



TEST REPORT

ETSI EN 300 328 V1.7.1: 2006-10

Report Reference No......: **TRE1303013503 R/C: 59940**

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Date of issue.....: May 22, 2013

Testing Laboratory Name: **Shenzhen Huatongwei International Inspection Co., Ltd**

Address.....: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name.....: **RICON TECHNOLOGIES FZE**

Address.....: Ras Al Khaimah,UAE P.O. Box 16111

Test specification:

Standard: **ETSI EN 300 328 V1.7.1: 2006-10**

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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Test item description : Cellular Router

Trade Mark: **RICON**

Model/Type reference.....: S9922

Listed Models: /

Modulation Type.....: CCK,OFDM

Manufacturer.....: **RICON TECHNOLOGIES FZE**

Operation Frequency.....: From 2412MHz to 2472MHz

Result.....: **Positive**

TEST REPORT

Test Report No. : TRE1303013503	May 22, 2013 Date of issue
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Equipment under Test : Cellular Router

Model /Type : S9922

Listed Models : /

Applicant : **RICON TECHNOLOGIES FZE**

Address : Ras Al Khaimah,UAE P.O. Box 16111

Manufacturer : **RICON TECHNOLOGIES FZE**

Address : Ras Al Khaimah,UAE P.O. Box 16111

Test Result according to the standards on page 4:	Positive
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[ETSI EN 300 328 V1.7.1\(2006-10\)](#) – Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Mar 26, 2013
Testing commenced on	:	Mar 26, 2013
Testing concluded on	:	May 22, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 12V from AC Adapter

Adapter:

Model: KW300-120E20
 Input: 100-240V ~ 50/60Hz 0.8A
 Output: +12V DC 2.0A
 Power Cable: 120cm
 Shielded Unshielded

Description of the test mode

IEEE 802.11b/g/n: Thirteen channels are provided to the EUT.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

2.3. Short description of the Equipment under Test (EUT)

The EUT (Cellular Router (M/N:S9922)) equipped with a 2.4G wifi module. By it the EUT can transmit data to upper computer for analysis of the necessary.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

○ Power Cable	Length (m) : /
	Shield : /
	Detachable : /
○ Multimeter	Manufacturer : /
	Model No. : /

2.6. Modifications

No modifications were implemented to meet testing criteria.

2.7. NOTE

- The EUT is an 802.11b/g/n Cellular Router ,The functions of the EUT listed as below:

	Test Standards	Reference Report
Radio-WCDMA	ETSI EN 301 908-1 V5.2.1: 2011-05 ETSI EN 301 908-2 V4.2.1: 2010-03	TRE1303013501
Radio-GSM	ETSI EN 301 511 V9.0.2: 2003-03	TRE1303013502
Radio-WLAN	ETSI EN 300 328 V1.7.1: 2006-10	TRE1303013503
EMC-GSM	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-7 V1.3.1: 2005-11	TRE1303013504
EMC-WCDMA	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-24 V1.5.1: 2010-10	TRE1303013505
EMC-WLAN	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-17 V2.2.1: 2012-09	TRE1303013506
EMC	EN 55022:2010 EN 55024:2010	TRE1303013507
EMF	EN62311:2008	TRE1303013508

- The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—
802.11n(40MHz)	√	—	—	—

- The EUT incorporates a SISO function, Physically, the EUT provides one transmitter and one receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

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

3.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 30, 2009. Valid time is until Feb 28, 2015.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept. 30, 2013.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the authorization is valid through July 07, 2013

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2010. Valid time is until May 06, 2013.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2013.

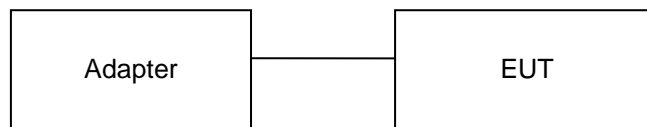
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
HuPocket Projector ity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Test Description

ETSI EN 300 328 requirements		
Maximum transmit power	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.1	PASS
Maximum e.i.r.p. spectral density	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.2	PASS
Frequency range	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.3	PASS
Medium sccess protocol	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.5	PASS
Transmitter spurious emissions	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.6	PASS
Receiver spurious emissions	ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.7	PASS

Remark: The measurement uncertainty is not included in the test result.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum transmit power	11b/CCK	1 Mbps	1/7/13
	11g/OFDM	6 Mbps	1/7/13
Maximum e.i.r.p. spectral density	11n(20MHz)/OFDM	6.5 Mbps	1/7/13
	11n(40MHz)/OFDM	13.5 Mbps	3/7/11
Transmitter spurious emissions(30-1000MHz)	11b/CCK	1 Mbps	1/7/13
Transmitter spurious emissions(1-12.75GHz)	11g/OFDM	6 Mbps	1/7/13
Receiver spurious emissions (30-1000MHz)	11n(20MHz)/OFDM	6.5 Mbps	1/7/13
Receiver spurious emissions (1-12.75GHz)	11n(40MHz)/OFDM	13.5 Mbps	3/7/11
Frequency range	11b/CCK	1 Mbps	1/13
	11g/OFDM	6 Mbps	1/13

11n(20MHz)/OFDM	6.5 Mbps	1/13
11n(40MHz)/OFDM	13.5 Mbps	3/11

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1" and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency error	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Adjacent and alternate channel power Conducted	1.20 dB	(1)
Conducted spurious emission	1.60 dB	(1)
Radiated spurious emission	2.20 dB	(1)
Intermodulation attenuation	1.00 dB	(1)
Maximum useable receiver sensitivity	2.80 dB	(1)
Co-channel rejection	2.80 dB	(1)
Adjacent channel selectivity	2.80 dB	(1)
Spurious response rejection	2.80 dB	(1)
Intermodulation response rejection	2.80 dB	(1)
Blcking or desensitization	2.80 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3.7. Equipments Used during the Test

Maximum transmit power & Frequency range & Maximum e.i.r.p. spectral density					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2012/10/27
2	Climate Chamber	ESPEC	EL-10KA	05107008	2012/10/27

Transmitter spurious emissions & Receiver spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2012/10/27
2	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2012/10/27
3	TURNTABLE	ETS	2088	2149	2012/10/27
4	ANTENNA MAST	ETS	2075	2346	2012/10/27
5	HORN ANTENNA	Rohde&Schwarz	HF906	100039	2012/10/27
6	EMI TEST SOFTWARE	Rohde&Schwarz	ESK1	N/A	2012/10/27
7	High pass filter	Compliance Direction systems	BSU-6	34202	2012/10/27
8	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2012/10/27
9	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2012/10/27
10	HORN ANTENNA	ShwarzBeck	9120D	1011	2012/10/27
11	HORN ANTENNA	ShwarzBeck	9120D	1012	2012/10/27
12	TURNTABLE	MATURO	TT2.0	----	2012/10/27
13	ANTENNA MAST	MATURO	TAM-4.0-P	----	2012/10/27

The Cal. Interval was one year

4. TEST CONDITIONS AND RESULTS

4.1. ETSI EN 300 328 REQUIREMENTS

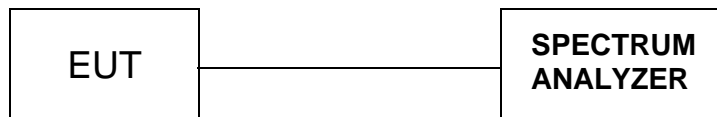
4.1.1. Maximum transmit power

LIMIT

ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.1.2

The equivalent isotropic radiated power (e.i.r.p.) shall be equal to or less than -10 dBW (100 mW). This limit shall apply for any combination of power level and intended antenna assembly.

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.7.2.2

In case of conducted measurements, the transmitter shall be connected to the measuring equipment via a suitable attenuator and the RF power as defined in clause 5.2.1 shall be measured and recorded in the test report.

The measurement shall be performed using normal operation of the equipment with modulation, using the test data sequence, applied.

The test procedure shall be as follows:

- step 1:

- using a suitable means, the output of the transmitter shall be coupled to a diode detector;

- the output of the diode detector shall be connected to the vertical channel of an oscilloscope;

- the combination of the diode detector and the oscilloscope shall be capable of faithfully reproducing the envelope peaks and the duty cycle of the transmitter output signal;

- the observed duty cycle of the transmitter (Tx on/(Tx on +Tx off)) shall be noted as x, ($0 < x < 1$) and recorded in the test report. For the purpose of testing, the equipment shall be operated with a duty cycle that is equal to or more than 0,1.

- step 2:

- the average output power of the transmitter shall be determined using a wideband, calibrated RF power meter with a thermocouple detector or an equivalent thereof and, where applicable, with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);

- the e.i.r.p. shall be calculated from the above measured power output A, the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:

- $P = A + G + 10 \log (1/x)$;

- P shall not exceed the value specified in clause 5.2.1.

- step 3:

- the measurement set up as given under step 1 shall be used to determine on the oscilloscope the peak of the envelope of the output signal of the transmitter;

- the maximum deviation of the Y-trace of the oscilloscope shall be recorded as "B".

- step 4:

- the transmitter shall be replaced by a signal generator. The output frequency of the signal shall be made equal to the centre of the frequency range occupied by the transmitter;

- the signal generator shall be unmodulated. The output power of the signal generator shall be raised to a level such that the deviation of the Y-trace of the oscilloscope reaches level B, as indicated in step 3;

- this output power level "C" (in dBm) of the signal generator shall be determined using a wideband, calibrated RF power meter with a thermocouple detector or an equivalent thereof;

level C shall not exceed by more than 3 dB the value specified in clause 5.2.1 minus the applicable antenna assembly gain G in dBi.

These measurements shall be performed at normal and extreme test conditions.

TEST RESULTS

Test Mode:802.11b				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2412 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	15.91	2.00	17.91
T min (-20°C)	253 V	16.25	2.00	18.25
	207 V	15.54	2.00	17.54
T Max (+55°C)	253 V	15.92	2.00	17.92
	207 V	15.22	2.00	17.22
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11b at final test to get the worst-case emission at 1Mbps.

Test Mode:802.11b				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2442 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	15.31	2.00	17.31
T min (-20°C)	253 V	15.68	2.00	17.68
	207 V	15.23	2.00	17.23
T Max (+55°C)	253 V	15.66	2.00	17.66
	207 V	14.96	2.00	16.96
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11b at final test to get the worst-case emission at 1Mbps.

Test Mode:802.11b				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2472 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	15.41	2.00	17.41
T min (-20°C)	253 V	15.63	2.00	17.63
	207 V	15.25	2.00	17.25
T Max (+55°C)	253 V	15.52	2.00	17.52
	207 V	15.02	2.00	17.02
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11b at final test to get the worst-case emission at 1Mbps.

Test Mode:802.11g				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2412 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	12.90	2.00	14.90
T min (-20°C)	253 V	13.22	2.00	15.22
	207 V	12.52	2.00	14.52
T Max (+55°C)	253 V	12.96	2.00	14.96
	207 V	12.60	2.00	14.60
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11g at final test to get the worst-case emission at 6Mbps.

Test Mode:802.11g				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2442 MHz		Duty Cycle loss=10log(1/x)= 0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	12.58	2.00	14.58
T min (-20°C)	253 V	12.75	2.00	14.75
	207 V	12.32	2.00	14.32
T Max (+55°C)	253 V	12.66	2.00	14.66
	207 V	12.20	2.00	14.20
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11g at final test to get the worst-case emission at 6Mbps.

Test Mode:802.11g				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2472 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	13.16	2.00	15.16
T min (-20°C)	253 V	13.54	2.00	15.54
	207 V	12.68	2.00	14.68
T Max (+55°C)	253 V	13.05	2.00	15.05
	207 V	12.66	2.00	14.66
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11g at final test to get the worst-case emission at 6Mbps.

Test Mode: 802.11n (20MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2412 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	11.10	2.00	13.10
T min (-20°C)	253 V	11.52	2.00	13.52
	207 V	11.06	2.00	13.06
T Max (+55°C)	253 V	11.69	2.00	13.69
	207 V	11.25	2.00	13.25
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11n (20MHz) at final test to get the worst-case emission at 6.5 Mbps.

Test Mode: 802.11n (20MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2442 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	10.80	2.00	12.80
T min (-20°C)	253 V	11.25	2.00	13.25
	207 V	10.63	2.00	12.63
T Max (+55°C)	253 V	11.36	2.00	13.36
	207 V	10.74	2.00	12.74
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11n (20MHz) at final test to get the worst-case emission at 6.5 Mbps.

Test Mode: 802.11n (20MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2472 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	10.70	2.00	12.70
T min (-20°C)	253 V	11.05	2.00	13.05
	207 V	10.63	2.00	12.63
T Max (+55°C)	253 V	11.03	2.00	13.03
	207 V	10.52	2.00	12.52
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.
 2. 802.11n (20MHz) at final test to get the worst-case emission at 6.5 Mbps.

Test Mode: 802.11n (40MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2422 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	9.56	2.00	11.56
T min (-20°C)	253 V	10.26	2.00	12.26
	207 V	9.41	2.00	11.41
T Max (+55°C)	253 V	10.14	2.00	12.14
	207 V	9.36	2.00	11.36
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

Test Mode: 802.11n (40MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2442 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	9.37	2.00	11.37
T min (-20°C)	253 V	9.86	2.00	11.86
	207 V	9.28	2.00	11.28
T Max (+55°C)	253 V	9.74	2.00	11.74
	207 V	9.22	2.00	11.22
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

Test Mode: 802.11n (40MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Frequency: 2462 MHz		Duty Cycle loss=10log(1/x)=0		
Test Condition		Transmitter Power (dBm)		
Temperature (°C)	Voltage (V)	Measured Power (dBm)	Antenna Gain(dBi)	EIRP (dBm)
T Nor (25°C)	230 V	9.70	2.00	11.70
T min (-20°C)	253 V	9.92	2.00	11.92
	207 V	9.60	2.00	11.60
T Max (+55°C)	253 V	10.20	2.00	12.20
	207 V	9.45	2.00	11.45
Result		PASS		
Limit		20dBm		

Note :1. Measured Power include the cable loss.

2. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

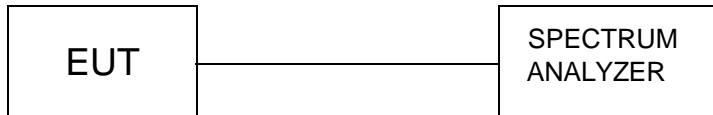
4.1.2. Maximum e.i.r.p. spectral density

LIMIT

ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.2.2

For wide band modulations other than FHSS (e.g. DSSS, OFDM, etc.), the maximum e.i.r.p. spectral density is limited to 10 mW per MHz

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.7.3 for the measurement method.

TEST RESULTS

Test Mode:802.11b				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Temperature:25°C		Test Voltage:230V		
Duty Cycle loss=10log(1/x)=0		Transmitter Power (dBm)		
Test Channel Number	Test Frequency (MHz)	Measured Power Density (dBm/MHZ)	Antenna Gain(dBi)	EIRP Density (dBm/MHz)
1	2412	6.02	2.0	8.02
7	2442	6.65	2.0	8.65
13	2472	6.62	2.0	8.62
Result		PASS		
Limit		10dBm/MHz		

- Note :1. Measured Power include the cable loss.
2. 802.11b at final test to get the worst-case emission at 1Mbps.

Test Mode:802.11g				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Temperature:25°C		Test Voltage:230V		
Duty Cycle loss=10log(1/x)=0		Transmitter Power (dBm)		
Test Channel Number	Test Frequency (MHz)	Measured Power Density (dBm/MHZ)	Antenna Gain(dBi)	EIRP Density (dBm/MHz)
1	2412	0.57	2.0	2.57
7	2442	2.35	2.0	4.35
13	2472	0.44	2.0	2.44
Result		PASS		
Limit		10dBm/MHz		

- Note :1. Measured Power include the cable loss.
2. 802.11g at final test to get the worst-case emission at 54Mbps.

Test Mode:802.11n(20MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Temperature:25°C		Test Voltage:230V		
Duty Cycle loss=10log(1/x)=0		Transmitter Power (dBm)		
Test Channel Number	Test Frequency (MHz)	Measured Power Density (dBm/MHz)	Antenna Gain(dBi)	EIRP Density (dBm/MHz)
1	2412	-0.27	2.0	1.73
7	2442	1.45	2.0	3.45
13	2472	0.44	2.0	2.44
Result		PASS		
Limit		10dBm/MHz		

Note :1. Measured Power include the cable loss.
 2. 802.11n(20MHz) at final test to get the worst-case emission at 6.5 Mbps.

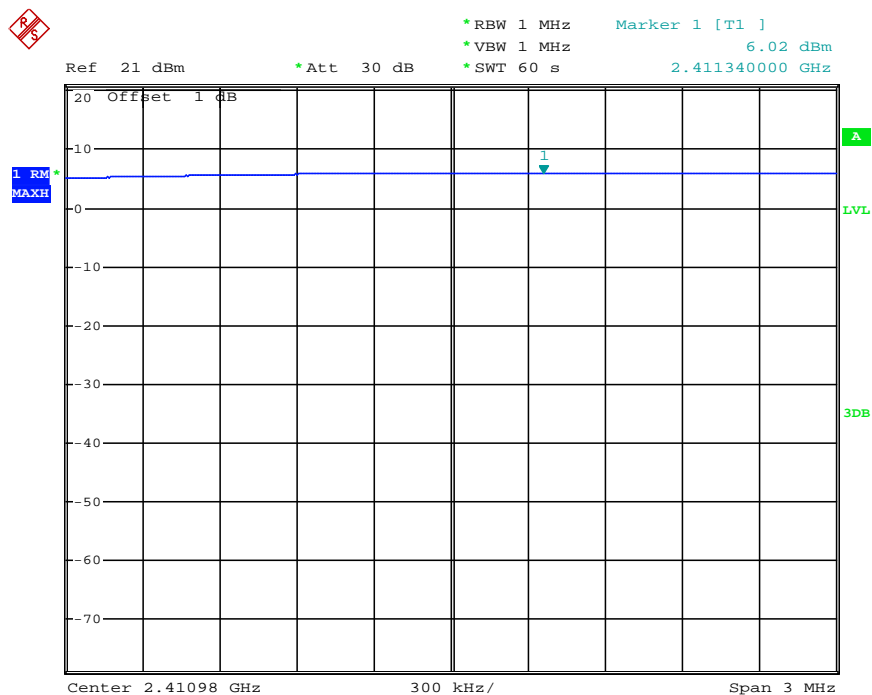
Test Mode:802.11n(40MHz)				
Antenna Gain:2.00dBi		Test Method: Conducted		
Test Temperature:25°C		Test Voltage:230V		
Duty Cycle loss=10log(1/x)=0		Transmitter Power (dBm)		
Test Channel Number	Test Frequency (MHz)	Measured Power Density (dBm/MHz)	Antenna Gain(dBi)	EIRP Density (dBm/MHz)
3	2422	-5.15	2.0	-3.15
7	2442	-4.67	2.0	-2.67
11	2462	-4.94	2.0	-2.94
Result		PASS		
Limit		10dBm/MHz		

Note :1. Measured Power include the cable loss.
 2. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

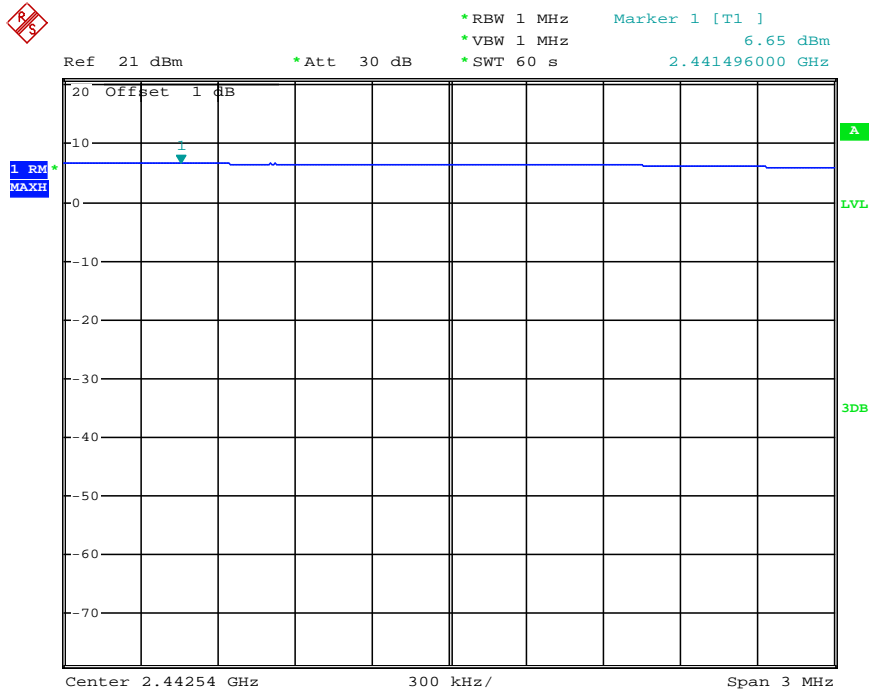
Photos of Power Spectral Density Measurement

Note: For 802.11b Mode

Channel 1

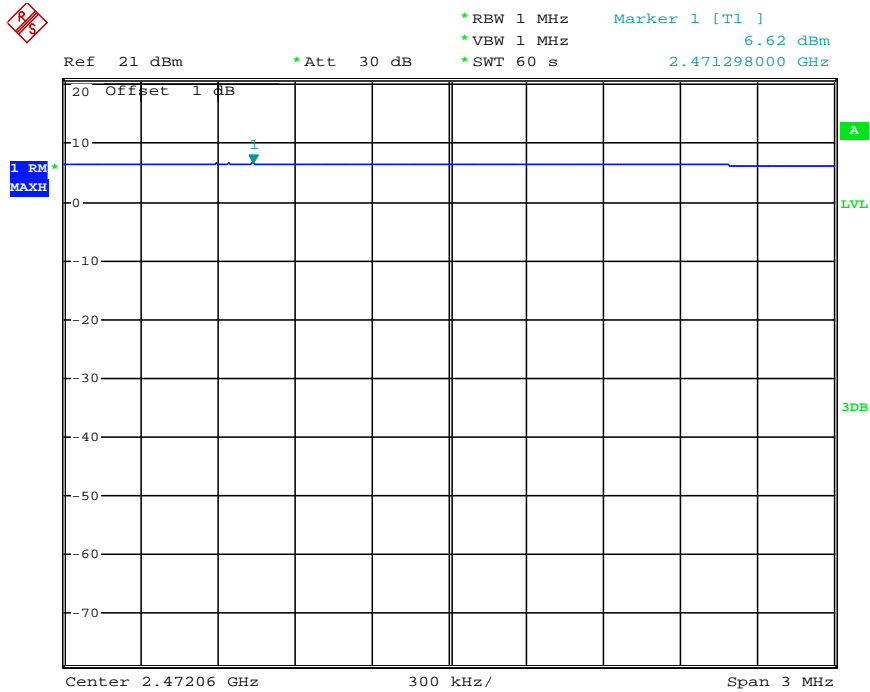


Channel 7



Date: 14.MAY.2013 17:37:05

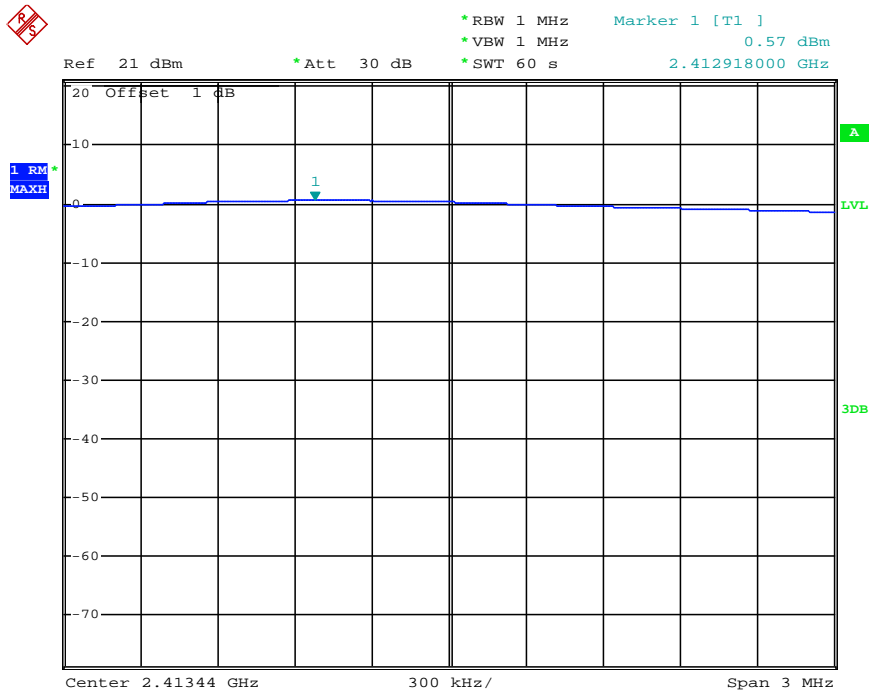
Channel 13



Date: 14.MAY.2013 17:40:03

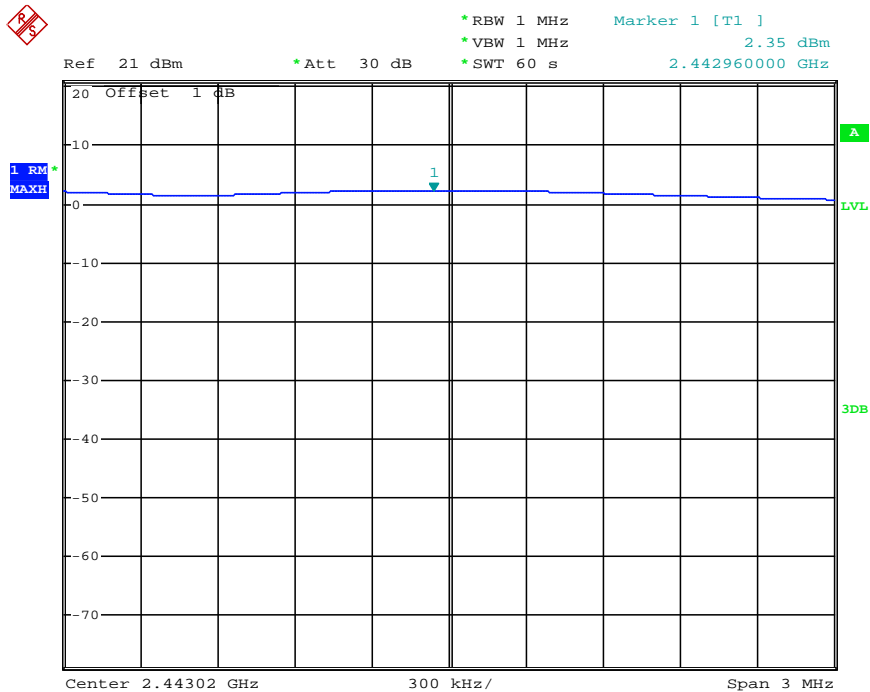
Note: For 802.11g Mode

Channel 1



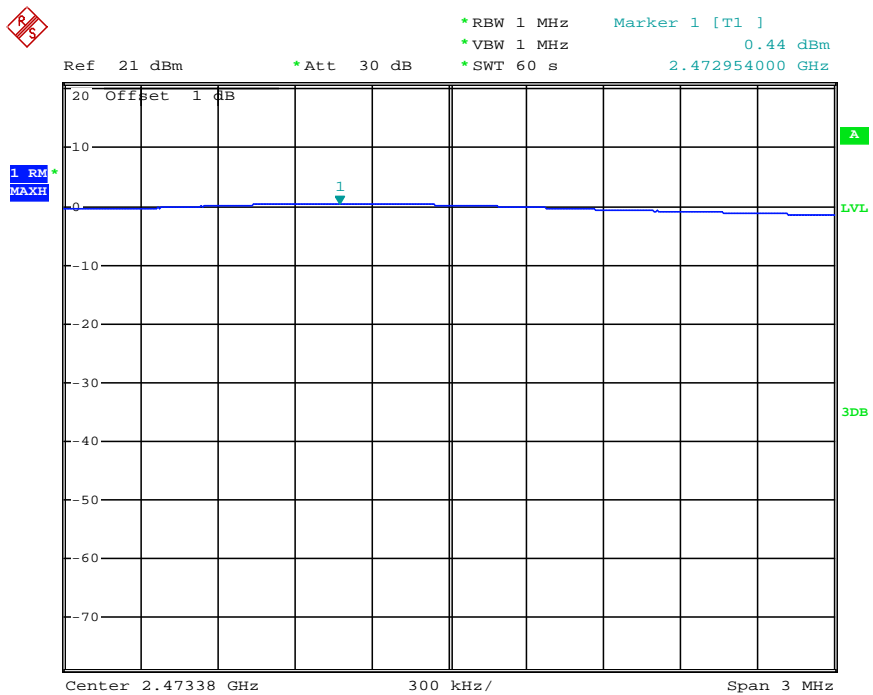
Date: 14.MAY.2013 17:42:58

Channel 7



Date: 14.MAY.2013 17:46:31

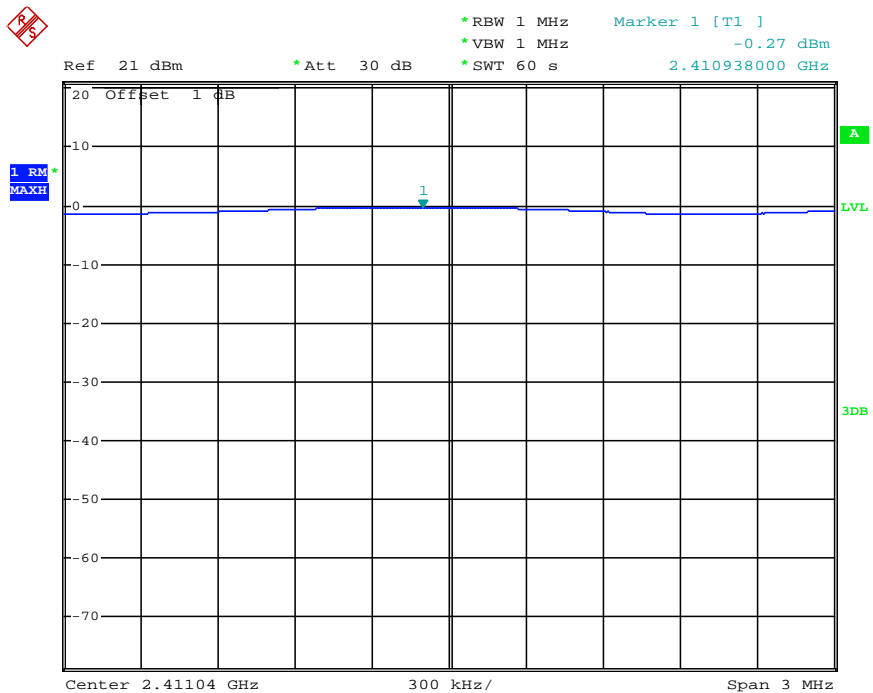
Channel 13



Date: 14.MAY.2013 17:49:46

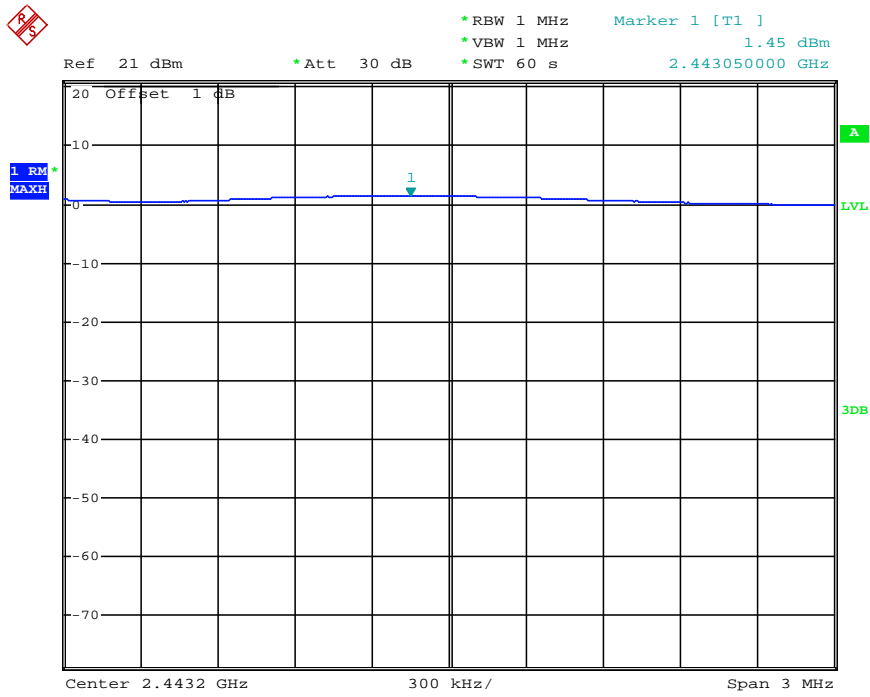
Note: For 802.11n (20MHz) Mode

Channel 1



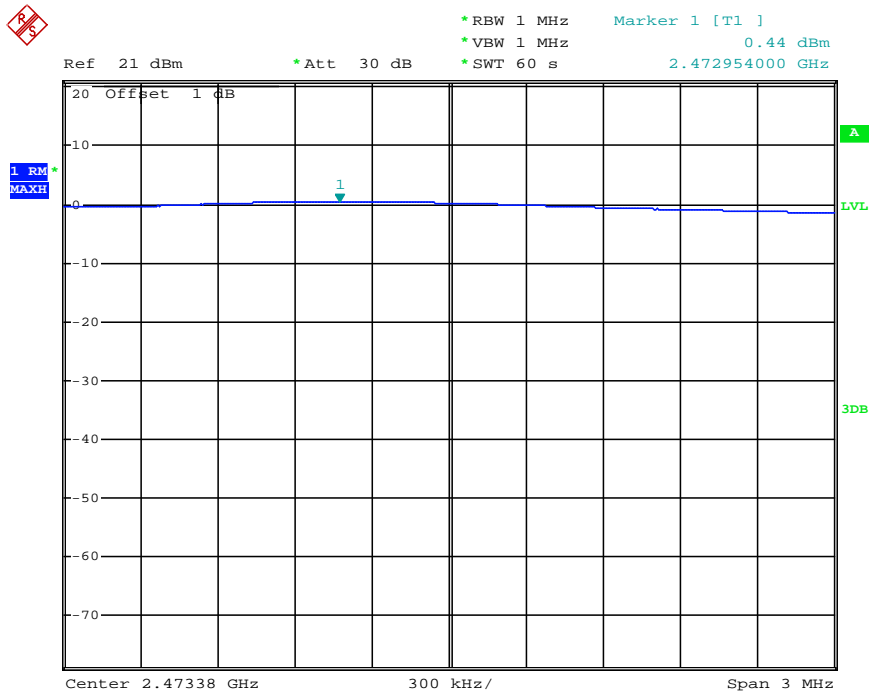
Date: 14.MAY.2013 16:46:37

Channel 7



Date: 14.MAY.2013 16:52:08

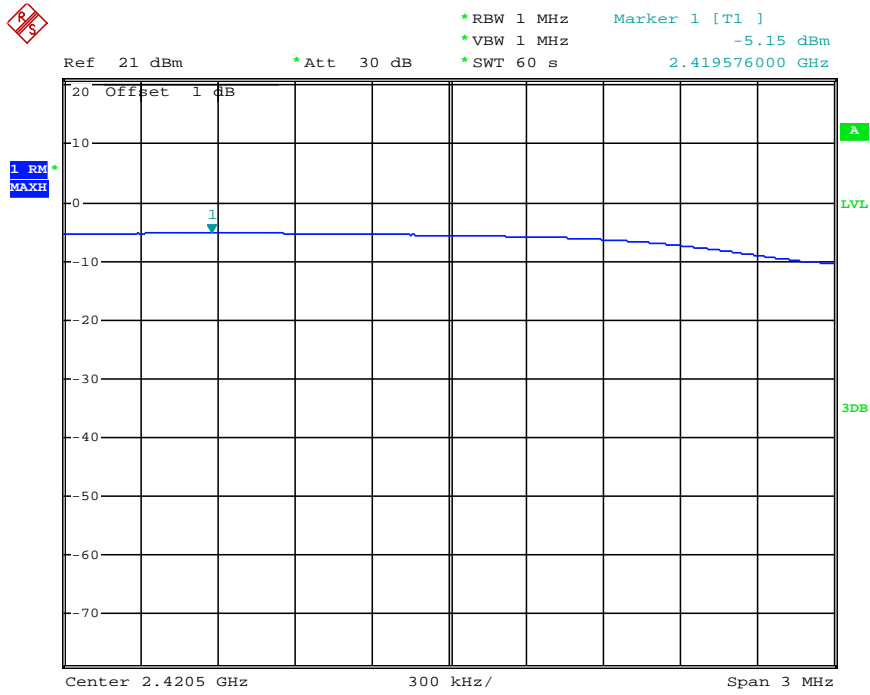
Channel 13



Date: 14.MAY.2013 17:49:46

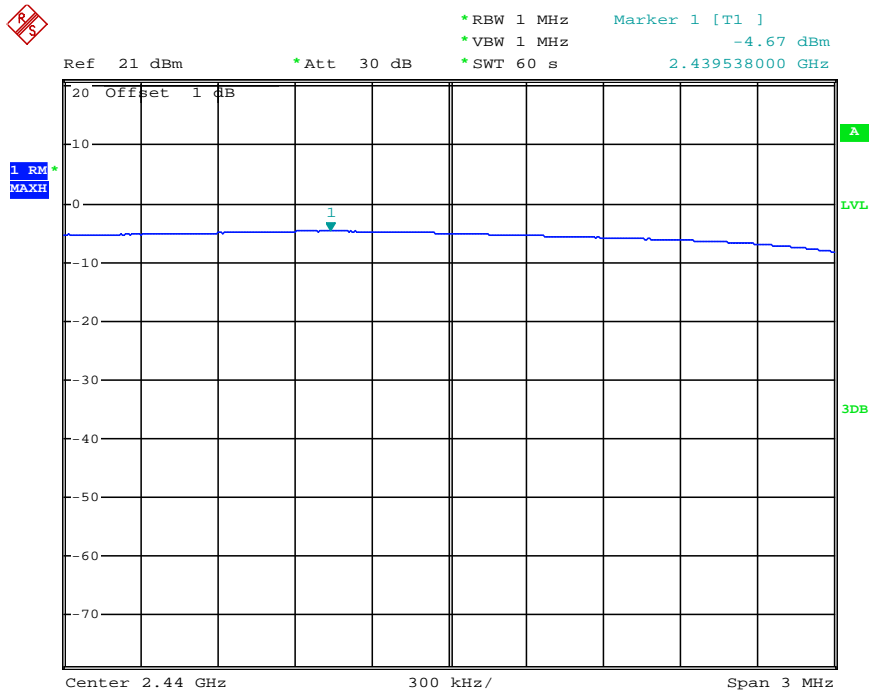
Note: For 802.11n (40MHz) Mode

Channel 3



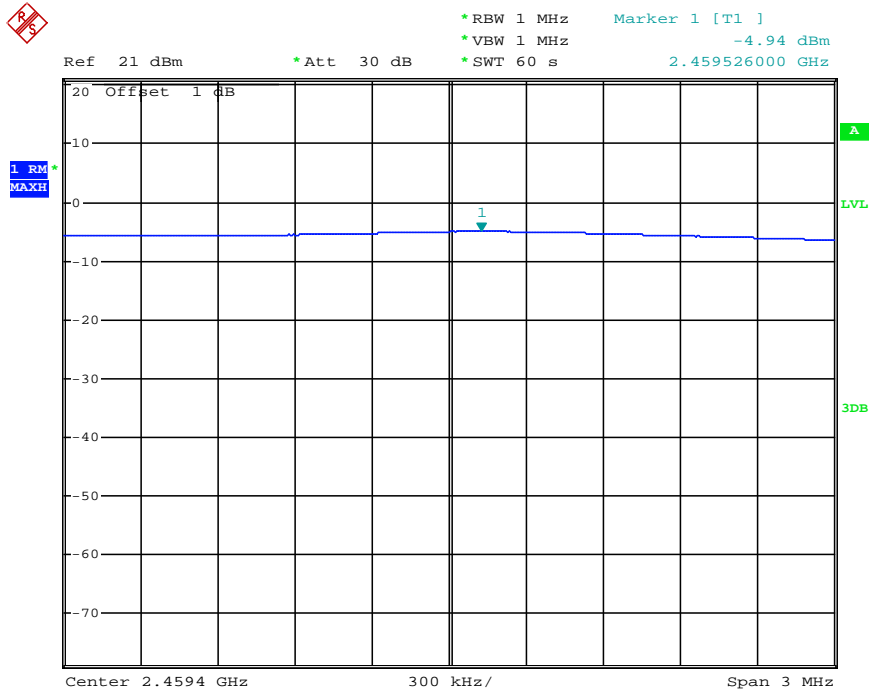
Date: 14.MAY.2013 16:43:06

Channel 7



Date: 14.MAY.2013 16:37:51

Channel 11



Date: 14.MAY.2013 16:35:46

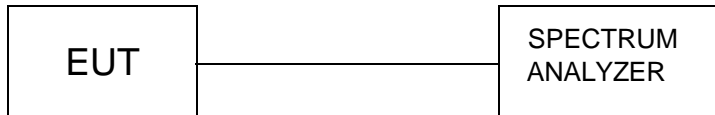
4.1.3. Frequency range

LIMIT

ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.3.2

For all equipment the frequency range shall lie within the band 2.4 GHz to 2.4835 GHz ($f_L > 2.4\text{GHz}$ and $f_H < 2.4835\text{GHz}$).

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.7.4 for the measurement method.

TEST RESULTS

Test Mode: 802.11b			
Antenna Gain:2.00dBi		Test Method: Conducted	
Duty Cycle loss=10log(1/x)=0			
Test environmental		Frequency Range	
Temperature (°C)	Voltage (V)	f _L at CH.1 (MHz)	f _H at C _H .13 (MHz)
T Nor (25°C)	230 V	2405.140	2478.900
T min (-20°C)	253 V	2405.140	2478.920
	207 V	2405.100	2478.950
T Max (+55°C)	253 V	2405.160	2478.870
	207 V	2405.130	2478.890
Limit		f _L >2.4GHz & f _H <2.4835GHz	
Result		PASS	

Note :1. Measured Power include the cable loss.

2. 802.11b at final test to get the worst-case emission at 1Mbps.

Test Mode: 802.11g			
Antenna Gain:2.00dBi		Test Method: Conducted	
Duty Cycle loss=10log(1/x)=0			
Test environmental		Frequency Range	
Temperature (°C)	Voltage (V)	f _L at CH.1 (MHz)	f _H at C _H .13 (MHz)
T Nor (25°C)	230 V	2403.060	2480.880
T min (-20°C)	253 V	2403.120	2480.850
	207 V	2403.090	2480.860
T Max (+55°C)	253 V	2403.030	2480.886
	207 V	2403.070	2480.945
Limit		f _L >2.4GHz & f _H <2.4835GHz	
Result		PASS	

Note :1. Measured Power include the cable loss.

2. 802.11g at final test to get the worst-case emission at 6Mbps.

Test Mode:802.11n (20MHz)			
Antenna Gain:2.00dBi		Test Method: Conducted	
Duty Cycle loss=10log(1/x)=0			
Test environmental		Frequency Range	
Temperature (°C)	Voltage (V)	f _L at CH.1 (MHz)	f _H at C _H .13 (MHz)
T Nor (25°C)	230 V	2402.880	2481.110
T min (-20°C)	253 V	2402.850	2481.170
	207 V	2402.870	2481.110
T Max (+55°C)	253 V	2402.880	2481.150
	207 V	2402.850	2481.090
Limit		f _L >2.4GHz & f _H <2.4835GHz	
Result		PASS	

Note :1. Measured Power include the cable loss.

2. 802.11n (20MHz) at final test to get the worst-case emission at 6.5 Mbps.

Test Mode:802.11n (40MHz)			
Antenna Gain:2.00dBi		Test Method: Conducted	
Duty Cycle loss=10log(1/x)=0			
Test environmental		Frequency Range	
Temperature (°C)	Voltage (V)	f _L at CH.3 (MHz)	f _H at C _H .11 (MHz)
T Nor (25°C)	230 V	2403.426	2480.620
T min (-20°C)	253 V	2403.425	2480.621
	207 V	2403.432	2480.631
T Max (+55°C)	253 V	2403.435	2480.620
	207 V	2403.422	2480.600
Limit		f _L >2.4GHz & f _H <2.4835GHz	
Result		PASS	

Note :1. Measured Power include the cable loss.

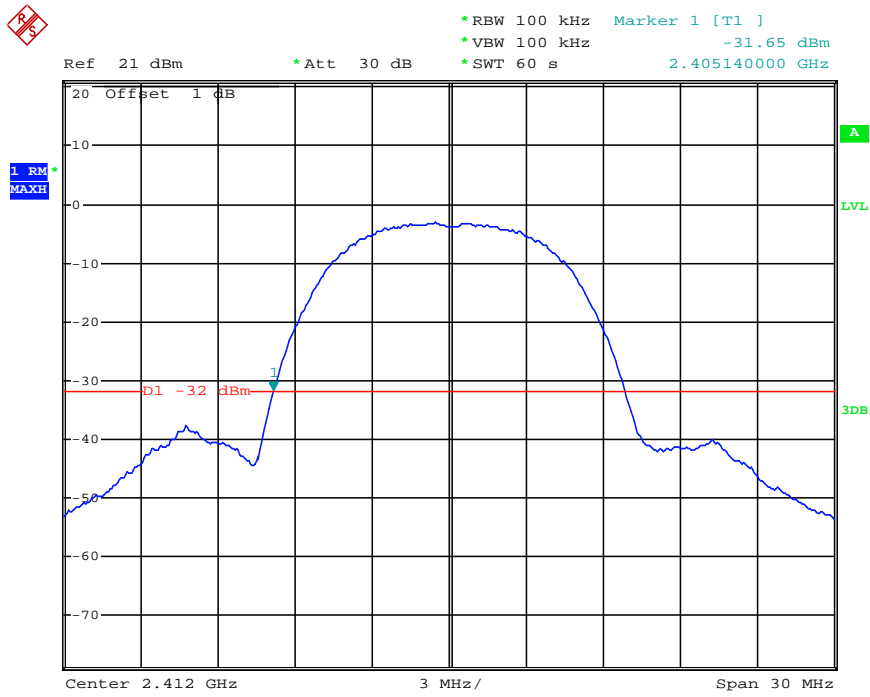
2. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

Photos of Frequency Range Measurement

For 802.11b Mode

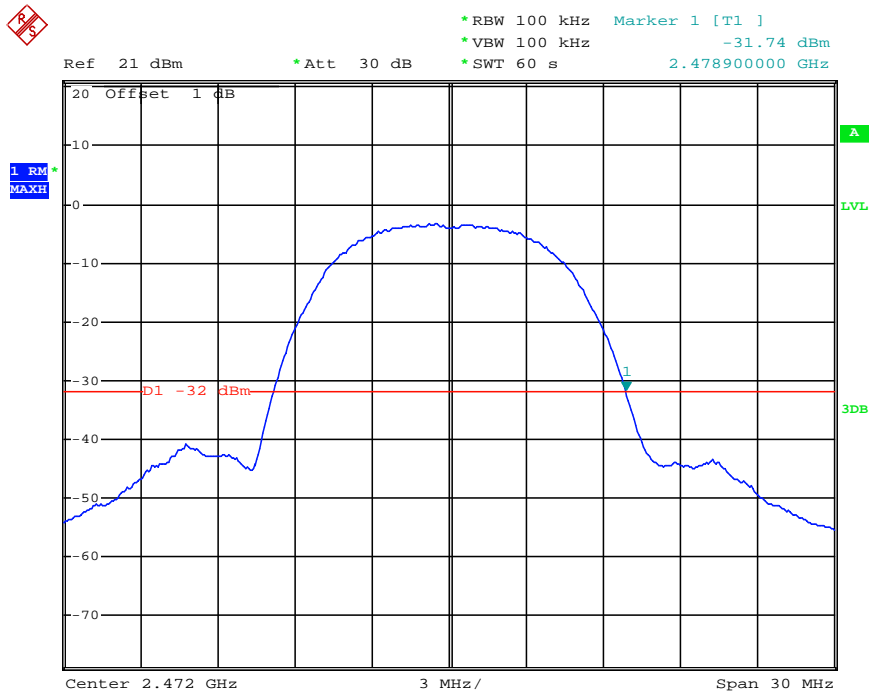
Test condition:normal

Channel 1



Date: 14.MAY.2013 18:13:09

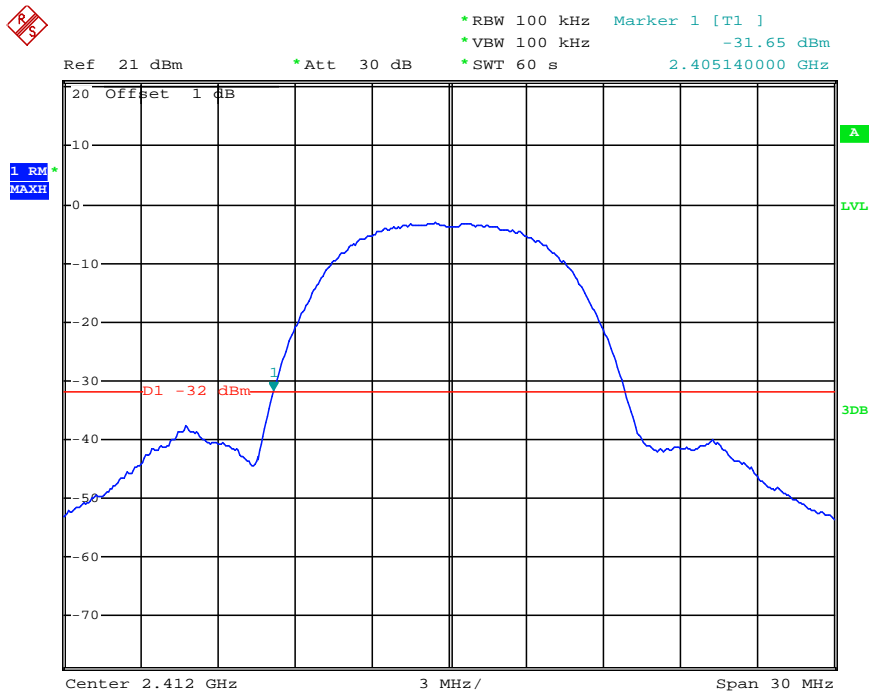
Channel 13



Date: 14.MAY.2013 18:03:11

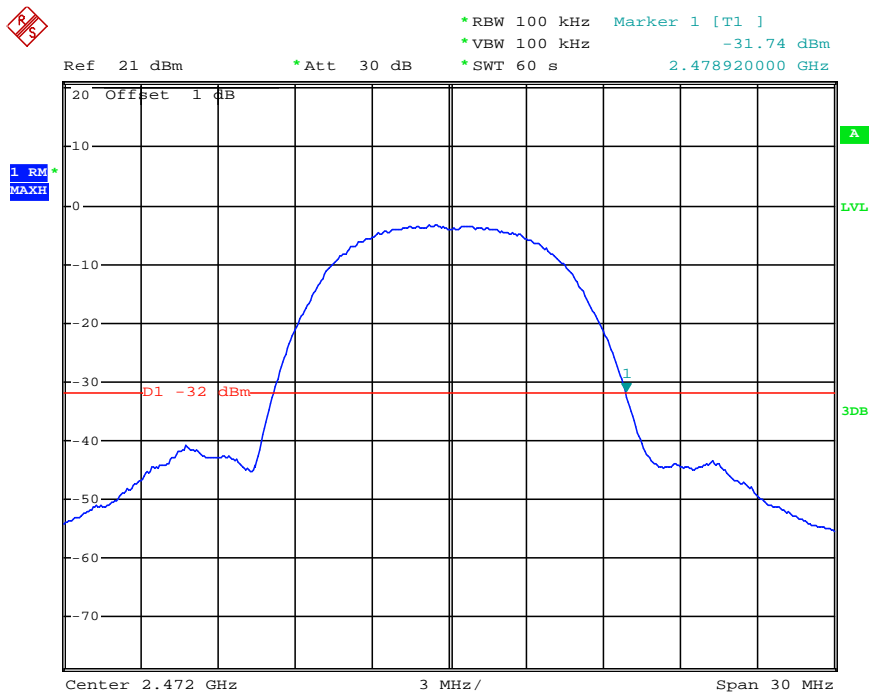
Test condition:-20°C&253V

Channel 1



Date: 14.MAY.2013 18:13:20

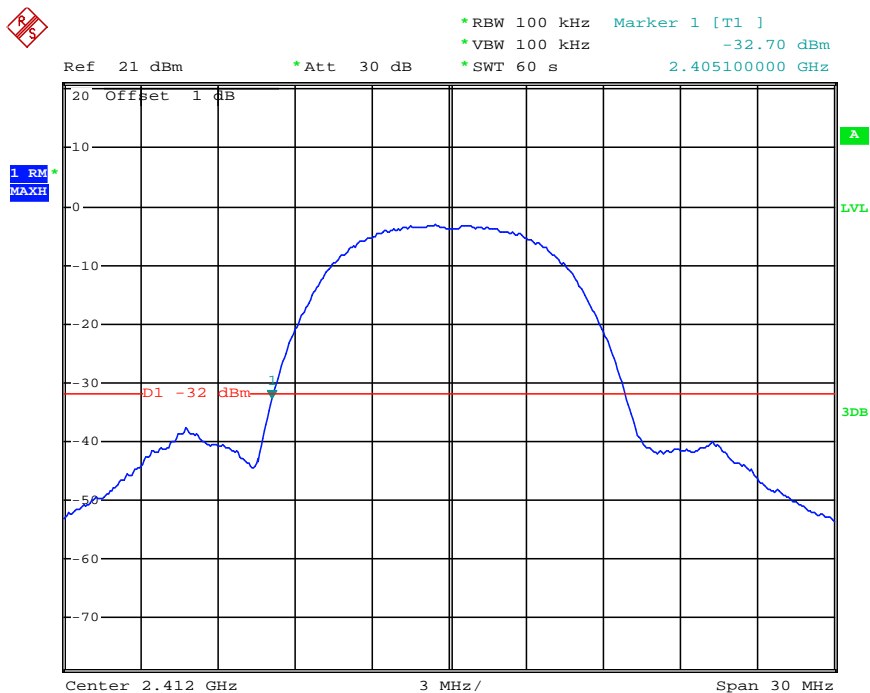
Channel 13



Date: 14.MAY.2013 18:03:39

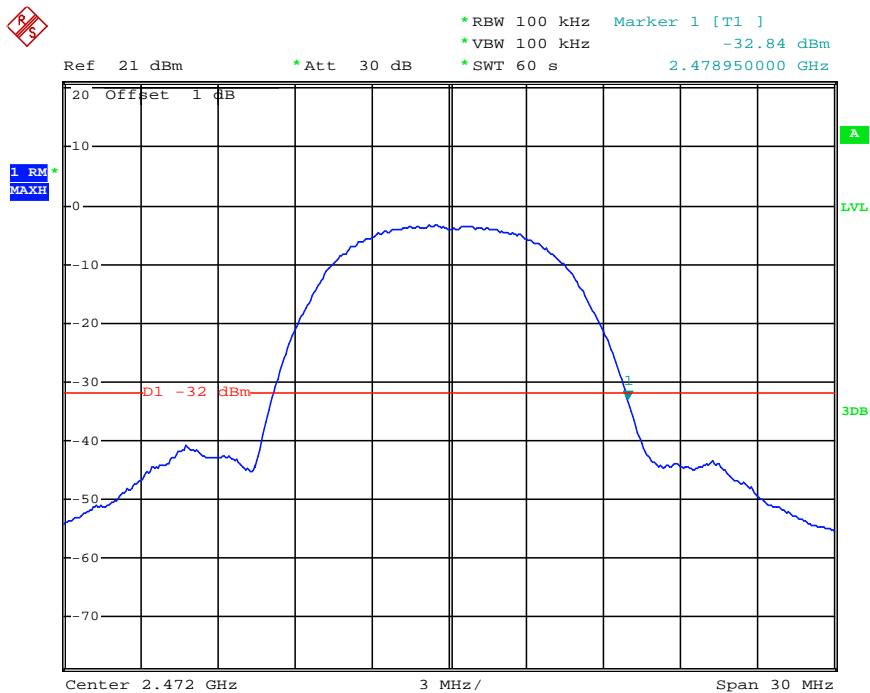
Test condition:-20°C & 207V

Channel 1



Date: 14.MAY.2013 18:13:32

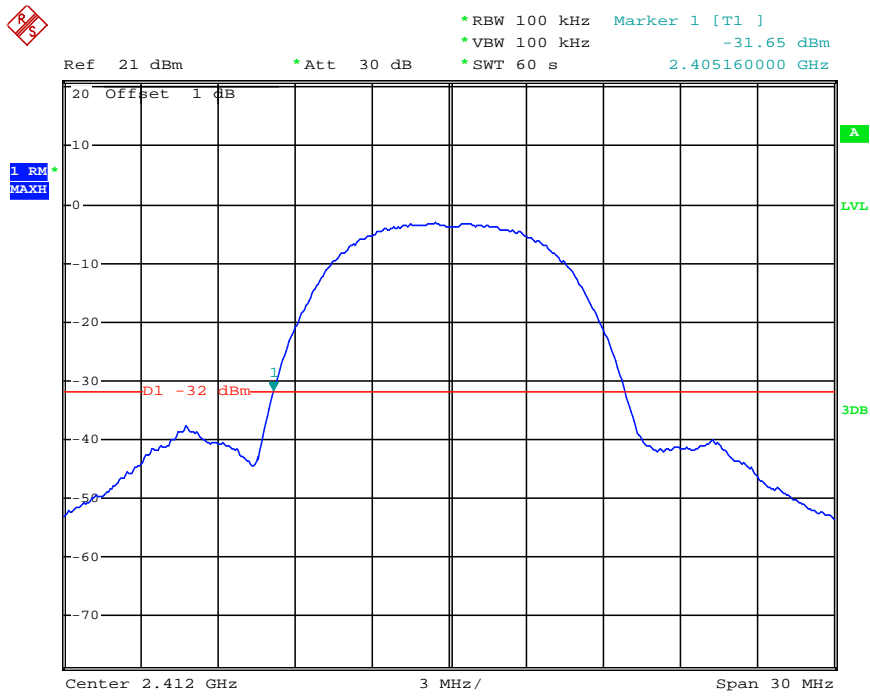
Channel 13



Date: 14.MAY.2013 18:03:54

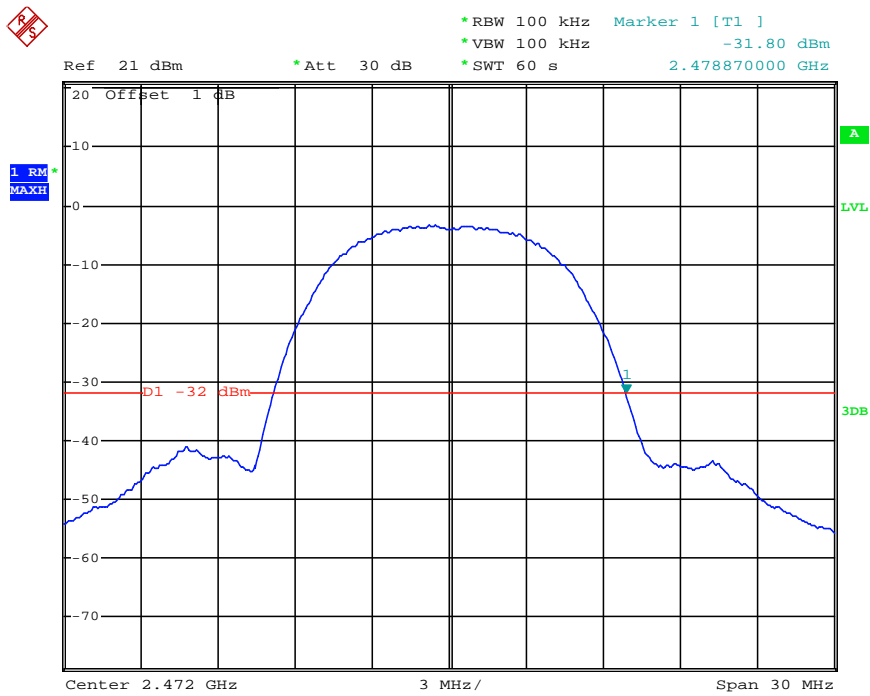
Test condition: +55°C & 253V

Channel 1



Date: 14.MAY.2013 18:13:43

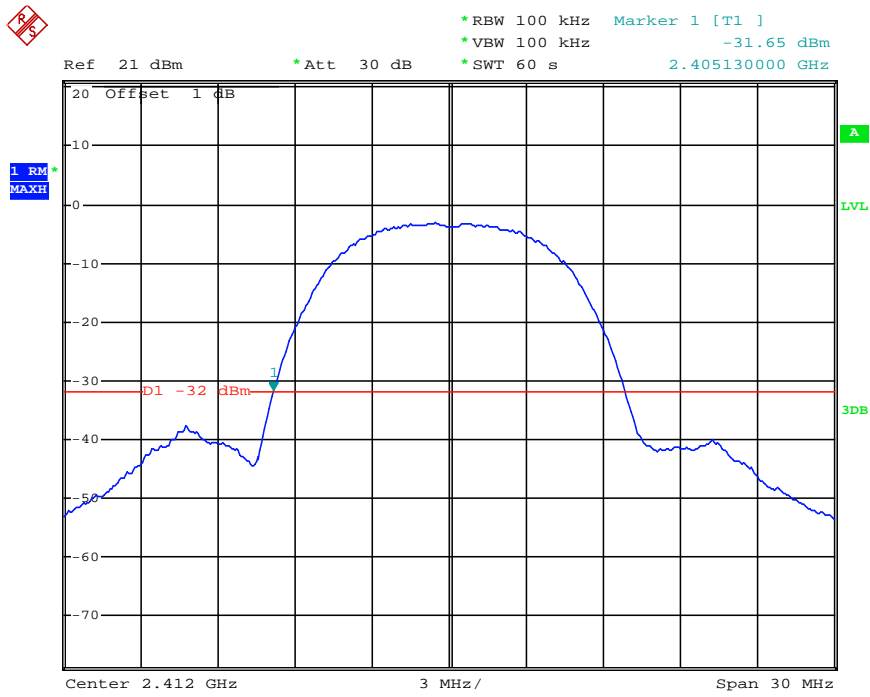
Channel 13



Date: 14.MAY.2013 18:05:22

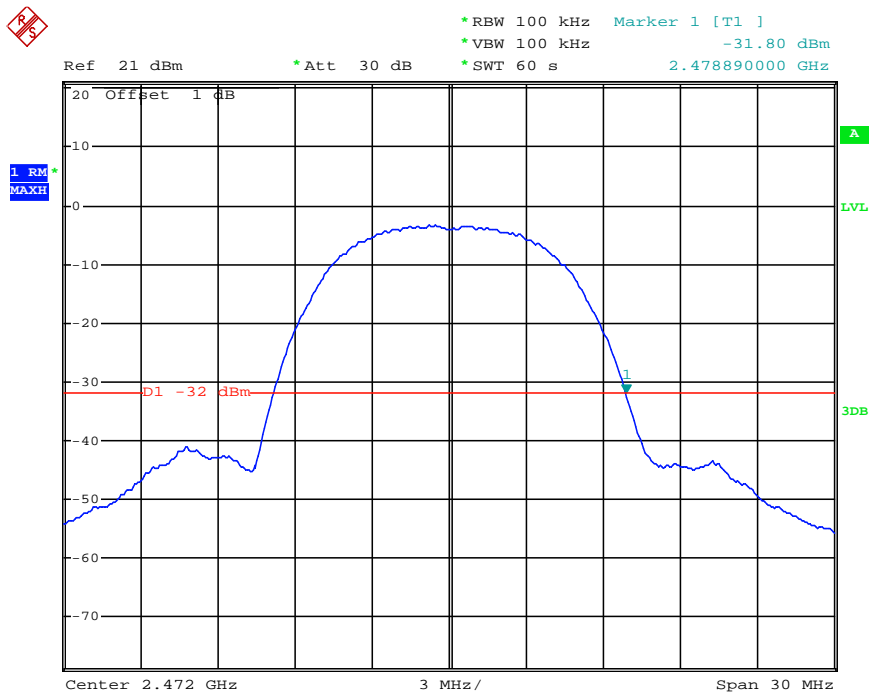
Test condition: +55°C & 207V

Channel 1



Date: 14.MAY.2013 18:14:07

Channel 13

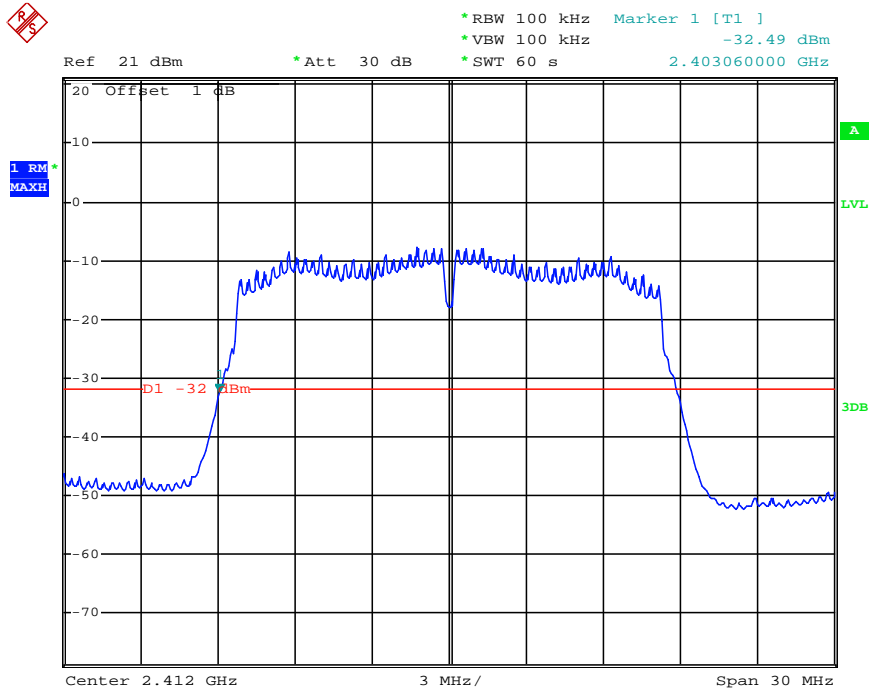


Date: 14.MAY.2013 18:05:53

Note: For 802.11g Mode

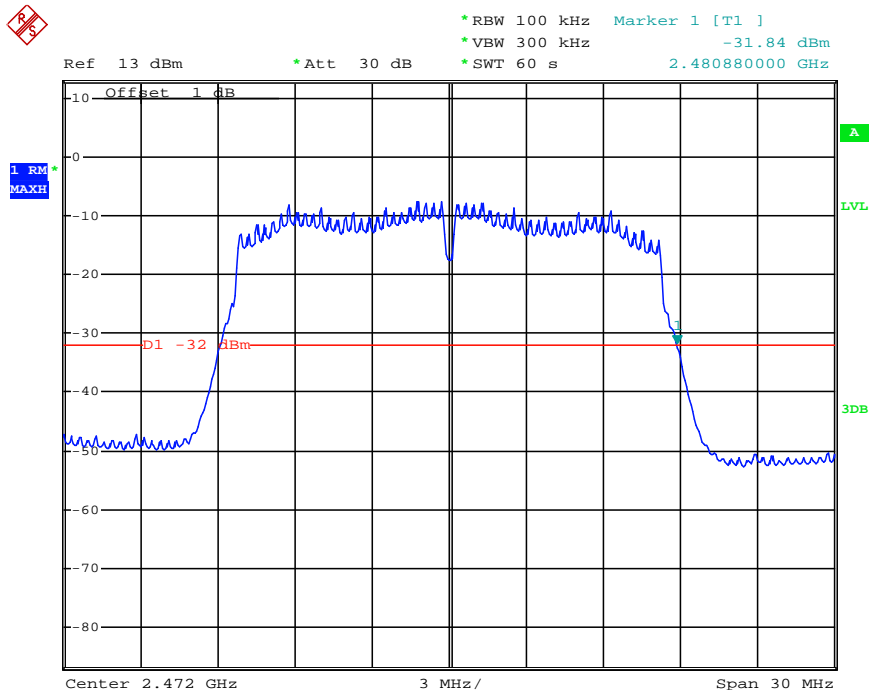
Test condition:normal

Channel 1



Date: 14.MAY.2013 18:16:04

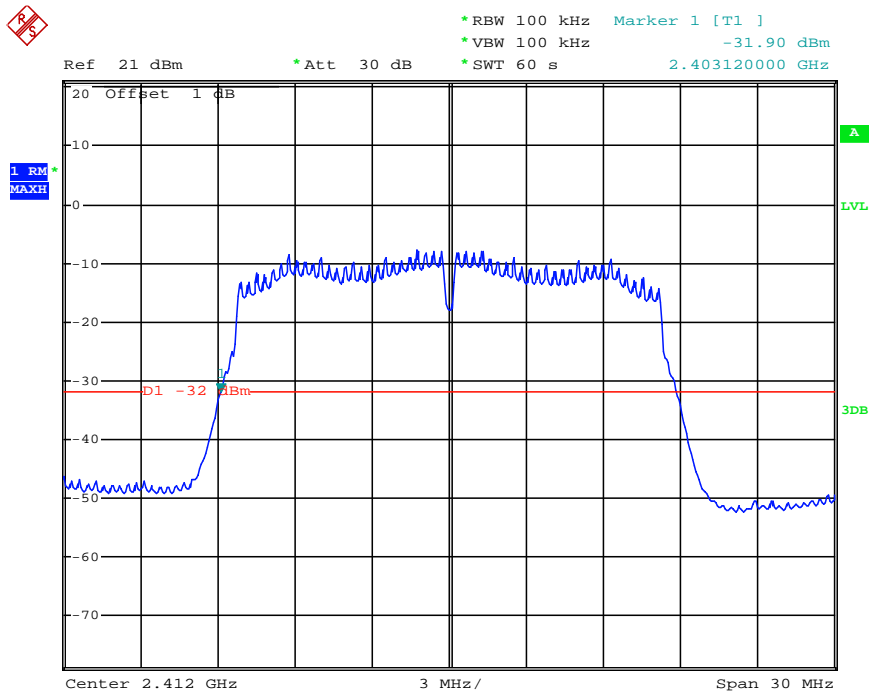
Channel 13



Date: 16.MAY.2013 12:12:45

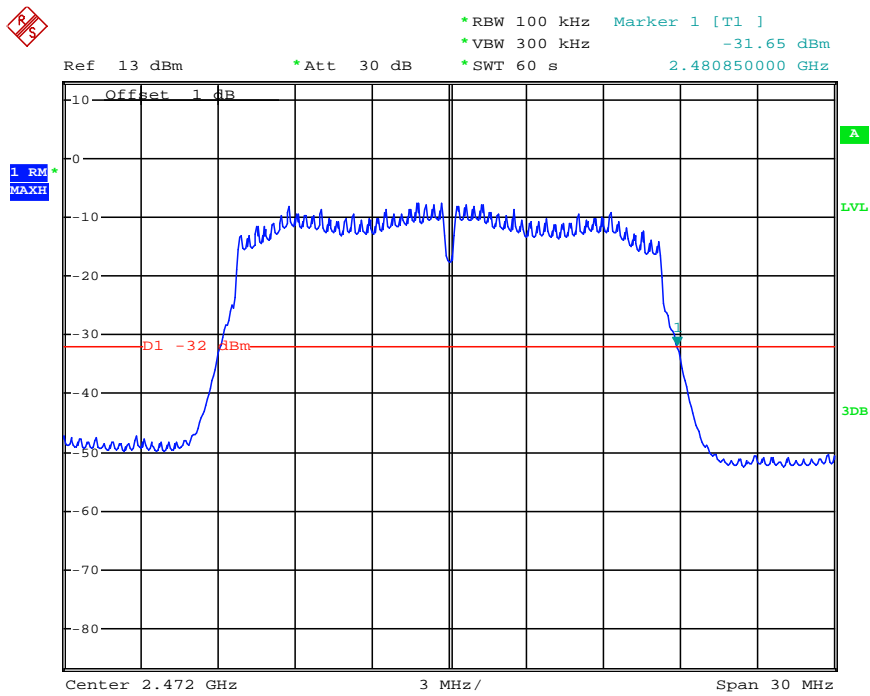
Test condition:-20°C & 253V

Channel 1



Date: 14.MAY.2013 18:16:12

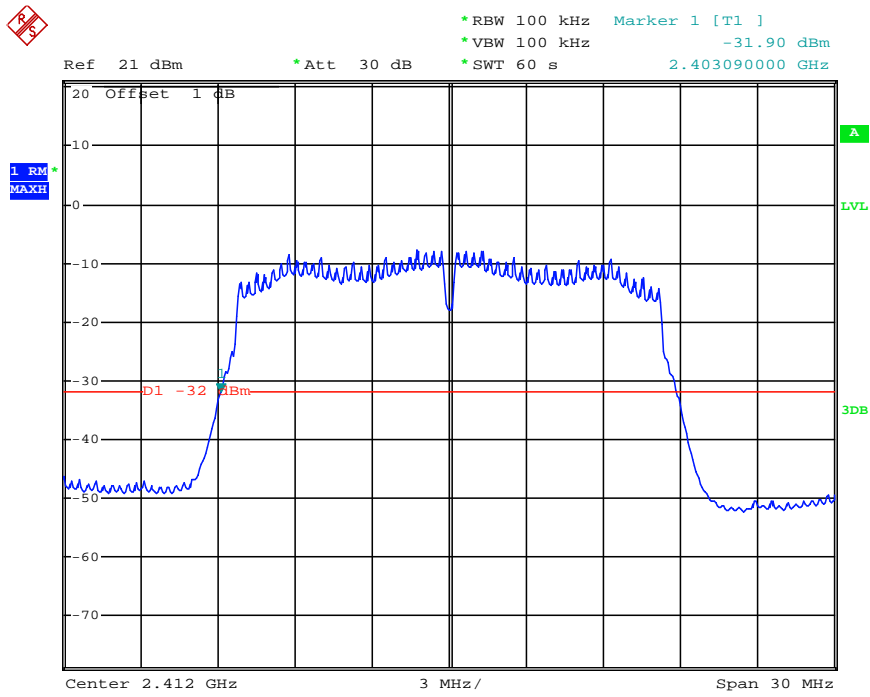
Channel 13



Date: 16.MAY.2013 12:13:00

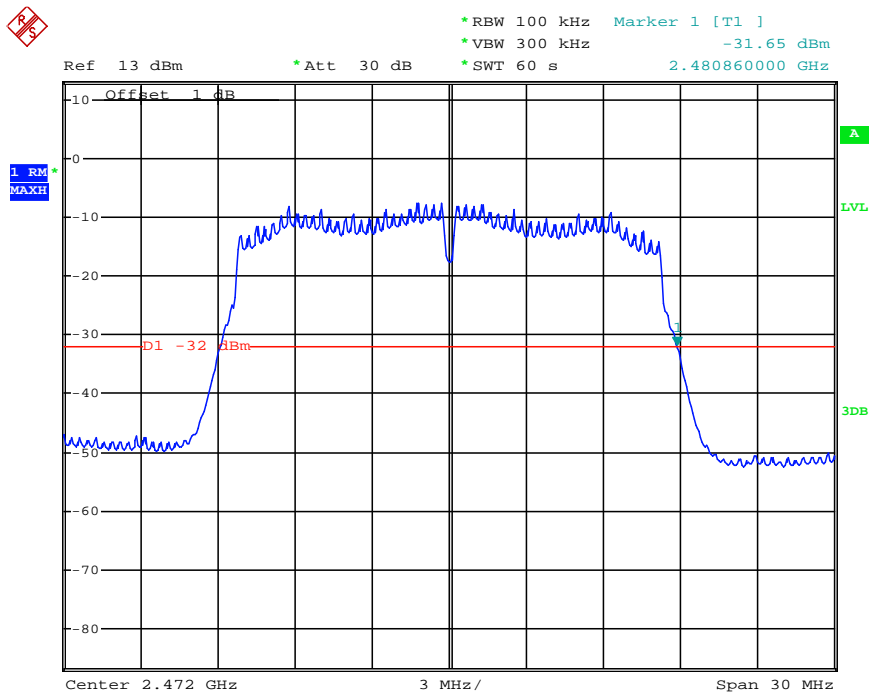
Test condition:-20°C & 207V

Channel 1



Date: 14.MAY.2013 18:16:29

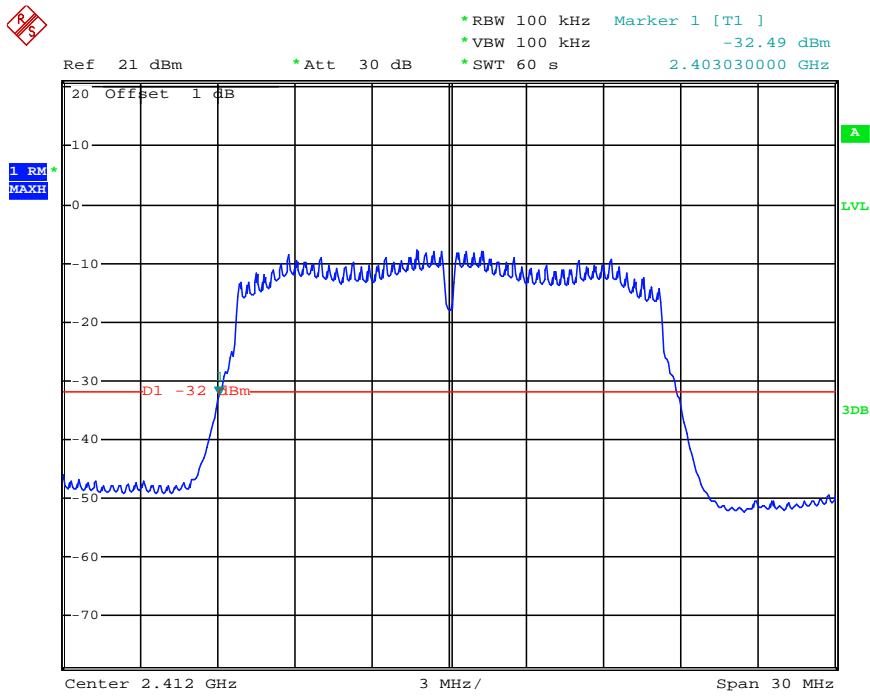
Channel 13



Date: 16.MAY.2013 12:13:16

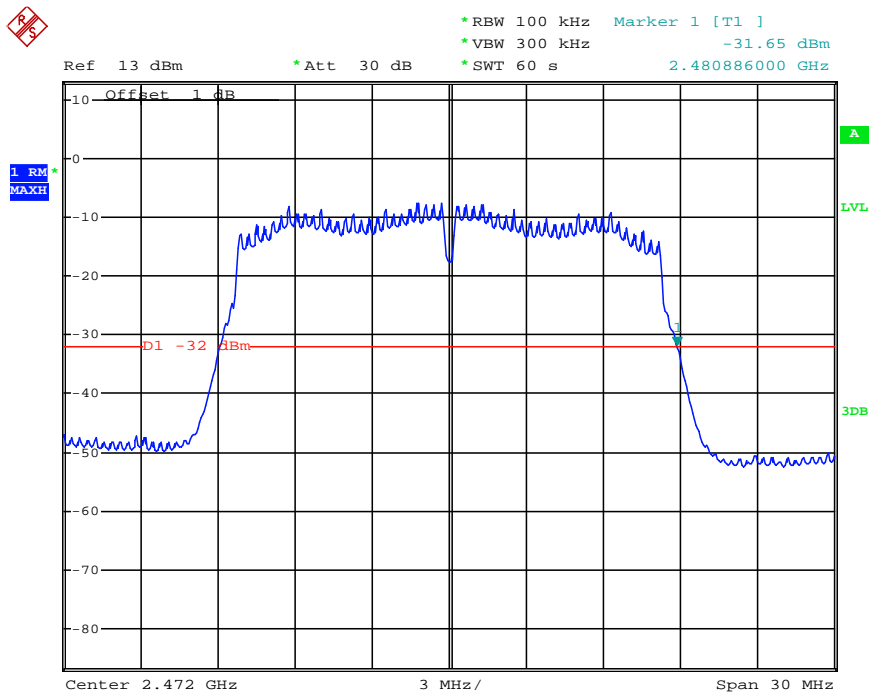
Test condition: +55°C & 253V

Channel 1



Date: 14.MAY.2013 18:16:41

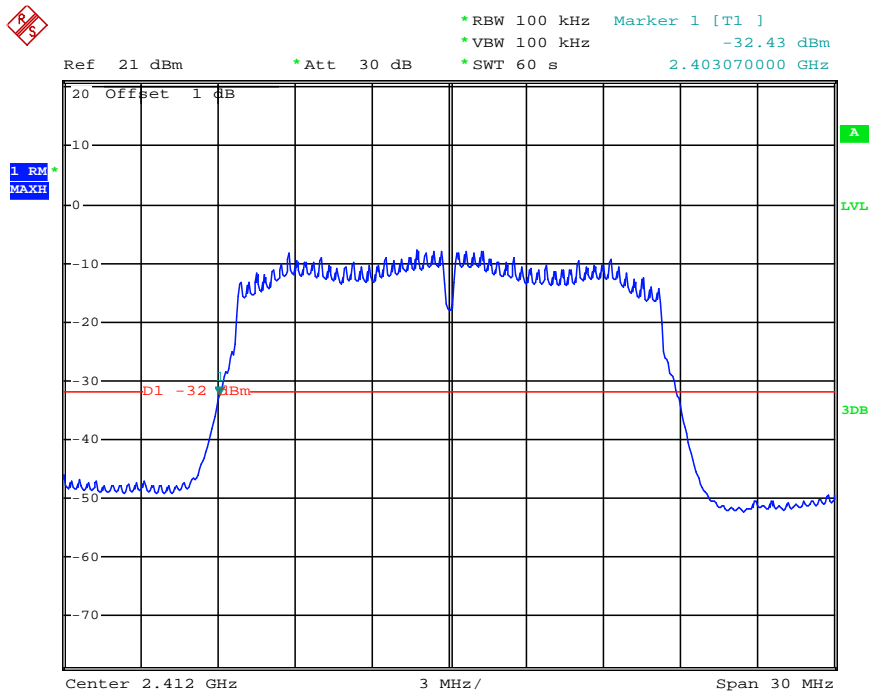
Channel 13



Date: 16.MAY.2013 12:13:30

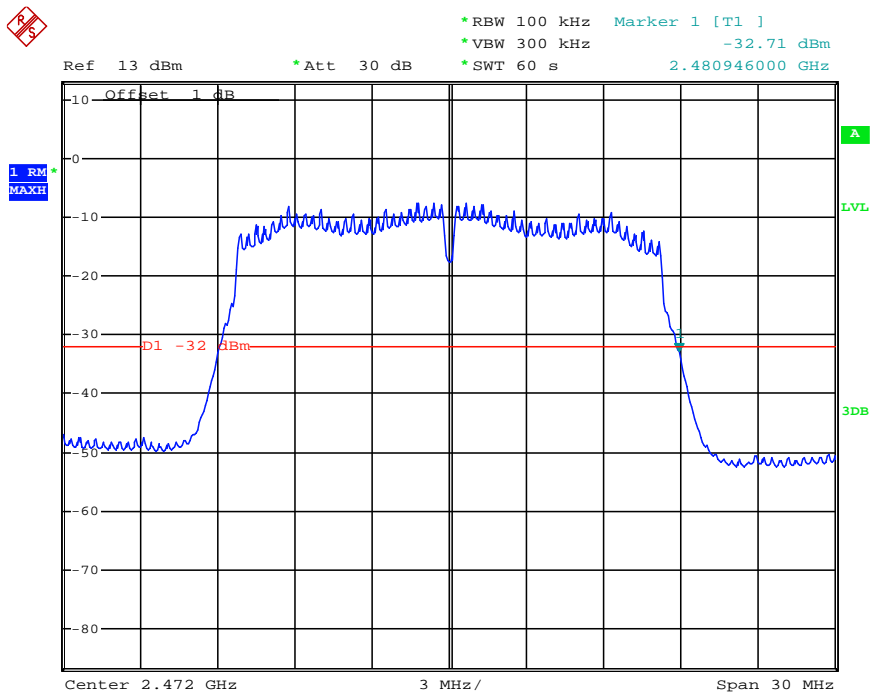
Test condition: +55°C & 207V

Channel 1



Date: 14.MAY.2013 18:17:00

Channel 13

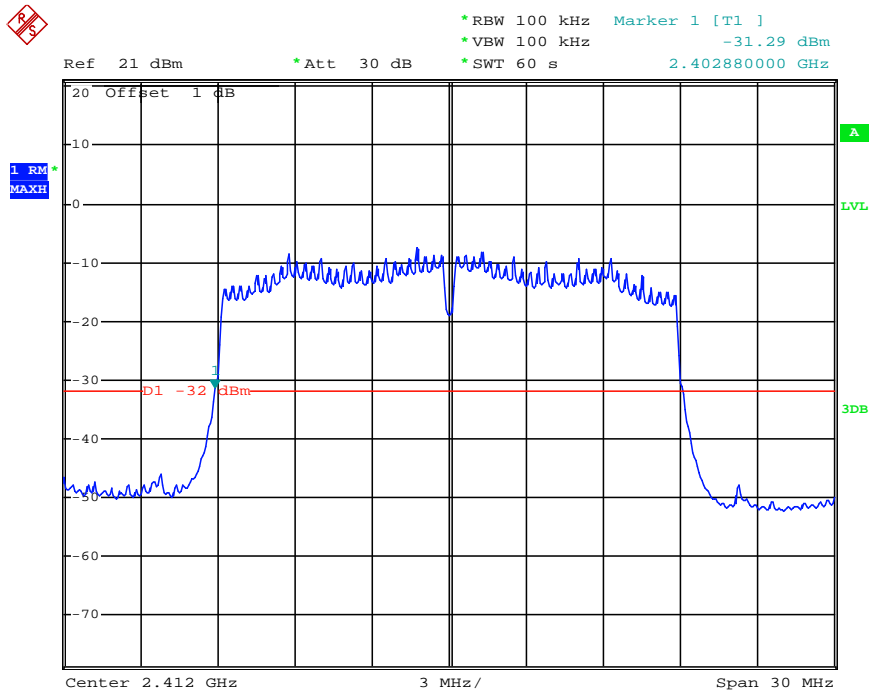


Date: 16.MAY.2013 12:15:52

Note: For 802.11n (20MHz) Mode

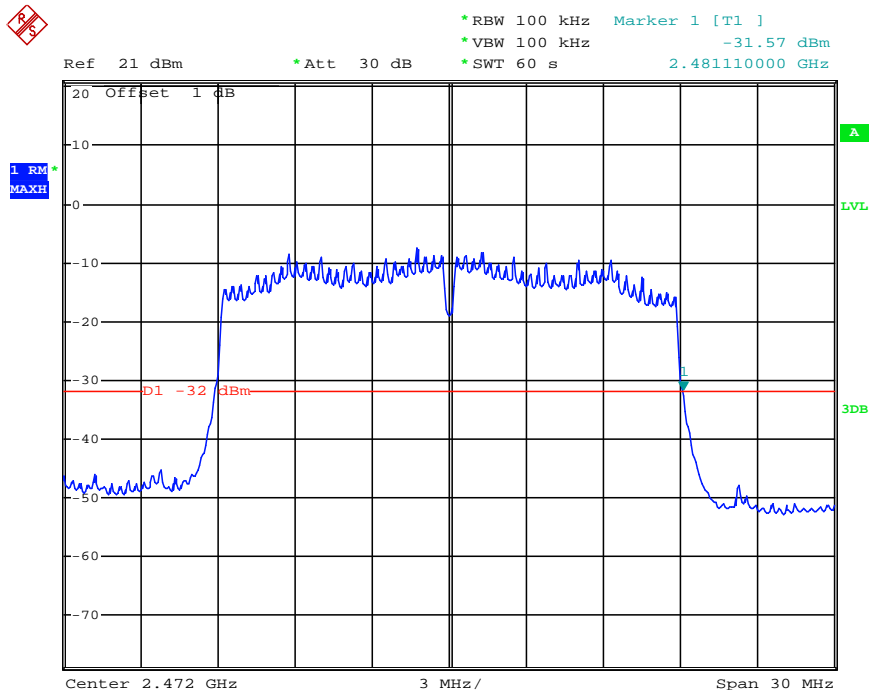
Test condition:normal

Channel 1



Date: 14.MAY.2013 18:10:23

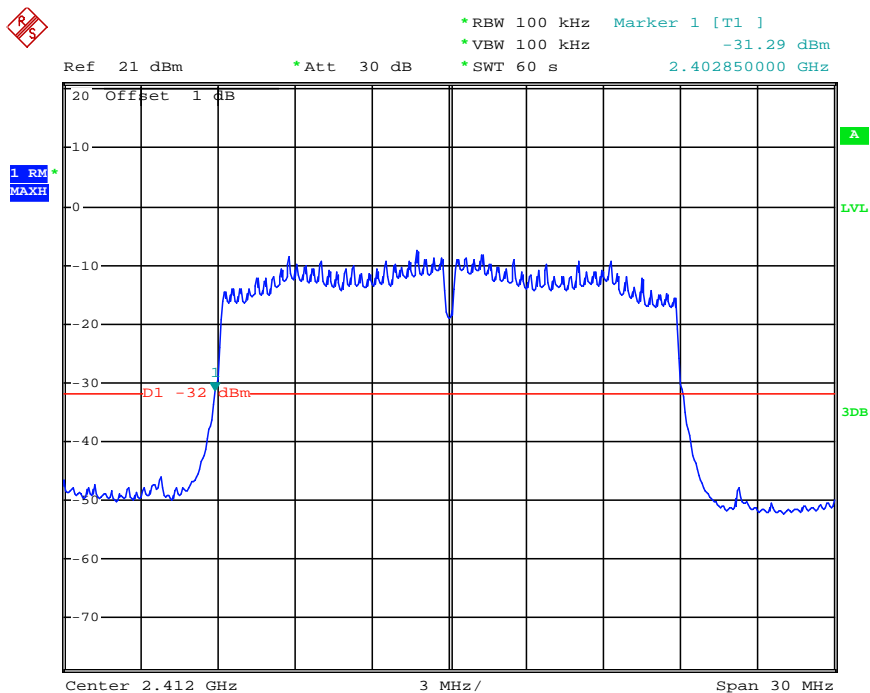
Channel 13



Date: 14.MAY.2013 18:07:30

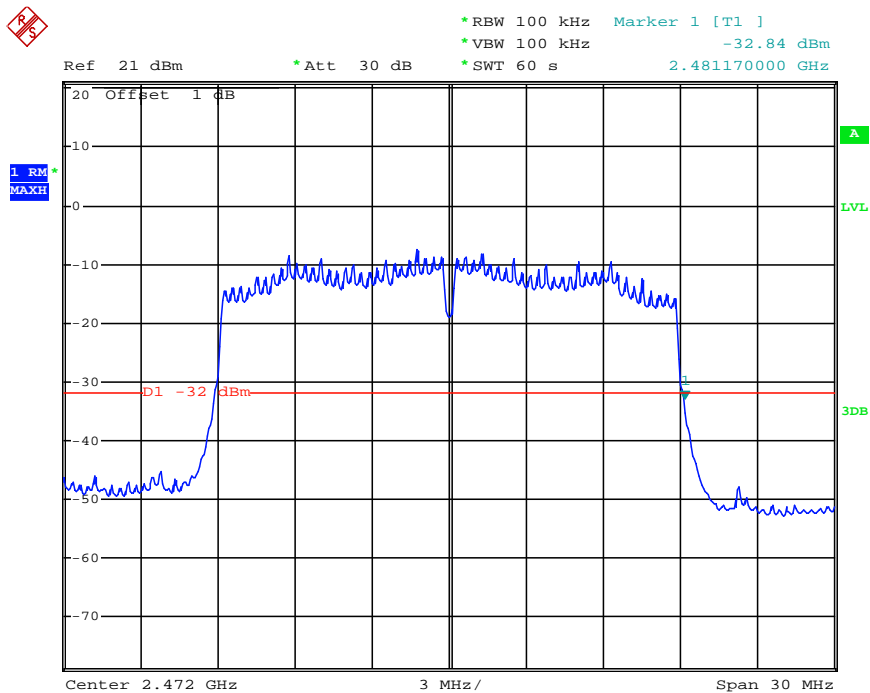
Test condition:-20°C & 253V

Channel 1



Date: 14.MAY.2013 18:10:41

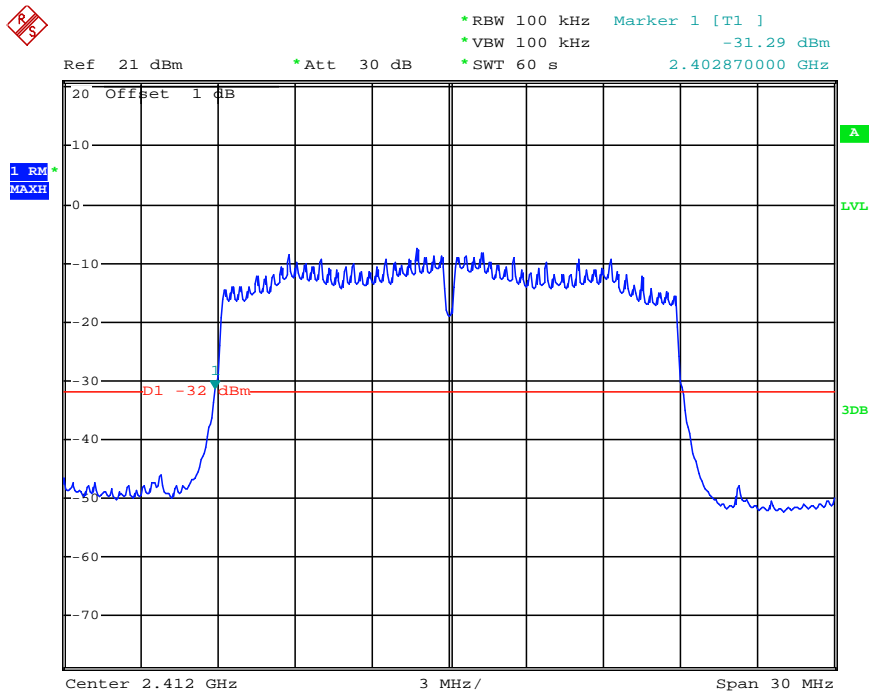
Channel 13



Date: 14.MAY.2013 18:07:37

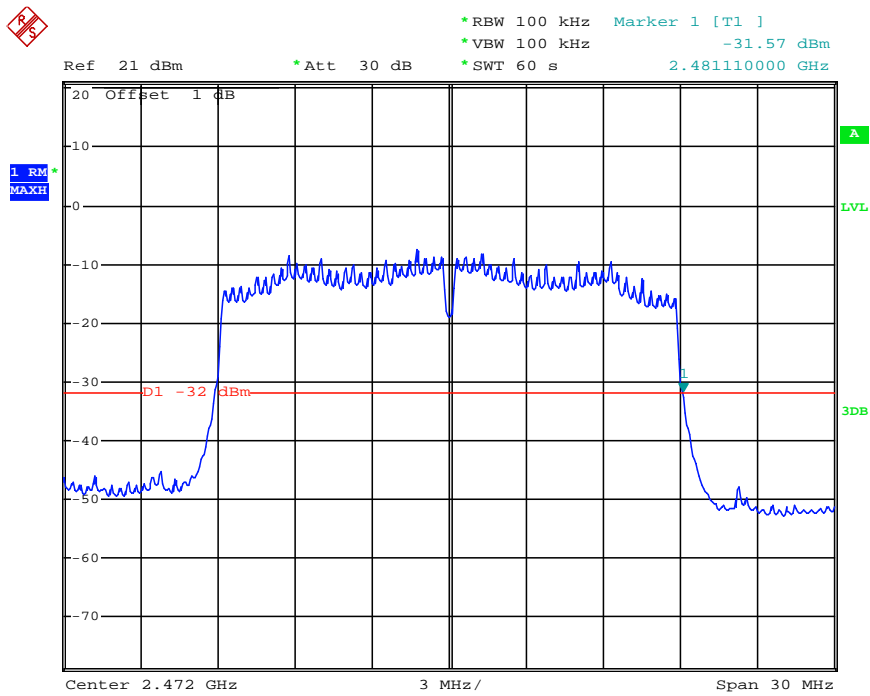
Test condition: -20°C & 207V

Channel 1



Date: 14.MAY.2013 18:10:52

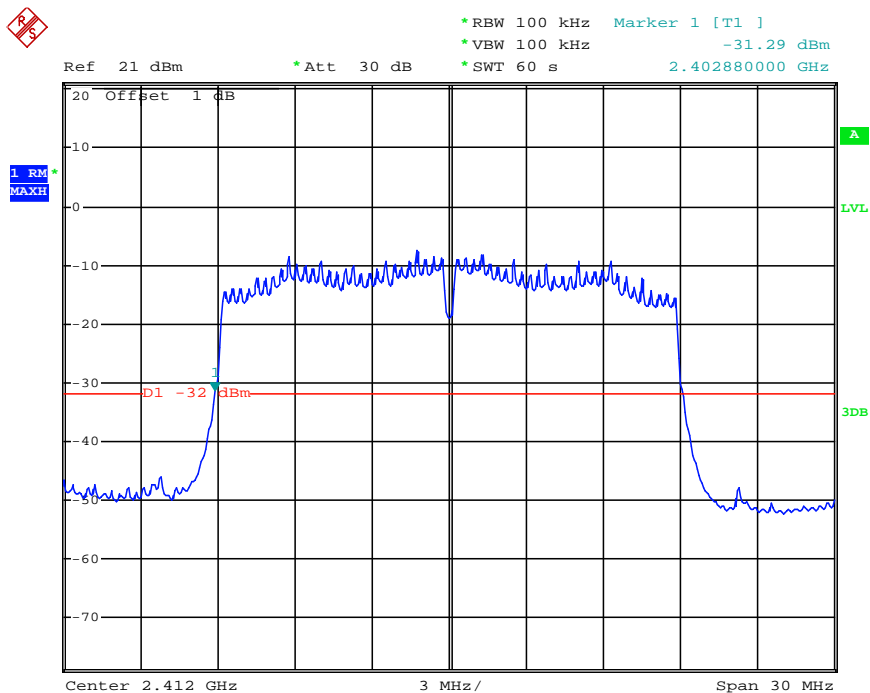
Channel 13



Date: 14.MAY.2013 18:07:42

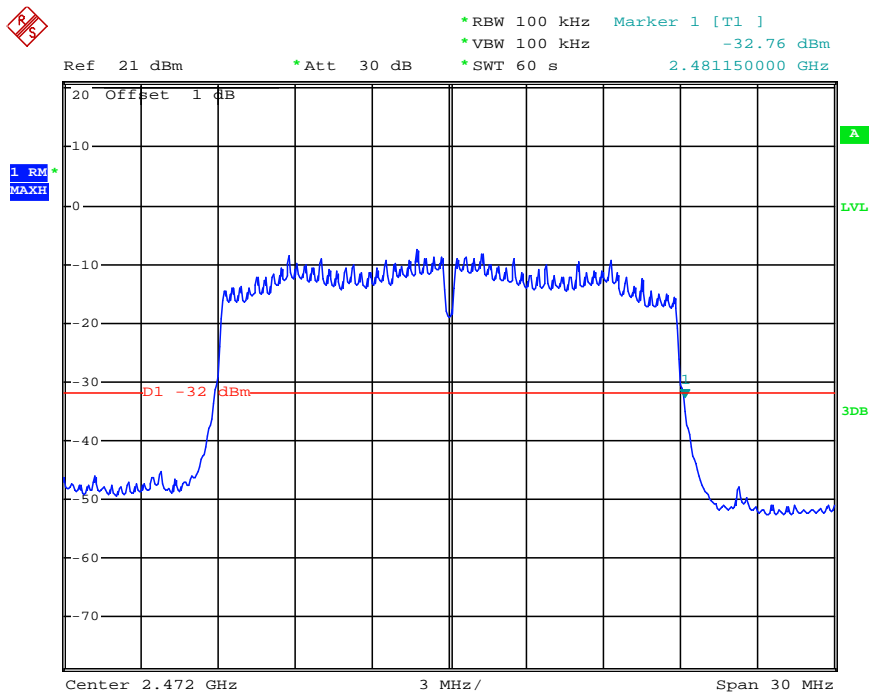
Test condition: +55°C & 253V

Channel 1



Date: 14.MAY.2013 18:11:25

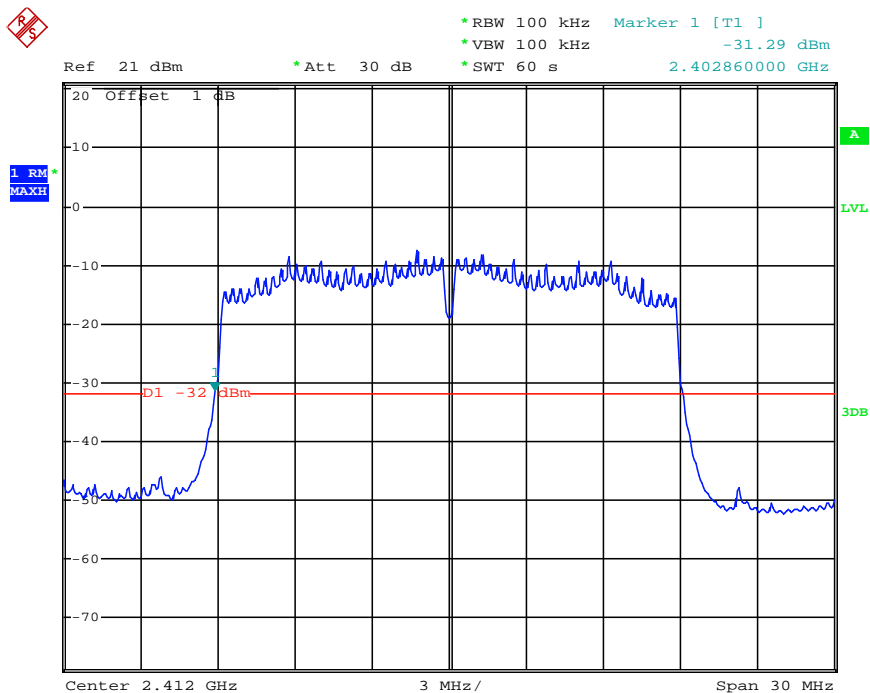
Channel 13



Date: 14.MAY.2013 18:08:15

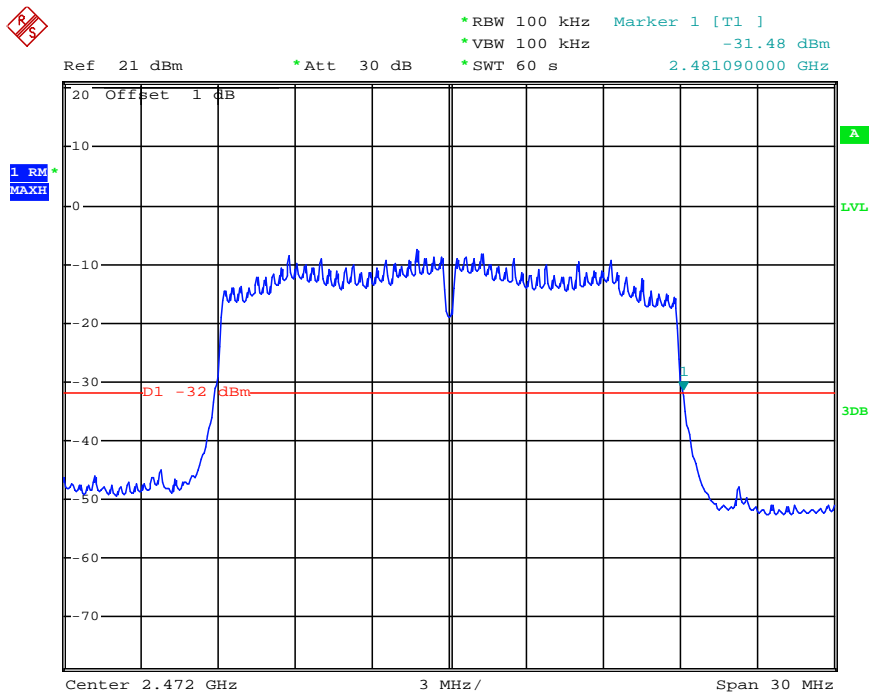
Test condition: +55°C & 207V

Channel 1



Date: 14.MAY.2013 18:11:39

Channel 13

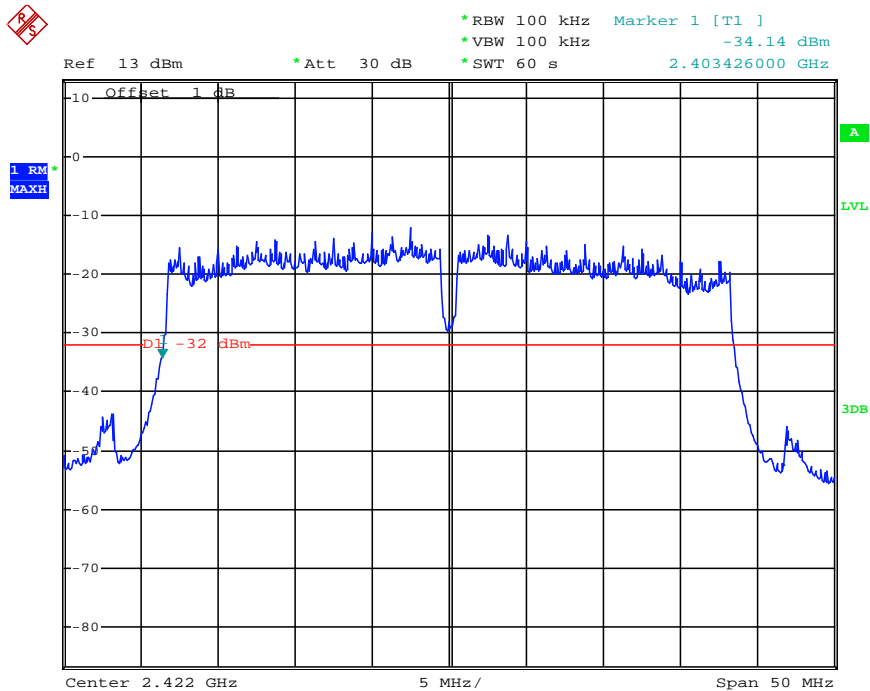


Date: 14.MAY.2013 18:08:23

Note: For 802.11n (40MHz) Mode

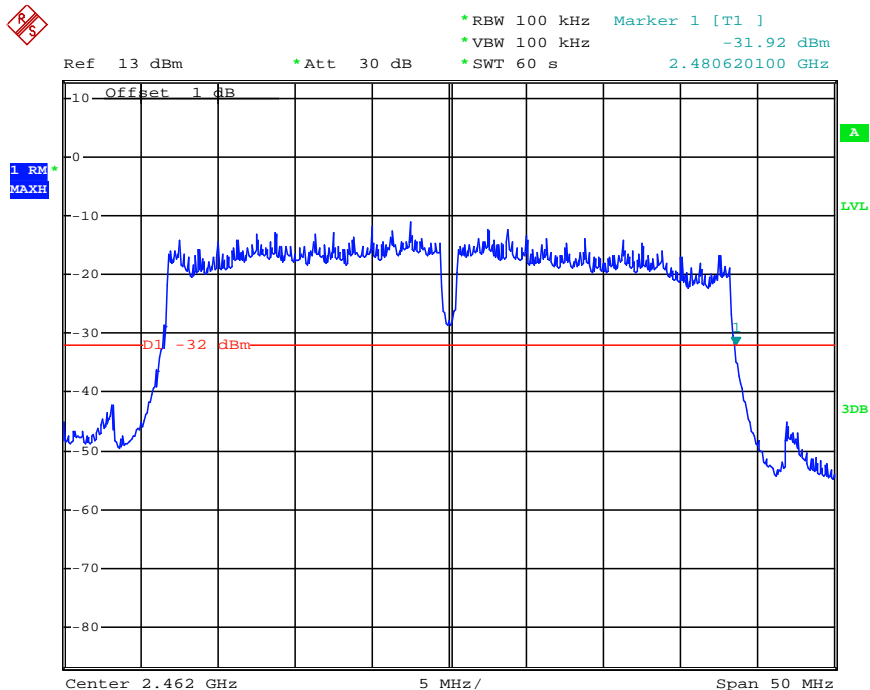
Test condition:normal

Channel 3



Date: 16.MAY.2013 16:42:51

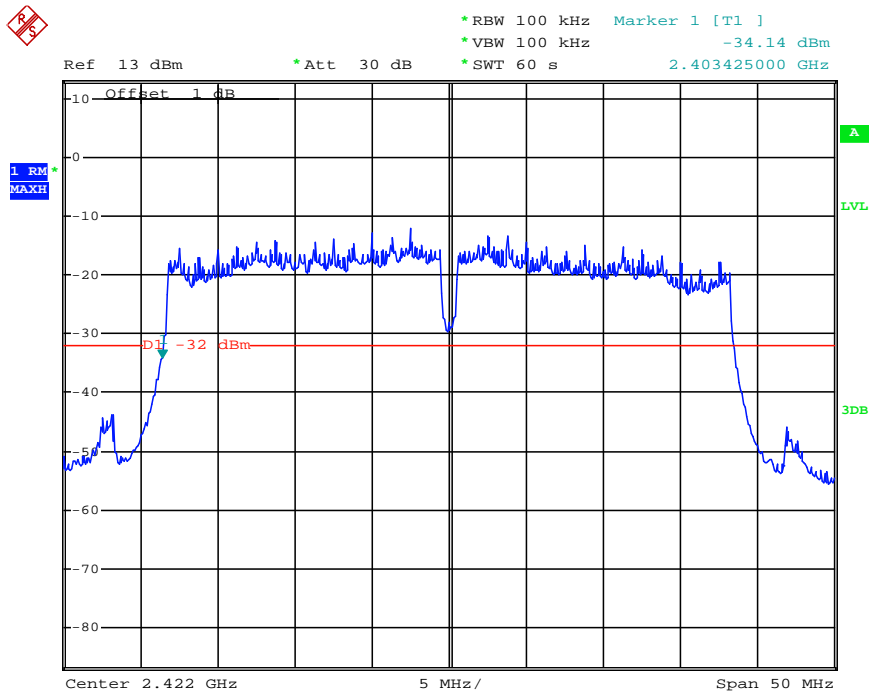
Channel 11



Date: 16.MAY.2013 16:46:47

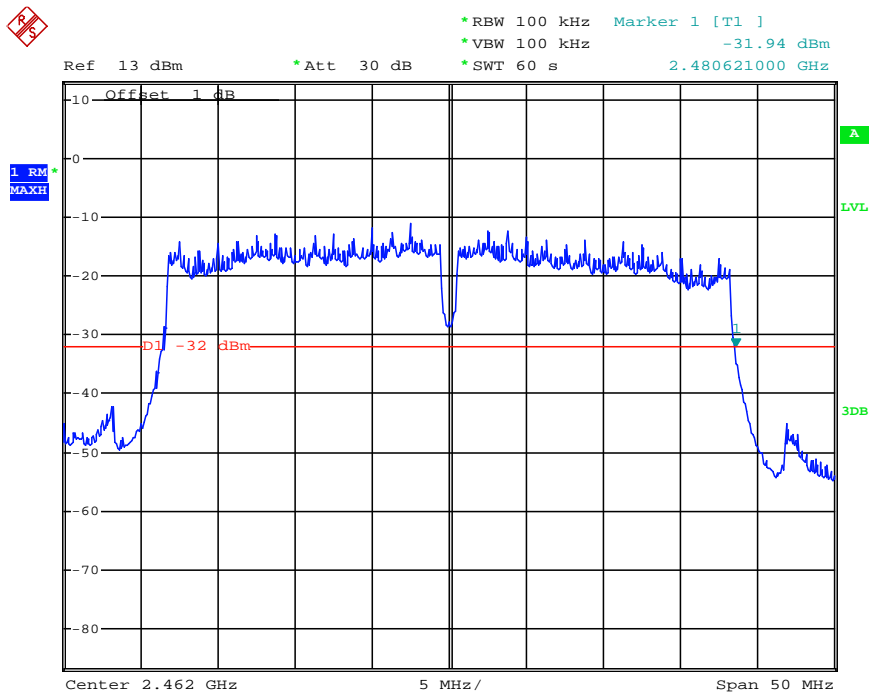
Test condition:-20°C & 253V

Channel 3



Date: 16.MAY.2013 16:43:03

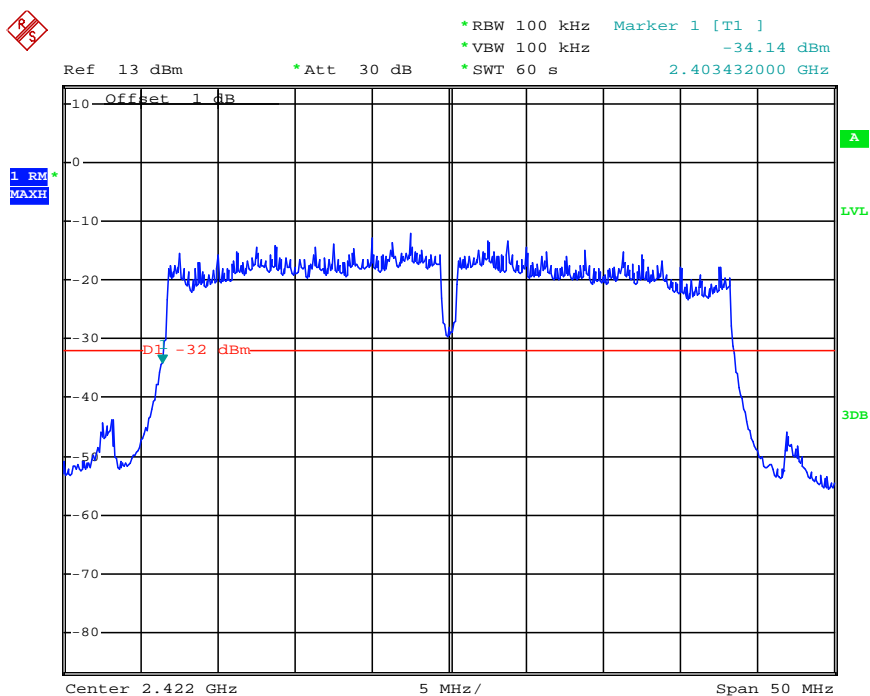
Channel 11



Date: 16.MAY.2013 16:46:36

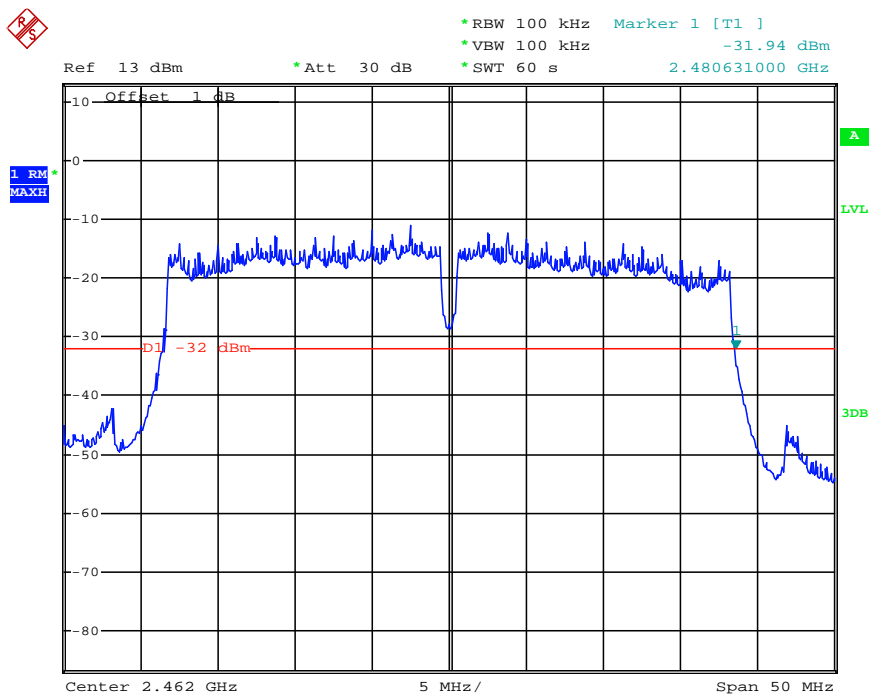
Test condition:-20°C & 207V

Channel 3



Date: 16.MAY.2013 16:43:14

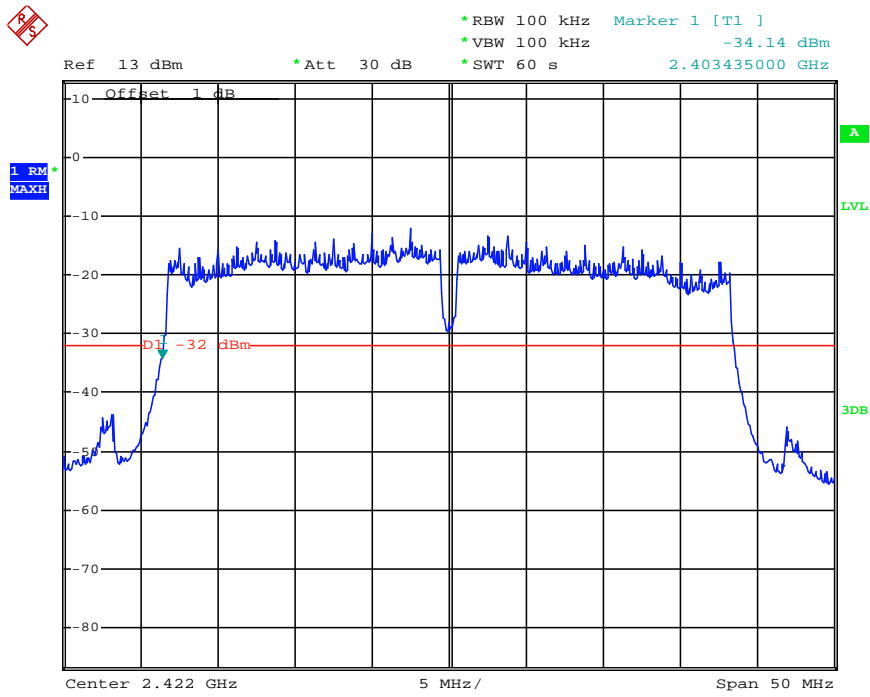
Channel 11



Date: 16.MAY.2013 16:46:27

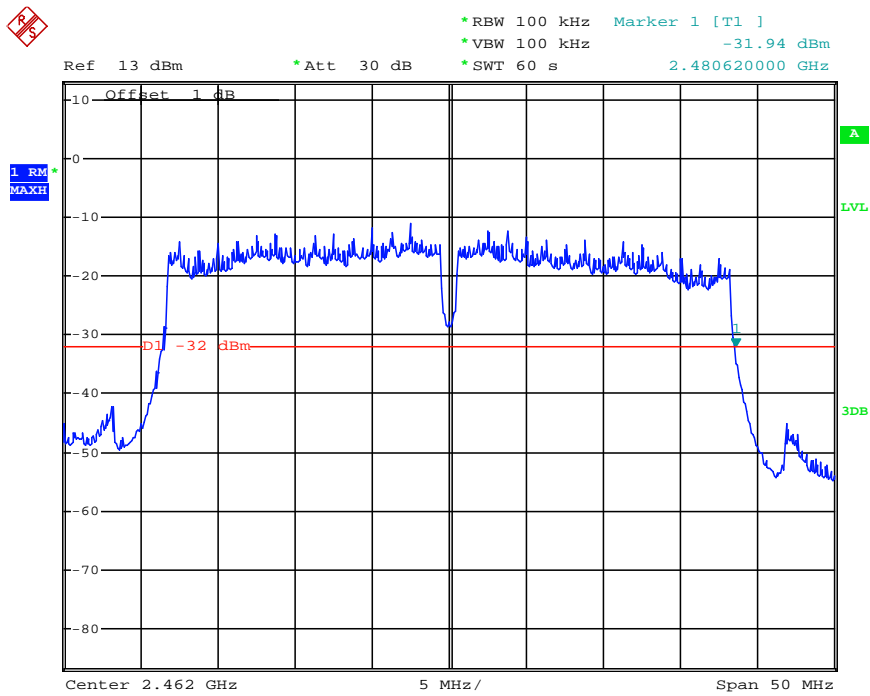
Test condition: +55°C & 253V

Channel 3



Date: 16.MAY.2013 16:43:23

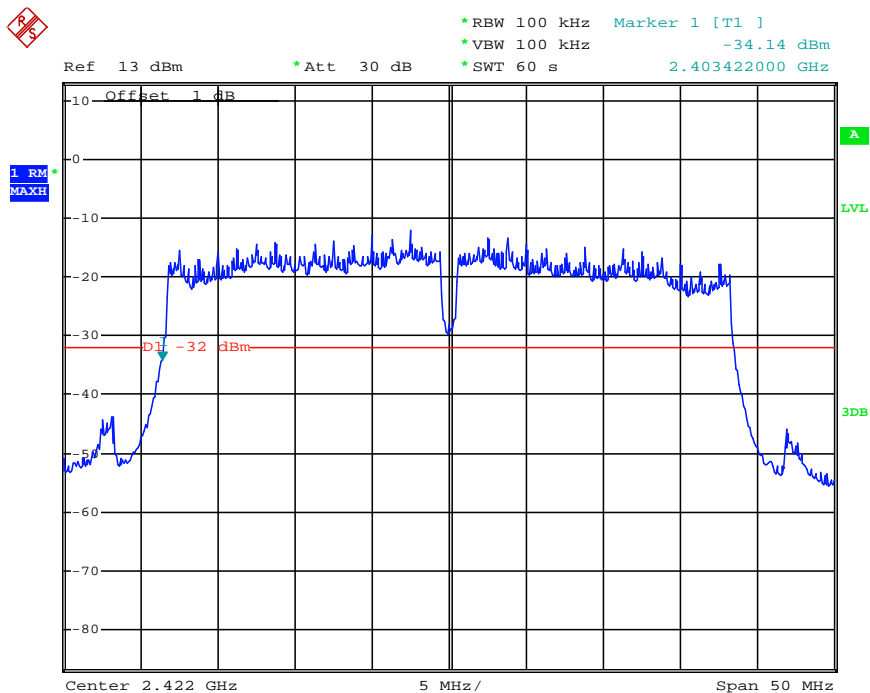
Channel 11



Date: 16.MAY.2013 16:46:17

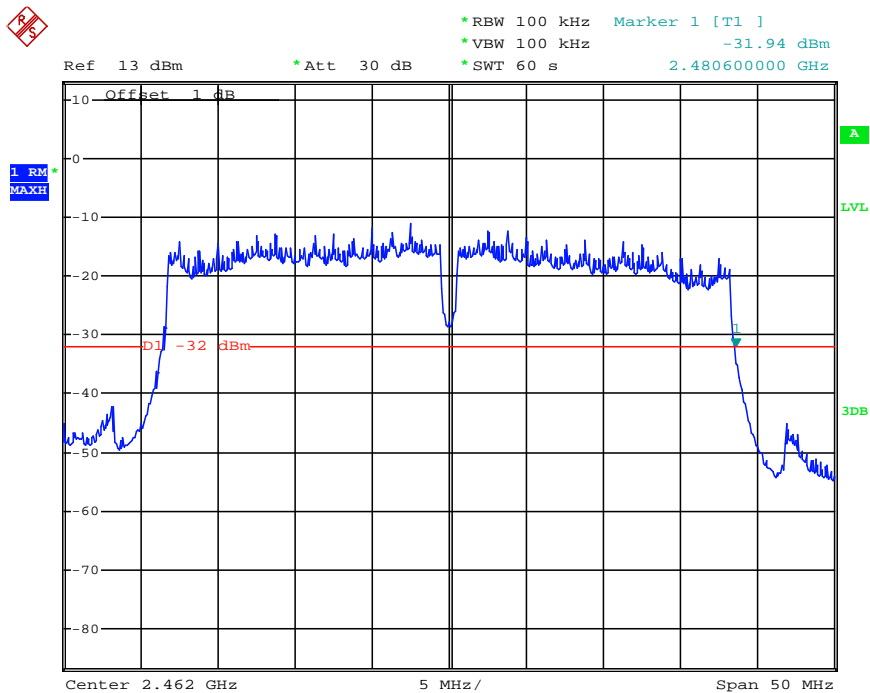
Test condition: +55°C & 207V

Channel 3



Date: 16.MAY.2013 16:43:34

Channel 11



Date: 16.MAY.2013 16:46:04

4.1.4. Medium access protocol

LIMIT

ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.5.2

According to EN 300 328 V1.7.1

Requirement:

A medium access protocol shall be implemented by the manufacturer.

TEST RESULTS

The EUT is accord with medium access protocol.

4.1.5. Transmitter spurious emissions

LIMIT

ETSI EN 300 328 (V1.7.1) Sub-clause 4.3.6.2

The spurious emissions of the transmitter shall not exceed the values in tables 2 and 3 in the indicated bands.

Table2: Transmitter limits for narrowband spurious emissions

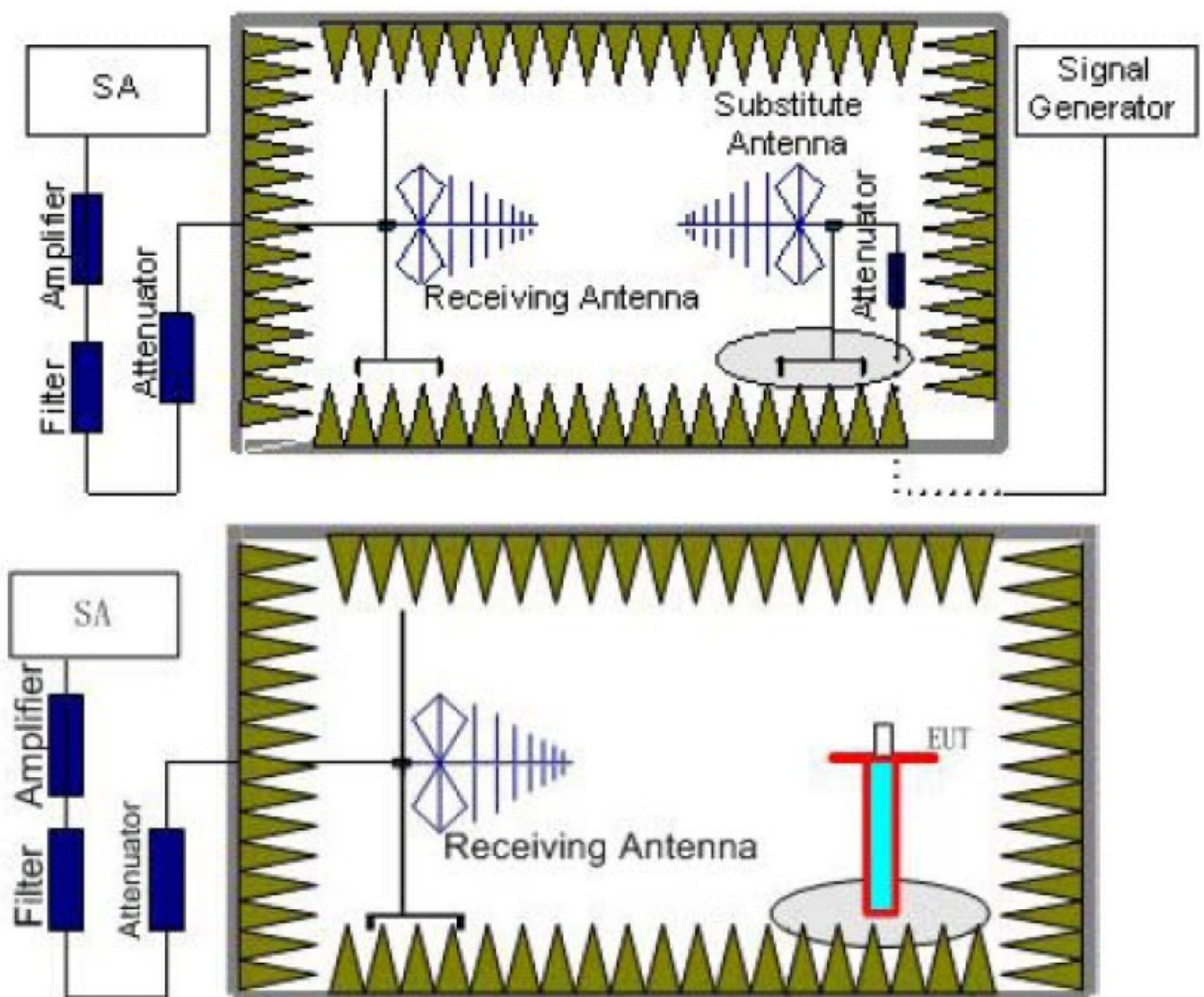
Frequency Range	Limit when Operating	Limit when Standby
30 MHz to 1 GHz	-36 dBm	-57 dBm
Above 1 GHz to 12.75 GHz	-30 dBm	-47 dBm
1.8 GHz to 1.9 GHz, 5.15 GHz to 5.3 GHz	-47 dBm	-47 dBm

Table 3: Transmitter limits for wideband spurious emissions

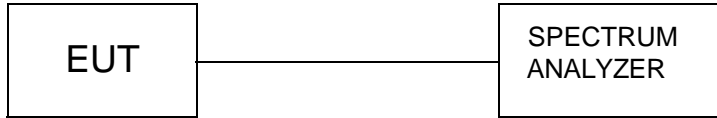
Frequency Range	Limit when Operating	Limit when Standby
30 MHz to 1 GHz	-86 dBm/Hz	-107 dBm/Hz
Above 1 GHz to 12.75 GHz	-80 dBm/Hz	-97 dBm/Hz
1.8 GHz to 1.9 GHz, 5.15 GHz to 5.3 GHz	-97 dBm/Hz	-97 dBm/Hz

TEST CONFIGURATION

Effective Radiated Power measurement (30 MHz to 12.75 GHz)



Conducted spurious emissions measurement



TEST PROCEDURE

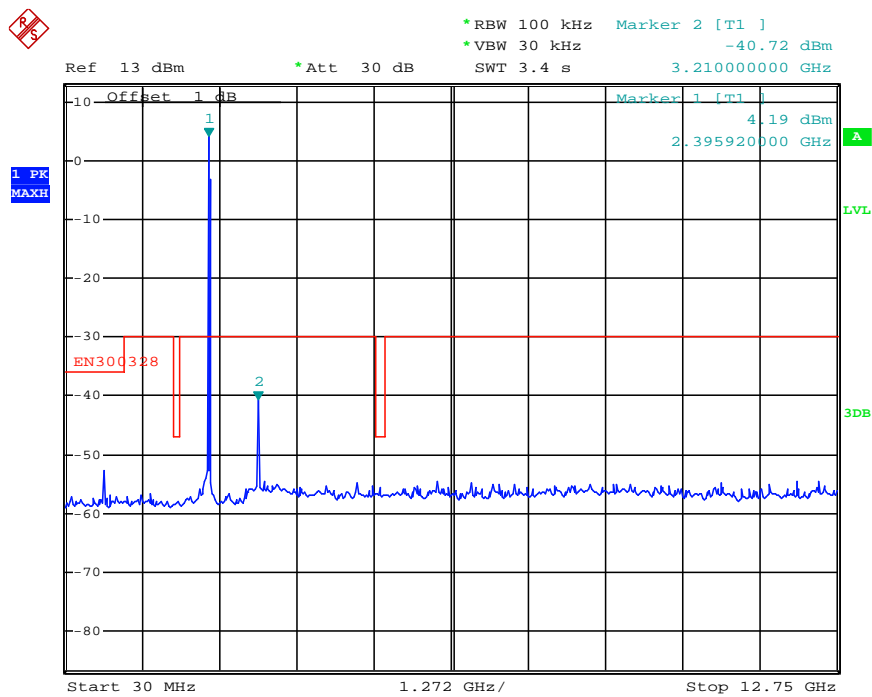
1. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.7.5 for the measurement method.

TEST RESULTS

Conducted spurious emissions test results

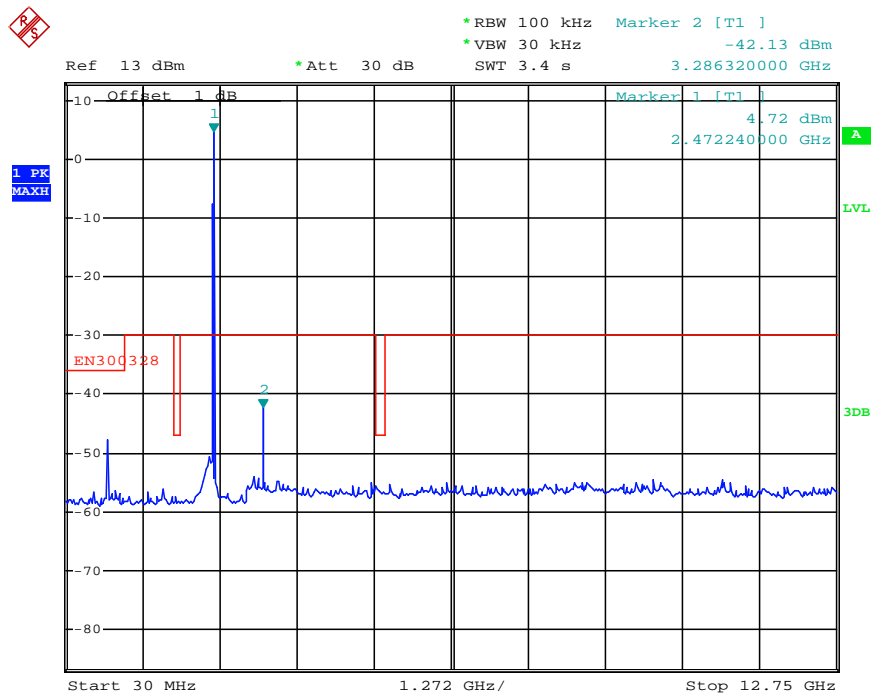
For 802.11b

Measurement Result @The Channel 1



Date: 14.MAY.2013 18:25:24

Measurement Result @The Channel 13

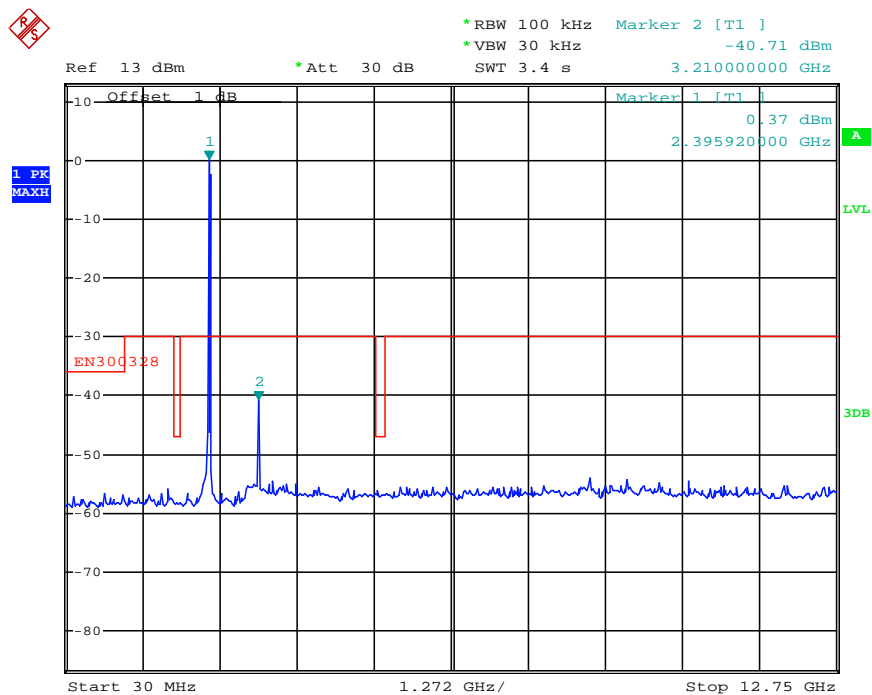


Date: 14.MAY.2013 18:26:12

Note: 1. For 802.11b mode at final test to get the worst-case emission at 1Mbps.
2. The test results including the cable lose.

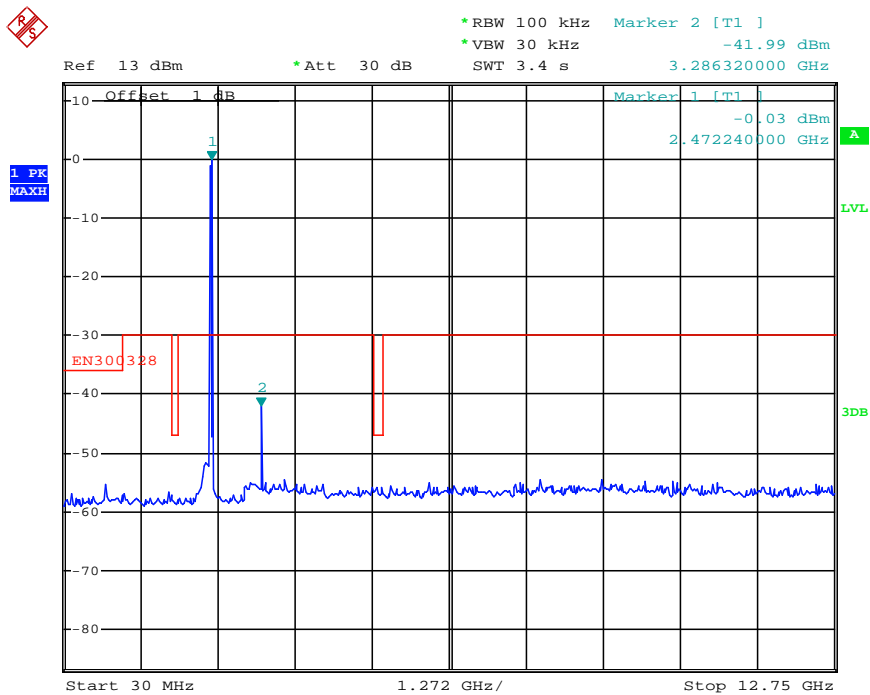
For 802.11g

Measurement Result @The Channel 1



Date: 14.MAY.2013 18:22:11

Measurement Result @The Channel 13

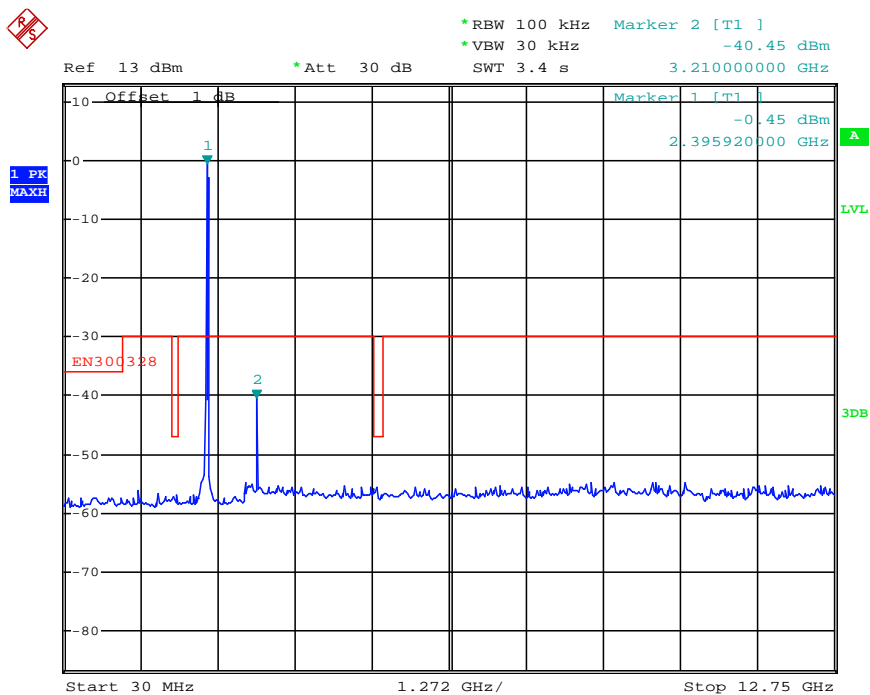


Date: 14.MAY.2013 18:22:57

Note: 1. For 802.11g mode at final test to get the worst-case emission at 6Mbps.
2. The test results including the cable lose.

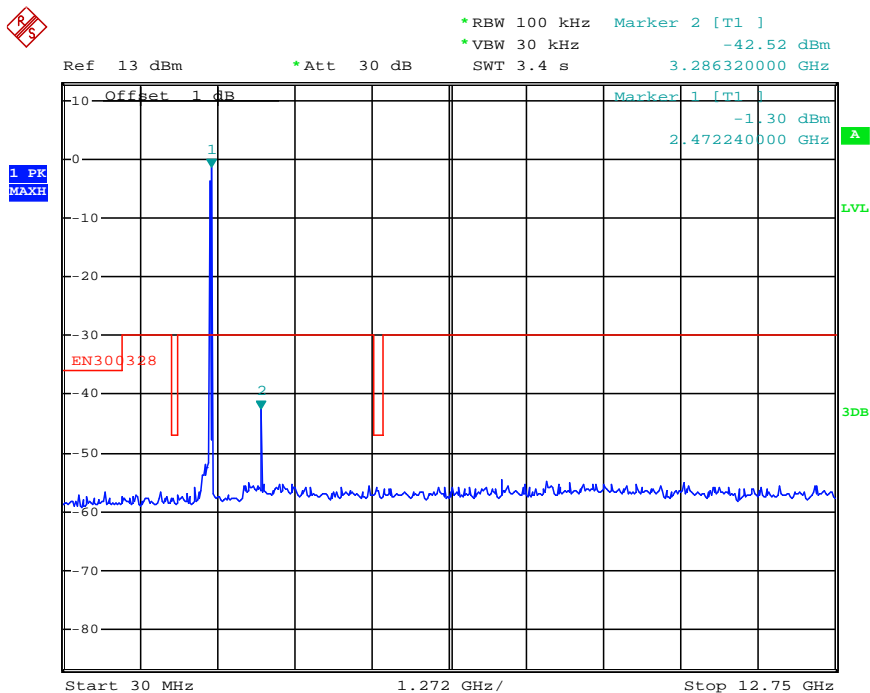
For 802.11n(20MHz)

Measurement Result @The Channel 1



Date: 14.MAY.2013 18:27:10

Measurement Result @The Channel 13

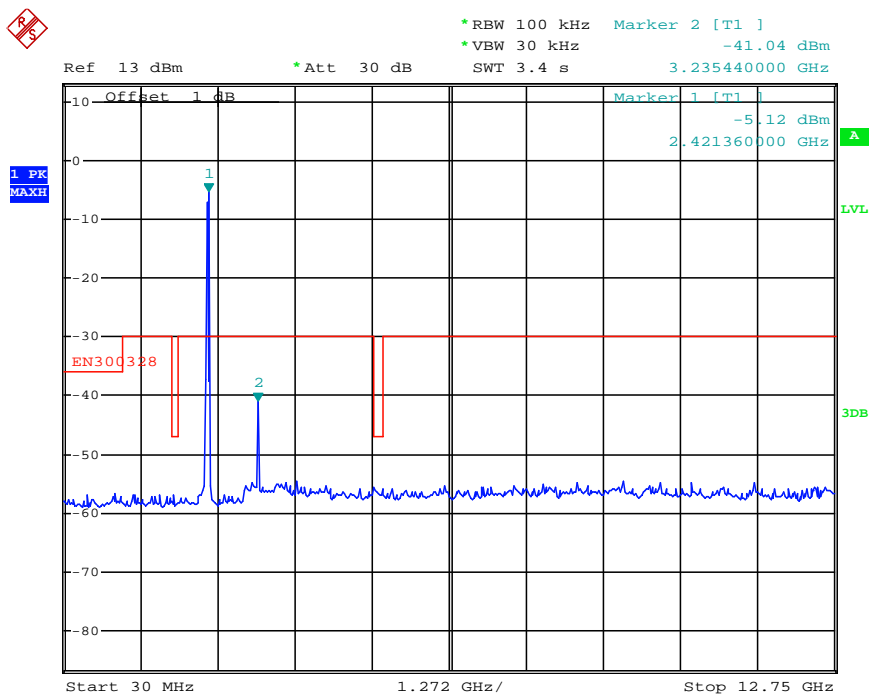


Date: 14.MAY.2013 18:27:55

Note: 1. For 802.11n(20MHz) mode at final test to get the worst-case emission at 6.5Mbps.
2. The test results including the cable lose.

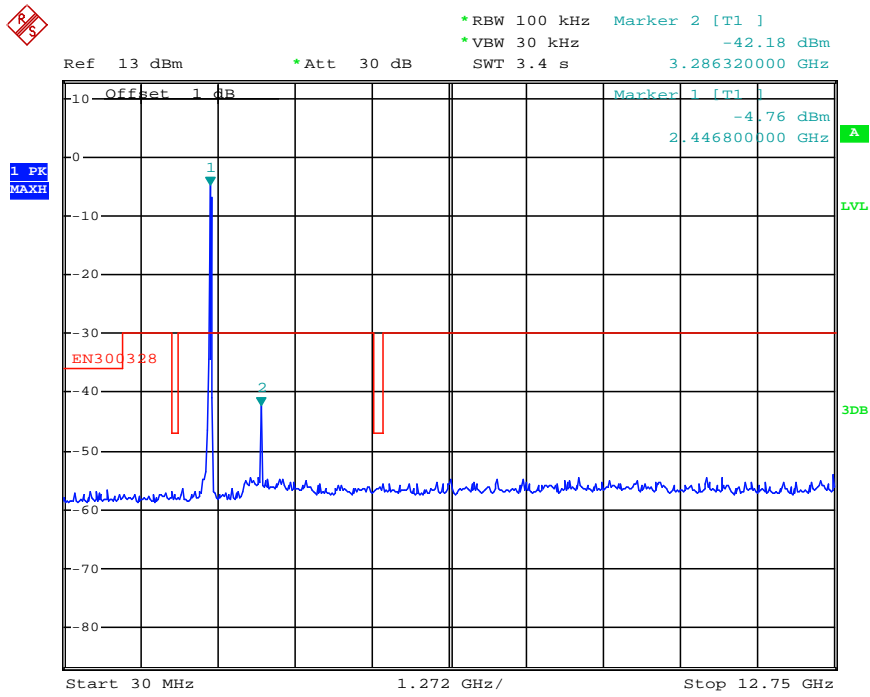
For 802.11n(40MHz)

Measurement Result @The Channel 3



Date: 14.MAY.2013 18:28:41

Measurement Result @The Channel 11



Date: 14.MAY.2013 18:29:31

Note: 1. For 802.11n(40MHz) mode at final test to get the worst-case emission at 13.5 Mbps.
2. The test results including the cable loss.

Radiated spurious emissions test results**For 802.11b*****Measurement Result @ The Channel 1***

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	326.25	-57.59	-36	21.59
1000	1800	H	100	1562.33	-68.93	-30	38.93
1800	1900	H	100	1820.00	-66.16	-47	19.16
1900	5150	H	100	4824.00	-56.36	-30	26.36
5150	5300	H	100	5245.54	-58.66	-47	11.66
5300	12750	H	100	12306.05	-45.89	-30	15.89
30	1000	V	100	326.25	-55.65	-36	19.65
1000	1800	V	100	1562.33	-68.73	-30	38.73
1800	1900	V	100	1820.00	-66.87	-47	19.87
1900	5150	V	100	4824.00	-48.69	-30	18.69
5150	5300	V	100	5245.54	-59.34	-47	12.34
5300	12750	V	100	12306.05	-46.06	-30	16.06

Measurement Result @ The Channel 13

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	165.25	-58.58	-36	22.58
1000	1800	H	100	1426.35	-67.35	-30	37.35
1800	1900	H	100	1836.00	-67.67	-47	20.67
1900	5150	H	100	4944.00	-54.03	-30	24.03
5150	5300	H	100	5185.54	-63.48	-47	16.48
5300	12750	H	100	10650.80	-48.19	-30	18.19
30	1000	V	100	165.25	-56.58	-36	20.58
1000	1800	V	100	1426.35	-65.38	-30	35.38
1800	1900	V	100	1836.00	-66.15	-47	19.15
1900	5150	V	100	4944.00	-49.49	-30	19.49
5150	5300	V	100	5185.54	-60.42	-47	13.42
5300	12750	V	100	10650.80	-47.32	-30	17.32

Remark:	
(1)	Corrected Power (dBm) = Reading+Ant/CL/Amp.CF
(2)	Margin=Limit-Emission Level
(3)	Measuring frequencies from 30 MHz to the 12.75GHz.
(4)	802.11b at final test to get the worst-case emission at 1Mbps.
(5)	Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

For 802.11g**Measurement Result @The Channel 1**

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	263.54	-58.50	-36	22.50
1000	1800	H	100	1369.05	-70.30	-30	40.30
1800	1900	H	100	1850.12	-67.37	-47	20.37
1900	5150	H	100	4824.00	-55.02	-30	25.02
5150	5300	H	100	5206.20	-59.40	-47	12.40
5300	12750	H	100	12063.10	-47.97	-30	17.97
30	1000	V	100	263.54	-56.05	-36	20.05
1000	1800	V	100	1369.05	-67.13	-30	37.13
1800	1900	V	100	1850.12	-66.95	-47	19.95
1900	5150	V	100	4824.00	-49.72	-30	19.72
5150	5300	V	100	5206.20	-59.61	-47	12.61
5300	12750	V	100	12063.10	-48.30	-30	18.30

Measurement Result @ The Channel 13

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	358.24	-56.57	-36	20.57
1000	1800	H	100	1563.25	-68.93	-30	38.93
1800	1900	H	100	1862.00	-67.37	-47	20.37
1900	5150	H	100	4944.00	-56.94	-30	26.94
5150	5300	H	100	5252.52	-58.65	-47	11.65
5300	12750	H	100	12002.55	-46.94	-30	16.94
30	1000	V	100	358.24	-54.00	-36	18.00
1000	1800	V	100	1563.25	-69.98	-30	39.98
1800	1900	V	100	1862.00	-68.73	-47	21.73
1900	5150	V	100	4944.00	-46.61	-30	16.61
5150	5300	V	100	5252.52	-58.60	-47	11.60
5300	12750	V	100	12002.55	-47.09	-30	17.09

Remark:	
(1)	Corrected Power (dBm) = Reading+Ant/CL/Amp.CF
(2)	Margin=Limit-Emission Level
(3)	Measuring frequencies from 30 MHz to the 12.75GHz.
(4)	802.11g at final test to get the worst-case emission at 6Mbps.
(5)	Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

For 802.11n (20MHz)**Measurement Result @The Channel 1**

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	345.26	-54.92	-36	18.92
1000	1800	H	100	1257.20	-68.65	-30	38.65
1800	1900	H	100	1842.20	-66.60	-47	19.60
1900	5150	H	100	4824.00	-55.56	-30	25.56
5150	5300	H	100	5247.30	-55.05	-47	8.05
5300	12750	H	100	12020.00	-44.82	-30	14.82
30	1000	V	100	345.26	-49.87	-36	13.87
1000	1800	V	100	1257.20	-66.07	-30	36.07
1800	1900	V	100	1842.20	-67.04	-47	20.04
1900	5150	V	100	4824.00	-48.85	-30	18.85
5150	5300	V	100	5247.30	-60.68	-47	13.68
5300	12750	V	100	12020.00	-44.12	-30	14.12

Measurement Result @ The Channel 13

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	332.50	-56.29	-36	20.29
1000	1800	H	100	1532.00	-69.07	-30	39.07
1800	1900	H	100	1820.14	-66.20	-47	19.20
1900	5150	H	100	4944.00	-57.34	-30	27.34
5150	5300	H	100	5186.36	-58.11	-47	11.11
5300	12750	H	100	10253.02	-45.26	-30	15.26
30	1000	V	100	332.50	-52.47	-36	16.47
1000	1800	V	100	1532.00	-66.05	-30	36.05
1800	1900	V	100	1820.14	-60.86	-47	13.86
1900	5150	V	100	4944.00	-49.26	-30	19.26
5150	5300	V	100	5186.36	-59.43	-47	12.43
5300	12750	V	100	10253.02	-45.88	-30	15.88

Remark:	
(1)	Corrected Power (dBm) = Reading+Ant/CL/Amp.CF
(2)	Margin=Limit-Emission Level
(3)	Measuring frequencies from 30 MHz to the 12.75GHz.
(4)	802.11n (20MHz) at final test to get the worst-case emission at 6.5Mbps.
(5)	Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

For 802.11n (40MHz)**Measurement Result @The Channel 3**

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	475.26	-56.15	-36	20.15
1000	1800	H	100	1563.25	-69.01	-30	39.01
1800	1900	H	100	1875.26	-66.68	-47	19.68
1900	5150	H	100	4844.00	-55.03	-30	25.03
5150	5300	H	100	5263.00	-60.45	-47	13.45
5300	12750	H	100	12142.50	-46.42	-30	16.42
30	1000	V	100	475.26	-55.44	-36	19.44
1000	1800	V	100	1563.25	-67.35	-30	37.35
1800	1900	V	100	1875.26	-66.17	-47	19.17
1900	5150	V	100	4844.00	-49.79	-30	19.79
5150	5300	V	100	5263.00	-59.32	-47	12.32
5300	12750	V	100	12142.50	-45.69	-30	15.69

Measurement Result @ The Channel 11

Start Frequency (MHz)	Stop Frequency (MHz)	Antenna Polarization	Res Bandwidth (KHz)	Maximum Emission Observed		Limit (dBm)	Margin (dB)
				Frequency (MHz)	Datum (dBm)		
30	1000	H	100	356.05	-54.44	-36	18.44
1000	1800	H	100	1445.00	-65.98	-30	35.98
1800	1900	H	100	1880.05	-65.44	-47	18.44
1900	5150	H	100	4924.00	-53.58	-30	23.58
5150	5300	H	100	5236.05	-60.05	-47	13.05
5300	12750	H	100	12067.06	-46.50	-30	16.50
30	1000	V	100	356.05	-53.11	-36	17.11
1000	1800	V	100	1445.00	-68.13	-30	38.13
1800	1900	V	100	1880.05	-65.74	-47	18.74
1900	5150	V	100	4924.00	-47.03	-30	17.03
5150	5300	V	100	5236.05	-61.70	-47	14.70
5300	12750	V	100	12067.06	-45.09	-30	15.09

Remark:	
(1)	Corrected Power (dBm) = Reading+Ant/CL/Amp.CF
(2)	Margin=Limit-Emission Level
(3)	Measuring frequencies from 30 MHz to the 12.75GHz.
(4)	802.11n (40MHz) at final test to get the worst-case emission at 13.5Mbps.
(5)	Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

4.1.6. Receiver spurious emissions

LIMIT

ETSI EN 300 328(V1.7.1) Sub-clause 4.3.7.2

The spurious emissions of the receiver shall not exceed the values in tables 4 and 5 in the indicated bands.

Table 4: Narrowband spurious emission limits for receivers

Frequency	range
30 MHz to 1 GHz	-57 dBm
1 GHz to 12.75GHz	-47 dBm

Table 5: Wideband spurious emission limits for receivers

Frequency	range
30 MHz to 1 GHz	-107dBm/Hz
1 GHz to 12.75GHz	-97dBm/Hz

TEST CONFIGURATION

The same as described in section 4.1.4

TEST PROCEDURE

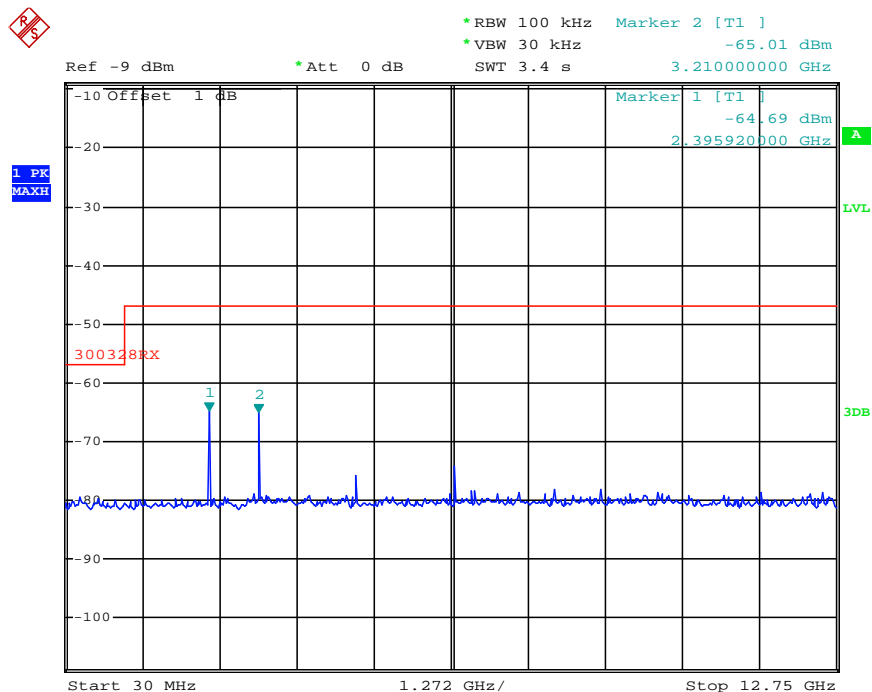
1. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.3 for the test conditions.
2. Please refer to ETSI EN 300 328 (V1.7.1) Sub-clause 5.7.6 for the measurement method.

TEST RESULTS

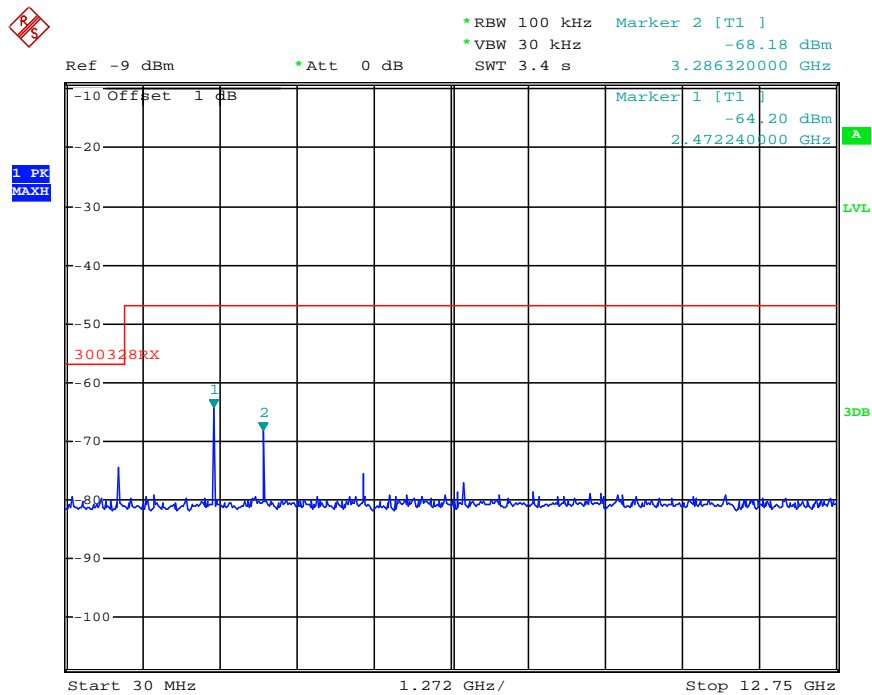
Conducted spurious emissions test results

For 802.11b

Measurement Result @The Channel 1



Measurement Result @The Channel 13

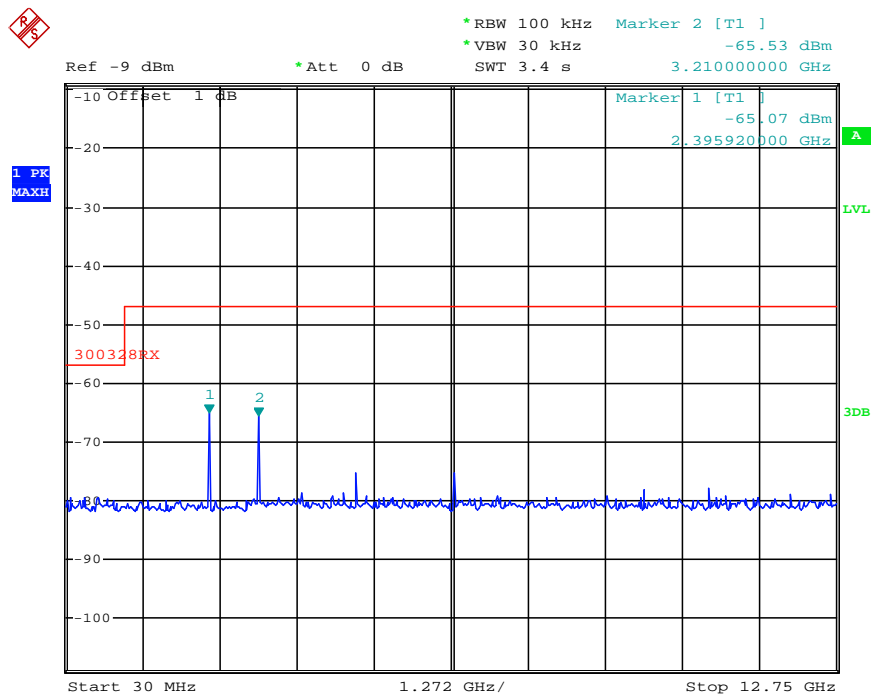


Date: 14.MAY.2013 18:34:50

Note: 1. For 802.11b mode at final test to get the worst-case emission at 1Mbps.
2. The test results including the cable lose.

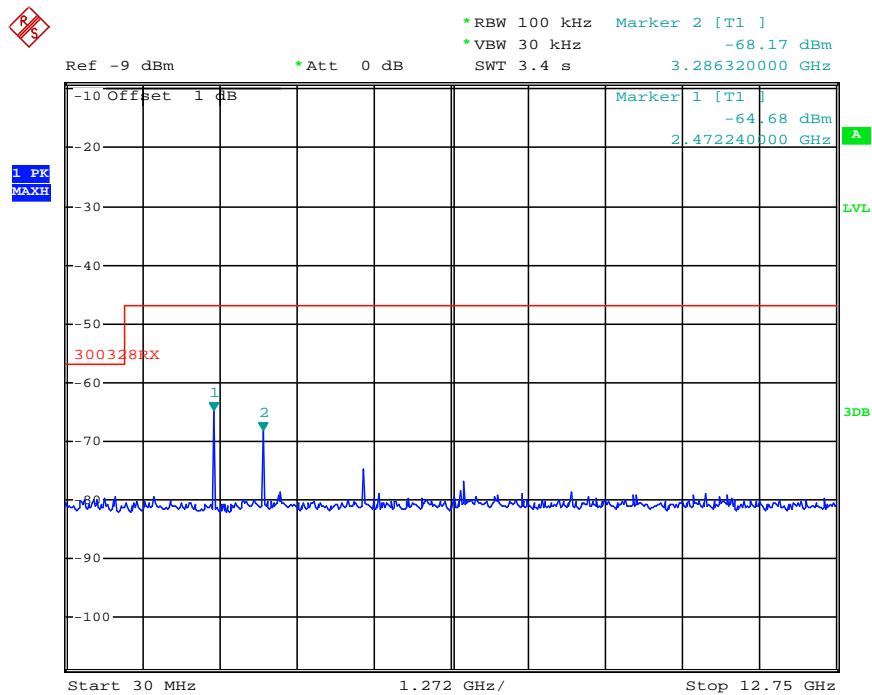
For 802.11g

Measurement Result @The Channel 1



Date: 14.MAY.2013 18:37:14

Measurement Result @The Channel 13

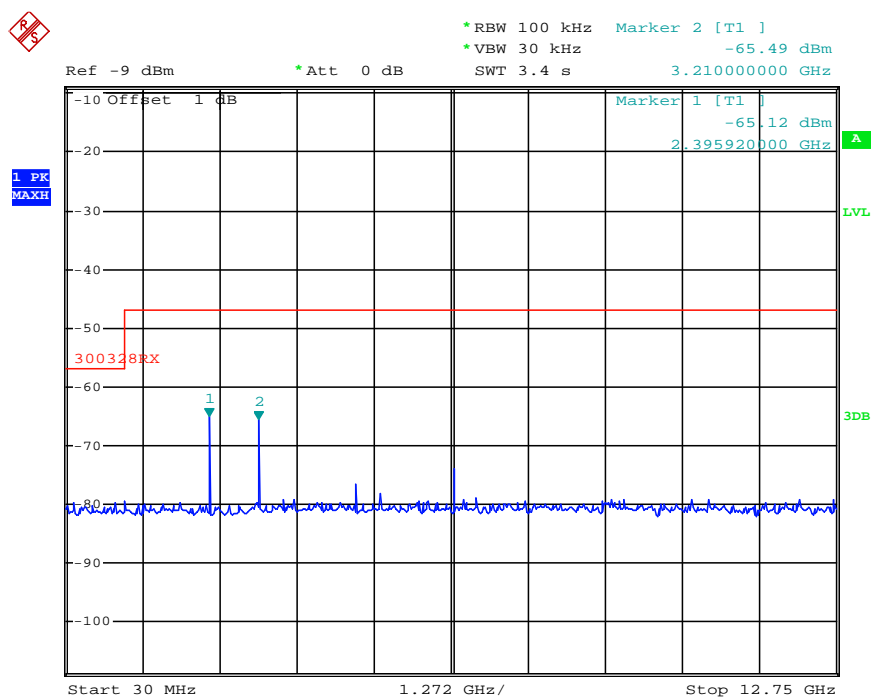


Date: 14.MAY.2013 18:37:54

Note: 1. For 802.11g mode at final test to get the worst-case emission at 6Mbps.
2. The test results including the cable lose.

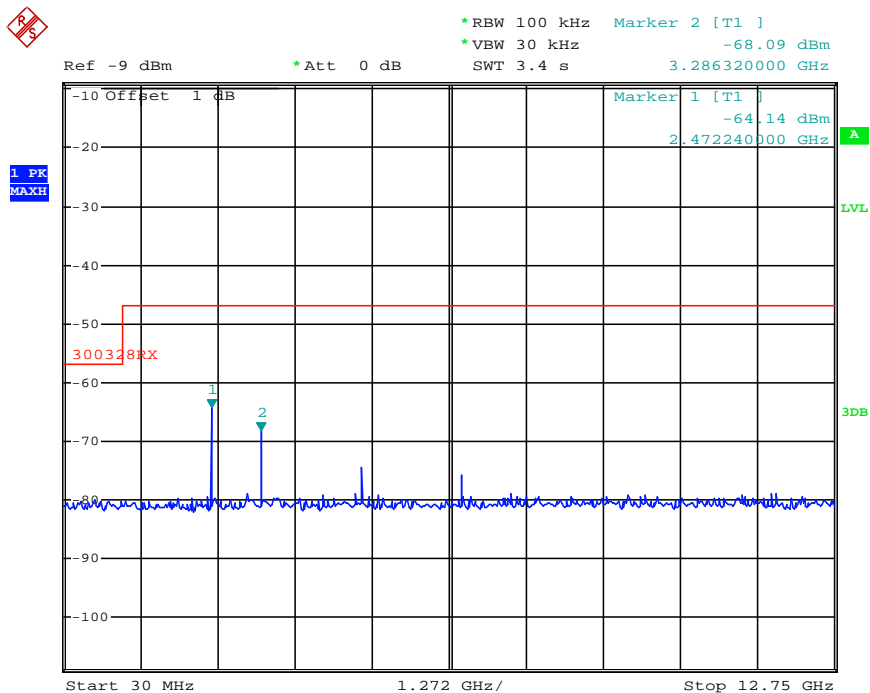
For 802.11n(20MHz)

Measurement Result @The Channel 1



Date: 14.MAY.2013 18:33:53

Measurement Result @The Channel 13

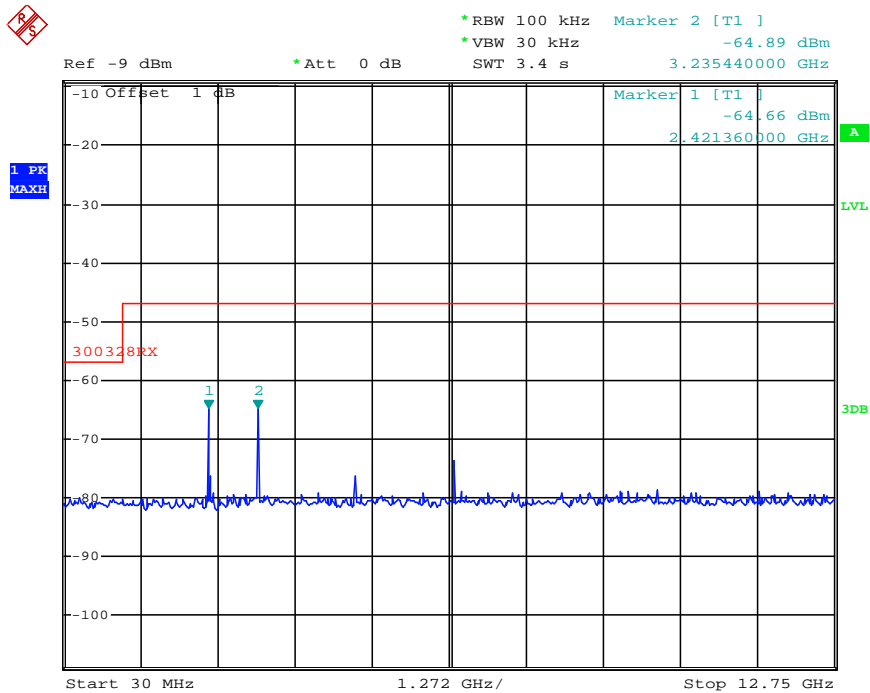


Date: 14.MAY.2013 18:33:04

Note: 1. For 802.11n(20MHz) mode at final test to get the worst-case emission at 6.5Mbps.
2. The test results including the cable lose.

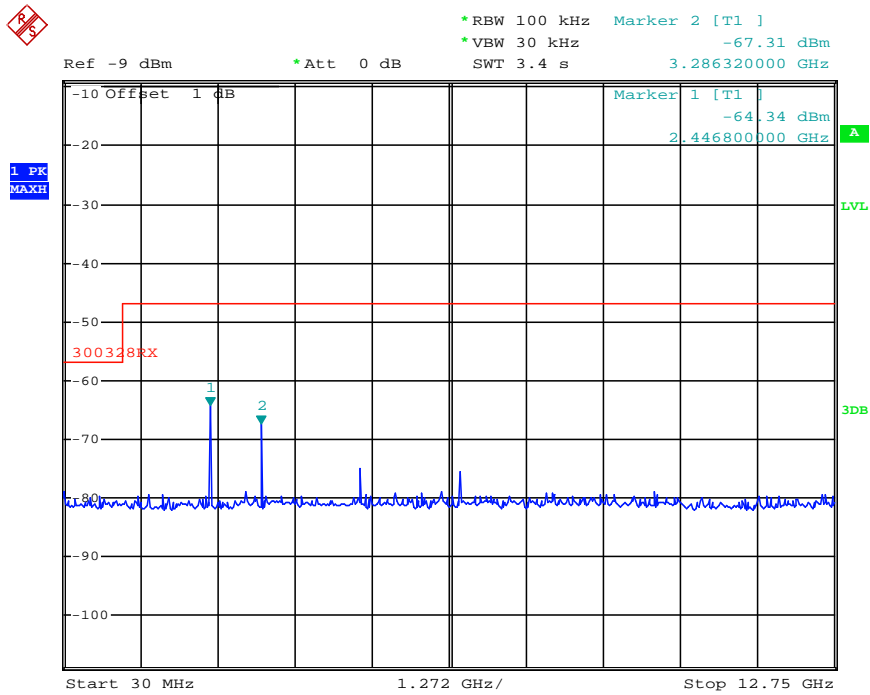
For 802.11n(40MHz)

Measurement Result @The Channel 3



Date: 14.MAY.2013 18:32:09

Measurement Result @The Channel 11



Date: 14.MAY.2013 18:31:15

Note: 1. For 802.11n(40MHz) mode at final test to get the worst-case emission at 13.5Mbps.
2. The test results including the cable lose.

Radiated spurious emissions test results

Test Mode:802.11b							
Test Frequency:2412MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	365.23	-63.55	-57	6.55
1000	12750	V	100	11206.05	-53.45	-47	6.45
30	1000	H	100	365.23	-63.62	-57	6.62
1000	12750	H	100	11206.05	-53.55	-47	6.55

Test Mode:802.11b							
Test Frequency:2472MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	453.24	-64.59	-57	7.59
1000	12750	V	100	11025.20	-54.92	-47	7.92
30	1000	H	100	453.24	-64.03	-57	7.03
1000	12750	H	100	11025.20	-54.52	-47	7.52

Test Mode:802.11g							
Test Frequency:2412MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	543.25	-64.50	-57	7.50
1000	12750	V	100	12063.10	-55.00	-47	8.00
30	1000	H	100	543.25	-63.23	-57	6.23
1000	12750	H	100	12063.10	-54.12	-47	7.12

Test Mode:802.11g							
Test Frequency:2472MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	462.44	-64.56	-57	7.56
1000	12750	V	100	12056.14	-54.79	-47	7.79
30	1000	H	100	462.44	-63.70	-57	6.70
1000	12750	H	100	12056.14	-54.50	-47	7.50

Test Mode: 802.11n (20MHz)							
Test Frequency:2412MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	452.26	-65.04	-57	8.04
1000	12750	V	100	12014.36	-53.68	-47	6.68
30	1000	H	100	452.26	-64.42	-57	7.42
1000	12750	H	100	12014.36	-54.33	-47	7.33

Test Mode: 802.11n (20MHz)							
Test Frequency:2472MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	723.61	-62.79	-57	5.79
1000	12750	V	100	11023.25	-52.63	-47	5.63
30	1000	H	100	723.61	-62.43	-57	5.43
1000	12750	H	100	11023.25	-52.73	-47	5.73

Test Mode:802.11n (40MHz)							
Test Frequency:2422MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	521.25	-64.79	-57	7.79
1000	12750	V	100	11253.20	-52.84	-47	5.84
30	1000	H	100	521.25	-63.73	-57	6.73
1000	12750	H	100	11253.20	-52.77	-47	5.77

Test Mode:802.11n (40MHz)							
Test Frequency:2462MHz				Test Method:EIRP(Radiated)			
Start Frequency	Stop Frequency	Antenna	Res Bandwidth	Maximum Emission Observed		Limit	Margin
(MHz)	(MHz)	Polarization	(KHz)	Frequency (MHz)	Datum (dBm)	(dBm)	(dB)
30	1000	V	100	345.78	-64.50	-57	7.50
1000	12750	V	100	11532.25	-52.67	-47	5.67
30	1000	H	100	345.78	-64.55	-57	7.55
1000	12750	H	100	11532.25	-52.45	-47	5.45

- Note :1. 802.11b at final test to get the worst-case emission at 1Mbps.
 2. 802.11g at final test to get the worst-case emission at 6Mbps.
 3. 802.11n (20MHz) at final test to get the worst-case emission at 6.5Mbps.
 4. 802.11n (40MHz) at final test to get the worst-case emission at 13.5 Mbps.

5. Test Setup Photos of the EUT



.....End of Report.....