MEASUREMENT REPORT
of
WIRELESS LAN PC CARD

Applicant : DBTEL Incorporated

Model No. : DB6802-L1

EUT : Wireless LAN PC Card

FCC ID : BW3-DB-6802-L1

Report No. : D0415719

Tested by :

Training Research Co., Ltd.

TEL : 886-2-26935155 FAX : 886-2-26934440

255 Nanyang St., Shijr, Taipei Hsien 221, Taiwan, R.O.C.

CERTIFICATION

We here by verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (1992) as a reference. All test were conducted by ***Training Research Co., Ltd.***, 255 Nanyang St., Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.247.

Applicant	:	DBTEL Incorporated
Model No.	:	DB6802-L1
EUT	:	Wireless LAN PC Card
FCC ID	:	BW3-DB-6802-L1
Report No.	:	D0415719
Test Date	:	September 2, 2002

Prepared by: *Eric Wong* **Approved by:** *Frank Tsai*

Tested by :

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Ⅰ. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of Applicant in support of a wireless LAN PC Card certification in accordance with Part 2 Subpart J and Part 15 Subpart A and C of the Commission's Rules and Regulations.

1.2 Description of EUT

EUT	**:**	Wireless LAN PC Card
Model No.	**:**	DB6802-L1
Granted FCC ID	**:**	BW3-DB-6802-L1
Frequency Range	**:**	2.412 GHz ~ 2.462GHz
Antenna Kit	**:**	2 chip antennas
Supported Channel:		11 Channel
Modulation Skill	**:**	DBPSK, DQPSK, CCK (w/PBCC mode)
Power Type	**:**	Powered by the PCMCIA slot of the device
Applicant	**:**	DBTEL Incorporated
		No.29, Tzu Chuang St., Tu-Cheng, Taipei, Taiwan, R.O.C.

1.3 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

Notebook	**:**	**IBM COMPUTER INC.**
Type No.	:	08N1180
Serial No.	:	11SO8K6451ZFX0820AJOLB
FCC ID	:	DoC Approved

AC Adaptor	**:**	**ASTEC INC. (China)**
Model No.	:	02K6654
Serial No.	:	11SO2K6654Z1Z0Z40325LE
FCC ID	:	DoC Approved
Power Core	:	Non-shielded, Plastic hoods, with ferrite bead
Power type	:	100 ~ 240VAC, 50 ~ 60Hz, 1.2A-0.5A / 16VDC, 4.5A

1.4 Configuration of System Under Test

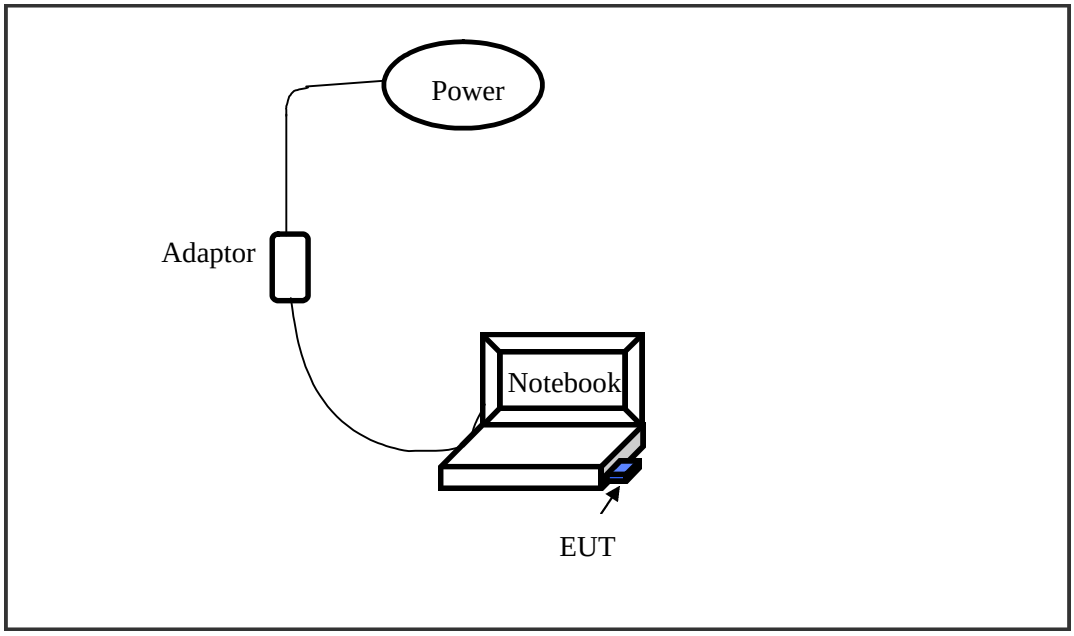


Fig. 1 Configuration of system under test

The tests below are carried with the EUT transmitter set at high power in TDD mode. The EUT is forced to select of output power level and channel number by notebook computer using with the utility provided by the manufacturer.

The setting up procedure was recorded in <Appendix A.>.

1.5 Verify the Frequency and Channel

Channel	Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

Note:
1.This is for sure that all frequencies are in 2.412GHz to 2.462GHz.

2.Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz.
(The locations of these frequencies one near the top, one near the middle and one near the bottom.)

After tests, the EUT operating frequencies are in 2.412GHz to 2.462GHz. So all the items as followed in testing report are need to test these three frequencies:
Top: Channel – 1; Middle: Channel – 6; Bottom: Channel – 11.

1.6 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (1992) and the pre-setup was written on Appendix A, the detail setup was written on each test item.

1.7 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter**, **Anechoic Chamber (Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F, 255 Nanyang St., Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a anechoic chamber also located at Training Research Co., Ltd.

255 Nanyang St., Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.8 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

In test, they were set in high power and continuously transmitting mode that controlled by notebook computer. The Ch01, Ch06 and Ch11 of EUT were all tested. The setting up procedure is recorded on <Appendix A>.

II. Section 15.203 : Antenna Requirement

The EUT equipped with the *integral antenna* inside the case, the EUT is equipped no other connectors for the extra antenna. The statement about cannot remove and modify freely without any tools from outside is applied. This complies with the Antenna requirement stated in Sect.15.203.

III. Section 15.207: Power Line Conducted Emissions for AC Powered Units

3.1 Test Condition & Setup

The power line conducted emission measurements were performed in an anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the back-wall and at least 1 meter from the side-wall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPER quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 450 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 2.4.

There is a test condition apply in this test item, the test procedure description as follow:

EUT transmit only:

Using the utility installed in the notebook computer to control the EUT through. Then making access to the mode of continuous transmission and set testing channel and antenna kit. Three channels were tested, one in the top (CH01), one in the middle (CH06) and the other in bottom (CH11).

The setting up procedure is recorded on <Appendix A>.

3.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
EMI Receiver	8546A	H P	3520A00242	06/29/02	06/29/03
RF Filter Section	85460A	H P	3448A00217	06/29/02	06/29/03
LISN (EUT)	LISN-01	TRC	9912-03,04	12/09/01	12/09/02
LISN (Support E.)	LISN-01	TRC	9912-05	01/04/02	01/04/03
Switch/Control Unit (< 30MHz)	3488A	HP	N/A	11/20/01	11/20/02
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	11/20/01	11/20/02

3.3 Test configuration

Conducted Emissions Test Placement

3.4 Test Result of Conducted Emissions

EUT station transmit only

The following table shows a summary of the highest emissions of power line conducted emissions on the LINE and NETURAL conductors of the EUT power cord.

Table 1 Power Line Conducted Emissions (Channel 1, Transmitter Mode, Ant.1)

Test Conditions: Testing room : Temperature : 25.6 ° C Humidity : 47.3 % RH
Testing site : Temperature : 27.4 ° C Humidity : 61.8 % RH

Power Connected Emissions				*FCC Class B*	
Conductor	***Frequency (KHz)***	***Peak Amplitude (dB μV)***	***QP Amplitude (dB μV)***	***Limit (dB μV)***	***Margin (dB)***
Line 1	488.750	41.67	---	48.00	-6.33
	736.750	41.43	---	48.00	-6.57
	992.500	43.40	---	48.00	-4.60
	1236.625	42.93	---	48.00	-5.07
	1360.625	42.46	---	48.00	-5.54
	1736.500	42.91	---	48.00	-5.09
	1934.125	42.63	---	48.00	-5.37
	4870.000	37.79	---	48.00	-10.21
Line 2	492.625	41.15	---	48.00	-6.85
	740.625	40.42	---	48.00	-7.58
	977.000	42.23	---	48.00	-5.77
	1213.375	42.04	---	48.00	-5.96
	1585.375	42.07	---	48.00	-5.93
	1728.750	41.76	---	48.00	-6.24
	1938.000	42.00	---	48.00	-6.00
	4800.000	36.63	---	48.00	-11.37

NOTE:

1. Margin = Peak Amplitude - Limit
2. A "+" sign in the margin column means the emission is OVER the Class B Limit and "–" sign of means UNDER the Class B limit

Table 2 Power Line Conducted Emissions (Channel 6, Transmitter Mode, Ant.1)

Test Conditions: Testing room : Temperature : 25.6 ° C Humidity : 47.3 % RH
Testing site : Temperature : 27.4 ° C Humidity : 61.8 % RH

Power Connected Emissions				*FCC Class B*	
Conductor	***Frequency (KHz)***	***Peak Amplitude (dB μV)***	***QP Amplitude (dB μV)***	***Limit (dB μV)***	***Margin (dB)***
Line 1	461.625	40.13	---	48.00	-7.87
	492.625	41.28	---	48.00	-6.72
	760.000	39.05	---	48.00	-8.95
	872.375	40.60	---	48.00	-7.40
	992.500	42.20	---	48.00	-5.80
	1256.000	41.83	---	48.00	-6.17
	1372.250	41.53	---	48.00	-6.47
	1631.875	41.43	---	48.00	-6.57
	1759.750	41.31	---	48.00	-6.69
Line 2	492.625	40.49	---	48.00	-7.51
	876.250	39.62	---	48.00	-8.38
	988.625	40.87	---	48.00	-7.13
	1256.000	41.43	---	48.00	-6.57
	1372.250	40.83	---	48.00	-7.17
	1639.625	40.56	---	48.00	-7.44
	1759.750	40.92	---	48.00	-7.08

Table 3 Power Line Conducted Emissions (Channel 11, Transmitter Mode,Ant.1)

Test Conditions: Testing room : Temperature : 25.6 ° C Humidity : 47.3 % RH
Testing site : Temperature : 27.4 ° C Humidity : 61.8 % RH

Power Connected Emissions				*FCC Class B*	
Conductor	***Frequency (KHz)***	***Peak Amplitude (dB μV)***	***QP Amplitude (dB μV)***	***Limit (dB μV)***	***Margin (dB)***
Line 1	457.750	38.61	---	48.00	-9.39
	492.625	41.29	---	48.00	-6.71
	698.000	39.40	---	48.00	-8.60
	756.125	39.49	---	48.00	-8.51
	872.375	40.58	---	48.00	-7.42
	992.500	42.05	---	48.00	-5.95
	1256.000	42.14	---	48.00	-5.86
	1376.125	41.62	---	48.00	-6.38
	1755.875	41.46	---	48.00	-6.54
	2070.000	39.56	---	48.00	-8.44
Line 2	492.625	40.46	---	48.00	-7.54
	760.000	38.48	---	48.00	-9.52
	876.250	39.72	---	48.00	-8.28
	992.500	40.39	---	48.00	-7.61
	1252.125	41.27	---	48.00	-6.73
	1376.125	40.57	---	48.00	-7.43
	1631.875	40.58	---	48.00	-7.42
	1643.500	39.93	---	48.00	-8.07
	1643.500	40.00	---	48.00	-8.00
	1755.875	40.90	---	48.00	-7.10

****The reading amplitudes are all under limit.***

IV. Section 15.247 (a): Technical description of the EUT

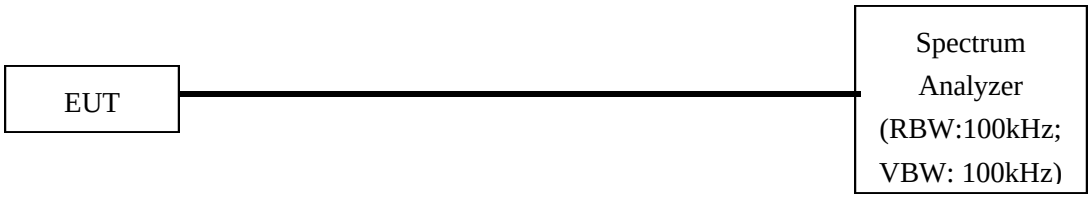
Based on the Section 2.1, *Direct Sequence System* is a spread spectrum system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high speed code sequence dominates the "modulating function" and is the direct cause of the wide spreading of the transmitted signal. In the *operational description* demonstrates the operation principles of the baseband processor employed by the EUT, shows that which is a complete DSSS baseband processor and meets the definition of the Direct Sequence Spread Spectrum System.

Ⅴ. Section 15.247(a)(2): Bandwidth for Direct Sequence System.

5.1 Test Condition & Setup

The transmitter bandwidth measurements were performed by the contact manner. The EUT was set to transmit continuously, also various channels were investigated to find the maximum occupied bandwidth.. The output of the EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency is observed by the spectrum analyzer with 100kHz RBW and 100kHz VBW.

5.2 Test Instruments Configuration



Test Configuration of Bandwidth for Direct Sequence System

P.S.: Notebook computer to control the EUT at maximal power output and channel Number and set antenna kit

5.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	8592A	H P	3003AD1401	01/02/02	01/01/03

5.4 Test Result of Bandwidth

Bandwidth of Channel 1

Bandwidth	:	11.45 MHz
The min. 6 dB BW at least	:	500 KHz

Bandwidth of Channel 6

Bandwidth	:	11.15 MHz
The min. 6 dB BW at least	:	500 KHz

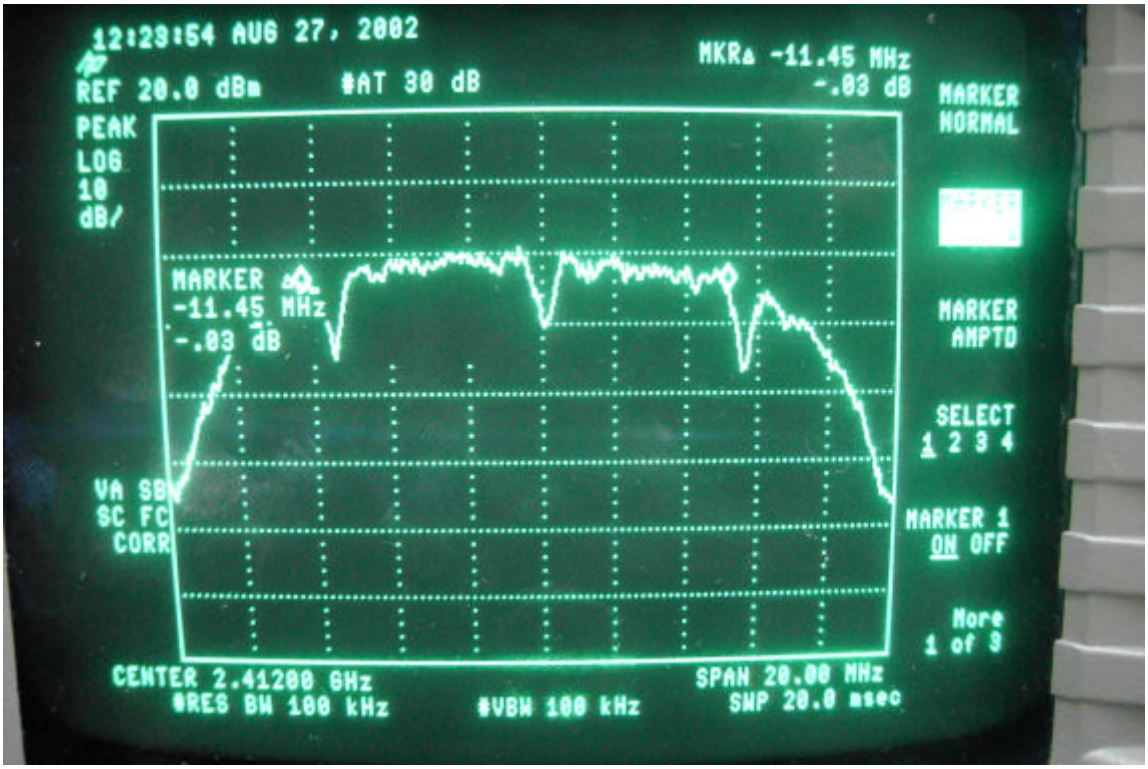
Bandwidth of Channel 11

Bandwidth	:	11.30 MHz
The min. 6 dB BW at least	:	500 KHz

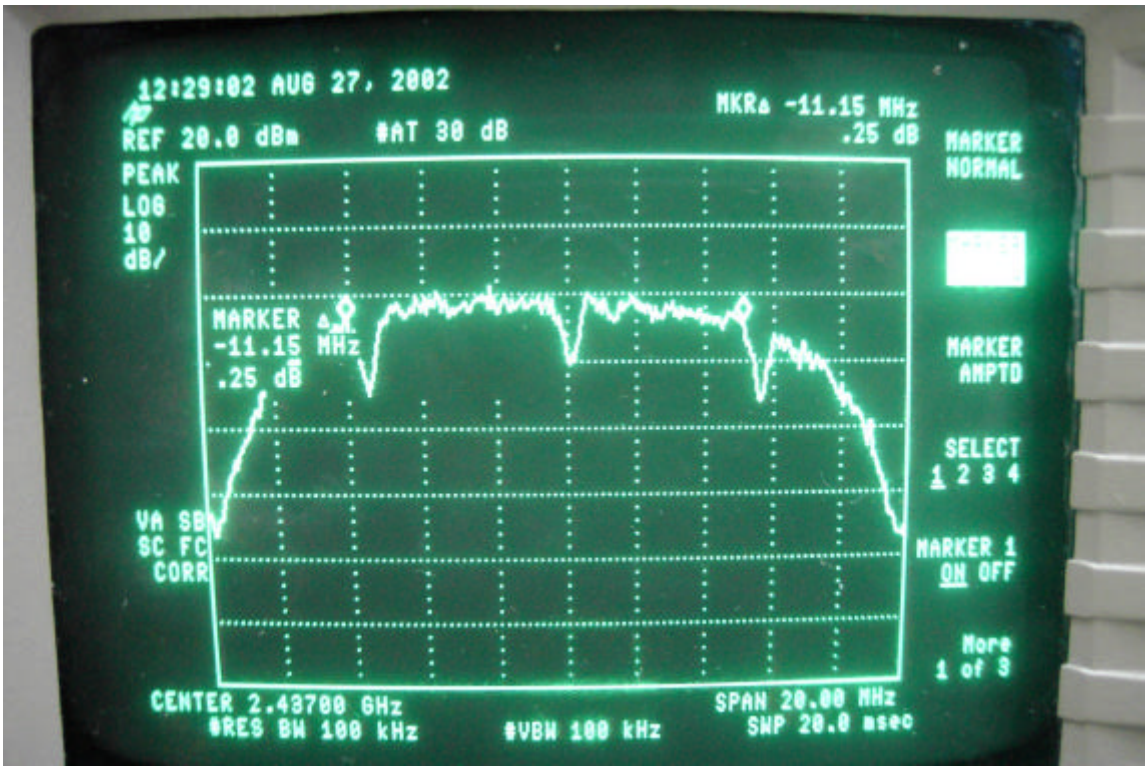
Note:

1.The data in the above table are summarizing the following attachment spectrum analyzer hard copy.

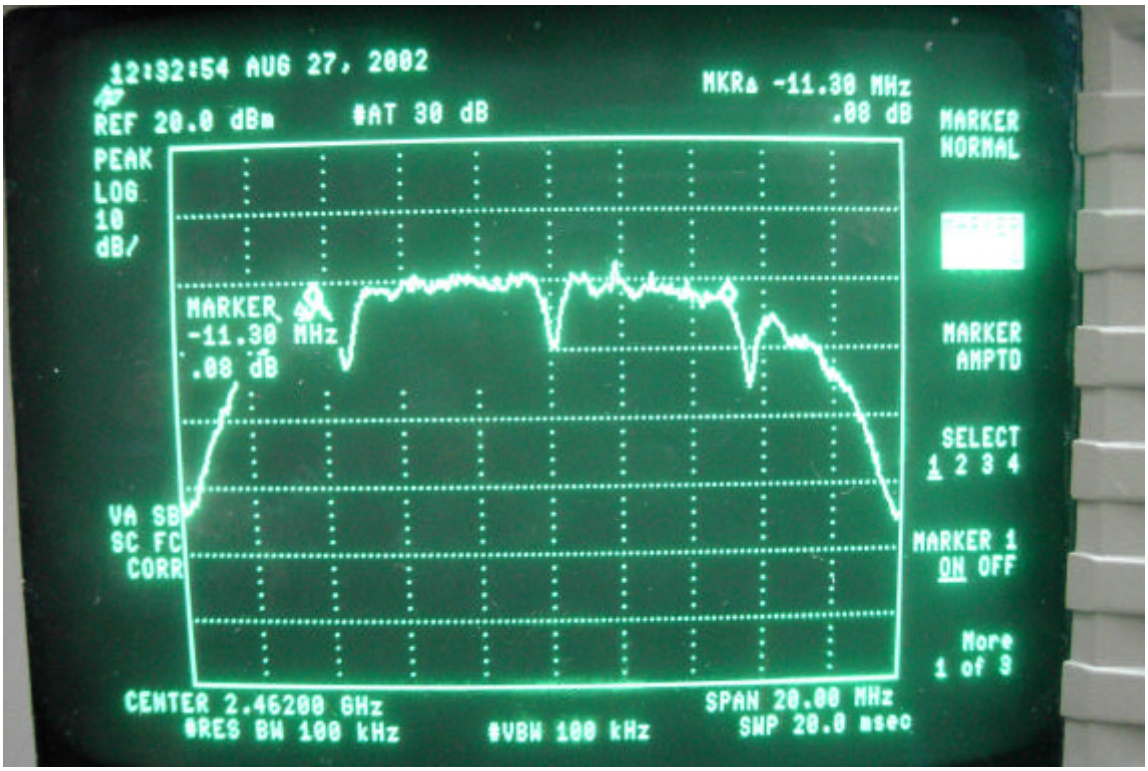
Bandwidth of Channel 1: 11.45 MHz



Bandwidth of Channel 6: 11.15 MHz

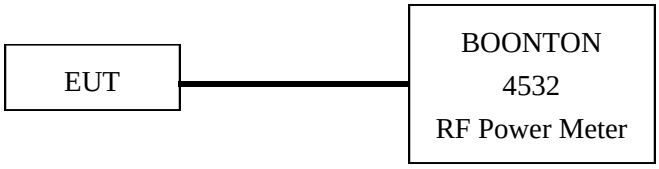


Bandwidth of Channel 11: 11.30 MHz



VI. Section 15.247(b): Power Output

6.1 Test Condition & Setup



1. The output of the transmitter is connected to the BOONTON RF Power Meter.
2. The calibration is performed before every test. The values of the output power of the EUT will shown in the dBm directly are the transmitter output peak power. Recording as follows.

6.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.
RF Power Meter	4532	BOONTON	117501

6.3 Test Result

Formula:
Signal generator + |Cable loss| = Output peak power

Channel	**Power Meter Reading**	**Cable Loss**	**Limit**	**Output peak power**	
	dBm	**dBm**	**(DSS)**	**dBm**	**mW**
CH1	9.42	0.20	100mW	9.62	9.16
CH6	9.86	0.20	100mW	10.06	10.13
CH11	10.27	0.20	100mW	10.47	11.14

Note:

The limit is vary according to the equipment class, listed below:

1. Digital Transmission System (DTS): 100mW
2. Spread Spectrum Transmitter (DSS): 1W

Ⅶ. Section 15.247(c): Spurious Emissions (Radiated)

7.1 Test Condition & Setup

The EUT was placed in an anechoic chamber and scanned at 3-meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration, which produced the highest emissions was noted so it could be reproduced later during the final tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, anechoic chamber. The EUT system was placed on a nonconductive turntable, which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 85460A EMI Receiver, Schaffner whole range Bi-Log antenna (Model No.: CBL6141A) is used to measure frequency from 30 MHz to 1GHz.The final test is used the spectrum HP 85460A and spectrum was examined from 1GHz to 18GHz using an Hewlett Packard 8564E Spectrum Analyzer, EMCO Horn Antenna (Model 3115) for 1G ~ 18GHz.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 85460A for frequency 30MHz to 1000MHz, and 8564E for frequency 1GHz to 18GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz)and the analyzer was operated in quasi-peak mode. Also, the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1GHz to 18GHz) and the analyzer was operated in the peak and average mode. There is a test condition apply in this test item, the test procedure description as the following:

EUT transmit only:

Using the utility installed in the Notebook computer to control the EUT through Ethernet hub. Then making access to the mode of continuous transmission. Three channels is tested, one in the top (CH01), one in the middle (CH06) and the other in bottom (CH11).

With the transmitter operating from a AC source and using the internal of EUT, radiates spurious emissions falling within the restricted bands of 15.209 were measured at operating frequencies corresponding to low, mid and high channels in the 2400 ~ 2483.5 MHz band.

The actual field intensity in decibels referenced to 1 microvolt per meter (dBμV/m) is determined by algebraically adding the measured reading in dBμV, the antenna factor (dB), and cable loss (dB) at the appropriate frequency.

For frequency between 30MHz to 1000MHz

FIa (dBuV/m) = FIr (dBμV) – Correction Factors

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

For frequency between 1 GHz to 18 GHz

FIa (dBμV/m) = FIr (dBμV) + Correction Factor

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

The setting up procedure is recorded on Appendix A.

7.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
EMI Receiver	8546A	H P	3520A00242	06/29/02	06/29/03
RF Filter Section	85460A	H P	3448A00217	06/29/02	06/29/03
Bi-log Antenna	CBL6141A	Schaffner	4206	03/09/02	03/09/03
Switch/Control Unit (> 30MHz)	3488A	HP	N/A	11/20/01	11/20/02
Auto Switch Box (> 30MHz)	ASB-01	TRC	9904-01	11/20/01	11/20/02
Spectrum Analyzer	8564E	HP	US36433002	08/01/02	08/01/03
Microwave Preamplifier	83051A	HP	3232A00347	08/01/02	08/01/03
Horn Antenna	3115	EMCO	9704 – 5178	08/01/02	08/01/03
Anechoic Chamber (cable calibrated together)				05/20/02	05/20/03

7.3 Test Instruments Configuration

Front View of the Test Configuration

Rear View of the Test Configuration

The test configuration for frequency between 1GHz to 18GHz is same as above.

7.4 Test Result of Spurious Radiated Emissions

EUT's transmit only

The highest peak values of radiated emissions form the EUT at various antenna heights, antenna polarizations, EUT orientation, etc. The worse case (high gain antenna) are recorded on the following.

FCC ID : BW3-DB-6802-L1
EUT : Wireless LAN PC Card

Test Conditions: Testing room : Temperature : 25.6 ° C Humidity : 47.3 % RH
Testing site : Temperature : 27.4 ° C Humidity : 61.8 % RH

Table 5 Radiated Emissions for 30MHz 1GHz [CH 1, Horizontal, Ant. 1]

Radiated Emission				*Correction Factors*	*Corrected Amplitude*	*FCC Class B (3 m)*	
Frequency (MHz)	*Amplitude (dBmV/m)*	*Ant. H. (m)*	*Table (°)*	*(dB)*	*(dBmV/m)*	*Limit (dBmV/m)*	*Margin (dB)*
233.09	16.80	1.00	267	18.55	35.35	46.00	-10.65
260.98	17.71	1.00	259	19.71	37.42	46.00	-8.58
300.39	13.57	1.00	75	21.53	35.10	46.00	-10.90
328.24	12.33	1.00	71	22.05	34.38	46.00	-11.62
352.52	10.35	1.00	121	22.70	33.05	46.00	-12.95
500.45	4.99	1.00	73	28.09	33.08	46.00	-12.92

Note:

1.Margin = Corrected Amplitude – Limit.

2.Peak Amplitude – Correction Factors = Corrected Amplitude

Table 6 Radiated Emissions for 30MHz 1GHz [CH 1, Vertical, Ant. 1]

Radiated Emission				Correction Factors	Corrected Amplitude	FCC Class B (3 m)	
Frequency (MHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	(dB)	(dBmV/m)	Limit (dBmV/m)	Margin (dB)
68.80	19.94	1.00	297	12.28	32.22	40.00	-21.86
234.31	10.75	1.00	347	18.55	29.30	46.00	-21.62
260.98	14.20	1.00	347	19.71	33.91	46.00	-17.68
325.85	7.52	1.00	308	22.06	29.58	46.00	-23.92
390.72	9.55	1.00	140	24.82	34.37	46.00	-18.09
895.73	5.87	1.00	39	34.86	40.73	46.00	-22.45

Table 7 Open Field Radiated Emissions for 1GHz 18GHz [Channel 1, Horizontal, Ant. 1]

Radiated Emission				Corrected Amplitude		FCC Class B (3m)		
Frequency (GHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	Peak	Average	Limit		Margin (dB)
						Peak	Ave.	
2.411	100.09	1.00	81	100.09	---	---	---	---

Table 8 Open Field Radiated Emissions for 1GHz 18GHz [Channel 1, Vertical, Ant. 1]

Radiated Emission				*Corrected Amplitude*		*FCC Class B (3m)*		
Frequency (Hz)	*Amplitude (dBmV/m)*	*Ant. H. (m)*	*Table (°)*	*Peak*	*Average*	*Limit*		*Margin (dB)*
						Peak	*Ave.*	
2.411	92.30	1.00	294	92.30	---	---	---	---

Note:

1. Margin = Corrected - Limit.
2. Peak Amplitude + Correction Factor = Corrected
3. The " * " means restricted bands.
4. As stated in Section 15.35(b), for any frequencies above 1000MHz, radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. As the results of our test, the peak amplitudes are already below the FCC limit. Thus the average amplitudes of the rest are omitted.

Table 13 Radiated Emissions for 30MHz 1GHz [CH 6, Horizontal, Ant. 1]

Radiated Emission				Correction Factors	Corrected Amplitude	FCC Class B (3 m)	
Frequency (MHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	(dB)	(dBmV/m)	Limit (dBmV/m)	Margin (dB)
260.98	17.85	1.00	263	19.71	37.56	46.00	-8.44
300.39	13.71	1.00	61	21.53	35.24	46.00	-10.76
325.24	13.75	1.00	80	22.05	35.80	46.00	-10.20
353.13	10.74	1.00	110	22.74	33.48	46.00	-12.52
391.32	7.37	1.00	208	24.85	32.22	46.00	-13.78
500.45	6.17	1.00	78	28.09	34.26	46.00	-11.74

Table 14 Radiated Emissions for 30MHz 1GHz [CH 6, Vertical, Ant.1]

Radiated Emission				Correction Factors	Corrected Amplitude	FCC Class B (3 m)	
Frequency (MHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	(dB)	(dBmV/m)	Limit (dBmV/m)	Margin (dB)
6819	19.15	1.00	298	12.39	31.54	40.00	-8.46
233.09	11.07	1.00	49	18.55	29.62	46.00	-16.38
260.98	11.33	1.00	300	19.71	31.04	46.00	-14.96
325.85	7.93	1.00	8	22.06	29.99	46.00	-16.01
390.72	8.95	1.00	147	24.82	33.77	46.00	-12.23
500.45	4.78	1.00	329	28.09	32.87	46.00	-13.13

Table 15 Open Field Radiated Emissions for 1GHz 18GHz [Channel 6, Horizontal, Ant. 1]

Radiated Emission				Corrected Amplitude		FCC Class B (3m)		
Frequency (GHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	Peak	Average	Limit		Margin (dB)
						Peak	Ave.	
2.437	100.28	1.00	167	100.28	---	---	---	---

Table 16 Open Field Radiated Emissions for 1GHz 18GHz [Channel 6, Vertical, Ant. 1]

Radiated Emission				Corrected Amplitude		FCC Class B (3m)		
Frequency (Hz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	Peak	Average	Limit		Margin (dB)
						Peak	Ave.	
2.437	92.77	1.00	114	92.77	---	---	---	---

Table 21 Radiated Emissions for 30MHz 1GHz [CH 11, Horizontal, Ant. 1]

Radiated Emission				Correction Factors	Corrected Amplitude	FCC Class B (3 m)	
Frequency (MHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	(dB)	(dBmV/m)	Limit (dBmV/m)	Margin (dB)
233.09	16.44	1.00	125	18.55	34.99	46.00	-11.01
260.98	19.38	1.00	260	19.71	39.09	46.00	-6.91
300.39	14.08	1.00	70	21.53	35.61	46.00	-10.39
325.24	11.80	1.00	53	22.05	33.85	46.00	-12.15
352.52	10.70	1.00	119	22.70	33.40	46.00	-12.60
400.42	8.83	1.00	196	25.33	34.16	46.00	-11.84

Table 22 Radiated Emissions for 30MHz 1GHz [CH 11, Vertical, Ant. 1]

Radiated Emission				Correction Factors	Corrected Amplitude	FCC Class B (3 m)	
Frequency (MHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	(dB)	(dBmV/m)	Limit (dBmV/m)	Margin (dB)
67.59	19.63	1.00	296	12.49	32.12	40.00	-7.88
133.67	17.85	1.00	329	18.01	25.65	43.50	-17.85
232.49	10.25	1.00	344	18.55	28.80	46.00	-17.20
261.59	12.49	1.00	0	19.76	32.25	46.00	-13.75
352.52	7.22	1.00	288	22.70	29.92	46.00	-16.08
390.72	8.91	1.00	166	24.82	33.73	46.00	-12.27

Table 23 Open Field Radiated Emissions for 1GHz 18GHz [Channel 11, Horizontal, Ant. 1]

Radiated Emission				Corrected Amplitude		FCC Class B (3m)		
Frequency (GHz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	Peak	Average	Limit		Margin (dB)
						Peak	Ave.	
2.461	101.68	1.00	58	101.68	---	---	---	---
*4.926	40.11	1.00	116	40.11	---	74.0	54.0	-13.89

Table 24 Open Field Radiated Emissions for 1GHz 18GHz [Channel 11, Vertical, Ant. 1]

Radiated Emission				Corrected Amplitude		FCC Class B (3m)		
Frequency (Hz)	Amplitude (dBmV/m)	Ant. H. (m)	Table (°)	Peak	Average	Limit		Margin (dB)
						Peak	Ave.	
2.461	96.66	1.00	281	96.66	---	---	---	---
*4.926	41.11	1.00	162	41.11	---	74.0	54.0	-12.89

7.5 Test Result of Bandedge Compliance

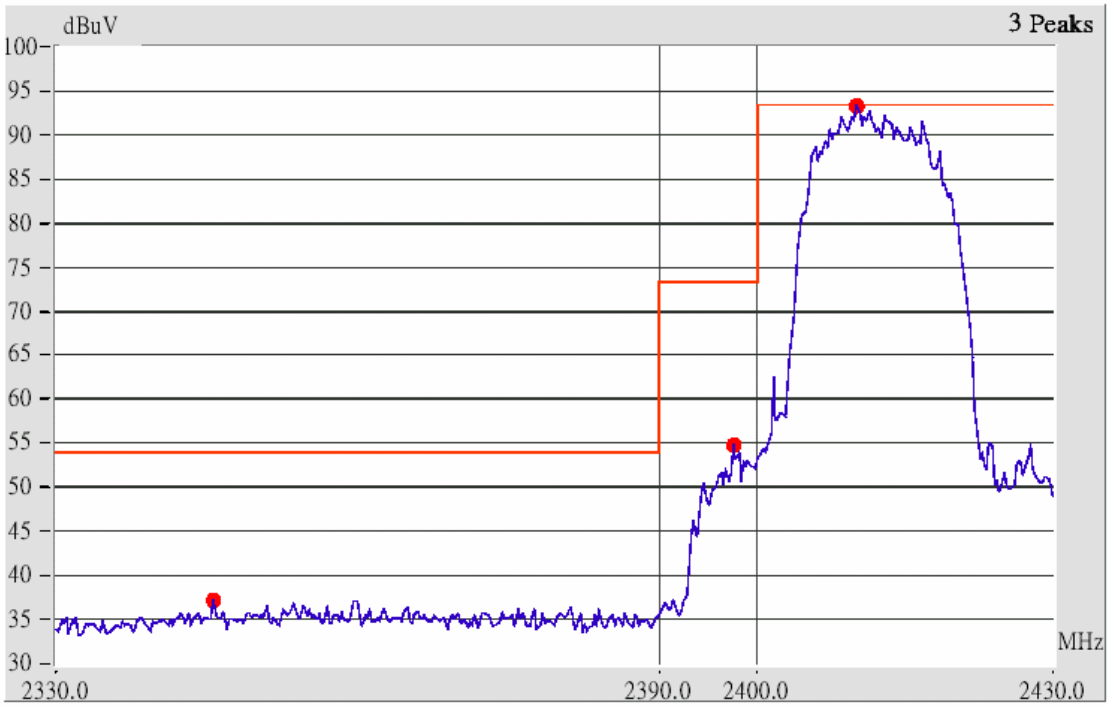
If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified id §15.209(a),*

We perform this section by the *conducted* manner, the RBW is set to 100kHz and VBW>RBW. We' d made the observation *up to 10th harmonics and the criterion is all the harmonic/spurious emissions must be 20dB below the highest emission level measured.* If the emissions fall in the restricted bands stated in the Part15.205(a) must also *comply with the radiated emission limits specified in Part15.209(a).*

The following pages show our observations referring to the channel 1 and 11 respectively.

Test Condition & Setup: same as 3.1

Channel 01



This is the hard copy of our bandedge measurement generated by our bandedge testing program.

The picture shown above is the bandedge of channel 1.

1. The lobe right by the fundamental side is already 20dB below the highest emission level.
2. The emissions recorded in the restricted band (<2400MHz) is do comply with the Part 15.209(a) – under the limited line marked in red color.

Channel 11

This is the hard copy of our bandedge measurement generated by our bandedge testing program.

The picture shown above is the bandedge of channel 11.

1. The lobe right by the fundamental side is already 20dB below the highest emission level.
2. The emissions recorded in the restricted band (>2483.5MHz) is do comply with the Part 15.209(a) – under the limited line marked in red color.

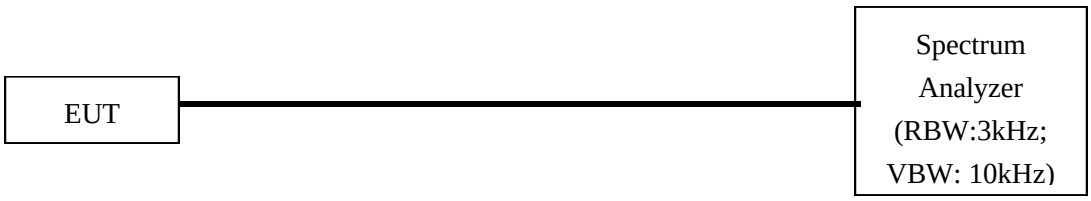
VIII. Section 15.247(d): Power Spectral Density

8.1 Test Condition & Setup

The tests below are running with the EUT transmitter set at high power in TDD mode . The EUT is needed to force selection of output power level and channel number. While testing, the EUT was set to transmit continuously and to be tested by the contact manner with the spectrum analyzer.

The attachments below show our observation.

8.2 Test Instruments Configuration



Test Configuration of Power Spectral Density

P.S.: Notebook computer to control the EUT at maximal power output and channel Number and set antenna kit

8.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	8592A	H P	3003AD1401	01/02/02	01/01/03

8.4 Test Result of Power spectral density

The following table shows a summary of the highest power out of UT.

Channel	*Frequency (GHz)*	*Ppr (dBm)*	*CF (dB)*	*Ppq (dBm)*	*Limit (dB)*	*Margin (dB)*
CH 01	2.413	-14.46	0.20	-14.26	8.00	-22.26
CH 06	2.435	-13.94	0.20	-13.74	8.00	-21.74
CH 11	2.463	-13.70	0.20	-13.50	8.00	-21.50

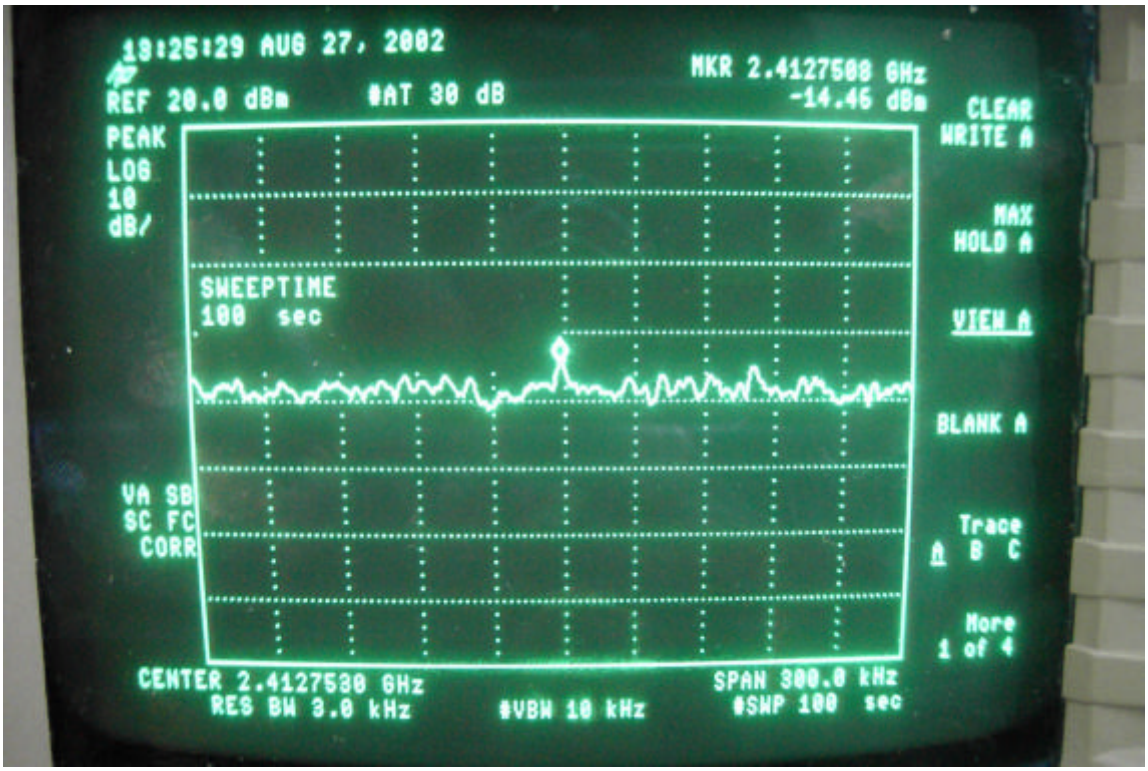
Note:

1.Ppr: spectrum read power density (using peak search mode),

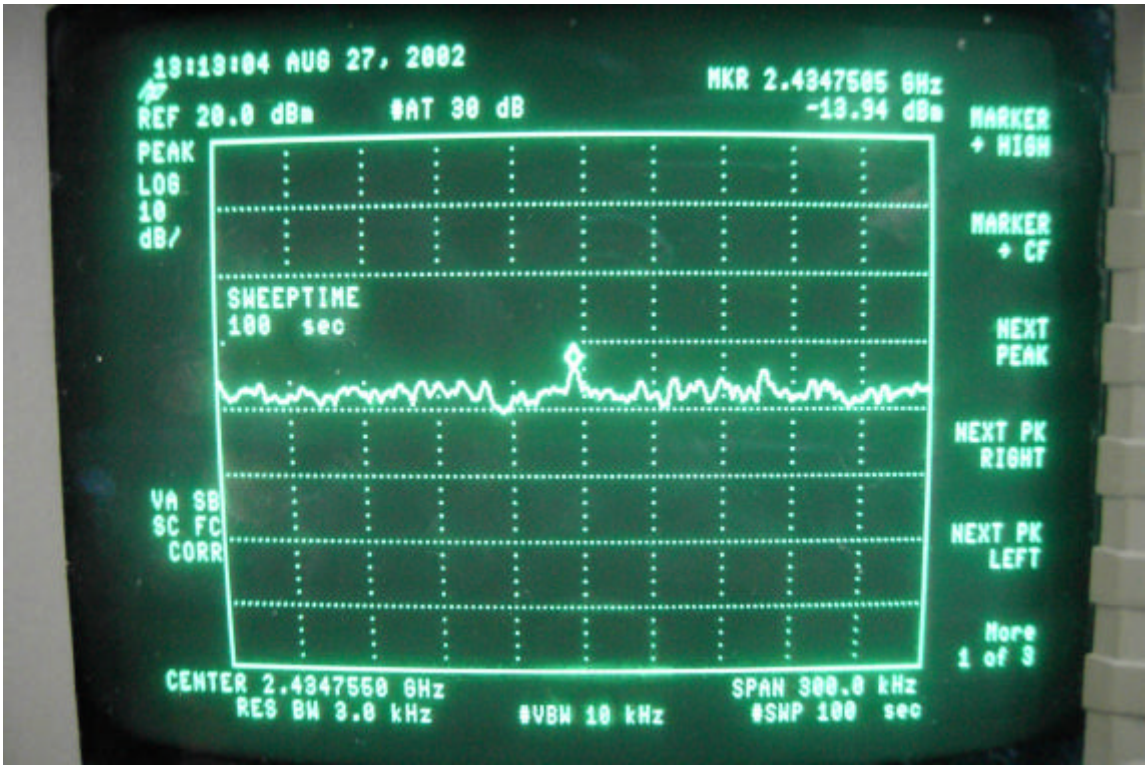
Ppq: actual peak power density in the spread spectrum band.

2.Ppq = Ppr + |Cable Loss|

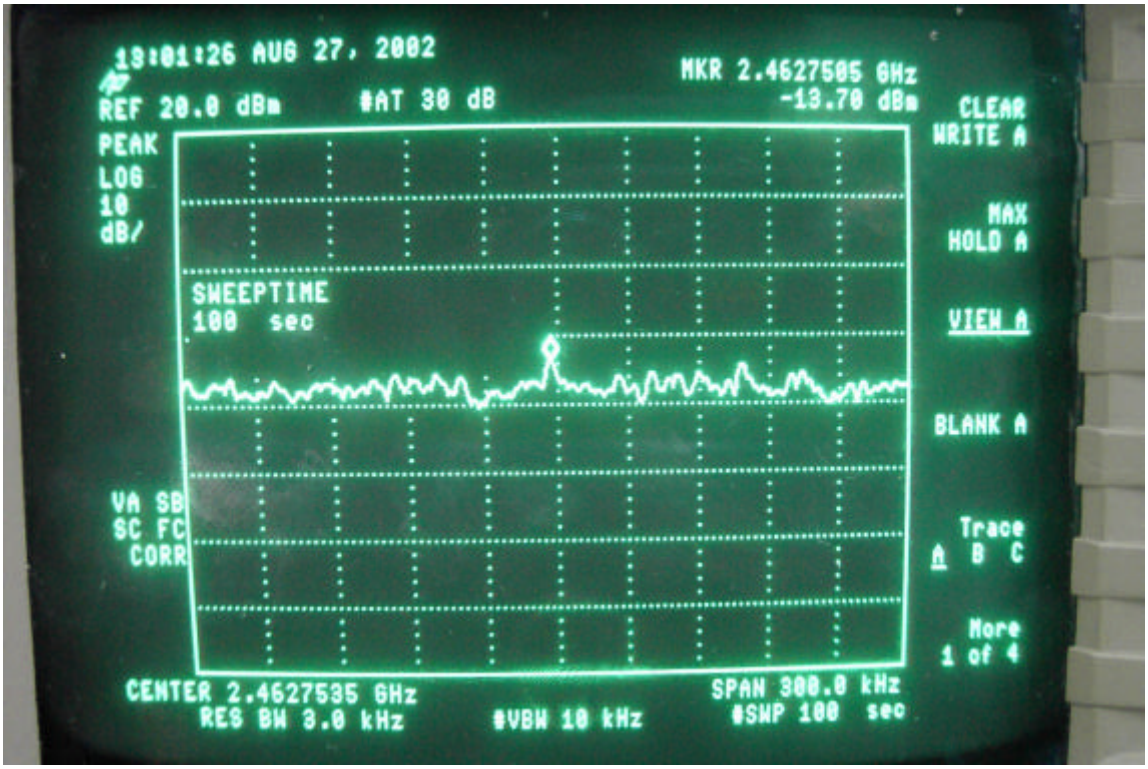
Channel 01


18:25:29 AUG 27, 2002
MKR 2.4127500 GHz
REF 20.0 dBm
#AT 30 dB
-14.46 dBm
CLEAR
WRITE A
PEAK
LOG
10
dB/
MAX
HOLD A
SWEEPTIME
100 sec
VIEW A
BLANK A
VA SB
SC FC
CORR
Trace
A B C
More
1 of 4
CENTER 2.4127500 GHz
SPAN 300.0 kHz
RES BW 3.0 kHz
#VBW 10 kHz
#SWP 100 sec

Channel 06


13:13:04 AUG 27, 2002
MKR 2.4347505 GHz
REF 20.0 dBm
#AT 30 dB
-13.94 dBm
MARKER
→ HIGH
PEAK
LOG
10
dB/
MARKER
→ CF
SWEEPTIME
100 sec
NEXT
PEAK
NEXT PK
RIGHT
VA SB
SC FC
CORR
NEXT PK
LEFT
More
1 of 3
CENTER 2.4347550 GHz
RES BW 3.0 kHz
#VBW 10 kHz
SPAN 300.0 kHz
#SWP 100 sec

Channel 11


13:01:26 AUG 27, 2002
MKR 2.4627505 GHz
REF 20.0 dBm
#AT 30 dB
-13.70 dBm
CLEAR
WRITE A
PEAK
LOG
10
dB/
MAX
HOLD A
SWEEPTIME
100 sec
VIEW A
BLANK A
VA SB
SC FC
CORR
Trace
A B C
More
1 of 4
CENTER 2.4627535 GHz
RES BW 3.0 kHz
#VBW 10 kHz
SPAN 300.0 kHz
#SWP 100 sec

Appendix A

Setting up Procedure

1. The EUT is inserted into PCMCIA slot of the Notebook for testing. By using the utility that is given by the manufacturer operating under the WindowsXP to control the EUT's in continuous transmission.
2. Then making access to the mode of continuous transmission and set testing channel. The test is performed under those specific conditions.