FCC PART 15.407

TEST REPORT

For

Amimon Ltd.

2 Maskit St. Herzlia, Israel

FCC ID: VQSAMN3622301

Report Type:	**Product Type:**
Original Report	RxGrizzlyPro

Test Engineer:	Ares Liu
Report Number:	R1DG121224005-00
Report Date:	2013-01-11
Reviewed By:	Ivan Cao EMC Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Amimon Ltd.*'s product, model number: *AMN36223 (FCC ID: VQSAMN3622301)* ("EUT") in this report is a transmitter of RxGrizzlyPro, which was measured approximately: 8.5cm (L) x 5.1cm (W) x1.0cm (H).This device is master,the operating frequency is 5150~5250MHz , 5725 ~5825MHz ,rated input voltage: DC 5V from DC input port.

** All measurement and test data in this report was gathered from production sample serial number: 121224005 (Assigned by BACL, Dongguan). The EUT was received on 2012-12-24.*

Objective

This type approval report is prepared on behalf of *Amimon Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

No Related Submittal(s)

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which is provided by manufacture.
The operating frequency range is 5150~5250MHz, 5725 ~5825MHz,the test frequencies are 5190MHz, 5230MHz, 5755MHz, 5795MHz those are requested by the applicant.

EUT Exercise Software

Control software: AppCom_V 4.0.3.1;

Equipment Modifications

Added a piece of copper foil on the bottom of pcb, please refer the internal photo, the modification was made to the EUT by manufacture.

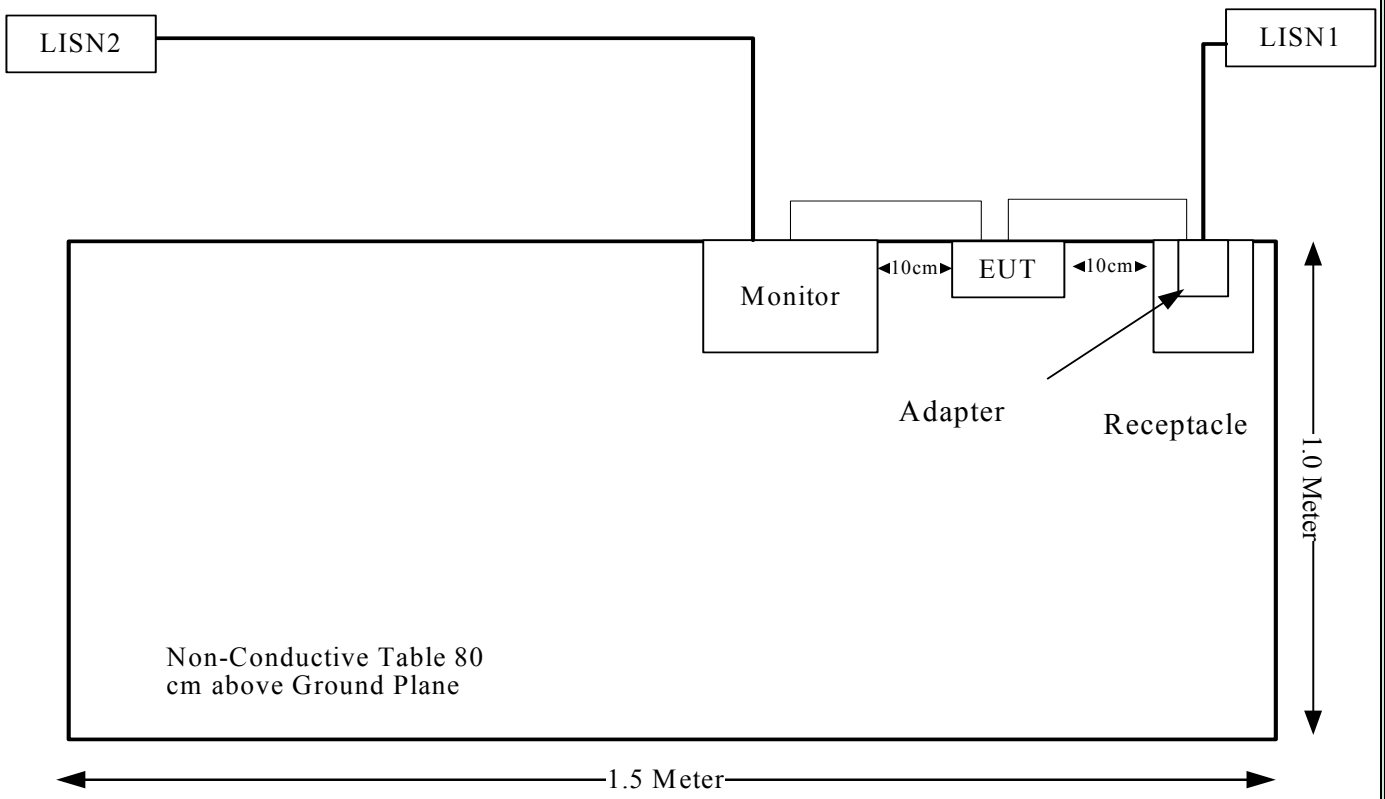
Local Support Equipment

Manufacturer	Description	Model	Serial Number
DELL	Monitor	U3011t	CN-OPH5NY-74445-16T-290L

External Cable

Cable Description	Length (m)	From/Port	To
shielded detachable HDMI cable	2.5	EUT	Monitor

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.407 (f), §2.1091, §1.1307(b)(1)	RF Exposure Evaluation	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1), (2),(3),(4),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b) (1),(2),(3),(4)	Out Of Band Emissions	Compliance
§15.407(a) (1)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance
§15.407(a)(6)	Peak Excursion Ratio	Compliance

FCC §15.407 (f), §2.1091, §1.1307(b) (1) – RF EXPOSURE EVALUATION

Applicable Standard

According to subpart 15.407(f)and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency	**Antenna Gain**		**Conducted Power**		**Evaluation Distance**	**Power Density**	**MPE Limit**
(MHz)	**(dBi)**	**(numeric)**	**(dBm)**	**(mW)**	**(cm)**	**(mW/cm2)**	**(mW/cm2)**
5230	2	1.58	15.82	38.19	20.00	0.01205	1.0

Result: The device meet FCC MPE at 20cm distance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The 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.
And according to FCC 47 CFR section 15.407 (a)(1),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.

Antenna Connector Construction

The EUT have six Ceramic Antenna,one for future DFS detect use,one for transmitting and receiving, the rest only for receiving, which in accordance to section 15.203, the maximum gain is 2.0 dBi; please refer to the internal photos.

Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

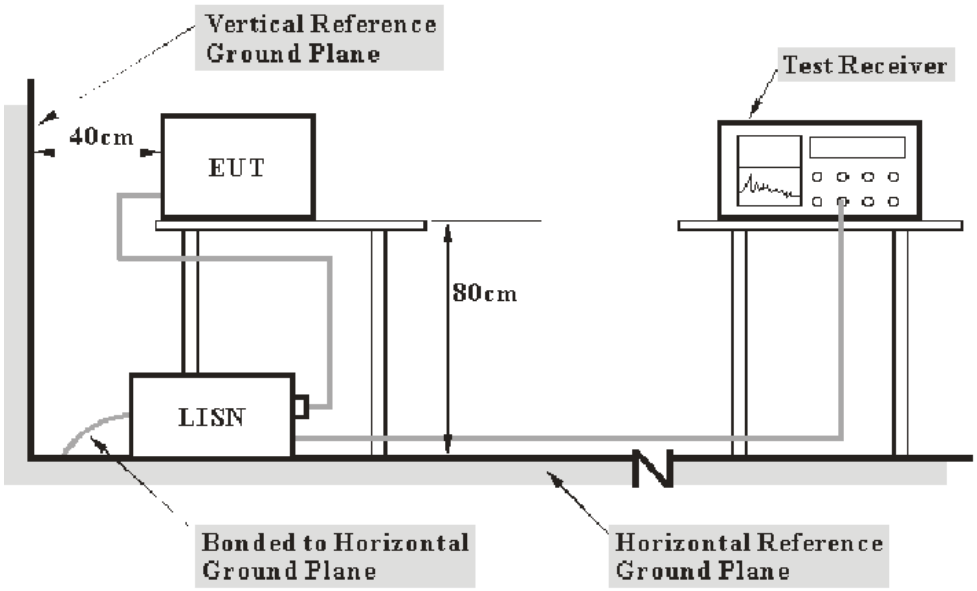
FCC §15.207, §15.407(b) (6)

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2012-11-29	2013-11-28
R&S	LISN1	ESH3-Z5	843331/015	2012-09-17	2013-09-16
R&S	LISN2	ESH3-Z5	100113	2012-11-29	2013-11-28

Test Procedure

During the conducted emission test, the EUT was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

8.54 dB at **0.310 MHz** in the **Line** mode.

Test Data

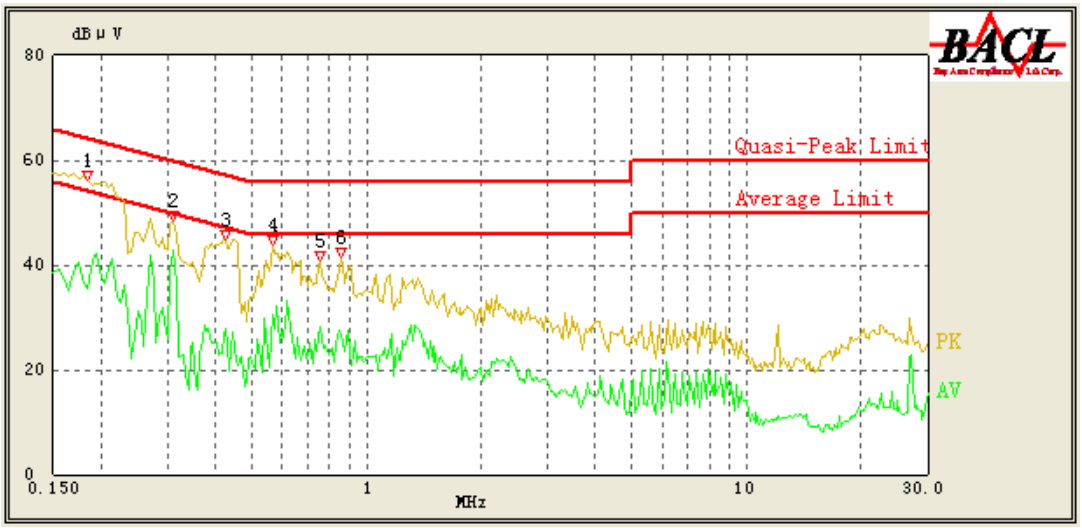
Environmental Conditions

Temperature:	20.1° C
Relative Humidity:	41 %
ATM Pressure:	101.4 kPa

The testing was performed by Ares Liu on 2013-01-10.

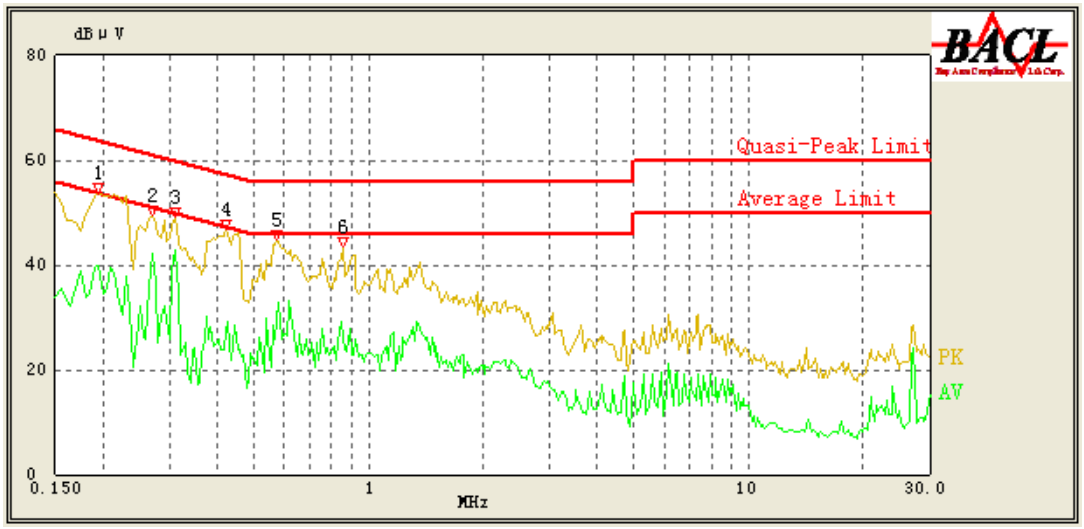
Test Mode: Transmitting

120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK /QP/Ave.)
0.310	42.89	0.34	51.43	8.54	AV
0.185	52.40	0.42	65.00	12.60	QP
0.565	40.60	0.32	56.00	15.40	QP
0.565	30.45	0.32	46.00	15.55	AV
0.425	40.93	0.32	58.14	17.21	QP
0.310	44.21	0.34	61.43	17.22	QP
0.755	28.29	0.32	46.00	17.71	AV
0.855	37.52	0.32	56.00	18.48	QP
0.755	36.68	0.32	56.00	19.32	QP
0.185	35.62	0.42	55.00	19.38	AV
0.855	26.47	0.32	46.00	19.53	AV
0.425	27.92	0.32	48.14	20.22	AV

120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK /QP/Ave.)
0.310	42.85	0.23	51.43	8.58	AV
0.270	42.06	0.23	52.57	10.51	AV
0.195	39.91	0.25	54.71	14.80	AV
0.195	48.77	0.25	64.71	15.94	QP
0.575	39.96	0.22	56.00	16.04	QP
0.575	29.48	0.22	46.00	16.52	AV
0.420	41.75	0.22	58.29	16.54	QP
0.310	44.82	0.23	61.43	16.61	QP
0.270	45.68	0.23	62.57	16.89	QP
0.855	38.26	0.23	56.00	17.74	QP
0.855	26.55	0.23	46.00	19.45	AV
0.420	27.12	0.22	48.29	21.17	AV

FCC §15.209, §15.205 & §15.407(b) (1) (6) (7) – UNDESIRABLE EMISSION & RESTRICTED BANDS

Applicable Standard

FCC §15.407 (b) (1),(2), (3), (6), (7); §15.209; §15.205;

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.

For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.

For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

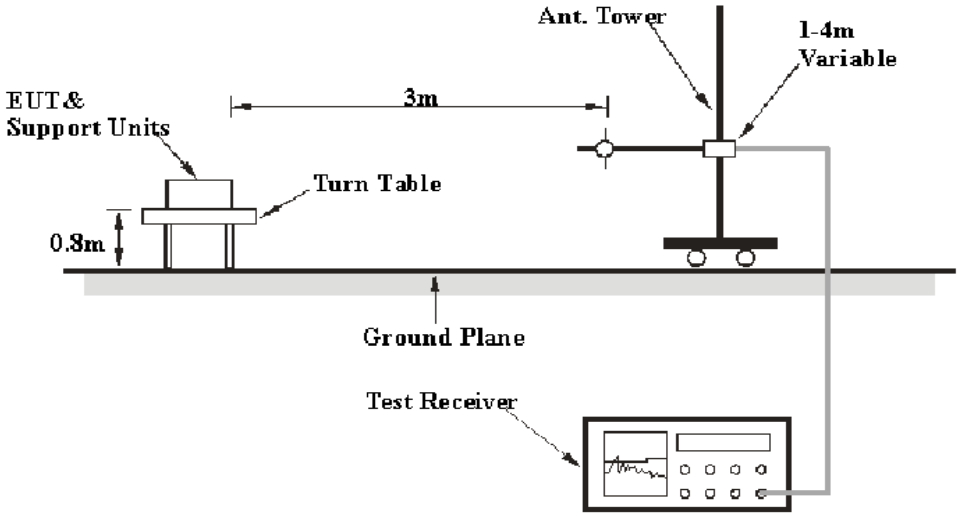
According to KDB 789033 D01 General UNII Test Procedures v01,emission shall be computed as: E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB
and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source,

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***	***Detector***
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 40 GHz	1 MHz	3 MHz	PK
1000 MHz – 40 GHz	1 MHz	10 Hz	Ave.

Test Procedure

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2012-05-14	2013-05-13
Sunol Sciences	Hybrid Antennas	JB3	A060611-1	2011-09-06	2013-09-05
HP	Pre-amplifier	8447E	2434A02181	2012-10-08	2013-10-07
R&S	Spectrum Analyzer	FSEM 30	DE31388	2012-03-15	2013-03-14
ETS-LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2014-09-05
PICOSECOND	Amplifier	5828	2708	N/A	N/A
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, Section 15.205, 15.209 and 15.407, with the worst margin reading of:

2.49 dB at **11590 MHz** in the **Vertical** polarization

Test Data

Environmental Conditions

Temperature:	19.3 ~20.3° C
Relative Humidity:	30 ~43 %
ATM Pressure:	100.8 ~101.8 kPa

The testing was performed by Ares Liu from 2012-12-31 to2013-01-09.

Mode: Transmitting

5150MHz~5250MHz

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	15.407/15.209	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Channel: 5190 MHz									
10380	34.19	PK	V	31.98	8.34	9.16	65.35	68.20	2.85 *
5150	37.71	PK	V	28.14	5.45	7.88	63.42	68.20	4.78
116.87	43.87	QP	V	13.85	1.32	21.41	37.63	43.50	5.87
5047	37.42	PK	V	26.41	5.46	7.86	61.43	68.20	6.77
5150	16.53	AV	V	28.14	5.45	7.88	42.24	54.00	11.76
5047	16.83	AV	V	26.41	5.46	7.86	40.84	54.00	13.16
5190	64.15	AV	H	26.82	5.50	8.06	88.41	N/A	N/A
5190	86.35	PK	H	26.82	5.50	8.06	110.61	N/A	N/A
5190	66.42	AV	V	26.48	5.50	8.06	89.95	N/A	N/A
5190	89.41	PK	V	26.48	5.50	8.06	113.33	N/A	N/A
Channel: 5230 MHz									
10460	34.09	PK	V	31.99	8.34	9.20	65.22	68.20	2.98 *
116.87	46.25	QP	V	13.85	1.32	21.41	40.01	43.50	3.49
5045	36.91	PK	V	26.39	5.47	7.85	60.92	68.20	7.28
5350	36.21	PK	V	26.60	4.99	8.30	59.50	68.20	8.70
5045	16.37	AV	V	26.39	5.47	7.85	40.38	54.00	13.62
5350	16.18	AV	V	26.60	4.99	8.30	39.47	54.00	14.53
5230	62.84	AV	H	26.56	5.20	8.22	86.38	N/A	N/A
5230	85.44	PK	H	26.56	5.20	8.22	108.98	N/A	N/A
5230	66.03	AV	V	26.56	5.20	8.22	89.57	N/A	N/A
5230	89.63	PK	V	26.56	5.20	8.22	113.17	N/A	N/A

*Within measurement uncertainty!

5725MHz ~5825MHz

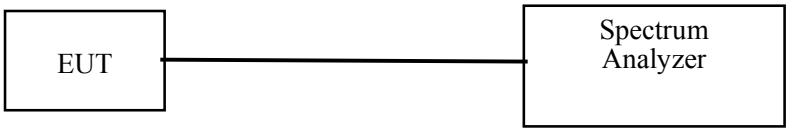
Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	15.407/15.209	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Channel: 5755 MHz									
11510	31.66	PK	V	32.90	7.84	7.26	65.14	68.20	3.06 *
116.88	45.02	QP	V	13.85	1.32	21.41	38.78	43.50	4.72
11510	15.48	AV	V	32.90	7.84	7.26	48.96	54.00	5.04
5149	36.83	PK	V	26.41	5.45	7.87	60.82	68.20	7.38
5725	36.55	PK	V	27.15	4.83	9.71	58.82	78.20	19.38
5149	16.55	AV	V	26.41	5.45	7.87	40.54	54.00	13.46
5715	35.15	PK	V	27.15	4.69	9.73	57.26	68.20	10.94
5825	35.48	PK	V	28.03	5.35	9.55	59.31	78.2	18.89
5835	32.15	PK	V	28.03	5.43	9.53	56.08	68.2	12.12
5755	63.16	AV	H	27.15	5.17	9.67	85.81	N/A	N/A
5755	84.89	PK	H	27.15	5.17	9.67	107.54	N/A	N/A
5755	65.82	AV	V	27.15	5.17	9.67	88.47	N/A	N/A
5755	88.92	PK	V	27.15	5.17	9.67	111.57	N/A	N/A
Channel: 5795 MHz									
11590	31.29	PK	V	32.90	8.01	6.49	65.71	68.20	2.49 *
11590	15.27	AV	V	32.90	8.01	6.49	49.69	54.00	4.31 *
110.49	44.73	QP	V	12.96	1.28	21.41	37.56	43.50	5.94
5825	36.28	PK	V	28.03	5.35	9.55	60.11	78.20	18.09
5144	34.22	PK	V	26.39	5.47	7.85	58.23	68.20	9.97
5144	16.61	AV	V	26.39	5.47	7.85	40.62	54.00	13.38
5835	34.25	PK	V	28.03	5.43	9.53	58.18	68.20	10.02
5725	35.14	PK	V	27.15	4.83	9.71	57.41	78.2	20.79
5715	34.02	PK	V	27.15	4.69	9.73	56.13	68.2	12.07
5795	64.28	AV	H	27.00	5.14	9.61	86.82	N/A	N/A
5795	84.69	PK	H	27.00	5.14	9.61	107.23	N/A	N/A
5795	66.51	AV	V	27.16	5.14	9.61	89.21	N/A	N/A
5795	88.14	PK	V	27.16	5.14	9.61	110.84	N/A	N/A

*Within measurement uncertainty!

Conducted Spurious Emission at Antenna Port

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The Resolution bandwidth is set to 1MHz, The Video bandwidth is set to ≥ 1MHz, report the peak value out of the oprating band.
3. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

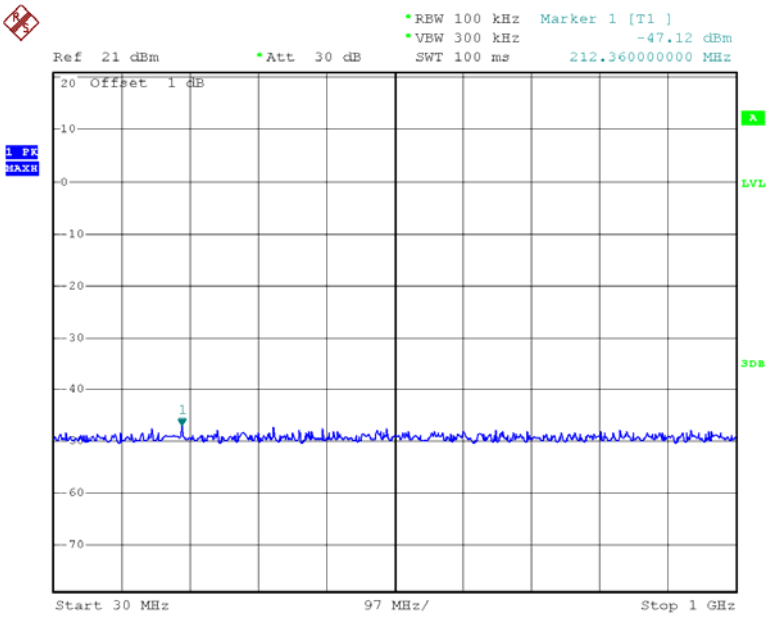
Temperature:	19.3 ~20.3° C
Relative Humidity:	30 ~43 %
ATM Pressure:	100.8 ~101.8 kPa

The testing was performed by Ares Liu from 2012-12-31 to2013-01-09.

Please refer to the following plots.

Mode: Transmitting

5190MHz(30MHz-1GHz)



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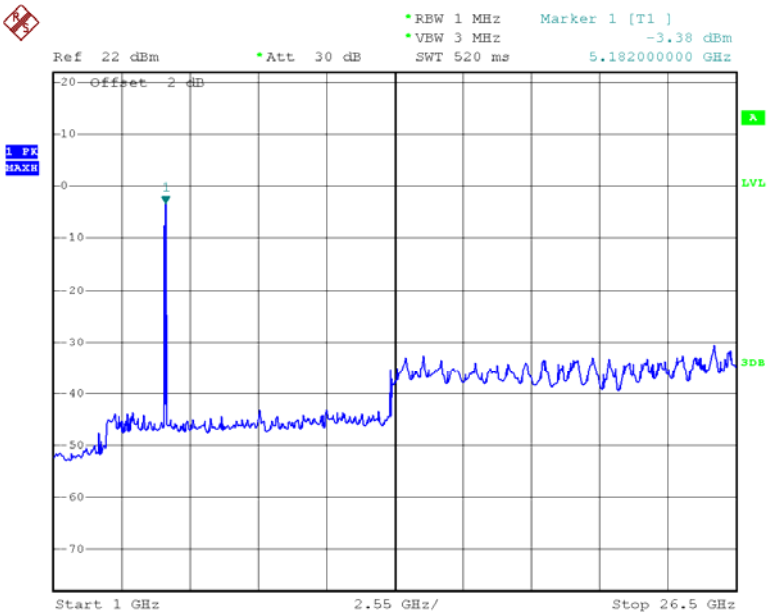
5190MHz(1GHz-26.5GHz)



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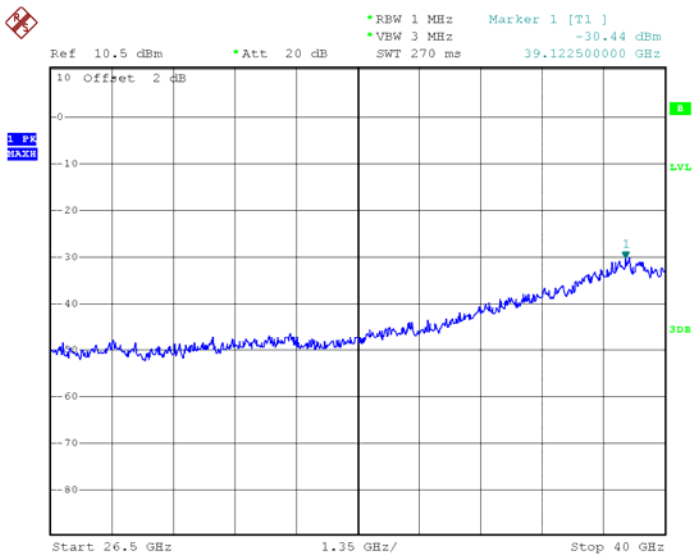
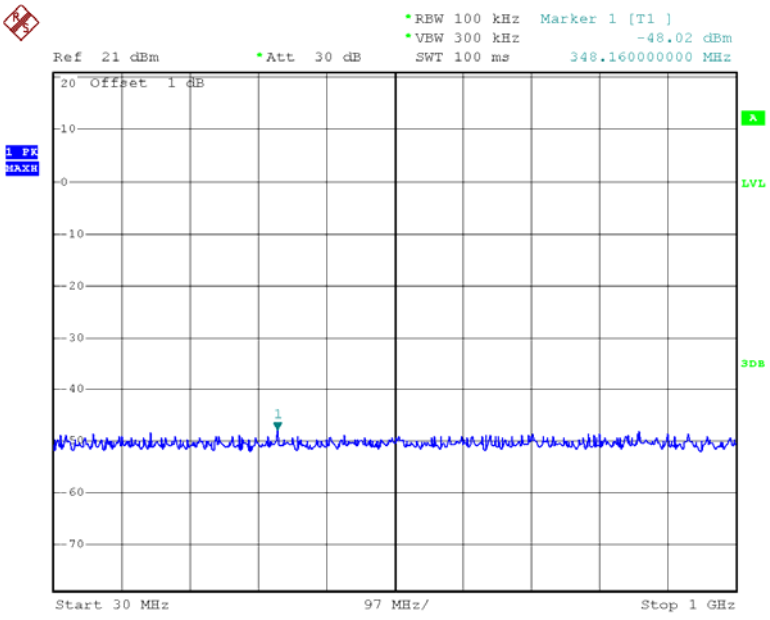
5190MHz(26.5GHz-40GHz)



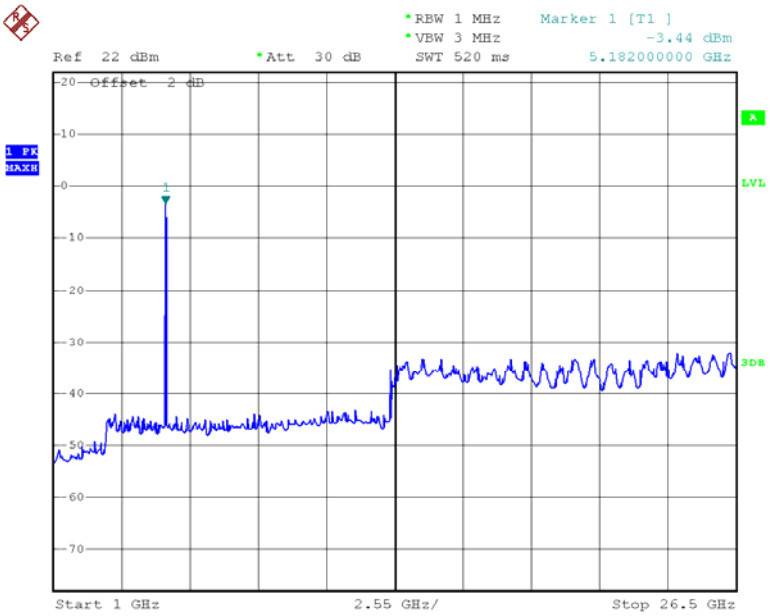
Date: 31.DEC.2012 13:52:17

5230MHz(30MHz-1GHz)



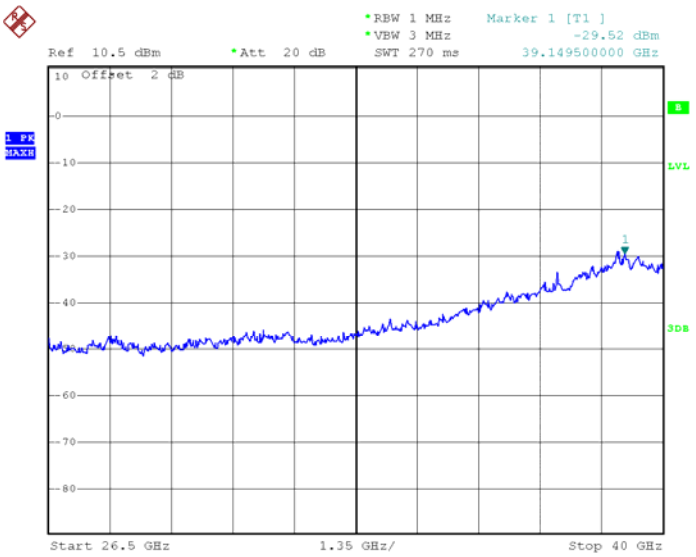
Date: 9.JAN.2013 13:28:30

5230MHz(1GHz-26.5GHz)



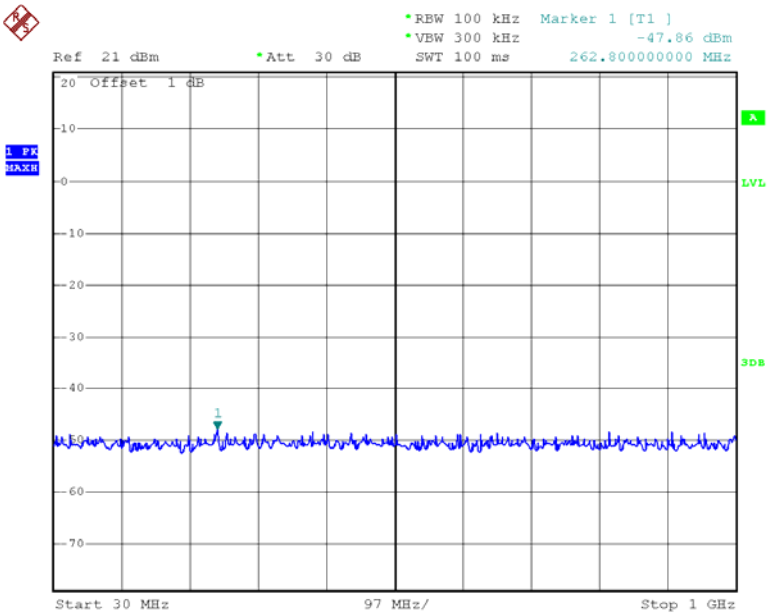
Date: 8.JAN.2013 17:09:06

5230MHz(26.5GHz-40GHz)



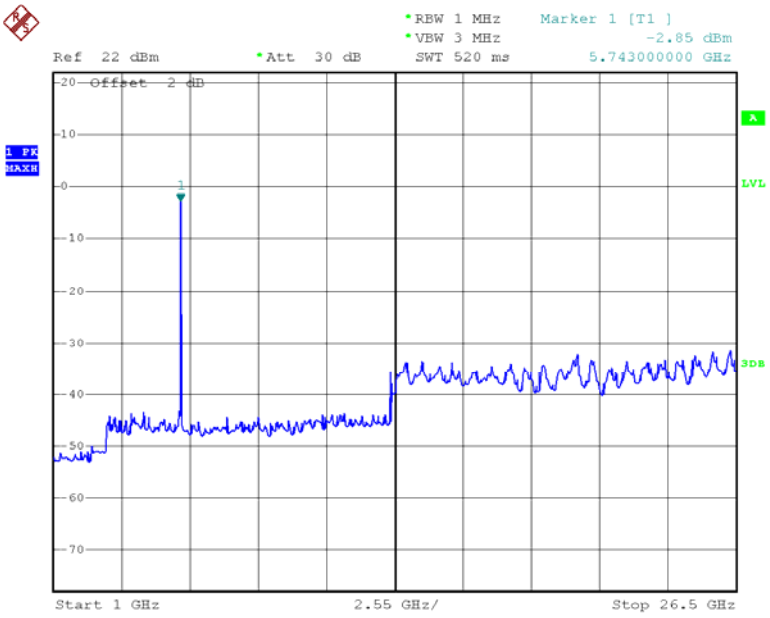
Date: 31.DEC.2012 13:53:06

5755MHz(30MHz-1GHz)



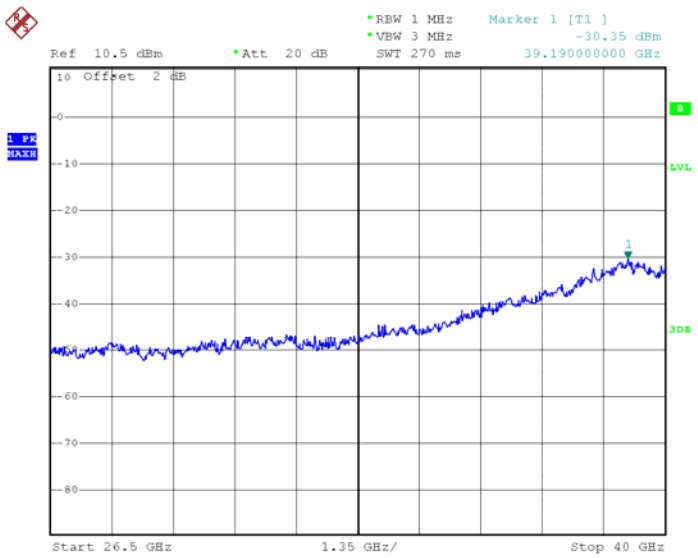
Date: 9.JAN.2013 13:29:14

5755MHz(1GHz-26.5GHz)



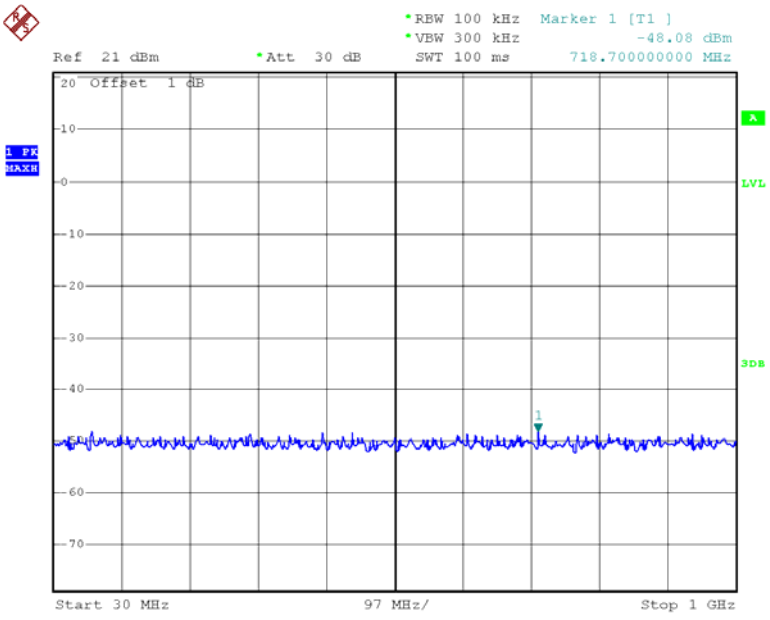
Date: 8.JAN.2013 17:16:28

5755MHz(26.5GHz-40GHz)



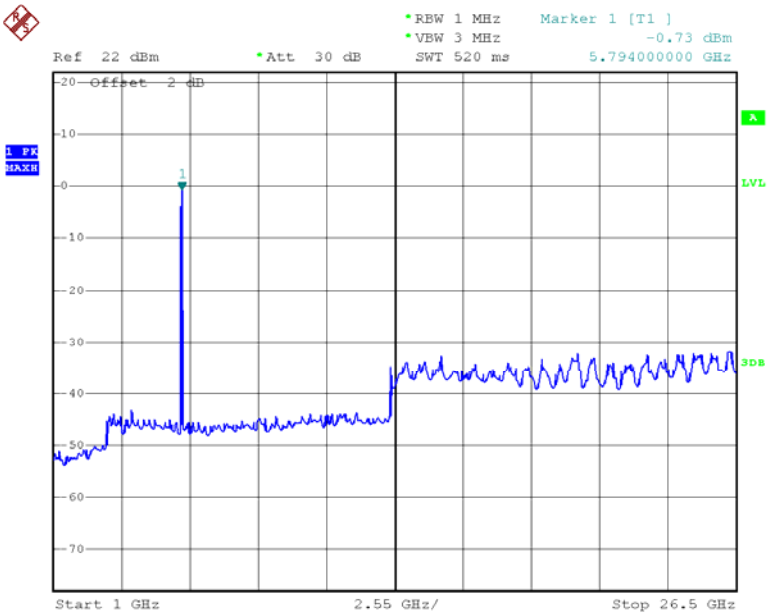
Date: 31.DEC.2012 14:10:05

5795MHz(30MHz-1GHz)



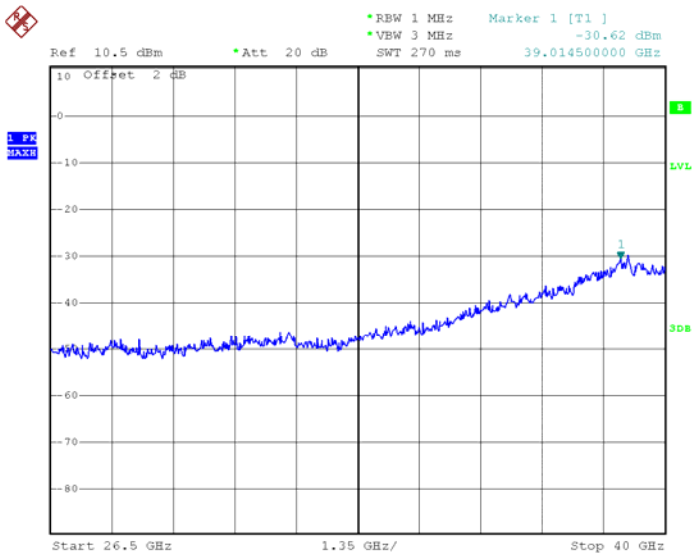
Date: 9.JAN.2013 13:29:23

5795(1GHz-26.5GHz)



Date: 8.JAN.2013 17:18:06

5795(26.5GHz-40GHz)



Date: 31.DEC.2012 14:10:30

FCC §15.407(b) (1) (2) (3) (4) – OUT OF BAND EMISSIONS

Applicable Standard

FCC §15.407 (b) (1),(2), (3), (4),;

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.

For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.

For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.725–5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibration or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measuremen instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 1 MHz and VBW to 3MHz of spectrum analyzer.
4. Off set the antenna gain and the cable loss.
5. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
6. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

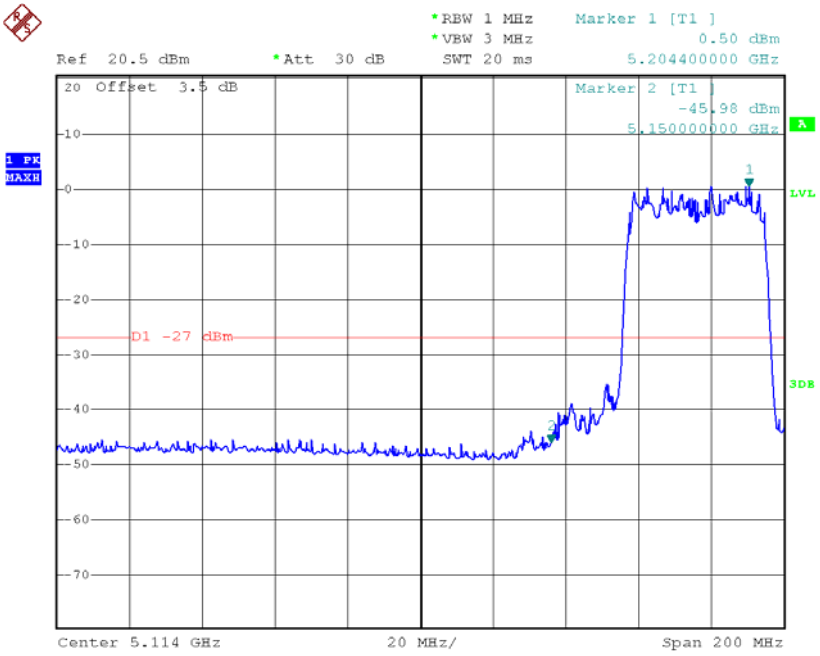
Environmental Conditions

Temperature:	19.3 ~20.3° C
Relative Humidity:	30 ~43 %
ATM Pressure:	100.8 ~101.8 kPa

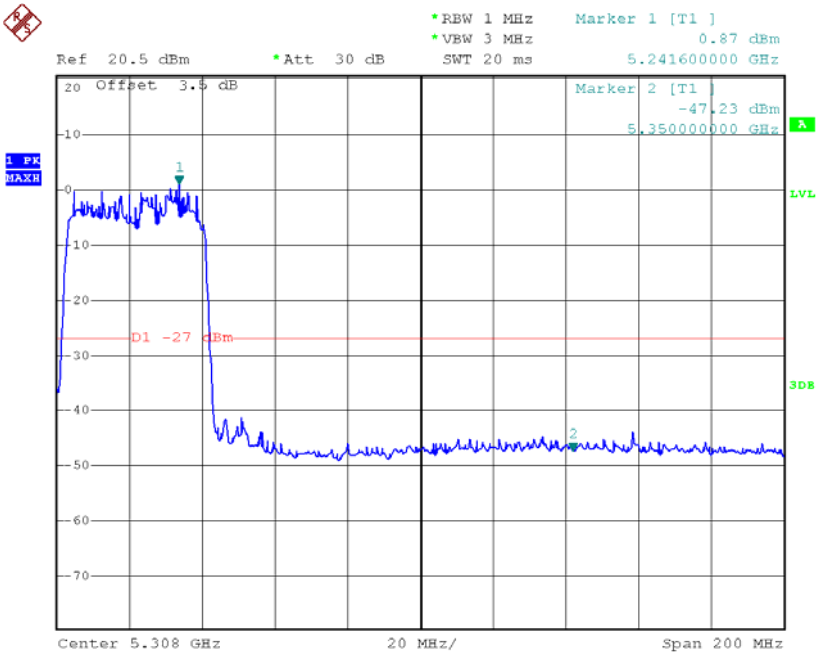
The testing was performed by Ares Liu from 2012-12-31 to2013-01-09.

5150-5250MHz band:

5190 MHz

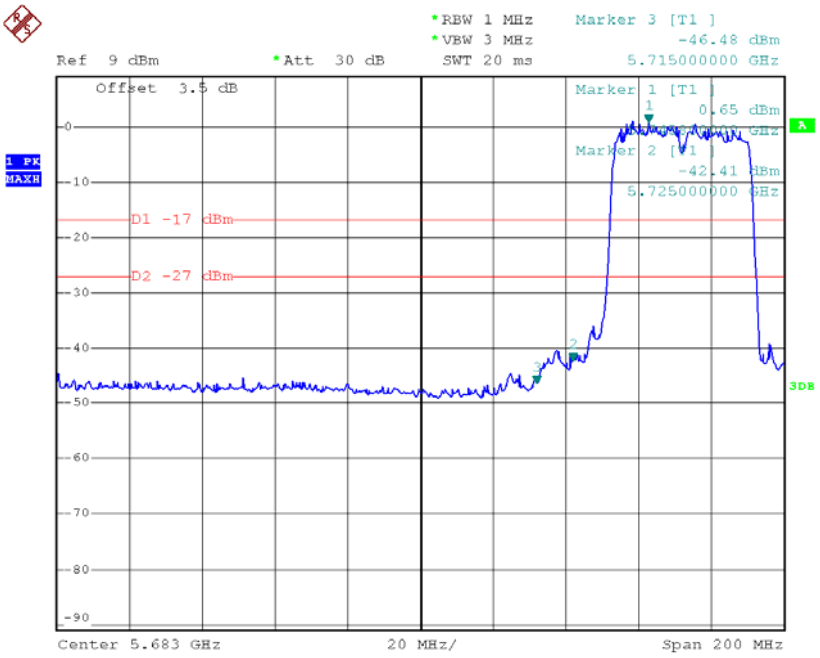


5230 MHz

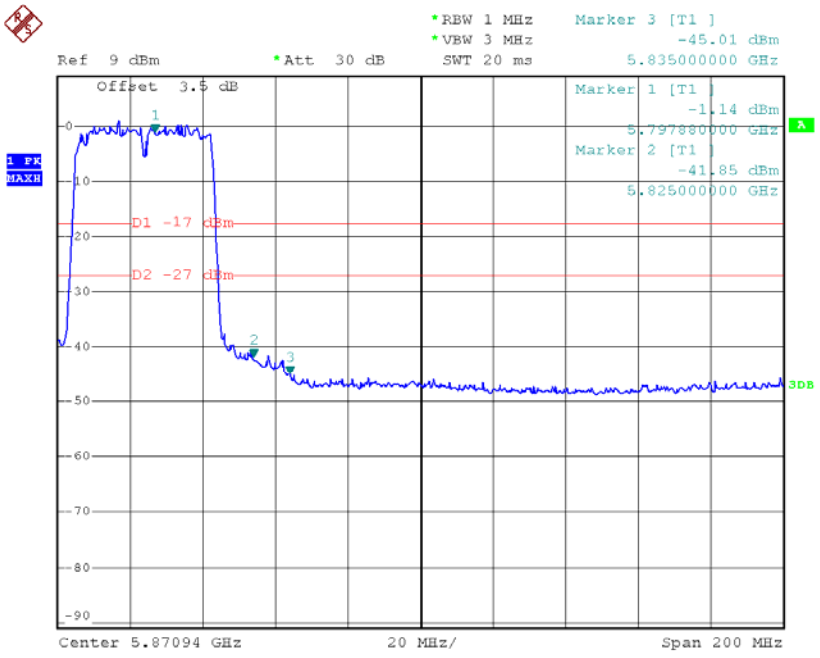


5725-5825MHz Band:

5755 MHz



5795 MHz



FCC §15.407(a) (1) – 26 dB OCCUPIED BANDWIDTH

Applicable Standard

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 + 10 log 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.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz 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.

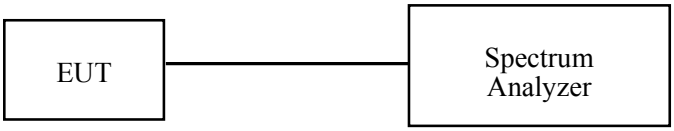
For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 dBm in any 1–MHz band. If transmitting 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Procedure

7. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
8. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
9. Use a RBW = approximately 1% of the emission bandwidth.Set the VBW > RBW. Use a peak detector.Do not use the Max Hold function. Rather, use the view button to capture the emission. Measure maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat, measurement as needed until the RBW/EBW ratio is approximately 1%.
10. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

Temperature:	19.9 °C
Relative Humidity:	30 %
ATM Pressure:	100.8 kPa

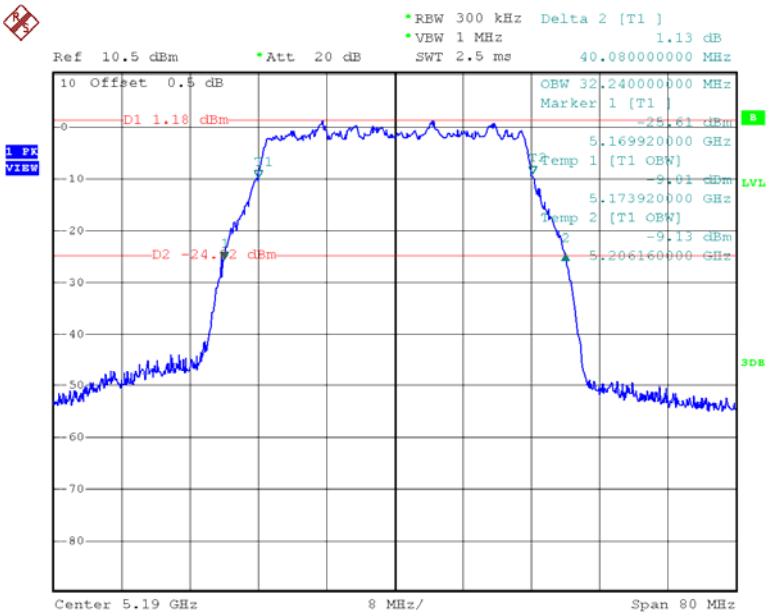
The testing was performed by Ares Liu on 2012-12-31.

Test Result: Pass.

Please refer to the following tables and plots.

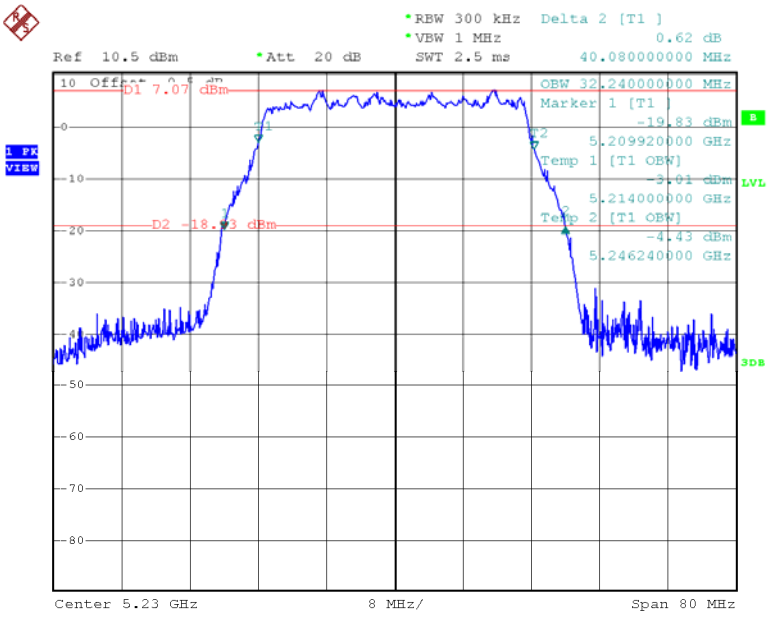
Frequency	26 dB Bandwidth
(MHz)	(MHz)
5190	40.08
5230	40.08
5755	40.08
5795	40.32

5190 MHz



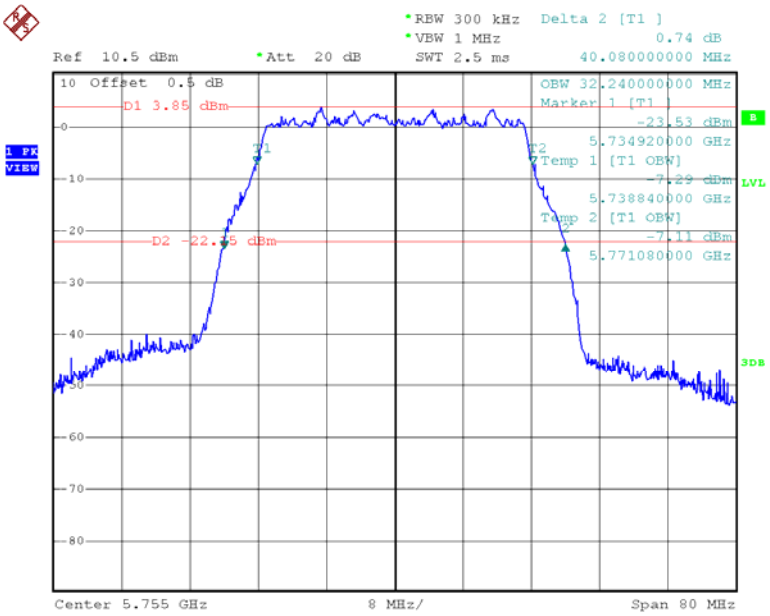
Date: 31.DEC.2012 13:45:21

5230 MHz



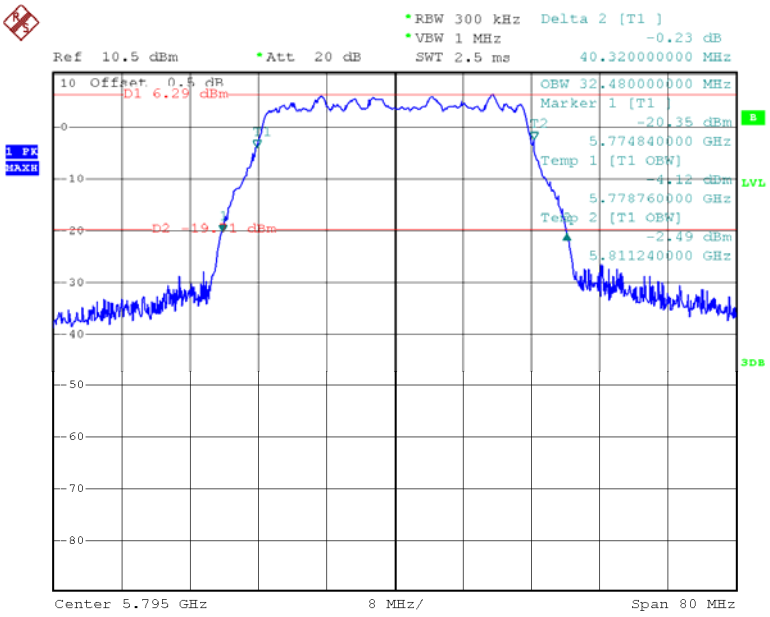
Date: 31.DEC.2012 13:57:15

5755 MHz



Date: 31.DEC.2012 14:04:08

5795 MHz



Date: 31.DEC.2012 14:14:31

FCC §15.407(a) (1) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

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 + 10 log 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.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz 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.

For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIM.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set span to encompass the entire emission bandwidth (EBW) of the signal. Set RBW = 1 MHz.Set VBW ≥ 3 MHz. Use sample detector mode Use a video trigger with the trigger level set to enable triggering only on full power pulses.Transmitter must operate at full control power for entire sweep of every sweep.If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”. Trace average 100 traces in power averaging mode.Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms.

4. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.
5. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	19.9 °C
Relative Humidity:	30 %
ATM Pressure:	100.8 kPa

The testing was performed by Ares Liu on 2012-12-31.

Test Mode: Transmitting

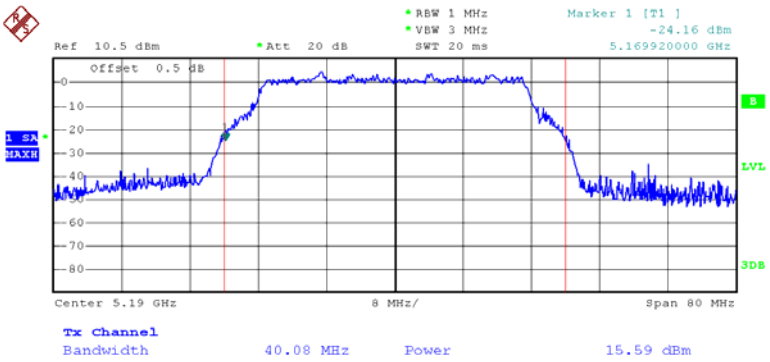
Test Result: Pass

Please refer to the following tables and plots.

Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Result
5190	15.59	17	PASS
5230	15.82	17	PASS
5755	15.57	30	PASS
5795	15.44	30	PASS

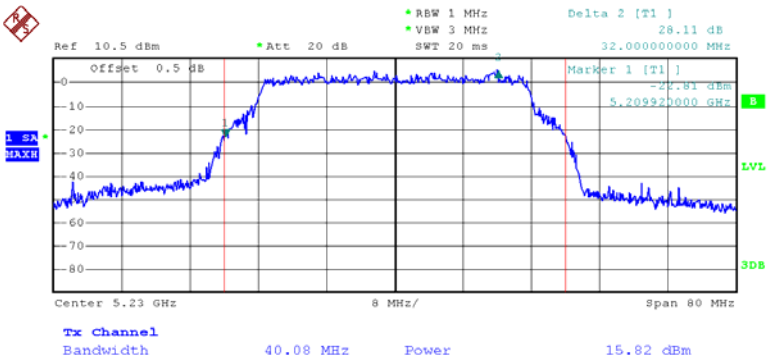
*Note: The antenna Gain is 2.0dBi.

RF Output Power, 5190MHz



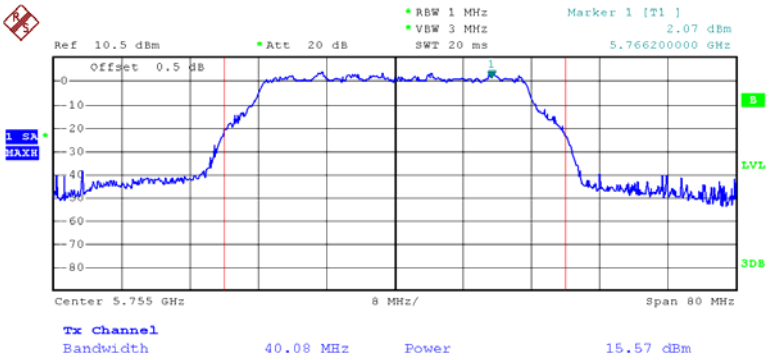
Date: 31.DEC.2012 13:47:50

RF Output Power, 5230 MHz



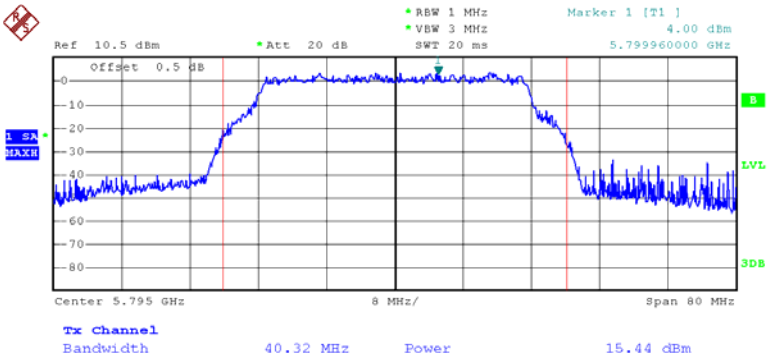
Date: 31.DEC.2012 13:58:49

RF Output Power, 5755 MHz



Date: 31.DEC.2012 14:07:05

RF Output Power, 5795 MHz



Date: 31.DEC.2012 14:14:58

FCC §15.407(a) (1) (5) - POWER SPECTRAL DENSITY

Applicable Standard

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 + 10 log 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.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz 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.

For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 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.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Use sample detector and power averaging (not video averaging) mode. Set RBW= 1 MHz*, VBW > 1 MHz. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging. This method is permitted only if the transmission pulse or sequence of pulses remains at maximum transmits power throughout each of the 100 sweeps of averaging and that the interval between pulses is not included in any of the sweeps.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

Environmental Conditions

Temperature:	19.9 ° C
Relative Humidity:	30 %
ATM Pressure:	100.8 kPa

The testing was performed by Ares Liu on 2012-12-31.

Test Mode: Transmitting

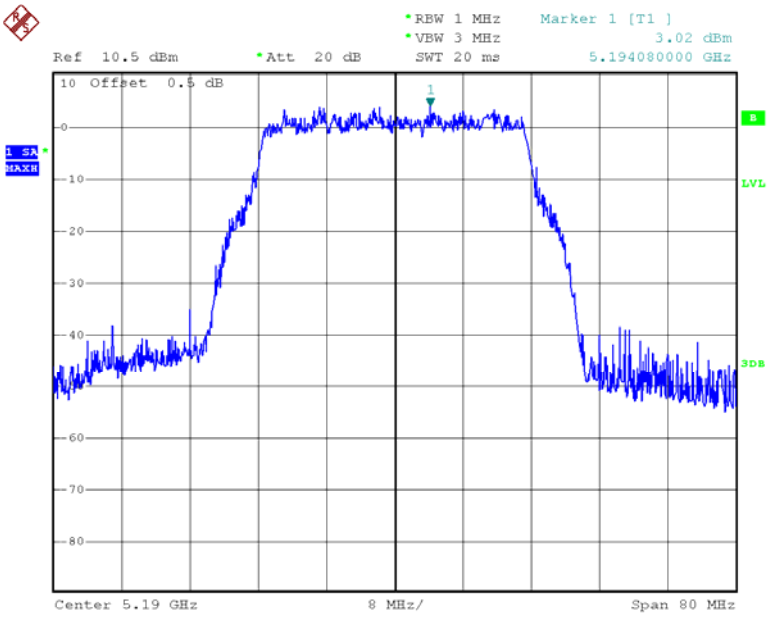
Test Result: Pass

Please refer to the following tables and plots.

Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
5190	3.02	4
5230	3.61	4
5755	4.10	17
5795	4.43	17

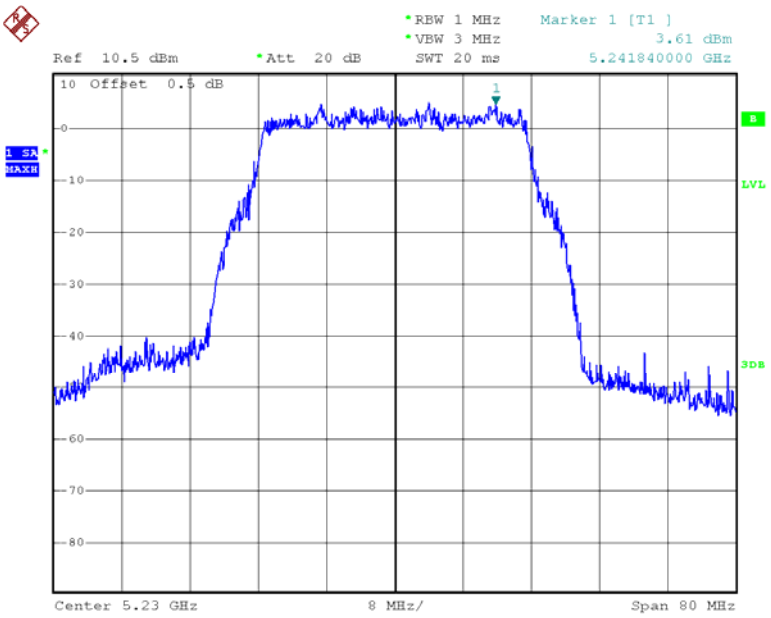
*Note: The antenna Gain is 2.0dBi.

5190MHz



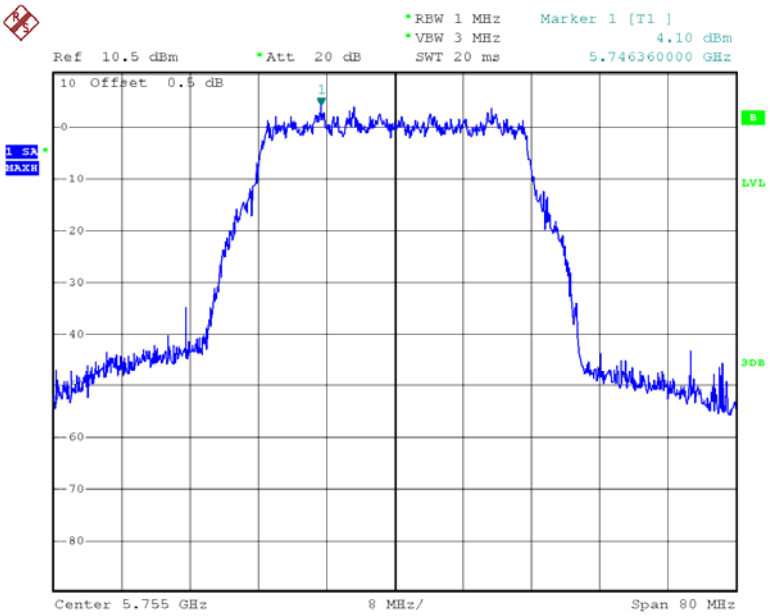
Date: 31.DEC.2012 13:48:07

5230 MHz



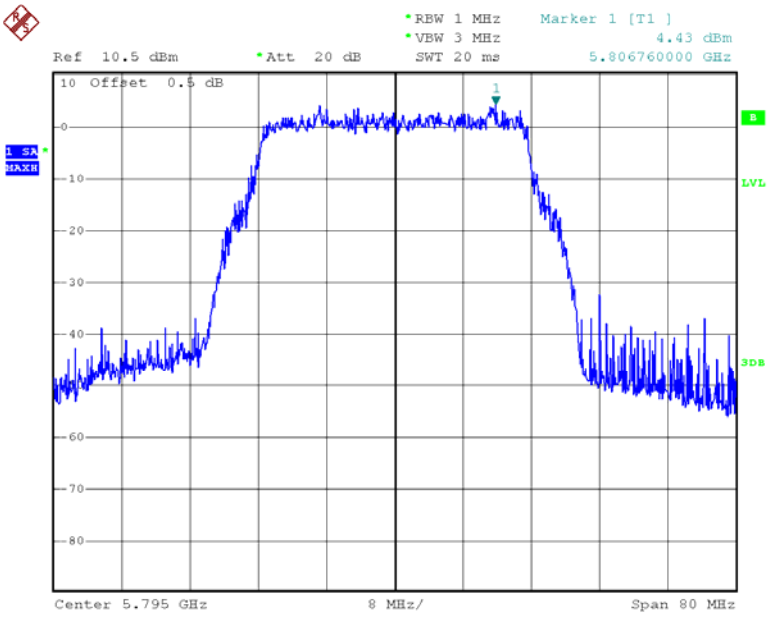
Date: 31.DEC.2012 13:59:06

5755 MHz



Date: 31.DEC.2012 14:07:26

5795 MHz



Date: 31.DEC.2012 14:15:20

FCC §15.407(a) (6) – PEAK EXCURSION RATIO

Applicable Standard

According to §15.407(a) (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.

Test Procedure

Set the spectrum analyzer span to view the entire emission bandwidth.
The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth. Submit a plot.
1st Trace:

• Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.
2nd Trace:

• create the 2nd trace using the settings described in the setion "FCC §15.407(a)(1)(2) – CONDUCTED TRANSMITTER OUTPUT POWER".

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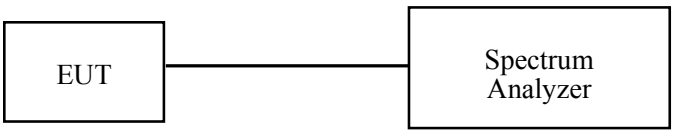


Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIM.

Test Data

Environmental Conditions

Temperature:	19.9 ° C
Relative Humidity:	30 %
ATM Pressure:	100.8 kPa

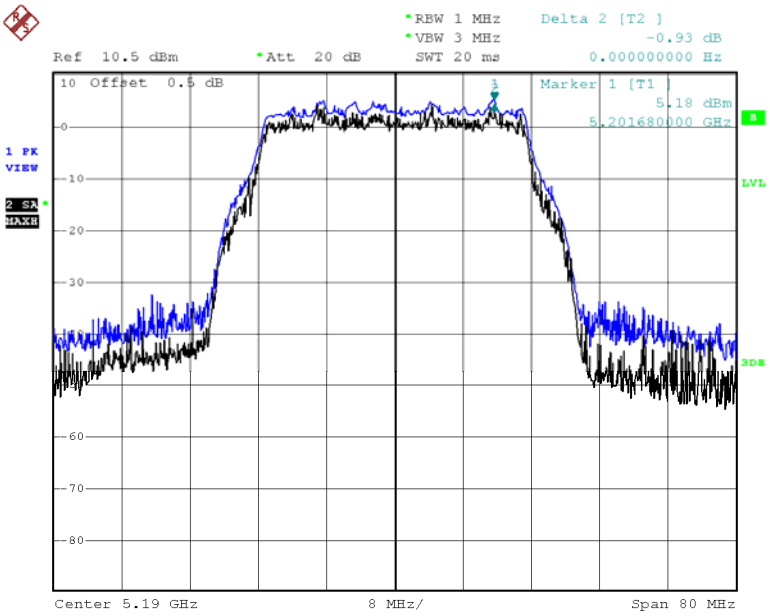
The testing was performed by Ares Liu on 2012-12-31.

Test Mode: Transmitting

Please refer to the following tables and plots.

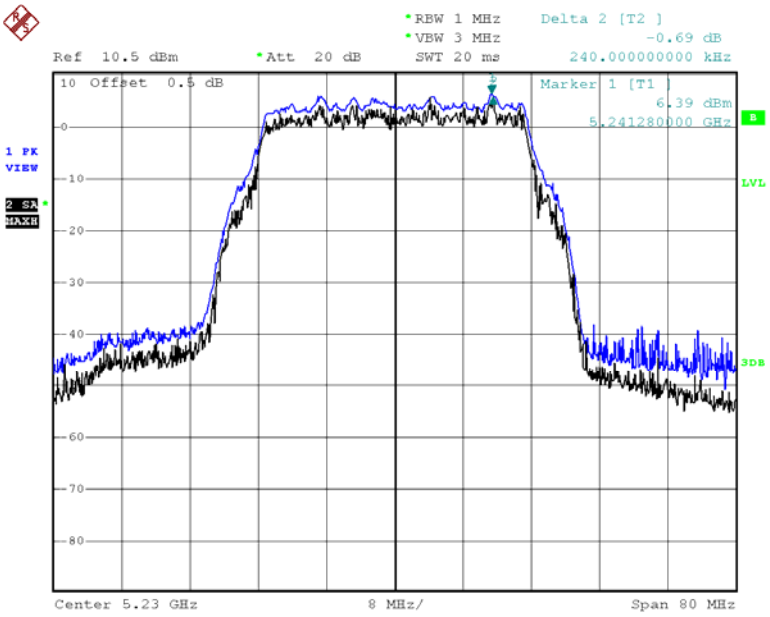
Channel Frequency MHz	Peak Excursion Ratio (dB)	Limit (dB)
5190MHz	0.93	13
5230MHz	0.69	13
5755MHz	0.70	13
5795MHz	1.12	13

5190MHz



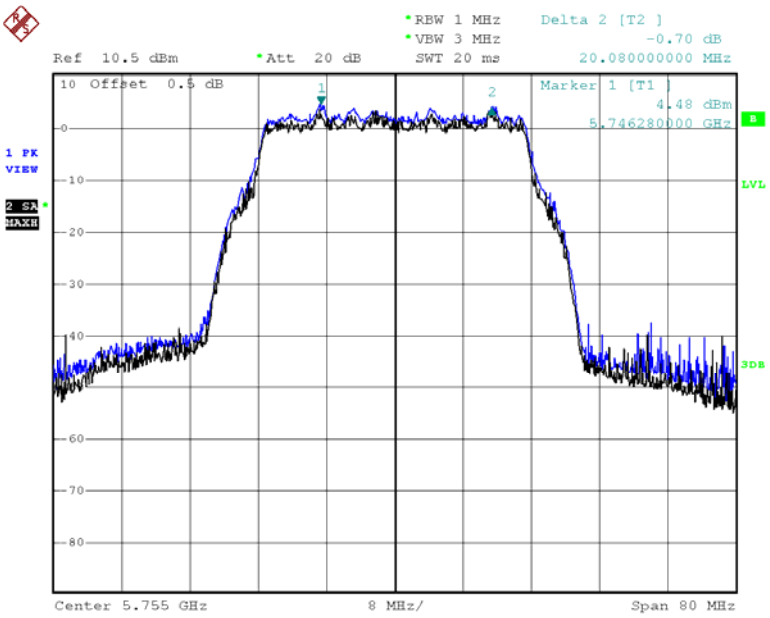
Date: 31.DEC.2012 13:48:43

5230 MHz



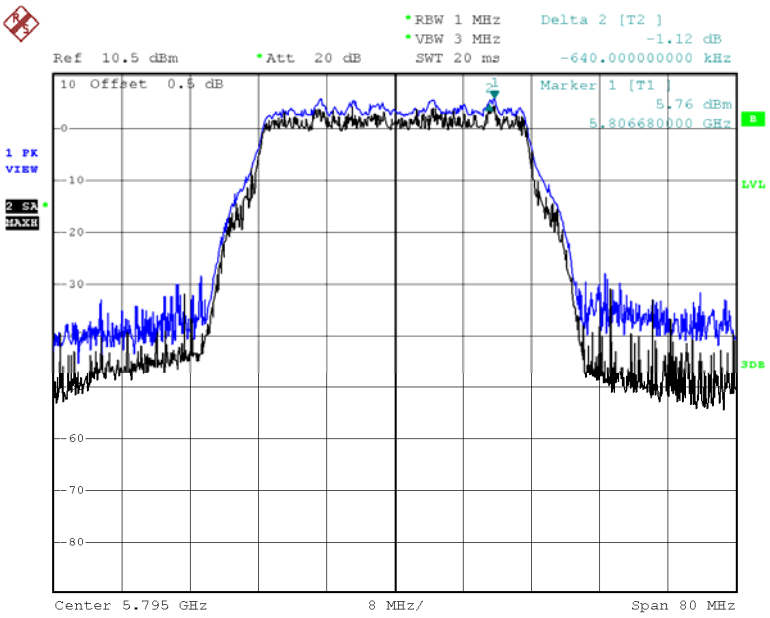
Date: 31.DEC.2012 13:59:48

5755 MHz



Date: 31.DEC.2012 14:08:19

5795 MHz



Date: 31.DEC.2012 14:16:23

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