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NVLAP Lab code: 200068-0
ISO/IEC 17025:1999, ISO 9002:1994

FCC Test Report

On Model Name: 2.4G RF wireless digital audio transmitter and receiver
Model Numbers: ELPWA01T,ELPWA02R

Trade Marks: Original
FCC ID: UN9ETNRJPELPWA

Prepared for
Shenzhen Ether Electronics Ltd

According to FCC Part 15 ,Section 15.247
Hopping Frequency Spread Spectrum Device

Test Report #:	*FCC06-8072*
Prepared by:	*Ravin Su*
Reviewed by:	*Ivan Wen*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen — *Paul Chen*

2006, OCT, 08 — *Date*

List of Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	UN9ETNRJPELPWA_Test report.pdf
Operation Description	Technical Description	UN9ETNRJPELPWA_operation description.pdf
RF Modual Specification	Modual Specification	UN9ETNRJPELPWA_BT Modual Spec.pdf
External Photos	External Photos	UN9ETNRJPELPWA_ External Photos
Internal Photos	Internal Photos	UN9ETNRJPELPWA_internal Photos
Block Diagram	Block Diagram	UN9ETNRJPELPWA_Block Diagram.pdf
Schematics	Circuit Diagram	UN9ETNRJPELPWA_Schematics.pdf
ID Label/Location	Label and Location	UN9ETNRJPELPWA_Label & Location.pdf
User Manual	User Manual	UN9ETNRJPELPWA_User Manual.pdf
Test setup photos	Test setup photos	UN9ETNRJPELPWA_Test Setup Photos.pdf

Test Location

Tests performed at ShenZhen Electronic Product Quality Testing Center in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location: Electronic Testing Building Shahe Road, Xili, Nanshan District Shenzhen 518055, P.R.China.

Tel: 86-755-26703698

Fax: 86-755-26627238

Registration Number: 261032

Accreditation Bodies

EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.

In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public.

Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.

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ADMINISTRATIVE DATA

Test Sample	*: 2.4G RF wireless digital audio transmitter and Reciever*
Model Name	*: ELPWA01T, ELPWA02R*
FCC ID	*: UN9ETNRJPELPWA*
Model Tested	*: ELPWA01T, ELPWA02R*
Serial Number	*: Engineering Sample*
Date Tested	*: 2006, Oct 8th to 10th*
Applicant	*: Shenzhen Ether Electronics Ltd.*
	Room 708, Block A, Electronics Building, 2070 Shenzhen Zhong Road,Shenzhen,China
Telephone	*: 86 755-83783500*
Fax	*: 86 755-83240314*
Manufacturer	*: Shenzhen Ether Electronics Ltd.*
	Room 708, Block A, Electronics Building, 2070 Shenzhen Zhong Road,Shenzhen,China

EUT Description

Shenzhen Ether Electronics Ltd. , model tested ELPWA01T, ELPWA02R (referred to as the EUT in this report) is a 2.4G RF wireless digital audio transmitter and Reciever,The transmitter model is ELPWA01T and the receiver model is ELPWA02R.The EUT is a kind of wireless audio transmitter device ,operating in 2.4GHz ISM band,using Frequency Hopping Spread Spectrum modulation .

Frequency Range	*: 2404MHz-2478MHz*
Modulation type	*: FHSS*
Transmitting Distance	*: 10m*
Power Supply	*: ELPWA01T- DC 6V/0.1A*
	ELPWA02R- DC 15V/1A

Test Summary

The Electromagnetic Compatibility requirements on model ELPWA01T, ELPWA02R for this test is stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

VM-5602B has been found to conform to the following parts of the 47 CFR FCC as detailed below:

Part 15	Requirement	Result Pass/Fail	Comments
15.15(b)	General technical requirements	Pass	The product contains no user accessible controls that increase transmission power above allowable levels.
15.19	Labeling requirement	Pass	The label is shown in the label exhibit.
15.21	Information to user	Pass	Information to the user is shown in the instruction manual exhibit.
15.27	Special accessories	Pass	No special accessories are required for compliance.
15.203	Antenna requirement	Pass	The SMA-B antenna is employed, Please kindly see the antenna specification .
15.107&15.207	Conducted emission	Pass	The unit coplies with the conducted emission limit of 15.107&15.207
15.205(a)	Radiated Emissions in Restricted Bands	Pass	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.209(a)	Radiated Emissions limits, general requirements	Pass	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.247 (c)	Out of band & Band Edge measurements	Pass	The unit complies with the band edge emissions limits of 15.247.

Continue on to next page…

15.247(a)(1)(iii)	*20 dB Bandwidth*	*Pass*	*The unit complies with the 20dB bandwidth limits*
15.247(b)(1)	*Maximum peak Output Power*	*Pass*	*The unit complies with the peak power limits of 15.247.*
15.247(a)(1)	*Hopping Channel Carrier Frequency Separation (>25 KHz)*	*Pass*	*The unit complies with Hopping Frequency Separation the limits of 15.247.*
15.247(a)(1)(iii)	*Number of the Hopping Frequency (channels)*	*Pass*	*The unit complies with the Number of the Hopping Frequency limits of 15.247.*
15.247(a)(1)(iii)	*Average Channel Occupancy Time (<0.4s)*	*Pass*	*The unit complies with Average Channel Occupancy Time (<0.4s) limits of 15.247.*
15.247(e)	*RF exposure*	*Pass*	*The unit complies with the limits of 1.1307.*

This report an application for Certification of Transmitter operation pursuant to FCC part 15.247, code of federal regulations 47. The product covered by this report is the ELPWA01T, ELPWA02R . This report is designed to demonstrate the compliance uof this device with the requirements outlined in 47 CFR Part 15 using the methods in CFR 47 Part 2.

Test Mode Justification

This device complies with Part 15 of the FCC rules. Operations is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

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Equipment Modification

Any modifications installed previous to testing by Shenzhen Ether Electronics Ltd. will be incorporated in each production model sold or leased in United States.

There were no modifications for this EUT intended for grant.

Test System Details

EUT				
Model Name:	*ELPWA01T, ELPWA02R*			
Tested Model Name:	*ELPWA01T, ELPWA02R*			
Serial Number:	*Engineering Sample*			
Description:	*2.4G RF wireless digital audio transmitter and Reciever*			
Manufacturer:	*Shenzhen Ether Electronics Ltd.*			
Power Cable Description				
From	*To*	*Length (Meters)*	*Shielded (Y/N)*	*Ferrite Loaded (Y/N)*
None				

Test Methodology

Testing was performed according to the measurement guidelines specified in FCC Public Notice DA00-705.

Radiated emissions testing are performed according to the procedures specified in ANSI C63.4-2003.

Frequency Range investigated:	*30 MHz to 25 GHz*
Measurement Distance:	*3 meter at 30 MHz to 2 GHz* *3 Meter at 2 GHz to 25 GHz*
EUT Power Source:	*230V AC /50Hz*
Emission Maximization:	*Antenna (1m to 4m) height and* *Horizontal/Vertical polarization* *360-degree turntable rotated and* *EUT rotated three orthogonal axes.*
Temperature:	*25°C*
Humidity:	*52%*
Atmosphere Pressure:	*98KPa*

1. FCC 15.107&15.207 Conducted emission

Conducted limits:

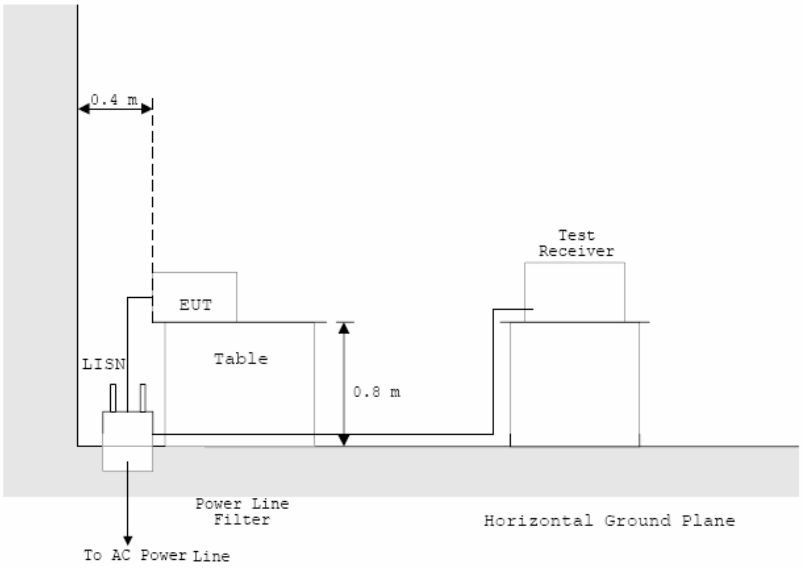
According to FCC §15.107 and §15.207, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50H/50 ohms line impedance stabilization network (LISN).

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Test procedure :

According to description of ANSI C63.4-2003 sec.13.1.3 , the AC power line conducted emission measurements were carried out. The conducted measurements were performed using the EMI test receiver to observe the emission characteristics of the EUT.

The EUT configuration , cable configuration and mode of operation were determined for producing the maximum level of emission , These configurations were used for final AC power line conducted emissions measurements .



Test result :

ELPWA01T:

No.	Freq. (MHz)	Limit Value (dBμV)		Emission Level (dBμV)	
		QP	AV	QP	AV
1	0.2040	63.4	53.4	44.4	37.6
2	0.3975	57.9	47.9	46.2	40.1
3	0.5955	56.0	46.0	42.3	36.7
4	0.6090	56.0	46.0	41.4	36.8

ELPWA02R:

No.	Freq. (MHz)	Limit Value (dBμV)		Emission Level (dBμV)	
		QP	AV	QP	AV
1	0. 303	60. 2	50. 2	47.8	45.6
2	0. 6000	56. 0	46. 0	47.7	43.2
3	0. 9015	56. 0	46. 0	44.6	40.7
4	1. 4955	56. 0	46. 0	43.0	38.7
5	8. 4975	60. 0	50. 0	46.9	40.1

NOTE:

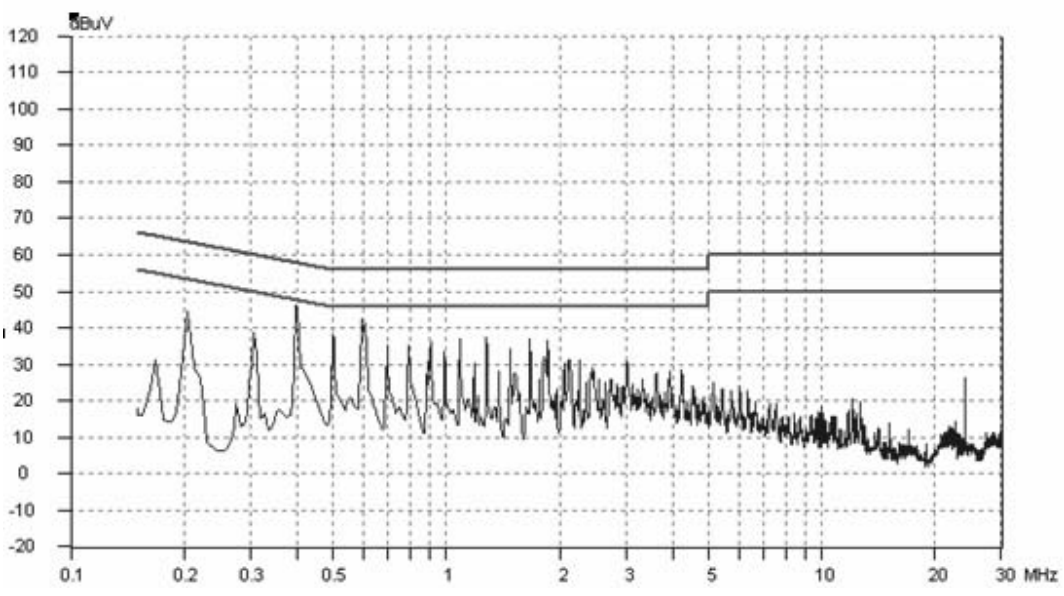
1. *QP and AV are abbreviations of the quasi-peak and average individually.*
2. *If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.*
3. *The emission levels recorded above is the larger ones of both L phase and N phase.*

Test Equipment List:

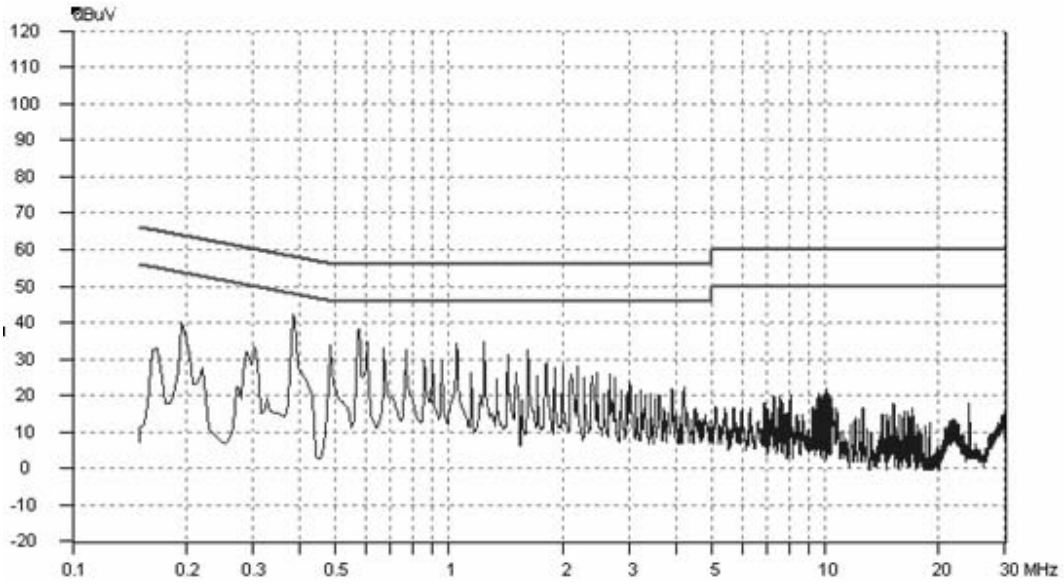
Test Equipment	Manufacturer/ Model	Serial No.	Last Cal.	Cal. Due
EMI Receiver	SCHWARZBECK	FCKL1528	06/10/06	06/09/07
AMN	SCHWARZBECK	NALK8127	06/10/06	06/09/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated and traceable to the National Institute of Standards and Technology (NIST).				

Plot of Conducted Emission Measurement :

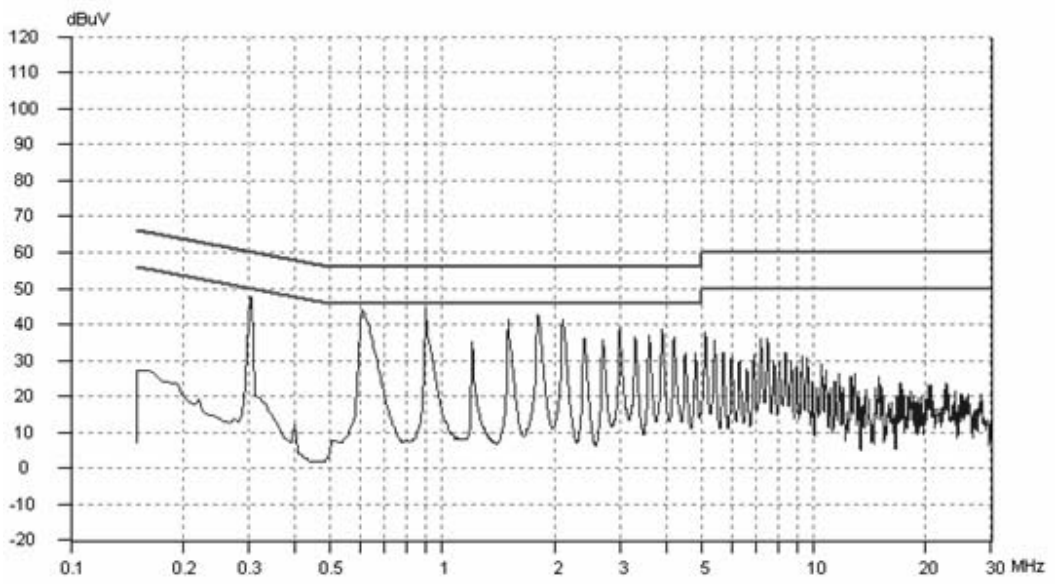
1. Mains terminal disturbance voltage, L phase, ELPWA01T



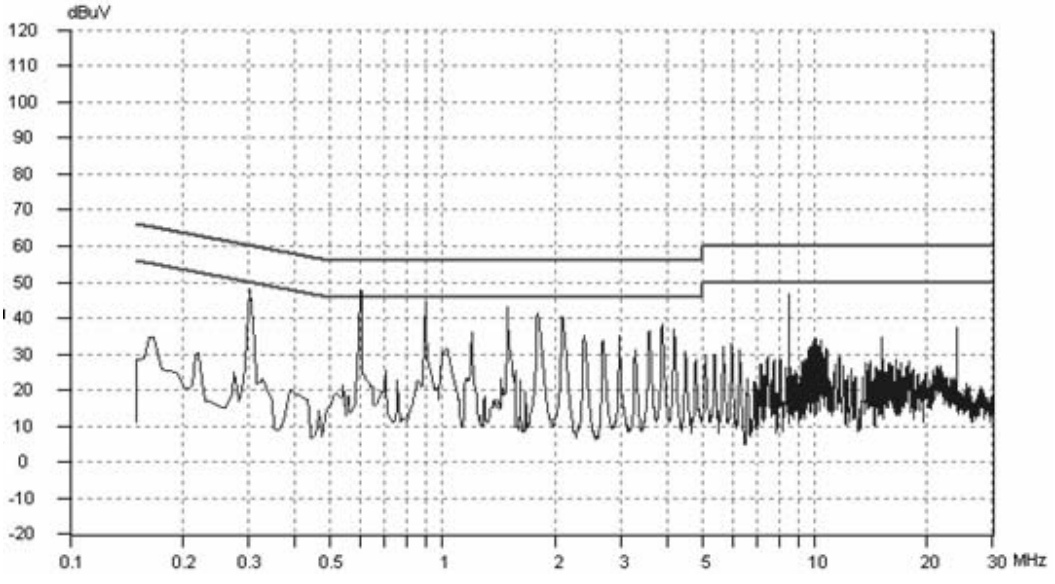
2. Mains terminal disturbance voltage, N phase, ELPWA01T



3. Mains terminal disturbance voltage, L phase, ELPWA02R



4. Mains terminal disturbance voltage, N phase, ELPWA02R



2. FCC 15.247 (b) (1) Maximum Peak Output Power

According to FCC §15.247(a), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, which ever is greater, provided the systems operate with an output power no greater than 125mW.

Frequency MHz	Channels	Types of Devices	Power
2404-2478	38	Hopping	0.125 Watt

Test Procedure:

Remove the antenna from the EUT and then connect the transmitter output to the power meter via a suitable attenuator. Set the EUT transmitting continuously to each of low, middle, and high frequency.

Test Result:

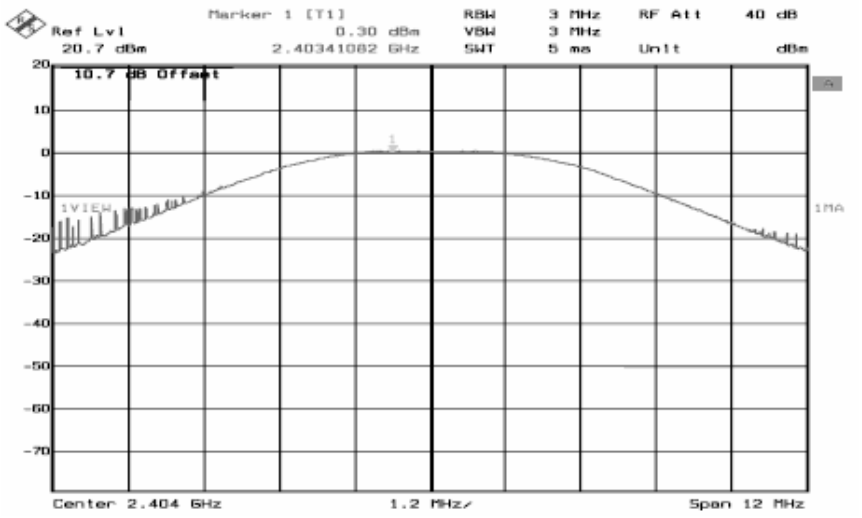
Channel	Frequency (MHz)	Reading (dBm)	Attenuation Factor (dB)	Corrected Reading (dBm)	Limit	Result
Low	2404	-29.7	30	0.3	0.125W (21dBm)	Pass
Middle	2441	-29.67	30	0.33	0.125W (21dBm)	Pass
High	2478	-31.80	30	-1.80	0.125W (21dBm)	Pass

Test Equipment List :

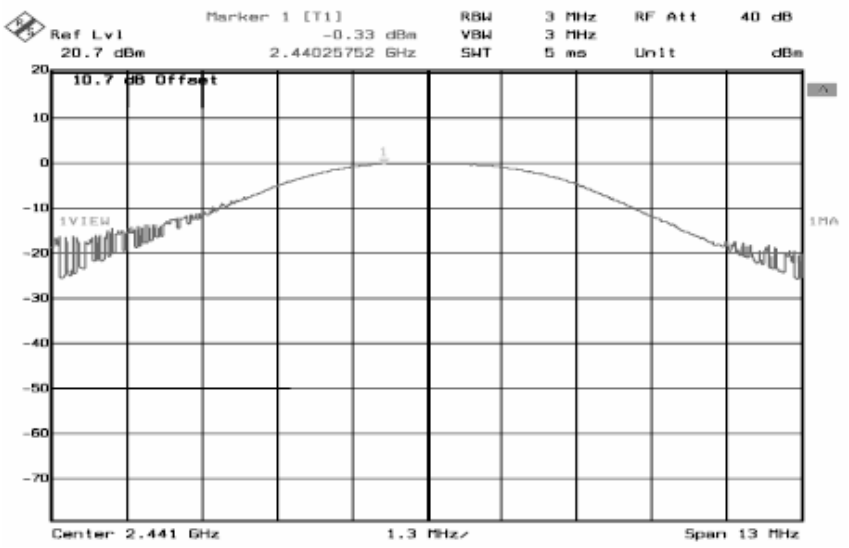
Test Equipment	*Manufacturer*	*Model*	*Serial No.*	*Last Cal.*	*Cal. Due*
Power Meter	*HP*	*436A*	*2347A17569*	*12/01/05*	*12/01/06*
Power Sensor	*HP*	*8484A*	*1635A01630*	*12/01/05*	*12/01/06*
Attenuator	*MFR*	*M3933/10-5*	*N/A*	*N/A*	*N/A*

Test Plots of Maximum Peak Output Power :

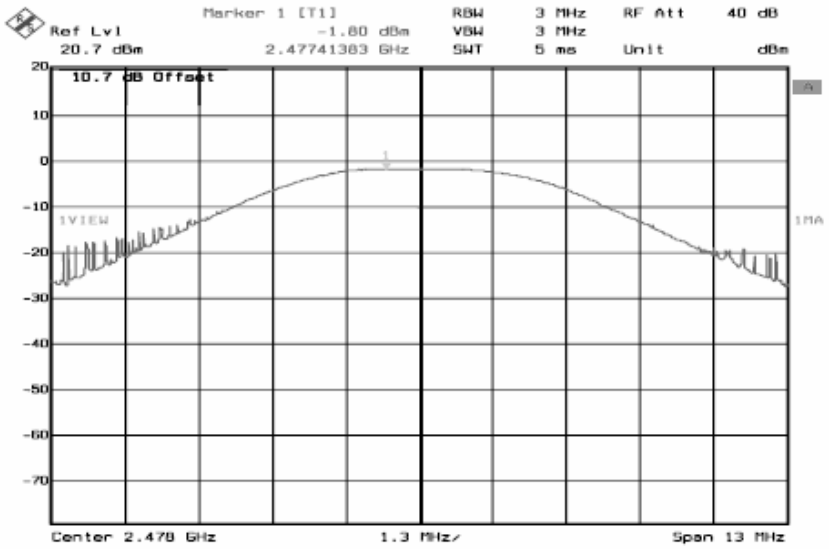
Low Channel



Mid channel



High channel



3. FCC 15.247 (a) (1) Hopping Channel 20 dB Bandwidth

Test Procedure:

a. The center frequency of the analyzer was set to the hopping channel under investigation.
b. The antenna port of the EUT was connected to the input of a spectrum analyzer.
c. Analyzer RBW> 1% of the 20dB bandwidth. VBW >RBW or VBW = RBW
d. Span > 3 times the 20dB bandwidth.
e. Max hold, peak detection.

Test Results:

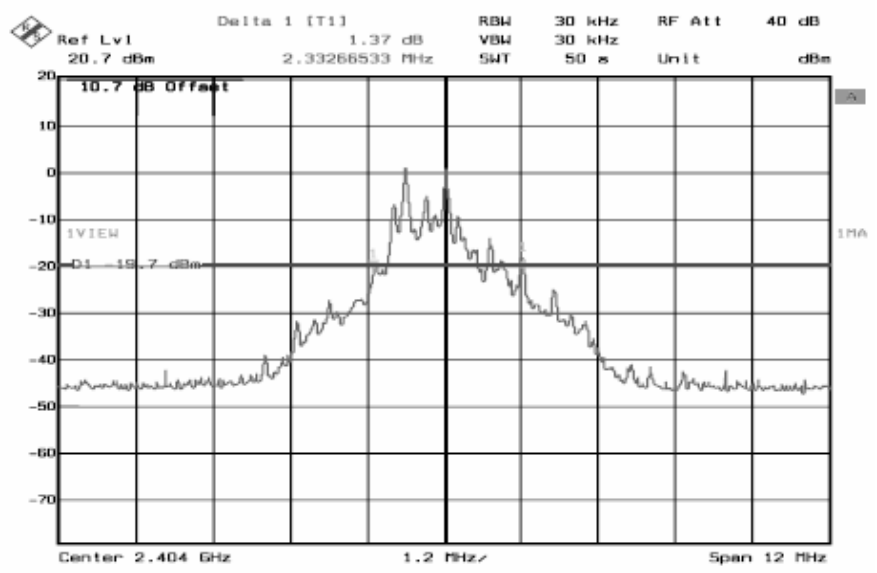
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2404	2.332MHz
Mid	2441	2.309MHz
High	2478	2.1101MHz

Test Equipment List:

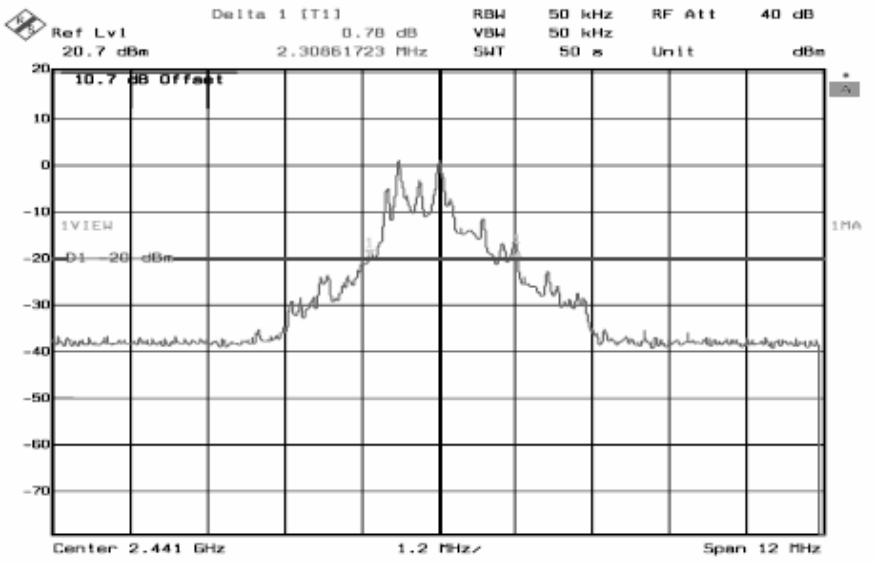
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	HP	8566B	2410A00224	12/01/05	12/01/06
Quasi Peak Adapter	HP	85650A	3145A01658	12/01/05	12/01/06
Plotter	HP	7470A	2308A27405	No Cal required	No Cal required

Test Plots of 20dB Bandwidth :

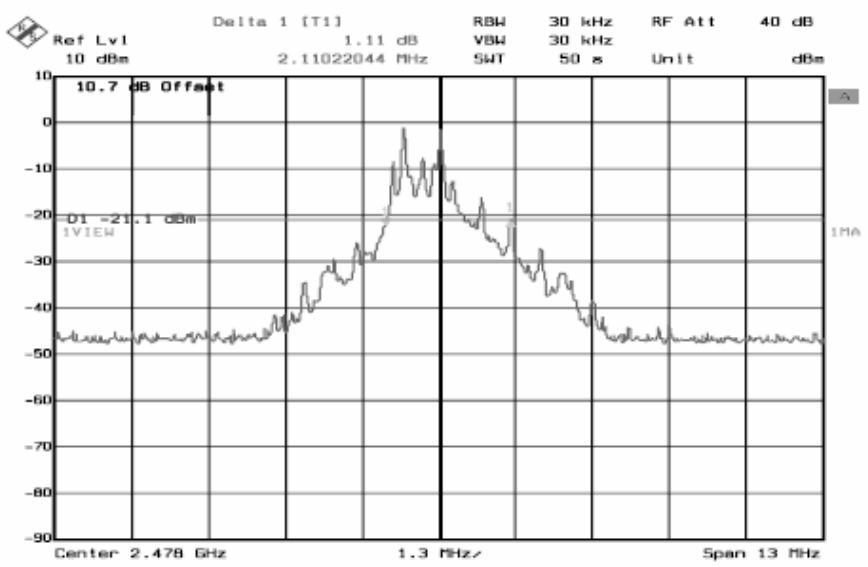
Low Channel



Mid Channel



High Channel:



4. FCC 15.247 (a) (1) (iii) Hopping Channel Carrier Frequency Separation

Carrier Frequency Separation Limit:

According to 15.247(a)(1), frequency hopping systems operating in the 2400 – 2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or 2/3 of the 20dB bandwidth, whichever is greater, provided the systems operate with an output power no greater than 125mW (21 dBm).

Test Procedures:

a. *Enable the hopping function for the EUT.*
b. *Set analyzer's span wide enough to capture the peaks of two adjacent channels.*
c. *Set RBW > 1% of the span, VBW = RBW, Max peak hold.*
d. *Using the Delta Marker function to determine the separation between the peaks of the adjacent channels.*

Test Results:

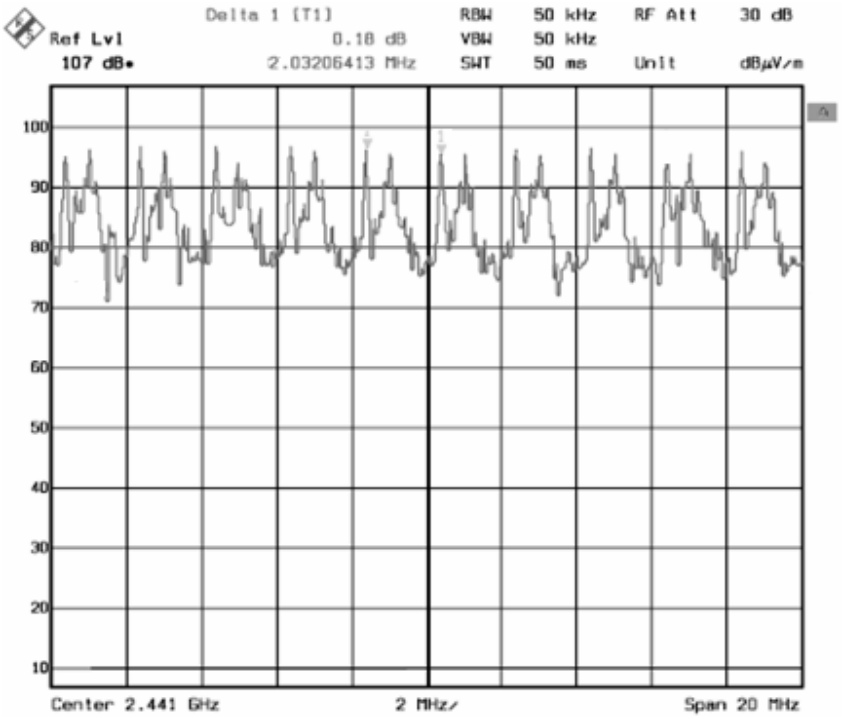
Channel	Hopping Frequency Separation (MHz)	2/3 20 dB Bandwidth (MHz)	Result
Mid.	2. 03	1.54	Pass

Note: *The EUT's output power is 1.3 dBm.*

Test Equipment List:

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	HP	8566B	2410A00224	12/01/05	12/01/06
Quasi Peak Adapter	HP	85650A	3145A01658	12/01/05	12/01/06
Plotter	HP	7470A	2308A27405	No Cal required	No Cal required

Test Plots of Channel Separation:



5. FCC 15.247 (a) (1) (iii) Number of Hopping Frequencies

Requirements for Number of Hopping Frequencies:

According 15.247(a)(1)(iii), frequency hopping systems in 2404 – 2478 MHz shall use at least 15 channels.

Channel centre frequencies:

The 38 user defined channel centre frequencies are listed in the table below.the value are in GHz.

UDC 0:	2.404	UDC 10:	2.424	UDC 20:	2.444	UDC 30:	2.464
UDC 1:	2.406	UDC 11:	2.426	UDC 21:	2.446	UDC 31:	2.466
UDC 2:	2.408	UDC 12:	2.428	UDC 22:	2.448	UDC 32:	2.468
UDC 3:	2.410	UDC 13:	2.430	UDC 23:	2.450	UDC 33:	2.470
UDC 4:	2.412	UDC 14:	2.432	UDC 24:	2.452	UDC 34:	2.472
UDC 5:	2.414	UDC 15:	2.434	UDC25:	2.454	UDC 35:	2.474
UDC 6:	2.416	UDC 16:	2.436	UDC 26:	2.456	UDC 36:	2.476
UDC 7:	2.418	UDC 17:	2.438	UDC 27:	2.458	UDC 37:	2.478
UDC 8:	2.420	UDC 18:	2.440	UDC 28:	2.460		
UDC 9:	2.422	UDC 19:	2.442	UDC 29:	2.462		

Test Procedures:

e. *Enable hopping function for the EUT.*
f. *Set the analyzer's span = the band (2400 – 2483.5 MHz)*
g. *Set RBW > 1% of the span, VBW = RBW, Max. peak hold.*

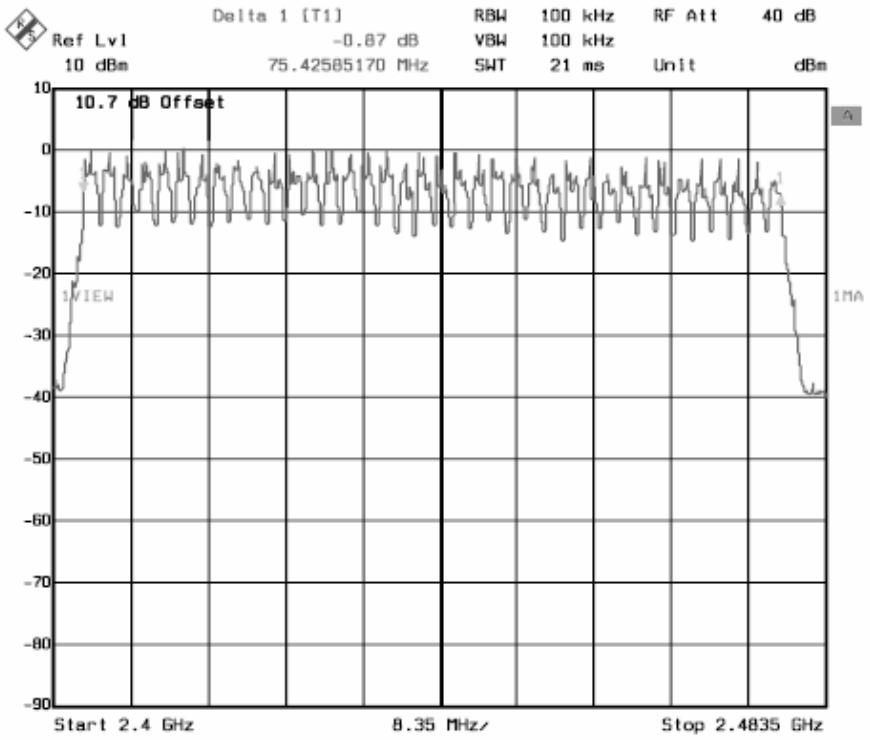
Test Data:

Frequency (MHz)	Number of hopping channels	Result
2404 -2478	38	Complies

Test Equipment List:

Test Equipment	*Manufacturer*	*Model*	*Serial No.*	*Last Cal.*	*Cal. Due*
Spectrum Analyzer	*HP*	*8566B*	*2410A00224*	*12/01/05*	*12/01/06*
Quasi Peak Adapter	*HP*	*85650A*	*3145A01658*	*12/01/05*	*12/01/06*
Plotter	*HP*	*7470A*	*2308A27405*	*No Cal required*	*No Cal required*

Plots of Number of Hopping Frequencies:



6. FCC 15.247 (a) (1) (iii) Average Channel Occupancy Time

Limit of Average Channel Occupancy Time:

According to 15.247(a)(1)(iii), for frequency hopping systems in the 2400 – 2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 S within a period of 0.4 S multiplied by the number of hopping channels employed.

Test Procedures:

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. The EUT must have its hopping function enabled.

3. Use the following spectrum analyzer settings:
Span = zero span, centered on a hopping channel RBW = 1 MHz
VBW >= RBW
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector function = peak
Trace = max hold

4. Use the marker-delta function to determine the dwell time. Plot the result on the screen of spectrum analyzer.

5. Repeat above procedures until all frequencies measured were complete.

Test Result : *Complies*

Test Data:

Period=0.4 sec x 38 channel= 15.2 sec
Dwell time of RF burst per channel=1.22ms
Time between each RF burst on same RF channel=110.22ms
*Time of occupancy on a channel=(1.22ms/110.22ms)*15.2s=0.169s*

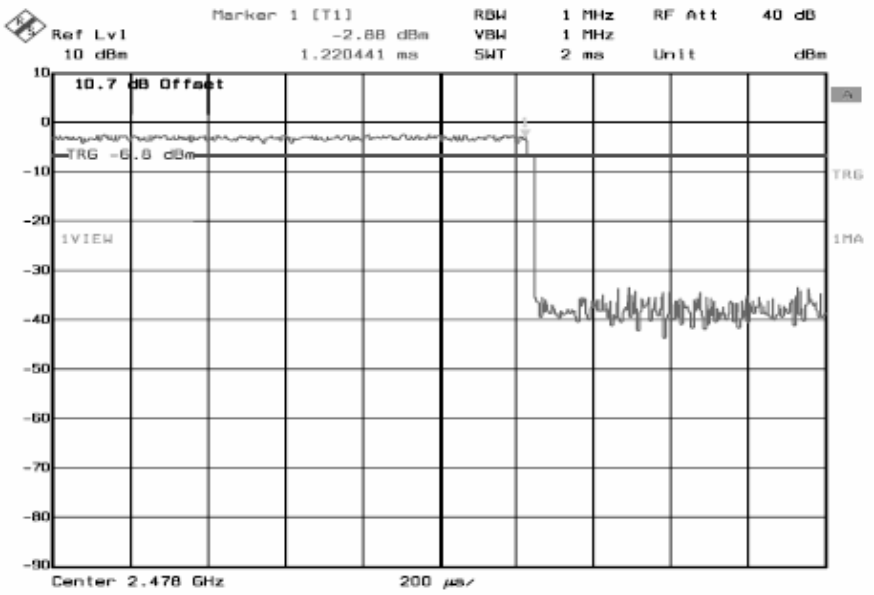
Note:

1. Please see the Plotted Data as follows
2.The expanded uncertainty of dwell time on each channel tests is 2dB.

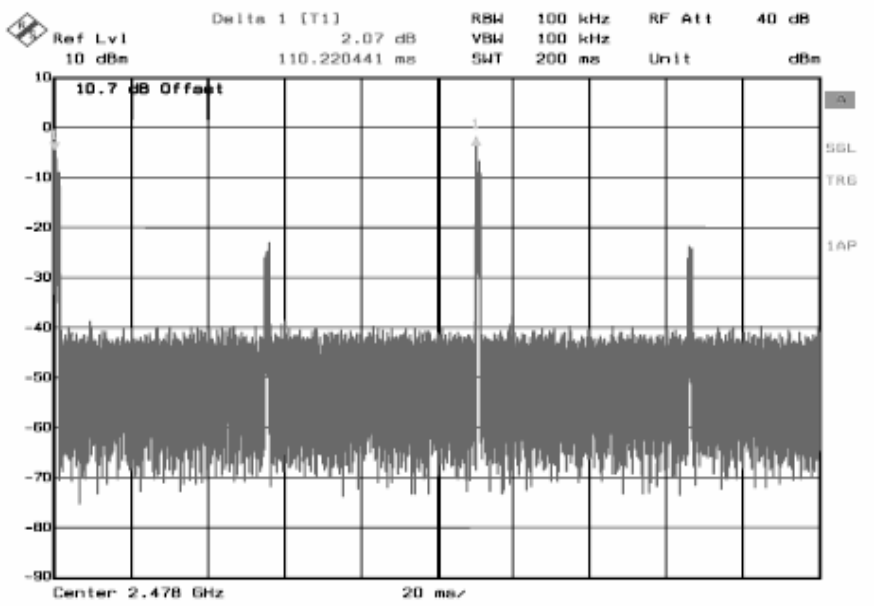
Test Equipment List:

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Spectrum Analyzer	Aglient	E4440A	MY42510126	Aug 31,2005	Aug.30,2006
Attenuator	Weinschel Engineering	1	N/A	N/A	N/A

Plotted Data for Channel Dwell Time :



Dwell time of RF burst per channel



Dwell time of RF burst per channel

7. 100 kHz bandwidth of the band edges

Limit:

According to 15.247(c), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

Test Procedures:

1. Set the EUT operating at the lowest channel.

2. Use the following spectrum analyzer settings:
VBW = RBW=100KHz

3. Set analyzer Start and Stop frequencies to coincide with band edges of operating band..

4. Plot the graph

5. Repeat the above for the highest channel.

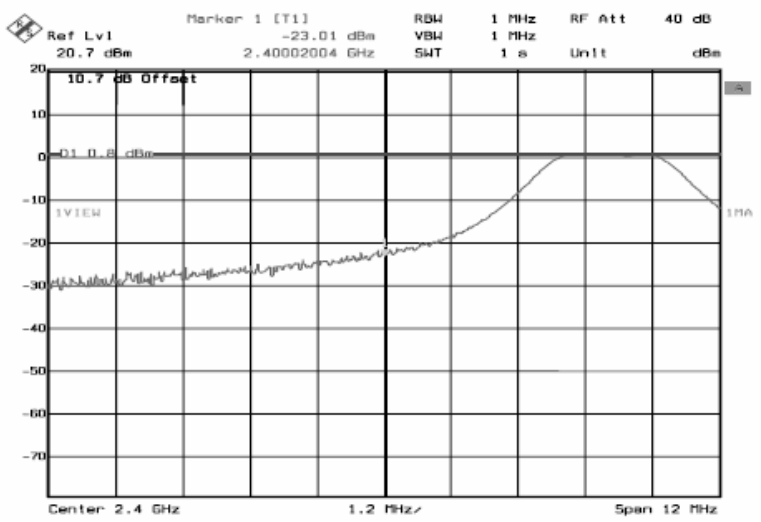
Test Result : *Complies*

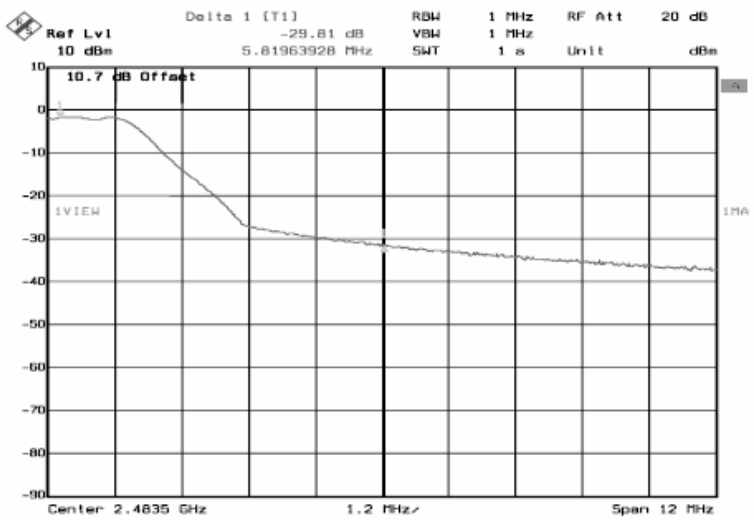
Frequency	*Power below nearest channel dBm*	*Limit*	*Margin*
2.400 GHz	*-23.0*	*-20*	*-3.0*
2.4835GHz	*-29.8*	*-20*	*-9.8*

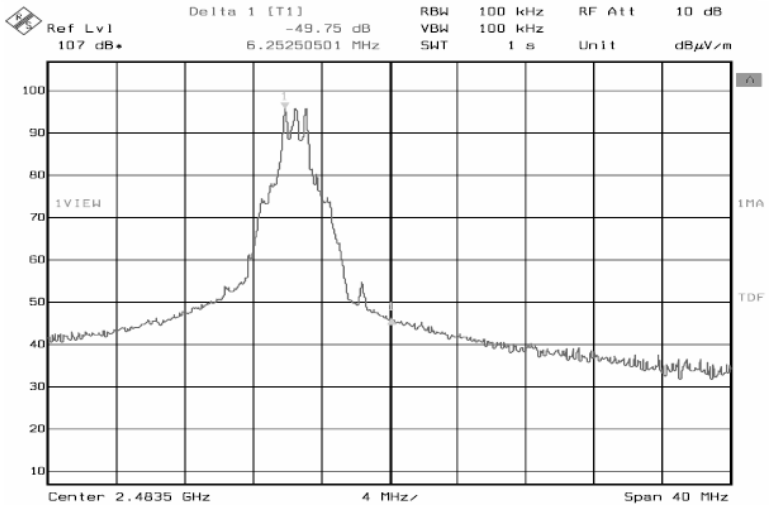
Test Equipment List:

Test Equipment	*Manufacturer*	*Model*	*Serial No.*	*Last Cal.*	*Cal. Due*
Spectrum Analyzer	*Rohde&Schwaz*	*FSP*	*100034*	*05/31/06*	*05/31/07*
Attenuator	*Weinschel Engineering*	*1*	*N/A*	*N/A*	*N/A*

Plot of Out-of-band Conducted Emission :







8. Radiated Emission Measurement

Limit:

According to §15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with §15.247 (c)

.And according to 15.33(a)(1),for an intentional radiator operates below 10GHz,the frequency range of measurements:to the tenth harmonic of the highest fundamental frequency or to 40GHz,whichever is lower.

Radiated emissions, which fall in the restricted band, as defined in Section 15.205(a), must comply with the radiated emission limits specified in §15.209(a)

Frequency (MHz)	Field strength (micro volts/meter)	Measure 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

Test Procedures:

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 3 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 degree to 360 degree With a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

5. Repeat step 4 until all frequencies need to be measured were complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Test Result : *Complies*

Set-up/Configuration:

Figure 1 : Frequencies measured below 1 GHz configuration

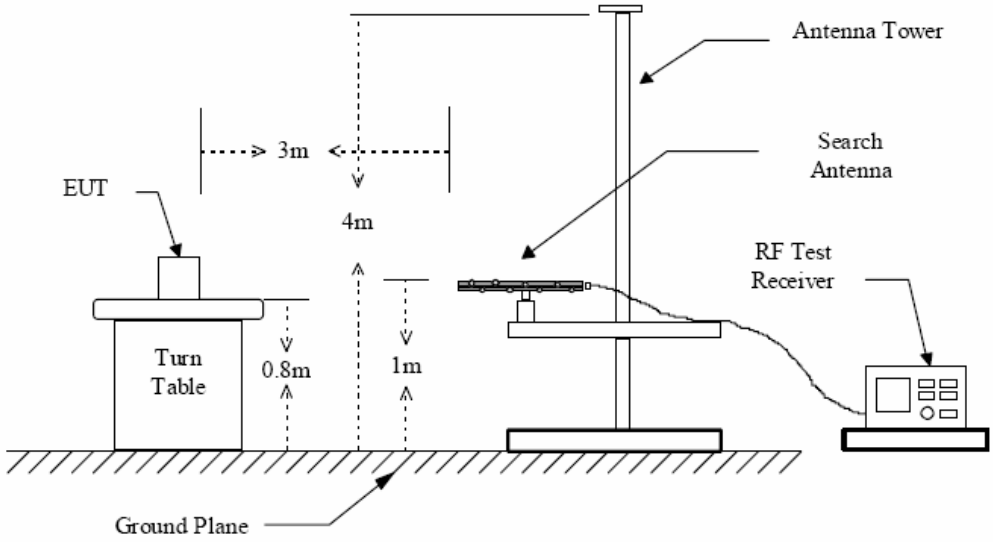
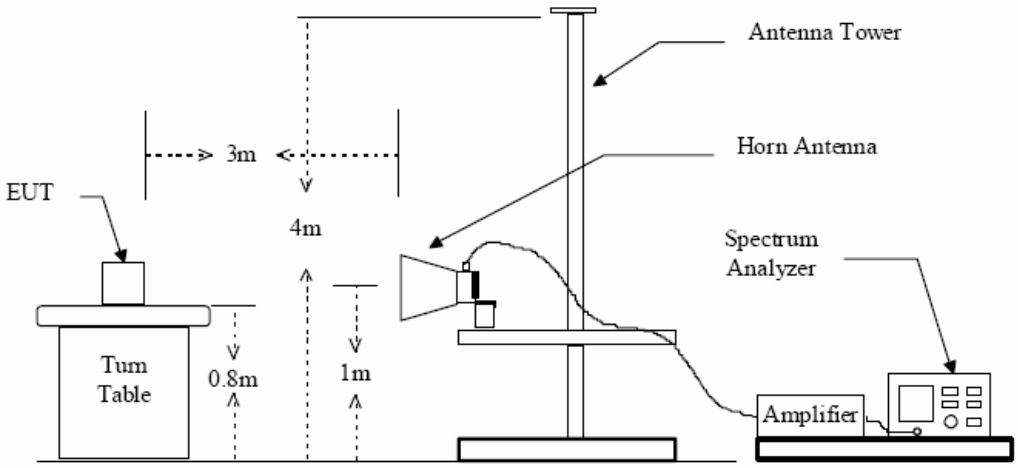


Figure 2 : Frequencies measured above 1 GHz configuration



Test Equipment List:

Test Equipment	*Manufacturer*	*Model*	*Serial No.*	*Last Cal.*	*Cal. Due*
EMI Test Receiver	*Rohde & Schwarz*	*ESI26*	*SB3436*	*01/26/06*	*01/25/07*
Horn Antenna	*Rohde & Schwarz*	*HF906*	*SB3435*	*01/26/06*	*01/25/07*
Bilog Antenna	*Chase*	*CBL6112A*	*SB3440*	*01/26/06*	*01/25/07*
Horn Antenna	*Rohde & Schwarz*	*AT4560*	*SB3435/03*	*01/26/06*	*01/25/07*
Preamplifier	*Rohde & Schwarz*	*--*	*SB3435/01*	*01/26/06*	*01/25/07*
Preamplifier	*Rohde & Schwarz*	*---*	*SB3435/02*	*01/26/06*	*01/25/07*

Instrument Setup:

Frequency	*Resolution bandwidth*	*Video bandwidth*	*Function*
< 1 GHz	*120 KHz*	*300 KHz*	*QP*
> 1 GHz	*1 MHZ*	*3 MHz*	*Peak*
> 1 GHz	*1 MHZ*	*10 Hz*	*Ave.*

Radiated Emission Data :

Peak value :

Frequency	RF channel	Dist. corr. factor	Field strength, Peak, 3 metres	Duty cycle	Limit	Margin
GHz	GHz	dB	dBμV/m	dB	dBμV/m	dB
4.802	2.404	0	57.41		74	16.59
4.881	2.441	0	57.06		74	16.94
4.954	2.478	0	54.58		74	19.42
7.210	2.404	0	56.38		74	17.62
7.322	2.441	0	59.33		74	14.67
7.432	2.478	0	57.06		74	16.94
9.912	2.478	0	None detected		74	-
12.386	2.478	0	57.52		74	16.48

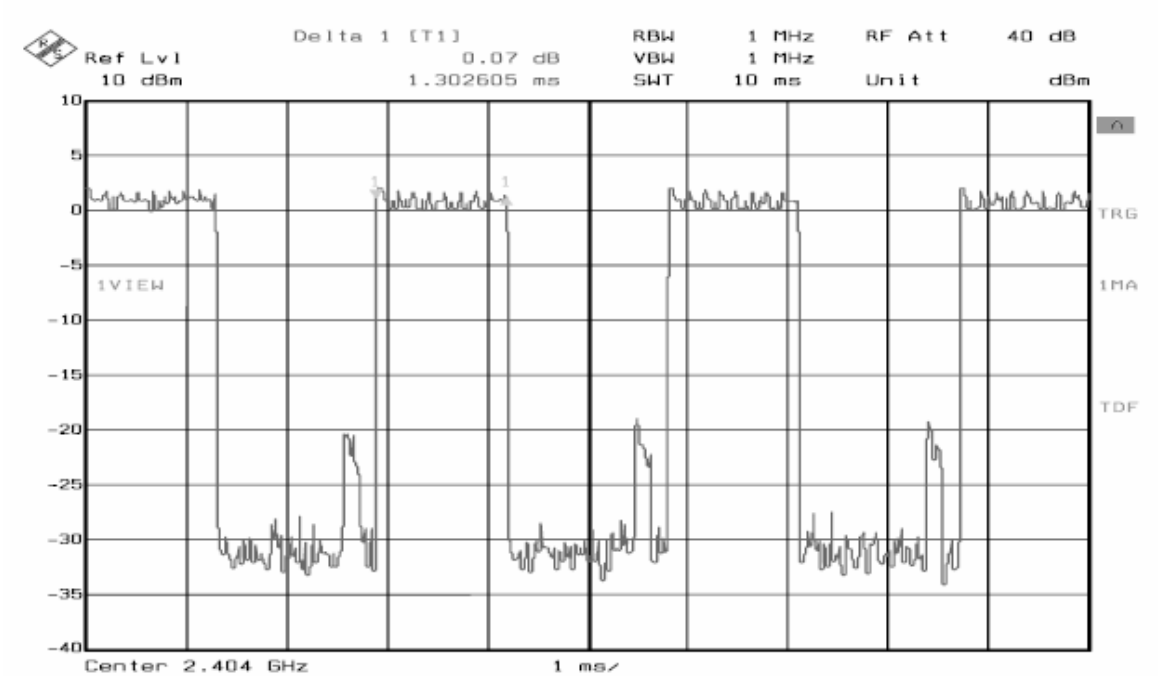
Average value :

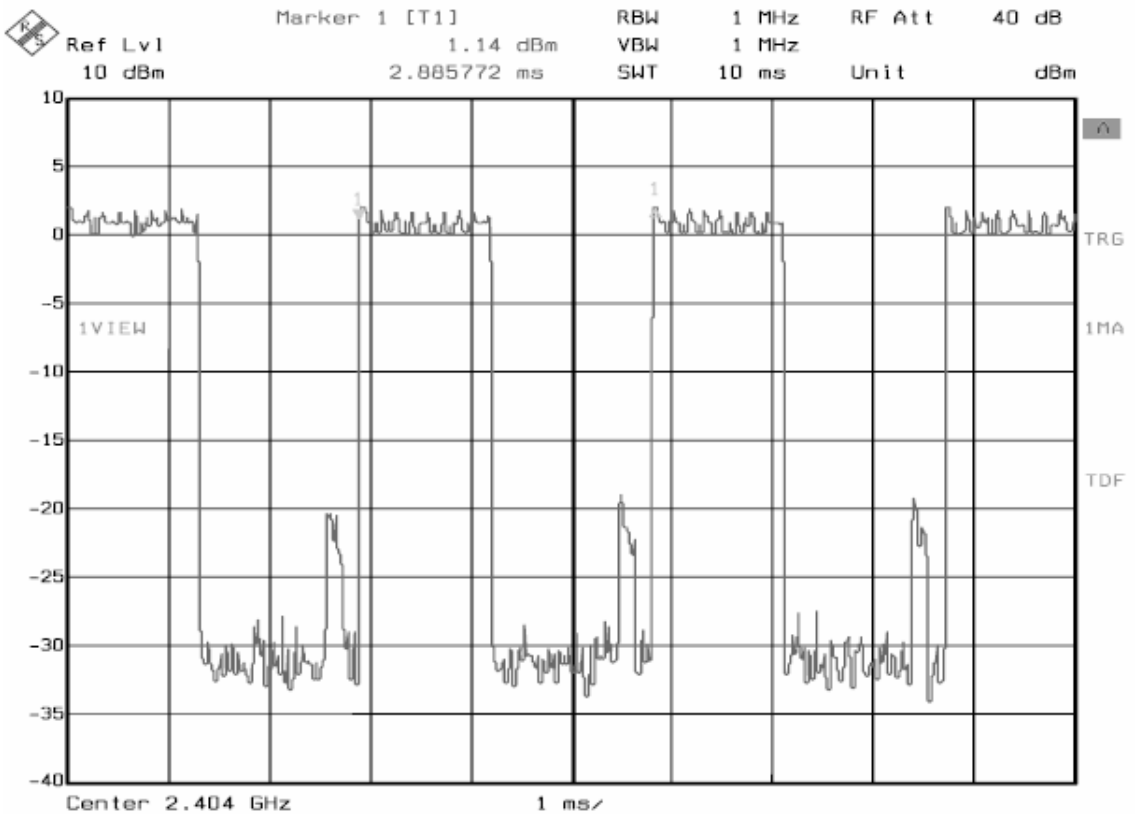
Frequency	RF channel	Dist. corr. factor	Field strength, Peak, 3 metres	Duty cycle	Limit	Margin
GHz	GHz	dB	dBμV/m	dB	dBμV/m	dB
4.802	2.404	0	57.41	-6.9	54	3.49
4.881	2.441	0	57.06	-6.9	54	3.84
4.954	2.478	0	54.58	-6.9	54	6.32
7.210	2.404	0	56.38	-6.9	54	4.52
7.322	2.441	0	59.33	-6.9	54	1.57
7.432	2.478	0	57.06	-6.9	54	3.84
9.912	2.478	0	None detected	-	54	-
12.386	2.478	0	57.58	-6.9	54	3.32

Note :

1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m)
= Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
3. The other emission levels were very low against the limit (>20dB to limit).
4.None detected over 12.5GHz due to the emissions level is too low to be measured.
5. Duty cycle : calculation according to RF burst para 15.35
20log (1.3ms/2.88ms) = -6.9 dB

plots of duty cycle :





Radiated Emissions in Restricted Bands:

Restricted Frequency band : 2310MHz-2390MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table	Ant.
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2321.320	70.2	---	66.2	---	-31.4	38.8	---	74.0	54.0	-28.2	98	1.5
2377.410	68.1	---	67.1	---	-31.1	37.0	---	74.0	54.0	-28.3	125	1.5

Restricted Frequency band : 2483.5MHz-2500MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table	Ant.
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2488.320	69.2	---	68.1	---	-30.6	38.6	---	74.0	54.0	-30.2	178	1.4
2493.170	71.1	---	68.0	---	-30.6	40.5	---	74.0	54.0	-29.6	88	1.4

Other Emissions frequency below 1G(worst case):

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
145.560	V	33.0	-10.4	22.6	43.5	-20.9	96	1.2
216.570	V	33.6	-6.0	27.6	46.0	-18.4	55	1.1
264.090	V	32.0	-3.8	28.2	46.0	-17.8	73	1.0
431.600	H	31.5	-5.5	26.0	46.0	-20.0	92	1.5
521.900	H	29.7	-4.9	24.8	46.0	-21.2	145	1.5
566.700	H	31.7	-5.3	26.4	46.0	-19.6	206	1.2

Note :

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

2. Correction Factor(dB/m)
= Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)

3. The other emission levels were very low against the limit (>20dB to limit).

4. Remark "--" means that the emissions level is too low to be measured.

Radiated Emissions in Restricted Bands:

Restricted Frequency band : 2310MHz-2390MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table	Ant.
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2321.320	70.2	---	66.2	---	-31.4	38.8	---	74.0	54.0	-28.2	98	1.5
2377.410	68.1	---	67.1	---	-31.1	37.0	---	74.0	54.0	-28.3	125	1.5

Restricted Frequency band : 2483.5MHz-2500MHz

Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin	Table	Ant.
	H		V		(dB)	Peak	Ave	Peak	Ave.	(dB)	Deg. (Deg.)	High
(MHz)	Peak	Ave	Peak	Ave	Corr.							(m)
2488.320	69.2	---	68.1	---	-30.6	38.6	---	74.0	54.0	-30.2	178	1.4
2493.170	71.1	---	68.0	---	-30.6	40.5	---	74.0	54.0	-29.6	88	1.4

Other Emissions frequency below 1G(worst case):

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
145.560	V	33.0	-10.4	22.6	43.5	-20.9	96	1.2
216.570	V	33.6	-6.0	27.6	46.0	-18.4	55	1.1
264.090	V	32.0	-3.8	28.2	46.0	-17.8	73	1.0
431.600	H	31.5	-5.5	26.0	46.0	-20.0	92	1.5
521.900	H	29.7	-4.9	24.8	46.0	-21.2	145	1.5
566.700	H	31.7	-5.3	26.4	46.0	-19.6	206	1.2

Note :

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

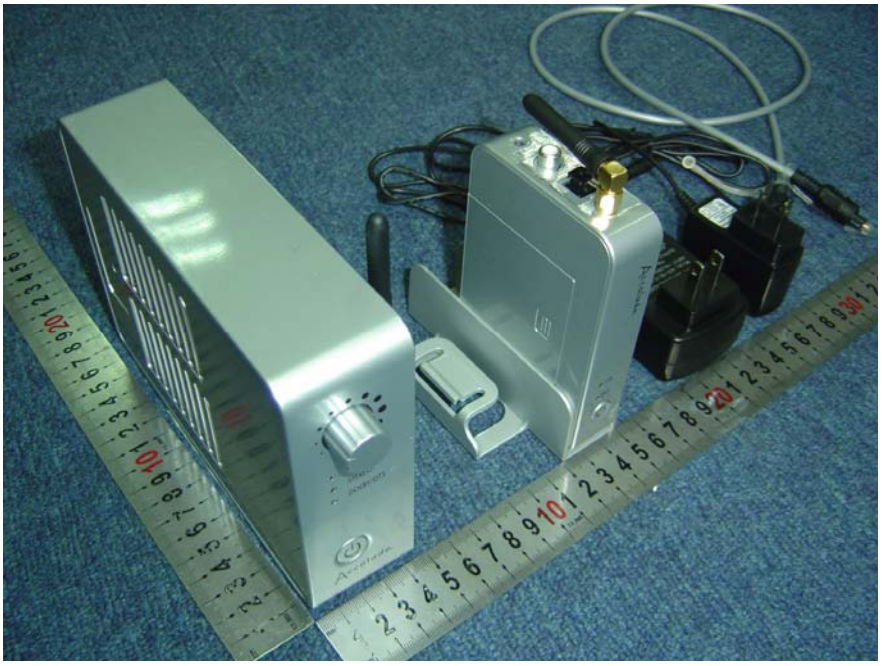
2. Correction Factor(dB/m)
= Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)

3. The other emission levels were very low against the limit (>20dB to limit).

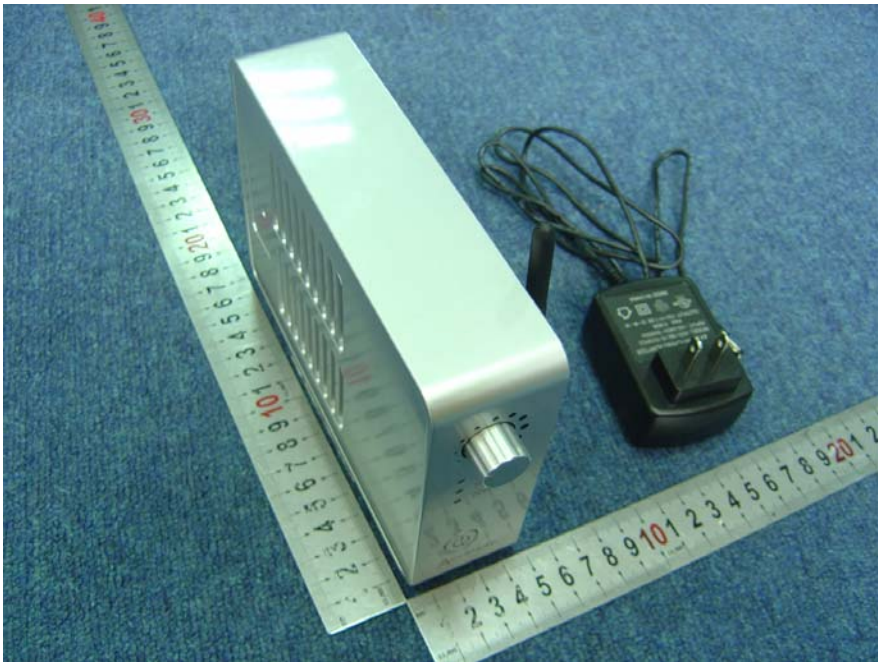
4. Remark "--" means that the emissions level is too low to be measured.

Appendix I: Photographs of the EUT

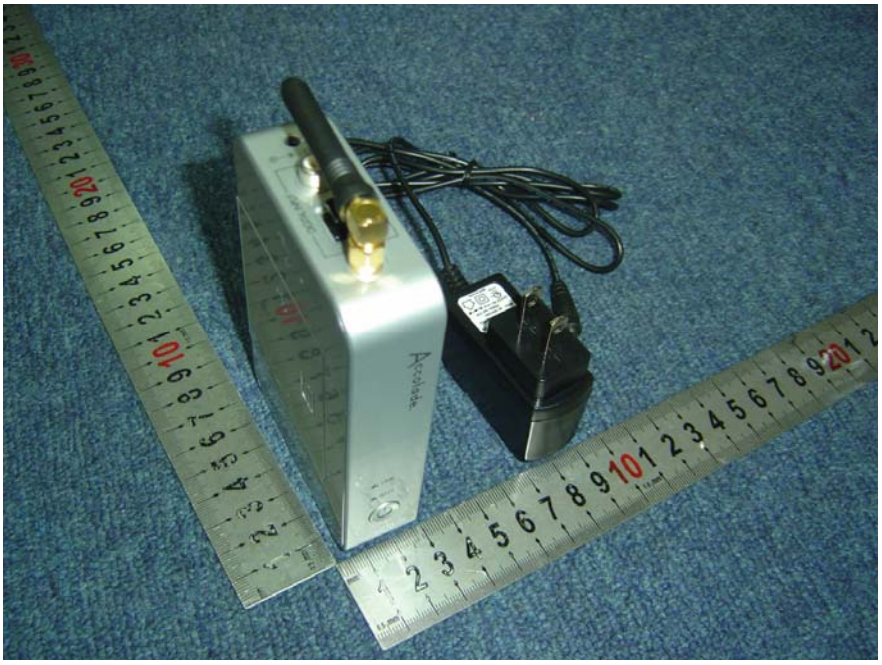
1. Appearance of the EUT



1.1 Receiver:

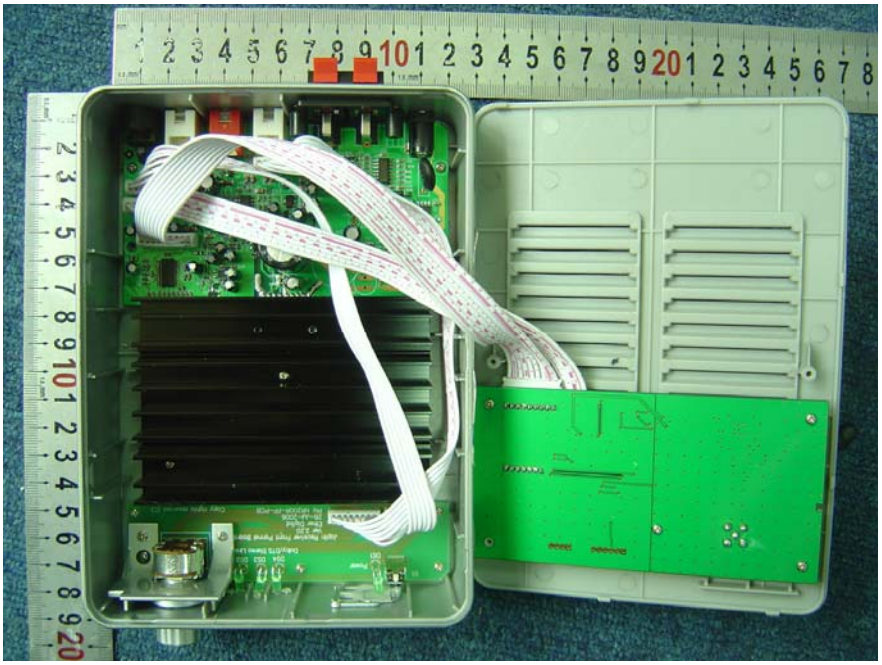


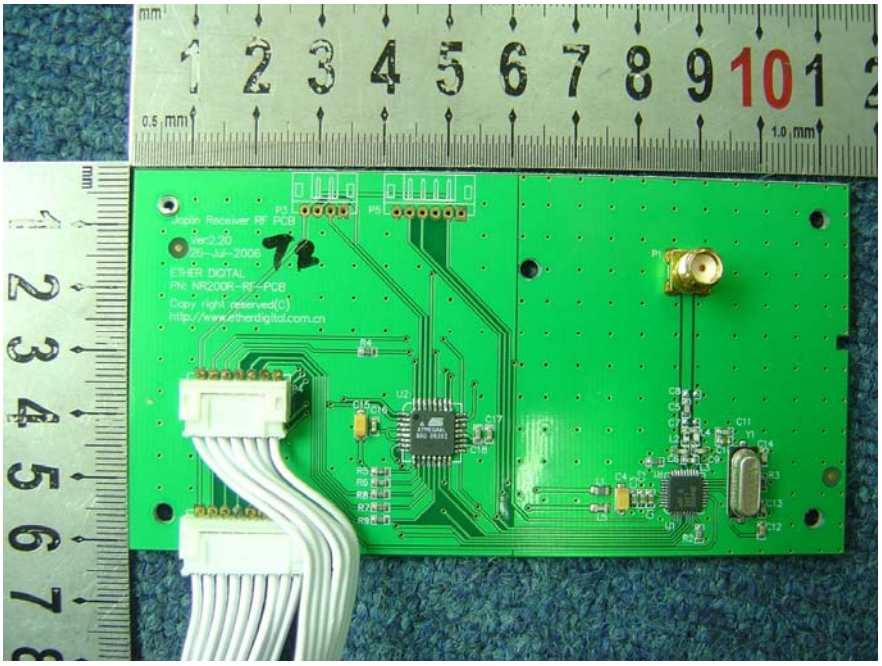
1.2 Transmitter:

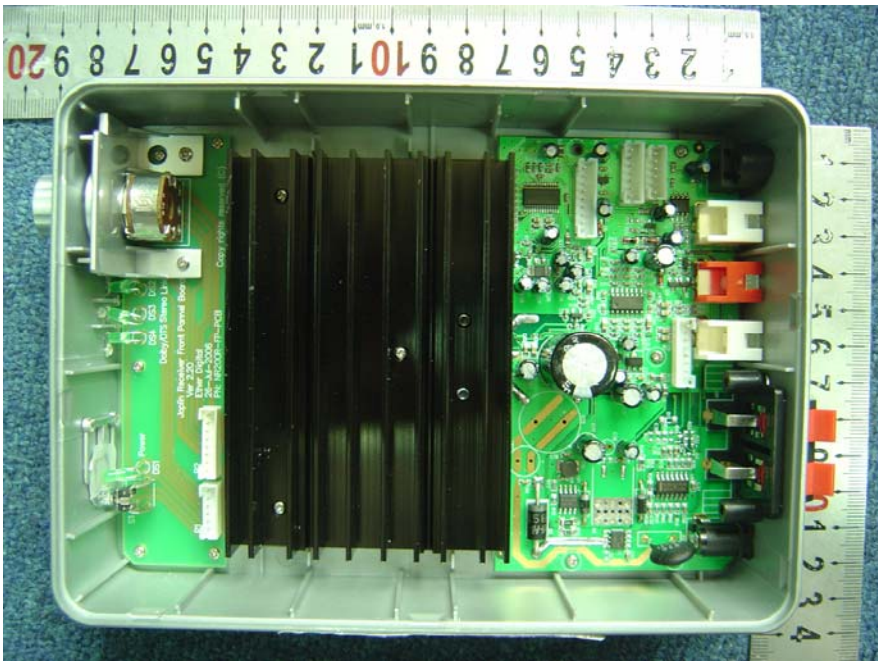


2. Inside of the EUT

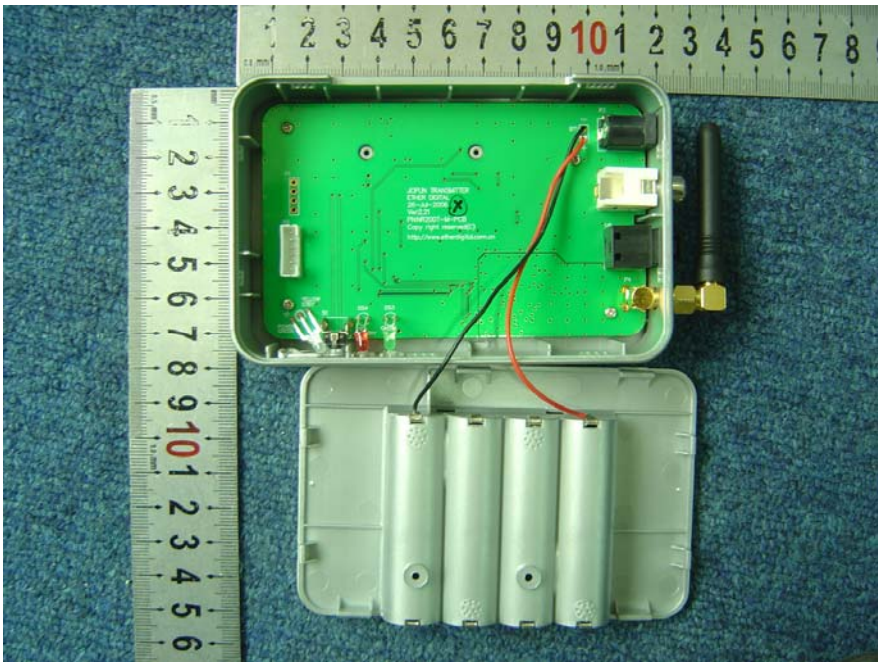
2.1 Receiver

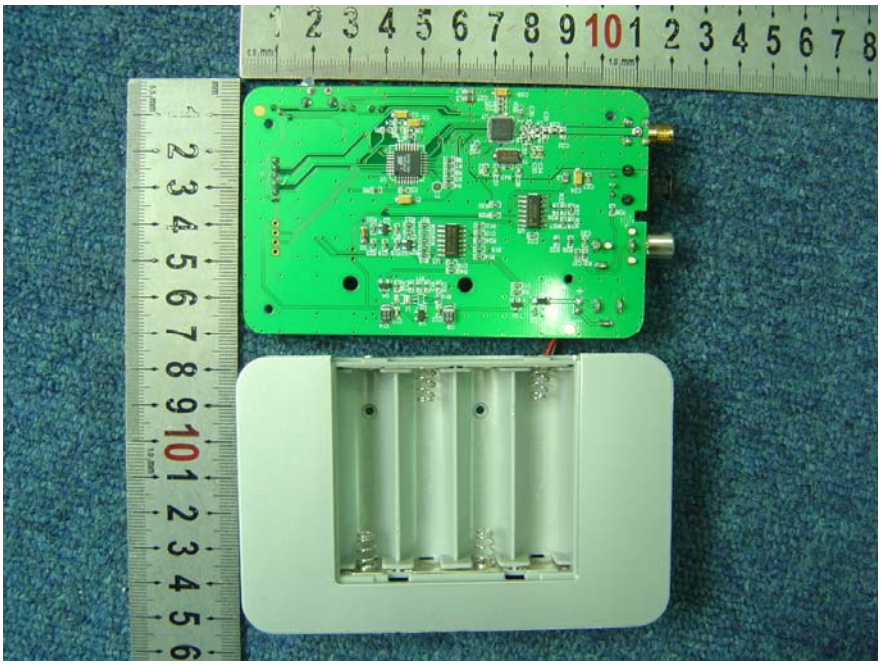



Jopin Receiver RF PCB
ver2.20
26-Jul-2006
ETHER DIGITAL
PN: NR200R-RF-PCB
Copy right reserved(C)
http://www.etherdigital.com.cn



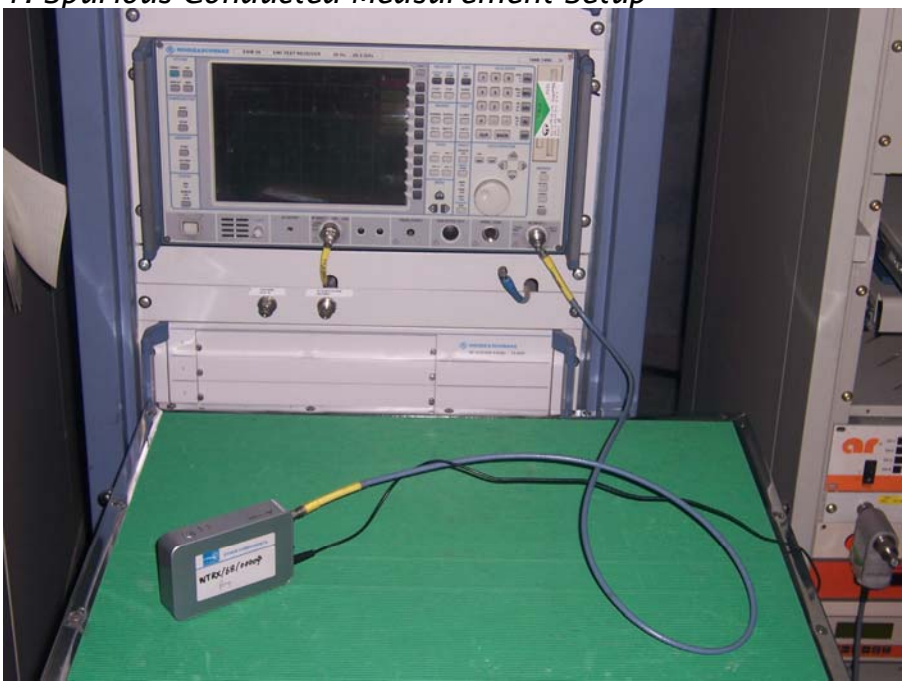
2.2 Transmitter:





Appendix II: Photographs of Test Configuration

1. Spurious Conducted Measurement Setup



2. Conducted Emissions Measurement

3. Radiated Emission Measurement