

EMC TEST REPORT for Intentional Radiator (Wi-Fi Function)

No. 140401227SHA-002

Applicant : G-Lab GmbH

Schiffbaustrasse 10, 8005, Zurich, Switzerland

Factory : Hansong(Nanjing) Technology Ltd

8th Kangping Road, Jiangning Economy&Technology
Development Zone, Nanjing, 211106, China

Product Name : GENEVA

Product description : Amplified speaker

Type/Model : A020

TEST RESULT : PASS

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2013): Radio Frequency Devices

ANSI C63.4 (2009): American National Standard for Methods of Measurement
of Radio-Noise Emissions from Low-Voltage Electrical and Electronic
Equipment in the Range of 9 kHz to 40 GHz

RSS-210 Issue 8 (December 2010): Low-power Licence-exempt Radio communication
Devices (All Frequency Bands): Category I Equipment

RSS-Gen Issue 3 (December 2010): General Requirements and Information for the
Certification of Radio communication Equipment

Date of issue: Sep 09, 2014

Prepared by:



Wade Zhang (Project Engineer)

Reviewed by:



Daniel Zhao (Reviewer)



FCC ID: ZXX-A020
IC: 10107A-A020

Description of Test Facility

Name: Intertek Testing Services Limited Shanghai
Address: Building 86, No. 1198 Qinzhou Rd., North, Shanghai 200233, P.R. China

FCC Registration Number: 236597
IC Assigned Code: 2042B-1

Name of contact: Jonny Jing
Tel: +86 21 61278271
Fax: +86 21 54262353

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1. General Information

1.1 Applicant Information

Applicant : G-Lab GmbH
Schiffbaustrasse 10, 8005, Zurich, Switzerland
Name of contact : Frank Joosten
Tel : + 41 43 205 2570
Fax : + 41 43 205 2572
Factory : Hansong(Nanjing) Technology Ltd
8th Kangping Road, Jiangning Economy&Technology
Development Zone, Nanjing, 211106, China

1.2 Identification of the EUT

Equipment : GENEVA
Product description : Amplified speaker
Trade name : GENEVA
Type/model : A020
FCC ID : ZXX-A020
IC : 10107A-A020

1.3 Technical specification

Operation Frequency : 2412~2462 MHz
Band
Type of Modulation : CCK,BPSK,QPSK,DSSS,OFDM
EUT Modes of : 802.11b/g
Modulation
Channel Number : 11Channel
Gain of Antenna : 4.2dBi
Description of EUT : The EUT is a wireless device, and its support 802.11b/g mode.
Port identification : power port 1;
Audio In port 1.
Rating : AC100-240V, 50/60Hz, 120W, Class II apparatus
Declared : 5°C ~ 40°C
Temperature range
Category of EUT : Class B
EUT type : ☒ Table top ☐ Floor standing
Sample received date : 2014.04.16
Sample Identification : 0140416-04-002
No
Date of test : 2014.04.16~2014.06.13

1.4 Mode of operation during the test / Test peripherals used

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

The lowest, middle and highest channel were tested as representatives.
For 802.11b/g ----- lowest, 2412MHz; middle, 2437MHz; highest, 2462MHz.

The test setting software for 802.11b/g is offered by the manufactory.

The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

After this pre-scan, we choose the following table of the data rata as the worst case.
802.11b: 1Mbps; 802.11g: 11Mbps;

Test Peripherals:
PC: HP ProBook 6470b

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2013-10-21	2014-10-20
Test Receiver	ESIB 26	R&S	EC 3045	2013-10-20	2014-10-19
Test Receiver	ESCI 7	R&S	EC4501	2013-12-29	2014-12-28
Spectrum Analyzer	N9010	Agilent	EC4890	2013-10-21	2014-10-20
Spectrum Analyzer	E4446	Agilent	/	2013-10-21	2014-10-20
Power meter	ML 2495A	Anritsu	EC 4895	2013-10-21	2014-10-20
A.M.N.	ESH2-Z5	R&S	EC 3119	2014-1-9	2015-1-8
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2014-5-15	2015-5-14
Horn antenna	HF 906	R&S	EC 3049	2014-5-12	2015-5-11
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2014-4-11	2015-4-10
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2014-4-11	2015-4-10
Log-period antenna	AT 1080	AR	EC 3044-7	2014-5-21	2015-5-20
Biconical antenna	3109PX	ETS	EC3564	2013-8-25	2014-8-24
Semi-anechoic chamber	-	Albatross project	EC 3048	2014-5-20	2015-5-19
Shielded room	-	Zhongyu	EC 2838	2014-1-12	2015-1-9
Shielded room	-	Zhongyu	EC 2839	2014-1-12	2015-1-9
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2014-2-1	2015-1-31
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2014-2-1	2015-1-31
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2014-2-1	2015-1-31
Loop Antenna	9230-1	Schwarzbeck	086814	2013-12-16	2014-12-15

2.2 Test Standard

47CFR Part 15 (2013);
ANSI C63.4 (2009);
KDB 558074 (V03R02);
KDB 662911 (V02R01);
RSS-210 Issue 8 (December 2010);
RSS-Gen Issue 3 (December 2010).

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERENCE	IC REFERENCE	RESULT
Minimum 6dB Bandwidth	15.247(a)(2)	RSS-210 Issue 8 Annex 8	Pass
Maximum peak output power	15.247(b)	RSS-210 Issue 8 Annex 8	Pass
Power spectrum density	15.247(e)	RSS-210 Issue 8 Annex 8	Pass
Radiated emission	15.205 & 15.209	RSS-210 Issue 8 Clause 2	Pass
Emission outside the frequency band	15.247(d)	RSS-210 Issue 8 Annex 8	Pass
Power line conducted emission	15.207	RSS-Gen Issue 3 Clause 7.2.4	Pass

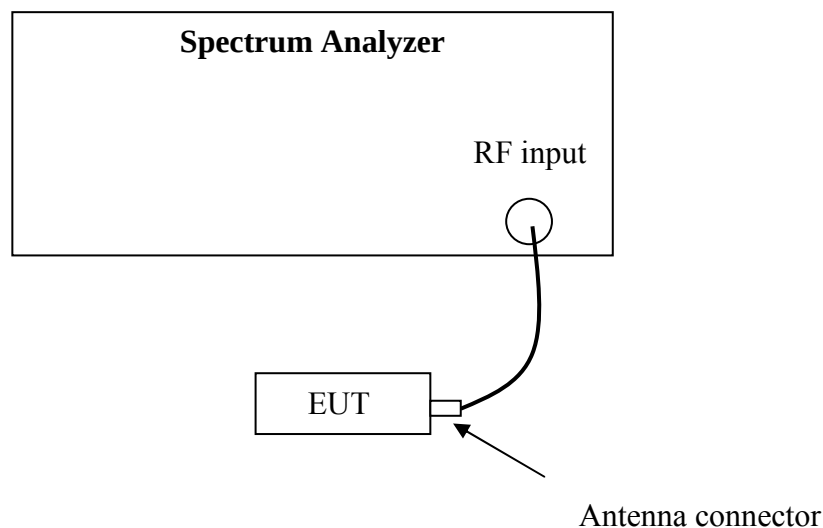
3. Minimum 6dB Bandwidth

Test result: PASS

3.1 Limit

For systems using digital modulation techniques that may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands, the minimum 6 dB bandwidth shall be at least 500 kHz.

3.2 Test Configuration



3.3 Test Procedure and test setup

The minimum 6dB bandwidth per FCC §15.247(a)(2) is measured using the Spectrum Analyzer according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” for compliance to FCC 47CFR 15.247 requirements (clause 8.2).

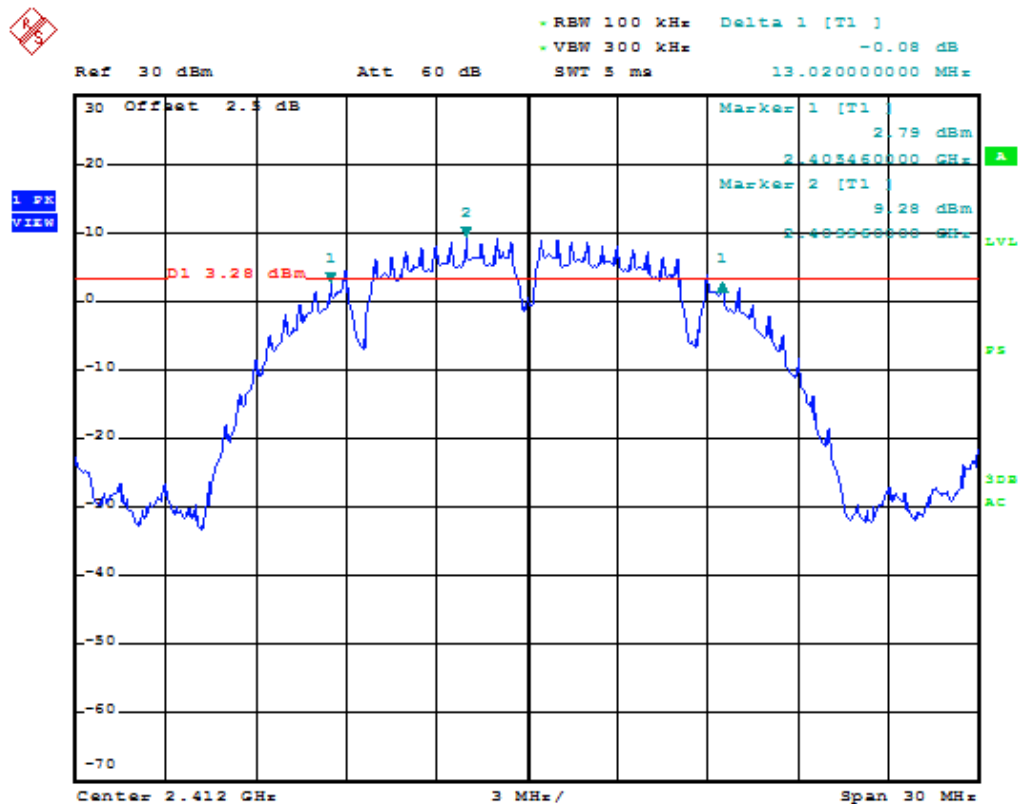
- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) ≥ 3 RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.4 Test Protocol

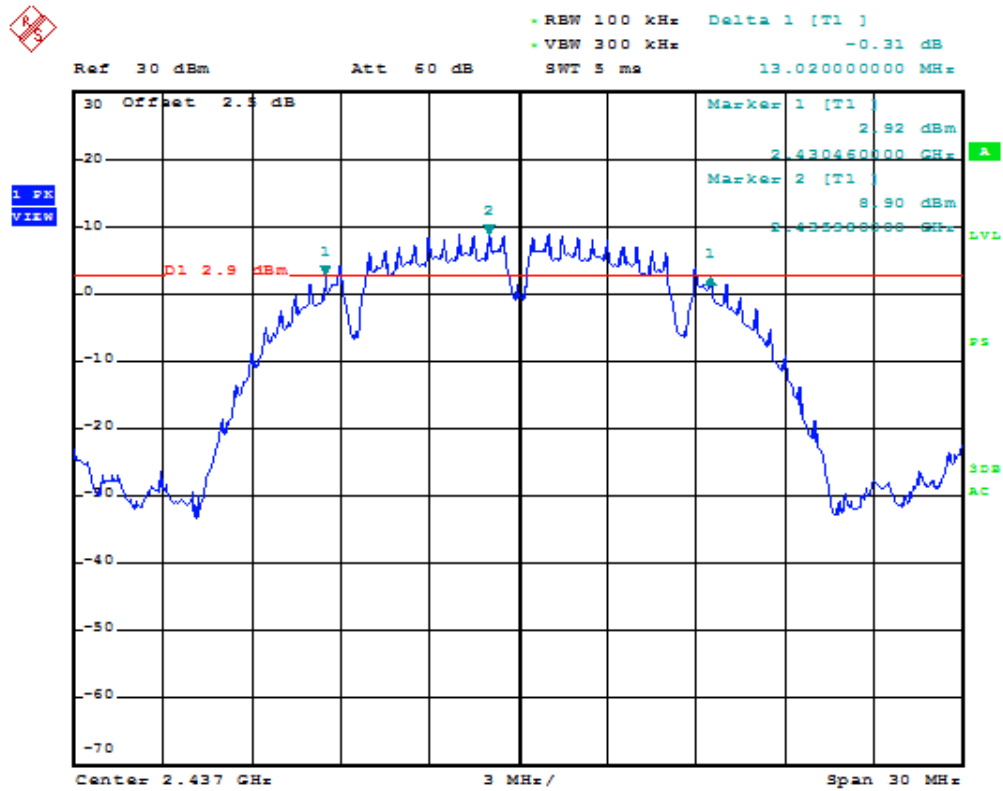
Temperature : 25°C
Relative Humidity : 55 %

Mode	CH	Bandwidth (MHz)	Limit (MHz)
802.11b	L	13.02	≥0.5
	M	13.02	
	H	13.02	

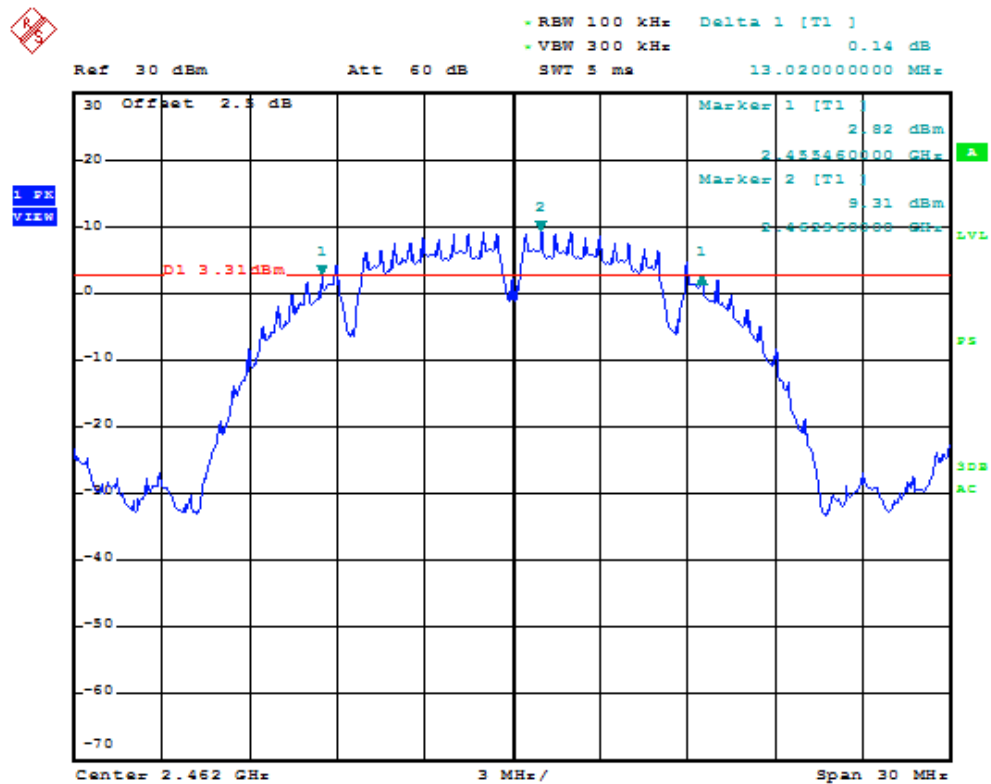
Channel L



Channel M

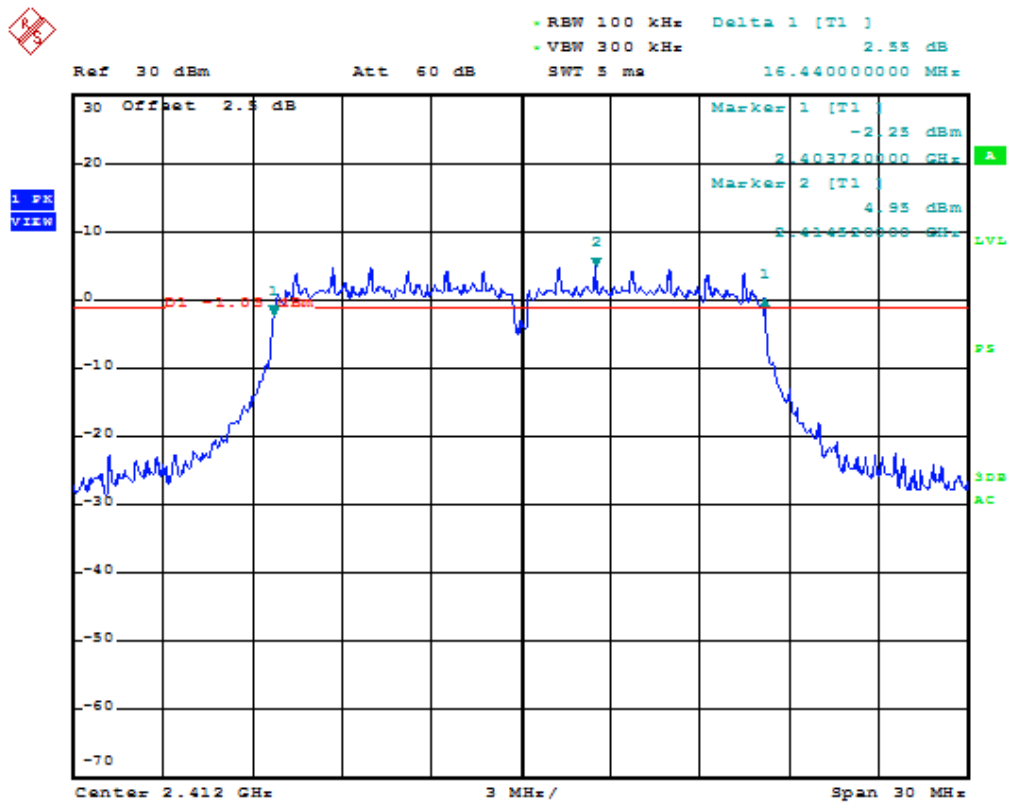


Channel H

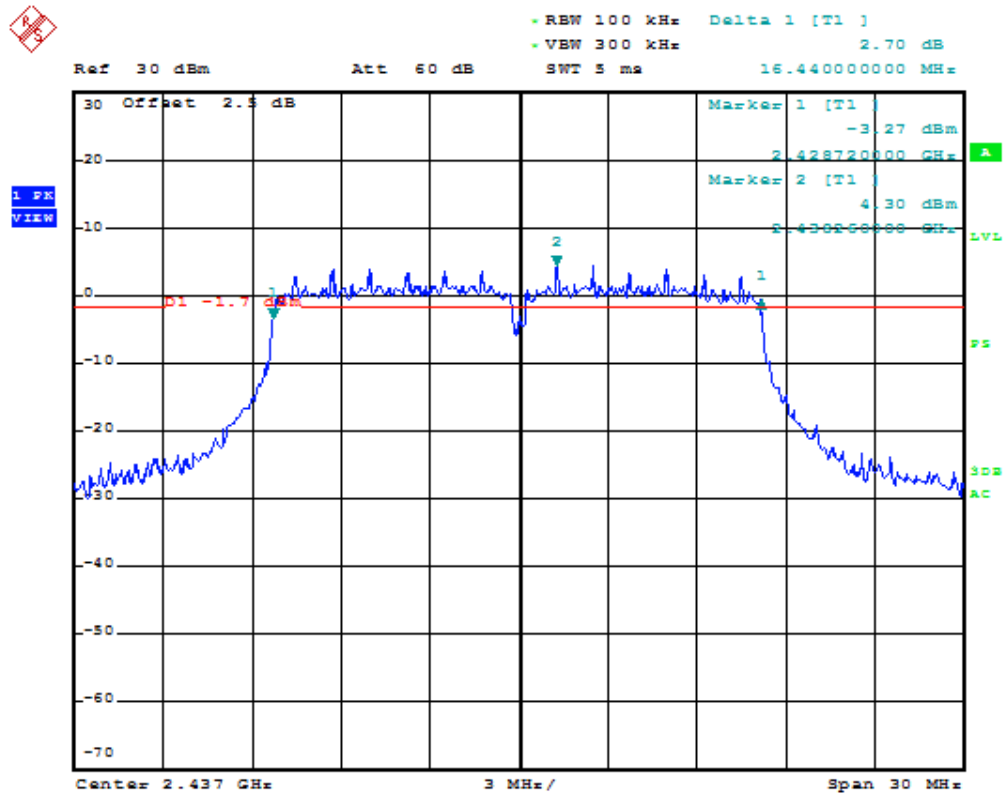


Mode	CH	Bandwidth (MHz)	Limit (MHz)
802.11g	L	16.44	≥ 0.5
	M	16.44	
	H	16.44	

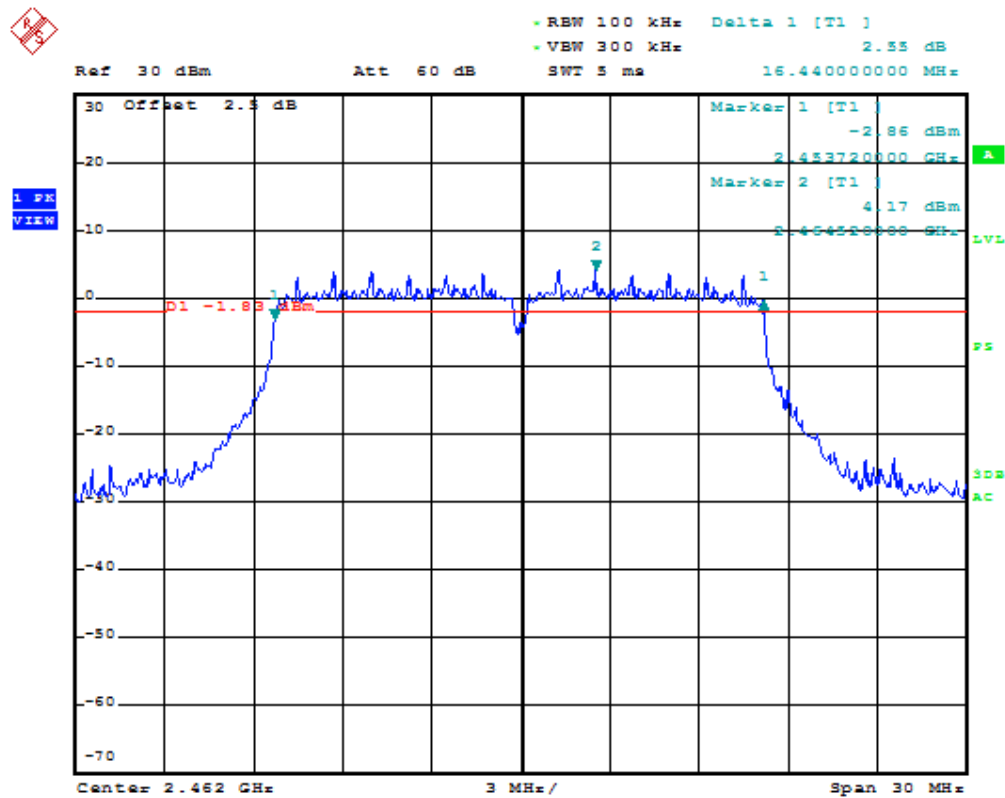
Channel L



Channel M



Channel H



4. Maximum peak output power

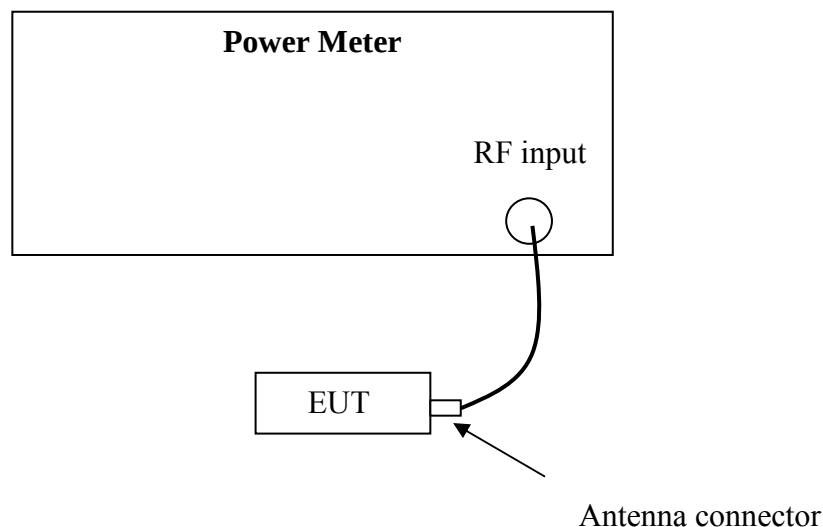
Test result: PASS

4.1 Test limit

- ☐ For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt
- ☐ For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts
- ☒ For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Test Configuration



4.3 Test procedure and test setup

The EUT was tested according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" for compliance to FCC 47CFR 15.247 requirements (clause 9.1.2).

4.4 Test protocol

Temperature : 25°C
Relative Humidity : 55 %

Mode	CH	Conducted Power (dBm)	Limit (dBm)
802.11b	L	20.69	≤30
	M	20.57	
	H	20.66	
802.11g	L	24.91	≤30
	M	24.66	
	H	24.62	

The maximum EIRP of the EUT = 24.91dBm + 4.20dBi = 29.11dBm = 814.70mW which is lower than the EIRP limit of RSS-210.

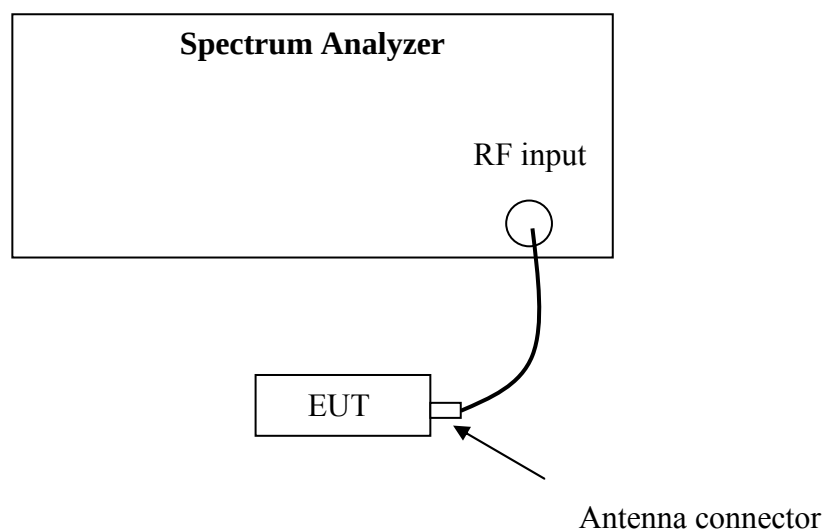
5. Power spectrum density

Test result: PASS

5.1 Test limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 Test Configuration



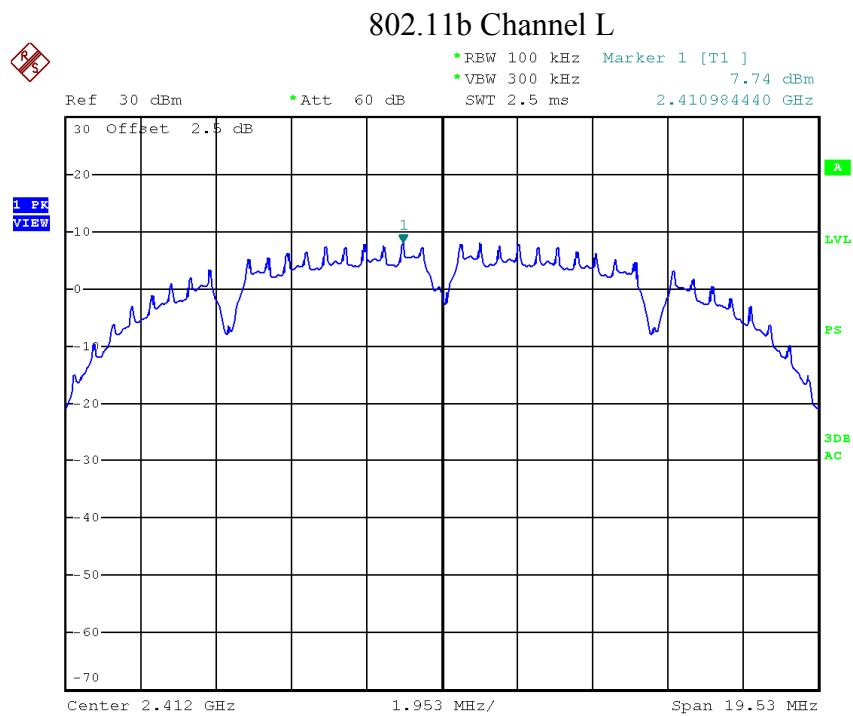
5.3 Test procedure and test setup

The power output per FCC § 15.247(e) was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” (clause 10.2) for compliance to FCC 47CFR 15.247 requirements.

5.4 Test Protocol

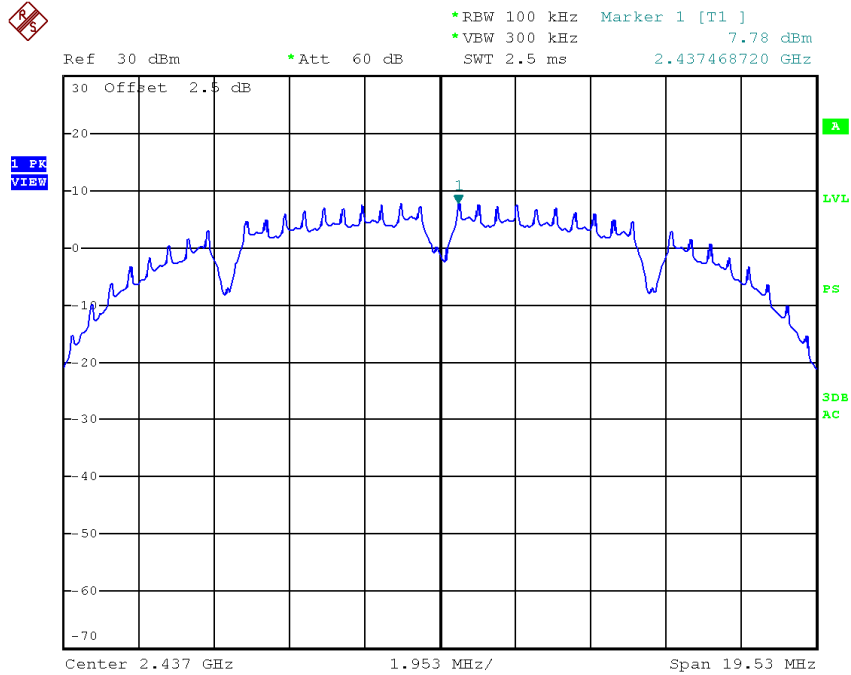
Temperature : 25°C
Relative Humidity : 55 %

Mode	CH	Spectrum Density (dBm/100kHz)	Limit (dBm/3kHz)
802.11b	L	7.74	≤8.00
	M	7.78	
	H	7.73	



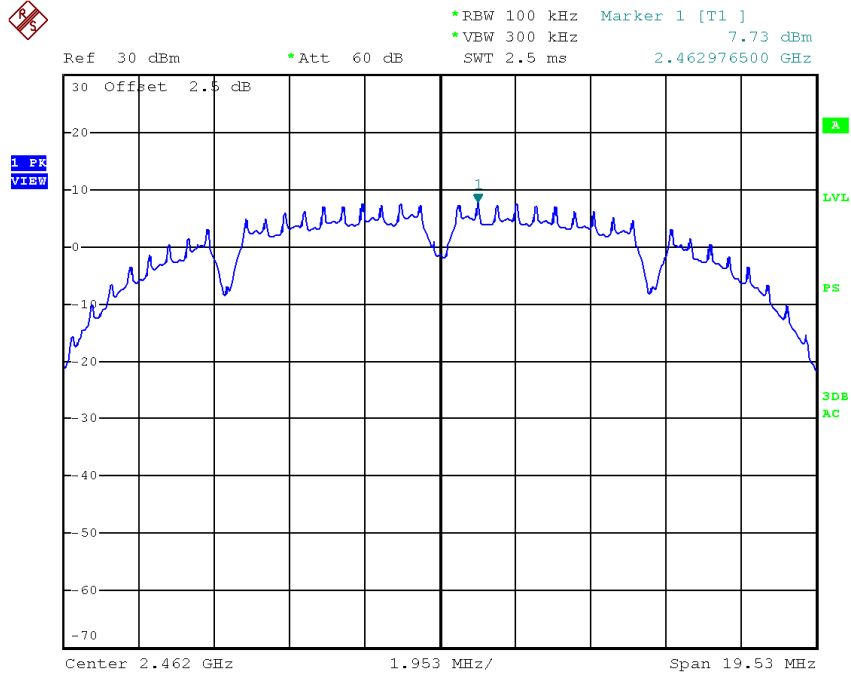
Date: 28.APR.2014 15:10:25

802.11b Channel M



Date: 28.APR.2014 15:12:40

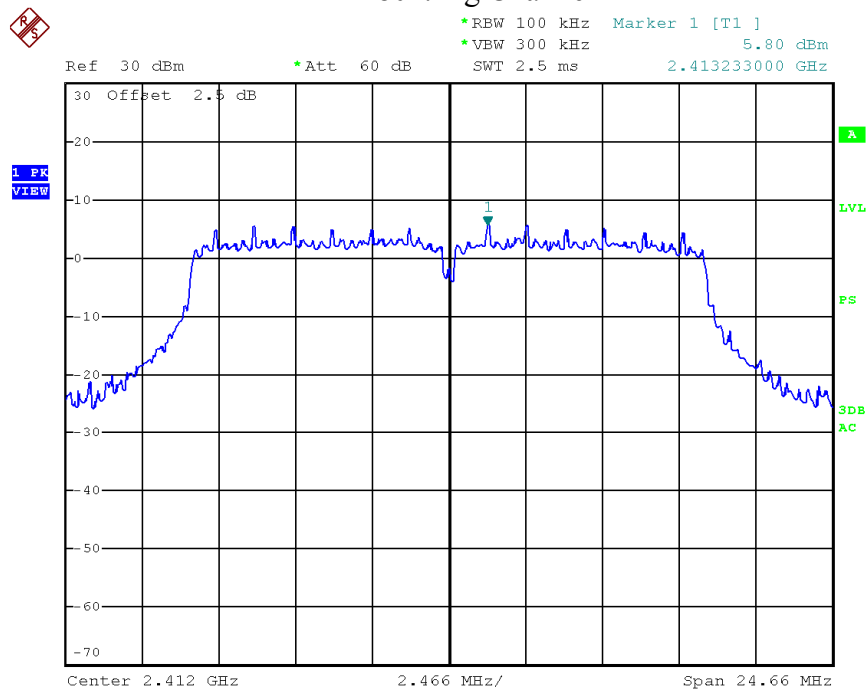
802.11b Channel H



Date: 28.APR.2014 15:14:26

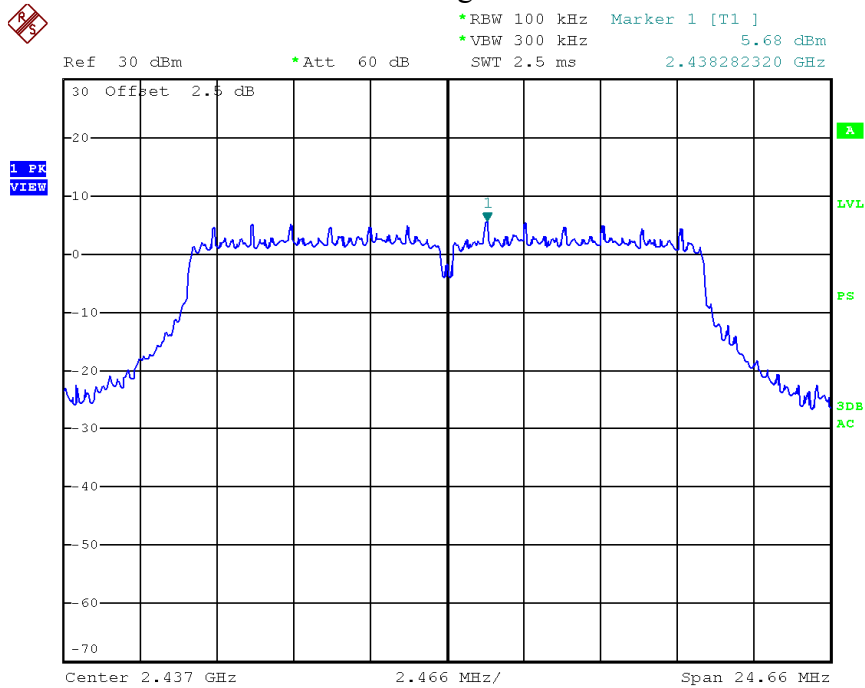
Mode	CH	Spectrum Density (dBm/100kHz)	Limit (dBm/3kHz)
802.11g	L	5.80	≤8.00
	M	5.68	
	H	5.57	

802.11g Channel L



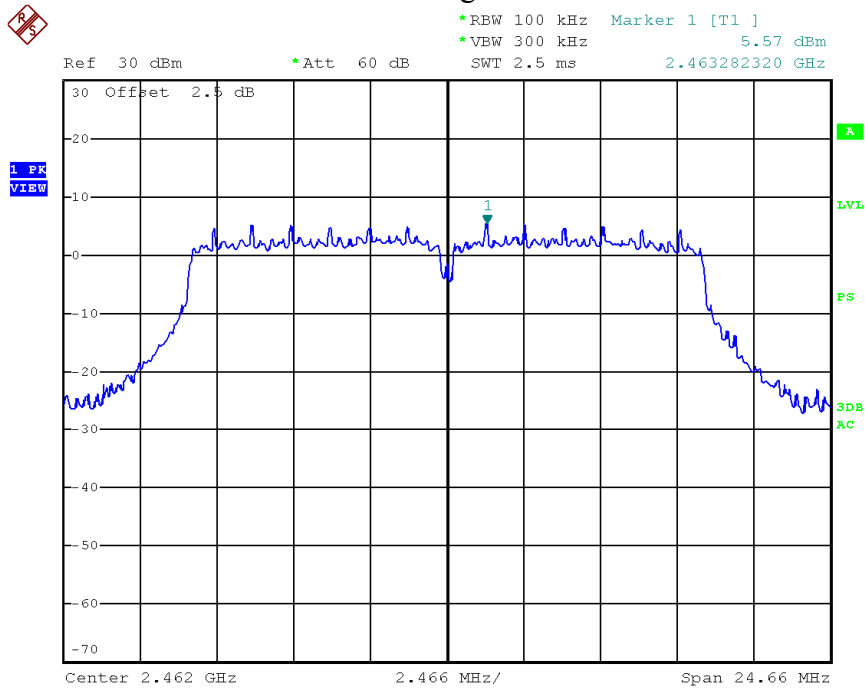
Date: 28.APR.2014 15:17:41

802.11g Channel M



Date: 28.APR.2014 15:19:29

802.11g Channel H



Date: 28.APR.2014 15:21:10

6. Radiated emission

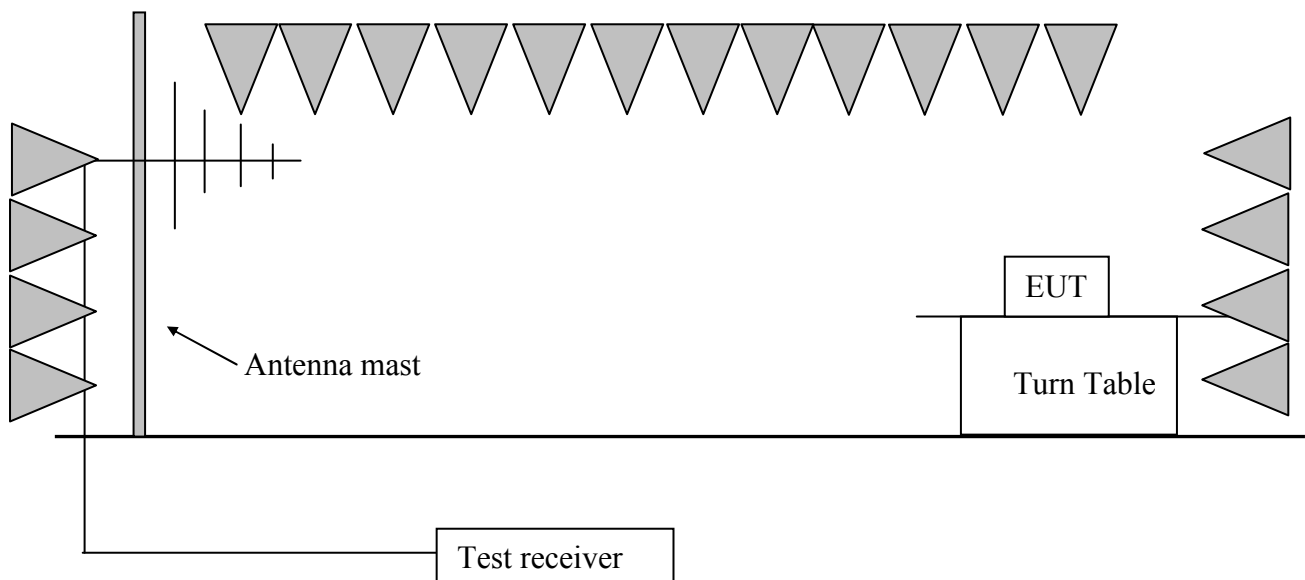
Test result: **PASS**

6.1 Test limit

The 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) showed as below:

Frequency (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

6.2 Test Configuration



6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The EUT was tested according to DTS test procedure of KDB558074 D01 DTS “Meas Guidance v03r02” (clause 12) for compliance to FCC 47CFR 15.247 requirements.

Use the following spectrum analyzer settings:

- (1) Span shall wide enough to fully capture the emission being measured;
- (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
- (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

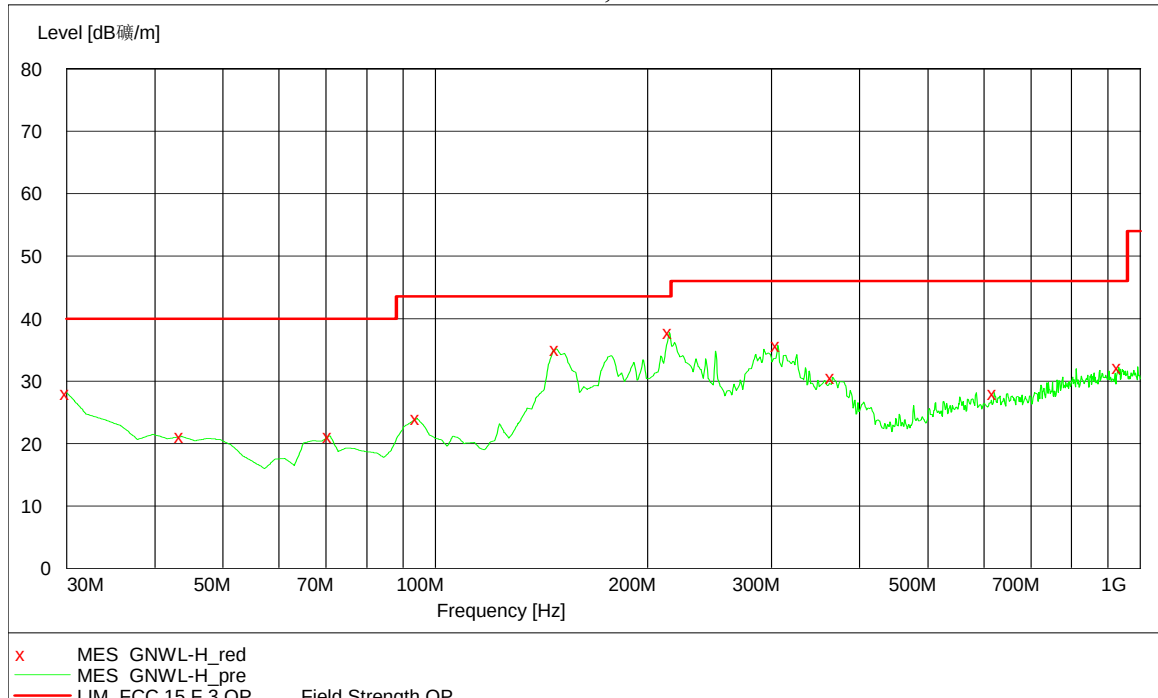
- $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
- $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

6.4 Test protocol

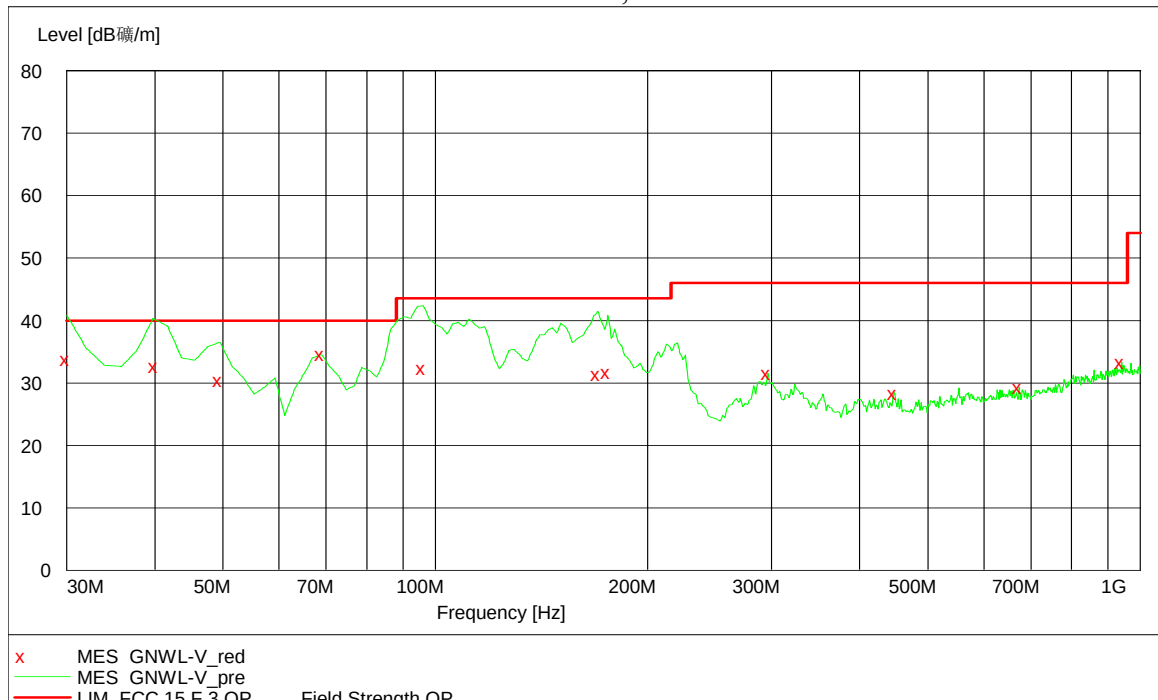
Temperature : 25°C
Relative Humidity : 55 %

Below 1GHz:

30MHz~1GHz, Horizontal



30MHz~1GHz, Vertical



Test data:

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Factor (dB)	Detector
H	30.00	28.10	40.00	11.90	22.00	PK
	148.58	35.10	43.50	8.40	14.50	PK
	214.67	37.80	43.50	5.70	12.20	PK
	306.03	35.70	46.00	10.30	15.60	PK
	366.29	30.60	46.00	15.40	17.40	PK
	931.96	32.20	46.00	13.80	25.30	PK
V	30.00	33.80	40.00	6.20	22.00	QP
	40.00	32.80	40.00	7.20	17.90	QP
	49.44	30.50	40.00	9.50	11.30	QP
	68.88	34.60	40.00	5.40	8.70	PK
	96.09	32.40	43.50	11.10	13.60	QP
	941.68	33.30	46.00	12.70	25.30	PK

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Above 1GHz:
802.11b:

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	63.20	74	-7.80	100	190	10.80	PK
		45.30	54	-7.80	100	190	8.70	AV
	2412	109.50	-	-7.80	100	190	-	PK
		103.10	-	-7.80	100	190	-	AV
	4824	47.40	74	-2.10	100	190	26.60	PK
		36.60	54	-2.10	100	190	17.40	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	107.20	-	-7.80	100	190	-	PK
		102.30	-	-7.80	100	190	-	AV
	4874	47.70	74	-2.10	100	190	26.30	PK
		37.40	54	-2.10	100	190	16.60	AV
	7311	49.50	74	6.50	100	190	24.50	PK
		40.50	54	6.50	100	190	13.50	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	108.90	-	-7.80	100	190	-	PK
		102.00	-	-7.80	100	190	-	AV
	2483.5	62.50	74	-7.50	100	190	11.50	PK
		49.80	54	-7.50	100	190	14.20	AV
	4924	47.90	74	-2.10	100	190	26.10	PK
		38.60	54	-2.10	100	190	15.40	AV
	7386	50.60	74	6.50	100	190	23.40	PK
		40.90	54	6.50	100	190	13.10	AV
Note:	2462MHz is fundamental signal.							

802.11g:

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	65.60	74	-7.80	100	190	8.40	PK
		47.80	54	-7.80	100	190	6.20	AV
	2412	106.20	-	-7.80	100	190	-	PK
		101.70	-	-7.80	100	190	-	AV
	4824	46.20	74	-2.10	100	190	27.80	PK
		39.40	54	-2.10	100	190	14.60	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	105.80	-	-7.80	100	190	-	PK
		99.70	-	-7.80	100	190	-	AV
	4874	48.60	74	-2.10	100	190	25.40	PK
		39.70	54	-2.10	100	190	14.30	AV
	7311	48.20	74	6.50	100	190	25.80	PK
		41.40	54	6.50	100	190	12.60	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	108.60	-	-7.80	100	190	-	PK
		102.30	-	-7.80	100	190	-	AV
	2483.5	67.80	74	-7.50	100	190	6.20	PK
		46.50	54	-7.50	100	190	7.50	AV
	4924	48.10	74	-2.10	100	190	25.90	PK
		39.70	54	-2.10	100	190	14.30	AV
	7386	45.30	74	6.50	100	190	28.70	PK
		38.40	54	6.50	100	190	15.60	AV
Note:	2462MHz is fundamental signal.							

Remark:

1. Factor = Antenna Factor + Cable Loss (-Amplifier, is employed);
2. Measured level = Original Receiver Reading + Correct Factor;
3. Margin = limit – Measured level;
4. If the PK reading is lower than AV limit, the AV testing is omitted.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV,
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m,
Measured level = 10dBuV + 0.20dB/m = 10.20dBuV/m,
Assuming limit = 54dBuV/m, Measured level = 10.20dBuV/m,
Then Margin = 54 - 10.20 = 43.80dBuV/m.

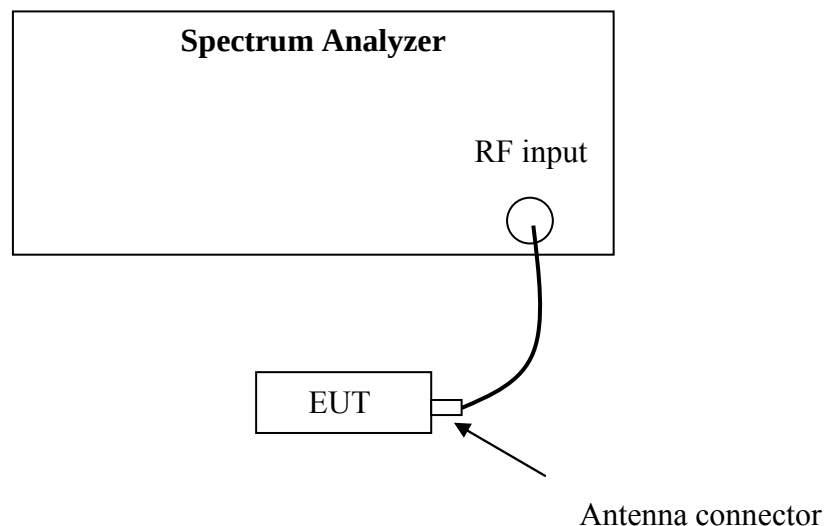
7. Emission outside the frequency Band

Test result: PASS

7.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

7.2 Test Configuration



7.3 Test procedure and test setup

The Emission outside the frequency Band per FCC § 15.247(d) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set at 300kHz, and the SPAN>>RBW.

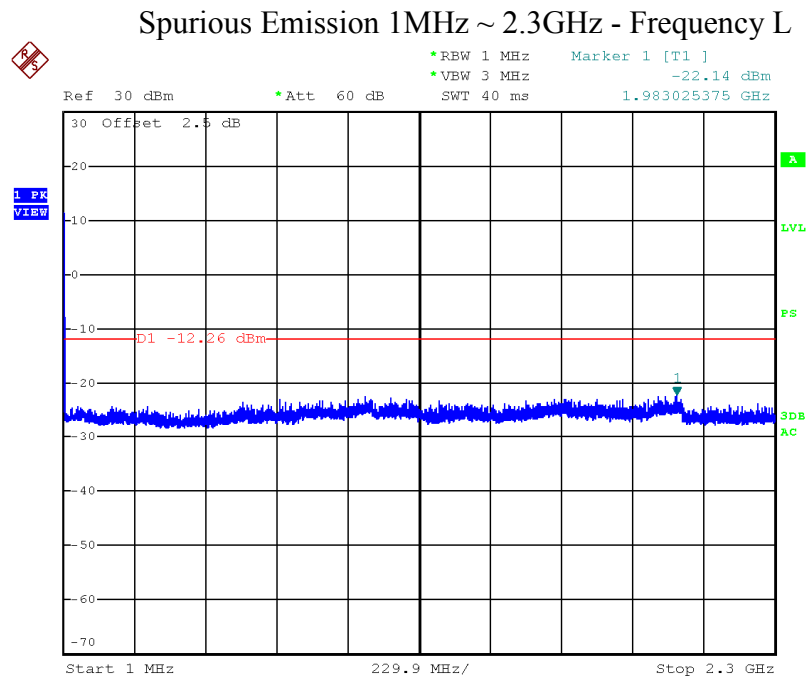
The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

7.4 Test protocol

Temperature : 25°C
Relative Humidity : 55 %

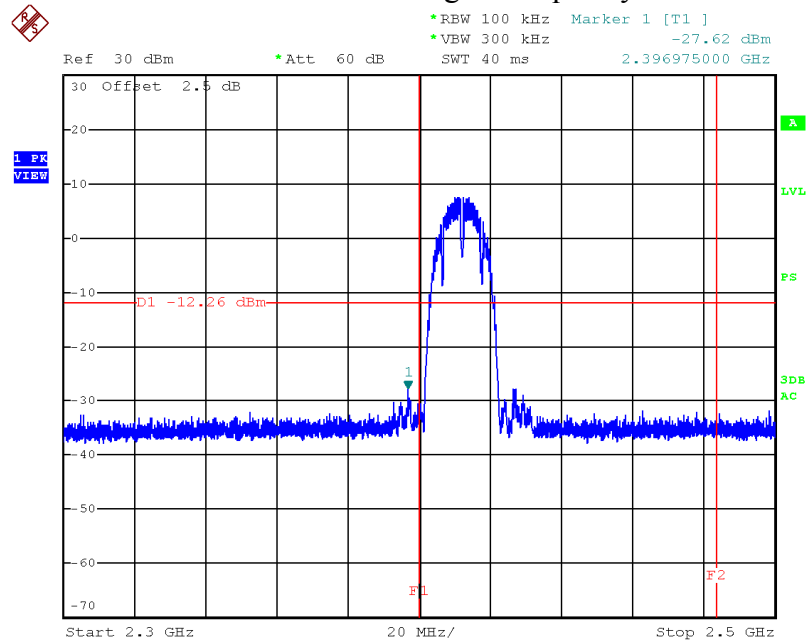
802.11b Out-of-Band Emissions:

Mode	CH	Result	Limit (dB)
802.11b	L	Pass	≥20
	M	Pass	
	H	Pass	



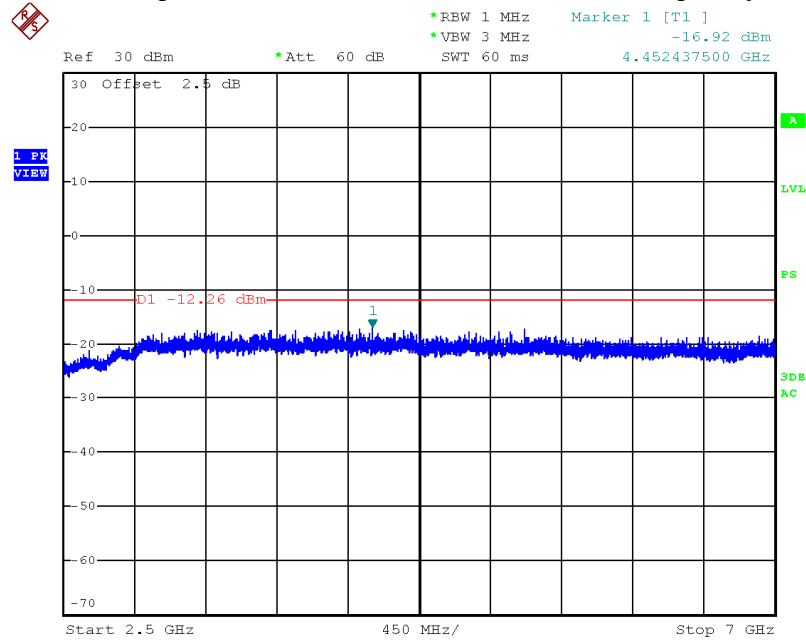
Date: 28.APR.2014 16:38:12

Low Band Edge - Frequency L

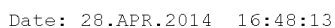
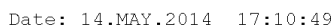


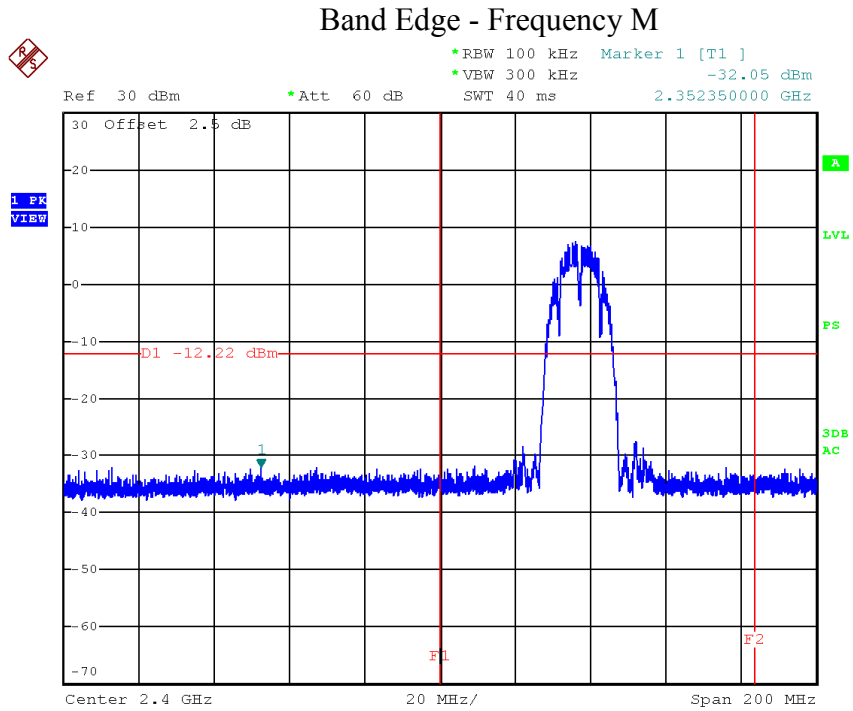
Date: 28.APR.2014 15:48:03

Spurious Emission 2.5GHz ~ 7GHz - Frequency L

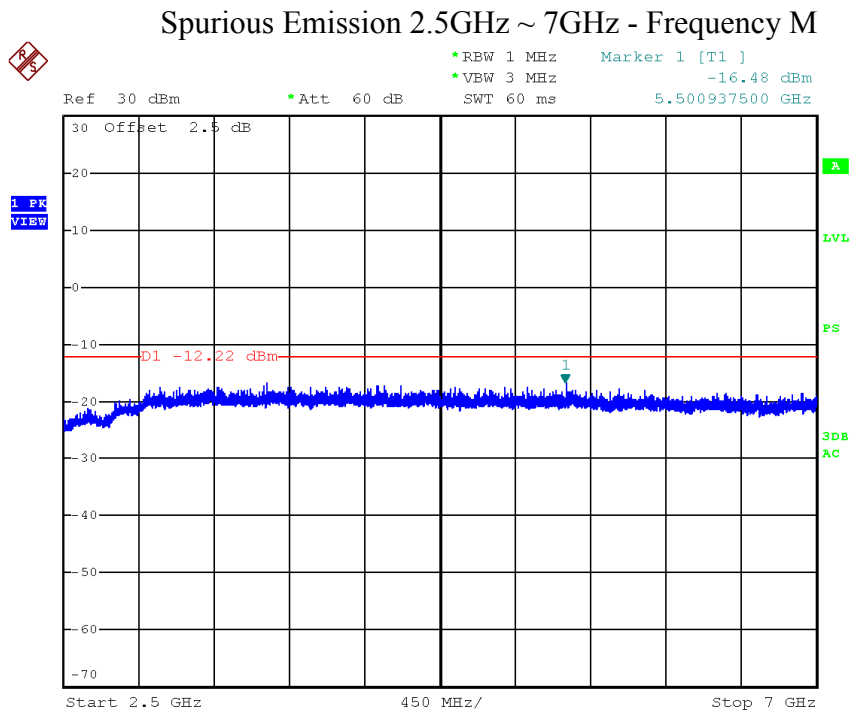


Date: 28.APR.2014 16:39:26



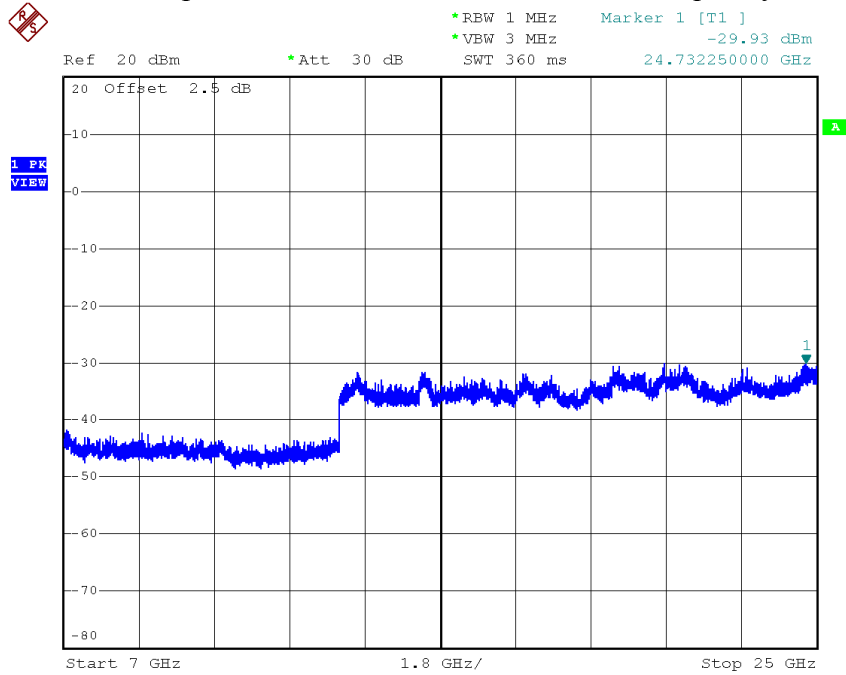


Date: 28.APR.2014 16:01:28



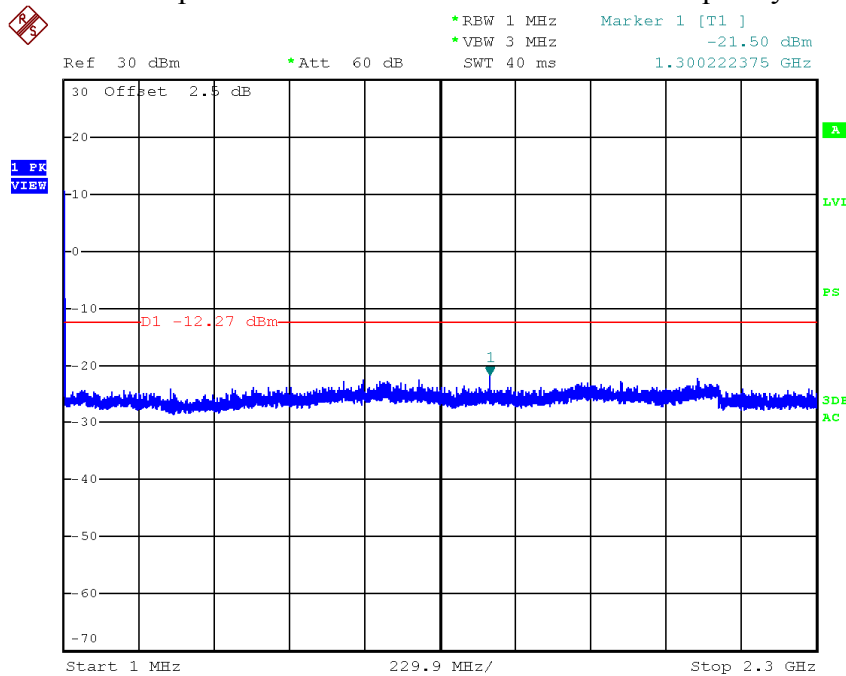
Date: 28.APR.2014 16:41:36

Spurious Emission 7GHz ~ 25GHz - Frequency M



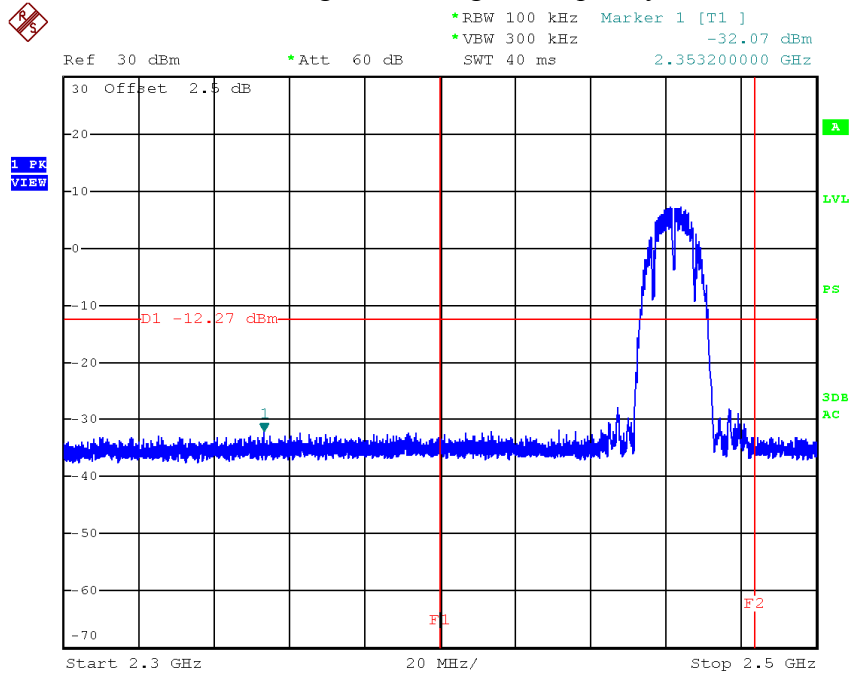
Date: 14.MAY.2014 17:12:14

Spurious Emission 1MHz ~ 2.3GHz - Frequency H



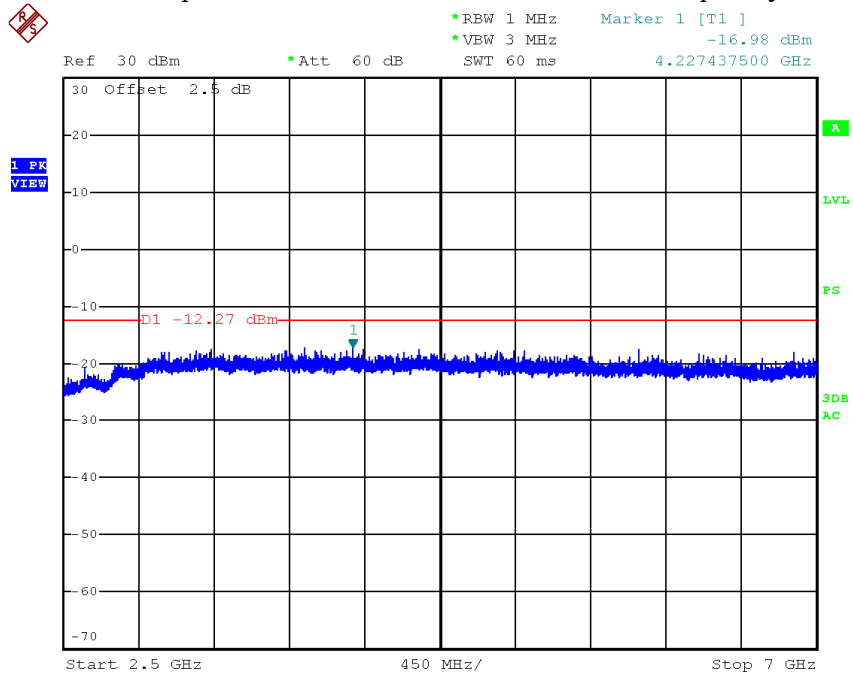
Date: 28.APR.2014 16:37:14

High Band Edge - Frequency H

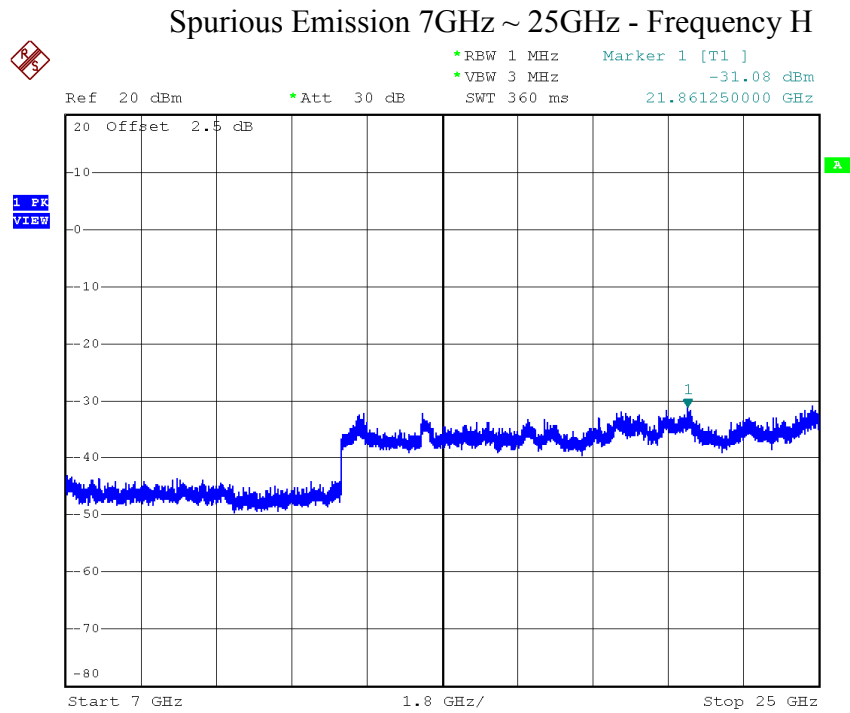


Date: 28.APR.2014 16:17:19

Spurious Emission 2.5GHz ~ 7GHz - Frequency H



Date: 28.APR.2014 16:36:13

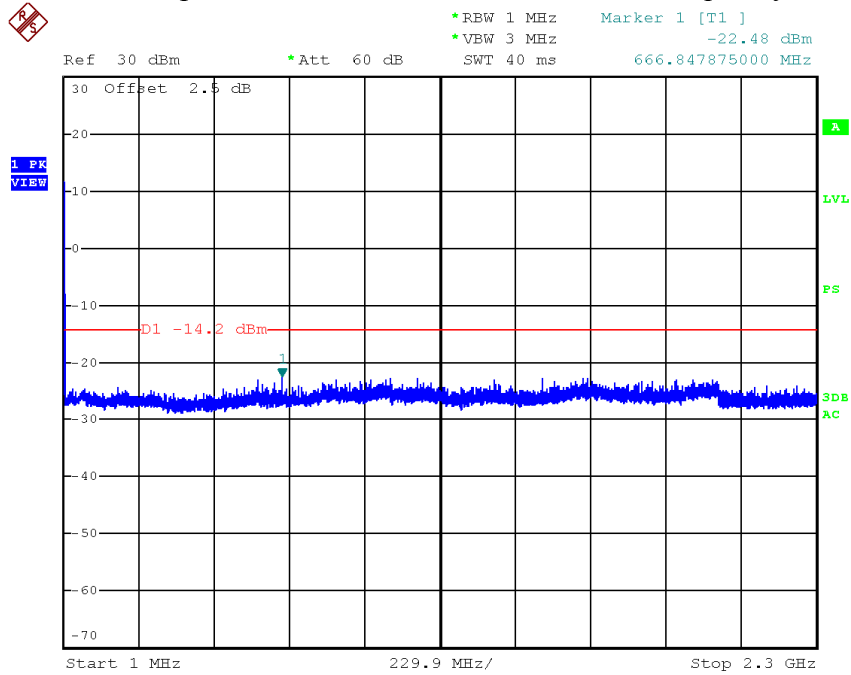


Date: 14.MAY.2014 17:16:30

802.11g Out-of-Band Emissions:

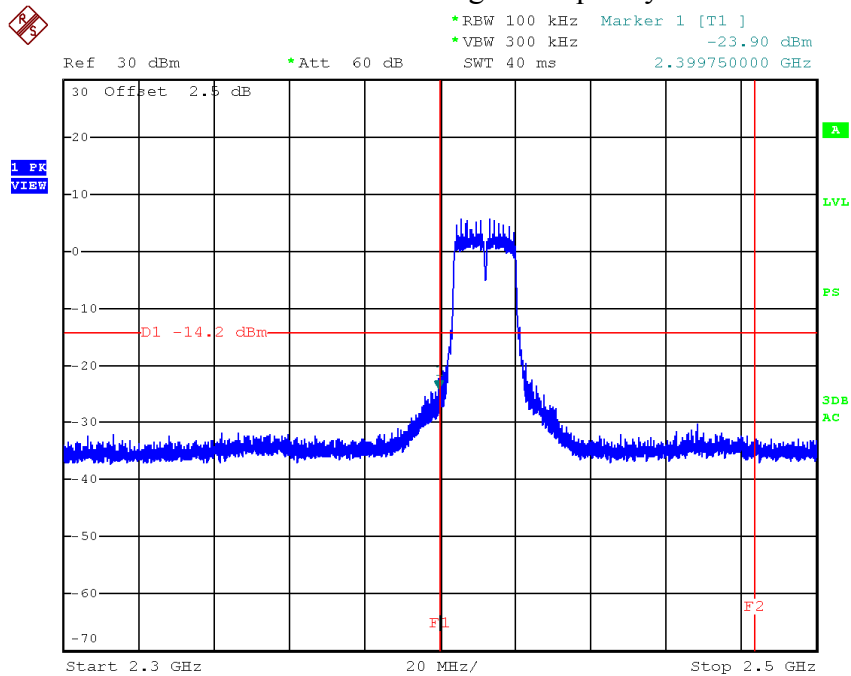
Mode	CH	Result	Limit (dB)
802.11g	L	Pass	≥ 20
	M	Pass	
	H	Pass	

Spurious Emission 1MHz ~ 2.3GHz - Frequency L



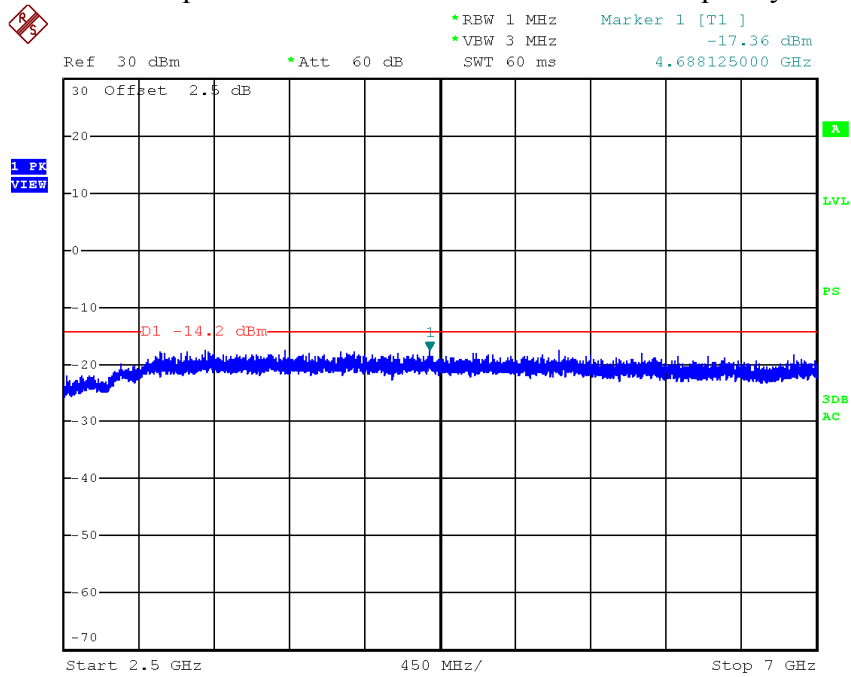
Date: 28.APR.2014 16:52:48

Low Band Edge - Frequency L



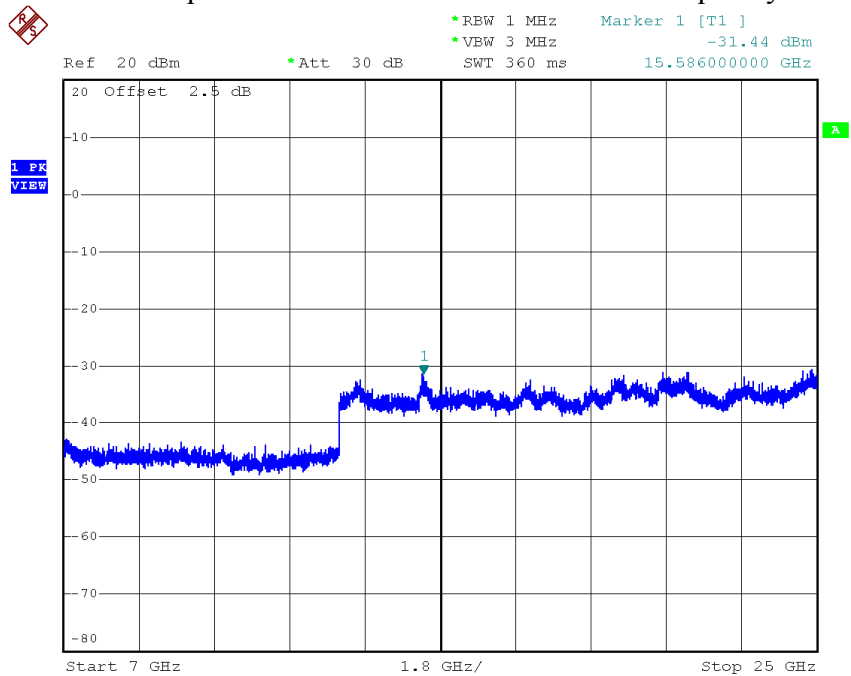
Date: 28.APR.2014 16:54:21

Spurious Emission 2.5GHz ~ 7GHz - Frequency L



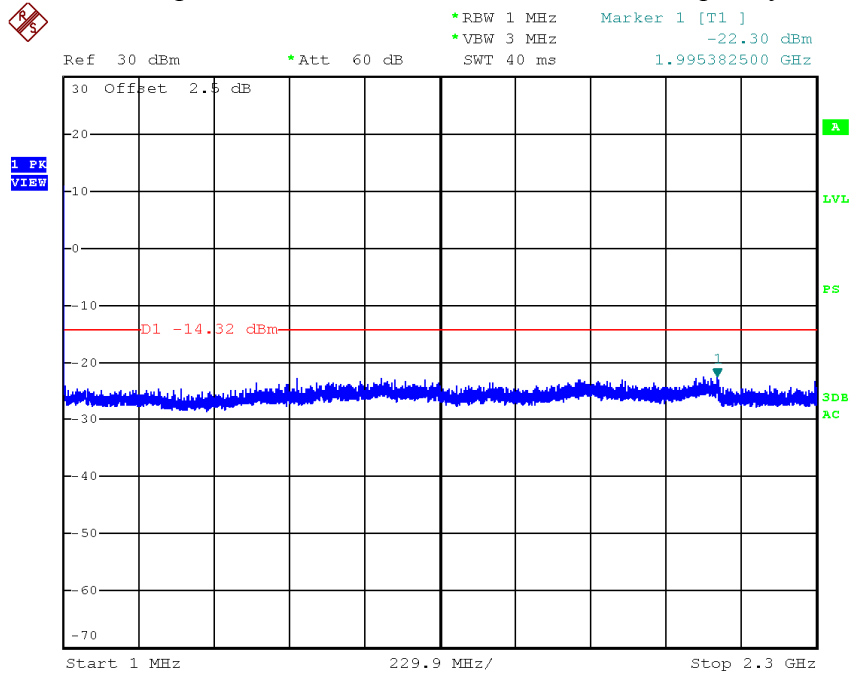
Date: 28.APR.2014 16:57:47

Spurious Emission 7GHz ~ 25GHz - Frequency L



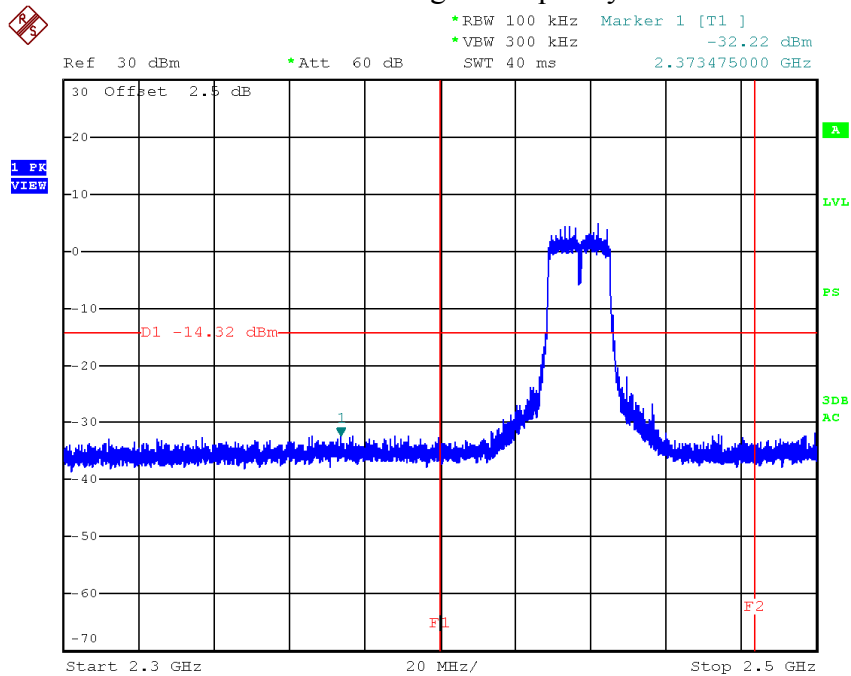
Date: 14.MAY.2014 17:14:32

Spurious Emission 1MHz ~ 2.3GHz - Frequency M



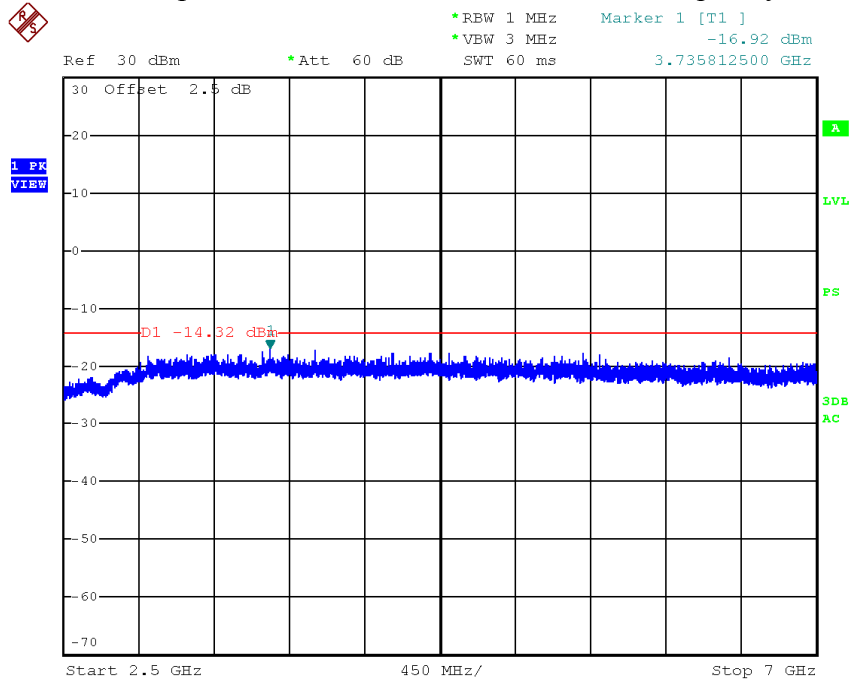
Date: 28.APR.2014 16:59:46

Band Edge - Frequency M



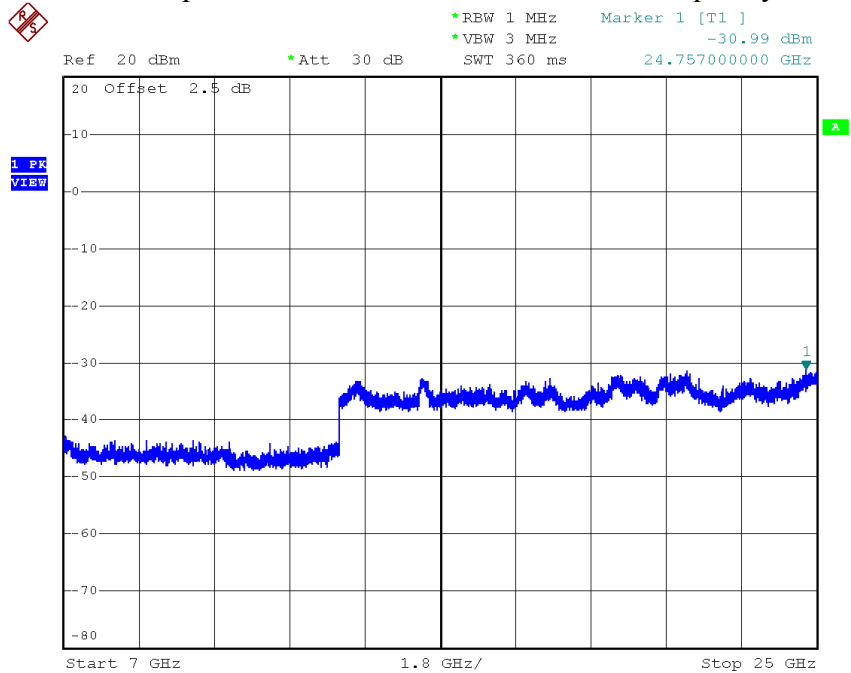
Date: 28.APR.2014 17:00:54

Spurious Emission 2.5GHz ~ 7GHz - Frequency M



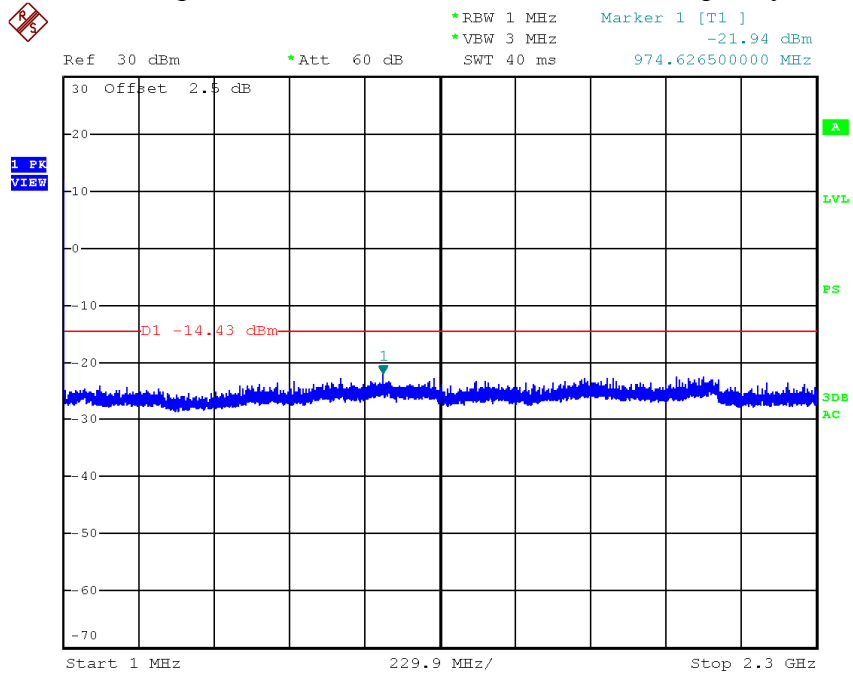
Date: 28.APR.2014 16:58:57

Spurious Emission 7GHz ~ 25GHz - Frequency M



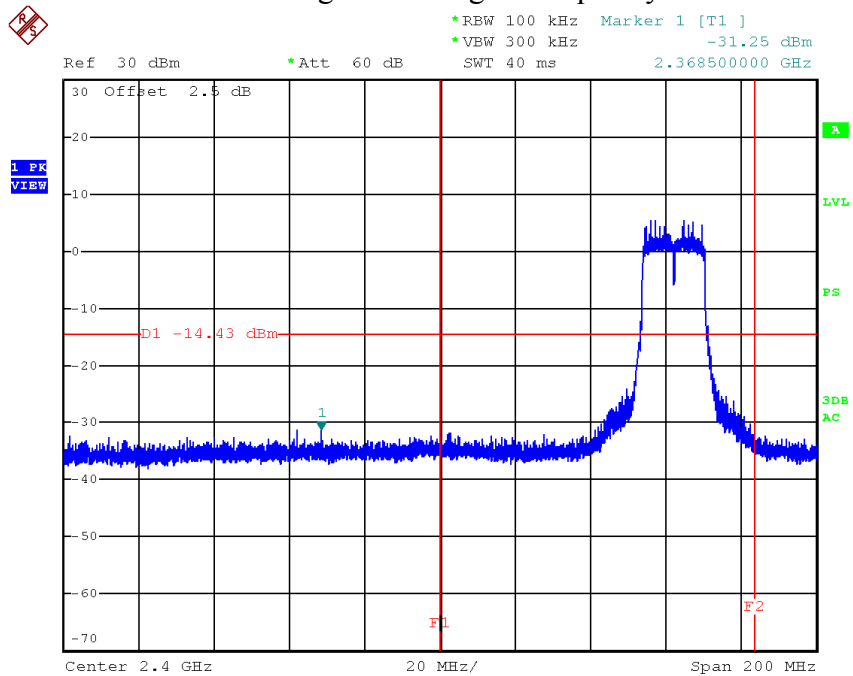
Date: 14.MAY.2014 17:14:56

Spurious Emission 1MHz ~ 2.3GHz - Frequency H



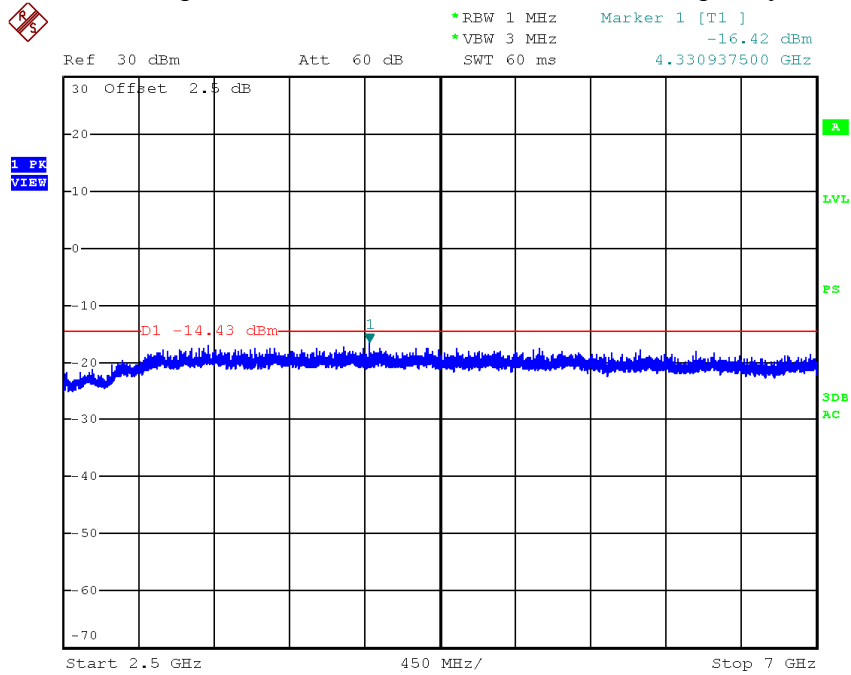
Date: 28.APR.2014 17:09:54

High Band Edge - Frequency H



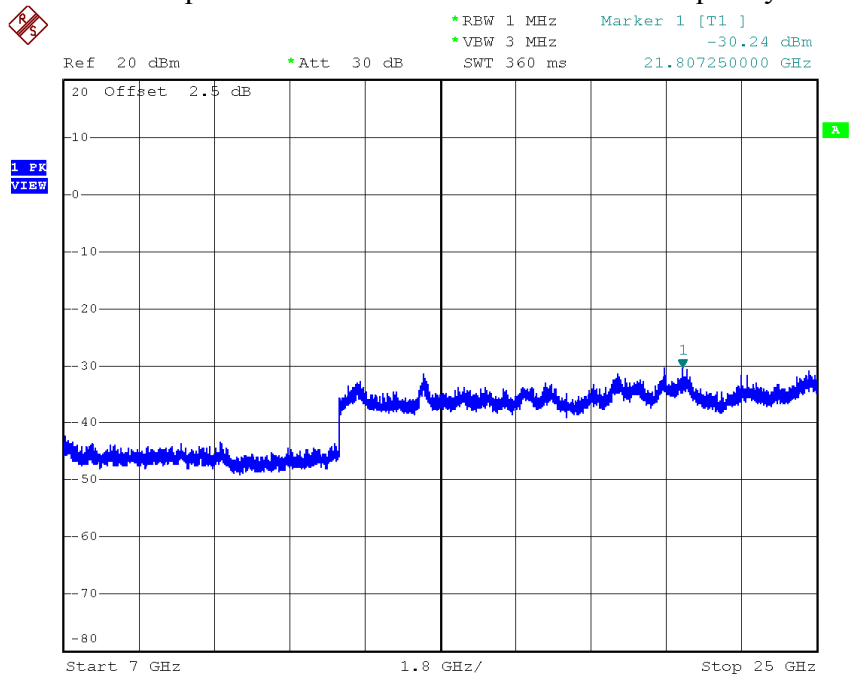
Date: 28.APR.2014 17:11:51

Spurious Emission 2.5GHz ~ 7GHz - Frequency H



Date: 28.APR.2014 17:41:03

Spurious Emission 7GHz ~ 25GHz - Frequency H



Date: 14.MAY.2014 17:16:58

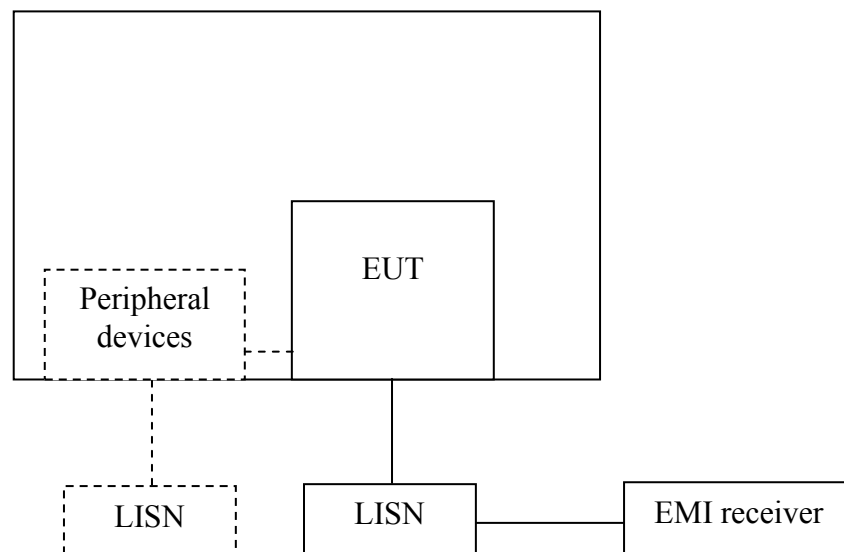
8. Power line conducted emission

Test result: PASS

8.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

8.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

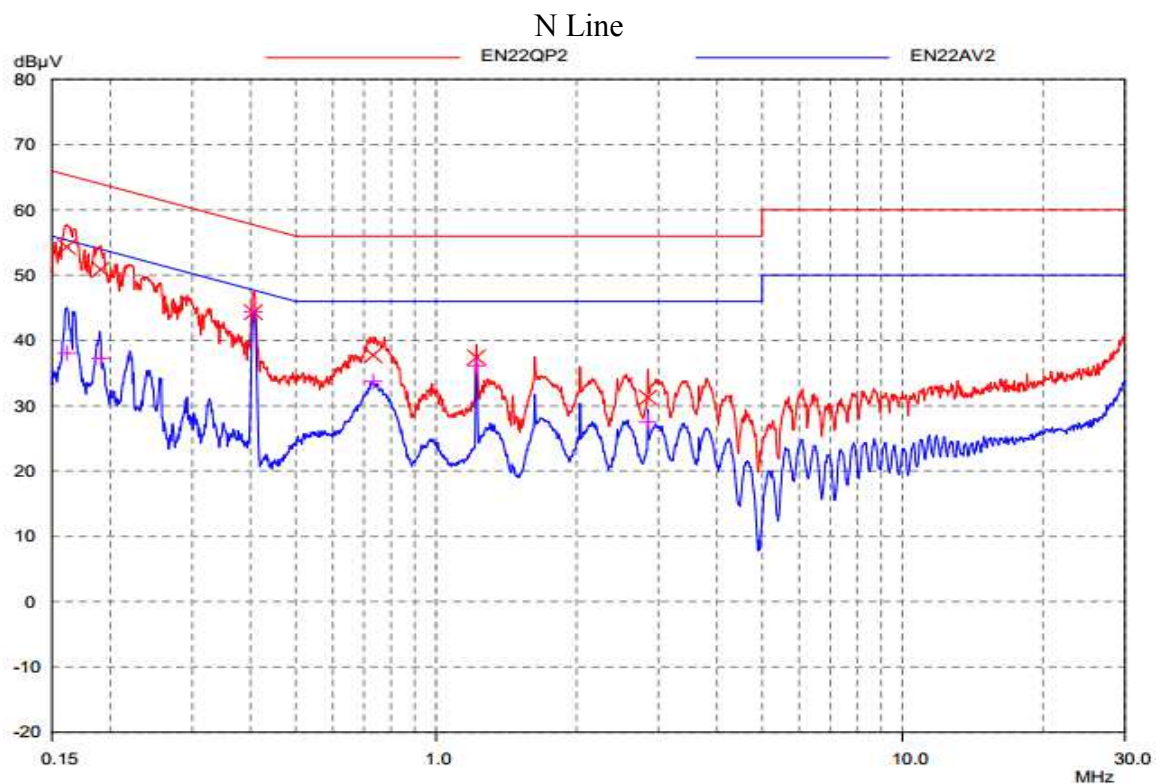
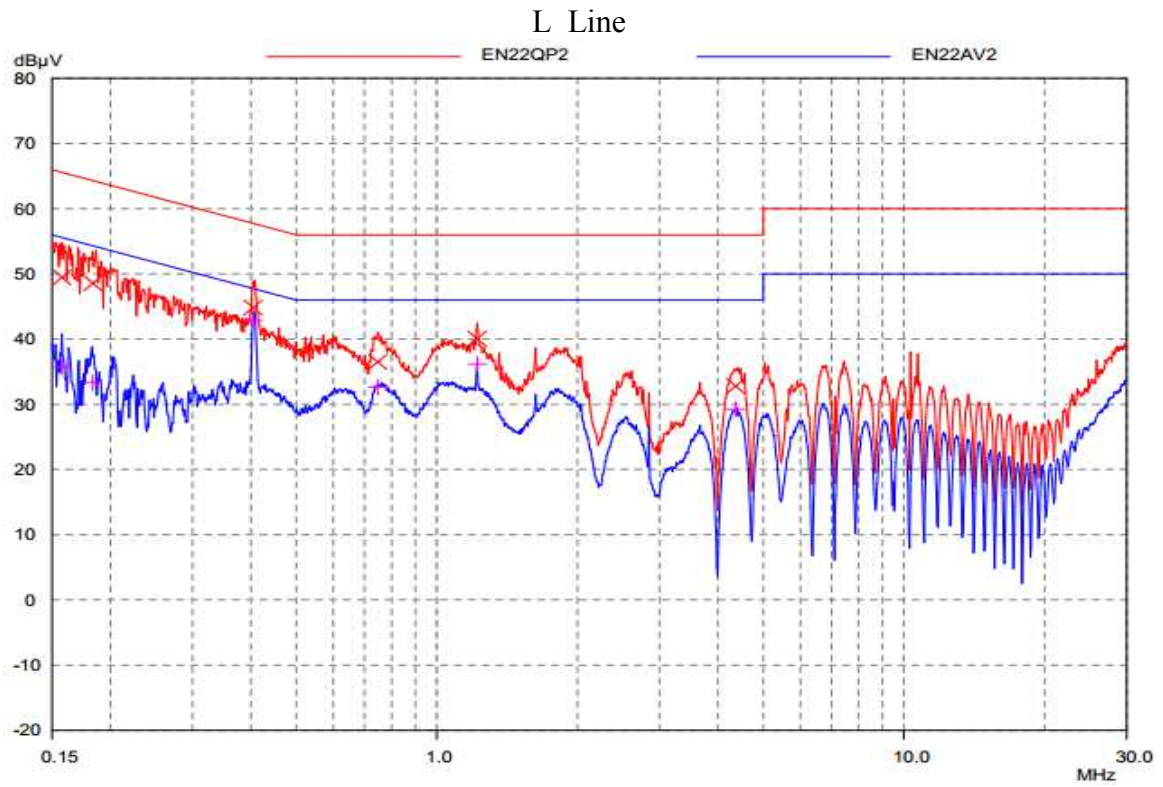
8.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a $50\Omega/50\mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\Omega/50\mu\text{H}$ coupling impedance with 50Ω termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement. The bandwidth of the test receiver is set at 9 kHz.

8.4 Test protocol

Temperature : 25°C
Relative Humidity : 55 %



Test data:

Line	Frequency	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
L	0.157	49.48	35.78	65.60	55.60	16.12	19.82
	0.183	48.58	33.37	64.34	54.34	15.76	20.97
	0.404	44.85	42.86	57.78	47.78	12.93	4.92
	0.747	36.52	32.63	56.00	46.00	19.48	13.37
	1.220	40.03	36.18	56.00	46.00	15.97	9.82
	4.359	32.79	29.26	56.00	46.00	23.21	16.74
N	0.161	54.33	38.07	65.40	55.40	11.07	17.33
	0.191	50.87	37.30	64.01	54.01	13.14	16.71
	0.405	44.33	44.40	57.74	47.74	13.41	3.34
	0.732	37.74	33.74	56.00	46.00	18.26	12.26
	1.220	37.43	36.14	56.00	46.00	18.57	9.86
	2.843	31.28	27.51	56.00	46.00	24.72	18.49

Remark: Margin (dB) = Limit - Corrected Reading.