

FCC TEST REPORT

REPORT NO. : RF930919L01

MODEL NO. : WRT55AG ver. 2

RECEIVED : Sep. 09, 2004

TESTED : Sep. 09 ~ Sep. 21, 2004

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Table of Contents

1.	CERTIFICATION	7
2.	SUMMARY OF TEST RESULTS	8
2.1	MEASUREMENT UNCERTAINTY	10
3.	GENERAL INFORMATION.....	11
3.1	GENERAL DESCRIPTION OF EUT	11
3.2	DESCRIPTION OF TEST MODES.....	12
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	13
3.4	DESCRIPTION OF SUPPORT UNITS	14
3.5	CONFIGURATION OF SYSTEM UNDER TEST	15
4.	TEST TYPES AND RESULTS (FOR PART 802.11b & 802.11g)	16
4.1	CONDUCTED EMISSION MEASUREMENT	16
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	16
4.1.2	TEST INSTRUMENTS.....	16
4.1.3	TEST PROCEDURES	17
4.1.4	DEVIATION FROM TEST STANDARD	17
4.1.5	TEST SETUP	17
4.1.6	EUT OPERATING CONDITIONS	18
4.1.7	TEST RESULTS	19
4.2	RADIATED EMISSION MEASUREMENT	25
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	25
4.2.2	TEST INSTRUMENTS.....	26
4.2.3	TEST PROCEDURES	27
4.2.4	DEVIATION FROM TEST STANDARD	27
4.2.5	TEST SETUP	28
4.2.6	EUT OPERATING CONDITIONS	28
4.2.7	TEST RESULTS	29
4.3	6dB BANDWIDTH MEASUREMENT	38
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	38
4.3.2	TEST INSTRUMENTS.....	38
4.3.3	TEST PROCEDURE.....	39
4.3.4	DEVIATION FROM TEST STANDARD	39



4.3.5	TEST SETUP	39
4.3.6	EUT OPERATING CONDITIONS	39
4.3.7	TEST RESULTS	40
4.4	MAXIMUM PEAK OUTPUT POWER	50
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	50
4.4.2	INSTRUMENTS.....	50
4.4.1	TEST PROCEDURES	50
4.4.2	DEVIATION FROM TEST STANDARD	51
4.4.3	TEST SETUP	51
4.4.4	EUT OPERATING CONDITIONS	51
4.4.3	TEST RESULTS	52
4.5	POWER SPECTRAL DENSITY MEASUREMENT	53
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	53
4.5.2	TEST INSTRUMENTS.....	53
4.5.3	TEST PROCEDURE.....	54
4.5.4	DEVIATION FROM TEST STANDARD	54
4.5.5	TEST SETUP	54
4.5.6	EUT OPERATING CONDITION	54
4.5.7	TEST RESULTS	55
4.6	BAND EDGES MEASUREMENT	65
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	65
4.6.2	TEST INSTRUMENTS.....	65
4.6.3	TEST PROCEDURE.....	65
4.6.4	DEVIATION FROM TEST STANDARD	65
4.6.5	EUT OPERATING CONDITION	65
4.6.6	TEST RESULTS	66
4.7	ANTENNA REQUIREMENT	79
4.7.1	STANDARD APPLICABLE	79
4.7.2	ANTENNA CONNECTED CONSTRUCTION	79
5.	TEST TYPES AND RESULTS (FOR PART 802.11a)	80
5.1	CONDUCTED EMISSION MEASUREMENT	80
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	80

5.1.2	TEST INSTRUMENTS.....	80
5.1.3	TEST PROCEDURES	81
5.1.4	DEVIATION FROM TEST STANDARD	81
5.1.5	TEST SETUP	82
5.1.6	EUT OPERATING CONDITIONS	82
5.1.7	TEST RESULTS	83
5.2	RADIATED EMISSION MEASUREMENT	85
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	85
5.2.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS.....	86
5.2.3	TEST INSTRUMENTS.....	87
5.2.4	TEST PROCEDURES	88
5.2.5	DEVIATION FROM TEST STANDARD	88
5.2.6	TEST SETUP	89
5.2.7	EUT OPERATING CONDITIONS	89
5.2.8	TEST RESULTS	90
	FOR FREQUENCY 5.15~5.35GHz	104
5.3	PEAK TRANSMIT POWER MEASUREMENT	104
5.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT.....	104
5.3.2	TEST INSTRUMENTS.....	104
5.3.3	TEST PROCEDURE.....	105
5.3.4	DEVIATION FROM TEST STANDARD	105
5.3.5	TEST SETUP	105
5.3.6	EUT OPERATING CONDITIONS	105
5.3.7	TEST RESULTS	106
5.4	PEAK POWER EXCURSION MEASUREMENT	122
5.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT.....	122
5.4.2	TEST INSTRUMENTS.....	122
5.4.3	TEST PROCEDURE.....	123
5.4.4	DEVIATION FROM TEST STANDARD	123
5.4.5	TEST SETUP	123
5.4.6	EUT OPERATING CONDITIONS	123
5.4.7	TEST RESULTS	124



5.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	133
5.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT.....	133
5.5.2	TEST INSTRUMENTS.....	133
5.5.3	TEST PROCEDURES	134
5.5.4	DEVIATION FROM TEST STANDARD	134
5.5.5	TEST SETUP	134
5.5.6	EUT OPERATING CONDITIONS	134
5.5.7	TEST RESULTS	135
5.6	FREQUENCY STABILITY	144
5.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	144
5.6.2	TEST INSTRUMENTS.....	144
5.6.3	TEST PROCEDURE.....	144
5.6.4	DEVIATION FROM TEST STANDARD	145
5.6.5	TEST SETUP	145
5.6.6	EUT OPERATING CONDITION	145
5.6.7	TEST RESULTS	146
5.7	BAND EDGES MEASUREMENT	147
5.7.1	TEST INSTRUMENTS.....	147
5.7.2	TEST PROCEDURE.....	147
5.7.3	EUT OPERATING CONDITION	147
5.7.4	TEST RESULTS	147
5.8	ANTENNA REQUIREMENT	161
5.8.1	STANDARD APPLICABLE	161
5.8.2	ANTENNA CONNECTED CONSTRUCTION	161
	FOR FREQUENCY 5.725~5.850GHz	162
5.9	6dB BANDWIDTH MEASUREMENT	162
5.9.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	162
5.9.2	TEST INSTRUMENTS.....	162
5.9.3	TEST PROCEDURE.....	163
5.9.4	DEVIATION FROM TEST STANDARD	163
5.9.5	TEST SETUP	163
5.9.6	EUT OPERATING CONDITIONS	163

5.9.7	TEST RESULTS	164
5.10	MAXIMUM PEAK OUTPUT POWER	171
5.10.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	171
5.10.2	INSTRUMENTS.....	171
5.10.3	TEST PROCEDURES	172
5.10.4	DEVIATION FROM TEST STANDARD	172
5.10.5	TEST SETUP	172
5.10.6	EUT OPERATING CONDITIONS	172
5.10.7	TEST RESULTS	173
5.11	POWER SPECTRAL DENSITY MEASUREMENT	174
5.11.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	174
5.11.2	TEST INSTRUMENTS.....	174
5.11.3	TEST PROCEDURE.....	175
5.11.4	DEVIATION FROM TEST STANDARD	175
5.11.5	TEST SETUP	175
5.11.6	EUT OPERATING CONDITION	175
5.11.7	TEST RESULTS.....	176
5.12	BAND EDGES MEASUREMENT	183
5.12.1	LIMITS OF BAND EDGES MEASUREMENT	183
5.12.2	TEST INSTRUMENTS.....	183
5.12.3	TEST PROCEDURE.....	183
5.12.4	DEVIATION FROM TEST STANDARD	183
5.12.5	EUT OPERATING CONDITION	184
5.12.6	TEST RESULTS	184
5.13	ANTENNA REQUIREMENT	197
5.13.1	STANDARD APPLICABLE	197
5.13.2	ANTENNA CONNECTED CONSTRUCTION	197
6.	APPENDIX : SIMULTANEOUS TRANSMISSION	198
7.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	206
8.	INFORMATION ON THE TESTING LABORATORIES	208



1. CERTIFICATION

PRODUCT : Wireless A+G Broadband Router
BRAND NAME : Linksys
MODEL NO. : WRT55AG ver. 2
APPLICANT : Cisco-Linksys, LLC
TEST SAMPLE : Engineering Sample
TESTED : Sep. 09 ~ Sep. 21, 2004
STANDARDS : FCC Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407)
ANSI C63.4-2001

The above equipment have been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Suntee Liu, **DATE:** Aug. 23, 2004
(Suntee Liu)

TECHNICAL
ACCEPTANCE : Gary Chang, **DATE:** Aug. 23, 2004
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang, **DATE:** Aug. 23, 2004
(Cody Chang, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For Freq. 2.412 ~ 2.462GHz:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.63 dB at 1.625 MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.13 dB at 2483.5 MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.



For Freq. 5.15 ~ 5.35GHz:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	Test Type	Result	Remark
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.28 dB at 1.617 MHz
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -0.06 dB at 10360.00 MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

For Freq. 5.725 ~ 5.850GHz :

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.28 dB at 1.617 MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.25 dB at 11490.00 MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement	Frequency	Uncertainty
Conducted emissions	9k~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.73 dB
	200MHz ~1000MHz	3.74 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless A+G Broadband Router
MODEL NO.	WRT55AG ver. 2
POWER SUPPLY	5.0Vdc from AC adapter
MODULATION TYPE	DBPSK, DQPSK, CCK, 16QAM, 64QAM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11a: 54/48/36/24/18/12/9/6 Mbps (Turbo mode: up to 108Mbps)
FREQUENCY RANGE	802.11b & 802.11g: 2.412 ~ 2.462 GHz 802.11a: 5.150 ~ 5.350 GHz and 5.725 ~ 5.850 GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 for Normal mode / 1 for Turbo mode 802.11a: 13 for Normal mode / 5 for Turbo mode
CHANNEL SPACING	802.11b & 802.11g: 5 MHz 802.11a: 20 MHz for Normal mode / 40 MHz for Turbo mode
OUTPUT POWER	802.11b: 100.000 mW 802.11g: 63.096 mW 802.11a: 41.687 mW
DATA CABLE	NA
ANTENNA TYPE	Refer to Note 4
I/O PORTS	NA

NOTE:

1. The EUT operates in both the 5.0 GHz and 2.4 GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. This EUT is capable of providing data rates of up to 108 Mbps in turbo mode depending upon reception quality.
3. The EUT was powered by the following adapter:

Brand	Linksys
Model	MT15-5050250-A1
Input	100-120Vac, 50-60Hz, 0.5A
Output	5.0Vdc, 2.5A
Power Line	1.8m nonshielded cable without core

4. There are 2 sets of antennas provided to the EUT. The Run Top dual band antenna has been chosen for final test after pre-testing.

	Set 1	Set 2
Manufacturer	Run Top dual band antenna (15cm & 20cm)	Wha-Yu Dual Band antenna (15cm & 20cm)
Antenna type	Detachable Dual Band Antenna (Dipole)	Detachable Dual Band Antenna (Dipole)
Antenna gain	4.9~5.825 GHz: 4.0 dBi 2.4~2.5 GHz: 2 dBi	5 GHz: 2.0 dBi 2.4 GHz: 2.0 dBi

5. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

802.11b and 802.11g:

11 channels are provided to this EUT.

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

NOTE:

- Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
- Above 1GHz, the channel 1, 6, and 11 were tested individually.
- From our experience and technical viewpoint, we have chosen data rates, 11Mbps with CCK technique and 6Mbps with OFDM technique, as the worst cases for the test among other data rates.

1 channel is provided to this EUT for Turbo Mode.

Channel	Frequency
6	2437 MHz

For 802.11a:

13 channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	8	5320 MHz
2	5200 MHz	9	5745 MHz
3	5220 MHz	10	5765 MHz
4	5240 MHz	11	5785 MHz
5	5260 MHz	12	5805 MHz
6	5280 MHz	13	5825 MHz
7	5300 MHz		



5 channels are provided to this EUT for Turbo Mode.

Channel	Frequency	Channel	Frequency
1	5210 MHz	4	5760 MHz
2	5250 MHz	5	5800 MHz
3	5290 MHz		

NOTE:

1. The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
2. "Normal Mode" allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
3. "Turbo Mode" allows data rates of up to 108Mbps. At data rates higher than 12Mbps the PA gain is reduced to improve signal fidelity. The device was, therefore, tested in turbo mode at the data rate that produced the highest output power for turbo mode (12Mbps).
4. Channel 1, 4, 5, 8, 9, 11, and 13 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. Channel 1~5 were chosen for final test of Turbo mode.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless A+G Broadband Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247),

Subpart E (15.407)

ANSI C63.4:2001

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.4 DESCRIPTION OF SUPPORT UNITS

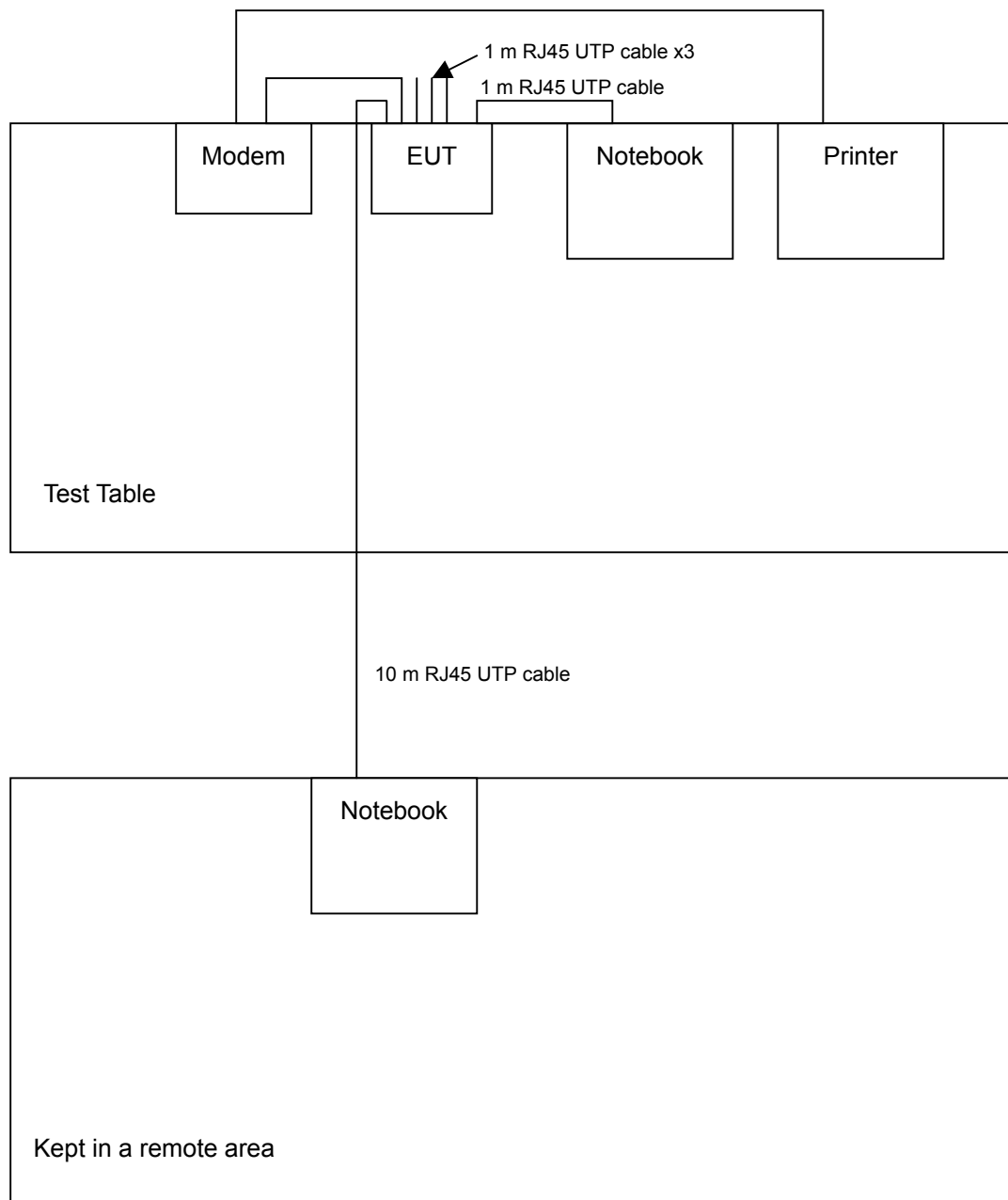
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS
2	NOTEBOOK COMPUTER	DELL	PP05L	16484462992	E2K24CLNS
3	PRINTER	EPSON	LQ-300+	DCGY054147	FCC DoC Approved
4	MODEM	ACEEX	1414V/3	0401008269	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA
3	1.2m shielded without core
4	1.2m shielded without core

NOTE: 1. All power cords of the above support units are non shielded (1.8m).
2. Item 2 acted as a communication partner to transfer data.

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS (FOR PART 802.11b & 802.11g)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Dec. 12, 2004
RF signal cable Woken	5D-FB	Cable-HYC01-01	Mar. 02, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Mar. 03, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Mar. 02, 2005
Software ADT	ADT_Cond_V3	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.

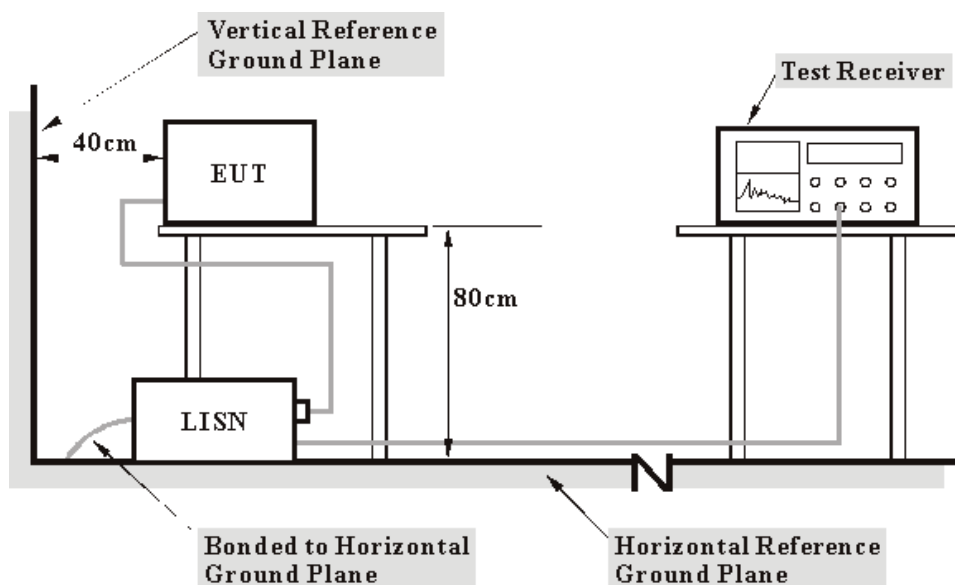
4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



4.1.6 EUT OPERATING CONDITIONS

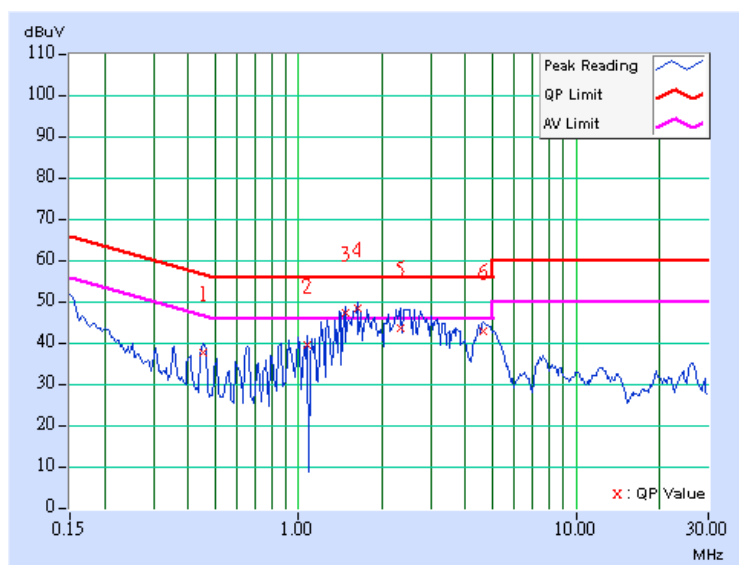
- a. Connected the EUT to the notebook placed on a testing table.
- b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The notebook sent "H" messages to its screen.
- d. The notebook sent "H" messages to the modem.
- e. The notebook sent "H" messages to the printer, and the printer printed them on paper.
- f. Steps c~e are repeated.

4.1.7 TEST RESULTS

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.451	0.13	37.72	-	37.85	-	56.86	46.86	-19.01	-
2	1.074	0.15	39.52	-	39.67	-	56.00	46.00	-16.33	-
3	1.473	0.15	47.00	32.43	47.15	32.58	56.00	46.00	-8.85	-13.42
4	1.625	0.16	48.21	32.66	48.37	32.82	56.00	46.00	-7.63	-13.18
5	2.320	0.17	43.65	-	43.82	-	56.00	46.00	-12.18	-
6	4.648	0.22	42.63	-	42.85	-	56.00	46.00	-13.15	-

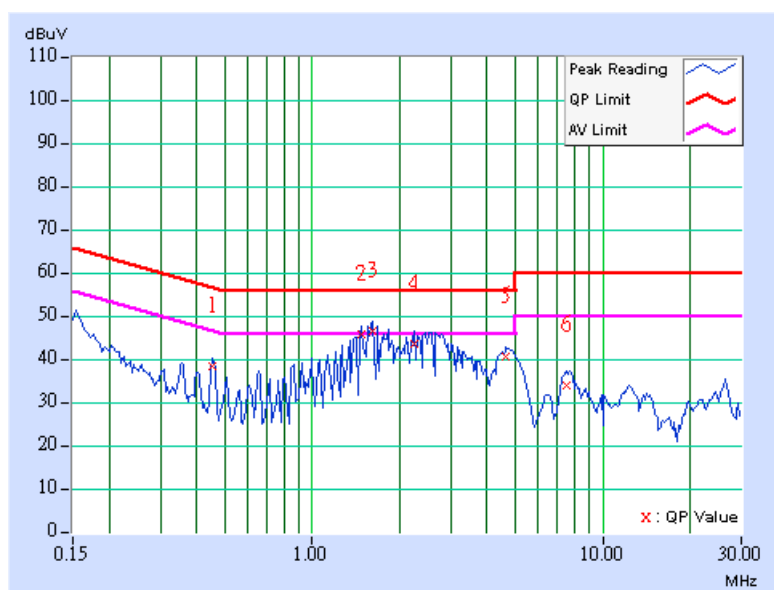
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.455	0.12	38.31	-	38.43	-	56.79	46.79	-18.36	-
2	1.477	0.15	45.83	-	45.98	-	56.00	46.00	-10.02	-
3	1.609	0.16	46.42	30.94	46.58	31.10	56.00	46.00	-9.42	-14.90
4	2.238	0.16	43.37	-	43.53	-	56.00	46.00	-12.47	-
5	4.645	0.21	40.47	-	40.68	-	56.00	46.00	-15.32	-
6	7.551	0.28	33.66	-	33.94	-	60.00	50.00	-26.06	-

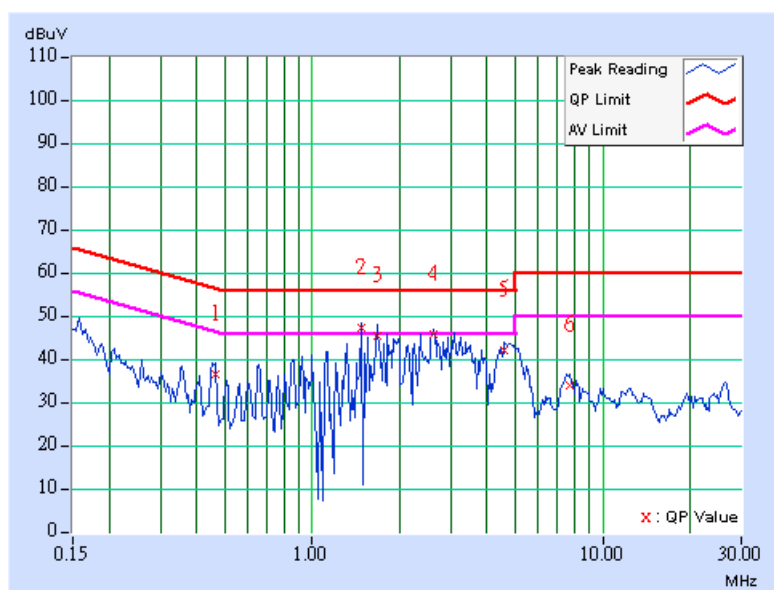
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.463	0.13	36.42	-	36.55	-	56.65	46.65	-20.10	-
2	1.473	0.15	47.00	32.32	47.15	32.47	56.00	46.00	-8.85	-13.53
3	1.668	0.16	45.41	-	45.57	-	56.00	46.00	-10.43	-
4	2.605	0.17	45.64	-	45.81	-	56.00	46.00	-10.19	-
5	4.578	0.22	41.99	-	42.21	-	56.00	46.00	-13.79	-
6	7.707	0.30	33.84	-	34.14	-	60.00	50.00	-25.86	-

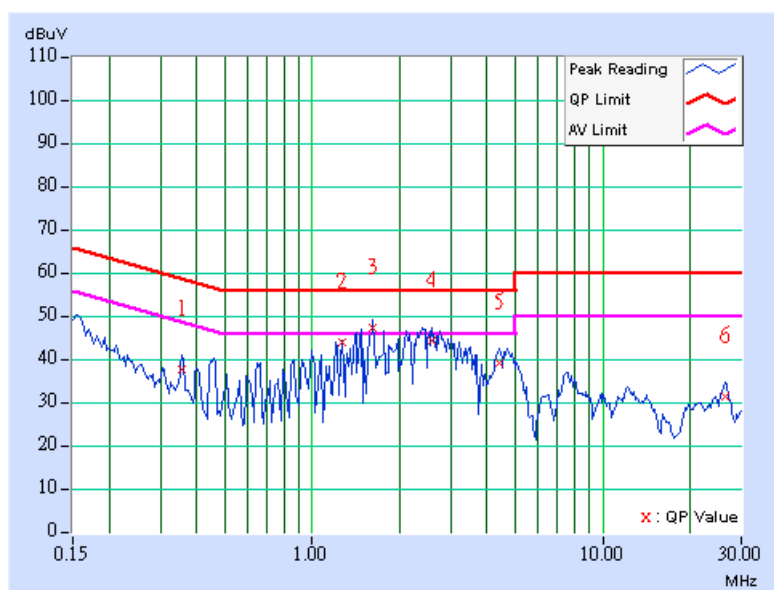
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.357	0.12	36.99	-	37.11	-	58.80	48.80	-21.69	-
2	1.273	0.15	43.56	-	43.71	-	56.00	46.00	-12.29	-
3	1.613	0.16	46.82	30.94	46.98	31.10	56.00	46.00	-9.02	-14.90
4	2.594	0.17	43.60	-	43.77	-	56.00	46.00	-12.23	-
5	4.379	0.21	38.47	-	38.68	-	56.00	46.00	-17.32	-
6	26.305	0.67	30.75	-	31.42	-	60.00	50.00	-28.58	-

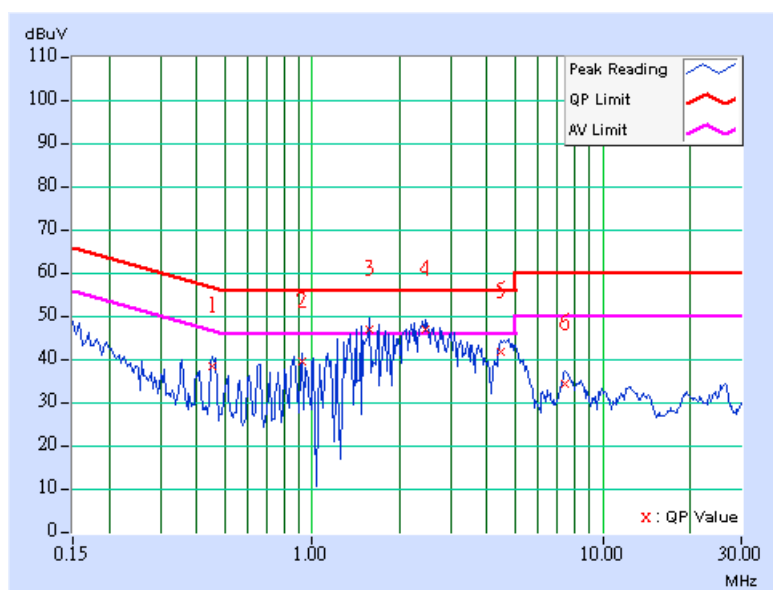
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.451	0.13	38.15	-	38.28	-	56.86	46.86	-18.58	-
2	0.923	0.15	39.34	-	39.49	-	56.00	46.00	-16.51	-
3	1.566	0.16	46.88	31.53	47.04	31.69	56.00	46.00	-8.96	-14.31
4	2.461	0.17	46.79	36.06	46.96	36.23	56.00	46.00	-9.04	-9.77
5	4.449	0.22	41.60	-	41.82	-	56.00	46.00	-14.18	-
6	7.441	0.30	34.27	-	34.57	-	60.00	50.00	-25.43	-

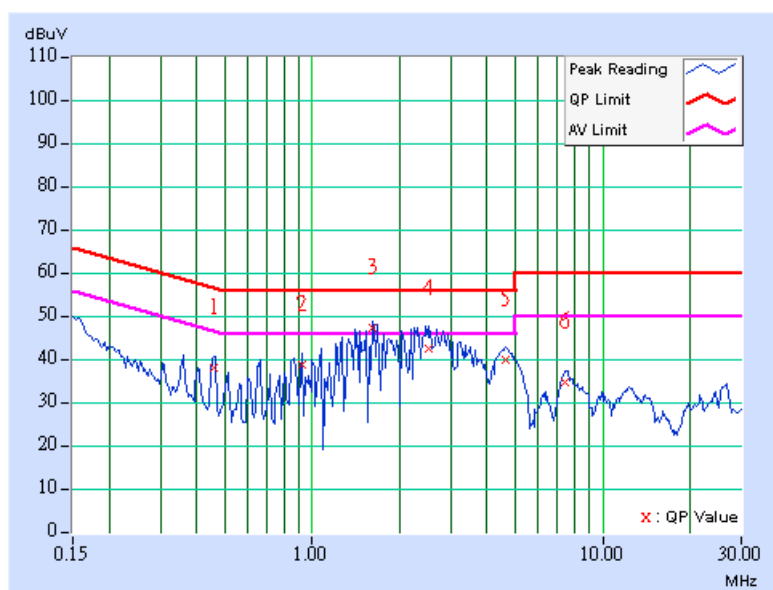
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62% RH, 991 hPa	TESTED BY	Rush Kao

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.459	0.12	38.02	-	38.14	-	56.72	46.72	-18.58	-
2	0.923	0.14	38.65	-	38.79	-	56.00	46.00	-17.21	-
3	1.617	0.16	46.96	31.13	47.12	31.29	56.00	46.00	-8.88	-14.71
4	2.527	0.17	42.43	-	42.60	-	56.00	46.00	-13.40	-
5	4.648	0.21	39.73	-	39.94	-	56.00	46.00	-16.06	-
6	7.445	0.28	34.37	-	34.65	-	60.00	50.00	-25.35	-

- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Jan. 13, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-407	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170241	Feb. 23, 2005
Preamplifier Agilent	8449B	3008A01961	Jan. 22, 2005
Preamplifier Agilent	8447D	2944A10629	Jan. 14, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218182/4	Mar. 04, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218194/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 1.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC4924-2.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

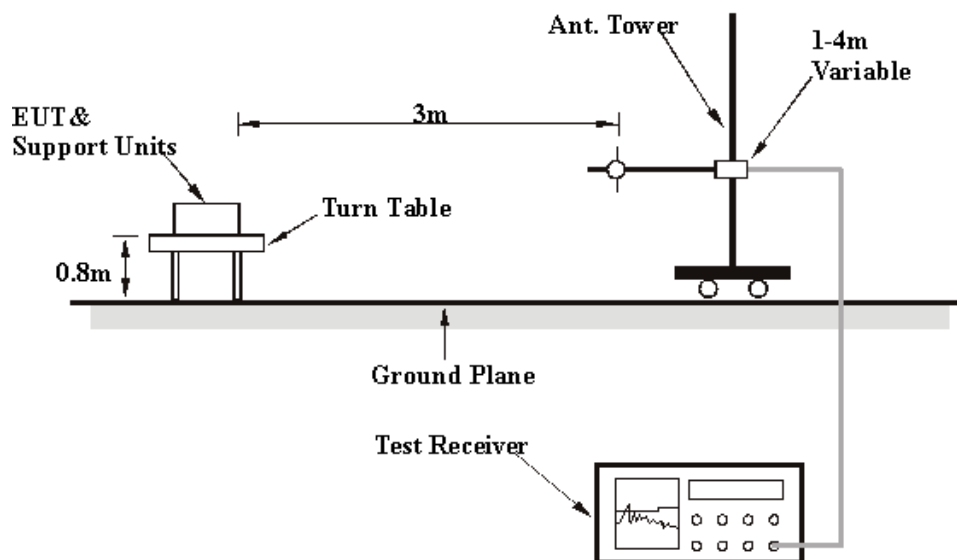
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	26 deg. C, 62% RH, 991 hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	43.61	33.00 QP	40.00	-7.00	1.00 H	289	17.73	15.28
2	57.21	32.73 QP	40.00	-7.27	1.75 H	115	18.74	13.99
3	109.70	32.35 QP	43.50	-11.15	1.50 H	271	20.38	11.97
4	218.56	26.97 QP	46.00	-19.03	1.50 H	244	15.17	11.80
5	239.94	28.76 QP	46.00	-17.24	1.00 H	49	15.69	13.07
6	249.66	34.30 QP	46.00	-11.70	1.25 H	28	21.08	13.22
7	329.36	33.82 QP	46.00	-12.18	1.00 H	334	18.64	15.18
8	374.07	33.62 QP	46.00	-12.38	1.00 H	277	17.44	16.18
9	399.34	28.06 QP	46.00	-17.94	1.00 H	127	11.33	16.74
10	500.42	42.84 QP	46.00	-3.16	1.75 H	250	24.10	18.74
11	550.96	36.88 QP	46.00	-9.12	1.75 H	292	17.16	19.72
12	599.56	32.16 QP	46.00	-13.84	1.25 H	43	11.16	21.00
13	681.20	36.64 QP	46.00	-9.36	1.25 H	295	14.57	22.07
14	770.62	40.14 QP	46.00	-5.86	1.00 H	298	16.49	23.65
15	881.42	34.71 QP	46.00	-11.29	1.50 H	292	9.94	24.77
16	990.28	41.25 QP	54.00	-12.75	1.25 H	253	15.48	25.77

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	26 deg. C, 62% RH, 991 hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	44.92	38.51 QP	40.00	-1.49	1.06 V	23	23.22	15.30
2	76.65	33.53 QP	40.00	-6.47	1.00 V	25	22.69	10.84
3	109.70	39.05 QP	43.50	-4.45	1.00 V	253	27.07	11.97
4	138.86	34.06 QP	43.50	-9.44	2.00 V	169	19.72	14.34
5	164.13	30.44 QP	43.50	-13.06	1.00 V	235	15.95	14.49
6	249.66	39.71 QP	46.00	-6.29	1.00 V	10	26.49	13.22
7	329.36	35.57 QP	46.00	-10.43	1.50 V	268	20.40	15.18
8	374.07	32.00 QP	46.00	-14.00	1.00 V	10	15.82	16.18
9	399.34	29.51 QP	46.00	-16.49	1.25 V	346	12.78	16.74
10	479.04	32.27 QP	46.00	-13.73	1.25 V	40	13.82	18.45
11	500.42	42.52 QP	46.00	-3.48	1.00 V	307	23.78	18.74
12	550.96	40.24 QP	46.00	-5.76	1.00 V	88	20.53	19.72
13	681.20	32.88 QP	46.00	-13.12	1.00 V	178	10.81	22.07
14	770.62	38.12 QP	46.00	-7.88	1.25 V	319	14.47	23.65
15	881.42	34.99 QP	46.00	-11.01	1.00 V	37	10.22	24.77
16	990.28	37.62 QP	54.00	-16.38	1.50 V	346	11.86	25.77

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 1	MODE	CCK
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25 GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	45.70 PK	74.00	-28.30	1.20 H	201	16.67	29.03
2	1320.00	43.31 PK	74.00	-30.69	1.12 H	320	13.06	30.25
3	2390.00	49.17 PK	74.00	-24.83	1.04 H	17	15.34	33.83
4	*2412.00	103.76 PK			1.04 H	17	69.83	33.93
4	*2412.00	95.43 AV			1.04 H	17	61.50	33.93
5	2688.00	45.44 PK	74.00	-28.56	1.15 H	27	10.58	34.86
6	4824.00	53.85 PK	74.00	-20.15	1.16 H	209	13.19	40.66
6	4824.00	44.30 AV	54.00	-9.70	1.16 H	209	3.64	40.66

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	43.87 PK	74.00	-30.13	1.12 V	272	14.84	29.03
2	1320.00	44.39 PK	74.00	-29.61	1.28 V	80	14.14	30.25
3	2390.00	56.56 PK	74.00	-17.44	1.11 V	323	22.73	33.83
3	2390.00	48.13 AV	54.00	-5.87	1.11 V	323	14.30	33.83
4	*2412.00	111.15 PK			1.11 V	323	77.22	33.93
4	*2412.00	102.72 AV			1.11 V	323	68.79	33.93
5	2688.00	45.56 PK	74.00	-28.44	1.24 V	326	10.70	34.86
6	4824.00	56.05 PK	74.00	-17.95	1.09 V	294	15.39	40.66
6	4824.00	48.12 AV	54.00	-5.88	1.09 V	294	7.46	40.66

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 6	MODE	CCK
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25 GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	46.29 PK	74.00	-27.71	1.24 H	192	17.26	29.03
2	1320.00	44.43 PK	74.00	-29.57	1.16 H	324	14.18	30.25
3	*2437.00	106.35 PK			1.07 H	342	72.30	34.05
3	*2437.00	97.98 AV			1.07 H	342	63.93	34.05
4	2688.00	47.62 PK	74.00	-26.38	1.16 H	24	12.76	34.86
5	4874.00	54.48 PK	74.00	-19.52	1.15 H	127	13.79	40.69
5	4874.00	45.69 AV	54.00	-8.31	1.15 H	127	5.00	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	44.48 PK	74.00	-29.52	1.10 V	271	15.45	29.03
2	1320.00	42.66 PK	74.00	-31.34	1.41 V	290	12.41	30.25
3	*2437.00	115.23 PK			1.10 V	204	81.18	34.05
3	*2437.00	106.78 AV			1.10 V	204	72.73	34.05
4	2688.00	50.28 PK	74.00	-23.72	1.02 V	151	15.42	34.86
5	4874.00	58.46 PK	74.00	-15.54	1.10 V	300	17.77	40.69
5	4874.00	51.23 AV	54.00	-2.77	1.10 V	300	10.54	40.69

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * “ : Fundamental frequency

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 11	MODE	CCK
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25 GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	47.07 PK	74.00	-26.93	1.32 H	259	18.04	29.03
2	1320.00	43.70 PK	74.00	-30.30	1.13 H	324	13.45	30.25
3	*2462.00	102.64 PK			1.30 H	18	68.48	34.16
3	*2462.00	98.57 AV			1.30 H	18	64.41	34.16
4	2483.50	48.25 PK	74.00	-25.75	1.30 H	18	13.99	34.26
5	4924.00	53.97 PK	74.00	-20.03	1.00 H	213	13.11	40.86
5	4924.00	46.59 AV	54.00	-7.41	1.00 H	213	5.73	40.86
6	9848.00	63.95 PK	74.00	-10.05	1.30 H	278	10.00	53.95
6	9848.00	52.08 AV	54.00	-1.92	1.30 H	278	-1.87	53.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	44.41 PK	74.00	-29.59	1.00 V	318	15.38	29.03
2	1320.00	44.02 PK	74.00	-29.98	1.34 V	252	13.77	30.25
3	*2462.00	111.70 PK			1.12 V	183	77.54	34.16
3	*2462.00	103.31 AV			1.12 V	183	69.15	34.16
4	2483.50	57.31 PK	74.00	-16.69	1.12 V	183	23.05	34.26
4	2483.50	48.92 AV	54.00	-5.08	1.12 V	183	14.66	34.26
5	4924.00	55.58 PK	74.00	-18.42	1.14 V	85	14.72	40.86
5	4924.00	50.45 AV	54.00	-3.55	1.14 V	85	9.59	40.86
6	9848.00	63.46 PK	74.00	-10.54	1.15 V	310	9.51	53.95
6	9848.00	51.83 AV	54.00	-2.17	1.15 V	310	-2.12	53.95

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * “ : Fundamental frequency

Normal mode

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	47.35 PK	74.00	-26.65	1.30 H	280	18.32	29.03
2	1320.00	44.28 PK	74.00	-29.72	1.15 H	327	14.03	30.25
3	2390.00	51.97 PK	74.00	-22.03	1.34 H	57	18.14	33.83
3	2390.00	41.65 AV	54.00	-12.35	1.34 H	57	7.82	33.83
4	*2412.00	100.23 PK			1.34 H	57	66.30	33.93
4	*2412.00	89.91 AV			1.34 H	57	55.98	33.93
5	2688.00	44.61 PK	74.00	-29.39	1.17 H	23	9.75	34.86
6	4824.00	51.39 PK	74.00	-22.61	1.24 H	328	10.73	40.66
6	4824.00	37.98 AV	54.00	-16.02	1.24 H	328	-2.68	40.66

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	46.98 PK	74.00	-27.02	1.00 V	252	17.95	29.03
2	1320.00	43.72 PK	74.00	-30.28	1.34 V	246	13.47	30.25
3	2390.00	59.90 PK	74.00	-14.10	1.14 V	196	26.07	33.83
3	2390.00	49.02 AV	54.00	-4.98	1.14 V	196	15.19	33.83
4	*2412.00	108.16 PK			1.14 V	196	74.23	33.93
4	*2412.00	97.28 AV			1.14 V	196	63.35	33.93
5	2688.00	46.33 PK	74.00	-27.67	1.04 V	10	11.47	34.86
6	4824.00	54.59 PK	74.00	-19.41	1.06 V	289	13.93	40.66
6	4824.00	40.37 AV	54.00	-13.63	1.06 V	289	-0.29	40.66

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	45.01 PK	74.00	-28.99	1.00 H	186	15.98	29.03
2	1320.00	44.95 PK	74.00	-29.05	1.10 H	225	14.70	30.25
3	*2437.00	103.50 PK			1.03 H	344	69.45	34.05
3	*2437.00	92.80 AV			1.03 H	344	58.75	34.05
4	2688.00	46.14 PK	74.00	-27.86	1.14 H	22	11.28	34.86
5	4874.00	54.12 PK	74.00	-19.88	1.13 H	212	13.43	40.69
5	4874.00	40.33 AV	54.00	-13.67	1.13 H	212	-0.36	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	45.22 PK	74.00	-28.78	1.32 V	182	16.19	29.03
2	1320.00	43.07 PK	74.00	-30.93	1.30 V	289	12.82	30.25
3	*2437.00	111.88 PK			1.08 V	141	77.83	34.05
3	*2437.00	104.14 AV			1.08 V	141	70.09	34.05
4	2688.00	48.83 PK	74.00	-25.17	1.02 V	6	13.97	34.86
5	4874.00	57.16 PK	74.00	-16.84	1.06 V	288	16.47	40.69
5	4874.00	43.27 AV	54.00	-10.73	1.06 V	288	2.58	40.69

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	45.17 PK	74.00	-28.83	1.00 H	186	16.14	29.03
2	1320.00	44.10 PK	74.00	-29.90	1.06 H	233	13.85	30.25
3	*2462.00	101.50 PK			1.04 H	342	67.34	34.16
3	*2462.00	90.12 AV			1.04 H	342	55.96	34.16
4	2483.50	56.49 PK	74.00	-17.51	1.04 H	342	22.23	34.26
4	2483.50	45.11 AV	54.00	-8.89	1.04 H	342	10.85	34.26
5	2688.00	45.03 PK	74.00	-28.97	1.03 H	349	10.17	34.86
6	4924.00	50.48 PK	74.00	-23.52	1.04 H	67	9.62	40.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	45.97 PK	74.00	-28.03	1.37 V	190	16.94	29.03
2	1320.00	43.59 PK	74.00	-30.41	1.37 V	105	13.34	30.25
3	*2462.00	108.68 PK			1.06 V	284	74.52	34.16
3	*2462.00	97.88 AV			1.06 V	284	63.72	34.16
4	2483.50	63.67 PK	74.00	-10.33	1.06 V	284	29.41	34.26
4	2483.50	52.87 AV	54.00	-1.13	1.06 V	284	18.61	34.26
5	2688.00	47.62 PK	74.00	-26.38	1.22 V	183	12.76	34.86
6	4924.00	51.92 PK	74.00	-22.08	1.21 V	272	11.06	40.86
6	4924.00	38.69 AV	54.00	-15.31	1.21 V	272	-2.17	40.86

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

Turbo mode

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	MODE	OFDM
TESTED BY	Rush Kao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	43.51 PK	74.00	-30.49	1.00 H	265	14.48	29.03
2	2390.00	47.18 PK	74.00	-26.82	1.00 H	12	13.35	33.83
3	*2437.00	93.52 PK			1.00 H	12	59.47	34.05
3	*2437.00	84.30 AV			1.00 H	12	50.25	34.05
4	2483.50	44.62 PK	74.00	-29.38	1.00 H	12	10.36	34.26
5	4874.00	50.29 PK	74.00	-23.71	1.02 H	25	9.60	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1120.00	44.64 PK	74.00	-29.36	1.00 V	64	15.61	29.03
2	2390.00	61.63 PK	74.00	-12.37	1.00 V	306	27.80	33.83
2	2390.00	52.65 AV	54.00	-1.35	1.00 V	306	18.82	33.83
3	*2437.00	107.97 PK			1.00 V	306	73.92	34.05
3	*2437.00	98.99 AV			1.00 V	306	64.94	34.05
4	2483.50	59.07 PK	74.00	-14.93	1.00 V	306	24.81	34.26
4	2483.50	50.09 AV	54.00	-3.91	1.00 V	306	15.83	34.26
5	4874.00	53.11 PK	74.00	-20.89	1.00 V	8	12.42	40.69
5	4874.00	39.57 AV	54.00	-14.43	1.00 V	8	-1.12	40.69

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247
6. “ * ” : Fundamental frequency

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK 30	100049	Aug. 12, 2005

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

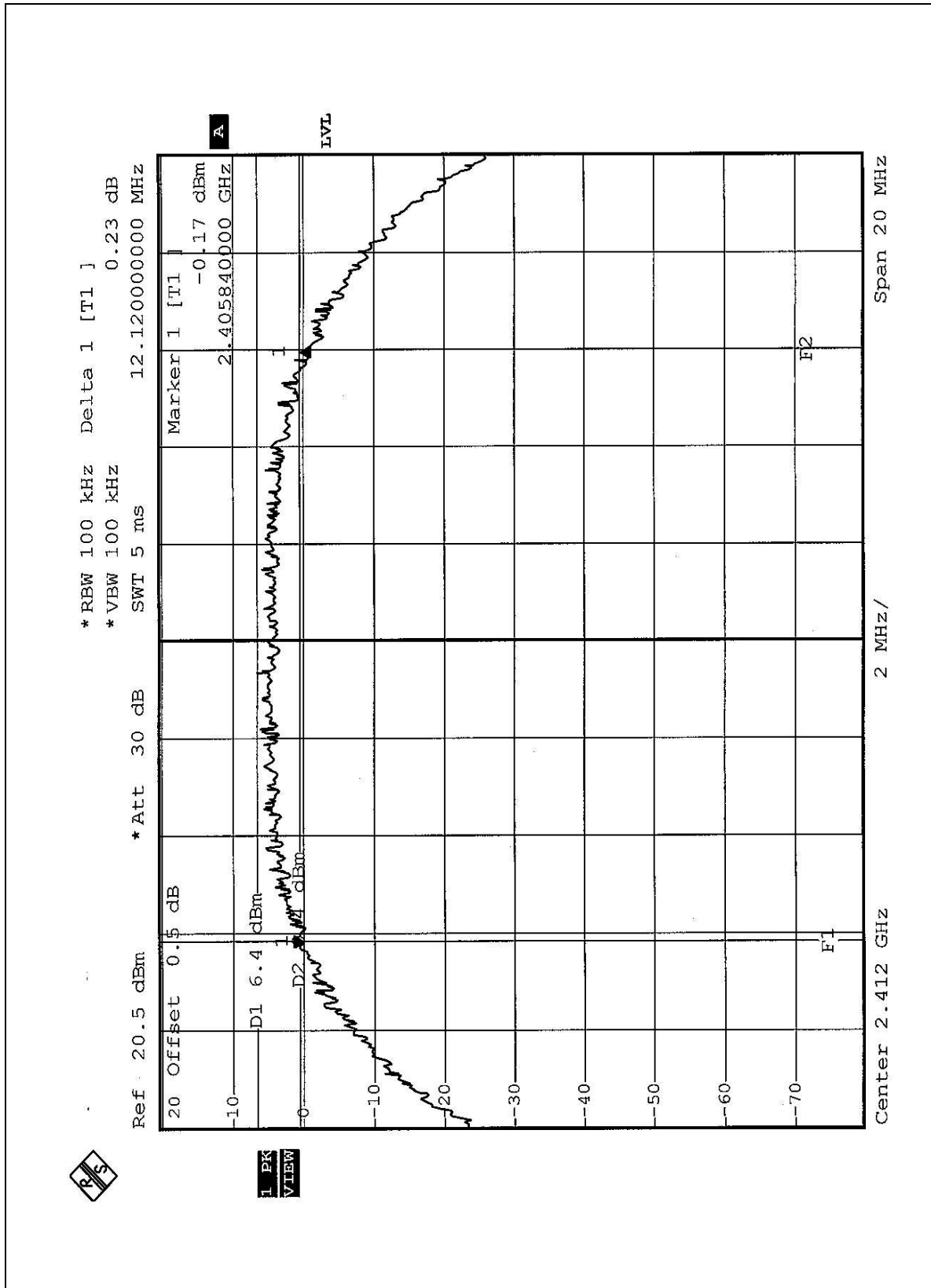
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

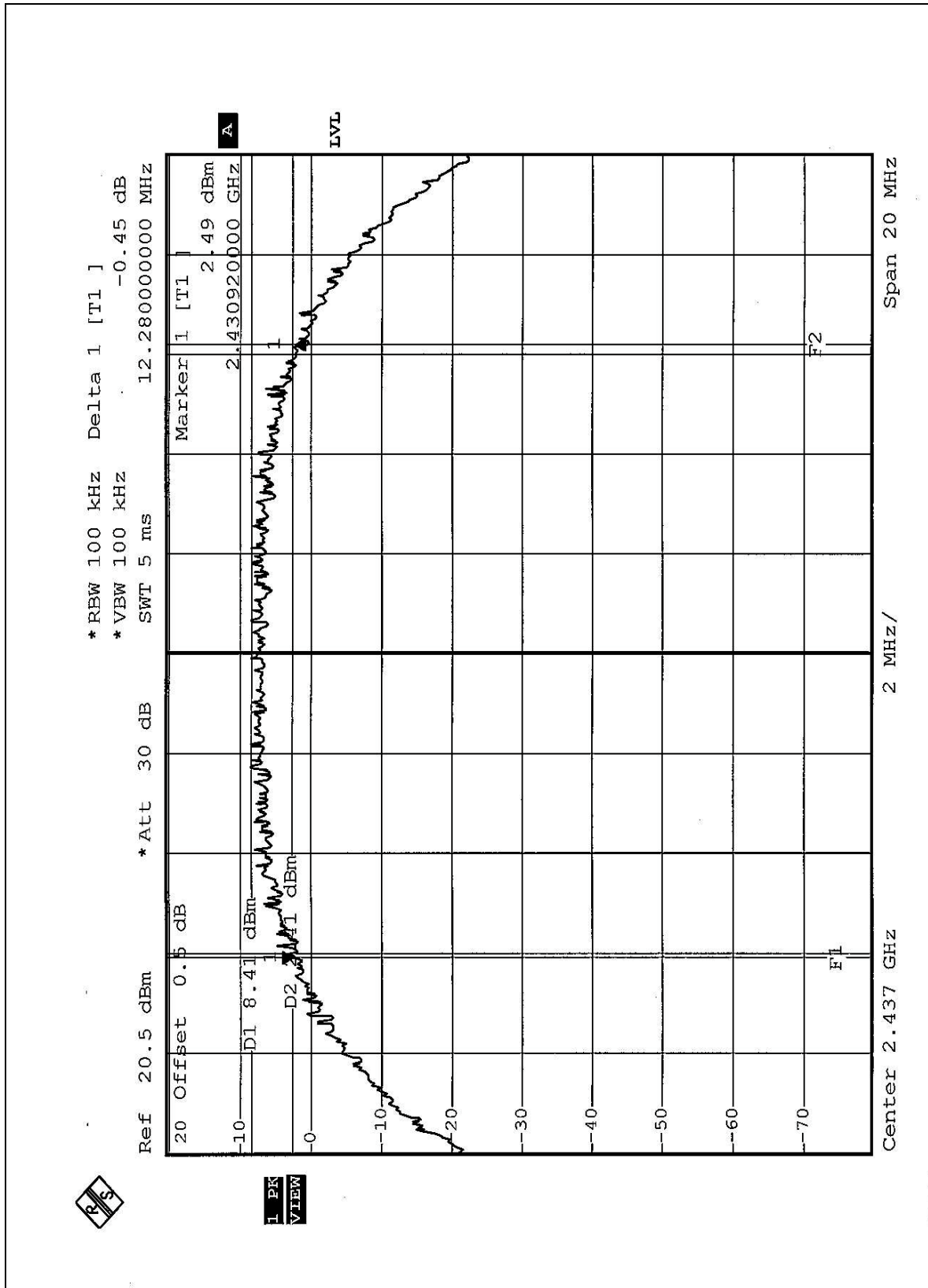
EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	CCK	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 67% RH, 991 hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.12	0.5	PASS
6	2437	12.28	0.5	PASS
11	2462	12.28	0.5	PASS

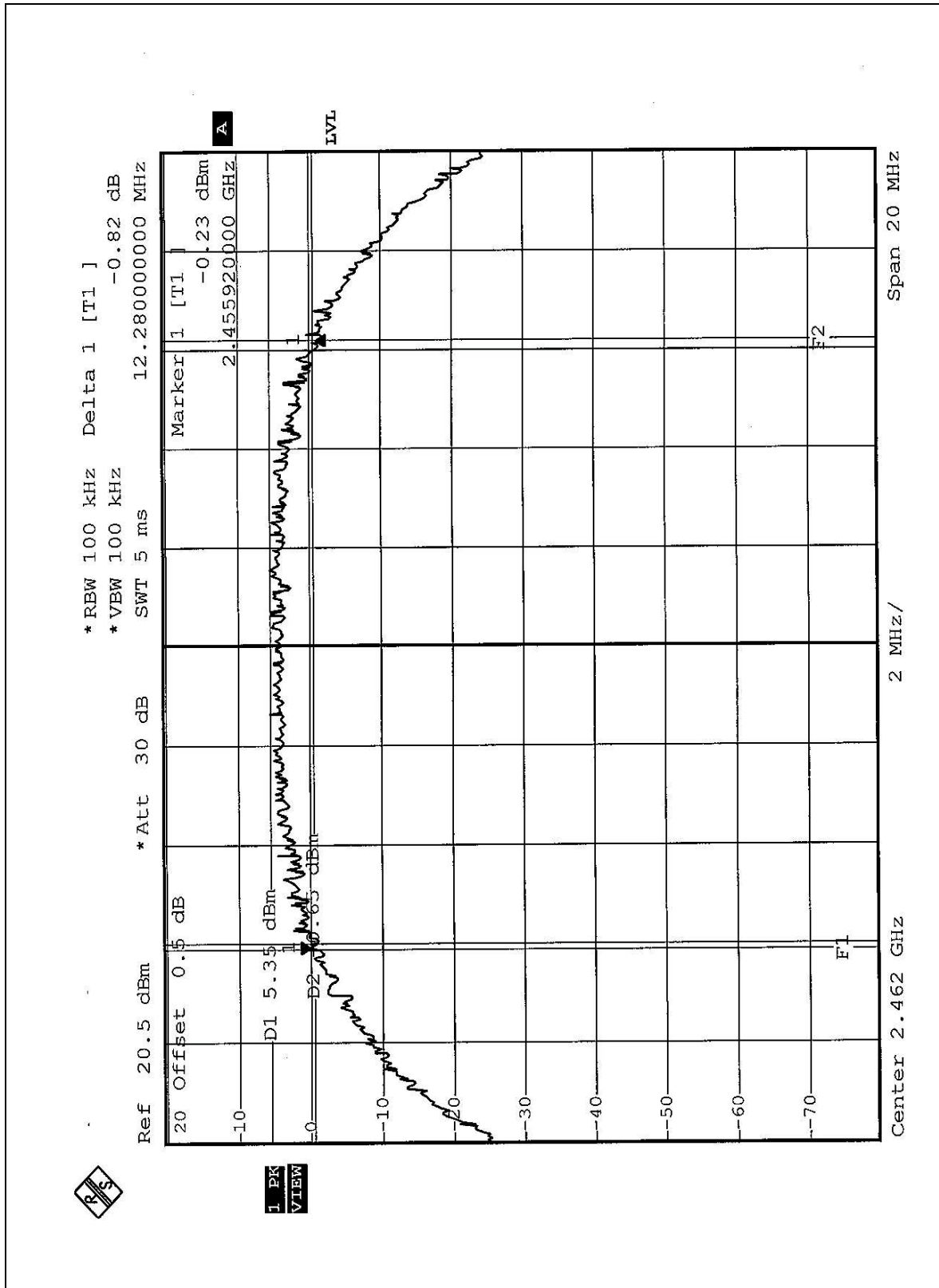
CH1



CH6



CH11

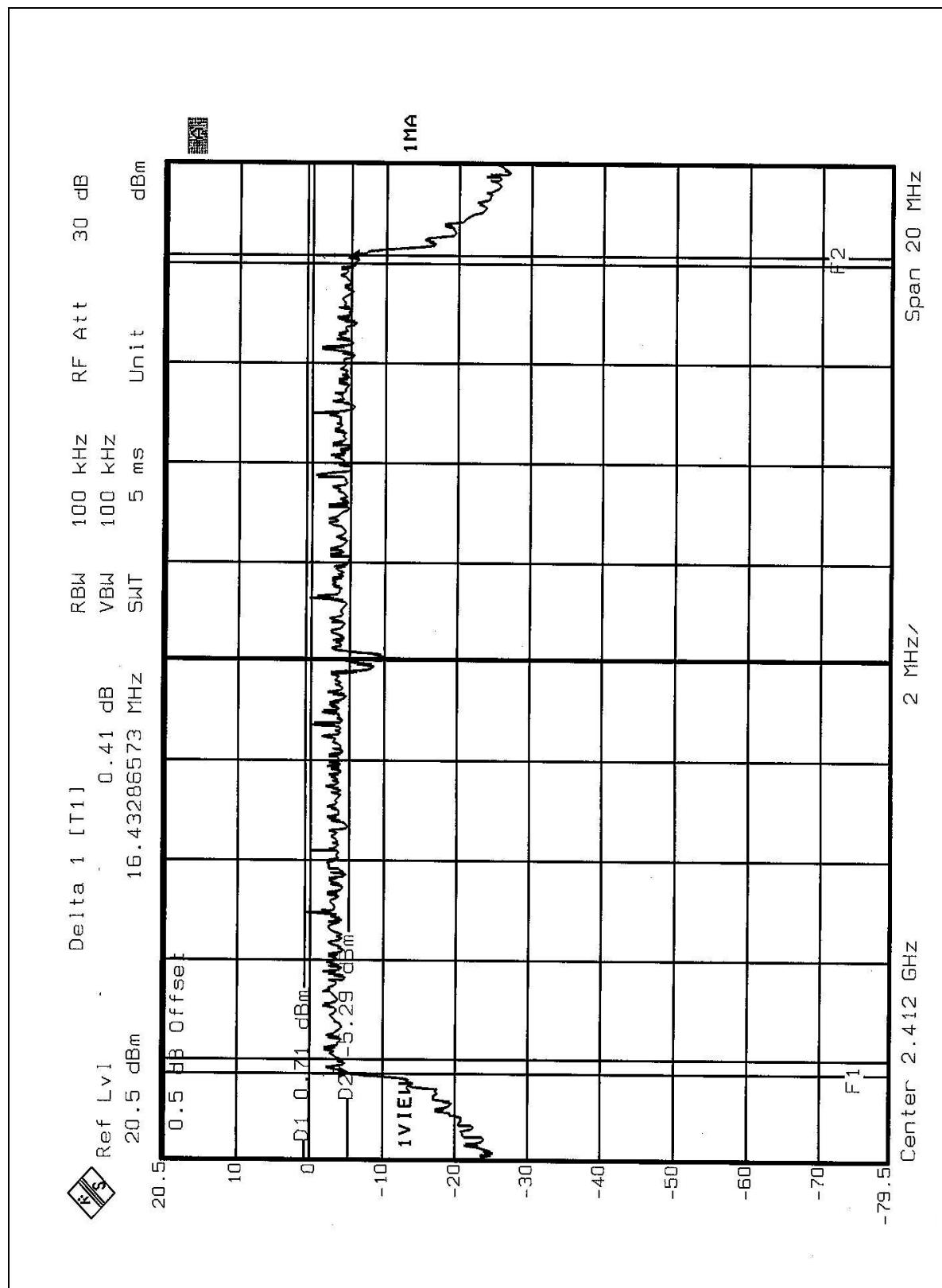


**Normal mode**

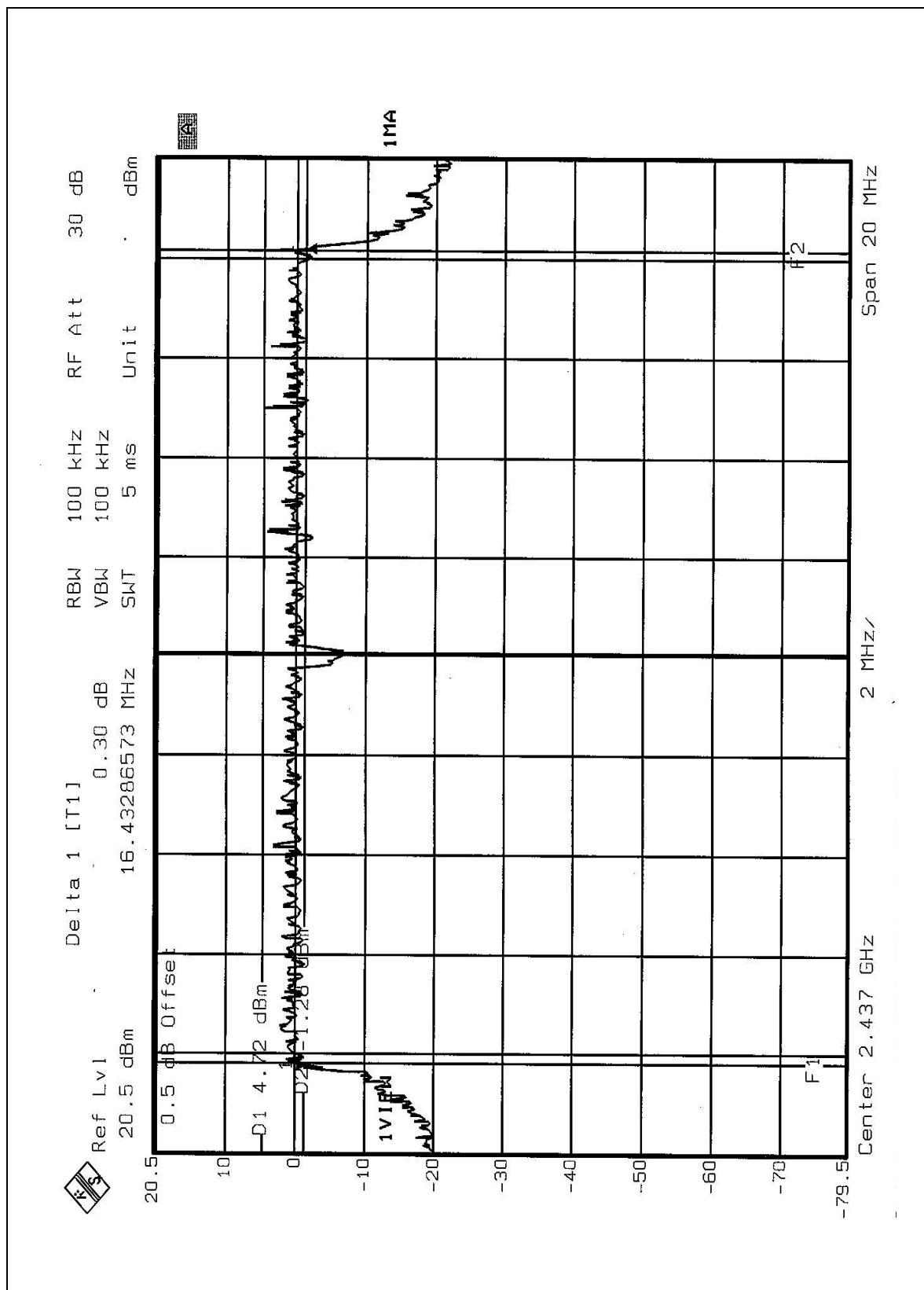
EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	OFDM	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 65% RH, 991 hPa	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.43	0.5	PASS
6	2437	16.43	0.5	PASS
11	2462	16.39	0.5	PASS

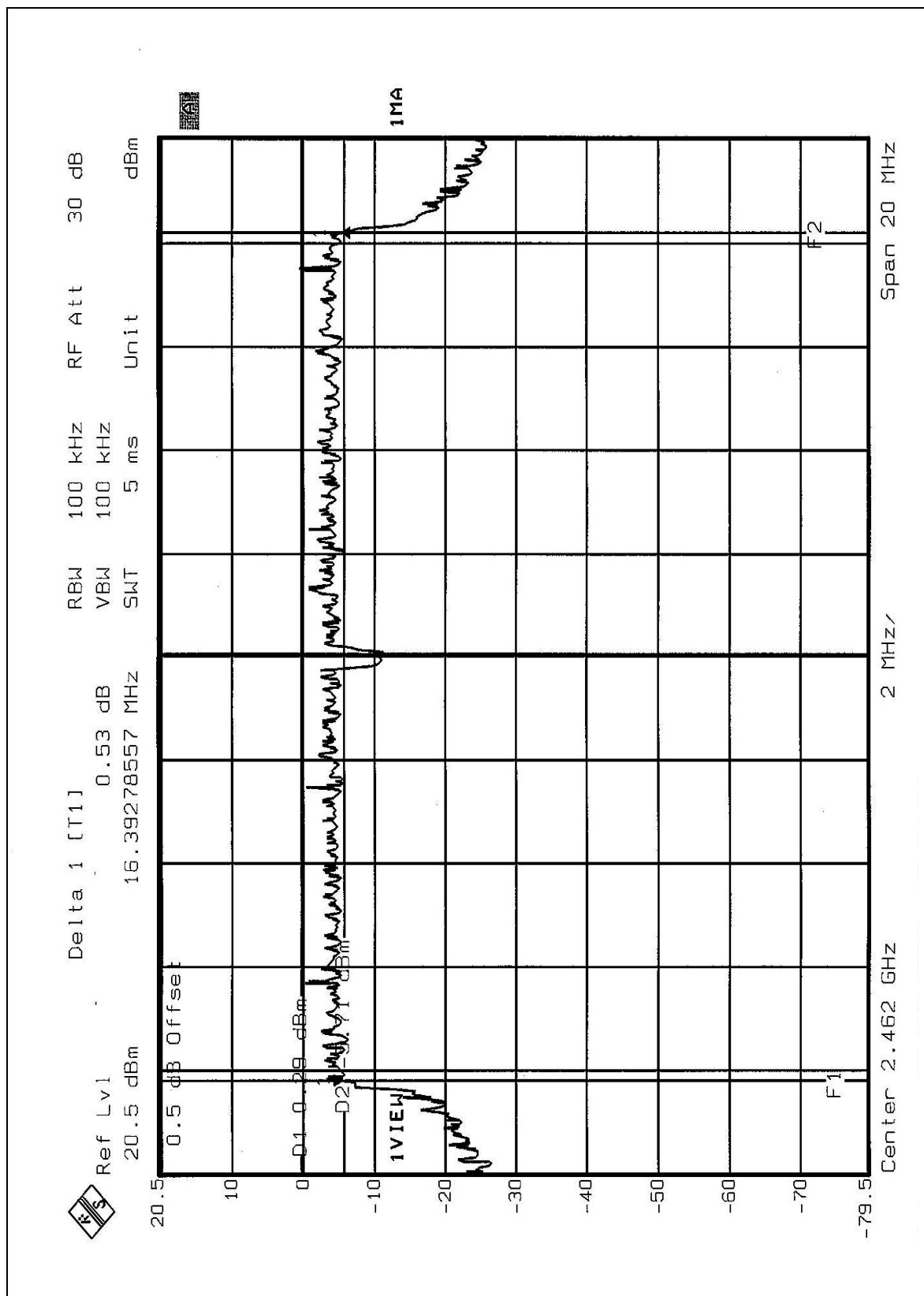
CH1



CH6



CH11

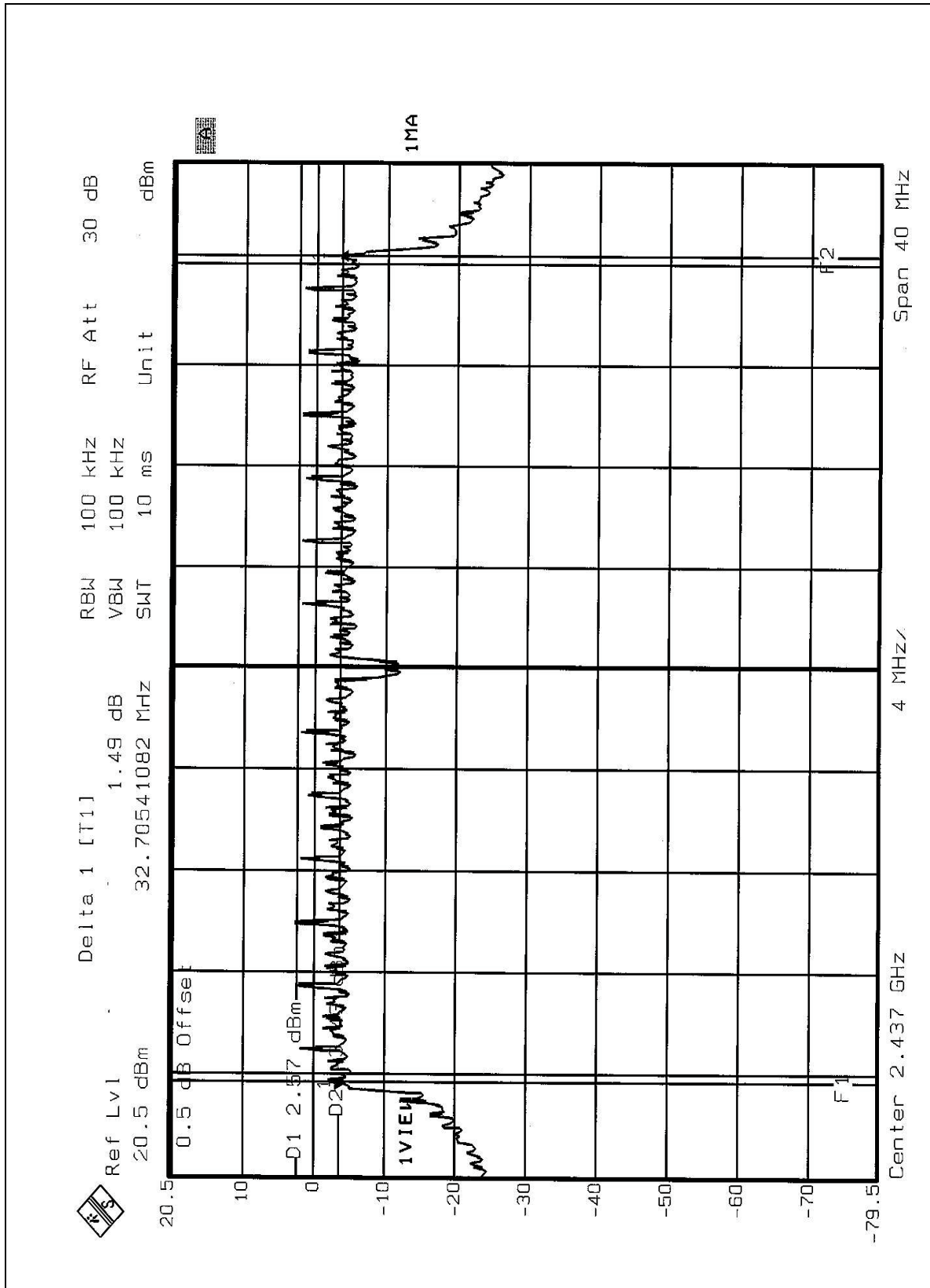


**Turbo mode**

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
MODE	OFDM	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 65% RH, 991 hPa	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
6	2437	32.71	0.5	PASS

CH6



4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA..

4.4.1 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.2 DEVIATION FROM TEST STANDARD

No deviation.

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.3 TEST RESULTS

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 67% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	CCK	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	51.286	17.1	30	PASS
6	2437	100.000	20.0	30	PASS
11	2462	50.119	17.0	30	PASS

Normal mode

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 65% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	OFDM	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	32.359	15.1	30	PASS
6	2437	63.096	18.0	30	PASS
11	2462	31.623	15.0	30	PASS

Turbo mode

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 65% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	OFDM	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
6	2437	50.119	17.0	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

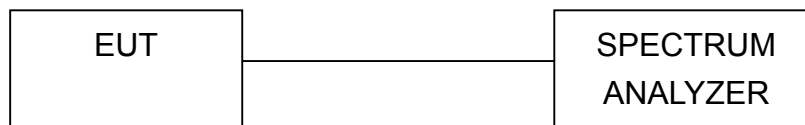
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

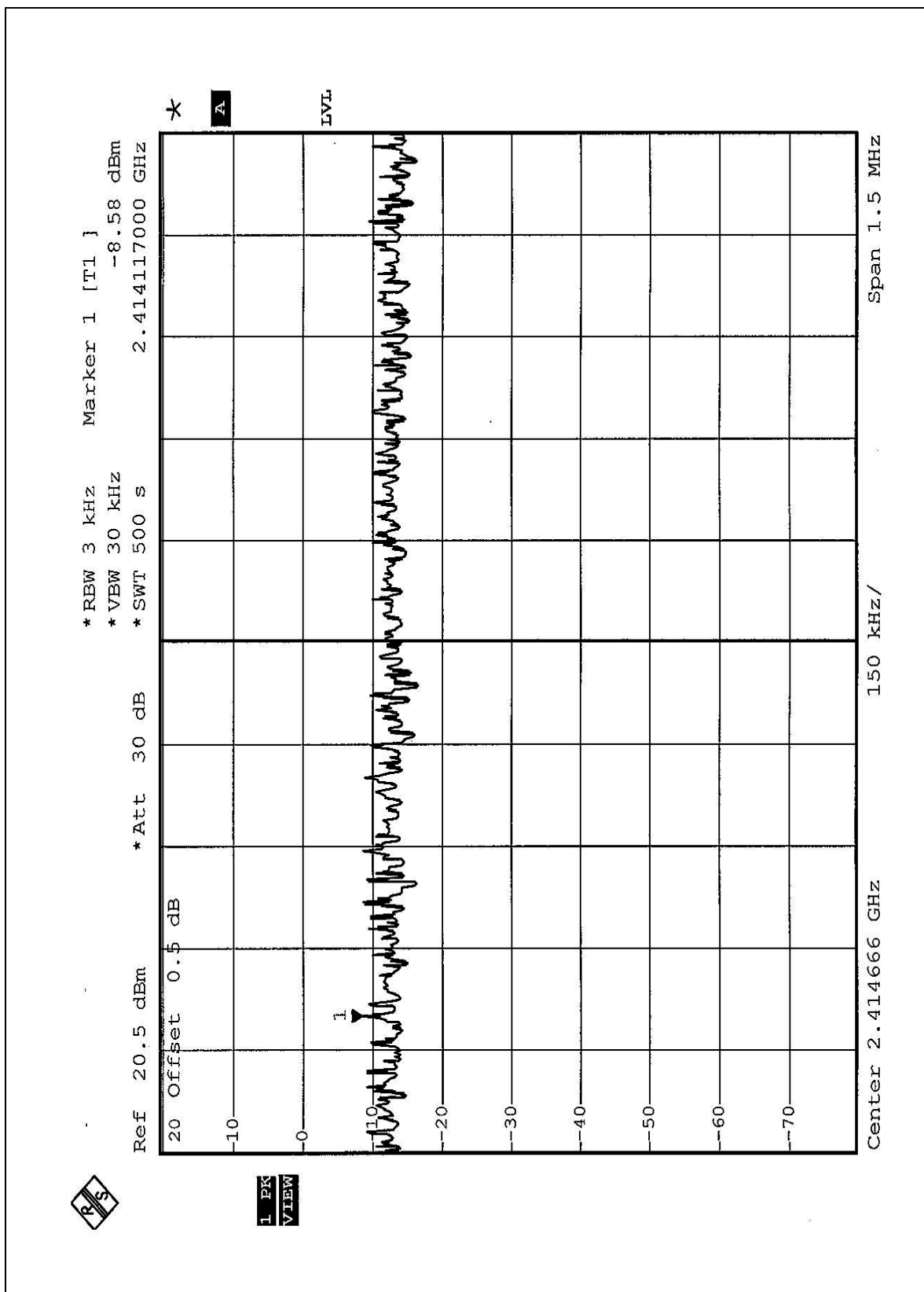
Same as Item 4.3.6.

4.5.7 TEST RESULTS

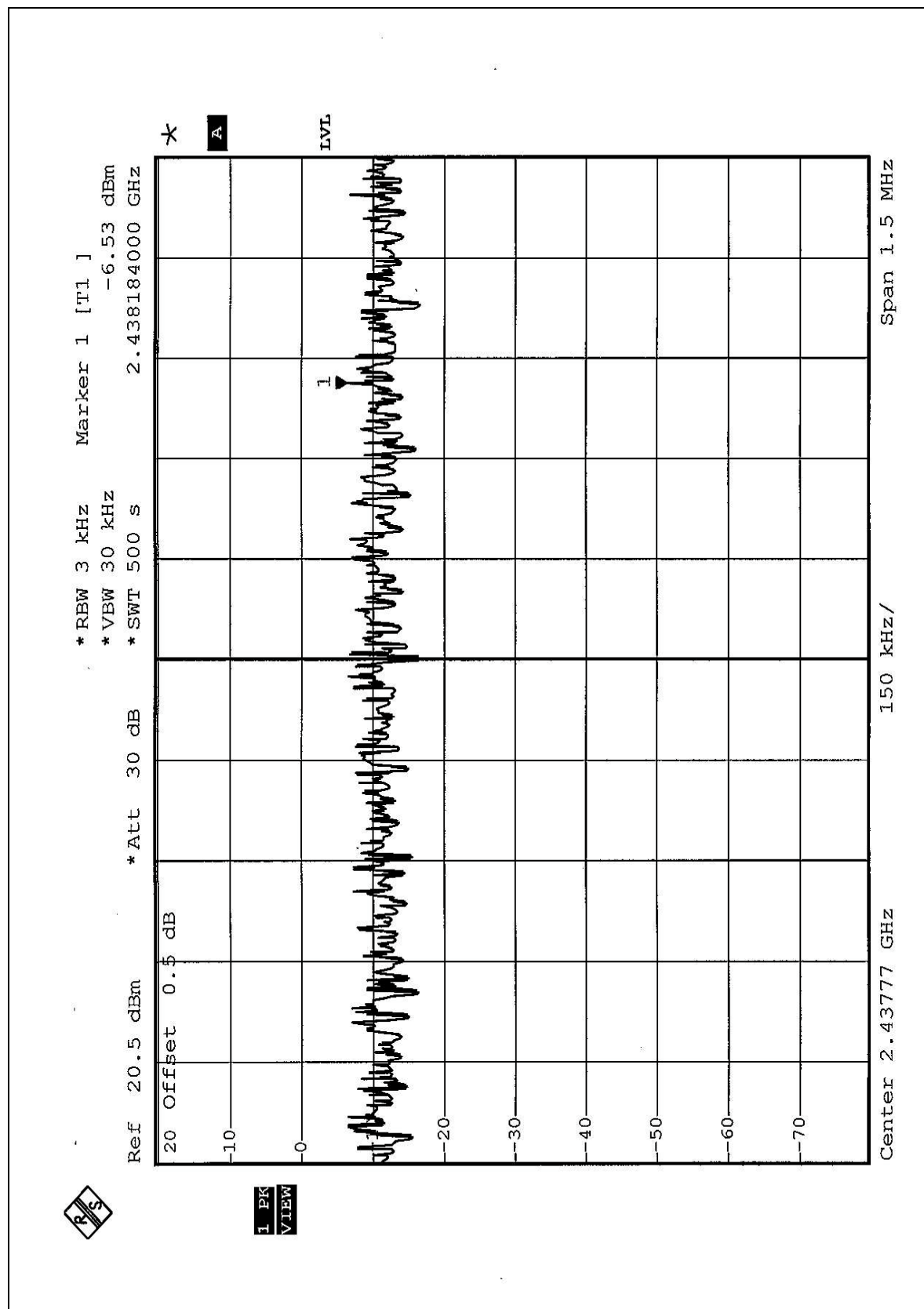
EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 67% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	CCK	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-8.58	8	PASS
6	2437	-6.53	8	PASS
11	2462	-8.30	8	PASS

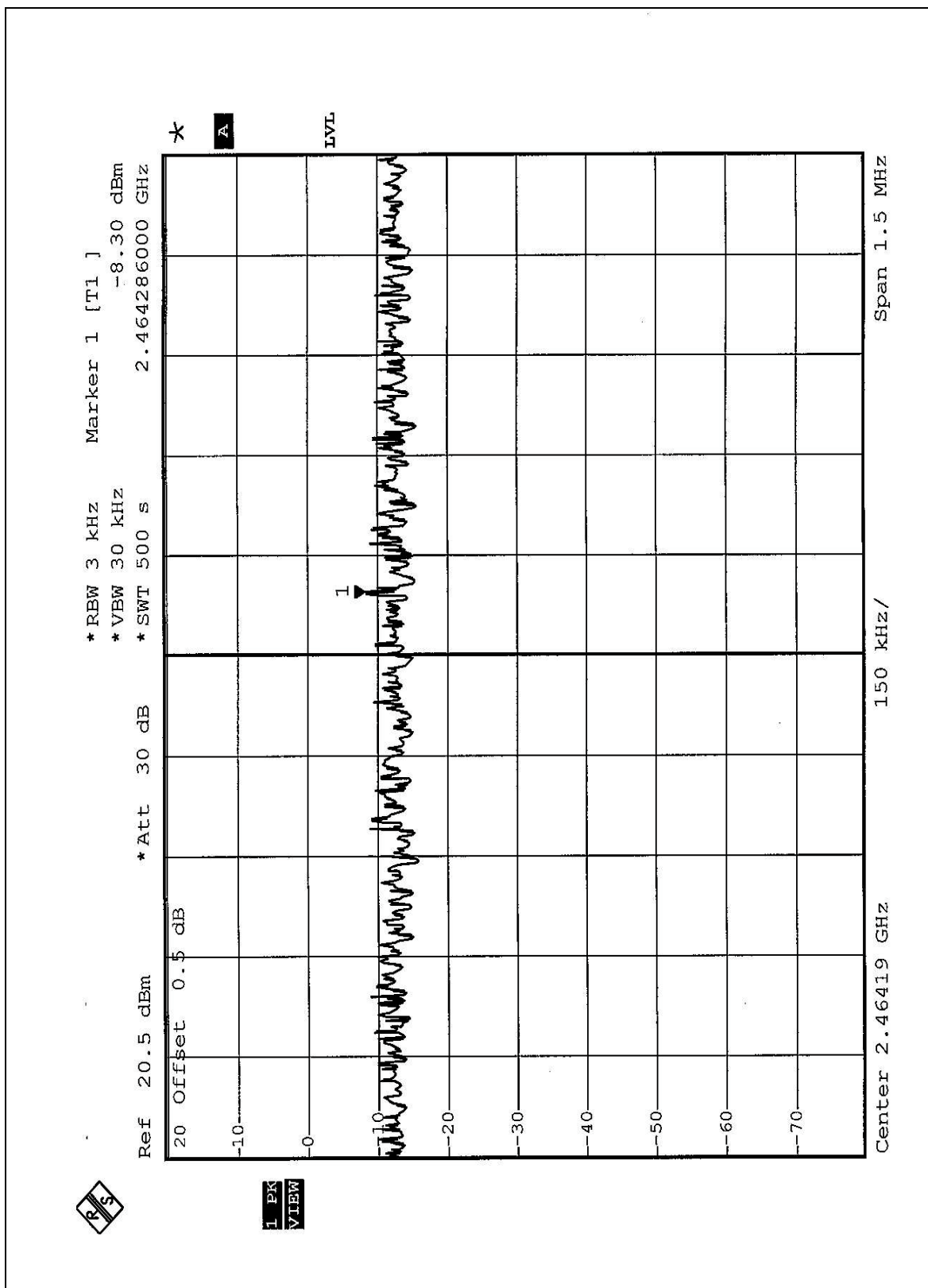
CH1



CH6



CH11

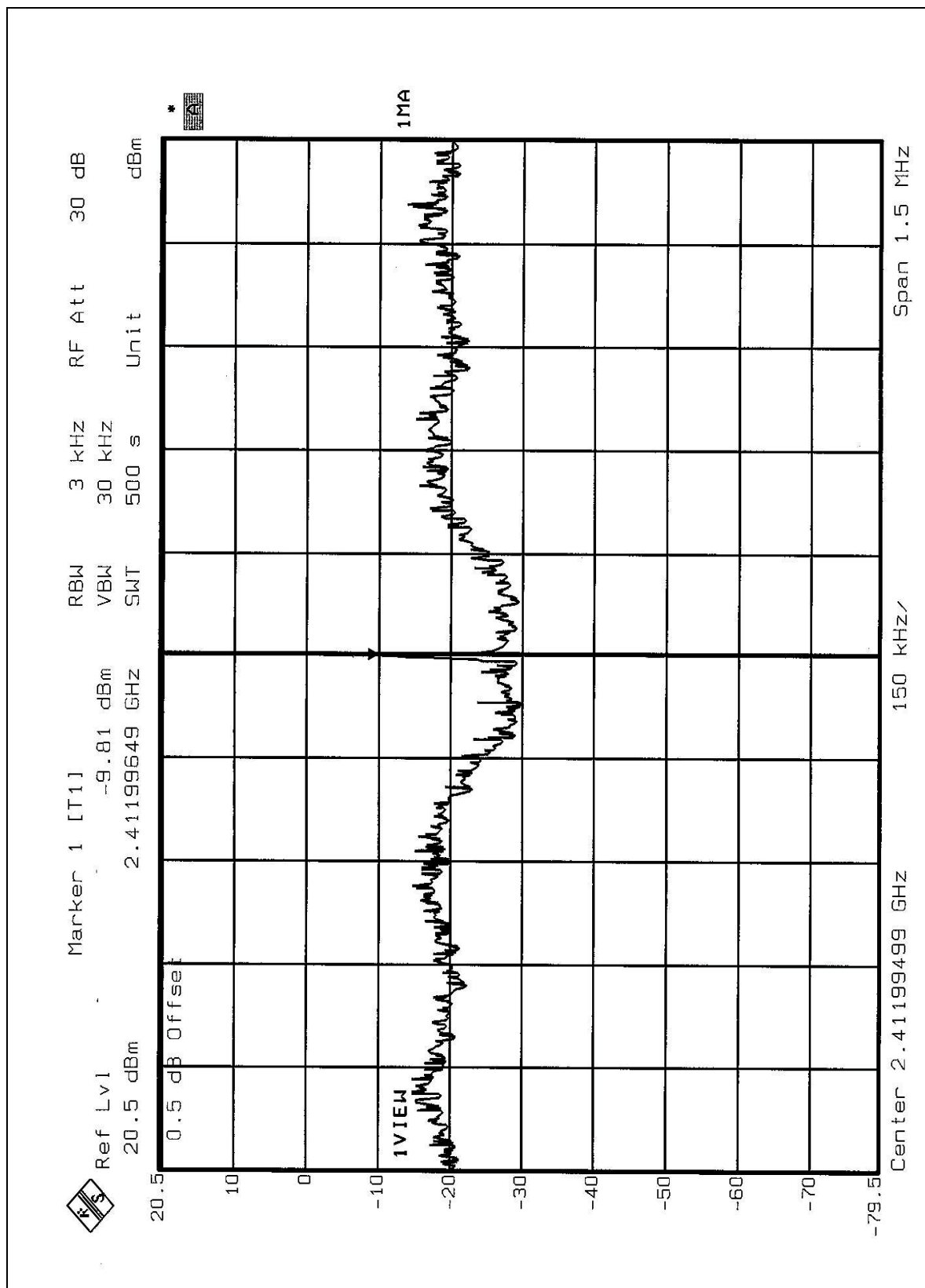


**Normal mode**

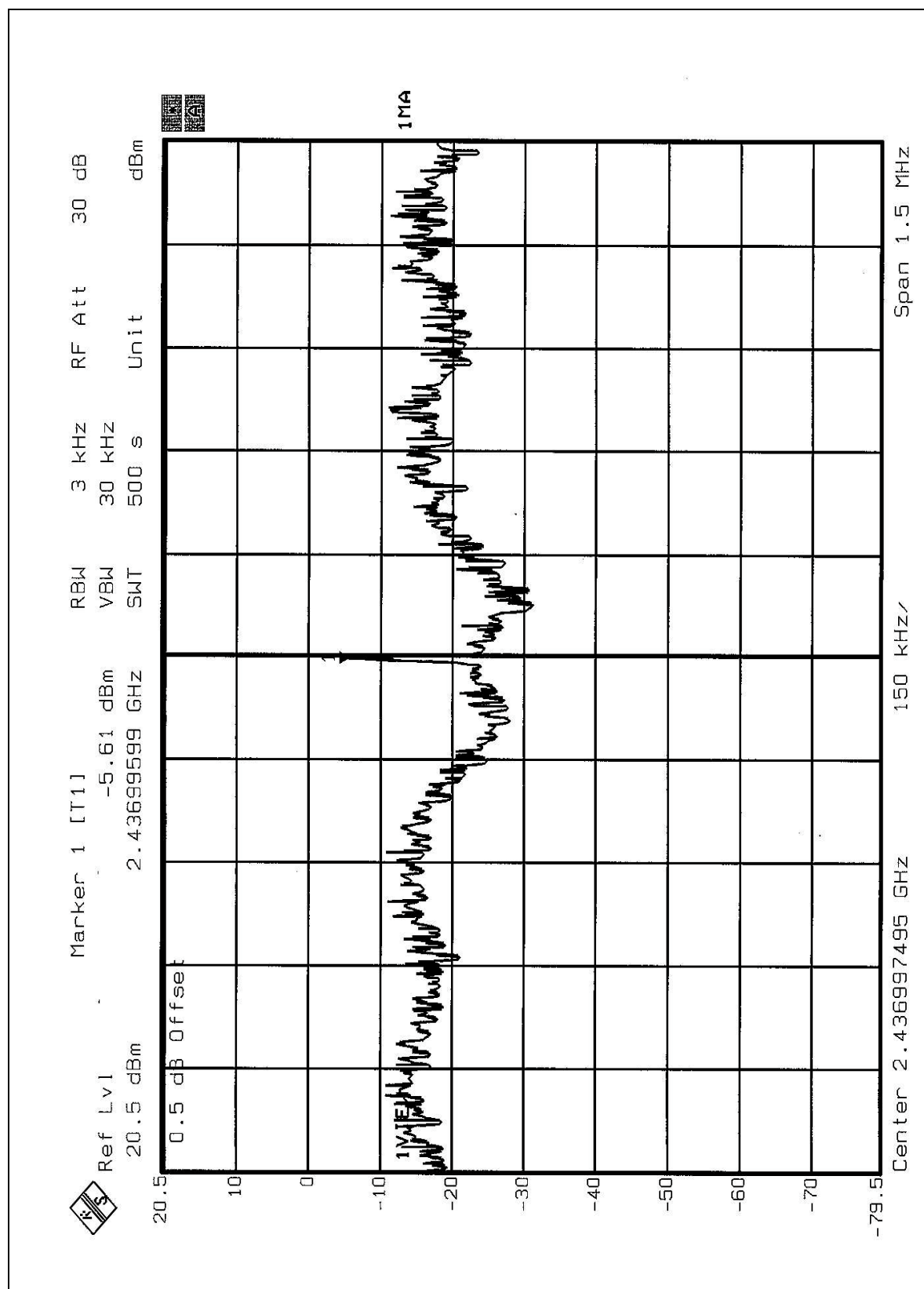
EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 65% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	OFDM	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.81	8	PASS
6	2437	-5.61	8	PASS
11	2462	-9.82	8	PASS

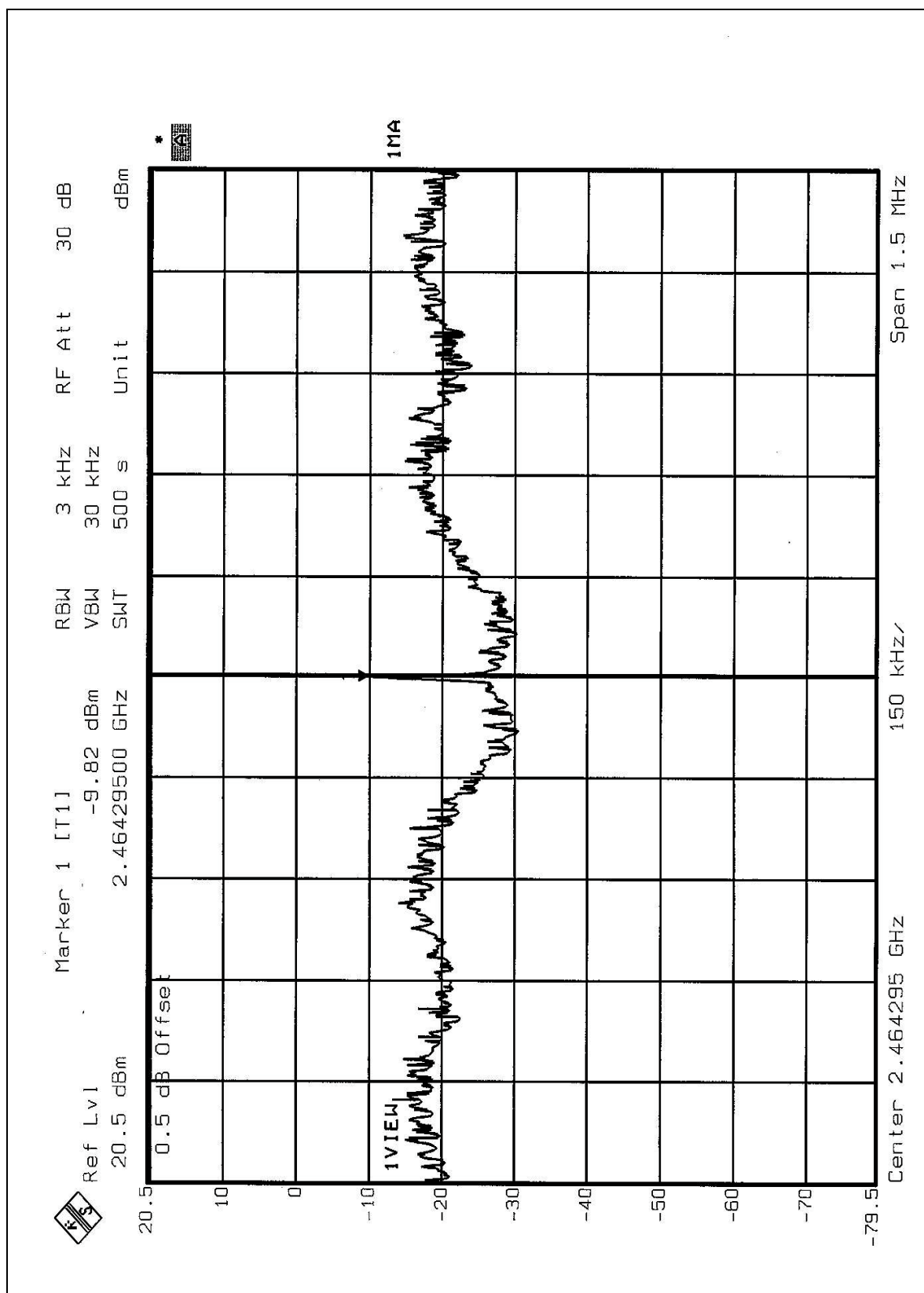
CH1



CH6



CH11

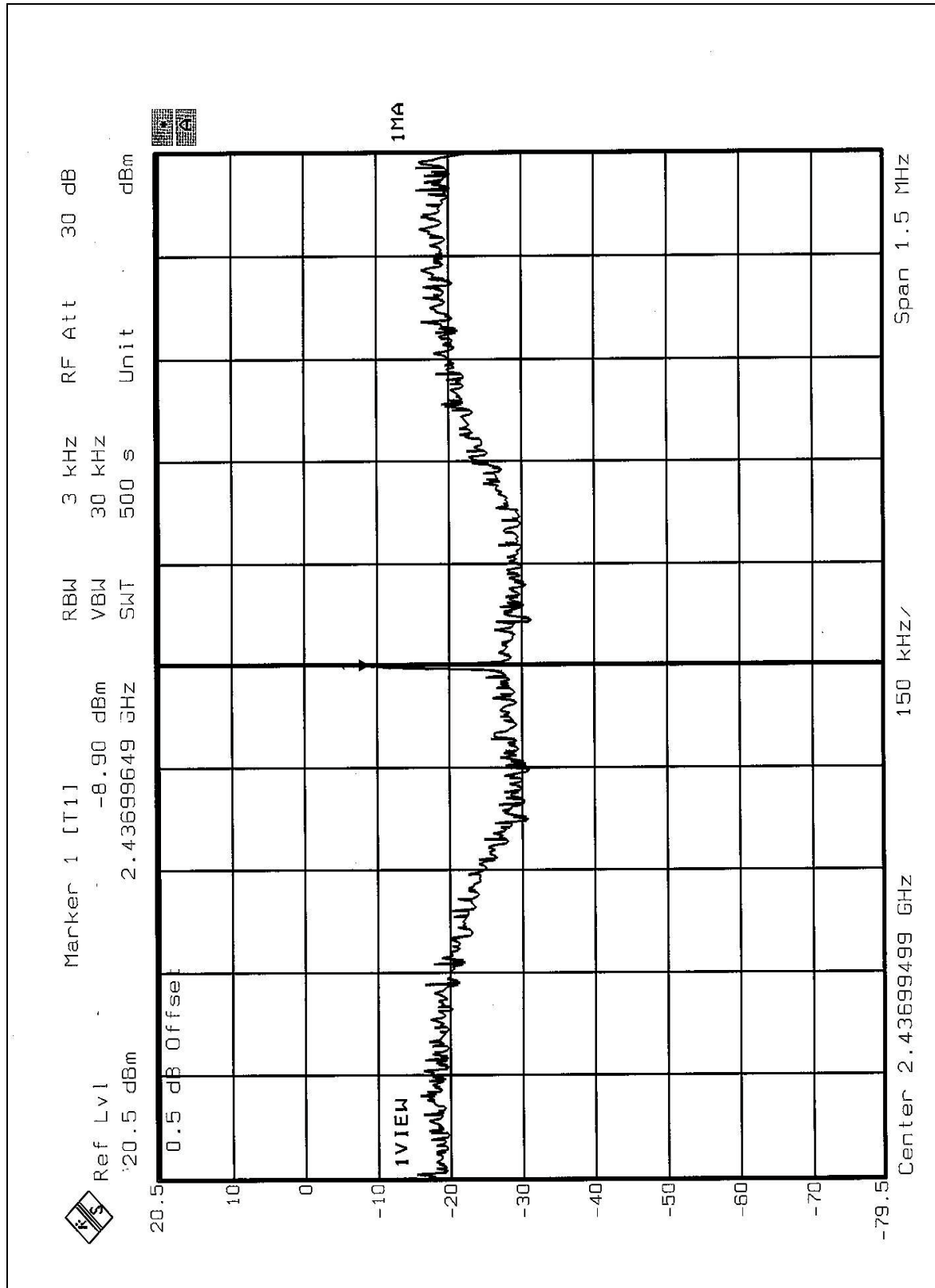


**Turbo mode**

EUT	Wireless A+G Broadband Router	MODEL	WRT55AG ver. 2
ENVIRONMENTAL CONDITIONS	24 deg.C, 65% RH, 991 hPa	INPUT POWER (SYSTEM)	120 Vac, 60 Hz
MODE	OFDM	TESTED BY	Rush Kao

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-8.90	8	PASS

CH6



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 10Hz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.



4.6.6 TEST RESULTS

The spectrum plots are attached on the following 12 pages. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

NOTE 1: The band edge emission plot of CCK technique on following 1~2 pages show 54.01dB delta between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 102.72dBuV/m, so the maximum field strength in restrict band is $102.72 - 54.01 = 48.71$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of CCK technique on following 3~4 pages show 52.67dB delta between carrier maximum power and local maximum emission in restrict band (2.4873GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.31dBuV/m, so the maximum field strength in restrict band is $103.31 - 52.67 = 50.64$ dBuV/m which is under 54dBuV/m limit.

NOTE 3: The band edge emission plot of OFDM technique with Normal mode on following 5~6 pages show 48.07dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 97.28dBuV/m, so the maximum field strength in restrict band is $97.28 - 48.07 = 49.21$ dBuV/m which is under 54dBuV/m limit.

NOTE 4: The band edge emission plot of OFDM technique with Normal mode on following 7~8 pages show 46.86dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 97.88dBuV/m, so the maximum field strength in restrict band is $97.88 - 46.86 = 51.02$ dBuV/m which is under 54dBuV/m limit.

NOTE 5: The band edge emission plot of OFDM technique with Turbo mode on following 9~10 pages show 46.30dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 98.88dBuV/m, so the maximum field strength in restrict band is $98.88 - 46.30 = 52.70$ dBuV/m which is under 54dBuV/m limit.

NOTE 6: The band edge emission plot of OFDM technique with Turbo mode on following 11~12 pages show 49.35dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 98.88dBuV/m, so the maximum field strength in restrict band is $98.88 - 49.35 = 49.53$ dBuV/m which is under 54dBuV/m limit.

* RBW 1 MHz	Marker 1 [T1]
* VBW 10 Hz	5.76 dBm
* Att 30 dB	2.409800000 GHz
Ref 20.5 dBm	

