

Test Report for FCC

FCC ID : QDMW10

Report Number		ESTF150711-002		
Applicant	Company name	ReignCom Co.,Ltd.		
	Address	14 Kamco Yangiae Tower, 949-3 Dogok 1-dong, Gangnam-gu, Seoul		
	Telephone	82-2-3019-1864		
Product	Product name	Network Terminal Unit		
	Model No.	W10	Manufacturer	Iriver Electronic Technology (China) Co.,Ltd.
	Serial No.	NONE	Country of origin	China
Test date	2007-10-29 ~ 2007-10-30		Date of issue	5-Nov-07
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15 2007 , ANSI C 63.4 2003			
Measurement facility registration number		94696		
Tested by	Engineer M. J. Song  (Signature)			
Reviewed by	Engineering Manager J.M.Yang  (Signature)			
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable			
* Note - This test report is not permitted to copy partly without permission - This test result is dependent on only equipment to be used - This test result based on a single evaluation of one sample of the above mentioned - Memory capacity of the USB-Drive is used with 2GB and 4GB				

Contents

1. Laboratory Information	4
2. Description of EUT	5
3. Test Standards	6
4. Measurement condition	7
5. 6dB Bandwidth Measurement	10
5.1 Test procedure	10
5.2 Test instruments and measurement setup	10
5.3 Measurement results	10
5.4 Trace data	12
6. Maximum Peak Output Power	16
6.1 Test procedure	16
6.2 Measurement results	16
7. Transmitter Power Spectral Density	17
7.1 Test procedure	17
7.2 Test instruments and measurement setup	17
7.3 Measurement results	17
7.4 Trace data	19
8. Band-Edge and Out of Band Emissions	23
8.1 Test procedure	23
8.2 Test instruments and measurement setup	23
8.3 Measurement results	23
8.4 Trace data of band-edge & out of emissioin	25

9. Measurement of radiated emission	27
9.1 Measurement equipment	27
9.2 Environmental conditions	27
9.3 Test data	28
10. Measurement of conducted emission	37
10.1 Measurement equipment	37
10.2 Environmental conditions	37
10.3 Test data	38
11. Antenna Requirement	41
11.1 Standard Applicable	41
11.2 Anetenna connected construction	41

Appendix 1. Spectral diagram

1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.

ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product Name	: Network Terminal Unit
Model Number	: W10
Modulation Type	: DSSS, OFDM
Transfer Rate	: up to 54Mbps
Number of Channel	: 802.11b and 802.11g--> CH1 ~ CH11
Channel Spacing	: 802.11b and 802.11g: 5MHz
Output Power	: 802.11b: 11.00dBm, 802.11g: 11.00dBm
Serial Number	: NONE
Manufacturer	: Iriver Electronic Technology (China) Co.,Ltd.
Country of origin	: China
Rating	: INPUT : AC 100V~240V 50 / 60Hz, OUTPUT : DC 5V 2A
Receipt Date	: 2007-09-19
Internal clock(s)	: 12MHz

2.2 General descriptions of EUT

This device fully compatible with the 802.11b standard to provide a wireless data rate of 11Mbps.
 This device fully compatible with the 802.11g standard to provide a wireless data rate of up to 54Mbps
 For the detailed features, please refer to the manufacturer's specifications or User's Manual.

3. Test Standards

Test Standard : FCC PART 15 (2007)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2003)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.

Summary of Test Results

Applied Standard : 47 CFR Part 15, Subpart C				
Standard	Test Type	Result	Remark	Limit
15.207	AC Power Conducted Emission	Pass	Meet the requirement	
15.209	Intentional Radiated Emission	Pass	Meet the requirement	
15.247(a)(2)	Spectrum Bandwidth of a DSSS System	Pass	Meet the requirement	Min. 500kHz
15.247(b)	Maximum Peak output power	Pass	Meet the requirement	Max. 30dBm
15.247(c)	Transmitter Radiated Emission	Pass	Meet the requirement	Table 15.209
15.247(d)	Power Spectral Density	Pass	Meet the requirement	Max. 8dBm
15.247(c)	Band Edge Measurement	Pass	Meet the requirement	20dB less

4. Measurement Condition

4.1 EUT Operation(For 802.11b and 802.11g)

a. Channel

Ch.	Frequency	Ch.	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

b. Measurement Channel : Low(2412MHz), Middle(2437Mhz),High(2462MHz)

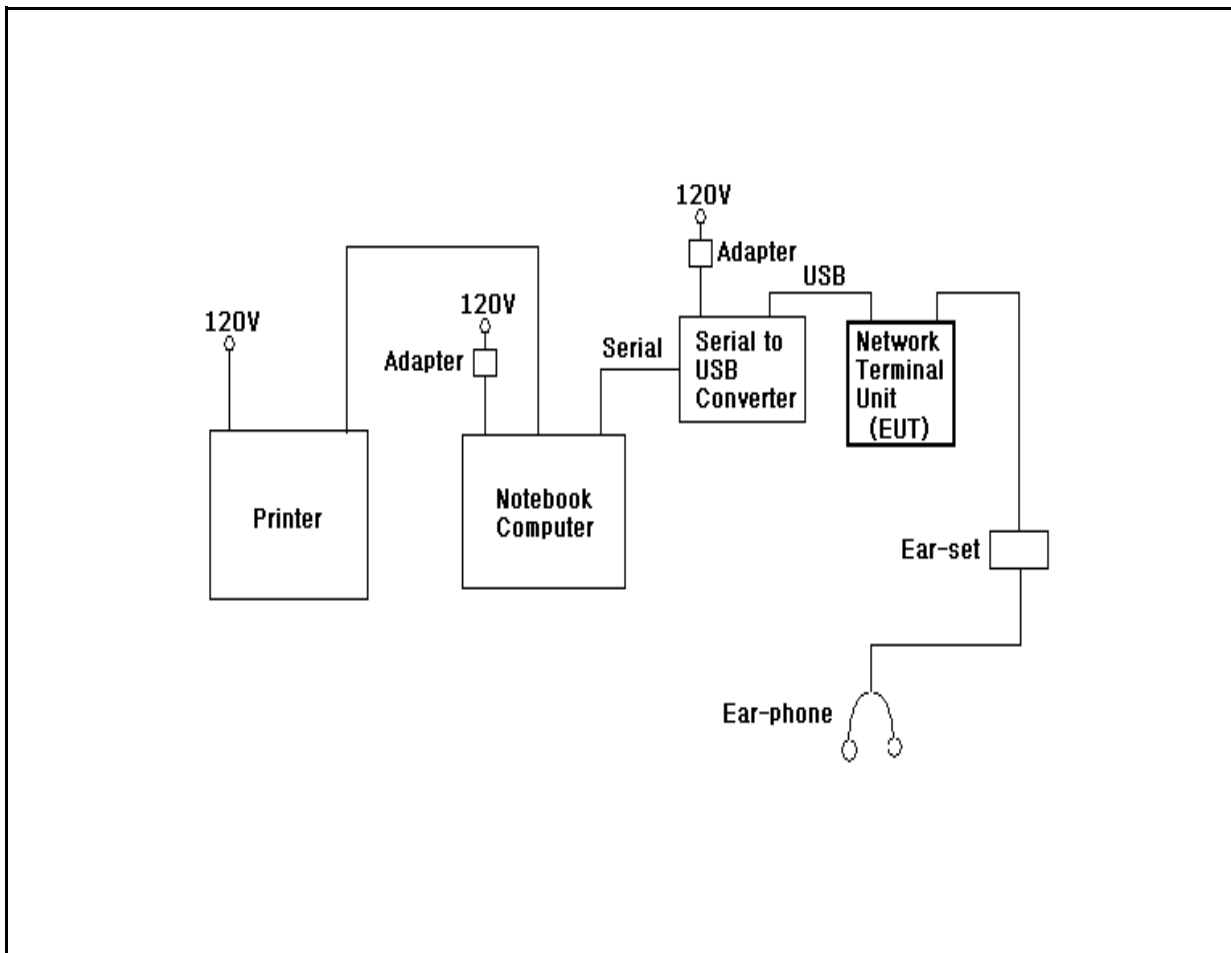
c. Test Mode : Continuous Output, DSSS and OFDM

d. Test rate : the worst case of rate 802.11b(11Mbps), 802.11g(54Mbps)

4.2 EUT Operation.

- * The EUT was in the following operation mode during all testing
- * The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- * After setting bluetooth tester and EUT, tested under transmission/receiving condition continuously at specific channel frequency.

4.3 Configuration and Peripherals



4.4 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Network Terminal Unit	W10	NONE	Irivier Electronic Technology (China) Co.,Ltd.	EUT
Notebook Computer	HSTNN-I05C	CNU7281VY5	HEWLETT-PACKARD	—
Adapter	PPP009L	7608166702	DONGGUANG LITE POWER 2nd PLANT	
Adapter	KSAC0500200W1US	NONE	Ktec	
Printer	LQ-570H+	B1021095782	SAMBO COMPUTER	
Ear-set	NONE	NONE	Irivier	
Ear-phone	NONE	NONE	NONE	
Serial to USB Converter	NONE	NONE	NONE	

4.5 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Network Terminal Unit	USB	Serial to USB Converter	USB	1	Y	
Network Terminal Unit	Ear-phone	Ear-set	—	1	N	
Ear-set	Ear-phone	Ear-phone	—	2	N	
Serial to USB Converter	RS-232C	Notebook Computer	COM 1	2	N	
Serial to USB Converter	DC Power	Adapter	—	2	N	
Notebook Computer	DC Power	Adapter	—	2	N	
Notebook Computer	Parallel	Printer	Parallel	2	Y	

5. 6dB Bandwidth Measurement

5.1 Test procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The 6dB bandwidth is defined as the bandwidth at 6dB below from peak power point. The minimum of 6dB bandwidth measurement is 0.5MHz.

5.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 100KHz
- . VBW= 100KHz
- . Span= 20MHz
- . Sweep= suitable duration based on the EUT specification.

6dB Bandwidth Test Instruments

Description	Model	Serial Number
Spectrum Analyzer	E4407B	US42041281
RF Cable	Length: 49cm	—
—Spectrum Analyzer <=> EUT	Loss: 1.05dB	—

5.3 Measurement results

EUT	Home Monitoring System	MODEL	W10
MODE	CCK	ENVIRONMENTAL CONDITION	24℃, 44%RH
INPUT POWER	120Vac, 60Hz		

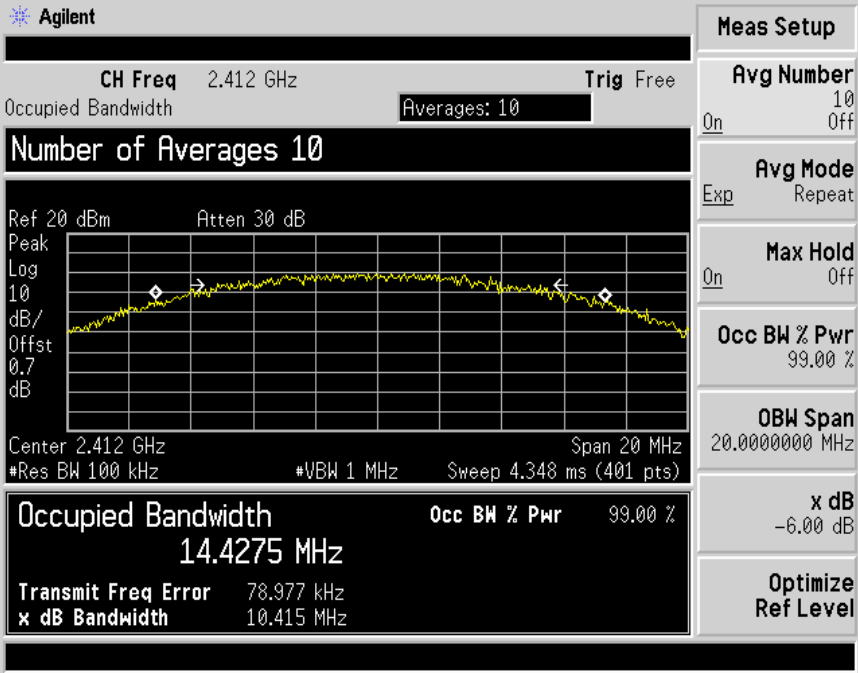
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	10.42	0.5	PASS
6	2437	8.34	0.5	PASS
11	2462	9.50	0.5	PASS

EUT	Home Monitoring System	MODEL	W10
MODE	OFDM	ENVIRONMENTAL CONDITION	24℃, 43%RH
INPUT POWER	120Vac, 60Hz		

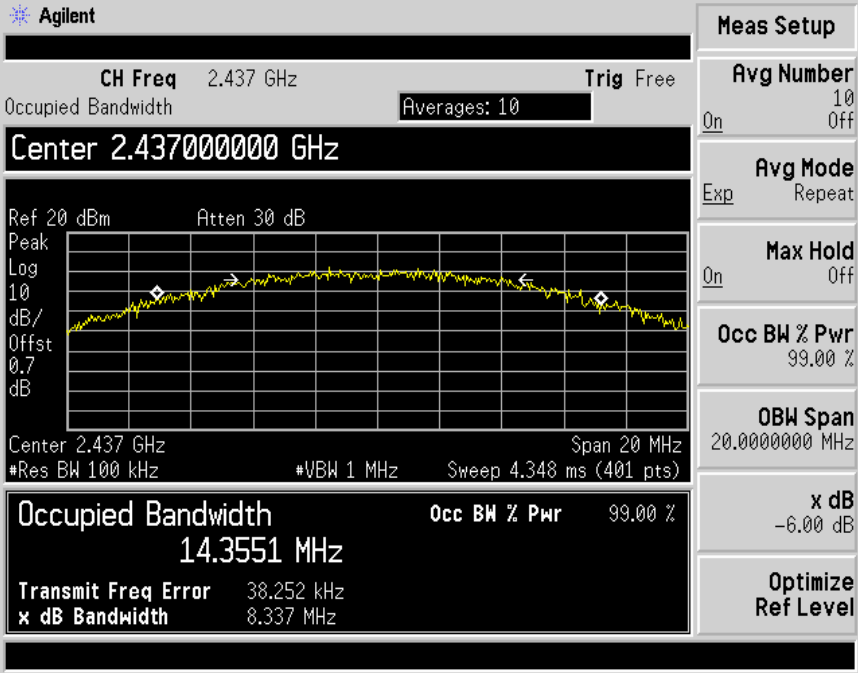
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	16.49	0.5	PASS
6	2437	16.06	0.5	PASS
11	2462	16.06	0.5	PASS

5.4 Trace data

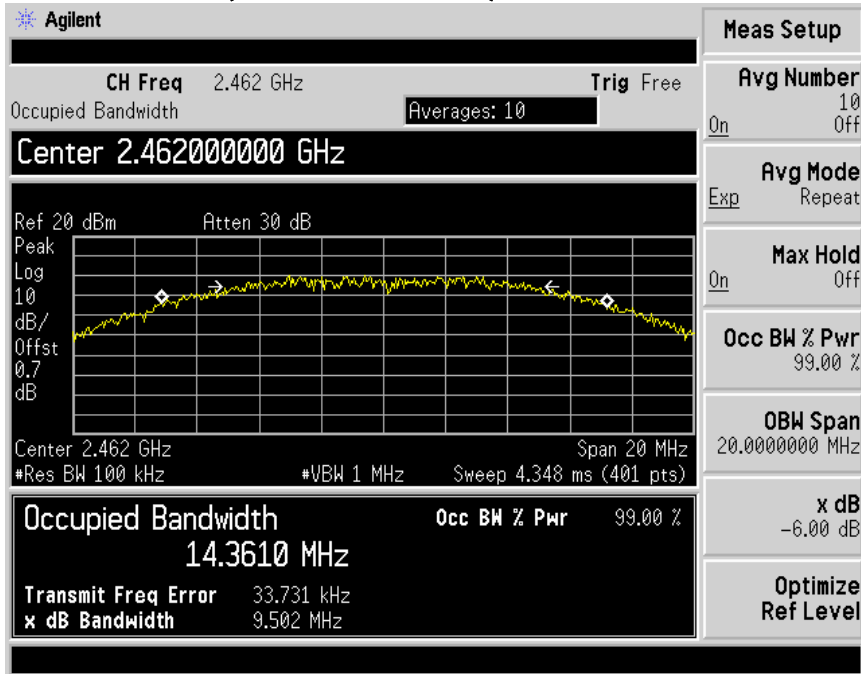
CCK (802.11b-1ch)



CCK (802.11b-6ch)

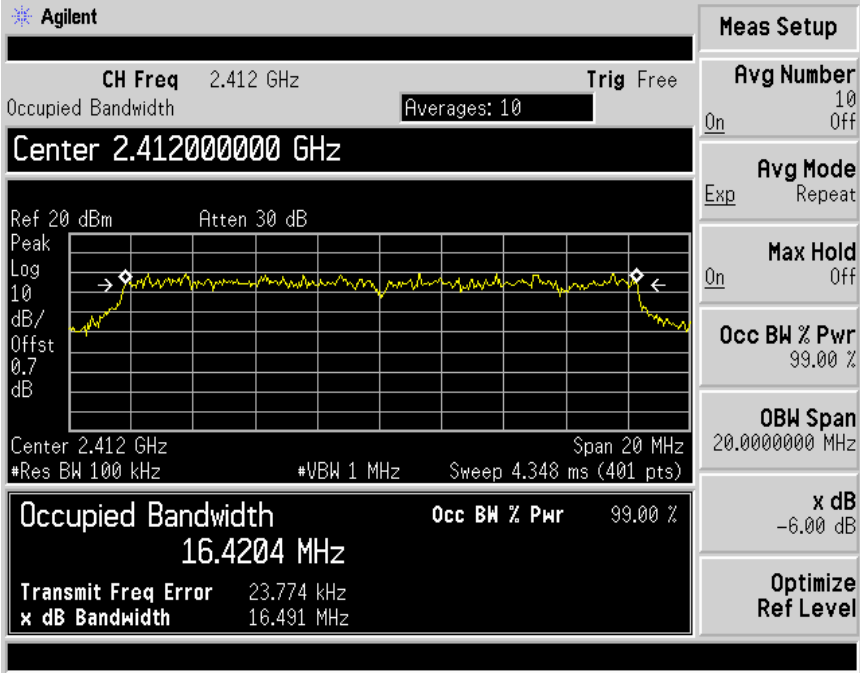


CCK (802.11b-11ch)

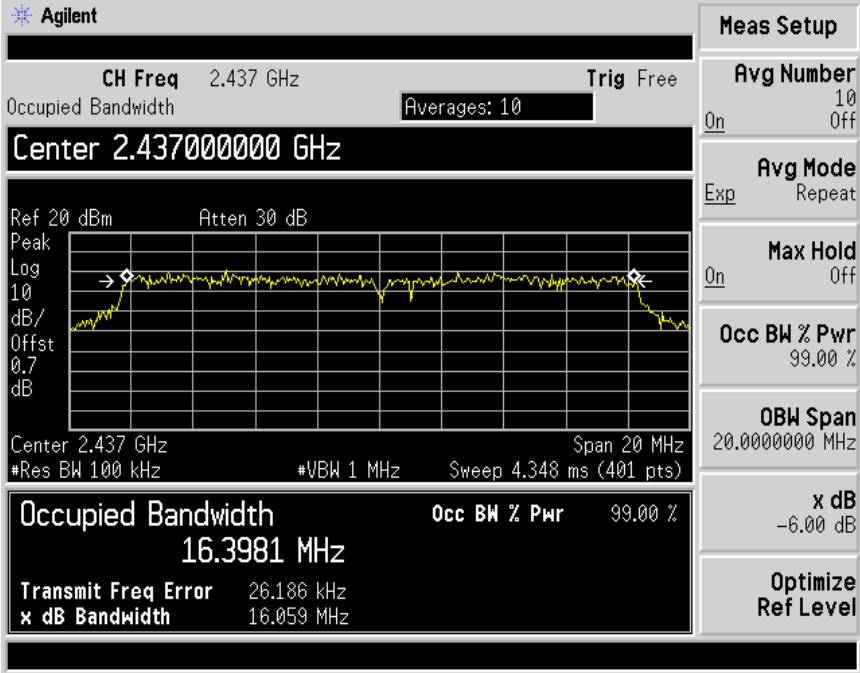


5.4 Trace data

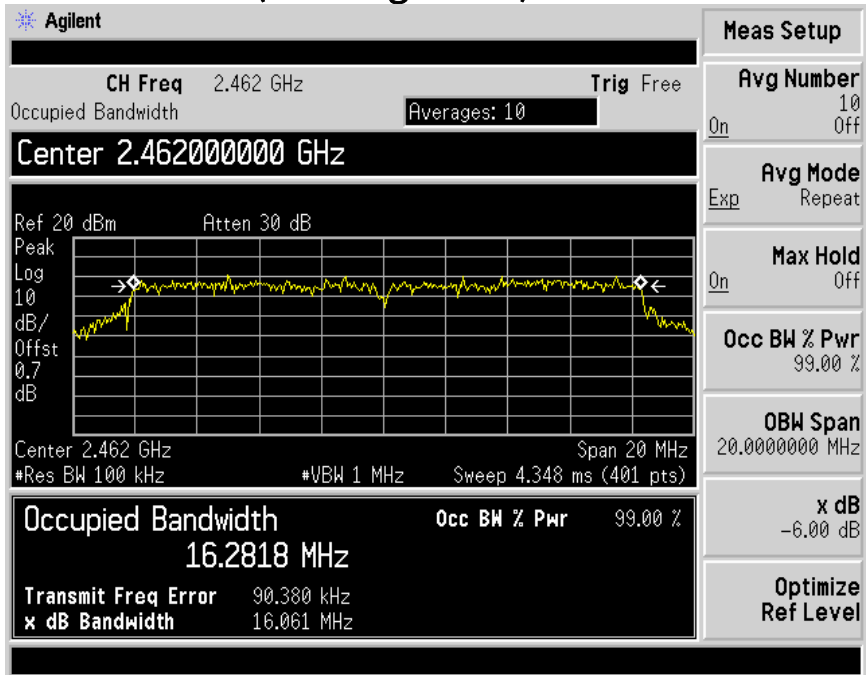
OFDM (802.11g-1ch)



OFDM (802.11g-6ch)



OFDM (802.11g-11ch)



6. MAXIMUM PEAK OUTPUT POWER

6.1 Test procedure

The transmitter antenna terminal is connected to the input of a RF power sensor. Measurement is made while EUT is operating in transmission mode at the appropriate center frequency. The maximum peak output power measurement is 30dBm.

Maximum Peak Output Power Test Instruments

Description	Model	Serial Number
Power Meter	HP E4418A	GB38272717
Power Sensor	HP 8481A	3318A96478
RF Cable:	Length: 49cm	—
—Spectrum Analyzer <=> EUT	Loss: 1.05dB	—

6.2 Measurement results

EUT	Home Monitoring System	MODEL	W10
MODE	CCK	ENVIRONMENTAL CONDITION	24℃, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Peak Power Output(dBm)		Limit[1W] (dBm)	PASS/FAIL
		(dBm)	(W)		
1	2412	11.0	0.013	30.0	PASS
6	2437	10.6	0.011	30.0	PASS
11	2462	10.7	0.012	30.0	PASS

EUT	Home Monitoring System	MODEL	W10
MODE	OFDM	ENVIRONMENTAL CONDITION	24℃, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Peak Power Output(dBm)		Limit[1W] (dBm)	PASS/FAIL
		(dBm)	(W)		
1	2412	10.5	0.011	30.0	PASS
6	2437	11.0	0.013	30.0	PASS
11	2462	11.1	0.013	30.0	PASS

7. Transmitter power spectral density

7.1 Test procedure

The peak power density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. The maximum of power spectral density measurement is 8dBm.

7.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 3KHz
- . VBW= 30KHz
- . Span= 1.5MHz
- . Sweep= 500 seconds (It is allowed to be longer than span/3kHz.)

The peak power density Test Instruments

Description	Model	Serial Number
Spectrum Analyzer	E4407B	US42041281
RF Cable	Length: 49cm	—
—Spectrum Analyzer <=> EUT	Loss: 1.05dB	—

7.3 Measurement results

EUT	Home Monitoring System	MODEL	W10	
MODE	CCK	ENVIRONMENTAL CONDITION	23℃, 43%RH	
INPUT POWER	120Vac, 60Hz			
CHANNEL	Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Maximum Limit (dBm)	PASS/FAIL
1	2412	-11.74	8.0	PASS
6	2437	-10.80	8.0	PASS
11	2462	-11.06	8.0	PASS

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EUT	Home Monitoring System	MODEL	W10
MODE	OFDM	ENVIRONMENTAL CONDITION	23°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Maximum Limit (dBm)	PASS/FAIL
1	2412	-21.59	8.0	PASS
6	2437	-21.00	8.0	PASS
11	2462	-22.59	8.0	PASS



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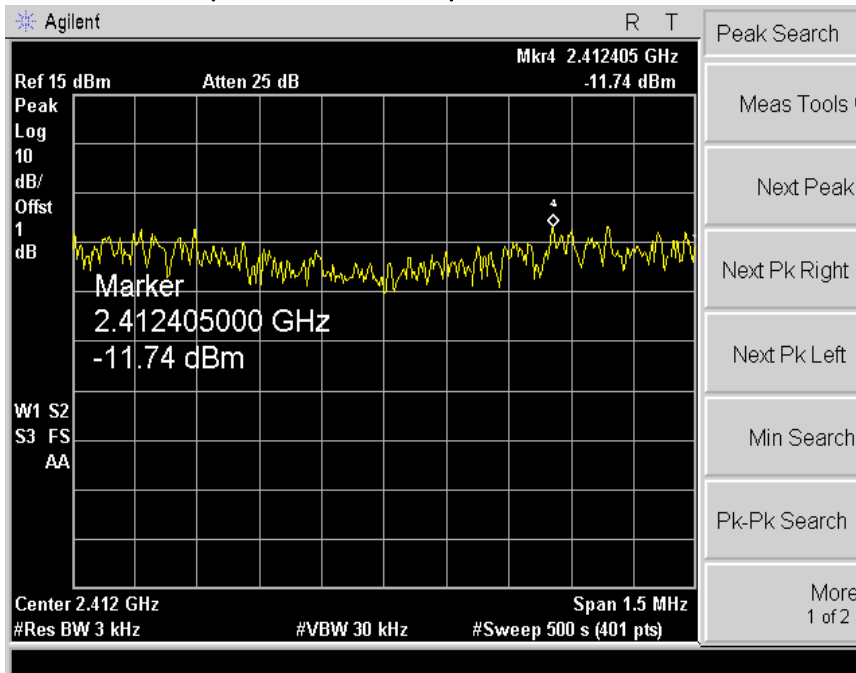
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Seoul, 158-803, Korea



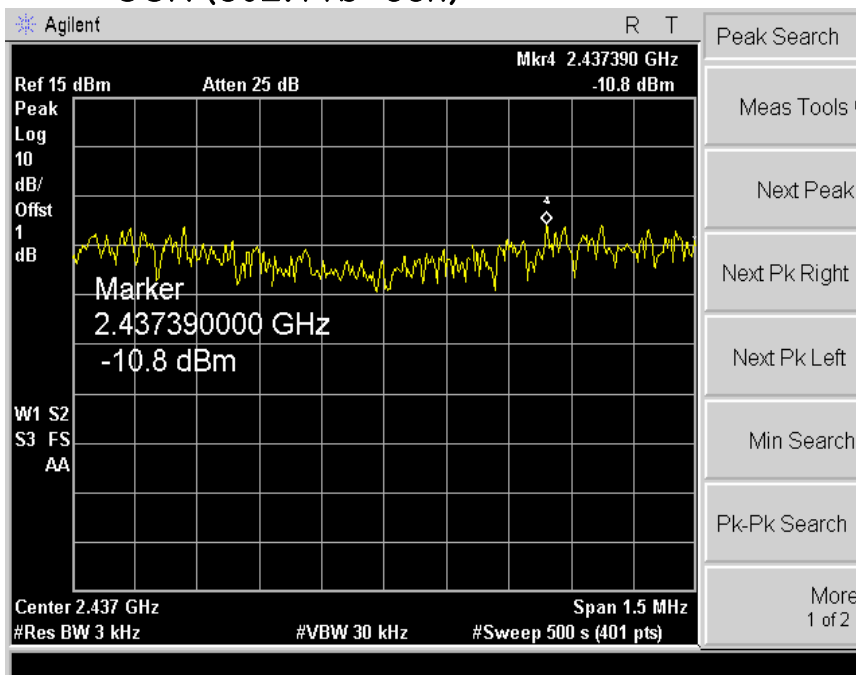
**Electromagnetic
Interference
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7.4 Trace data

CCK (802.11b-1ch)



CCK (802.11b-6ch)





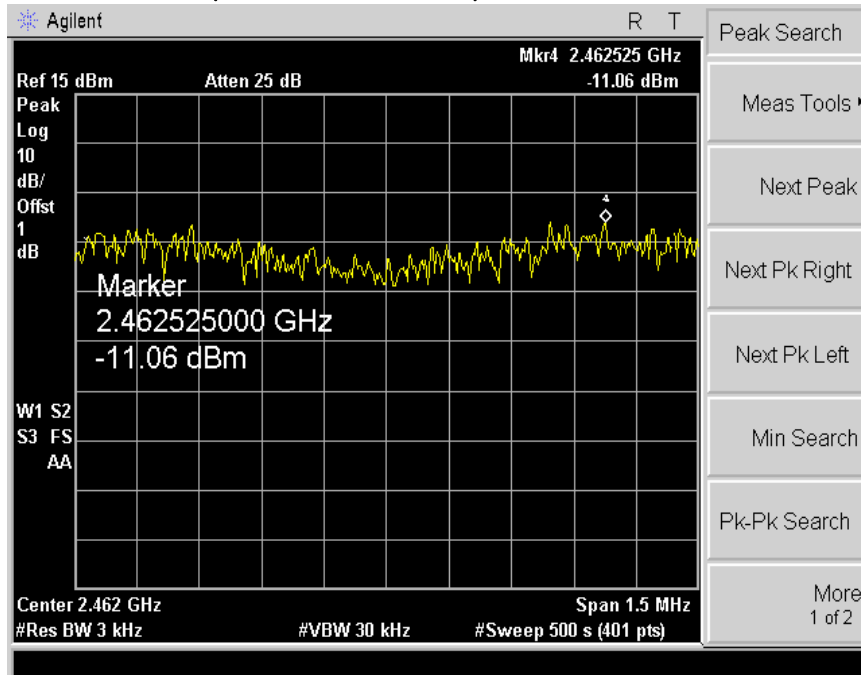
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CCK (802.11b-11ch)





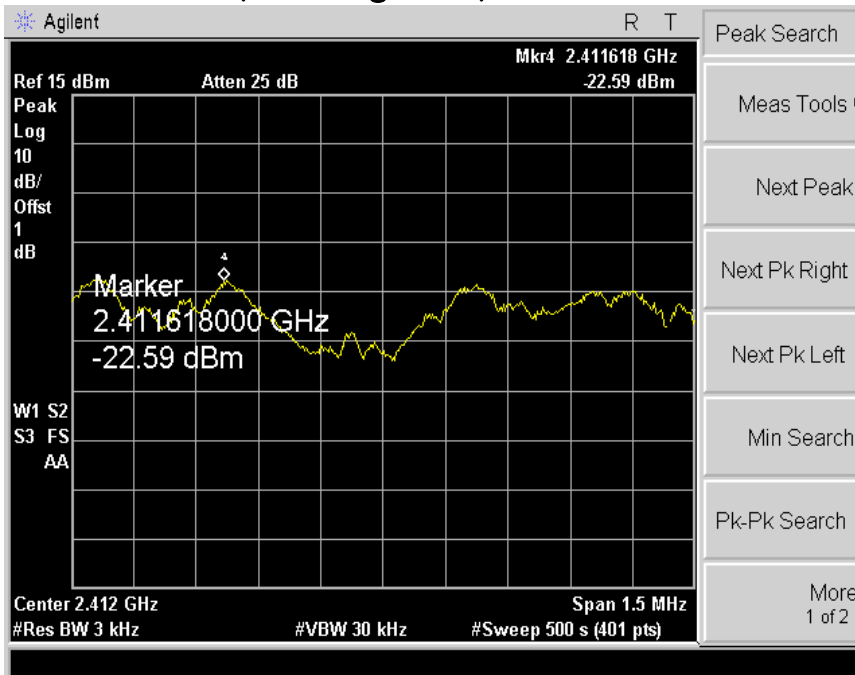
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Seoul, 158-803, Korea

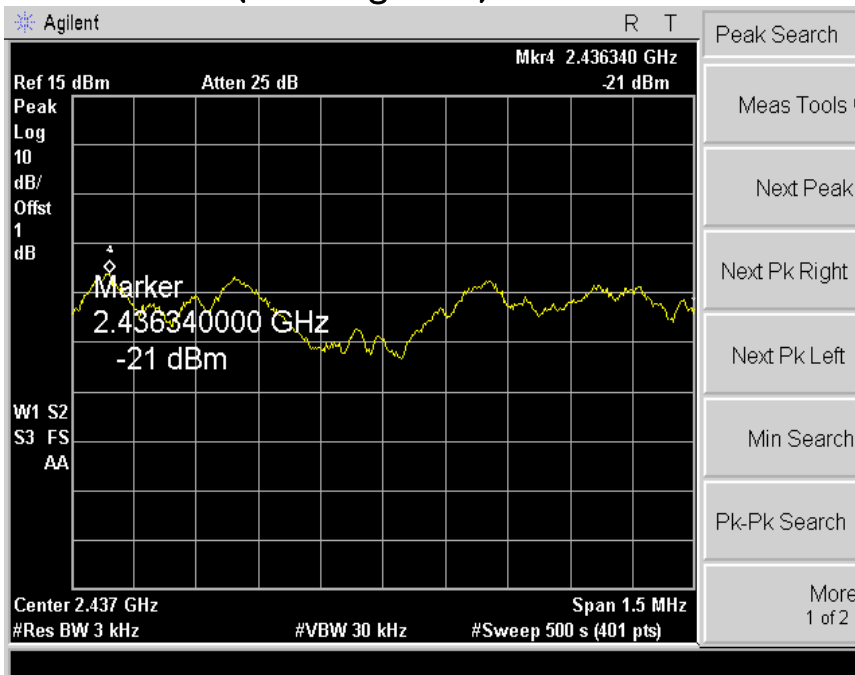


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7.4 Trace data OFDM (802.11g-1ch)



OFDM (802.11g-6ch)





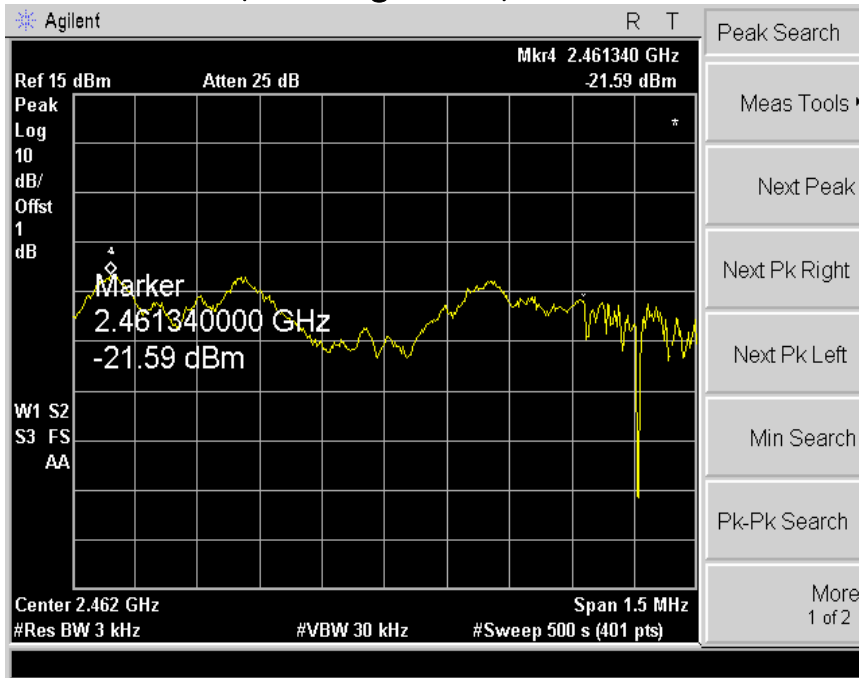
ESTECH Co., Ltd.

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426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
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OFDM (802.11g-11ch)



8. band-edge and out of band emissions.

8.1 Test procedure

The radio frequency power at 20dB down from the highest inband power level is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. The band edge&out of band emission shall be at least 20dB below of the highest inband power level.

8.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 100KHz(11b/g)
- . VBW= 100KHz(11b/g)
- . Span= suitable frequency span
- . Sweep= suitable duration based on the EUT specification.

Band Edge&Out of Emission Test Instruments

Description	Model	Serial Number
Spectrum Analyzer	E4407B	US42041281
RF Cable	Length: 49cm	—
—Spectrum Analyzer <=> EUT	Loss: 1.05dB	—

8.3 Measurement results of band-edge & out of emission

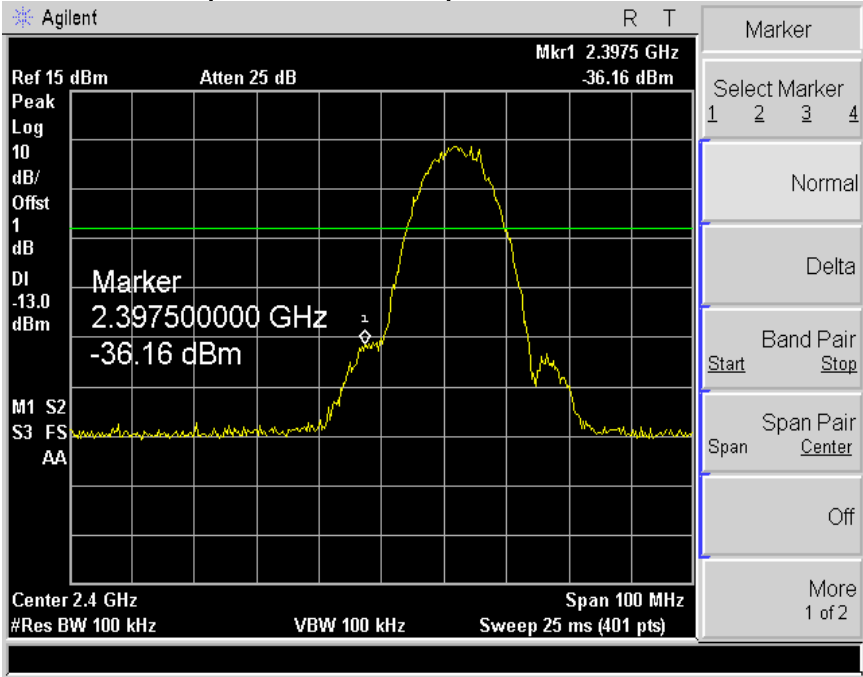
EUT	Home Monitoring System	MODEL	W10
MODE	CCK	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2397.5	-36.16	Below 20dB from peak power level to band edge
11	2462	2486.5	-50.35	Below 20dB from peak power level to band edge

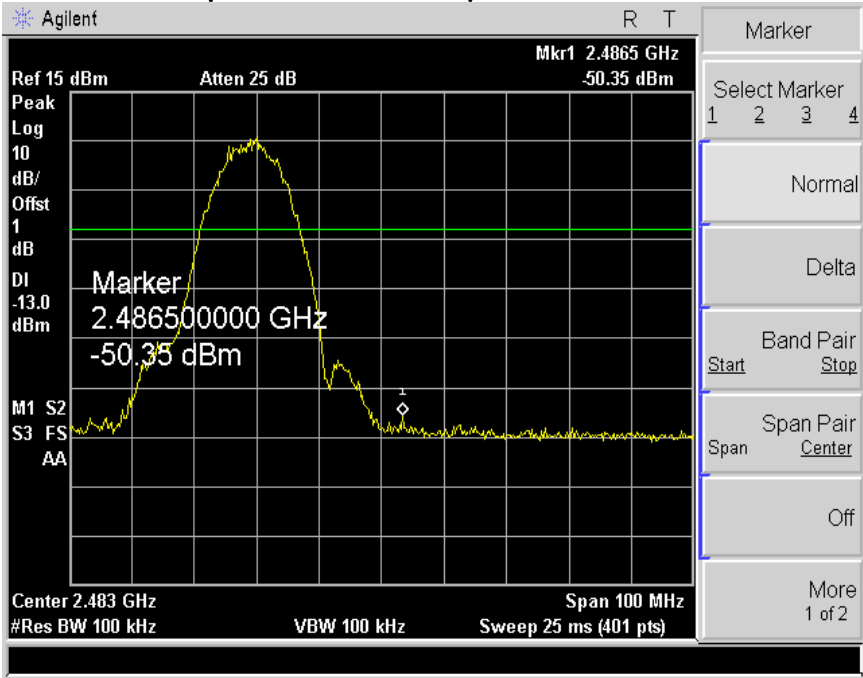
EUT	Home Monitoring System	MODEL	W10
MODE	OFDM	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2397.0	-30.41	Below 20dB from peak power level to band edge
11	2462	2484.0	-42.82	Below 20dB from peak power level to band edge

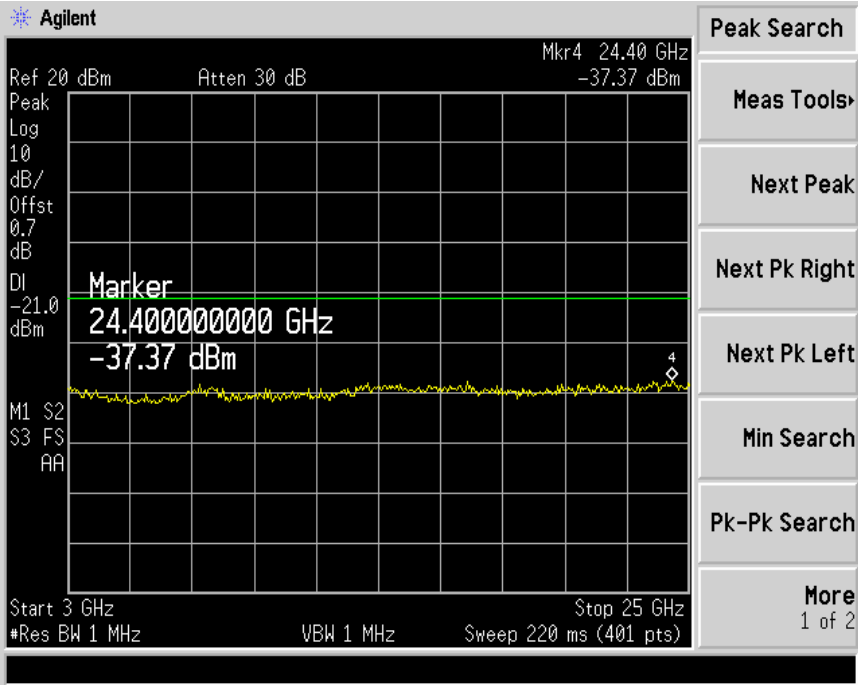
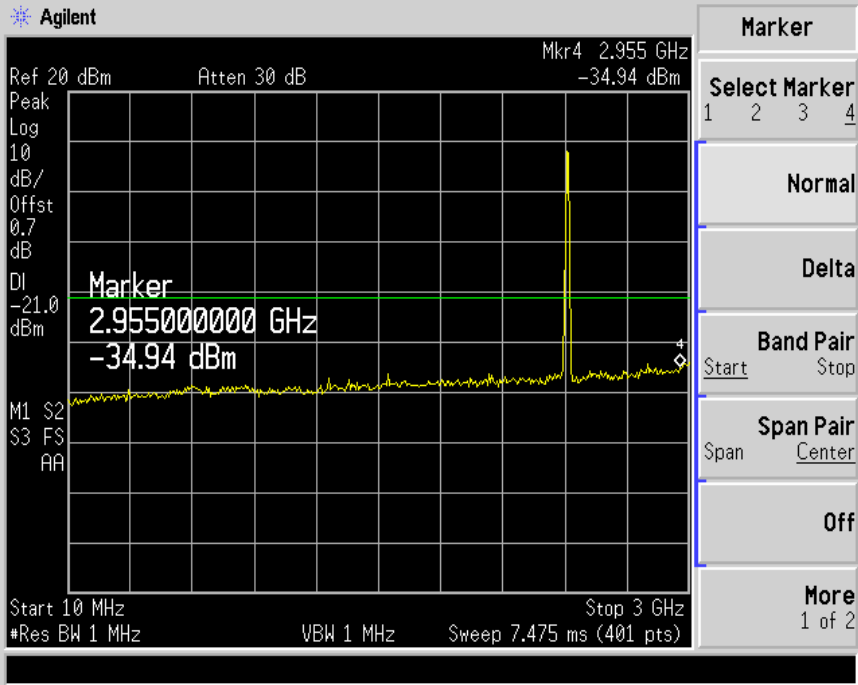
8.4 Trace data of band-edge & Out of Emission CCK (802.11b-1ch)



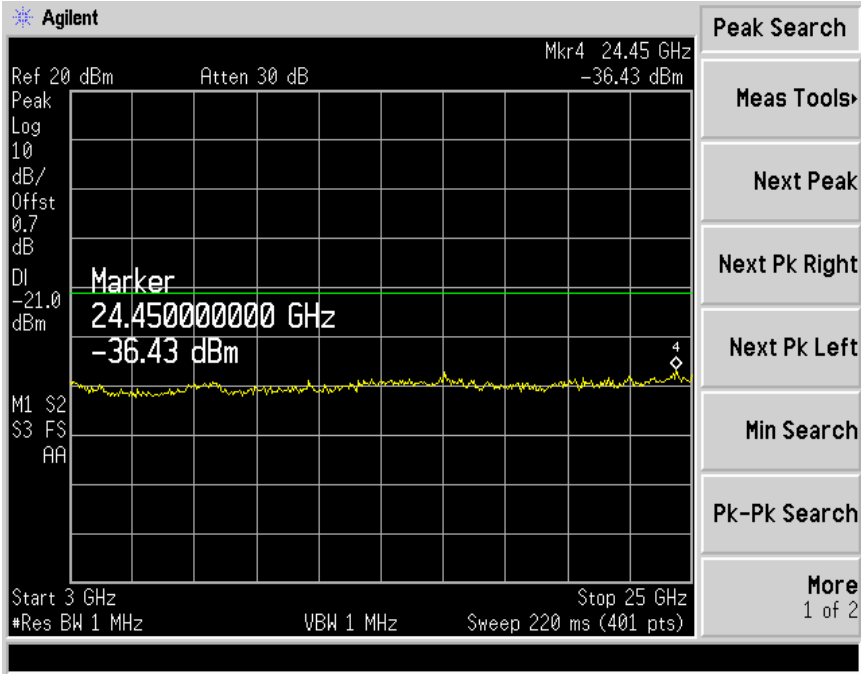
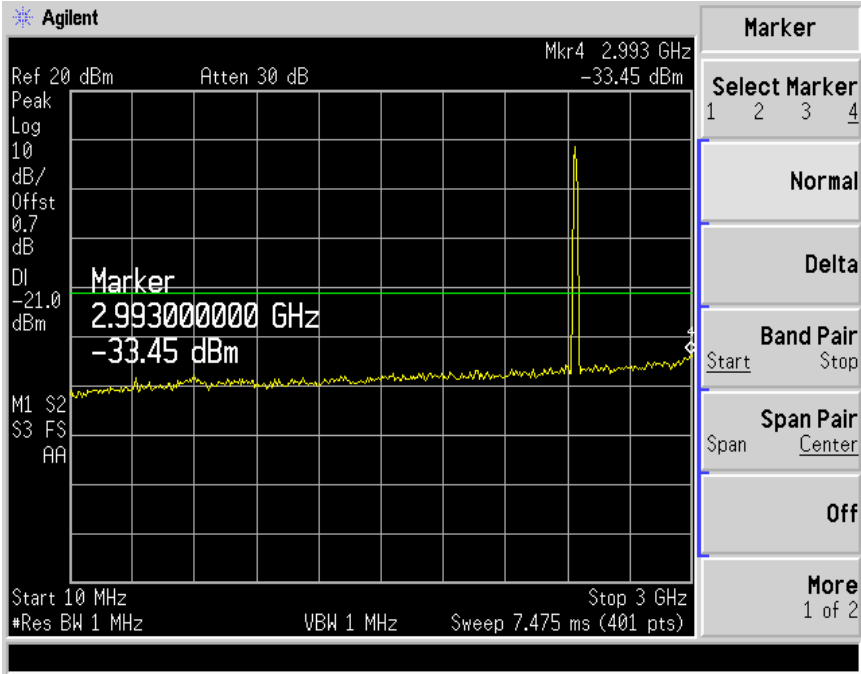
CCK (802.11b-11ch)



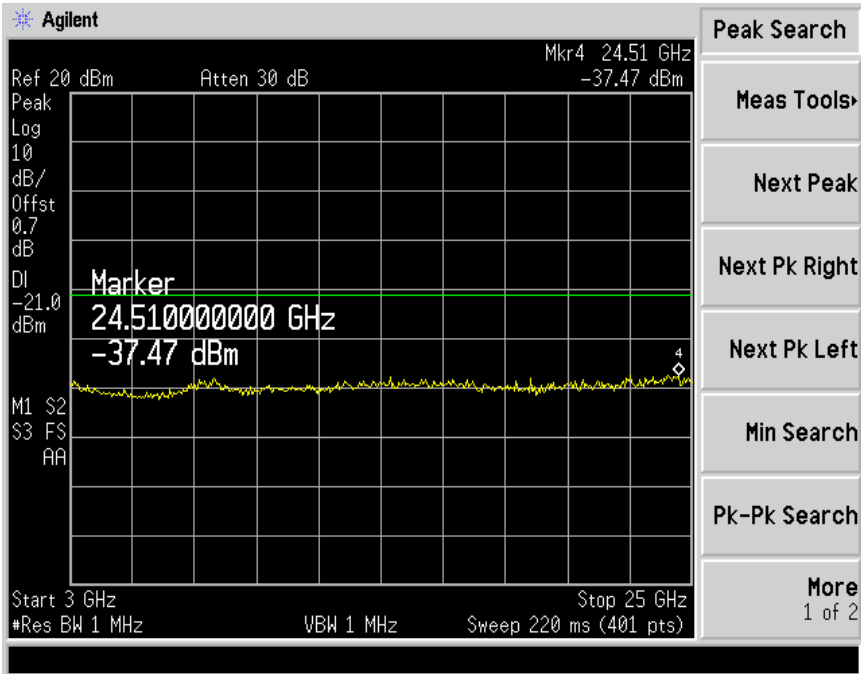
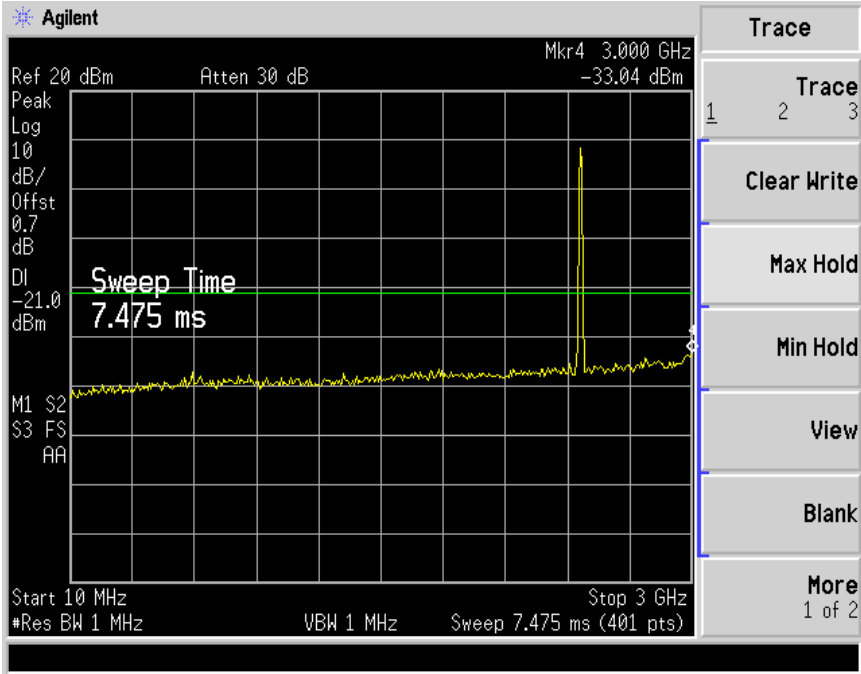
CCK (802.11b-1ch)



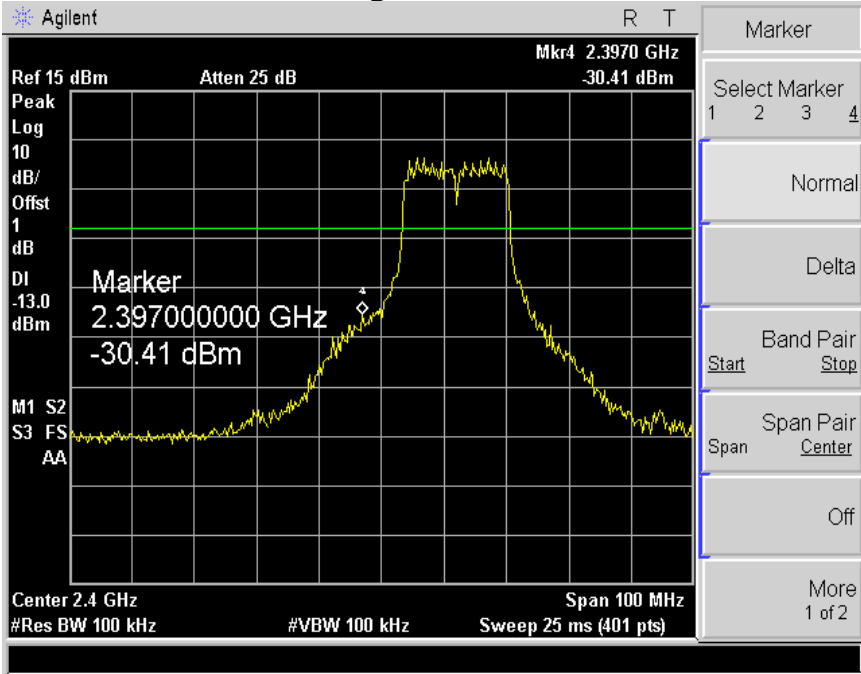
CCK (802.11b-06ch)



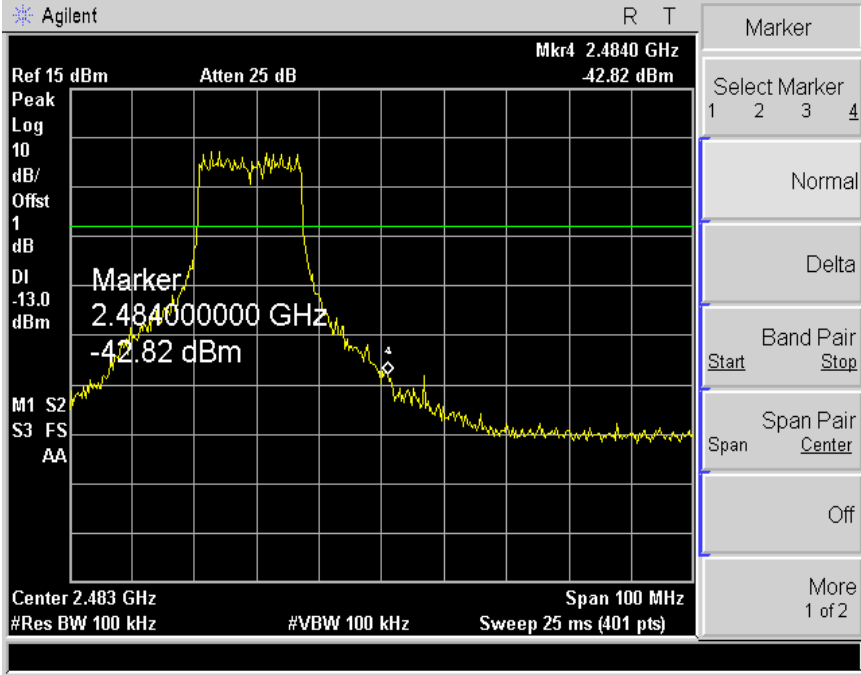
CCK (802.11b-11ch)



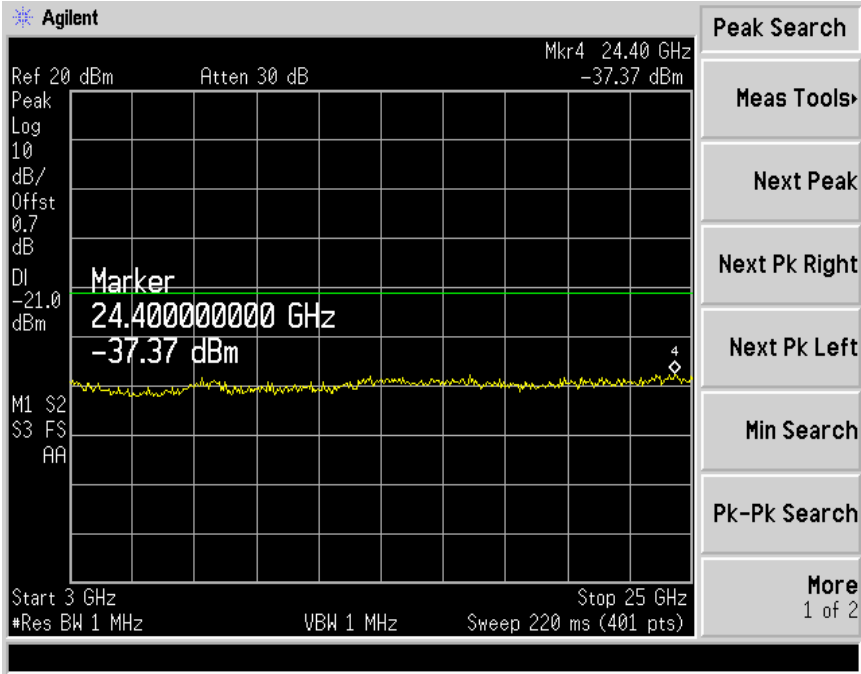
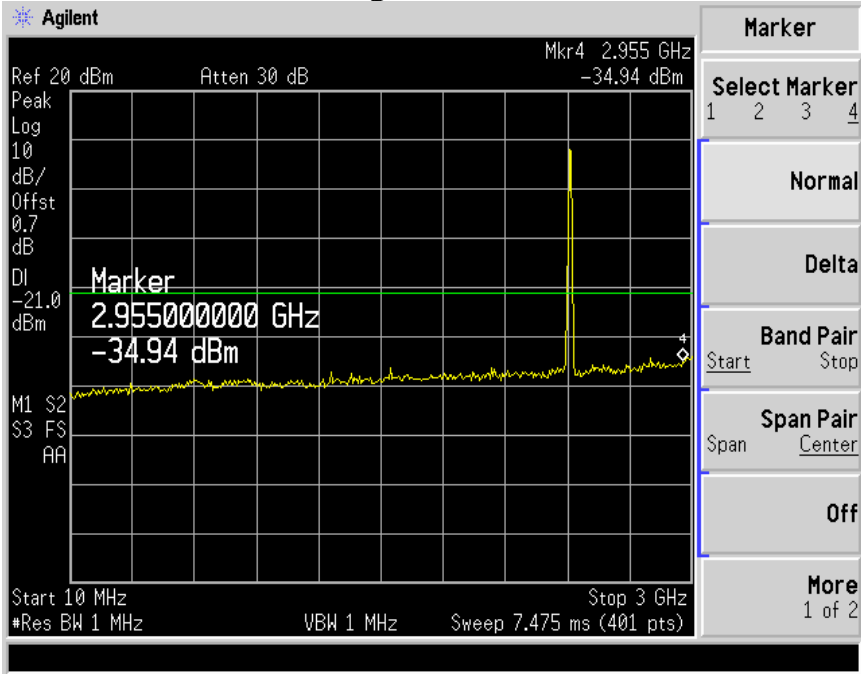
OFDM (802.11g-1ch)



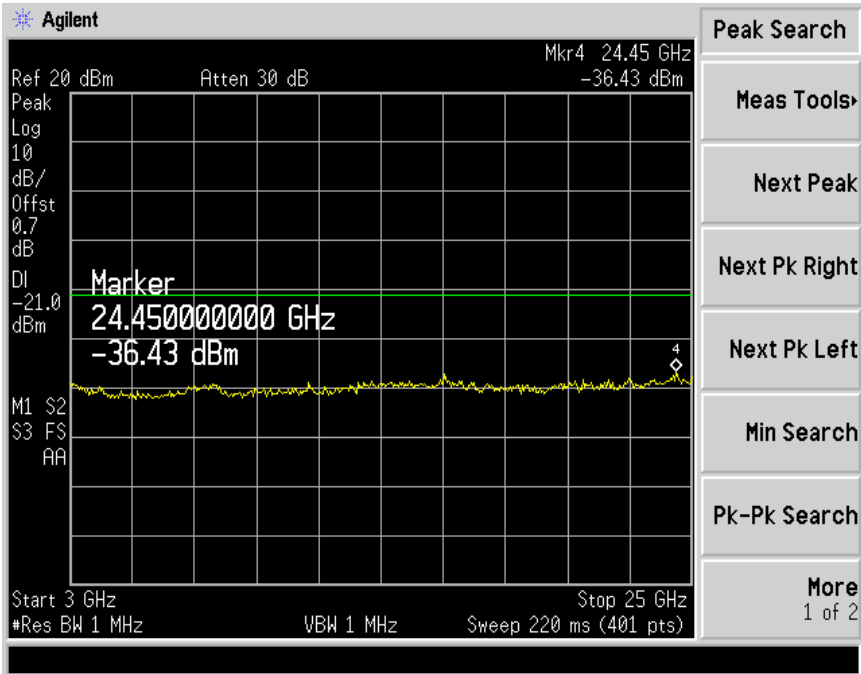
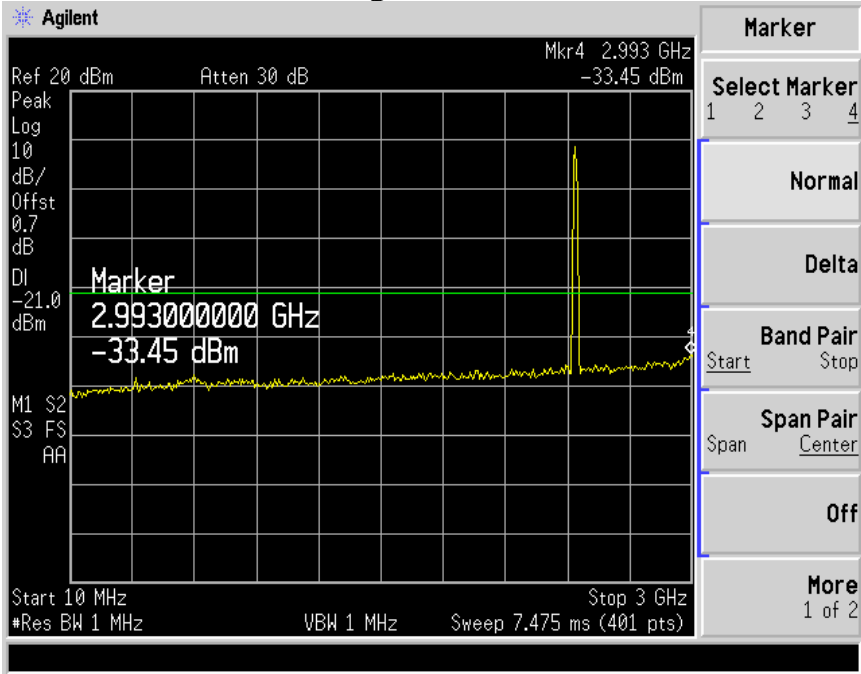
OFDM (802.11g-11ch)



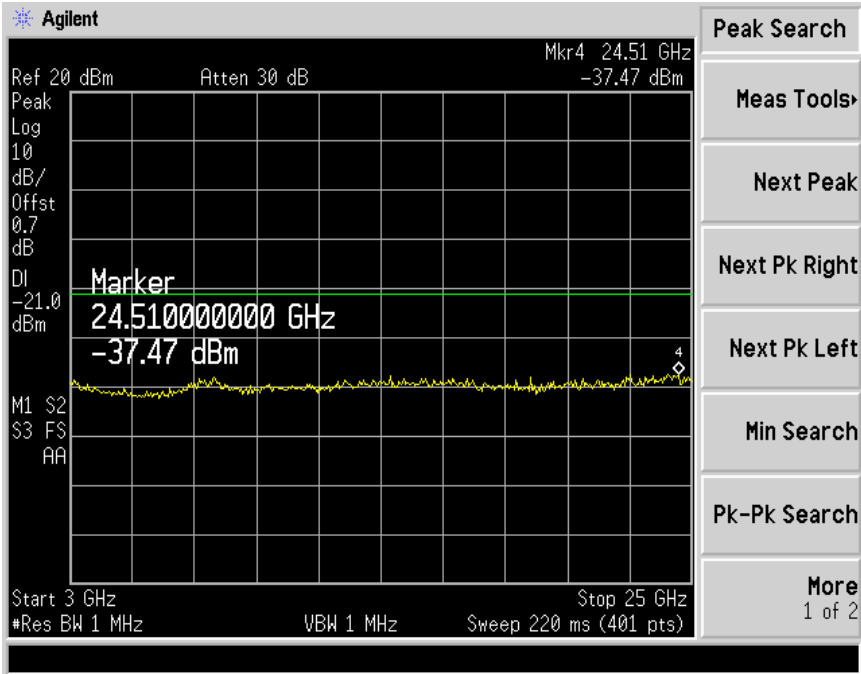
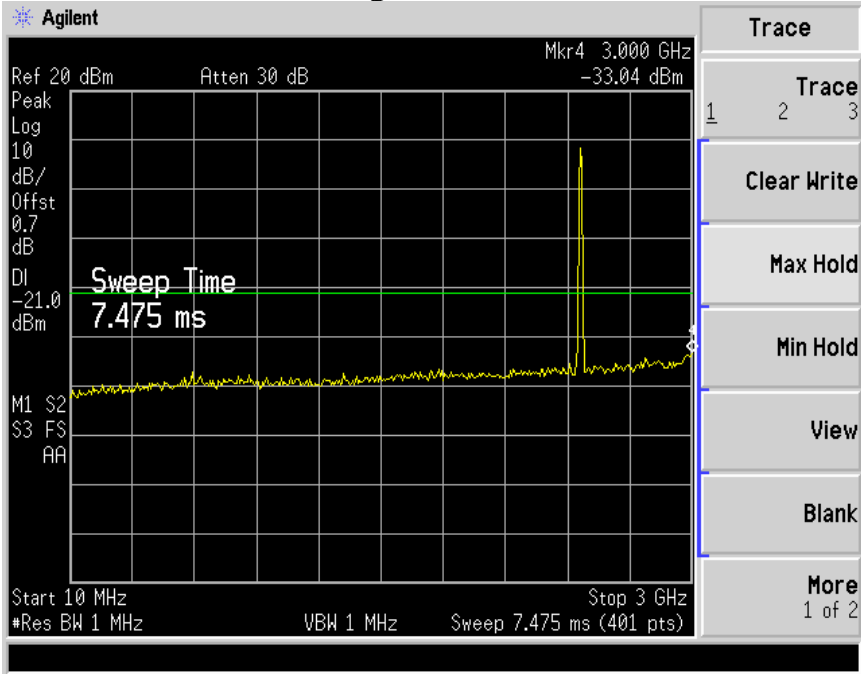
OFDM (802.11g-1ch)



OFDM (802.11g-06ch)



OFDM (802.11g-11ch)



9. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2007) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2007) & ANSI C 63.4 (2003) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test set-up.

9.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	2008-01-23
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2008-04-20
LogBicon Antenna	VULB 9160	SCHWARZBECK	3142	2008-05-07
Amplifier	8447F	HP	2805A02972	2008-06-26
Spectrum Analyzer	8563E	HP	3623A05297	2008-03-06
Horn Antenna	BBHA 9120 D	S/B	469	2008-07-24
PREAMPLIFIER	8449B	HP	3008A00581	2008-05-06
Turn Table	2087	EMCO	2129	-
Antenna Mast	2070-01	EMCO	9702-203	-
ANT Mast Controller	2090	EMCO	1535	-
Turn Table Controller	2090	EMCO	1535	-

9.2 Environmental Condition

Test Place : Open site(3m)
 Temperature (°C) : 20 °C
 Humidity (%) : 70 %

9.3 Test Data for Transmitter

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
135.38	16.00	V	1.0	12.37	1.8	43.5	30.18	-13.32
136.05	16.00	V	1.0	12.42	1.8	43.5	30.23	-13.27
169.30	12.20	H	1.7	12.14	2.0	43.5	26.34	-17.16
203.05	19.20	H	1.6	9.73	2.3	43.5	31.18	-12.32
215.75	18.30	H	2.5	10.21	2.4	43.5	30.87	-12.63
216.00	20.20	H	1.4	10.22	2.4	43.5	32.78	-10.72
229.10	19.80	H	1.4	10.72	2.5	46.0	32.99	-13.01
232.33	20.20	H	1.2	10.85	2.5	46.0	33.53	-12.47
299.20	17.90	V	1.9	13.08	3.0	46.0	33.96	-12.04
320.48	15.80	H	1.2	13.57	3.1	46.0	32.47	-13.53
406.05	14.80	H	1.0	15.48	3.6	46.0	33.91	-12.09
415.24	18.00	H	1.0	15.73	3.7	46.0	37.44	-8.56
432.00	12.30	H	1.0	16.19	3.8	46.0	32.30	-13.70
443.86	16.50	H	1.0	16.48	3.9	46.0	36.86	-9.14
472.51	15.00	V	1.2	16.91	4.1	46.0	35.96	-10.04
Remark	H : Horizontal, V : Vertical Test Mode : 802.11g, CH6 *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss-Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
135.39	16.30	V	1.0	12.37	1.8	43.5	30.48	-13.02
136.04	16.50	V	1.0	12.42	1.8	43.5	30.73	-12.77
169.28	12.30	H	1.6	12.14	2.0	43.5	26.44	-17.06
203.04	19.60	H	1.5	9.73	2.3	43.5	31.58	-11.92
215.77	18.00	H	2.4	10.21	2.4	43.5	30.57	-12.93
215.98	20.50	H	1.5	10.22	2.4	43.5	33.08	-10.42
229.11	19.90	H	1.5	10.72	2.5	46.0	33.09	-12.91
232.33	21.10	H	1.1	10.85	2.5	46.0	34.43	-11.57
299.14	18.00	V	1.8	13.08	3.0	46.0	34.05	-11.95
320.37	14.70	H	1.3	13.57	3.1	46.0	31.37	-14.63
406.04	14.70	H	1.0	15.48	3.6	46.0	33.81	-12.19
415.23	17.80	H	1.0	15.73	3.7	46.0	37.24	-8.76
432.02	13.00	V	1.1	16.19	3.8	46.0	33.00	-13.00
443.84	16.40	H	1.0	16.48	3.9	46.0	36.76	-9.24
472.52	14.50	H	1.0	16.91	4.1	46.0	35.46	-10.54
Remark		H : Horizontal, V : Vertical Test Mode: 802.11b, CH6 *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss-Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.						

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2389.36	48.95	H	1.1	27.64	-31.0	74.0	45.56	-28.44
2412	71.27	H	1.0	27.62	4.5	OB	103.39	-
4824	45.19	H	1.5	31.30	-28.8	74.0	47.65	-26.35
2389.36	48.20	V	1.0	27.64	-31.0	74.0	44.81	-29.19
2412	71.60	V	1.3	27.62	4.5	OB	103.72	-
4824	45.04	V	1.1	31.30	-28.8	74.0	47.50	-26.50
AV(RBW:1MHz VBW:10Hz)								
2389.36	35.17	H	1.1	27.64	-31.0	54.0	31.78	-22.22
2412	55.88	H	1.0	27.62	4.5	OB	88.00	-
4824	32.64	H	1.5	31.30	-28.8	54.0	35.10	-18.90
2389.36	35.30	V	1.0	27.64	-31.0	54.0	31.91	-22.09
2412	56.66	V	1.3	27.62	4.5	OB	88.78	-
4824	32.20	V	1.1	31.30	-28.8	54.0	34.66	-19.34
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss-Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2437	69.50	H	1.0	27.61	4.5	OB	101.61	–
4874	45.59	H	1.2	31.37	–28.7	74.0	48.27	–25.73
2437	68.24	V	1.9	27.61	4.5	OB	100.35	–
4874	44.73	V	1.6	31.37	–28.7	74.0	47.41	–26.59
AV(RBW:1MHz VBW:10Hz)								
2437	54.04	H	1.0	27.61	4.5	OB	86.15	–
4874	32.98	H	1.2	31.37	–28.7	54.0	35.66	–18.34
2437	54.20	V	1.9	27.61	4.5	OB	86.31	–
4874	32.34	V	1.6	31.37	–28.7	54.0	35.02	–18.98
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b – CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss–Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi–peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2462	67.34	H	1.8	27.60	4.5	OB	99.44	–
2488.05	44.33	H	1.4	27.58	–31.0	74.0	40.90	–33.10
4924	47.61	H	1.3	31.44	–28.6	74.0	50.47	–23.53
2462	67.41	V	1.2	27.60	4.5	OB	99.51	–
2488.05	44.31	V	1.5	27.58	–31.0	74.0	40.88	–33.12
4924	45.24	V	1.5	31.44	–28.6	74.0	48.10	–25.90
AV(RBW:1MHz VBW:10Hz)								
2462	53.02	H	1.8	27.60	–31.0	OB	49.60	–
2488.05	32.05	H	1.4	27.58	–31.0	54.0	28.62	–25.38
4924	34.39	H	1.3	31.44	–28.6	54.0	37.25	–16.75
2462	53.13	V	1.2	27.60	–31.0	OB	49.71	–
2488.05	32.30	V	1.5	27.58	–31.0	54.0	28.87	–25.13
4924	32.69	V	1.5	31.44	–28.6	54.0	35.55	–18.45
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b – CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss–Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi–peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2389.84	69.35	H	1.1	27.64	-31.0	74.0	65.96	-8.04
2412	70.11	H	1.0	27.62	4.5	OB	102.23	-
4824	43.40	H	1.0	31.30	-28.8	74.0	45.86	-28.14
2389.84	68.39	V	1.1	27.64	-31.0	74.0	65.00	-9.00
2412	68.41	V	1.1	27.62	4.5	OB	100.53	-
4824	43.40	V	1.1	31.30	-28.8	74.0	45.86	-28.14
AV(RBW:1MHz VBW:10Hz)								
2389.84	39.48	H	1.1	27.64	-31.0	54.0	36.09	-17.91
2412	39.91	H	1.0	27.62	4.5	OB	72.03	-
4824	31.50	H	1.0	31.30	-28.8	54.0	33.96	-20.04
2389.84	39.45	V	1.1	27.64	-31.0	54.0	36.06	-17.94
2412	39.23	V	1.1	27.62	4.5	OB	71.35	-
4824	31.50	V	1.1	31.30	-28.8	54.0	33.96	-20.04
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss-Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2437	67.85	H	1.0	27.61	4.5	OB	99.96	–
4874	44.00	H	1.0	31.37	–28.7	74.0	46.68	–27.32
2437	67.09	V	2.0	27.61	4.5	OB	99.20	–
4874	43.60	V	2.0	31.37	–28.7	74.0	46.28	–27.72
AV(RBW:1MHz VBW:10Hz)								
2437	39.01	H	1.0	27.61	4.5	OB	71.12	–
4874	31.30	H	1.0	31.37	–28.7	54.0	33.98	–20.02
2437	38.61	V	2.0	27.61	4.5	OB	70.72	–
4874	31.40	V	2.0	31.37	–28.7	54.0	34.08	–19.92
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g– CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss–Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.							

Test Date : 29-Oct-07

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW:1MHz VBW:1MHz)								
2462	65.14	H	1.7	27.60	4.5	OB	132.54	–
2483.68	62.48	H	1.8	27.59	–31.0	74.0	59.05	–14.95
4904	45.17	H	1.0	31.42	–28.6	74.0	47.97	–26.03
2462	62.71	V	1.3	27.60	4.5	OB	130.11	–
2483.68	62.20	V	1.2	27.59	–31.0	74.0	58.77	–15.23
4904	43.87	V	1.2	31.42	–28.6	74.0	46.67	–27.33
AV(RBW:1MHz VBW:10Hz)								
2462	38.07	H	1.7	27.60	4.5	OB	105.47	–
2483.68	37.80	H	1.8	27.59	–31.0	54.0	34.37	–19.63
4904	32.17	H	1.0	31.42	–28.6	54.0	34.97	–19.03
2462	37.13	V	1.3	27.60	4.5	OB	104.53	–
2483.68	38.08	V	1.2	27.59	–31.0	54.0	34.65	–19.35
4904	31.41	V	1.2	31.42	–28.6	54.0	34.21	–19.79
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g – CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss–Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi–peak detection at frequency below 1GHz.							

10. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2007) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2007) & ANSI C 63.4 (2003) in a shielded. The EUT was placed on a non-conductive table at least 80 above the ground plan. A grounded vertical reference plane was positioned in a distance of 40cm from the EUT. The distance from the EUT to other metal surfaces was at least 0.8m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0m.. The test receiver with Quasi Peak detector complies with CISPR 16.

10.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	NNLA8120A	Schwarzbeck	8120161	2008. 2. 28
LISN	ESH3-Z5	Schwarzbeck	838979/010	2008. 2. 28
TEST Receive	ESP17	Rohde & Schwarz	100185	2008. 8. 27
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	—

10.2 Environmental Condition

Test Place : Shield Room
 Temperature (°C) : 23 °C
 Humidity (%) : 42 %

10.3 Test data for Transmitter

Test Date : 30-Oct-07

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.19	0.16	0.0	H	63.91	45.91	46.11	53.91	29.85	30.05
0.20	0.15	0.0	H	63.45	45.39	45.59	53.45	31.01	31.21
0.27	0.13	0.0	H	61.06	42.05	42.23	51.06	30.62	30.80
0.28	0.13	0.0	N	60.91	43.02	43.20	50.91	29.12	29.30
0.35	0.13	0.1	H	58.96	41.18	41.37	48.96	27.18	27.37
0.39	0.13	0.1	H	58.15	42.66	42.86	48.15	30.28	30.48
0.52	0.15	0.1	N	56.00	36.25	36.49	46.00	24.81	25.05
0.56	0.15	0.1	H	56.00	38.72	38.97	46.00	26.10	26.35
0.58	0.15	0.1	H	56.00	36.84	37.09	46.00	23.52	23.77
0.83	0.17	0.1	N	56.00	38.66	38.97	46.00	24.27	24.58
0.90	0.20	0.1	N	56.00	38.76	39.11	46.00	25.49	25.84
1.10	0.25	0.2	H	56.00	36.30	36.72	46.00	25.22	25.64
5.58	0.40	0.5	N	60.00	27.08	28.00	50.00	17.98	18.90
6.35	0.43	0.6	N	60.00	25.49	26.47	50.00	13.40	14.38
7.66	0.50	0.6	N	60.00	27.84	28.96	50.00	15.05	16.17
7.97	0.52	0.6	H	60.00	24.78	25.93	50.00	11.16	12.31
8.25	0.54	0.6	H	60.00	25.25	26.44	50.00	11.08	12.27
8.35	0.55	0.7	N	60.00	26.51	27.71	50.00	13.96	15.16
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11b- CH6(2437MHz)								

Test Date : 30-Oct-07

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.19	0.16	0.0	H	63.86	41.67	41.87	53.86	28.23	28.43
0.20	0.16	0.0	N	63.82	43.66	43.86	53.82	28.79	28.99
0.21	0.15	0.0	N	63.24	42.72	42.91	53.24	29.09	29.28
0.25	0.14	0.0	N	61.69	40.50	40.68	51.69	25.25	25.43
0.28	0.13	0.0	N	60.88	42.09	42.27	50.88	28.65	28.83
0.35	0.13	0.1	N	59.01	41.37	41.56	49.01	27.44	27.63
0.54	0.15	0.1	N	56.00	36.36	36.61	46.00	24.12	24.37
0.56	0.15	0.1	H	56.00	38.13	38.38	46.00	24.69	24.94
0.58	0.15	0.1	N	56.00	37.26	37.51	46.00	22.41	22.66
0.63	0.15	0.1	H	56.00	37.24	37.50	46.00	24.30	24.56
0.96	0.23	0.2	H	56.00	37.07	37.45	46.00	24.12	24.50
1.19	0.26	0.2	H	56.00	35.49	35.92	46.00	24.09	24.52
5.58	0.40	0.5	N	60.00	25.96	26.88	50.00	15.93	16.85
6.45	0.44	0.6	N	60.00	25.15	26.14	50.00	14.73	15.72
6.95	0.46	0.6	H	60.00	23.54	24.58	50.00	14.37	15.41
7.26	0.48	0.6	N	60.00	25.21	26.28	50.00	15.31	16.38
8.14	0.53	0.6	N	60.00	25.44	26.61	50.00	15.48	16.65
28.42	0.94	1.4	H	60.00	24.15	26.53	50.00	16.67	19.05
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11g- CH6(2437MHz)								



11. Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.24

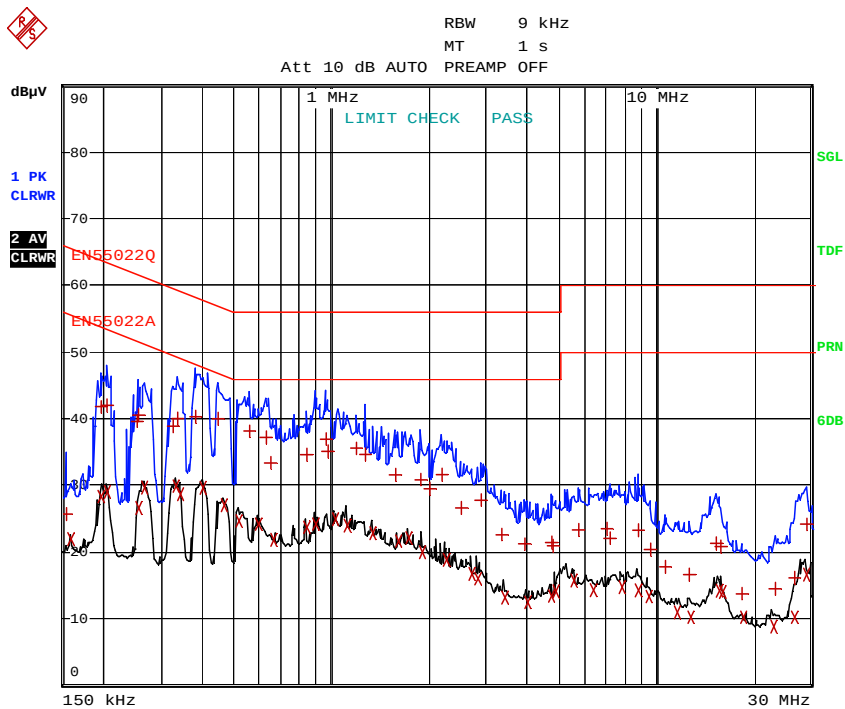
11.2 Antenna Connected Construction

The antenna types used in this product are Intergrated PCB Patch Antenna. The maximum Gain of this antenna is -2.15dBi .

Appendix 1. Spectral diagram

802.11g – CH 6

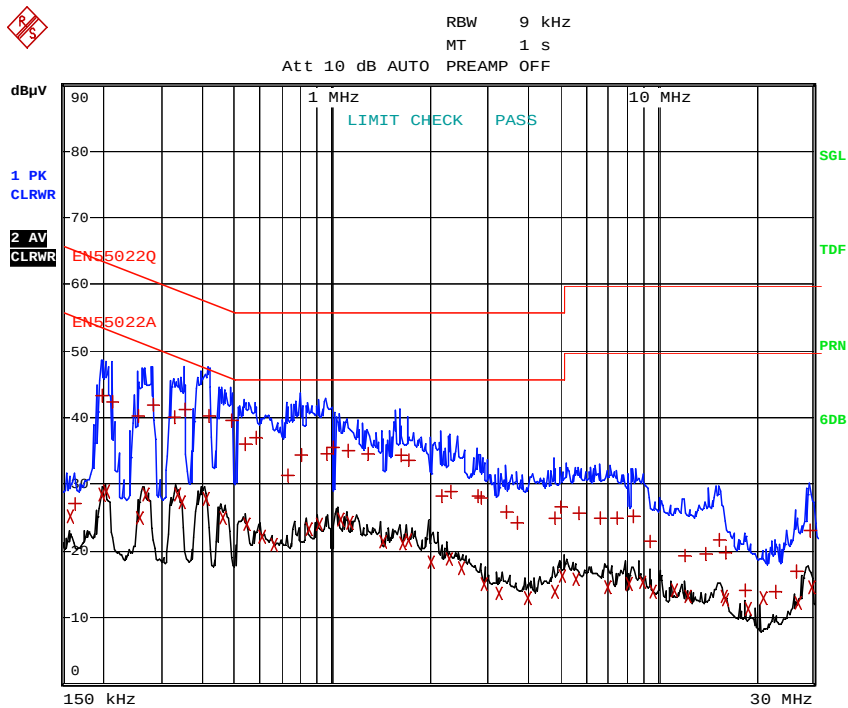
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Date: 30.OCT.2007 06:05:36

*NEUTRAL

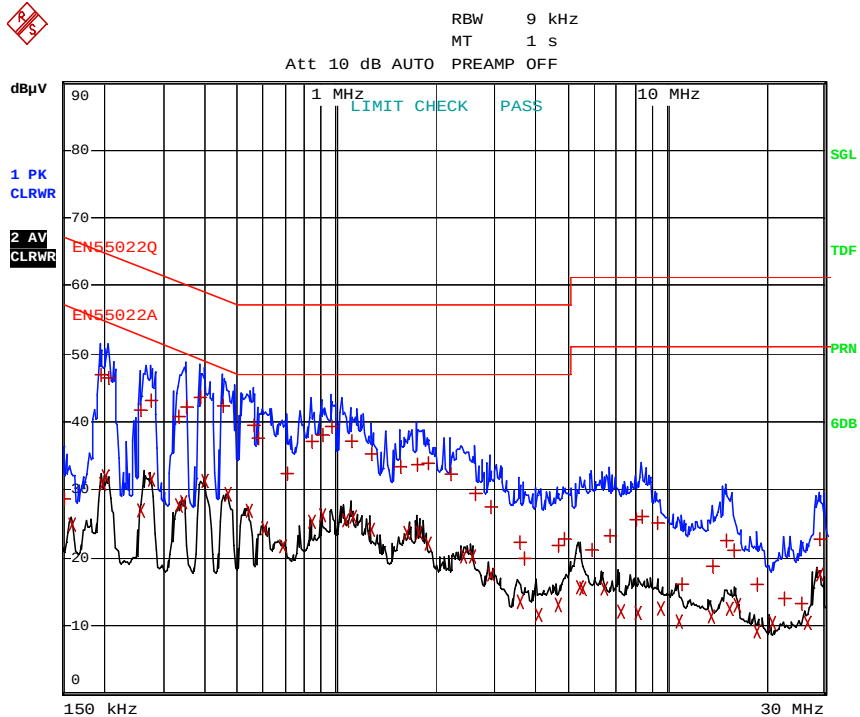


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Date: 30.OCT.2007 06:00:24

802.11b – CH6

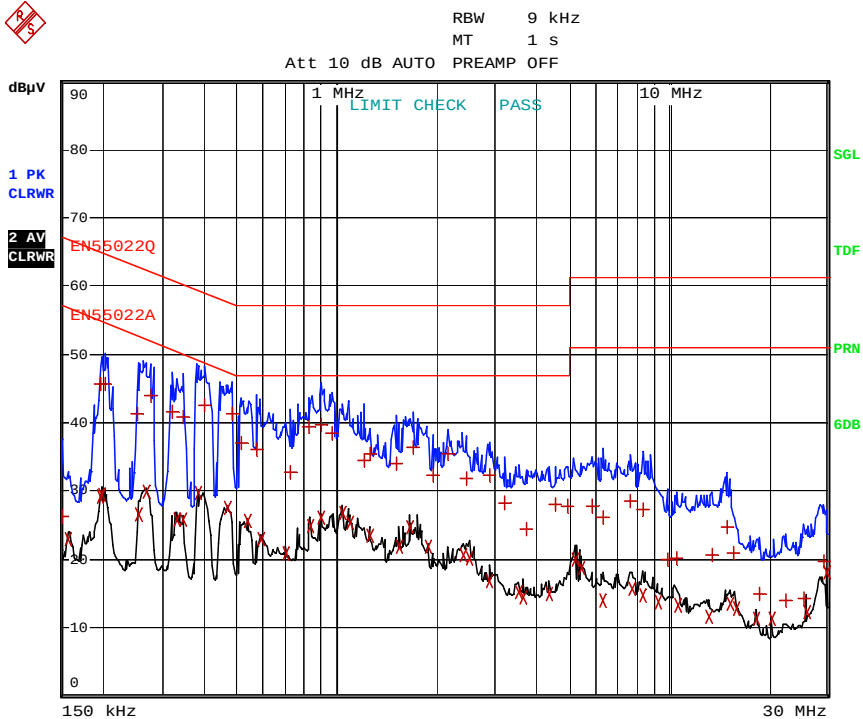
*HOT



Comment: W10_802.11b_HOT

Date: 30.OCT.2007 05:46:26

*NEUTRAL



Comment: W10_802.11b_NEUTRAL

Date: 30.OCT.2007 05:54:55