NVLAP LAB CODE 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

ADVANCED PLUS TECHNOLOGY CO., LTD

3F, No. 13, Lane 120, Sec. 1, Neihu Road, Neihu District,

Taipei City 114, Taiwan

FCC ID: WPWAP030T1F

Report Type:	**Product Type:**
Original Report	Digital Video Communicator

Test Engineer:	Cookies Bu
Report Number:	RSZ08080406
Report Date:	2008-10-17
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ADVANCED PLUS TECHNOLOGY CO., LTD* 's product, model number: *AP030T1F o*r the "EUT" as referred to in this report is a digital video communicator, which measures approximately: 12.7 cm L x 6.0 cm W x 2.2 cm H, rated input voltage: DC 6V battery.

** All measurement and test data in this report was gathered from production sample serial number: 0808009 (Assigned by BACL, Shenzhen). The EUT was received on 2008-08-04.*

Objective

This Type approval report is prepared on behalf of *ADVANCED PLUS TECHNOLOGY CO., LTD in* accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

The current scope of accreditations can be found at
http://ts.nist.gov/Standards/scopes/2007070.htm.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A.

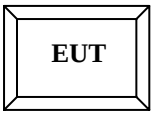
Special Accessories

The special accessories were provided by Bay Area Compliance Laboratories Corp. (Shenzhen).

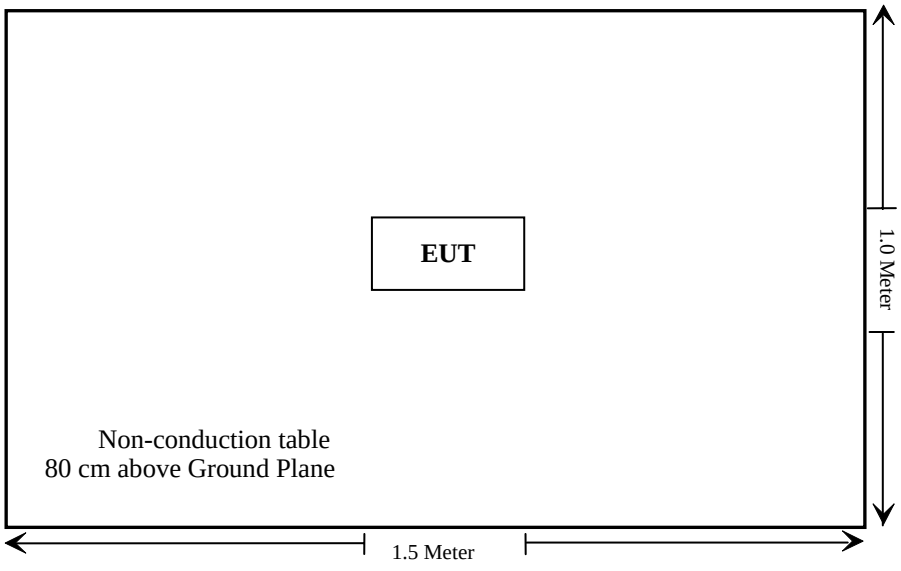
Equipment Modifications

No modification was made to the unit tested.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
CFR47§15.247 (i), §1.1310 §2.1093	RF EXPOSURE	Compliant
CFR47 §15.203	Antenna Requirement	Compliant
CFR47 §15.207 (a)	Conducted Emissions	N/A *
CFR47 §15.205	Restricted Band	Compliant
CFR47 §15.205, §15.209, §15.247(d)	Radiated Emission	Compliant
CFR47 §15.247 (a)(1)	20 dB Bandwidth	Compliant
CFR47 §15.247(a)(1)	Channel Separation Test	Compliant
CFR47 §15.247(a)(1)(iii)	Time of occupancy (Dwell Time)	Compliant
CFR47 §15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
CFR47 §15.247(b)(1)	Peak Output Power Measurement	Compliant
CFR47 §15.247(d)	Band Edges	Compliant

Note: * Barrery operation.

CFR47 §15.203 - ANTENNA REQUIREMENT

Standard Applicable

According to CFR47 § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has an integral antenna. The maximum gain is below 2 dBi.

Result: Compliance.

Please refer to the EUT internal photos.

§15.247 (i), §1.1310 §2.1093 - RF EXPOSURE

Standard Applicable

According to § 1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.
According to FCC Exclusion list, In the following table, fGHz is mid-band frequency in GHz, and d is the distance to a person'sbody, excluding hands, wrists, feet, and ankles.

Exposure category	low threshold	high threshold
general population	$(60/f_{GHz})$ mW, $d < 2.5$ cm $(120/f_{GHz})$ mW, $d \geq 2.5$ cm	$(900/f_{GHz})$ mW, $d < 20$ cm
occupational	$(375/f_{GHz})$ mW, $d < 2.5$ cm $(900/f_{GHz})$ mW, $d \geq 2.5$ cm	$(2250/f_{GHz})$ mW, $d < 20$ cm

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

Measurement Result:

This is a portable device which is operates at least 2.5 cm from body, the Max peak output power is

45.50mW<49.16mW= (120/2.441GHz) mW

The SAR measurement is not required.

CFR47 §15.205, §15.209, §15.247 - RADIATED EMISSIONS

Applicable Standard

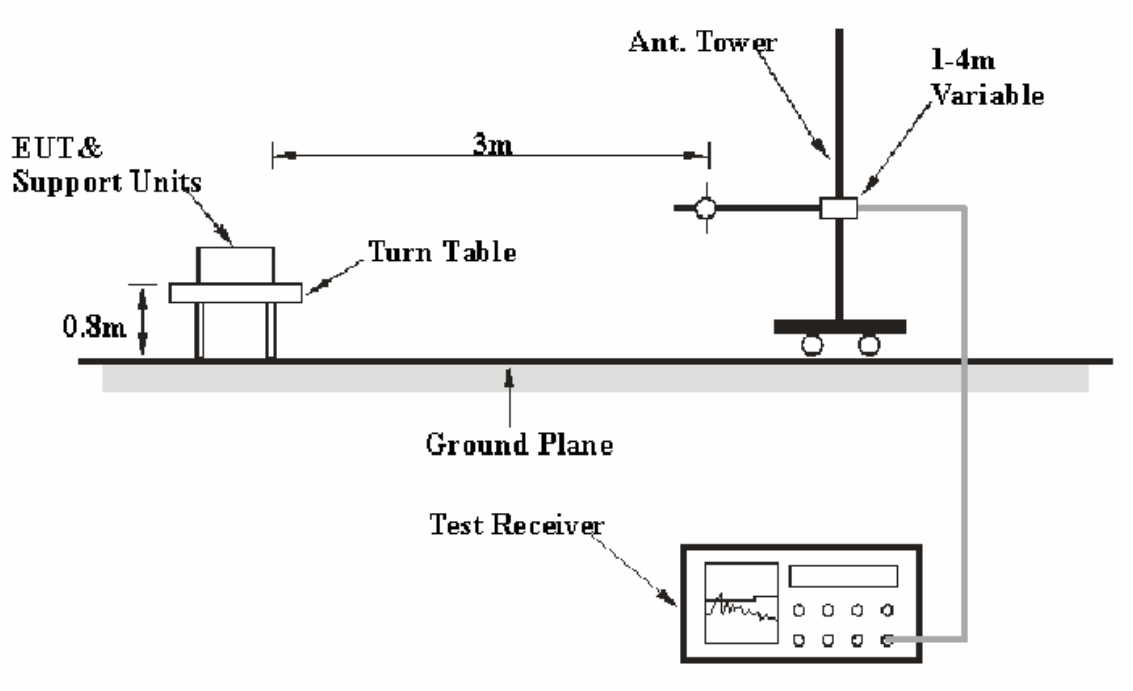
CFR47 §15.205; §15.209; §15.247 (d).

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.109, FCC 15.209 and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
30MHz – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25 GHz	1 MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2008-08-14	2009-08-14
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the Laptop was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz and peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude. = Meter Reading + Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.109, 15.205, 15.209, and 15.247, with the worst margin reading of:

Transmitting Mode:

1.70 dB at **540.050975 MHz** in the **Vertical** polarization, **for below 1 GHz**
12.01 dB at **4804 MHz** in the **Horizontal** polarization, **for above 1GHz (Low Channel)**
29.45 dB at **1080 MHz** in the **Horizontal** polarization, **for above 1GHz (Middle Channel)**
12.08 dB at **4962 MHz** in the **Horizontal** polarization, **for above 1GHz (High Channel)**

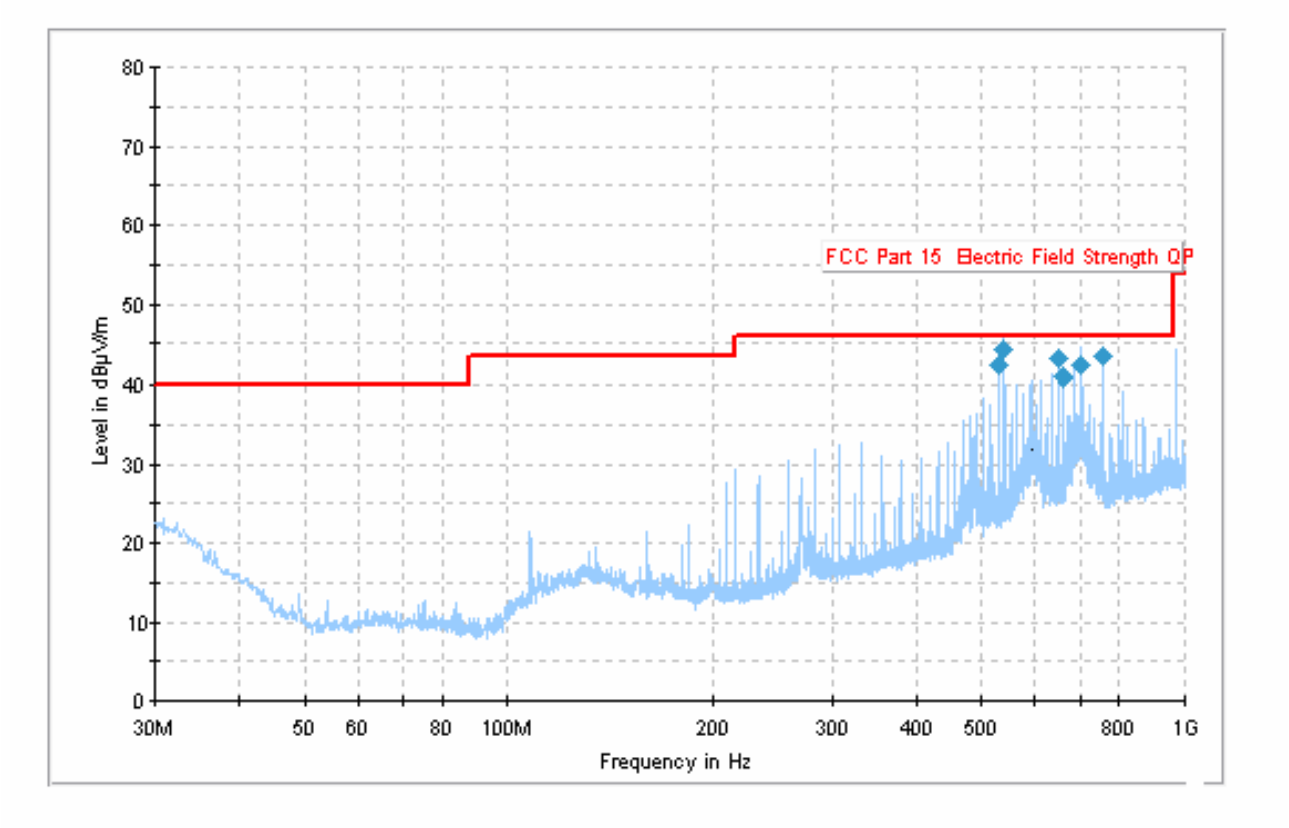
Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	52%
ATM Pressure:	100.9kPa

The testing was performed by Winner Zhang on 2008-09-18.

Test Mode: Transmitting (the worst case blow 1GHz)



Frequency (MHz)	Corrected Amp. (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
540.050975	44.3	106.0	V	185.0	-4.2	46.0	1.7*
756.100625	43.4	162.0	V	171.0	-0.9	46.0	2.6*
648.061550	43.2	105.0	V	7.0	-2.8	46.0	2.8*
528.431075	42.2	104.0	V	249.0	-4.7	46.0	3.8*
702.070525	42.2	163.0	V	111.0	-2.1	46.0	3.8*
660.061100	40.9	104.0	V	13.0	-2.4	46.0	5.1

- *Within measurement uncertainty.*

Test Mode: Transmitting (Above 1GHz)

Freq. (MHz)	Meter Reading (dBuV/M)	Detector PK/QP/AV	Direction (Degree)	Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Corr. Factor (dBuV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)	Remarks
Low Channel												
4804	37.54	AV	180	1.2	H	31.2	6.65	33.4	41.99	54	12.01	Harmonic
4804	35.37	AV	90	1.2	V	31.2	6.65	33.4	39.82	54	14.18	Harmonic
1026	42.30	AV	210	1.4	H	24.5	5.14	35.0	36.94	54	17.06	Spurious
1026	38.36	AV	180	1.2	V	24.5	5.14	35.0	33.00	54	21.00	Spurious
4804	45.94	PK	45	1.2	H	31.2	6.65	33.4	50.39	74	23.61	Harmonic
4804	44.89	PK	180	1.2	V	31.2	6.65	33.4	49.34	74	24.66	Harmonic
1026	52.05	PK	120	1.4	H	24.5	5.14	35.0	46.69	74	27.31	Spurious
1026	48.15	PK	45	1.3	V	24.5	5.14	35.0	42.79	74	31.21	Spurious
Middle Channel												
1080	50.85	PK	45	1.2	H	24.6	4.10	35.0	44.55	74	29.45	Spurious
4882	44.01	PK	160	1.0	V	31.5	6.70	33.4	48.81	74	25.19	Harmonic
4882	32.50	AV	78	1.1	V	31.5	6.70	33.4	37.30	54	16.70	Harmonic
1080	49.56	PK	180	1.2	V	24.6	4.10	35.0	43.26	74	30.74	Spurious
1080	40.35	AV	90	1.2	V	24.6	4.10	35.0	34.05	54	19.95	Spurious
4882	44.12	PK	165	1.4	H	31.5	6.70	33.4	48.92	74	25.08	Harmonic
4882	32.73	AV	81	1.5	H	31.5	6.70	33.4	37.53	54	16.47	Harmonic
1080	41.25	AV	180	1.2	H	24.6	4.10	35.0	34.95	54	19.05	Spurious
High Channel												
4962	36.72	AV	180	1.2	H	32.0	6.90	33.7	41.92	54	12.08	Harmonic
4962	35.94	AV	90	1.2	V	32.0	6.90	33.7	41.14	54	12.86	Harmonic
1134	40.51	AV	210	1.4	H	24.7	4.80	35.0	35.01	54	18.99	Spurious
1134	38.90	AV	180	1.2	V	24.7	4.80	35.0	33.40	54	20.60	Spurious
4962	45.77	PK	45	1.2	H	32.0	6.90	33.7	50.97	74	23.03	Harmonic
4962	45.40	PK	180	1.2	V	32.0	6.90	33.7	50.60	74	23.40	Harmonic
1134	50.85	PK	120	1.4	H	24.7	4.80	35.0	45.35	74	28.65	Spurious
1134	49.81	PK	45	1.3	V	24.7	4.80	35.0	44.31	74	29.69	Spurious

Radiated Emission in Restricted Band:

Freq. (MHz)	Receiver Reading (dBuV/M)	Detector (PK/QP/AV)	Direction (Degree)	Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Factor. (dBuV/m)	FCC Part 15.247/209	
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)
Out of left side band (2310MHz - 2390 MHz)											
2389	49.00	PK	353	1.00	H	30.6	3.61	34	49.21	74	24.79
2381	48.38	PK	352	1.50	V	30.6	3.61	34	48.59	74	25.41
2378	48.11	PK	355	1.30	V	30.6	3.61	34	48.32	74	25.68
Out of left side band (2483.5MHz - 2500 MHz)											
2484	54.29	PK	270	1.50	V	30.6	3.61	34	49.50	74	24.50
2498	46.36	PK	260	1.20	H	30.6	3.61	34	46.57	74	27.43
2492	46.36	PK	275	1.30	V	30.6	3.61	34	46.57	74	27.43

Note: Above PEAK measured radiated emission values are complied with the average limit, so average measurement has been omitted.

CFR47 §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another truce
3. Measure the channel separation.

Test Data

Environmental Conditions

Temperature:	27 ° C
Relative Humidity:	50%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-08-28.

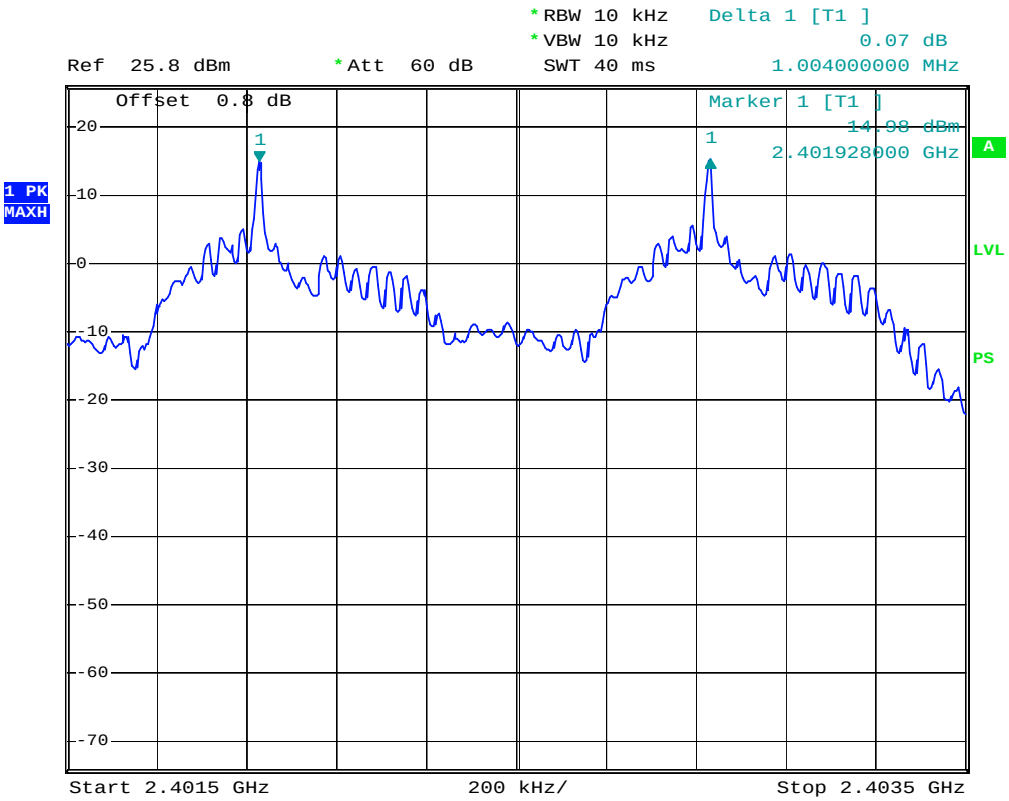
Test Mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	1.004	0.396	pass
Adjacency Channel	2403			
Middle Channel	2441	1.000	0.349	pass
Adjacency Channel	2442			
High Channel	2481	1.000	0.409	pass
Adjacency Channel	2480			

Test Result: Compliance.

Please refer to following plots

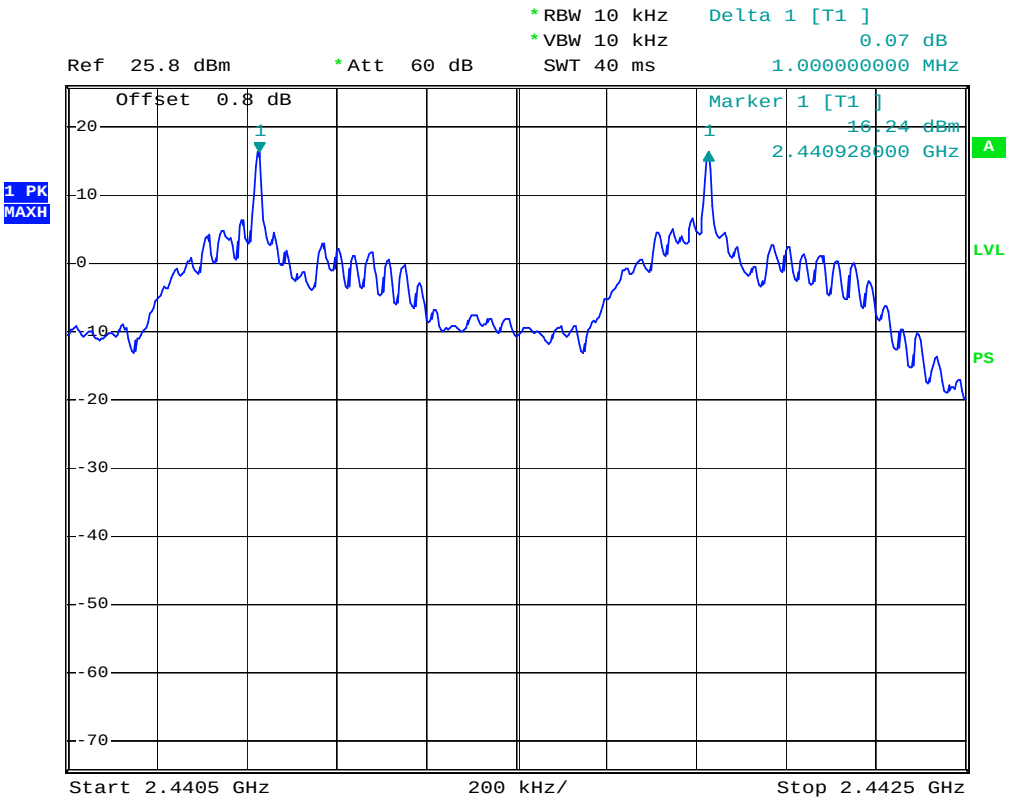
Low Channel



channel seperation low channel

Date: 28.SEP.2008 10:50:22

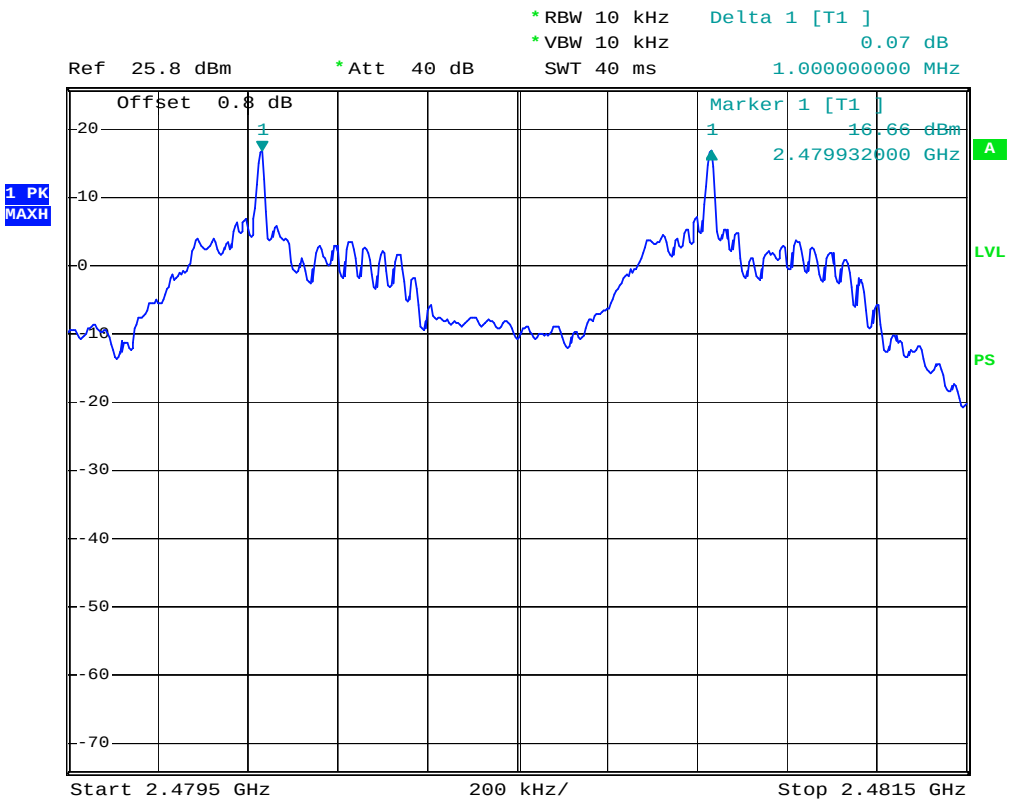
Middle Channel



channel seperation middle channel

Date: 28.SEP.2008 10:55:50

High Channel



channel seperation high channel

Date: 28.SEP.2008 10:37:53

CFR47 §15.247(a) (1) –20dB BANDWIDTH TESTING

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

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. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

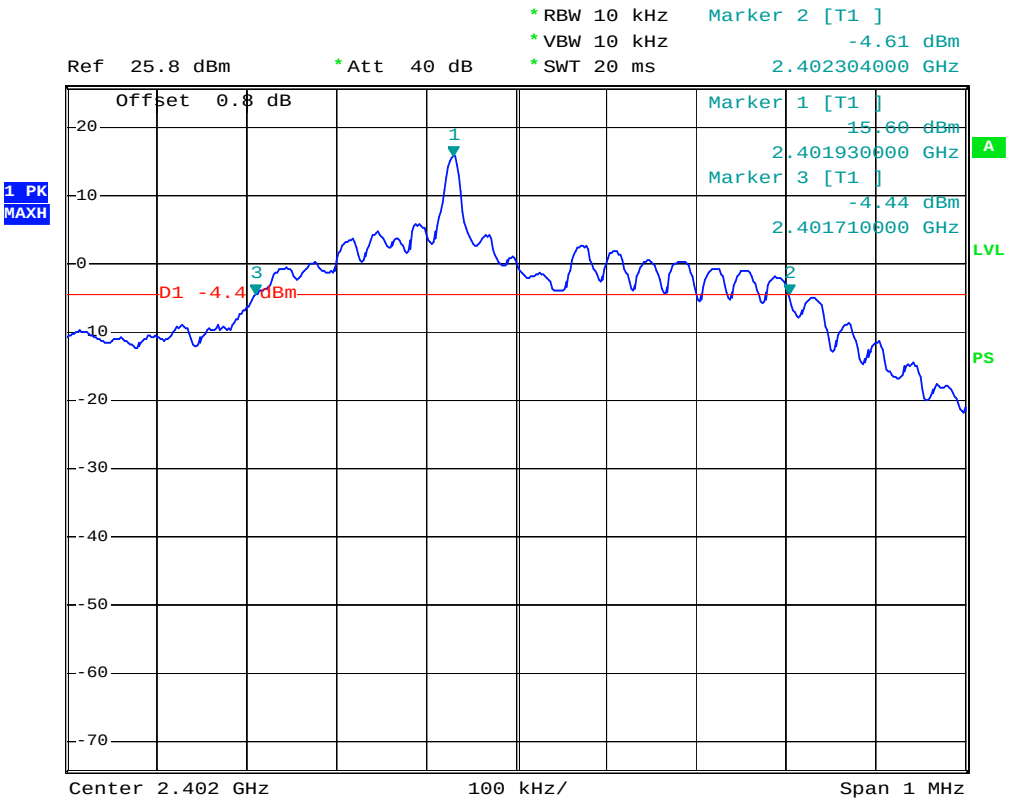
Temperature:	27 ° C
Relative Humidity:	50%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-10-06

Test Result: Please refer to the following table and plots.

Channel	Channel Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	0.594
Middle	2441	0.524
High	2481	0.614

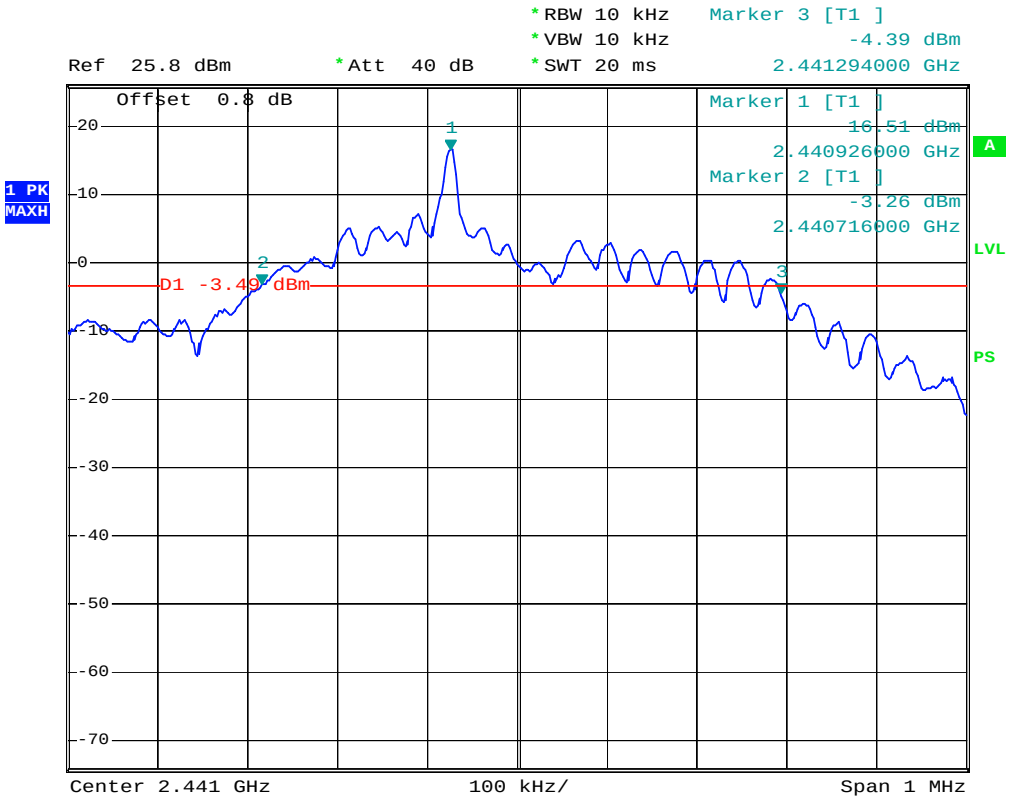
Low Channel



20dB bandwidth , low channel

Date: 6.OCT.2008 17:09:25

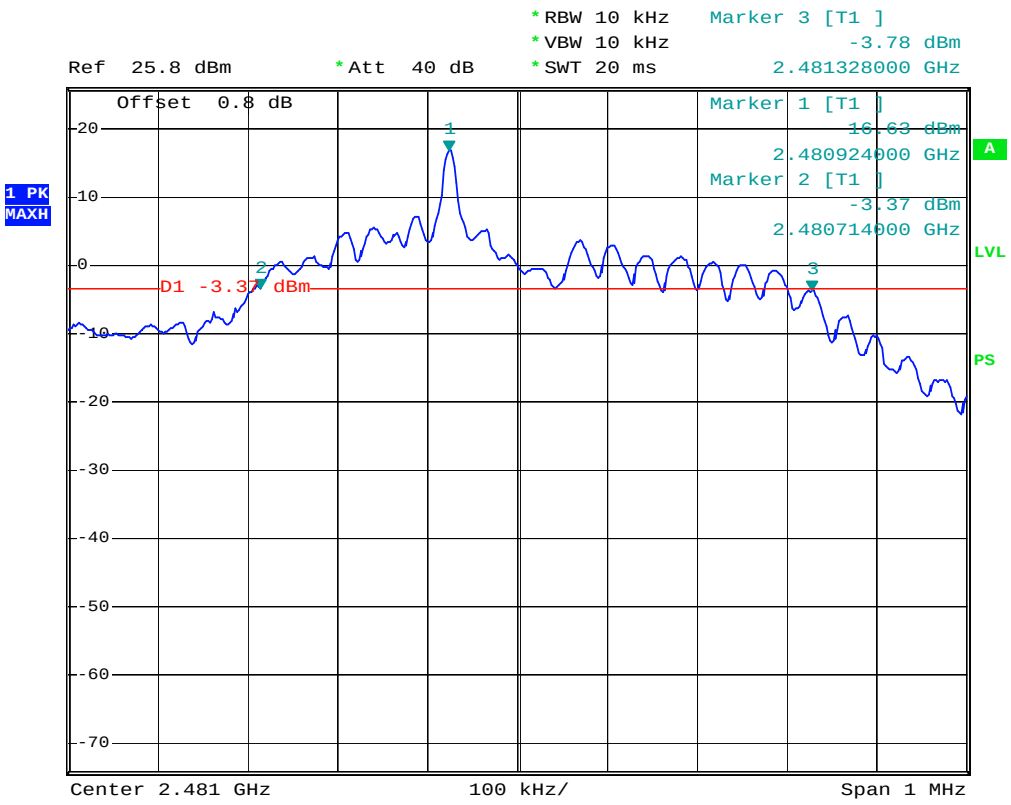
Middle Channel



20dB bandwidth ,middle channel

Date: 6.OCT.2008 17:22:25

High Channel



20dB bandwidth ,high channel

Date: 6.OCT.2008 17:17:45

CFR47 §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Set the EUT in transmitting mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Test Data

Environmental Conditions

Temperature:	27 ° C
Relative Humidity:	50%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-09-01.

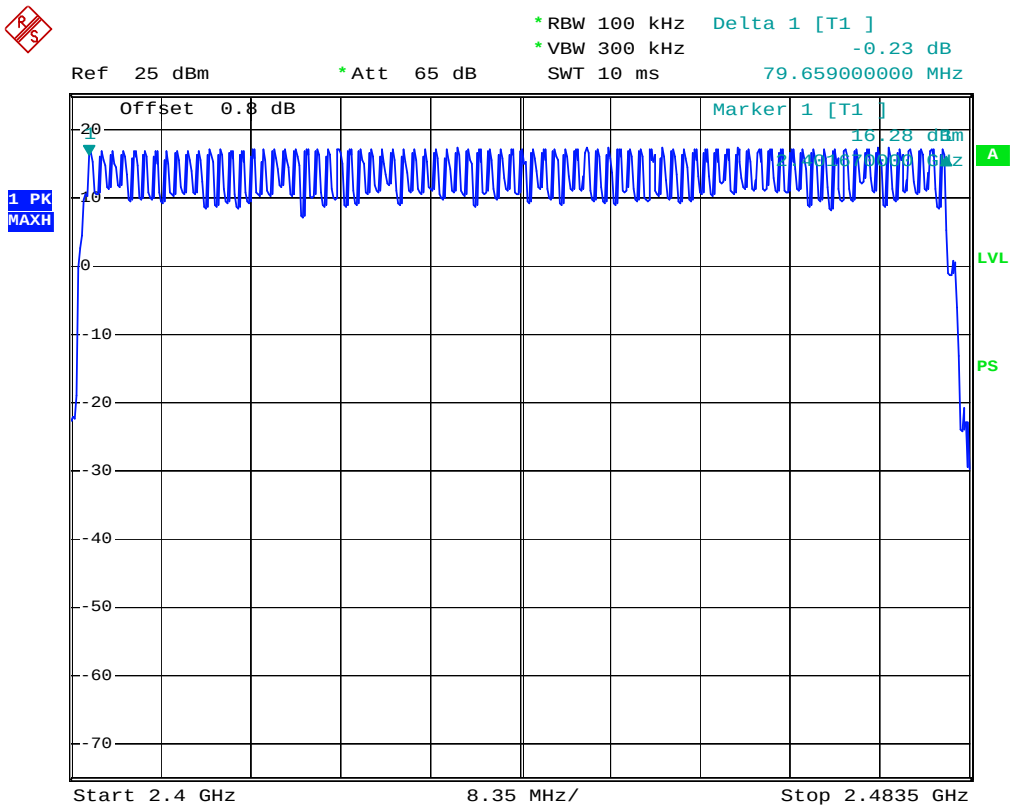
Test Mode: Transmitting

Frequency Range (MHz)	Quantity of Hopping Channel (CH)	Limit (CH)
2400 – 2483.5	80	>15

Test Result: Compliance.

Please refer to following plot.

Number of Hopping Channels



Quantity of hopping channel

Date: 1.SEP.2008 15:08:14

CFR47 §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 X channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length * hope rate/ number of hopping channels * 31.6s
Hop rate=1600/s

Test Data

Environmental Conditions

Temperature:	27 ° C
Relative Humidity:	50%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-10-16

Test Mode: Transmitting

Test Result: Compliance.

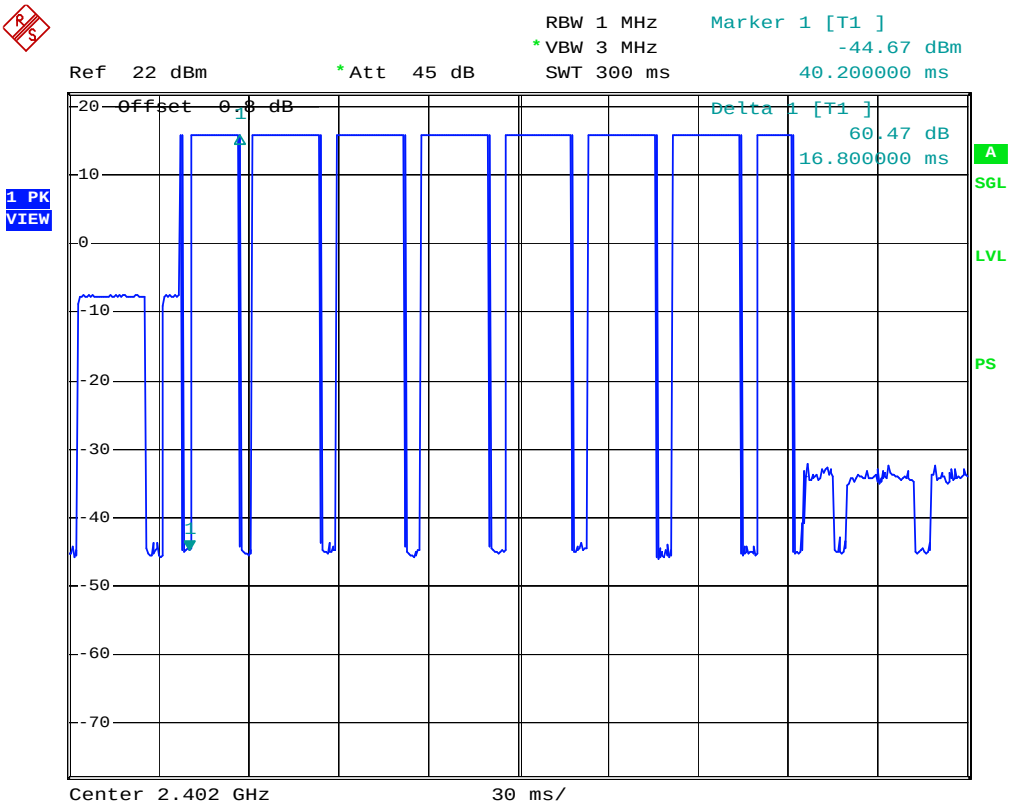
Please refer to following tables and plots

Channel	Dwell Time (s)	Limit (s)	Result
Low	0.1228	0.4	Pass
Middle	0.1236	0.4	Pass
High	0.1218	0.4	Pass

Note: Only one channel hops in 2402 to 2481 MHz range randomly in each 200 ms cycle.

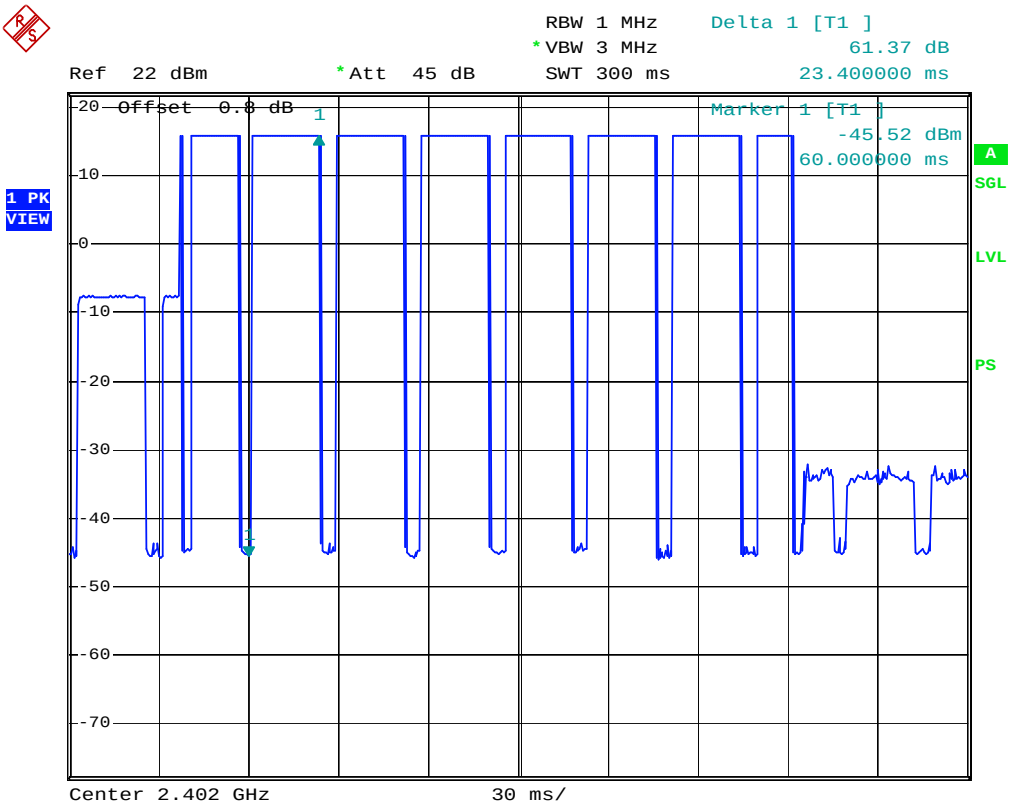
Low Channel: 2402MHz

On time: 16.8ms+6*23.4ms+12.6ms =169.8ms
16.8ms pulse, 23.4ms pulse, 12.6ms pulse have same duty cycle
For example: duty cycle of 23.4ms pulse:
(0.376ms*45)/23.4ms =16.875ms/23.4ms = 72.3%
So, the total on time= 169.8ms* 72.3% = 122.7654 ms
Dwell time= the total on time*(5/2/80)*(0.4*80) =122.7654ms



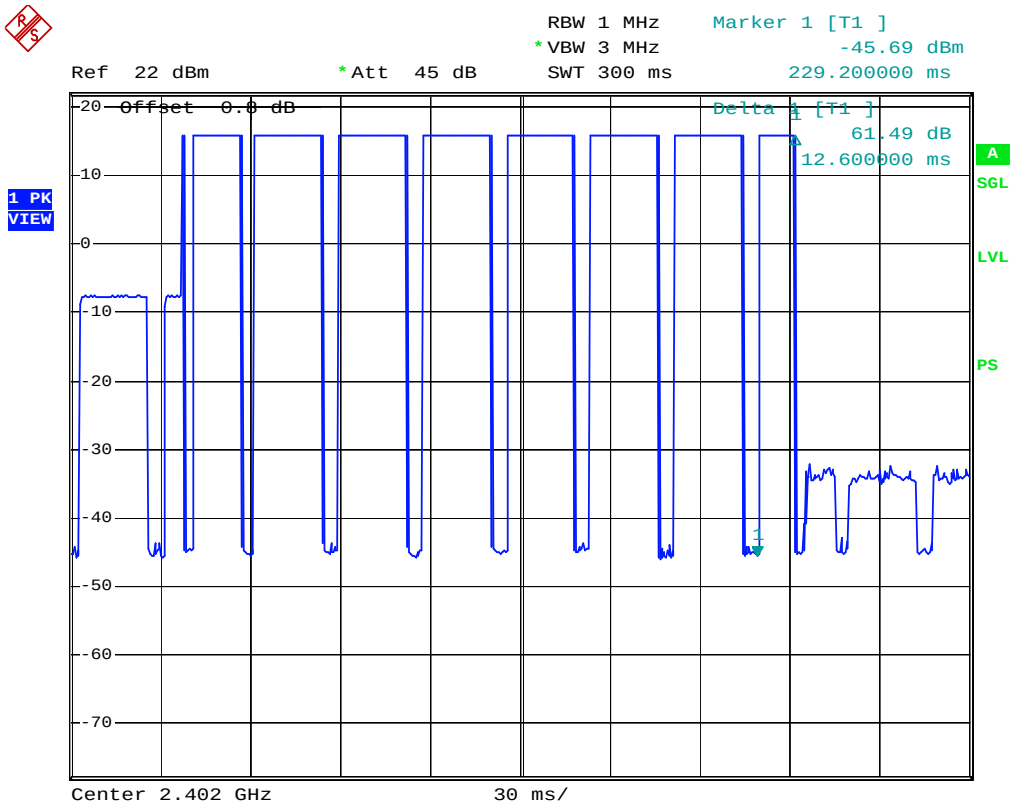
Pulse 1

Date: 16.OCT.2008 16:58:07



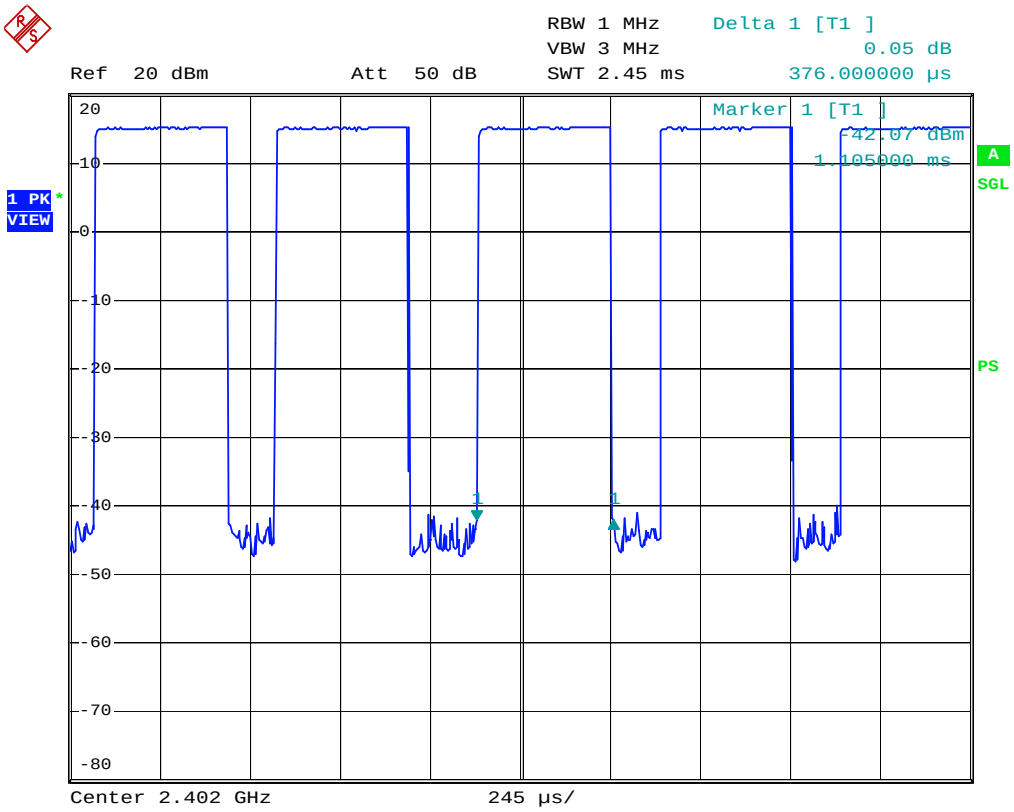
Pulse 2

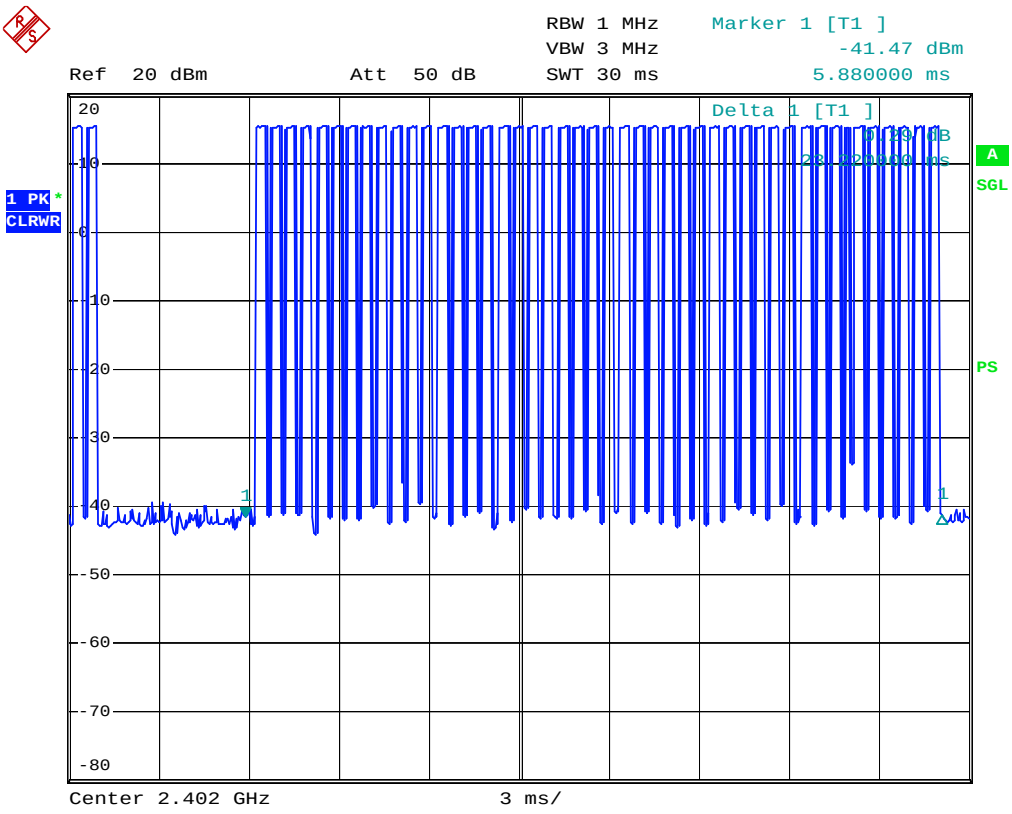
Date: 16.OCT.2008 16:57:10



Pulse 3

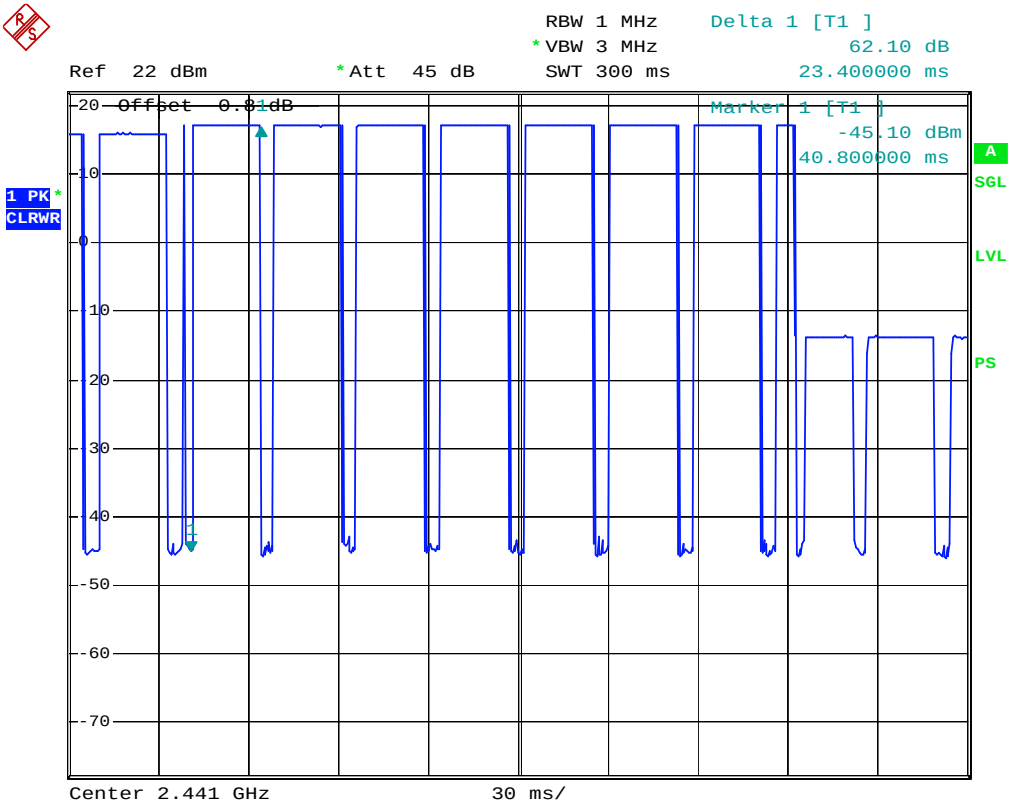
Date: 16.OCT.2008 16:55:47


RBW 1 MHz
VBW 3 MHz
SWT 2.45 ms
Delta 1 [T1]
0.05 dB
376.000000 µs
Ref 20 dBm
Att 50 dB
Marker 1 [T1]
-42.07 dBm
1.105000 ms
1 PK
VIEW
A
SGL
PS
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
245 µs/


RBW 1 MHz
VBW 3 MHz
SWT 30 ms
Marker 1 [T1]
-41.47 dBm
5.880000 ms
Ref 20 dBm
Att 50 dB
Delta 1 [T1]
1 PK
CLRWR
A
SGL
PS
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.402 GHz
3 ms/

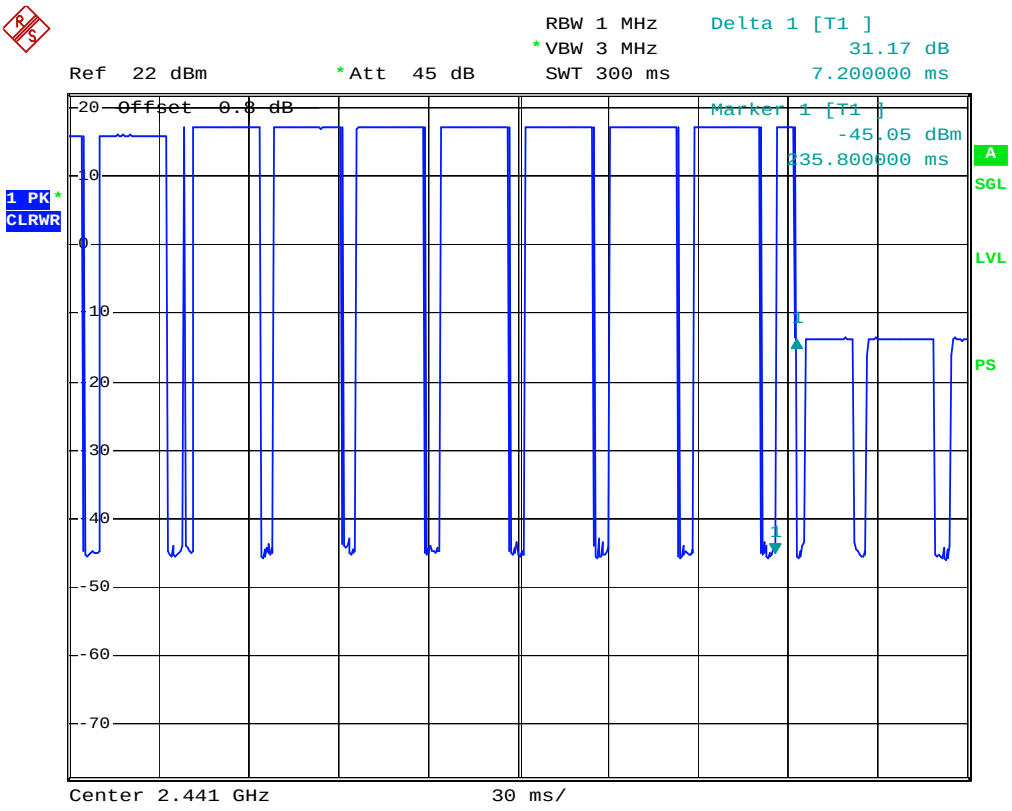
Middle Channel: 2441MHz

On time: 7*23.4ms+.7.2ms=171ms
23.4ms pulse and 7.2ms pulse have same duty cycle
For example: duty cycle of 23.4ms pulse:
(0.376ms*45)/23.4ms =16.875ms/23.4ms = 72.3%
So, the total on time = 171ms* 72.3% =123.633ms
Dwell time= the total on time*(5/2/80)*(0.4*80) =123.633ms<0.4s



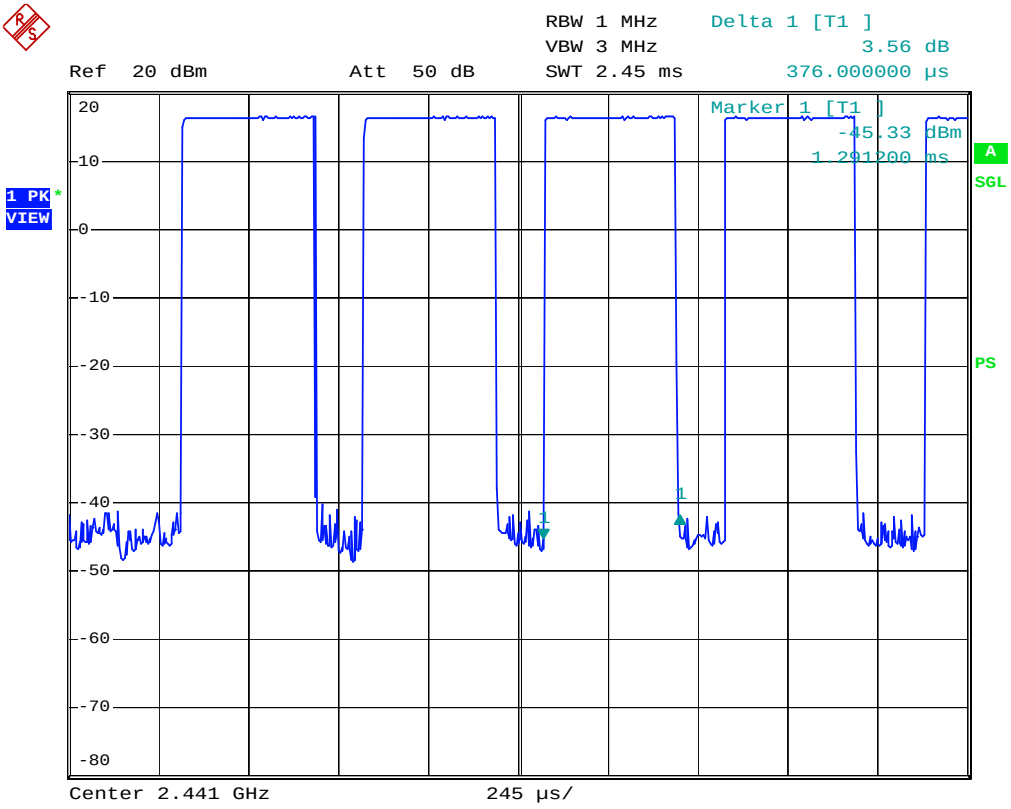
Pulse 1

Date: 16.OCT.2008 17:09:59



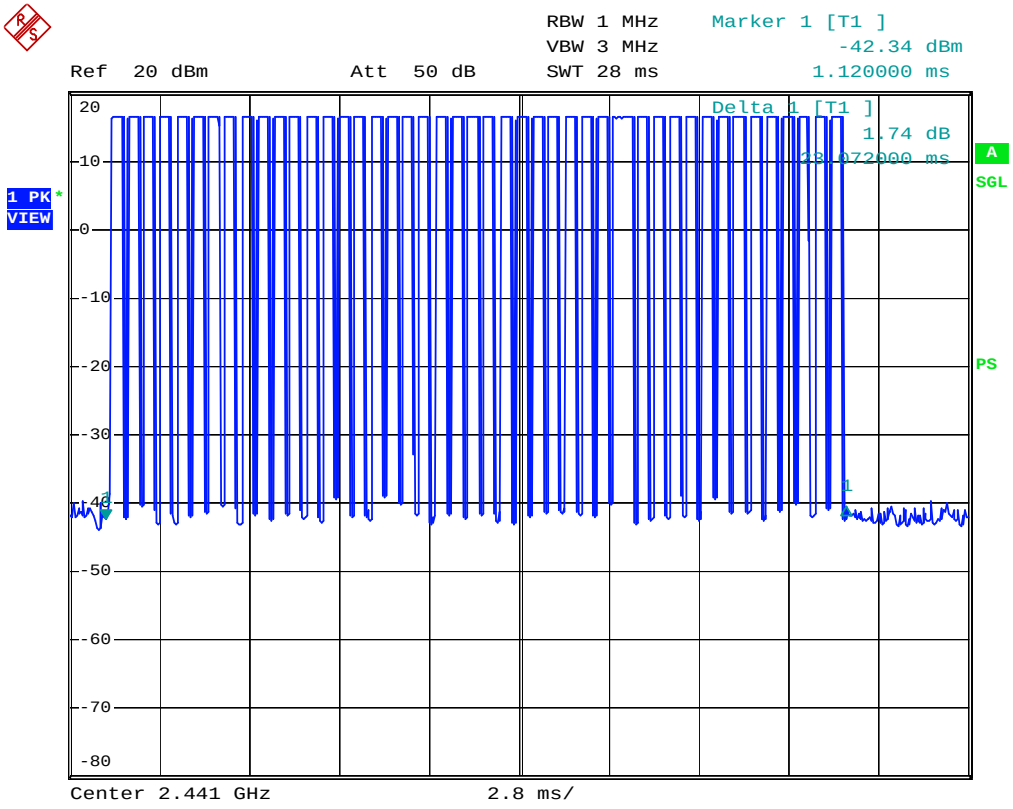
Pulse 2

Date: 16.OCT.2008 17:12:50



2441-2

Date: 16.OCT.2008 19:26:39

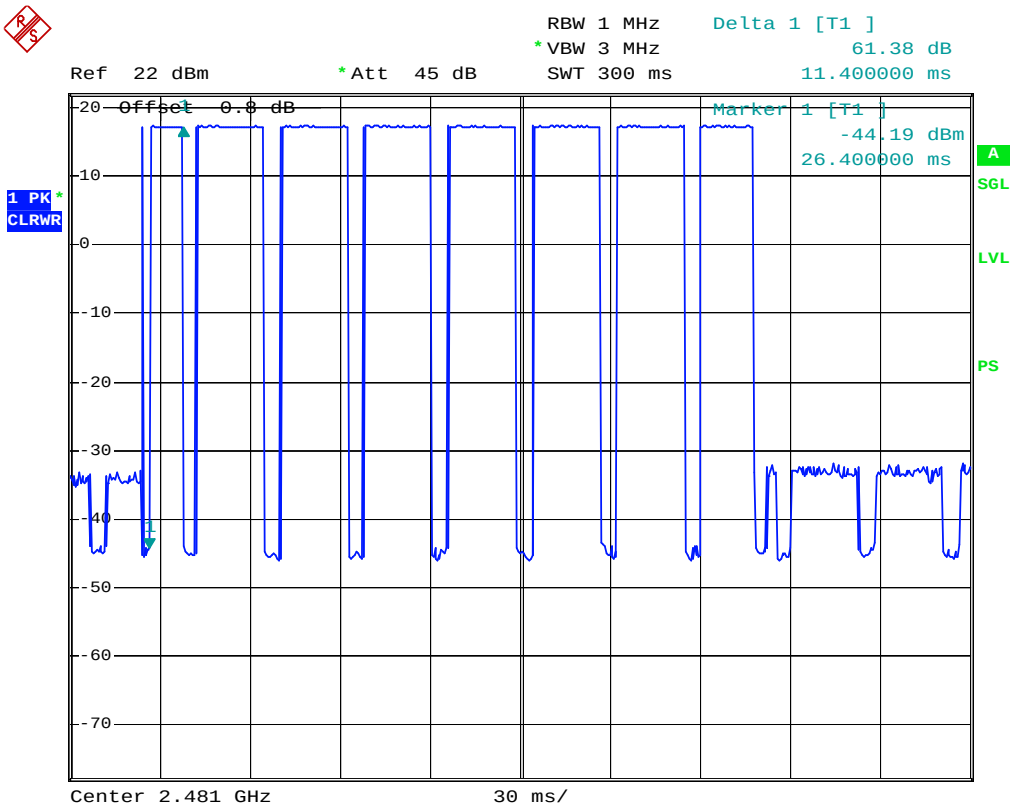


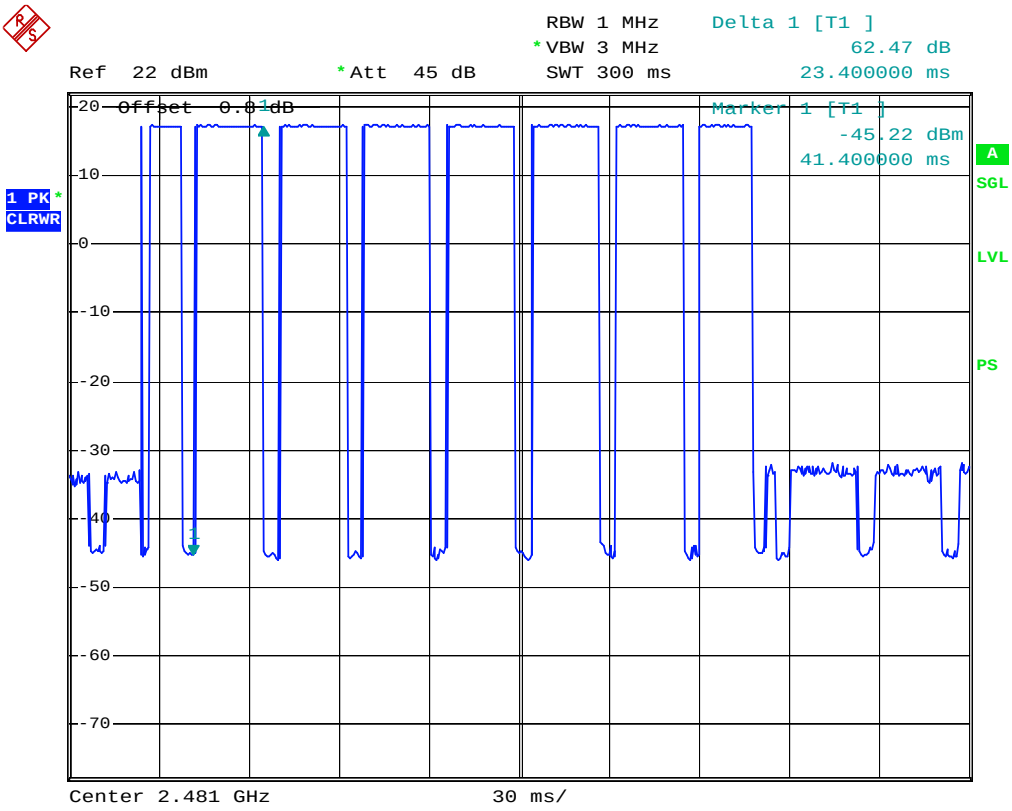
2441-1

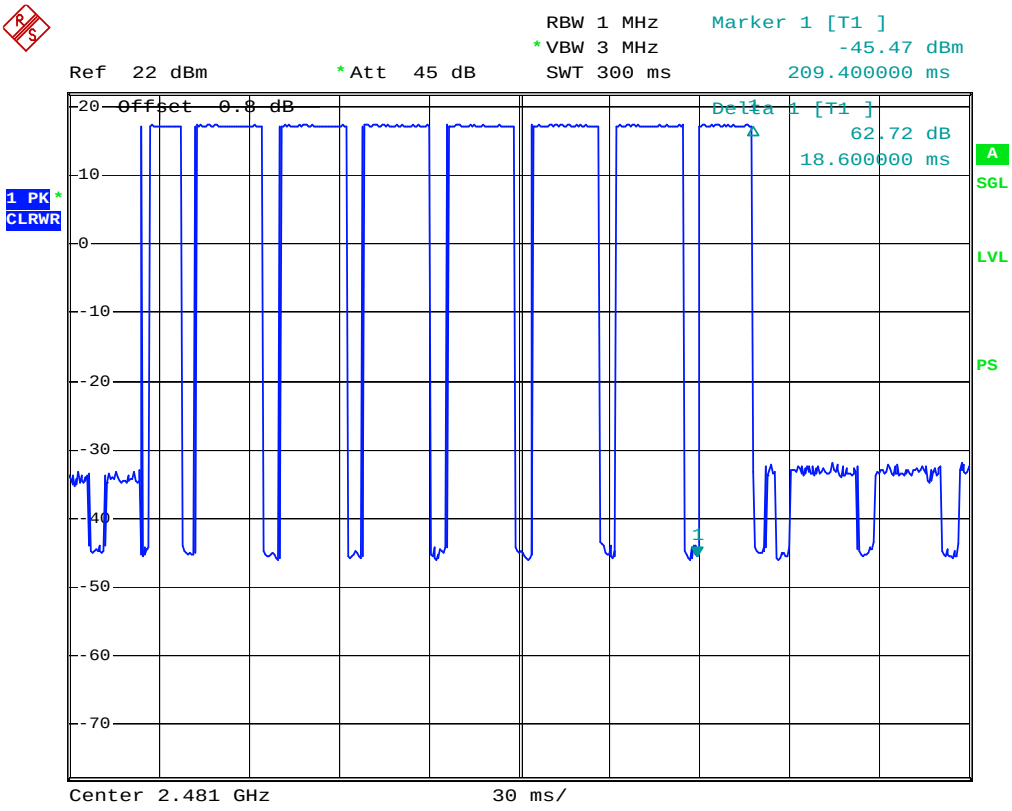
Date: 16.OCT.2008 19:11:45

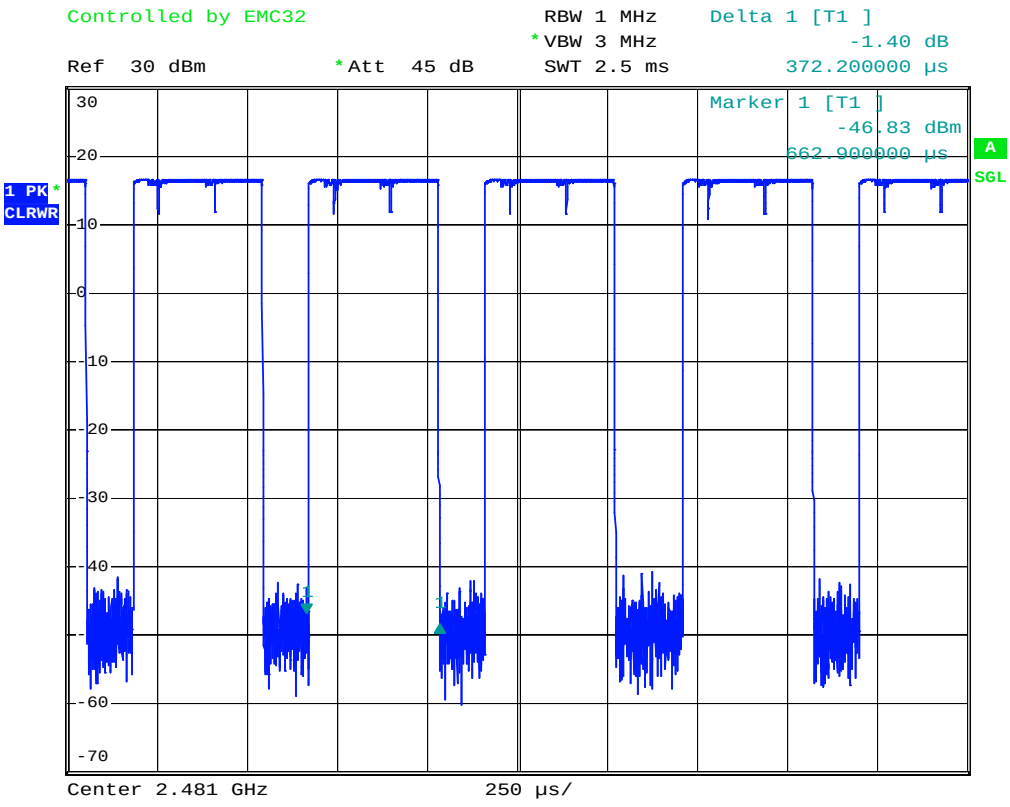
High Channel: 2481MHz

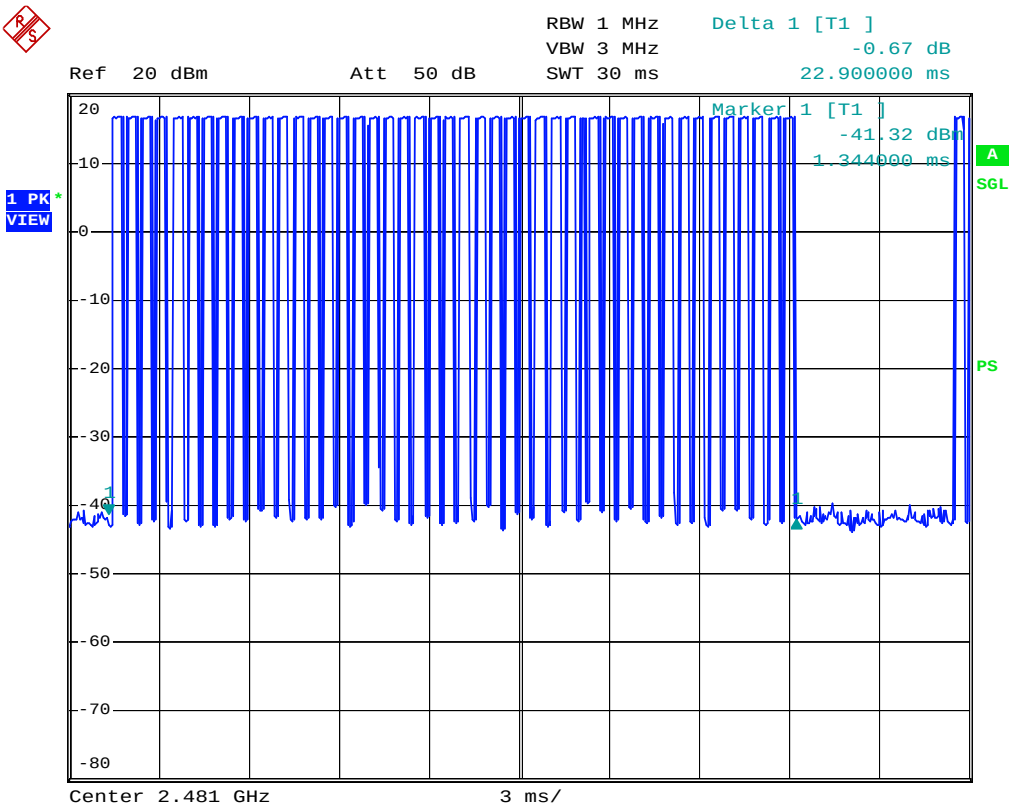
On time: 11.4ms+6*23.4ms+18.6ms =170.4ms
11.4ms pulse, 23.4ms pulse, 7.2ms pulse have same duty cycle
For example: duty cycle of 23.4ms pulse:
(0.3722ms*45)/23.4ms =16.74ms/23.4ms = 71.5%
So, the total on time= 170.4ms* 71.5 % = 121.836 ms
Dwell time= the total on time*(5/2/80)*(0.4*80) =121.836ms<0.4s




RBW 1 MHz
Delta 1 [T1]
*VBW 3 MHz
62.47 dB
Ref 22 dBm
*Att 45 dB
SWT 300 ms
23.400000 ms
Offset 0.0 dB
Marker 1 [T1]
-45.22 dBm
41.400000 ms
1 PK *
CLRWR
A
SGL
LVL
PS
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.481 GHz
30 ms/


RBW 1 MHz
*VBW 3 MHz
SWT 300 ms
Marker 1 [T1]
-45.47 dBm
209.400000 ms
Ref 22 dBm
*Att 45 dB
Offset 0.8 dB
Delta 1 [T1]
62.72 dB
18.600000 ms
1 PK *
CLRWR
A
SGL
LVL
PS
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.481 GHz
30 ms/


Controlled by EMC32
RBW 1 MHz
*VBW 3 MHz
SWT 2.5 ms
Delta 1 [T1]
-1.40 dB
372.200000 µs
Ref 30 dBm
*Att 45 dB
Marker 1 [T1]
-46.83 dBm
662.900000 µs
1 PK*
CLRWR
A
SGL
30
20
10
0
-10
-20
-30
-40
-60
-70
Center 2.481 GHz
250 µs/


RBW 1 MHz
VBW 3 MHz
SWT 30 ms
Delta 1 [T1]
-0.67 dB
22.900000 ms
Ref 20 dBm
Att 50 dB
Marker 1 [T1]
-41.32 dBm
1.344000 ms
1 PK
VIEW
A
SGL
PS
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.481 GHz
3 ms/

CFR47 §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

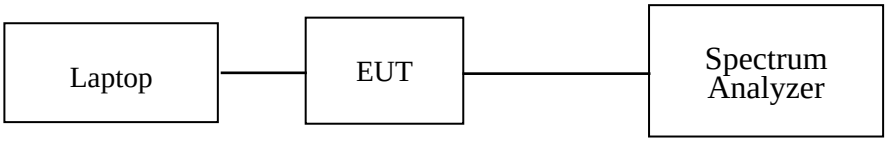
Test Procedure

Place the EUT on a wood table and set it in transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.

Add a correction factor to the display.

Measure the Peak Output Power of the EUT at appropriate RF operating channels of each band at a data rate which get the maximum power level.



Test Data

Environmental Conditions

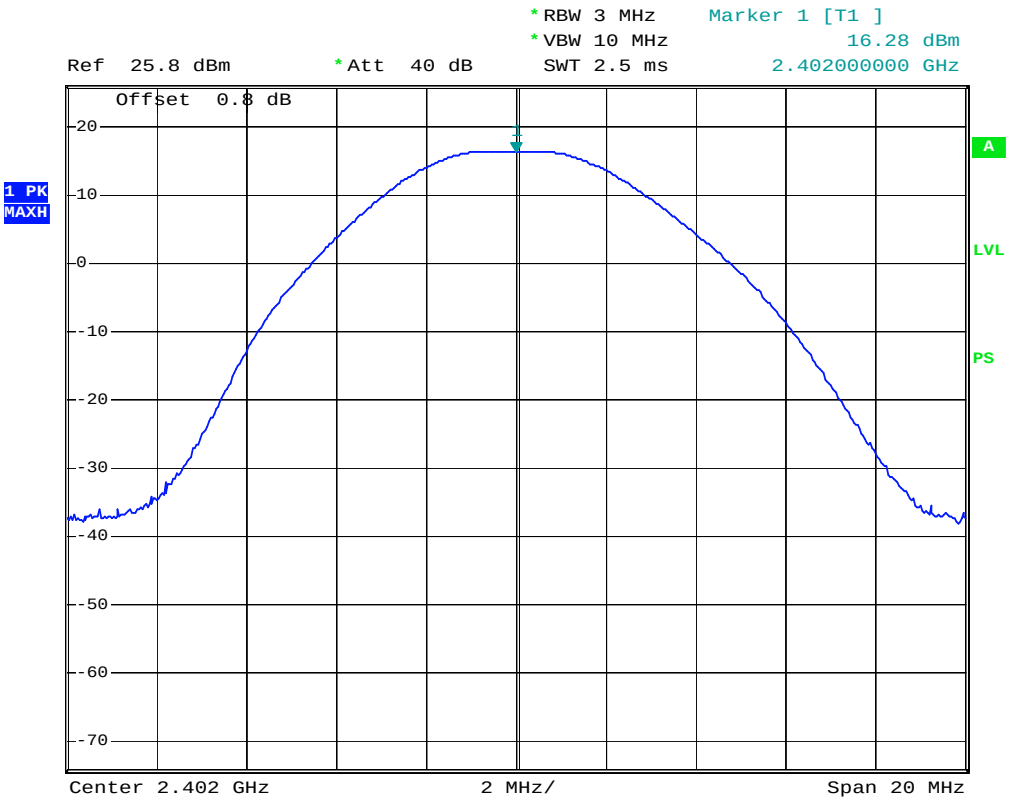
Temperature:	25 ° C
Relative Humidity:	52%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-09-27.

Test Mode: Transmitting

Channel	Frequency (MHz)	Power Output		Limit (mW)
		(dBm)	(mW)	
Low	2402	16.28	42.46	1000
Mid	2441	16.13	41.02	1000
High	2481	16.58	45.50	1000

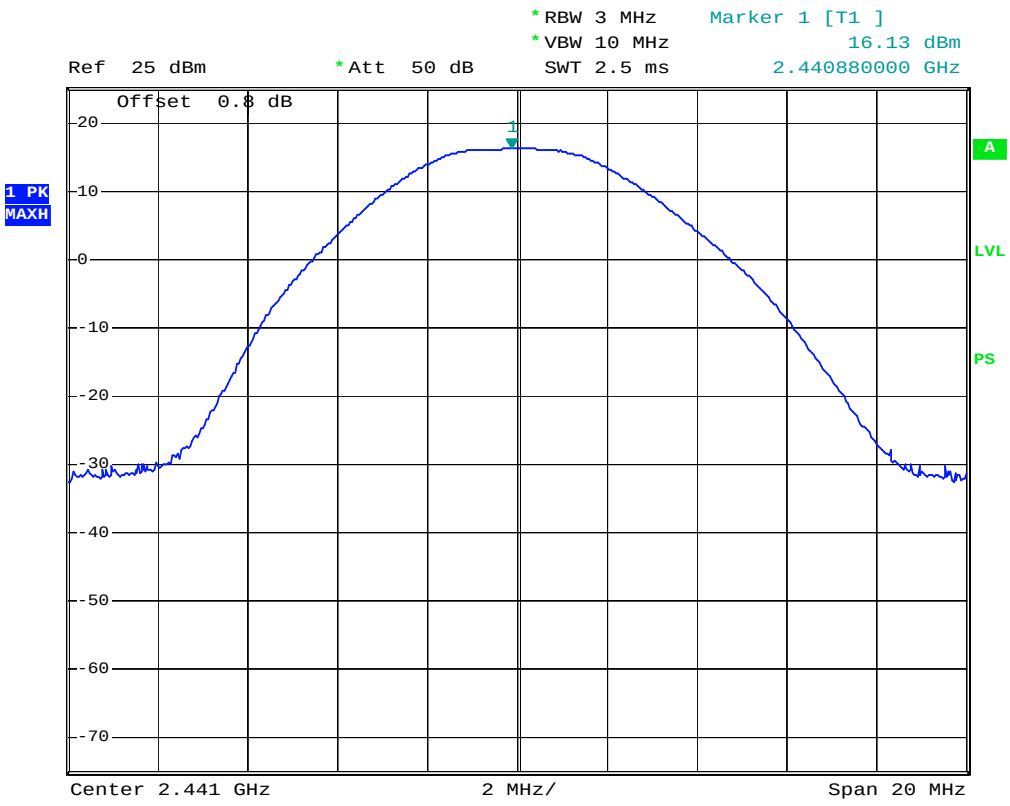
Low Channel



peak output power low channel

Date: 28.SEP.2008 10:33:18

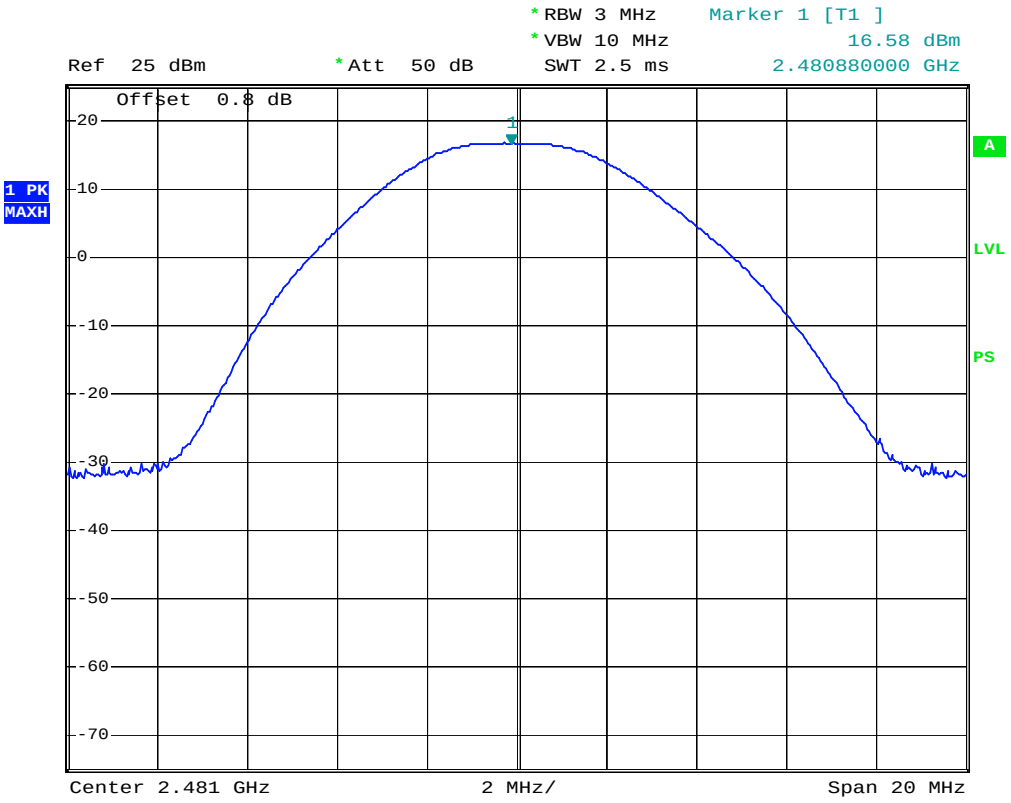
Middle Channel



peak output power middle channel

Date: 28.SEP.2008 17:18:52

High Channel



peak output power high channel

Date: 28.SEP.2008 17:20:57

CFR47 §15.247(d) - BAND EDGES TESTING

Applicable Standard

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. For conducted measurements the transmitter shall be connected to the measureing equipment.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Data

Environmental Conditions

Temperature:	27 ° C
Relative Humidity:	50%
ATM Pressure:	100.9kPa

The testing was performed by Cookies Bu on 2008-09-26.

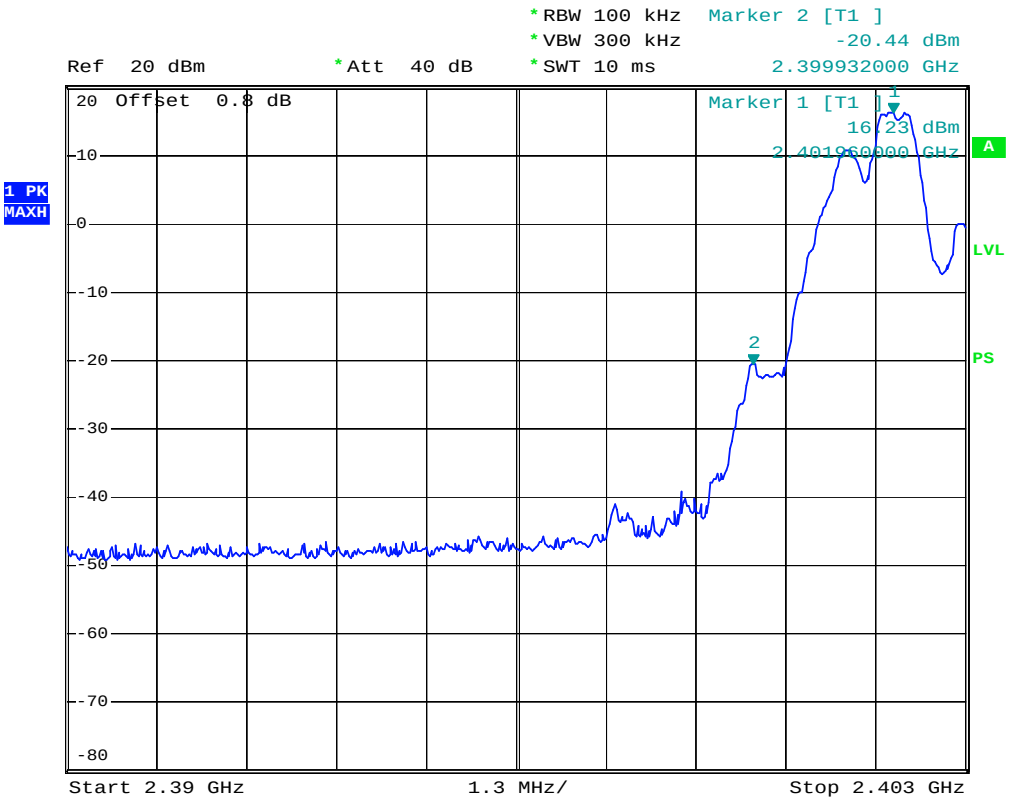
Test Mode: Transmitting

Frequency (MHz)	Delta Peak to band emission (dBc)	Limit (dBc)
2399.932	36.67	20
2483.920	56.15	20

Note: The point fall into the stricted band was tested in FCC 15.209, please refer to the restrict band testing.

Test Result: Pass

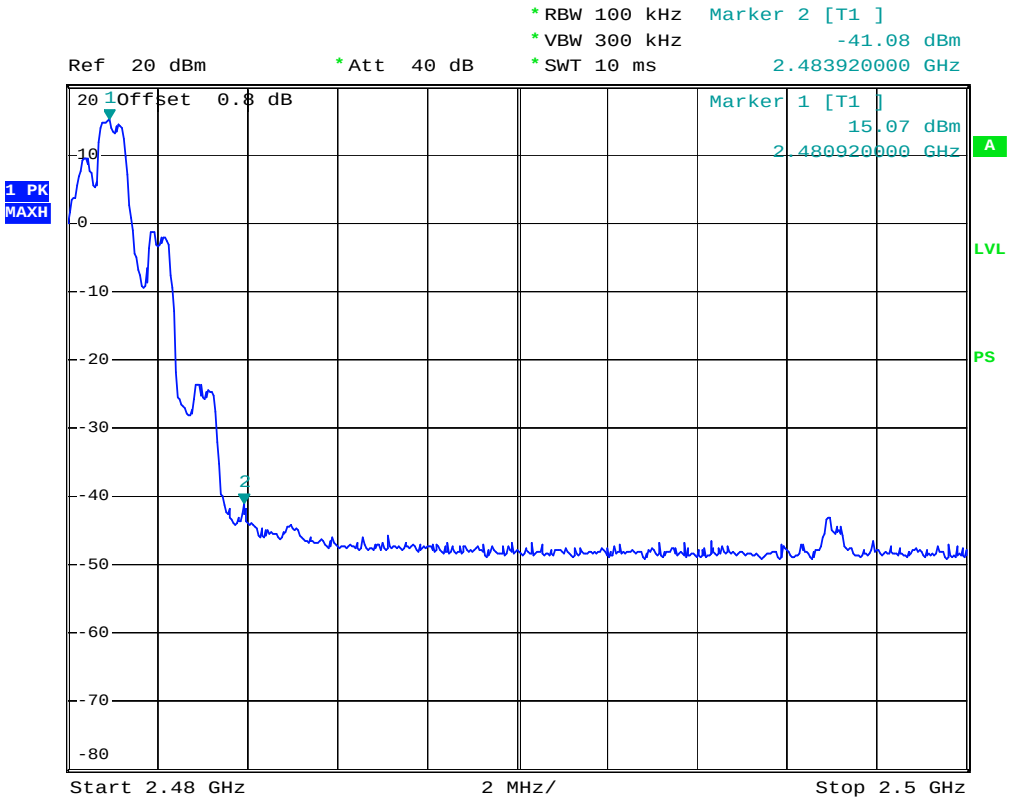
Band Edge Left Side



out of bandedge,left

Date: 6.OCT.2008 16:51:18

Band Edge Right Side



out of bandedge,right

Date: 6.OCT.2008 16:48:40

******* END OF REPORT *******