EMC
TEST REPORT

Report No. : TS09100028-EME
Model No. : WR5510
Issued Date : Oct. 16, 2009

Applicant: **AboCom Systems, Inc.**
77, Yu-Yih Rd., Chu-Nan Chen, Miao-Lih Hsuan, Taiwan

Test Method/ Standard: **47 CFR FCC Part 15.247 & ANSI C63.4 2003**

Test By: **Intertek Testing Services Taiwan Ltd.**
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan

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These measurements were taken by: Sign on File
Rex Liao/ Engineer

The test report was reviewed by: Leon Cheng

Name Leon Cheng
Title Engineer

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Emission on the Band Edge	15.247(d)	Pass
AC Power Line Conducted Emission	15.207	Pass

2. General Information

Identification of the EUT

Applicant:	AboCom Systems, Inc.
Product:	WLAN 802.11b/g/n Router
Model No.:	WR5510
FCC ID.:	MQ4WR5110
Frequency Range:	1. 2412 MHz to 2462 MHz for 802.11b, 802.11g, 802.11n HT20 2. 2422 MHz to 2452 MHz for 802.11n HT40.
Channel Number:	1. 11 channels for 802.11b, 802.11g, 802.11n HT20 2. 7 channels for 802.11n HT40.
Rated Power:	1. DC 12V from adapter (Model No.:: MT12-Y120100-A1) Input: 100-120 Vac, 60 Hz 2. DC 12 V from adapter (Model No.: DSA-12G-12 FUS 120120) Input: 100-240 Vac, 50/60 Hz
Power Cord:	N/A
Sample Received:	Oct. 08, 2009
Test Date(s):	Oct. 13, 2009 ~ Oct. 14, 2009
Note 1:	This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
Note 2:	When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Description of EUT

The EUT is a WLAN 802.11b/g/n Router, and was defined as information technology equipment.

For more detail features, please refer to User's manual as file name “Installation guide.pdf”

Antenna description

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain	: 2 dBi max
Antenna Type	: Dipole antenna
Connector Type	: SMA Reverse

Operation mode

The EUT was supplied with DC 12V from adapter (Test voltage: 120 Vac, 60 Hz) and it was run in TX mode that was controlled by “MP_TEST” program.

The EUT was transmitted continuously during the test.

With individual verifying, the maximum output power was found at 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The final tests were executed under these conditions and recorded in this report individually.

802.11b ch6	
Data rate (Mbps)	PK (dBm)
1M	20.56
2M	20.34
5.5M	20.1
11M	19.99

802.11g ch6	
Data rate (Mbps)	PK (dBm)
6M	26.89
9M	26.56
12M	26.43
18M	26.41
24M	26.16
36M	25.97
48M	25.91
54M	25.81

802.11n HT 20 ch6	
Data rate (Mbps)	PK (dBm)
MCS0	26.86
MCS1	26.71
MCS2	26.54
MCS3	26.31
MCS4	26.19
MCS5	26.01
MCS6	25.87
MCS7	25.71

802.11n HT 40 ch6	
Data rate (Mbps)	PK (dBm)
MCS0	26.43
MCS1	26.14
MCS2	26.00
MCS3	25.89
MCS4	25.67
MCS5	25.54
MCS6	25.49
MCS7	25.19

3. Maximum 6 dB Bandwidth

Name of Test	Maximum 6dB Bandwidth
Base Standard	FCC 15.247 (a)(2)

Test Result: Complies

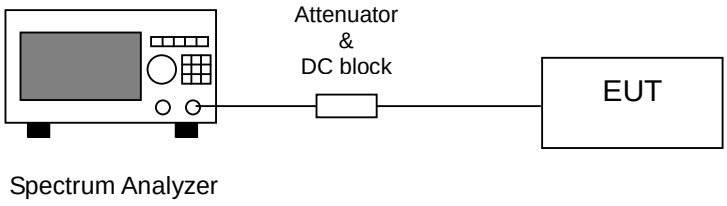
Measurement Data: See Table & plots below

Method of Measurement:

Reference FCC document: KDB558074

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

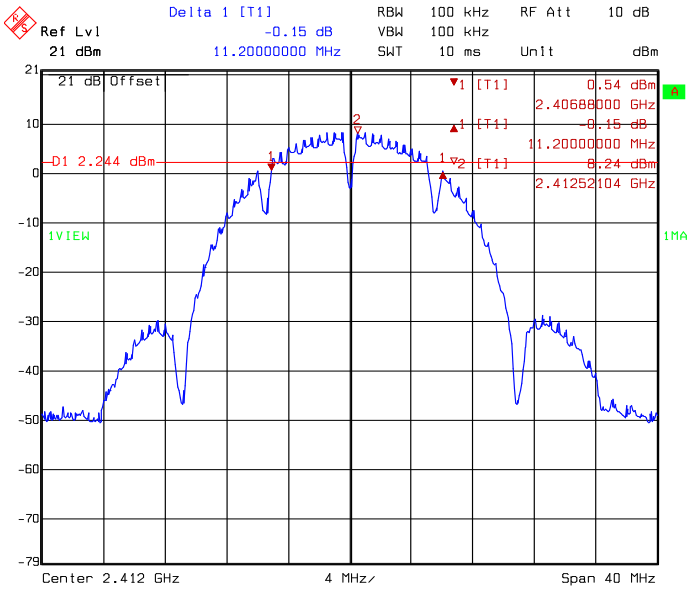


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 1. Maximum 6dB Bandwidth

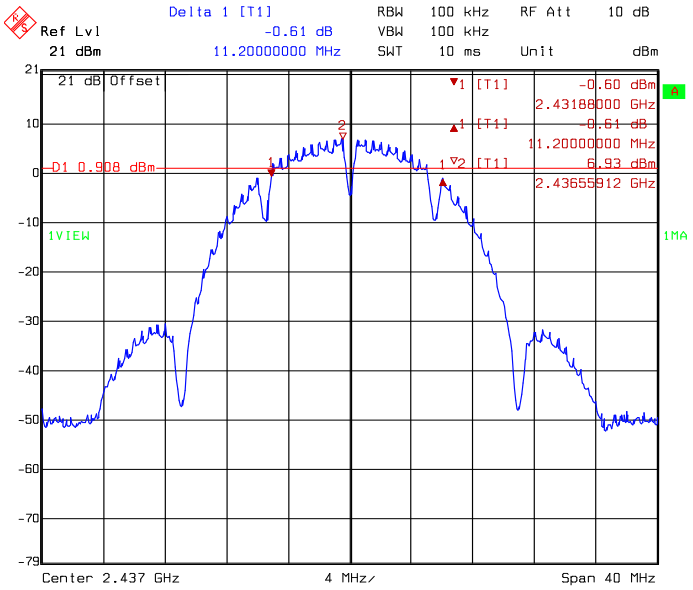
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
802.11b	1	2412	11.20	0.5
	6	2437	11.20	0.5
	11	2462	11.20	0.5
802.11g	1	2412	16.64	0.5
	6	2437	16.64	0.5
	11	2462	16.72	0.5
802.11 HT20	1	2412	18.00	0.5
	6	2437	17.92	0.5
	11	2462	17.92	0.5
802.11 HT40	3	2422	36.80	0.5
	6	2437	36.80	0.5
	9	2452	36.80	0.5

6dB Bandwidth @ 802.11b mode channel 1



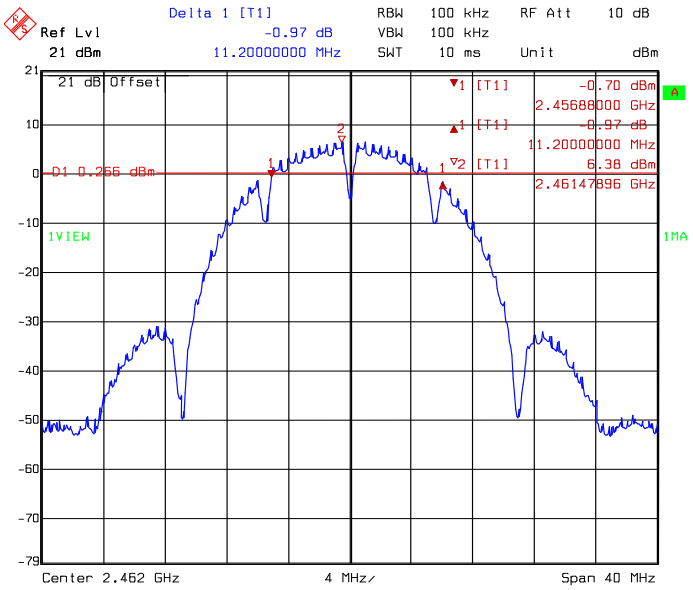
Title: 6dB Band-Width
Comment A: CH 1 at 802.11b mode
Date: 13.OCT.2009 16:06:33

6dB Bandwidth @ 802.11b mode channel 6

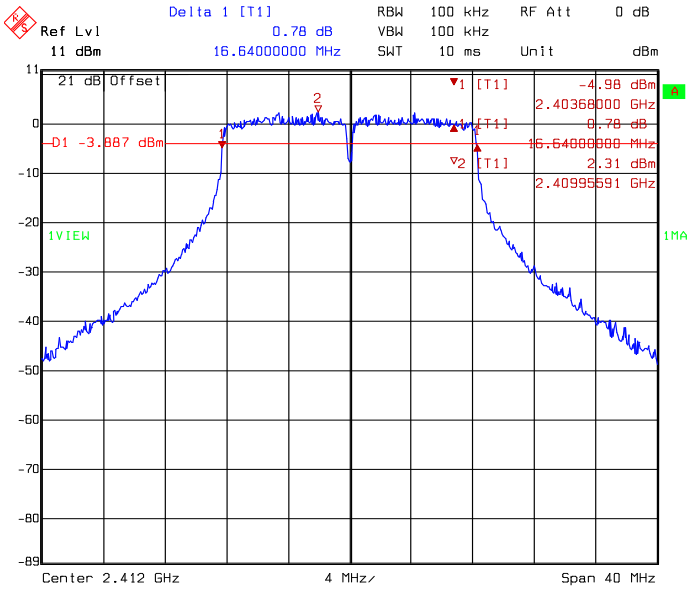


Title: 6dB Band-Width
Comment A: CH 6 at 802.11b mode
Date: 13.OCT.2009 16:16:14

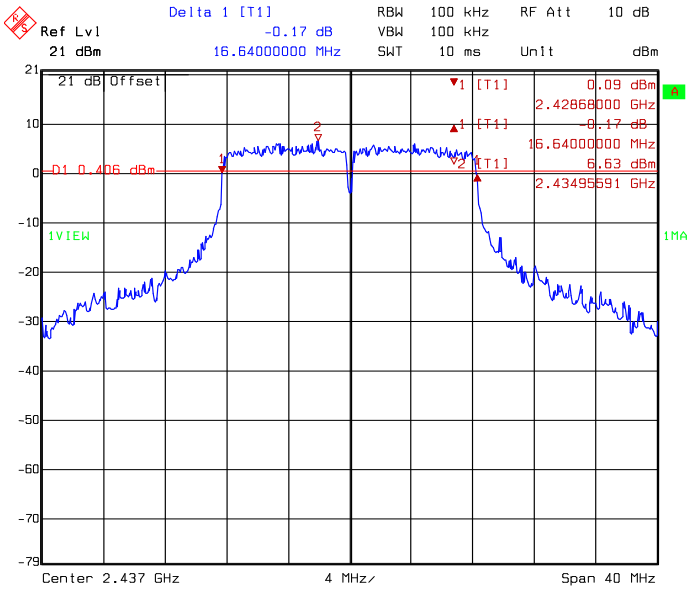
6dB Bandwidth @ 802.11b mode channel 11



6dB Bandwidth @ 802.11g mode channel 1

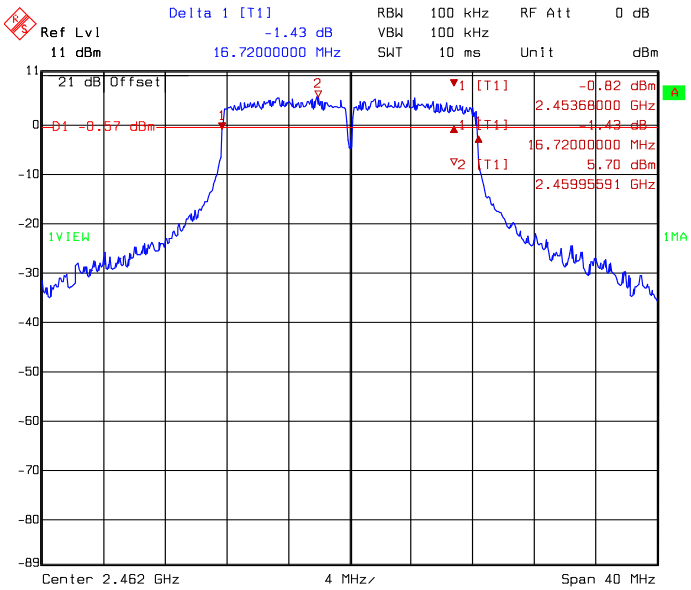


6dB Bandwidth @ 802.11g mode channel 6



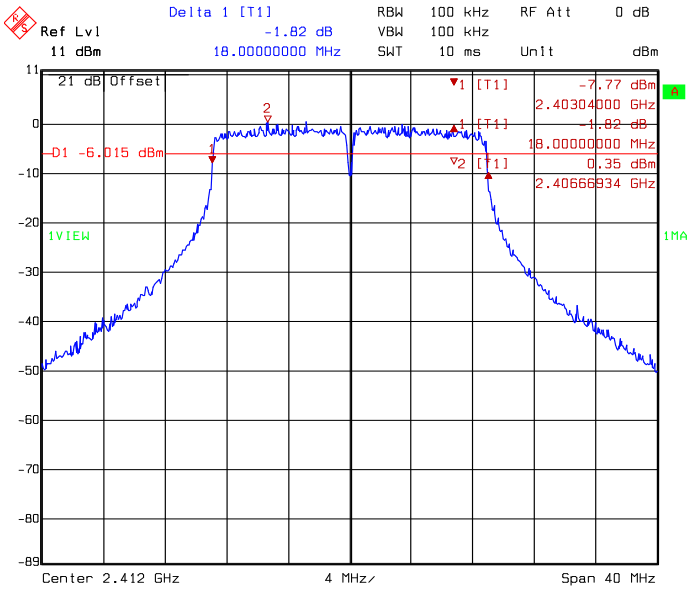
Title: 6dB Band-Width
Comment A: CH 6 at 802.11g mode
Date: 13.OCT.2009 16:27:58

6dB Bandwidth @ 802.11g mode channel 11

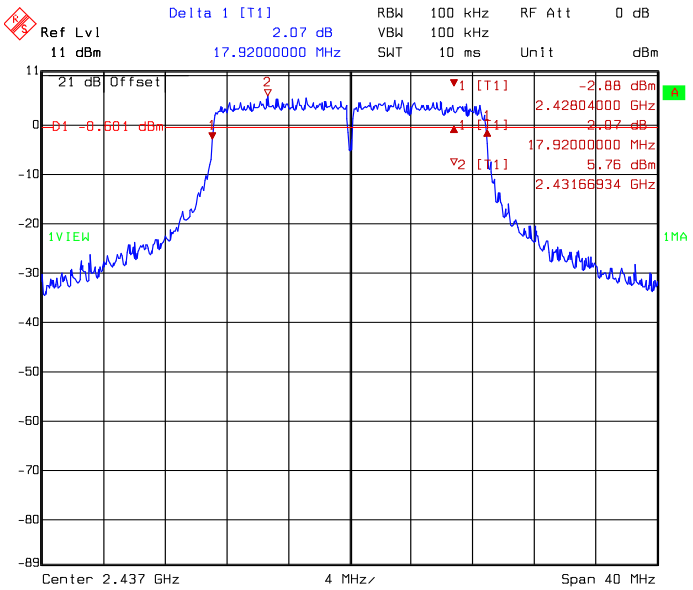


Title: 6dB Band-Width
Comment A: CH 11 at 802.11g mode
Date: 13.OCT.2009 16:30:57

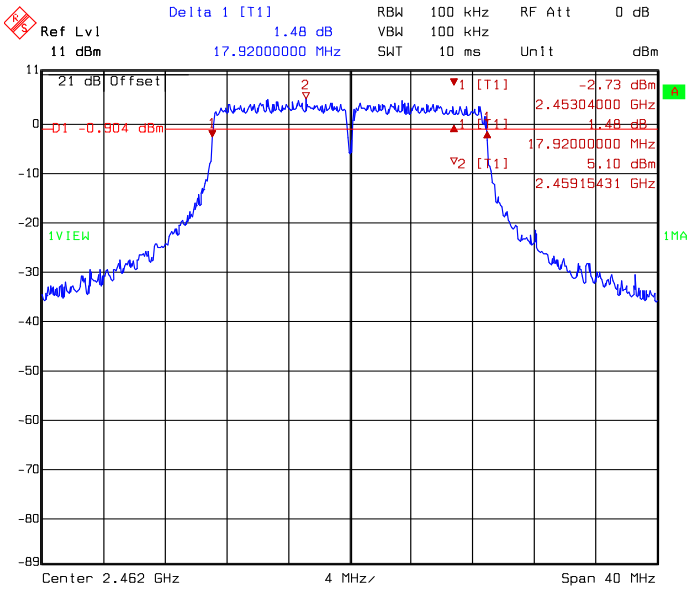
6dB Bandwidth @ 802.11n HT20 mode channel 1



6dB Bandwidth @ 802.11n HT20 mode channel 6

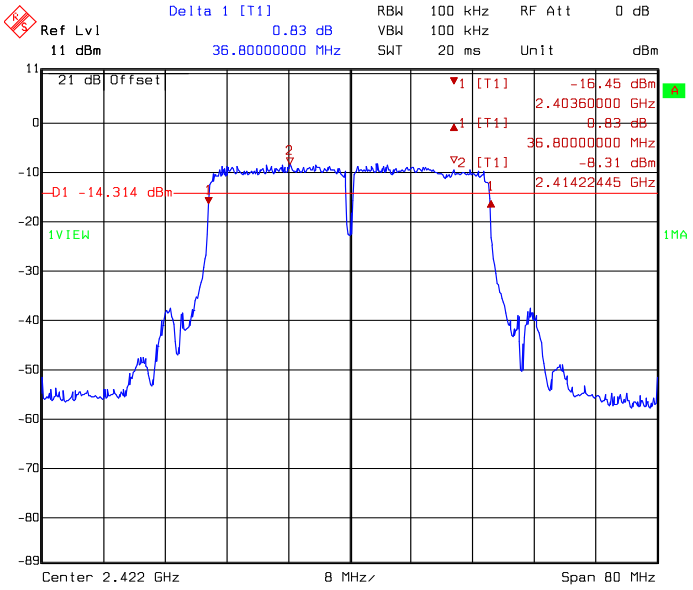


6dB Bandwidth @ 802.11n HT20 mode channel 11



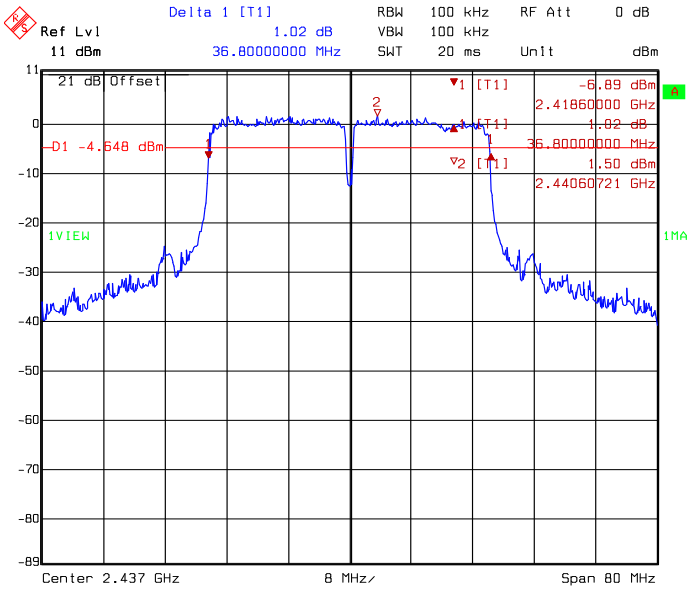
Title: 6dB Band-Width
Comment A: CH 11 at 802.11n 20MHz mode
Date: 13.OCT.2009 16:43:51

6dB Bandwidth @ 802.11n HT40 mode channel 3

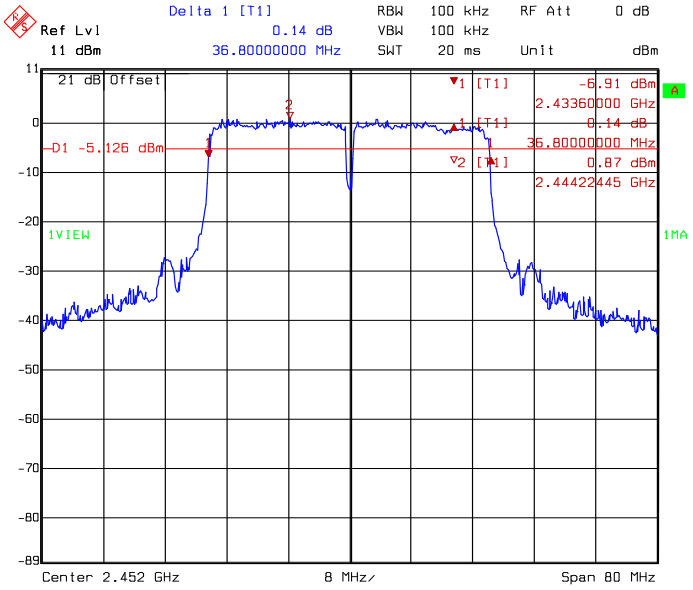


Title: 6dB Band-Width
Comment A: CH 3 at 802.11n 40MHz mode
Date: 13.OCT.2009 16:48:48

6dB Bandwidth @ 802.11n HT40 mode channel 6



6dB Bandwidth @ 802.11n HT40 mode channel 9



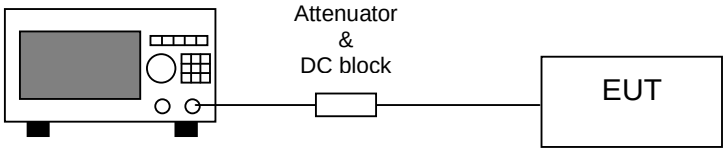
4. 99% Occupied Bandwidth

Name of Test	99% Occupied Bandwidth
Base Standard	None; for reporting purposes only

Test Result: Complies
Measurement Data: See Table & plots below

Method of Measurement:
Reference FCC document: KDB558074
A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

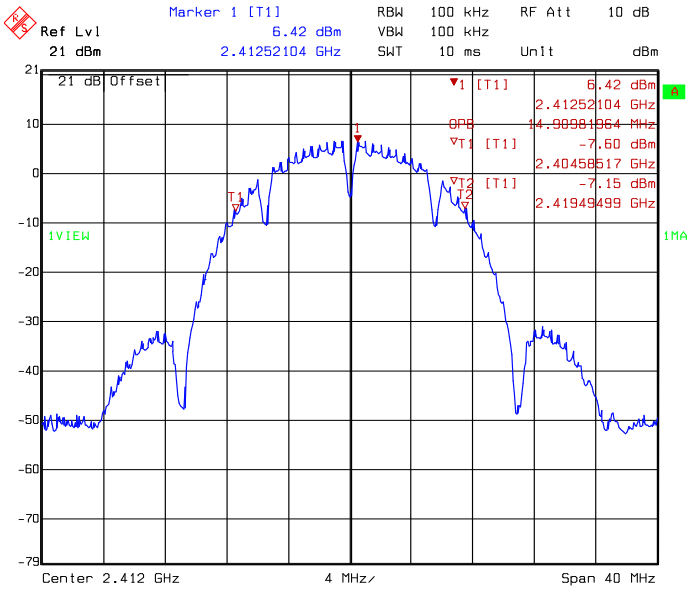


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 2. 99% Occupied Bandwidth

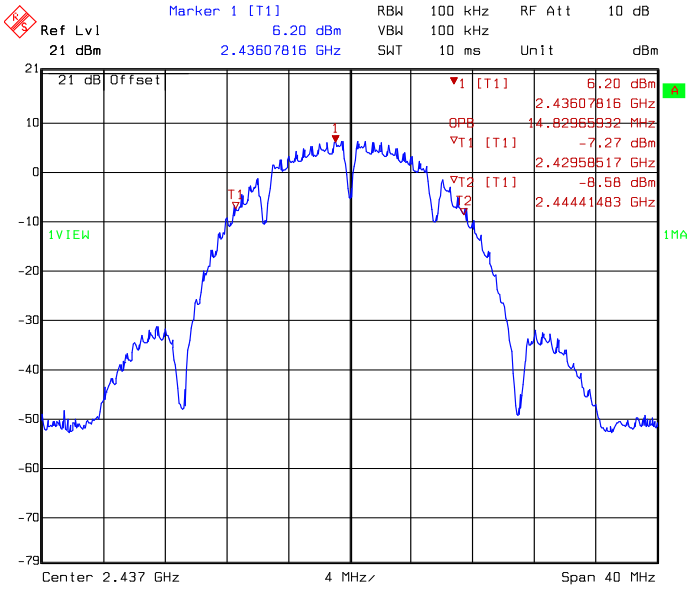
Mode	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
802.11b	1	2412	14.91
	6	2437	14.83
	11	2462	14.91
802.11g	1	2412	16.43
	6	2437	16.51
	11	2462	16.51
802.11 HT20	1	2412	17.64
	6	2437	17.72
	11	2462	17.72
802.11 HT40	3	2422	36.07
	6	2437	36.07
	9	2452	36.07

99% Occupied Bandwidth @ 802.11b mode channel 1



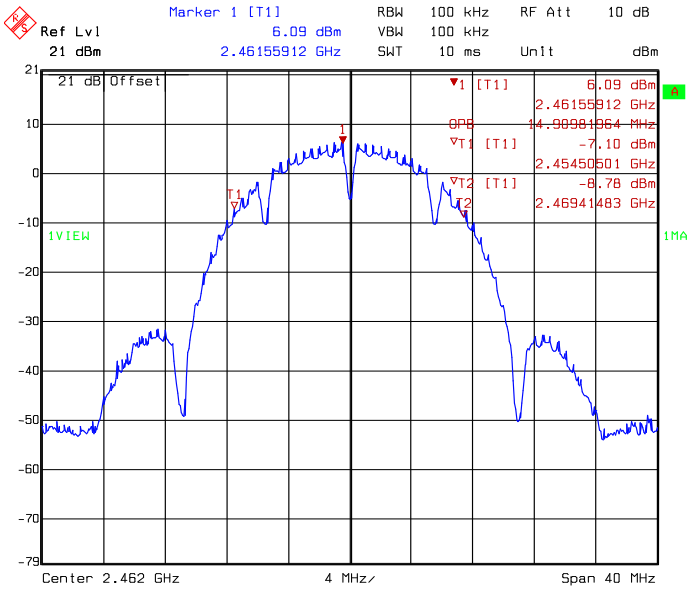
Title: Occupied Band-Width
Comment A: CH 1 at 802.11b mode
Date: 13.OCT.2009 16:08:25

99% Occupied Bandwidth @ 802.11b mode channel 6

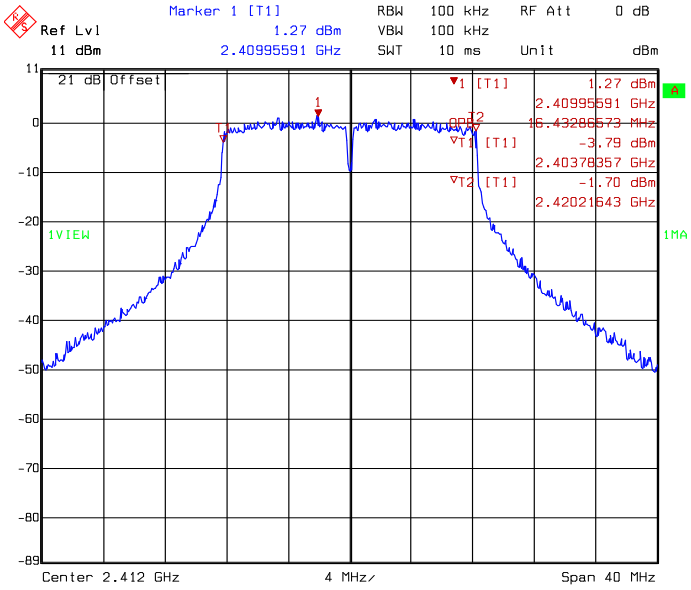


Title: Occupied Band-Width
Comment A: CH 6 at 802.11b mode
Date: 13.OCT.2009 16:18:05

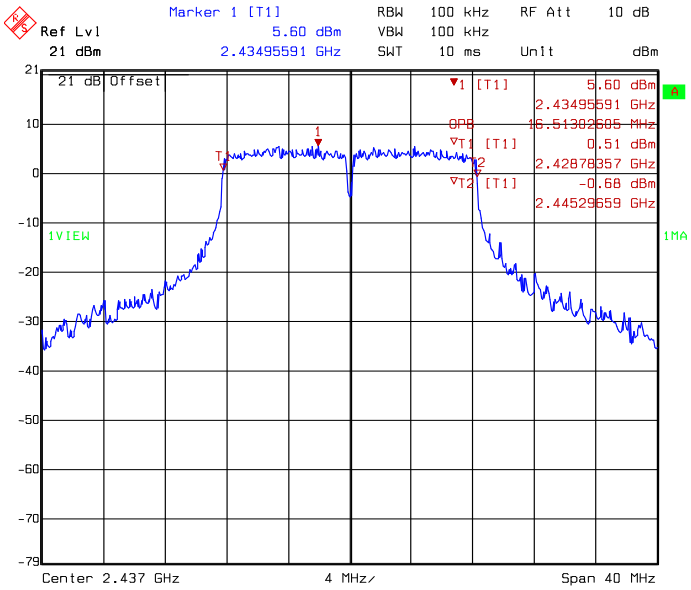
99% Occupied Bandwidth @ 802.11b mode channel 11



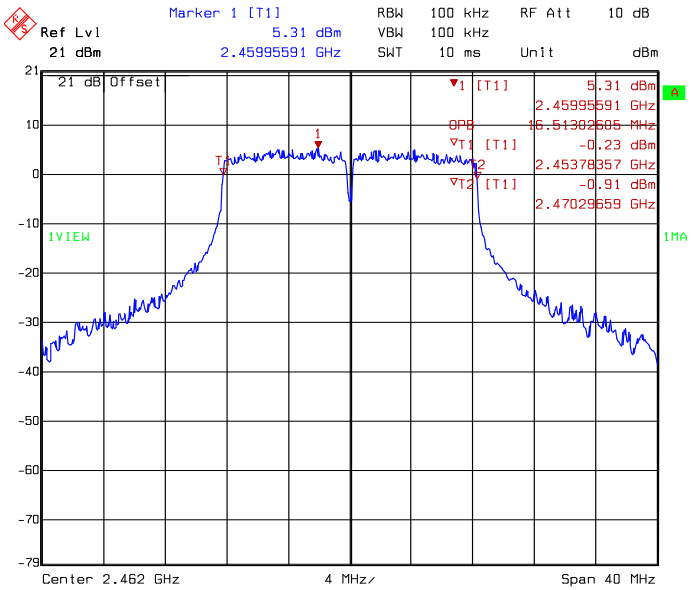
99% Occupied Bandwidth @ 802.11g mode channel 1



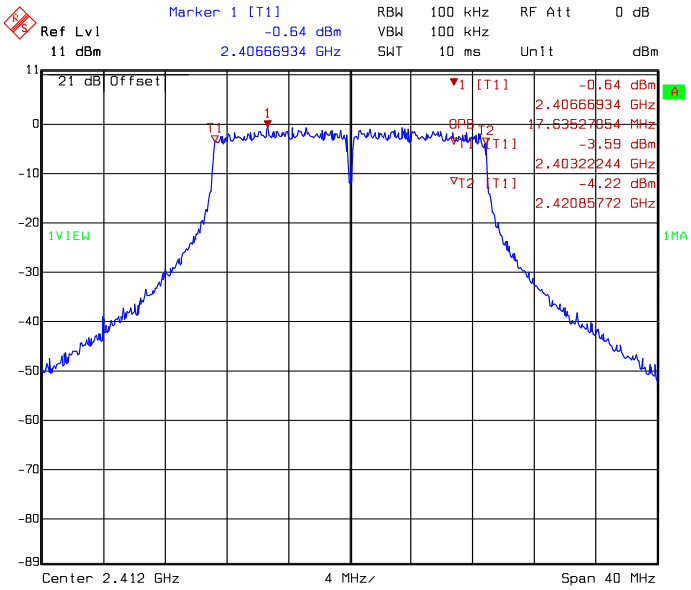
99% Occupied Bandwidth @ 802.11g mode channel 6



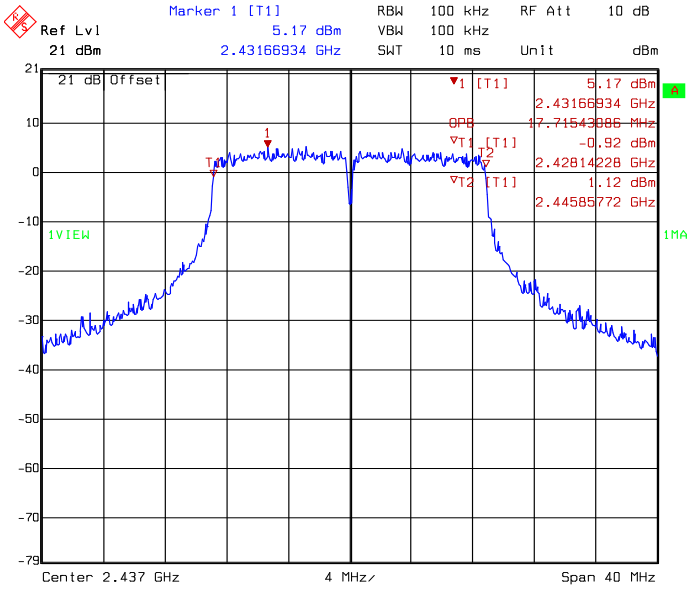
99% Occupied Bandwidth @ 802.11g mode channel 11



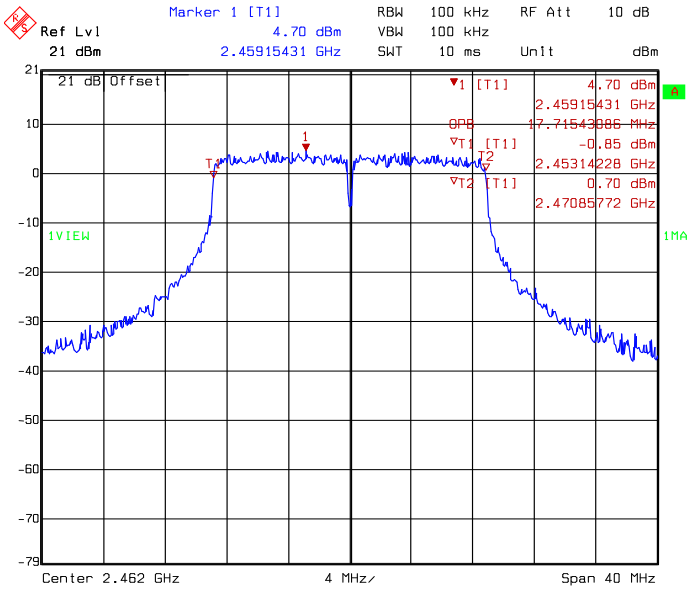
99% Occupied Bandwidth @ 802.11n HT20 mode channel 1



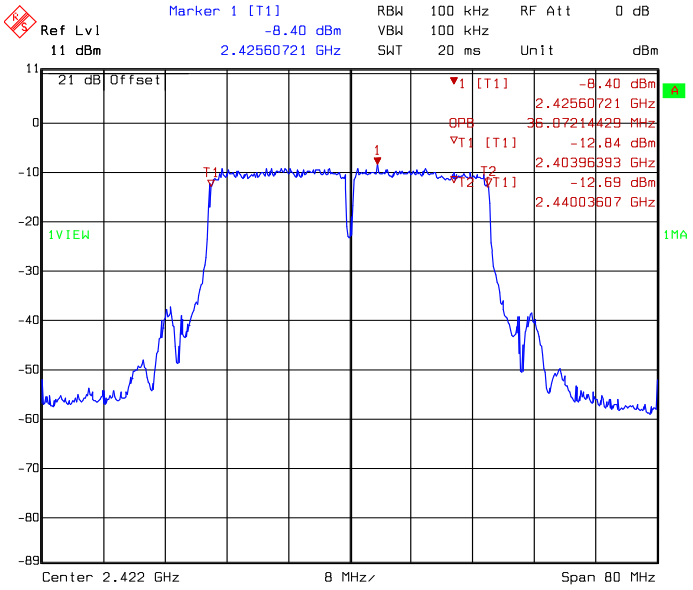
99% Occupied Bandwidth @ 802.11n HT20 mode channel 6



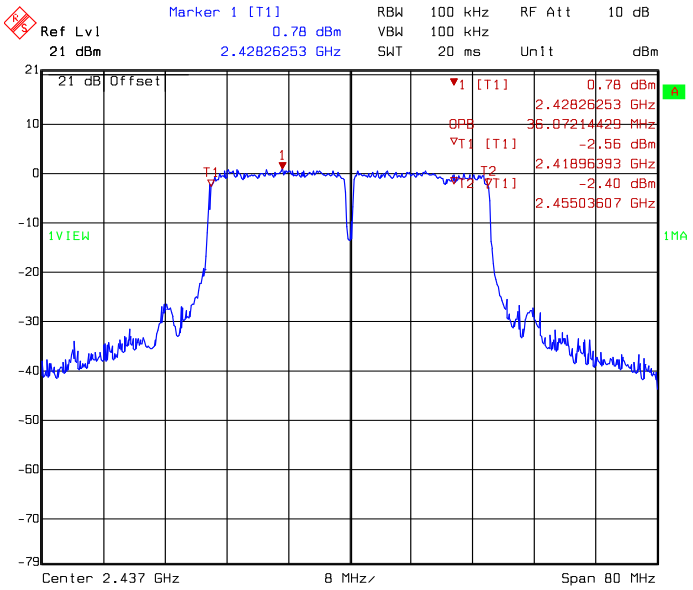
99% Occupied Bandwidth @ 802.11n HT20 mode channel 11



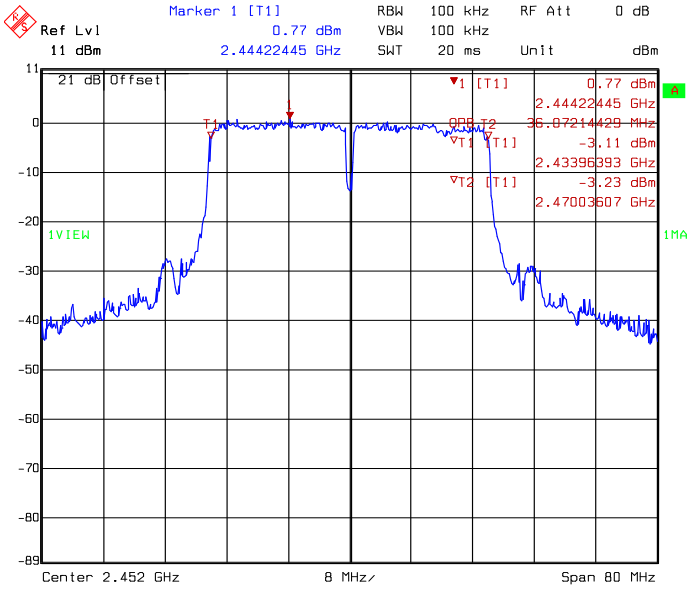
99% Occupied Bandwidth @ 802.11n HT40 mode channel 3



99% Occupied Bandwidth @ 802.11n HT40 mode channel 6



99% Occupied Bandwidth @ 802.11n HT40 mode channel 9



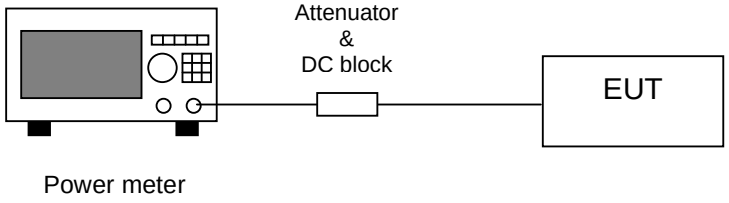
5. Maximum Output Power

Name of Test	Maximum output power
Base Standard	FCC 15.247(b)

Measurement Uncertainty: ±0.392 dB (k=2)
Test Result: Complies
Measurement Data: See Table below

Method of Measurement:
Reference FCC document: KDB558074
The power output was measured on the EUT using a 50 ohm SMA Cable connected to peak power meter via power sensor for below 20MHz bandwidth. For 40MHz bandwidth (HT40 mode), the spectrum analyzer was used.
Power output was measured with the maximum rated input level.

Test Diagram:



Note 1: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps for 802.11b and 6 Mbps for 802.11a/ 11g. The EUT was tuned to a low, middle and high channel.

Note 2: §15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note 3: §15.247 (b) (4) (ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Table 3. Maximum output power

Mode	Channel	Frequency (MHz)	Output Power		Limit (dBm)	Result
			dBm	mW		
802.11b	1	2412	18.95	78.52	30	Pass
	6	2437	20.56	113.76	30	Pass
	11	2462	20.61	115.08	30	Pass
802.11g	1	2412	25.01	316.96	30	Pass
	6	2437	26.89	488.65	30	Pass
	11	2462	27.05	506.99	30	Pass
802.11 HT20	1	2412	24.86	306.20	30	Pass
	6	2437	26.86	485.29	30	Pass
	11	2462	27.09	511.68	30	Pass
802.11 HT40	3	2422	18.93	78.16	30	Pass
	6	2437	26.43	439.54	30	Pass
	9	2452	26.61	458.14	30	Pass

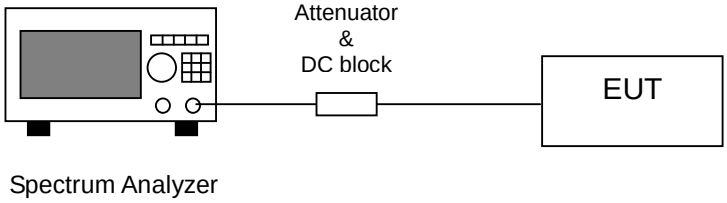
6. Power Spectral Density

Name of Test	Power Spectral Density
Base Standard	FCC 15.247(e)

Test Result: Complies
Measurement Data: See Table & plots below

Method of Measurement:
Reference FCC document: KDB558074
A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

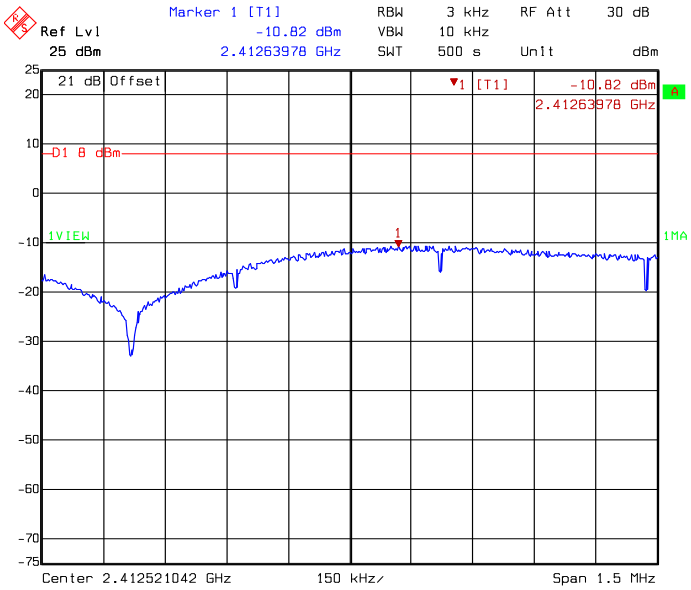


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 4. Power Spectral Density

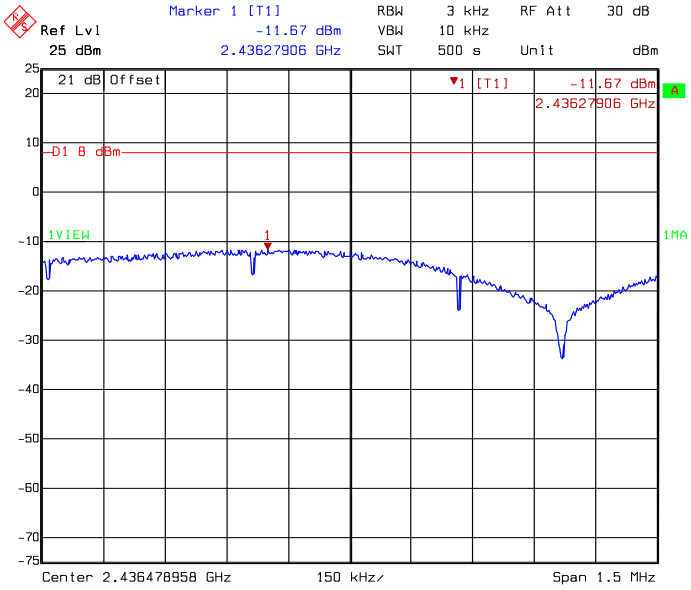
Mode	Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)
802.11b	1	2412	-10.82	8
	6	2437	-11.67	8
	11	2462	-12.16	8
802.11g	1	2412	-13.20	8
	6	2437	-8.65	8
	11	2462	-9.38	8
802.11 HT20	1	2412	-13.35	8
	6	2437	-8.20	8
	11	2462	-9.25	8
802.11 HT40	3	2422	-22.38	8
	6	2437	-10.63	8
	9	2452	-11.08	8

Power Spectral Density @ 802.11b mode channel 1



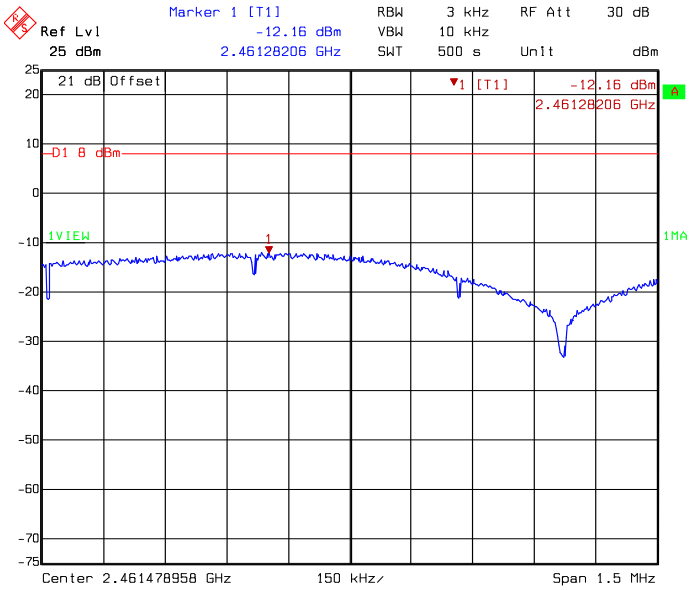
Title: Power density
Comment A: CH 1 at 802.11b mode
Date: 13.OCT.2009 16:06:49

Power Spectral Density @ 802.11b mode channel 6



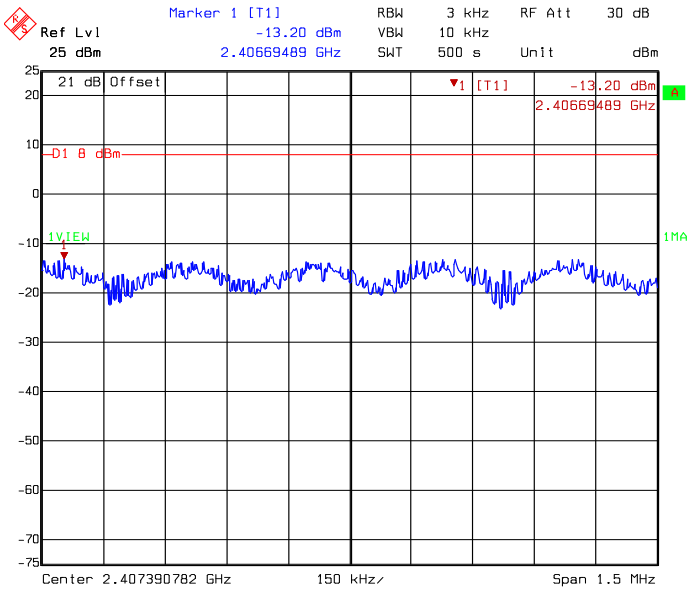
Title: Power density
Comment A: CH 6 at 802.11b mode
Date: 13.OCT.2009 16:16:29

Power Spectral Density @ 802.11b mode channel 11



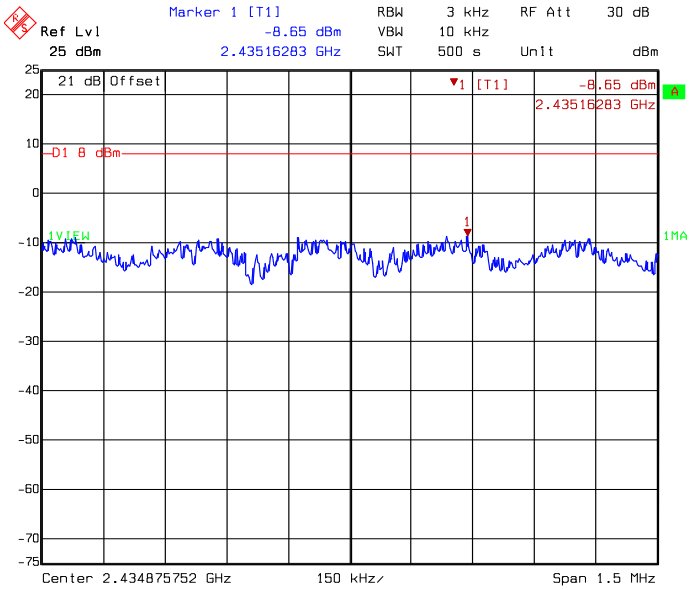
Title: Power density
Comment A: CH 11 at 802.11b mode
Date: 13.OCT.2009 16:20:13

Power Spectral Density @ 802.11g mode channel 1



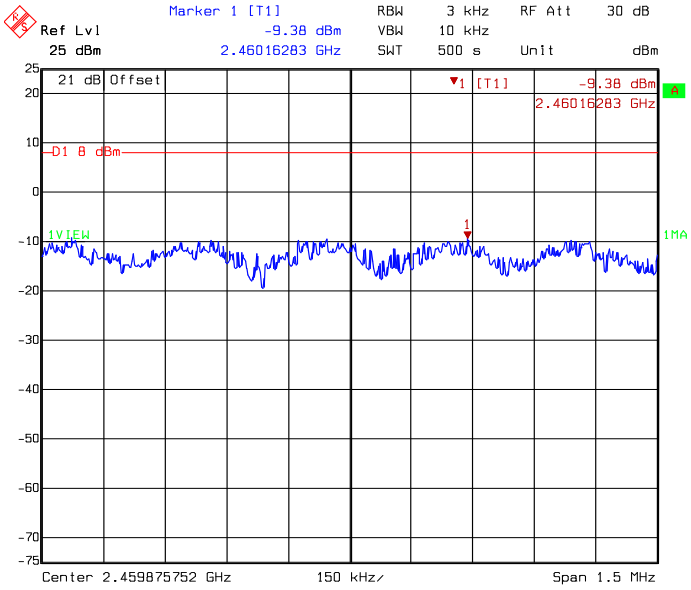
Title: Power density
Comment A: CH 1 at 802.11g mode
Date: 13.OCT.2009 16:24:33

Power Spectral Density @ 802.11g mode channel 6



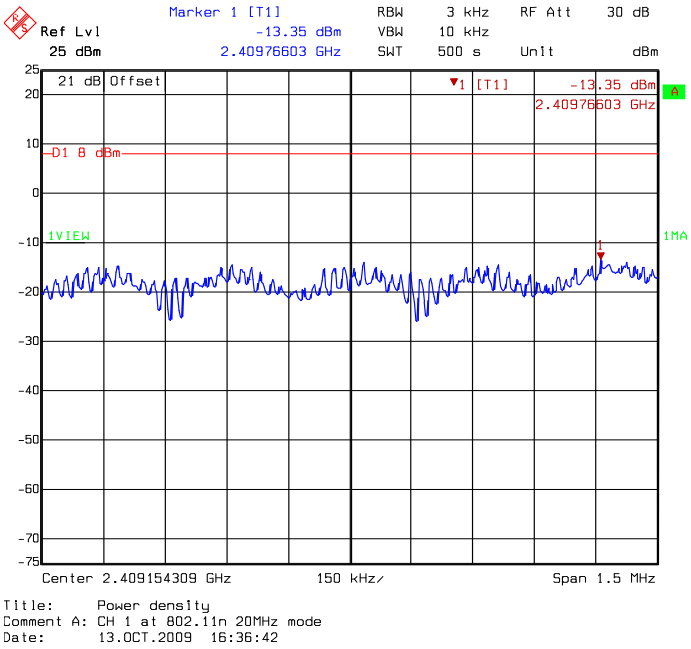
Title: Power density
Comment A: CH 6 at 802.11g mode
Date: 13.OCT.2009 16:28:14

Power Spectral Density @ 802.11g mode channel 11

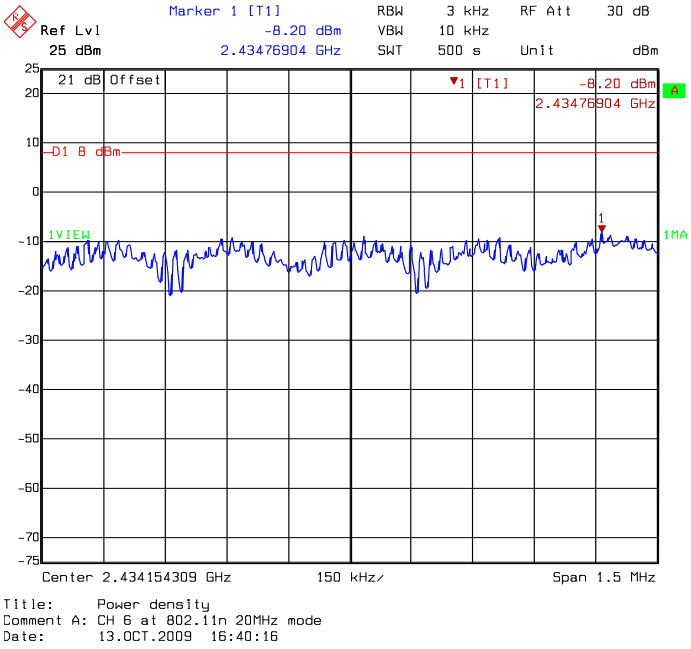


Title: Power density
Comment A: CH 11 at 802.11g mode
Date: 13.OCT.2009 16:31:12

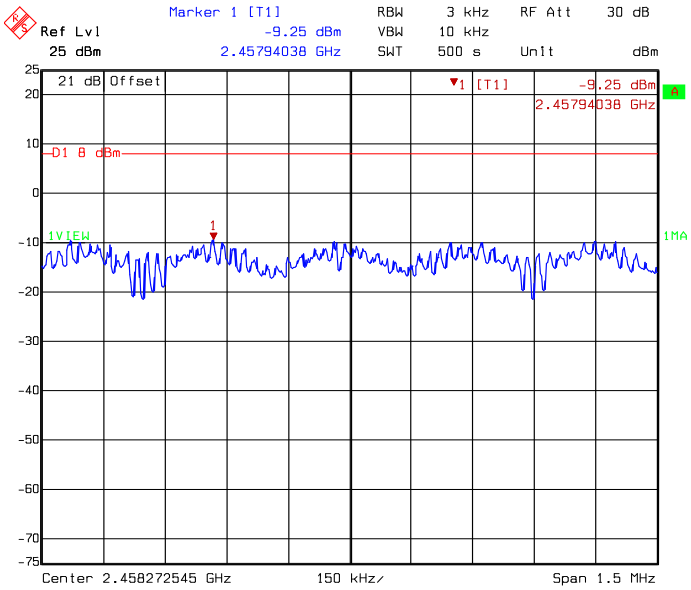
Power Spectral Density @ 802.11n HT20 mode channel 1



Power Spectral Density @ 802.11n HT20 mode channel 6

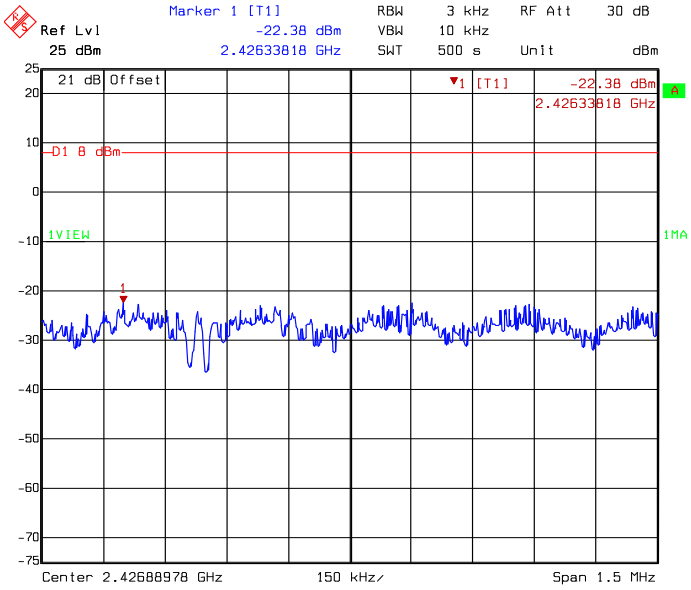


Power Spectral Density @ 802.11n HT20 mode channel 11



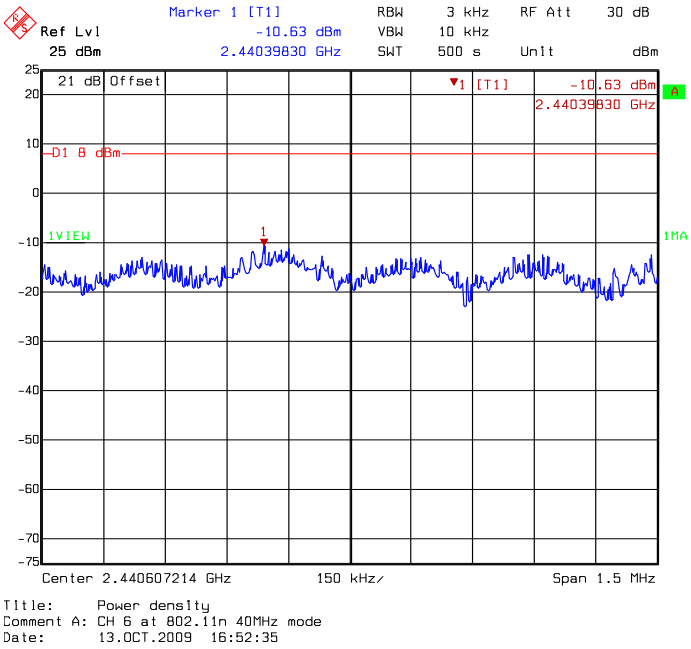
Title: Power density
Comment A: CH 11 at 802.11n 20MHz mode
Date: 13.OCT.2009 16:44:06

Power Spectral Density @ 802.11n HT40 mode channel 3

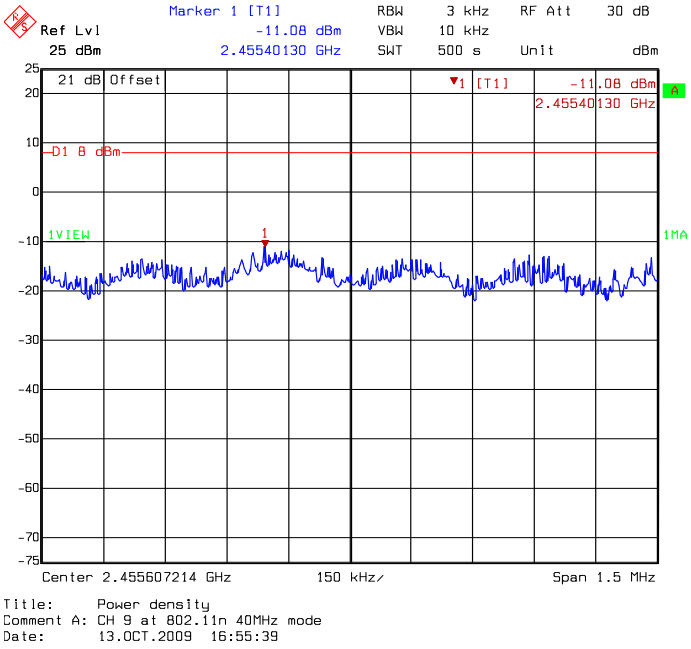


Title: Power density
Comment A: CH 3 at 802.11n 40MHz mode
Date: 13.OCT.2009 16:49:03

Power Spectral Density @ 802.11n HT40 mode channel 6



Power Spectral Density @ 802.11n HT40 mode channel 9



7. RF Antenna conducted Spurious

Name of Test	RF Antenna Conducted Spurious
Base Standard	FCC 15.247(d)

Test Result: Complies

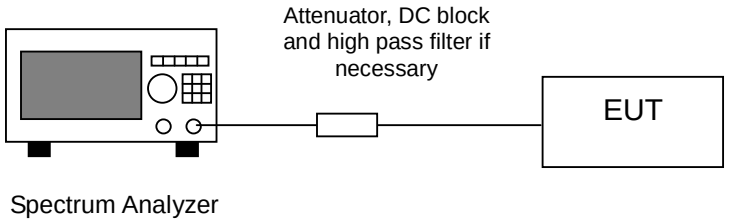
Measurement Data: See plots below

Method of Measurement:

Reference FCC document: KDB558074

The measurements were performed from 30 MHz to 25 GHz RF antenna conducted per FCC 15.247 (d) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. Harmonics and spurious noise must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

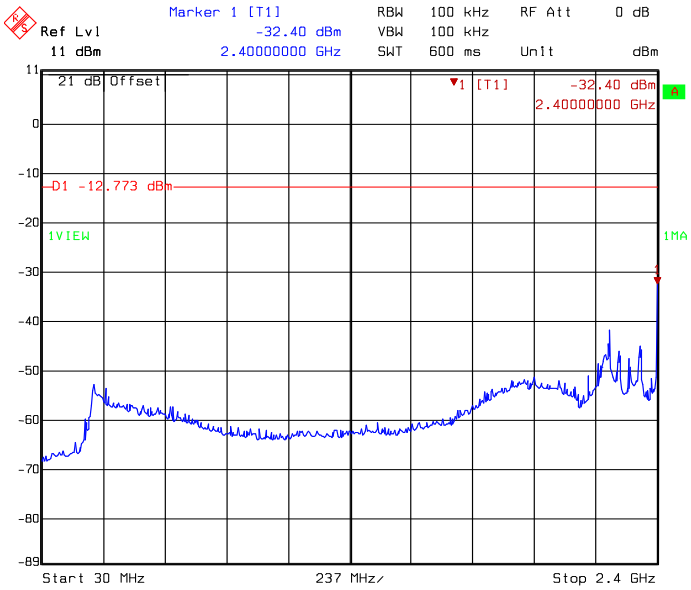
Test Diagram:



Note: (1) The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

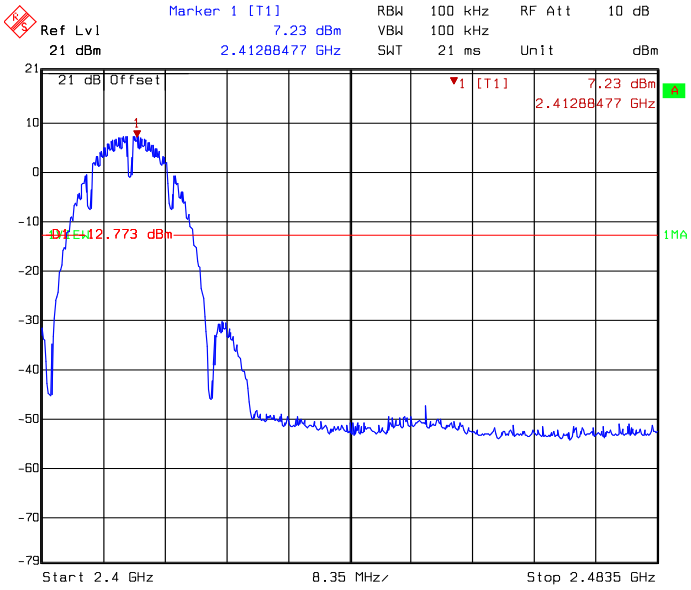
(2) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

conducted spurious @ 802.11b mode channel 1 (1of 3)



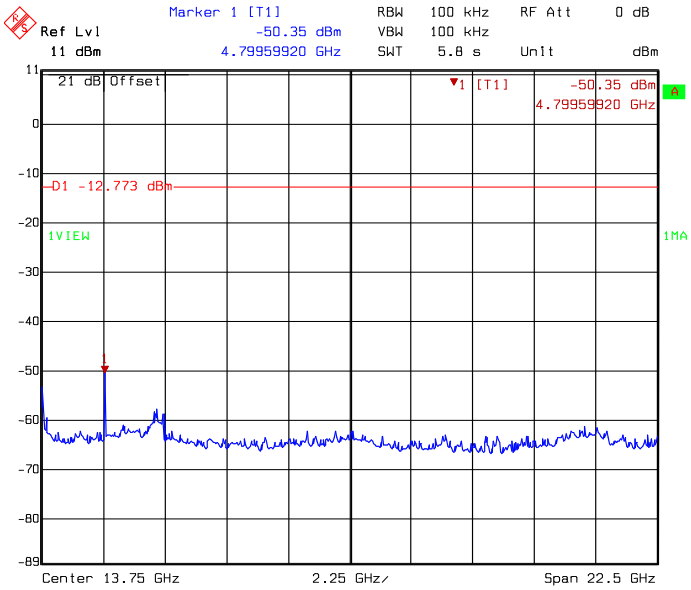
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 30MHz~2400MHz
Date: 13.OCT.2009 16:07:33

conducted spurious @ 802.11b mode channel 1 (2of 3)

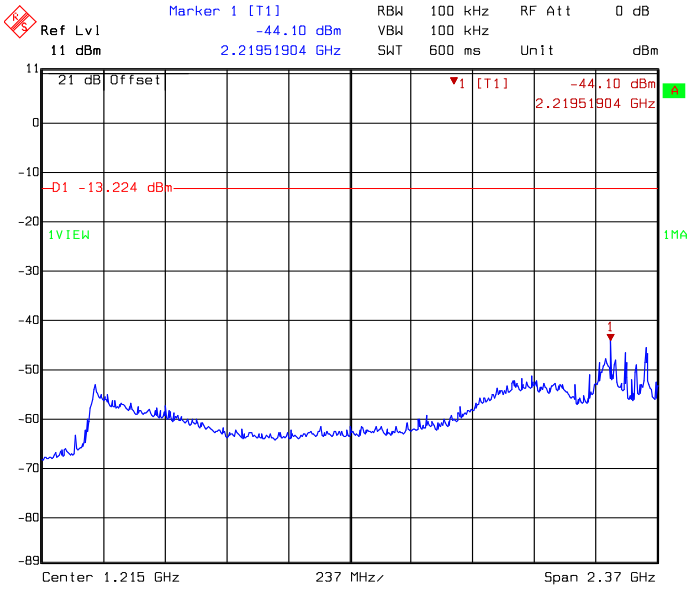


Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 2400MHz~2483.5MHz
Date: 13.OCT.2009 16:07:12

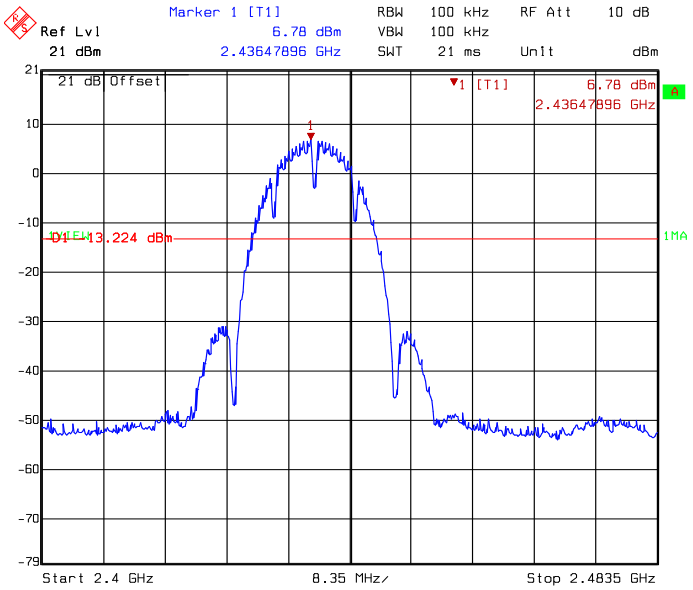
conducted spurious @ 802.11b mode channel 1 (3of 3)



conducted spurious @ 802.11b mode channel 6 (1of 3)

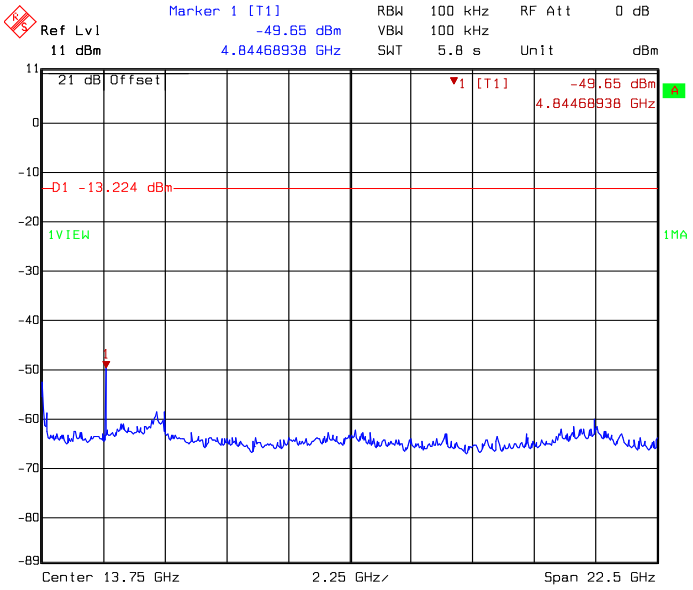


conducted spurious @ 802.11b mode channel 6 (2of 3)



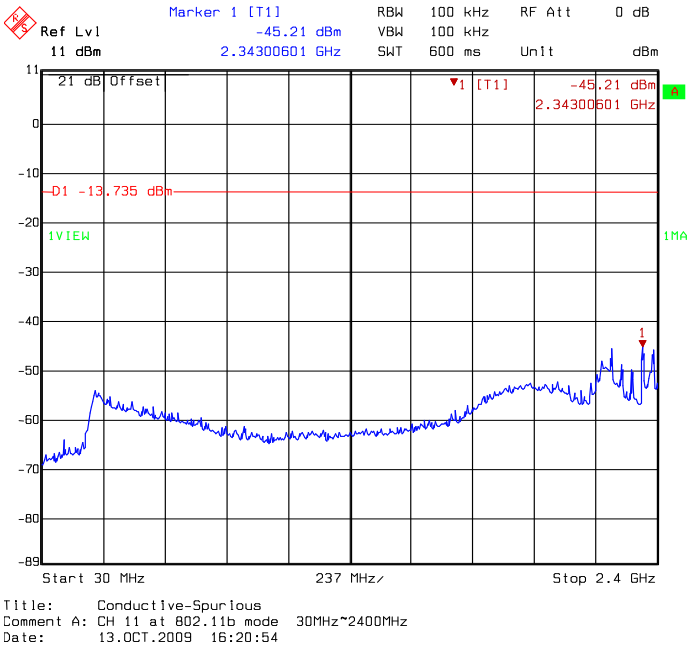
Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2400MHz~2483.5MHz
Date: 13.OCT.2009 16:16:52

conducted spurious @ 802.11b mode channel 6 (3of 3)

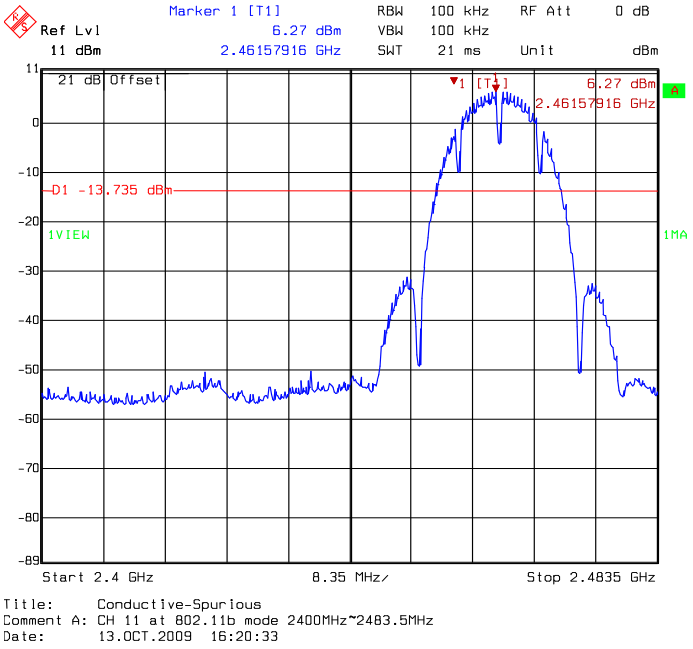


Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2483.5MHz~25GHz
Date: 13.OCT.2009 16:17:40

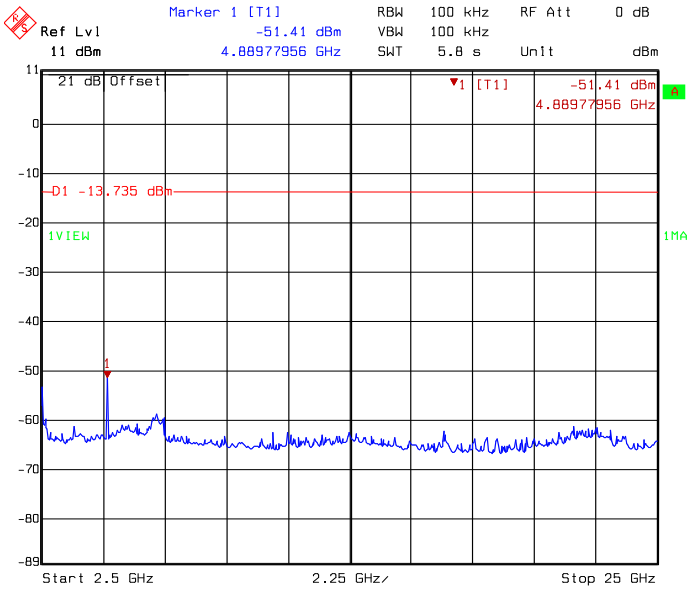
conducted spurious @ 802.11b mode channel 11 (1of 3)



conducted spurious @ 802.11b mode channel 11 (2of 3)



conducted spurious @ 802.11b mode channel 11 (3of 3)

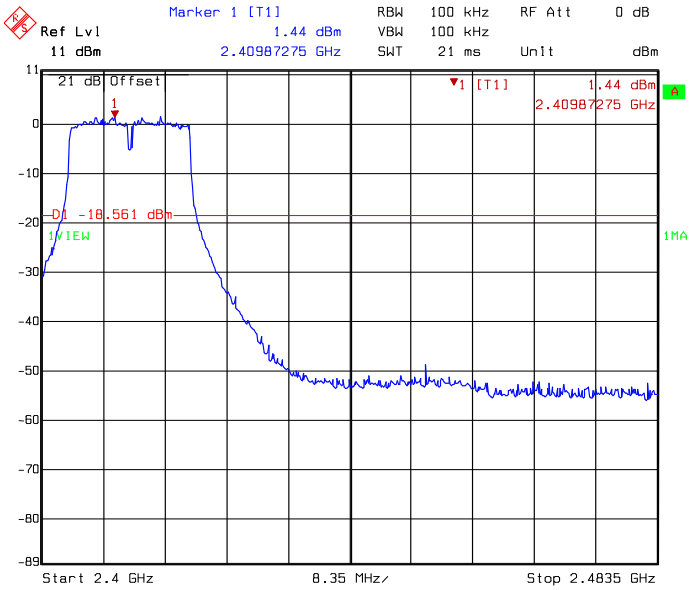


Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 2483.5MHz~25GHz
Date: 13.OCT.2009 16:21:20

conducted spurious @ 802.11g mode channel 1 (1of 3)

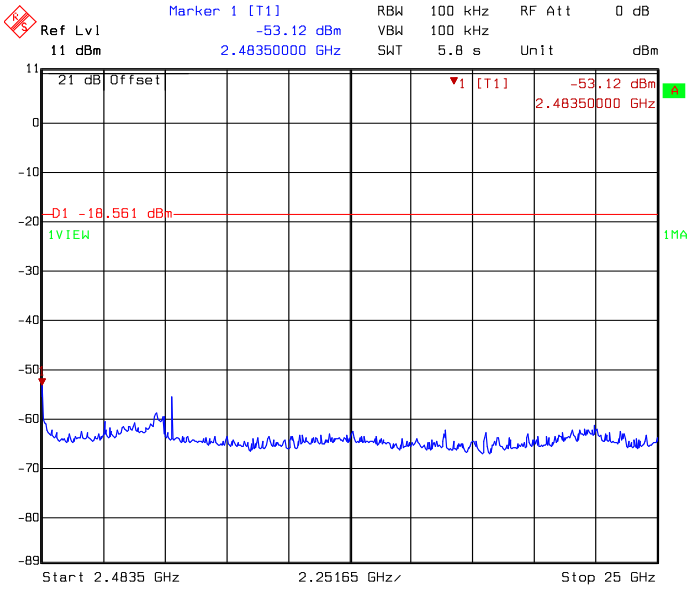
Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 30MHz~2400MHz
Date: 13.OCT.2009 16:25:14

conducted spurious @ 802.11g mode channel 1 (2of 3)



Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2400MHz~2483.5MHz
Date: 13.OCT.2009 16:24:53

conducted spurious @ 802.11g mode channel 1 (3of 3)

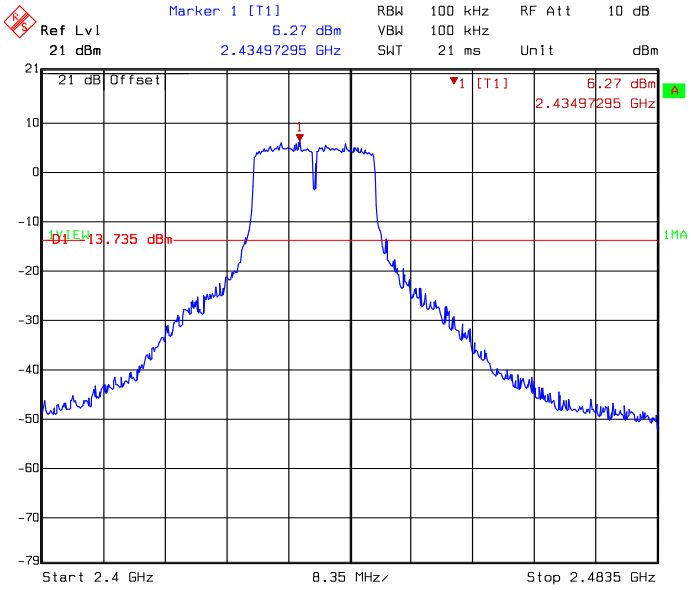


Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2483.5MHz~25000MHz
Date: 13.OCT.2009 16:25:40

conducted spurious @ 802.11g mode channel 6 (1of 3)

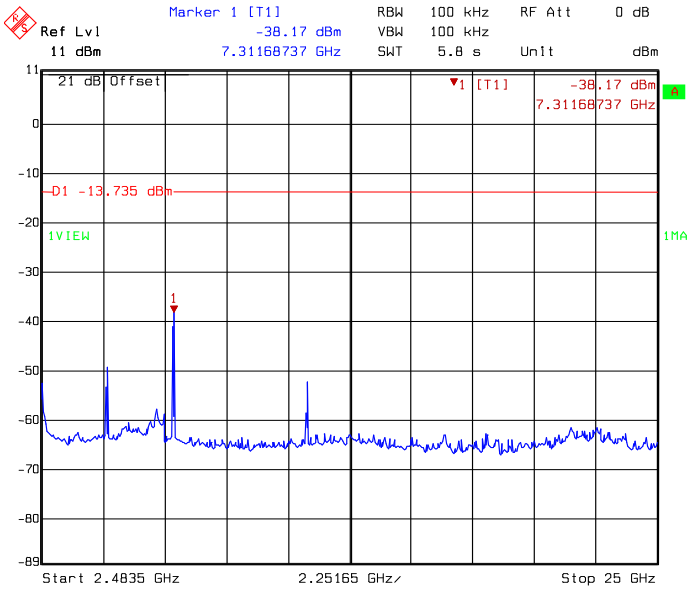
Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 30MHz~2400MHz
Date: 13.OCT.2009 16:28:58

conducted spurious @ 802.11g mode channel 6 (2of 3)



Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2400MHz~2483.5MHz
Date: 13.OCT.2009 16:28:37

conducted spurious @ 802.11g mode channel 6 (3of 3)

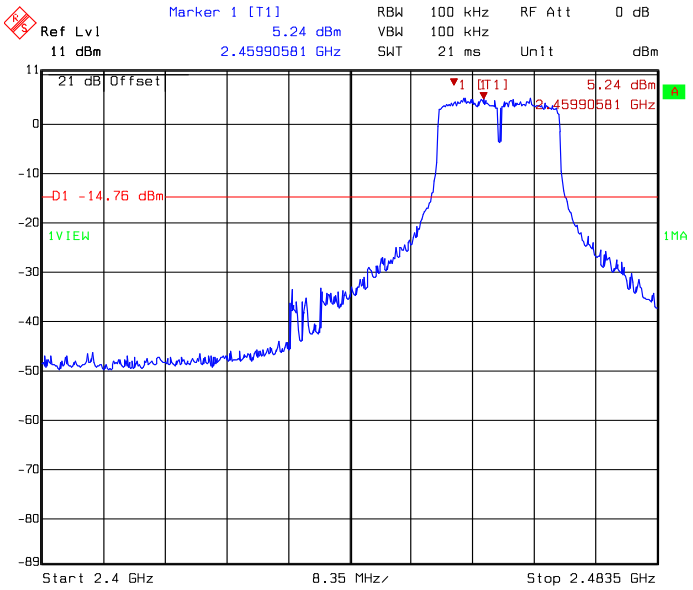


Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2483.5MHz~25000MHz
Date: 13.OCT.2009 16:29:24

conducted spurious @ 802.11g mode channel 11 (1of 3)

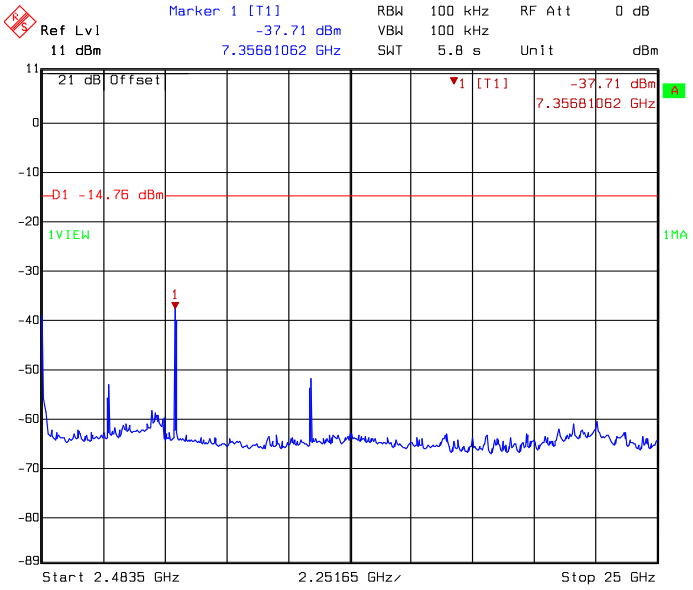
Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 30MHz~2400MHz
Date: 13.OCT.2009 16:31:53

conducted spurious @ 802.11g mode channel 11 (2of 3)



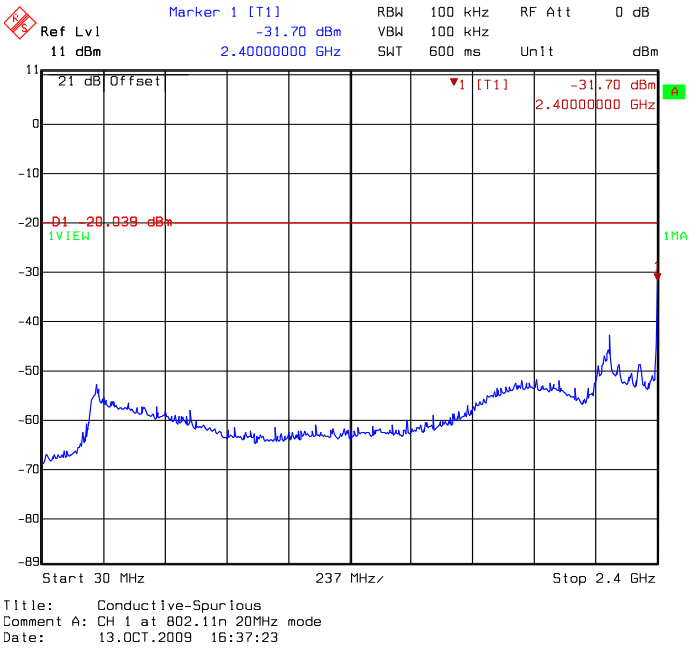
Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2400MHz~2483.5MHz
Date: 13.OCT.2009 16:31:32

conducted spurious @ 802.11g mode channel 11 (3of 3)

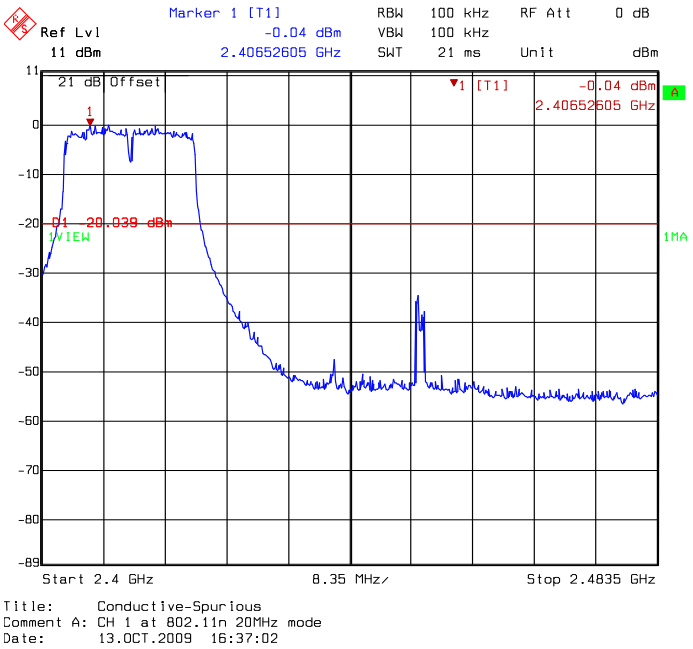


Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2483.5MHz~25000MHz
Date: 13.OCT.2009 16:32:20

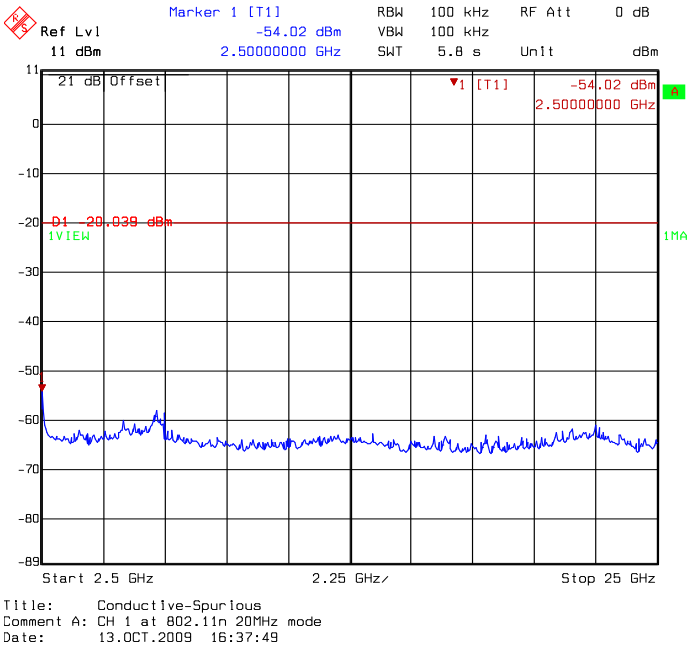
conducted spurious @ 802.11n HT20 mode channel 1 (1of 3)



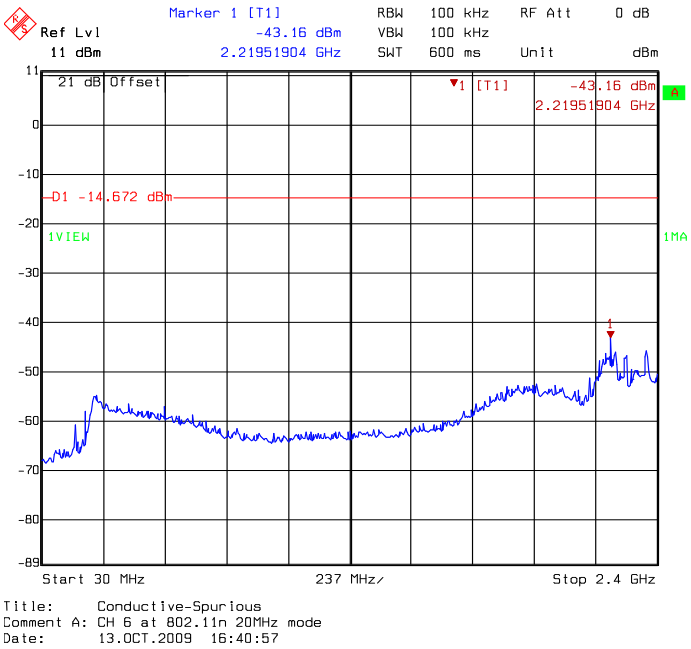
conducted spurious @ 802.11n HT20 mode channel 1 (2of 3)



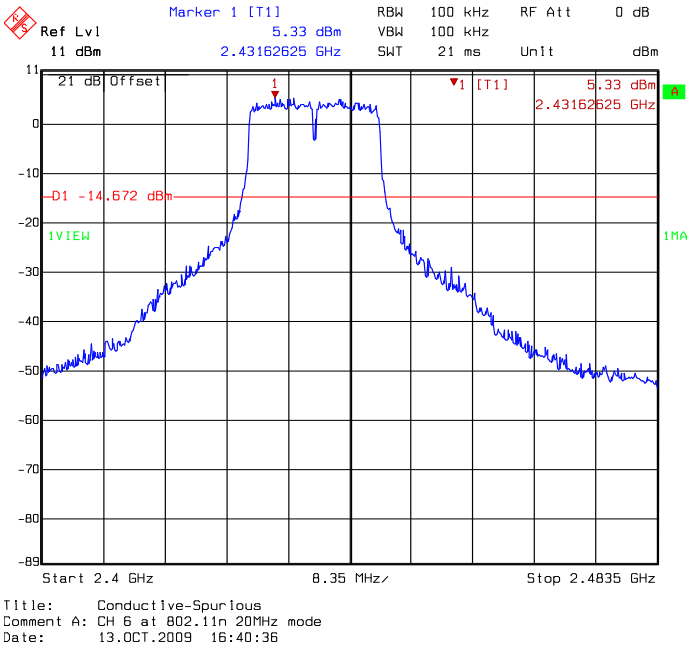
conducted spurious @ 802.11n HT20 mode channel 1 (3of 3)



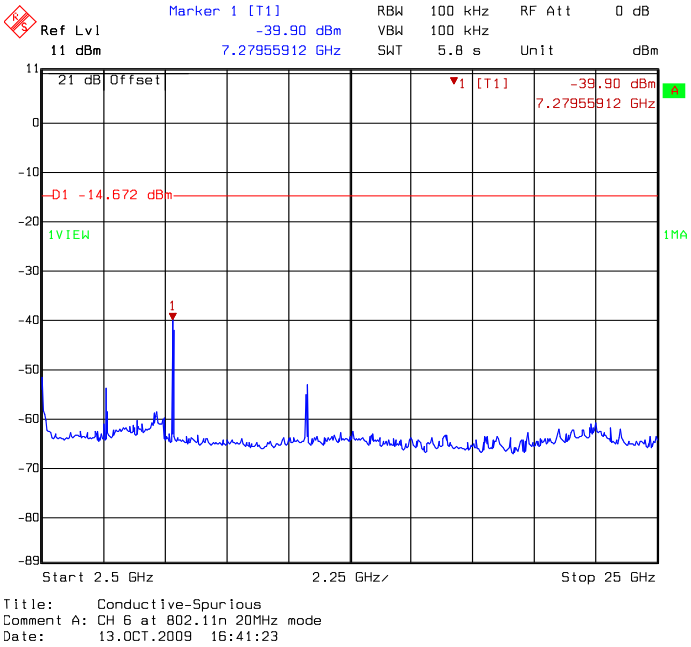
conducted spurious @ 802.11n HT20 mode channel 6 (1of 3)



conducted spurious @ 802.11n HT20 mode channel 6 (2of 3)



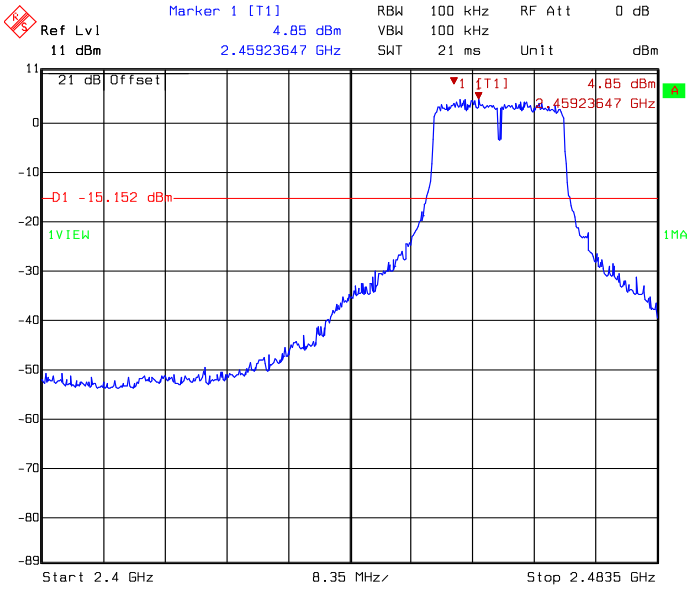
conducted spurious @ 802.11n HT20 mode channel 6 (3of 3)



conducted spurious @ 802.11n HT20 mode channel 11 (1of 3)

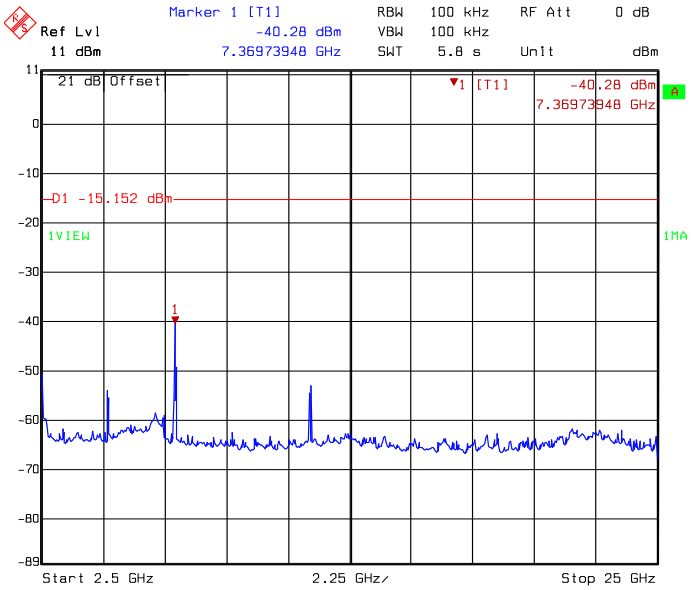
Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode
Date: 13.OCT.2009 16:44:47

conducted spurious @ 802.11n HT20 mode channel 11 (2of 3)

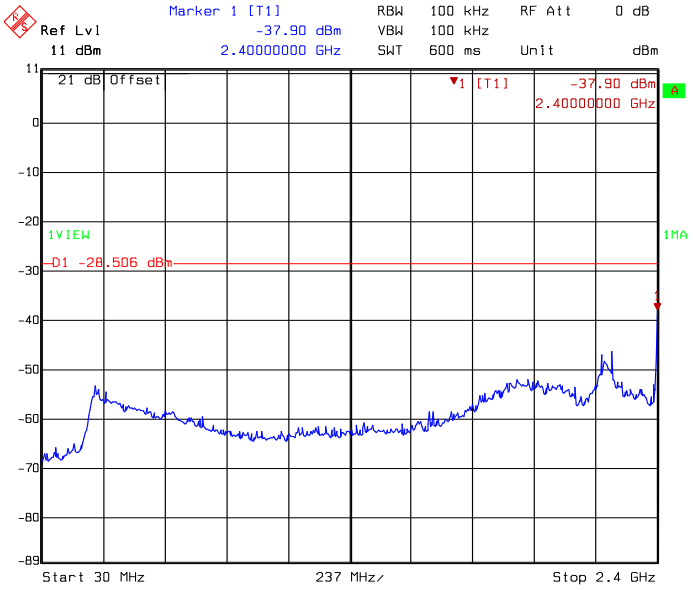


Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode
Date: 13.OCT.2009 16:44:26

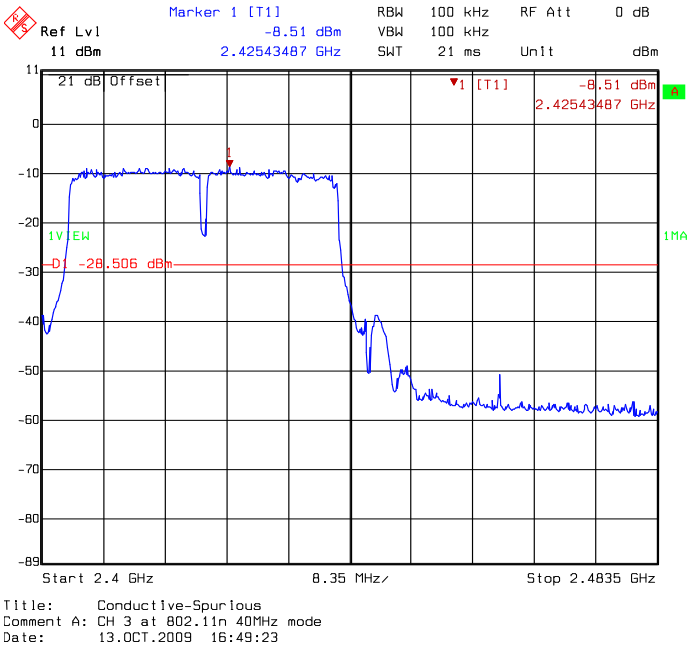
conducted spurious @ 802.11n HT20 mode channel 11 (3of 3)



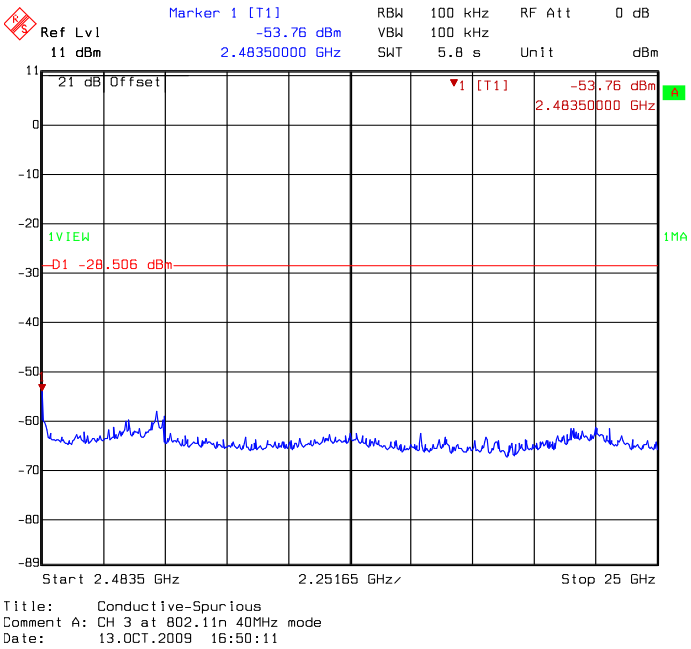
conducted spurious @ 802.11n HT40 mode channel 3 (1of 3)



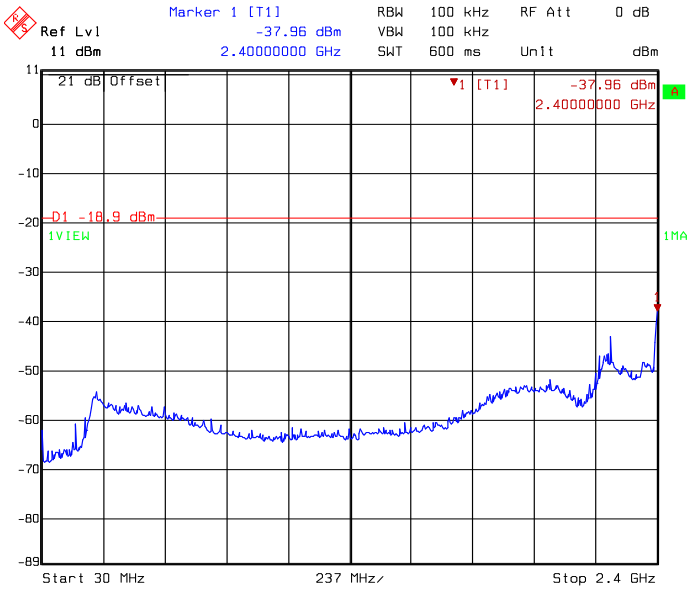
conducted spurious @ 802.11n HT40 mode channel 3 (2of 3)



conducted spurious @ 802.11n HT40 mode channel 3 (3of 3)

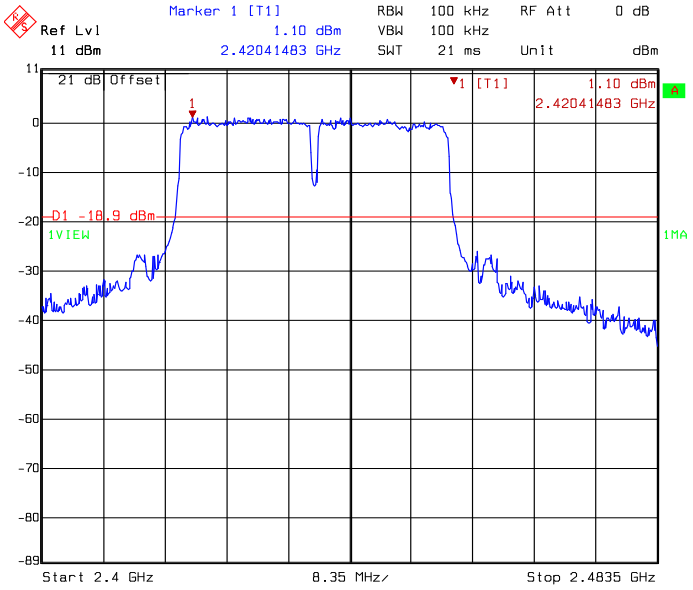


conducted spurious @ 802.11n HT40 mode channel 6 (1of 3)



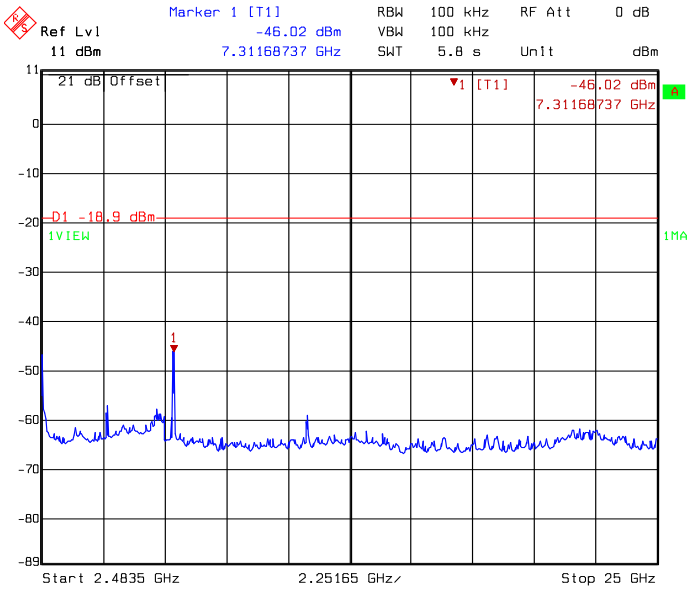
Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode
Date: 13.OCT.2009 16:53:16

conducted spurious @ 802.11n HT40 mode channel 6 (2of 3)

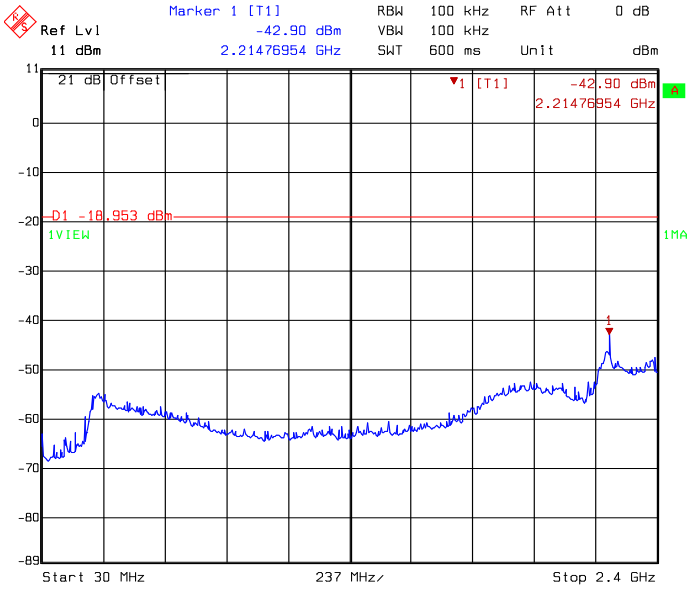


Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode
Date: 13.OCT.2009 16:52:55

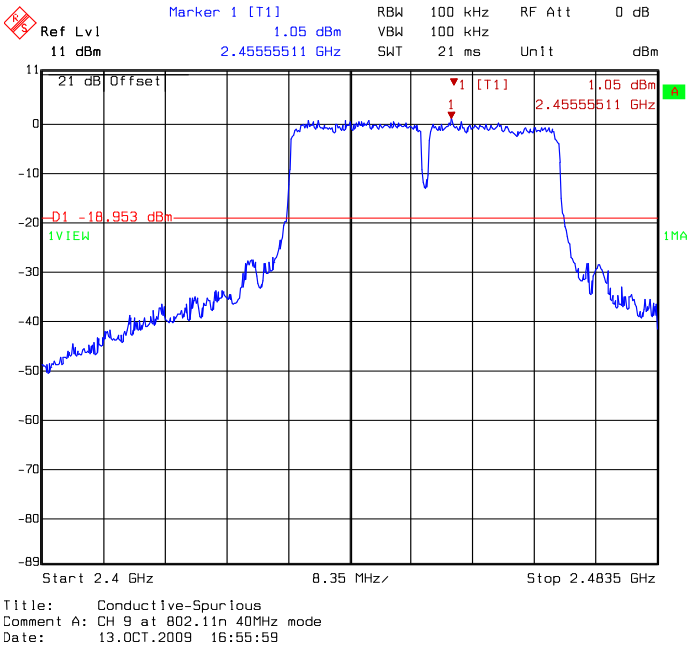
conducted spurious @ 802.11n HT40 mode channel 6 (3of 3)



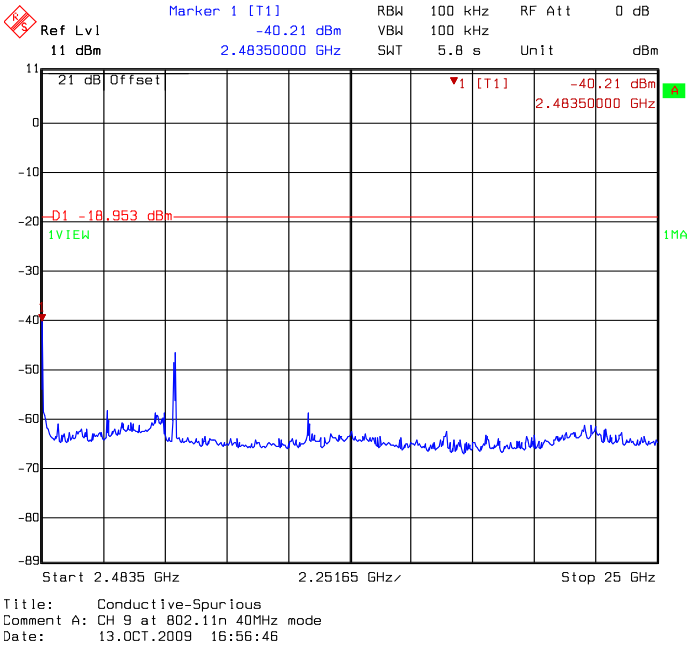
conducted spurious @ 802.11n HT40 mode channel 9 (1of 3)



conducted spurious @ 802.11n HT40 mode channel 9 (2of 3)



conducted spurious @ 802.11n HT40 mode channel 9 (3of 3)



8. Radiated Spurious Emission

Name of Test	Radiated Spurious Emission
Base Standard	FCC 15.247(d), 15.209, 15.205

Test Result: Complies

Measurement Data: See Tables below

Method of Measurement:

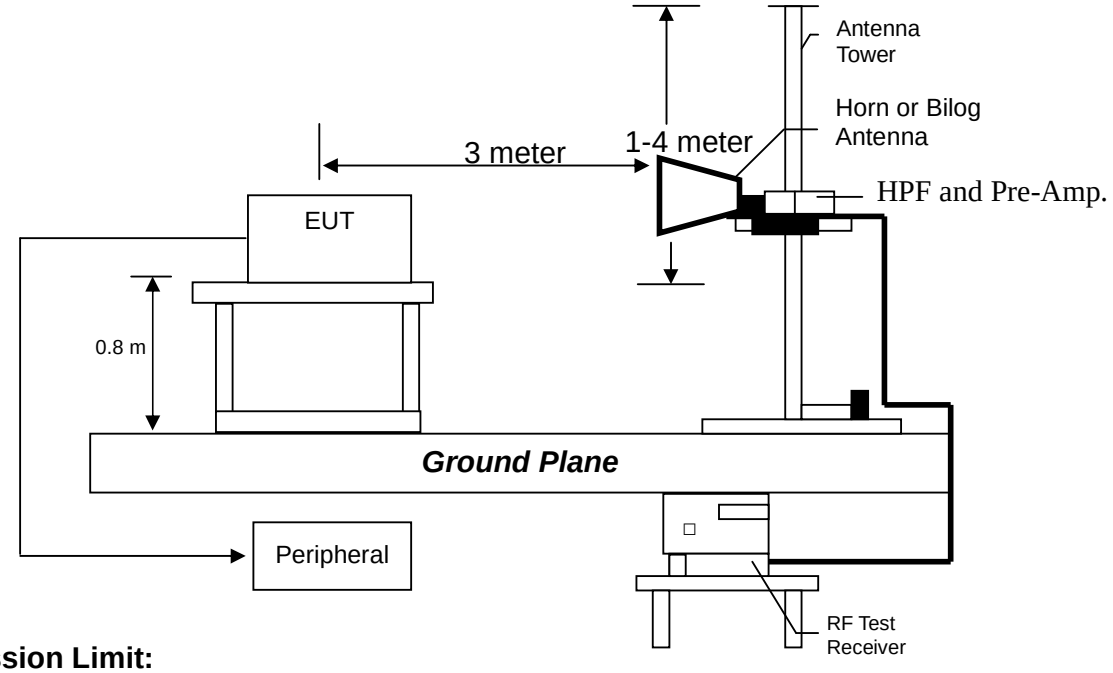
Reference FCC document: KDB558074, ANSI C63.4

The frequency range from 30 MHz to 1000 MHz using Bilog Antenna.
The frequency range over 1 GHz using Horn Antenna.

Radiated emissions were invested cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded also on the report. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter. The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meters reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

Test Diagram:



Emission Limit:

The spurious Emission shall test through the 10th harmonic. 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).

Frequency (MHz)	Limits (dBμV/m@ 3 meter)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Note: (1) The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

(1) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 802.11b, 802.11g and 802.11n continuously transmitting mode. The worst case occurred at 802.11b Tx channel 1.

EUT : WR5510
Worst Case : 802.11b Tx at channel 1

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	46.49	QP	12.84	21.19	34.03	40.00	-5.97
V	296.75	QP	13.95	26.53	40.48	46.00	-5.52
V	445.16	QP	17.64	20.90	38.54	46.00	-7.46
V	499.48	QP	18.43	18.20	36.62	46.00	-9.38
V	593.57	QP	20.71	15.28	35.99	46.00	-10.01
V	741.98	QP	22.74	12.72	35.46	46.00	-10.54
H	148.34	QP	13.24	19.31	32.54	43.50	-10.96
H	297.00	QP	14.17	29.02	43.18	46.00	-2.82
H	445.16	QP	18.12	18.29	36.41	46.00	-9.59
H	593.57	QP	20.84	16.51	37.34	46.00	-8.66
H	741.98	QP	22.95	16.67	39.62	46.00	-6.38
H	890.39	QP	24.62	15.98	40.59	46.00	-5.41

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

Measurement results: frequency above 1GHz

EUT : WR5510
Test : 802.11b Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4824.00	PK	V	36.07	37.77	53.11	54.81	74	-19.19
4824.00	AV	V	36.07	37.77	51.21	52.91	54	-1.09
4824.00	PK	H	36.07	37.77	46.62	48.32	54	-5.68

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11b Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4874.00	PK	V	36.07	37.77	53.48	55.18	74	-18.82
4874.00	AV	V	36.07	37.77	51.72	53.42	54	-0.58
4874.00	PK	H	36.07	37.77	46.31	48.01	54	-5.99

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11b Tx at channel 11

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4924.00	PK	V	36.07	37.77	53.35	55.05	74	-18.95
4924.00	AV	V	36.07	37.77	51.6	53.3	54	-0.70
4924.00	PK	H	36.07	37.77	44.53	46.23	54	-7.77

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11g Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4824.00	PK	V	36.07	37.77	53.99	55.69	74	-18.31
4824.00	AV	V	36.07	37.77	44.89	46.59	54	-7.41
7236.00	PK	V	36.18	43.97	51.87	59.66	74	-14.34
7236.00	AV	V	36.18	43.97	27.06	34.85	54	-19.15
4824.00	PK	H	36.07	37.77	43.51	45.21	54	-8.79
7236.00	PK	H	36.18	43.97	39.35	47.14	54	-6.86

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11g Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4874.00	PK	V	36.07	37.77	58.65	60.35	74	-13.65
4874.00	AV	V	36.07	37.77	46.35	48.05	54	-5.95
7311.00	PK	V	36.18	43.97	64.41	72.2	74	-1.80
7311.00	AV	V	36.18	43.97	35.52	43.31	54	-10.69
9748.00	PK	V	34.28	48.31	44.87	58.9	74	-15.10
9748.00	AV	V	34.28	48.31	28.18	42.21	54	-11.79
12185.00	PK	V	36.09	49.6	49.72	63.23	74	-10.77
12185.00	AV	V	36.09	49.6	26.34	39.85	54	-14.15
4874.00	PK	H	36.07	37.77	54.18	55.88	74	-18.12
4874.00	AV	H	36.07	37.77	41.88	43.58	54	-10.42
7311.00	PK	H	36.18	43.97	53.57	61.36	74	-12.64
7311.00	AV	H	36.18	43.97	27.83	35.62	54	-18.38

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11g Tx at channel 11

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4924.00	PK	V	36.07	37.77	55.84	57.54	74	-16.46
4924.00	AV	V	36.07	37.77	44.73	46.43	54	-7.57
7386.00	PK	V	36.18	43.97	59.36	67.15	74	-6.85
7386.00	AV	V	36.18	43.97	30.02	37.81	54	-16.19
9848.00	PK	V	34.28	48.31	42.35	56.38	74	-17.62
9848.00	AV	V	34.28	48.31	24.88	38.91	54	-15.09
12310.00	PK	V	36.09	49.6	45.22	58.73	74	-15.27
12310.00	AV	V	36.09	49.6	23.73	37.24	54	-16.76
4924.00	PK	H	36.07	37.77	48.87	50.57	54	-3.43
7386.00	PK	H	36.18	43.97	51.47	59.26	74	-14.74
7386.00	AV	H	36.18	43.97	27.43	35.22	54	-18.78

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT20 Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4824.00	PK	V	36.07	37.77	46.25	47.95	54	-6.05
7236.00	PK	V	36.18	43.97	51.17	58.96	74	-15.04
7236.00	AV	V	36.18	43.97	26.37	34.16	54	-19.84
4824.00	PK	H	36.07	37.77	43.71	45.41	54	-8.59

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT20 Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4874.00	PK	V	36.07	37.77	57.32	59.02	74	-14.98
4874.00	AV	V	36.07	37.77	45.08	46.78	54	-7.22
7311.00	PK	V	36.18	43.97	64.89	72.68	74	-1.32
7311.00	AV	V	36.18	43.97	32.9	40.69	54	-13.31
9748.00	PK	V	34.28	48.31	40.63	54.66	74	-19.34
9748.00	AV	V	34.28	48.31	24.26	38.29	54	-15.71
12185.00	PK	V	36.09	49.6	46.85	60.36	74	-13.64
12185.00	AV	V	36.09	49.6	24.58	38.09	54	-15.91
4874.00	PK	H	36.07	37.77	53.16	54.86	74	-19.14
4874.00	AV	H	36.07	37.77	40.99	42.69	54	-11.31
7311.00	PK	H	36.18	43.97	53.1	60.89	74	-13.11
7311.00	AV	H	36.18	43.97	28.44	36.23	54	-17.77

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT20 Tx at channel 11

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4924.00	PK	V	36.07	37.77	58.56	60.26	74	-13.74
4924.00	AV	V	36.07	37.77	47.68	49.38	54	-4.62
7386.00	PK	V	36.18	43.97	62.87	70.66	74	-3.34
7386.00	AV	V	36.18	43.97	32.9	40.69	54	-13.31
9848.00	PK	V	34.28	48.31	43.23	57.26	74	-16.74
9848.00	AV	V	34.28	48.31	25.95	39.98	54	-14.02
12310.00	PK	V	36.09	49.6	45.11	58.62	74	-15.38
12310.00	AV	V	36.09	49.6	24.37	37.88	54	-16.12
4924.00	PK	H	36.07	37.77	48.48	50.18	54	-3.82
7386.00	PK	H	36.18	43.97	50.87	58.66	74	-15.34
7386.00	AV	H	36.18	43.97	26.67	34.46	54	-19.54

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT40 Tx at channel 3

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4844.00	PK	V	36.07	37.77	46.57	48.27	54	-5.73
4844.00	PK	H	36.07	37.77	39.24	40.94	54	-13.06

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT40 Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4874.00	PK	V	36.07	37.77	55.91	57.61	74	-16.39
4874.00	AV	V	36.07	37.77	45.97	47.67	54	-6.33
7311.00	PK	V	36.18	43.97	62.72	70.51	74	-3.49
7311.00	AV	V	36.18	43.97	37.54	45.33	54	-8.67
9748.00	PK	V	34.28	48.31	41.31	55.34	74	-18.66
9748.00	AV	V	34.28	48.31	24.25	38.28	54	-15.72
12185.00	PK	V	36.09	49.6	45.85	59.36	74	-14.64
12185.00	AV	V	36.09	49.6	25.08	38.59	54	-15.41
4874.00	PK	H	36.07	37.77	46.45	48.15	54	-5.85
7311.00	PK	H	36.18	43.97	47.37	55.16	74	-18.84
7311.00	AV	H	36.18	43.97	31.87	39.66	54	-14.34

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

EUT : WR5510
Test : 802.11n HT40 Tx at channel 9

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4904.00	PK	V	36.07	37.77	46.75	48.45	54	-5.55
7356.00	PK	V	36.18	43.97	52.39	60.18	74	-13.82
7356.00	AV	V	36.18	43.97	31.83	39.62	54	-14.38
12260.00	PK	V	36.09	49.6	38.07	51.58	54	-2.42
4904.00	PK	H	36.07	37.77	43.62	45.32	54	-8.68
7356.00	PK	H	36.18	43.97	40.27	48.06	54	-5.94

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the system noise floor.

9. Emission on Band Edge

Name of Test	Emission Band Edge
Base Standard	FCC 15.247(d)

Test Result: Complies

Measurement Data: See Tables & plots below

Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4

The frequency range from 30 MHz to 1000 MHz using Bilog Antenna.
The frequency range over 1 GHz using Horn Antenna.

Radiated emissions were invested cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded also on the report.

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Test Mode: 802.11b

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	63.41	74	-10.59
		AV	53.40	54	-0.60
11 (highest)	2483.5-2500	PK	61.67	74	-12.33
		AV	52.84	54	-1.16

Test Mode: 802.11g

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	66.96	74	-7.04
		AV	53.30	54	-0.70
11 (highest)	2483.5-2500	PK	71.49	74	-2.51
		AV	53.20	54	-0.80

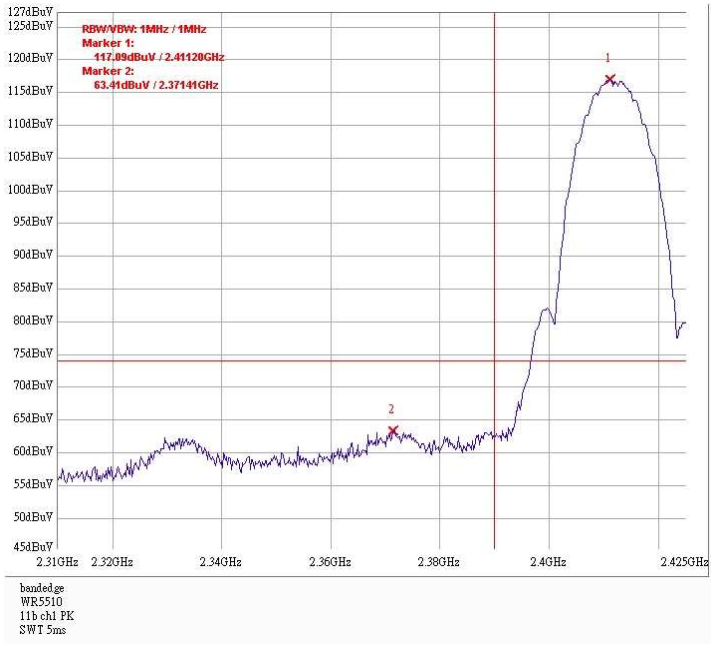
Test Mode: 802.11n HT20

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	67.91	74	-6.09
		AV	53.19	54	-0.81
11 (highest)	2483.5-2500	PK	67.30	74	-6.70
		AV	53.38	54	-0.62

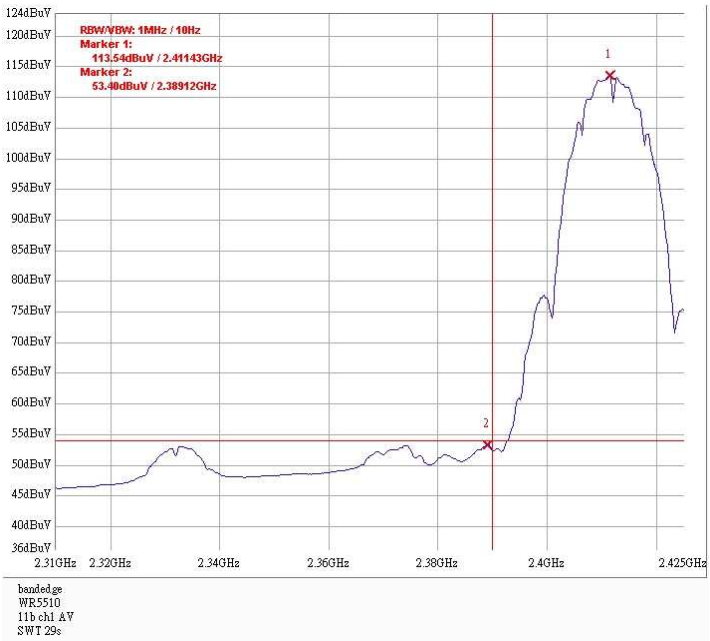
Test Mode: 802.11n HT40

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3 (lowest)	2310-2390	PK	66.25	74	-7.75
		AV	52.06	54	-1.94
9 (highest)	2483.5-2500	PK	65.55	74	-8.45
		AV	52.92	54	-1.08

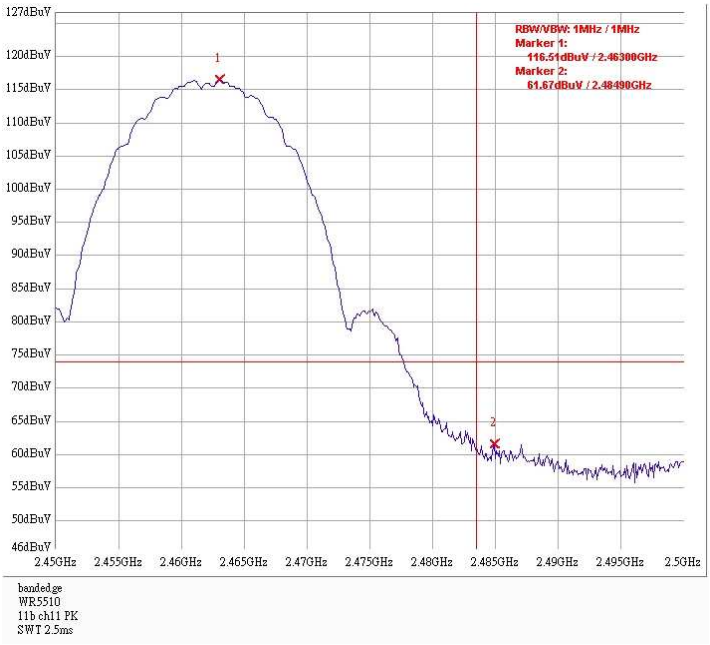
Bandage @ 802.11b mode channel 1 (PK)



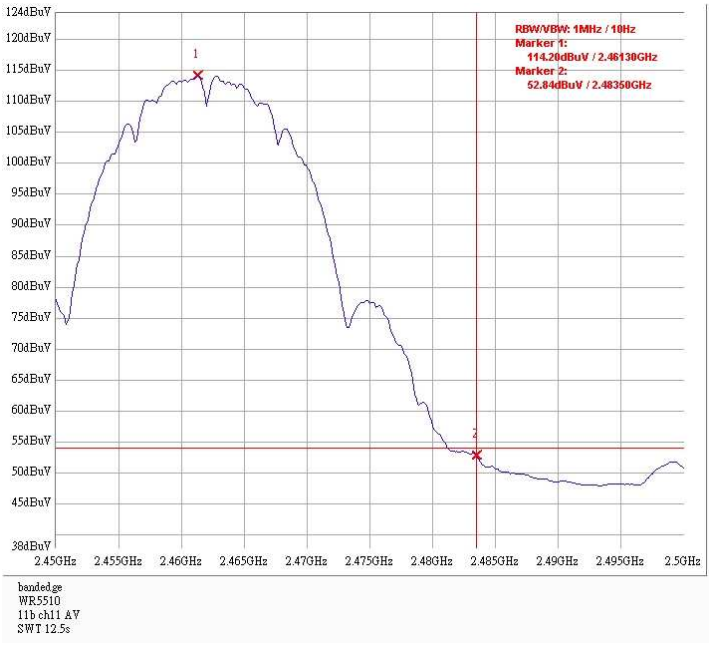
Bandage @ 802.11b mode channel 1 (AV)



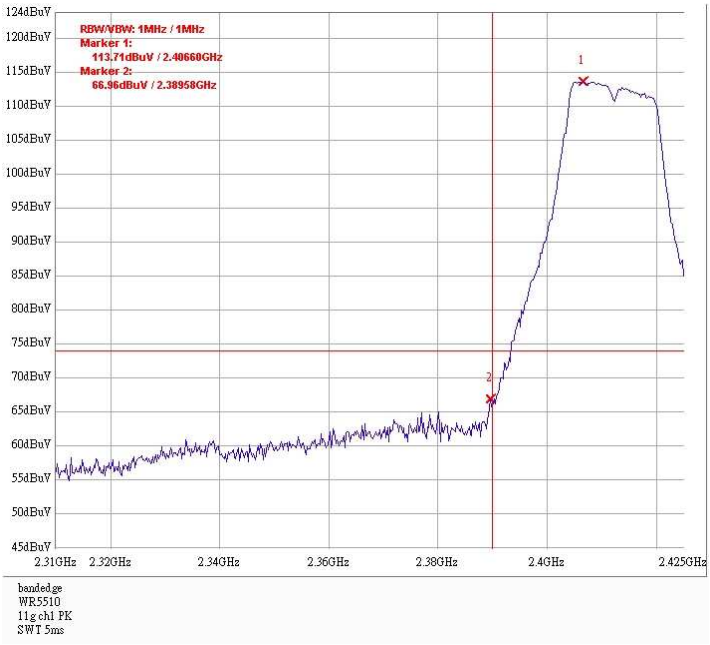
Bandage @ 802.11b mode channel 11 (PK)



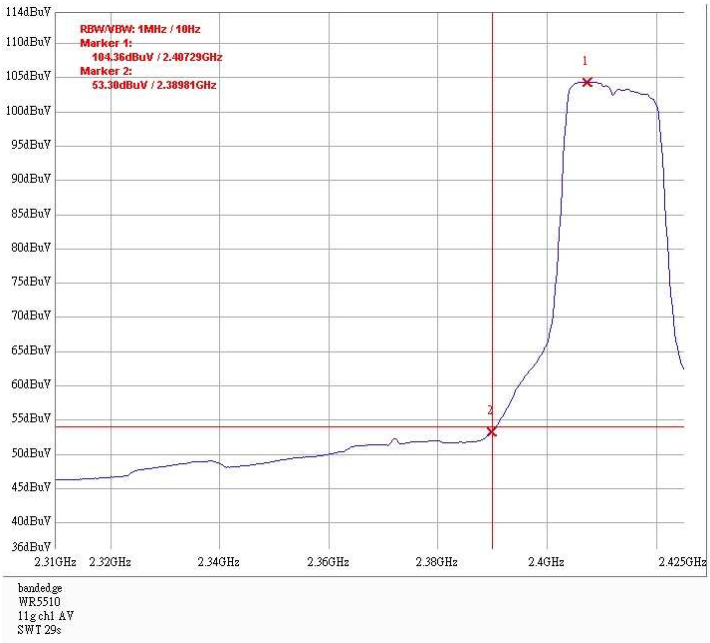
Bandage @ 802.11b mode channel 11 (AV)



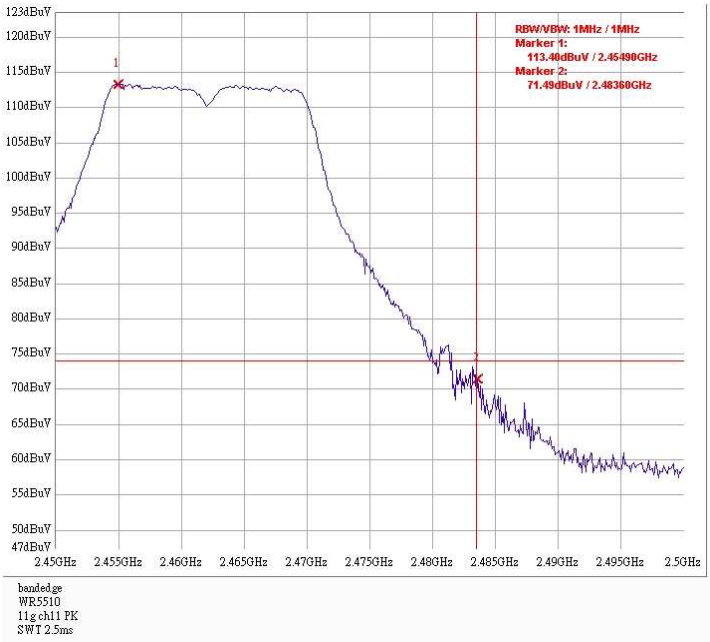
Bandage @ 802.11g mode channel 1 (PK)



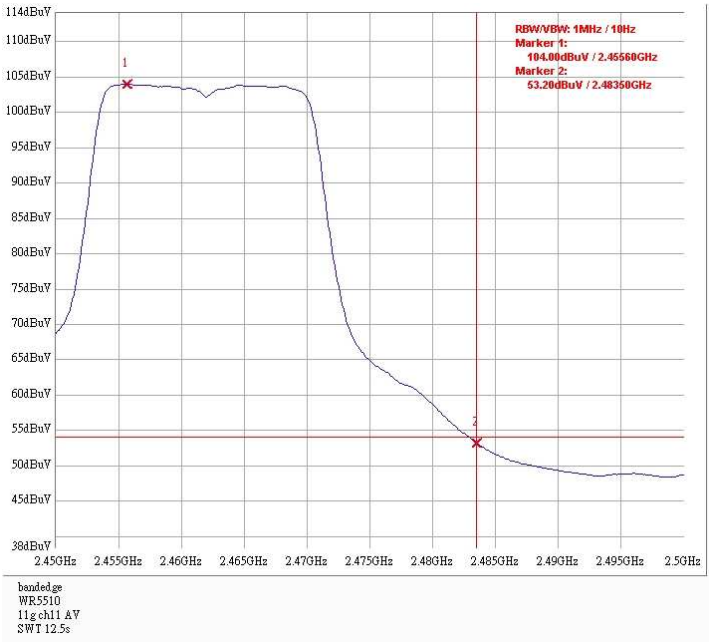
Bandage @ 802.11g mode channel 1 (AV)



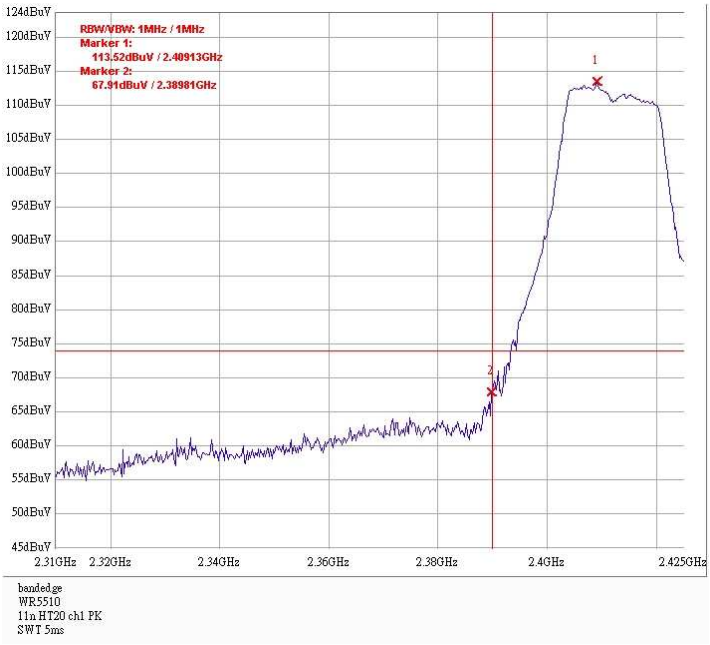
Bandage @ 802.11g mode channel 11 (PK)



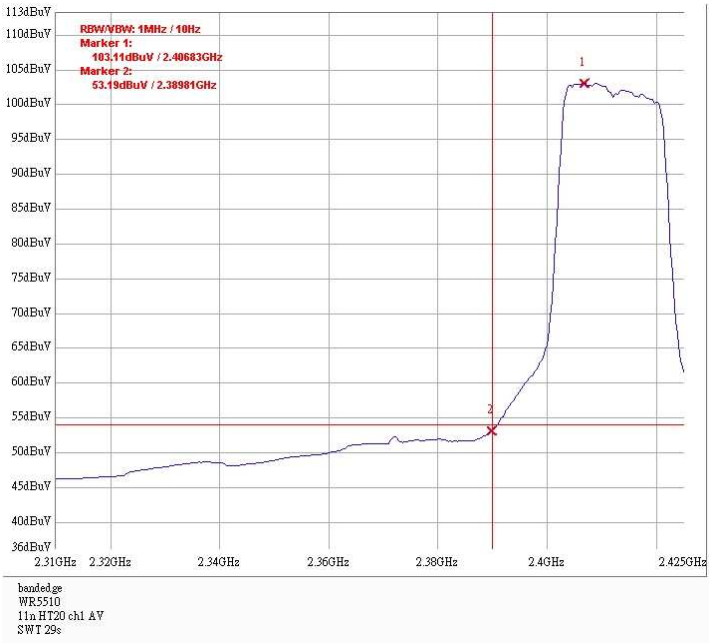
Bandage @ 802.11g mode channel 11 (AV)



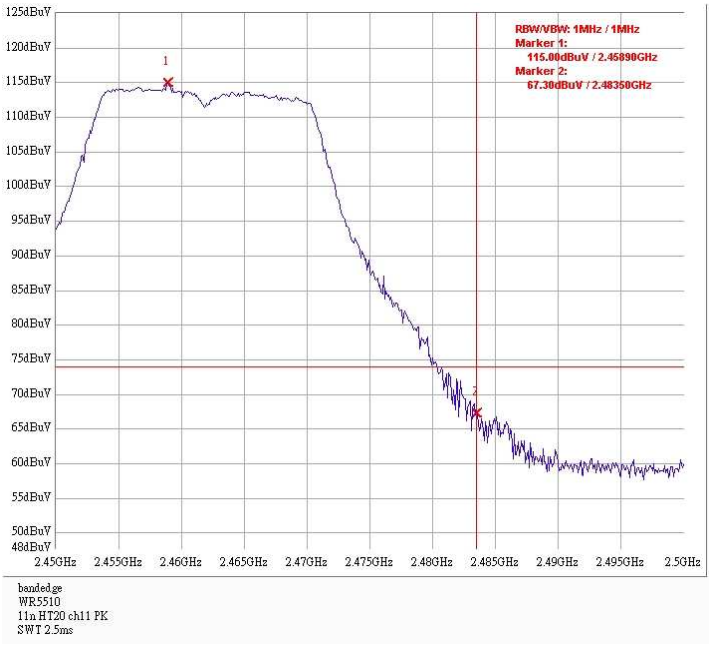
Bandage @ 802.11n HT20 mode channel 1 (PK)



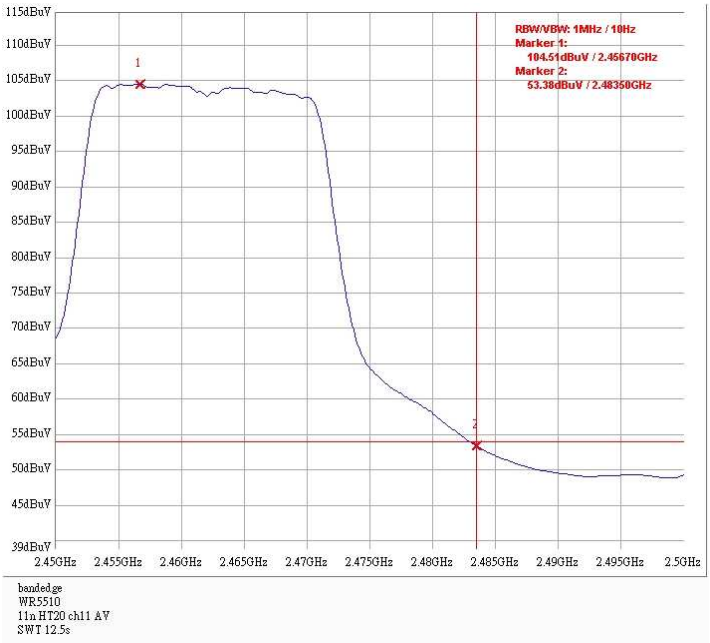
Bandage @ 802.11n HT20 mode channel 1 (AV)



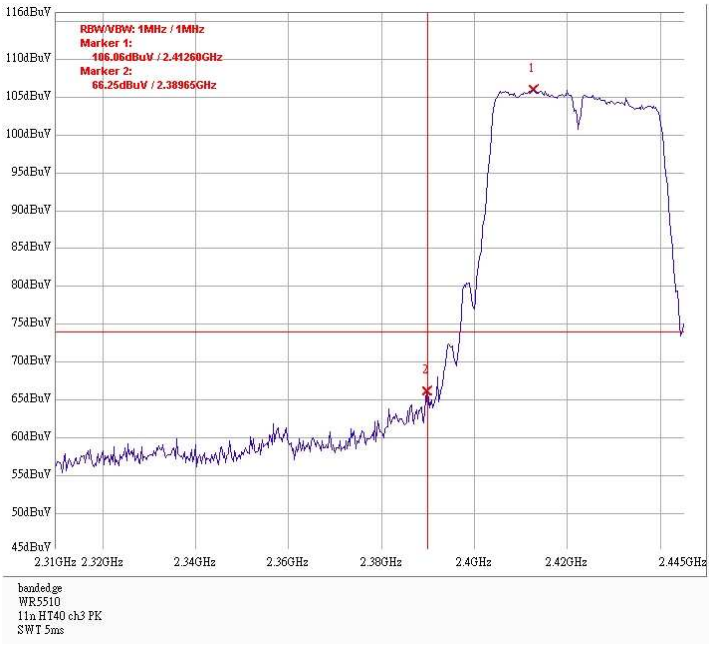
Bandage @ 802.11n HT20 mode channel 11 (PK)



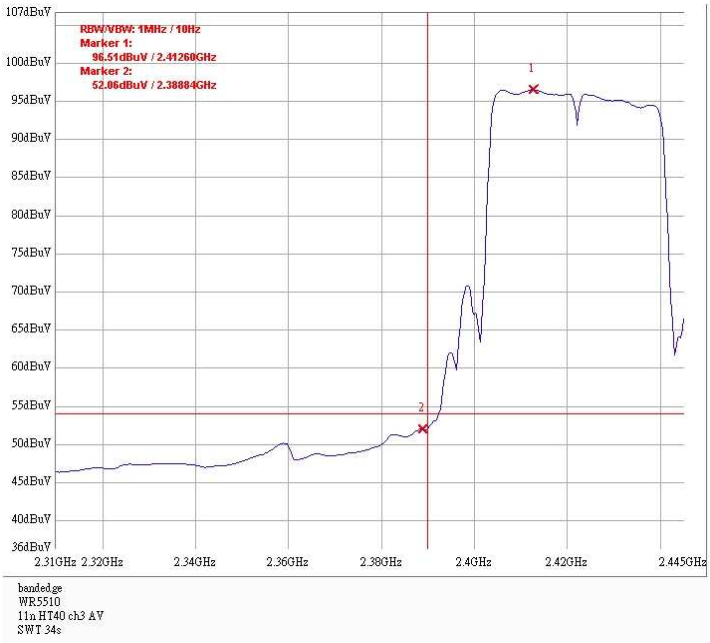
Bandage @ 802.11n HT20 mode channel 11 (AV)



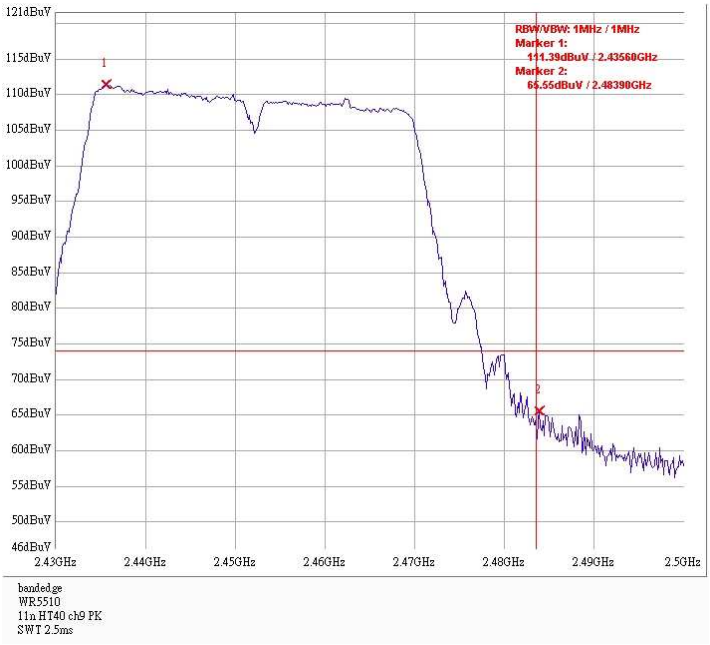
Bandage @ 802.11n HT40 mode channel 3 (PK)



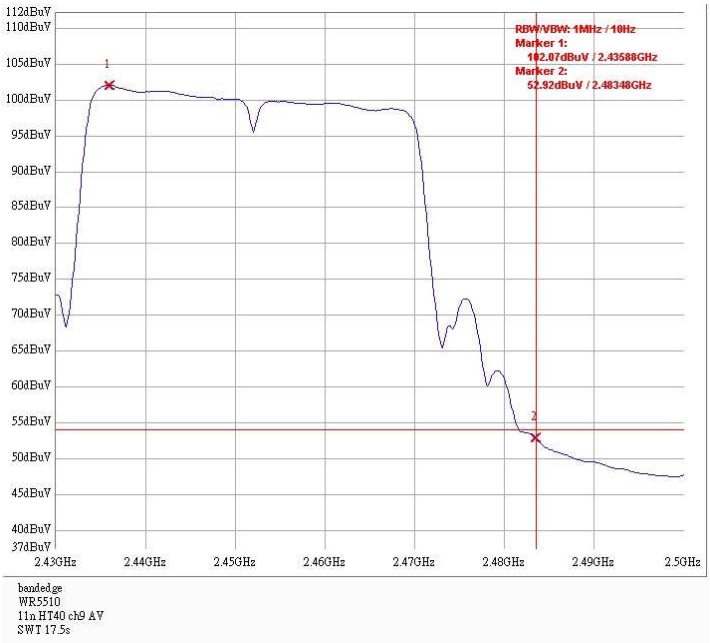
Bandage @ 802.11n HT40 mode channel 3 (AV)



Bandage @ 802.11n HT40 mode channel 9 (PK)



Bandage @ 802.11n HT40 mode channel 9 (AV)



10. AC power line conducted emission

Name of Test	AC power line conducted emission
Base Standard	FCC 15.207

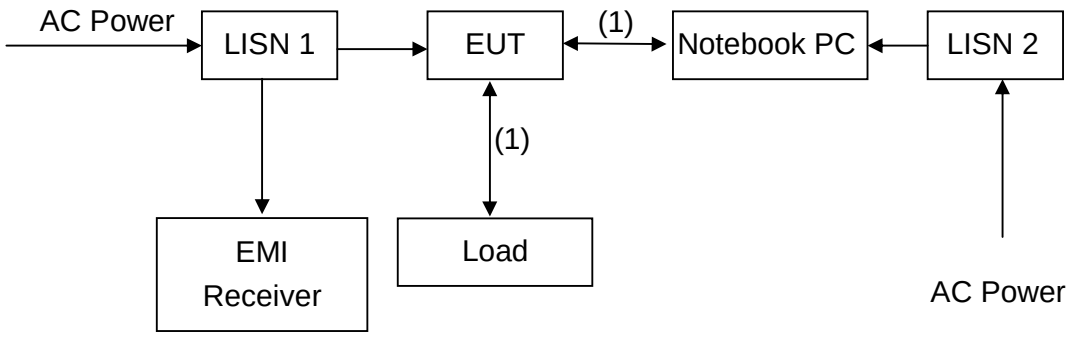
Test Result: Complies
Measurement Data: See Tables & plots below
Method of Measurement:
Reference FCC document: KDB558074, ANSI C63.4

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/ 50 uH coupling impedance with 50 ohm 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 C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

Test Diagram:



(1) RJ-45 UTP Cat.5 10 meter

Emission Limit:

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

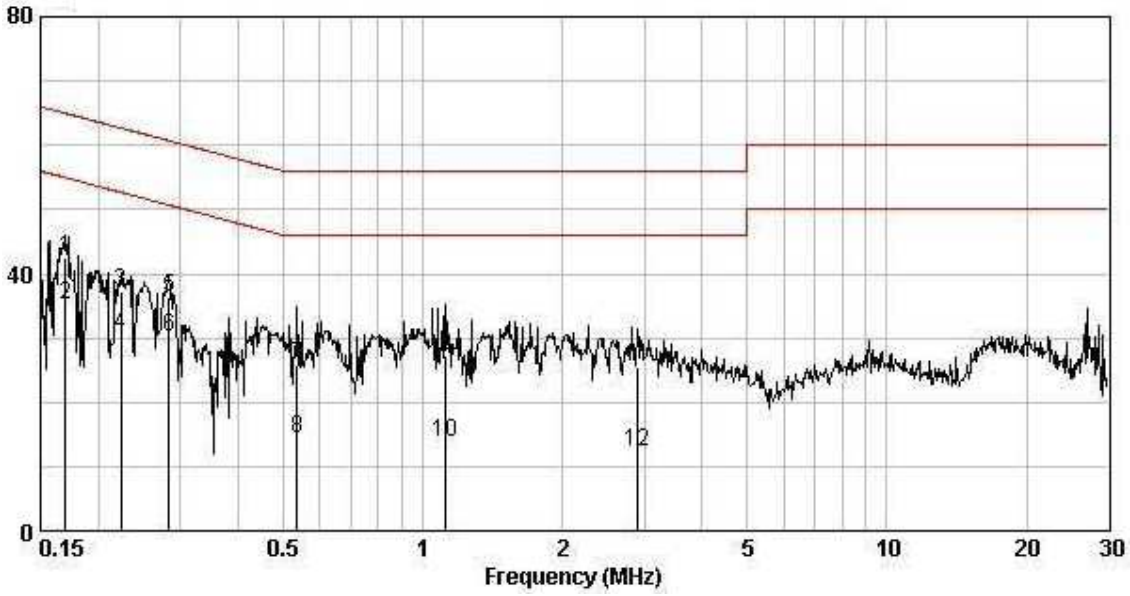
*Decreases with the logarithm of the frequency.

Note: The EUT was tested while in normal communication mode.

Phase : Line
EUT : WR5510
Operating mode : Normal operating mode
Adapter: : DSA-12G-12 FUS 120120

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Av
0.17	0.81	42.49	64.99	35.14	54.99	-22.50	-19.85
0.22	0.69	37.12	62.70	30.53	52.70	-25.58	-22.17
0.28	0.45	36.32	60.72	30.11	50.72	-24.40	-20.61
0.53	0.11	25.70	56.00	14.46	46.00	-30.30	-31.54
1.12	0.11	27.17	56.00	13.81	46.00	-28.83	-32.19
2.90	0.22	25.43	56.00	12.39	46.00	-30.57	-33.61

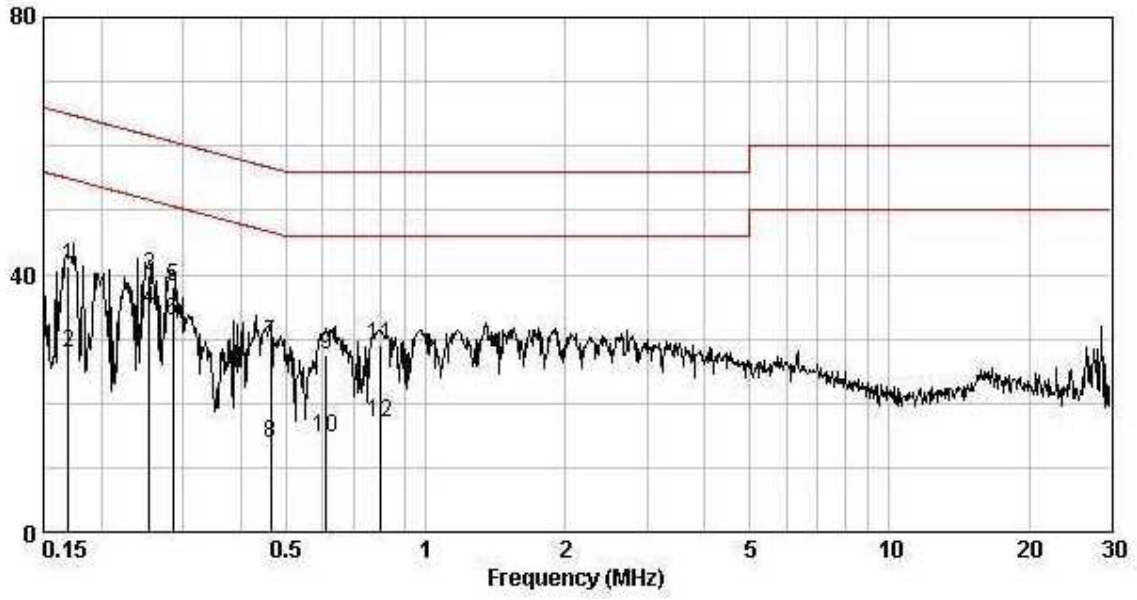
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : WR5510
Operating mode : Normal operating mode
Adapter: : DSA-12G-12 FUS 120120

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.17	0.11	41.18	64.97	27.85	54.97	-23.79	-27.12
0.25	0.11	39.87	61.64	34.52	51.64	-21.78	-17.13
0.28	0.11	38.08	60.68	32.78	50.68	-22.60	-17.90
0.46	0.11	29.30	56.63	13.78	46.63	-27.33	-32.85
0.61	0.11	27.51	56.00	14.53	46.00	-28.49	-31.47
0.80	0.11	29.01	56.00	16.95	46.00	-26.99	-29.05

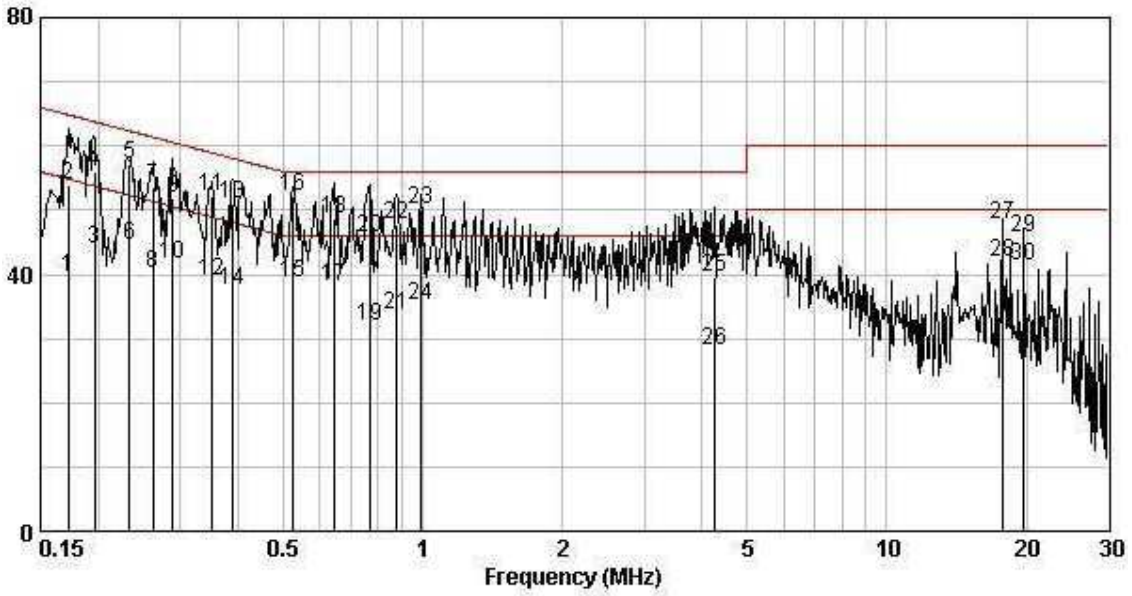
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Line
EUT : WR5510
Operating mode : Normal operating mode
Adapter: : MT12-Y120100-A1

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Av
0.17	0.81	53.92	64.86	39.49	54.86	-10.94	-15.37
0.20	0.81	56.12	63.76	43.99	53.76	-7.64	-9.77
0.23	0.65	57.10	62.35	44.44	52.35	-5.24	-7.90
0.26	0.53	53.55	61.38	40.25	51.38	-7.83	-11.13
0.29	0.44	51.98	60.54	41.64	50.54	-8.57	-8.91
0.35	0.24	52.30	58.91	38.99	48.91	-6.62	-9.93
0.39	0.14	50.89	58.08	37.61	48.08	-7.19	-10.47
0.53	0.11	52.18	56.00	38.62	46.00	-3.82	-7.38
0.65	0.11	48.69	56.00	38.00	46.00	-7.31	-8.00
0.77	0.11	45.75	56.00	31.85	46.00	-10.25	-14.15
0.88	0.11	47.82	56.00	33.79	46.00	-8.18	-12.21
0.99	0.11	49.97	56.00	35.17	46.00	-6.03	-10.83
4.27	0.31	39.69	56.00	28.06	46.00	-16.31	-17.94
17.70	0.87	47.67	60.00	41.91	50.00	-12.33	-8.09
19.71	0.91	45.74	60.00	41.37	50.00	-14.26	-8.63

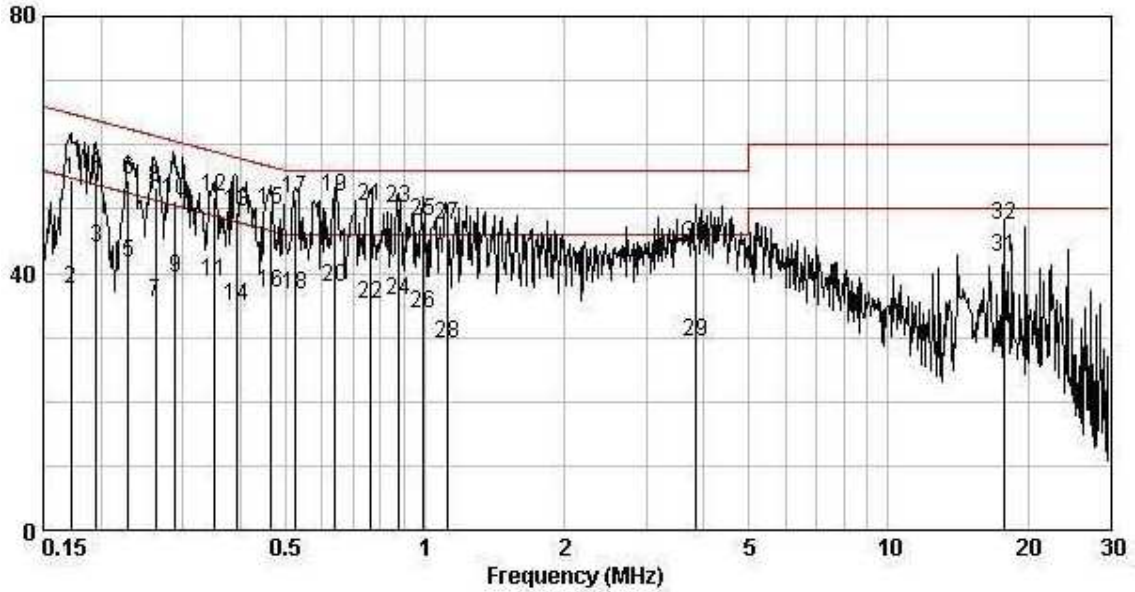
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : WR5510
Operating mode : Normal operating mode
Adapter: : MT12-Y120100-A1

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Av
0.17	0.11	54.52	64.86	37.64	54.86	-10.34	-17.22
0.20	0.11	55.54	63.80	43.97	53.80	-8.26	-9.83
0.23	0.11	54.43	62.48	41.65	52.48	-8.05	-10.83
0.26	0.11	53.35	61.38	35.35	51.38	-8.03	-16.03
0.29	0.11	51.35	60.54	39.30	50.54	-9.20	-11.25
0.35	0.11	52.01	58.91	38.55	48.91	-6.91	-10.37
0.39	0.11	49.51	58.03	35.02	48.03	-8.53	-13.02
0.46	0.11	49.89	56.63	36.96	46.63	-6.74	-9.67
0.53	0.11	51.44	56.00	36.68	46.00	-4.56	-9.32
0.64	0.11	51.95	56.00	37.94	46.00	-4.05	-8.06
0.76	0.11	50.39	56.00	35.17	46.00	-5.61	-10.83
0.88	0.11	50.04	56.00	35.66	46.00	-5.96	-10.34
0.99	0.11	48.15	56.00	33.81	46.00	-7.85	-12.19
1.12	0.11	47.59	56.00	28.89	46.00	-8.41	-17.11
3.84	0.28	44.65	56.00	29.24	46.00	-11.35	-16.76
17.70	0.52	47.40	60.00	42.57	50.00	-12.60	-7.43

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test Equipment List

Equipment	Brand	Model No.
EMI Test Receiver	Rohde & Schwarz	ESCS 30
Spectrum Analyzer	Rohde & Schwarz	FSP 30
Spectrum Analyzer	Rohde & Schwarz	FSEK 30
Signal Generator	Rohde & Schwarz	SMR27
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Horn Antenna	SCHWARZBECK	BBHA 9170
Bilog Antenna	SCHWARZBECK	VULB 9168
Pre-Amplifier	MITEQ	919981
Pre-Amplifier	MITEQ	828825
Controller	HDGmbH	CM 100
Antenna Tower	HDGmbH	MA 2400
LISN	Rohde & Schwarz	ESH3-Z5
Wideband Peak Power Meter/ Sensor	Anritsu	ML2495A/ MA2411B
Temperature Humidity Test Chamber	Juror	TR-4010

Note: 1. The above equipments are within the valid calibration period.
2. The test antennas (receiving antenna) are calibration per 3 years.
3. The video bandwidth of the power meter and sensor can be up to 65 MHz.

Measurement Uncertainty:

Measurement uncertainty was calculated in accordance with TR 100 028-1.

Parameter	Uncertainty
Radiated Emission	±5.056 dB
Conducted Emission	±2.786 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.