EMC
TEST REPORT

Report No. : **TS08120105-EME**
Model No. : **SDW310C**
Issued Date : **Jan. 20, 2009**

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

Test Method/ Standard: **CFR 47 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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The test report was reviewed by:

Name Kevin Chen
Title Chief Engineer

Table of Contents

1. Summary of Test Data

Test/Requirement Description	Applicable Rule	Result
Minimum 6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Output Power	15.247(b)	Pass
Power Spectral Density	15.247(e)	Pass
RF Antenna Conducted Spurious	15.247(d)	Pass
Radiated Spurious Emission	15.247(d), 15.205, 15.209	Pass
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 System,Inc
Product:	802.11a/b/g wireless SDIO Module
Model No.:	SDW310C
FCC ID.:	MQ4SDW310C
Frequency Range:	1. 2412 ~ 2462 MHz for 802.11b/g 2. 5745 ~ 5825 MHz for 802.11a
Channel Number:	1. 11 Channels for 2412 ~ 2462 MHz 2. 5 Channels for 5745 ~ 5825 MHz
Rated Power:	DC 3.3 V from PC PCI Card
Power Cord:	N/A
Data Cable:	N/A
Sample Received:	Dec. 24, 2008
Test Date(s):	Dec. 29 , 2008 ~ Jan. 06, 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 an 802.11a/b/g wireless SDIO Module, 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

For Dipole antenna (2.4 GHz ~ 2.5 GHz)
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	: 1 dBi max
Antenna Type	: Dipole antenna
Connector Type	: I-PEX MHF

For Dipole antenna (5.15 GHz ~ 5.85 GHz)
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	: 1 dBi max
Antenna Type	: Dipole antenna
Connector Type	: I-PEX MHF

For PCB antenna (2.4 GHz ~ 2.5 GHz)
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	: 1.8 dBi max
Antenna Type	: PCB antenna
Connector Type	: MHF Plug

For PCB antenna (4.9 GHz ~ 5.825 GHz)
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	: 4.0 dBi max
Antenna Type	: PCB Antenna
Connector Type	: MHF Plug

Operation mode

The EUT was supplied with DC 3.3 V from PC PCI Card and it was run in TX mode that was controlled by “ART” program.

The EUT was transmitted continuously during the test.

With individual verifying, the maximum output power was found out 1Mbps data rate for 802.11b mode, 6Mbps data rate for 802.11g/a mode. The final tests were executed under these conditions and recorded in this report individually.

802.11b ch6	
Data rate (Mbps)	PK(dBm)
1M	17.33
2M	16.79
5.5M	16.13
11M	15.82

802.11g ch6	
Data rate (Mbps)	PK(dBm)
6M	19.79
9M	19.42
12M	18.96
18M	18.42
24M	18.12
36M	17.88
48M	17.64
54M	17.32

802.11a ch149	
Data rate (Mbps)	PK(dBm)
6M	16.29
9M	16.13
12M	16.01
18M	15.93
24M	15.83
36M	15.71
48M	15.66
54M	15.51

Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For Dipole antenna

Power Parameters of 802.11b/g

Test Software Version	**ART**		
Frequency	2412 MHz	2437 MHz	2462 MHz
802.11b	16.5	16	16
802.11g	12.5	13	12.5

Power Parameters of 802.11a

Test Software Version	**ART**		
Frequency	5745 MHz	5785 MHz	5825 MHz
802.11a	13.5	14	13

For PCB antenna

Power Parameters of 802.11b/g

Test Software Version	**ART**		
Frequency	2412 MHz	2437 MHz	2462 MHz
802.11b	14.5	13.5	14.5
802.11g	12.5	13	12.5

Power Parameters of 802.11a

Test Software Version	**ART**		
Frequency	5745 MHz	5785 MHz	5825 MHz
802.11a	13.5	14	14.5

3. Maximum 6 dB Bandwidth

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

Test Result: Complies

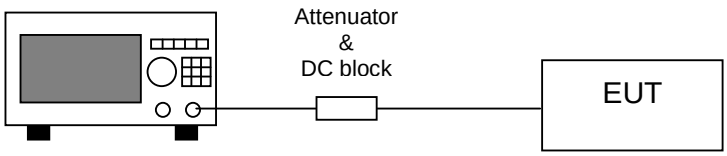
Measurement Data: See Table & plots below

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:

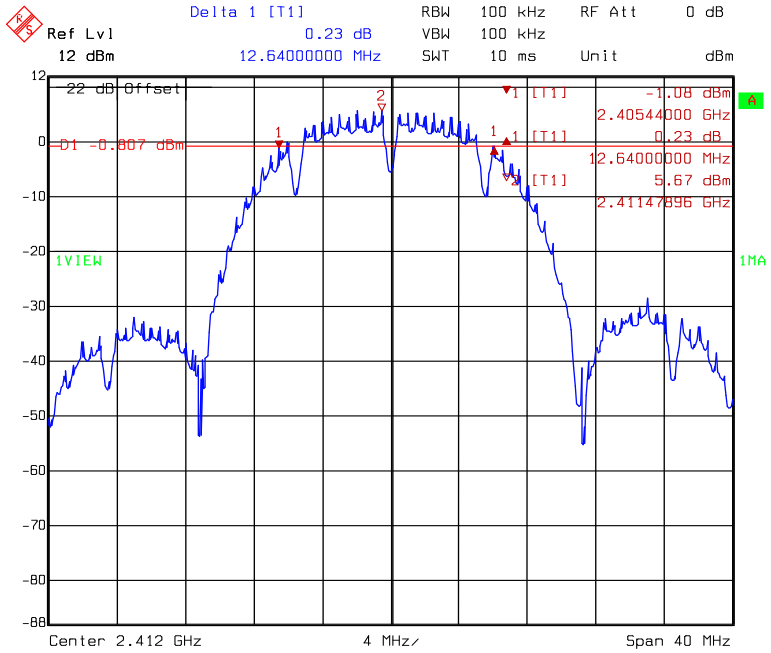


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps for 802.11b, 6 Mbps for 802.11a/ 11g. The EUT was tuned to a low, middle and high channel.

Table 1. Maximum 6 dB Bandwidth

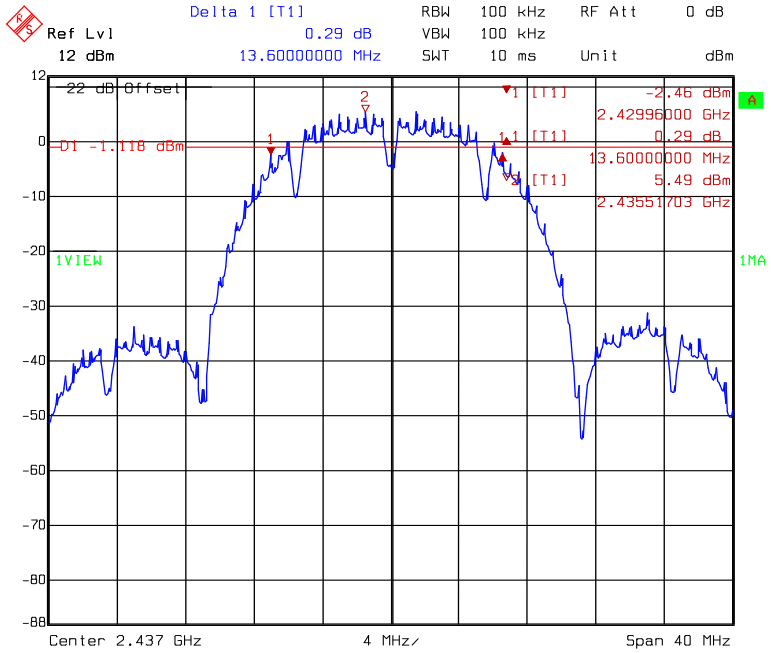
Mode	Channel	Frequency (MHz)	Data rate (Mbps)	6dB Bandwidth (MHz)	Limit (MHz)
802.11b	1	2412	1	12.64	0.5
	6	2437		13.60	0.5
	11	2462		13.60	0.5
802.11g	1	2412	6	16.64	0.5
	6	2437		16.64	0.5
	11	2462		16.64	0.5
802.11a	149	5745	6	16.64	0.5
	157	5785		16.64	0.5
	165	5825		16.64	0.5

6 dB Bandwidth @ 802.11b mode channel 1



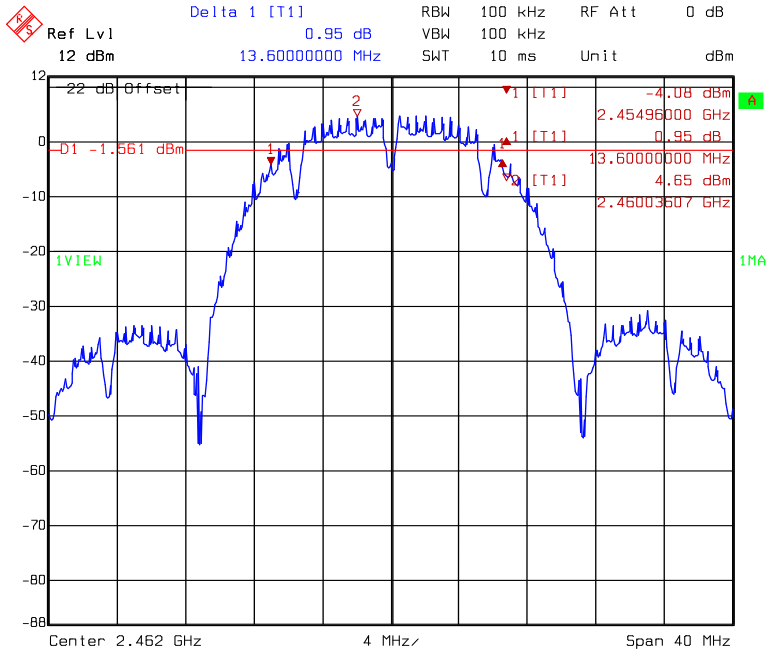
Title: 6dB Band-Width
Comment A: CH 1 at 802.11b mode
Date: 24.DEC.2008 17:27:42

6 dB Bandwidth @ 802.11b mode channel 6



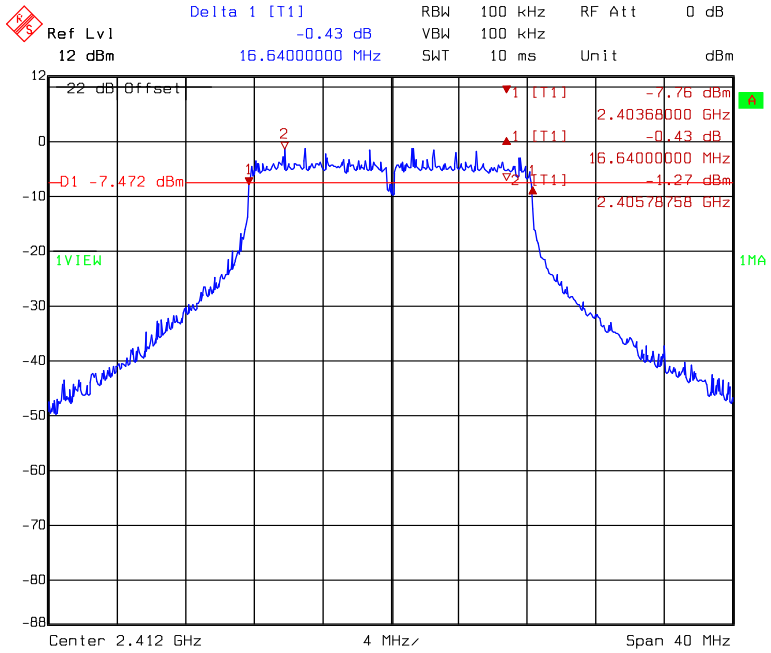
Title: 6dB Band-Width
Comment A: CH 6 at 802.11b mode
Date: 05.JAN.2009 16:29:32

6 dB Bandwidth @ 802.11b mode channel 11



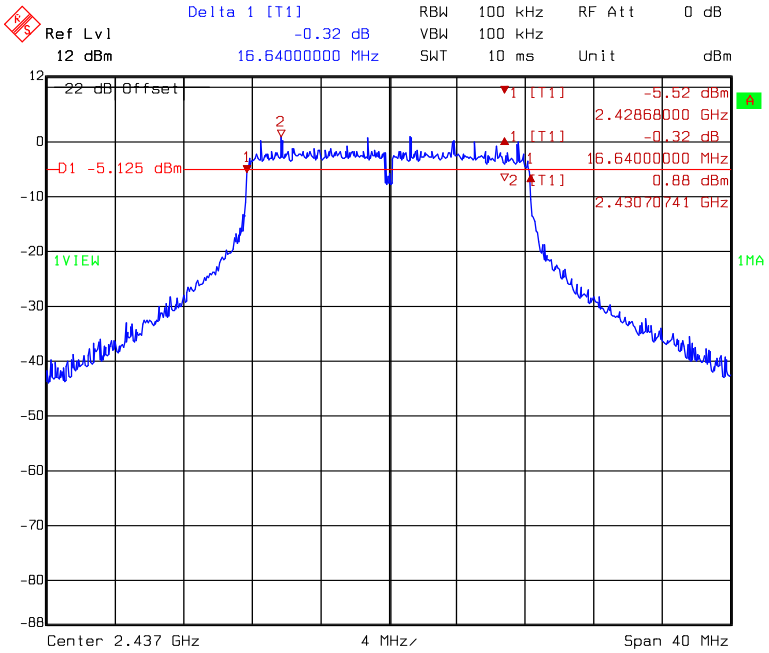
Title: 6dB Band-Width
Comment A: CH 11 at 802.11b mode
Date: 05.JAN.2009 16:32:29

6 dB Bandwidth @ 802.11g mode channel 1



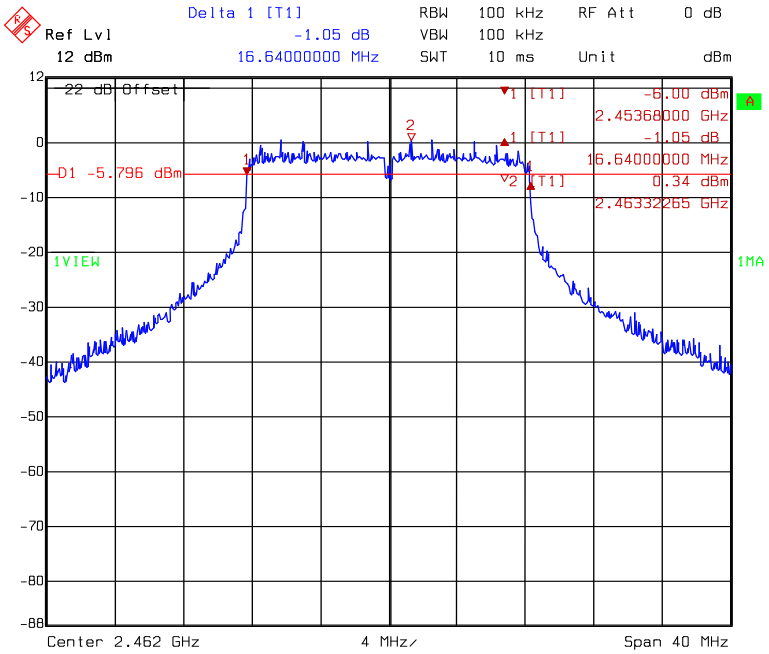
Title: 6dB Band-Width
Comment A: CH 1 at 802.11g mode
Date: 24.DEC.2008 17:39:40

6 dB Bandwidth @ 802.11g mode channel 6



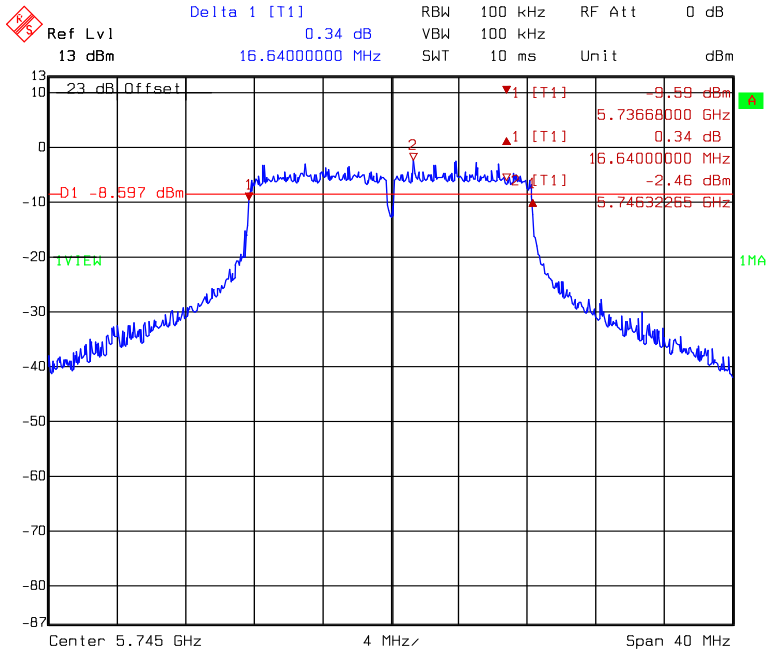
Title: 6dB Band-Width
Comment A: CH 6 at 802.11g mode
Date: 05.JAN.2009 16:43:52

6 dB Bandwidth @ 802.11g mode channel 11



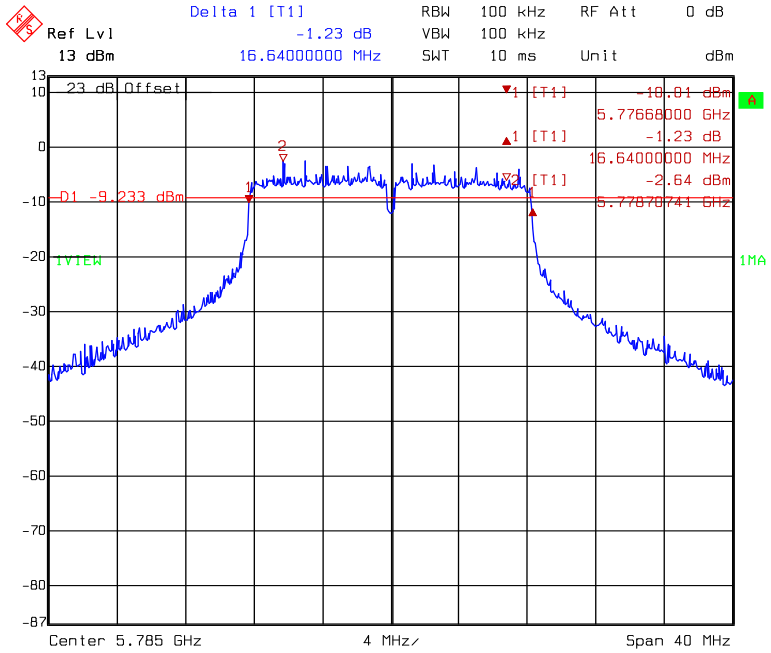
Title: 6dB Band-Width
Comment A: CH 11 at 802.11g mode
Date: 05.JAN.2009 16:41:06

6 dB Bandwidth @ 802.11a mode channel 149



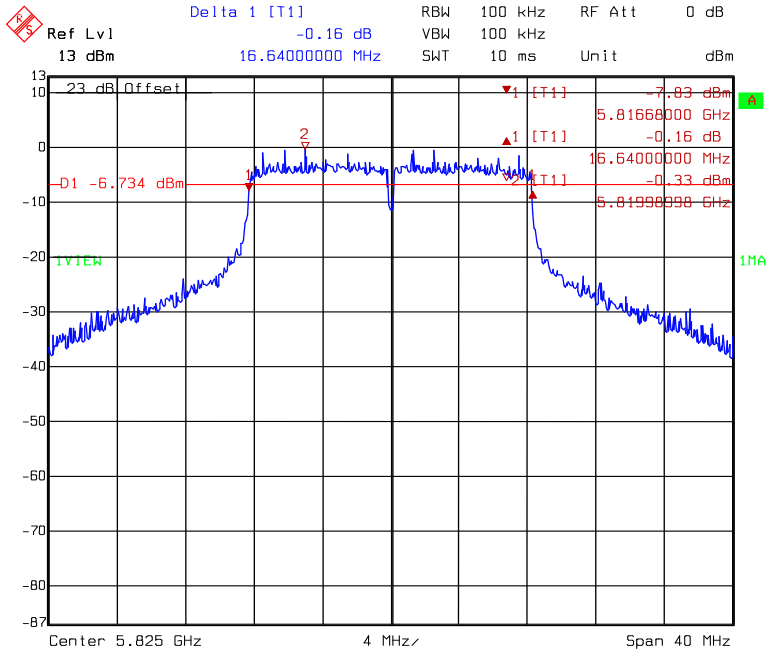
Title: 6dB Band-Width
Comment A: CH 149 at 802.11a mode
Date: 24.DEC.2008 17:53:00

6 dB Bandwidth @ 802.11a mode channel 157



Title: 6dB Band-Width
Comment A: CH 157 at 802.11a mode
Date: 24.DEC.2008 18:06:41

6 dB Bandwidth @ 802.11a mode channel 165



Title: 6dB Band-Width
Comment A: CH 165 at 802.11a mode
Date: 24.DEC.2008 18:10:16

4. 99 % Occupied Bandwidth

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

Test Result: Complies

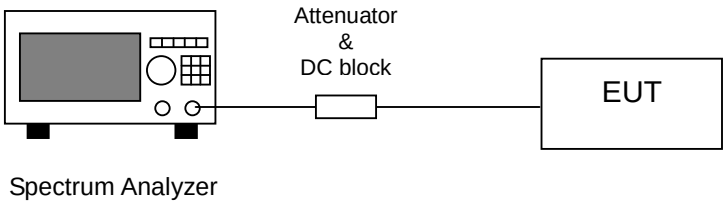
Measurement Data: See Table & plots below

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:



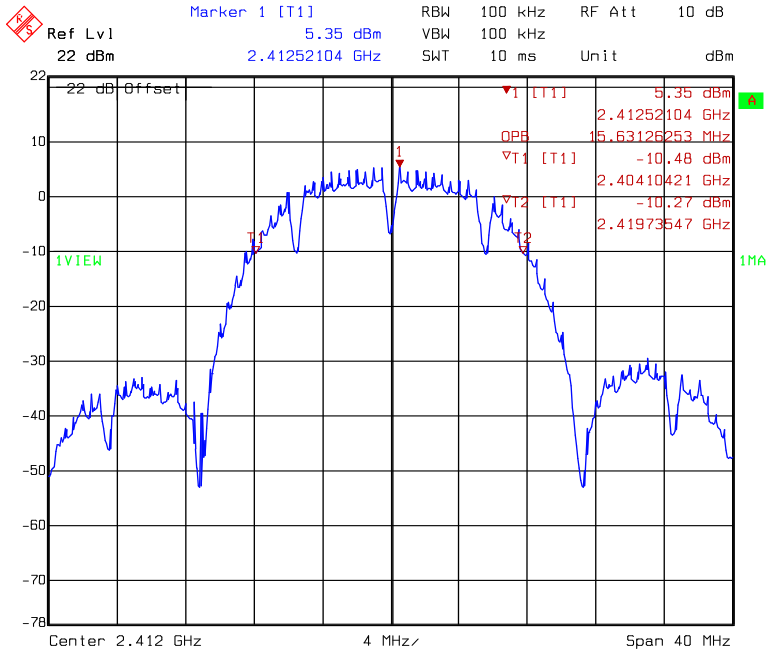
Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps for 802.11b, 6 Mbps for 802.11a/ 11g. The EUT was tuned to a low, middle and high channel.

Table 2. 99 % Occupied Bandwidth

Test Condition:

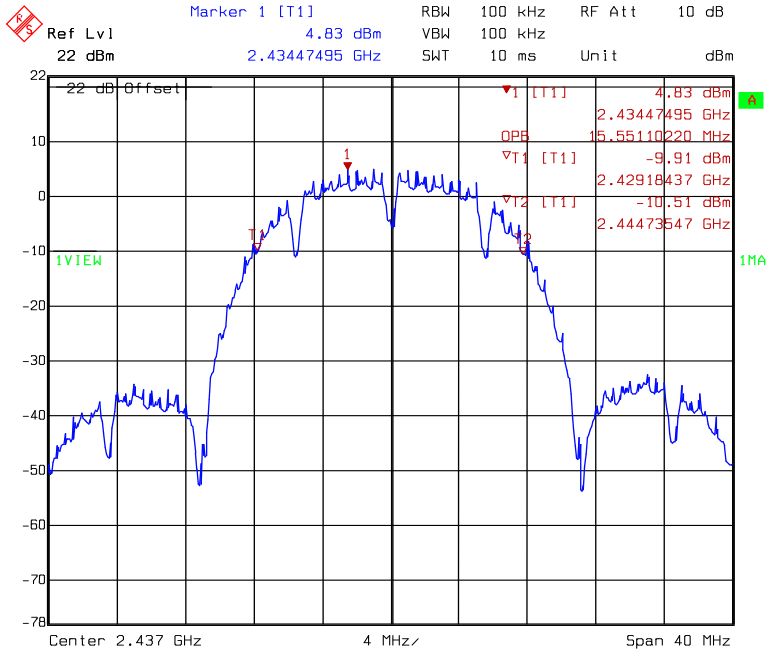
Mode	Channel	Frequency (MHz)	Data rate (Mbps)	99% Bandwidth (MHz)
80.11b	1	2412	1	15.63
	6	2437		15.55
	11	2462		15.55
802.11g	1	2412	6	16.59
	6	2437		16.59
	11	2462		16.59
802.11a	149	5745	6	16.59
	157	5785		16.59
	165	5825		16.67

99 % Occupied Bandwidth @ 802.11b mode channel 1



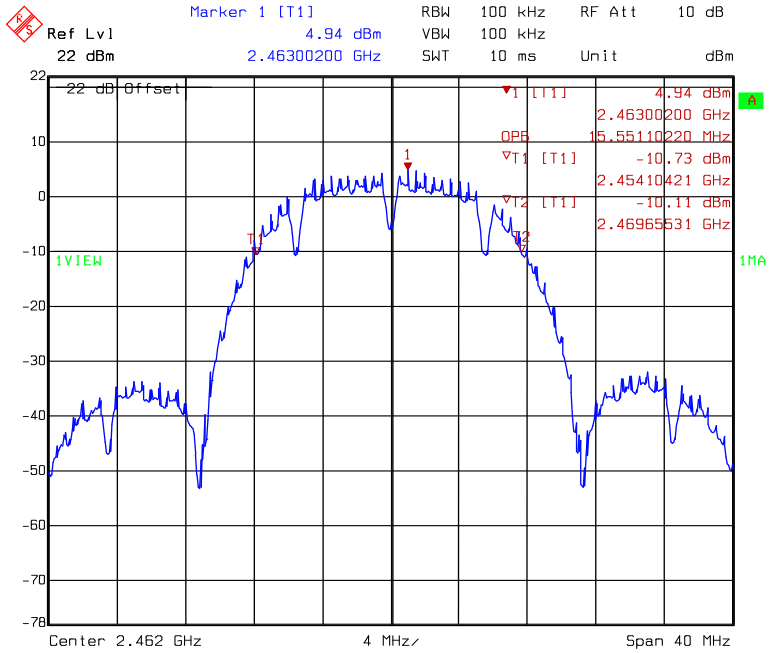
Title: Occupied Band-Width
Comment A: CH 1 at 802.11b mode
Date: 24.DEC.2008 17:29:31

99 % Occupied Bandwidth @ 802.11b mode channel 6



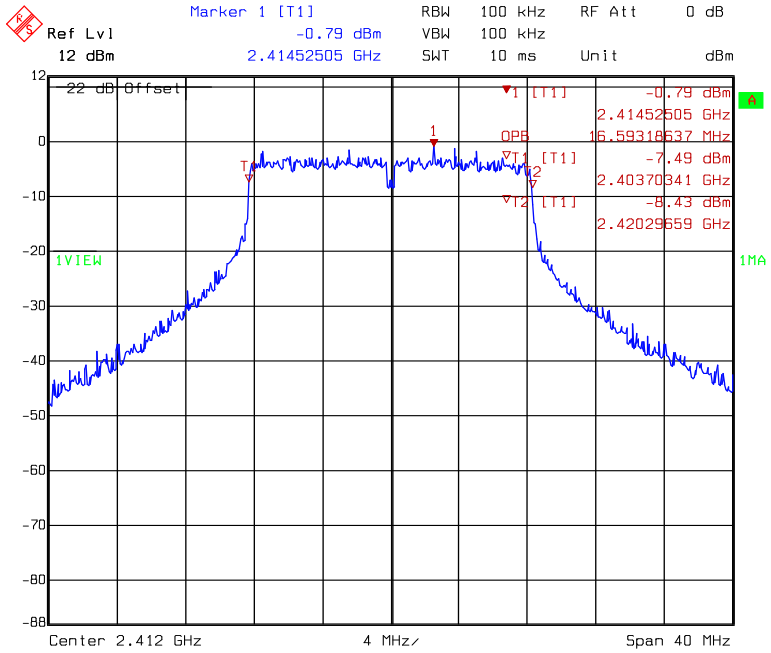
Title: Occupied Band-Width
Comment A: CH 6 at 802.11b mode
Date: 05.JAN.2009 16:31:42

99 % Occupied Bandwidth @ 802.11b mode channel 11



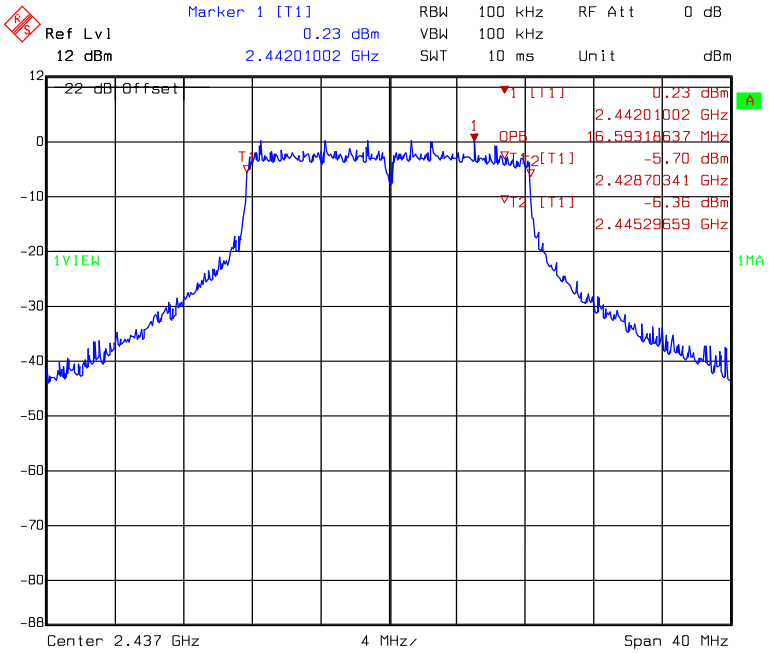
Title: Occupied Band-Width
Comment A: CH 11 at 802.11b mode
Date: 05.JAN.2009 16:34:24

99 % Occupied Bandwidth @ 802.11g mode channel 1



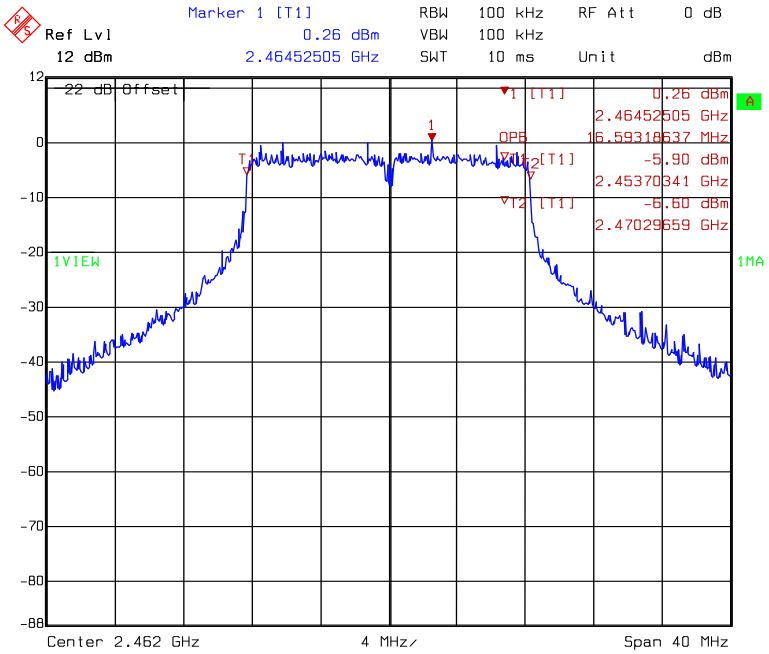
Title: Occupied Band-Width
Comment A: CH 1 at 802.11g mode
Date: 24.DEC.2008 17:41:23

99 % Occupied Bandwidth @ 802.11g mode channel 6



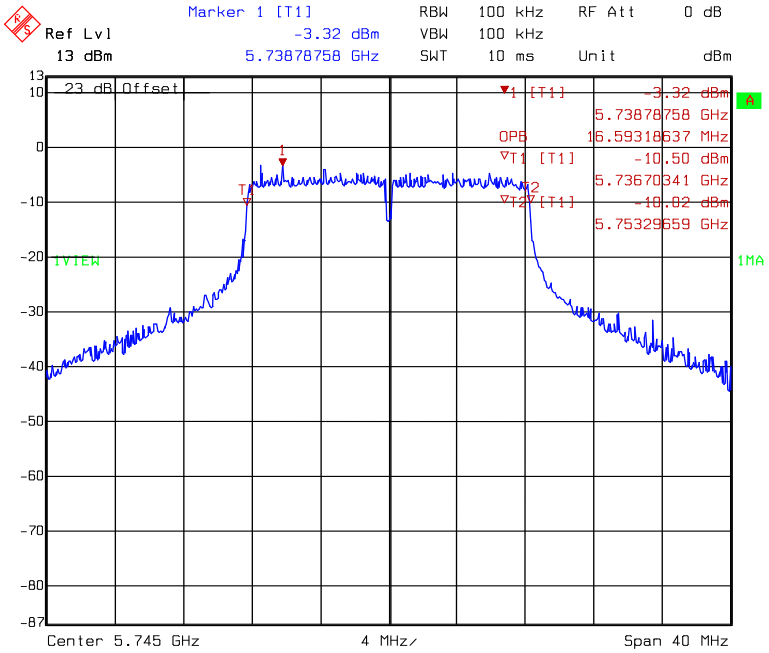
Title: Occupied Band-Width
Comment A: CH 6 at 802.11g mode
Date: 05.JAN.2009 16:45:36

99 % Occupied Bandwidth @ 802.11g mode channel 11



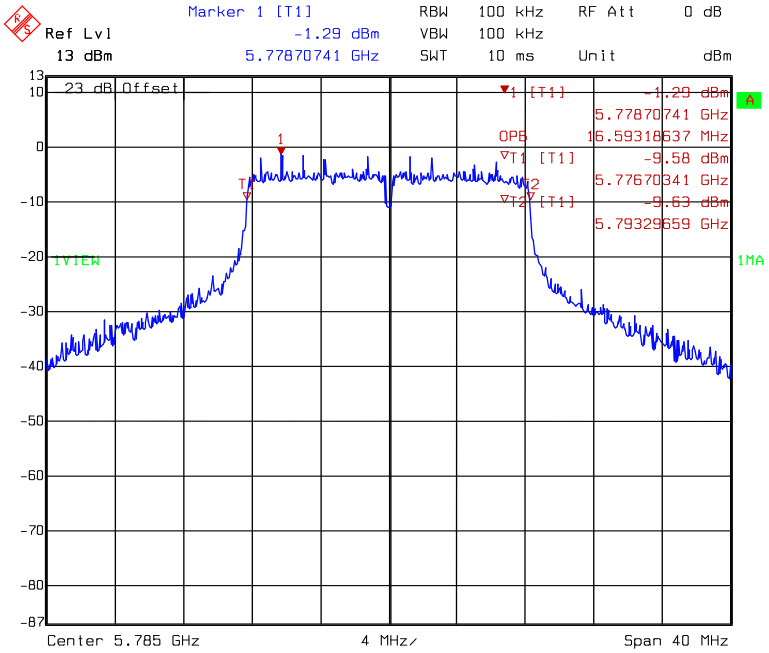
Title: Occupied Band-Width
Comment A: CH 11 at 802.11g mode
Date: 05.JAN.2009 16:42:50

99 % Occupied Bandwidth @ 802.11a mode channel 149



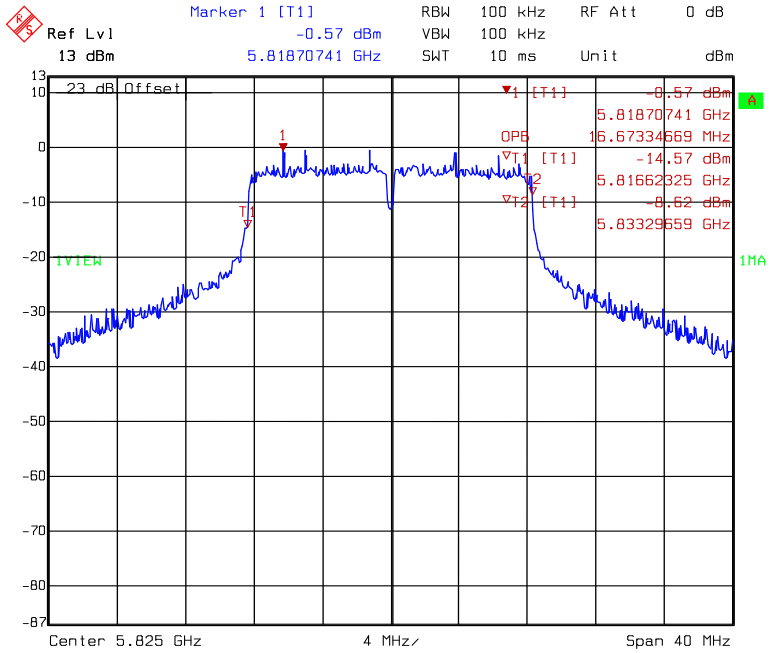
Title: Occupied Band-Width
Comment A: CH 149 at 802.11a mode
Date: 24.DEC.2008 17:55:04

99 % Occupied Bandwidth @ 802.11a mode channel 157



Title: Occupied Band-Width
Comment A: CH 157 at 802.11a mode
Date: 24.DEC.2008 18:08:46

99 % Occupied Bandwidth @ 802.11a mode channel 165



Title: Occupied Band-Width
Comment A: CH 165 at 802.11a mode
Date: 24.DEC.2008 18:12:21

5. Maximum Output Power

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

Measurement Uncertainty: ±2dB (k=2)

Test Result: Complies

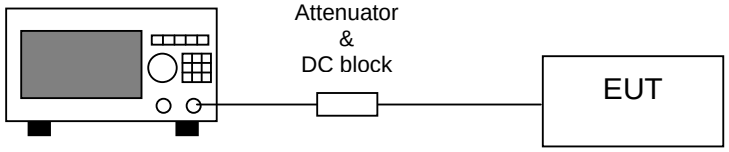
Measurement Data: See Table below

Method of Measurement:

Reference FCC document: KDB558074

The peak power at antenna terminals is measured using a Wideband Peak Power Meter which the video bandwidth can be up to 65MHz. Power output is measured with the maximum rated input level.

Test Diagram:



Wideband Peak Power meter
and sensor

Note 1: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps for 802.11b, 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

Test Condition:

With Dipole antenna

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (dBm)		Limit (dBm)
				Dipole		
				PK	AV	
802.11b	1	2412	1	17.07	14.73	30
	6	2437		16.85	14.66	30
	11	2462		16.64	14.41	30
802.11g	1	2412	6	19.68	11.27	30
	6	2437		19.79	11.92	30
	11	2462		19.19	11.21	30
802.11a	149	5745	6	16.29	9.55	30
	157	5785		16.22	9.63	30
	165	5825		15.78	9.66	30

With PCB antenna

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (dBm)		Limit (dBm)
				Patch		
				PK	AV	
802.11b	1	2412	1	15.88	13.56	30
	6	2437		15.06	12.64	30
	11	2462		15.73	13.33	30
802.11g	1	2412	6	19.68	11.27	30
	6	2437		19.79	11.92	30
	11	2462		19.19	11.21	30
802.11a	149	5745	6	16.29	9.55	30
	157	5785		16.22	9.63	30
	165	5825		16.15	9.95	30

6. Power Spectral Density

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

Test Result: Complies

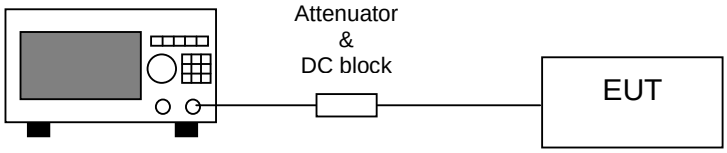
Measurement Data: See Table & plots below

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:



Spectrum Analyzer

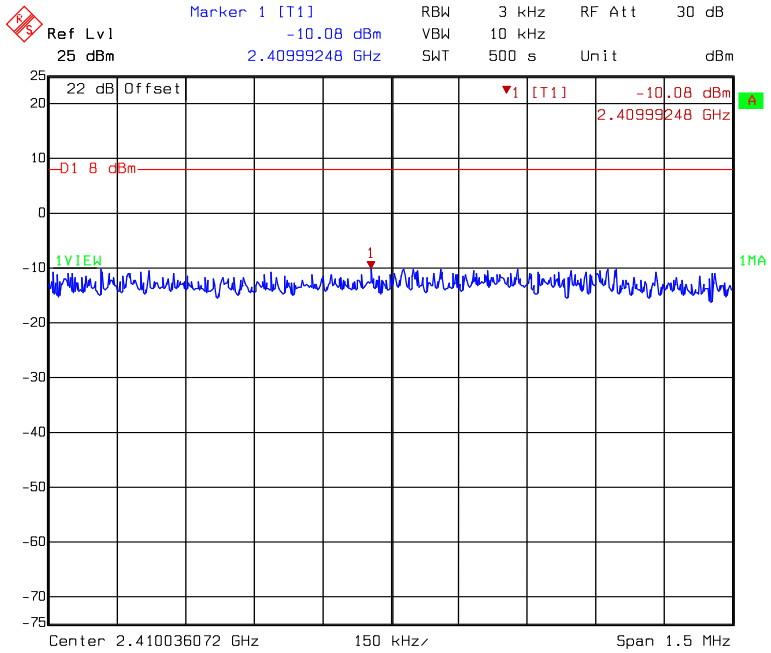
Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps for 802.11b, 6 Mbps for 802.11a/ 11g. The EUT was tuned to a low, middle and high channels with higher power setting.

Table 4. Power Spectral Density

Test Condition:

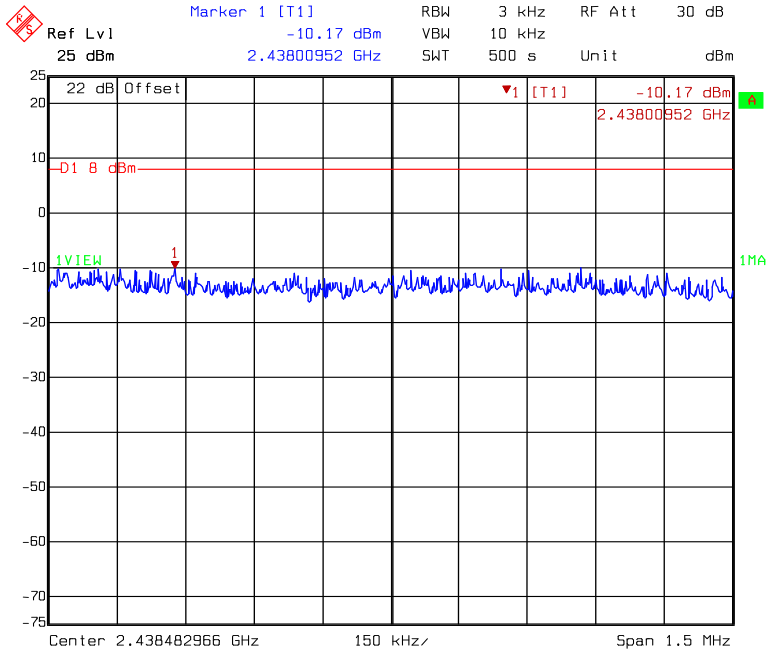
Mode	Channel	Frequency (MHz)	Data rate (Mbps)	PPSD (dBm)	Limit (dBm)
802.11b	1	2412	1	-10.08	8
	6	2437		-10.17	8
	11	2462		-9.60	8
802.11g	1	2412	6	-14.39	8
	6	2437		-12.72	8
	11	2462		-13.83	8
802.11a	149	5745	6	-17.03	8
	157	5785		-14.56	8
	165	5825		-15.00	8

Power Spectral Density @ 802.11b mode channel 1



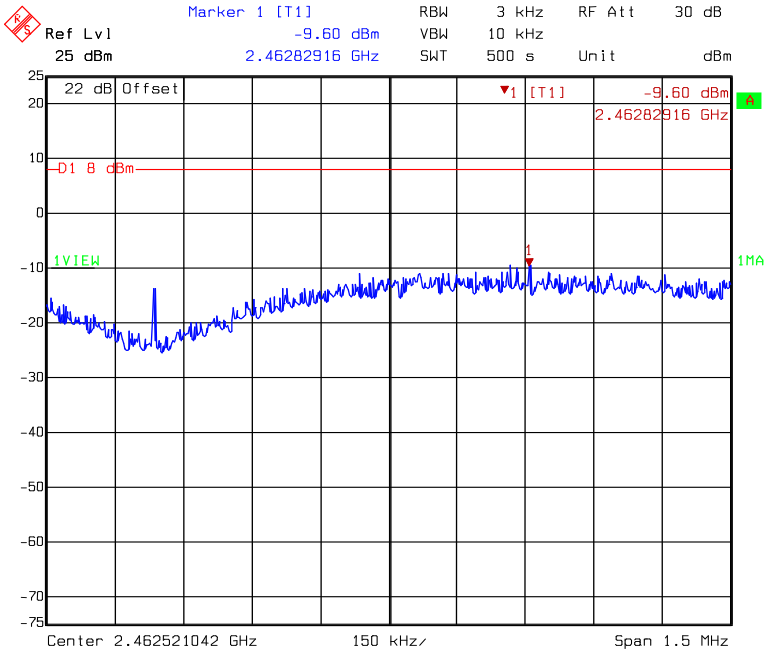
Title: Power density
Comment A: CH 1 at 802.11b mode
Date: 24.DEC.2008 17:27:57

Power Spectral Density @ 802.11b mode channel 6



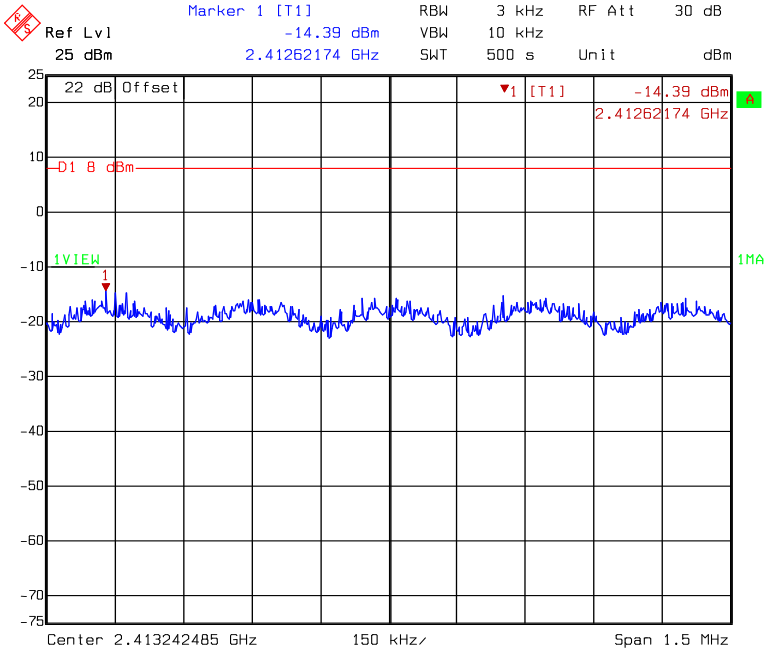
Title: Power density
Comment A: CH 6 at 802.11b mode
Date: 05.JAN.2009 16:29:48

Power Spectral Density @ 802.11b mode channel 11



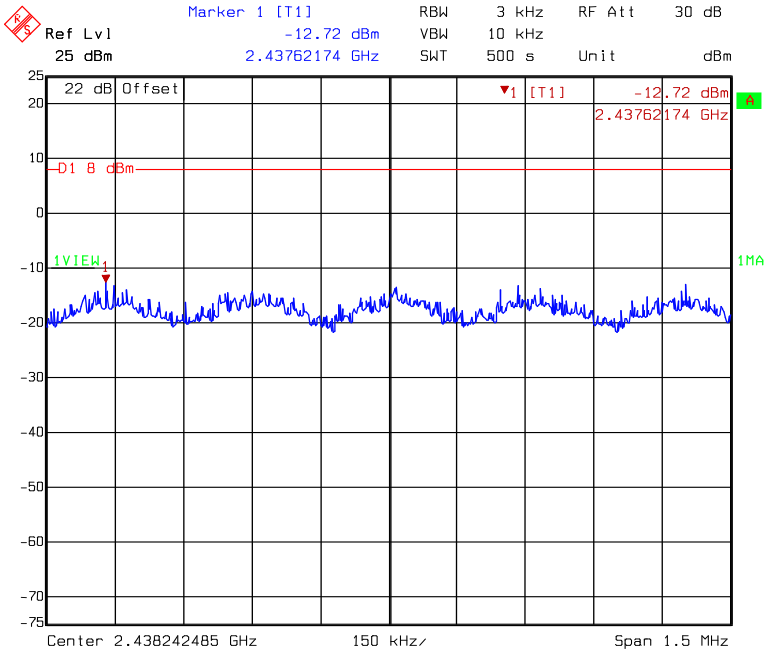
Title: Power density
Comment A: CH 11 at 802.11b mode
Date: 05.JAN.2009 16:32:48

Power Spectral Density @ 802.11g mode channel 1



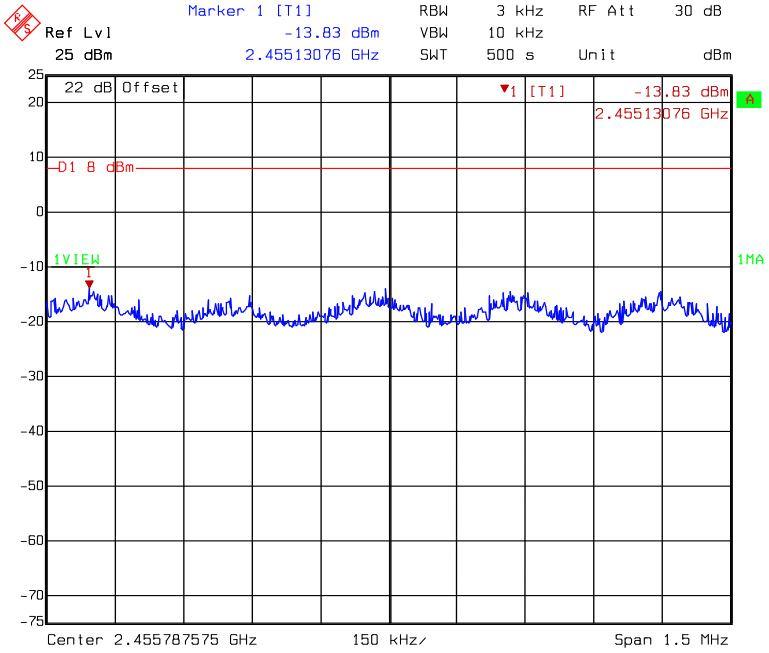
Title: Power density
Comment A: CH 1 at 802.11g mode
Date: 24.DEC.2008 17:39:56

Power Spectral Density @ 802.11g mode channel 6



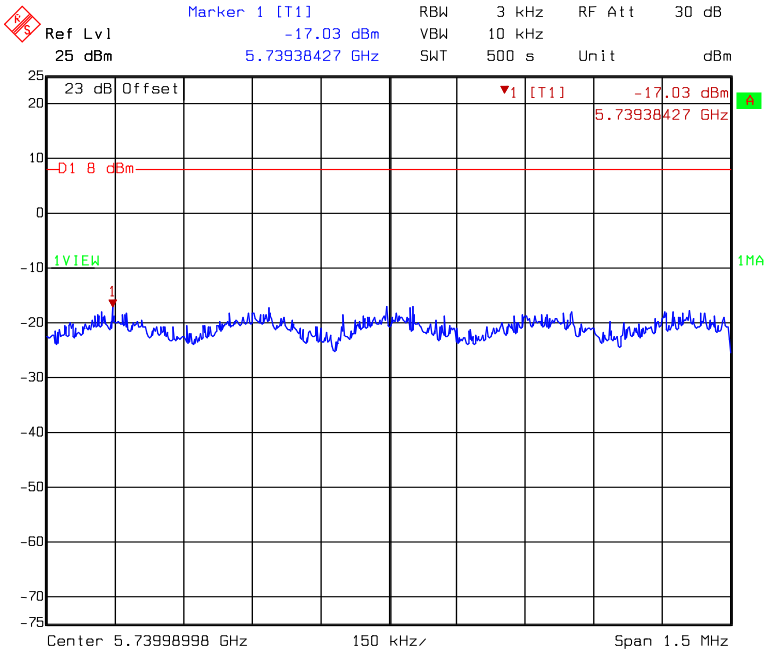
Title: Power density
Comment A: CH 6 at 802.11g mode
Date: 05.JAN.2009 16:44:08

Power Spectral Density @ 802.11g mode channel 11



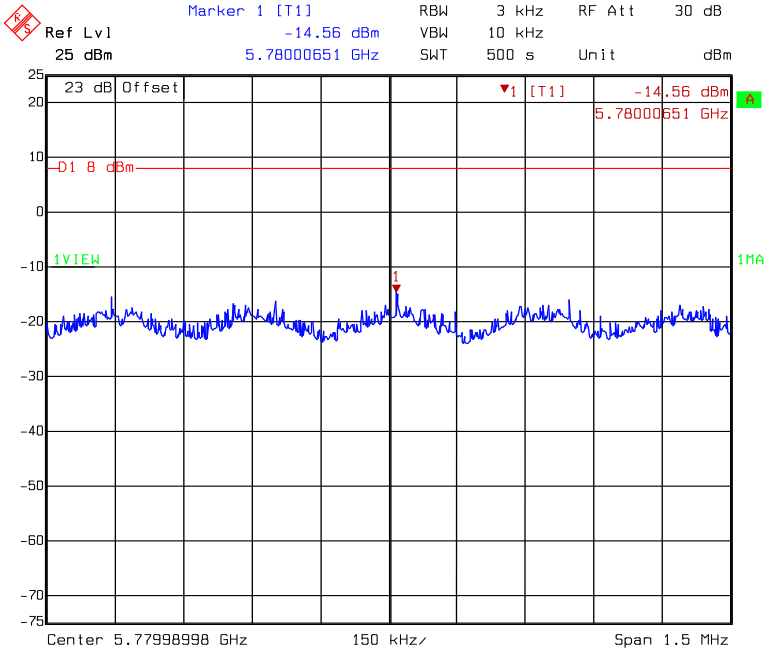
Title: Power density
Comment A: CH 11 at 802.11g mode
Date: 05.JAN.2009 16:41:22

Power Spectral Density @ 802.11a mode channel 149



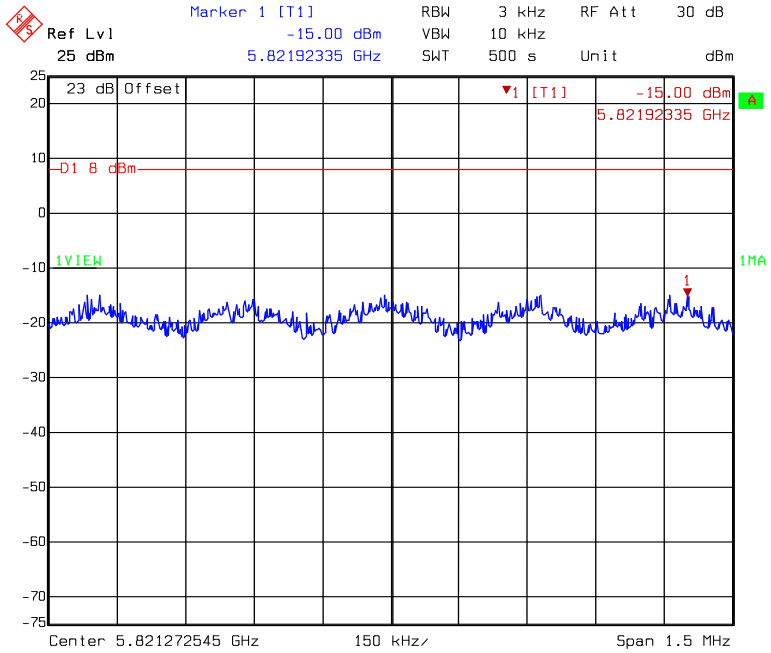
Title: Power density
Comment A: CH 149 at 802.11a mode
Date: 24.DEC.2008 17:53:16

Power Spectral Density @ 802.11a mode channel 157



Title: Power density
Comment A: CH 157 at 802.11a mode
Date: 24.DEC.2008 18:06:56

Power Spectral Density @ 802.11a mode channel 165



Title: Power density
Comment A: CH 165 at 802.11a mode
Date: 24.DEC.2008 18:10:32

7. RF Antenna conducted Spurious

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

Test Result: Complies

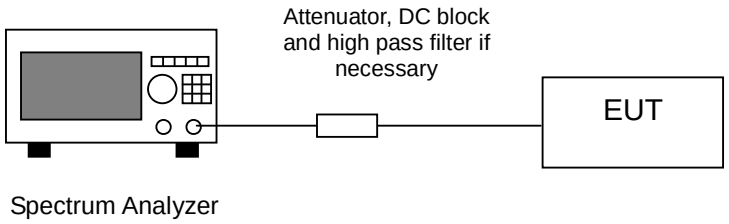
Measurement Data: See plots below

Method of Measurement:

Reference FCC document: KDB558074

The measurements were performed from 30 MHz to 25 GHz(for 2.4G) and 30 MHz to 40 GHz(for 5.8G)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.

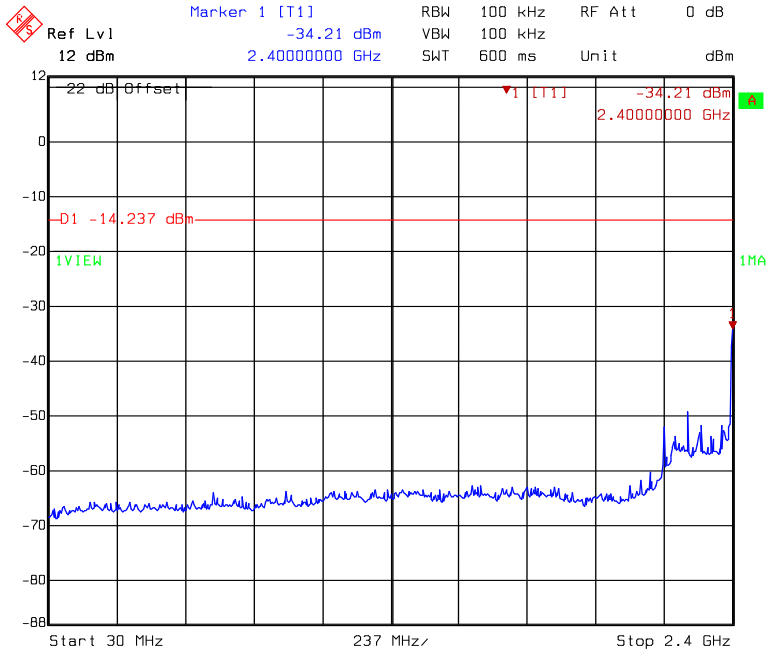
Test Diagram:



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

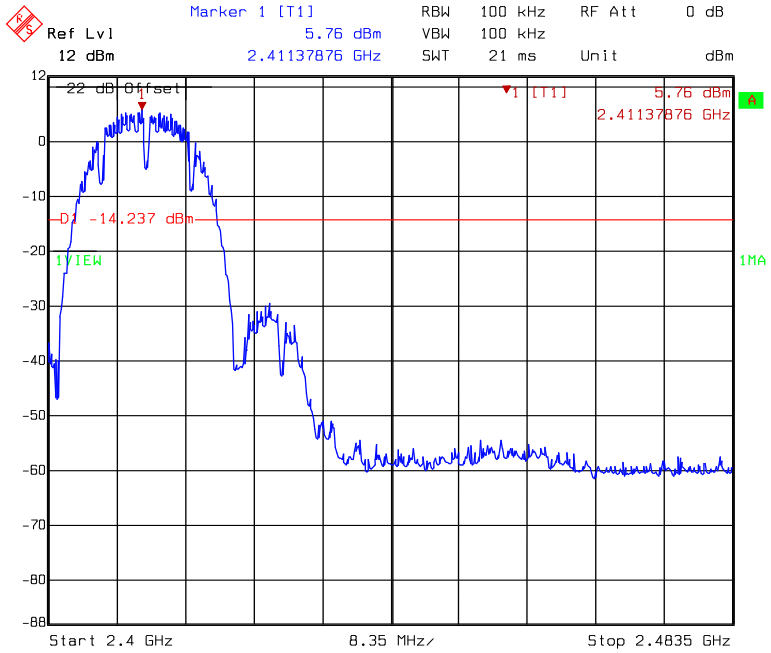
(2) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

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



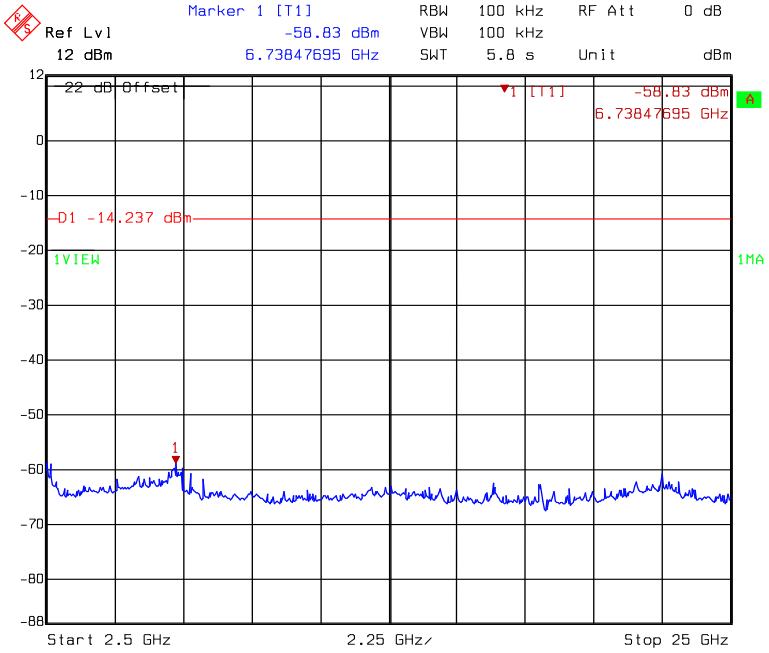
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 30MHz~2400MHz
Date: 24.DEC.2008 17:28:38

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



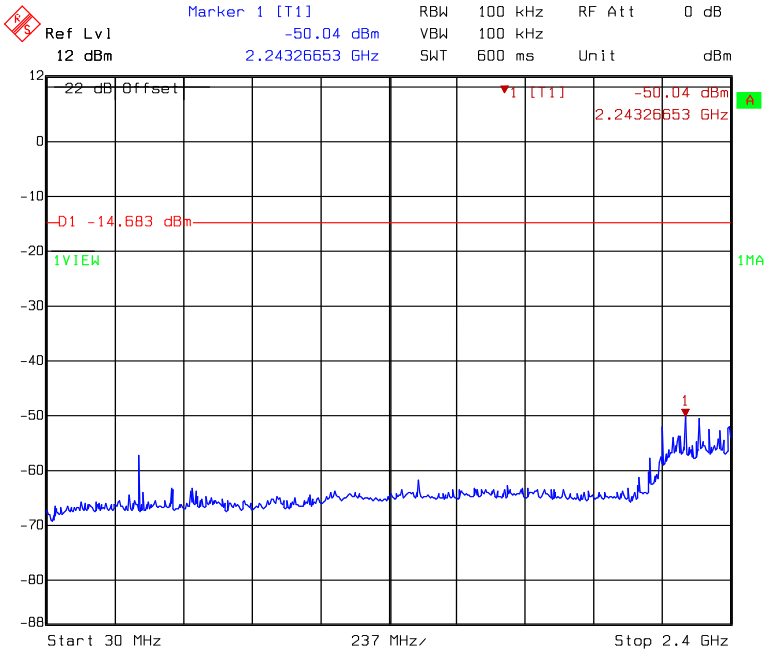
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 2400MHz~2483.5MHz
Date: 24.DEC.2008 17:28:17

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



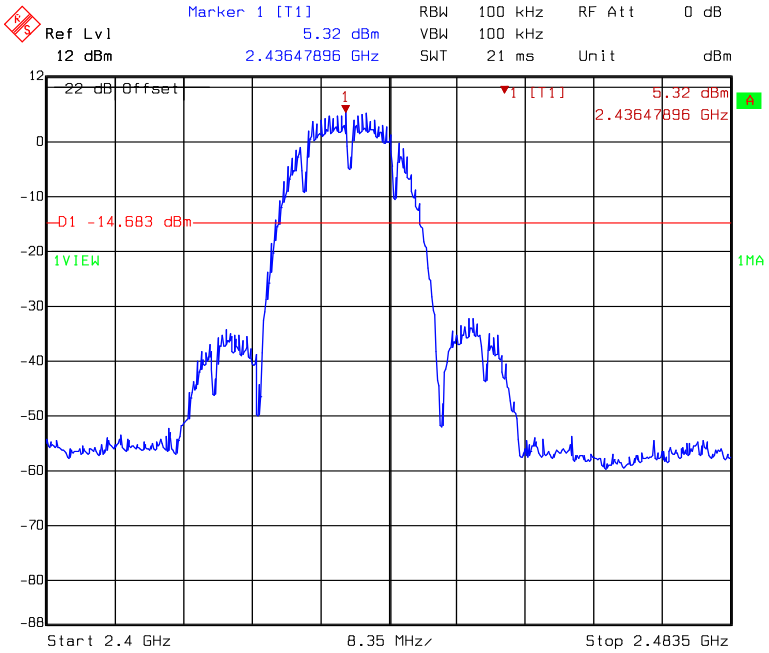
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 2483.5MHz~25GHz
Date: 24.DEC.2008 17:29:06

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



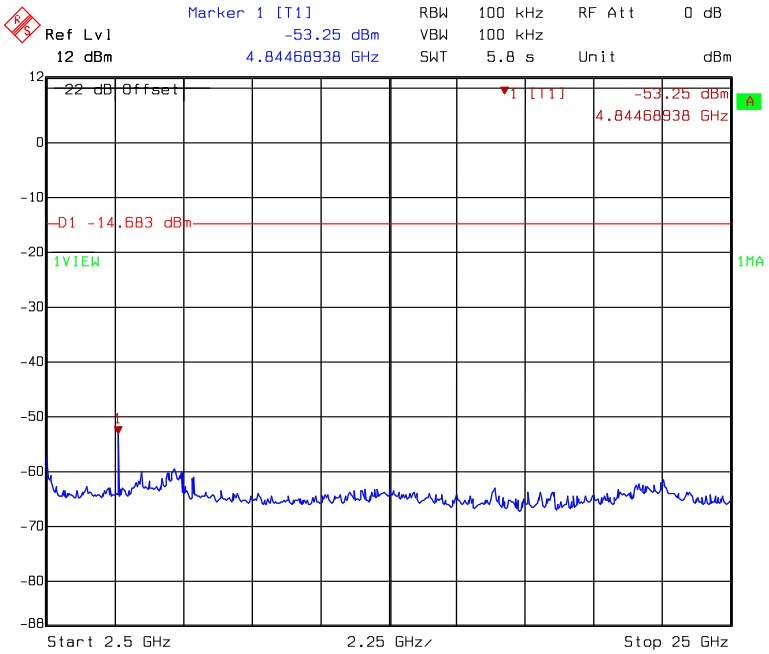
Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 30MHz~2400MHz
Date: 05.JAN.2009 16:30:48

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



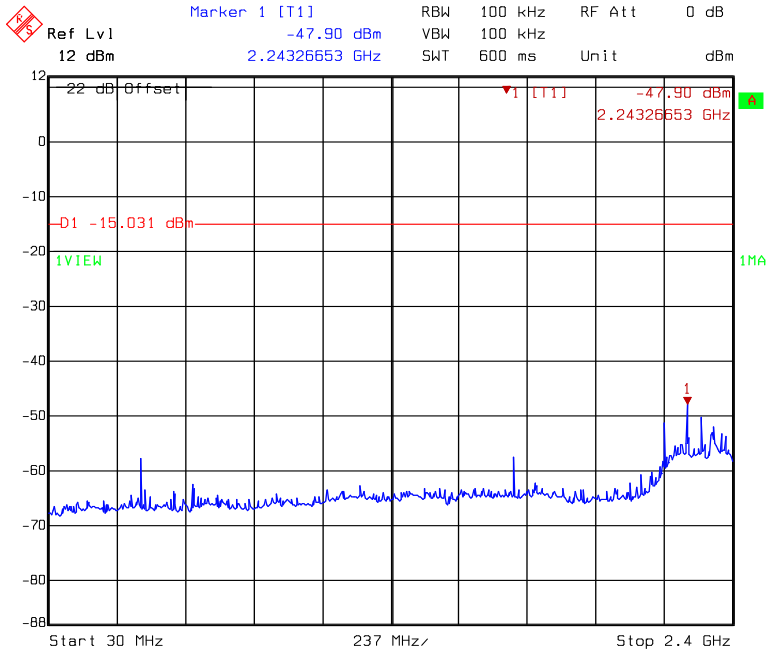
Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2400MHz~2483.5MHz
Date: 05.JAN.2009 16:30:08

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



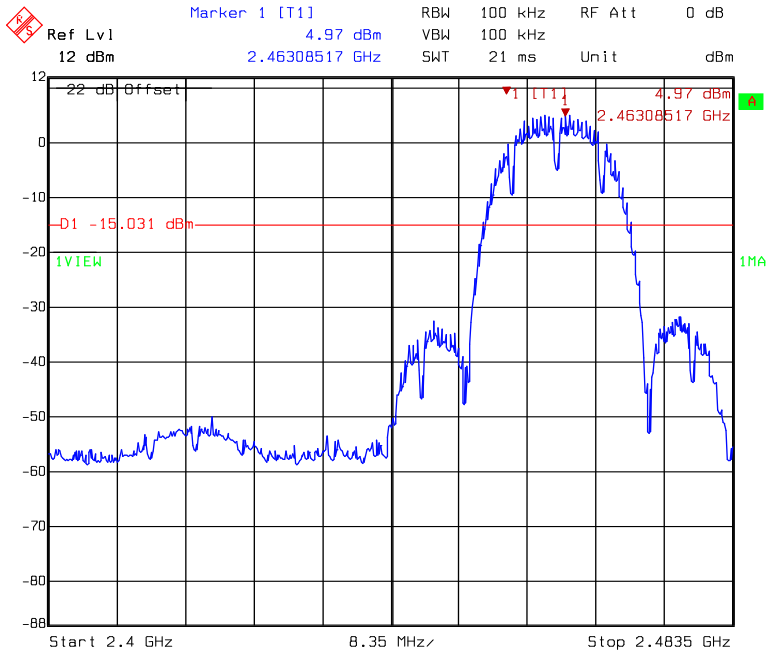
Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2483.5MHz~25GHz
Date: 05.JAN.2009 16:31:16

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



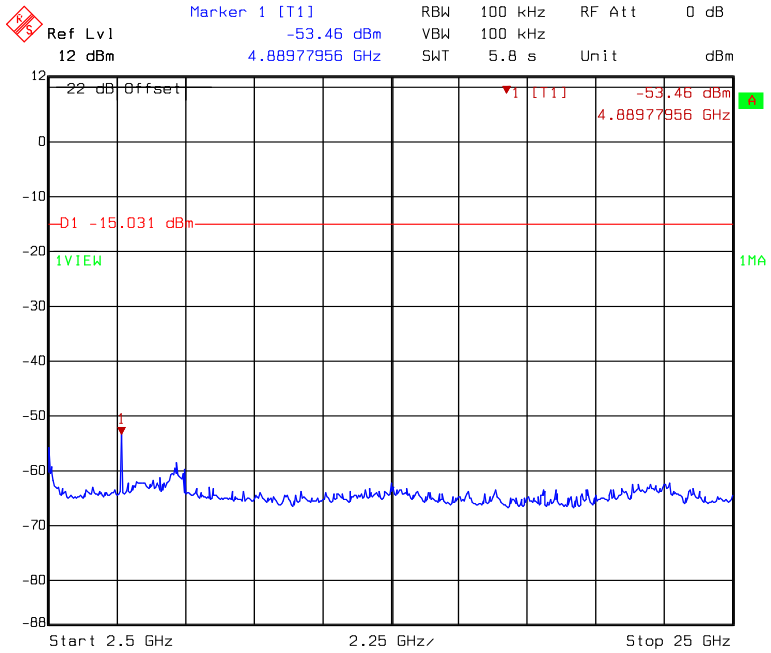
Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 30MHz~2400MHz
Date: 05.JAN.2009 16:33:31

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



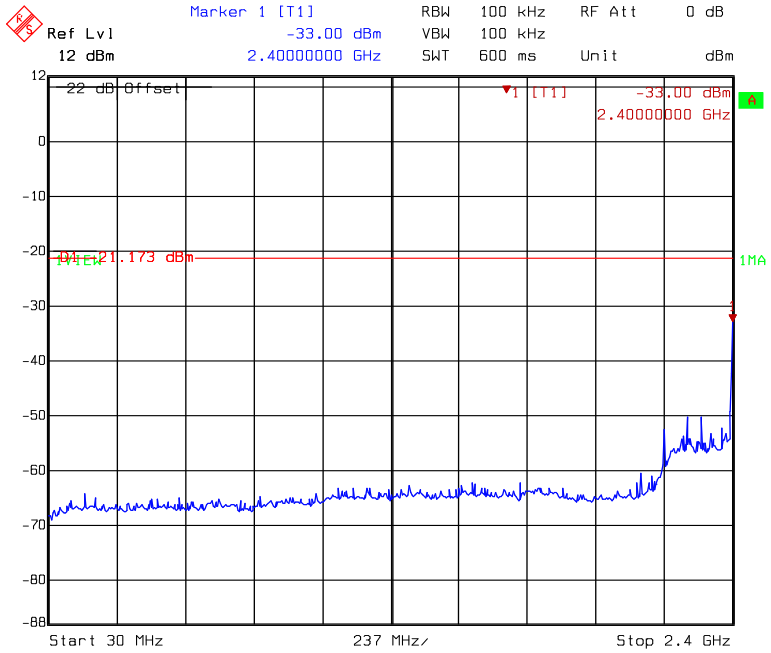
Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 2400MHz~2483.5MHz
Date: 05.JAN.2009 16:33:10

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



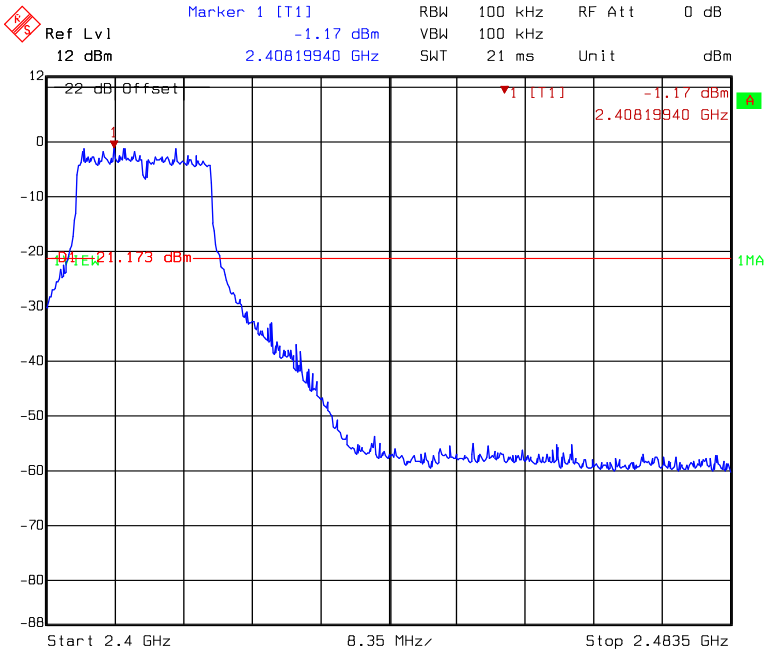
Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 2483.5MHz~25GHz
Date: 05.JAN.2009 16:33:58

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



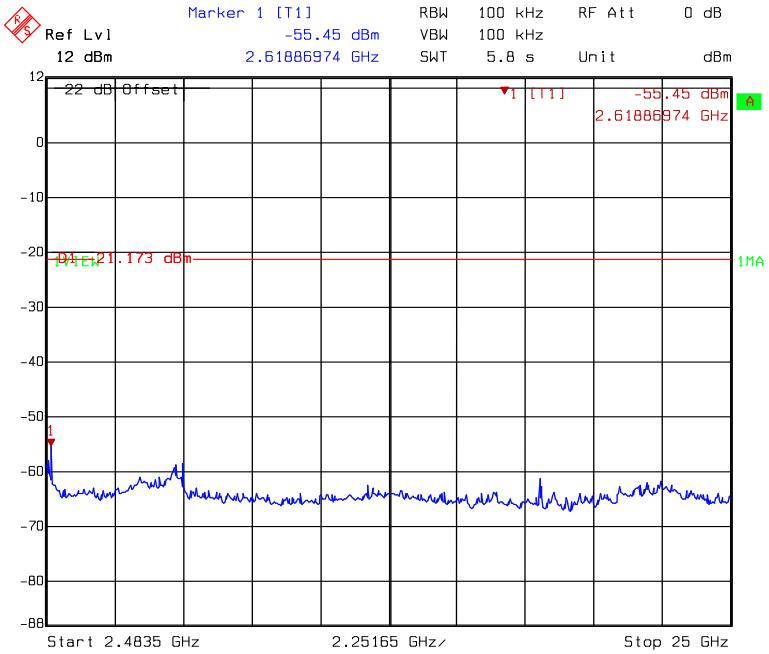
Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 30MHz~2400MHz
Date: 24.DEC.2008 17:40:37

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



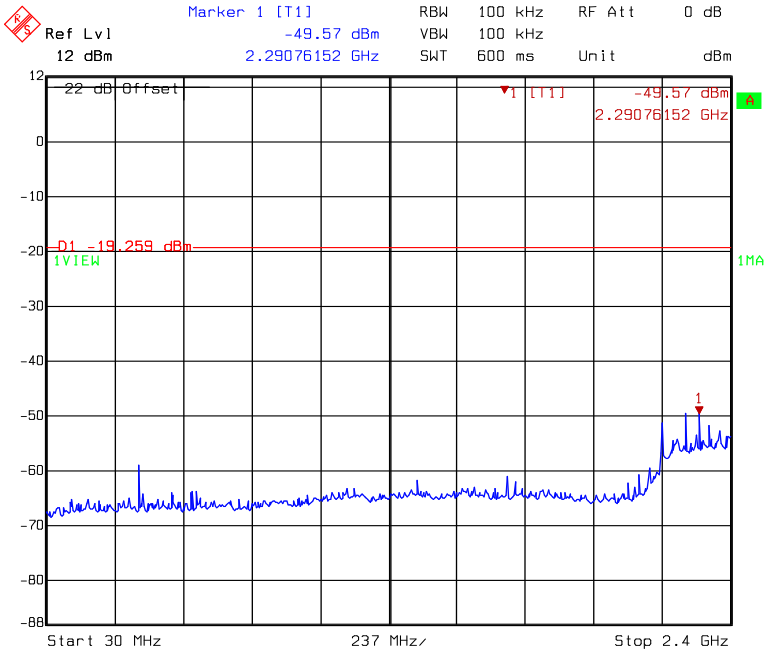
Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2400MHz~2483.5MHz
Date: 24.DEC.2008 17:40:16

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



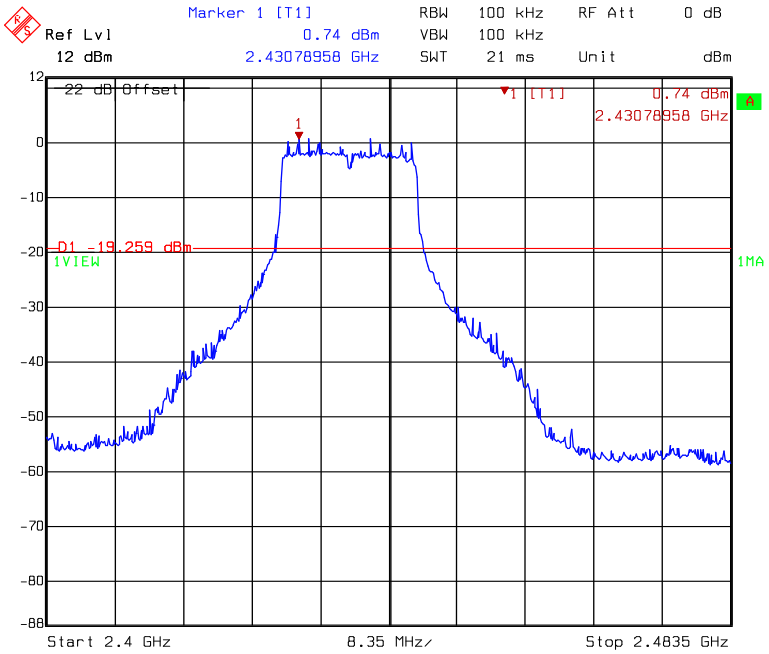
Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2483.5MHz~25000MHz
Date: 24.DEC.2008 17:41:04

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



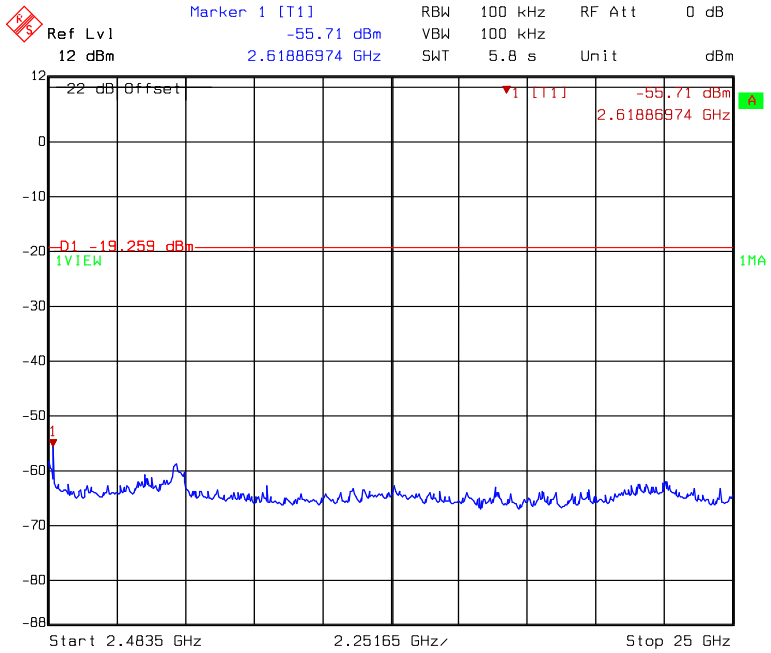
Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 30MHz~2400MHz
Date: 05.JAN.2009 16:44:49

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



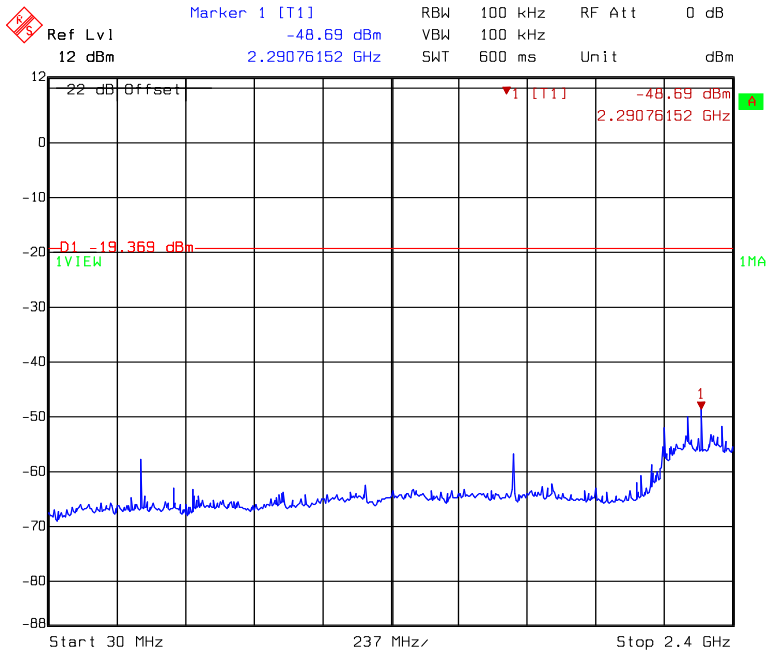
Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2400MHz~2483.5MHz
Date: 05.JAN.2009 16:44:28

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



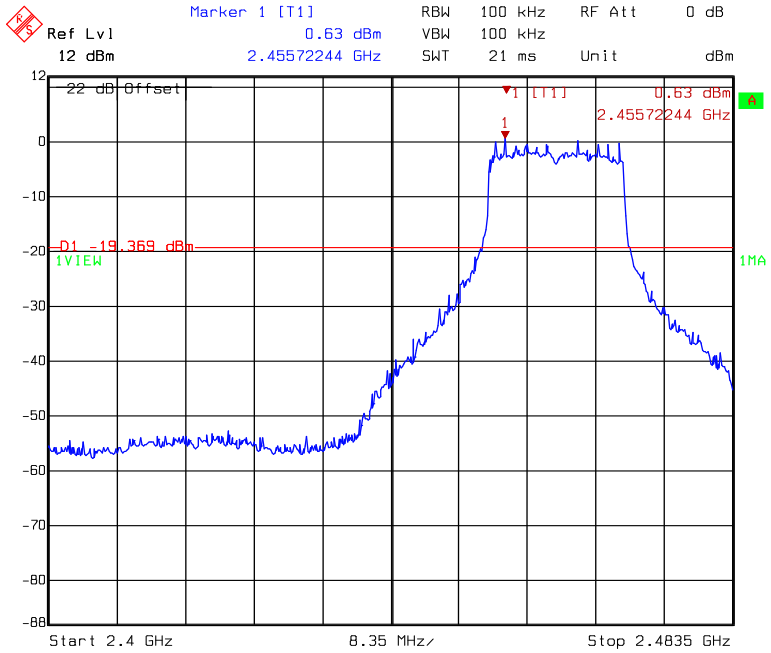
Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2483.5MHz~25000MHz
Date: 05.JAN.2009 16:45:17

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



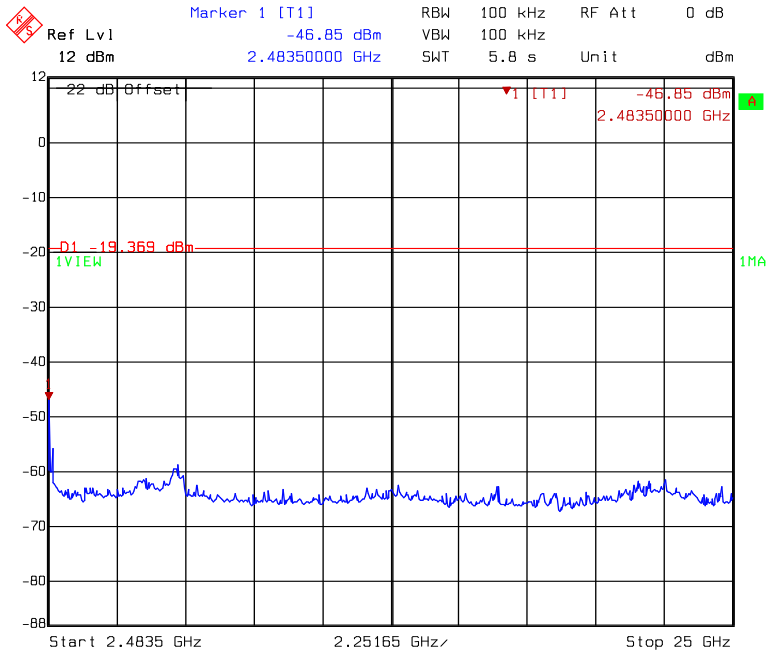
Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 30MHz~2400MHz
Date: 05.JAN.2009 16:42:03

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



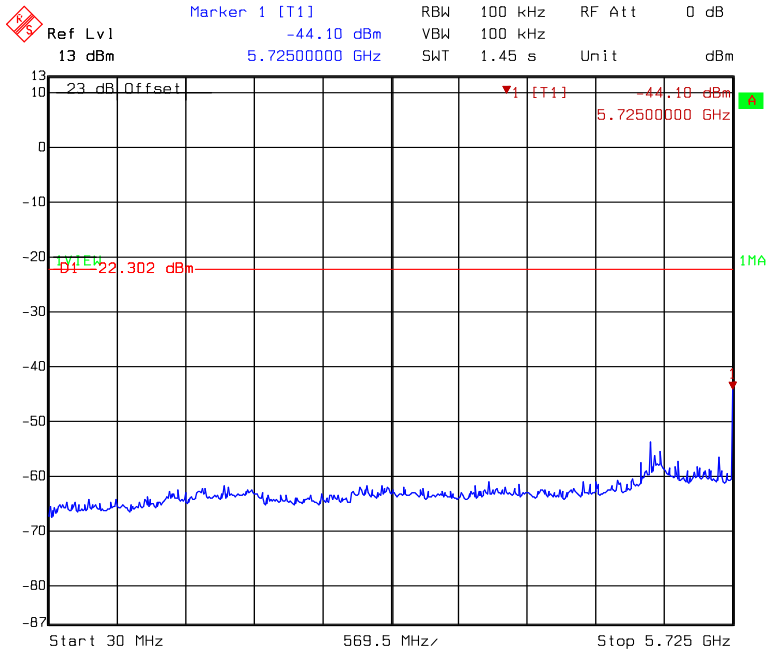
Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2400MHz~2483.5MHz
Date: 05.JAN.2009 16:41:42

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



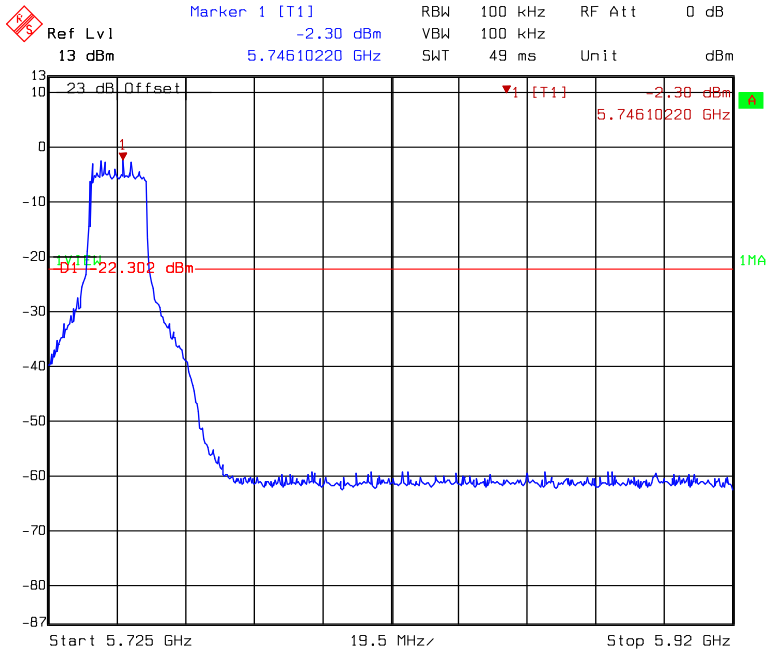
Title: Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2483.5MHz~25000MHz
Date: 05.JAN.2009 16:42:30

conducted spurious @ 802.11a mode channel 149 (1 of 4)



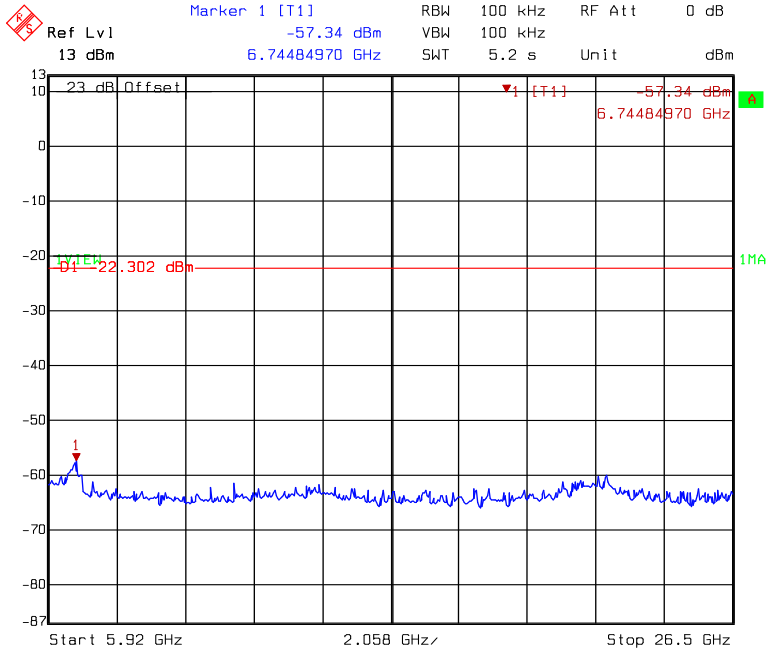
Title: Conductive-Spurious
Comment A: CH 149 at 802.11a mode 30MHz~5725MHz
Date: 24.DEC.2008 17:53:57

conducted spurious @ 802.11a mode channel 149 (2 of 4)



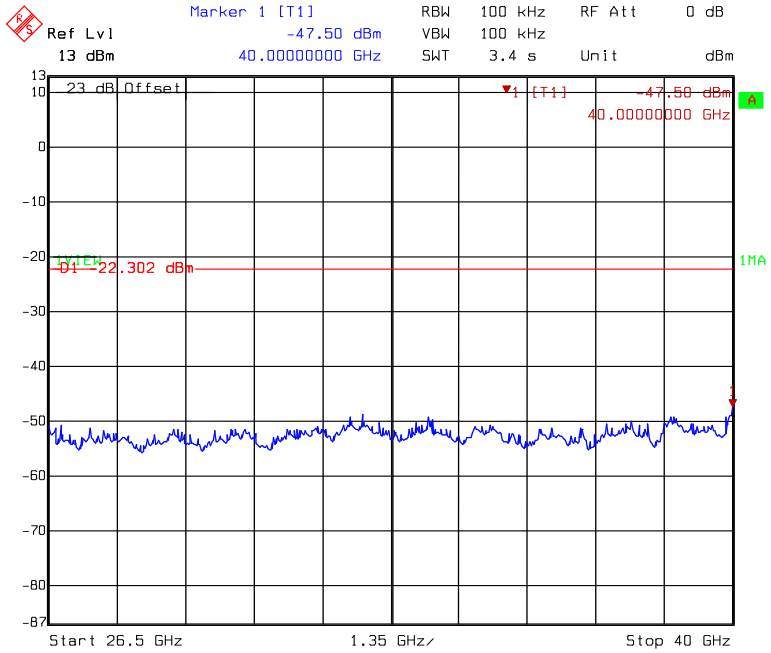
Title: Conductive-Spurious
Comment A: CH 149 at 802.11a mode 5725MHz~5920MHz
Date: 24.DEC.2008 17:53:36

conducted spurious @ 802.11a mode channel 149 (3 of 4)



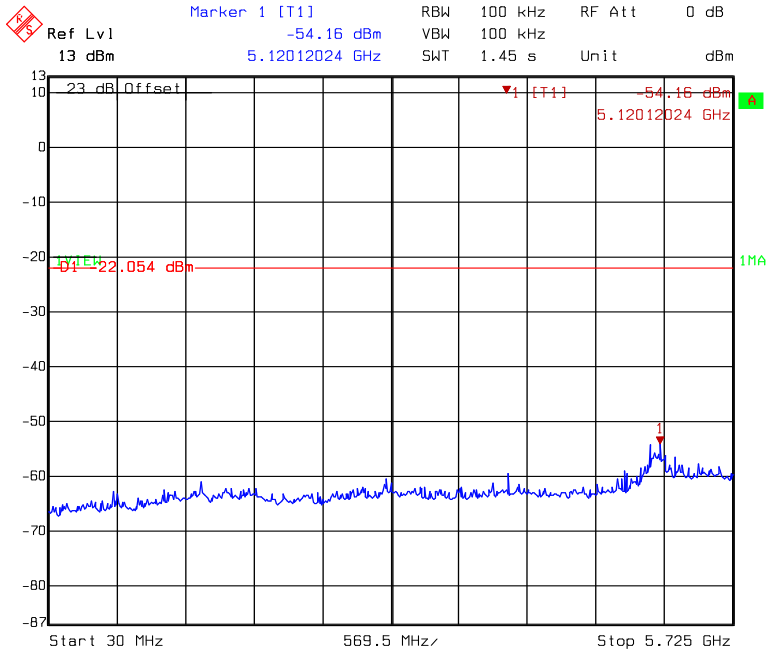
Title: Conductive-Spurious
Comment A: CH 149 at 802.11a mode 5925MHz~26500MHz
Date: 24.DEC.2008 17:54:23

conducted spurious @ 802.11a mode channel 149 (4 of 4)



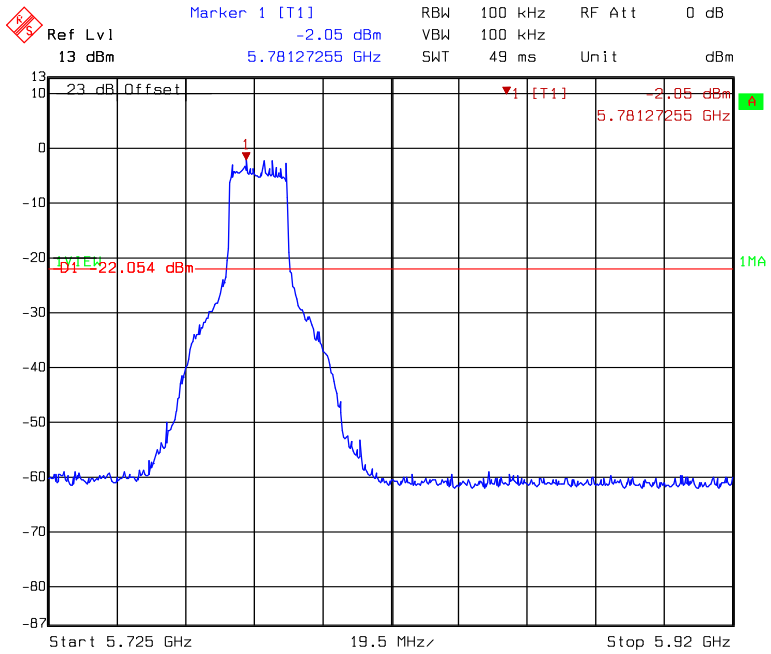
Title: Conductive-Spurious
Comment A: CH 149 at 802.11a mode 26500MHz~40000MHz
Date: 24.DEC.2008 17:54:45

conducted spurious @ 802.11a mode channel 157 (1 of 4)



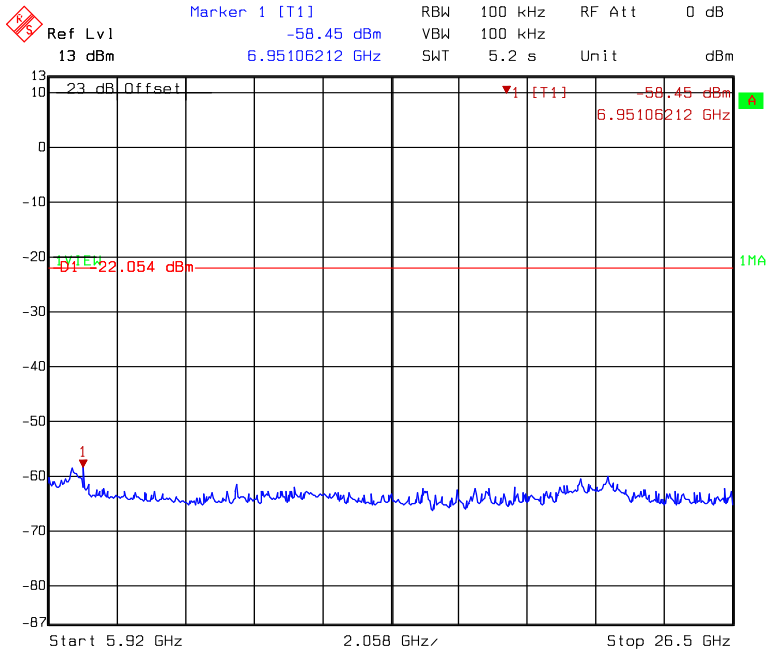
Title: Conductive-Spurious
Comment A: CH 157 at 802.11a mode 30MHz~5725MHz
Date: 24.DEC.2008 18:07:38

conducted spurious @ 802.11a mode channel 157 (2 of 4)



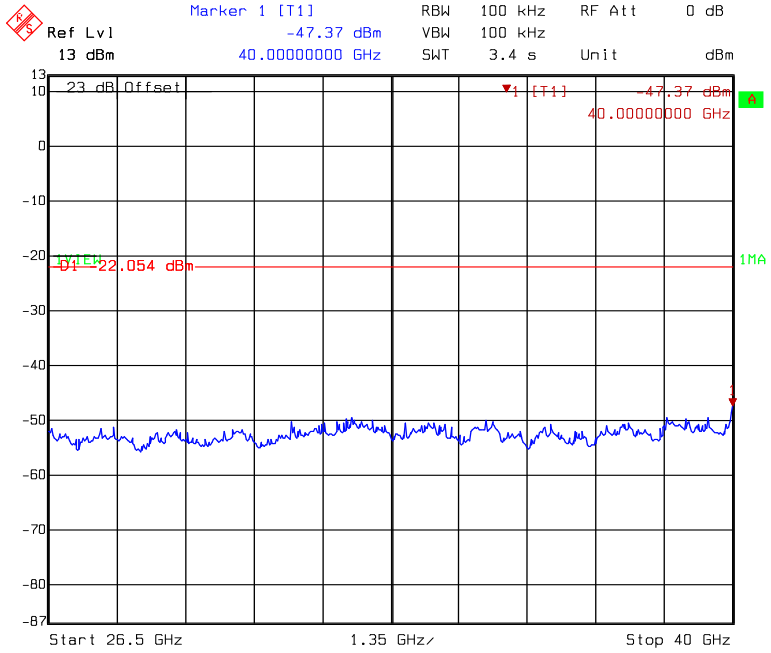
Title: Conductive-Spurious
Comment A: CH 157 at 802.11a mode 5725MHz~5920MHz
Date: 24.DEC.2008 18:07:17

conducted spurious @ 802.11a mode channel 157 (3 of 4)



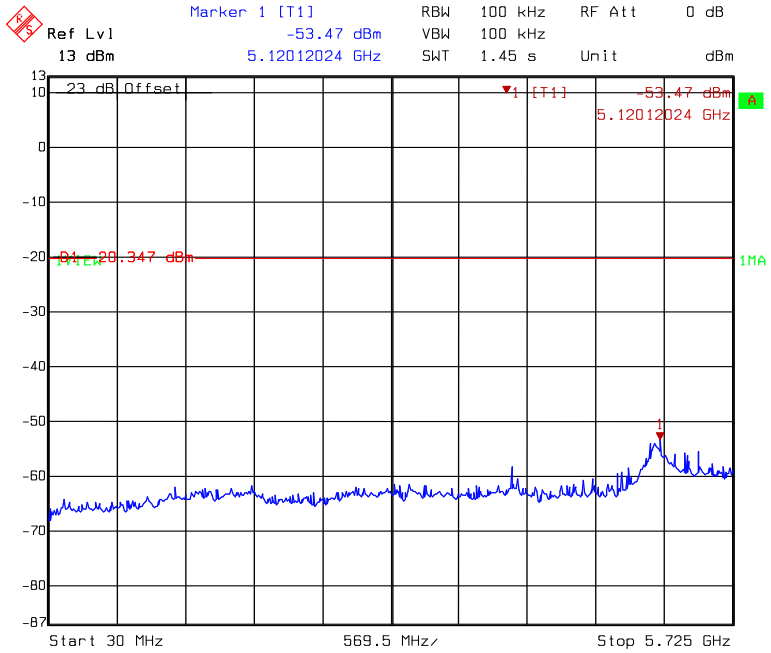
Title: Conductive-Spurious
Comment A: CH 157 at 802.11a mode 5925MHz~26500MHz
Date: 24.DEC.2008 18:08:04

conducted spurious @ 802.11a mode channel 157 (4 of 4)



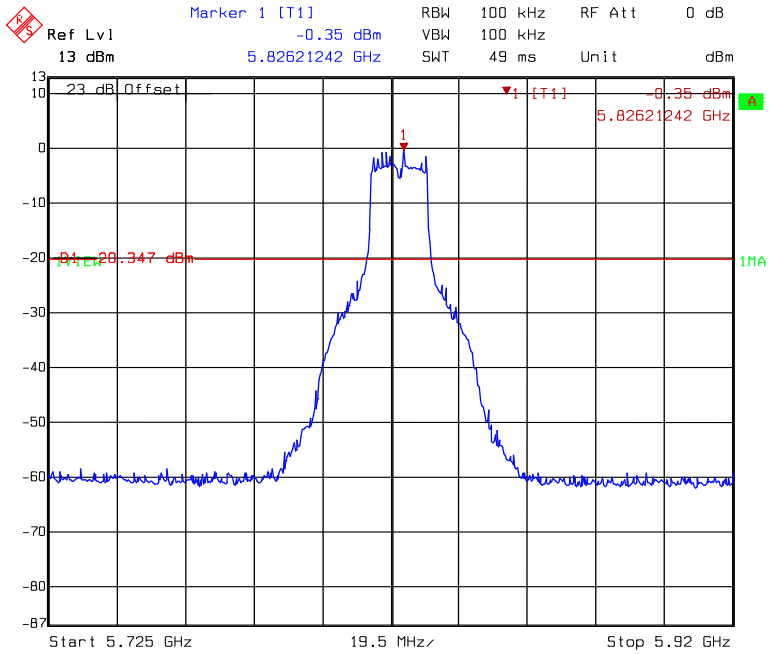
Title: Conductive-Spurious
Comment A: CH 157 at 802.11a mode 26500MHz~40000MHz
Date: 24.DEC.2008 18:08:27

conducted spurious @ 802.11a mode channel 165 (1 of 4)



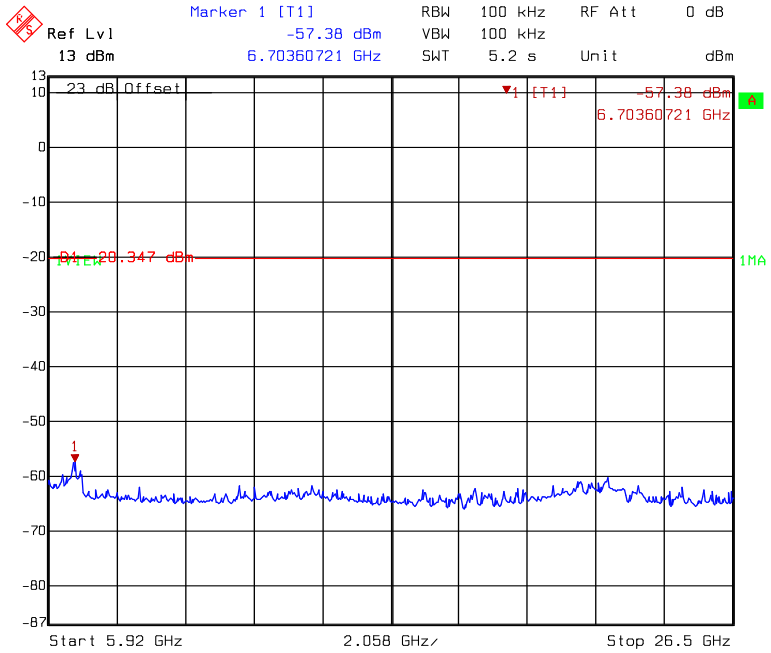
Title: Conductive-Spurious
Comment A: CH 165 at 802.11a mode 30MHz~5725MHz
Date: 24.DEC.2008 18:11:13

conducted spurious @ 802.11a mode channel 165 (2 of 4)



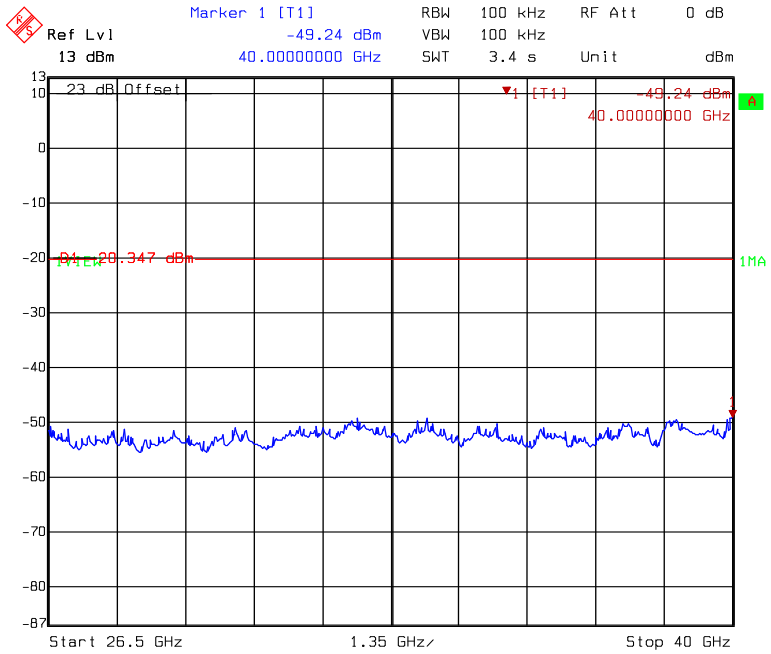
Title: Conductive-Spurious
Comment A: CH 165 at 802.11a mode 5725MHz~5920MHz
Date: 24.DEC.2008 18:10:52

conducted spurious @ 802.11a mode channel 165 (3 of 4)



Title: Conductive-Spurious
Comment A: CH 165 at 802.11a mode 5925MHz~26500MHz
Date: 24.DEC.2008 18:11:39

conducted spurious @ 802.11a mode channel 165 (4 of 4)



Title: Conductive-Spurious
Comment A: CH 165 at 802.11a mode 26500MHz~40000MHz
Date: 24.DEC.2008 18:12:01

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

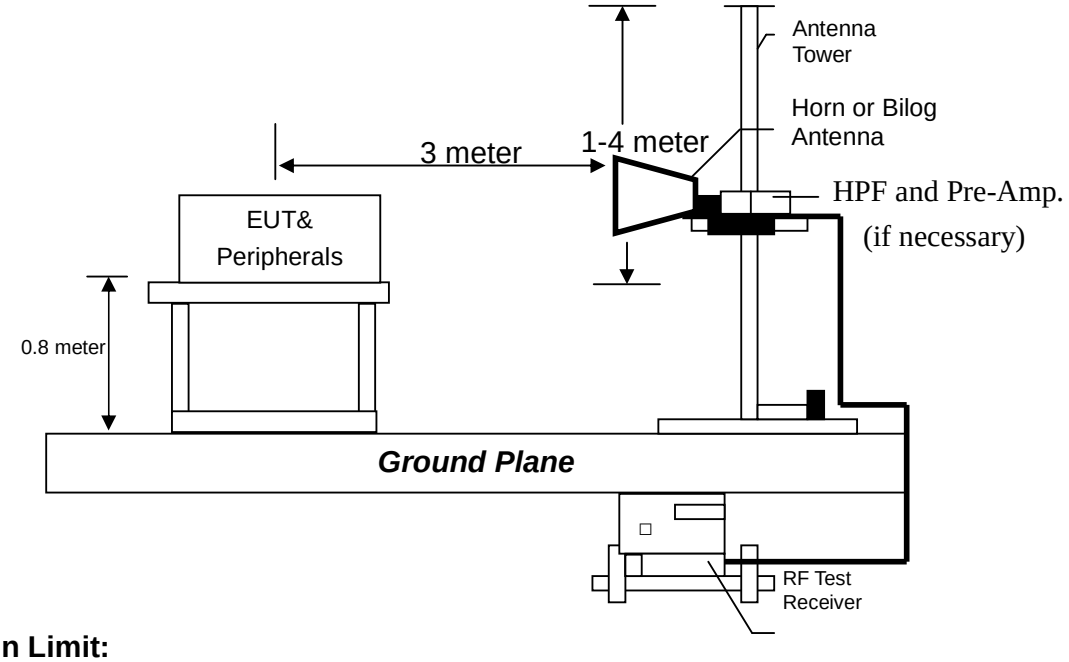
Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4
The frequency range from 30 MHz to 1000 MHz was using Bilog Antenna.
The frequency range over 1 GHz was 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 for 802.11b, 6 Mbps for 802.11a/ 11g. 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.

Measurement results: frequencies equal to or less than 1 GHz

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

EUT : SDW310C
Worst Case : 802.11b Tx at channel 1
With antenna : Dipole antenna

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	35.820	QP	12.62	21.08	33.70	40.00	-6.30
V	104.690	QP	7.64	20.94	28.58	43.50	-14.92
V	142.520	QP	14.27	19.04	33.31	43.50	-10.19
V	747.800	QP	22.74	13.51	36.25	46.00	-9.75
V	764.290	QP	22.81	13.15	35.96	46.00	-10.04
V	797.270	QP	23.19	12.61	35.80	46.00	-10.20
H	106.630	QP	9.03	18.38	27.41	43.50	-16.10
H	132.820	QP	12.32	15.46	27.78	43.50	-15.72
H	149.310	QP	13.24	19.51	32.75	43.50	-10.76
H	848.680	QP	24.04	9.21	33.25	46.00	-12.76
H	862.260	QP	24.12	9.85	33.97	46.00	-12.04
H	896.210	QP	24.62	11.72	36.34	46.00	-9.67

Remark:

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

EUT : SDW310C
Worst Case : 802.11b Tx at channel 1
With antenna : PCB antenna

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	35.820	QP	12.62	20.70	33.32	40.00	-6.68
V	104.690	QP	7.64	21.23	28.87	43.50	-14.63
V	142.520	QP	14.27	19.37	33.64	43.50	-9.86
V	764.290	QP	22.81	12.72	35.53	46.00	-10.47
V	799.210	QP	23.19	14.33	37.52	46.00	-8.48
V	897.180	QP	24.35	11.11	35.46	46.00	-10.55
H	99.840	QP	7.93	18.55	26.48	43.50	-17.03
H	116.330	QP	10.54	16.51	27.05	43.50	-16.46
H	132.820	QP	12.32	16.93	29.25	43.50	-14.25
H	830.250	QP	24.04	10.02	34.06	46.00	-11.95
H	864.200	QP	24.12	11.59	35.71	46.00	-10.30
H	897.180	QP	24.62	11.89	36.51	46.00	-9.50

Remark:

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

Measurement results: frequency above 1GHz

EUT : SDW310C
Test Condition : 802.11b Tx at channel 1
With antenna : Dipole antenna

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)
2369.20	PK	V	-	30.31	17.81	48.12	54	-5.88
2366.40	PK	H	-	30.31	21.26	51.57	54	-2.43
3000.00	PK	V	35.54	34.62	47.64	46.72	54	-7.28
3990.00	PK	V	35.62	34.57	47.46	46.41	54	-7.59
4824.00	PK	V	36.07	37.77	54.66	56.36	74	-17.64
4824.00	AV	V	36.07	37.77	50.74	52.44	54	-1.56
4980.00	PK	V	36.07	37.77	49.86	51.56	54	-2.44
6000.00	PK	V	36.65	40.87	44.18	48.40	54	-5.60
3000.00	PK	H	35.54	34.62	46.7	45.78	54	-8.22
3990.00	PK	H	35.62	34.57	47.42	46.37	54	-7.63
4824.00	PK	H	36.07	37.77	51.69	53.39	74	-20.61
4824.00	AV	H	36.07	37.77	49.24	50.94	54	-3.06
4980.00	PK	H	36.07	37.77	44.94	46.64	54	-7.36
6000.00	PK	H	36.65	40.87	41.73	45.95	54	-8.05
9648.00	PK	H	34.28	48.31	37.85	51.88	54	-2.12

Remark:

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

EUT : SDW310C
Test Condition : 802.11b Tx at channel 6
With antenna : Dipole antenna

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)
3000.00	PK	V	35.54	34.62	48.42	47.50	54	-6.50
3990.00	PK	V	35.62	34.57	48.44	47.39	54	-6.61
4874.00	PK	V	36.07	37.77	53.99	55.69	74	-18.31
4874.00	AV	V	36.07	37.77	49.55	51.25	54	-2.75
4980.00	PK	V	36.07	37.77	46.78	48.48	54	-5.52
7311.00	PK	V	36.18	43.97	43.06	50.85	54	-3.15
3000.00	PK	H	35.54	34.62	47.19	46.27	54	-7.73
3990.00	PK	H	35.62	34.57	47.27	46.22	54	-7.78
4874.00	PK	H	36.07	37.77	56.55	58.25	74	-15.75
4874.00	AV	H	36.07	37.77	51.80	53.50	54	-0.50
7311.00	PK	H	36.18	43.97	41.43	49.22	54	-4.78
9748.00	PK	H	34.28	48.31	42.86	56.89	74	-17.11
9748.00	AV	H	34.28	48.31	38.94	52.97	54	-1.03

Remark:

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

EUT : SDW310C
Test Condition : 802.11b Tx at channel 11
With antenna : Dipole antenna

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)
3960.00	PK	V	35.62	34.57	47.95	46.90	54	-7.10
4924.00	PK	V	36.07	37.77	57.64	59.34	74	-14.66
4924.00	AV	V	36.07	37.77	51.79	53.49	54	-0.51
6000.00	PK	V	36.65	40.87	41.99	46.21	54	-7.79
7386.00	PK	V	36.18	43.97	44.89	52.68	54	-1.32
9848.00	PK	V	34.28	48.31	38.38	52.41	54	-1.59
12310.00	PK	V	36.09	49.6	38.37	51.88	54	-2.12
3990.00	PK	H	35.62	34.57	47.85	46.80	54	-7.20
4924.00	PK	H	36.07	37.77	51.11	52.81	54	-1.19
7386.00	PK	H	36.18	43.97	43.35	51.14	54	-2.86
9848.00	PK	H	34.28	48.31	43.88	57.91	74	-16.09
9848.00	AV	H	34.28	48.31	39.23	53.26	54	-0.74
12310.00	PK	H	36.09	49.6	37.73	51.24	54	-2.76

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 : SDW310C
Test Condition : 802.11g Tx at channel 1
With antenna : Dipole antenna

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)
3000.00	PK	V	35.54	34.62	48.53	47.61	54	-6.39
3990.00	PK	V	35.62	34.57	47.66	46.61	54	-7.39
4980.00	PK	V	36.07	37.77	46.62	48.32	54	-5.68
6000.00	PK	V	36.65	40.87	42.36	46.58	54	-7.42
3000.00	PK	H	35.54	34.62	48.29	47.37	54	-6.63
4824.00	PK	H	36.07	37.77	43.76	45.46	54	-8.54
4980.00	PK	H	36.07	37.77	43.88	45.58	54	-8.42
6000.00	PK	H	36.65	40.87	42.48	46.7	54	-7.30

Remark:

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

EUT : SDW310C
Test Condition : 802.11g Tx at channel 6
With antenna : Dipole antenna

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)
3000.00	PK	V	35.54	34.62	48.58	47.66	54	-6.34
3990.00	PK	V	35.62	34.57	47.73	46.68	54	-7.32
4980.00	PK	V	36.07	37.77	46.20	47.90	54	-6.10
7311.00	PK	V	36.18	43.97	40.44	48.23	54	-5.77
3000.00	PK	H	35.54	34.62	47.86	46.94	54	-7.06
3990.00	PK	H	35.62	34.57	46.21	45.16	54	-8.84
4860.00	PK	H	36.07	37.77	46.90	48.60	54	-5.40
7311.00	PK	H	36.18	43.97	40.67	48.46	54	-5.54

Remark:

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

EUT : SDW310C
Test Condition : 802.11g Tx at channel 11
With antenna : Dipole antenna

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)
3000.00	PK	V	35.54	34.62	49.77	48.85	54	-5.15
3990.00	PK	V	35.62	34.57	47.49	46.44	54	-7.56
4980.00	PK	V	36.07	37.77	46.10	47.80	54	-6.20
7386.00	PK	V	36.18	43.97	41.02	48.81	54	-5.19
3990.00	PK	H	35.62	34.57	45.68	44.63	54	-9.37
6000.00	PK	H	36.65	40.87	42.48	46.70	54	-7.30

Remark:

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

EUT : SDW310C
Test Condition : 802.11a Tx at channel 149
With antenna : Dipole antenna

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)
11490.00	PK	V	33.53	49.96	50.24	66.67	74	-7.33
11490.00	AV	V	33.53	49.96	35.31	51.74	54	-2.26
11490.00	PK	H	33.53	49.96	43.42	59.85	74	-14.15
11490.00	AV	H	33.53	49.96	29.28	45.71	54	-8.29

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : SDW310C
Test Condition : 802.11a Tx at channel 157
With antenna : Dipole antenna

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)
11570.00	PK	V	34.55	50.03	52.40	67.88	74	-6.12
11570.00	AV	V	34.55	50.03	37.71	53.19	54	-0.81
11570.00	PK	H	34.55	50.03	45.00	60.48	74	-13.52
11570.00	AV	H	34.55	50.03	31.09	46.57	54	-7.43

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : SDW310C
Test Condition : 802.11a Tx at channel 165
With antenna : Dipole antenna

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)
11650.00	PK	V	34.55	50.03	53.25	68.73	74	-5.27
11650.00	AV	V	34.55	50.03	37.50	52.98	54	-1.02
11650.00	PK	H	34.55	50.03	48.20	63.68	74	-10.32
11650.00	AV	H	34.55	50.03	32.62	48.10	54	-5.90

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : SDW310C
Test Condition : 802.11b Tx at channel 1
With antenna : PCB antenna

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)
2369.20	PK	V	-	30.31	16.06	46.37	54	-7.63
2369.20	PK	H	-	30.31	21.15	51.46	54	-2.54
3000.00	PK	V	35.54	34.62	48.73	47.81	54	-6.19
3960.00	PK	V	35.62	34.57	48.49	47.44	54	-6.56
4824.00	PK	V	36.07	37.77	46.59	48.29	54	-5.71
4980.00	PK	V	36.07	37.77	46.14	47.84	54	-6.16
3000.00	PK	H	35.54	34.62	47.82	46.90	54	-7.10
3990.00	PK	H	35.62	34.57	45.84	44.79	54	-9.21
4824.00	PK	H	36.07	37.77	50.04	51.74	54	-2.26
4980.00	PK	H	36.07	37.77	45.41	47.11	54	-6.89

Remark:

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

EUT : SDW310C
Test Condition : 802.11b Tx at channel 6
With antenna : PCB antenna

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)
3000.00	PK	V	35.54	34.62	48.49	47.57	54	-6.43
3990.00	PK	V	35.62	34.57	48.38	47.33	54	-6.67
4874.00	PK	V	36.07	37.77	57.34	59.04	74	-14.96
4874.00	AV	V	36.07	37.77	50.69	52.39	54	-1.61
4980.00	PK	V	36.07	37.77	46.45	48.15	54	-5.85
9748.00	PK	V	34.28	48.31	37.86	51.89	54	-2.11
3000.00	PK	H	35.54	34.62	47.23	46.31	54	-7.69
4874.00	PK	H	36.07	37.77	58.03	59.73	74	-14.27
4874.00	AV	H	36.07	37.77	50.18	51.88	54	-2.12
7311.00	PK	H	36.18	43.97	43.17	50.96	54	-3.04
9748.00	PK	H	34.28	48.31	42.63	56.66	74	-17.34
9748.00	AV	H	34.28	48.31	33.66	47.69	54	-6.31

Remark:

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

EUT : SDW310C
Test Condition : 802.11b Tx at channel 11
With antenna : PCB antenna

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)
3000.00	PK	V	35.54	34.62	48.44	47.52	54	-6.48
4924.00	PK	V	36.07	37.77	57.53	59.23	74	-14.77
4924.00	AV	V	36.07	37.77	51.43	53.13	54	-0.87
6000.00	PK	V	36.65	40.87	41.98	46.20	54	-7.80
12310.00	PK	V	36.09	49.6	38.73	52.24	54	-1.76
4924.00	PK	H	36.07	37.77	55.68	57.38	74	-16.62
4924.00	AV	H	36.07	37.77	50.12	51.82	54	-2.18
7386.00	PK	H	36.18	43.97	43.39	51.18	54	-2.82
9848.00	PK	H	34.28	48.31	40.92	54.95	74	-19.05
9848.00	AV	H	34.28	48.31	34.61	48.64	54	-5.36
12310.00	PK	H	36.09	49.60	38.40	51.91	54	-2.09

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 : SDW310C
Test Condition : 802.11g Tx at channel 1
With antenna : PCB antenna

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)
3000.00	PK	V	35.54	34.62	47.51	46.59	54	-7.41
3990.00	PK	V	35.62	34.57	48.56	47.51	54	-6.49
4980.00	PK	V	36.07	37.77	46.27	47.97	54	-6.03
6000.00	PK	V	36.65	40.87	41.88	46.10	54	-7.90
3000.00	PK	H	35.54	34.62	47.80	46.88	54	-7.12
3990.00	PK	H	35.62	34.57	46.32	45.27	54	-8.73
4824.00	PK	H	36.07	37.77	47.81	49.51	54	-4.49
6000.00	PK	H	36.65	40.87	41.55	45.77	54	-8.23

Remark:

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

EUT : SDW310C
Test Condition : 802.11g Tx at channel 6
With antenna : PCB antenna

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)
3000.00	PK	V	35.54	34.62	49.45	48.53	54	-5.47
4874.00	PK	V	36.07	37.77	47.90	49.60	54	-4.40
4980.00	PK	V	36.07	37.77	46.43	48.13	54	-5.87
7311.00	PK	V	36.18	43.97	40.83	48.62	54	-5.38
3000.00	PK	H	35.54	34.62	47.56	46.64	54	-7.36
3990.00	PK	H	35.62	34.57	46.24	45.19	54	-8.81
4874.00	PK	H	36.07	37.77	49.51	51.21	54	-2.79

Remark:

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

EUT : SDW310C
Test Condition : 802.11g Tx at channel 11
With antenna : PCB antenna

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)
3000.00	PK	V	35.54	34.62	48.62	47.70	54	-6.30
3960.00	PK	V	35.62	34.57	47.65	46.60	54	-7.40
4924.00	PK	V	36.07	37.77	45.97	47.67	54	-6.33
4980.00	PK	V	36.07	37.77	46.10	47.80	54	-6.20
6000.00	PK	V	36.65	40.87	41.76	45.98	54	-8.02
3000.00	PK	H	35.54	34.62	47.82	46.90	54	-7.10
3990.00	PK	H	35.62	34.57	46.96	45.91	54	-8.09
4924.00	PK	H	36.07	37.77	44.82	46.52	54	-7.48
6000.00	PK	H	36.65	40.87	40.85	45.07	54	-8.93

Remark:

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

EUT : SDW310C
Test Condition : 802.11a Tx at channel 149
With antenna : PCB antenna

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)
11490.00	PK	V	33.53	49.96	44.29	60.72	74	-13.28
11490.00	AV	V	33.53	49.96	29.87	46.30	54	-7.70
11490.00	PK	H	33.53	49.96	47.18	63.61	74	-10.39
11490.00	AV	H	33.53	49.96	31.81	48.24	54	-5.76

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : SDW310C
Test Condition : 802.11a Tx at channel 157
With antenna : PCB antenna

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)
11570.00	PK	V	34.55	50.03	44.82	60.30	74	-13.70
11570.00	AV	V	34.55	50.03	30.47	45.95	54	-8.05
11570.00	PK	H	34.55	50.03	48.53	64.01	74	-9.99
11570.00	AV	H	34.55	50.03	34.06	49.54	54	-4.46

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : SDW310C
Test Condition : 802.11a Tx at channel 165
With antenna : PCB antenna

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)
11650.00	PK	V	34.55	50.03	45.04	60.52	74	-13.48
11650.00	AV	V	34.55	50.03	30.77	46.25	54	-7.75
11650.00	PK	H	34.55	50.03	48.31	63.79	74	-10.21
11650.00	AV	H	34.55	50.03	33.49	48.97	54	-5.03

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.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 for 802.11b, 6 Mbps for 802.11a/ 11g. The EUT was tuned to a low, middle and high channel.

Test Mode: 802.11b mode with Dipole antenna

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	60.93	74	-13.07
		AV	51.81	54	-2.19
11 (highest)	2483.5-2500	PK	58.38	74	-15.62
		AV	47.63	54	-6.37

Test Mode: 802.11g mode with Dipole antenna

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	60.15	74	-13.85
		AV	48.10	54	-5.90
11 (highest)	2483.5-2500	PK	62.31	74	-11.69
		AV	47.91	54	-6.09

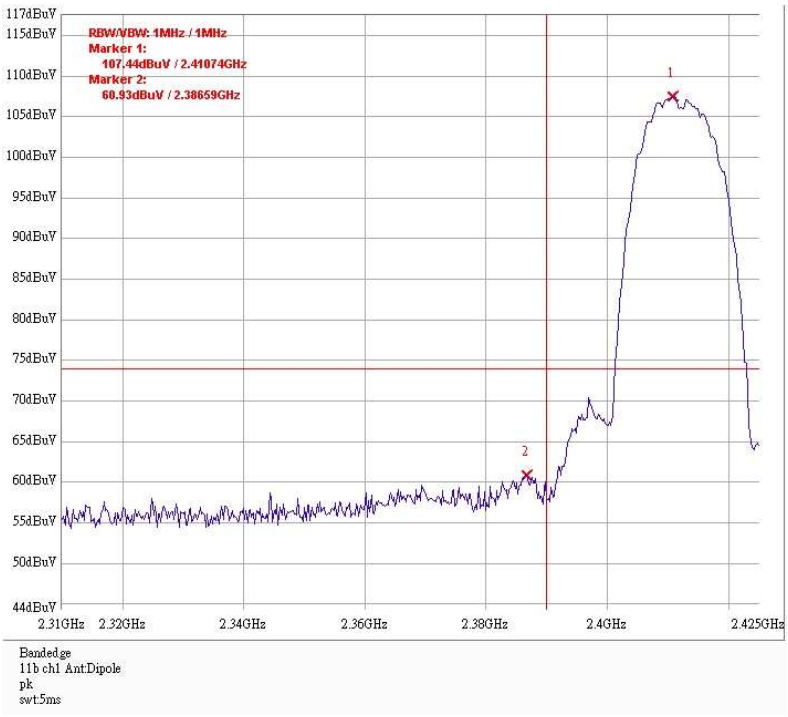
Test Mode: 802.11b mode with PCB antenna

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	61.98	74	-12.02
		AV	49.70	54	-4.30
11 (highest)	2483.5-2500	PK	60.91	74	-13.09
		AV	49.08	54	-4.92

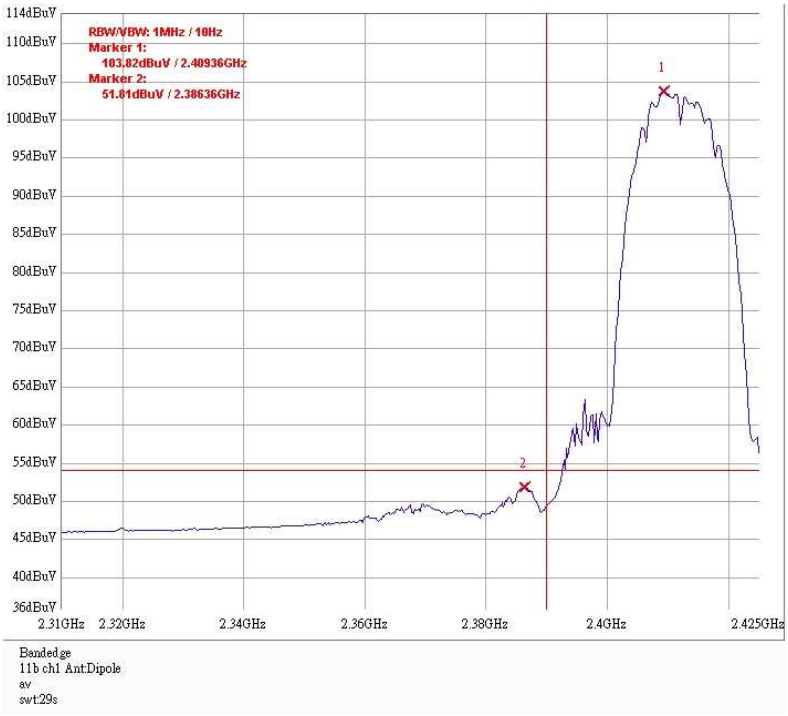
Test Mode: 802.11g mode with PCB antenna

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	59.80	74	-14.20
		AV	47.84	54	-6.16
11 (highest)	2483.5-2500	PK	66.49	74	-7.51
		AV	48.89	54	-5.11

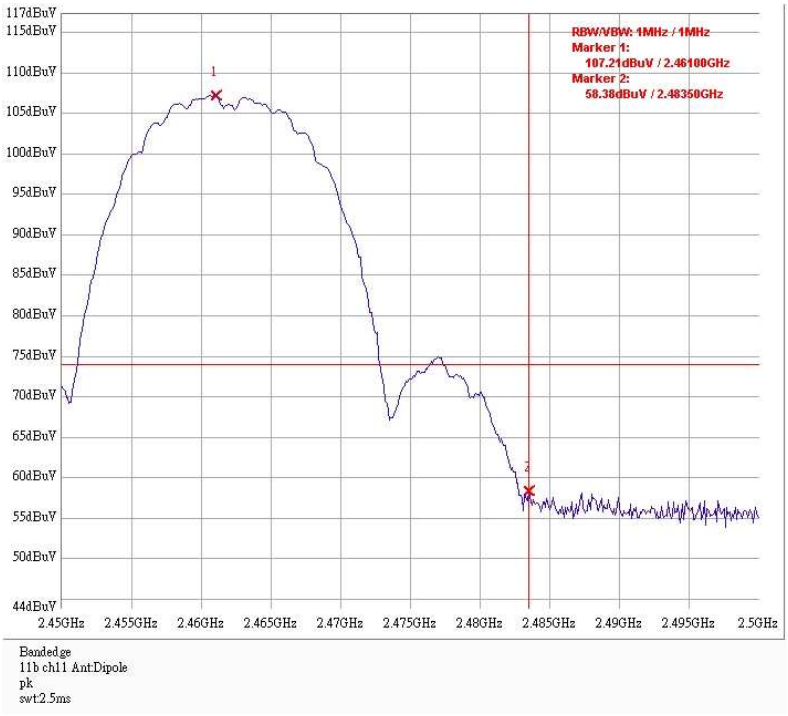
Band edge @ 802.11b mode channel 1 PK With Dipole antenna



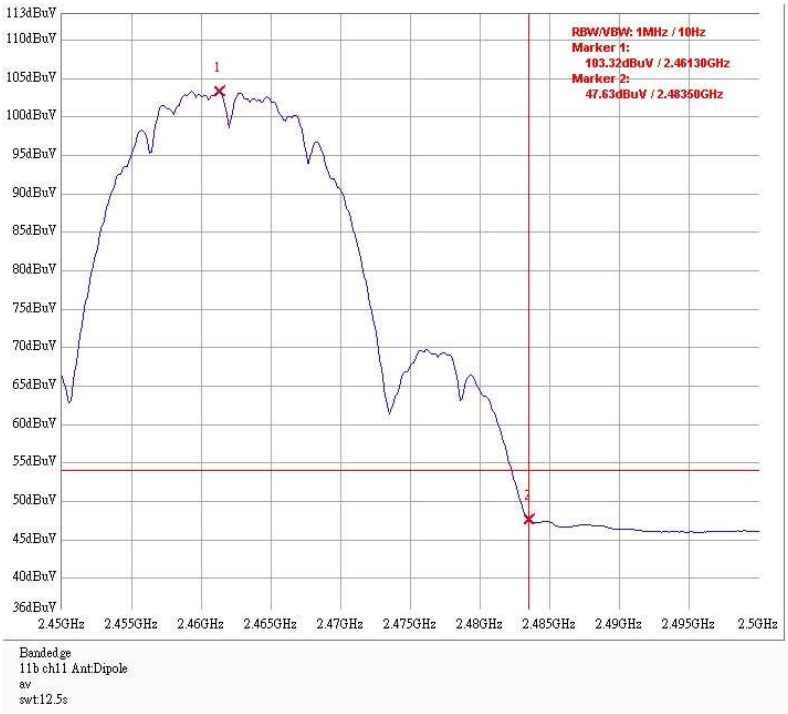
Band edge @ 802.11b mode channel 1 AV With Dipole antenna



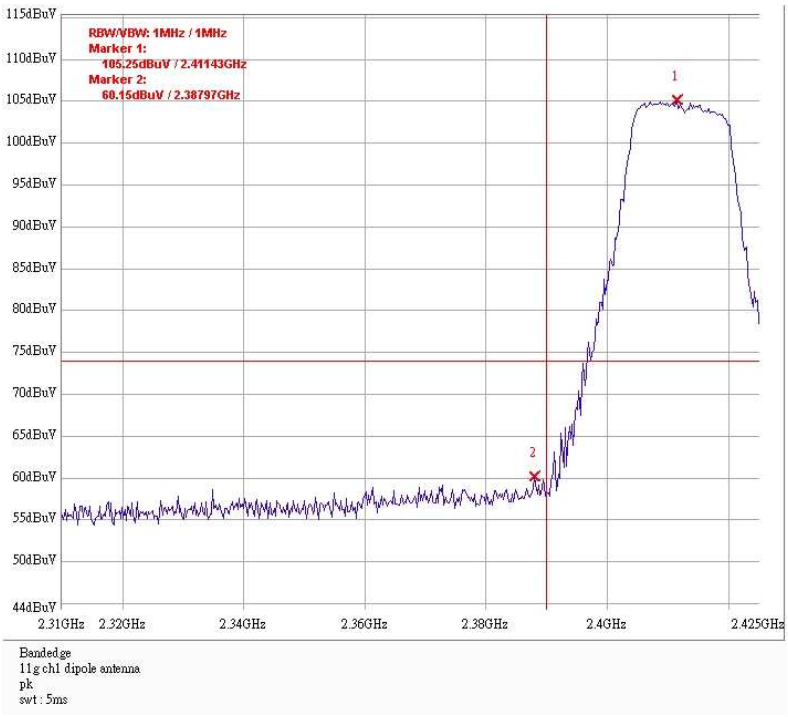
Band edge @ 802.11b mode channel 11 PK With Dipole antenna



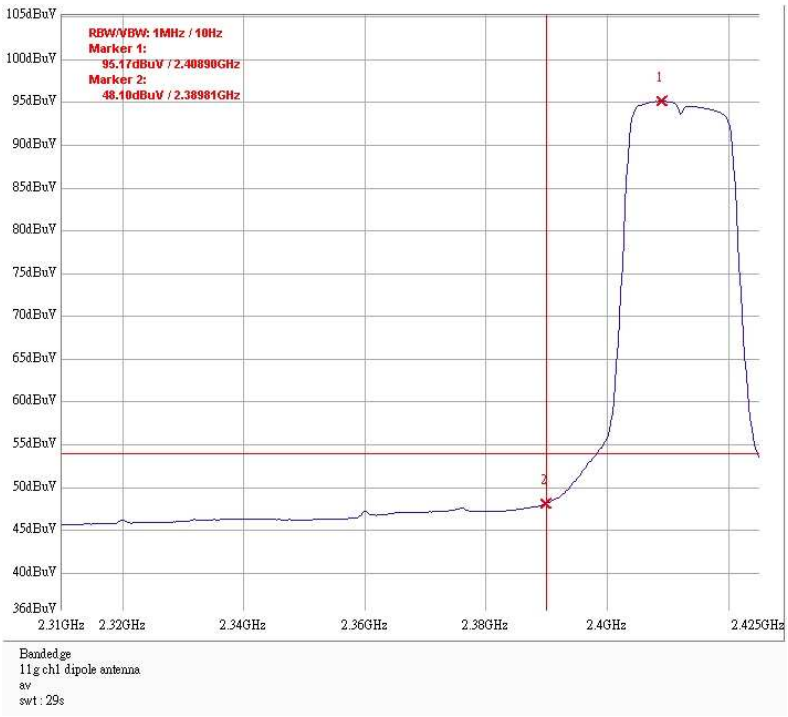
Band edge @ 802.11b mode channel 11 AV With Dipole antenna



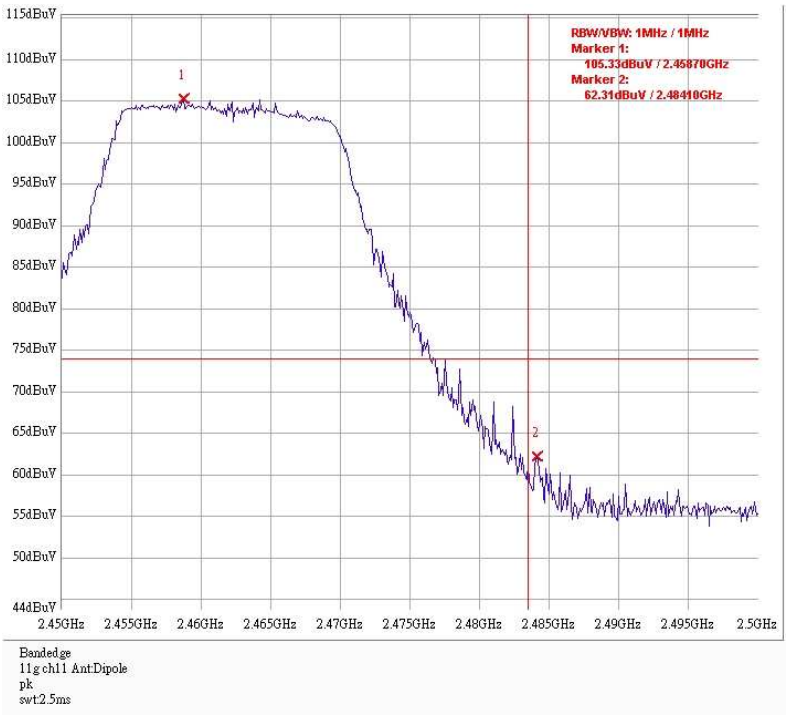
Band edge @ 802.11g mode channel 1 PK With Dipole antenna



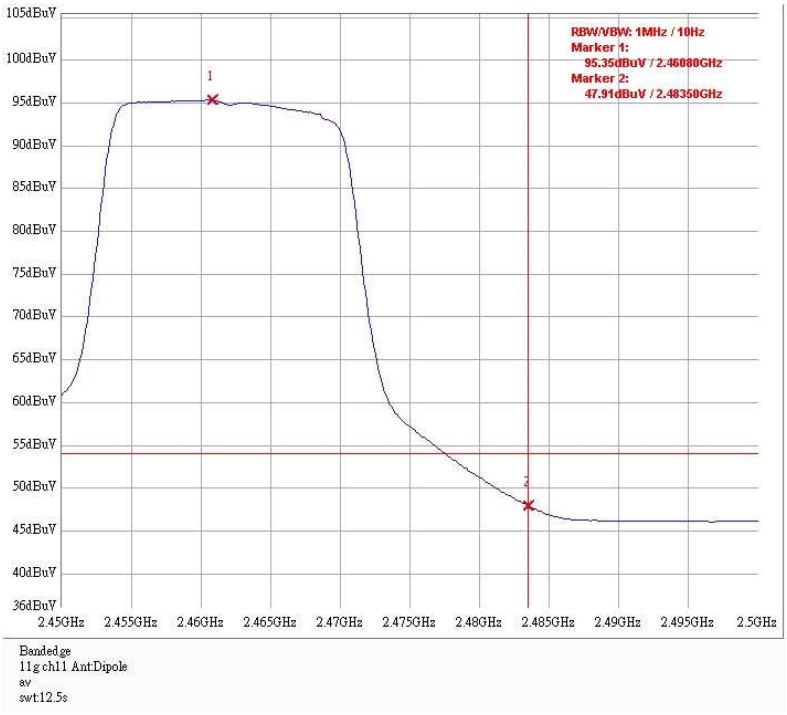
Band edge @ 802.11g mode channel 1 AV With Dipole antenna



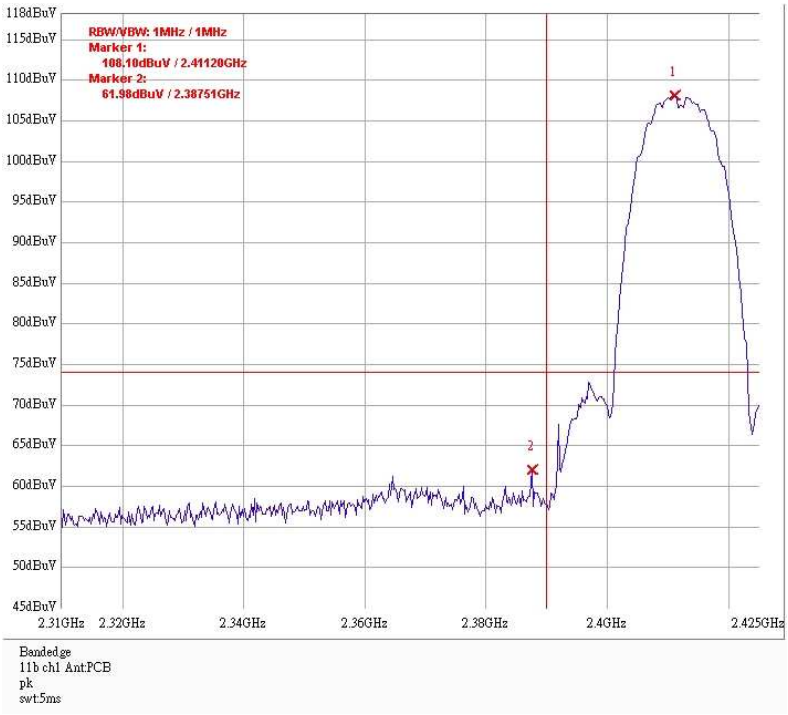
Band edge @ 802.11g mode channel 11 PK With Dipole antenna



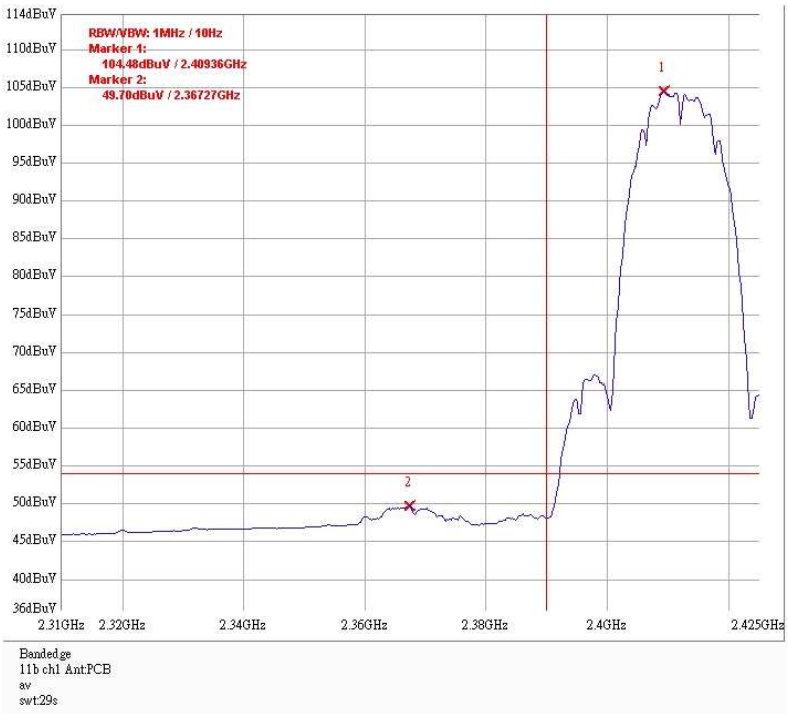
Band edge @ 802.11g mode channel 11 AV With Dipole antenna



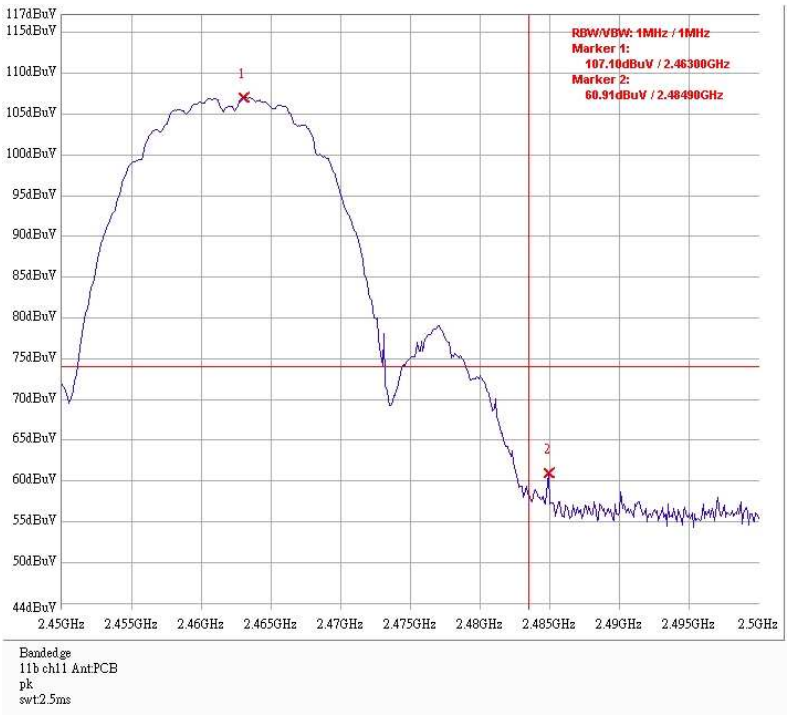
Band edge @ 802.11b mode channel 1 PK With PCB antenna



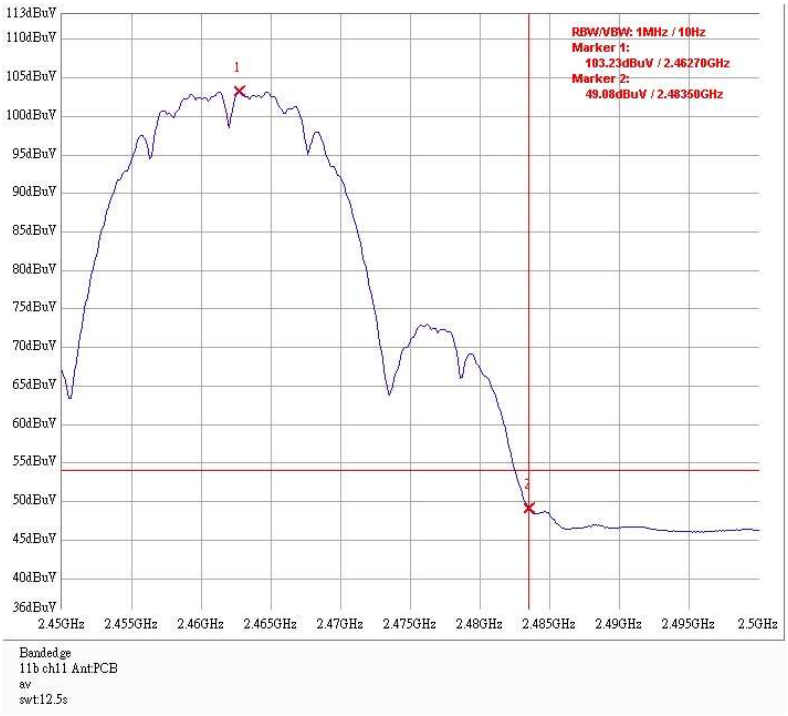
Band edge @ 802.11b mode channel 1 AV With PCB antenna



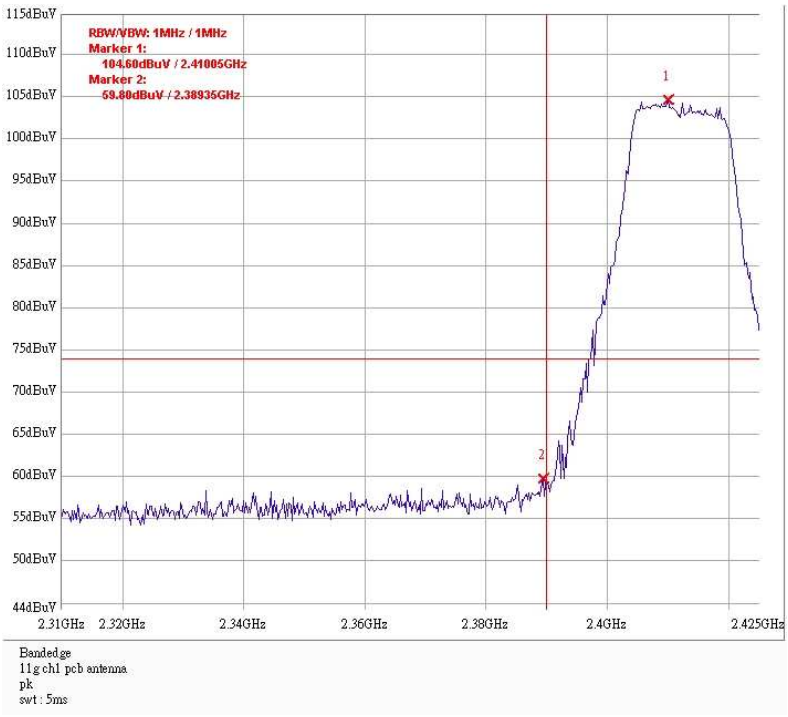
Band edge @ 802.11b mode channel 11 PK With PCB antenna



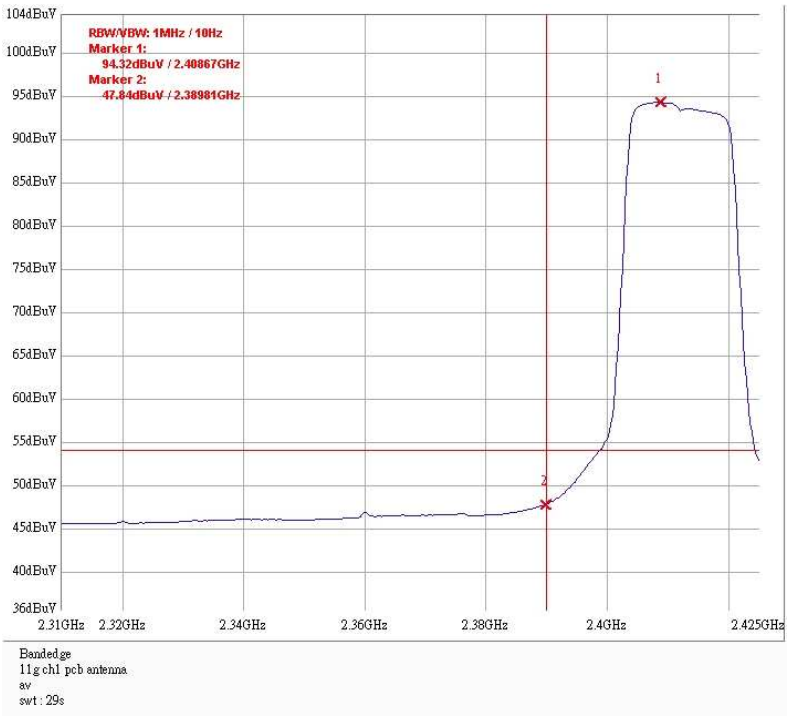
Band edge @ 802.11b mode channel 11 AV With PCB antenna



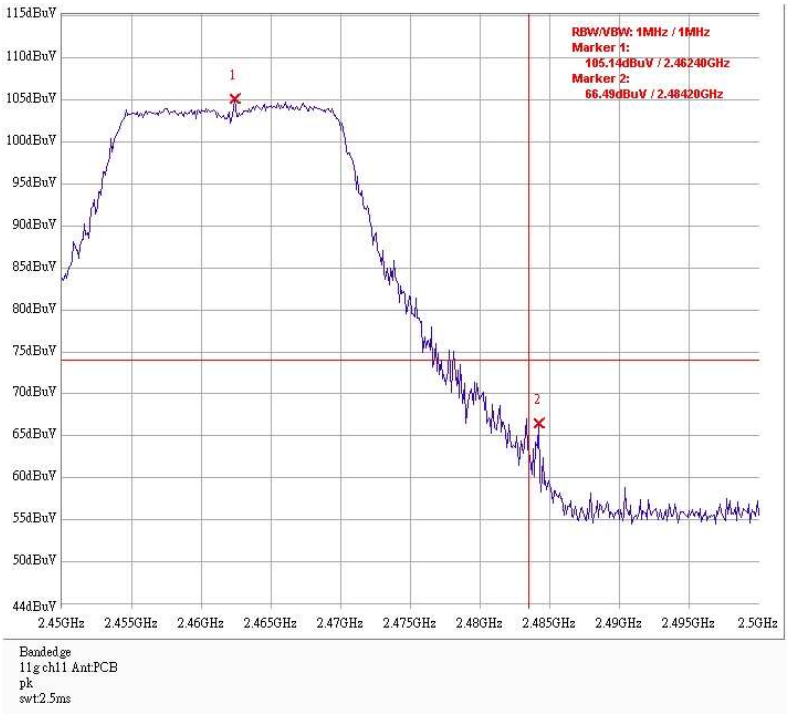
Band edge @ 802.11g mode channel 1 PK With PCB antenna



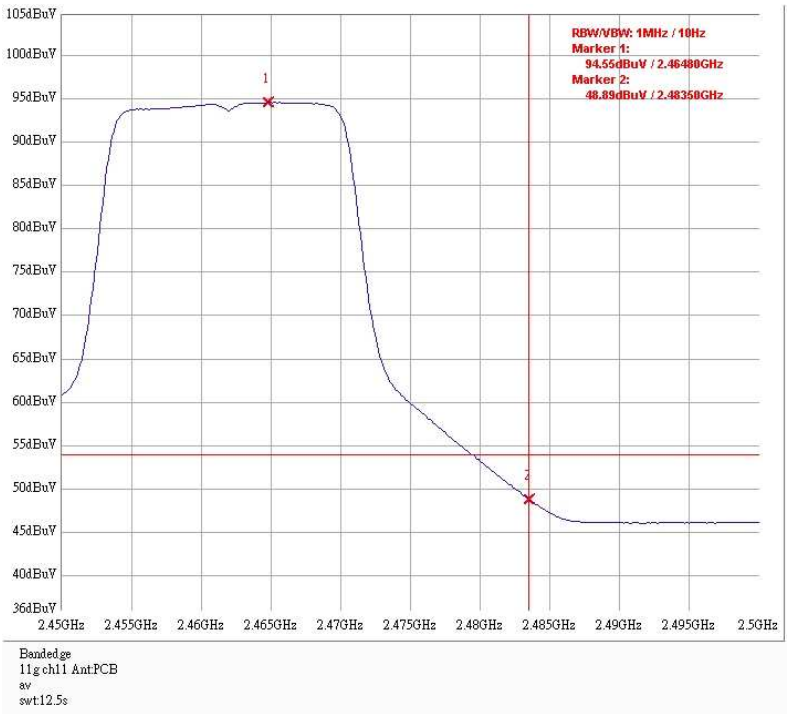
Band edge @ 802.11g mode channel 1 AV With PCB antenna



Band edge @ 802.11g mode channel 11 PK With PCB antenna



Band edge @ 802.11g mode channel 11 AV With PCB antenna



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:

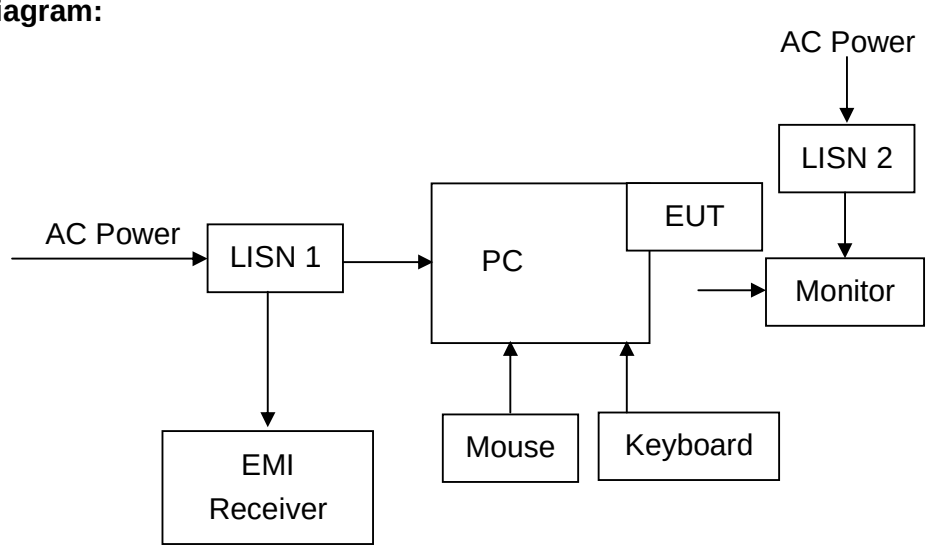
Reference FCC document: KDB558074, ANSI C63.4

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 9 kHz.

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

Test Diagram:



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

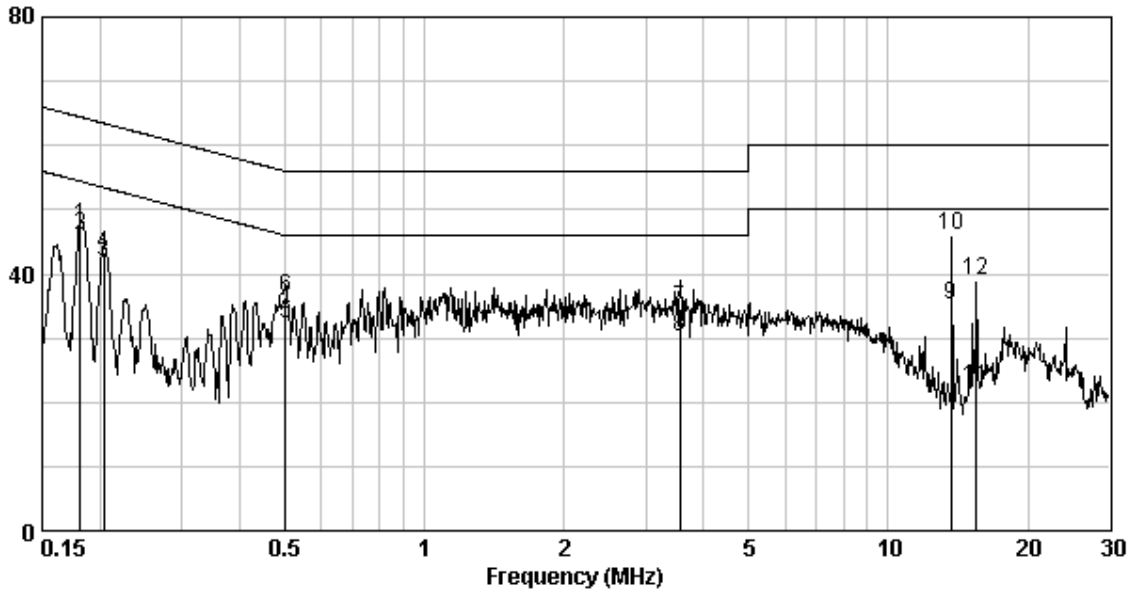
*Decreases with the logarithm of the frequency.

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

Phase	: Line
EUT	: SDW310C
Test Condition	: Normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.18	0.81	47.37	64.42	45.89	54.42	-17.05	-8.53
0.20	0.78	43.14	63.45	41.83	53.45	-20.31	-11.62
0.50	0.11	36.46	56.00	32.20	46.00	-19.54	-13.80
3.56	0.27	34.59	56.00	30.17	46.00	-21.41	-15.83
13.65	0.75	45.87	60.00	35.11	50.00	-14.13	-14.89
15.44	0.82	38.91	60.00	22.13	50.00	-21.09	-27.87

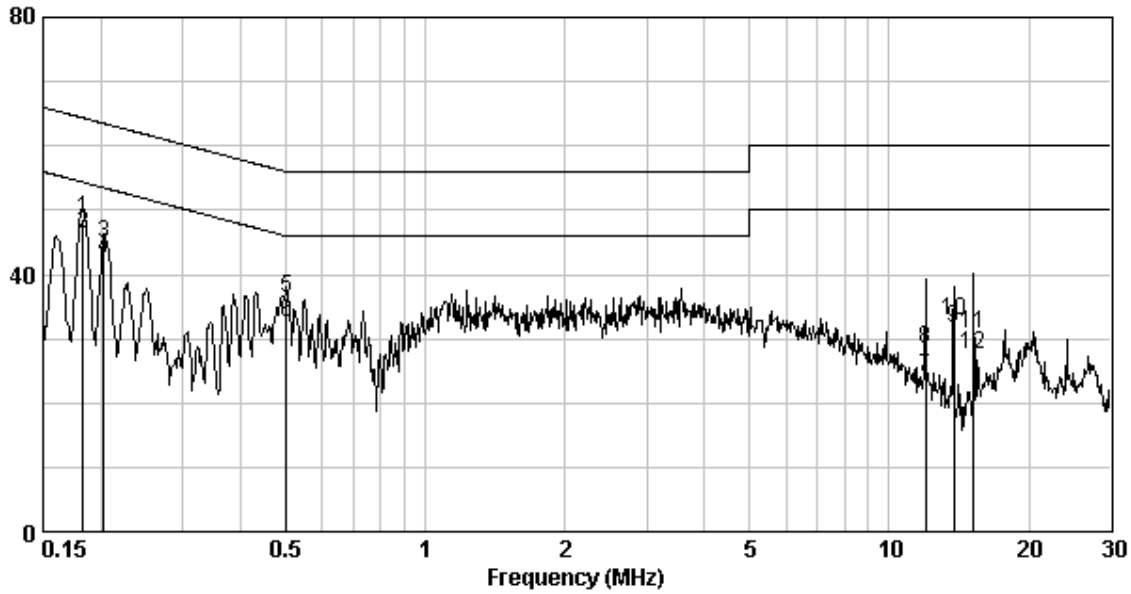
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : SDW310C
Test Condition : Normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.18	0.11	48.74	64.34	46.26	54.34	-15.61	-8.09
0.20	0.11	44.71	63.49	42.44	53.49	-18.79	-11.06
0.50	0.11	36.26	56.00	32.42	46.00	-19.74	-13.58
11.97	0.45	28.49	60.00	24.13	50.00	-31.51	-25.87
13.77	0.49	31.67	60.00	32.72	50.00	-28.33	-17.28
15.21	0.51	30.79	60.00	27.48	50.00	-29.21	-22.52

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



APPENDICES

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 NAMAS NIS 81.

Parameter	Uncertainty
Radiated Emission	±4.98 dB
Conducted Emission	±2.6 dB

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