FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: All-in-one system with speakers, amplifiers, radio, Bluetooth, streaming via Ethernet and Wifi, HDMI in/out

Brand Name: GENEVA

Model No.: Geneva Sound System Model XXL

Series Model: N/A

FCC ID:ZXX-MODELXXL

IC:10107A-MODELXXL

Test Report Number: C130918R02-RPW

Issued for

G-Lab GmbH

Schiffbaustrasse 10, 8005 Zürich, Switzerland

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

No.10 Weiye Rd., Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China

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ACCREDITED
TESTING CERT #2541.01

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass
3.2	15.247(b)	RSS-210 A8.4	Peak Output Power	≤ 30dBm	Pass
3.5	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass
3.6	15.207	RSS-210 Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass

1. TEST RESULT CERTIFICATION

Product Name:	All-in-one system with speakers, amplifiers, radio, Bluetooth, streaming via Ethernet and Wifi, HDMI in/out
Trade Name:	GENEVA
Model Name.:	Geneva Sound System Model XXL
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	PORTABLE DEVICES
Date of Test:	September 17, 2013
Applicant:	**G-Lab GmbH** Schiffbaustrasse 10, 8005 Zürich, Switzerland
Manufacturer:	**Hansong(Nanjing) Technology Ltd** 8th Kangping Road,Jiangning Economy and Technology Development Zone,Nanjing,211100
Application Type:	Certification

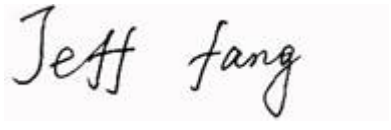
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Canada RSS-210 Issue 8	No non-compliance noted
Canada RSS-Gen Issue 3	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:



Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:

Blent.Wang
Test Engineer
Compliance Certification Service Inc.

2. EUT DESCRIPTION

Product Name:	All-in-one system with speakers, amplifiers, radio, Bluetooth, streaming via Ethernet and Wifi, HDMI in/out
Brand Name:	GENEVA
Model Name:	Geneva Sound System Model XXL
Series Model:	N/A
Model Discrepancy:	N/A
Power Rating :	Power supply： INPUT: 100-240V~ 50-60HZ FUSE:T6.3A 250V
Frequency Range:	IEEE 802.11b/g: 2412 MHz~ 2462 MHz
Transmit Power:	IEEE 802.11b: 20.33dBm (107.89mW) IEEE 802.11g: 21.05dBm (127.35mW)
Modulation Technique:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS /OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	IEEE 802.11b/g: 11 Channels
Antenna Specification:	2.0 dBi gain (Max)

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for ***FCC ID:ZXX-MODELXXL*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
3. This submittal(s) (test report) is intended for ***IC:10107A-MODELXXL*** filing to comply with Canada RSS-210 Issue 8 and Canada RSS-Gen Issue 3 Rules.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 2003and FCC CFR 47 15.207, 15.209 and 15.247,RSS-210 and RSS-Gen..

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4 2009.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT transmitting and receiving with one (chain 0) antenna working at b/g mode, so one antenna working configuration was used for b/g mode testing in this report.

The EUT transmitting and receiving with two antennas simultaneously working at n mode, so 2x2 configuration was used for all testing in this report.

The worst-case data rates are determined to be as follows for each mode based on investigation by measuring the average power, peak power and PPSD across all data rates, bandwidths, and modulations.

The worst-case data rates:
IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 11Mbps data rate was chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 54Mbps data rate was chosen for full testing.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Equipment Used for Emissions Measurement

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-5-12
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2014-5-12
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2014-3-24
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	2014-3-24
EPM-P Series Power Meter	Agilent	E4416A	GB41292714	2014-5-12
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	2014-5-12
DC POWER SUPPLY	GW instek	GPS-3303C	E903131	2014-5-12
Temp. / Humidity Chamber	Kingson	THS-M1	242	2014-3-12
Test Software	EZ-EMC			

977 Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-5-12
EMI Test Receiver	R&S	ESPI3	101026	2014-3-15
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	2014-5-12
Pre-Amplfier	Miteq	NSP4000-NF	870629	2014-5-12
Bilog Antenna	Sunol	JB1	A110204-2	2014-5-12
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2014-6-7
Turn Table	CT	CT123	4165	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R
Controller	CT	CT1OO	95637	N.C.R
Test Software	EZ-EMC			

Conducted Emission				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI3	100781	2014-3-15
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	2014-3-15
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	SN:05012	2014-3-15
TRANSIENT LIMITER	SCHAFFNER	CFL9206	1710	2014-4-7
Test Software	EZ-EMC			

Remark: *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Expanded Uncertainty (95% CONFIDENCE INTERVAL): K=2

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 2009 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC5743 for 10m chamber 10m, IC5743 for 10m chamber 3m.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.4 :2003)；VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002；EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003；EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22; CAN/CSA-CEI/IEC CISPR 22；EN 61000-3-2；EN 61000-3-3；EN550024； EN 61000-4-2; EN 61000-4-3；EN61000-4-4；EN 61000-4-5； EN 61000-4-6；IEC 61000-4-8；EN 61000-4-11; IEC61000-3-2；IEC61000-3-3；IEC 61000-4-2； IEC 61000-4-3；IEC 61000-4-4； IEC 61000-4-5；IEC 61000-4-6；IEC 61000-4-8；IEC 61000-4-11; EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17；47 CFR FCC Part 15, 22, 24	ACCREDITED TESTING CERT #2541.01
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-1600 C-1707 G-216

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook	DELL	E5430	CN8YYW1	N/A

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

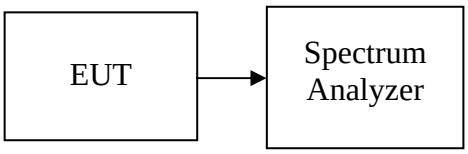
7. FCC PART 15.247 REQUIREMENTS

7.1 6DB AND 99% BANDWIDTH MEASUREMENT

LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

Test Configuration



TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013.

TEST RESULTS

No non-compliance noted

Test Data

TEST RESULT OF 6DB BANDWIDTH

IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	11.779	>500	PASS
Mid	2437	11.859		PASS
High	2462	11.378		PASS

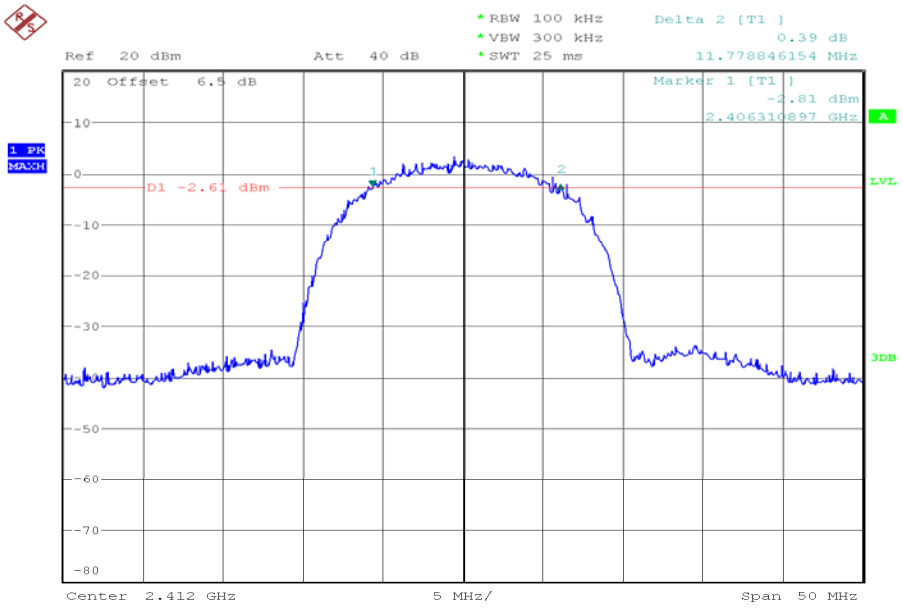
IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.506	>500	PASS
Mid	2437	16.506		PASS
High	2462	16.506		PASS

Test Plot

IEEE 802.11b MODE

6dB Bandwidth (CH Low)



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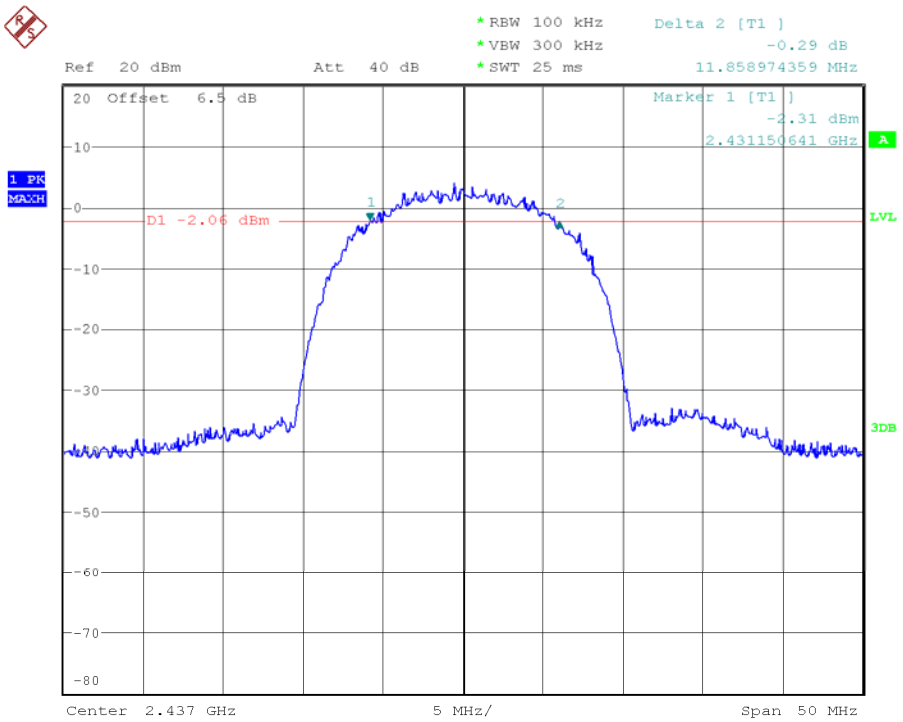
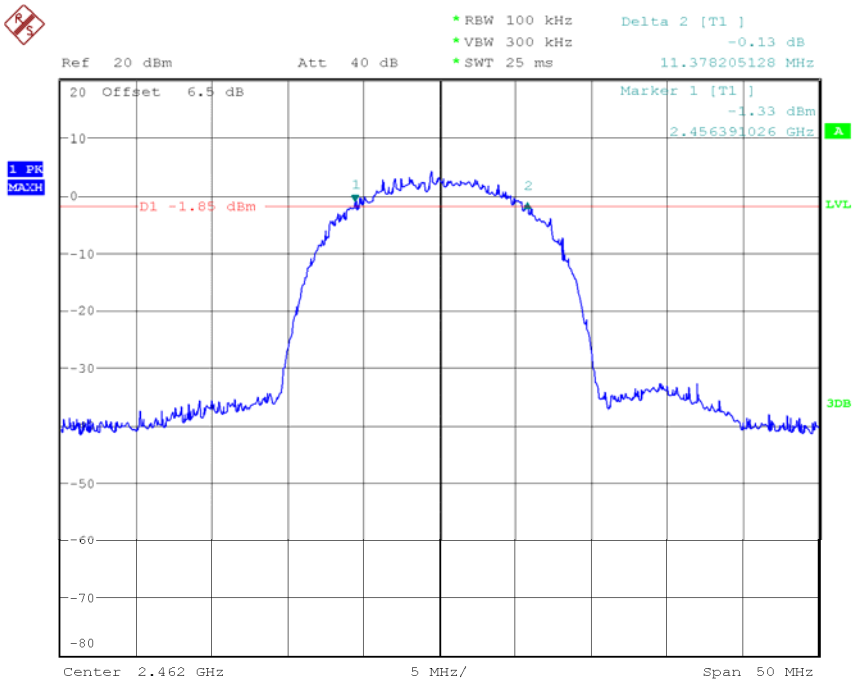
6dB Bandwidth (CH Mid)



Date: 17.SEP.2013 15:34:51

6dB Bandwidth (CH High)



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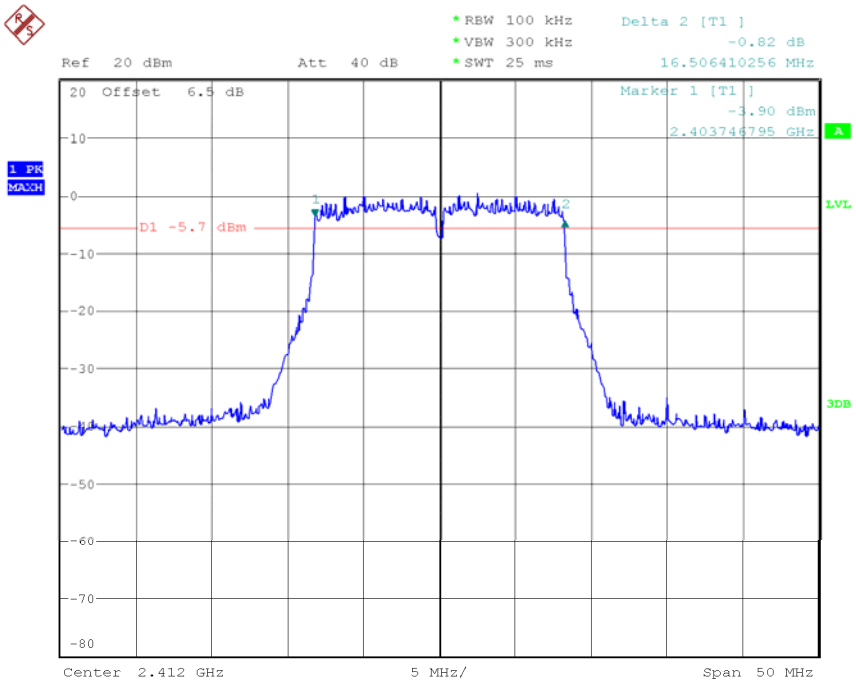
IEEE 802.11g MODE

6dB Bandwidth (CH Low)



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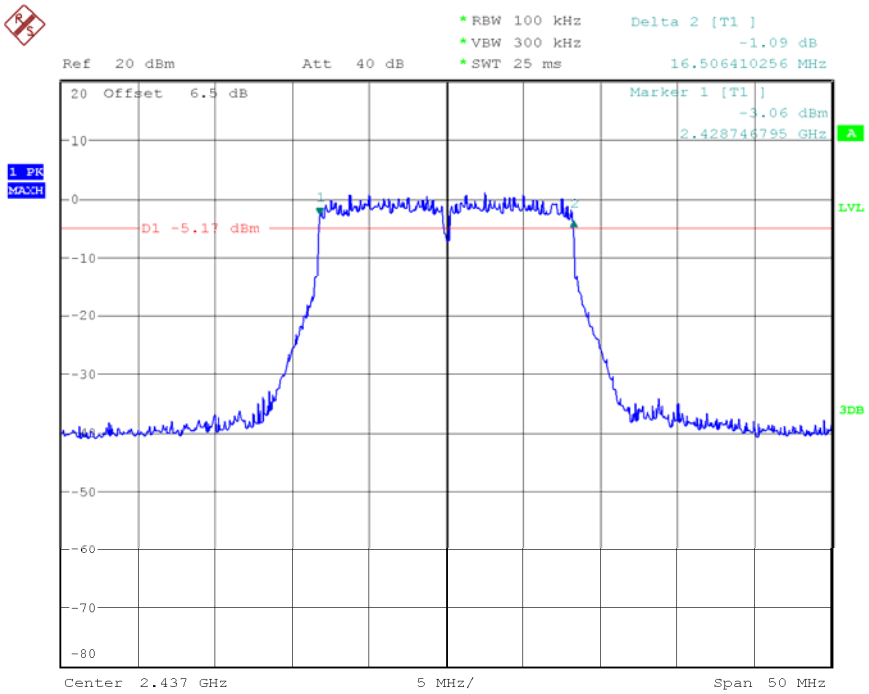
6dB Bandwidth (CH Mid)



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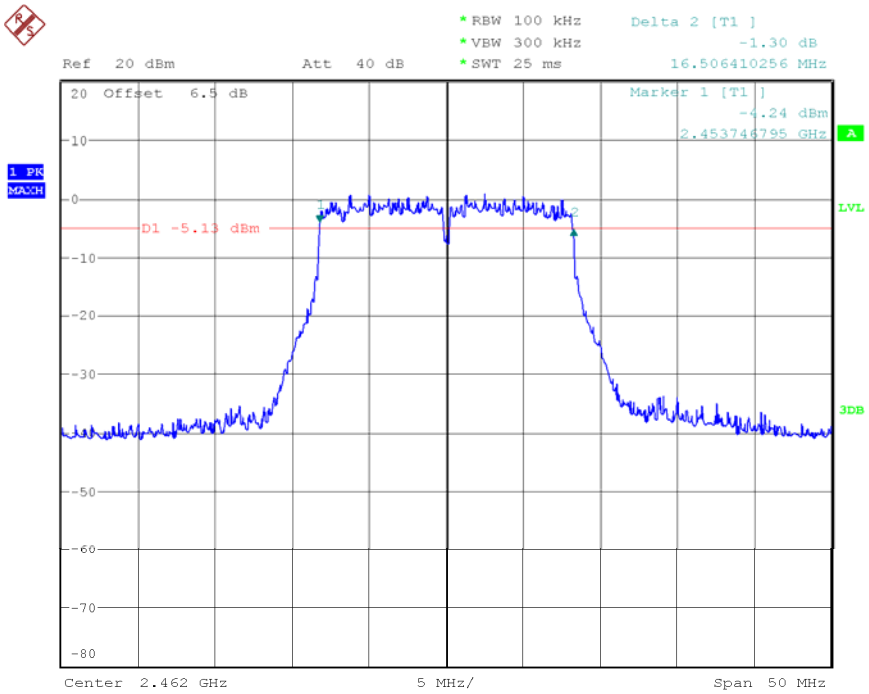
6dB Bandwidth (CH High)



Date: 17.SEP.2013 15:41:27

TEST RESULT OF 99% OCCUPIED BANDWIDTH

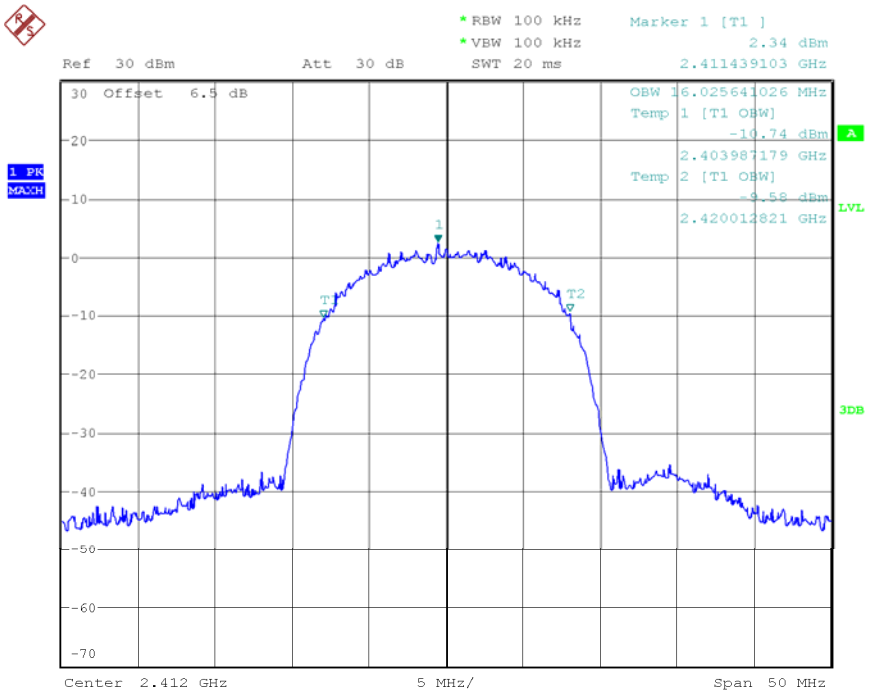
IEEE 802.11b mode

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth(MHz)
Low	2412	16.026
Mid	2437	16.026
High	2462	16.026

IEEE 802.11g mode

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth(MHz)
Low	2412	16.506
Mid	2437	16.506
High	2462	16.506

99% Occupied Bandwidth Plot on 802.11b Channel 01



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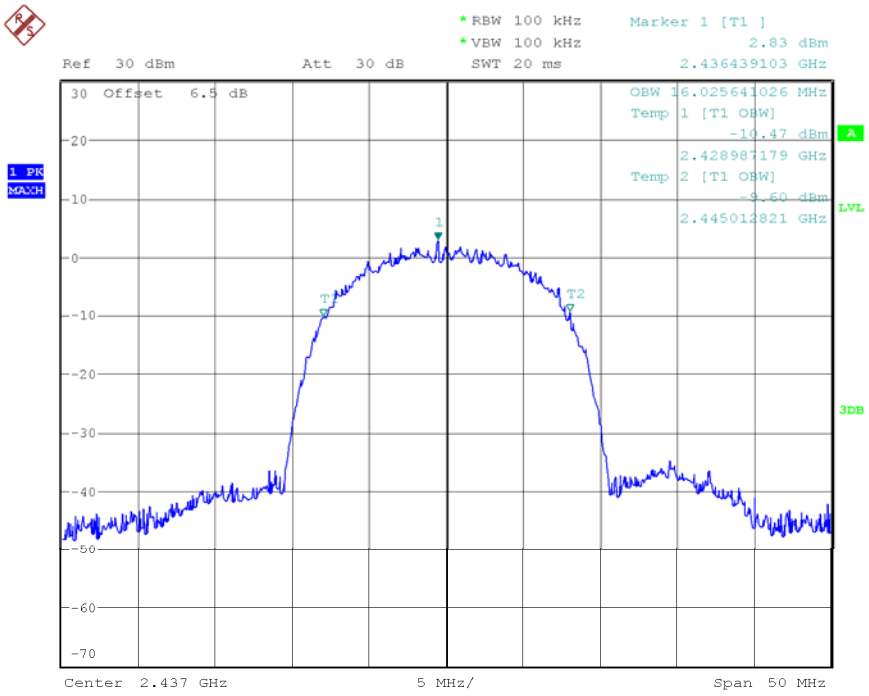
99% Occupied Bandwidth Plot on 802.11b Channel 06



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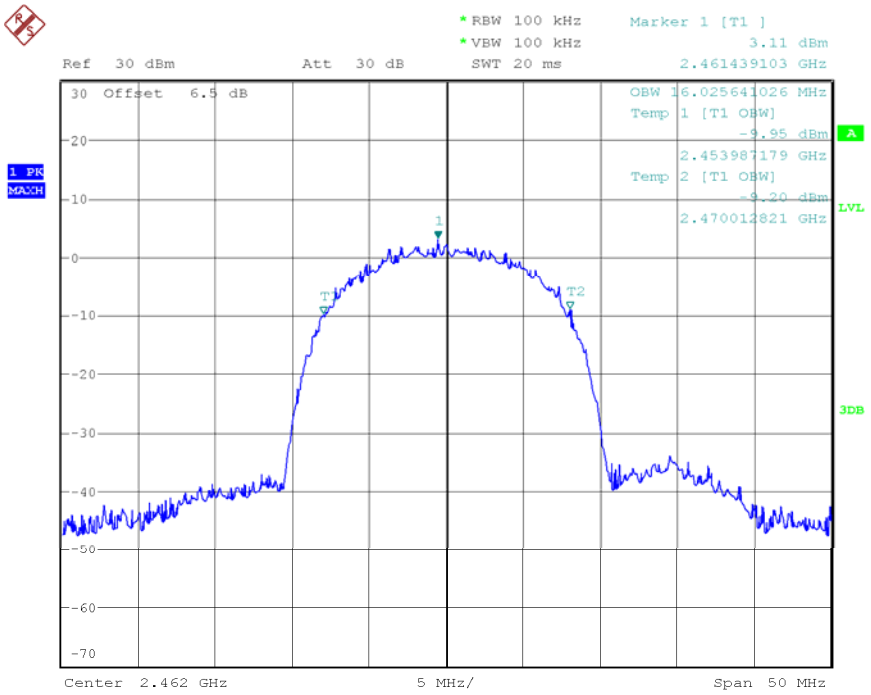
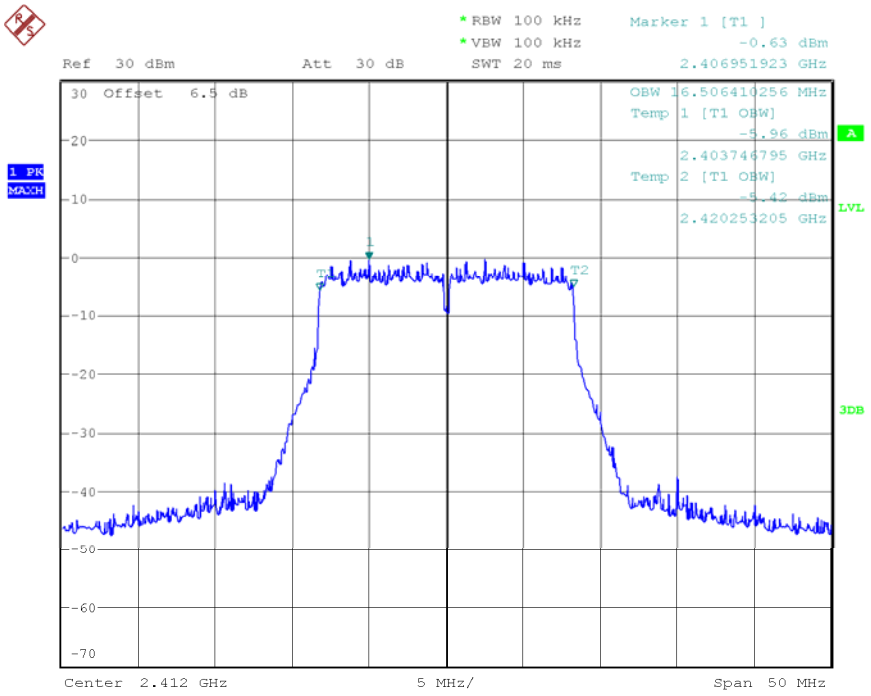
99% Occupied Bandwidth Plot on 802.11b Channel 11



Date: 22.SEP.2013 16:02:55

99% Occupied Bandwidth Plot on 802.11g Channel 01



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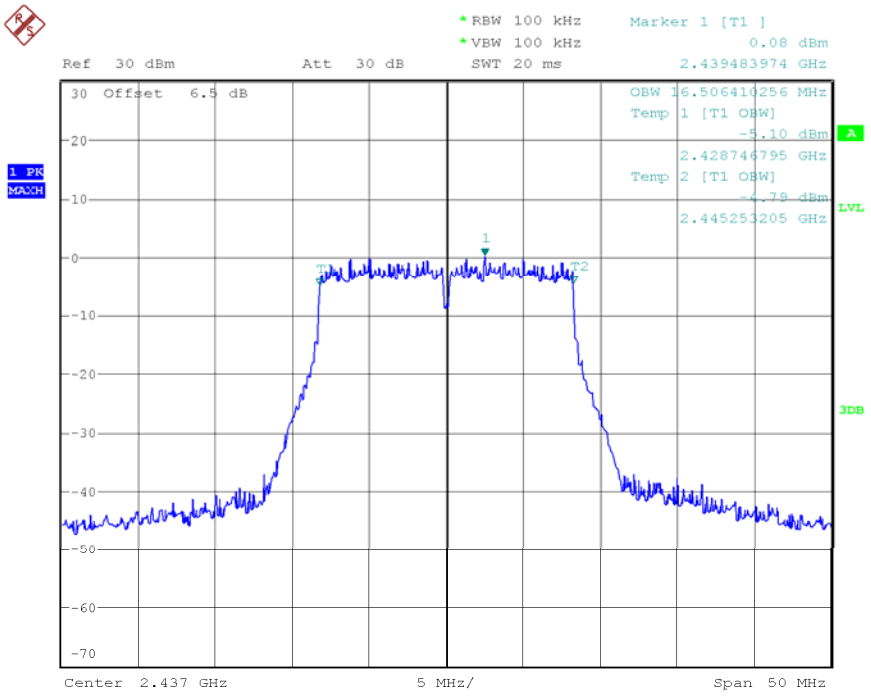
99% Occupied Bandwidth Plot on 802.11g Channel 06



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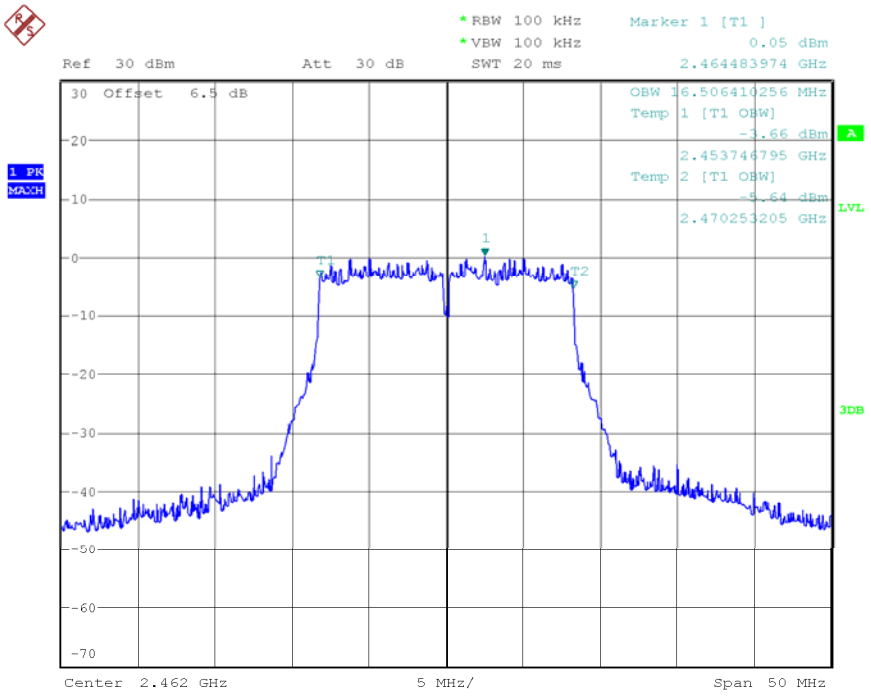
99% Occupied Bandwidth Plot on 802.11g Channel 11



Date: 22.SEP.2013 16:05:32

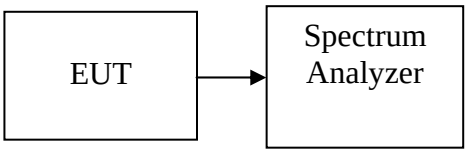
7.2 POWER OUTPUT

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Configuration



TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013..

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2412	19.33	85.70	30.00	PASS
Mid	2437	20.00	100.00	30.00	PASS
High	2462	20.33	**107.89**	30.00	PASS

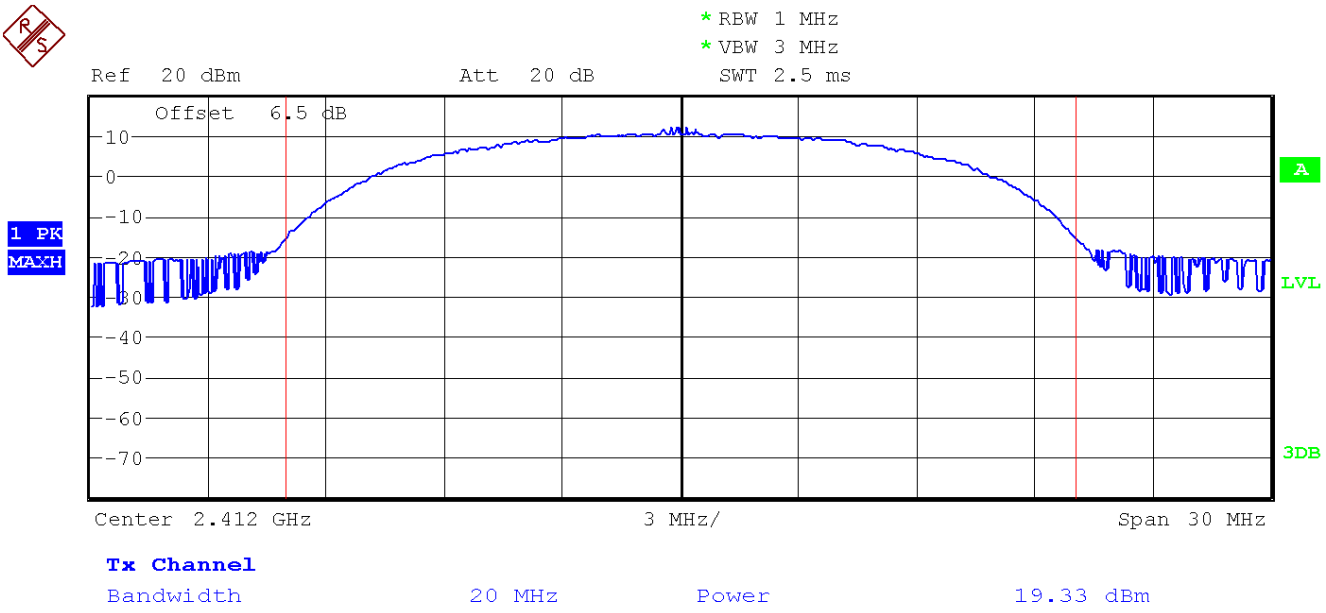
Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)	Result
Low	2412	20.71	117.76	30.00	PASS
Mid	2437	21.05	127.35	30.00	PASS
High	2462	21.05	**127.35**	30.00	PASS

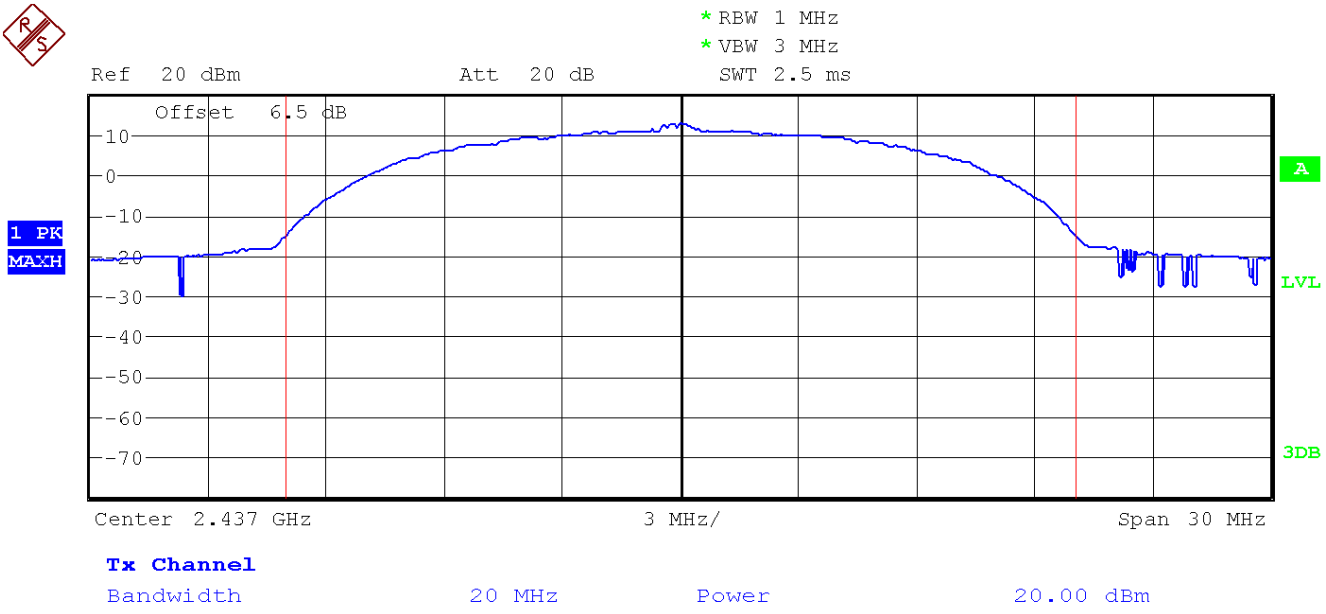
Test Plot

IEEE 802.11b mode

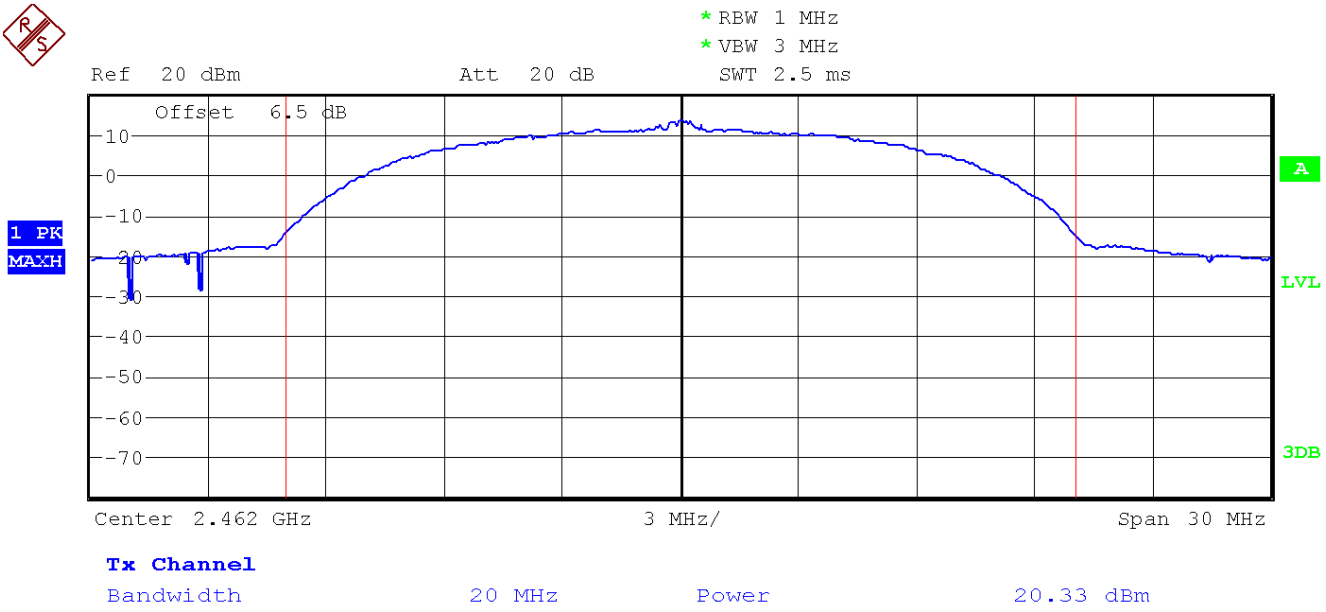
Peak Power (CH Low)



Peak Power (CH Mid)

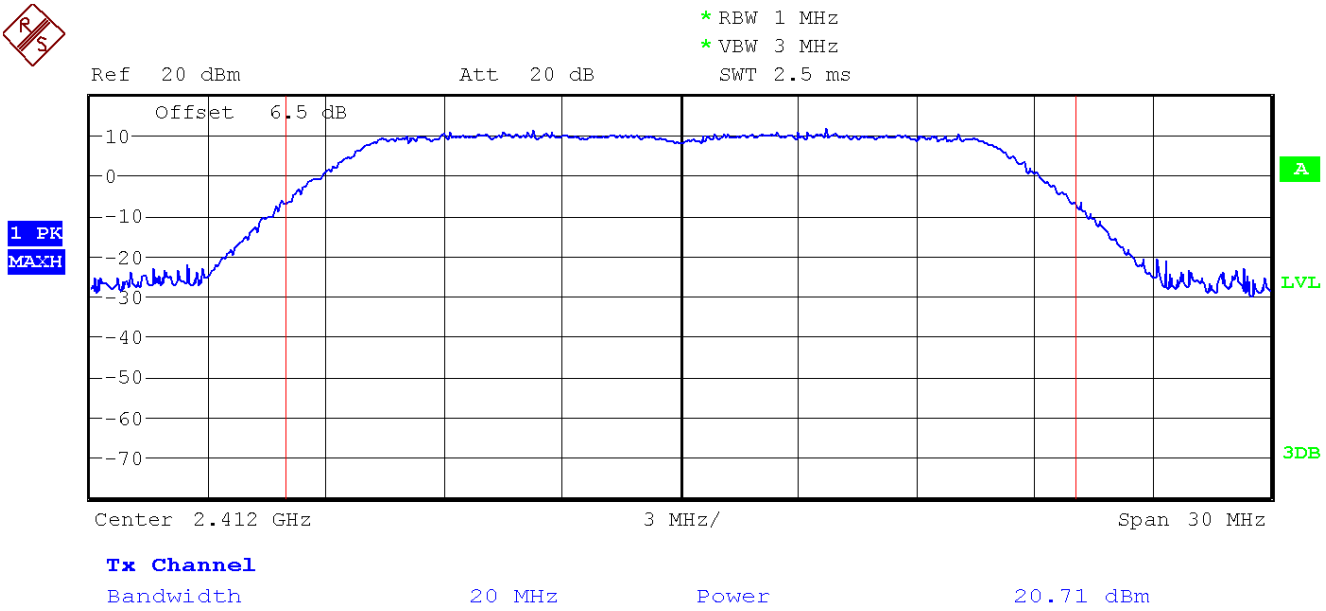


Peak Power (CH High)

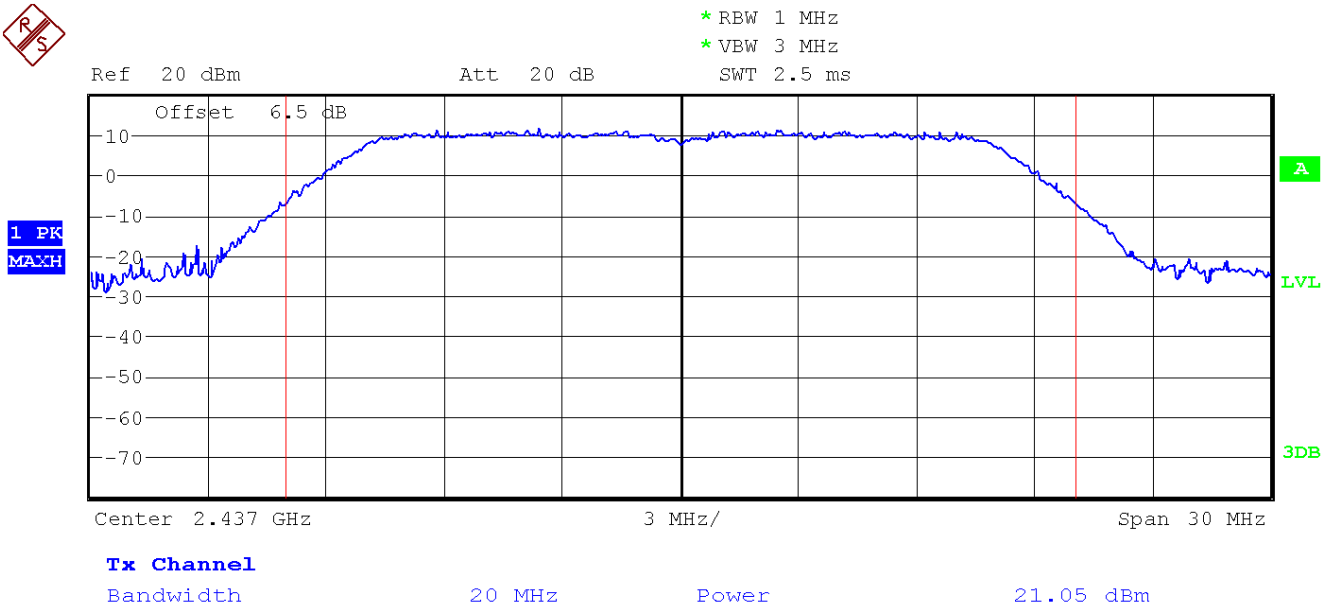


IEEE 802.11g mode

Peak Power (CH Low)



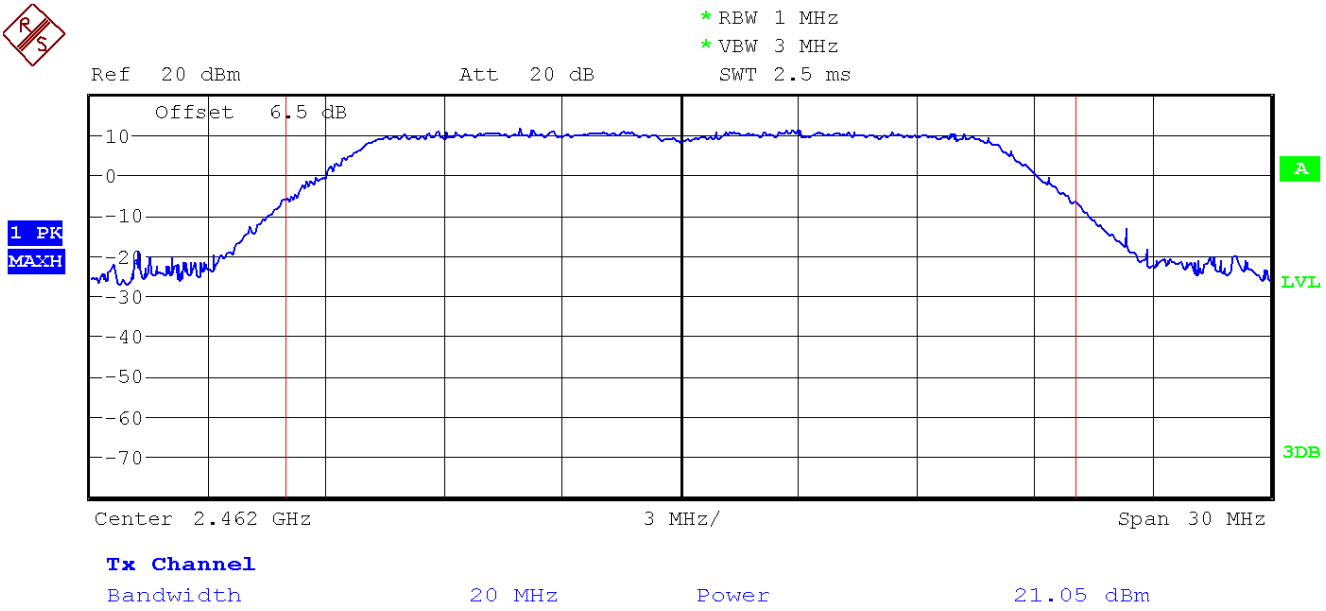
Peak Power (CH Mid)



Tx Channel

Bandwidth	20 MHz	Power	21.05 dBm

Peak Power (CH High)



Tx Channel

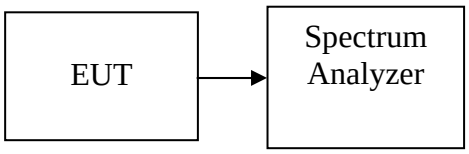
Bandwidth	20 MHz	Power	21.05 dBm

7.3 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

Test Configuration



TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance v03r01 dated 04-09-2013..

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-10.89	8.00	PASS
Mid	2437	-10.35	8.00	PASS
High	2462	-10.32	8.00	PASS

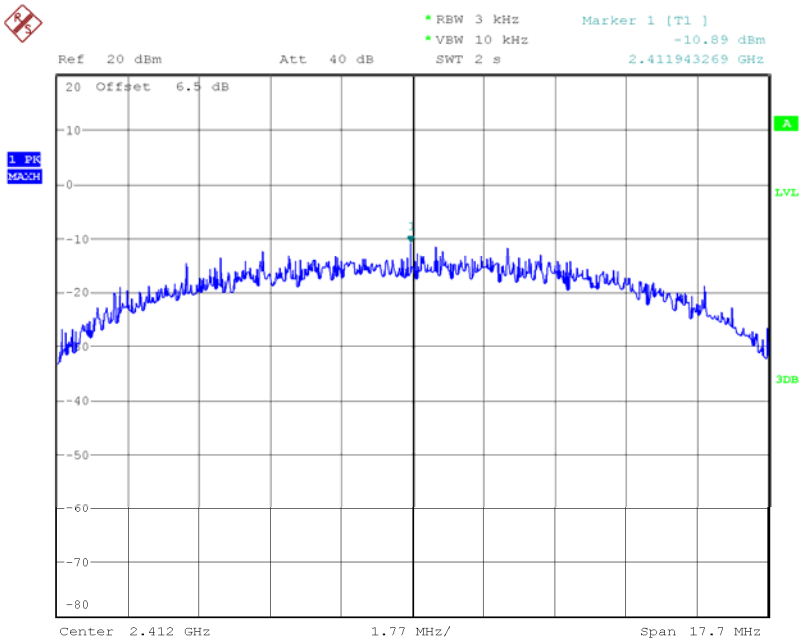
Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.58	8.00	PASS
Mid	2437	-14.44	8.00	PASS
High	2462	-14.47	8.00	PASS

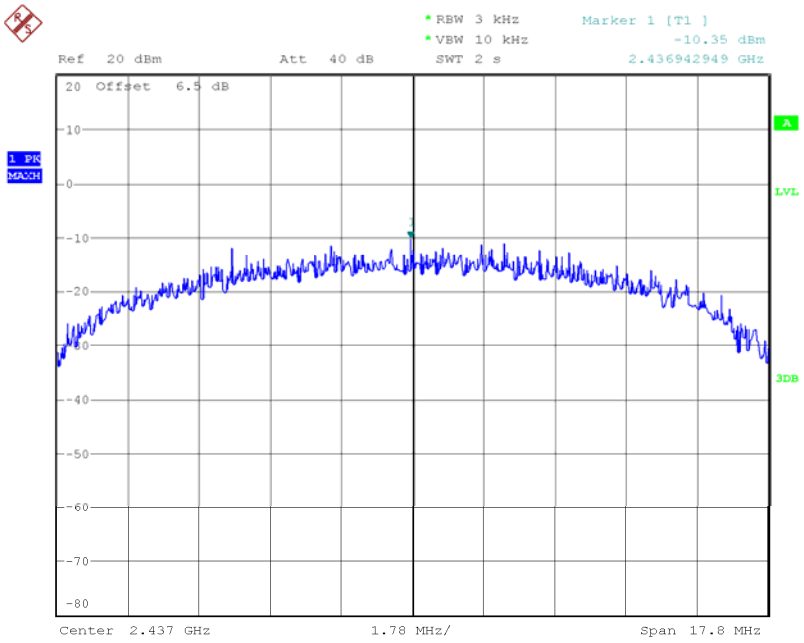
Test Plot

IEEE 802.11b mode

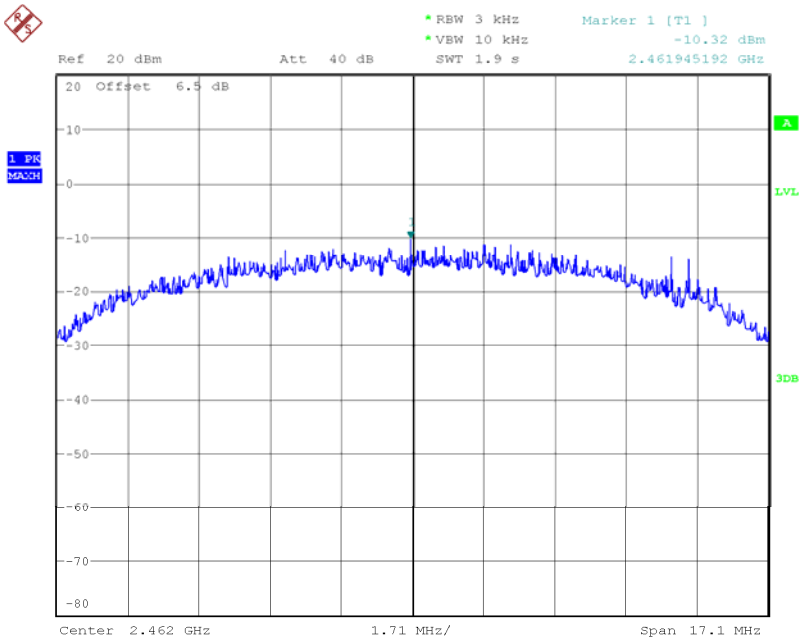
PPSD (CH Low)



PPSD (CH Mid)



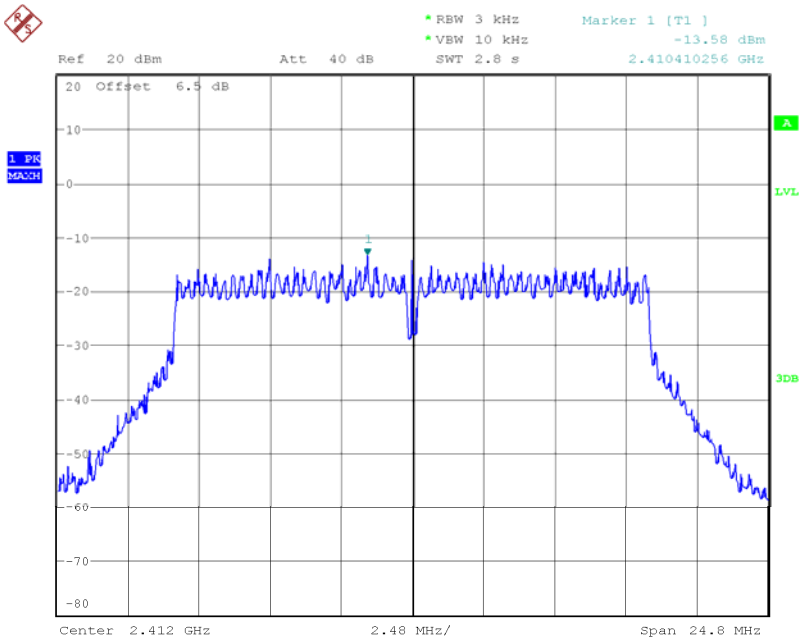
PPSD (CH High)



Date: 8.OCT.2013 15:05:58

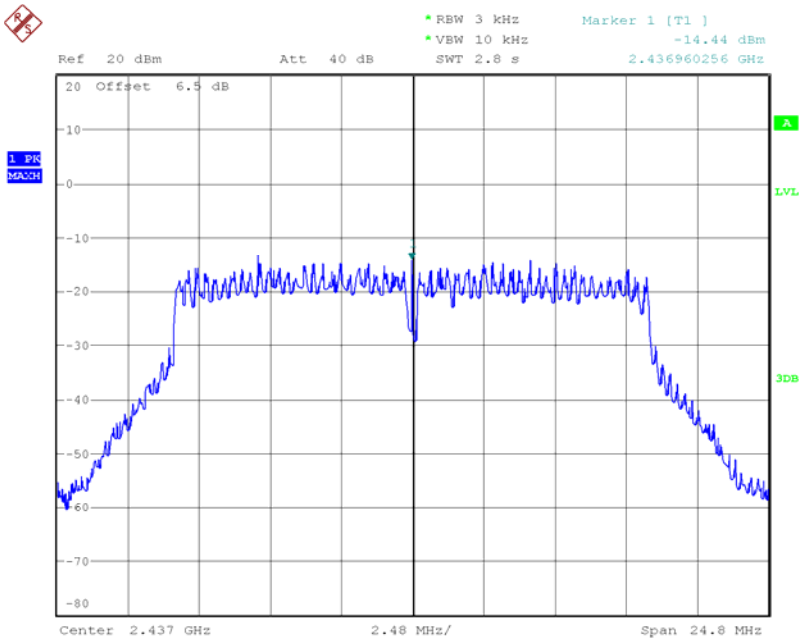
IEEE 802.11g mode

PPSD (CH Low)



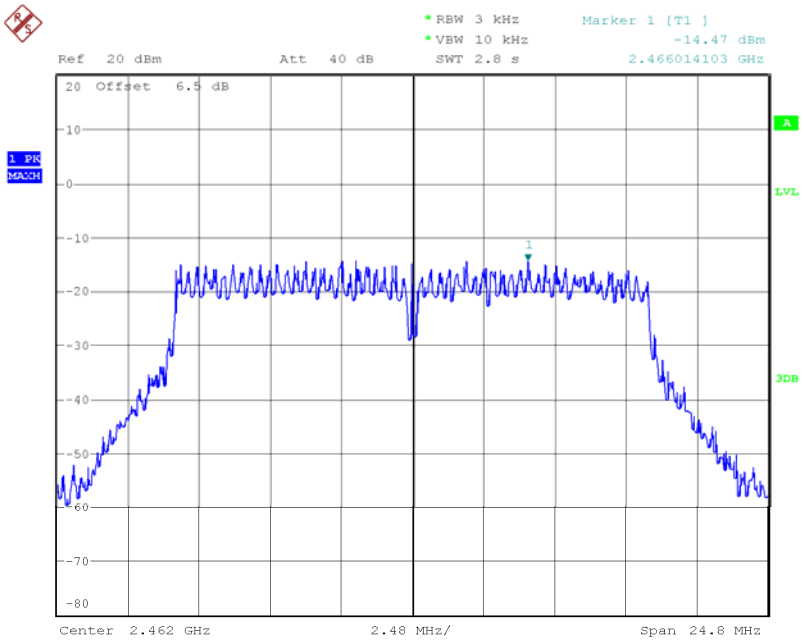
Date: 8.OCT.2013 15:11:26

PPSD (CH Mid)



Date: 8.OCT.2013 15:10:05

PPSD (CH High)



Date: 8.OCT.2013 15:20:45

7.4 SPURIOUS EMISSIONS

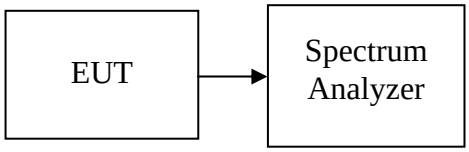
Conducted Measurement

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Conducted power was measured based on the use of RMS averaging over a time interval,therefore the required attenuntion is 30 dB.

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz.

Measurements are made over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, and highest channels.

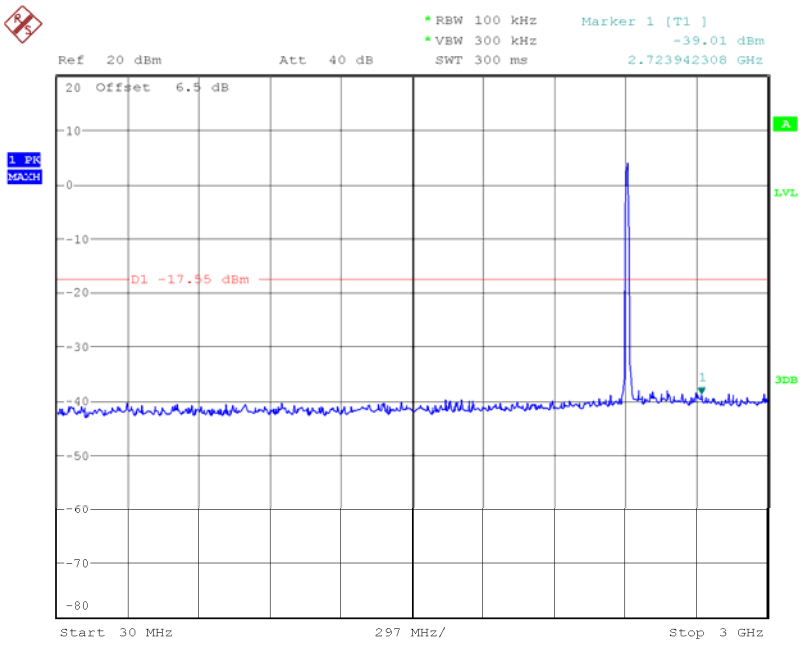
TEST RESULTS

No non-compliance noted

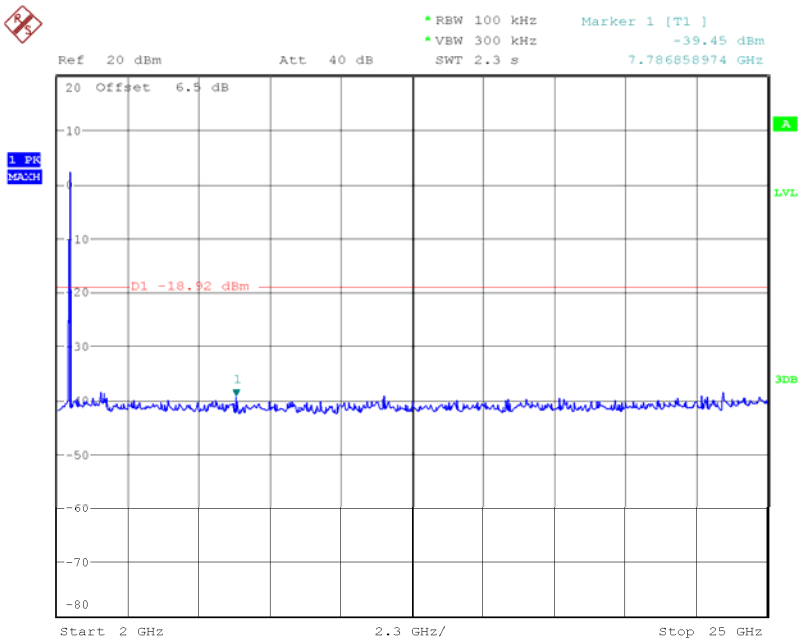
Test Plot

IEEE 802.11b mode

CH Low

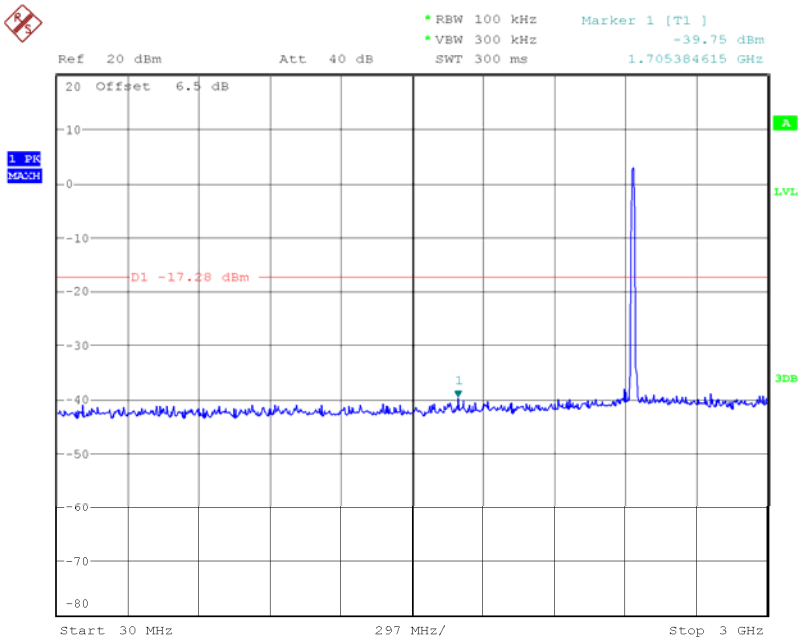


Date: 25.SEP.2013 17:57:12



Date: 25.SEP.2013 17:59:44

CH Mid



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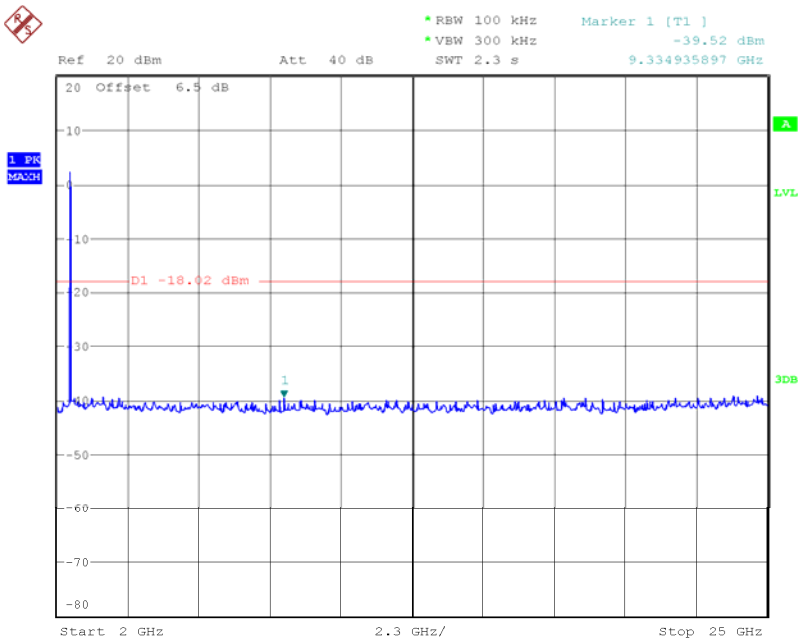
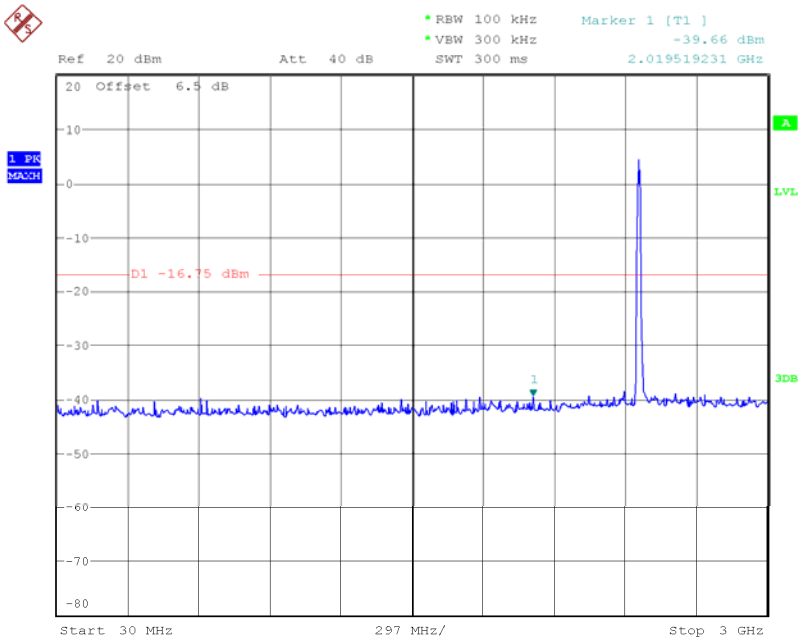


Date: 25.SEP.2013 18:01:13

CH High



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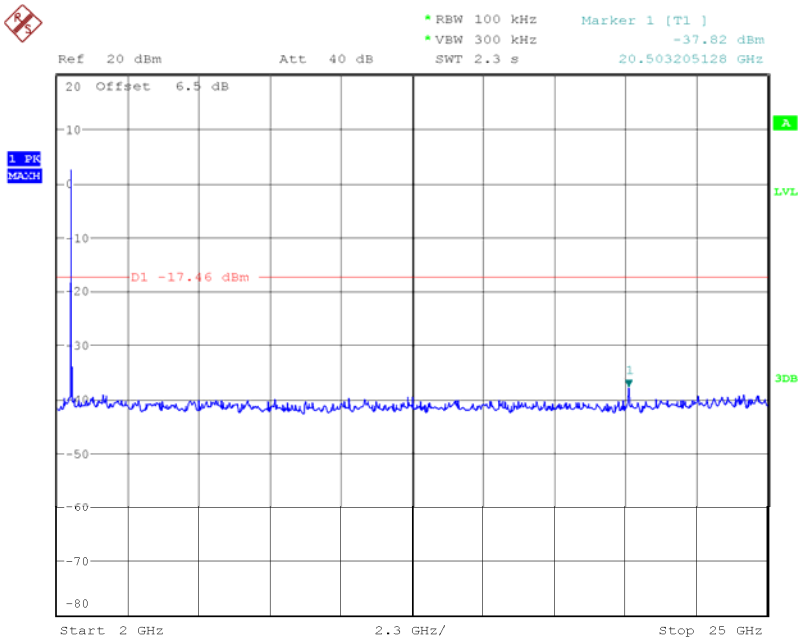
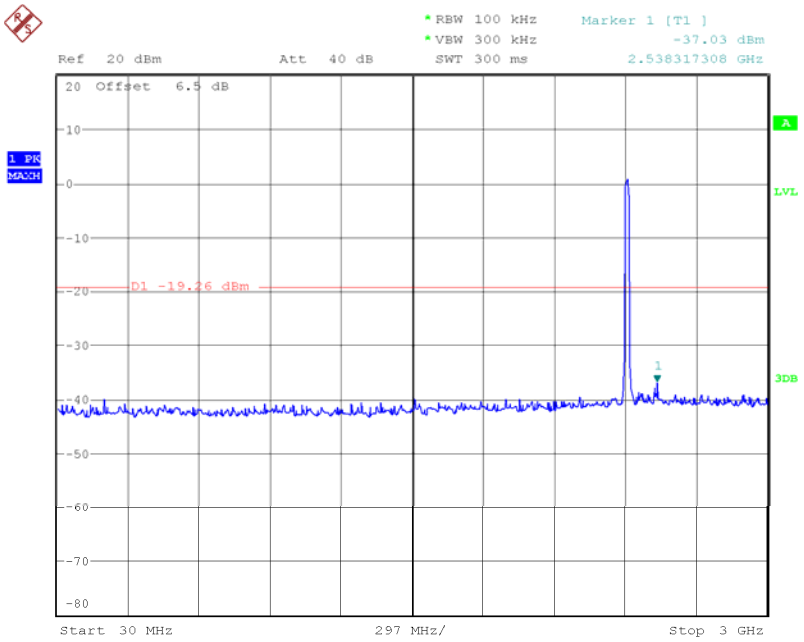


Date: 25.SEP.2013 18:02:43

IEEE 802.11g mode

CH Low



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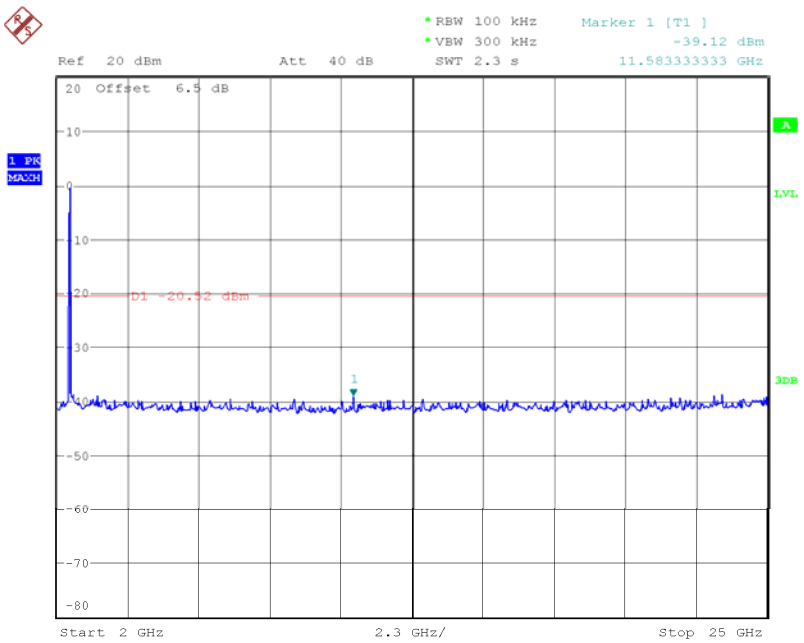
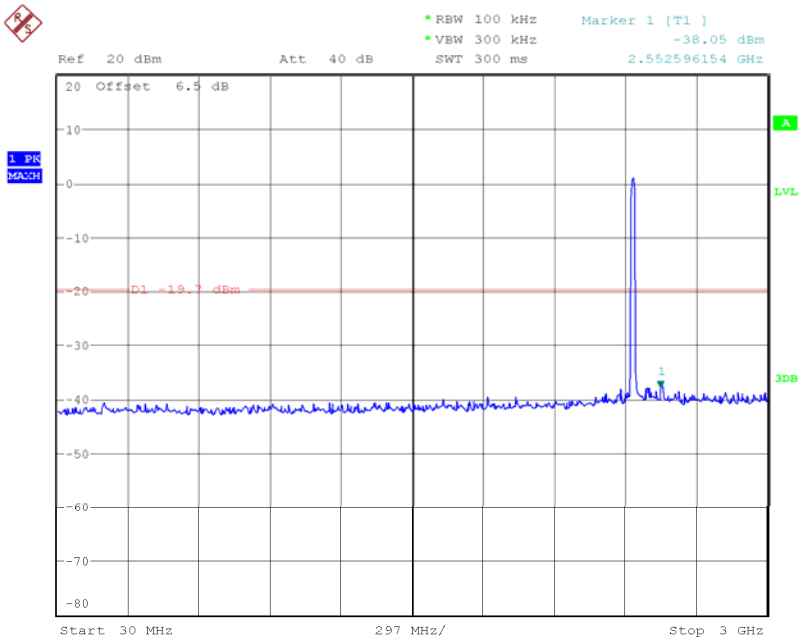


Date: 25.SEP.2013 18:05:06

CH Mid



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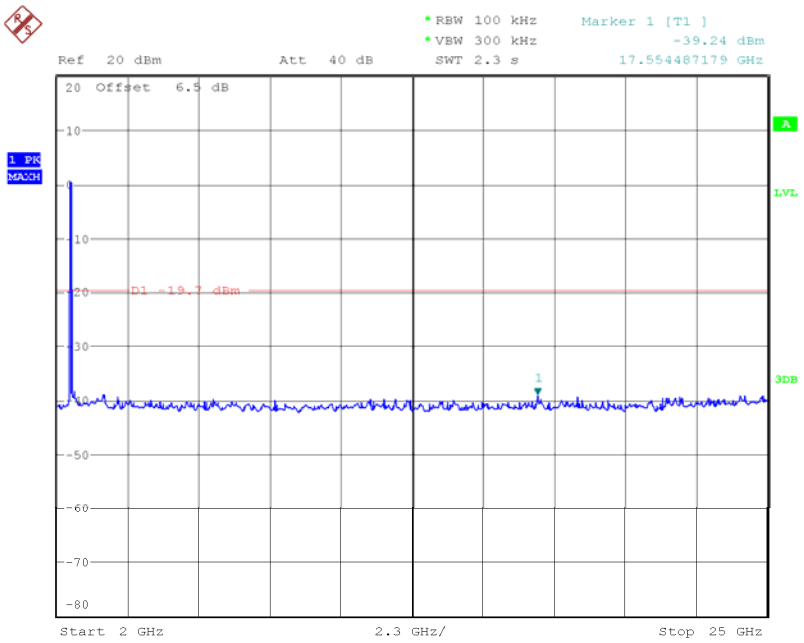
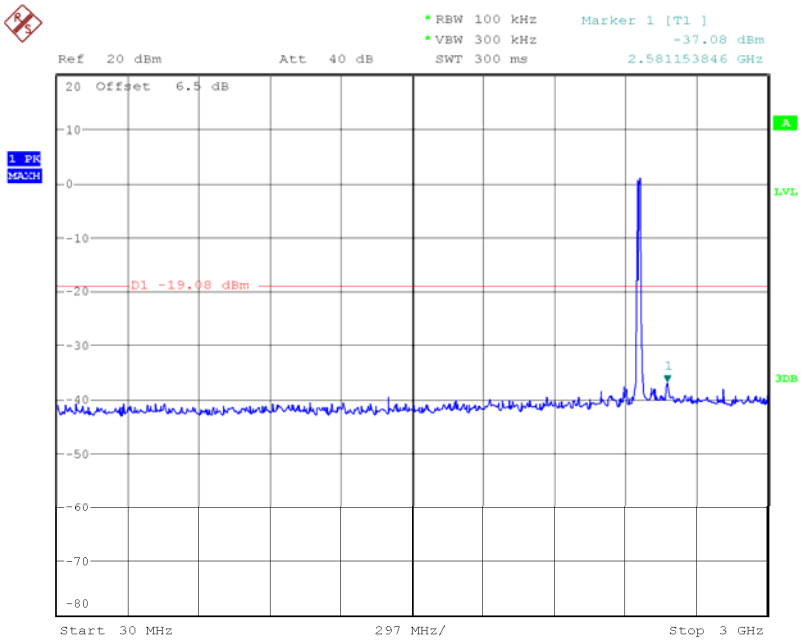
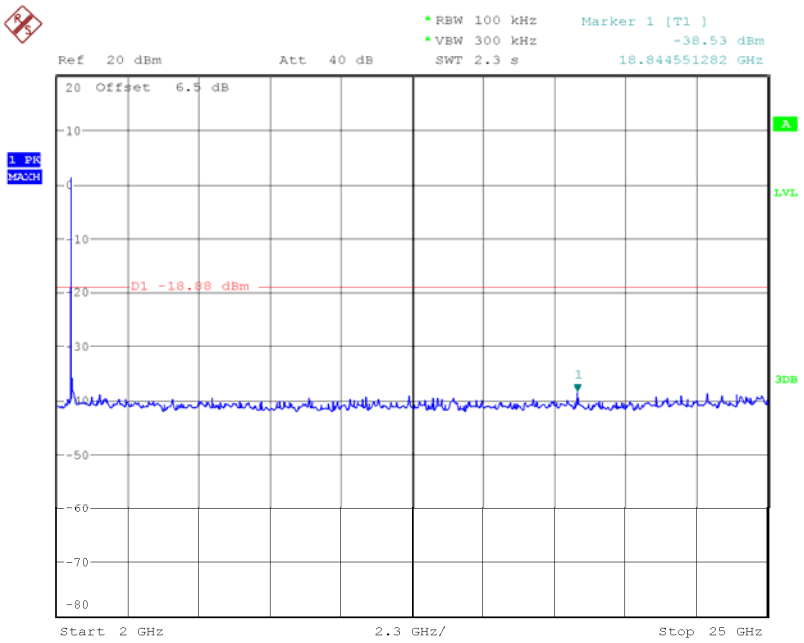


Date: 25.SEP.2013 18:07:51

CH High



Date: 25.SEP.2013 18:09:14



Date: 25.SEP.2013 18:10:13

7.5 RADIATED EMISSIONS

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

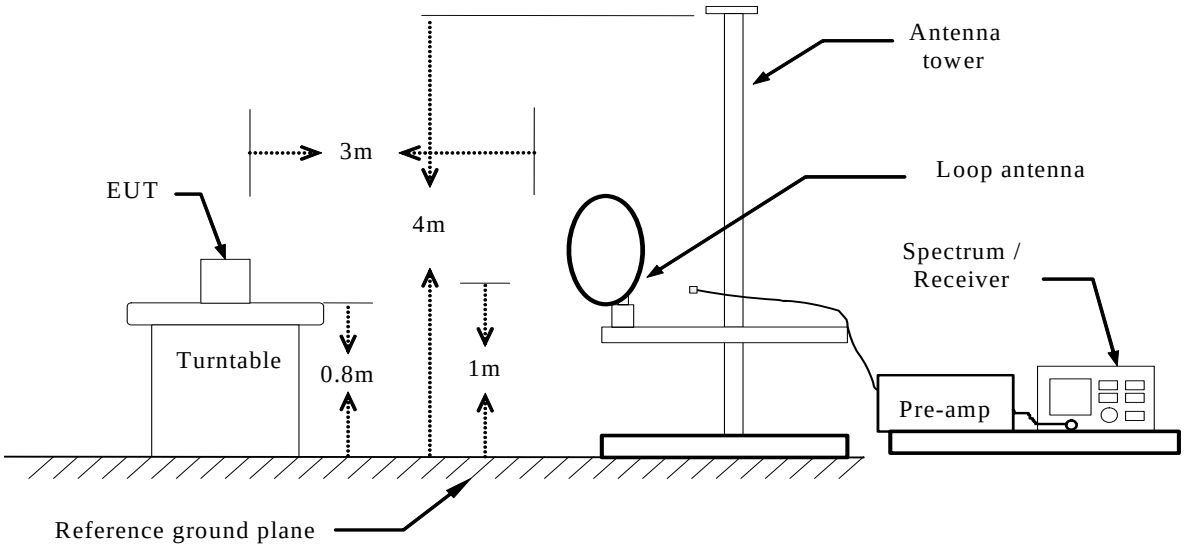
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the emission table above, the tighter limit applies at the band edges.

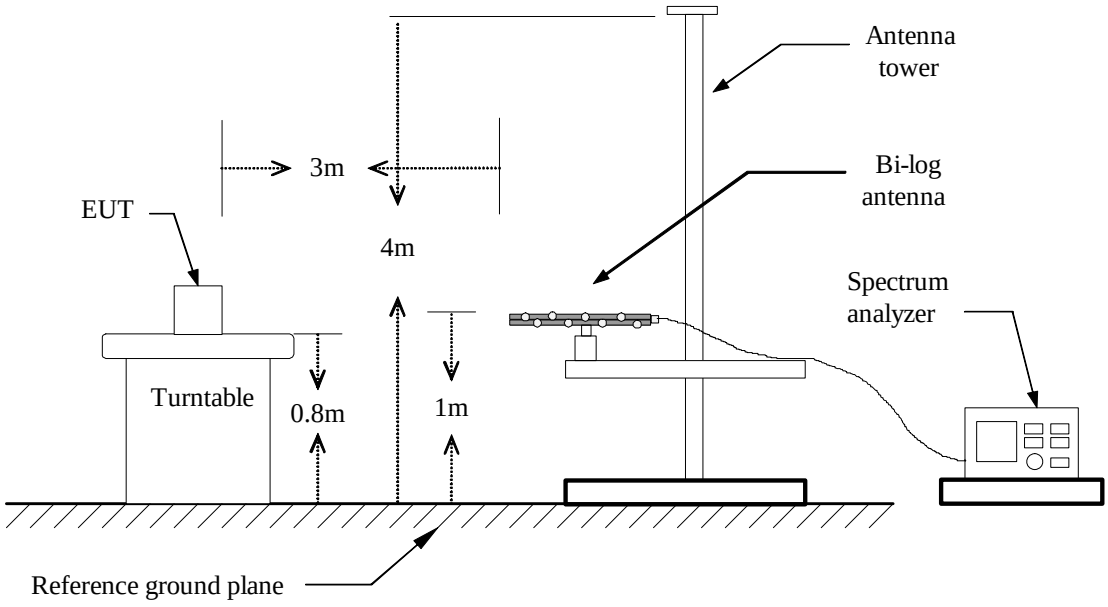
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

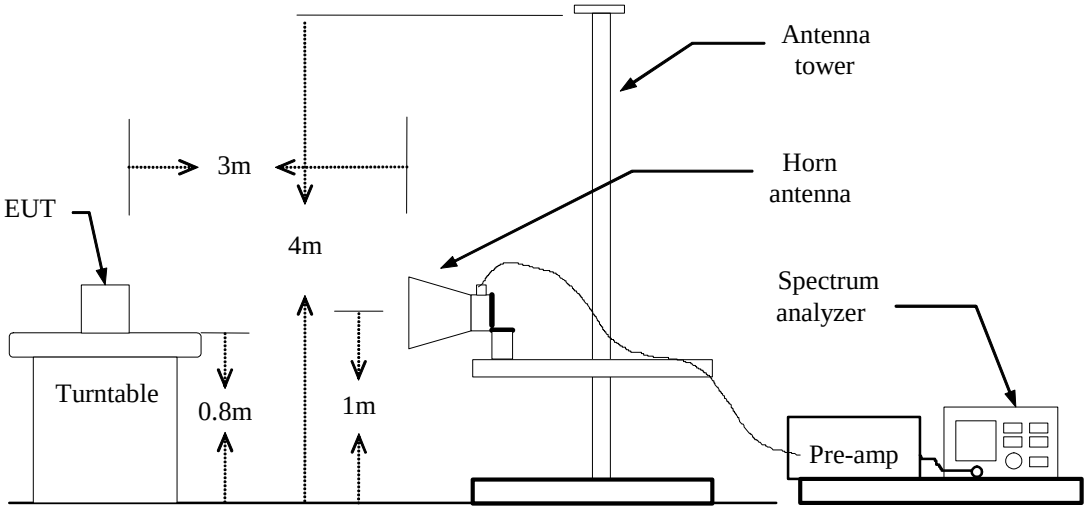
Below 30MHz



Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

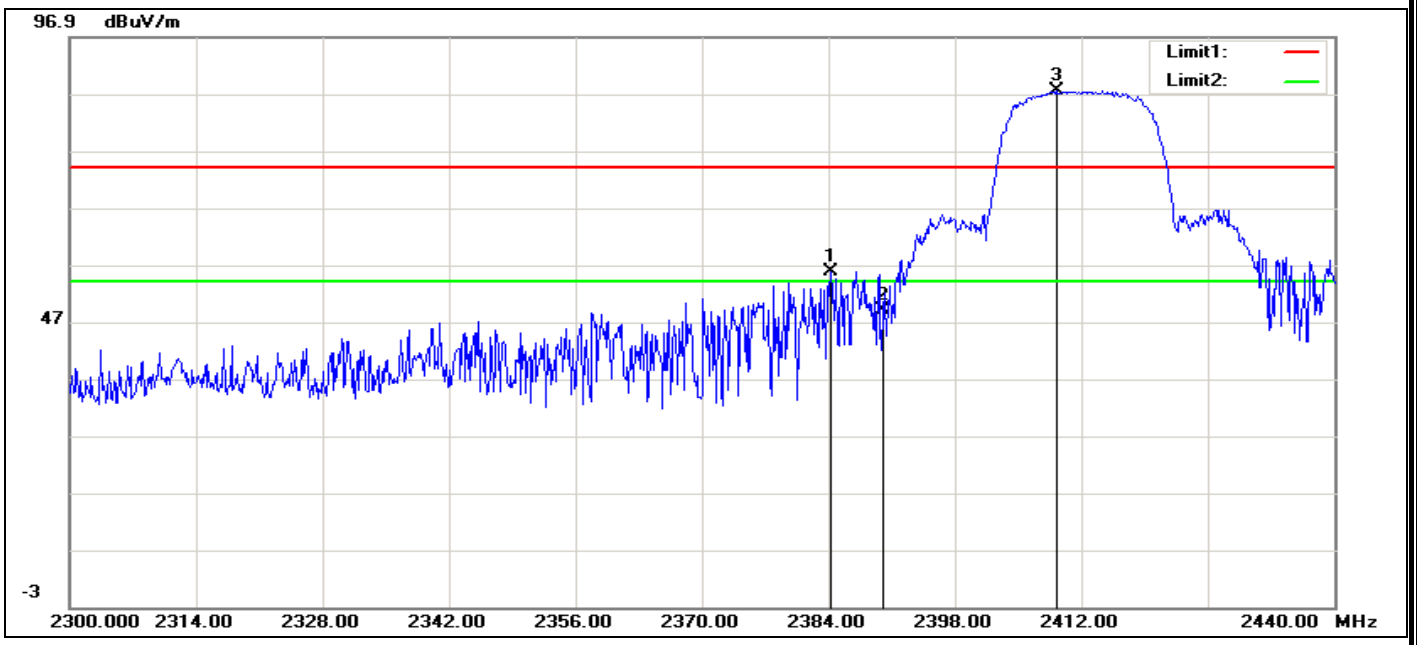
   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

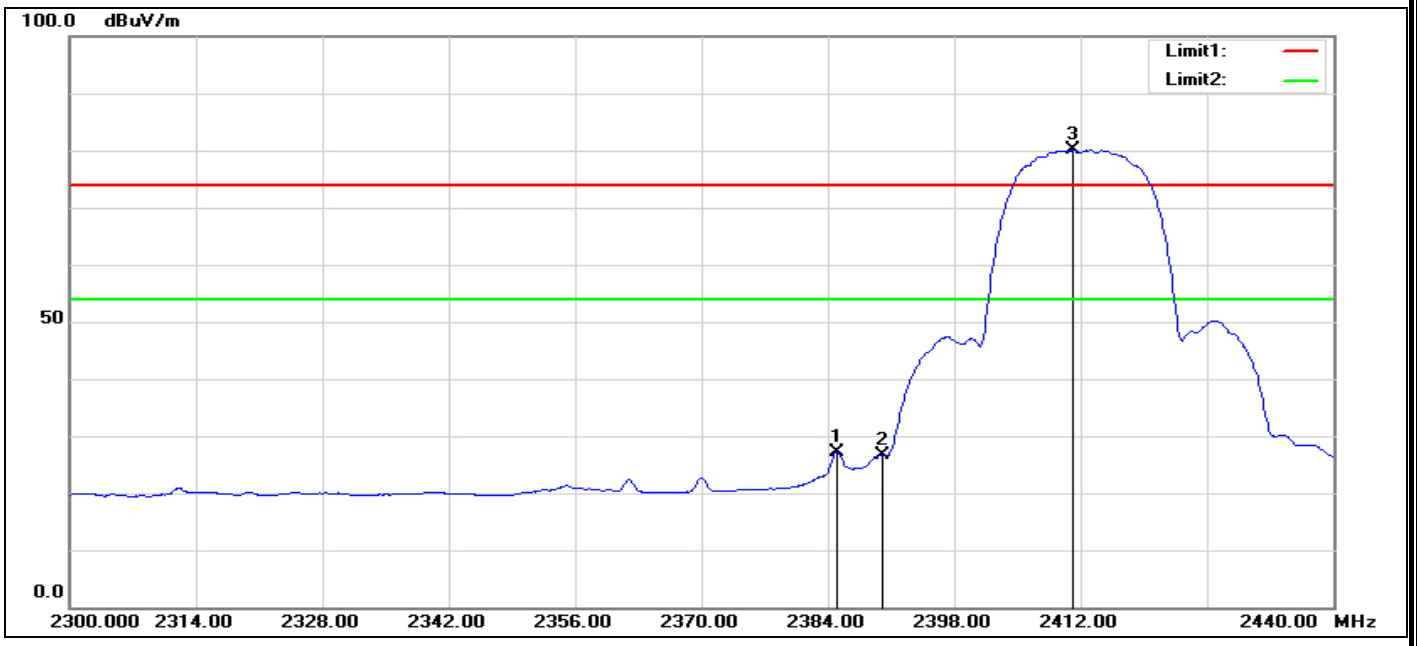
RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2384.280	70.16	-14.28	55.88	74.00	-18.12	100	112	peak
2	2390.000	63.27	-14.28	48.99	74.00	-25.01	100	290	peak
3	2409.200	101.64	-14.22	87.42	74.00	13.42	100	103	peak

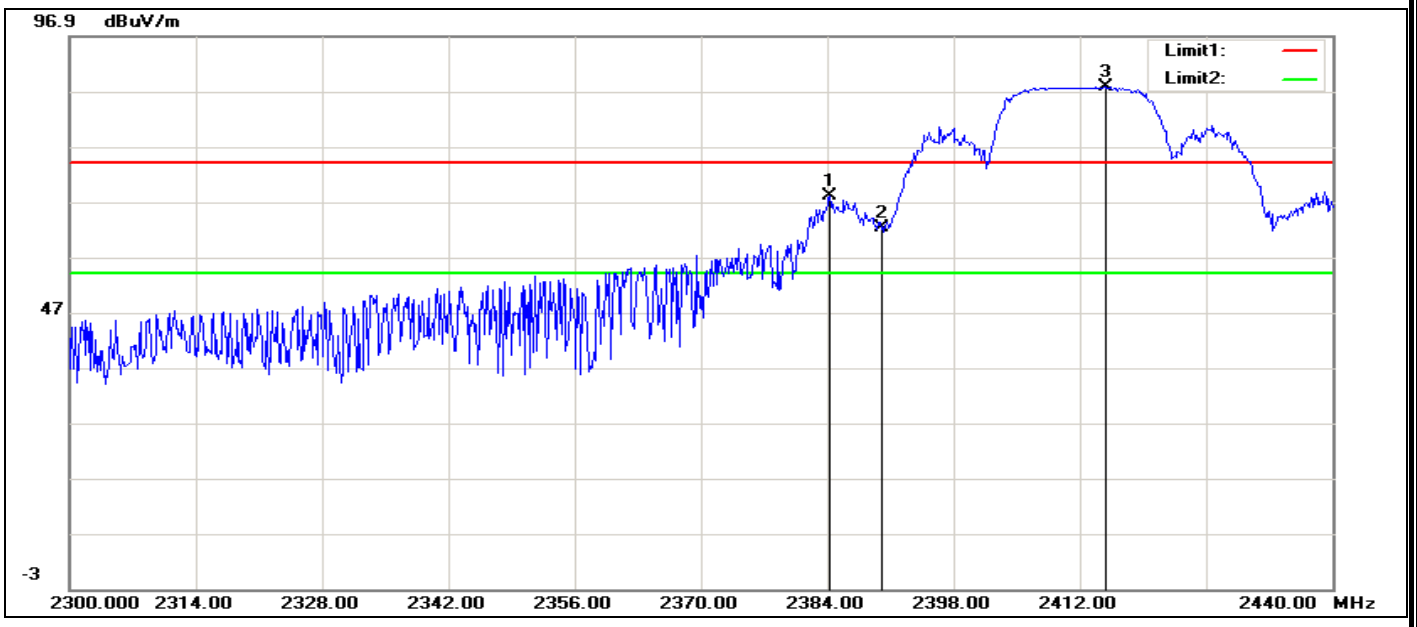
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2384.980	41.51	-14.29	27.22	54.00	-26.78	100	290	AVG
2	2390.000	40.83	-14.28	26.55	54.00	-27.45	100	290	AVG
3	2411.160	94.36	-14.21	80.15	54.00	26.15	100	97	AVG

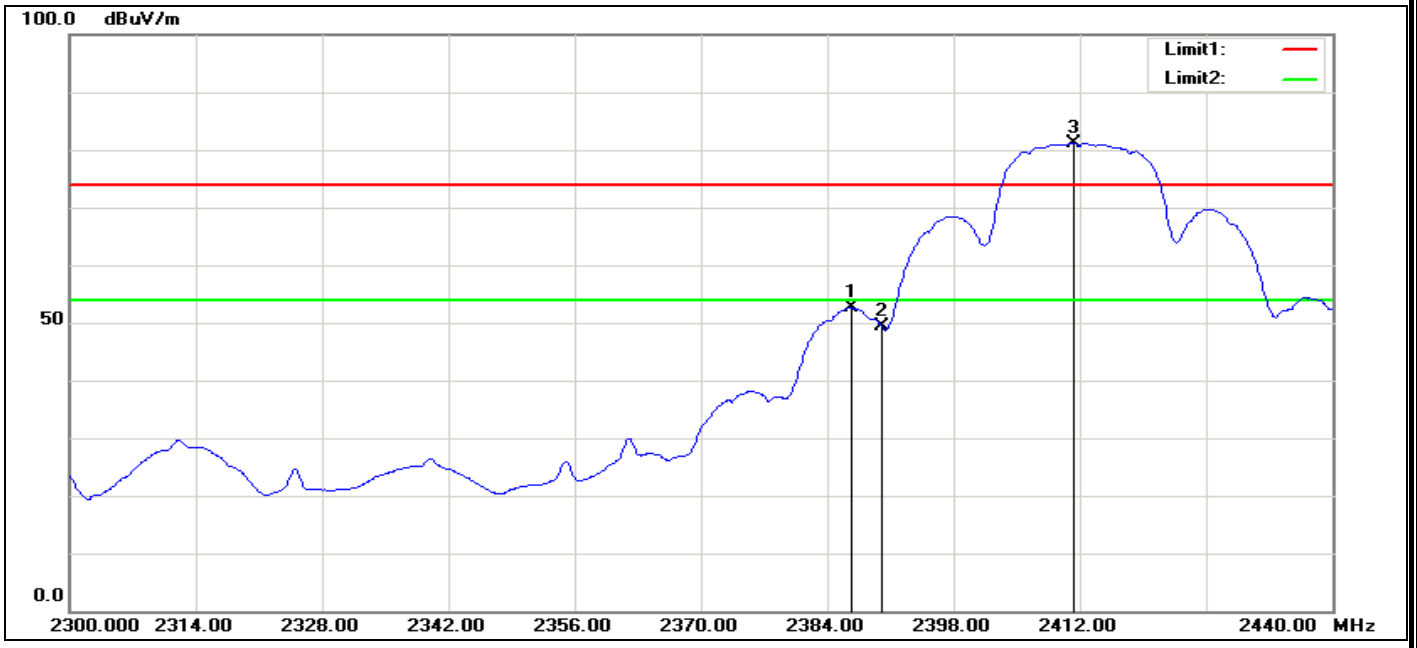
RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2384.280	82.22	-14.28	67.94	74.00	-6.06	100	267	peak
2	2390.000	76.52	-14.28	62.24	74.00	-11.76	100	273	peak
3	2414.940	101.87	-14.18	87.69	74.00	13.69	100	267	peak

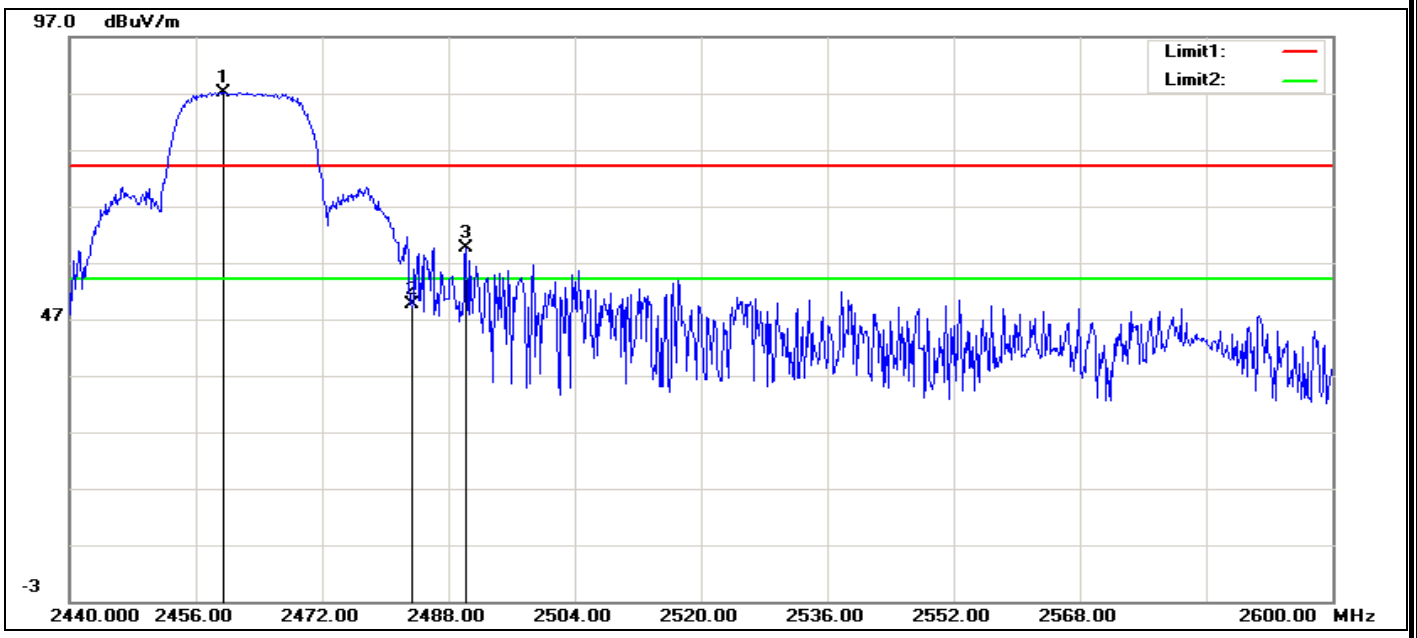
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2386.660	66.97	-14.28	52.69	54.00	-1.31	100	13	AVG
2	2390.000	63.77	-14.28	49.49	54.00	-4.51	100	273	AVG
3	2411.300	95.45	-14.21	81.24	54.00	27.24	100	166	AVG

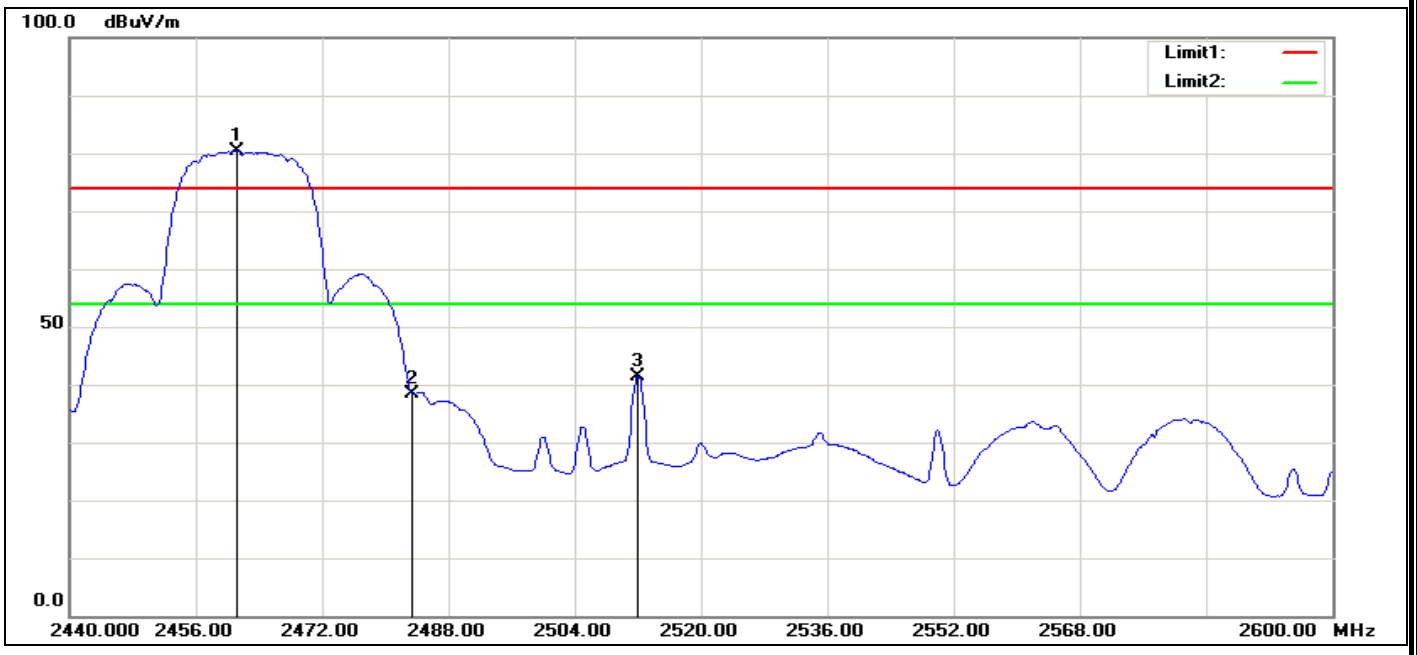
RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2459.520	100.94	-13.83	87.11	74.00	13.11	100	54	peak
2	2483.500	63.33	-13.65	49.68	74.00	-24.32	100	54	peak
3	2490.240	73.14	-13.60	59.54	74.00	-14.46	100	120	peak

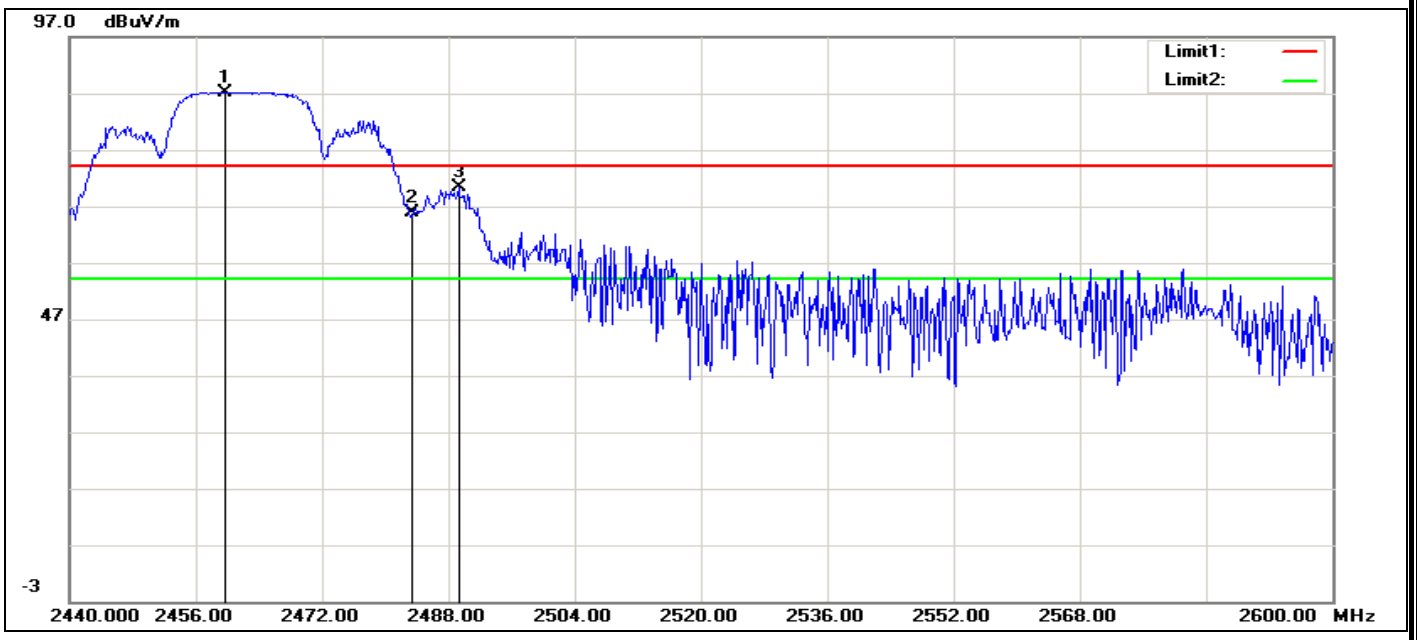
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2461.280	94.21	-13.82	80.39	54.00	26.39	100	49	AVG
2	2483.500	51.92	-13.65	38.27	54.00	-15.73	100	54	AVG
3	2512.000	54.94	-13.51	41.43	54.00	-12.57	100	115	AVG

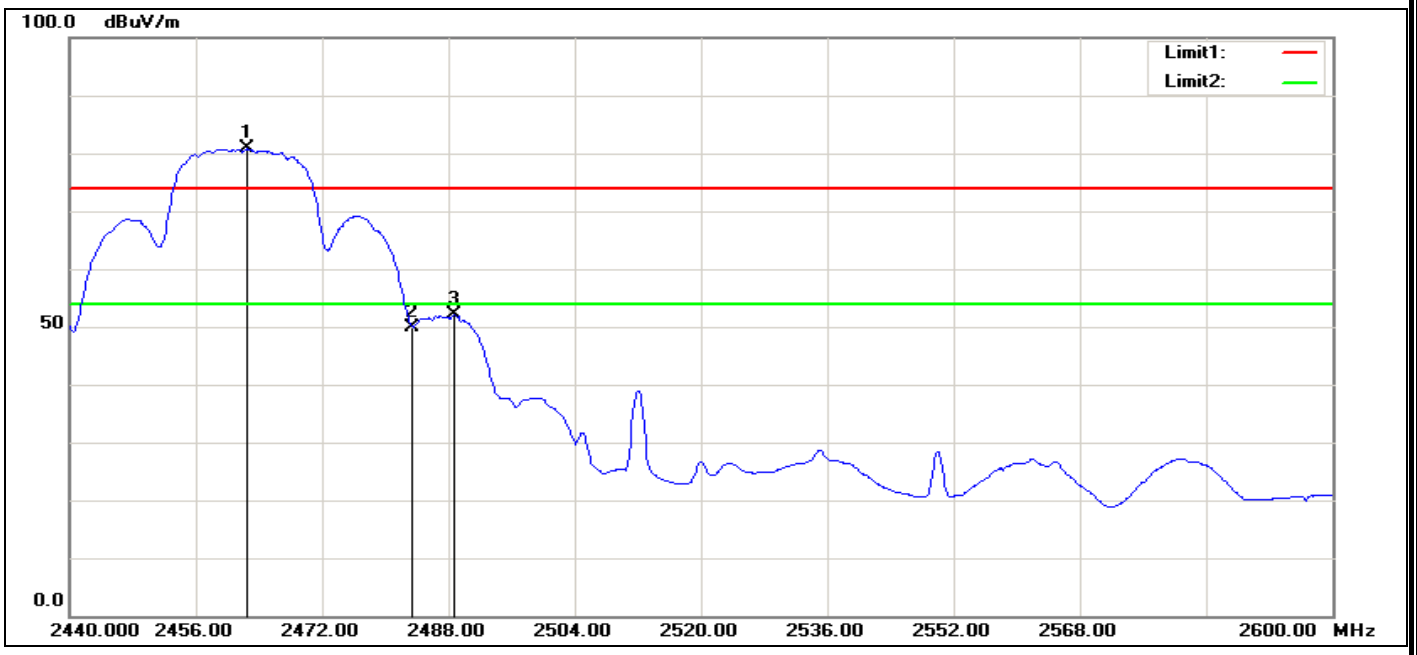
RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2459.680	101.07	-13.83	87.24	74.00	13.24	100	331	peak
2	2483.500	79.56	-13.65	65.91	74.00	-8.09	100	270	peak
3	2489.280	83.96	-13.60	70.36	74.00	-3.64	100	93	peak

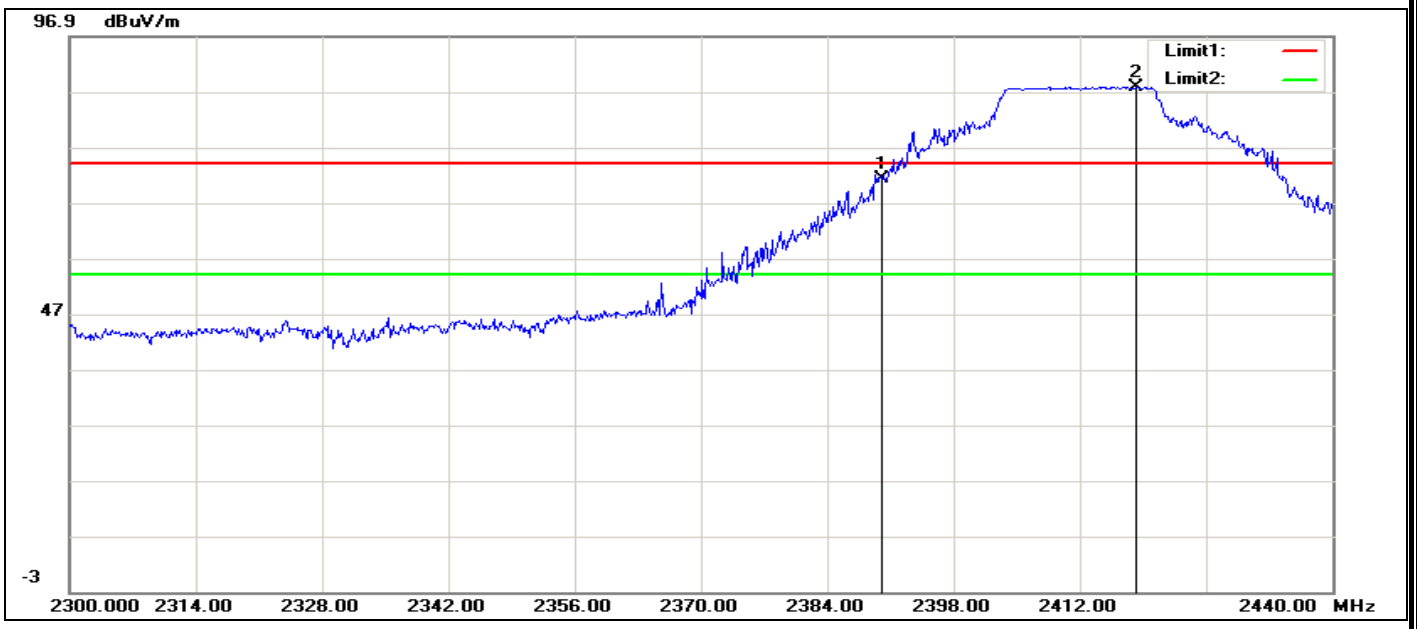
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2462.560	94.58	-13.81	80.77	54.00	26.77	100	87	AVG
2	2483.500	63.53	-13.65	49.88	54.00	-4.12	100	270	AVG
3	2488.640	65.76	-13.60	52.16	54.00	-1.84	100	87	AVG

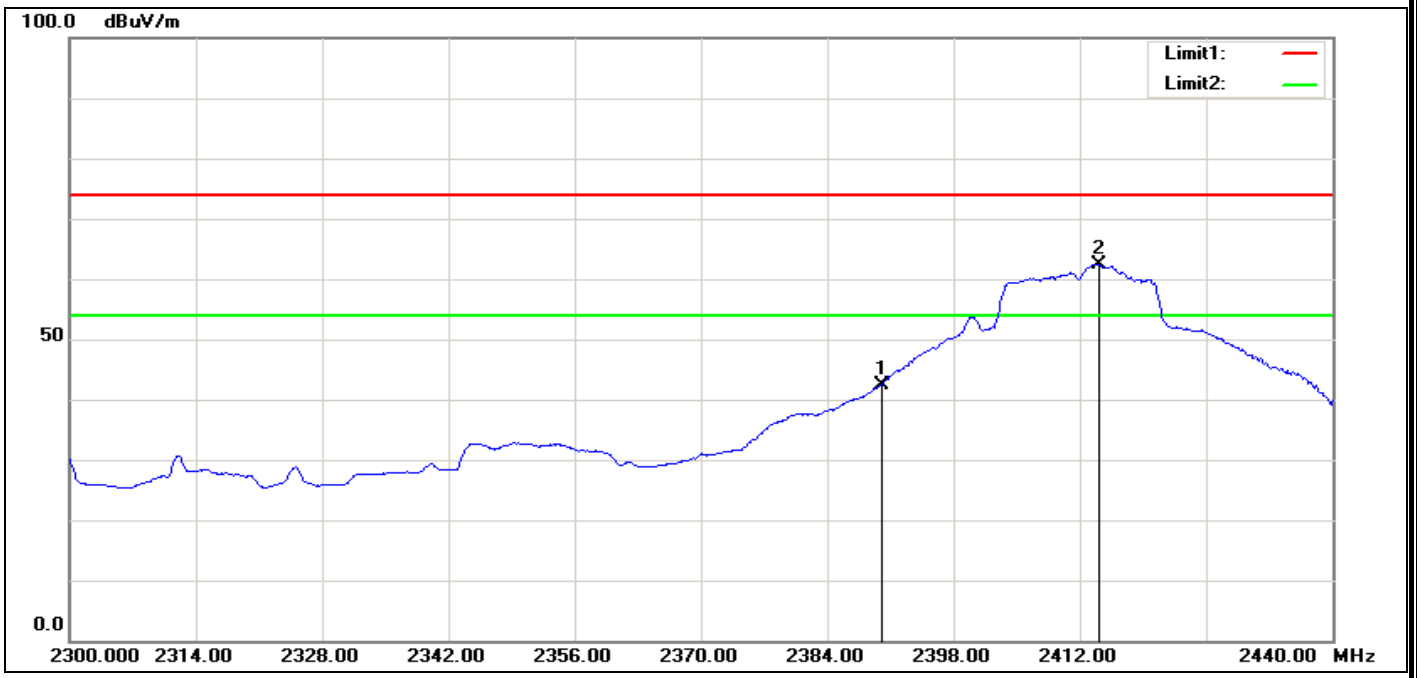
RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	85.62	-14.28	71.34	74.00	-2.66	100	1	peak
2	2418.300	101.98	-14.15	87.83	74.00	13.83	100	1	peak

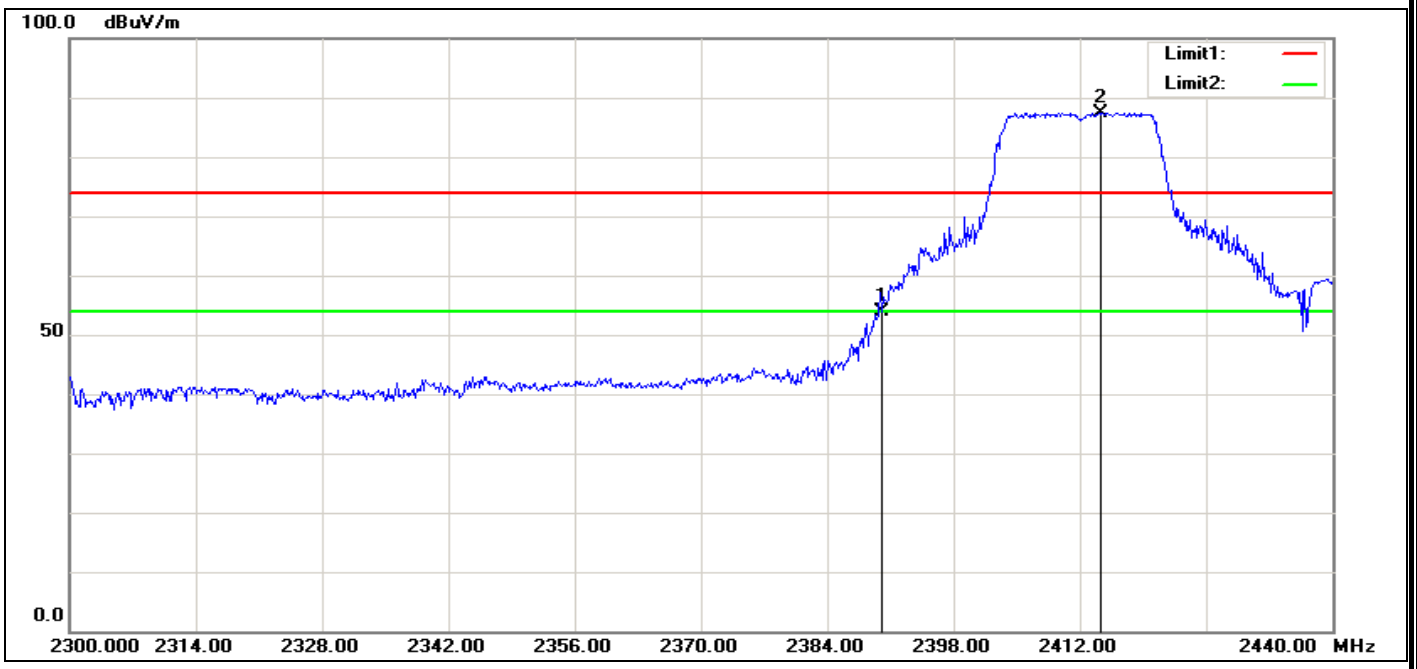
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	56.78	-14.28	42.50	54.00	-11.50	100	158	AVG
2	2414.100	76.62	-14.18	62.44	54.00	8.44	100	33	AVG

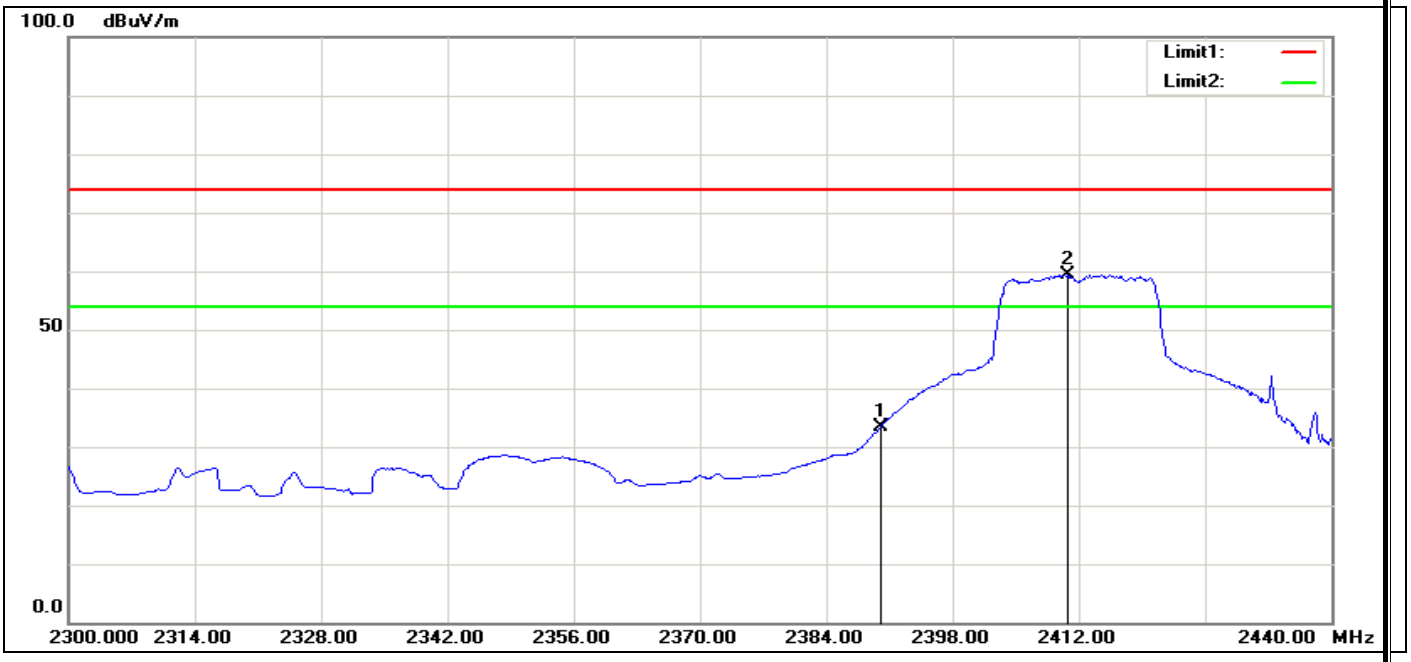
RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	68.24	-14.28	53.96	74.00	-20.04	100	252	peak
2	2414.240	101.66	-14.18	87.48	74.00	13.48	100	107	peak

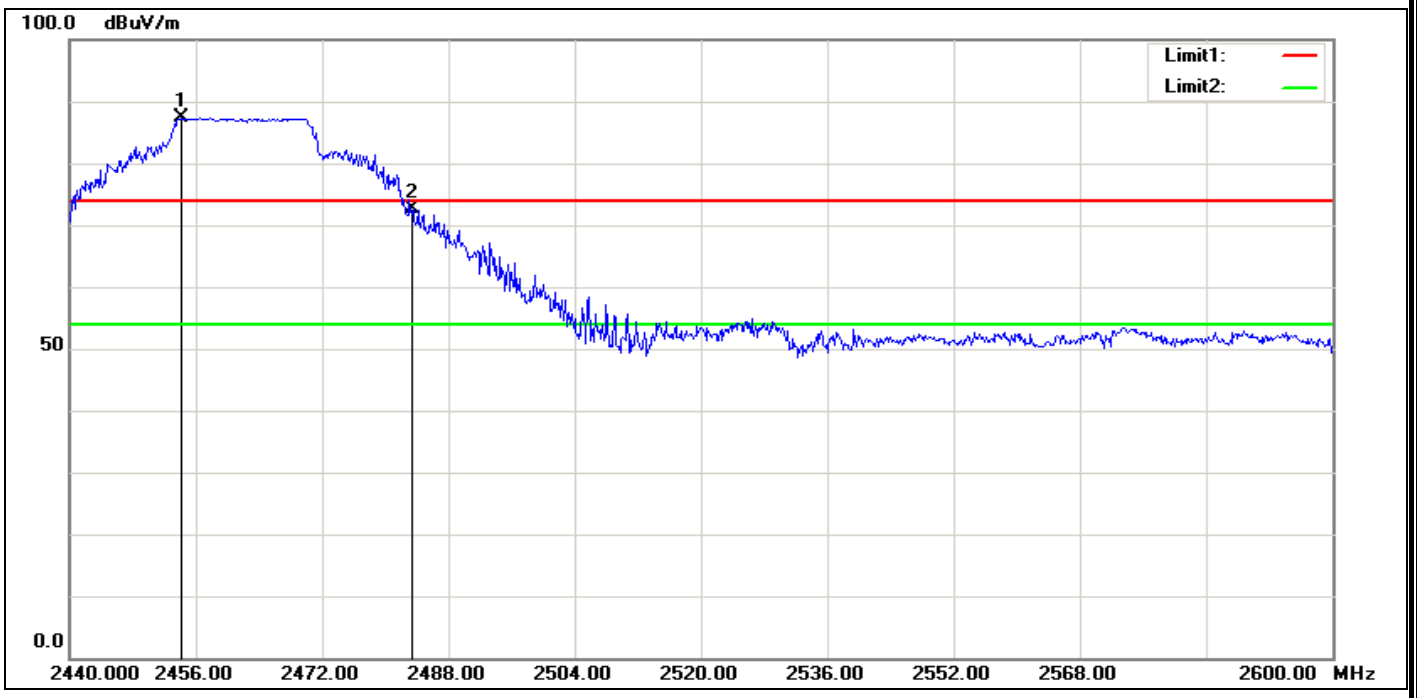
AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2390.000	47.66	-14.28	33.38	54.00	-20.62	100	221	AVG
2	2410.740	73.59	-14.21	59.38	54.00	5.38	100	39	AVG

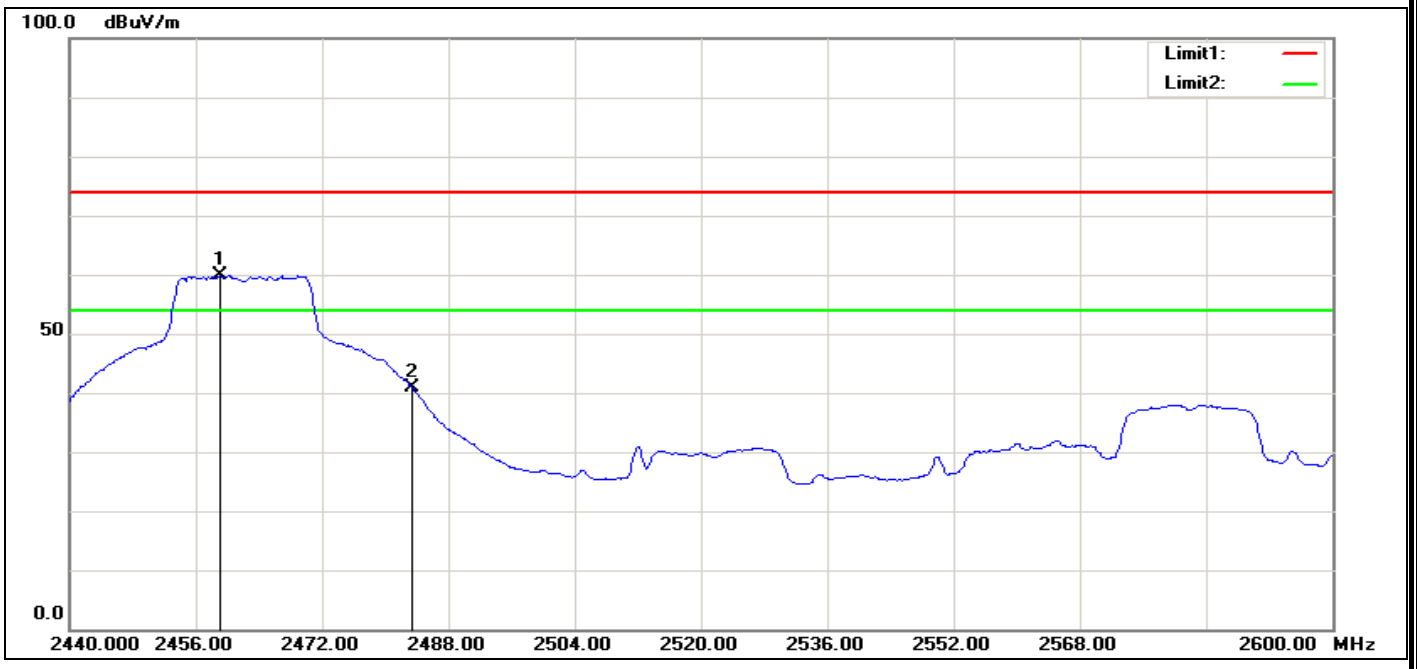
RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2454.080	101.18	-13.88	87.30	74.00	13.30	100	235	peak
2	2483.500	86.28	-13.65	72.63	74.00	-1.37	100	108	peak

AVG



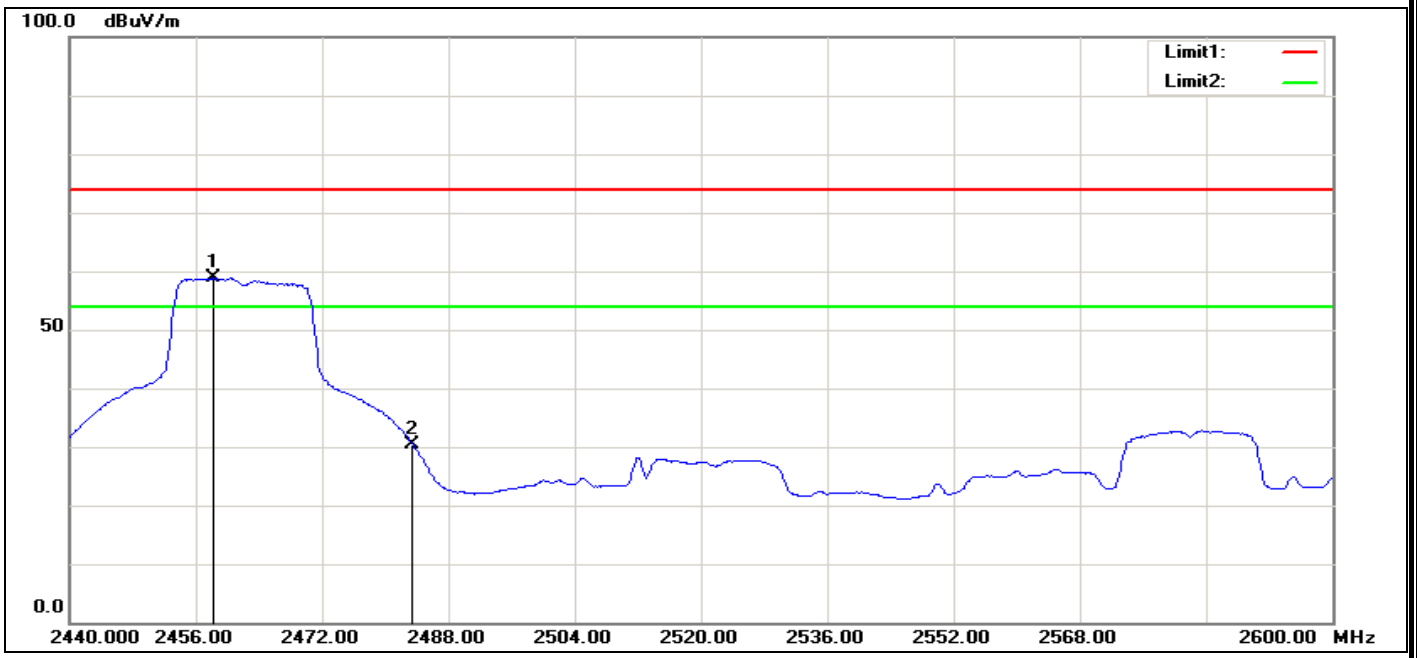
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2459.040	73.69	-13.83	59.86	54.00	5.86	100	261	AVG
2	2483.500	54.42	-13.65	40.77	54.00	-13.23	100	38	AVG

RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)

Peak

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2455.360	101.10	-13.86	87.24	74.00	13.24	100	214	peak
2	2483.500	78.95	-13.65	65.30	74.00	-8.70	100	306	peak

AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2458.240	72.73	-13.85	58.88	54.00	4.88	100	65	AVG
2	2483.500	43.92	-13.65	30.27	54.00	-23.73	100	314	AVG

Below 1GHz

Operation Mode: Normal Link **Test Date:** 2013-09-24

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
60.0700	H	37.07	0.57	37.64	40.00	-2.36	peak
84.3200	H	37.29	0.63	37.92	40.00	-2.08	peak
95.9600	H	40.46	0.65	41.11	43.50	-2.39	peak
144.4600	H	36.19	0.93	37.12	43.50	-6.38	peak
180.3500	H	39.66	1.00	40.66	43.50	-2.84	peak
191.9900	H	38.80	1.06	39.86	43.50	-3.64	peak
60.0700	V	36.10	0.57	36.67	40.00	-3.33	peak
71.7100	V	36.27	0.61	36.88	40.00	-3.12	peak
95.9600	V	40.94	0.65	41.59	43.50	-1.91	peak
131.8500	V	40.39	0.85	41.24	43.50	-2.26	peak
180.3500	V	40.31	1.00	41.31	43.50	-2.19	peak
203.6300	V	38.79	1.10	39.89	43.50	-3.61	peak

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MH).*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** 2013-09-24

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4824.000	44.89	-7.95	36.94	74.00	-37.06	100	344	peak
2	7237.000	45.58	-0.68	44.90	74.00	-29.10	100	115	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4826.000	45.12	-7.94	37.18	74.00	-36.82	100	69	peak
2	7238.000	43.51	-0.67	42.84	74.00	-31.16	100	211	peak

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** 2013-09-24

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4875.000	44.82	-7.69	37.13	74.00	-36.87	100	138	peak
2	7316.000	41.47	-0.84	40.63	74.00	-33.37	100	249	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	43.83	-7.68	36.15	74.00	-37.85	100	166	peak
2	7312.000	42.96	-0.85	42.11	74.00	-31.89	100	13	peak

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** 2013-09-24

Temperature: 22°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4926.000	44.85	-7.57	37.28	74.00	-36.72	100	346	peak
2	7385.000	41.74	-0.69	41.05	74.00	-32.95	100	209	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	44.94	-7.57	37.37	74.00	-36.63	100	242	peak
2	7386.000	42.95	-0.69	42.26	74.00	-31.74	100	262	peak

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** 2013-09-24

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4826.000	43.79	-7.94	35.85	74.00	-38.15	100	90	peak
2	7236.000	43.21	-0.67	42.54	74.00	-31.46	100	110	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4825.000	44.02	-7.94	36.08	74.00	-37.92	100	309	peak
2	7238.000	43.08	-0.67	42.41	74.00	-31.59	100	71	peak

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** 2013-09-24

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4875.000	43.23	-7.69	35.54	74.00	-38.46	100	314	peak
2	7314.000	41.50	-0.85	40.65	74.00	-33.35	100	56	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4874.000	44.06	-7.69	36.37	74.00	-37.63	100	306	peak
2	7312.000	41.79	-0.85	40.94	74.00	-33.06	100	164	peak

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** 2013-09-24

Temperature: 24°C **Tested by:** Blent.Wang

Humidity: 48 % RH **Polarity:** Ver. / Hor.

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4927.000	44.91	-7.57	37.34	74.00	-36.66	100	109	peak
2	7389.000	42.79	-0.69	42.10	74.00	-31.90	100	235	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4925.000	43.32	-7.57	35.75	74.00	-38.25	100	219	peak
2	7388.000	42.33	-0.69	41.64	74.00	-32.36	100	147	peak

7.6 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

** Decreases with the logarithm of the frequency.*

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

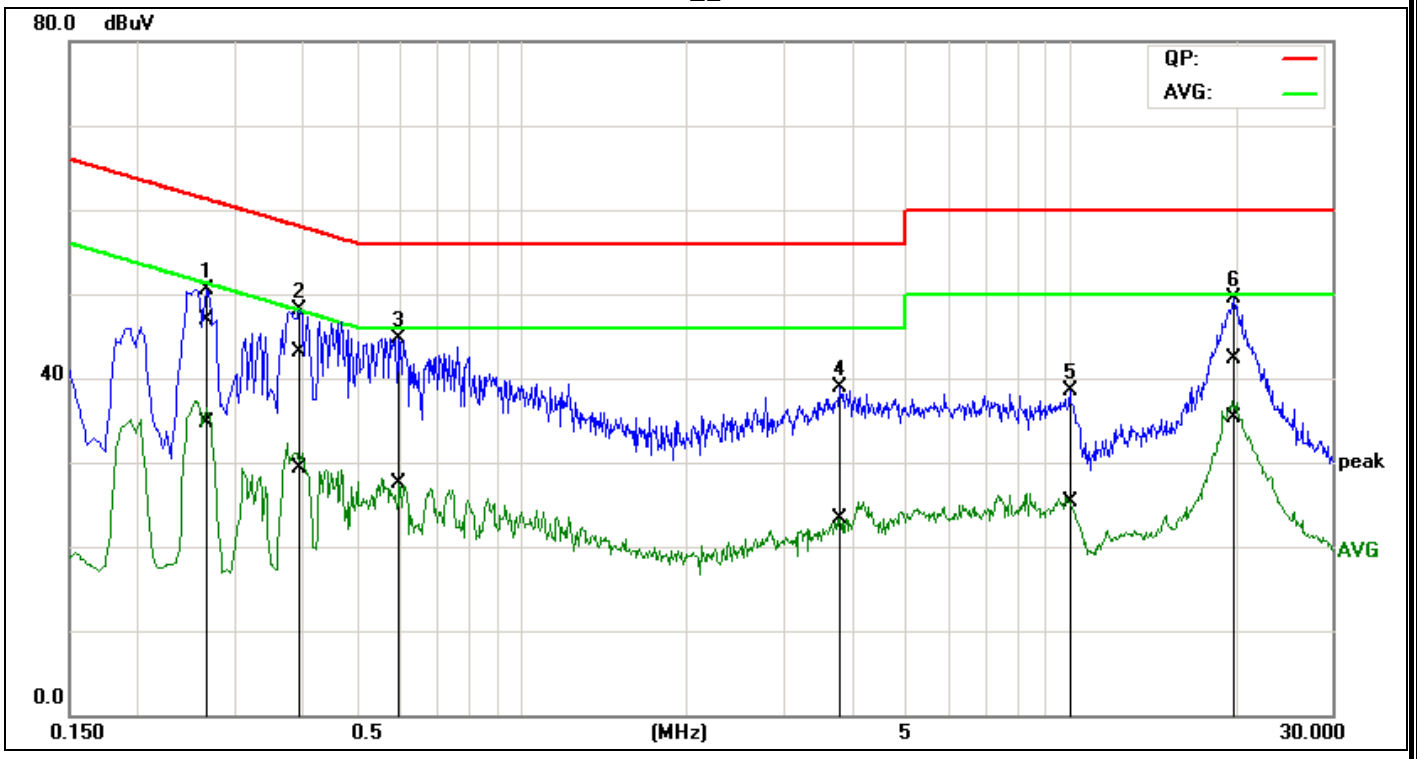
TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Job No.:	C130918R02-RPW	Date:	2013-9-24
Company:	GENEVA	Time:	15:32:29
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Blent.Wang
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:	Geneva Sound System Model XXL	Description:	

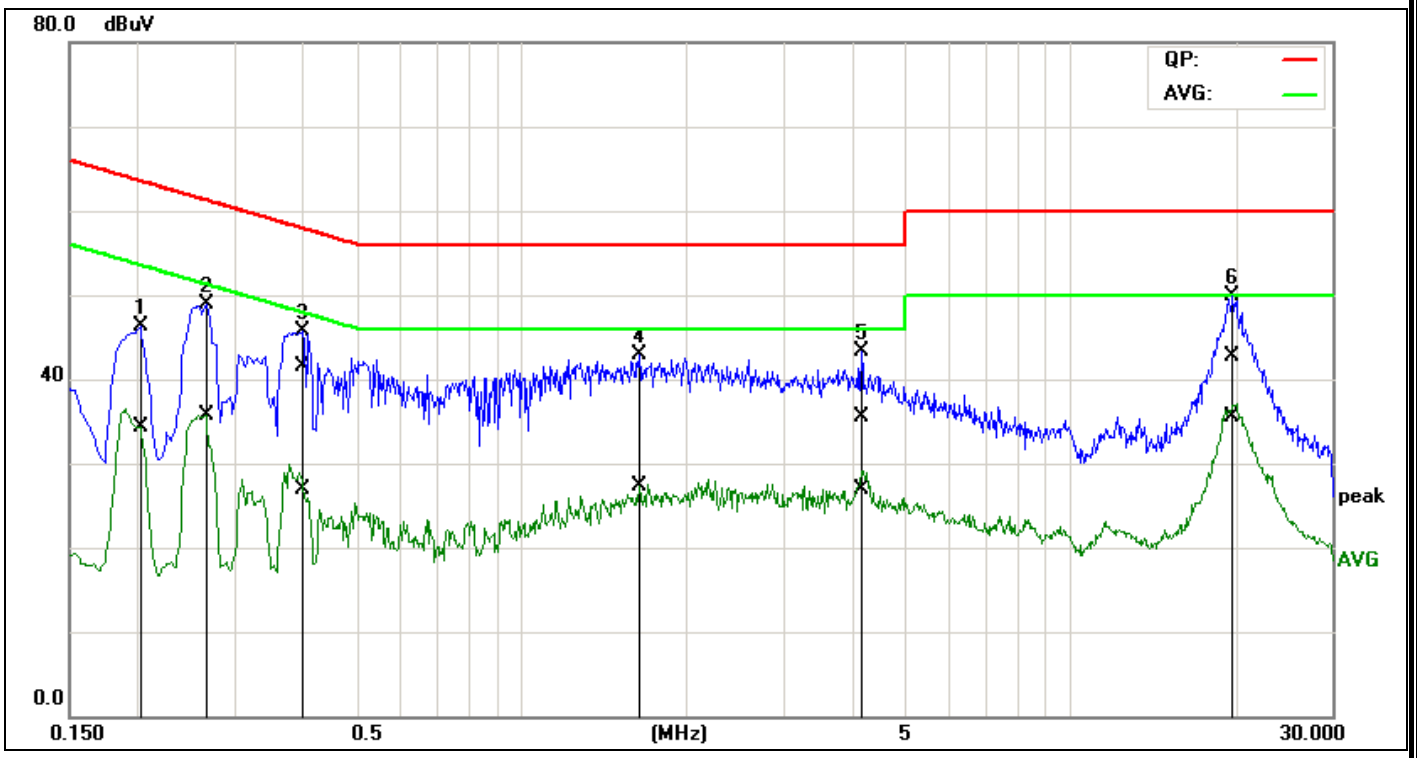
L1



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2683	27.35	15.03	19.65	47.00	34.68	61.17	51.17	-14.17	-16.49	Pass
2	0.3936	23.26	9.59	19.75	43.01	29.34	57.99	47.99	-14.98	-18.65	Pass
3*	0.5980	24.88	7.63	19.83	44.71	27.46	56.00	46.00	-11.29	-18.54	Pass
4	3.8200	18.70	3.15	20.15	38.85	23.30	56.00	46.00	-17.15	-22.70	Pass
5	10.0060	17.72	4.58	20.77	38.49	25.35	60.00	50.00	-21.51	-24.65	Pass
6	19.8850	21.27	14.28	21.12	42.39	35.40	60.00	50.00	-17.61	-14.60	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Job No.:	C130918R02-RPW	Date:	2013-9-24
Company:	GENEVA	Time:	15:36:59
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	Blent.Wang
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:	Geneva Sound System Model XXL	Description:	



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2020	26.74	14.71	19.64	46.38	34.35	63.52	53.53	-17.14	-19.18	Pass
2*	0.2660	29.29	16.05	19.69	48.98	35.74	61.24	51.24	-12.26	-15.50	Pass
3	0.3964	21.77	7.03	19.78	41.55	26.81	57.93	47.93	-16.38	-21.12	Pass
4	1.6420	22.97	7.31	19.92	42.89	27.23	56.00	46.00	-13.11	-18.77	Pass
5	4.1275	15.24	6.75	20.20	35.44	26.95	56.00	46.00	-20.56	-19.05	Pass
6	19.8162	21.59	14.37	21.07	42.66	35.44	60.00	50.00	-17.34	-14.56	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

END OF REPORT