Japan Radio Law TEST REPORT

ZUIKI Inc.

Cuieboard3

Cubietruck

Prepared for : ZUIKI Inc.
Shin-Yokohama, Kohoku-ku, Yokohama-City, Kanagawa
222-0033, Japan

Prepared by : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-R15177
Date of Test : Apr.05~09, 2015
Date of Report : Apr.09, 2015

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TEST REPORT VERIFICATION

Applicant	:	ZUIKI Inc.
Manufacturer	:	CUBIEIECH LIMITED SHENZHEN
EUT Description	:	Cuieboard3
Model No.	:	Cubietruck
Test Voltage	:	DC 5V

Measurement Standards Used:

ARIB STD-T66 Version 2.1/2003-03
Technical Regulations Conformity Certification;
Radio Equipment Characteristics Testing Method

Second-Generation Low-Power Data Communication System/Wireless LAN System

The device described above is tested by AUDIX Technology Corporation. The measurement results were contained in this test report and AUDIX Technology Corporation was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with. Article 49-20 and the relevant Articles in Ordinance Regulating Radio Equipment, which is equal to the ARIB STD-T66 requirements, and the device has been measured in accordance with the test method given in MIC notice No.88 Appendix No.43, or surpasses or is equal to the test method.

This report applies to above tested sample only and shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test : Apr.05~09, 2015 Report of date: Apr.09, 2015

Prepared by : Cindy Zhu / Assistant

Reviewed by : Sunny Lu / Assistant Manager

Approved & Authorized Signer : David Jin / Manager

1. SUMMARY OF MEASUREMENTS AND RESULTS

1.1. Compliance with ARIB STD-T66 Version 2.1/2003-03

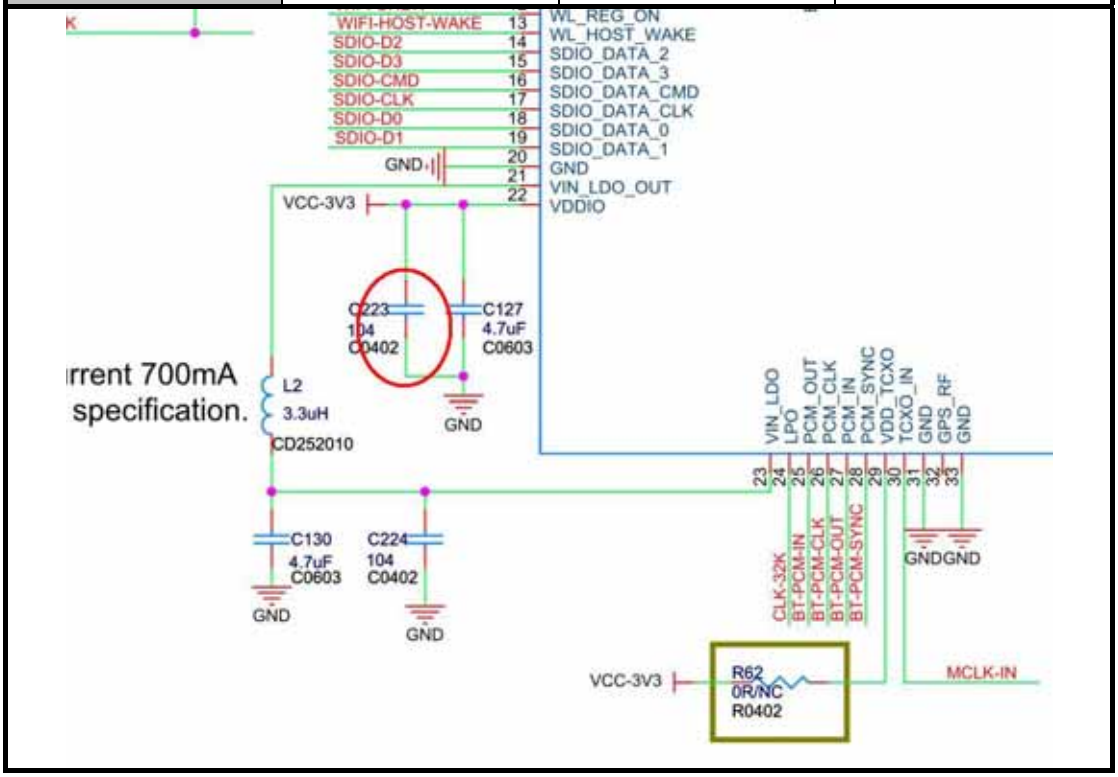
CLAUSE (ARIB STD-T66)	TEST PARAMETER	RESULTS
Transmitter Parameters		
3.2 (2)	Antenna Power	**PASS**
3.2 (3)	Tolerances for Antenna Power	**PASS**
3.2 (4)	Frequency Tolerance	**PASS**
3.2 (5)	Transmission Rate	**N/A**
3.2 (6)	Spurious Emissions	**PASS**
3.2 (7)	Occupied Frequency Bandwidth	**PASS**
3.2 (8)	Spread-spectrum Bandwidth / Spread Factor	**PASS**
3.2 (9)	Number of Carriers	**N/A**
3.2 (10)	Dwell Time	**N/A**
Receiver Parameters		
3.3 (1)	Secondary Radiated Emissions	**PASS**
Other Parameters		
3.4.1	Interference Prevention Function	**PASS**
3.4.2	Construction Protection	**PASS**
3.4.3	Carrier sense function	**PASS**
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

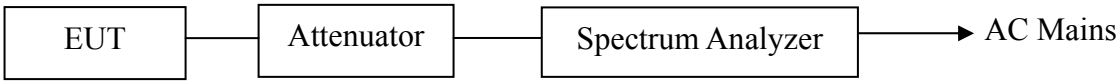
Product Name	: Cuieboard3
Model Number	: Cubietruck
Radio	: Bluetooth V4.0; IEEE802.11 b/g/n
Operation Frequency	: IEEE 802.11b: 2412MHz—2484MHz IEEE 802.11g: 2412MHz—2472MHz IEEE802.11nHT20: 2412MHz—2472MHz Bluetooth: 2402-2480MHz
Modulation Technology	: IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) Bluetooth V4.0: GFSK
Antenna Assembly Gain	: Integrated PCB antenna,Gain :4.1dBi
Applicant	: ZUIKI Inc. Shin-Yokohama, Kohoku-ku, Yokohama-City, Kanagawa 222-0033, Japan
Manufacturer	: CUBIEIECH LIMITED SHENZHEN 303, 1st Bldg, A Zone, Baoan Internet Industry Base, No.1009, Baoyuan Road, Baoan District, Shenzhen, China.
Date of Test	: Apr.05~09, 2015
Date of Receipt	: Apr.05, 2015
Sample Type	: Prototype production

Operating Voltage	5 V	5.5 V	4.5 V
Measuring Voltage	3.3 V	3.32V	3.27V
Tolerance	-	0.60%	-0.90%



NOTE: When EUT be operated at ±10% from the normal supply voltage, the supply voltage of RF part was varied within ±1%. All test cases were done under the normal supply voltage.

2.2.Block Diagram of Test Setup



(EUT: Cuieboard3)

2.3.Test Information

A special test software was used to control EUT work in Continuous TX mode(100% duty cycle), and select test channel, wireless mode and data rate.

Tested mode, channel, and data rate information			
Mode	data rate (Mpbs)(see Note)	Channel	Frequency (MHz)
IEEE 802.11b	1	Low :CH1	2412
	1	Middle: CH7	2442
	1	High: CH13	2472
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH7	2442
	6	High: CH13	2472
IEEE 802.11n HT20	6.5	Low :CH1	2412
	6.5	Middle: CH7	2442
	6.5	High: CH13	2472
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.			

2.4.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Validity Date	Cal. Agency
1	Spectrum Analyzer	Agilent	N9030A	MY51380221	Oct.29,14	Oct.28,15	CEPREI
2	Attenuator (10dB)	Agilent	8491A	MY39264375	Apr.28,14	Apr.27,15	CEPREI
3	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	Apr.28,14	Apr.27,15	CEPREI
4	Power meter	Anritsu	ML2487A	6K00002472	Aug.20,14	Aug.19,15	CEPREI
5	Signal Generator	HP	83732B	VS34490501	Apr.28,14	Apr.27,15	CEPREI

Note: Calibration by the calibration Agencies Listed in the table Correspond to paragraph 4(ii)(c) of Article 24-2 in the Radio Law.

2.5.Description of Test Facility

Site Description

Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd. No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
3m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 90454 Valid Date: Dec.30, 2017
3m & 10m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 794232 Valid Date: Oct.31, 2015
RF Anechoic Chamber	:	Dimensions are: [L]10m ╳ [W]5.5m ╳ [H]5m
EMC Lab.	:	Certificated by DAkkS, Germany Registration No: D-PL-12151-01-00 Valid Date: Dec.15, 2016 Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2016

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200372-0

AUDIX Technology (Shenzhen) Co., Ltd.
Shenzhen, Guangdong 518057
CHINA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2015-04-01 through 2016-03-31
Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

2.6.Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Radiated Spurious Emission test in RF chamber	3.6dB
Uncertainty for Conduction Spurious emission test	2.0dB
Uncertainty for Output power test	0.8dB
Uncertainty for Power density test	2.0dB
Uncertainty for Frequency range test	$7x10^{-8}$
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.1 %
Uncertainty for test site temperature and humidity	0.6℃
	3%

3. MEASUREMENTS OF TRANSMITTER PARAMETERS

3.1.Antenna Power

3.1.1. Limit

Item	Limits
Antenna Power Density	≦10mW/MHz (OFDM,DS from 2400~2483.5MHz) ≦10mW (Other from 2400~2483.5MHz)
Antenna Power Error	+20%,-80% (Base on manufacturer declare antenna power density)

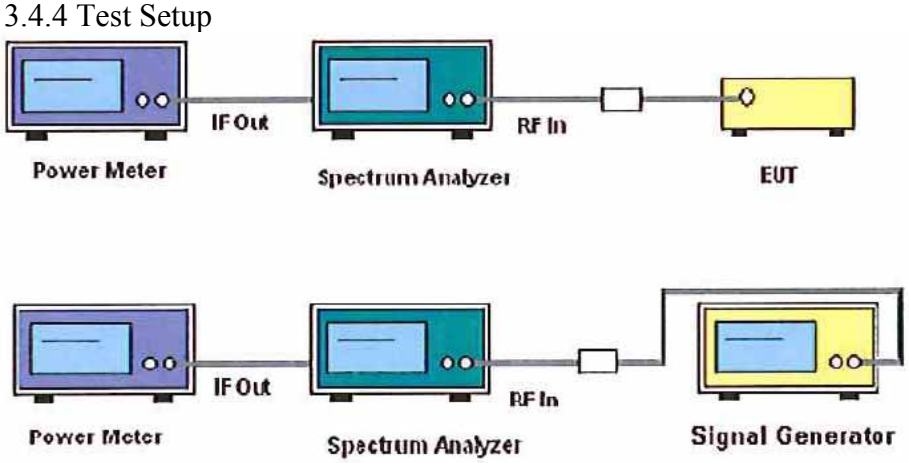
3.1.2. Measuring Instruments

See list of measuring instruments of the 2.3 section.

3.1.3. Test Procedures

1. A power meter is connected on the IF output port of the spectrum analyzer.
2. Adjust the spectrum analyzer to have the center frequency the same with the measured carrier.
   RBW=VBW=1MHz. detector mode is positive peak. Turn off the averaging function and use zero span.
3. The calibrating signal power shall be reduced to 0 dBm and is shall be verified that the power meter reading also reduces by 10 dB.
4. Connect the equipment to be measured. Using the following settings of the spectrum analyzer in combination with “max hold” function, fine the frequency of highest power output in the power envelope: center frequency equal to operating frequency; RBW & VBW: 1 MHz: detector mode: positive peak: averaging : off: span: 3 times the spectrum width: amplitude: adjust for middle of the instrument’s range. The frequency found shall be recorded.
5. Set the center frequency of the spectrum analyzer to the found frequency and switch to zero span. The power meter indicates the measured power density “E”.
6. Remove the EUT and put the replacing standard signal generator (SSG). Set the standard signal generator (SSG) at same frequency and transmit on, then set SSG output power at Pt to give the equivalent output level of “E”.
7. Calculate antenna power density by the formula PD=Pt + 10*log(1/X).
   x: The duty cycle of the EUT in continuously transmitting mode
   Pt: Output power of the SSG
8. Antenna power Error is definition that actual measure antenna power tolerance between +20% to -80% power range that base on manufacturer declare the conducted power density.

3.4.4 Test Setup



3.1.4. Test Results

EUT: Cuieboard3	
M/N: Cubietruck	Test Engineer: Donjon_Huang
Test Site: RF Site	Date:2015-04-07
Temperature:23.8±0.6℃ Humidity: 52.1±3.0 % Pressure: 101.4±1.0kpa	

Test Voltage	Mode	CH	Result (mW/MHz)	Limit (mW/MHz)
DC 5V	11b	CH1	2.34 4.00%	10 or less Tolerance -80% +20%
		CH7	2.25 0%	
		CH13	1.95 -13.33%	
		CH14	0.98 -56.44%	
	11g	CH1	0.95 -57.78	10 or less Tolerance -80% +20%
		CH7	0.87 -61.33%	
		CH13	0.79 -64.89%	
	11n HT20	CH1	0.67 -70.22%	10 or less Tolerance -80% +20%
		CH7	0.62 -72.44%	
		CH13	0.56 -75.11%	
Rated Power: 2.25mW/MHz				
Conclusion: PASS				

3.2.Frequency Tolerance

3.2.1. Limit

Item	Limits
Frequency Tolerance	≦50ppm

3.2.2. Measuring Instruments

See list of measuring instruments of the 2.3 section.

3.2.3. Test Procedure

1. Frequency accuracy of instrument shall be less than 10% of limits tolerance (5ppm).
2. Setting of SA is following as: RBW:10kHz / VBW:10kHz.
3. The frequency tolerance test case is directly measured using spectrum analyzer. Then the frequency
   error formula is (f-fc)/fc×10^6 ppm and the limit is less than ±50ppm.

3.2.4. Test Setup

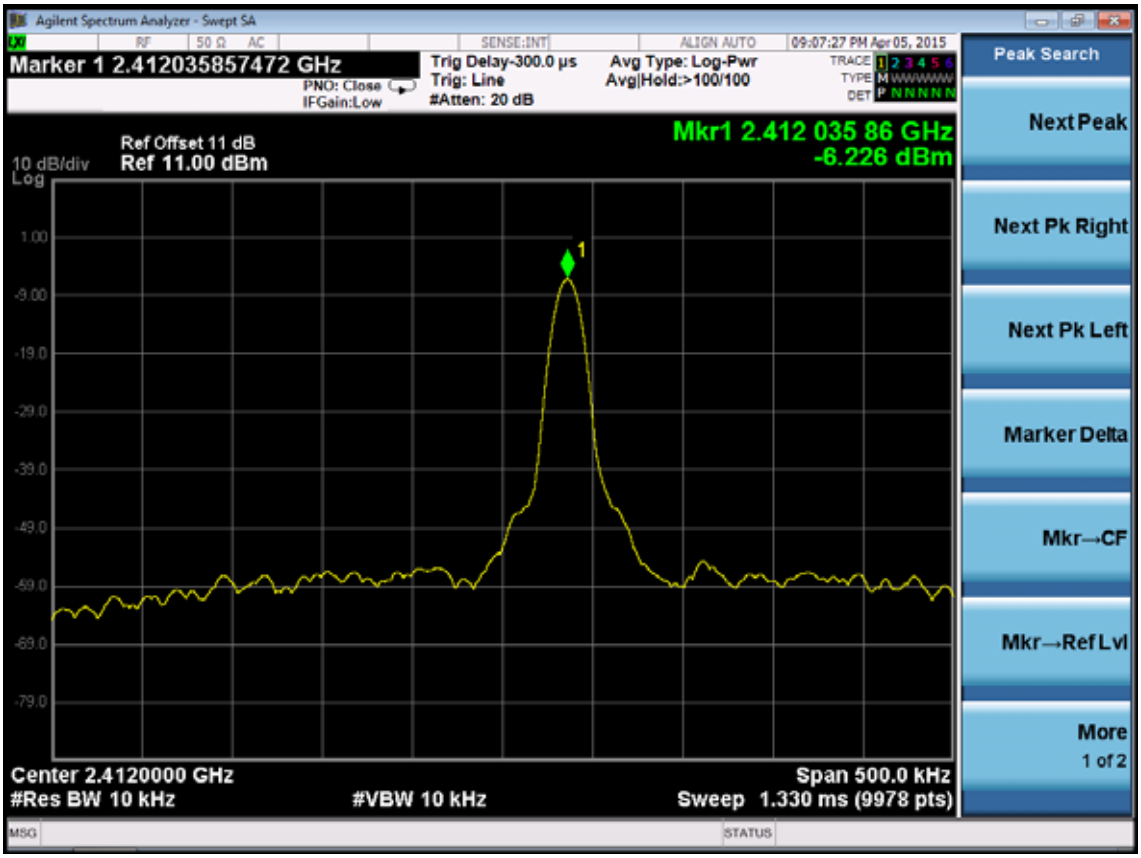
See clause 2.2 for block diagram of test setup.

3.2.5. Test Results

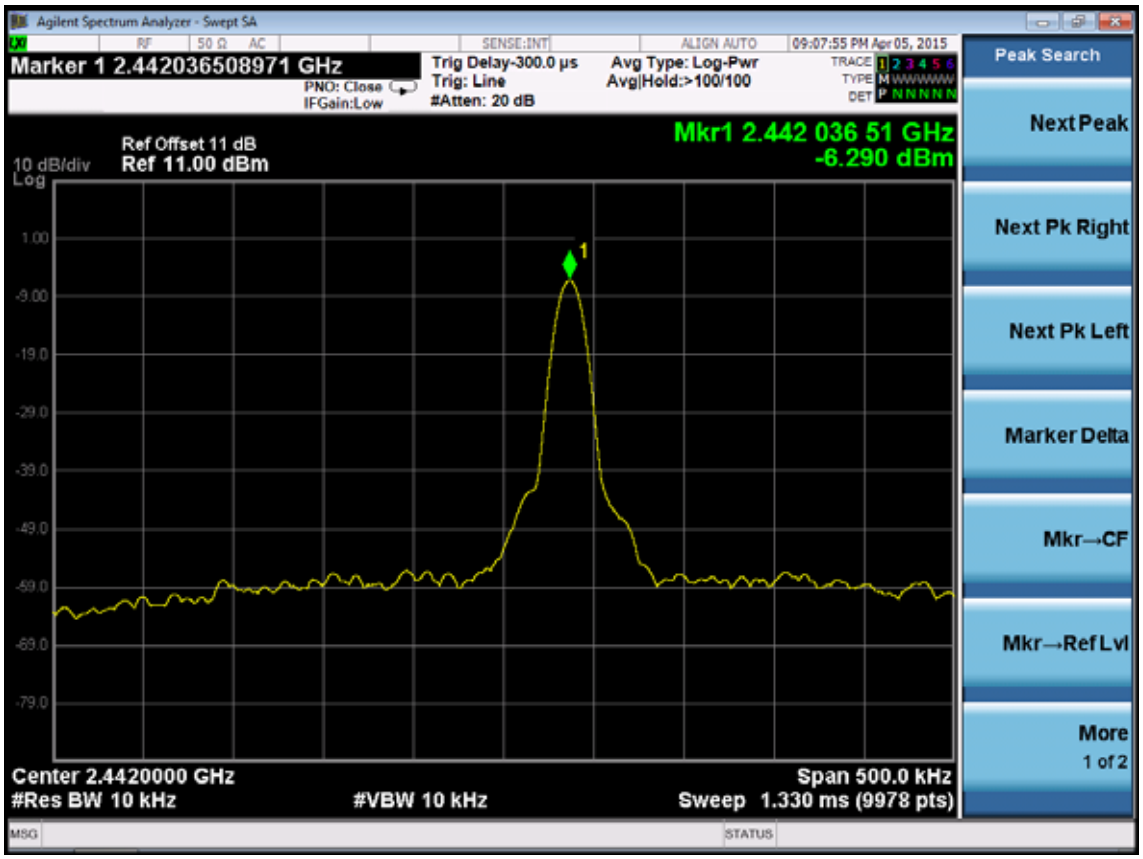
EUT: Cuieboard3	
M/N: Cubietruck	Test Engineer: Donjon_Huang
Test Site: RF Site	Date:2015-04-07
Temperature:22.2±0.6 ℃ Humidity: 52.7±3.0 % Pressure: 101.1±1.0kpa	

Test Voltage	Mode	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
DC 5V	Tx	CH1	2412.03586	2412	14.89	±50
		CH7	2442.03651	2442	14.95	±50
		CH13	2472.03766	2472	15.23	±50
		CH14	2484.03756	2484	15.12	±50
Conclusion: Pass						

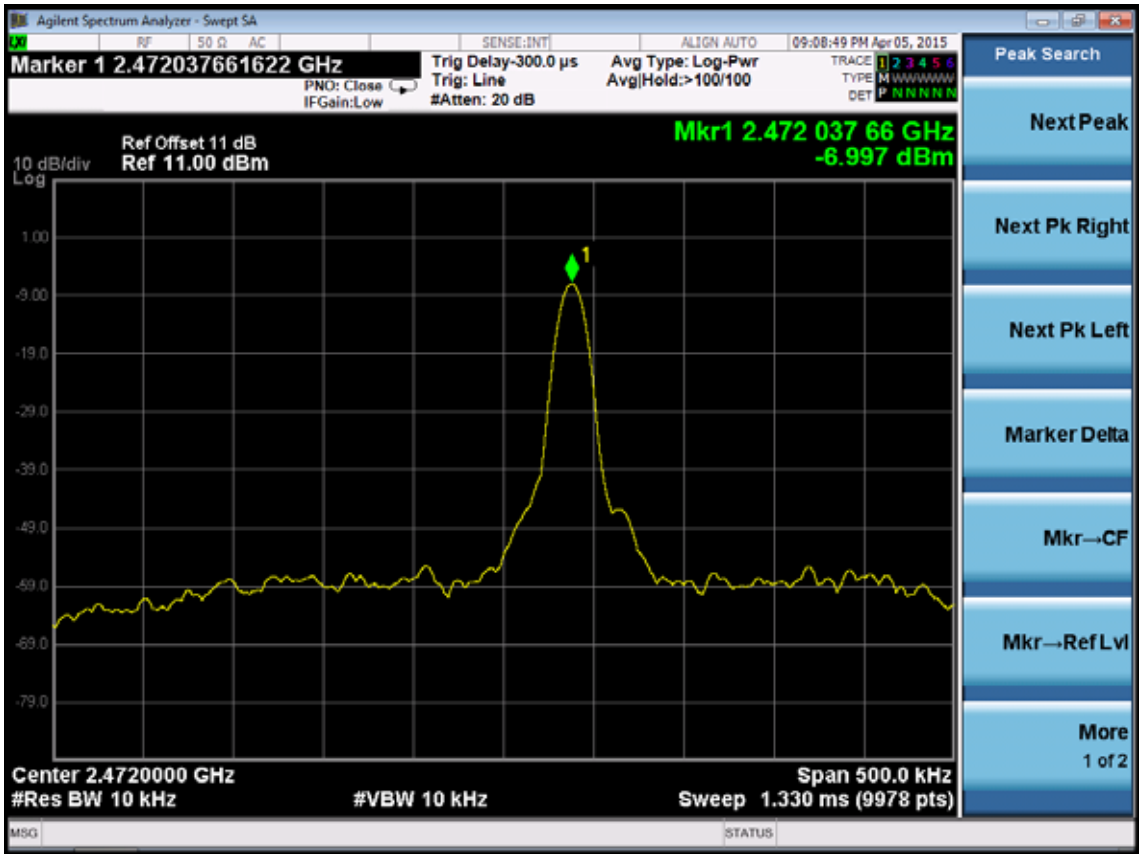
Test CH1: 2412MHz



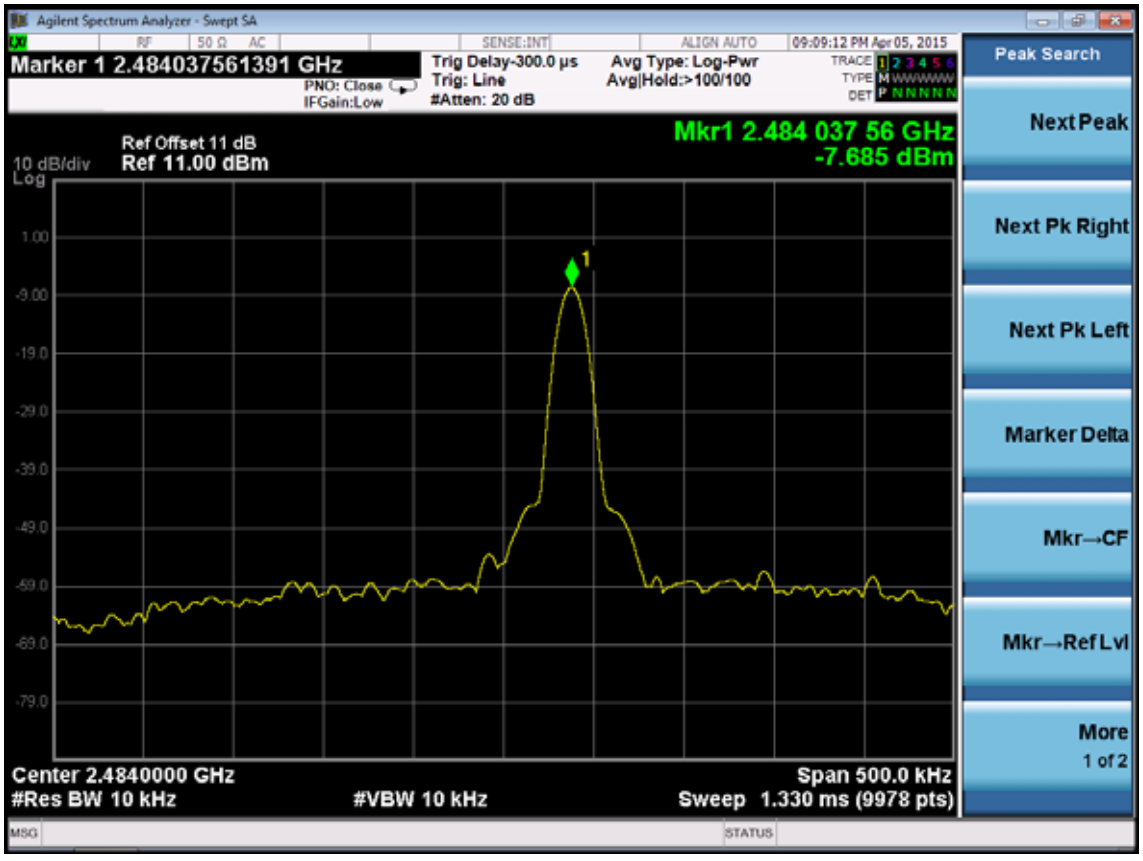
Test CH7: 2442MHz



Test CH13: 2472MHz



Test CH14: 2484MHz



3.3. Occupied Bandwidth and Spread-spectrum Bandwidth / Spread Factor Measurement

3.3.1. Limit

Item	Limits
Occupied Bandwidth	DS≦26MHz; Others≦26MHz OFDM (For BW=20MHz)≦26MHz OFDM (For BW=40MHz)≦38MHz
Spreading Bandwidth	DS,OFDM,FH,FH+DS,FH+OFDM≧500kHz

3.3.2. Measuring Instruments

See list of measuring instruments of the 2.3 section.

3.3.3. Test Procedure

1. Setting of SA is following as: RBW: 100KHz / VBW: 300kHz
   Sweep Mode: Continuous sweep
   Detect mode: Positive peak
   Trace mode: Max hold.
2. EUT have transmitted each modulation signal and fixed channelize (For DSSS or OFDM Device).
   SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz(For DSSS or OFDM Device).
3. SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and must greater than 500kHz.
4. Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
5. Spread Spectrum Factor(2400MHz≦f≦2483.5MHz) limit should be 5 or more. CH14 is 2484MHz, so it is Spread Spectrum Factor should be 10 or more.

3.3.4. Test Setup

See clause 2.2 for block diagram of test setup.

3.3.5. Test Results

(99% BW)

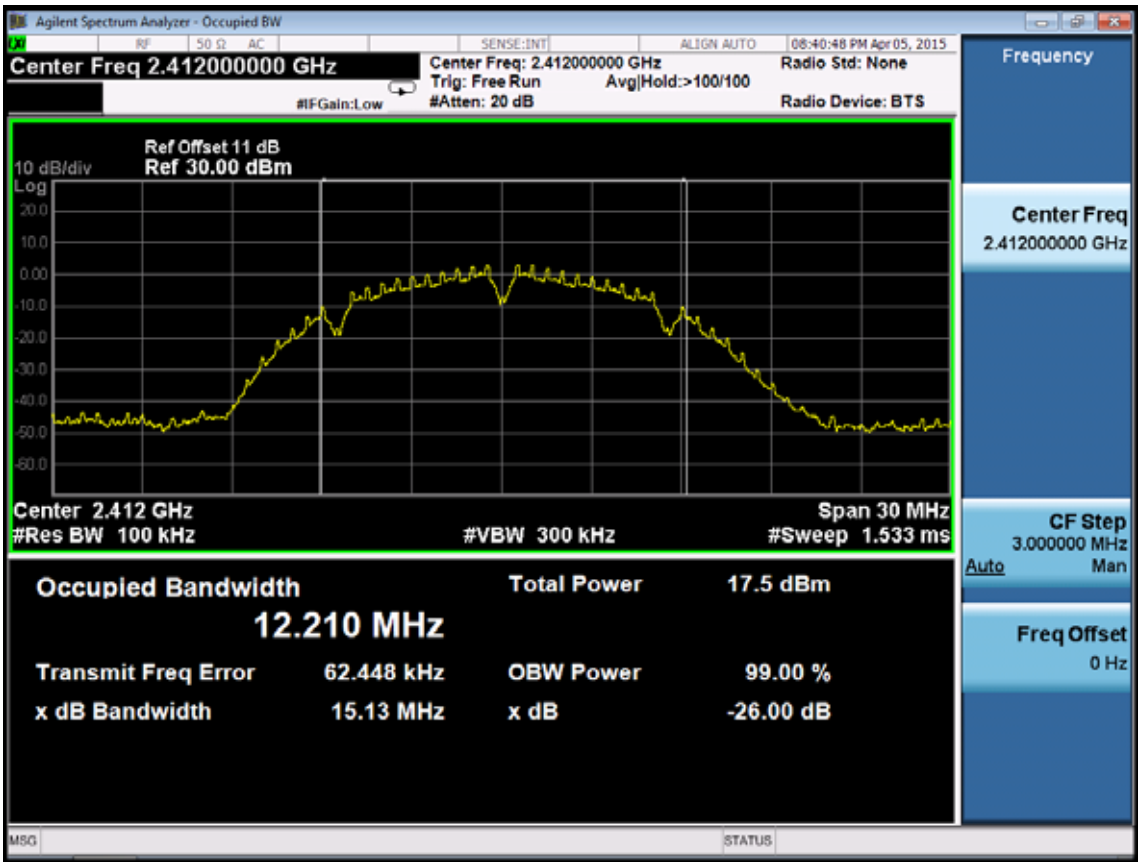
EUT: Cuieboard3		
M/N: Cubietruck		
Test date: 2015-04-07	Pressure: 101.3±1.0 kpa	Humidity: 53.8±3.0%
Tested by: Kobe_Huang	Test site: RF site	Temperature:22.1±0.6 ℃

Voltage (V)	Test Mode	CH	99% bandwidth (MHz)	Limit (KHz)
DC 5V	11b	CH1	12.210	≦26
		CH7	12.343	≦26
		CH13	12.169	≦26
		CH14	20.581	≦26
	11g	CH1	16.305	≦26
		CH7	16.292	≦26
		CH13	16.298	≦26
	11n HT20	CH1	17.446	≦26
		CH7	17.465	≦26
		CH13	17.455	≦26
Conclusion：PASS				

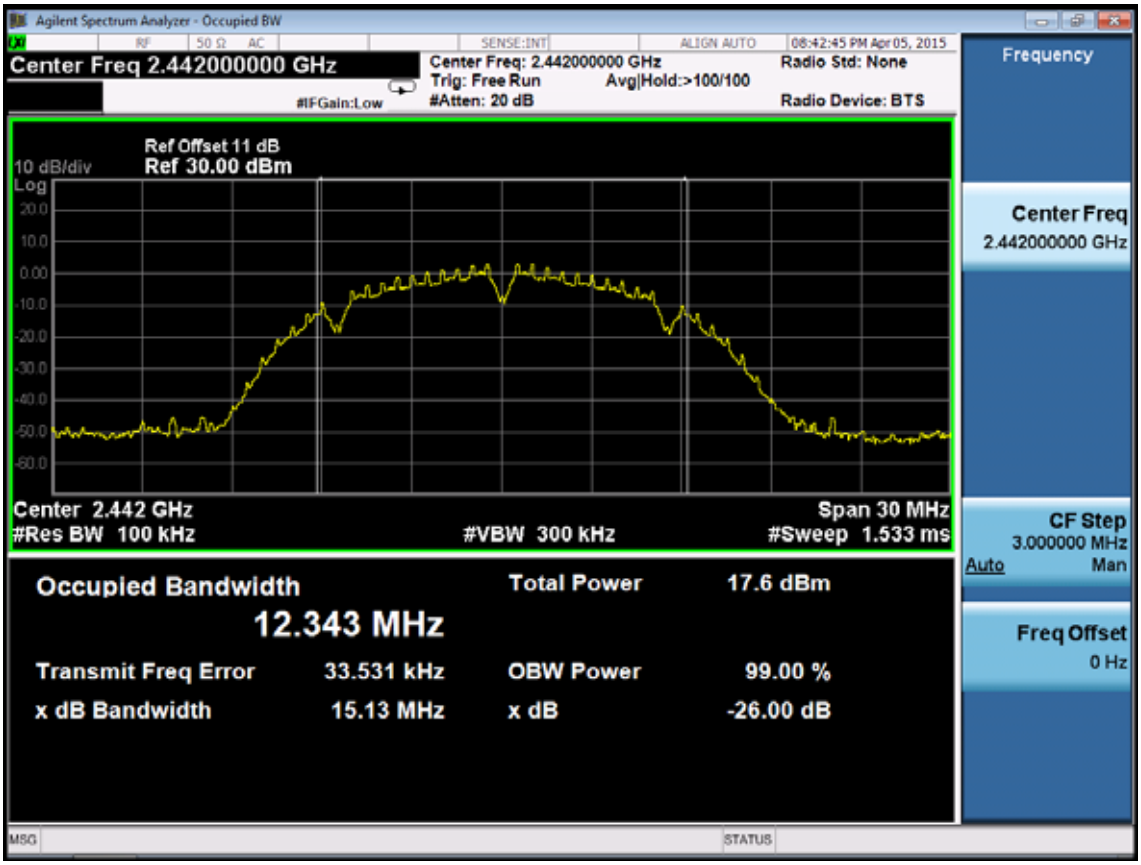
(99% BW)

Test Mode: IEEE 802.11b

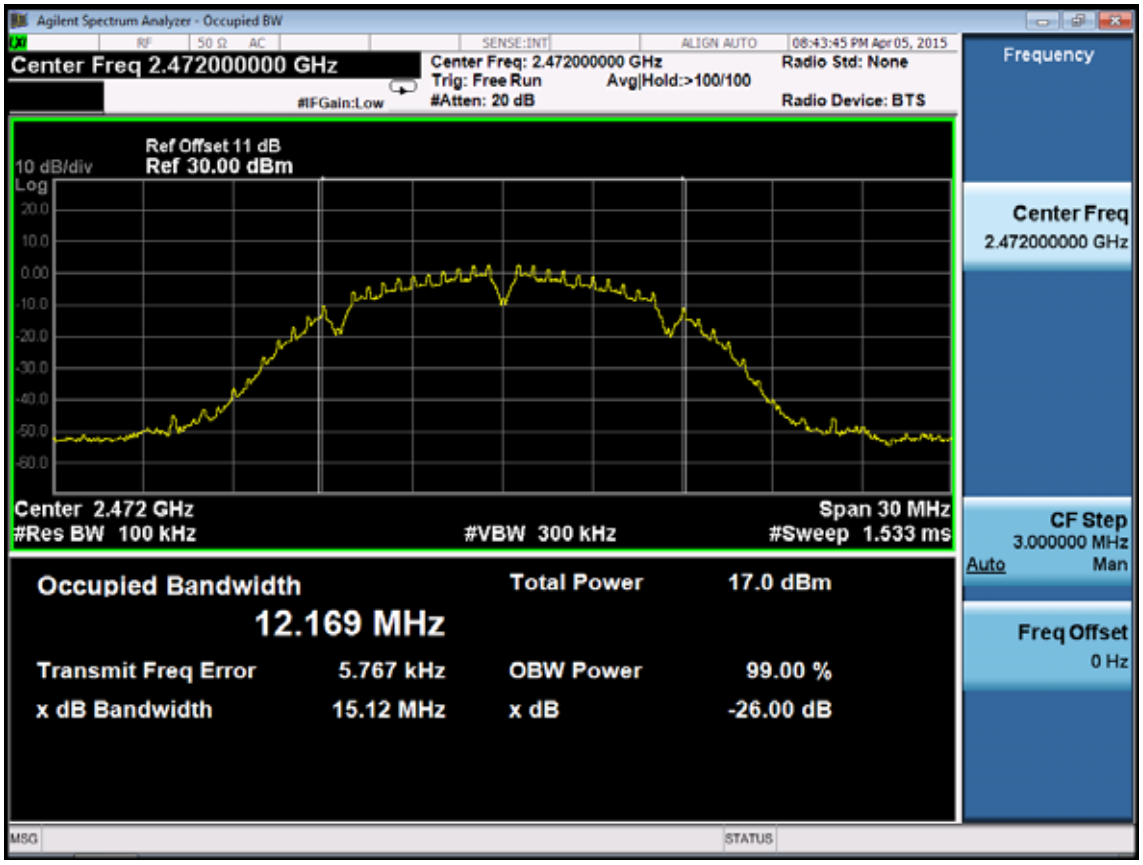
Test CH1: 2412MHz



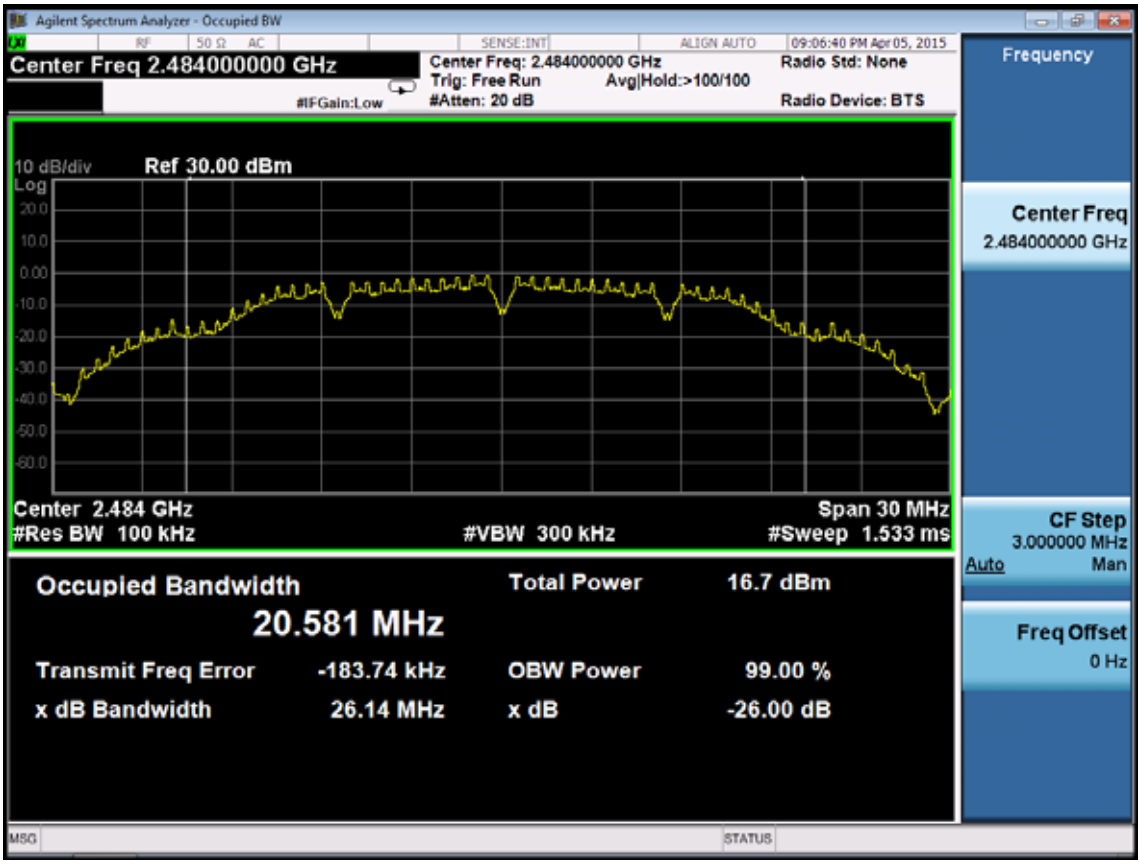
Test CH7: 2442MHz



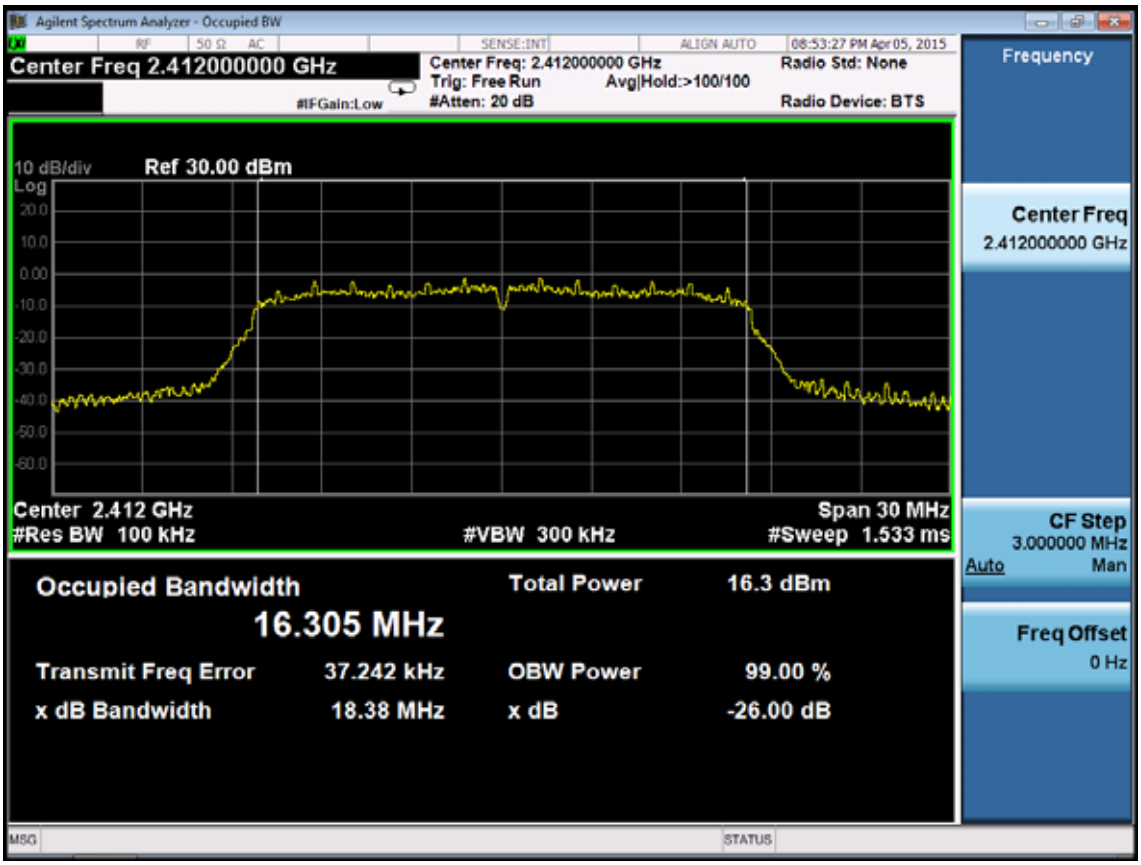
Test CH13: 2472MHz



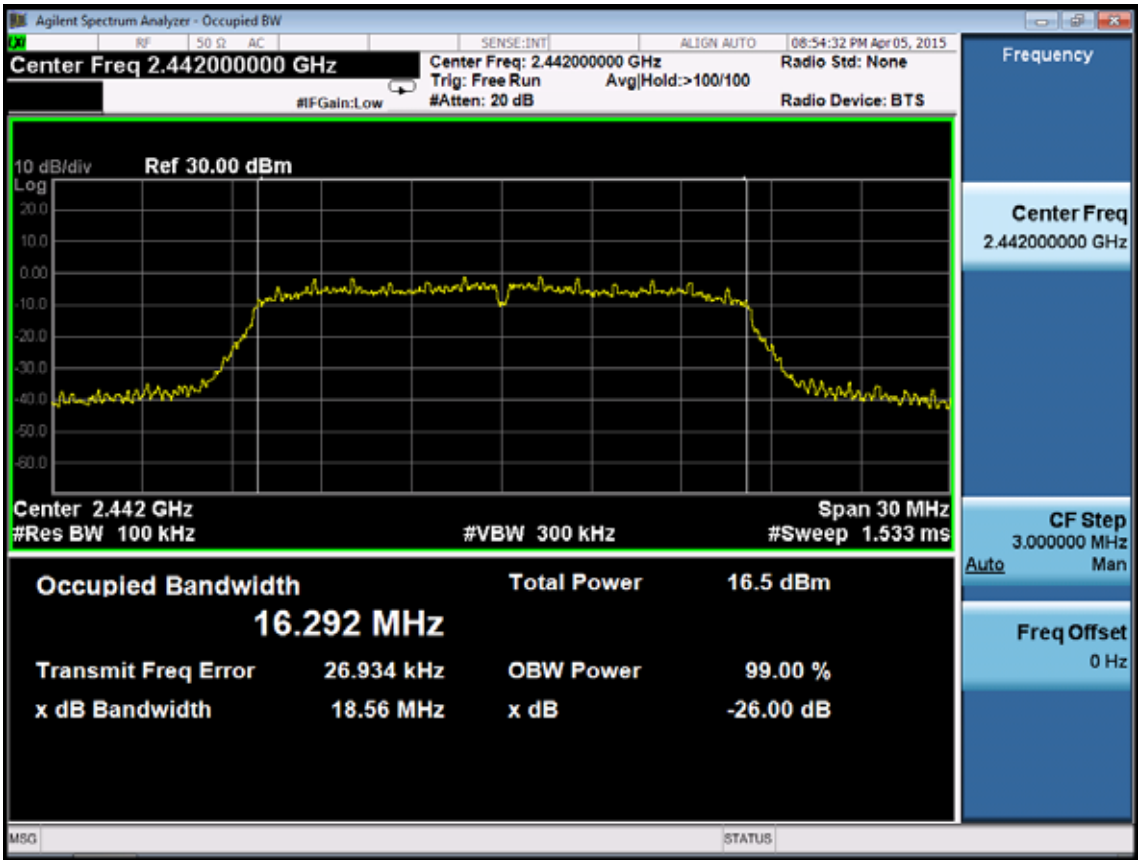
Test CH14: 2484MHz



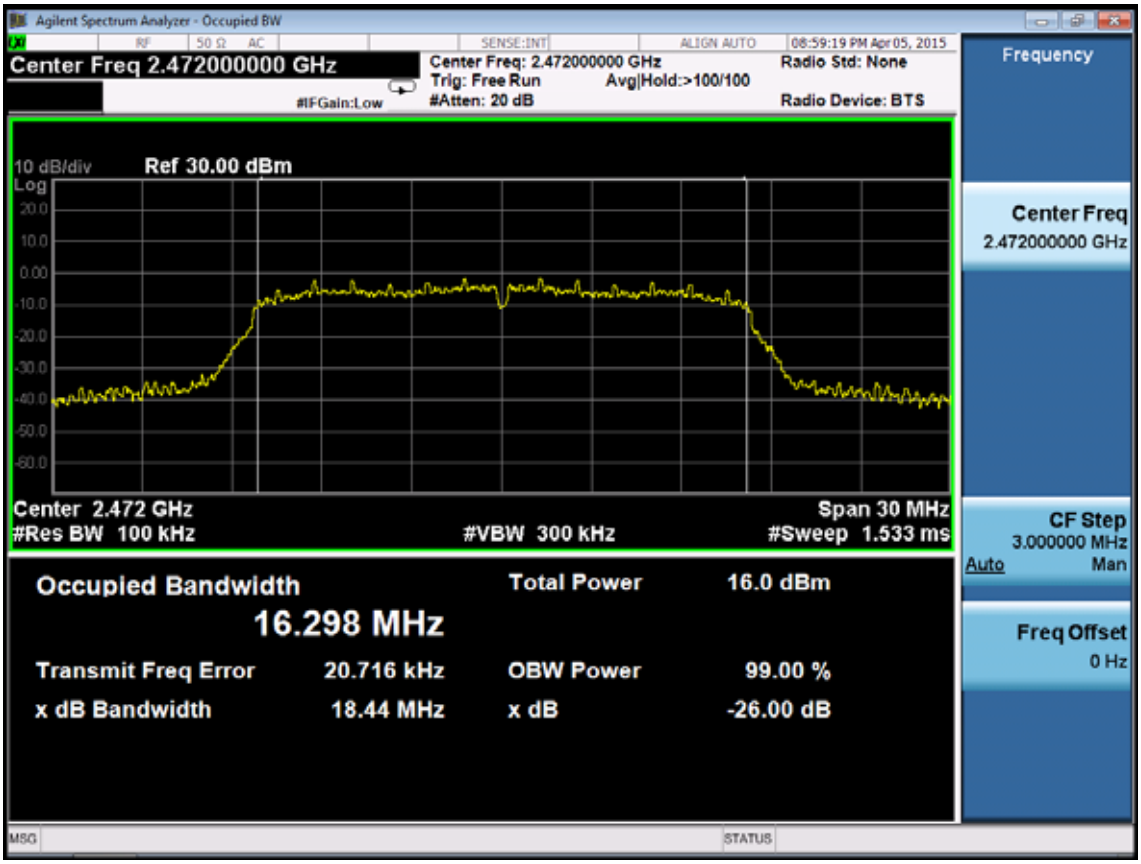
Test Mode: IEEE 802.11g
Test CH1: 2412MHz



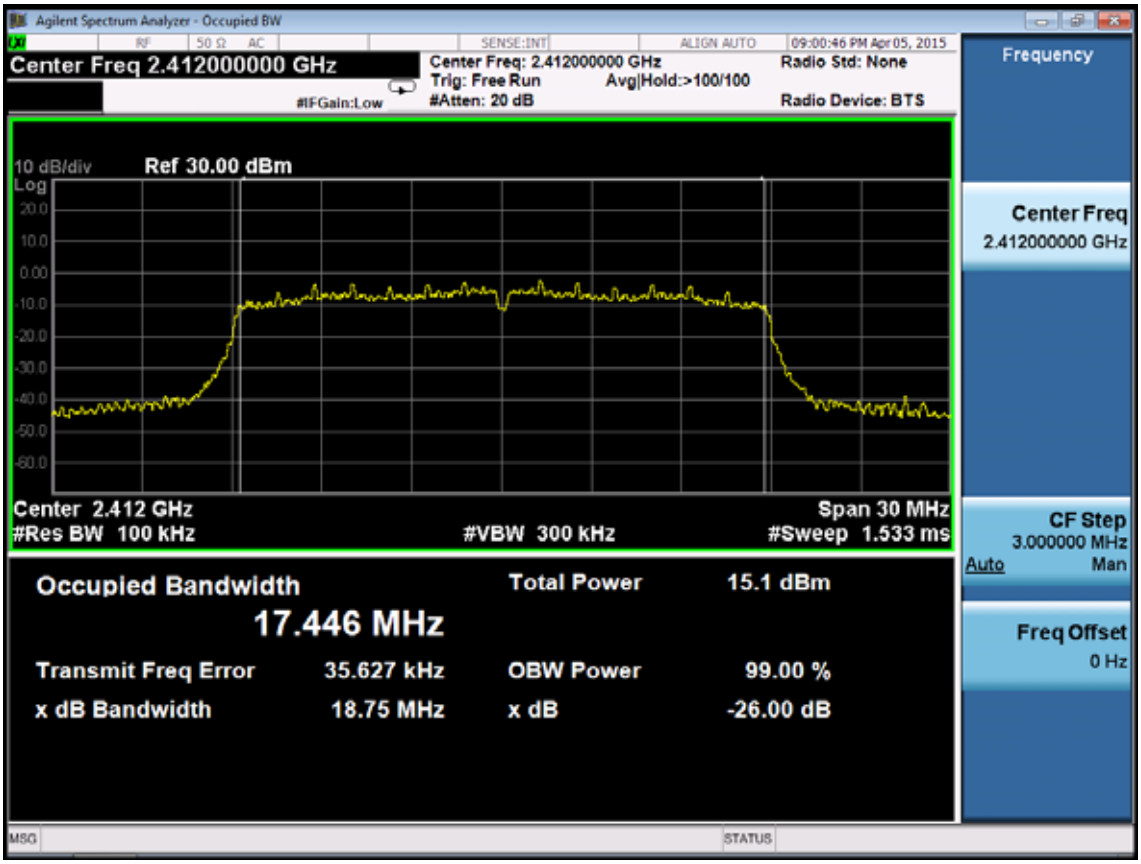
Test CH7: 2442MHz



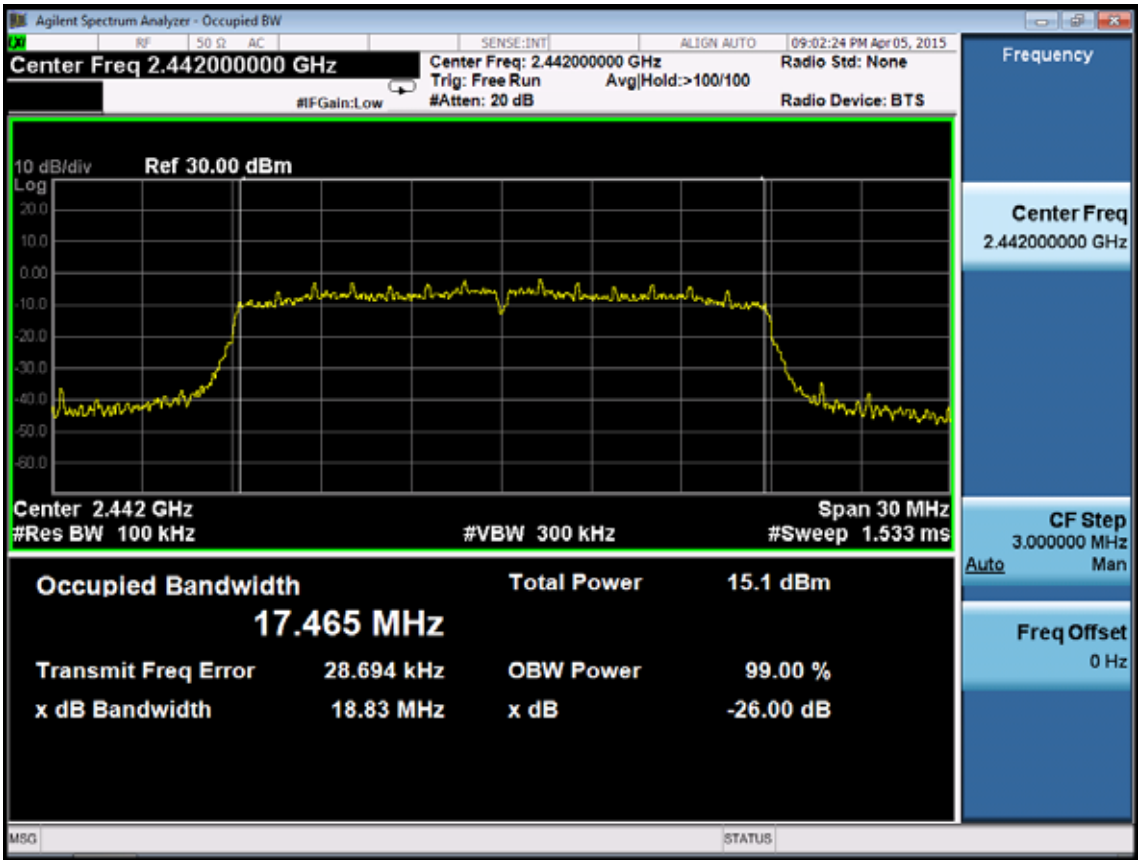
Test CH13: 2472MHz



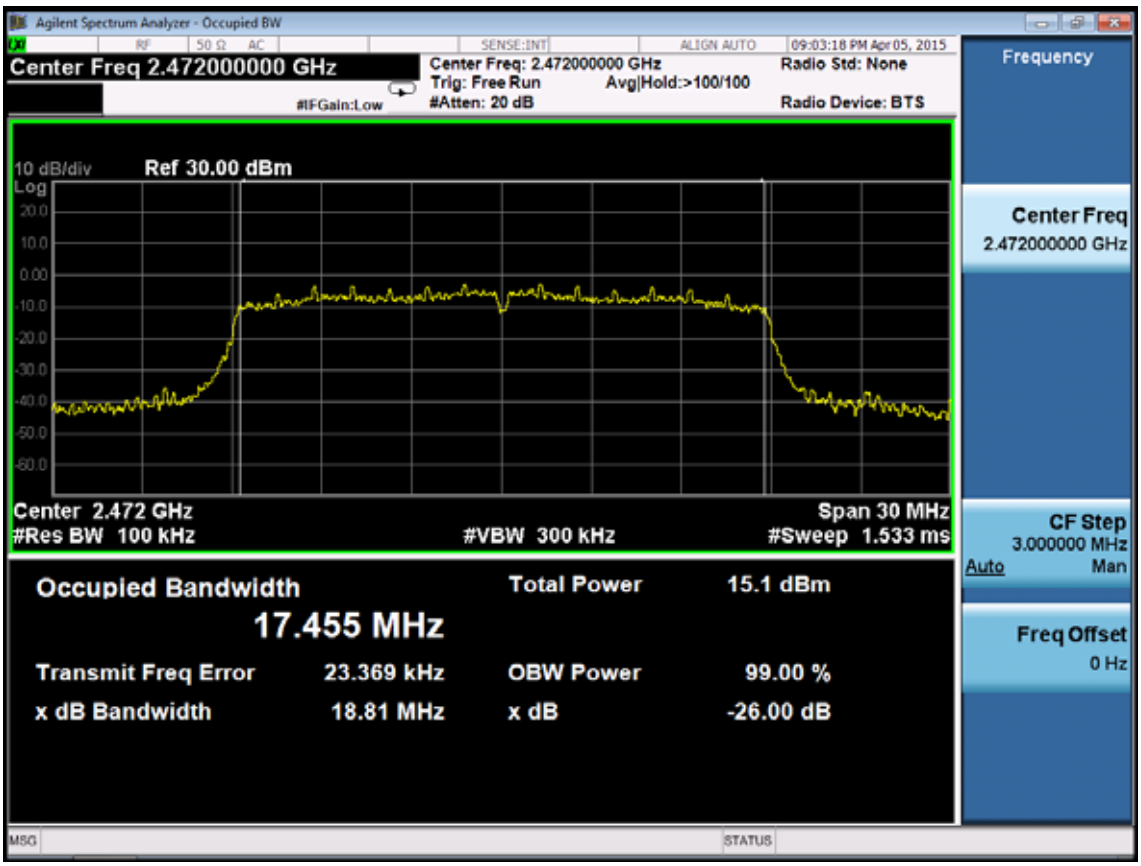
Test Mode: IEEE 802.11n HT20
Test CH1: 2412MHz



Test CH7: 2442MHz



Test CH13: 2472MHz



(90% BW)

EUT: Cuieboard3		
M/N: Cubietruck		
Test date: 2015-04-07	Pressure: 101.1±1.0 kpa	Humidity: 52.8±3.0%
Tested by: Donjon_Huang	Test site: RF site	Temperature:23.2±0.6 ℃

Voltage (V)	Test Mode	CH	90% bandwidth (MHz)	Limit (KHz)
DC 5V	11b	CH1	8.0588	>500
		CH7	8.1295	>500
		CH13	8.0278	>500
		CH14	14.592	>500
	11g	CH1	13.751	>500
		CH7	13.702	>500
		CH13	13.721	>500
	11n HT20	CH1	14.629	>500
		CH7	14.691	>500
		CH13	14.673	>500
Conclusion：PASS				

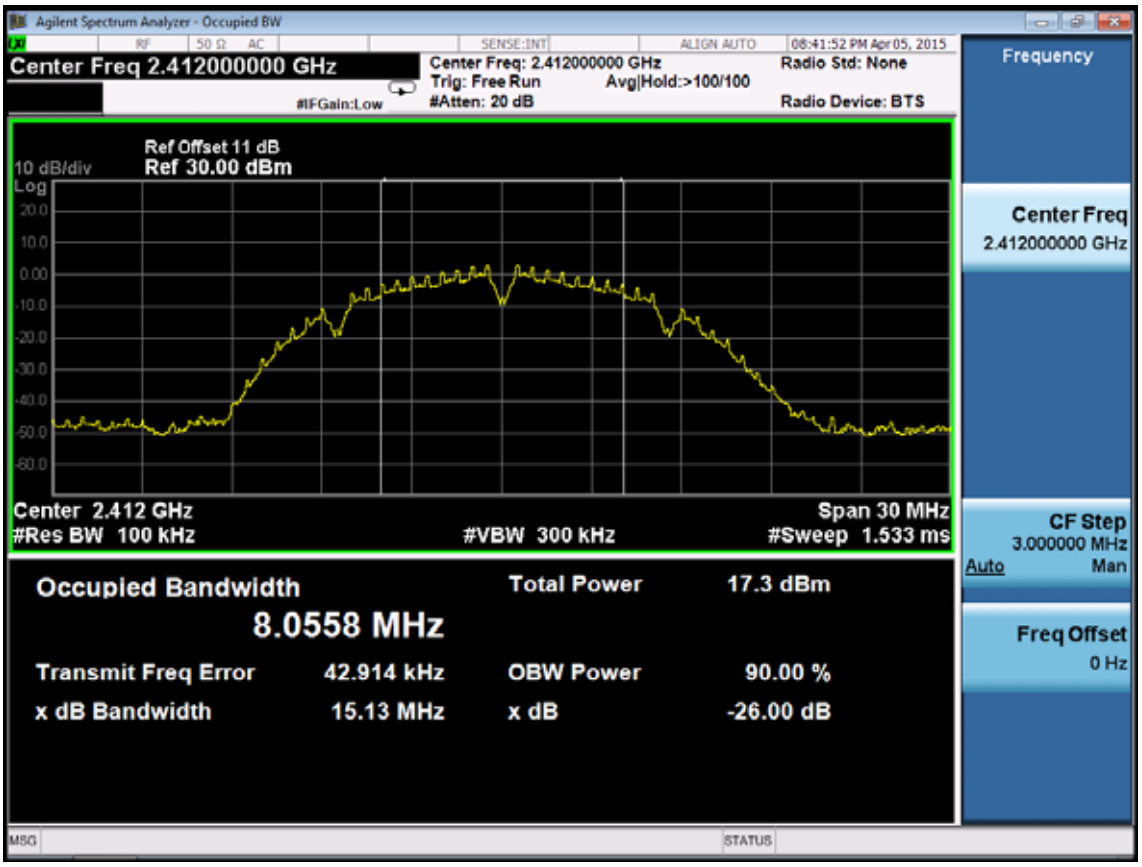
Spread Spectrum Factor

Test Mode	CH	90% bandwidth (MHz)	Symbol Rate (MHz)	Spread Spectrum Factor	Limit
11b	CH1	8.0588	1.375	5.861	≧5
	CH7	8.1295		5.912	≧5
	CH13	8.0278		5.838	≧5
	CH14	14.592		10.612	≧10
11g	CH1	13.751	1.0	14.977	≧5
	CH7	13.702		14.984	≧5
	CH13	13.721		14.981	≧5
11n HT20	CH1	14.629	1.0	15.870	≧5
	CH7	14.691		15.847	≧5
	CH13	14.673		15.818	≧5
Conclusion：PASS					

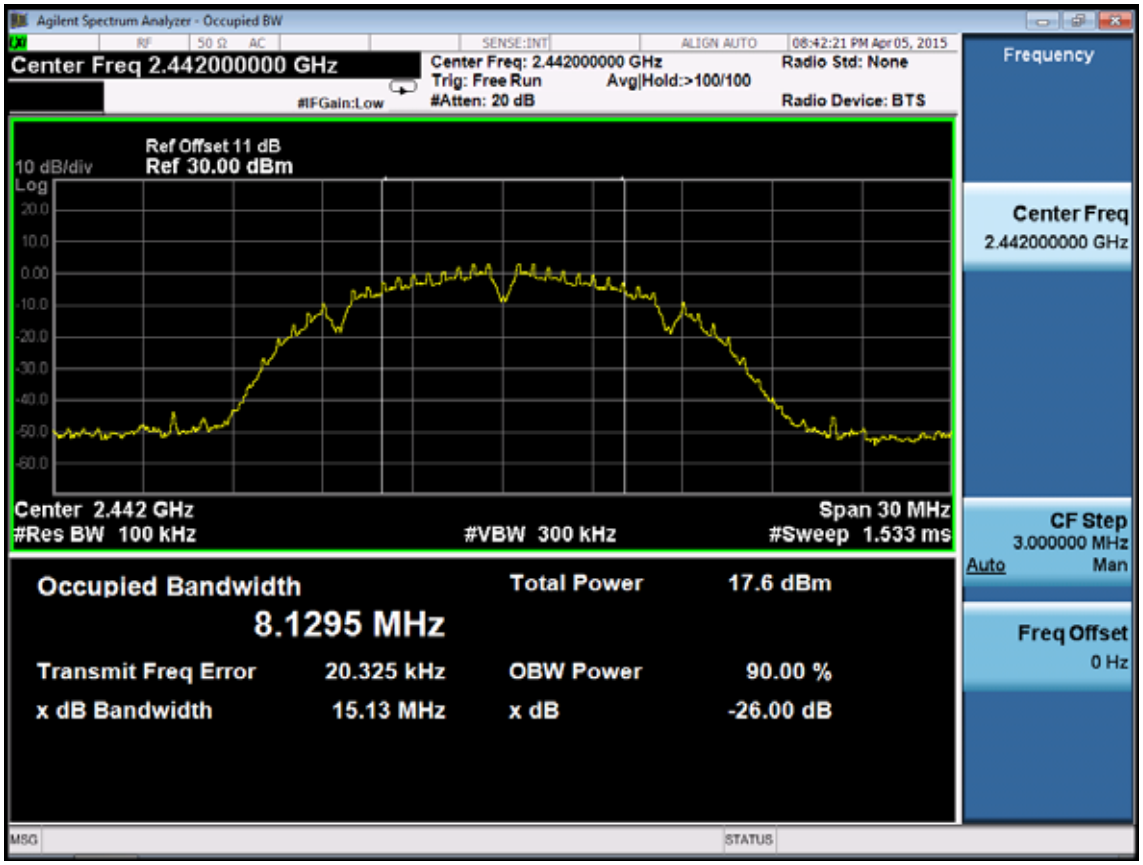
(90% BW)

Test Mode: IEEE 802.11b

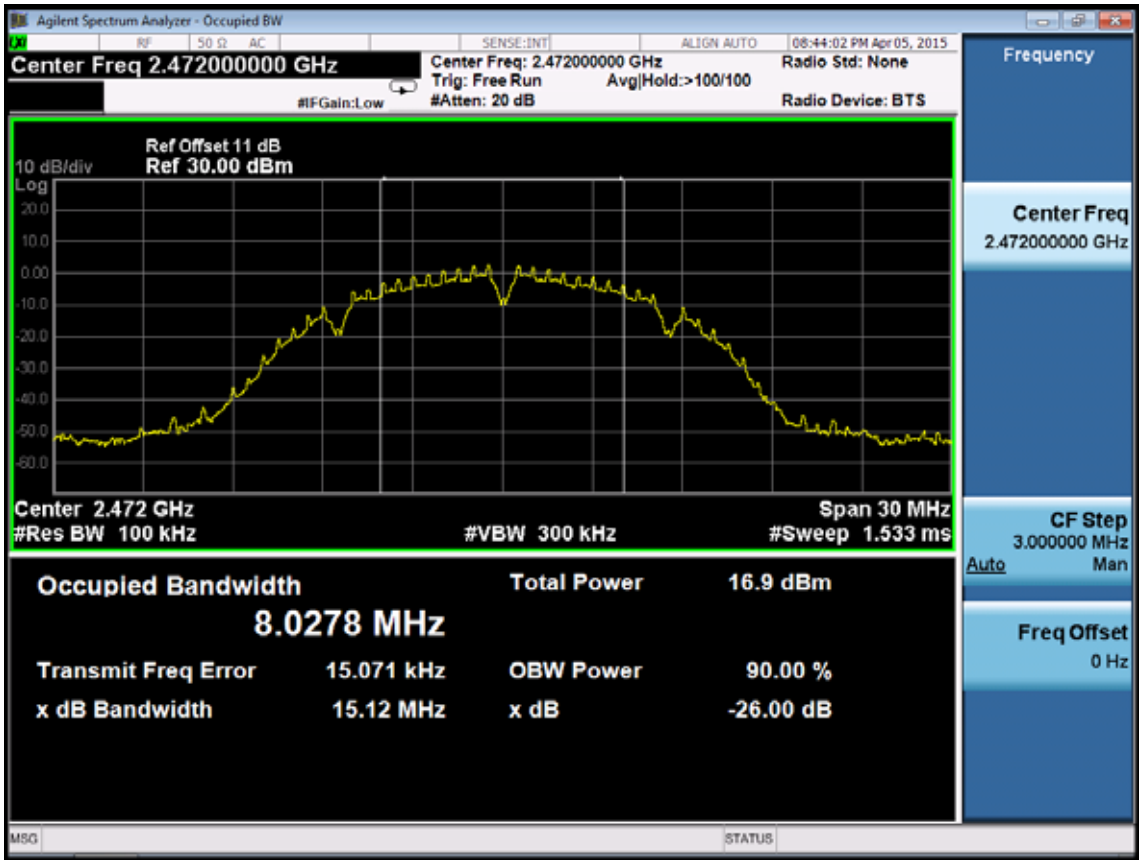
Test CH1: 2412MHz



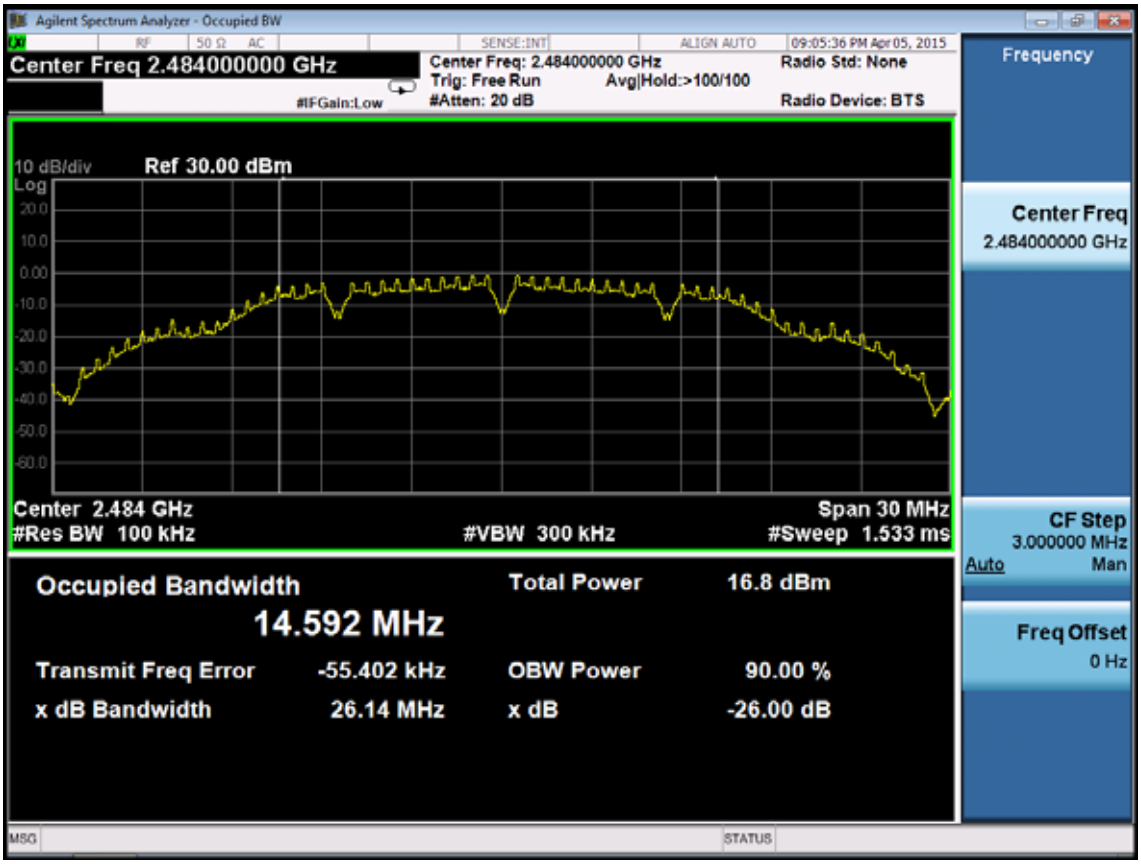
Test CH7: 2442MHz



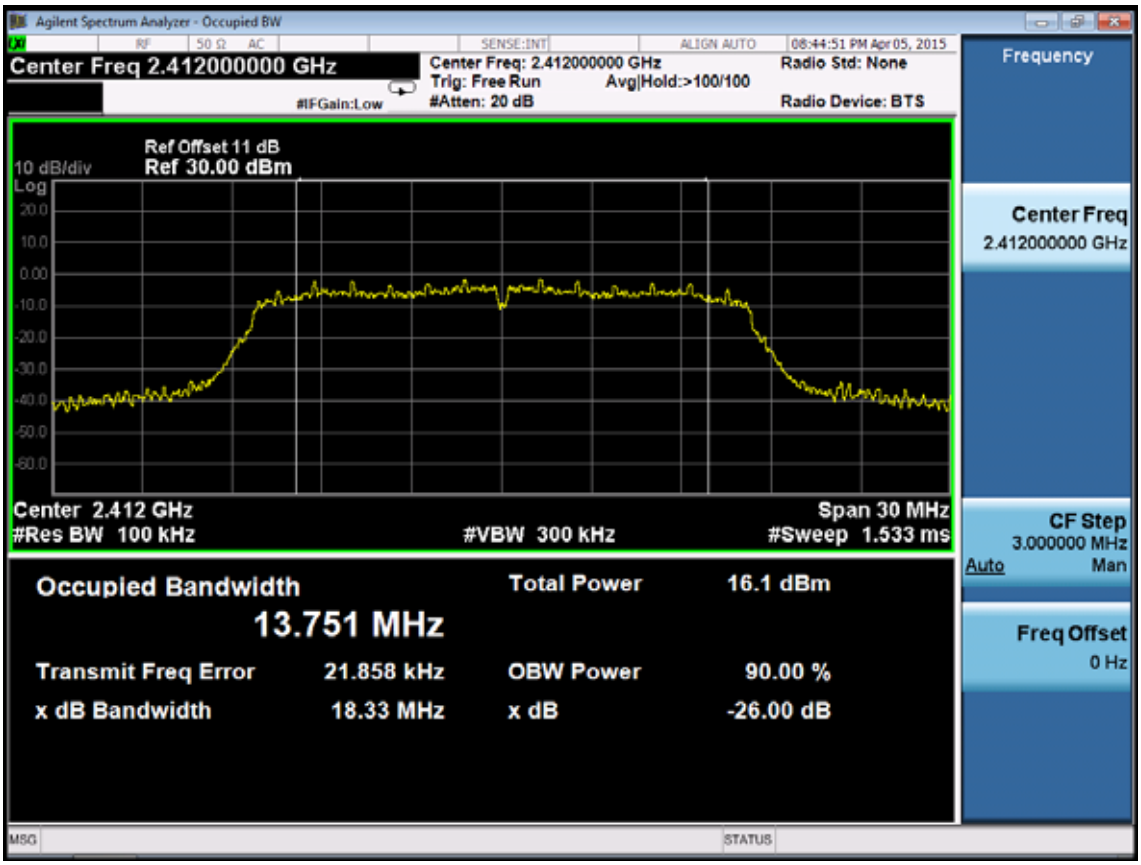
Test CH13: 2472MHz



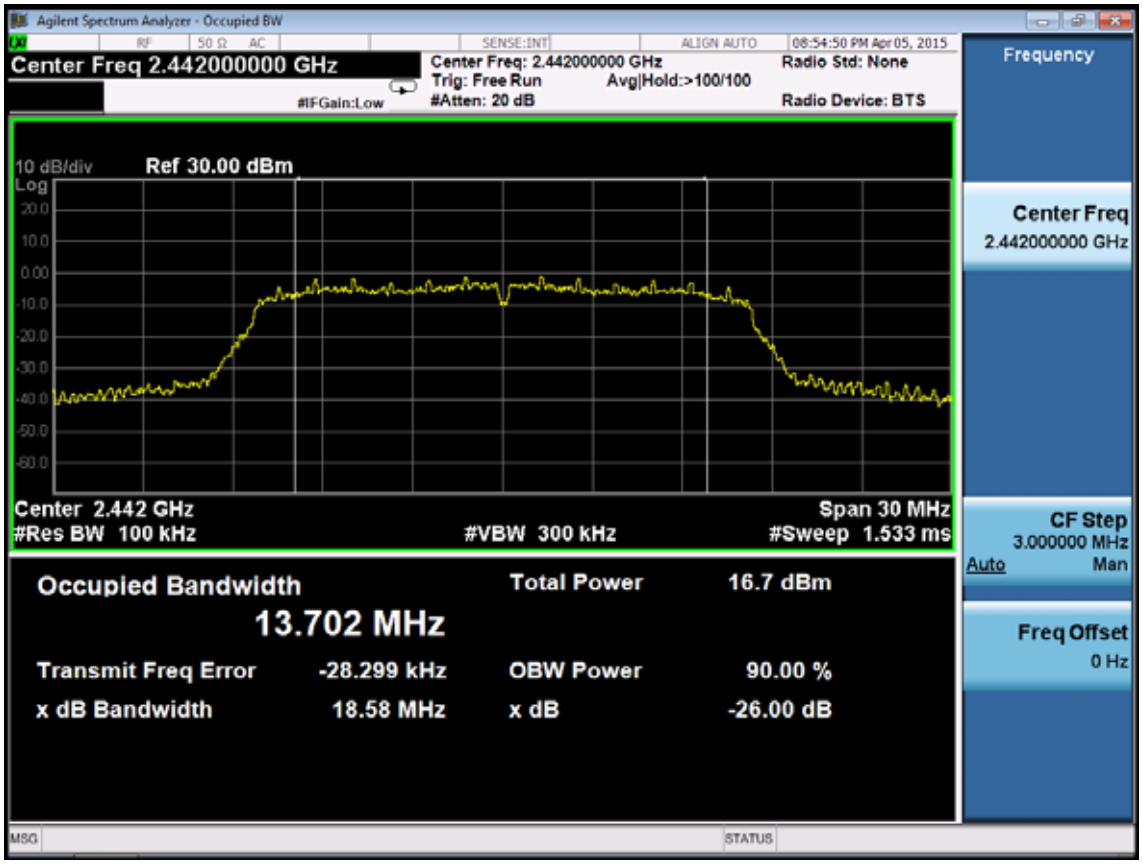
Test CH14: 2484MHz



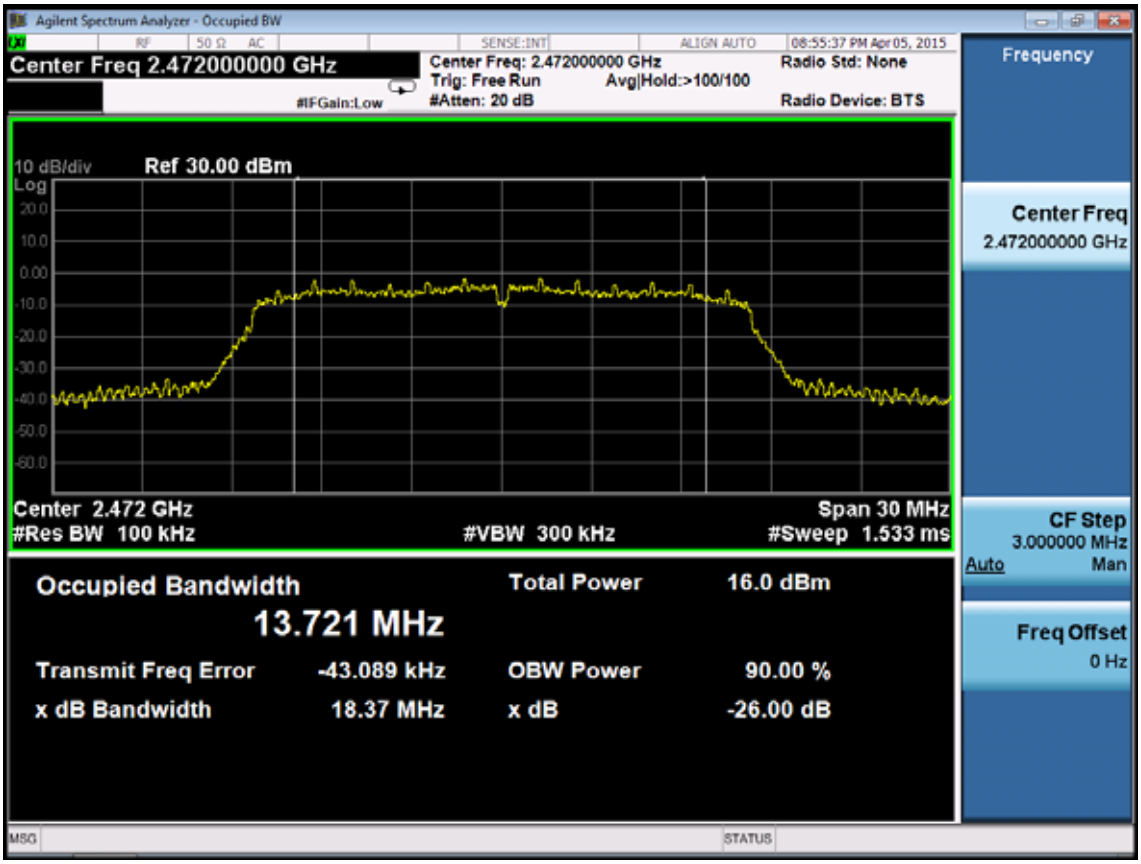
Test Mode: IEEE 802.11g
Test CH1: 2412MHz



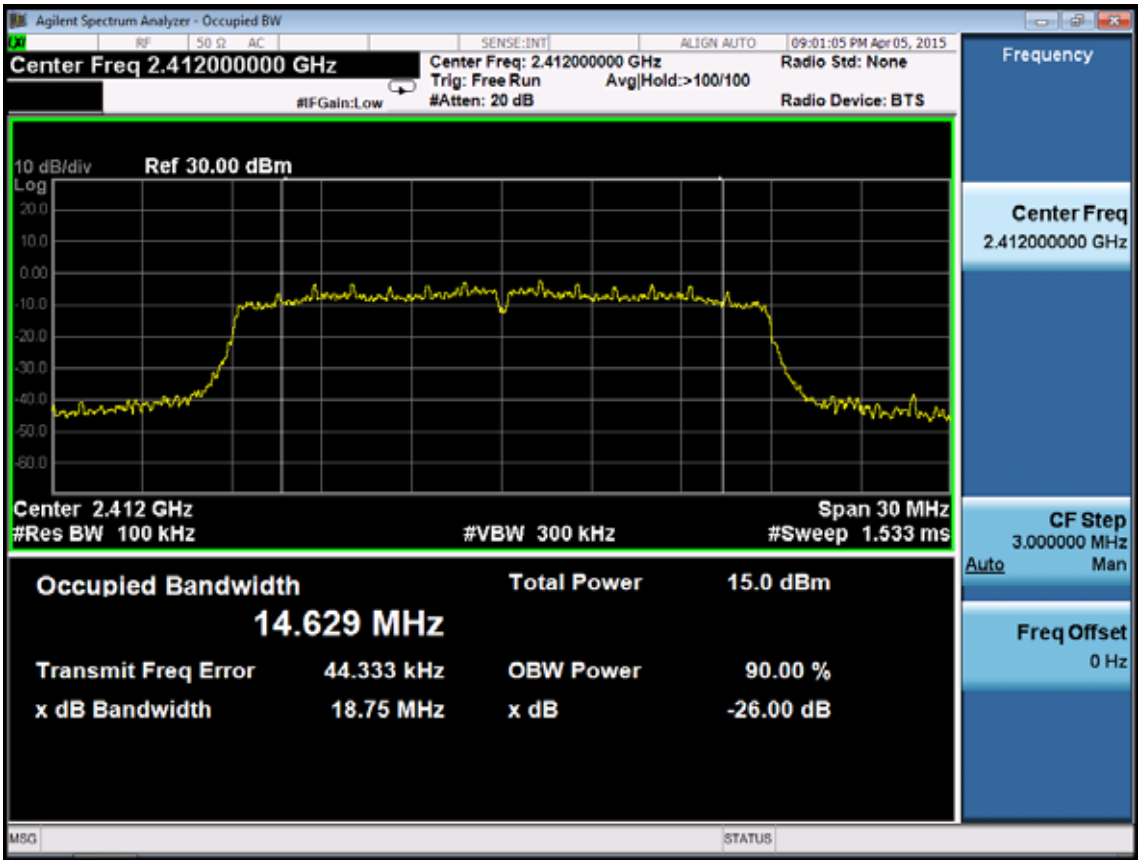
Test CH7: 2442MHz



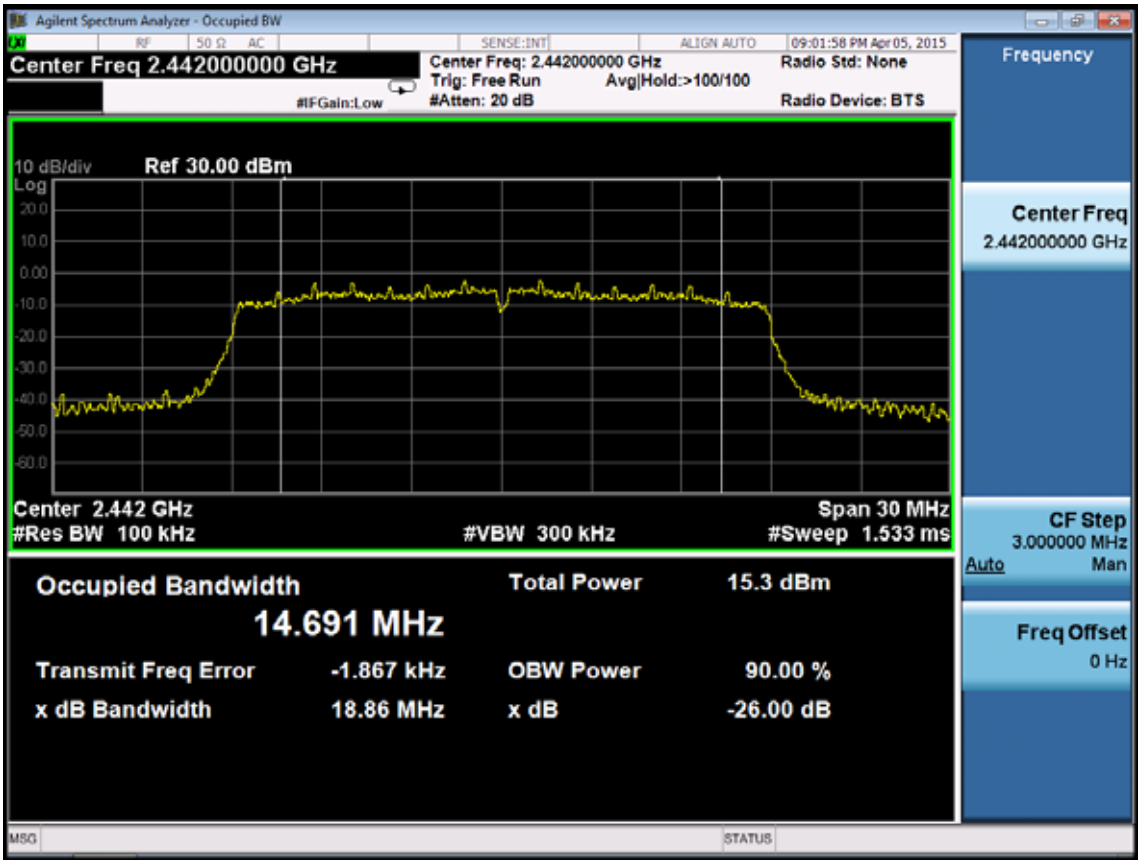
Test CH13: 2472MHz



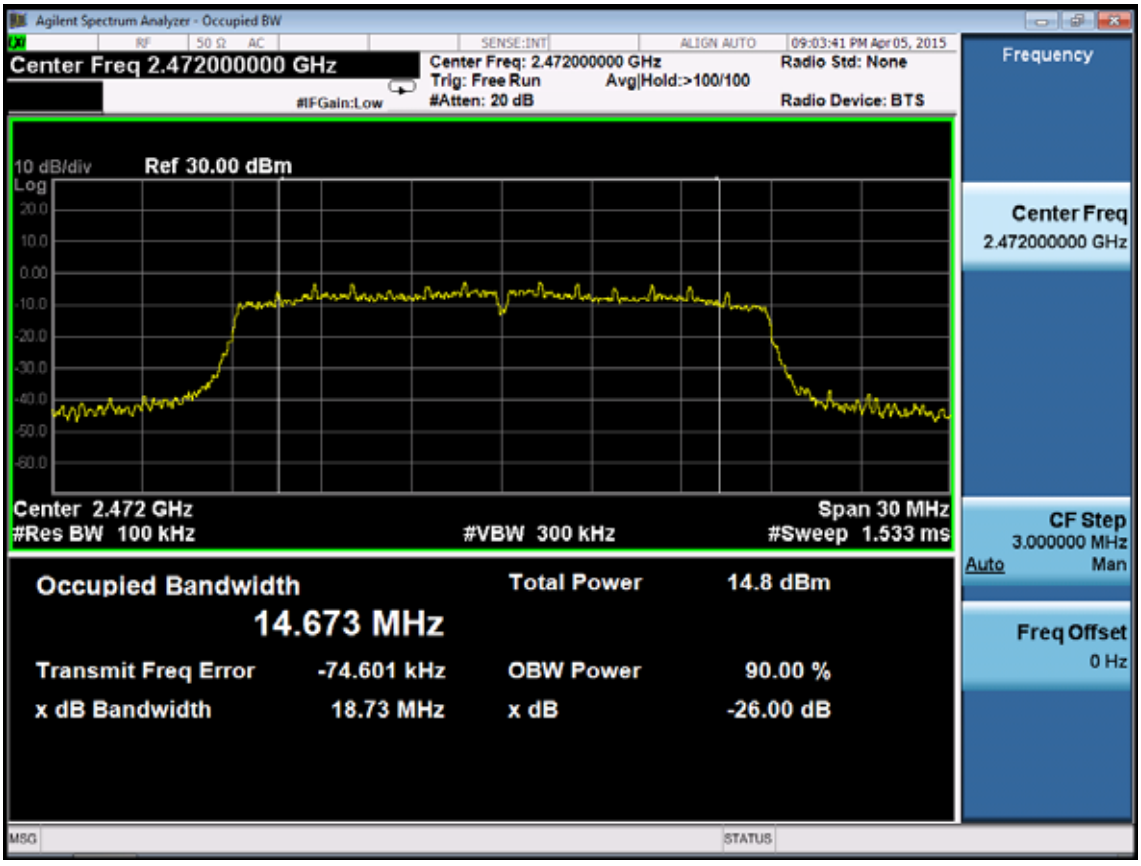
Test Mode: IEEE 802.11n HT20
Test CH1: 2412MHz



Test CH7: 2442MHz



Test CH13: 2472MHz



3.4.Transmitter Spurious Emissions (Conducted)

3.4.1.Limit

Item	Limits
Tx Spurious Emission	≦2.5 μ W (2387MHz＞f ; 2496.5MHz＜f)
	≦25 μ W (2387MHz≦f＜2400MHz) and (2483.5MHz＜f≦2496.5MHz)
	For Channel 14 Transmitter Operating Below 2458MHz: 2.5μW or less (-26dbm) Transmitter Operating Between 2458 to 2471MHz: 25μW or less (-16dbm) Transmitter Operating 2497 through 2510: 25μW or less (-16dbm) Transmitter Operating Above 2510: 2.5μW or less (-26dbm)

3.4.2.Measuring Instruments

See list of measuring instruments of the 2.3 section.

3.4.3.Test Procedures

1. EUT have transmitted the maximum power and fixed channelize.
2. Setting of SA is following as: **RBW**: 1MHz / **VBW**:1MHz above 1GHz, **Sweep time** : Auto / **Sweep Mode**: Continuous sweep / **Detect mode**: Positive peak / **Trace mod**e: Max hold.
3. Setting of SA is following as: **RBW:** 100kHz / **VBW**:100kHz under 1GHz, **Sweep time** : Auto / **Sweep Mode**: Continuous sweep / **Detect mode**: Positive peak / **Trace mode**: Max hold.
4. Setting of SA is following as: start frequency 30MHz and stop frequency 2387MHz Then to mark peak reading Value + cable loss shall be less than 2.5 μ W.
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading Value + cable loss shall be less than 25 μ W.
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz. Then to mark peak reading Value + cable loss shall be less than 25 μ W.
7. SA adjusted to start frequency 2500MHz and stop frequency 13000MHz. Then to mark peak reading Value + cable loss shall be less than 25 μ W.
8. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.

3.4.4.Test Setup

See clause 2.2 for block diagram of test setup.

3.4.5. Test Results of Conducted Spurious Emissions – TX Operating

Note:

*1: Frequency Band (30MHz≦ f ≦1000MHz)
*2: Frequency Band (1000MHz＜ f ＜2387MHz)
*3: Frequency Band (2387MHz≦ f ＜2400MHz)
*4: Frequency Band (2483.5MHz≦ f ≦2496.5MHz)
*5: Frequency Band (2496.5MHz＜ f ＜13000MHz)
*6: Frequency Band (1000MHz＜ f ＜2458MHz)
*7: Frequency Band (2458MHz≦ f ＜2471MHz)
*8: Frequency Band (2471MHz≦ f ＜2497MHz)
*9: Frequency Band (2497MHz≦ f ＜2551MHz)
*10: Frequency Band (2551MHz＜ f ＜13000MHz)

EUT: Cuieboard3		
M/N: Cubietruck		
Test date: 2015-04-07	Pressure: 101.2±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Leo-Li	Test site: RF site	Temperature:22.3±0.6 ℃

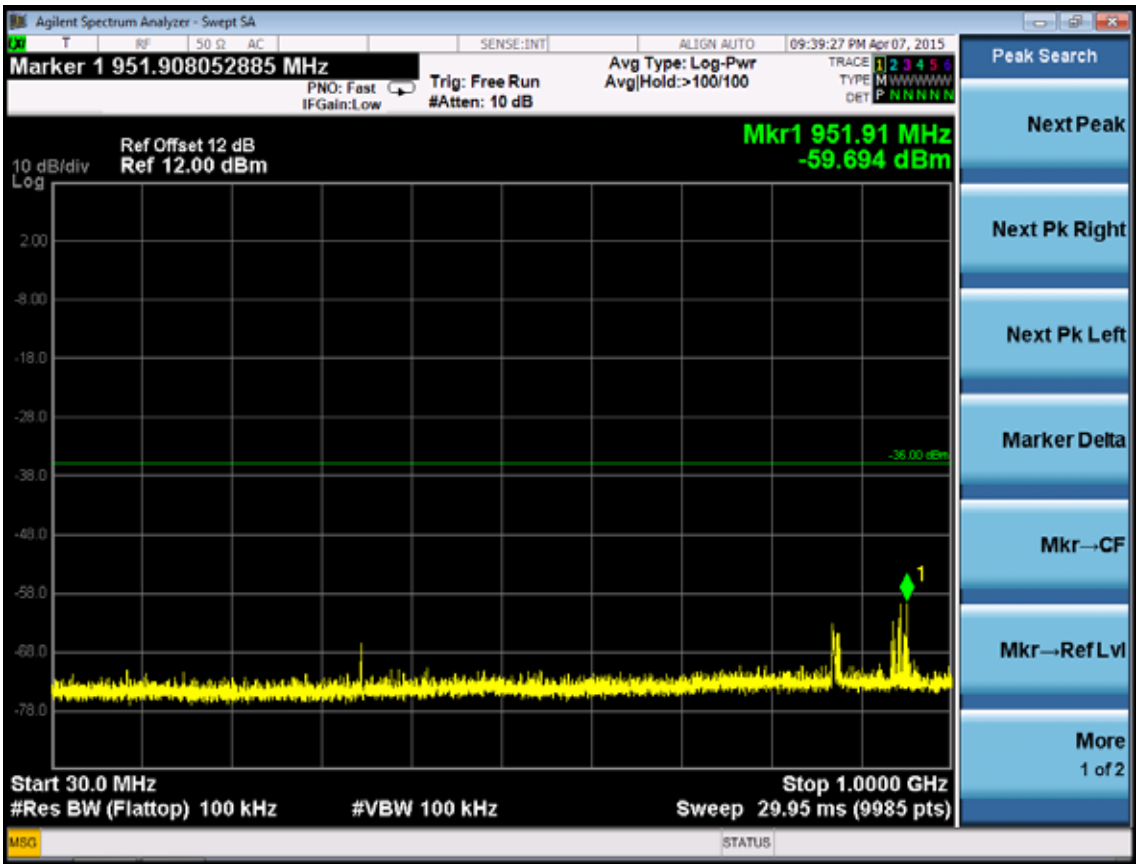
Test Voltage	DC 5V					
Test Mode	11b/CH1,CH7,CH13				Remarks	Result
Test Frequency	MHz	2412	2442	2472	Low/Mid/High of test frequency range	(Pass/Fail)
*1	dBm/100KHz	-59.694	-57.024	-57.040	Limit≦2.5 μ W/MHz (-36dBm/100KHz)	Pass
*2	dBm/MHz	-45.854	-45.291	-46.122	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass
*3	dBm/MHz	-36.633	-46.180	-45.723	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*4	dBm/MHz	-52.725	-50.585	-37.310	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*5	dBm/MHz	-43.175	-43.941	-41.315	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass

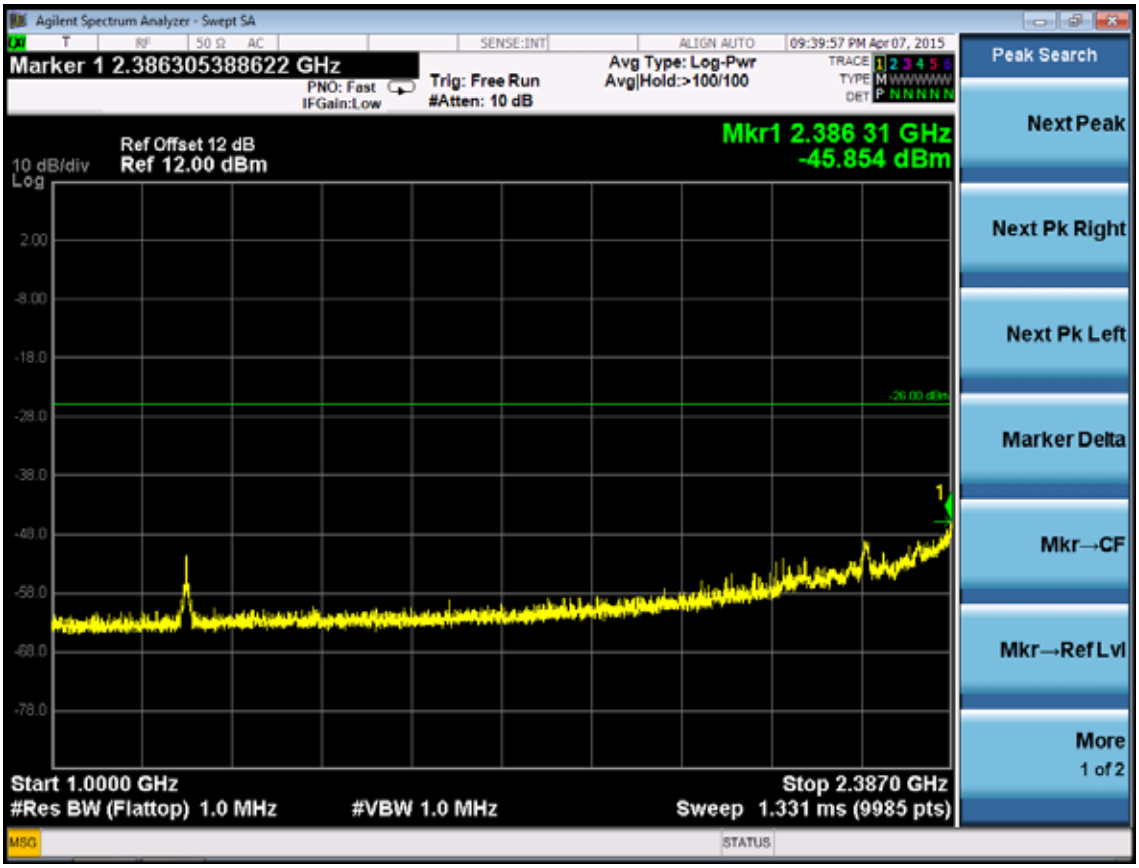
Test Mode	11b/CH14		Remarks	Result
Test Frequency	MHz	2484	Low/Mid/High of test frequency range	(Pass/Fail)
*1	dBm/100KHz	-56.233	Limit≦2.5 μ W/MHz (-36dBm/100KHz)	Pass
*6	dBm/MHz	-38.963	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass
*7	dBm/MHz	-19.779	Limit≦2.5 μ W/MHz (-16dBm/MHz)	Pass
*8	dBm/MHz	2.758	Limit≦2.5 μ W/MHz (-16dBm/MHz)	Pass
*9	dBm/MHz	-19.634	Limit≦25 μ W/MHz (-26dBm/MHz)	Pass
*10	dBm/MHz	-39.812	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass

EUT: Cuieboard3		
M/N: Cubietruck		
Test date: 2015-04-07	Pressure: 101.2±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Leo-Li	Test site: RF site	Temperature:22.3±0.6 ℃

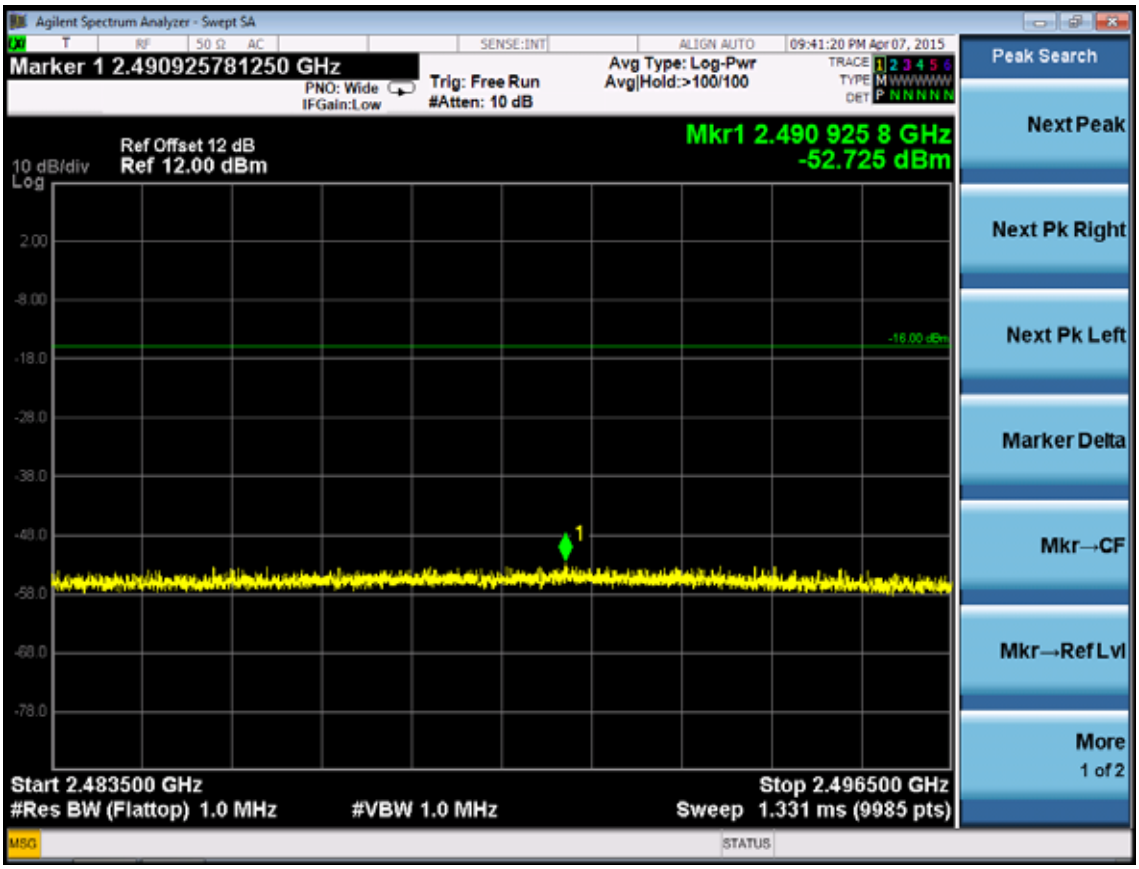
Test Mode	11g/ CH1,CH7,CH13				Remarks	Result
Test Frequency	MHz	2412	2442	2472	Low/Mid/High of test frequency range	(Pass/Fail)
*1	dBm/100KHz	-57.770	-55.951	-57.560	Limit≦2.5 μ W/MHz (-36dBm/100KHz)	Pass
*2	dBm/MHz	-33.016	-45.868	-45.881	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass
*3	dBm/MHz	-41.294	-41.989	-46.318	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*4	dBm/MHz	-46.719	-41.875	-43.386	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*5	dBm/MHz	-42.731	-44.081	-44.466	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass
Test Mode	11nHT20/ CH1,CH7,CH13				Remarks	Result
Test Frequency	MHz	2412	2442	2472	Low/Mid/High of test frequency range	(Pass/Fail)
*1	dBm/100KHz	-57.507	-58.079	-57.170	Limit≦2.5 μ W/MHz (-36dBm/100KHz)	Pass
*2	dBm/MHz	-36.954	-46.930	-45.789	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass
*3	dBm/MHz	-43.078	-45.414	-46.695	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*4	dBm/MHz	-46.968	-44.675	-45.754	Limit≦25 μ W/MHz (-16dBm/MHz)	Pass
*5	dBm/MHz	-44.613	-42.760	-39.982	Limit≦2.5 μ W/MHz (-26dBm/MHz)	Pass

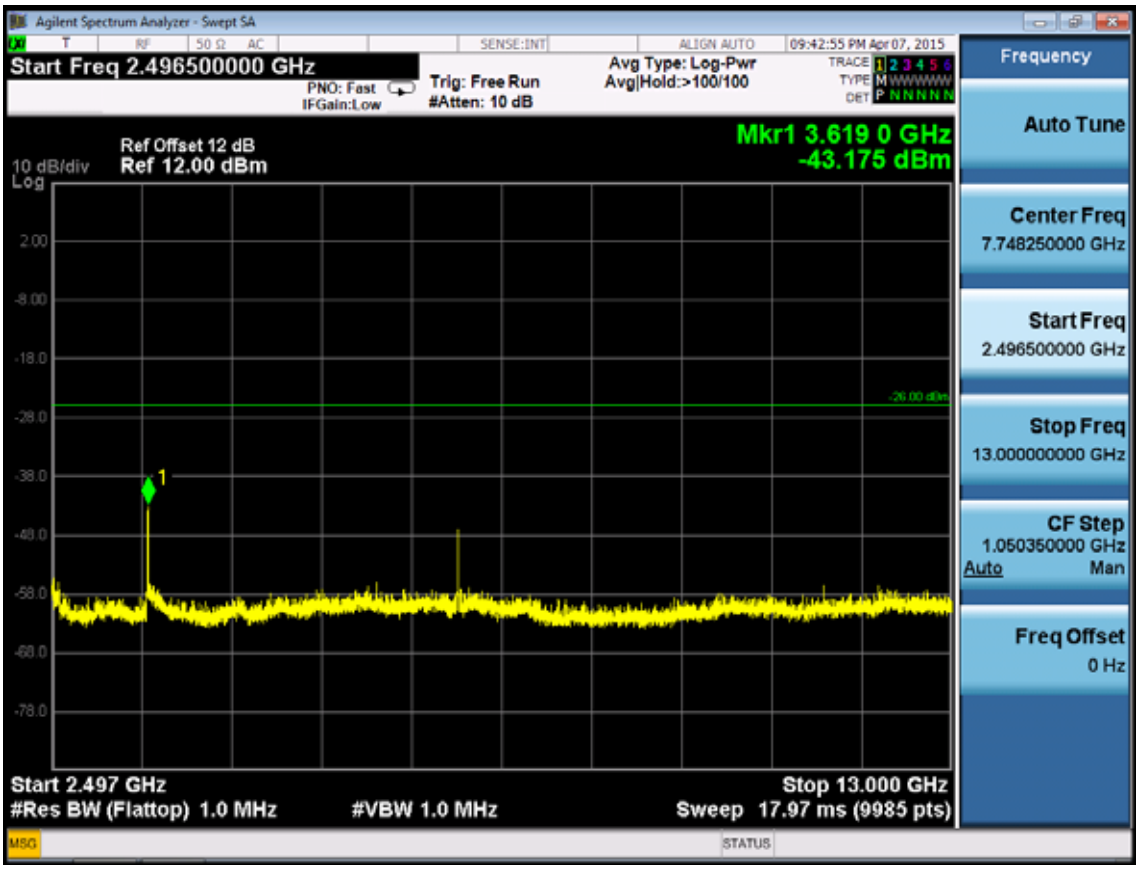
IEEE 802.11b
CH1 2412MHz



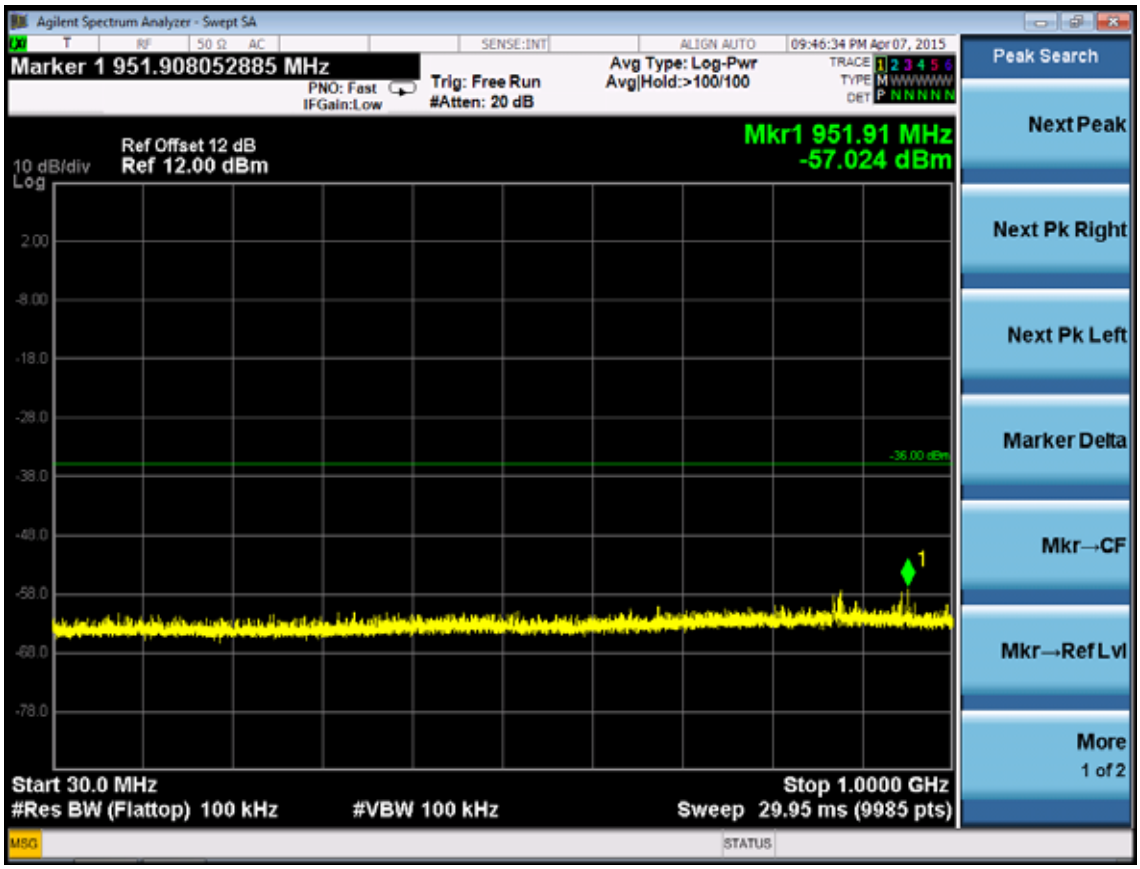


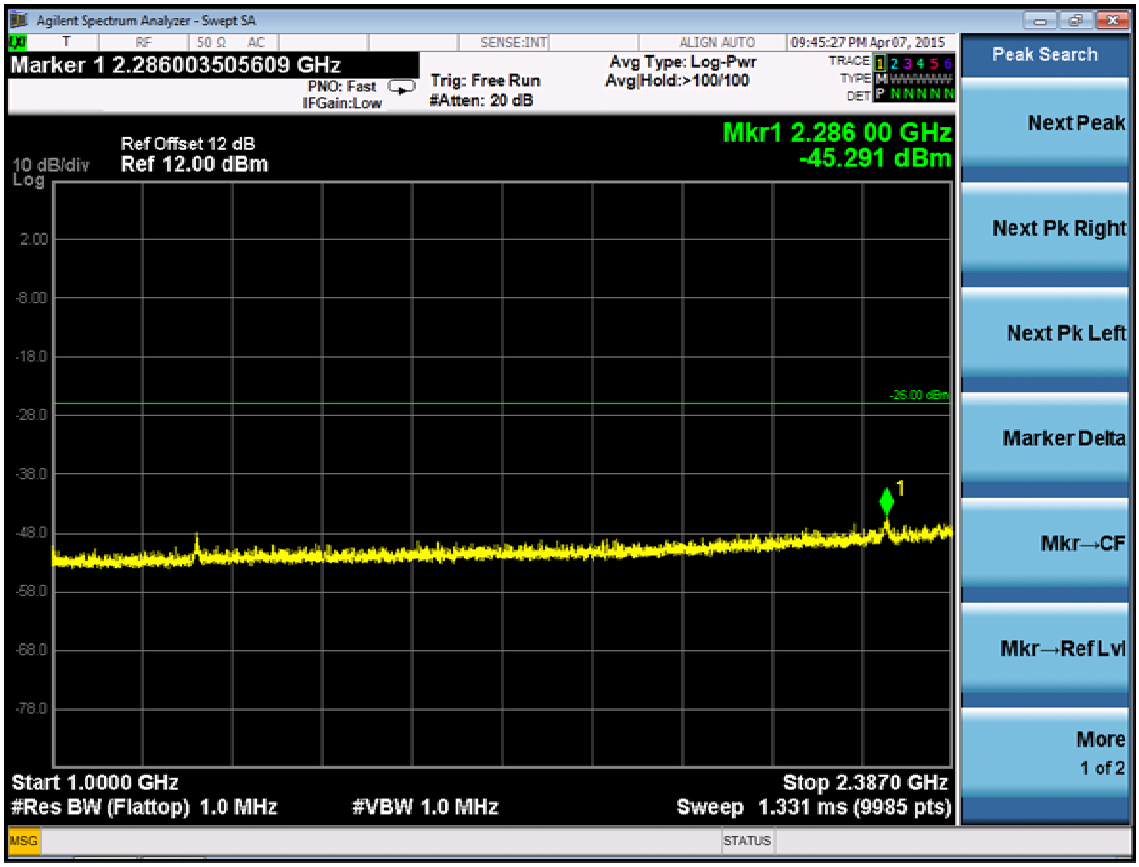

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399835937500 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:40:23 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.399 835 9 GHz
-36.633 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

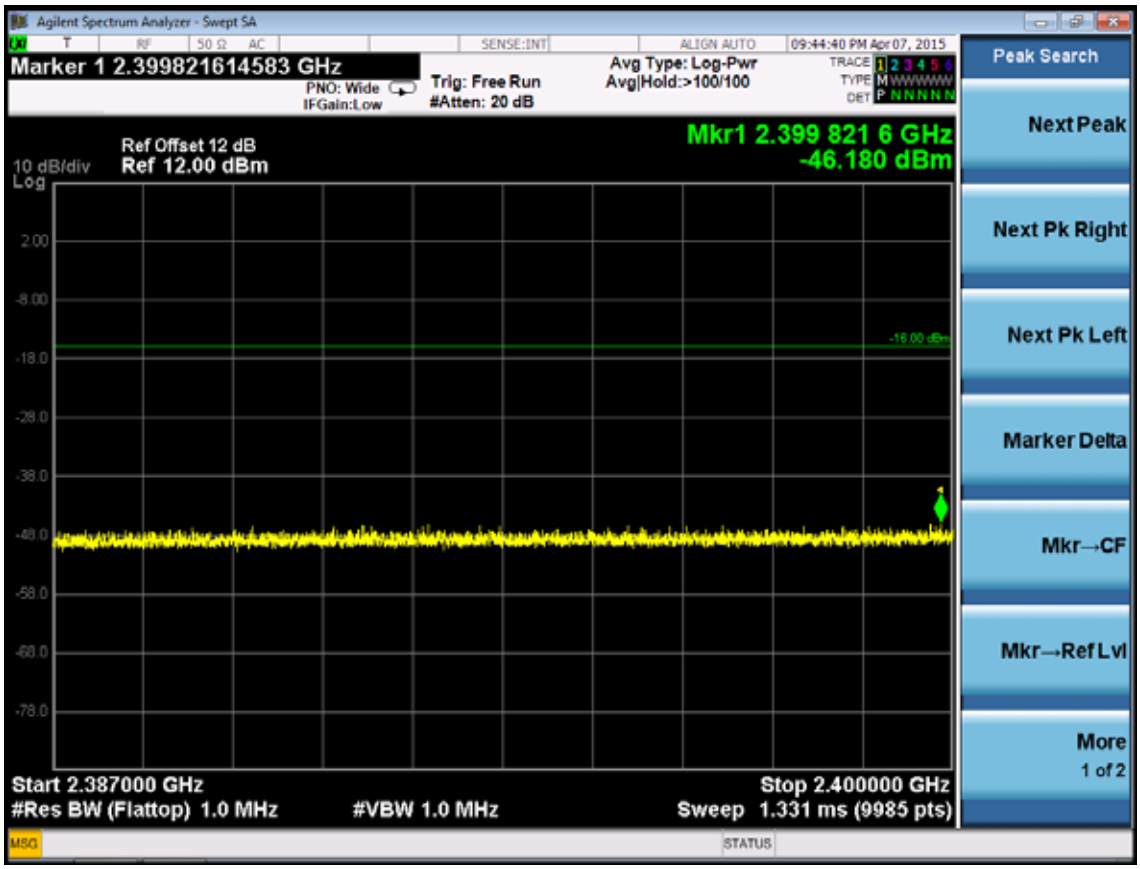

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.490925781250 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:41:20 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.490 925 8 GHz
-52.725 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

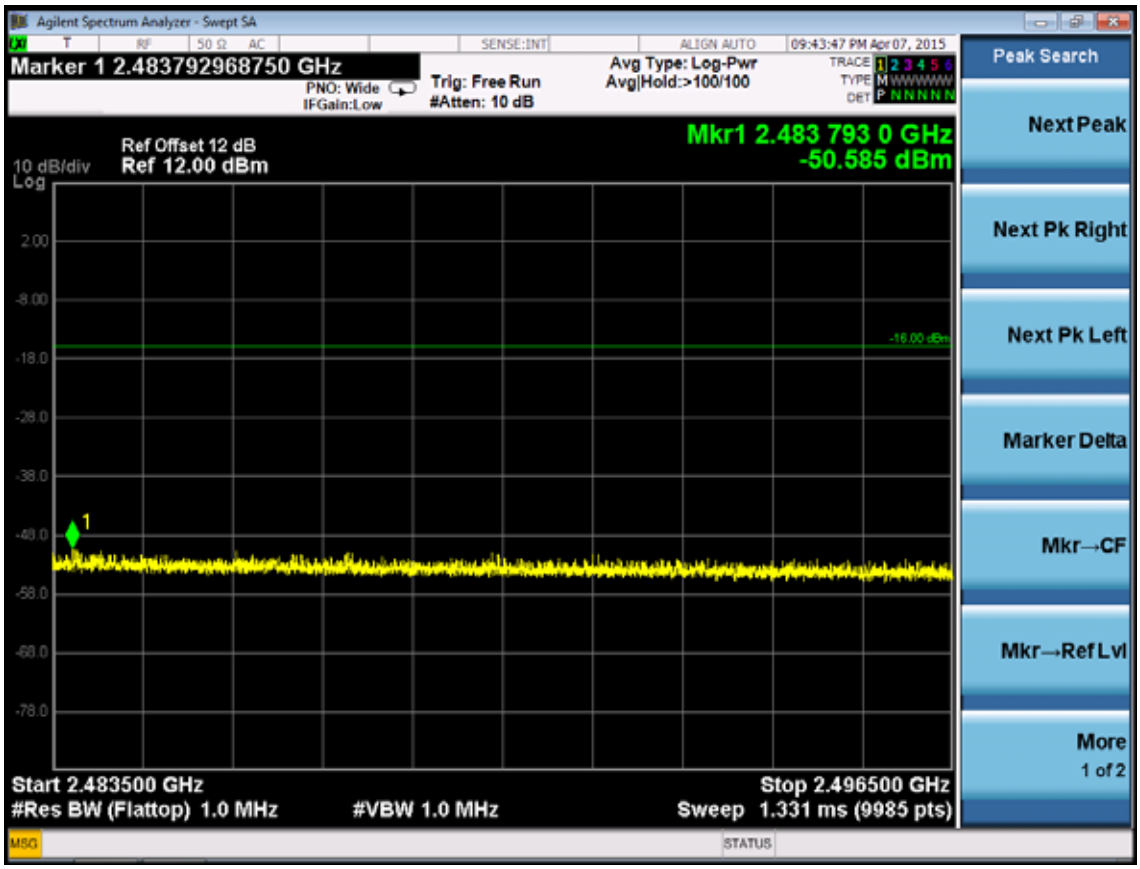

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:42:55 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.619 0 GHz
-43.175 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

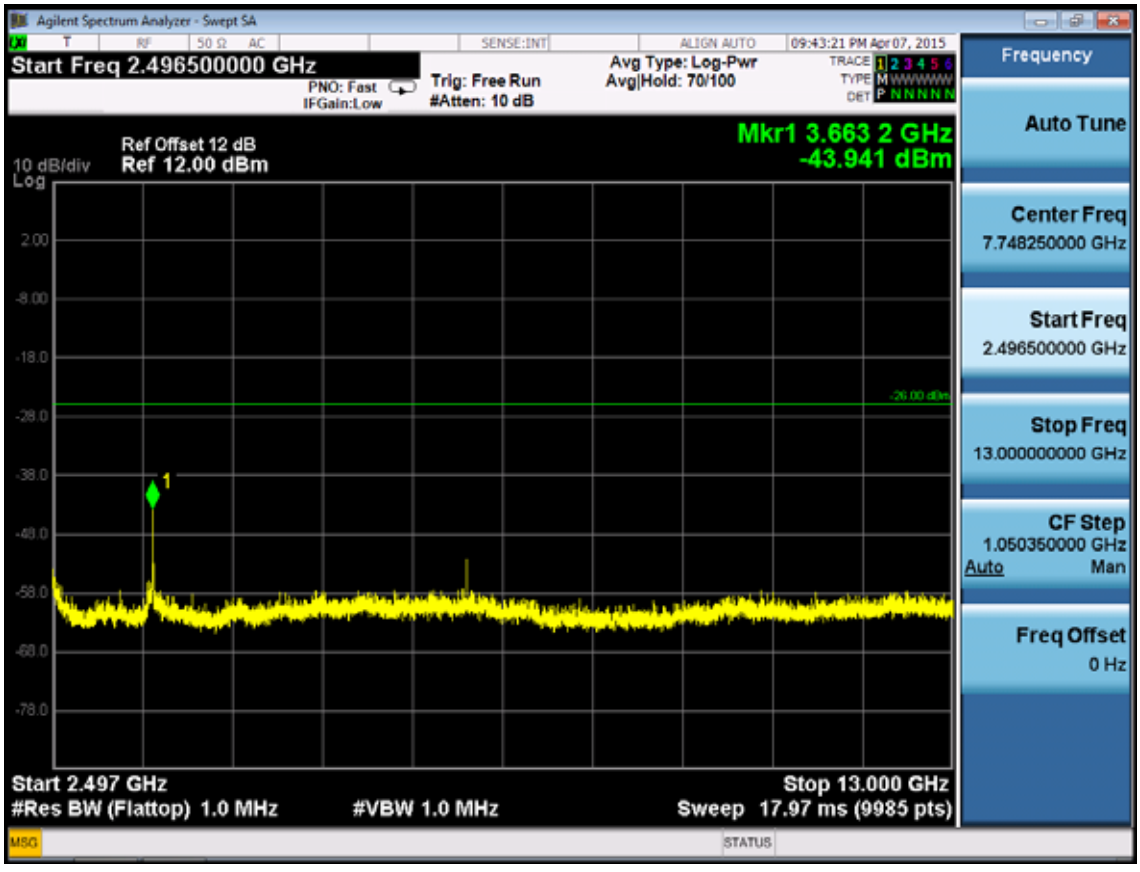
CH7 2442MHz


Agilent Spectrum Analyzer - Swept SA
Marker 1 951.908052885 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:46:34 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 951.91 MHz
-57.024 dBm
Start 30.0 MHz
#Res BW (Flattop) 100 kHz
#VBW 100 kHz
Stop 1.0000 GHz
Sweep 29.95 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

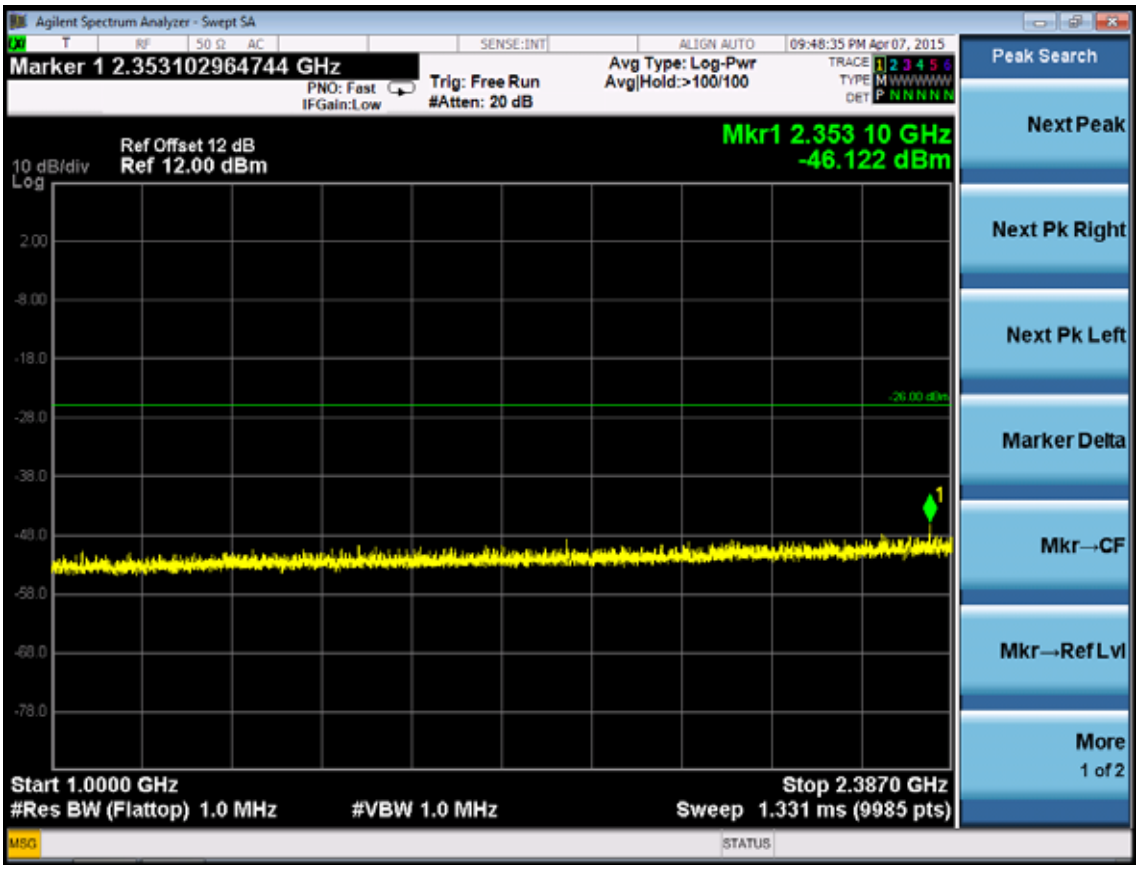

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.286003505609 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:45:27 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.286 00 GHz
-45.291 dBm
-26.00 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

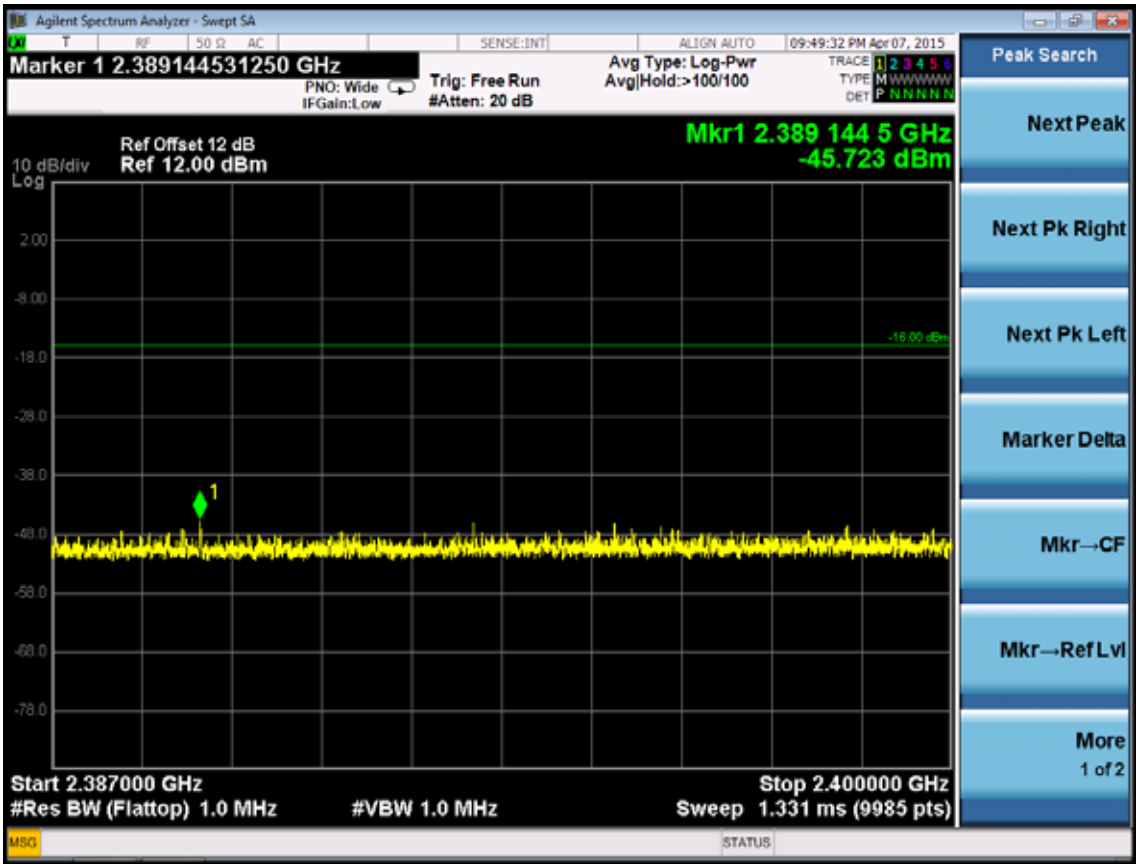

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399821614583 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:44:40 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.399 821 6 GHz
-46.180 dBm
-16.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

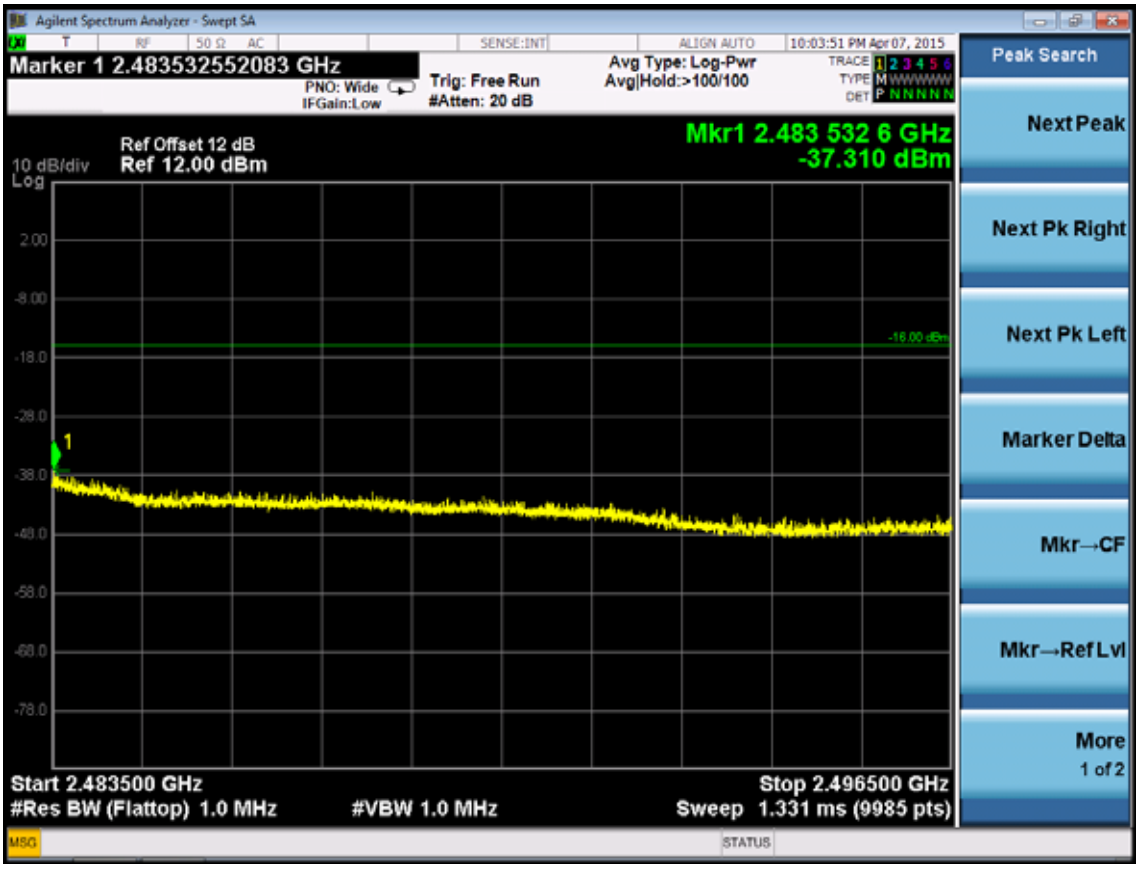

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.483792968750 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:43:47 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.483 793 0 GHz
-50.585 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold: 70/100
09:43:21 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.663 2 GHz
-43.941 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

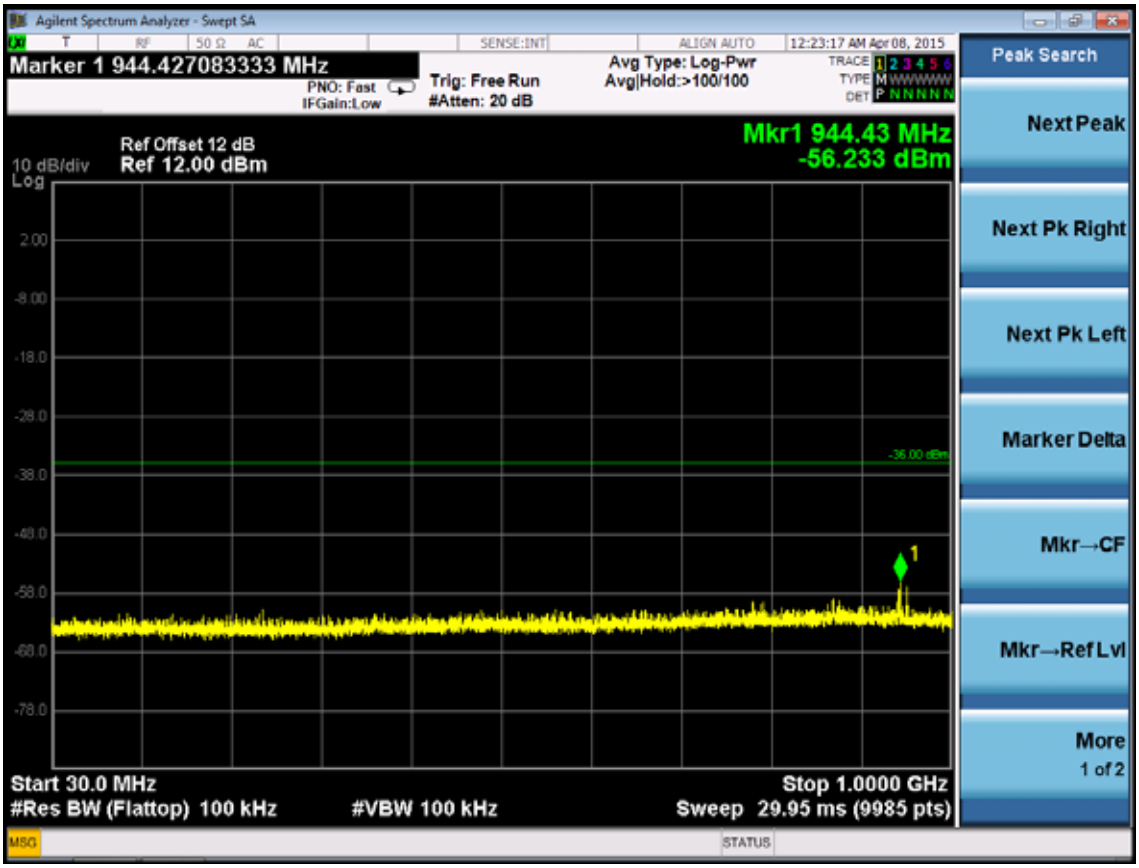
CH13 2472MHz

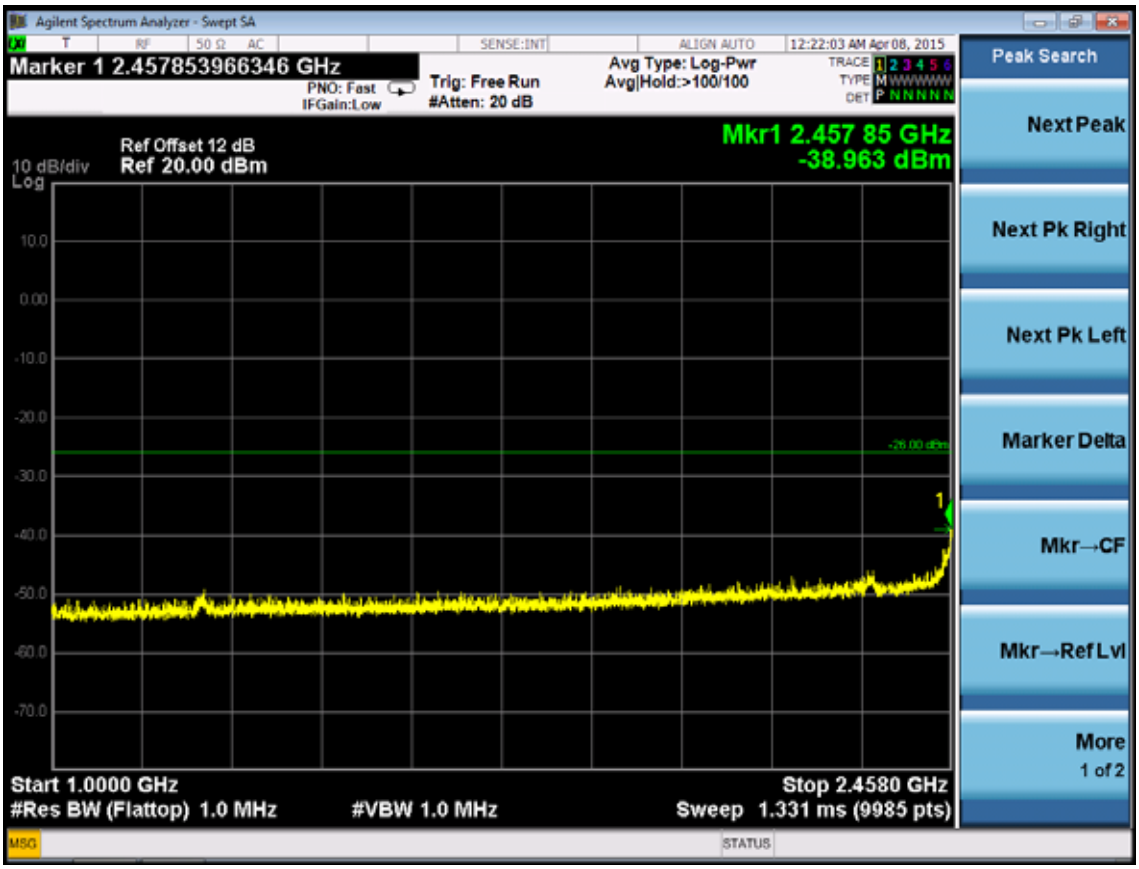



Agilent Spectrum Analyzer - Swept SA
Marker 1 2.389144531250 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:49:32 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.389 144 5 GHz
-45.723 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.483532552083 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:03:51 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.483 532 6 GHz
-37.310 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

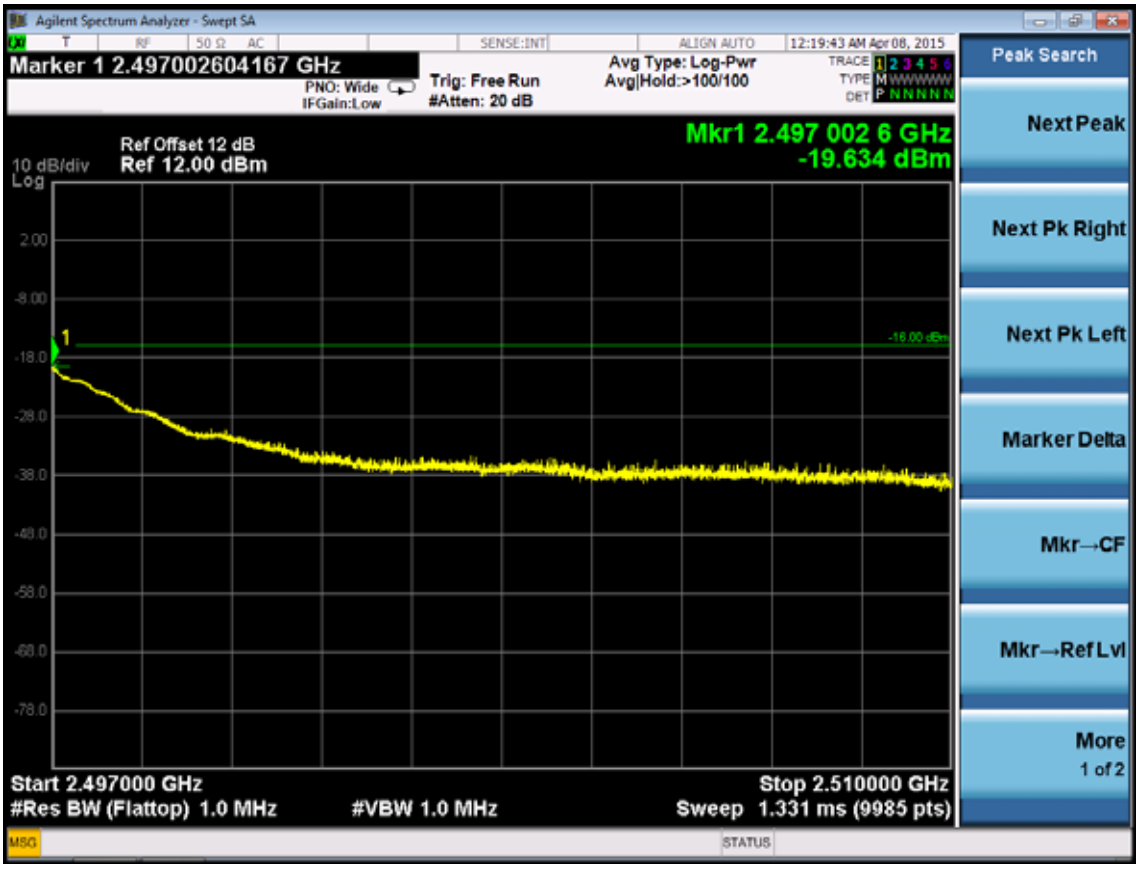
CH14 2484MHz

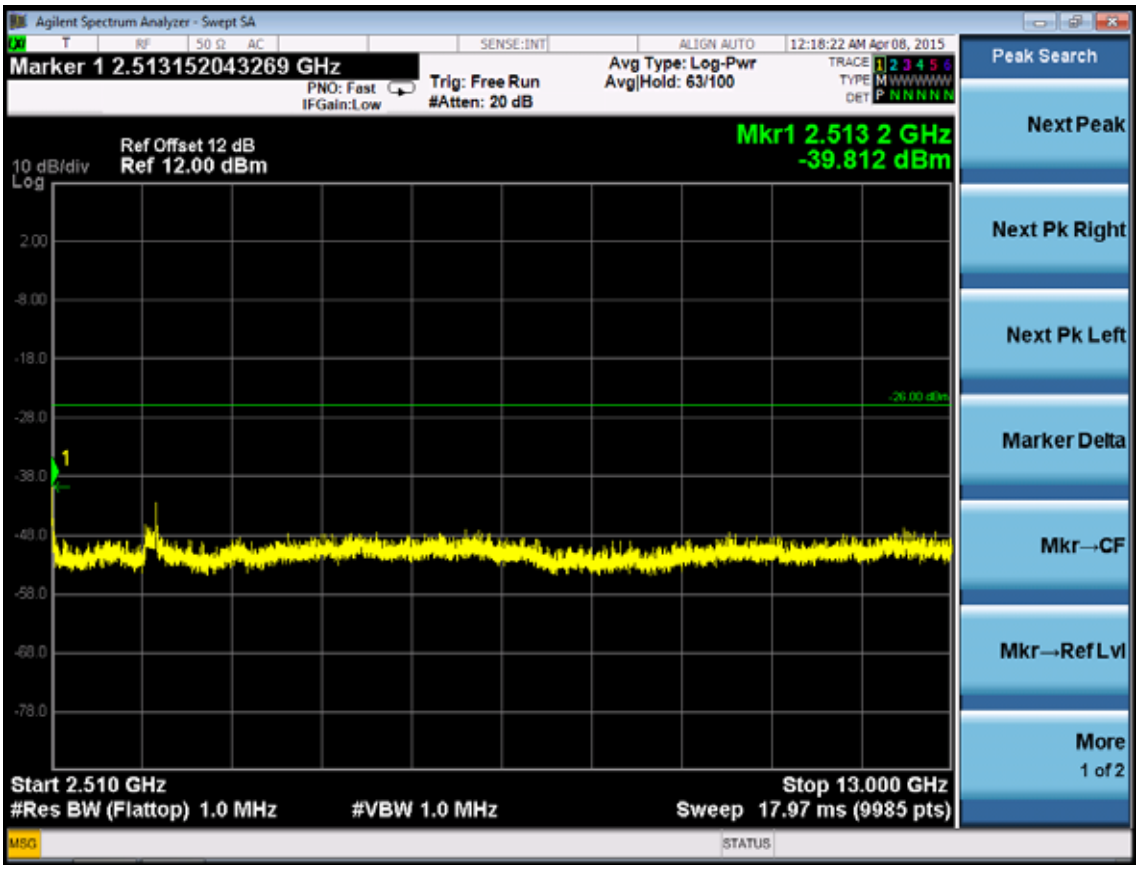



Agilent Spectrum Analyzer - Swept SA
Marker 1 2.457853966346 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:22:03 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.457 85 GHz
-38.963 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.4580 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

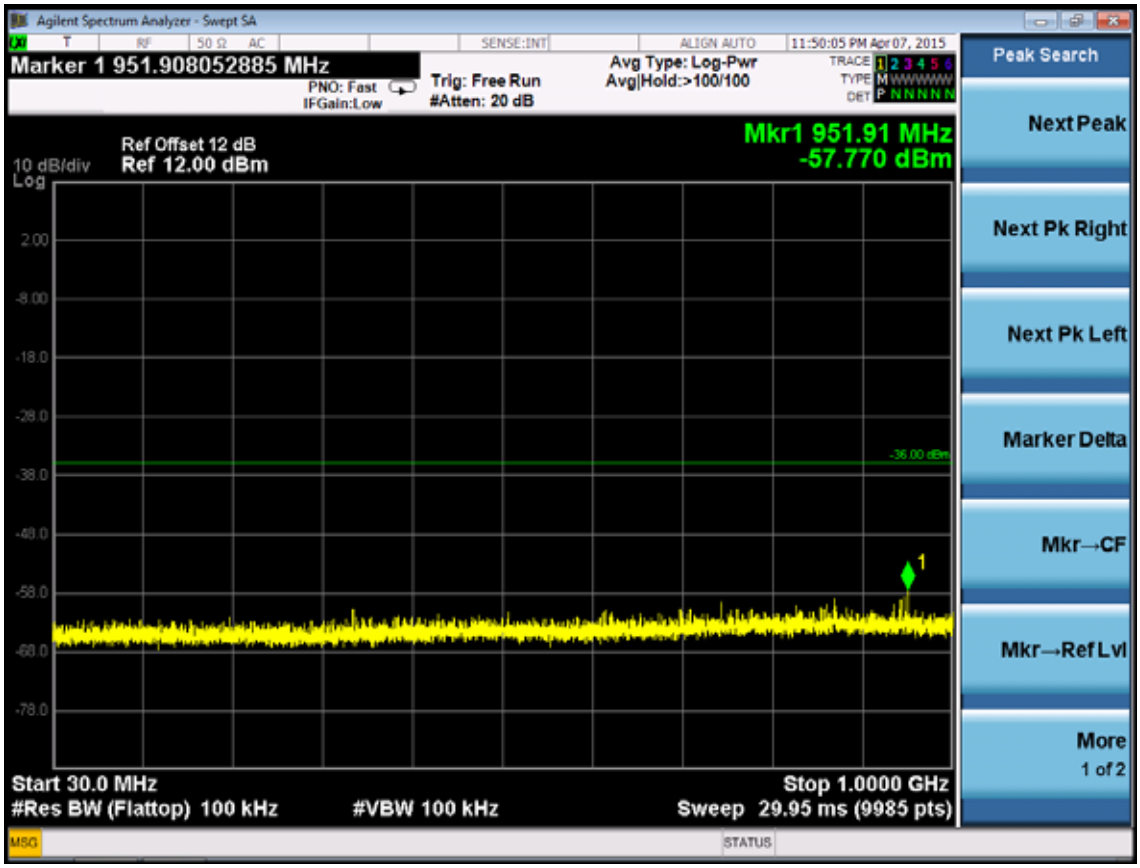

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.470985677083 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:21:28 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.470 985 7 GHz
-19.779 dBm
Start 2.458000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.471000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

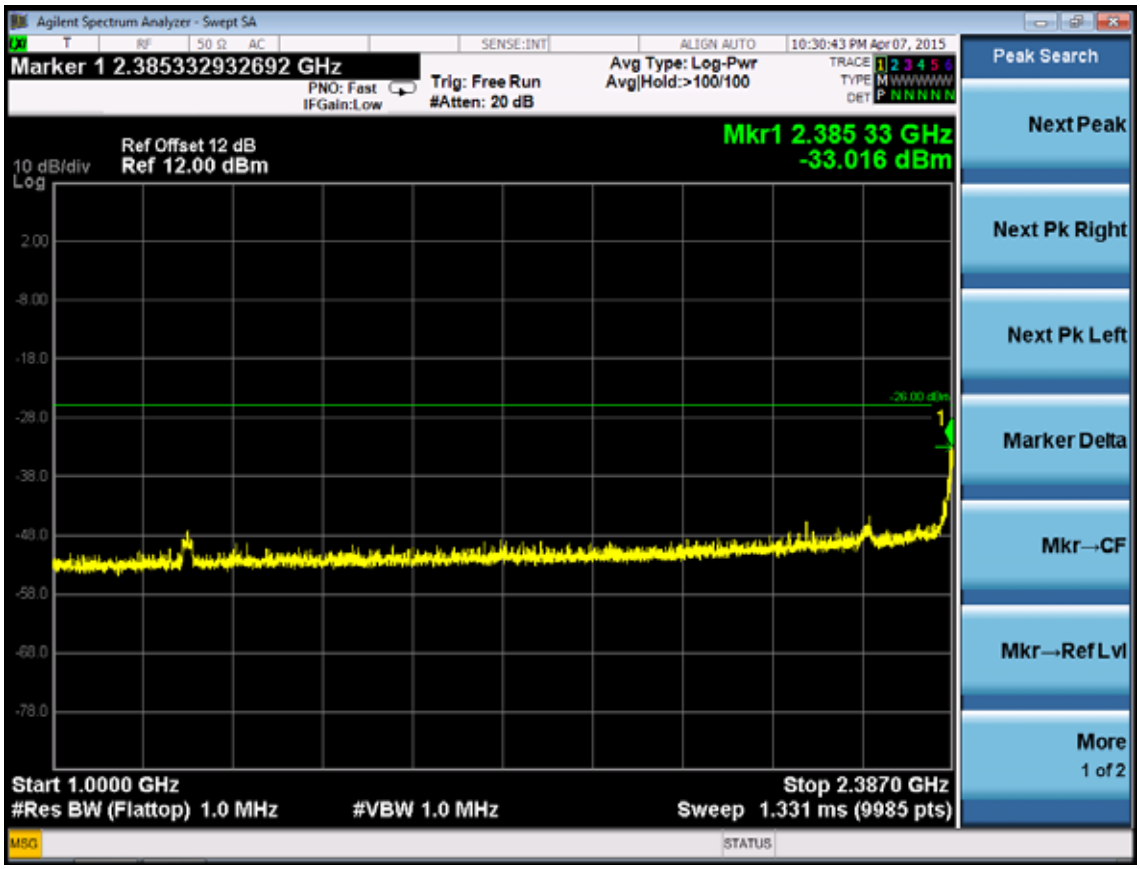

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.483166666667 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:20:46 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.483 166 7 GHz
2.758 dBm
10.00 dBm
Start 2.47100 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.49700 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

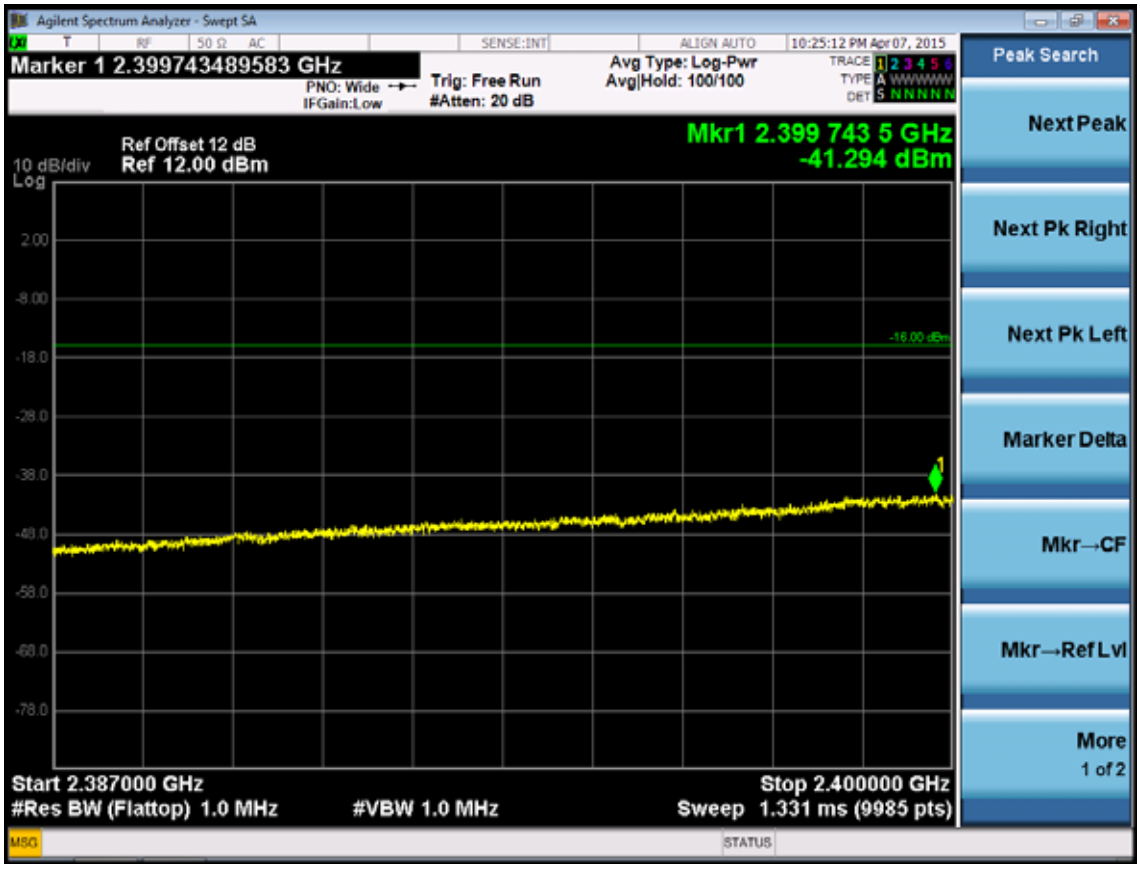

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.497002604167 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:19:43 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.497 002 6 GHz
-19.634 dBm
-16.00 dBm
Start 2.497000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.510000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

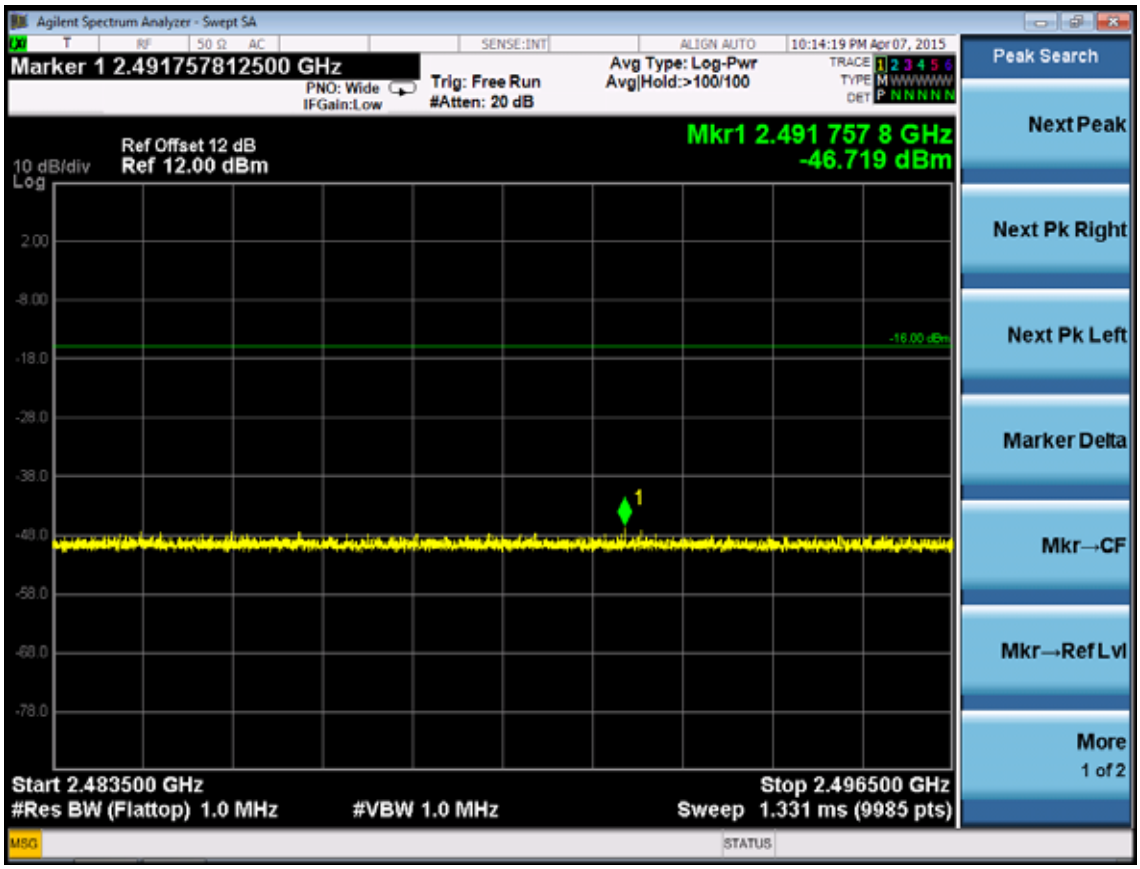


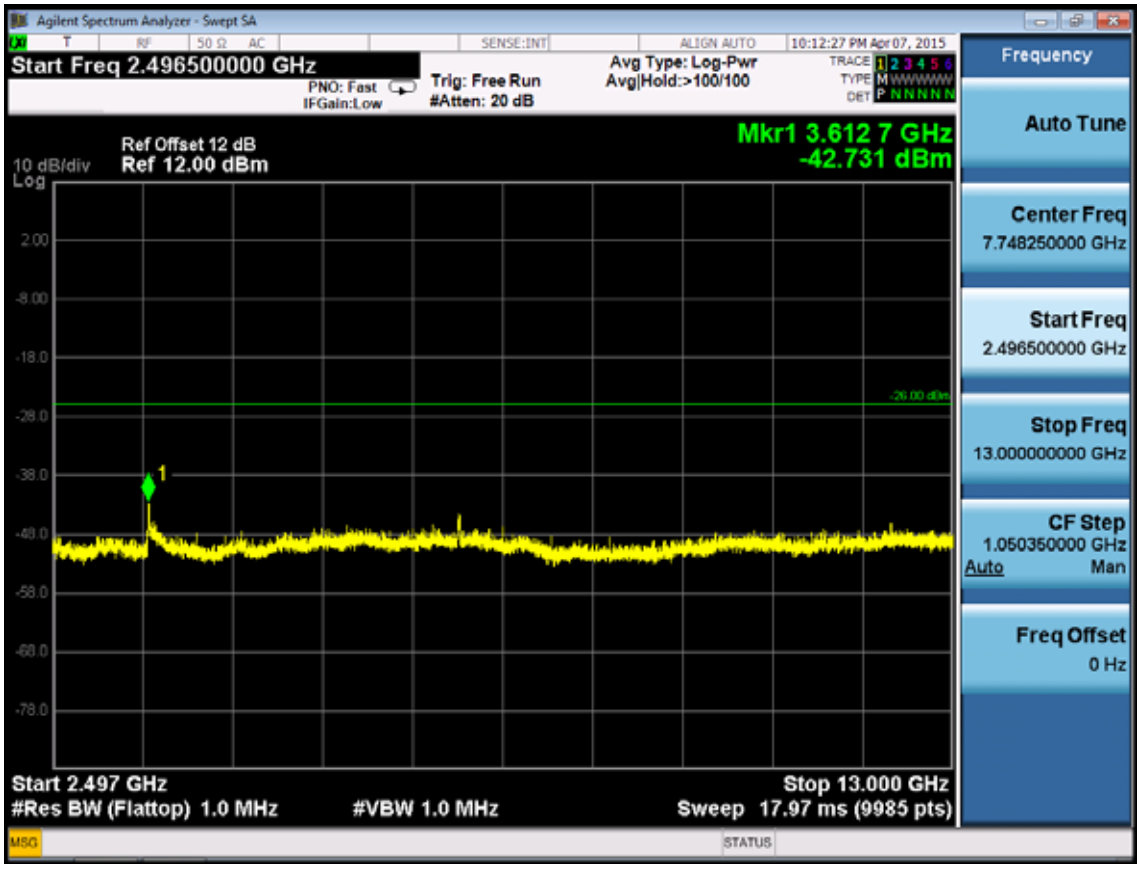
IEEE 802.11g
CH1 2412MHz



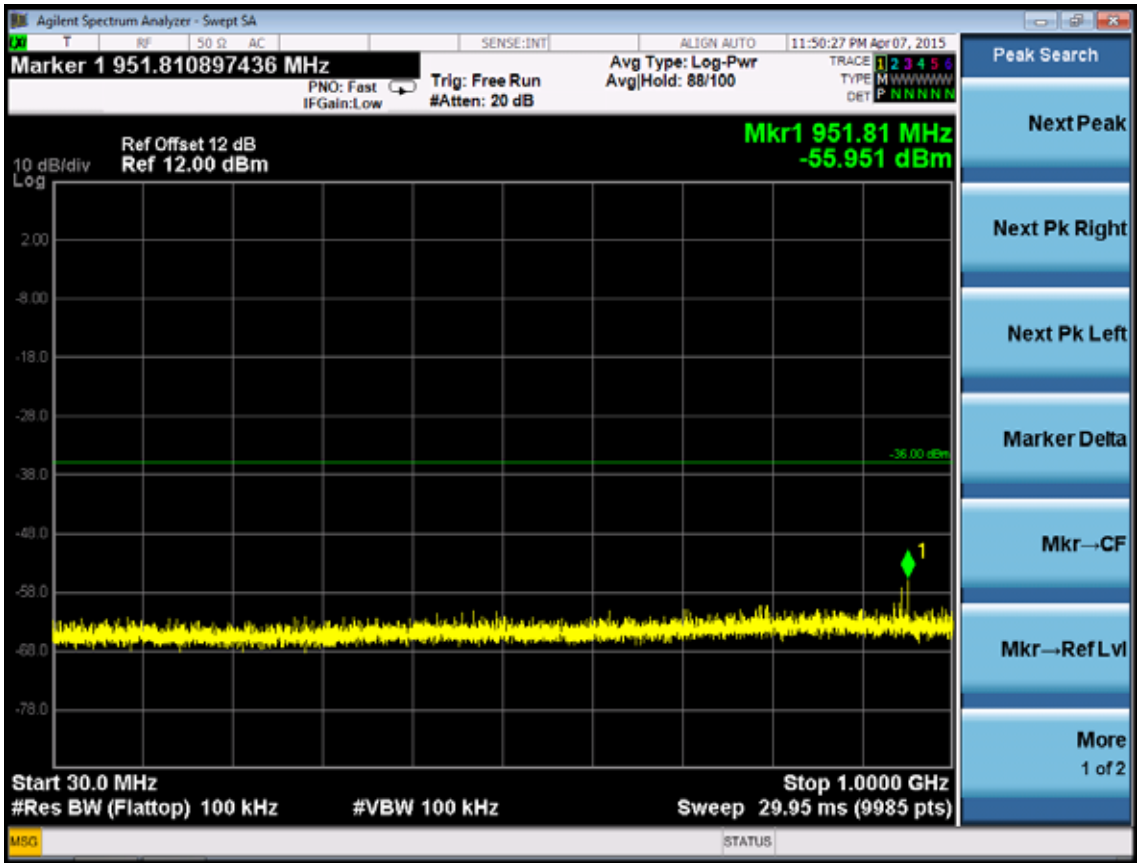

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.385332932692 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:30:43 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.385 33 GHz
-33.016 dBm
-26.00 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399743489583 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
10:25:12 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.399 743 5 GHz
-41.294 dBm
-18.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

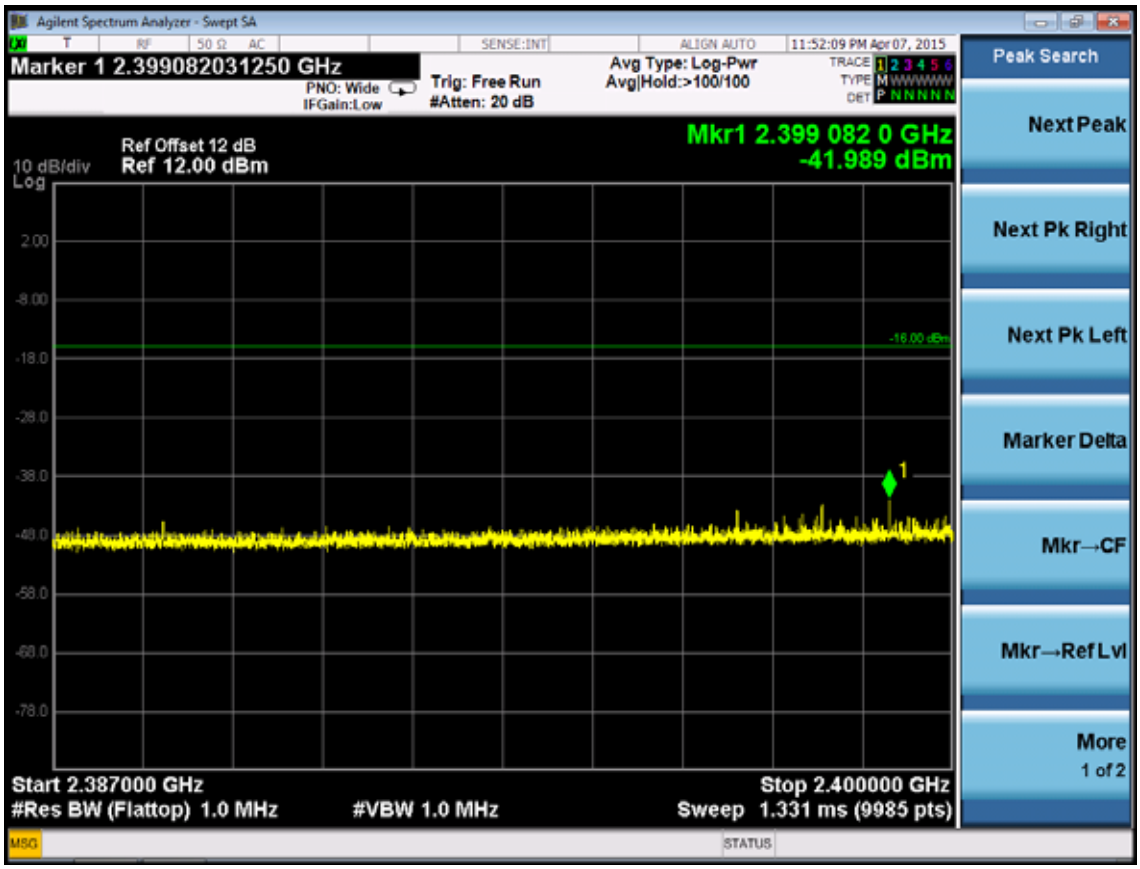

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.491757812500 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:14:19 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.491 757 8 GHz
-46.719 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

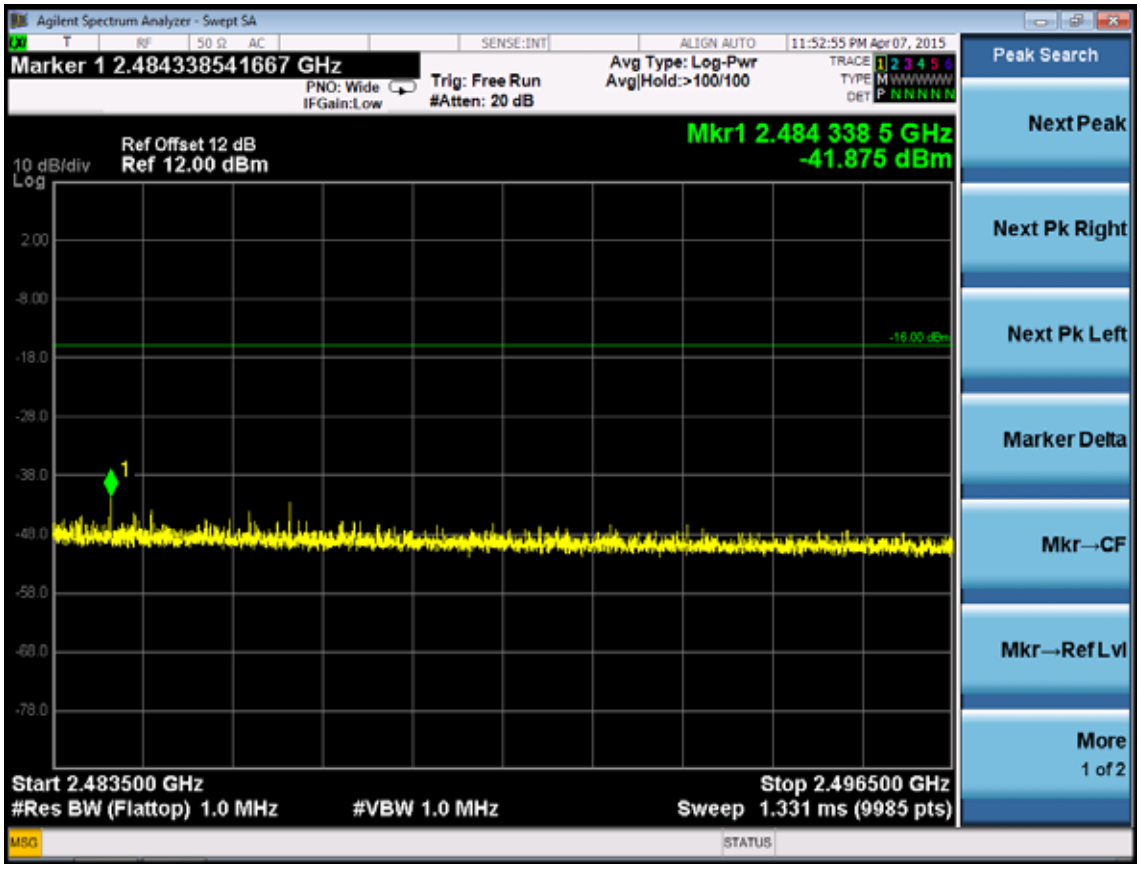

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:12:27 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.612 7 GHz
-42.731 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

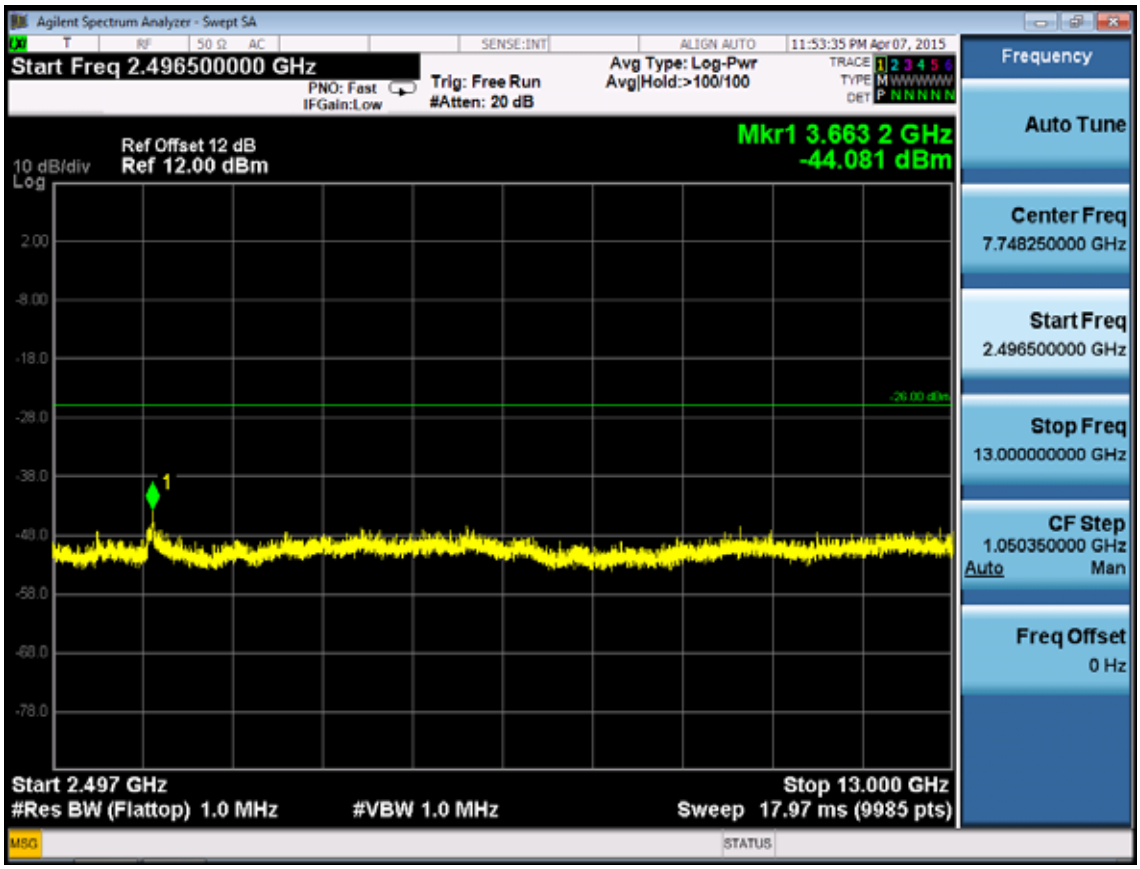
CH7 2442MHz


Agilent Spectrum Analyzer - Swept SA
Marker 1 951.810897436 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 88/100
11:50:27 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 951.81 MHz
-55.951 dBm
-36.00 dBm
Start 30.0 MHz
#Res BW (Flattop) 100 kHz
#VBW 100 kHz
Stop 1.0000 GHz
Sweep 29.95 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

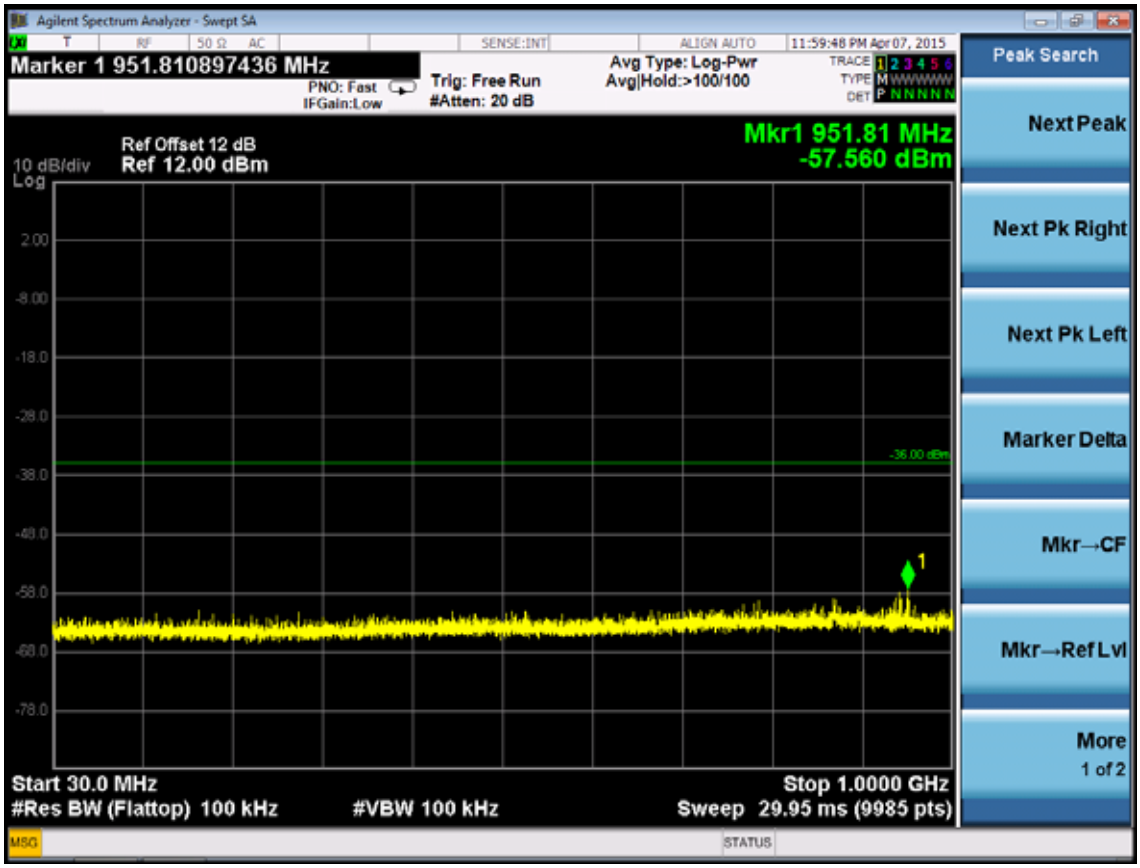

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.368940104167 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:51:28 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.368 94 GHz
-45.868 dBm
-26.00 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

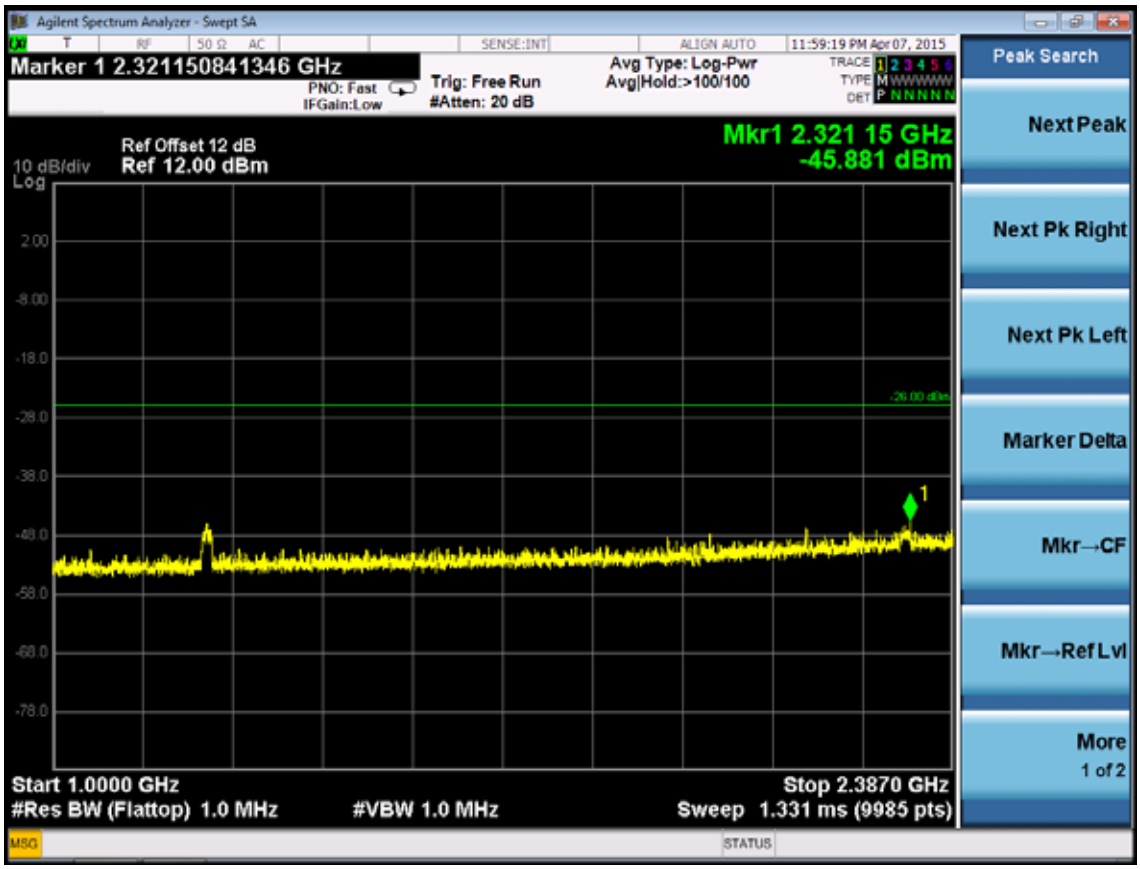

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399082031250 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:52:09 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.399 082 0 GHz
-41.989 dBm
-16.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

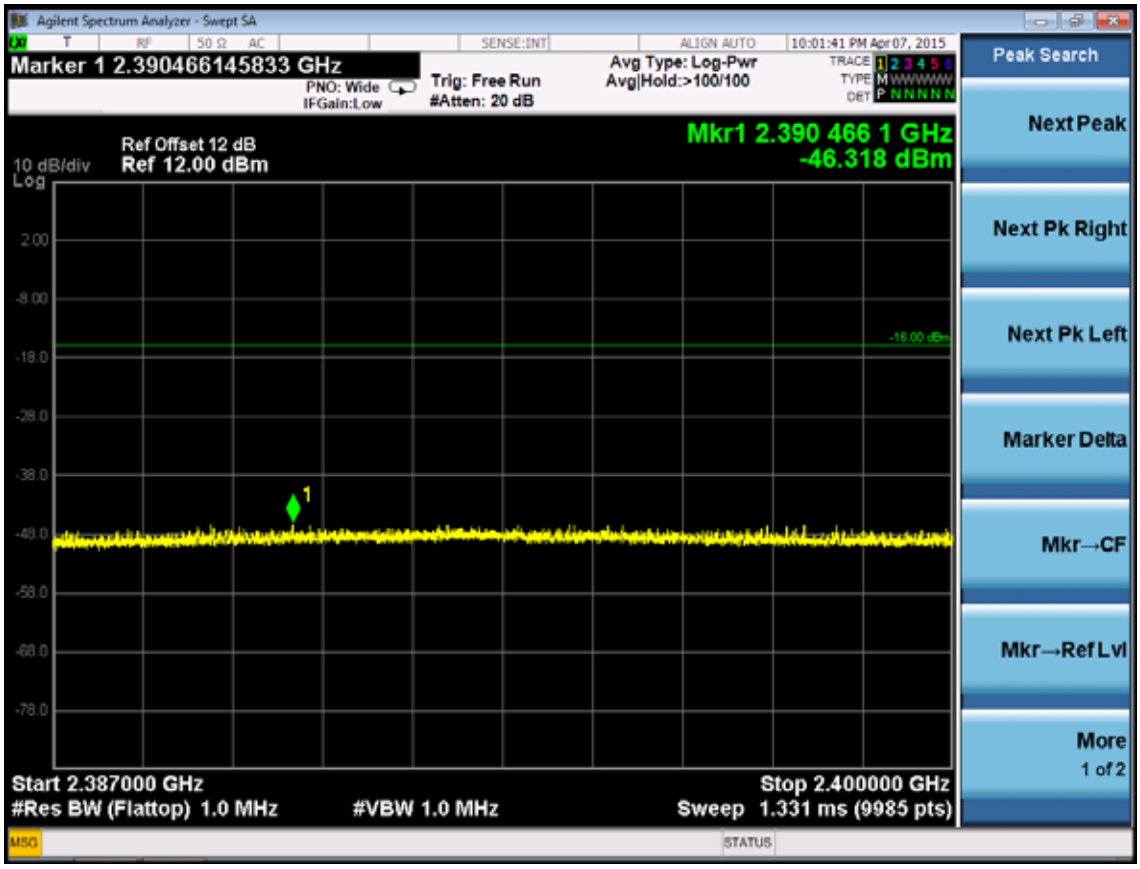

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.484338541667 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:52:55 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.484 338 5 GHz
-41.875 dBm
-16.00 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

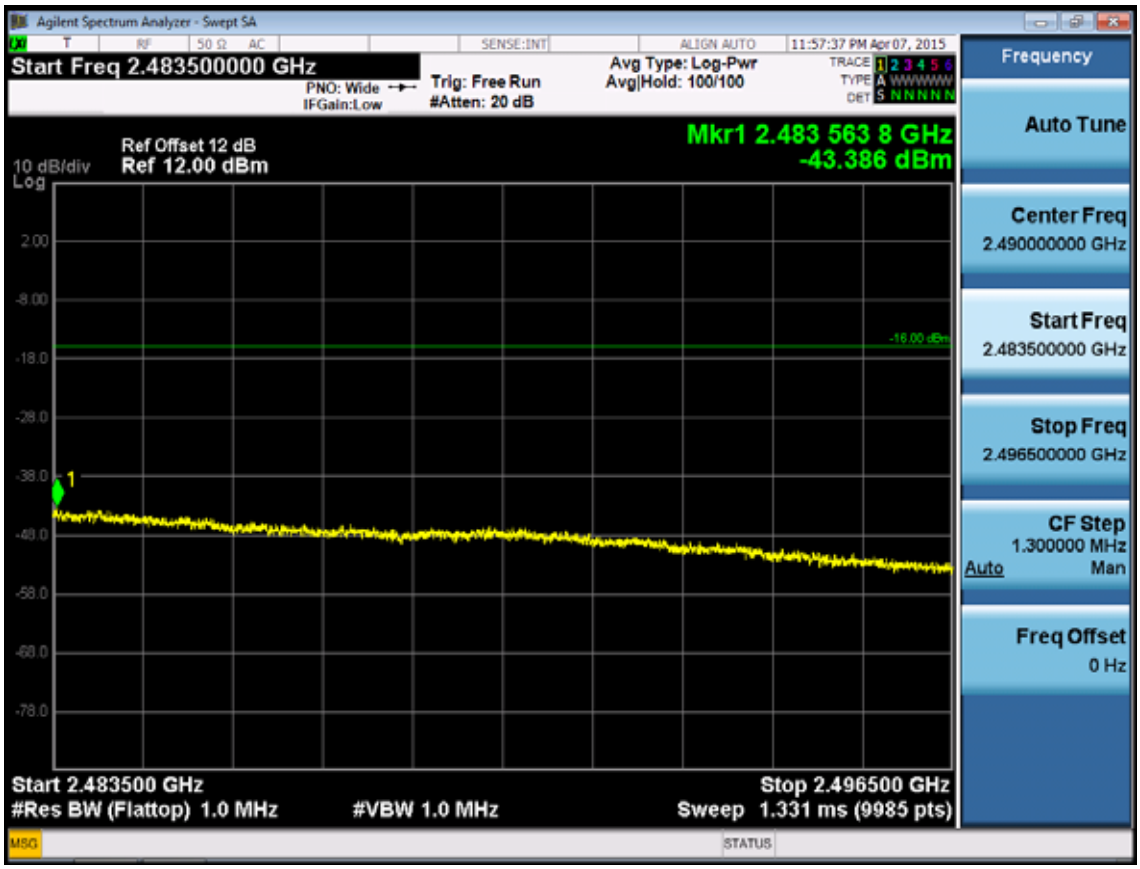


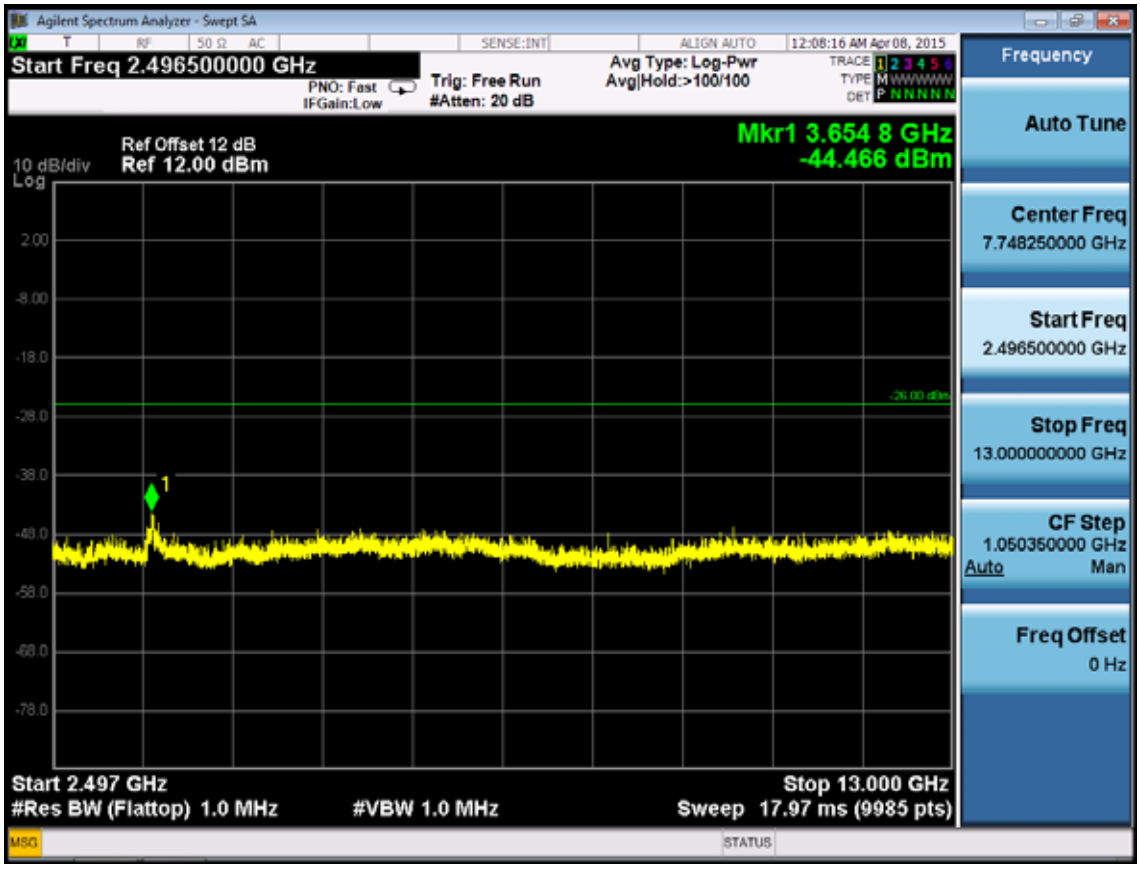
CH13 2472MHz



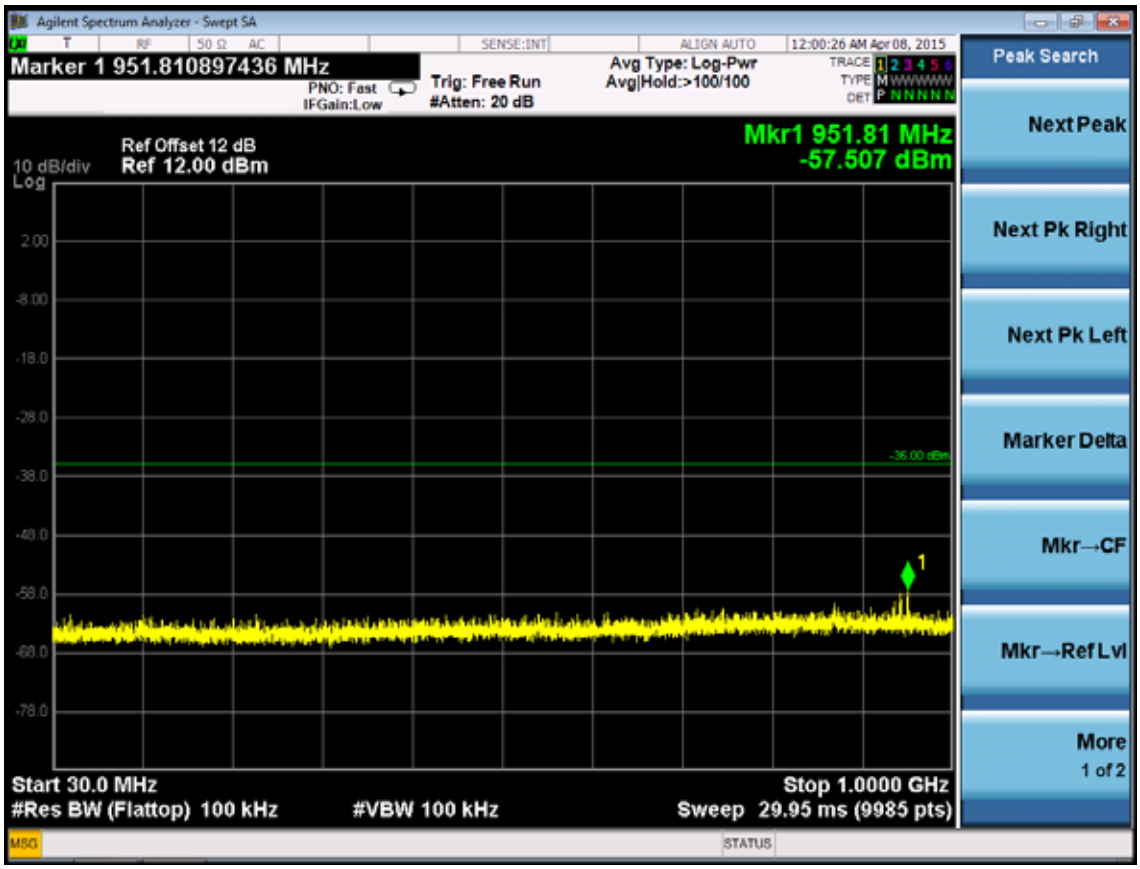

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.321150841346 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:59:19 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.321 15 GHz
-45.881 dBm
-26.00 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

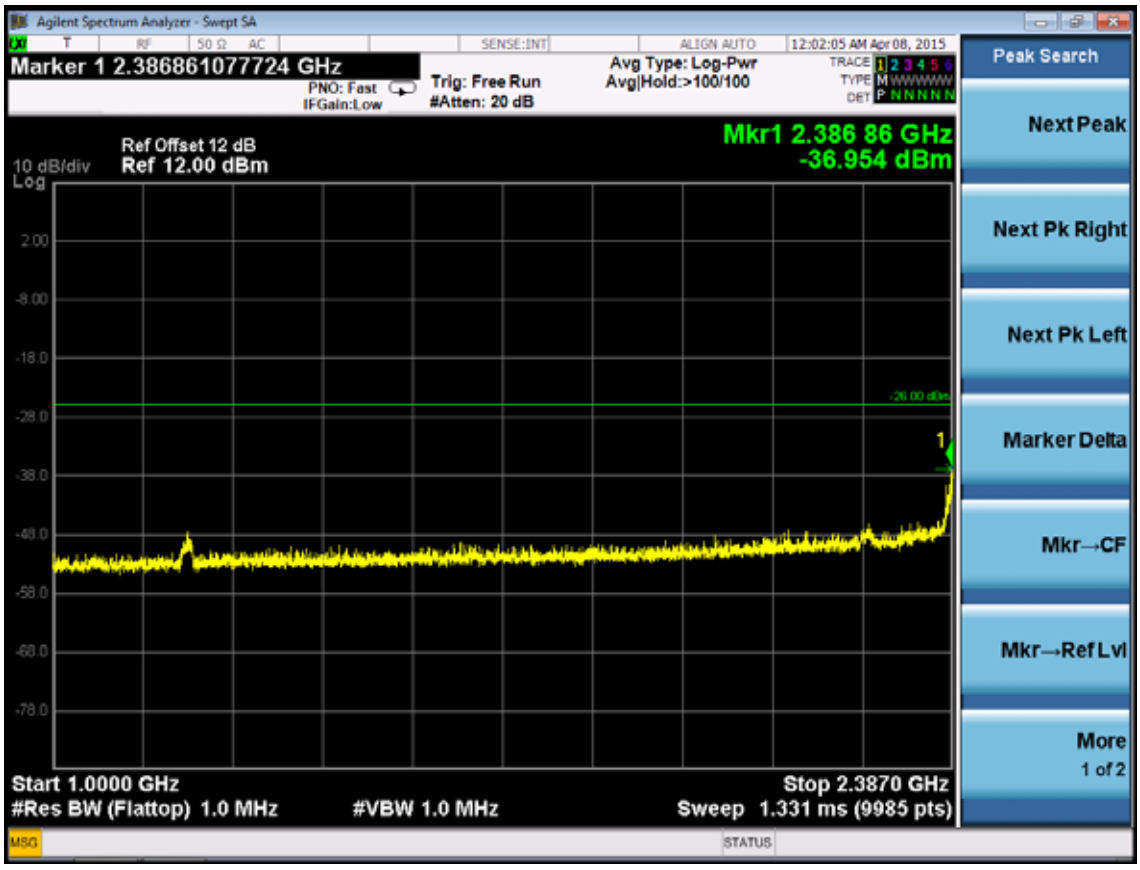

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.390466145833 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:01:41 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.390 466 1 GHz
-46.318 dBm
-18.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Start Freq 2.483500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
11:57:37 PM Apr 07, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.483 563 8 GHz
-43.386 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Frequency
Auto Tune
Center Freq
2.490000000 GHz
Start Freq
2.483500000 GHz
Stop Freq
2.496500000 GHz
CF Step
1.300000 MHz
Auto
Man
Freq Offset
0 Hz

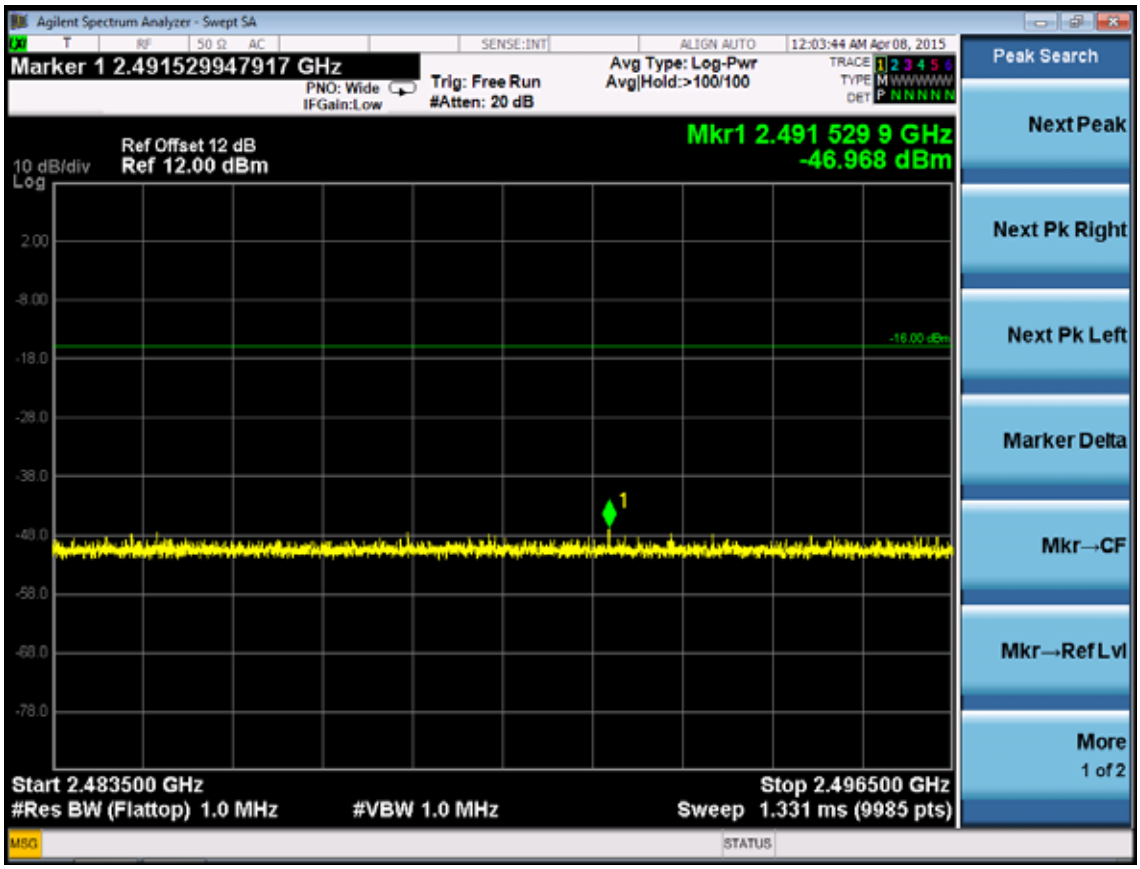

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:08:16 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.654 8 GHz
-44.466 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

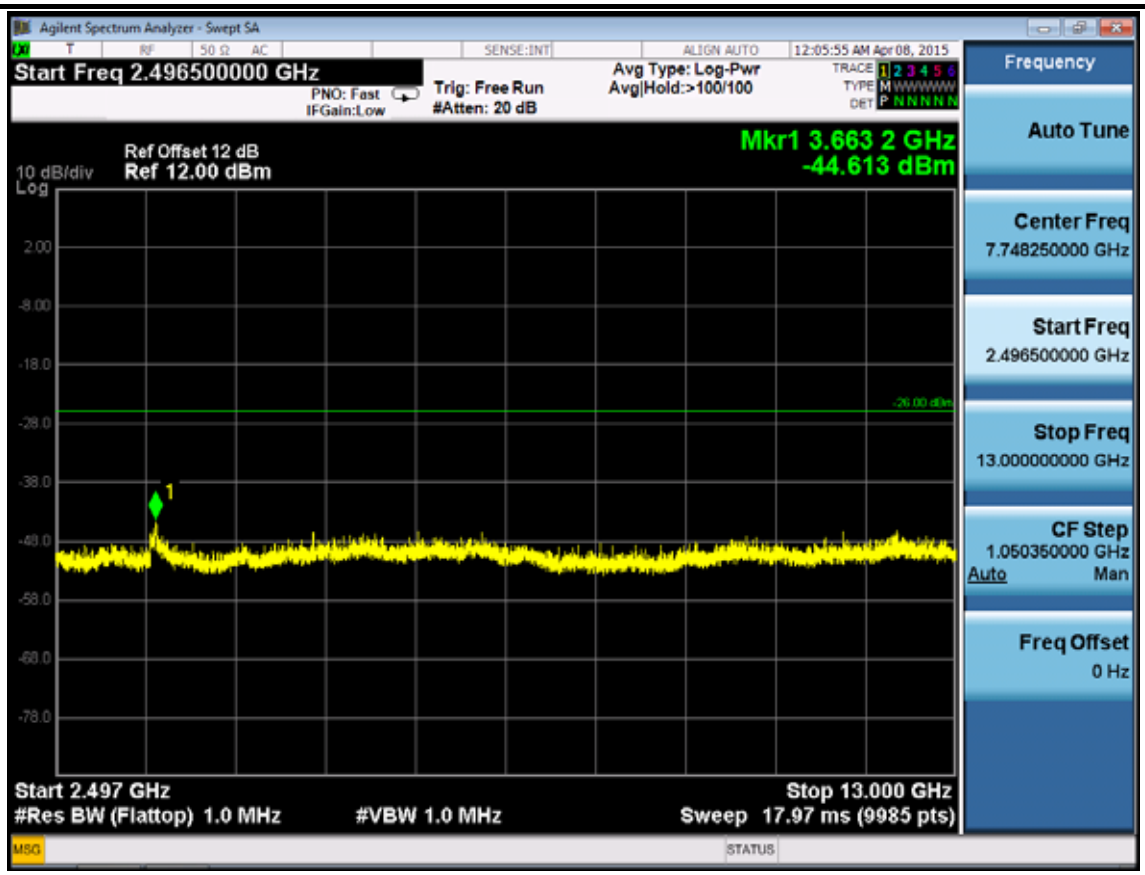
IEEE 802.11n HT20
CH1 2412MHz



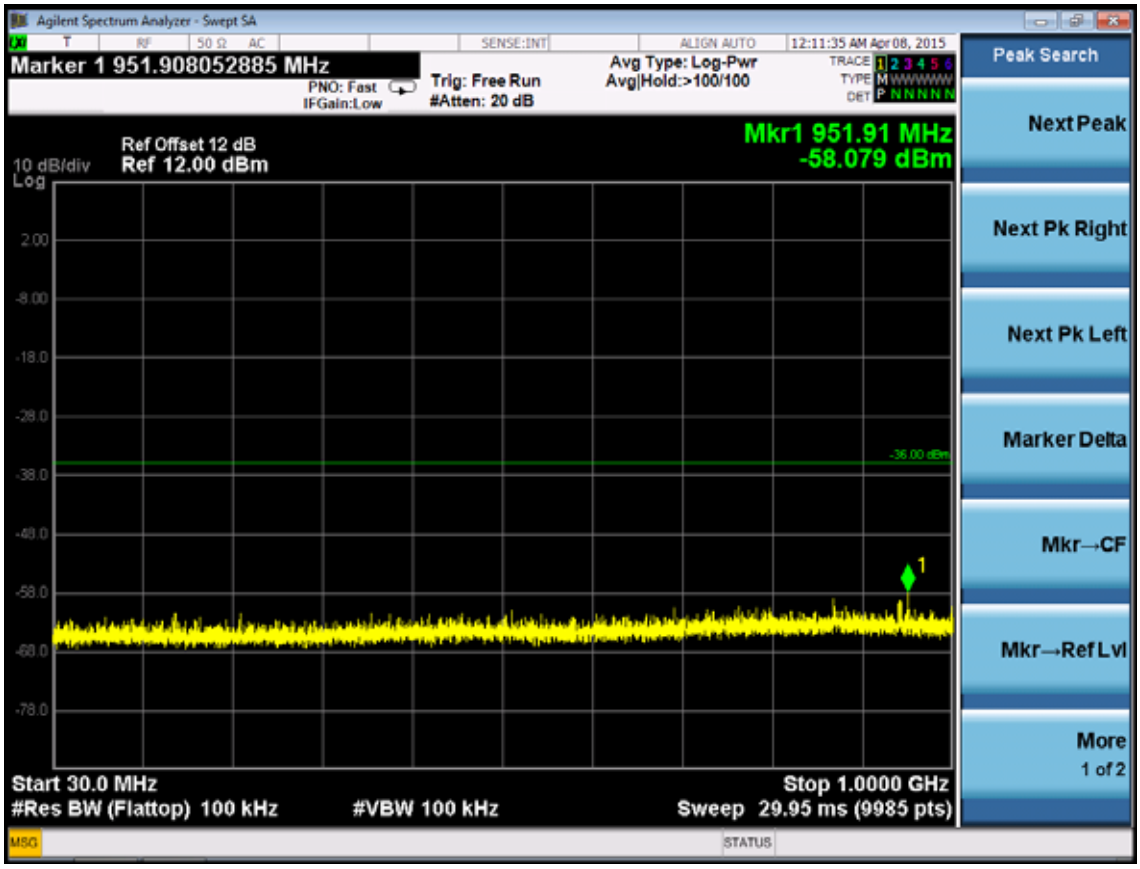


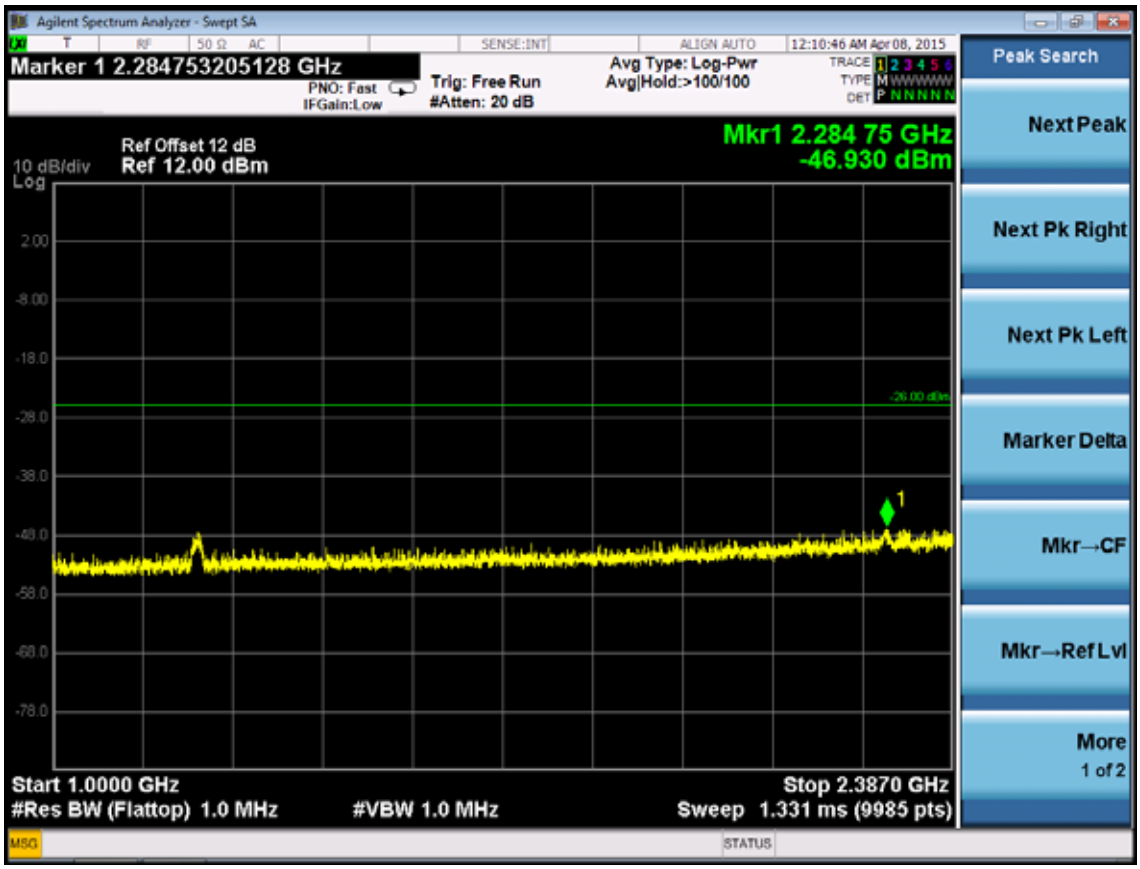

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399731770833 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
12:02:55 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.399 731 8 GHz
-43.078 dBm
-16.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

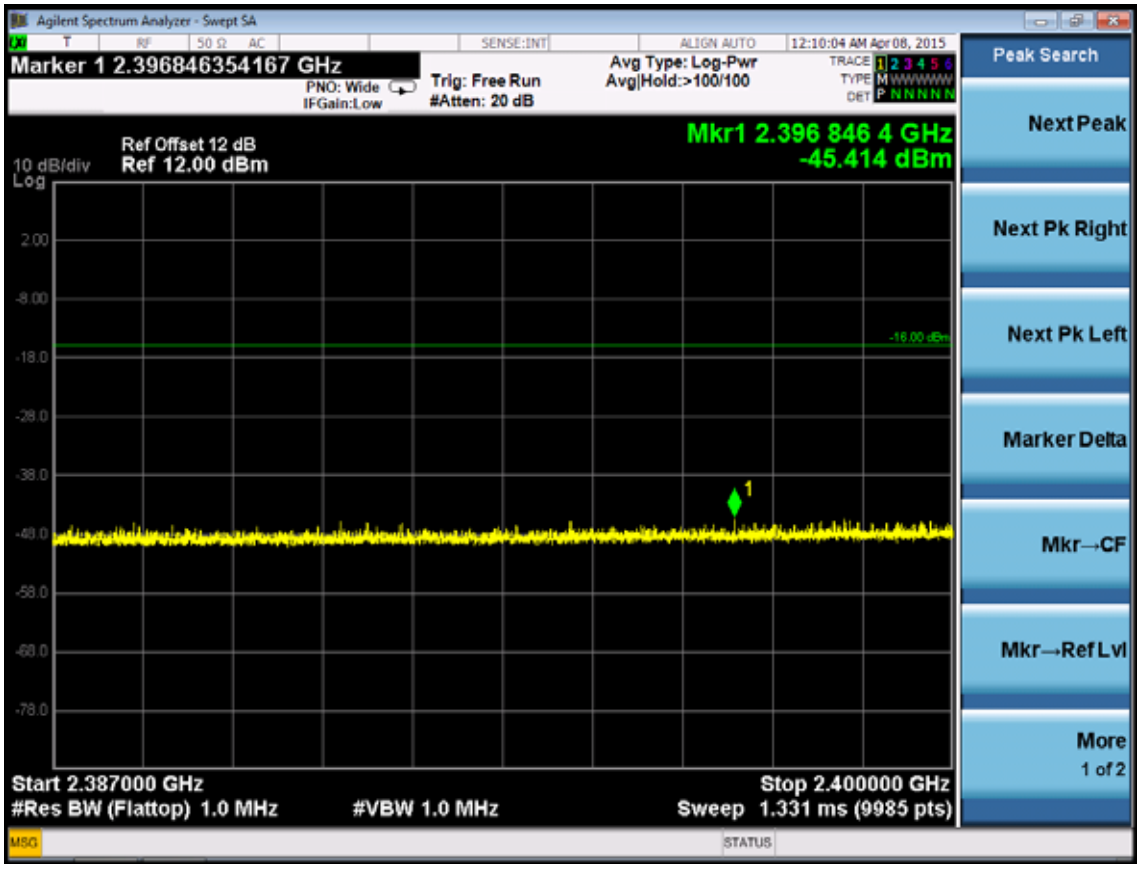

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.491529947917 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:03:44 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.491 529 9 GHz
-46.968 dBm
-16.00 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

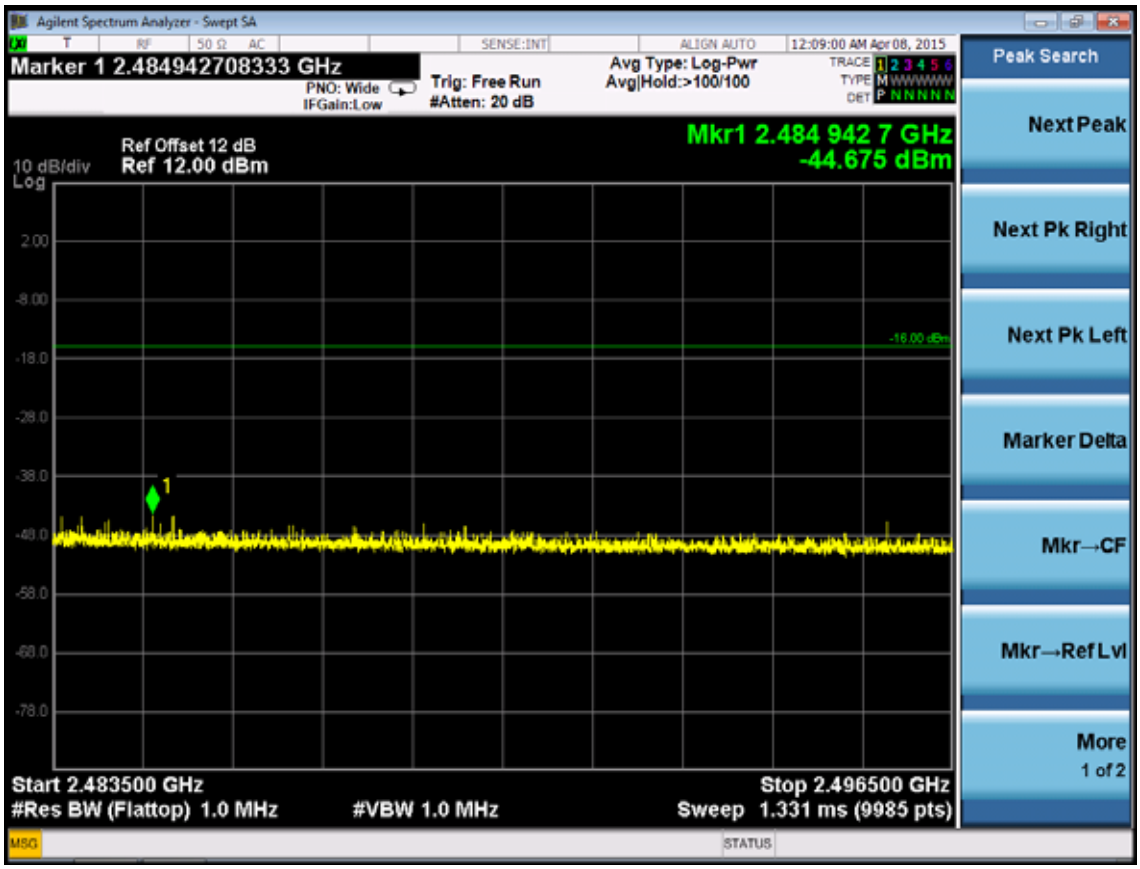

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:05:55 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.663 2 GHz
-44.613 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

CH7 2442MHz


Agilent Spectrum Analyzer - Swept SA
Marker 1 951.908052885 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:11:35 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 951.91 MHz
-58.079 dBm
Start 30.0 MHz
#Res BW (Flattop) 100 kHz
#VBW 100 kHz
Stop 1.0000 GHz
Sweep 29.95 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

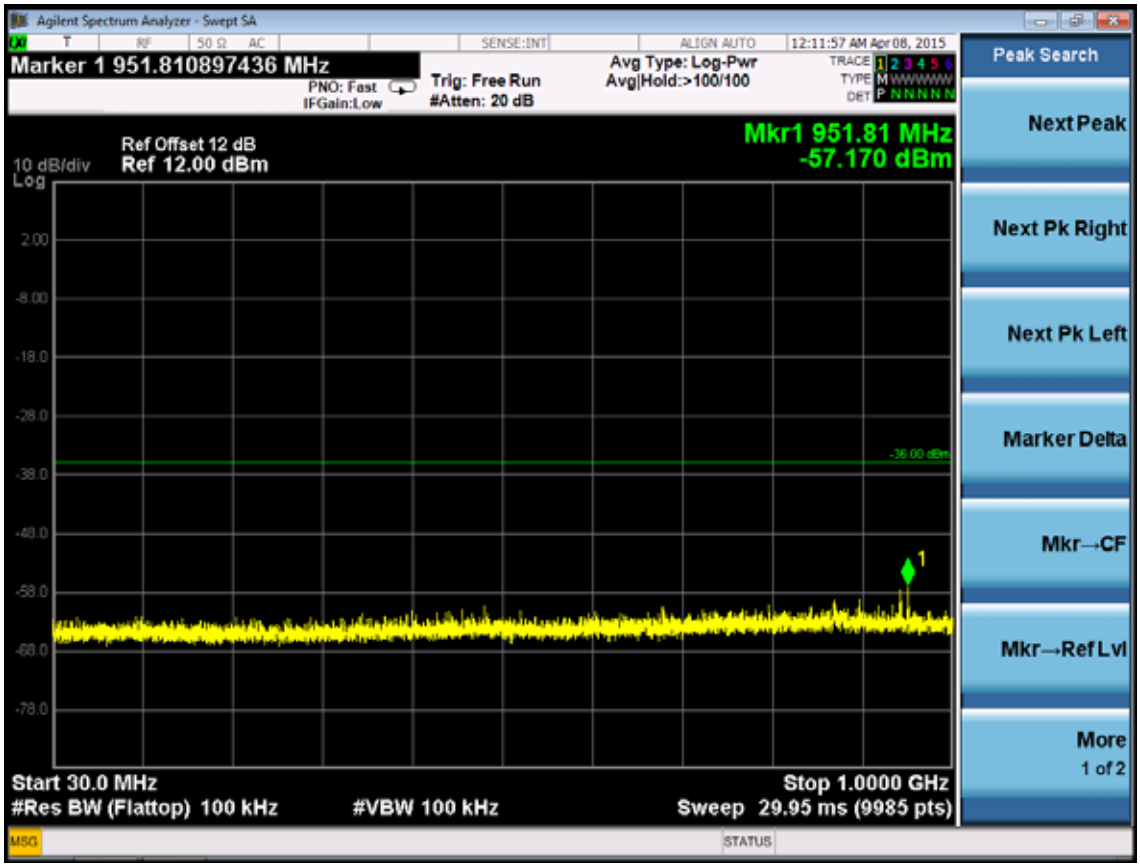

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.284753205128 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:10:46 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.284 75 GHz
-46.930 dBm
-26.00 dBm
Start 1.0000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

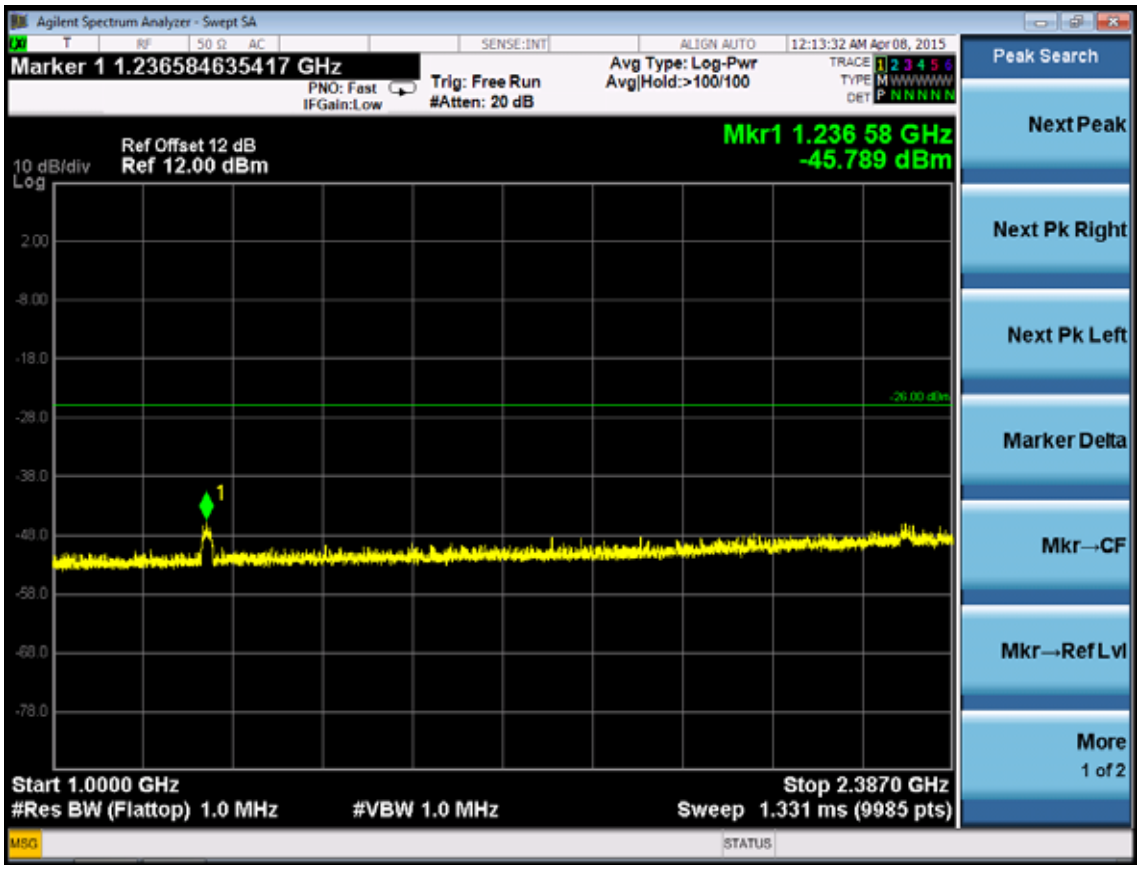

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.396846354167 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:10:04 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.396 846 4 GHz
-45.414 dBm
-18.00 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

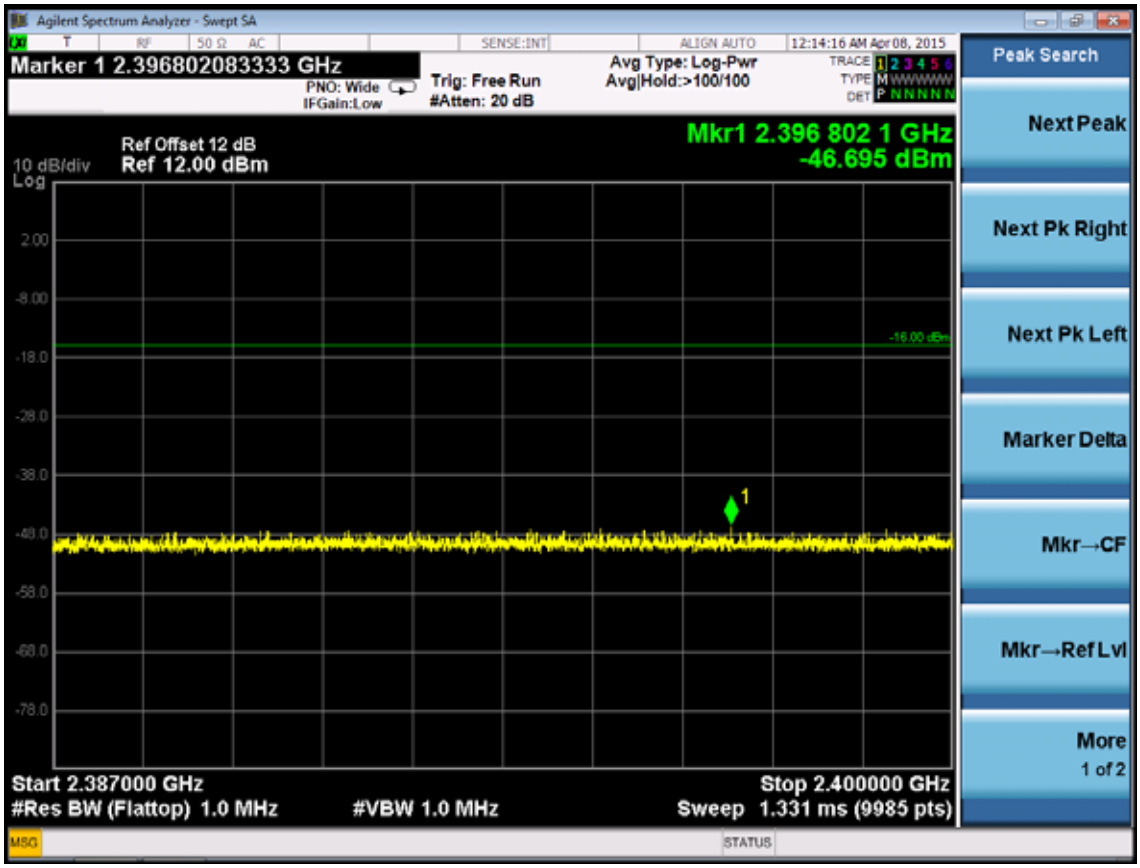

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.484942708333 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:09:00 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.484 942 7 GHz
-44.675 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

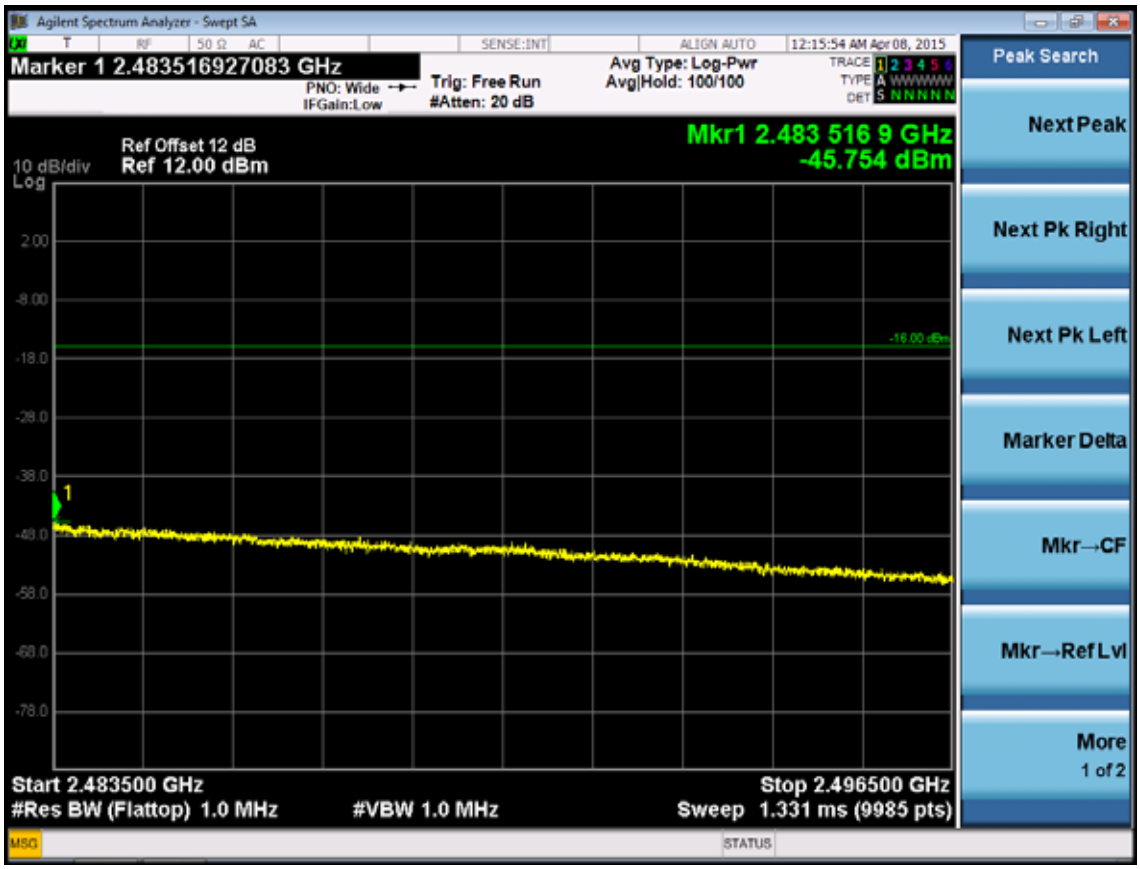

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:06:38 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 3.665 3 GHz
-42.760 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz

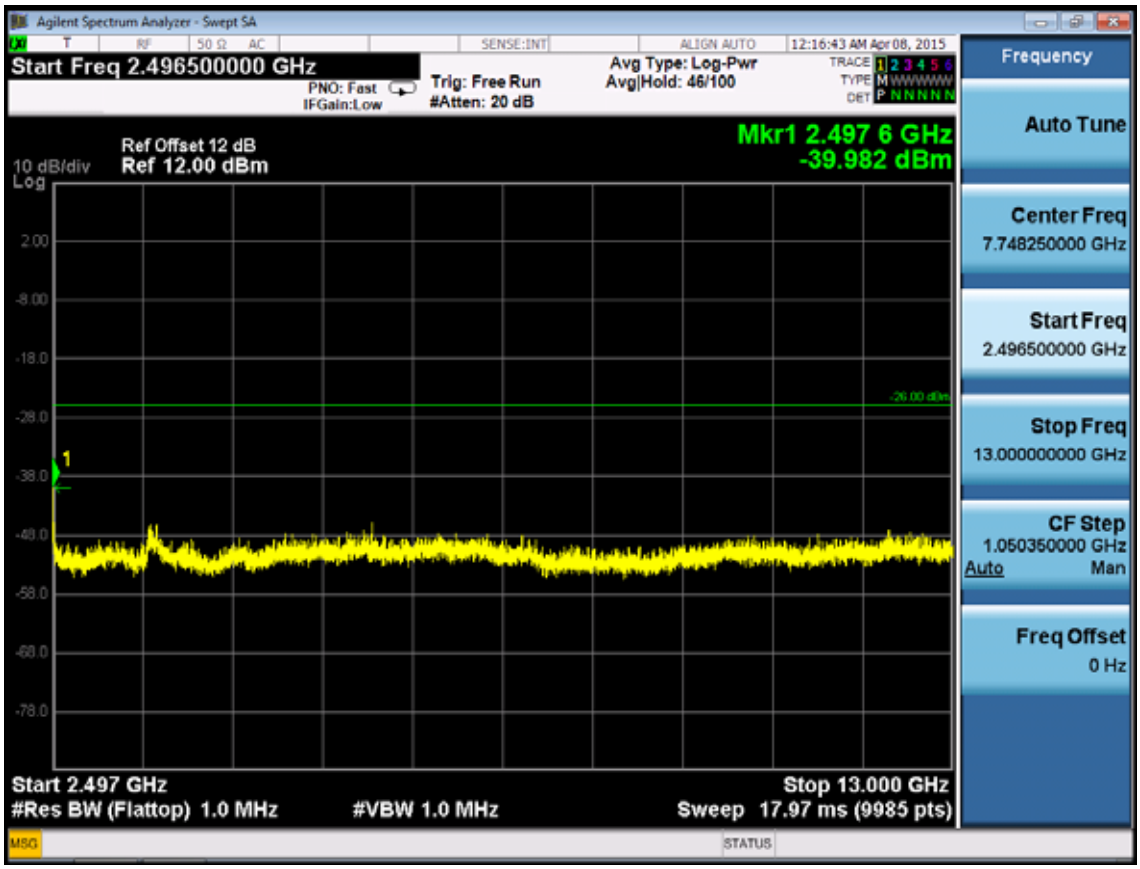
CH13 2472MHz






Agilent Spectrum Analyzer - Swept SA
Marker 1 2.396802083333 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:14:16 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.396 802 1 GHz
-46.695 dBm
Start 2.387000 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.483516927083 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
12:15:54 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.483 516 9 GHz
-45.754 dBm
Start 2.483500 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.331 ms (9985 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Start Freq 2.496500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 46/100
12:16:43 AM Apr 08, 2015
Ref Offset 12 dB
10 dB/div
Log
Ref 12.00 dBm
Mkr1 2.497 6 GHz
-39.982 dBm
-26.00 dBm
Start 2.497 GHz
#Res BW (Flattop) 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.97 ms (9985 pts)
Frequency
Auto Tune
Center Freq
7.748250000 GHz
Start Freq
2.496500000 GHz
Stop Freq
13.000000000 GHz
CF Step
1.050350000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

3.5.Carrier sense function

3.5.1. Limit

The radio equipment connected to telecommunication circuit equipment shall be equipped with a device which detects emissions radiated from another radio station and prevents interference, or a device which prevents interference by operation on a receive signal and a signal for diffusion for signal level detection.

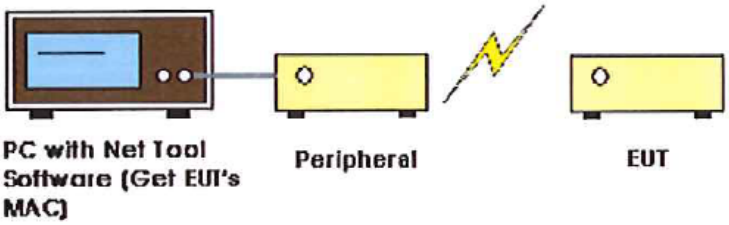
3.5.2. Measuring Instruments

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Wireless Router	---	D-Link	DI-624+A	NI624+ACEUA1	☑FCC ID: KA2DI524 ☐BSMI ID

3.5.3. Test Procedures

1. Use personal computer control the wireless N Router work at 11n HT20 mode by software.
2. Link the Wireless Router with EUT Via Wireless, Let EUT work in normal transmitting Mode.
3. Set the signal generator at same frequency channel with a proper signal level output to act as interference signal.
4. Monitor the signal transmission between EUT and wireless Router, when interference signal presents, the EUT would stop transmitting once it detects interference signal over their, then it pass. Otherwise the Result is fail.

3.5.4. Test Setup



Peripheral: the Wireless Router

3.5.5. Test result

Good

4. MEASUREMENTS OF RECEIVER PARAMETERS

4.1. Secondary Radiated Emissions (Conducted)

4.1.1. Limit

Item	Limits
Rx Spurious Emission	≦4nW(f＜1GHz)
	≦20nW(1GHz≦f)

4.1.2. Measuring Instruments

See list of measuring instruments of 2.3 section.

4.1.3. Test Procedures

1. EUT have the continuous reception mode and fixed only one channelize.
2. SA set **RBW**: 100KHz and **VBW:** 100KHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW.
3. SA set **RBW**: 1MHz and **VBW**:1MHz. Then adjust to start frequency 1000MHz and stop frequency13000MHz. Search to mark peak reading value + cable loss shall be less than 20nW.
4. If power level of lower emissions are more than 1/10 of limit(0.4nW for f＜1GHz,2nW for f≧1GHz), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit ,no necessary to be indicated.

4.1.4. Test Setup

See clause 2.2 for block diagram of test setup.

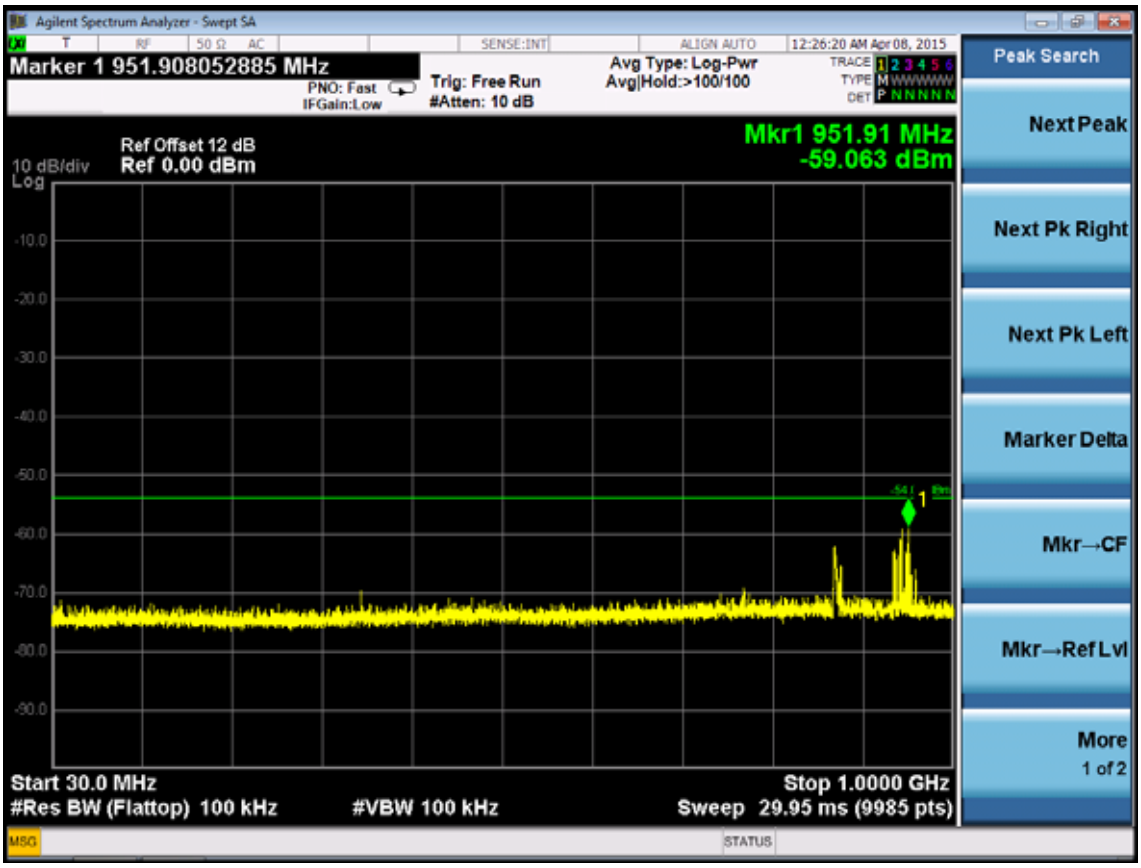
4.1.5. Test Results of Conducted Spurious Emissions – RX Operating

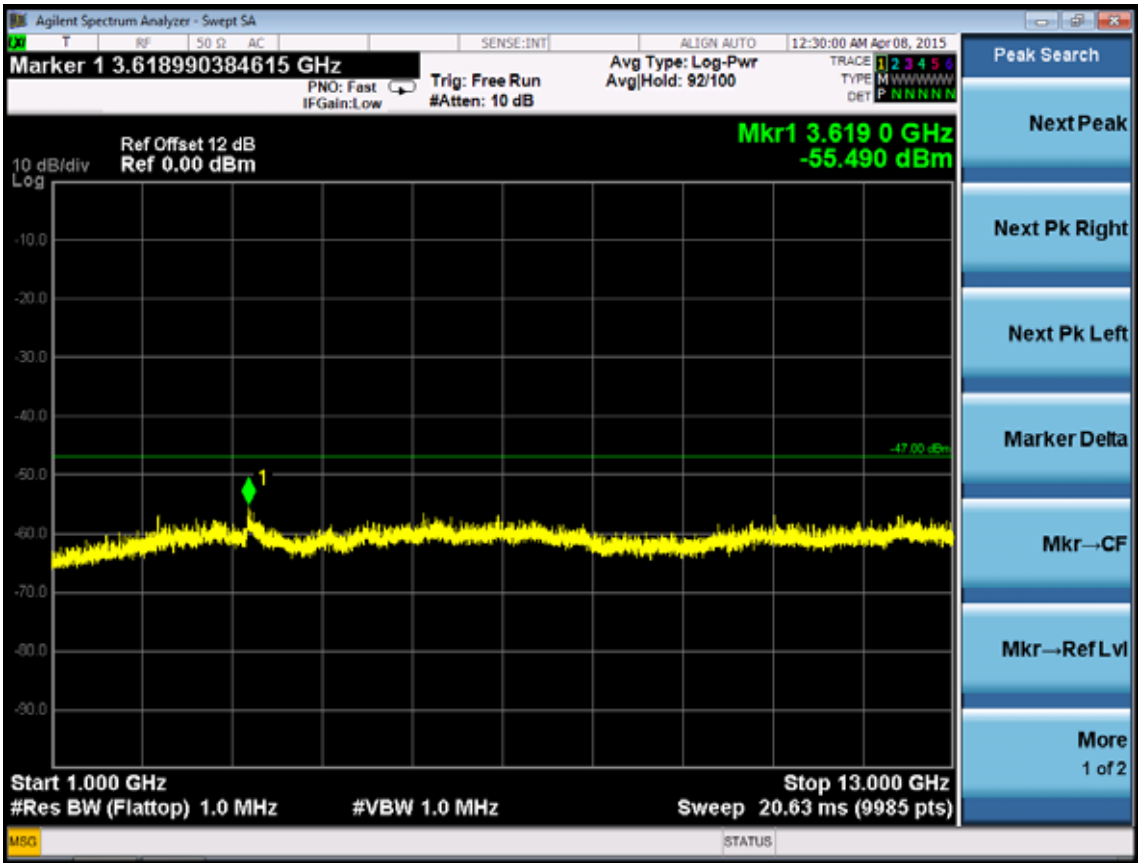
EUT: Cuieboard3		
M/N: Cubietruck		
Test date: 2015-04-08	Pressure: 101.2±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Leo-Li	Test site: RF site	Temperature:22.3±0.6 ℃

Test Voltage	DC 5V						
Test Mode	11b/CH1,CH7,CH13,CH14					Remarks	Result
Test Frequency	MHz	2412	2442	2472	2484	Low/Mid/High of test frequency range	(Pass/Fail)
30MHz~1000GHz	dBm	-59.063	-59.040	-59.395	-59.941	Limit≦4nW (-54dBm)	Pass
1000 MHz ~13000MHz	dBm	-55.490	-56.548	-56.339	-54.747	Limit≦20n W (-47dBm)	Pass

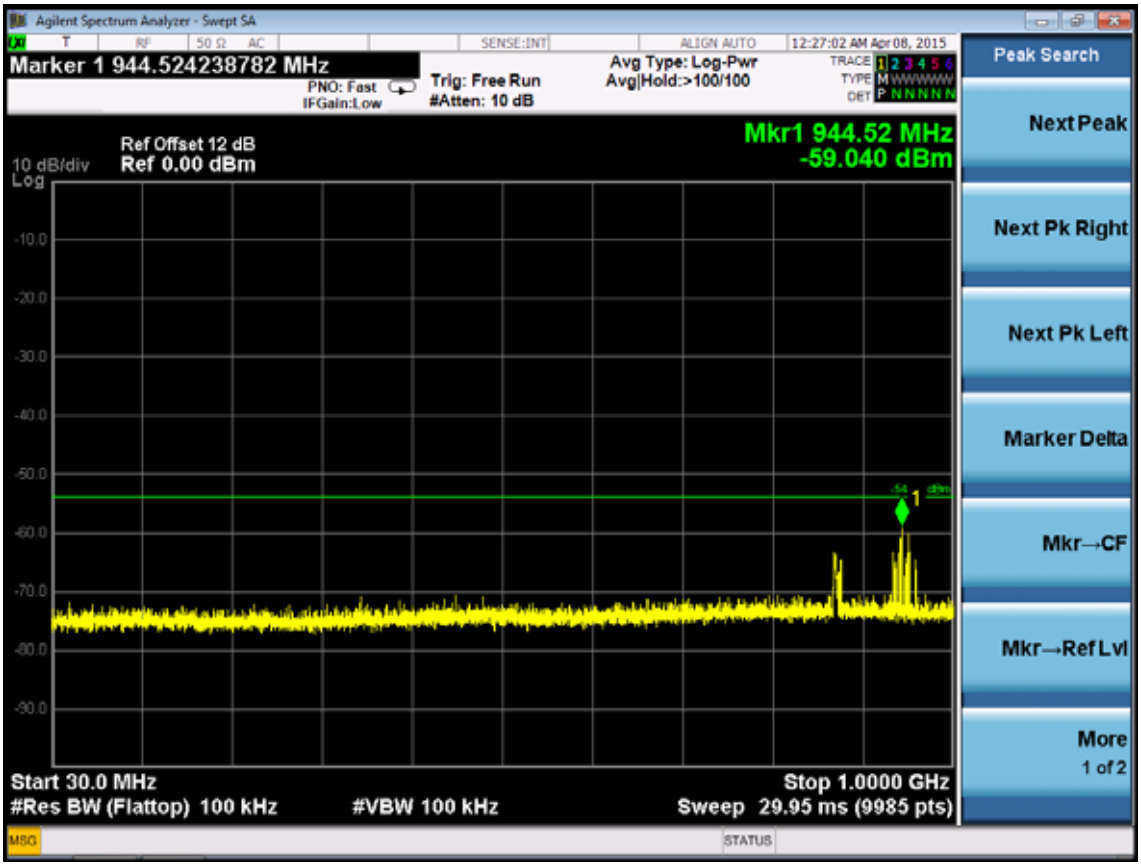
Test Mode	11g/CH1,CH7,CH13				Remarks	Result
Test Frequency	MHz	2412	2442	2472	Low/Mid/High of test frequency range	(Pass/Fail)
30MHz~1000GHz	dBm	-59.232	-59.360	-59.160	Limit≦4nW (-54dBm)	Pass
1000 MHz ~13000MHz	dBm	-55.099	-55.920	-55.554	Limit≦20nW (-47dBm)	Pass
Test Mode	11nHT20/CH1,CH7,CH13				Remarks	Result
Test Frequency	MHz	2412	2442	2472	Low/Mid/High of test frequency range	(Pass/Fail)
30MHz~1000GHz	dBm	-58.549	-59.088	-59.147	Limit≦4nW (-54dBm)	Pass
1000 MHz ~13000MHz	dBm	-55.481	-54.554	-55.390	Limit≦20n W (-47dBm)	Pass

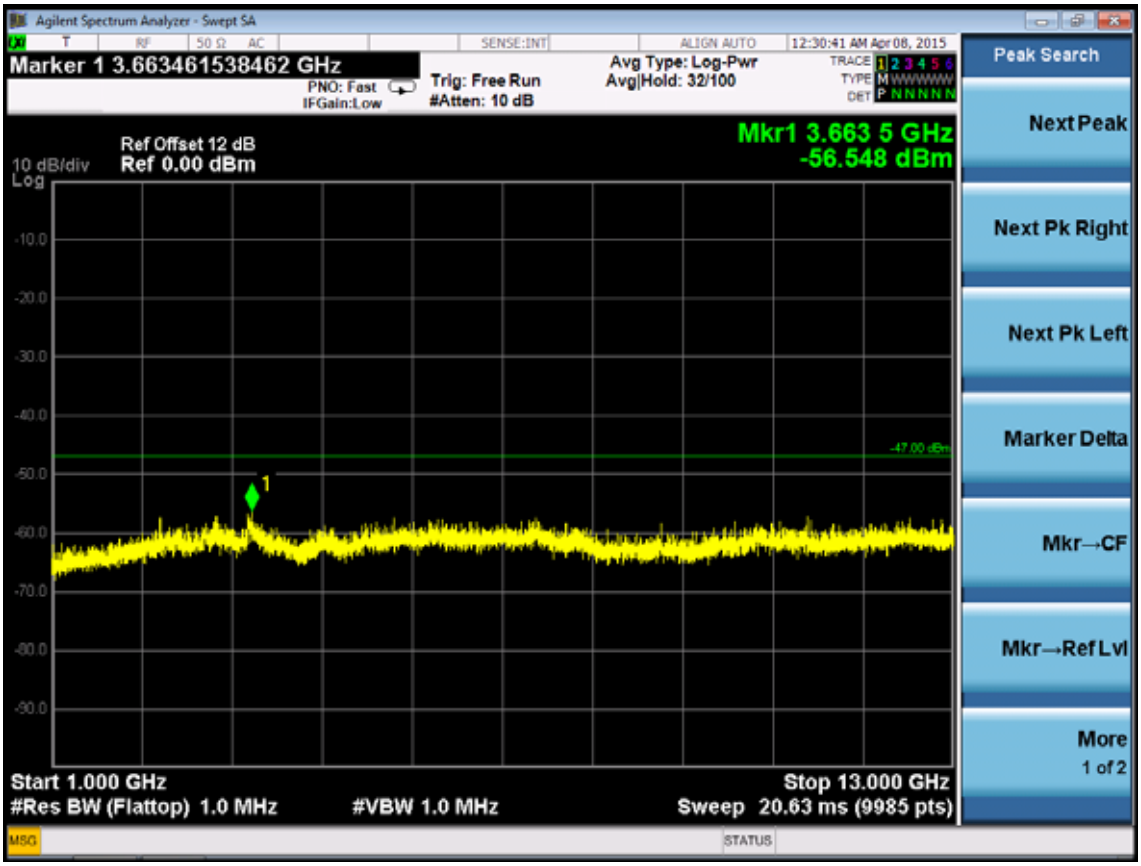
Test Mode: IEEE 802.11b
Test CH1: 2412MHz



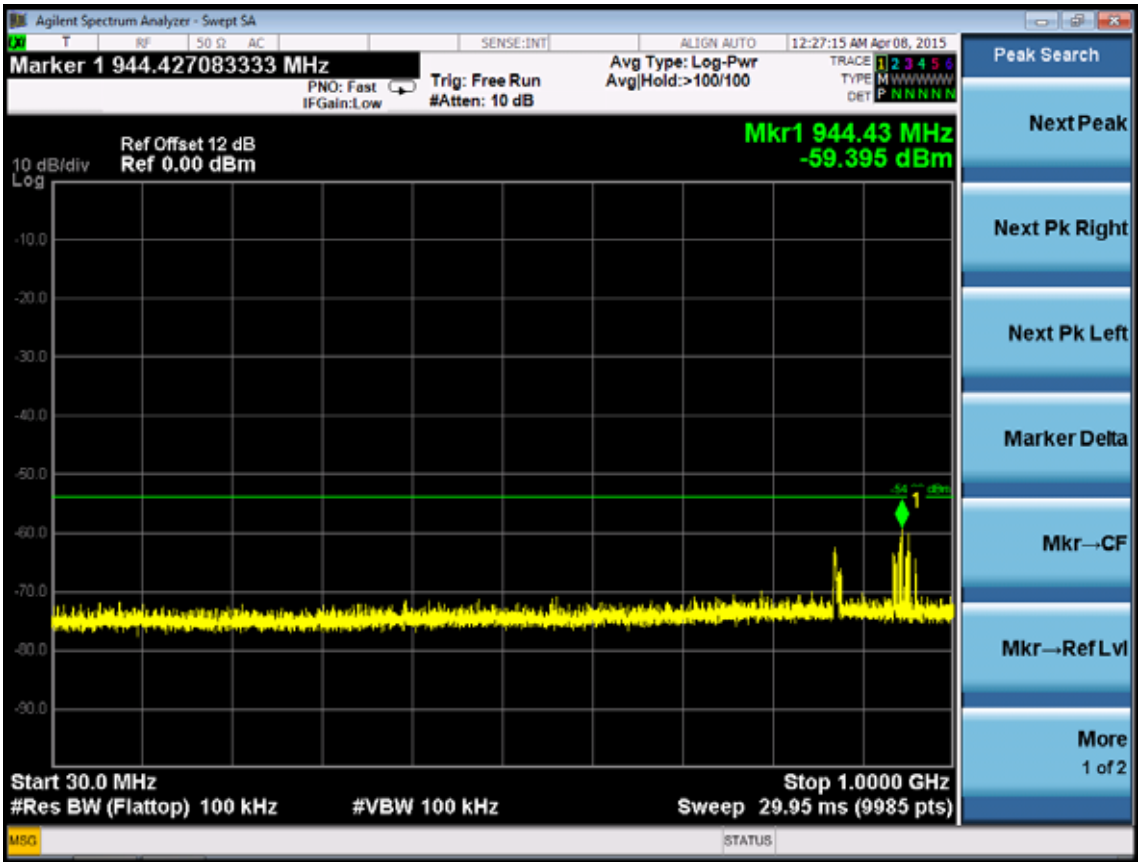


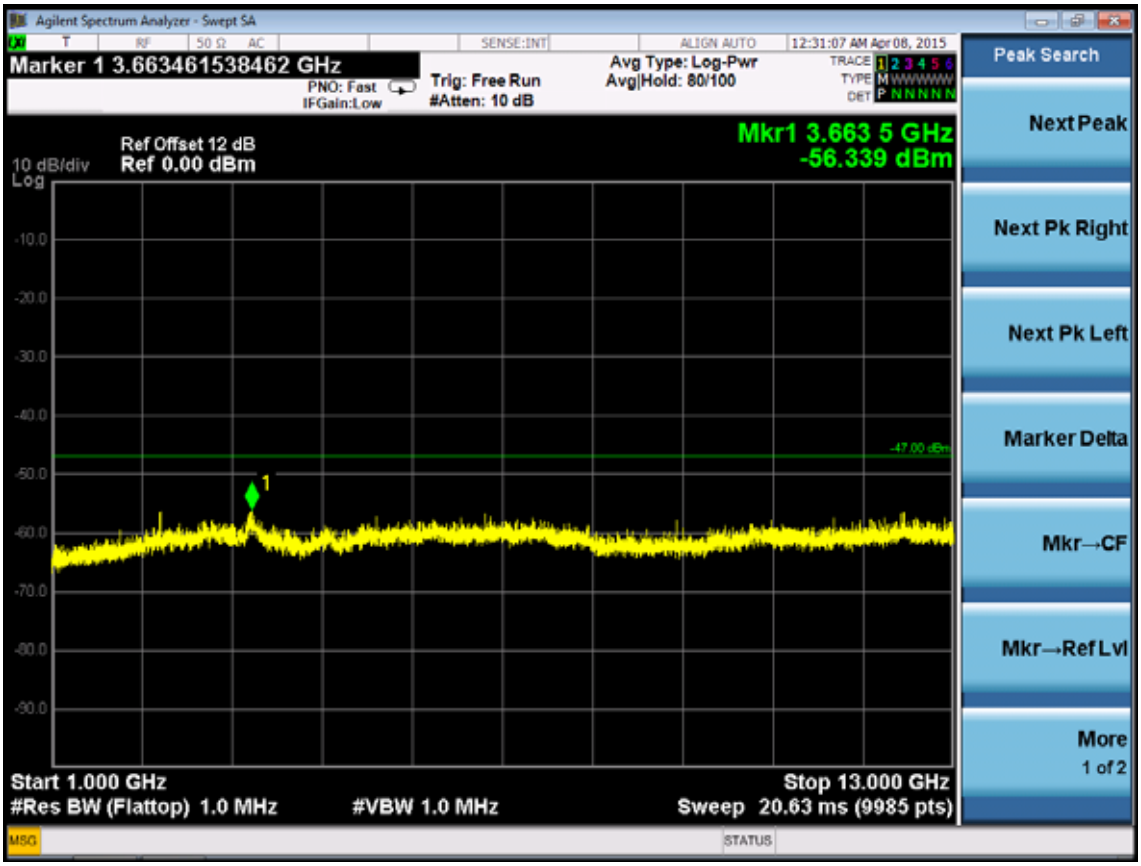
Test CH7: 2442MHz



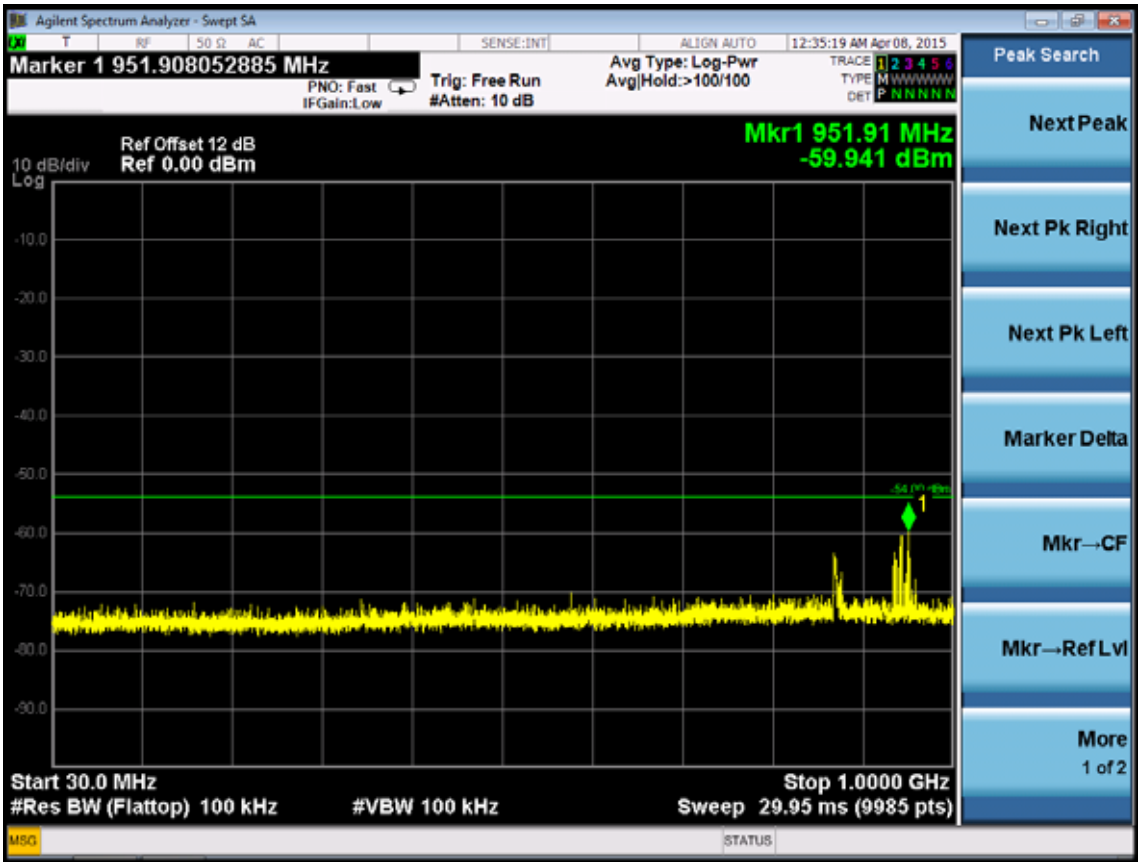


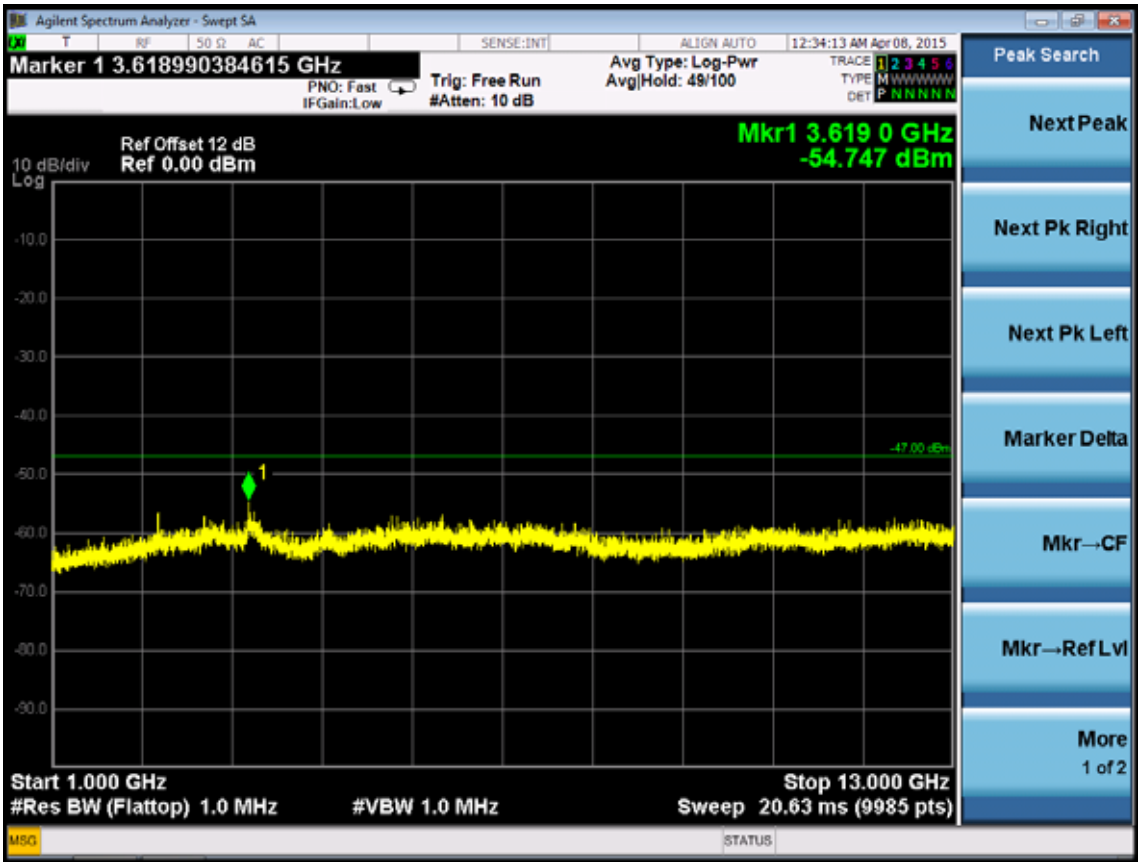
Test CH13: 2472MHz



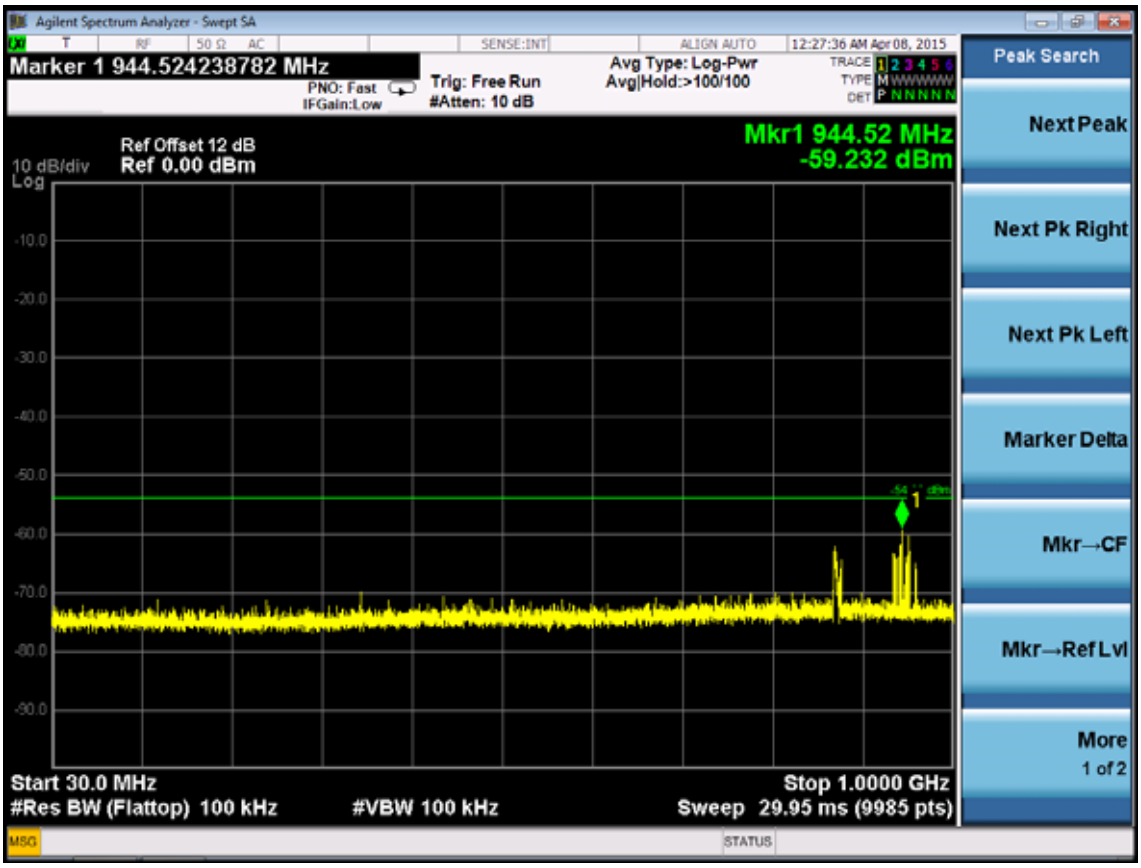


Test CH14: 2484MHz

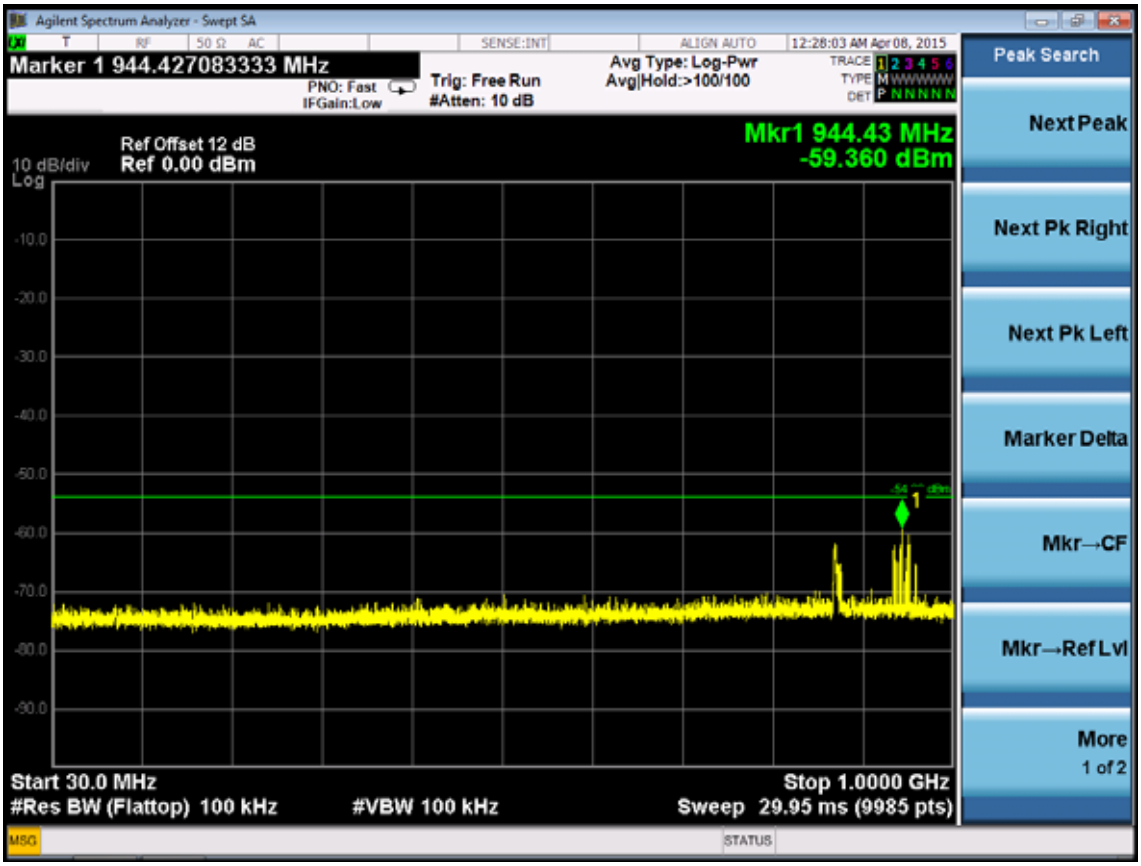




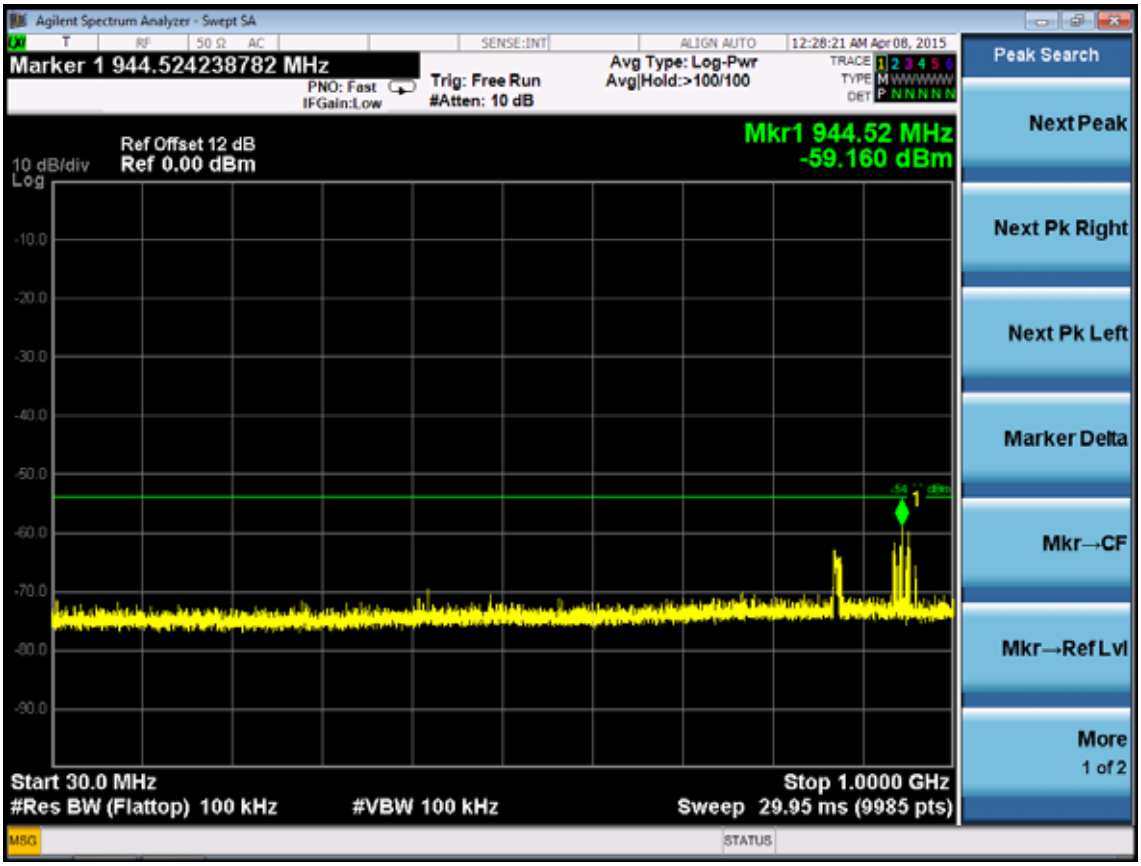
Test Mode: IEEE 802.11g
Test CH1: 2412MHz



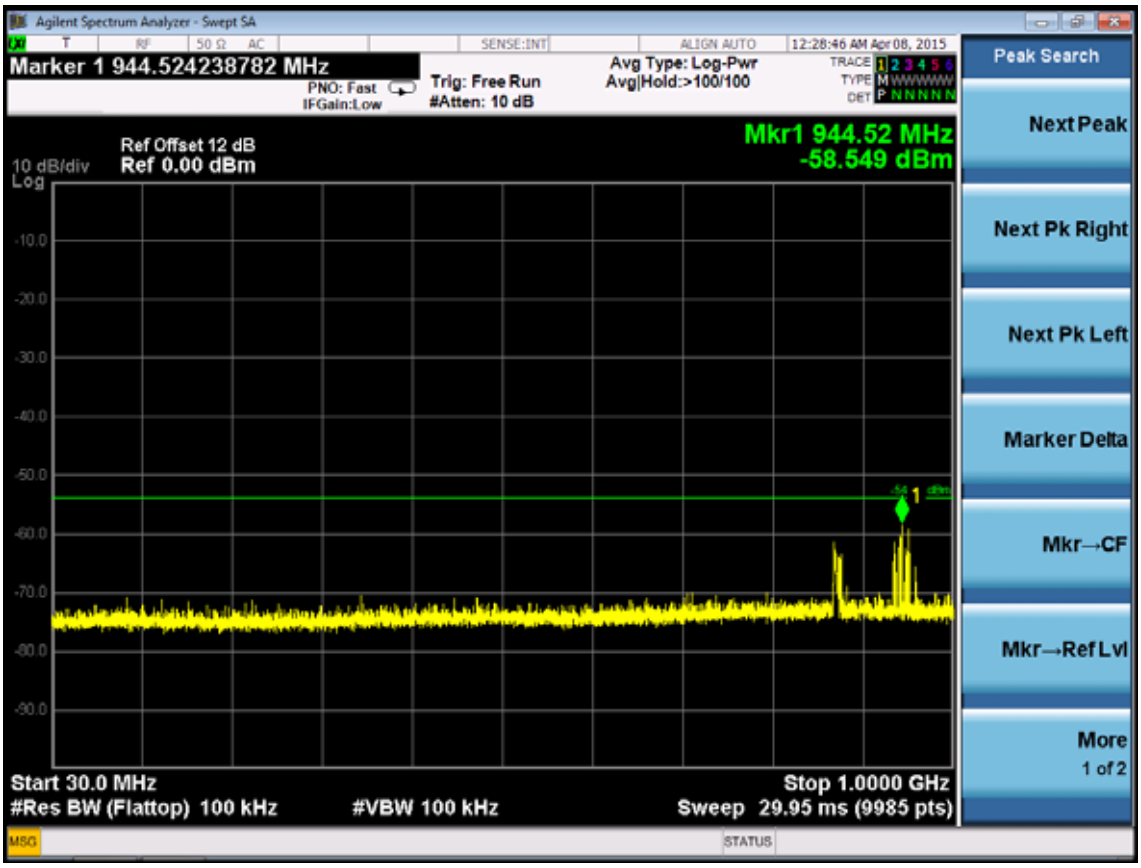
Test CH7: 2442MHz



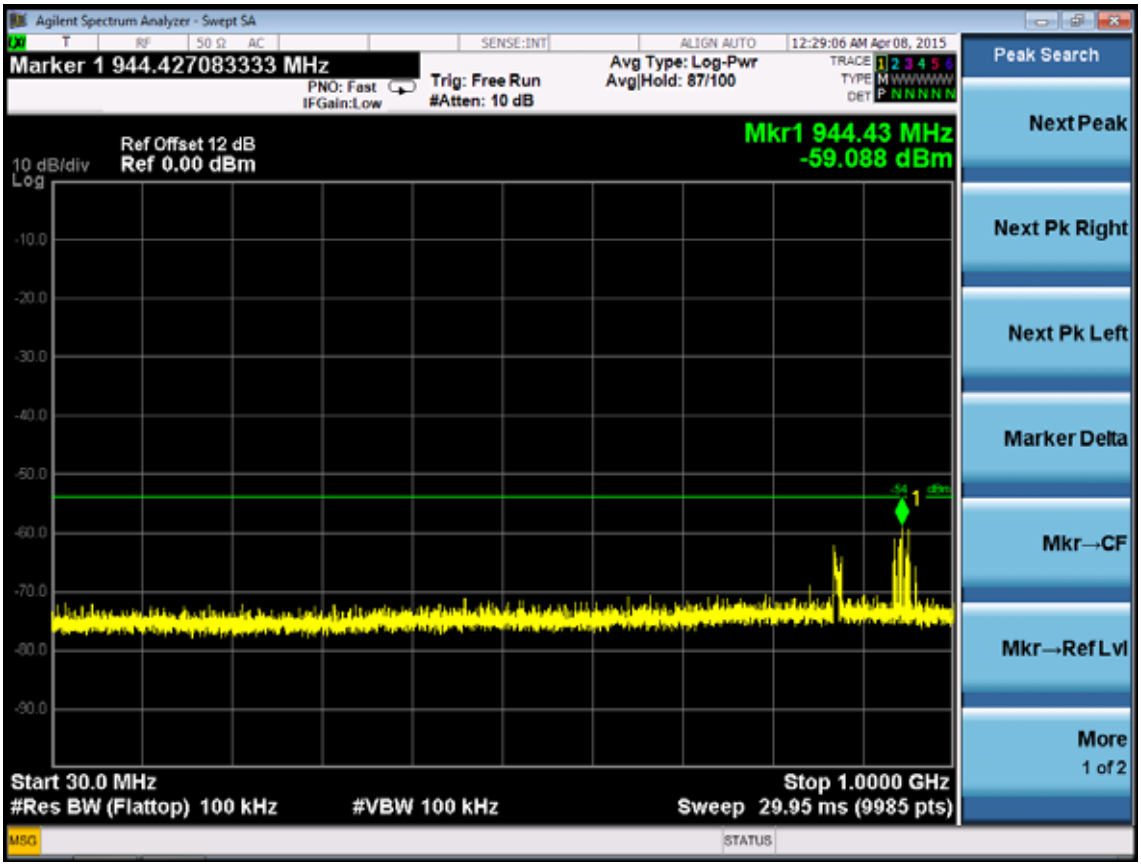
Test CH13: 2472MHz



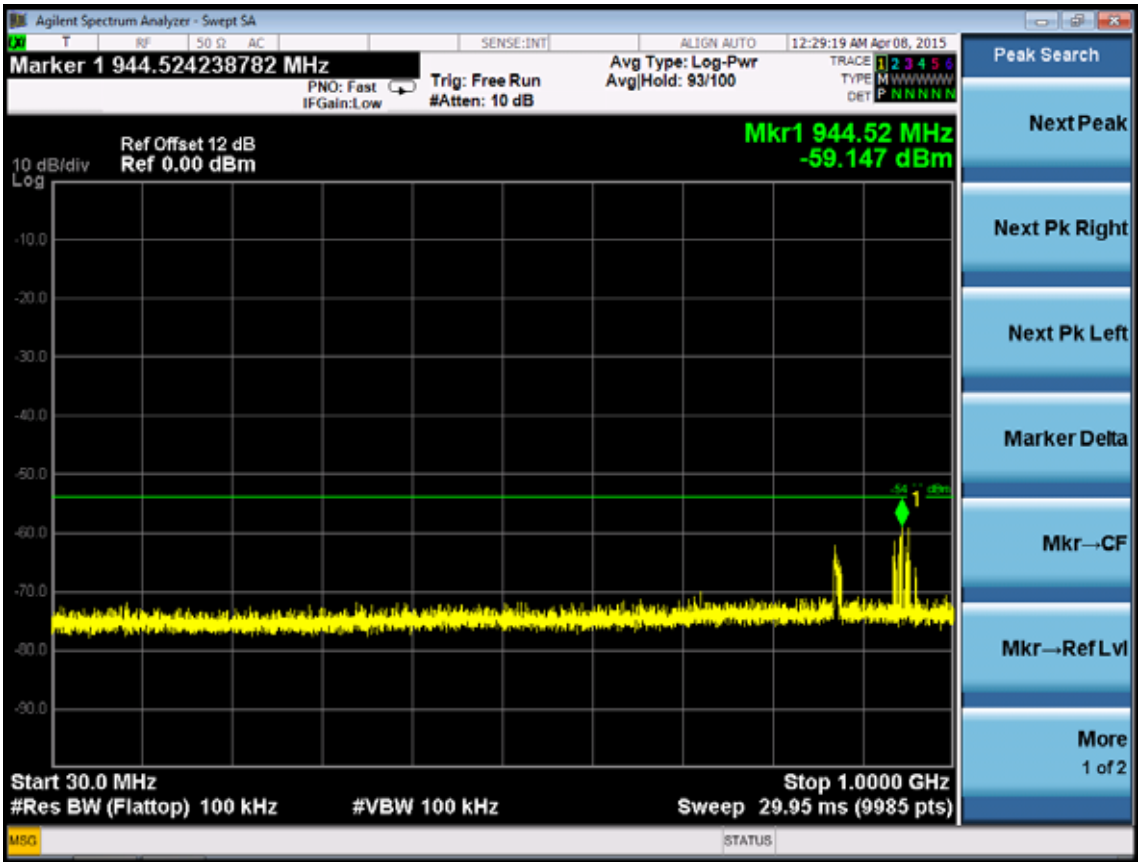
Test Mode: IEEE 802.11n HT20
Test CH1: 2412MHz



Test CH7: 2442MHz



Test CH13: 2472MHz



5. MEASUREMENT OF OTHER PARAMETERS

5.1.Interference Prevention Function

5.1.1. Limit

Item	Limits
Identification	≥48bits

5.1.2. Measuring Instruments

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Wireless Router	---	D-Link	DI-624+A	NI624+ACE UA1	☑FCC ID: KA2DI524 ☐BSMI ID

5.1.3. Test Procedures

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification cades form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code: a. Transmit the predetermined identification codes form the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes form the counterpart. d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

5.1.4. Test Results

TX: The transmitting mode of EUT is on normal operating, the interference prevention function is okay.

RX: The receiving mode of EUT is on normal operating, the interference prevention function is okay.

The ID Code of this WiFi device is 6C:FA:A7:6F:FB:01 as below list：

5.2.Construction Protection

5.2.1. Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

5.2.2. Confirmation Method

☐ Sealed with special screws.
☐ Plastic chassis is being welded using ultrasonic waves.
☐ Chassis is glued using a special adhesive.
☐ Metal covers are spot-fused.
☐ Cover is specially interlocked.
☐RF and Modulation components are covered with shielding case and this shielding case is soldered.
☐ RF modulation parts and ID-ROM be welded using the BGA Method.
☐ Shield case is welded at RF and modulation parts and ID-ROM is glued at its lead with a special adhesive.
☐ Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
■ Other: The RF module was Printed and fixed to the main board with amount contact pin, cannot be modified easily.

5.2.3. The Photos of Construction Protection

6. PHOTOGRAPHS OF TEST

7. PHOTOS OF THE EUT

Figure 1
General Appearance of the EUT

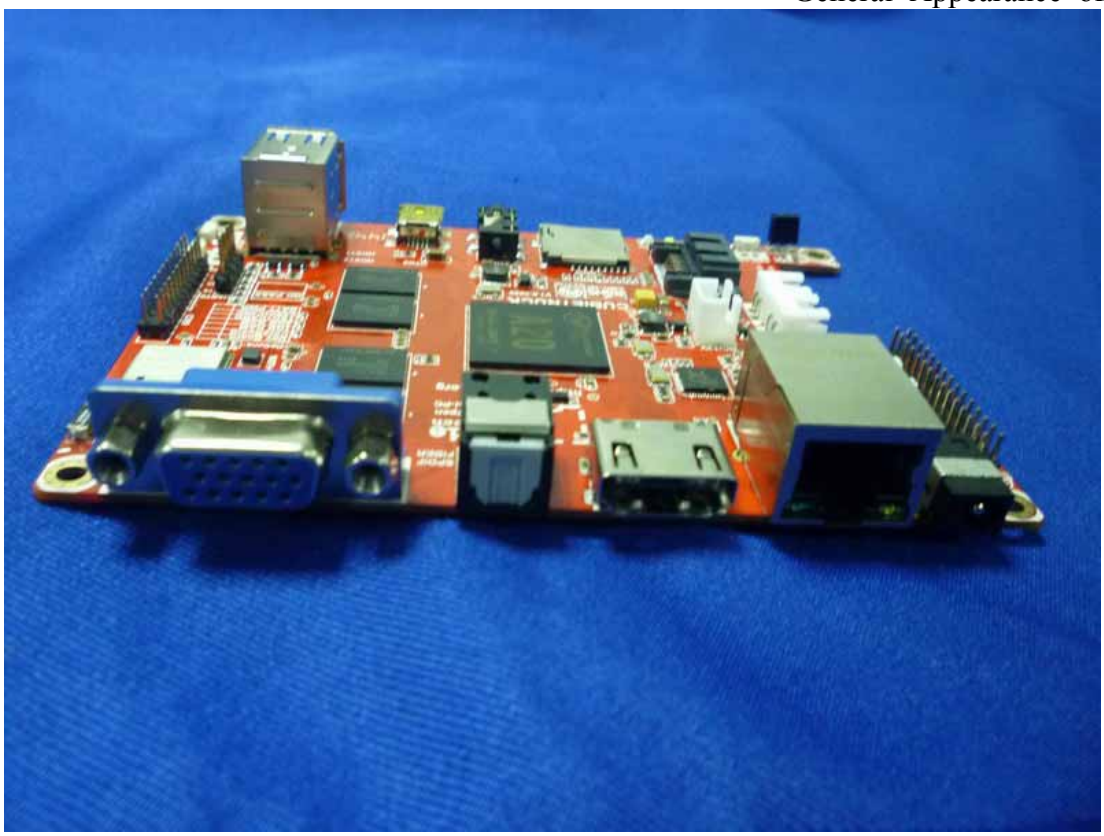


Figure 2
General Appearance of the EUT

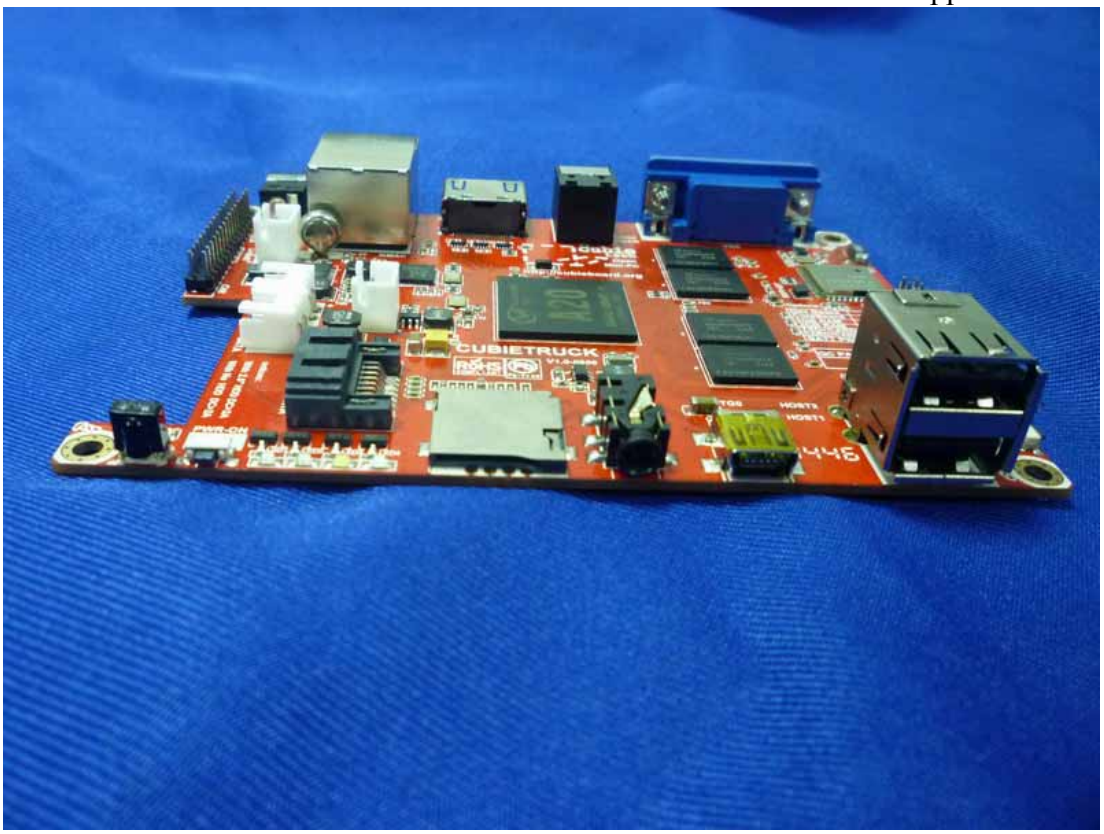


Figure 3
General Appearance of the EUT

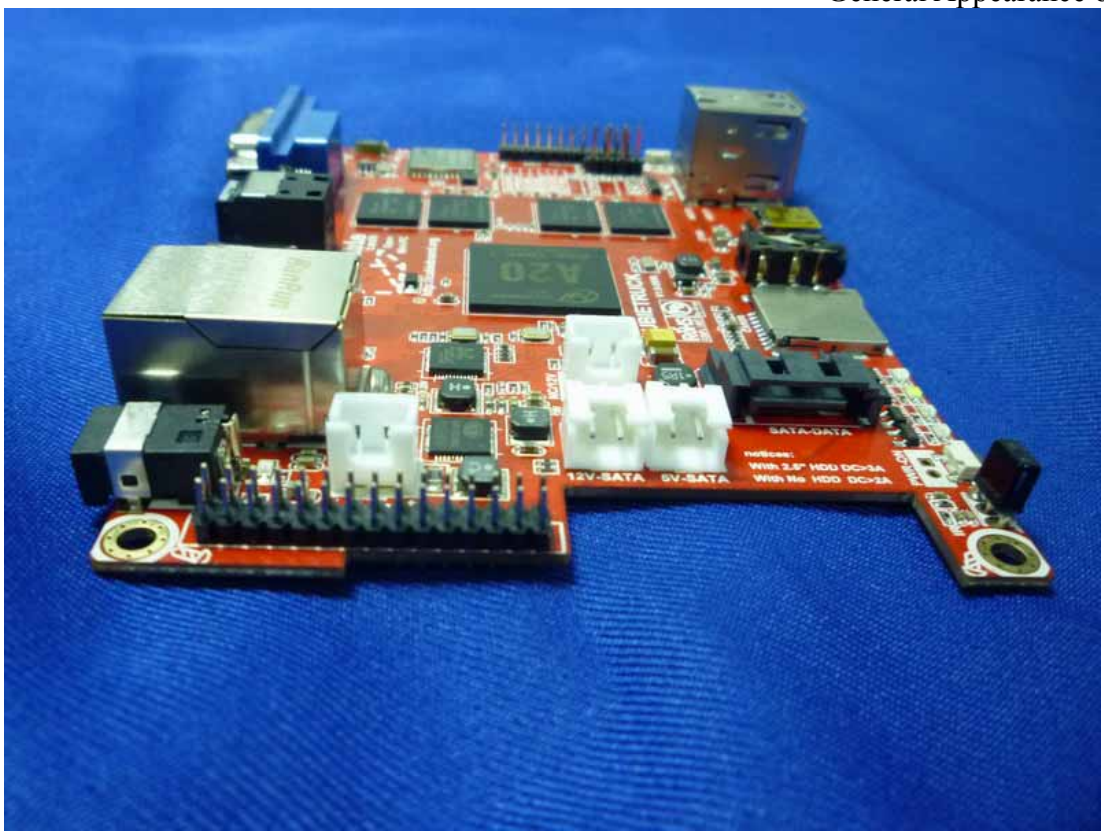


Figure 4
General Appearance of the EUT

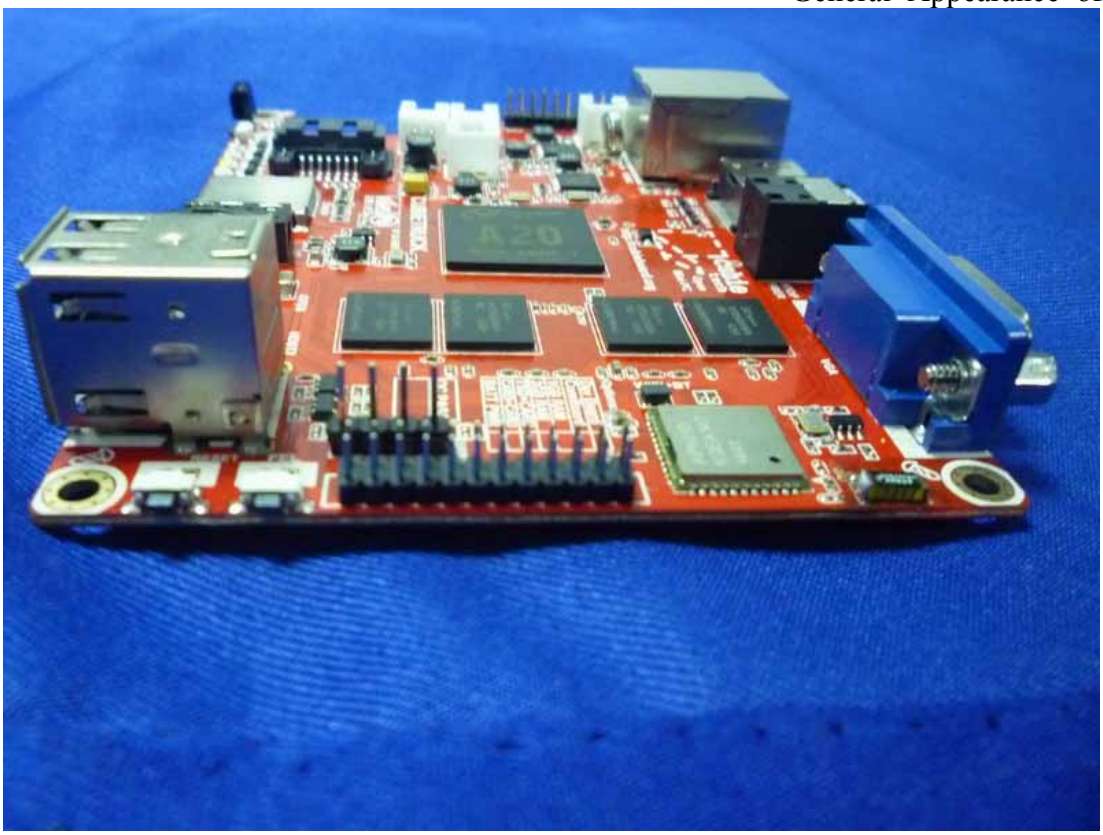


Figure 5
General Appearance of the EUT

Figure 6
General Appearance of the EUT

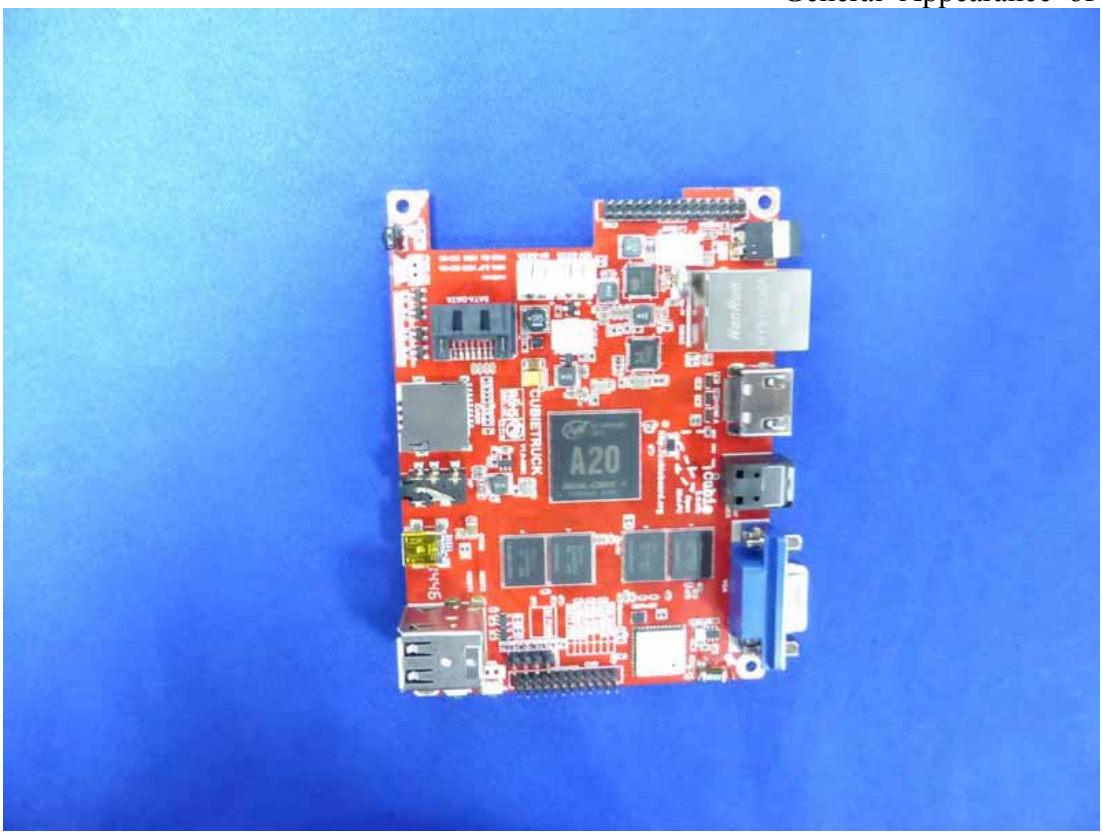


Figure 7
General Appearance of the EUT

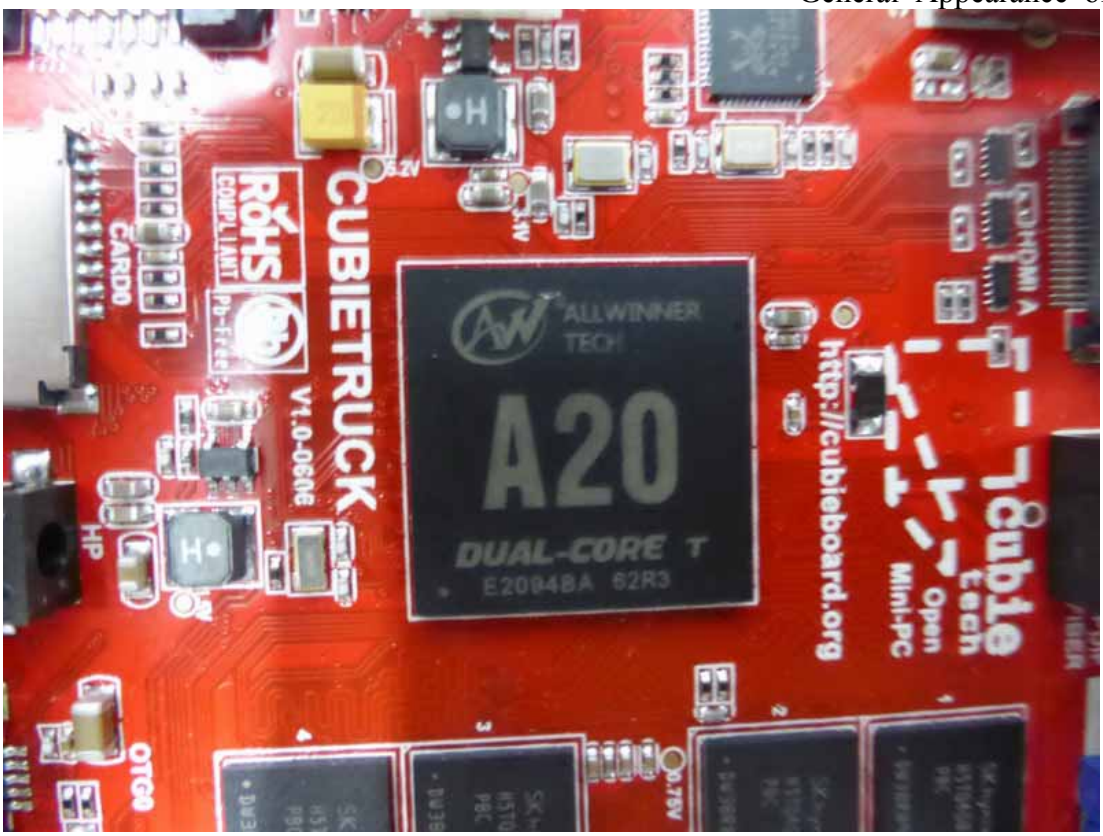


Figure 8
General Appearance of the EUT

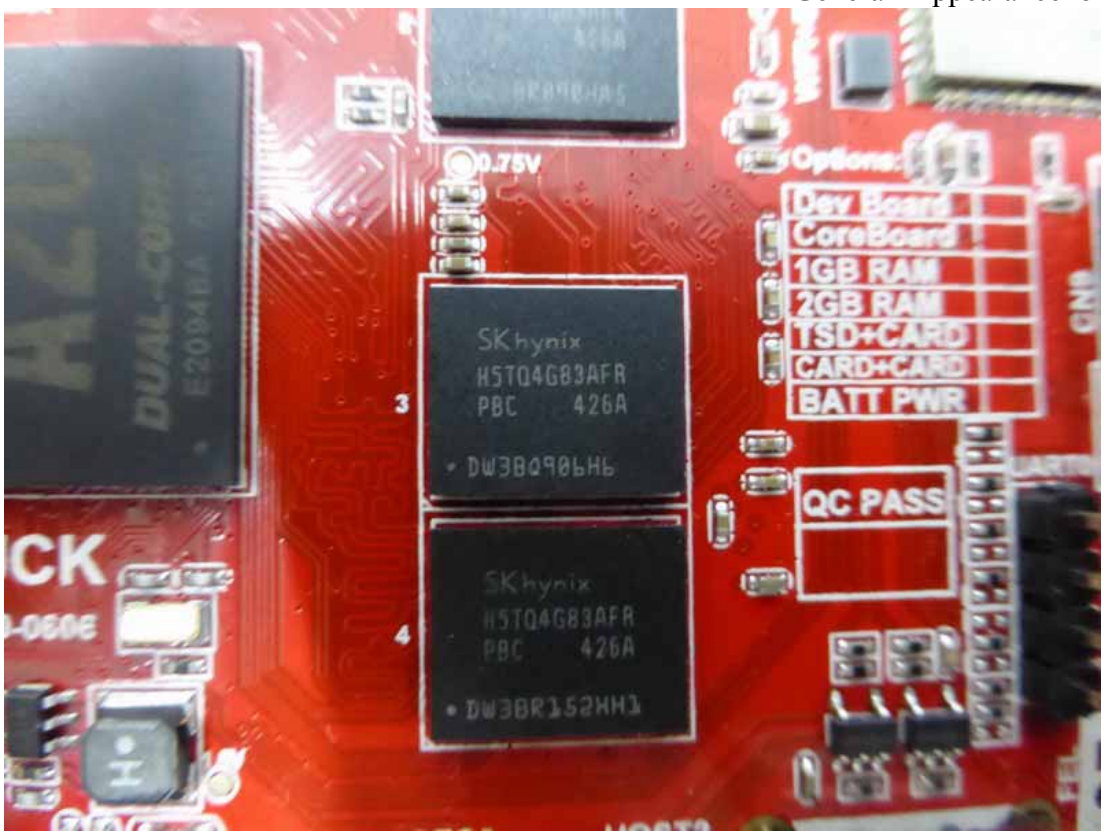


Figure 9
General Appearance of the EUT

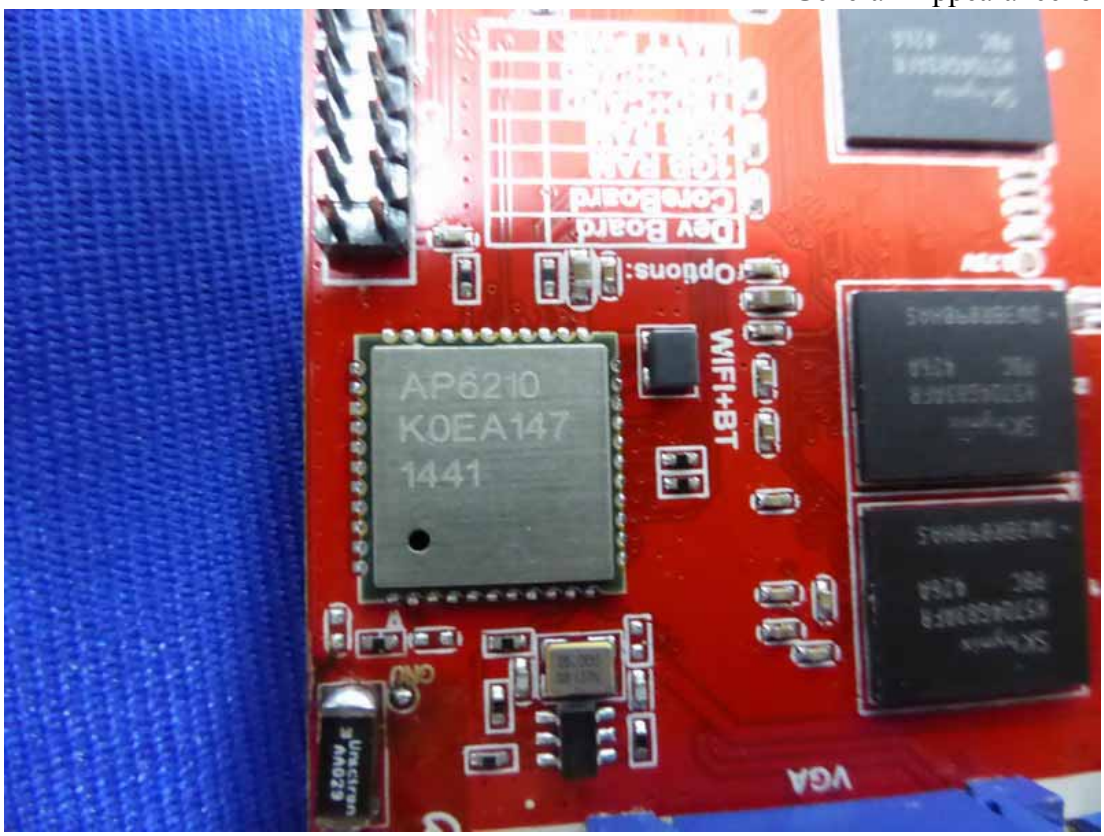


Figure 10
General Appearance of the EUT

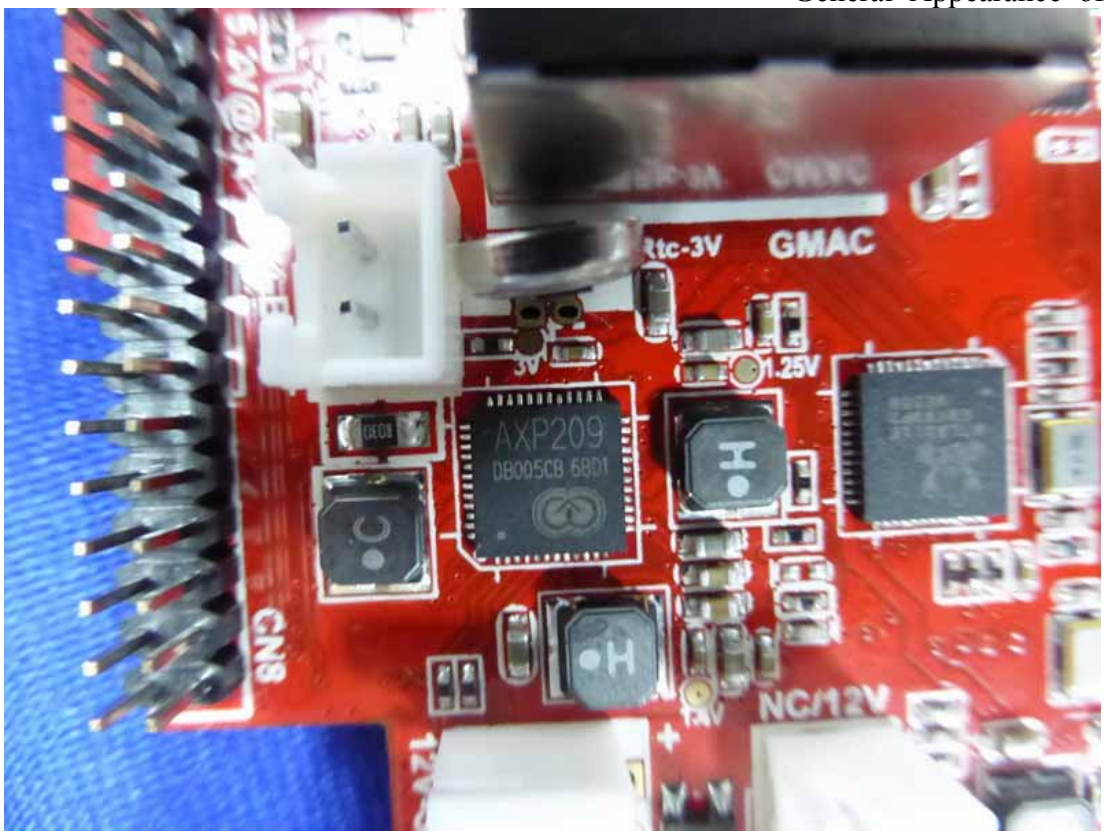


Figure 11
General Appearance of the EUT

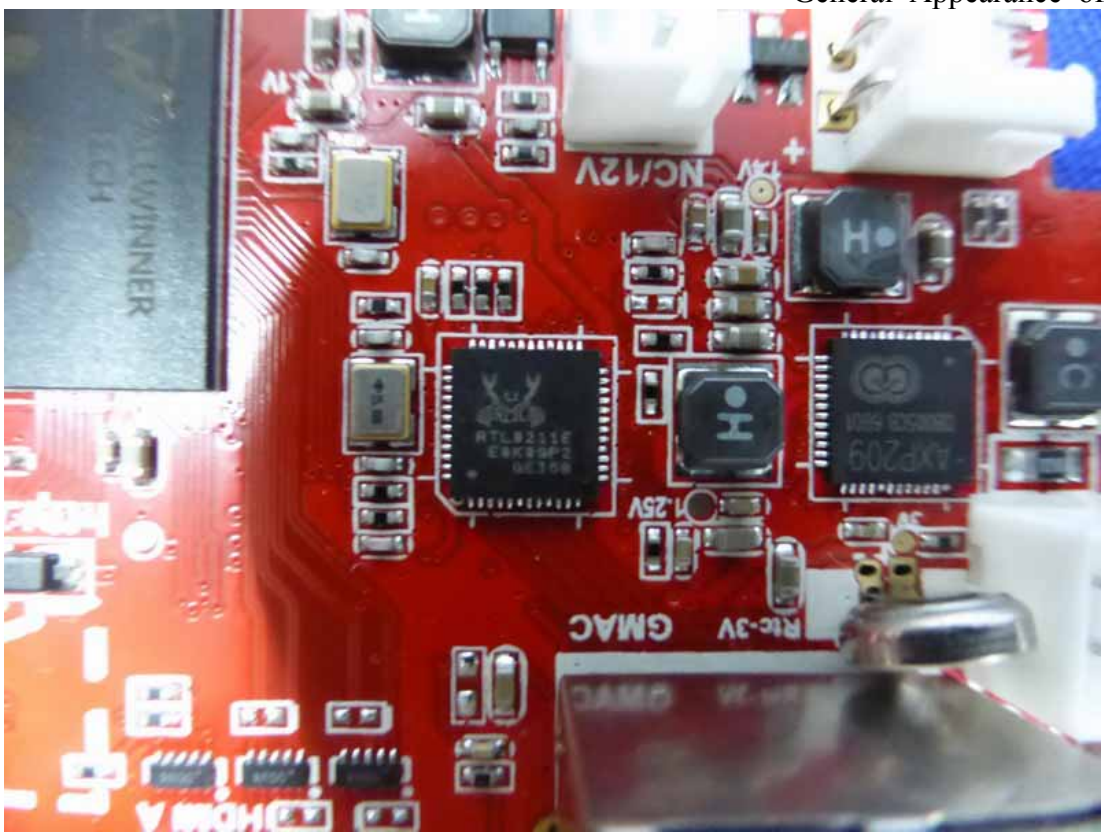


Figure 12
General Appearance of the EUT

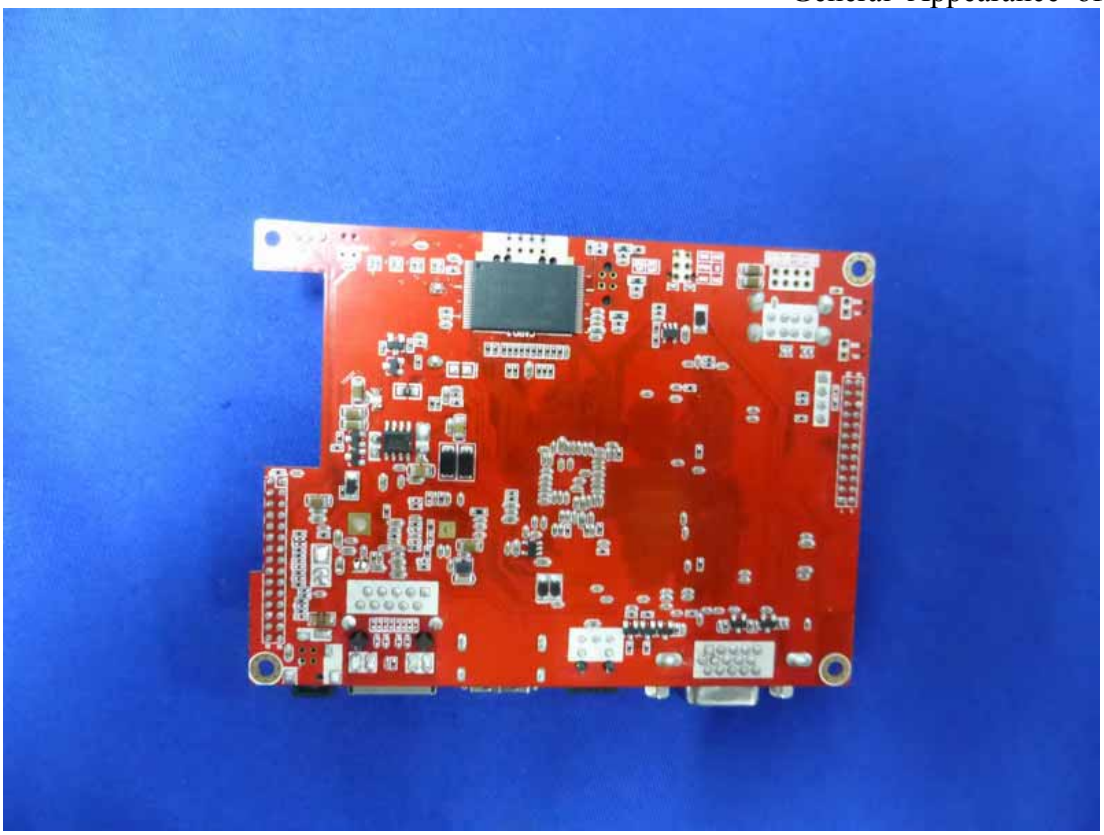


Figure 13
General Appearance of the EUT

Figure 14
USB Cable

Figure 15
USB Cable

Figure 16
USB Cable