

 ESTECH Co., Ltd. Rm 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	   	Electromagnetic Interference Test Report
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Test Report for FCC

FCC ID : BEJ9QK-W1000NS

Report Number		ESTF150709-007		
Applicant	Company name	LG Electronics Inc.		
	Address	19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do,451-713, Korea.		
	Telephone	82-31-610-5338		
Product	Product name	Home Monitoring System		
	Model No.	LSP-W1000NS	Manufacturer	LG Electronics Inc.
	Serial No.	NONE	Country of origin	KOREA
Test date	2007-9-5 ~ 2007-9-21		Date of issue	21-Sep-07
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15 2006 , ANSI C 63.4 2003			
Measurement facility registration number		94696		
Tested by	Engineer J.H.Kim  (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 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				

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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	: Home Monitoring System
Model Number	: LSP-W1000NS
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: 14.78dBm, 802.11g: 16.09dBm
Serial Number	: NONE
Manufacturer	: LG Electronics Inc.
Country of origin	: KOREA
Rating	: INPUT:AC120V / 60Hz
Receipt Date	: 2007-08-20
Internal clock(s)	: (12,24,27,33)MHz

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 (2006)

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)

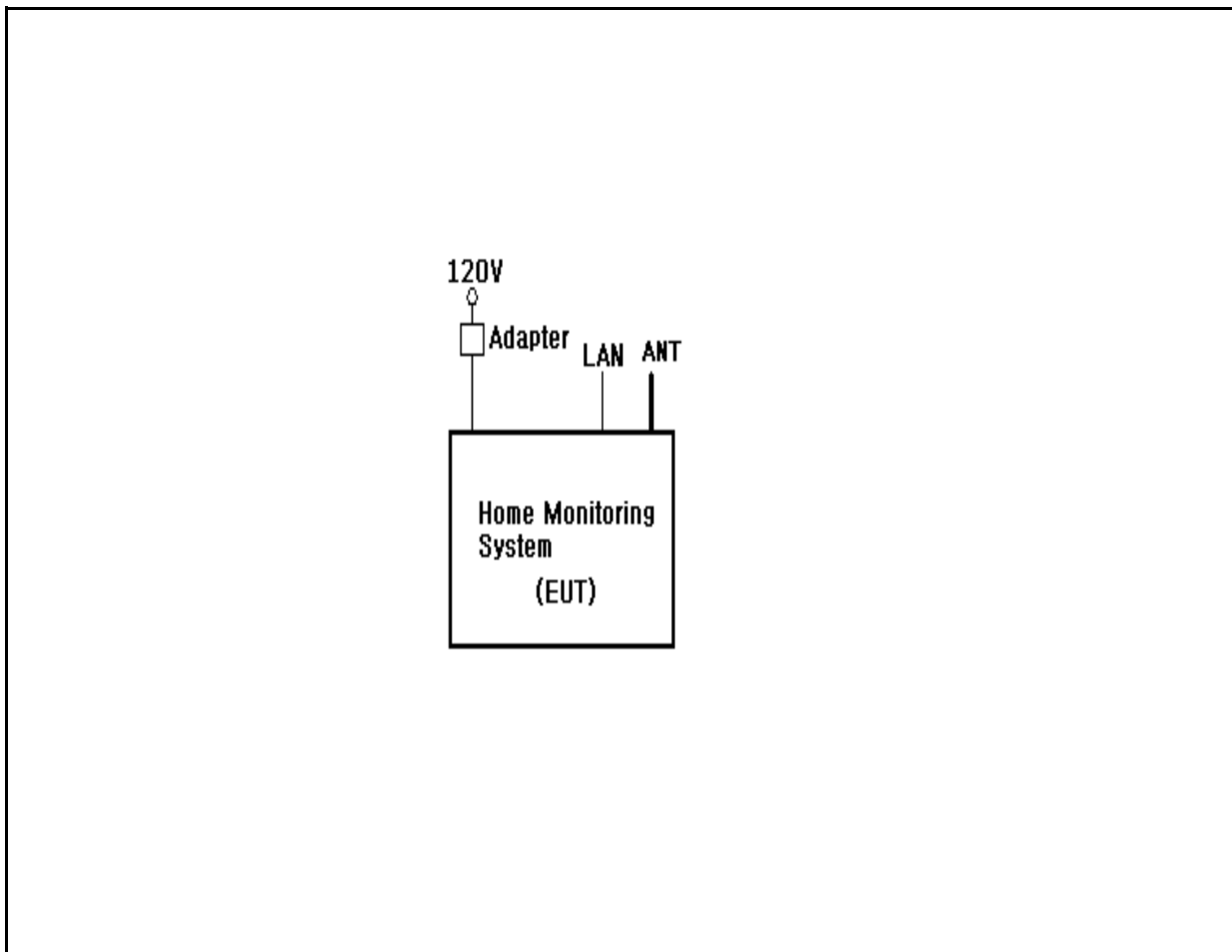
c. Test Mode : Continuous Output, DSSS and OFDM

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.
- * The supporting equipments used in the Part 15B testing were approved under DoC.

4.3 Configuration and Peripherals



4.4 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Home Monitoring System	LSP - W1000NS	NONE	LG Electronics Inc.	EUT
ADAPTER	DSA - 60W - 12112060	NONE	Dee Van Electronics (ShenZhen)Co.,Ltd.	-

4.5 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Home Monitoring System	LAN	External Network	LAN	20	N	-
Home Monitoring System	Power	Adapter	-	2	N	-

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	LSP-W1000NS
MODE	CCK	ENVIRONMENTAL CONDITION	24°C, 44%RH
INPUT POWER	120Vac, 60Hz		

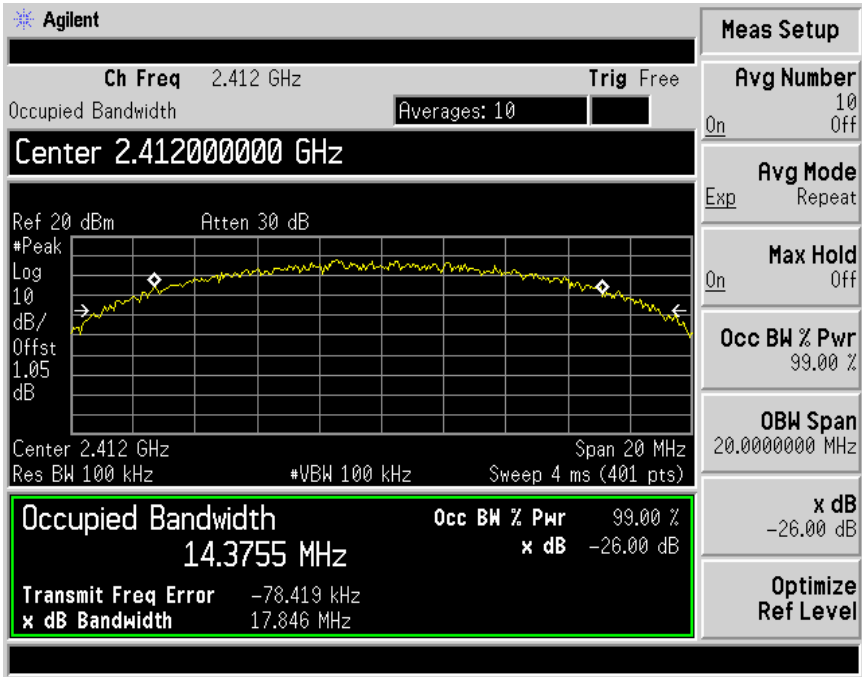
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	17.85	0.5	PASS
6	2437	17.98	0.5	PASS
11	2462	17.97	0.5	PASS

EUT	Home Monitoring System	MODEL	LSP-W1000NS
MODE	OFDM	ENVIRONMENTAL CONDITION	24°C, 43%RH
INPUT POWER	120Vac, 60Hz		

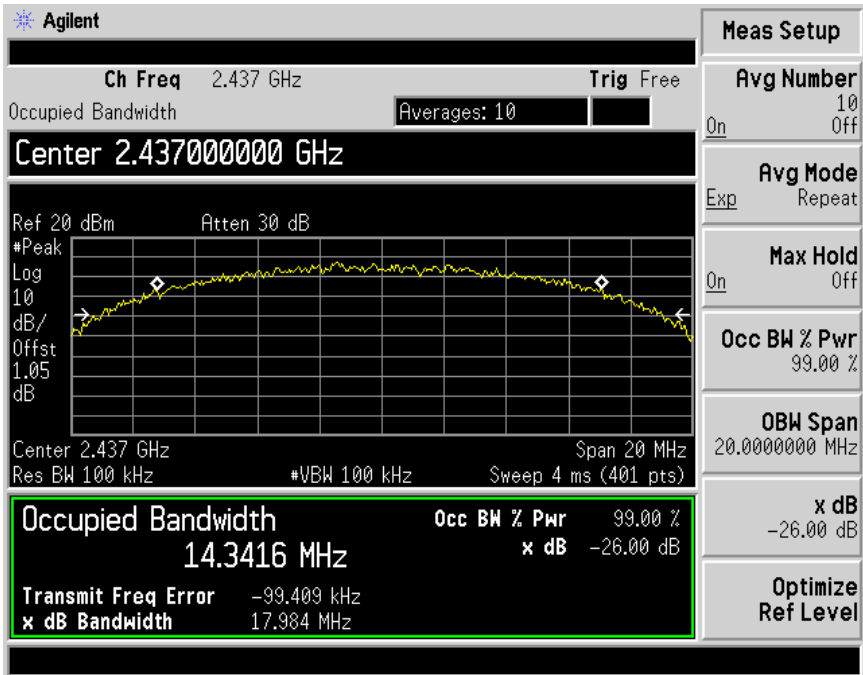
CHANNEL	Channel Frequency (MHz)	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
1	2412	19.18	0.5	PASS
6	2437	15.92	0.5	PASS
11	2462	15.48	0.5	PASS

5.4 Trace data

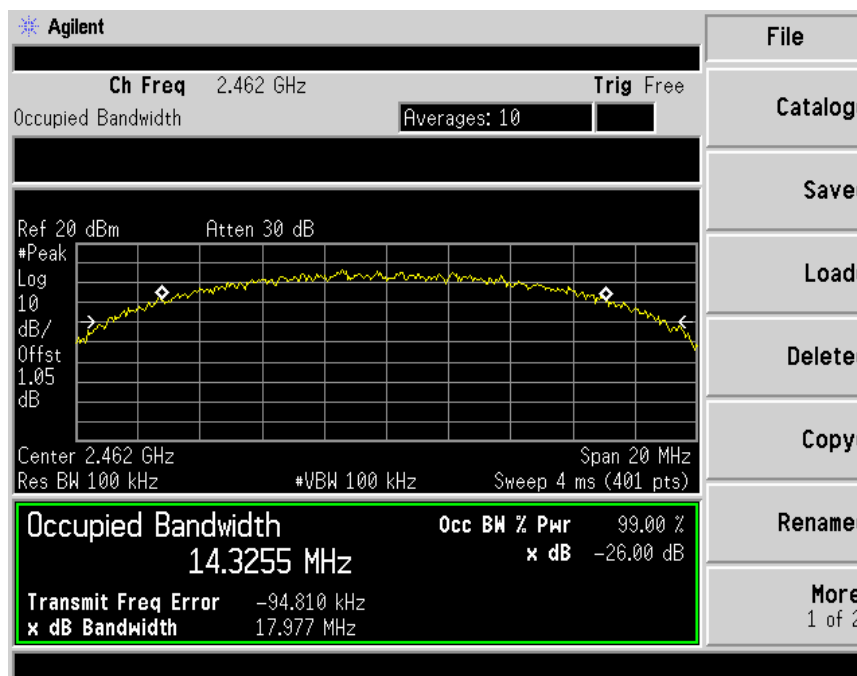
CCK (802.11b-1ch)



CCK (802.11b-6ch)

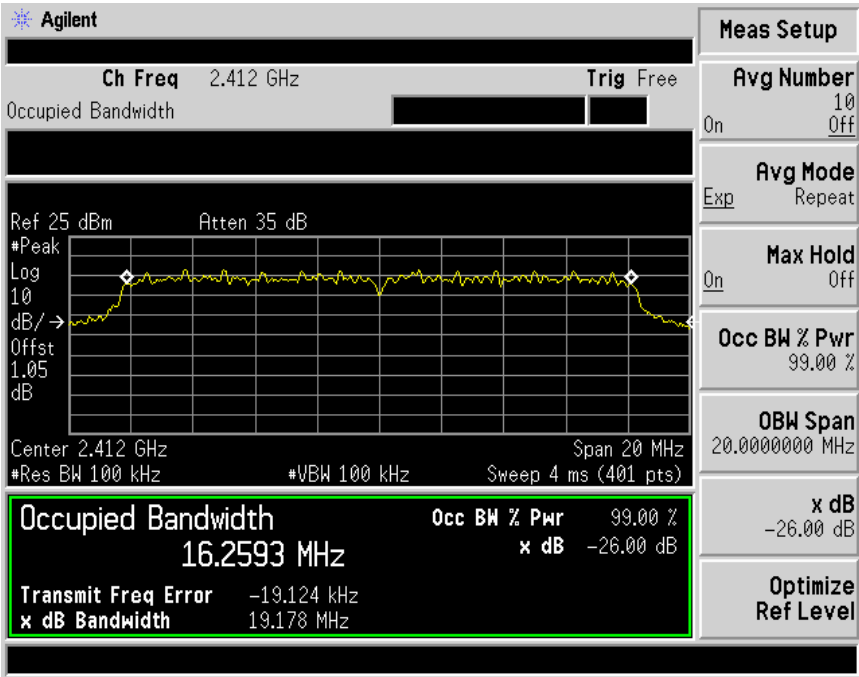


CCK (802.11b-11ch)

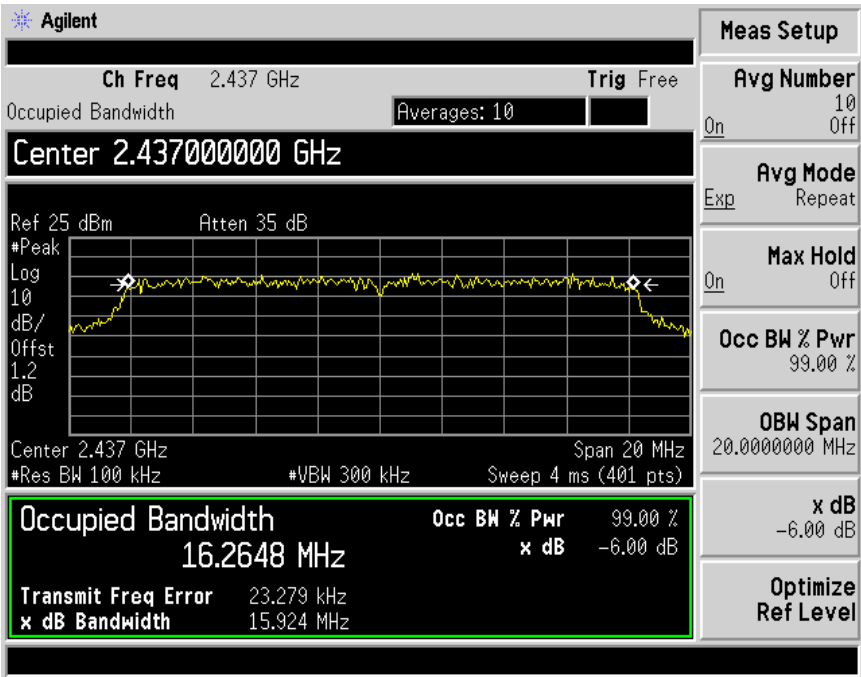


5.4 Trace data

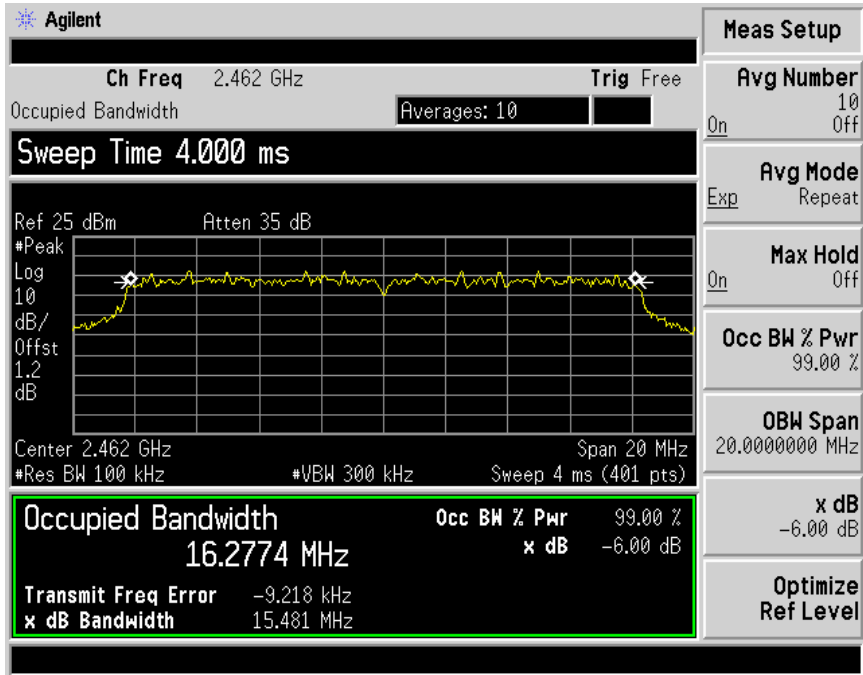
OFDM (802.11g-1ch)



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	LSP-W1000NS
MODE	CCK	ENVIRONMENTAL CONDITION	24°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Peak Power Output(dBm)		Limit[1W] (dBm)	PASS/FAIL
		(dBm)	(W)		
1	2412	14.8	0.030	30.0	PASS
6	2437	14.0	0.025	30.0	PASS
11	2462	13.1	0.020	30.0	PASS

EUT	Home Monitoring System	MODEL	LSP-W100NS
MODE	OFDM	ENVIRONMENTAL CONDITION	24°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Peak Power Output(dBm)		Limit[1W] (dBm)	PASS/FAIL
		(dBm)	(W)		
1	2412	15.5	0.035	30.0	PASS
6	2437	16.1	0.041	30.0	PASS
11	2462	16.1	0.040	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	-

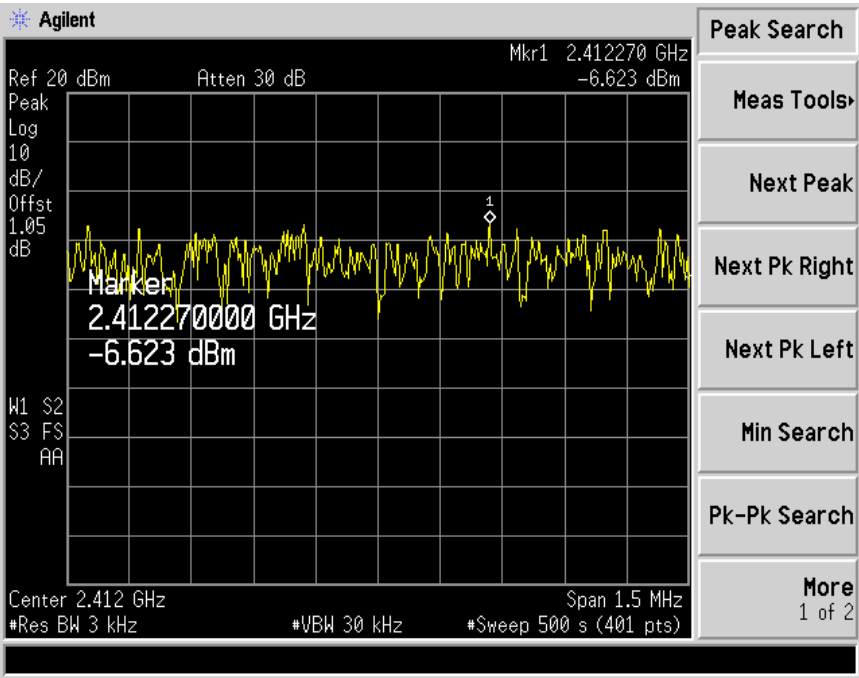
7.3 Measurement results

EUT	Home Monitoring System	MODEL	LSP-W1000NS	
MODE	CCK	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	-6.62	8.0	PASS
6	2437	-7.45	8.0	PASS
11	2462	-8.37	8.0	PASS

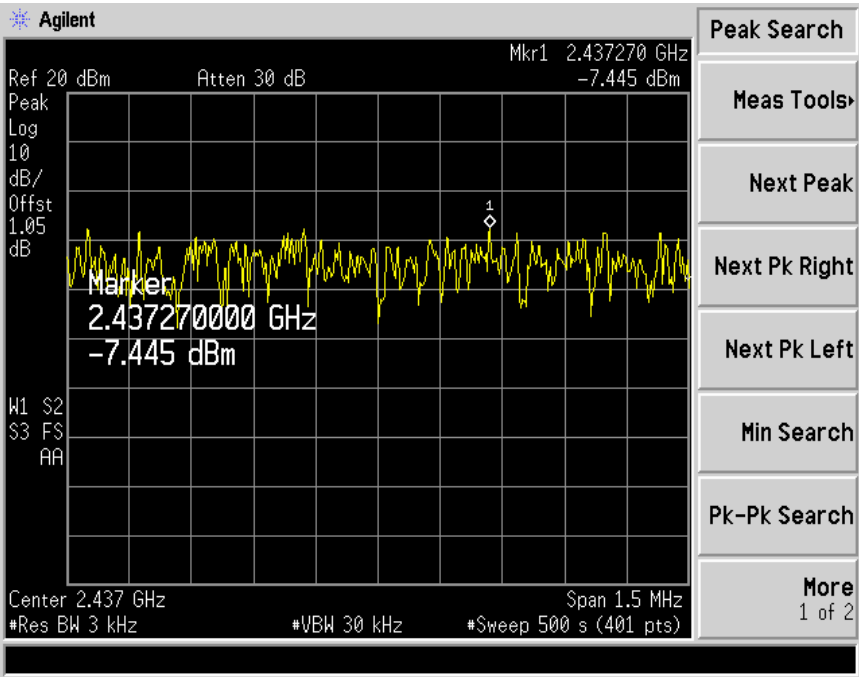
EUT	Home Monitoring System	MODEL	LSP-W1000NS
MODE	OFDM	ENVIRONMENTAL CONDITION	23°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Maximum Limit (dBm)	PASS/FAIL
1	2412	-7.58	8.0	PASS
6	2437	-7.84	8.0	PASS
11	2462	-8.31	8.0	PASS

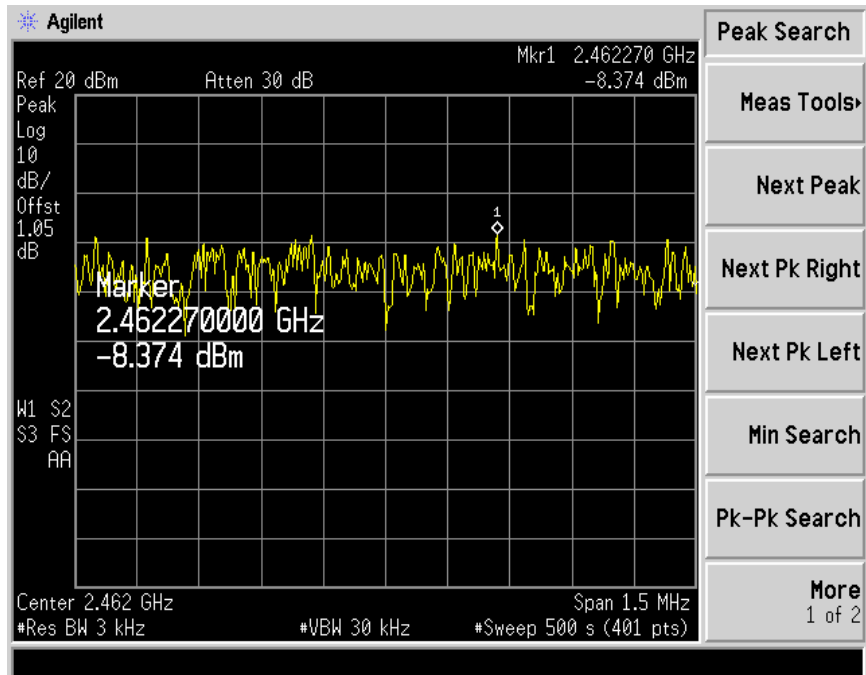
7.4 Trace data
CCK (802.11b-1ch)



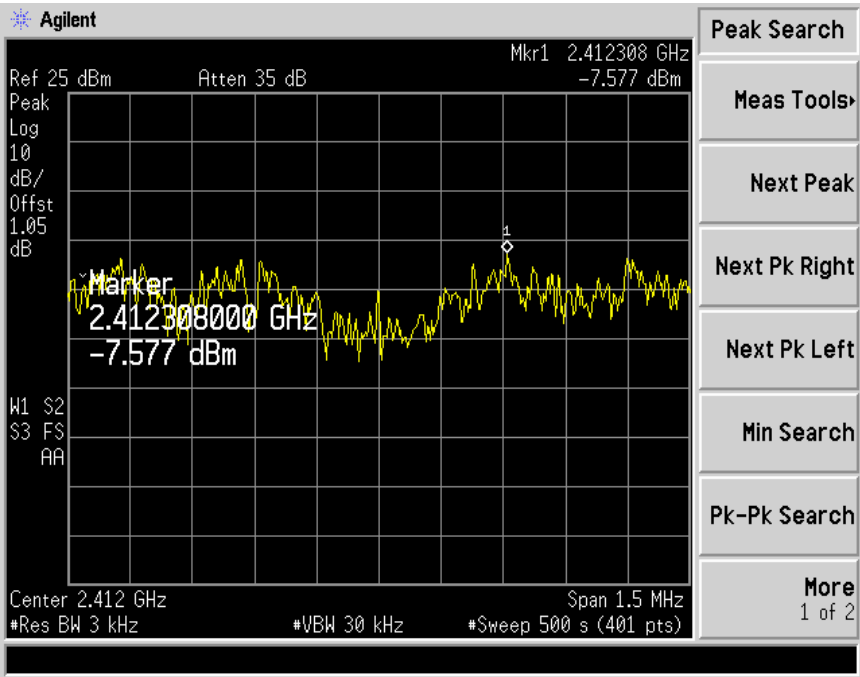
CCK (802.11b-6ch)



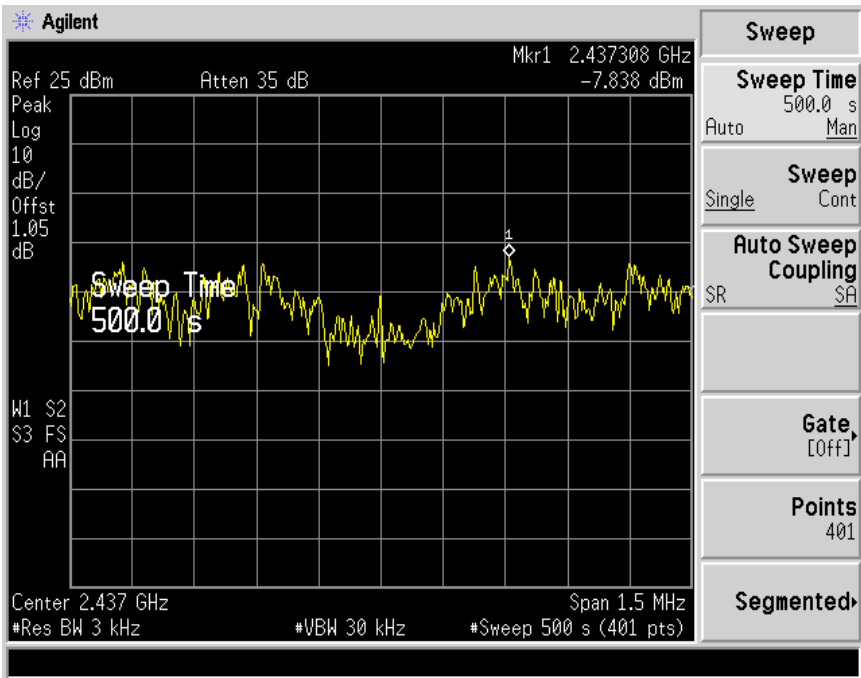
CCK (802.11b-11ch)



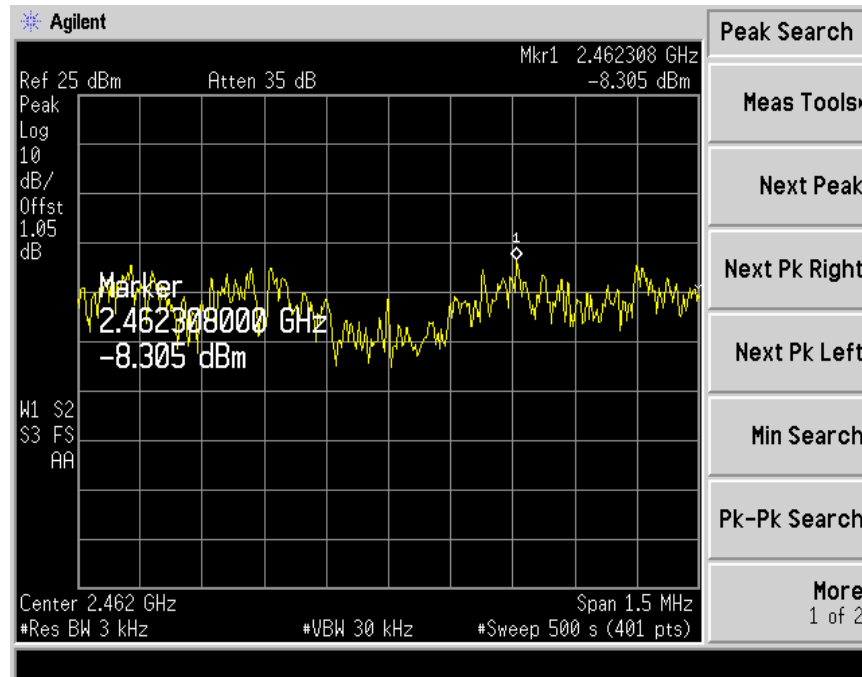
7.4 Trace data
OFDM (802.11g-1ch)



OFDM (802.11g-6ch)



OFDM (802.11g-11ch)



8. band-edge and out of band emissions.

8.1 Test procedure

The radio 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

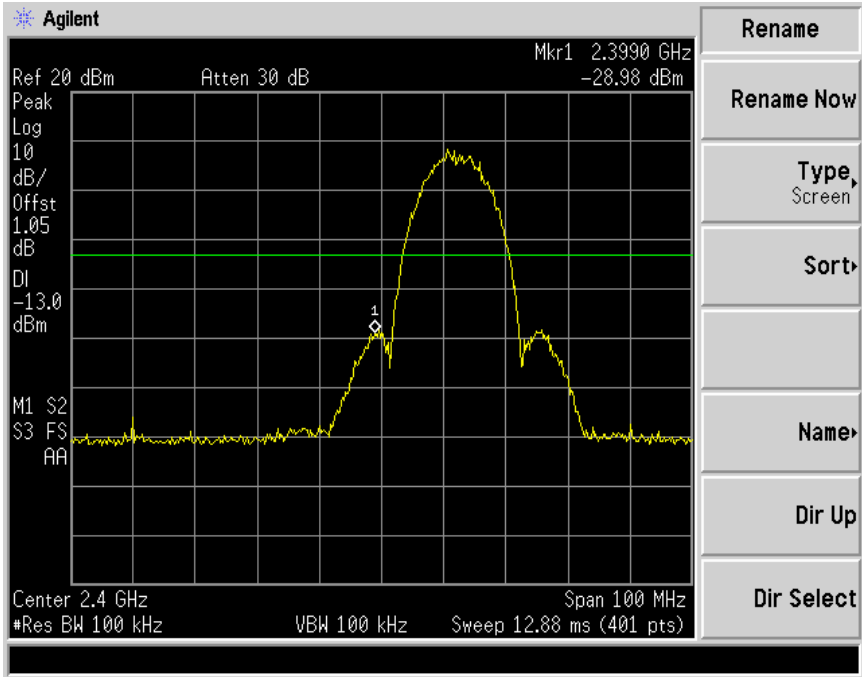
EUT	Home Monitoring System	MODEL	LSP-W1000NS
MODE	CCK	ENVIRONMENTAL CONDITION	23°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2339.0	-28.98	Below 20dB from peak power level to band edge
11	2462	2484.3	-48.20	Below 20dB from peak power level to band edge

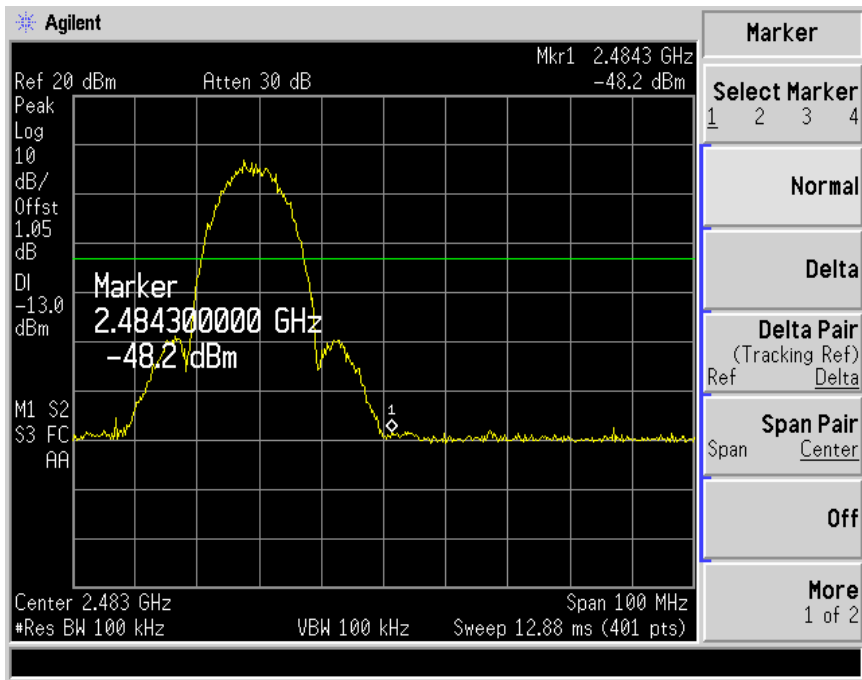
EUT	Home Monitoring System	MODEL	LSP-W1000NS
MODE	OFDM	ENVIRONMENTAL CONDITION	23°C, 43%RH
INPUT POWER	120Vac, 60Hz		

CHANNEL	Channel Frequency (MHz)	Measurement Frequency (MHz)	Peak Level at 20dB below(dBm)	Limit (MHz)
1	2412	2399.5	-17.96	Below 20dB from peak power level to band edge
11	2462	2483.5	-31.51	Below 20dB from peak power level to band edge

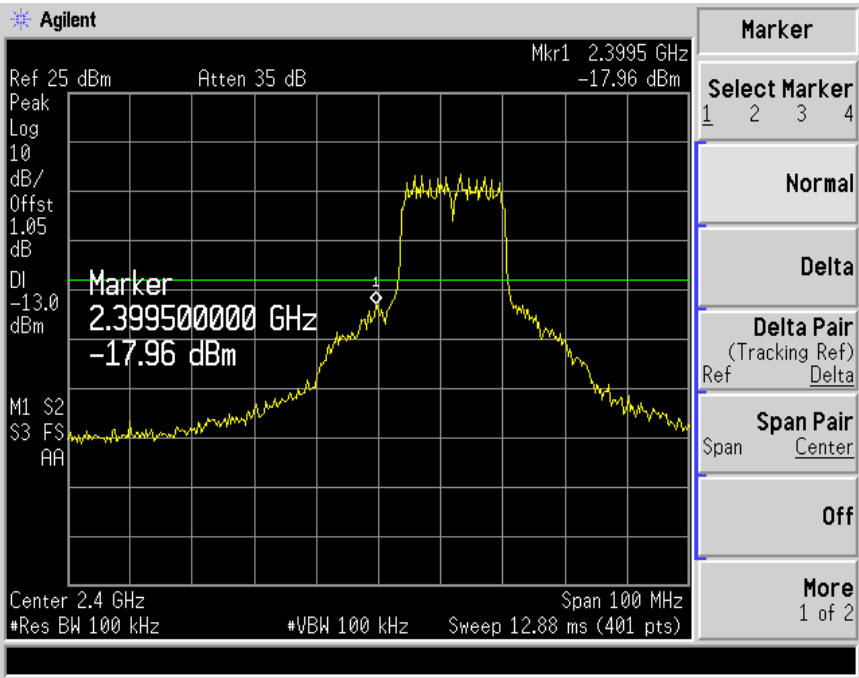
8.4 Trace data of band-edge & Out of Emission CCK (802.11b-1ch)



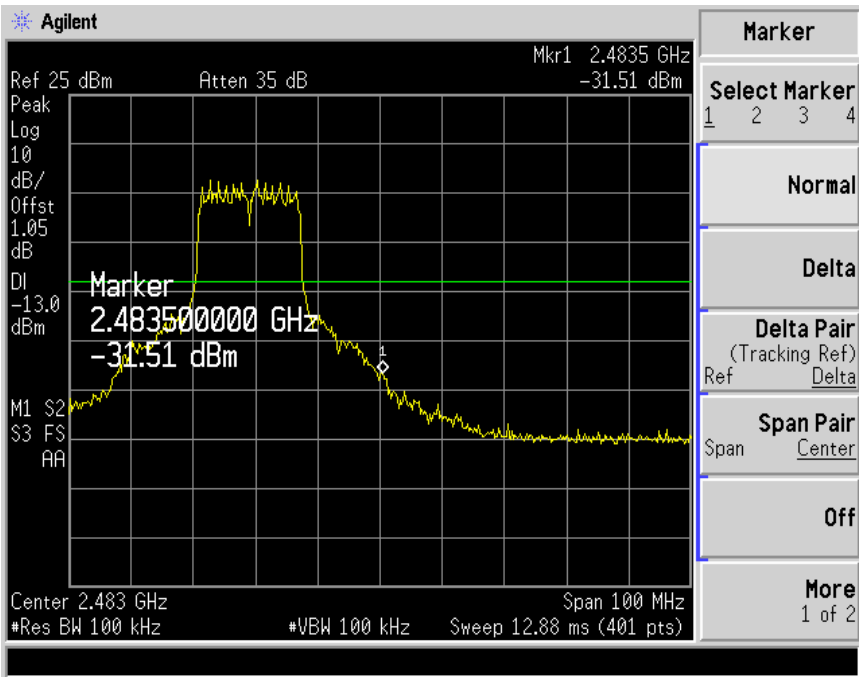
CCK (802.11b-11ch)



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 (2006) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2006) & 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	R3273	ADVANTEST	121200664	2007-11-27
Horn Antenna	BBHA 9120 D	S/B	469	2008-07-24
PREAMPLIFIER	8449B	HP	30084581	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) : 27 °C
 Humidity (%) : 46 %

9.3 Test Data for Receiver

Test Date : 6-Sep-07

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)
34.52	13.60	V	1.0	12.38	1.0	40.0	26.95	-13.05
81.72	8.40	V	1.0	8.74	1.4	40.0	18.54	-21.46
108.82	12.40	V	1.0	10.97	1.6	43.5	24.99	-18.51
143.32	8.10	H	1.8	13.54	1.8	43.5	23.47	-20.03
150.00	11.70	H	1.7	13.90	1.8	43.5	27.40	-16.10
200.01	15.50	V	1.0	10.38	2.2	43.5	28.11	-15.39
216.00	12.70	V	1.0	10.68	2.4	43.5	25.74	-17.76
244.11	11.90	H	1.2	11.80	2.6	46.0	26.26	-19.74
280.00	12.70	H	1.2	12.81	2.8	46.0	28.30	-17.70
324.01	15.10	H	1.2	13.74	3.1	46.0	31.96	-14.04
360.00	11.30	H	1.1	14.39	3.4	46.0	29.08	-16.92
400.00	8.10	H	1.0	15.32	3.6	46.0	27.00	-19.00
432.00	7.20	H	1.0	16.01	3.8	46.0	27.02	-18.98
540.01	5.40	H	1.0	17.68	4.4	46.0	27.52	-18.48
600.00	5.20	V	1.0	19.16	4.7	46.0	29.09	-16.91
PEAK(RBW:1MHz VBW:1MHz)								
1160.00	44.06	H	1.2	24.27	-32.9	74.0	35.40	-38.60
1214.00	43.80	H	1.4	24.45	-32.8	74.0	35.42	-38.58
1160.00	47.87	V	1.1	24.27	-32.9	74.0	39.21	-34.79
1214.00	48.92	V	1.2	24.45	-32.8	74.0	40.54	-33.46
AV(RBW:1MHz VBW:10Hz)								
1160.00	32.11	H	1.2	24.27	-32.9	54.0	23.45	-30.55
1214.00	32.61	H	1.4	24.45	-32.8	54.0	24.23	-29.77
1160.00	31.62	V	1.1	24.27	-32.9	54.0	22.96	-31.04
1214.00	32.64	V	1.2	24.45	-32.8	54.0	24.26	-29.74
Remark	H : Horizontal, V : Vertical Test Mode:Receiver							

9.3 Test Data for Transmitter

Test Date : 6-Sep-07

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)
35.02	14.30	V	1.0	12.40	1.0	40.0	27.68	-12.32
81.30	9.20	H	2.4	8.75	1.4	40.0	19.35	-20.65
108.84	12.60	V	1.0	10.97	1.6	43.5	25.19	-18.31
143.32	7.40	H	1.8	13.54	1.8	43.5	22.77	-20.73
150.00	9.10	H	1.8	13.90	1.8	43.5	24.80	-18.70
176.01	10.10	V	1.0	12.80	2.0	43.5	24.94	-18.56
200.00	14.30	H	1.4	10.38	2.2	43.5	26.91	-16.59
216.00	16.70	H	1.4	10.68	2.4	43.5	29.74	-13.76
226.92	15.20	H	1.3	11.09	2.4	46.0	28.74	-17.26
248.33	18.20	H	1.2	11.88	2.6	46.0	32.70	-13.30
302.57	17.10	H	1.2	13.25	3.0	46.0	33.34	-12.66
400.00	14.10	H	1.0	15.32	3.6	46.0	33.00	-13.00
432.07	15.20	H	1.0	16.01	3.8	46.0	35.02	-10.98
507.50	10.50	H	1.0	17.16	4.3	46.0	31.98	-14.02
681.31	8.30	H	1.0	19.92	5.2	46.0	33.43	-12.57
Remark	H : Horizontal, V : Vertical Test Mode:802.11b							

Test Date : 6-Sep-07

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)
35.62	12.40	V	1.0	12.44	1.0	40.0	25.82	-14.18
75.64	9.50	H	2.5	9.73	1.3	40.0	20.58	-19.42
108.82	13.20	V	1.0	10.97	1.6	43.5	25.79	-17.71
150.00	7.60	H	1.8	13.90	1.8	43.5	23.30	-20.20
171.62	10.40	H	1.7	13.19	2.0	43.5	25.61	-17.89
200.00	16.20	H	1.3	10.38	2.2	43.5	28.81	-14.69
216.00	14.10	H	1.2	10.68	2.4	43.5	27.14	-16.36
248.33	15.20	H	1.2	11.88	2.6	46.0	29.70	-16.30
250.01	16.20	H	1.1	11.92	2.6	46.0	30.75	-15.25
300.00	16.10	V	1.0	13.19	3.0	46.0	32.27	-13.73
375.02	13.30	H	1.0	14.76	3.5	46.0	31.52	-14.48
400.00	10.90	H	1.0	15.32	3.6	46.0	29.80	-16.20
432.07	14.10	H	1.0	16.01	3.8	46.0	33.92	-12.08
550.14	10.30	H	1.0	17.93	4.5	46.0	32.72	-13.28
625.00	9.10	H	1.0	19.28	4.9	46.0	33.31	-12.70
Remark	H : Horizontal, V : Vertical Test Mode:802.11g							

Test Date : 7-Sep-07

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)								
1624	43.60	H	1.4	24.82	-32.0	74.0	36.46	-37.54
2389.38	37.00	H	1.4	27.64	-31.0	74.0	33.61	-40.39
2412	74.80	H	1.4	27.62	-31.0	OB	106.70	-
4824	44.80	H	1.7	31.30	-28.8	74.0	47.26	-26.74
7236	44.33	H	1.4	36.54	-26.7	74.0	54.22	-19.78
9648	45.91	H	1.5	37.98	-23.1	74.0	60.80	-13.20
1624	43.82	V	1.3	24.82	-32.0	74.0	36.68	-37.32
2389.38	36.00	V	1.2	27.64	-31.0	74.0	32.61	-41.39
2412	81.59	V	1.2	27.62	-31.0	OB	113.49	-
4824	44.07	V	1.4	31.30	-28.8	74.0	46.53	-27.47
7236	44.28	V	1.3	36.54	-26.7	74.0	54.17	-19.83
9648	46.23	V	1.4	37.98	-23.1	74.0	61.12	-12.88
AV(RBW:1MHz VBW:10Hz)								
1624	31.07	H	1.4	24.82	-32.0	54.0	23.93	-30.07
2389.38	31.04	H	1.4	27.64	-31.0	54.0	27.65	-26.35
2412	68.62	H	1.4	27.62	-31.0	OB	100.52	-
4824	31.89	H	1.7	31.30	-28.8	54.0	34.35	-19.65
7236	31.55	H	1.4	36.54	-26.7	54.0	41.44	-12.56
9648	35.23	H	1.5	37.98	-23.1	54.0	50.12	-3.88
1624	30.99	V	1.3	24.82	-32.0	54.0	23.85	-30.15
2389.38	30.20	V	1.2	27.64	-31.0	54.0	26.81	-27.19
2412	74.98	V	1.2	27.62	-31.0	OB	106.88	-
4824	33.74	V	1.4	31.30	-28.8	54.0	36.20	-17.80
7236	31.74	V	1.3	36.54	-26.7	54.0	41.63	-12.37
9648	37.90	V	1.4	37.98	-23.1	54.0	52.79	-1.21
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band							

Test Date : 7-Sep-07

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)								
1624	43.20	H	1.5	24.82	-32.0	74.0	36.06	-37.94
2437	74.69	H	1.4	27.61	-31.0	OB	106.58	-
4874	44.62	H	1.1	31.37	-28.7	74.0	47.30	-26.70
7311	45.10	H	1.2	36.56	-26.5	74.0	55.15	-18.85
9748	44.50	H	1.2	38.12	-22.8	74.0	59.86	-14.14
1624	43.29	V	1.2	24.82	-32.0	74.0	36.15	-37.85
2437	81.48	V	1.3	27.61	-31.0	OB	113.37	-
4874	44.17	V	1.4	31.37	-28.7	74.0	46.85	-27.15
7311	44.23	V	1.5	36.56	-26.5	74.0	54.28	-19.72
9748	46.02	V	1.4	38.12	-22.8	74.0	61.38	-12.62
AV(RBW:1MHz VBW:10Hz)								
1624	30.64	H	1.5	24.82	-32.0	54.0	23.50	-30.50
2437	68.04	H	1.4	27.61	-31.0	OB	99.93	-
4874	34.14	H	1.1	31.37	-28.7	54.0	36.82	-17.18
7311	31.12	H	1.2	36.56	-26.5	54.0	41.17	-12.83
9748	34.58	H	1.2	38.12	-22.8	54.0	49.94	-4.06
1624	31.14	V	1.2	24.82	-32.0	54.0	24.00	-30.00
2437	74.61	V	1.3	27.61	-31.0	OB	106.50	-
4874	33.14	V	1.4	31.37	-28.7	54.0	35.82	-18.18
7311	31.62	V	1.5	36.56	-26.5	54.0	41.67	-12.33
9748	37.22	V	1.4	38.12	-22.8	54.0	52.58	-1.42
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band							

Test Date : 7-Sep-07

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)								
1624.1	43.62	H	1.6	24.82	-32.0	74.0	36.48	-37.52
2462	74.52	H	1.4	27.60	-31.0	OB	106.40	-
2483.54	39.00	H	1.4	27.59	-31.0	74.0	35.57	-38.43
4924	44.61	H	1.6	31.44	-28.6	74.0	47.47	-26.53
7386	45.04	H	1.1	36.59	-26.4	74.0	55.26	-18.74
9848	44.29	H	1.4	38.18	-22.8	74.0	59.63	-14.37
1624.1	43.31	V	1.3	24.82	-32.0	74.0	36.17	-37.83
2462	81.14	V	1.2	27.60	-31.0	OB	113.02	-
2483.54	38.00	V	1.2	27.59	-31.0	74.0	34.57	-39.43
4924	44.62	V	1.4	31.44	-28.6	74.0	47.48	-26.52
7386	44.17	V	1.5	36.59	-26.4	74.0	54.39	-19.61
9848	44.34	V	1.1	38.18	-22.8	74.0	59.68	-14.32
AV(RBW:1MHz VBW:10Hz)								
1624.1	31.10	H	1.6	24.82	-32.0	54.0	23.96	-30.04
2462	67.96	H	1.4	27.60	-31.0	OB	64.54	-
2483.54	32.80	H	1.4	27.59	-31.0	54.0	29.37	-24.63
4924	32.62	H	1.6	31.44	-28.6	54.0	35.48	-18.52
7386	31.12	H	1.1	36.59	-26.4	54.0	41.34	-12.66
9848	34.11	H	1.4	38.18	-22.8	54.0	49.45	-4.55
1624.1	32.62	V	1.3	24.82	-32.0	54.0	25.48	-28.52
2462	73.96	V	1.2	27.60	-31.0	OB	70.54	-
2483.54	32.10	V	1.2	27.59	-31.0	54.0	28.67	-25.33
4924	33.62	V	1.4	31.44	-28.6	54.0	36.48	-17.52
7386	31.52	V	1.5	36.59	-26.4	54.0	41.74	-12.26
9848	36.24	V	1.1	38.18	-22.8	54.0	51.58	-2.42
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b - CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 11Mbps. *OB is Operating Band							

Test Date : 7-Sep-07

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)								
1160	46.88	H	1.4	24.27	-32.9	74.0	38.22	-35.78
2388.31	39.00	H	1.4	27.64	-31.0	74.0	35.61	-38.39
2412	72.85	H	1.4	27.62	-31.0	OB	104.75	-
4824	44.02	H	1.3	31.30	-28.8	74.0	46.48	-27.52
7236	44.62	H	1.4	36.54	-26.7	74.0	54.51	-19.49
9648	44.96	H	1.3	37.98	-23.1	74.0	59.85	-14.15
1160	46.71	V	1.6	24.27	-32.9	74.0	38.05	-35.95
2388.31	38.00	V	1.2	27.64	-31.0	74.0	34.61	-39.39
2412	80.33	V	1.2	27.62	-31.0	OB	112.23	-
4824	45.83	V	1.2	31.30	-28.8	74.0	48.29	-25.71
7236	45.14	V	1.5	36.54	-26.7	74.0	55.03	-18.97
9648	45.41	V	1.5	37.98	-23.1	74.0	60.30	-13.70
AV(RBW:1MHz VBW:10Hz)								
1160	34.64	H	1.4	24.27	-32.9	54.0	25.98	-28.02
2388.31	33.00	H	1.4	27.64	-31.0	54.0	29.61	-24.39
2412	60.23	H	1.4	27.62	-31.0	OB	92.13	-
4824	31.76	H	1.3	31.30	-28.8	54.0	34.22	-19.78
7236	31.01	H	1.4	36.54	-26.7	54.0	40.90	-13.10
9648	32.48	H	1.3	37.98	-23.1	54.0	47.37	-6.63
1160	34.21	V	1.6	24.27	-32.9	54.0	25.55	-28.45
2388.31	31.00	V	1.2	27.64	-31.0	54.0	27.61	-26.39
2412	65.98	V	1.2	27.62	-31.0	OB	97.88	-
4824	33.46	V	1.2	31.30	-28.8	54.0	35.92	-18.08
7236	33.21	V	1.5	36.54	-26.7	54.0	43.10	-10.90
9648	34.12	V	1.5	37.98	-23.1	54.0	49.01	-4.99
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g - CH1(2412MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band							

Test Date : 7-Sep-07

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)								
1780	44.21	H	1.4	24.91	-31.7	74.0	37.47	-36.53
2437	71.08	H	1.4	27.61	-31.0	OB	102.97	-
4874	44.22	H	1.2	31.37	-28.7	74.0	46.90	-27.10
7311	44.89	H	1.5	36.56	-26.5	74.0	54.94	-19.06
9748	44.62	H	1.4	38.12	-22.8	74.0	59.98	-14.02
1780	44.62	V	1.5	24.91	-31.7	74.0	37.88	-36.12
2437	80.96	V	1.2	27.61	-31.0	OB	112.85	-
4874	45.87	V	1.3	31.37	-28.7	74.0	48.55	-25.45
7311	45.10	V	1.4	36.56	-26.5	74.0	55.15	-18.85
9748	44.90	V	1.6	38.12	-22.8	74.0	60.26	-13.74
AV(RBW:1MHz VBW:10Hz)								
1780	36.21	H	1.4	24.91	-31.7	54.0	29.47	-24.53
2437	58.62	H	1.4	27.61	-31.0	OB	90.51	-
4874	31.62	H	1.2	31.37	-28.7	54.0	34.30	-19.70
7311	31.06	H	1.5	36.56	-26.5	54.0	41.11	-12.89
9748	32.89	H	1.4	38.12	-22.8	54.0	48.25	-5.75
1780	34.14	V	1.5	24.91	-31.7	54.0	27.40	-26.60
2437	66.24	V	1.2	27.61	-31.0	OB	98.13	-
4874	34.11	V	1.3	31.37	-28.7	54.0	36.79	-17.21
7311	32.99	V	1.4	36.56	-26.5	54.0	43.04	-10.96
9748	33.84	V	1.6	38.12	-22.8	54.0	49.20	-4.80
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g- CH6(2437MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band							

Test Date : 7-Sep-07

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)								
1728.9	45.84	H	1.4	24.77	-31.7	74.0	38.90	-35.10
2462	70.09	H	1.3	27.60	-31.0	OB	101.97	-
2482.36	41.00	H	1.4	27.59	-31.0	74.0	37.58	-36.42
4924	44.17	H	1.4	31.44	-28.6	74.0	47.03	-26.97
7386	44.89	H	1.6	36.59	-26.4	74.0	55.11	-18.89
9848	44.62	H	1.5	38.18	-22.8	74.0	59.96	-14.04
1728.9	44.62	V	1.6	24.77	-31.7	74.0	37.68	-36.32
2462	81.73	V	1.2	27.60	-31.0	OB	113.61	-
2483.54	39.80	V	1.2	27.59	-31.0	74.0	36.37	-37.63
4924	44.69	V	1.3	31.44	-28.6	74.0	47.55	-26.45
7386	44.91	V	1.4	36.59	-26.4	74.0	55.13	-18.87
9848	44.56	V	1.7	38.18	-22.8	74.0	59.90	-14.10
AV(RBW:1MHz VBW:10Hz)								
1728.9	34.09	H	1.4	24.77	-31.7	54.0	27.15	-26.85
2462	57.55	H	1.3	27.60	-31.0	OB	89.43	-
2483.54	33.10	H	1.4	27.59	-31.0	54.0	29.67	-24.33
4924	31.82	H	1.4	31.44	-28.6	54.0	34.68	-19.32
7386	31.06	H	1.6	36.59	-26.4	54.0	41.28	-12.72
9848	33.01	H	1.5	38.18	-22.8	54.0	48.35	-5.65
1728.9	34.34	V	1.6	24.77	-31.7	54.0	27.40	-26.60
2462	68.04	V	1.2	27.60	-31.0	OB	99.92	-
2483.54	32.80	V	1.2	27.59	-31.0	54.0	29.37	-24.63
4924	34.24	V	1.3	31.44	-28.6	54.0	37.10	-16.90
7386	33.29	V	1.4	36.59	-26.4	54.0	43.51	-10.49
9848	33.09	V	1.7	38.18	-22.8	54.0	48.43	-5.57
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g - CH11(2462MHz) *Cable Loss=Cable Loss+Amp *Data rate of 54Mbps. *OB is Operating Band							

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 (2006) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2006) & 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	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) : 26 °C
 Humidity (%) : 42 %

10.3 Test data for Receiver

Test Date : 5-Sep-07

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)
0.17	0.16	0.0	N	64.82	38.98	39.18	54.82	26.25	26.45
0.19	0.16	0.0	N	64.26	34.42	34.62	54.26	25.83	26.03
0.24	0.14	0.0	H	62.24	31.92	32.11	52.24	23.11	23.30
0.27	0.13	0.0	N	61.06	34.50	34.68	51.06	22.23	22.41
0.31	0.12	0.1	N	60.08	31.23	31.40	50.08	20.32	20.49
0.36	0.13	0.1	H	58.71	29.36	29.55	48.71	21.62	21.81
0.53	0.15	0.1	N	56.00	26.64	26.89	46.00	26.89	27.14
0.54	0.15	0.1	H	56.00	25.84	26.09	46.00	19.25	19.50
0.78	0.16	0.1	H	56.00	26.55	26.84	46.00	22.29	22.58
0.82	0.17	0.1	N	56.00	24.83	25.13	46.00	22.56	22.86
1.24	0.26	0.2	H	56.00	26.39	26.83	46.00	20.71	21.15
1.27	0.26	0.2	H	56.00	24.33	24.77	46.00	20.38	20.82
6.69	0.45	0.6	N	60.00	22.53	23.54	50.00	13.38	14.39
7.19	0.47	0.6	H	60.00	23.28	24.34	50.00	16.81	17.87
7.57	0.50	0.6	N	60.00	23.74	24.85	50.00	14.31	15.42
8.78	0.57	0.7	H	60.00	26.42	27.67	50.00	17.58	18.83
8.79	0.57	0.7	N	60.00	19.59	20.84	50.00	14.31	15.56
10.92	0.68	0.8	H	60.00	21.52	22.99	50.00	15.32	16.79
Remark	H : Hot Line, N : Neutral Line								

10.3 Test data for Transmitter

Test Date : 5-Sep-07

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)
0.18	0.16	0.0	N	64.67	41.00	41.20	54.67	29.63	29.83
0.23	0.14	0.0	N	62.41	37.29	37.48	52.41	26.01	26.20
0.27	0.13	0.0	H	61.03	35.92	36.10	51.03	24.69	24.87
0.31	0.12	0.1	H	59.92	34.36	34.53	49.92	26.65	26.82
0.41	0.14	0.1	H	57.65	30.41	30.62	47.65	23.31	23.52
0.46	0.14	0.1	H	56.77	31.61	31.83	46.77	26.55	26.77
0.55	0.15	0.1	N	56.00	30.44	30.69	46.00	20.43	20.68
0.58	0.15	0.1	H	56.00	28.06	28.31	46.00	21.14	21.39
0.62	0.15	0.1	H	56.00	26.41	26.67	46.00	20.18	20.44
0.68	0.16	0.1	N	56.00	29.41	29.68	46.00	19.94	20.21
0.78	0.16	0.1	N	56.00	28.53	28.82	46.00	23.07	23.36
0.98	0.24	0.2	N	56.00	26.23	26.63	46.00	19.64	20.04
5.82	0.41	0.5	N	60.00	22.91	23.85	50.00	15.37	16.31
5.99	0.42	0.5	H	60.00	24.34	25.29	50.00	15.59	16.54
7.00	0.46	0.6	N	60.00	24.81	25.85	50.00	15.78	16.82
7.45	0.49	0.6	N	60.00	24.91	26.00	50.00	17.02	18.11
8.00	0.52	0.6	H	60.00	29.15	30.31	50.00	19.72	20.88
8.81	0.57	0.7	H	60.00	27.47	28.72	50.00	19.58	20.83
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11b- CH6(2437MHz)								

Test Date : 5-Sep-07

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)
0.17	0.16	0.0	H	64.82	39.24	39.44	54.82	31.04	31.24
0.18	0.16	0.0	N	64.67	40.93	41.13	54.67	30.05	30.25
0.24	0.14	0.0	N	62.24	36.87	37.06	52.24	25.97	26.16
0.27	0.13	0.0	H	61.06	35.94	36.12	51.06	25.18	25.36
0.28	0.13	0.0	N	60.97	34.89	35.07	50.97	22.72	22.90
0.49	0.15	0.1	N	56.12	32.34	32.58	46.12	26.59	26.83
0.54	0.15	0.1	N	56.00	30.58	30.83	46.00	20.44	20.69
0.63	0.15	0.1	H	56.00	27.15	27.41	46.00	19.97	20.23
0.67	0.16	0.1	N	56.00	28.96	29.23	46.00	19.94	20.21
0.95	0.23	0.2	H	56.00	25.59	25.97	46.00	18.81	19.19
1.15	0.26	0.2	N	56.00	26.14	26.57	46.00	20.16	20.59
1.34	0.26	0.2	N	56.00	26.09	26.54	46.00	19.79	20.24
5.85	0.41	0.5	H	60.00	24.11	25.05	50.00	15.59	16.53
6.80	0.45	0.6	H	60.00	26.03	27.05	50.00	17.45	18.47
7.19	0.47	0.6	N	60.00	24.86	25.92	50.00	16.48	17.54
8.04	0.53	0.6	N	60.00	23.75	24.91	50.00	15.55	16.71
8.74	0.57	0.7	H	60.00	28.54	29.78	50.00	19.48	20.72
10.51	0.67	0.8	H	60.00	24.10	25.53	50.00	16.11	17.54
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

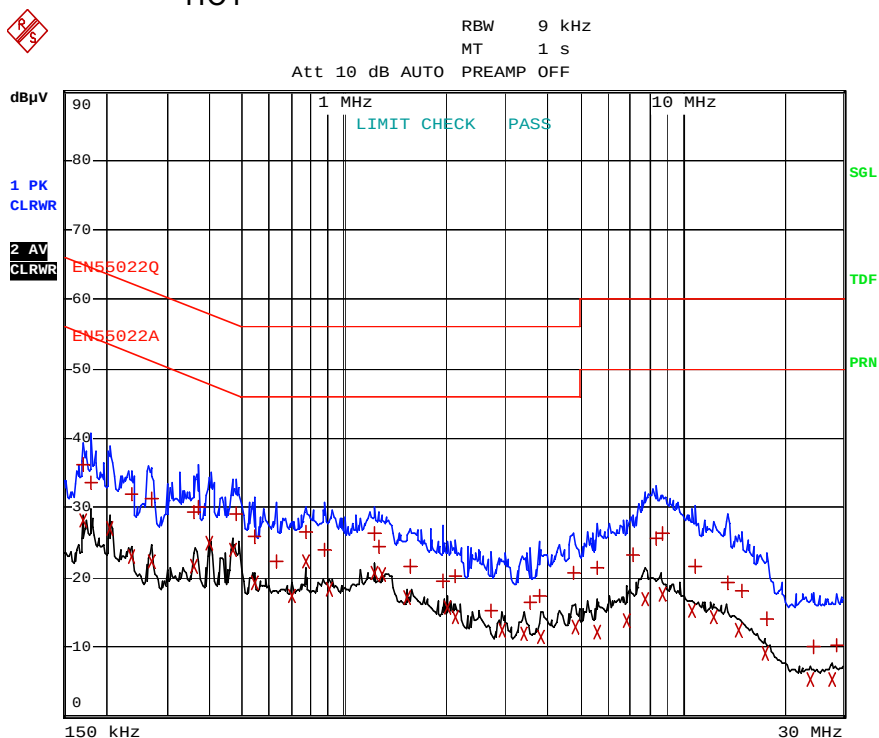
11.2 Antenna Connected Construction

The antenna types used in this product are Intergrated PCB Pattern Antenna. The maximum Gain of this antenna is 1.0dBi.

Appendix 1. Spectral diagram

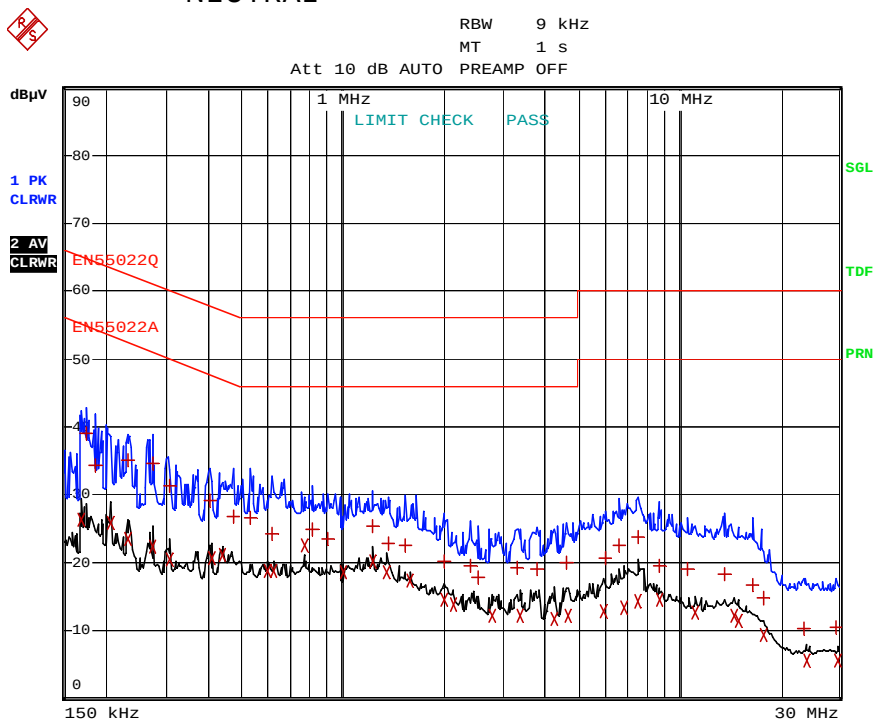
RX mode

*HOT



Comment: LSP-W1000NS RX HOT
Date: 5.SEP.2007 16:38:50

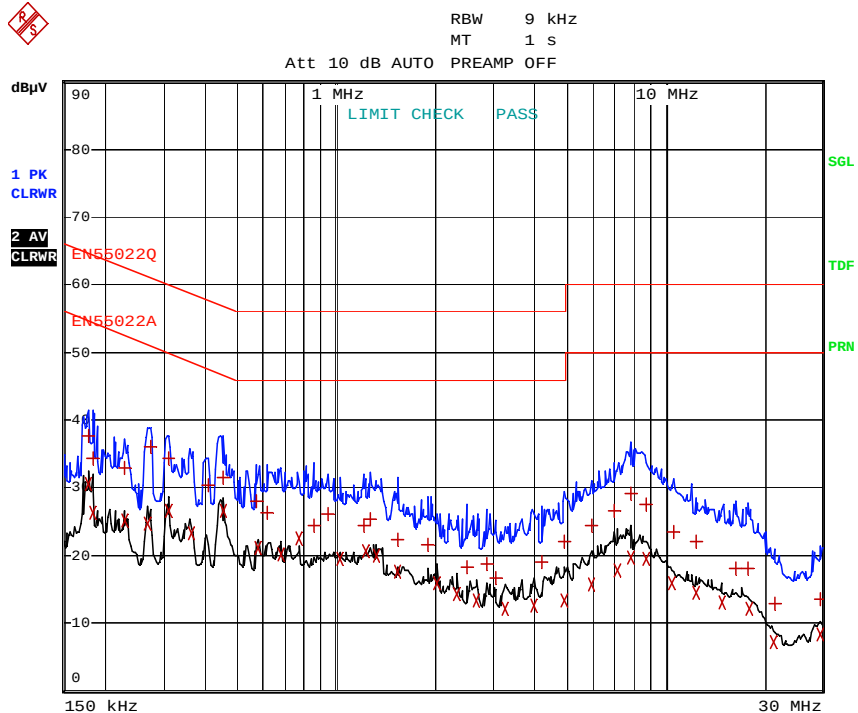
*NEUTRAL



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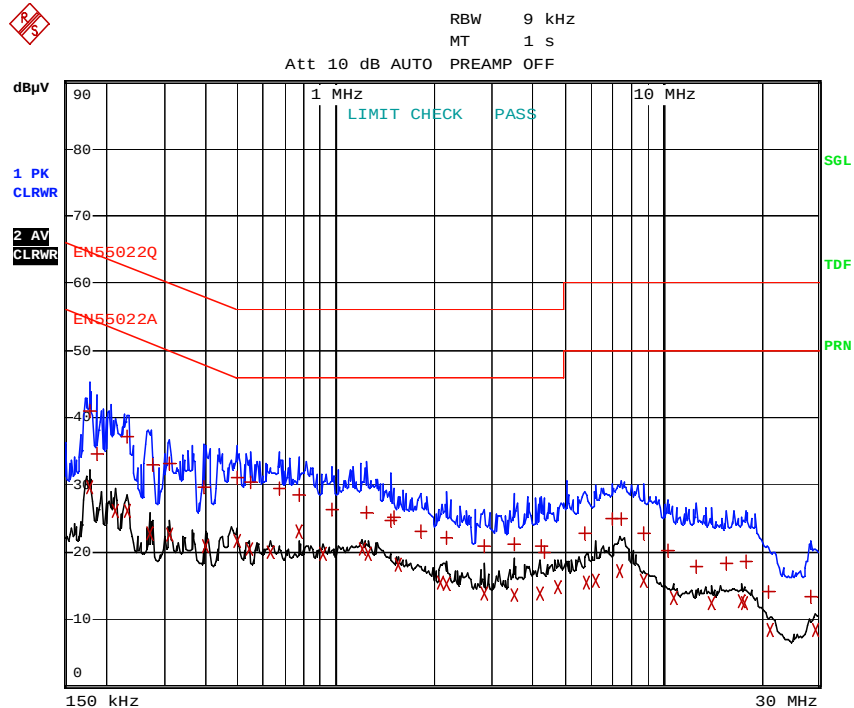
802.11b -TX

*HOT



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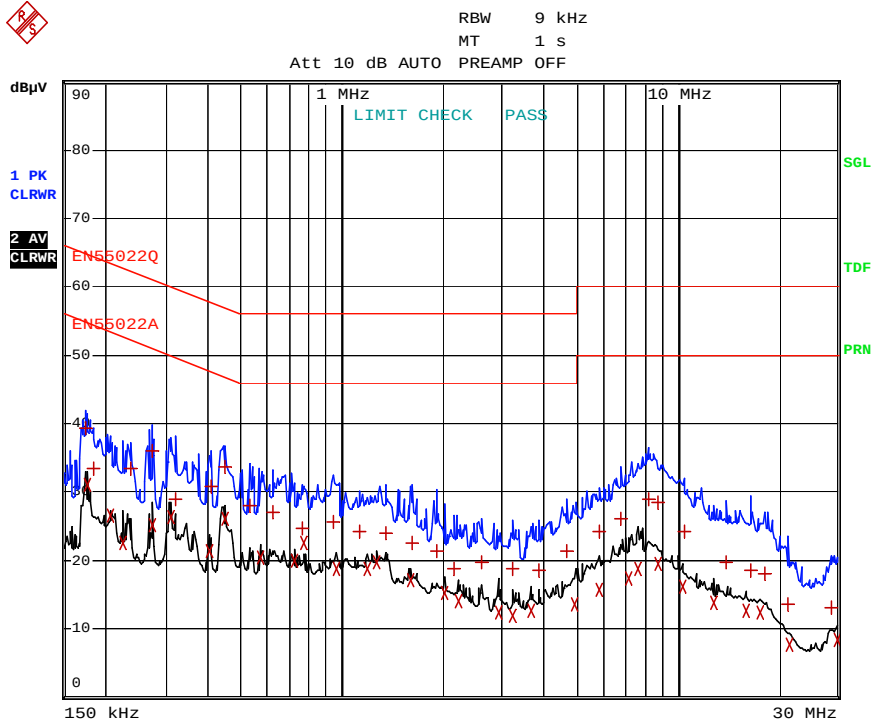
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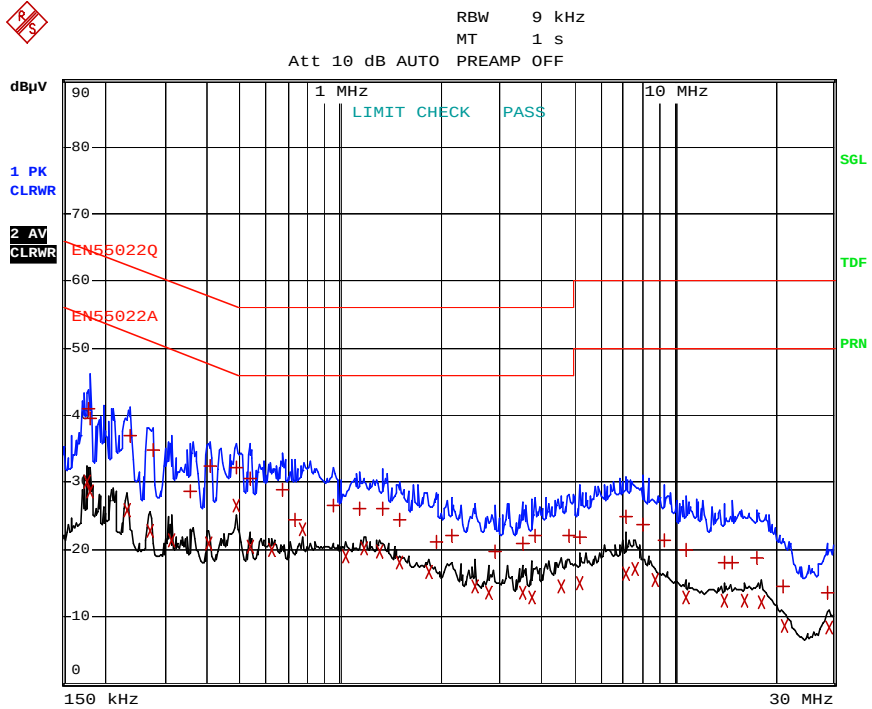
802.11g - TX

*HOT



Comment: LSP-W1000NS 801.11/G HOT
Date: 5.SEP.2007 16:16:02

*NEUTRAL



Comment: LSP-W1000NS 801.11/G NEUTRAL
Date: 5.SEP.2007 16:12:31