FCC Test Report

Product Name ： LIFX Module Board

Model No. ： LMB

FCC ID. ： 2AA53-LIFX01

Applicant ： LIFI LABS INC.

Address ： 524 UNION STREET #309, SAN FRANCISCO, CA, USA 94133

Date of Receipt ： 2013/09/25

Issued Date ： 2013/10/23

Report No. ： 139516R-RFUSP42V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2013/10/23
Report No. : 139516R-RFUSP42V01

QuieTek

Product Name	：	LIFX Module Board
Applicant	：	LIFI LABS INC.
Address	：	524 UNION STREET #309, SAN FRANCISCO, CA, USA 94133
Manufacturer	：	LIFI LABS INC.
Model No.	：	LMB
FCC ID.	：	2AA53-LIFX01
EUT Test Voltage	：	AC 100-240V, 50/60Hz
Trade Name	：	LIFX
Applicable Standard	：	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2012 ANSI C63.4: 2009
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 : 

(Carol Tsai / Engineering Adm. Assistant)

Reviewed By : 

(Quale Tang n / Senior Engineer)

Approved By : 

(Roy Wang / Manager)

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 1313** **NCC, Certificate No : NCC-RCB-07**
USA	**:**	**FCC, Registration Number: 365520**
Canada	**:**	**IC, Submission No: 150981**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory:
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory:
No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	LIFX Module Board
Product Type	WLAN (1TX, 1RX)
Trade Name	LIFX
Model No.	LMB
Frequency Range/Channel Number	2412~2462MHz / 11 Channels
Type of Modulation (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Type of Modulation (IEEE 802.11g/n)	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed (IEEE 802.11b)	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data Speed (IEEE 802.11g)	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data Speed (IEEE 802.11n(20MHz))	Support a subset of the combination of GI, MCS 0~MCS 7 and bandwidth defined in 802.11n(20MHz)
Antenna Gain	1.92dBi
Antenna Type	PCB Antenna

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX		RX	
Mode/ Channel Bandwidth	20MHz	40MHz	20MHz	40MHz
IEEE802.11b	✓		✓	
IEEE802.11g	✓		✓	
IEEE802.11n(20MHz)	✓		✓	

IEEE 802.11n(20MHz)

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}	N_{DBPS}	Data Rate(Mb/s)	
				20MHz	20MHz	800ns GI	400ns GI
						20MHz	20MHz
0	BPSK	1/2	1	52	26	6.5	7.2
1	QPSK	1/2	2	104	52	13.0	14.4
2	QPSK	3/4	2	104	78	19.5	21.7
3	16-QAM	1/2	4	208	104	26.0	28.9
4	16-QAM	3/4	4	208	156	39.0	43.3
5	64-QAM	2/3	6	312	208	52.0	57.8
6	64-QAM	3/4	6	312	234	58.5	65.0
7	64-QAM	5/6	6	312	260	65.0	72.2
Note 1: Support of 400ns GI is optional on transmit and receive.							

Table 1 – MCS parameters for TX Antenna number = 1

Symbol	Explanation
R	Code rate
N_{BPSC}	Number of coded bits per single carrier
N_{CBPS}	Number of coded bits per symbol
N_{DBPS}	Number of data bits per symbol
GI	guard interval

IEEE 802.11b/g & IEEE 802.11n (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz		

Note:

1. This device is the LIFX Module Board, including 2.4GHz b/g/n (1x1) transmitting and receiving function.
2. The model difference is as follows:

Item	System Model	Module Model	Externals Color	Strategy of Fitting	
1	BUL-11-A21E26-W	LMB	White	E26	
2	BUL-11-A21E26-G	LMB	Gray	E26	
3	BUL-11-A21E27-W	LMB	White	E27	
4	BUL-11-A21E27-G	LMB	Gray	E27	
5	BUL-11-A21B22-W	LMB	White	B22	
6	BUL-11-A21B22-G	LMB	Gray	B22	

3. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
4. 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.
5. This device is a wirelesss device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 139516R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	11n(20MHz)	6	0	Complies
Peak Power Output	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11	0	Complies
Radiated Emission	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11	0	Complies
RF antenna conducted test	b/g	1/ 11	0	Complies
	11n(20MHz)	1/ 11	0	Complies
Radiated Emission Band Edge	b/g	1/ 11	0	Complies
	11n(20MHz)	1/ 11	0	Complies
Occupied Bandwidth	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11	0	Complies
Power Density	b/g	1/ 6/ 11	0	Complies
	11n(20MHz)	1/ 6/ 11	0	Complies

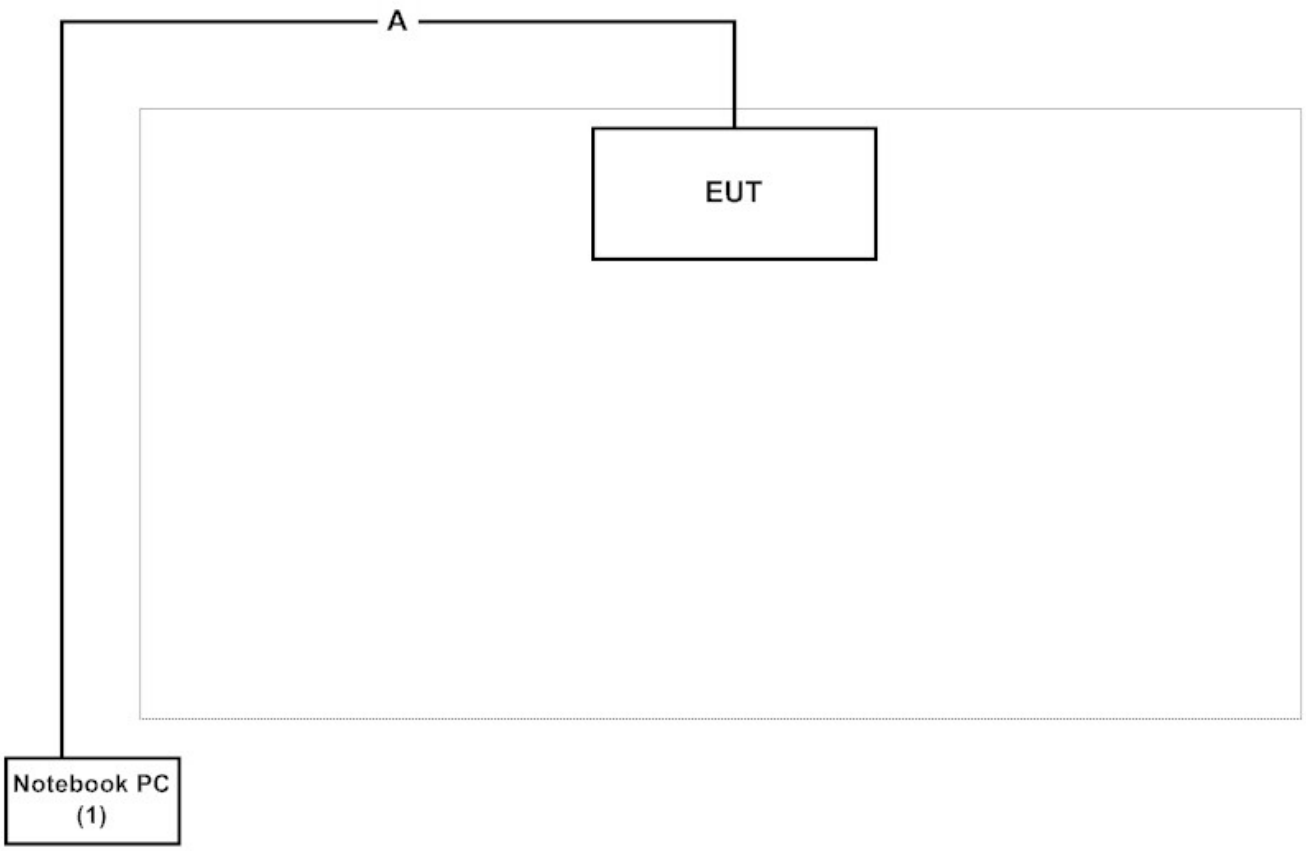
1.4. Tested System Details

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	DELL	Vostro3400	7F808N1	DoC	Non-Shielded, 1.8m

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Console Cable	Shielded, 3m

1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.5.
2	Execute the control program “WICEO FCC Test Tool” to control the EUT.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
5	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

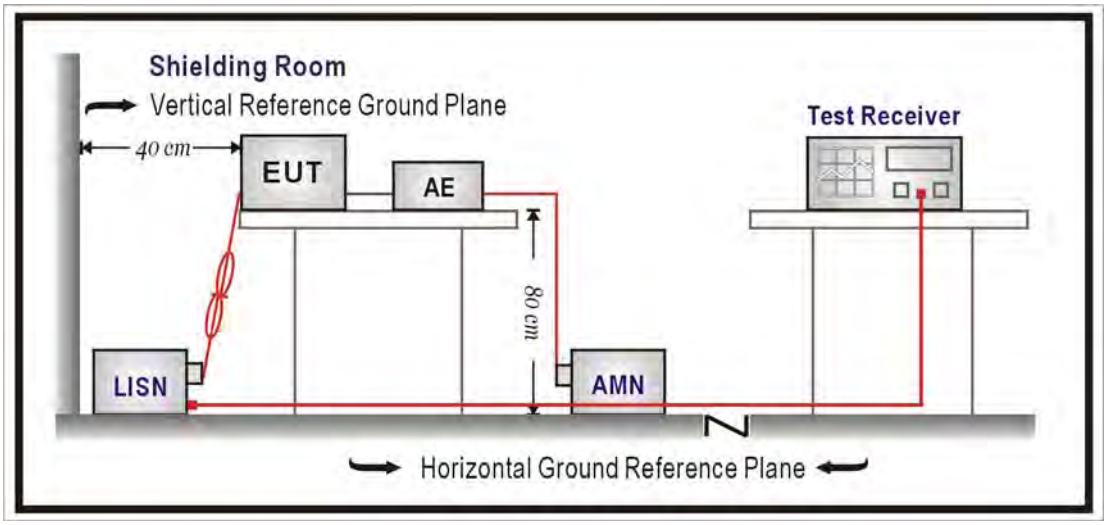
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2014/08/01
LISN	R&S	ESH3-Z5	836679/022	2014/01/20
Test Receiver	R&S	ESCS 30	825442/017	2014/01/01

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

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

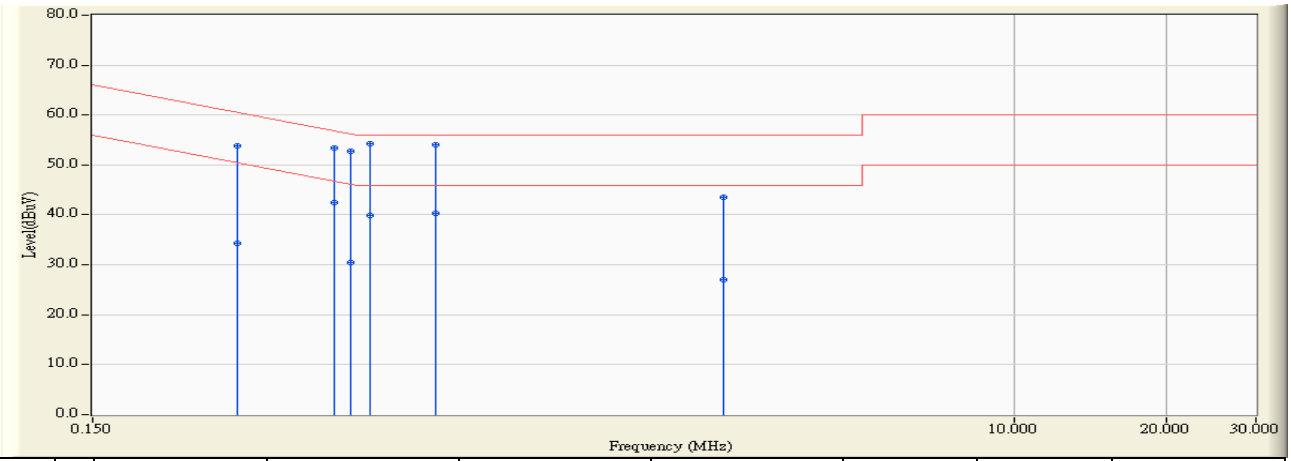
According to FCC Part 15 Subpart C Paragraph 15.207: 2012

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	**Time : 2013/10/01 - 16:53**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-3_0813 - Line1	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2437MHz**

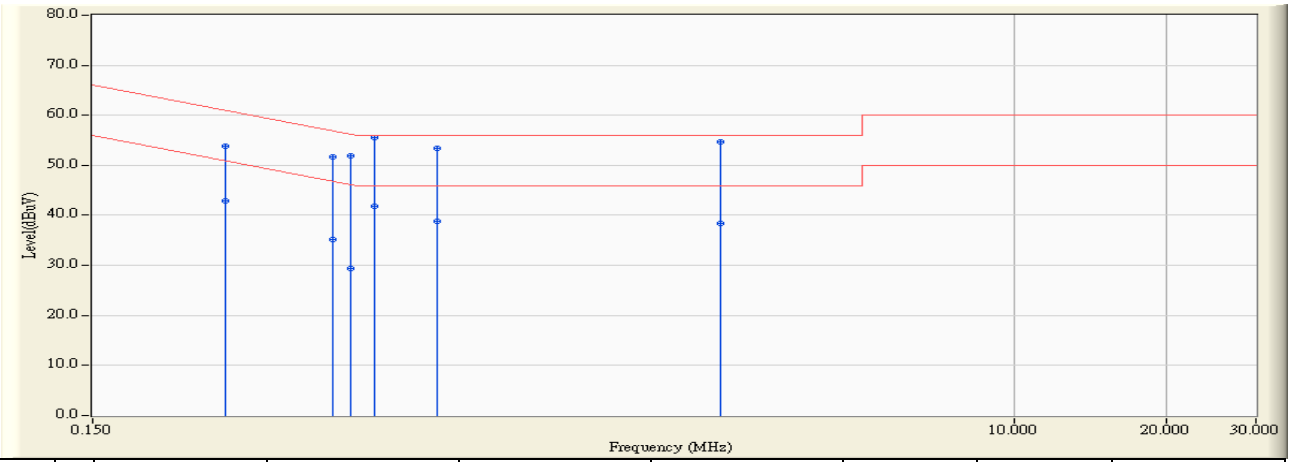


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.291	9.708	44.210	53.918	-6.589	60.507	QUASIPEAK
2		0.291	9.708	24.610	34.318	-16.189	50.507	AVERAGE
3		0.451	9.805	43.610	53.415	-3.446	56.861	QUASIPEAK
4		0.451	9.805	32.760	42.565	-4.296	46.861	AVERAGE
5		0.486	9.819	42.980	52.799	-3.438	56.237	QUASIPEAK
6		0.486	9.819	20.540	30.359	-15.878	46.237	AVERAGE
7	*	0.529	9.833	44.340	54.173	-1.827	56.000	QUASIPEAK
8		0.529	9.833	30.060	39.893	-6.107	46.000	AVERAGE
9		0.716	9.882	44.120	54.001	-1.999	56.000	QUASIPEAK
10		0.716	9.882	30.450	40.331	-5.669	46.000	AVERAGE
11		2.662	10.000	33.480	43.480	-12.520	56.000	QUASIPEAK
12		2.662	10.000	16.920	26.920	-19.080	46.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measure Level = Reading Level + Correct Factor。

Site : SR3	**Time : 2013/10/01 - 16:56**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-3_0813 - Line2	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2437MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.275	9.699	44.170	53.869	-7.097	60.966	QUASIPEAK
2		0.275	9.699	33.180	42.879	-8.087	50.966	AVERAGE
3		0.447	9.792	41.790	51.582	-5.351	56.933	QUASIPEAK
4		0.447	9.792	25.370	35.162	-11.771	46.933	AVERAGE
5		0.486	9.809	42.130	51.939	-4.298	56.237	QUASIPEAK
6		0.486	9.809	19.670	29.479	-16.758	46.237	AVERAGE
7	*	0.541	9.827	45.770	55.597	-0.403	56.000	QUASIPEAK
8		0.541	9.827	31.990	41.817	-4.183	46.000	AVERAGE
9		0.720	9.874	43.610	53.484	-2.516	56.000	QUASIPEAK
10		0.720	9.874	29.010	38.884	-7.116	46.000	AVERAGE
11		2.627	9.970	44.630	54.600	-1.400	56.000	QUASIPEAK
12		2.627	9.970	28.450	38.420	-7.580	46.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measure Level = Reading Level + Correct Factor。

3. Peak Power Output

3.1. Test Equipment

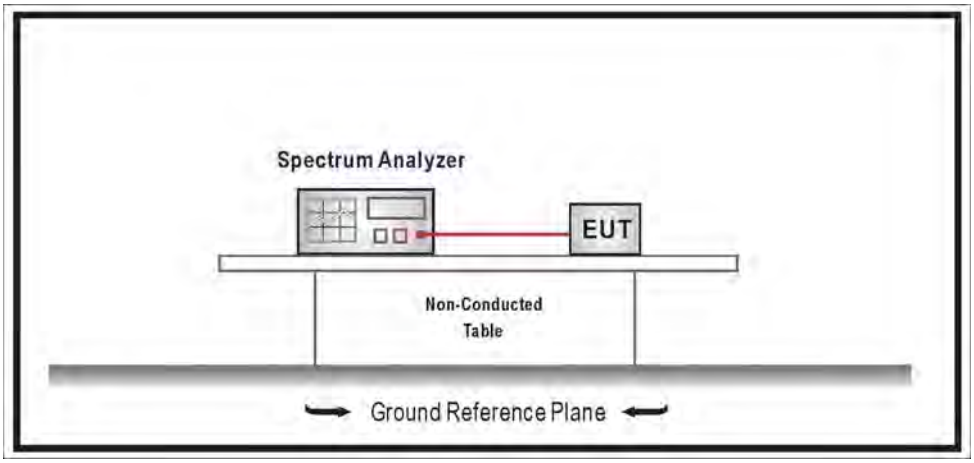
The following test equipments are used during the test:

Peak Power / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

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

3.2. Test Setup



3.3. Test procedures

The EUT was tested according to DTS test procedure of KDB558074, Section 5.2.1.2 Measurement Procedure PK2 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

3.6. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

3.7. Test Result

Product	LIFX Module Board		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

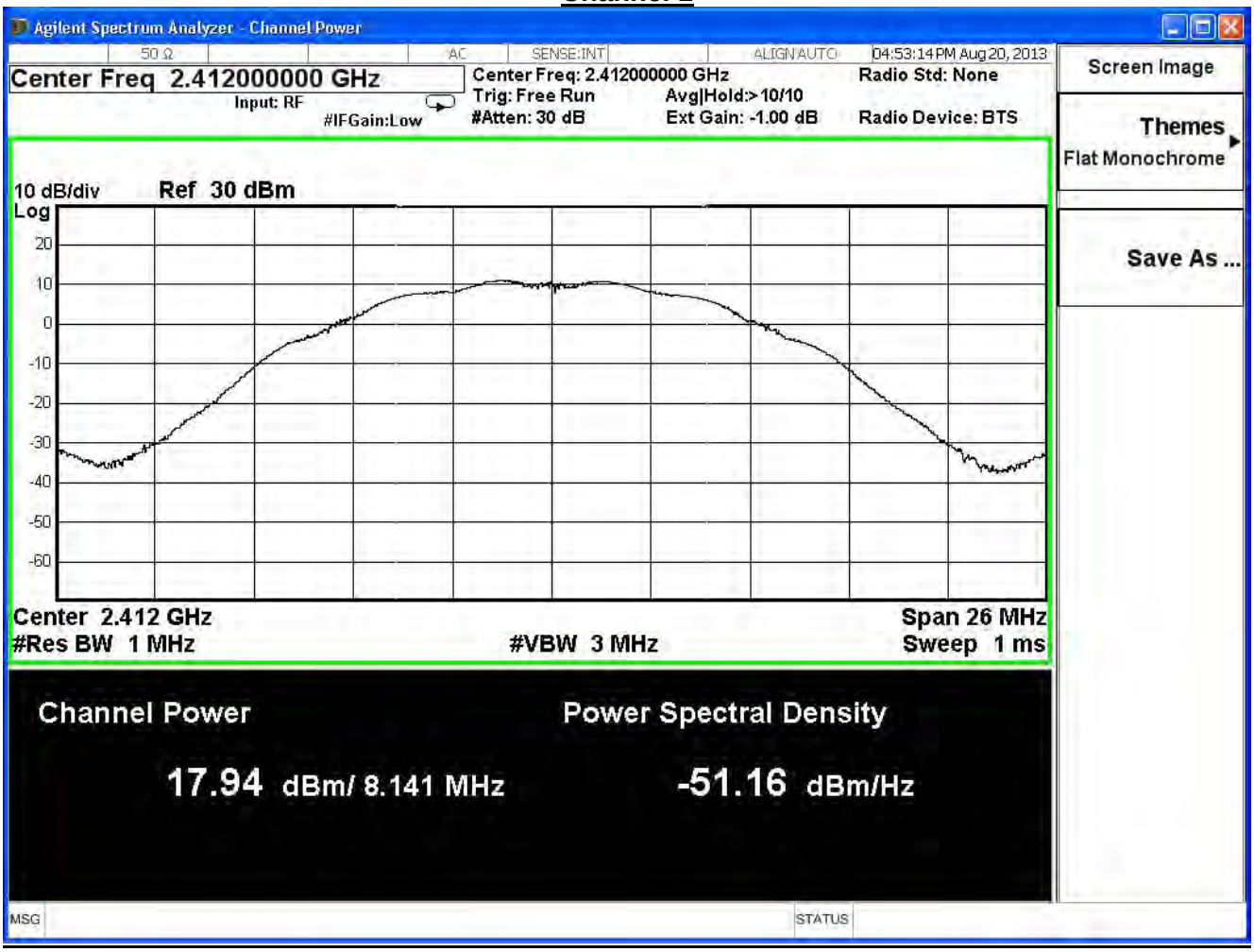
IEEE 802.11b, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	17.94	≦30	Pass
6	2437	18.30	≦30	Pass
11	2462	17.99	≦30	Pass

The worst emission of data rate is 1Mbps.

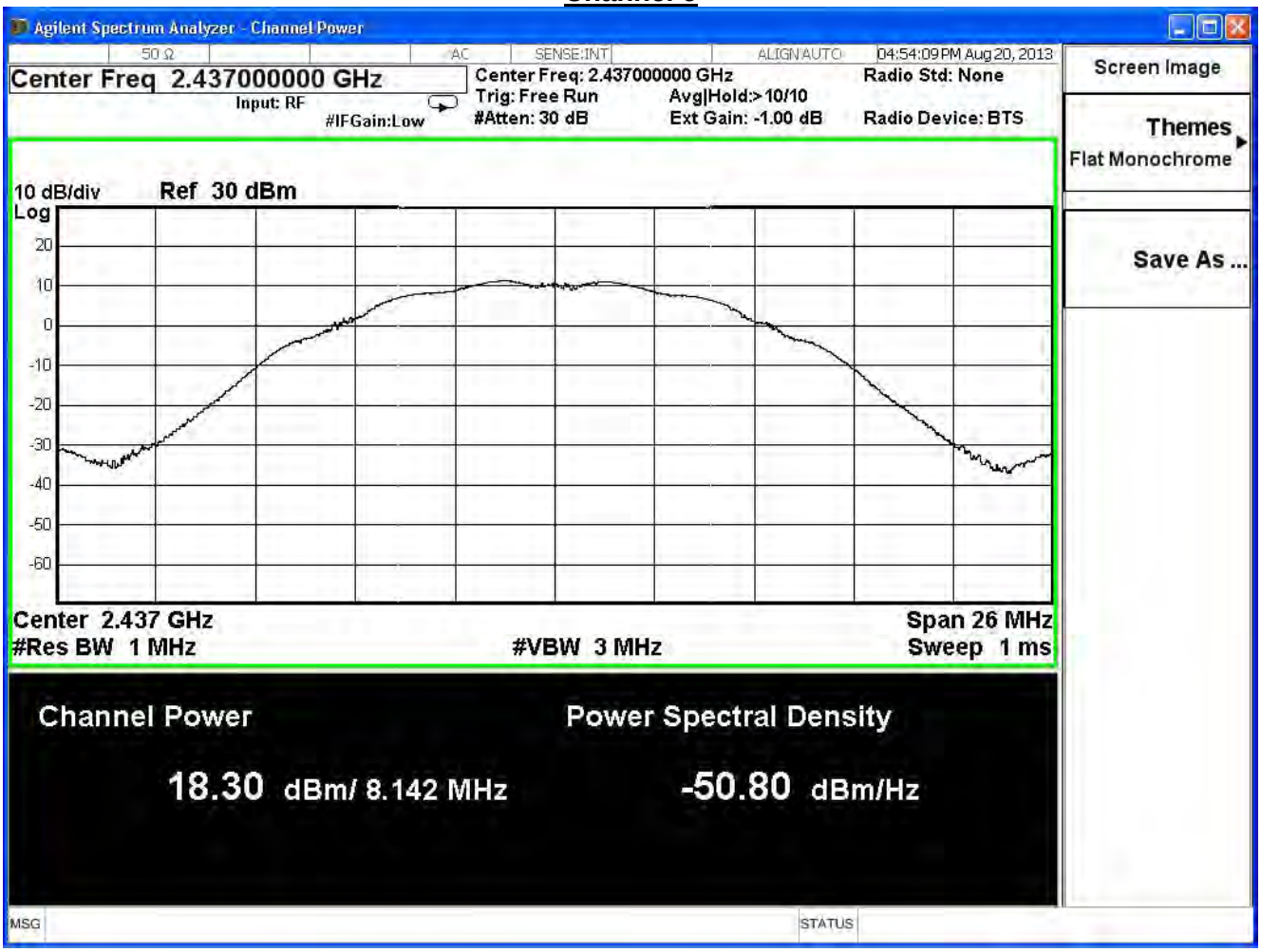
Peak Power Output (dBm)						
Channel No.	Frequency (MHz)	Data Rate (Mbps)				Required Limit
		1	2	5.5	11	
1	2412	17.94	--	--	--	1 Watt=30dBm
6	2437	18.30	18.20	18.10	18.00	1 Watt=30dBm
11	2462	17.99	--	--	--	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:53:14 PM Aug 20, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.412 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
17.94 dBm/ 8.141 MHz
Power Spectral Density
-51.16 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:54:09 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.437 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
18.30 dBm/ 8.142 MHz
Power Spectral Density
-50.80 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:56:51 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.462 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
17.99 dBm/ 8.138 MHz
Power Spectral Density
-51.11 dBm/Hz
MSG
STATUS

Product	LIFX Module Board		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

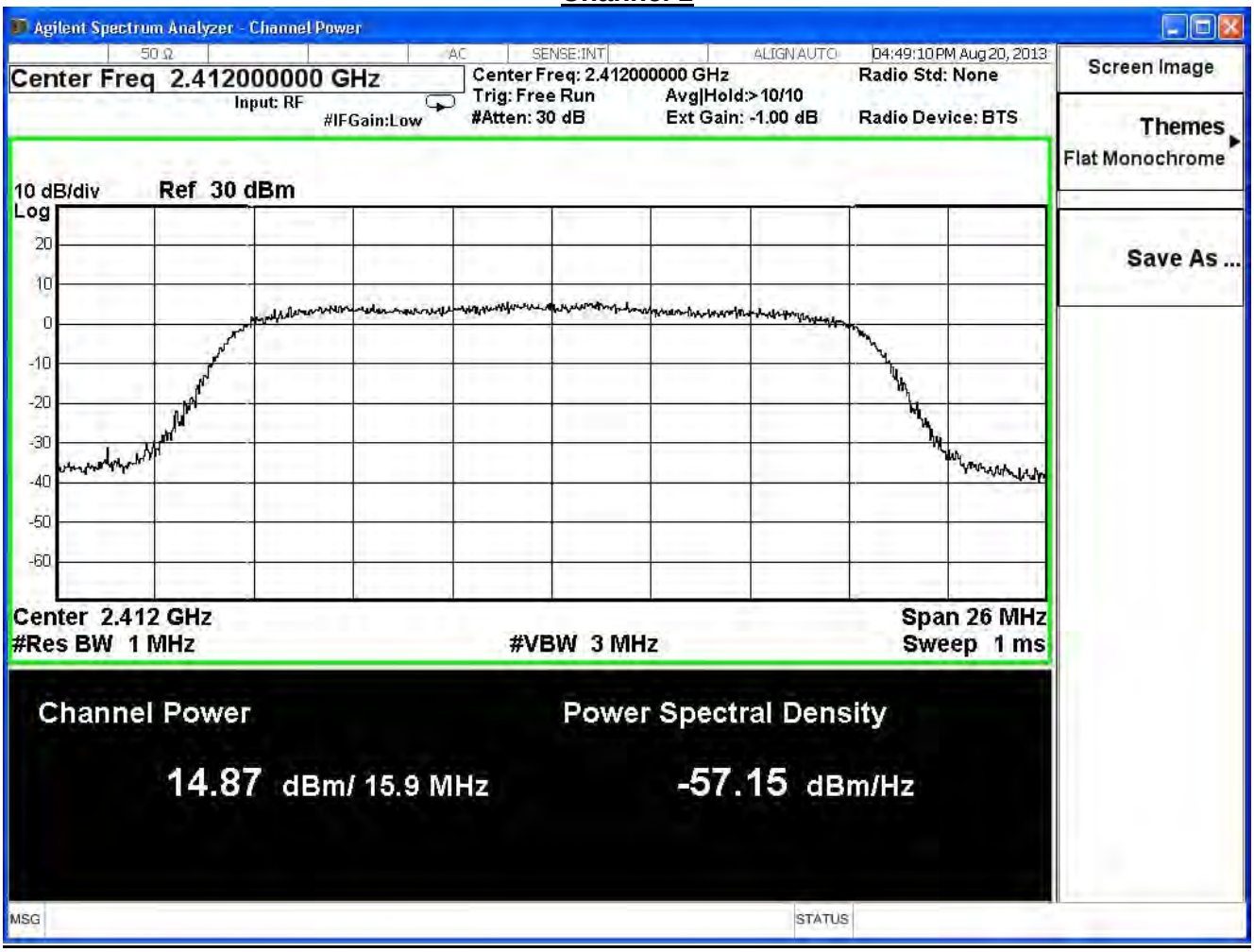
IEEE 802.11g, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	14.87	≦30	Pass
6	2437	15.32	≦30	Pass
11	2462	14.91	≦30	Pass

The worst emission of data rate is 6Mbps.

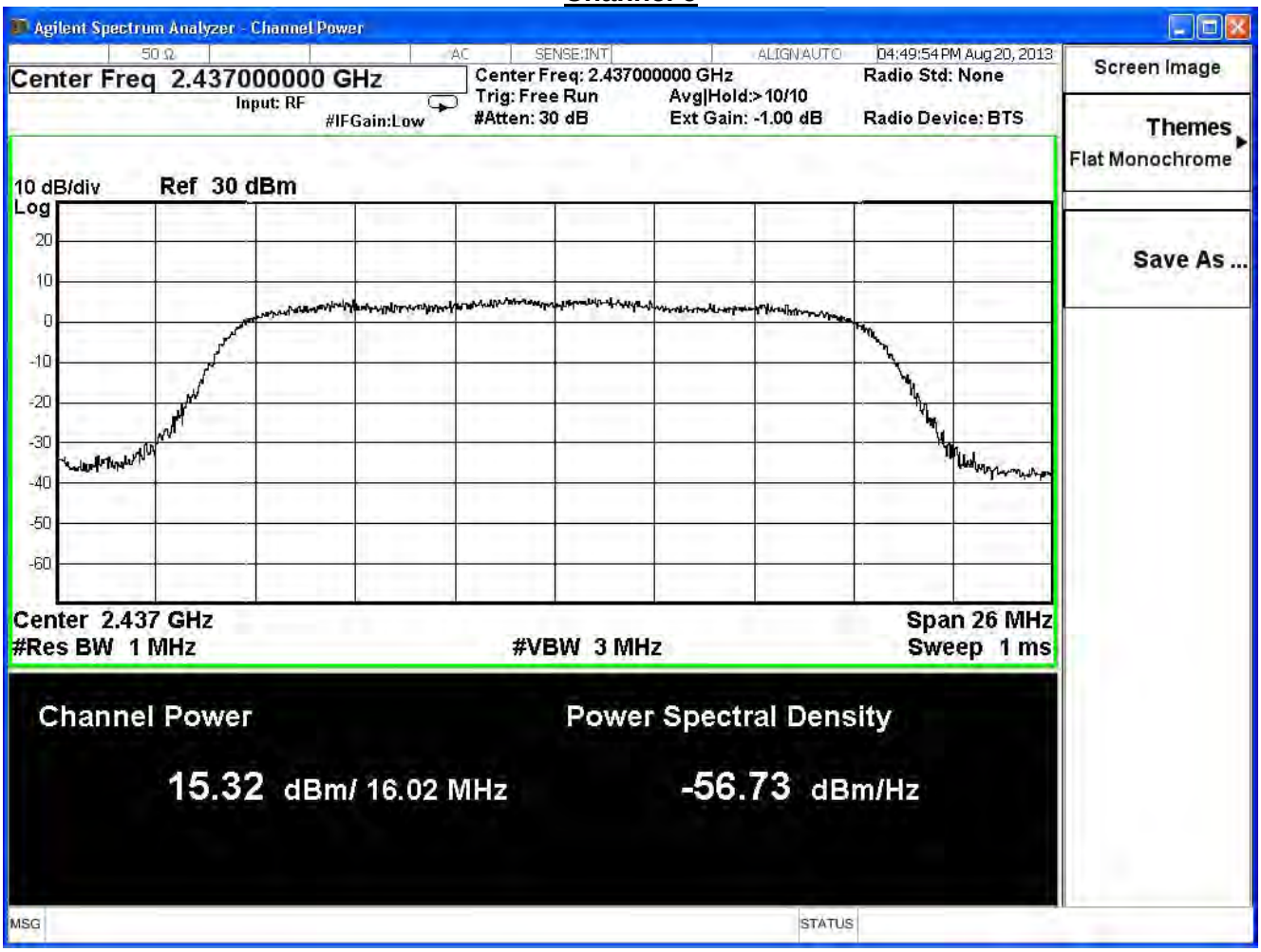
Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
1	2412	14.87	--	--	--	--	--	--	1 Watt=30dBm
6	2437	15.32	15.12	15.02	14.92	14.80	14.56	14.32	1 Watt=30dBm
11	2462	14.91	--	--	--	--	--	--	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

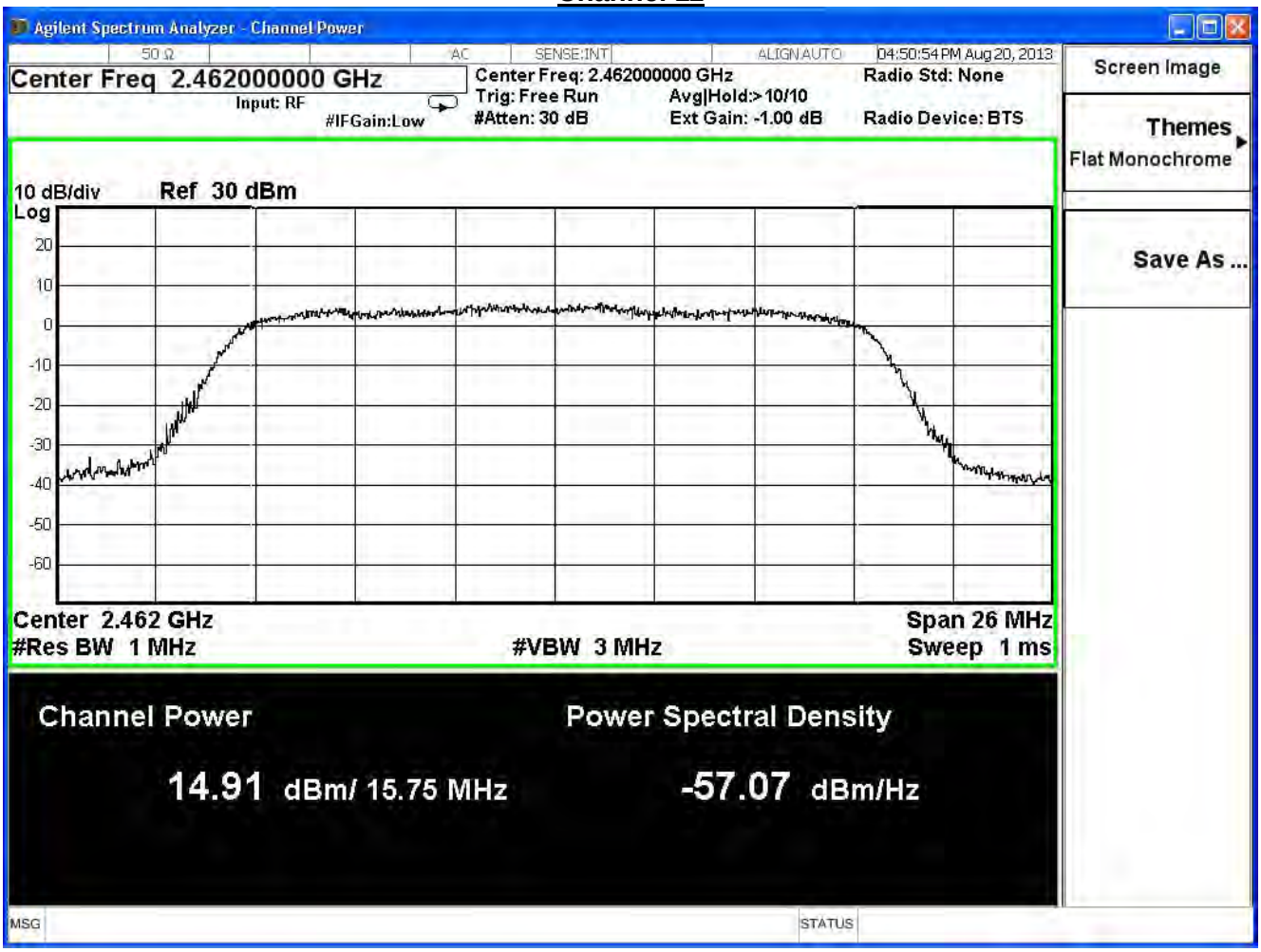
Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:49:10 PM Aug 20, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.412 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
14.87 dBm/ 15.9 MHz
Power Spectral Density
-57.15 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:49:54 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.437 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
15.32 dBm/ 16.02 MHz
Power Spectral Density
-56.73 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:50:54 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.462 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
14.91 dBm/ 15.75 MHz
Power Spectral Density
-57.07 dBm/Hz
MSG
STATUS

Product	LIFX Module Board		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11n(20MHz), ANT 0

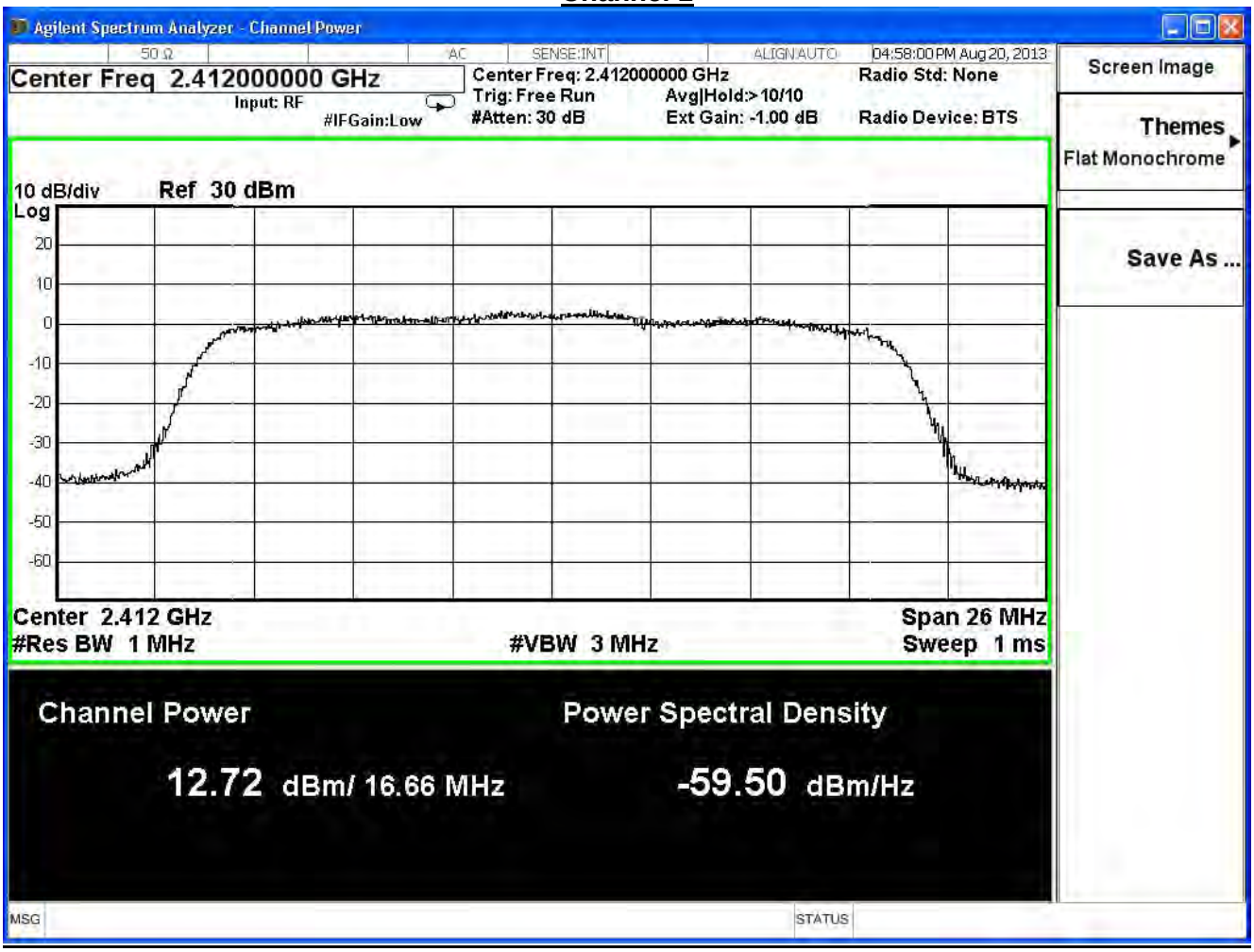
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	12.72	≦30	Pass
6	2437	13.18	≦30	Pass
11	2462	12.96	≦30	Pass

The worst emission of data rate is 6.5 Mbps.

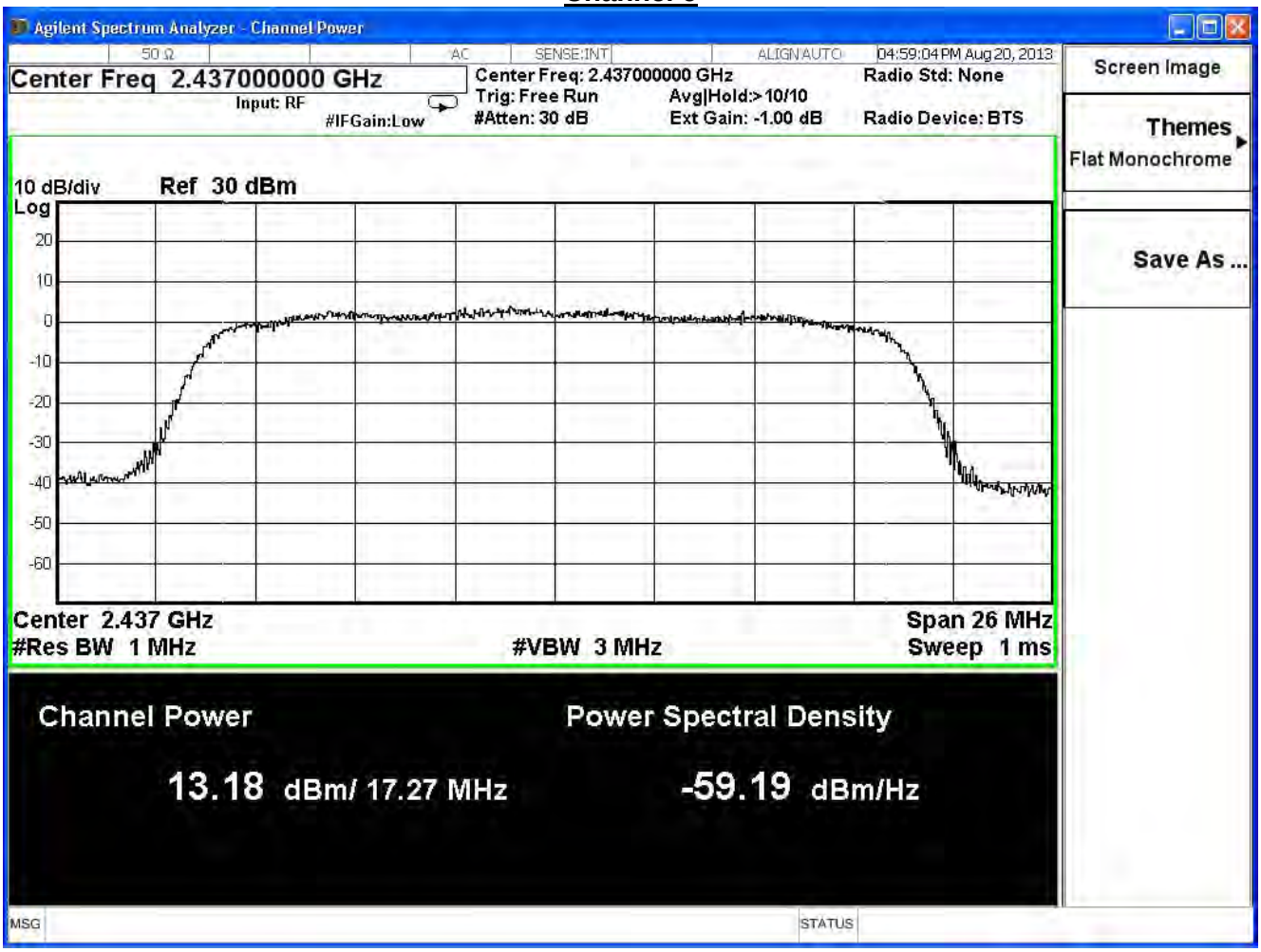
Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		6.5	13.0	19.5	26.0	39.0	52.0	58.5	65.0	
1	2412	12.72	--	--	--	--	--	--	--	30dBm
6	2437	13.18	12.98	12.78	12.68	12.48	12.24	12.12	11.88	30dBm
11	2462	12.96	--	--	--	--	--	--	--	30dBm

Note: Measure Level =Reading value + cable loss

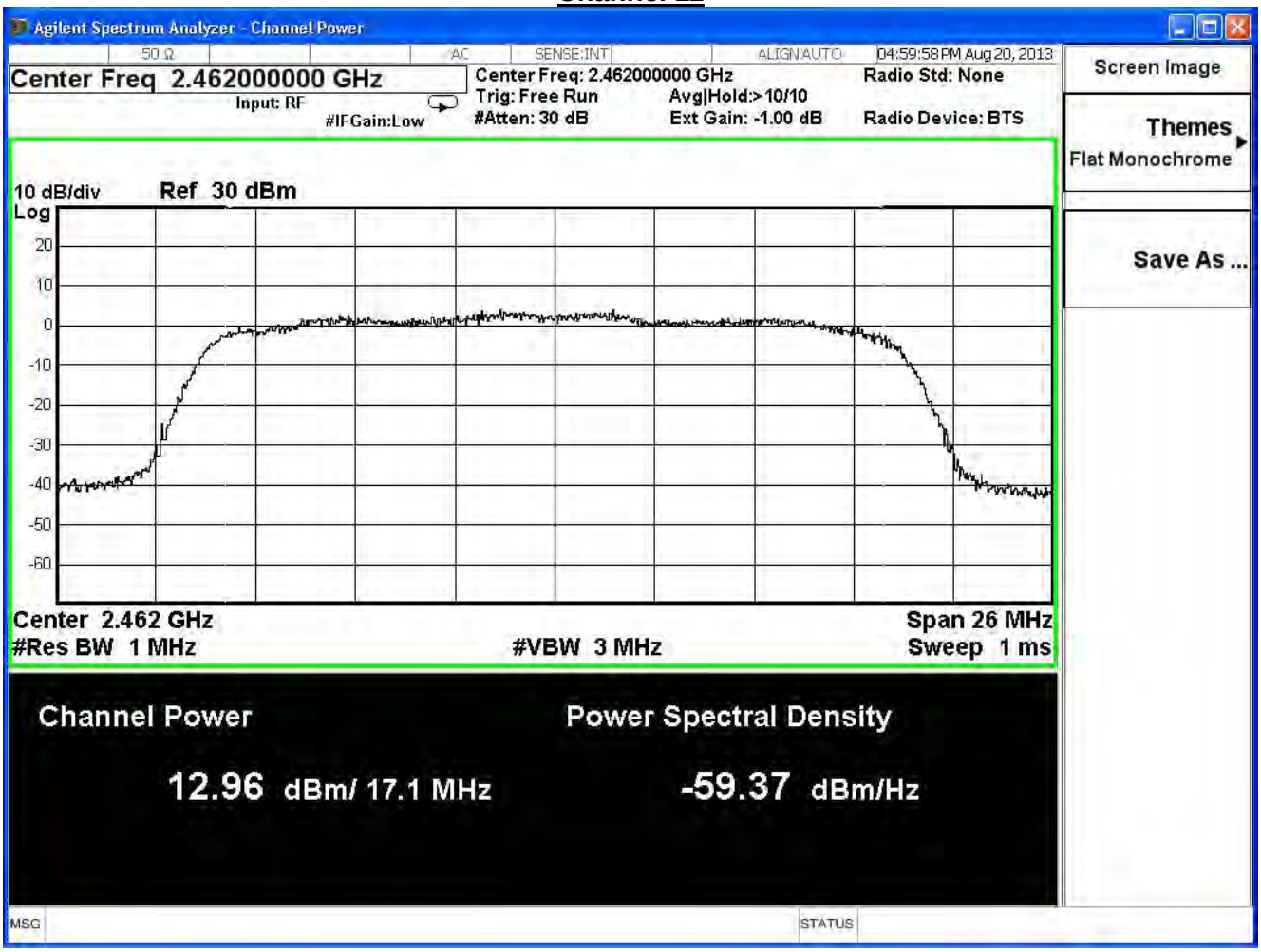
Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:58:00 PM Aug 20, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.412 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
12.72 dBm/ 16.66 MHz
Power Spectral Density
-59.50 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:59:04 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.437 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
13.18 dBm/ 17.27 MHz
Power Spectral Density
-59.19 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:59:58 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.462 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 26 MHz
Sweep 1 ms
Channel Power
12.96 dBm/ 17.1 MHz
Power Spectral Density
-59.37 dBm/Hz
MSG
STATUS

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

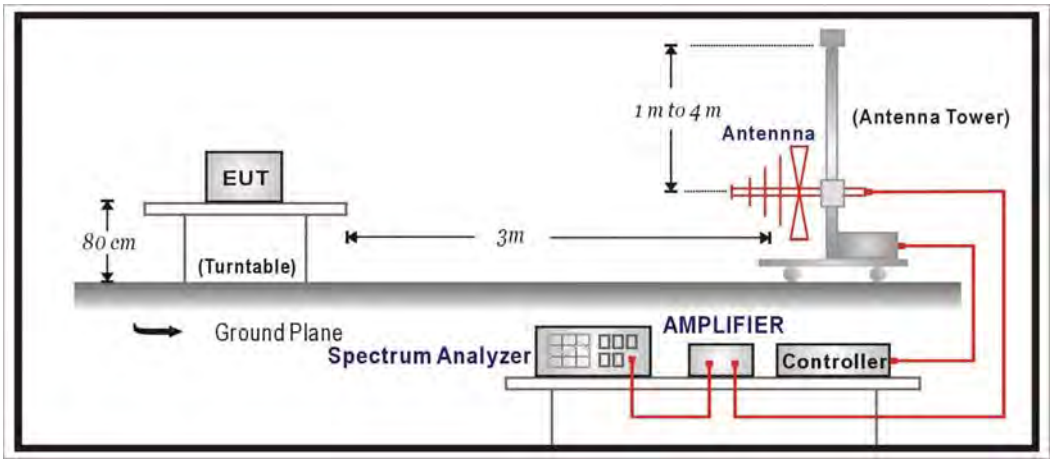
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895(CB1)	2014/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2014/02/17
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2014/06/09
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2014/02/19
Spectrum Analyzer	Agilent	E4440A	MY46187335	2014/01/27
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2014/02/21

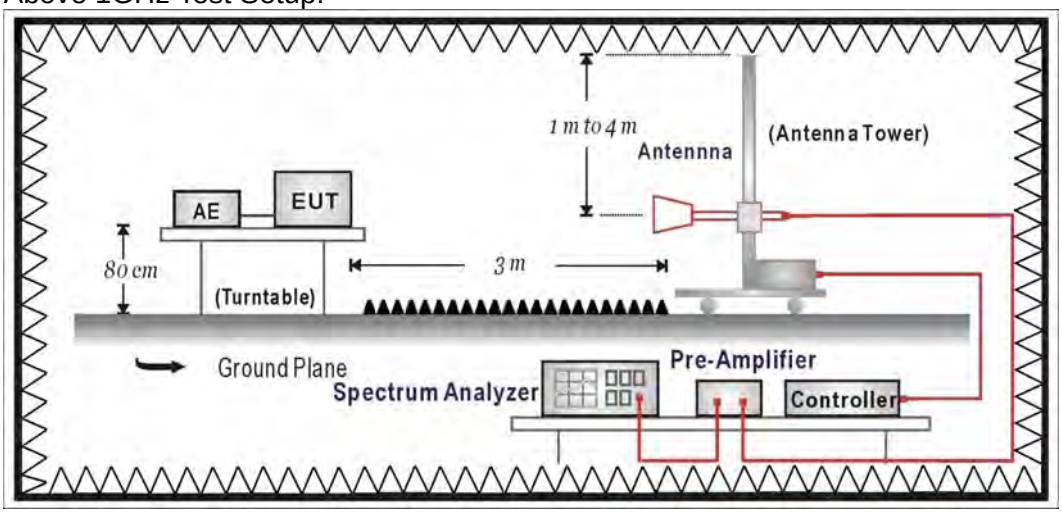
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement Distance(meter)
0.009-0.490	2400/F(KHz)	67.60	300
0.490-1.705	2400/F(KHz)	87.60	30
1.705-30.0	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: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
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.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

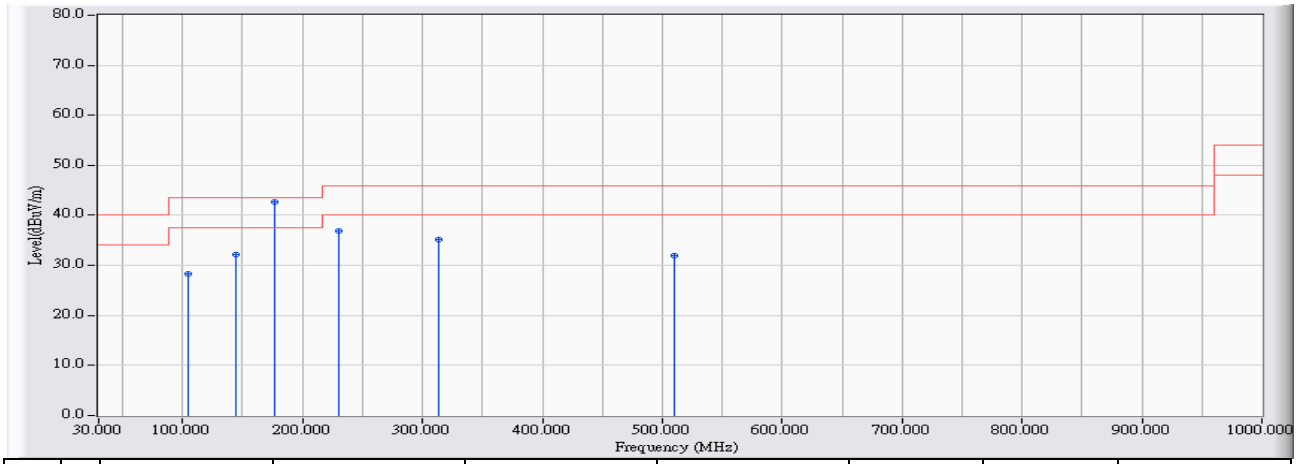
4.6. Uncertainty

The measurement uncertainty
30MHz～1GHz as ±3.43dB
1GHz～26.5Ghz as ±3.65dB

4.7. Test Result

30MHz-1GHz Spurious

Site : CB1	**Time : 2013/09/25 - 16:02**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

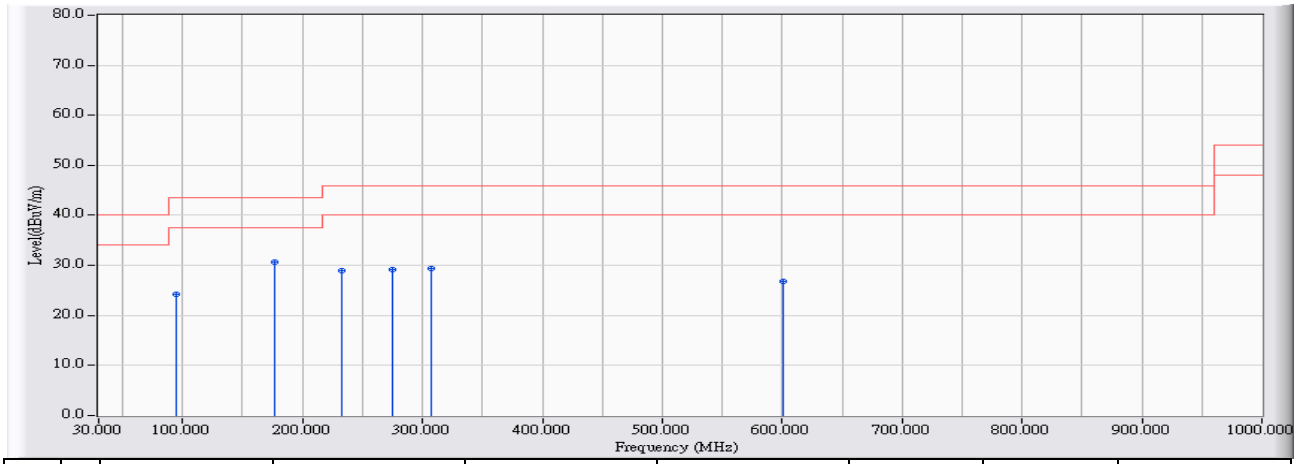


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		104.690	-22.943	51.276	28.333	-15.167	43.500	QUASIPEAK
2		144.460	-23.061	55.327	32.266	-11.234	43.500	QUASIPEAK
3	*	176.470	-24.529	67.114	42.585	-0.915	43.500	QUASIPEAK
4		229.820	-22.252	59.051	36.798	-9.202	46.000	QUASIPEAK
5		313.240	-19.610	54.786	35.176	-10.824	46.000	QUASIPEAK
6		510.150	-15.448	47.310	31.862	-14.138	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/09/25 - 16:05**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

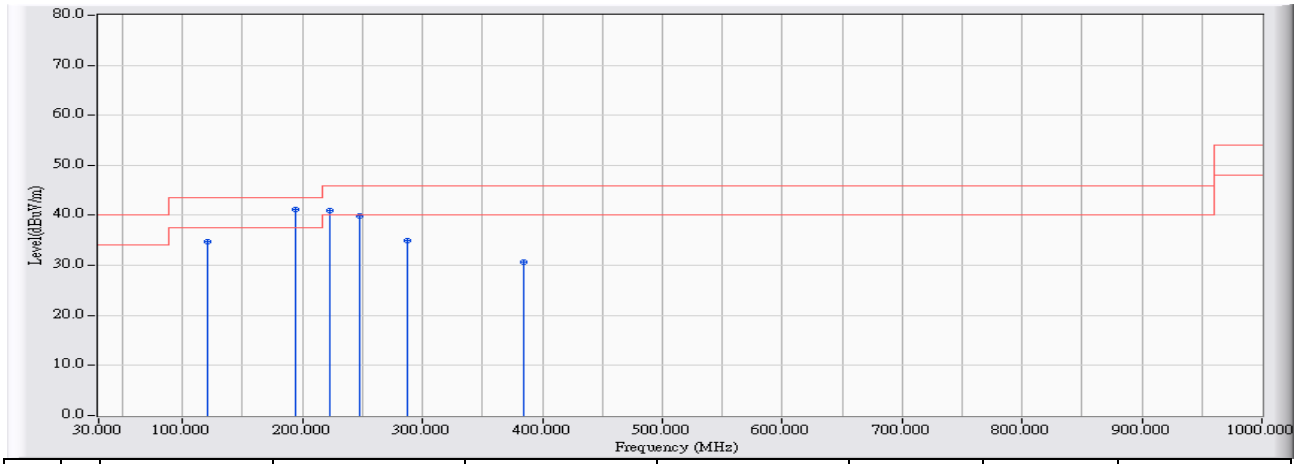


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		94.990	-24.362	48.563	24.201	-19.299	43.500	QUASIPEAK
2	*	176.470	-24.529	55.292	30.763	-12.737	43.500	QUASIPEAK
3		232.730	-22.006	50.872	28.866	-17.134	46.000	QUASIPEAK
4		274.440	-20.249	49.512	29.263	-16.737	46.000	QUASIPEAK
5		307.420	-19.758	49.091	29.334	-16.666	46.000	QUASIPEAK
6		600.360	-15.316	42.059	26.743	-19.257	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/09/25 - 16:20**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2437MHz**

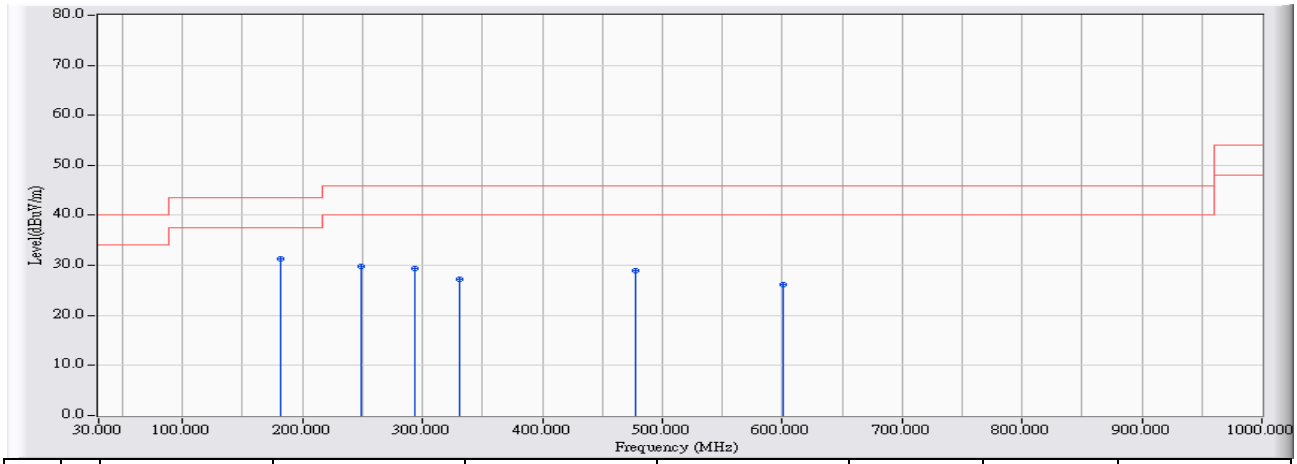


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		120.210	-22.188	56.962	34.774	-8.726	43.500	QUASIPEAK
2	*	193.930	-24.751	65.975	41.224	-2.276	43.500	QUASIPEAK
3		223.030	-22.828	63.738	40.910	-5.090	46.000	QUASIPEAK
4		247.280	-20.773	60.643	39.870	-6.130	46.000	QUASIPEAK
5		288.020	-20.087	55.023	34.936	-11.064	46.000	QUASIPEAK
6		384.050	-17.816	48.443	30.627	-15.373	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/09/25 - 16:24**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2437MHz**

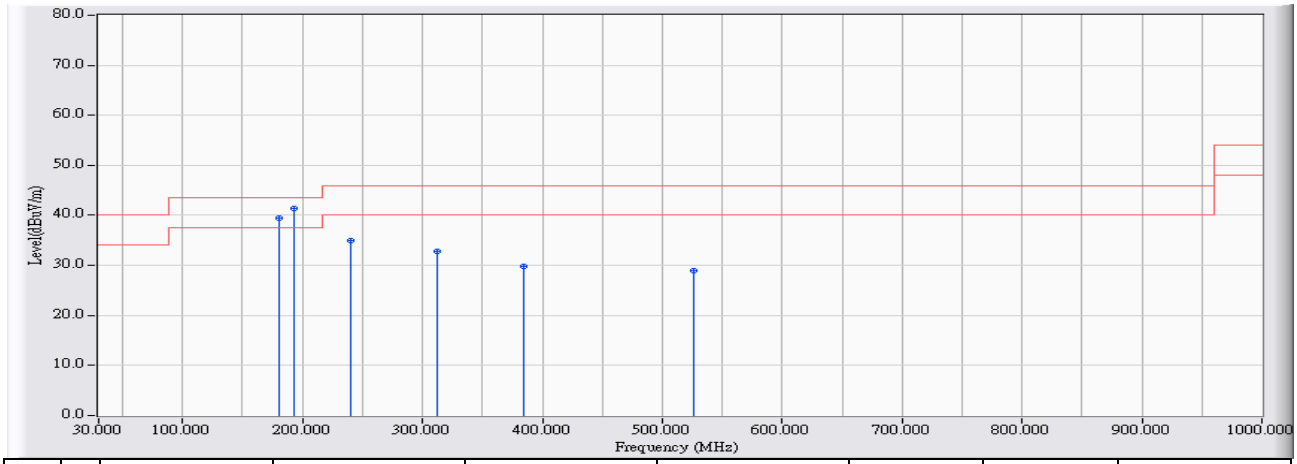


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	181.320	-24.689	55.913	31.225	-12.275	43.500	QUASIPEAK
2		249.220	-20.610	50.446	29.837	-16.163	46.000	QUASIPEAK
3		293.840	-20.017	49.394	29.376	-16.624	46.000	QUASIPEAK
4		330.700	-19.167	46.464	27.296	-18.704	46.000	QUASIPEAK
5		477.170	-15.908	44.802	28.894	-17.106	46.000	QUASIPEAK
6		600.360	-15.316	41.410	26.094	-19.906	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/09/25 - 17:06**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n_2437MHz**

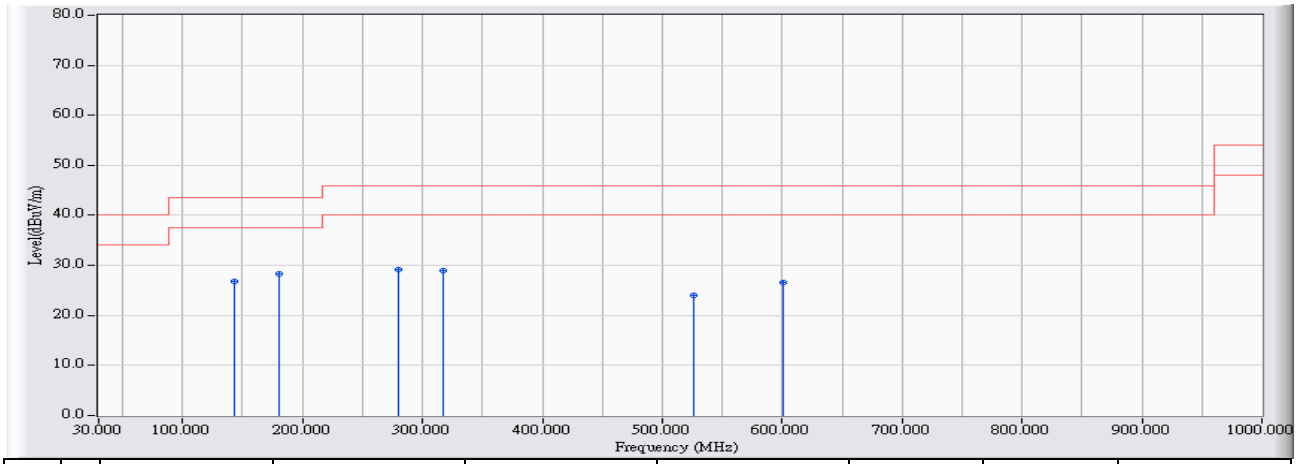


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		180.350	-24.683	64.129	39.445	-4.055	43.500	QUASIPEAK
2	*	192.960	-24.746	66.170	41.424	-2.076	43.500	QUASIPEAK
3		240.490	-21.348	56.292	34.943	-11.057	46.000	QUASIPEAK
4		312.270	-19.634	52.514	32.880	-13.120	46.000	QUASIPEAK
5		384.050	-17.816	47.679	29.863	-16.137	46.000	QUASIPEAK
6		525.670	-15.426	44.367	28.941	-17.059	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/09/25 - 17:09**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n_2437MHz**



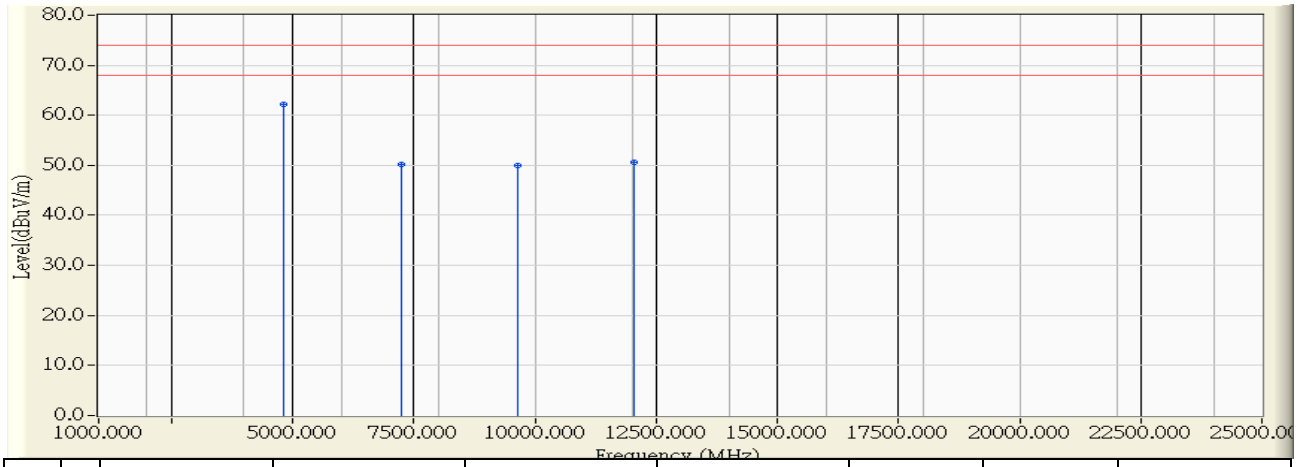
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		143.490	-23.014	49.779	26.765	-16.735	43.500	QUASIPEAK
2	*	180.350	-24.683	52.921	28.237	-15.263	43.500	QUASIPEAK
3		280.260	-20.180	49.380	29.201	-16.799	46.000	QUASIPEAK
4		317.120	-19.511	48.507	28.995	-17.005	46.000	QUASIPEAK
5		525.670	-15.426	39.454	24.028	-21.972	46.000	QUASIPEAK
6		600.360	-15.316	41.980	26.664	-19.336	46.000	QUASIPEAK

Note:

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

Above 1GHz Spurious

Site : CB1	**Time : 2013/09/28 - 14:51**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

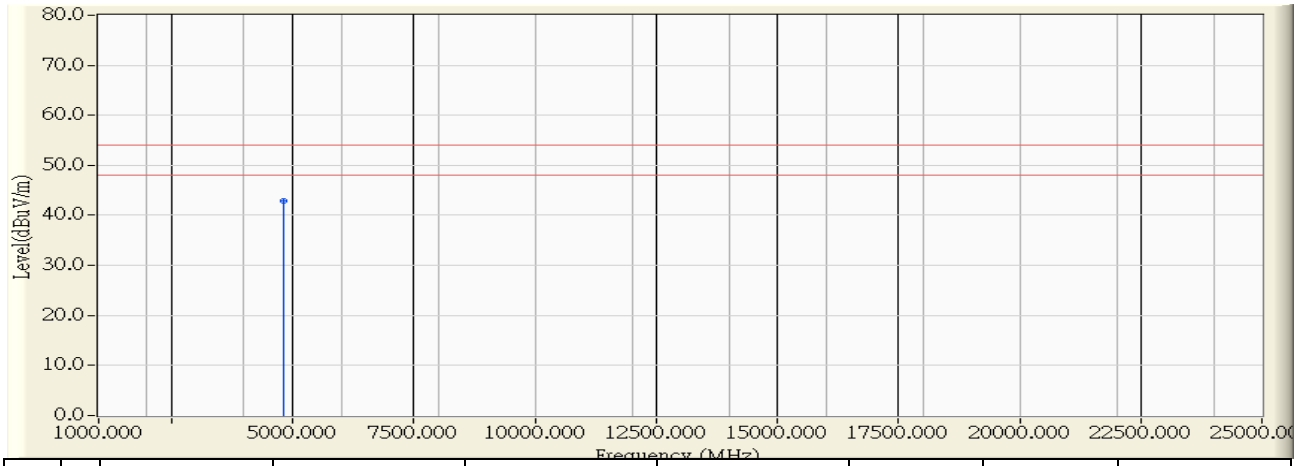


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	62.870	62.253	-11.747	74.000	PEAK
2		7236.000	5.445	44.660	50.105	-23.895	74.000	PEAK
3		9648.000	9.226	40.730	49.956	-24.044	74.000	PEAK
4		12060.000	11.115	39.530	50.645	-23.355	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 14:52**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

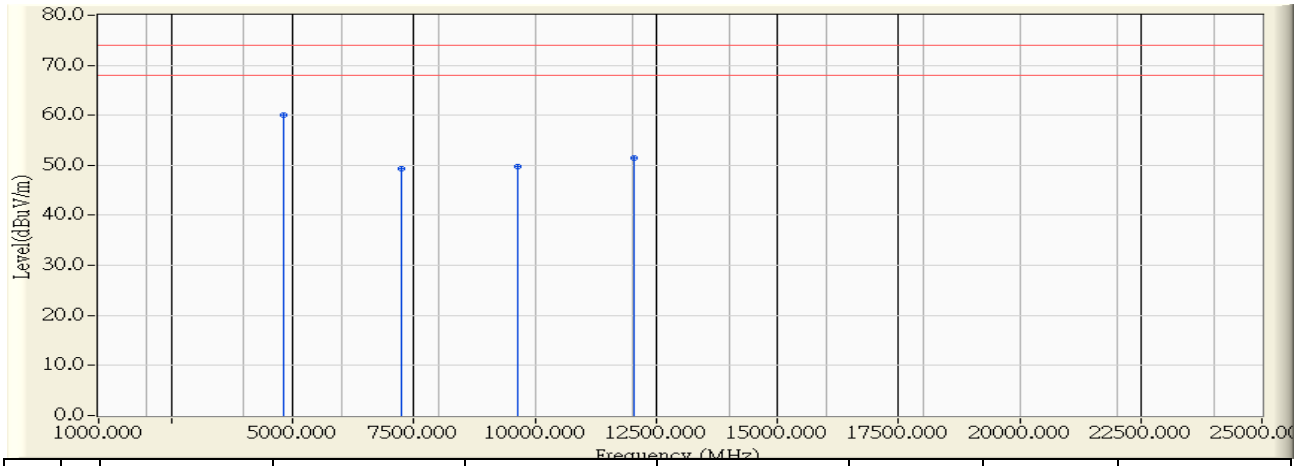


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	43.560	42.943	-11.057	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:00**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

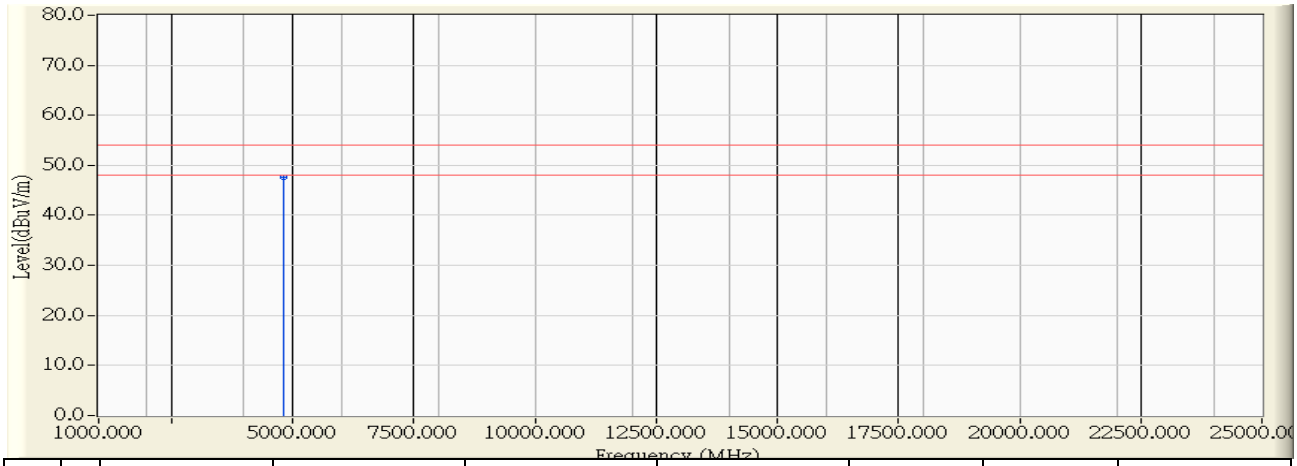


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	60.640	60.023	-13.977	74.000	PEAK
2		7236.000	5.445	43.880	49.325	-24.675	74.000	PEAK
3		9648.000	9.226	40.610	49.836	-24.164	74.000	PEAK
4		12060.000	11.115	40.340	51.455	-22.545	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:01**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

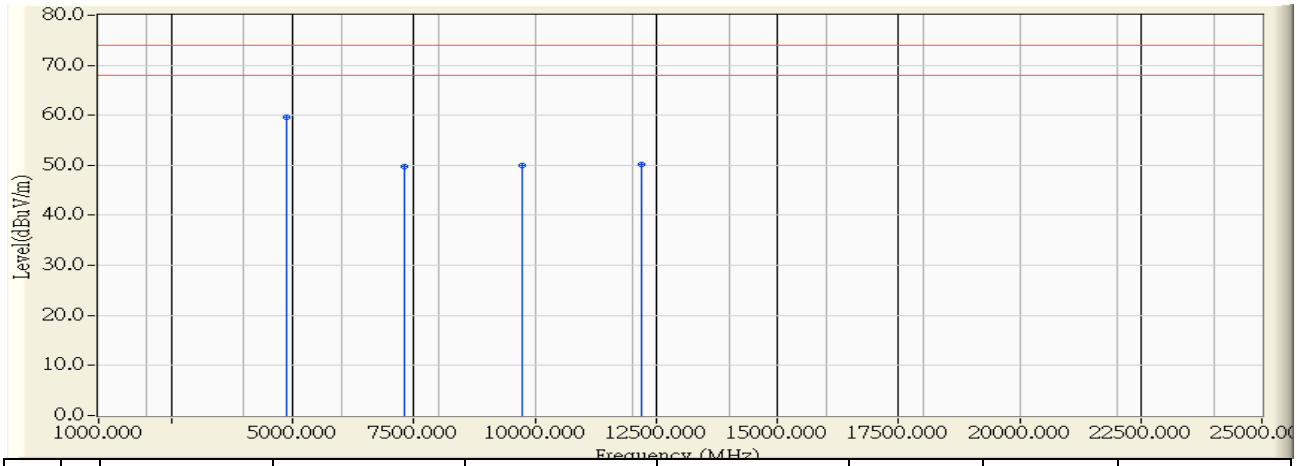


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	48.210	47.593	-6.407	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:04**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

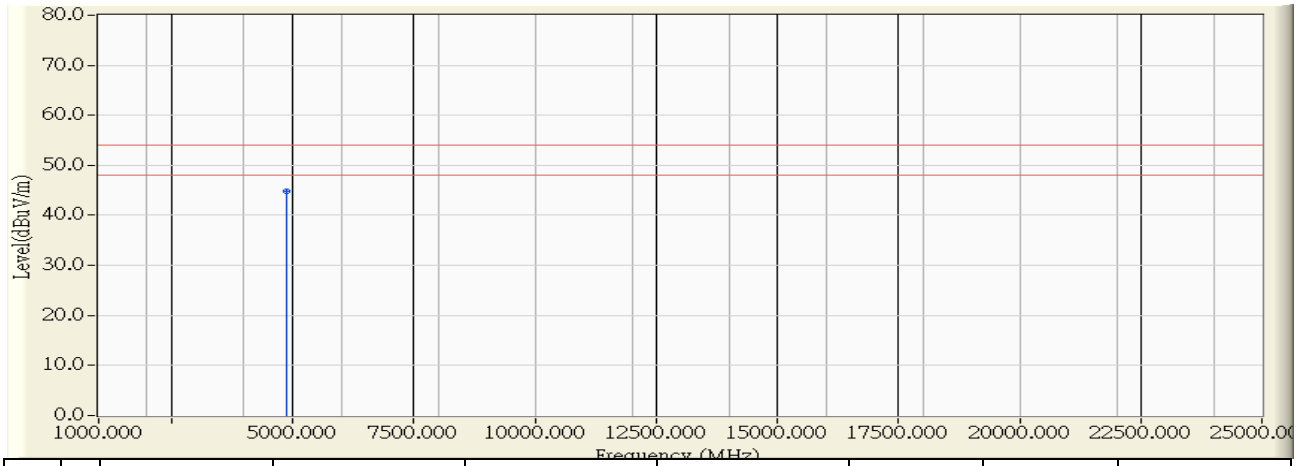


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	60.060	59.565	-14.435	74.000	PEAK
2		7311.000	5.608	44.250	49.857	-24.143	74.000	PEAK
3		9748.000	9.873	40.180	50.053	-23.947	74.000	PEAK
4		12185.000	11.058	39.120	50.178	-23.822	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:06**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

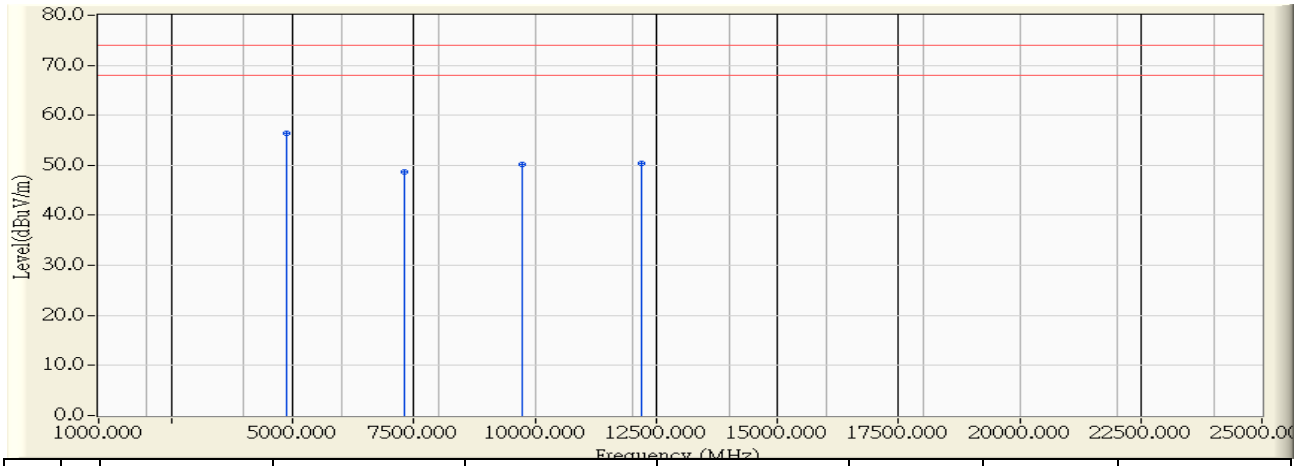


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	45.300	44.805	-9.195	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:18**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

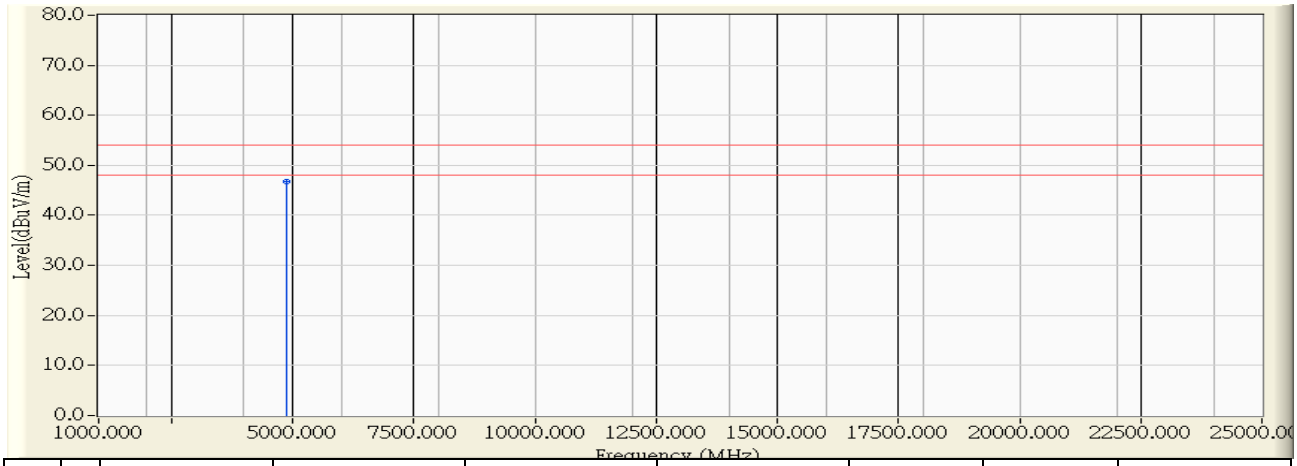


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	56.820	56.325	-17.675	74.000	PEAK
2		7311.000	5.608	43.020	48.627	-25.373	74.000	PEAK
3		9748.000	9.873	40.240	50.113	-23.887	74.000	PEAK
4		12185.000	11.058	39.350	50.408	-23.592	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:18**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2437MHz**

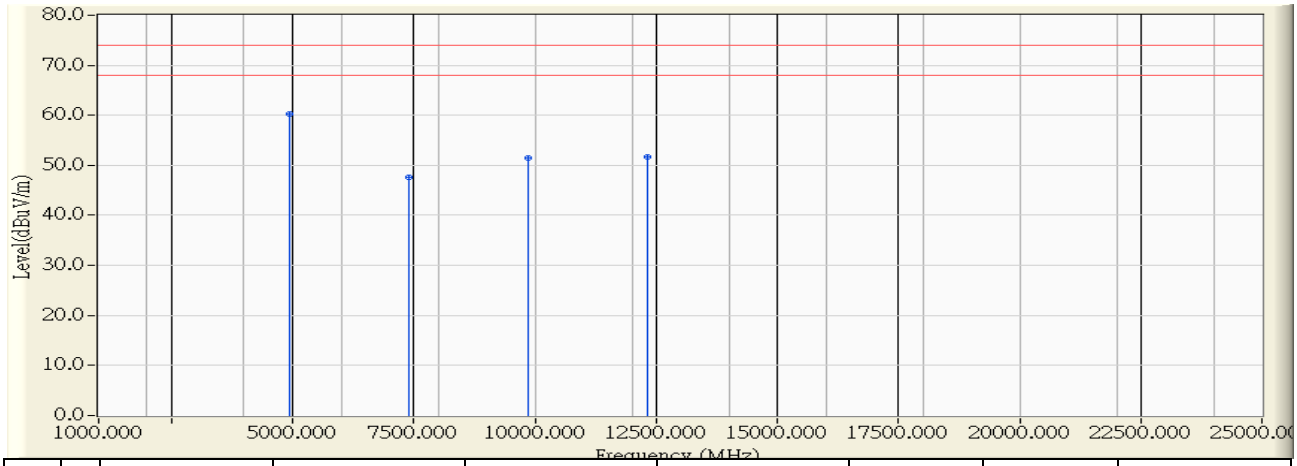


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	47.250	46.755	-7.245	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:22**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

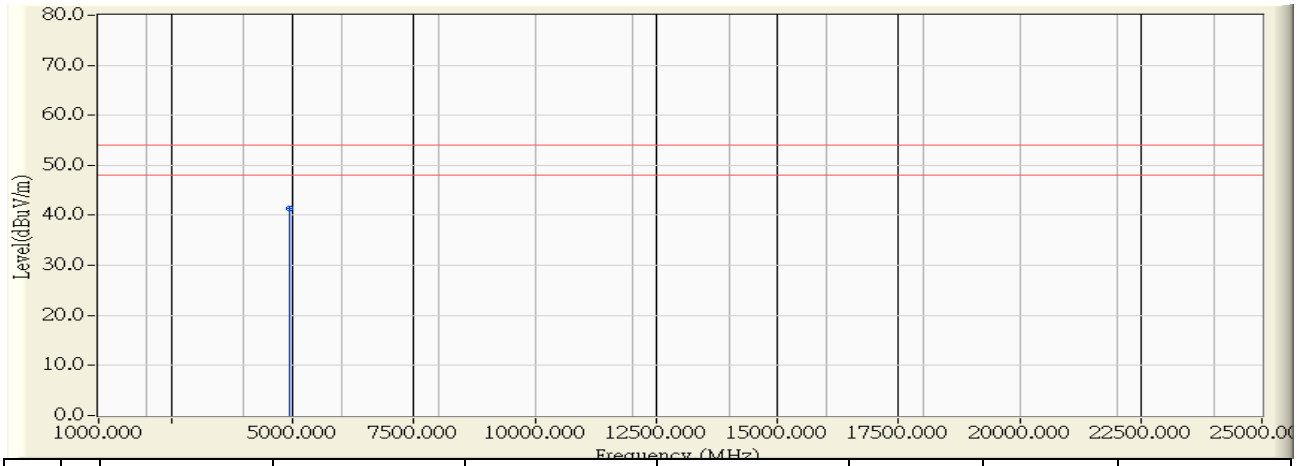


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	60.600	60.227	-13.773	74.000	PEAK
2		7386.000	5.770	41.790	47.560	-26.440	74.000	PEAK
3		9848.000	10.521	40.880	51.401	-22.599	74.000	PEAK
4		12310.000	11.001	40.680	51.681	-22.319	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:23**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

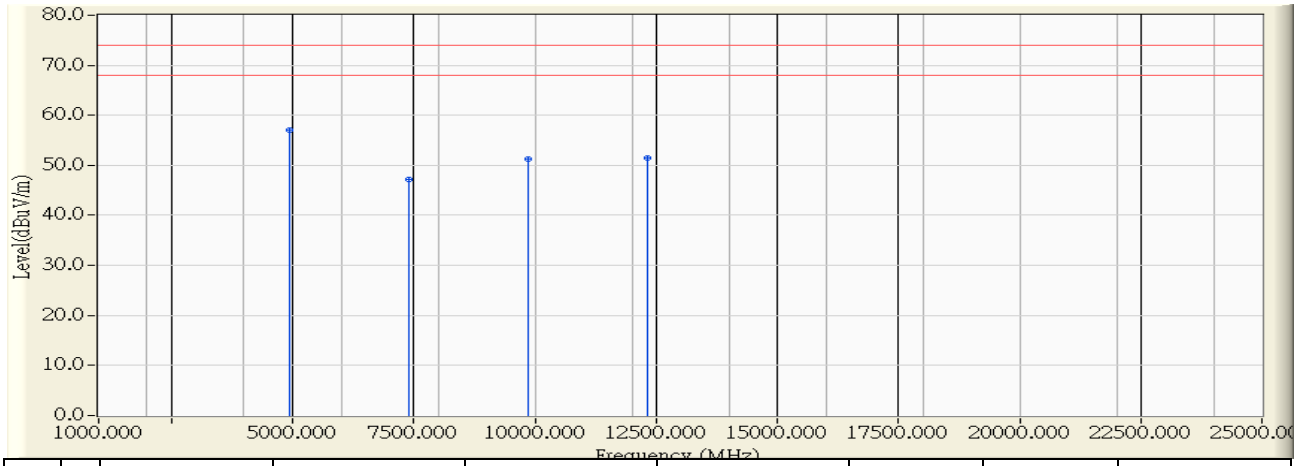


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	41.810	41.437	-12.563	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:28**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

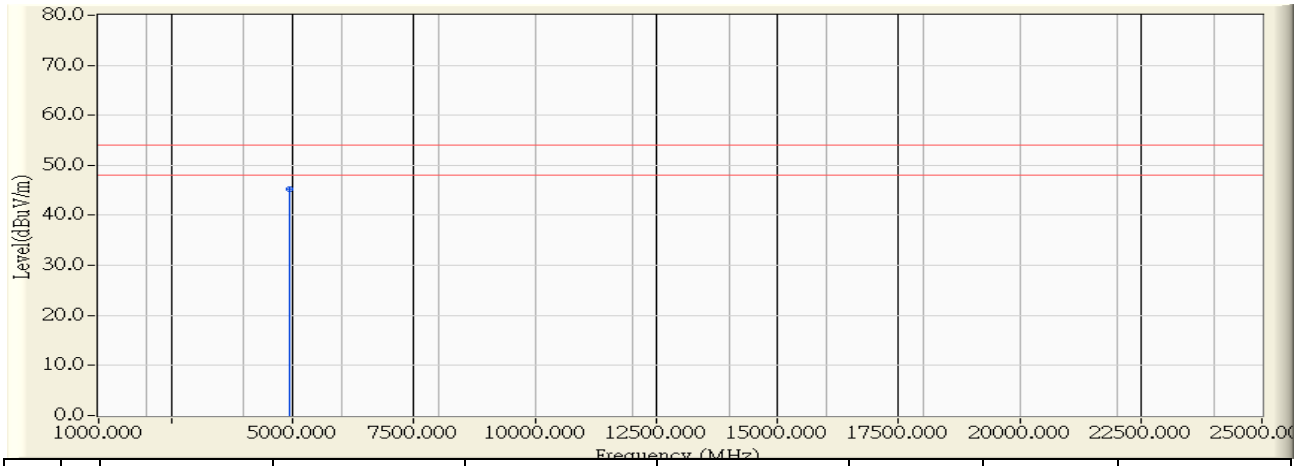


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	57.420	57.047	-16.953	74.000	PEAK
2		7386.000	5.770	41.370	47.140	-26.860	74.000	PEAK
3		9848.000	10.521	40.820	51.341	-22.659	74.000	PEAK
4		12310.000	11.001	40.560	51.561	-22.439	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:28**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

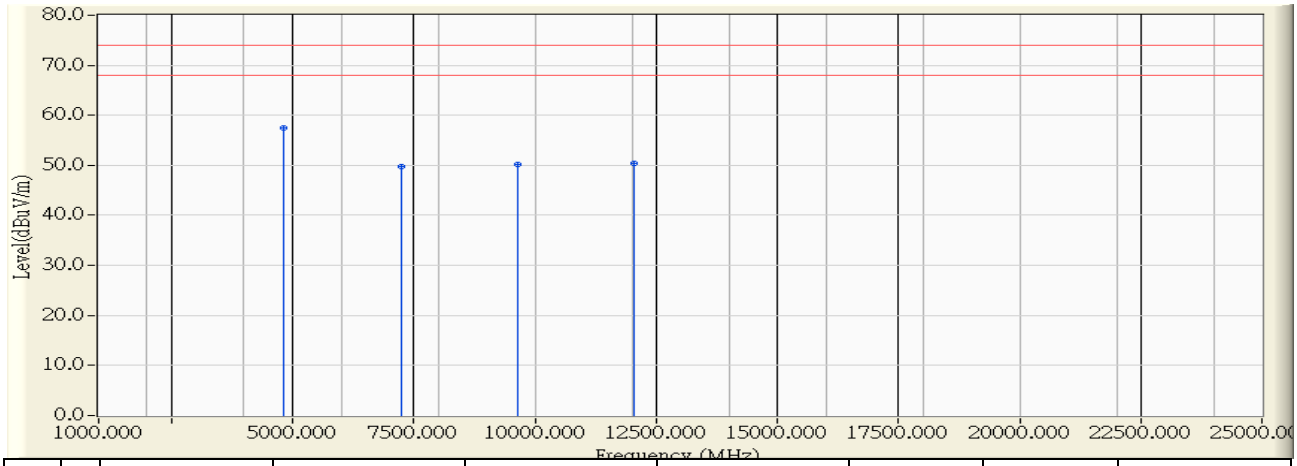


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	45.640	45.267	-8.733	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:32**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

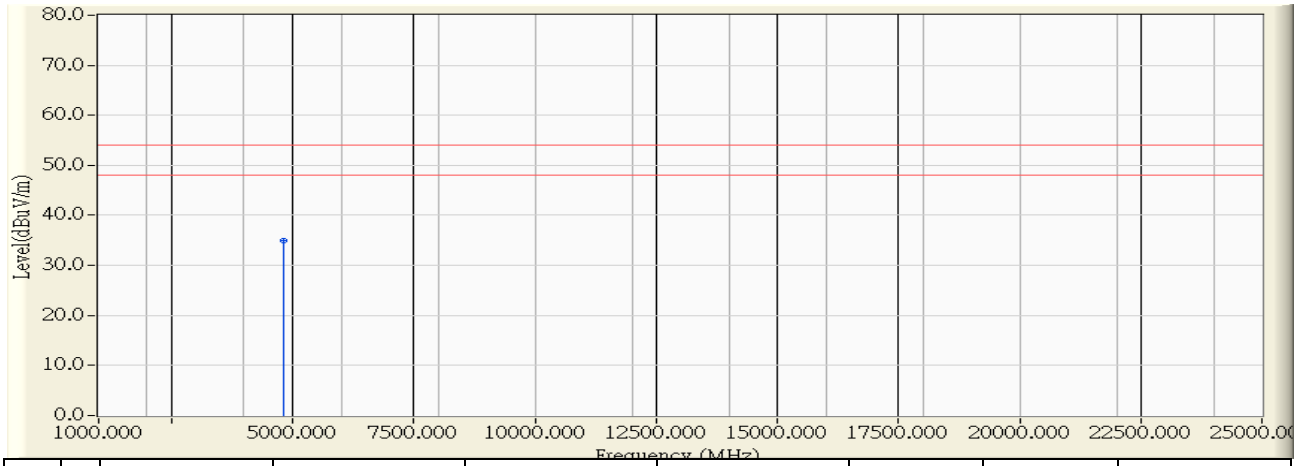


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	58.020	57.403	-16.597	74.000	PEAK
2		7236.000	5.445	44.310	49.755	-24.245	74.000	PEAK
3		9648.000	9.226	40.930	50.156	-23.844	74.000	PEAK
4		12060.000	11.115	39.240	50.355	-23.645	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:32**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

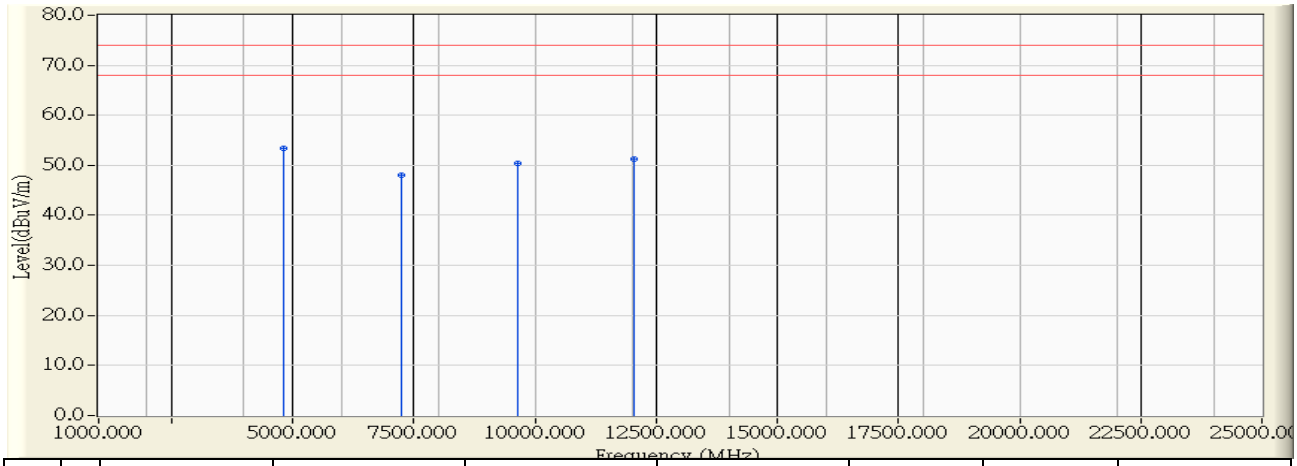


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	35.530	34.913	-19.087	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:40**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

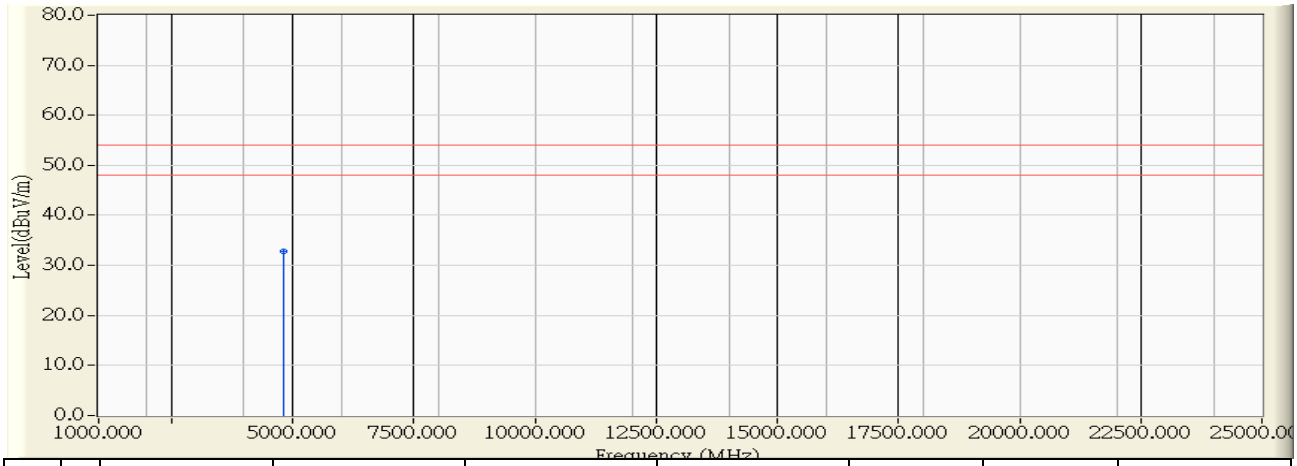


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	53.960	53.343	-20.657	74.000	PEAK
2		7236.000	5.445	42.530	47.975	-26.025	74.000	PEAK
3		9648.000	9.226	41.260	50.486	-23.514	74.000	PEAK
4		12060.000	11.115	40.070	51.185	-22.815	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:41**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

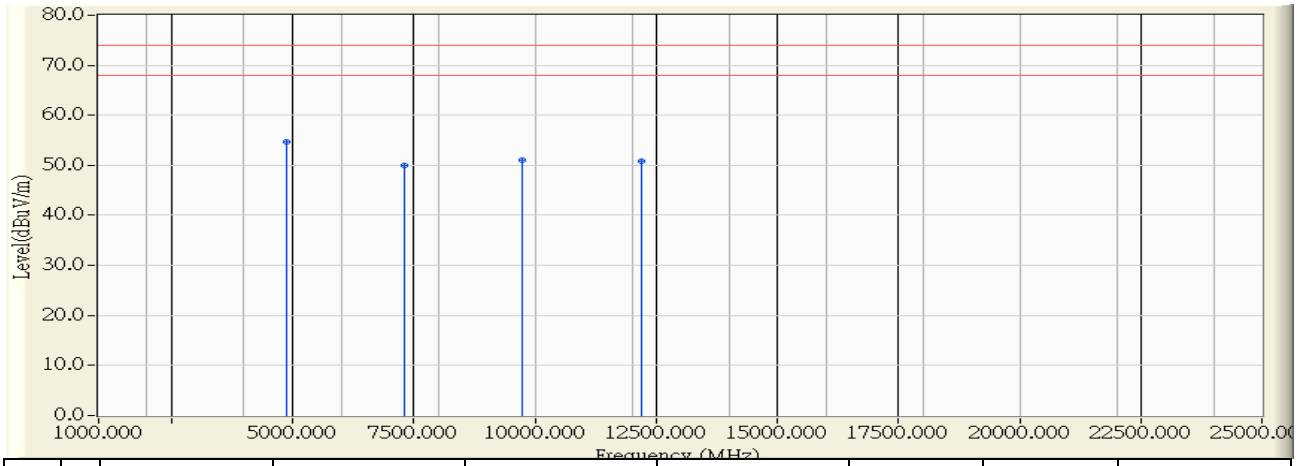


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	33.500	32.883	-21.117	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:44**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2437MHz**

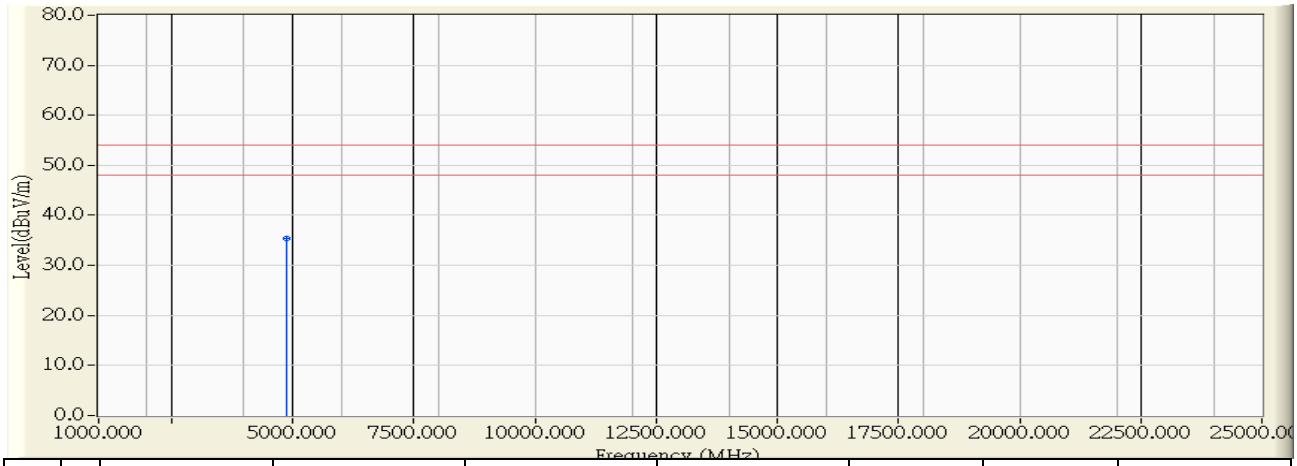


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	55.240	54.745	-19.255	74.000	PEAK
2		7311.000	5.608	44.290	49.897	-24.103	74.000	PEAK
3		9748.000	9.873	41.140	51.013	-22.987	74.000	PEAK
4		12185.000	11.058	39.850	50.908	-23.092	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:45**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2437MHz**

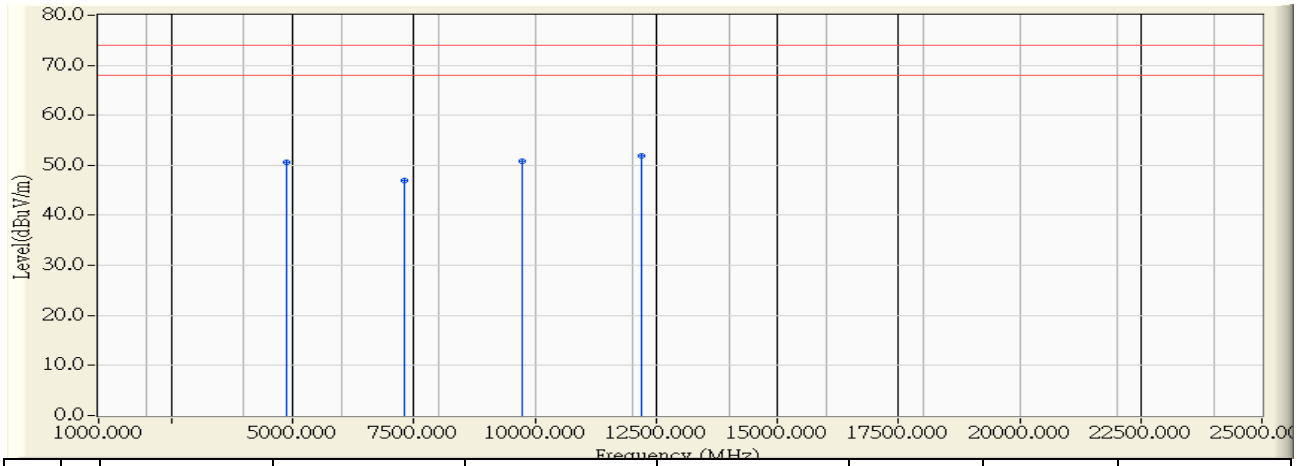


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	35.860	35.365	-18.635	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 15:53**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2437MHz**

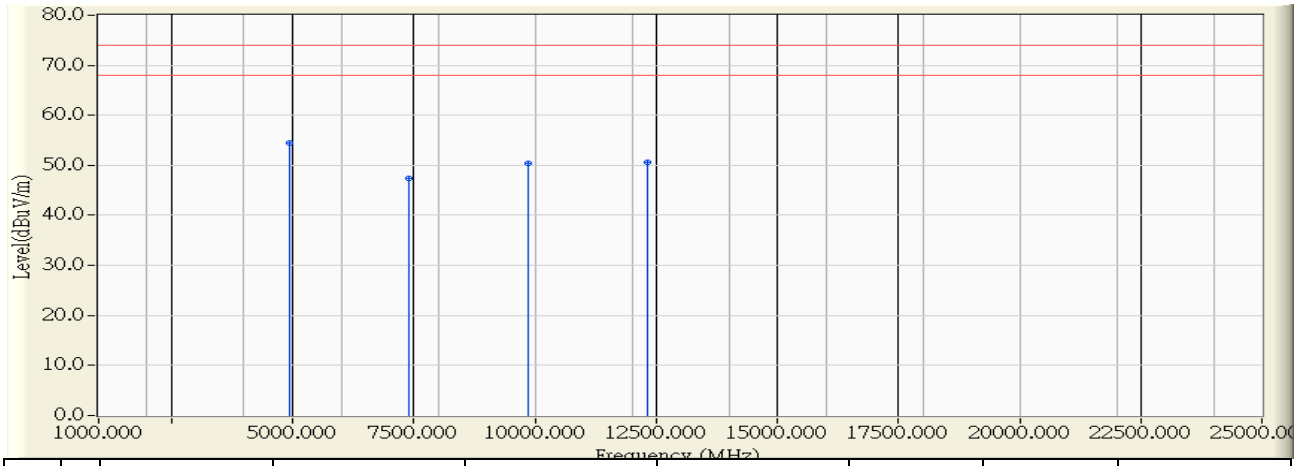


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	51.110	50.615	-23.385	74.000	PEAK
2		7311.000	5.608	41.330	46.937	-27.063	74.000	PEAK
3		9748.000	9.873	40.980	50.853	-23.147	74.000	PEAK
4	*	12185.000	11.058	40.780	51.838	-22.162	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:13**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

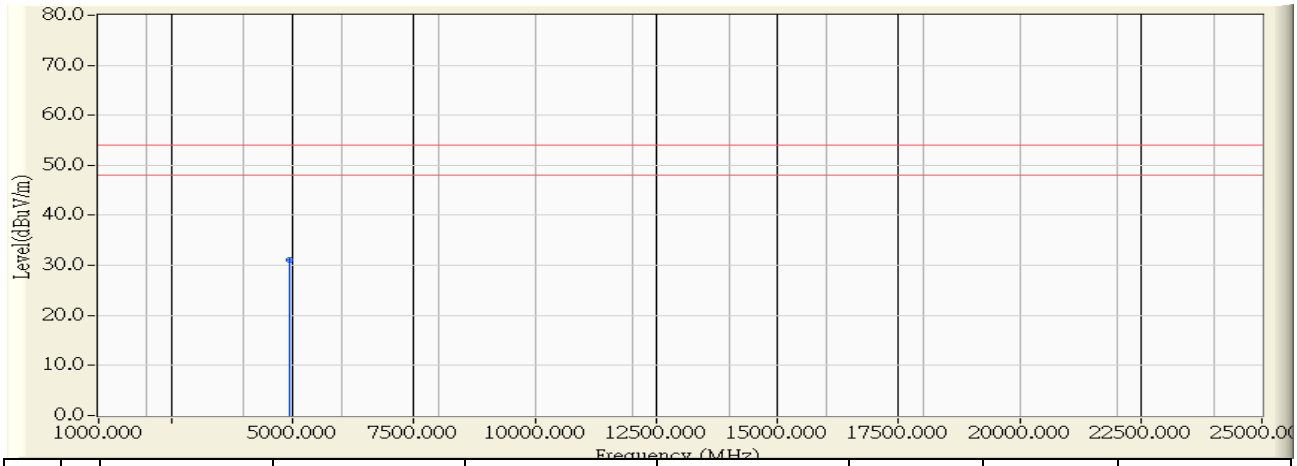


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	54.750	54.377	-19.623	74.000	PEAK
2		7386.000	5.770	41.590	47.360	-26.640	74.000	PEAK
3		9848.000	10.521	39.800	50.321	-23.679	74.000	PEAK
4		12310.000	11.001	39.590	50.591	-23.409	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:13**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

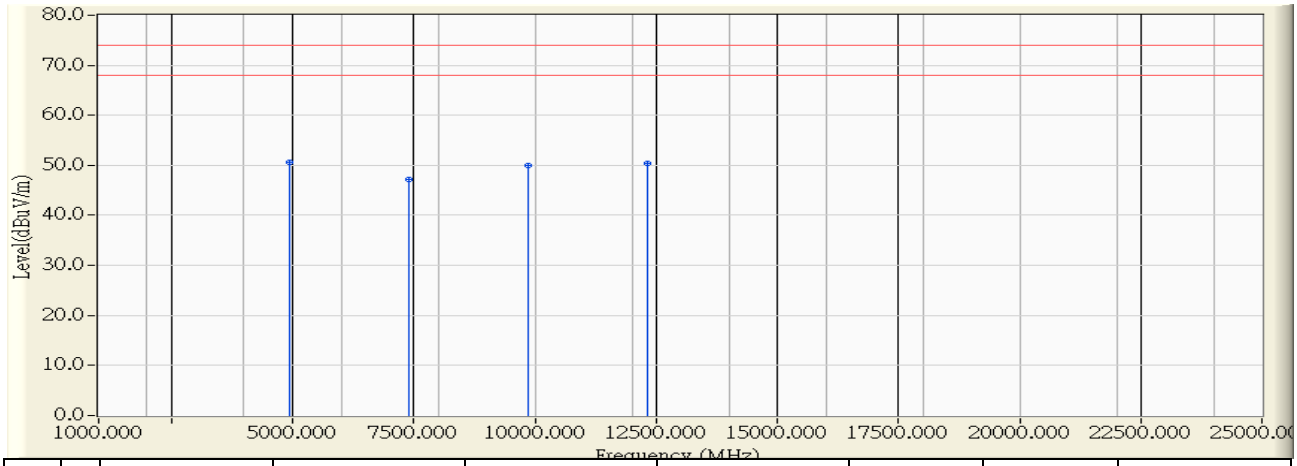


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	31.510	31.137	-22.863	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:17**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

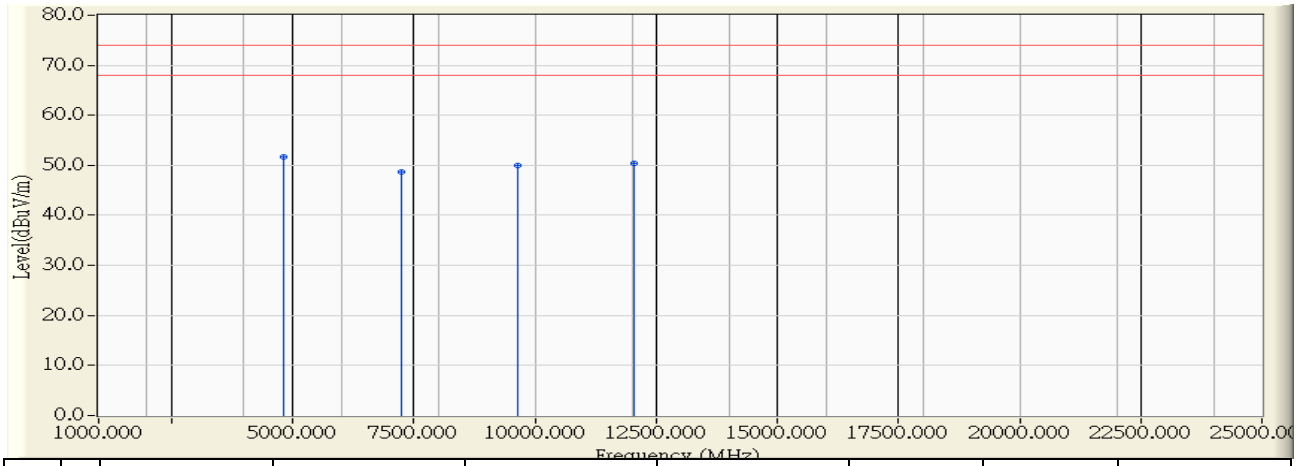


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-0.373	51.020	50.647	-23.353	74.000	PEAK
2		7386.000	5.770	41.340	47.110	-26.890	74.000	PEAK
3		9848.000	10.521	39.480	50.001	-23.999	74.000	PEAK
4		12310.000	11.001	39.390	50.391	-23.609	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:21**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**

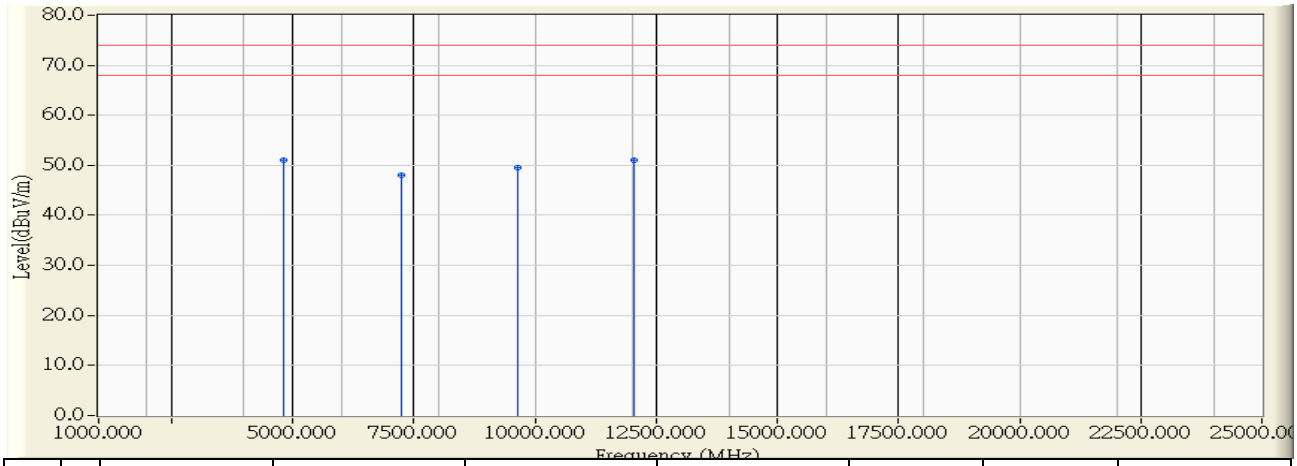


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	52.200	51.583	-22.417	74.000	PEAK
2		7236.000	5.445	43.170	48.615	-25.385	74.000	PEAK
3		9648.000	9.226	40.820	50.046	-23.954	74.000	PEAK
4		12060.000	11.115	39.200	50.315	-23.685	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:22**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**

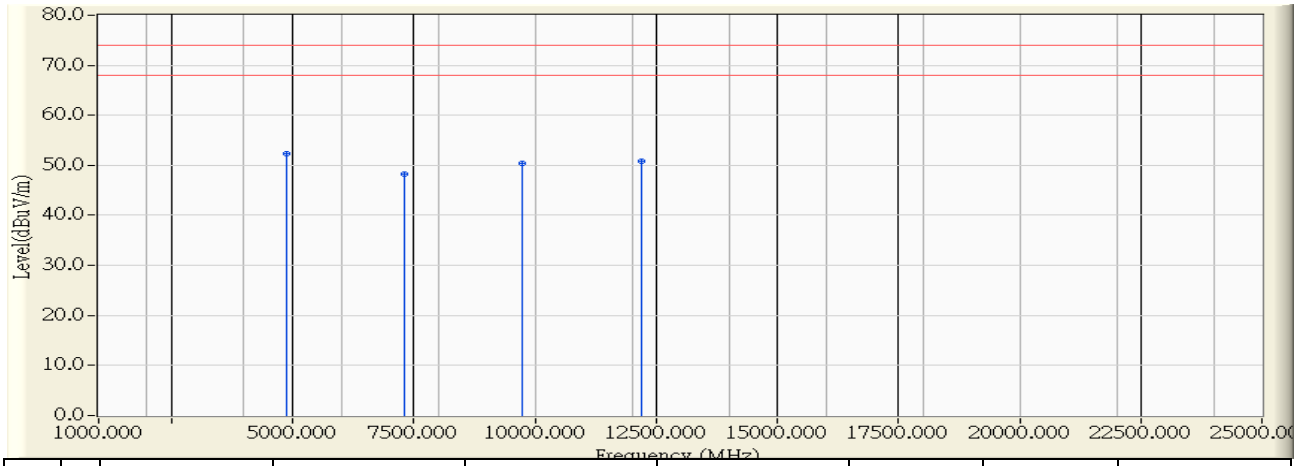


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-0.617	51.620	51.003	-22.997	74.000	PEAK
2		7236.000	5.445	42.560	48.005	-25.995	74.000	PEAK
3		9648.000	9.226	40.300	49.526	-24.474	74.000	PEAK
4		12060.000	11.115	39.870	50.985	-23.015	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:27**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2437MHz**

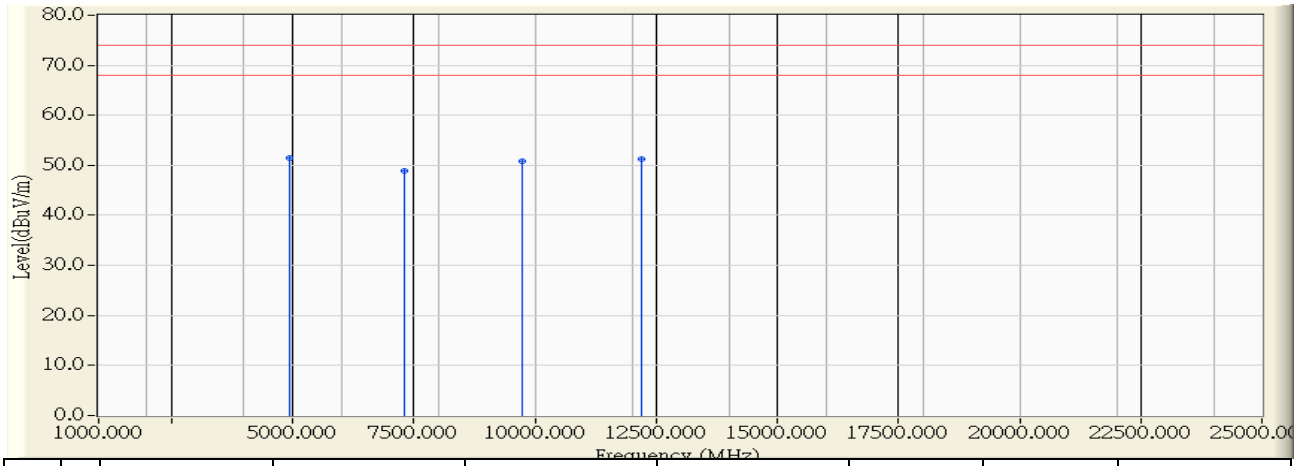


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-0.495	52.760	52.265	-21.735	74.000	PEAK
2		7311.000	5.608	42.700	48.307	-25.693	74.000	PEAK
3		9748.000	9.873	40.530	50.403	-23.597	74.000	PEAK
4		12185.000	11.058	39.860	50.918	-23.082	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:29**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2437MHz**

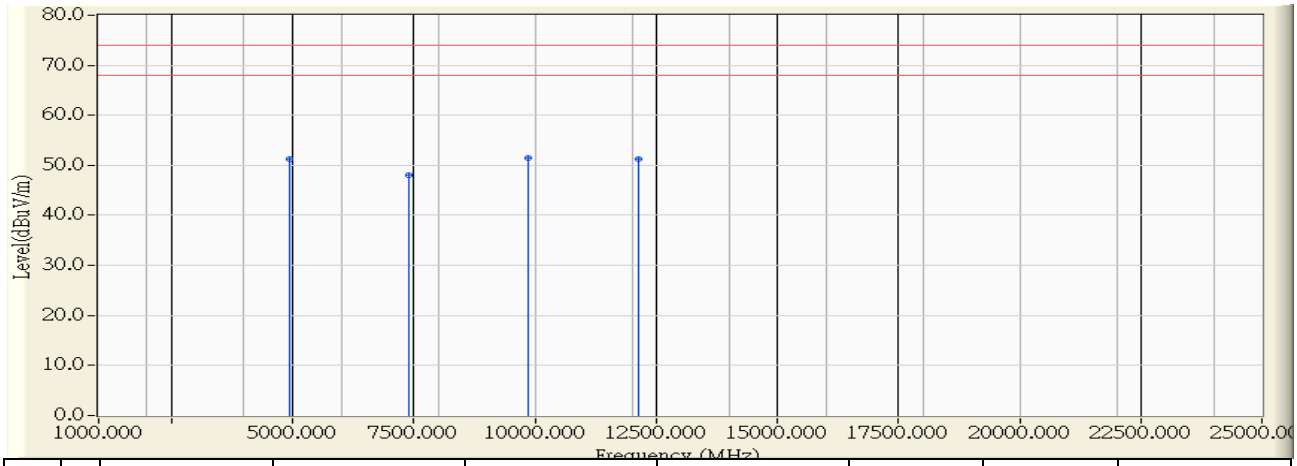


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4947.000	-0.317	51.880	51.563	-22.437	74.000	PEAK
2		7311.000	5.608	43.200	48.807	-25.193	74.000	PEAK
3		9748.000	9.873	40.900	50.773	-23.227	74.000	PEAK
4		12185.000	11.058	40.110	51.168	-22.832	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:33**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**

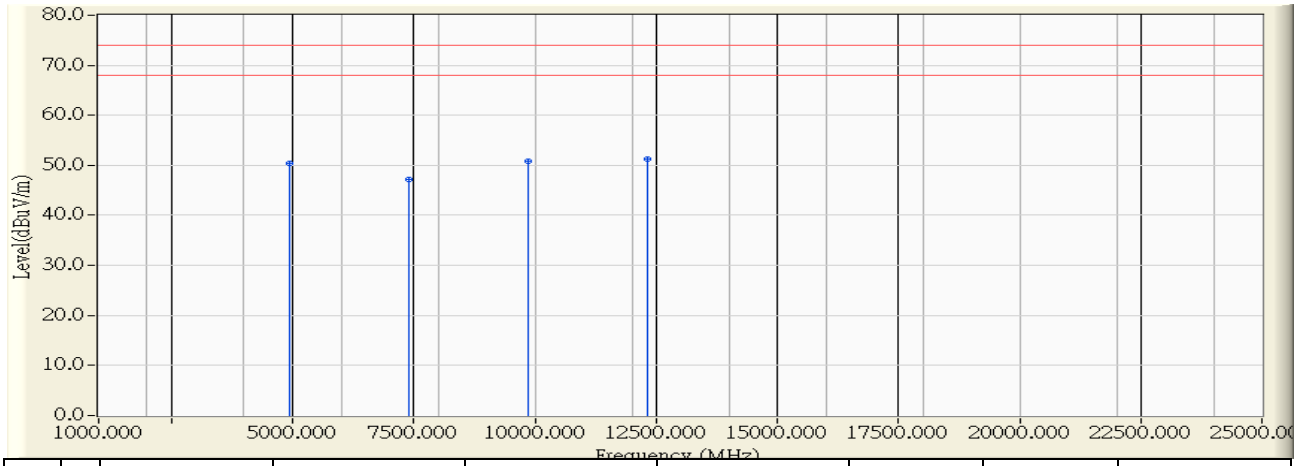


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	51.530	51.157	-22.843	74.000	PEAK
2		7386.000	5.770	42.260	48.030	-25.970	74.000	PEAK
3	*	9848.000	10.521	40.900	51.421	-22.579	74.000	PEAK
4		12130.000	11.083	40.140	51.223	-22.777	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/09/28 - 16:36**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	50.720	50.347	-23.653	74.000	PEAK
2		7386.000	5.770	41.500	47.270	-26.730	74.000	PEAK
3		9848.000	10.521	40.370	50.891	-23.109	74.000	PEAK
4	*	12310.000	11.001	40.170	51.171	-22.829	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 18GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

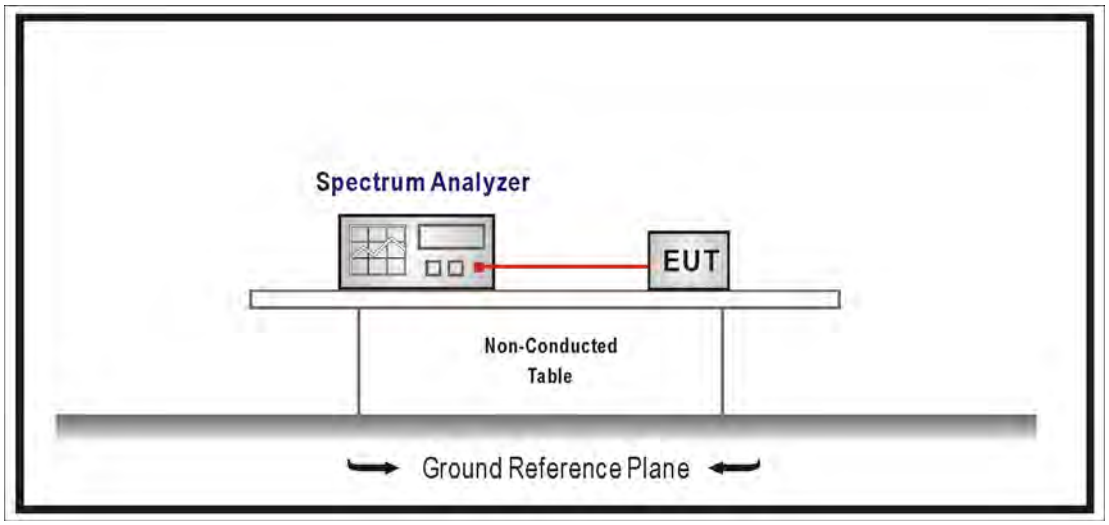
RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

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

5.2. Test Setup

RF Antenna Conducted Measurement:



5.3. 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or 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)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

5.6. Uncertainty

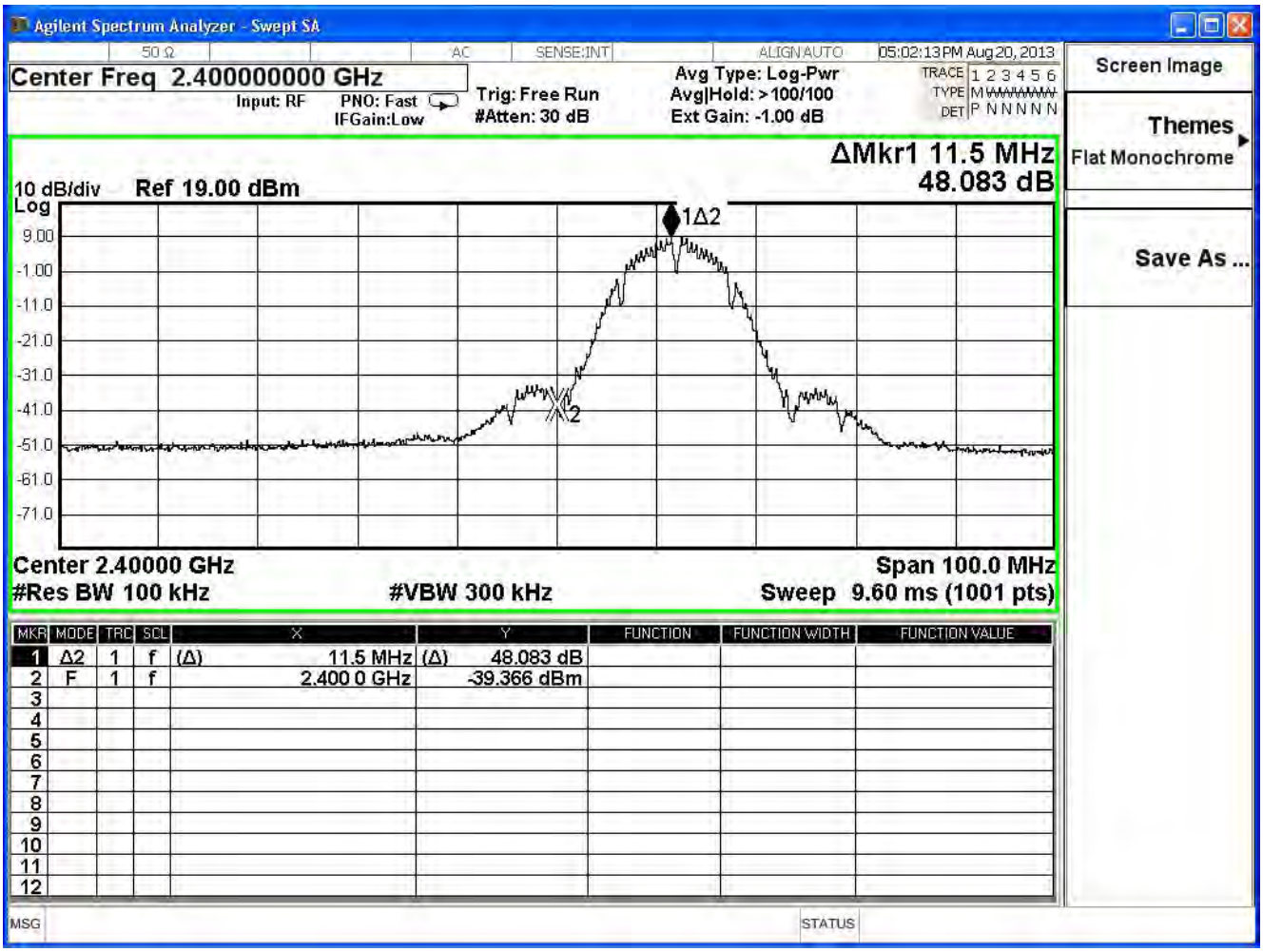
Conducted is defined as ± 1.27dB

5.7. Test Result

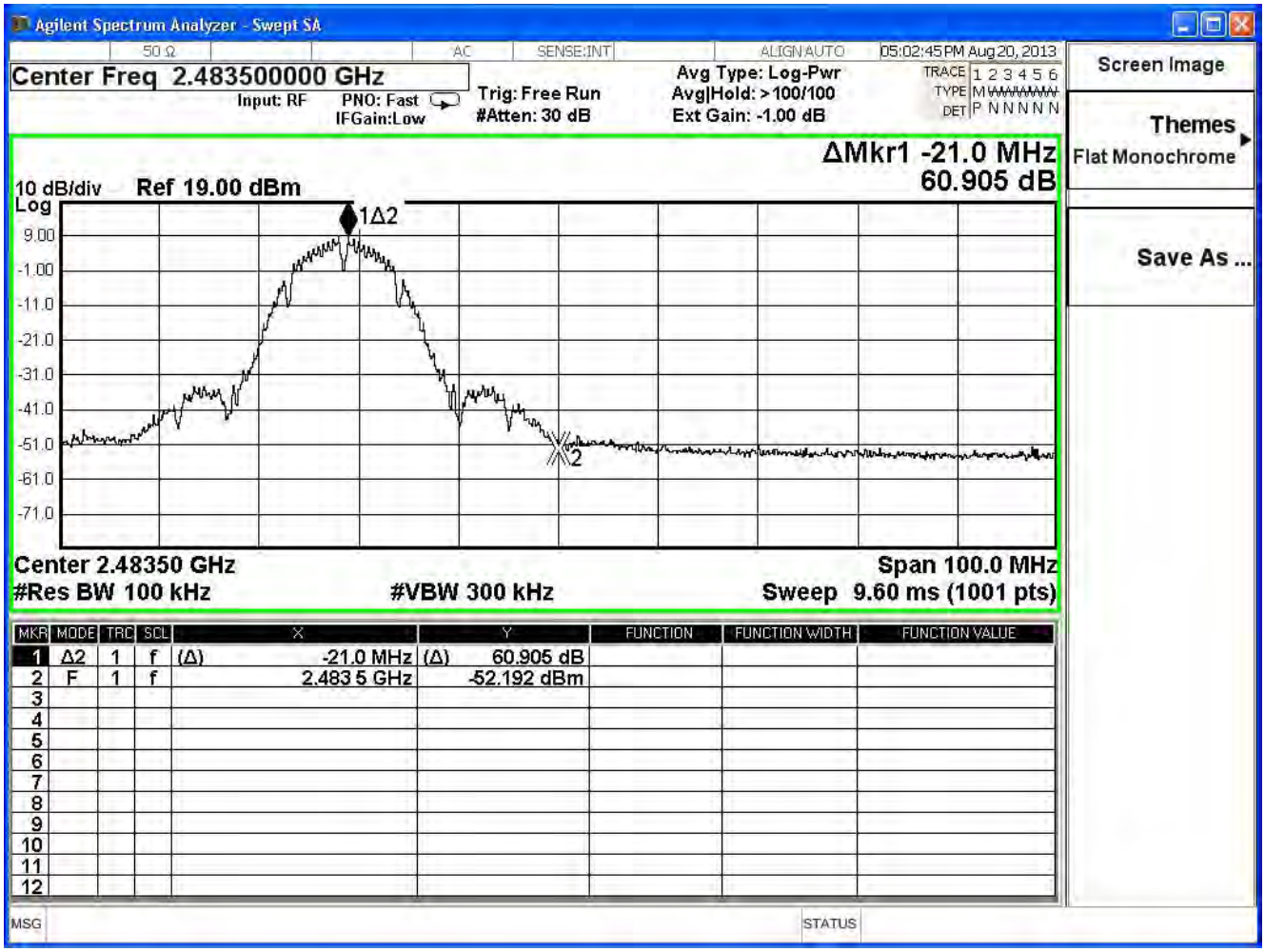
Product	LIFX Module Board		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11b, ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	48.08	≧20	Pass
11	2462	60.91	≧20	Pass

Channel 1 (2412MHz)



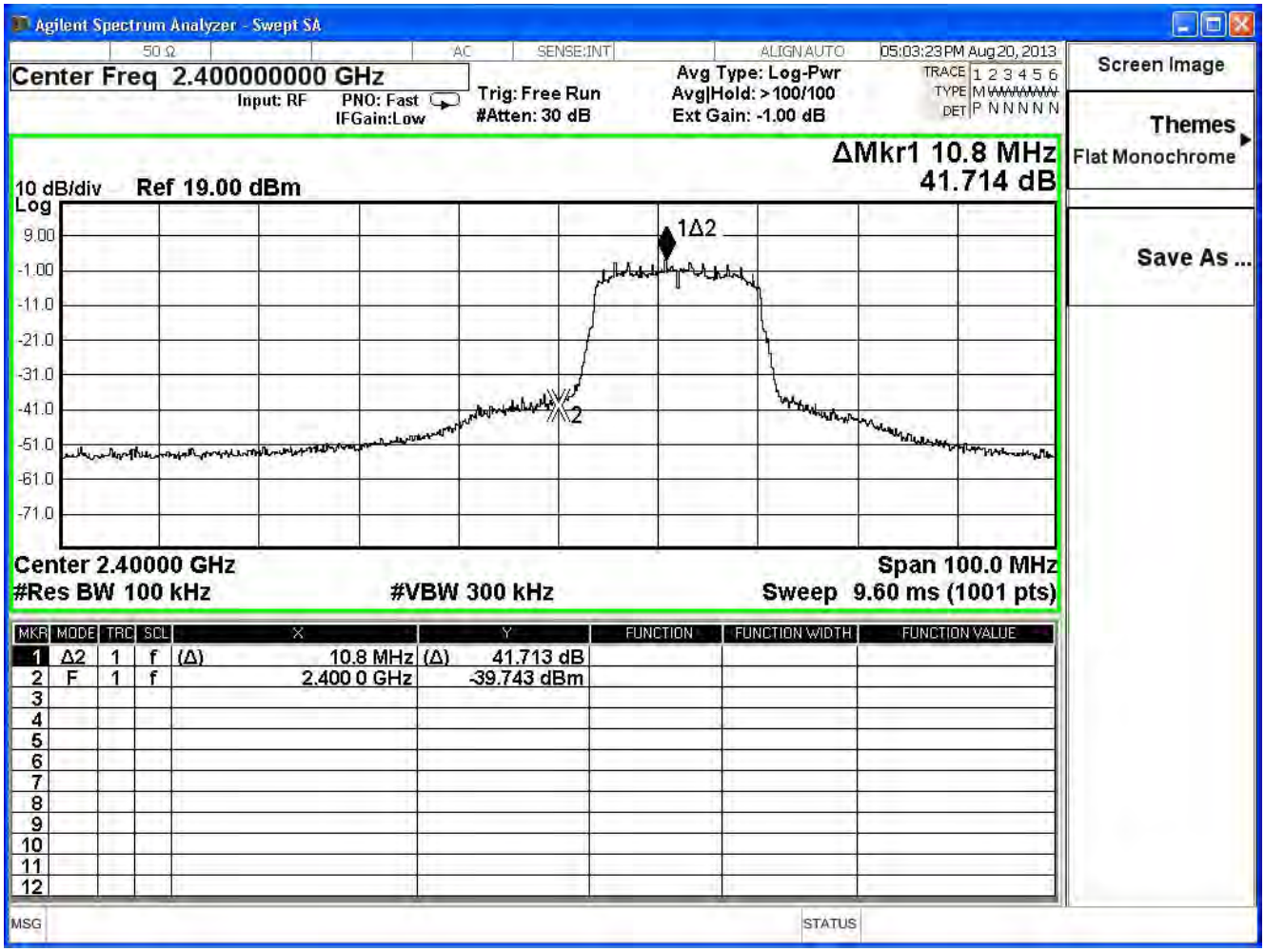
Channel 11 (2462MHz)



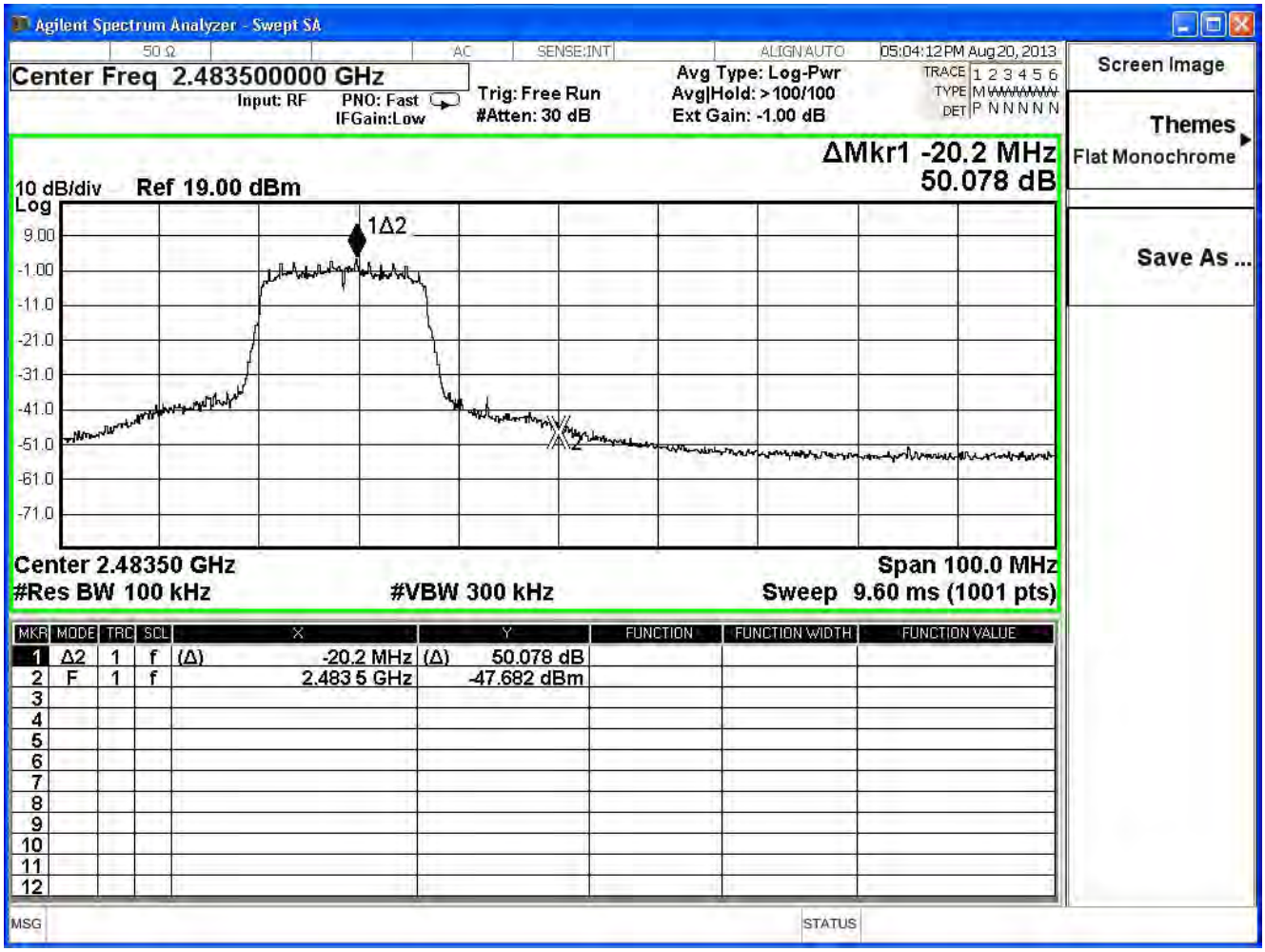
Product	LIFX Module Board		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11g, ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	41.71	≧20	Pass
11	2462	50.08	≧20	Pass

Channel 1 (2412MHz)



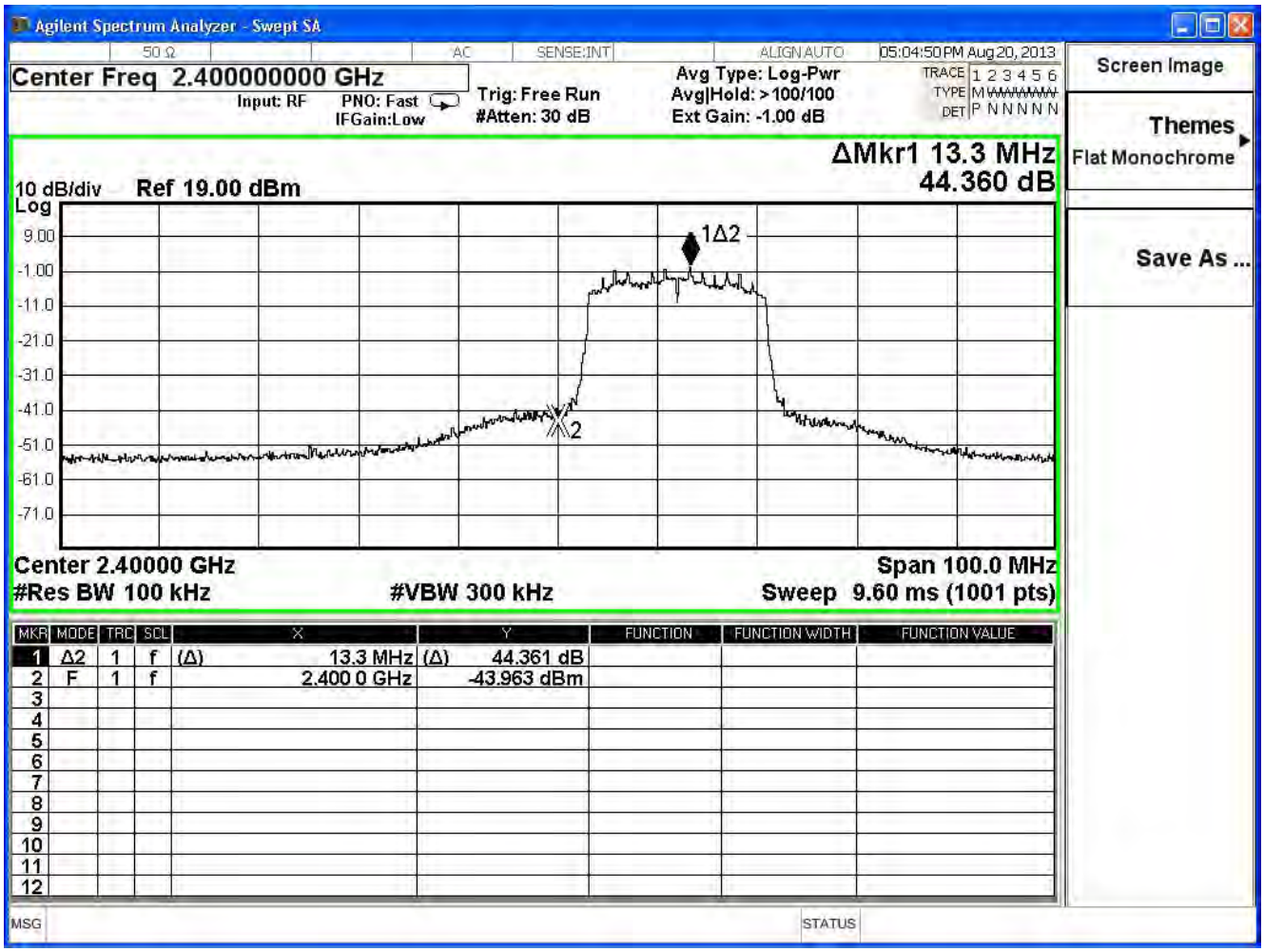
Channel 11 (2462MHz)



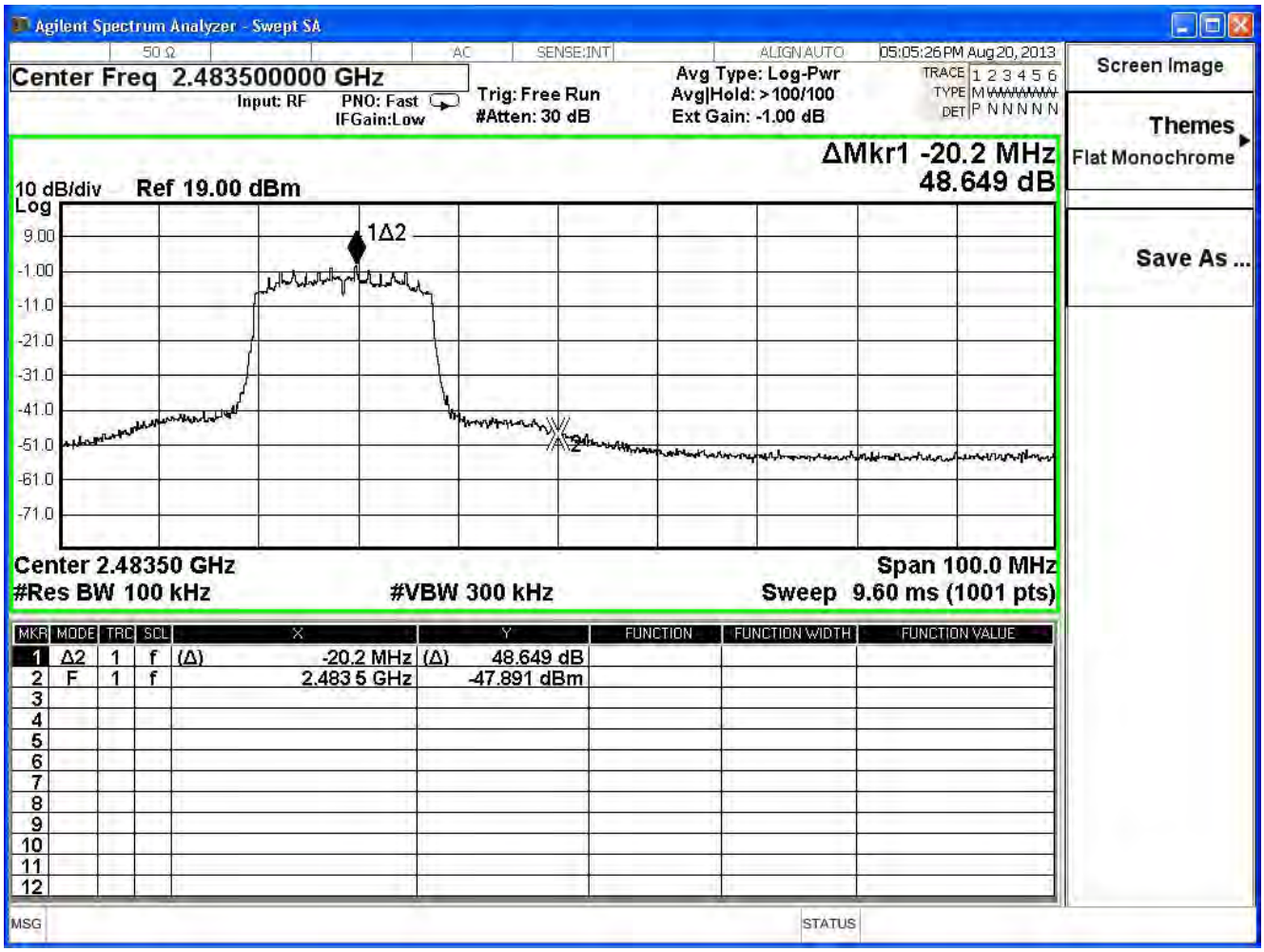
Product	LIFX Module Board		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11n (20MHz), ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	44.36	≧20	Pass
11	2462	48.65	≧20	Pass

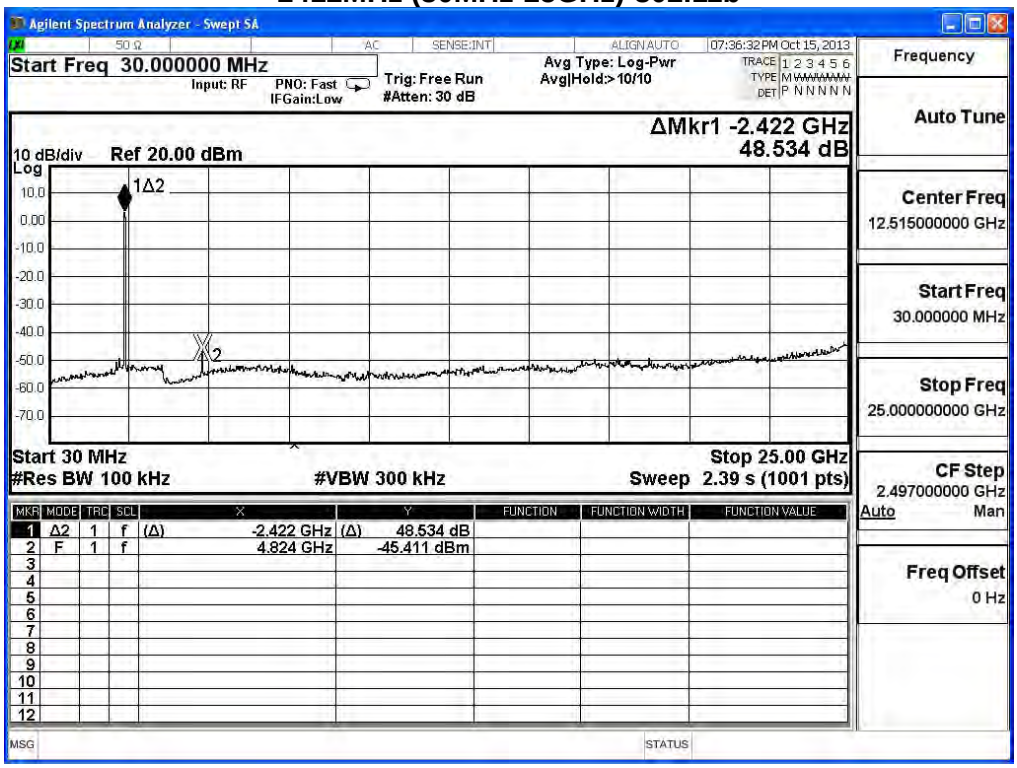
Channel 1 (2412MHz)



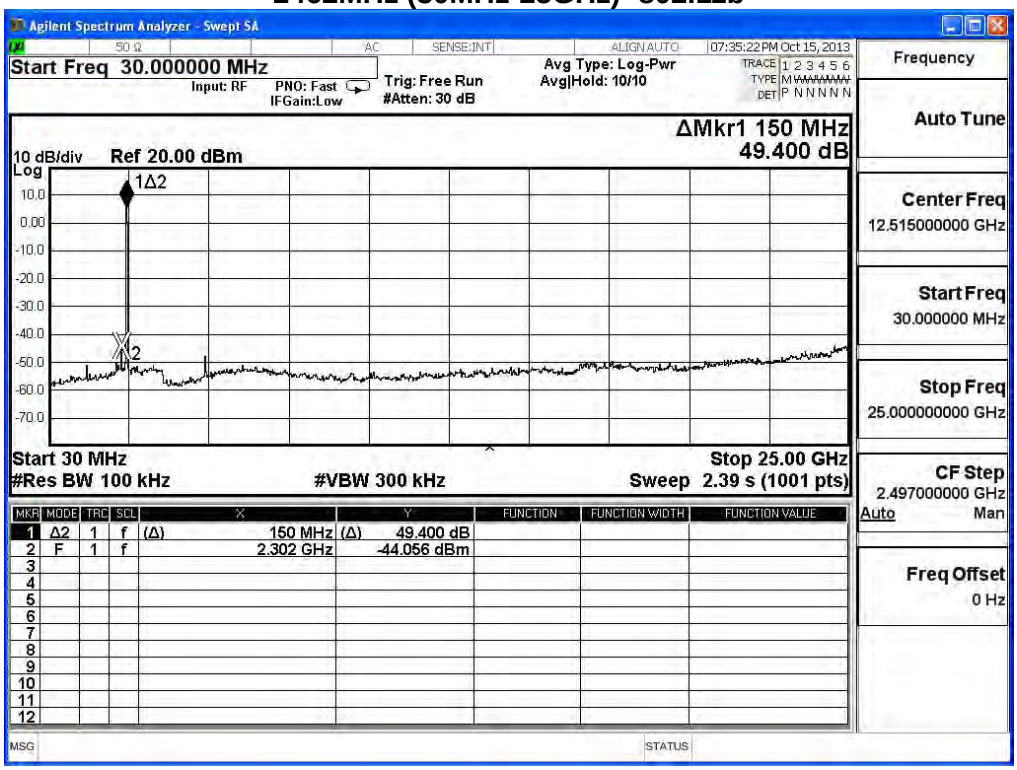
Channel 11 (2462MHz)



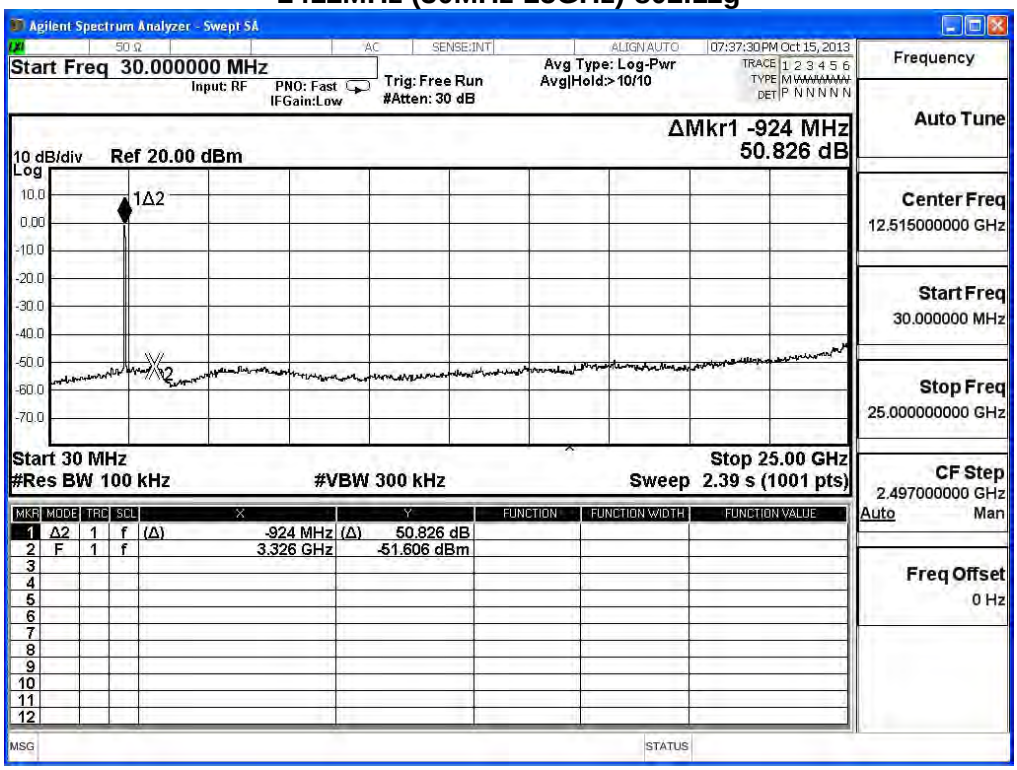
2412MHz (30MHz-25GHz)-802.11b



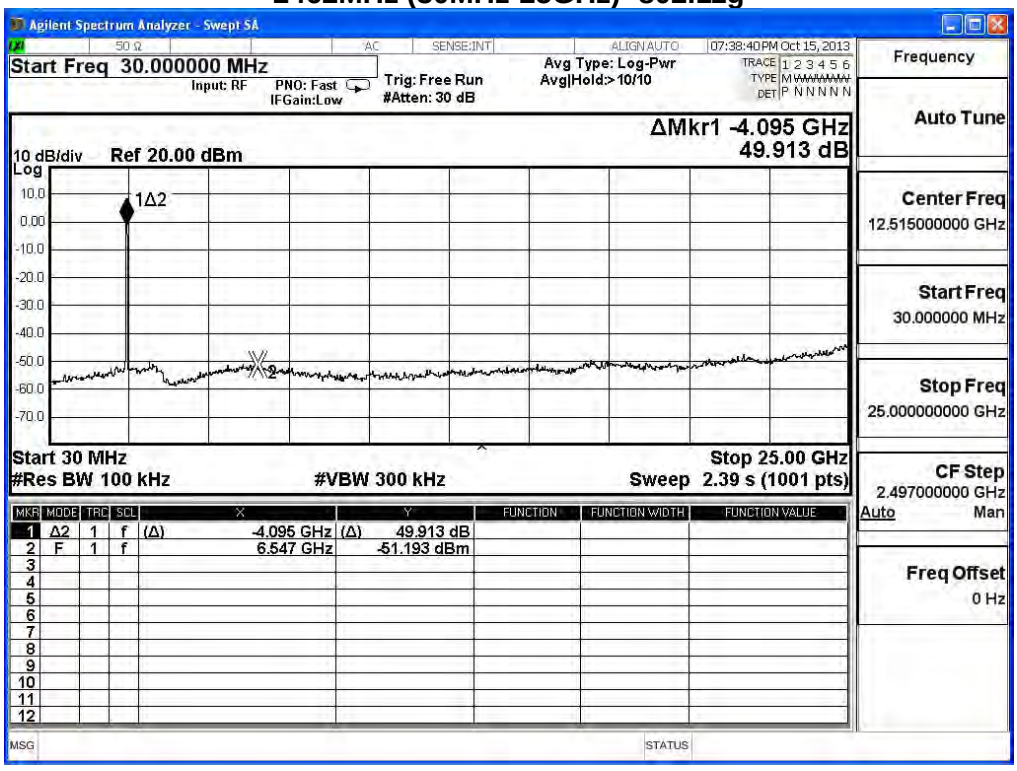
2462MHz (30MHz-25GHz) -802.11b



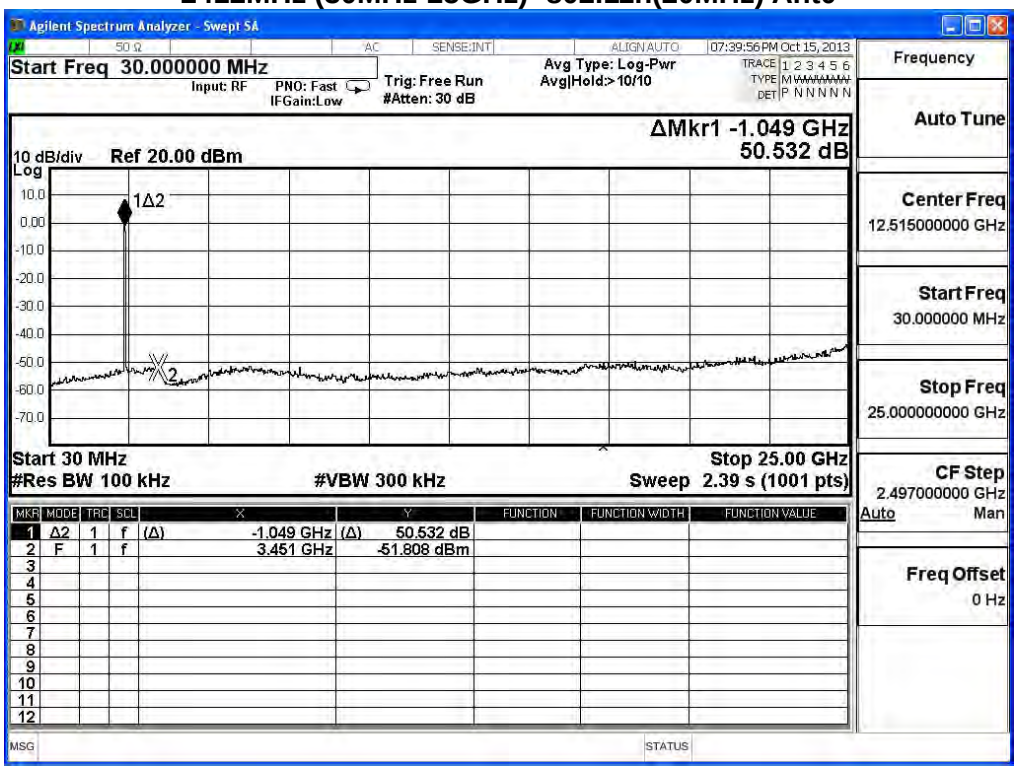
2412MHz (30MHz-25GHz)-802.11g



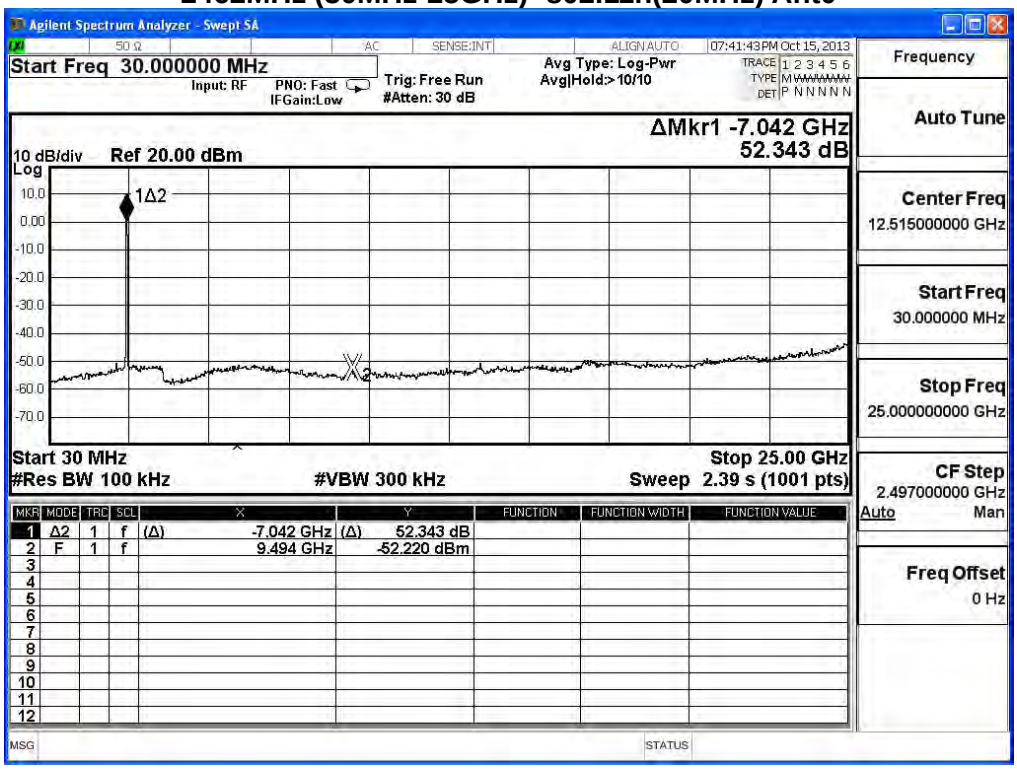
2462MHz (30MHz-25GHz) -802.11g



2412MHz (30MHz-25GHz)- 802.11n(20MHz) Ant0



2462MHz (30MHz-25GHz) -802.11n(20MHz) Ant0



6. Band Edge

6.1. Test Equipment

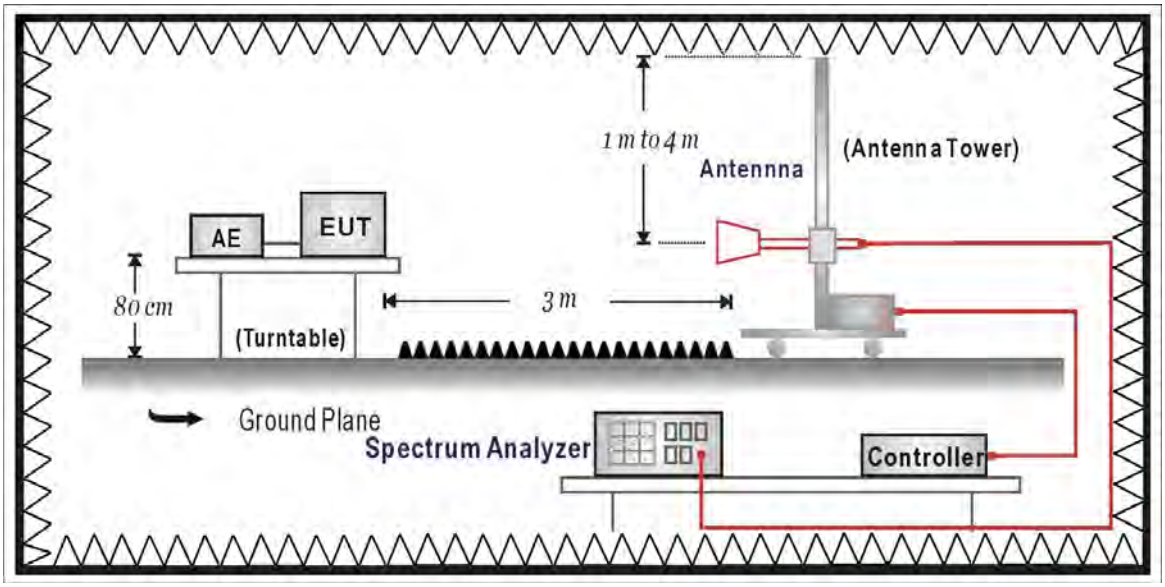
The following test equipments are used during the test:

Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2014/02/17
Spectrum Analyzer	Agilent	E4440A	MY46187335	2014/01/27
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2014/02/21

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

6.2. Test Setup



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

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.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

6.6. Uncertainty

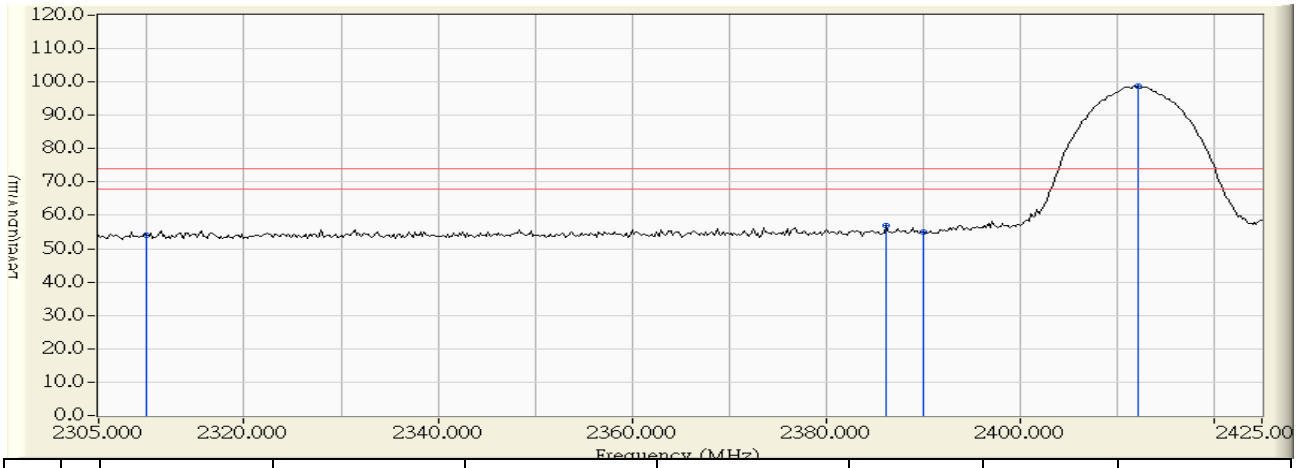
The measurement uncertainty

± 3.9 dB above 1GHz

6.7. Test Result

Radiated is defined as

Site : CB1	**Time : 2013/09/28 - 11:00**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	23.952	54.011	-19.989	74.000	PEAK
2		2386.200	30.849	26.122	56.971	-17.029	74.000	PEAK
3		2390.000	30.888	23.987	54.875	-19.125	74.000	PEAK
4	*	2412.200	31.118	67.584	98.703	24.703	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

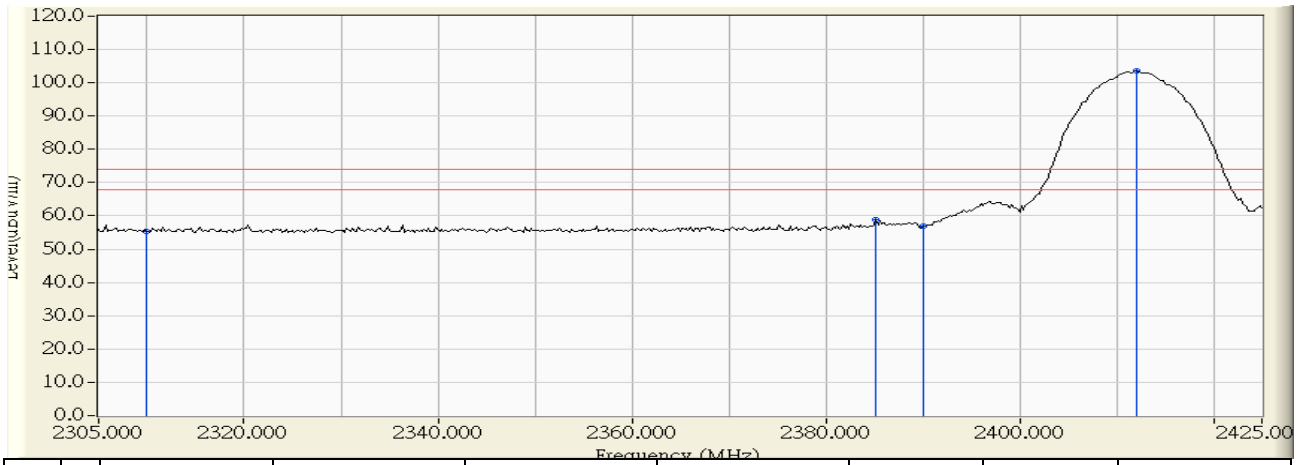
Site : CB1	**Time : 2013/09/28 - 11:00**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.140	42.199	-11.801	54.000	AVERAGE
2		2389.600	30.884	12.784	43.668	-10.332	54.000	AVERAGE
3		2390.000	30.888	12.743	43.631	-10.369	54.000	AVERAGE
4	*	2411.200	31.108	64.706	95.814	41.814	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:04**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

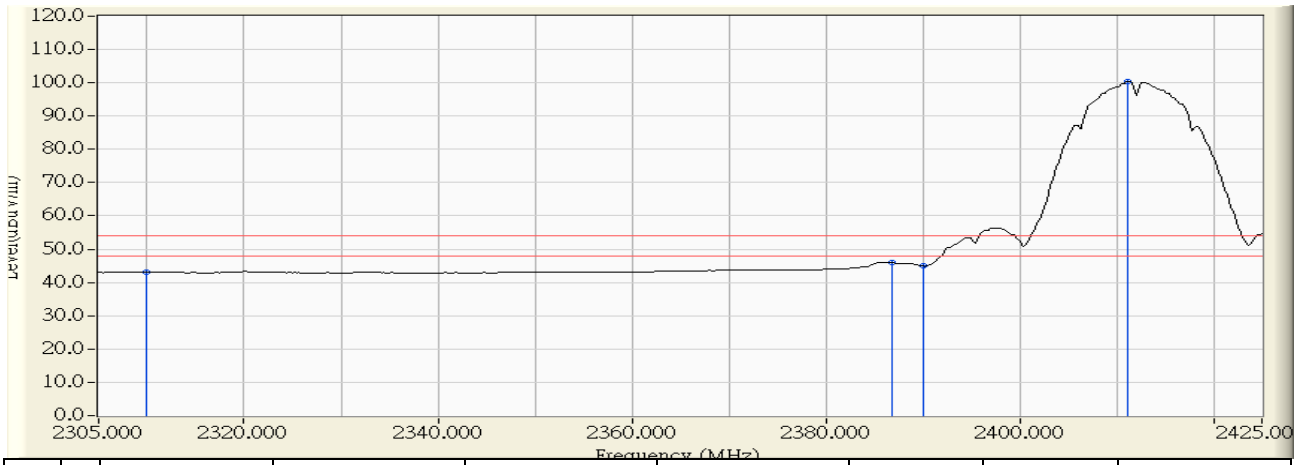


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	25.360	55.419	-18.581	74.000	PEAK
2		2385.200	30.839	28.160	58.999	-15.001	74.000	PEAK
3		2390.000	30.888	26.046	56.934	-17.066	74.000	PEAK
4	*	2412.000	31.116	72.319	103.435	29.435	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:04**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2412MHz**

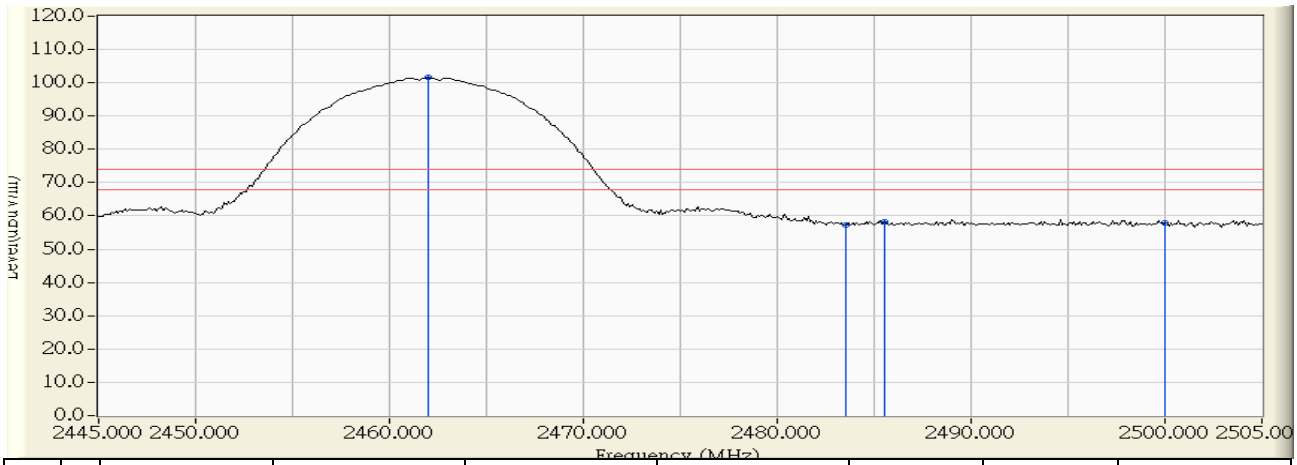


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.908	42.967	-11.033	54.000	AVERAGE
2		2386.800	30.856	15.061	45.916	-8.084	54.000	AVERAGE
3		2390.000	30.888	14.057	44.945	-9.055	54.000	AVERAGE
4	*	2411.200	31.108	69.388	100.496	46.496	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:10**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

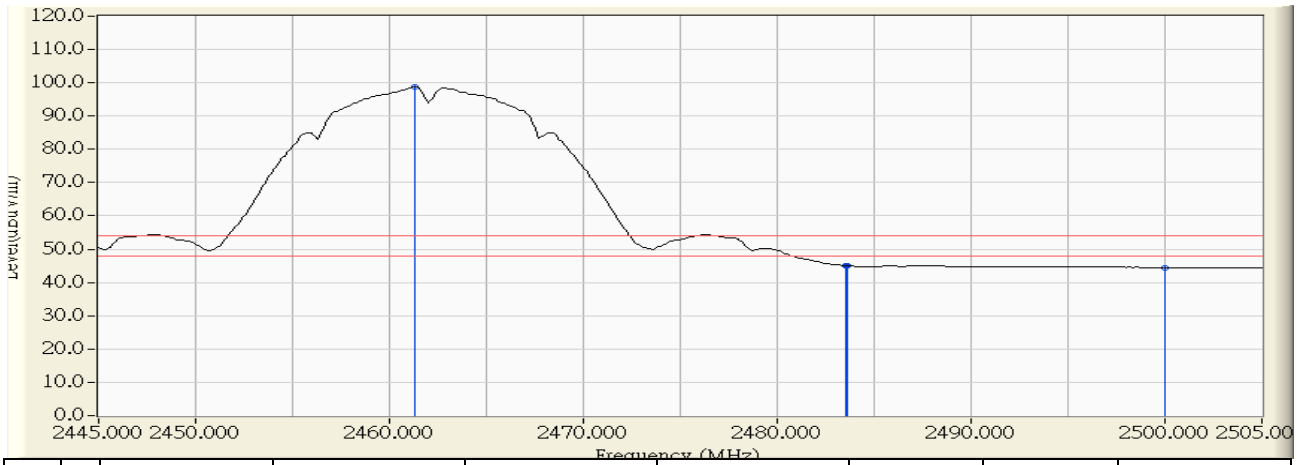


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2462.000	31.635	69.906	101.541	27.541	74.000	PEAK
2		2483.500	31.858	25.328	57.186	-16.814	74.000	PEAK
3		2485.500	31.879	26.380	58.259	-15.741	74.000	PEAK
4		2500.000	31.988	25.825	57.814	-16.186	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:10**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

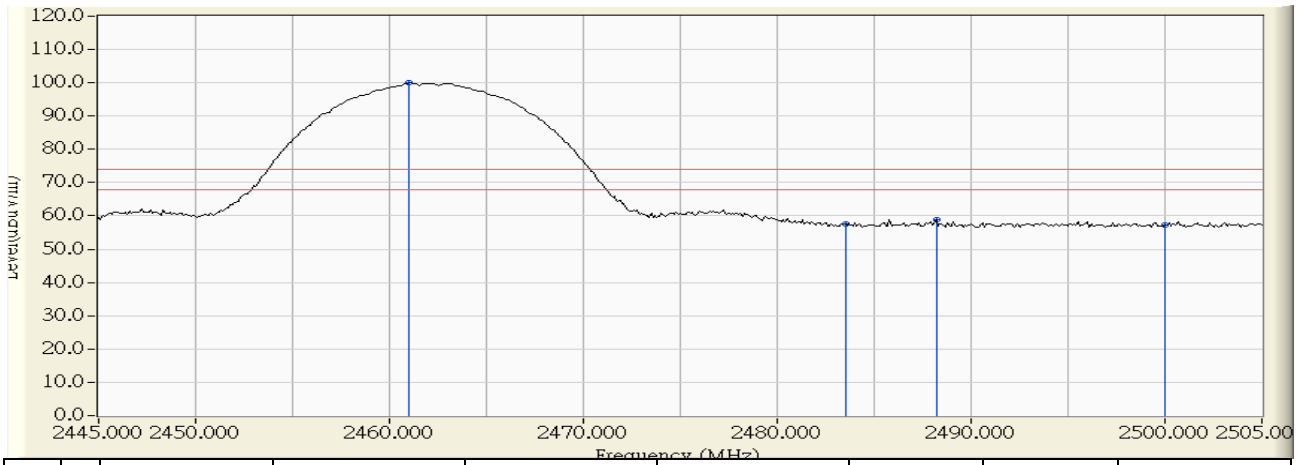


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.300	31.628	67.080	98.708	44.708	54.000	AVERAGE
2		2483.500	31.858	13.195	45.053	-8.947	54.000	AVERAGE
3		2483.600	31.859	13.164	45.023	-8.977	54.000	AVERAGE
4		2500.000	31.988	12.536	44.525	-9.475	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:13**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

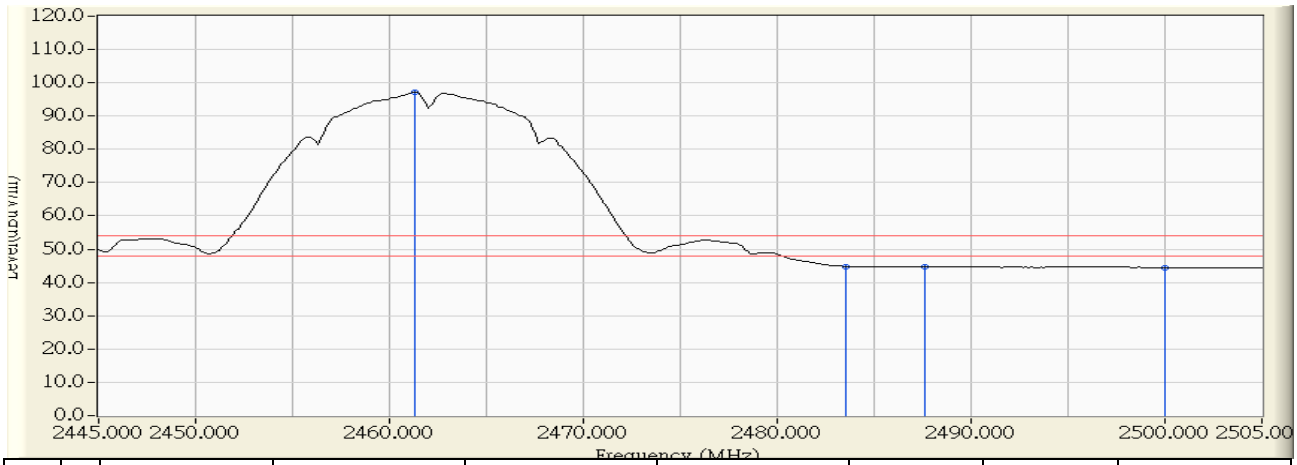


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.000	31.624	68.291	99.916	25.916	74.000	PEAK
2		2483.500	31.858	25.777	57.635	-16.365	74.000	PEAK
3		2488.200	31.906	27.036	58.943	-15.057	74.000	PEAK
4		2500.000	31.988	25.350	57.339	-16.661	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:14**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11b_2462MHz**

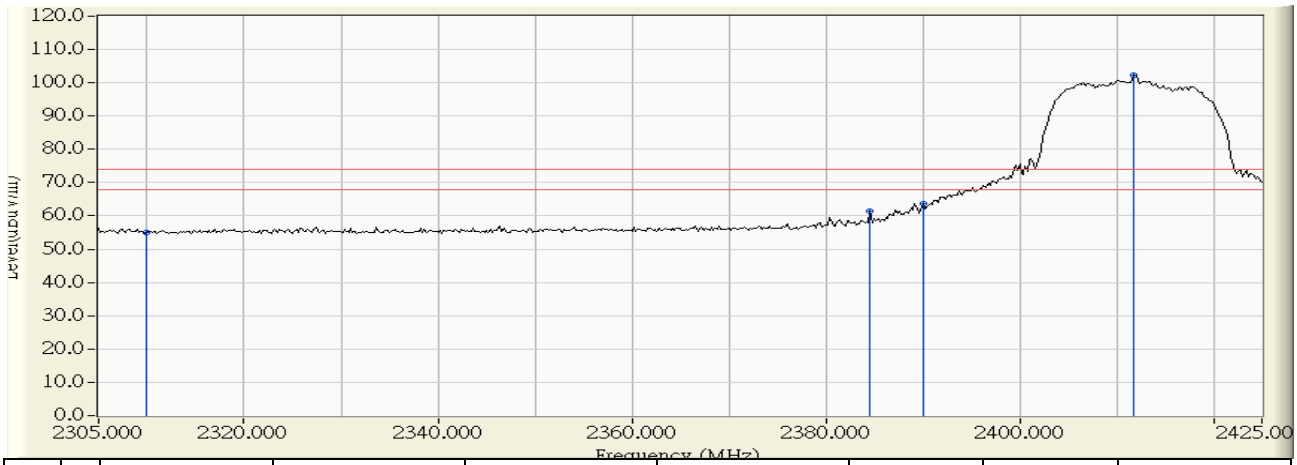


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.300	31.628	65.531	97.159	43.159	54.000	AVERAGE
2		2483.500	31.858	12.992	44.850	-9.150	54.000	AVERAGE
3		2487.600	31.901	12.888	44.788	-9.212	54.000	AVERAGE
4		2500.000	31.988	12.528	44.517	-9.483	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : 2013/09/28 - 11:27**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	24.948	55.007	-18.993	74.000	PEAK
2		2384.600	30.832	30.763	61.595	-12.405	74.000	PEAK
3		2390.000	30.888	32.896	63.784	-10.216	74.000	PEAK
4	*	2411.800	31.115	71.291	102.405	28.405	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:28**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.006	42.065	-11.935	54.000	AVERAGE
2		2389.800	30.886	15.584	46.470	-7.530	54.000	AVERAGE
3		2390.000	30.888	15.676	46.564	-7.436	54.000	AVERAGE
4	*	2411.000	31.106	58.438	89.544	35.544	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

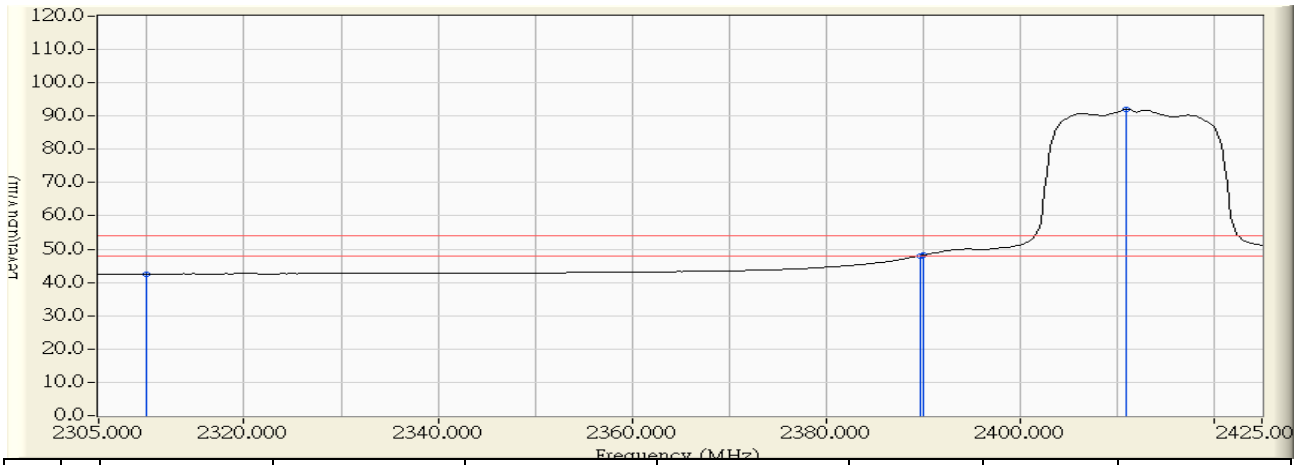
Site : CB1	**Time : 2013/09/28 - 11:32**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	24.937	54.996	-19.004	74.000	PEAK
2		2389.400	30.882	32.199	63.081	-10.919	74.000	PEAK
3		2390.000	30.888	33.386	64.274	-9.726	74.000	PEAK
4	*	2411.800	31.115	73.492	104.606	30.606	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:32**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2412MHz**

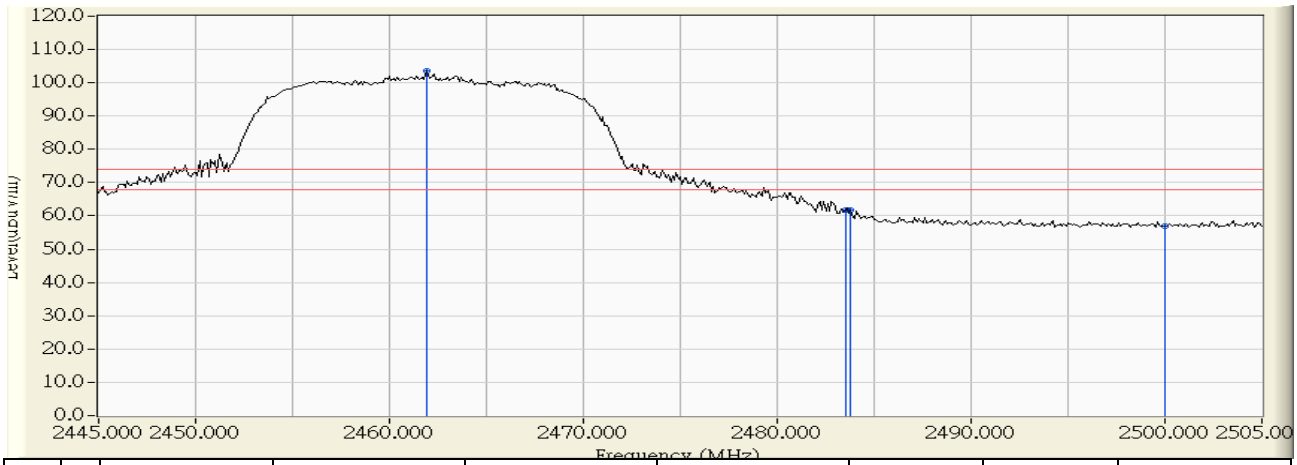


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.531	42.590	-11.410	54.000	AVERAGE
2		2389.800	30.886	17.179	48.065	-5.935	54.000	AVERAGE
3		2390.000	30.888	17.275	48.163	-5.837	54.000	AVERAGE
4	*	2411.000	31.106	60.841	91.947	37.947	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:17**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

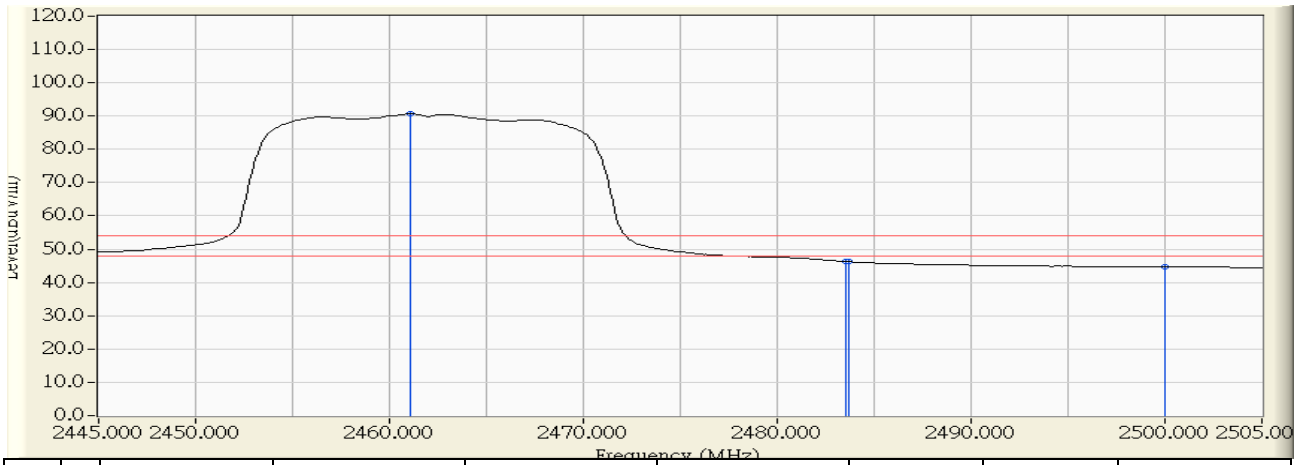


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.900	31.633	71.898	103.532	29.532	74.000	PEAK
2		2483.500	31.858	29.800	61.658	-12.342	74.000	PEAK
3		2483.800	31.861	29.810	61.671	-12.329	74.000	PEAK
4		2500.000	31.988	25.049	57.038	-16.962	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:18**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

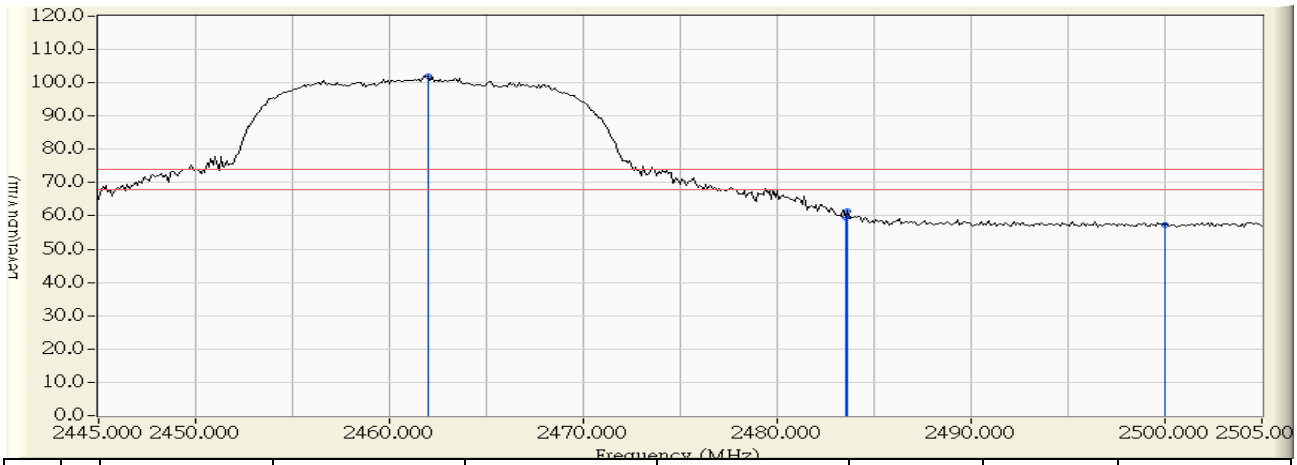


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.100	31.626	59.024	90.650	36.650	54.000	AVERAGE
2		2483.500	31.858	14.450	46.308	-7.692	54.000	AVERAGE
3		2483.700	31.860	14.439	46.299	-7.701	54.000	AVERAGE
4		2500.000	31.988	12.612	44.601	-9.399	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:21**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

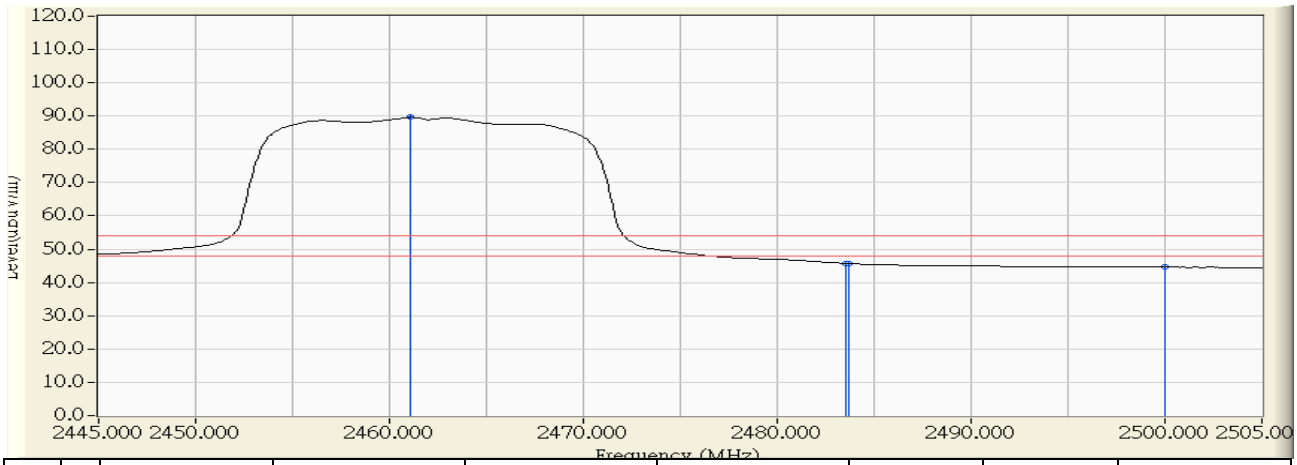


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2462.000	31.635	70.351	101.986	27.986	74.000	PEAK
2		2483.500	31.858	27.638	59.496	-14.504	74.000	PEAK
3		2483.600	31.859	29.636	61.495	-12.505	74.000	PEAK
4		2500.000	31.988	25.319	57.308	-16.692	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:22**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11g_2462MHz**

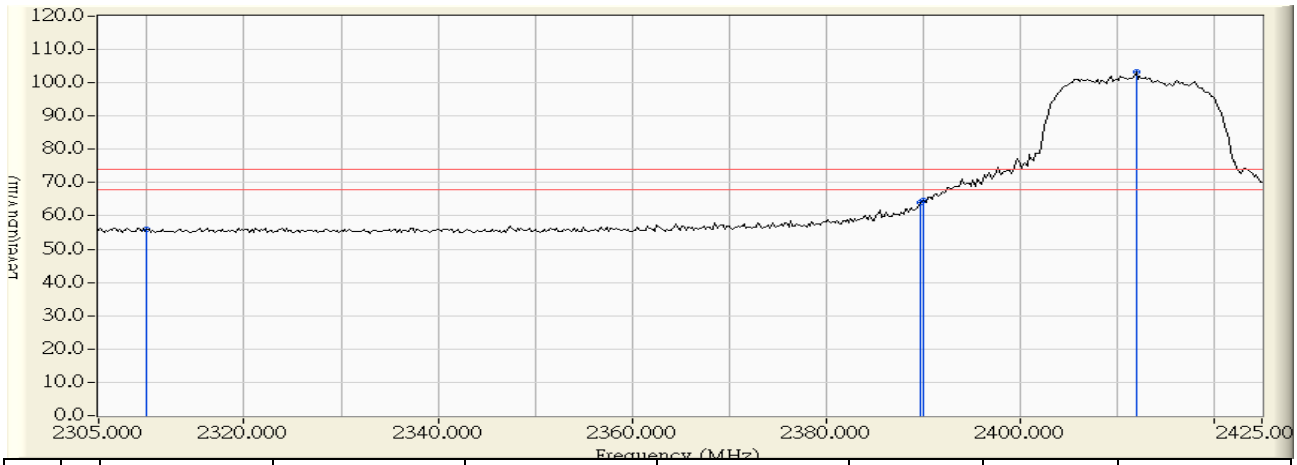


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.100	31.626	57.973	89.599	35.599	54.000	AVERAGE
2		2483.500	31.858	13.894	45.752	-8.248	54.000	AVERAGE
3		2483.700	31.860	13.818	45.678	-8.322	54.000	AVERAGE
4		2500.000	31.988	12.598	44.587	-9.413	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:36**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	25.839	55.898	-18.102	74.000	PEAK
2		2389.800	30.886	33.229	64.115	-9.885	74.000	PEAK
3		2390.000	30.888	33.918	64.806	-9.194	74.000	PEAK
4	*	2412.000	31.116	72.192	103.308	29.308	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:37**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.148	42.207	-11.793	54.000	AVERAGE
2		2389.800	30.886	16.970	47.856	-6.144	54.000	AVERAGE
3		2390.000	30.888	17.074	47.962	-6.038	54.000	AVERAGE
4	*	2411.000	31.106	59.215	90.321	36.321	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:40**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	25.209	55.268	-18.732	74.000	PEAK
2		2389.400	30.882	32.744	63.626	-10.374	74.000	PEAK
3		2390.000	30.888	32.067	62.955	-11.045	74.000	PEAK
4	*	2412.200	31.118	73.050	104.169	30.169	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

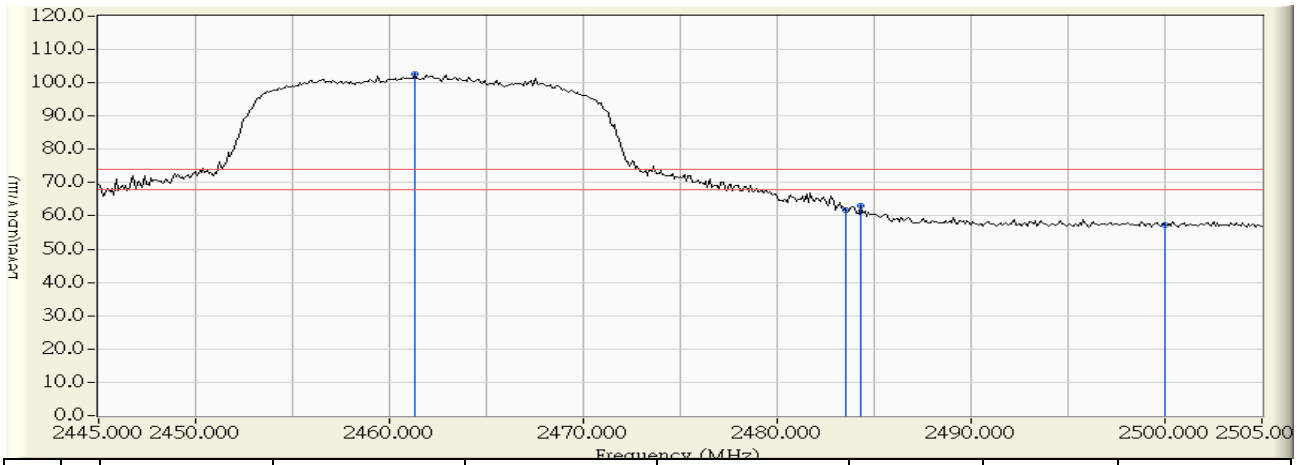
Site : CB1	**Time : 2013/09/28 - 11:41**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2412MHz**

		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	30.059	12.027	42.086	-11.914	54.000	AVERAGE
2		2389.800	30.886	16.862	47.748	-6.252	54.000	AVERAGE
3		2390.000	30.888	16.965	47.853	-6.147	54.000	AVERAGE
4	*	2411.200	31.108	60.211	91.319	37.319	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:44**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**

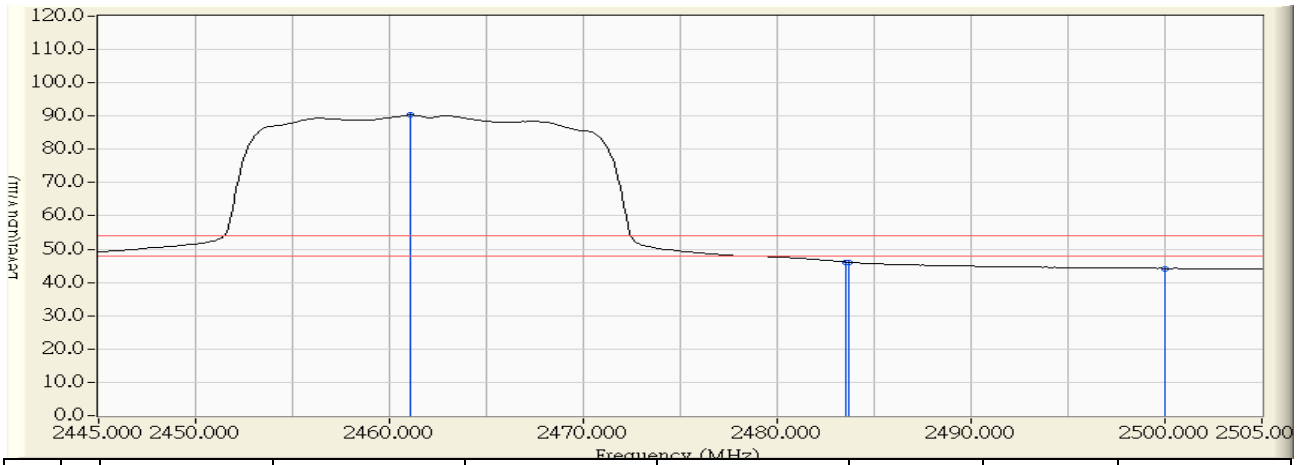


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.300	31.628	70.875	102.503	28.503	74.000	PEAK
2		2483.500	31.858	29.887	61.745	-12.255	74.000	PEAK
3		2484.300	31.867	31.089	62.955	-11.045	74.000	PEAK
4		2500.000	31.988	25.269	57.258	-16.742	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:45**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**

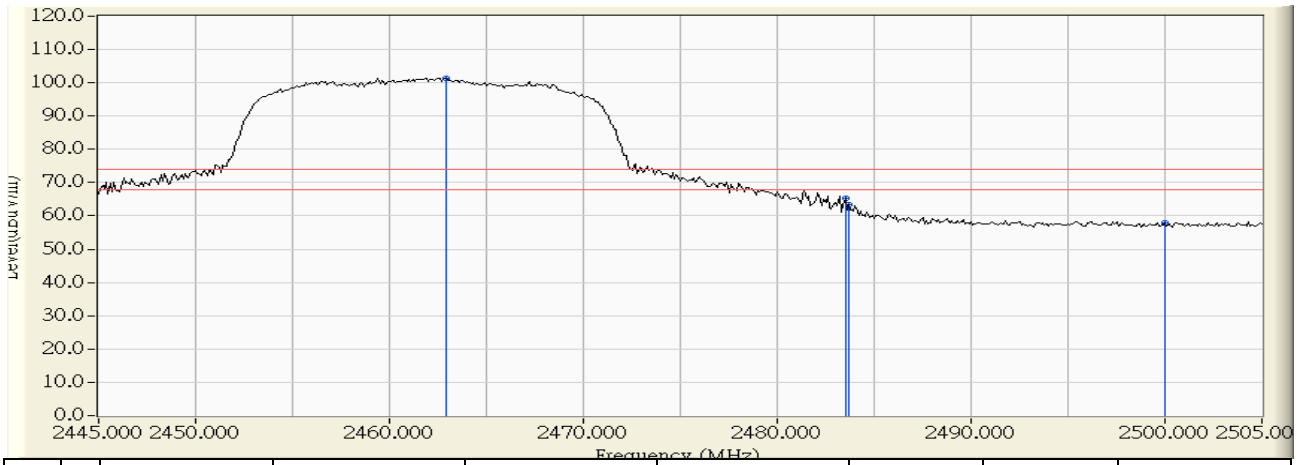


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.100	31.626	58.662	90.288	36.288	54.000	AVERAGE
2		2483.500	31.858	14.299	46.157	-7.843	54.000	AVERAGE
3		2483.700	31.860	14.195	46.055	-7.945	54.000	AVERAGE
4		2500.000	31.988	12.224	44.213	-9.787	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:48**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**

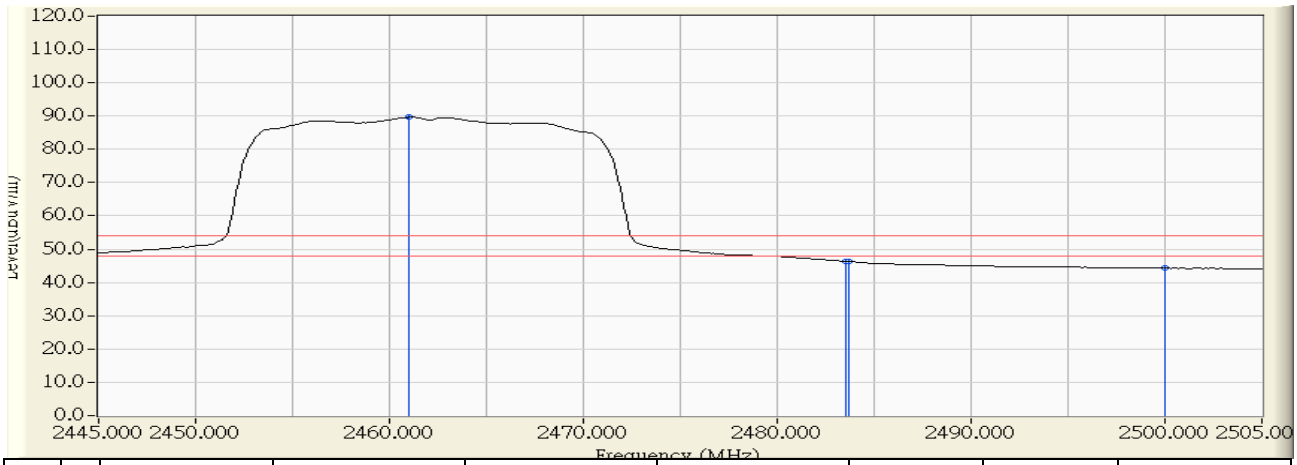


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2462.900	31.645	69.705	101.349	27.349	74.000	PEAK
2		2483.500	31.858	33.343	65.201	-8.799	74.000	PEAK
3		2483.700	31.860	31.674	63.534	-10.466	74.000	PEAK
4		2500.000	31.988	25.866	57.855	-16.145	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	**Time : 2013/09/28 - 11:49**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : AC 120V/60Hz**
EUT : LIFX Module Board	**Note : 802.11n(20MHz)_2462MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.000	31.624	58.046	89.671	35.671	54.000	AVERAGE
2		2483.500	31.858	14.467	46.325	-7.675	54.000	AVERAGE
3		2483.700	31.860	14.391	46.251	-7.749	54.000	AVERAGE
4		2500.000	31.988	12.293	44.282	-9.718	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measure Level = Reading Level + Correct Factor。
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

7.1. Test Equipment

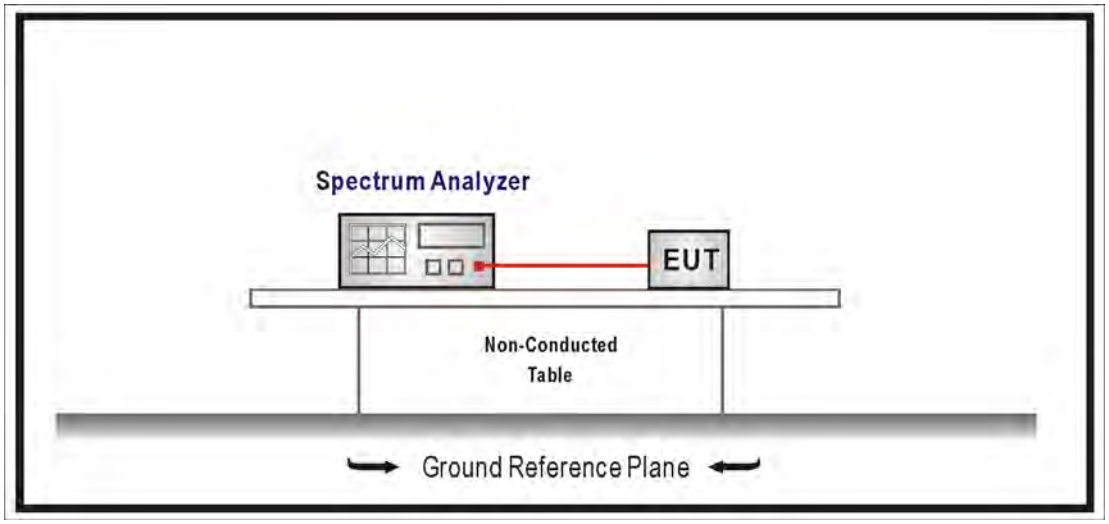
The following test equipments are used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

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

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 1% of EBW, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

7.6. Uncertainty

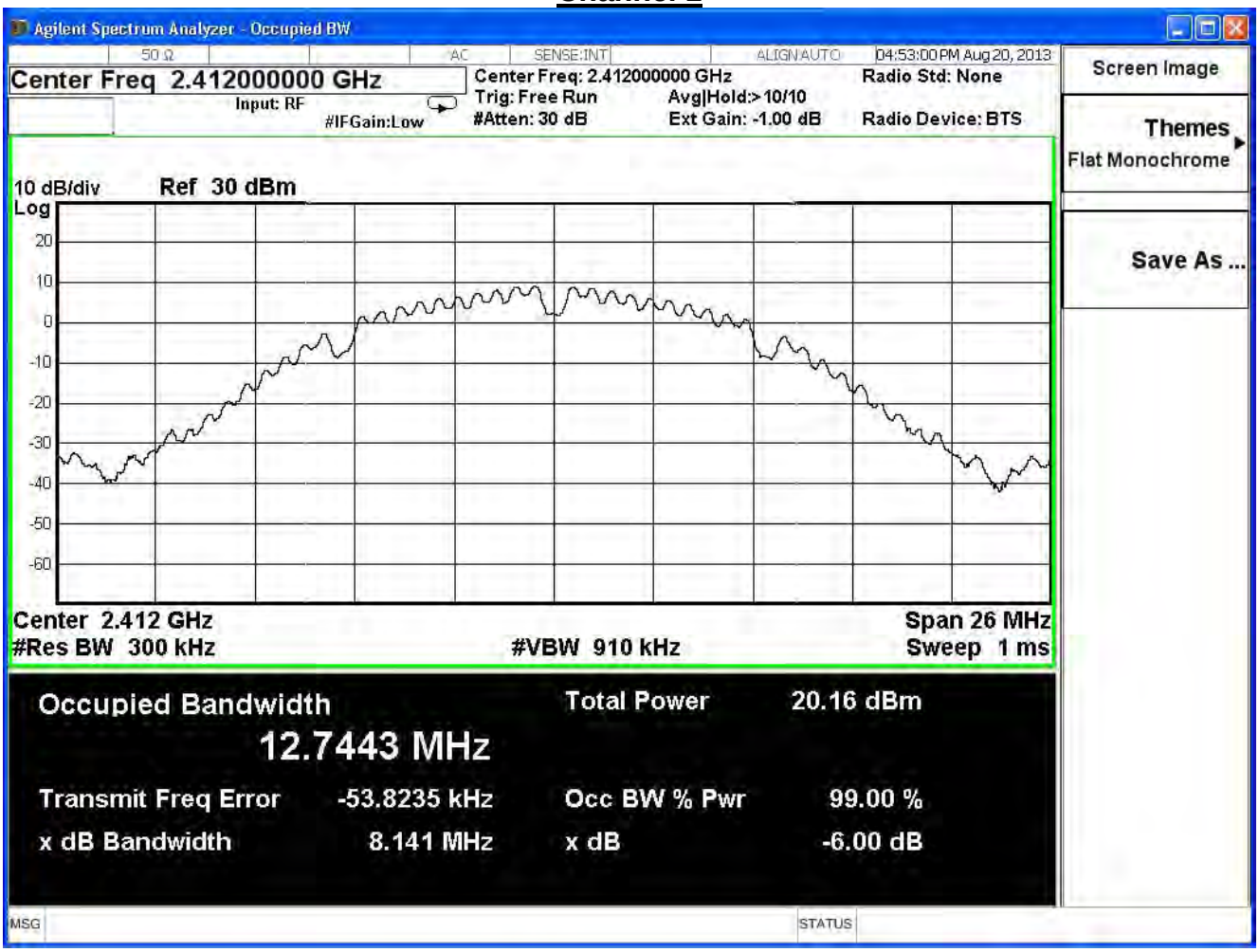
The measurement uncertainty is defined as ±150Hz

7.7. Test Result

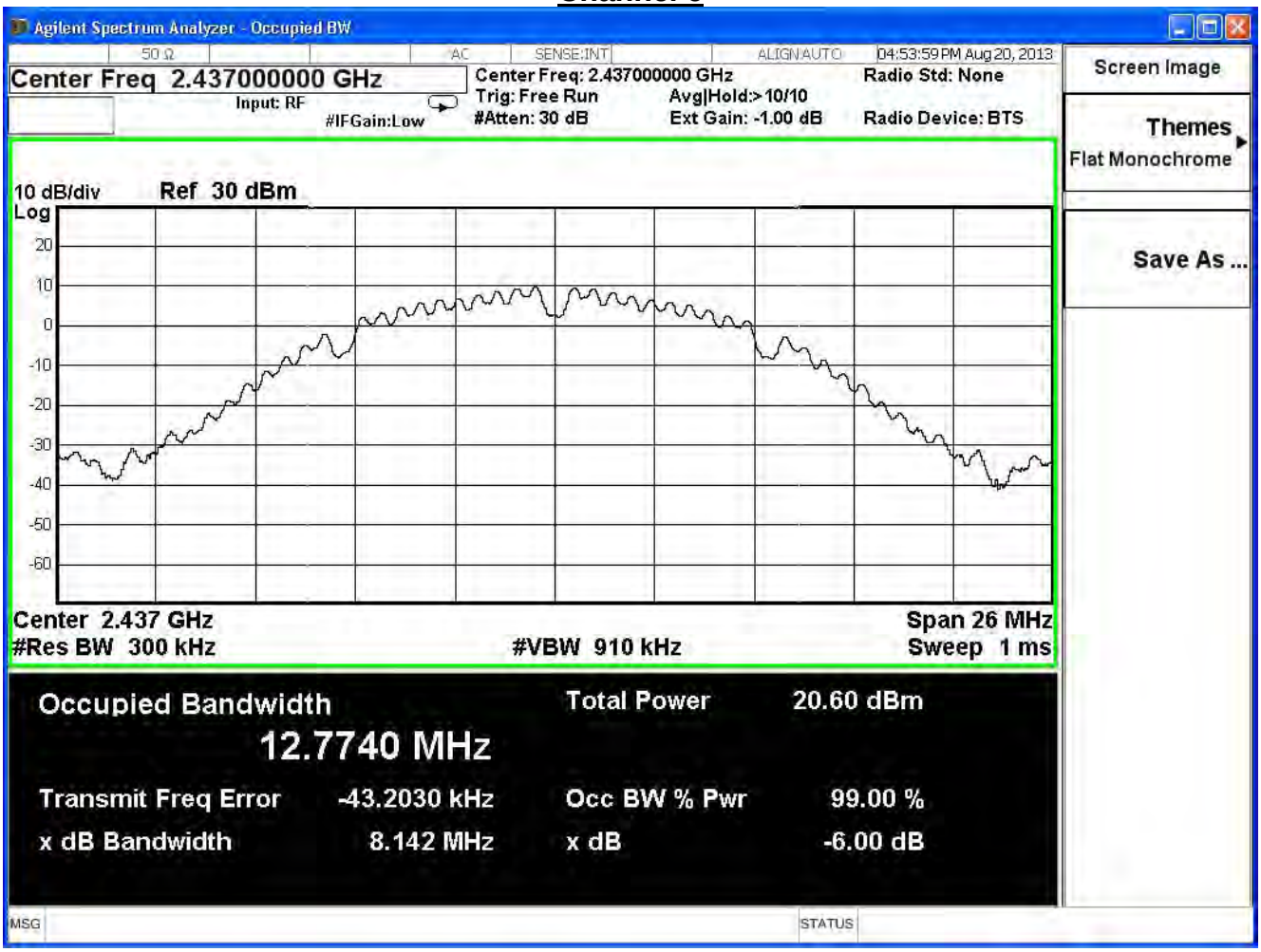
Product	LIFX Module Board		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

802.11 b, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Required Limit (MHz)	Result
1	2412	8.14	≧0.5	Pass
6	2437	8.14	≧0.5	Pass
11	2462	8.14	≧0.5	Pass

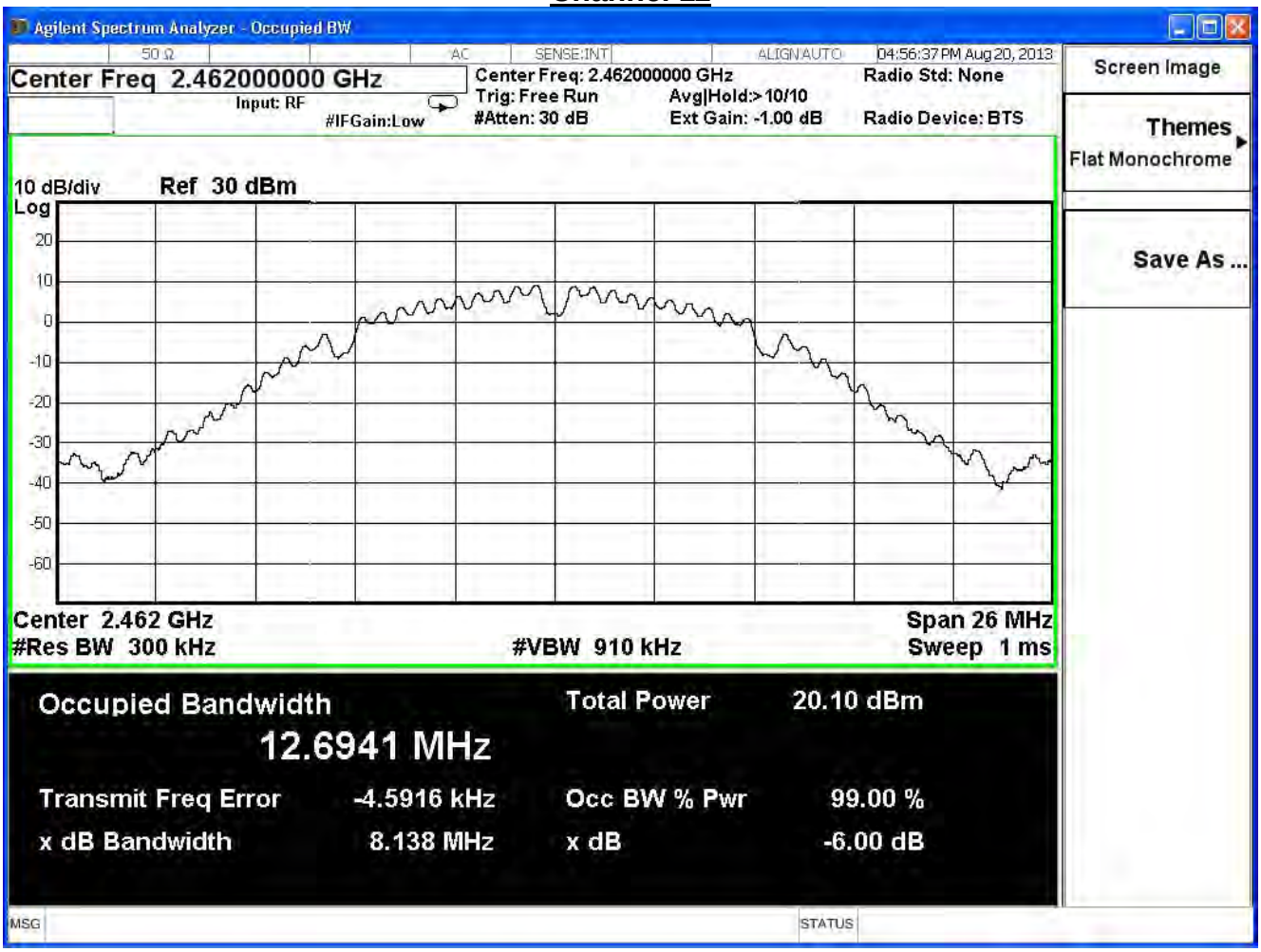
Channel 1



Channel 6


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:53:59 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.437 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
12.7740 MHz
Total Power
20.60 dBm
Transmit Freq Error
-43.2030 kHz
Occ BW % Pwr
99.00 %
x dB Bandwidth
8.142 MHz
x dB
-6.00 dB
MSG
STATUS

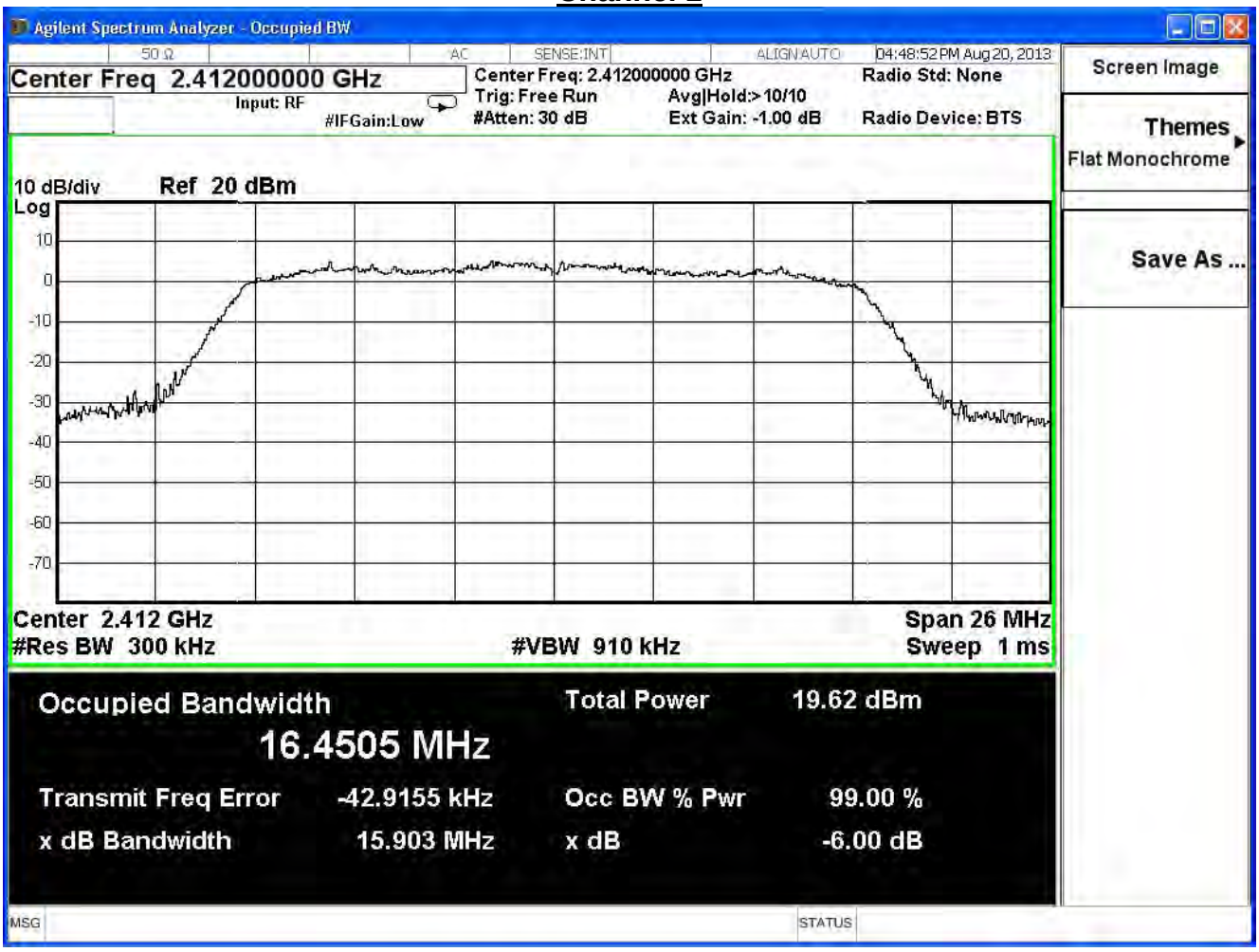
Channel 11


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:56:37 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 30 dBm
20
10
0
-10
-20
-30
-40
-50
-60
Center 2.462 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
12.6941 MHz
Total Power
20.10 dBm
Transmit Freq Error
-4.5916 kHz
Occ BW % Pwr
99.00 %
x dB Bandwidth
8.138 MHz
x dB
-6.00 dB
MSG
STATUS

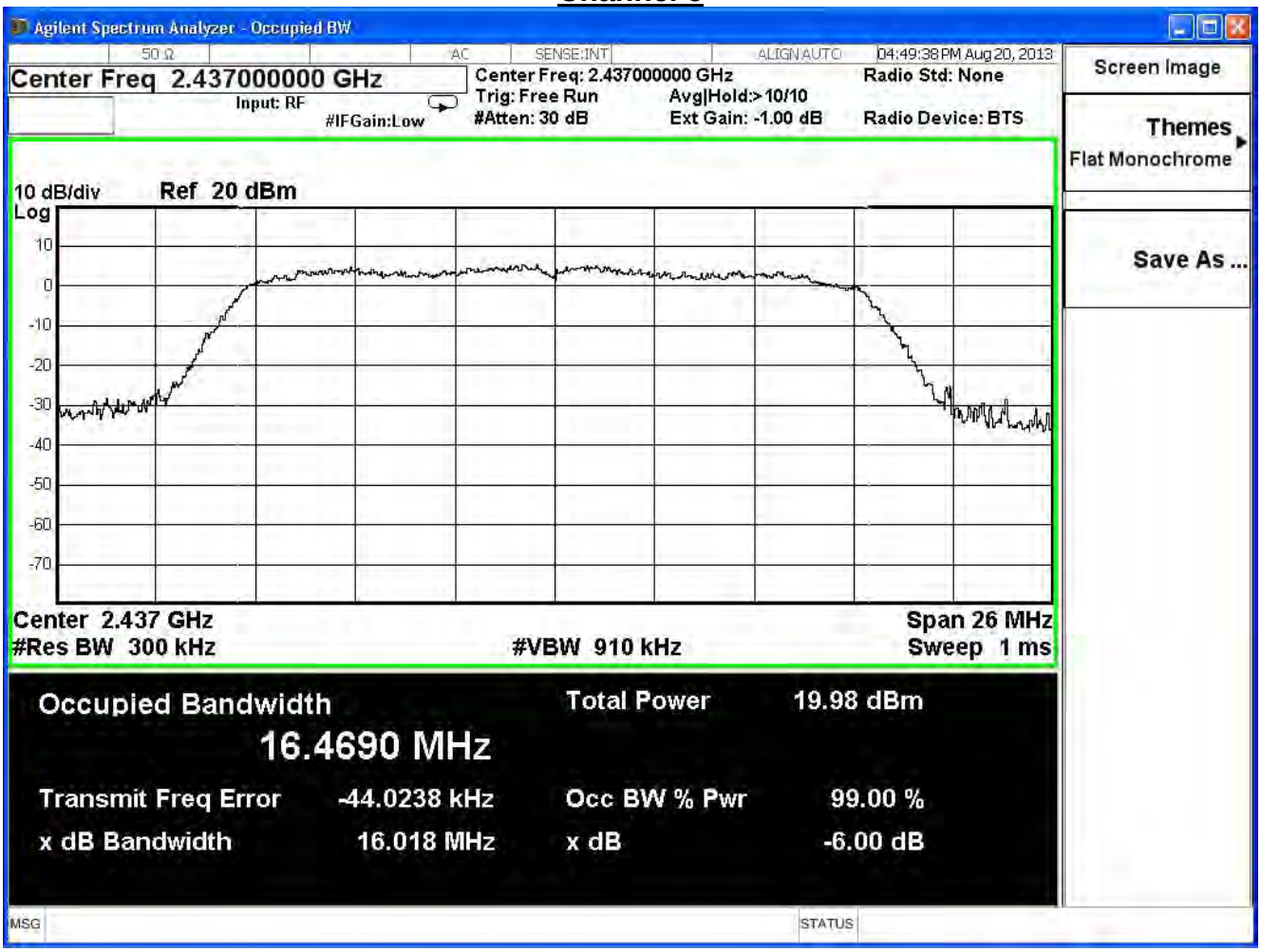
Product	LIFX Module Board		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11g, ANT 0				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Required Limit (MHz)	Result
1	2412	15.90	≧0.5	Pass
6	2437	16.02	≧0.5	Pass
11	2462	15.75	≧0.5	Pass

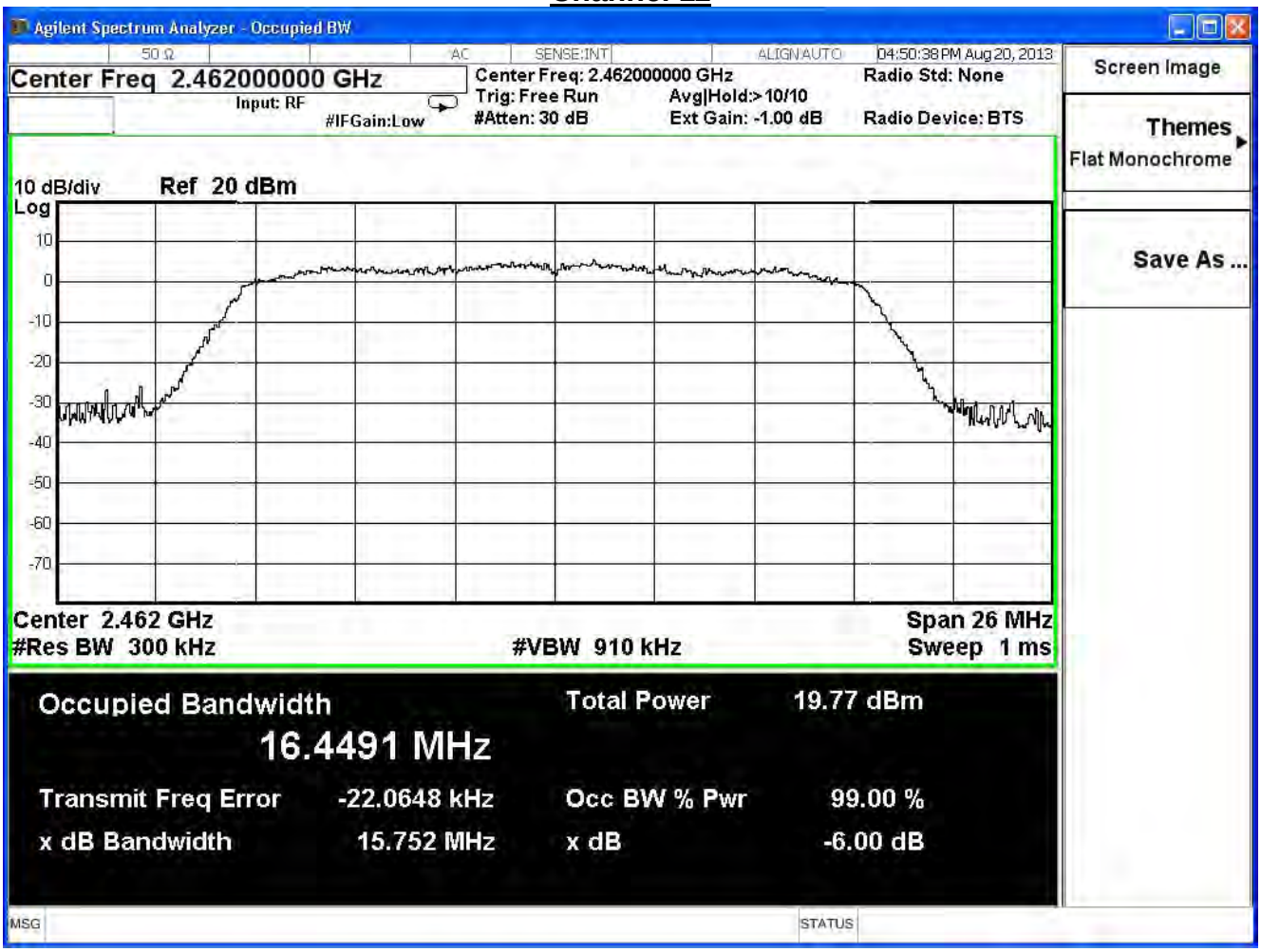
Channel 1



Channel 6


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:49:38 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.437 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
16.4690 MHz
Total Power
19.98 dBm
Transmit Freq Error
-44.0238 kHz
Occ BW % Pwr
99.00 %
x dB Bandwidth
16.018 MHz
x dB
-6.00 dB
MSG
STATUS

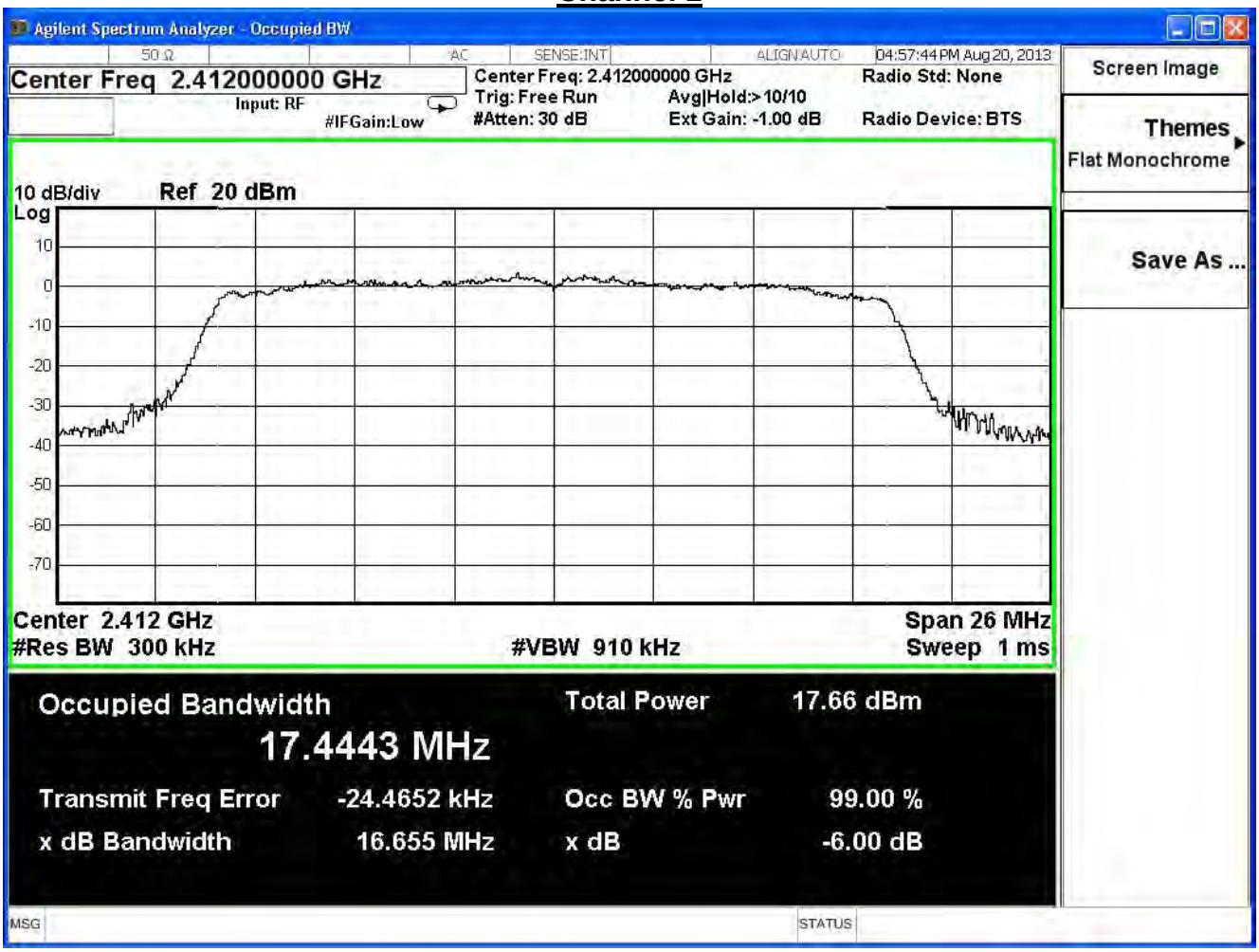
Channel 11


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:50:38 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.462 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
16.4491 MHz
Total Power
19.77 dBm
Transmit Freq Error
-22.0648 kHz
Occ BW % Pwr
99.00 %
x dB Bandwidth
15.752 MHz
x dB
-6.00 dB
MSG
STATUS

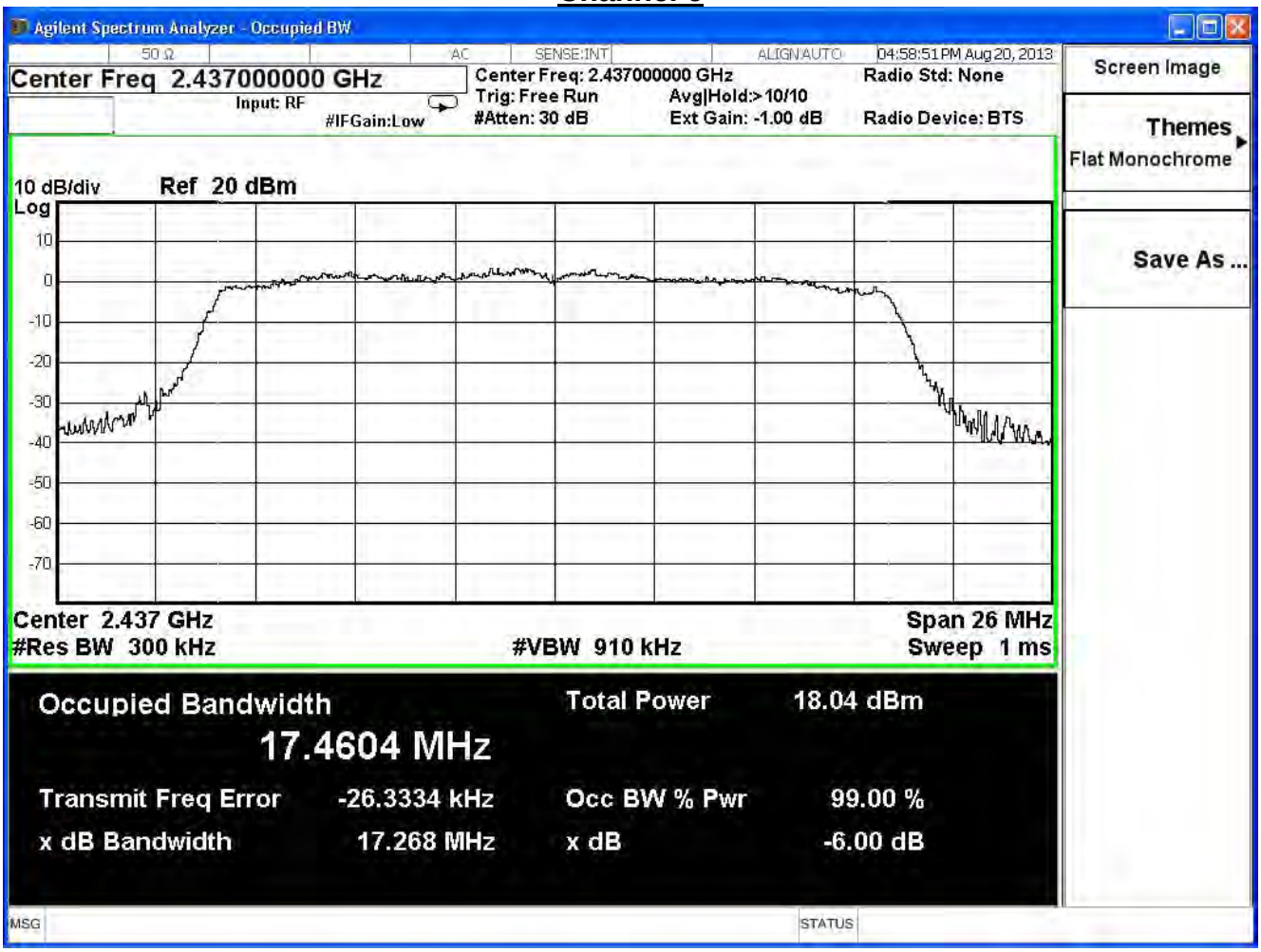
Product	LIFX Module Board		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

IEEE 802.11n (20MHz), ANT 0				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Required Limit (MHz)	Result
1	2412	16.66	≧0.5	Pass
6	2437	17.27	≧0.5	Pass
11	2462	17.10	≧0.5	Pass

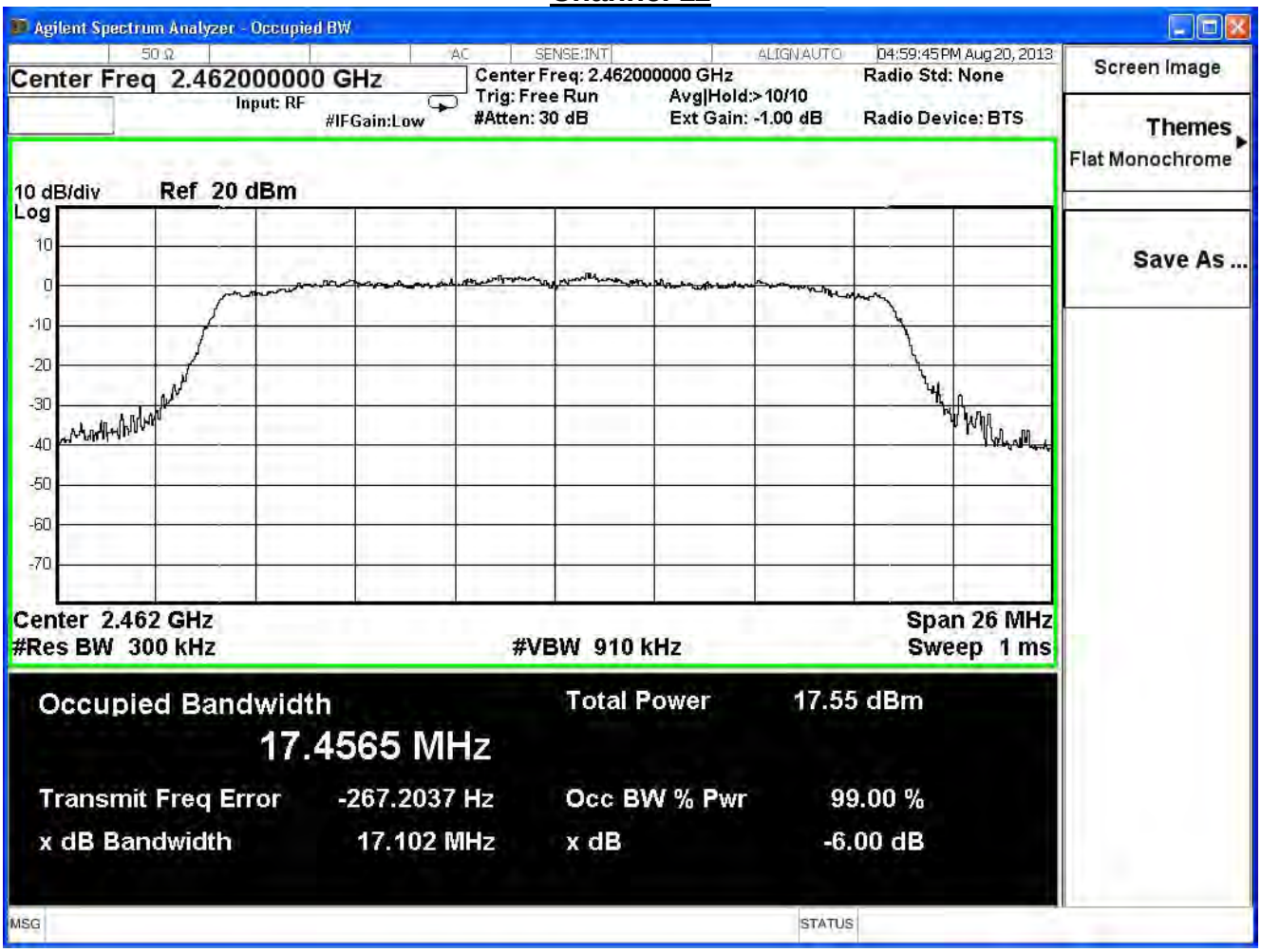
Channel 1



Channel 6


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:58:51 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.437 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
17.4604 MHz
Total Power
18.04 dBm
Transmit Freq Error
-26.3334 kHz
Occ BW % Pwr
99.00 %
x dB Bandwidth
17.268 MHz
x dB
-6.00 dB
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:59:45 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Screen Image
Themes
Flat Monochrome
Save As ...
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.462 GHz
#Res BW 300 kHz
#VBW 910 kHz
Span 26 MHz
Sweep 1 ms
Occupied Bandwidth
17.4565 MHz
Total Power
17.55 dBm
Transmit Freq Error
-267.2037 Hz
Occ BW % Pwr
99.00 %
x dB Bandwidth
17.102 MHz
x dB
-6.00 dB
MSG
STATUS

8. Power Density

8.1. Test Equipment

The following test equipment is used during the test:

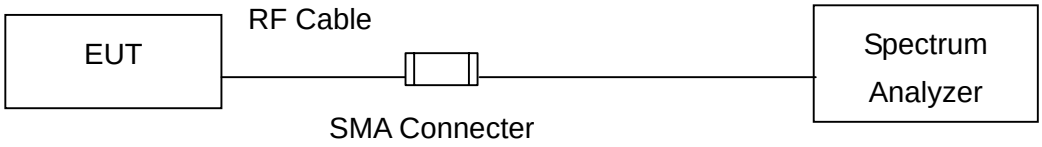
Power Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

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

8.2. Test Setup

IEEE 802.11 b / g / a / n (20M) MODE



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW= 100 kHz, Set VBW= 300 kHz, Sweep time=Auto, Set detector=Peak detector

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

8.6. Uncertainty

The measurement uncertainty is defined as ±1.27dB.

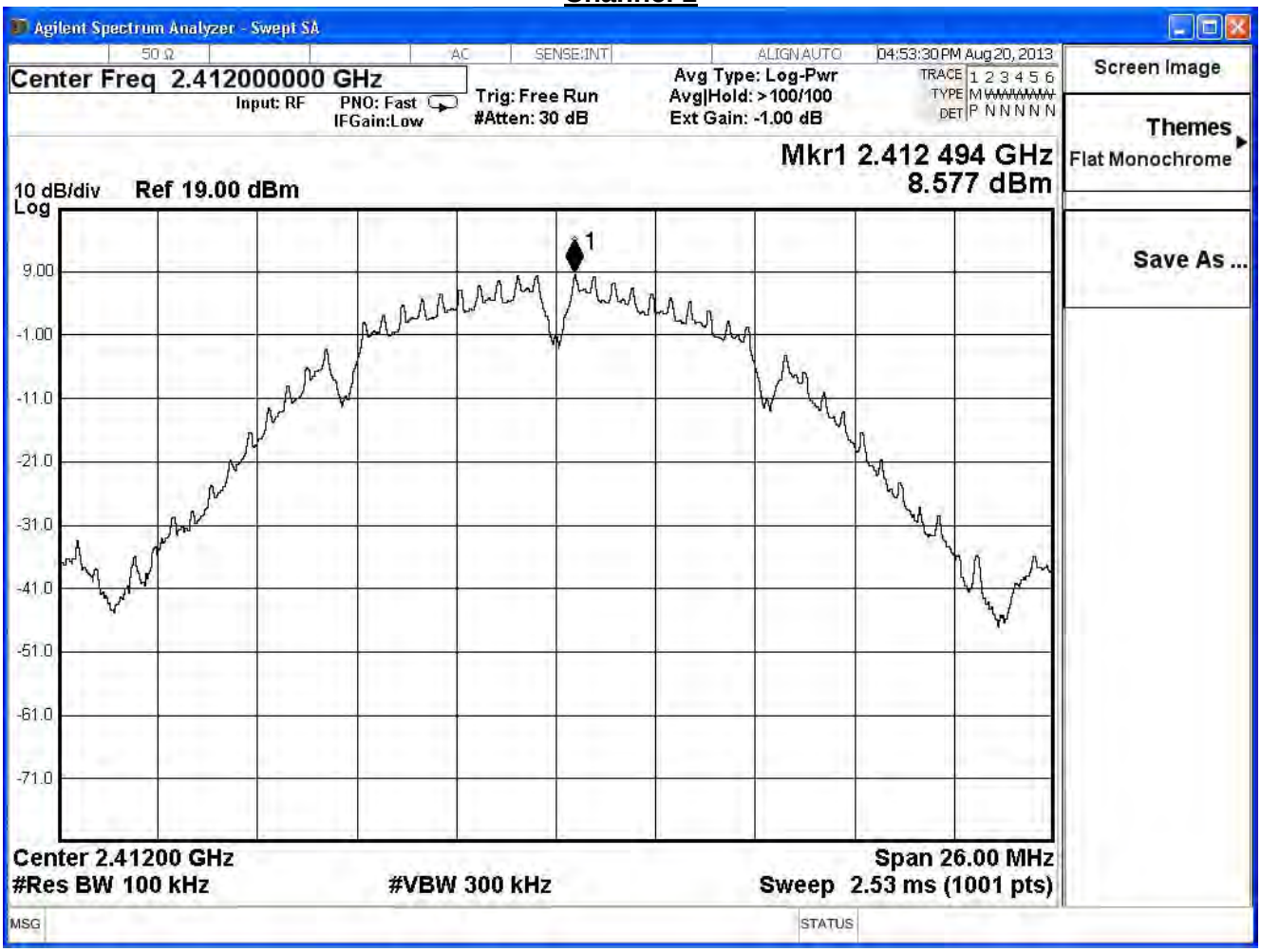
8.7. Test Result

Product	LIFX Module Board		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

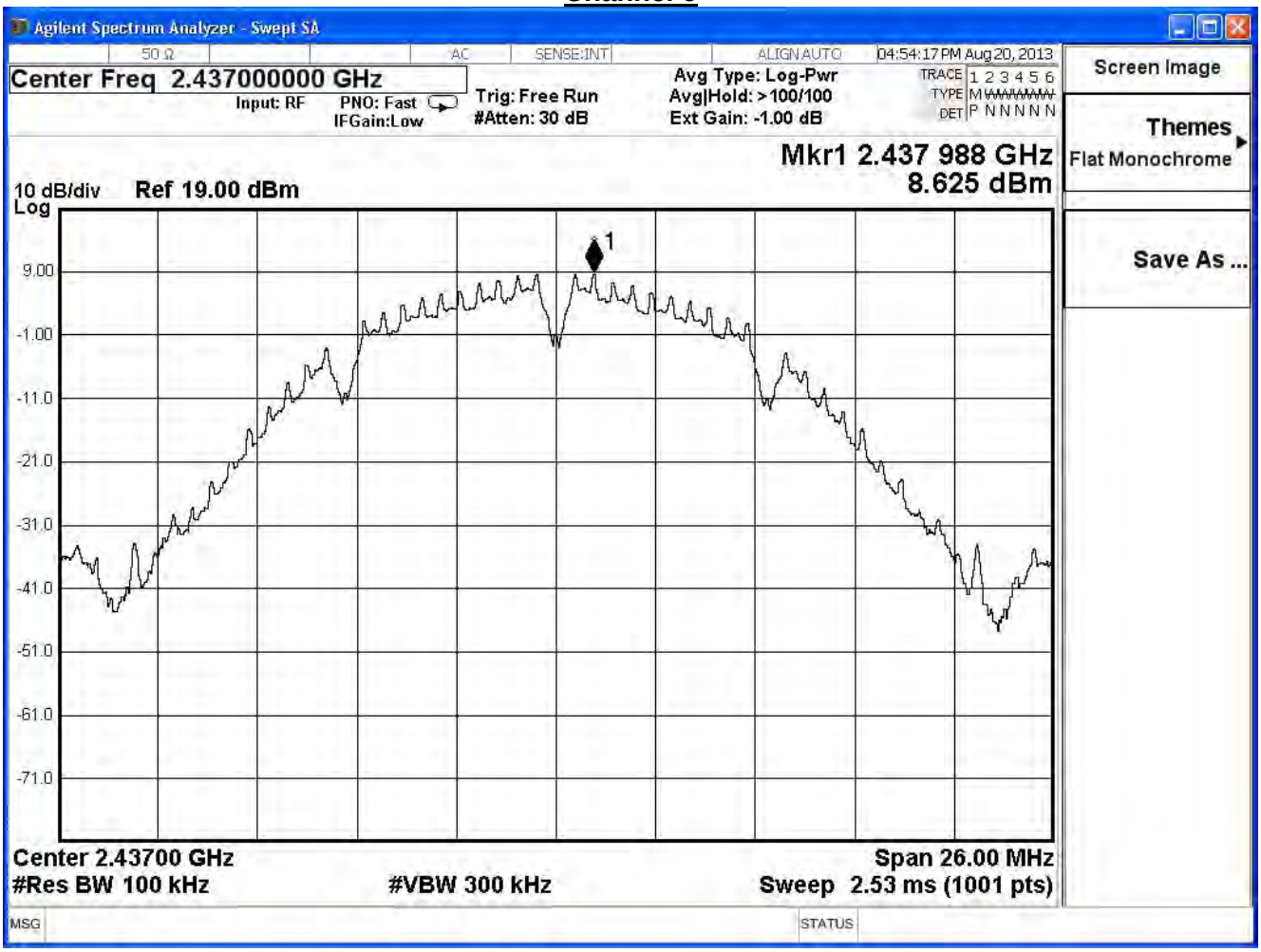
IEEE 802.11b, ANT 0					
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	8.58	-6.62	≦8	Pass
6	2437	8.63	-6.57	≦8	Pass
11	2462	8.59	-6.61	≦8	Pass

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB
Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

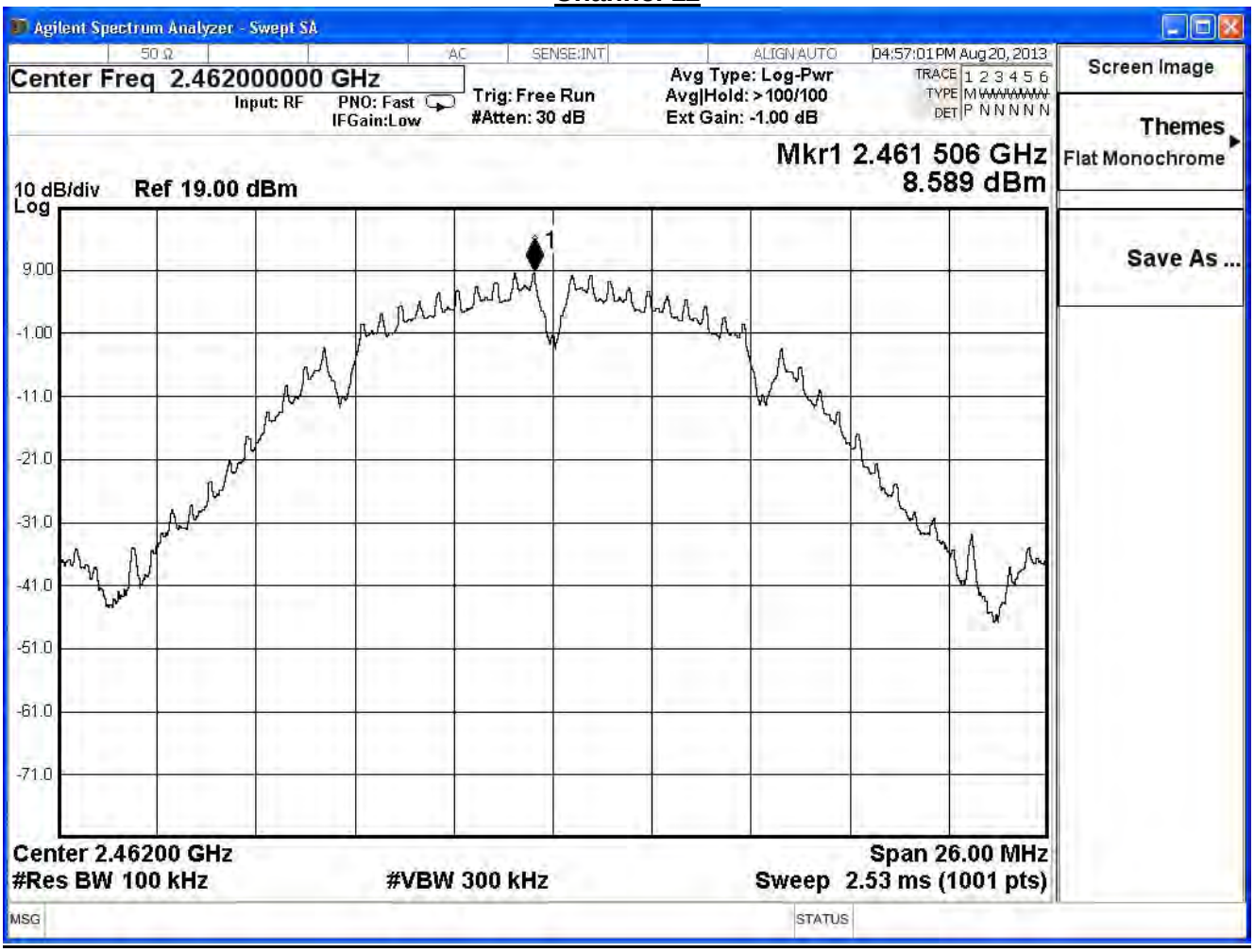
Channel 1



Channel 6


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:54:17 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.437 988 GHz
8.625 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Center 2.43700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...

Channel 11

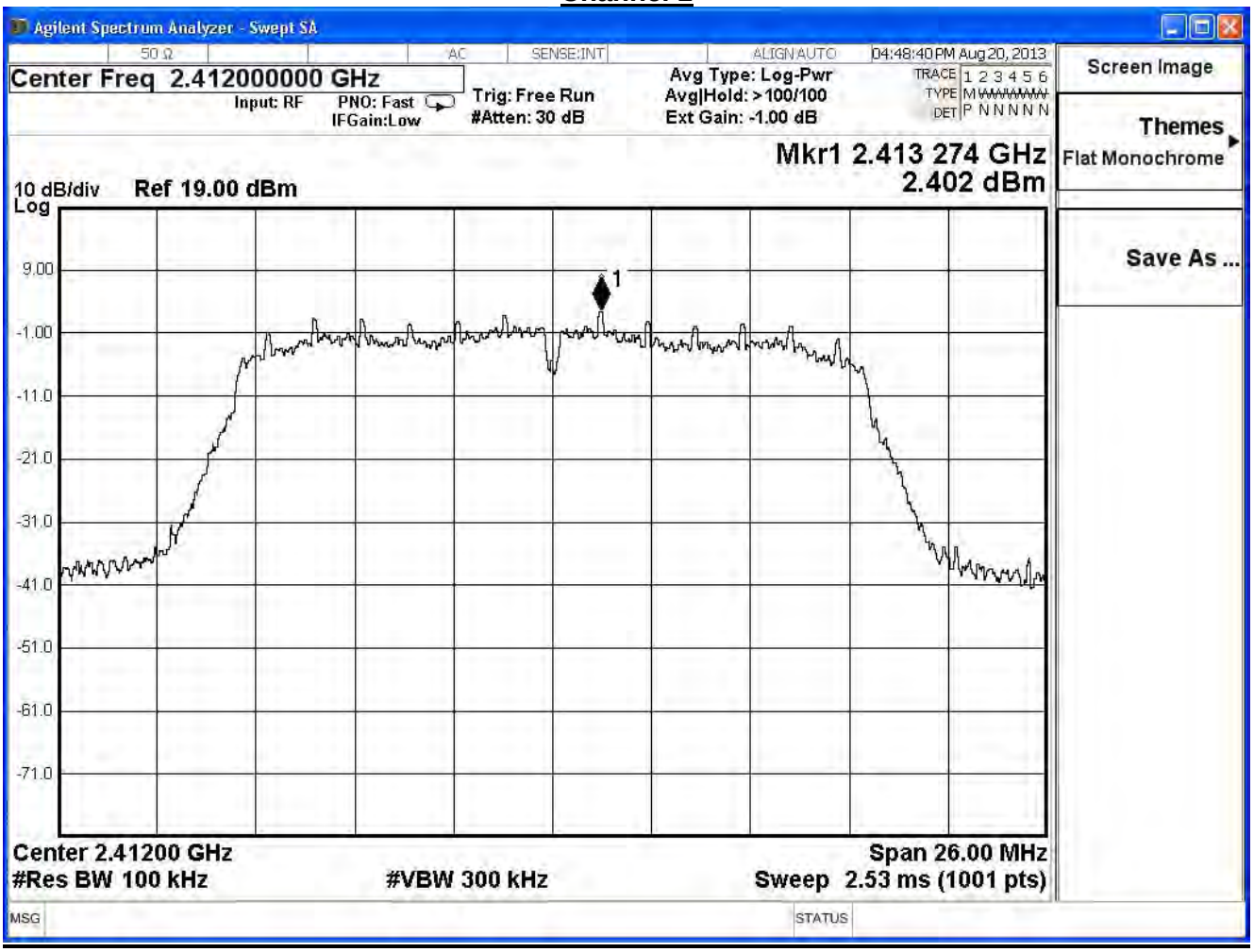

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:57:01 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.461 506 GHz
8.589 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...

Product	LIFX Module Board		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

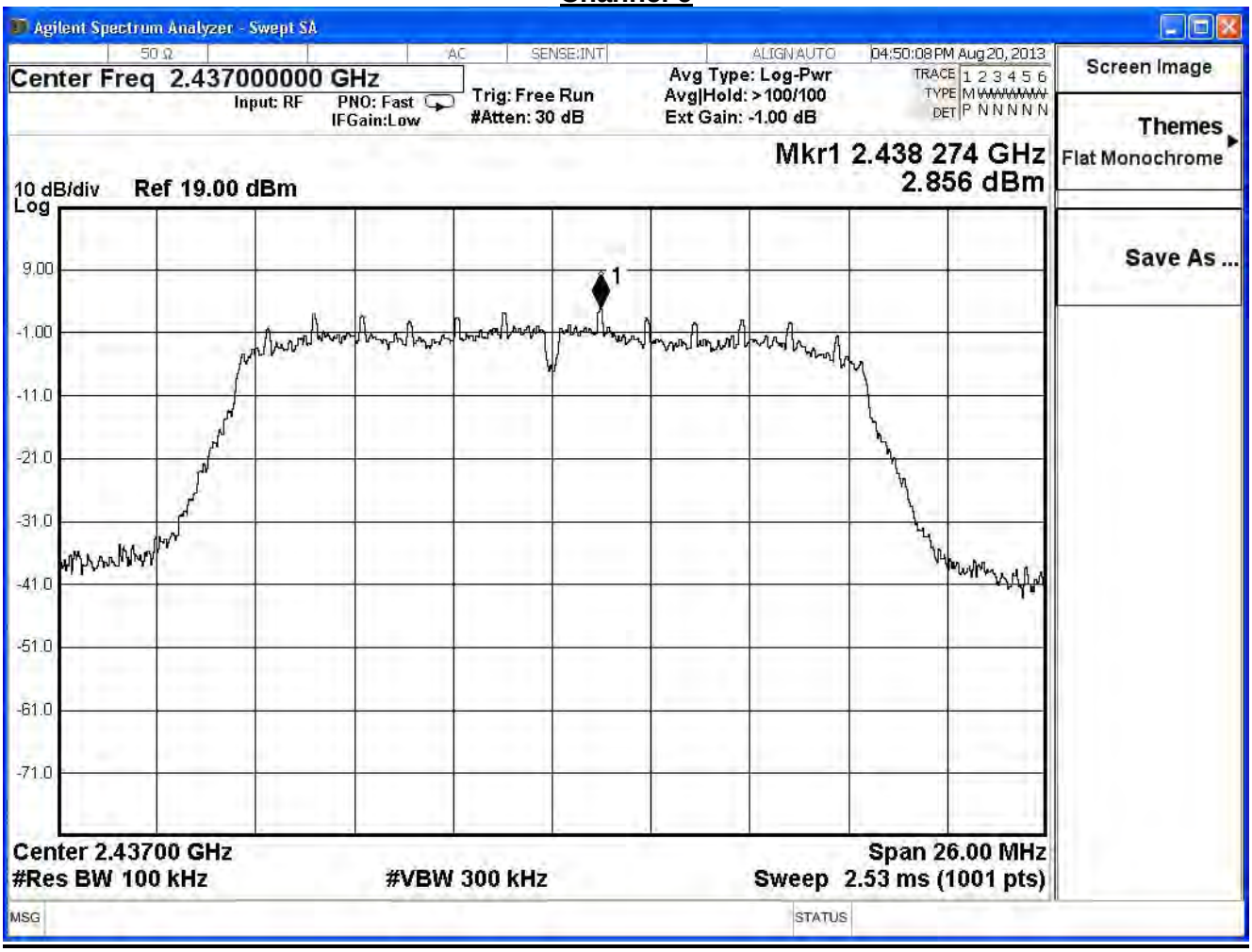
IEEE 802.11g, ANT 0					
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	2.40	-12.80	≦8	Pass
6	2437	2.86	-12.34	≦8	Pass
11	2462	2.55	-12.65	≦8	Pass

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB
Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

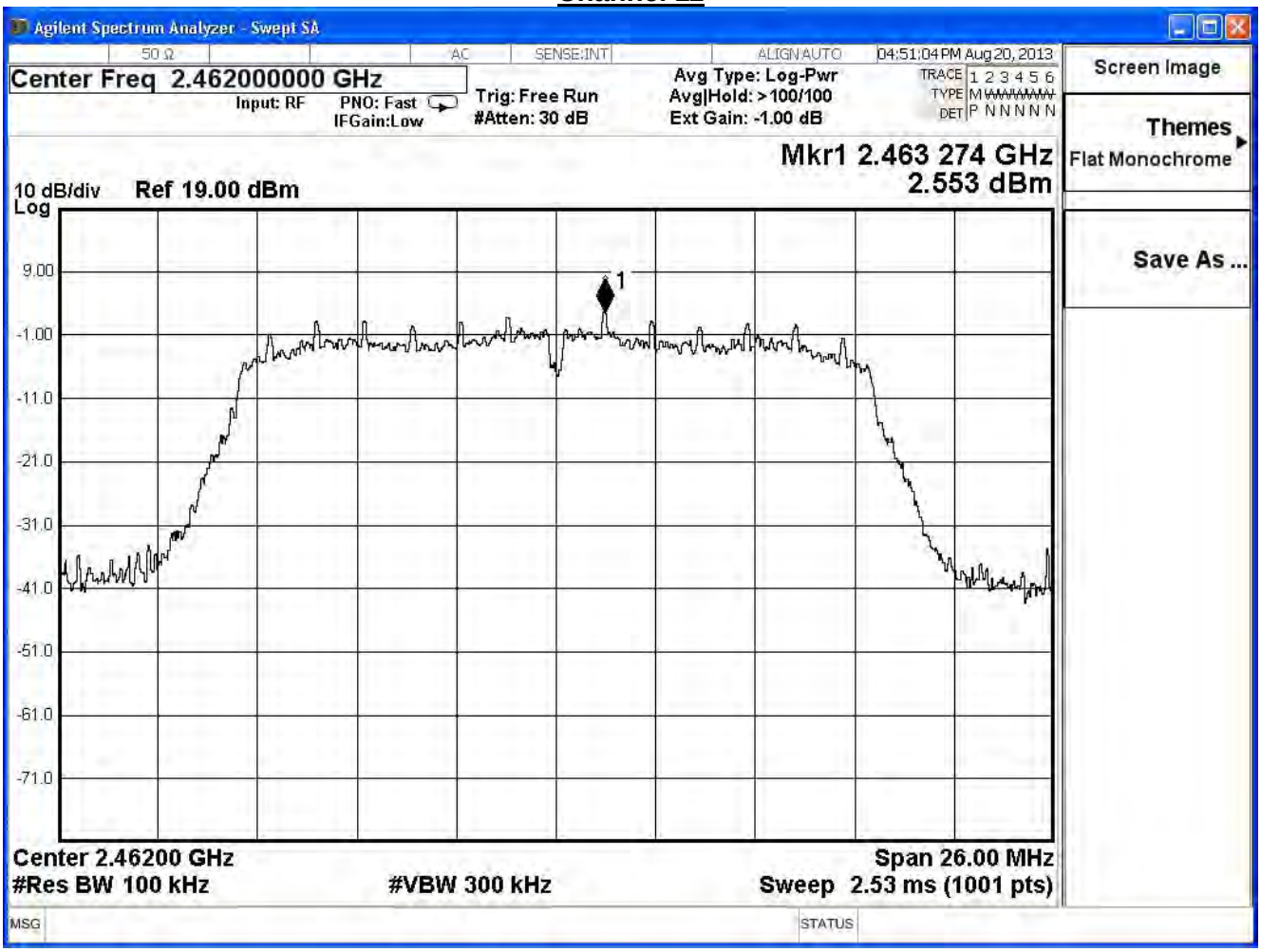
Channel 1



Channel 6


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:50:08 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 274 GHz
2.856 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Center 2.43700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...

Channel 11

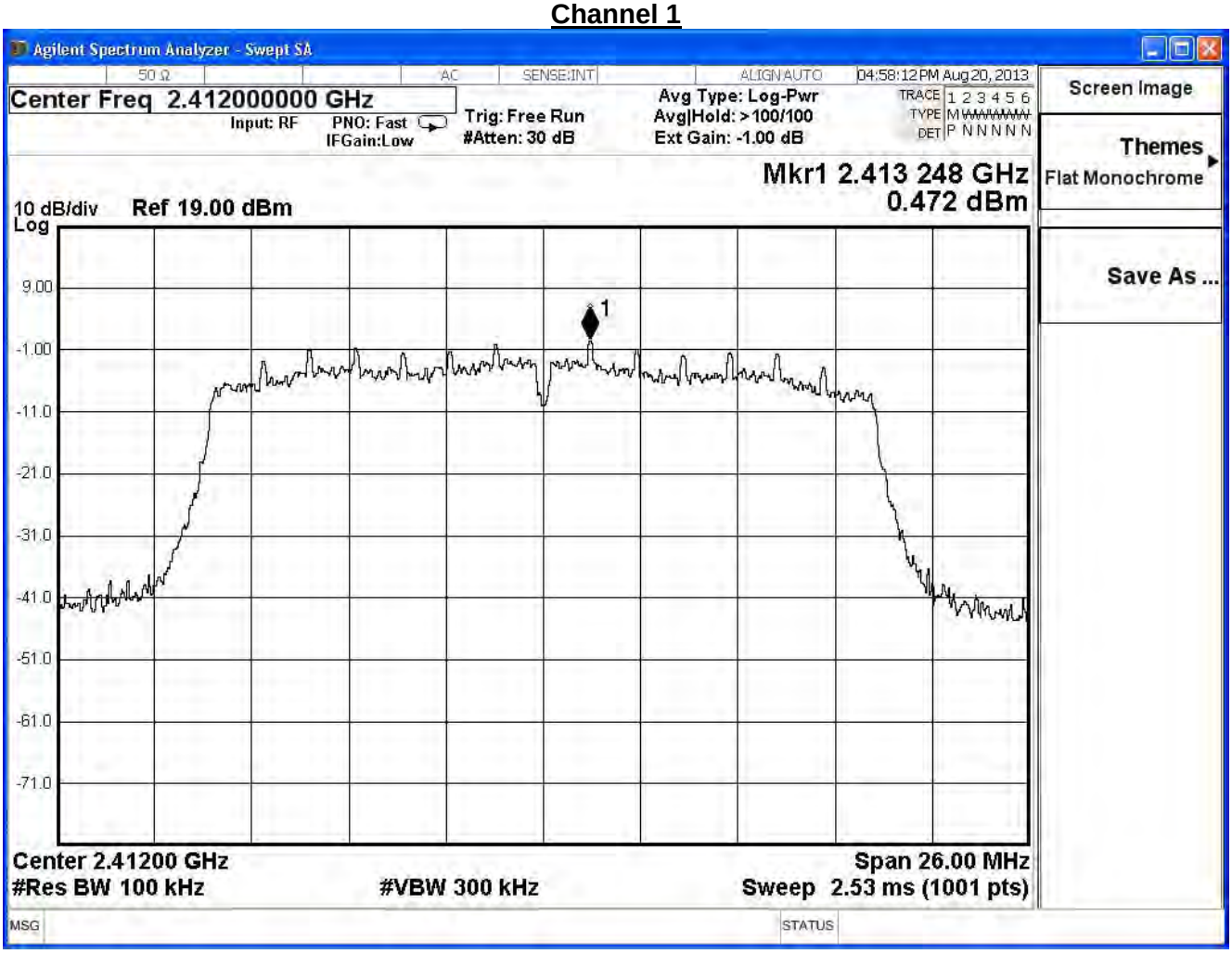

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:51:04 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 274 GHz
2.553 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...

Product	LIFX Module Board		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2013/08/20	Test Site	SR7

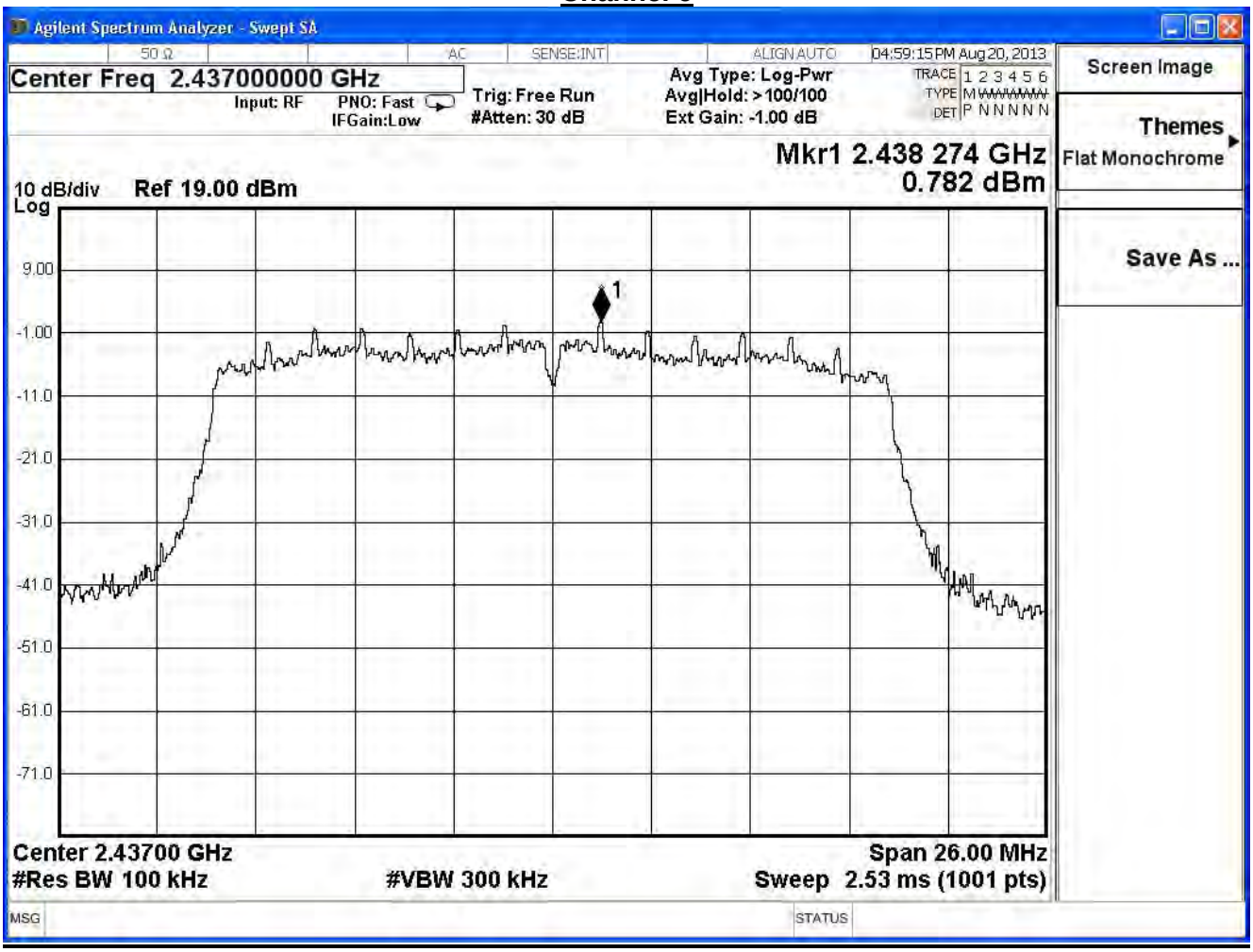
IEEE802.11n_20MHz, ANT 0					
Channel No.	Frequency (MHz)	Reading Level (dBm)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	0.47	-14.73	≦8	Pass
6	2437	0.78	-14.42	≦8	Pass
11	2462	0.72	-14.48	≦8	Pass

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB
Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

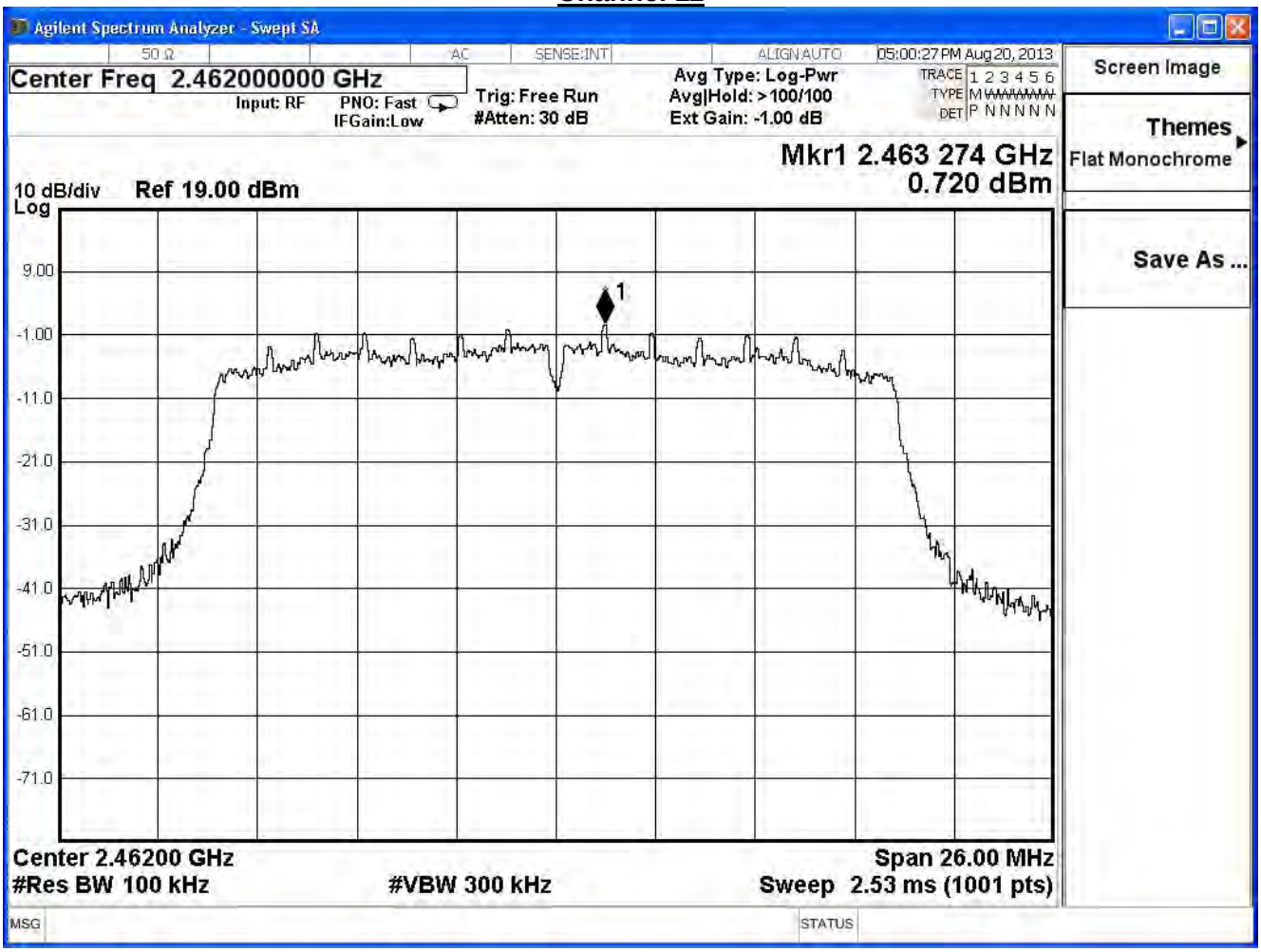
Channel 1



Channel 6


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:59:15 PM Aug 20, 2013
Center Freq 2.437000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 274 GHz
0.782 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Center 2.43700 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...

Channel 11


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:00:27 PM Aug 20, 2013
Center Freq 2.462000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: >100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 274 GHz
0.720 dBm
10 dB/div
Log
Ref 19.00 dBm
9.00
-1.00
-11.0
-21.0
-31.0
-41.0
-51.0
-61.0
-71.0
1
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 26.00 MHz
Sweep 2.53 ms (1001 pts)
MSG
STATUS
Screen Image
Themes
Flat Monochrome
Save As ...