



Test Report

Product Name : GMX Stereo Transmitter
Model No. : SMPTFZ-003
FCC ID. : Y22-SK20120001

Applicant : Skullcandy
Address : 1441 W. Ute Blvd Suite 250, Park City, UT 84098, U.S.A.

Date of Receipt : 2012/09/12
Issued Date : 2012/10/02
Report No. : 129270R-RFUSP42V01
Report Version : V1.0



The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2012/10/02

Report No. : 129270R-RFUSP42V01



Product Name : GMX Stereo Transmitter
 Applicant : Skullcandy
 Address : 1441 W. Ute Blvd Suite 250, Park City, UT 84098, U.S.A.
 Manufacturer : Merry Electronics (Shenzhen) Co., Ltd.
 Model No. : SMPTFZ-003
 FCC ID. : Y22-SK20120001
 EUT Voltage : DC 5V (Power by Battery)
 Trade Name : SKULLCANDY
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2011
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By :

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Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	:	TAF, Accreditation Number: 1313
Germany	:	TUV Rheinland, Certificate No.: 10011438-2-2010
USA	:	FCC, Registration Number: 365520
Canada	:	IC, Submission No: 150981

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: <http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	GMX Stereo Transmitter
Model No.	SMPTFZ-003
Trade Name	SKULLCANDY
Frequency Range	2403.35-2477.35MHz
Type of Modulation	pi/4 - DQPSK
Antenna Type	PCB Antenna
Antenna Gain	0dBi
Number of Channels	38
Channel Control	Auto

Component	
GMX Stereo Transmitter USB Power Cable	Shielded, 0.5m
3.5mm to RCA Cable	Shielded, 1.5m

Working Frequency of Each Channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01	2403.35 MHz	Channel 14	2429.35 MHz	Channel 27	2455.35 MHz
Channel 02	2405.35 MHz	Channel 15	2431.35 MHz	Channel 28	2457.35 MHz
Channel 03	2407.35 MHz	Channel 16	2433.35 MHz	Channel 29	2459.35 MHz
Channel 04	2409.35 MHz	Channel 17	2435.35 MHz	Channel 30	2461.35 MHz
Channel 05	2411.35 MHz	Channel 18	2437.35 MHz	Channel 31	2463.35 MHz
Channel 06	2413.35 MHz	Channel 19	2439.35 MHz	Channel 32	2465.35 MHz
Channel 07	2415.35 MHz	Channel 20	2441.35 MHz	Channel 33	2467.35 MHz
Channel 08	2417.35 MHz	Channel 21	2443.35 MHz	Channel 34	2469.35 MHz
Channel 09	2419.35 MHz	Channel 22	2445.35 MHz	Channel 35	2471.35 MHz
Channel 10	2421.35 MHz	Channel 23	2447.35 MHz	Channel 36	2473.35 MHz
Channel 11	2423.35 MHz	Channel 24	2449.35 MHz	Channel 37	2475.35 MHz
Channel 12	2425.35 MHz	Channel 25	2451.35 MHz	Channel 38	2477.35 MHz
Channel 13	2427.35 MHz	Channel 26	2453.35 MHz		

Note:

1. This device is a GMX Stereo Transmitter included a 2.4GHz transmitting function, and 2.4GHz receiving function.
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
3. Regards to the frequency band operation; the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 129270R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit-Transmitter
----	------------------------------

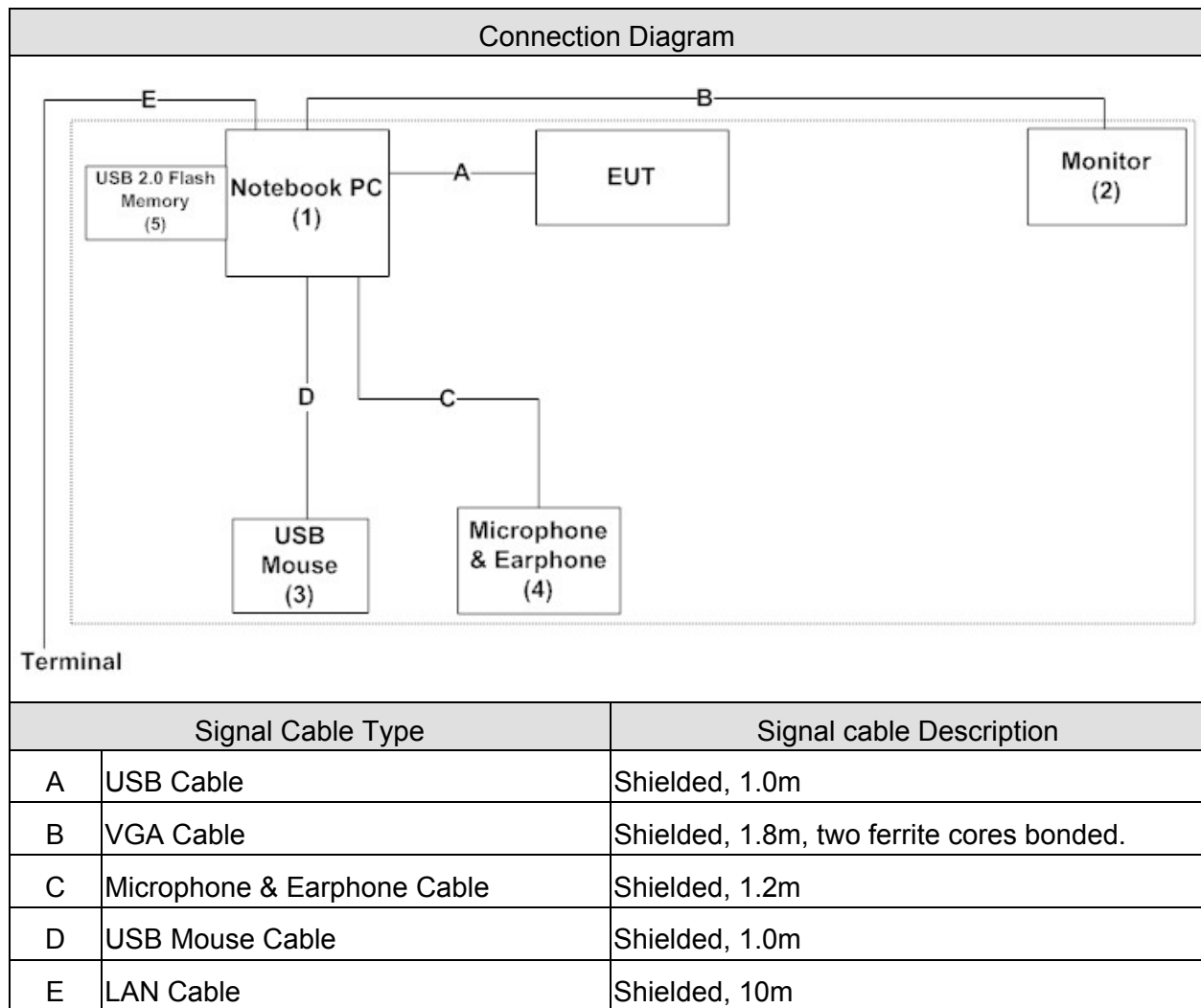
Test Items	Channel	Result
Conducted Emission	1/ 20/ 38	Complies
Peak Power Output	1/ 20/ 38	Complies
Radiated Emission (Under 1GHz)	20	Complies
Radiated Emission (Above 1GHz)	1/ 20/ 38	Complies
RF antenna conducted test	1/ 38	Complies
Radiated Emission Band Edge	1/ 38	Complies
Occupied Bandwidth	1/ 20/ 38	Complies
Power Density	1/ 20/ 38	Complies

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	ACER	PAV70	LUSEW0D0371105 FE221601	DoC	Non-Shielded, 2.5m a ferrite core bonded
2	Monitor	CHI MEI	A170E1-09	3UC120955RA0033	DoC	Non-Shielded, 1.8m
3	USB Mouse	Logitech	M-UV83	LZE35150261	DoC	--
4	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
5	USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.5.
2	Execute the VMldev V1.1.6.38 on the EUT.
3	Configure the test mode, and the test channel
4	Press “Start TX” to start the continuous transmitting.
5	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test (DSSS)	15 - 35	24
Humidity (%RH)		25 - 75	49
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

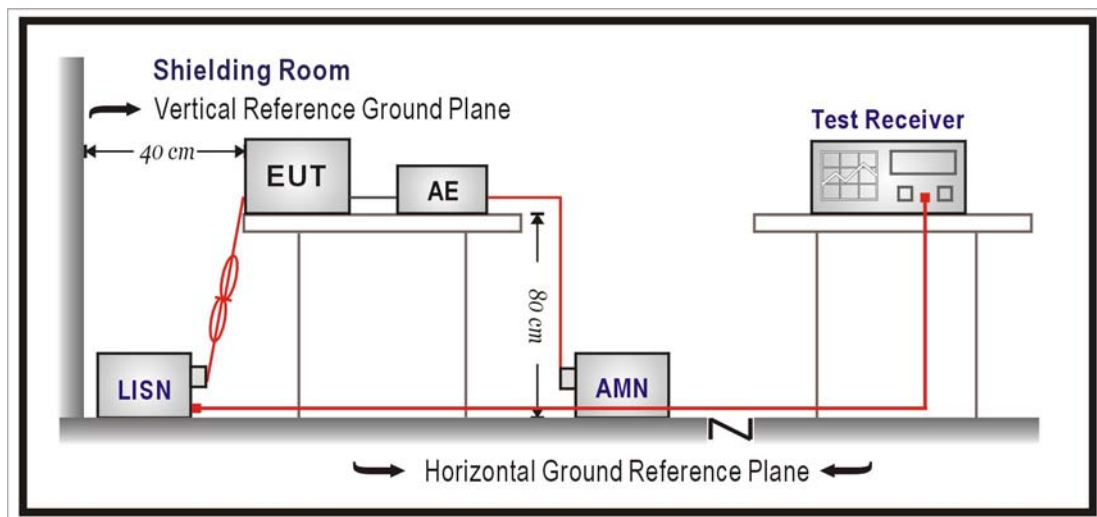
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal.
LISN	R&S	ENV216	100096	2013/08/12
LISN	R&S	ESH3-Z5	836679/022	2013/02/06
Test Receiver	R&S	ESCS 30	825442/017	2013/01/01

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

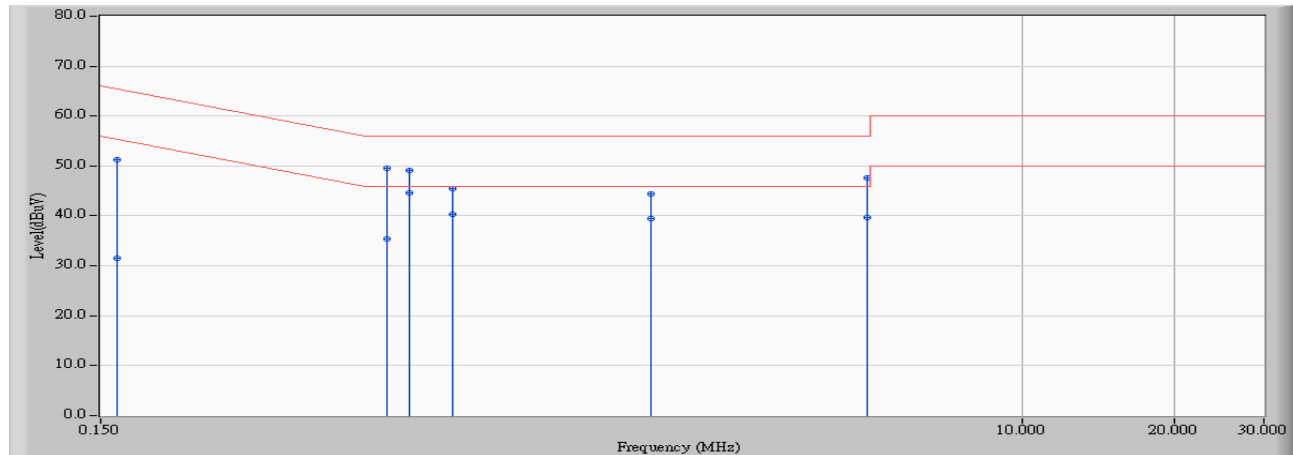
According to FCC Part 15 Subpart C Paragraph 15.207: 2011

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	Time : 2012/09/24 - 13:18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A)-1_0907 - Line1	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter

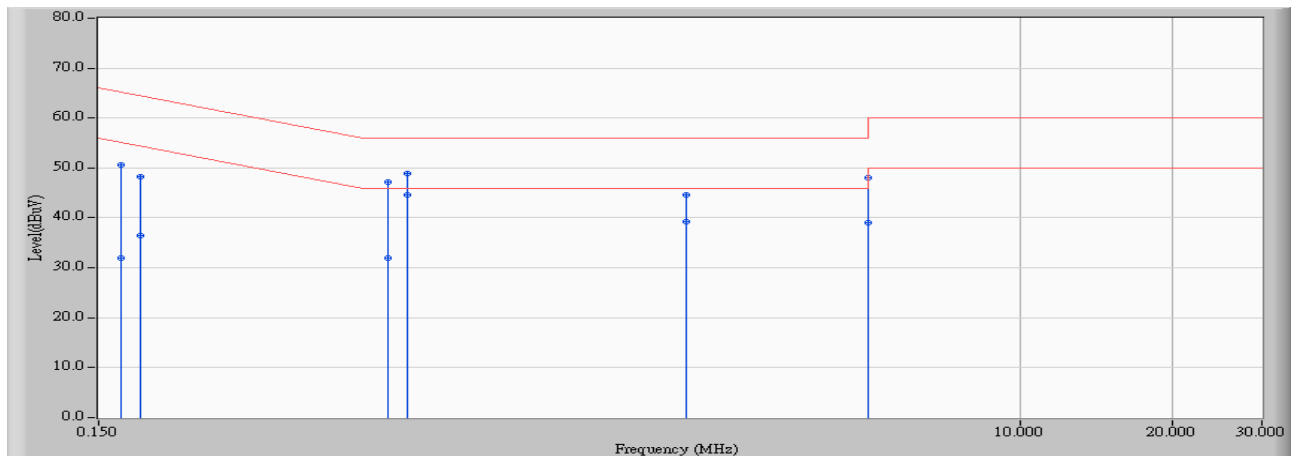


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.162	9.656	41.550	51.205	-14.170	65.375	QUASIPeAK
2		0.162	9.656	21.980	31.635	-23.740	55.375	AVERAGE
3		0.552	9.710	39.890	49.600	-6.400	56.000	QUASIPeAK
4		0.552	9.710	25.590	35.300	-10.700	46.000	AVERAGE
5		0.611	9.719	39.310	49.029	-6.971	56.000	QUASIPeAK
6	*	0.611	9.719	34.870	44.589	-1.411	46.000	AVERAGE
7		0.748	9.741	35.660	45.400	-10.600	56.000	QUASIPeAK
8		0.748	9.741	30.480	40.220	-5.780	46.000	AVERAGE
9		1.834	9.905	34.440	44.345	-11.655	56.000	QUASIPeAK
10		1.834	9.905	29.590	39.495	-6.505	46.000	AVERAGE
11		4.935	10.056	37.520	47.575	-8.425	56.000	QUASIPeAK
12		4.935	10.056	29.700	39.755	-6.245	46.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2012/09/24 - 13:22
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A)-1_0907 - Line2	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.166	9.665	40.990	50.656	-14.521	65.177	QUASIPeAK
2		0.166	9.665	22.230	31.896	-23.281	55.177	AVERAGE
3		0.181	9.666	38.490	48.156	-16.272	64.428	QUASIPeAK
4		0.181	9.666	26.730	36.396	-18.032	54.428	AVERAGE
5		0.560	9.718	37.400	47.118	-8.882	56.000	QUASIPeAK
6		0.560	9.718	22.280	31.998	-14.002	46.000	AVERAGE
7		0.611	9.725	39.270	48.995	-7.005	56.000	QUASIPeAK
8	*	0.611	9.725	34.870	44.595	-1.405	46.000	AVERAGE
9		2.173	9.939	34.760	44.699	-11.301	56.000	QUASIPeAK
10		2.173	9.939	29.350	39.289	-6.711	46.000	AVERAGE
11		5.005	10.085	38.040	48.125	-11.875	60.000	QUASIPeAK
12		5.005	10.085	29.010	39.095	-10.905	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

3.1. Test Equipment

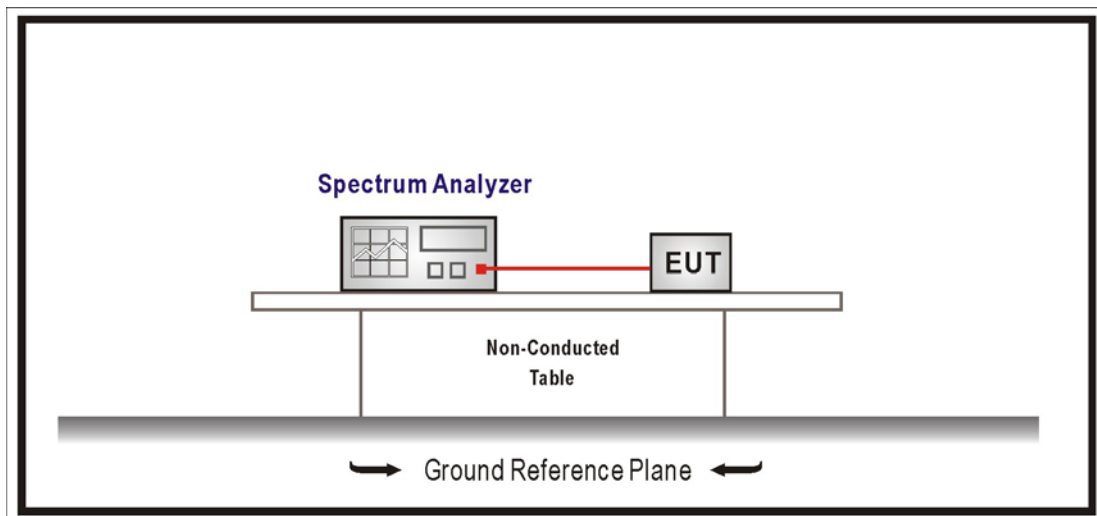
The following test equipments are used during the test:

Peak Power Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Test procedures

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074, Section 5.2.1.2 Measurement Procedure PK2 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

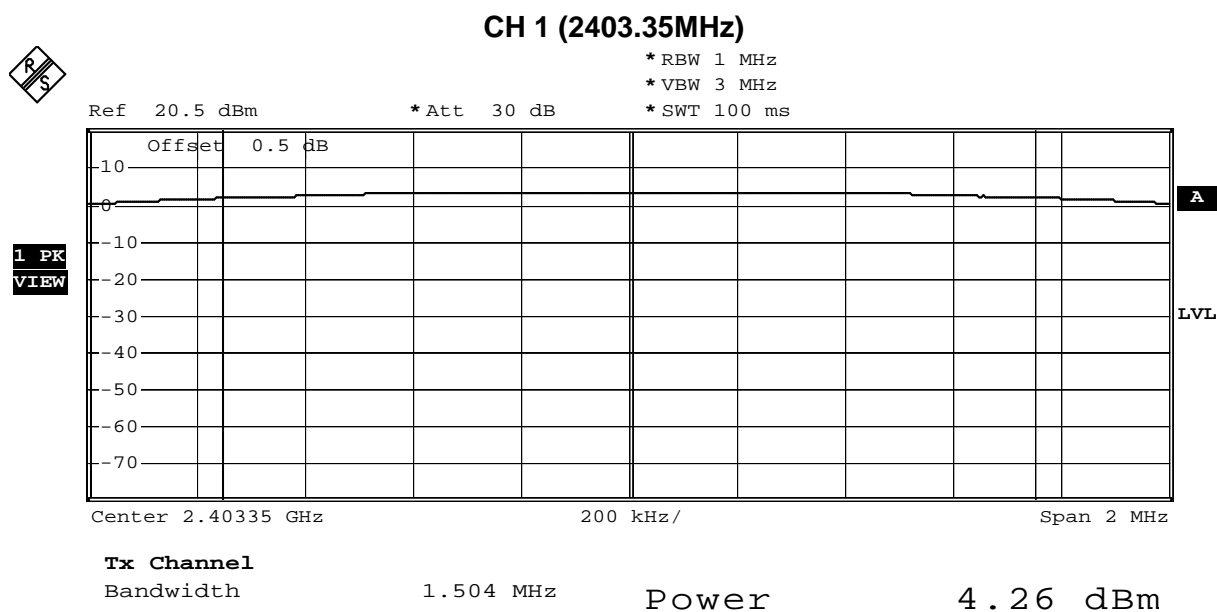
3.6. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

3.7. Test Result

Product	GMX Stereo Transmitter		
Test Item	Peak Power Output		
Test Mode	Transmit		
Date of Test	2012/09/18	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2403.35	4.26	1Watt= 30 dBm	Pass
20	2441.35	4.21	1Watt= 30 dBm	Pass
38	2477.35	4.15	1Watt= 30 dBm	Pass



Comment: A:\2

Date: 18.SEP.2012 20:16:22

CH 20 (2441.35MHz)

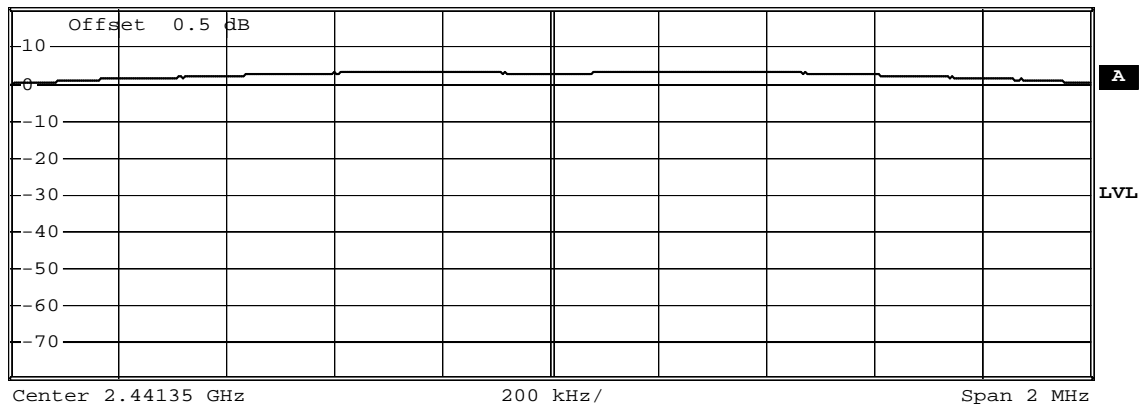


*RBW 1 MHz
 *VBW 3 MHz
 *SWT 100 ms

Ref 20.5 dBm

*Att 30 dB

1 PK
VIEW



Tx Channel

Bandwidth

1.6 MHz

Power

4.21 dBm

Comment: A:\2

Date: 18.SEP.2012 20:15:56

```
* RBW 1 MHz
* VBW 3 MHz
* SWT 100 ms
```



4.15 dBm

Date: 18.SEP.2012 20:15:21

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

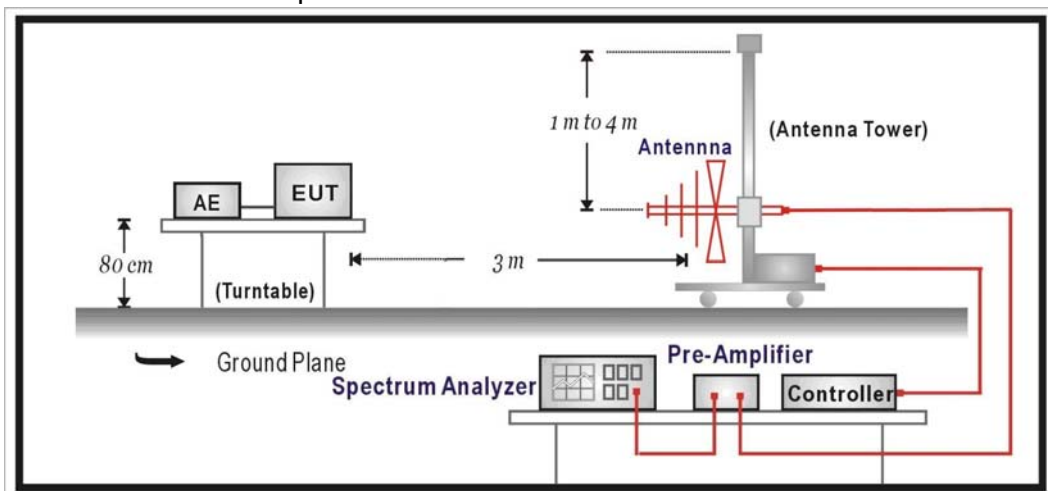
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2013/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120D	743	2013/02/02
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2012/12/05
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2013/03/01
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

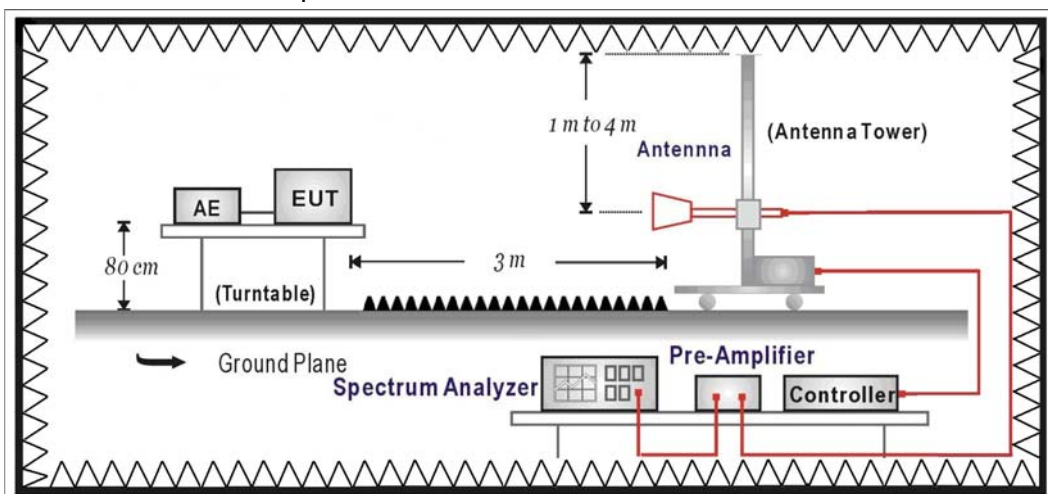
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	dBuV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

4.6. Uncertainty

The measurement uncertainty

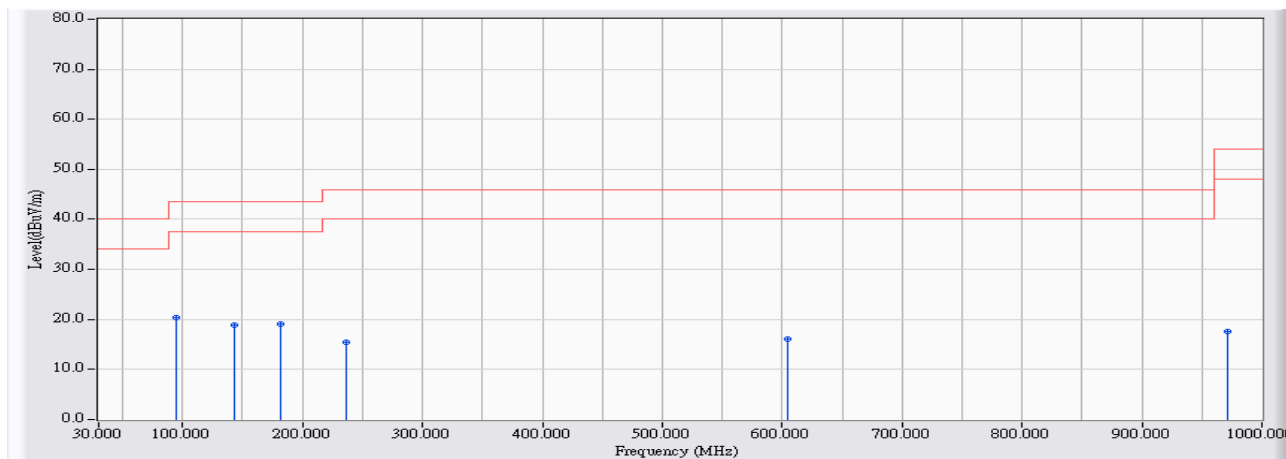
30MHz~1GHz as $\pm 3.43\text{dB}$

1GHz~26.5Ghz as $\pm 3.65\text{dB}$

4.7. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2012/09/18 - 21:56
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2441.35MHz_arbiter

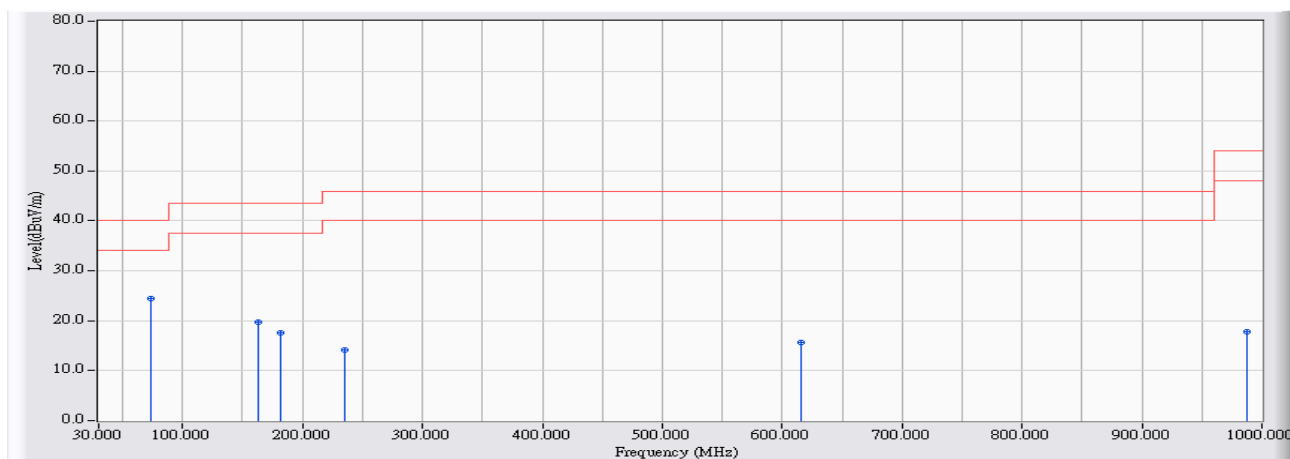


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	94.667	-9.664	29.968	20.304	-23.196	43.500	QUASIPeAK
2		143.167	-11.001	29.977	18.976	-24.524	43.500	QUASIPeAK
3		181.967	-15.039	34.157	19.118	-24.382	43.500	QUASIPeAK
4		236.933	-13.901	29.414	15.513	-30.487	46.000	QUASIPeAK
5		603.917	-7.179	23.282	16.104	-29.896	46.000	QUASIPeAK
6		970.900	-5.427	22.930	17.503	-36.497	54.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2012/09/18 - 21:57
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2441.35MHz_arbiter



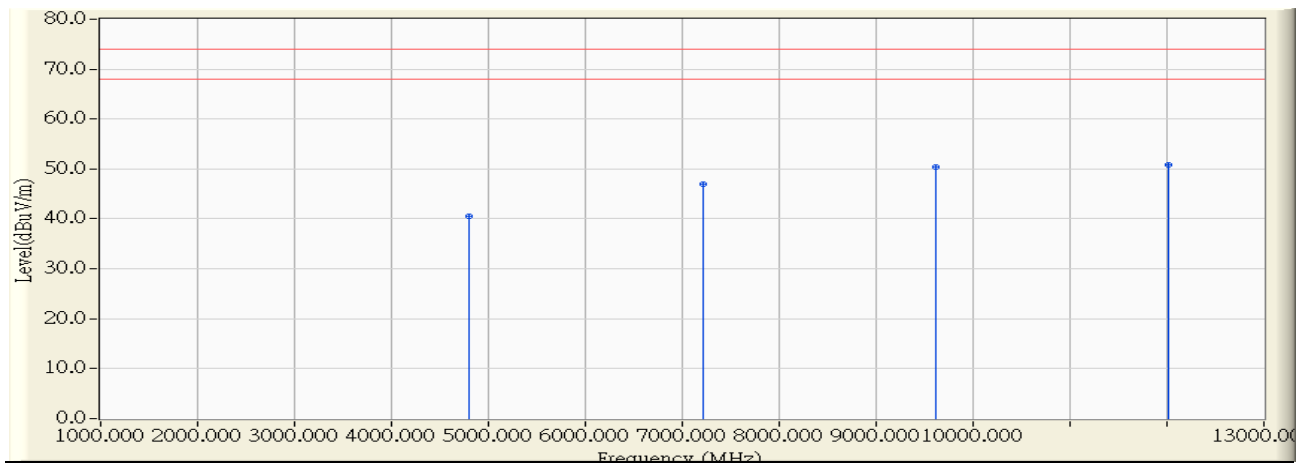
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	73.650	-10.123	34.605	24.481	-15.519	40.000	QUASIPeAK
2		162.567	-12.931	32.655	19.723	-23.777	43.500	QUASIPeAK
3		181.967	-15.039	32.702	17.663	-25.837	43.500	QUASIPeAK
4		235.317	-13.980	28.033	14.053	-31.947	46.000	QUASIPeAK
5		615.233	-7.447	23.141	15.693	-30.307	46.000	QUASIPeAK
6		987.067	-4.457	22.337	17.880	-36.120	54.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : CB1	Time : 2012/09/17 - 10:41
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

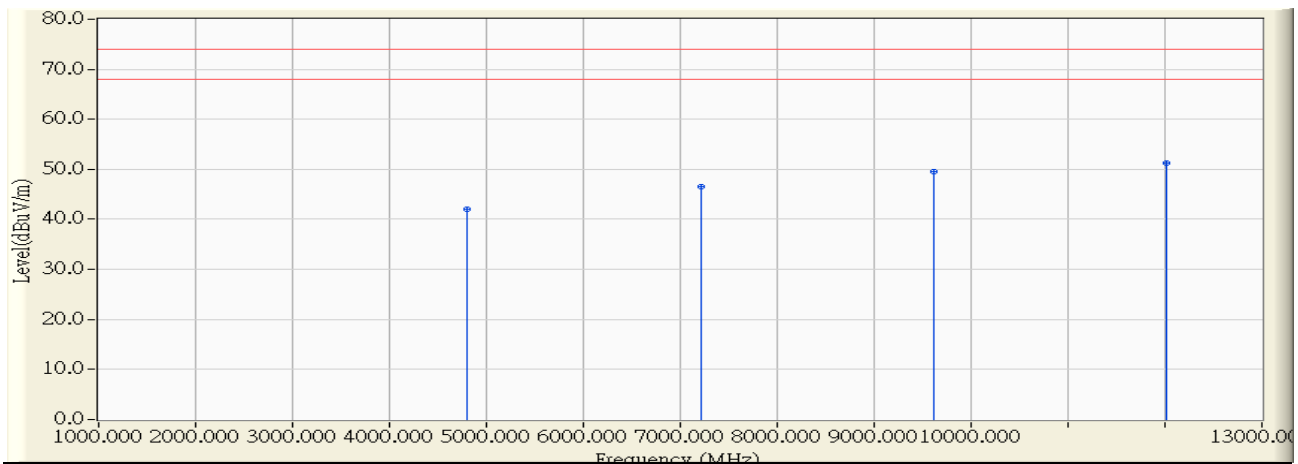


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.660	-0.854	41.490	40.636	-33.364	74.000	PEAK
2		7210.810	5.436	41.500	46.936	-27.064	74.000	PEAK
3		9611.120	8.963	41.450	50.413	-23.587	74.000	PEAK
4	*	12016.230	11.540	39.240	50.781	-23.219	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/09/17 - 10:37
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

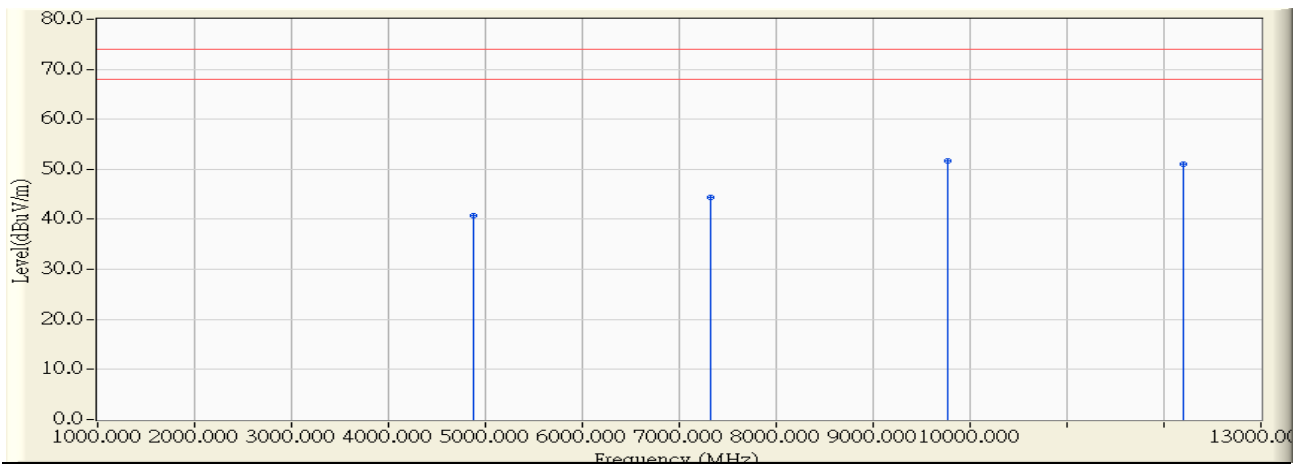


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4806.700	-0.849	42.890	42.041	-31.959	74.000	PEAK
2		7211.370	5.438	41.080	46.517	-27.483	74.000	PEAK
3		9613.400	8.979	40.590	49.570	-24.430	74.000	PEAK
4	*	12017.230	11.541	39.710	51.250	-22.750	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/09/17 - 10:51
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2441.35MHz_arbiter

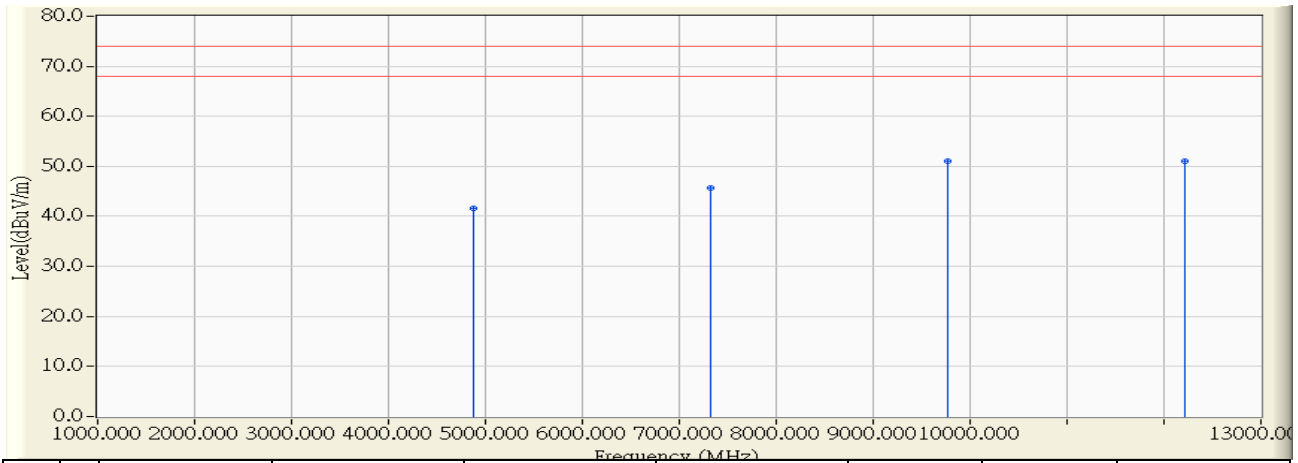


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4883.060	-0.647	41.300	40.652	-33.348	74.000	PEAK
2	7324.610	5.710	38.790	44.500	-29.500	74.000	PEAK
3	* 9768.320	10.102	41.530	51.633	-22.367	74.000	PEAK
4	12204.190	11.474	39.570	51.044	-22.956	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/09/17 - 10:47
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2441.35MHz_arbiter

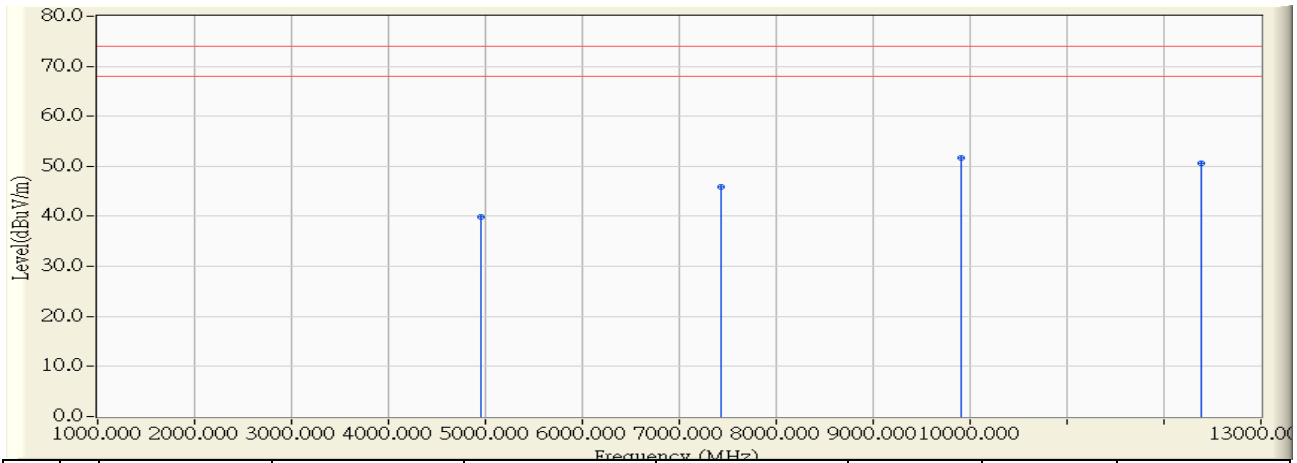


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4883.220	-0.647	42.220	41.572	-32.428	74.000	PEAK
2	7320.930	5.702	40.060	45.761	-28.239	74.000	PEAK
3	* 9764.320	10.074	40.870	50.944	-23.056	74.000	PEAK
4	12210.030	11.472	39.470	50.942	-23.058	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/09/17 - 10:59
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter

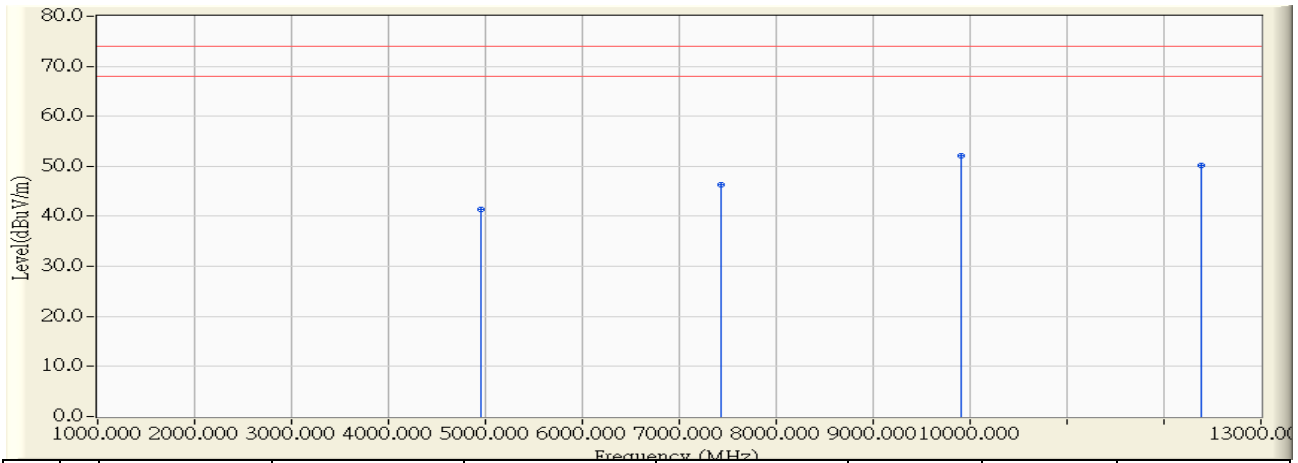


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4954.260	-0.461	40.350	39.889	-34.111	74.000	PEAK
2	7429.690	5.963	39.970	45.934	-28.066	74.000	PEAK
3	* 9909.280	11.125	40.530	51.654	-22.346	74.000	PEAK
4	12387.510	11.409	39.280	50.690	-23.310	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/09/17 - 10:55
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4954.500	-0.461	41.960	41.499	-32.501	74.000	PEAK
2	7433.730	5.973	40.380	46.353	-27.647	74.000	PEAK
3	* 9907.160	11.109	41.100	52.209	-21.791	74.000	PEAK
4	12387.230	11.410	38.780	50.190	-23.810	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

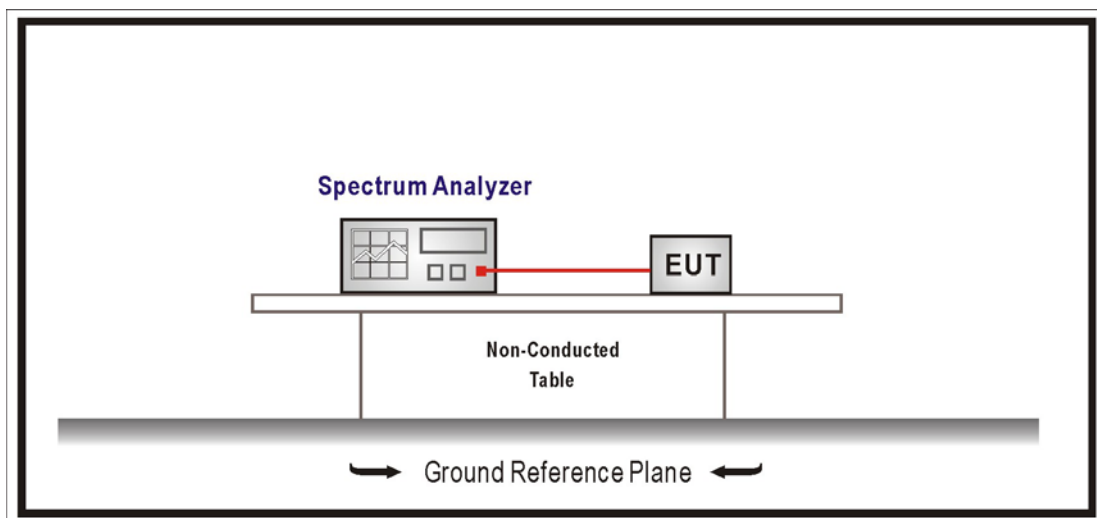
RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup

RF Antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

5.6. Uncertainty

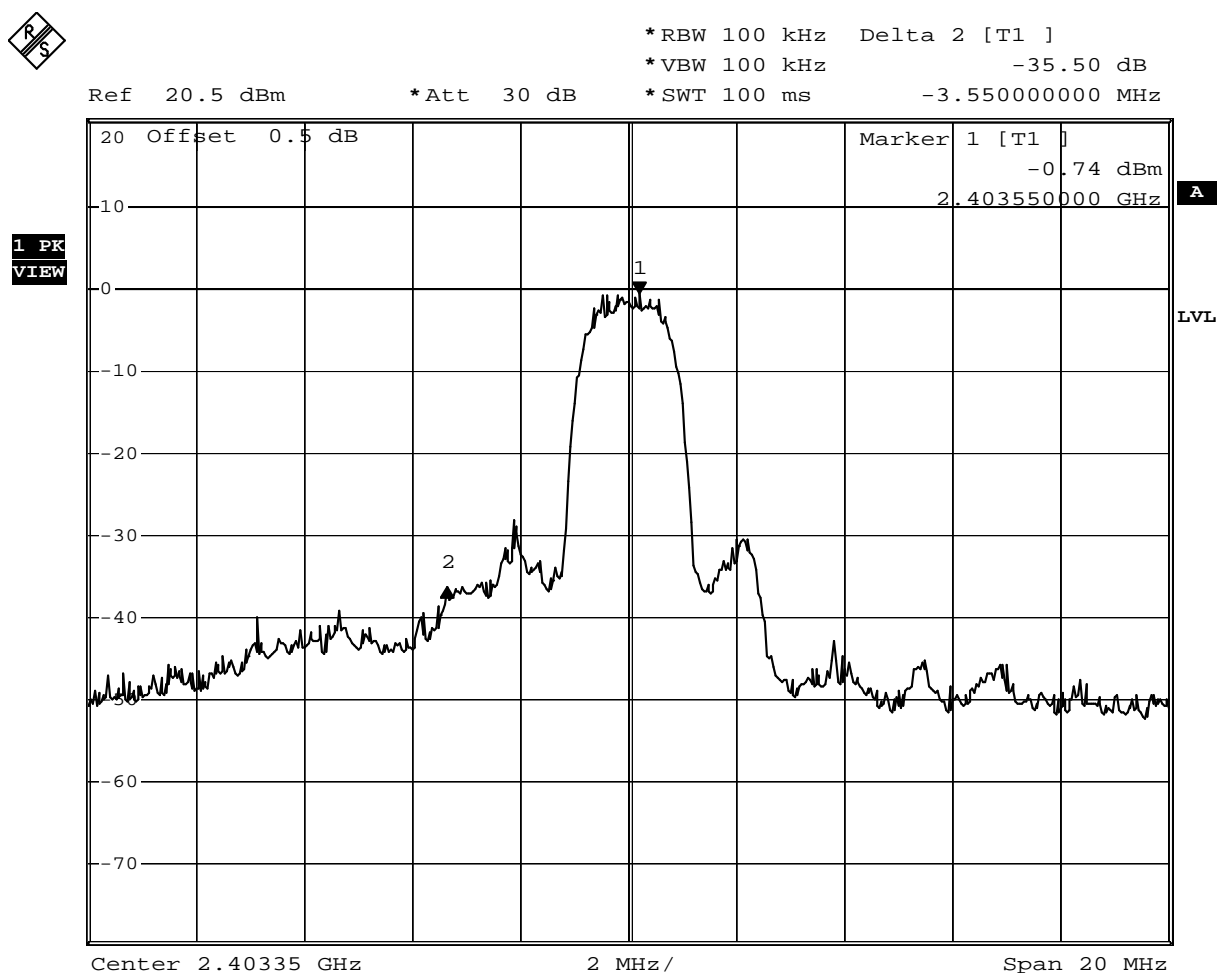
Conducted is defined as $\pm 1.27\text{dB}$

5.7. Test Result

Product	GMX Stereo Transmitter		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit-Transmitter		
Date of Test	2012/09/18	Test Site	SR7

Antenna Gain: 0dBi				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2403.35	35.50	≥ 20	Pass
38	2477.35	48.98	≥ 20	Pass

Channel 01 (2403.35MHz)



Comment: A:\2

Date: 18.SEP.2012 13:42:54

Channel 38 (2477.35MHz)

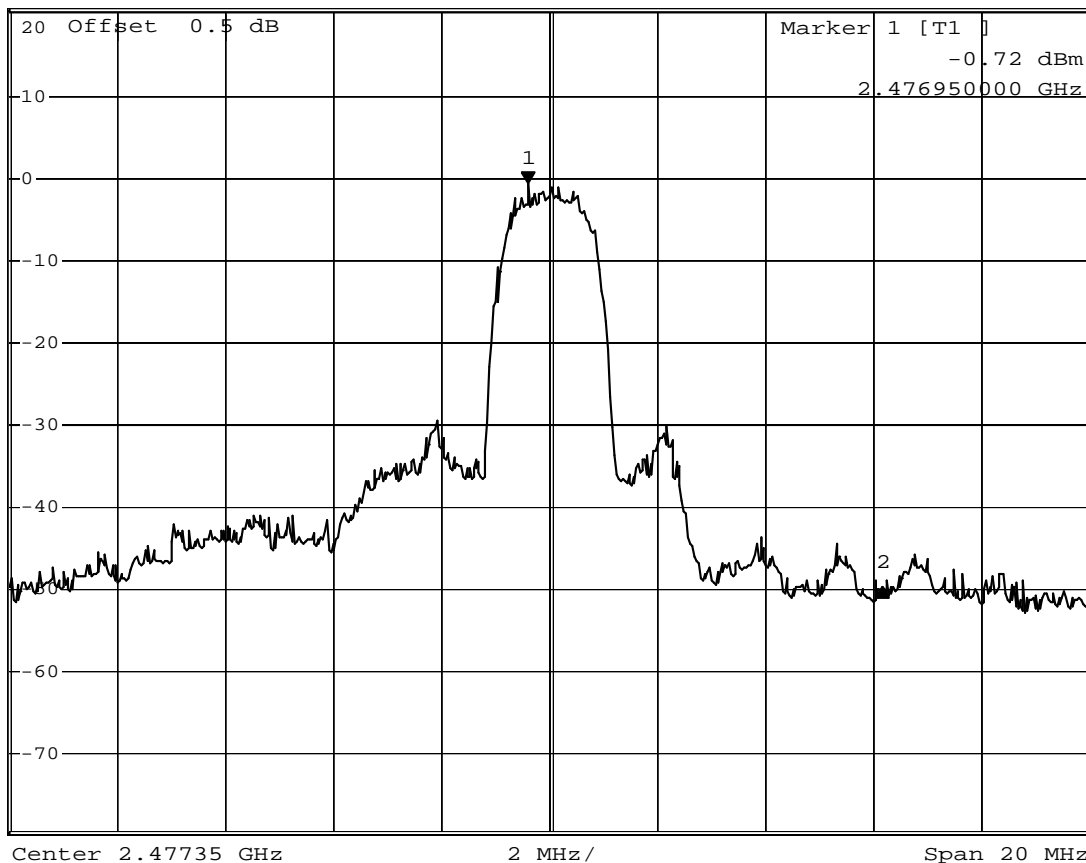


*RBW 100 kHz Delta 2 [T1]
 *VBW 100 kHz -48.98 dB
 *SWT 100 ms 6.55000000 MHz

Ref 20.5 dBm

*Att 30 dB

1 PK
VIEW



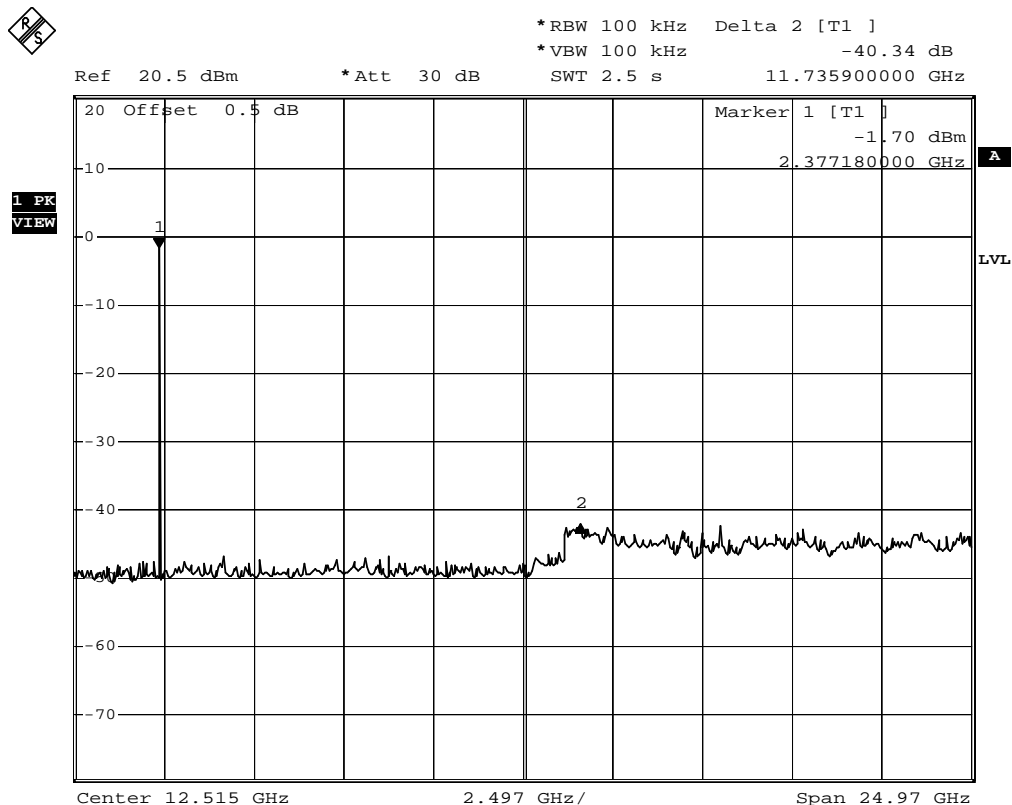
LVL

Comment: A:\2

Date: 18.SEP.2012 13:40:34

Product	GMX Stereo Transmitter		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit-Transmitter		
Date of Test	2012/09/18	Test Site	SR7

2403.35MHz (30MHz-25GHz)

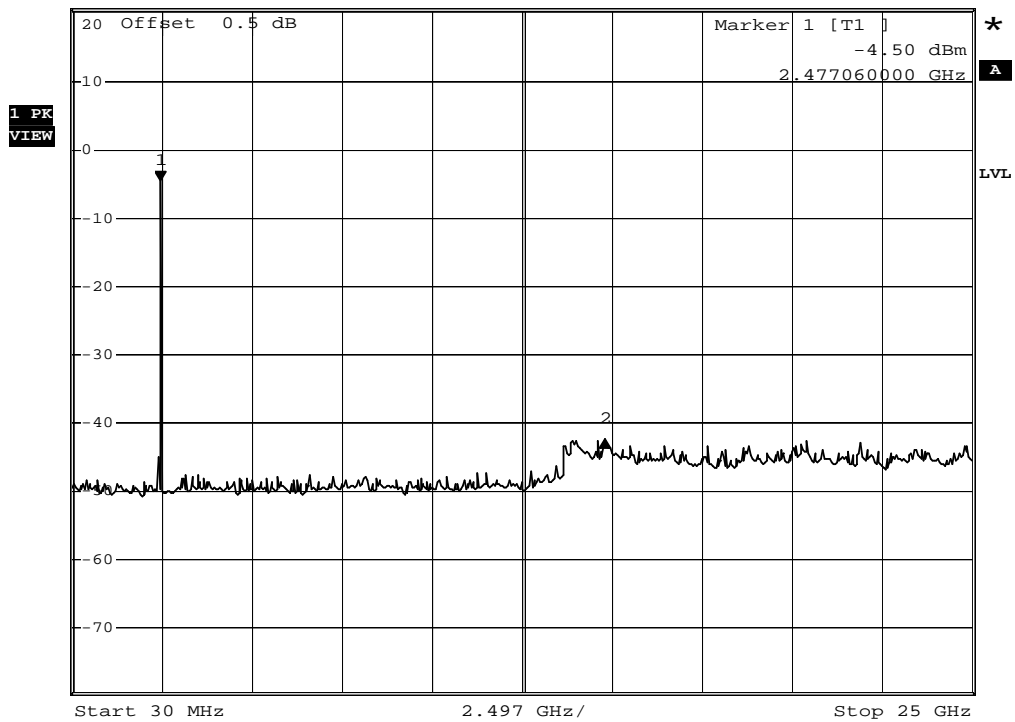


Comment: A:\2
Date: 18.SEP.2012 13:42:14

2477.35MHz (30MHz-25GHz)



*RBW 100 kHz Delta 2 [T1]
 *VBW 100 kHz -37.87 dB
 Ref 20.5 dBm *Att 30 dB SWT 2.5 s 12.335180000 GHz



Comment: A:\2
 Date: 18.SEP.2012 13:41:28

6. Radiated Emission Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

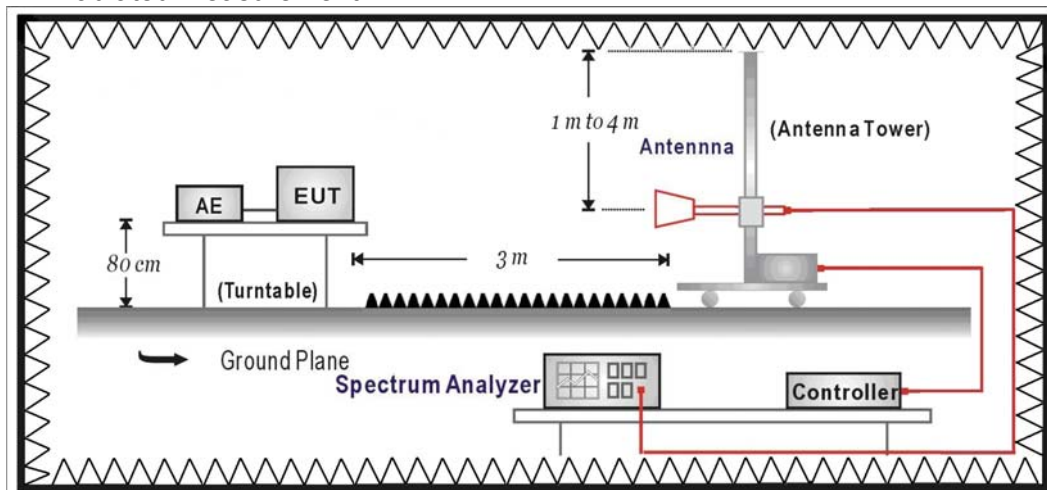
Radiated Emission Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120D	743	2013/02/02
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

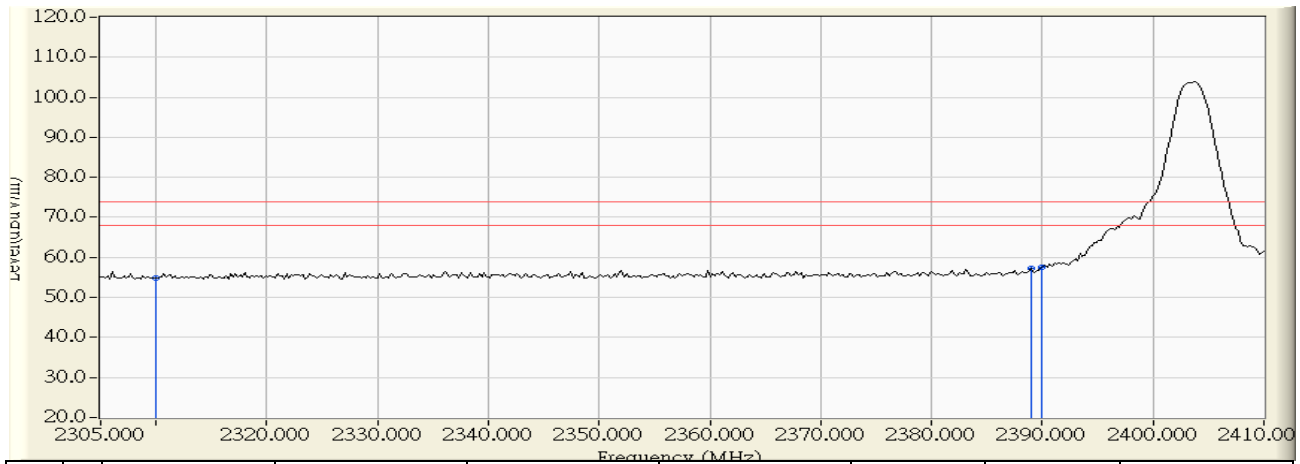
6.6. Uncertainty

The measurement uncertainty
 ± 3.9 dB above 1GHz

6.7. Test Result

Radiated is defined as

Site : CB1	Time : 2012/09/17 - 16:41
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

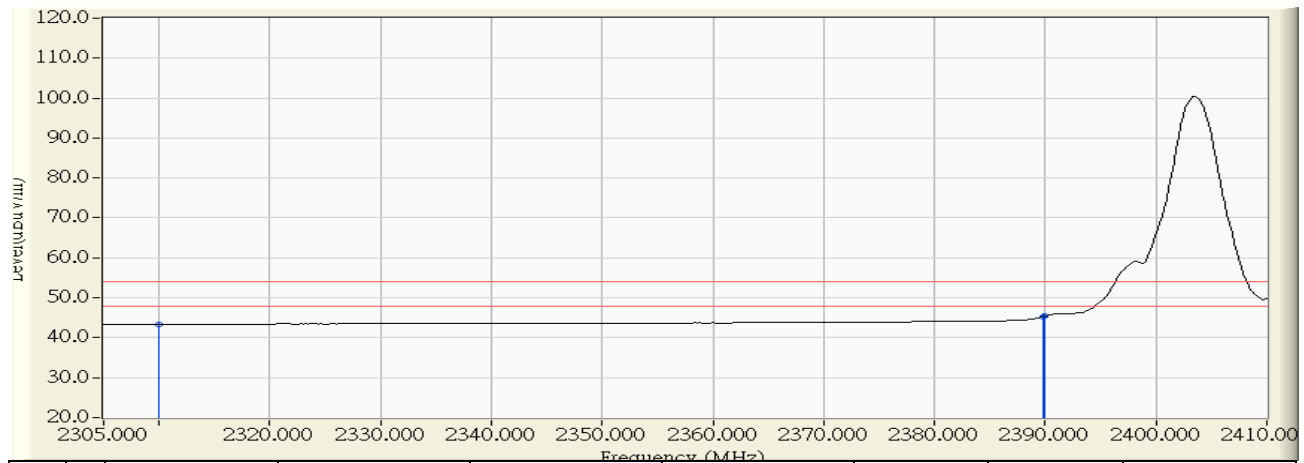


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	25.133	54.912	-19.088	74.000	PEAK
2		2389.000	30.568	26.811	57.379	-16.621	74.000	PEAK
3	*	2390.000	30.578	27.051	57.629	-16.371	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:43
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

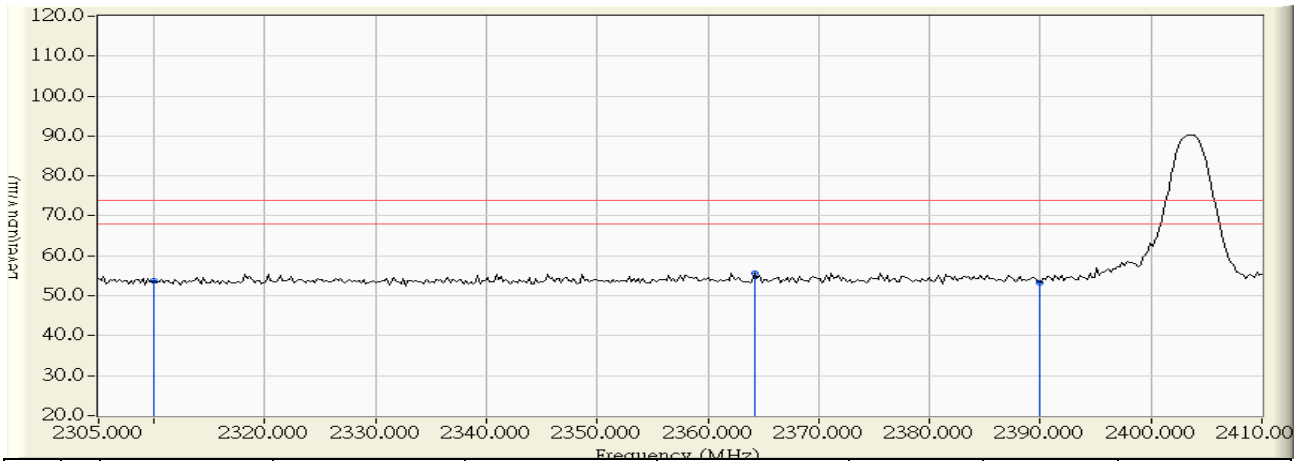


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	29.779	13.528	43.307	-10.693	54.000	AVERAGE
2	2389.840	30.577	14.685	45.261	-8.739	54.000	AVERAGE
3	* 2390.000	30.578	14.796	45.374	-8.626	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:37
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

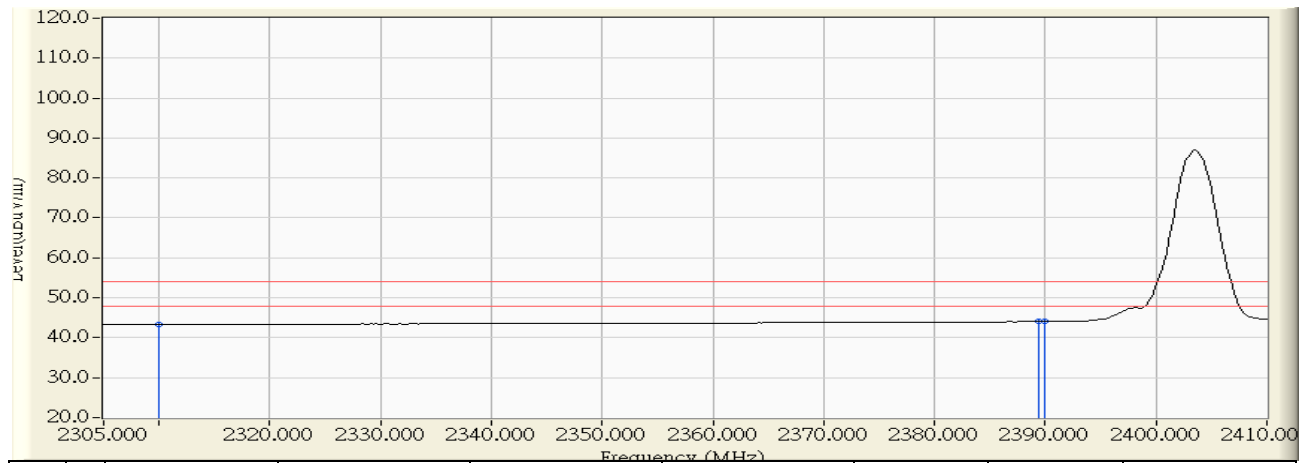


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	23.966	53.745	-20.255	74.000	PEAK
2	*	2364.220	30.321	25.413	55.733	-18.267	74.000	PEAK
3		2390.000	30.578	22.702	53.280	-20.720	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:38
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2403.35MHz_arbiter

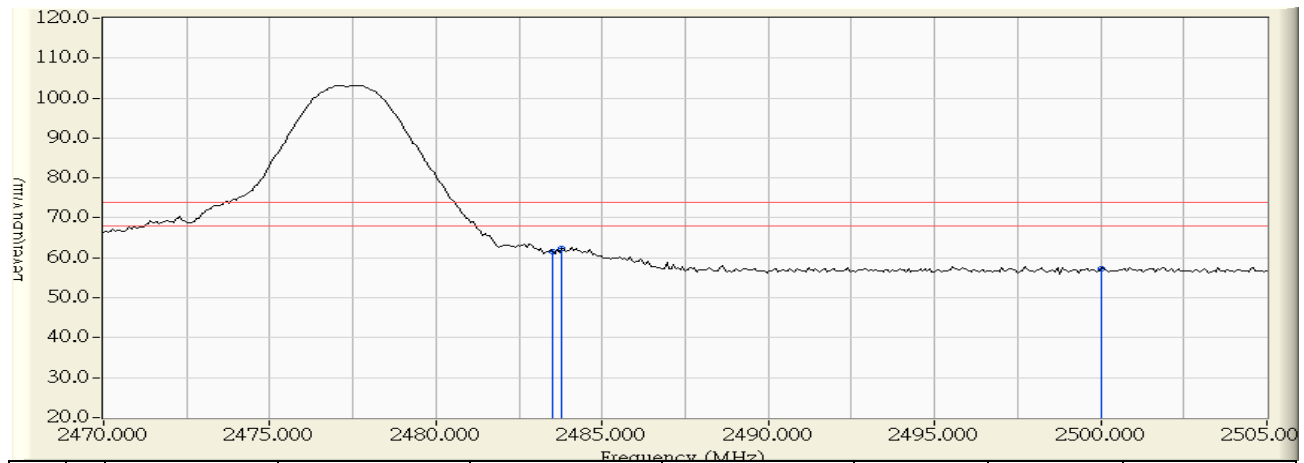


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	29.779	13.516	43.295	-10.705	54.000	AVERAGE
2	2389.420	30.572	13.475	44.047	-9.953	54.000	AVERAGE
3	* 2390.000	30.578	13.520	44.098	-9.902	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:52
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter

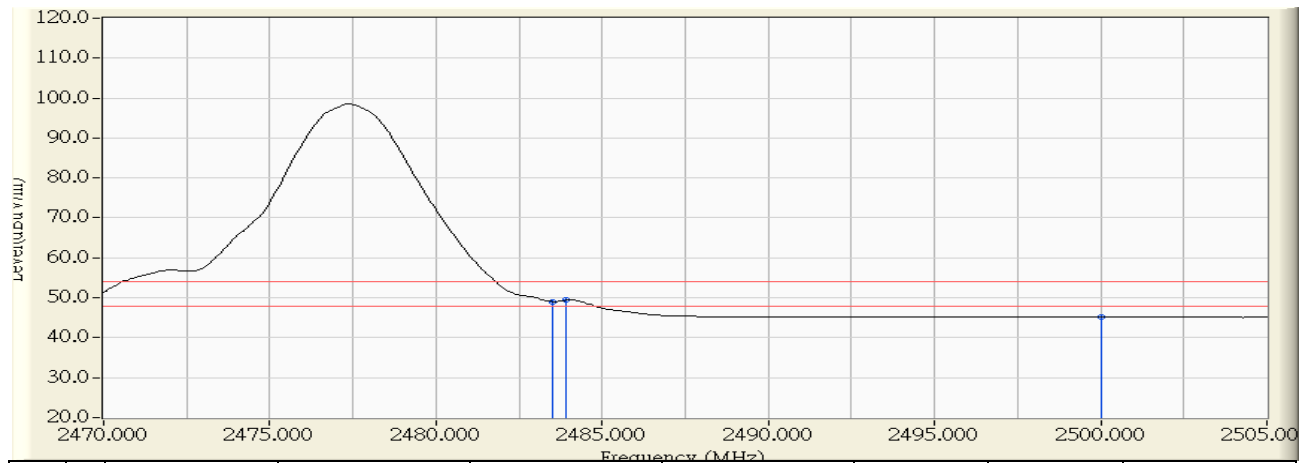


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	30.130	61.642	-12.358	74.000	PEAK
2	*	2483.790	31.515	30.874	62.389	-11.611	74.000	PEAK
3		2500.000	31.638	25.591	57.230	-16.770	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:53
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter

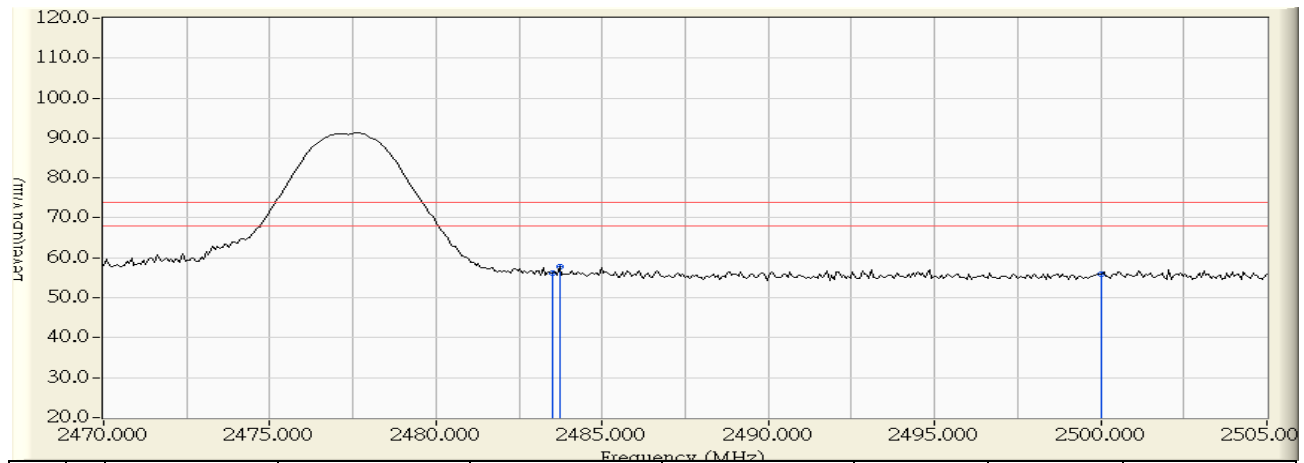


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	17.538	49.050	-4.950	54.000	AVERAGE
2	*	2483.930	31.516	17.881	49.397	-4.603	54.000	AVERAGE
3		2500.000	31.638	13.467	45.106	-8.894	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:48
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter

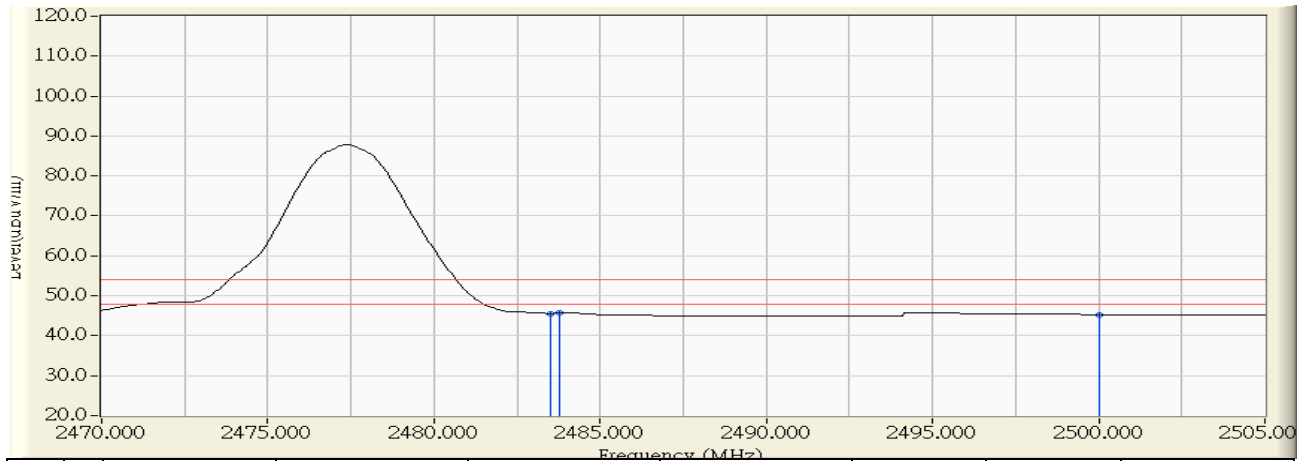


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	24.674	56.186	-17.814	74.000	PEAK
2	*	2483.720	31.514	26.354	57.868	-16.132	74.000	PEAK
3		2500.000	31.638	24.278	55.917	-18.083	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2012/09/17 - 16:49
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V (Power by PC)
EUT : GMX Stereo Transmitter	Note : Mode 1: Transmit-Transmitter-2477.35MHz_arbiter



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	14.083	45.595	-8.405	54.000	AVERAGE
2	*	2483.790	31.515	14.125	45.640	-8.360	54.000	AVERAGE
3		2500.000	31.638	13.667	45.306	-8.694	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

7.1. Test Equipment

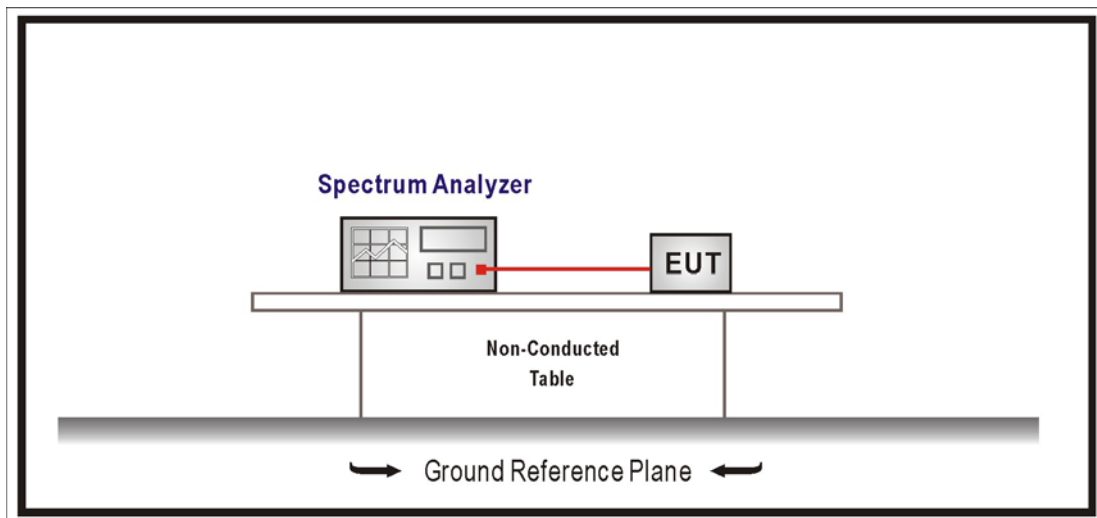
The following test equipments are used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1% of EBW, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

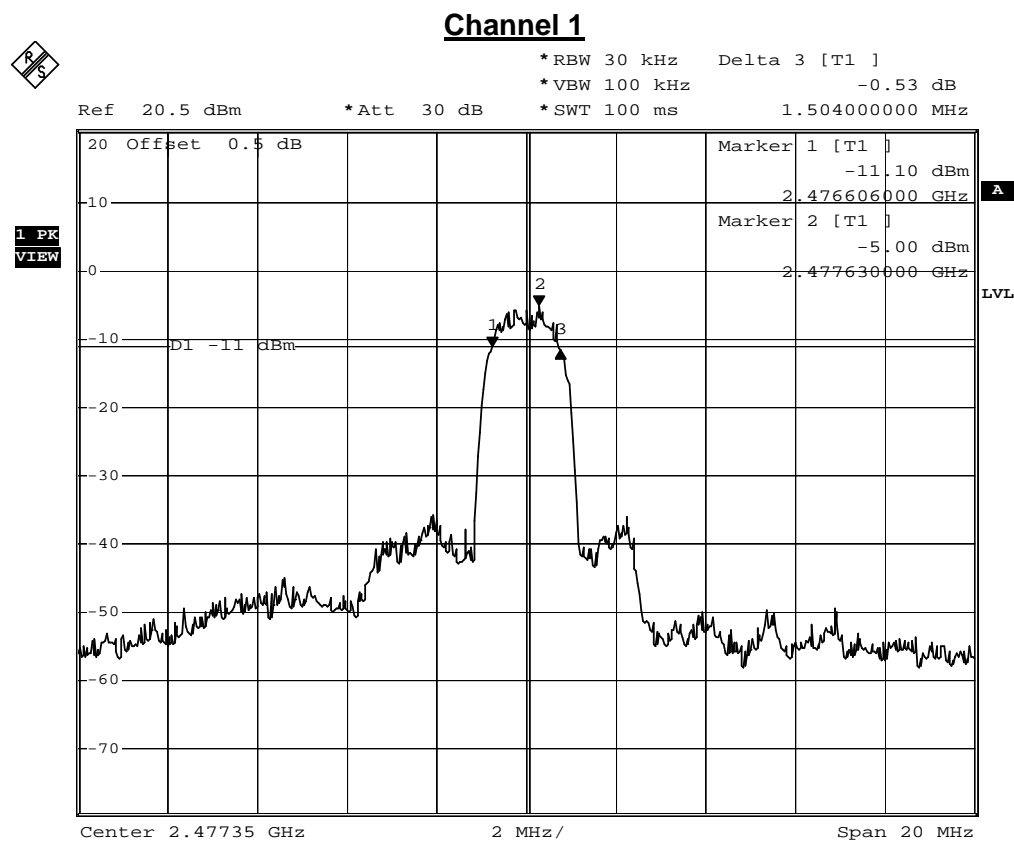
7.6. Uncertainty

The measurement uncertainty is defined as $\pm 150\text{Hz}$

7.7. Test Result

Product	GMX Stereo Transmitter		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit-Transmitter		
Date of Test	2012/09/18	Test Site	SR7

Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
1	2403.35	1.504	≥ 0.5	Pass
20	2441.35	1.600	≥ 0.5	Pass
38	2477.35	1.720	≥ 0.5	Pass



Comment: A:\2
 Date: 18.SEP.2012 20:11:33

Channel 20

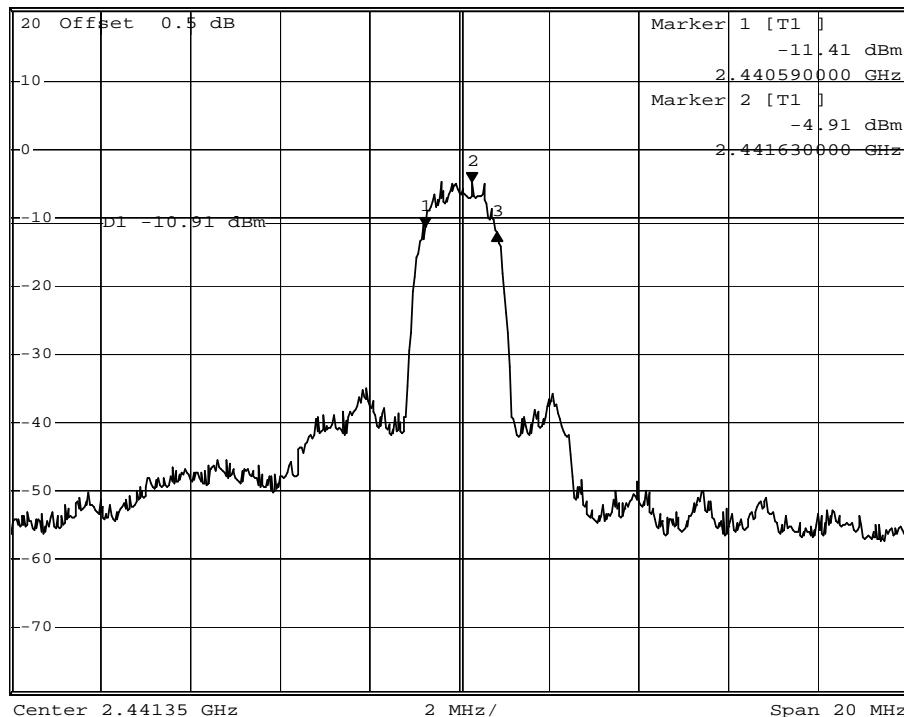


*RBW 30 kHz Delta 3 [T1]
 *VBW 100 kHz -0.75 dB
 *SWT 100 ms 1.600000000 MHz

Ref 20.5 dBm

*Att 30 dB

1 PK
VIEW



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Date: 18.SEP.2012 20:12:21

Channel 38



*RBW 30 kHz Delta 3 [T1]

*VBW 100 kHz 3.15 dB

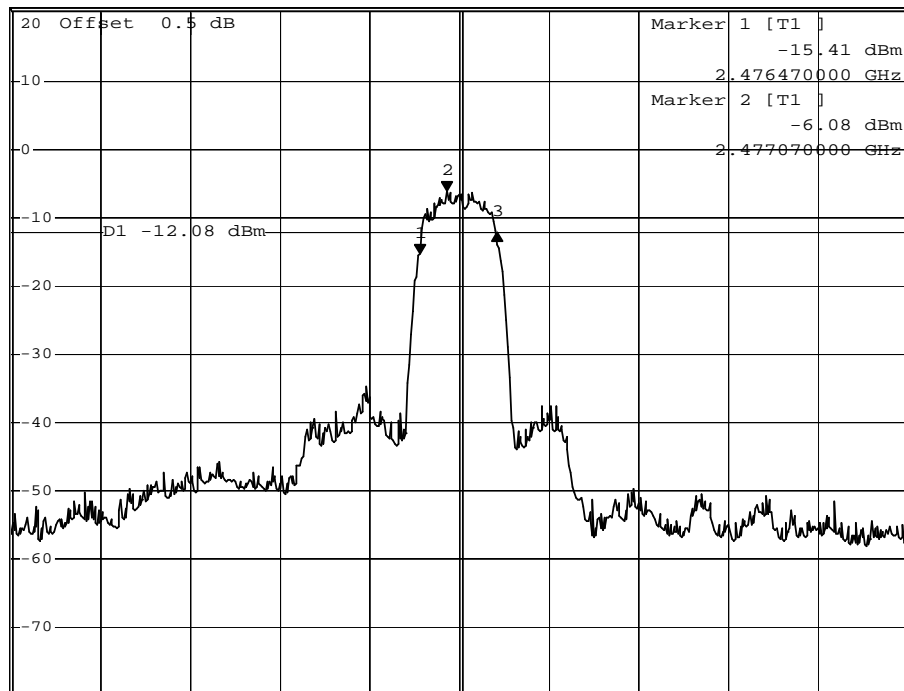
Ref 20.5 dBm

*Att 30 dB

*SWT 100 ms

1.720000000 MHz

1 PK
VIEW



Comment: A:\2

Date: 18.SEP.2012 20:13:36

8. Power Density

8.1. Test Equipment

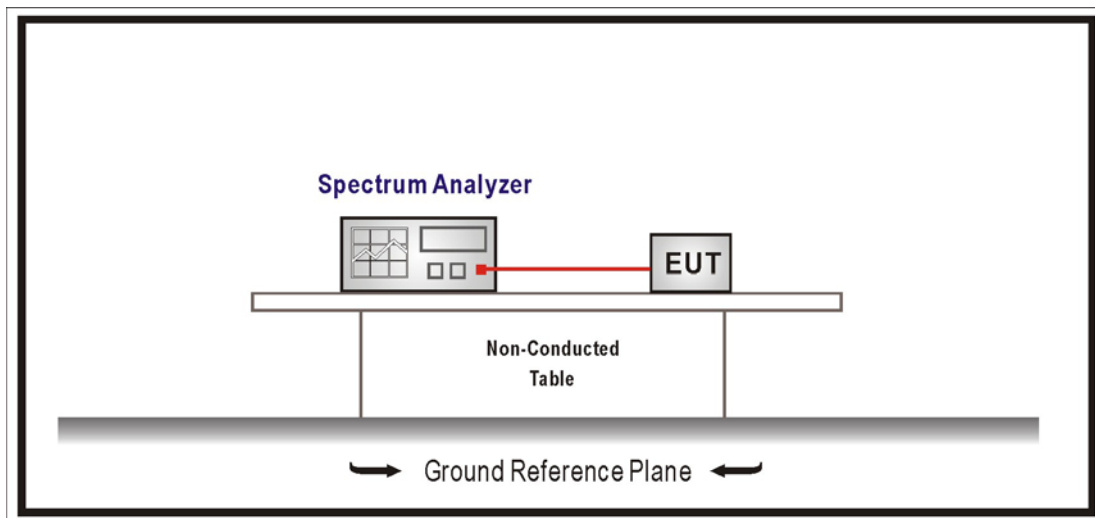
The following test equipment are used during the test:

Power Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 100 kHz, Set VBW= 300 kHz, Sweep time=Auto, Set detector=Peak detector.

Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

8.6. Uncertainty

The measurement uncertainty is defined as $\pm 1.27\text{dB}$.

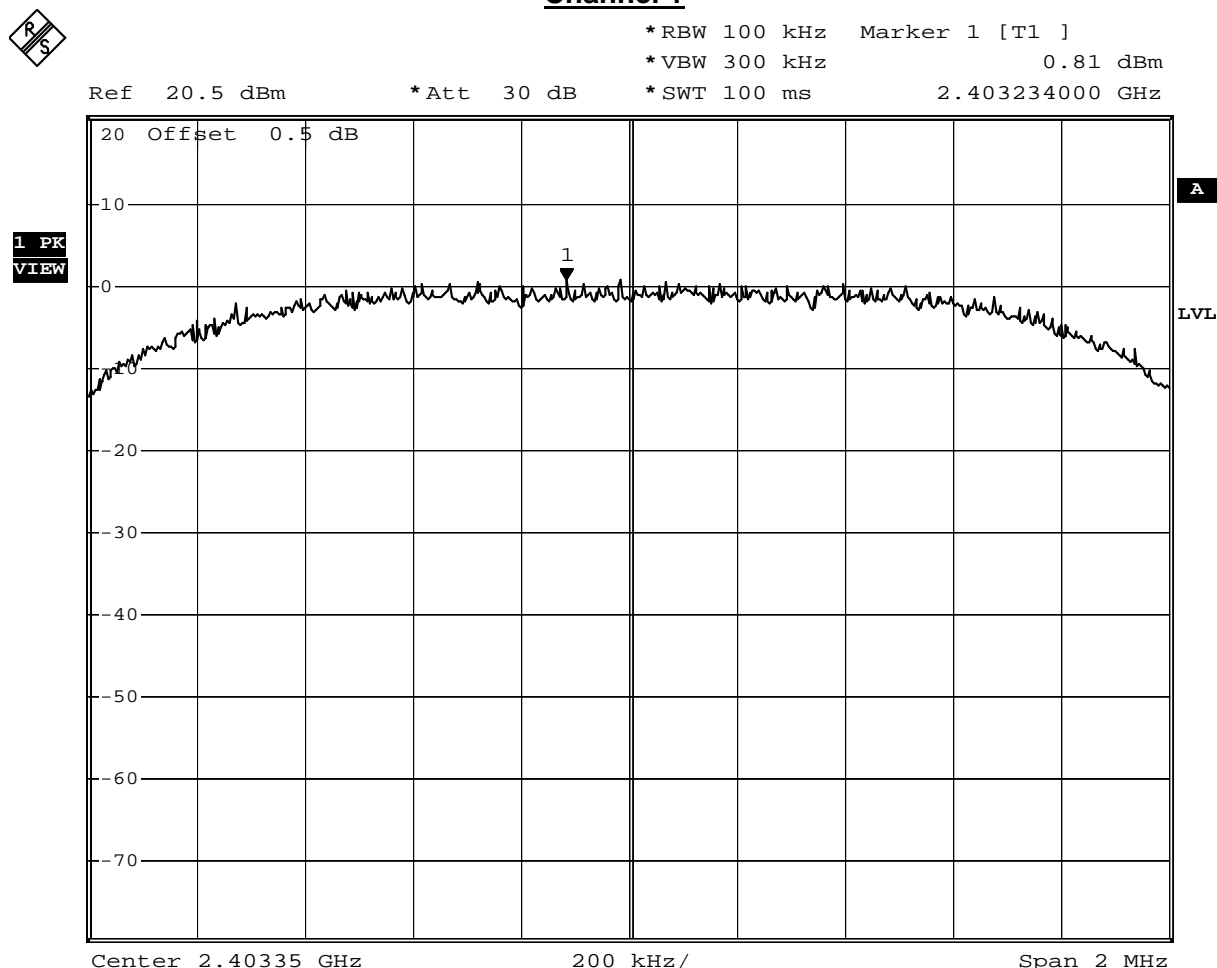
8.7. Test Result

Product	GMX Stereo Transmitter		
Test Item	Power Density		
Test Mode	Mode 1: Transmit-Transmitter		
Date of Test	2012/09/18	Test Site	SR7

Channel No.	Frequency (MHz)	Reading Level(dBm)	Measure Level (dBm)	Limit (dBm)	Result
1	2403.35	0.81	-14.39	≤8	Pass
20	2441.35	0.66	-14.54	≤8	Pass
38	2477.35	-0.01	-15.21	≤8	Pass

Note: Measure Level (dBm) = Reading Level (dBm) + BWCF = Reading Level (dBm) -15.2 (dB)
 Bandwidth correction factor (BWCF) = 10log (3kHz.100kHz)

Channel 1



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Date: 18.SEP.2012 20:17:36

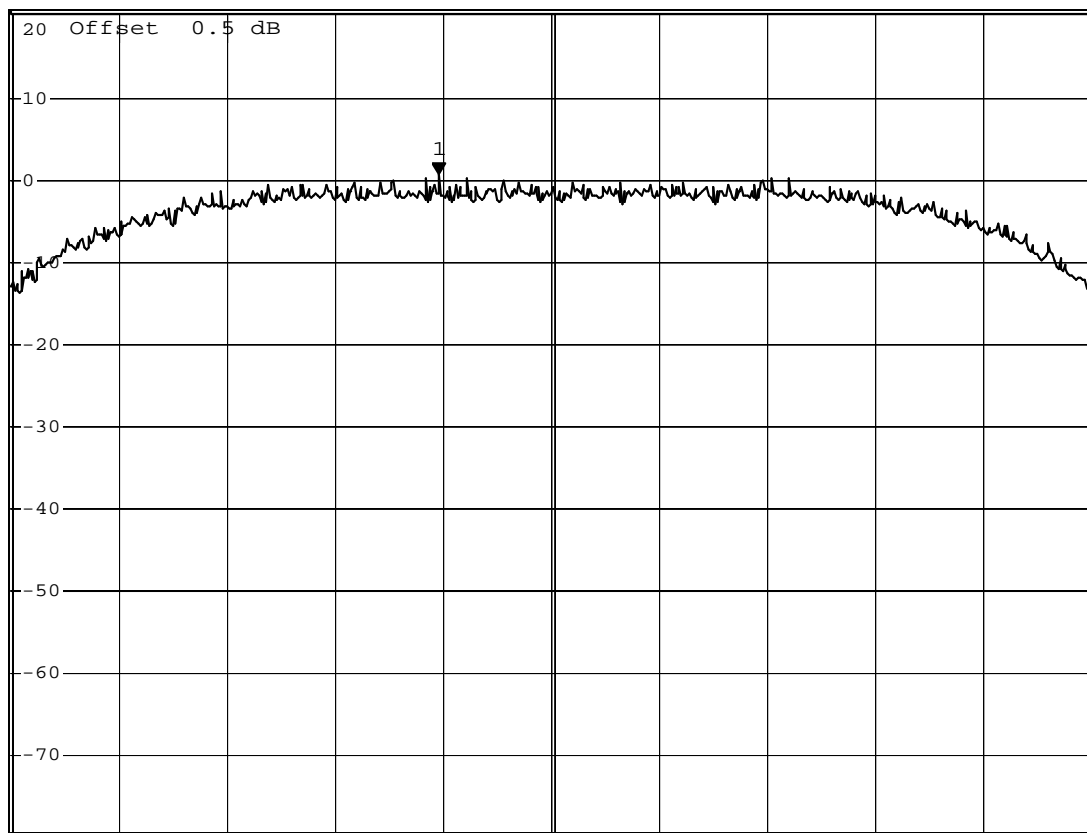
Channel 20



*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz 0.66 dBm
 *SWT 100 ms 2.441142000 GHz

Ref 20.5 dBm

*Att 30 dB



Center 2.44135 GHz

200 kHz/

Span 2 MHz

Comment: A:\2

Date: 18.SEP.2012 20:18:07

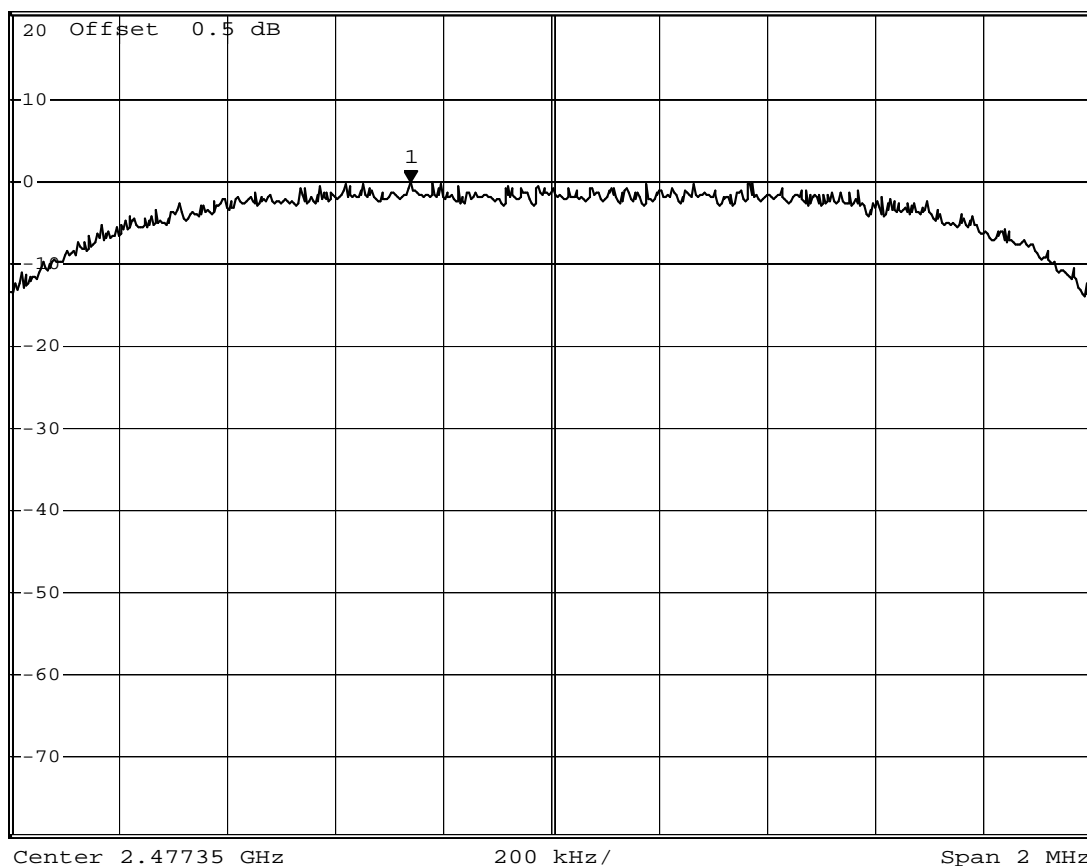


Channel 38

*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -0.01 dBm
 *SWT 100 ms 2.477090000 GHz

Ref 20.5 dBm

*Att 30 dB



Comment: A:\2

Date: 18.SEP.2012 20:18:31