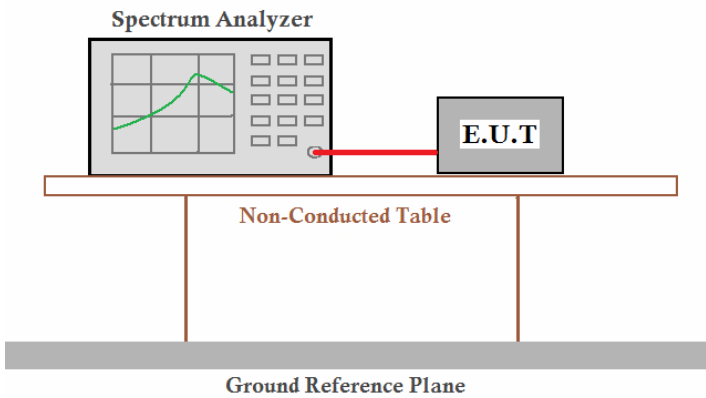
Date: 7.SEP.2010 08:58:53

Test channel:	Highest
---------------	---------



Date: 7.SEP.2010 09:27:53

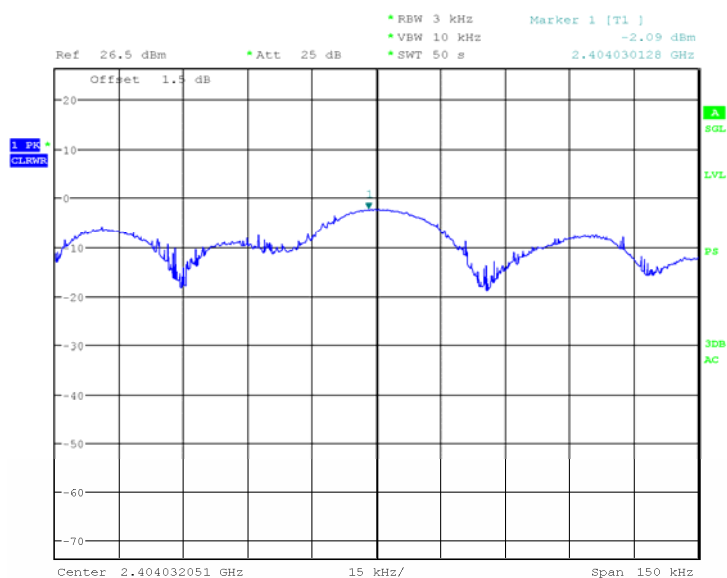
5.4 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e) RSS-210 A8.2 (b)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	8dBm
Test setup:	 <p><i>Remark: Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>
Test Instruments:	Refer to section 4.7 for details
Test mode:	Refer to section 4.3 for details
Test results:	Passed

Measurement Data			
Operating mode			
Test channel	Power Spectral Density (dBm)	Limit (dBm)	Result
Lowest	-2.09	8.00	Pass
Middle	-2.44	8.00	Pass
Highest	-1.89	8.00	Pass

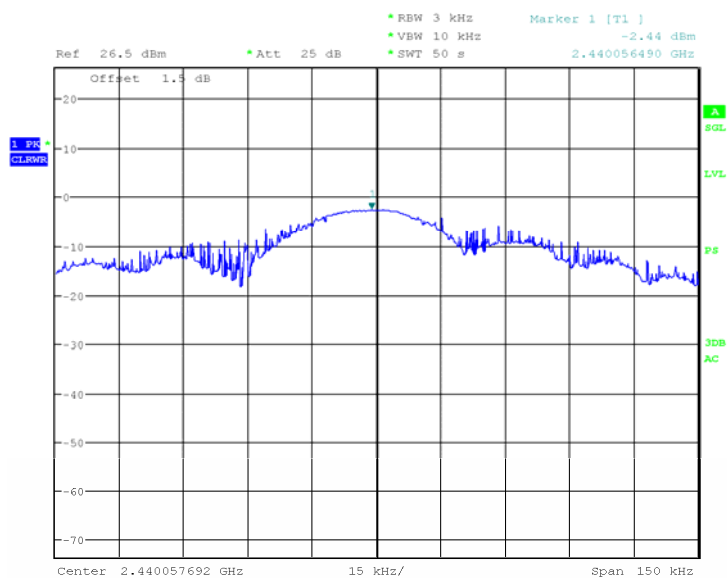
Test plot as follows:

Test channel:	Lowest
---------------	--------



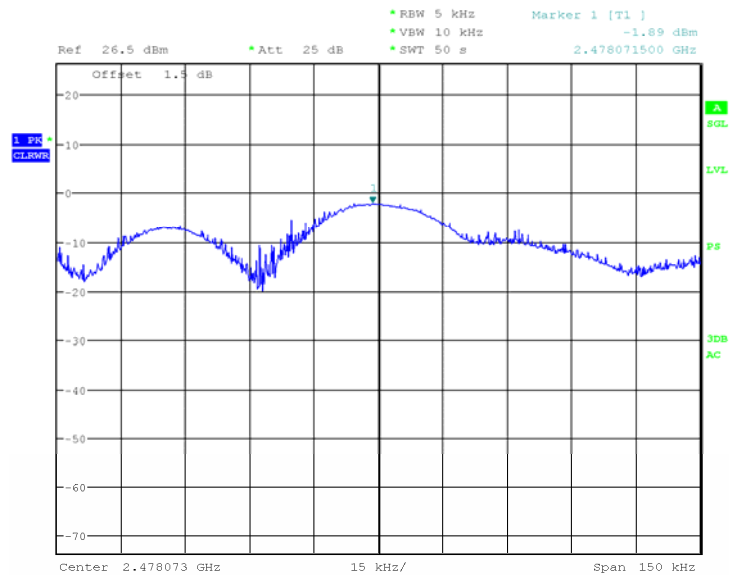
Date: 25.AUG.2010 19:55:50

Test channel:	Middle
---------------	--------



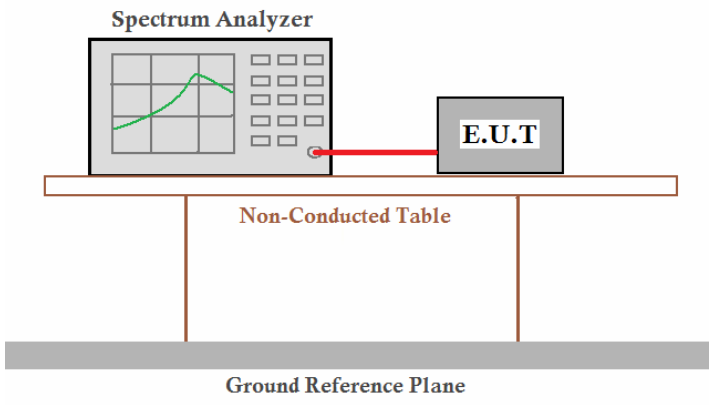
Date: 7.SEP.2010 09:02:11

Test channel:	Highest
---------------	---------



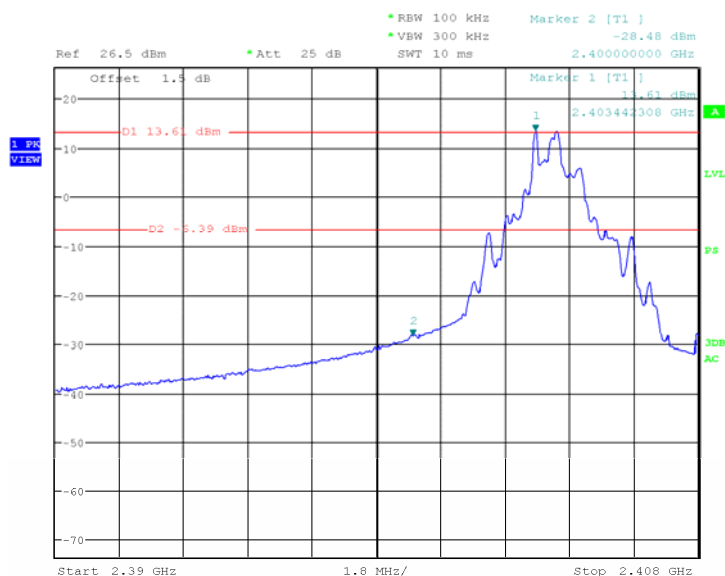
Date: 7.SEP.2010 09:33:38

5.5 Band Edge

Test Requirement:	FCC Part15 C Section 15.247 (d) RSS-210 A8.5
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 <p><i>Remark:</i> <i>Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>
Test Instruments:	Refer to section 4.7 for details
Test mode:	Refer to section 4.3 for details
Test results:	Passed

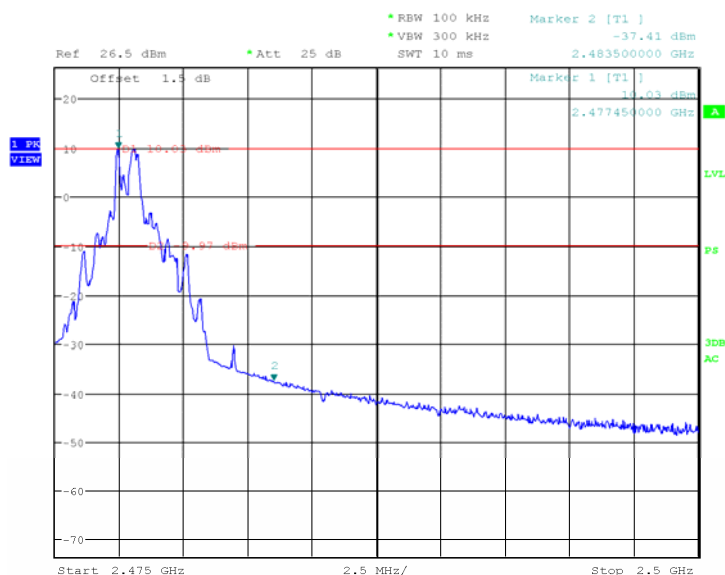
Test plot as follows:

Test mode:	Operating Mode	Test channel:	Lowest
------------	----------------	---------------	--------



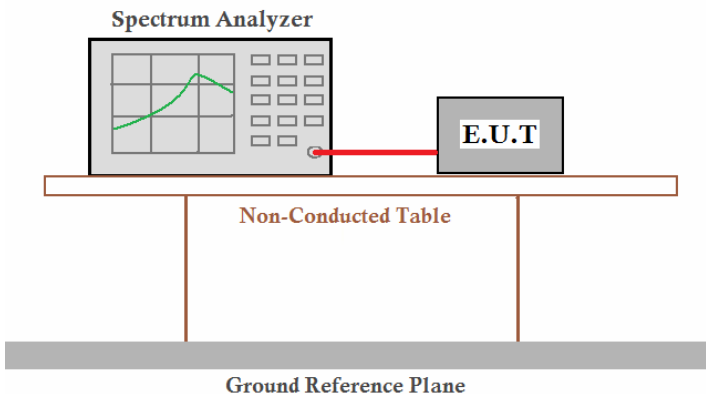
Date: 25.AUG.2010 19:57:06

Test mode:	Operating Mode	Test channel:	Highest
------------	----------------	---------------	---------



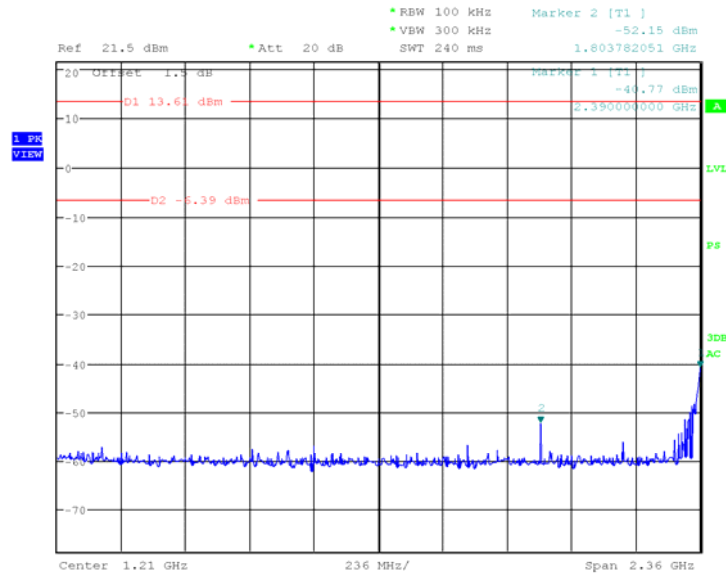
Date: 7.SEP.2010 09:29:03

5.6 RF Antenna Conducted spurious emissions

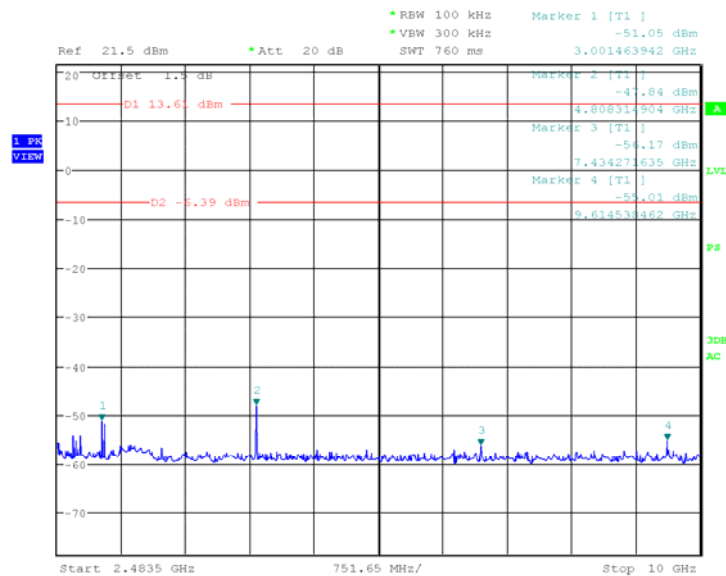
Test Requirement:	FCC Part15 C Section 15.247 (d) RSS-210 A8.5
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 <p><i>Remark:</i> Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</p>
Test Instruments:	Refer to section 4.7 for details
Test mode:	Refer to section 4.3 for details
Test results:	Passed

Test plot as follows:

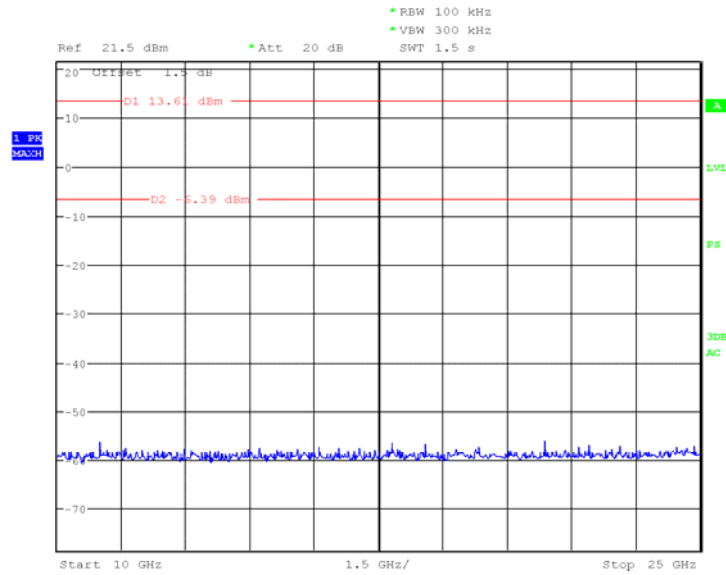
Test channel:	Lowest
---------------	--------



Date: 25.AUG.2010 19:58:58

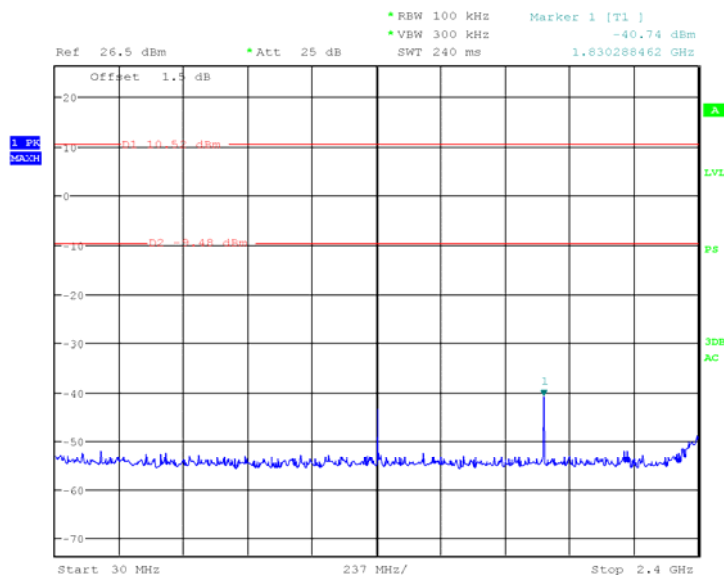


Date: 25.AUG.2010 20:01:23

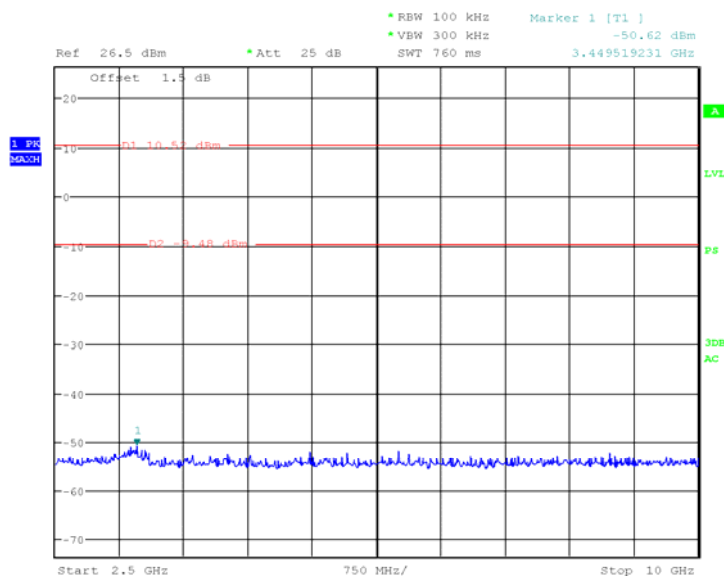


Date: 25.AUG.2010 19:59:49

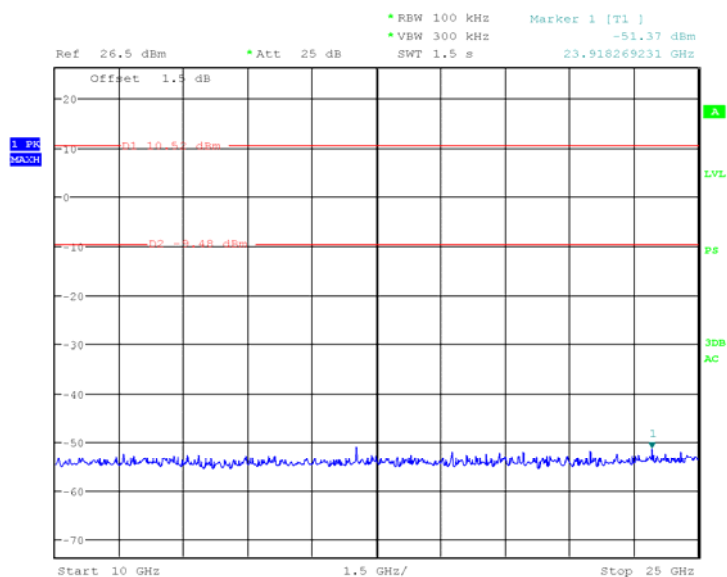
Test channel:	Middle
---------------	--------



Date: 7.SEP.2010 09:05:08

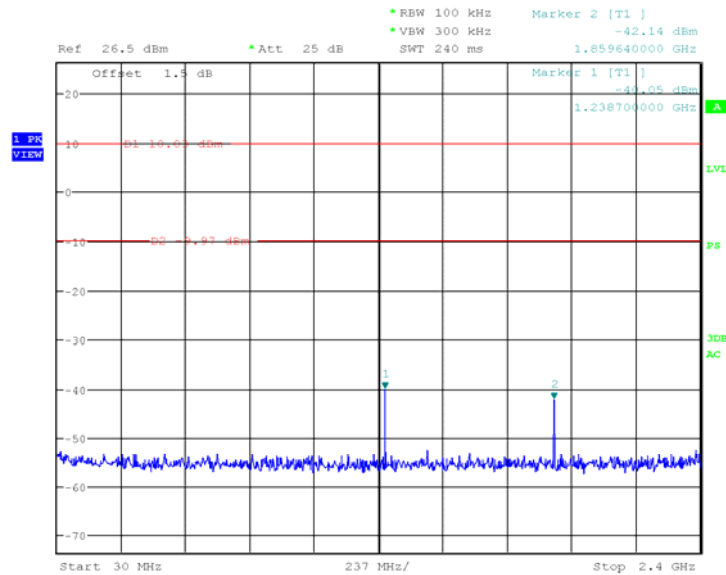


Date: 7.SEP.2010 09:05:31

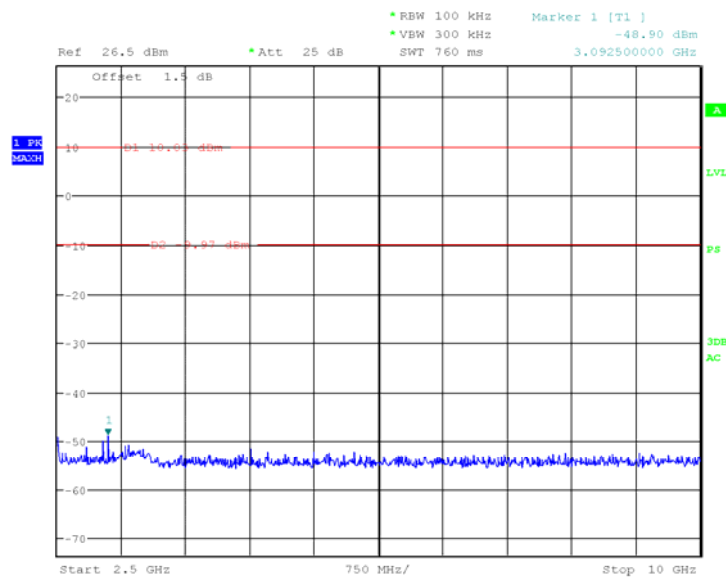


Date: 7.SEP.2010 09:05:46

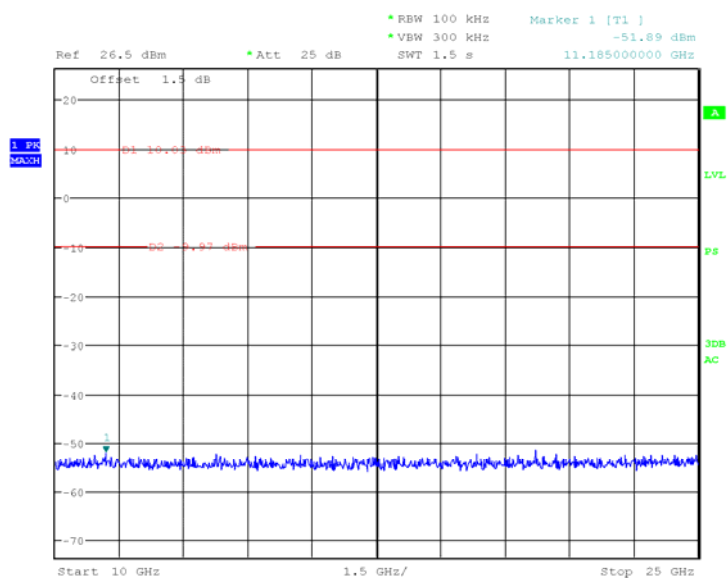
Test channel:	Highest
---------------	---------



Date: 7.SEP.2010 09:30:09



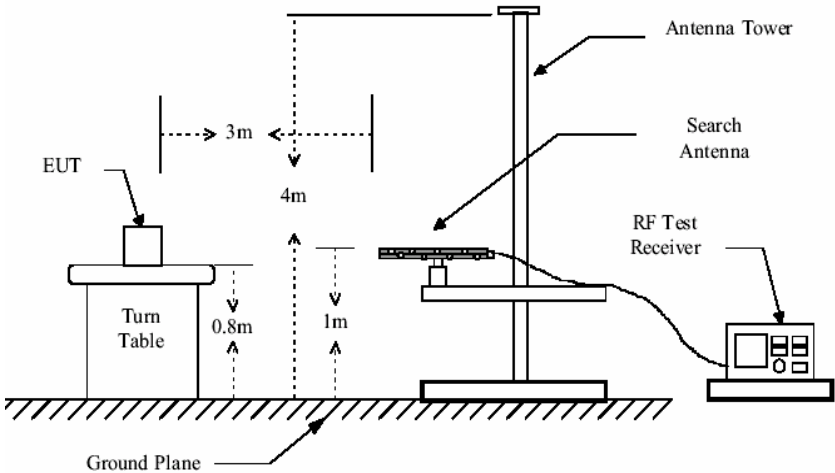
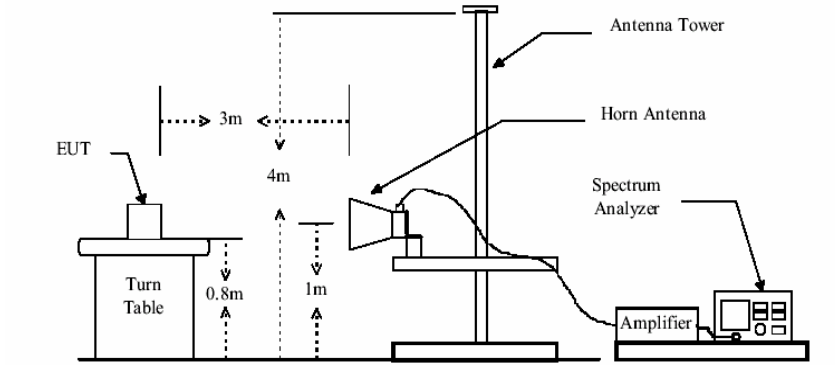
Date: 7.SEP.2010 09:30:33



Date: 7.SEP.2010 09:30:49

5.7 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209 and 15.205 RSS-210 A8.5				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:					
	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:					
	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
74.0			Peak Value		
Test Procedure:	<p>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p>				

<p>Test setup:</p>	<p>Below 1GHz</p>  <p>Above 1GHz</p> 
<p>Test Instruments:</p>	<p>Refer to section 4.7 for details</p>
<p>Test mode:</p>	<p>Refer to section 4.3 for details</p>
<p>Test results:</p>	<p>Passed</p>

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

5.7.1 Radiated emission below 1GHz

Worst case: Middle Channel

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
36.77	0.63	14.29	25.74	40.45	29.63	40.00	-10.37	Vertical
73.62	0.88	12.03	25.69	39.07	26.29	40.00	-13.71	Vertical
159.78	1.57	11.34	25.63	39.96	27.24	43.50	-16.26	Vertical
332.52	2.14	16.86	25.58	32.28	25.70	46.00	-20.30	Vertical
504.71	2.41	19.33	25.55	30.10	26.29	46.00	-19.71	Vertical
925.76	3.38	24.59	25.51	26.88	29.34	46.00	-16.66	Vertical
34.28	0.62	12.65	25.74	28.22	15.75	40.00	-24.25	Horizontal
73.62	0.88	7.70	25.69	39.33	22.22	40.00	-17.78	Horizontal
159.78	1.57	10.34	25.63	42.09	28.37	43.50	-15.13	Horizontal
270.37	2.00	13.57	25.59	36.62	26.60	46.00	-19.40	Horizontal
356.68	2.18	15.70	25.57	36.08	28.39	46.00	-17.61	Horizontal
706.70	2.95	28.39	25.53	28.61	34.42	46.00	-11.58	Horizontal

5.7.2 Transmitter emission above 1GHz

Test channel:	Lowest	Remark:	Peak
---------------	--------	---------	------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2327.75	6.02	29.76	39.75	43.76	39.79	74.00	-34.21	Vertical
2398.25	6.34	30.03	38.87	43.57	41.07	74.00	-32.93	Vertical
2400.00	6.34	30.03	38.87	43.59	41.09	74.00	-32.91	Vertical
4804.00	9.36	34.25	41.53	45.37	47.45	74.00	-26.55	Vertical
7206.00	13.38	37.23	40.98	46.49	56.12	74.00	-17.88	Vertical
9608.00	13.39	37.99	37.56	41.92	55.74	74.00	-18.26	Vertical
12010.00	16.45	39.10	39.09	42.09	58.55	74.00	-15.45	Vertical
2327.75	6.02	29.76	39.75	43.62	39.65	74.00	-34.35	Horizontal
2398.25	6.34	30.03	38.87	44.00	41.50	74.00	-32.50	Horizontal
2400.00	6.34	30.03	38.87	43.81	41.31	74.00	-32.69	Horizontal
4804.00	9.36	34.25	41.53	44.22	46.30	74.00	-27.70	Horizontal
7206.00	13.38	37.23	40.98	45.61	55.24	74.00	-18.76	Horizontal
9608.00	13.39	37.99	37.56	41.51	55.33	74.00	-18.67	Horizontal
12010.00	16.45	39.10	39.09	40.77	57.23	74.00	-16.77	Horizontal

Test channel:	Lowest	Remark:	average
---------------	--------	---------	---------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2327.75	6.02	29.76	39.75	31.03	27.06	54.00	-26.94	Vertical
2398.25	6.34	30.03	38.87	31.15	28.65	54.00	-25.35	Vertical
2400.00	6.34	30.03	38.87	31.18	28.68	54.00	-25.32	Vertical
4804.00	9.36	34.25	41.53	31.04	33.12	54.00	-20.88	Vertical
7206.00	13.38	37.23	40.98	31.30	40.93	54.00	-13.07	Vertical
9608.00	13.39	37.99	37.56	28.37	42.19	54.00	-11.81	Vertical
12010.00	16.45	39.10	39.09	27.60	44.06	54.00	-9.94	Vertical
2327.75	6.02	29.76	39.75	31.21	27.24	54.00	-26.76	Horizontal
2398.25	6.34	30.03	38.87	31.08	28.58	54.00	-25.42	Horizontal
2400.00	6.34	30.03	38.87	31.12	28.62	54.00	-25.38	Horizontal
4804.00	9.36	34.25	41.53	31.02	33.10	54.00	-20.90	Horizontal
7206.00	13.38	37.23	40.98	31.37	41.00	54.00	-13.00	Horizontal
9608.00	13.39	37.99	37.56	28.44	42.26	54.00	-11.74	Horizontal
12010.00	16.45	39.10	39.09	27.60	44.06	54.00	-9.94	Horizontal

Test channel:	Middle	Remark:	Peak
---------------	--------	---------	------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2400.00	6.34	30.03	38.87	43.78	41.28	74.00	-32.72	Vertical
2483.50	6.22	30.32	39.53	43.95	40.96	74.00	-33.04	Vertical
4882.00	10.57	34.35	40.33	46.04	50.63	74.00	-23.37	Vertical
7323.00	12.91	37.31	40.40	45.35	55.17	74.00	-18.83	Vertical
9764.00	13.89	38.03	37.94	40.47	54.45	74.00	-19.55	Vertical
12205.00	17.95	39.23	39.30	40.86	58.74	74.00	-15.26	Vertical
2400.00	6.34	30.03	38.87	43.59	41.09	74.00	-32.91	Horizontal
2483.50	6.22	30.32	39.53	48.20	45.21	74.00	-28.79	Horizontal
4882.00	10.57	34.35	40.33	50.12	54.71	74.00	-19.29	Horizontal
7323.00	12.91	37.31	40.40	46.11	55.93	74.00	-18.07	Horizontal
9764.00	13.89	38.03	37.94	40.46	54.44	74.00	-19.56	Horizontal
12205.00	17.95	39.23	39.30	40.62	58.50	74.00	-15.50	Horizontal

Test channel:	Middle	Remark:	average
---------------	--------	---------	---------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2400.00	6.34	30.03	38.87	31.00	28.50	54.00	-25.50	Vertical
2483.50	6.22	30.32	39.53	30.85	27.86	54.00	-26.14	Vertical
4882.00	10.57	34.35	40.33	31.41	36.00	54.00	-18.00	Vertical
7323.00	12.91	37.31	40.40	31.59	41.41	54.00	-12.59	Vertical
9764.00	13.89	38.03	37.94	28.20	42.18	54.00	-11.82	Vertical
12205.00	17.95	39.23	39.30	27.50	45.38	54.00	-8.62	Vertical
2400.00	6.34	30.03	38.87	31.01	28.51	54.00	-25.49	Horizontal
2483.50	6.22	30.32	39.53	30.83	27.84	54.00	-26.16	Horizontal
4882.00	10.57	34.35	40.33	31.36	35.95	54.00	-18.05	Horizontal
7323.00	12.91	37.31	40.40	31.57	41.39	54.00	-12.61	Horizontal
9764.00	13.89	38.03	37.94	28.20	42.18	54.00	-11.82	Horizontal
12205.00	17.95	39.23	39.30	27.47	45.35	54.00	-8.65	Horizontal

Test channel:	Highest	Remark:	Peak
---------------	---------	---------	------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	6.22	30.32	39.53	53.71	50.72	74.00	-23.28	Vertical
2500.00	5.76	30.37	39.15	43.72	40.70	74.00	-33.30	Vertical
4960.00	10.43	34.45	41.03	44.73	48.58	74.00	-25.42	Vertical
7440.00	12.72	37.37	40.01	45.29	55.37	74.00	-18.63	Vertical
9920.00	14.24	38.08	37.78	40.44	54.98	74.00	-19.02	Vertical
12400.00	17.55	39.34	39.48	40.93	58.34	74.00	-15.66	Vertical
2483.50	6.22	30.32	39.53	43.98	40.99	74.00	-33.01	Horizontal
2500.00	5.76	30.37	39.15	44.04	41.02	74.00	-32.98	Horizontal
4960.00	10.43	34.45	41.03	44.48	48.33	74.00	-25.67	Horizontal
7440.00	12.72	37.37	40.01	44.67	54.75	74.00	-19.25	Horizontal
9920.00	14.24	38.08	37.78	40.91	55.45	74.00	-18.55	Horizontal
12400.00	17.55	39.34	39.48	42.50	59.91	74.00	-14.09	Horizontal

Test channel:	Highest	Remark:	average
---------------	---------	---------	---------

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	6.22	30.32	39.53	30.52	27.53	54.00	-26.47	Vertical
2500.00	5.76	30.37	39.15	30.54	27.52	54.00	-26.48	Vertical
4960.00	10.43	34.45	41.03	32.01	35.86	54.00	-18.14	Vertical
7440.00	12.72	37.37	40.01	31.46	41.54	54.00	-12.46	Vertical
9920.00	14.24	38.08	37.78	27.19	41.73	54.00	-12.27	Vertical
12400.00	17.55	39.34	39.48	27.87	45.28	54.00	-8.72	Vertical
2483.50	6.22	30.32	39.53	30.58	27.59	54.00	-26.41	Horizontal
2500.00	5.76	30.37	39.15	30.60	27.58	54.00	-26.42	Horizontal
4960.00	10.43	34.45	41.03	31.99	35.84	54.00	-18.16	Horizontal
7440.00	12.72	37.37	40.01	31.47	41.55	54.00	-12.45	Horizontal
9920.00	14.24	38.08	37.78	27.18	41.72	54.00	-12.28	Horizontal
12400.00	17.55	39.34	39.48	27.86	45.27	54.00	-8.73	Horizontal

Remark: The disturbance above 13GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5.8 Conducted Emissions

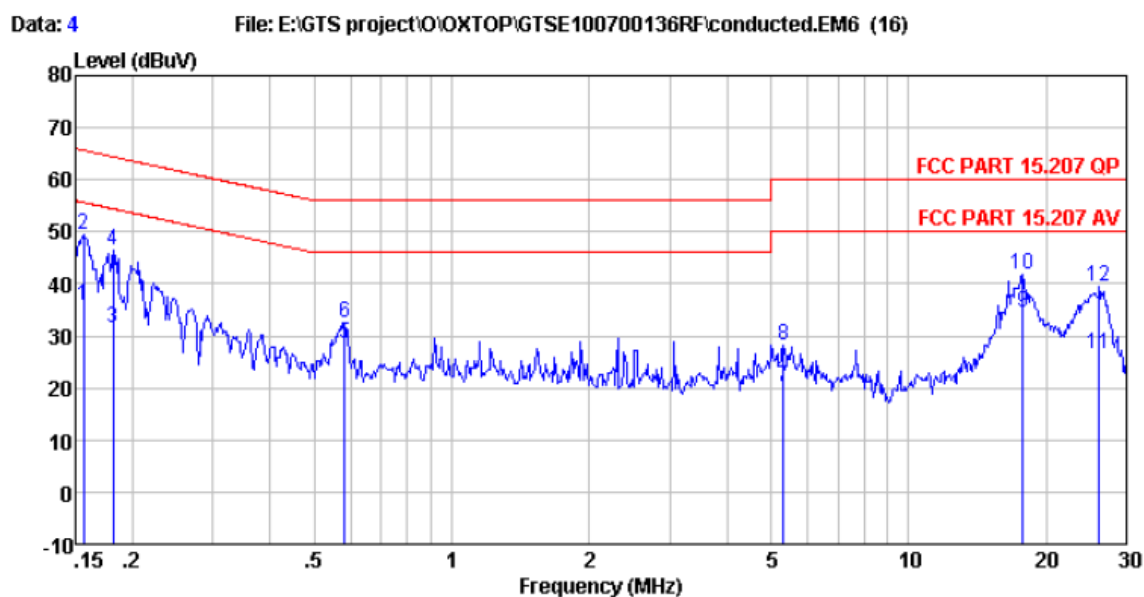
Test Requirement:	FCC Part15 C Section 15.207 RSS-GEN Section 7.2.2		
Test Method:	ANSI C63.4: 2003		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.		
Test setup:	<div><div><div>Reference Plane</div><div><div>LISN</div><div>AUX Equipment</div><div>E.U.T</div><div>Test table/Insulation plane</div></div><div>40cm</div><div>80cm</div><div><div>LISN</div><div>Filter</div><div>AC power</div><div>EMI Receiver</div></div></div></div> <div><div>Remark:</div><div>E.U.T: Equipment Under Test</div><div>LISN: Line Impedance Stabilization Network</div><div>Test table height=0.8m</div></div>		
Test Instruments:	Refer to section 4.7 for details		
Test mode:	Refer to section 4.3 for details		
Test results:	Passed		

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



Condition : FCC PART 15.207 QP LISN LINE

Job No : 136RF

Test Mode : Normal operating

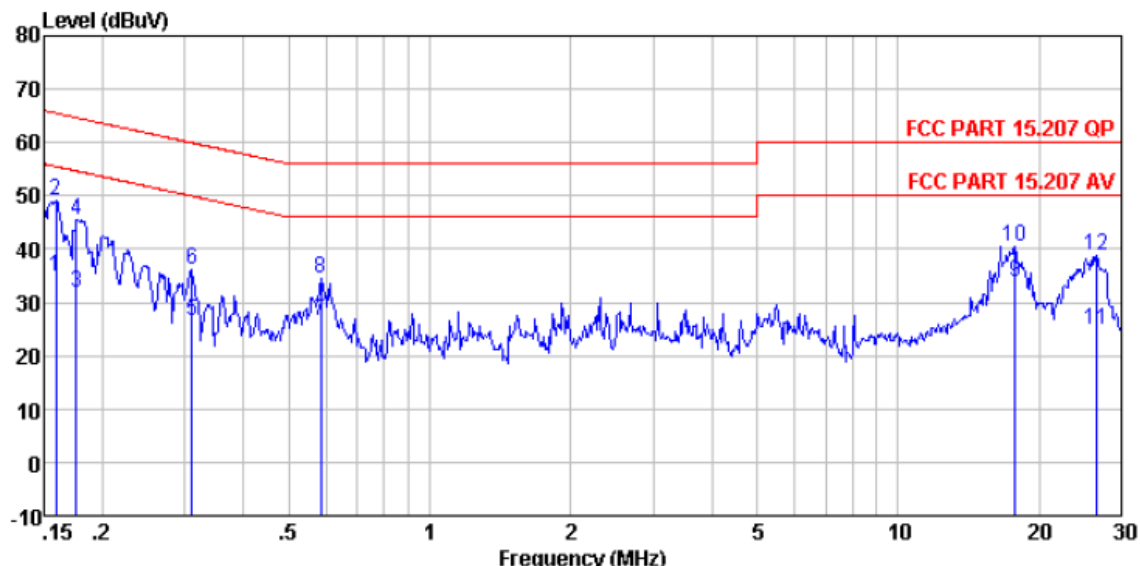
Test Engineer: Franks

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.16	32.00	3.68	0.01	35.69	55.65	-19.96	Average
2	0.16	45.72	3.68	0.01	49.41	65.65	-16.24	QP
3	0.18	28.00	3.67	0.01	31.68	54.42	-22.74	Average
4	0.18	42.80	3.67	0.01	46.48	64.42	-17.94	QP
5	0.58	25.00	3.54	0.01	28.55	46.00	-17.45	Average
6	0.58	29.08	3.54	0.01	32.63	56.00	-23.37	QP
7	5.33	16.50	3.29	0.32	20.11	50.00	-29.89	Average
8	5.33	24.74	3.29	0.32	28.35	60.00	-31.65	QP
9	17.75	31.00	3.16	0.44	34.60	50.00	-15.40	Average
10	17.75	38.32	3.16	0.44	41.92	60.00	-18.08	QP
11	26.14	23.00	3.12	0.45	26.57	50.00	-23.43	Average
12	26.14	35.86	3.12	0.45	39.43	60.00	-20.57	QP

Neutral Line:

Data: 3

File: E:\GTS project\O\OXTOP\GTSE100700136RF\conducted.EM6 (16)



Condition : FCC PART 15.207 QP LISN NEUTRAL

Job No : 136RF

Test Mode : Normal operating

Test Engineer: Franks

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.16	31.00	3.68	0.01	34.69	55.52	-20.83	Average
2	0.16	45.46	3.68	0.01	49.15	65.52	-16.37	QP
3	0.18	28.00	3.67	0.01	31.68	54.68	-23.00	Average
4	0.18	41.76	3.67	0.01	45.44	64.68	-19.24	QP
5	0.31	23.00	3.61	0.01	26.62	49.97	-23.35	Average
6	0.31	32.58	3.61	0.01	36.20	59.97	-23.77	QP
7	0.59	23.10	3.54	0.01	26.65	46.00	-19.35	Average
8	0.59	30.90	3.54	0.01	34.45	56.00	-21.55	QP
9	17.75	30.10	3.16	0.44	33.70	50.00	-16.30	Average
10	17.75	37.04	3.16	0.44	40.64	60.00	-19.36	QP
11	26.56	21.30	3.11	0.45	24.86	50.00	-25.14	Average
12	26.56	35.24	3.11	0.45	38.80	60.00	-21.20	QP

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.