



## Test Report

Product Name : LPD pen

Model No. : LPDP-01

FCC ID. : ZYJ-RF23100030

Applicant : EVEREST Display Inc.

Address : 4F, No. 1, Li-Hsin Rd. 6, Science Based Industrial Park,  
300. Hsinchu, Taiwan

Date of Receipt : 2012/02/07

Issued Date : 2012/05/17

Report No. : 122136R-RFUSP44V01

Report Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

## Test Report Certification

Issued Date : 2012/05/17

Report No. : 122136R-RFUSP44V01

**QuieTek**

Product Name : LPD pen  
Applicant : EVEREST Display Inc.  
Address : 4F, No. 1, Li-Hsin Rd. 6, Science Based Industrial Park, 300.  
Hsinchu, Taiwan  
Manufacturer : EVEREST Display Inc.  
Model No. : LPDP-01  
Trade Name : EVEREST  
FCC ID. : ZYJ-RF23100030  
EUT Voltage : DC 3.7V  
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2011  
Test Result : Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By :



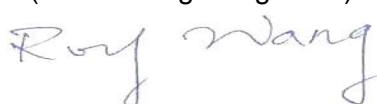
( Demi Chang / Engineering Adm. Specialist )

Reviewed By :



( Ben Huang / Engineer )

Approved By :



( Roy Wang / Manager )

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**1. General Information****1.1. EUT Description**

Product Name	LPD pen
Trade Name	EVEREST
Model No.	LPDP-01
Frequency Range	2402~2478MHz
Antenna Gain	2.11dBi
Channel Number	77
Type of Modulation	GFSK
Channel Control	Auto
Antenna Type	PCB antenna

**Working Frequency of Each Channel**

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01	2402 MHz	Channel 21	2422 MHz	Channel 41	2442MHz	Channel 61	2462 MHz
Channel 02	2403 MHz	Channel 22	2423 MHz	Channel 42	2443MHz	Channel 62	2463 MHz
Channel 03	2404 MHz	Channel 23	2424 MHz	Channel 43	2444 MHz	Channel 63	2464 MHz
Channel 04	2405 MHz	Channel 24	2425 MHz	Channel 44	2445 MHz	Channel 64	2465 MHz
Channel 05	2406 MHz	Channel 25	2426 MHz	Channel 45	2446 MHz	Channel 65	2466 MHz
Channel 06	2407 MHz	Channel 26	2427 MHz	Channel 46	2447 MHz	Channel 66	2467 MHz
Channel 07	2408 MHz	Channel 27	2428 MHz	Channel 47	2448 MHz	Channel 67	2468 MHz
Channel 08	2409 MHz	Channel 28	2429 MHz	Channel 48	2449 MHz	Channel 68	2469 MHz
Channel 09	2410 MHz	Channel 29	2430 MHz	Channel 49	2450 MHz	Channel 69	2470 MHz
Channel 10	2411 MHz	Channel 30	2431 MHz	Channel 50	2451 MHz	Channel 70	2471 MHz
Channel 11	2412 MHz	Channel 31	2432 MHz	Channel 51	2452 MHz	Channel 71	2472 MHz
Channel 12	2413 MHz	Channel 32	2433 MHz	Channel 52	2453 MHz	Channel 72	2473 MHz
Channel 13	2414 MHz	Channel 33	2434 MHz	Channel 53	2454 MHz	Channel 73	2474 MHz
Channel 14	2415 MHz	Channel 34	2435 MHz	Channel 54	2455 MHz	Channel 74	2475 MHz
Channel 15	2416 MHz	Channel 35	2436 MHz	Channel 55	2556 MHz	Channel 75	2476 MHz
Channel 16	2417 MHz	Channel 36	2437 MHz	Channel 56	2457 MHz	Channel 76	2477 MHz
Channel 17	2418 MHz	Channel 37	2438 MHz	Channel 57	2458 MHz	Channel 77	2478 MHz
Channel 18	2419 MHz	Channel 38	2439 MHz	Channel 58	2459 MHz		
Channel 19	2420 MHz	Channel 39	2440 MHz	Channel 59	2460 MHz		
Channel 20	2421 MHz	Channel 40	2441 MHz	Channel 60	2461 MHz		

**Note:**

1. This device is a LPD pen included a 2.4GHz receiving function, and 2.4GHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
3. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 122136R-RFUSP37V02 under Declaration of Conformity.

### 1.3. Test Mode

QuiTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
TX	Mode 1: Transmit

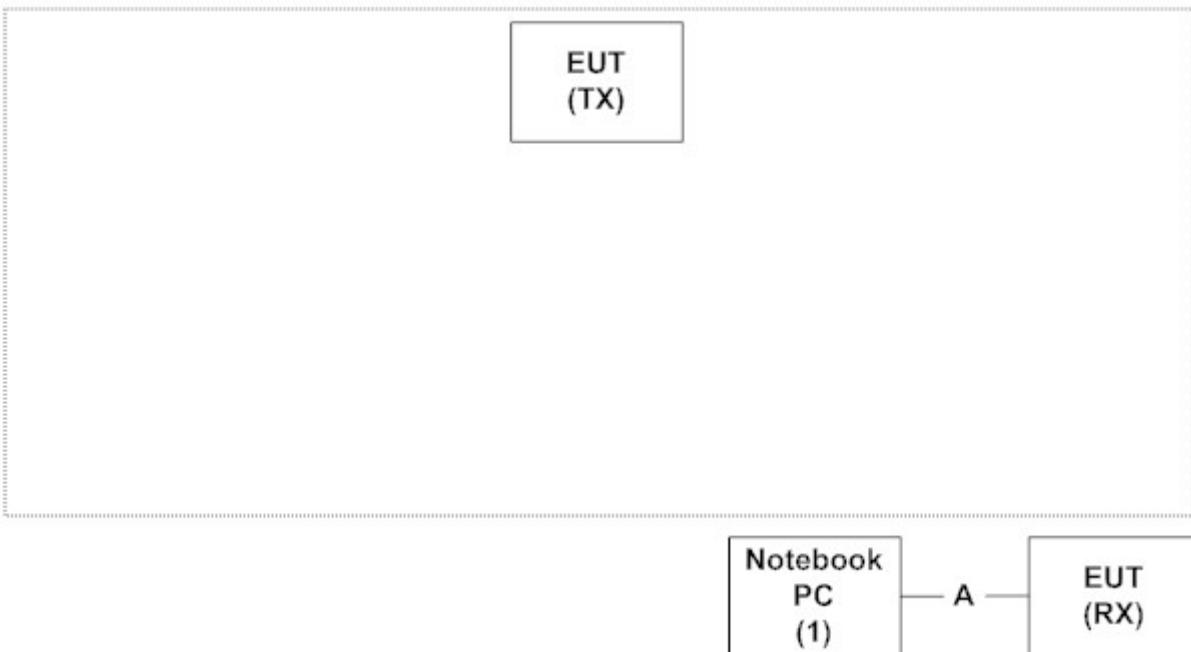
Emission	
Performed Item	Test
Conducted Emission	No
Radiated Emission	Yes
Band Edge	Yes

#### 1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	ACER	PAV70	LUSEW0D0371 105FE221601	DoC	Non-Shielded, 2.5m a ferrite core bonded

#### 1.5. Configuration of tested System

Connection Diagram	
	
Signal Cable Type	Signal cable Description
A   USB Cable	Shielded, 1m

#### 1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5.
2	Turn on the power.
3	The RF signal's status will continue transmit through EUT.
4	Repeat the above procedure (3)

## 1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.249 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.249 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description: September 27, 2010 File on  
Federal Communications Commission  
Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 365520



Accredited by TAF  
Accreditation Number: 1313  
Effective through: December 27, 2013



Accredited by NVLAP  
NVLAP Lab Code: 200347-0  
Effective through: September 30, 2012



Site Name: Quietek Corporation  
Site Address: No. 75-2, 3rd Lin, Wangye Keng, Yonghxing  
Tsuen, Qiongliong Shiang, Hsinchu County 307, Taiwan  
TEL : 886-3-5928858 / FAX : 886-3-5928859  
E-Mail : service@quietek.com

**2. Radiated Emission****2.1. Test Equipment**

The following test equipment are used during the test:

## Fundamental Power / CB1

Instrument	Manufacturer	Type No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2013/03/14
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/04/07

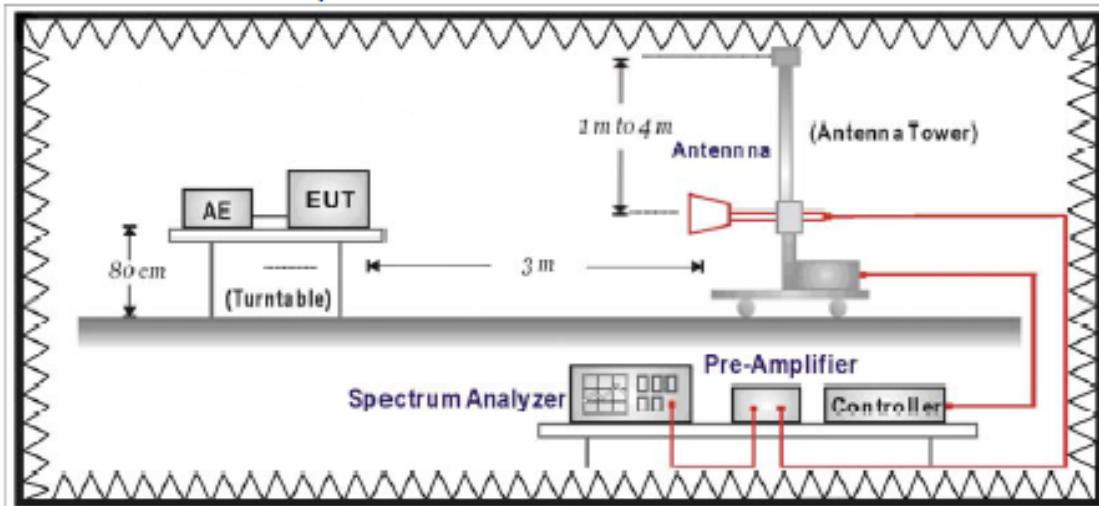
## Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2012/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120D	743	2013/02/02
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2012/12/05
Pre-Amplifier	QuiTek	AP-025C	CHM-0706049	2013/03/01
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

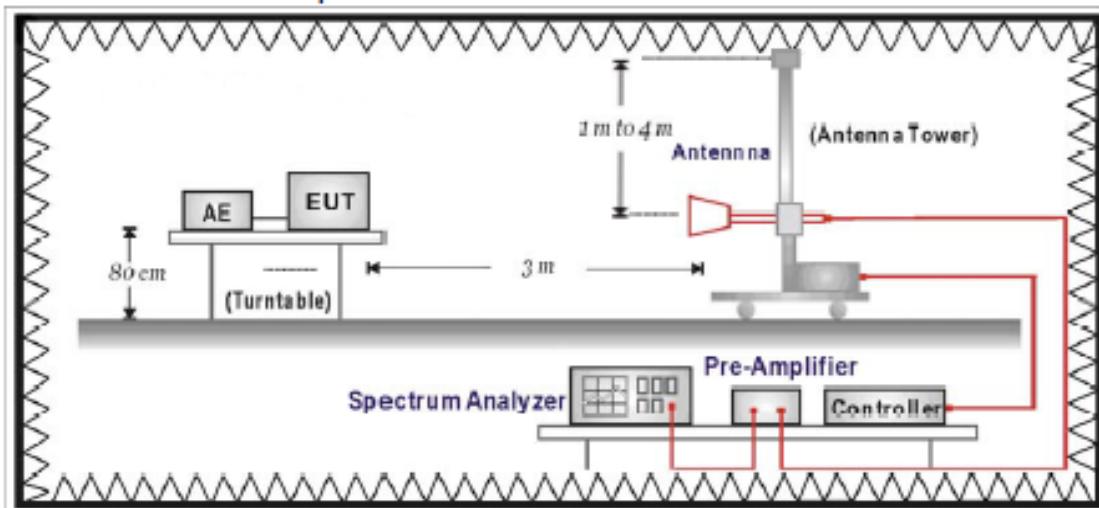
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

## 2.2. Test Setup

Above 1GHz Test Setup:



Above 1GHz Test Setup:



## 2.3. Limits

### ➤ Fundamental and Harmonics Emission Limits

<b>FCC Part 15 Subpart C Paragraph 15.249 Limits</b>				
Fundamental Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

### ➤ Spurious electric field strength limits

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

## 2.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

## 2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.209 and Paragraph 15.249: 2011

## 2.6. Uncertainty

The measurement uncertainty

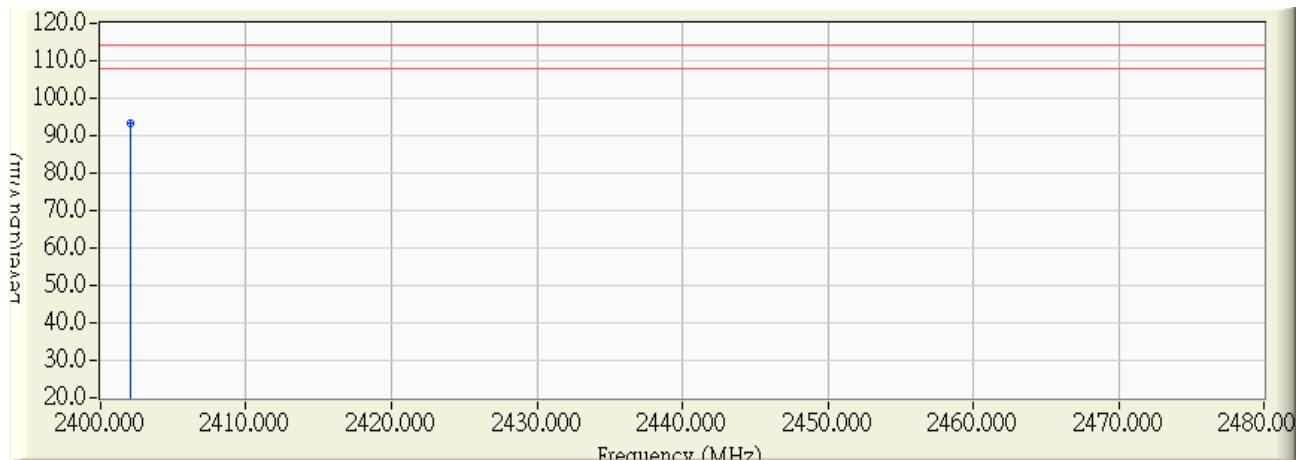
30MHz~1GHz as  $\pm 3.43\text{dB}$

1GHz~26.5GHz as  $\pm 3.65\text{dB}$

## 2.7. Test Result

### Fundamental :

Site : CB1	Time : 2012/04/06 - 15:10
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

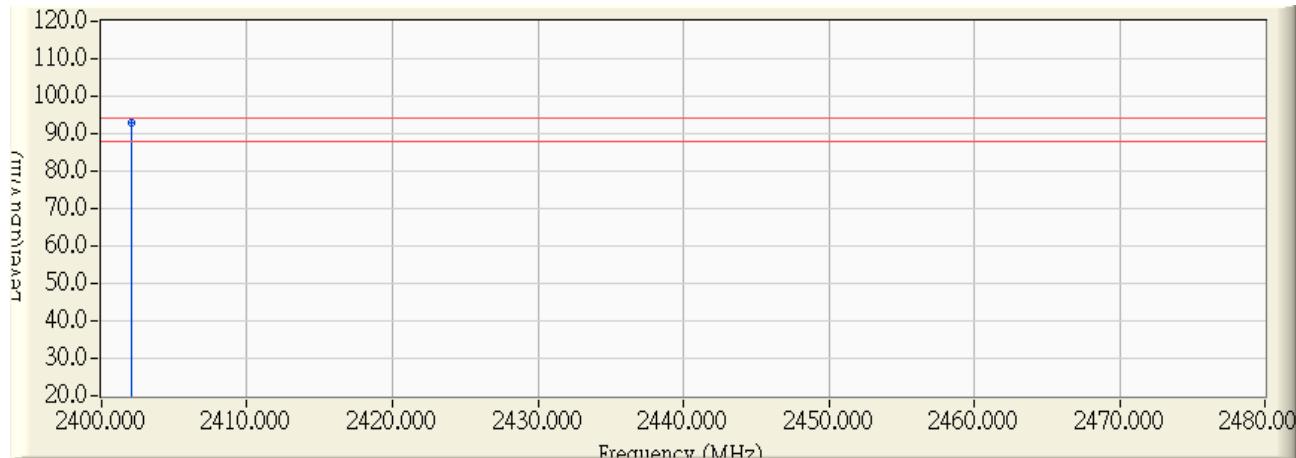


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2402.040	30.698	62.610	93.308	-20.692	114.000	PEAK

### Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:11
Limit : FCC_SpartC_15.249_F_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

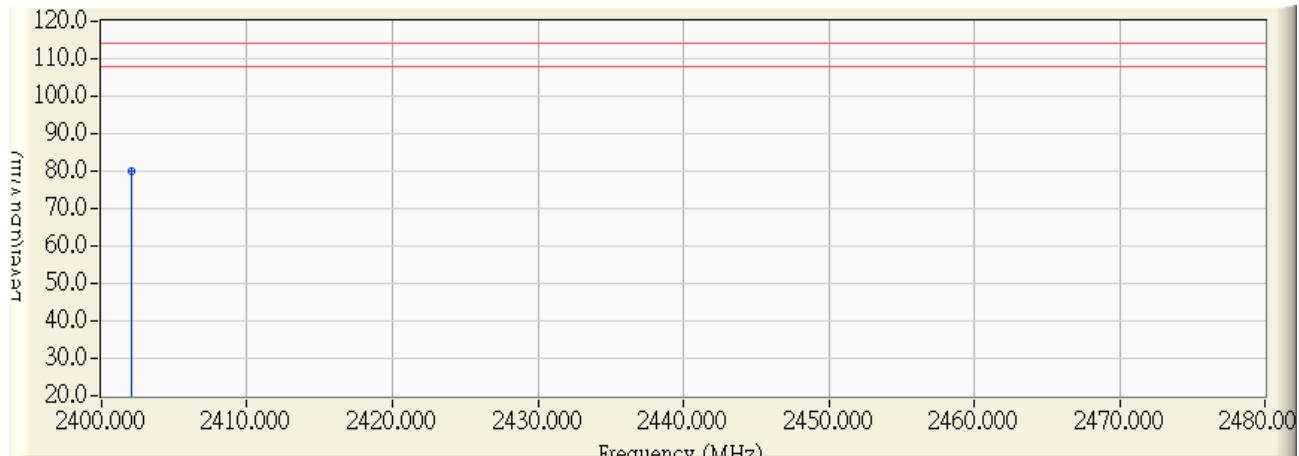


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2402.040	30.698	62.280	92.978	-1.022	94.000	AVERAGE

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:12
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

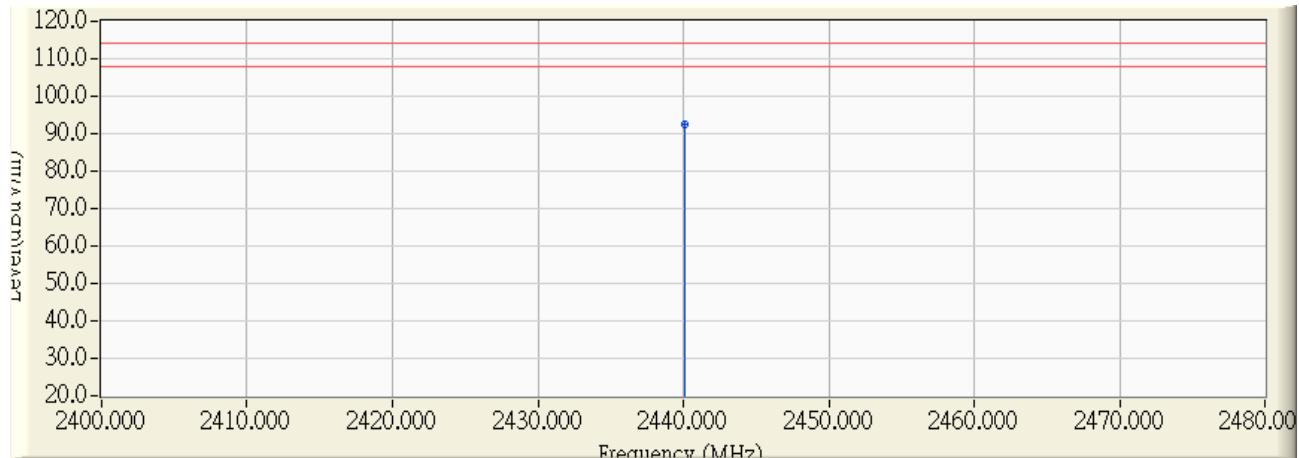


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2402.040	30.698	49.170	79.868	-34.132	114.000	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:15
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2440MHz

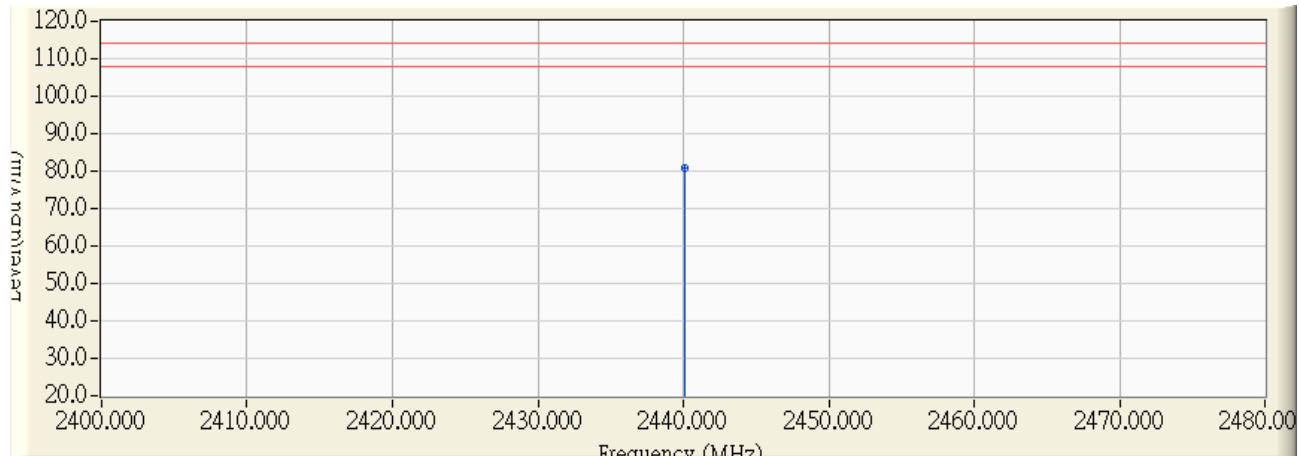


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2440.080	31.078	61.430	92.508	-21.492	114.000	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:17
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2440MHz

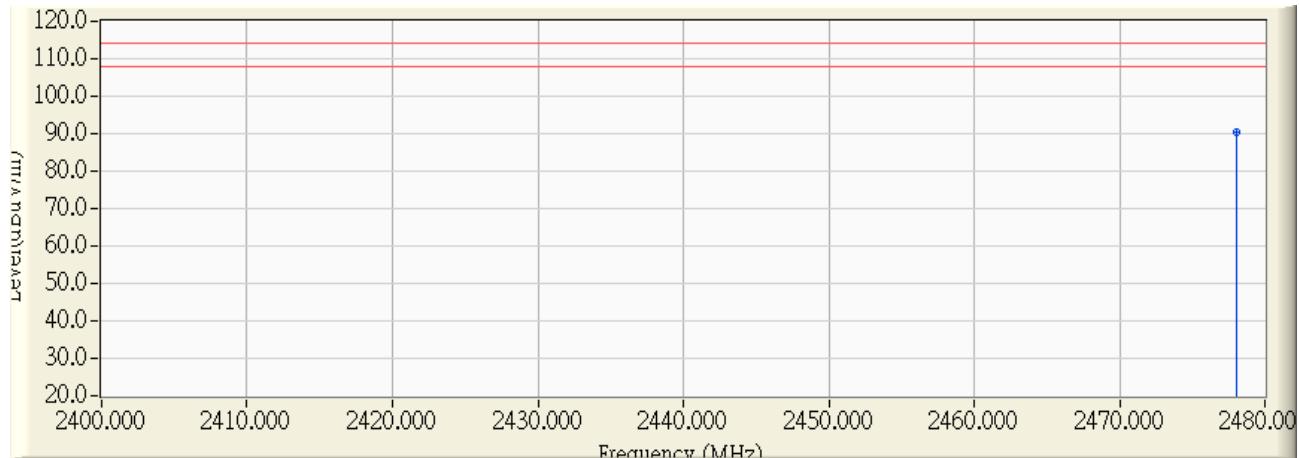


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2440.080	31.078	49.930	81.008	-32.992	114.000	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:05
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz

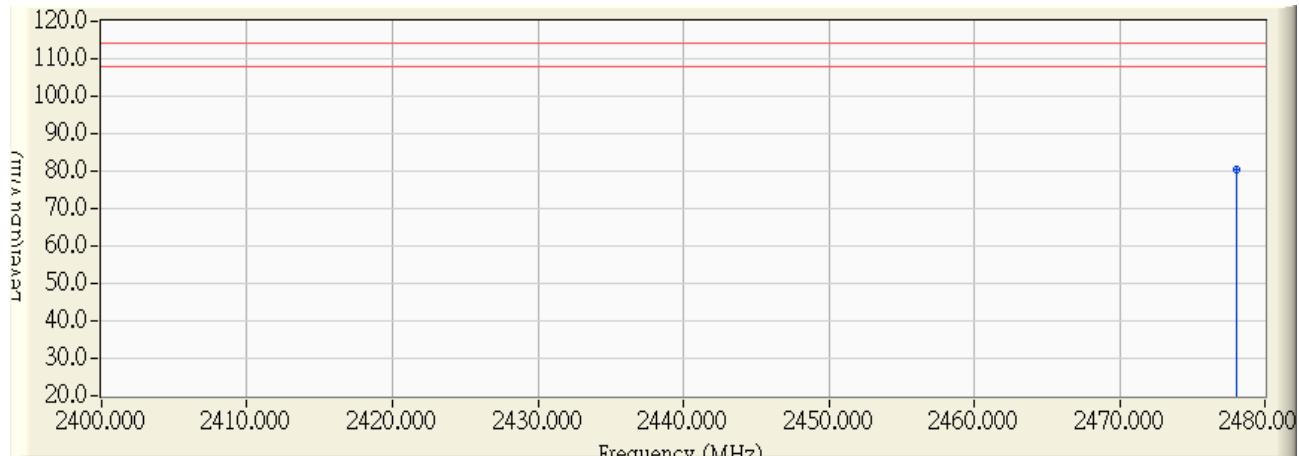


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2478.080	31.457	59.100	90.558	-23.442	114.000	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:07
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz



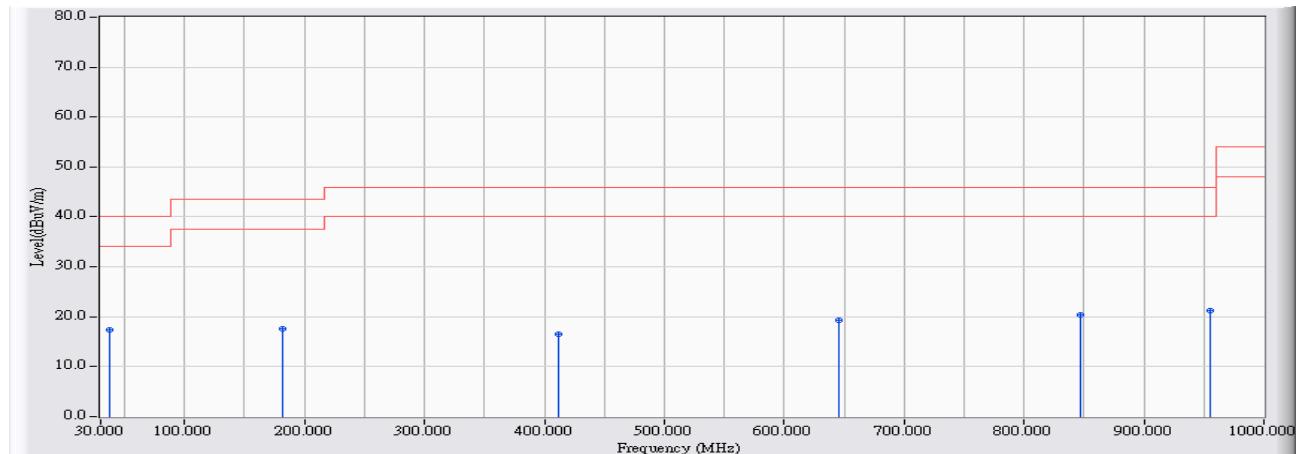
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2478.000	31.457	49.150	80.607	-33.393	114.000	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

**30 MHz-1 GHz Spurious:**

Site : CB1	Time : 2012/03/29 - 13:32
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : LPD Pen	Note : Mode 1: Transmit-2440MHz

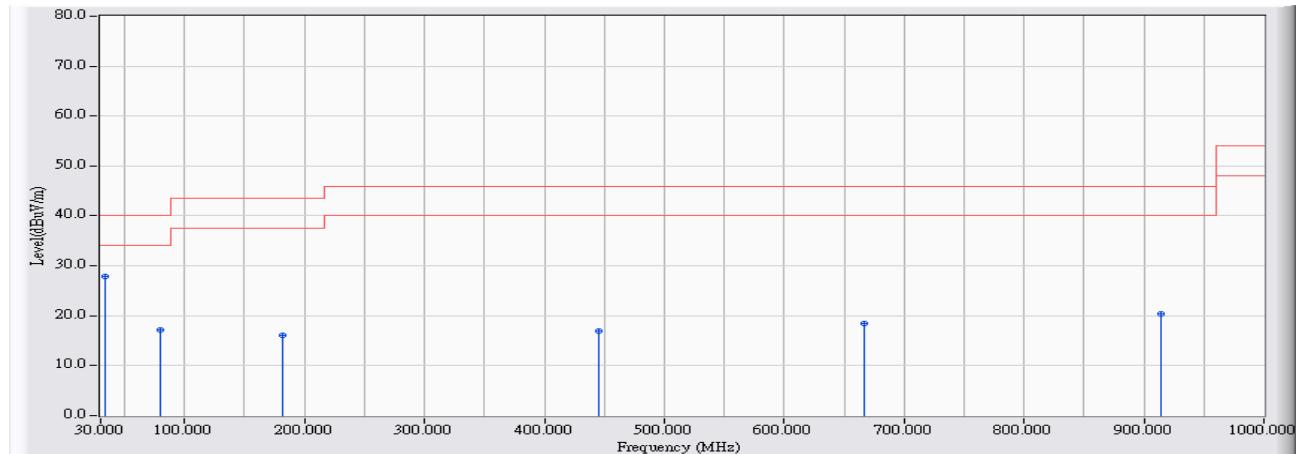


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	38.083	-11.772	29.250	17.479	-22.521	40.000	QUASIPEAK
2		181.967	-14.715	32.278	17.563	-25.937	43.500	QUASIPEAK
3		411.533	-7.130	23.657	16.526	-29.474	46.000	QUASIPEAK
4		645.950	-4.103	23.368	19.265	-26.735	46.000	QUASIPEAK
5		846.417	-2.347	22.805	20.458	-25.542	46.000	QUASIPEAK
6		954.733	-1.398	22.591	21.193	-24.807	46.000	QUASIPEAK

**Note:**

1. All Reading Levels are Quasi-Peak value.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	Time : 2012/03/29 - 13:32
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	Power : DC 5V
EUT : LPD Pen	Note : Mode 1: Transmit-2440MHz



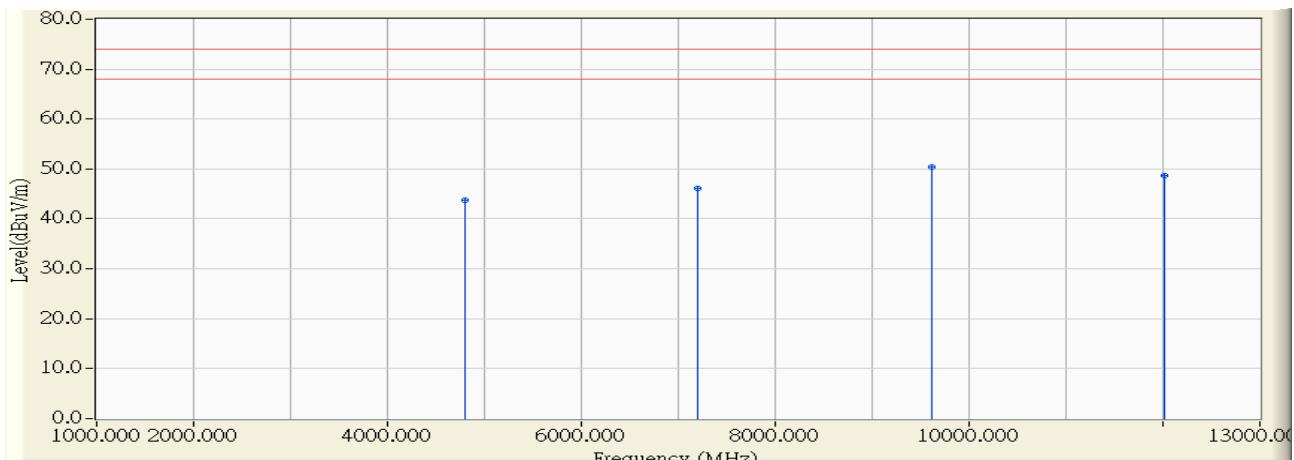
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	33.233	-10.505	38.378	27.873	-12.127	40.000	QUASIPEAK
2		80.117	-17.011	34.103	17.093	-22.907	40.000	QUASIPEAK
3		181.967	-14.715	30.798	16.083	-27.417	43.500	QUASIPEAK
4		445.483	-6.427	23.325	16.898	-29.102	46.000	QUASIPEAK
5		666.967	-4.033	22.570	18.537	-27.463	46.000	QUASIPEAK
6		914.317	-1.849	22.299	20.450	-25.550	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

**Above 1GHz Spurious :**

Site : CB1	Time : 2012/04/06 - 15:24
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

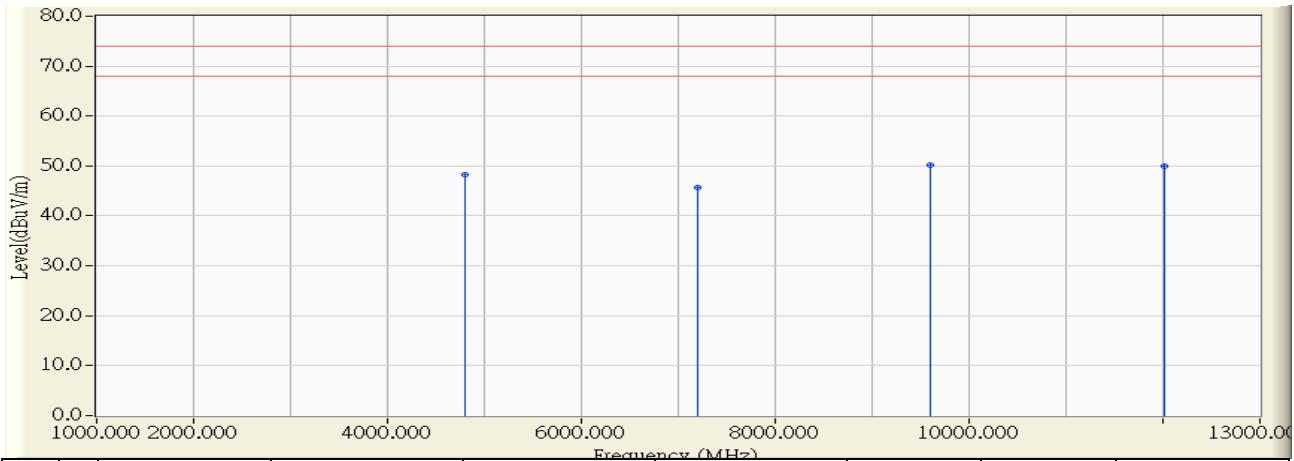


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4804.200	-0.854	44.670	43.815	-30.155	73.970	PEAK
2	7205.200	5.422	40.750	46.172	-27.798	73.970	PEAK
3	9611.000	8.962	41.430	50.393	-23.577	73.970	PEAK
4	12010.080	11.544	37.060	48.604	-25.366	73.970	PEAK

**Note:**

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:28
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

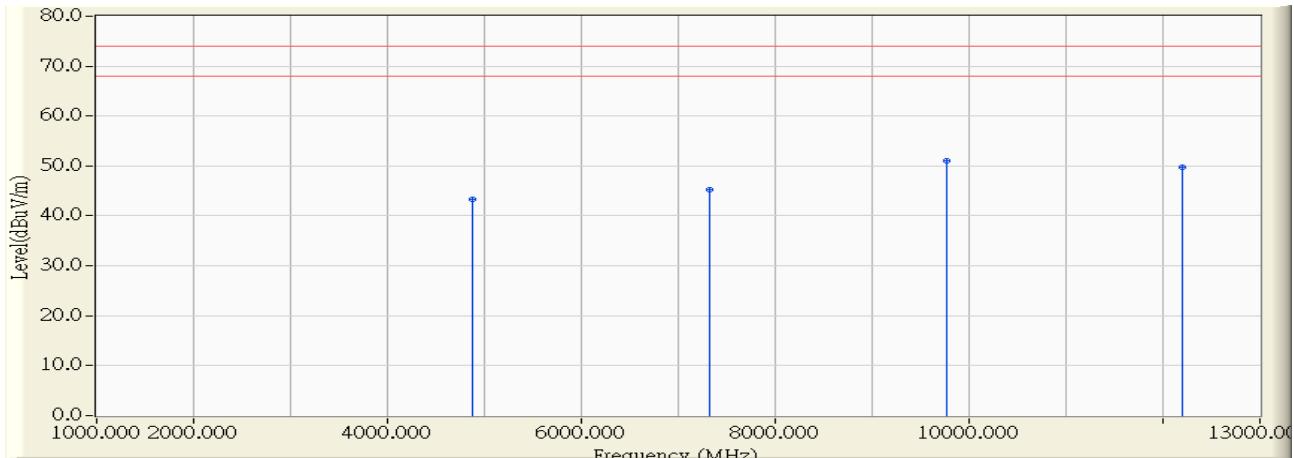


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4804.120	-0.856	49.010	48.155	-25.815	73.970	PEAK
2	7206.080	5.424	40.180	45.604	-28.366	73.970	PEAK
3	*	8.936	41.150	50.086	-23.884	73.970	PEAK
4	12008.520	11.545	38.350	49.895	-24.075	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:32
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2440MHz

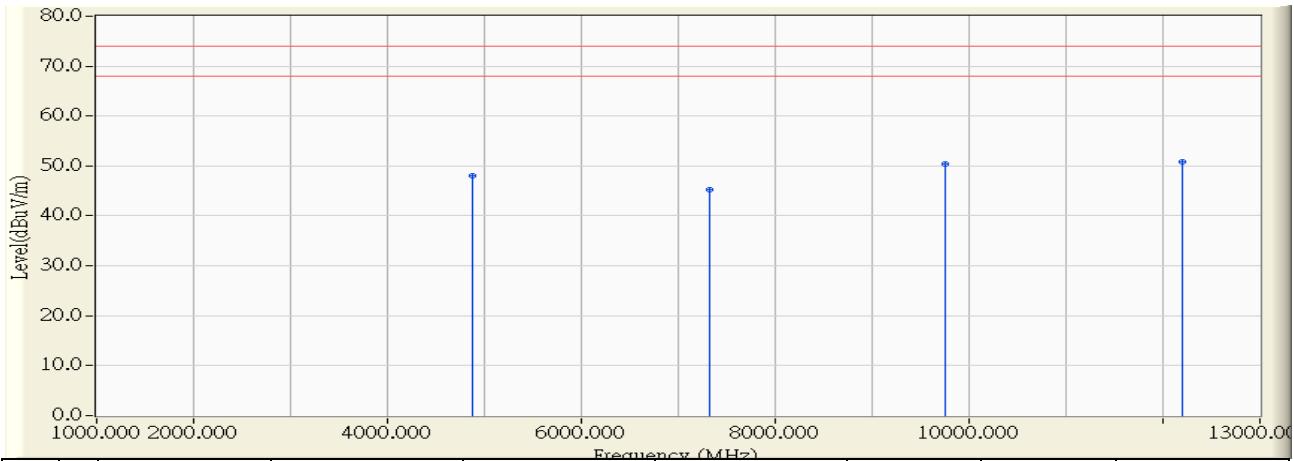


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4879.800	-0.656	43.970	43.313	-30.657	73.970	PEAK
2	7318.640	5.695	39.490	45.186	-28.784	73.970	PEAK
3	*	10.078	40.950	51.028	-22.942	73.970	PEAK
4	12200.560	11.475	38.270	49.746	-24.224	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:35
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2440MHz

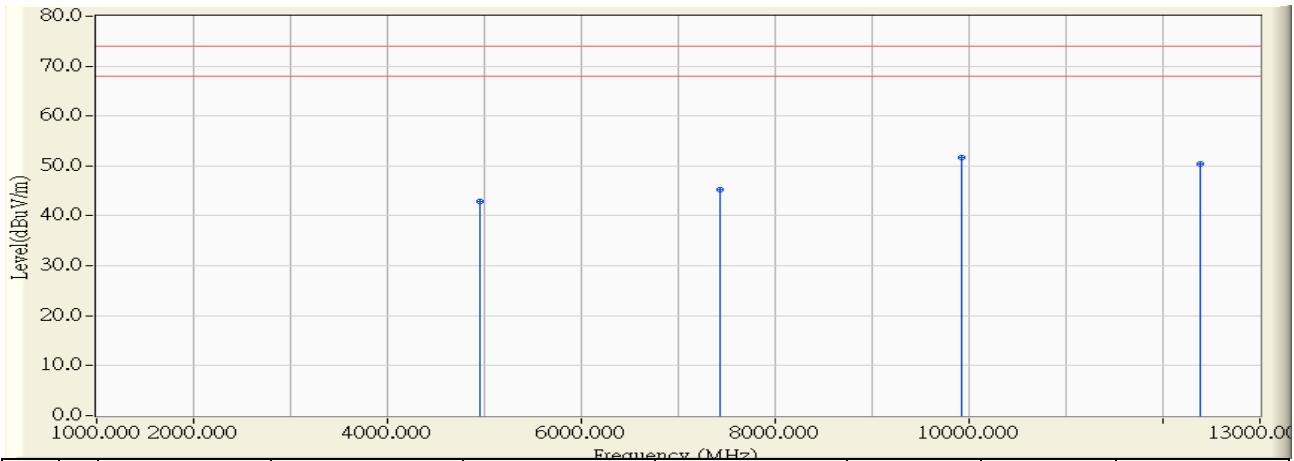


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4880.040	-0.656	48.630	47.974	-25.996	73.970	PEAK
2	7320.200	5.699	39.510	45.210	-28.760	73.970	PEAK
3	9758.560	10.031	40.450	50.482	-23.488	73.970	PEAK
4	*	11.476	39.310	50.787	-23.183	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:40
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz

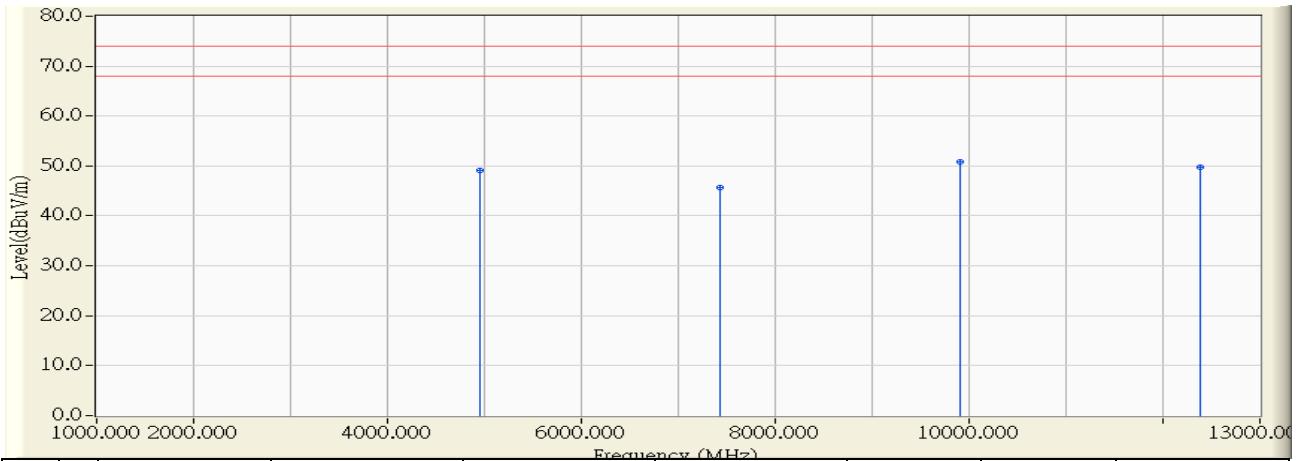


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4955.920	-0.457	43.320	42.863	-31.107	73.970	PEAK
2	7435.720	5.978	39.250	45.228	-28.742	73.970	PEAK
3	*	11.173	40.620	51.794	-22.176	73.970	PEAK
4	12388.440	11.409	38.900	50.309	-23.661	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:44
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4956.040	-0.457	49.590	49.133	-24.837	73.970	PEAK
2	7434.640	5.975	39.720	45.696	-28.274	73.970	PEAK
3	*	11.158	39.720	50.877	-23.093	73.970	PEAK
4	12391.800	11.407	38.330	49.738	-24.232	73.970	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

### 3. Band Edge

#### 3.1. Test Equipment

The following test equipment are used during the test:

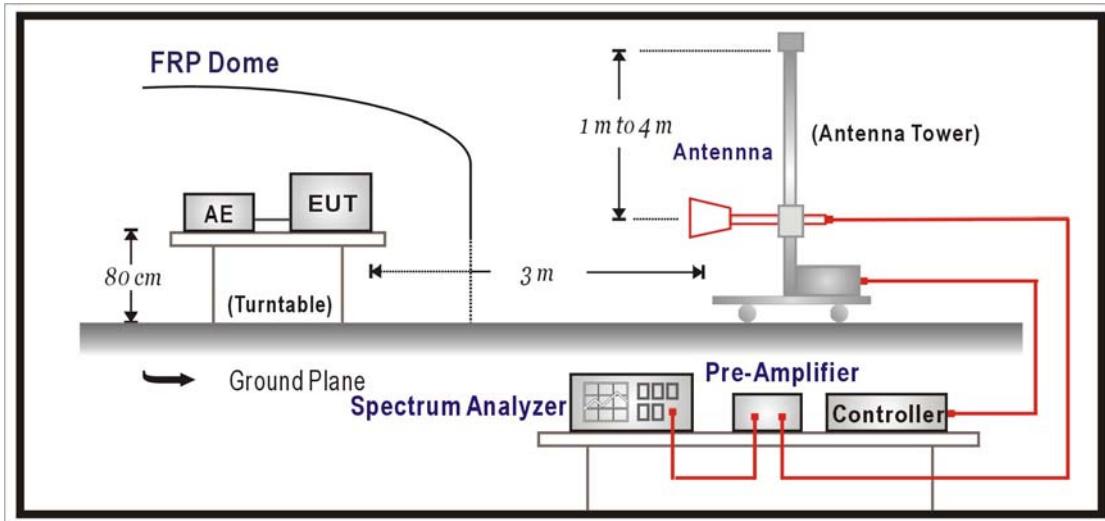
Band Edge / CB1

Instrument	Manufacturer	Type No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzbeck	BBHA 9120D	743	2013/02/02
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

#### 3.2. Test Setup

RF Radiated Measurement:



### **3.3. Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50 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. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### **3.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

### **3.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.249: 2011

### **3.6. Uncertainty**

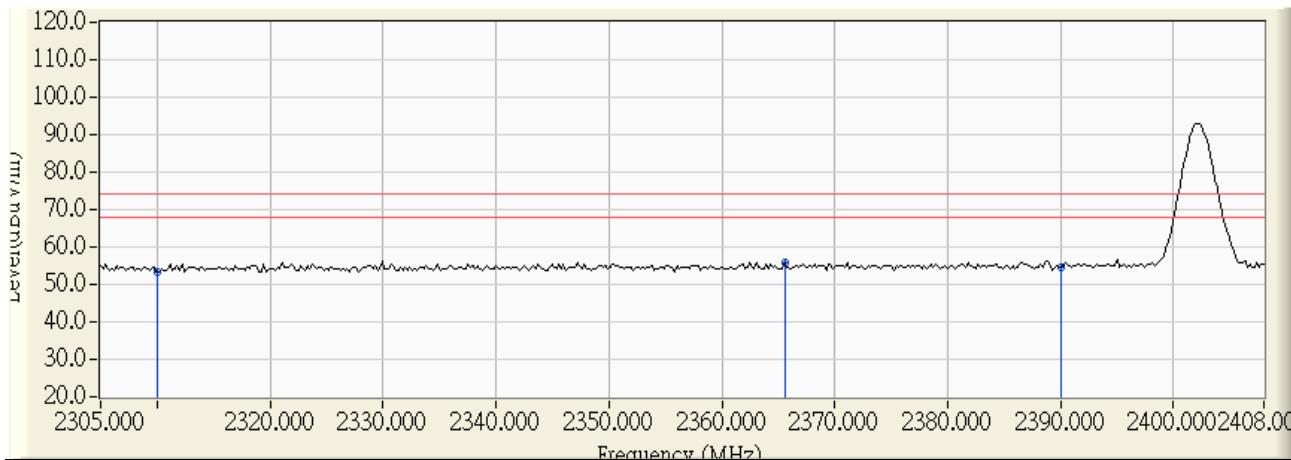
The measurement uncertainty

Conducted is defined as  $\pm 1.27\text{dB}$

Radiated is defined as  $\pm 3.9\text{dB}$

### 3.7. Test Result

Site : CB1	Time : 2012/04/06 - 15:55
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

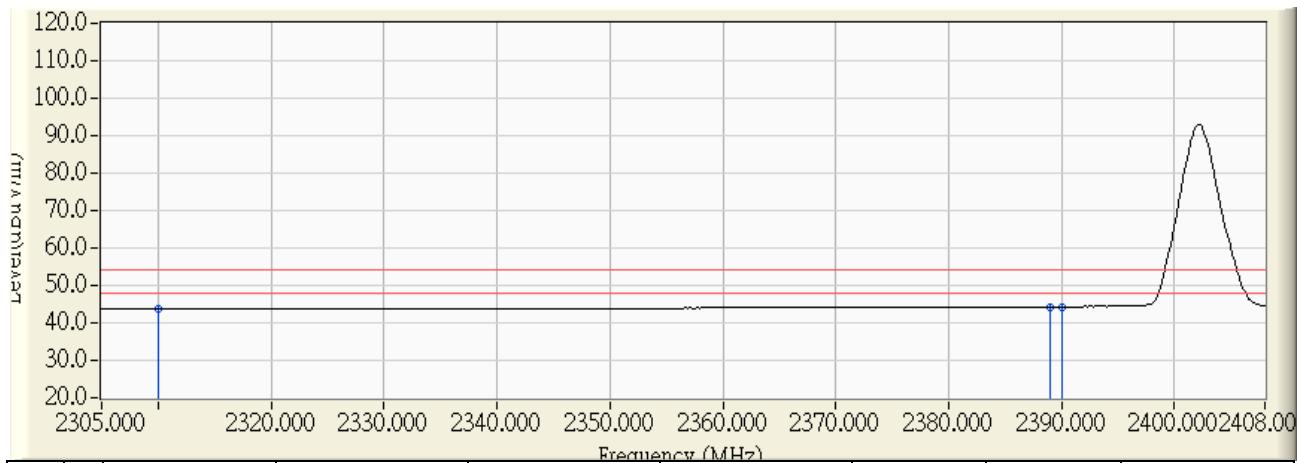


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	23.628	53.407	-20.593	74.000	PEAK
2	*	2365.564	30.334	25.567	55.901	-18.099	74.000	PEAK
3		2390.000	30.578	23.842	54.420	-19.580	74.000	PEAK

#### Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:56
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

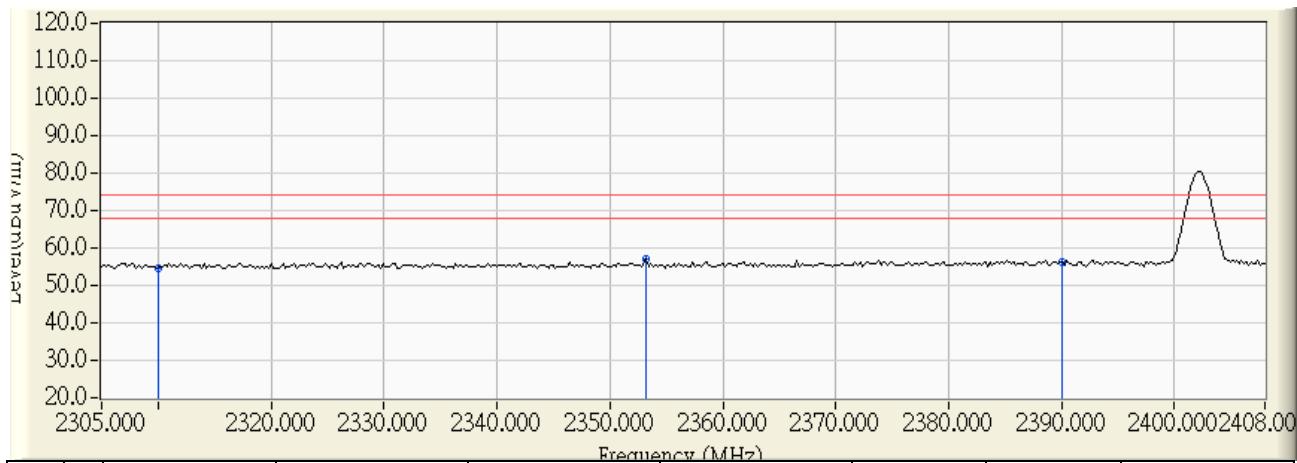


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	29.779	13.812	43.591	-10.409	54.000	AVERAGE
2	2389.048	30.568	13.753	44.321	-9.679	54.000	AVERAGE
3	*	30.578	13.758	44.336	-9.664	54.000	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:58
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

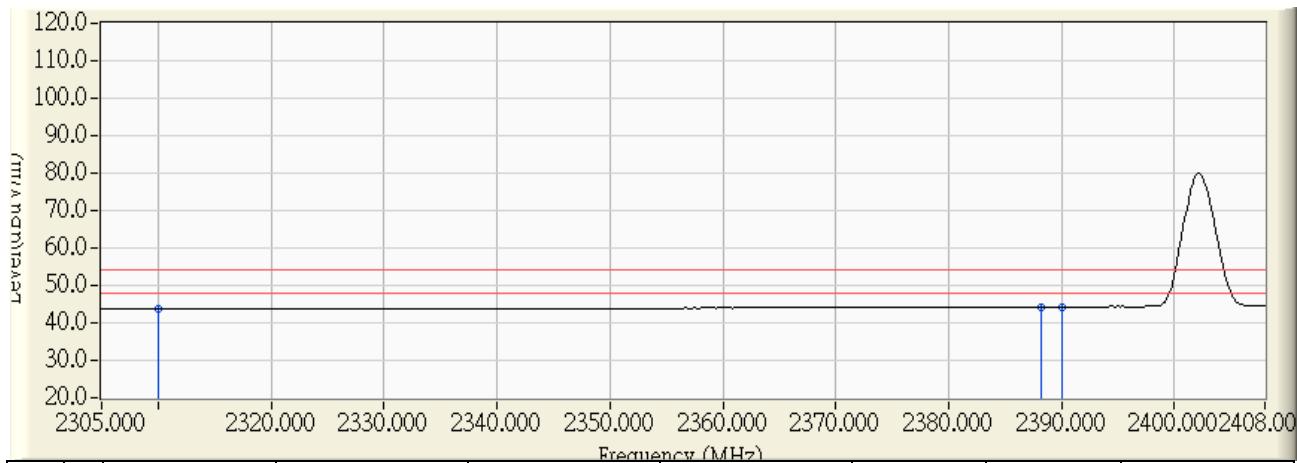


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	29.779	24.977	54.756	-19.244	74.000	PEAK
2	*	2353.204	30.210	26.860	57.070	-16.930	74.000	PEAK
3		2390.000	30.578	25.727	56.305	-17.695	74.000	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:59
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2402MHz

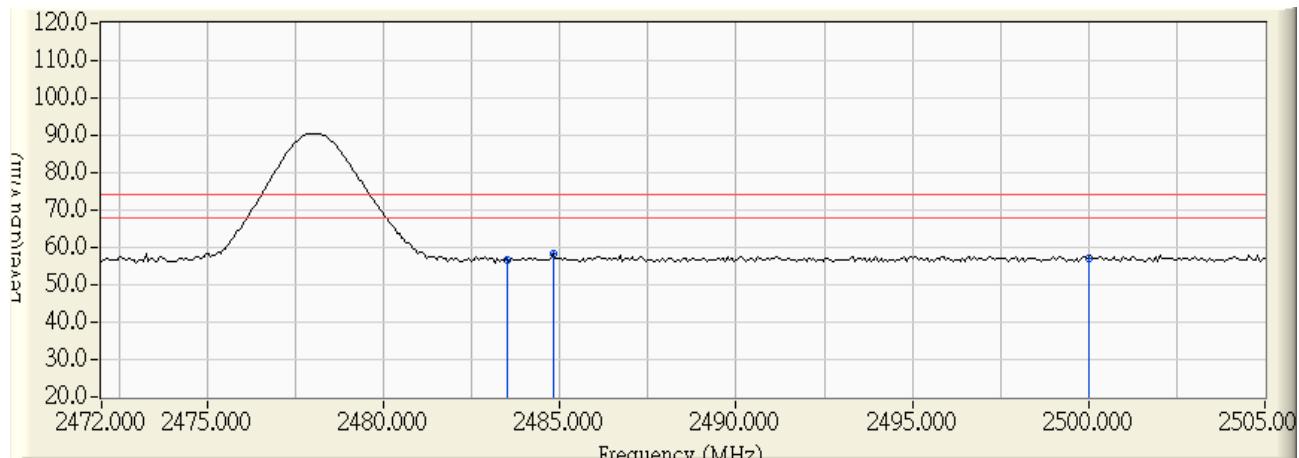


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	29.779	13.816	43.595	-10.405	54.000	AVERAGE
2	2388.224	30.561	13.732	44.292	-9.708	54.000	AVERAGE
3	*	30.578	13.733	44.311	-9.689	54.000	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:49
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz

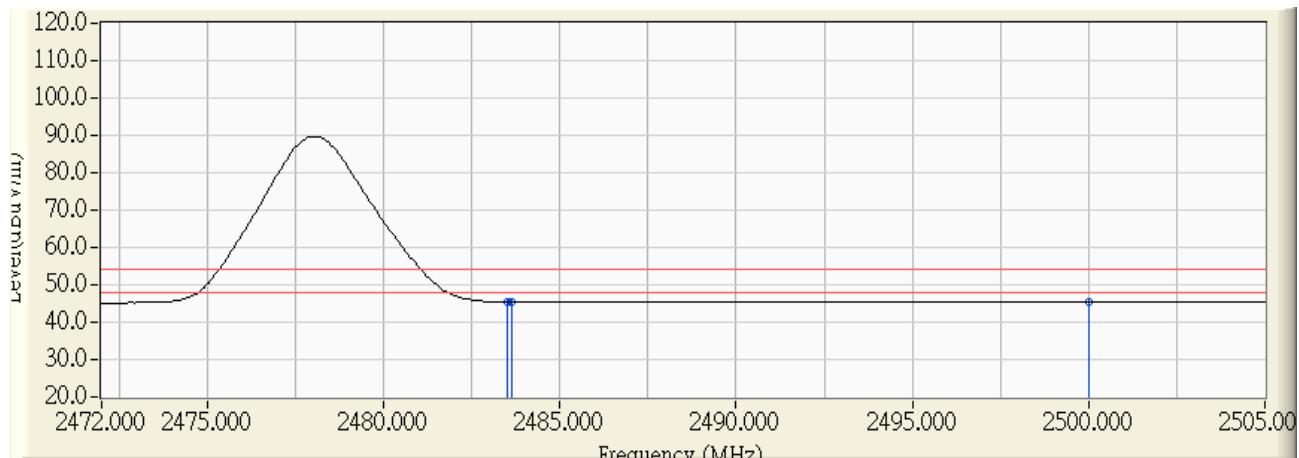


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	25.257	56.769	-17.231	74.000	PEAK
2	*	2484.804	31.525	26.613	58.138	-15.862	74.000	PEAK
3		2500.000	31.638	25.596	57.235	-16.765	74.000	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:50
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz

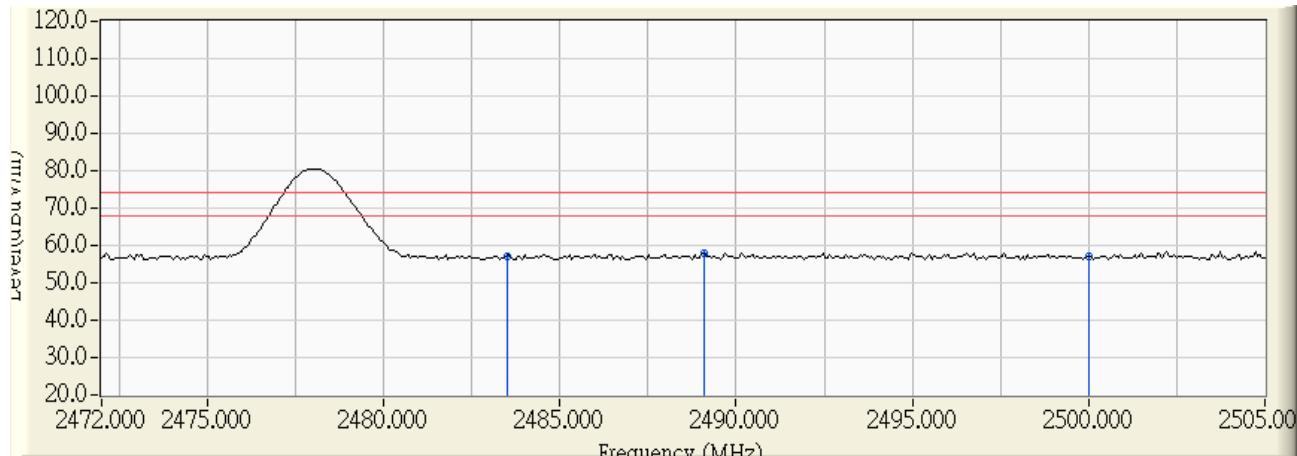


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	13.828	45.340	-8.660	54.000	AVERAGE
2		2483.616	31.513	13.826	45.339	-8.661	54.000	AVERAGE
3	*	2500.000	31.638	13.731	45.370	-8.630	54.000	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:52
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz

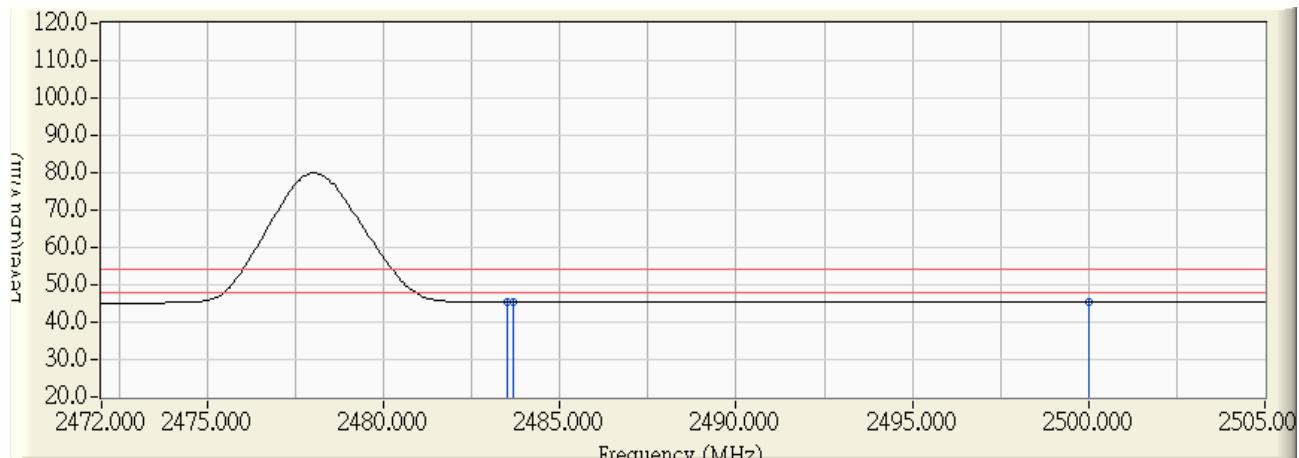


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	25.538	57.050	-16.950	74.000	PEAK
2	*	2489.094	31.568	26.495	58.063	-15.937	74.000	PEAK
3		2500.000	31.638	25.422	57.061	-16.939	74.000	PEAK

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/04/06 - 15:53
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 3.7V
EUT : LPD pen	Note : Mode 1: Transmit-2478MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	31.512	13.757	45.269	-8.731	54.000	AVERAGE
2		2483.682	31.514	13.767	45.281	-8.719	54.000	AVERAGE
3	*	2500.000	31.638	13.718	45.357	-8.643	54.000	AVERAGE

Note:

1. All Readings below 1GHz are Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.