

FCC Test Report

Product Name : Dual-band Wireless Range Extender

Model No. : RP-AC68U

FCC ID. : MSQ-RPAC68U

Applicant : ASUSTeK COMPUTER INC.

Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt : 2015/05/15

Issued Date : 2015/05/26

Report No. : 1550369R-RFUSP56V00

Report Version : V1.0



The test results relate only to the samples tested.

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Test Report Certification

Issued Date : 2015/05/26

Report No. : 1550369R-RFUSP56V00





a  DEKRA company


Product Name : Dual-band Wireless Range Extender
 Applicant : ASUSTeK COMPUTER INC.
 Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
 Manufacturer : (1) ASKEY COMPUTER CORPORATION
 (2) ASKEY TECHNOLOGY(JIANG SU) LTD.
 Model No. : RP-AC68U
 FCC ID. : MSQ-RPAC68U
 EUT Voltage : AC 100-240V, 50-60Hz
 Trade Name : ASUS
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart E Section 15.407:2014
 ANSI C63.10: 2009
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By : 
 (Carol Tsai / Engineering Adm. Specialist)

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Approved By : 
 (Roy Wang / Director 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: 3024
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/english/about/certificates.aspx?bval=5>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :
http://www.quietek.com/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	Dual-band Wireless Range Extender	
Product Type	WLAN (3TX, 4RX)	
Trade Name	ASUS	
Model No.	RP-AC68U	
Frequency Range/ Channel Number	IEEE 802.11a	5180~5240MHz / 4 Channels
Type of Modulation	IEEE 802.11a	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed	IEEE 802.11a	6, 9, 18, 24, 36, 48, 54Mbps
Antenna Gain	Ant1 (chain A) 120 mm :(1) 5 G:6.23 dBi Ant2 (chain B) 225 mm :(1) 5 G:4.6 dBi Ant3 (chain C) 235 mm :(1) 5 G:4.45 dBi Ant4 (chain D) 290 mm :(1) 5 G:3.56 dBi	
Antenna Type	Dipole antenna	

Component	
LAN Cable	Non-Shielded, 1.8m
Power Adatper	I.T.E., AD890326 I/P: 100-240V~ 50/60Hz 0.8A O/P : 19V $\overline{=}$ 1.75A Cable Out: Non-Shielded, 1.8m

IEEE 802.11a

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

Note:

1. This device is a Dual-band Wireless Range Extender including 2.4GHz b (3x4) and 5GHz a/n/ac (3x4) 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 E Paragraph 15.407.
3. Regards to the frequency band operation; the lowest , middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. The function of the 2.4GHz & 5.8GHz transmitting is measured and makes a test report of the report number: 1550369R-RFUSP39V00.
5. This device has USB and Ethernet ports, which can be connected to computer. It is a Class B personal computer and peripheral. Its test report number is 1550369R-RFUSP01V00 under part 15B with Declaration of Conformity letter.

1.2. 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
----	------------------

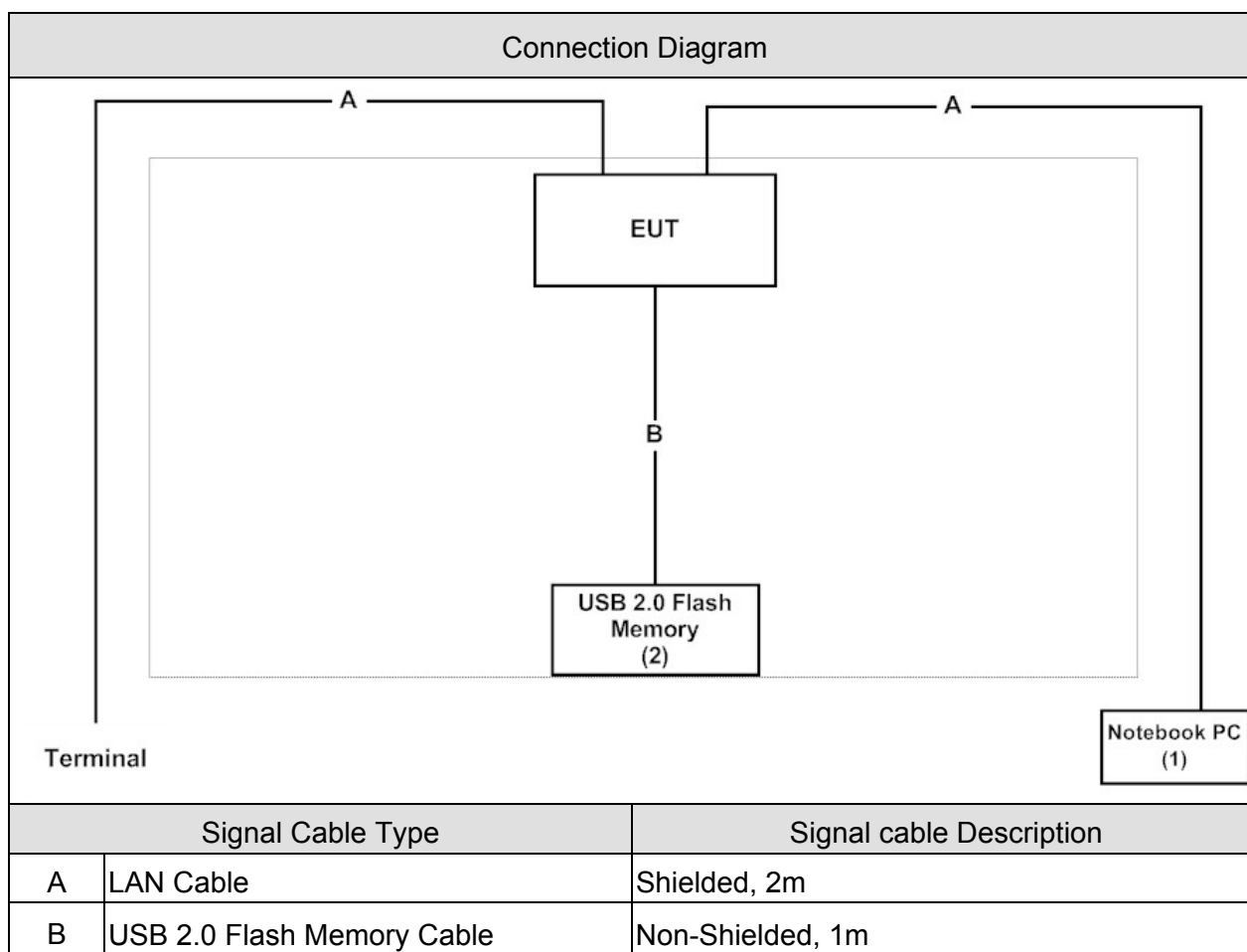
Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	11a	44	0+1+2	Complies
99 % & 26dB Bandwidth	11a	36/44/48	0/1/2	Complies
Peak Transmit Output	11a	36/44/48	0+1+2	Complies
Peak Power Spectrum Density	11a	36/44/48	0+1+2	Complies
Radiated Emission	11a	36/44/48	0+1+2	Complies
Band Edge	11a	36/44/48	0+1+2	Complies
Frequency Stability	11a	36/44/48	0/1/2	Complies

1.3. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Notebook PC	ACER	MS2296	LUSCV021391 150332C2000	DoC	Non-Shielded, 2.5m one ferrite core bonded
2 USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4
2	Execute the MP Tool on the EUT.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 E 15.407 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 99 % & 26dB Bandwidth	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Peak Transmit Power	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Peak Power Spectrum	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 E 15.407 Frequency Stability	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

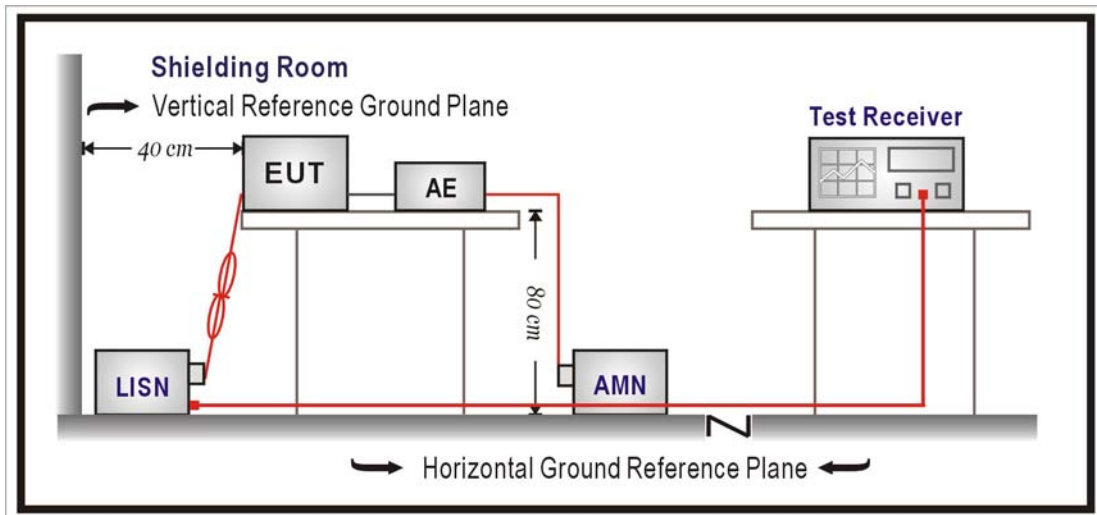
The following test equipments are used during the test:

Conducted Emission / SR2

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2015/08/10
LISN	R&S	ESH3-Z5	836679/022	2015/12/15
Test Receiver	R&S	ESCS 30	825442/017	2016/01/14

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 C63.10:2009. 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

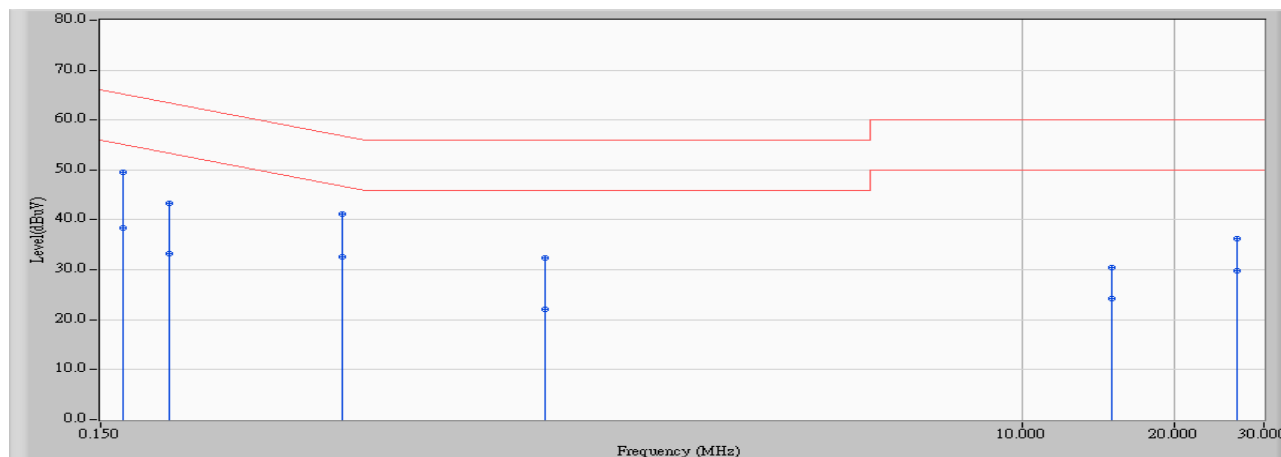
According to FCC Part 15 Subpart C Paragraph 15.207: 2014

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2	Time : 2015/05/15 - 19:39
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2_LISN(16A)-4_0825 - Line1	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a_5220MHz

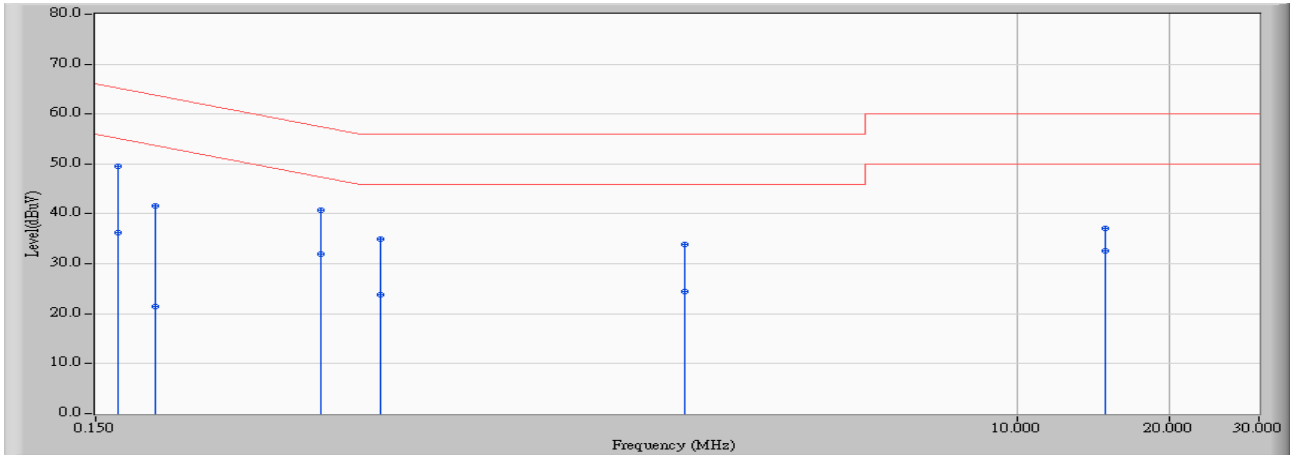


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.166	9.760	39.790	49.550	-15.627	65.177	QUASPEAK
2	0.166	9.760	28.590	38.350	-16.827	55.177	AVERAGE
3	0.205	9.760	33.610	43.370	-20.049	63.418	QUASPEAK
4	0.205	9.760	23.410	33.170	-20.249	53.418	AVERAGE
5	0.451	9.751	31.360	41.111	-15.750	56.861	QUASPEAK
6	*	9.751	22.810	32.561	-14.300	46.861	AVERAGE
7	1.138	9.811	22.580	32.391	-23.609	56.000	QUASPEAK
8	1.138	9.811	12.210	22.021	-23.979	46.000	AVERAGE
9	15.029	10.186	20.290	30.476	-29.524	60.000	QUASPEAK
10	15.029	10.186	14.150	24.336	-25.664	50.000	AVERAGE
11	26.509	10.340	25.820	36.160	-23.840	60.000	QUASPEAK
12	26.509	10.340	19.540	29.880	-20.120	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 : SR2	Time : 2015/05/15 - 19:42
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2_LISN(16A)-4_0825 - Line2	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a_5220MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.166	9.810	39.790	49.600	-15.577	65.177	QUASPEAK
2	0.166	9.810	26.390	36.200	-18.977	55.177	AVERAGE
3	0.197	9.810	31.890	41.700	-22.041	63.741	QUASPEAK
4	0.197	9.810	11.730	21.540	-32.201	53.741	AVERAGE
5	0.420	9.820	30.950	40.770	-16.687	57.457	QUASPEAK
6	*	9.820	22.140	31.960	-15.497	47.457	AVERAGE
7	0.548	9.825	25.120	34.945	-21.055	56.000	QUASPEAK
8	0.548	9.825	13.970	23.795	-22.205	46.000	AVERAGE
9	2.193	9.890	23.990	33.880	-22.120	56.000	QUASPEAK
10	2.193	9.890	14.570	24.460	-21.540	46.000	AVERAGE
11	14.912	10.323	26.820	37.143	-22.857	60.000	QUASPEAK
12	14.912	10.323	22.240	32.563	-17.437	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. 99% & 26dB Bandwidth

3.1. Test Equipment

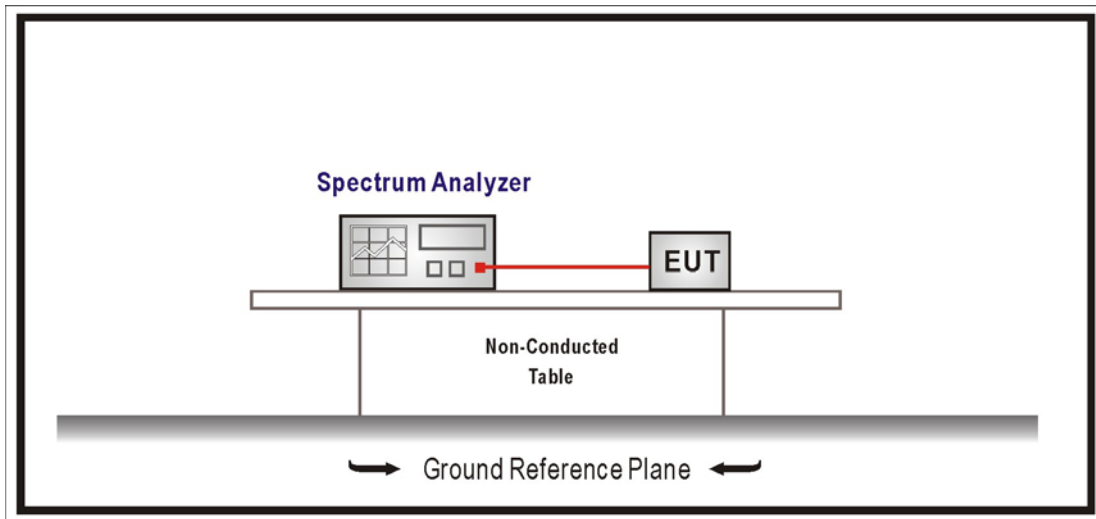
The following test equipments are used during the radiated emission tests:

99% & 26dB Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

3.2. Test Setup



3.3. Limits

99% & 26dB Bandwidth : No Required

3.4. Test Procedure

99% & 26dB Bandwidth :

The EUT was tested according to U-NII test procedure of KDB 789033.

Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

3.5. Uncertainty

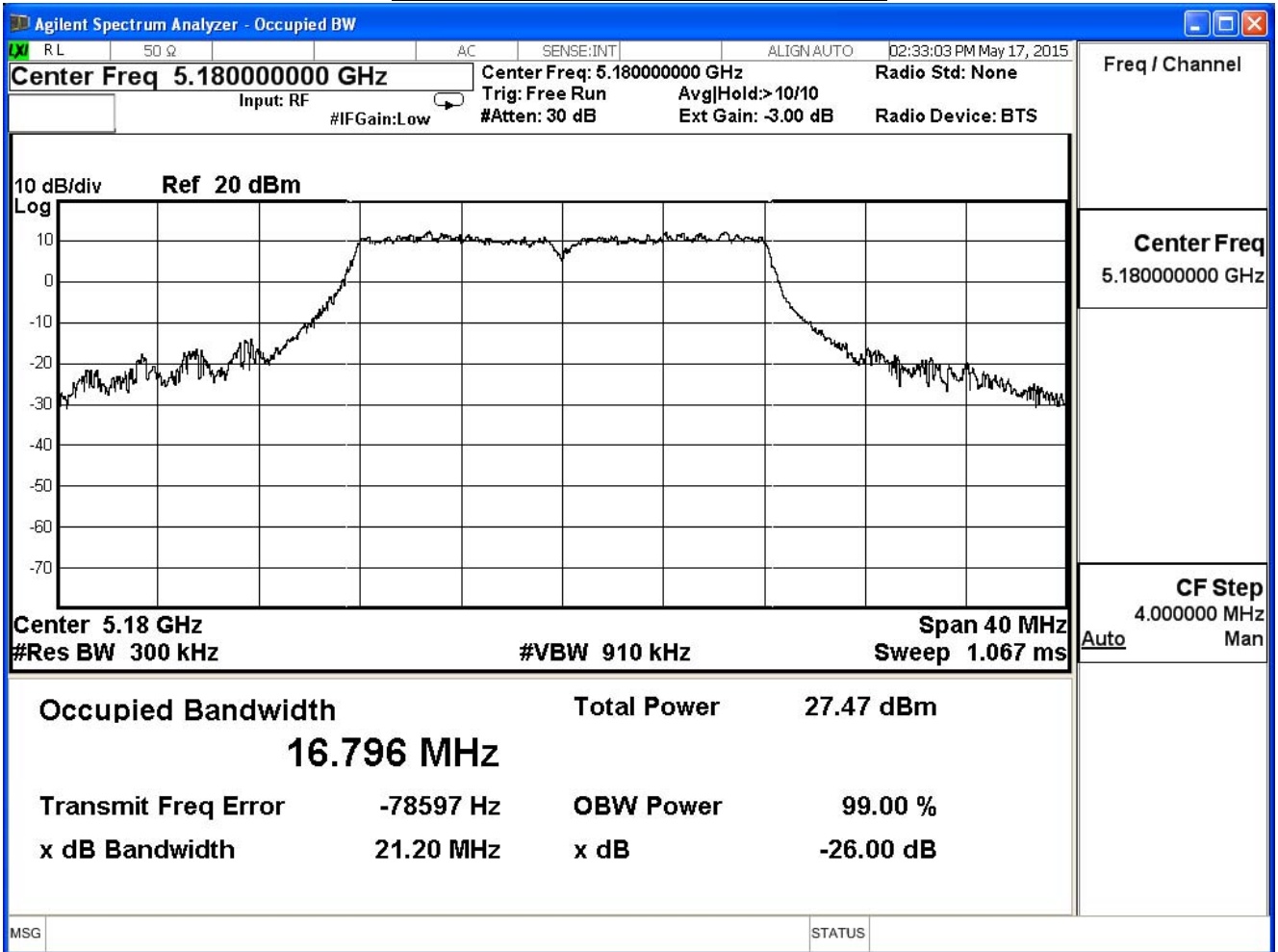
The measurement uncertainty is defined as $\pm 150\text{Hz}$

3.6. Test Result

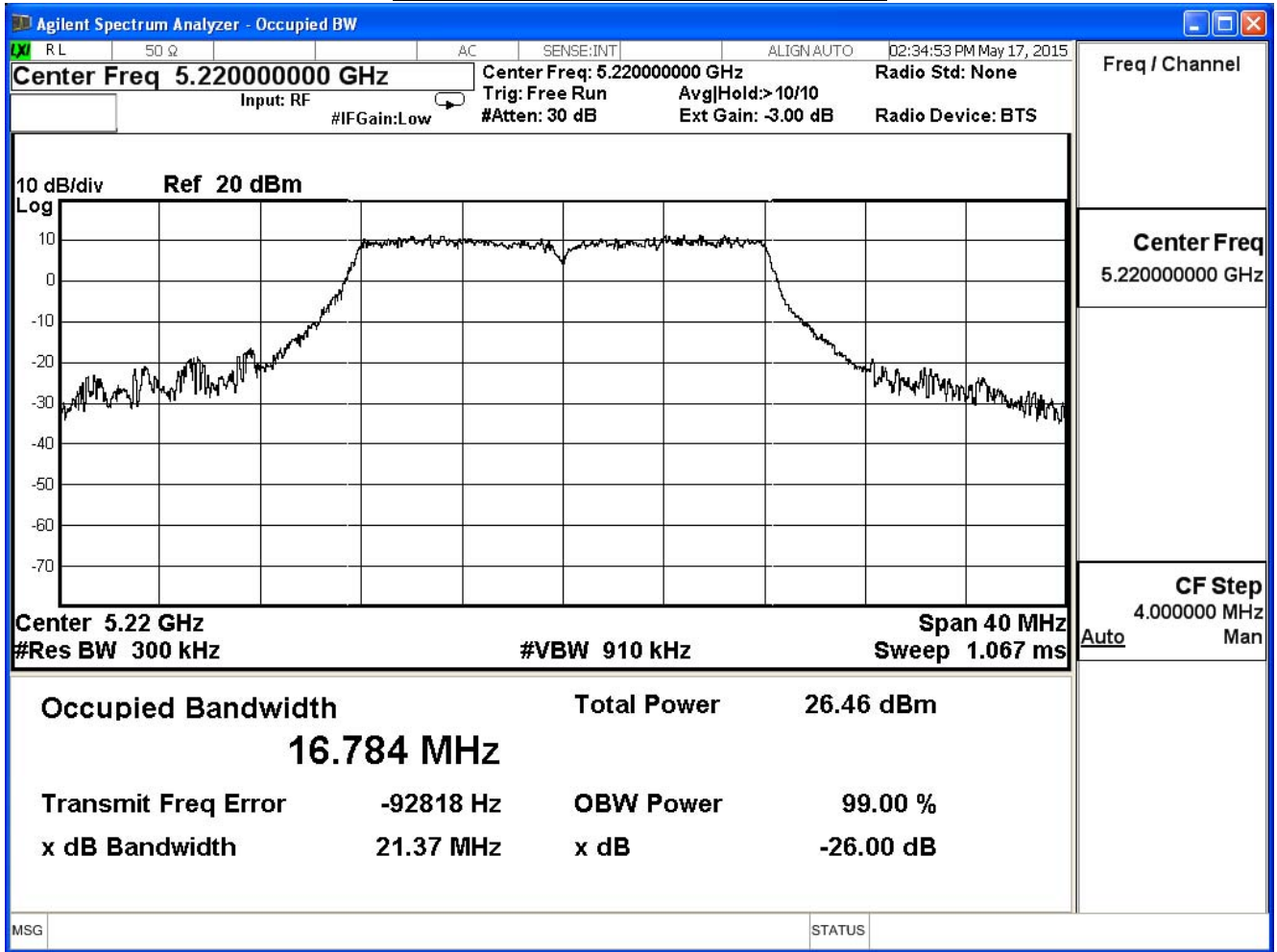
Product	Dual-band Wireless Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/17	Test Site	SR7

802.11a (ANT 0)				
Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Limit (MHz)
36	5180	21.20	16.796	--
44	5220	21.37	16.784	--
48	5240	21.07	16.778	--

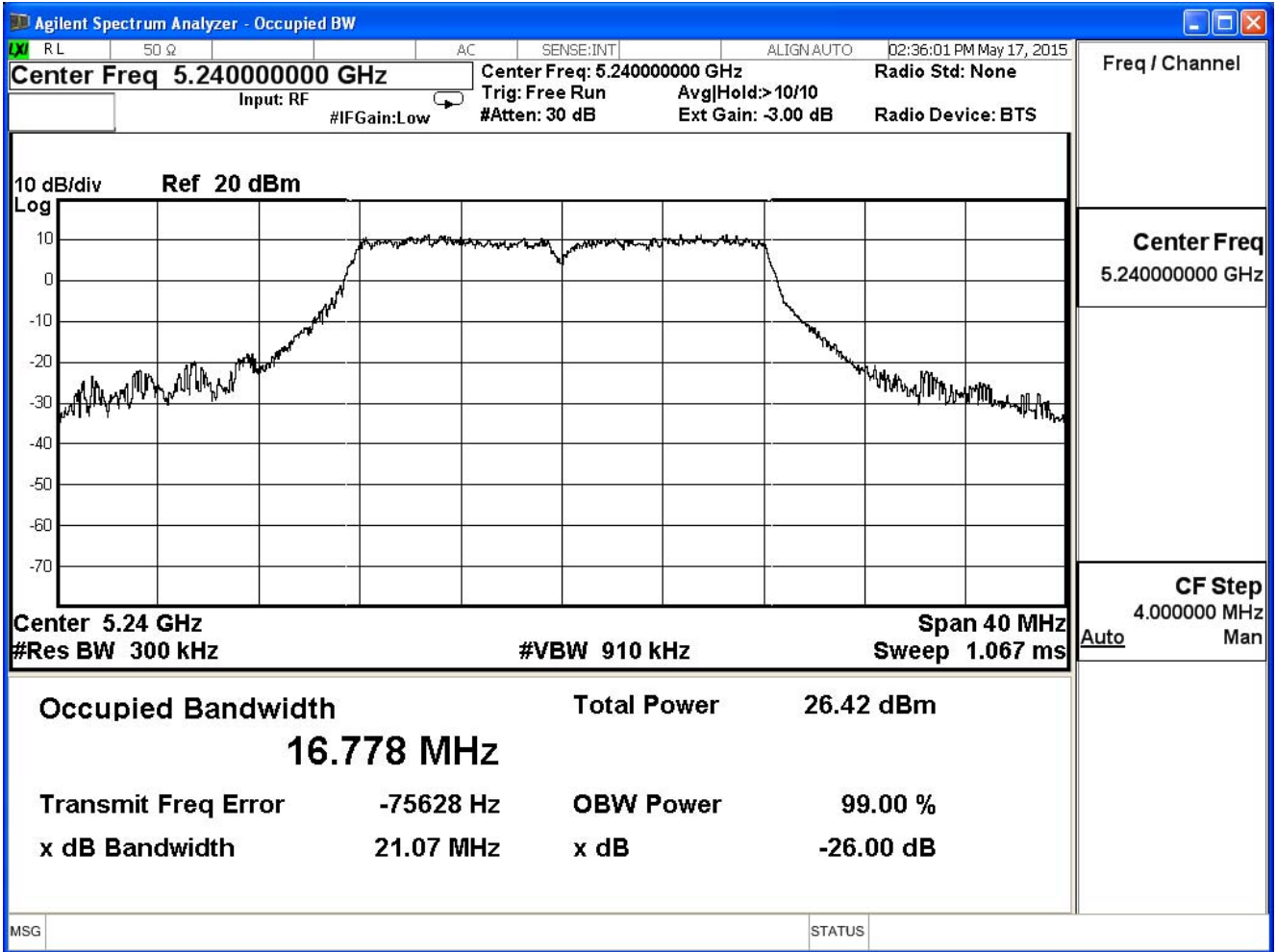
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



99% & 26dB Bandwidth – Channel 48

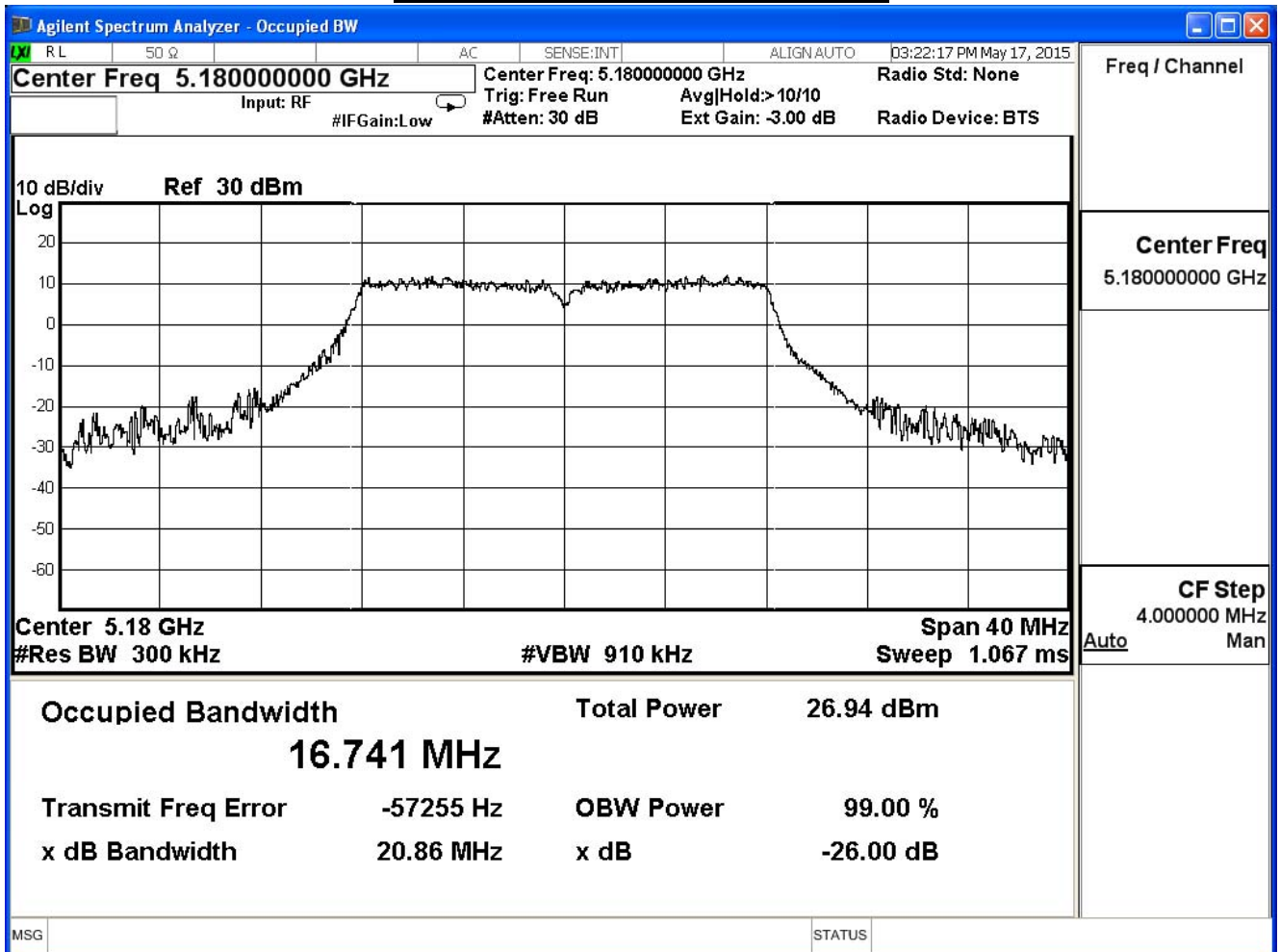


Product	Dual-band Wireless Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/17	Test Site	SR7

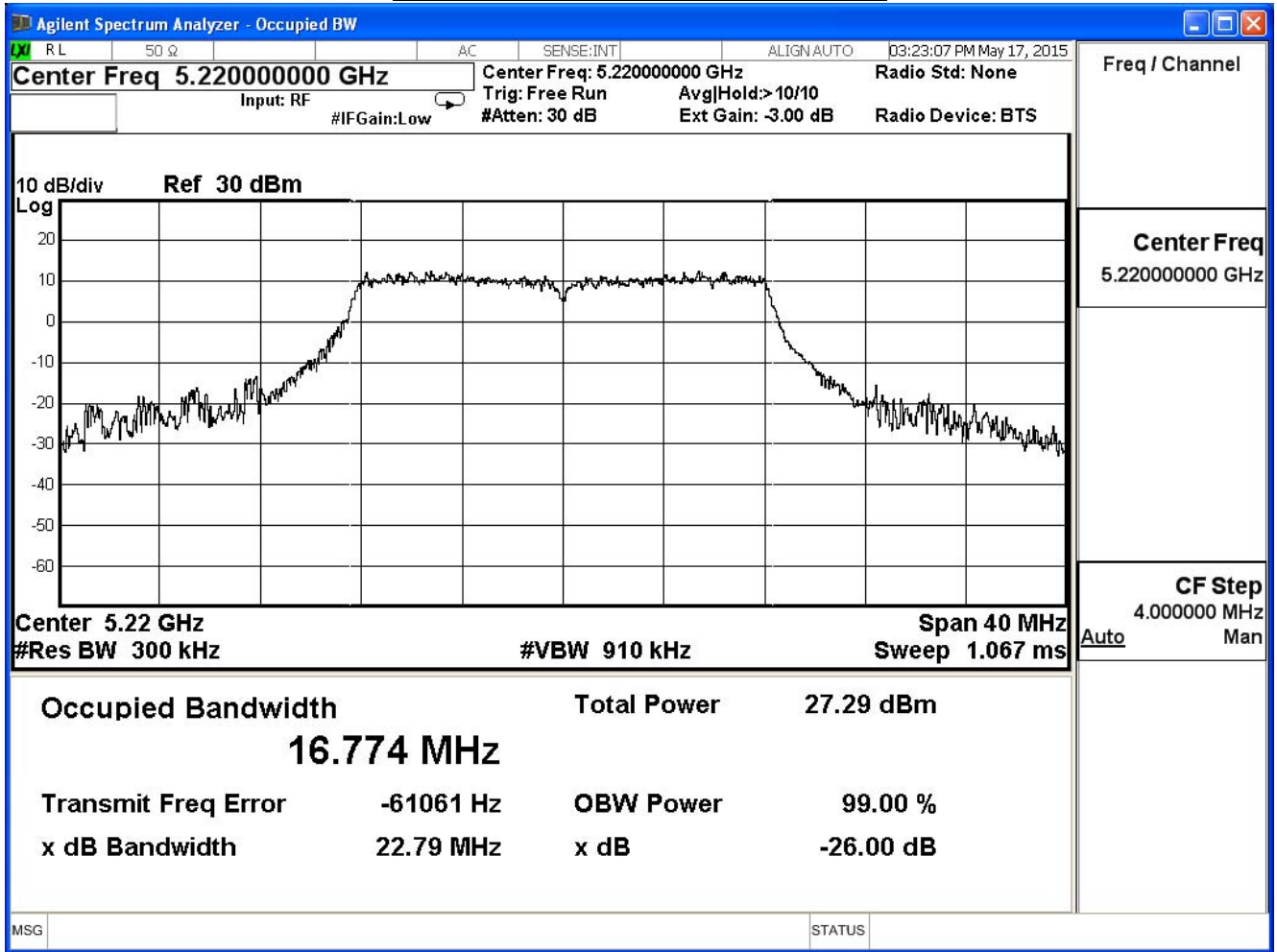
802.11a (ANT 1)

Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Limit (MHz)
36	5180	20.86	16.741	--
44	5220	22.79	16.774	--
48	5240	21.06	16.755	--

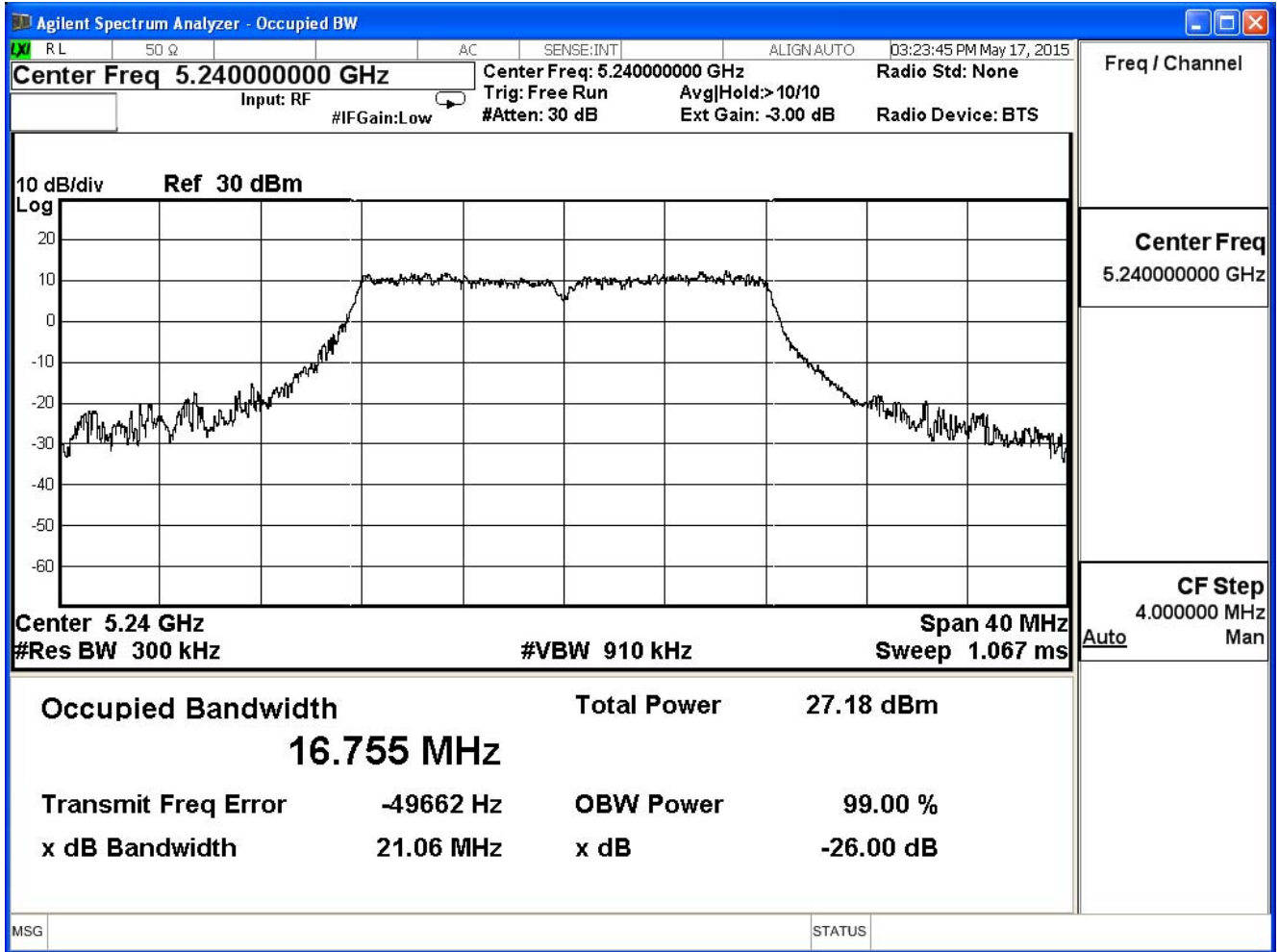
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



99% & 26dB Bandwidth – Channel 48

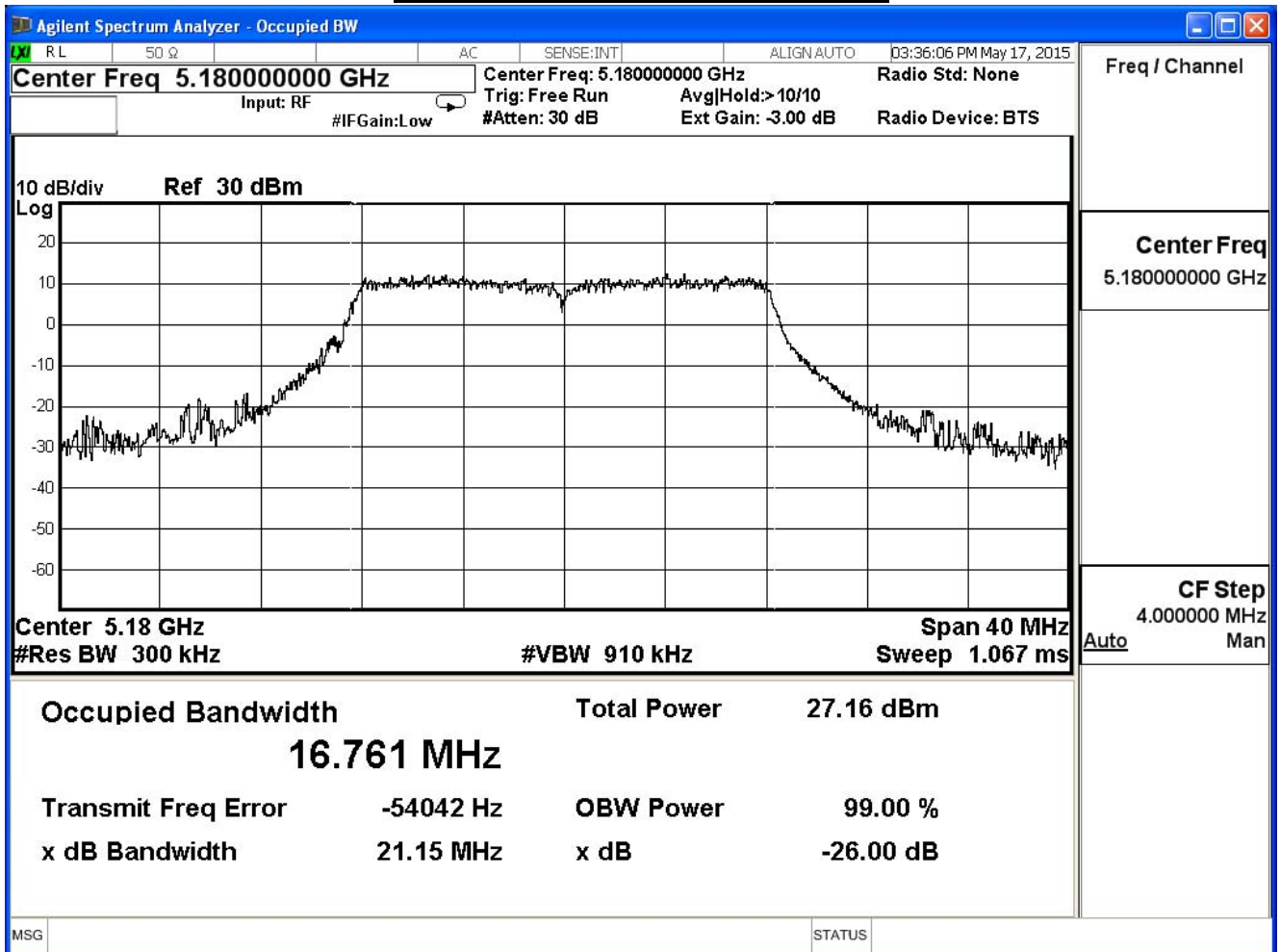


Product	Dual-band Wireless Range Extender		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/17	Test Site	SR7

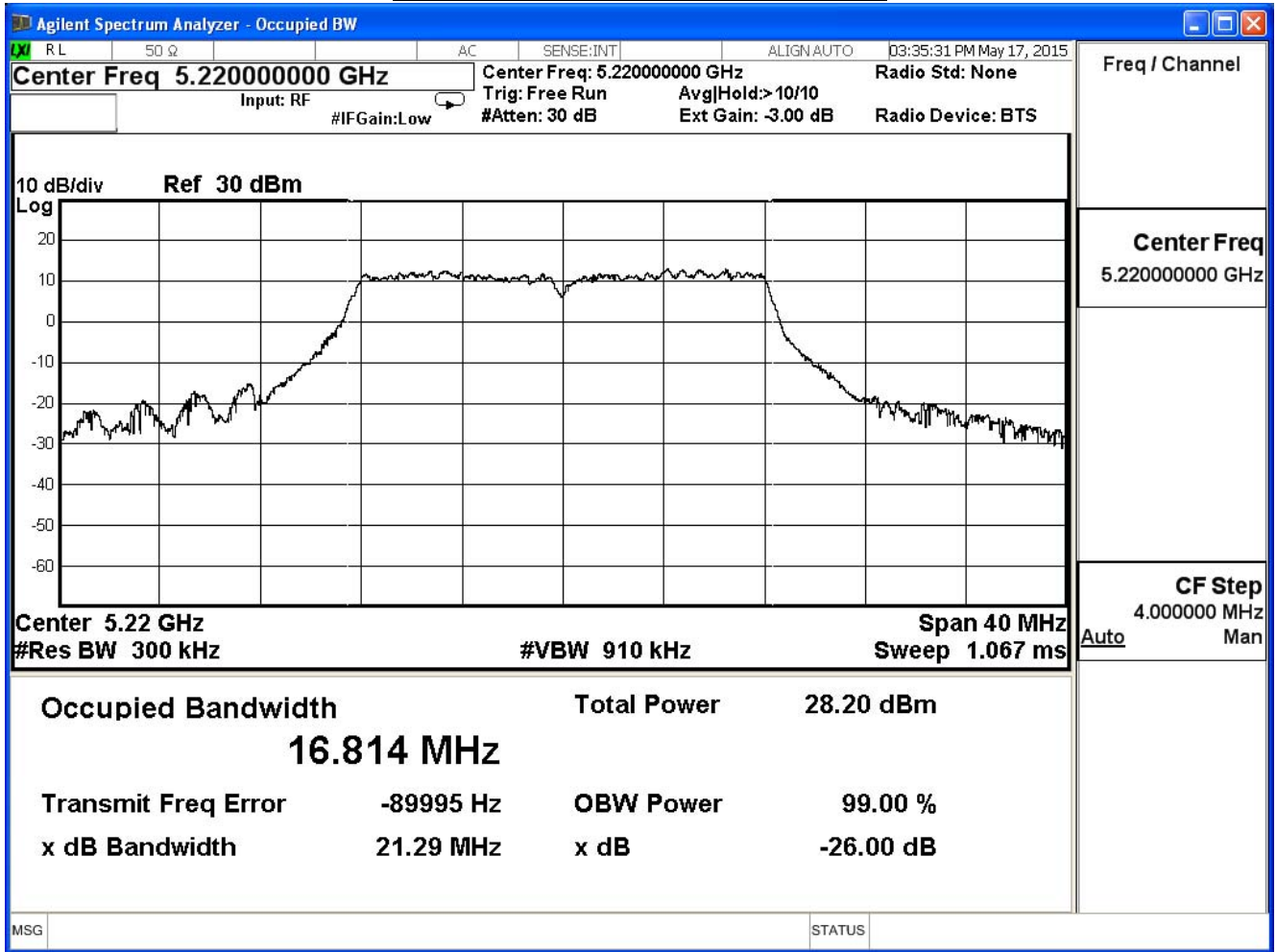
802.11a (ANT 2)

Channel No.	Frequency (MHz)	26dB BW (MHz)	99 % OBW (MHz)	Limit (MHz)
36	5180	21.15	16.761	--
44	5220	21.29	16.814	--
48	5240	21.44	16.783	

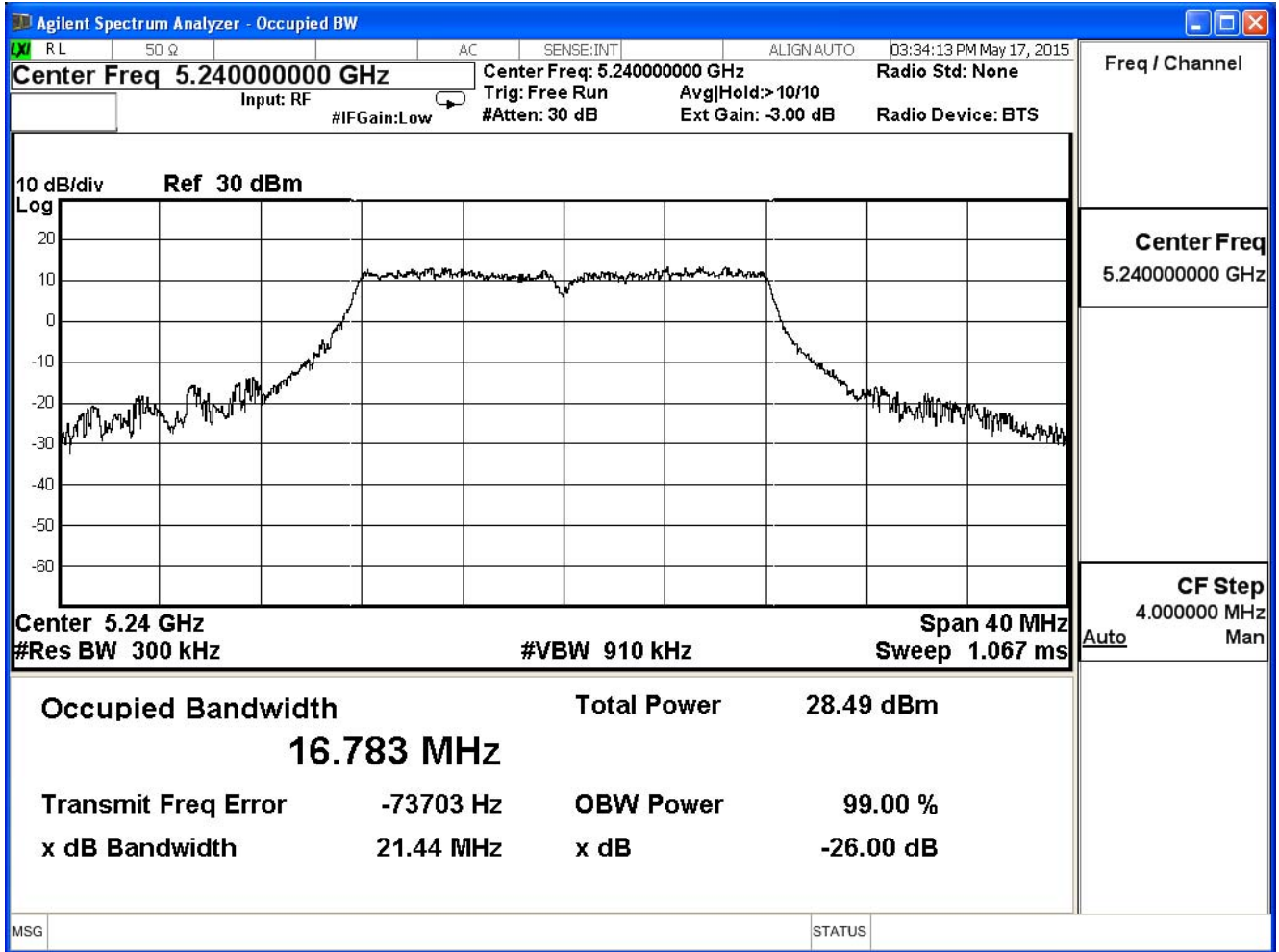
99% & 26dB Bandwidth – Channel 36



99% & 26dB Bandwidth – Channel 44



99% & 26dB Bandwidth – Channel 48



4. Peak Transmit Output

4.1. Test Equipment

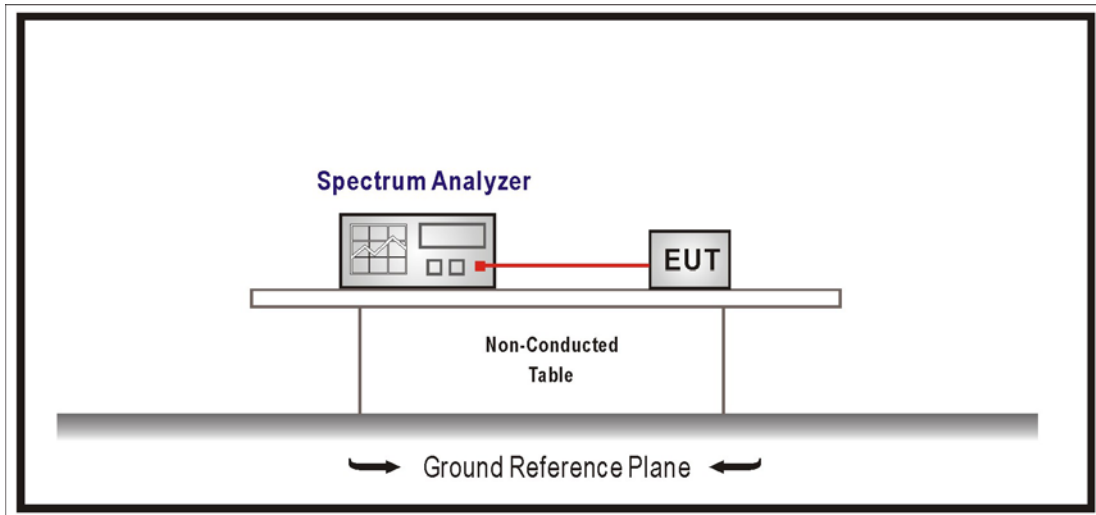
The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

4.2. Test Setup



4.3. Limits

1. For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4.4. Test Procedure

The EUT was setup to ANSI C63.10:2009; tested to U-NII test procedure of KDB 789033 for compliance to FCC 47CFR Subpart E requirements. The Method SA-1 of the Maximum conducted output power was used.

Set RBW=1MHz, VBW=3MHz with RMS detector and trace average 100 traces in power averaging mode. Set span to encompass the entire emission bandwidth (EBW) of the signal. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

4.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

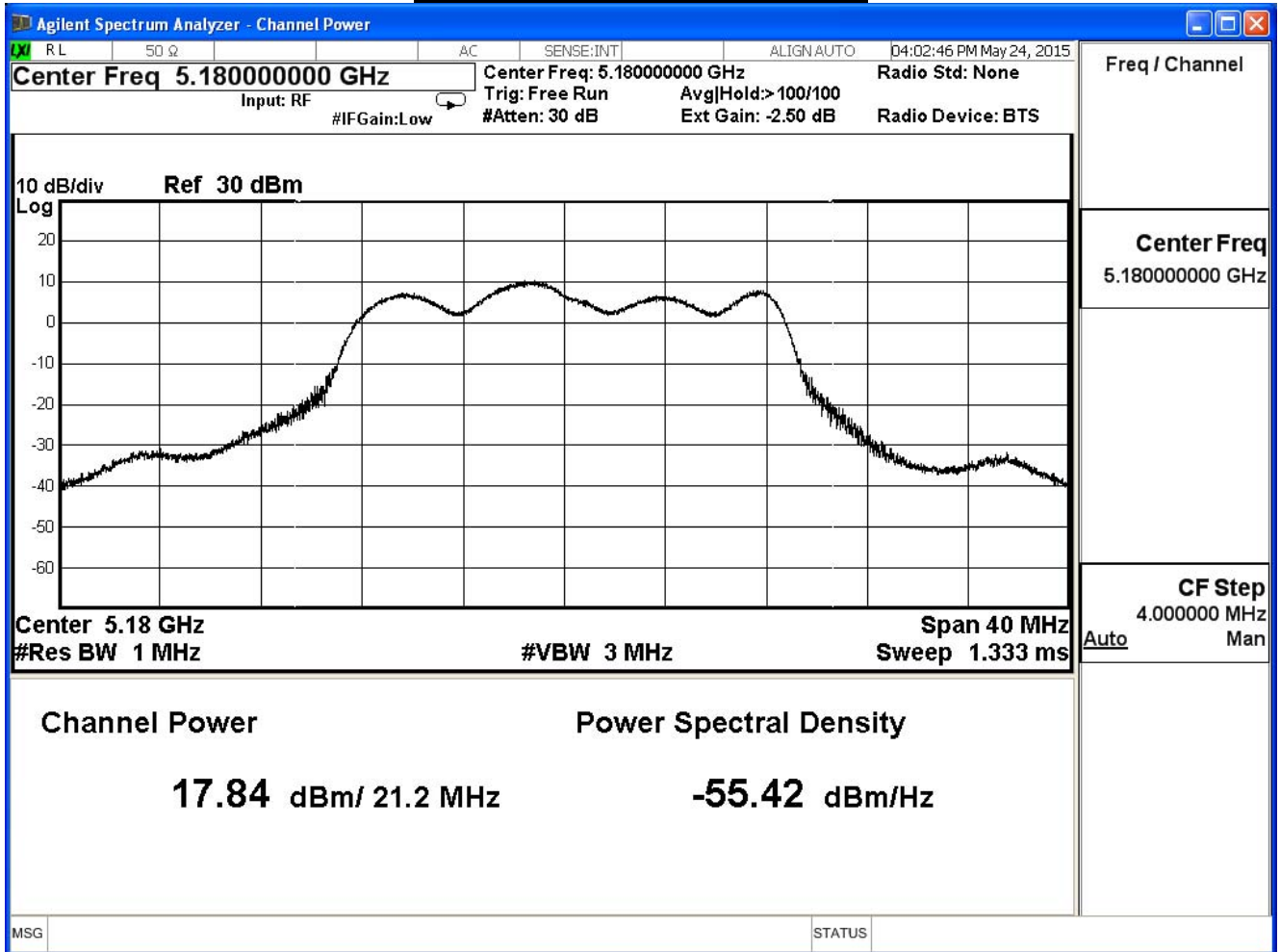
Product	Dual-band Wireless Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

802.11a (ANT 0) -AP and Bridge Mode					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit	Result
36	5180	21.20	17.84	≤30	Pass
44	5220	21.37	18.08	≤30	Pass
48	5240	21.07	18.67	≤30	Pass

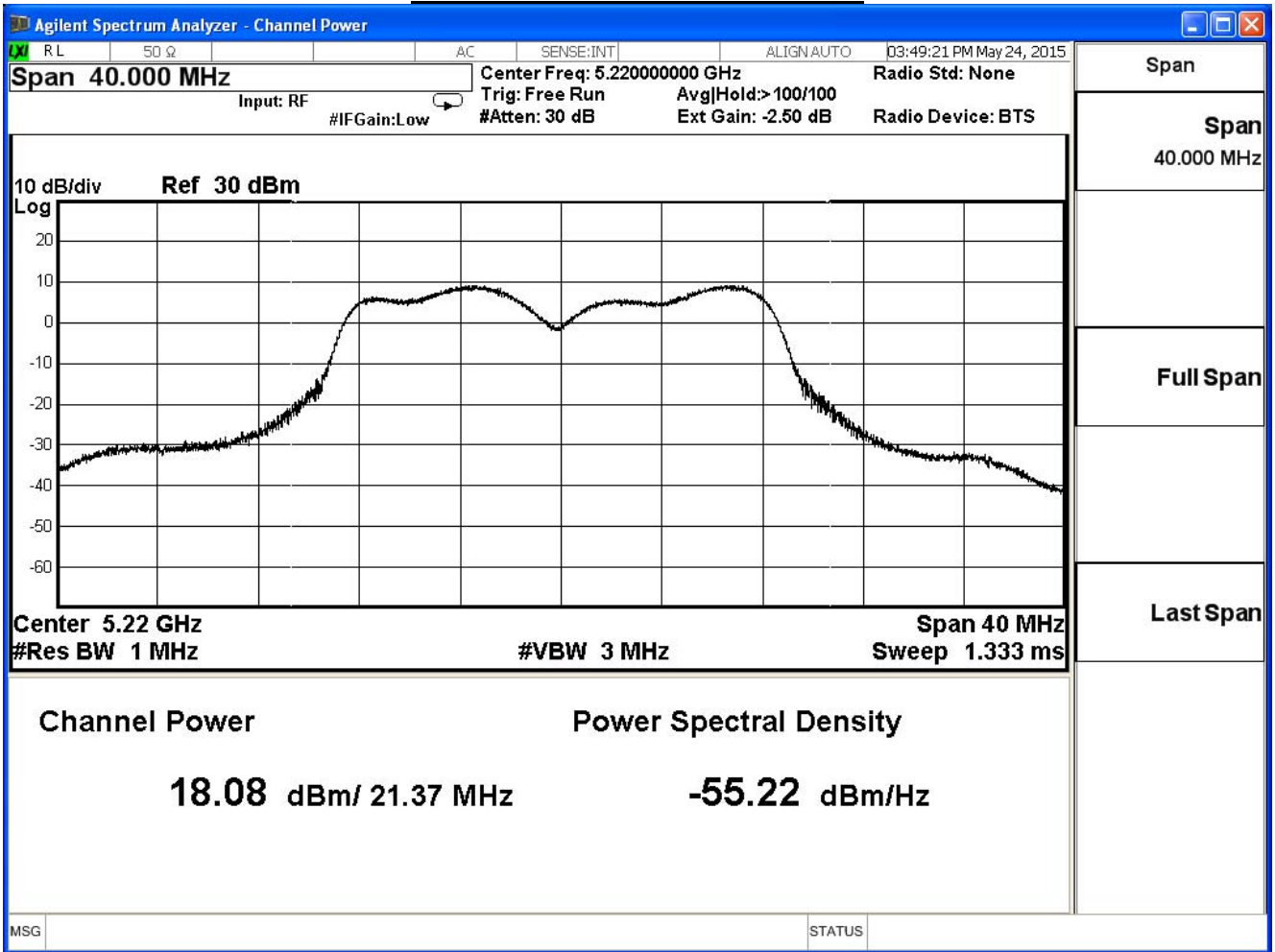
The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	17.84	--	--	--	--	--	--	≤30
44	5220	18.08	17.98	17.78	17.58	17.38	17.14	17.79	
48	5240	18.67	--	--	--	--	--	--	

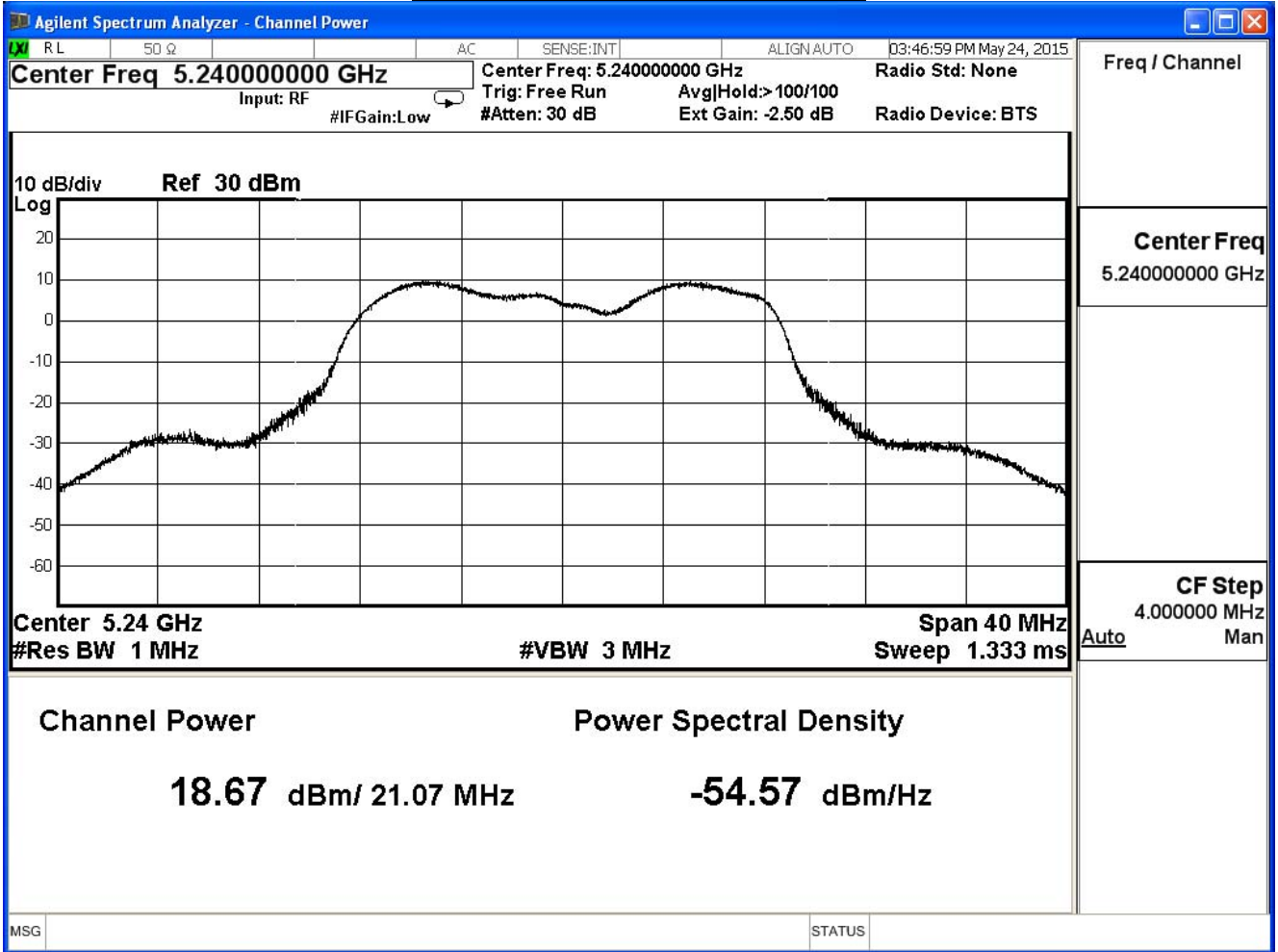
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



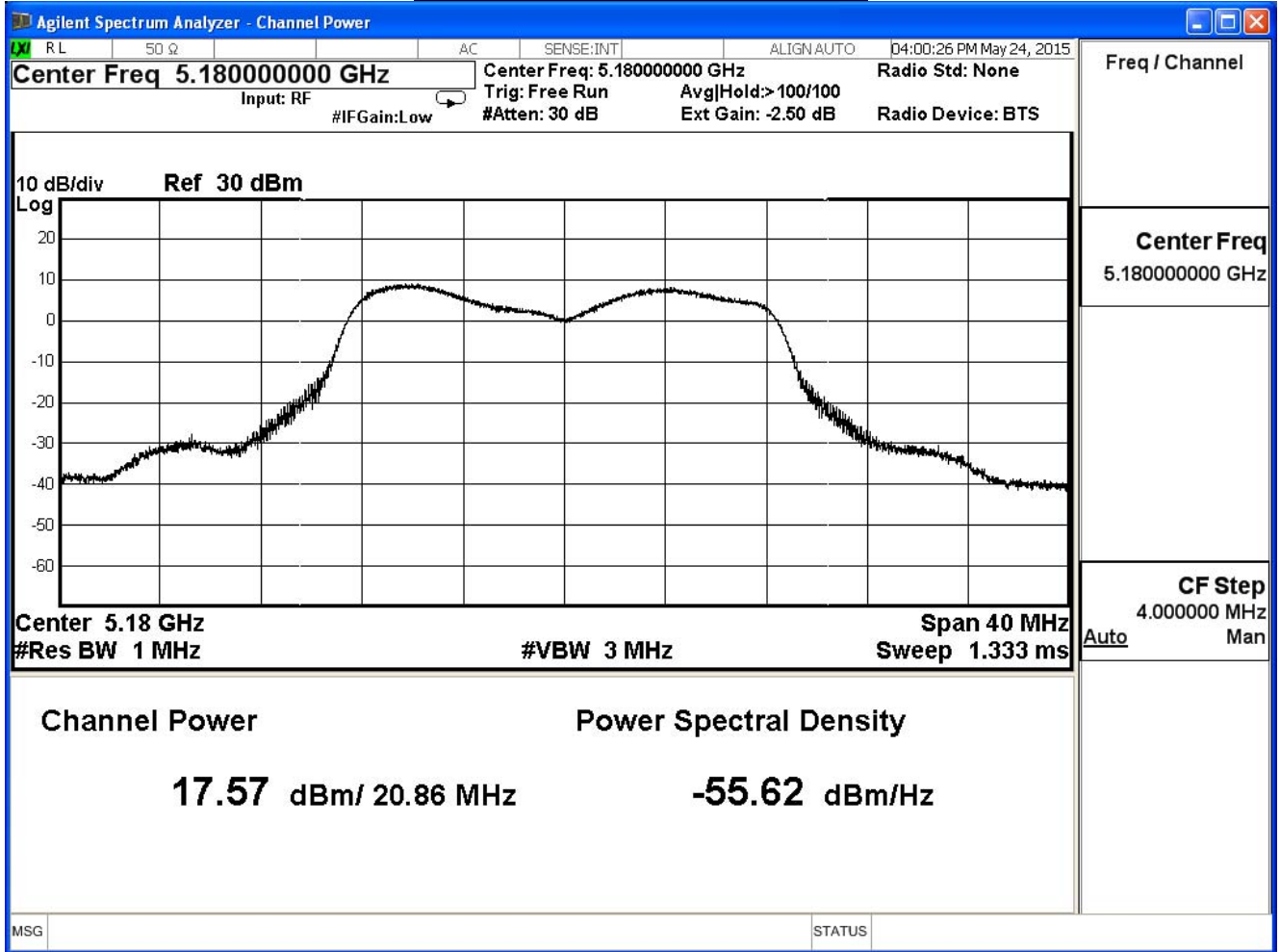
Product	Dual-band Wireless Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

802.11a (ANT 1) -AP and Bridge Mode					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit	Result
36	5180	20.86	17.57	≤30	Pass
44	5220	22.79	18.52	≤30	Pass
48	5240	21.06	18.25	≤30	Pass

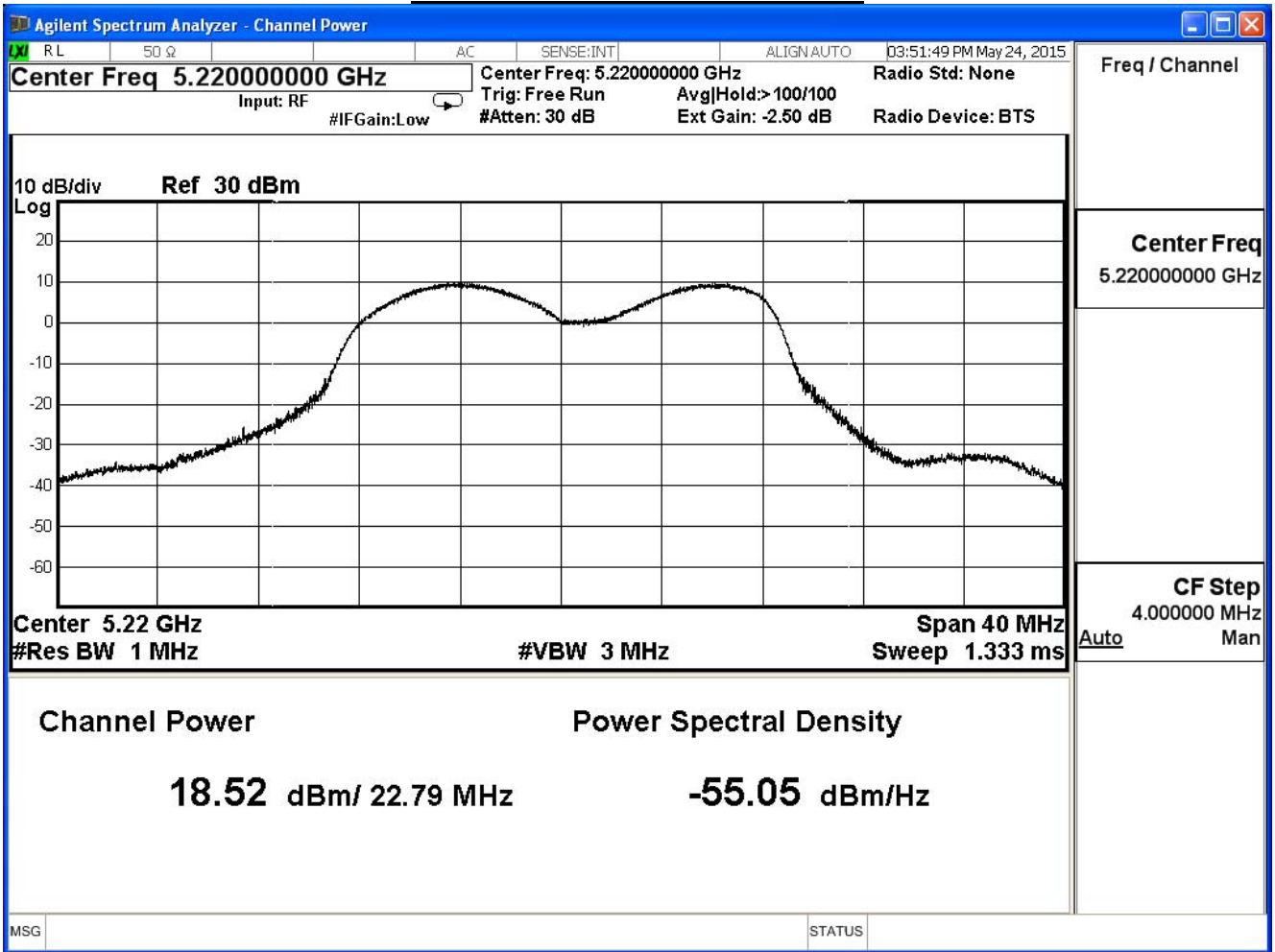
The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	17.57	--	--	--	--	--	--	≤30
44	5220	18.52	18.32	18.12	17.92	17.72	17.48	17.36	
48	5240	18.25	--	--	--	--	--	--	

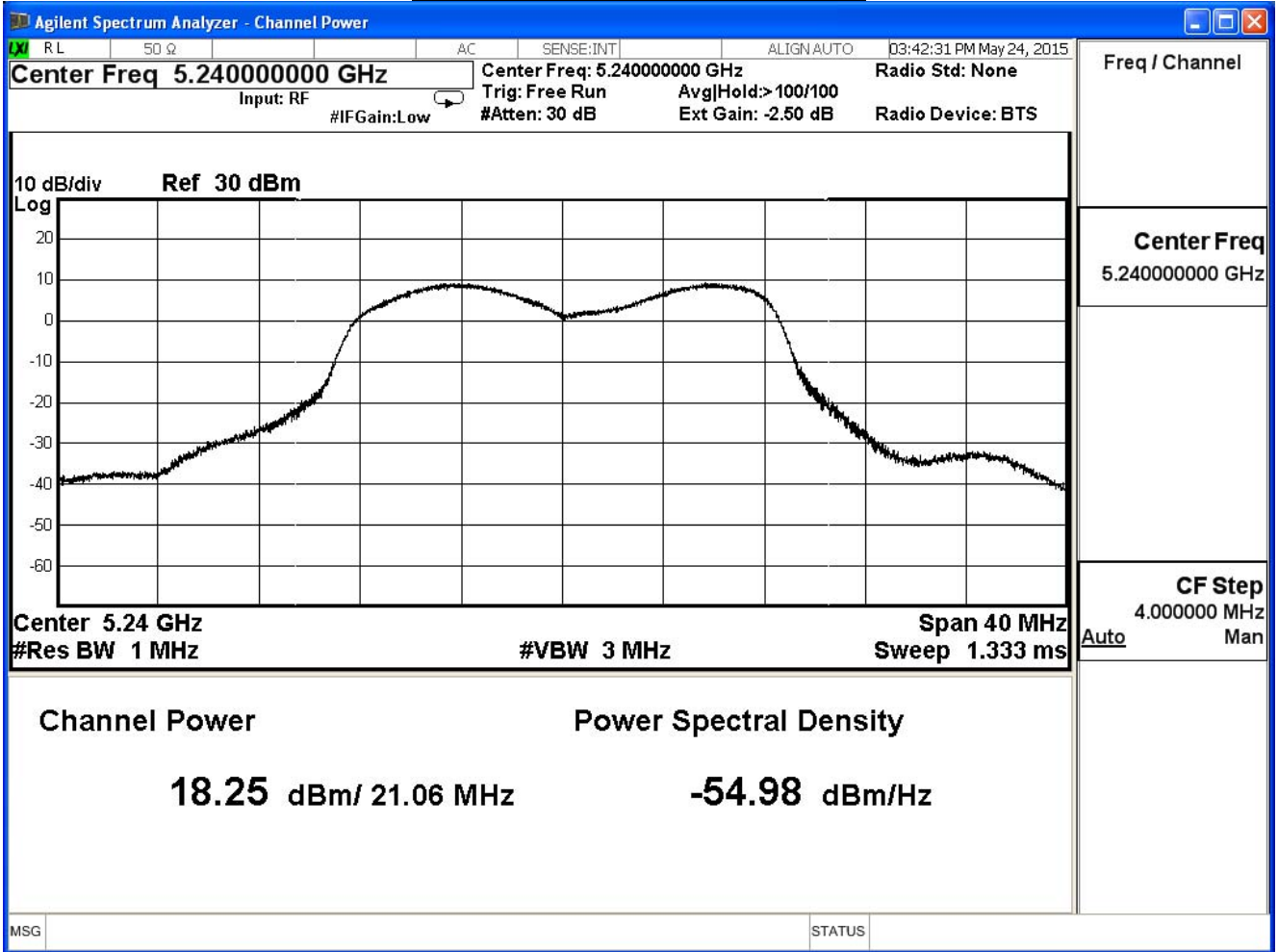
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



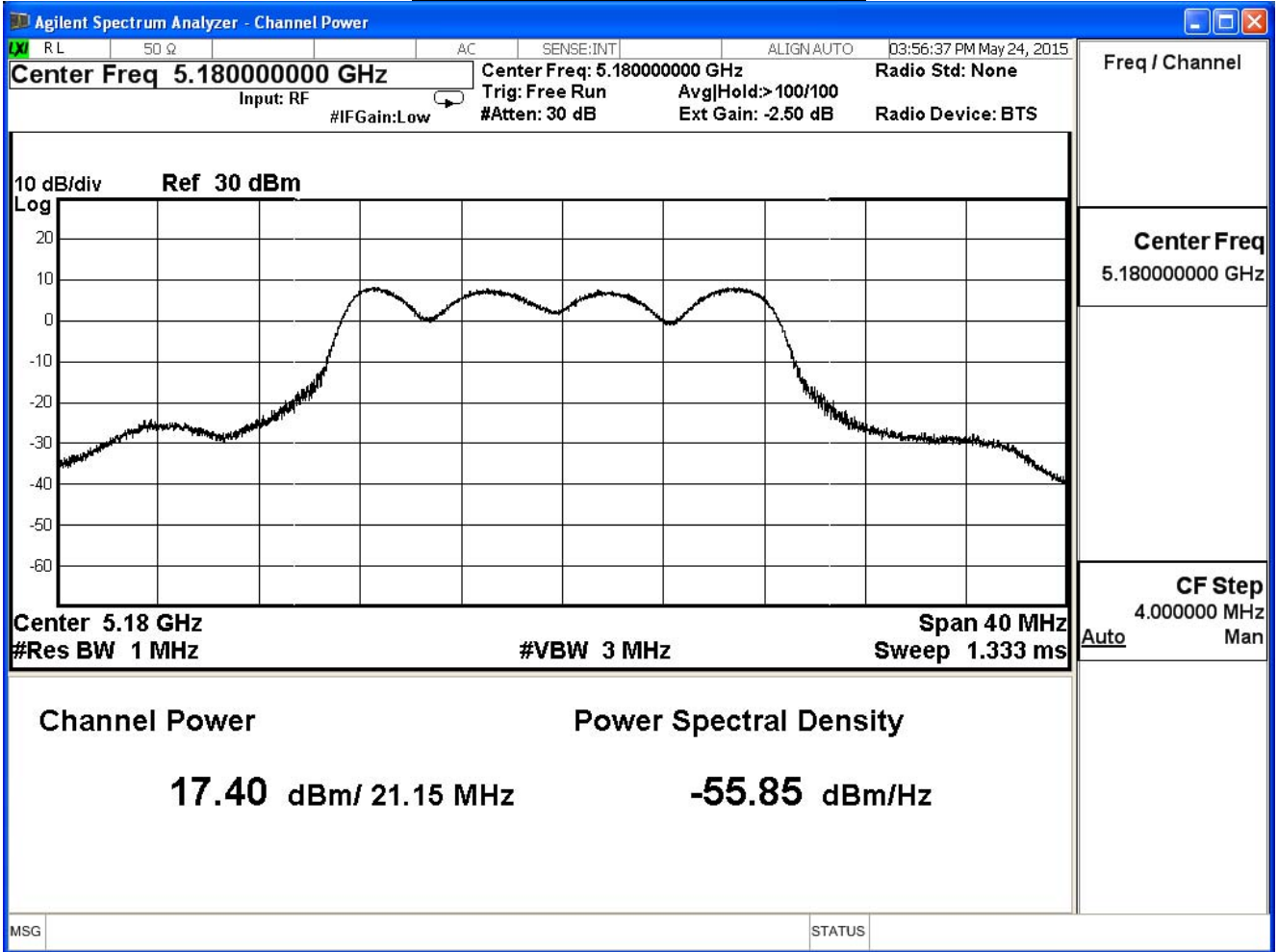
Product	Dual-band Wireless Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

802.11a (ANT 2) -AP and Bridge Mode					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit	Result
36	5180	21.15	17.40	≤30	Pass
44	5220	21.29	18.24	≤30	Pass
48	5240	21.44	18.30	≤30	Pass

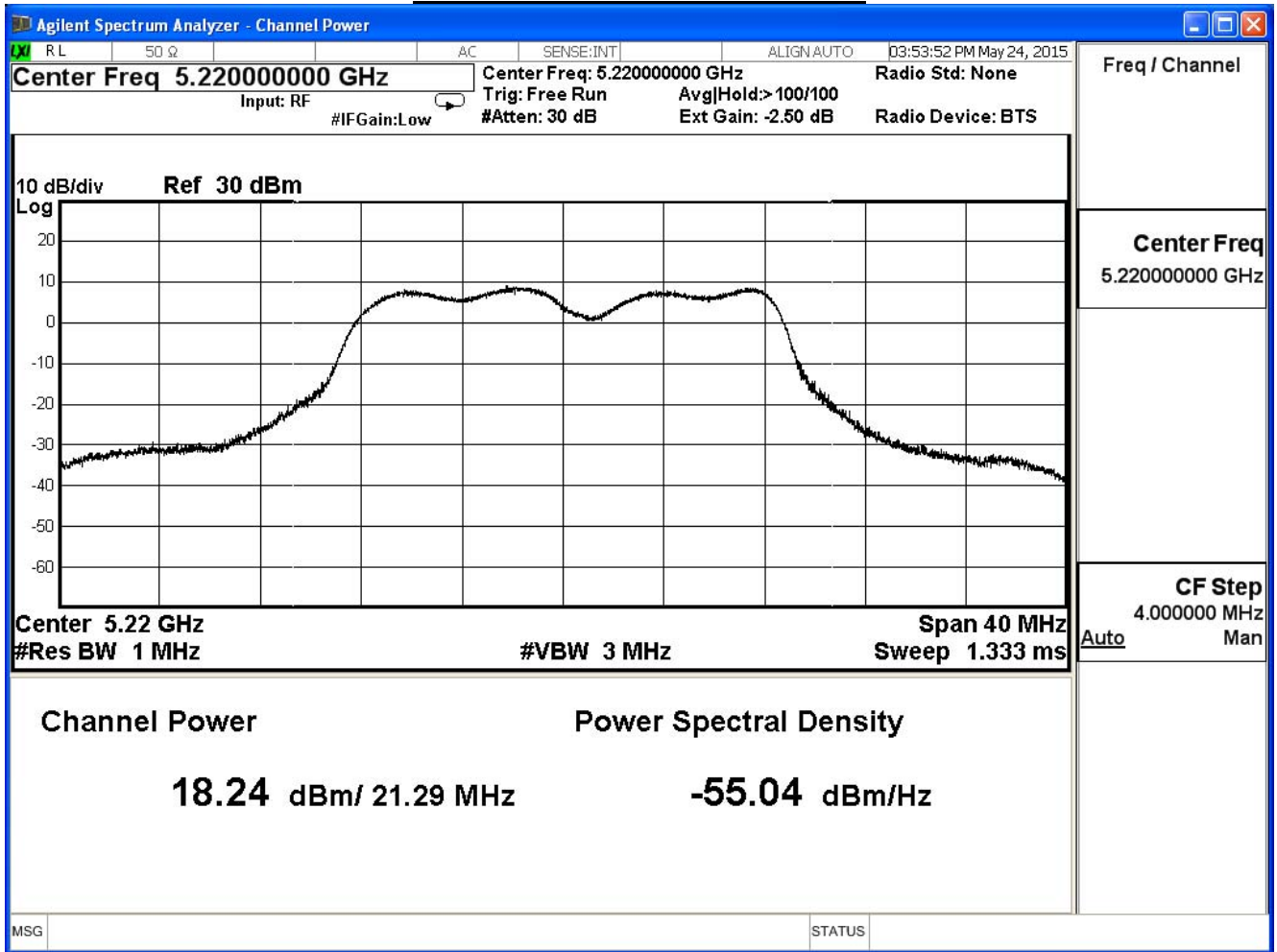
The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	17.40	--	--	--	--	--	--	≤30
44	5220	18.24	18.14	17.94	17.84	17.74	17.50	17.38	
48	5240	18.30	--	--	--	--	--	--	

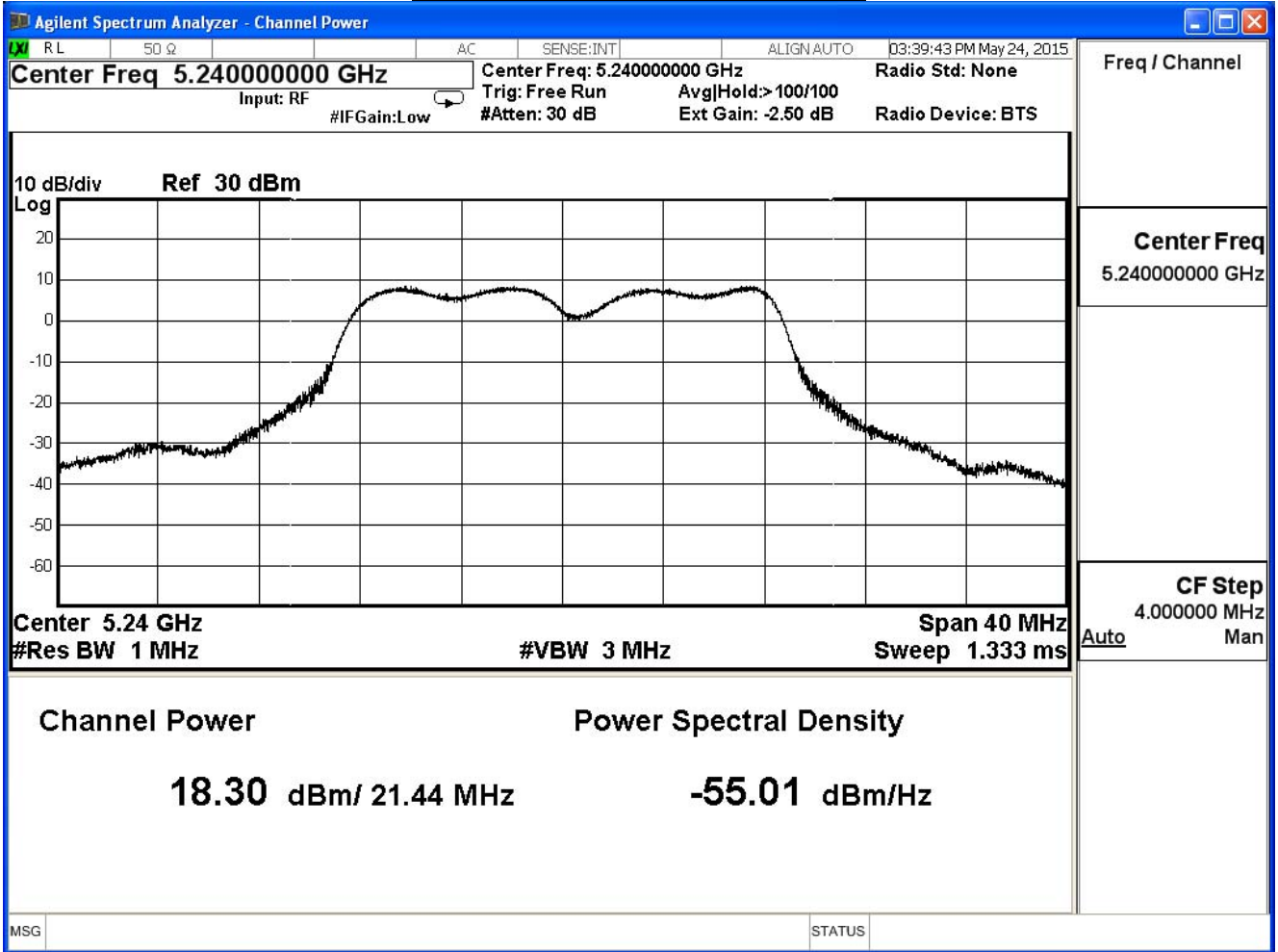
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Wireless Range Extender		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

802.11a (ANT 0+1+2) -AP and Bridge Mode					
Channel No.	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Required Limit	Result
36	5180	172.92	22.38	≤30	Pass
44	5220	202.07	23.06	≤30	Pass
48	5240	208.06	23.18	≤30	Pass

The worst emission of data rate is 6Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	22.38	--	--	--	--	--	--	≤30
44	5220	23.06	22.92	22.72	22.55	22.39	22.15	21.99	
48	5240	23.18	--	--	--	--	--	--	

5. Peak Power Spectrum Density

5.1. Test Equipment

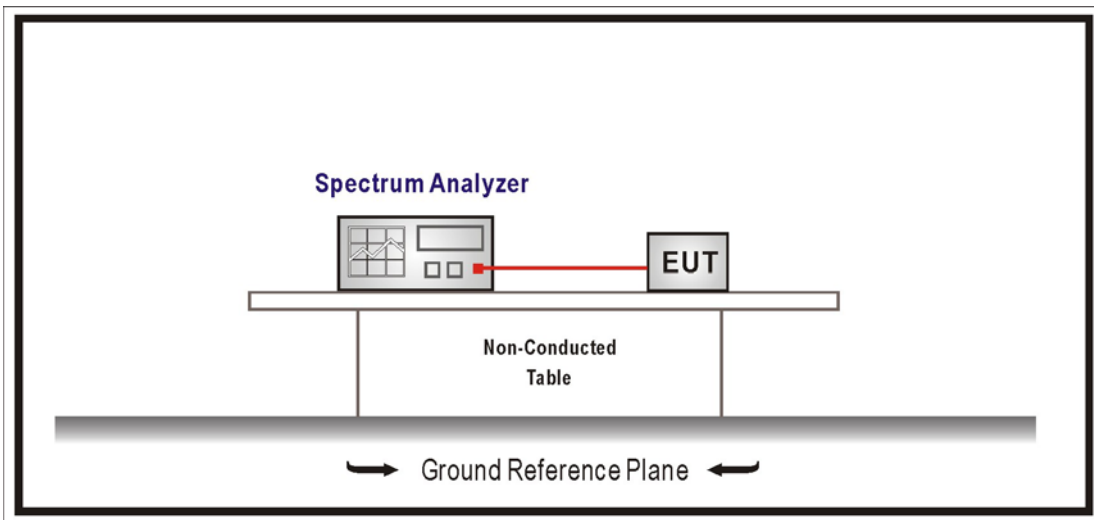
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14

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

5.2. Test Setup



5.3. Limits

1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 17 dBm in any 1MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

5.4. Test Procedure

The EUT was setup to ANSI C63.10:2009; tested to U-NII test procedure of KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

For Band1 : Set RBW=1MHz, VBW=3MHz with RMS detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

For Band4 : Set RBW=500KHz, VBW=1.5MHz with RMS detector. The PPSD is the highest level found across the emission in any 500KHz band after 100 sweeps of averaging.

5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

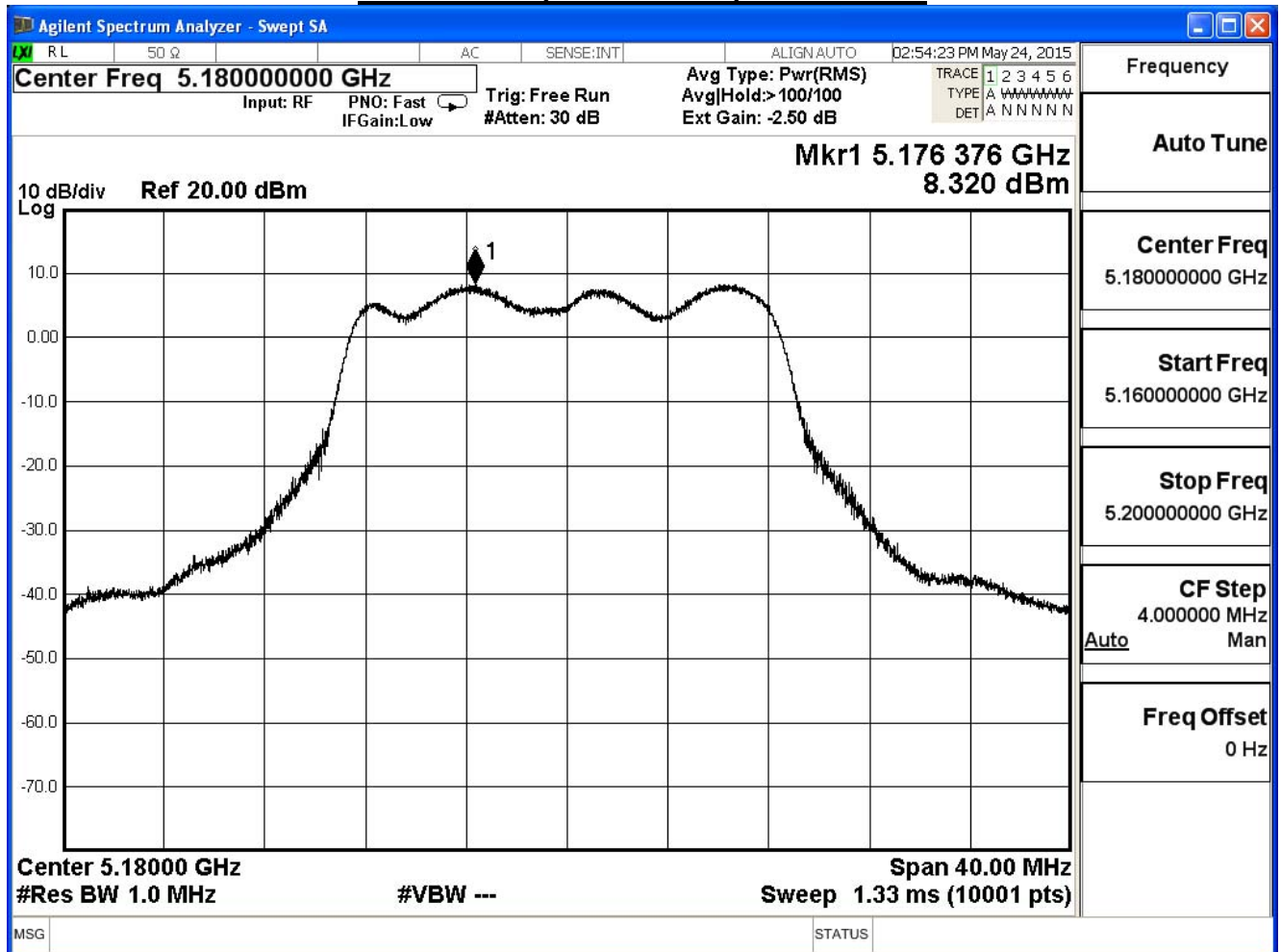
Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

IEEE 802.11a (ANT 0) -AP and Bridge Mode				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	8.32	≤ 13.63	Pass
44	5220	8.53	≤ 13.63	Pass
48	5240	8.59	≤ 13.63	Pass

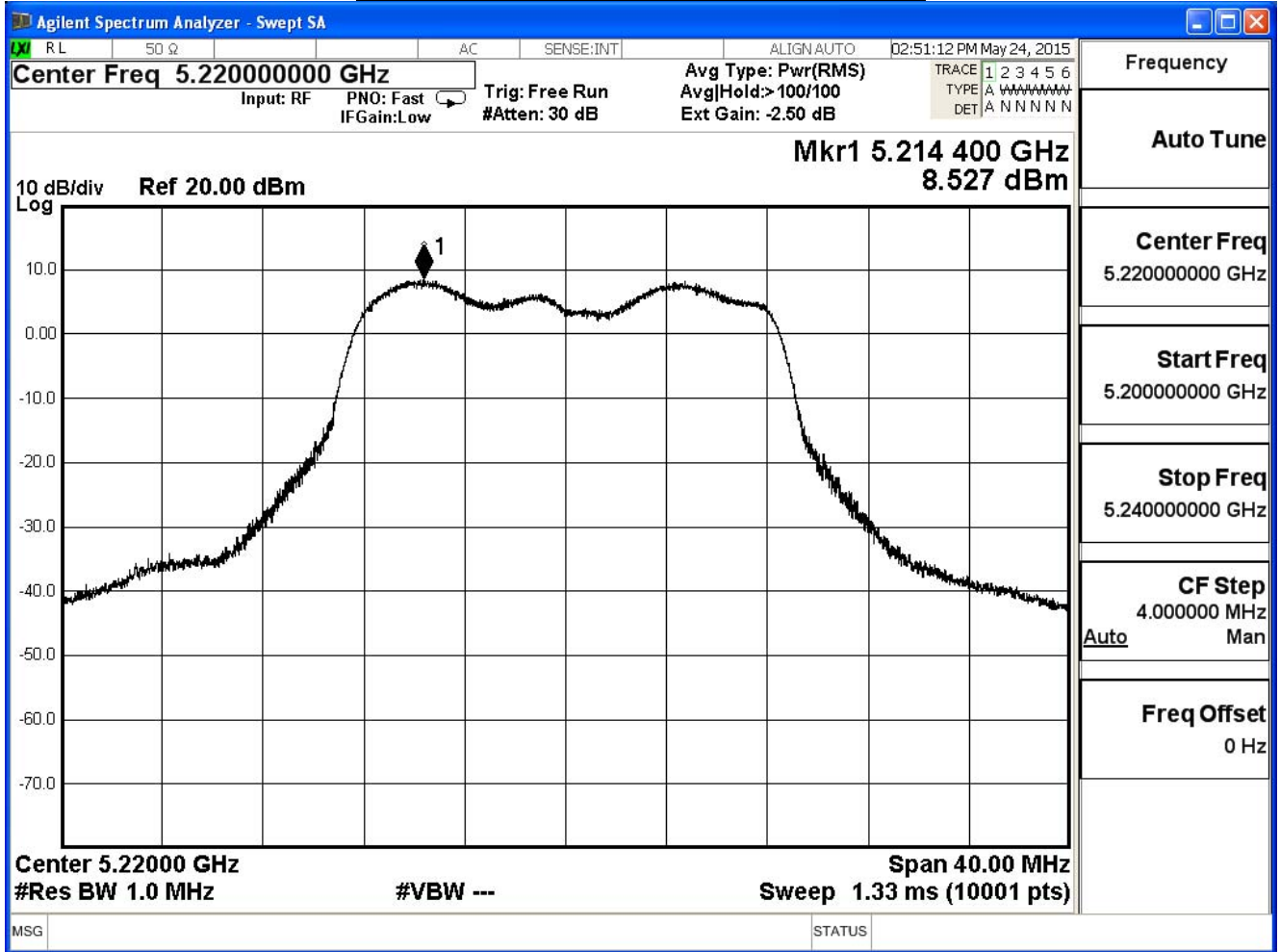
Directional Antenna: $10\log(\text{Ant N}) + \text{Max Gain} = 10\log(3) + 4.6 = 9.37\text{dBi}$

Power Density Limit: $17\text{dBm} - (9.37\text{dBi} - 6\text{dB}) = 13.63\text{dBm/MHz}$

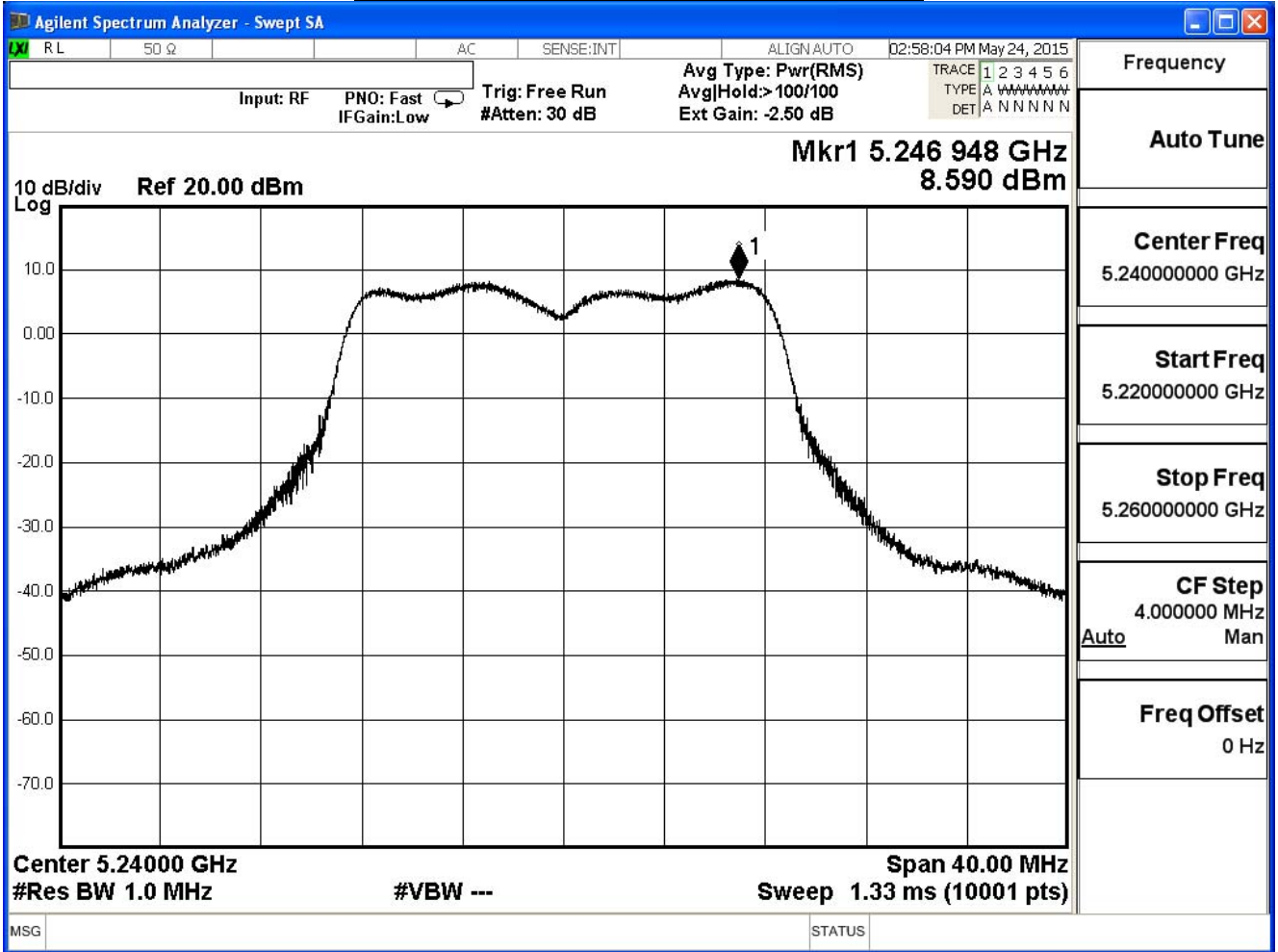
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



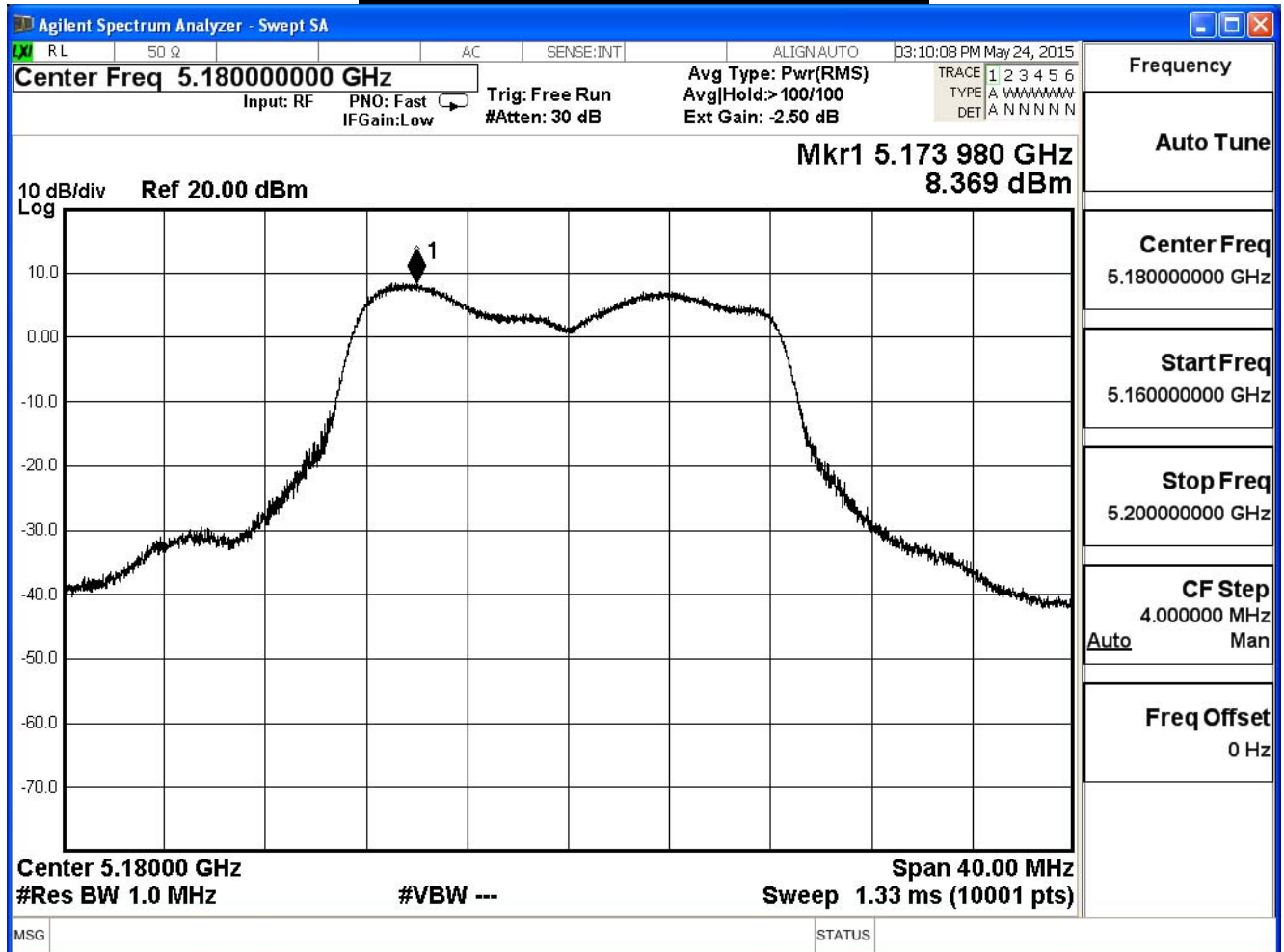
Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

IEEE 802.11a (ANT 1) -AP and Bridge Mode				
Channel No.	Frequency (MHz)	Measurement (dBm)	Limit (dBm)	Result
36	5180	8.37	≤ 13.63	Pass
44	5220	8.74	≤ 13.63	Pass
48	5240	8.45	≤ 13.63	Pass

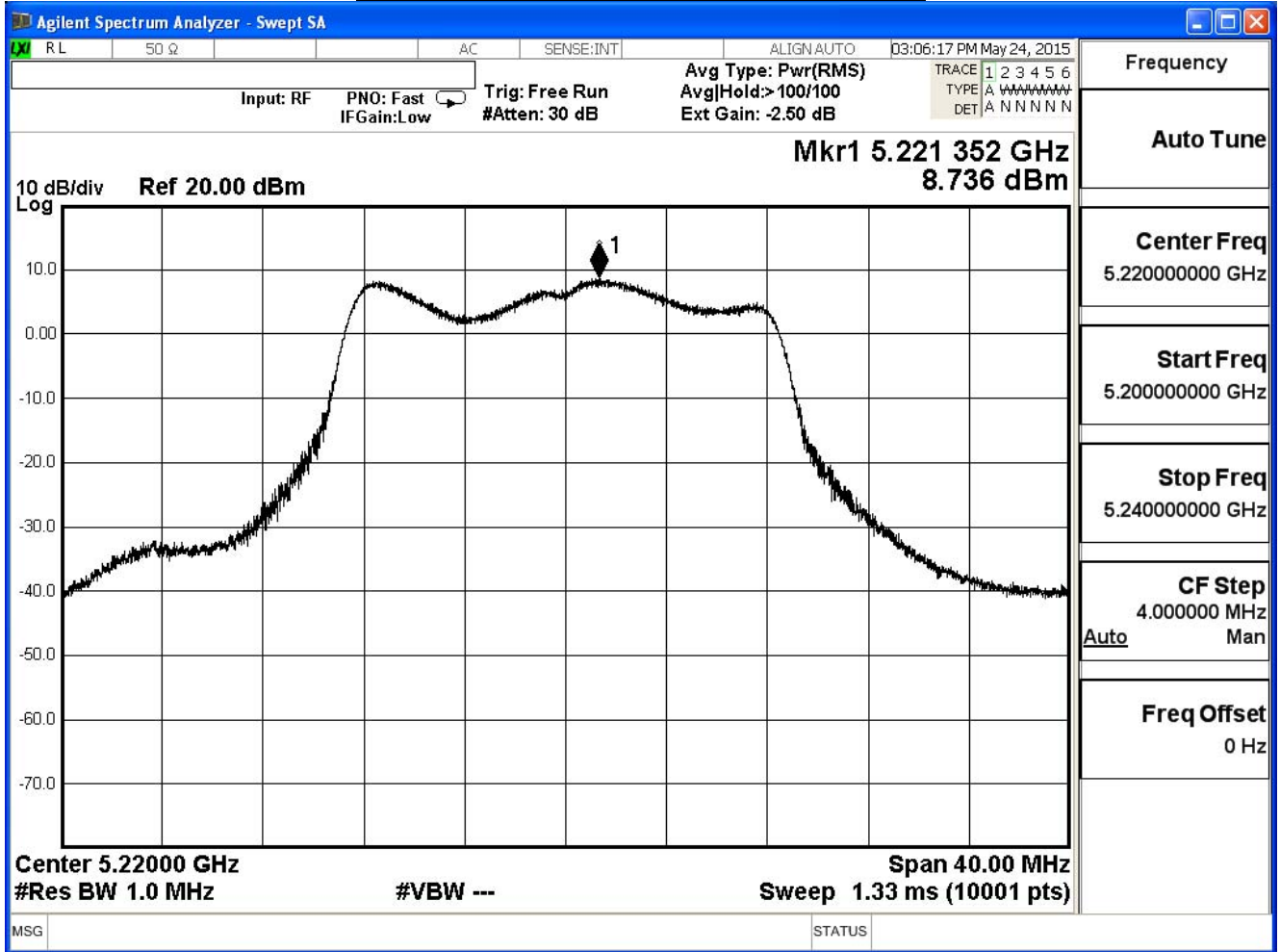
Directional Antenna: $10\log(\text{Ant N}) + \text{Max Gain} = 10\log(3) + 4.6 = 9.37\text{dBi}$

Power Density Limit: $17\text{dBm} - (9.37\text{dBi} - 6\text{dB}) = 13.63\text{dBm/MHz}$

Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



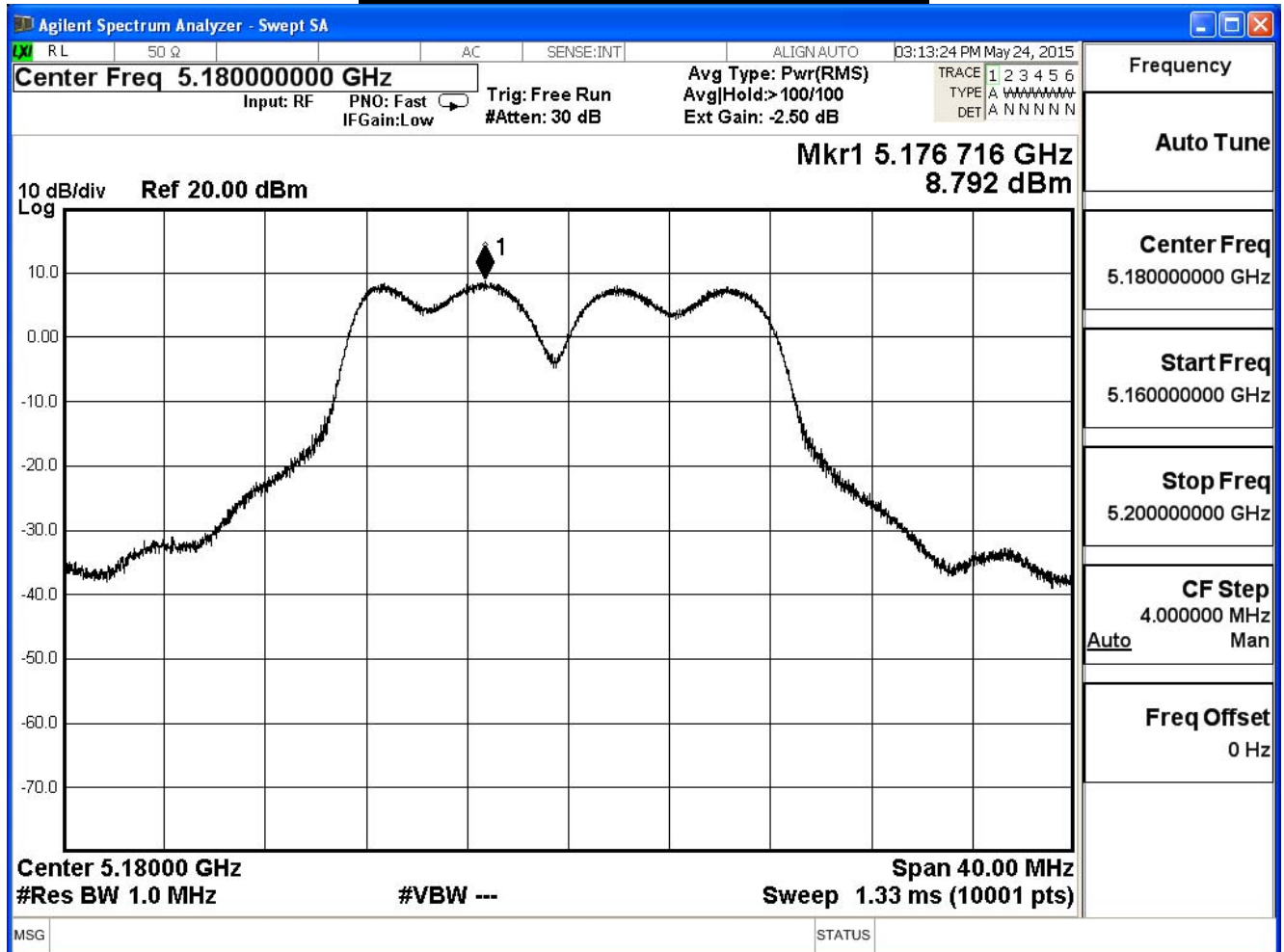
Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

IEEE 802.11a (ANT 2) -AP and Bridge Mode				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	8.79	≤ 13.63	Pass
44	5220	8.77	≤ 13.63	Pass
48	5240	8.49	≤ 13.63	Pass

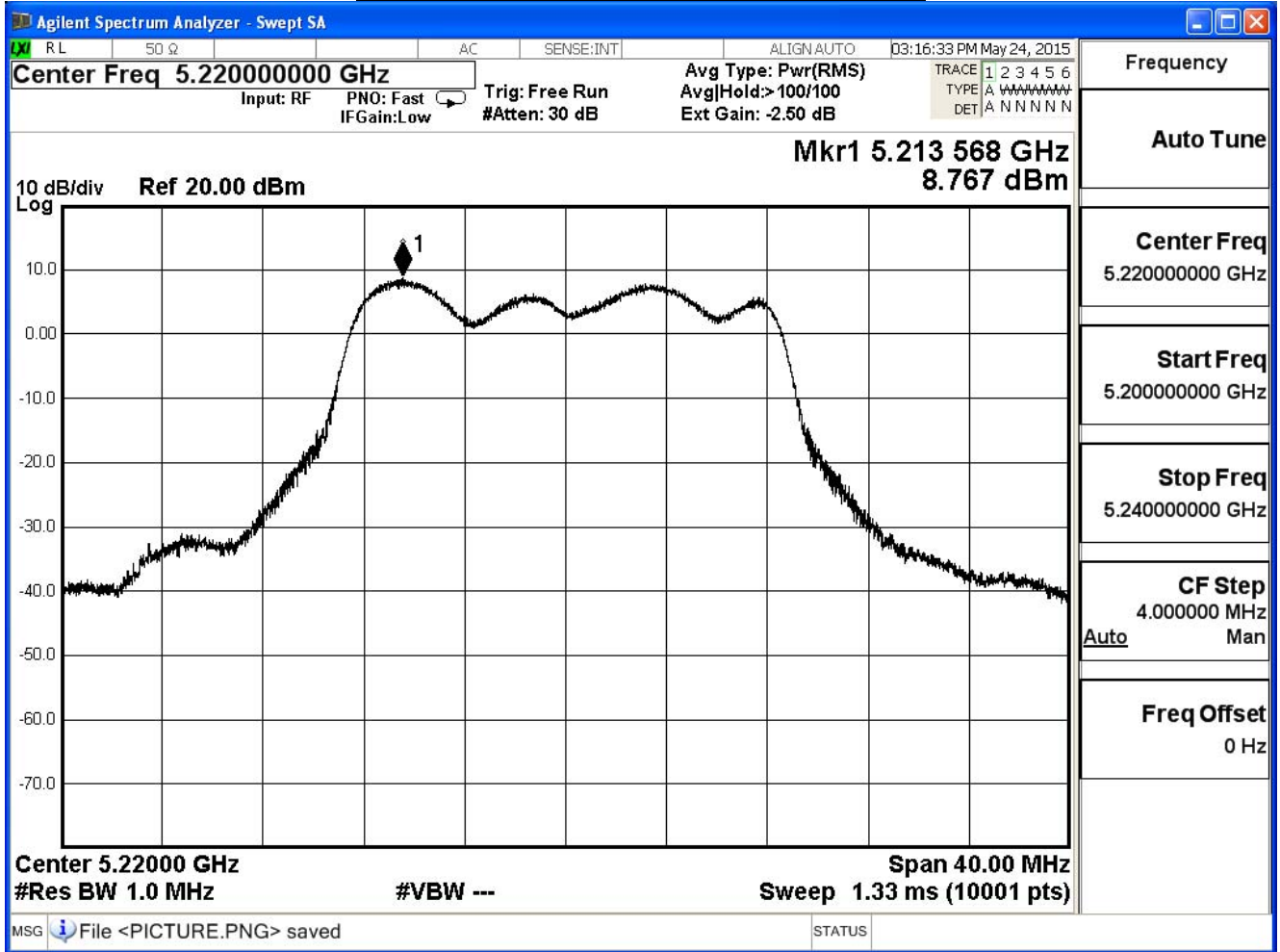
Directional Antenna: $10\log(\text{Ant N}) + \text{Max Gain} = 10\log(3) + 4.6 = 9.37\text{dBi}$

Power Density Limit: $17\text{dBm} - (9.37\text{dBi} - 6\text{dB}) = 13.63\text{dBm/MHz}$

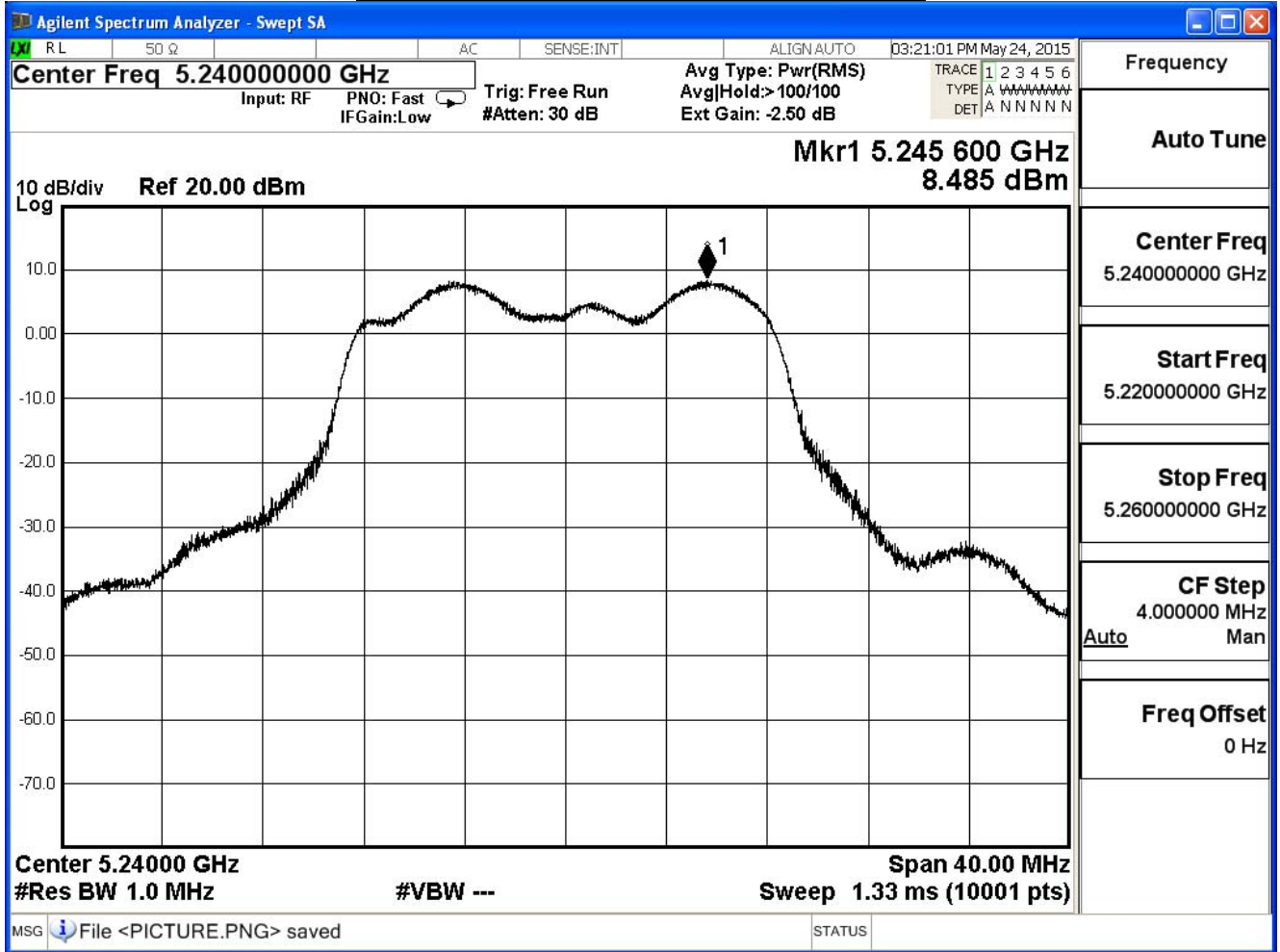
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



Product	Dual-band Wireless Range Extender		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2015/05/24	Test Site	SR7

IEEE 802.11a (ANT 0+1+2) -AP and Bridge Mode				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
36	5180	13.27	≤ 13.63	Pass
44	5220	13.45	≤ 13.63	Pass
48	5240	13.28	≤ 13.63	Pass

Directional Antenna: $10\log(\text{Ant N}) + \text{Max Gain} = 10\log(3) + 4.6 = 9.37\text{dBi}$

Power Density Limit: $17\text{dBm} - (9.37\text{dBi} - 6\text{dB}) = 13.63\text{dBm/MHz}$

6. Radiated Emission

6.1. Test Equipment

The following test equipments are used during the radiated emission test:

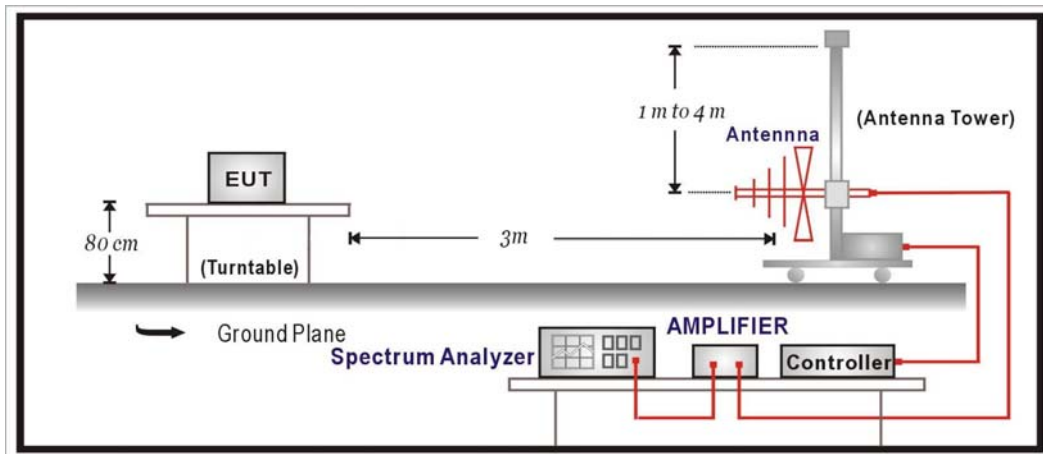
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895(CB1)	2015/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2016/01/26
Pre-Amplifier	EMCI	EMC0031835	980233	2016/01/18
Pre-Amplifier	Quietek	AP-025C	CHM-0706049	2016/01/18
Spectrum Analyzer	Agilent	E4440A	MY46187335	2016/01/07
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2016/01/26

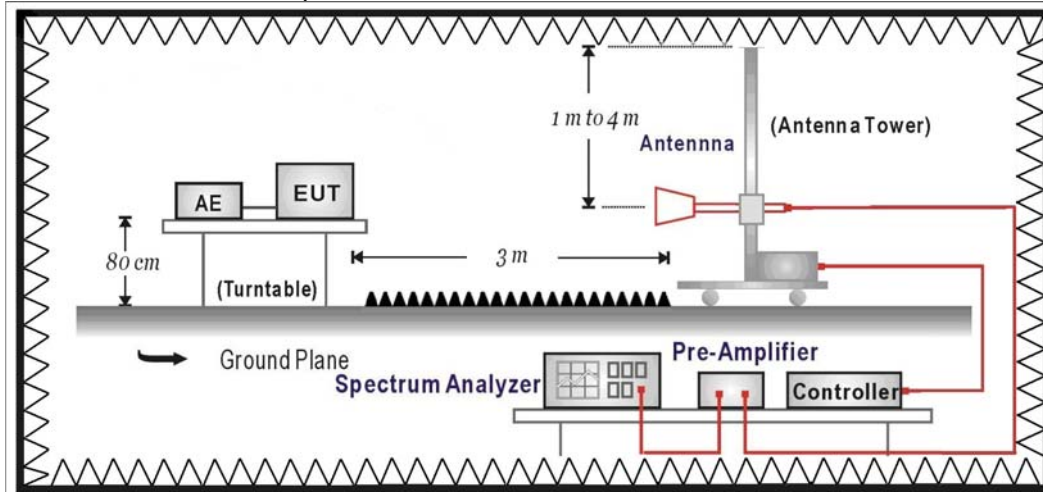
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



6.3. Limits

➤ **General Radiated Emission Limits**

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remark:

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ **Unwanted Emission out of the restricted bands Limits**

FCC Part 15 Subpart E Paragraph 15.407(b) Limits		
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5850	-27 (Note1)	68.3
	-17 (Note2)	78.3

Remark:

1. For frequencies more than 10 MHz above or below the band edges.
2. For frequency range from the band edges to 10 MHz above or below the band edges.
3. $uV/m = \frac{1000000\sqrt{30 \times EIRP}}{3}$, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

6.4. Test Procedure

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

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

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.

The additional notch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

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

The frequency range from 30MHz to 10th harmonics is checked.

6.5. Uncertainty

The measurement uncertainty

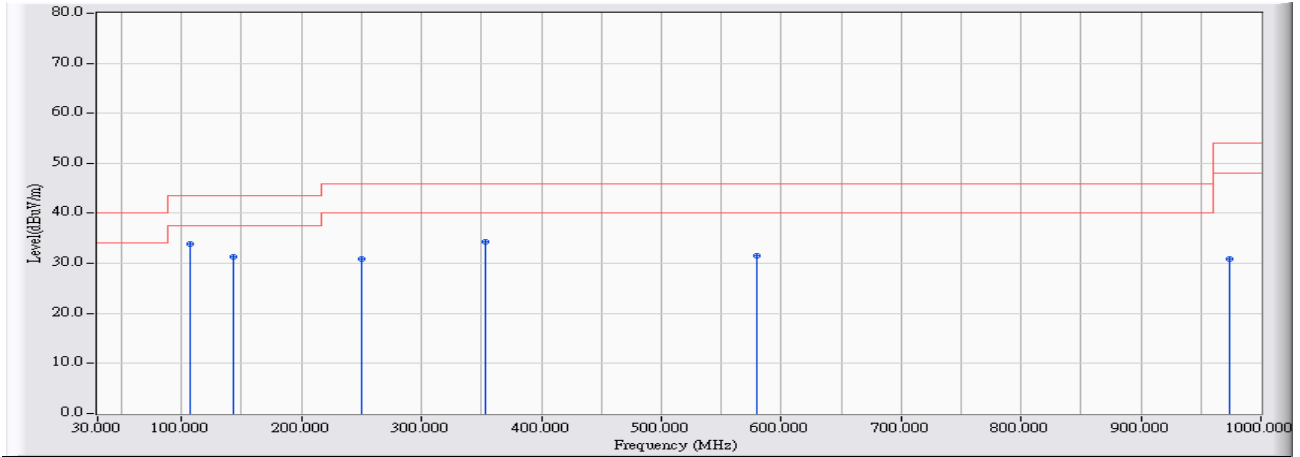
30MHz~1GHz as $\pm 3.43\text{dB}$

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

6.6. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2015/05/16 - 02:00
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-2_1011 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a_5220MHz-

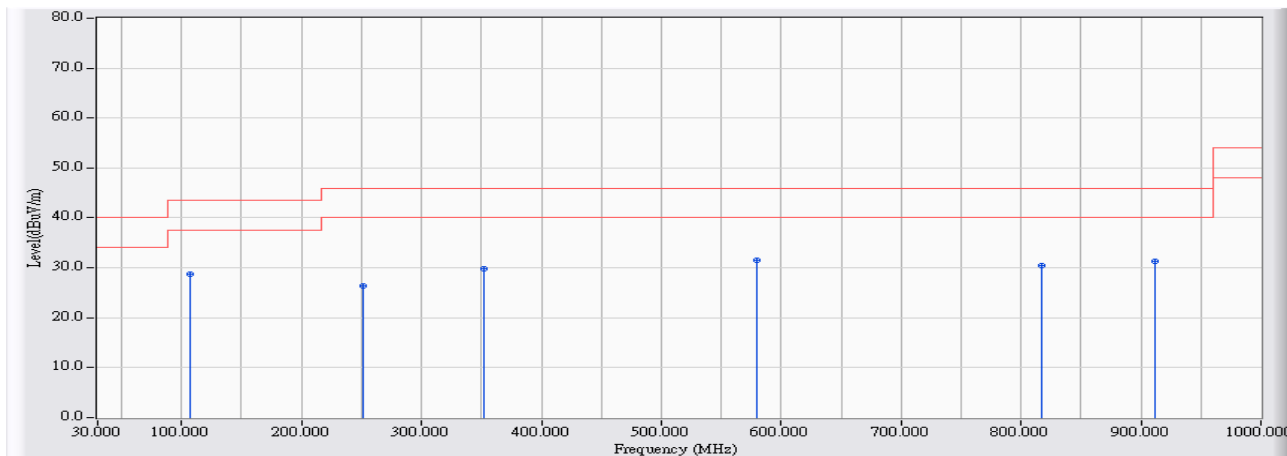


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	106.592	10.165	23.755	33.919	-9.581	43.500	QUASPEAK
2		142.949	9.985	21.299	31.284	-12.216	43.500	QUASPEAK
3		249.595	11.849	19.094	30.943	-15.057	46.000	QUASPEAK
4		352.849	14.022	20.226	34.248	-11.752	46.000	QUASPEAK
5		579.715	17.422	14.096	31.518	-14.482	46.000	QUASPEAK
6		973.823	20.075	10.866	30.941	-23.059	54.000	QUASPEAK

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 : 2015/05/16 - 03:51
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-2_1011 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a_5220MHz-



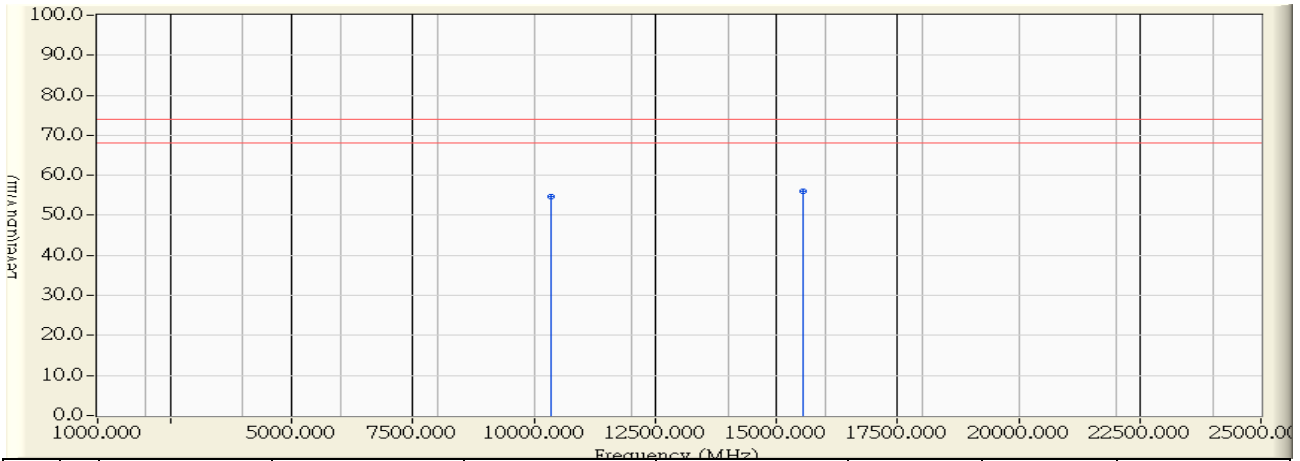
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	106.592	10.165	18.571	28.735	-14.765	43.500	QUASPEAK
2	251.049	11.902	14.452	26.354	-19.646	46.000	QUASPEAK
3	352.364	14.010	15.905	29.915	-16.085	46.000	QUASPEAK
4	* 579.715	17.422	14.063	31.485	-14.515	46.000	QUASPEAK
5	817.246	19.258	11.251	30.509	-15.491	46.000	QUASPEAK
6	911.289	19.565	11.678	31.242	-14.758	46.000	QUASPEAK

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.

Harmonic & Spurious:

Site : CB1	Time : 2015/05/20 - 16:04
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

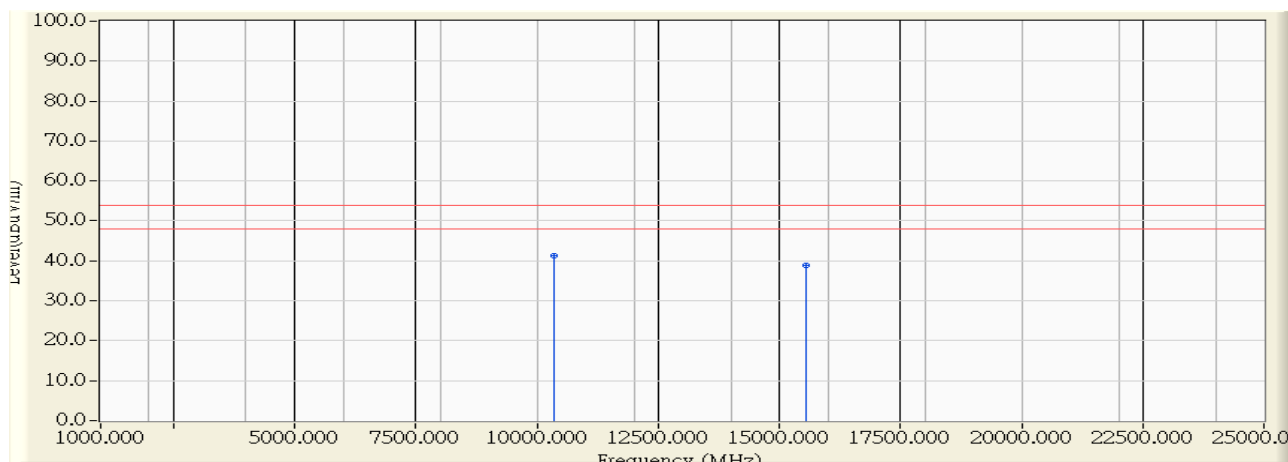


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10360.000	10.136	44.610	54.746	-19.254	74.000	PEAK
2	* 15540.000	11.090	44.920	56.010	-17.990	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 17:32
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

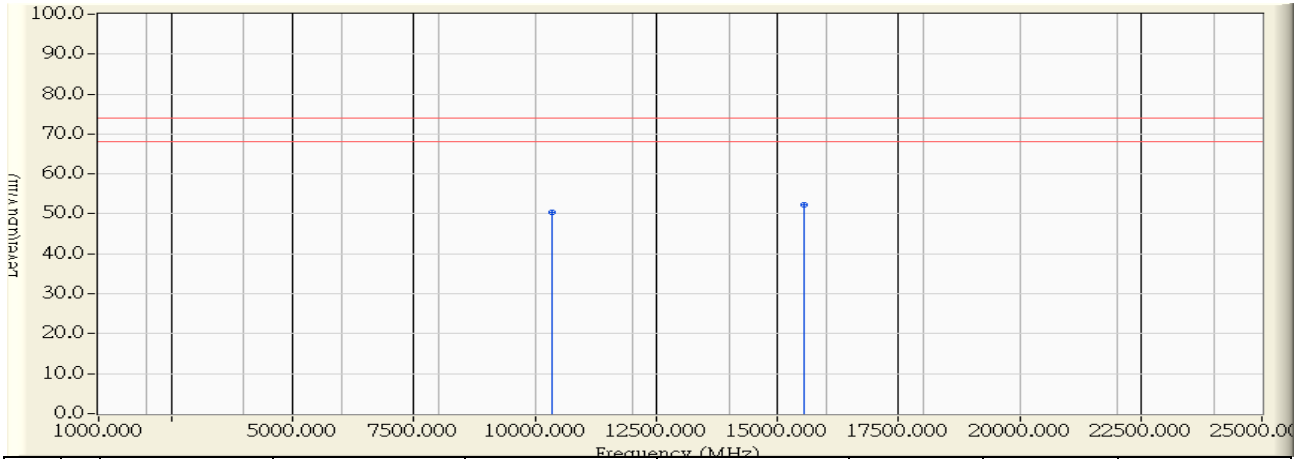


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	10360.000	10.136	31.140	41.276	-12.724	54.000	AVERAGE
2		15540.000	11.090	27.810	38.900	-15.100	54.000	AVERAGE

Note:

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

Site : CB1	Time : 2015/05/20 - 16:08
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

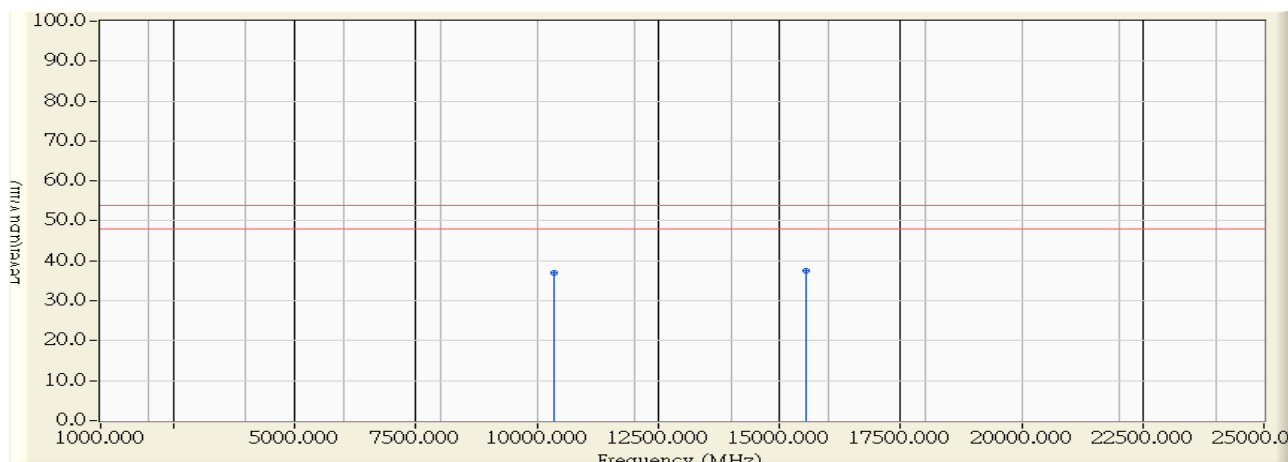


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10360.000	9.513	40.910	50.423	-23.577	74.000	PEAK
2	* 15540.000	11.090	41.240	52.330	-21.670	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 17:41
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

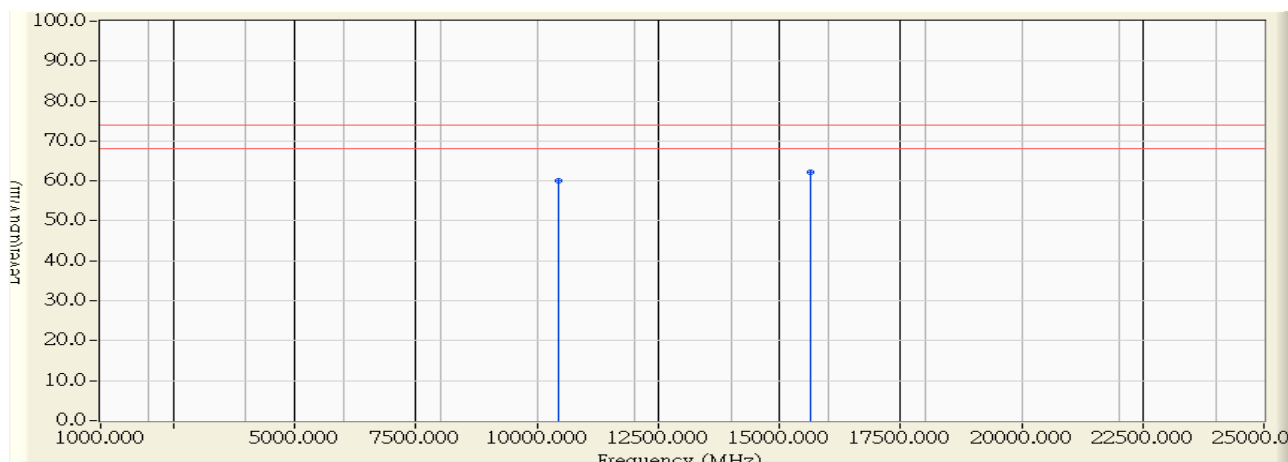


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10360.000	9.513	27.600	37.113	-16.887	54.000	AVERAGE
2	* 15540.000	11.090	26.500	37.590	-16.410	54.000	AVERAGE

Note:

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

Site : CB1	Time : 2015/05/20 - 16:17
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

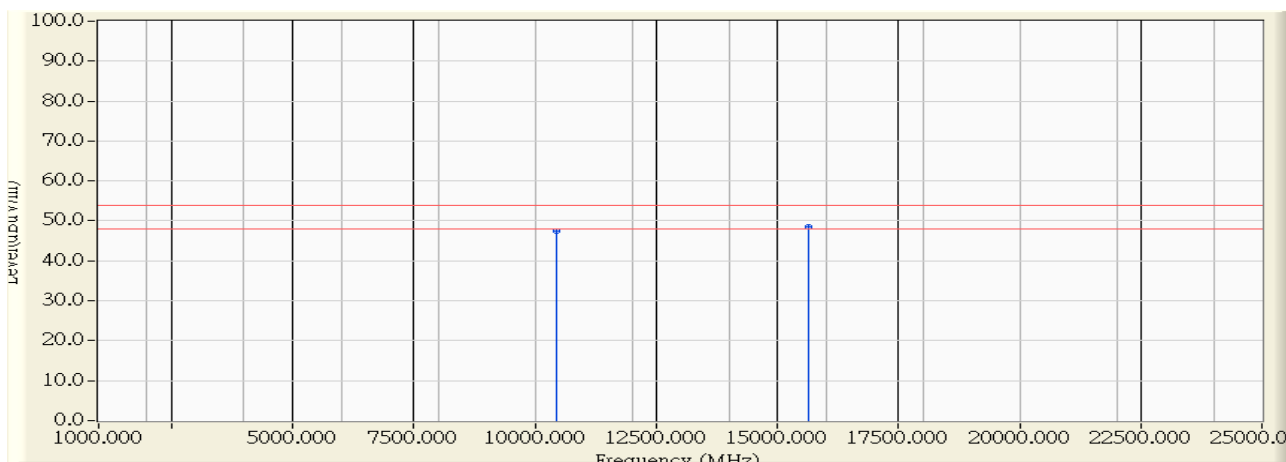


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10440.000	10.057	50.070	60.127	-13.873	74.000	PEAK
2	* 15660.000	10.956	51.330	62.286	-11.714	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 17:24
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

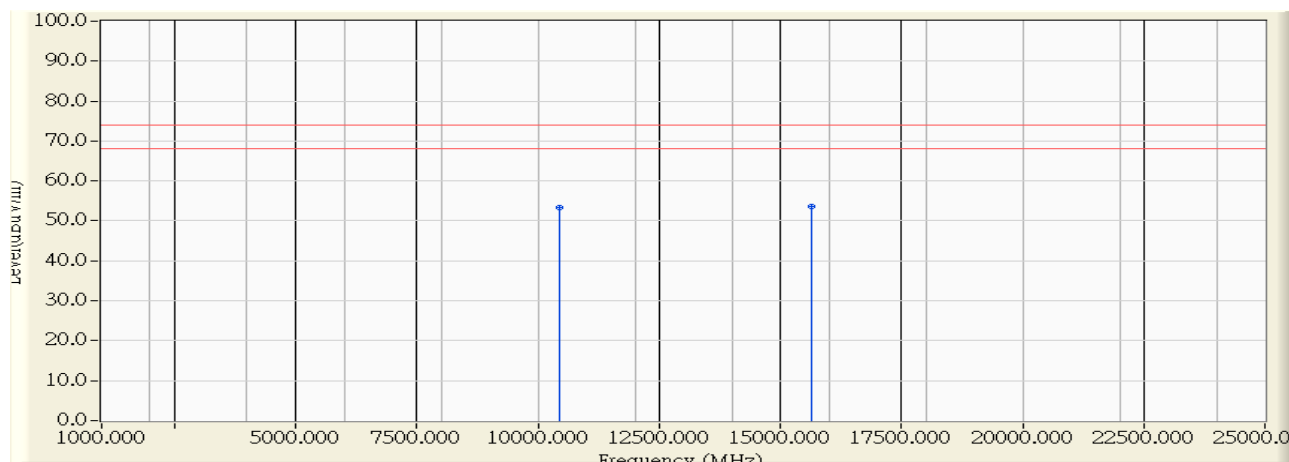


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10440.000	10.057	37.520	47.577	-6.423	54.000	AVERAGE
2	* 15660.000	10.956	37.530	48.486	-5.514	54.000	AVERAGE

Note:

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

Site : CB1	Time : 2015/05/20 - 16:12
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

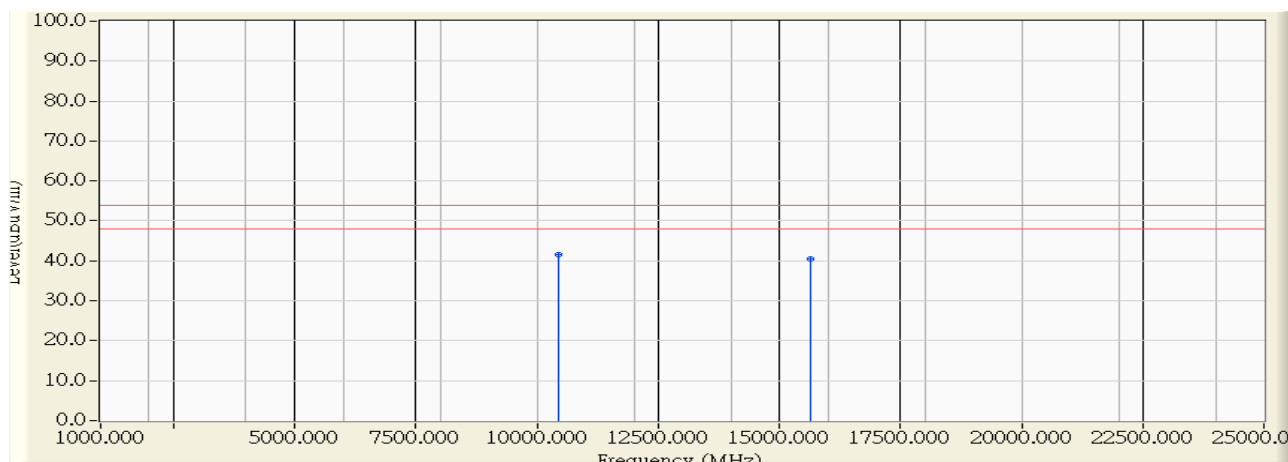


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10440.000	9.514	43.970	53.484	-20.516	74.000	PEAK
2	* 15660.000	10.956	42.580	53.536	-20.464	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 17:16
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

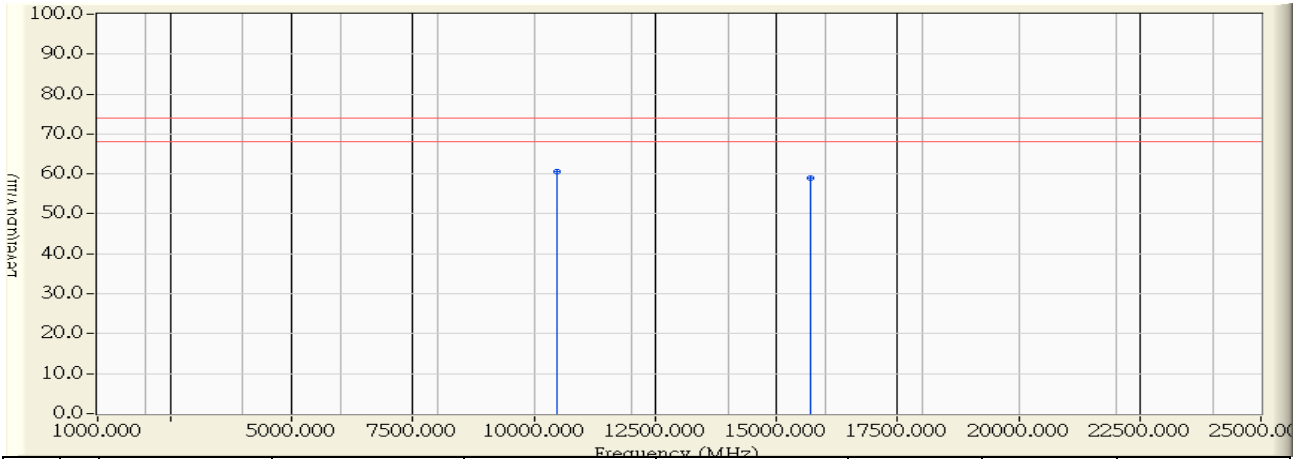


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	10440.000	9.514	31.910	41.424	-12.576	54.000	AVERAGE
2		15660.000	10.956	29.510	40.466	-13.534	54.000	AVERAGE

Note:

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

Site : CB1	Time : 2015/05/20 - 16:23
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

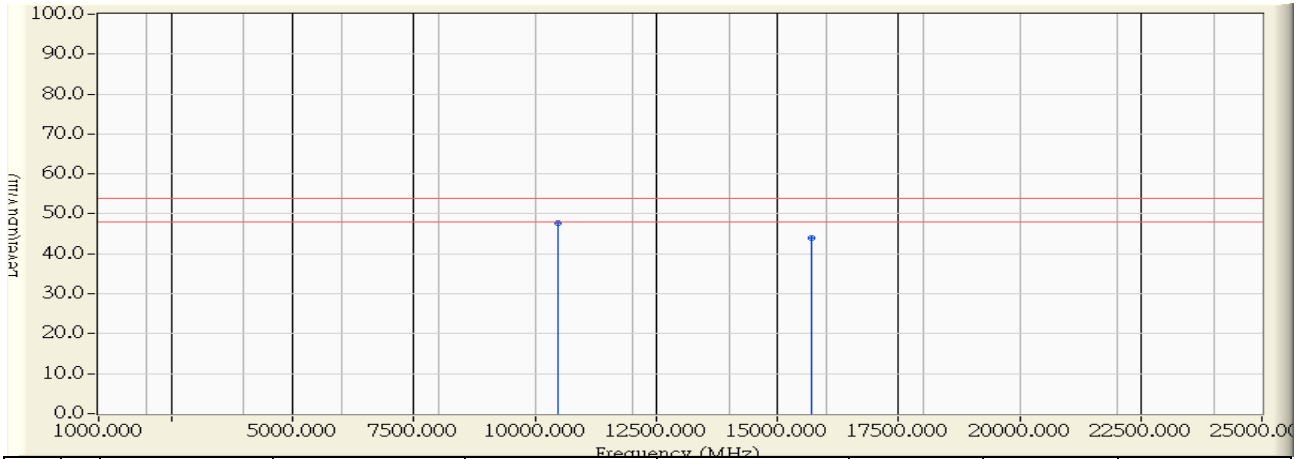


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	10480.000	10.029	50.660	60.689	-13.311	74.000	PEAK
2		15720.000	10.889	48.060	58.949	-15.051	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 16:56
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

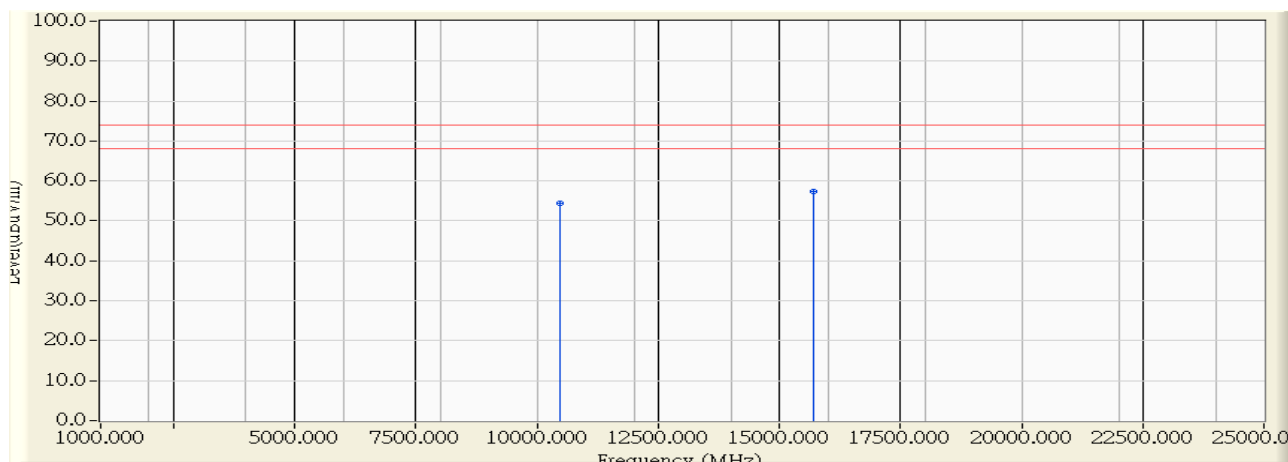


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	10480.000	10.029	37.650	47.679	-6.321	54.000	AVERAGE
2		15720.000	10.889	33.150	44.039	-9.961	54.000	AVERAGE

Note:

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

Site : CB1	Time : 2015/05/20 - 16:26
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

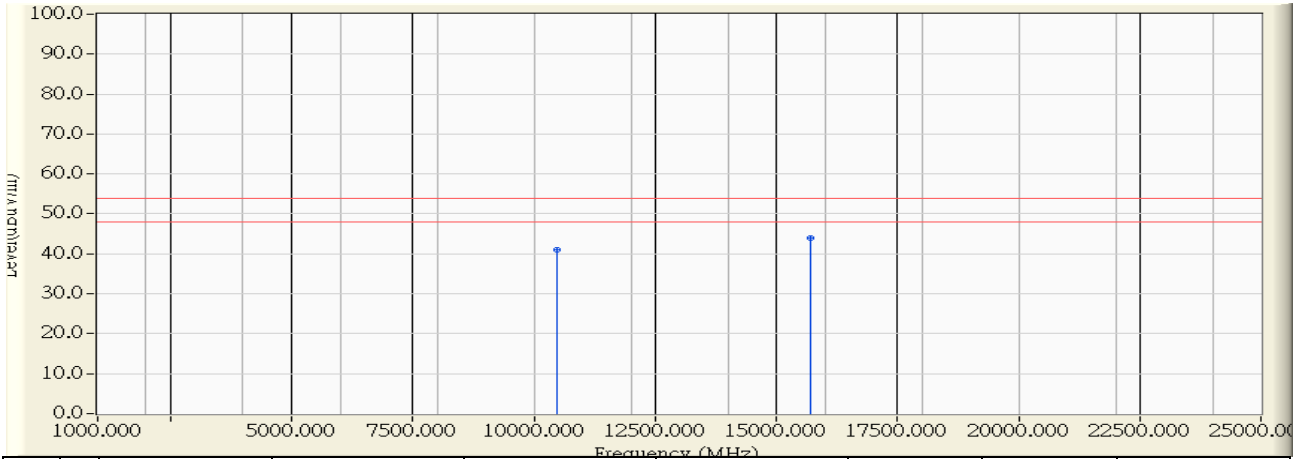


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	10480.000	9.526	44.930	54.456	-19.544	74.000	PEAK
2	* 15720.000	10.889	46.580	57.469	-16.531	74.000	PEAK

Note:

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

Site : CB1	Time : 2015/05/20 - 17:05
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		10480.000	9.526	31.620	41.146	-12.854	54.000	AVERAGE
2	*	15720.000	10.889	33.080	43.969	-10.031	54.000	AVERAGE

Note:

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

7. Band Edge

7.1. Test Equipment

The following test equipments are used during the band edge tests:

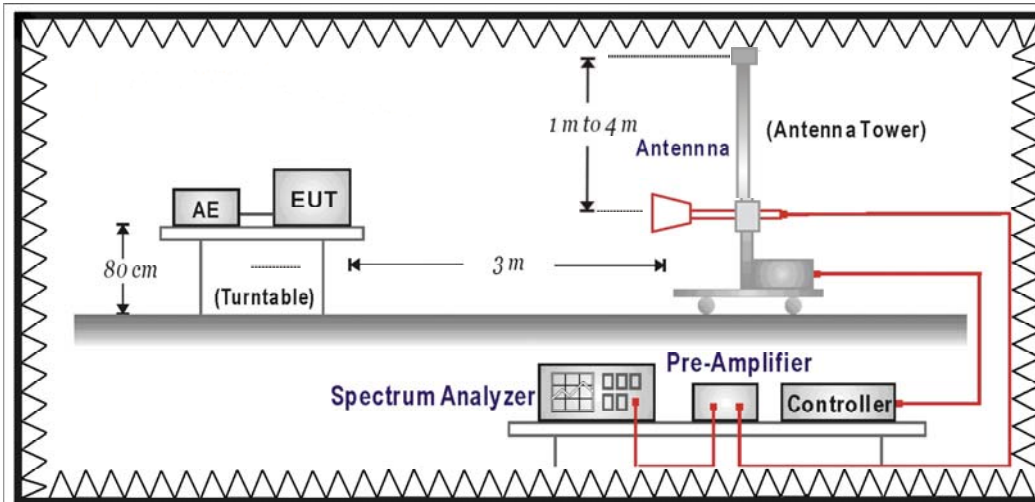
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2016/01/26
Spectrum Analyzer	Agilent	E4440A	MY46187335	2016/01/07
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2016/01/26

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

7.2. Test Setup

RF Radiated Measurement:



7.3. Limits

➤ General Radiated Emission Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remark:

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ Unwanted Emission out of the restricted bands Limits

FCC Part 15 Subpart E Paragraph 15.407(b) Limits		
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5850	-27 (Note1)	68.3
	-17 (Note2)	78.3

Remark:

1. For frequencies more than 10 MHz above or below the band edges.
2. For frequency range from the band edges to 10 MHz above or below the band edges.

3.
$$uV/m = \frac{1000000 \sqrt{30 \times EIRP}}{3}$$
, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

7.4. Test Procedure

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

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

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.

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

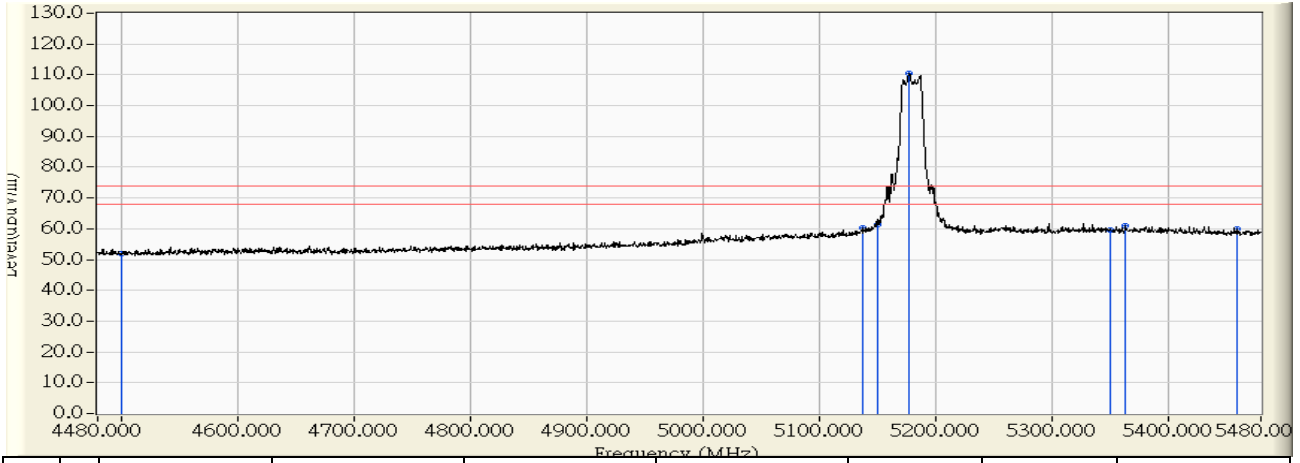
7.5. Uncertainty

The measurement uncertainty is defined as $\pm 3.65\text{dB}$

7.6. Test Result

Radiated is defined as

Site : CB1	Time : 2015/05/19 - 16:44
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

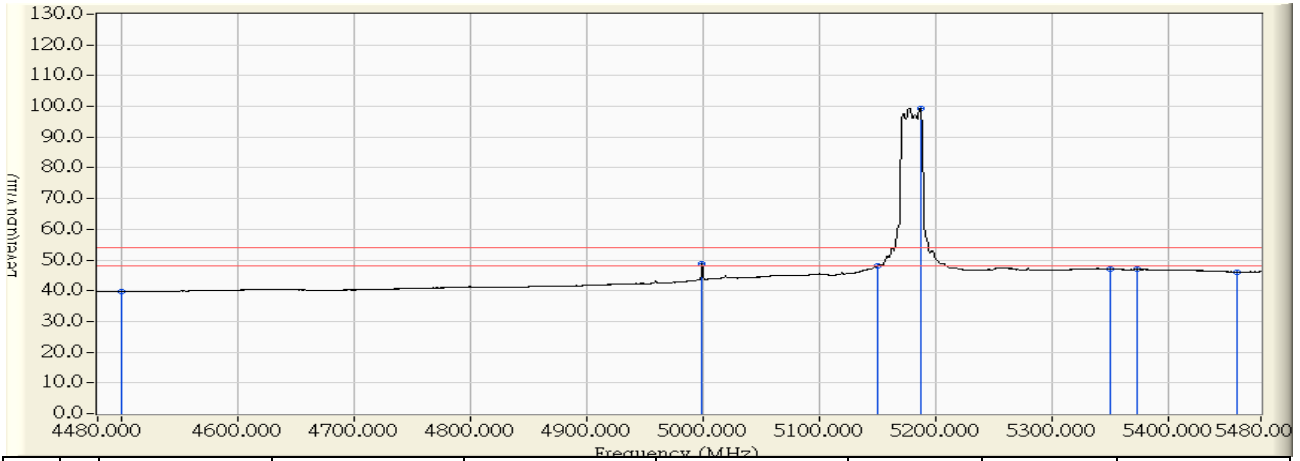


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	54.434	52.069	-21.931	74.000	PEAK
2	5137.671	0.166	59.971	60.137	-13.863	74.000	PEAK
3	5150.000	0.275	60.949	61.223	-12.777	74.000	PEAK
4	* 5177.651	0.516	109.804	110.320	36.320	74.000	PEAK
5	5350.000	2.026	57.479	59.504	-14.496	74.000	PEAK
6	5363.558	2.144	58.779	60.923	-13.077	74.000	PEAK
7	5460.000	2.989	56.878	59.866	-14.134	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:46
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

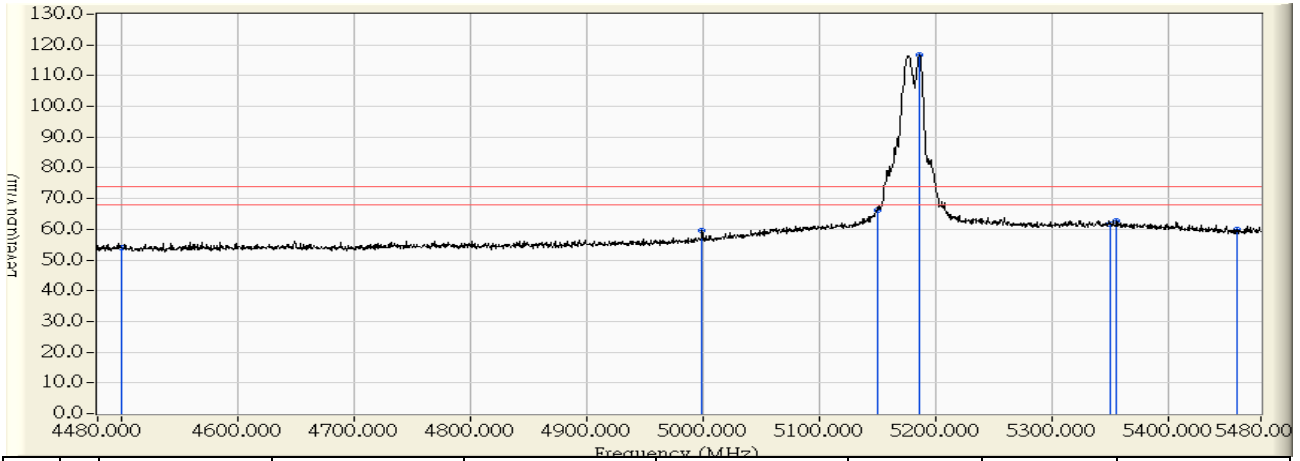


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	42.102	39.737	-14.263	54.000	AVERAGE
2	4999.740	-1.040	49.718	48.677	-5.323	54.000	AVERAGE
3	5150.000	0.275	47.669	47.943	-6.057	54.000	AVERAGE
4	* 5187.146	0.599	98.830	99.429	45.429	54.000	AVERAGE
5	5350.000	2.026	45.046	47.071	-6.929	54.000	AVERAGE
6	5373.053	2.227	44.694	46.921	-7.079	54.000	AVERAGE
7	5460.000	2.989	43.094	46.082	-7.918	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 15:50
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

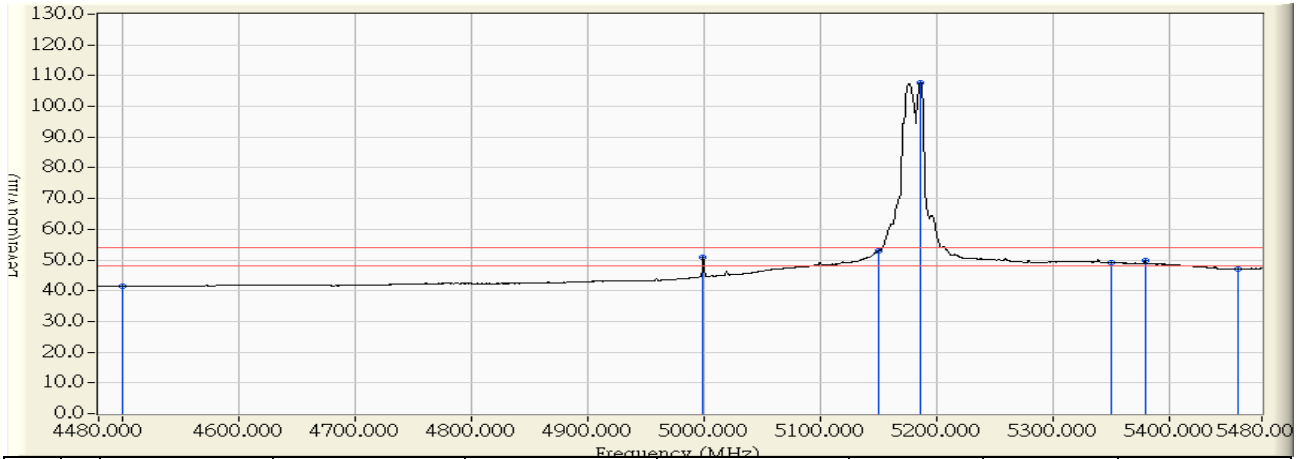


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	54.612	53.955	-20.045	74.000	PEAK
2	4999.740	-0.549	60.066	59.516	-14.484	74.000	PEAK
3	5150.000	0.691	65.488	66.179	-7.821	74.000	PEAK
4	* 5186.647	0.993	115.670	116.663	42.663	74.000	PEAK
5	5350.000	2.342	59.197	61.539	-12.461	74.000	PEAK
6	5356.062	2.391	60.210	62.602	-11.398	74.000	PEAK
7	5460.000	3.250	56.537	59.787	-14.213	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 15:47
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5180MHz

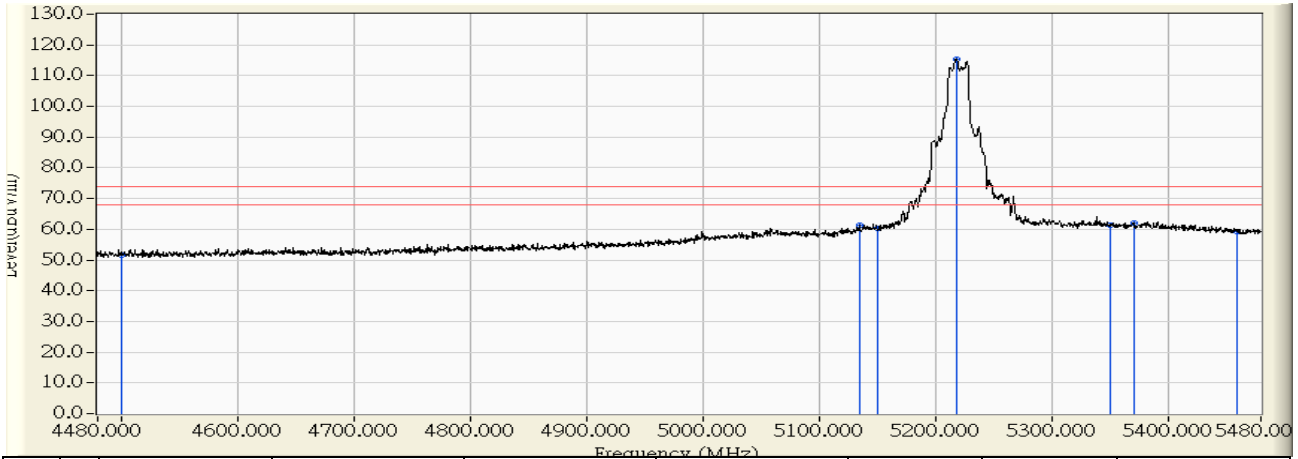


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	42.186	41.529	-12.471	54.000	AVERAGE
2	4999.740	-0.549	51.533	50.983	-3.017	54.000	AVERAGE
3	5150.000	0.691	52.199	52.890	-1.110	54.000	AVERAGE
4	* 5186.646	0.993	106.599	107.592	53.592	54.000	AVERAGE
5	5350.000	2.342	46.821	49.163	-4.837	54.000	AVERAGE
6	5379.550	2.586	47.191	49.777	-4.223	54.000	AVERAGE
7	5460.000	3.250	43.830	47.080	-6.920	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:42
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

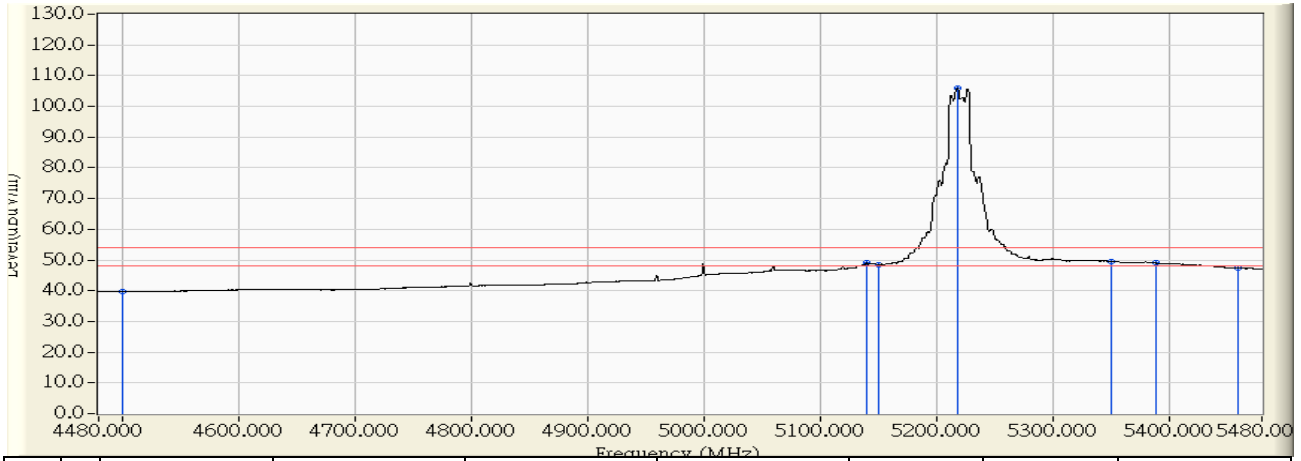


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	54.053	51.688	-22.312	74.000	PEAK
2	5134.673	0.140	61.357	61.497	-12.503	74.000	PEAK
3	5150.000	0.275	60.019	60.293	-13.707	74.000	PEAK
4	* 5218.131	0.871	114.485	115.356	41.356	74.000	PEAK
5	5350.000	2.026	59.440	61.465	-12.535	74.000	PEAK
6	5371.054	2.209	59.859	62.068	-11.932	74.000	PEAK
7	5460.000	2.989	56.140	59.128	-14.872	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:41
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

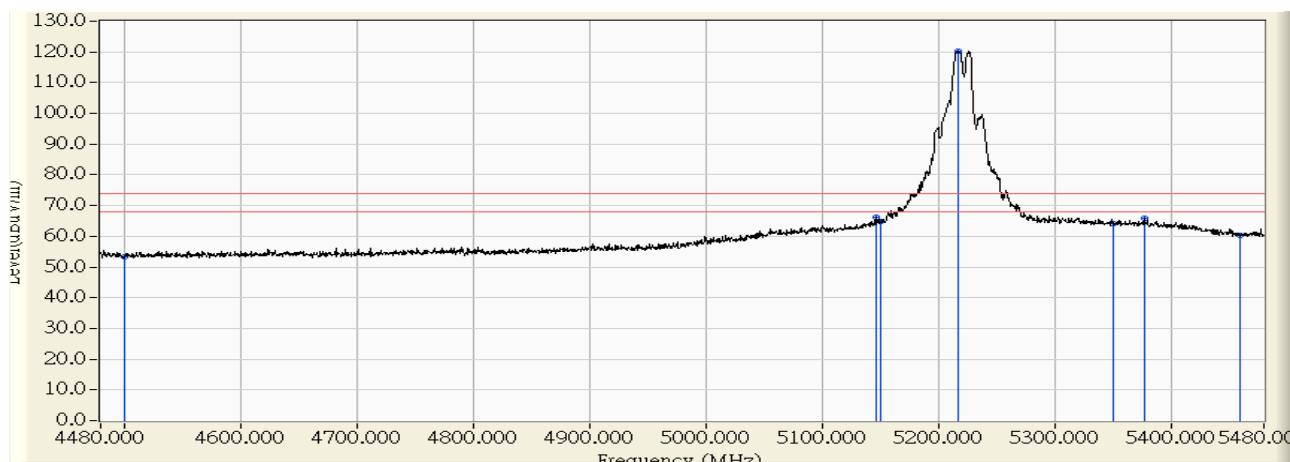


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	42.146	39.781	-14.219	54.000	AVERAGE
2	5139.670	0.184	48.871	49.055	-4.945	54.000	AVERAGE
3	5150.000	0.275	48.233	48.507	-5.493	54.000	AVERAGE
4	* 5218.131	0.871	104.977	105.848	51.848	54.000	AVERAGE
5	5350.000	2.026	47.511	49.536	-4.464	54.000	AVERAGE
6	5388.546	2.363	46.659	49.022	-4.978	54.000	AVERAGE
7	5460.000	2.989	44.352	47.340	-6.660	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:07
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

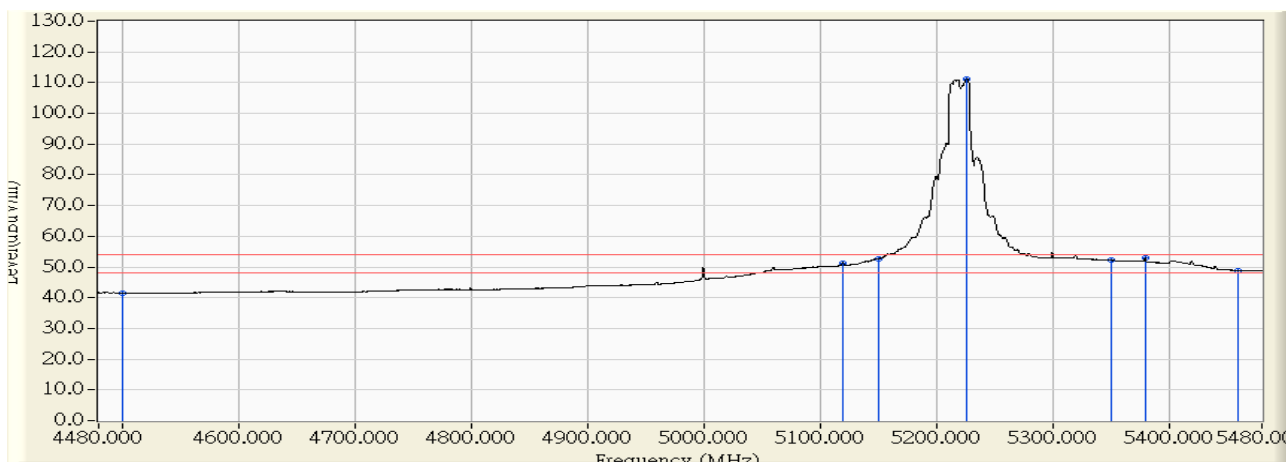


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	54.118	53.461	-20.539	74.000	PEAK
2	5146.167	0.659	65.655	66.314	-7.686	74.000	PEAK
3	5150.000	0.691	64.003	64.694	-9.306	74.000	PEAK
4	* 5216.632	1.241	118.949	120.190	46.190	74.000	PEAK
5	5350.000	2.342	61.776	64.118	-9.882	74.000	PEAK
6	5377.051	2.565	63.149	65.714	-8.286	74.000	PEAK
7	5460.000	3.250	57.185	60.435	-13.565	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:03
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5220MHz

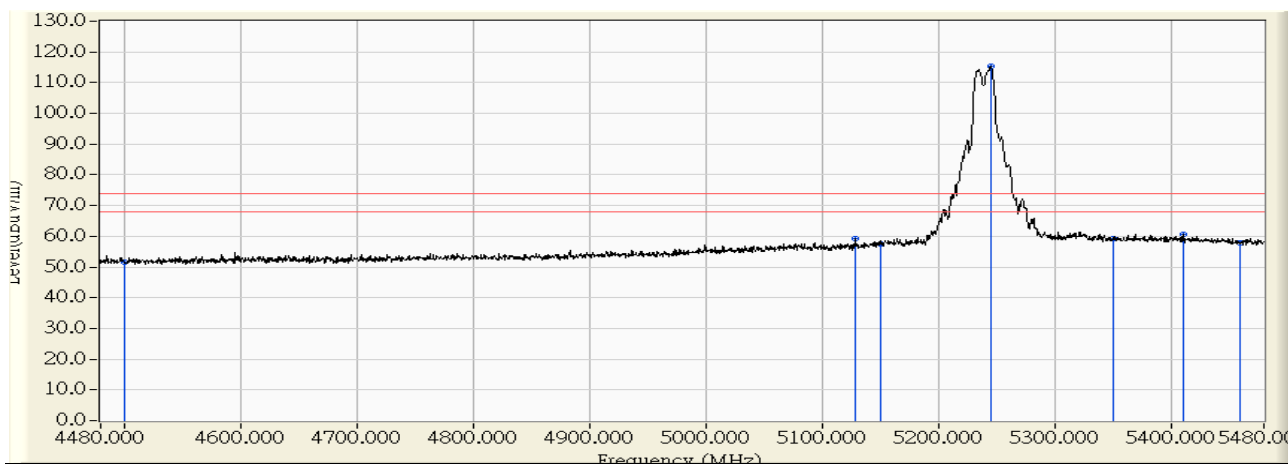


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	42.227	41.570	-12.430	54.000	AVERAGE
2	5119.180	0.437	50.905	51.341	-2.659	54.000	AVERAGE
3	5150.000	0.691	51.999	52.690	-1.310	54.000	AVERAGE
4	* 5226.127	1.319	109.913	111.232	57.232	54.000	AVERAGE
5	5350.000	2.342	49.808	52.150	-1.850	54.000	AVERAGE
6	5379.550	2.586	50.419	53.005	-0.995	54.000	AVERAGE
7	5460.000	3.250	45.623	48.873	-5.127	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:36
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

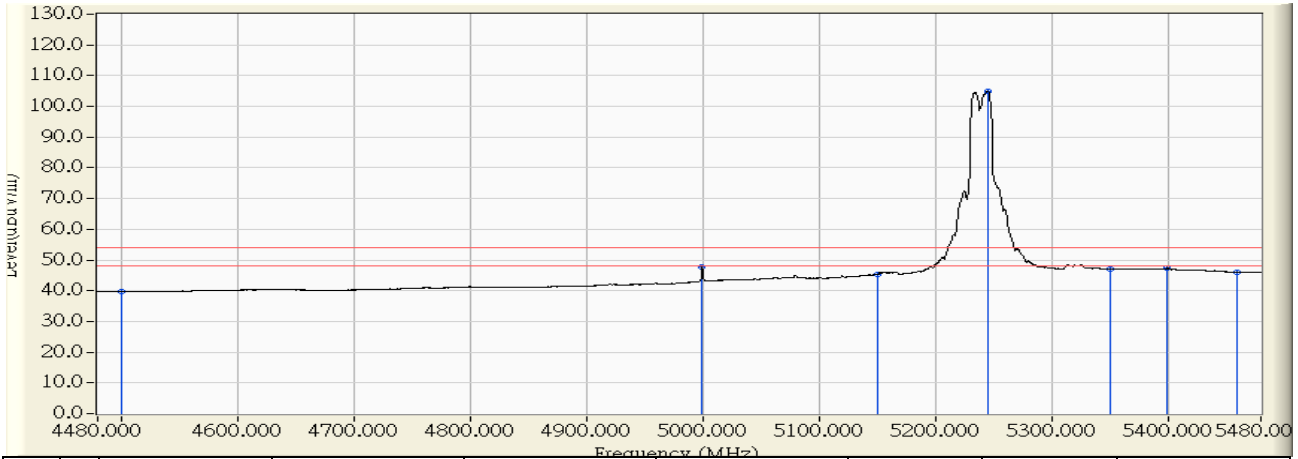


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	53.976	51.611	-22.389	74.000	PEAK
2	5128.176	0.083	59.054	59.137	-14.863	74.000	PEAK
3	5150.000	0.275	57.132	57.406	-16.594	74.000	PEAK
4	* 5245.117	1.108	114.261	115.368	41.368	74.000	PEAK
5	5350.000	2.026	57.353	59.378	-14.622	74.000	PEAK
6	5410.535	2.554	58.242	60.797	-13.203	74.000	PEAK
7	5460.000	2.989	54.956	57.944	-16.056	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:38
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - HORIZONTAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

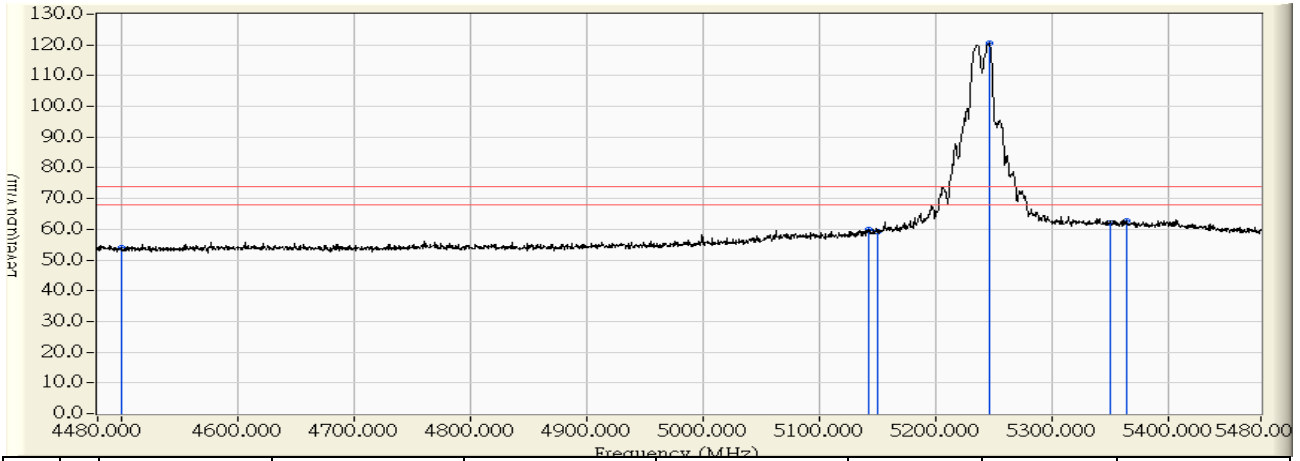


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-2.365	42.109	39.744	-14.256	54.000	AVERAGE
2	4999.740	-1.040	48.775	47.734	-6.266	54.000	AVERAGE
3	5150.000	0.275	45.016	45.290	-8.710	54.000	AVERAGE
4	* 5245.117	1.108	103.920	105.027	51.027	54.000	AVERAGE
5	5350.000	2.026	45.156	47.181	-6.819	54.000	AVERAGE
6	5399.540	2.459	44.965	47.424	-6.576	54.000	AVERAGE
7	5460.000	2.989	43.070	46.058	-7.942	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:33
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz

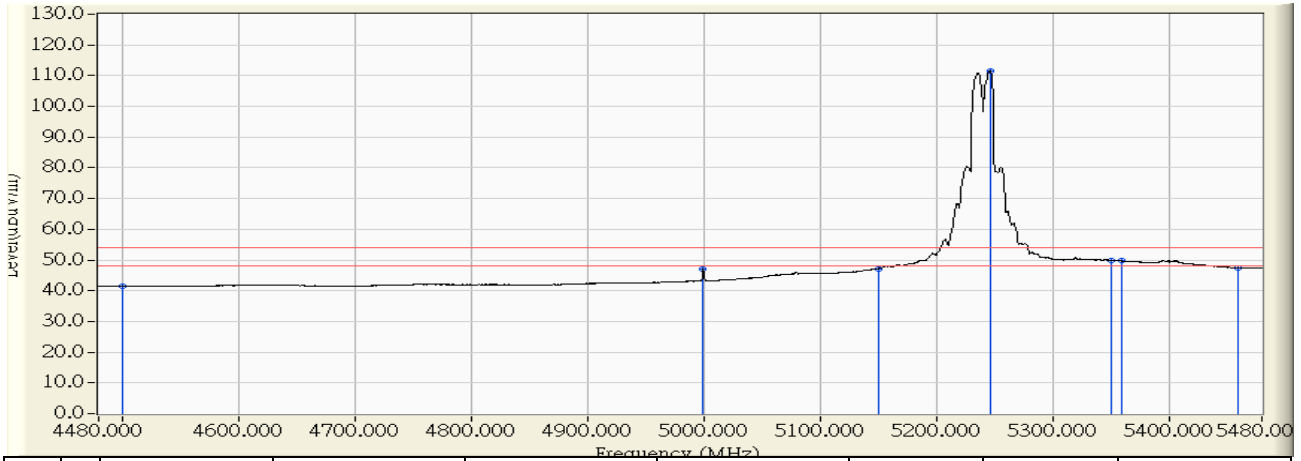


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	54.728	54.071	-19.929	74.000	PEAK
2	5142.669	0.630	59.366	59.996	-14.004	74.000	PEAK
3	5150.000	0.691	58.444	59.135	-14.865	74.000	PEAK
4	* 5246.617	1.488	119.199	120.687	46.687	74.000	PEAK
5	5350.000	2.342	59.696	62.038	-11.962	74.000	PEAK
6	5364.058	2.458	60.311	62.769	-11.231	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 = 1MHz, 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.

Site : CB1	Time : 2015/05/19 - 16:31
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G_H2 - VERTICAL	Power : AC 120V/60Hz
EUT : Dual-band Wireless Range Extender	Note : 802.11a 5240MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4500.000	-0.658	42.119	41.462	-12.538	54.000	AVERAGE
2	4999.740	-0.549	47.472	46.922	-7.078	54.000	AVERAGE
3	5150.000	0.691	46.516	47.207	-6.793	54.000	AVERAGE
4	* 5246.117	1.484	110.201	111.685	57.685	54.000	AVERAGE
5	5350.000	2.342	47.604	49.946	-4.054	54.000	AVERAGE
6	5359.060	2.417	47.280	49.696	-4.304	54.000	AVERAGE
7	5460.000	3.250	44.134	47.384	-6.616	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 1MHz, 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.

8. Frequency Stability

8.1. Test Equipment

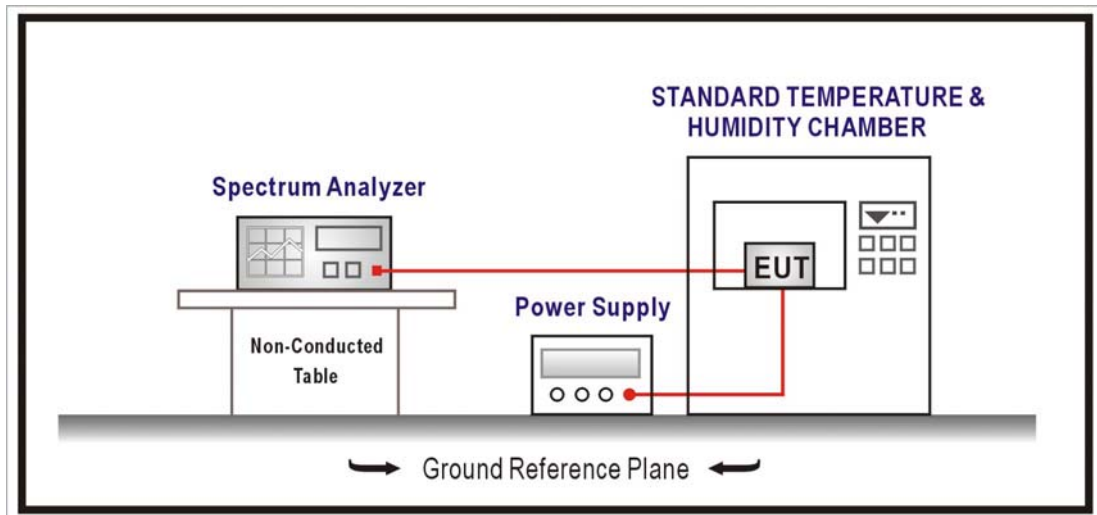
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2015/07/14
Temperature & Humidity Chamber	WIT	TH-1S-B	1082101	2016/01/22

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

8.2. Test Setup



8.3. Limits

Manufactures of all devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

8.4. Test Procedure

The EUT was setup to ANSI C63.10:2009; tested to U-NII test procedure of KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

8.5. Uncertainty

The measurement uncertainty is defined as ± 150 Hz

8.6. Test Result

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5180MHz(ANT 0)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5180.1214	23.4371	PASS
-10		5180.1183	22.8326	PASS
0		5180.7459	144.0051	PASS
10		5180.1319	25.4666	PASS
20		5180.6462	124.7515	PASS
30		5180.7468	144.1779	PASS
40		5180.8203	158.3671	PASS
50		5180.8659	167.1627	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5180.7632	147.3308	PASS
	120	5180.0723	13.9506	PASS
	138	5180.6977	134.6943	PASS

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5240MHz(ANT 0)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.1876	35.8067	PASS
-10		5240.5947	113.4980	PASS
0		5240.0275	5.2486	PASS
10		5240.2949	56.2821	PASS
20		5240.3842	73.3129	PASS
30		5240.2211	42.1996	PASS
40		5240.1674	31.9529	PASS
50		5240.2526	48.1986	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.3593	68.5632	PASS
	120	5240.0288	5.4905	PASS
	138	5240.1402	26.7609	PASS

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5180MHz(ANT 1)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5180.1048	20.2269	PASS
-10		5180.2275	43.9254	PASS
0		5180.0964	18.6108	PASS
10		5180.1714	33.0892	PASS
20		5180.5273	101.8003	PASS
30		5180.4523	87.3145	PASS
40		5180.6197	119.6364	PASS
50		5180.6252	120.6876	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5180.8182	157.9477	PASS
	120	5180.4684	90.4336	PASS
	138	5180.8999	173.7221	PASS

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5240MHz(ANT 1)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.8569	163.5380	PASS
-10		5240.7607	145.1807	PASS
0		5240.5833	111.3132	PASS
10		5240.0934	17.8223	PASS
20		5240.2628	50.1566	PASS
30		5240.1526	29.1195	PASS
40		5240.2373	45.2909	PASS
50		5240.8526	162.7096	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.4726	90.1999	PASS
	120	5240.1395	26.6203	PASS
	138	5240.3276	62.5273	PASS

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5180MHz(ANT 2)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5180.5323	102.7575	PASS
-10		5180.2312	44.6387	PASS
0		5180.3837	74.0784	PASS
10		5180.4622	89.2211	PASS
20		5180.4156	80.2251	PASS
30		5180.8647	166.9236	PASS
40		5180.5570	107.5327	PASS
50		5180.4789	92.4432	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5180.6482	125.1306	PASS
	120	5180.8789	169.6794	PASS
	138	5180.3542	68.3855	PASS

Product	Dual-band Wireless Range Extender		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit - 802.11a - 5240MHz(ANT 2)		
Date of Test	2015/05/20	Test Site	SR7

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.3920	74.8164	PASS
-10		5240.6028	115.0416	PASS
0		5240.2637	50.3188	PASS
10		5240.3968	75.7178	PASS
20		5240.6813	130.0266	PASS
30		5240.1252	23.8922	PASS
40		5240.3323	63.4219	PASS
50		5240.6125	116.8804	PASS

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.3942	75.2266	PASS
	120	5240.8755	167.0750	PASS
	138	5240.5116	97.6429	PASS