



FCC TEST REPORT

Prepared For :	Pingshow, Inc
Product Name:	TV BOX
Model :	AireCenter-AC100, AireCenter-AC360
Prepared By :	Shenzhen United Testing Technology Co., Ltd. 4F, Block B Unit 2, Jianxing Building, Chaguang Industry Area, Nanshan District, Shenzhen, China Tel: 86-755-86180996 Fax: 86-755-86180156
Test Date:	October 20, 2014 to October 31, 2014
Date of Report :	November 03, 2014
Report No.:	UNI-1410136-03

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1 TEST CERTIFICATION

Product:	TV BOX
Model:	AireCenter-AC100, AireCenter-AC360
Applicant:	Pingshow, Inc 20863 Stevens Creek Blvd, #560 Cupertino, CA 95014
Factory:	ShenZhen Netxeon Technology Co.,Ltd Unit 708, 7/F West, Building 202 Tai Ran Industrial Park, Chegongmiao, Shenzhen, China
Trade Mark:	N/A
Tested:	October 20, 2014 to October 31, 2014
Operational Frequency:	5180MHz, 5200MHz, 5220MHz, 5240MHz; 5745MHz, 5765MHz, 5785MHz, 5805MHz
Modulation Type:	IEEE 802.11a : OFDM(64QAM, 16QAM, QPSK, BPSK)
Air Data Rate	IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6 Mbps (Note: 6Mbps was selected to test, It was the worst case)
Frequency Selection	By software
Antenna:	Integral Antenna used, the antenna gain is 1.2dBi for 5G band
Power Supply:	Model No.: CW0503000 Input:100-240V, 50/60Hz, 0.4A MAX; Output: 5.0 V, 3000mA
FCC ID:	2ADT4AC100
Applicable Standards:	FCC Part 15.407

The test report was prepared by Shenzhen United Testing Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.



優耐檢測

Shenzhen United Testing Technology Co., Ltd.

Report No.: UNI-1410136-03

Prepared by :

Michael Su

Michael Su /Assistant Engineer

Reviewer :

Mike Yong

Mike Yong/Supervisor

Approved & Authorized Signer :

Hoffer Lau

Hoffer Lau/ Manager

**2.0 Test Equipment**

Item	Test Equipment	Manufacturer	Model No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	June. 30 2014	June. 29 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	Jul. 03 2014	Jul. 02 2015
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	Feb. 25 2014	Feb. 24 2015
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	June 29 2014	June 28 2015
6	Horn Antenna	ETS-LINDGREN	3160	June. 30 2014	June. 29 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A
8	Amplifier(100kHz-3GHz)	HP	8347A	Jul. 03 2014	Jul. 02 2015
9	Amplifier(2GHz-20GHz)	HP	8349B	Jul. 03 2014	Jul. 02 2015
10	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	June. 30 2014	June. 29 2015
11	Band filter	Amindeon	82346	June. 30 2014	June. 29 2015
12	Constant temperature and humidity box	Oregon Scientific	BA-888	May 11 2014	May 10 2015
13	D.C. Power Supply	Instek	PS-3030	May 11 2014	May 10 2015
14	Universal radio communication tester	Rohde & Schwarz	CMU200	May 11 2014	May 10 2015
15	Splitter	Agilent	11636B	May 11 2014	May 10 2015
16	EMI Test Receiver	Rohde & Schwarz	ESCS30	Jul. 03 2014	Jul. 02 2015
17	LISN	Schwarebeck	NSLK 8126	Jul. 03 2014	Jul. 02 2015



3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.407	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart E Paragraph 15.407 (b1/4/5/6/7), Part 15.205 and Part 15.209	Undesirable Emission and Restrict band	PASS	Complies
FCC Part 15, Paragraph 15.407 (a1/2/3)	Peak Transmit Power	PASS	Complies
FCC Part 15, Paragraph 15.407 (a)(6)	Peak Power Excursion	PASS	Complies
FCC Part 15, Paragraph 15.407 (a1/2/3)	Peak Power Spectral Density	PASS	Complies
FCC Part 15, Paragraph 15.407(g)	Frequency Stability	PASS	Complies

4.0 Test LAB Details

All Tests Performed at

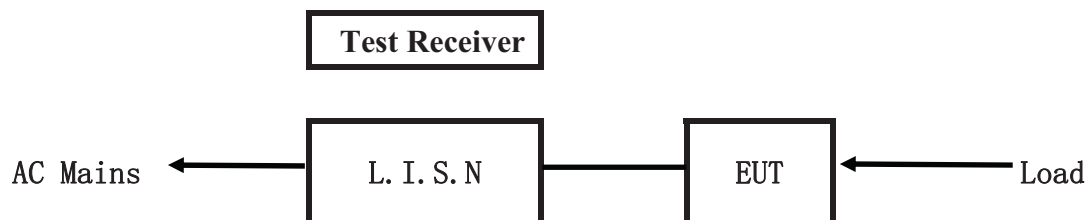
Name: ShenZhen CTL Testing Technology Co.,Ltd

Address: Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen, Guangdong, China

FCC Registration Number: 970318

5. Power Line Conducted Emission Test

5.1 Schematics of the test



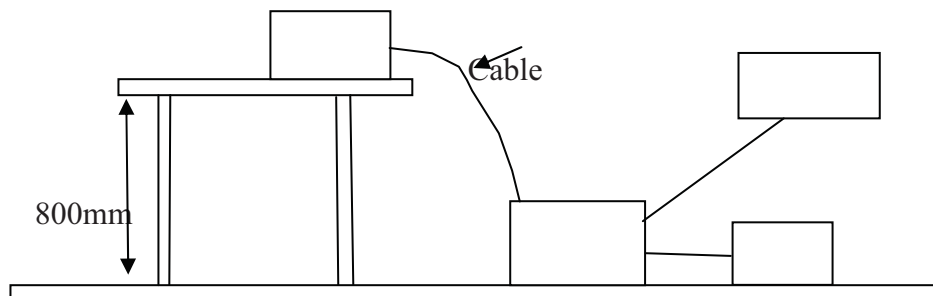
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC
TV BOX	ShenZhen Netxeon Technology Co.,Ltd	AireCenter-AC100, AireCenter-AC360	2ADT4AC100



B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC
Monitor	HP	HP1908	DOC

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107

Frequency (MHz)	Class A Limits (dBμV)		Class B Limits (dBμV)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.



A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

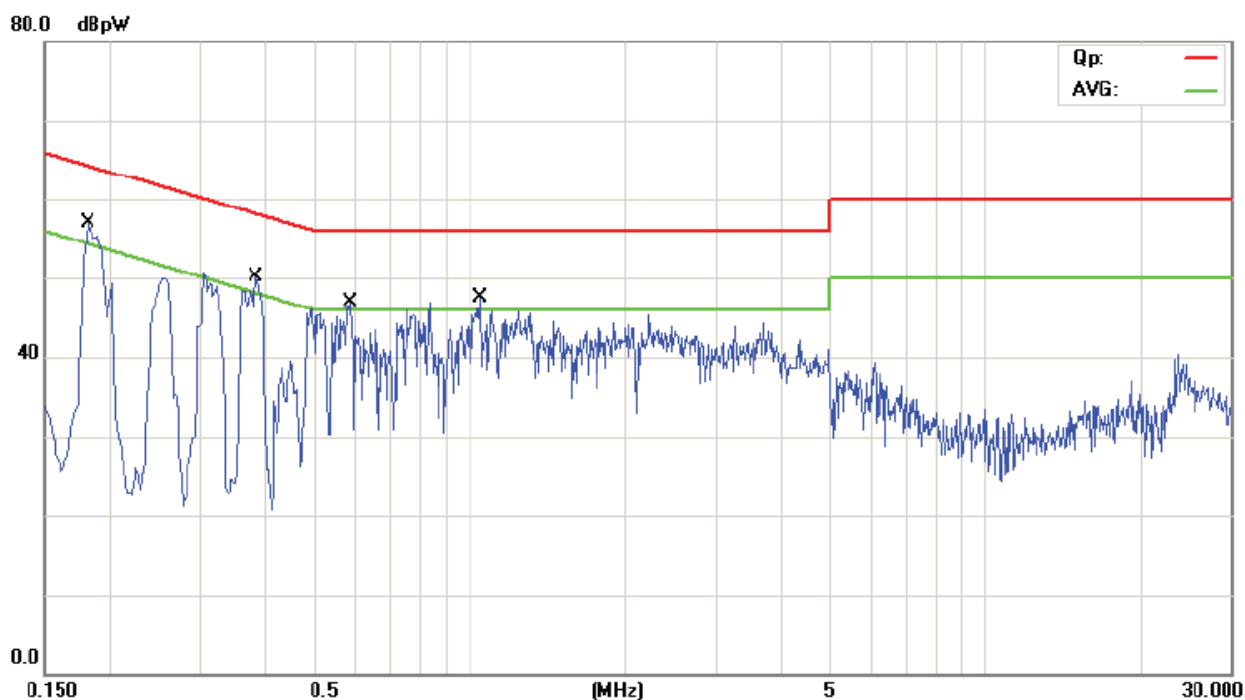
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Charging and WIFI Keeping TX mode

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



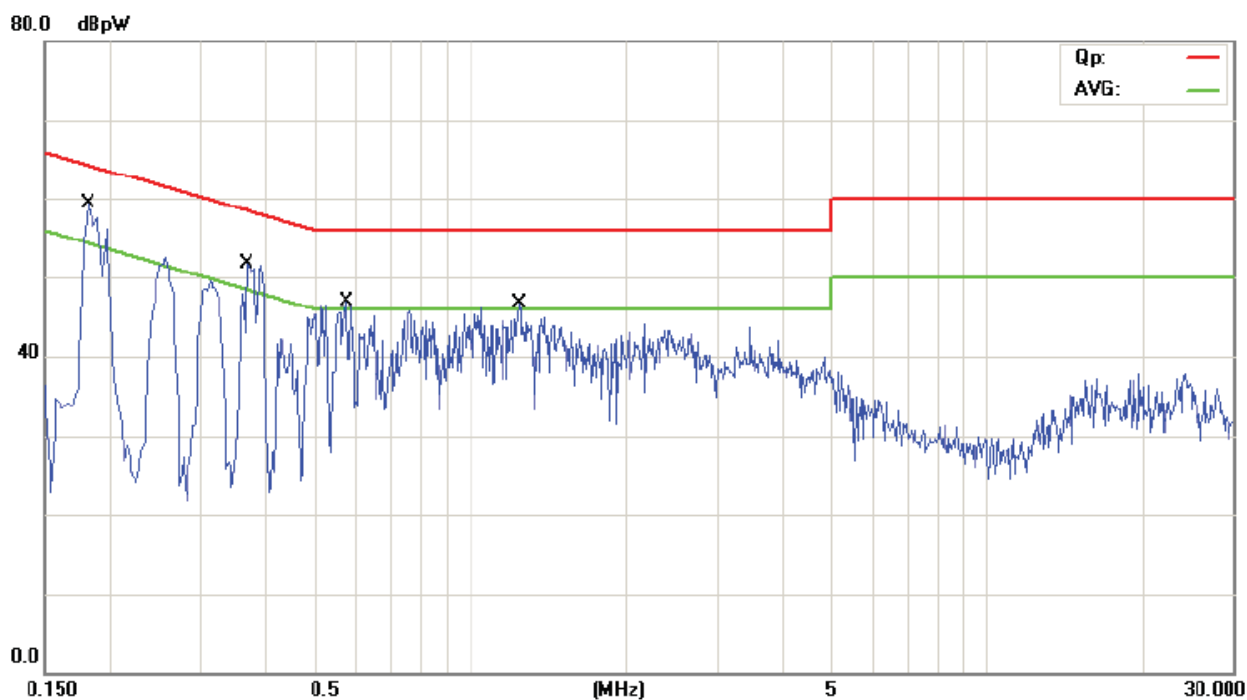
No.	Mk.	Freq. MHz	Reading Level dBpW	Correct Factor dB	Measure- ment dBpW	Limit dBpW	Over dB	Detector	Comment
1	*	0.1818	43.70	11.03	54.73	64.40	-9.67	QP	
2		0.1818	28.20	11.03	39.23	54.40	-15.17	AVG	
3		0.3862	35.60	11.25	46.85	58.15	-11.30	QP	
4		0.3862	26.10	11.25	37.35	48.15	-10.80	AVG	
5		0.5902	30.60	11.47	42.07	56.00	-13.93	QP	
6		0.5902	16.80	11.47	28.27	46.00	-17.73	AVG	
7		1.0501	31.90	11.92	43.82	56.00	-12.18	QP	
8		1.0501	19.50	11.92	31.42	46.00	-14.58	AVG	

**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)****EUT Operating Environment**

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Charging and WIFI Keeping TX mode**Equipment Level: Class B****Results: Pass**

Please refer to following diagram for individual



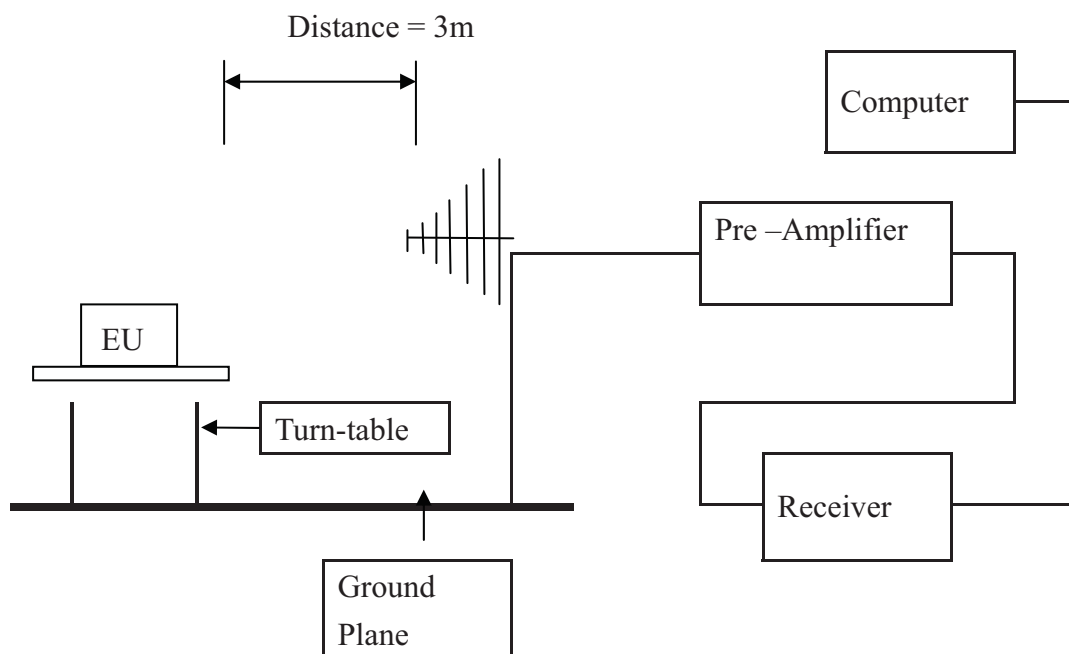
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBpW	dB	dBpW	dBpW	dB		
1		0.1824	41.00	11.03	52.03	64.38	-12.35	QP	
2		0.1824	28.50	11.03	39.53	54.38	-14.85	AVG	
3	*	0.3695	38.00	11.23	49.23	58.51	-9.28	QP	
4		0.3695	24.10	11.23	35.33	48.51	-13.18	AVG	
5		0.5785	28.20	11.45	39.65	56.00	-16.35	QP	
6		0.5785	21.20	11.45	32.65	46.00	-13.35	AVG	
7		1.2464	26.40	12.00	38.40	56.00	-17.60	QP	
8		1.2464	19.90	12.00	31.90	46.00	-14.10	AVG	

6 Undesirable Emission and Restrict band

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at CTL Laboratory. This site is on file with the FCC laboratory division, Registration No. 970318
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 40 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz, VBW=3MHz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report



6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz
- (2) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz.

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT



Test result

A: Radiated Disturbance In Horizontal (30MHz----1000MHz)

EUT set Condition: Charging and WIFI Keeping TX mode

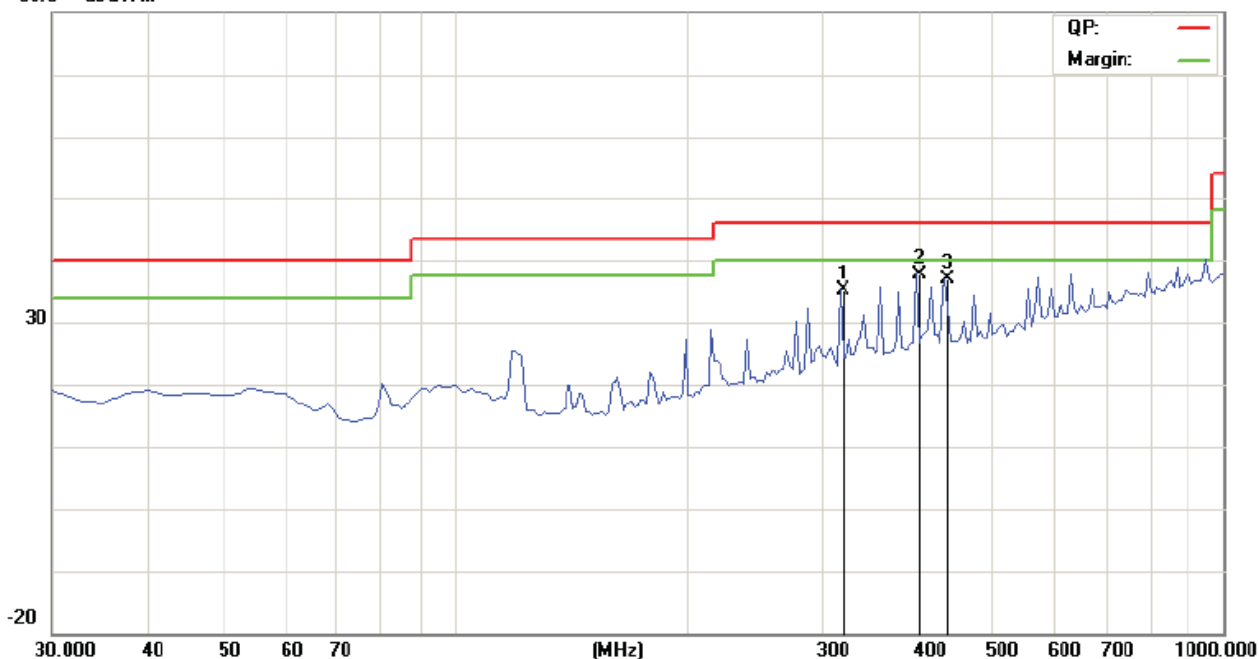
Level: Class B

Results: PASS

Please refer to following diagram for individual

Picture of the test

80.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		318.5750	43.13	-7.97	35.16	46.00	-10.84	peak		0
2	*	398.6000	42.99	-5.36	37.63	46.00	-8.37	peak		0
3		437.4000	41.50	-4.65	36.85	46.00	-9.15	peak		0



B: Radiated Disturbance In Vertical (30MHz----1000MHz)

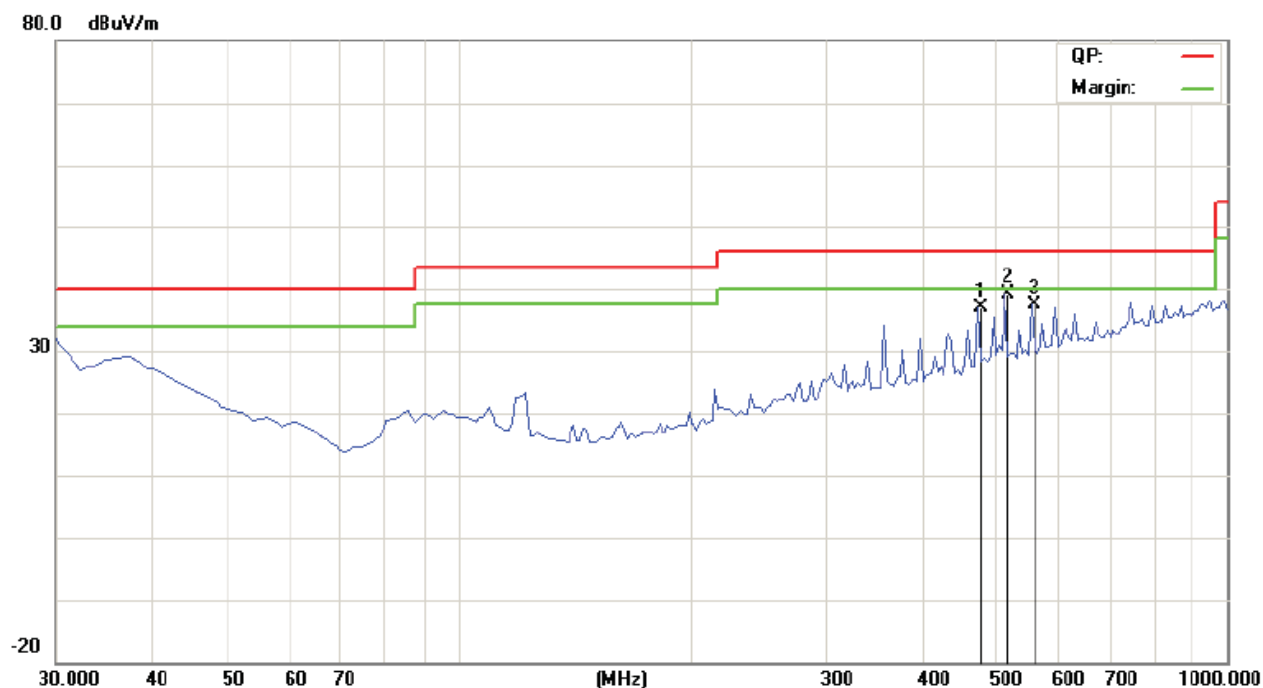
EUT set Condition: Charging and WIFI Keeping TX mode

Level: Class B

Results: PASS

Please refer to following diagram for individual

Picture of the test



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		478.6250	40.69	-3.75	36.94	46.00	-9.06	peak	0	
2	*	517.4250	41.96	-2.91	39.05	46.00	-6.95	peak	0	
3		556.2250	39.62	-2.22	37.40	46.00	-8.60	peak	0	

**Operation Mode: WIFI Keeping TX mode under CH36 (5180MHz) for 11a at 6Mbps**

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5180.00	--	H	Fundamental Frequency
5180.00	--	V	
10360	--	H	74(Peak)/ 54(AV)
15540	--	V	74(Peak)/ 54(AV)
20720	--	H/V	74(Peak)/ 54(AV)
25900	--	H/V	74(Peak)/ 54(AV)
31080	--	H/V	74(Peak)/ 54(AV)
36260	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps

Operation Mode: WIFI Keeping TX mode under CH40 (5200MHz) for 11a at 6Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5200.00	--	H	Fundamental Frequency
5200.00	--	V	
10400	--	H	74(Peak)/ 54(AV)
15600	--	V	74(Peak)/ 54(AV)
20800	--	H/V	74(Peak)/ 54(AV)
26000	--	H/V	74(Peak)/ 54(AV)
31200	--	H/V	74(Peak)/ 54(AV)
36400	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps

**Operation Mode: WIFI Keeping TX mode under CH48 (5240MHz) for 11a at 6Mbps**

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5240.00	--	H	Fundamental Frequency
5240.00	--	V	
10480	--	H	74(Peak)/ 54(AV)
15720	--	V	74(Peak)/ 54(AV)
20960	--	H/V	74(Peak)/ 54(AV)
26200	--	H/V	74(Peak)/ 54(AV)
31440	--	H/V	74(Peak)/ 54(AV)
36680	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps

Operation Mode: WIFI Keeping TX mode under CH149 (5745MHz) for 11a at 6Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5745.00	--	H	Fundamental Frequency
5745.00	--	V	
11490	--	H	74(Peak)/ 54(AV)
17235	--	V	74(Peak)/ 54(AV)
22980	--	H/V	74(Peak)/ 54(AV)
28725	--	H/V	74(Peak)/ 54(AV)
34470	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps



Operation Mode: WIFI Keeping TX mode under CH153 (5765MHz) for 11a at 6Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5765.00	--	H	Fundamental Frequency
5765.00	--	V	
11530	--	H	74(Peak)/ 54(AV)
17295	--	V	74(Peak)/ 54(AV)
23060	--	H/V	74(Peak)/ 54(AV)
28825	--	H/V	74(Peak)/ 54(AV)
34590	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps

Operation Mode: WIFI Keeping TX mode under CH161 (5805MHz) for 11a at 6Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
5805.00	--	H	Fundamental Frequency
5805.00	--	V	
11610	--	H	74(Peak)/ 54(AV)
17415	--	V	74(Peak)/ 54(AV)
23220	--	H/V	74(Peak)/ 54(AV)
29025	--	H/V	74(Peak)/ 54(AV)
34830	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

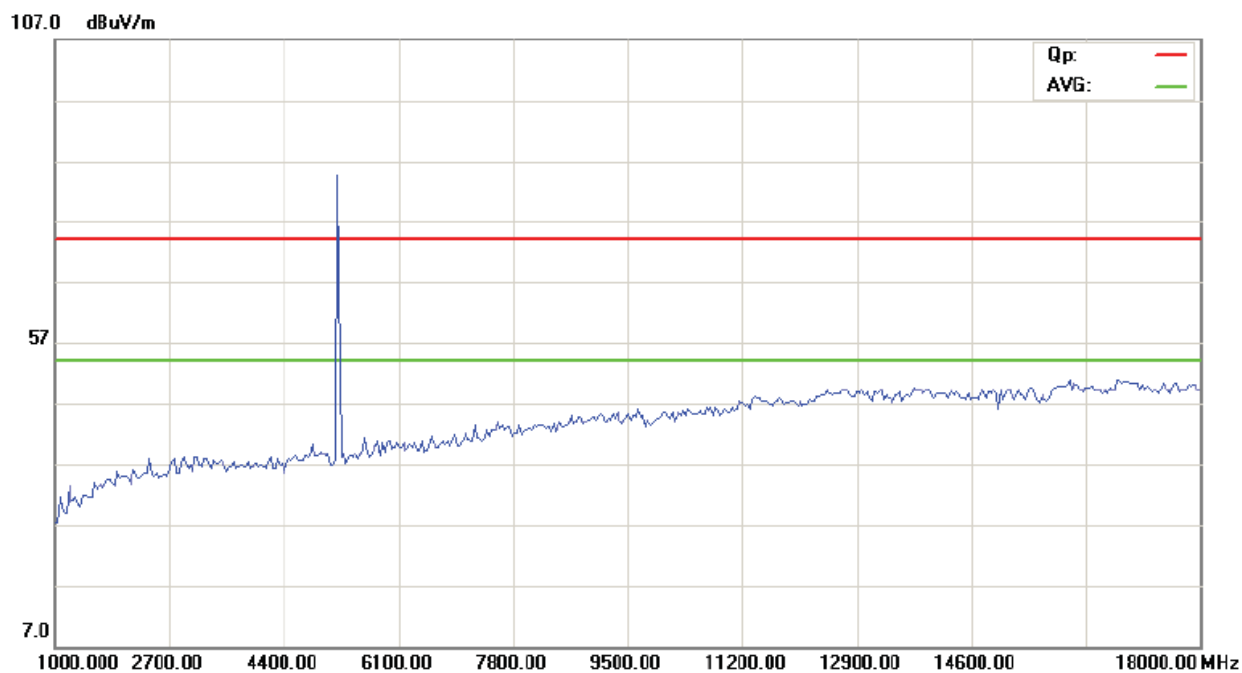
2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11a mode 6Mbps

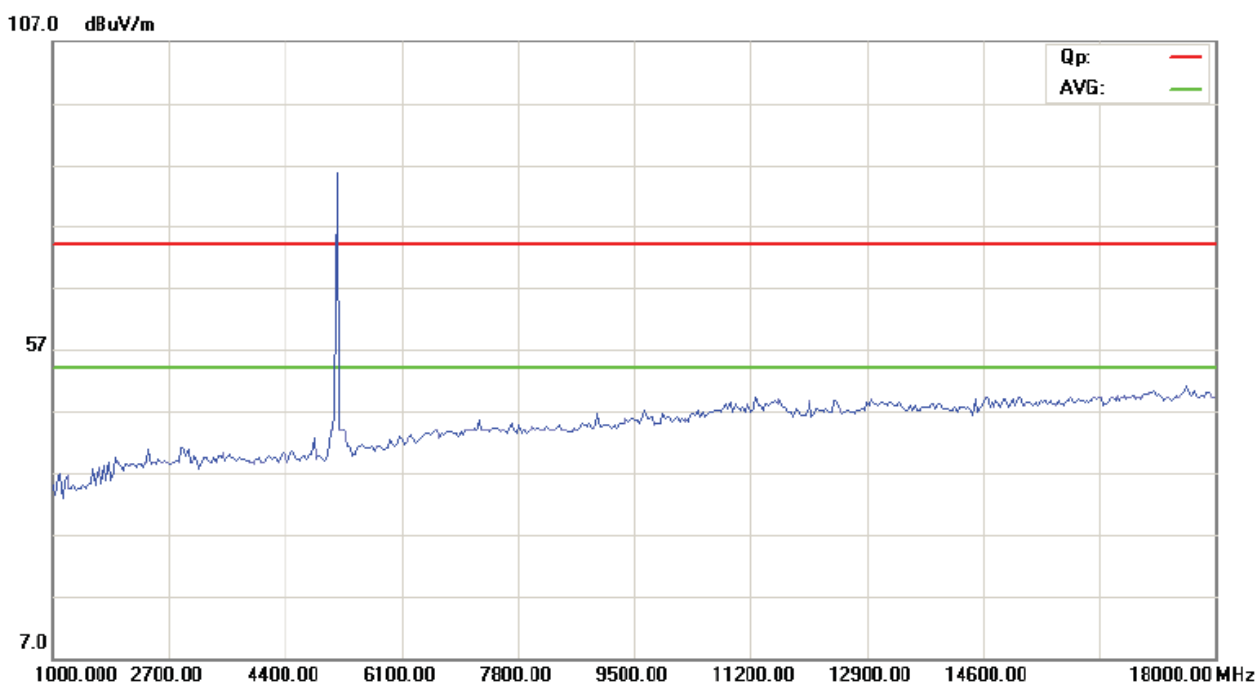


Please refer to the following test plots for details:

CH36 for 11a at 6Mbps: Horizontal

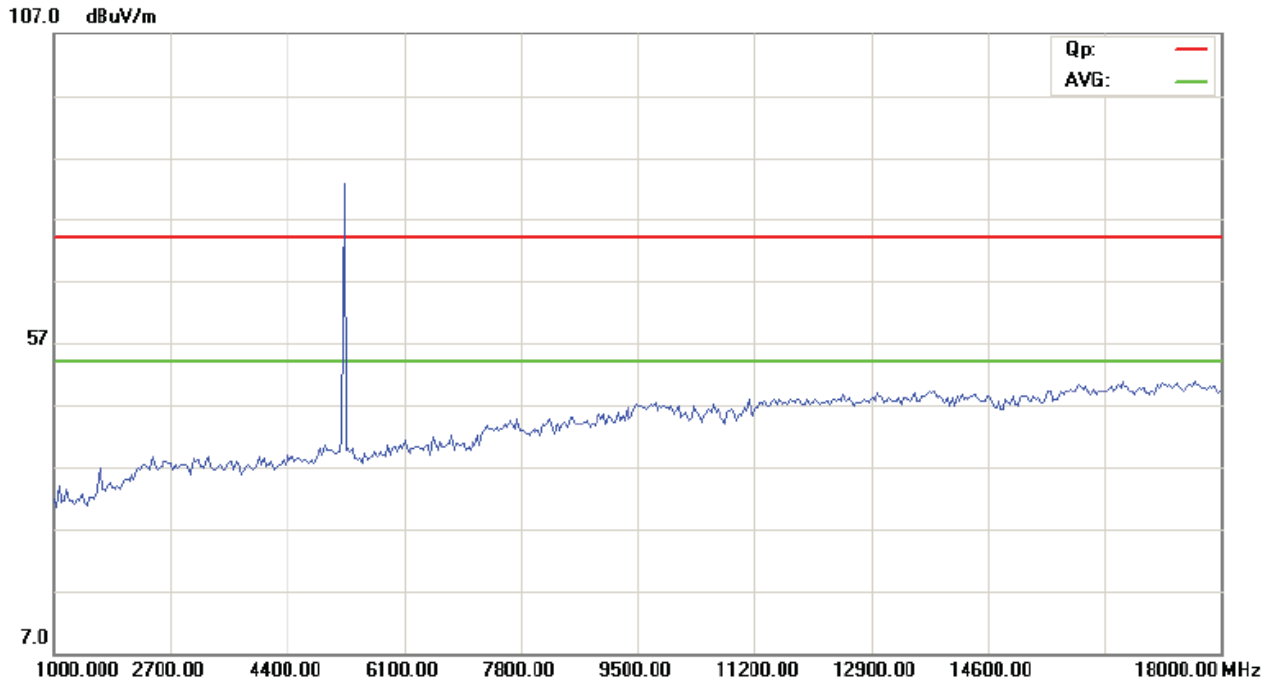


CH36 for 11a at 6Mbps: Vertical

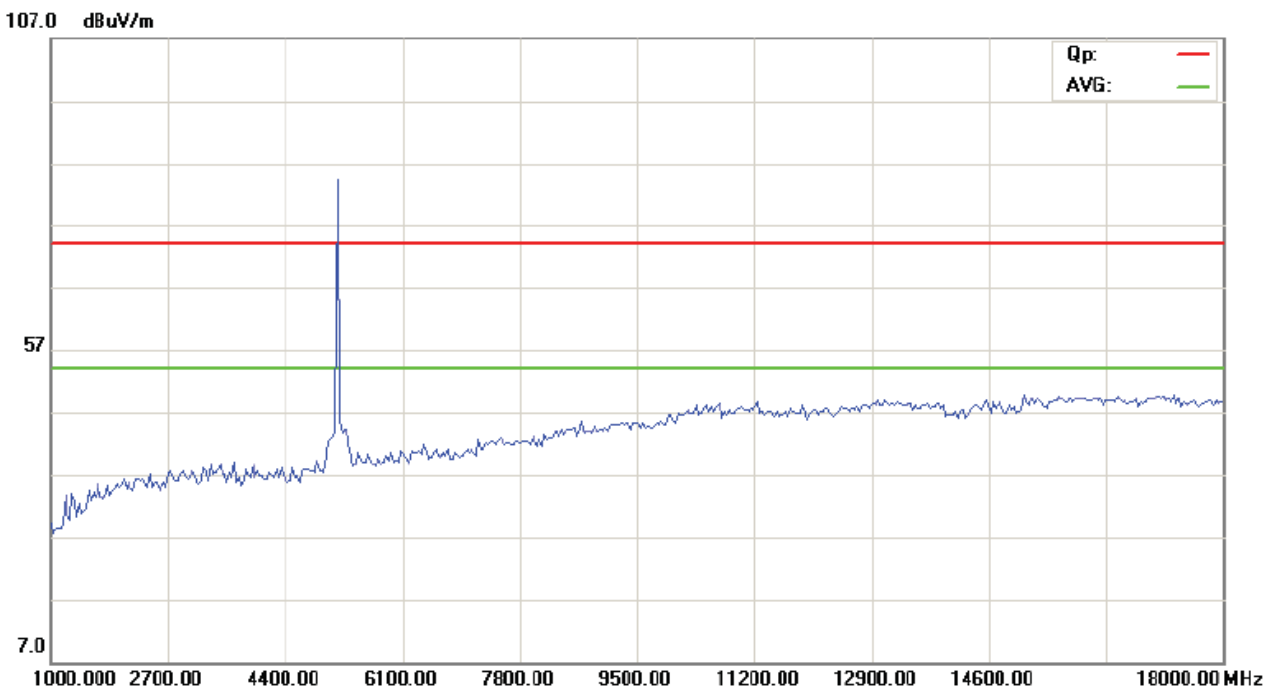




CH40 for 11a at 6Mbps: Vertical

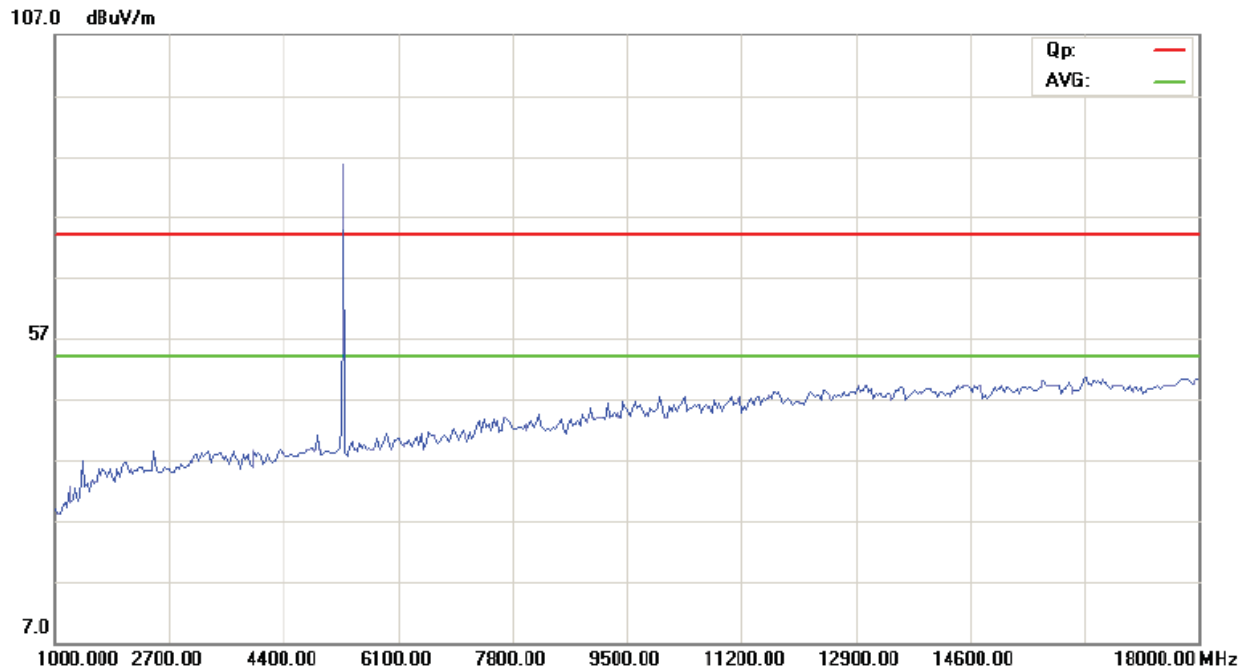


CH40 for 11a at 6Mbps: Horizontal

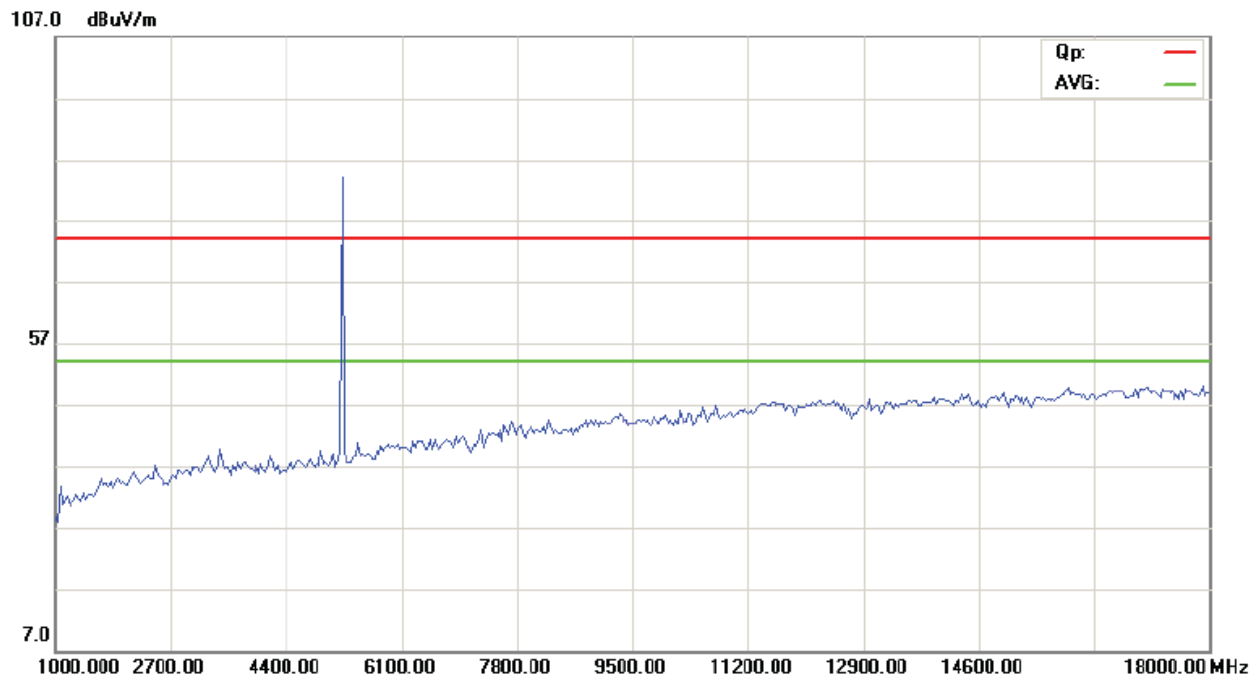




CH48 for 11a at 6Mbps: Vertical



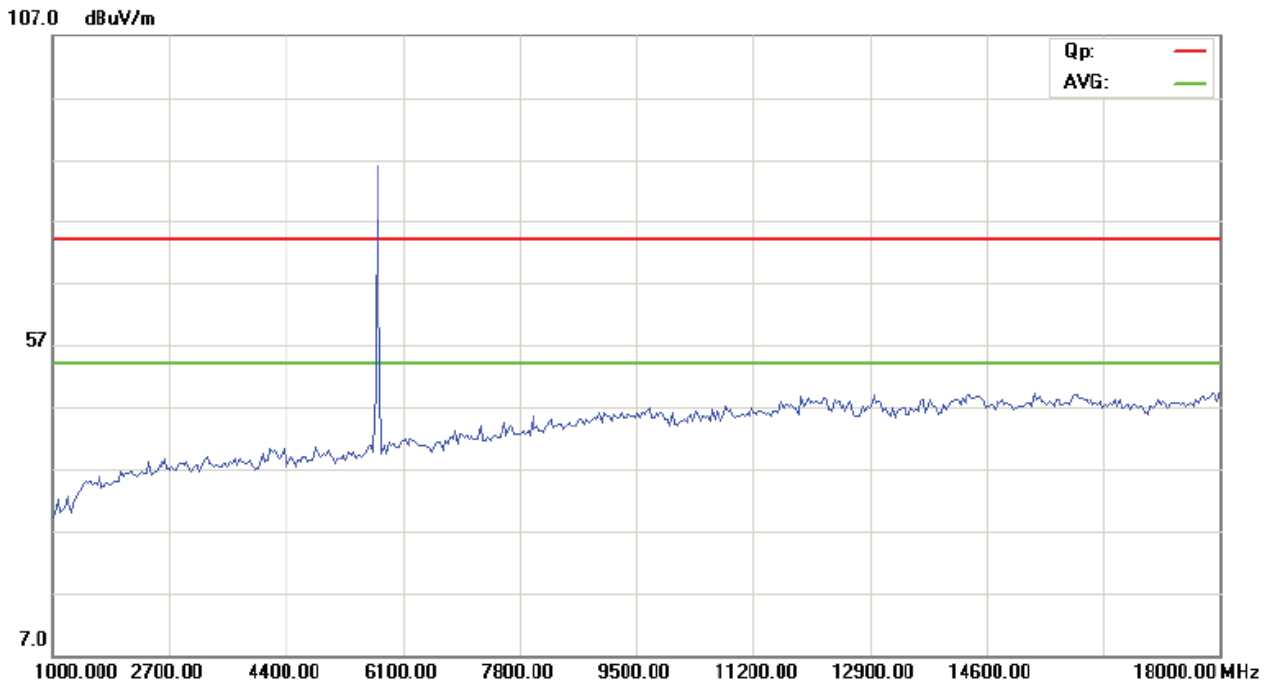
CH48 for 11a at 6Mbps: Horizontal



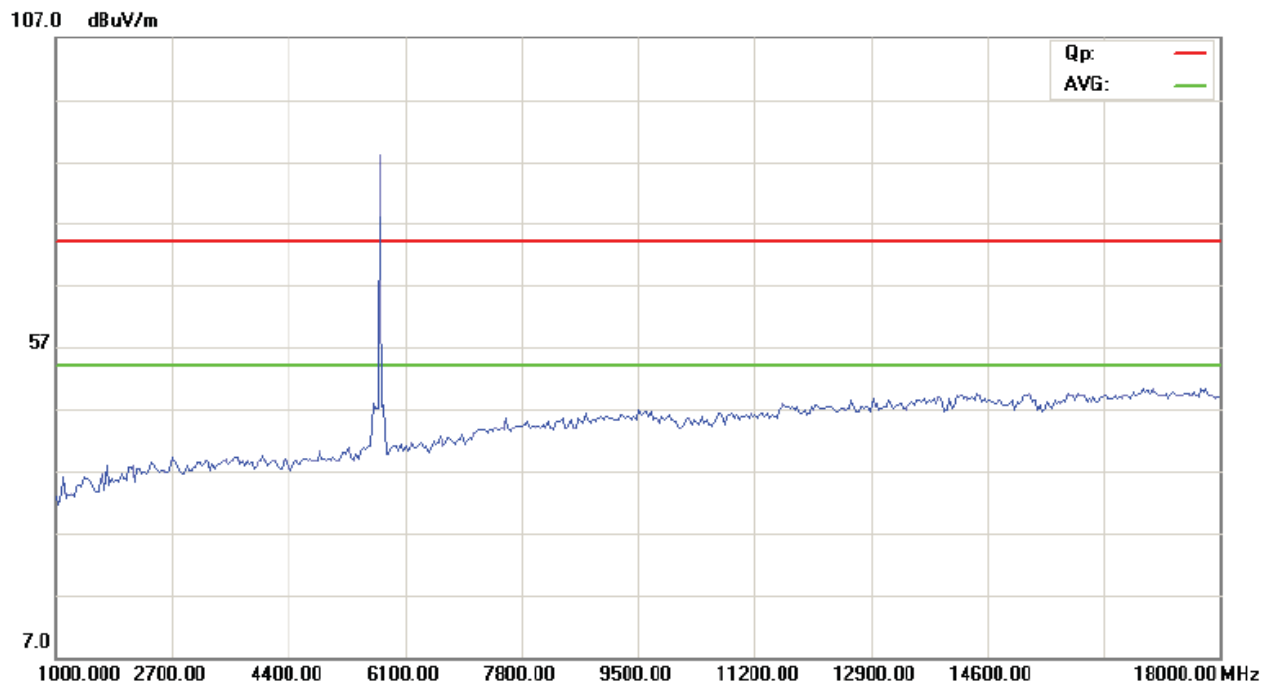


Please refer to the following test plots for details:

CH149 for 11a at 6Mbps: Horizontal

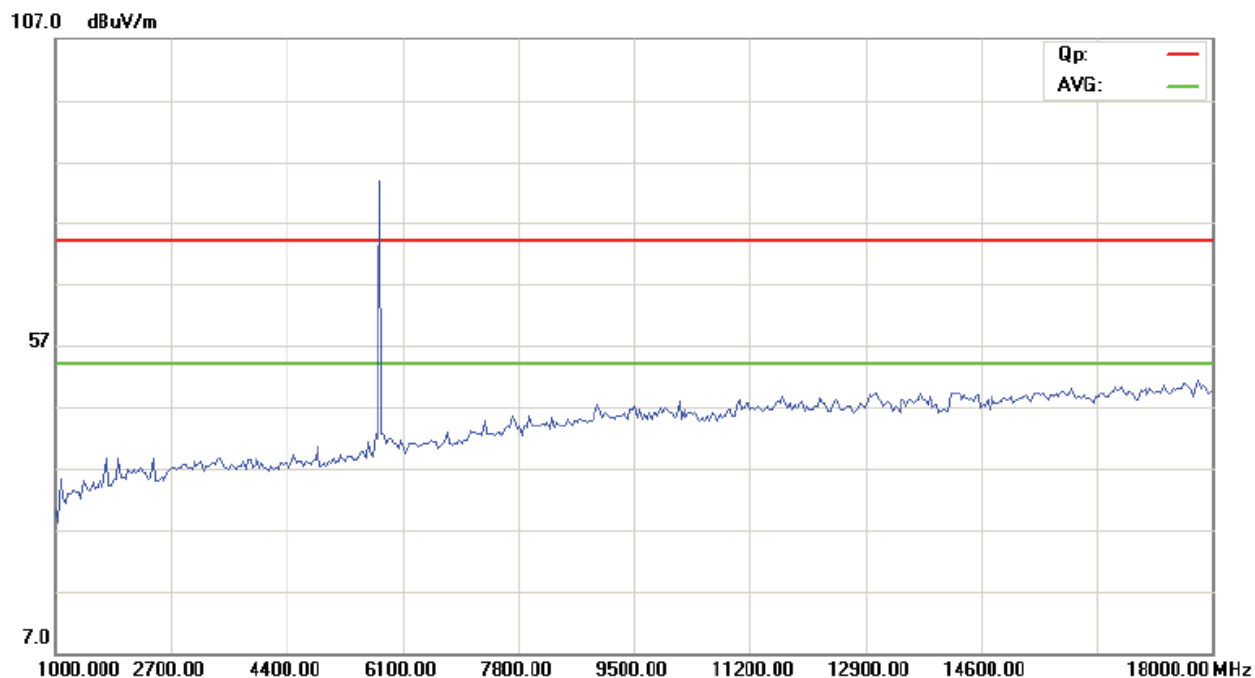


CH149 for 11a at 6Mbps: Vertical

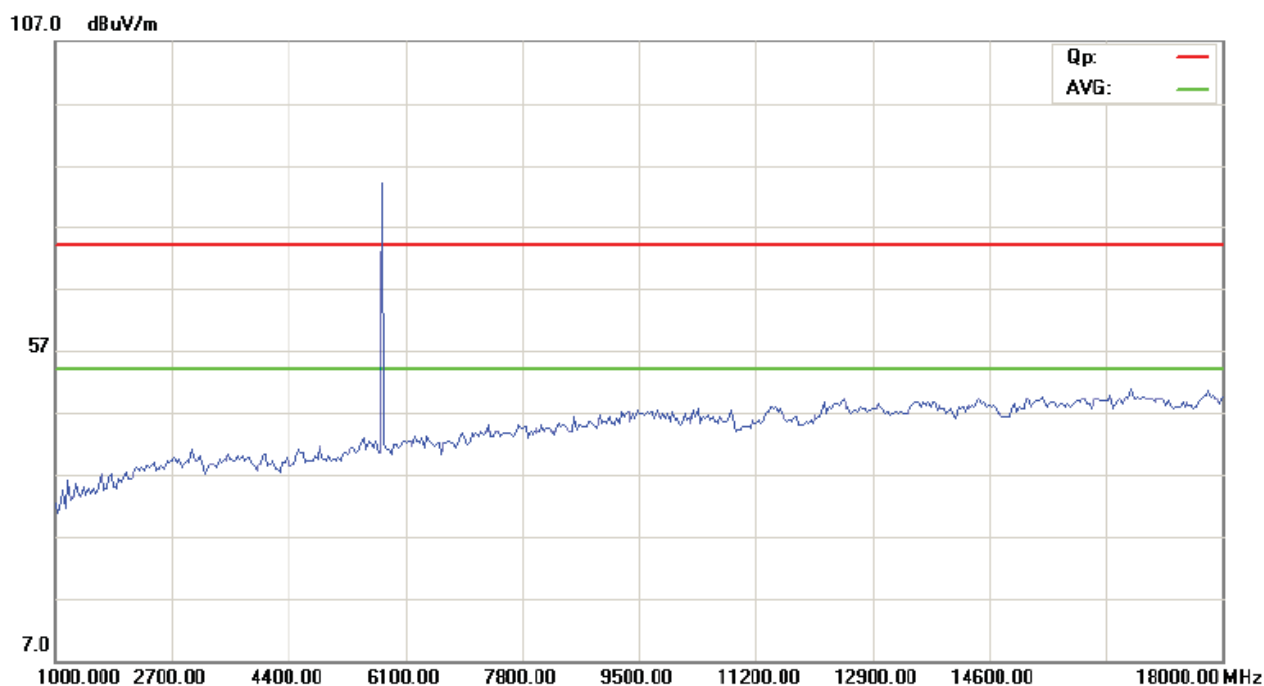




CH153 for 11a at 6Mbps: Vertical

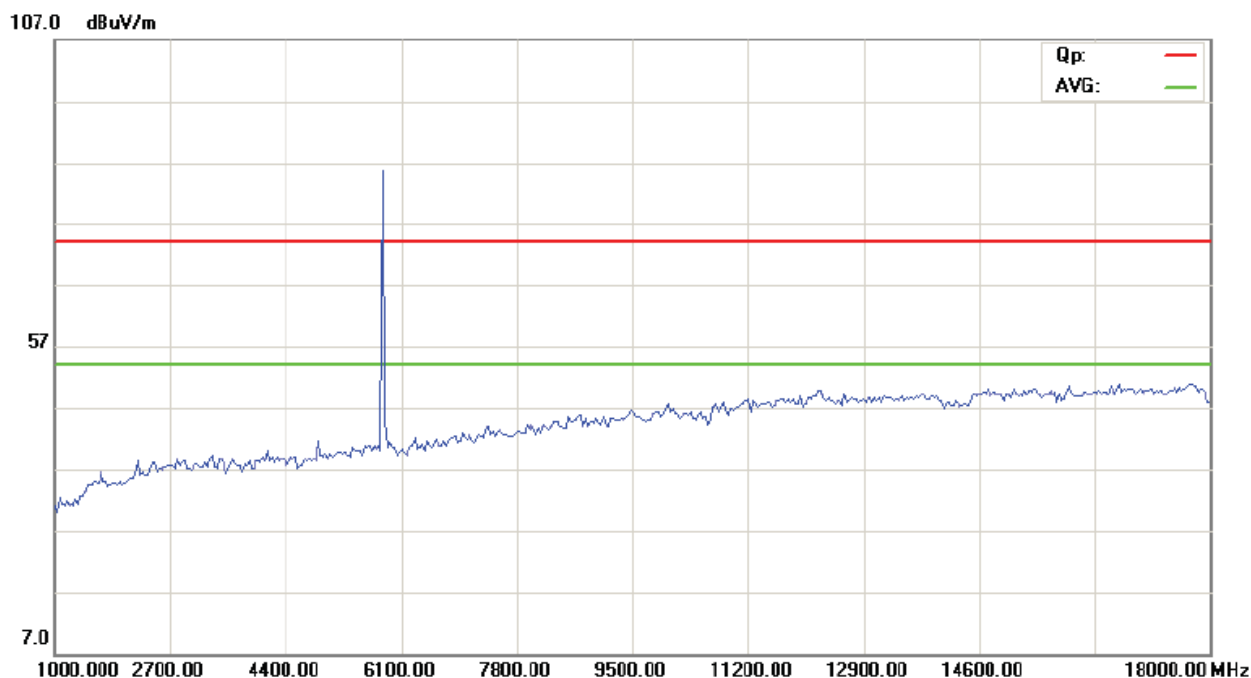


CH153 for 11a at 6Mbps: Horizontal

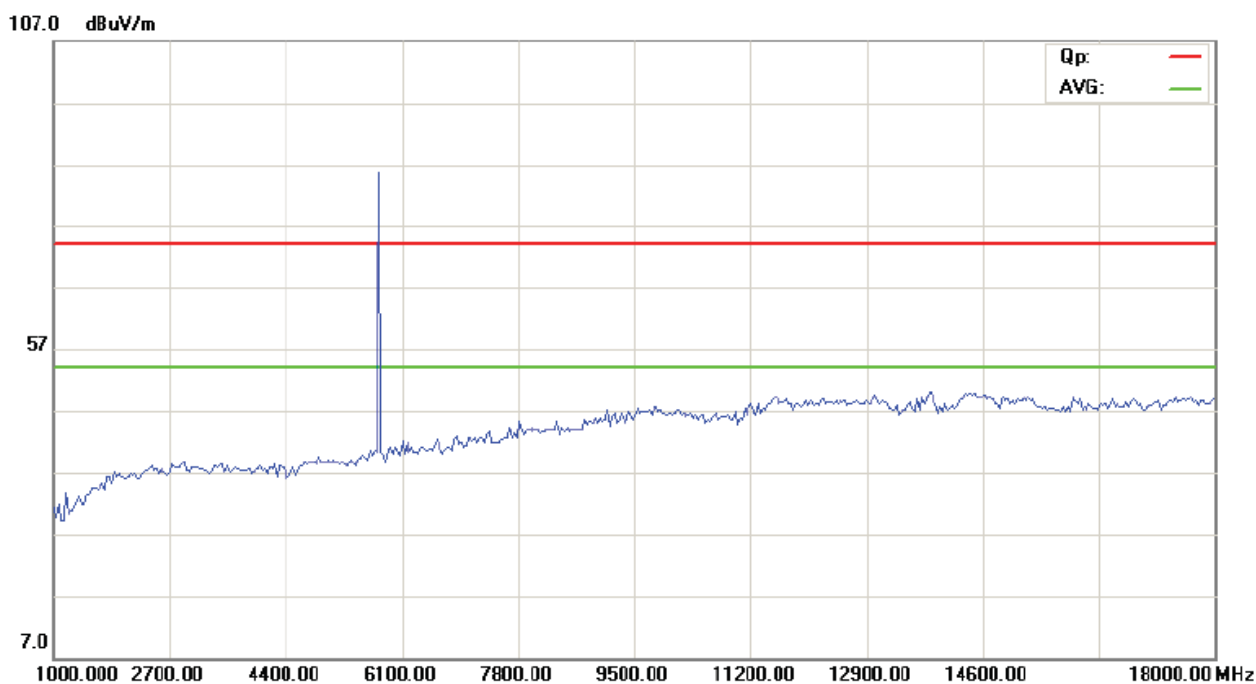




CH161 for 11a at 6Mbps: Vertical



CH161 for 11a at 6Mbps: Horizontal

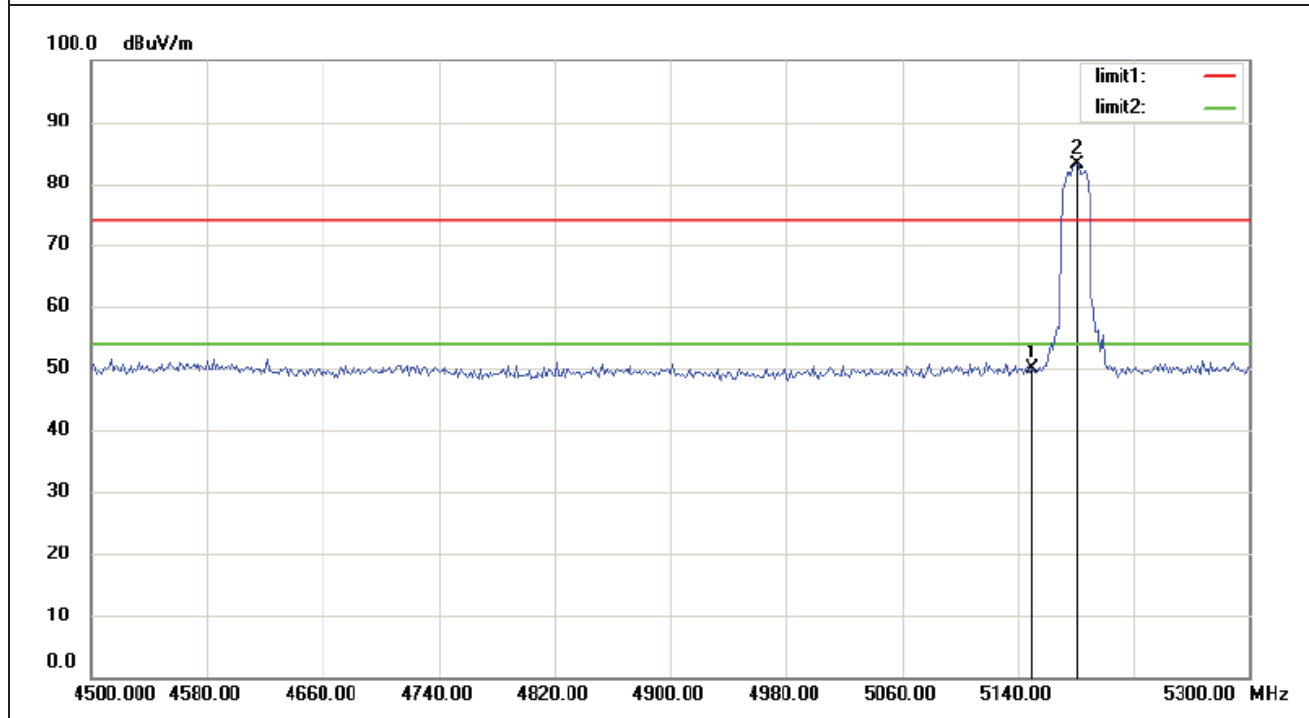


Note: For radiated Emissions from 18-40GHz, it is only the floor noise.



Restricted band Measurement			
EUT	TV BOX		Test Mode: Channel 36 (5180MHz)
Mode	WIFI Keeping TX mode		Input Voltage AC120V
Temperature	24 deg. C,		Humidity 56% RH
Test Result:	Pass		Detector PK
5150	PK (dBμV/m)	49.98 (PK)	Limit -27dBm/MHz
	EIRP (dBm)	-45.22	

Test figure: Vertical



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]}=49.98\text{dB}\mu\text{V/m}$,

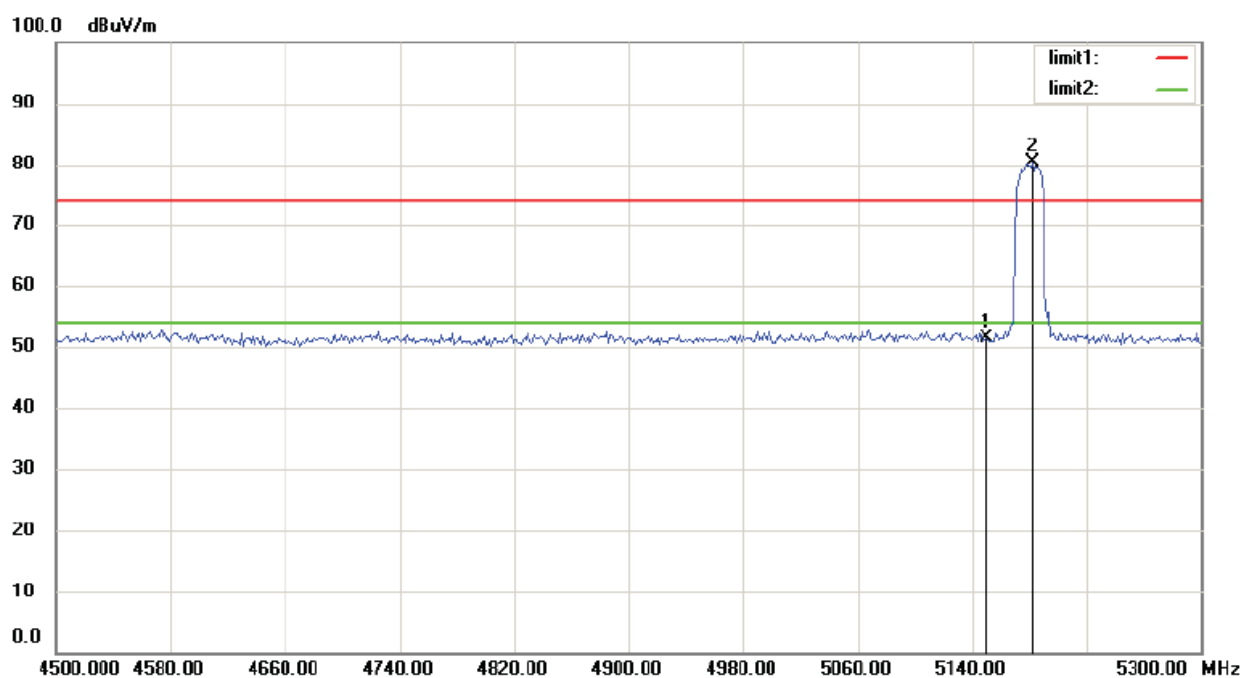
$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2=49.98-95.2= -45.22\text{dBm}$$

2. RBW=1MHz, VBW=3MHz



Restricted band Measurement				
EUT	TV BOX		Test Mode:	Channel 36 (5180MHz)
Mode	WIFI Keeping TX mode		Input Voltage	AC120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5150	PK (dBμV/m)	51.45 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-43.75		

Test figure: Horizontal



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 51.45 \text{ dB}\mu\text{V/m}$,

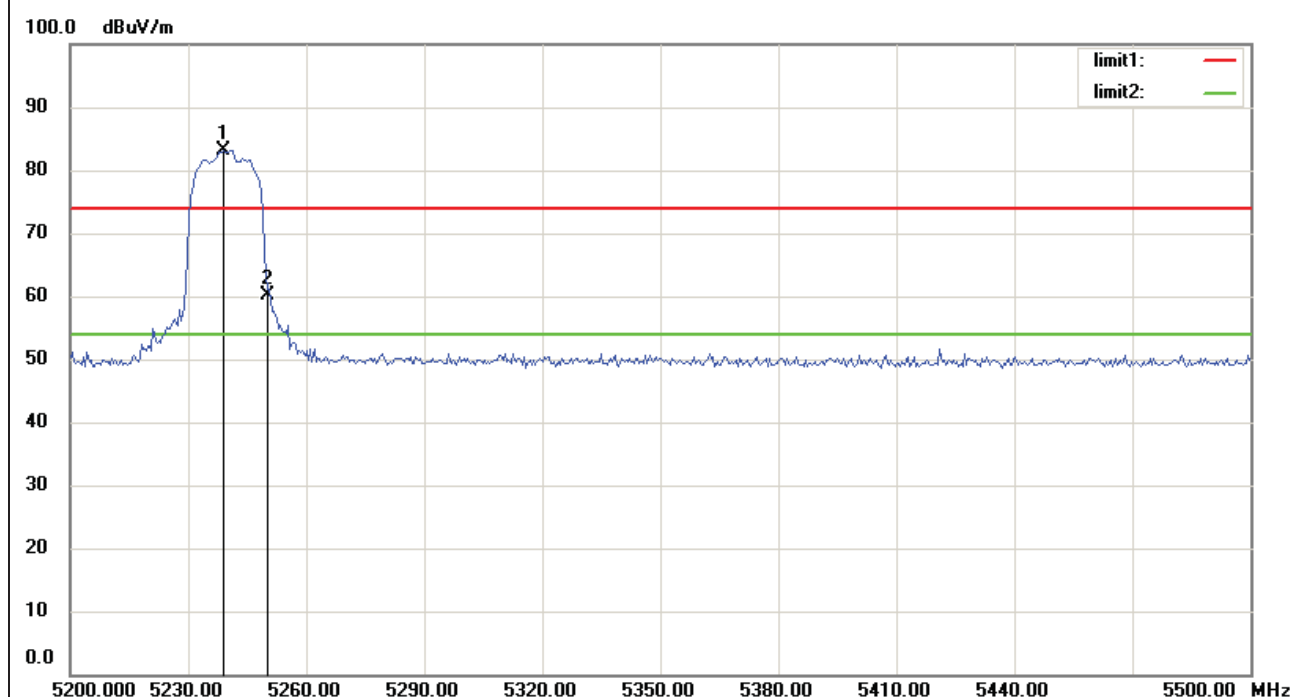
$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 51.45 - 95.2 = -43.75 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



Restricted band Measurement				
EUT	TV BOX		Test Mode:	Channel 48 (5240MHz)
Mode	WIFI Keeping TX mode		Input Voltage	AC120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dBμV/m)	60.83 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-34.37		

Test figure: Vertical



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP}[\text{dBm}] = \text{E}[\text{dB}\mu\text{V/m}] - 95.2$$

For Example, if $\text{E}[\text{dB}\mu\text{V/m}] = 60.83 \text{ dB}\mu\text{V/m}$,

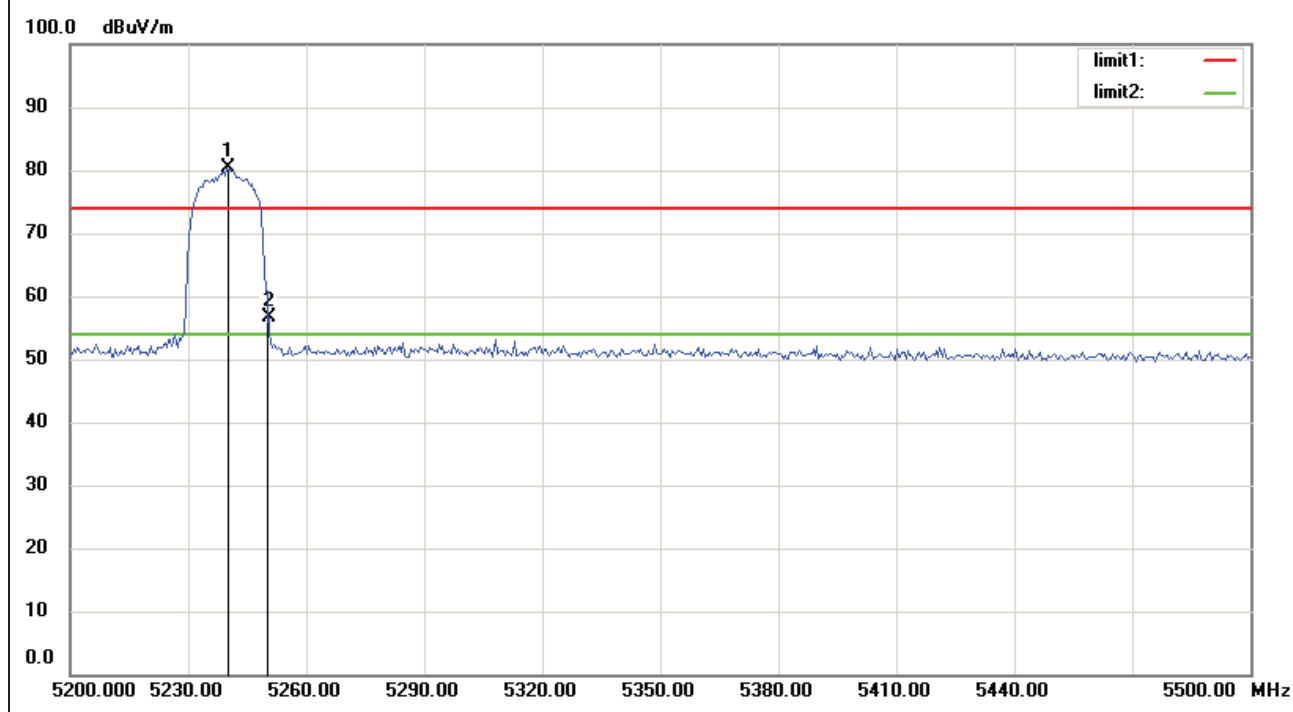
$$\text{EIRP}[\text{dBm}] = \text{E}[\text{dB}\mu\text{V/m}] - 95.2 = 60.83 - 95.2 = -34.37 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



Restricted band Measurement			
EUT	TV BOX		Test Mode:
Mode	WIFI Keeping TX mode		Channel 48 (5240MHz)
Temperature	24 deg. C,		Input Voltage
Test Result:	Pass		Humidity
5250	PK (dBμV/m)	57.61 (PK)	56% RH
	EIRP (dBm)	-37.39	Detector
			PK
			Limit
			-27dBm/MHz

Test figure: Horizontal



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 57.61 \text{ dB}\mu\text{V/m}$,

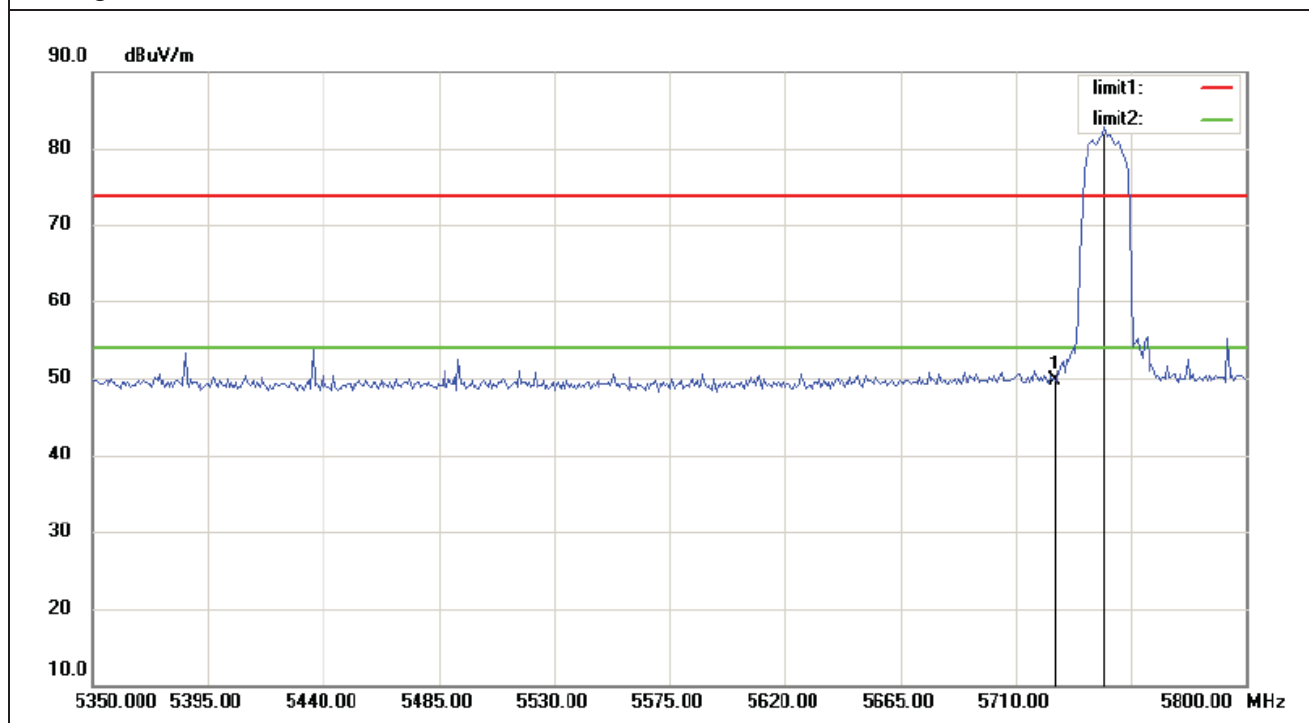
$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 57.61 - 95.2 = -37.39 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



Restricted band Measurement			
EUT	TV BOX		Test Mode: Channel 149 (5745MHz)
Mode	WIFI Keeping TX mode		Input Voltage AC120V
Temperature	24 deg. C,		Humidity 56% RH
Test Result:	Pass		Detector PK
5725	PK (dBμV/m)	49.69 (PK)	Limit -27dBm/MHz
	EIRP (dBm)	-45.51	

Test figure: Vertical



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 49.69 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 49.69 - 95.2 = -45.51 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



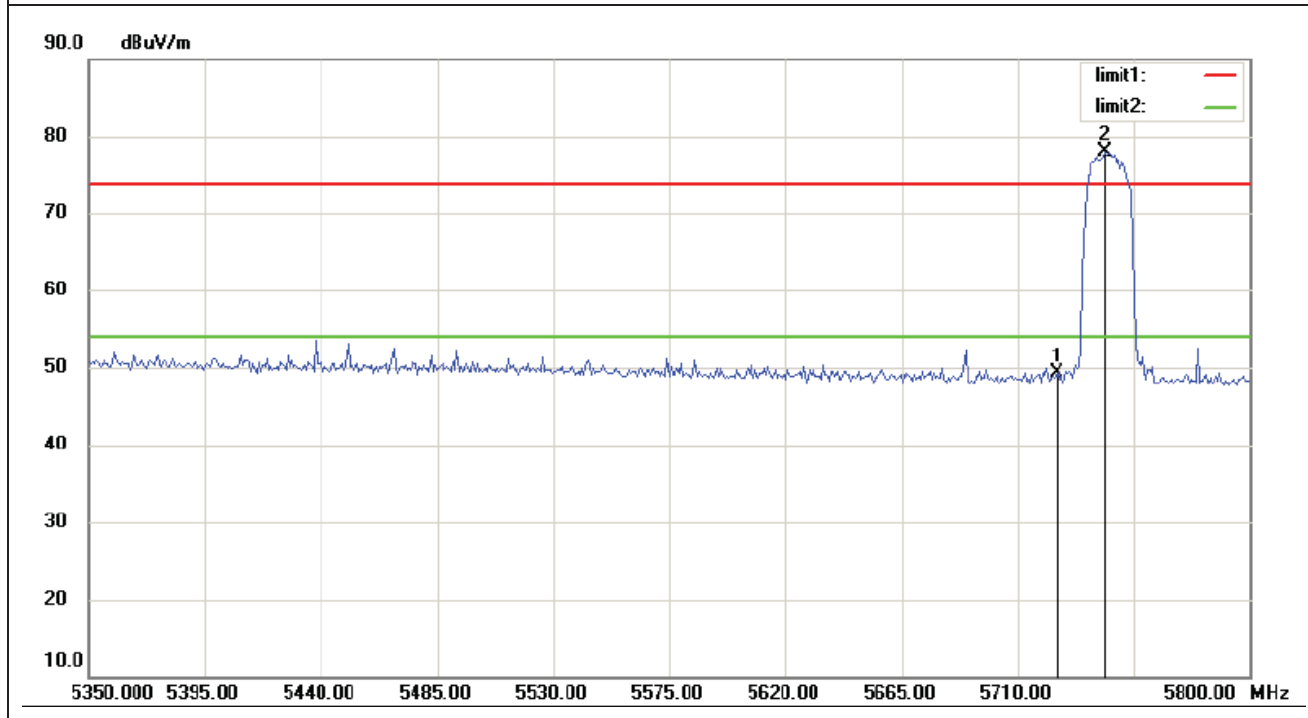
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Report No.: UNI-1410136-03

Restricted band Measurement			
EUT	TV BOX		Test Mode: Channel 149 (5745MHz)
Mode	WIFI Keeping TX mode		Input Voltage AC120V
Temperature	24 deg. C,		Humidity 56% RH
Test Result:	Pass		Detector PK
5725	PK (dBμV/m)	49.34 (PK)	Limit -27dBm/MHz
	EIRP (dBm)	-45.86	

Test figure: Horizontal



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP}[\text{dBm}] = \text{E}[\text{dB}\mu\text{V/m}] - 95.2$$

For Example, if $\text{E}[\text{dB}\mu\text{V/m}] = 49.34 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP}[\text{dBm}] = \text{E}[\text{dB}\mu\text{V/m}] - 95.2 = 49.34 - 95.2 = -45.86 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



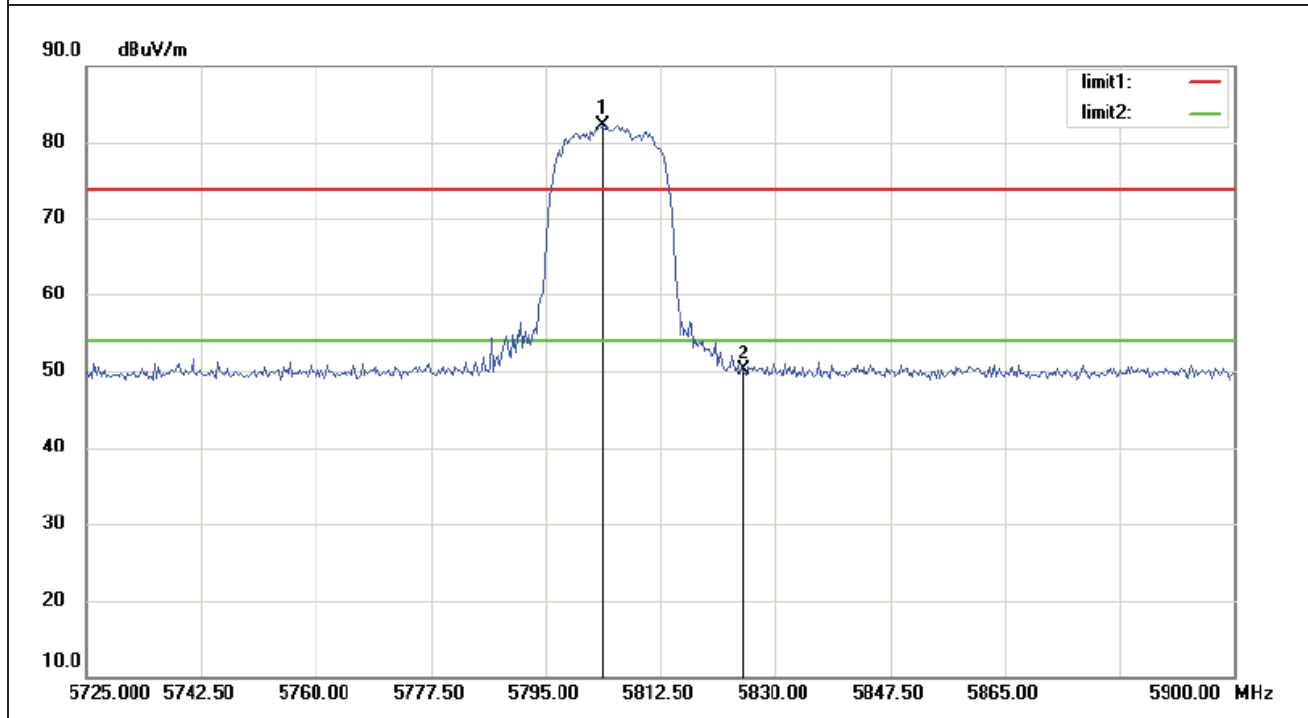
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Shenzhen United Testing Technology Co., Ltd.

Report No.: UNI-1410136-03

Restricted band Measurement				
EUT	TV BOX		Test Mode:	Channel 161 (5745MHz)
Mode	WIFI Keeping TX mode		Input Voltage	AC120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5825	PK (dBμV/m)	50.03 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-45.17		

Test figure: Vertical



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 50.03\text{dB}\mu\text{V/m}$,

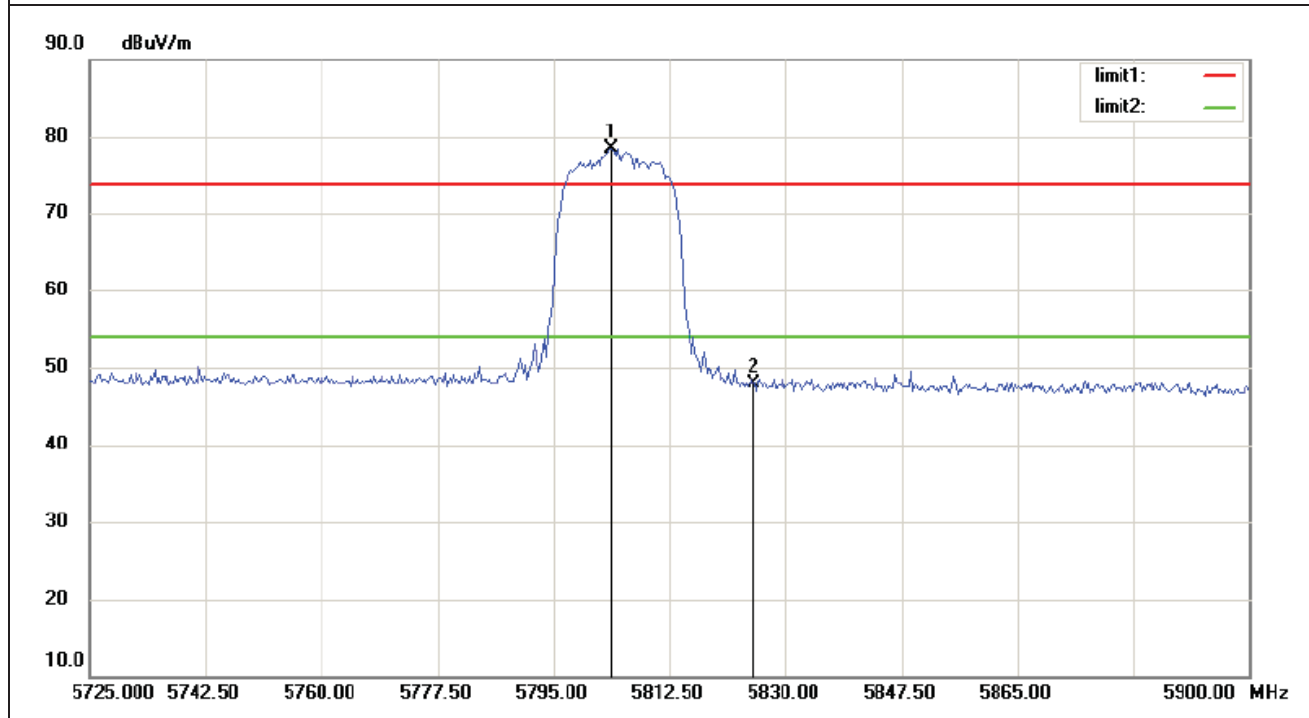
$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.03 - 95.2 = -45.17\text{dBm}$$

2. RBW=1MHz, VBW=3MHz



Restricted band Measurement			
EUT	TV BOX		Test Mode: Channel 161 (5745MHz)
Mode	WIFI Keeping TX mode		Input Voltage AC120V
Temperature	24 deg. C,		Humidity 56% RH
Test Result:	Pass		Detector PK
5825	PK (dBμV/m)	47.92 (PK)	Limit -27dBm/MHz
	EIRP (dBm)	-47.28	

Test figure: Horizontal



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 47.92 \text{ dB}\mu\text{V/m}$,

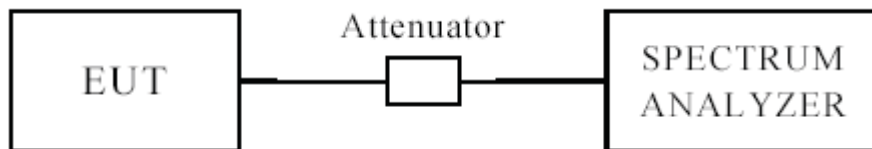
$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.92 - 95.2 = -47.28 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz



7.0 26 dB OCCUPIED BANDWIDTH

7.1 Test Setup



7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 300 kHz
2. Set the video bandwidth (VBW) = 1MHz
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

7.4 Test Result



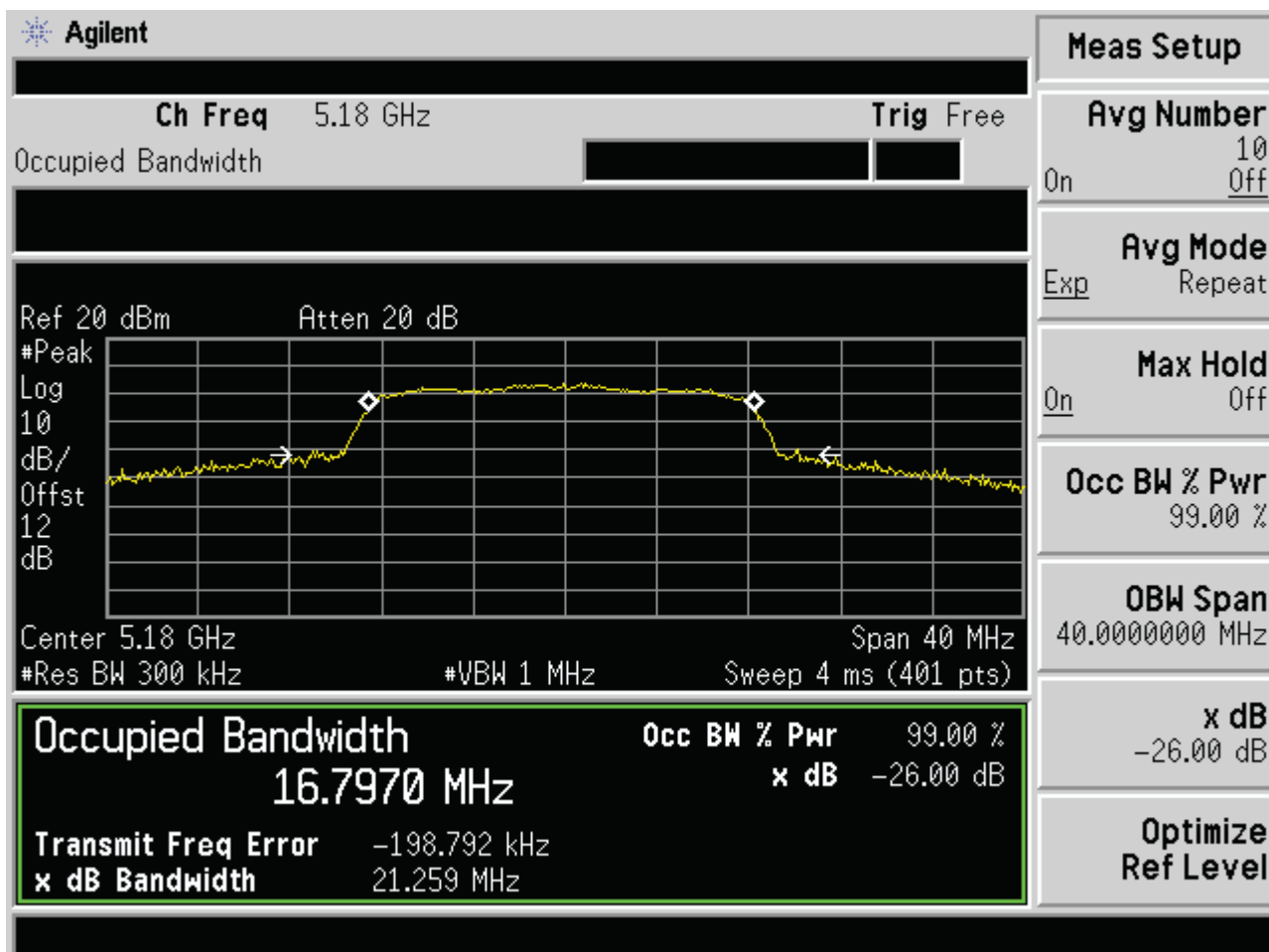
26dB Occupied Bandwidth

EUT		TV BOX		Model	AireCenter-AC100	
Mode		802.11a		Input Voltage	AC120V	
Temperature		24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	26 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
36	5180	6	21.259	--	Pass	
40	5200	6	23.128	--	Pass	
48	5240	6	22.438	--	Pass	
149	5745	6	19.214	--	Pass	
153	5765	6	19.555	--	Pass	
161	5805	6	19.085	--	Pass	



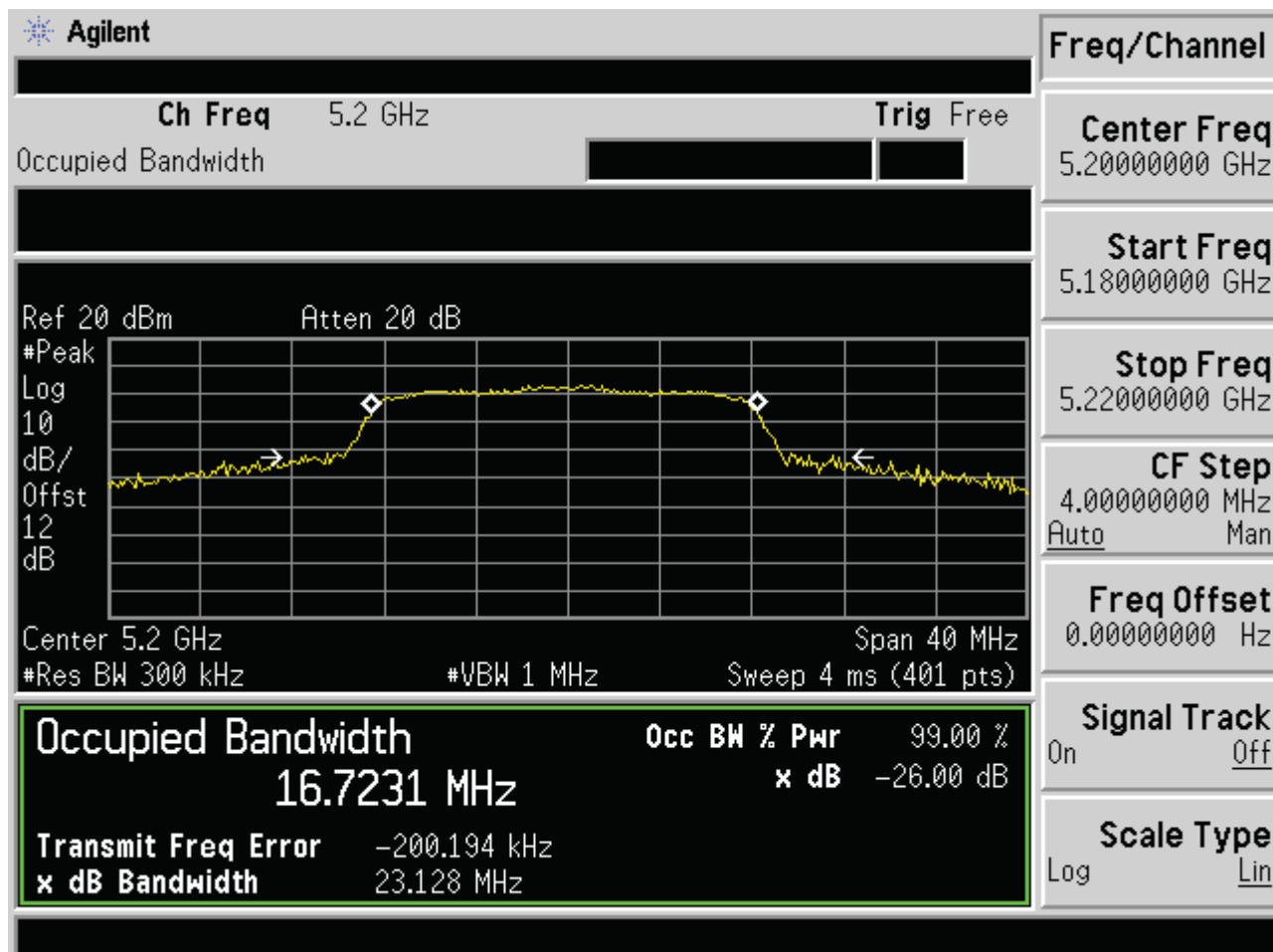
Test Figure:

Channel 36





Channel 40



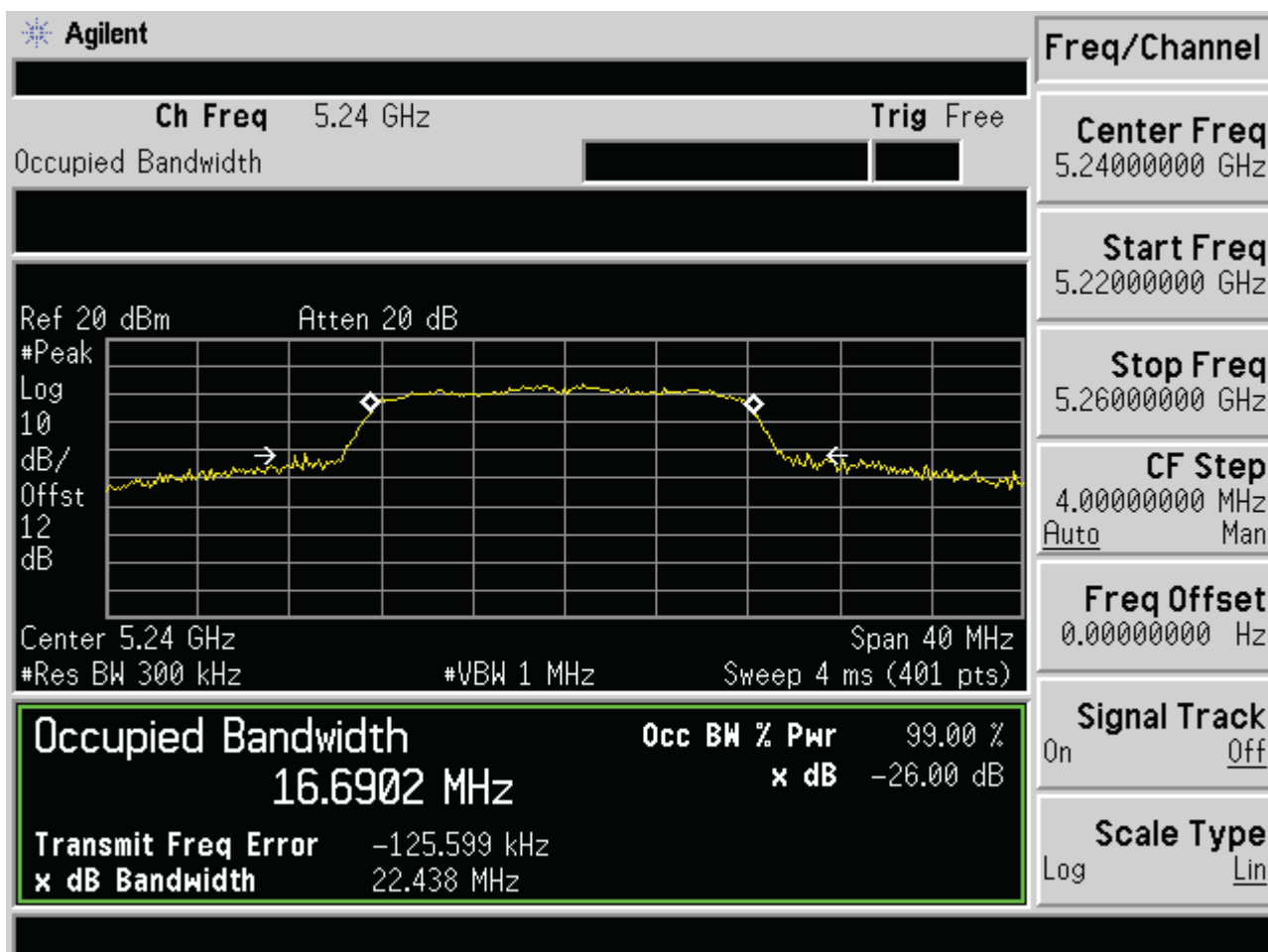


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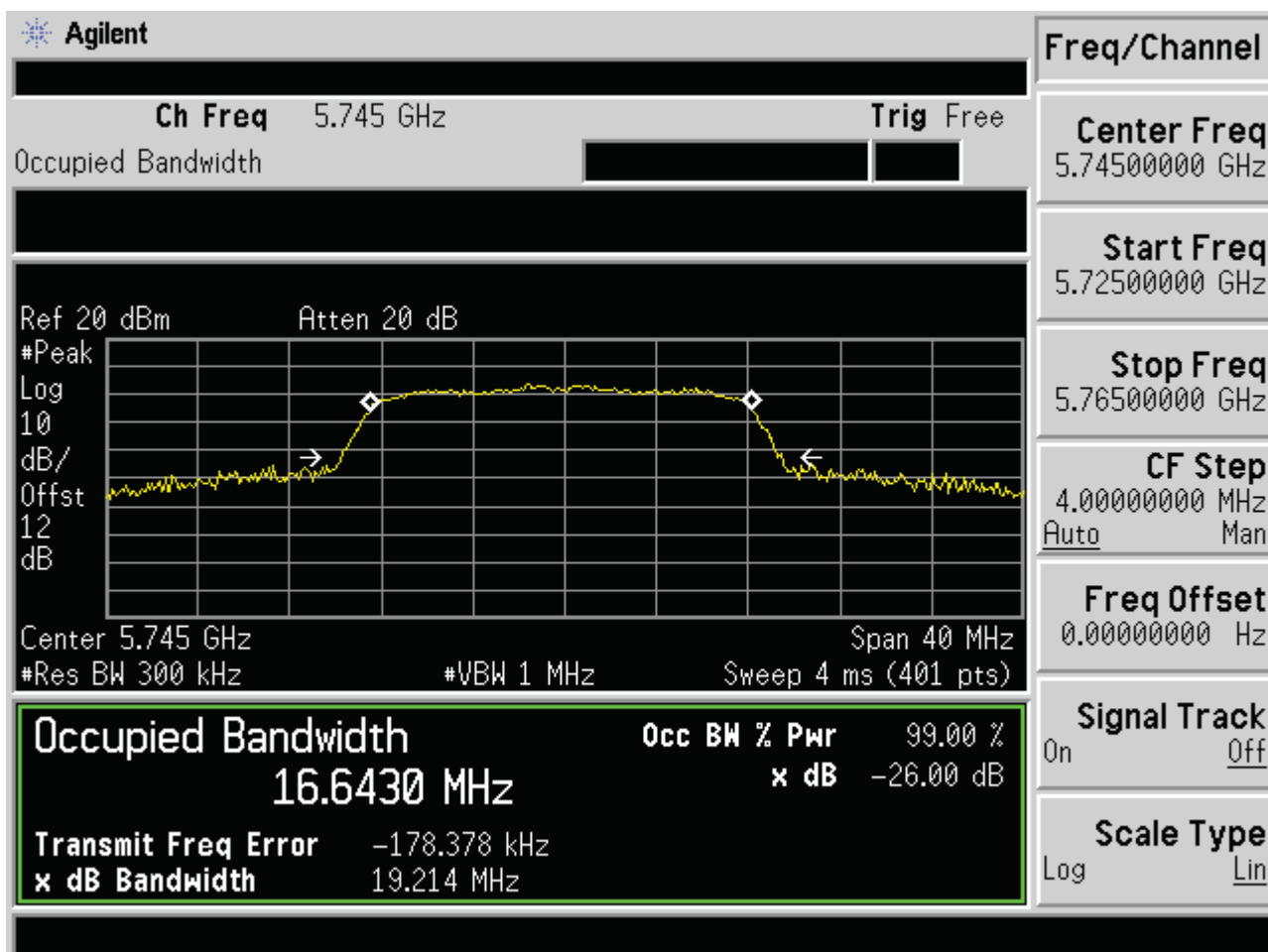
Report No.: UNI-1410136-03

Channel 48



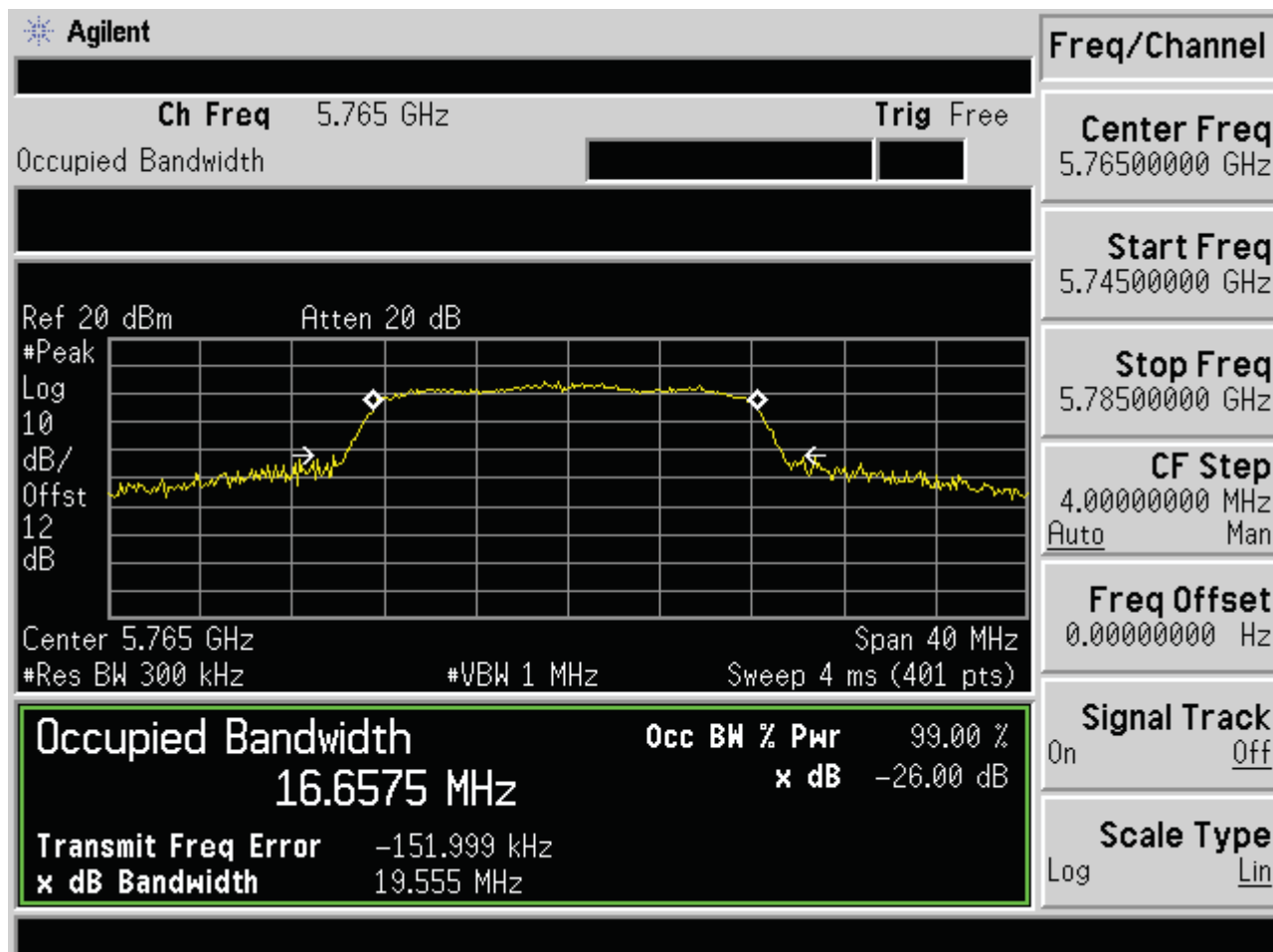


Channel 149





Channel 153



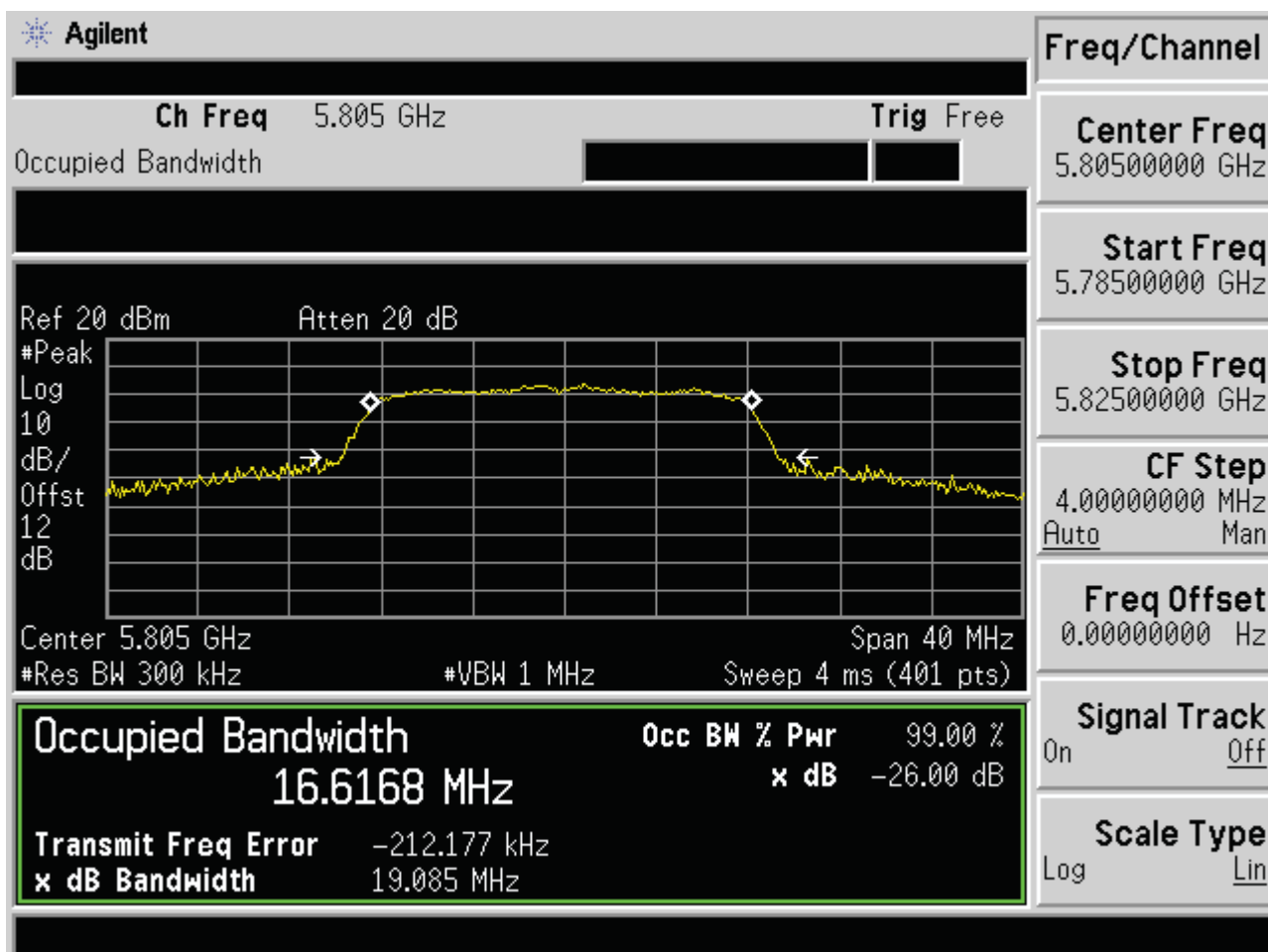


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Shenzhen United Testing Technology Co., Ltd.

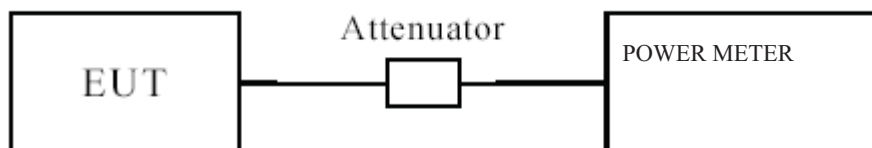
Report No.: UNI-1410136-03

Channel 161



8.0 Max Transmit Power Measurement

8.1 Test Setup



8.2 Limits of Max Transmit Power Measurement

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz and 5.470-5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

Note: Where B is the 26dB emission bandwidth in MHz.

8.3 Test Procedure

The RF power output was measured with a Spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the average power was measured



8.4 Test Results

EUT		TV BOX	Model	AireCenter-AC100	
Mode		802.11a	Input Voltage	AC120V	
Temperature		24 deg. C,	Humidity	56% RH	
Channel	Frequency (MHz)	Average Power Output (dBm)		Limit (dBm)	Pass/ Fail
36	5180	16.12		17	Pass
40	5200	15.32		17	Pass
48	5240	14.92		17	Pass
149	5745	15.35		30	Pass
153	5765	15.95		30	Pass
161	5805	14.90		30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH36, CH40, CH48, CH149, CH153 and CH161

2. The result basic equation calculation as follow:

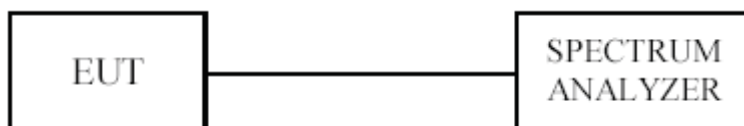
Average Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded



9. Peak Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

Frequency Band	Limit
5.15 – 5.25GHz	4dBm
5.25 – 5.35GHz and 5.470-5.725GHz	11dBm
5.725 – 5.825GHz	17dBm

9.3 Test Procedure

1. The EUT was directly connected to the spectrum analyzer
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Set the span to encompass the entire emissions bandwidth (EBW) of the signal
5. Detector = RMS
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.



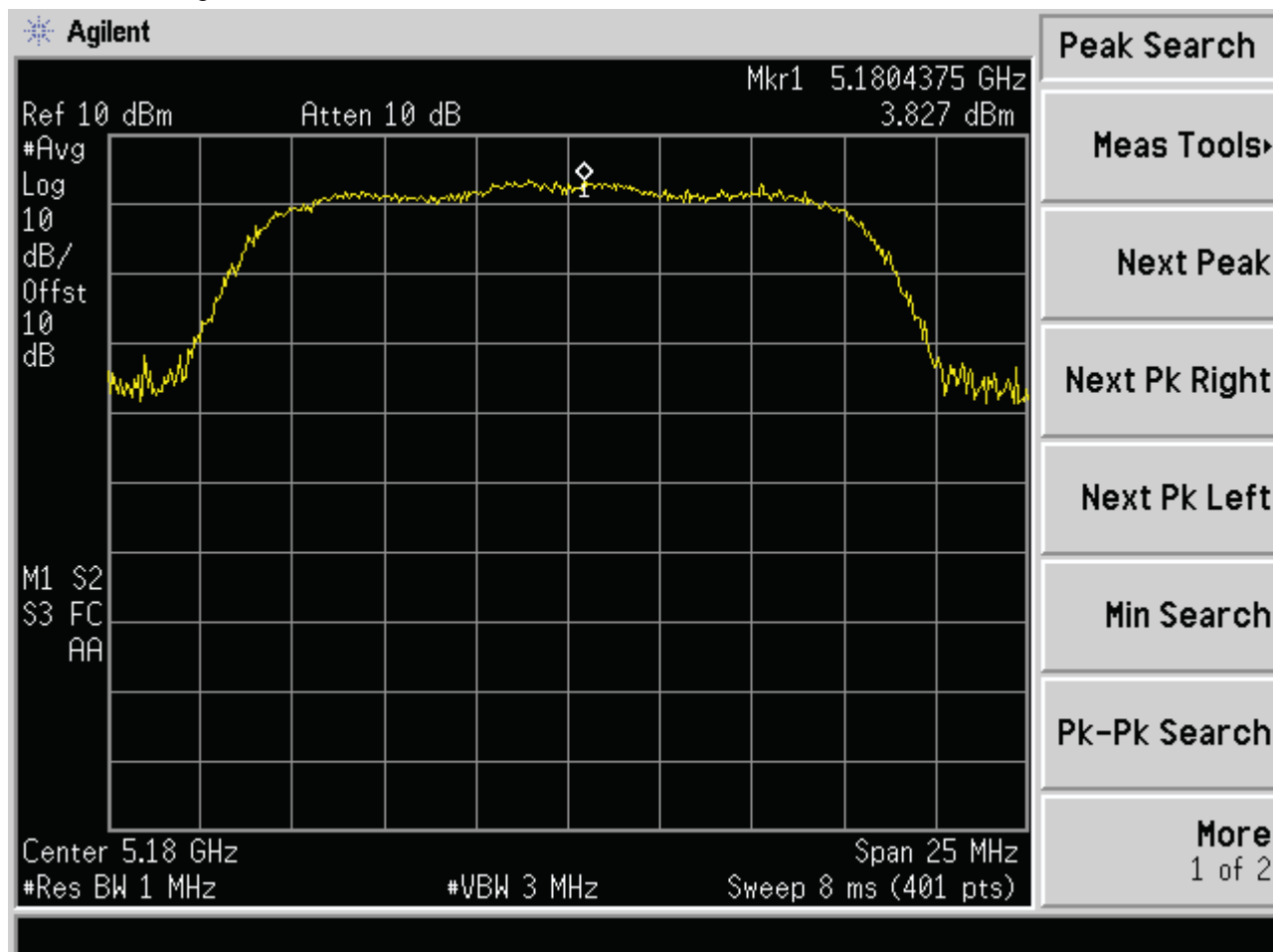
9.4 Test Result

EUT		TV BOX	Model	AireCenter-AC100	
Mode		802.11a 6Mbps	Input Voltage	AC120V	
Temperature		24 deg. C,	Humidity	56% RH	
Channel	Frequency (MHz)	Final Power Spectral Density (dBm)		Limit (dBm)	Pass/ Fail
36	5180	3.827		4	Pass
40	5200	2.811		4	Pass
48	5240	2.547		4	Pass
149	5745	1.022		17	Pass
153	5765	1.442		17	Pass
161	5805	1.789		17	Pass



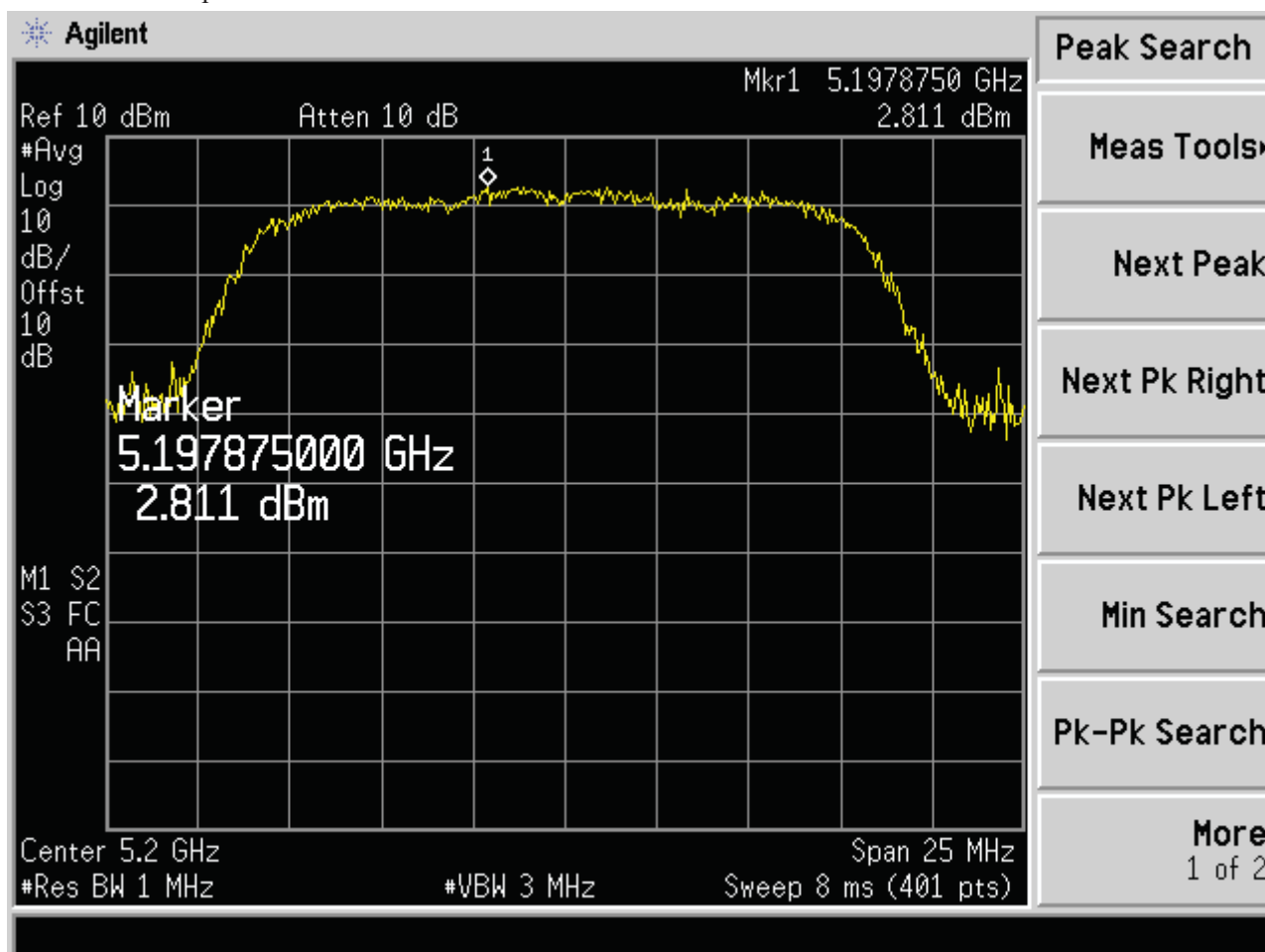
9.5 Photo of Power Spectral Density Measurement

1.802.11a at 6Mbps of CH36



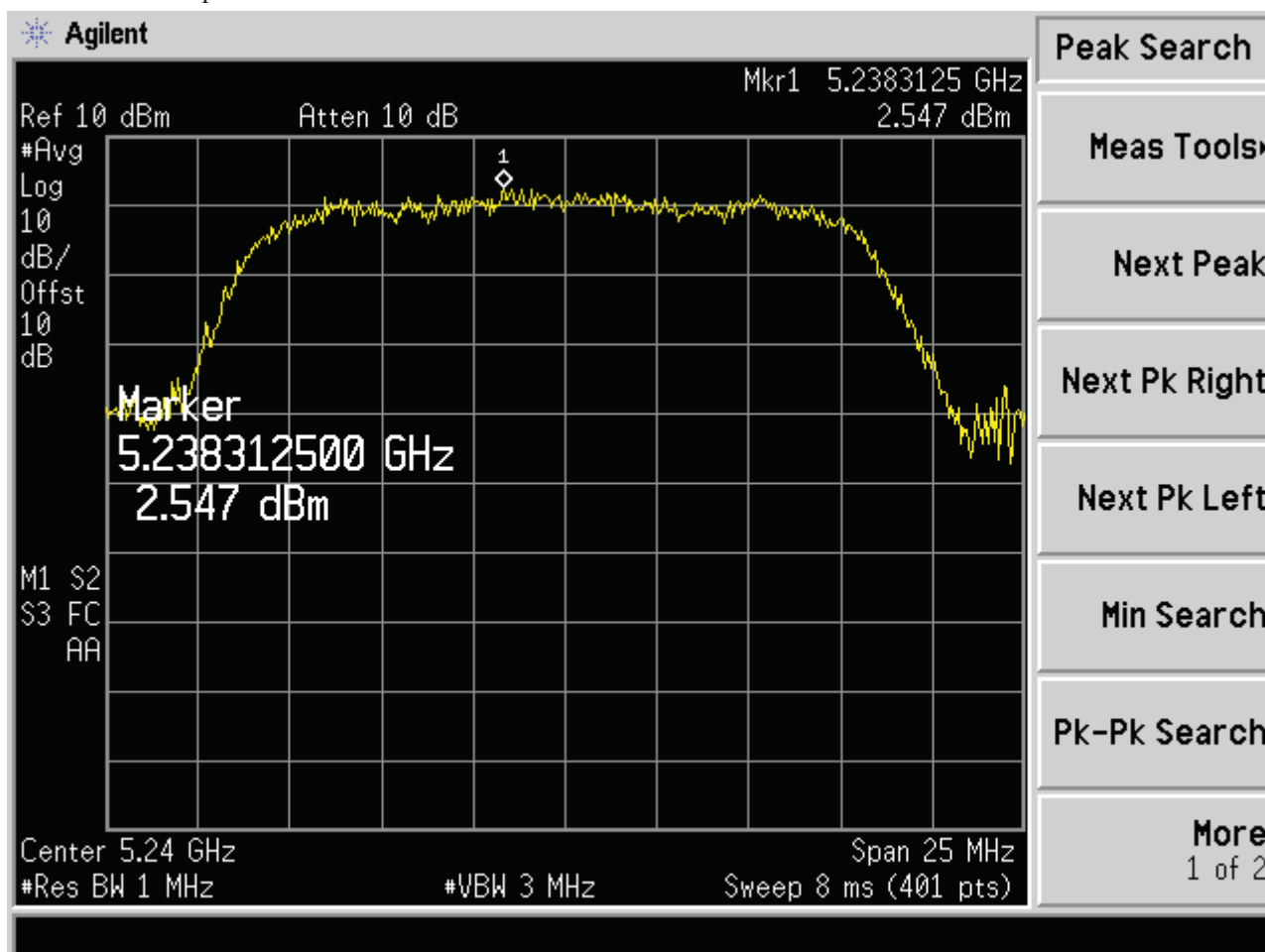


2.802.11a at 6Mbps of CH40



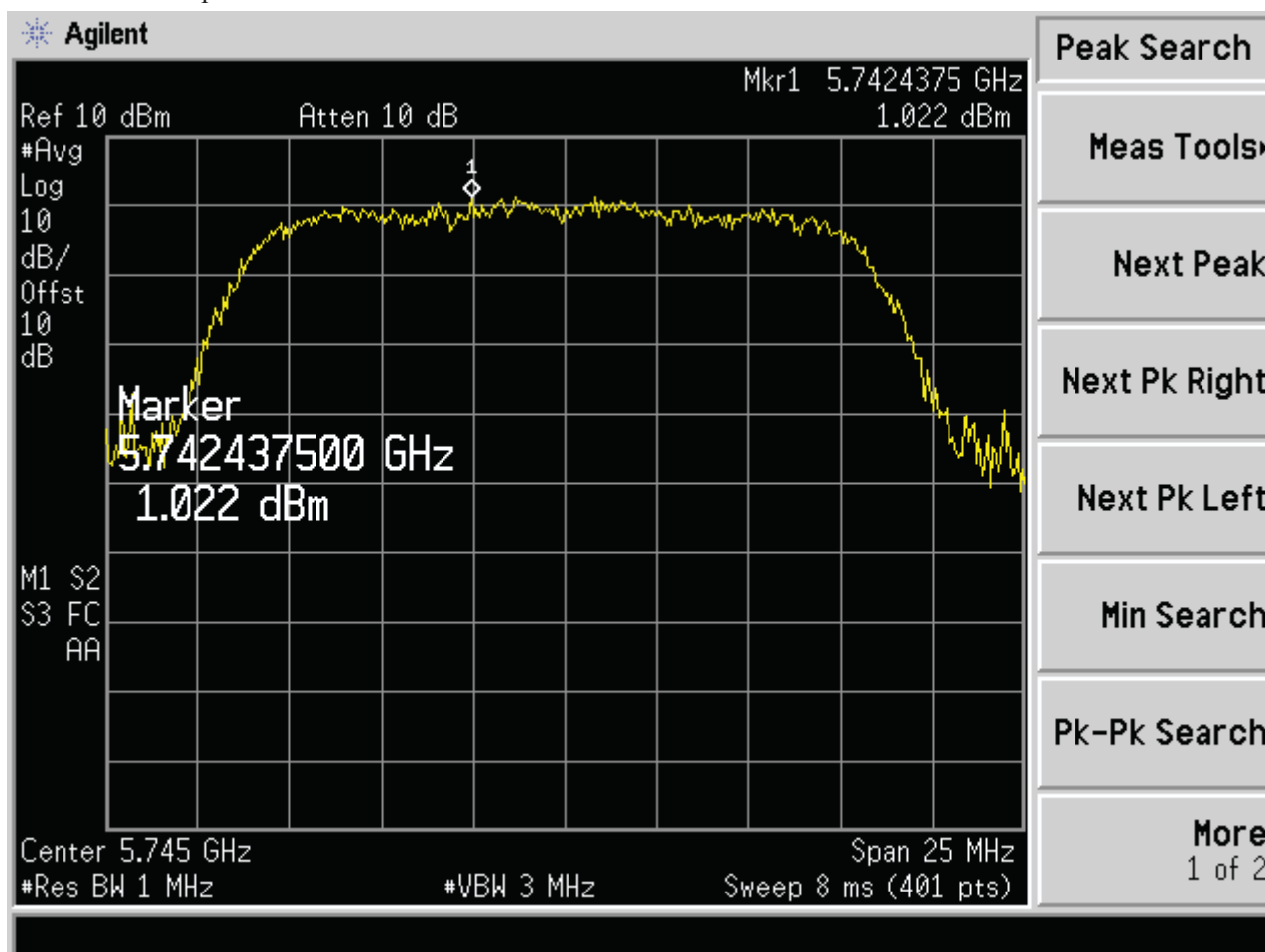


3.802.11a at 6Mbps of CH48



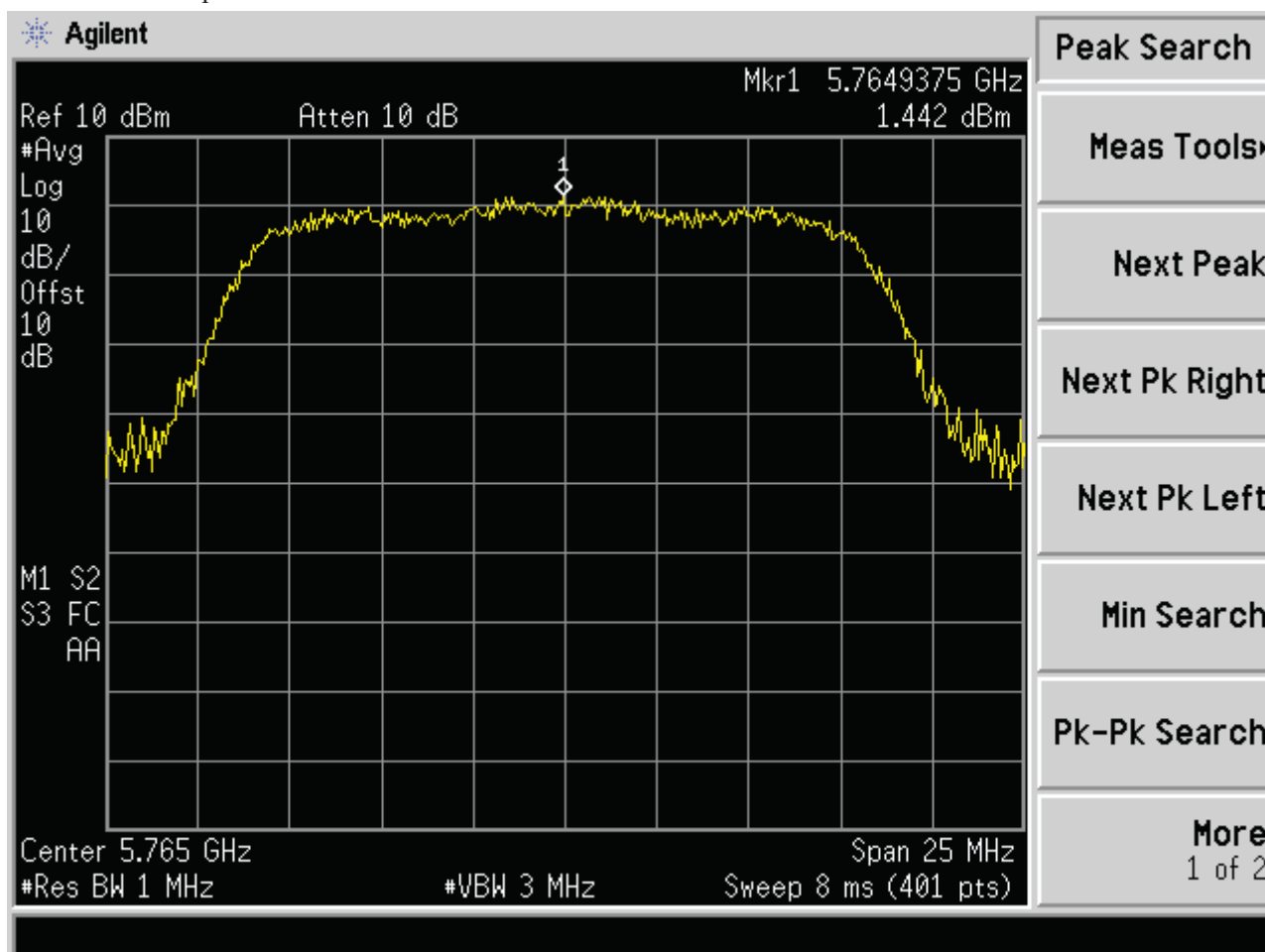


4.802.11a at 6Mbps of CH149



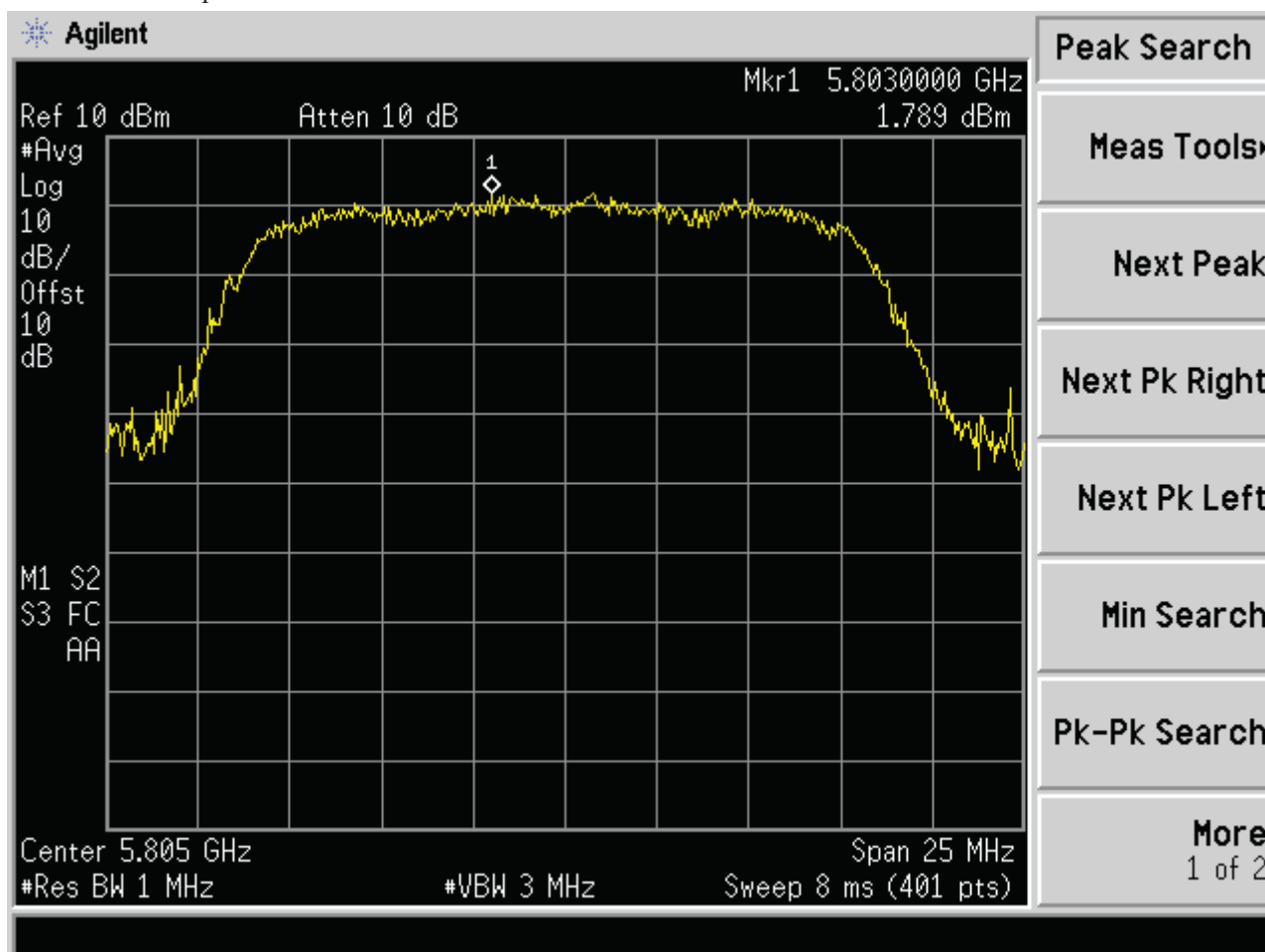


5.802.11a at 6Mbps of CH153





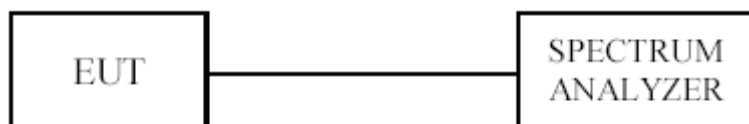
6.802.11a at 6Mbps of CH0161





10. Peak Excursion Measurement

10.2 Test Setup



10.2 Limits of Peak Power Excursion Measurement

Frequency Band	Limit
5.15 – 5.25GHz	13
5.25 – 5.35GHz and 5.470-5.725GHz	13
5.725 – 5.825GHz	13

10.3 Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna
2. Set the RBW = 1MHz (Peak and Average Trace)
3. Set the VBW = 3MHz (Peak and Average Trace)
4. Set the span to encompass the entire emissions bandwidth (EBW) of the signal
5. Detector = Peak (Peak Trace) / RMS (Average Trace)
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.



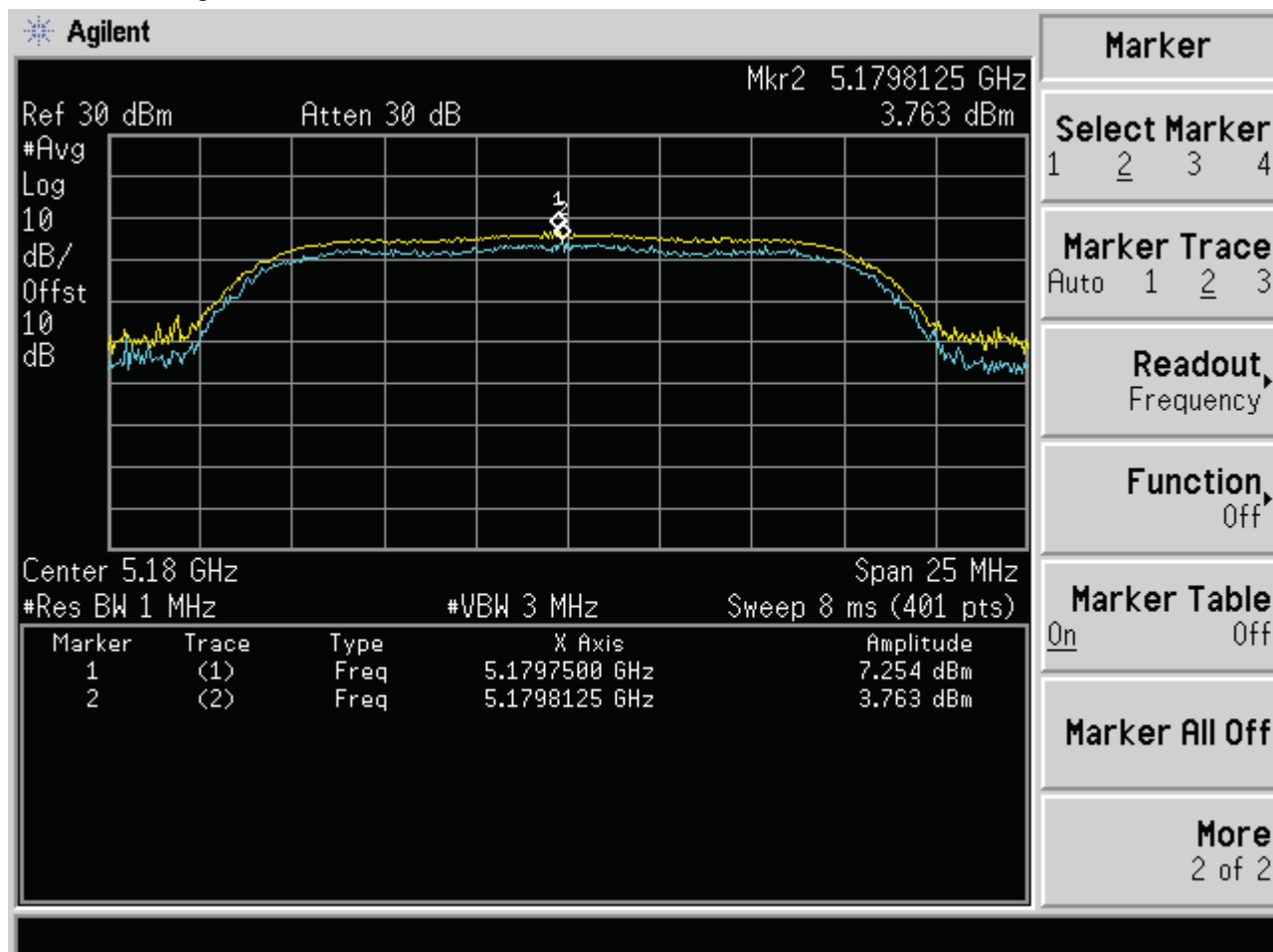
10.4 Test Result

EUT		TV BOX	Model	AireCenter-AC100	
Mode		802.11a 6Mbps	Input Voltage	AC120V	
Temperature		24 deg. C,	Humidity	56% RH	
Channel	Frequency (MHz)	Peak Excursion (dB)		Limit (dB)	Pass/ Fail
36	5180	3.491		13	Pass
40	5200	3.306		13	Pass
48	5240	1.945		13	Pass
149	5745	2.869		13	Pass
153	5765	3.114		13	Pass
161	5805	3.344		13	Pass



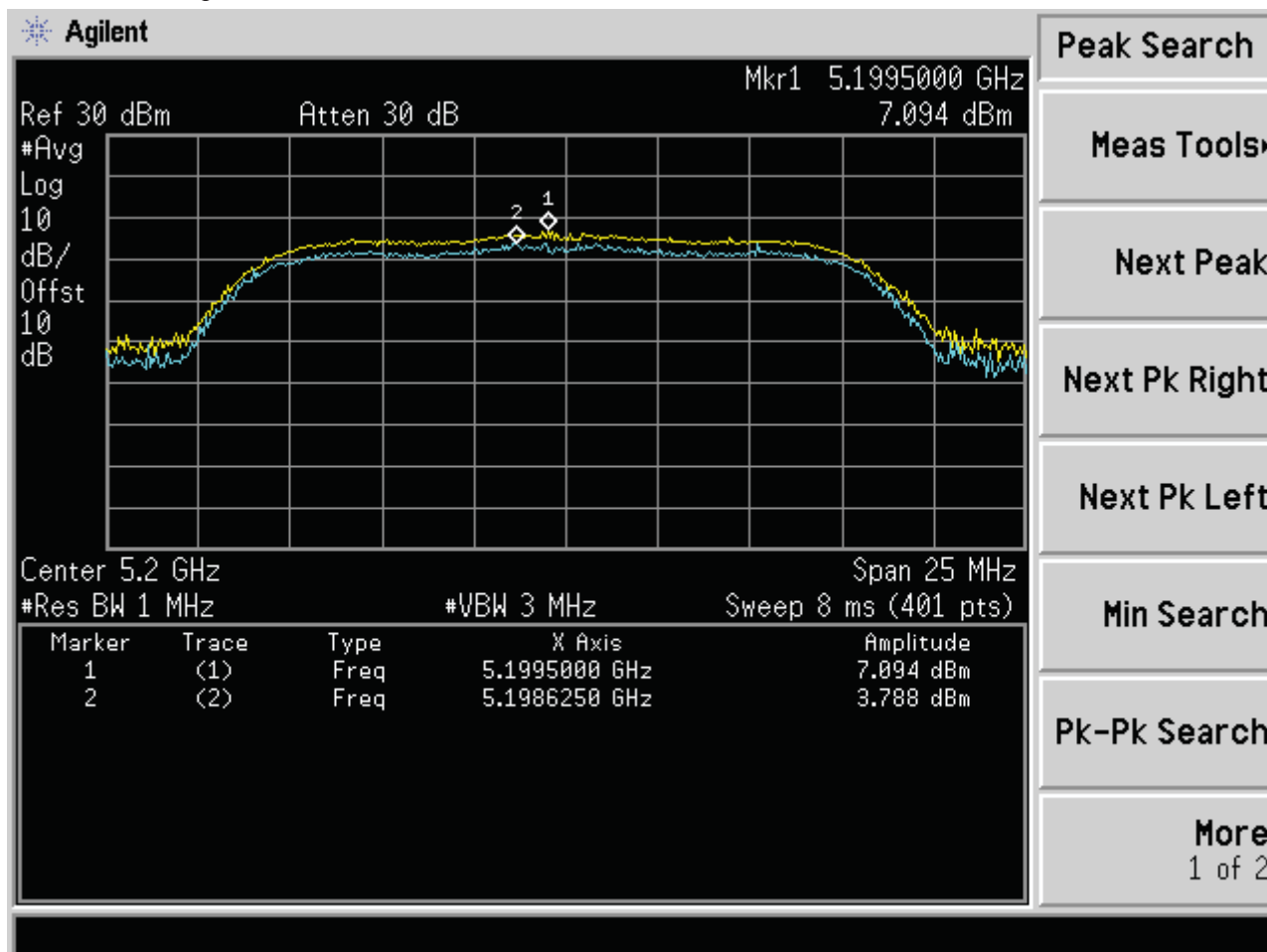
10.5 Photo of Peak Level

1.802.11a at 6Mbps of CH36



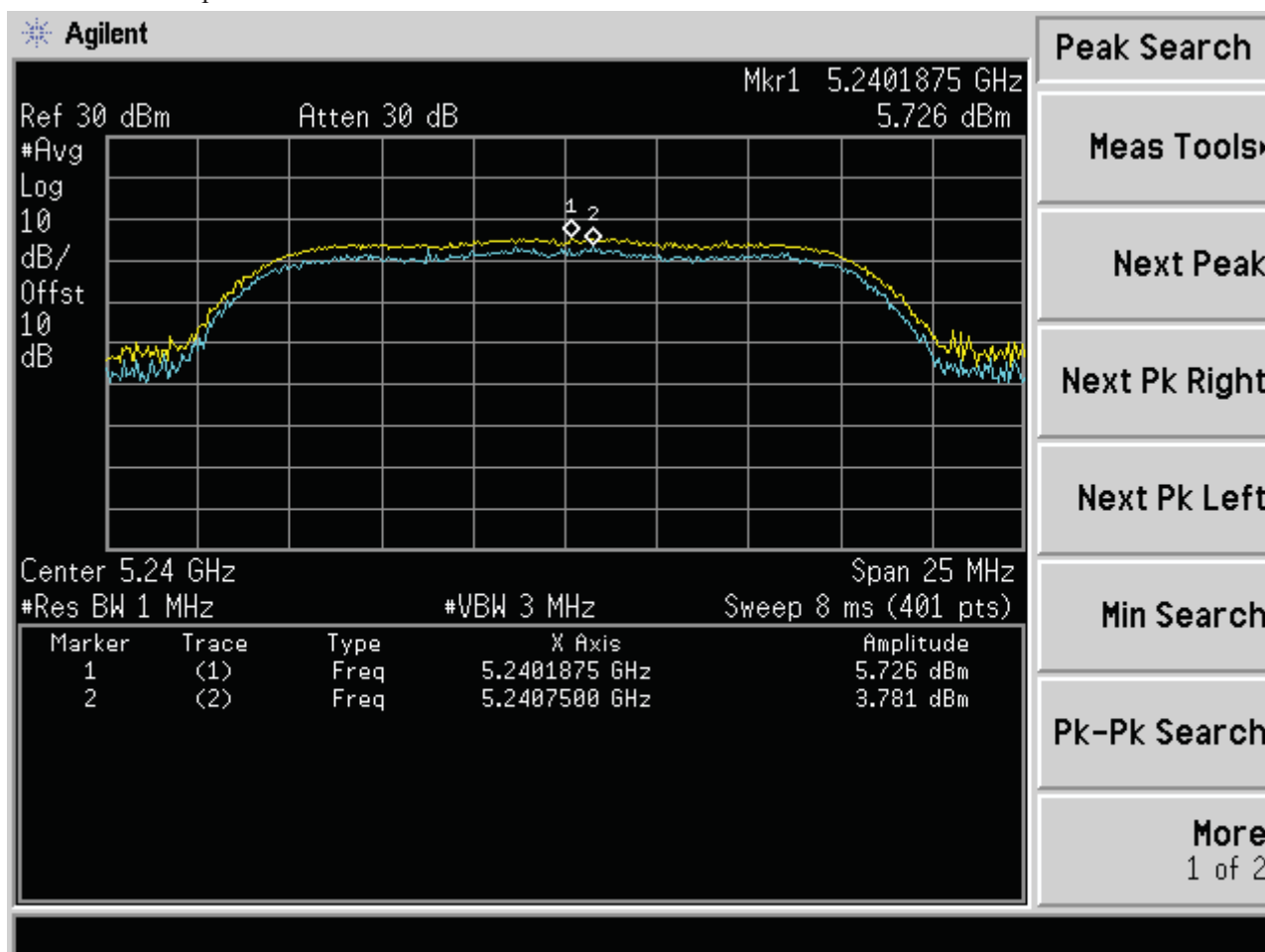


2.802.11a at 6Mbps of CH40



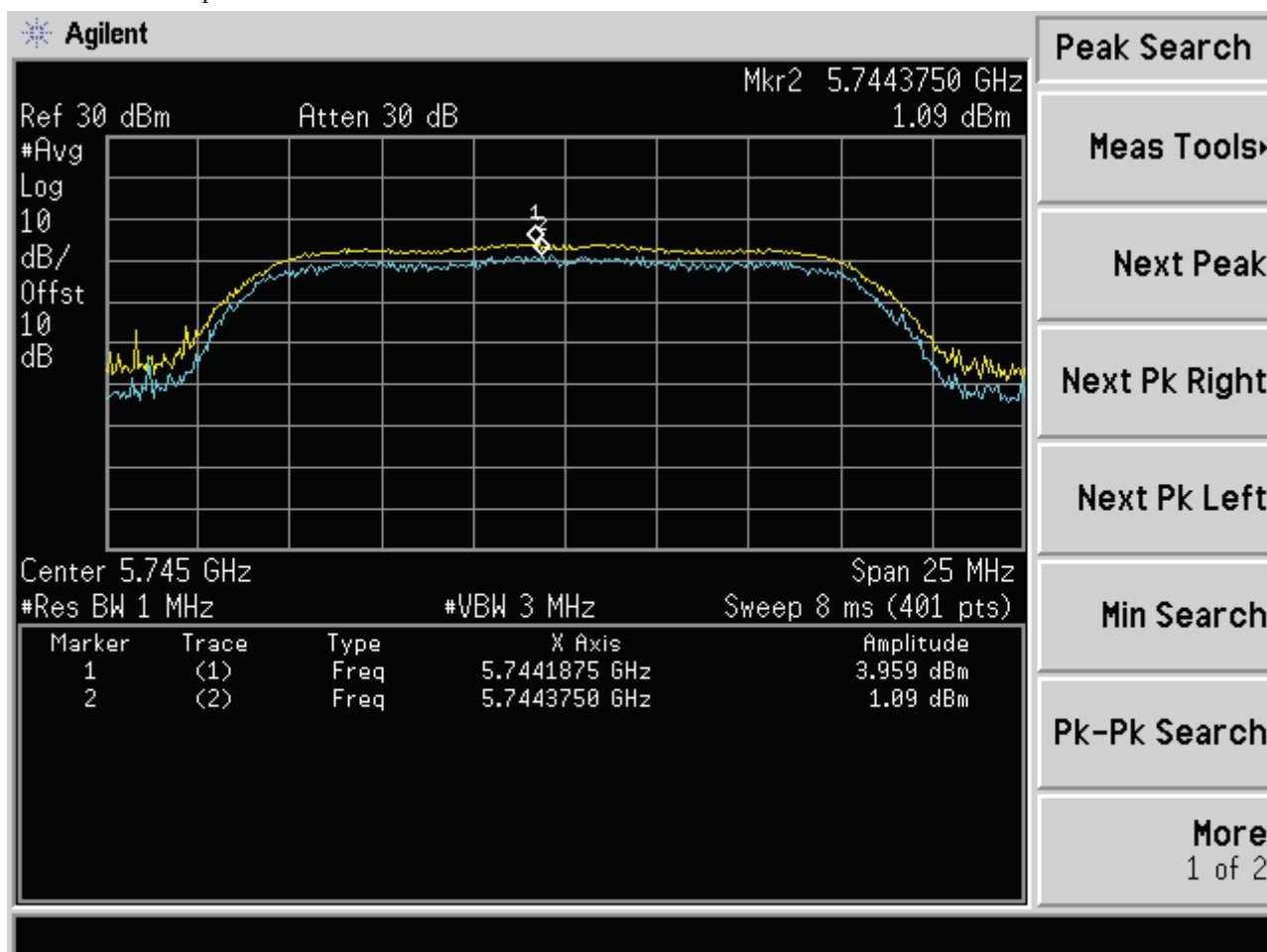


3.802.11a at 6Mbps of CH48



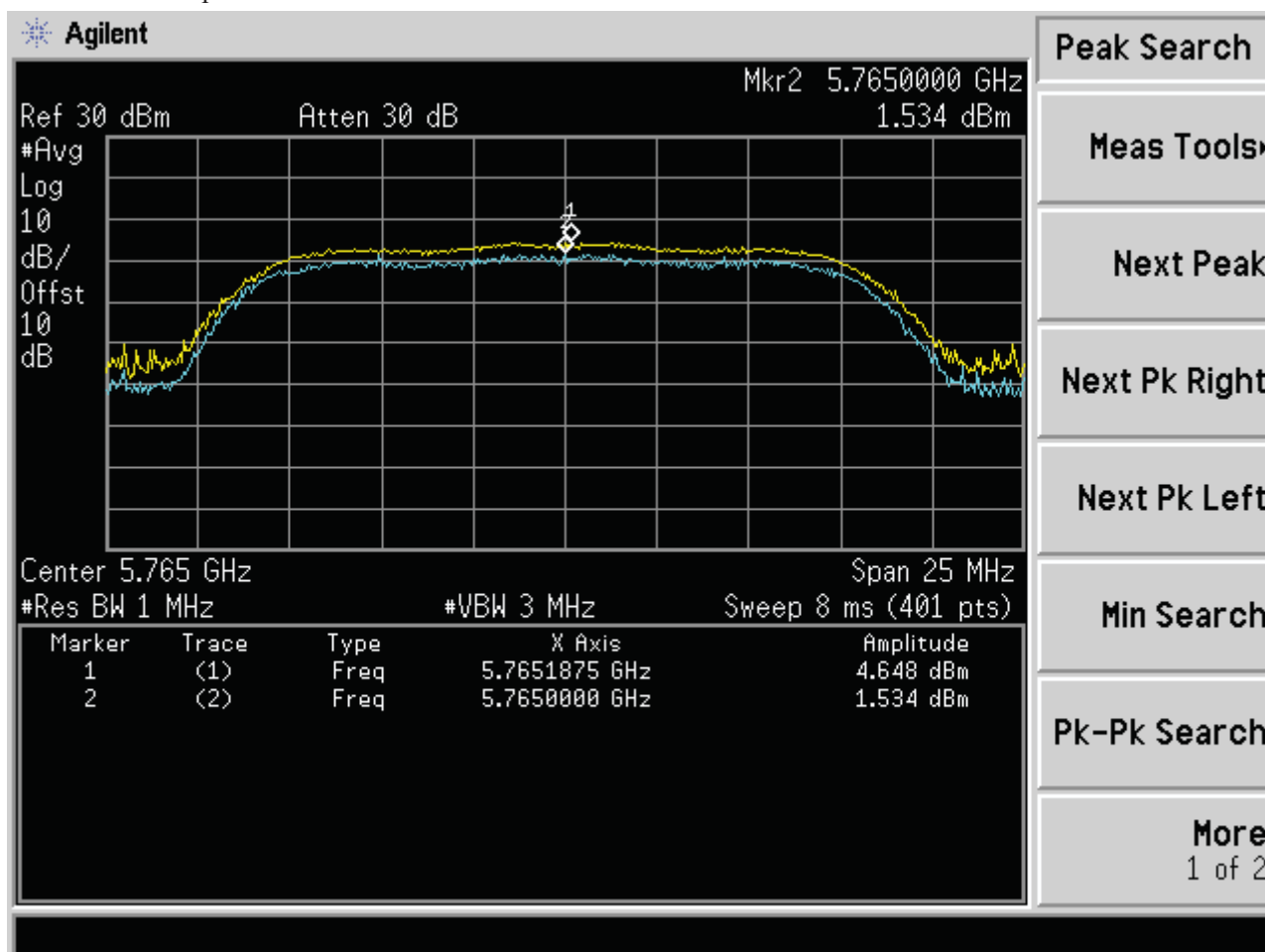


4.802.11a at 6Mbps of CH149



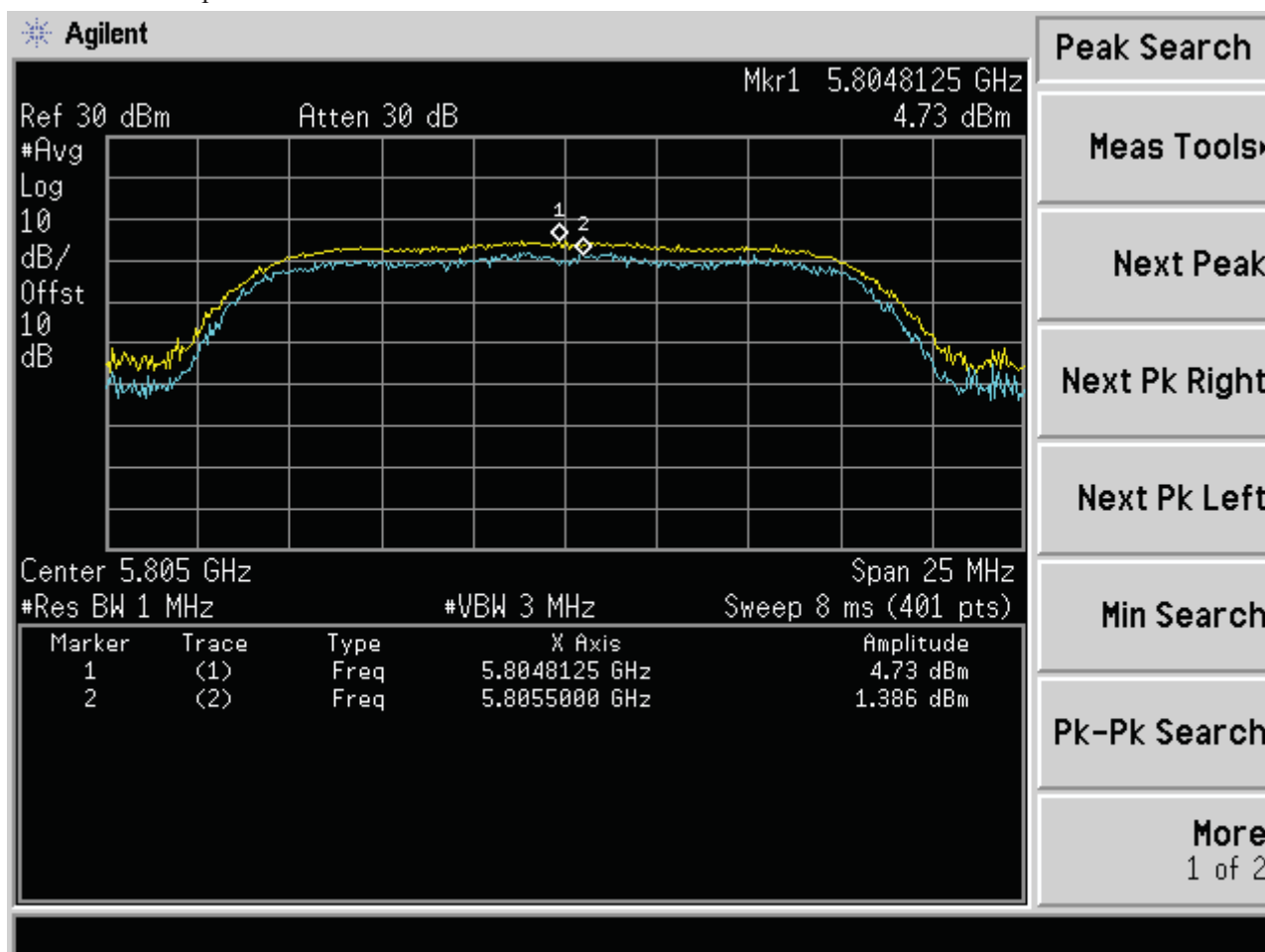


5.802.11a at 6Mbps of CH153





6.802.11a at 6Mbps of CH161





11.0 Frequency Stability

11.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.02\%$ of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees

11.2 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at $+20$ degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

**11.3 Test Result****Channel 36 (5180MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5179.9765
120V	5179.9717
102V	5179.9806
Max. Deviation (MHz)	0.0283
Max. Deviation (ppm)	5.5

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5179.9738
-20	5179.9726
-10	5179.9772
0	5179.9715
10	5179.9783
20	5179.9810
30	5179.9829
40	5179.9733
50	5179.9761
Max. Deviation (MHz)	0.0285
Max. Deviation (ppm)	5.5

**Channel 40 (5200MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5199.9689
120V	5199.9778
102V	5199.9708
Max. Deviation (MHz)	0.0311
Max. Deviation (ppm)	6.0

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5199.9758
-20	5199.9792
-10	5199.9727
0	5199.9812
10	5199.9809
20	5199.9822
30	5199.9790
40	5199.9812
50	5199.9751
Max. Deviation (MHz)	0.0273
Max. Deviation (ppm)	5.3

**Channel 48 (5240MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5239.9675
120V	5239.9737
102V	5239.9809
Max. Deviation (MHz)	0.0325
Max. Deviation (ppm)	6.2

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5239.9718
-20	5239.9708
-10	5329.9748
0	5239.9709
10	5239.9812
20	5239.9771
30	5239.9809
40	5239.9819
50	5239.9758
Max. Deviation (MHz)	0.0292
Max. Deviation (ppm)	5.6

**Channel 149 (5745MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5744.9671
120V	5744.9812
102V	5744.9683
Max. Deviation (MHz)	0.0329
Max. Deviation (ppm)	5.7

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5744.9716
-20	5744.9733
-10	5744.9822
0	5744.9752
10	5744.9709
20	5744.9749
30	5744.9816
40	5744.9820
50	5744.9753
Max. Deviation (MHz)	0.0284
Max. Deviation (ppm)	4.9

**Channel 153 (5765MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5764.9734
120V	5764.9826
102V	5764.9792
Max. Deviation (MHz)	0.0266
Max. Deviation (ppm)	4.6

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5764.9724
-20	5764.9691
-10	5764.9834
0	5764.9809
10	5764.9781
20	5764.9803
30	5764.9785
40	5764.9810
50	5764.9786
Max. Deviation (MHz)	0.0309
Max. Deviation (ppm)	5.4

**Channel 161 (5805MHz)****Voltage vs. Frequency Stability**

Voltage	Measurement Frequency (MHz)
138V	5804.9616
120V	5804.9786
102V	5804.9663
Max. Deviation (MHz)	0.0384
Max. Deviation (ppm)	6.6

Rated working voltage: AC120V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5804.9811
-20	5804.9785
-10	5804.9805
0	5804.9783
10	5804.9811
20	5804.9769
30	5804.9788
40	5804.9802
50	5804.9725
Max. Deviation (MHz)	0.0275
Max. Deviation (ppm)	4.7



12.0 Antenna Requirement

12.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

12.2 Antenna Connected construction

Integral antenna used. The maximum Gain of each antenna is 1.2dBi for 5G band.

13.0 FCC ID Label

FCC ID: 2ADT4AC100

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



FCC ID Label Location



優耐檢測

Shenzhen United Testing Technology Co., Ltd.

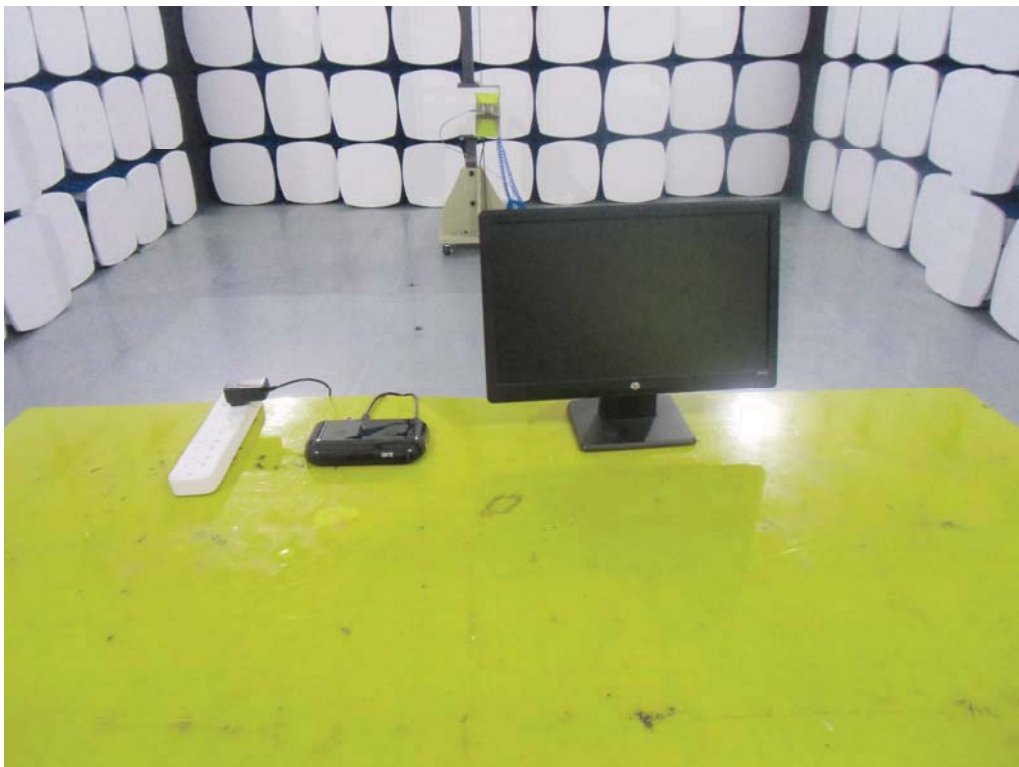
Report No.: UNI-1410136-03

14 PHOTOGRAPHS OF THE TEST CONFIGURATION

Conducted Emissions



Radiated Emissions



PHOTOGRAPHS OF EUT

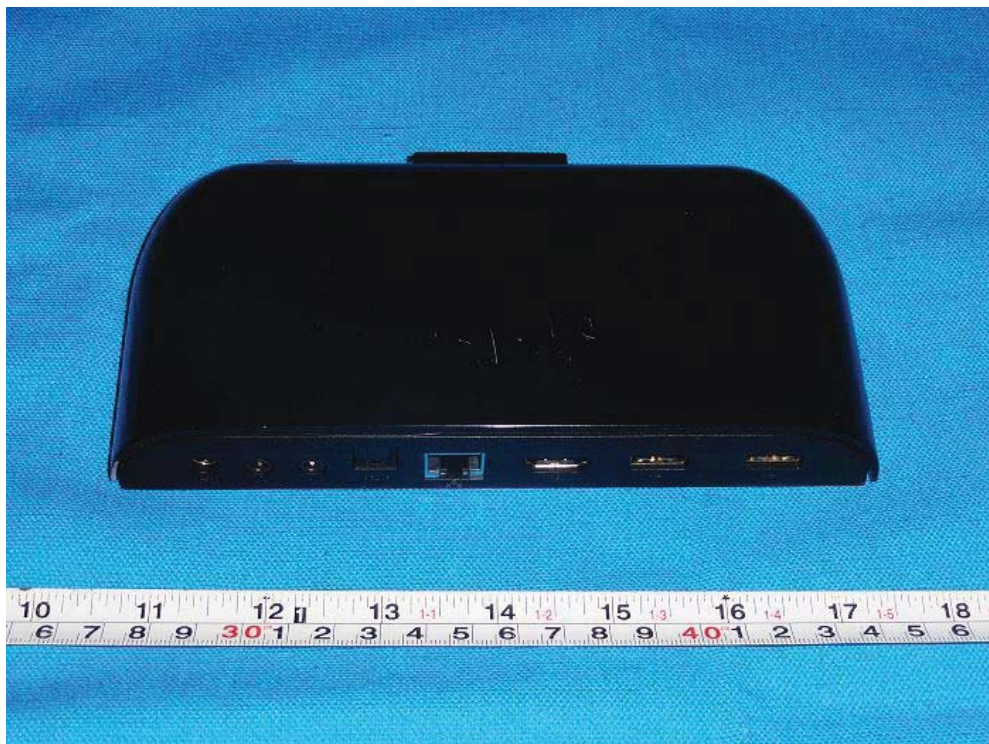


Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7

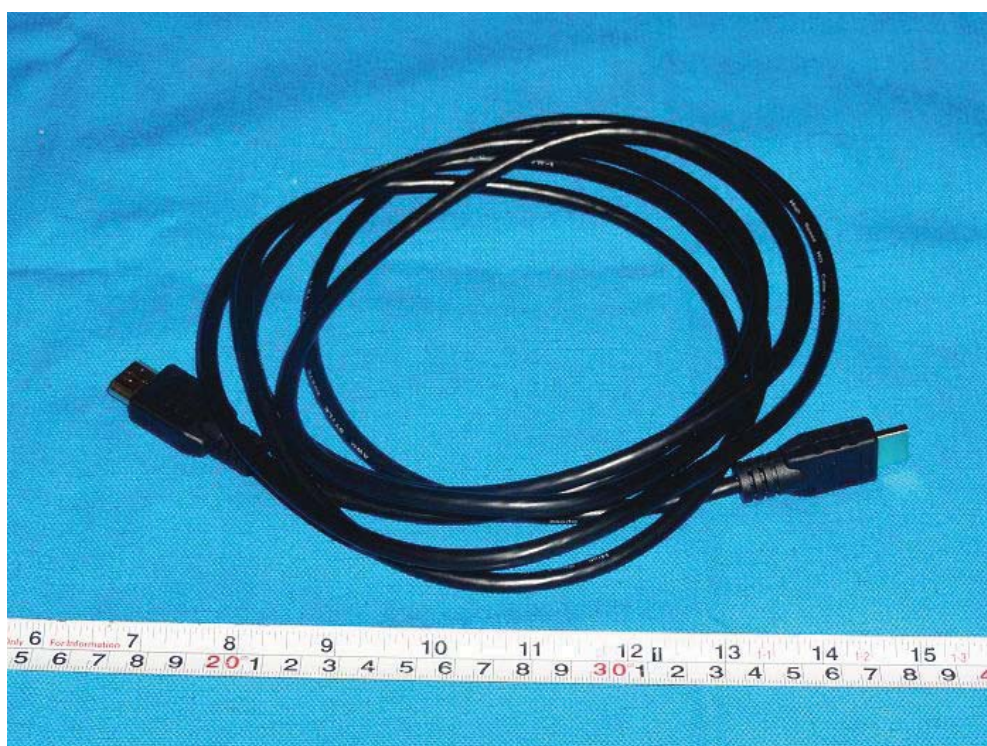


Photo 8

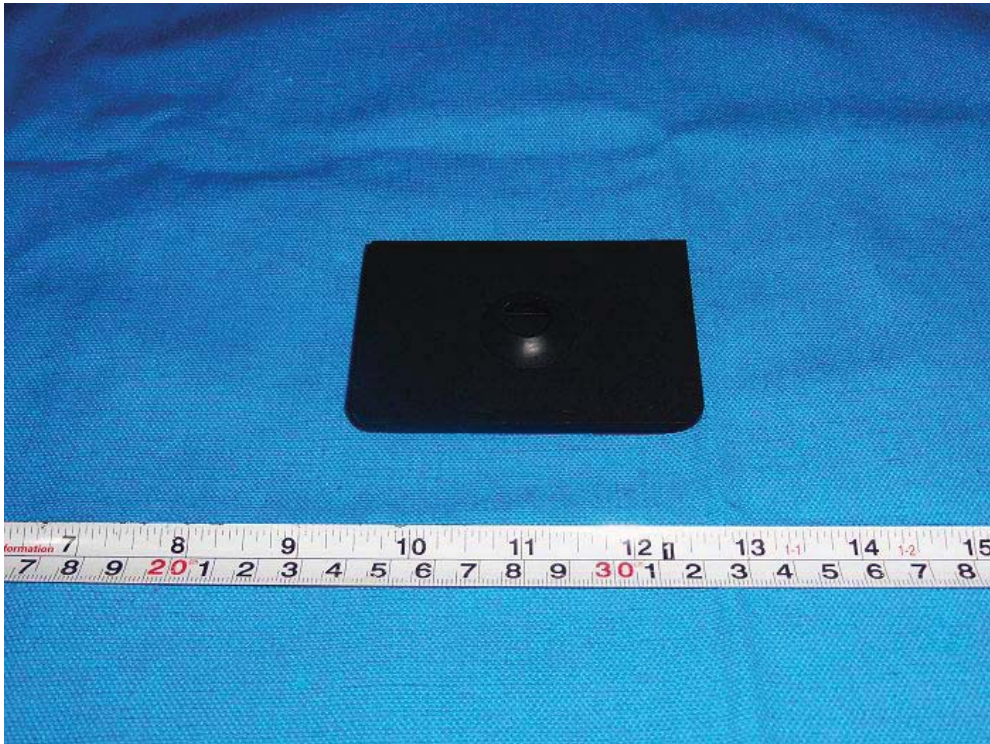


Photo 9



Photo 10

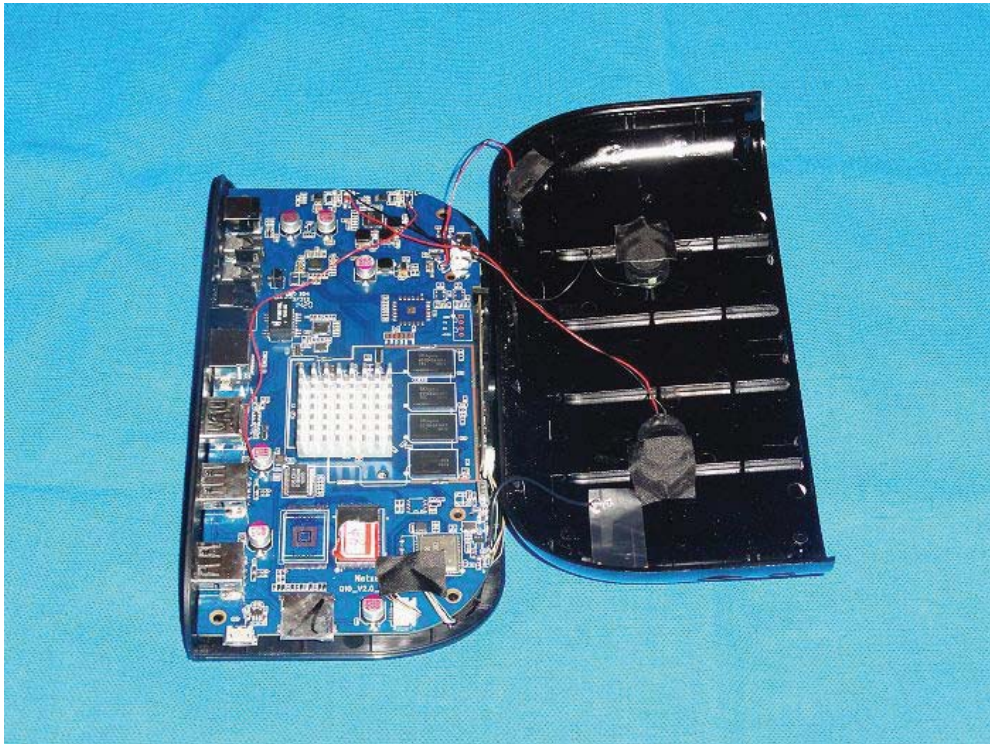


Photo 11

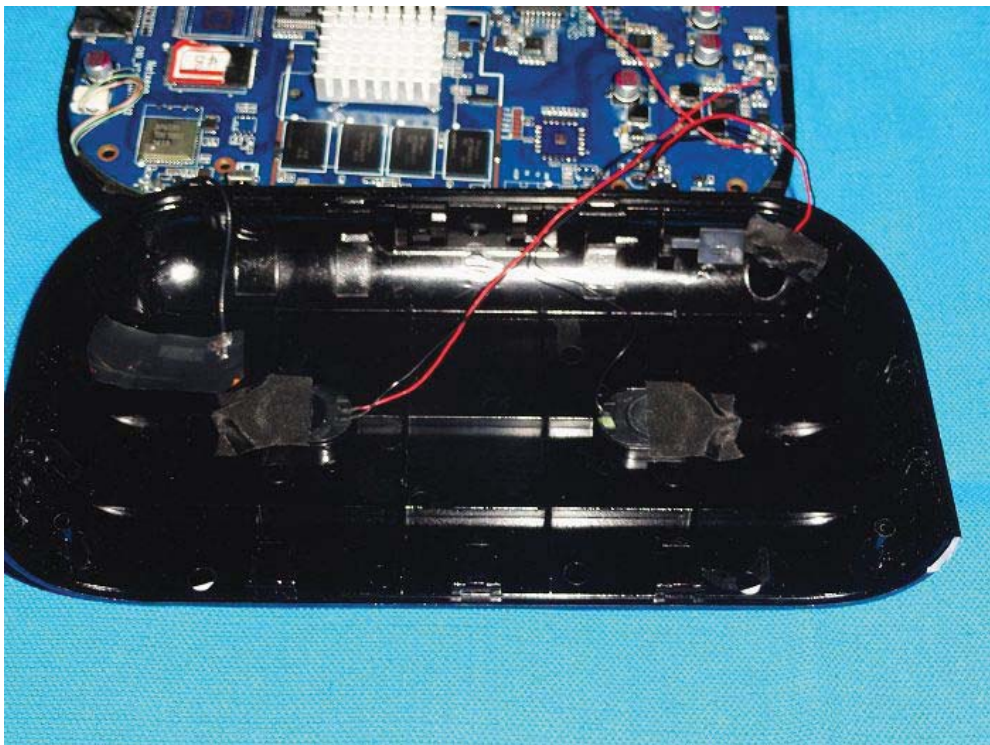


Photo 12

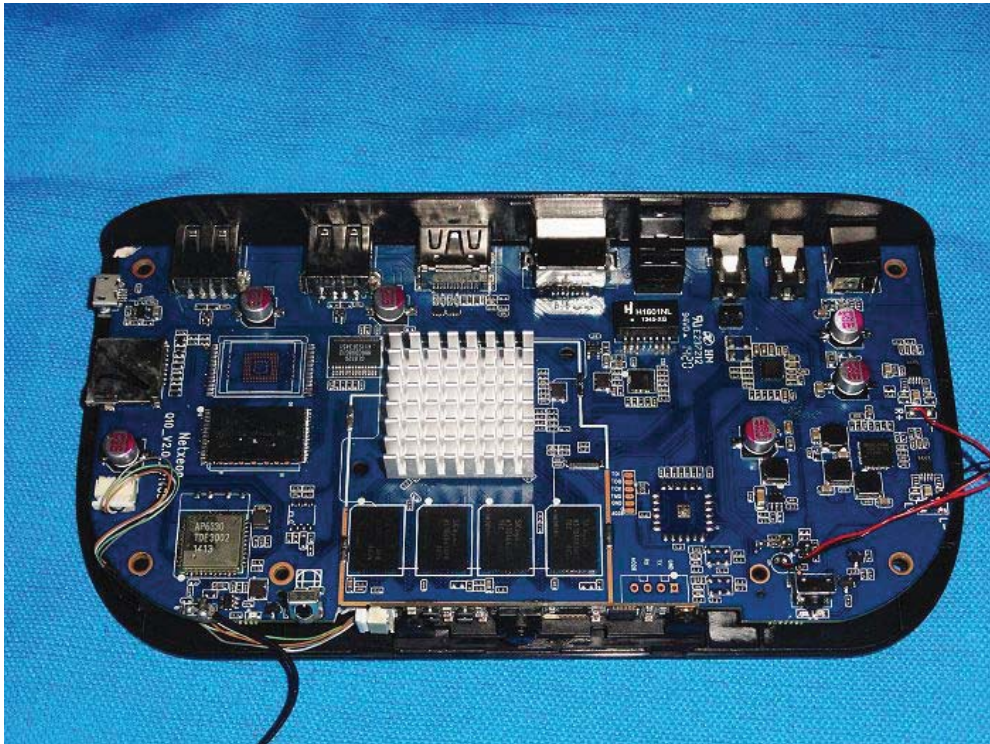


Photo 13

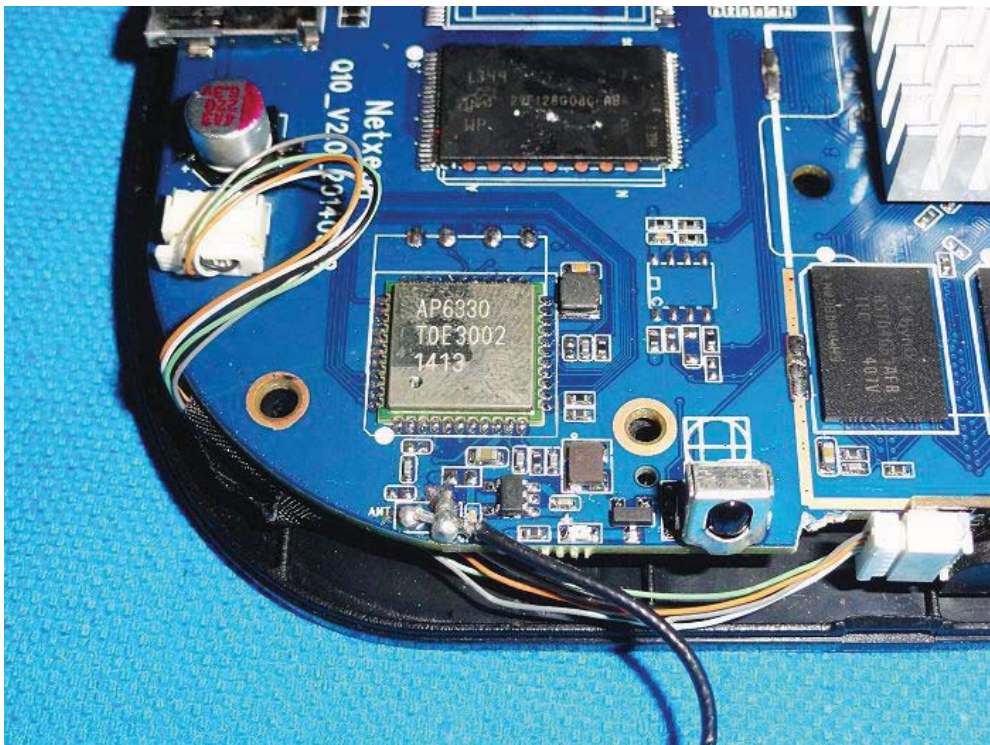


Photo 14



Photo 15

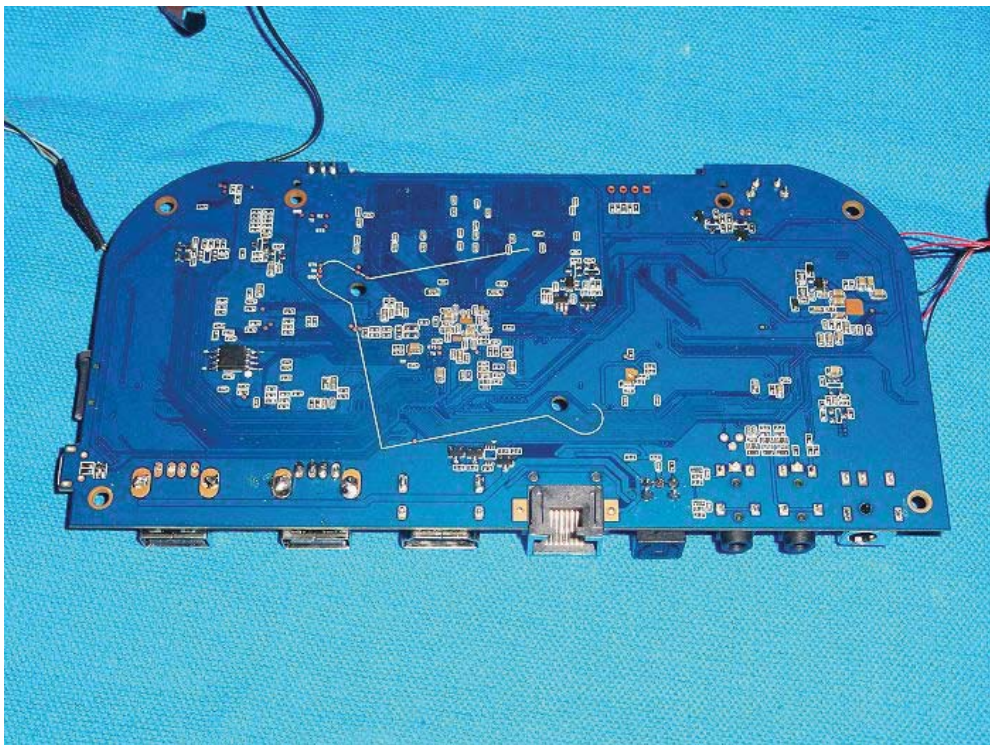


Photo 16



Photo 17

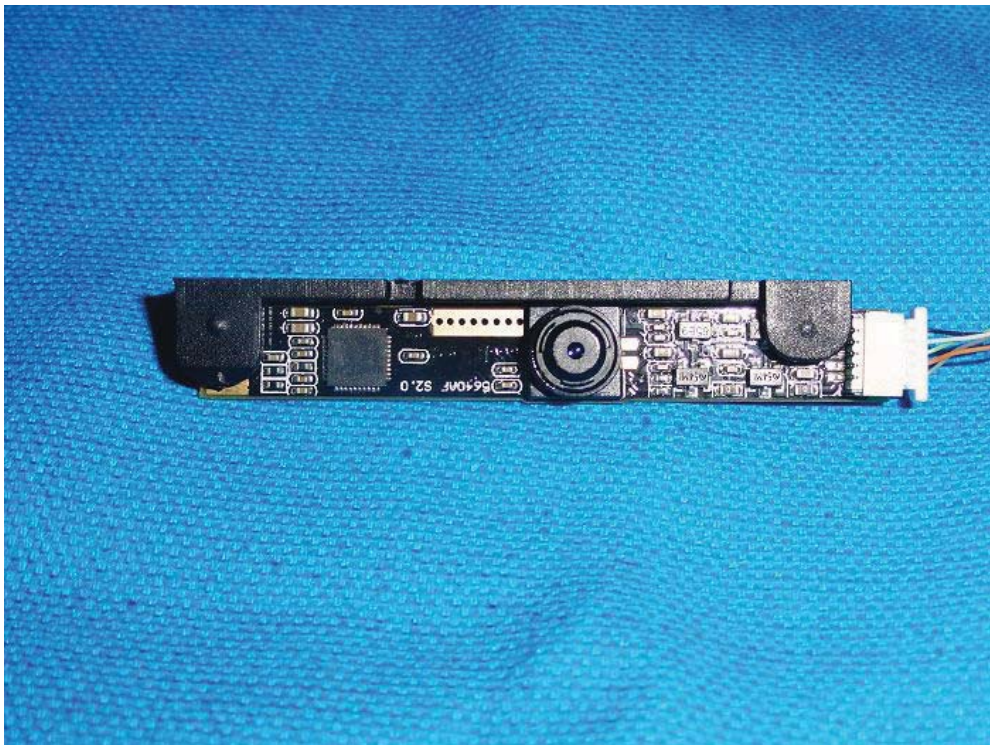


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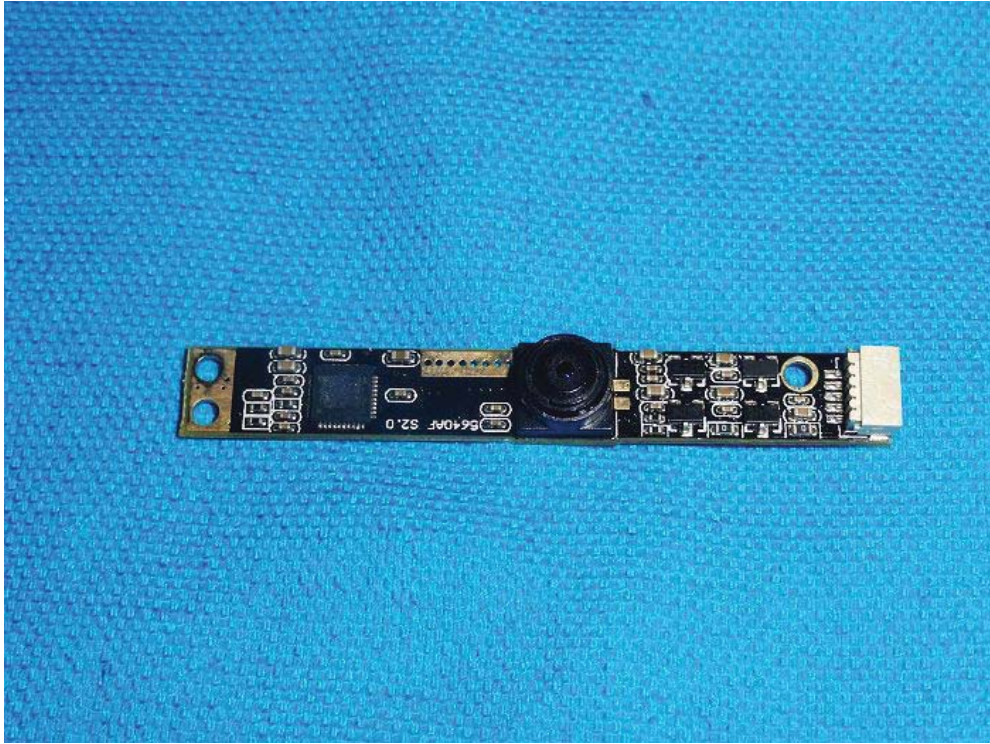


Photo 19

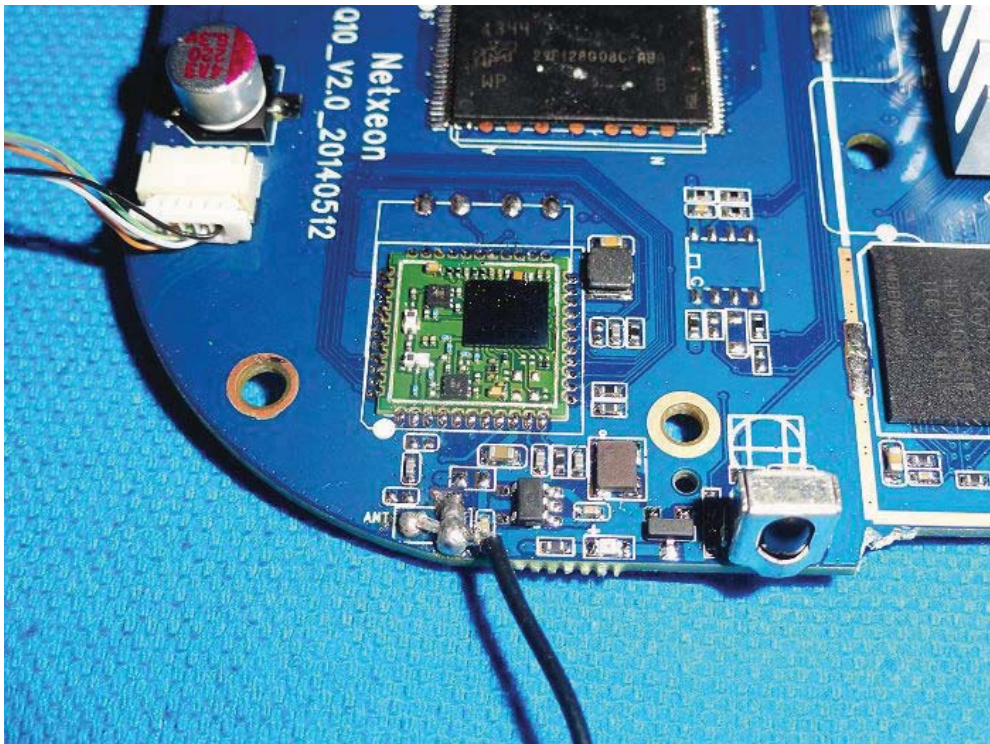


Photo 20

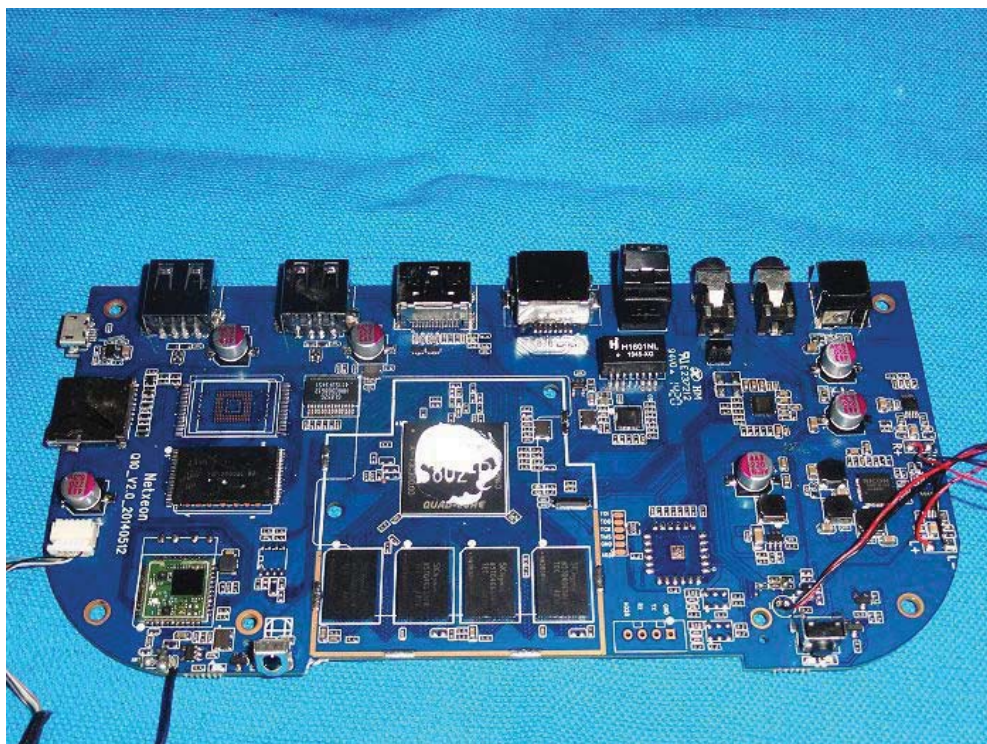


Photo 21

The Report End