



**FCC PART 15C
TEST REPORT
No. 2010WLN0264**

For

ZTE CORPORATION

WIRELESS MODEM AND ROUTER

Type: MF60

With

FCC ID: Q78-ZTEMF60

Hardware Version: di3C

Software Version: BD_MF60V1.0.0B09

Issued Date: 2011-01-14



DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

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IC O.A.T.S listed: No.6629A-1

Note:The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
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Postal Code: 100191
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1.2. Testing Environment

Normal Temperature: 15-30°C
Extreme Temperature: -20/+55°C
Relative Humidity: 30-60%
Air Pressure 990hPa-1040hPa

Note: The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.3. Project data

Testing End Date: 2010-12-15

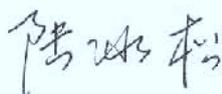
1.4. Signature



Sun Zhenyu
(Prepared this test report)



Gao Hong
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Wireless modem and router
Type	MF60
FCC ID	Q78-ZTEMF60
With WLAN Function	Yes
Frequency Range	ISM 2400MHz~2483.5MHz
Type of Modulation	DSSS/CCK/OFDM
Number of Channels	11
Antenna	Integral Antenna
MAX Conducted Power	19.95dBm(OFDM)
Power Supply	3.7V DC by Battery

Note: Photographs of EUT are shown in ANNEX C of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	355572040000589	di3C	BD_MF60V1.0.0B09

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	SN
AE1	Traveler Charger	STC-A22050I700USBA-Z	/
AE2	Battery	Li3715T42P3h654251	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

Equipment Under Test (EUT) is a model of WIRELESS MODEM AND ROUTER with integrated antenna. It consists of normal options: Lithium Battery and Travel Charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	Oct, 2009 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009
KDB558074	Measurement of Digital Transmission Systems Operating under Section 15.247	March 23, 2005

5. LABORATORY ENVIRONMENT

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

Shielding Room2 (7.30 meters×4.00 meters×3.80 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Verdict
Maximum Peak Output Power	15.247 (a)	P
Peak Power Spectral Density	15.247 (d)	P
Occupied 6dB Bandwidth	15.247 (d)	P
Band Edges Compliance	15.247 (b)	P
Transmitter Spurious Emission - Conducted	15.247	P
Transmitter Spurious Emission - Radiated	15.247, 15.209, 15.209	P
AC Powerline Conducted Emission	15.107, 15.207	P

Please refer to **ANNEX A** for detail.

The measurement is made according to ANSI C63.4 and KDB558074.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

Test Conditions

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage
V min	Low Voltage
V max	High Voltage
H nom	Norm Humidity
A nom	Norm Air Pressure

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	T nom	21°C
Voltage	V nom	3.7V(By battery)
Humidity	H nom	38%
Air Pressure	A nom	1010hPa

7. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2011-07-19
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2011-10-29
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2011-08-13

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Test Receiver	ESI40	831564/002	Rohde & Schwarz	2011-02-12
2	BiLog Antenna	3142B	9908-1403	EMCO	2011-03-15
3	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2010-12-25

Anechoic chamber

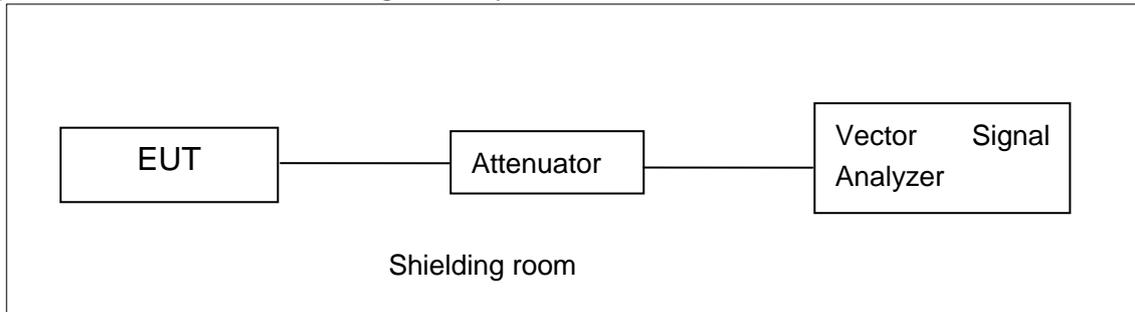
Fully anechoic chamber by Frankonia German.

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer

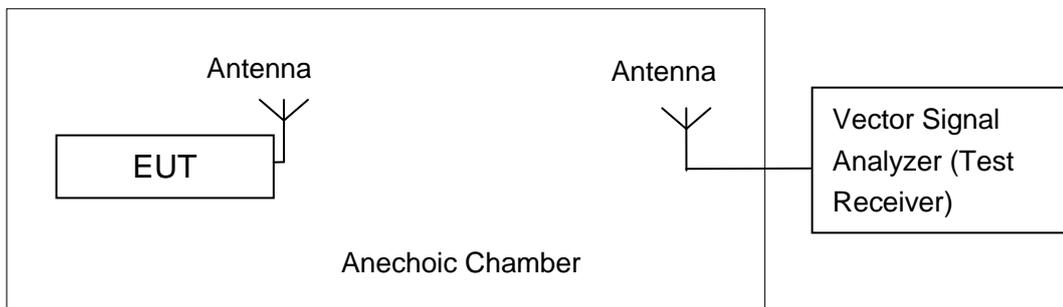


A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;



The measurement is made according to ANSI C63.4 and KDB558074

A.2. Maximum Peak Output Power

Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

The measurement is made according to ANSI C63.4 and KDB558074, and power output option 1 (RBW=20MHz) in KDB558074 is used for the test. EUT is operating in continuous transmitting mode.

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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A.2.1. Maximum Conducted Peak Output Power

Measurement Results:

Mode	Data Rate (Mbps)	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	13.59	/	/
	2	14.20	/	/
	5.5	15.59	/	/
	11	16.76	13.78	14.65
802.11g	6	18.71	/	/
	9	18.84	/	/
	12	19.05	/	/
	18	18.74	/	/
	24	19.95	18.36	18.28
	36	19.64	/	/
	48	19.33	/	/
	54	19.59	/	/

*1. The data rate 11Mbps and 24Mbps are selected as worse condition, and the following cases (802.11b&g modes) are performed with this condition.

Mode (bandwidth)	Data Rate	Test Result (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11n (20MHz)	MCS0	17.79	18.32	17.21
	MCS1	17.63	/	/
	MCS2	17.40	/	/
	MCS3	15.86	/	/
	MCS4	17.41	/	/
	MCS5	17.53	/	/
	MCS6	16.68	/	/
	MCS7	15.56	/	/

*2. MCS0 is selected as worse condition, and the following cases (802.11n mode) are performed with this condition.

Conclusion: PASS

A.3. Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(d)	< 8 dBm/3 kHz

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Results:

802.11b&g mode

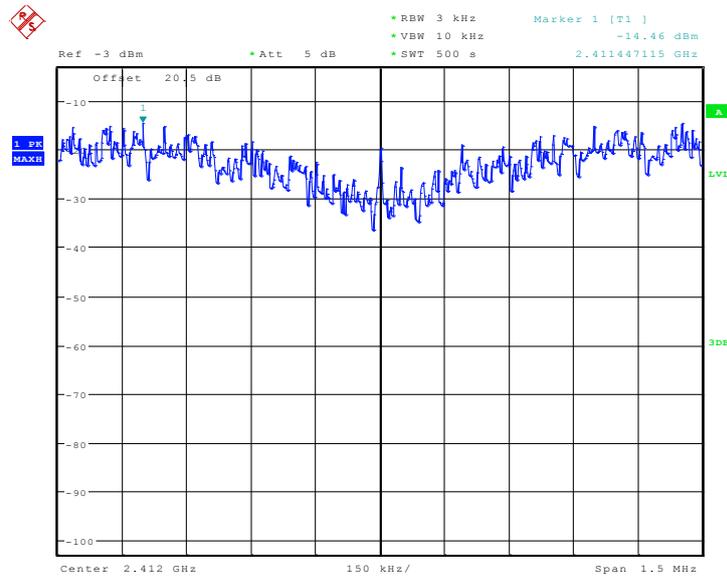
Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11b	1	Fig.1	-14.46	P
	6	Fig.2	-13.86	P
	11	Fig.3	-14.51	P
802.11g	1	Fig.4	-13.94	P
	6	Fig.5	-15.58	P
	11	Fig.6	-15.40	P

802.11n mode

Mode	Channel	Power Spectral Density (dBm/3 kHz)		Conclusion
802.11n (20MHz)	1	Fig.7	-16.54	P
	6	Fig.8	-15.65	P
	11	Fig.9	-15.09	P

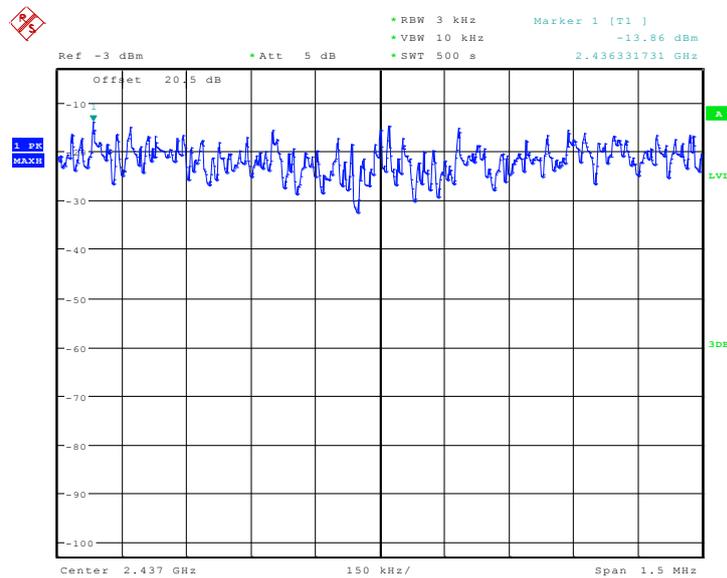
Conclusion: PASS

Test graphs as below:



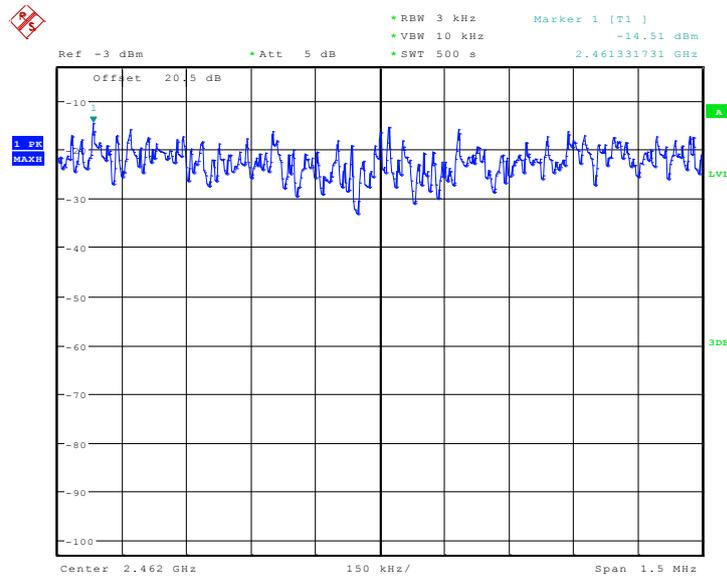
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Fig. 1 Power Spectral Density (802.11b, Ch 1)



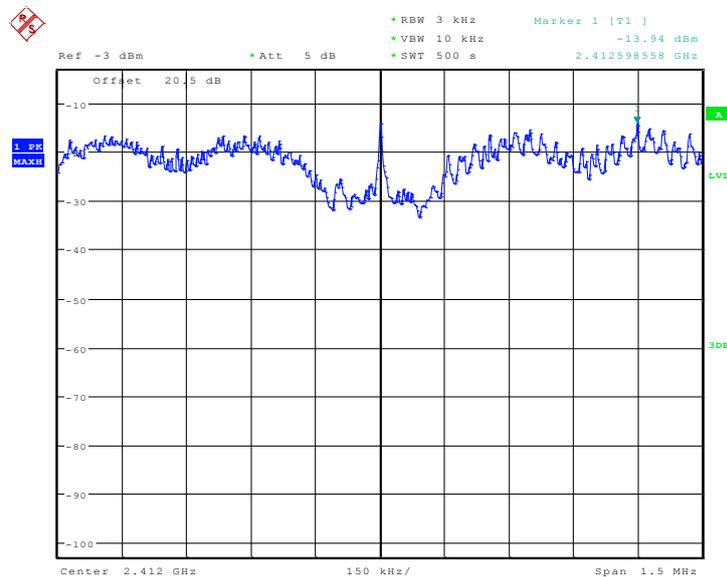
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Fig. 2 Power Spectral Density (802.11b, Ch 6)



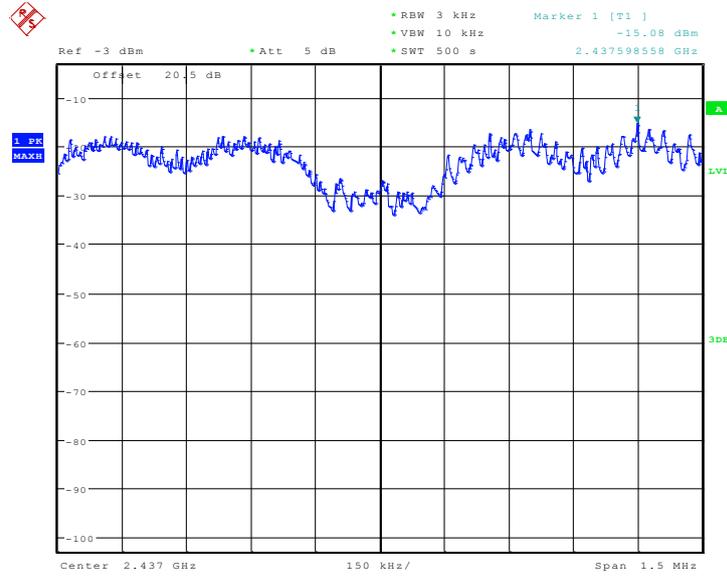
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Fig. 3 Power Spectral Density (802.11b, Ch 11)



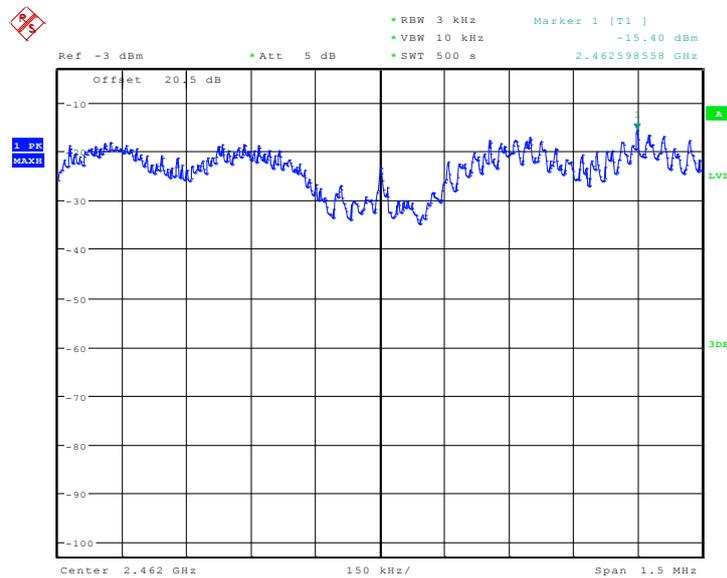
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Fig. 4 Power Spectral Density (802.11g, Ch 1)



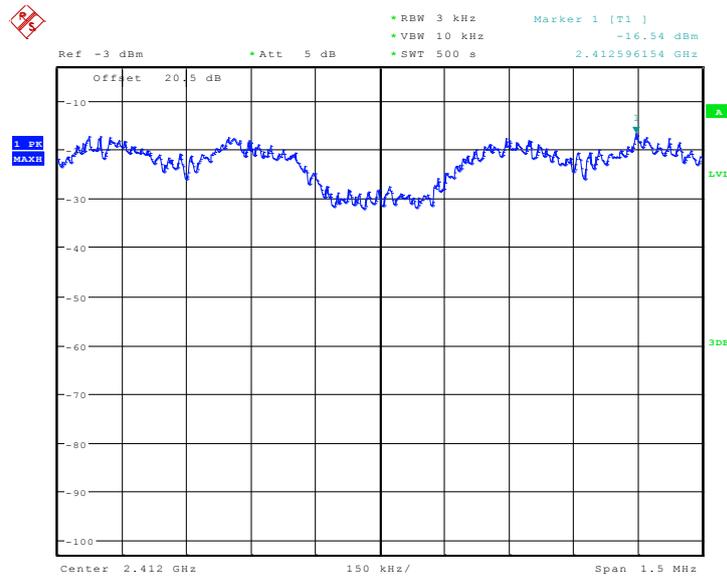
Date: 29.NOV.2010 14:25:41

Fig. 5 Power Spectral Density (802.11g, Ch 6)



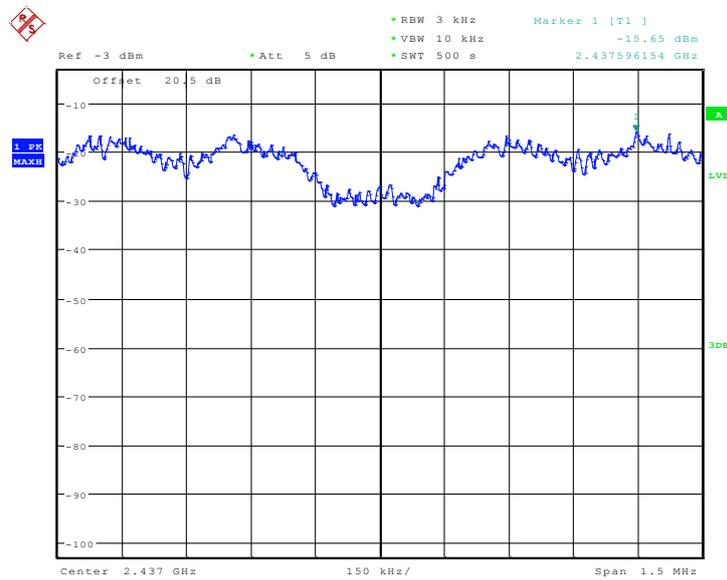
Date: 29.NOV.2010 14:38:05

Fig. 6 Power Spectral Density (802.11g, Ch 11)



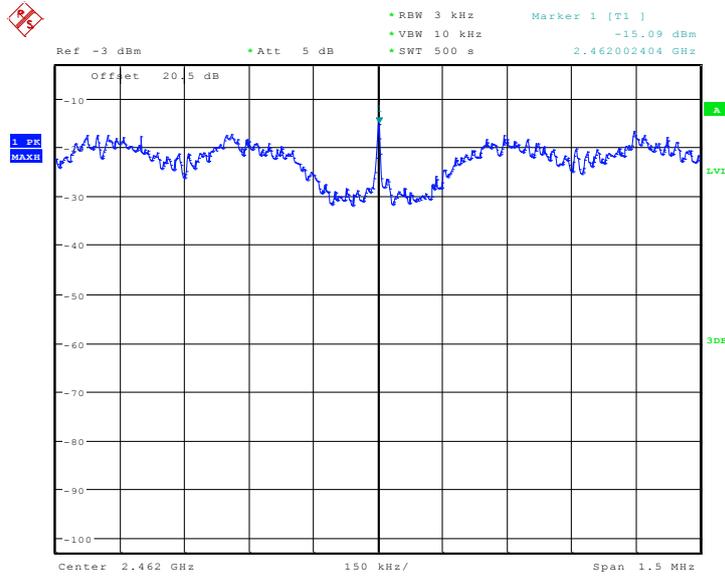
Date: 29.NOV.2010 14:49:53

Fig. 7 Power Spectral Density (802.11n, 20MHz bandwidth, Ch 1)



Date: 29.NOV.2010 15:18:07

Fig. 8 Power Spectral Density (802.11n, 20MHz bandwidth, Ch 6)



Date: 29.NOV.2010 15:34:24

Fig. 9 Power Spectral Density (802.11n, 20MHz bandwidth, Ch 11)

A.4. Occupied 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

802.11b&g mode

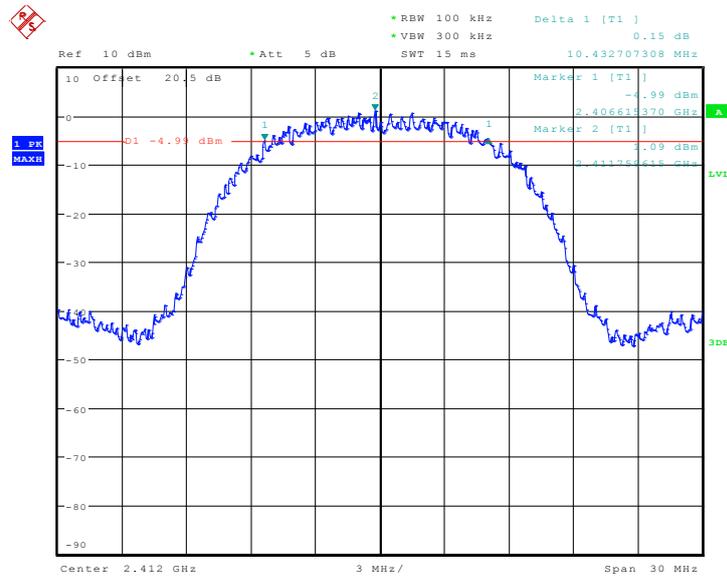
Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11b	1	Fig.10	10433	P
	6	Fig.11	10433	P
	11	Fig.12	10096	P
802.11g	1	Fig.13	16298	P
	6	Fig.14	16298	P
	11	Fig.15	16298	P

802.11n mode

Mode	Channel	Occupied 6dB Bandwidth (kHz)		conclusion
802.11n (20MHz)	1	Fig.16	16923	P
	6	Fig.17	16923	P
	11	Fig.18	16923	P

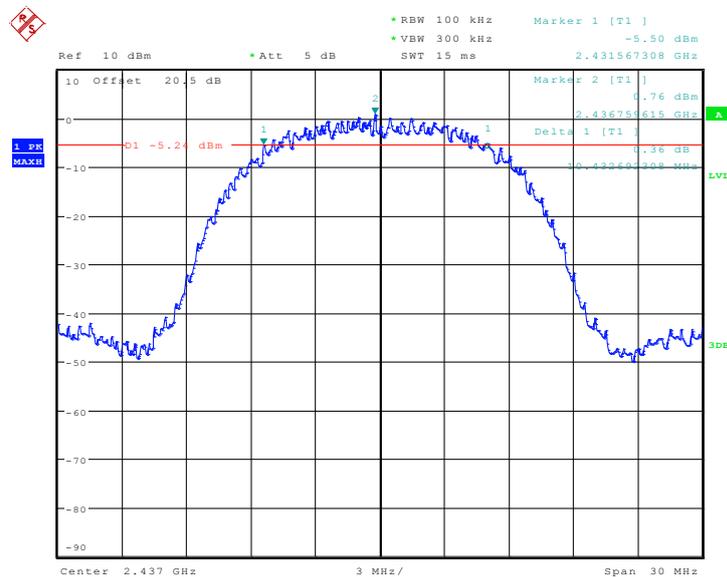
Conclusion: PASS

Test graphs as below:



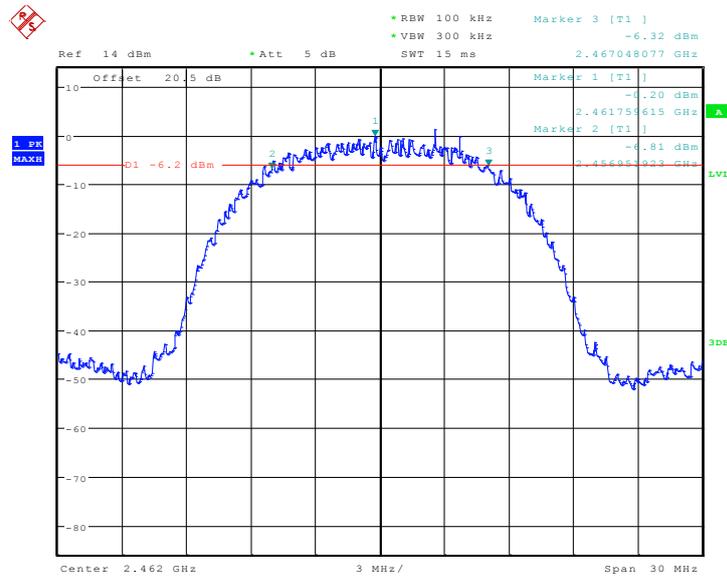
Date: 27.NOV.2010 18:48:10

Fig. 10 Occupied 6dB Bandwidth (802.11b, Ch 1)



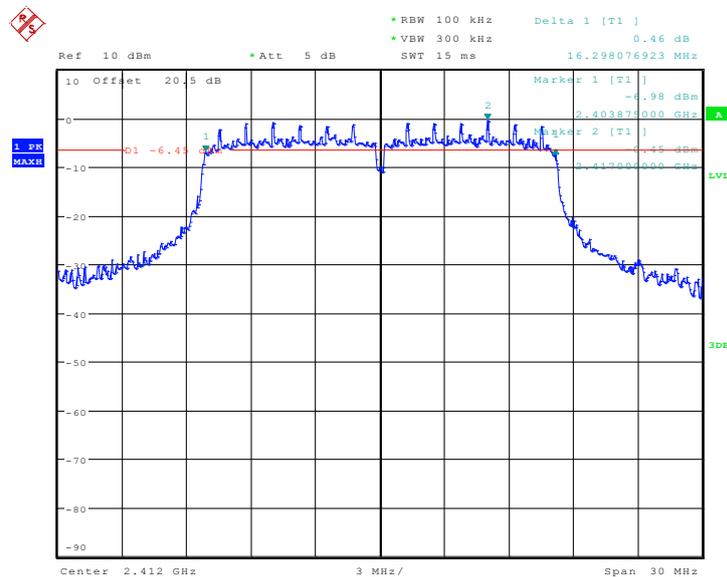
Date: 27.NOV.2010 19:11:42

Fig. 11 Occupied 6dB Bandwidth (802.11b, Ch 6)



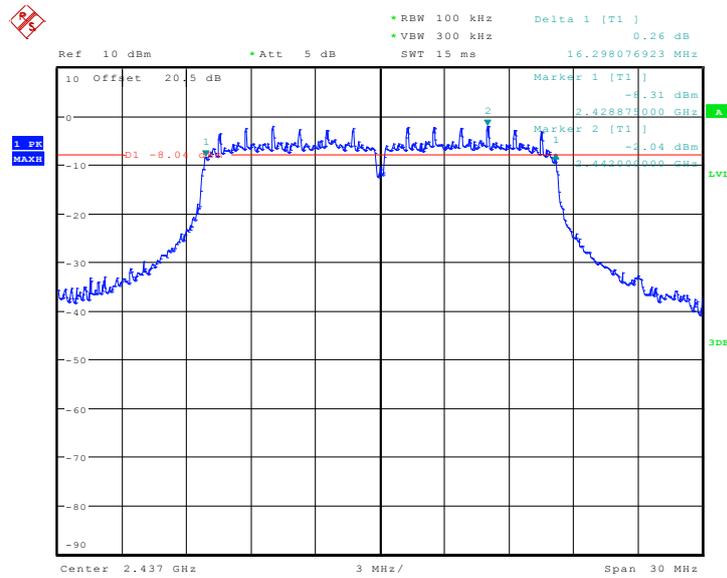
Date: 29.NOV.2010 12:47:08

Fig. 12 Occupied 6dB Bandwidth (802.11b, Ch 11)



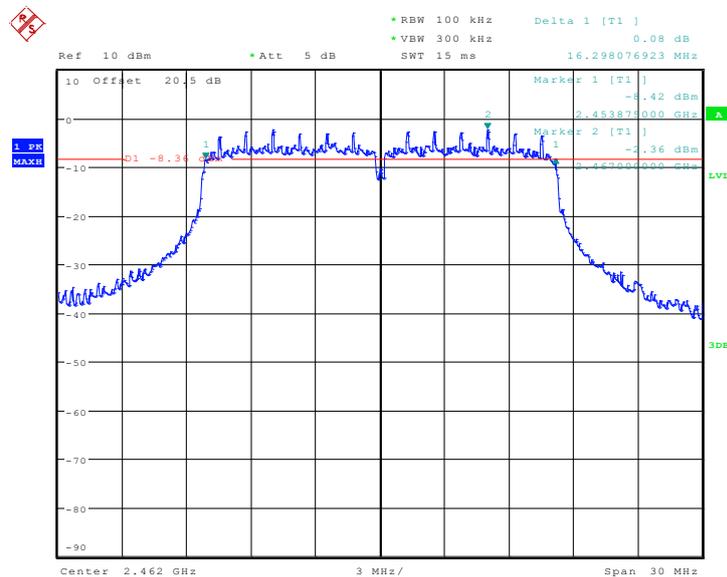
Date: 27.NOV.2010 19:21:51

Fig. 13 Occupied 6dB Bandwidth (802.11g, Ch 1)



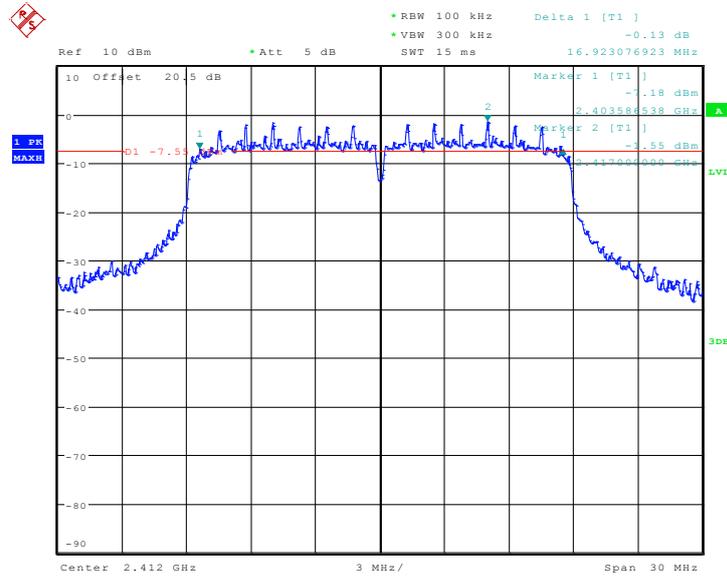
Date: 27.NOV.2010 19:23:22

Fig. 14 Occupied 6dB Bandwidth (802.11g, Ch 6)



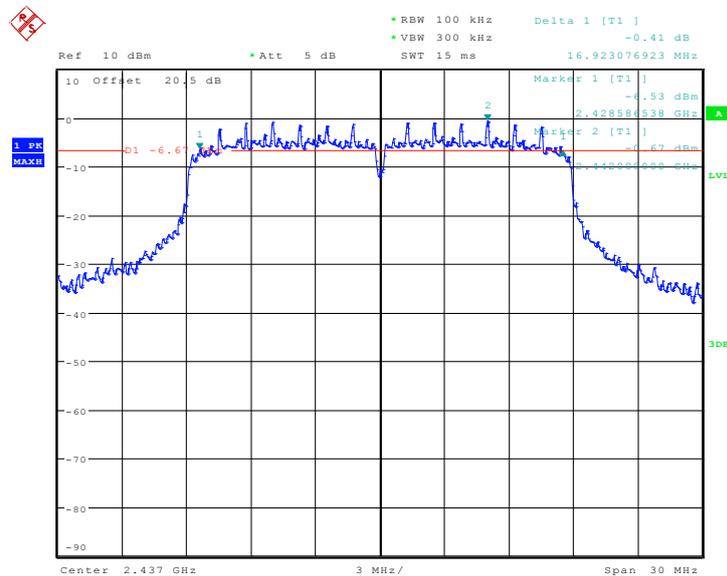
Date: 27.NOV.2010 19:19:52

Fig. 15 Occupied 6dB Bandwidth (802.11g, Ch 11)



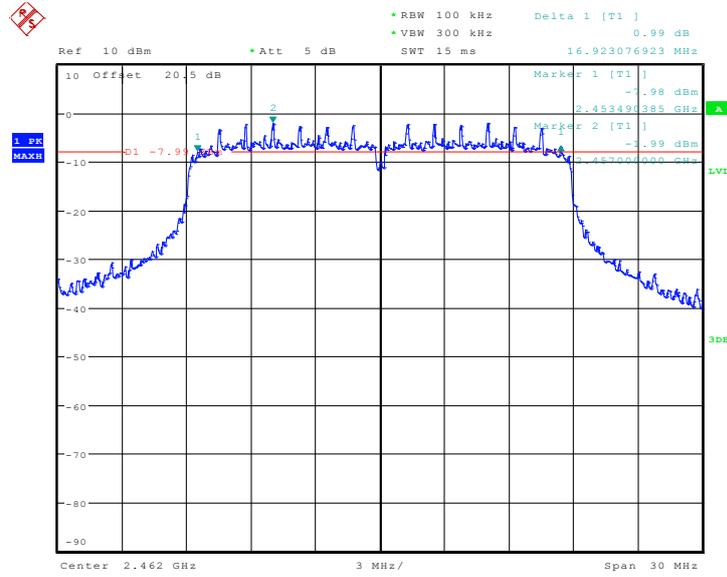
Date: 27.NOV.2010 19:35:26

Fig. 16 Occupied 6dB Bandwidth (802.11n, 20MHz bandwidth, Ch 1)



Date: 27.NOV.2010 19:38:43

Fig. 17 Occupied 6dB Bandwidth (802.11n, 20MHz bandwidth, Ch 6)



Date: 27.NOV.2010 19:37:18

Fig. 18 Occupied 6dB Bandwidth (802.11n, 20MHz bandwidth, Ch 11)

A.5. Band Edges Compliance

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	> 20

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Result:

802.11b&g mode

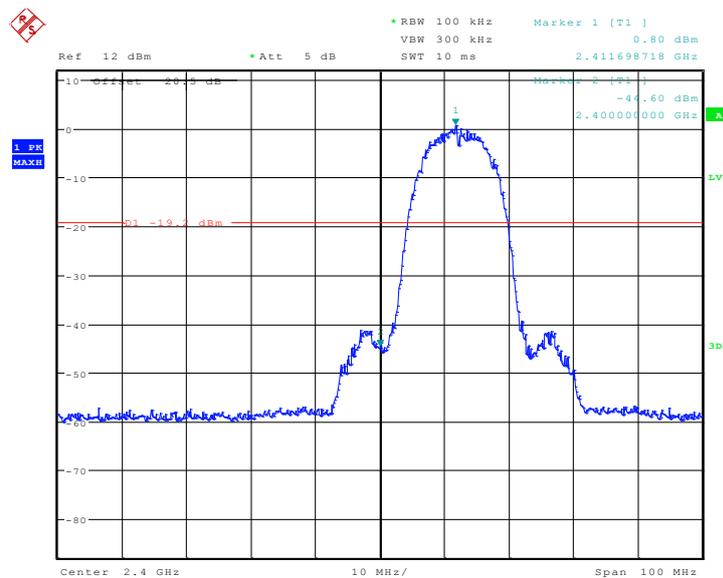
Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.19	P
	11	Fig.20	P
802.11g	1	Fig.21	P
	11	Fig.22	P

802.11n mode

Mode	Channel	Test Results	Conclusion
802.11n (20MHz)	1	Fig.23	P
	11	Fig.24	P

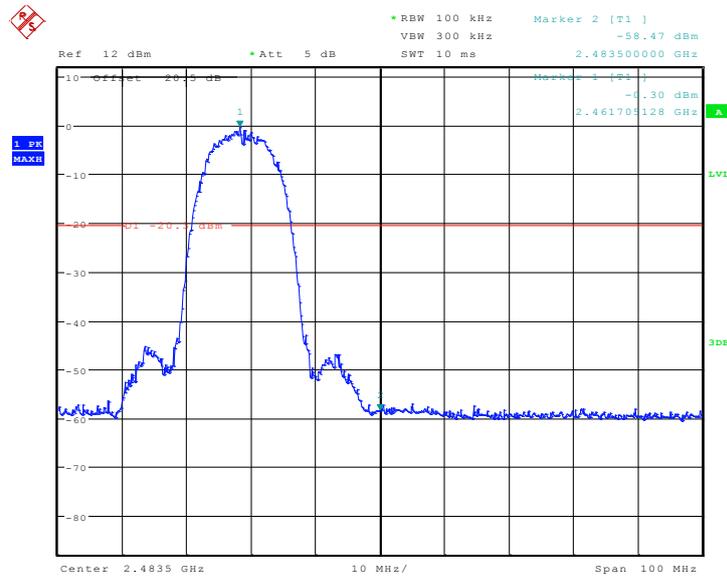
Conclusion: PASS

Test graphs as below:



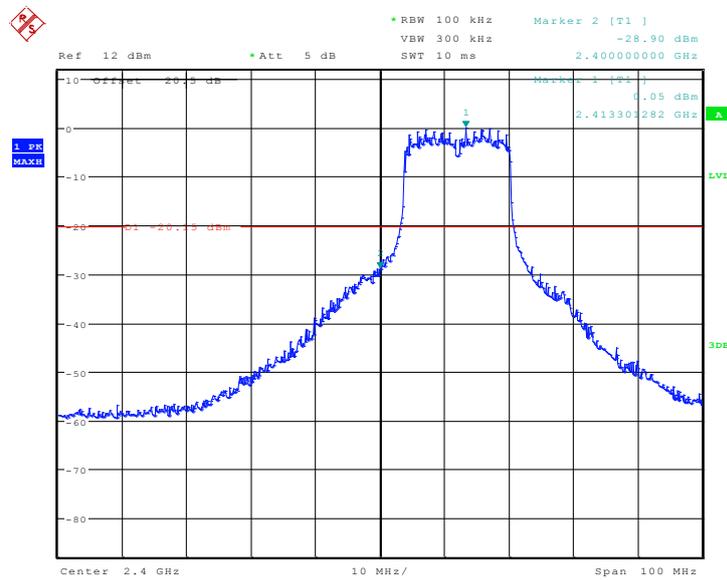
Date: 29.NOV.2010 16:50:16

Fig. 19 Band Edges (802.11b, Ch 1)



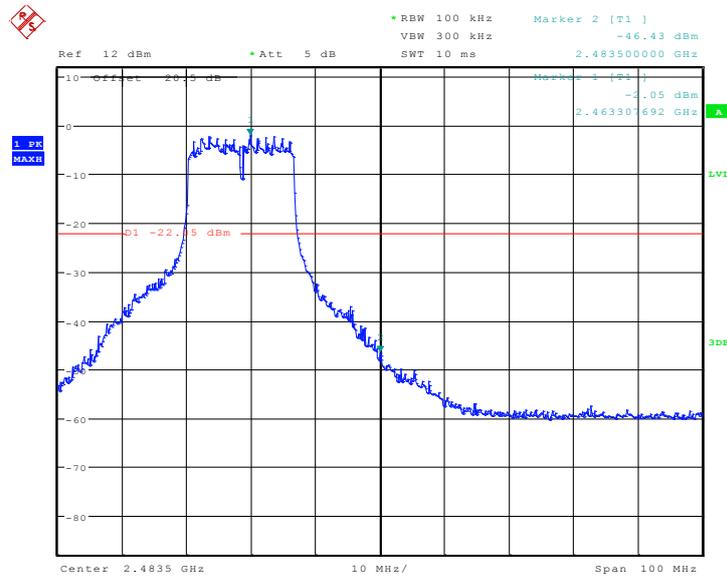
Date: 29.NOV.2010 16:47:28

Fig. 20 Band Edges (802.11b, Ch 11)



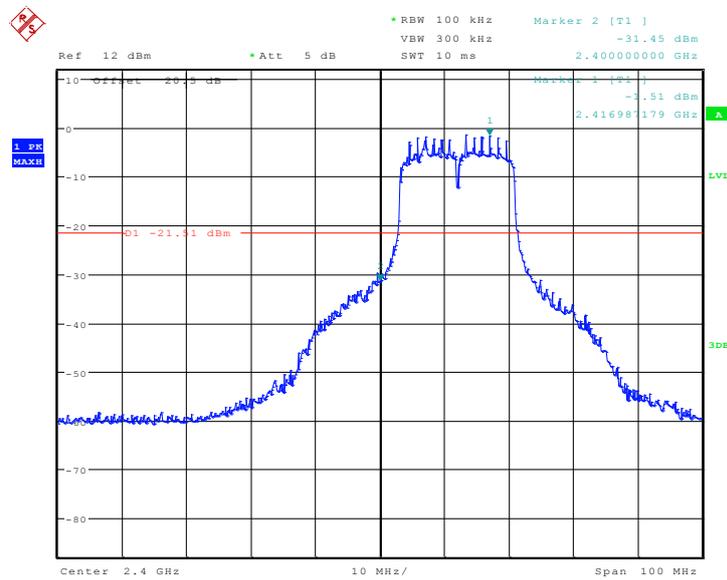
Date: 29.NOV.2010 16:53:32

Fig. 21 Band Edges (802.11g, Ch 1)



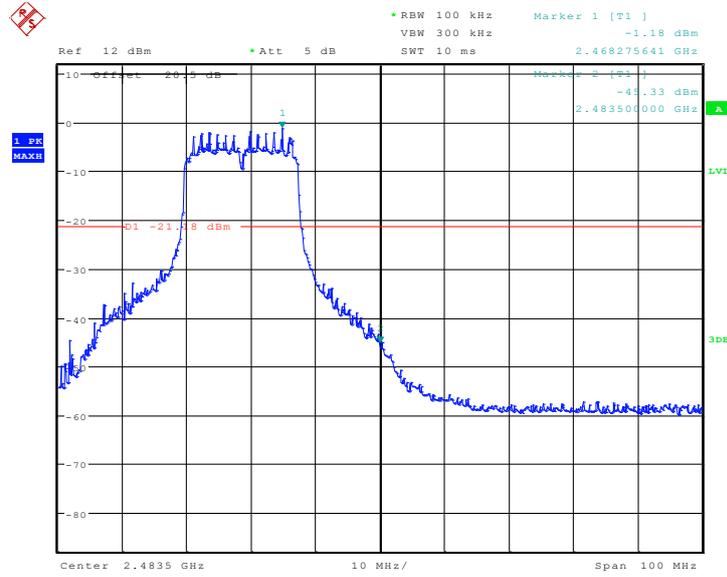
Date: 29.NOV.2010 16:58:25

Fig. 22 Band Edges (802.11g, Ch 11)



Date: 29.NOV.2010 17:01:34

Fig. 23 Band Edges (802.11n, 20MHz bandwidth, Ch 1)



Date: 29.NOV.2010 17:06:14

Fig. 24 Band Edges (802.11n, 20MHz bandwidth, Ch 11)

A.6. Transmitter Spurious Emission

A.6.1 Transmitter Spurious Emission - Conducted

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Frequency Range	Uncertainty
$30\text{MHz} \leq f \leq 2\text{GHz}$	0.63
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	0.82
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.55
$8\text{GHz} \leq f \leq 20\text{GHz}$	1.86
$20\text{GHz} \leq f \leq 22\text{GHz}$	1.90
$22\text{GHz} \leq f \leq 26\text{GHz}$	2.20

Measurement Results:

802.11b&g mode

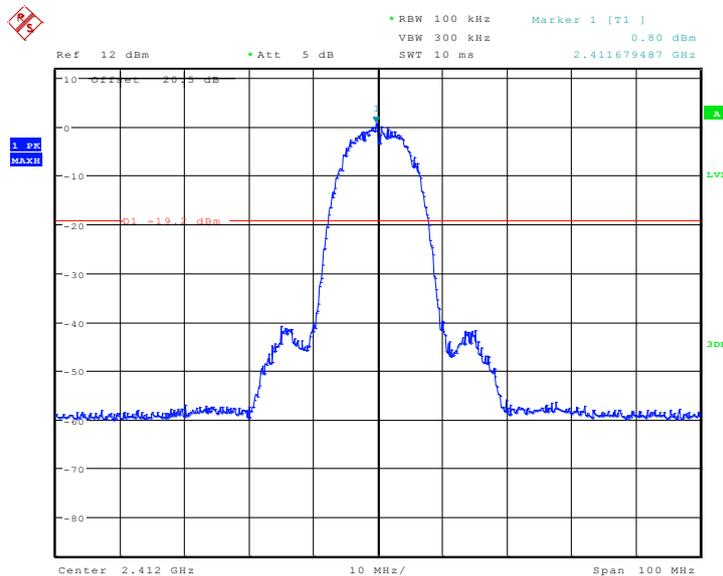
MODE	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412 GHz	Fig.25	P
		30 MHz ~ 1 GHz	Fig.26	P
		1 GHz ~ 26 GHz	Fig.27	P
	6	2.437 GHz	Fig.28	P
		30 MHz ~ 1 GHz	Fig.29	P
		1 GHz ~ 26 GHz	Fig.30	P
	11	2.472 GHz	Fig.31	P
		30 MHz ~ 1 GHz	Fig.32	P
		1 GHz ~ 26 GHz	Fig.33	P
802.11g	1	2.412 GHz	Fig.34	P
		30 MHz ~ 1 GHz	Fig.35	P
		1 GHz ~ 26 GHz	Fig.36	P
	6	2.437 GHz	Fig.37	P
		30 MHz ~ 1 GHz	Fig.38	P
		1 GHz ~ 26 GHz	Fig.39	P
	11	2.472 GHz	Fig.40	P
		30 MHz ~ 1 GHz	Fig.41	P
		1 GHz ~ 26 GHz	Fig.42	P

Conclusion: PASS

802.11n mode

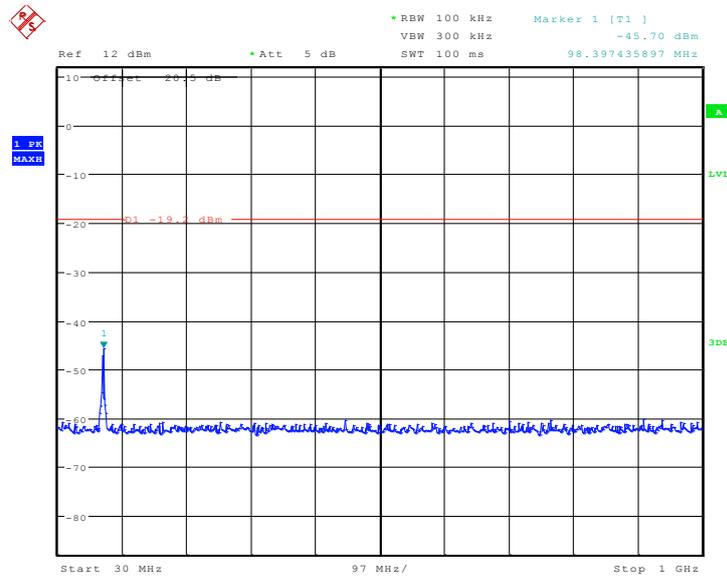
MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n (20MHz)	1	2.412 GHz	Fig.43	P
		30 MHz ~ 1 GHz	Fig.44	P
		1 GHz ~ 26 GHz	Fig.45	P
	6	2.437 GHz	Fig.46	P
		30 MHz ~ 1 GHz	Fig.47	P
		1 GHz ~ 26 GHz	Fig.48	P
	11	2.472 GHz	Fig.49	P
		30 MHz ~ 1 GHz	Fig.50	P
		1 GHz ~ 26 GHz	Fig.51	P

Test graphs as below:



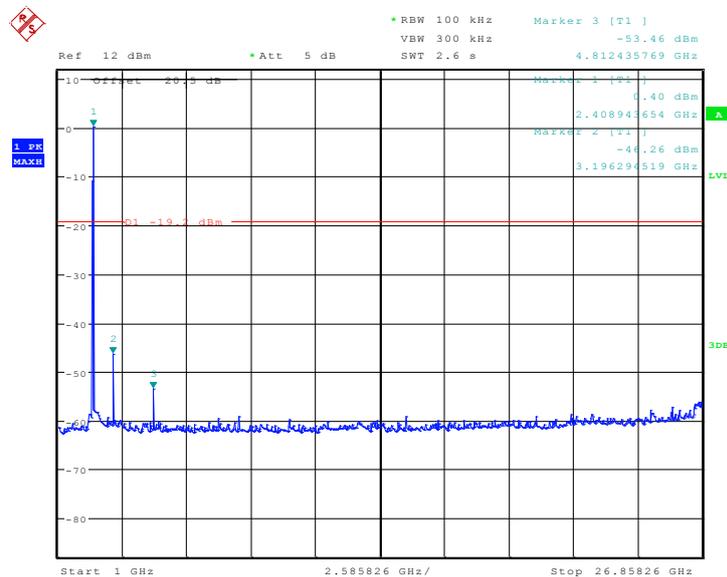
Date: 29.NOV.2010 17:16:48

Fig. 25 Conducted Spurious Emission (802.11b, Ch1, Center Frequency)



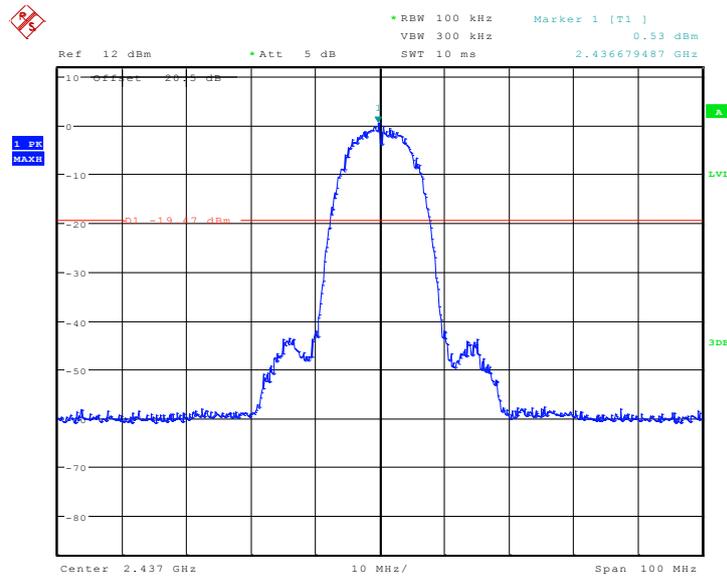
Date: 29.NOV.2010 17:18:16

Fig. 26 Conducted Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)



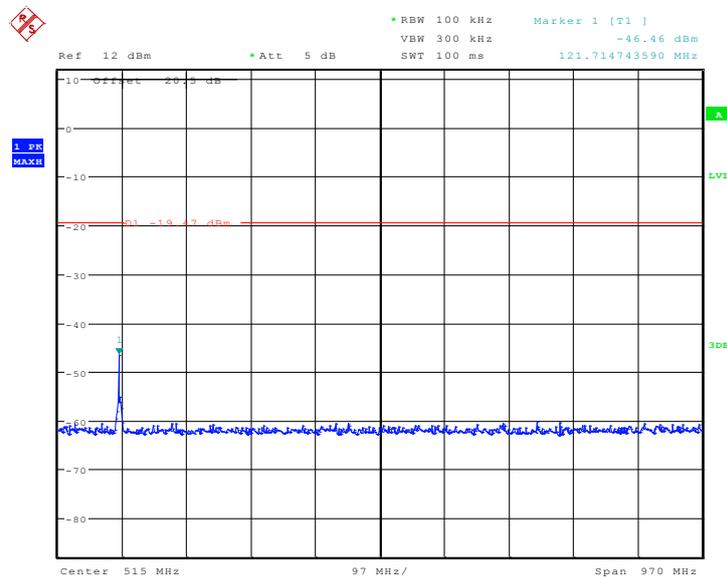
Date: 29.NOV.2010 17:20:19

Fig. 27 Conducted Spurious Emission (802.11b, Ch1, 1 GHz-26 GHz)



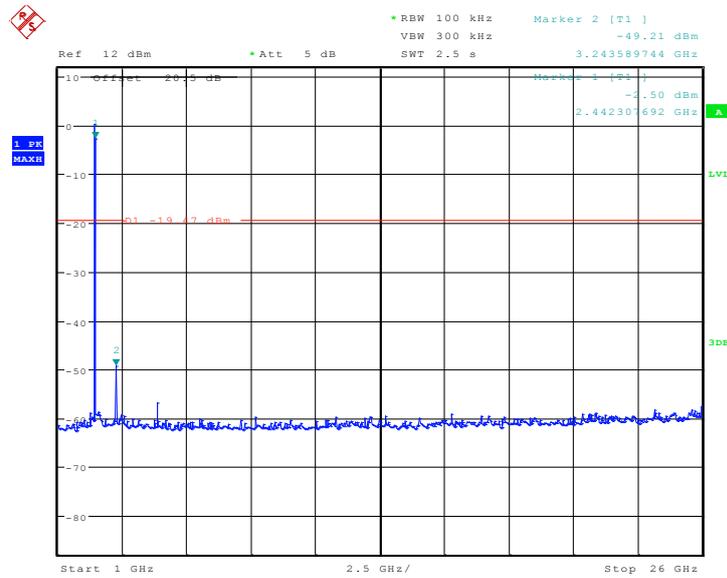
Date: 29.NOV.2010 17:22:31

Fig. 28 Conducted Spurious Emission (802.11b, Ch6, Center Frequency)



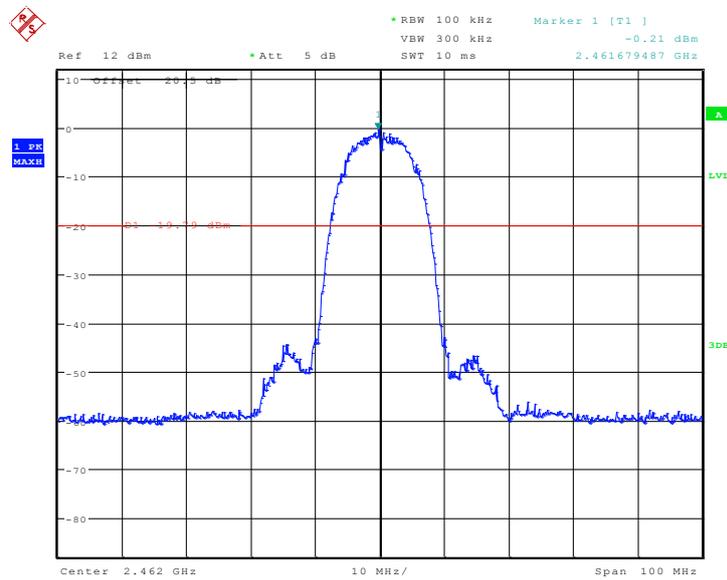
Date: 29.NOV.2010 17:24:00

Fig. 29 Conducted Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)



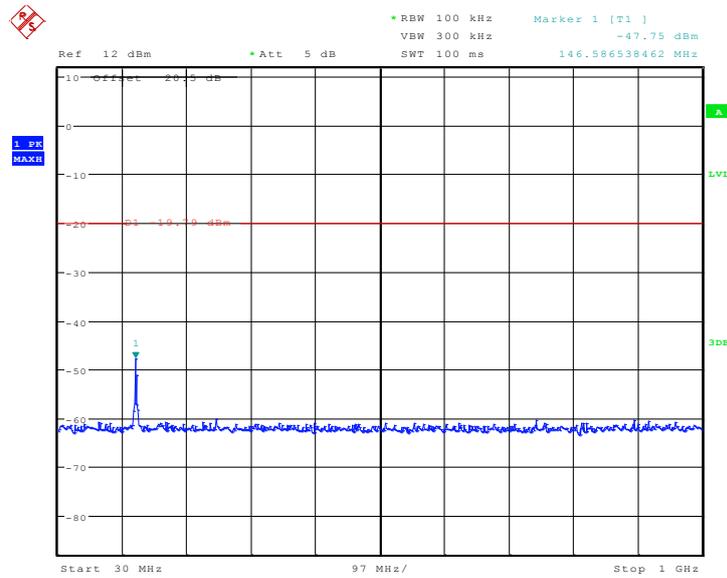
Date: 29.NOV.2010 17:25:33

Fig. 30 Conducted Spurious Emission (802.11b, Ch6, 1 GHz-26 GHz)



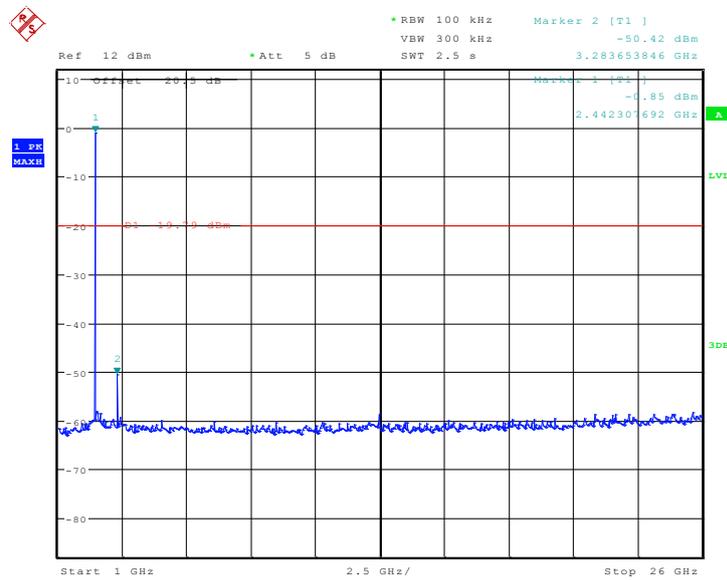
Date: 29.NOV.2010 17:29:29

Fig. 31 Conducted Spurious Emission (802.11b, Ch11, Center Frequency)



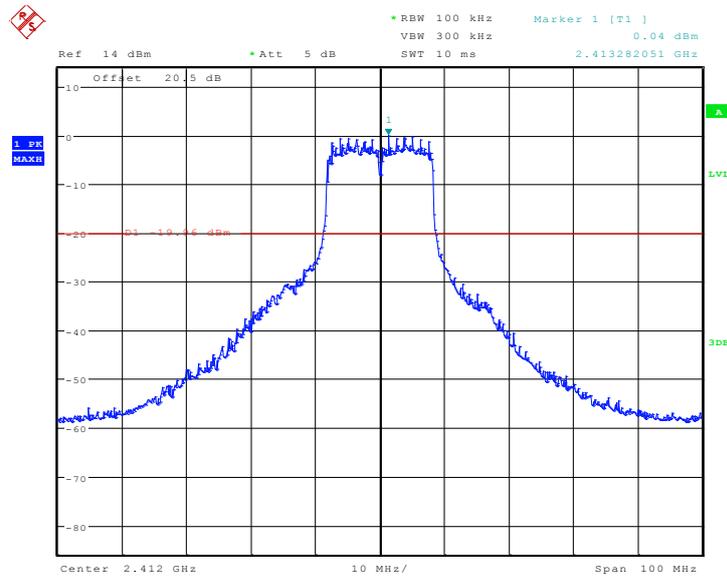
Date: 29.NOV.2010 17:30:55

Fig. 32 Conducted Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)



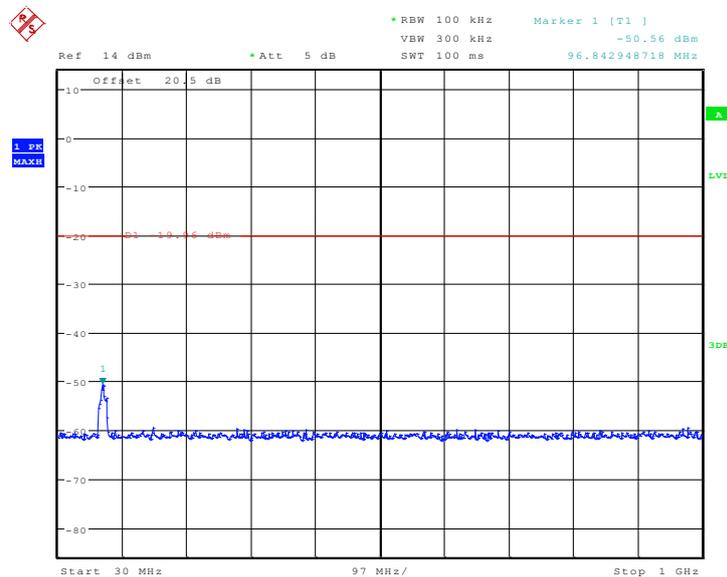
Date: 29.NOV.2010 17:32:12

Fig. 33 Conducted Spurious Emission (802.11b, Ch11, 1 GHz-26 GHz)



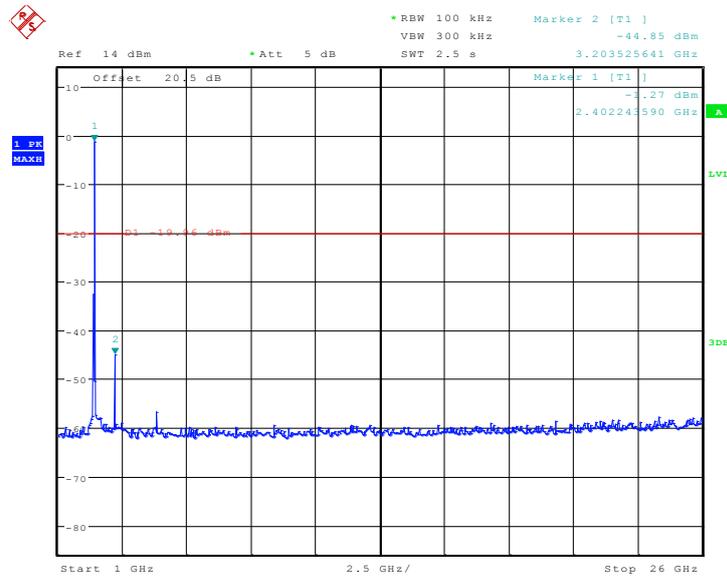
Date: 29.NOV.2010 17:36:31

Fig. 34 Conducted Spurious Emission (802.11g, Ch1, Center Frequency)



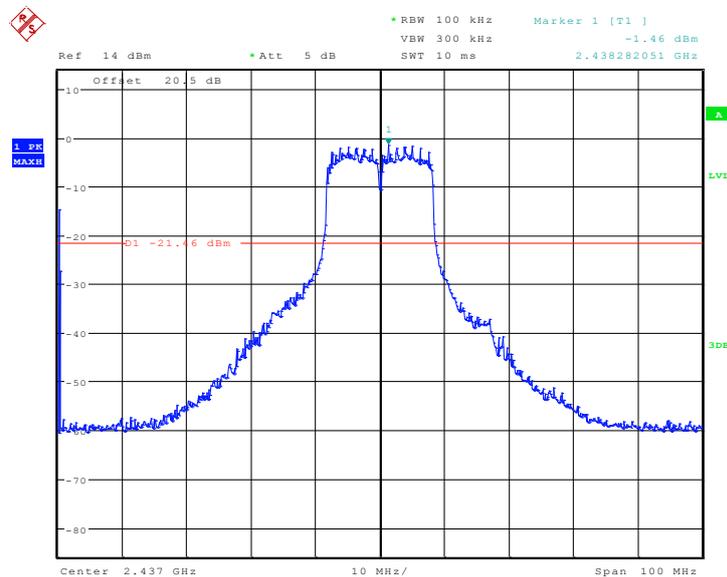
Date: 29.NOV.2010 17:39:54

Fig. 35 Conducted Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)



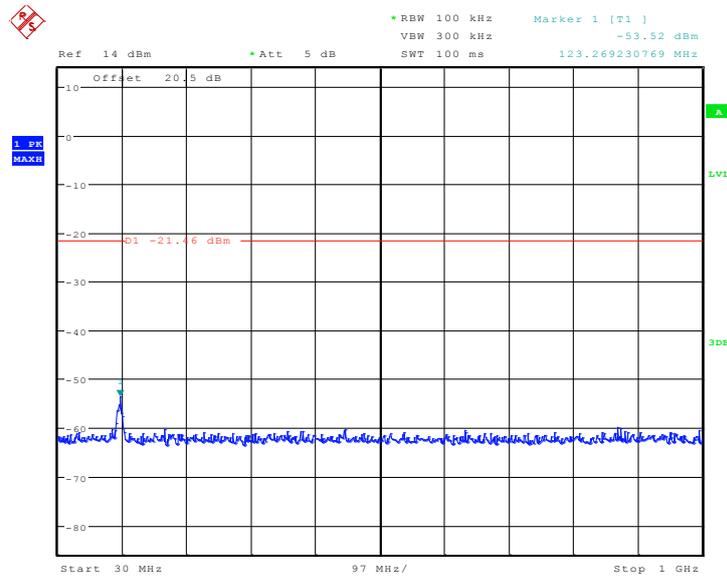
Date: 29.NOV.2010 17:42:14

Fig. 36 Conducted Spurious Emission (802.11g, Ch1, 1 GHz-26 GHz)



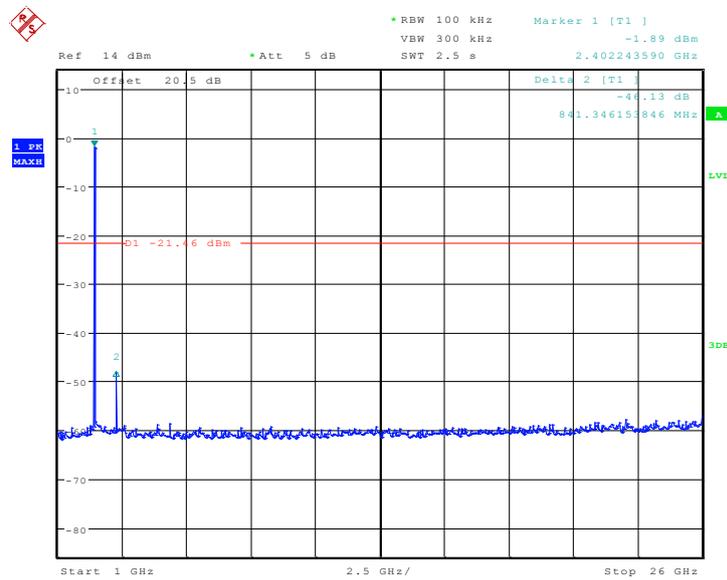
Date: 29.NOV.2010 17:45:02

Fig. 37 Conducted Spurious Emission (802.11g, Ch6, Center Frequency)



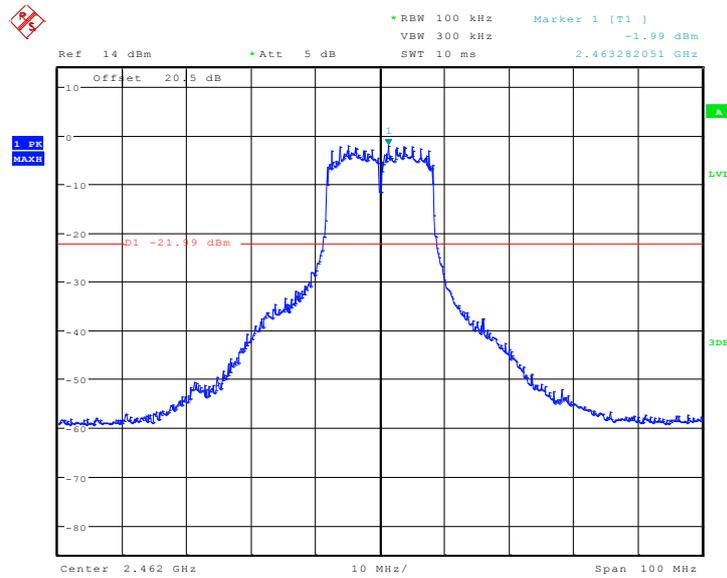
Date: 29.NOV.2010 17:47:00

Fig. 38 Conducted Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)



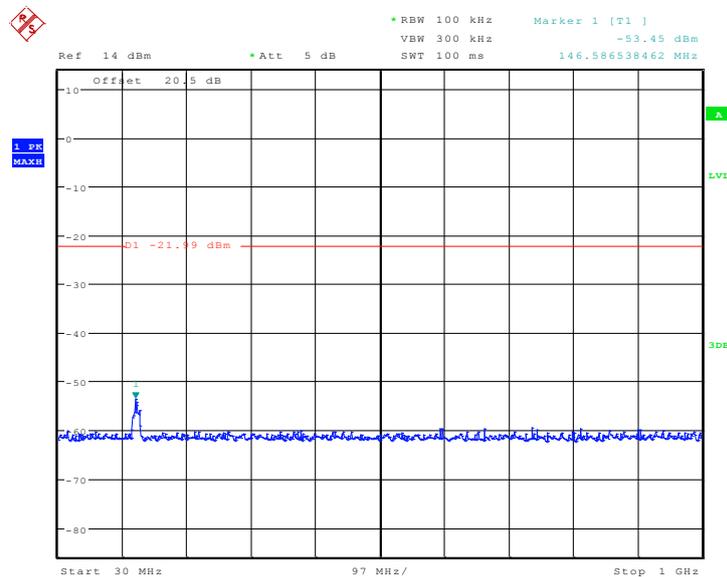
Date: 29.NOV.2010 17:49:57

Fig. 39 Conducted Spurious Emission (802.11g, Ch6, 1 GHz-26 GHz)



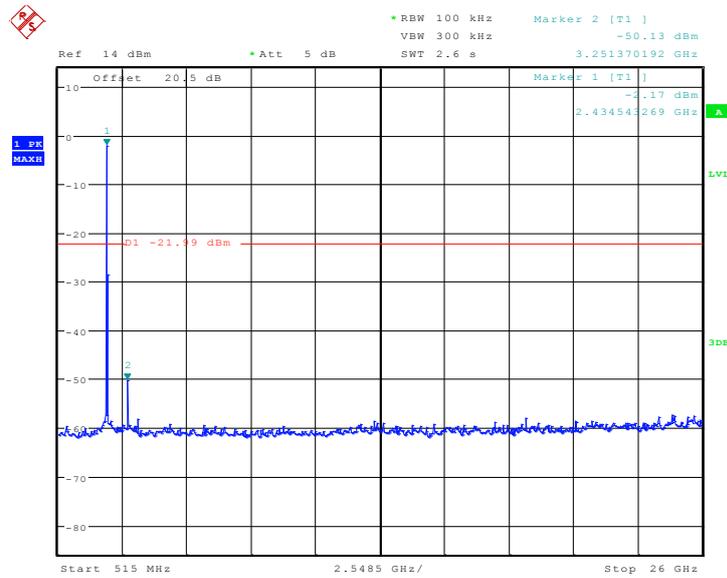
Date: 29.NOV.2010 17:59:22

Fig. 40 Conducted Spurious Emission (802.11g, Ch11, Center Frequency)



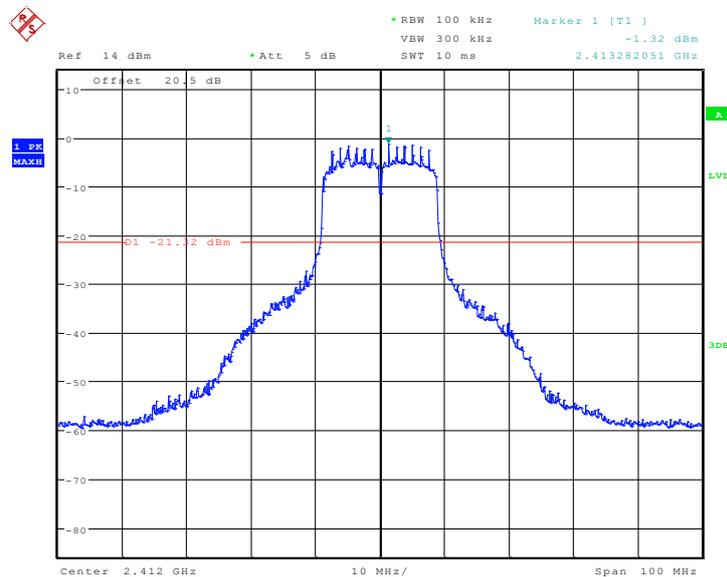
Date: 29.NOV.2010 18:00:55

Fig. 41 Conducted Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)



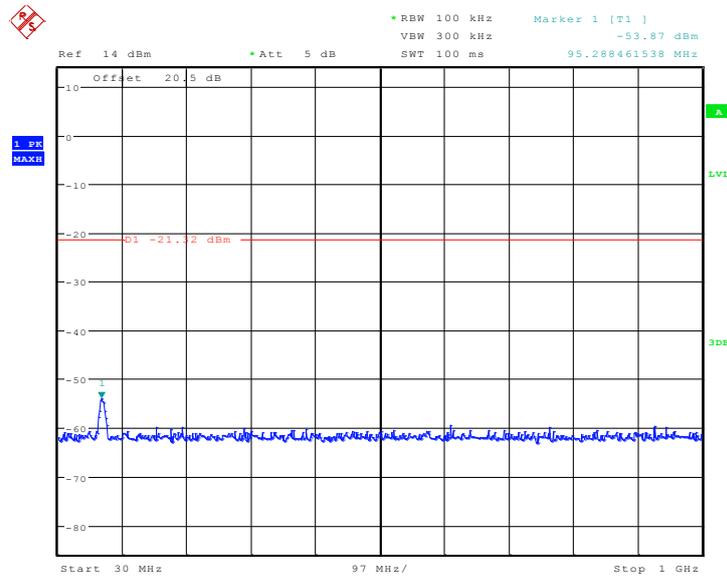
Date: 29.NOV.2010 18:02:54

Fig. 42 Conducted Spurious Emission (802.11g, Ch11, 1 GHz-26 GHz)



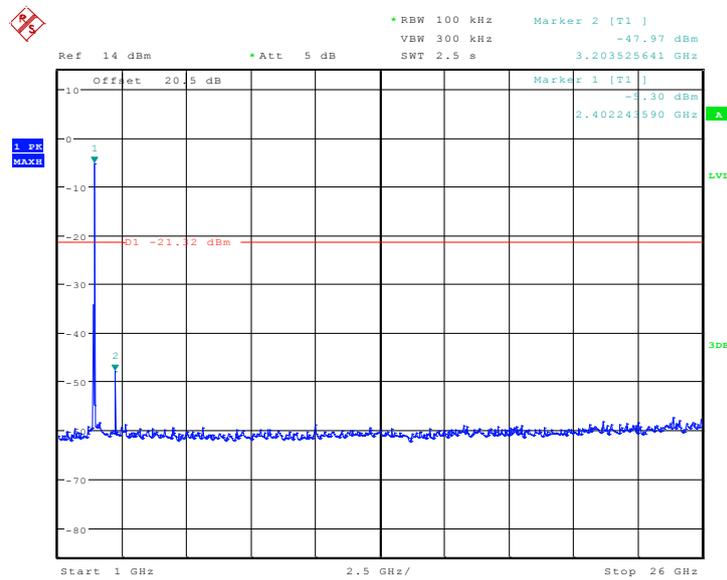
Date: 29.NOV.2010 18:15:48

Fig. 43 Conducted Spurious Emission (802.11n, 20MHz, Ch1, Center Frequency)



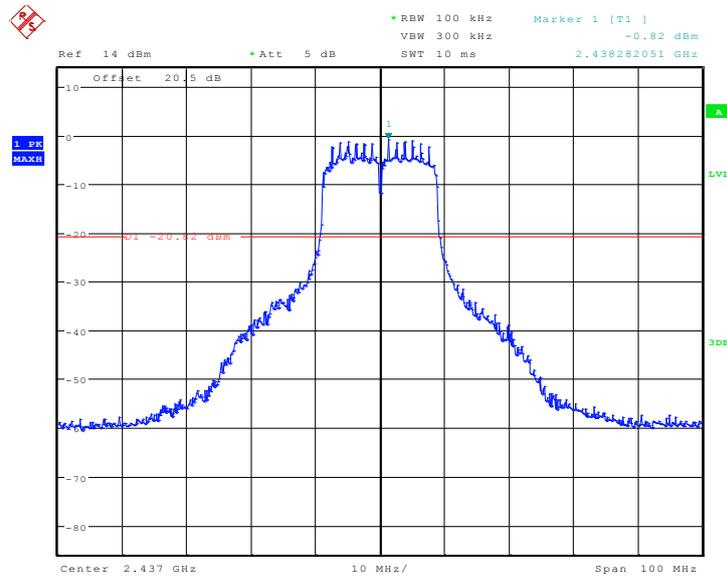
Date: 29.NOV.2010 18:16:45

Fig. 44 Conducted Spurious Emission (802.11n, 20MHz, Ch1, 30 MHz-1 GHz)



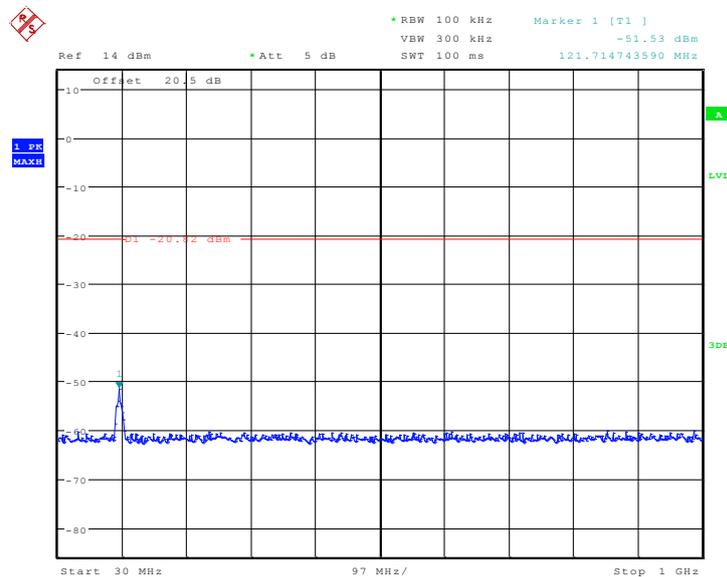
Date: 29.NOV.2010 18:18:12

Fig. 45 Conducted Spurious Emission (802.11n, 20MHz, Ch1, 1 GHz-26 GHz)



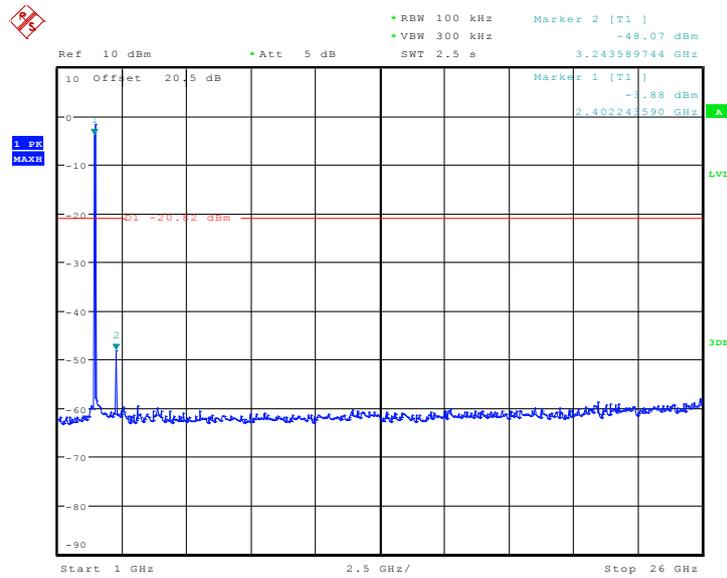
Date: 29.NOV.2010 18:20:37

Fig. 46 Conducted Spurious Emission (802.11n, 20MHz, Ch6, Center Frequency)



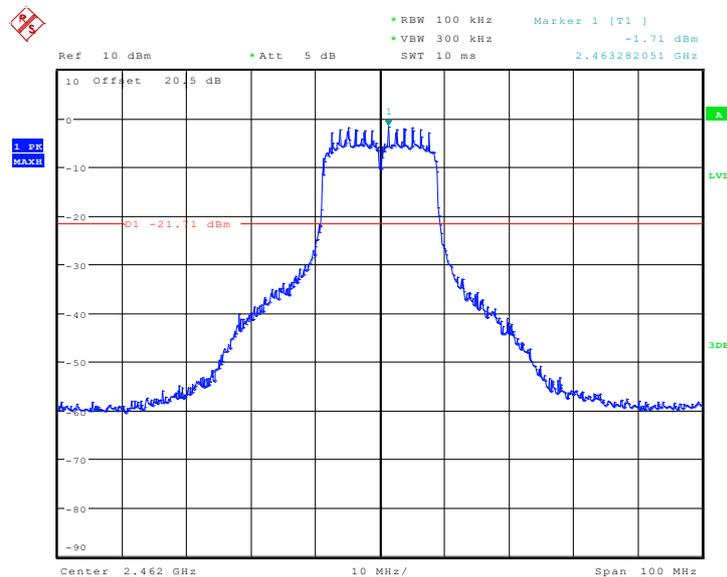
Date: 29.NOV.2010 18:21:47

Fig. 47 Conducted Spurious Emission (802.11n, 20MHz, Ch6, 30 MHz-1 GHz)



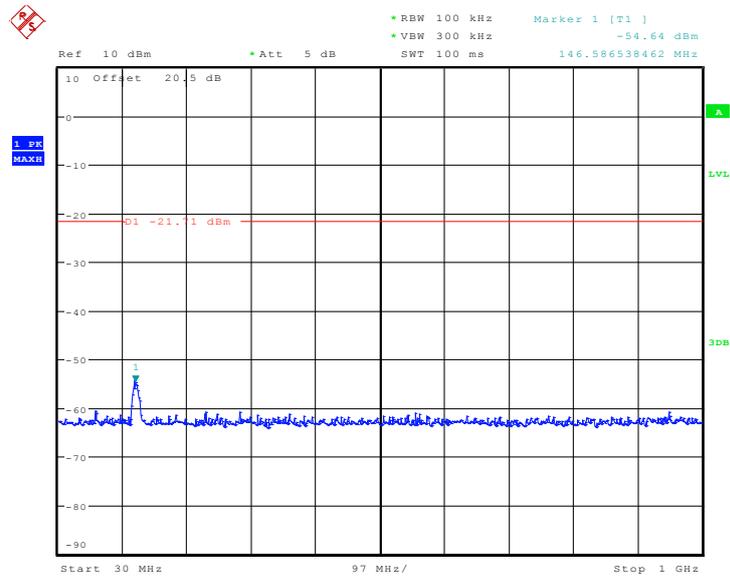
Date: 29.NOV.2010 18:30:52

Fig. 48 Conducted Spurious Emission (802.11n, 20MHz, Ch6, 1 GHz-26 GHz)



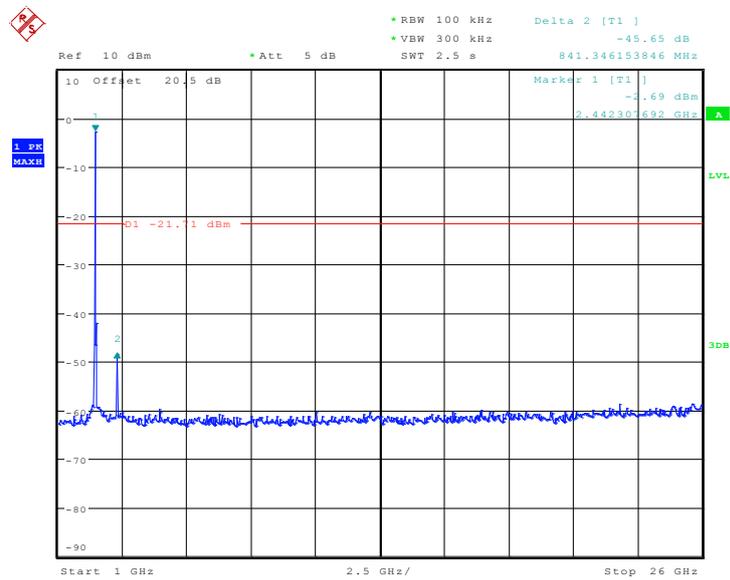
Date: 29.NOV.2010 18:34:06

Fig. 49 Conducted Spurious Emission (802.11n, 20MHz, Ch11, Center Frequency)



Date: 29.NOV.2010 18:35:14

Fig. 50 Conducted Spurious Emission (802.11n, 20MHz, Ch11, 30 MHz-1 GHz)



Date: 29.NOV.2010 18:36:33

Fig. 51 Conducted Spurious Emission (802.11n, 20MHz, Ch11, 1 GHz-26 GHz)

A.6.2 Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

The measurement is made according to ANSI C63.4 and KDB558074.

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

Measurement Results:

802.11b&g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.43GHz	Fig.52	P
	1	30 MHz ~1 GHz	Fig.53	P
		1 GHz ~ 4 GHz	Fig.54	P
		4 GHz ~ 18 GHz	Fig.55	P
	6	30 MHz ~1 GHz	Fig.56	P
		1 GHz ~ 4 GHz	Fig.57	P
		4 GHz ~ 18 GHz	Fig.58	P
	Power	2.45GHz ~2.5GHz	Fig.59	P
	11	30 MHz ~1 GHz	Fig.60	P
		1 GHz ~ 4 GHz	Fig.61	P
		4 GHz ~ 18 GHz	Fig.62	P
	802.11g	Power	2.38GHz~2.43GHz	Fig.63
1		30 MHz ~1 GHz	Fig.64	P
		1 GHz ~ 4 GHz	Fig.65	P
		4 GHz ~ 18 GHz	Fig.66	P
6		30 MHz ~1 GHz	Fig.67	P
		1 GHz ~ 4 GHz	Fig.68	P
		4 GHz ~ 18 GHz	Fig.69	P
Power		2.45GHz ~2.5GHz	Fig.70	P
11		30 MHz ~1 GHz	Fig.71	P
		1 GHz ~ 4 GHz	Fig.72	P
		4 GHz ~ 18 GHz	Fig.73	P
/		All channels	18 GHz~ 26 GHz	Fig.74

802.11n mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (20MHz)	Power	2.38GHz ~2.43GHz	Fig.75	P
	1	30 MHz ~1 GHz	Fig.76	P
		1 GHz ~ 4 GHz	Fig.77	P
		4 GHz ~ 18 GHz	Fig.78	P
	6	30 MHz ~1 GHz	Fig.79	P
		1 GHz ~ 4 GHz	Fig.80	P
		4 GHz ~ 18 GHz	Fig.81	P
	Power	2.45GHz ~2.5GHz	Fig.82	P
	11	30 MHz ~1 GHz	Fig.83	P
		1 GHz ~ 4 GHz	Fig.84	P
		4 GHz ~ 18 GHz	Fig.85	P

Conclusion: PASS

Measurement Results:

A "reference path loss" is established and the A_{Rp} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rp} = P_{Mea} + \text{Cable Loss} + \text{Antenna Gain}$$

802.11b

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P_{Mea} (dBuV/m)	Polarization
2412.456	90.53	-18.7	27.5	81.73	HORIZONTAL
2413.214	89.30	-18.7	27.5	80.50	VERTICAL
2407.886	87.68	-18.7	27.5	78.88	HORIZONTAL
2420.839	81.10	-18.7	27.5	72.30	VERTICAL
2420.845	67.59	-18.8	27.5	58.89	VERTICAL
2425.743	61.14	-18.8	27.5	52.44	HORIZONTAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P_{Mea} (dBuV/m)	Polarization
2446.894	91.08	-18.9	27.5	82.48	HORIZONTAL
2442.886	91.04	-18.9	27.5	82.44	VERTICAL
2438.878	90.97	-18.9	27.5	82.37	VERTICAL
2450.902	88.05	-18.7	27.5	79.25	VERTICAL
2434.87	86.04	-18.9	27.5	77.44	VERTICAL
2454.91	56.59	-18.7	27.5	47.79	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P_{Mea} (dBuV/m)	Polarization
2474.95	91.01	-18.4	27.5	81.91	VERTICAL
2470.942	90.99	-18.4	27.5	81.89	VERTICAL
2478.958	90.99	-18.4	27.5	81.89	VERTICAL
2466.934	90.92	-18.6	27.5	82.02	VERTICAL
2482.966	77.63	-18.1	27.5	68.23	HORIZONTAL
2462.926	73.3	-18.6	27.5	64.4	HORIZONTAL

802.11g

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2414.83	91.05	-18.7	27.5	82.25	VERTICAL
2418.838	91.05	-18.7	27.5	82.25	VERTICAL
2406.814	90.97	-18.7	27.5	82.17	HORIZONTAL
2410.822	90.95	-18.7	27.5	82.15	VERTICAL
2422.846	90.9	-18.8	27.5	82.2	VERTICAL
2402.806	90.81	-18.7	27.5	82.01	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2450.902	91.23	-18.7	27.5	82.43	VERTICAL
2446.894	91.22	-18.9	27.5	82.62	HORIZONTAL
2442.886	91.2	-18.9	27.5	82.6	HORIZONTAL
2438.878	91.16	-18.9	27.5	82.56	HORIZONTAL
2434.87	91.11	-18.9	27.5	82.51	HORIZONTAL
2454.91	81.24	-18.7	27.5	72.44	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2478.958	91.11	-18.4	27.5	82.01	VERTICAL
2474.95	91.09	-18.4	27.5	81.99	VERTICAL
2466.934	91.08	-18.6	27.5	82.18	HORIZONTAL
2470.942	91.06	-18.4	27.5	81.96	HORIZONTAL
2482.966	90.92	-18.1	27.5	81.52	VERTICAL
2462.926	90.48	-18.6	27.5	81.58	HORIZONTAL

802.11n (20MHz)

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2418.838	90.96	-18.7	27.5	82.16	VERTICAL
2422.846	90.95	-18.8	27.5	82.25	VERTICAL
2414.83	90.94	-18.7	27.5	82.14	HORIZONTAL
2410.822	90.86	-18.7	27.5	82.06	HORIZONTAL
2406.814	90.81	-18.7	27.5	82.01	VERTICAL
2402.806	90.6	-18.7	27.5	81.8	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2450.902	91.2	-18.7	27.5	82.4	HORIZONTAL
2446.894	91.19	-18.9	27.5	82.59	HORIZONTAL
2438.878	91.11	-18.9	27.5	82.51	HORIZONTAL
2442.886	91.08	-18.9	27.5	82.48	VERTICAL
2434.87	91	-18.9	27.5	82.4	HORIZONTAL
2454.91	82.01	-18.7	27.5	73.21	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Gain	P _{Mea} (dBuV/m)	Polarization
2478.958	91.12	-18.4	27.5	82.02	HORIZONTAL
2466.934	91.09	-18.6	27.5	82.19	HORIZONTAL
2470.942	91.07	-18.4	27.5	81.97	VERTICAL
2474.95	91.07	-18.4	27.5	81.97	VERTICAL
2462.926	91.01	-18.6	27.5	82.11	HORIZONTAL
2482.966	91	-18.1	27.5	81.6	HORIZONTAL

Test graphs as below:

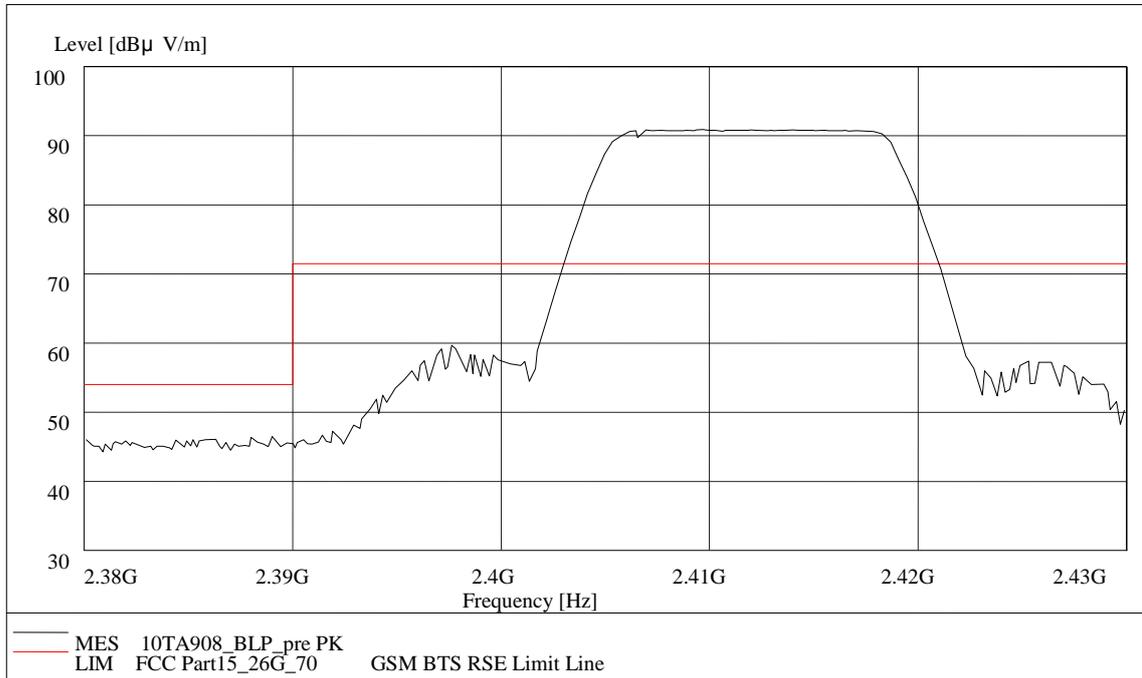


Fig. 52 Radiated Spurious Emission (Power): 802.11b, 2.38 GHz - 2.43GHz

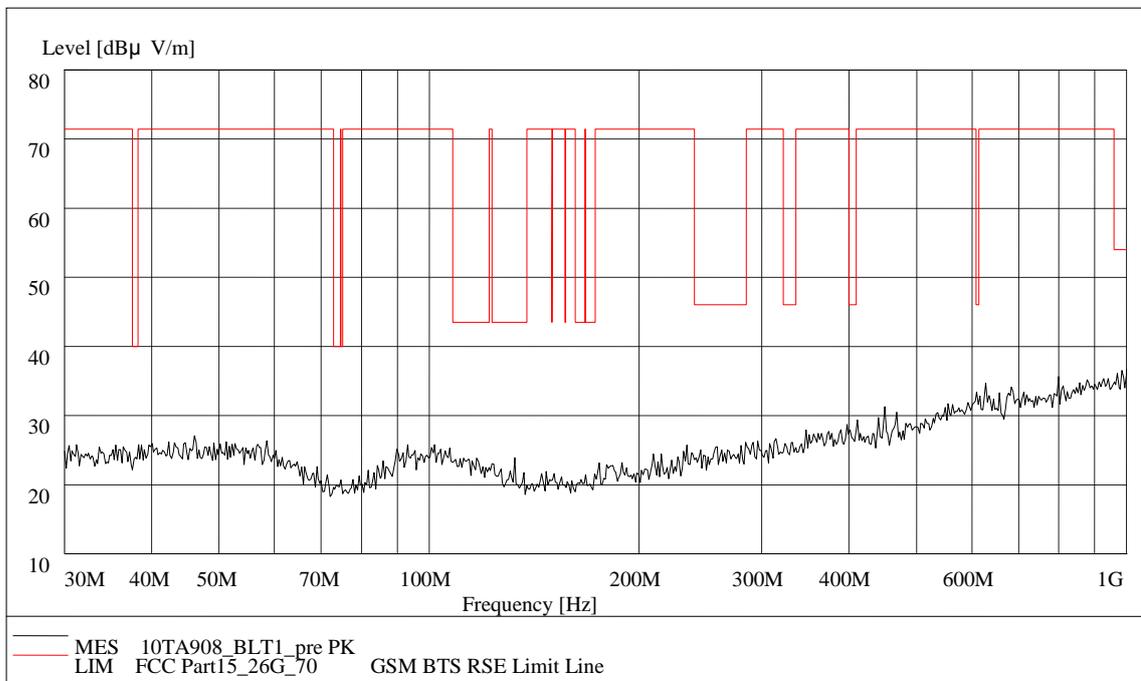


Fig. 53 Radiated Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)

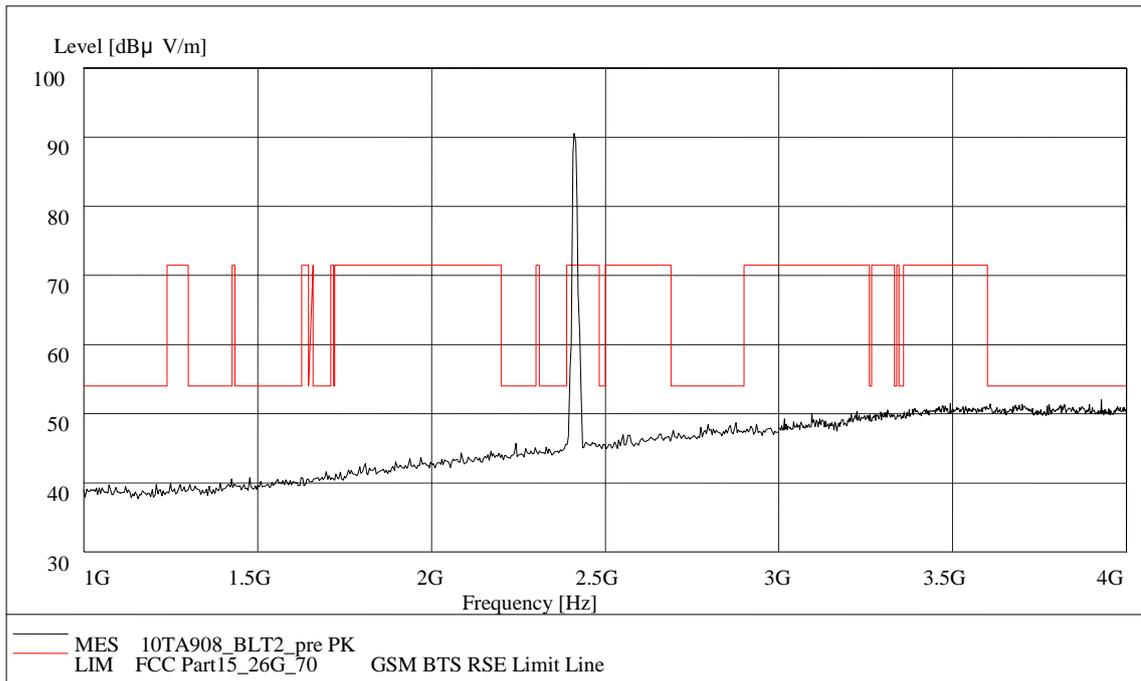


Fig. 54 Radiated Spurious Emission (802.11b, Ch1, 1 GHz-4 GHz)

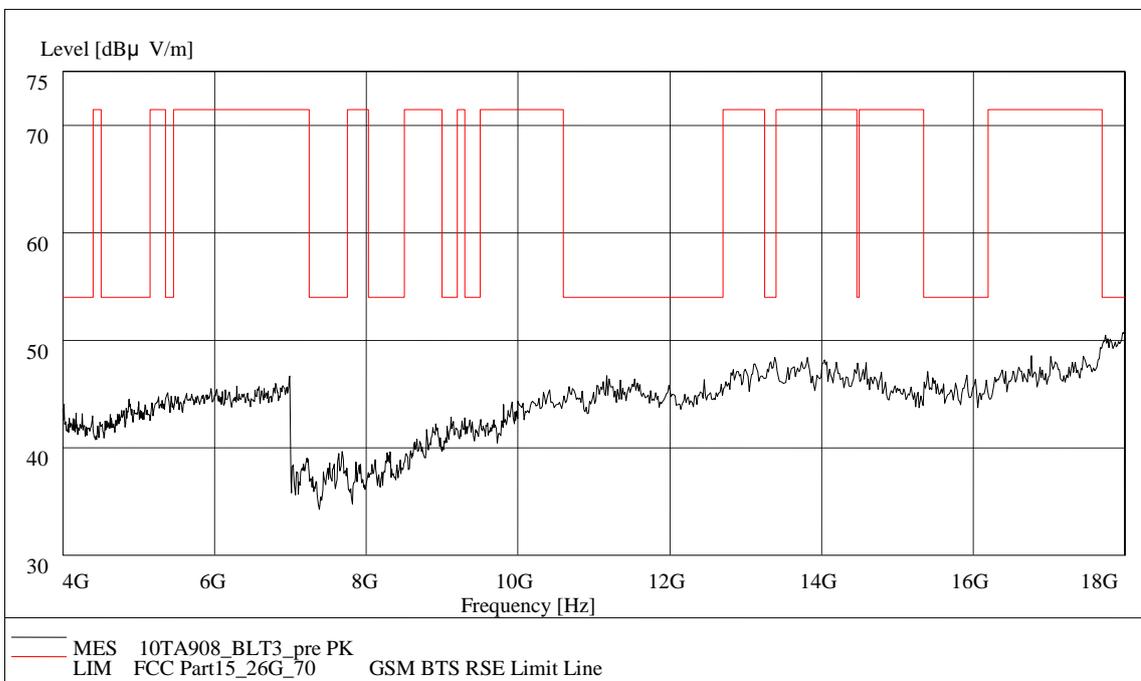


Fig. 55 Radiated Spurious Emission (802.11b, Ch1, 4 GHz-18 GHz)

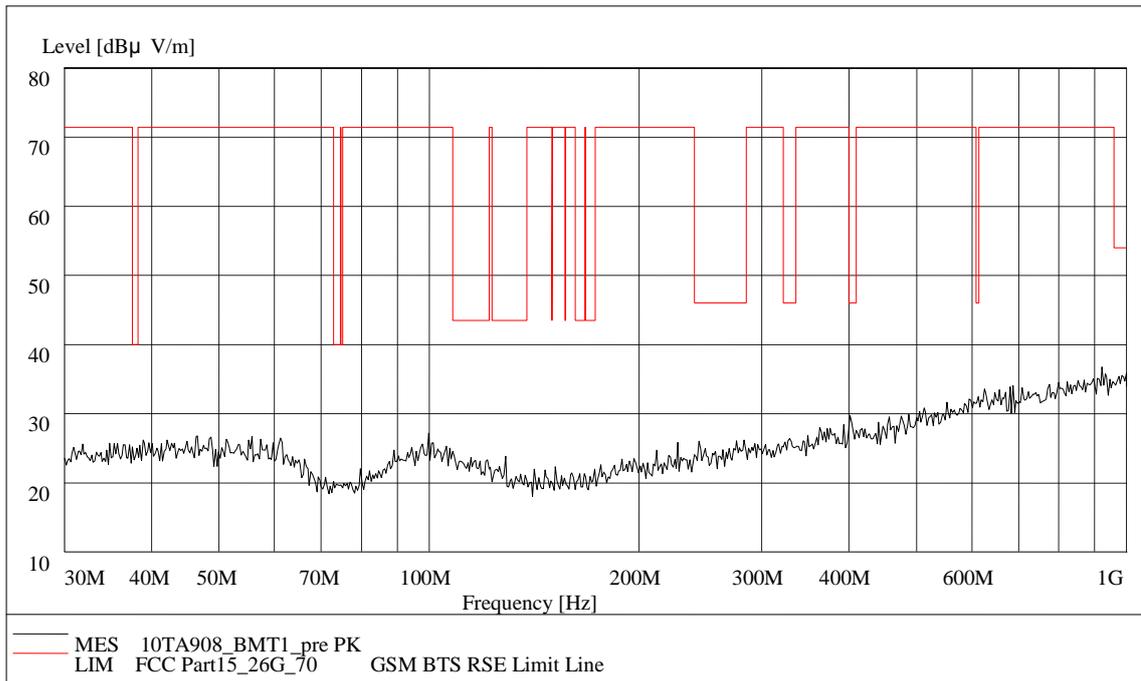


Fig. 56 Radiated Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)

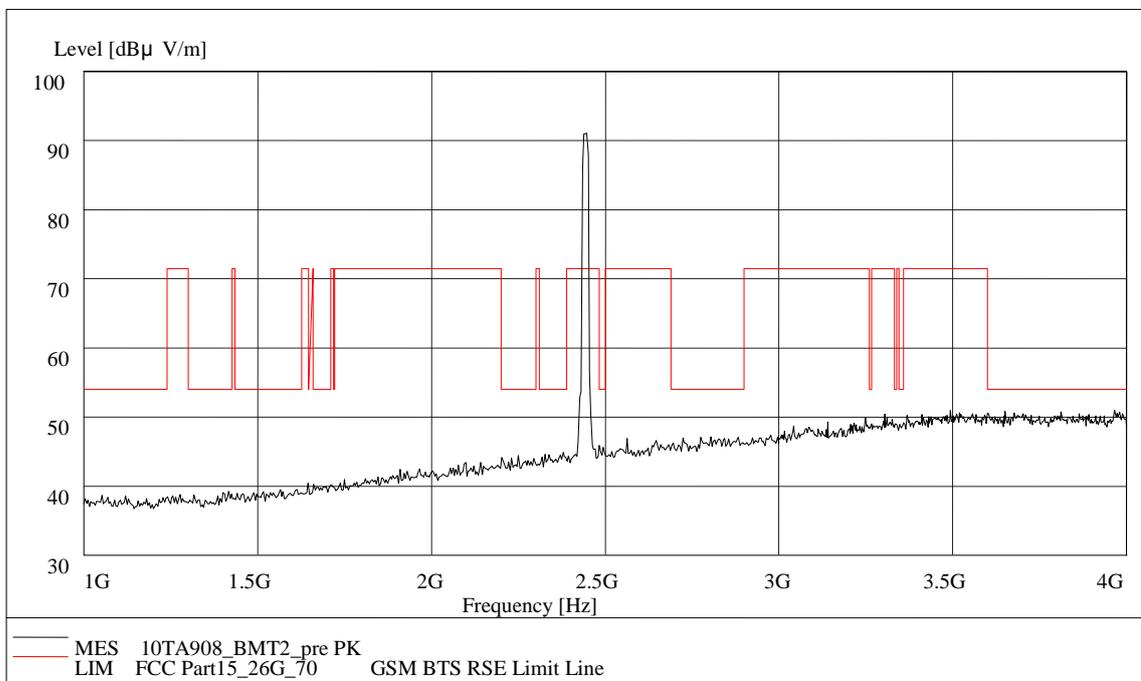


Fig. 57 Radiated Spurious Emission (802.11b, Ch6, 1 GHz-4 GHz)

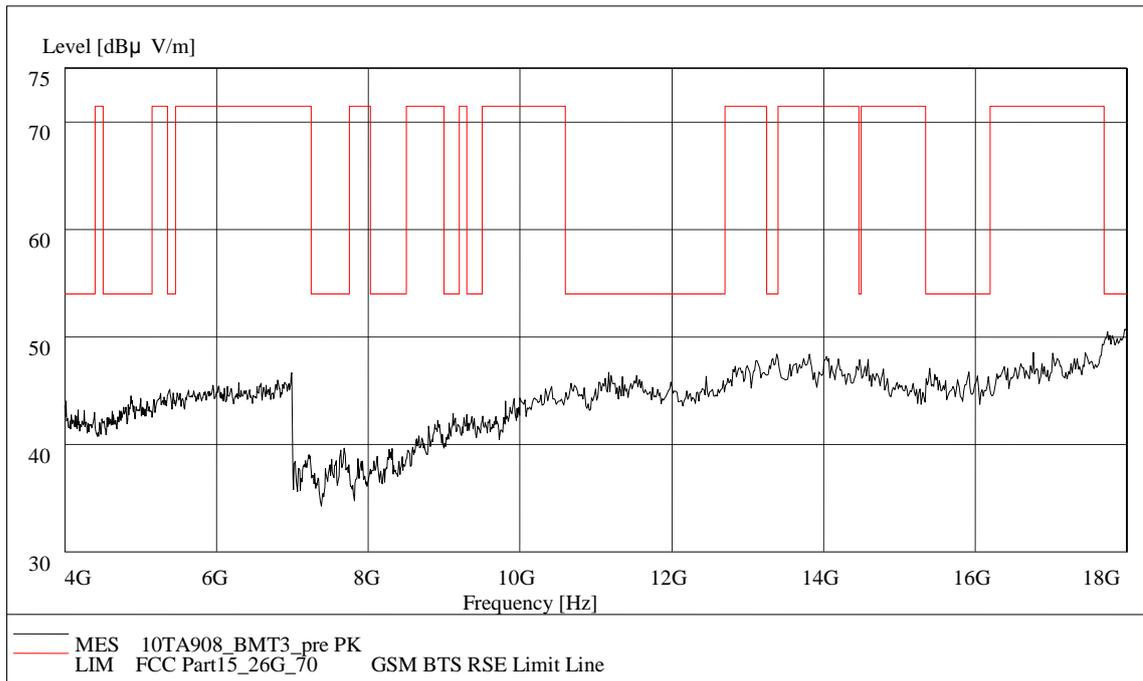


Fig. 58 Radiated Spurious Emission (802.11b, Ch6, 4 GHz-18 GHz)

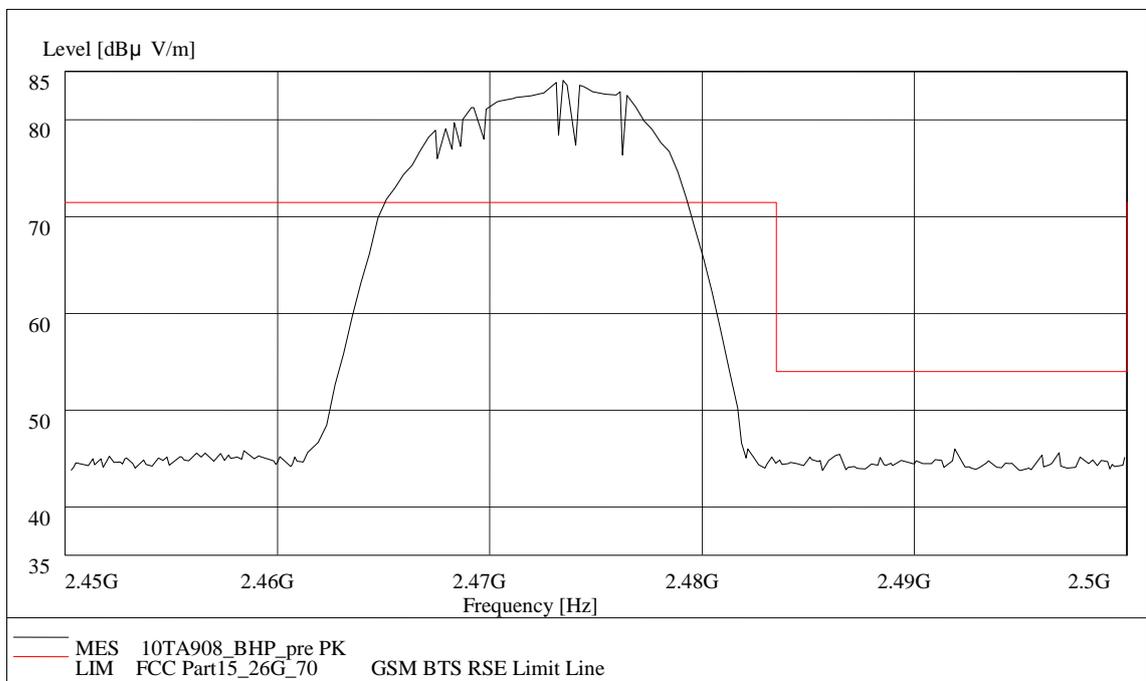


Fig. 59 Radiated Spurious Emission (Power): 802.11b, 2.45 GHz - 2.5GHz

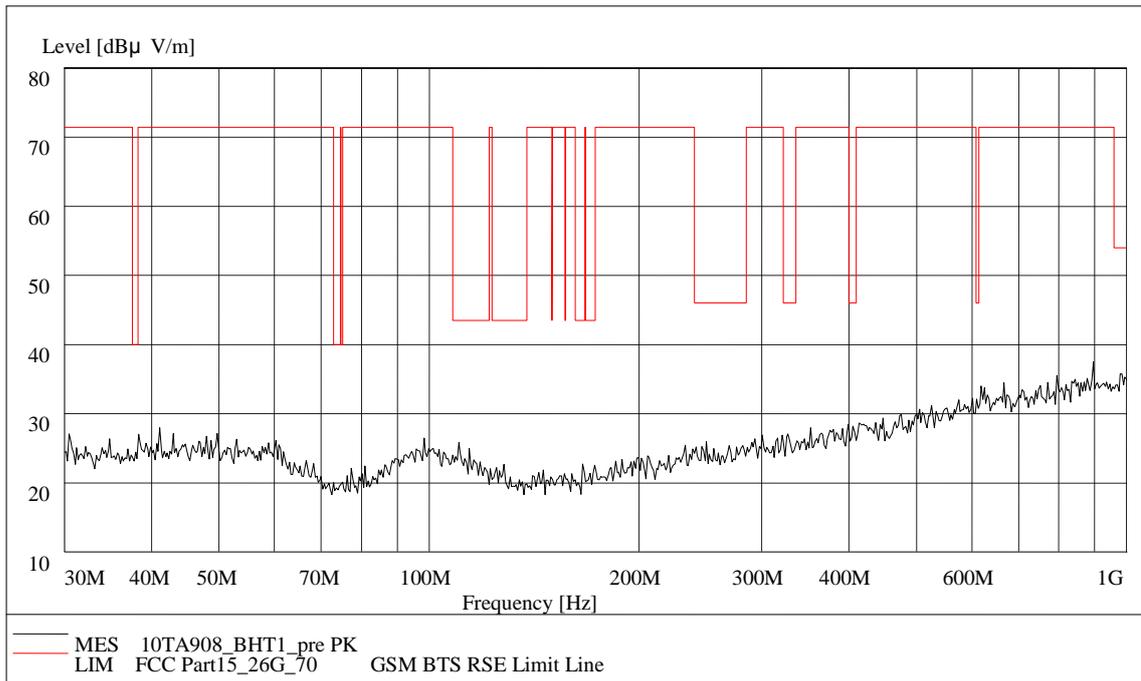


Fig. 60 Radiated Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)

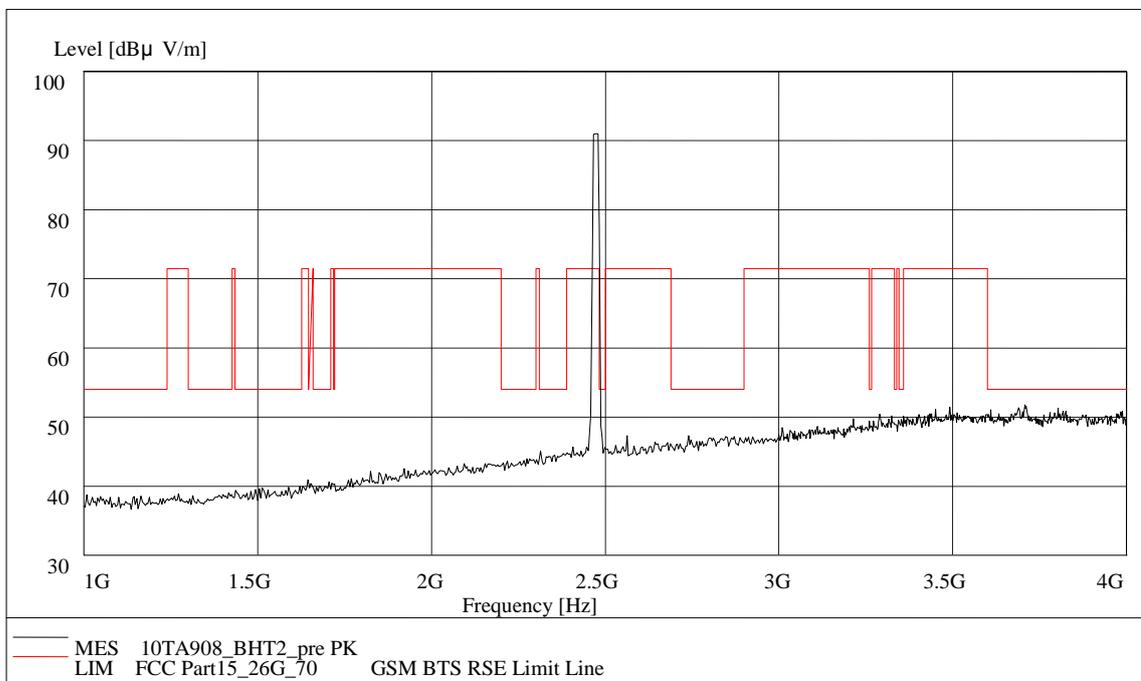


Fig. 61 Radiated Spurious Emission (802.11b, Ch11, 1 GHz-4 GHz)

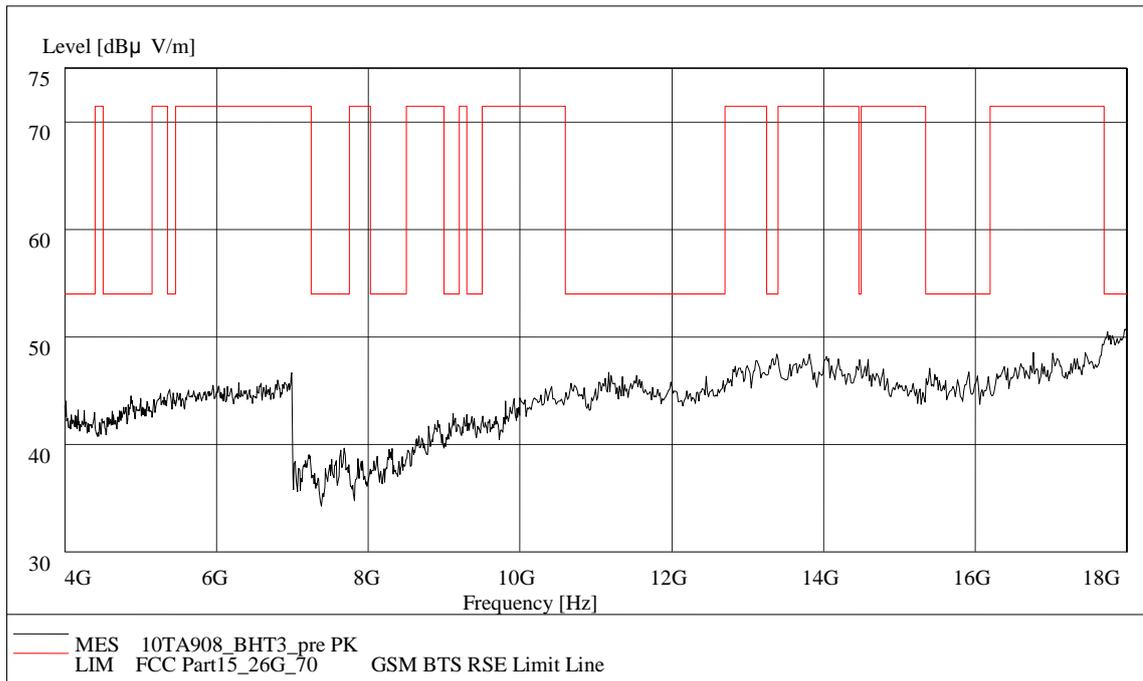


Fig. 62 Radiated Spurious Emission (802.11b, Ch11, 4 GHz-18 GHz)

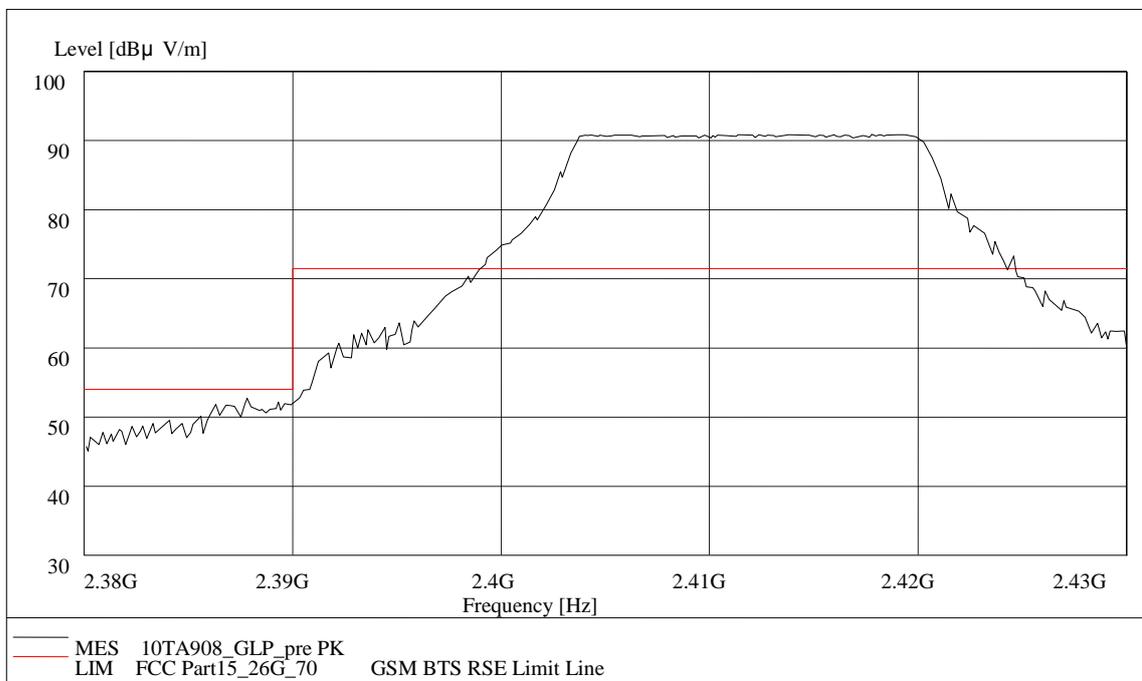


Fig. 63 Radiated Spurious Emission (Power): 802.11g, 2.38 GHz - 2.43GHz

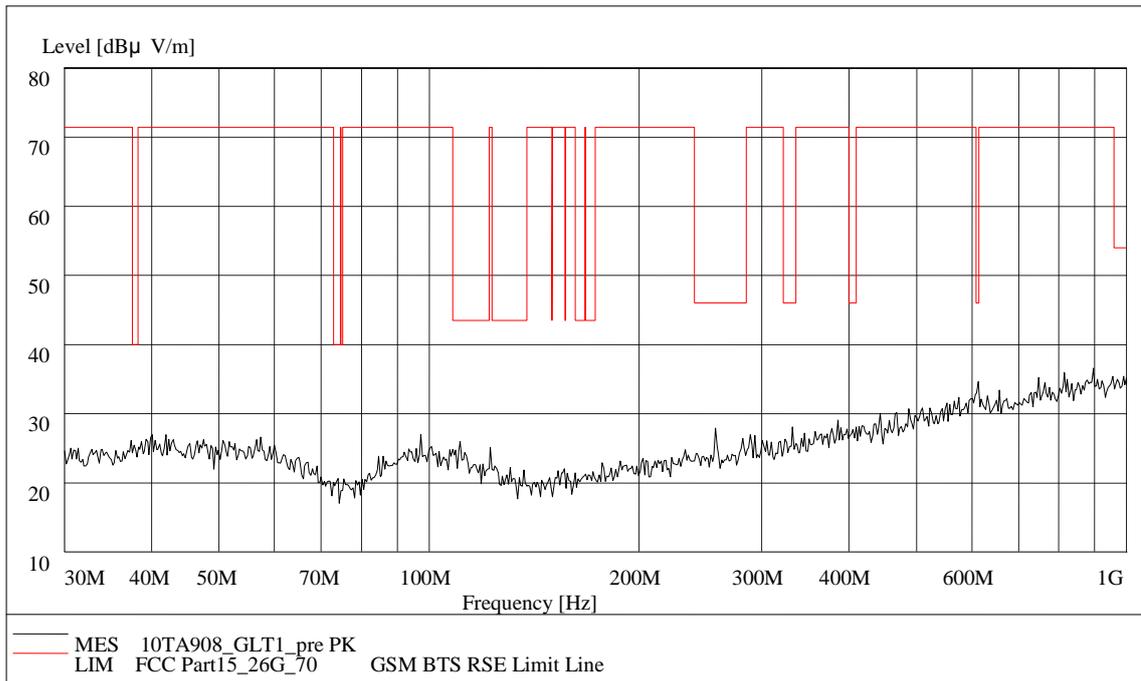


Fig. 64 Radiated Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)

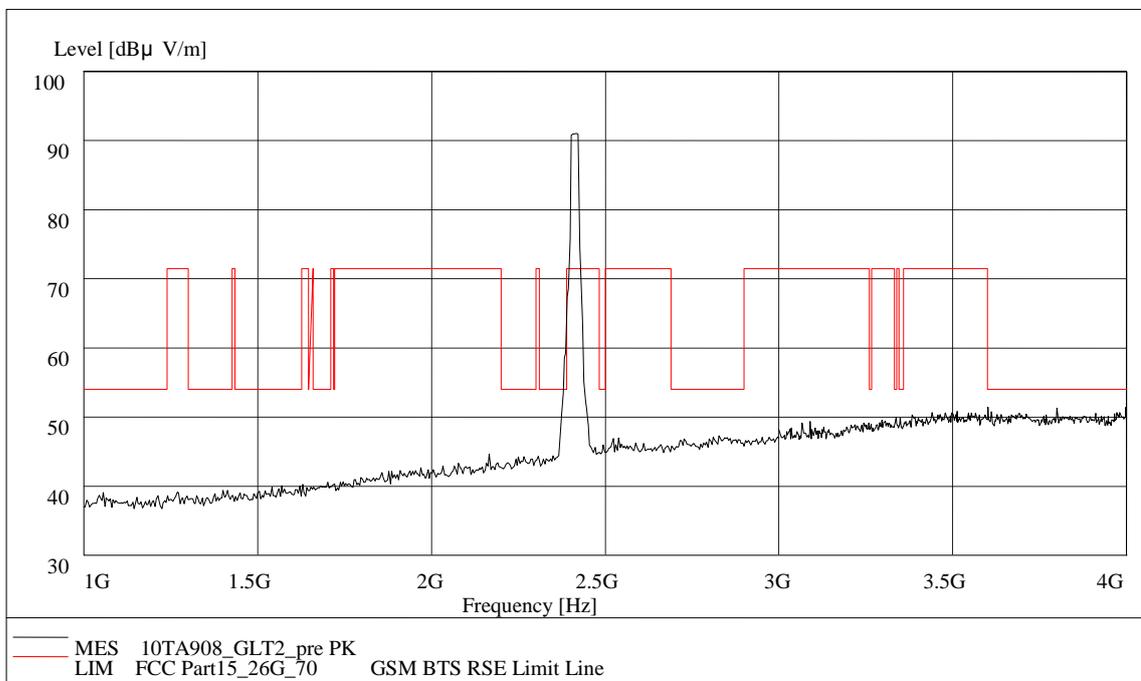


Fig. 65 Radiated Spurious Emission (802.11g, Ch1, 1 GHz-4 GHz)

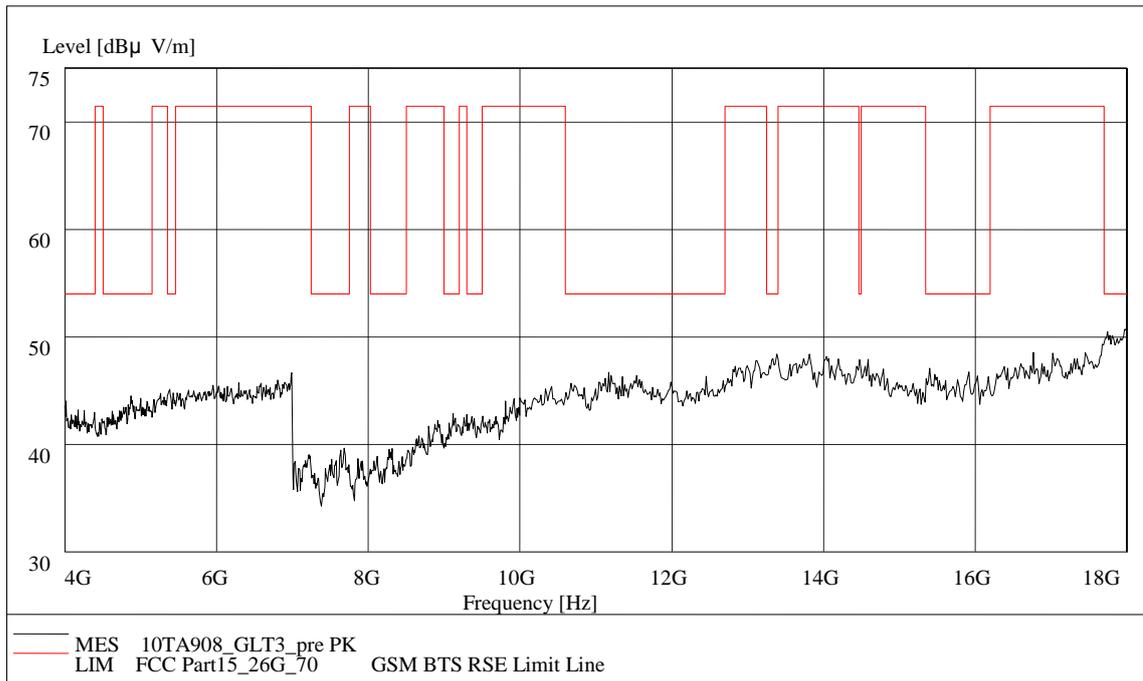


Fig. 66 Radiated Spurious Emission (802.11g, Ch1, 4 GHz-18 GHz)

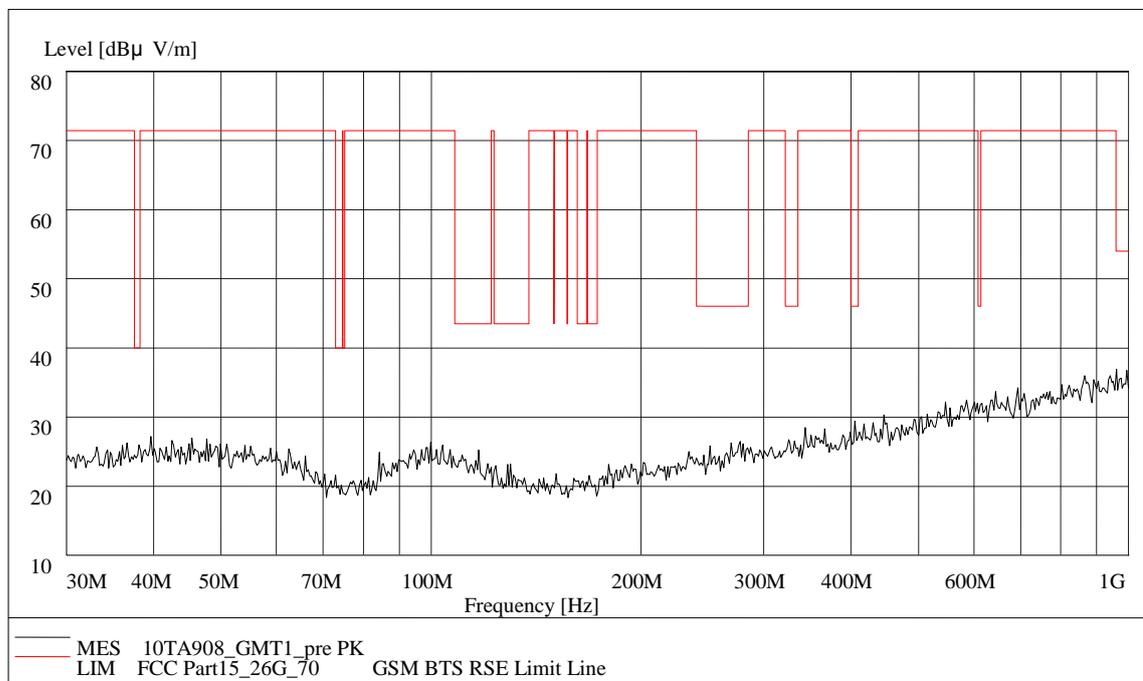


Fig. 67 Radiated Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)

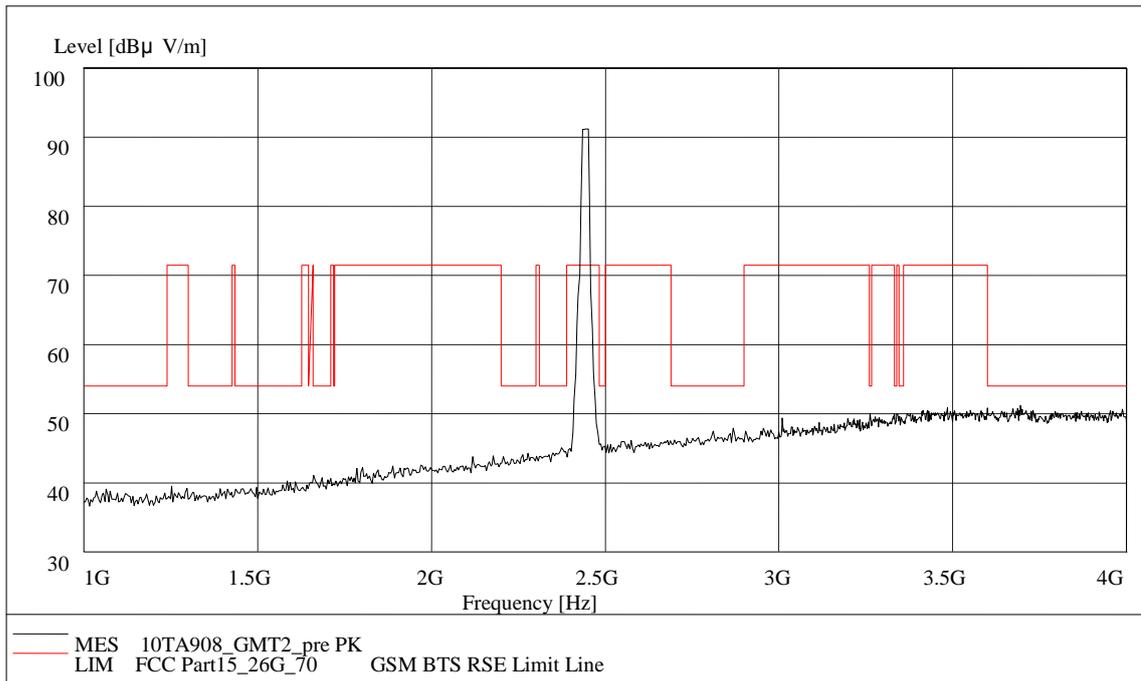


Fig. 68 Radiated Spurious Emission (802.11g, Ch6, 1 GHz-4 GHz)

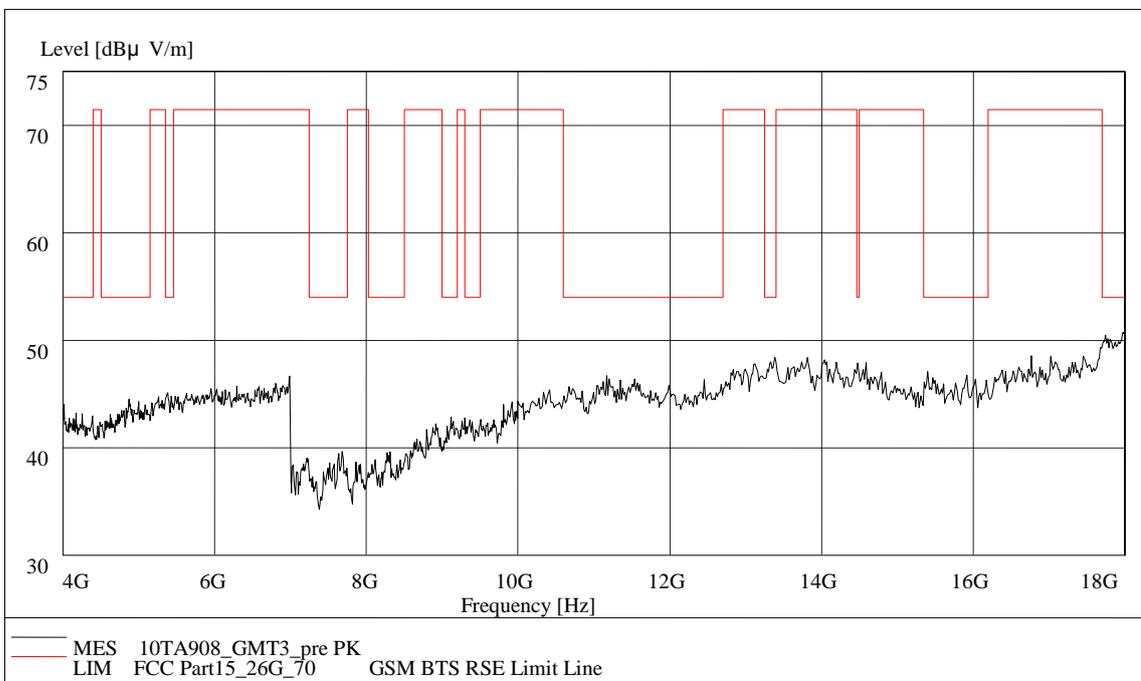


Fig. 69 Radiated Spurious Emission (802.11g, Ch6, 4 GHz-18 GHz)

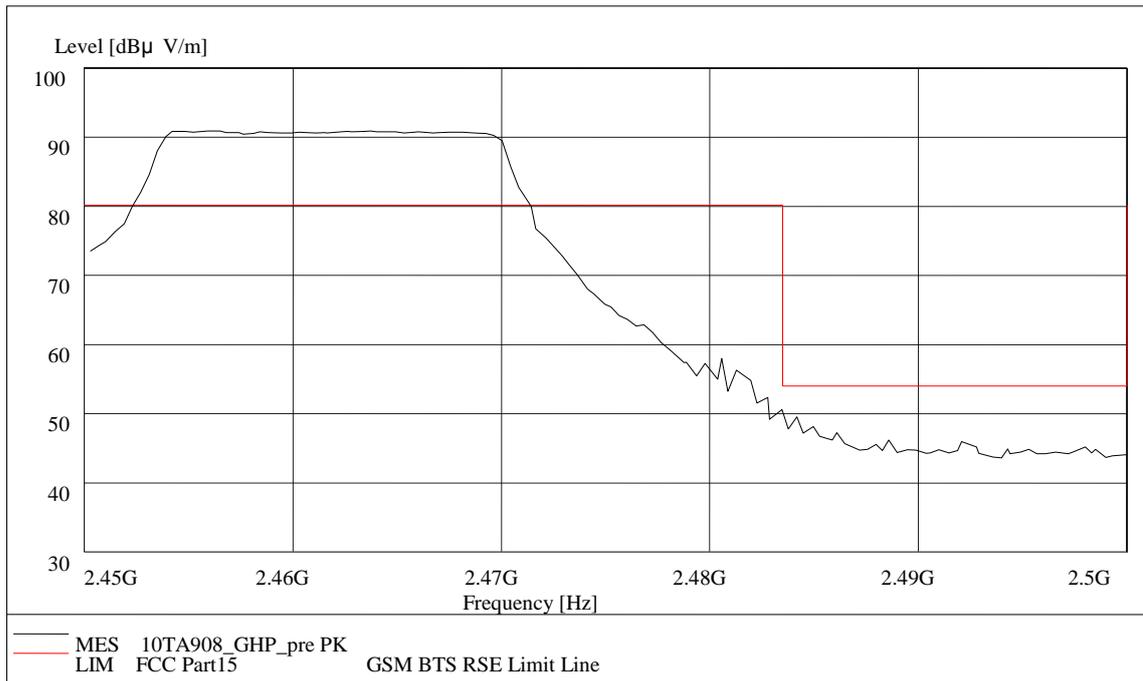


Fig. 70 Radiated Spurious Emission (Power): 802.11g, 2.45 GHz - 2.5GHz

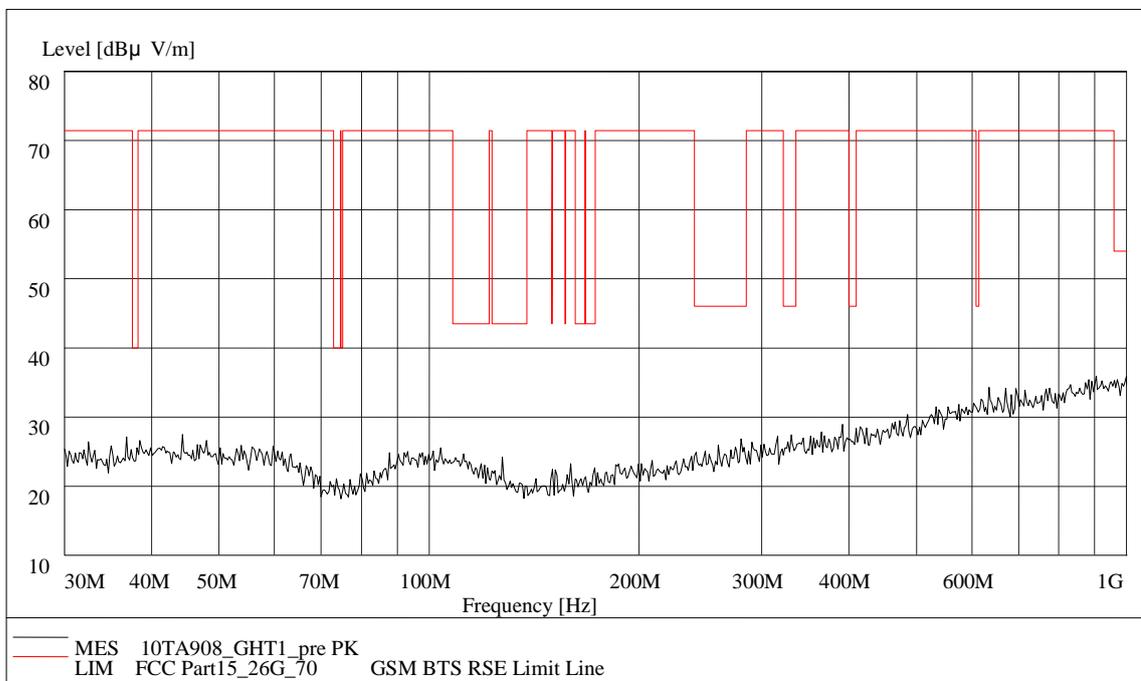


Fig. 71 Radiated Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)

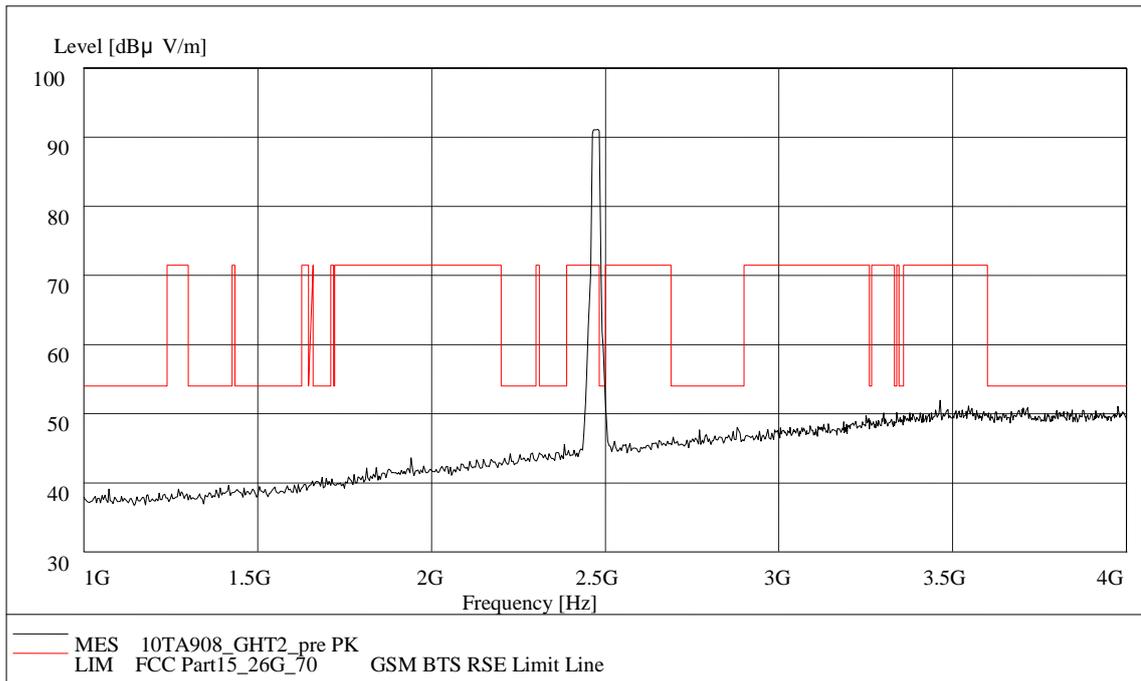


Fig. 72 Radiated Spurious Emission (802.11g, Ch11, 1 GHz-4 GHz)

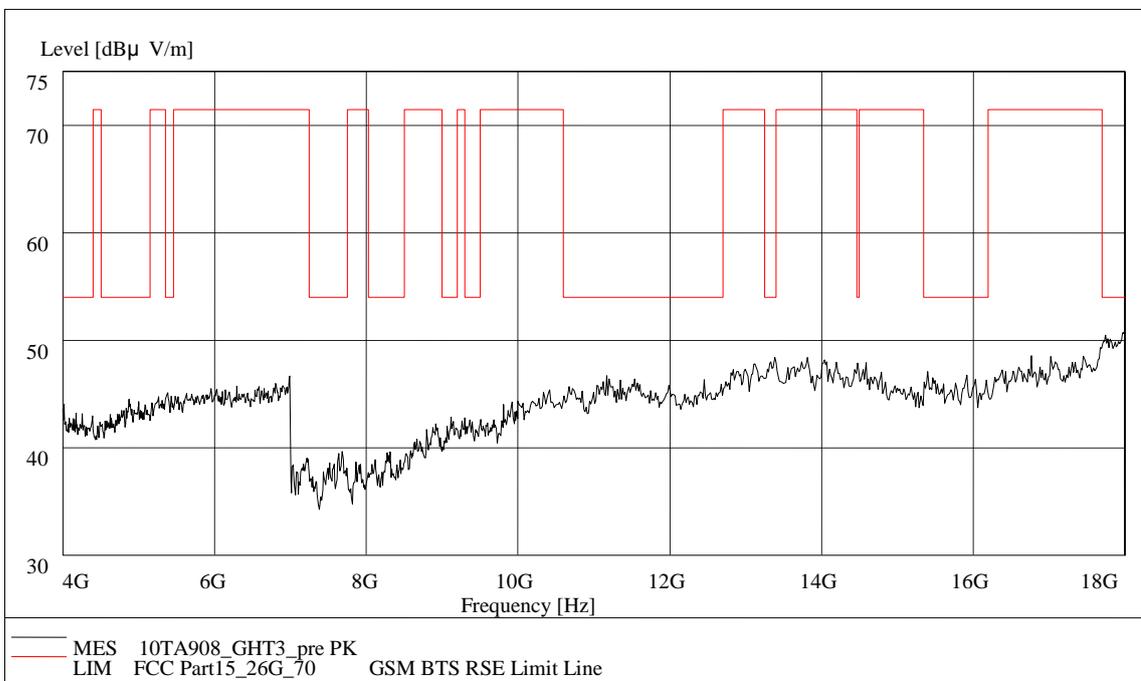


Fig. 73 Radiated Spurious Emission (802.11g, Ch11, 4 GHz-18 GHz)

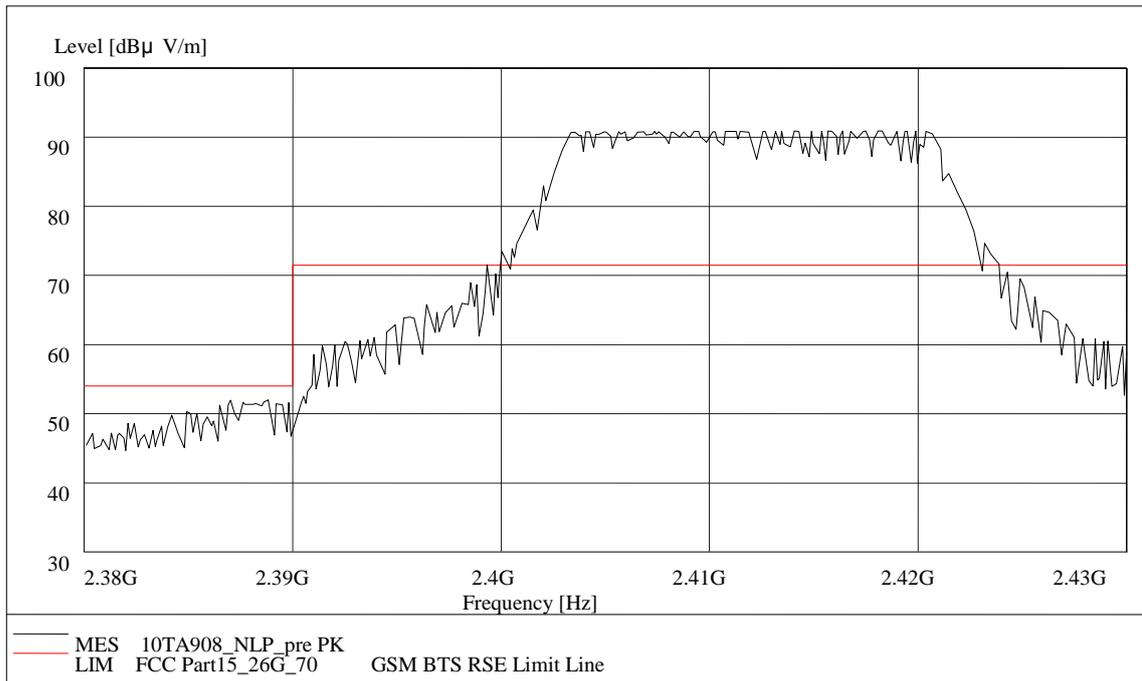


Fig. 74 Radiated Spurious Emission (Power): 802.11n, 20MHz, 2.38 GHz - 2.43GHz

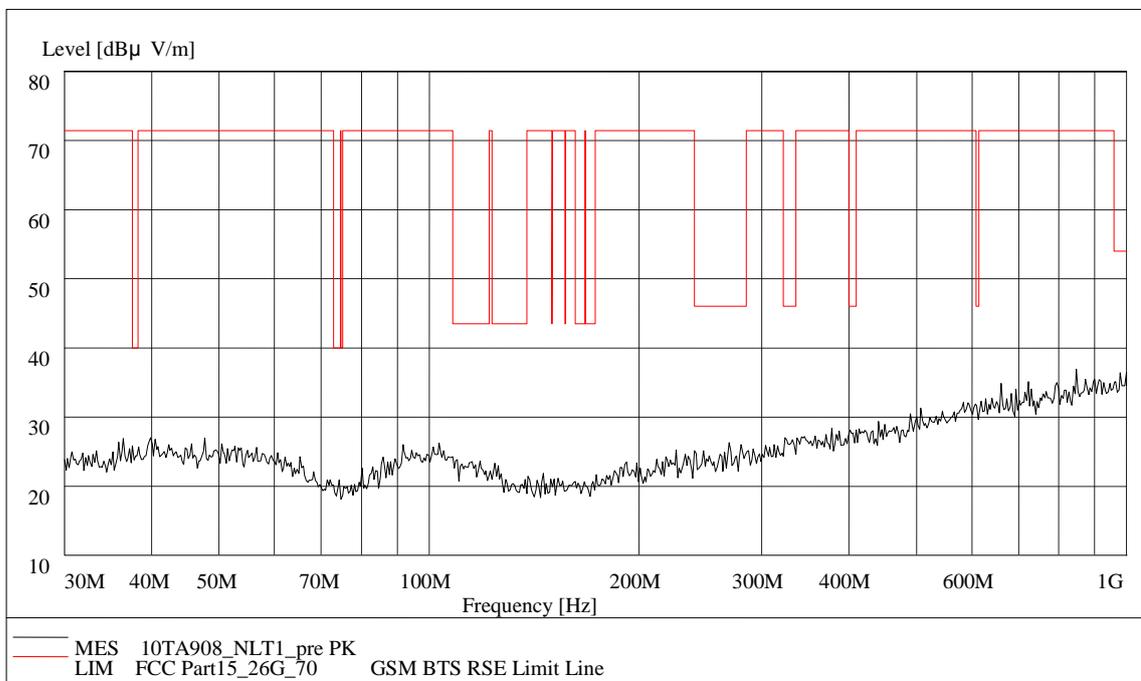


Fig. 75 Radiated Spurious Emission (802.11n, 20MHz, Ch1, 30 MHz-1 GHz)

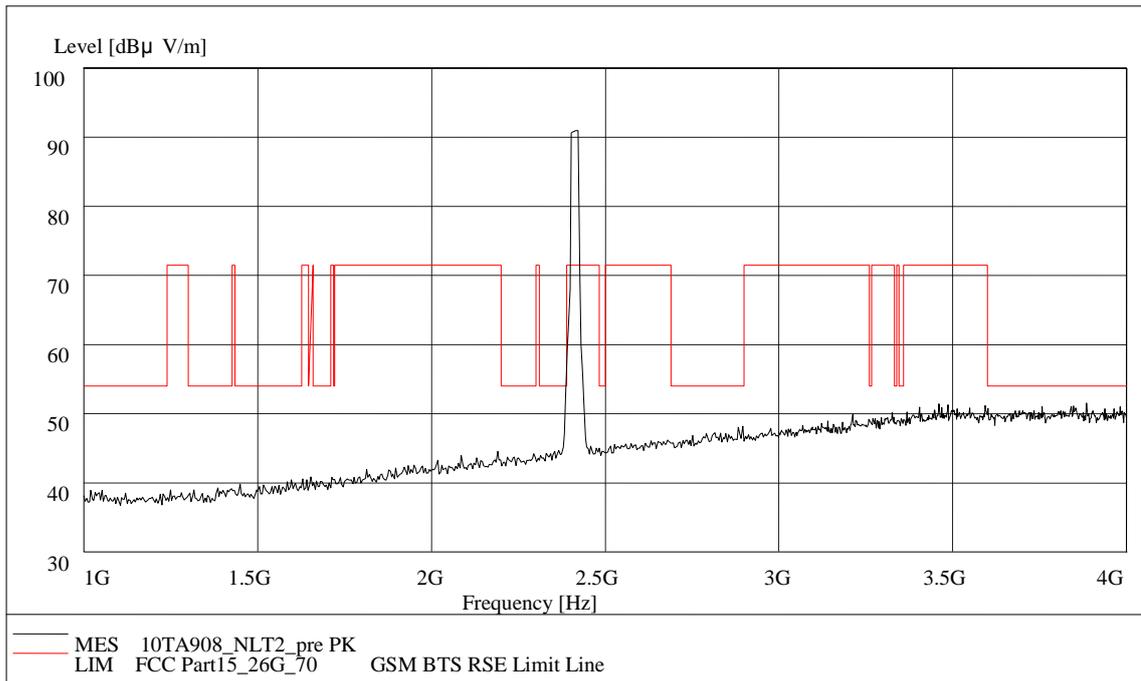


Fig. 76 Radiated Spurious Emission (802.11n, 20MHz, Ch1, 1 GHz-4 GHz)

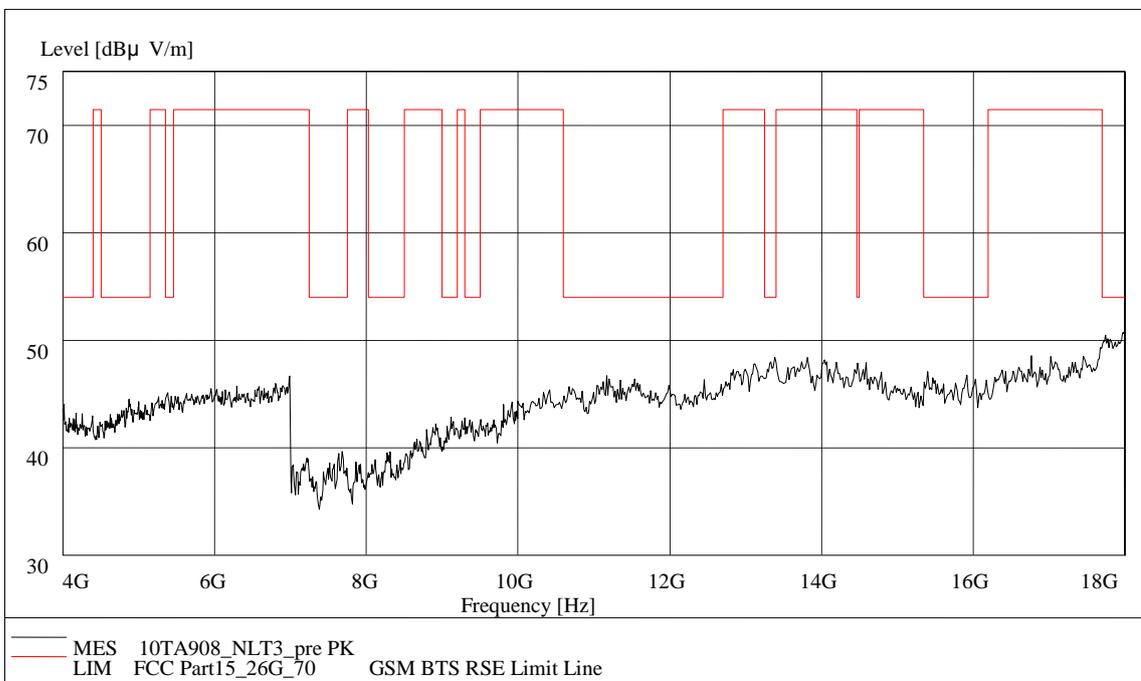


Fig. 77 Radiated Spurious Emission (802.11n, 20MHz, Ch1, 4 GHz-18 GHz)

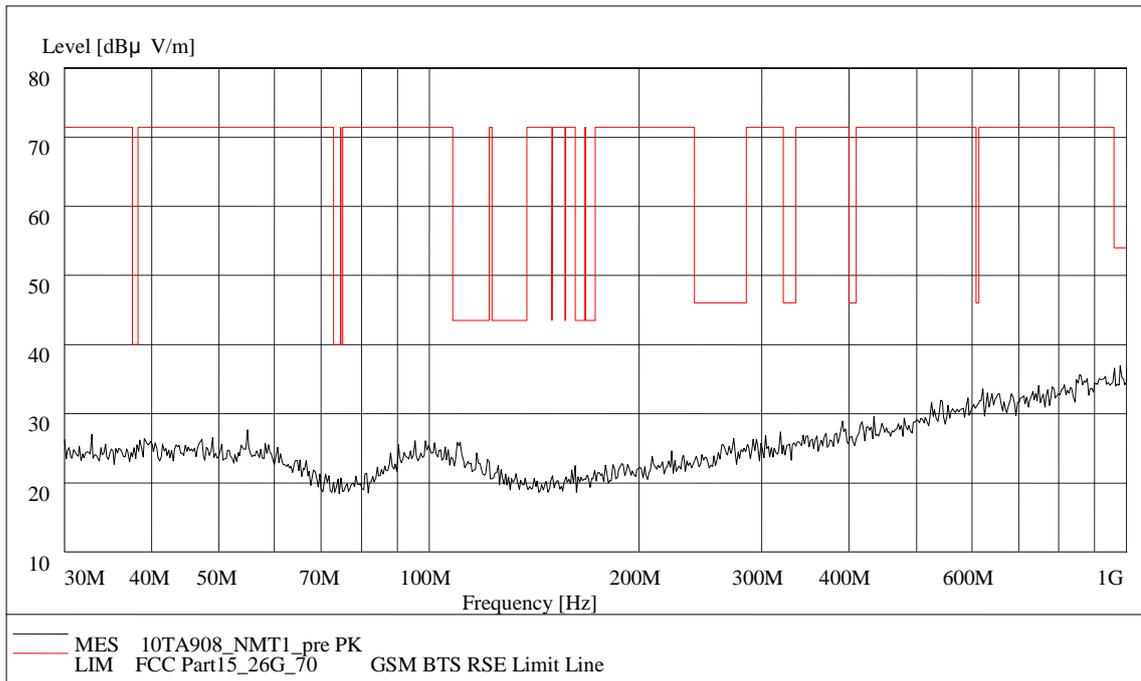


Fig. 78 Radiated Spurious Emission (802.11n, 20MHz, Ch6, 30 MHz-1 GHz)

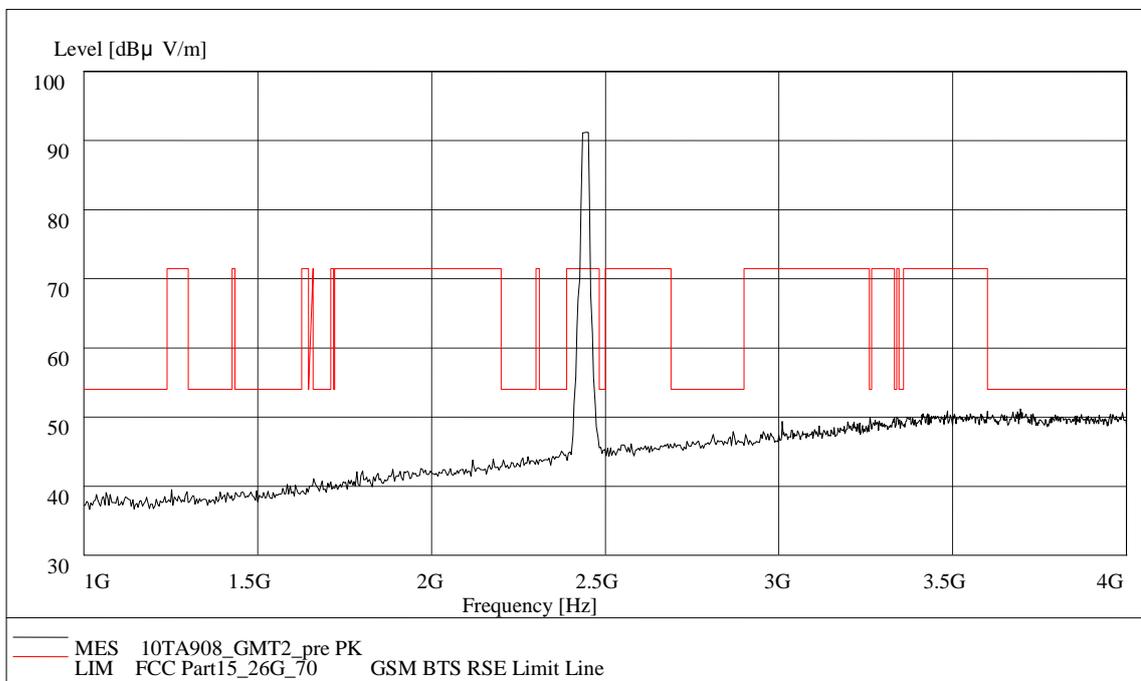


Fig. 79 Radiated Spurious Emission (802.11n, 20MHz, Ch6, 1 GHz-4 GHz)

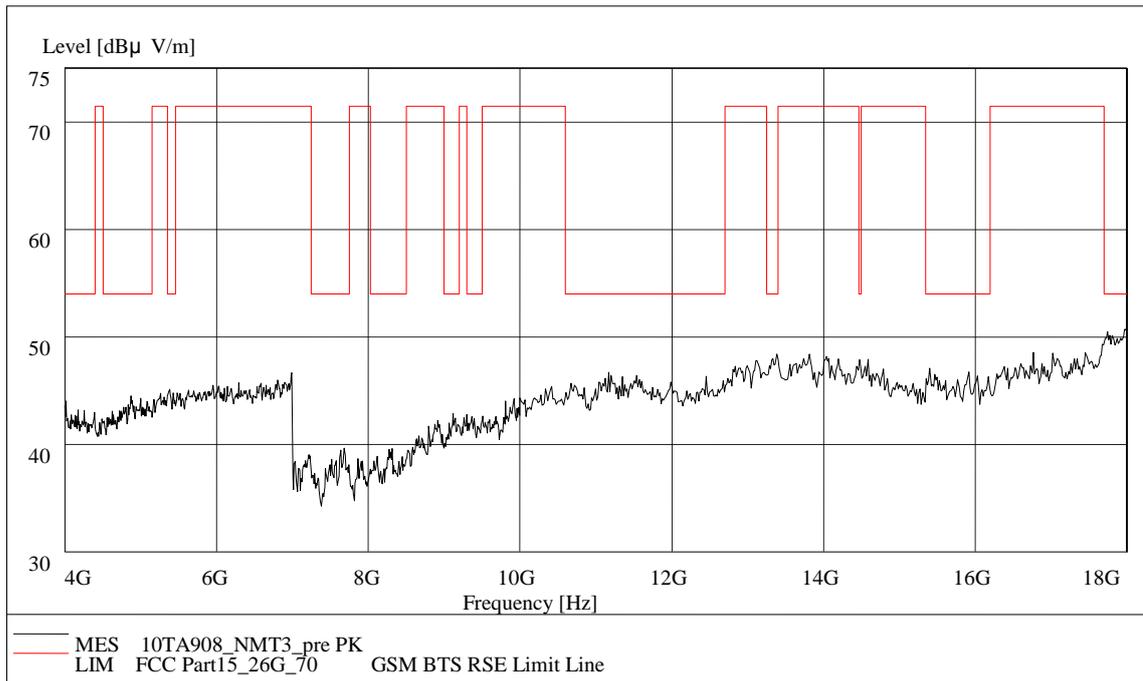


Fig. 80 Radiated Spurious Emission (802.11n, 20MHz, Ch6, 4 GHz-18 GHz)

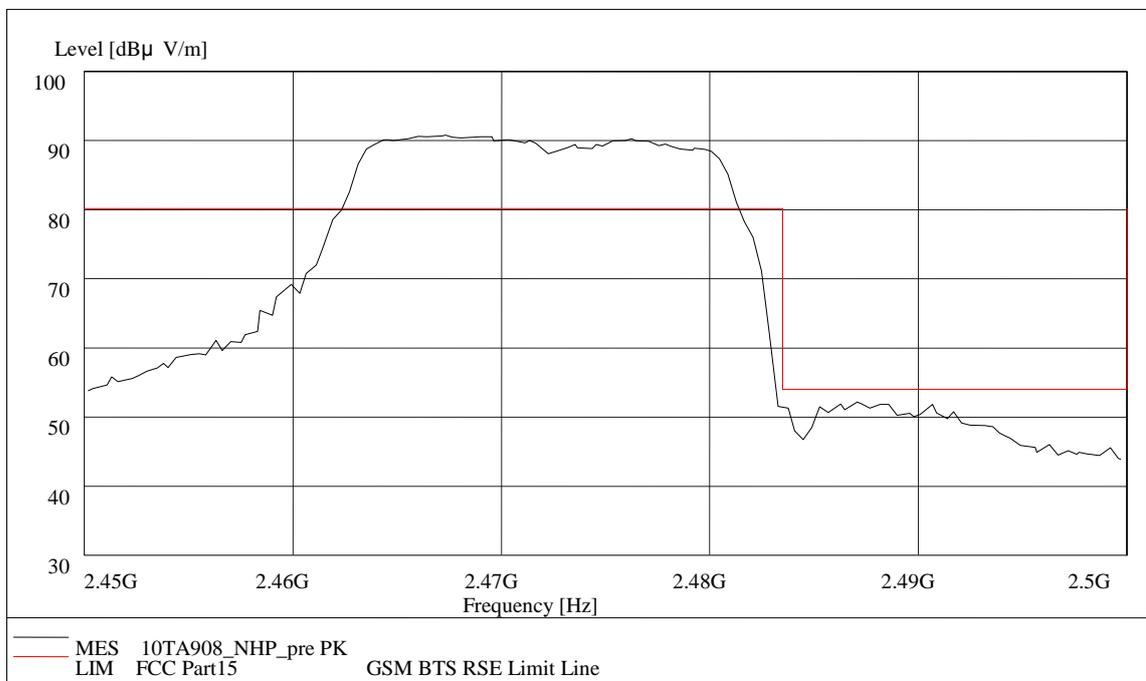


Fig. 81 Radiated Spurious Emission (Power): 802.11n, 20MHz, 2.45 GHz - 2.5GHz

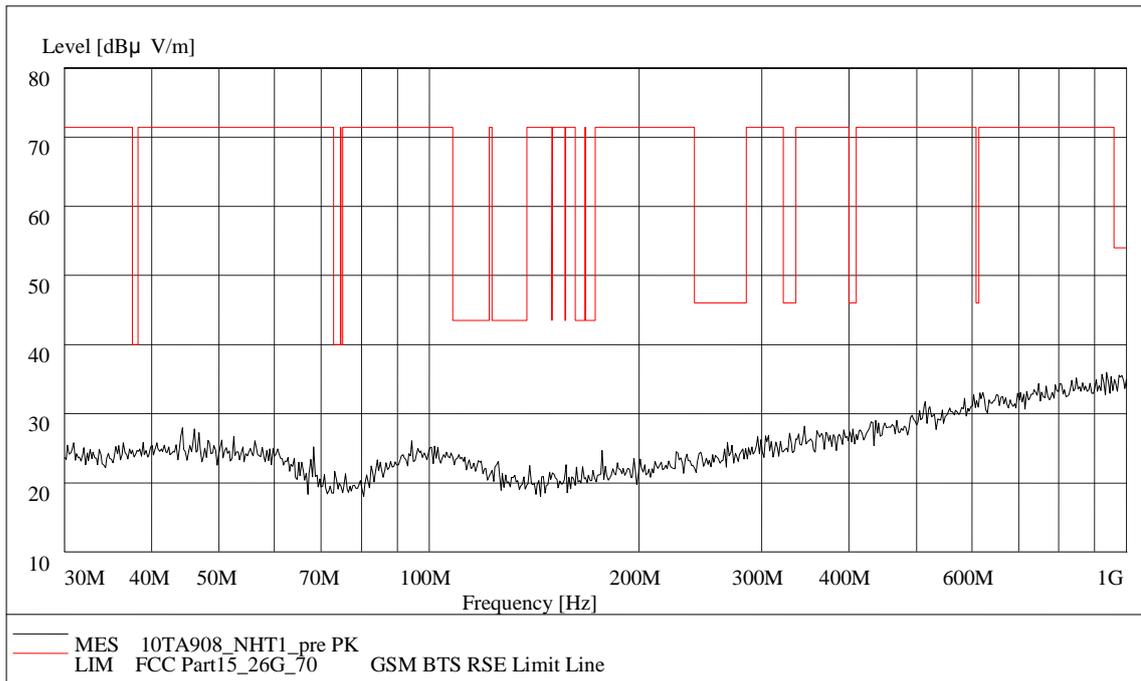


Fig. 82 Radiated Spurious Emission (802.11n, 20MHz Ch11, 30 MHz-1 GHz)

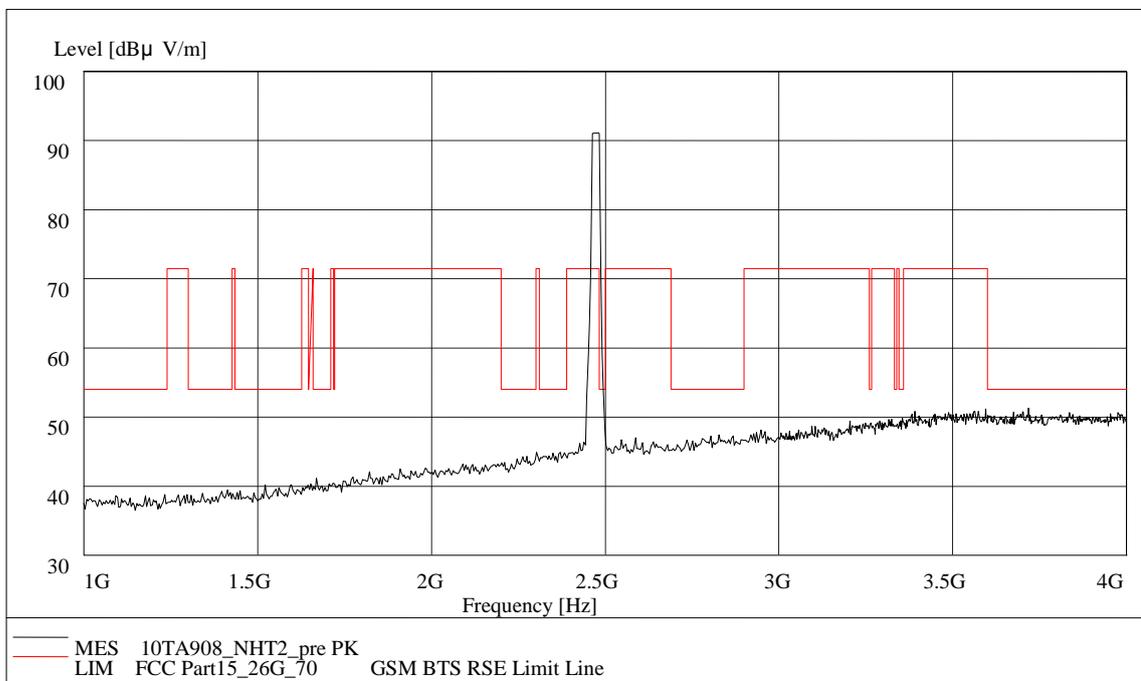


Fig. 83 Radiated Spurious Emission (802.11n, 20MHz Ch11, 1 GHz-4 GHz)

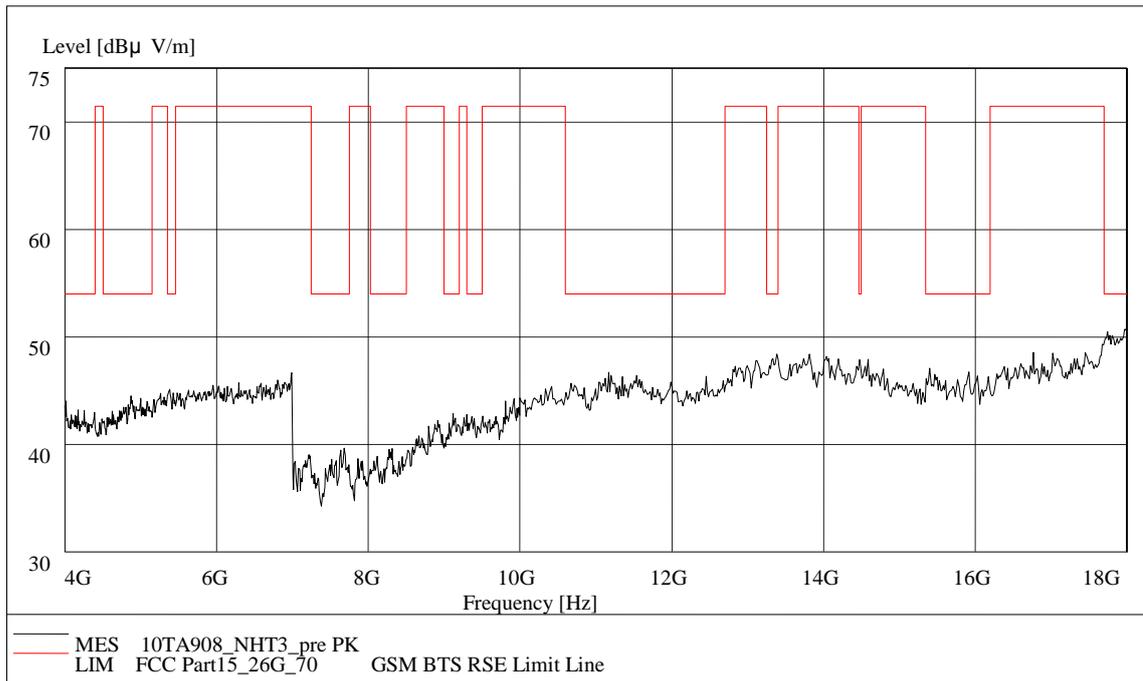


Fig. 84 Radiated Spurious Emission (802.11n, 20MHz, Ch11, 4 GHz-18 GHz)

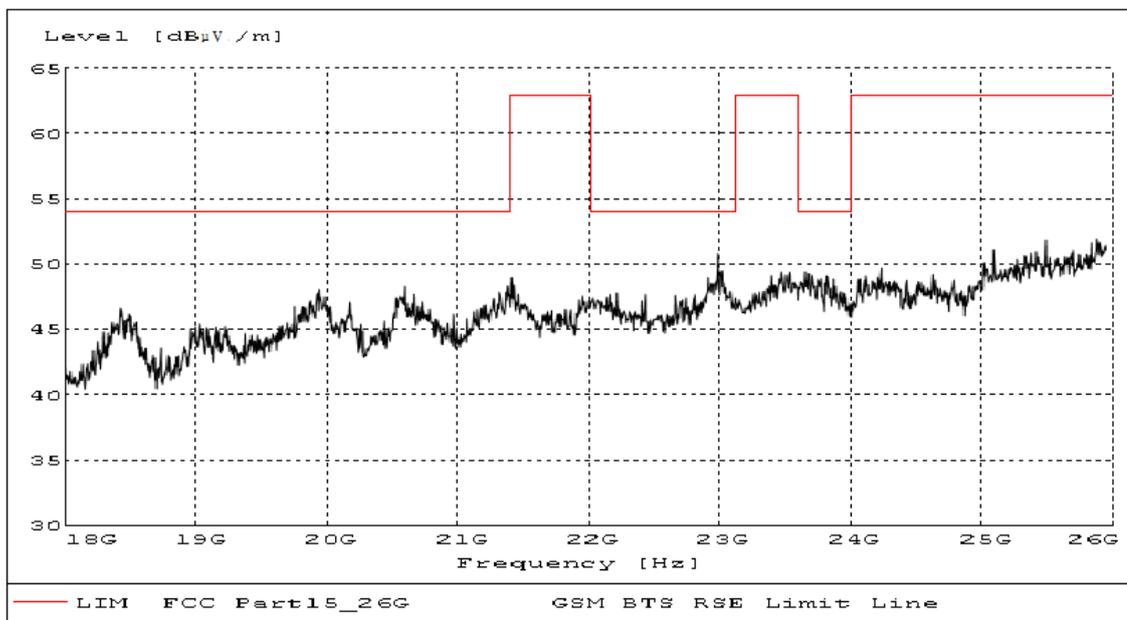


Fig. 85 Radiated emission: 18 GHz - 26 GHz

A.7. AC Powerline Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)			Conclusion
		With charger			
		802.11b	802.11g	802.11n (20MHz)	
0.15 to 0.5	66 to 56	Fig.86	Fig.87	Fig.88	P
0.5 to 5	56				
5 to 30	60				

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)			Conclusion
		With charger			
		802.11b	802.11g	802.11n (20MHz)	
0.15 to 0.5	56 to 46	Fig.86	Fig.87	Fig.88	P
0.5 to 5	46				
5 to 30	50				

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.4 and KDB558074

Conclusion: PASS

Test graphs as below:

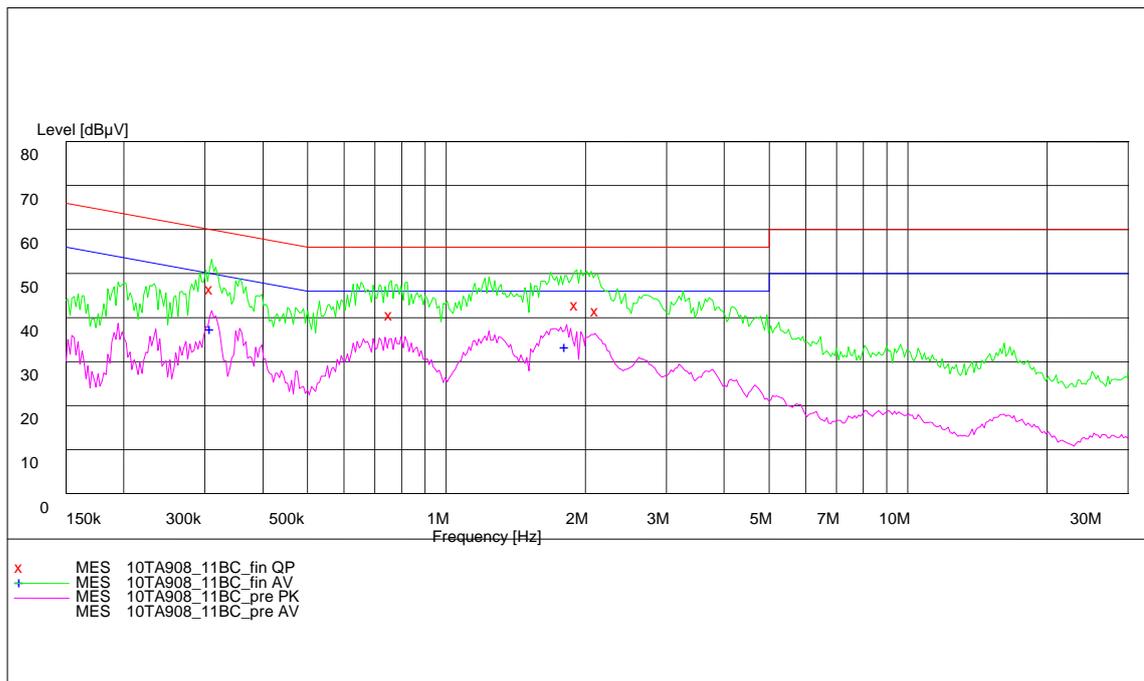


Fig. 86 AC Powerline Conducted Emission-802.11b

Measurement Result: "BC_fin QP"

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.310136	49.40	10.1	60	10.6	L1	GND
0.759408	43.70	10.1	56	12.3	L1	GND
1.915856	45.80	10.1	56	10.2	L1	FLO
2.123040	44.60	10.1	56	11.4	L1	FLO

Measurement Result: "BC_fin AV"

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.310136	40.50	10.1	50	9.4	L1	FLO
1.822872	36.50	10.1	46	9.5	L1	GND

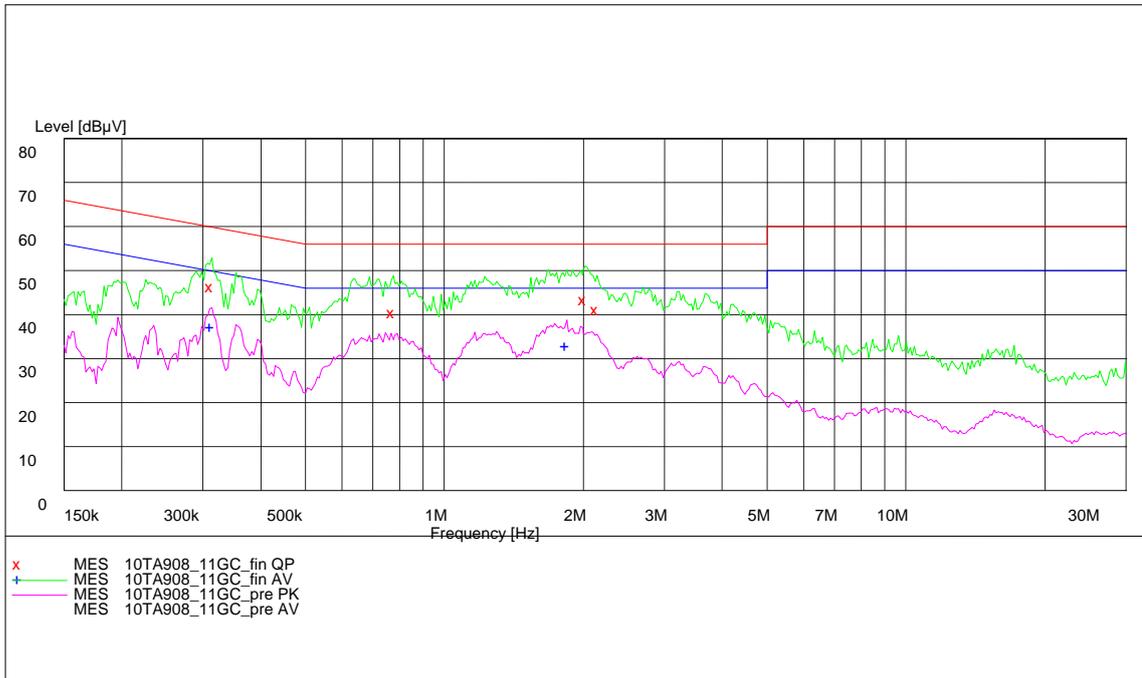


Fig. 87 AC Powerline Conducted Emission-802.11g

Measurement Result: "BC_fin QP"

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.313237	49.20	10.1	60	10.7	L1	FLO
0.774672	43.50	10.1	56	12.5	L1	GND
2.020000	46.40	10.1	56	9.6	L1	GND
2.144271	44.20	10.1	56	11.8	L1	FLO

Measurement Result: "BC_fin AV"

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.313237	40.40	10.1	50	9.5	L1	GND
1.841100	36.00	10.1	46	10.0	L1	GND

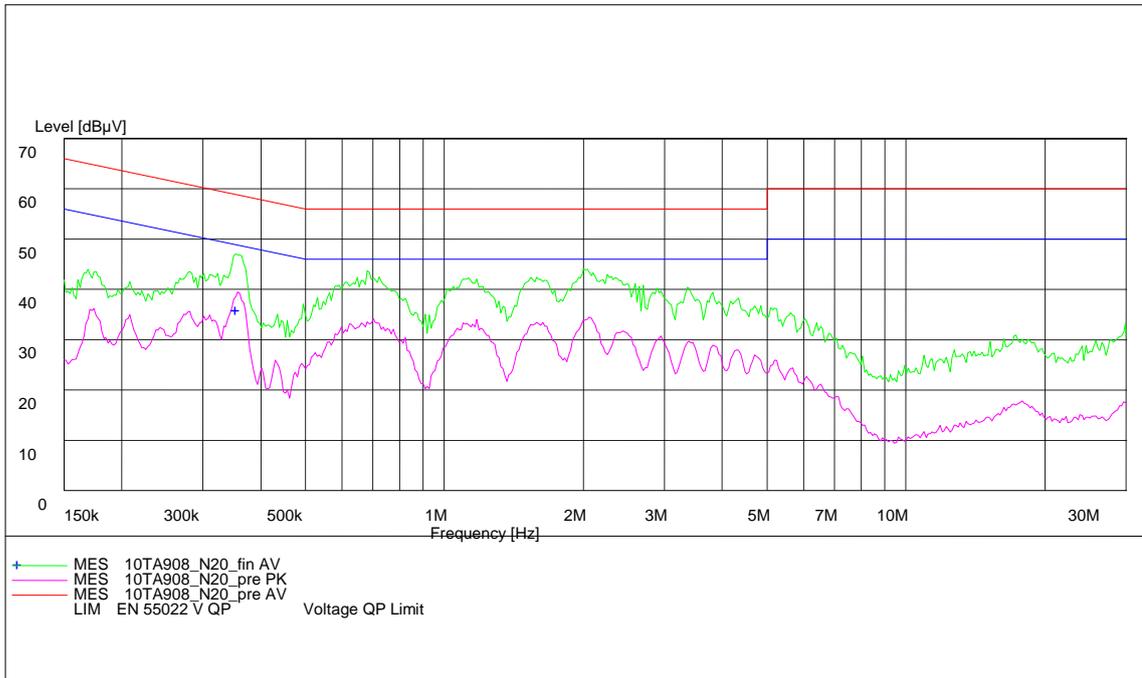


Fig. 88 AC Powerline Conducted Emission-802.11n, 20MHz

Measurement Result: "BC_fin AV"

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.356493	38.70	10.1	49	10.1	N	GND

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