

FCC TEST REPORT

REPORT NO.: RF931215L02

MODEL NO.: DWL-G710

RECEIVED: Dec. 15, 2004

TESTED: Dec. 20 ~ Dec. 28, 2004

ISSUED: Dec. 30, 2004

APPLICANT: D-Link Corporation

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ILAC MRA



No. 2177-01

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1. CERTIFICATION

PRODUCT: AirPlus GTM 2.4GHz Wireless Range Extender
BRAND NAME: D-Link
MODEL NO.: DWL-G710
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Dec. 20 ~ Dec. 28, 2004
APPLICANT: D-Link Corporation
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

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 : Candice Chen , **DATE:** Dec. 30, 2004
(Candice Chen)

TECHNICAL
ACCEPTANCE : Gary Chang , **DATE:** Dec. 30, 2004
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang , **DATE:** Dec. 30, 2004
(Cody Chang,
Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.65dB at 2.480MHz
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(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.09dB at 2560.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	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	9kHz~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	AirPlus GTM 2.4GHz Wireless Range Extender
MODEL NO.	DWL-G710
POWER SUPPLY	5Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	51.050mW
ANTENNA TYPE	Dipole antenna with 2dBi gain
DATA CABLE	NA
I/O PORTS	RJ45
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was tested with the following adapter:

BRAND:	D-Link
MODEL :	JTA0302A
INPUT :	100-120Vac, 50- 60Hz, 0.5A
OUTPUT :	5.0Vdc, 2A

- The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
- The EUT complies with IEEE 802.11g standards and backwards compatible with IEEE 802.11b products.
- The above EUT information was declared by 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: Eleven 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:

1. Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11 with OFDM technique, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. After pre-testing all data rates, we have chosen 11Mbps with DSSS technique and 6Mbps with OFDM technique, as the worst cases for the test among other data rates.
4. For conducted emission test, we have chosen 6Mbps with OFDM technique as the worst case after pre-testing in conducted emission test site.
5. Two test results were presented in the following sections. The test result A was for DSSS technique and the test result B was for OFDM technique.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a AirPlus GTM 2.4GHz Wireless Range Extender. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)

ANSI C63.4: 2003

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

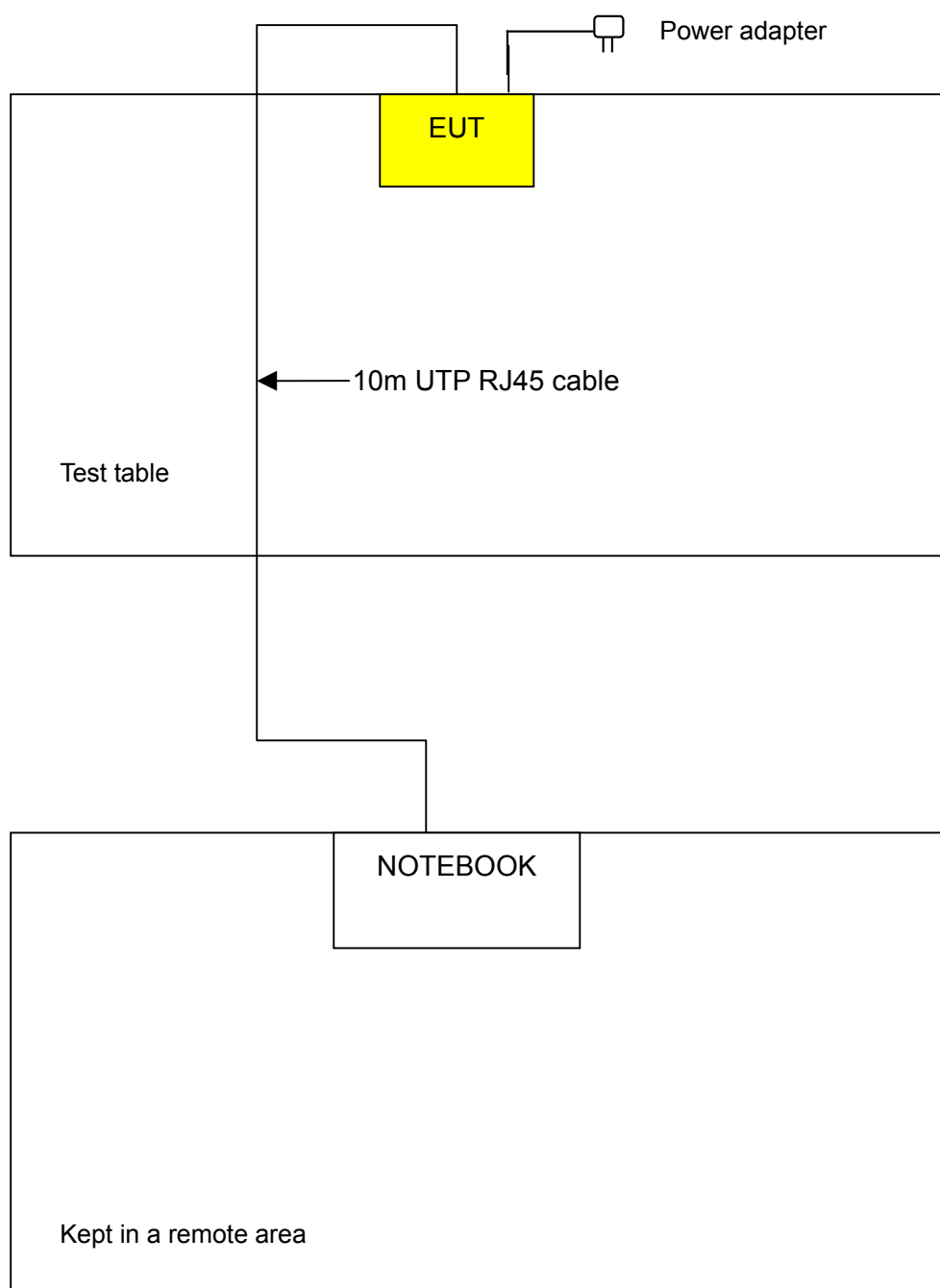
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	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	100288	Nov. 06, 2005
RF signal cable Woken	5D-FB	Cable-HyC02-01	Mar. 07, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Mar. 10, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Mar. 04, 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 2.
 3. The VCCI Site Registration No. is C-2047.



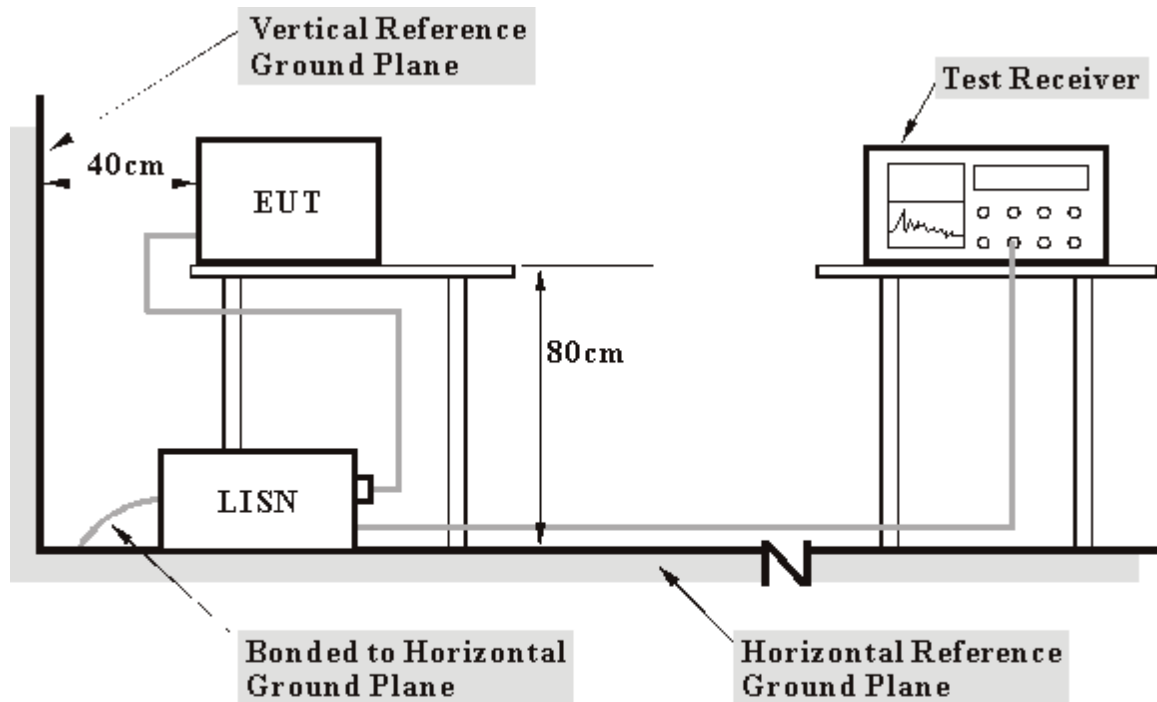
4.1.3 TEST PROCEDURES

- 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

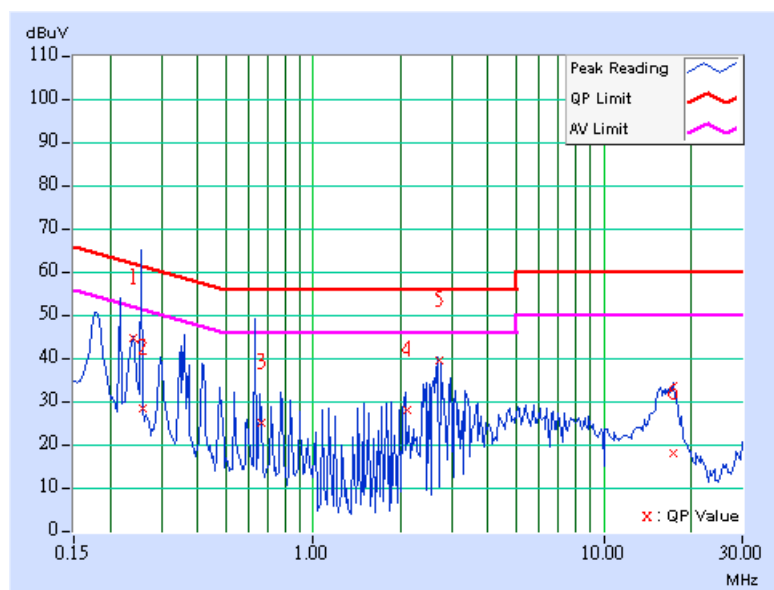
- a. Placed the EUT on the testing table.
- b. Prepared another Notebook system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ45 cable.
- d. The communication partner sent data to EUT by command "PING".

4.1.7 TEST RESULTS

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.239	0.10	44.04	-	44.14	-	62.12	52.12	-17.97	-
2	0.259	0.10	27.68	-	27.78	-	61.45	51.45	-33.67	-
3	0.661	0.17	24.21	-	24.38	-	56.00	46.00	-31.62	-
4	2.099	0.26	27.44	-	27.70	-	56.00	46.00	-28.30	-
5	2.703	0.28	38.94	-	39.22	-	56.00	46.00	-16.78	-
6	17.410	0.81	17.52	-	18.33	-	60.00	50.00	-41.67	-

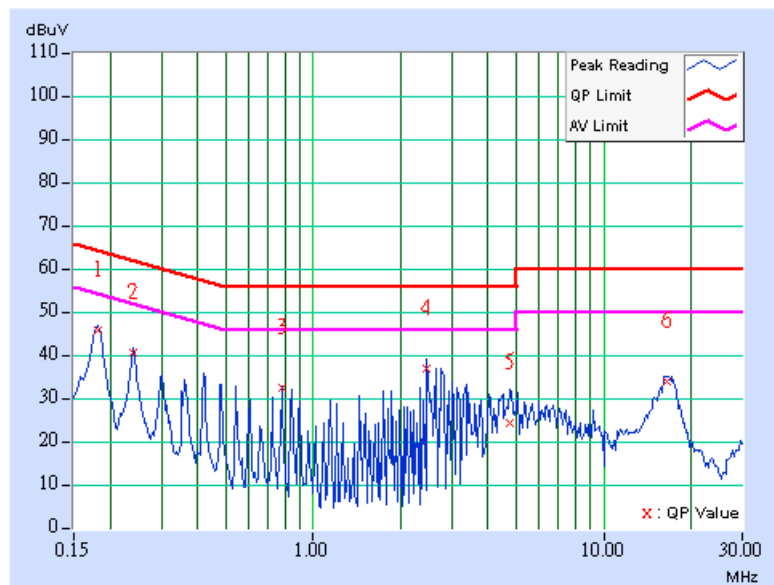
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.181	0.10	45.33	-	45.43	-	64.43	54.43	-19.00	-
2	0.240	0.10	40.18	-	40.28	-	62.10	52.10	-21.82	-
3	0.783	0.19	32.07	-	32.26	-	56.00	46.00	-23.74	-
4	2.465	0.26	36.61	-	36.87	-	56.00	46.00	-19.13	-
5	4.750	0.34	23.96	-	24.30	-	56.00	46.00	-31.70	-
6	16.497	0.59	33.41	-	34.00	-	60.00	50.00	-26.00	-

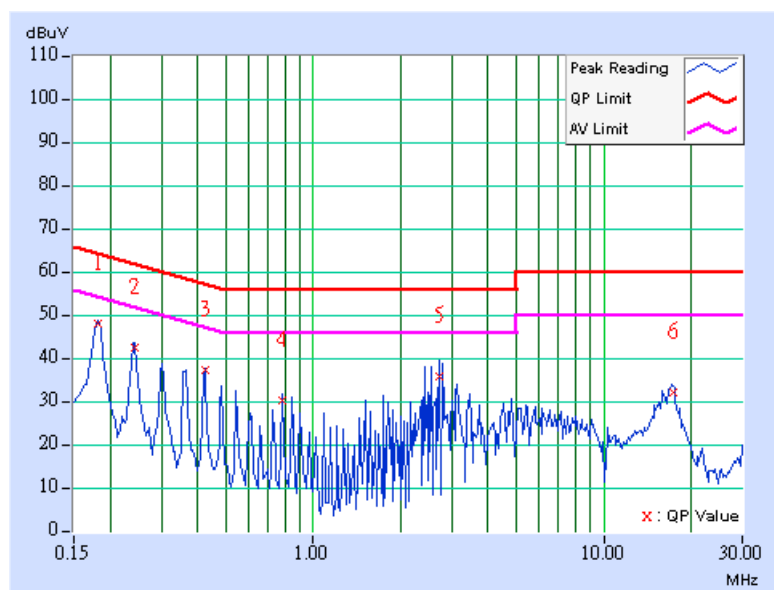
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.181	0.10	47.44	-	47.54	-	64.43	54.43	-16.89	-
2	0.244	0.10	41.62	-	41.72	-	61.97	51.97	-20.24	-
3	0.423	0.12	36.67	-	36.79	-	57.38	47.38	-20.59	-
4	0.783	0.20	29.40	-	29.60	-	56.00	46.00	-26.40	-
5	2.715	0.28	35.31	-	35.59	-	56.00	46.00	-20.41	-
6	17.278	0.80	31.50	-	32.30	-	60.00	50.00	-27.70	-

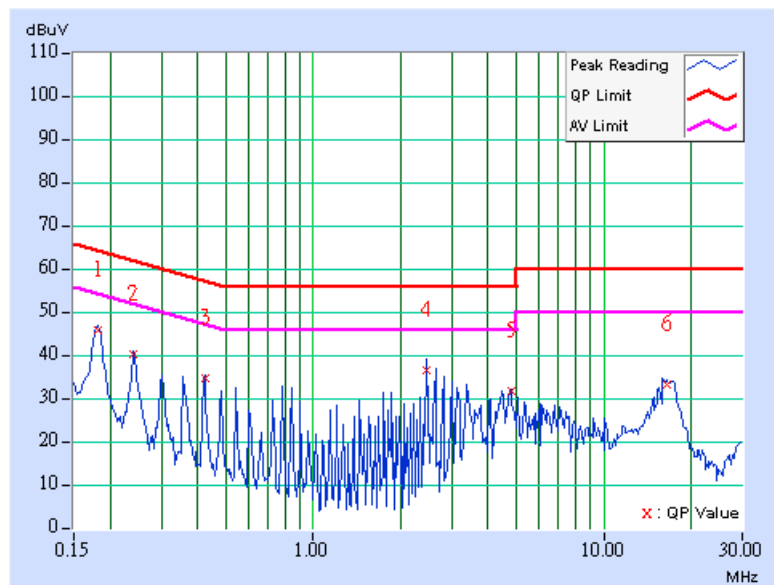
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.181	0.10	45.33	-	45.43	-	64.43	54.43	-19.00	-
2	0.240	0.10	39.68	-	39.78	-	62.10	52.10	-22.32	-
3	0.423	0.12	34.33	-	34.45	-	57.38	47.38	-22.93	-
4	2.469	0.26	36.20	-	36.46	-	56.00	46.00	-19.54	-
5	4.824	0.34	31.21	-	31.55	-	56.00	46.00	-24.45	-
6	16.526	0.59	32.85	-	33.44	-	60.00	50.00	-26.56	-

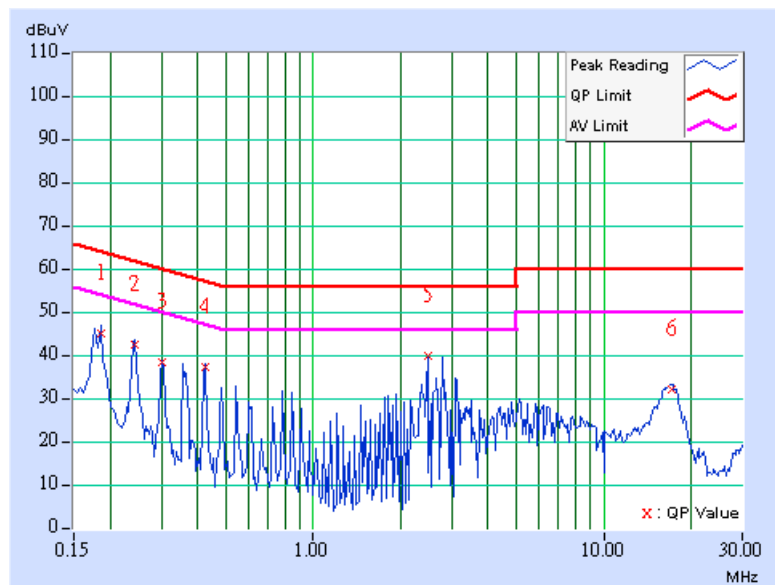
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.185	0.10	44.39	-	44.49	-	64.25	54.25	-19.76	-
2	0.244	0.10	41.66	-	41.76	-	61.97	51.97	-20.20	-
3	0.302	0.11	37.59	-	37.70	-	60.18	50.18	-22.48	-
4	0.423	0.12	36.67	-	36.79	-	57.38	47.38	-20.59	-
5	2.480	0.27	39.08	-	39.35	-	56.00	46.00	-16.65	-
6	17.060	0.79	31.57	-	32.36	-	60.00	50.00	-27.64	-

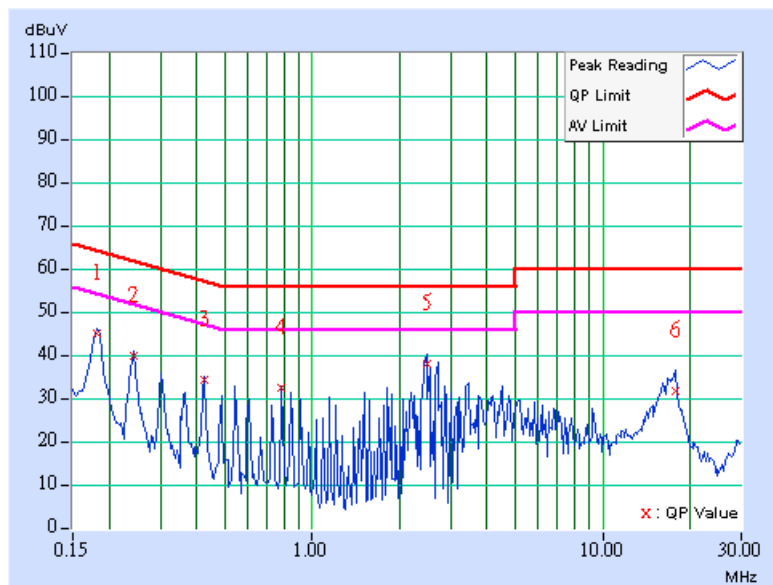
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	TESTED BY: Match Tsui	

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	0.181	0.10	44.63	-	44.73	-	64.43	54.43	-19.70	-
2	0.244	0.10	39.30	-	39.40	-	61.97	51.97	-22.56	-
3	0.423	0.12	33.78	-	33.90	-	57.38	47.38	-23.48	-
4	0.787	0.19	31.88	-	32.07	-	56.00	46.00	-23.93	-
5	2.480	0.26	37.41	-	37.67	-	56.00	46.00	-18.33	-
6	17.747	0.61	31.35	-	31.96	-	60.00	50.00	-28.04	-

- 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	Nov. 21, 2005
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	Nov. 09, 2005
Preamplifier Agilent	8447D	2944A10629	Nov. 09, 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 meter 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.

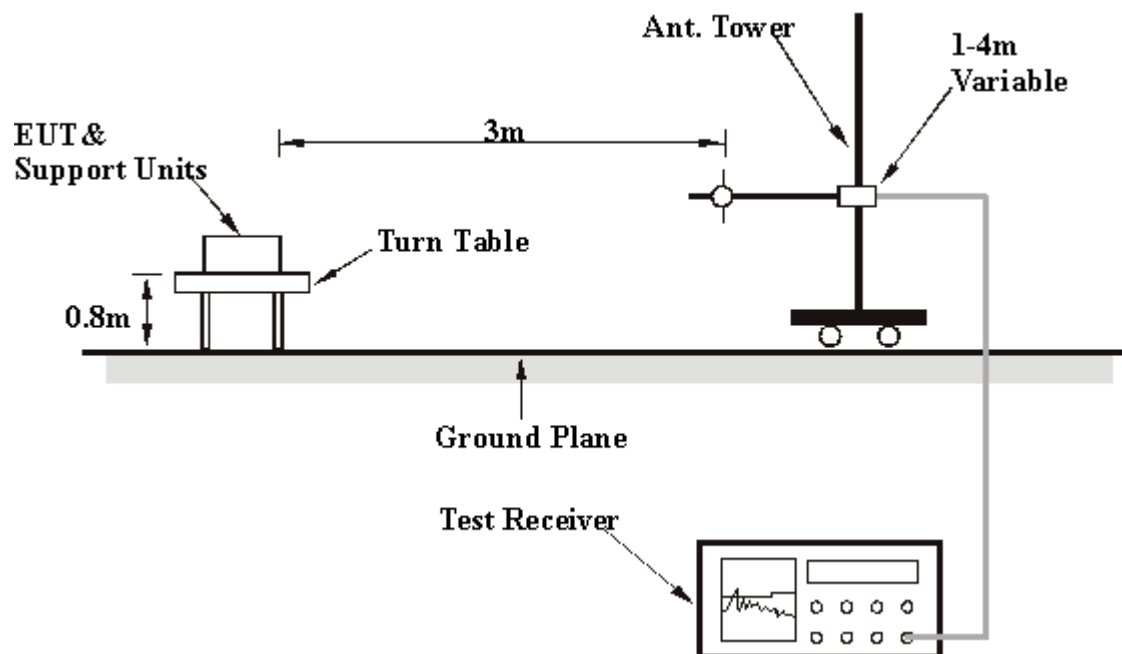
NOTE:

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	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 62%RH, 991hPa	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	47.49	25.61 QP	40.00	-14.39	3.00 H	292	10.60	15.01
2	107.76	27.57 QP	43.50	-15.93	3.00 H	292	15.90	11.67
3	267.15	29.72 QP	46.00	-16.28	1.25 H	61	16.17	13.55
4	319.64	32.56 QP	46.00	-13.44	1.00 H	190	17.71	14.85
5	366.29	30.85 QP	46.00	-15.15	1.00 H	325	14.94	15.91
6	479.04	35.21 QP	46.00	-10.79	2.00 H	349	16.88	18.33
7	599.56	33.86 QP	46.00	-12.14	1.25 H	34	13.04	20.82
8	640.38	38.16 QP	46.00	-7.84	1.25 H	241	16.81	21.35
9	700.64	35.81 QP	46.00	-10.19	1.25 H	370	13.78	22.03
10	751.18	30.43 QP	46.00	-15.57	2.00 H	364	7.18	23.25
11	799.78	44.33 QP	46.00	-1.67	1.50 H	322	20.87	23.46
12	900.86	30.08 QP	46.00	-15.92	1.50 H	337	5.26	24.82
13	947.52	40.16 QP	46.00	-5.84	1.00 H	304	14.85	25.30

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 62%RH, 991hPa	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	47.50	38.50 QP	40.00	-1.50	1.00 V	334	23.49	15.01
2	107.76	39.28 QP	43.50	-4.22	1.25 V	211	27.62	11.67
3	142.75	35.98 QP	43.50	-7.52	1.00 V	247	21.48	14.51
4	201.06	27.08 QP	43.50	-16.42	1.00 V	241	15.79	11.29
5	232.16	31.45 QP	46.00	-14.55	1.00 V	55	18.97	12.48
6	267.15	31.58 QP	46.00	-14.42	1.00 V	82	18.03	13.55
7	300.20	36.80 QP	46.00	-9.20	1.25 V	364	22.39	14.41
8	366.29	32.21 QP	46.00	-13.79	1.00 V	49	16.29	15.91
9	479.04	35.77 QP	46.00	-10.23	1.00 V	307	17.44	18.33
10	599.56	31.83 QP	46.00	-14.17	1.00 V	316	11.01	20.82
11	640.38	35.02 QP	46.00	-10.98	1.00 V	313	13.68	21.35
12	700.64	35.26 QP	46.00	-10.74	1.00 V	13	13.23	22.03
13	751.18	29.94 QP	46.00	-16.06	1.00 V	22	6.69	23.25
14	799.78	40.70 QP	46.00	-5.30	1.50 V	298	17.24	23.46
15	904.75	37.41 QP	46.00	-8.59	2.50 V	241	12.55	24.86

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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.

4.2.8 TEST RESULTS (A)

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	2372.00	54.49 PK	74.00	-19.51	1.32 H	220	23.85	30.64
1	2372.00	45.42 AV	54.00	-8.58	1.32 H	220	14.78	30.64
2	*2412.00	103.64 PK			1.32 H	220	72.84	30.80
2	*2412.00	95.72 AV			1.32 H	220	64.92	30.80
3	2560.00	51.92 PK	74.00	-22.08	1.21 H	253	20.67	31.25
3	2560.00	47.42 AV	54.00	-6.58	1.21 H	253	16.17	31.25
4	4824.00	44.82 PK	74.00	-29.18	1.10 H	130	8.24	36.58
4	4824.00	32.49 AV	54.00	-21.51	1.10 H	130	-4.09	36.58

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	2372.00	56.59 PK	74.00	-17.41	1.11 V	320	25.95	30.64
1	2372.00	48.77 AV	54.00	-5.23	1.11 V	320	18.13	30.64
2	*2412.00	112.56 PK			1.11 V	320	81.76	30.80
2	*2412.00	104.64 AV			1.11 V	320	73.84	30.80
3	2560.00	58.55 PK	92.56	-34.01	1.08 V	16	27.30	31.25
3	2560.00	54.07 AV	84.64	-30.57	1.08 V	16	22.82	31.25
4	4824.00	46.22 PK	74.00	-27.78	1.18 V	297	9.64	36.58
4	4824.00	33.97 AV	54.00	-20.03	1.18 V	297	-2.61	36.58

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : Fundamental frequency

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	*2437.00	103.81 PK			1.33 H	220	72.91	30.90
1	*2437.00	96.33 AV			1.33 H	220	65.43	30.90
2	2560.00	49.94 PK	74.00	-24.06	1.16 H	278	18.69	31.25
2	2560.00	46.45 AV	54.00	-7.55	1.16 H	278	15.20	31.25
3	4874.00	44.70 PK	74.00	-29.30	1.11 H	147	7.94	36.76
3	4874.00	32.12 AV	54.00	-21.88	1.11 H	147	-4.64	36.76

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	*2437.00	110.40 PK			1.10 V	324	79.50	30.90
1	*2437.00	103.23 AV			1.10 V	324	72.33	30.90
2	2560.00	57.61 PK	90.40	-32.79	1.12 V	3	26.36	31.25
2	2560.00	54.55 AV	83.23	-28.68	1.12 V	3	23.30	31.25
3	4874.00	45.60 PK	74.00	-28.40	1.17 V	267	8.84	36.76
3	4874.00	33.18 AV	54.00	-20.82	1.17 V	267	-3.58	36.76

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : Fundamental frequency

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	*2462.00	104.20 PK			1.35 H	202	73.21	30.99
1	*2462.00	96.85 AV			1.35 H	202	65.86	30.99
2	2488.00	54.14 PK	74.00	-19.86	1.35 H	202	23.05	31.09
2	2488.00	45.72 AV	54.00	-8.28	1.35 H	202	14.63	31.09
3	2560.00	50.06 PK	74.00	-23.94	1.25 H	199	18.81	31.25
3	2560.00	45.53 AV	54.00	-8.47	1.25 H	199	14.28	31.25
4	4924.00	44.97 PK	74.00	-29.03	1.24 H	323	7.99	36.97
4	4924.00	32.35 AV	54.00	-21.65	1.24 H	323	-4.63	36.97

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	*2462.00	111.81 PK			1.08 V	323	80.82	30.99
1	*2462.00	103.15 AV			1.08 V	323	72.16	30.99
2	2488.00	58.61 PK	74.00	-15.39	1.08 V	323	27.52	31.09
2	2488.00	50.25 AV	54.00	-3.75	1.08 V	323	19.16	31.09
3	2560.00	56.82 PK	74.00	-17.18	1.30 V	8	25.57	31.25
3	2560.00	52.91 AV	54.00	-1.09	1.30 V	8	21.66	31.25
4	4924.00	44.97 PK	74.00	-29.03	1.24 V	138	7.99	36.97
4	4924.00	32.49 AV	54.00	-21.51	1.24 V	138	-4.49	36.97

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : Fundamental frequency

4.2.9 TEST RESULTS (B)

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	2390.00	45.09 PK	74.00	-28.91	1.12 H	53	14.38	30.71
1	2390.00	36.49 AV	54.00	-17.51	1.12 H	53	5.78	30.71
2	*2412.00	96.76 PK			1.12 H	53	65.96	30.80
2	*2412.00	88.16 AV			1.12 H	53	57.36	30.80
3	2552.00	48.08 PK	74.00	-25.92	1.04 H	50	16.85	31.23
3	2552.00	43.86 AV	54.00	-10.14	1.04 H	50	12.63	31.23
4	4824.00	45.80 PK	74.00	-28.20	1.06 H	79	9.22	36.58
4	4824.00	32.94 AV	54.00	-21.06	1.06 H	79	-3.64	36.58

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	2390.00	55.56 PK	74.00	-18.44	1.01 V	3	24.85	30.71
1	2390.00	46.26 AV	54.00	-7.74	1.01 V	3	15.55	30.71
2	*2412.00	107.23 PK			1.01 V	3	76.43	30.80
2	*2412.00	97.93 AV			1.01 V	3	67.13	30.80
3	2552.00	56.61 PK	74.00	-17.39	1.00 V	0	25.38	31.23
3	2552.00	50.71 AV	54.00	-3.29	1.00 V	0	19.48	31.23
4	4824.00	44.30 PK	74.00	-29.70	1.00 V	10	7.72	36.58
4	4824.00	31.94 AV	54.00	-22.06	1.00 V	10	-4.64	36.58

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : Fundamental frequency

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	*2437.00	98.12 PK			1.39 H	240	67.22	30.90
1	*2437.00	89.11 AV			1.39 H	240	58.21	30.90
2	2560.00	46.52 PK	74.00	-27.48	1.00 H	275	15.27	31.25
2	2560.00	36.63 AV	54.00	-17.37	1.00 H	275	5.38	31.25
3	4874.00	44.35 PK	74.00	-29.65	1.02 H	330	7.59	36.76
3	4874.00	32.99 AV	54.00	-21.01	1.02 H	330	-3.77	36.76

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	*2437.00	105.24 PK			1.03 V	18	74.34	30.90
1	*2437.00	96.38 AV			1.03 V	18	65.48	30.90
2	2560.00	53.98 PK	74.00	-20.02	1.00 V	360	22.73	31.25
2	2560.00	49.35 AV	54.00	-4.65	1.00 V	360	18.10	31.25
3	4874.00	43.80 PK	74.00	-30.20	1.00 V	253	7.04	36.76
3	4874.00	32.94 AV	54.00	-21.06	1.00 V	253	-3.82	36.76

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : Fundamental frequency

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 991hPa	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	*2462.00	100.68 PK			1.43 H	211	69.69	30.99
1	*2462.00	91.76 AV			1.43 H	211	60.77	30.99
2	2488.00	53.45 PK	74.00	-20.55	1.43 H	211	22.36	31.09
2	2488.00	44.53 AV	54.00	-9.47	1.43 H	211	13.44	31.09
3	2560.00	47.25 PK	74.00	-26.75	1.00 H	276	16.00	31.25
3	2560.00	40.09 AV	54.00	-13.91	1.00 H	276	8.84	31.25
4	4924.00	44.80 PK	74.00	-29.20	1.10 H	11	7.83	36.97
4	4924.00	32.44 AV	54.00	-21.56	1.10 H	11	-4.53	36.97

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	*2462.00	106.38 PK			1.14 V	208	75.39	30.99
1	*2462.00	97.51 AV			1.14 V	208	66.52	30.99
2	2488.00	55.40 PK	74.00	-18.60	1.14 V	208	24.31	31.09
2	2488.00	46.47 AV	54.00	-7.53	1.14 V	208	15.38	31.09
3	2520.00	55.84 PK	74.00	-18.16	1.09 V	3	24.67	31.17
3	2520.00	51.48 AV	54.00	-2.52	1.09 V	3	20.31	31.17
4	4924.00	44.80 PK	74.00	-29.20	1.12 V	260	7.82	36.97
4	4924.00	32.44 AV	54.00	-21.56	1.12 V	260	-4.54	36.97

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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. “ * ” : 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.

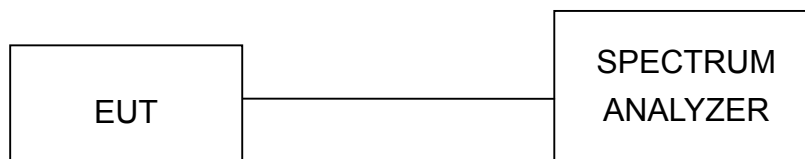
4.3.3 TEST PROCEDURE

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

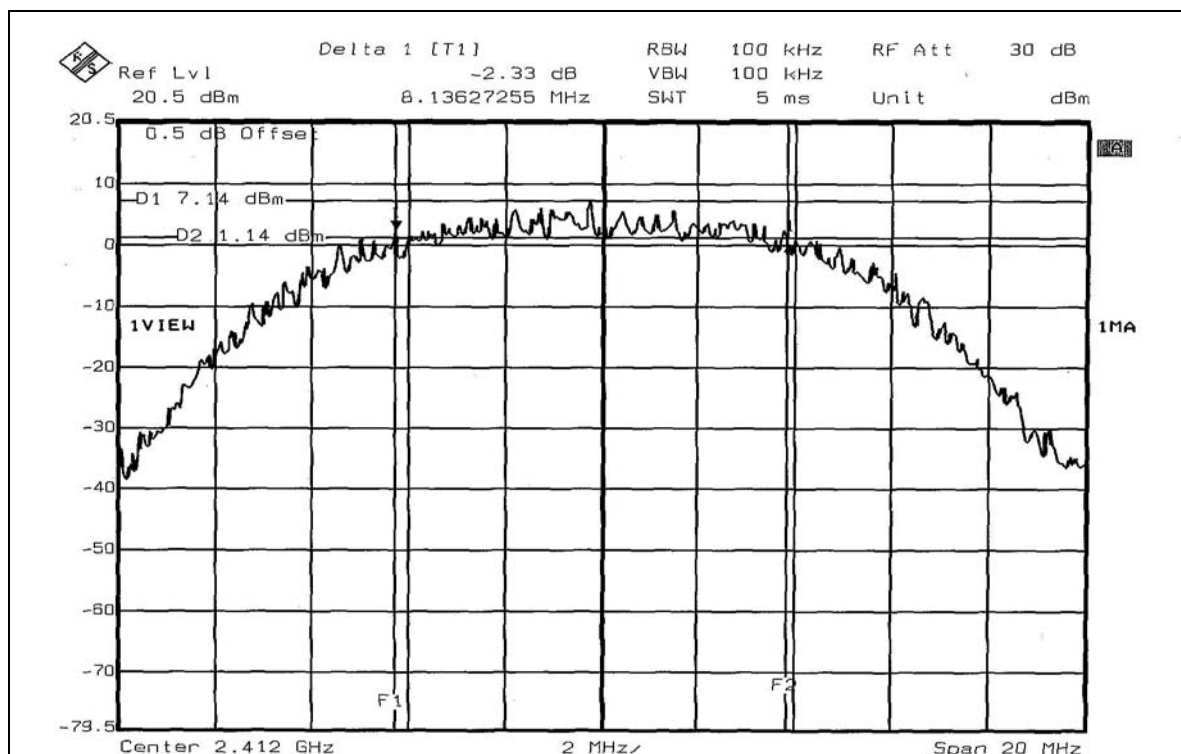
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (A)

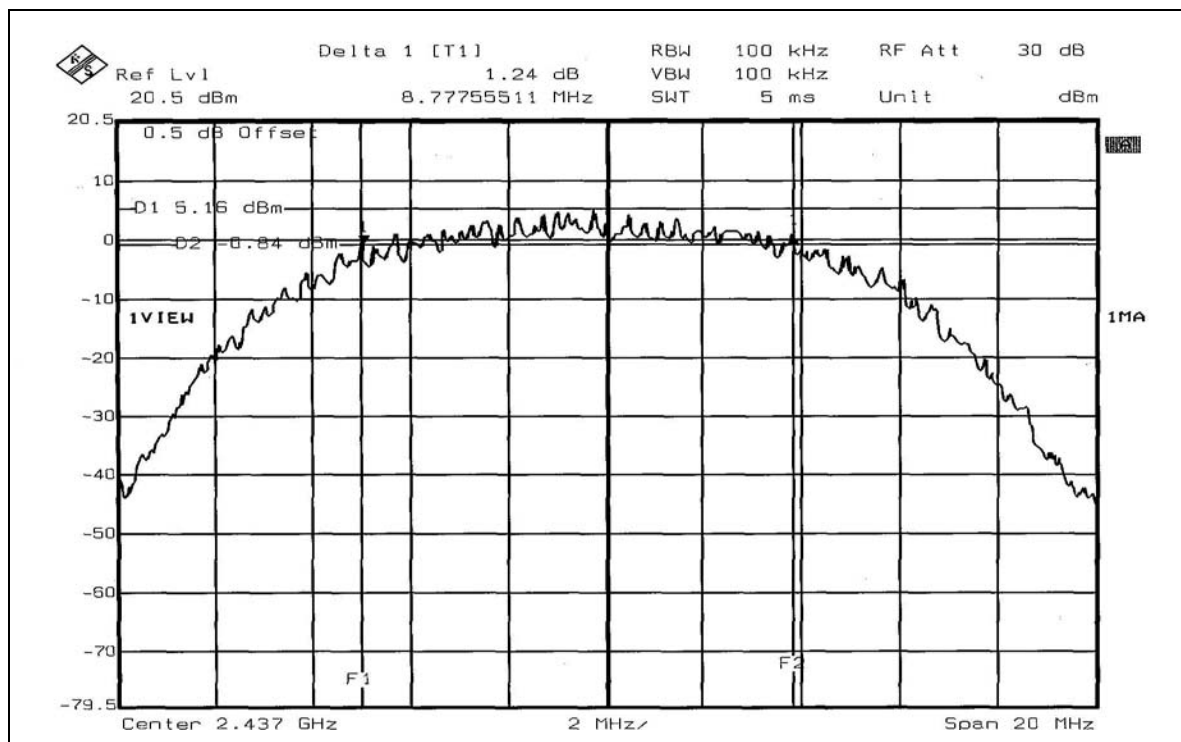
EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	8.14	0.5	PASS
6	2437	8.78	0.5	PASS
11	2462	8.82	0.5	PASS

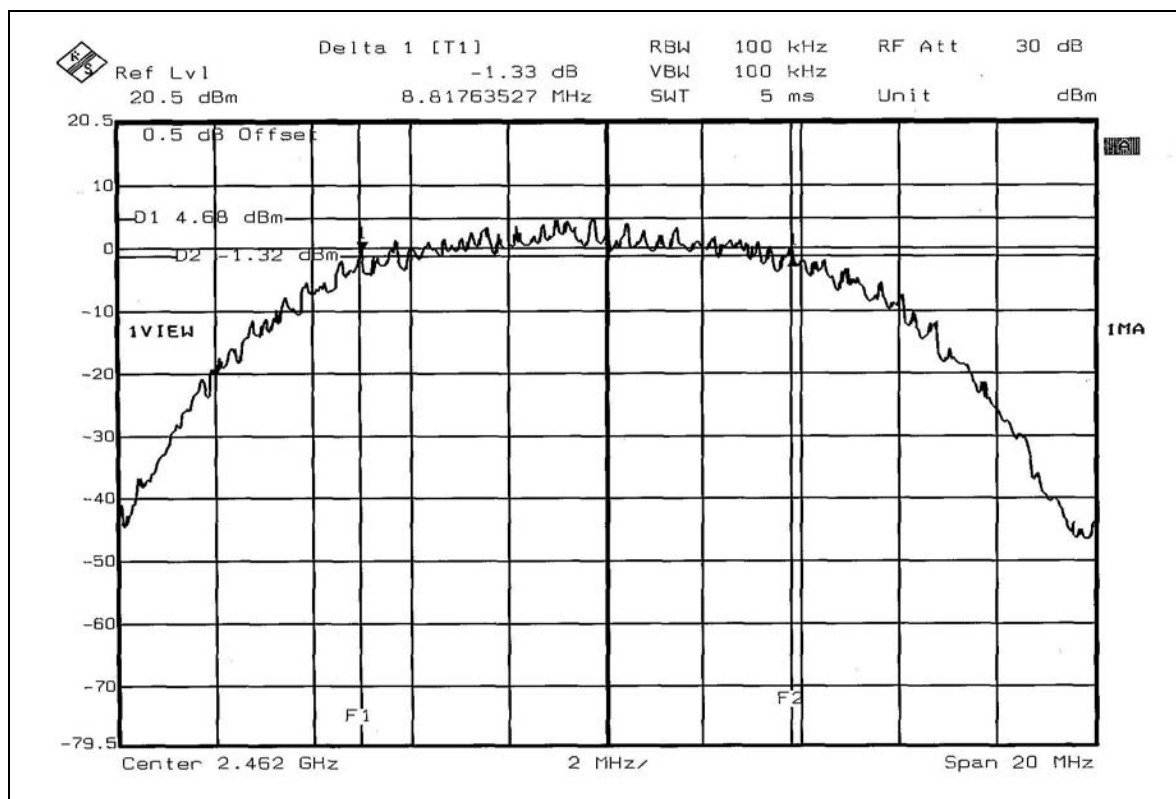
CH1



CH6



CH11

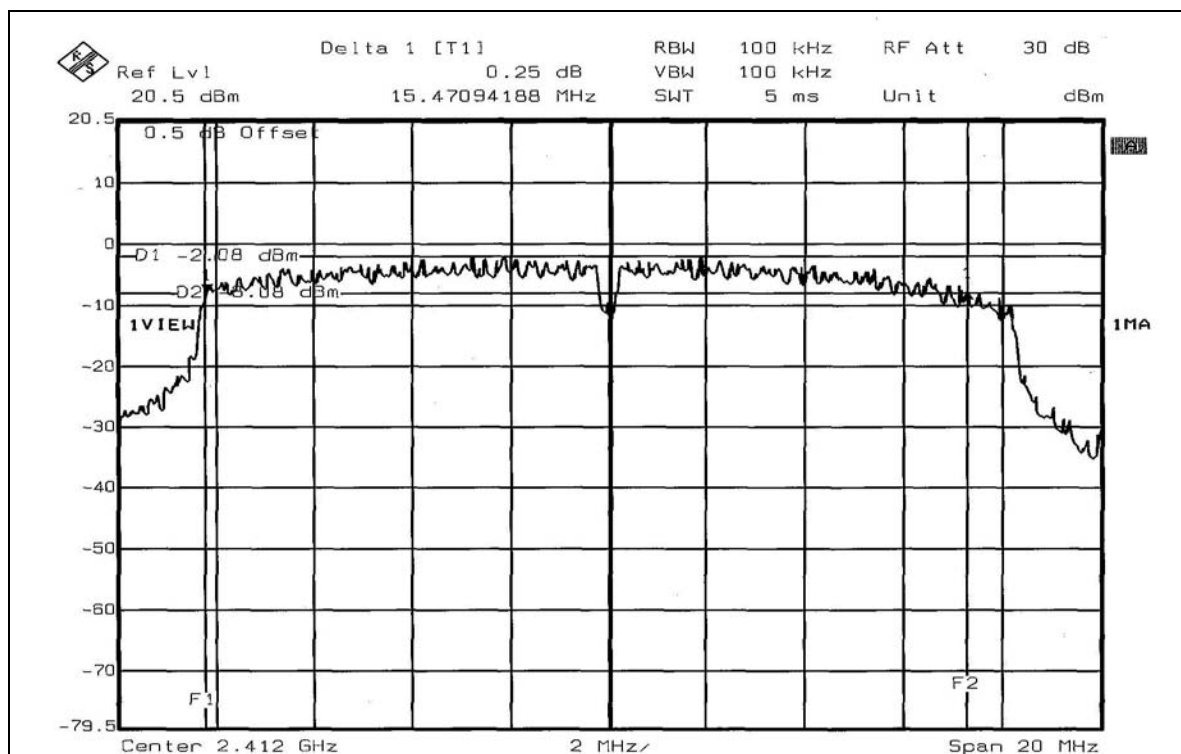


4.3.8 TEST RESULTS (B)

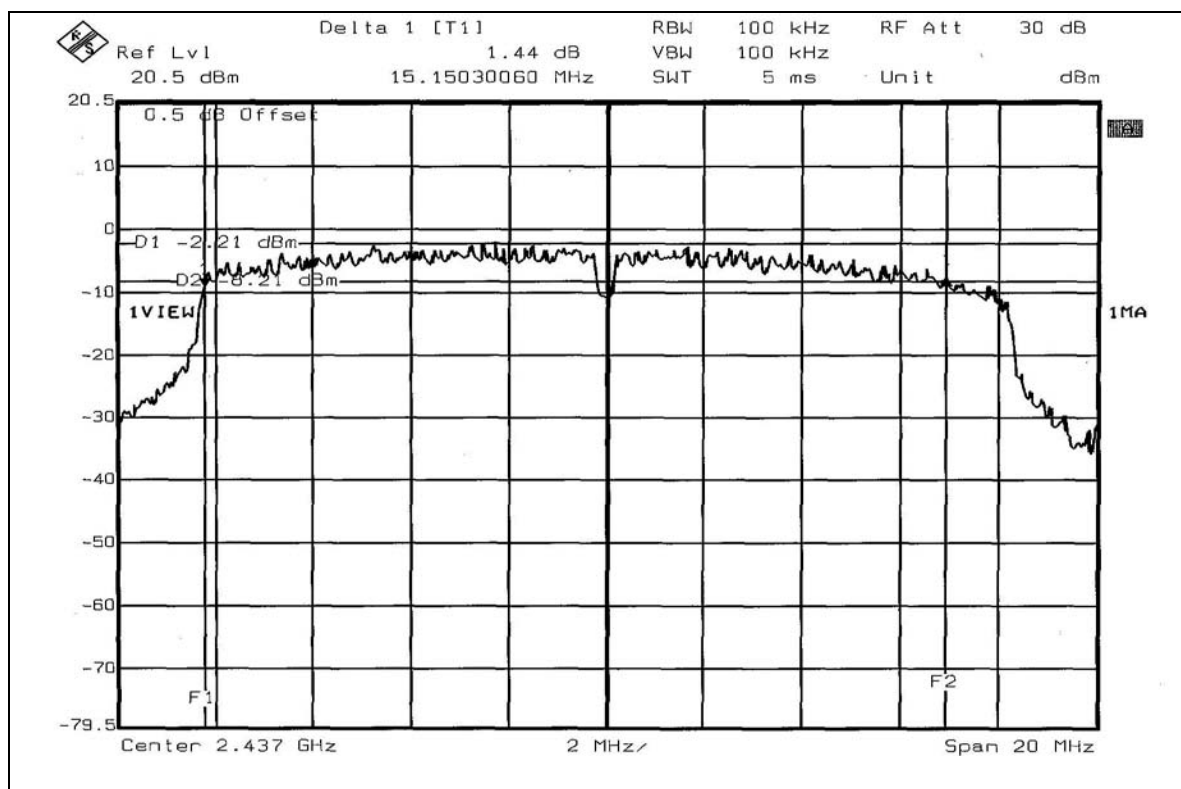
EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	15.47	0.5	PASS
6	2437	15.15	0.5	PASS
11	2462	15.15	0.5	PASS

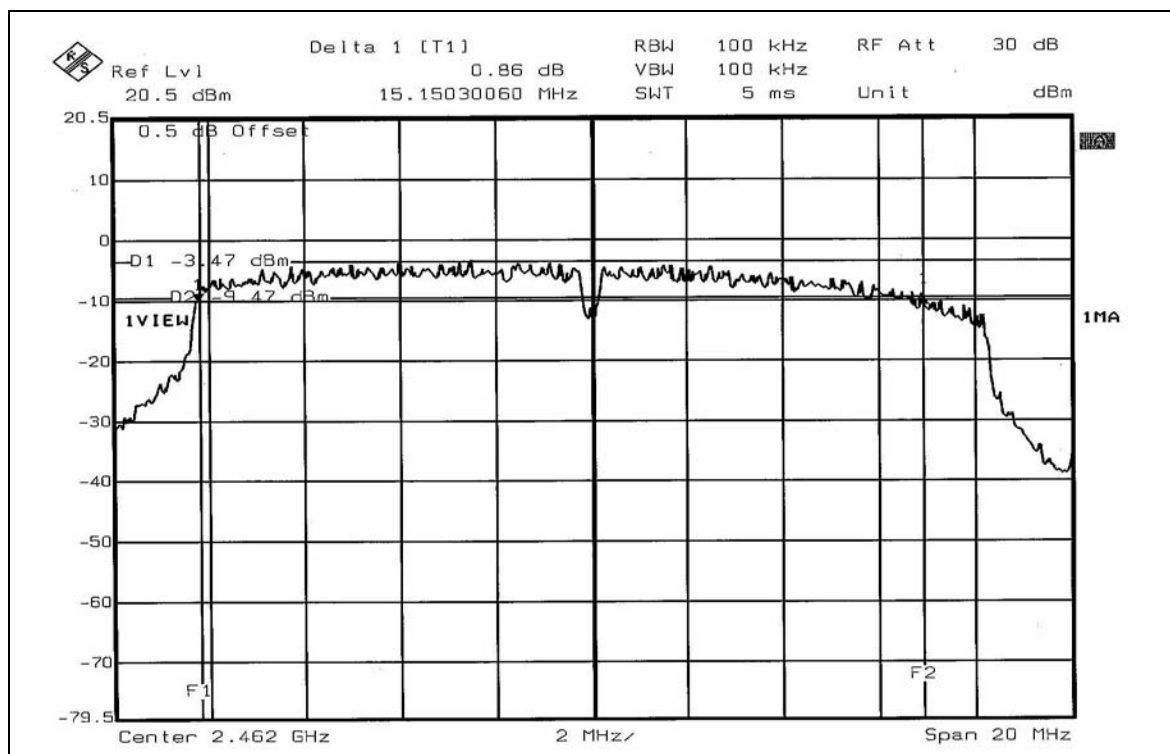
CH1



CH6



CH11



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. 06, 2005
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..

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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 (A)

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 64%RH, 991hPa
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	51.050	17.08	30	PASS
6	2437	51.050	17.08	30	PASS
11	2462	50.582	17.04	30	PASS

4.4.4 TEST RESULTS (B)

EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 64%RH, 991hPa
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	40.644	16.09	30	PASS
6	2437	41.305	16.16	30	PASS
11	2462	40.738	16.10	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.

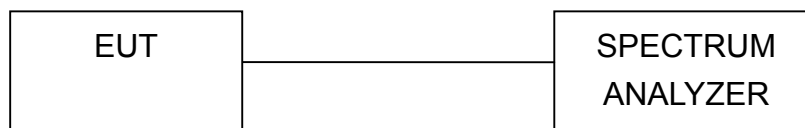
4.5.3 TEST PROCEDURE

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

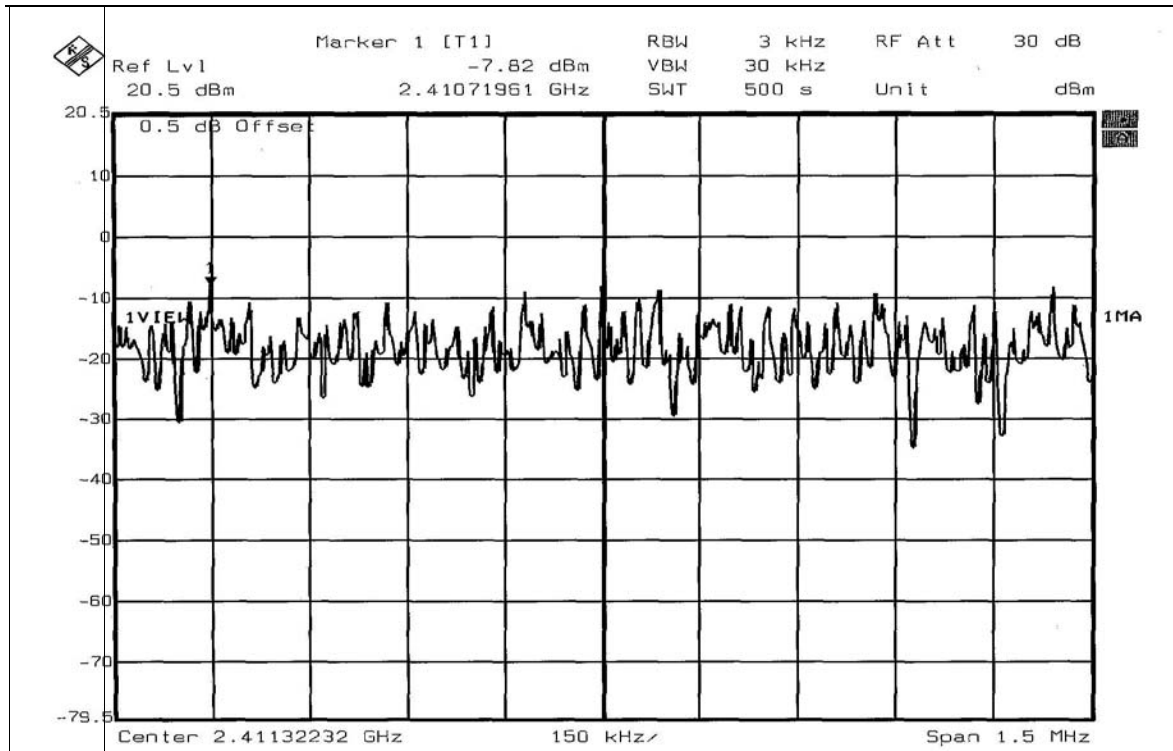
Same as Item 4.3.6

4.5.7 TEST RESULTS (A)

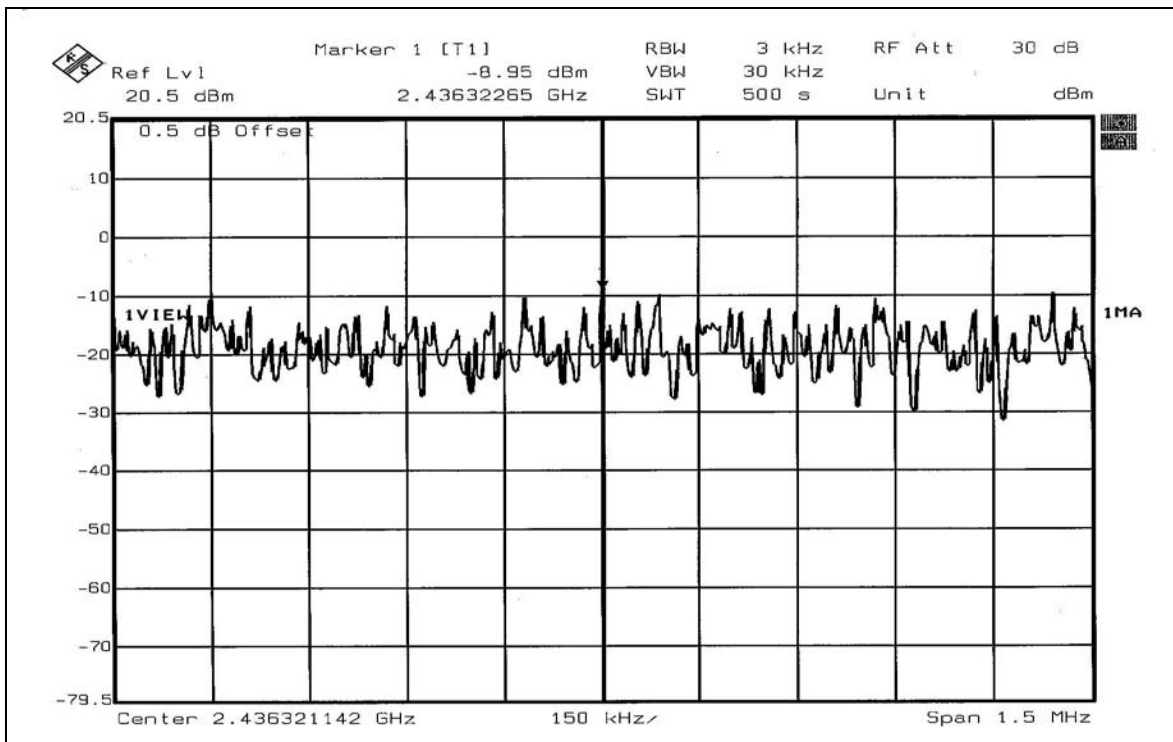
EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 64%RH, 991hPa
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-7.82	8	PASS
6	2437	-8.95	8	PASS
11	2462	-8.96	8	PASS

CH1

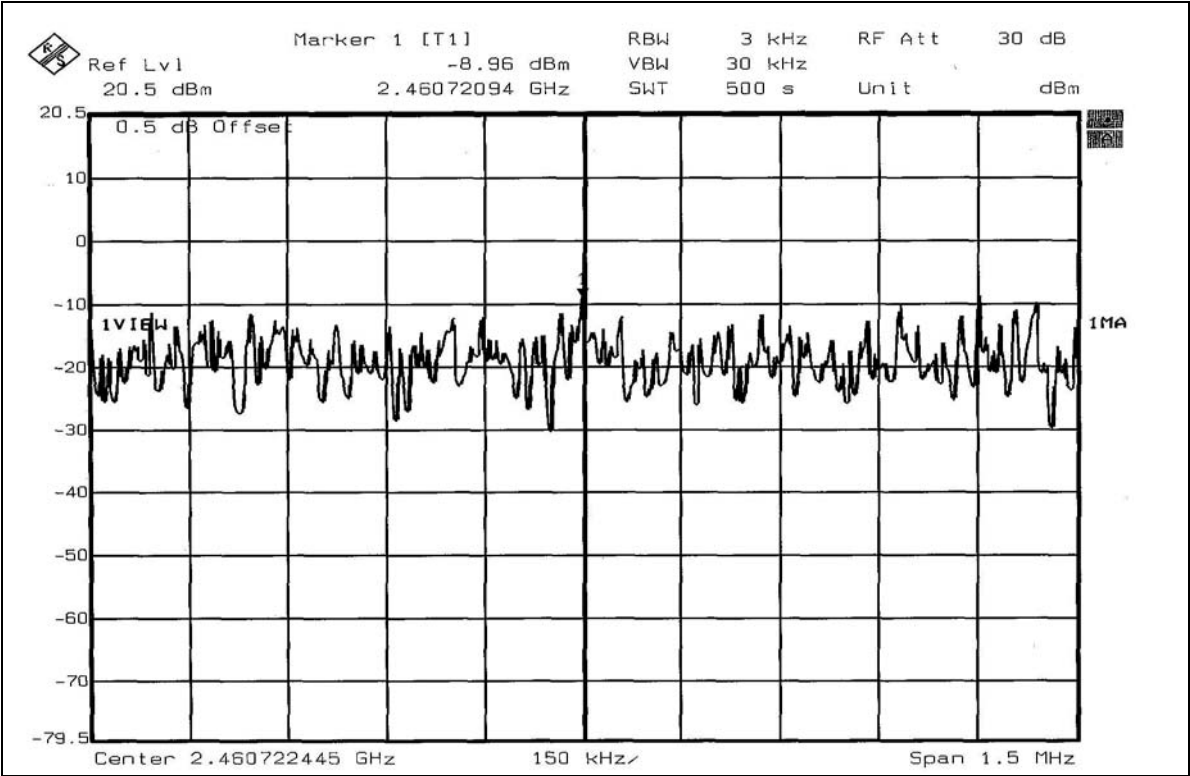


CH6





CH11

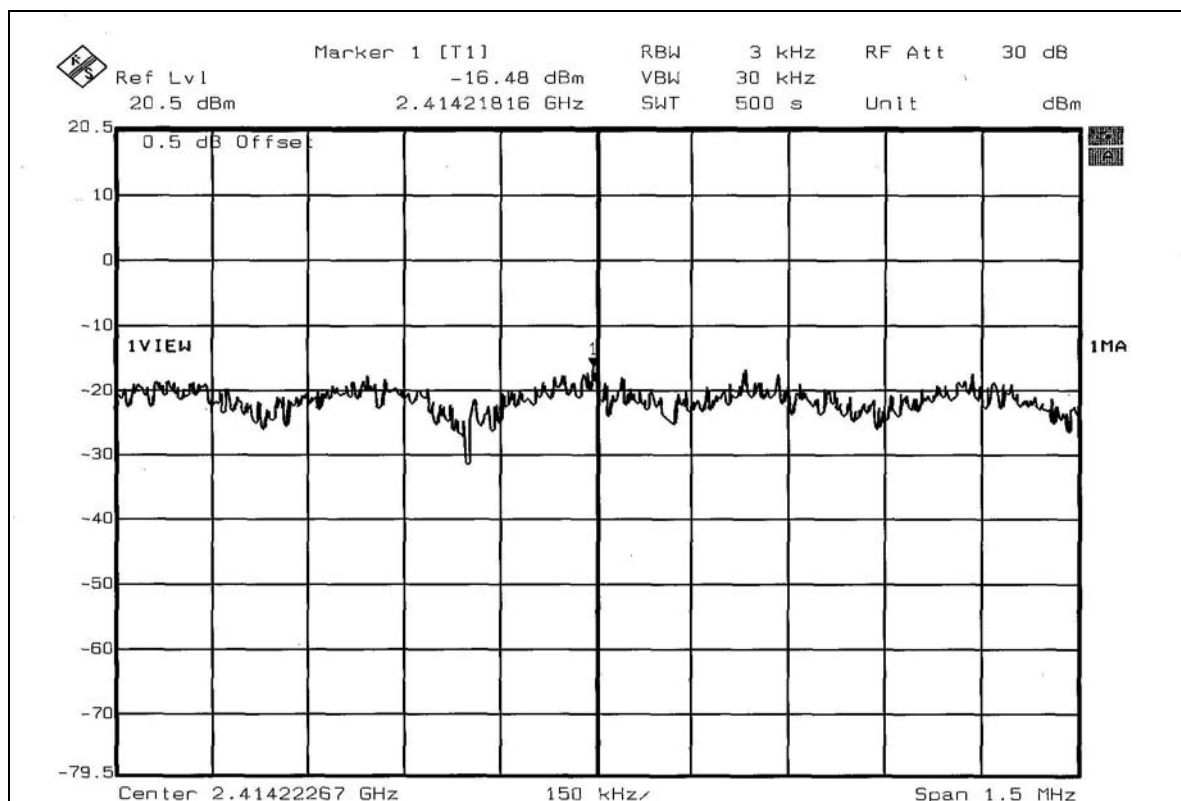


4.5.8 TEST RESULTS (B)

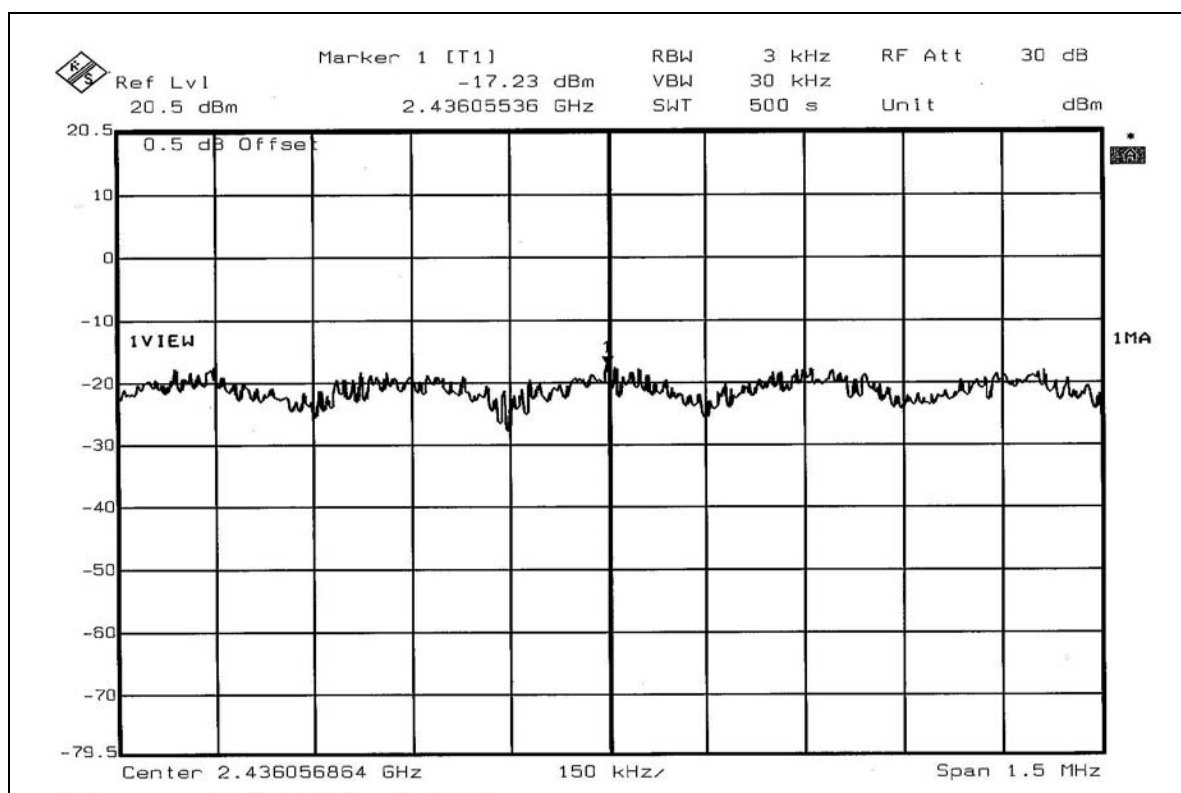
EUT	AirPlus GTM 2.4GHz Wireless Range Extender	MODEL	DWL-G710
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 64%RH, 991hPa
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-16.48	8	PASS
6	2437	-17.23	8	PASS
11	2462	-17.25	8	PASS

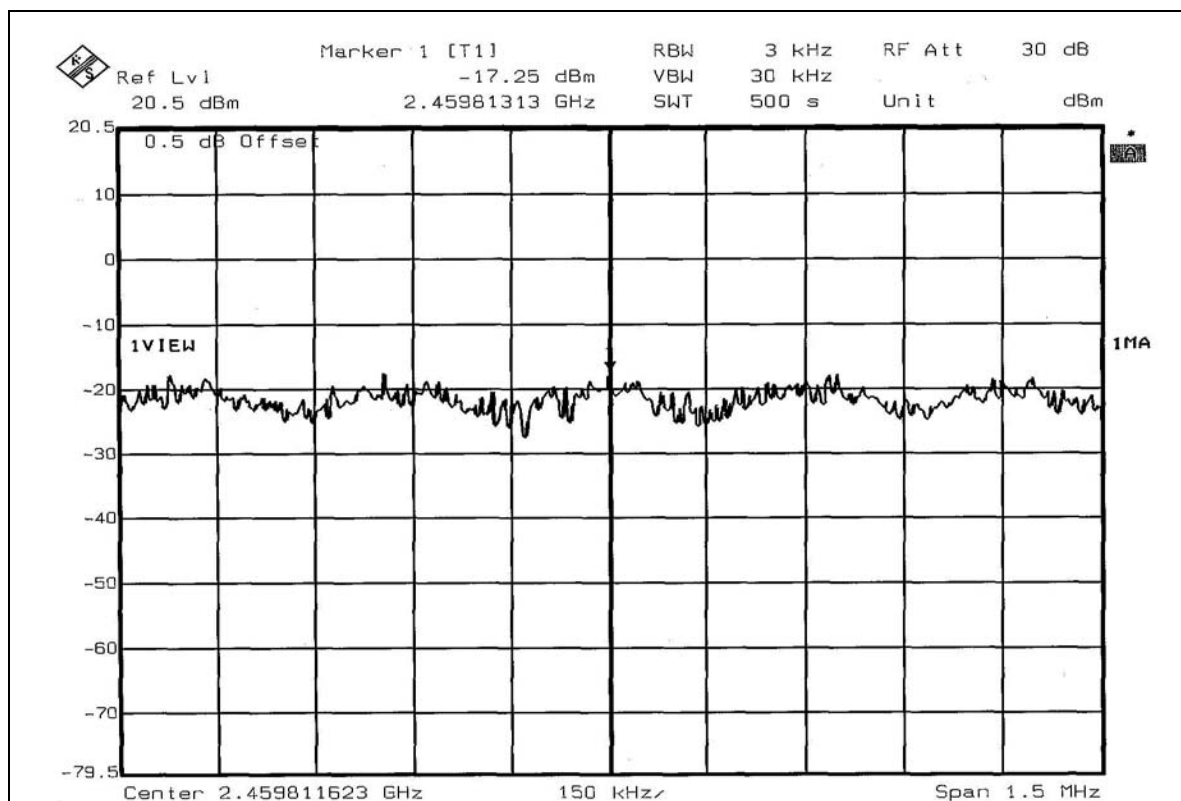
CH1



CH6



CH11



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 100 kHz and 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

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 images. 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(d).

4.6.7 TEST RESULTS(A)

NOTE:

The band edge emission plot of DSSS technique on page 55 show 52.91dB delta between carrier maximum power and local maximum emission in restrict band (2.3717GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 112.56dBuV/m (Peak), so the maximum field strength in restrict band is $112.56 - 52.91 = 59.65$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on page 55 show 53.65dB delta between carrier maximum power and local maximum emission in restrict band (2.3711GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 104.64dBuV/m (Average), so the maximum field strength in restrict band is $104.64 - 53.65 = 50.99$ dBuV/m which is under 54dBuV/m limit.

The band edge emission plot of DSSS technique on the page 56 show 50.14dB delta between carrier maximum power and local maximum emission in restrict band (2.4998GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 111.81dBuV/m (Peak), so the maximum field strength in restrict band is $111.81 - 50.14 = 61.67$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on the page 57 show 51.28dB delta between carrier maximum power and local maximum emission in restrict band (2.5000GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 103.15dBuV/m (Average), so the maximum field strength in restrict band is $103.15 - 51.28 = 51.87$ dBuV/m which is under 54dBuV/m limit.

4.6.8 TEST RESULTS(B)

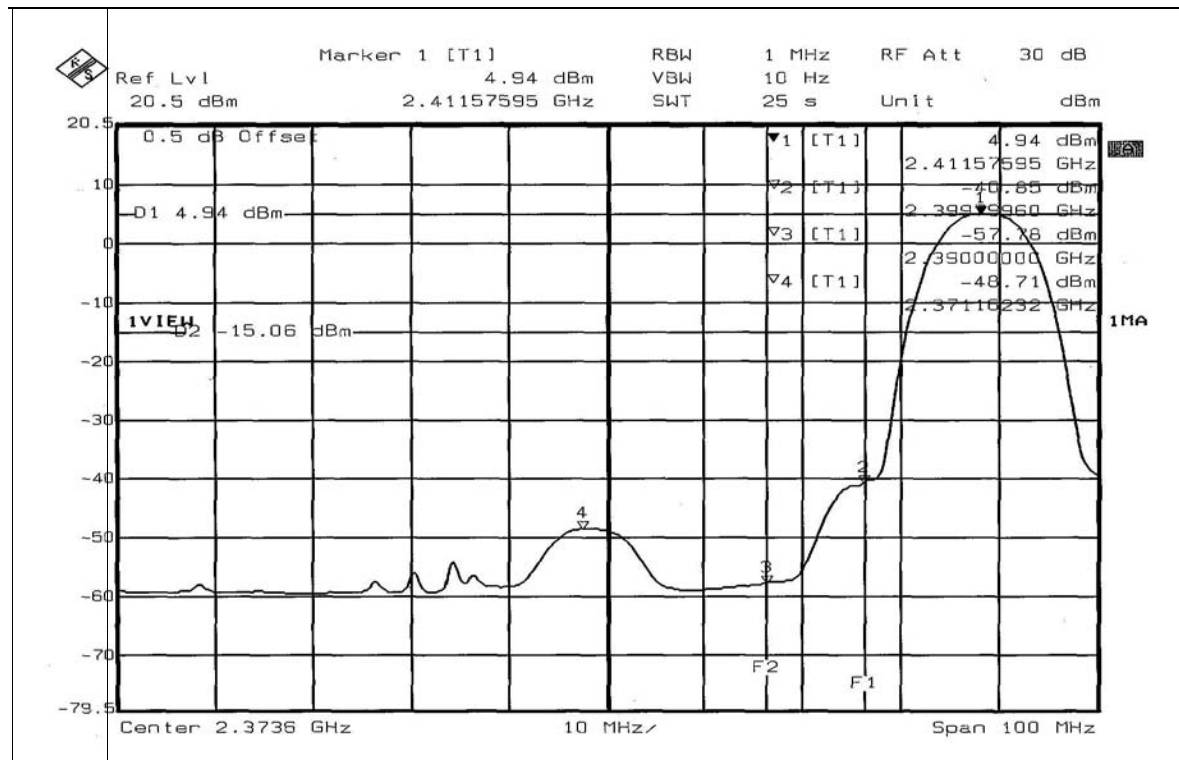
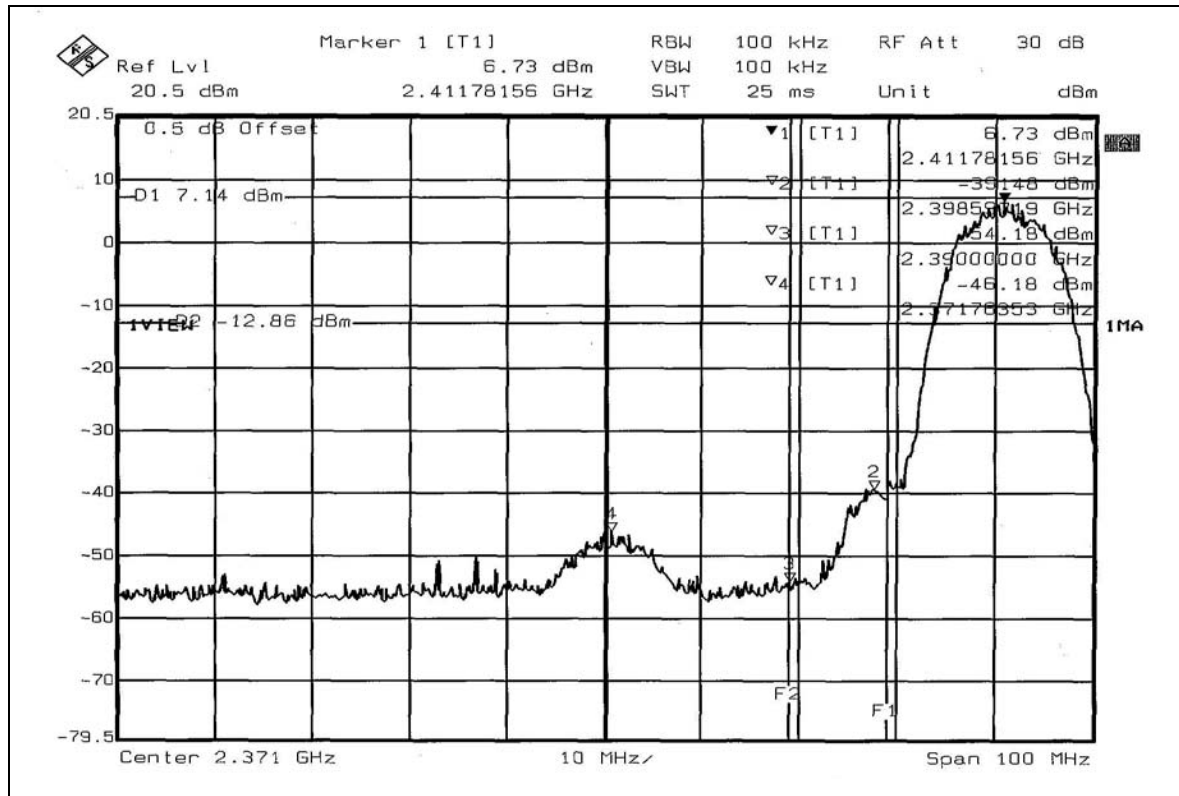
NOTE:

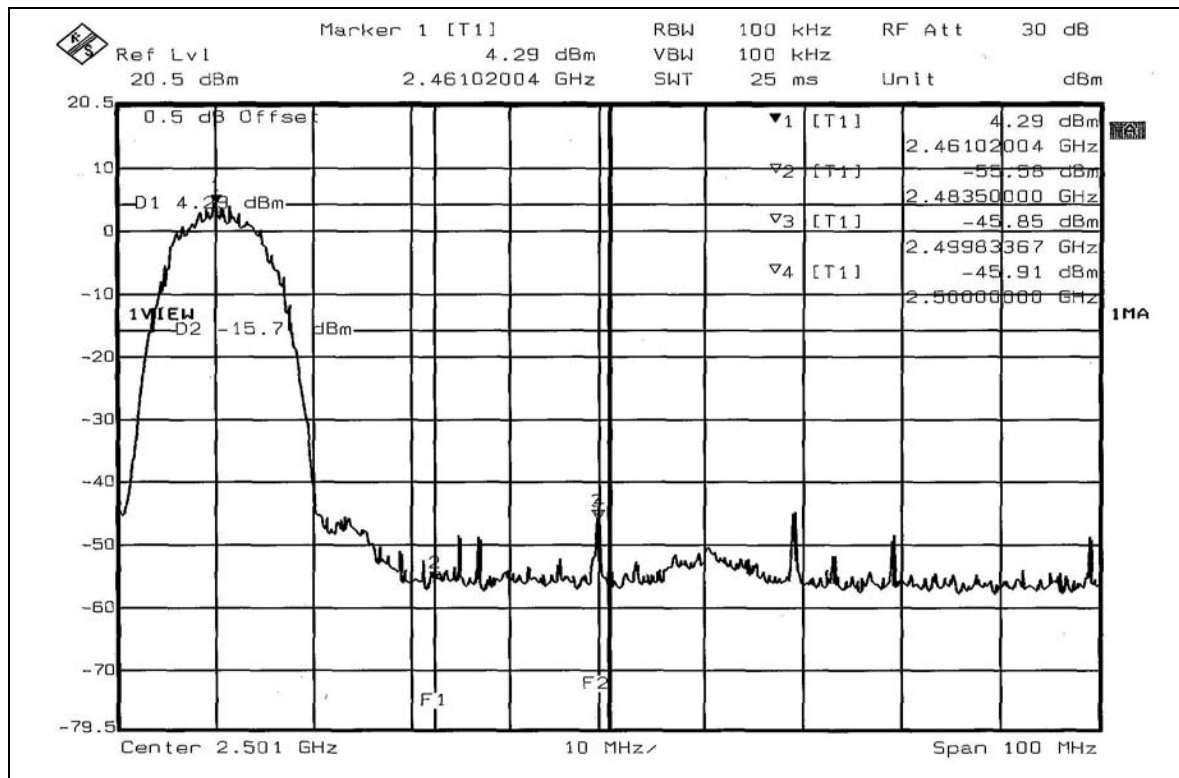
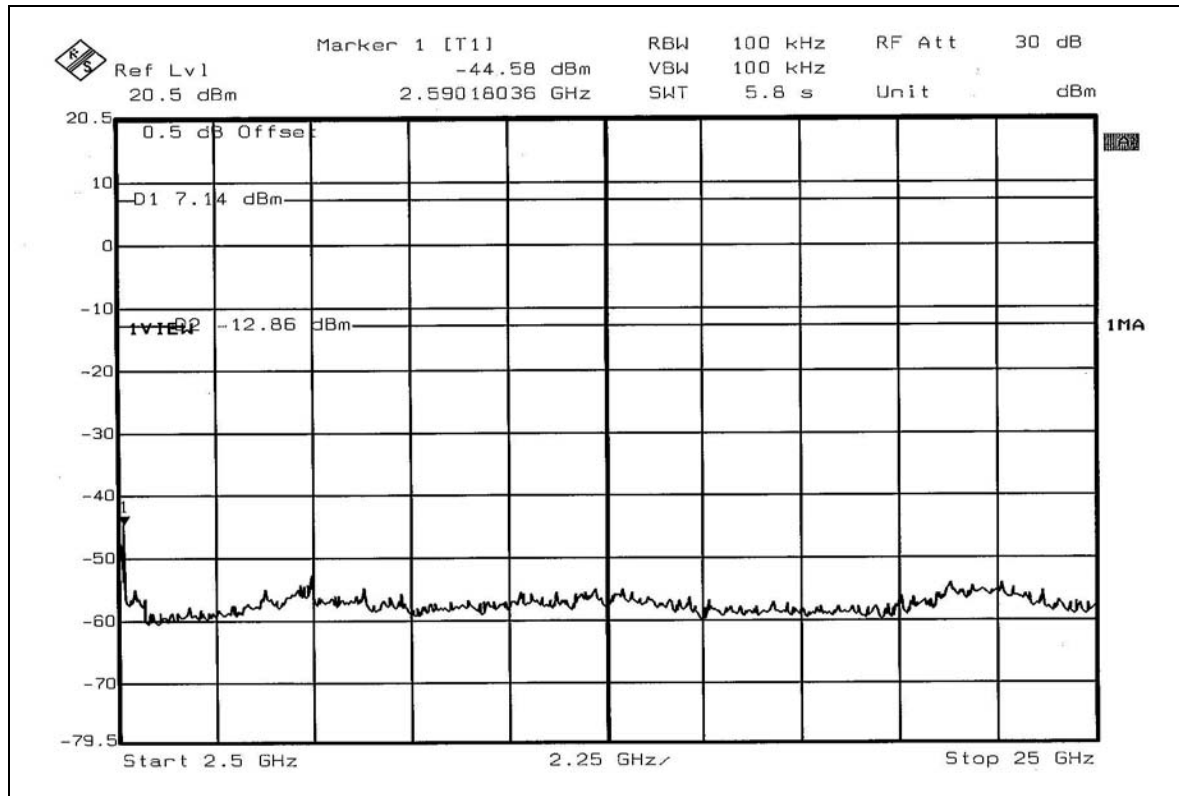
The band edge emission plot of OFDM technique on page 58 show 46.03dB delta between carrier maximum power and local maximum emission in restrict band (2.3579GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 107.23dBuV/m (Peak), so the maximum field strength in restrict band is $107.23 - 46.03 = 61.20$ dBuV/m which is under 74dBuV/m limit.

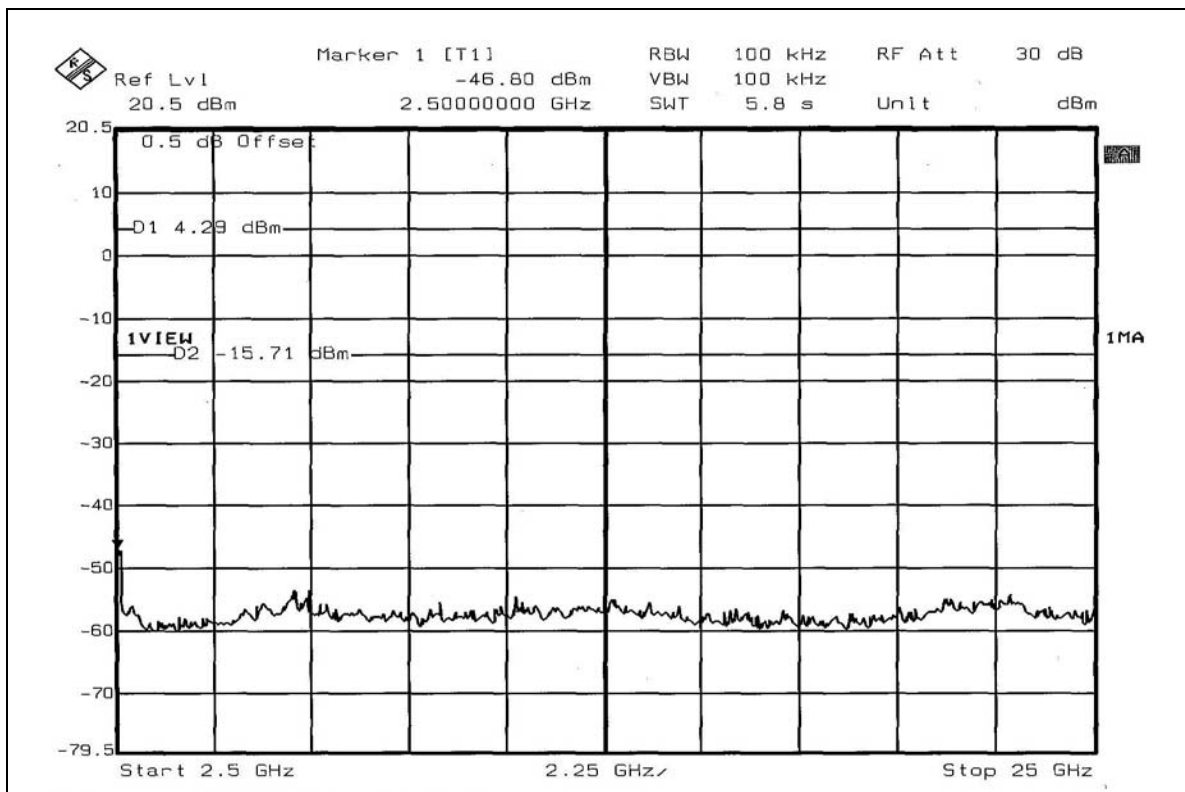
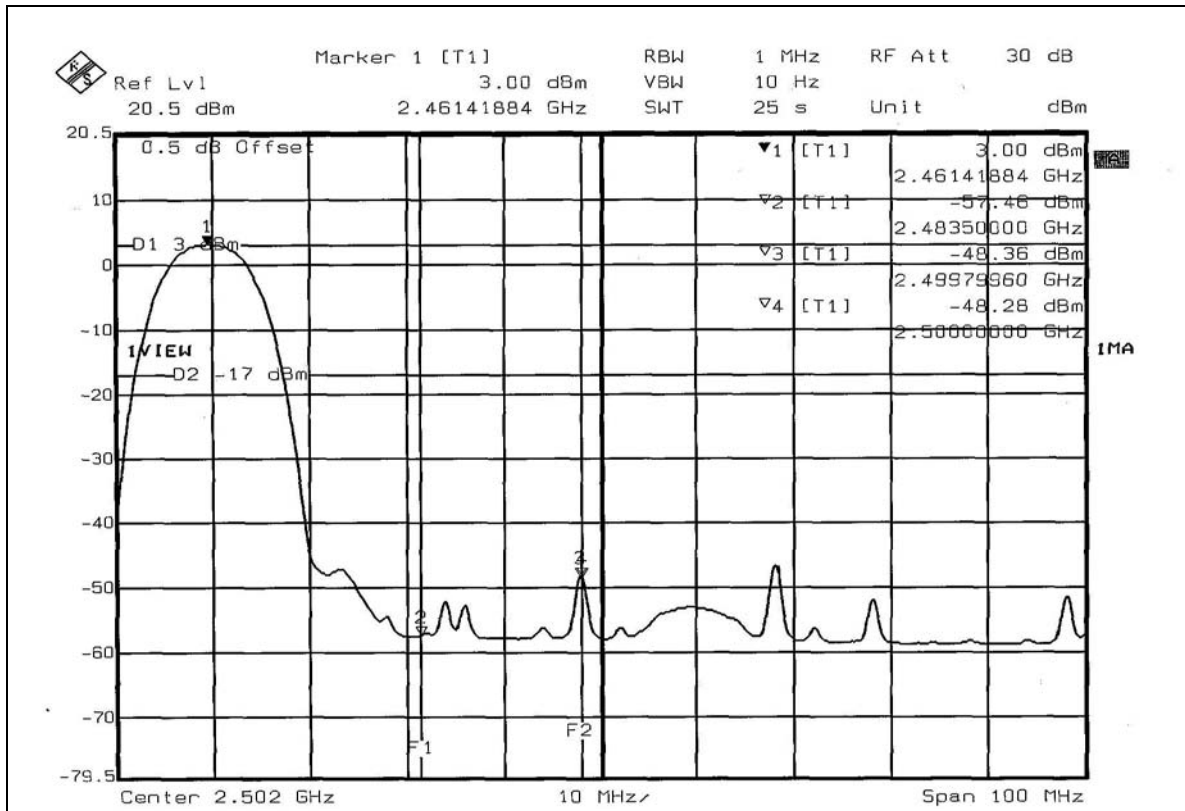
The band edge emission plot of OFDM technique on page 58 show 50.60dB delta between carrier maximum power and local maximum emission in restrict band (2.3581GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 97.93dBuV/m (Average), so the maximum field strength in restrict band is $97.93 - 50.60 = 47.33$ dBuV/m which is under 54dBuV/m limit.

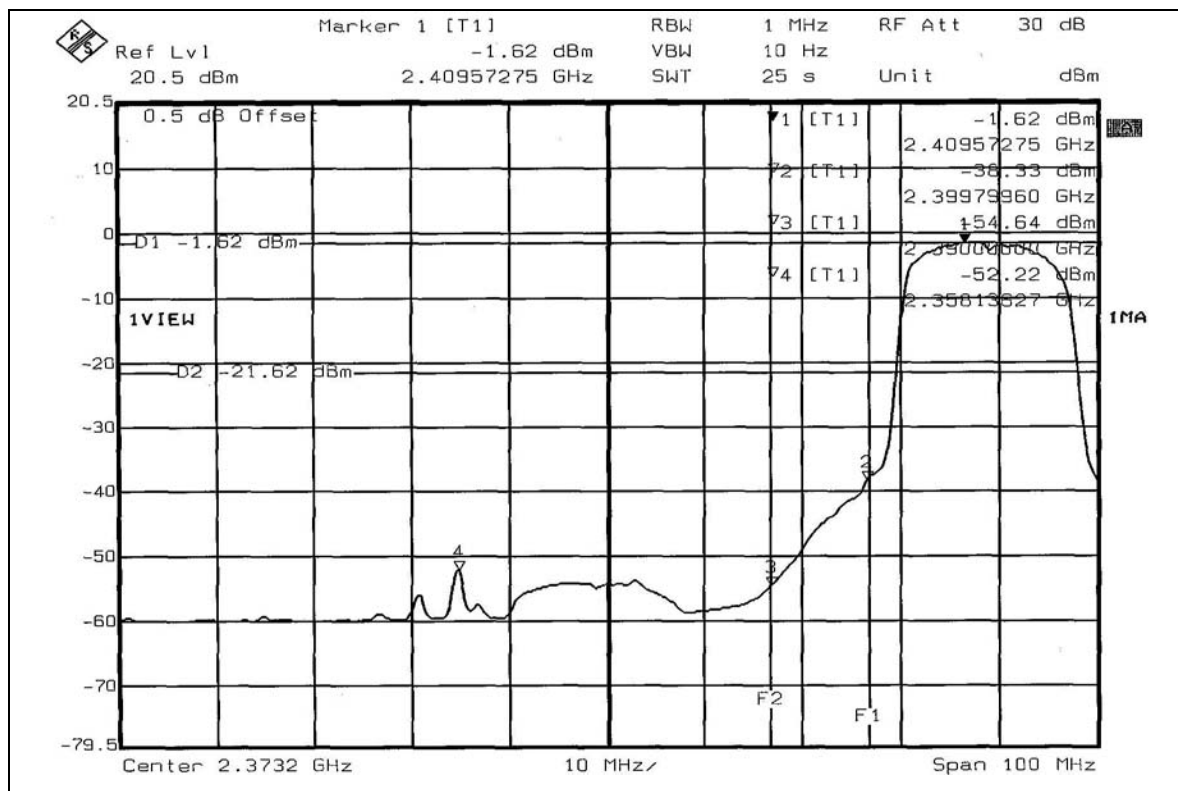
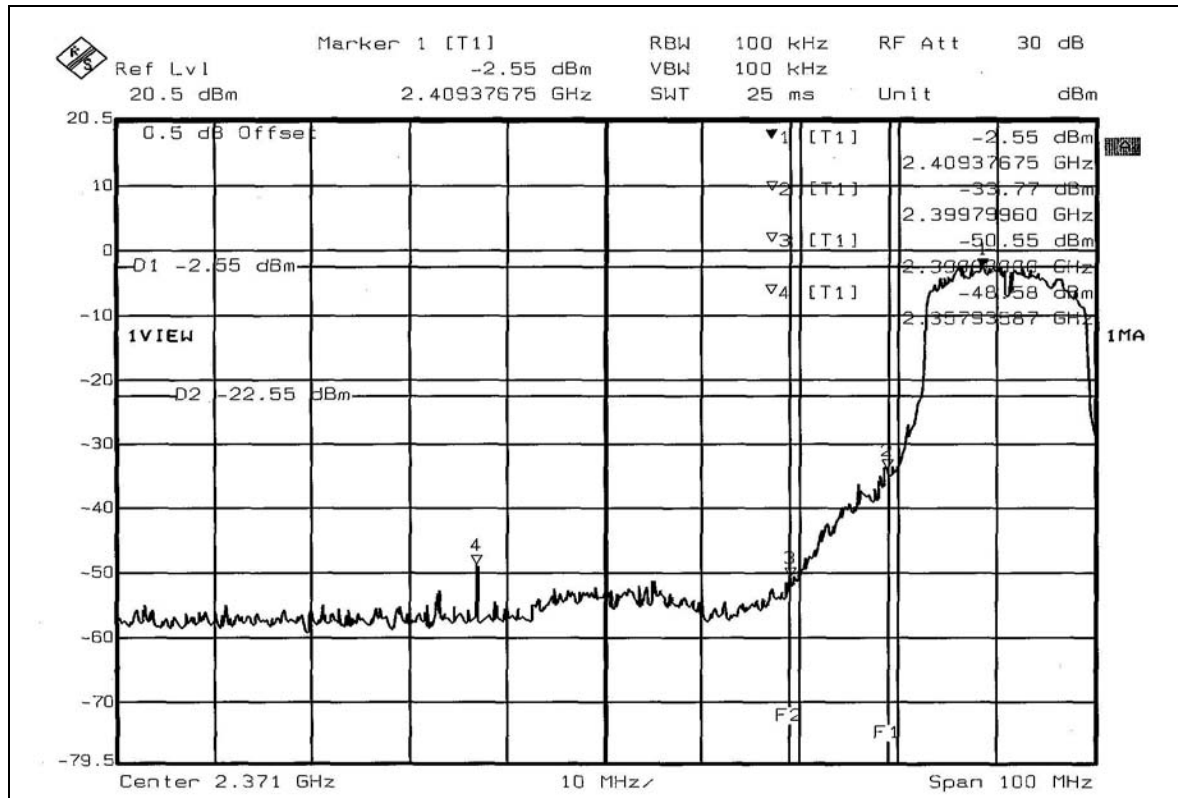
The band edge emission plot of OFDM technique on page 59 show 44.25dB delta between carrier maximum power and local maximum emission in restrict band (2.4879GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 106.38dBuV/m (Peak), so the maximum field strength in restrict band is $106.38 - 44.25 = 62.13$ dBuV/m which is under 74dBuV/m limit.

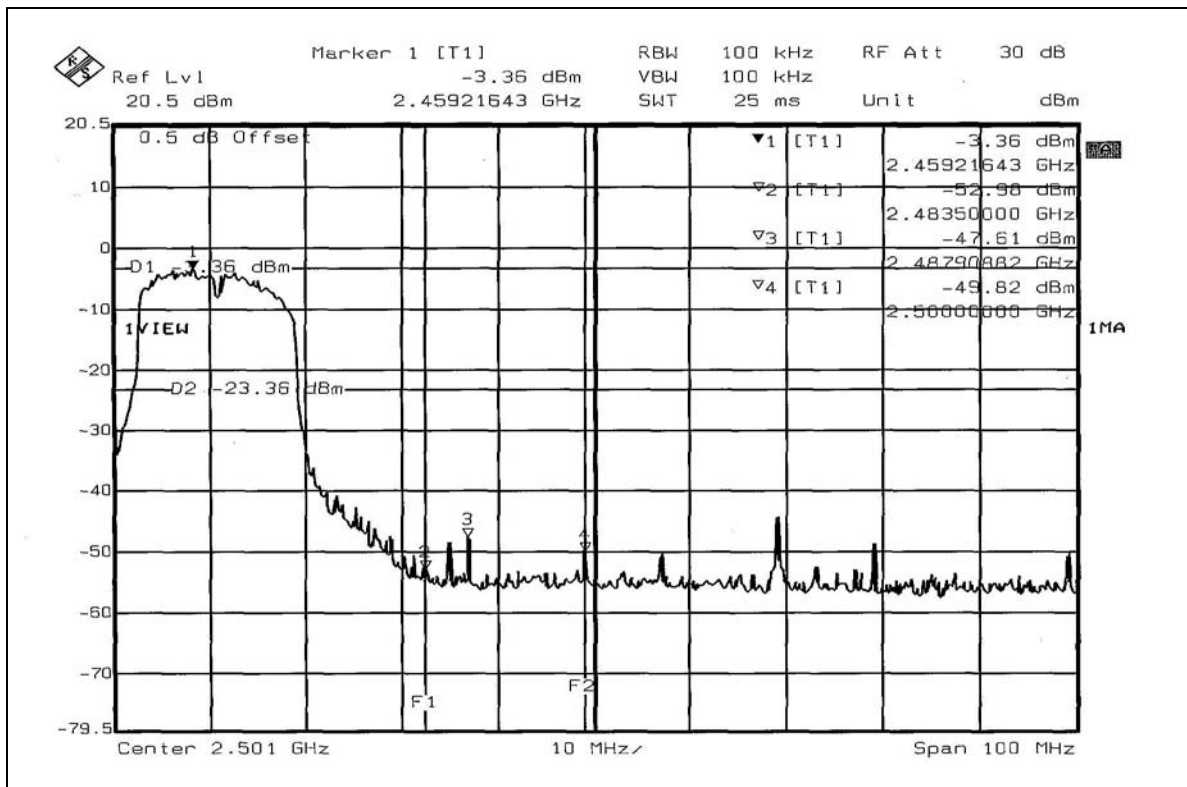
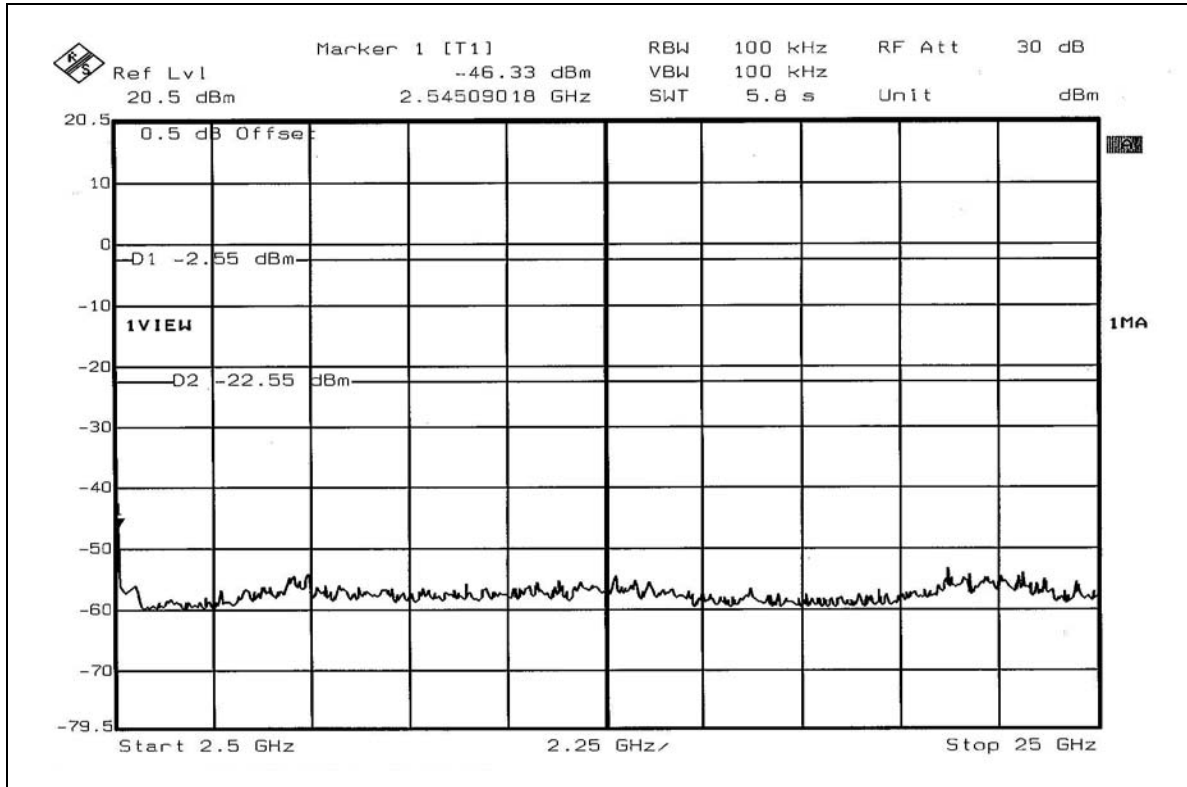
The band edge emission plot of OFDM technique on page 60 show 48.36dB delta between carrier maximum power and local maximum emission in restrict band (2.4881GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 97.51dBuV/m (Average), so the maximum field strength in restrict band is $97.51 - 48.36 = 49.15$ dBuV/m which is under 54dBuV/m limit.

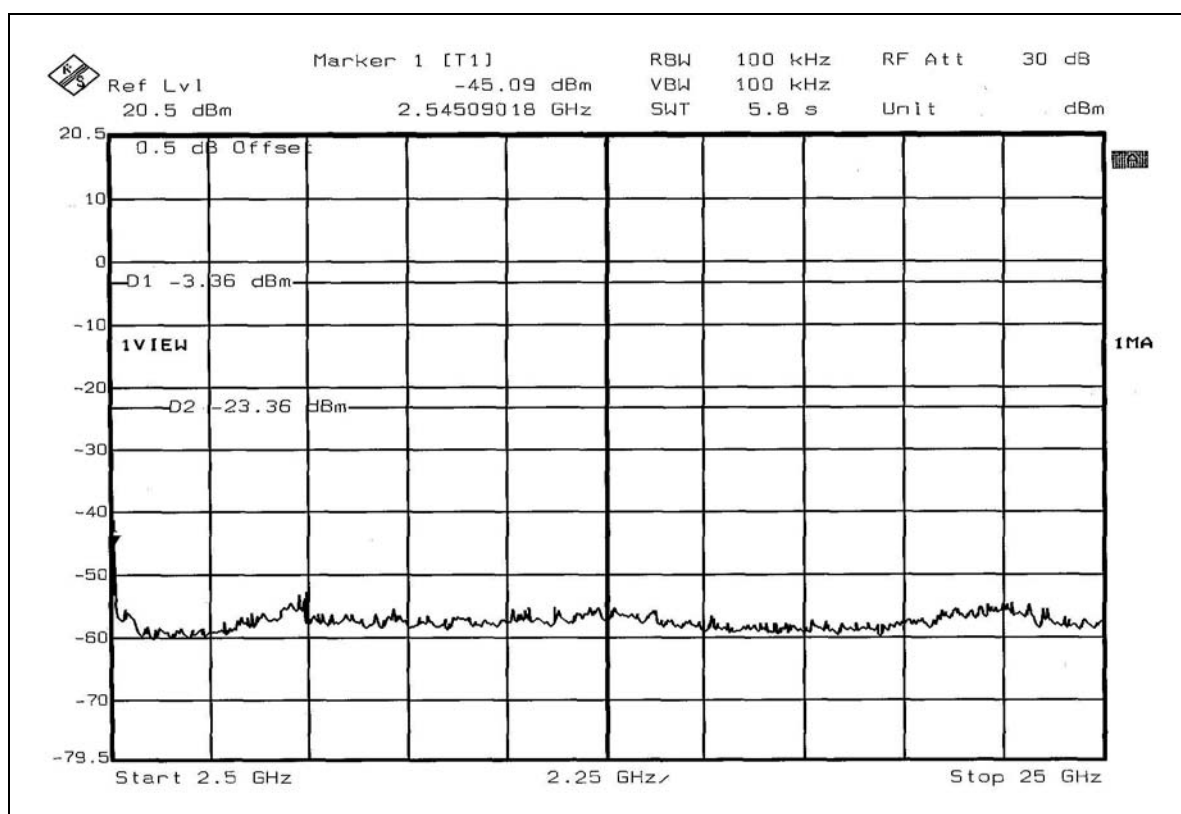
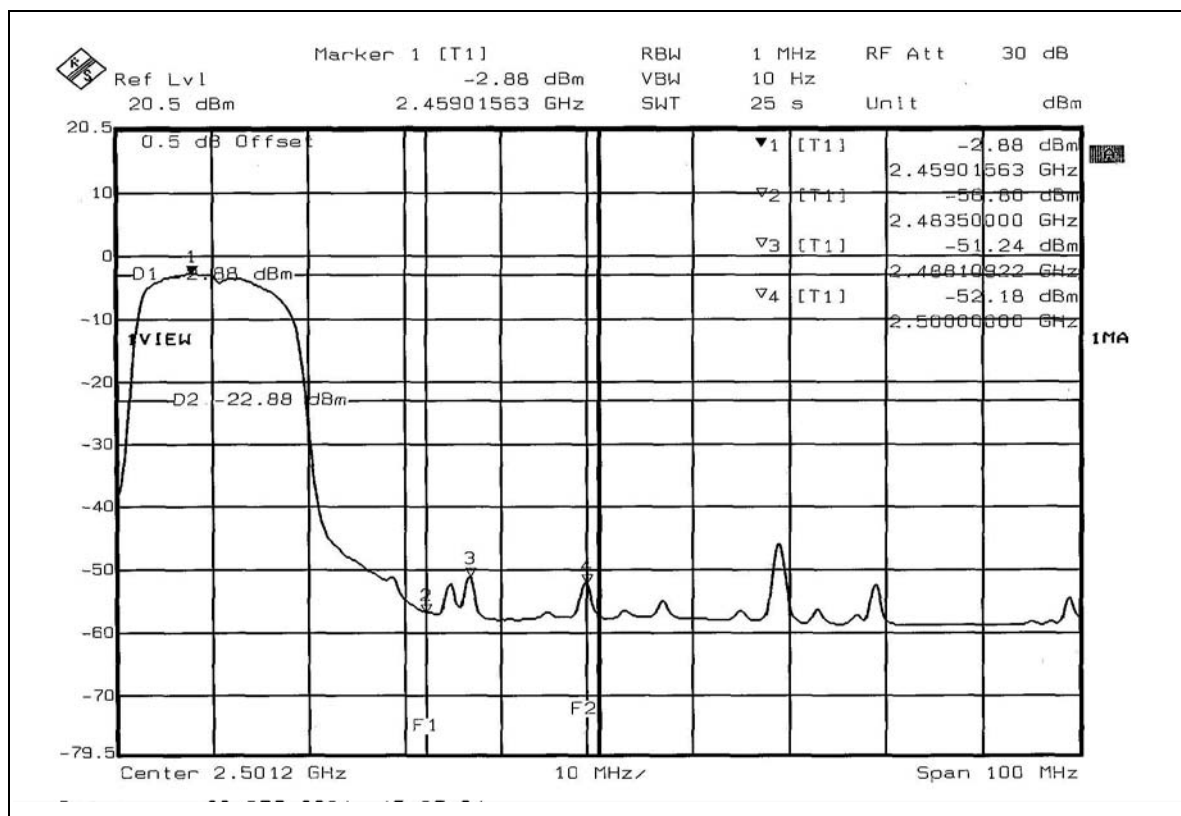














4.7 ANTENNA REQUIREMENT

4.7.1 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 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

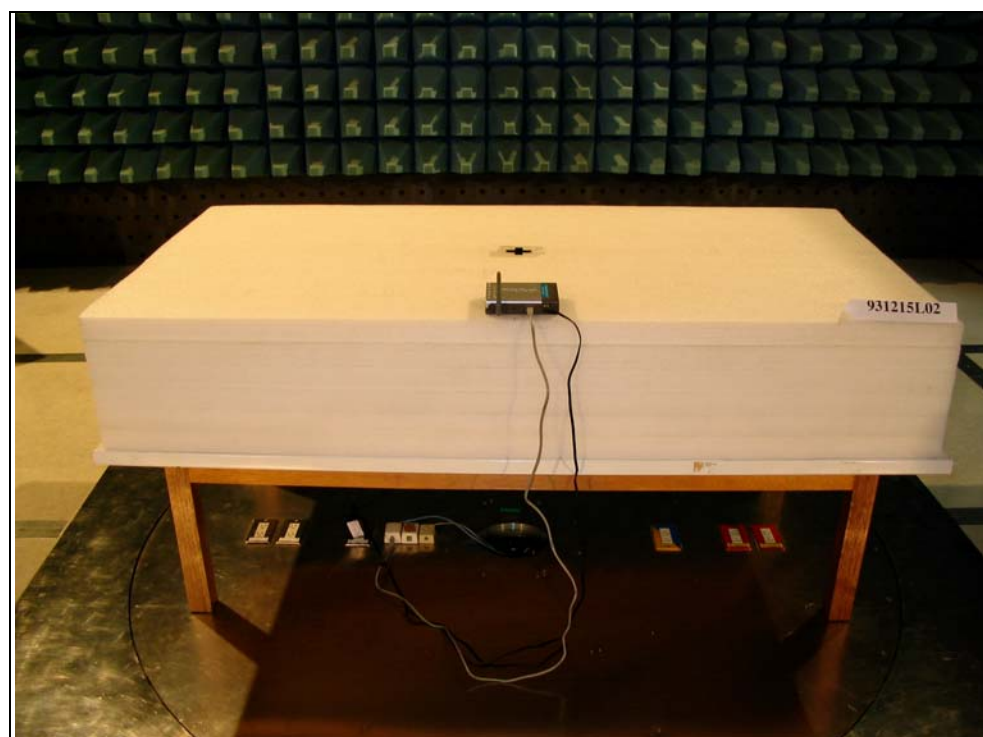
The antenna used in this product is Dipole antenna with RSMA antenna connector. The maximum Gain of the antenna is 2dBi.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST



6. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Linko RF Lab.

Tel: 886-3-3270910

Fax: 886-3-3270892

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also