FCC Test Report

Product Name ： High Resolution Car Recorder

Model No. ： CR56

FCC ID. ： 2AA22CR56

Applicant ： SanJet Technology Corp.

Address ： 4F, No.2, Li-Hsin 6th Rd., Hsinchu Science Park, Hsinchu, Taiwan, R.O.C

Date of Receipt ： 2013/07/25

Issued Date ： 2013/09/24

Report No. ： 137522R-RFUSP42V01

Report Version ： V1.0

Testing Laboratory
1313

Test Report Certification

Issued Date : 2013/09/24
Report No. : 137522R-RFUSP42V01

QuieTek

Product Name	:	High Resolution Car Recorder
Applicant	:	SanJet Technology Corp.
Address	:	4F, No.2, Li-Hsin 6th Rd., Hsinchu Science Park, Hsinchu, Taiwan, R.O.C
Manufacturer	:	SanJet Technology Corp.
Model No.	:	CR56
FCC ID.	:	2AA22CR56
EUT Voltage	:	DC 12V
Trade Name	:	SanJet
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 : Fonbo Fang
(Fonbo Fang / Engineering Adm. Assistant)

Tested By : Quale Tang
(Quale Tang / Senior Engineer)

Approved By : Roy Wang
(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**
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

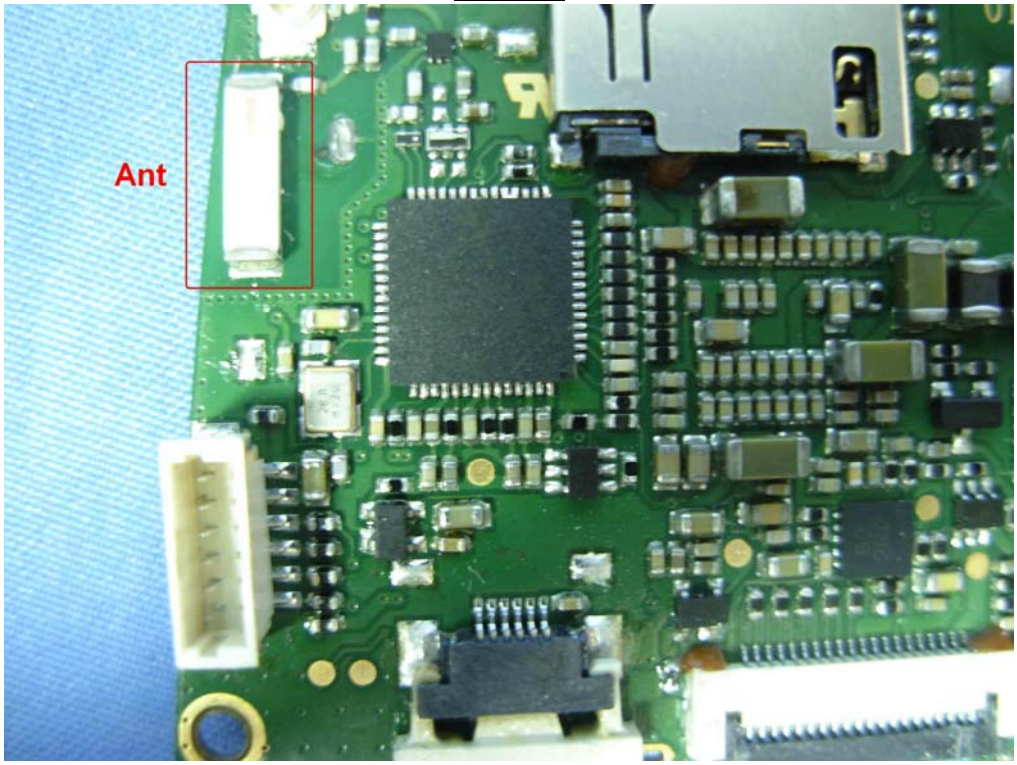
Product Name	High Resolution Car Recorder	
Product Type	WLAN (1TX, 1RX)	
Trade Name	SanJet	
Model No.	CR56	
Frequency Range/ Channel Number	IEEE 802.11b/g	2412~2462MHz / 11 Channels
	IEEE 802.11n (20MHz)	2412~2462MHz / 11 Channels
Type of Modulation	IEEE 802.11b	Direct Sequence Spread Spectrum
	IEEE 802.11g/n	Orthogonal Frequency Division Multiplexing
Data Speed	IEEE 802.11b	1, 2, 5.5, 11Mbps
	IEEE 802.11g	6, 9, 18, 24, 36, 48,54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS 7 and bandwidth defined in 802.11n
Antenna Gain	0.5dBi	
Antenna Type	Chip Antenna	

Component	
USB Cable	Shielded, 0.9m, one ferrite core bonded.
Car Charger	JT-DC5V1.0A I/P: 12V-24V O/P: DC 5V1A

ANT-TX / RX & Bandwidth

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

1TX1RX



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 a High Resolution Car Recorder including 2.4GHz b/g/n transmitting and receiving function.
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
3. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 137522R-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

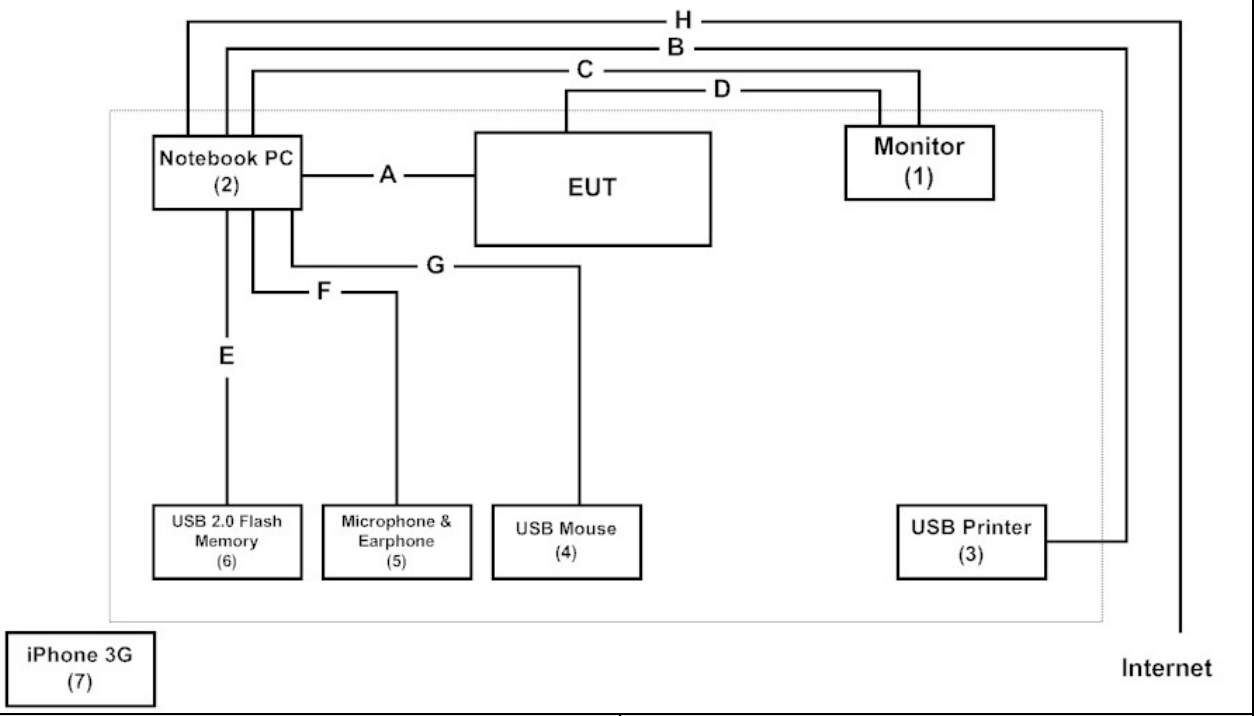
1.4. Tested System Details

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	Monitor	DELL	U2410f	082WXD-72872-16R-0W2L	DoC	Non-Shielded, 1.8m
2	Notebook PC	DELL	PP26L	66TLZ1S	DoC	Non-Shielded, 1.8m
3	USB Printer	HP	SX-MI	N/A	DoC	--
4	USB Mouse	Logitech	M-UV83	LZE35005997	DoC	--
5	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
6	USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--
7	iPhone 3G	Apple	A1241	87927AP3Y7H	DoC	--

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	USB Cable (EUT)	Shielded, 0.9m, one ferrite core bonded.
B	USB Printer Cable	Shielded, 1.5m
C	VGA Cable	Shielded, 1.2m
D	HDMI Cable	Shielded, 1.5m
E	USB Cable	Shielded, 0.9m
F	Microphone & Earphone Cable	Non-Shielded, 1.8m
G	USB Mouse Cable	Shielded, 1.8m
H	LAN Cable	Non-Shielded, 3.0m

1.6. EUT Exercise Software

1	Test system is in accord with EUT user manual (refer to 1.5 configuration of tested system)
2	Turn on the power of all equipment.
3	Execute the program “Teknigne_rf_tester_1_2_omsi” command to control the EUT.
4	Configure the test mode, the test channel, and the data rate.
5	Press “Start TX” to start the continuous transmitting.
6	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 (DSSS)	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 (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test (DSSS)	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 (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (DSSS)	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 (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

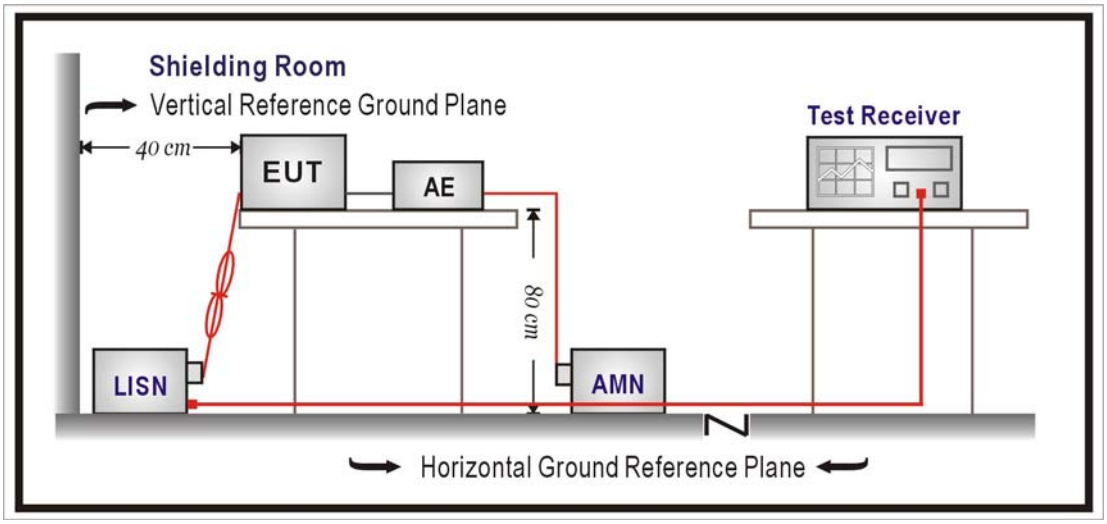
The following test equipments are used during the test:

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 Jan. 2012 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

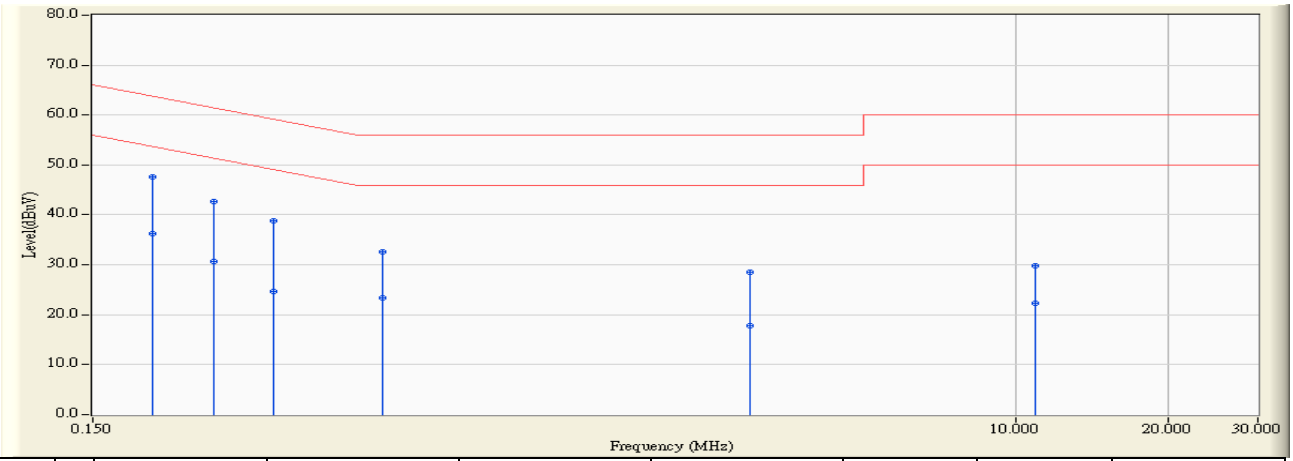
According to FCC Part 15 Subpart C Paragraph 15.207: 2012

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	**Time : 2013/08/28 - 14:10**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-3_0813 - Line1	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note :**

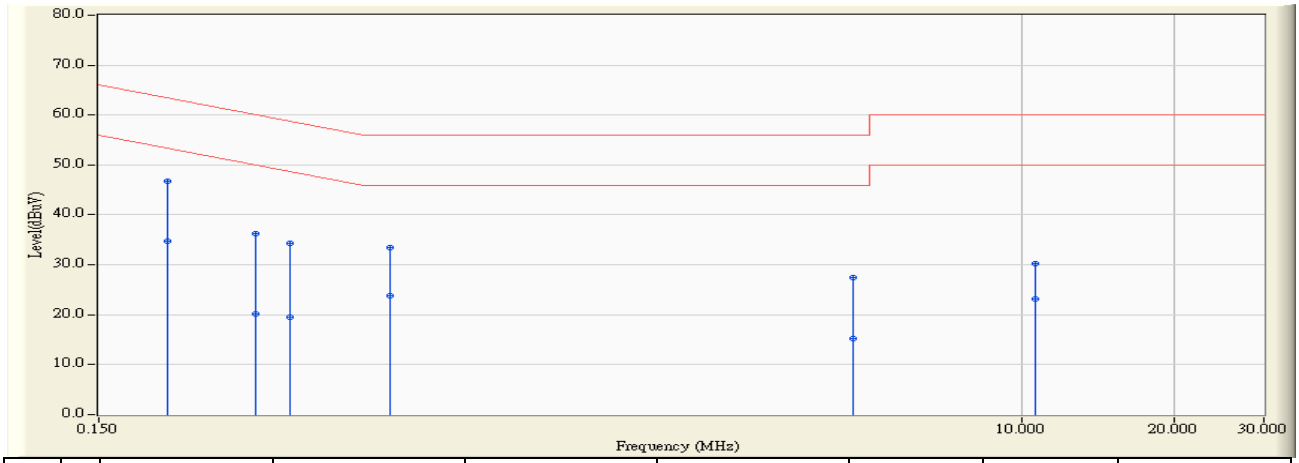


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.197	9.655	37.960	47.615	-16.126	63.741	QUASIPEAK
2		0.197	9.655	26.630	36.285	-17.456	53.741	AVERAGE
3		0.259	9.693	33.060	42.753	-18.698	61.451	QUASIPEAK
4		0.259	9.693	20.930	30.623	-20.828	51.451	AVERAGE
5		0.341	9.742	29.070	38.812	-20.357	59.169	QUASIPEAK
6		0.341	9.742	14.850	24.592	-24.577	49.169	AVERAGE
7		0.560	9.844	22.700	32.544	-23.456	56.000	QUASIPEAK
8		0.560	9.844	13.630	23.474	-22.526	46.000	AVERAGE
9		2.974	10.010	18.590	28.600	-27.400	56.000	QUASIPEAK
10		2.974	10.010	7.740	17.750	-28.250	46.000	AVERAGE
11		10.927	10.110	19.640	29.750	-30.250	60.000	QUASIPEAK
12		10.927	10.110	12.220	22.330	-27.670	50.000	AVERAGE

Note:

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

Site : SR3	**Time : 2013/08/28 - 14:13**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-3_0813 - Line2	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : Tx**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.205	9.660	37.190	46.850	-16.568	63.418	QUASIPEAK
2		0.205	9.660	25.020	34.680	-18.738	53.418	AVERAGE
3		0.306	9.709	26.510	36.219	-23.852	60.072	QUASIPEAK
4		0.306	9.709	10.360	20.069	-30.002	50.072	AVERAGE
5		0.357	9.742	24.520	34.262	-24.535	58.797	QUASIPEAK
6		0.357	9.742	9.740	19.482	-29.315	48.797	AVERAGE
7		0.564	9.835	23.710	33.545	-22.455	56.000	QUASIPEAK
8		0.564	9.835	13.950	23.785	-22.215	46.000	AVERAGE
9		4.634	10.060	17.480	27.540	-28.460	56.000	QUASIPEAK
10		4.634	10.060	5.250	15.310	-30.690	46.000	AVERAGE
11		10.591	10.160	20.180	30.340	-29.660	60.000	QUASIPEAK
12		10.591	10.160	13.060	23.220	-26.780	50.000	AVERAGE

Note:

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

3. Peak Power Output

3.1. Test Equipment

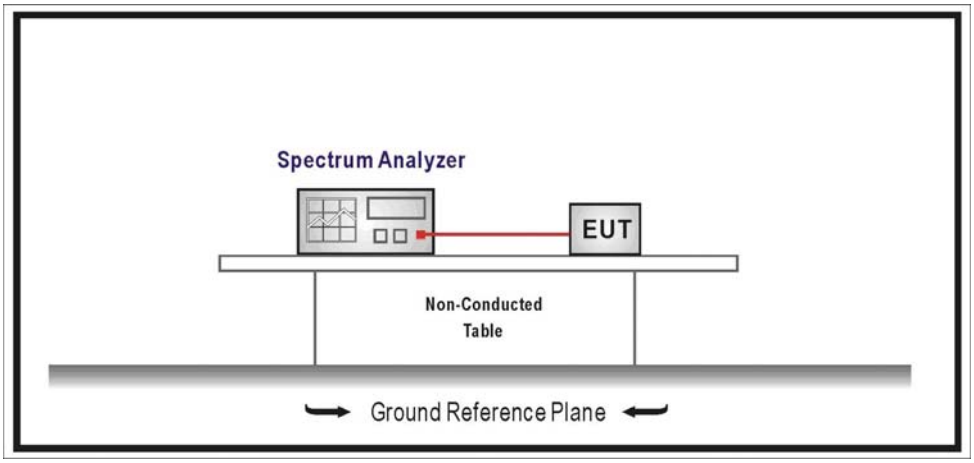
The following test equipments are used during the test:

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 Jan. 2012 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	High Resolution Car Recorder		
Test Item	Peak Power Output		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

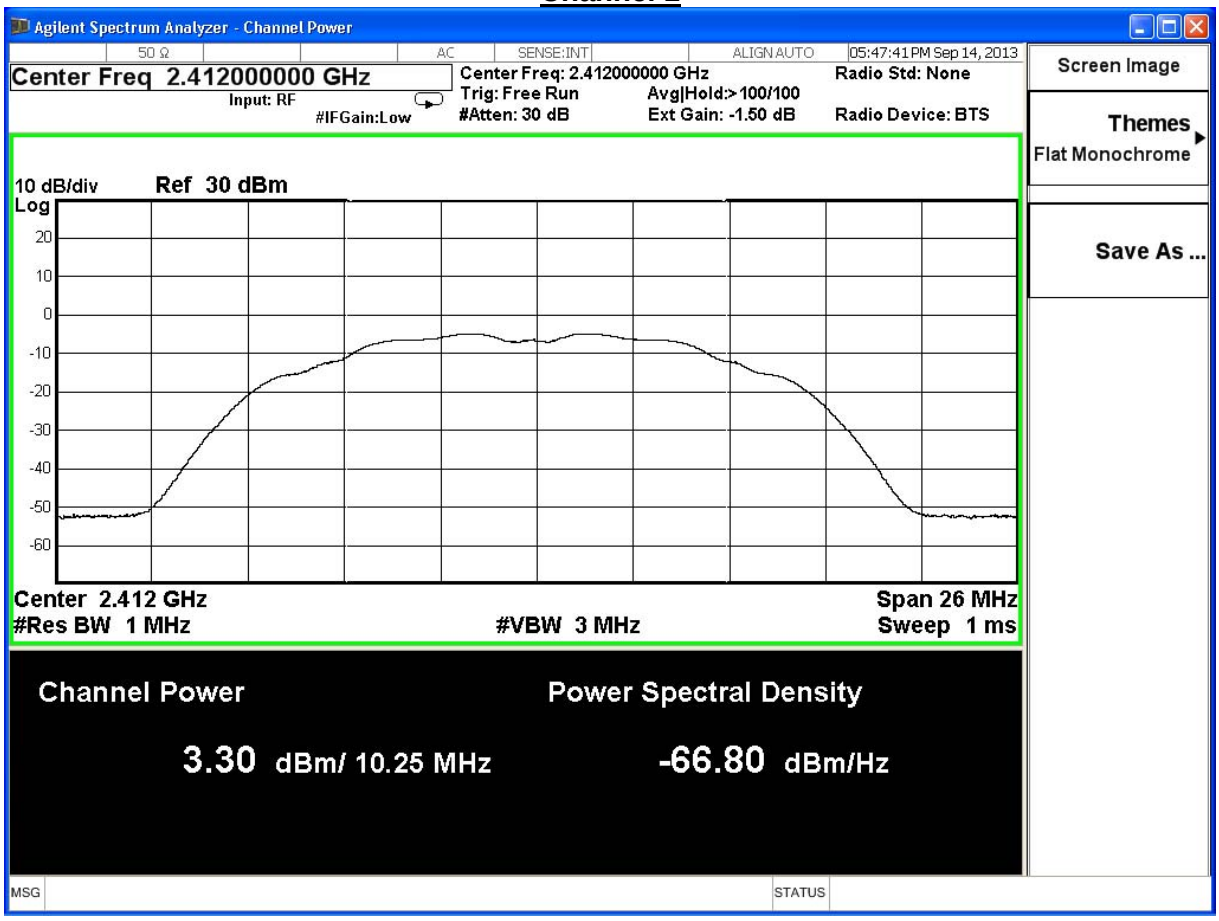
IEEE 802.11b				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	3.30	≦30	Pass
6	2437	3.22	≦30	Pass
11	2462	3.48	≦30	Pass

The worst emission of data rate is1Mbps.

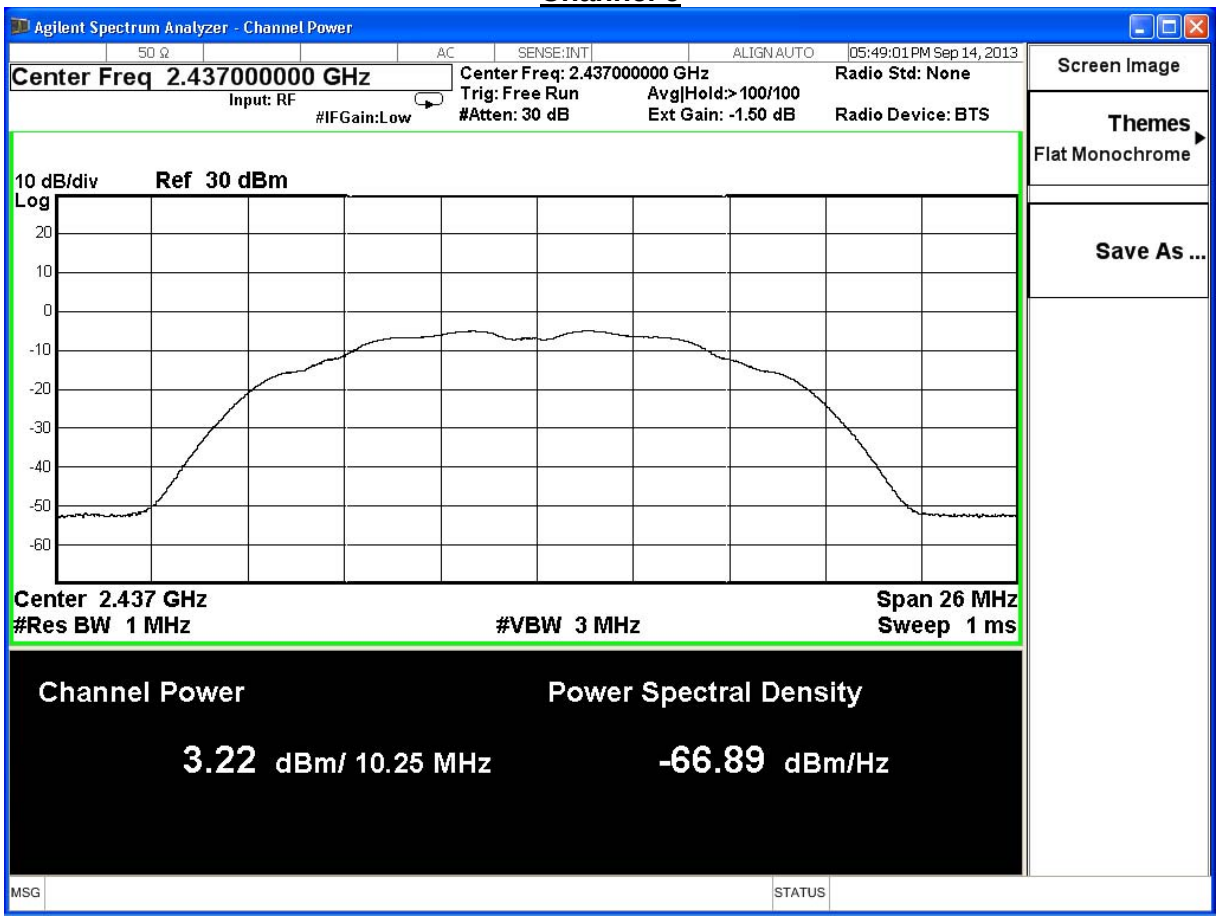
Peak Power Output Value (dBm)						
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1	2	5.5	11	
1	2412	3.30	--	--	--	1 Watt=30dBm
6	2437	3.22	--	--	--	1 Watt=30dBm
11	2462	3.48	3.28	3.04	2.82	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

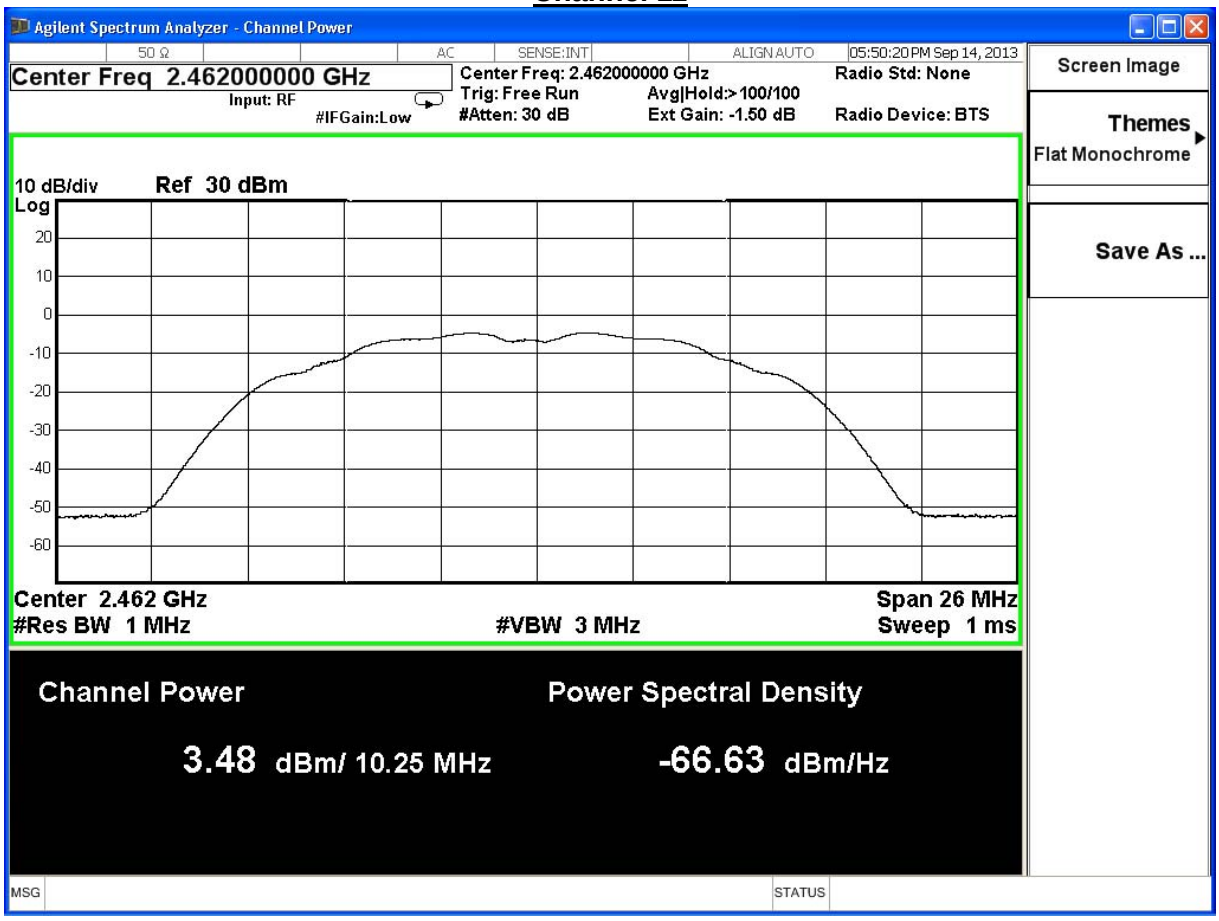
Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:47:41 PM Sep 14, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
3.30 dBm/ 10.25 MHz
Power Spectral Density
-66.80 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:49:01 PM Sep 14, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
3.22 dBm/ 10.25 MHz
Power Spectral Density
-66.89 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:50:20 PM Sep 14, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
3.48 dBm/ 10.25 MHz
Power Spectral Density
-66.63 dBm/Hz
MSG
STATUS

Product	High Resolution Car Recorder		
Test Item	Peak Power Output		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

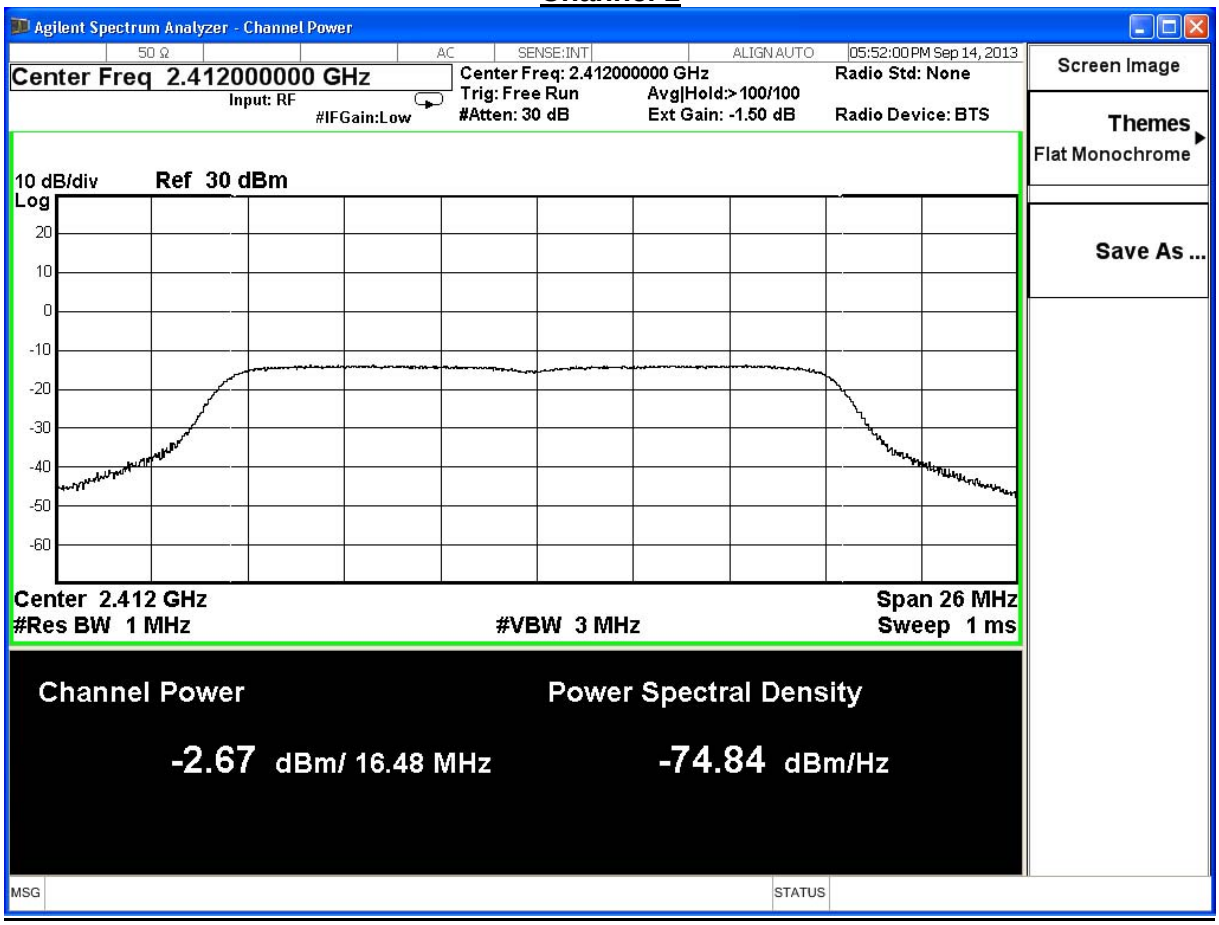
IEEE 802.11g				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	-2.67	≦30	Pass
6	2437	-2.44	≦30	Pass
11	2462	-2.09	≦30	Pass

The worst emission of data rate is 6Mbps.

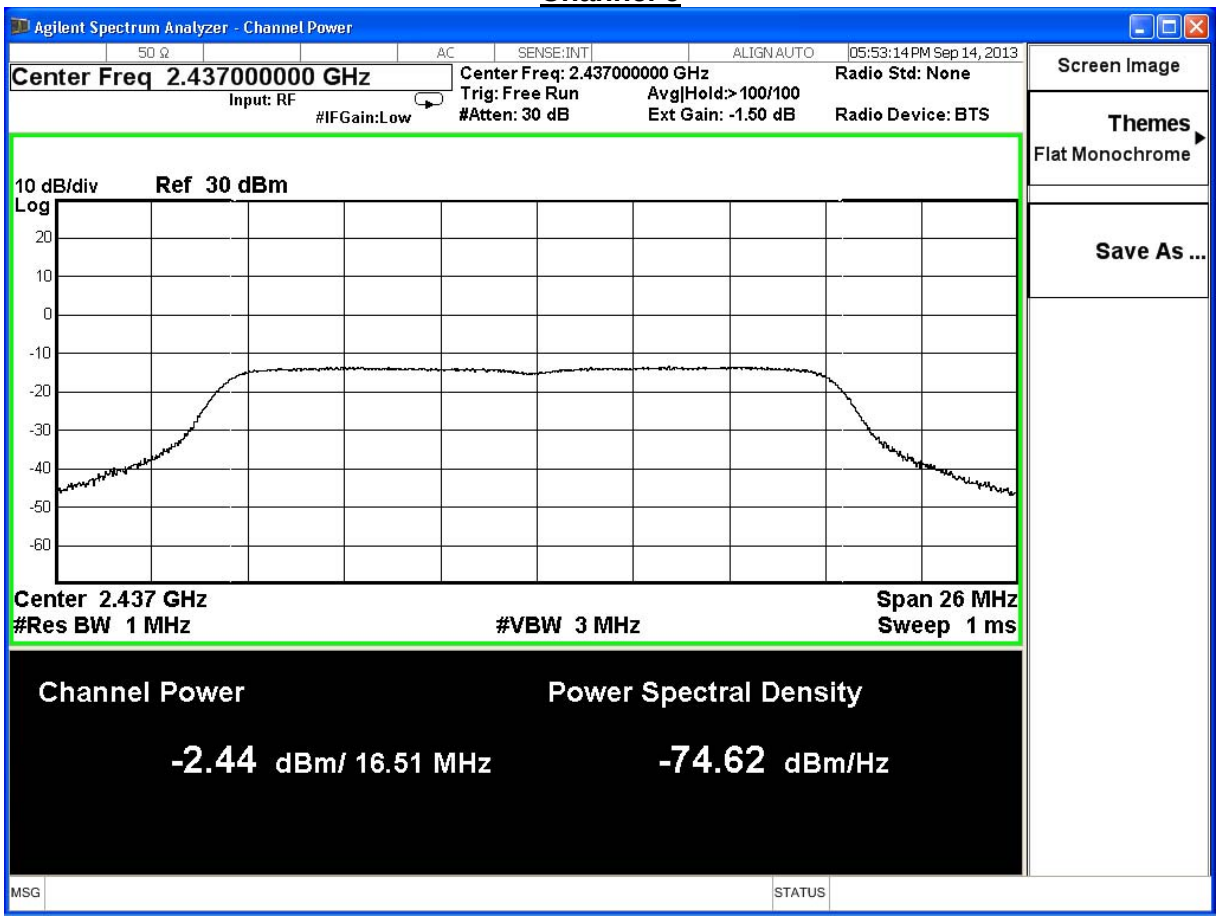
Peak Power Output (dBm)								
Channel No	Frequency (MHz)	Data Rate						Required Limit
		12	18	24	36	48	54	
1	2412	-2.67	--	--	--	--	--	1 Watt=30dBm
6	2437	-2.44	--	--	--	--	--	1 Watt=30dBm
11	2462	-2.09	-2.20	-2.33	-2.57	-2.79	-2.91	1 Watt=30dBm

Note: Measure Level =Reading value + cable loss

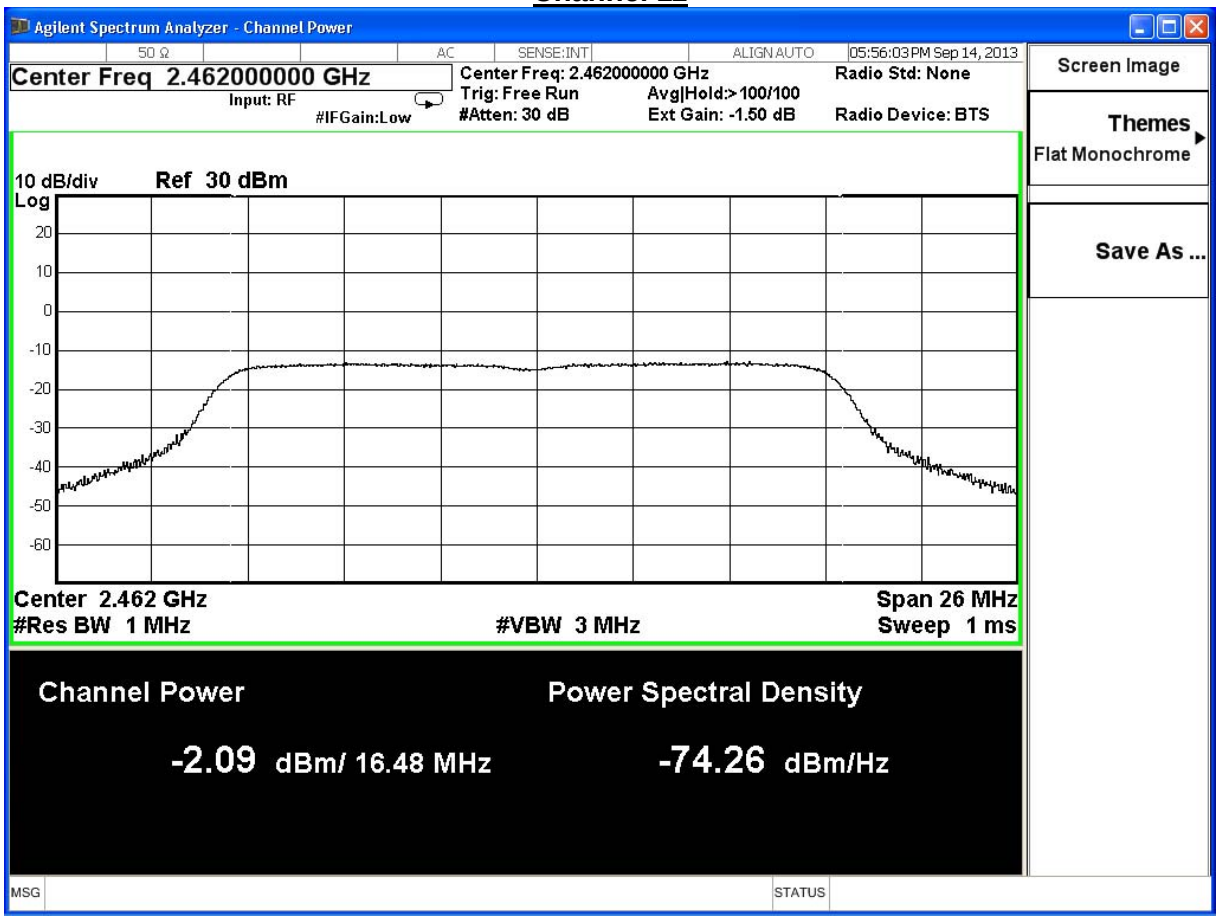
Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:52:00 PM Sep 14, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 30 dB
Ext Gain: -1.50 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
-2.67 dBm/ 16.48 MHz
Power Spectral Density
-74.84 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:53:14 PM Sep 14, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
-2.44 dBm/ 16.51 MHz
Power Spectral Density
-74.62 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:56:03 PM Sep 14, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 30 dB
Ext Gain: -1.50 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
-2.09 dBm/ 16.48 MHz
Power Spectral Density
-74.26 dBm/Hz
MSG
STATUS

Product	High Resolution Car Recorder		
Test Item	Peak Power Output		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

IEEE 802.11n 20MHz (ANT 0)

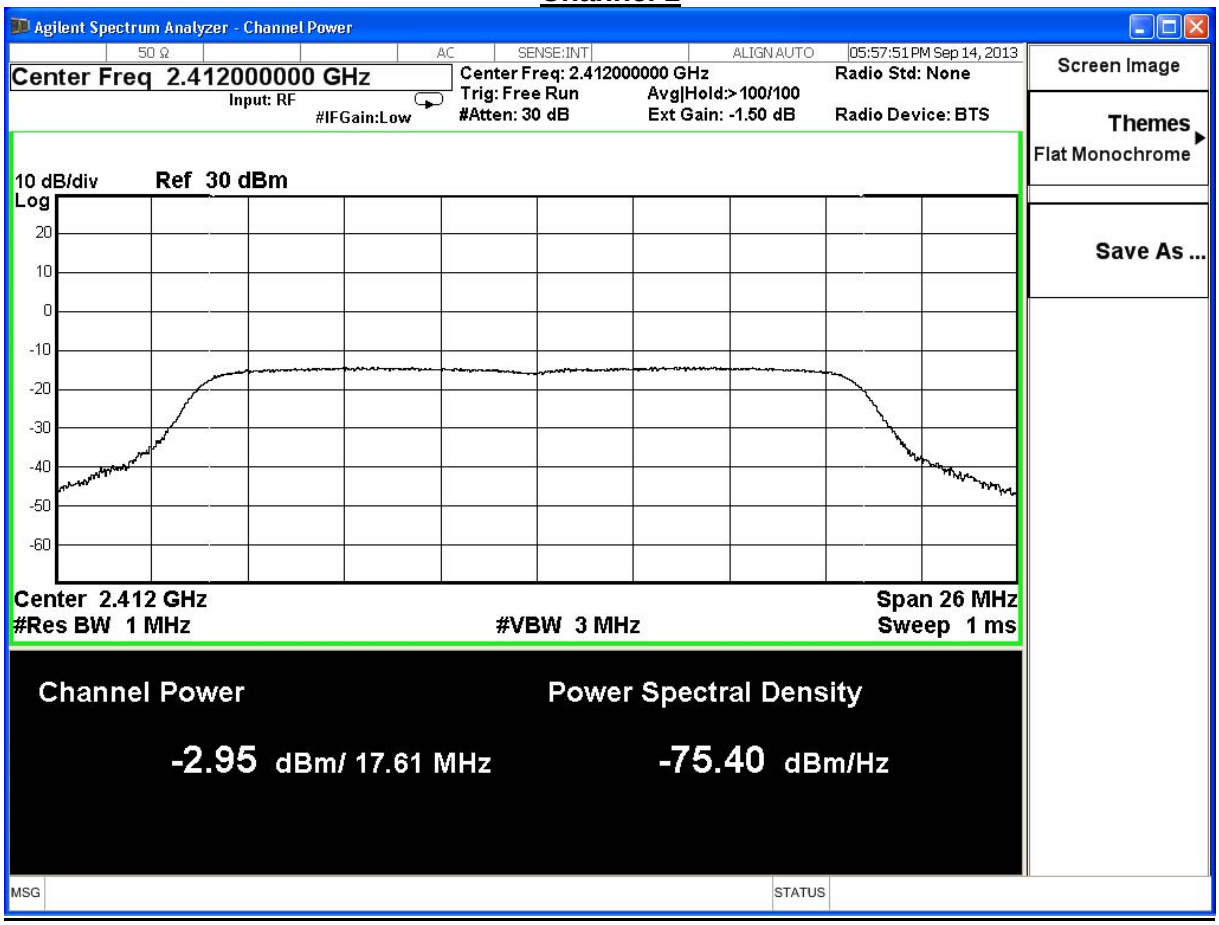
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	-2.95	≦30	Pass
6	2437	-2.74	≦30	Pass
11	2462	-2.32	≦30	Pass

The worst emission of data rate is 19.5 Mbps.

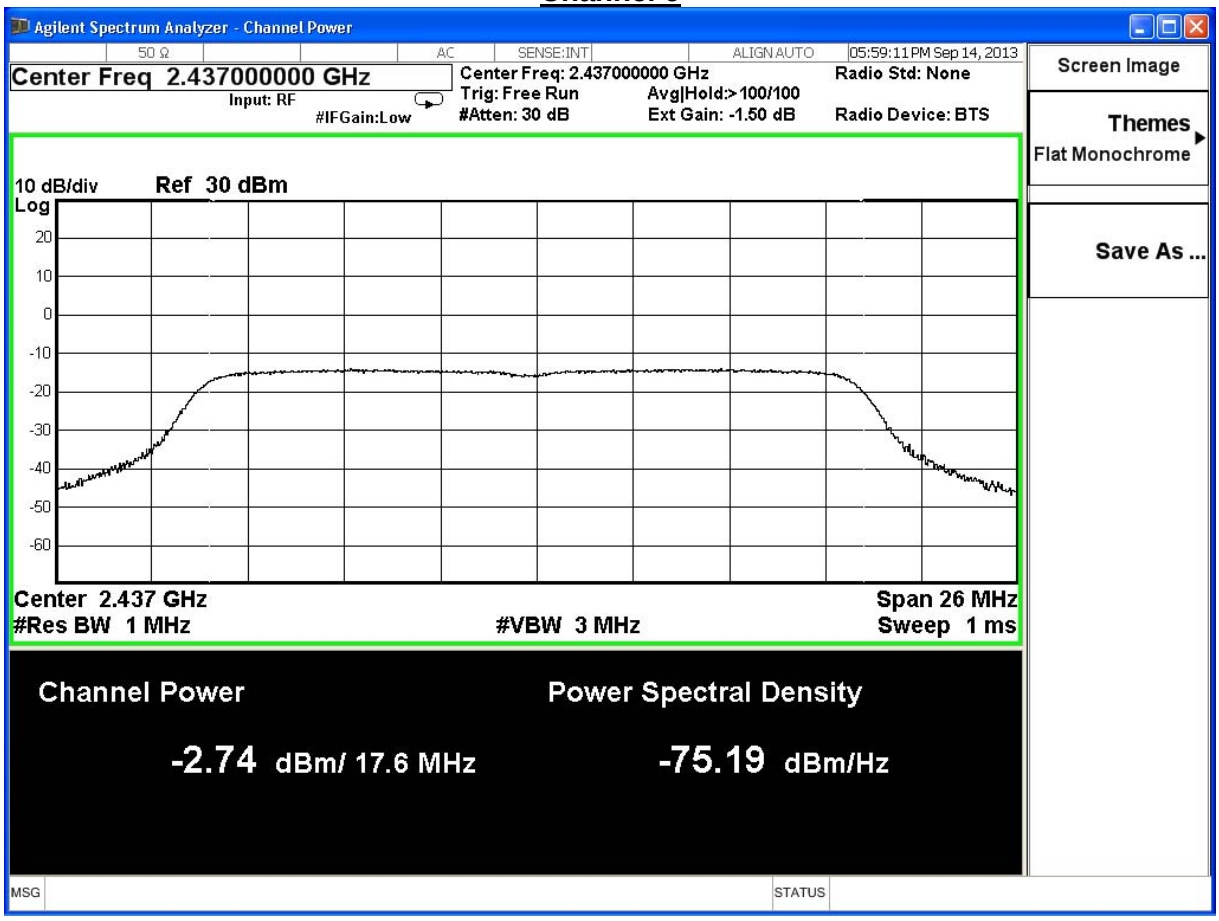
Peak Power Output (dBm)										
MCS Index		0	1	2	3	4	5	6	7	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		6.5	13.0	19.5	26.0	39.0	52.0	58.5	65.0	
1	2412	-2.95	--	--	--	--	--	--	--	1Watt=30dBm
6	2437	-2.74	--	--	--	--	--	--	--	1Watt=30dBm
11	2462	-2.32	-2.44	-2.64	-2.86	-2.99	-3.11	-3.23	-3.45	1Watt=30dBm

Note: Measure Level =Reading value + cable loss

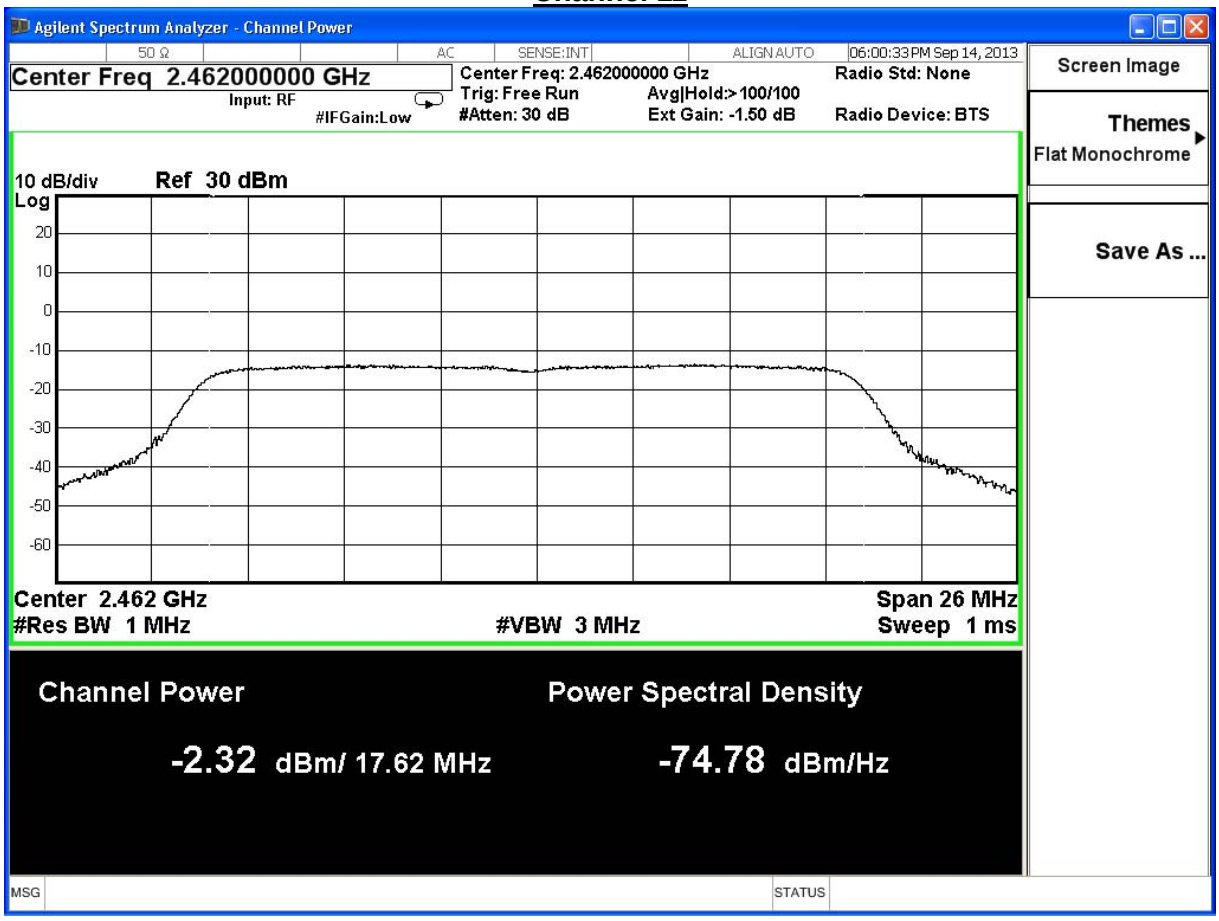
Channel 1


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:57:51 PM Sep 14, 2013
Center Freq 2.412000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.412000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 30 dB
Ext Gain: -1.50 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
-2.95 dBm/ 17.61 MHz
Power Spectral Density
-75.40 dBm/Hz
MSG
STATUS

Channel 6


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:59:11 PM Sep 14, 2013
Center Freq 2.437000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.437000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
-2.74 dBm/ 17.6 MHz
Power Spectral Density
-75.19 dBm/Hz
MSG
STATUS

Channel 11


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
06:00:33 PM Sep 14, 2013
Center Freq 2.462000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -1.50 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
-2.32 dBm/ 17.62 MHz
Power Spectral Density
-74.78 dBm/Hz
MSG
STATUS

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

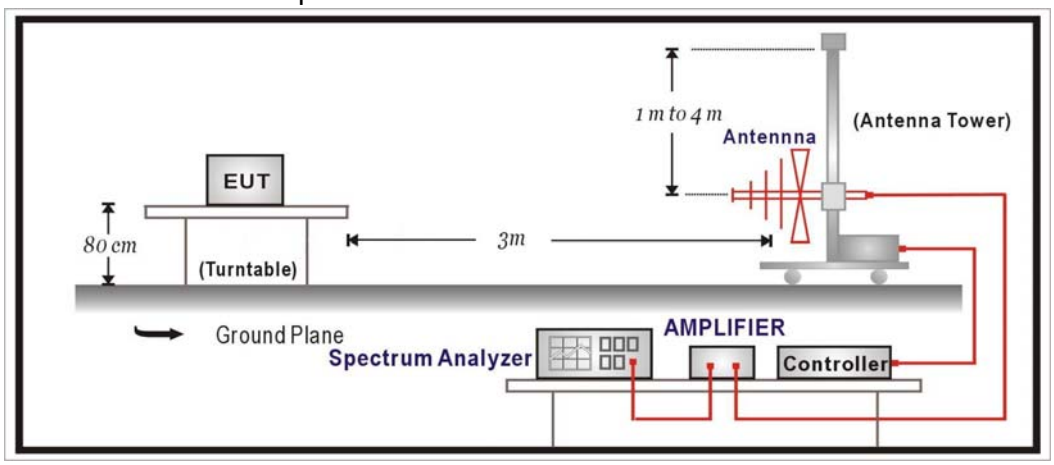
Radiated Emission / CB1

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

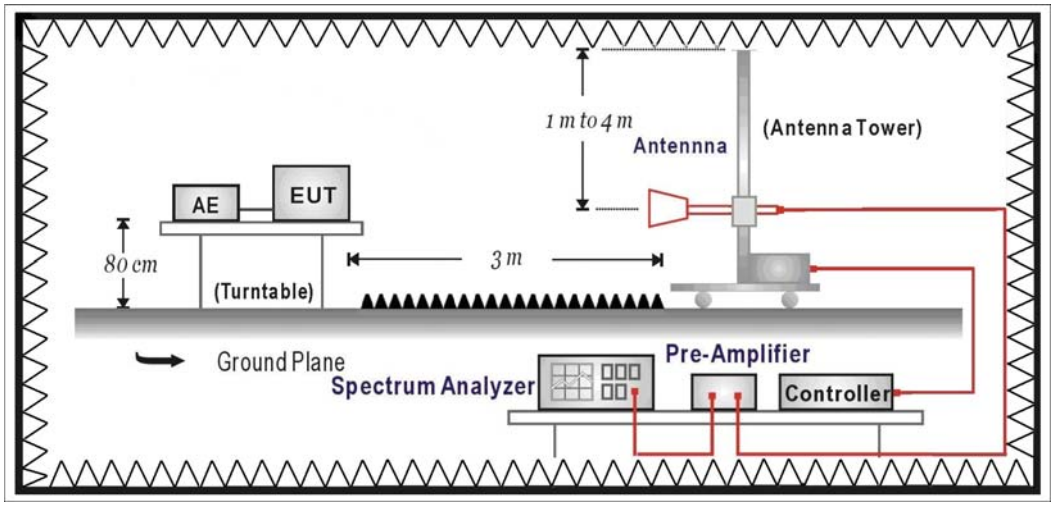
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

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
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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 Jan. 2012 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

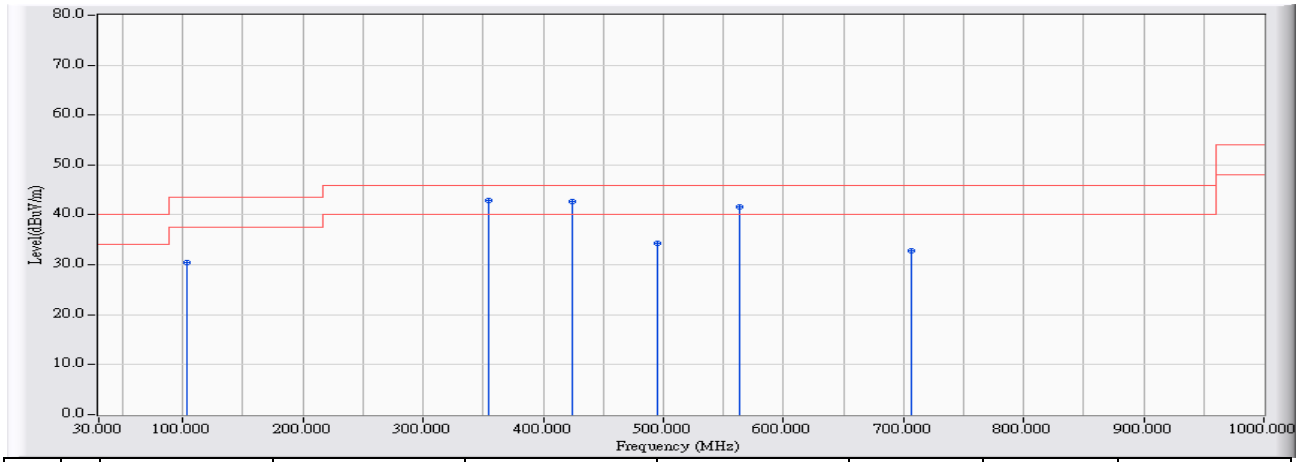
30MHz～1GHz as ±3.43dB

1GHz～26.5Ghz as ±3.65dB

4.7. Test Result

30MHz-1GHz Spurious

Site : CB1	**Time : 2013/08/29 - 15:41**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_2437MHz**

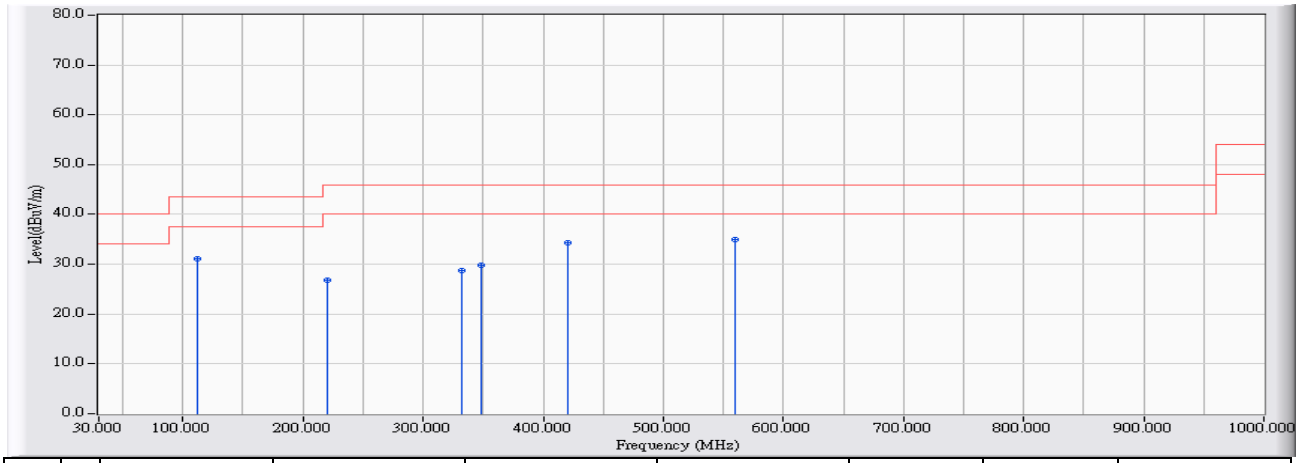


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		103.720	-22.991	53.513	30.522	-12.978	43.500	QUASIPEAK
2	*	353.980	-18.578	61.407	42.829	-3.171	46.000	QUASIPEAK
3		423.820	-16.948	59.615	42.667	-3.333	46.000	QUASIPEAK
4		495.600	-15.549	49.951	34.402	-11.598	46.000	QUASIPEAK
5		563.500	-15.371	57.041	41.670	-4.330	46.000	QUASIPEAK
6		707.060	-14.580	47.458	32.878	-13.122	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/08/29 - 15:45**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_2437MHz**

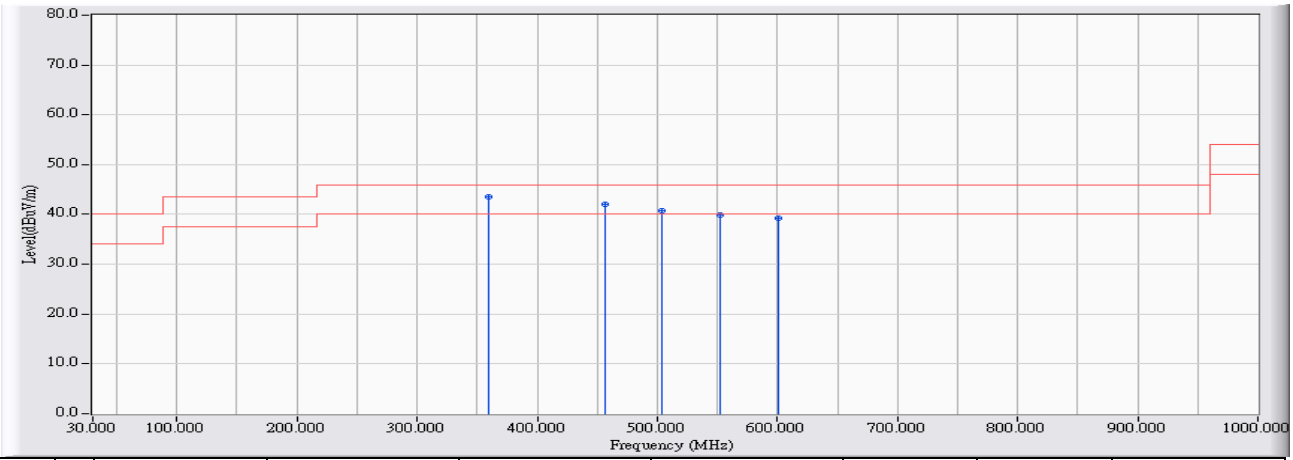


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		111.480	-22.604	53.770	31.165	-12.335	43.500	QUASIPEAK
2		220.120	-23.075	49.942	26.867	-19.133	46.000	QUASIPEAK
3		332.640	-19.118	47.801	28.683	-17.317	46.000	QUASIPEAK
4		348.160	-18.726	48.639	29.914	-16.086	46.000	QUASIPEAK
5		419.940	-17.023	51.255	34.232	-11.768	46.000	QUASIPEAK
6	*	559.620	-15.377	50.290	34.913	-11.087	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/08/29 - 16:17**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_2437MHz**

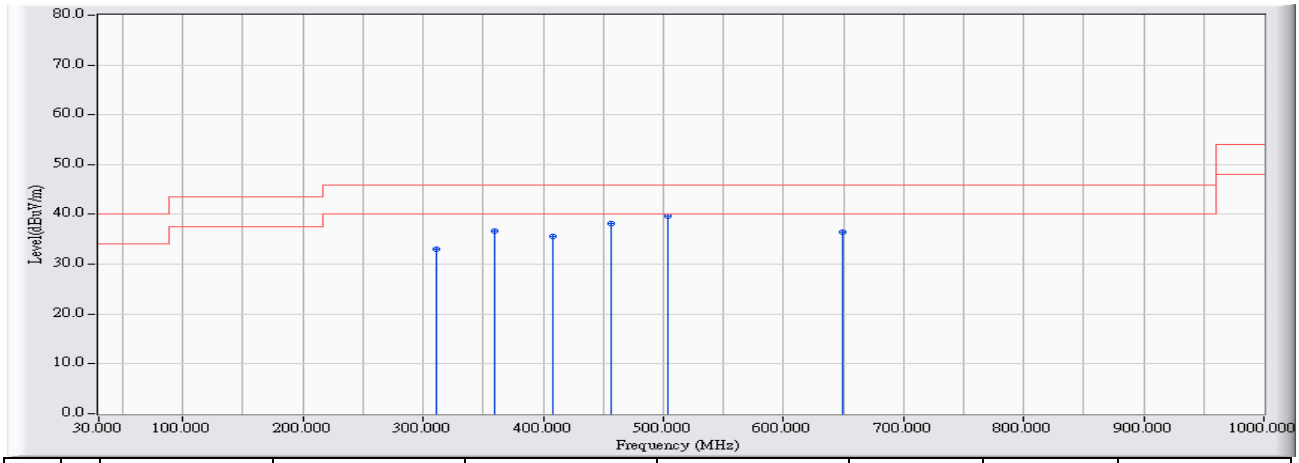


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	359.800	-18.430	62.031	43.601	-2.399	46.000	QUASIPEAK
2		456.800	-16.305	58.408	42.103	-3.897	46.000	QUASIPEAK
3		503.360	-15.458	56.281	40.823	-5.177	46.000	QUASIPEAK
4		551.860	-15.388	55.314	39.926	-6.074	46.000	QUASIPEAK
5		600.360	-15.316	54.660	39.344	-6.656	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/08/29 - 16:20**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_2437MHz**

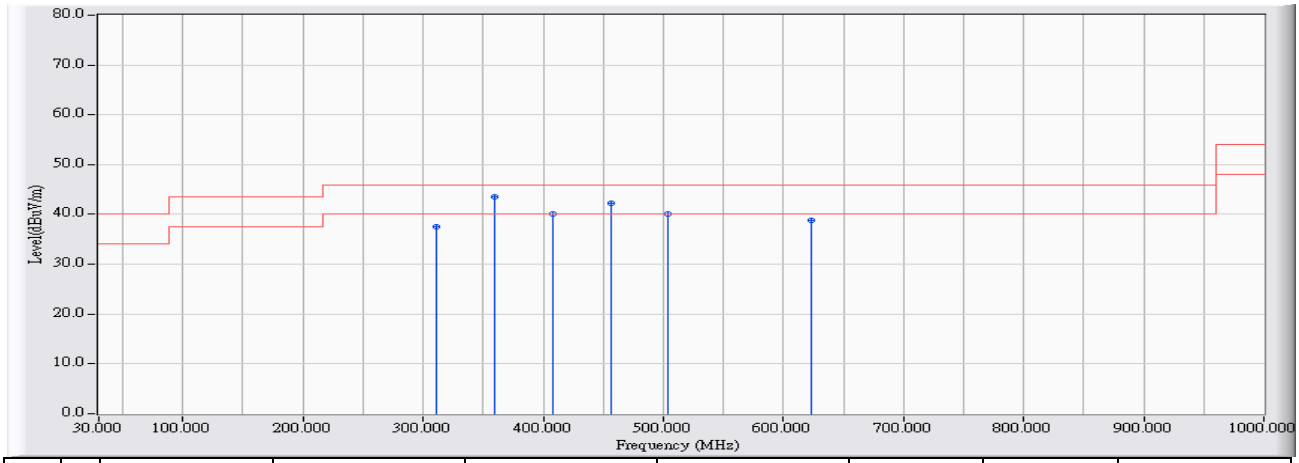


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		311.300	-19.659	52.772	33.113	-12.887	46.000	QUASIPEAK
2		359.800	-18.430	55.059	36.629	-9.371	46.000	QUASIPEAK
3		408.300	-17.249	52.897	35.647	-10.353	46.000	QUASIPEAK
4		456.800	-16.305	54.536	38.231	-7.769	46.000	QUASIPEAK
5	*	503.360	-15.458	55.076	39.618	-6.382	46.000	QUASIPEAK
6		648.860	-15.005	51.512	36.507	-9.493	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/08/29 - 16:24**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_2437MHz**

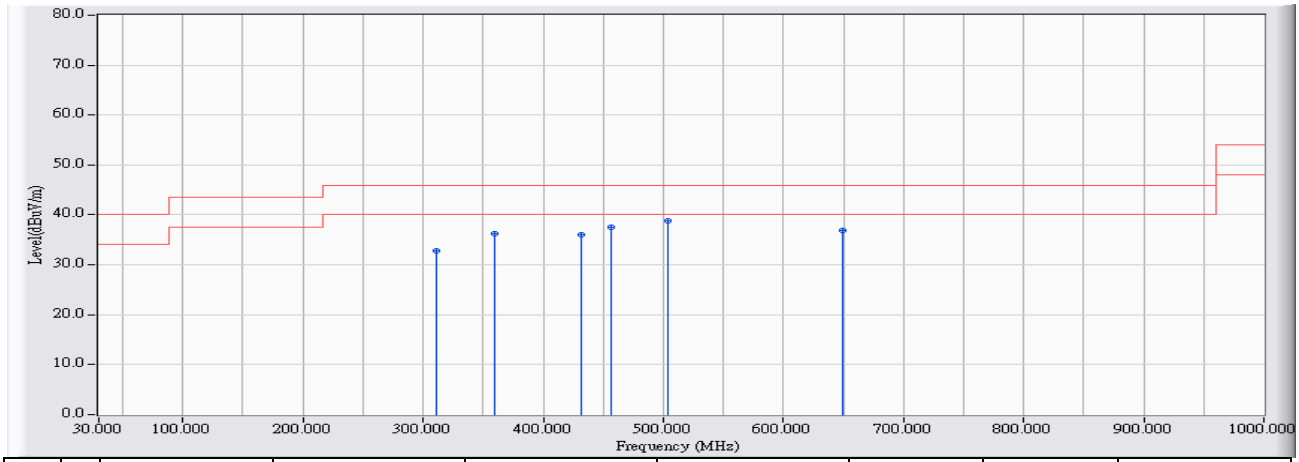


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		311.300	-19.659	57.295	37.636	-8.364	46.000	QUASIPEAK
2	*	359.800	-18.430	61.921	43.491	-2.509	46.000	QUASIPEAK
3		408.300	-17.249	57.407	40.157	-5.843	46.000	QUASIPEAK
4		456.800	-16.305	58.530	42.225	-3.775	46.000	QUASIPEAK
5		503.360	-15.458	55.529	40.071	-5.929	46.000	QUASIPEAK
6		623.640	-15.167	54.088	38.921	-7.079	46.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/08/29 - 16:26**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_2437MHz**



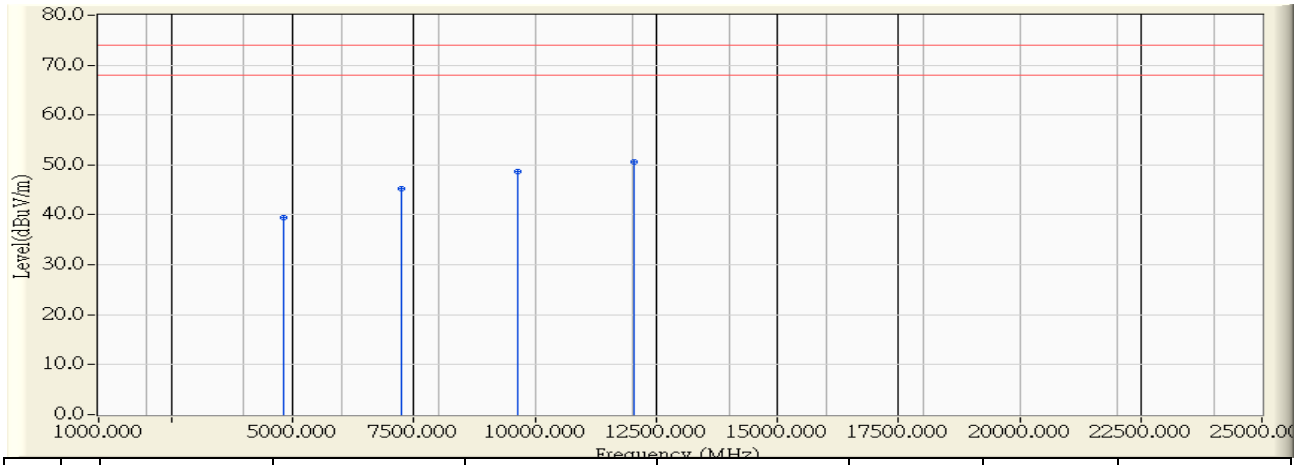
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		311.300	-19.659	52.549	32.890	-13.110	46.000	QUASIPEAK
2		359.800	-18.430	54.696	36.266	-9.734	46.000	QUASIPEAK
3		431.580	-16.797	52.765	35.969	-10.031	46.000	QUASIPEAK
4		456.800	-16.305	53.911	37.606	-8.394	46.000	QUASIPEAK
5	*	503.360	-15.458	54.275	38.817	-7.183	46.000	QUASIPEAK
6		648.860	-15.005	51.959	36.954	-9.046	46.000	QUASIPEAK

Note:

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

Above 1GHz Spurious

Site : CB1	**Time : 2013/08/09 - 17:28**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_2412MHz**

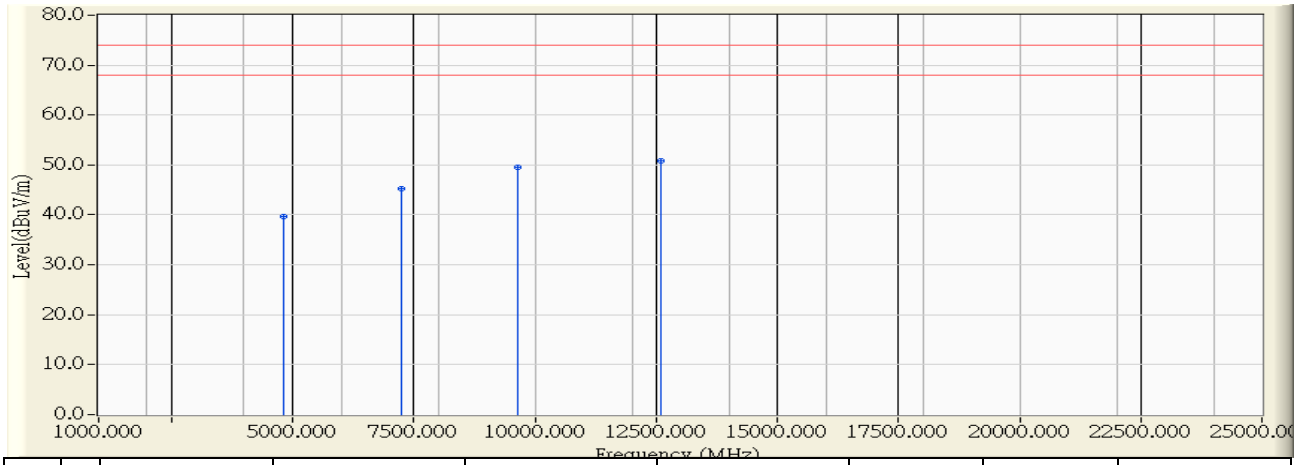


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4824.000	-0.617	40.100	39.483	-34.517	74.000	PEAK
2		7236.000	5.445	39.840	45.285	-28.715	74.000	PEAK
3		9648.000	9.226	39.470	48.696	-25.304	74.000	PEAK
4	*	12060.000	11.115	39.460	50.575	-23.425	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/09 - 17:33**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_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	40.200	39.583	-34.417	74.000	PEAK
2		7236.000	5.445	39.720	45.165	-28.835	74.000	PEAK
3		9648.000	9.226	40.230	49.456	-24.544	74.000	PEAK
4	*	12606.000	11.285	39.550	50.834	-23.166	74.000	PEAK

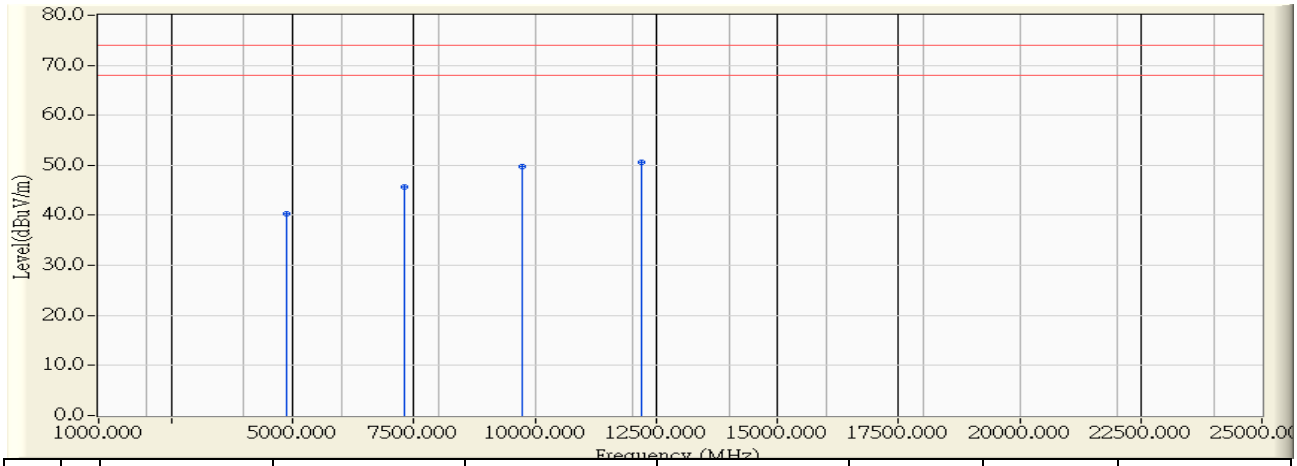
Note:

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.
7. The Emission above 18GHz were not included is because their levels are too low.

QuieTek

File# : 137522R - Page: 27

Engineer :	
Site : CB1	**Time : 2013/08/09 - 17:38**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_2437MHz**

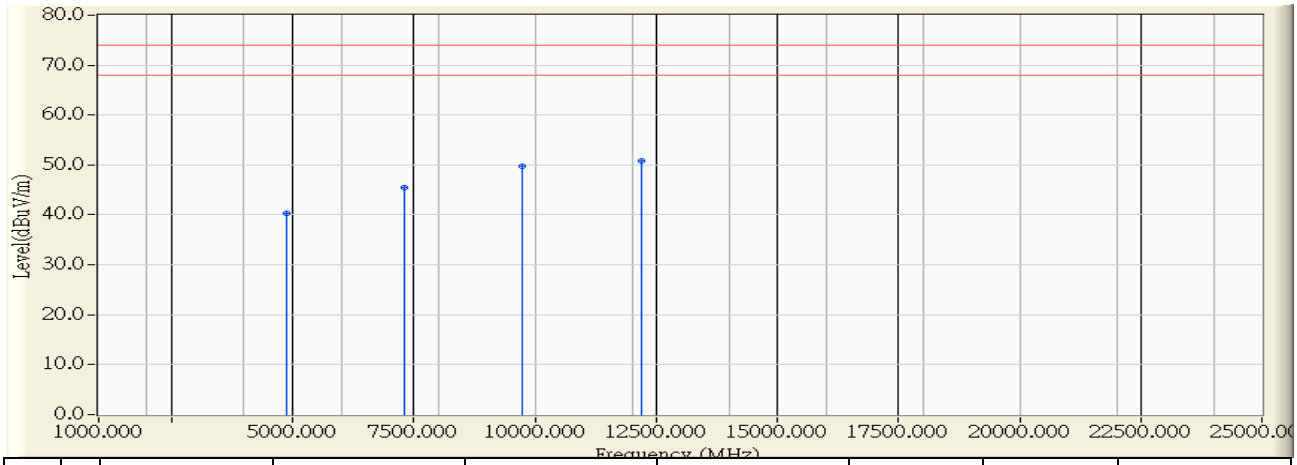


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	40.760	40.265	-33.735	74.000	PEAK
2		7311.000	5.608	40.030	45.637	-28.363	74.000	PEAK
3		9748.000	9.873	39.840	49.713	-24.287	74.000	PEAK
4	*	12185.000	11.058	39.530	50.588	-23.412	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/09 - 17:42**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_2437MHz**

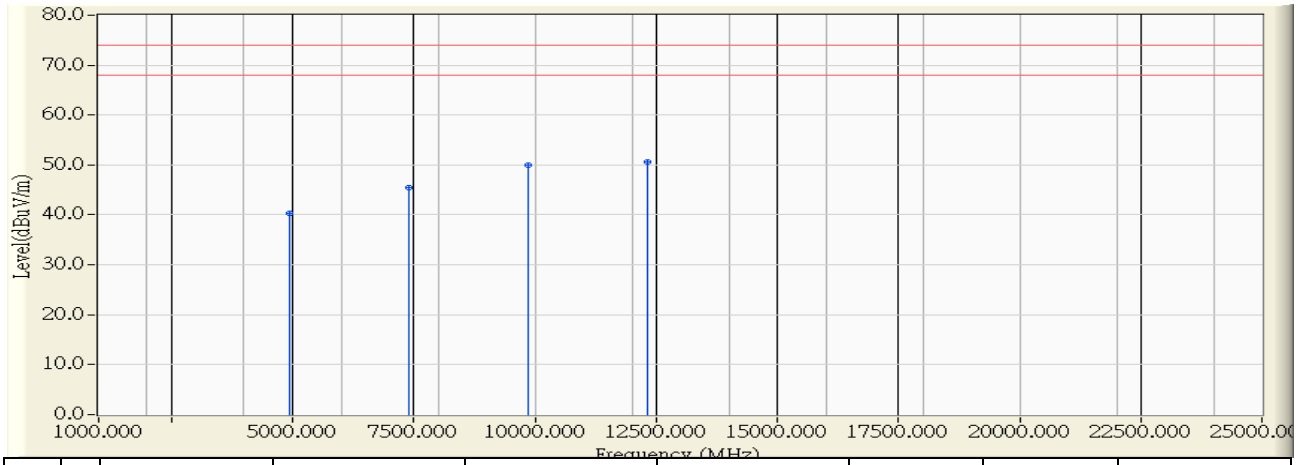


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	40.730	40.235	-33.765	74.000	PEAK
2		7311.000	5.608	39.760	45.367	-28.633	74.000	PEAK
3		9748.000	9.873	39.970	49.843	-24.157	74.000	PEAK
4	*	12185.000	11.058	39.710	50.768	-23.232	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/09 - 17:46**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_2462MHz**

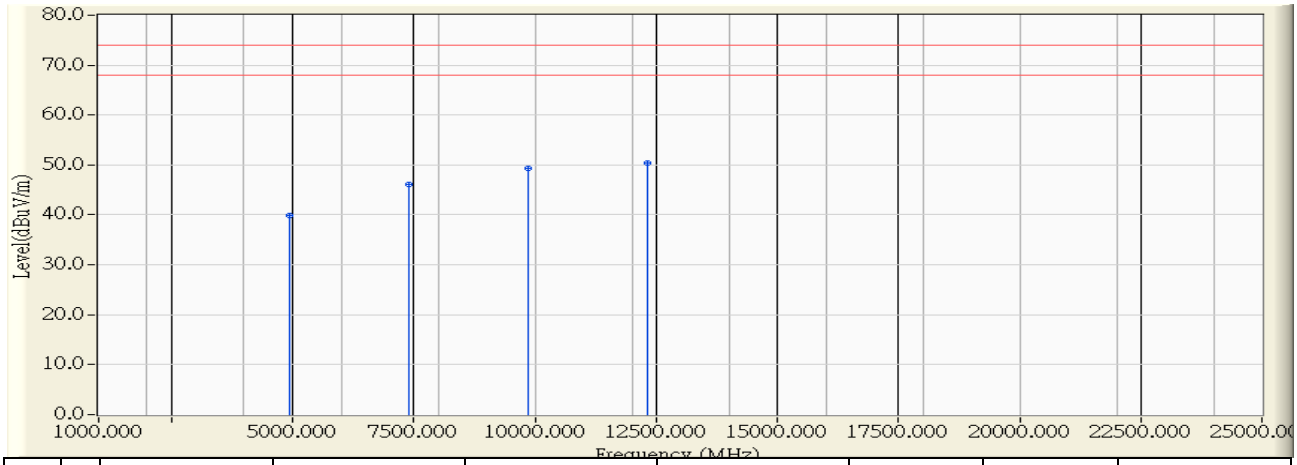


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	40.770	40.397	-33.603	74.000	PEAK
2		7386.000	5.770	39.610	45.380	-28.620	74.000	PEAK
3		9848.000	10.521	39.400	49.921	-24.079	74.000	PEAK
4	*	12310.000	11.001	39.560	50.561	-23.439	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. Measurement 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 : 2013/08/09 - 17:48**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11b_1Mbps_2462MHz**

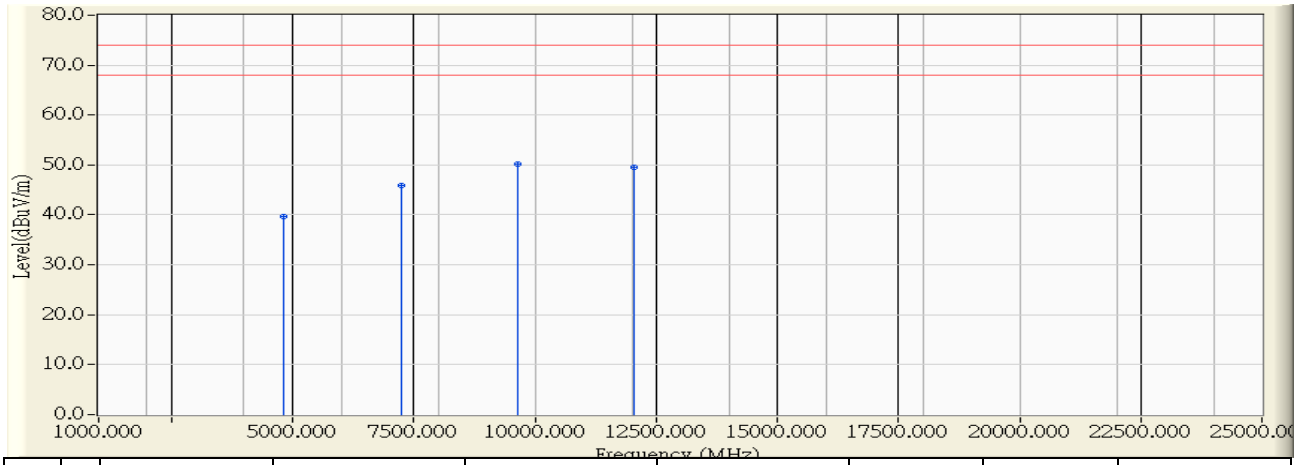


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	40.340	39.967	-34.033	74.000	PEAK
2		7386.000	5.770	40.340	46.110	-27.890	74.000	PEAK
3		9848.000	10.521	38.840	49.361	-24.639	74.000	PEAK
4	*	12310.000	11.001	39.300	50.301	-23.699	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 18:47**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2412MHz**

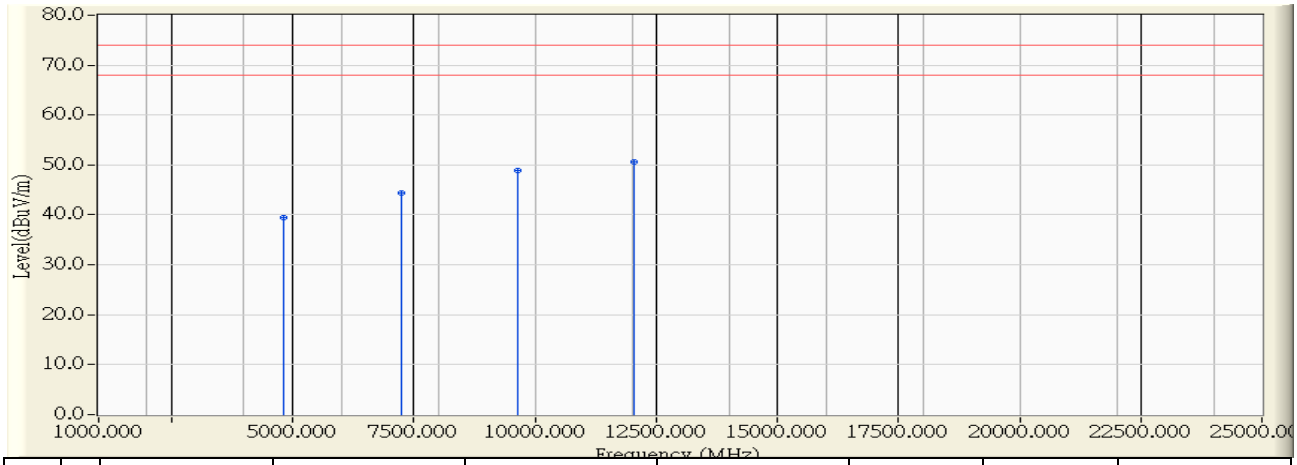


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4824.000	-0.617	40.340	39.723	-34.277	74.000	PEAK
2		7236.000	5.445	40.510	45.955	-28.045	74.000	PEAK
3	*	9648.000	9.226	40.950	50.176	-23.824	74.000	PEAK
4		12060.000	11.115	38.430	49.545	-24.455	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 18:52**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2412MHz**

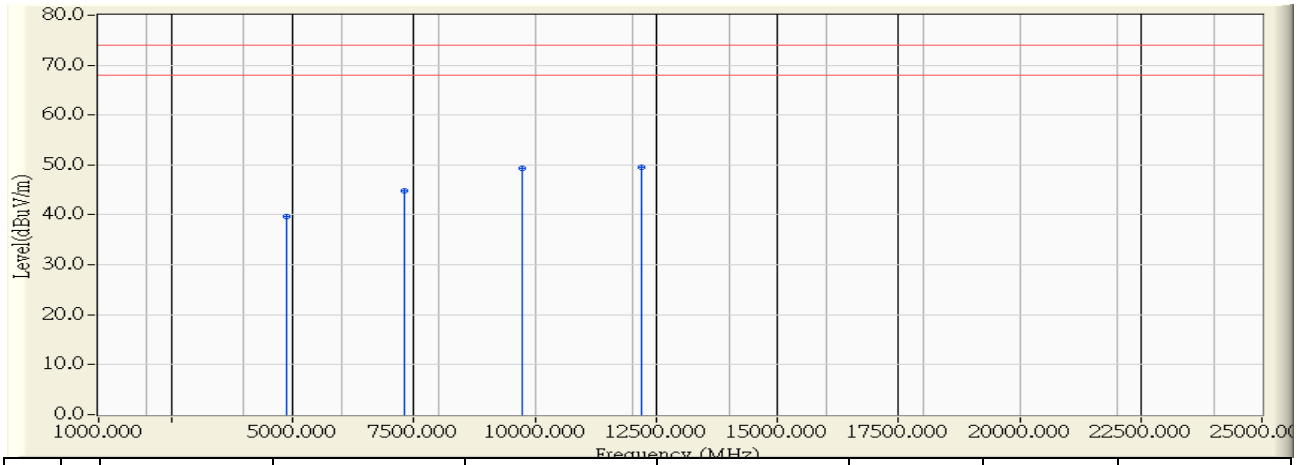


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4824.000	-0.617	40.100	39.483	-34.517	74.000	PEAK
2		7236.000	5.445	39.040	44.485	-29.515	74.000	PEAK
3		9648.000	9.226	39.720	48.946	-25.054	74.000	PEAK
4	*	12060.000	11.115	39.400	50.515	-23.485	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:02**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2437MHz**

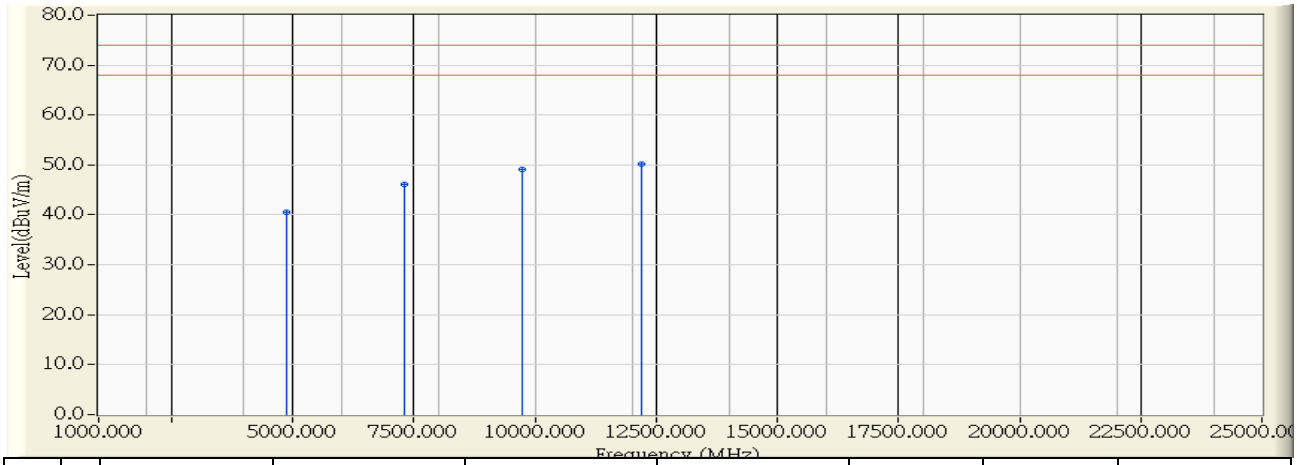


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	40.140	39.645	-34.355	74.000	PEAK
2		7311.000	5.608	39.240	44.847	-29.153	74.000	PEAK
3		9748.000	9.873	39.410	49.283	-24.717	74.000	PEAK
4	*	12185.000	11.058	38.440	49.498	-24.502	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:05**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2437MHz**

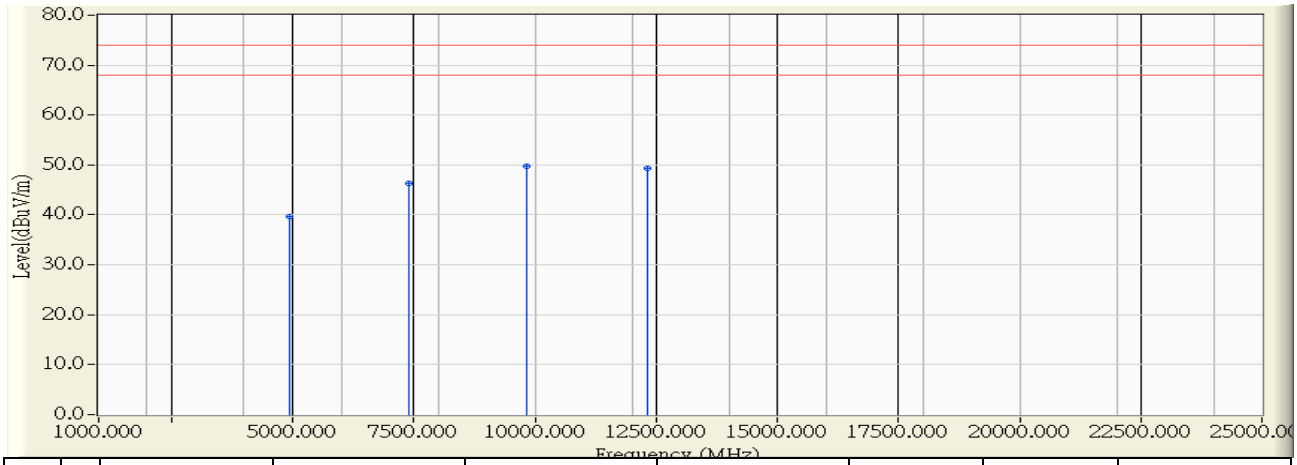


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	41.080	40.585	-33.415	74.000	PEAK
2		7311.000	5.608	40.540	46.147	-27.853	74.000	PEAK
3		9748.000	9.873	39.220	49.093	-24.907	74.000	PEAK
4	*	12185.000	11.058	39.150	50.208	-23.792	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:12**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2462MHz**

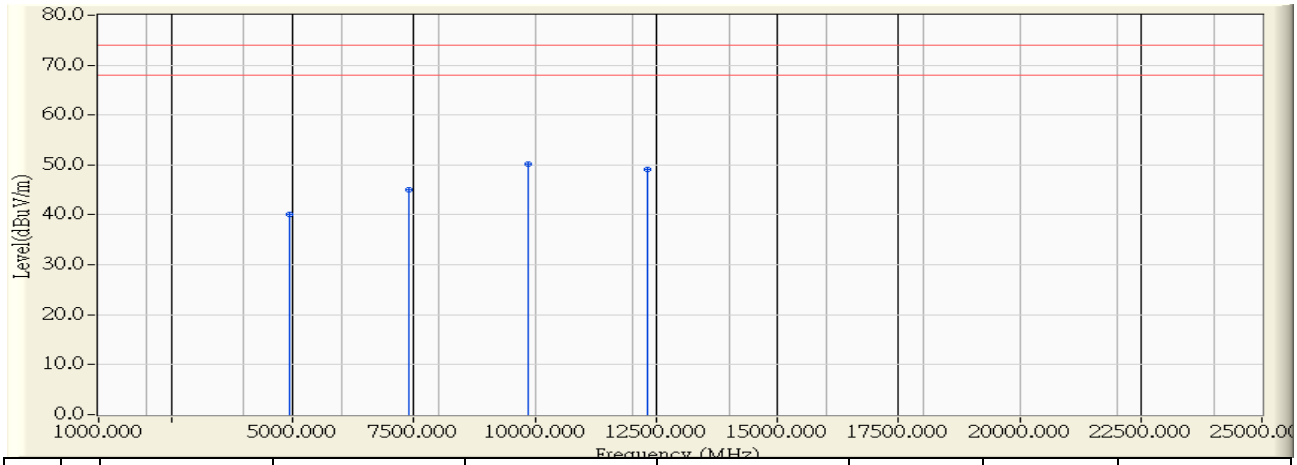


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	40.060	39.687	-34.313	74.000	PEAK
2		7386.000	5.770	40.600	46.370	-27.630	74.000	PEAK
3	*	9840.000	10.469	39.310	49.779	-24.221	74.000	PEAK
4		12310.000	11.001	38.270	49.271	-24.729	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:21**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11g_12Mbps_2462MHz**

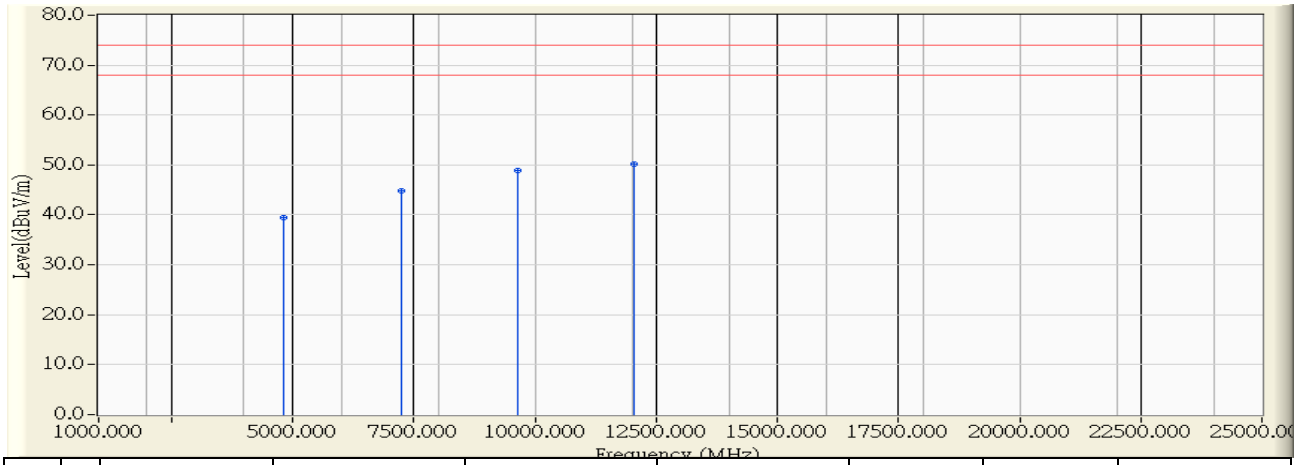


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	40.390	40.017	-33.983	74.000	PEAK
2		7386.000	5.770	39.250	45.020	-28.980	74.000	PEAK
3	*	9848.000	10.521	39.700	50.221	-23.779	74.000	PEAK
4		12310.000	11.001	38.130	49.131	-24.869	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:28**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_2412MHz**



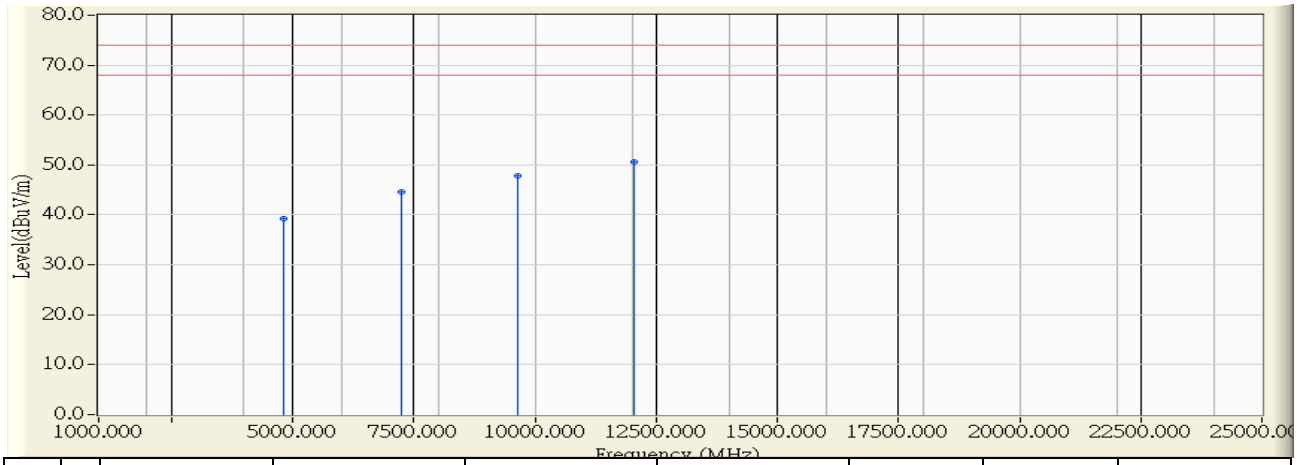
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4824.000	-0.617	40.140	39.523	-34.477	74.000	PEAK
2		7236.000	5.445	39.340	44.785	-29.215	74.000	PEAK
3		9648.000	9.226	39.690	48.916	-25.084	74.000	PEAK
4	*	12052.000	11.119	39.140	50.259	-23.741	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.

7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:31**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_2412MHz**



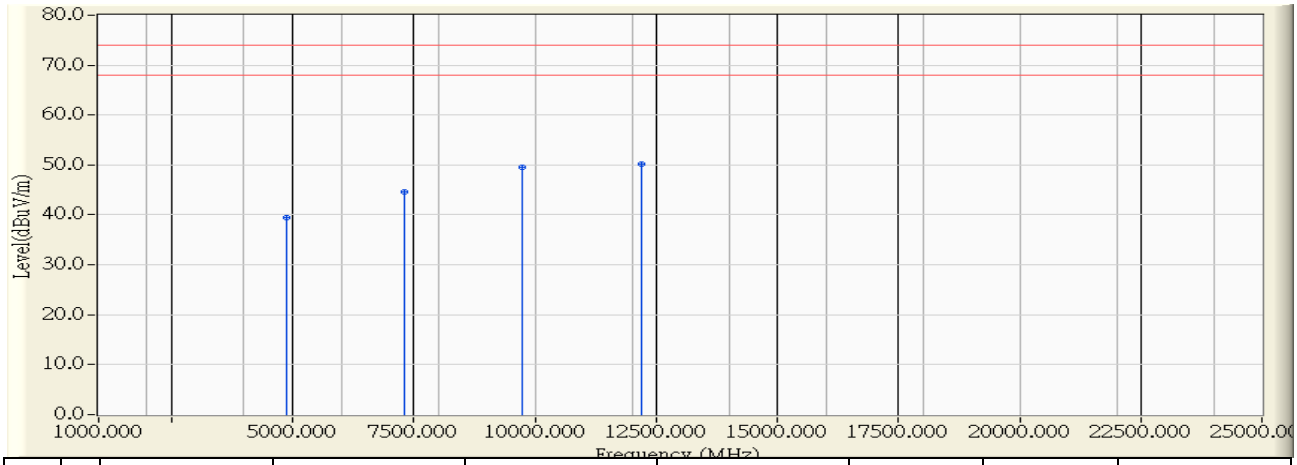
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4824.000	-0.617	39.950	39.333	-34.667	74.000	PEAK
2		7236.000	5.445	39.180	44.625	-29.375	74.000	PEAK
3		9648.000	9.226	38.650	47.876	-26.124	74.000	PEAK
4	*	12060.000	11.115	39.470	50.585	-23.415	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.

7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:36**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_2437MHz**

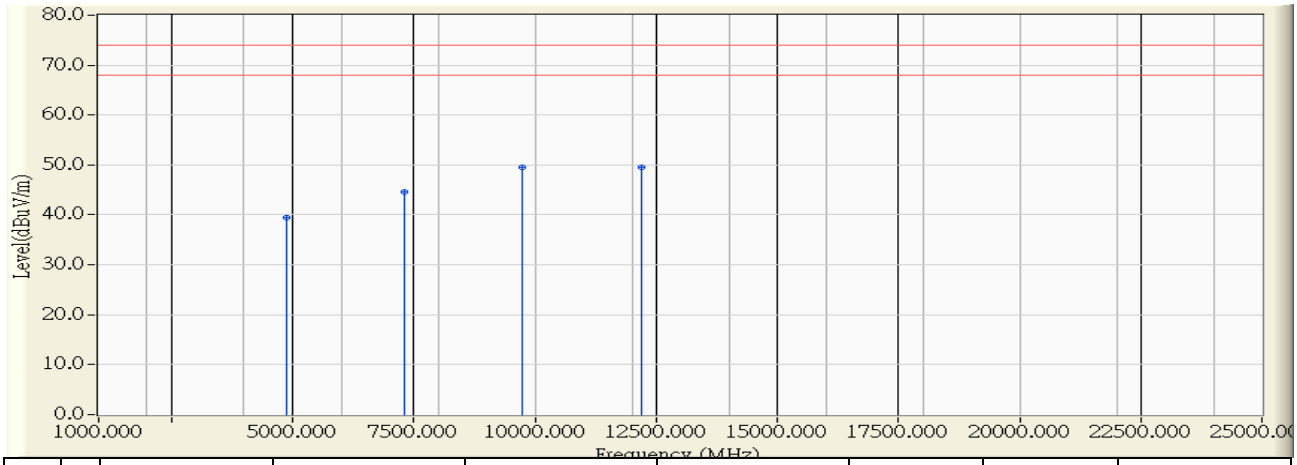


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	39.910	39.415	-34.585	74.000	PEAK
2		7311.000	5.608	38.980	44.587	-29.413	74.000	PEAK
3		9748.000	9.873	39.700	49.573	-24.427	74.000	PEAK
4	*	12185.000	11.058	39.030	50.088	-23.912	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:38**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_2437MHz**

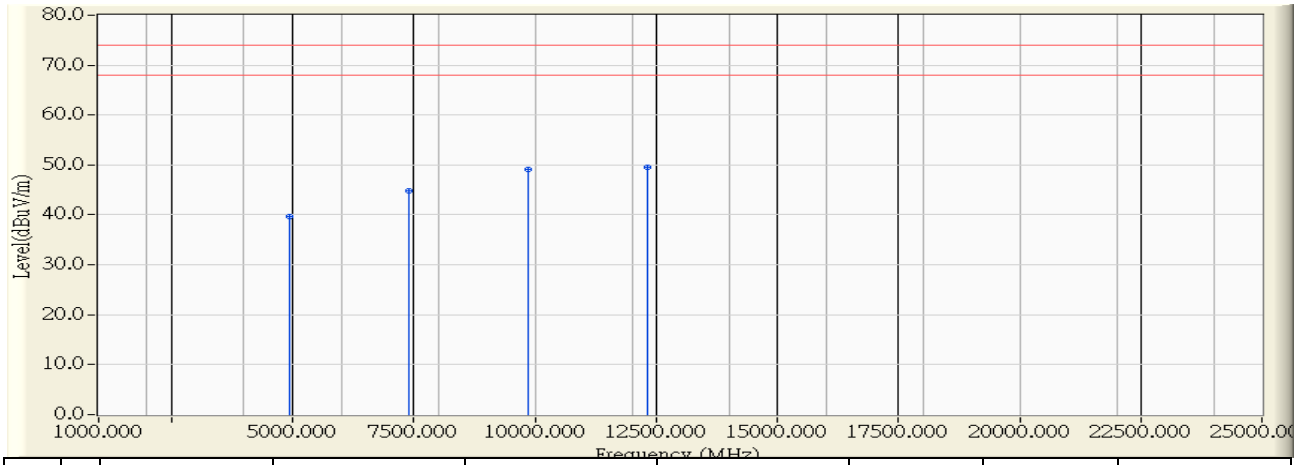


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4874.000	-0.495	39.960	39.465	-34.535	74.000	PEAK
2		7311.000	5.608	38.950	44.557	-29.443	74.000	PEAK
3	*	9748.000	9.873	39.750	49.623	-24.377	74.000	PEAK
4		12185.000	11.058	38.380	49.438	-24.562	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:42**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_2462MHz**

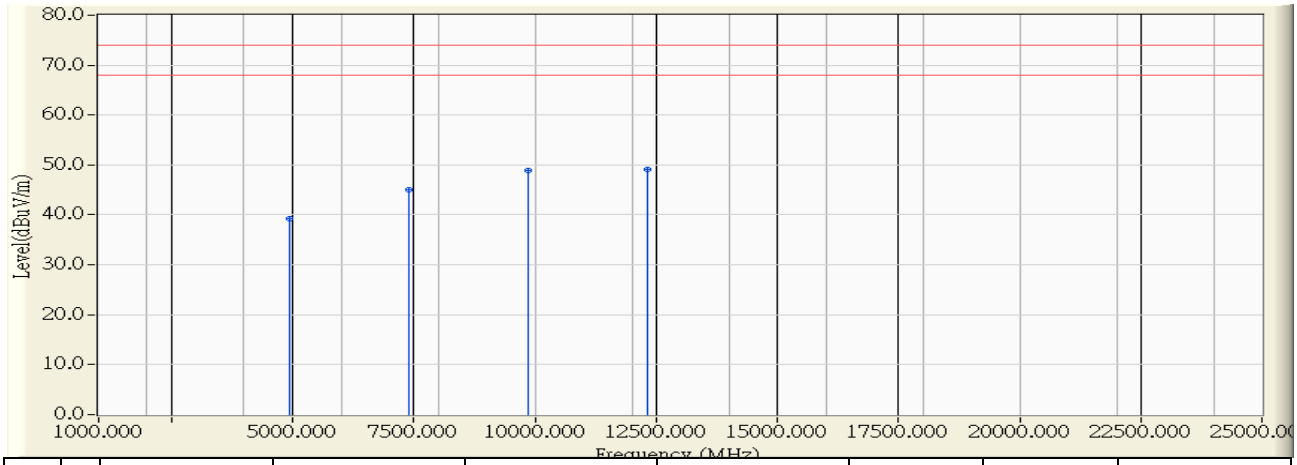


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4924.000	-0.373	40.000	39.627	-34.373	74.000	PEAK
2		7386.000	5.770	39.150	44.920	-29.080	74.000	PEAK
3		9848.000	10.521	38.520	49.041	-24.959	74.000	PEAK
4	*	12310.000	11.001	38.530	49.531	-24.469	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.
7. The Emission above 18GHz were not included is because their levels are too low.

Site : CB1	**Time : 2013/08/19 - 19:44**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	**Power : DC 5V**
EUT : High Resolution Car Recorder	**Note : 802.11n(20MHz)_MCS0_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	39.700	39.327	-34.673	74.000	PEAK
2		7386.000	5.770	39.250	45.020	-28.980	74.000	PEAK
3		9848.000	10.521	38.310	48.831	-25.169	74.000	PEAK
4	*	12310.000	11.001	38.130	49.131	-24.869	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.
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:

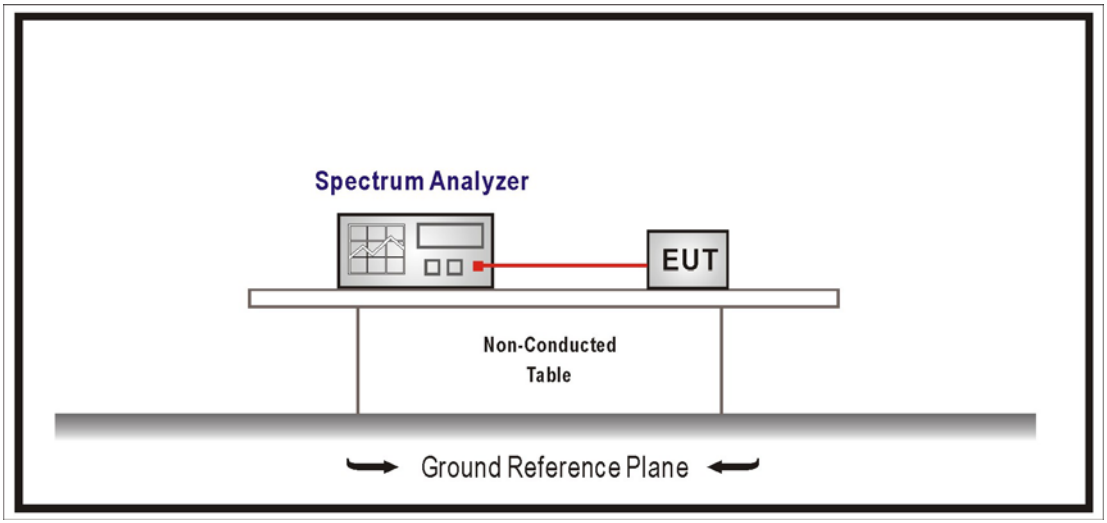
RF antenna conducted test / SR7

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 Jan. 2012 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

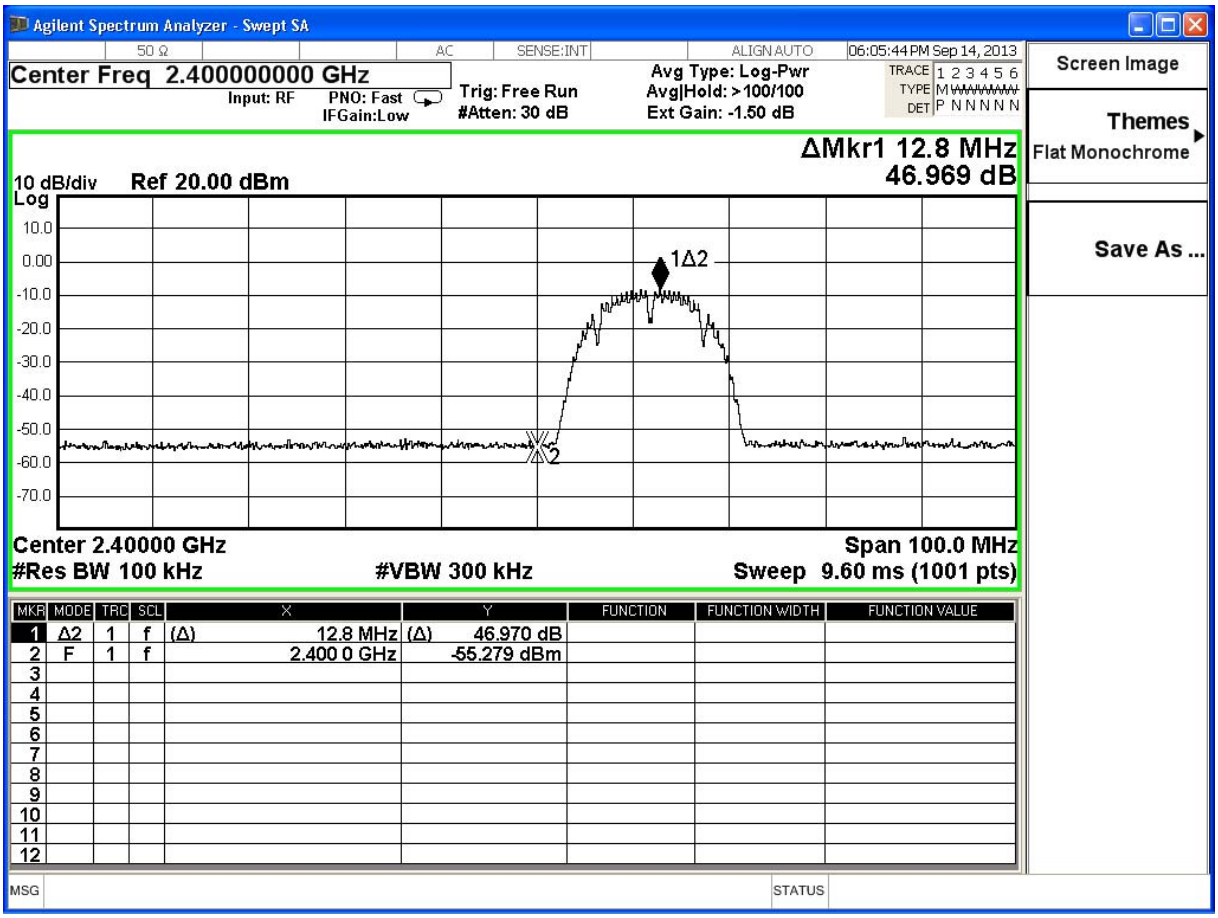
Conducted is defined as ± 1.27dB

5.7. Test Result

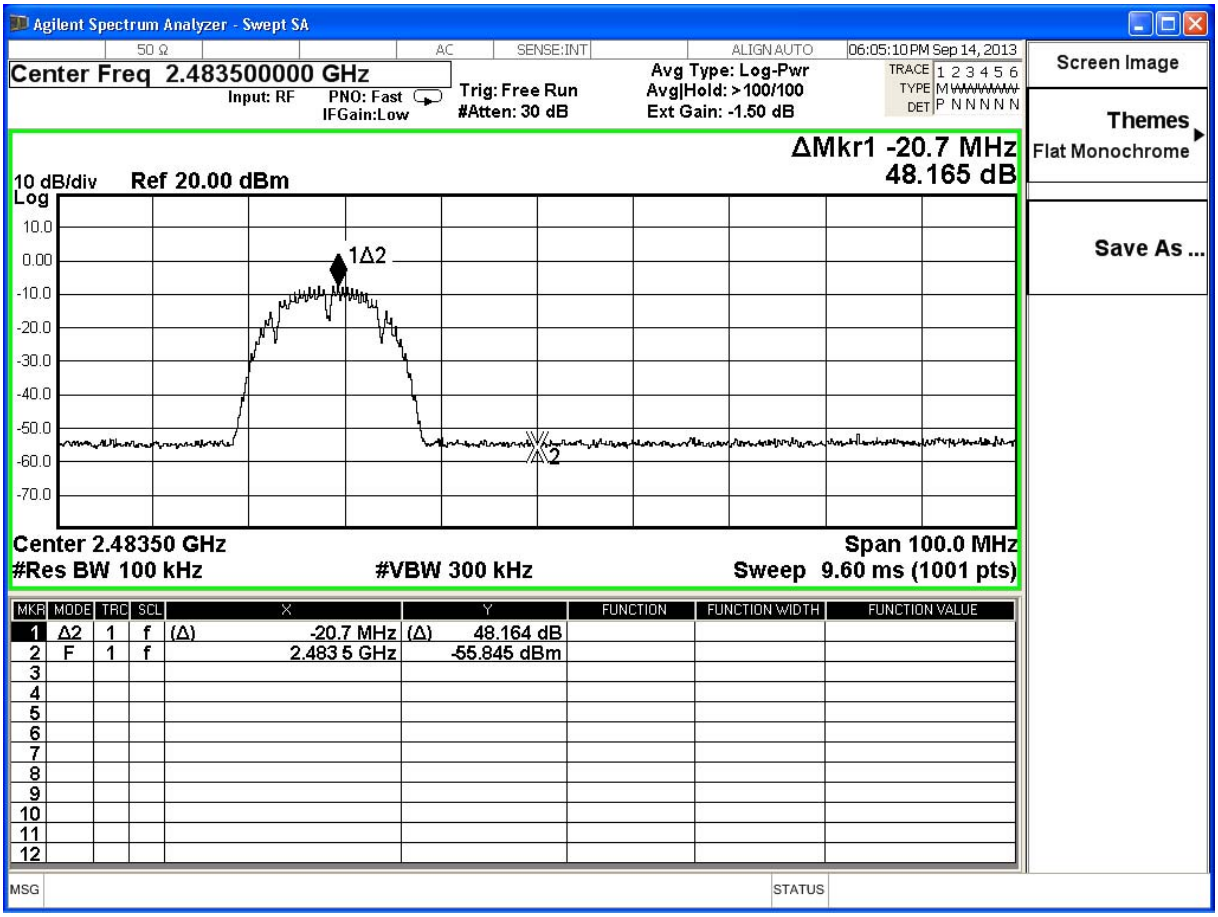
Product	High Resolution Car Recorder		
Test Item	RF antenna conducted test		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

IEEE 802.11b, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	46.96	≧20	Pass
11	2462	48.16	≧20	Pass

Channel 01 (2412MHz)



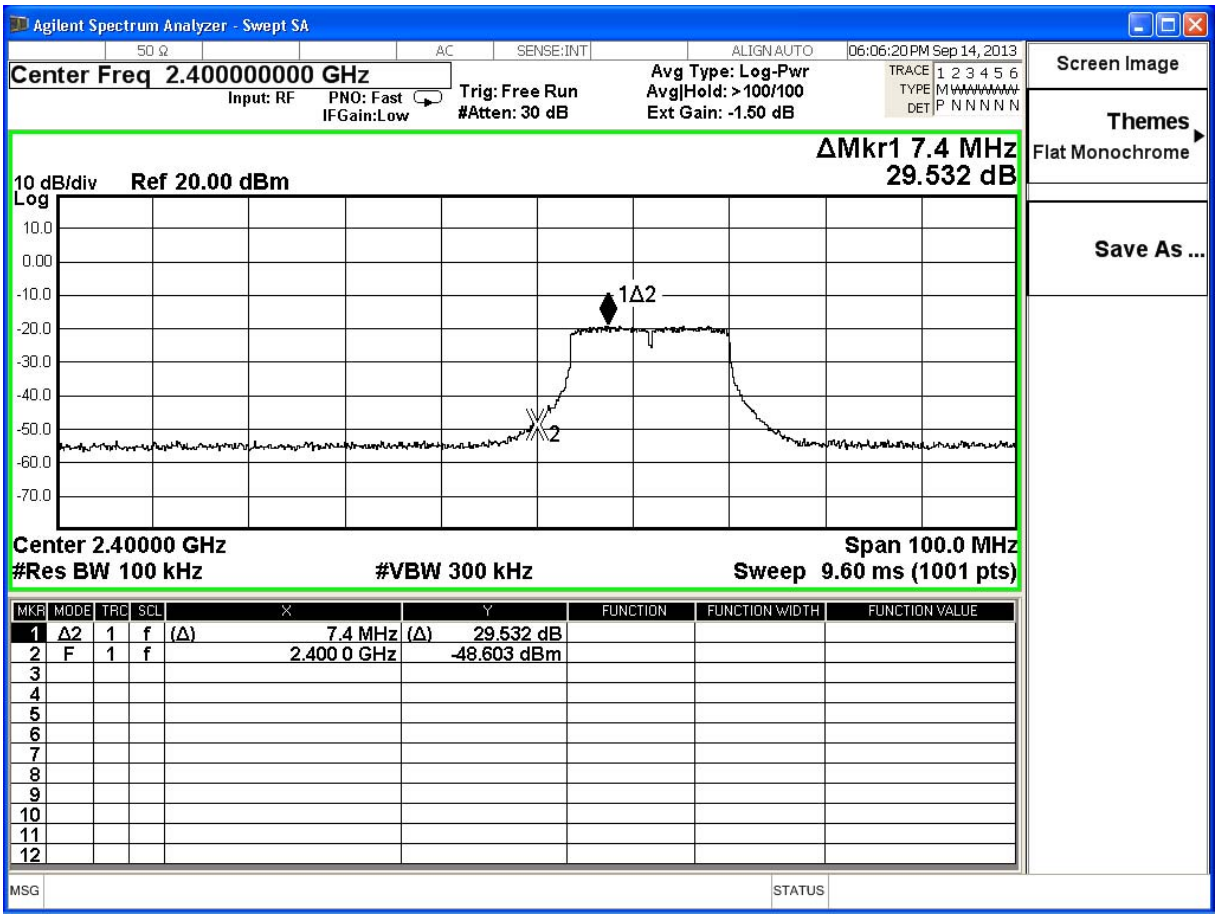
Channel 11 (2462MHz)



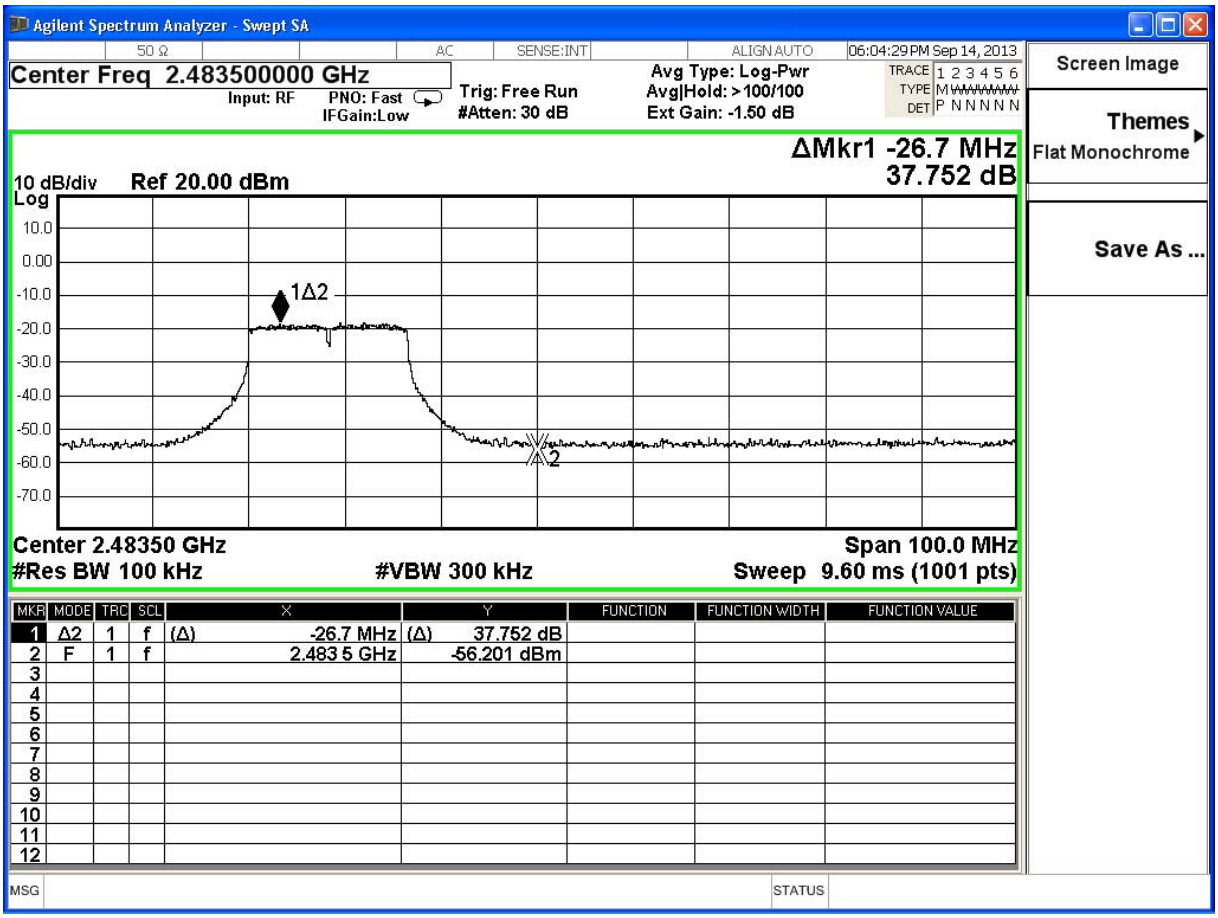
Product	High Resolution Car Recorder		
Test Item	RF antenna conducted test		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

IEEE 802.11g, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	29.53	≧20	Pass
11	2462	37.75	≧20	Pass

Channel 01 (2412MHz)



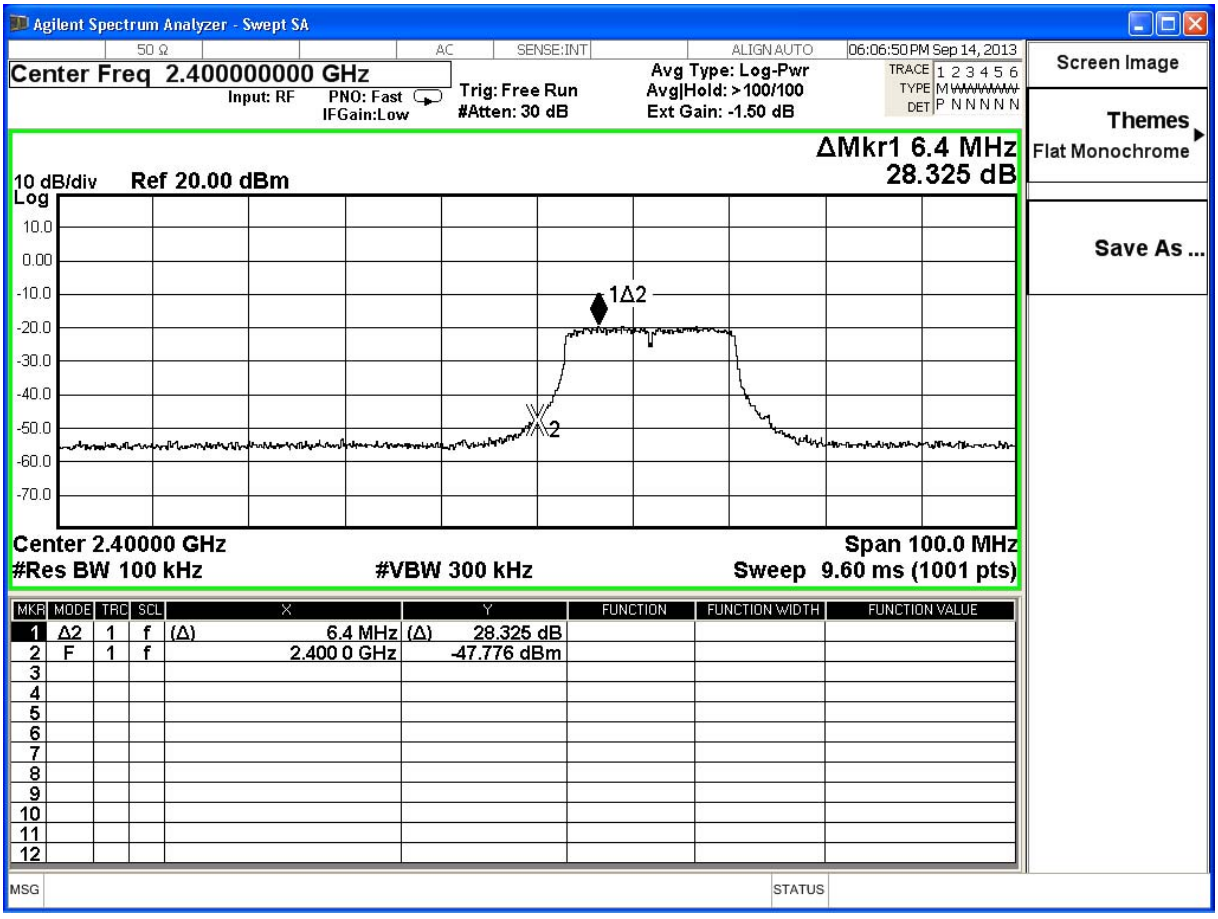
Channel 11 (2462MHz)



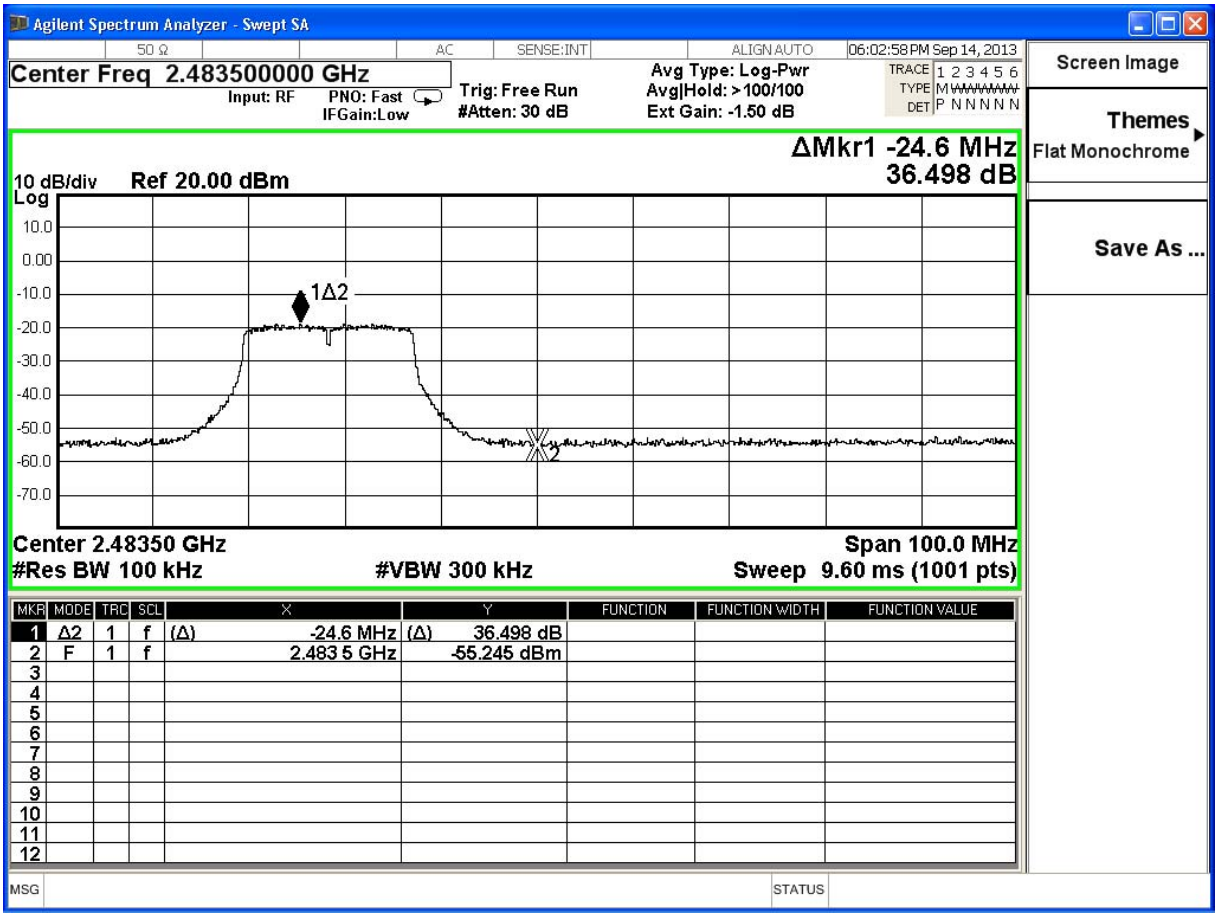
Product	High Resolution Car Recorder		
Test Item	RF antenna conducted test		
Test Mode	Transmit		
Date of Test	2013/09/14	Test Site	SR7

IEEE 802.11n (20MHz), (ANT 0) , Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	28.32	≧20	Pass
11	2462	36.49	≧20	Pass

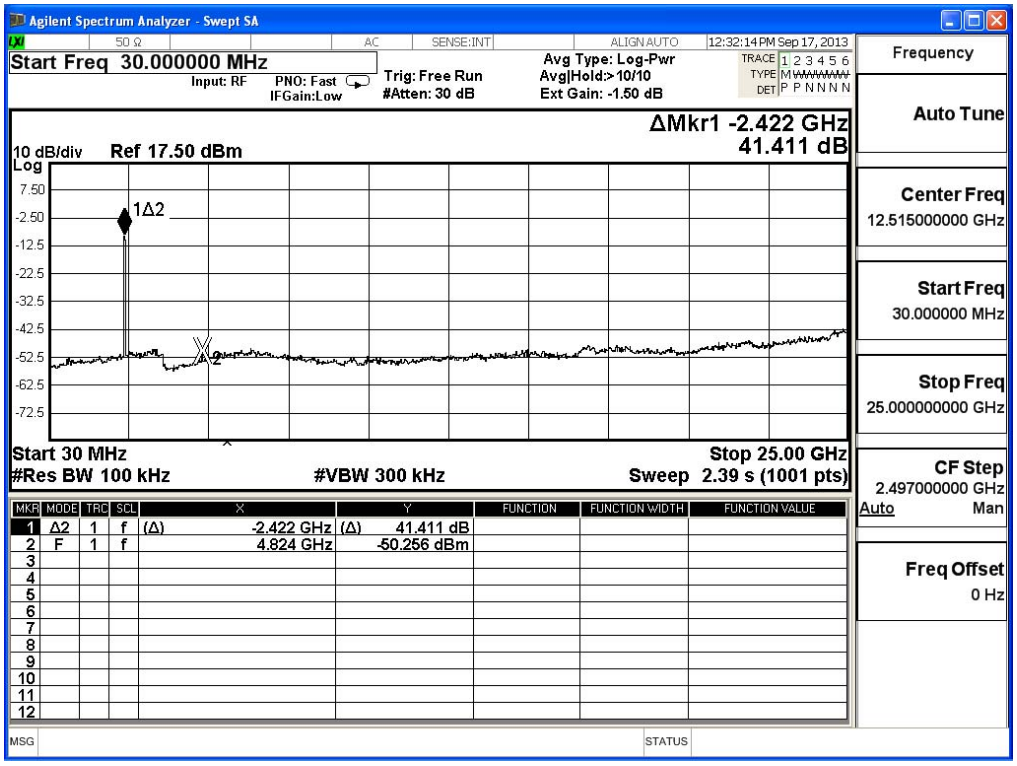
Channel 1 (2412MHz)



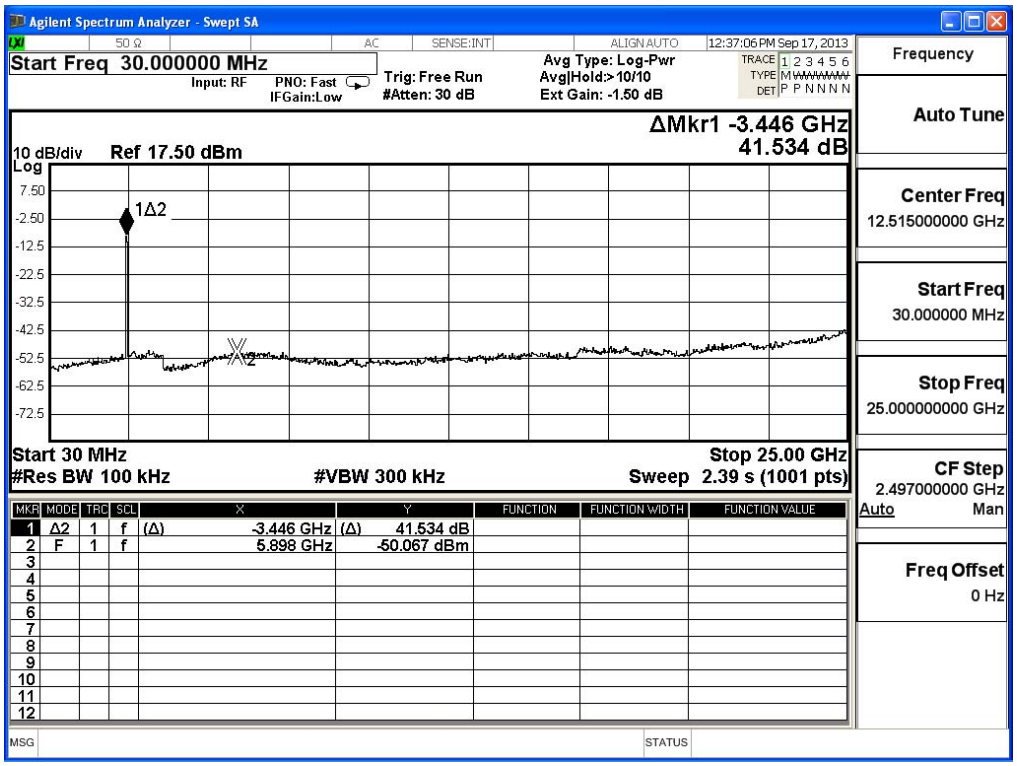
Channel 11 (2462MHz)



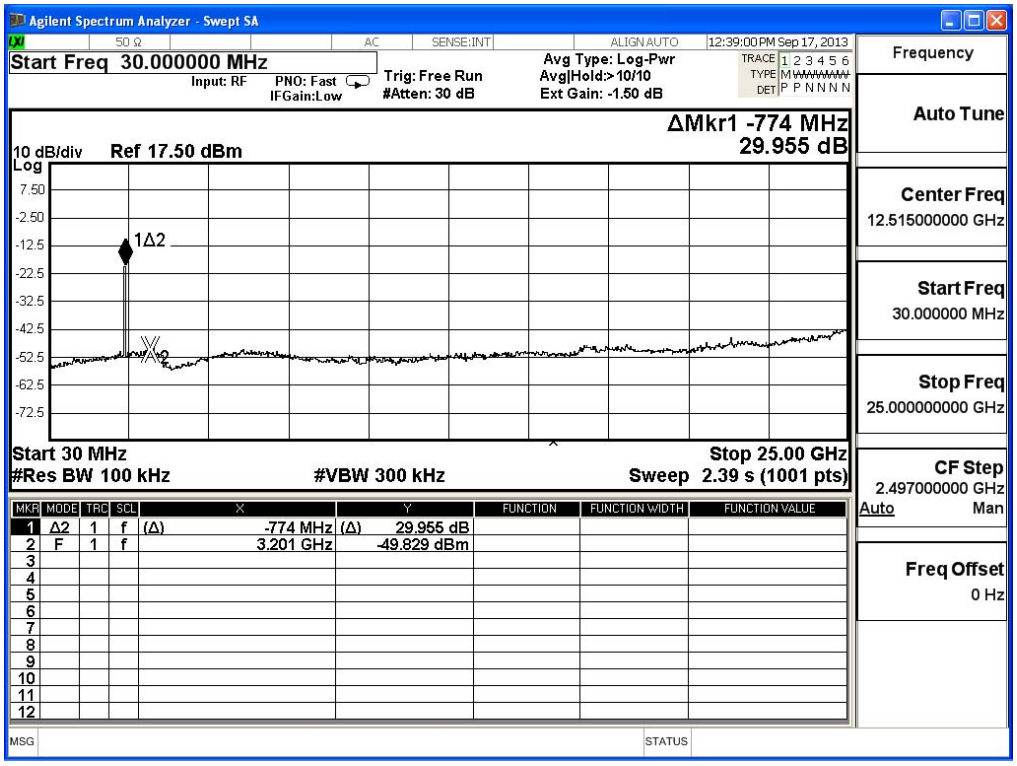
2412MHz (30MHz-25GHz)-802.11b



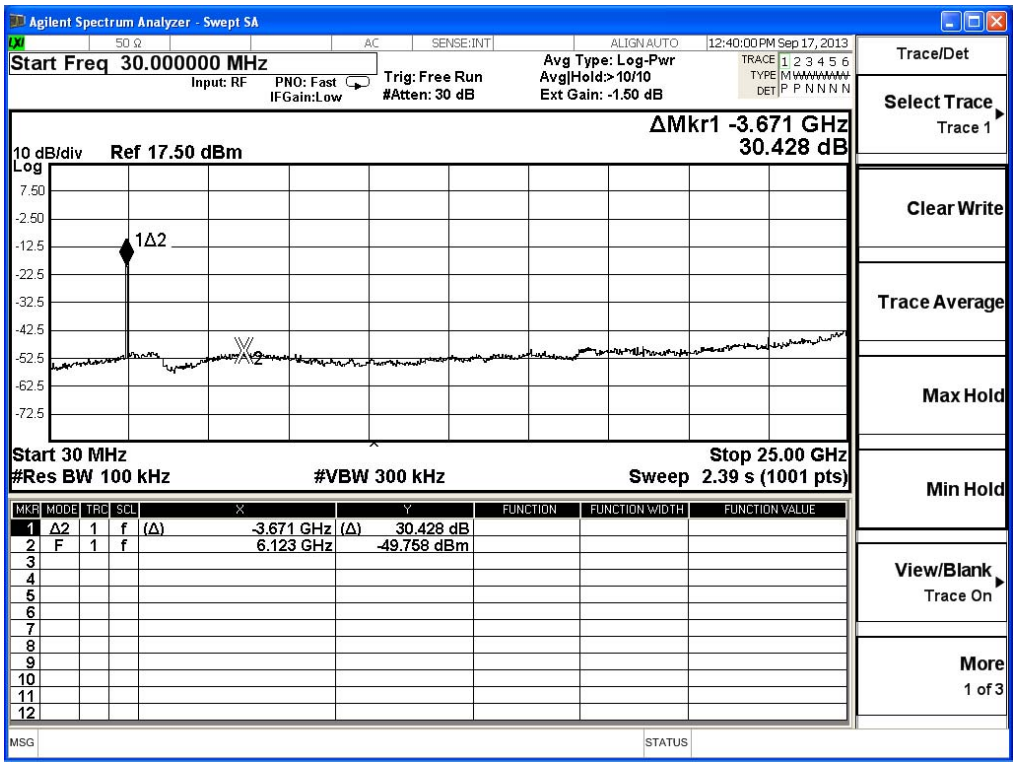
2462MHz (30MHz-25GHz) -802.11b



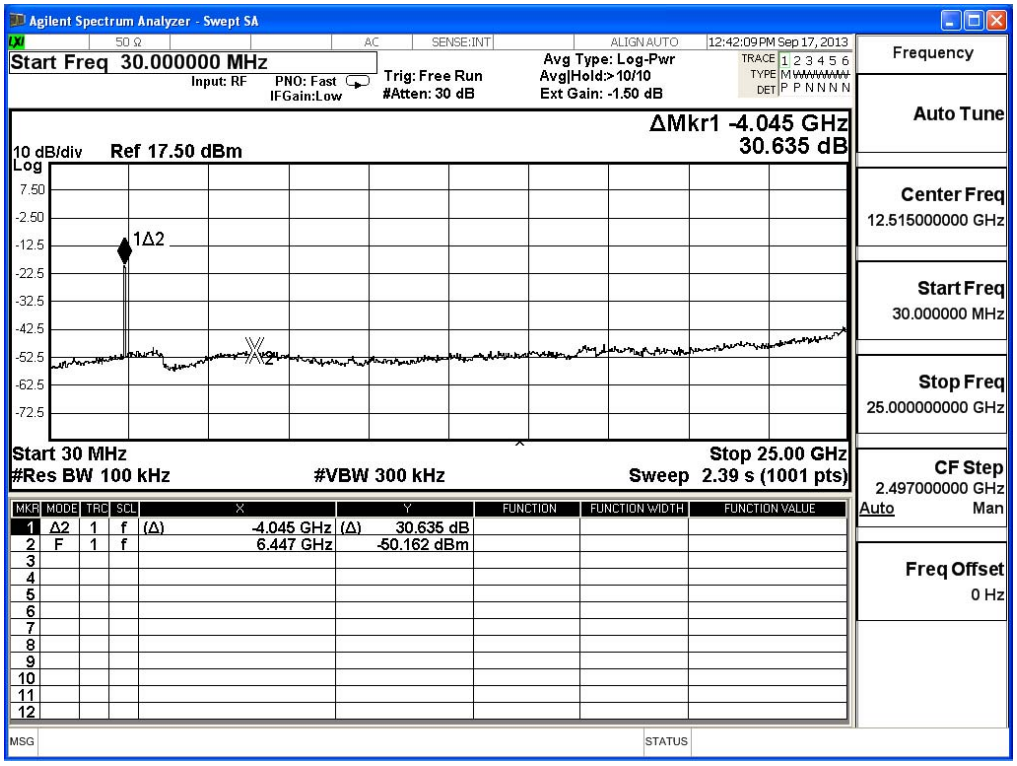
2412MHz (30MHz-25GHz)-802.11g



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



2412MHz (30MHz-25GHz)-802.11n(20MHz)-ANT 0



2462MHz (30MHz-25GHz) -802.11n(20MHz)-ANT 0