



# FCC TEST REPORT

**REPORT NO.:** RF920624R02B

**MODEL NO.:** WLL4030

**RECEIVED:** Jul. 20, 2004

**TESTED:** Jul. 20 ~ Sep. 15, 2004

**APPLICANT:** ASKEY COMPUTER CORP.

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TAIPEI TAIWAN R.O.C.

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No. 2177-01



0528  
ILAC MRA



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## 1. CERTIFICATION

**PRODUCT:** Mini- PCI CARD  
**BRAND NAME:** ASKEY  
**MODEL NO.:** WLL4030  
**APPLICANT:** ASKEY COMPUTER CORP.  
**TEST ITEM:** Engineering Sample  
**TESTED:** Jul. 20 ~ Sep. 15, 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 :** Andrea Hsia **DATE:** Sep. 15, 2004  
 (Andrea Hsia)

**TECHNICAL ACCEPTANCE :** Gary Chang **DATE:** Sep. 15, 2004  
 Responsible for RF (Gary Chang)

**APPROVED BY :** Cody Chang **DATE:** Sep. 15, 2004  
 (Cody Chang, Deputy manager)



## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>Remark</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.98dB at 0.170MHz
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 -0.70dB at 99.50MHz
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.



<b>APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)</b>			
<b>Standard Section</b>	<b>Test Type</b>	<b>Result</b>	<b>Remark</b>
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.02dB at 0.170MHz
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 -0.70dB at 99.50MHz
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.

**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:

<b>MEASUREMENT</b>	<b>FREQUENCY</b>	<b>UNCERTAINTY</b>
Conducted emissions	9k~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.55 dB
	200MHz ~1000MHz	3.58 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Mini- PCI CARD
<b>MODEL NO.</b>	WLL4030
<b>POWER SUPPLY</b>	3.3Vdc from host equipment
<b>MODULATION TYPE</b>	DBPSK, DQPSK, CCK, 16QAM, 64QAM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps
<b>FREQUENCY RANGE</b>	802.11b and 802.11g: 2412~2462MHz 802.11a: 5.15~5.35GHz and 5.725~5.825GHz
<b>NUMBER OF CHANNEL</b>	802.11b and 802.11g: 11 802.11a: 12
<b>CHANNEL SPACING</b>	802.11b and 802.11g: 5MHz 802.11a: 20MHz
<b>OUTPUT POWER</b>	802.11b and 802.11g: 16.42dBm 802.11a: 18.42dBm
<b>DATA CABLE</b>	NA
<b>ANTENNA TYPE</b>	*refer to note2
<b>I/O PORTS</b>	NA
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:**

1. This is a supplementary report with ADT report no. RF920624R02.
2. This report is prepared for FCC class II permissive change. The difference compared with the original design is adding 16 antenna types to this EUT for the test. Please refer to following table:

Item	Brand	P/N	Type	2.4GHz	5GHz
1	NISSEI Electric Co., Ltd	CP115407-01	Inverted F	0.19dBi	3.03dBi
2	NISSEI Electric Co., Ltd	CP115404-01	Inverted F	-1.19dBi	0.42dBi
<b>3</b>	<b>NISSEI Electric Co., Ltd</b>	<b>CP115410-01</b>	<b>Inverted F</b>	<b>0.39dBi</b>	<b>3.50dBi</b>
4	NISSEI Electric Co., Ltd	CP115401-01	Inverted F	-0.97dBi	2.93dBi
5	NISSEI Electric Co., Ltd	CP115399-01	Inverted F	1.05dBi	0.70dBi
6	NISSEI Electric Co., Ltd	CP115412-01	Inverted F	1.06dBi	-1.18dBi
7	Yokowo Co., Ltd	YCE-5008	Monopole	0.14dBi	0.89dBi
8	Yokowo Co., Ltd	YCE-5008(008L00196)	Monopole	2.57dBi	2.47dBi
9	NEC TOKIN Corp.	DA-120D-2454M-FJ01	Monopole	0.80dBi	-1.70dBi
10	Yokowo Co., Ltd	YCE-5008(008L00197)	Monopole	2.40dBi	0.20dBi
<b>11</b>	<b>Yokowo Co., Ltd</b>	<b>YCE-5008</b>	<b>Monopole</b>	<b>2.85dBi</b>	<b>1.45dBi</b>
12	Yokowo Co., Ltd	YCE-5008(008L00197)	Monopole	1.03dBi	2.39dBi
13	Yokowo Co., Ltd	YCE-5008	Monopole	1.49dBi	2.09dBi
<b>14</b>	<b>Yokowo Co., Ltd</b>	<b>YCE-5008(008L00197)</b>	<b>Monopole</b>	<b>2.31dBi</b>	<b>2.95dBi</b>
15	NISSEI Electric Co., Ltd	CP115391-01	Inverted F	-0.14dBi	1.78dBi
<b>16</b>	<b>NA</b>	<b>NA</b>	<b>Inverted F</b>	<b>2.38dBi</b>	<b>2.55dBi</b>

\*Item 3, 11, 14 and 16 were the worst case and chosen for final test.





- 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: 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:**

- 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.
- For radiated emission, three test modes were presented in the following sections. The test mode 1 is for Inverted F antenna with 0.39dBi gain (refer to NOTE 2 of section 3.1), test mode 2 is for Monopole antenna with 2.85dBi gain, the mode 3 is for Monopole antenna with 2.31dBi gain and the test mode 4 is for is for Inverted F antenna with 2.38dBi gain .

For 802.11a: Thirteen 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		

**NOTE:**

- The EUT allows data rates of up to 54Mbps and was tested at 6Mbps data rate that produced the highest output power.
- Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test.
- For radiated emission, three test modes were presented in the following sections. The test mode 1 is for Inverted F antenna with 3.50dBi gain (refer to NOTE 2 of section 3.1), test mode 2 is for Monopole antenna with 1.45dBi gain, mode 3 is for Monopole antenna with 2.95dBi gain and the test mode 4 is for is for Inverted F antenna with 2.55dBi gain .

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Mini- PCI CARD. 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

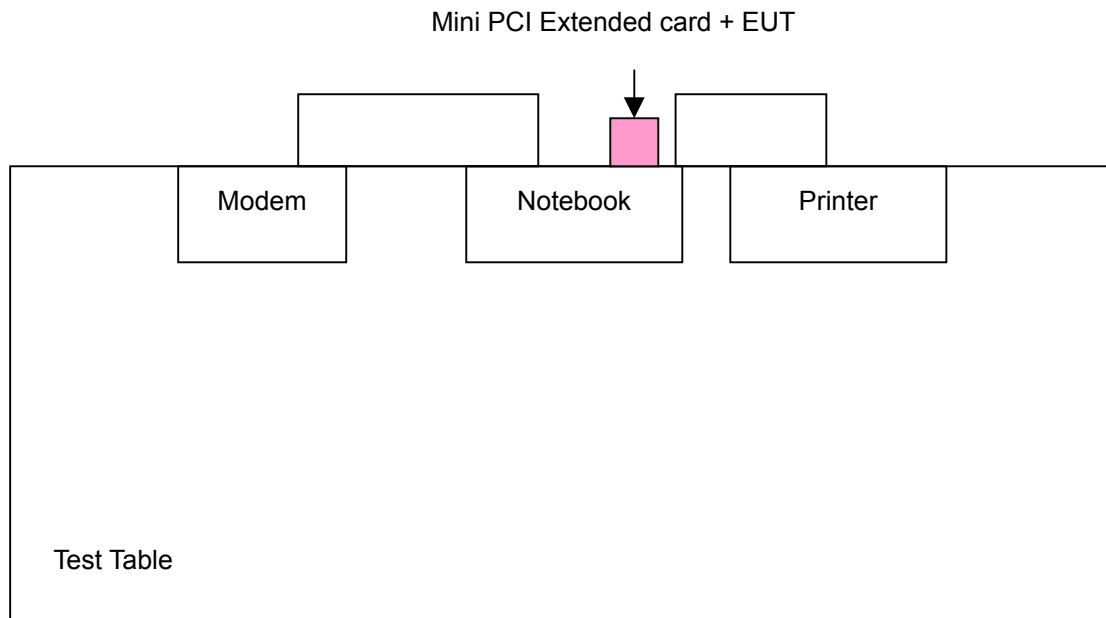
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	LATITUDE	C640	IMRMPCIDE3
2	PRINTER	EPSON	LQ-300+	DCGY047265	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008248	IFAXDM1414

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

**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 (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 (dB $\mu$ 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	Dec. 11, 2004
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.



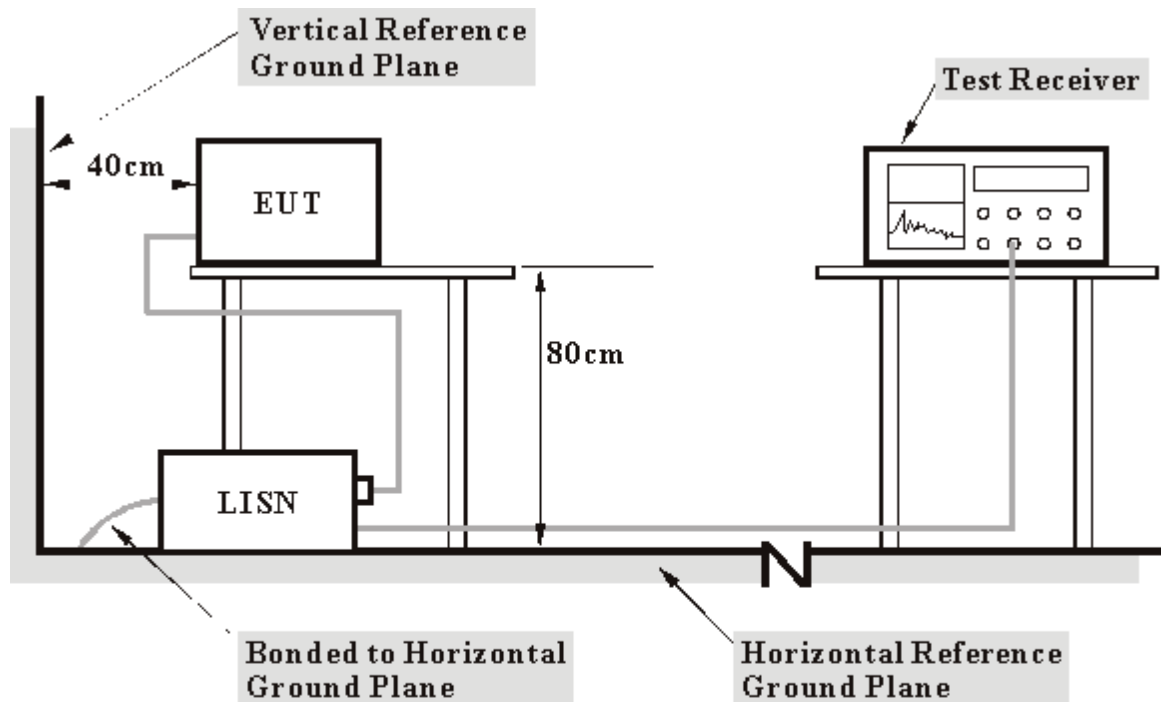
#### 4.1.3 TEST PROCEDURES

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

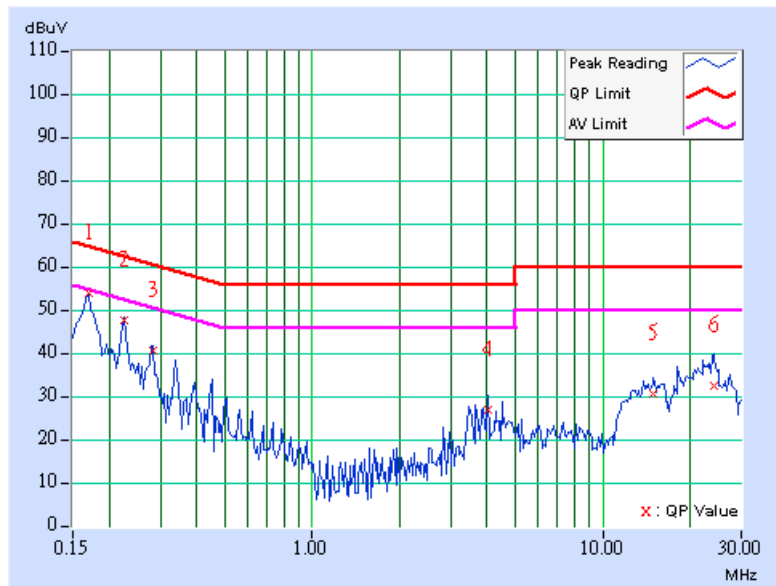


4.1.7 TEST RESULTS

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.170	0.10	52.90	-	53.00	-	64.98	54.98	-11.98
2	0.224	0.10	46.53	-	46.63	-	62.66	52.66	-16.03	-
3	0.283	0.11	39.80	-	39.91	-	60.73	50.73	-20.83	-
4	4.047	0.32	25.99	-	26.31	-	56.00	46.00	-29.69	-
5	14.941	0.70	29.56	-	30.26	-	60.00	50.00	-29.74	-
6	24.051	1.11	31.52	-	32.63	-	60.00	50.00	-27.37	-

- 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.

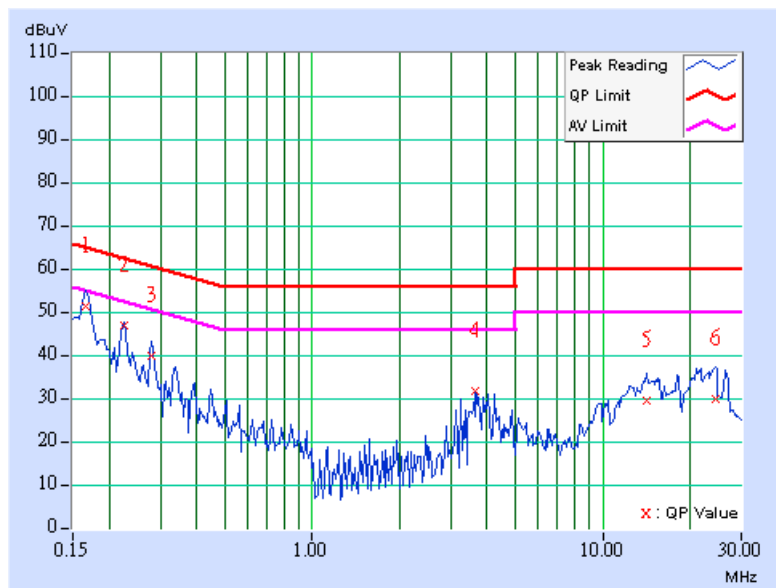




<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.166	0.10	50.75	-	50.85	-	65.18
2	0.224	0.10	46.33	-	46.43	-	62.66	52.66	-16.23	-
3	0.279	0.11	39.40	-	39.51	-	60.85	50.85	-21.34	-
4	3.648	0.29	31.06	-	31.35	-	56.00	46.00	-24.65	-
5	14.121	0.55	28.90	-	29.45	-	60.00	50.00	-30.55	-
6	24.348	0.69	29.33	-	30.02	-	60.00	50.00	-29.98	-

- 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.



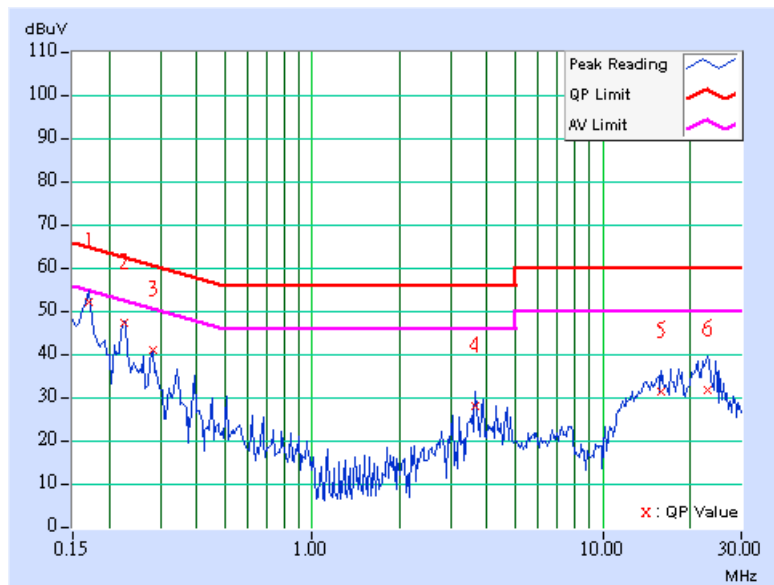




<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.170	0.10	51.34	-	51.44	-	64.98
2	0.224	0.10	46.23	-	46.33	-	62.66	52.66	-16.33	-
3	0.283	0.11	39.94	-	40.05	-	60.73	50.73	-20.69	-
4	3.656	0.30	27.12	-	27.42	-	56.00	46.00	-28.58	-
5	15.984	0.74	30.60	-	31.34	-	60.00	50.00	-28.66	-
6	23.016	1.06	30.75	-	31.81	-	60.00	50.00	-28.19	-

- 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.

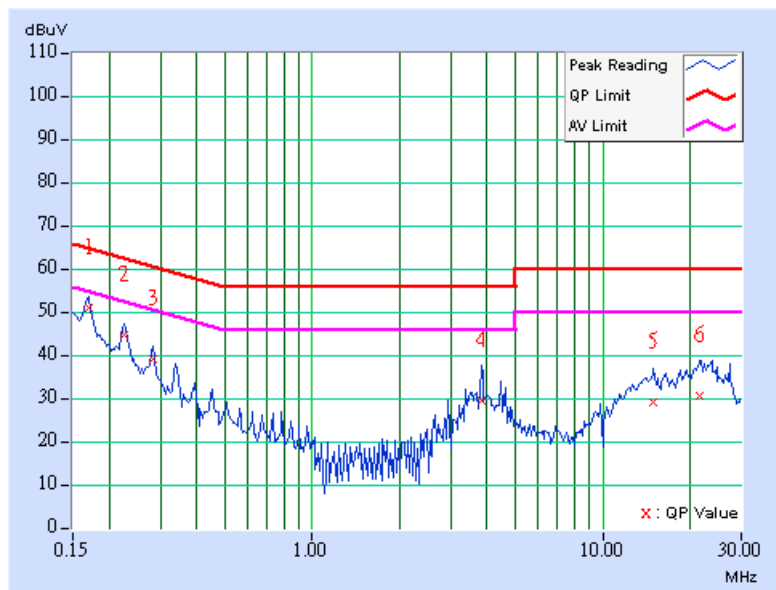




<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.170	0.10	50.60	-	50.70	-	64.98
2	0.224	0.10	44.30	-	44.40	-	62.66	52.66	-18.26	-
3	0.283	0.11	38.46	-	38.57	-	60.73	50.73	-22.17	-
4	3.832	0.30	29.11	-	29.41	-	56.00	46.00	-26.59	-
5	14.961	0.56	28.66	-	29.22	-	60.00	50.00	-30.78	-
6	21.605	0.67	30.05	-	30.72	-	60.00	50.00	-29.28	-

- 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.

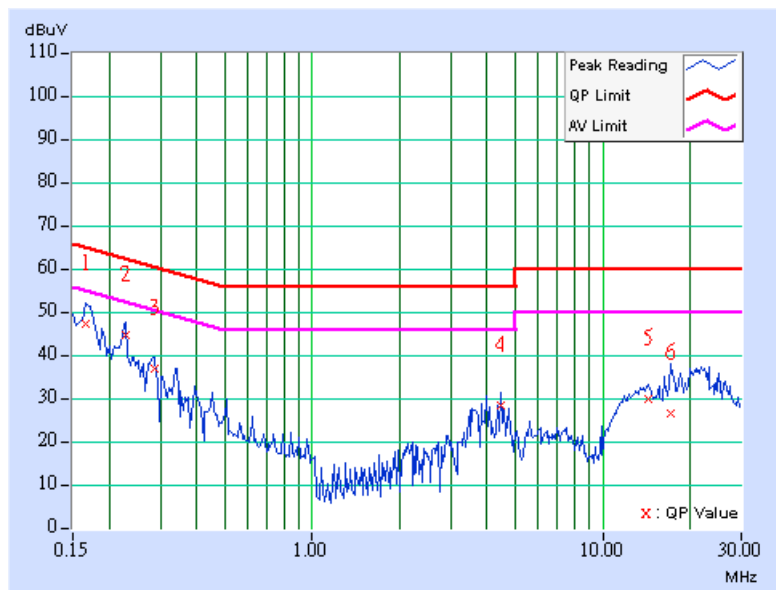




<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.166	0.10	46.75	-	46.85	-	65.18
2	0.228	0.10	44.04	-	44.14	-	62.52	52.52	-18.38	-
3	0.287	0.11	36.19	-	36.30	-	60.62	50.62	-24.32	-
4	4.465	0.33	27.78	-	28.11	-	56.00	46.00	-27.89	-
5	14.371	0.68	29.19	-	29.87	-	60.00	50.00	-30.13	-
6	17.180	0.80	25.85	-	26.65	-	60.00	50.00	-33.35	-

- 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.

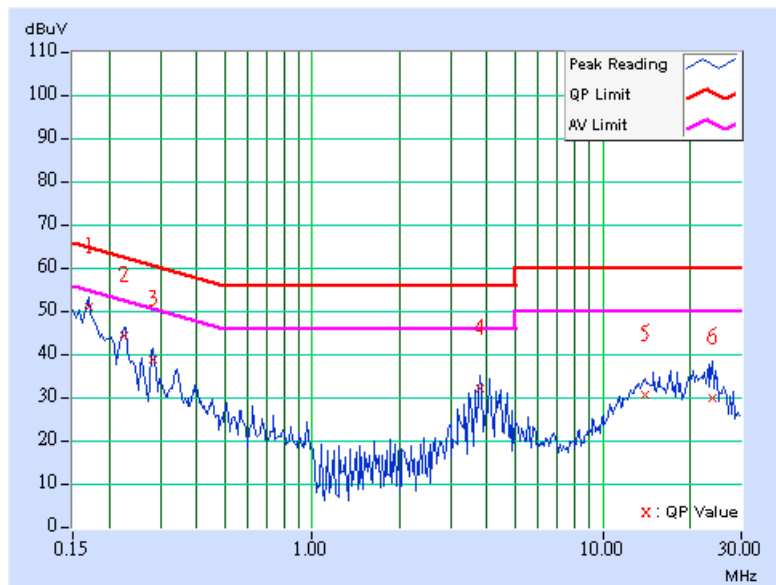




<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Gary Chang

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	0.170	0.10	50.34	-	50.44	-	64.98
2	0.224	0.10	43.73	-	43.83	-	62.66	52.66	-18.83	-
3	0.283	0.11	38.20	-	38.31	-	60.73	50.73	-22.43	-
4	3.785	0.30	31.48	-	31.78	-	56.00	46.00	-24.22	-
5	14.059	0.55	30.00	-	30.55	-	60.00	50.00	-29.45	-
6	23.746	0.69	29.30	-	29.99	-	60.00	50.00	-30.01	-

- 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 1 ~ 25 GHz, 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	ESI7	100033	Jun, 08, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Feb. 03, 2005
HORN Antenna SCHWARZBECK	9120D	9120D-408	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170243	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10633	Jan. 15, 2005
Preamplifier Agilent	8449B	3008A01964	Jan. 27, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Mar. 05, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Mar. 05, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	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 2.
  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 IC4924-3.



#### 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. 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.

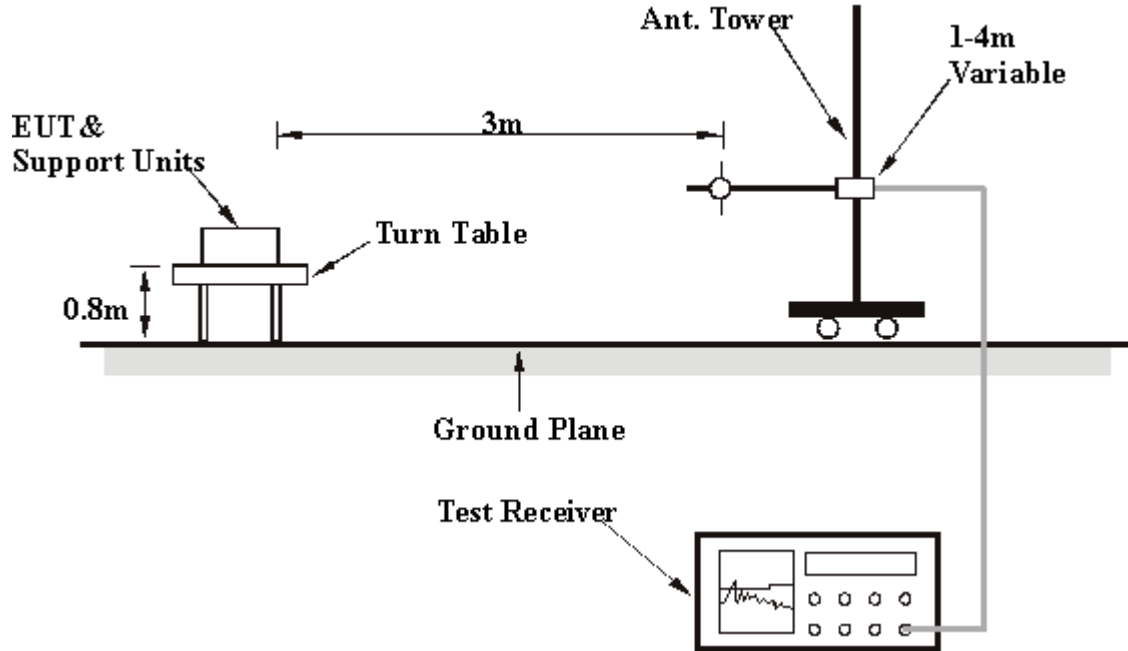
**NOTE:**

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

## Test Mode 1

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	100.69	40.78 QP	43.50	-2.72	1.15 H	85	29.58	11.20
2	166.56	39.51 QP	43.50	-3.99	2.54 H	159	25.35	14.16
3	198.90	38.00 QP	43.50	-5.50	1.00 H	216	26.46	11.54
4	233.18	39.08 QP	46.00	-6.92	1.23 H	86	26.27	12.81
5	265.51	40.37 QP	46.00	-5.63	1.00 H	50	26.53	13.84
6	298.26	36.72 QP	46.00	-9.28	2.56 H	41	21.94	14.78
7	364.43	33.10 QP	46.00	-12.90	2.58 H	325	16.92	16.18
8	398.30	30.68 QP	46.00	-15.32	1.00 H	6	13.76	16.92
9	633.30	38.87 QP	46.00	-7.13	1.90 H	259	17.16	21.71
10	799.16	42.12 QP	46.00	-3.88	1.00 H	346	18.35	23.77

**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	98.77	40.88 QP	43.50	-2.62	1.00 V	177	29.82	11.06
2	132.59	37.07 QP	43.50	-6.43	1.00 V	44	23.42	13.65
3	165.79	38.07 QP	43.50	-5.43	1.00 V	335	23.84	14.23
4	200.03	31.67 QP	43.50	-11.83	1.00 V	68	20.21	11.46
5	231.98	38.84 QP	46.00	-7.16	1.91 V	89	26.11	12.73
6	566.51	40.60 QP	46.00	-5.40	1.00 V	248	20.31	20.29
7	633.17	42.43 QP	46.00	-3.57	2.02 V	217	20.72	21.71

- 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.



## Test Mode 2

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

### 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	67.95	28.75 QP	40.00	-11.25	1.93 H	302	15.58	13.17
2	99.51	39.00 QP	43.50	-4.50	1.61 H	357	27.89	11.11
3	166.56	36.03 QP	43.50	-7.47	2.52 H	249	21.87	14.16
4	198.84	38.41 QP	43.50	-5.09	1.50 H	257	26.86	11.55
5	399.70	3.57 QP	46.00	-42.43	1.18 H	347	-13.38	16.95
6	800.20	40.32 QP	46.00	-5.68	1.00 H	175	16.55	23.77
7	932.00	35.08 QP	46.00	-10.92	1.04 H	120	9.47	25.61

### 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	99.88	39.90 QP	43.50	-3.60	1.00 V	85	28.77	11.13
2	133.69	30.38 QP	43.50	-13.12	1.00 V	154	16.66	13.72
3	166.50	33.86 QP	43.50	-9.64	1.00 V	37	19.70	14.16
4	199.80	36.61 QP	43.50	-6.89	1.00 V	353	25.13	11.48
5	232.00	27.81 QP	46.00	-18.19	1.01 V	64	15.08	12.73
6	397.80	32.05 QP	46.00	-13.95	1.00 V	290	15.14	16.91
7	532.78	36.84 QP	46.00	-9.16	1.70 V	264	17.41	19.43
8	657.78	41.28 QP	46.00	-4.72	1.00 V	81	19.25	22.03
9	799.88	37.54 QP	46.00	-8.46	1.73 V	95	13.77	23.77

- 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.



**Test Mode 3**

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	99.70	39.10 QP	43.50	-4.40	1.31 H	84	27.98	11.12
2	133.80	31.50 QP	43.50	-12.00	1.65 H	79	17.77	13.73
3	165.40	38.10 QP	43.50	-5.40	1.67 H	94	23.84	14.26
4	199.80	37.10 QP	43.50	-6.40	1.07 H	248	25.62	11.48
5	234.50	38.70 QP	46.00	-7.30	1.36 H	38	25.80	12.90
6	265.50	38.40 QP	46.00	-7.60	1.52 H	77	24.56	13.84
7	299.80	37.10 QP	46.00	-8.90	1.04 H	34	22.29	14.81
8	362.80	32.80 QP	46.00	-13.20	1.31 H	62	16.66	16.14
9	400.80	32.50 QP	46.00	-13.50	1.06 H	92	15.52	16.98
10	632.40	35.10 QP	46.00	-10.90	1.15 H	81	13.40	21.70
11	800.90	41.80 QP	46.00	-4.20	1.37 H	197	18.02	23.78

**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	99.60	39.20 QP	43.50	-4.30	1.52 V	63	28.08	11.12
2	133.50	36.10 QP	43.50	-7.40	1.09 V	214	22.39	13.71
3	167.90	35.40 QP	43.50	-8.10	1.68 V	52	21.36	14.04
4	199.63	32.90 QP	43.50	-10.60	1.08 V	268	21.41	11.49
5	232.60	37.20 QP	46.00	-8.80	1.06 V	91	24.43	12.77
6	500.40	35.20 QP	46.00	-10.80	1.94 V	74	16.48	18.72
7	575.00	39.10 QP	46.00	-6.90	1.42 V	84	18.57	20.53
8	635.10	41.80 QP	46.00	-4.20	1.57 V	234	20.07	21.73

- 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.



### Test Mode 4

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

#### 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	99.50	41.50 QP	43.50	-2.00	1.07 H	85	30.39	11.11
2	167.50	40.20 QP	43.50	-3.30	1.15 H	332	26.12	14.08
3	199.50	37.50 QP	43.50	-6.00	1.02 H	304	26.00	11.50
4	235.20	38.40 QP	46.00	-7.60	1.15 H	62	25.46	12.94
5	264.50	41.50 QP	46.00	-4.50	1.05 H	335	27.70	13.80
6	351.40	32.50 QP	46.00	-13.50	1.44 H	85	16.61	15.89
7	400.20	32.80 QP	46.00	-13.20	1.07 H	31	15.84	16.96
8	599.50	34.50 QP	46.00	-11.50	1.18 H	98	13.26	21.24
9	732.50	38.40 QP	46.00	-7.60	1.02 H	62	15.13	23.27

#### 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)
<b>1</b>	<b>99.50</b>	<b>42.80 QP</b>	<b>43.50</b>	<b>-0.70</b>	<b>1.24 V</b>	<b>54</b>	<b>31.69</b>	<b>11.11</b>
2	133.50	38.50 QP	43.50	-5.00	1.07 V	84	24.79	13.71
3	168.20	39.50 QP	43.50	-4.00	1.15 V	82	25.48	14.02
4	199.80	32.80 QP	43.50	-10.70	1.02 V	112	21.32	11.48
5	232.50	39.50 QP	46.00	-6.50	1.12 V	352	26.73	12.77
6	545.20	39.50 QP	46.00	-6.50	1.02 V	325	19.80	19.70
7	635.60	41.85 QP	46.00	-4.15	1.32 V	85	20.11	21.74

- 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.



4.2.8 TEST RESULTS (A)

Test Mode 1

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	2386.90	56.12 PK	74.00	-17.88	1.26 H	225	24.52	31.60
1	2386.90	48.93 AV	54.00	-5.07	1.26 H	225	17.33	31.60
2	*2412.00	107.42 PK			1.26 H	225	75.72	31.70
2	*2412.00	100.23 AV			1.26 H	225	68.53	31.70
3	2688.00	47.39 PK	74.00	-26.61	1.28 H	339	14.69	32.70
4	4824.00	56.06 PK	74.00	-17.94	1.75 H	284	18.48	37.58
4	4824.00	51.56 AV	54.00	-2.44	1.75 H	284	13.98	37.58

**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	2386.90	52.65 PK	74.00	-21.35	1.50 V	199	21.05	31.60
1	2386.90	45.37 AV	54.00	-8.63	1.50 V	199	13.77	31.60
2	*2412.00	103.95 PK			1.50 V	199	72.25	31.70
2	*2412.00	96.67 AV			1.50 V	199	64.97	31.70
3	2688.00	49.39 PK	74.00	-24.61	1.00 V	17	16.69	32.70
4	4824.00	53.01 PK	74.00	-20.99	1.36 V	167	15.43	37.58
4	4824.00	47.51 AV	54.00	-6.49	1.36 V	167	9.93	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	108.26 PK			1.24 H	225	76.41	31.85
1	*2437.00	100.63 AV			1.24 H	225	68.78	31.85
2	2688.00	46.41 PK	74.00	-27.59	1.43 H	347	13.71	32.70
3	4874.00	54.06 PK	74.00	-19.94	1.02 H	173	16.40	37.66
3	4874.00	49.29 AV	54.00	-4.71	1.02 H	173	11.63	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	104.72 PK			1.53 V	201	72.87	31.85
1	*2437.00	96.97 AV			1.53 V	201	65.12	31.85
2	2688.00	48.39 PK	74.00	-25.61	1.00 V	258	15.69	32.70
3	4874.00	51.92 PK	74.00	-22.08	1.10 V	189	14.26	37.66
3	4874.00	46.85 AV	54.00	-7.15	1.10 V	189	9.19	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	*2412.00	107.32 PK			1.25 H	224	75.62	31.70
1	*2412.00	100.02 AV			1.25 H	224	68.32	31.70
2	2487.30	56.42 PK	74.00	-17.58	1.25 H	224	24.27	32.15
2	2487.30	49.12 AV	54.00	-4.88	1.25 H	224	16.97	32.15
3	2688.00	46.19 PK	74.00	-27.81	1.12 H	319	13.49	32.70
4	4924.00	54.78 PK	74.00	-19.22	1.51 H	241	17.03	37.74
4	4924.00	51.22 AV	54.00	-2.78	1.51 H	241	13.47	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	105.38 PK			1.50 V	204	73.38	32.00
1	*2462.00	97.83 AV			1.50 V	204	65.83	32.00
2	2487.30	54.48 PK	74.00	-19.52	1.50 V	204	22.33	32.15
2	2487.30	46.93 AV	54.00	-7.07	1.50 V	204	14.78	32.15
3	2688.00	48.37 PK	74.00	-25.63	1.24 V	27	15.67	32.70
4	4924.00	54.02 PK	74.00	-19.98	1.26 V	242	16.28	37.74
4	4924.00	49.12 AV	54.00	-4.88	1.26 V	242	11.38	37.74

- 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. “ \* “ : Fundamental frequency.

**Test Mode 2**

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	2386.90	58.62 PK	74.00	-15.38	1.05 H	169	27.02	31.60
1	2386.90	51.07 AV	54.00	-2.93	1.05 H	169	19.47	31.60
2	*2412.00	109.92 PK			1.05 H	169	78.22	31.70
2	*2412.00	102.37 AV			1.05 H	169	70.67	31.70
3	2688.00	47.03 PK	74.00	-26.97	1.24 H	295	14.33	32.70
4	4824.00	53.59 PK	74.00	-20.41	1.24 H	295	16.01	37.58
4	4824.00	45.68 AV	54.00	-8.32	1.24 H	295	8.10	37.58
5	7236.00	55.28 PK	74.00	-18.72	1.11 H	248	11.14	44.14
5	7236.00	46.38 AV	54.00	-7.62	1.11 H	248	2.24	44.14

**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	2386.90	54.32 PK	74.00	-19.68	1.58 V	198	22.72	31.60
1	2386.90	46.94 AV	54.00	-7.06	1.58 V	198	15.34	31.60
2	*2412.00	105.62 PK			1.58 V	198	73.92	31.70
2	*2412.00	98.24 AV			1.58 V	198	66.54	31.70
3	2688.00	47.49 PK	74.00	-26.51	1.42 V	189	14.79	32.70
4	4824.00	54.02 PK	74.00	-19.98	1.78 V	190	16.44	37.58
4	4824.00	44.59 AV	54.00	-9.41	1.78 V	190	7.01	37.58
5	7236.00	57.29 PK	74.00	-16.71	1.59 V	201	13.16	44.14
5	7236.00	45.79 AV	54.00	-8.21	1.59 V	201	1.66	44.14

- 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. “ \* “ : Fundamental frequency.





<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	109.66 PK			1.07 H	171	77.81	31.85
1	*2437.00	101.89 AV			1.07 H	171	70.04	31.85
2	2688.00	46.48 PK	74.00	-27.52	1.00 H	47	13.78	32.70
3	4874.00	53.99 PK	74.00	-20.01	1.45 H	95	16.33	37.66
3	4874.00	47.26 AV	54.00	-6.74	1.45 H	95	9.60	37.66
4	7311.00	54.14 PK	74.00	-19.86	1.44 H	12	9.82	44.33
4	7311.00	42.58 AV	54.00	-11.42	1.44 H	12	-1.74	44.33

**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	107.65 PK			1.55 V	197	75.80	31.85
1	*2437.00	100.26 AV			1.55 V	197	68.41	31.85
2	2688.00	46.70 PK	74.00	-27.30	1.20 V	303	14.00	32.70
3	4874.00	57.66 PK	74.00	-16.34	1.22 V	31	20.00	37.66
3	4874.00	51.48 AV	54.00	-2.52	1.22 V	31	13.82	37.66
4	7311.00	55.98 PK	74.00	-18.02	1.20 V	325	11.66	44.33
4	7311.00	43.31 AV	54.00	-10.69	1.20 V	325	-1.01	44.33

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	109.94 PK			1.05 H	161	77.94	32.00
1	*2462.00	102.20 AV			1.05 H	161	70.20	32.00
2	2487.30	58.04 PK	74.00	-15.96	1.05 H	161	25.89	32.15
2	2487.30	50.30 AV	54.00	-3.70	1.05 H	161	18.15	32.15
3	2688.00	43.17 PK	74.00	-30.83	1.50 H	190	10.47	32.70
4	4924.00	51.79 PK	74.00	-22.21	1.26 H	48	14.05	37.74
4	4924.00	49.93 AV	54.00	-4.07	1.26 H	48	12.19	37.74
5	7386.00	55.54 PK	74.00	-18.46	1.00 H	289	10.97	44.57
5	7386.00	42.78 AV	54.00	-11.22	1.00 H	289	-1.79	44.57

**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	106.60 PK			1.32 V	354	74.60	32.00
1	*2462.00	99.52 AV			1.32 V	354	67.52	32.00
2	2487.30	55.70 PK	74.00	-18.30	1.32 V	354	23.55	32.15
2	2487.30	48.62 AV	54.00	-5.38	1.32 V	354	16.47	32.15
3	2688.00	45.34 PK	74.00	-28.66	1.00 V	124	12.64	32.70
4	4924.00	58.12 PK	74.00	-15.88	1.32 V	28	20.38	37.74
4	4924.00	51.70 AV	54.00	-2.30	1.32 V	28	13.96	37.74
5	7386.00	58.71 PK	74.00	-15.29	1.15 V	257	14.14	44.57
5	7386.00	47.84 AV	54.00	-6.16	1.15 V	257	3.27	44.57

- 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. “ \* ” : Fundamental frequency.



### Test Mode 3

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

#### 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	2386.00	56.90 PK	74.00	-17.10	1.35 H	65	25.30	31.60
1	2386.00	49.10 AV	54.00	-4.90	1.35 H	65	17.50	31.60
2	*2412.00	108.70 PK			1.35 H	65	77.00	31.70
2	*2412.00	100.90 AV			1.35 H	65	69.20	31.70
3	2688.00	48.10 PK	74.00	-25.90	1.04 H	85	15.40	32.70
4	4824.00	55.70 PK	74.00	-18.30	1.04 H	85	18.12	37.58
4	4824.00	51.70 AV	54.00	-2.30	1.04 H	85	14.12	37.58

#### 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	2388.00	53.80 PK	74.00	-20.20	1.31 V	62	22.20	31.60
1	2388.00	46.70 AV	54.00	-7.30	1.31 V	62	15.10	31.60
2	*2412.00	104.80 PK			1.71 V	82	73.10	31.70
2	*2412.00	97.10 AV			1.71 V	82	65.40	31.70
3	2688.00	49.17 PK	74.00	-24.83	1.31 V	62	16.47	32.70
4	4824.00	52.10 PK	74.00	-21.90	1.64 V	71	14.52	37.58
4	4824.00	48.00 AV	54.00	-6.00	1.64 V	71	10.42	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	109.00 PK			1.41 H	82	77.15	31.85
1	*2437.00	101.40 AV			1.41 H	82	69.55	31.85
2	2688.00	47.10 PK	74.00	-26.90	1.87 H	82	14.40	32.70
3	4874.00	54.70 PK	74.00	-19.30	1.13 H	38	17.04	37.66
3	4874.00	49.50 AV	54.00	-4.50	1.13 H	38	11.84	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	105.70 PK			1.67 V	92	73.85	31.85
1	*2437.00	97.80 AV			1.67 V	92	65.95	31.85
2	2688.00	48.90 PK	74.00	-25.10	1.62 V	74	16.20	32.70
3	4874.00	52.70 PK	74.00	-21.30	1.82 V	357	15.04	37.66
3	4874.00	47.80 AV	54.00	-6.20	1.82 V	357	10.14	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	108.80 PK			1.75 H	34	76.80	32.00
1	*2462.00	101.00 AV			1.75 H	34	69.00	32.00
2	2487.00	57.40 PK	74.00	-16.60	1.75 H	34	25.25	32.15
2	2487.00	50.10 AV	54.00	-3.90	1.75 H	34	17.95	32.15
3	2688.00	47.50 PK	74.00	-26.50	1.82 H	51	14.80	32.70
4	4924.00	55.70 PK	74.00	-18.30	1.82 H	51	17.96	37.74
4	4924.00	51.70 AV	54.00	-2.30	1.82 H	51	13.96	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	105.70 PK			1.58 V	34	73.70	32.00
1	*2462.00	98.00 AV			1.58 V	34	66.00	32.00
2	2487.00	55.10 PK	74.00	-18.90	1.58 V	34	22.95	32.15
2	2487.00	47.00 AV	54.00	-7.00	1.58 V	34	14.85	32.15
3	2688.00	48.70 PK	74.00	-25.30	1.31 V	74	16.00	32.70
4	4924.00	55.10 PK	74.00	-18.90	1.74 V	283	17.36	37.74
4	4924.00	49.80 AV	54.00	-4.20	1.74 V	283	12.06	37.74

- 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.“ \* “ : Fundamental frequency.



### Test Mode 4

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

#### 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	2387.60	58.50 PK	74.00	-15.50	1.12 H	35	26.90	31.60
1	2387.60	50.40 AV	54.00	-3.60	1.12 H	35	18.80	31.60
2	*2412.00	109.20 PK			1.12 H	35	77.50	31.70
2	*2412.00	102.10 AV			1.12 H	35	70.40	31.70
3	2688.00	48.20 PK	74.00	-25.80	1.04 H	227	15.50	32.70
4	4824.00	57.40 PK	74.00	-16.60	1.72 H	34	19.82	37.58
4	4824.00	51.40 AV	54.00	-2.60	1.72 H	34	13.82	37.58

#### 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	2388.00	53.80 PK	74.00	-20.20	1.08 V	321	22.20	31.60
1	2388.00	46.20 AV	54.00	-7.80	1.08V	321	14.60	31.60
2	*2412.00	105.40 PK			1.08 V	321	73.70	31.70
2	*2412.00	98.20 AV			1.08 V	321	66.50	31.70
3	2688.00	50.40 PK	74.00	-23.60	1.05 V	85	17.70	32.70
4	4824.00	53.50 PK	74.00	-20.50	1.14 V	352	15.92	37.58
4	4824.00	48.20 AV	54.00	-5.80	1.14 V	352	10.62	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	110.50 PK			1.35 H	35	78.65	31.85
1	*2437.00	102.80 AV			1.35 H	35	70.95	31.85
2	2688.00	47.50 PK	74.00	-26.50	1.32 H	115	14.80	32.70
3	4874.00	55.40 PK	74.00	-18.60	1.13 H	62	17.74	37.66
3	4874.00	49.80 AV	54.00	-4.20	1.13 H	62	12.14	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	106.20 PK			1.74 V	95	74.35	31.85
1	*2437.00	97.90 AV			1.74 V	95	66.05	31.85
2	2688.00	48.20 PK	74.00	-25.80	1.14 V	245	15.50	32.70
3	4874.00	53.20 PK	74.00	-20.80	1.52 V	77	15.54	37.66
3	4874.00	48.50 AV	54.00	-5.50	1.52 V	77	10.84	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

#### 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	109.40 PK			1.13 H	62	77.40	32.00
1	*2462.00	101.90 AV			1.13 H	62	69.90	32.00
2	2488.00	57.40 PK	74.00	-16.60	1.13 H	62	25.24	32.16
2	2488.00	51.10 AV	54.00	-2.90	1.13 H	62	18.94	32.16
3	2688.00	47.50 PK	74.00	-26.50	1.85 H	95	14.80	32.70
4	4924.00	55.70 PK	74.00	-18.30	1.02 H	335	17.96	37.74
4	4924.00	51.90 AV	54.00	-2.10	1.02 H	335	14.16	37.74

#### 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	107.10 PK			1.02 V	352	75.10	32.00
1	*2462.00	99.10 AV			1.02 V	352	67.10	32.00
2	2488.20	55.40 PK	74.00	-18.60	1.02 V	352	23.24	32.16
2	2488.20	48.20 AV	54.00	-5.80	1.02 V	352	16.04	32.16
3	2688.00	49.40 PK	74.00	-24.60	1.17 V	32	16.70	32.70
4	4924.00	55.40 PK	74.00	-18.60	1.82 V	272	17.66	37.74
4	4924.00	50.10 AV	54.00	-3.90	1.82 V	272	12.36	37.74

- 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. “ \* “ : Fundamental frequency.



## 4.2.9 TEST RESULTS (B)

## Test Mode 1

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	59.44 PK	74.00	-14.56	1.06 H	171	27.83	31.61
1	2390.00	50.07 AV	54.00	-3.93	1.06 H	171	18.46	31.61
2	*2412.00	105.08 PK			1.06 H	171	73.38	31.70
2	*2412.00	95.71 AV			1.06 H	171	64.01	31.70
3	2688.00	47.16 PK	74.00	-26.84	1.25 H	349	14.46	32.70
4	4824.00	51.85 PK	74.00	-22.15	1.01 H	161	14.27	37.58
4	4824.00	38.94 AV	54.00	-15.06	1.01 H	161	1.36	37.58

**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	51.89 PK	74.00	-22.11	2.10 V	20	20.28	31.61
1	2390.00	43.64 AV	54.00	-10.36	2.10 V	20	12.03	31.61
2	*2412.00	97.53 PK			2.10 V	20	65.83	31.70
2	*2412.00	89.28 AV			2.10 V	20	57.58	31.70
3	2688.00	48.35 PK	74.00	-25.65	1.00 V	318	15.65	32.70
4	4824.00	52.78 PK	74.00	-21.22	1.00 V	247	15.20	37.58
4	4824.00	40.18 AV	54.00	-13.82	1.00 V	247	2.60	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	106.30 PK			1.06 H	175	74.45	31.85
1	*2437.00	95.57 AV			1.06 H	175	63.72	31.85
2	2688.00	46.16 PK	74.00	-27.84	1.42 H	358	13.46	32.70
3	4874.00	50.28 PK	74.00	-23.72	1.00 H	238	12.62	37.66
3	4874.00	39.17 AV	54.00	-14.83	1.00 H	238	1.51	-14.83

**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	98.15 PK			2.05 V	18	66.30	31.85
1	*2437.00	88.13 AV			2.05 V	18	56.28	31.85
2	2688.00	49.51 PK	74.00	-24.49	1.00 V	13	16.81	32.70
3	4874.00	52.38 PK	74.00	-21.62	1.30 V	147	14.72	37.66
3	4874.00	40.85 AV	54.00	-13.15	1.30 V	147	3.19	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	105.16 PK			1.00 H	185	73.16	32.00
1	*2462.00	95.25 AV			1.00 H	185	63.25	32.00
2	2483.50	58.41 PK	74.00	-15.59	1.00 H	185	26.28	32.13
2	2483.50	48.50 AV	54.00	-5.50	1.00 H	185	16.37	32.13
3	2688.00	45.38 PK	74.00	-28.62	1.49 H	347	12.68	32.70
4	4924.00	53.68 PK	74.00	-20.32	1.42 H	332	15.94	37.74
4	4924.00	42.39 AV	54.00	-11.61	1.42 H	332	4.65	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	98.44 PK			2.08 V	6	66.44	32.00
1	*2462.00	88.88 AV			2.08 V	6	56.88	32.00
2	2483.50	51.69 PK	74.00	-22.31	2.08 V	6	19.56	32.13
2	2483.50	42.13 AV	54.00	-11.87	2.08 V	6	10.00	32.13
3	2688.00	49.30 PK	74.00	-24.70	1.10 V	13	16.60	32.70
4	4924.00	53.74 PK	74.00	-20.26	1.00 V	147	16.00	37.74
4	4924.00	41.36 AV	54.00	-12.64	1.00 V	147	3.62	37.74

- 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. “ \* “ : Fundamental frequency.



## Test Mode 2

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

### 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	61.54 PK	74.00	-12.46	1.21 H	334	29.93	31.61
1	2390.00	50.25 AV	54.00	-3.75	1.21 H	334	18.64	31.61
2	*2412.00	107.18 PK			1.21 H	334	75.48	31.70
2	*2412.00	95.89 AV			1.21 H	334	64.19	31.70
3	2688.00	47.14 PK	74.00	-26.86	1.38 H	261	14.44	32.70
4	4824.00	54.56 PK	74.00	-19.44	1.28 H	216	16.98	37.58
4	4824.00	40.39 AV	54.00	-13.61	1.28 H	216	2.81	37.58

### 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	54.49 PK	74.00	-19.51	1.69 V	260	22.88	31.61
1	2390.00	44.37 AV	54.00	-9.63	1.69 V	260	12.76	31.61
2	*2412.00	100.13 PK			1.69 V	260	68.43	31.70
2	*2412.00	90.01 AV			1.69 V	260	58.31	31.70
3	2688.00	45.39 PK	74.00	-28.61	1.00 V	332	12.69	32.70
4	4824.00	52.14 PK	74.00	-21.86	1.32 V	116	14.56	37.58
4	4824.00	38.71 AV	54.00	-15.29	1.32 V	116	1.13	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	106.68 PK			1.20 H	313	74.83	31.85
1	*2437.00	96.36 AV			1.20 H	313	64.51	31.85
2	2688.00	46.85 PK	74.00	-27.15	1.10 H	287	14.15	32.70
3	4874.00	54.07 PK	74.00	-19.93	1.37 H	321	16.41	37.66
3	4874.00	41.52 AV	54.00	-12.48	1.37 H	321	3.86	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	100.35 PK			1.60 V	254	68.50	31.85
1	*2437.00	89.97 AV			1.60 V	254	58.12	31.85
2	2688.00	44.71 PK	74.00	-29.29	1.20 V	174	12.01	32.70
3	4874.00	51.89 PK	74.00	-22.11	1.30 V	338	14.23	37.66
3	4874.00	38.22 AV	54.00	-15.78	1.30 V	338	0.56	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	28deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	106.78 PK			1.26 H	310	74.78	32.00
1	*2462.00	96.49 AV			1.26 H	310	64.49	32.00
2	2483.50	60.03 PK	74.00	-13.97	1.26 H	310	27.90	32.13
2	2483.50	49.74 AV	54.00	-4.26	1.26 H	310	17.61	32.13
3	2688.00	44.61 PK	74.00	-29.39	1.10 H	325	11.91	32.70
4	4924.00	53.17 PK	74.00	-20.83	1.24 H	325	15.43	37.74
4	4924.00	41.39 AV	54.00	-12.61	1.24 H	325	3.65	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	99.80 PK			1.69 V	260	67.80	32.00
1	*2462.00	89.89 AV			1.69 V	260	57.89	32.00
2	2483.50	53.05 PK	74.00	-20.95	1.69 V	260	20.92	32.13
2	2483.50	43.14 AV	54.00	-10.86	1.69 V	260	11.01	32.13
3	2688.00	45.97 PK	74.00	-28.03	1.38 V	174	13.27	32.70
4	4924.00	52.06 PK	74.00	-21.94	1.12 V	339	14.31	37.74
4	4924.00	38.90 AV	54.00	-15.10	1.12 V	339	1.15	37.74

- 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. “ \* ” : Fundamental frequency.



**Test Mode 3**

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	59.80 PK	74.00	-14.20	1.31 H	262	28.19	31.61
1	2390.00	50.40 AV	54.00	-3.60	1.31 H	262	18.79	31.61
2	*2412.00	106.10 PK			1.31 H	262	74.40	31.70
2	*2412.00	96.00 AV			1.31 H	262	64.30	31.70
3	2688.00	48.80 PK	74.00	-25.20	1.62 H	78	16.10	32.70
4	4824.00	52.50 PK	74.00	-21.50	1.62 H	78	14.92	37.58
4	4824.00	40.40 AV	54.00	-13.60	1.62 H	78	2.82	37.58

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	52.40 PK	74.00	-21.60	1.08 V	42	20.79	31.61
1	2390.00	44.40 AV	54.00	-9.60	1.08 V	42	12.79	31.61
2	*2412.00	98.80 PK			1.08 V	42	67.10	31.70
2	*2412.00	90.70 AV			1.08 V	42	59.00	31.70
3	2688.00	47.10 PK	74.00	-26.90	1.18 V	92	14.40	32.70
4	4824.00	53.40 PK	74.00	-20.60	1.75 V	345	15.82	37.58
4	4824.00	42.40 AV	54.00	-11.60	1.75 V	345	4.82	37.58

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	107.10 PK			1.33 H	61	75.25	31.85
1	*2437.00	96.10 AV			1.33 H	61	64.25	31.85
2	2688.00	47.40 PK	74.00	-26.60	1.52 H	87	14.70	32.70
3	4874.00	51.40 PK	74.00	-22.60	1.36 H	94	13.74	37.66
3	4874.00	40.80 AV	54.00	-13.20	1.36 H	94	3.14	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	99.70 PK			1.18 V	74	67.85	31.85
1	*2437.00	89.70 AV			1.18 V	74	57.85	31.85
2	2688.00	49.10 PK	74.00	-24.90	1.62 V	281	16.40	32.70
3	4874.00	53.40 PK	74.00	-20.60	1.39 V	226	15.74	37.66
3	4874.00	42.10 AV	54.00	-11.90	1.39 V	226	4.44	37.66

- 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. “ \* “ : Fundamental frequency.





<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	106.70 PK			1.46 H	327	74.70	32.00
1	*2462.00	96.80 AV			1.46 H	327	64.80	32.00
2	2483.50	59.10 PK	74.00	-14.90	1.46 H	327	26.97	32.13
2	2483.50	49.80 AV	54.00	-4.20	1.46 H	327	17.67	32.13
3	2688.00	46.90 PK	74.00	-27.10	1.97 H	276	14.20	32.70
4	4924.00	54.40 PK	74.00	-19.60	1.52 H	187	16.66	37.74
4	4924.00	43.90 AV	54.00	-10.10	1.52 H	187	6.16	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	99.80 PK			1.39 V	251	67.80	32.00
1	*2462.00	90.40 AV			1.39 V	251	58.40	32.00
2	2483.50	52.50 PK	74.00	-21.50	1.39 V	251	20.37	32.13
2	2483.50	43.80 AV	54.00	-10.20	1.39 V	251	11.67	32.13
3	2688.00	48.70 PK	74.00	-25.30	1.07 V	352	16.00	32.70
4	4924.00	54.40 PK	74.00	-19.60	1.32 V	85	16.66	37.74
4	4924.00	42.50 AV	54.00	-11.50	1.32 V	85	4.76	37.74

- 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. “ \* “ : Fundamental frequency.



**Test Mode 4**

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

**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	60.10 PK	74.00	-13.90	1.12 H	335	28.49	31.61
1	2390.00	51.70 AV	54.00	-2.30	1.12 H	335	20.09	31.61
2	*2412.00	106.70 PK			1.12 H	335	75.00	31.70
2	*2412.00	96.80 AV			1.12 H	335	65.10	31.70
3	2688.00	48.10 PK	74.00	-25.90	1.08 H	68	15.40	32.70
4	4824.00	52.80 PK	74.00	-21.20	1.16 H	55	15.22	37.58
4	4824.00	40.00 AV	54.00	-14.00	1.16 H	55	2.42	37.58

**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	52.70 PK	74.00	-21.30	1.65 V	352	21.09	31.61
1	2390.00	44.50 AV	54.00	-9.50	1.65 V	352	12.89	31.61
2	*2412.00	98.50 PK			1.65 V	352	66.80	31.70
2	*2412.00	90.80 AV			1.65 V	352	59.10	31.70
3	2688.00	48.10 PK	74.00	-25.90	1.74 V	62	15.40	32.70
4	4824.00	53.40 PK	74.00	-20.60	1.12 V	85	15.82	37.58
4	4824.00	42.10 AV	54.00	-11.90	1.12 V	85	4.52	37.58

- 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. “ \* ” : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	107.20 PK			1.13 H	25	75.35	31.85
1	*2437.00	96.80 AV			1.13 H	25	64.95	31.85
2	2688.00	47.50 PK	74.00	-26.50	1.02 H	332	14.80	32.70
3	4874.00	51.50 PK	74.00	-22.50	1.82 H	74	13.84	37.66
3	4874.00	40.80 AV	54.00	-13.20	1.82 H	74	3.14	37.66

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	99.80 PK			1.19 V	35	67.95	31.85
1	*2437.00	90.50 AV			1.19 V	35	58.65	31.85
2	2688.00	47.20 PK	74.00	-26.80	1.08 V	94	14.50	32.70
3	4874.00	53.20 PK	74.00	-20.80	1.17 V	226	15.54	37.66
3	4874.00	43.50 AV	54.00	-10.50	1.17 V	226	5.84	37.66

- 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. “ \* “ : Fundamental frequency.



<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa	<b>TESTED BY</b>	Long Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	106.80 PK			1.62 H	55	74.80	32.00
1	*2462.00	96.50 AV			1.62 H	55	64.50	32.00
2	2483.50	59.80 PK	74.00	-14.20	1.62 H	55	27.67	32.13
2	2483.50	49.90 AV	54.00	-4.10	1.62 H	55	17.77	32.13
3	2688.00	47.20 PK	74.00	-26.80	1.12 H	62	14.50	32.70
4	4924.00	54.40 PK	74.00	-19.60	1.18 H	352	16.66	37.74
4	4924.00	44.50 AV	54.00	-9.50	1.18 H	352	6.76	37.74

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	100.20 PK			1.31 V	297	68.20	32.00
1	*2462.00	89.10 AV			1.31 V	297	57.10	32.00
2	2483.50	52.00 PK	74.00	-22.00	1.31 V	297	19.87	32.13
2	2483.50	43.00 AV	54.00	-11.00	1.31 V	297	10.87	32.13
3	2688.00	47.20 PK	74.00	-26.80	1.52 V	84	14.50	32.70
4	4924.00	55.40 PK	74.00	-18.60	1.52 V	74	17.66	37.74
4	4924.00	43.20 AV	54.00	-10.80	1.52 V	74	5.46	37.74

- 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. “ \* “ : 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.



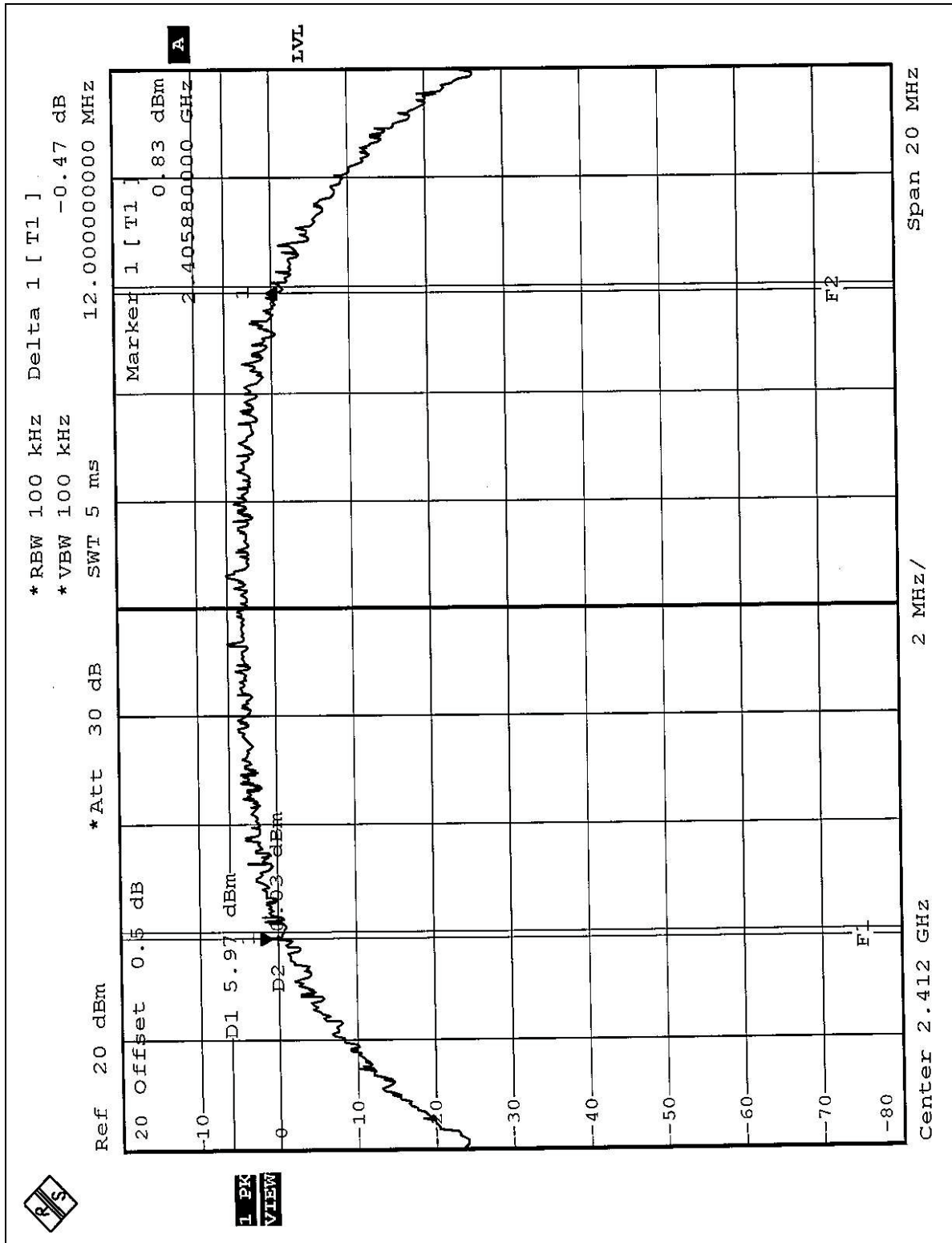
## 4.3.7 TEST RESULTS (A)

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	CCK	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 57%RH, 991hPa	<b>TESTED BY</b>	Steven Lu

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	12.00	0.5	PASS
6	2437	11.56	0.5	PASS
11	2462	11.20	0.5	PASS



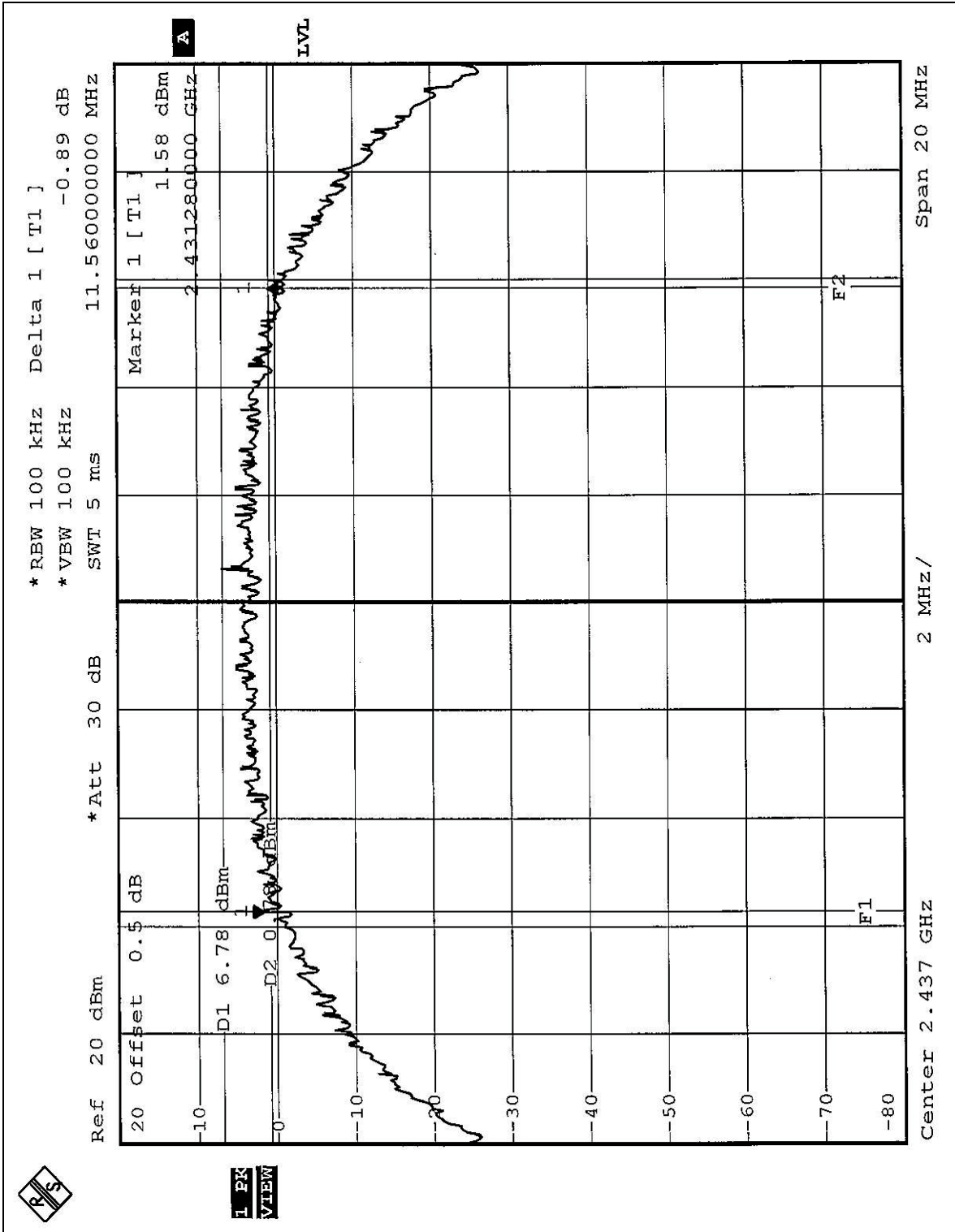
CH1





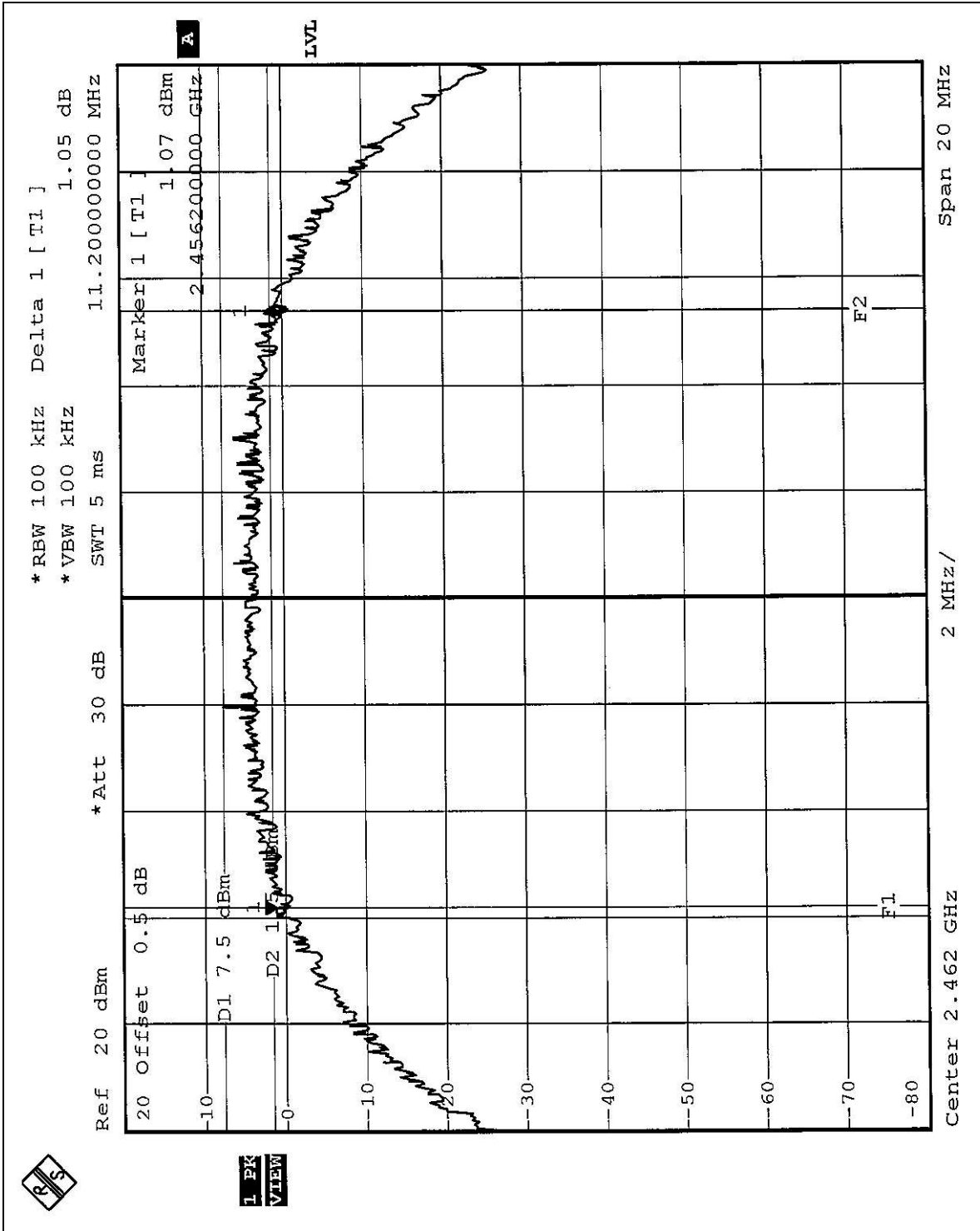


CH6





CH11





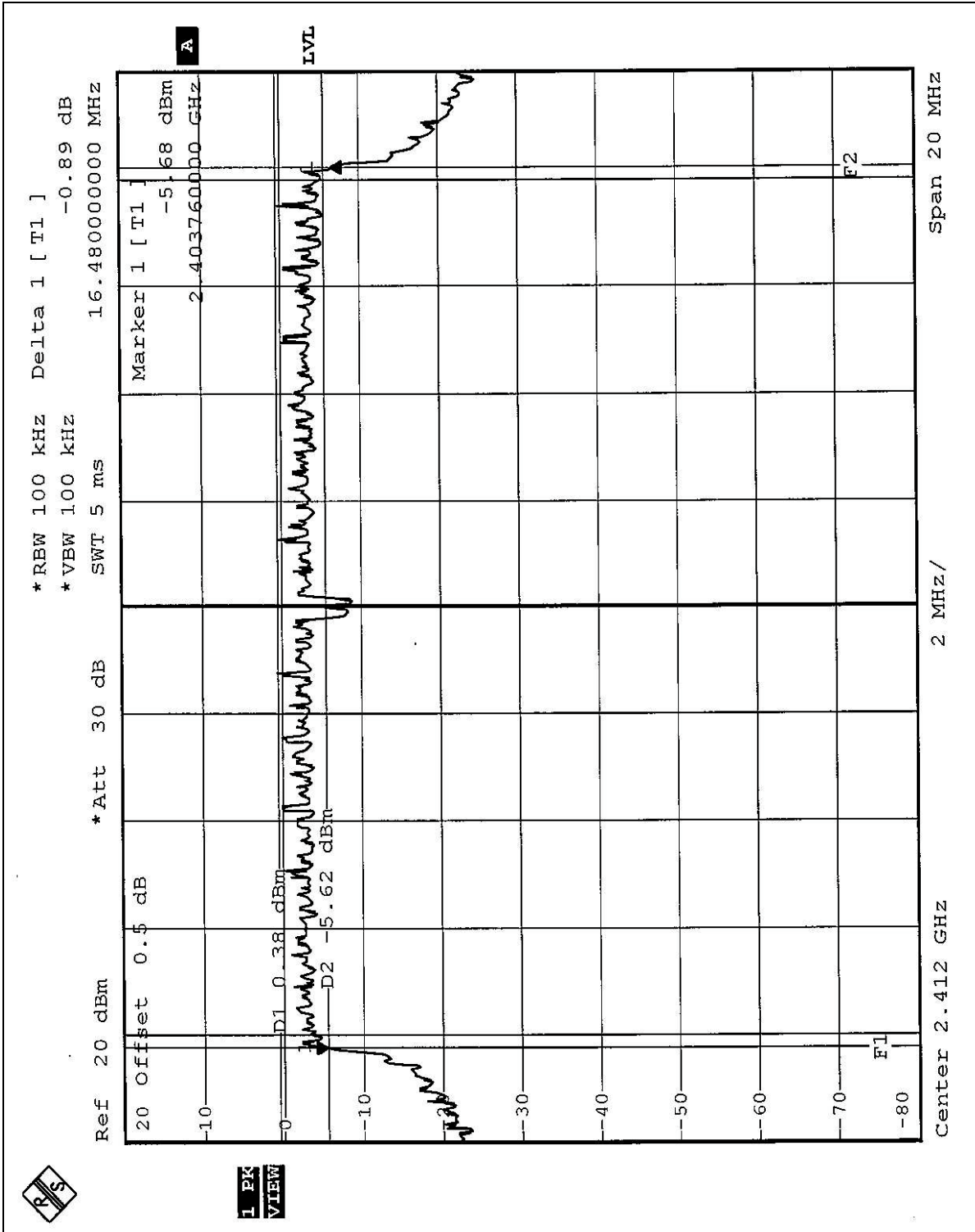
## 4.3.8 TEST RESULTS (B)

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>MODE</b>	OFDM	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 991hPa	<b>TESTED BY</b>	Steven Lu

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	16.48	0.5	PASS
6	2437	16.44	0.5	PASS
11	2462	16.40	0.5	PASS

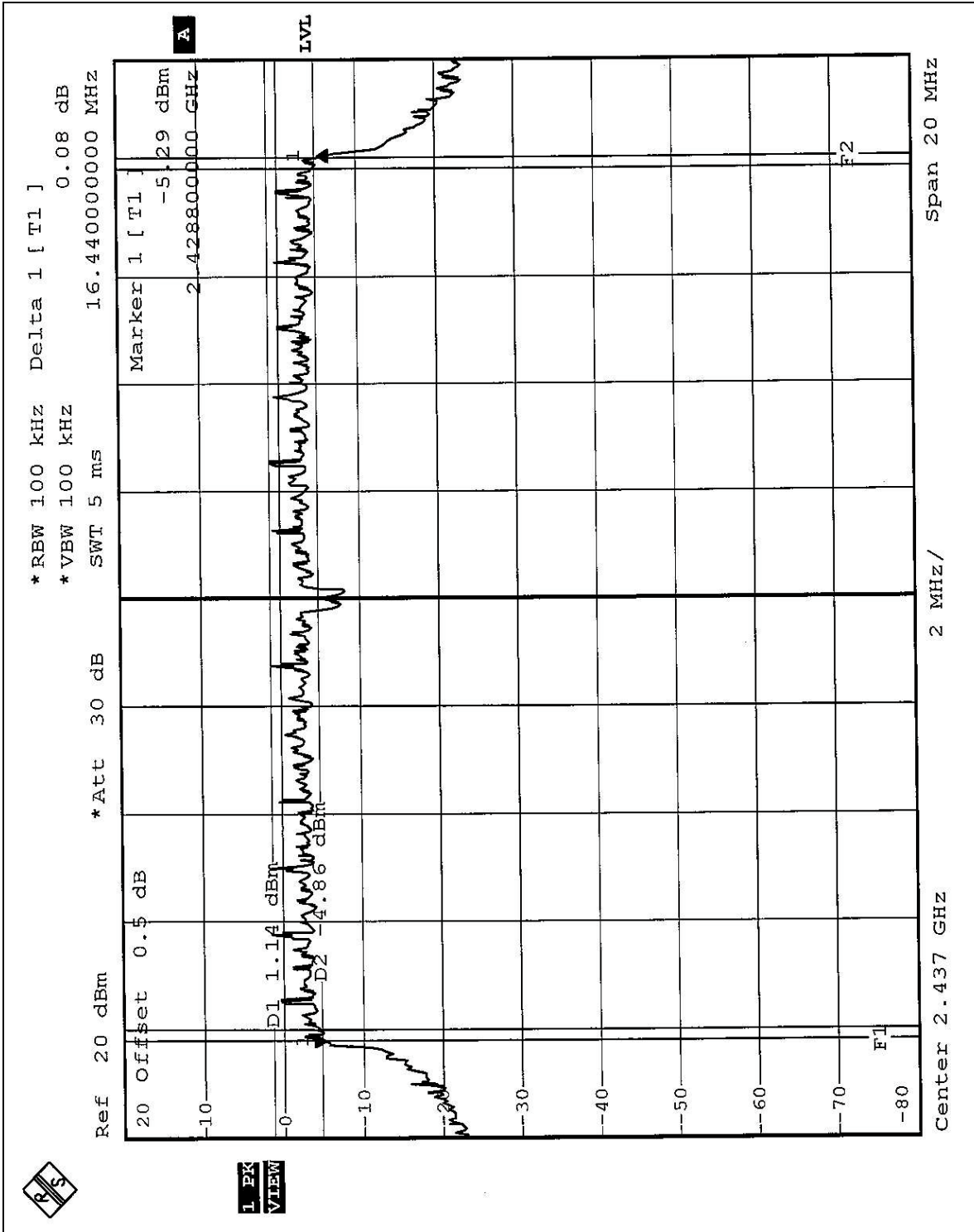


CH1



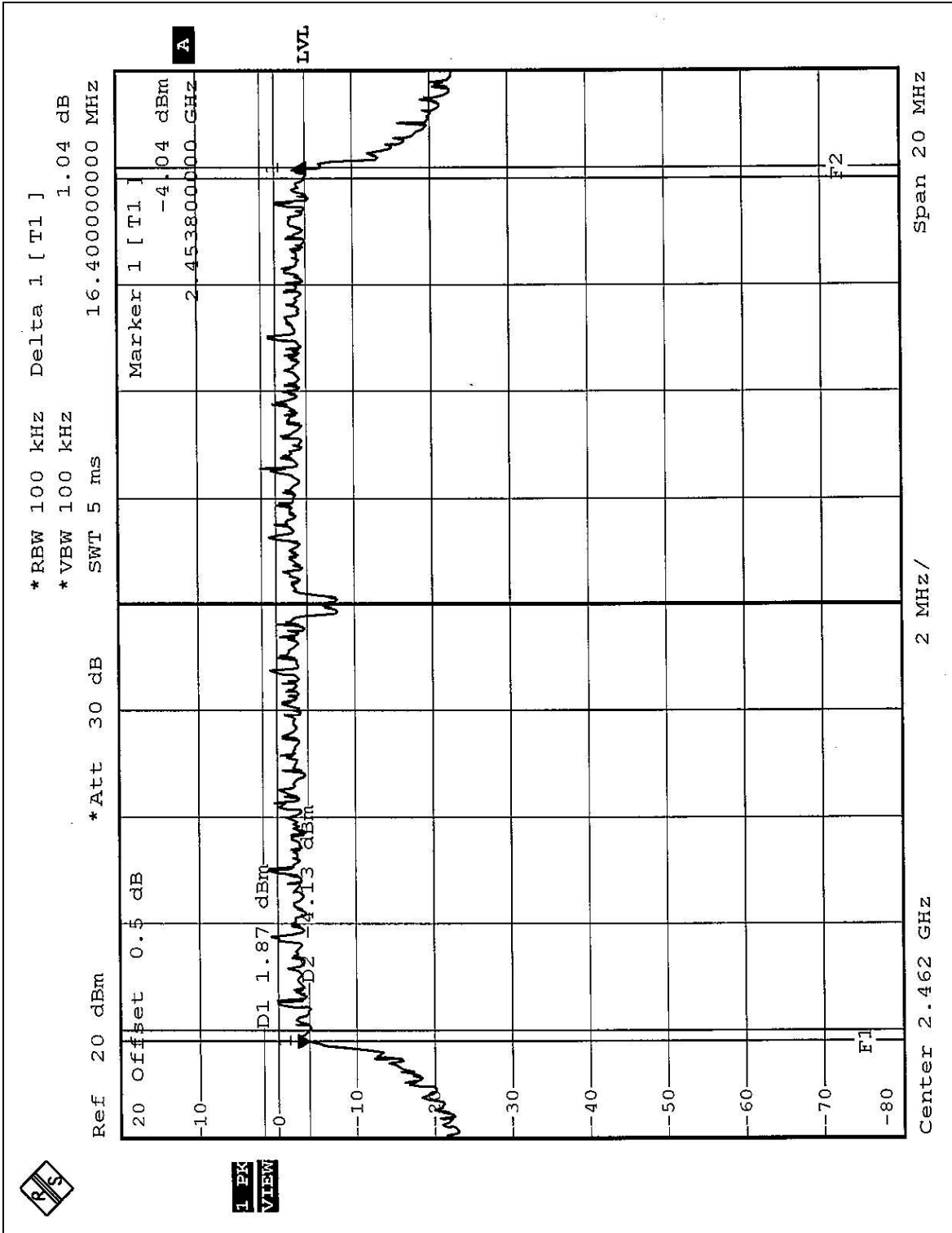


CH6





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. 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 (A)

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 57%RH, 991hPa
<b>MODE</b>	CCK	<b>TESTED BY</b>	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.42	30	PASS
6	2437	16.37	30	PASS
11	2462	16.40	30	PASS

4.4.4 TEST RESULTS (B)

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 57%RH, 991hPa
<b>MODE</b>	OFDM	<b>TESTED BY</b>	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.42	30	PASS
6	2437	16.40	30	PASS
11	2462	16.40	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.

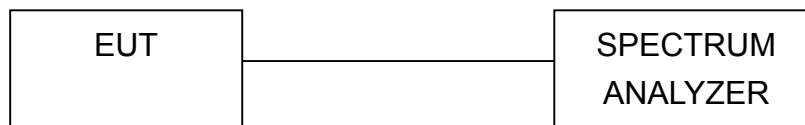
The power spectral density was measured and recorded.

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



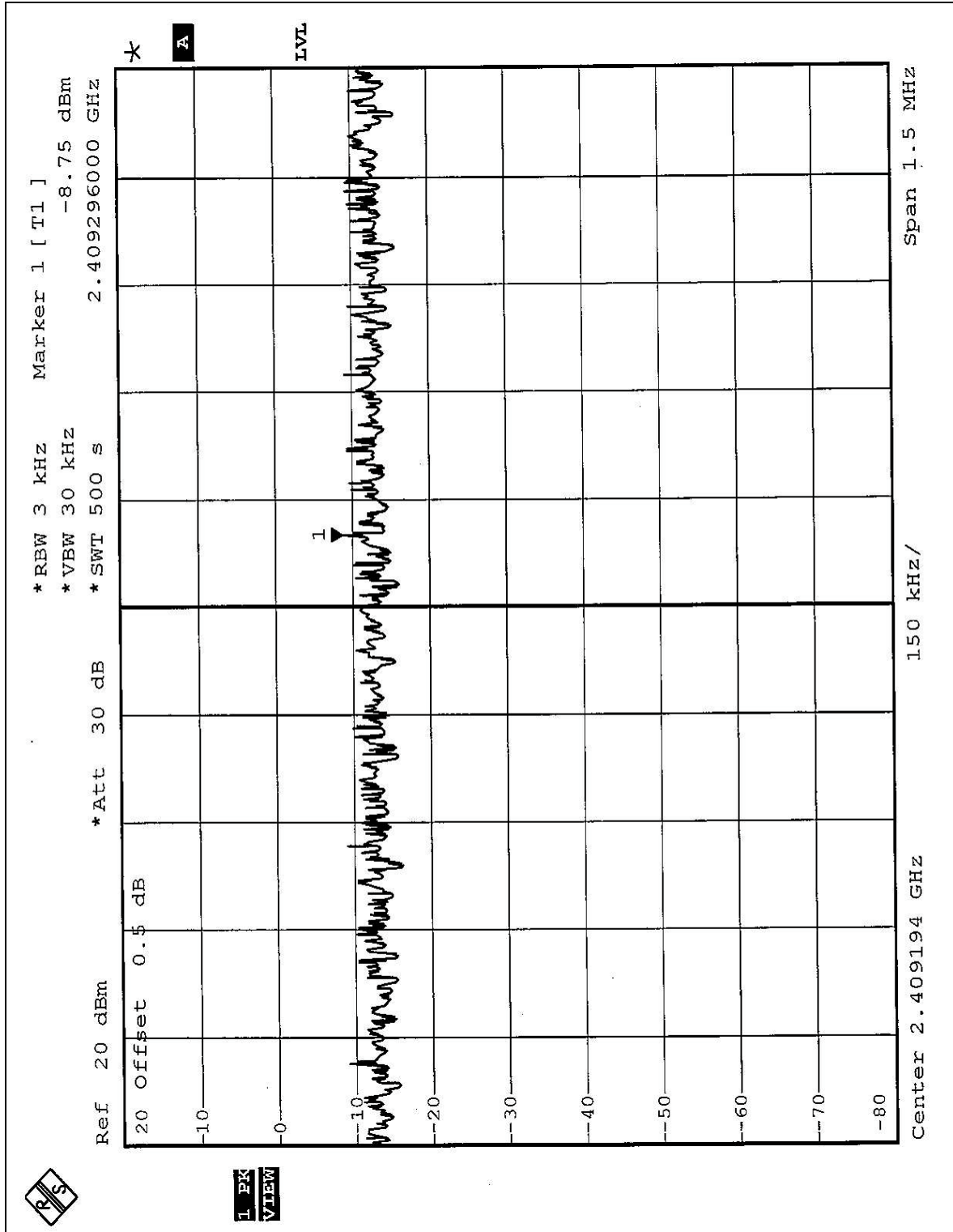
## 4.5.7 TEST RESULTS (A)

<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 57%RH, 991hPa
<b>MODE</b>	CCK	<b>TESTED BY</b>	Steven Lu

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-8.75	8	PASS
6	2437	-8.76	8	PASS
11	2462	-8.30	8	PASS

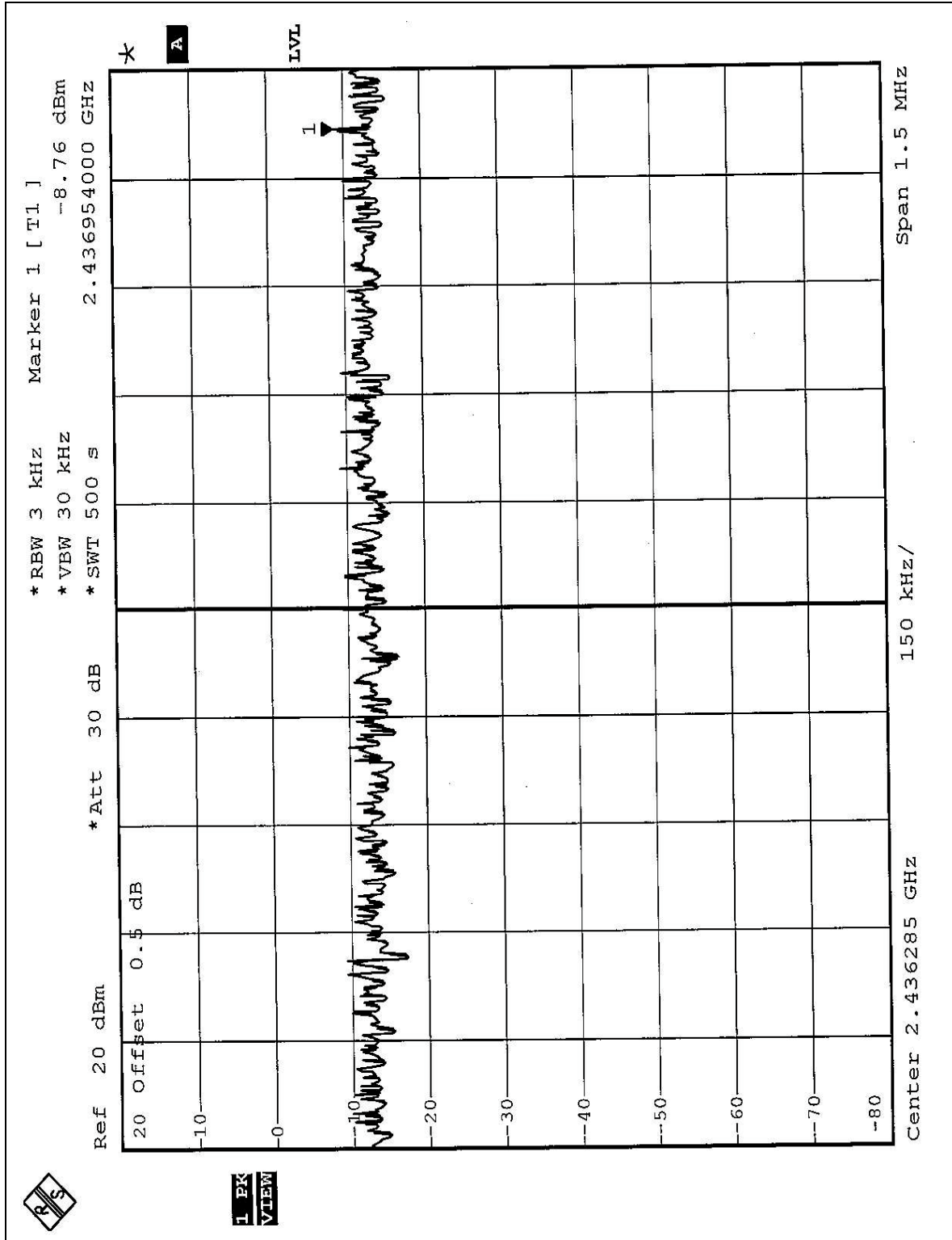


CH1





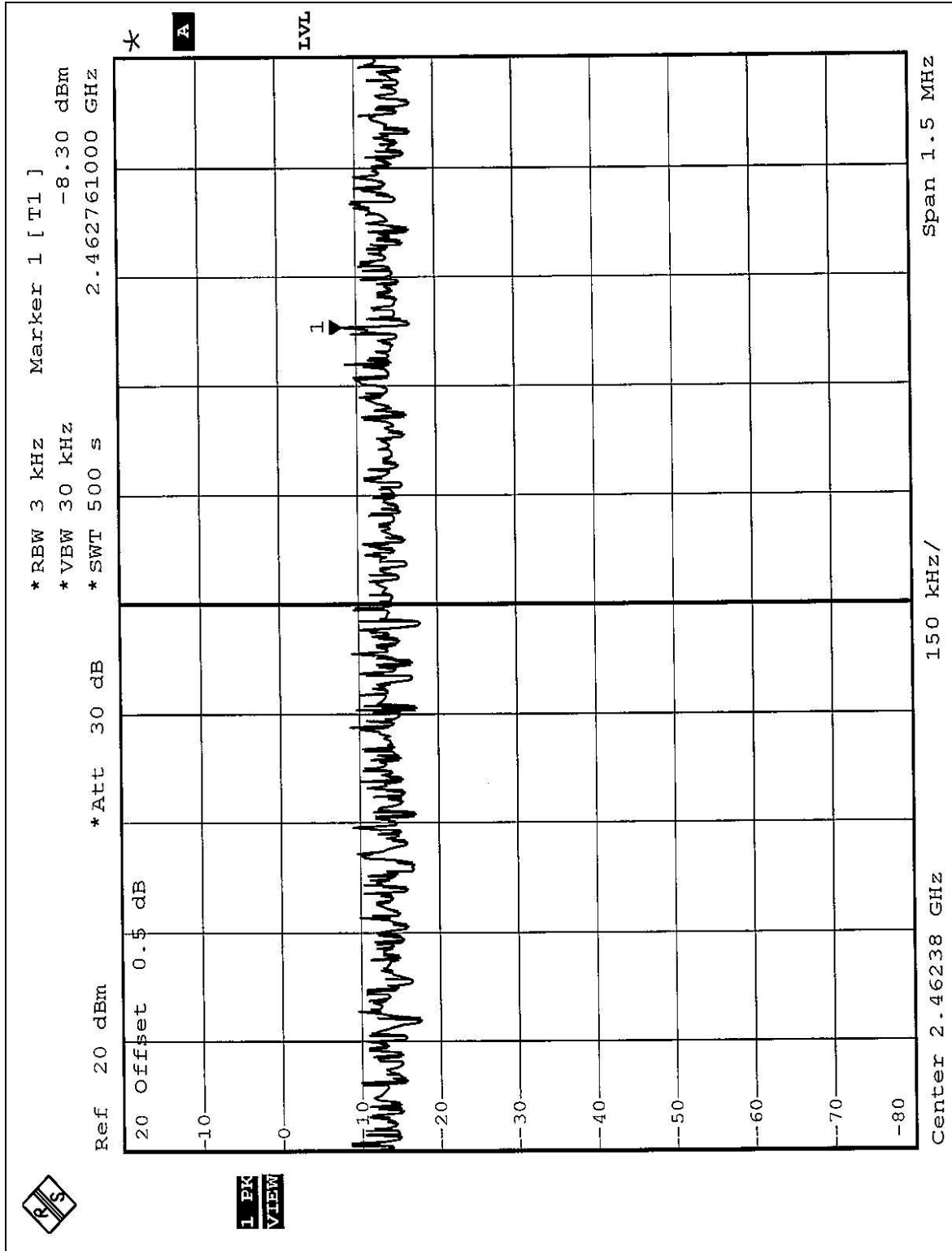
CH6



1 PK VIEW



CH11





## 4.5.8 TEST RESULTS (B)

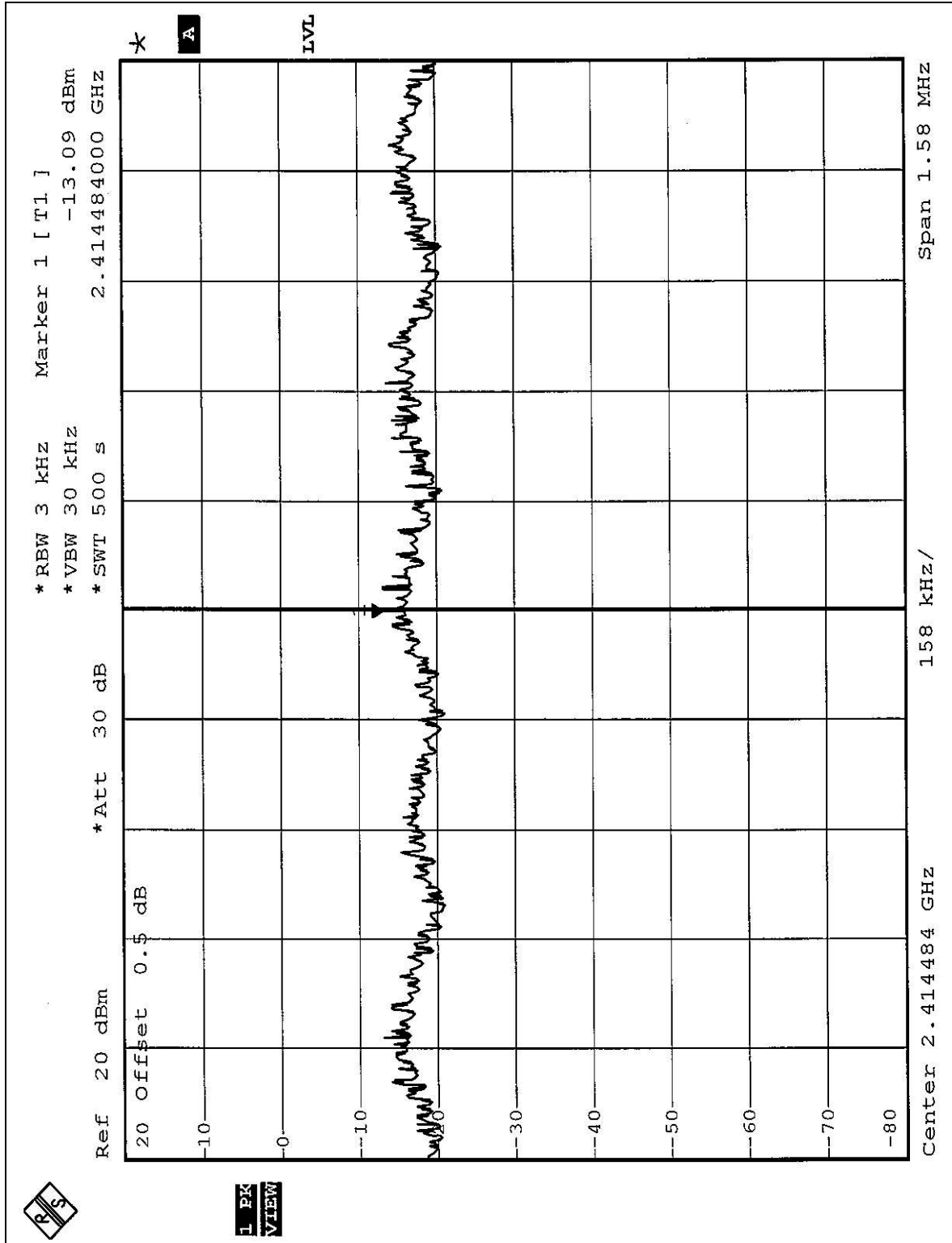
<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 57%RH, 991hPa
<b>MODE</b>	OFDM	<b>TESTED BY</b>	Steven Lu

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-13.09	8	PASS
6	2437	-12.75	8	PASS
11	2462	-12.20	8	PASS



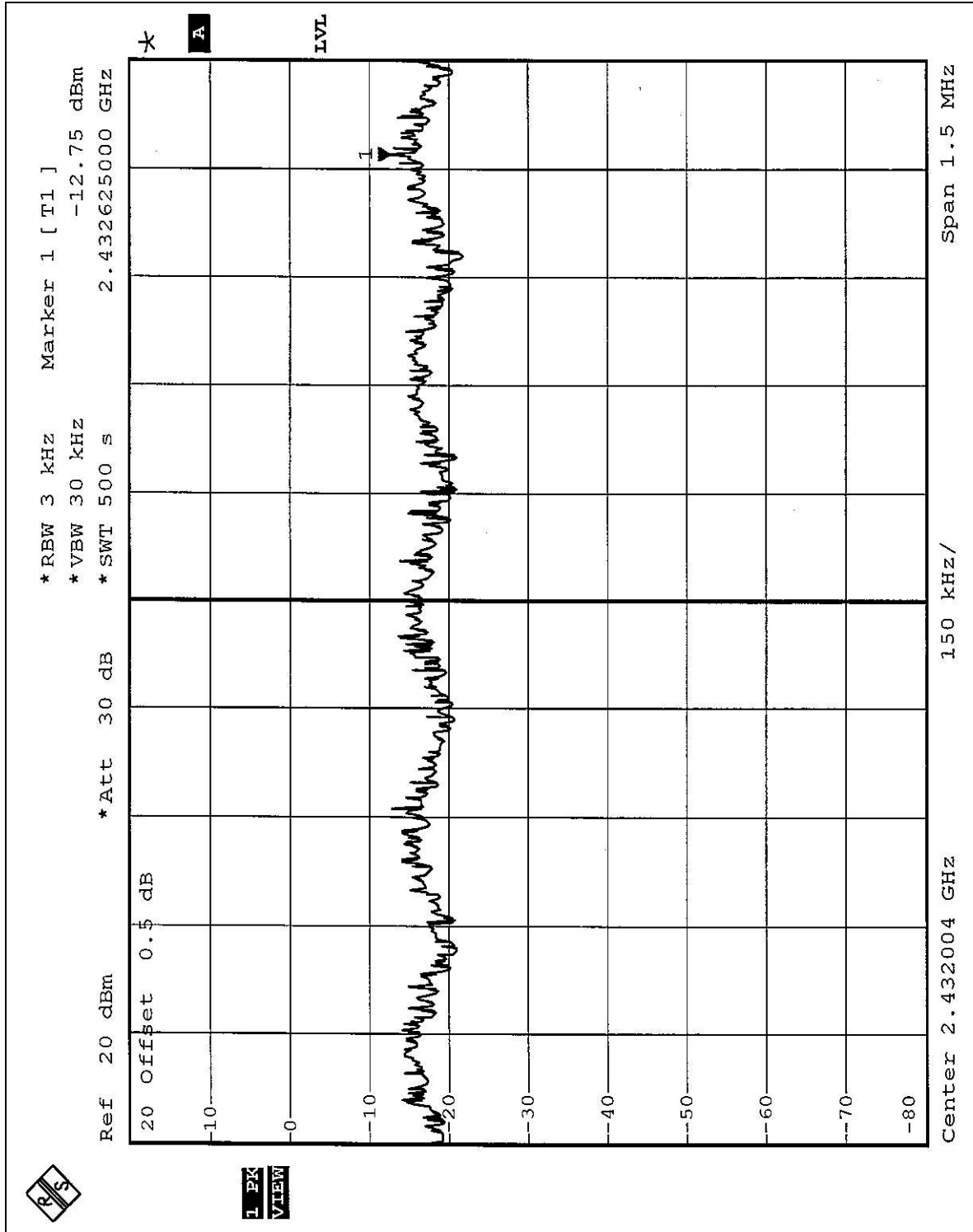


CH1



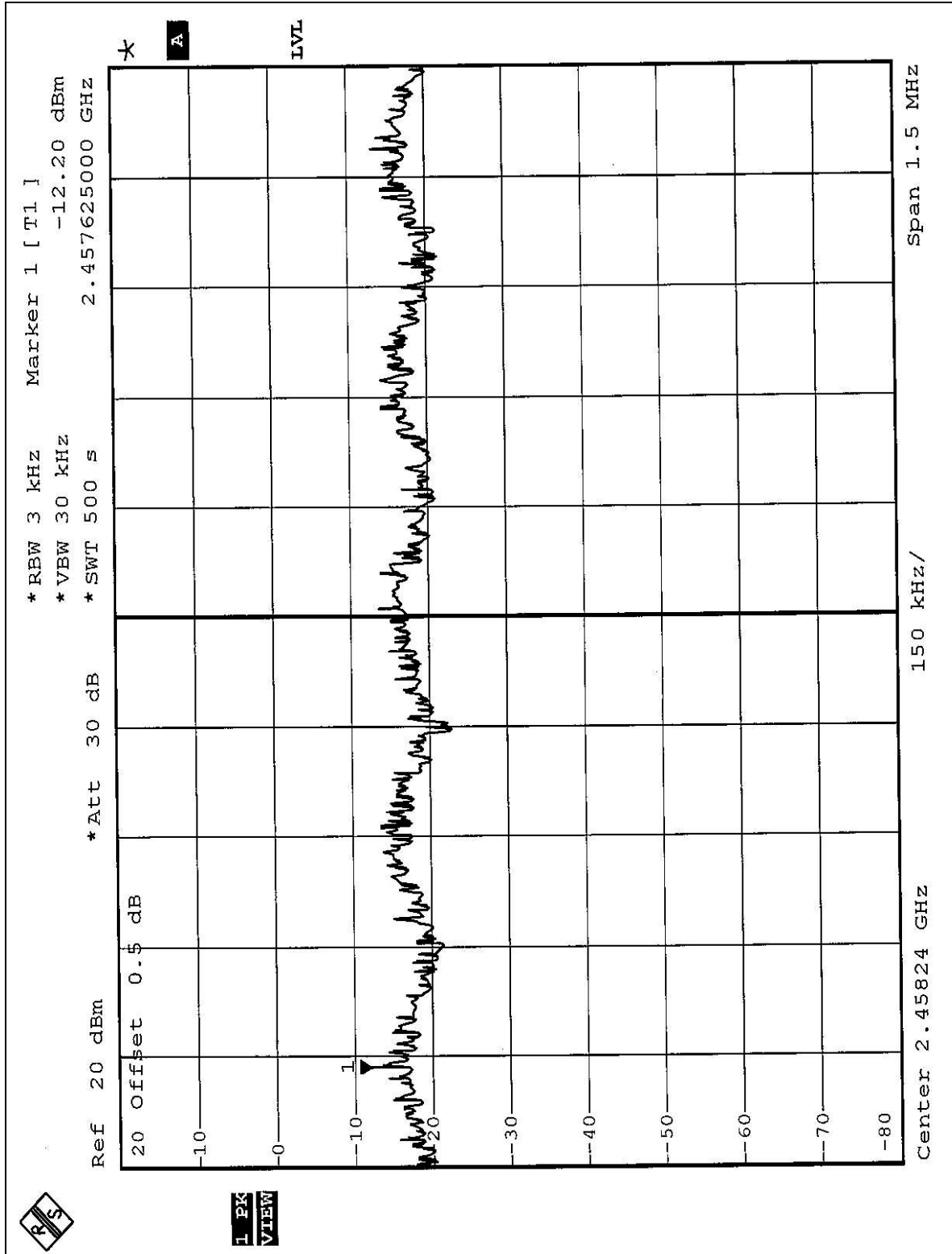


CH6





CH11





## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below  $-20\text{dB}$  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 lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 300Hz 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 4 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).

##### Test Mode 1

**NOTE1:** The band edge emission plot of CCK technique on the page 73 shows 53.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3864GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 100.23dBuV/m, so the maximum field strength in restrict band is  $100.23-53.87=46.36$ dBuV/m which is under 54dBuV/m limit.

**NOTE2:** The band edge emission plot of CCK technique on the page 74 shows 54.99dB delta between carrier maximum power and local maximum emission in restrict band (2.4865GHz ). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 100.02dBuV/m, so the maximum field strength in restrict band is  $100.02-54.99=45.03$ dBuV/m which is under 54 dBuV/m limit.

**NOTE3:** The band edge emission plot of OFDM technique on the page 75 shows 46.67dB 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 4.2.9 is 95.71dBuV/m, so the maximum field strength in restrict band is  $95.71-46.67=49.04$ dBuV/m which is under 54 dBuV/m limit.

**NOTE4:** The band edge emission plot of OFDM technique on the page 76 shows 46.58dB 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 4.2.9 is 95.25dBuV/m, so the maximum field strength in restrict band is  $95.25-46.58=48.67$ dBuV/m which is under 54dBuV/m limit.

##### Test Mode 2

**NOTE1:** The band edge emission plot of CCK technique on the page 73 shows 53.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3864GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 102.37dBuV/m, so the maximum field strength in restrict band is  $102.37-53.87=48.50$ dBuV/m which is under 54dBuV/m limit.



**NOTE2:** The band edge emission plot of CCK technique on the page 74 shows 54.99dB delta between carrier maximum power and local maximum emission in restrict band (2.4865GHz ). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 102.20dBuV/m, so the maximum field strength in restrict band is  $102.20-54.99=54.99$ dBuV/m which is under 54 dBuV/m limit.

**NOTE3:** The band edge emission plot of OFDM technique on the page 75 shows 46.67dB 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 4.2.9 is 95.89dBuV/m, so the maximum field strength in restrict band is  $95.89-46.67=49.22$ dBuV/m which is under 54 dBuV/m limit.

**NOTE4:** The band edge emission plot of OFDM technique on the page 76 shows 46.58dB 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 4.2.9 is 96.49dBuV/m, so the maximum field strength in restrict band is  $96.49-46.58=49.91$ dBuV/m which is under 54dBuV/m limit.

### Test Mode 3

**NOTE1:** The band edge emission plot of CCK technique on the page 73 shows 53.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3864GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 100.90dBuV/m, so the maximum field strength in restrict band is  $100.90-53.87=47.03$ dBuV/m which is under 54dBuV/m limit.

**NOTE2:** The band edge emission plot of CCK technique on the page 74 shows 54.99dB delta between carrier maximum power and local maximum emission in restrict band (2.4865GHz ). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 101.00dBuV/m, so the maximum field strength in restrict band is  $101.00-54.99=46.01$ dBuV/m which is under 54 dBuV/m limit.

**NOTE3:** The band edge emission plot of OFDM technique on the page 75 shows 46.67dB 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 4.2.9 is 96.00dBuV/m, so the maximum field strength in restrict band is  $96.00-46.67=49.33$ dBuV/m which is under 54 dBuV/m limit.



**NOTE4:** The band edge emission plot of OFDM technique on the page 76 shows 46.58dB 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 4.2.9 is 96.80dBuV/m, so the maximum field strength in restrict band is  $96.80-46.58=50.22$ dBuV/m which is under 54dBuV/m limit.

#### Test Mode 4

**NOTE1:** The band edge emission plot of CCK technique on the page 73 shows 53.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3864GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 102.10dBuV/m, so the maximum field strength in restrict band is  $102.10-53.87=48.23$ dBuV/m which is under 54dBuV/m limit.

**NOTE2:** The band edge emission plot of CCK technique on the page 74 shows 54.99dB delta between carrier maximum power and local maximum emission in restrict band (2.4865GHz ). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 101.90dBuV/m, so the maximum field strength in restrict band is  $101.90-54.99=46.91$ dBuV/m which is under 54 dBuV/m limit.

**NOTE3:** The band edge emission plot of OFDM technique on the page 75 shows 46.67dB 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 4.2.9 is 96.80dBuV/m, so the maximum field strength in restrict band is  $96.80-46.67=50.13$ dBuV/m which is under 54 dBuV/m limit.

**NOTE4:** The band edge emission plot of OFDM technique on the page 76 shows 46.58dB 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 4.2.9 is 96.50dBuV/m, so the maximum field strength in restrict band is  $96.50-46.58=49.92$ dBuV/m which is under 54dBuV/m limit.

