SGS-CSTC Standards Technical Services（Shanghai） Co., Ltd.

588 West Jindu Road,Songjiang District,Shanghai,China

Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5655
ee.shanghai@sgs.com

TEST REPORT

Application No. :	SHEM1202000112RF
Applicant:	Monster, LLC
Equipment Under Test (EUT):	
NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
EUT Name:	StreamCast HD Receiver
Brand Name:	Monster Products
Model No:	MSP STRC WL REC WW
Fundamental Frequency :	2412-2464 MHz, 5736-5814MHz and 5180-5240MHz*
Test Frequency:	5180-5240MHz
FCC ID:	RJE-178458
IC:	7512A-178458
Standards:	FCC PART 15 SUBPART E, Section 15.407 RSS-210 Issue 8 (December 2010) RSS-Gen Issue 3 (December 2010)
Date of Receipt:	Feb. 13, 2012
Date of Test:	Nov. 12, 2012 to Mar. 26, 2013.
Date of Issue:	Apr.23, 2013
Test Result :	**PASS ***

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

For 2412-2464MHz and 5736-5814MHz bands please reference report SHEM120200011218.

E&E Section Head
SGS-CSTC(Shanghai) Co., Ltd.

E&E EMC Engineer
SGS-CSTC(Shanghai) Co., Ltd.

2 Test Summary

TEST ITEM	FCC REFERANCE	IC REFERANCE	Test Procedure	RESULT
Peak Transmit Power	15.407(a)(1)	RSS-210 Issue 8 Annex 9	ANSI C63.10,2009 Clause 6.10.2	Pass
Peak Power Spectral Density	15.407(a)(1)	RSS-210 Issue 8 Annex 9	ANSI C63.10,2009 Clause 6.11	Pass
Peak Power Excursion	15.407(a)(6)	RSS-210 Issue 8 Annex 9	ANSI C63.10,2009 Clause 6.10.2	Pass
Electric Field Strength Spurious Emissions	15.407(b)(1)(6)(7) 15.205 15.209	RSS-210 Issue 8 Annex 9	ANSI C63.10,2009 Clause 6.3, 6.5 and 6.6	Pass
Radiated Emission BandEdge	15.407(b)(5)(7) 15.205	---	ANSI C63.10,2009 Clause 6.9	Pass
Undesirable emission	FCC Part15 407 (b)(1)	RSS-210 Issue 8 Annex 9	ANSI C63.10,2009 Clause 6.7	Pass
Frequency stability	FCC Part15 407 (g)	---	----	Pass
Power line conducted emission	15.407(b)(6) 15.207	RSS-Gen Issue 8 Clause 7.2.4	ANSI C63.10,2009 Clause 6.2	Pass
Occupied bandwidth	---	RSS-Gen Issue 3 Clause 4.6.1	RSS-Gen Issue 3 Clause 4.6.1	Tested

3 Contents

4 General Information

4.1 Client Information

Applicant :	Monster, LLC
Applicant Address:	7251 West Lake Mead Blvd Suite 342 Las Vegas, NV 89128
Manufacturer:	Hansong(Nanjing) Technology Ltd.
Manufacturer Address:	8th Kangping Road, Jiangning Economy and Technology Development Zone,Nanjing,201106,China

4.2 Details of E.U.T.

EUT Name:	StreamCast HD Receiver	
Brand Name:	Monster Products	
Model No:	MSP STRC WL REC WW	
Power Supply:	5.2V DC	
Frequency Band Channels :	5180-5240 MHz Channel Description:	
	Channel of Tranmitter	Frequency(MHz)
	Low	5180
	Mid	5210
	High	5240
Modulation Type:	QPSK	
Antenna Type:	Integral antenna(Antenna Gain 2.0dB)	

4.3 Description of Support Units

Name	Model No.	Remark
AC Adapter	N/A	N/A

4.4 Test Location

Tests were performed at:
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

4.5 Other Information Requested by the Customer

None.

4.6 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

5 Test Instruments

☒ **Conducted Emission**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-06-13	2013-06-12
2	Line impedance stabilization network (LISN)	SCHWARZBECK	NSLK8127	8127-490	2012-06-13	2013-06-12
3	Line impedance stabilization network (LISN)	ETS	3816/2	00034161	2012-06-13	2013-06-12

☒ **Radiated Spurious Emission**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-06-02	2013-06-01
2	Antenna	SCHWARZBECK	VULB9168	9168-313	2012-08-15	2013-08-14
3	CONTROLLER	INNCO	CO200	474	/	/
4	Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2012-08-15	2013-08-14
5	Antenna	SCHWARZBECK	BBHA9170	9170-373	2012-08-15	2013-08-14
6	Low nosie amplifier	LNA6900	TESEQ	71033	2012-08-15	2013-08-14

☒ **RF Conducted Test**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-06-03	2013-06-01
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2012-06-03	2013-06-01
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2012-06-03	2013-06-01
4	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2012-06-03	2013-06-01
5	Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170373	2012-08-15	2013-08-14
6	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2012-10-09	2013-10-08
7	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY－2009P	--	2012-10-09	2013-10-08

8	CLAMP METER	FLUKE	316	86080010	2012-06-03	2013-06-01
9	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2012-10-09	2013-10-08
11	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2012-06-03	2013-06-01
12	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT1800.0/ 2000.0-0.2/40-5SSK	11	2012-06-03	2013-06-01
13	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/ 880.0-0.2/40-5SSK	9	2012-06-03	2013-06-01
14	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	2012-06-03	2013-06-01
15	Low nosie amplifier	TESEQ	LNA6900	70133	2012-06-03	2013-06-01
16	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-06-03	2013-06-01
17	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2012-06-03	2013-06-01

6 Test Procedure & Measurement Data

6.1 E.U.T. Operation

Input voltage:	5.2V DC
Operating Environment:	
Temperature:	25.0 °C
Humidity:	45 % RH
Atmospheric Pressure:	1013 mbar
EUT Operation:	The EUT has been tested under operating condition.
	Test program was used to control the EUT for staying in continuous transmitting mode is programmed.
	For 5180-5240MHz Band Channel low (5180MHz) mid(5210MHz) high(5240MHz)

6.2 Peak Output Power Measurement

Test Requirement:	FCC Part 15 407 (a) (1) RSS-210 Issue 8 Annex 9
Test date	Dec.15, 2013
Standard Applicable:	According to section 15.407(a) (1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26- dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
Measuremet Produre:	1. Place the EUT on the table and set it in transmitting mode. 2. Remove the antenna from the EUT and then connect a low loss RF calbe from the antenna port to the spectrum. 3. Set the occur band to the entire emission bandwitdth of the signal. 4. Record the max.channel power reading Repeat above procedures until all the frequency measured were complete.
Limit:	For 5.15-5.25GHz band The lesser of 50mW (17dBm) or 4dBm + 10logB

Measurement Result:

5180-5240MHz Band for Antenna A:

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	PEAK POWER LIMIT (dBm)	26dB Occupied Bandwidth (MHz)	Result
LOW	5180	4.06	0.5	4.56	12.06	16.08	PASS
MID	5210	3.64	0.5	4.14	12.06	16.08	PASS
HIGH	5240	3.84	0.5	4.34	12.06	16.08	PASS

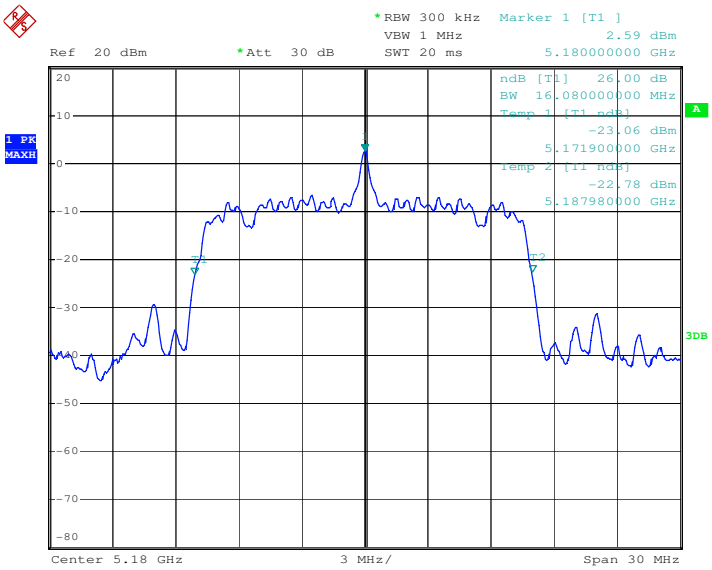
5180-5240MHz Band for Antenna B:

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	PEAK POWER LIMIT (dBm)	26dB Occupied Bandwidth (MHz)	Result
LOW	5180	5.13	0.5	5.63	12.06	16.08	PASS
MID	5210	2.98	0.5	3.48	12.06	16.08	PASS
HIGH	5240	3.77	0.5	4.27	12.06	16.08	PASS

Test Plots for 26dB Bandwidth

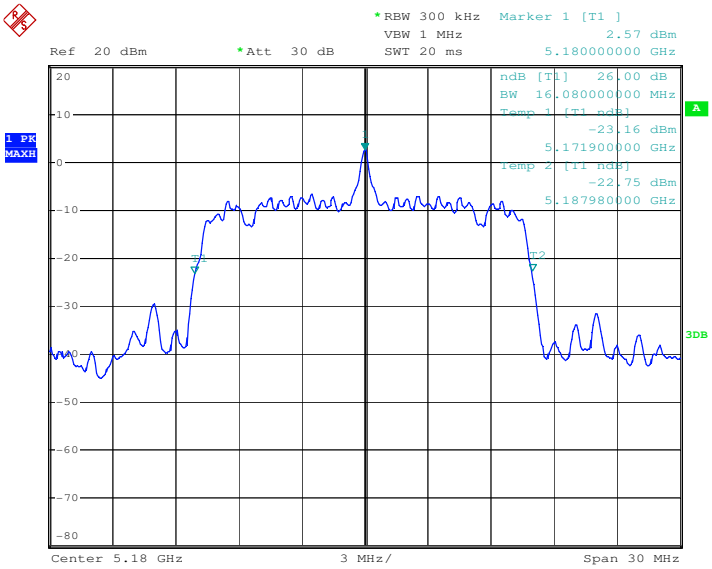
5180MHz Brand:

For Antenna A:



Date: 15.DEC.2012 18:50:06

For Antenna B:



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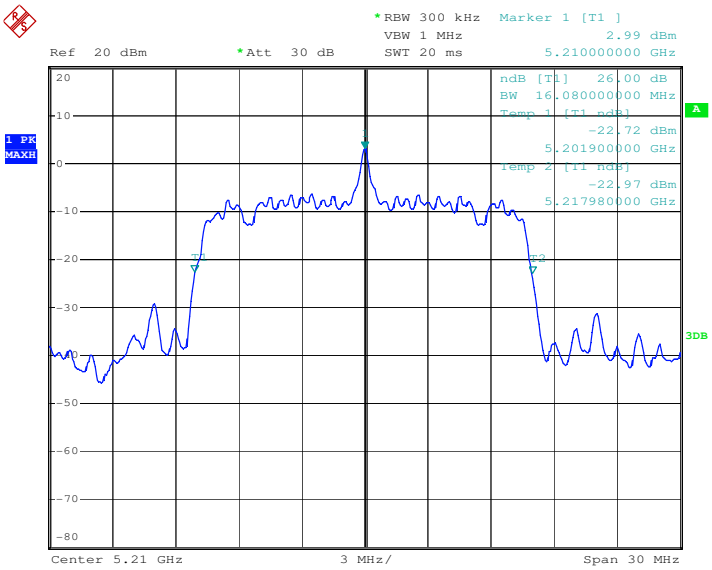
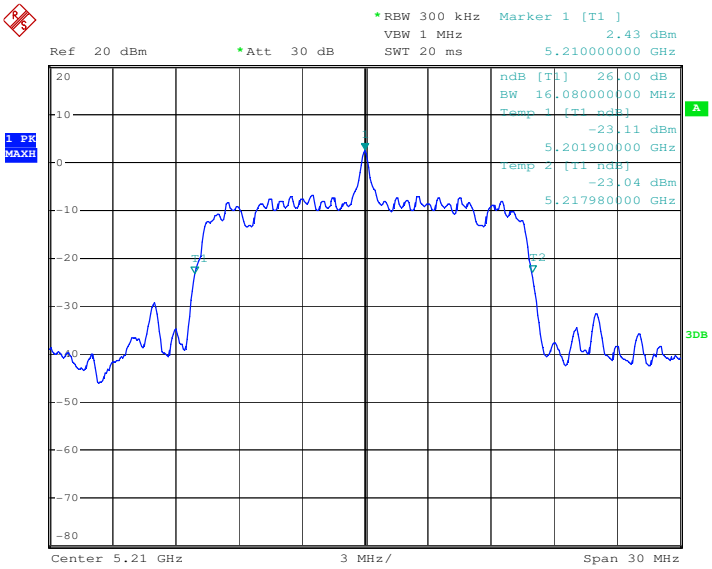
5210MHz Brand:

For Antenna A:



Date: 15.DEC.2012 18:50:45

For Antenna B:



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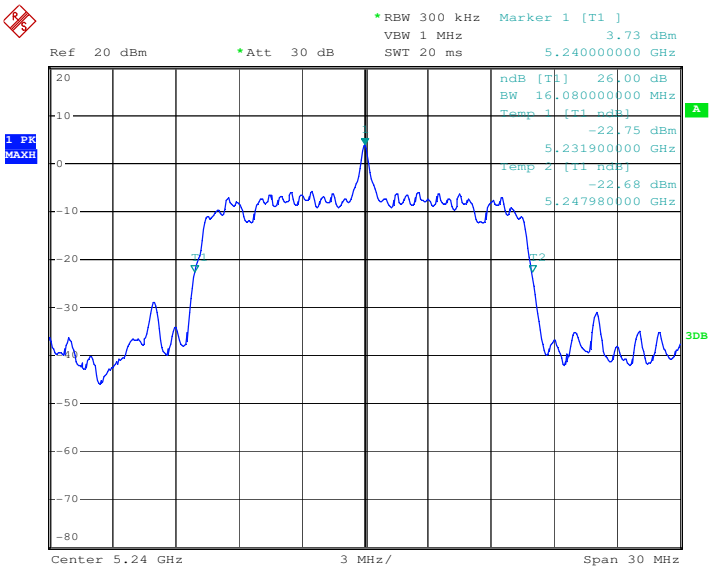
5240MHz Brand:

For Antenna A:



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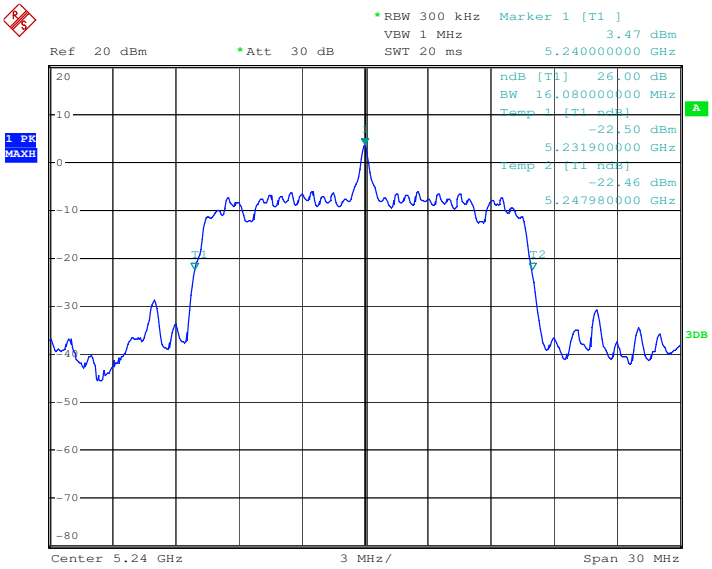
For Antenna B:

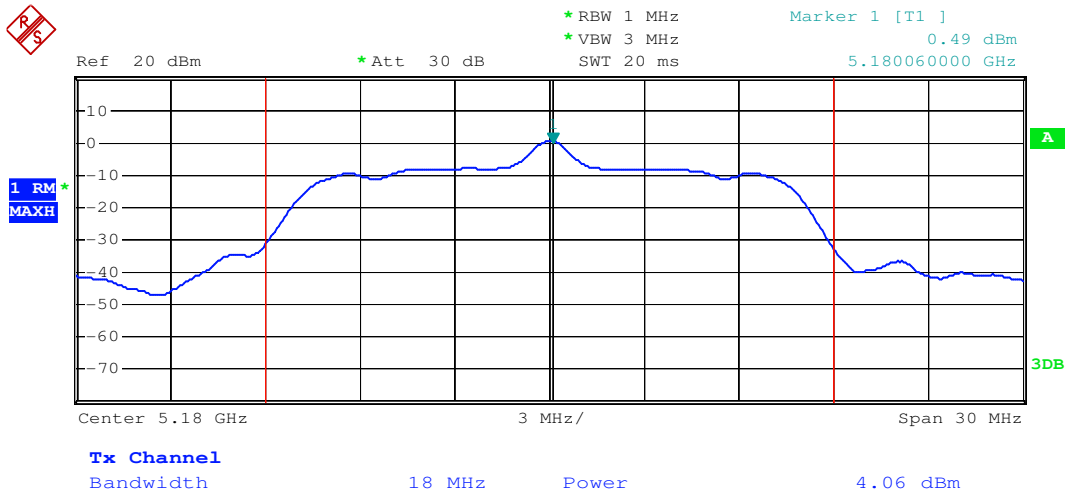


Date: 15.DEC.2012 18:48:34

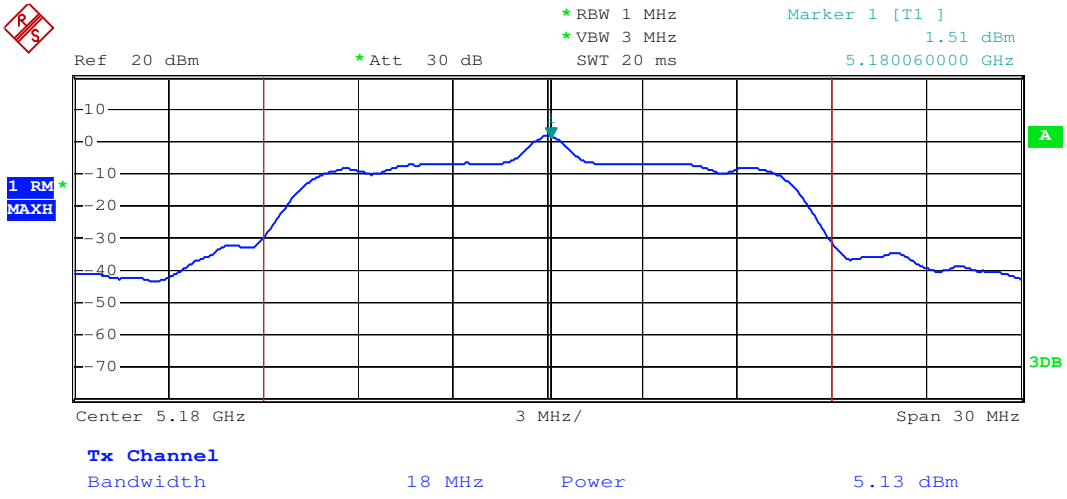
Test Plots for Channel Power

5180MHz Brand:

For Antenna A:

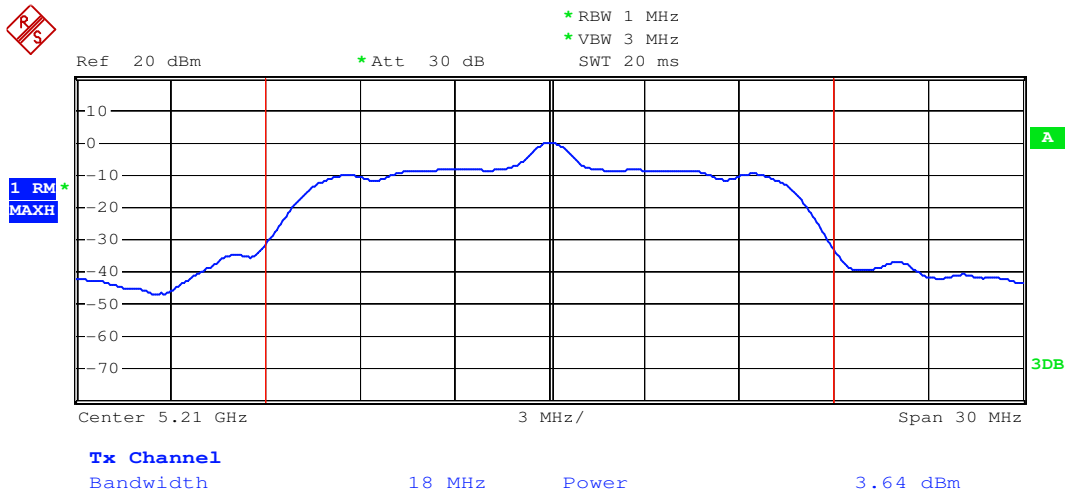


For Antenna B:



5210MHz Brand:

For Antenna A:



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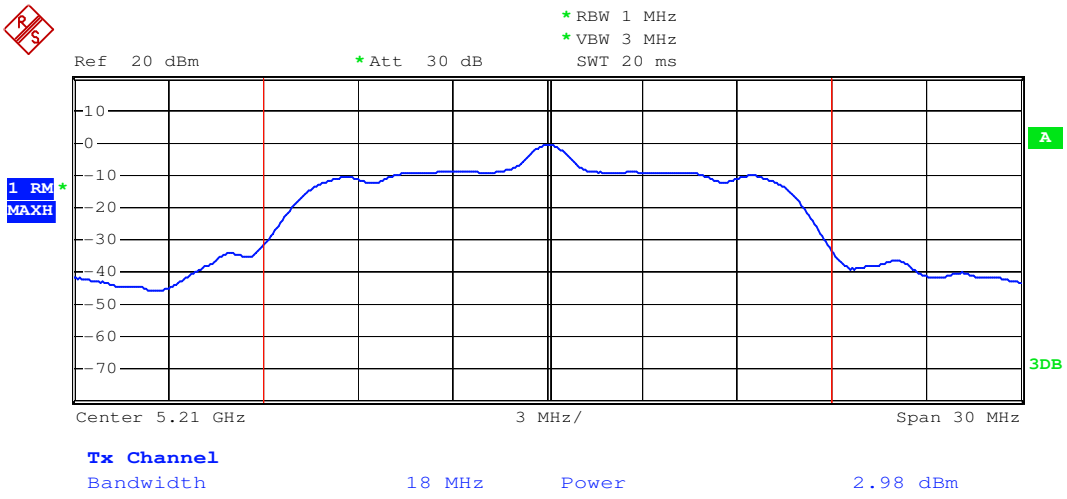
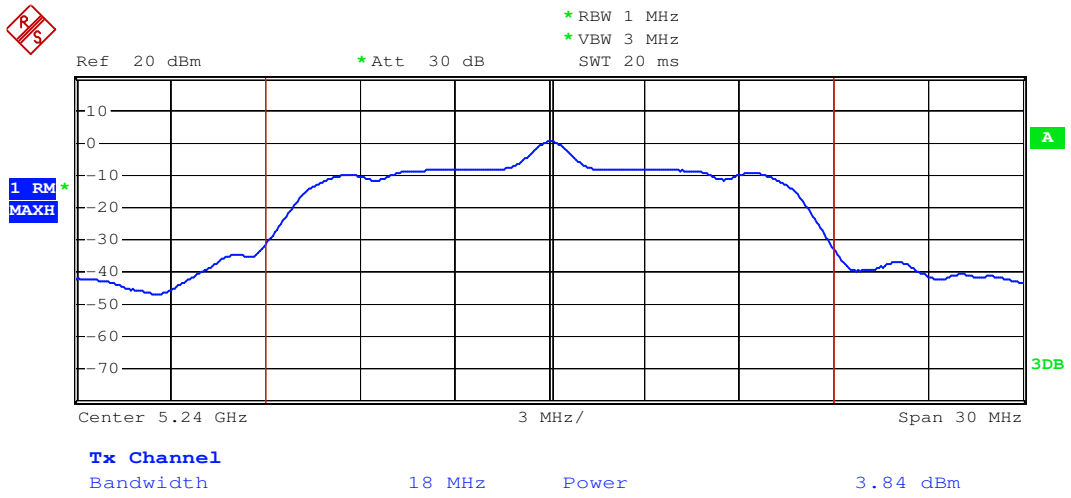
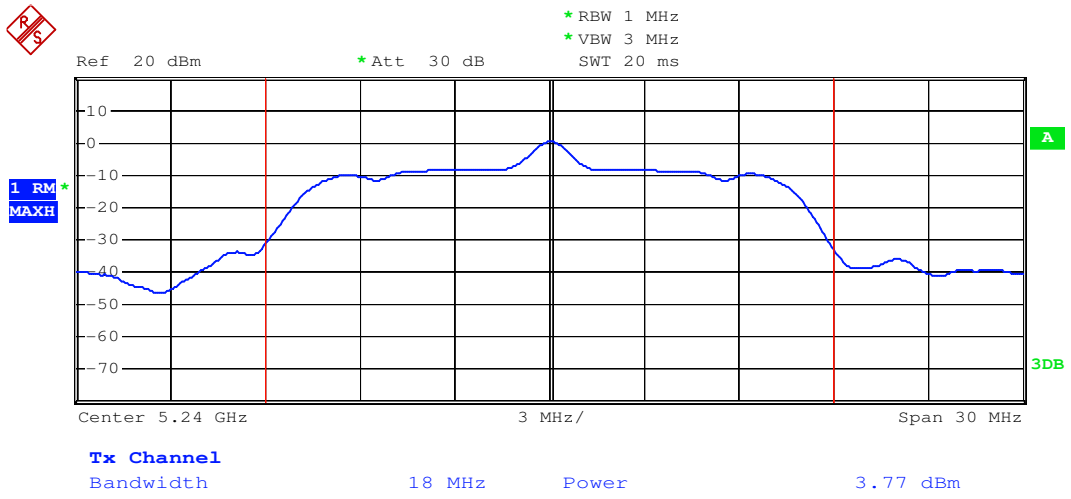


5240MHz Brand:

For Antenna A:



For Antenna B:



6.3 Peak Power Spectral Density

Test Requirement:	FCC Part15 407(a)(1) RSS-210 Issue 8 Annex 9
Test date:	Feb.15, 2013
Standard Applicable:	According to section 15.407(a), (1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26- dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
Measurement Procedure:	The EUT was tested according to UNII test procedure of KDB 789033 for compliance to FCC 47CFR 15.407 requiremnts. Set RBW=1MHz,Set VBW=3MHz,Span=50MHz,Sweep time=Auto,Set detector=Peak detector.

Measurement Result:

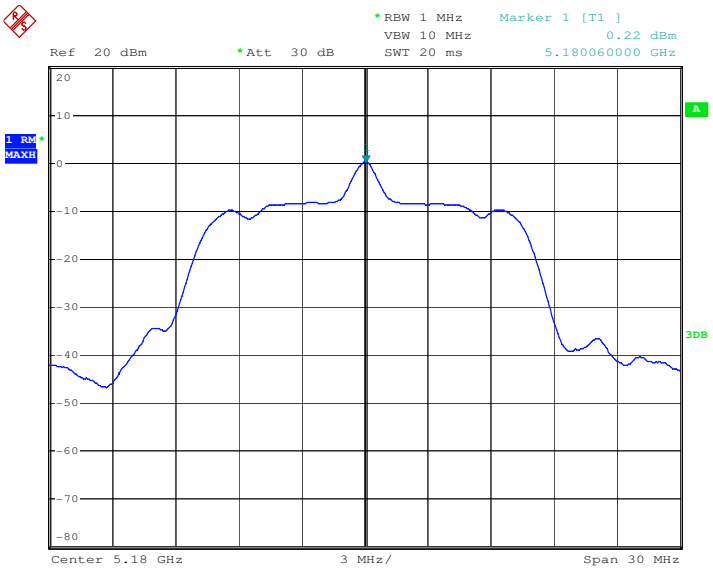
5180-5240MHz Band for Antenna A:

CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	5180	0.22	0.5	0.72	4	PASS
MID	5210	0.17	0.5	0.67	4	PASS
HIGH	5240	0.21	0.5	0.71	4	PASS

5180-5240MHz Band for Antenna B:

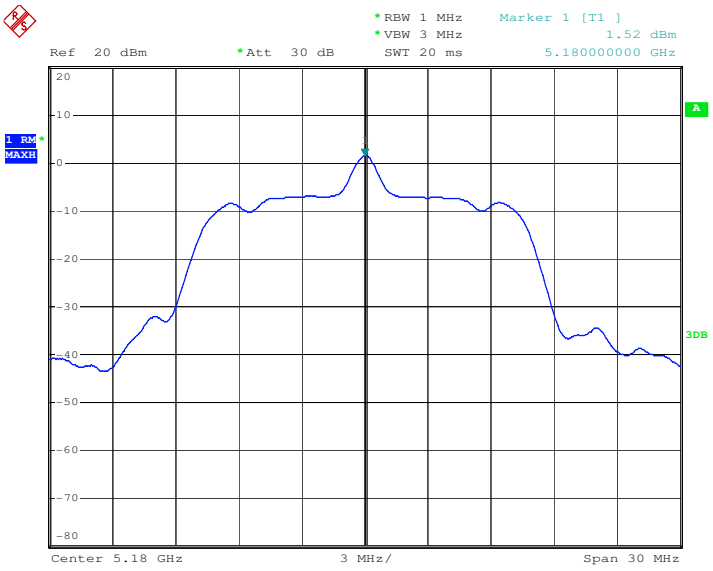
CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	5180	1.52	0.5	2.02	4	PASS
MID	5210	-0.79	0.5	-0.29	4	PASS
HIGH	5240	-0.22	0.5	0.28	4	PASS

Power Spectral Density Test Plot(CH 5180MHz)
For Antenna A:



Date: 15.DEC.2012 18:59:19

For Antenna B:



Date: 15.DEC.2012 19:06:14

Power Spectral Density Test Plot(CH 5210MHz)
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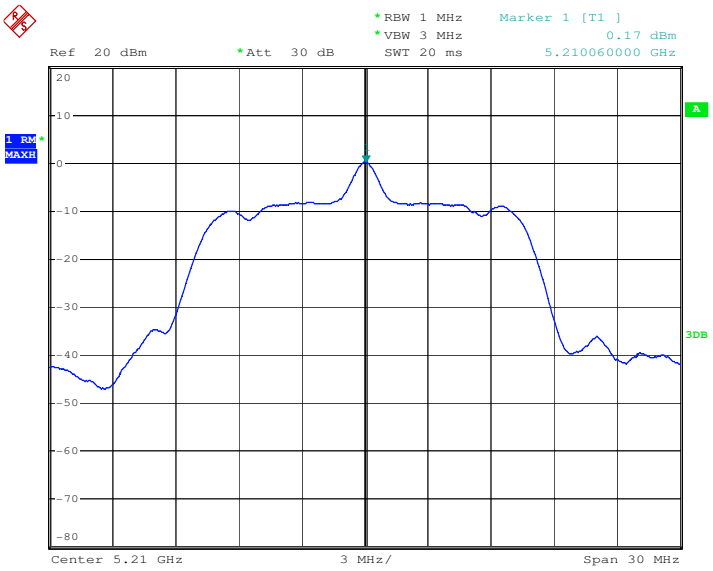
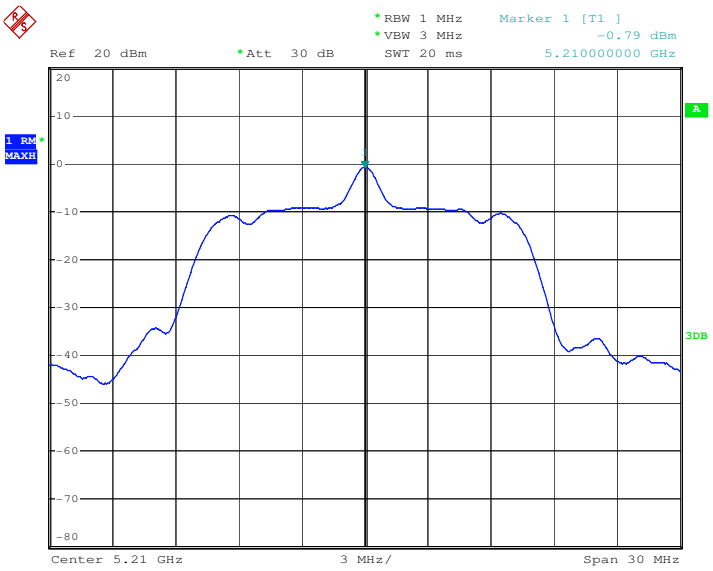


Date: 15.DEC.2012 19:09:12

For Antenna B:



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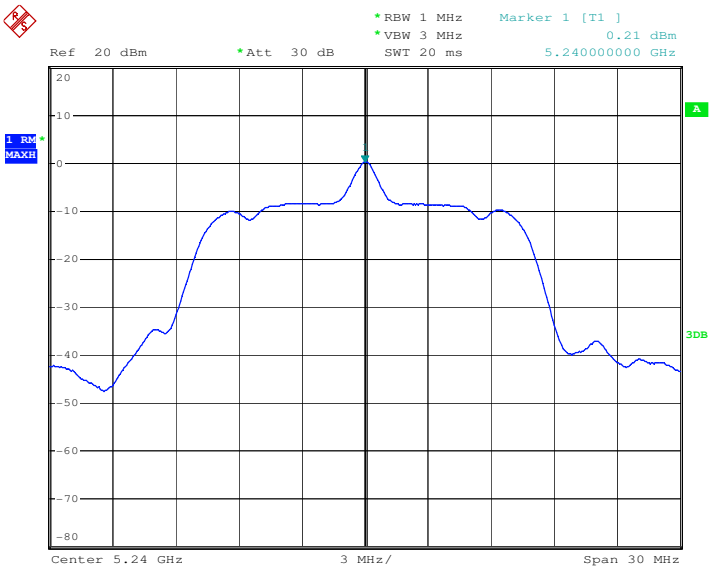
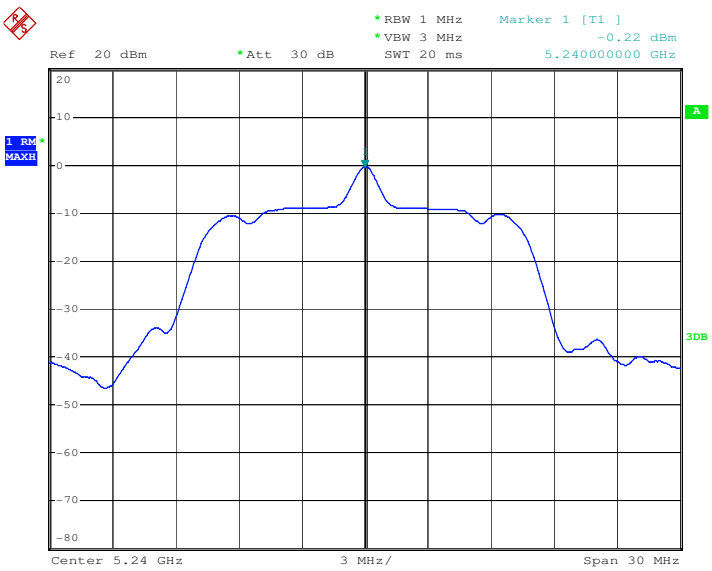
Power Spectral Density Test Plot(CH 5240MHz)

For Antenna A:



Date: 15.DEC.2012 19:15:00

For Antenna B:



Date: 15.DEC.2012 19:18:08

6.4 Peak Power Excursion

Test Requirement: FCC Part15 407(a)(6)

RSS-210 Issue 8 Annex 9

Test date: Feb.15, 2012

Standard Applicable: According to section 15.407(a) and KDB 789033

(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Measurement Procedure:

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emission bandwidth.
3. Find the maximum of the peak-max-hold spectrum.

   set RBW=1MHz,VBW ⩾ 3MHz, Detector=peak, Trace mode=max-hold
4. allowt the sweeps to continue until the trace stabilizes.
5. Use the peak search function to find the peak of the spectrum.
6. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD

   Note: PPSD reference section 6.3

Limit:

Frequency Band	Limit
5.15 – 5.25 GHz	13dB

Measurement Result:

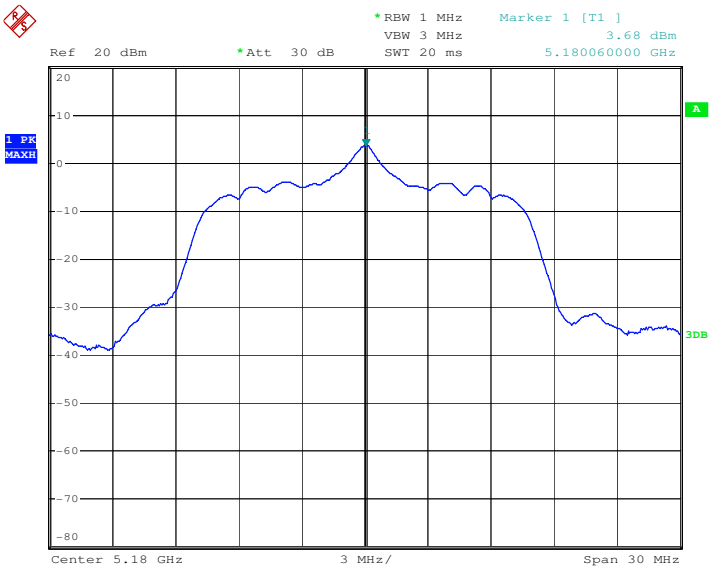
5180-5240MHz Band for Anteeena A:

CH	Frequency (MHz)	Measure Value (dBm)	PPSD (dBm)	Peak power excursion (dB)	Limit (dBm)	Result
LOW	5180	3.68	0.72	2.96	13	PASS
MID	5210	3.05	0.67	2.38	13	PASS
HIGH	5240	3.13	0.71	2.42	13	PASS

5180-5240MHz Band for Anteeena B:

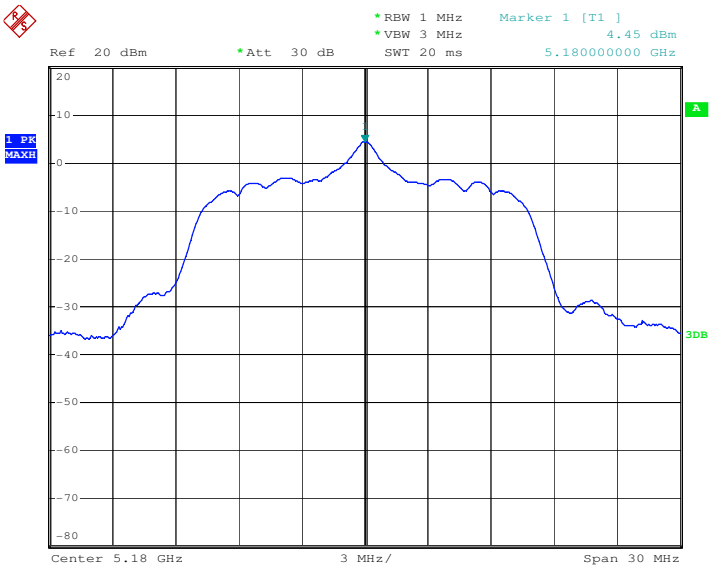
CH	Frequency (MHz)	Measure Value (dBm)	PPSD (dBm)	Peak power excursion (dB)	Limit (dBm)	Result
LOW	5180	4.45	2.02	2.43	13	PASS
MID	5210	2.13	-0.29	2.42	13	PASS
HIGH	5240	3.22	0.28	2.94	13	PASS

CH 5180MHz
For Antenna A:



Date: 15.DEC.2012 19:00:11

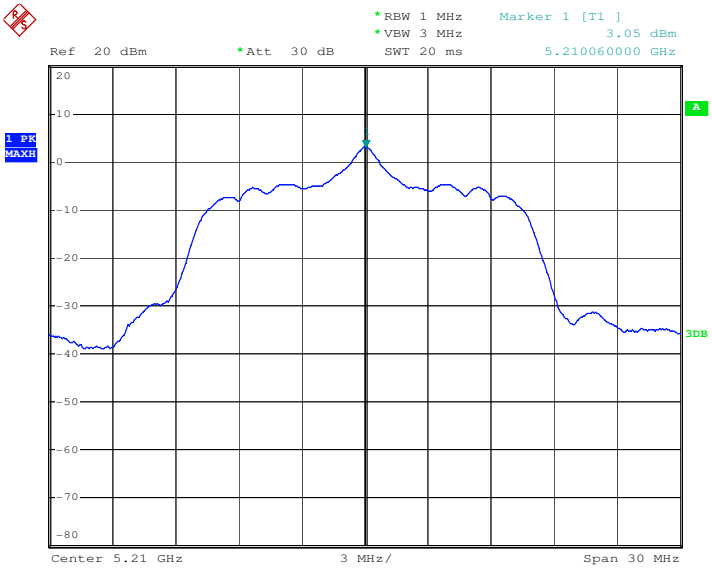
For Antenna B:



Date: 15.DEC.2012 19:06:35

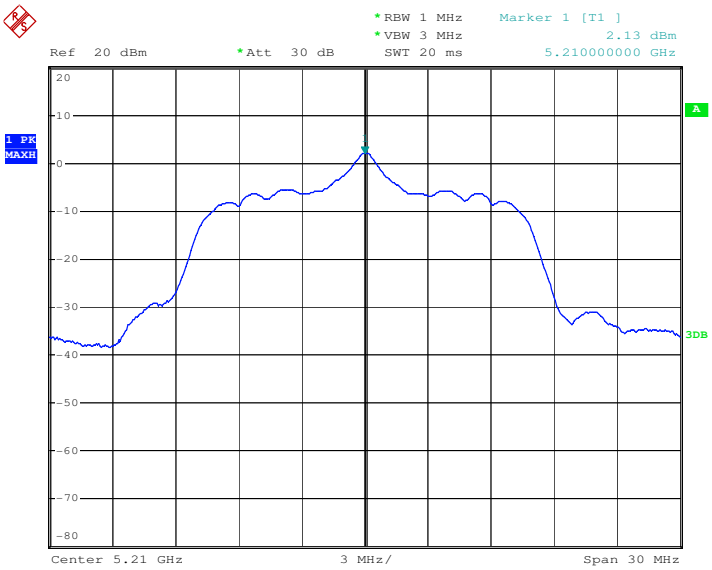
CH 5210MHz

For Antenna A:



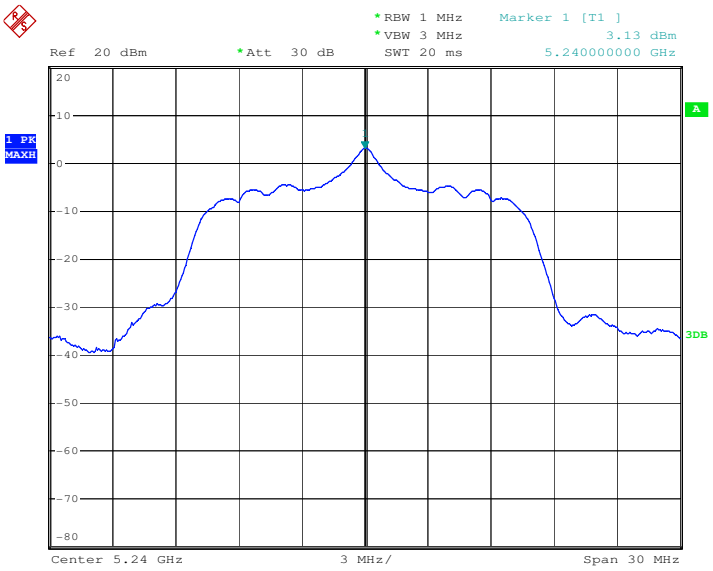
Date: 15.DEC.2012 19:08:48

For Antenna B:



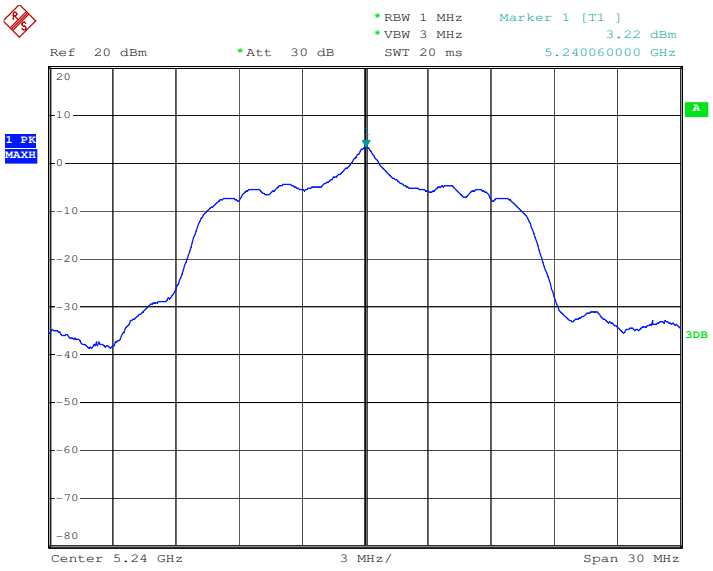
Date: 15.DEC.2012 19:12:29

CH 5240MHz
For Antenna A:



Date: 15.DEC.2012 19:15:26

For Antenna B:



Date: 15.DEC.2012 19:18:32

6.5 Electric Field Strength Spurious Emissions

Test Requirement: FCC Part15 407(b)(1)(6)(7) and FCC Part 15.209

Test date: Mar. 12, 2013 to Mar. 19, 2013

Standard Applicable: According to section 15.407(b)

(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

Measurement Procedure:

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Pre-test with the Horizontal, Vertical and other status towards to the test antenna. To find the worst status.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz - 1000 MHz). 1MHz resolution bandwidth and Peak detector apply (1000 MHz – 25GHz)
Above 1GHz
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until all frequency measured were complete.

Limit:

According to the general radiated limits in 15.209 as following

Frequency (MHz)	Field strength (microvolts/meter)	Field strength (dBuV/m)	Measurement distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Limits of unwanted emission out of the restricted bands in 15.407

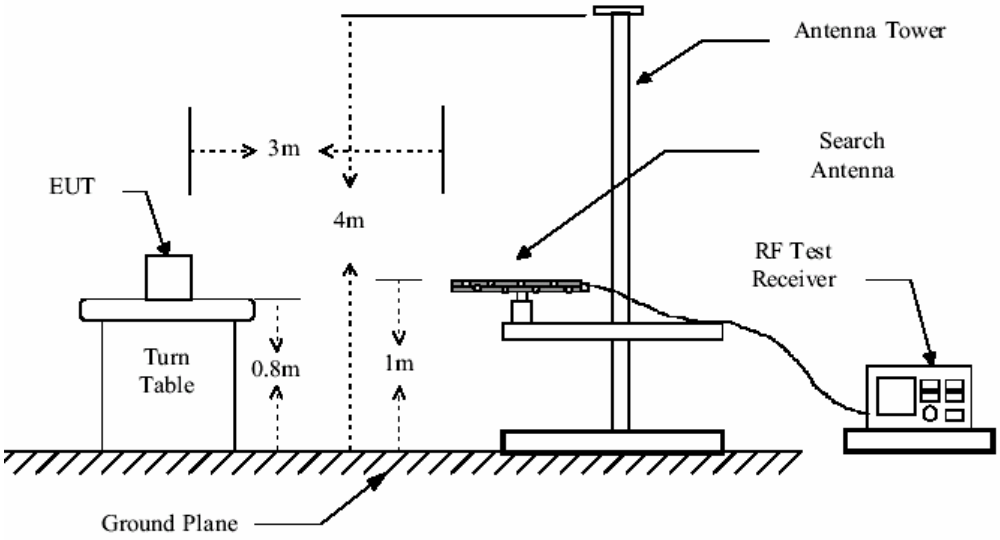
Operation Frequency (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dBμV/m) *
5150-5250	-27	68.3

Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

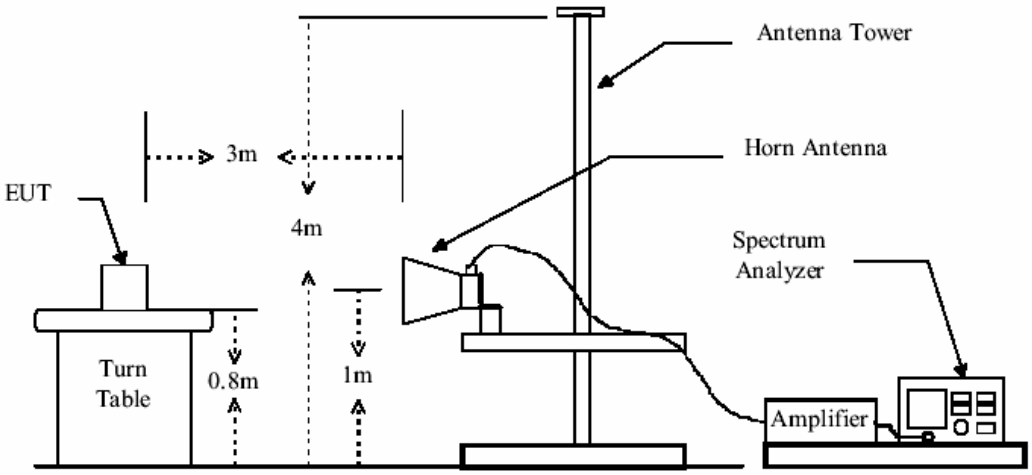
$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

Radiated Test Set-up:

Radiated Emission Test Set-up,Frequency Below 1000MHz



Radiated Emission Test Set-up Frequency Over 1GHz



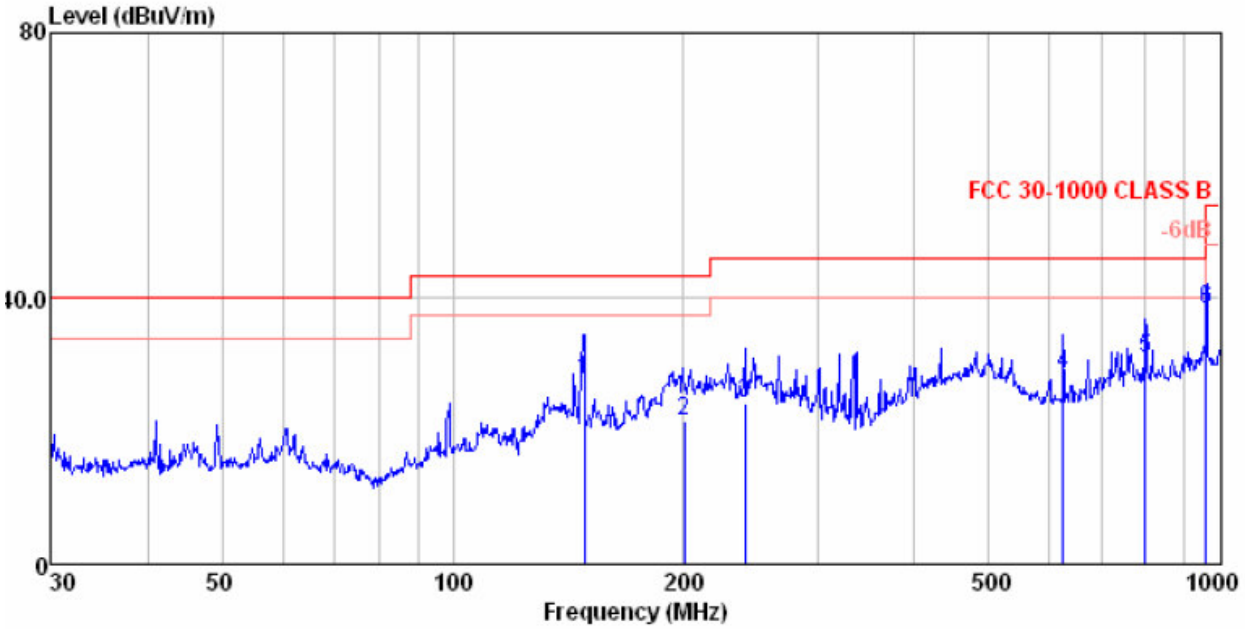
Low nosie amplifier was used below 1GHz,High pass Filter was used above 1GHz.

Tests results:

From the pre-test the worst status is the EUT Horizontal towards to the antenna. Below is the worst test results.

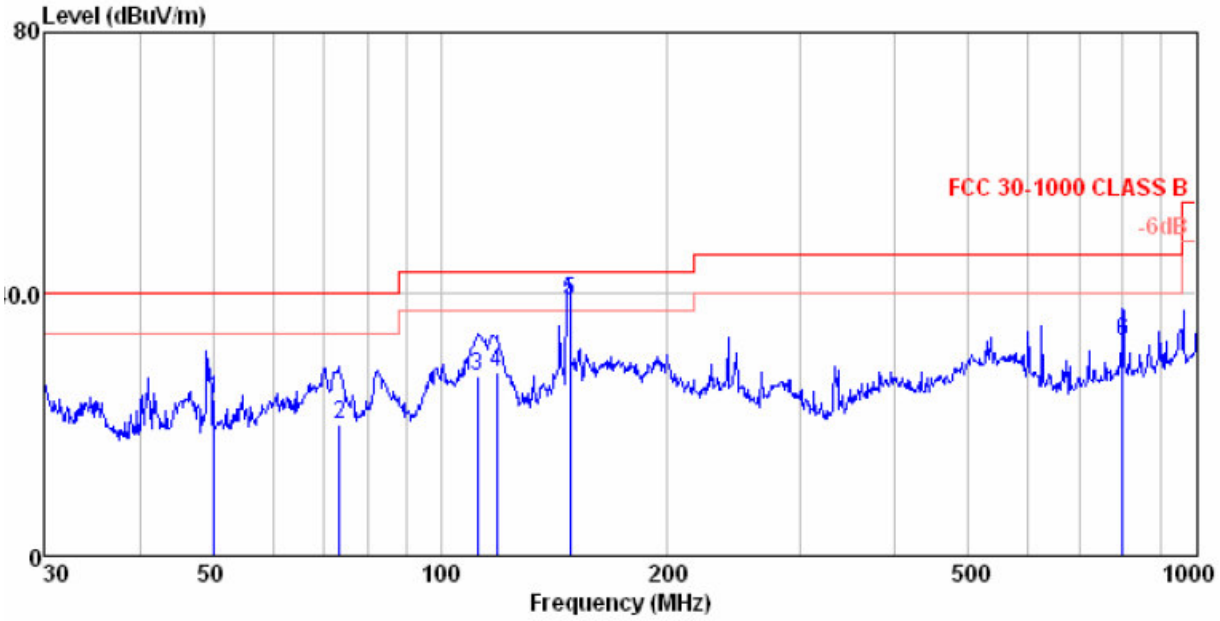
Operation Mode:5.2GHz Band

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement Antenna:Horizontal



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	148.37	38.70	12.60	1.26	24.70	27.86	43.50	-15.64	QP
2	200.31	35.28	9.30	1.51	24.60	21.49	43.50	-22.01	QP
3	240.33	36.67	10.40	1.69	24.50	24.26	46.00	-21.74	QP
4	625.08	30.28	19.70	2.98	24.20	28.76	46.00	-17.24	QP
5	799.16	29.31	22.19	3.45	24.00	30.95	46.00	-15.05	QP
6	958.85	34.27	23.97	3.82	23.76	38.30	46.00	-7.70	QP

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement Antenna:Vertical



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	50.20	35.21	12.79	0.65	24.70	23.95	40.00	-16.05	QP
2	73.65	33.99	10.07	0.83	24.70	20.19	40.00	-19.81	QP
3	112.13	40.85	10.12	1.10	24.70	27.37	43.50	-16.13	QP
4	118.60	41.31	10.19	1.13	24.70	27.93	43.50	-15.57	QP
5	148.28	49.90	12.60	1.26	24.70	39.06	43.50	-4.44	QP
6	799.25	30.68	22.49	3.45	24.00	32.62	46.00	-13.38	QP

Operation Mode: Low Mid CH 5180MHz

For Antenna A:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2428.00	-6.49	47.11	40.62	74	-33.38	Vertical
9551.00	11.84	38.40	50.24	74	-23.76	Vertical
13894.70	9.87	34.55	44.42	54	-9.58	Vertical
13903.00	9.89	44.97	54.86	74	-19.14	Vertical
15410.02	10.44	34.53	44.97	54	-9.03	Vertical
15416.00	10.45	45.98	56.43	74	-17.57	Vertical
2445.00	-6.48	45.95	39.47	74	-34.53	Horizontal
9517.00	11.89	38.08	49.97	74	-24.03	Horizontal
13915.56	9.93	34.18	44.11	54	-9.89	Horizontal
13920.00	9.94	45.28	55.22	74	-18.78	Horizontal
15569.00	10.74	45.45	56.19	74	-17.81	Horizontal
15574.18	10.75	34.26	45.01	54	-8.99	Horizontal

For Antenna B:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2462.00	-6.44	47.33	40.89	74	-33.11	Vertical
9466.00	11.79	38.07	49.86	74	-24.14	Vertical
13883.36	9.84	34.51	44.35	54	-9.65	Vertical
13886.00	9.84	45.54	55.38	74	-18.62	Vertical
15288.40	10.24	35.02	45.26	54	-8.74	Vertical
15297.00	10.26	46.18	56.44	74	-17.56	Vertical
2394.00	-6.55	49.57	43.02	74	-30.98	Horizontal
10367.00	10.74	41.92	52.66	74	-21.34	Horizontal
13920.00	9.94	45.47	55.41	74	-18.59	Horizontal
13920.42	9.94	39.59	49.53	54	-4.47	Horizontal
15290.44	10.24	40.10	50.34	54	-3.66	Horizontal
15297.00	10.26	45.54	55.80	74	-18.20	Horizontal

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

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Fiter–Preamplifier Factor

Operation Mode: Mid CH 5210MHz

For Antenna A:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2394.00	-6.55	51.02	44.47	74	-29.53	Vertical
7613.00	7.74	40.25	47.99	74	-26.01	Vertical
9772.00	11.52	38.37	49.89	74	-24.11	Vertical
13848.24	9.74	34.87	44.61	54	-9.39	Vertical
13852.00	9.75	45.81	55.56	74	-18.44	Vertical
2428.00	-6.49	45.98	39.49	74	-34.51	Horizontal
7868.00	7.74	40.22	47.96	74	-26.04	Horizontal
10214.00	10.92	39.02	49.94	74	-24.06	Horizontal
15530.20	10.67	34.44	45.11	54	-8.89	Horizontal
15535.00	10.67	45.28	55.95	74	-18.05	Horizontal

For Antenna B:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2428.00	-6.49	50.86	44.37	74	-29.63	Vertical
7919.00	7.74	40.83	48.57	74	-25.43	Vertical
9568.00	11.81	39.02	50.83	74	-23.17	Vertical
13879.06	9.83	34.78	44.61	54	-9.39	Vertical
13886.00	9.84	46.57	56.41	74	-17.59	Vertical
3924.00	-2.48	41.22	38.74	74	-35.26	Horizontal
9262.00	10.98	37.09	48.07	74	-25.93	Horizontal
13778.82	9.54	34.47	44.01	54	-9.99	Horizontal
13784.00	9.56	45.09	54.65	74	-19.35	Horizontal
15577.44	10.77	33.82	44.59	54	-9.41	Horizontal
15586.00	10.78	44.83	55.61	74	-18.39	Horizontal

Operation Mode: High CH 5240MHz

For Antenna A:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2411.00	-6.51	50.83	44.32	74	-29.68	Vertical
9534.00	11.86	38.17	50.03	74	-23.97	Vertical
13920.00	9.94	45.36	55.30	74	-18.7	Vertical
13920.18	9.94	34.39	44.33	54	-9.67	Vertical
15210.88	10.12	34.63	44.75	54	-9.25	Vertical
15212.00	10.12	46.25	56.37	74	-17.63	Vertical
2411.00	-6.51	50.83	44.32	74	-29.68	Horizontal
9534.00	11.86	38.17	50.03	74	-23.97	Horizontal
13920.00	9.94	45.36	55.3	74	-18.7	Horizontal
15212.00	10.12	46.25	56.37	74	-17.63	Horizontal

For Antenna B:

Frequency (MHz)	Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Over Limit (dB)	Antenna polarization
2411.00	-6.51	48.92	42.41	74	-31.59	Vertical
7817.00	7.74	40.25	47.99	74	-26.01	Vertical
9517.00	11.89	38.11	50	74	-24.00	Vertical
13760.68	9.50	34.76	44.26	54	-9.74	Vertical
3771.00	-2.95	41.06	38.11	74	-35.89	Horizontal
7766.00	7.74	39.84	47.58	74	-26.42	Horizontal
9568.00	11.81	37.91	49.72	74	-24.28	Horizontal
13764.62	9.51	34.89	44.4	54	-9.60	Horizontal
13767.00	9.51	46.3	55.81	74	-18.19	Horizontal

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

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Fiter–Preamplifier Factor

6.6 Radiated Emission Band Edge

Test Requirement: FCC Part15 407(b)(5)(7) and FCC Part 15.205

Test date: May. 04.2012

Standard Applicable: According to section 15.407(b)

(5) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: 40.0 dBμV/m between 30MHz & 88MHz;

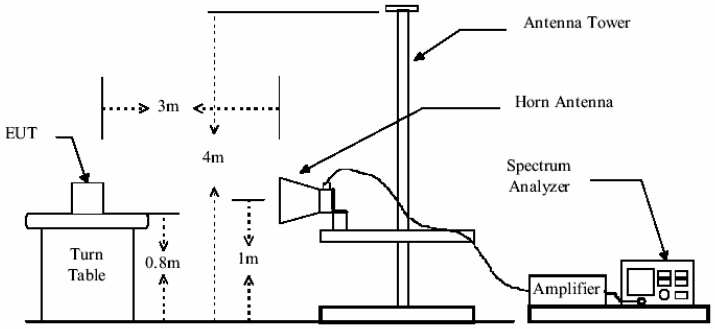
43.5 dBμV/m between 88MHz & 216MHz;

46.0 dBμV/m between 216MHz & 960MHz;

AV 54.0 dBμV/m PK 74.0dBμV/m above 960MHz.

Measurement Procedure: The EUT was setup according to ANSI 63.10,2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47 CFR 15.407 requirements.The EUT is placed on a turn table which is 0.8 m above ground.The turn table is rotated 360 degrees to determine to the position of the maximum emission level.The EUT was positioned such that the distance from antenna to the EUT was 3 menters.The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level This is repeated for both horizontal and vertical polarization of the antenna.In order to find the maximum emission,all of the interface cables were manipulated according to ANSIC 63.10:2009 on radiated measurement.
Spectrum analyzer parameters setting as shown below:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

Radiated Emission Test Set-up Frequency Over 1GHz



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

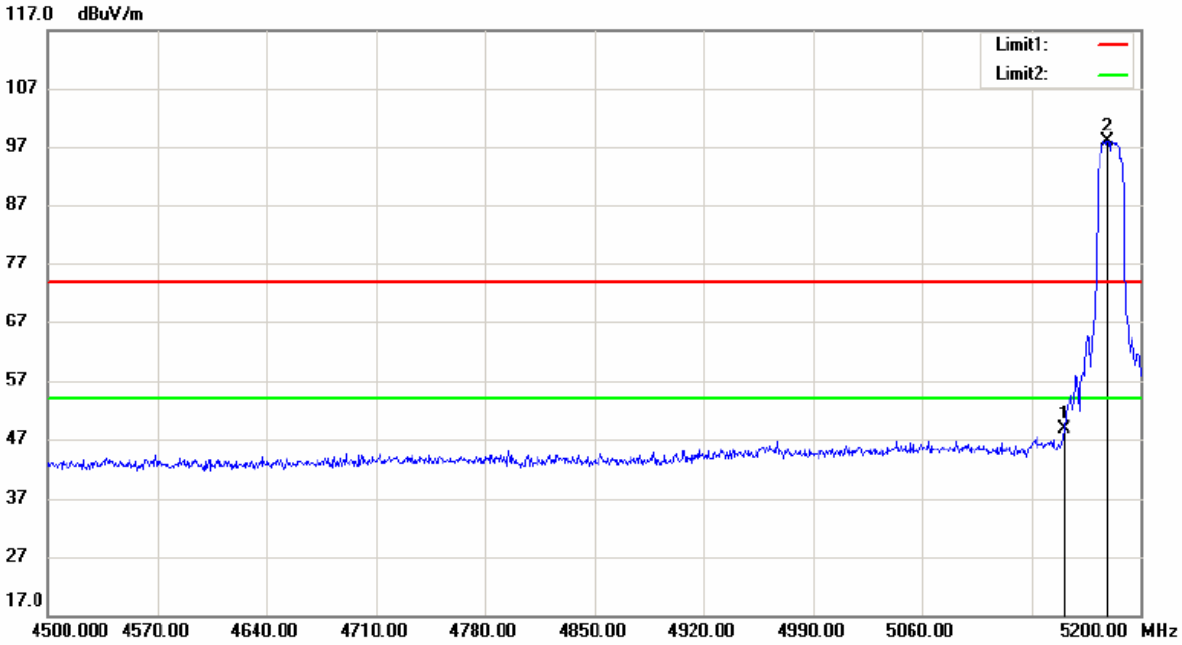
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

Radiated Bandedge Measurement Result:

CH Low 5180MHz Radiated Bandedge(Horizontal)

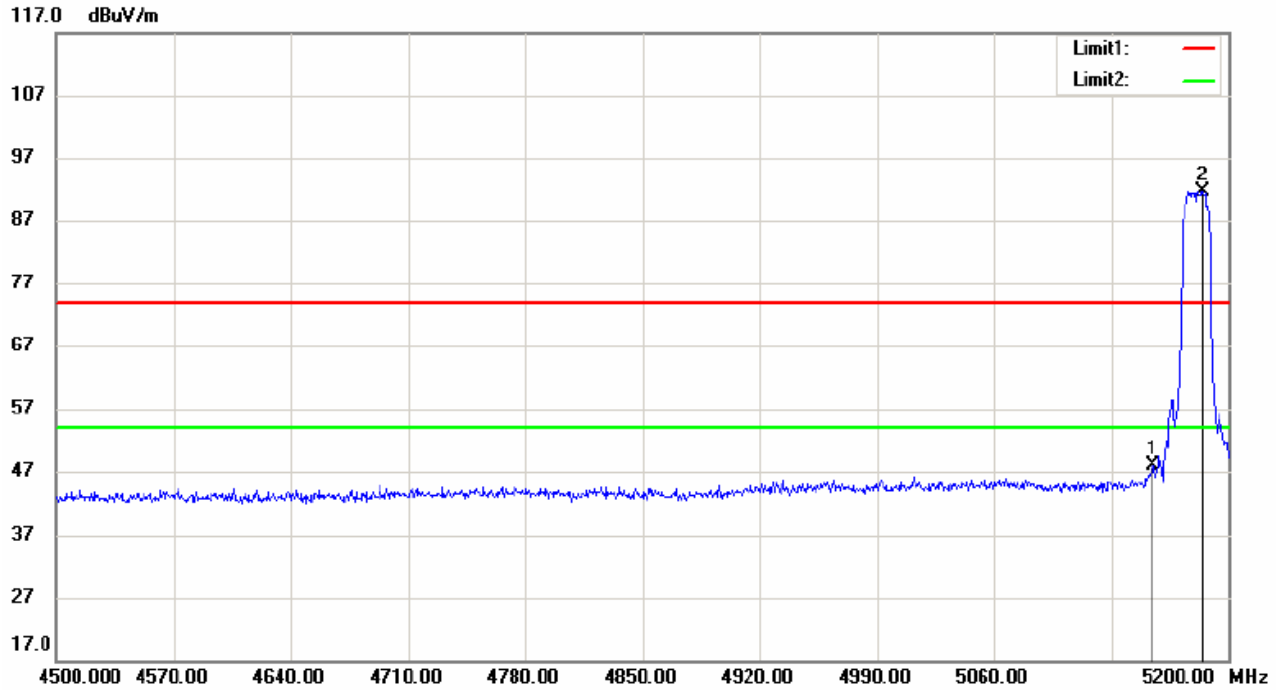
Horizontal, Peak Detector:

For Antenna A:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5151.000	47.97	peak	0.74	48.71	74.00	-25.29
2	5179.000	97.20	peak	0.76	97.96	74.00	23.96

For Antenna B:

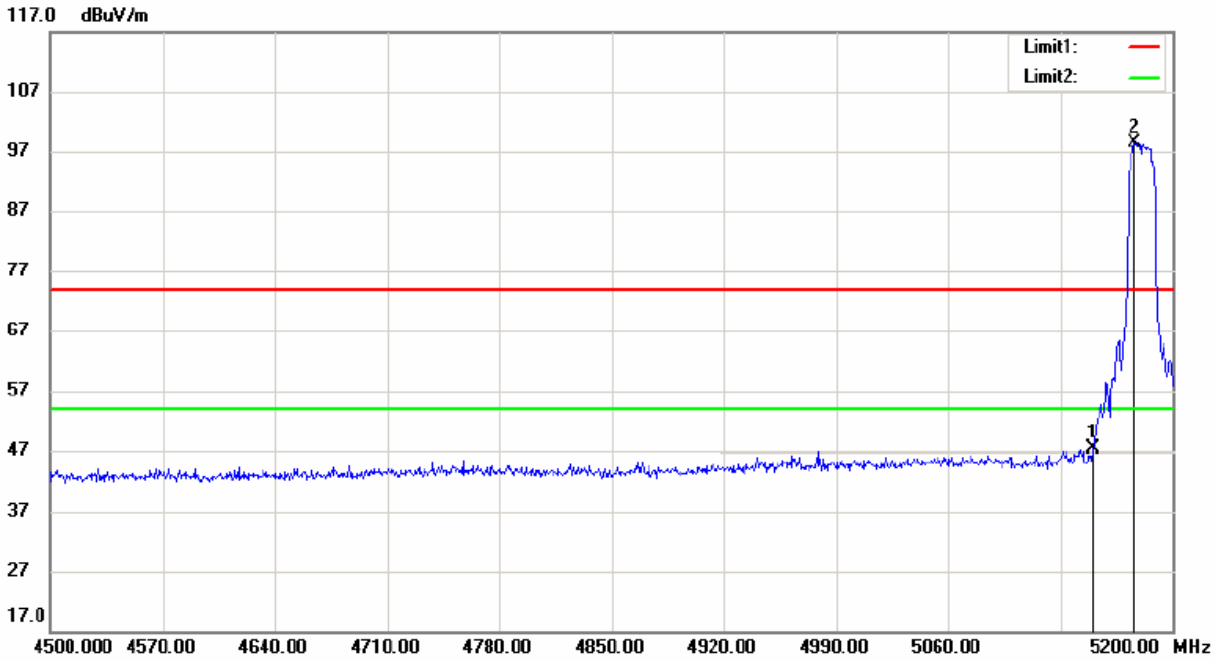


Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5154.500	47.17	peak	0.75	47.92	74.00	-26.08
2	5184.600	90.90	peak	0.78	91.68	74.00	17.68

CH Low 5180MHz Radiated Bandedge(Vertical)

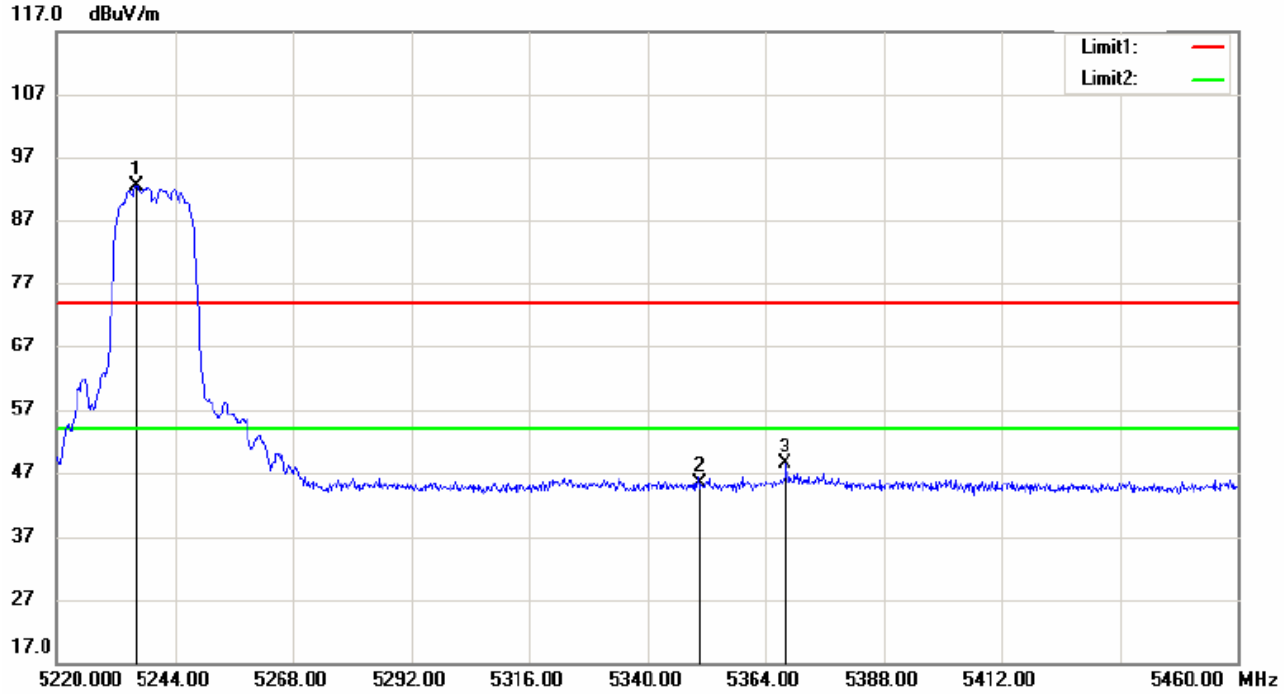
Vertical, Peak Detector:

For Antenna A:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5150.300	46.53	peak	0.74	47.27	74.00	-26.73
2	5176.200	97.57	peak	0.76	98.33	74.00	24.33

For Antenna B:

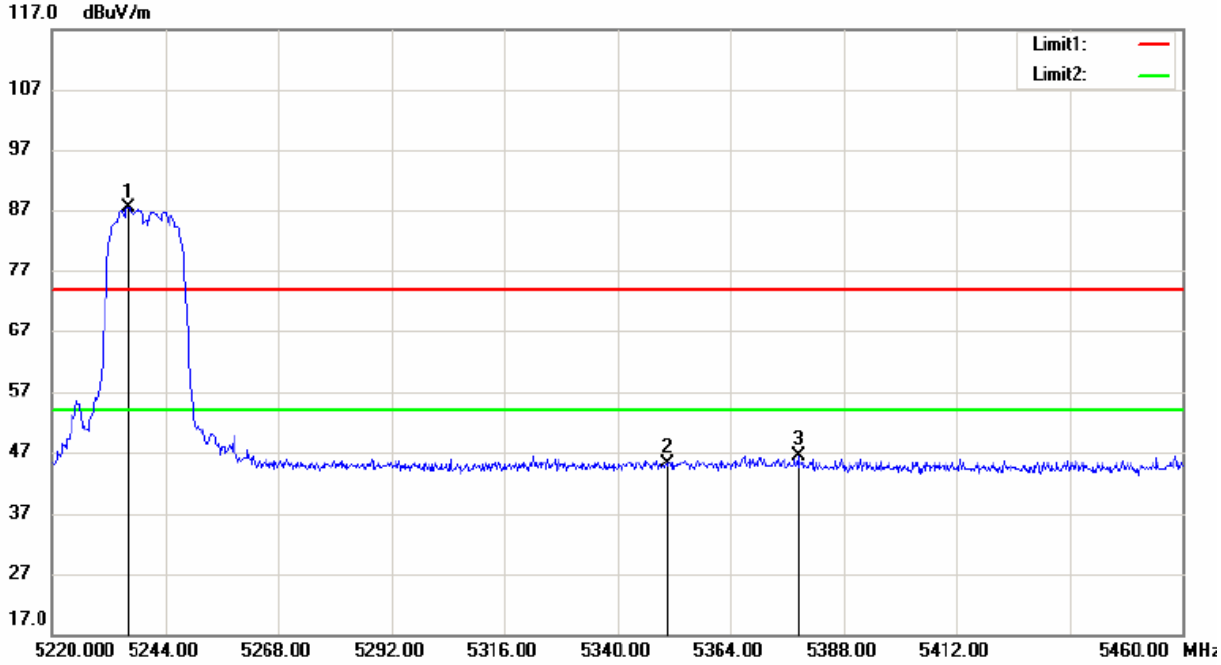


Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5236.080	91.59	peak	0.82	92.41	74.00	18.41
2	5350.800	44.47	peak	0.92	45.39	74.00	-28.61
3	5368.080	47.48	peak	0.93	48.41	74.00	-25.59

CH High 5240MHz Radiated Bandedge(Horizontal)

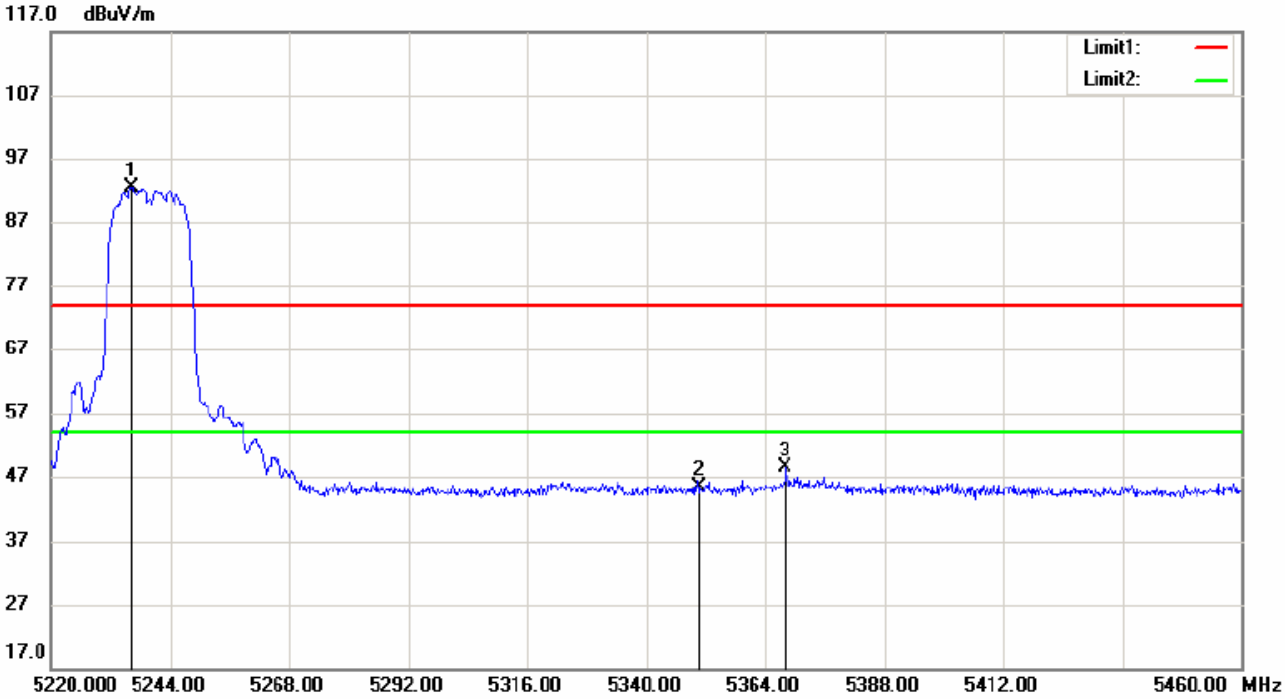
Horizontal, Peak Detector:

For Antenna A:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5236.080	86.60	peak	0.82	87.42	74.00	13.42
2	5350.800	44.27	peak	0.92	45.19	74.00	-28.81
3	5378.400	45.41	peak	0.94	46.35	74.00	-27.65

For Antenna B:

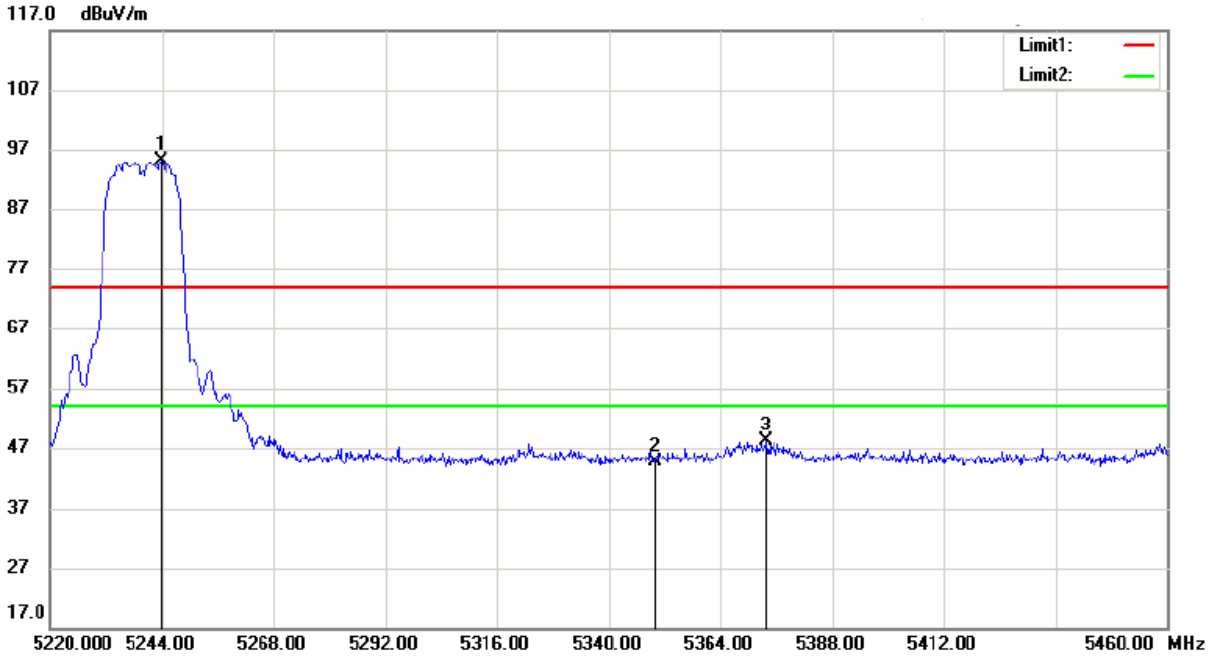


Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5236.080	91.59	peak	0.82	92.41	74.00	18.41
2	5350.800	44.47	peak	0.92	45.39	74.00	-28.61
3	5368.080	47.48	peak	0.93	48.41	74.00	-25.59

CH High 5240MHz Radiated Bandedge(Vertical)

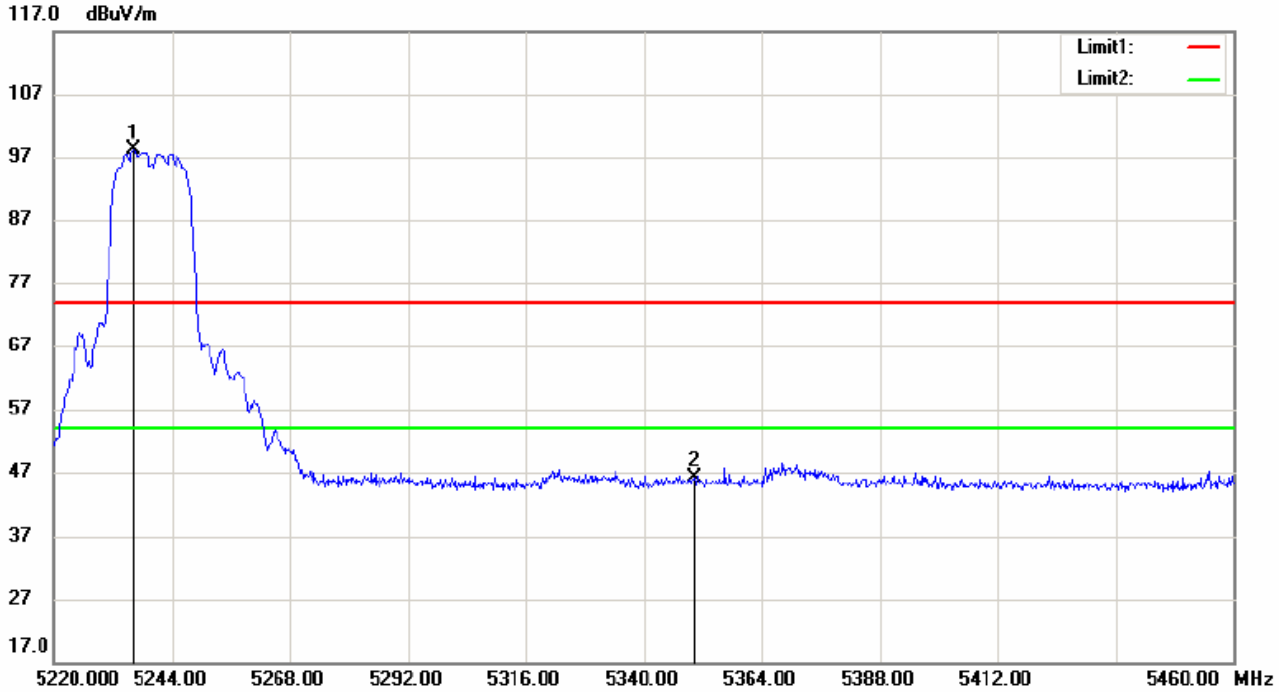
Vertical, Peak Detector:

For Antenna A:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5243.760	94.23	peak	0.83	95.06	74.00	21.06
2	5350.080	43.83	peak	0.92	44.75	74.00	-29.25
3	5373.840	47.24	peak	0.94	48.18	74.00	-25.82

For Antenna B:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	5236.080	97.23	peak	0.82	98.05	74.00	24.05
2	5350.320	45.28	peak	0.92	46.20	74.00	-27.80

Remark: 1. The Peak Level less than the AV limit, so the AV level is no greater than the AV limit.

2. No any other emission which fall in restricted bands can be detected and be reported.

All frequencies within the “Restricted bands” have been evaluated to compliance. Section 15.205 Restricted bands of operation.

6.7 Undesirable emission Test

Test Requirement: FCC Part15 407 (b)(1)

Test date: May. 03, 2012

Standard Applicable: According to section 15.407(b)(1), the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

Remark: the test using connected mode. And the antenna gain is 2dBi, so the limit should reduce 2dB. Thus the limited is -29dBm

Measurement Procedure:

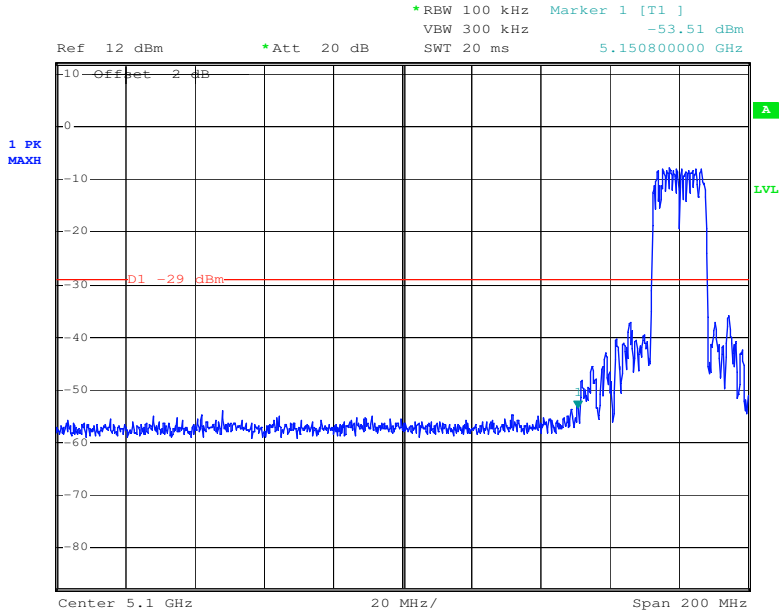
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW=100KHz VBW=300KHz, Sweep = auto
6. Repeat above procedures until all frequency measured were complete.

Remark: the test using connected mode. And the antenna gain is 2dBi, so the limit should reduce 2dB. Thus the limited is -29dBm

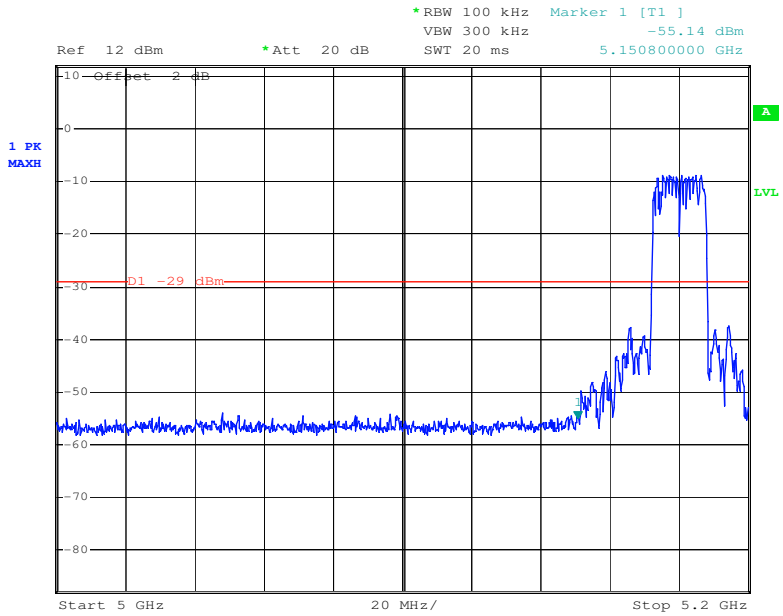
Measurement Result:

5180MHz Band:

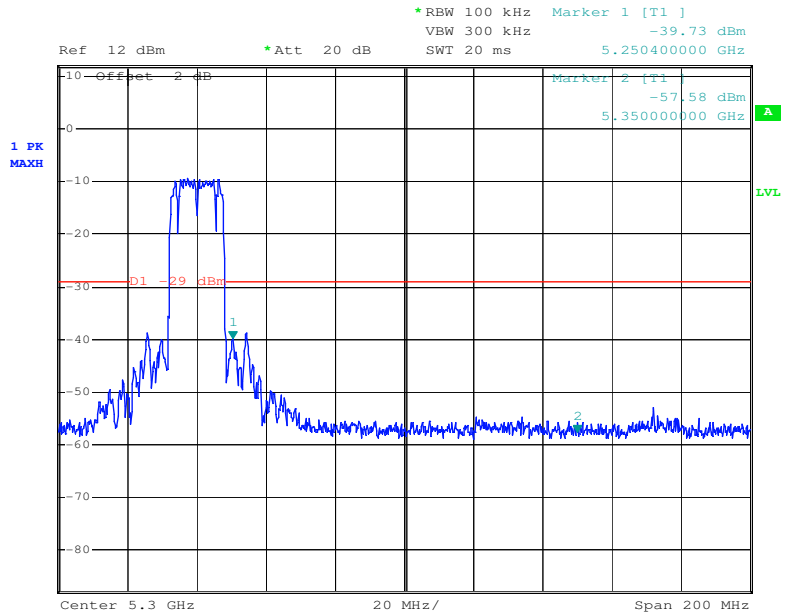
For Antenna A:



For Antenna B:

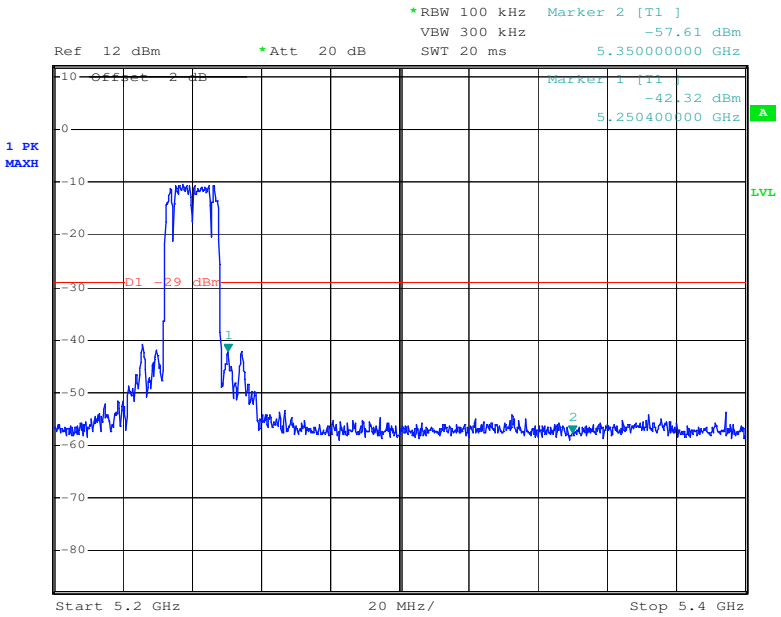


5240MHz Band:
For Antenna A:



Date: 25.APR.2013 18:37:52

For Antenna B:

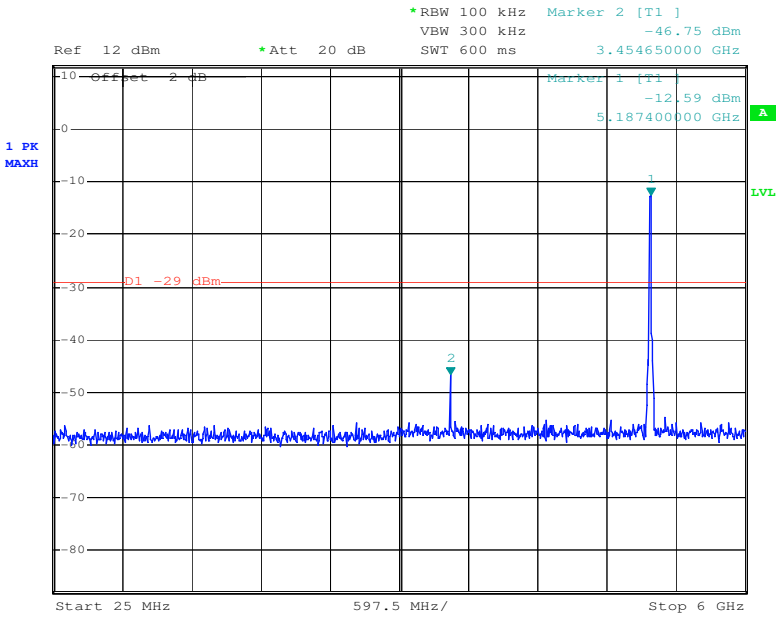


Date: 25.APR.2013 18:36:46

CSE 5180MHz Brand

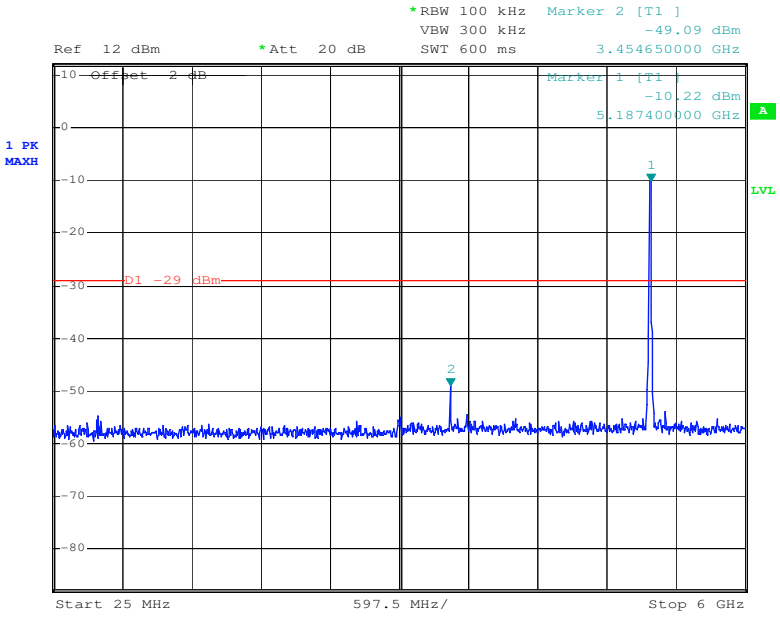
25M-6G:

For Antenna A:



Date: 25.APR.2013 18:46:28

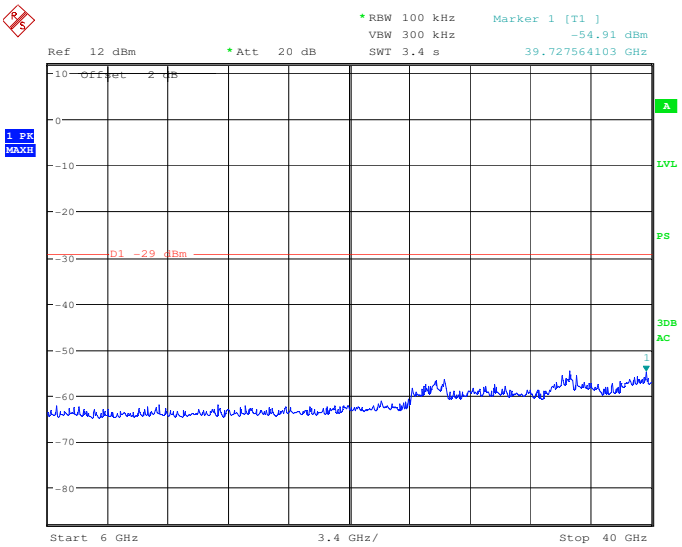
For Antenna B:



Date: 25.APR.2013 18:45:14

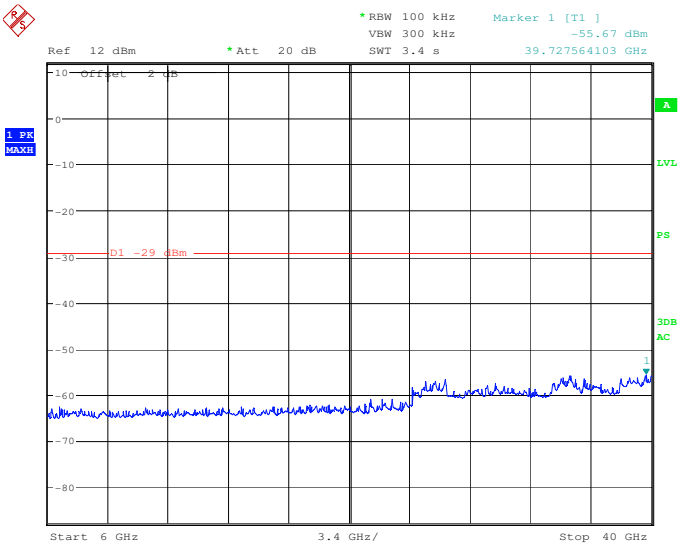
6G-40G:

For Antenna A:



Date: 25.APR.2013 19:35:39

For Antenna B:

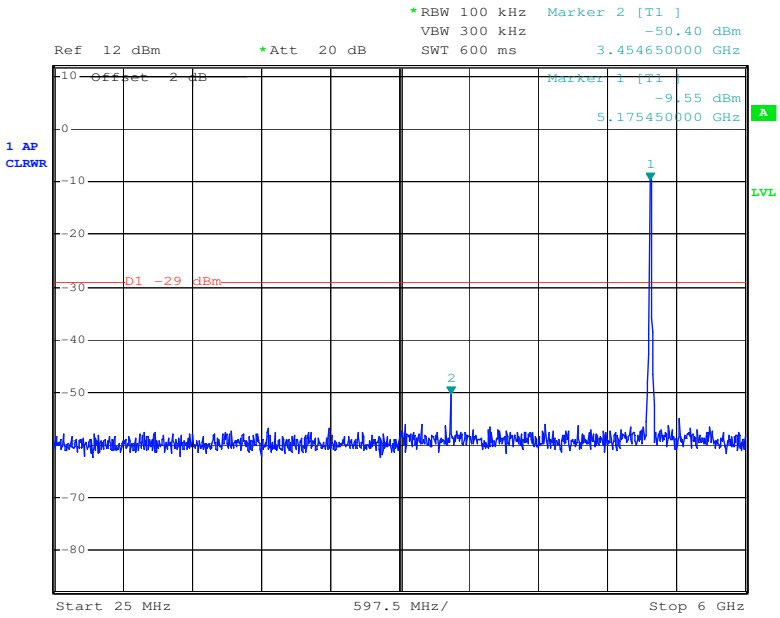


Date: 25.APR.2013 19:36:12

CSE 5210MHz Brand

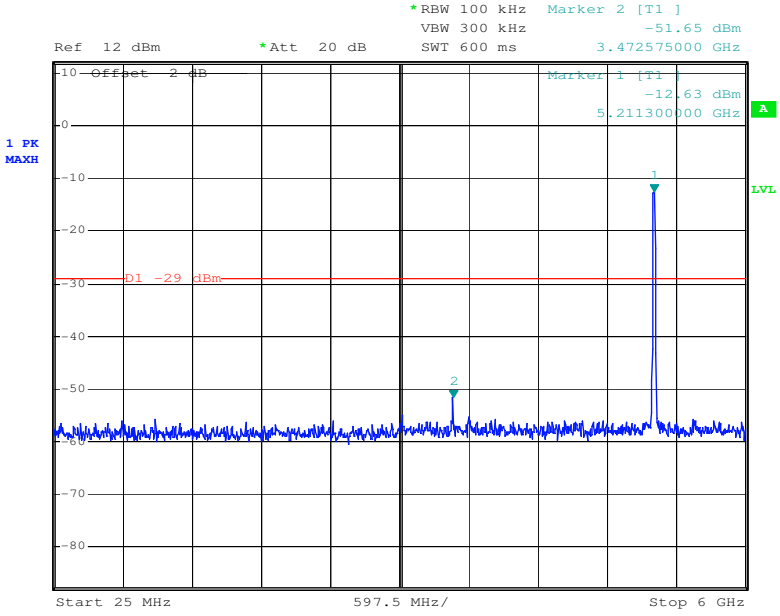
25M- 6G

For Antenna A:



Date: 25.APR.2013 19:05:05

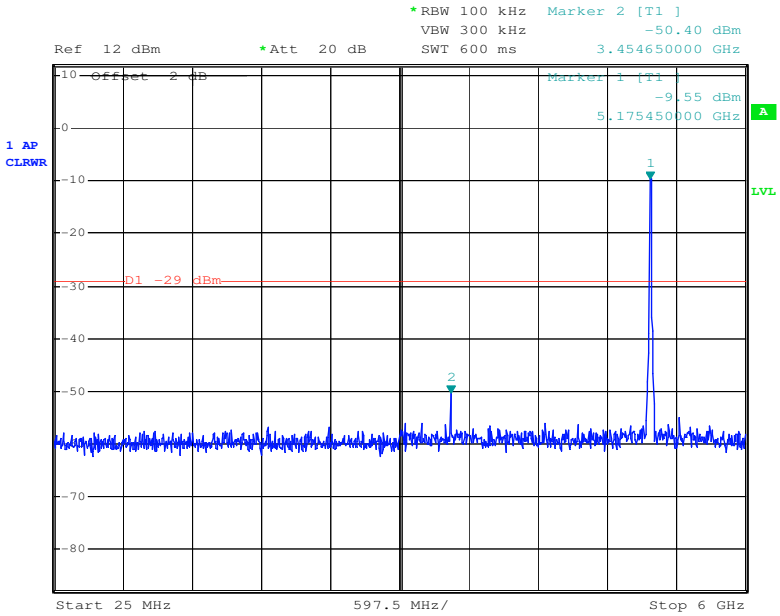
For Antenna B:



Date: 25.APR.2013 18:47:43

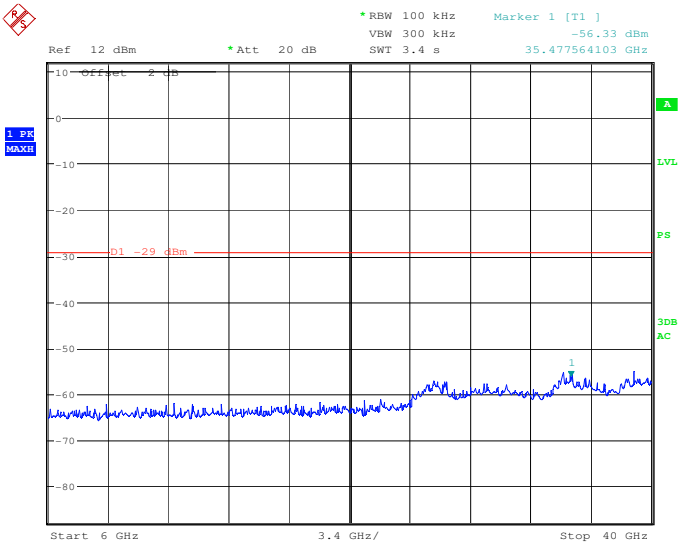
6G-40G:

For Antenna A:



Date: 25.APR.2013 19:05:05

For Antenna B:

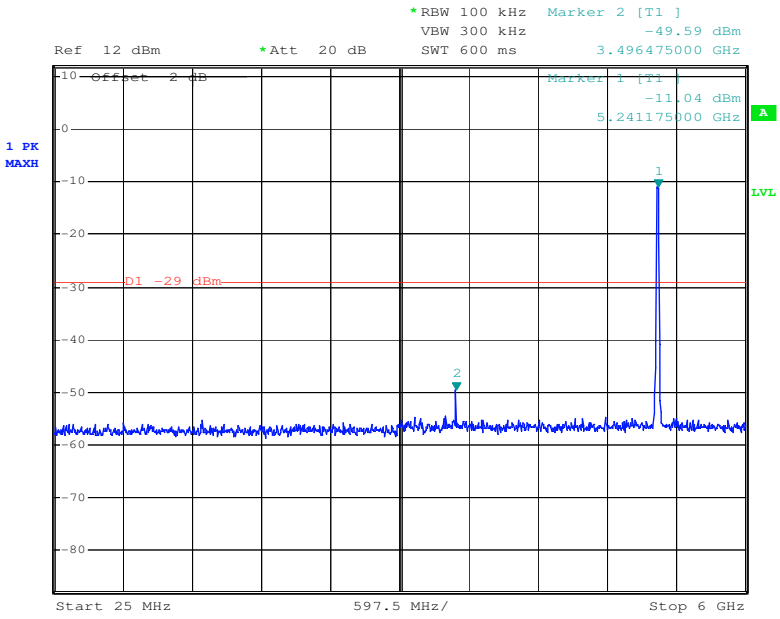


Date: 25.APR.2013 19:36:46

CSE 5240MHz Brand

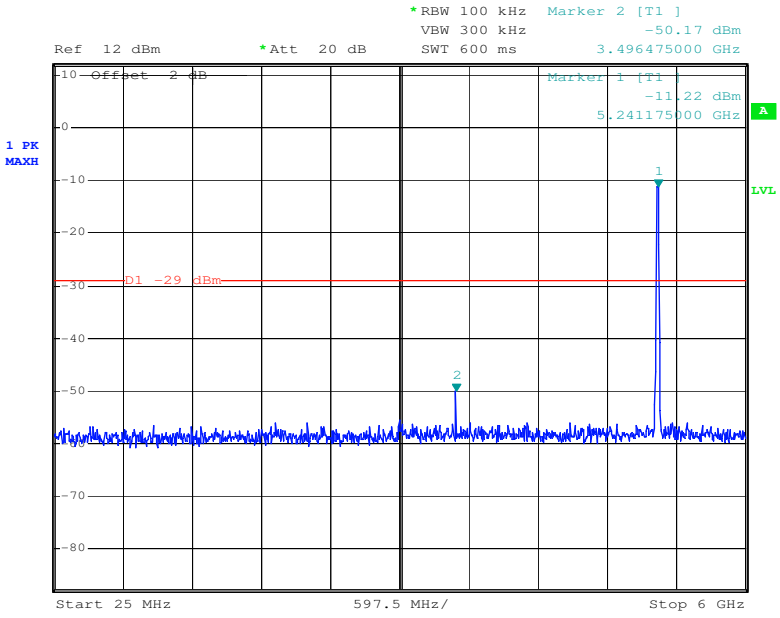
25M- 6G

For Antenna A:



Date: 25.APR.2013 18:54:26

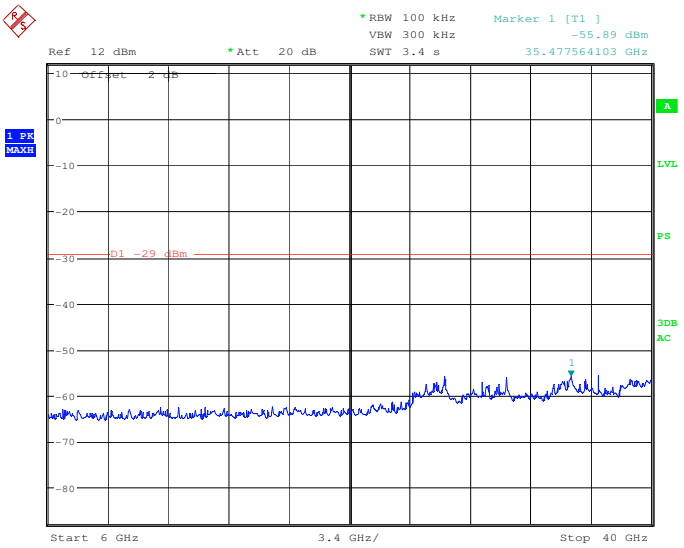
For Antenna B:



Date: 25.APR.2013 19:01:31

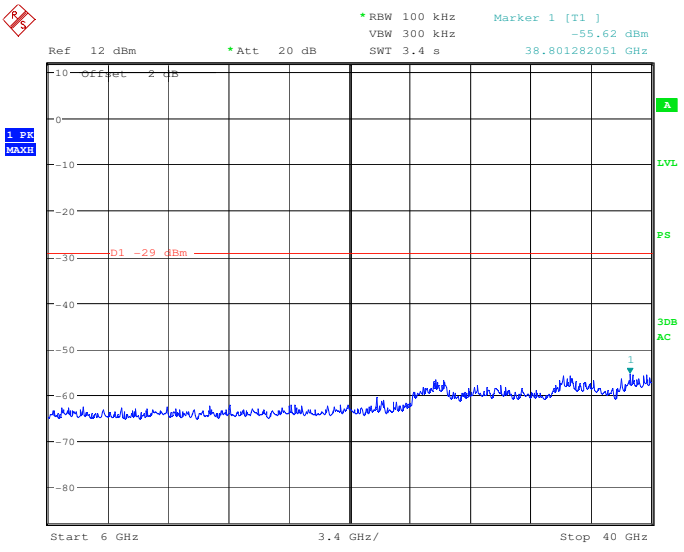
6G-40G:

For Antenna A:



Date: 25.APR.2013 19:38:16

For Antenna B:



Date: 25.APR.2013 19:37:53

6.8 Conducted Emission Test

Test Requirement: FCC Part15.407 and FCC Part 15.207

Test date: Feb. 21, 2012

Standard Applicable According to section 15.207,frequency 150KHz to 30MHz shall not not exceed the limit table as blew.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*

EUT Setup

1.The conducted emission tests were performed in the test site,using the setup in accordance with the ANSI C63.10-2009.

2.EUT is charged with PC.The AC Power adaptor of PC was plug-in LISN.The rear of the EUT and periphearals were placed flushed with the rear of the tabletop.

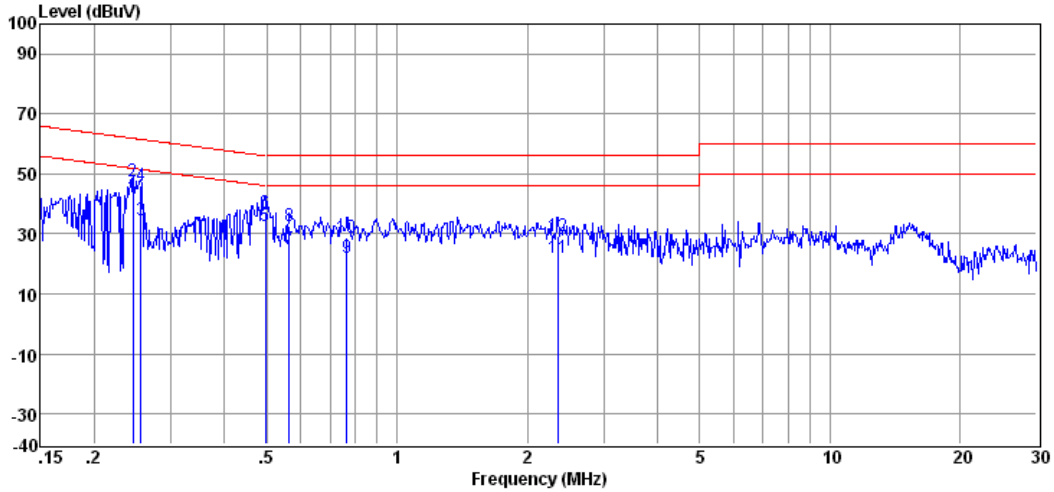
3.The LISN was connected with 120V AC/60Hz power source.

Measurement Result

Operation mode: Transimitter conducted to Receiver by wireless.

Note:All test modes have been tested, below show the worst plots.

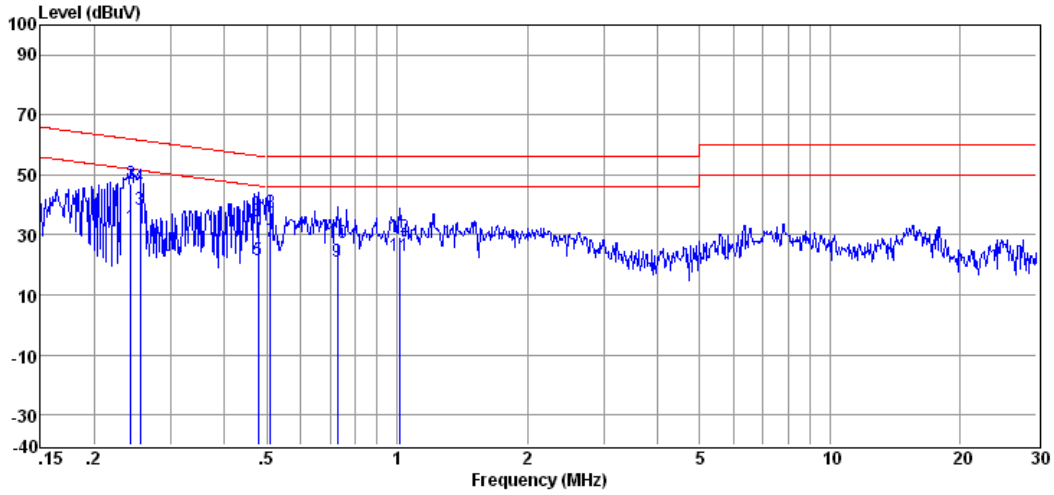
L line:



Item (Mark)	Freq (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss dB	Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.246	42.20	0.12	0.10	42.42	51.91	-9.49	Average	LINE
2	0.246	47.54	0.12	0.10	47.76	61.91	-14.15	QP	LINE
3	0.256	34.35	0.12	0.10	34.57	51.56	-16.99	Average	LINE
4	0.256	45.89	0.12	0.10	46.11	61.56	-15.45	QP	LINE
5	0.497	32.46	0.20	0.10	32.76	46.05	-13.29	Average	LINE
6	0.497	36.65	0.20	0.10	36.95	56.05	-19.10	QP	LINE
7	0.564	24.54	0.20	0.10	24.84	46.00	-21.16	Average	LINE
8	0.564	32.30	0.20	0.10	32.60	56.00	-23.40	QP	LINE
9	0.767	21.81	0.20	0.10	22.11	46.00	-23.89	Average	LINE
10	0.767	28.63	0.20	0.10	28.93	56.00	-27.07	QP	LINE
11	2.358	21.77	0.30	0.11	22.18	46.00	-23.82	Average	LINE
12	2.358	28.64	0.30	0.11	29.05	56.00	-26.95	QP	LINE

Note: 1. Level = Read Level +LISN Factor + Cable loss
2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

N Line:



Item (Mark)	Freq (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss dB	Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.243	32.64	0.11	0.10	32.85	52.00	-19.15	Average	NEUTRAL
2	0.243	46.64	0.11	0.10	46.85	62.00	-15.15	QP	NEUTRAL
3	0.255	38.07	0.12	0.10	38.29	51.60	-13.31	Average	NEUTRAL
4	0.255	45.97	0.12	0.10	46.19	61.60	-15.41	QP	NEUTRAL
5	0.479	21.45	0.19	0.10	21.74	46.36	-24.62	Average	NEUTRAL
6	0.479	34.31	0.19	0.10	34.60	56.36	-21.76	QP	NEUTRAL
7	0.510	27.67	0.20	0.10	27.97	46.00	-18.03	Average	NEUTRAL
8	0.510	37.08	0.20	0.10	37.38	56.00	-18.62	QP	NEUTRAL
9	0.727	20.97	0.20	0.10	21.27	46.00	-24.73	Average	NEUTRAL
10	0.727	27.14	0.20	0.10	27.44	56.00	-28.56	QP	NEUTRAL
11	1.016	22.52	0.20	0.10	22.82	46.00	-23.18	Average	NEUTRAL
12	1.016	28.94	0.20	0.10	29.24	56.00	-26.76	QP	NEUTRAL

Note: 1. Level = Read Level +LISN Factor + Cable loss
2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

6.9 Occupied Bandwidth Test

Test Requirement: RSS-Gen Issue 3 Clause 4.6.1

Test date: Feb.15, 2012

Standard Applicable According to the section RSS-Gen Issue 3 Clause 4.6.1

EUT Setup The occupied bandwidth per RSS-Gen Issue 3 Clause 4.6.1 was measured using the Spectrum Analyzer with the resolutions set at 100kHz,the video bandwidth set at 300kHz.

Measurement Result:

5180-5240MHz Band for Antenna A:

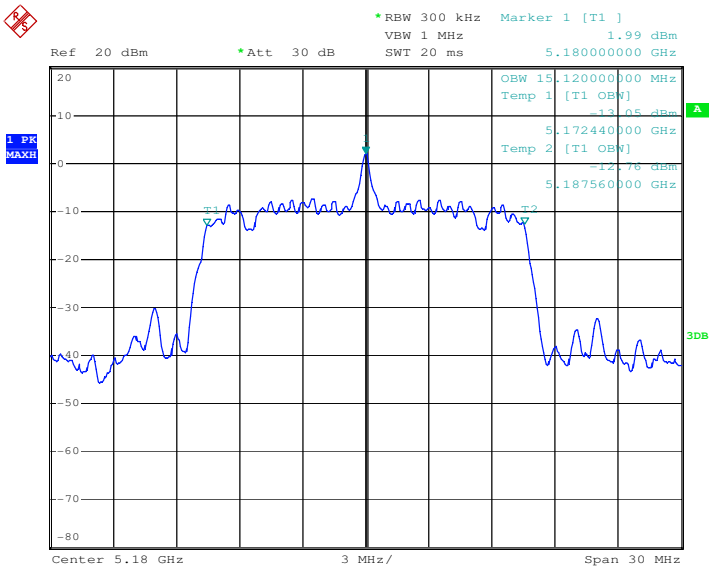
Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	5180	15.12
MID	5210	15.12
HIGH	5240	15.06

5180-5240MHz Band for Antenna B:

Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	5180	15.12
MID	5210	15.12
HIGH	5240	15.06

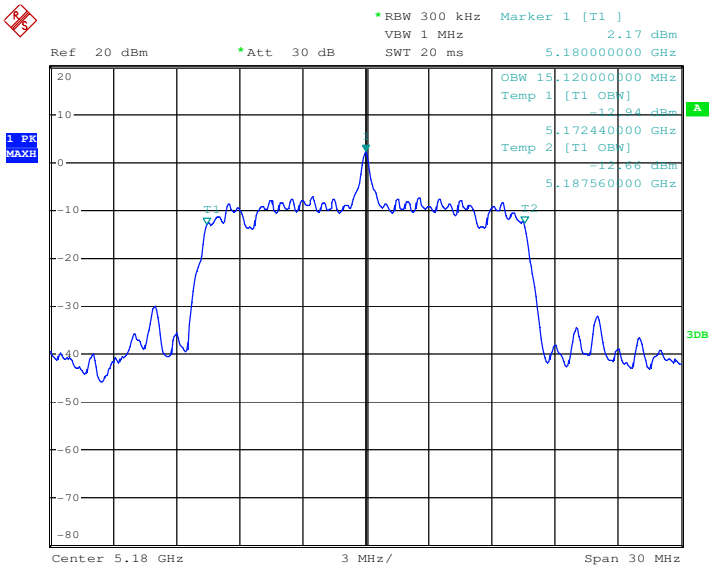
Channel 5180MHz

For Antenna A:



Date: 15.DEC.2012 18:34:20

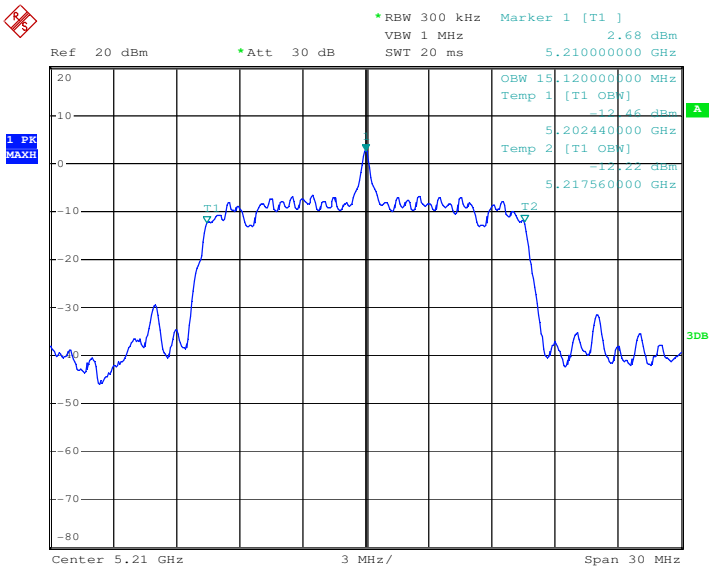
For Antenna B:



Date: 15.DEC.2012 18:35:13

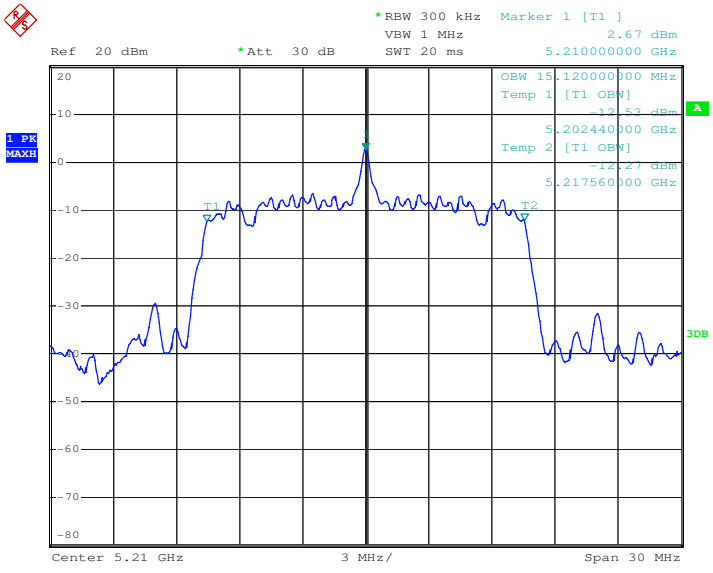
Channel 5210MHz

For Antenna A:



Date: 15.DEC.2012 18:37:19

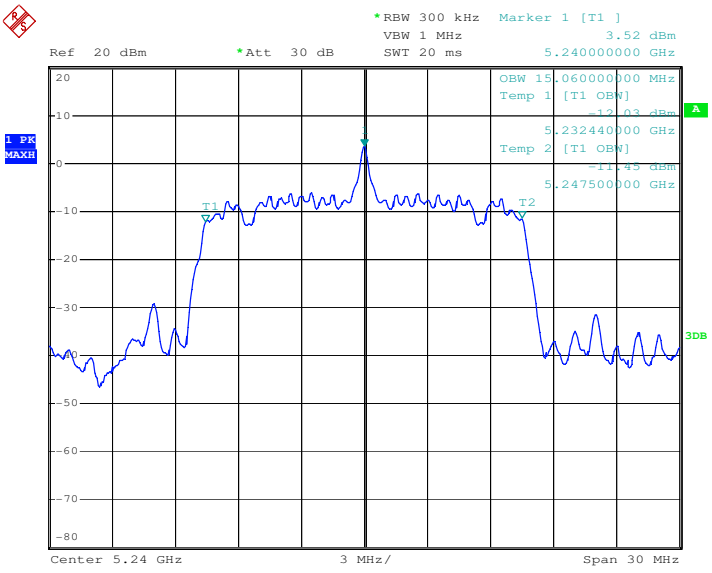
For Antenna B:



Date: 15.DEC.2012 18:37:52

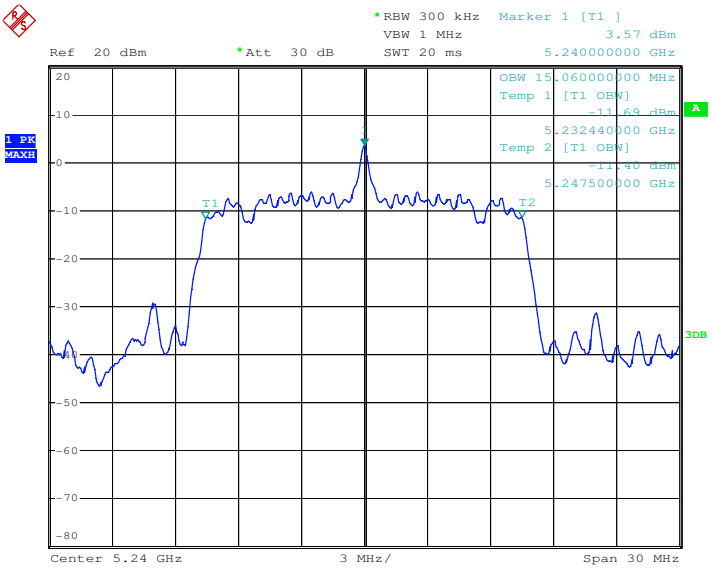
Channel 5240MHz

For Antenna A:



Date: 15.DEC.2012 18:39:06

For Antenna B:



Date: 15.DEC.2012 18:39:42

6.10 Frequency stability

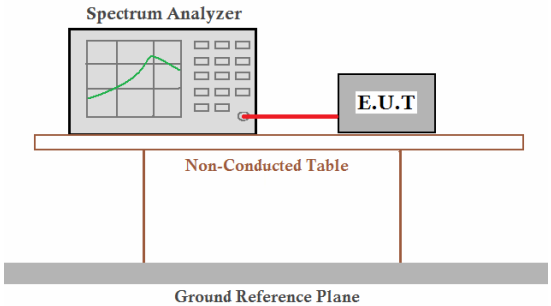
Test requirement: FCC Part15 407 (g)

Standard Applicable: According to section 15.407(g), the manufacturers of UNII devices are responsible for ensuing frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user manual.

Test Procedure:

1) Set up the EUT on lowest channel and the highest channel
2) Test the EUT in the lowest channel and the Highest channel ,
3) Select the lowest operating frequency of the equipment under test.
4) Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
5) Adjust the centre frequency of spectrum analyzer on any frequency be measured.
6) Measure the frequency range by spectrum analyzer Marker function. set the Spectrum Analyzer as below:
   Span: Wide enough to capture the complete power envelope, including all side bands
   RBW: 100KHz
   VBW: 100KHz
   Detector function: RMS average
   Trace mode: Max Hold
   Sweep time: 1minute
7) Using the marker of the spectrum analyzer, find the the lowest frequency of the spectrum envelope This frequency shall be recorded as FL.
8) Select the highest operating frequency of the equipment under test.
9) Using the same set as step 6), find the highest frequency of the spectrum envelope. This frequency shall be recorded as FH.
10) Pretest the EUT at different transmission rate and worst case data in the report.

Test setup:



Test Data:

Antenna A

Test Conditions		Nominal Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Result
Temp (℃)	Volt (V AC)				
T_{nom} (25)	V_{nom} (120)	5180	5169.26	F_L>5150	Pass
		5240	5248.47	F_H <5250	Pass
T_{min} (-20)	V_{min} (138)	5180	5171.88	F_L>5150	Pass
		5240	5248.27	F_H <5250	Pass
	V_{max} (102)	5180	5172.33	F_L>5150	Pass
		5240	5248.14	F_H <5250	Pass
T_{max} (55)	V_{min} (138)	5180	5175.18	F_L>5150	Pass
		5240	5248.97	F_H <5250	Pass
	V_{max} (102)	5180	5174.35	F_L>5150	Pass
		5240	5248.46	F_H <5250	Pass

Antenna B

Test Conditions		Nominal Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)	Result
Temp (℃)	Volt (V AC)				
T_{nom} (25)	V_{nom} (120)	5180	5174.77	F_L>5150	Pass
		5240	5248.35	F_H <5250	Pass
T_{min} (-20)	V_{min} (138)	5180	5175.45	F_L>5150	Pass
		5240	5249.35	F_H <5250	Pass
	V_{max} (102)	5180	5174.57	F_L>5150	Pass
		5240	5248.82	F_H <5250	Pass
T_{max} (55)	V_{min} (138)	5180	5174.55	F_L>5150	Pass
		5240	5248.34	F_H <5250	Pass
	V_{max} (102)	5180	5174.37	F_L>5150	Pass
		5240	5248.76	F_H <5250	Pass

7 Test Setup Photographs

Refer to the < Monster_RX Test Setup photos>.

8 EUT Constructional Details

Refer to the < Monster_RX_External Photos> & < Monster-RX_Internal Photos >.

End of Report