Compliance Test Report for FCC

Report Number		ESTF150601-007		
Applicant	Company name	SAMSUNG ELECTRONICS CO., LTD.		
	Address	416, Meatan-3-Dong, YoungTong-Gu, Suwon City, Korea		
	Telephone	82-31-277-8818		
Product	Product name	Wireless Mini PCI Card		
	Model No.	SWL-2460C	Manufacturer	SAMSUNG ELECTRO MECHANICS CO., LTD.
	Serial No.	NONE	Country of origin	KOREA
Test date	2005-12-13 ~ 2006-01-23		Date of issue	23-Jan-06
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15 2005 , ANSI C 63.4 2003			
Test item	■ Conducted Emission	□ Class A ■ Class B	Test result	OK
	■ Radiated Emission	□ Class A ■ Class B	Test result	OK
Measurement facility registration number		94696		
Tested by	Engineer J.H.Kim	(Signature)		
Reviewed by	Manager Engineer 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 our 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

Contents

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	: Wireless Mini PCI Card
Model Number	: SWL-2460C
Modulation Type	: DSSS, OFDM
Transfer Rate	: up to 54Mbps
Number of Channel	: 802.11b and 802.11g:11
Channel Spacing	: 802.11b and 802.11g: 5MHz
Output Power	: 802.11b: 17.7dBm, 802.11g: 21.1dBm
Serial Number	: NONE
Manufacturer	: SAMSUNG ELECTRO MECHANICS CO., LTD.
Country of origin	: KOREA
Rating	: INPUT:AC120V / 60Hz
Receipt Date	: 2005-12-13

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 (2005)

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 decides 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 method apply to the measurement of individual units or systems comprised of multiple units

Summary of Test Results

Applied Satandard : 47 CFR Part 15, Subpart C				
Standard	Test Type	Result	Remark	Limit
15.207	AC Power Conducted 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 ouput 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)

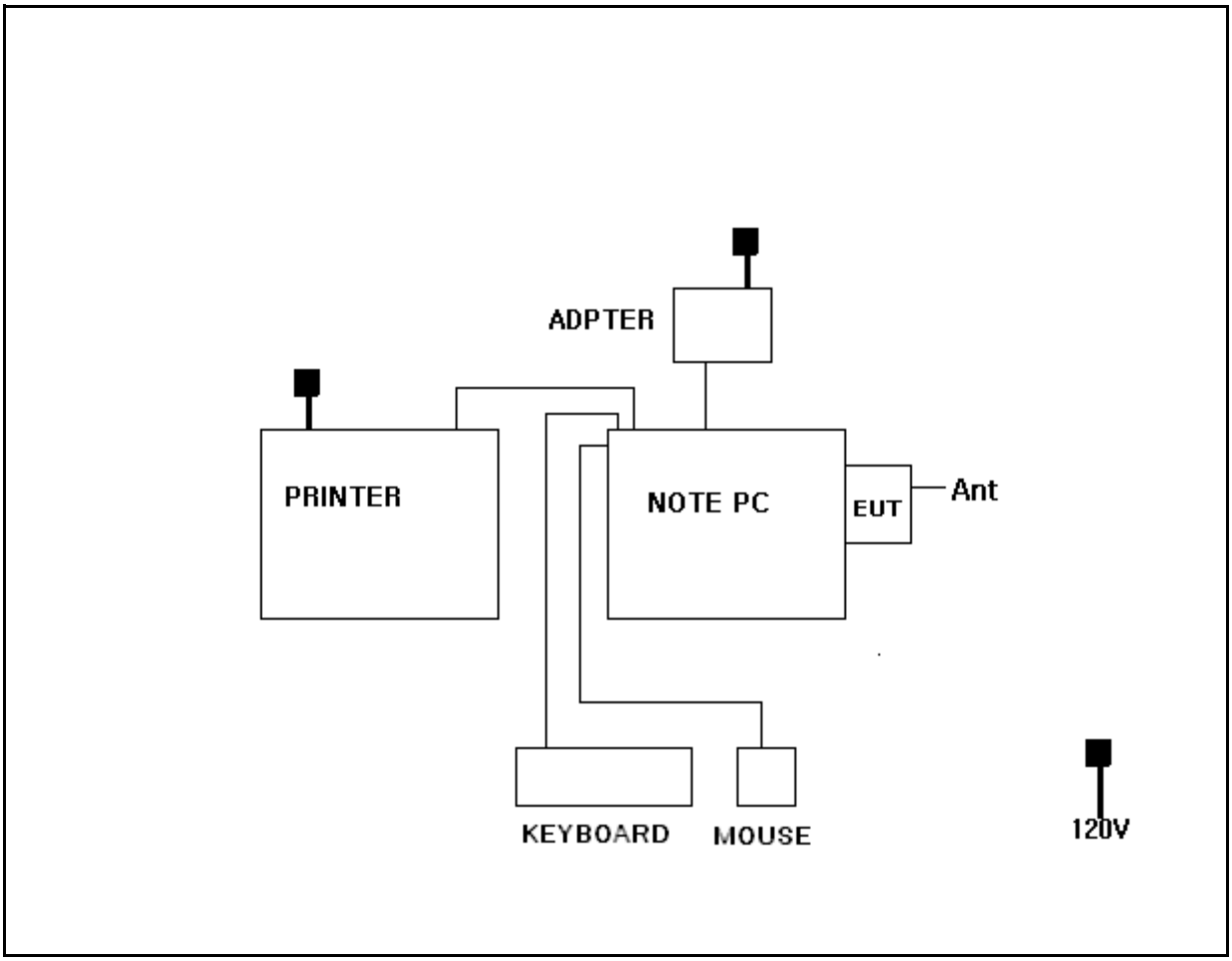
c. Test Mode : Continuous Output, DSSS and OFDM

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 hightest level of emission

4.3 Configuration and Peripherals



4.4 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Wireless Mini PCI Card	SWL-2460C	NONE	SAMSUNG ELECTRO MECHANICS CO., LTD.	EUT
NOTE PC	PPLLE	35748823888	DELL COMPUTER	-
ADAPTER	PA-1650-05DK	DLLQQ	DONGGUANG LITE POWER 2ND PLANT	-
PRINTER	LQ-570H+	B1021095782	SAMBO COMPUTER	-
KEYBOARD	SEM-DT35US	31001238	SAMSUNG ELECTRO MECHANICS CO., LTD.	
MOUSE	M-UV83	LNA40200502	LOGITECH	

4.5 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Wireless Mini PCI Card	PCMCIA	NOTE PC	PCMCIA	0	Y	-
NOTE PC	PARALLEL	PRINTER	PARALLEL	2	Y	-
NOTE PC	POWER	ADAPTER	-	2	N	-
NOTE PC	USB	KEYBOARD	USB	2	Y	-
NOTE PC	USB	MOUSE	USB	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: 1.1dB	-

5.3 Measurement results

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	CCK	ENVIRONMENTAL CONDITION	24℃, 44%RH
INPUT POWER	120Vac, 60Hz		

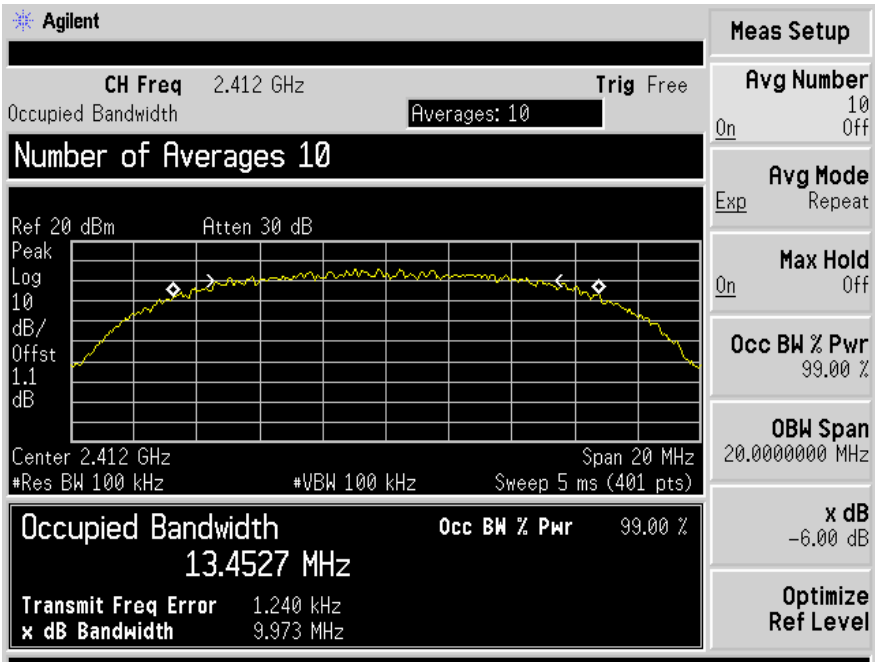
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	9.97	0.5	PASS
6	2437	9.94	0.5	PASS
11	2462	10.23	0.5	PASS

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	OFDM	ENVIRONMENTAL CONDITION	24℃, 43%RH
INPUT POWER	120Vac, 60Hz		

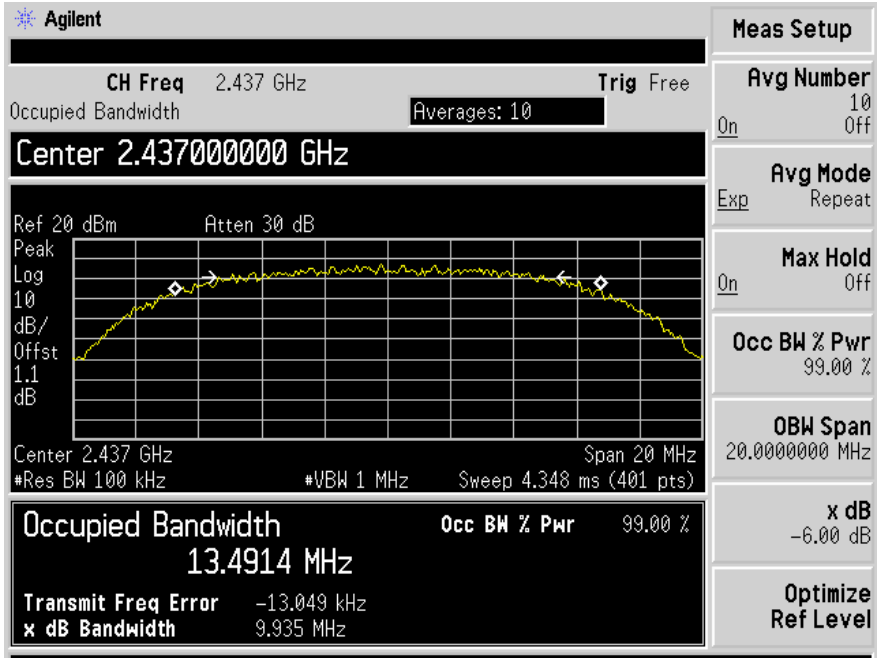
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	16.54	0.5	PASS
6	2437	16.47	0.5	PASS
11	2462	16.52	0.5	PASS

5.4 Trace data

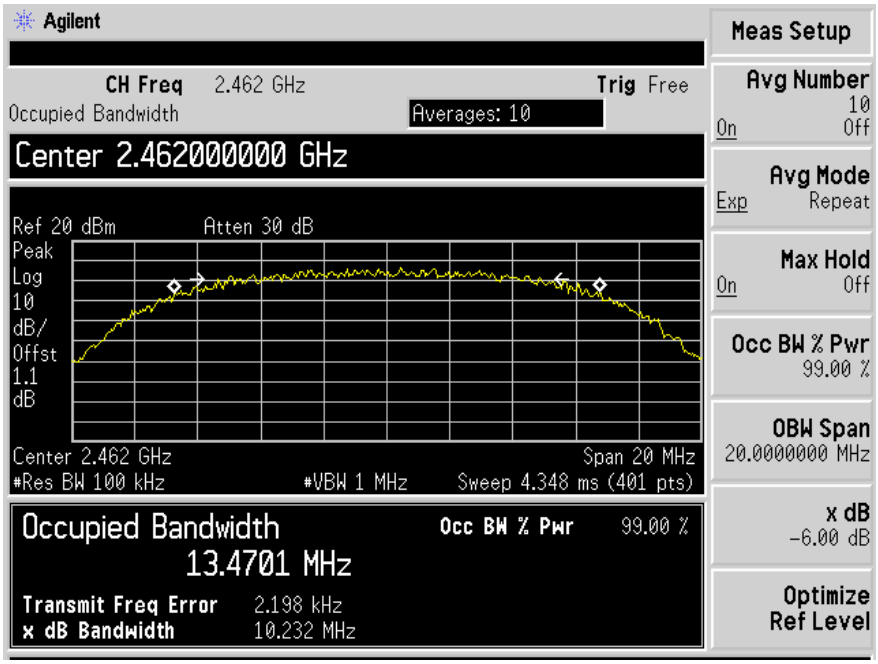
CCK (802.11b-1ch)



CCK (802.11b-6ch)

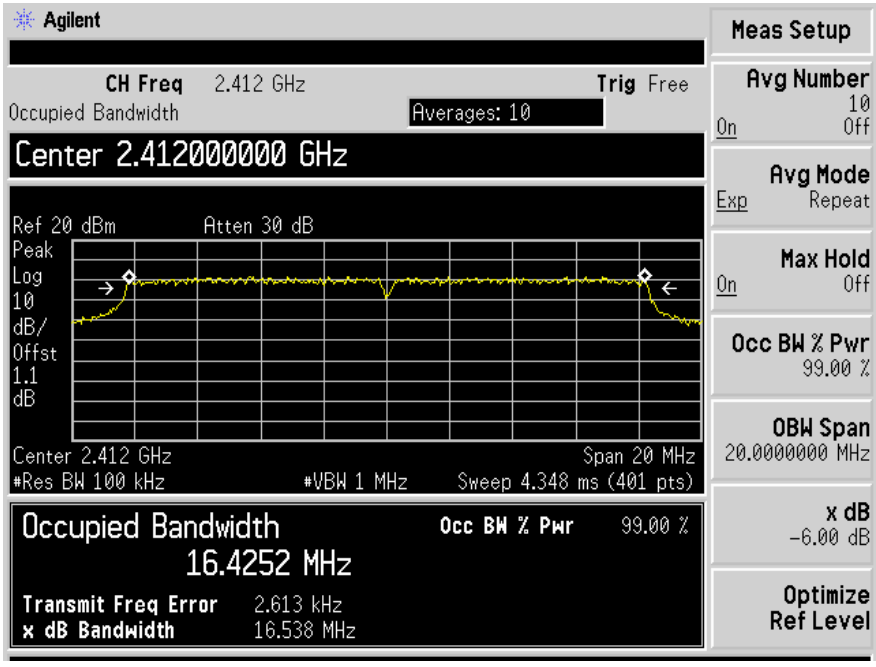


CCK (802.11b-11ch)



5.4 Trace data

OFDM (802.11g-1ch)



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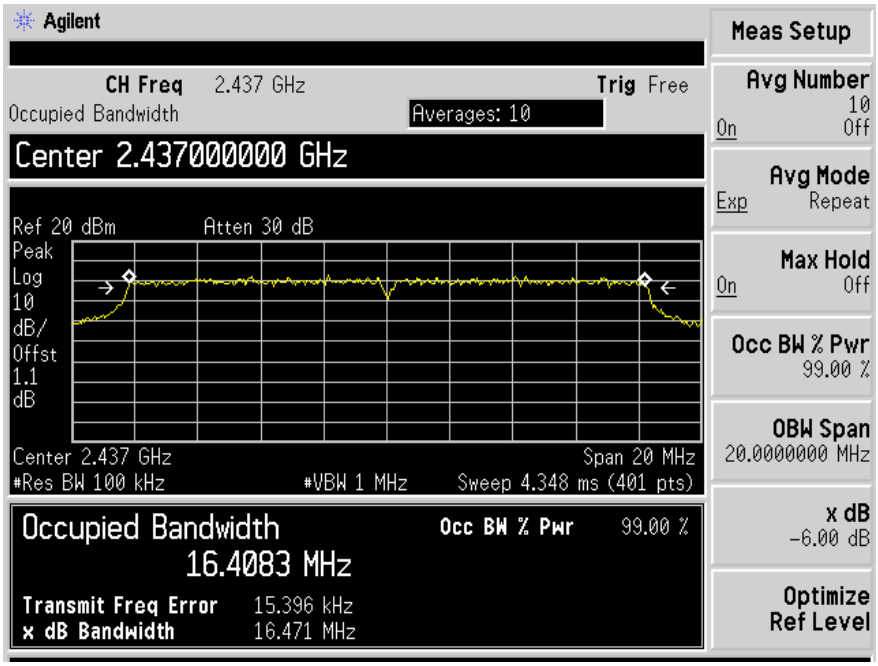
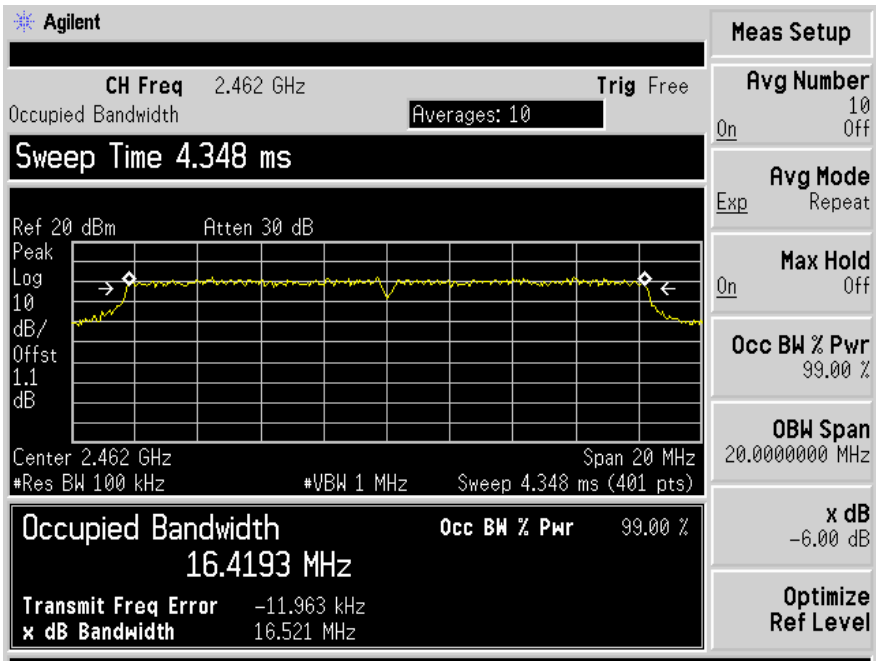


OFDM (802.11g-11ch)



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: 1.1dB	-

6.2 Measurement results

EUT	WLAN Mini PCI	MODEL	SWL-2460C
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	17.6	0.057	30.0	PASS
6	2437	17.7	0.059	30.0	PASS
11	2462	17.3	0.054	30.0	PASS

EUT	WLAN Mini PCI	MODEL	SWL-2460C
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	21.1	0.130	30.0	PASS
6	2437	21.1	0.128	30.0	PASS
11	2462	20.8	0.120	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 dencity 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: 1.1dB	-

7.3 Measurement results

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	CCK	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

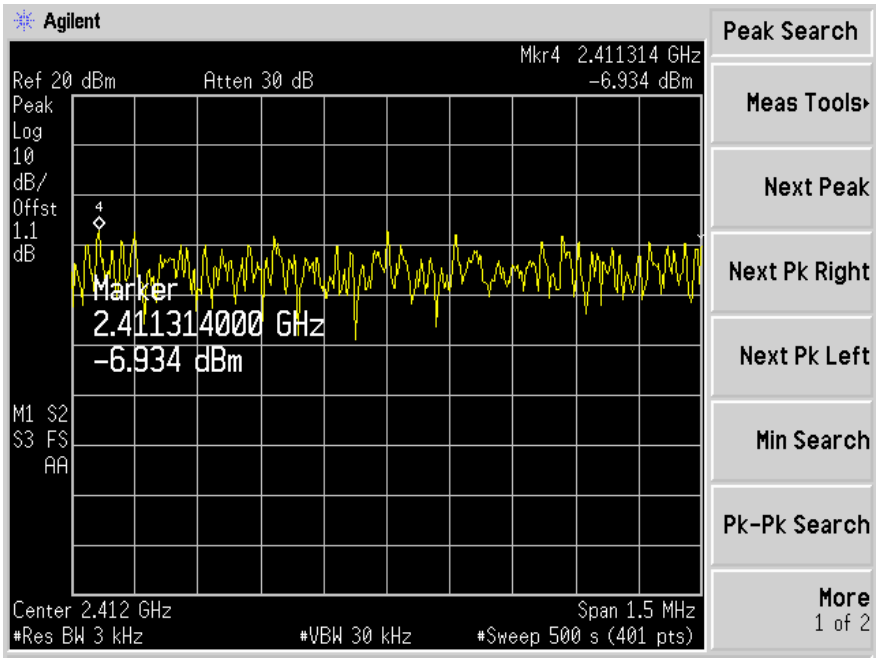
CHANNEL	Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Maximum Limit (dBm)	PASS/FAIL
1	2412	-6.93	8.0	PASS
6	2437	-7.13	8.0	PASS
11	2462	-7.28	8.0	PASS

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	OFDM	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

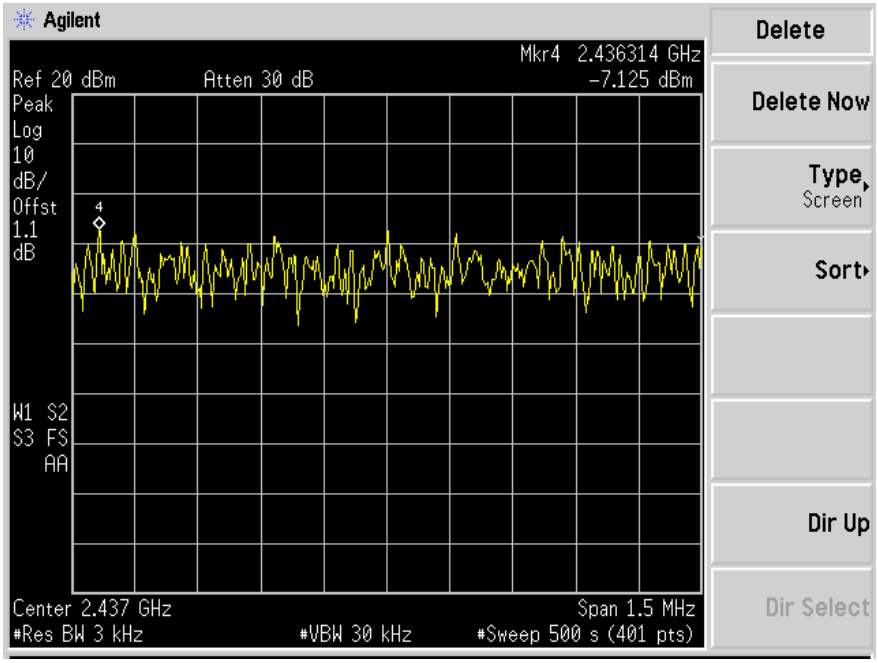
CHANNEL	Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Maximum Limit (dBm)	PASS/FAIL
1	2412	-11.36	8.0	PASS
6	2437	-12.03	8.0	PASS
11	2462	-12.04	8.0	PASS

7.4 Trace data

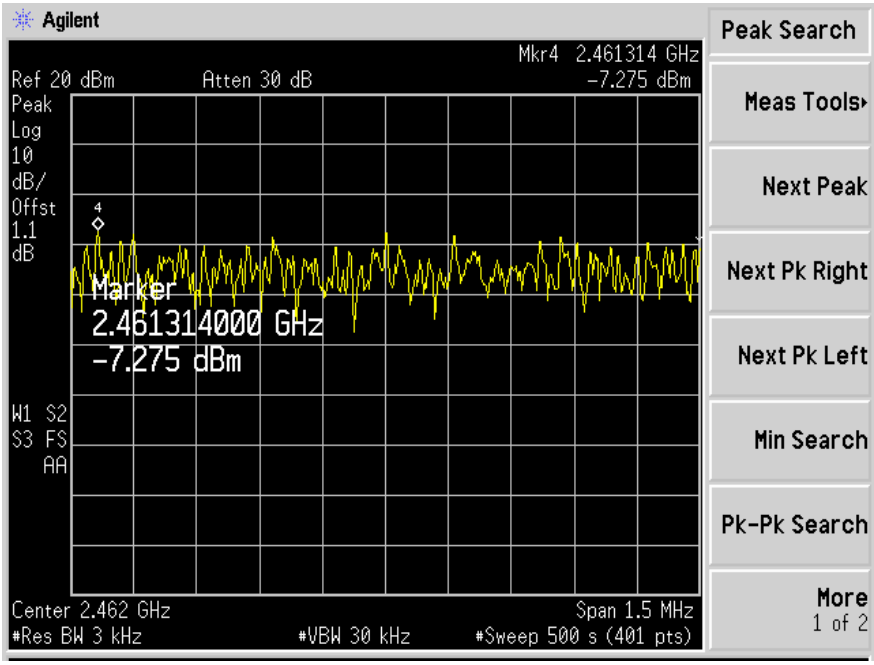
CCK (802.11b-1ch)



CCK (802.11b-6ch)

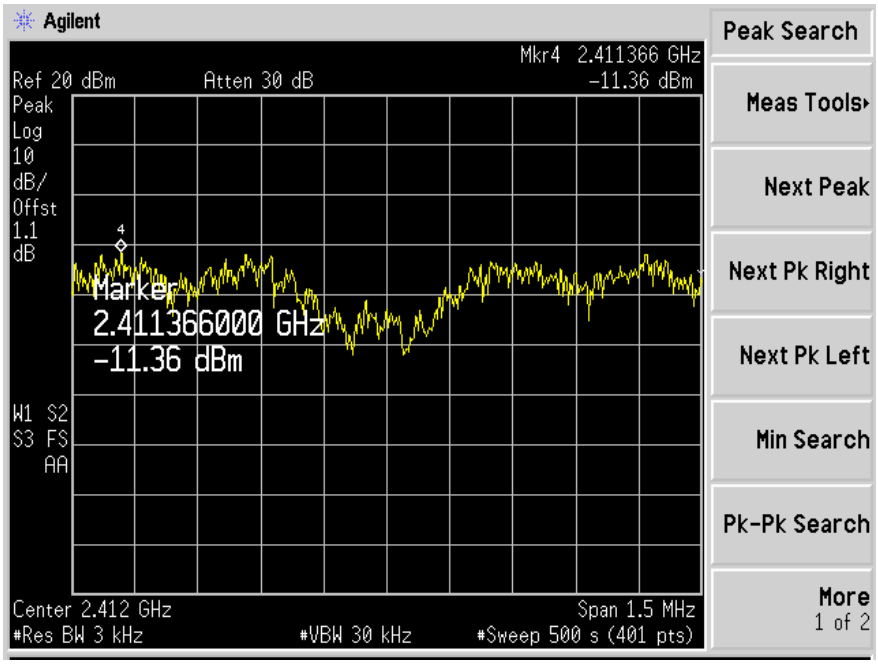


CCK (802.11b-11ch)

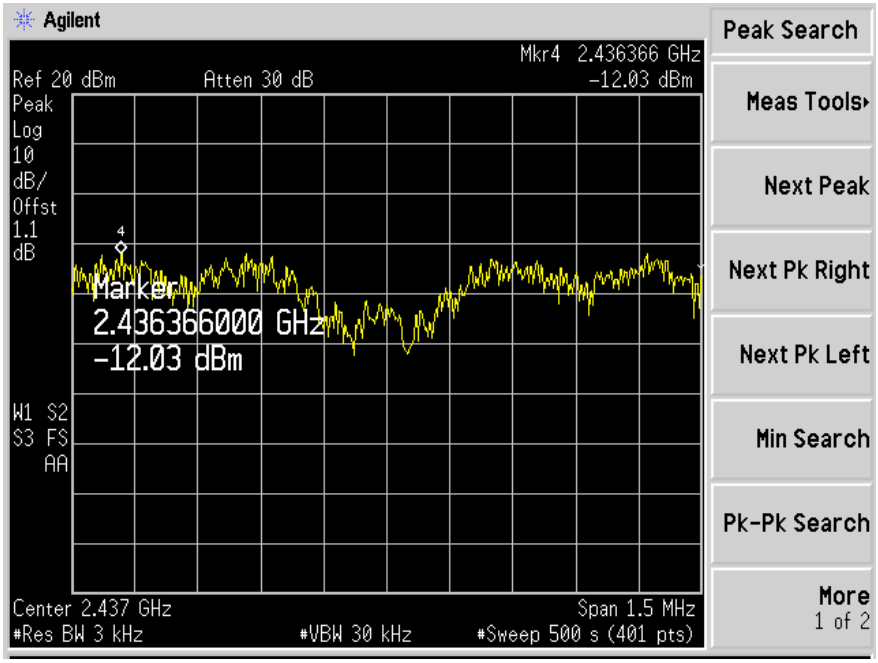


7.4 Trace data

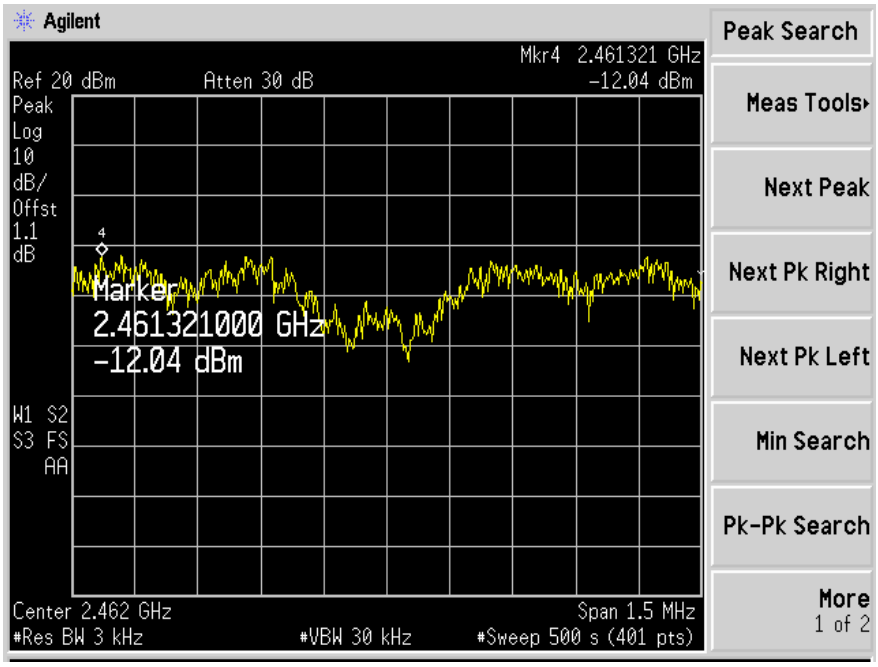
OFDM (802.11g-1ch)



OFDM (802.11g-6ch)



OFDM (802.11g-11ch)



8. band-edge and out of band emissions.

8.1 Test procedure

The radio frequecy 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: 1.1dB	-

8.3 Measurement results of band-edge & out of emission

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	CCK	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

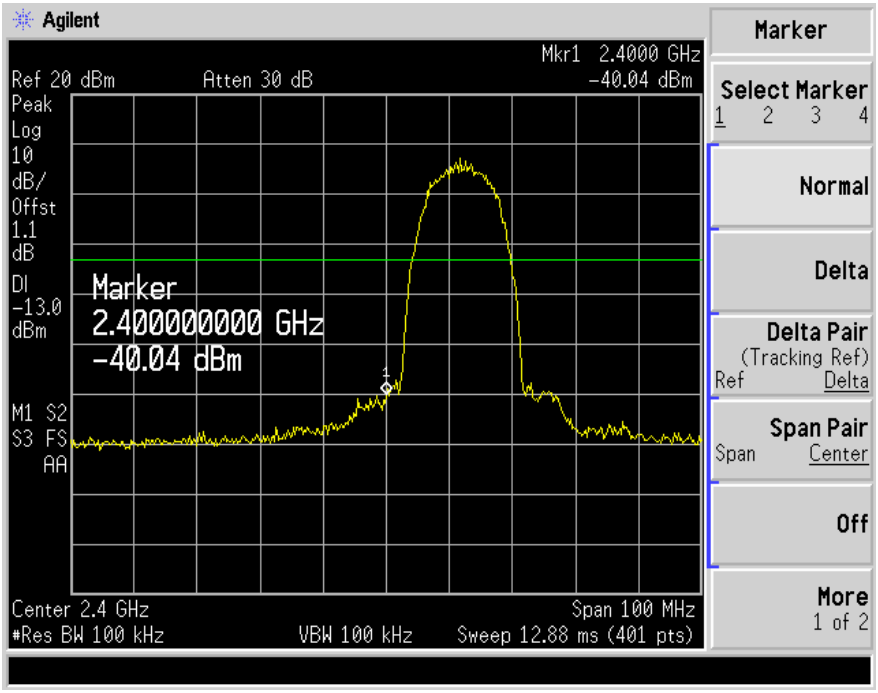
CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2400.0	-40.04	Below 20dB from peak power level to band edge
11	2462	2483.5	-45.83	Below 20dB from peak power level to band edge

EUT	WLAN Mini PCI	MODEL	SWL-2460C
MODE	OFDM	ENVIRONMENTAL CONDITION	23℃, 43%RH
INPUT POWER	120Vac, 60Hz		

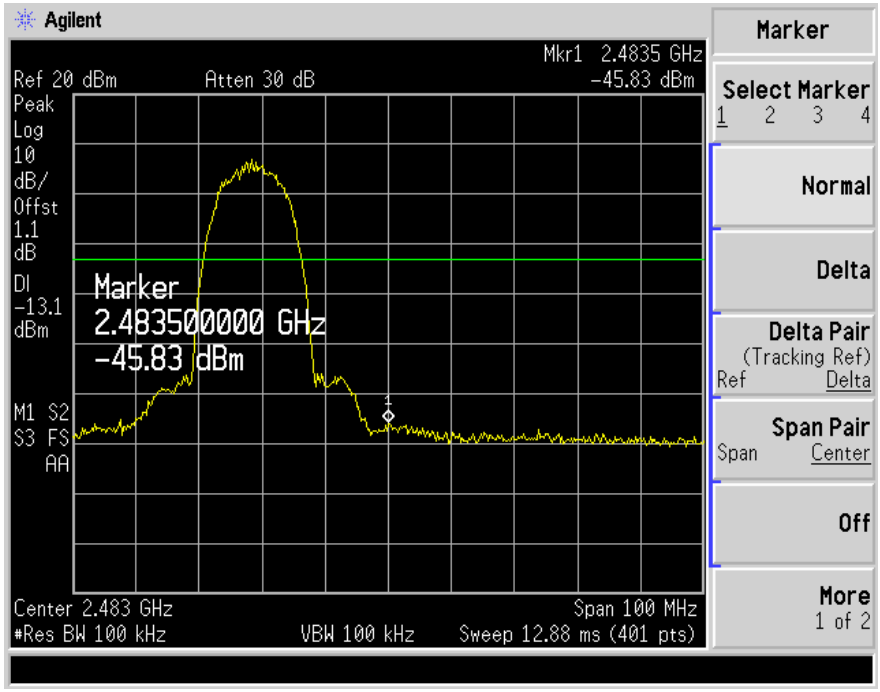
CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2400.0	-24.07	Below 20dB from peak power level to band edge
11	2462	2483.5	-33.35	Below 20dB from peak power level to band edge

8.4 Trace data of band-edge & Out of Emission

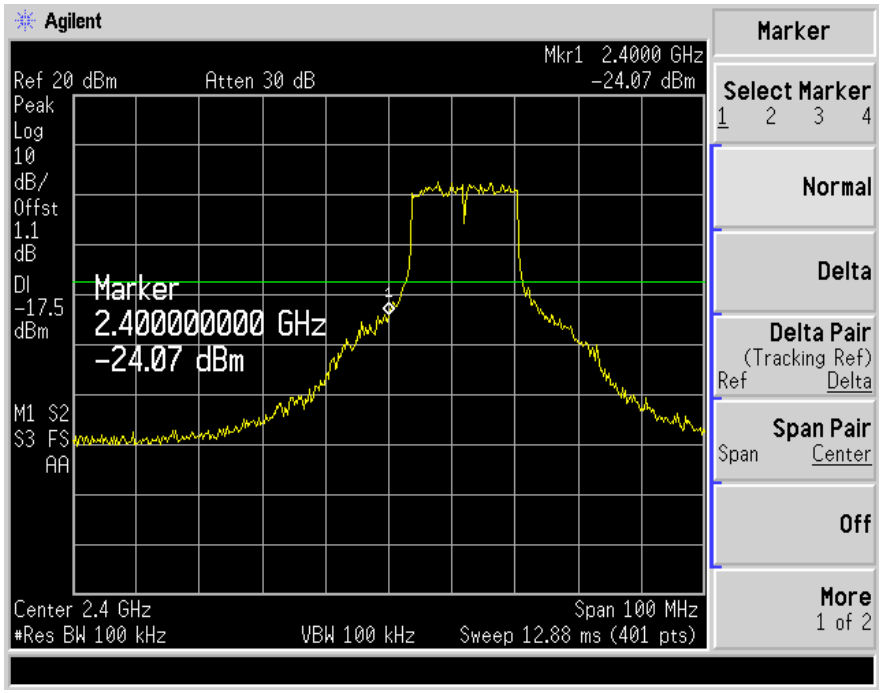
CCK (802.11b-1ch)



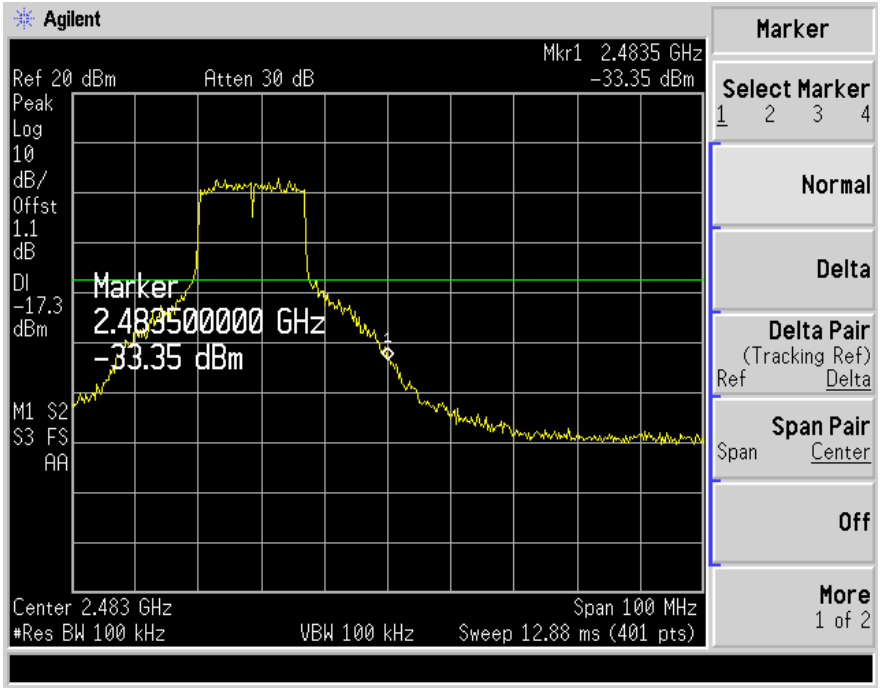
CCK (802.11b-11ch)



OFDM (802.11g-1ch)



OFDM (802.11g-11ch)



9. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2005) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2005) & 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	2006. 1. 19
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2006. 8. 22
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2006. 4. 10
LogBicon Antenna	VULB 9160	S/B	3142	2006. 7. 04
Horn Antenna	BBHA 9120 D	SCHWARZBECK	352	2006. 4. 06
Horn Antenna	BBHA 9120 D	SCHWARZBECK	469	2006. 3. 01
Spectrum Analyzer	8563E	HP	3623A05297	2006. 3. 3
PREAMPLIFIER	8449B	HP	3008A00581	2006. 3. 14
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) : 7 ℃
Humidity (%) : 42 %

9.3 Test Data

CCK(802.11b)

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
36.13	14.80	H	2.2	12.47	1.0	40.0	28.29	-11.71
71.62	16.70	H	2.1	10.63	1.2	40.0	28.56	-11.44
120.00	20.90	H	1.8	12.03	1.6	43.5	34.53	-8.97
143.12	9.40	H	1.6	13.53	1.8	43.5	24.76	-18.74
166.27	18.90	H	1.5	13.54	1.9	43.5	34.37	-9.13
200.00	14.10	H	1.3	10.38	2.1	43.5	26.58	-16.92
225.00	17.90	H	1.2	11.00	2.2	46.0	31.10	-14.90
240.09	18.30	H	1.1	11.71	2.3	46.0	32.31	-13.69
300.10	13.60	H	1.0	13.19	2.6	46.0	29.39	-16.61
360.01	13.20	H	1.0	14.39	3.0	46.0	30.59	-15.41
400.02	14.90	H	1.0	15.32	3.1	46.0	33.32	-12.68
500.26	11.30	H	1.0	17.06	3.6	46.0	31.96	-14.04
600.00	10.70	V	1.0	19.16	4.0	46.0	33.86	-12.14
800.01	8.70	H	1.0	21.76	4.5	46.0	34.96	-11.04
Remark	H : Horizontal, V : Vertical Test Mode:802.11b							

OFDM(802.11g)

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
35.77	18.30	H	2.4	12.45	1.0	40.0	31.76	-8.24
71.61	16.30	H	2.1	10.63	1.2	40.0	28.16	-11.84
120.10	20.30	V	1.0	12.04	1.6	43.5	33.94	-9.56
149.02	16.40	V	1.0	13.85	1.9	43.5	32.14	-11.36
180.10	14.40	V	1.0	12.43	2.0	43.5	28.83	-14.67
200.00	16.10	V	1.0	10.38	2.1	43.5	28.58	-14.92
225.01	17.40	H	1.2	11.00	2.2	46.0	30.60	-15.40
240.02	19.50	V	1.0	11.71	2.3	46.0	33.51	-12.49
300.09	15.20	V	1.0	13.19	2.6	46.0	30.99	-15.01
360.16	13.20	H	1.0	14.39	3.0	46.0	30.59	-15.41
400.02	15.10	H	1.0	15.32	3.1	46.0	33.52	-12.48
500.20	11.70	H	1.0	17.06	3.6	46.0	32.36	-13.64
600.00	10.70	V	1.0	19.16	4.0	46.0	33.86	-12.14
700.01	6.40	V	1.0	20.14	4.2	46.0	30.74	-15.26
Remark	H : Horizontal, V : Vertical Test Mode:802.11g							

CCK-CH1

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2390	40.67	H	1.0	27.64	-33.0	74.0	35.28	-38.72
2412	71.50	H	1.5	27.62	-33.0	-	101.39	-
4824	46.00	H	1.7	31.30	-32.3	74.0	44.99	-29.01
7236	40.67	H	1.7	36.54	-32.0	74.0	45.18	-28.82
9648	43.33	H	1.6	37.98	-31.8	74.0	49.48	-24.52
2390	40.33	V	1.0	27.64	-33.0	74.0	34.94	-39.06
2412	79.00	V	1.3	27.62	-33.0	-	108.89	-
4824	49.33	V	1.4	31.30	-32.3	74.0	48.32	-25.68
7236	41.33	V	1.4	36.54	-32.0	74.0	45.84	-28.16
9648	43.50	V	1.8	37.98	-31.8	74.0	49.65	-24.35
AV(RBW:1Mhz VBW:10hz)								
2390	30.33	H	1.0	27.64	-33.0	54.0	24.94	-29.06
2412	64.83	H	1.5	27.62	-33.0	-	94.72	-
4824	33.50	H	1.7	31.30	-32.3	54.0	32.49	-21.51
7236	30.17	H	1.7	36.54	-32.0	54.0	34.68	-19.32
9648	31.33	H	1.6	37.98	-31.8	54.0	37.48	-16.52
2390	30.33	V	1.0	27.64	-33.0	54.0	24.94	-29.06
2412	72.50	V	1.3	27.62	-33.0	-	102.39	-
4824	35.83	V	1.4	31.30	-32.3	54.0	34.82	-19.18
7236	30.17	V	1.4	36.54	-32.0	54.0	34.68	-19.32
9648	32.17	V	1.8	37.98	-31.8	54.0	38.32	-15.68
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. * There was no found any radiated emission for the restricted bands below 2390MHz.							

CCK-CH6

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2437	74.17	H	1.6	27.61	-33.0	-	104.05	-
4874	47.17	H	1.5	31.37	-32.3	74.0	46.23	-27.77
7311	41.50	H	1.5	36.56	-32.0	74.0	46.02	-27.98
9748	43.00	H	1.4	38.12	-31.8	74.0	49.29	-24.71
2437	80.33	V	1.9	27.61	-33.0	-	110.21	-
4874	50.67	V	1.1	31.37	-32.3	74.0	49.73	-24.27
7311	40.33	V	1.5	36.56	-32.0	74.0	44.85	-29.15
9748	43.83	V	1.2	38.12	-31.8	74.0	50.12	-23.88
AV(RBW:1Mhz VBW:10hz)								
2437	67.67	H	1.6	27.61	-33.0	-	97.55	-
4874	33.83	H	1.5	31.37	-32.3	54.0	32.89	-21.11
7311	30.17	H	1.5	36.56	-32.0	54.0	34.69	-19.31
9748	31.67	H	1.4	38.12	-31.8	54.0	37.96	-16.04
2437	73.83	V	1.9	27.61	-33.0	-	103.71	-
4874	37.33	V	1.1	31.37	-32.3	54.0	36.39	-17.61
7311	30.33	V	1.5	36.56	-32.0	54.0	34.85	-19.15
9748	32.33	V	1.2	38.12	-31.8	54.0	38.62	-15.38

Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps.

CCK-CH11

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2462	74.00	H	1.6	27.60	-33.0	-	103.87	-
2483.5	43.50	H	1.0	27.59	-33.0	74.0	38.06	-35.94
4924	47.33	H	1.7	31.44	-32.3	74.0	46.46	-27.54
7386	39.50	H	1.7	36.59	-32.1	74.0	44.02	-29.98
9848	43.00	H	1.6	38.18	-31.8	74.0	49.37	-24.63
2462	82.00	V	1.8	27.60	-33.0	-	111.87	-
2483.5	43.70	V	1.0	27.59	-33.0	74.0	38.26	-35.74
4924	49.17	V	1.1	31.44	-32.3	74.0	48.30	-25.70
7386	40.50	V	1.2	36.59	-32.1	74.0	45.02	-28.98
9848	42.83	V	1.4	38.18	-31.8	74.0	49.20	-24.80
AV(RBW:1Mhz VBW:10hz)								
2462	67.33	H	1.6	27.60	-33.0	-	97.20	-
2483.5	32.67	H	1.0	27.59	-33.0	54.0	27.23	-26.77
4924	34.67	H	1.7	31.44	-32.3	54.0	33.80	-20.20
7386	29.50	H	1.7	36.59	-32.1	54.0	34.02	-19.98
9848	31.50	H	1.6	38.18	-31.8	54.0	37.87	-16.13
2462	75.33	V	1.8	27.60	-33.0	-	105.20	-
2483.5	32.66	V	1.0	27.59	-33.0	54.0	27.22	-26.78
4924	36.00	V	1.1	31.44	-32.3	54.0	35.13	-18.87
7386	29.50	V	1.2	36.59	-32.1	54.0	34.02	-19.98
9848	33.17	V	1.4	38.18	-31.8	54.0	39.54	-14.46
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *There was no found any radiated emission for the restricted bands above 2483.5MHz.							

OFDM-CH1

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2390	40.83	H	1.0	27.64	-33.0	74.0	35.44	-38.56
2412	69.67	H	1.6	27.62	-33.0	-	99.56	-
4824	44.17	H	1.2	31.30	-32.3	74.0	43.16	-30.84
7236	39.67	H	1.2	36.54	-32.0	74.0	44.18	-29.82
9648	41.33	H	1.2	37.98	-31.8	74.0	47.48	-26.52
2390	41.00	V	1.0	27.64	-33.0	74.0	35.61	-38.39
2412	78.00	V	1.3	27.62	-33.0	-	107.89	-
4824	47.83	V	1.1	31.30	-32.3	74.0	46.82	-27.18
7236	40.83	V	1.1	36.54	-32.0	74.0	45.34	-28.66
9648	42.83	V	1.3	37.98	-31.8	74.0	48.98	-25.02
AV(RBW:1Mhz VBW:10hz)								
2390	30.50	H	1.0	27.64	-33.0	54.0	25.11	-28.89
2412	59.67	H	1.6	27.62	-33.0	-	89.56	-
4824	33.00	H	1.2	31.30	-32.3	54.0	31.99	-22.01
7236	30.00	H	1.2	36.54	-32.0	54.0	34.51	-19.49
9648	30.83	H	1.2	37.98	-31.8	54.0	36.98	-17.02
2390	30.50	V	1.0	27.64	-33.0	54.0	25.11	-28.89
2412	68.00	V	1.3	27.62	-33.0	-	97.89	-
4824	35.83	V	1.1	31.30	-32.3	54.0	34.82	-19.18
7236	30.00	V	1.1	36.54	-32.0	54.0	34.51	-19.49
9648	31.33	V	1.3	37.98	-31.8	54.0	37.48	-16.52
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *There was no found any radiated emission for the restricted bands below 2390MHz.							

OFDM-CH6

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2437	72.17	H	1.6	27.61	-33.0	-	102.05	-
4874	43.83	H	1.7	31.37	-32.3	74.0	42.89	-31.11
7311	40.00	H	1.6	36.56	-32.0	74.0	44.52	-29.48
9748	39.50	H	1.6	38.12	-31.8	74.0	45.79	-28.21
2437	80.33	V	1.6	27.61	-33.0	-	110.21	-
4874	45.33	V	1.4	31.37	-32.3	74.0	44.39	-29.61
7311	41.50	V	1.4	36.56	-32.0	74.0	46.02	-27.98
9748	41.67	V	1.5	38.12	-31.8	74.0	47.96	-26.04
AV(RBW:1Mhz VBW:10hz)								
2437	62.17	H	1.6	27.61	-33.0	-	92.05	-
4874	32.83	H	1.7	31.37	-32.3	54.0	31.89	-22.11
7311	30.17	H	1.6	36.56	-32.0	54.0	34.69	-19.31
9748	29.50	H	1.6	38.12	-31.8	54.0	35.79	-18.21
2437	70.67	V	1.6	27.61	-33.0	-	100.55	-
4874	35.83	V	1.4	31.37	-32.3	54.0	34.89	-19.11
7311	30.17	V	1.4	36.56	-32.0	54.0	34.69	-19.31
9748	30.00	V	1.5	38.12	-31.8	54.0	36.29	-17.71
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g- CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps.							

OFDM-CH11

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW:1Mhz VBW:1Mhz)								
2462	67.33	H	1.4	27.60	-33.0	-	97.20	-
2483.5	44.00	H	1.0	27.59	-33.0	74.0	38.56	-35.44
4924	43.50	H	1.0	31.44	-32.3	74.0	42.63	-31.37
7386	39.17	H	1.0	36.59	-32.1	74.0	43.69	-30.31
9848	40.67	H	1.0	38.18	-31.8	74.0	47.04	-26.96
2462	77.50	V	2.0	27.60	-33.0	-	107.37	-
2482	43.50	V	1.0	27.59	-33.0	74.0	38.06	-35.94
4924	44.83	V	1.1	31.44	-32.3	74.0	43.96	-30.04
7386	40.50	V	1.1	36.59	-32.1	74.0	45.02	-28.98
9848	41.83	V	1.8	38.18	-31.8	74.0	48.20	-25.80
AV(RBW:1Mhz VBW:10hz)								
2462	58.17	H	1.4	27.60	-33.0	-	88.04	-
2483.5	33.00	H	1.0	27.59	-33.0	54.0	27.56	-26.44
4924	33.33	H	1.0	31.44	-32.3	54.0	32.46	-21.54
7386	29.33	H	1.0	36.59	-32.1	54.0	33.85	-20.15
9848	30.50	H	1.0	38.18	-31.8	54.0	36.87	-17.13
2462	68.83	V	2.0	27.60	-33.0	-	98.70	-
2482	33.00	V	1.0	27.59	-33.0	54.0	27.56	-26.44
4924	34.50	V	1.1	31.44	-32.3	54.0	33.63	-20.37
7386	29.33	V	1.1	36.59	-32.1	54.0	33.85	-20.15
9848	31.17	V	1.8	38.18	-31.8	54.0	37.54	-16.46
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g - CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *There was no found any radiated emission for the restricted bands above 2483.5MHz.							

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 (2002) & ANSI C 63.4 (2003) The test setup was made according to FCC Part 15 (2002) & 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	ESH3-Z5	Rohde & Schwarz	838979/010	2006. 2. 18
LISN	NNLA8120A	Schwarzbeck	NONE	2006. 2. 18
TEST Receive	ESPI7	Rohde & Schwarz	100185	2006. 8. 22
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2006. 6. 15

10.2 Environmental Condition

Test Place : Shield Room

Temperature (°C) : 21 ℃

Humidity (%) : 43 %

10.3 Test data

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dB)
CH 1(2412MHz)									
0.22	0.14	0.0	H	62.82	39.92	40.11	52.82	22.23	22.42
0.23	0.14	0.1	H	62.45	48.16	48.35	52.45	36.83	37.02
0.36	0.16	0.1	H	58.73	33.96	34.25	48.73	26.87	27.16
CH 6(2437MHz)									
0.22	0.14	0.0	H	62.82	36.93	37.12	52.82	21.09	21.28
0.23	0.14	0.1	N	62.45	47.21	47.40	52.45	35.53	35.72
0.35	0.16	0.1	N	58.96	34.51	34.80	48.96	27.47	27.76
CH 11(2462MHz)									
0.22	0.14	0.0	H	62.82	38.54	38.73	52.82	23.58	23.77
0.23	0.14	0.1	H	62.45	46.58	46.77	52.45	37.33	37.52
0.36	0.16	0.1	N	58.73	33.35	33.64	48.73	26.23	26.52
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11b - CH 11(2462MHz)								

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dB)
CH 1(2412MHz)									
0.15	0.12	0.0	H	66.00	33.85	33.97	56.00	-	-
0.22	0.14	0.0	N	62.82	38.74	38.93	52.82	23.51	23.70
0.23	0.14	0.1	H	62.45	46.02	46.21	52.45	36.68	36.87
0.35	0.16	0.1	N	58.96	33.38	33.67	48.96	27.06	27.35
0.46	0.16	0.2	H	56.69	31.37	31.71	46.69	26.60	26.94
CH 6(2437MHz)									
0.15	0.12	0.0	H	66.00	32.83	32.95	56.00	-	-
0.22	0.14	0.0	H	62.82	36.56	36.75	52.82	20.82	21.01
0.23	0.14	0.1	H	62.45	45.91	46.10	52.45	36.62	36.81
0.35	0.16	0.1	N	58.96	33.59	33.88	48.96	27.58	27.87
0.47	0.16	0.2	H	56.51	31.27	31.62	46.51	26.52	26.87
CH 11(2462MHz)									
0.15	0.12	0.0	H	66.00	32.76	32.88	56.00	-	-
0.22	0.14	0.0	H	62.82	38.45	38.64	52.82	22.66	22.85
0.24	0.14	0.1	H	62.10	45.65	45.85	52.10	36.38	36.58
0.35	0.16	0.1	N	58.96	32.76	33.05	48.96	26.44	26.73
0.47	0.16	0.2	H	56.51	31.67	32.02	46.51	25.55	25.90
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11g - CH 11 (2462MHz)								

1.Setup for Radiated Test : 30 ~ 1000 MHz

[Front]

[Rear]

2. Setup for Radiated Test :Above 1000 MHz

[Front]

3. Setup for Conducted Test : 0.15 ~ 30 MHz

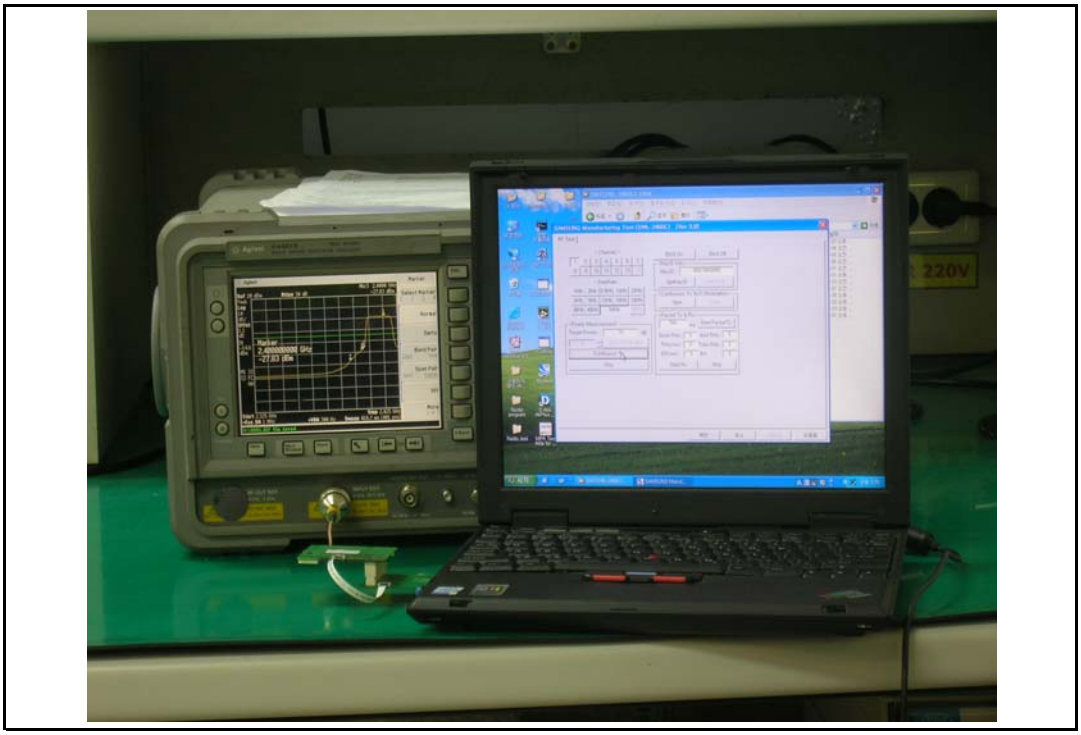
[Front]

[Rear]

4. Setup for Conducted Test

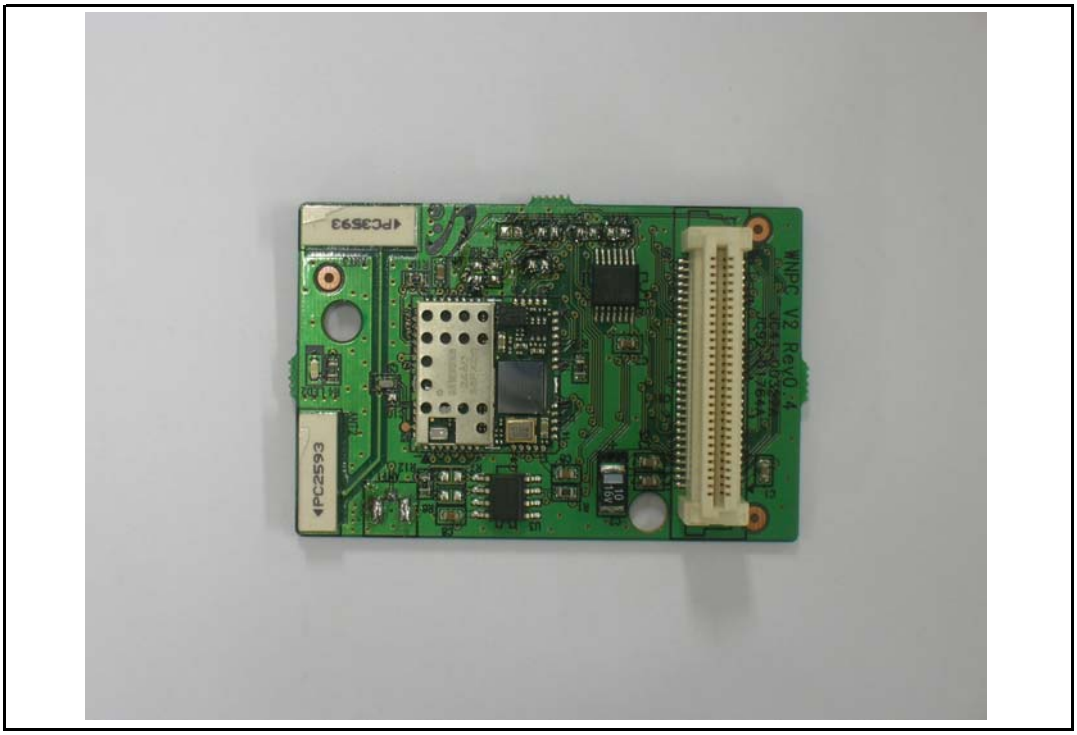
[6dB Bandwidth Measurement]

[Band-Edge and Out of Band Emissions]



12. Photographs of EUT

[Front]



[Rear]

13. Antenna Requirement

13.1 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

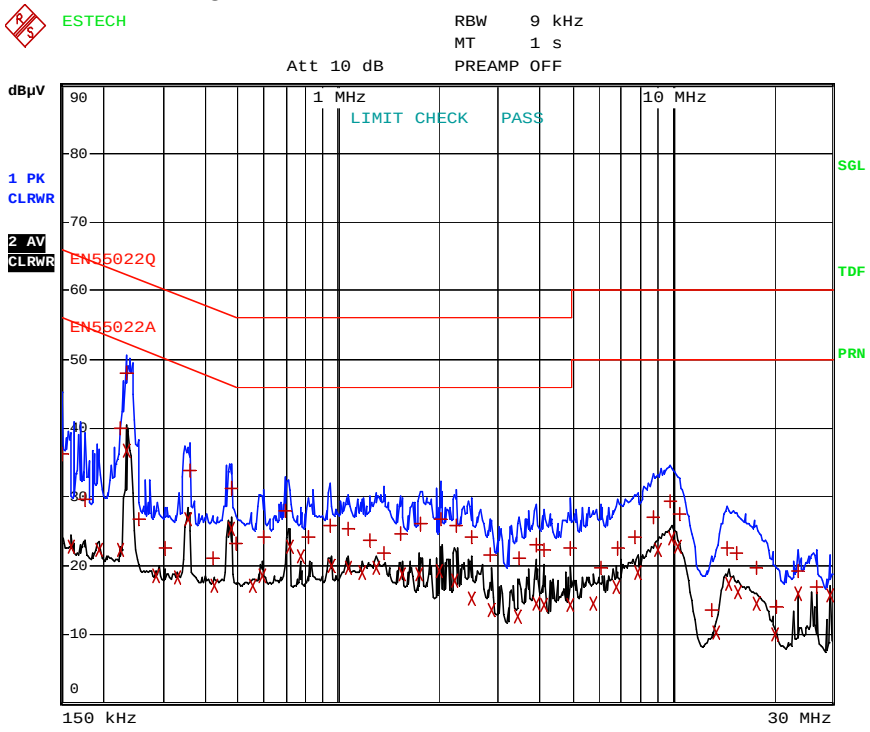
13.2 Antenna Connected Construction

The antenna types used in this product are Intergrated PCB Pattern Antenna. The maximum Gain of this antenna is 3.83dBi.

Appendix 1. Spectral diagram

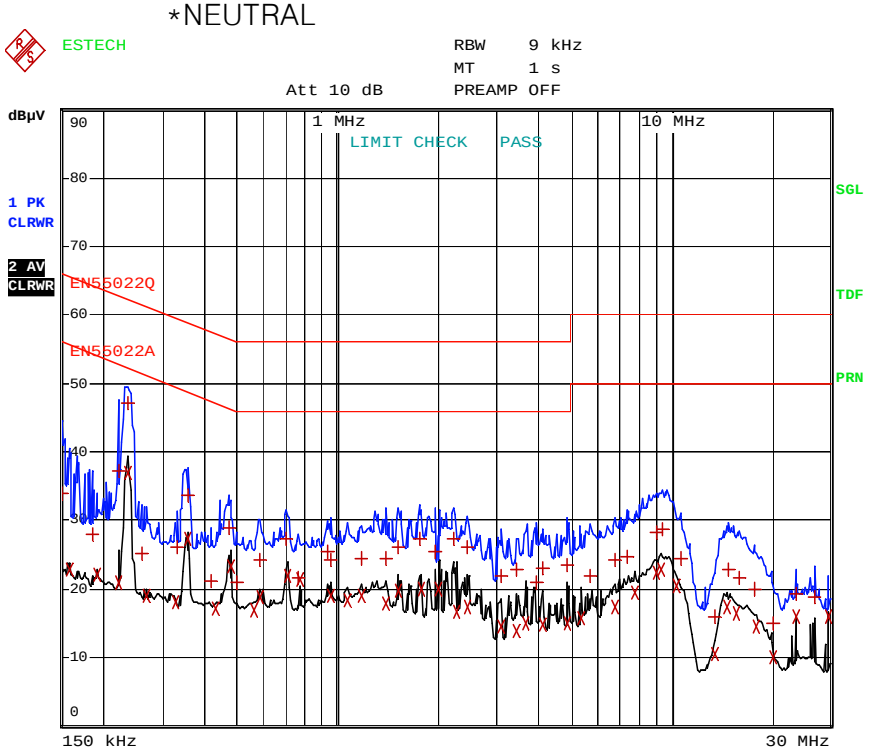
802.11b – CH 1

*HOT



Comment: SWL-2460C_801.11B(CH1) HOT
Date: 29.DEC.2005 09:04:11

*NEUTRAL

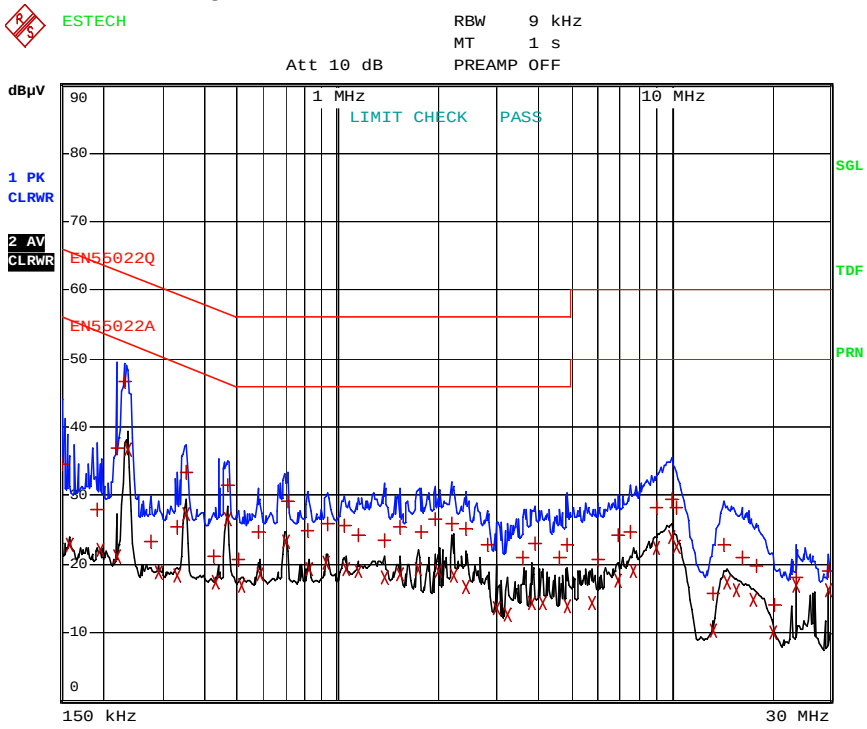


Comment: SWL-2460C_801.11B(CH1) NEUTRAL
Date: 29.DEC.2005 09:10:50

Appendix 1. Spectral diagram

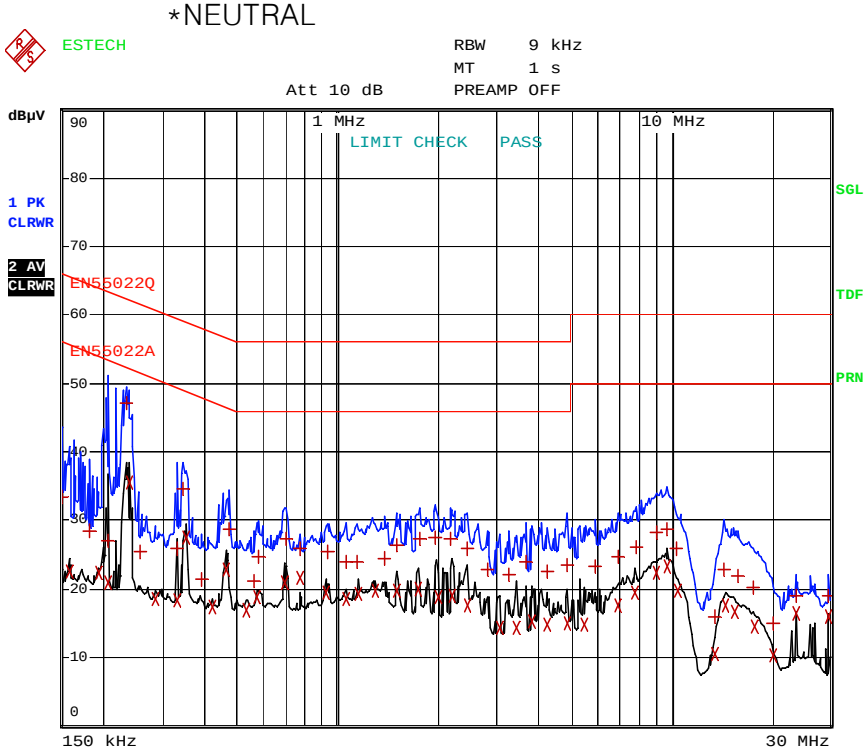
802.11b – CH 6

*HOT



Comment: SWL-2460C_801.11B(CH6) HOT
Date: 29.DEC.2005 09:25:01

*NEUTRAL

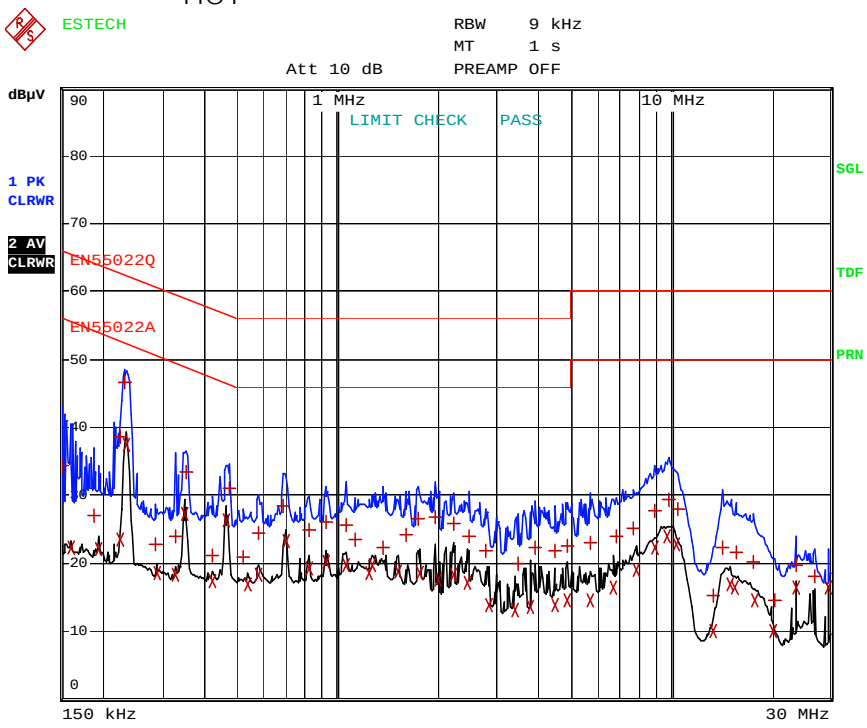


Comment: SWL-2460C_801.11B(CH6) NEUTRAL
Date: 29.DEC.2005 09:18:00

Appendix 1. Spectral diagram

802.11b – CH 11

*HOT



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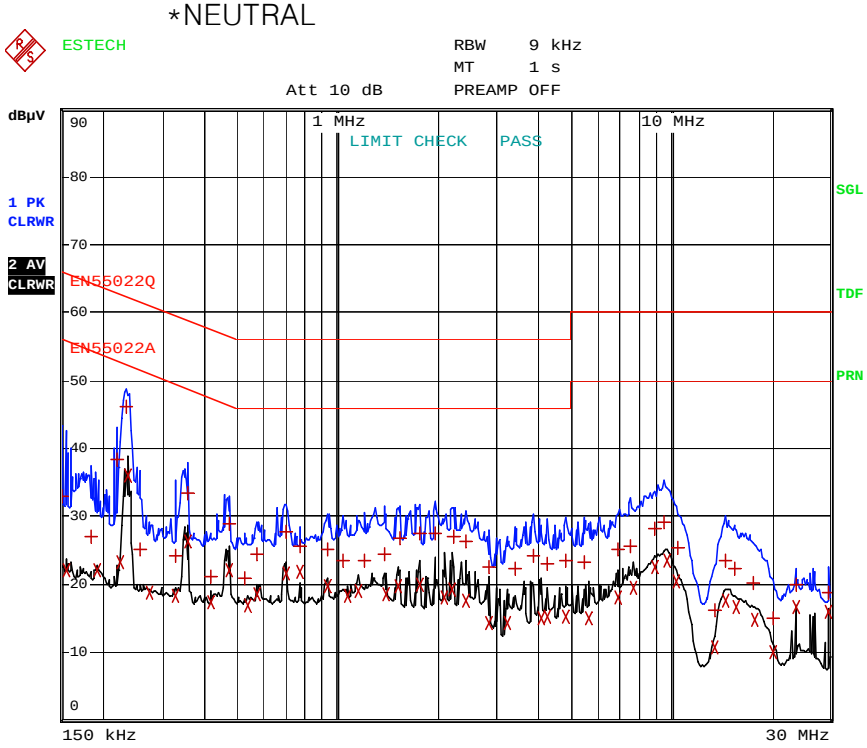
Date: 29.DEC.2005 09:31:25

*NEUTRAL

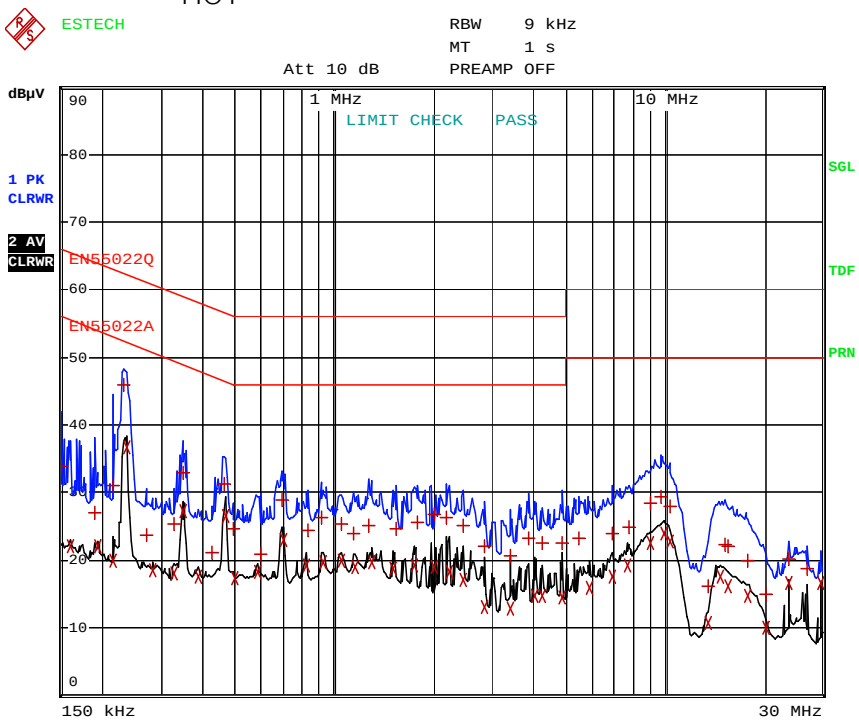


Comment: SWL-2460C_801.11B(CH11) NEUTRAL
Date: 29.DEC.2005 09:37:40

Appendix 1. Spectral diagram

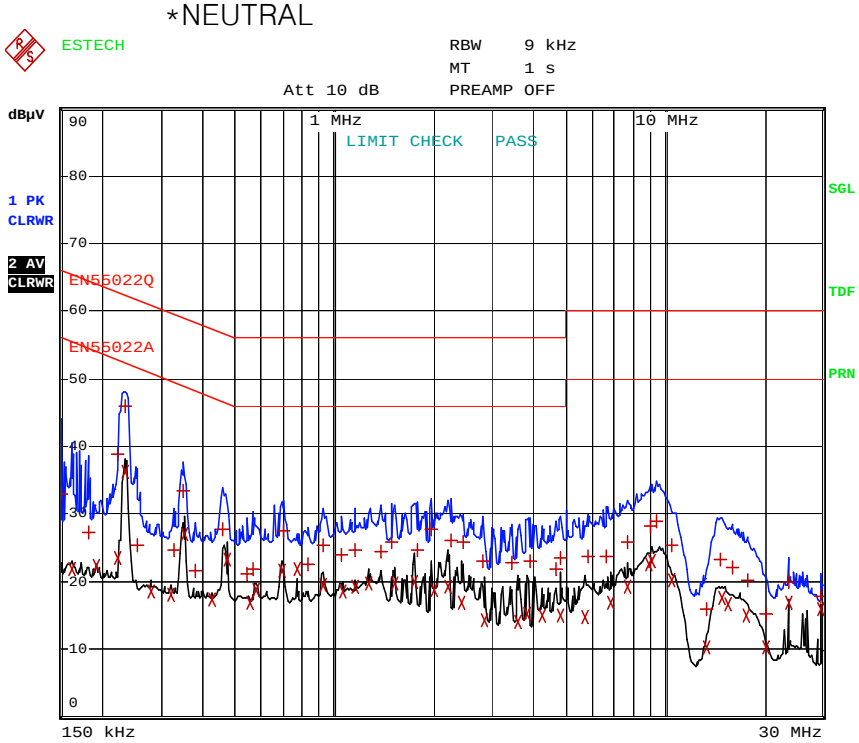
802.11g – CH 1

*HOT



Comment: SWL-2460C_801.11G(CH1) HOT
Date: 29.DEC.2005 09:51:52

*NEUTRAL

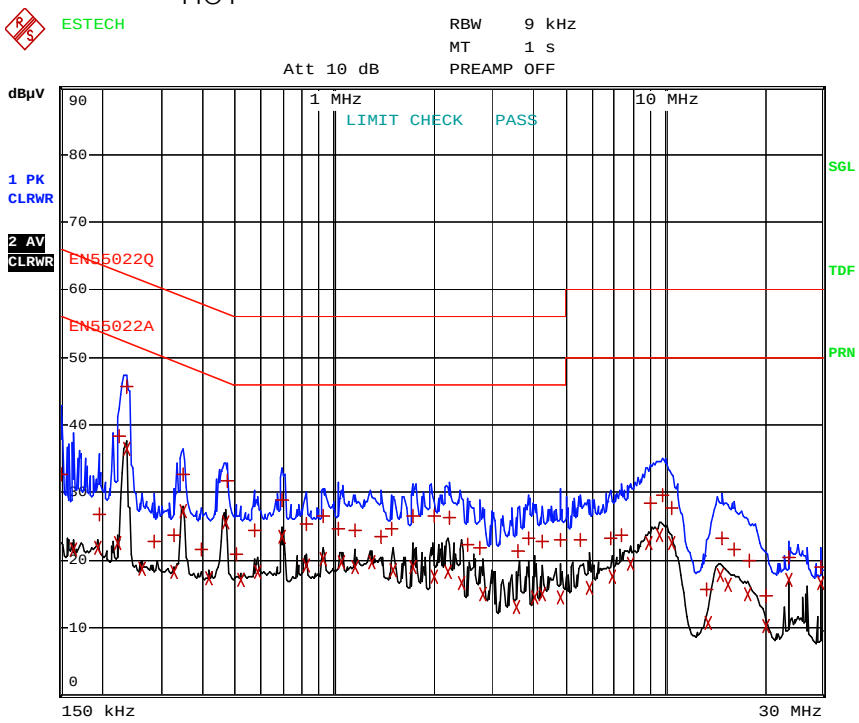


Comment: SWL-2460C_801.11G(CH1) NEUTRAL
Date: 29.DEC.2005 09:45:21

Appendix 1. Spectral diagram

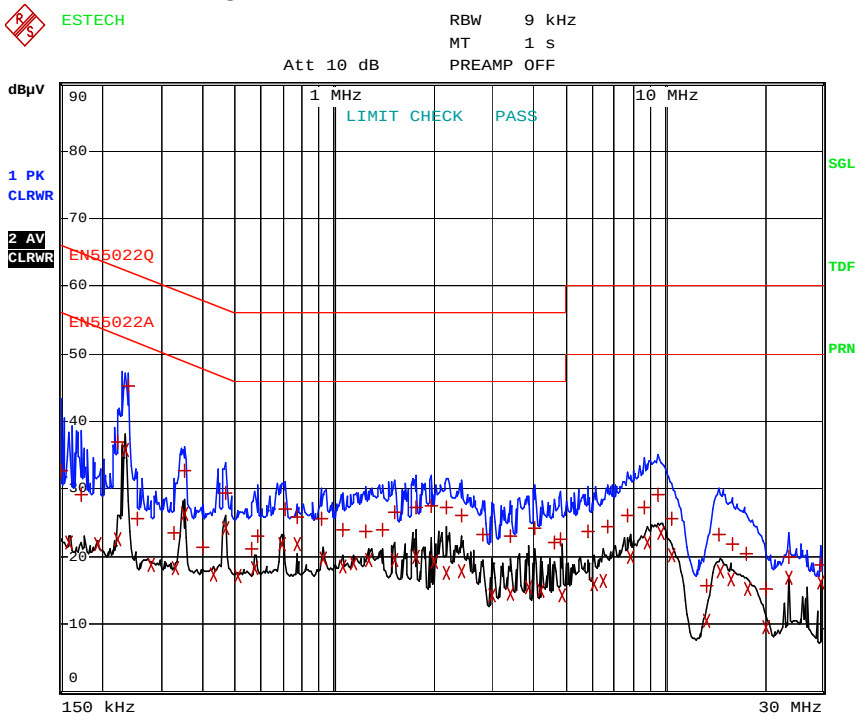
802.11g- CH 6

*HOT



Comment: SWL-2460C_801.11G(CH11) HOT
Date: 29.DEC.2005 11:12:49

*NEUTRAL

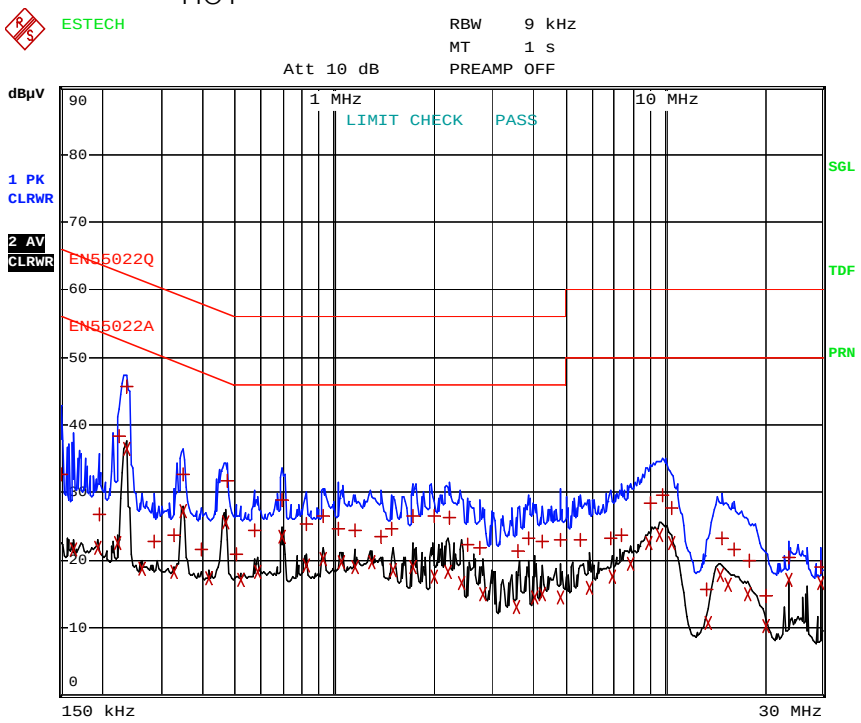


Comment: SWL-2460C_801.11G(CH11) NEUTRAL
Date: 29.DEC.2005 11:05:50

Appendix 1. Spectral diagram

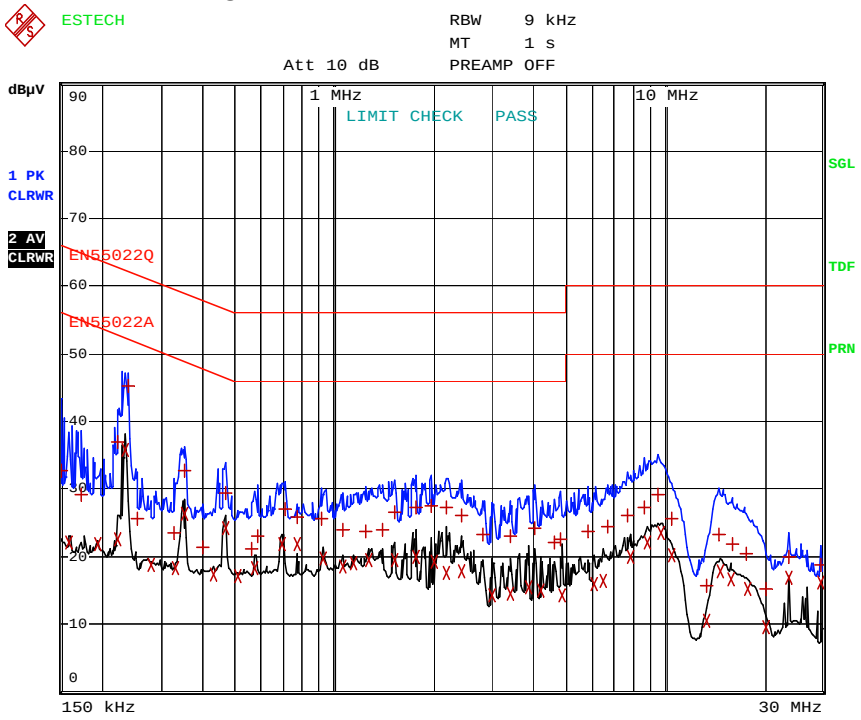
802.11g – CH 11

*HOT



Comment: SWL-2460C_801.11G(CH11) HOT
Date: 29.DEC.2005 11:12:49

*NEUTRAL



Comment: SWL-2460C_801.11G(CH11) NEUTRAL
Date: 29.DEC.2005 11:05:50