

TECHNICAL CONSULTING



ISO/IEC17025Accredited
Lab.

Report No:

FCC 1407023-04

File reference No:

2014-07-03

Applicant:

Shenzhen Longgang Huatong Industry Co., Ltd.

Product:

TABLET PC

Model No:

MID-R7801QC, MID-R7802DC, MID-R7802QC, MID-B7804DC,
MID-B7804QC, MID-R7805QC, MID-R7806QC

Trademark:

N/A

Test Standards:

FCC Part 15 Subpart E, Paragraph 15.407

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4, FCC Part 15 Subpart C, Paragraph 15.407 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated:

July 03, 2014

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

5/F, Block 4, Anhua Industrial Zone., No.8 TaiRan Rd. CheGongMiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688

Fax (755) 83442996

Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

IC- Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.
Telephone: (755) 83448688
Fax: (755) 83442996

Site on File with the Federal Communications Commission – United States

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Shenzhen Longgang Huatong Industry Co., Ltd.
Address: 4-5F, Jinjijia Industrial Park, Xialilang, Nanwan Street,Longgang District, Shenzhen City, Guangdong Province, P.R. China
Telephone: 00086-755-28886679
Fax: 00086-755-28883034

1.3 Description of EUT

Product:	Tablet PC
Manufacturer:	Shenzhen Longgang Huatong Industry Co., Ltd.
Address:	4-5F, Jinjijia Industrial Park, Xialilang, Nanwan Street,Longgang District, Shenzhen City, Guangdong Province, P.R. China
Brand Name:	HUATONG
Model Number:	MID-R7801QC
Additional Model Number:	MID-R7802DC, MID-R7802QC, MID-B7804DC, MID-B7804QC, MID-R7805QC, MID-R7806QC
Type of Modulation	IEEE 802.11a : OFDM(64QAM, 16QAM, QPSK, BPSK)
Frequency	5745MHz, 5765MHz, 5785MHz, 5805MHz
Air Data Rate	IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6 Mbps
Antenna:	Integral antennas used.
Antenna Gain:	Maximum 0.33dBi for 5G band
Test Mode:	5745MHz, 5785MHz, 5805MHz, was tested. And 6Mbps air data rate was the worse case. During testing, EUT was set to 100% duty cycle.
Frequency Selection	By software

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Power Supply: Model No.: JKY0212-0502000UL
Input: 100-240V, 50/60Hz, 0.3A; Output: 5V, 2A

Input Voltage: DC3.7V powered by Lion-Battery

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2014-06-18 to 2014-07-02

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

Terry Tang

The sample tested by _____

Print Name: Terry Tang

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Test Equipments					
2.0	Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.
	ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2013-08-23
	TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2013-08-23
	TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2013-08-23
	Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2013-08-25
	ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2013-08-23
	Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2013-08-24
	System Controller	CT	SC100	-	--
	Printer	EPSON	PHOTO EX3	CFNH234850	--
	Computer	IBM	8434	1S8434KCE99BLXL O*	-
	Loop Antenna	EMCO	6502	00042960	2013-08-23
	ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2013-08-23
	3m OATS	--	--	N/A	2013-08-22
	Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2013-08-24
	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2013-08-24
	Power meter	Anritsu	ML2487A	6K00003613	2013-08-24
	Power sensor	Anritsu	MA2491A	32263	2013-08-24
	Bilog Antenna	Schwarebeck	VULB9163	9163/340	2013-08-24
	LISN	AFJ	LS16C	10010947251	2013-08-23
	LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2013-08-23
	9*6*6 Anechoic	--	--	N/A	2013-08-22
	EMI Test Receiver	RS	ESCS30	100139	2013-08-23
					2014-08-22

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2.1 Auxiliary Equipment

Name	Model No.	Serial No.	Manufacturer	Cable	FCC ID/DOC
TF Card	--	--	Kingston	--	--
Passive Earphone	--	--	--	--	--
LCD Monitor	PH2450	--	SAMSUNG	--	DOC

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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

3.2 Test Standards

FCC Part 15 Subpart & Subpart E, Paragraph 15.407

4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

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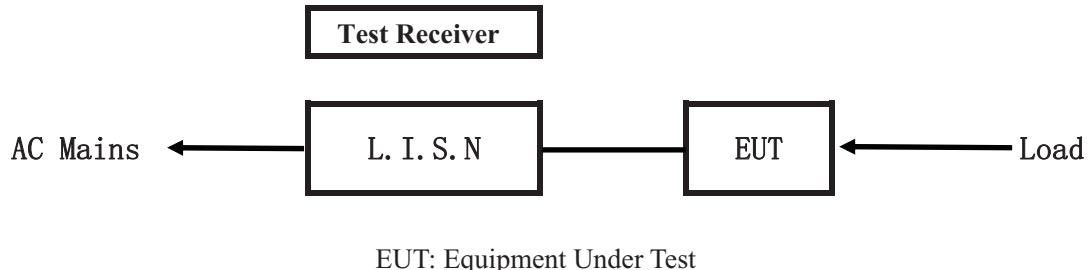
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

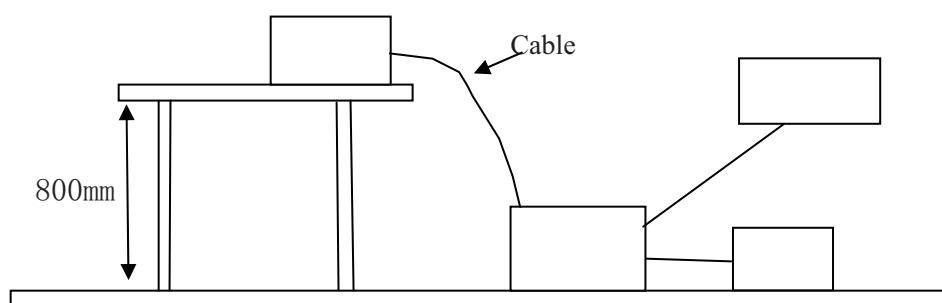


5.2 Test Method and test Procedure

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 ID
Tablet PC	Shenzhen Longgang Huatong Industry Co., Ltd.	MID-R7801QC, MID-R7802DC, MID-R7802QC, MID-B7804DC, MID-B7804QC, MID-R7805QC, MID-R7806QC	2ACPP-R7801QC

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B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating
--	--	--	--

5.4 EUT Operating Condition

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

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

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	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.

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

EUT Operating Environment

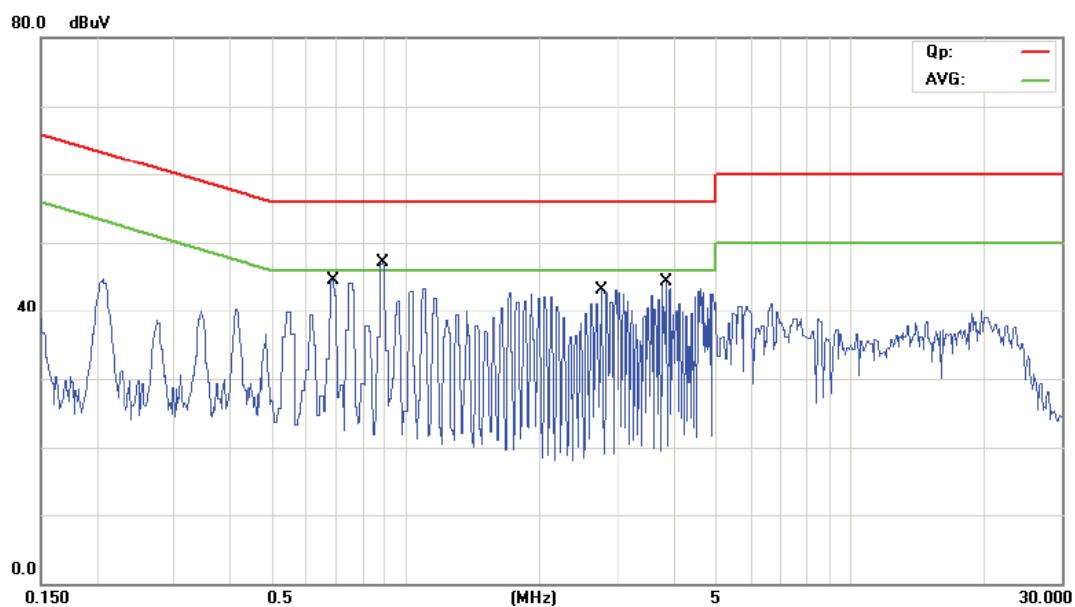
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping WIFI Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Over
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.8874	27.80	11.78	39.58	56.00	-16.42	QP
2		0.8874	18.20	11.78	29.98	46.00	-16.02	AVG
3		0.6857	33.00	11.57	44.57	56.00	-11.43	QP
4	*	0.6857	26.50	11.57	38.07	46.00	-7.93	AVG
5		2.7420	30.20	12.60	42.80	56.00	-13.20	QP
6		2.7420	24.60	12.60	37.20	46.00	-8.80	AVG
7		3.8384	31.00	13.04	44.04	56.00	-11.96	QP
8		3.8384	23.50	13.04	36.54	46.00	-9.46	AVG

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

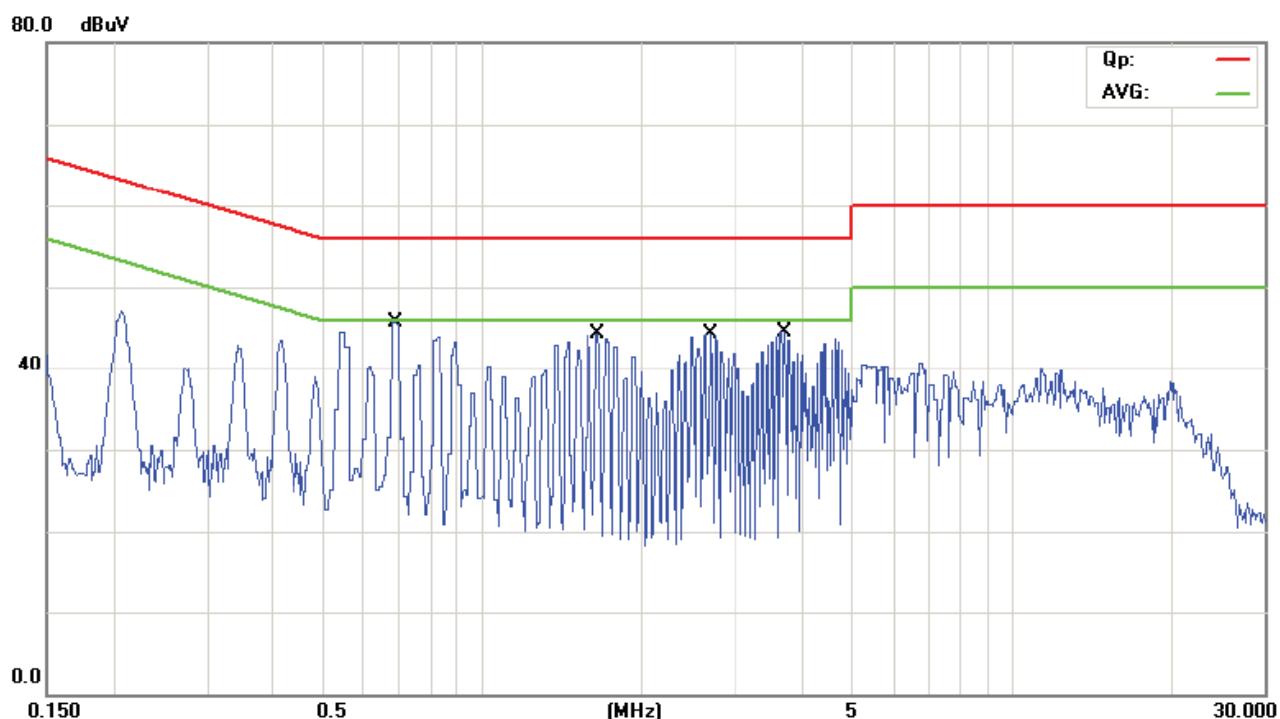
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping WIFI Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		1.6520	31.40	12.16	43.56	56.00	-12.44	QP
2		1.6520	22.70	12.16	34.86	46.00	-11.14	AVG
3		2.6835	30.20	12.57	42.77	56.00	-13.23	QP
4		2.6835	21.70	12.57	34.27	46.00	-11.73	AVG
5		3.7130	29.70	12.99	42.69	56.00	-13.31	QP
6		3.7130	20.10	12.99	33.09	46.00	-12.91	AVG
7		0.6854	34.50	11.57	46.07	56.00	-9.93	QP
8	*	0.6854	27.70	11.57	39.27	46.00	-6.73	AVG

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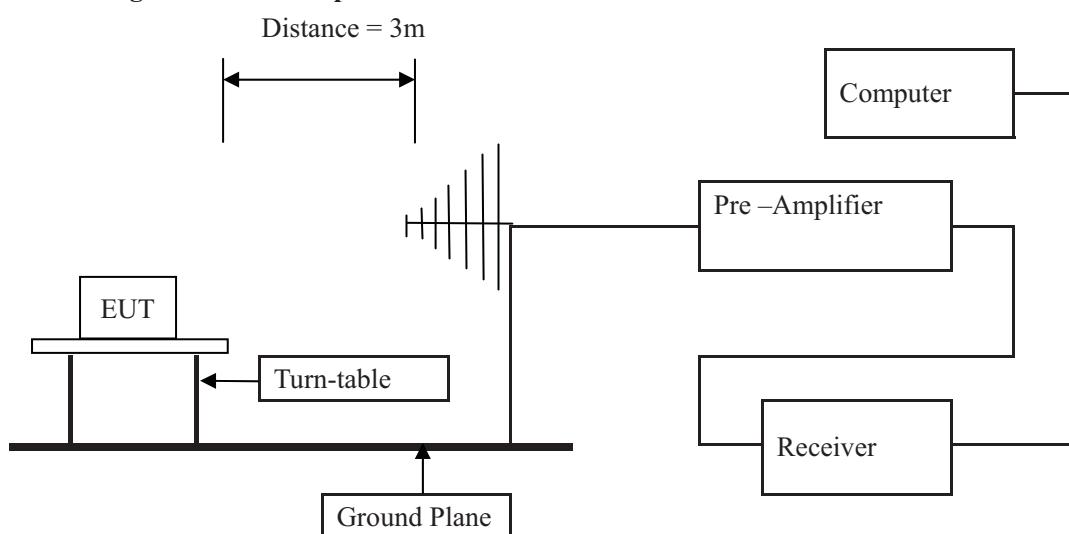
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6 Undesirable Emission and Restrict band

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (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. 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.

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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) = $20 \log_{10}$ 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
4. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keeping WIFI Transmitting

Results: **Pass**

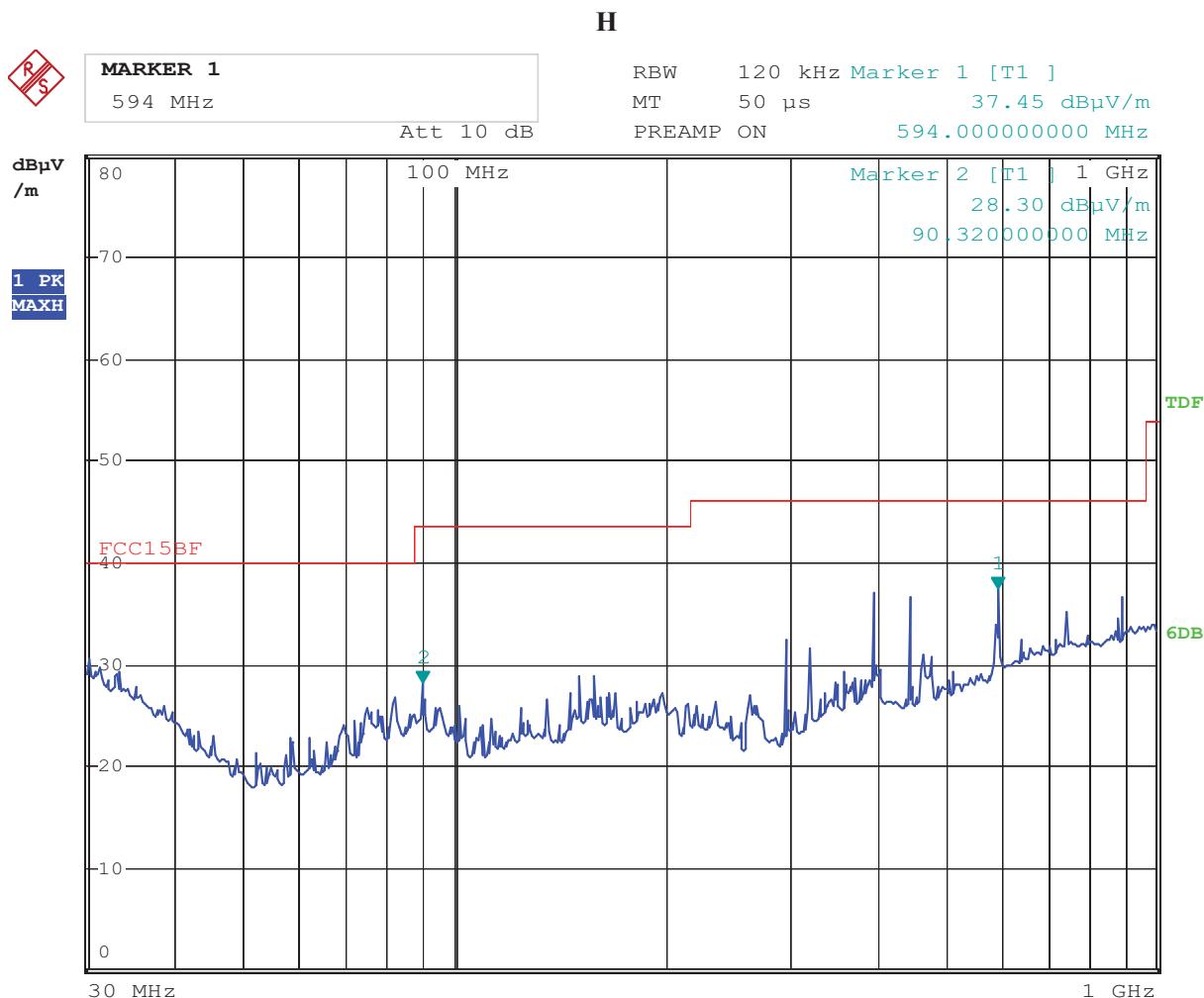
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
594.000	37.45	H	46.00
90.320	28.30	H	43.50
594.000	38.84	V	46.00
90.320	32.46	V	43.50

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Test Figure:



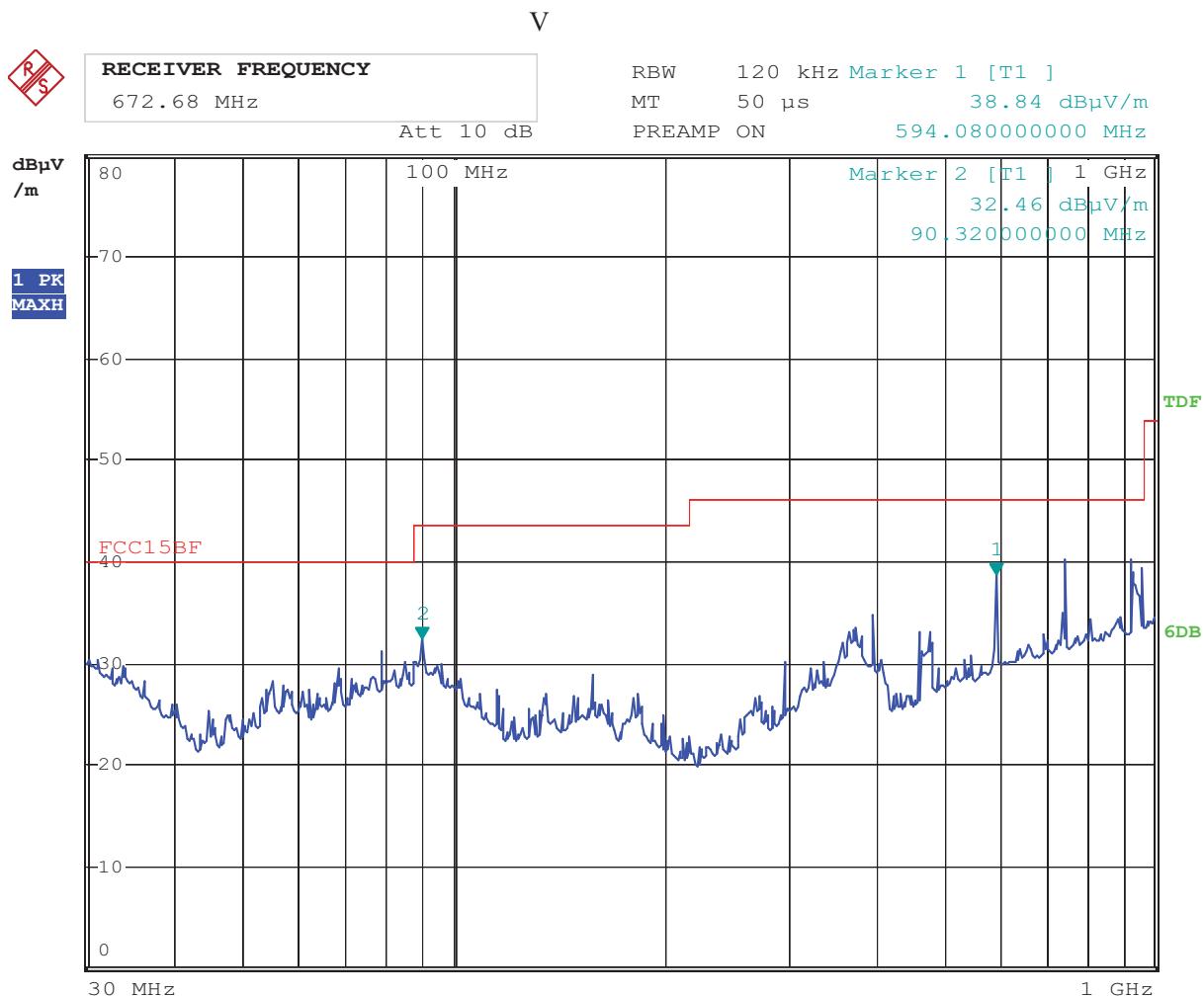
Date: 18.JUN.2014 19:12:57

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Test Figure:



Date: 18.JUN.2014 19:15:56

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Operation Mode: Keep Transmitting mode under CH149 5745MHz

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
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: Keep Transmitting under CH157 5785MHz

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
11570	--	H	74(Peak)/ 54(AV)
17355	--	V	74(Peak)/ 54(AV)
23140	--	H/V	74(Peak)/ 54(AV)
28925	--	H/V	74(Peak)/ 54(AV)
34710	--	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

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Operation Mode: Keep Transmitting under CH161 5805MHz

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
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

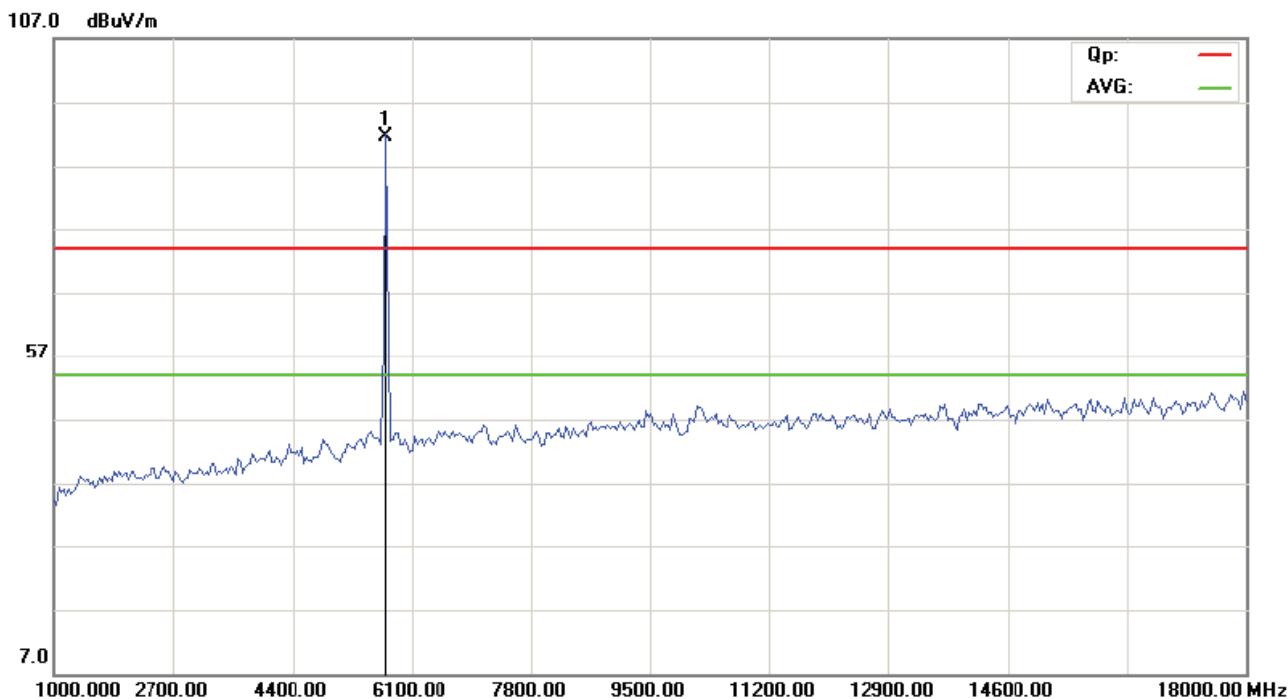
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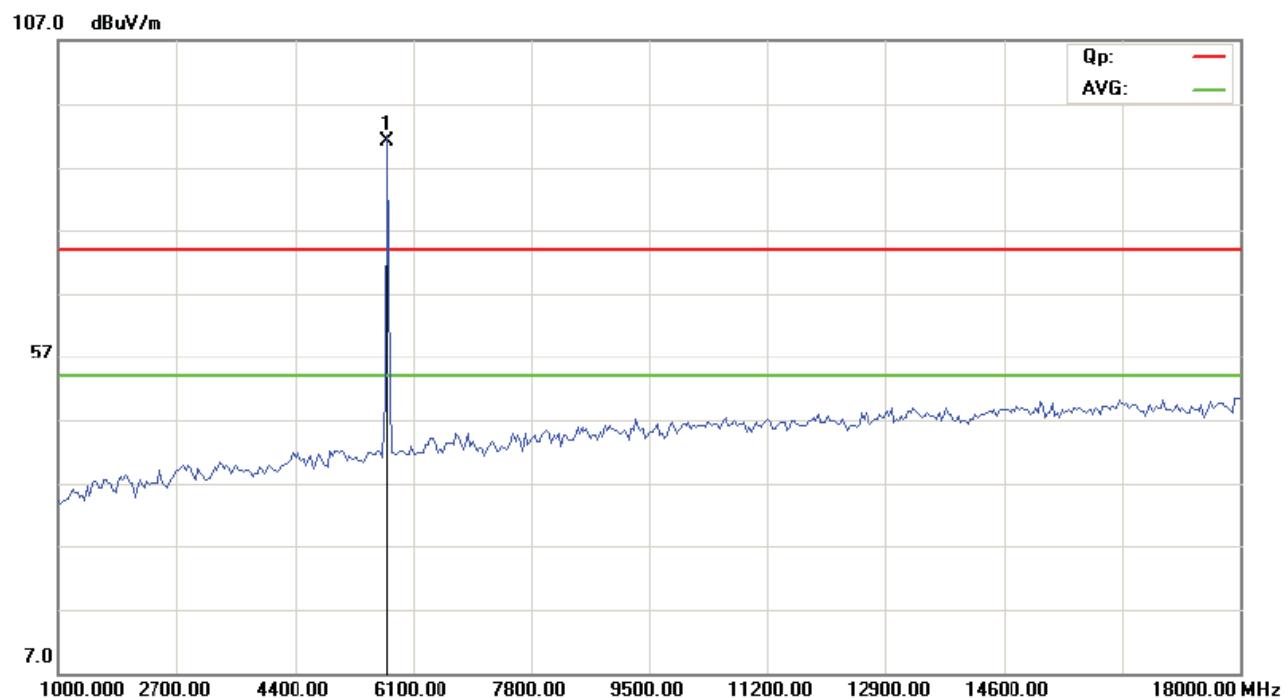
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Please refer to the following test plots for details:

CH149 for 11g at 6Mbps: Horizontal



CH149 for 11g at 6Mbps: Vertical

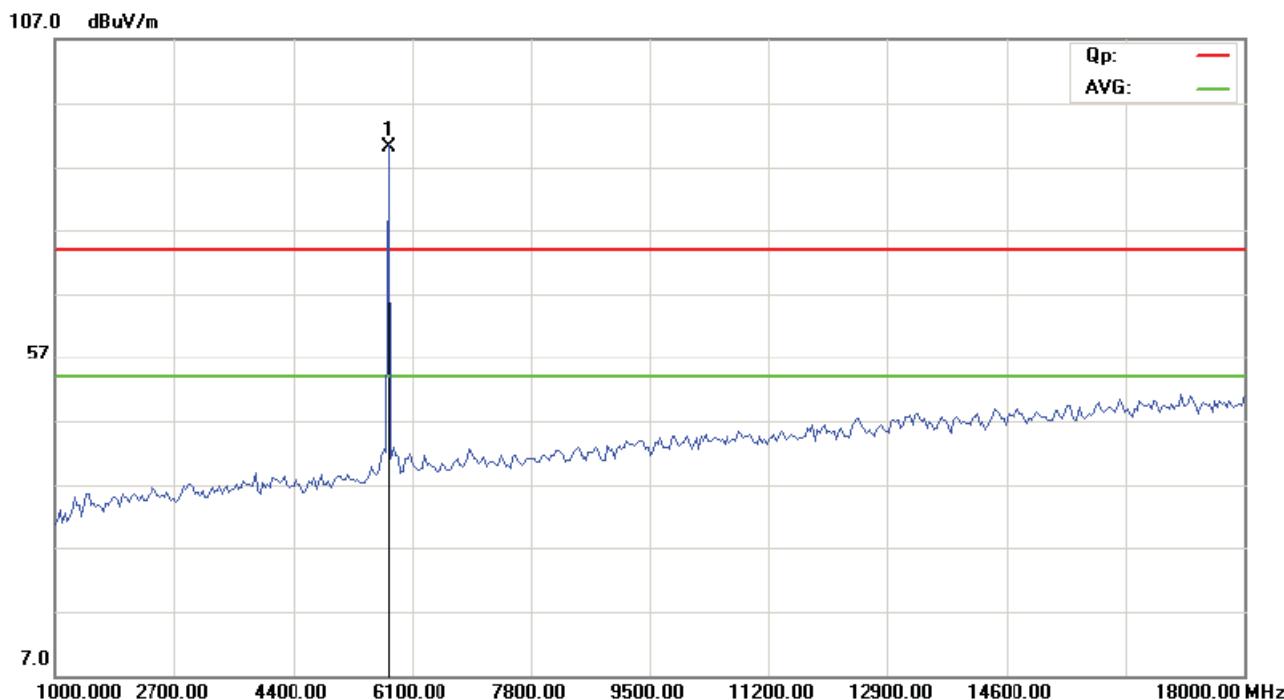


The report refers only to the sample tested and does not apply to the bulk.

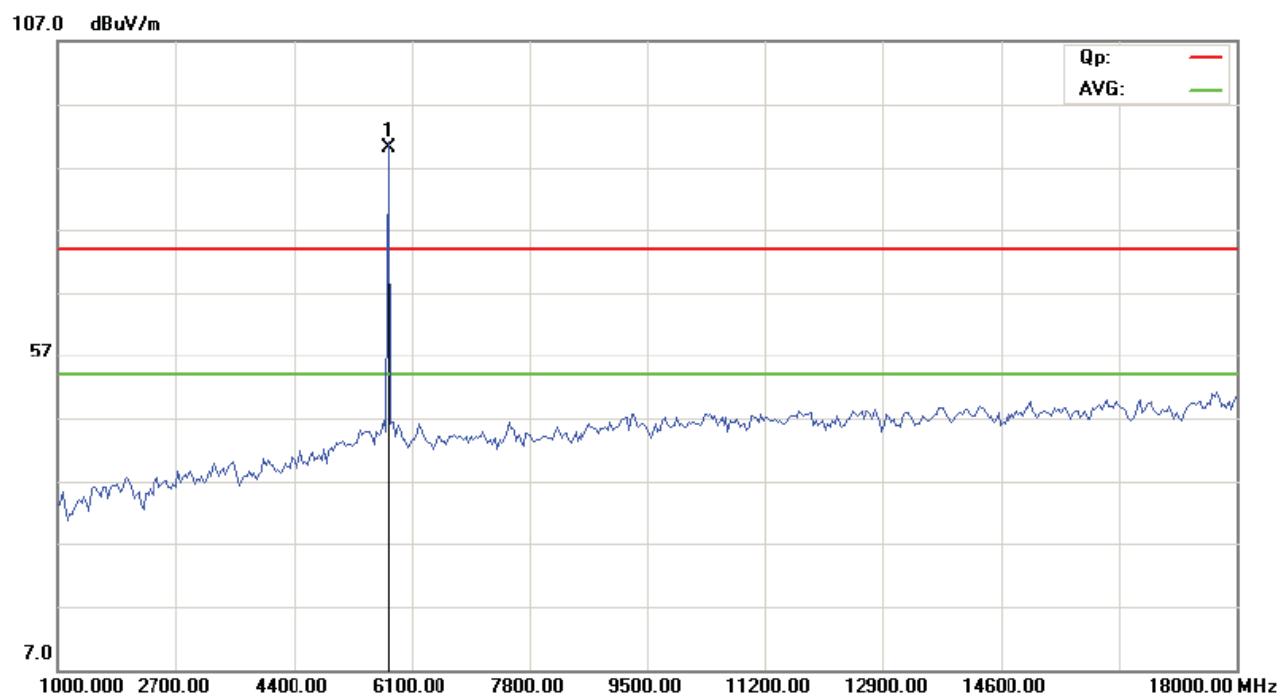
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CH157 for 11g at 6Mbps: Vertical



CH157 for 11g at 6Mbps: Horizontal

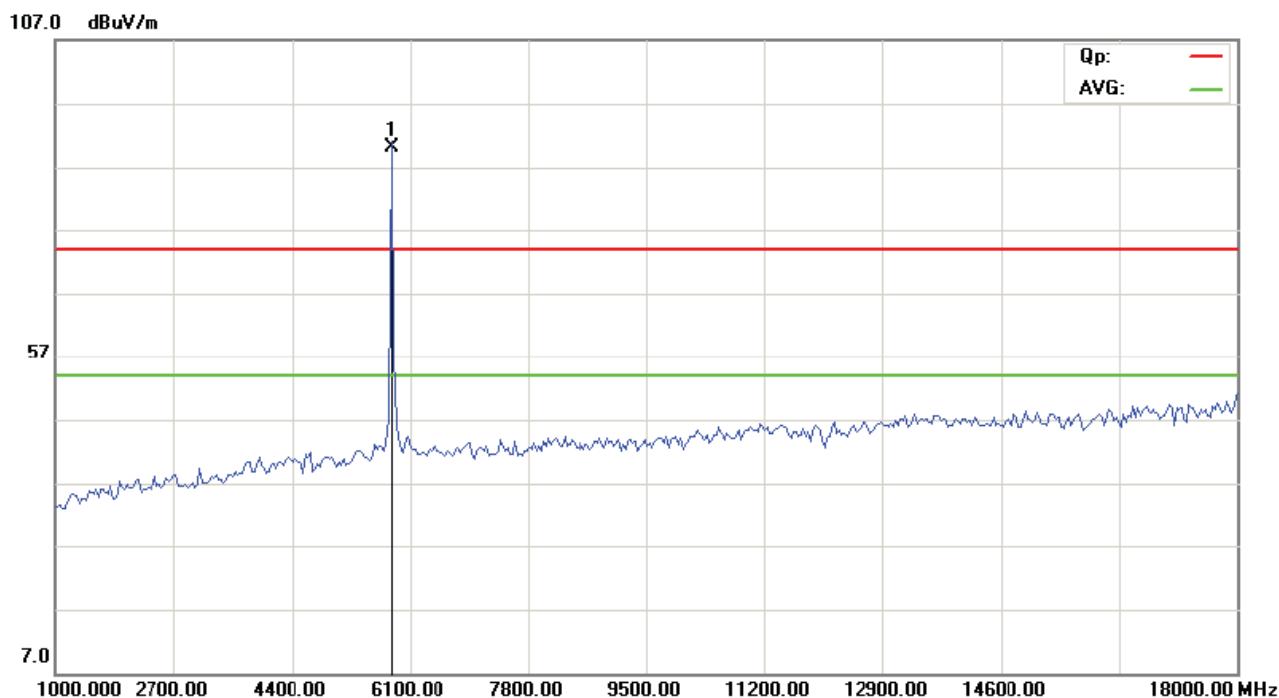


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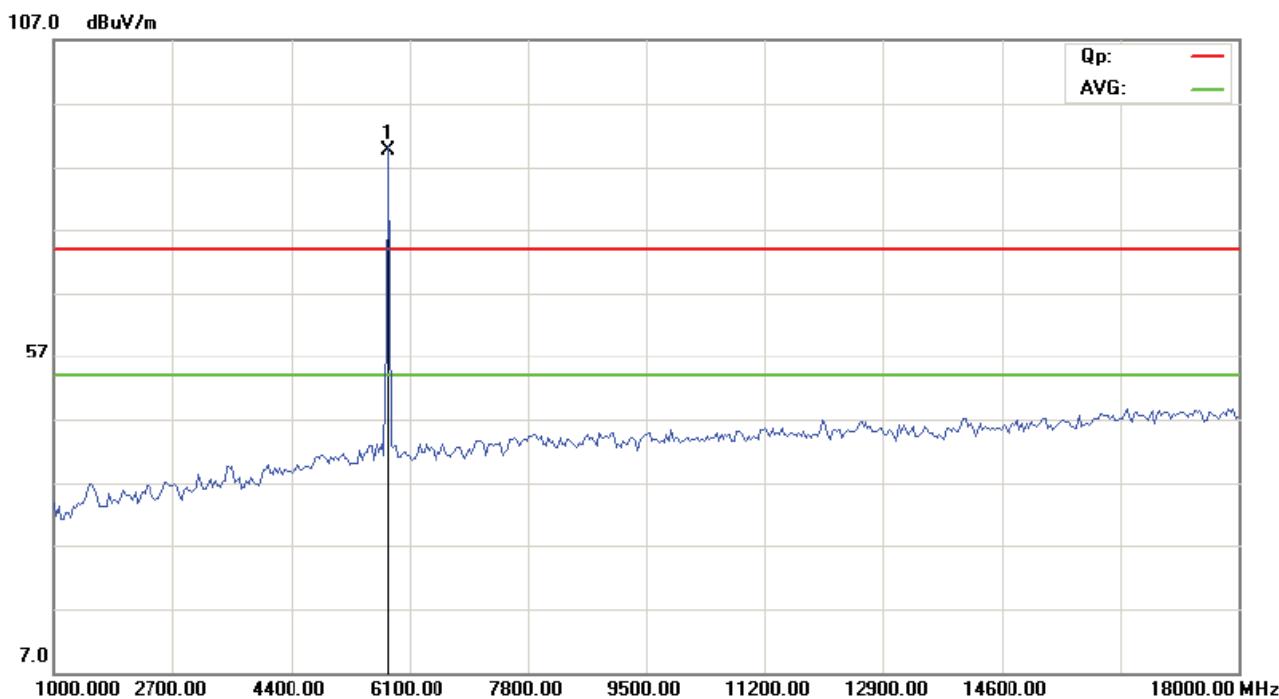
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CH161 for 11g at 6Mbps: Vertical



CH161 for 11g at 6Mbps: Horizontal



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

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Restricted band Measurement				
EUT	Tablet PC		Test Mode:	Channel 149 (5745MHz)
Mode	Keeping WIFI transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
Horizontal				
5725	PK (dB μ V/m)	56.16 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-39.04		
Vertical				
5725	PK (dB μ V/m)	54.83(PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-40.37		

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 E[dB μ V/m]=56.16 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 56.16 - 95.2 = -39.04 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	Tablet PC		Test Mode:	Channel 161 (5805MHz)
Mode	Keeping WIFI transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
Horizontal				
5825	PK (dB μ V/m)	54.92 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-40.28		
Vertical				
5825	PK (dB μ V/m)	52.87 (PK)	Limit	-27dBm/MHz
	EIRP (dBm)	-42.33		

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 E[dB μ V/m]=54.92 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 54.92 - 95.2 = -40.28 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

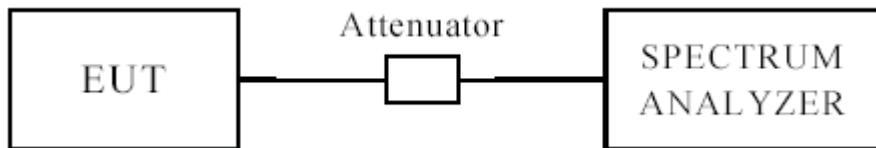
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7.0 26 dB OCCUPIED BANDWIDTH

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

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26dB Occupied Bandwidth

EUT		Tablet PC		Model	
Mode		802.11a		Input Voltage	
Temperature		24 deg. C,		Humidity	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	26 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
149	5745	6	28.944	--	Pass
157	5785	6	26.625	--	Pass
161	5805	6	27.708	--	Pass

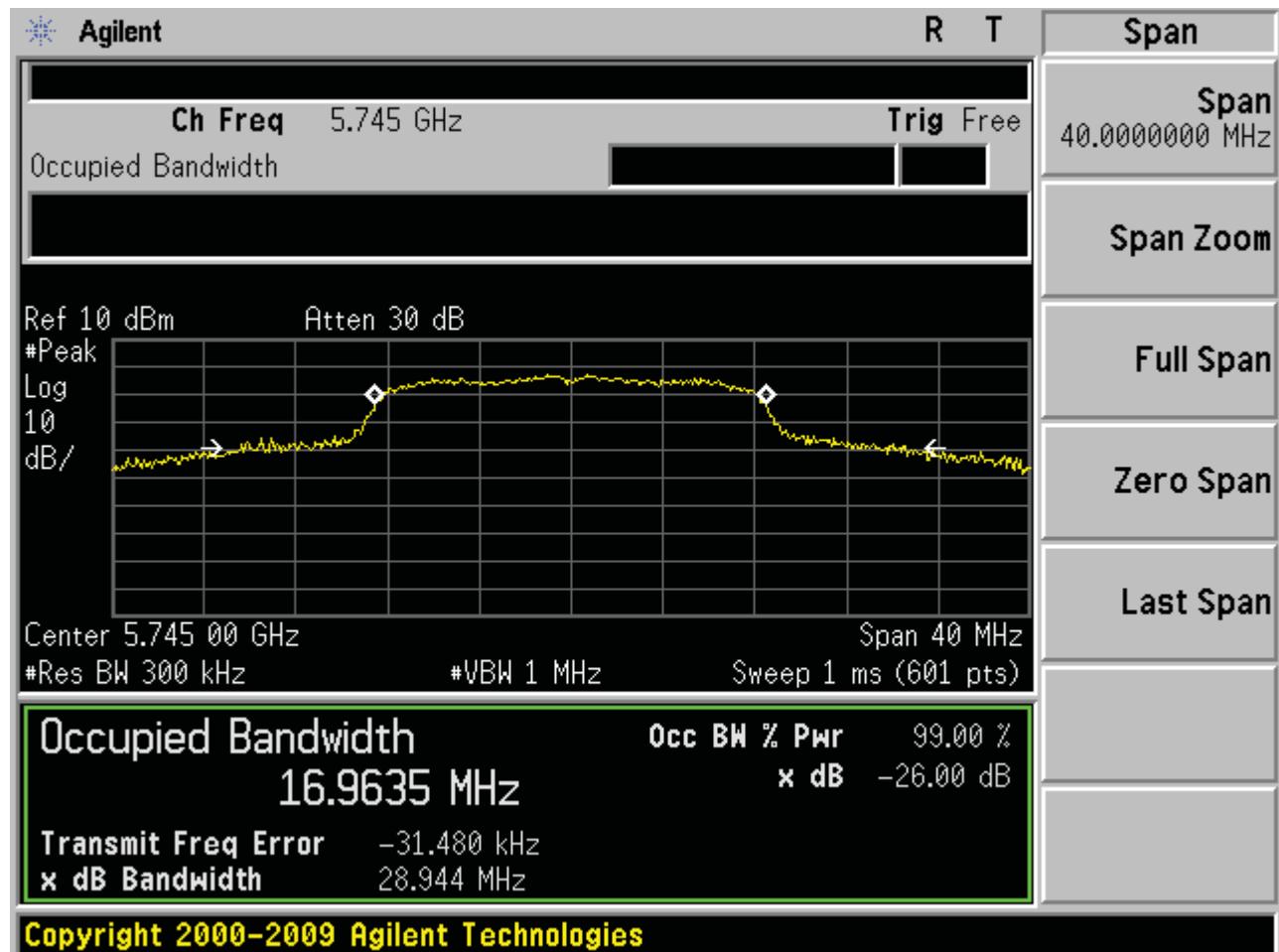
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Test Figure:

Channel 149

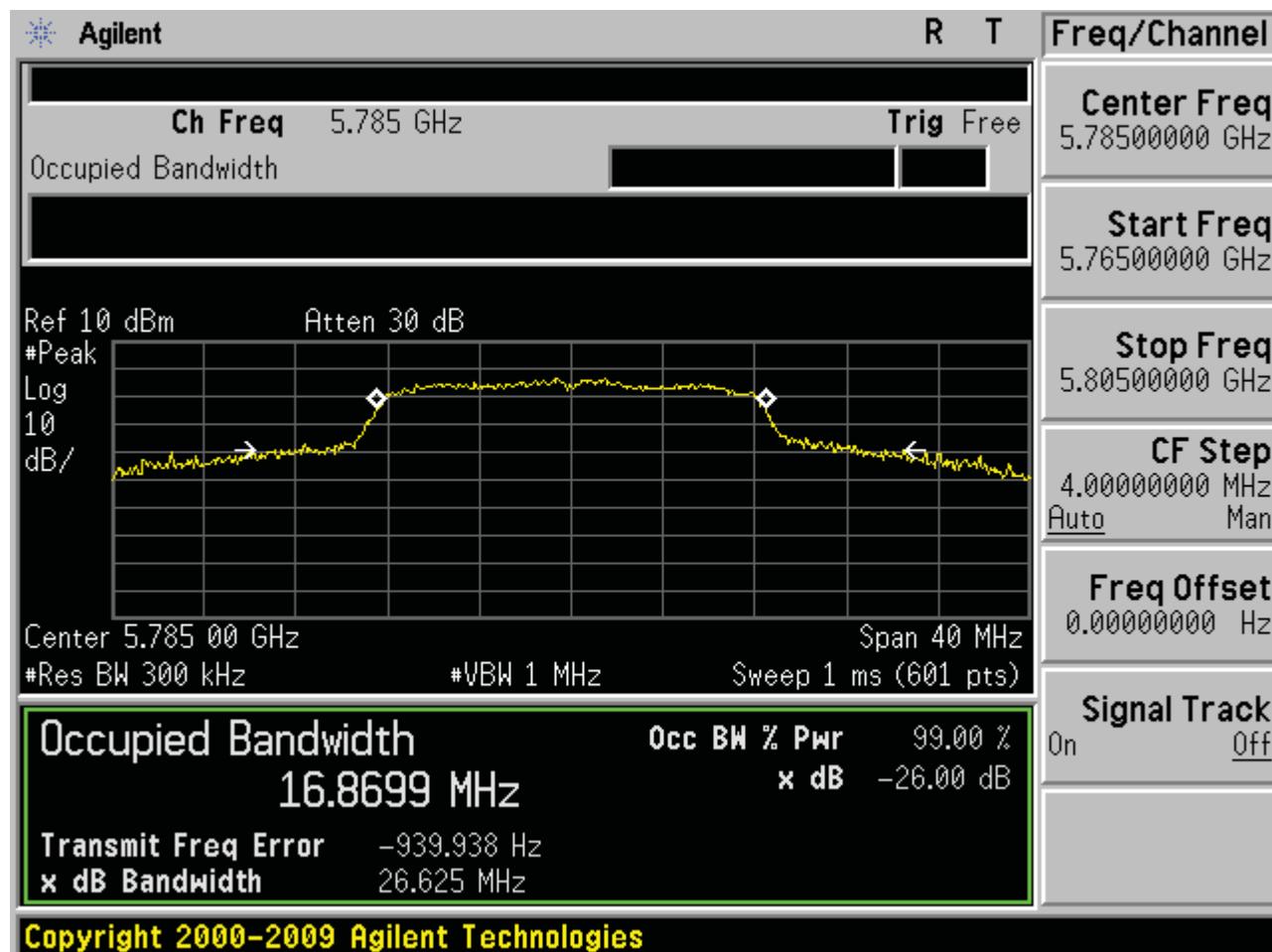


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Channel 157

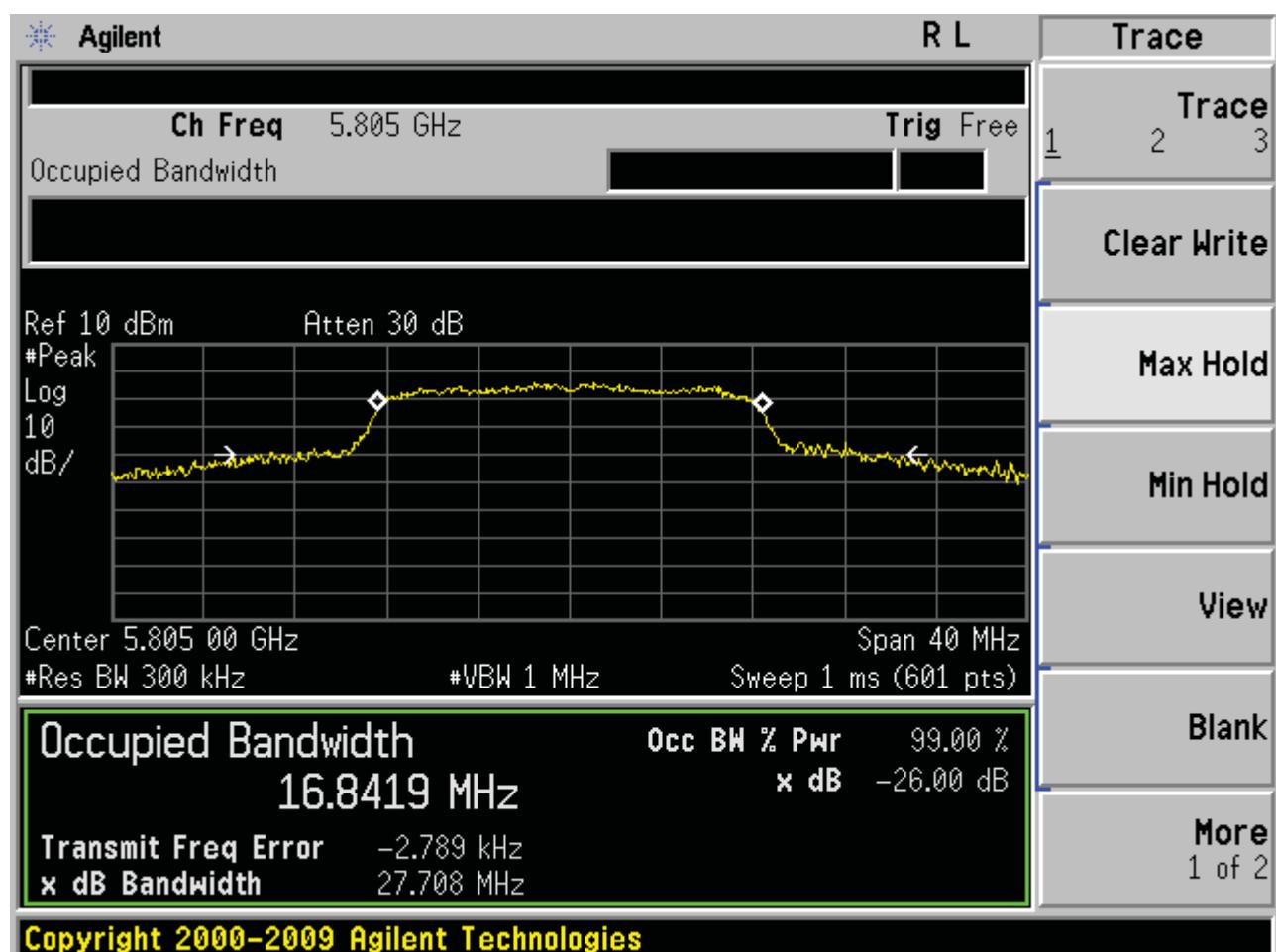


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Channel 161



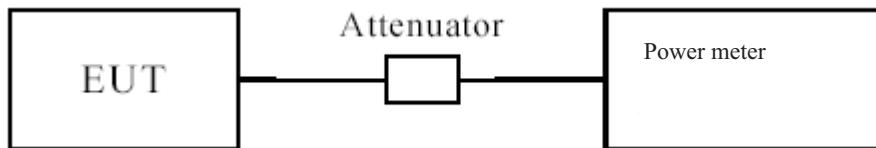
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8.0 Peak Transmit Power Measurement

8.1 Test Setup



8.2 Limits of Peak 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 Power meter 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

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8.4 Test Results

EUT		Tablet PC	Model	MID-R7801QC	
Mode		802.11a	Input Voltage	120V~	
Temperature		24 deg. C,	Humidity	56% RH	
Channel	Frequency (MHz)		Total Power (dBm)	Limit (dBm)	Pass/ Fail
149	5745		4.36	30	Pass
157	5785		3.73	30	Pass
161	5805		3.37	30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH149, CH157 and CH161

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded

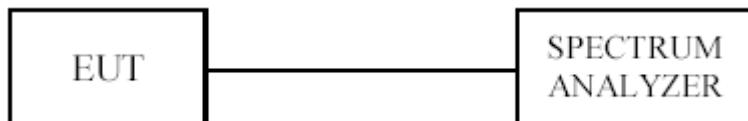
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9. Power Spectral Density Measurement

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.

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9.4 Test Result

EUT		Tablet PC	Model	MID-R7801QC	
Mode		802.11a 6Mbps	Input Voltage	120V~	
Temperature		24 deg. C,	Humidity	56% RH	
Channel	Frequency (MHz)		Final Power Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
149	5745		-5.672	17	Pass
157	5785		-6.458	17	Pass
161	5805		-6.565	17	Pass

Note: 1. Test method According to KDB669211 E) 2) c)

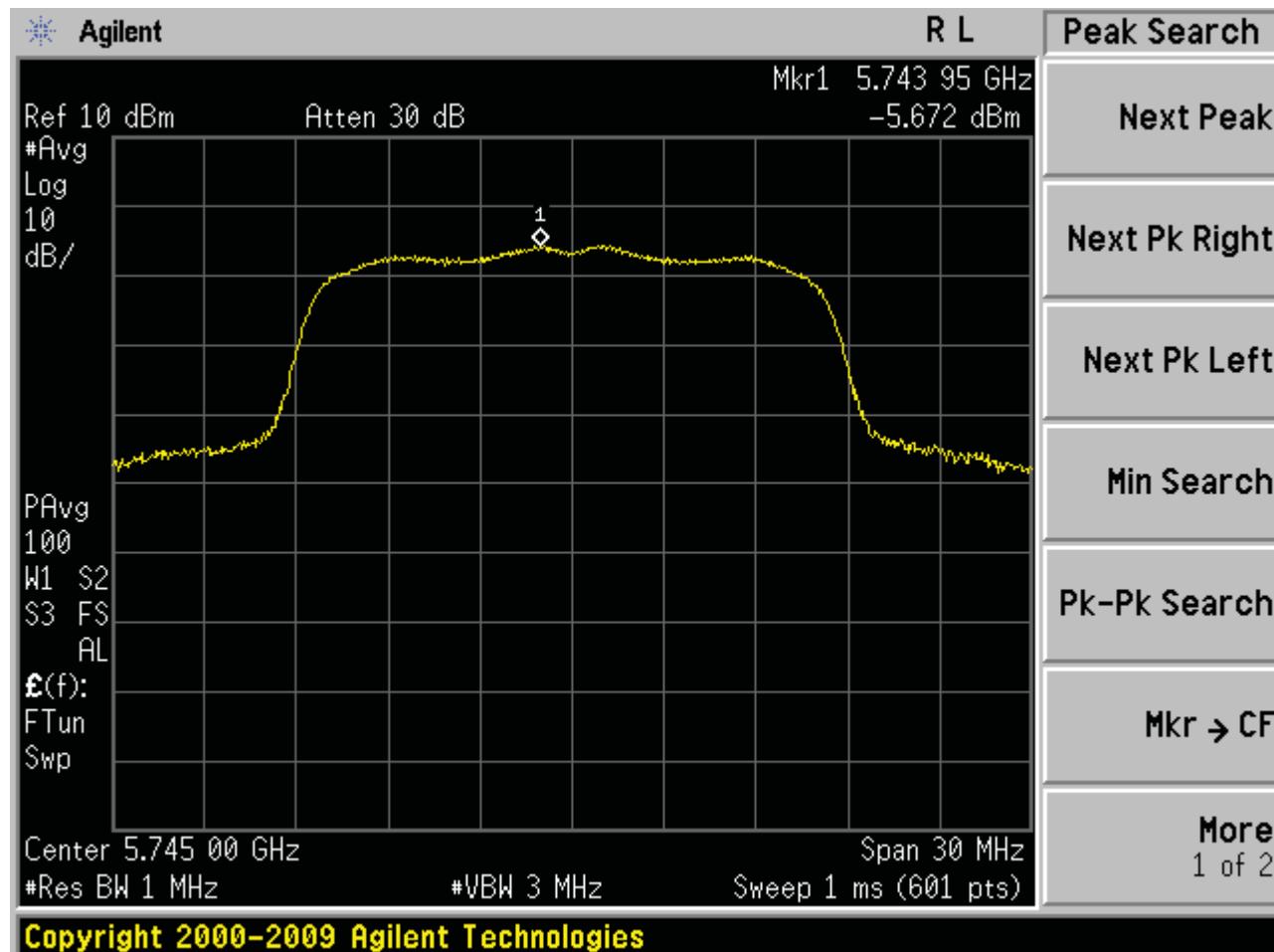
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9.5 Photo of Power Spectral Density Measurement

1.802.11a at 6Mbps of CH149

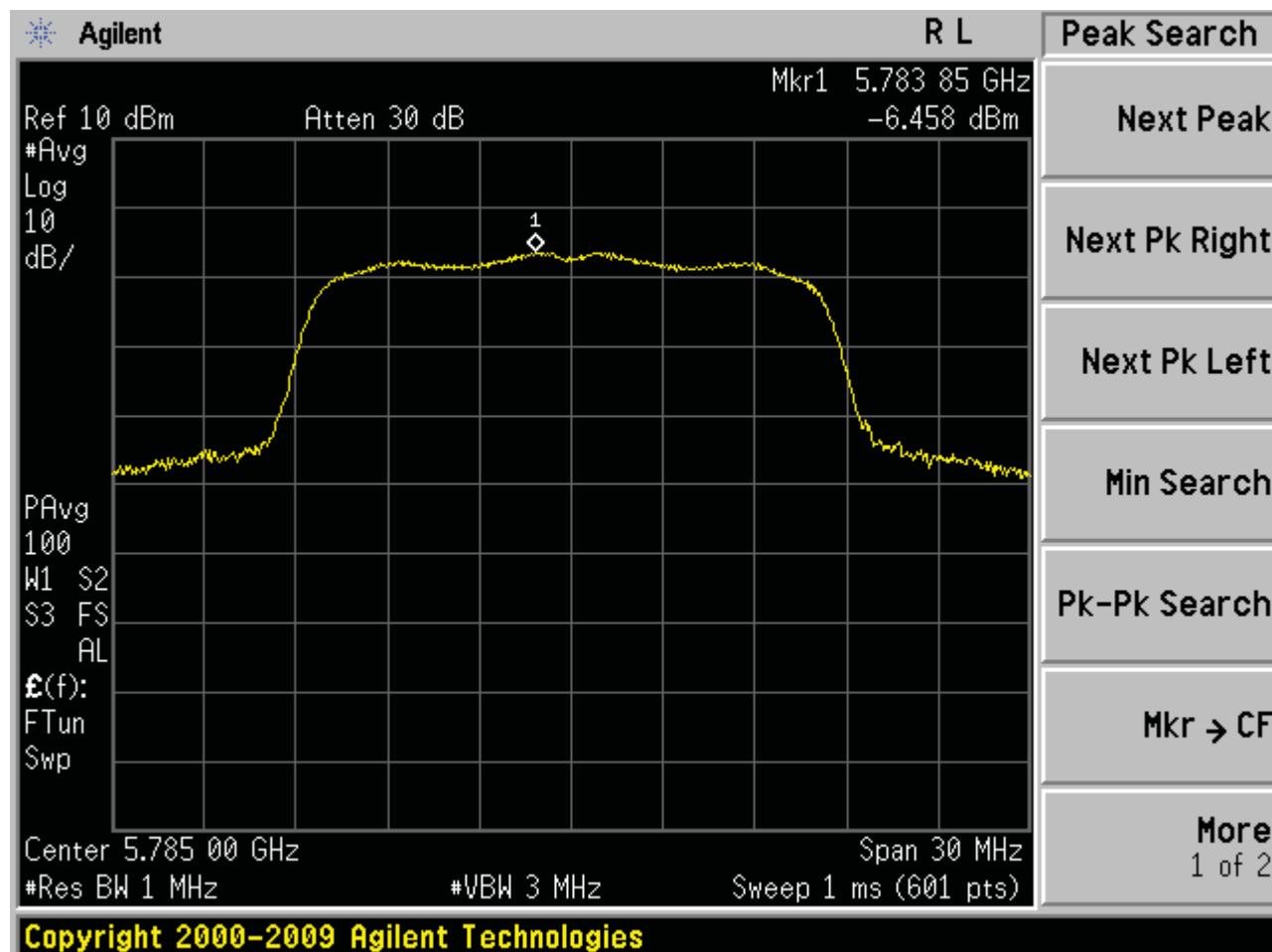


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2.802.11a at 6Mbps of CH157

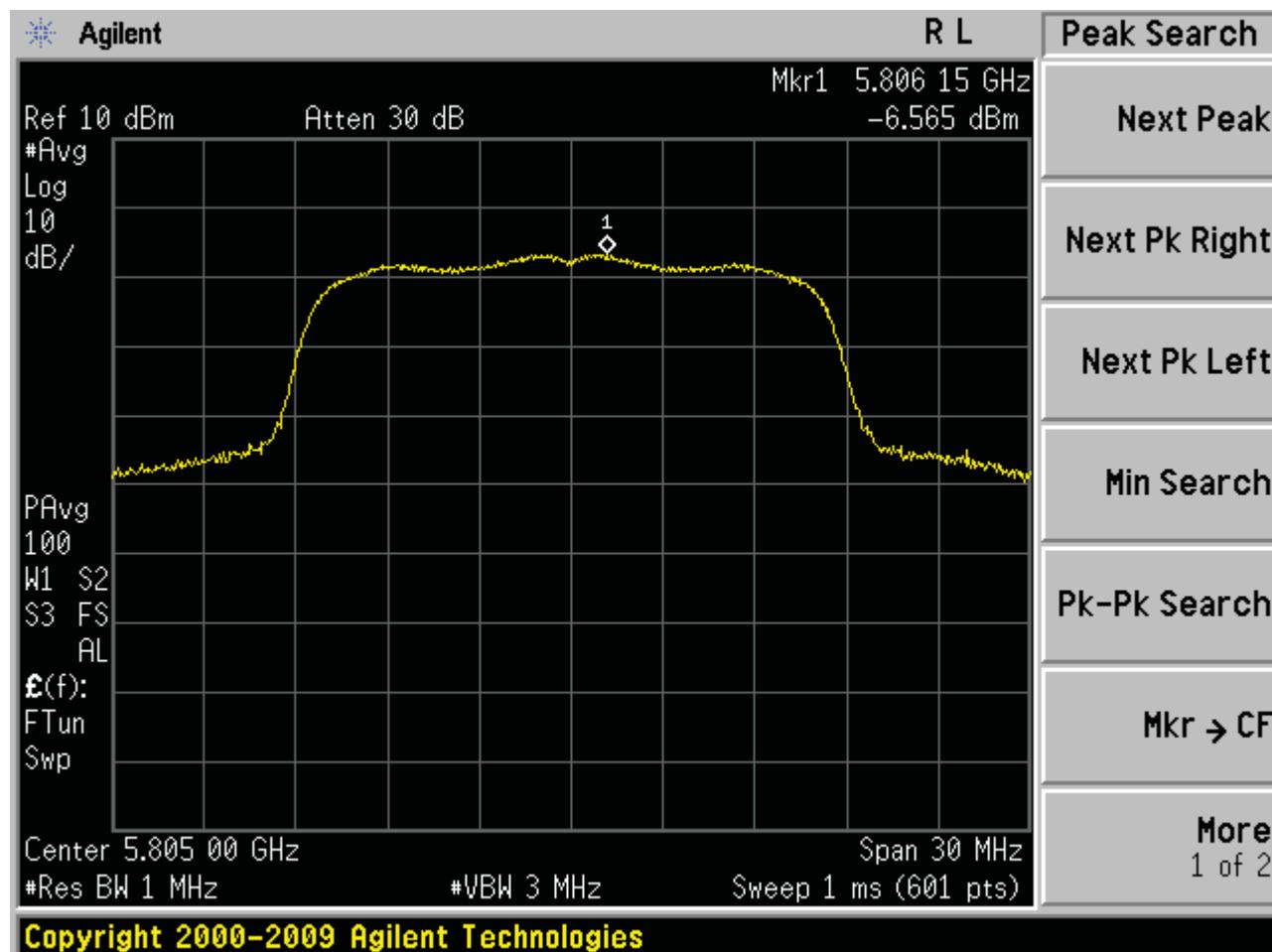


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3.802.11a at 6Mbps of CH161



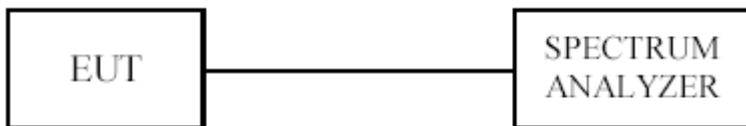
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10. Peak Excursion Measurement

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.

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10.4 Test Result

EUT		Tablet PC	Model		MID-R7801QC	
Mode		802.11a 6Mbps	Input Voltage		DC3.7V	
Temperature		24 deg. C,	Humidity		56% RH	
Channel	Frequency (MHz)	Peak Level (dBm)	AV level (dBm)	Peak Excursion (dB)	Limit (dB)	Pass/ Fail
149	5745	3.31	-5.672	8.982	13	Pass
157	5785	1.79	-6.458	8.248	13	Pass
161	5805	1.67	-6.565	8.235	13	Pass

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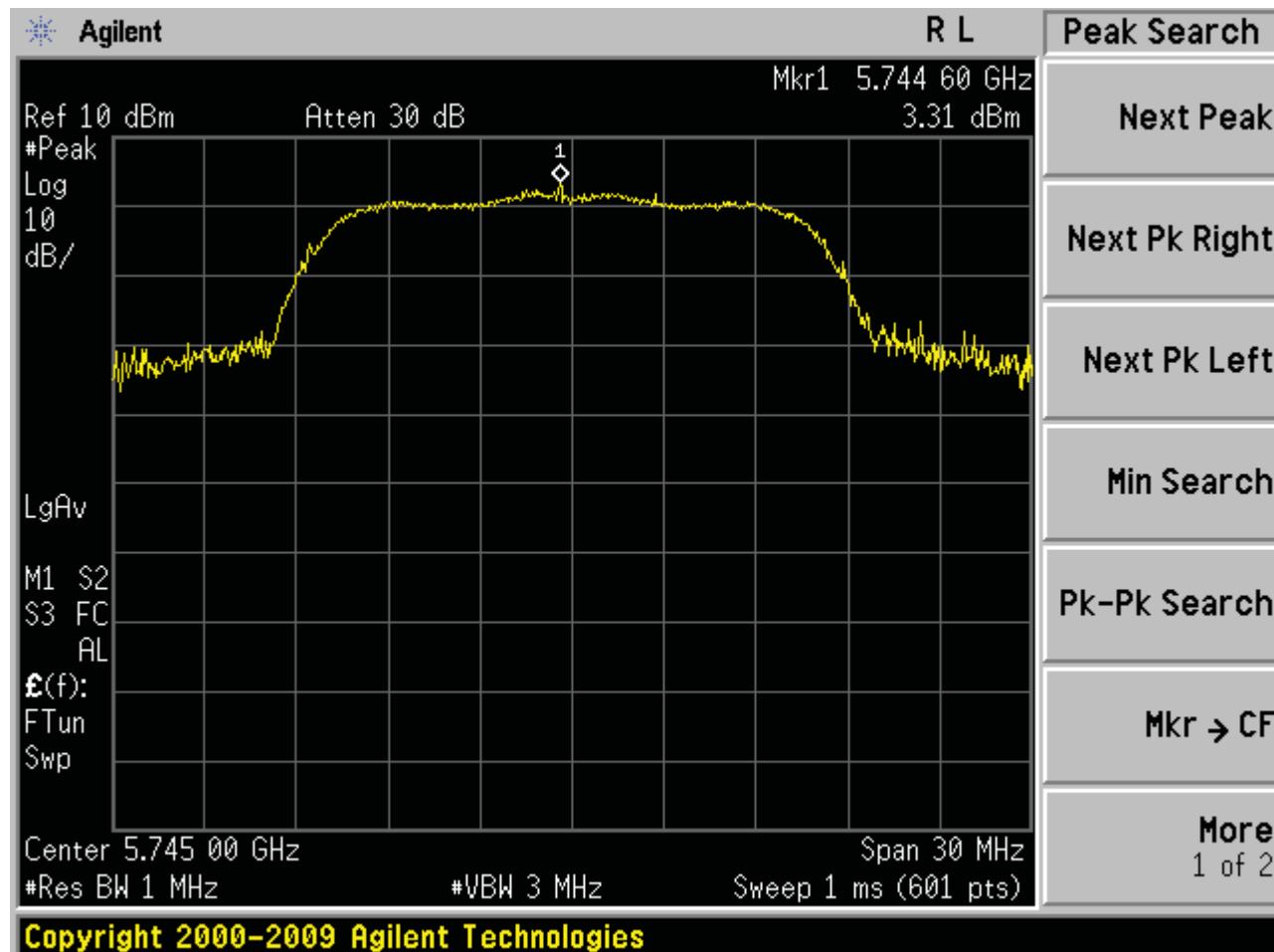
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10.5 Photo of Peak Level

1.802.11a at 6Mbps of CH149

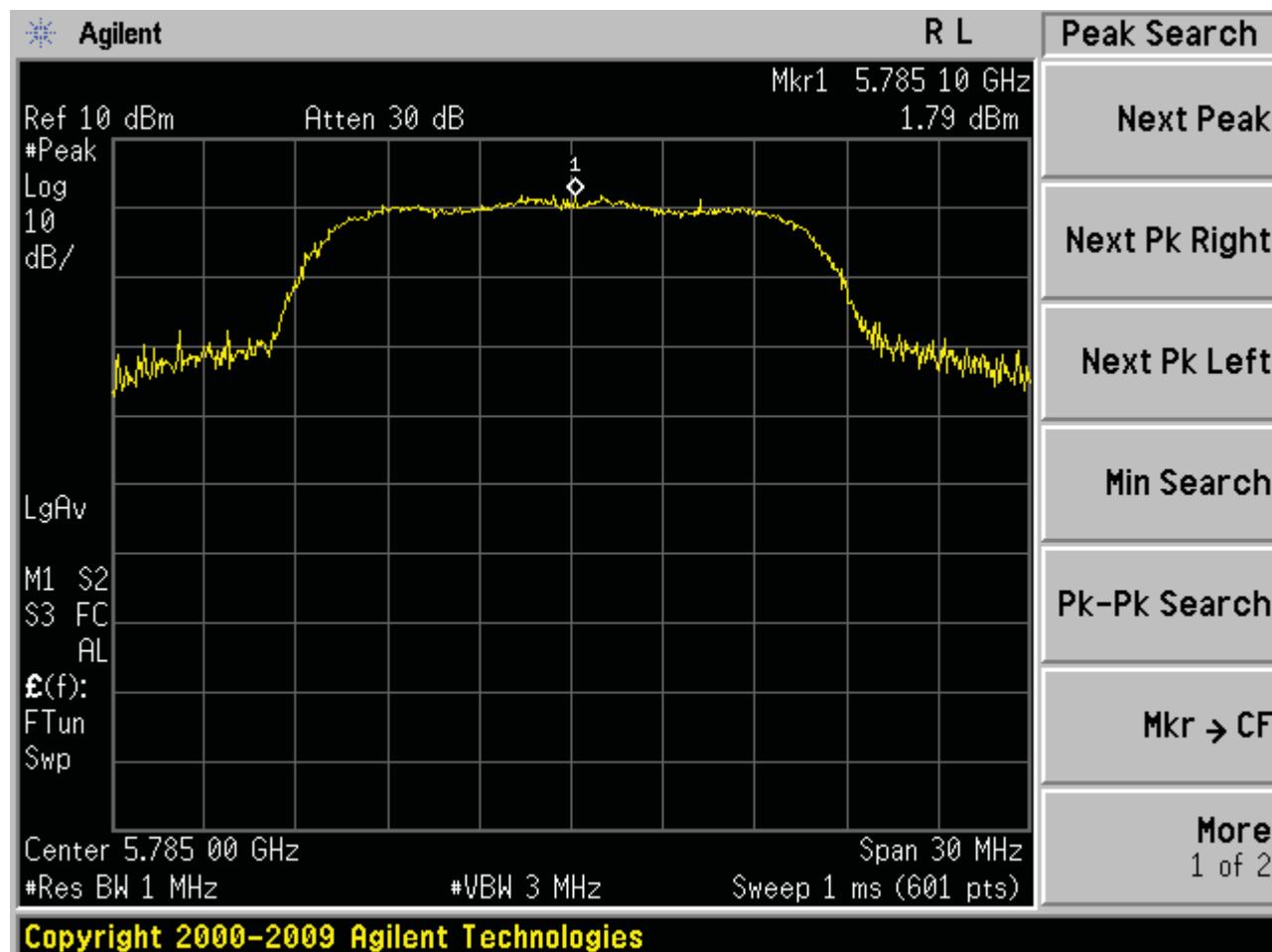


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2.802.11a at 6Mbps of CH157

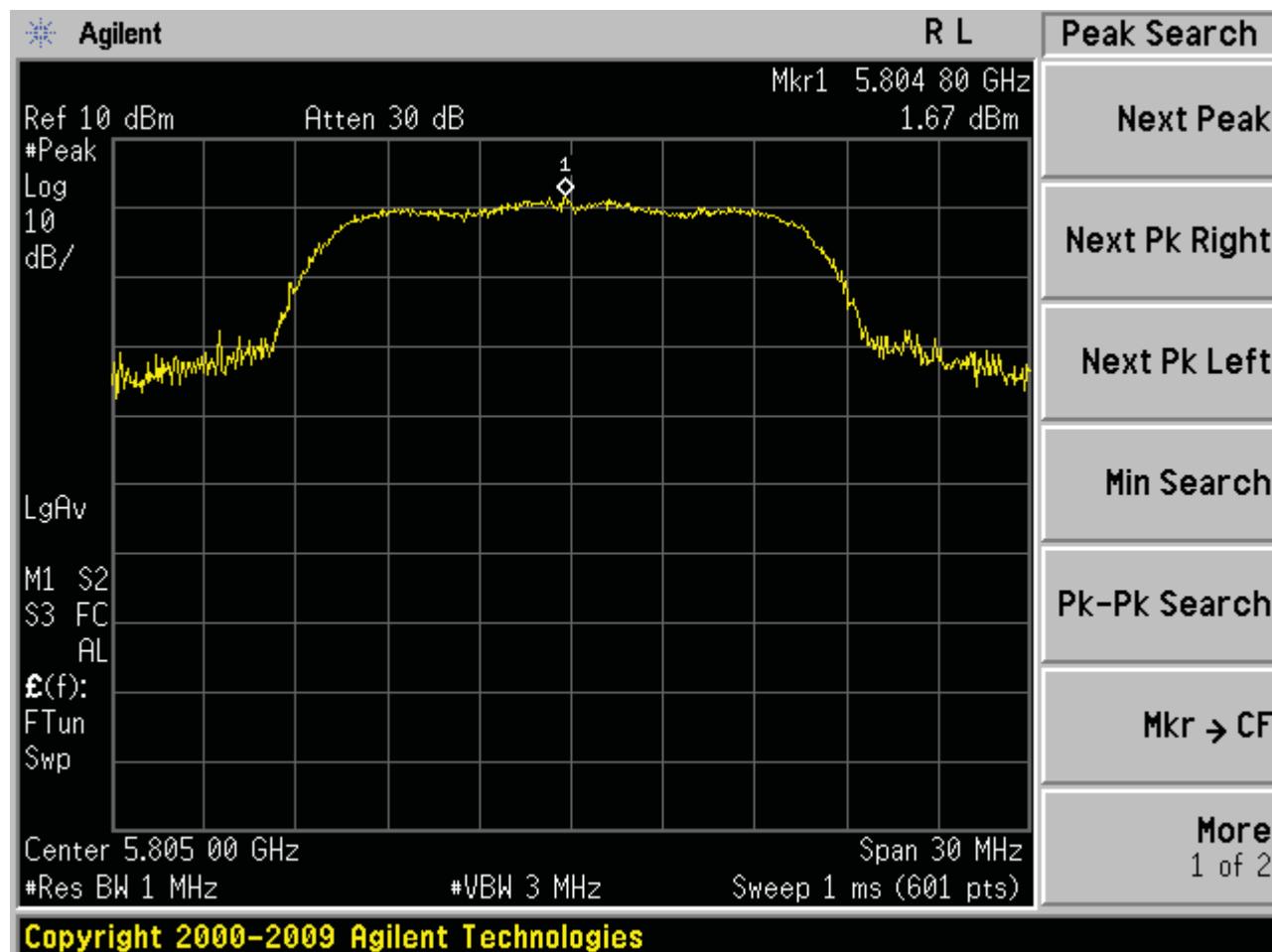


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3.802.11a at 6Mbps of CH161



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11.0 Frequency Stability

11.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within +/- 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.

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11.3 Test Result

Channel 149 (5745MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
4.255V	5744.9719
3.7V	5744.9786
3.145V	5744.9733
Max. Deviation (MHz)	0.0214
Max. Deviation (ppm)	3.7

Rated working voltage: DC3.7V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5744.9636
-20	5744.9702
-10	5744.9670
0	5744.9721
10	5744.9729
20	5744.9769
30	5744.9741
40	5744.9756
50	5744.9792
Max. Deviation (MHz)	0.0364
Max. Deviation (ppm)	6.3

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Channel 157 (5785MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
4.255V	5784.9629
3.7V	5784.9788
3.145V	5784.9771
Max. Deviation (MHz)	0.0371
Max. Deviation (ppm)	6.3

Rated working voltage: DC3.7V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5784.9662
-20	5784.9651
-10	5784.9709
0	5784.9713
10	5784.9736
20	5784.9750
30	5784.9769
40	5784.9728
50	5784.9783
Max. Deviation (MHz)	0.0349
Max. Deviation (ppm)	6.0

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Channel 161 (5805MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
4.255V	5804.9701
3.7V	5804.9772
3.145V	5804.9806
Max. Deviation (MHz)	0.0299
Max. Deviation (ppm)	5.2

Rated working voltage: DC3.7V

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5804.9632
-20	5804.9660
-10	5804.9712
0	5804.9767
10	5804.9751
20	5804.9778
30	5804.9815
40	5804.9755
50	5804.9764
Max. Deviation (MHz)	0.0368
Max. Deviation (ppm)	6.3

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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 mount in dB that the directional gain of the antenna exceeds 6 dBi.

12.2 Antenna Connected construction

Integral antennas used. The maximum Gain of each antenna is 0.33dBi for 5G band.

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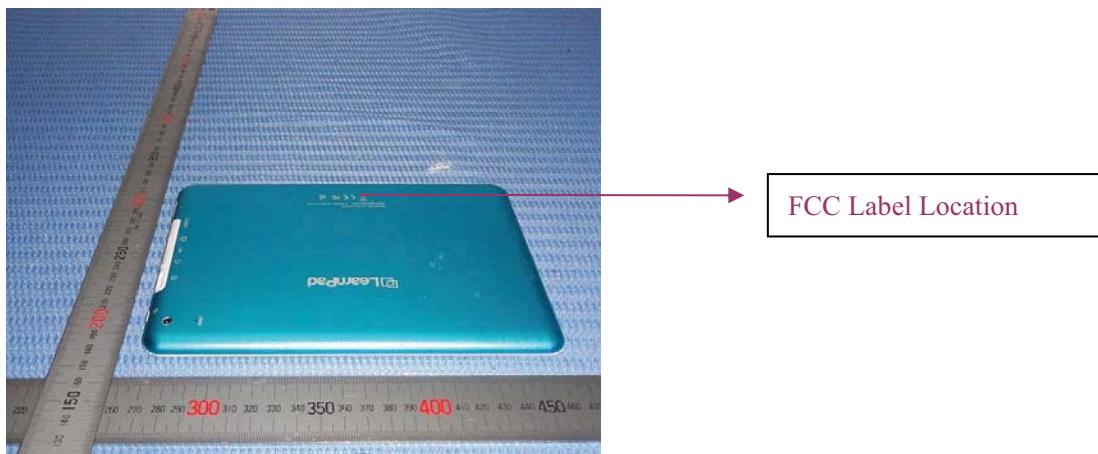
13.0 FCC Label

FCC ID: 2ACPP-R7801QC

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:



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14.0 Photo of testing

Conducted Emission Test Setup:



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Radiated Emission Test Setup:



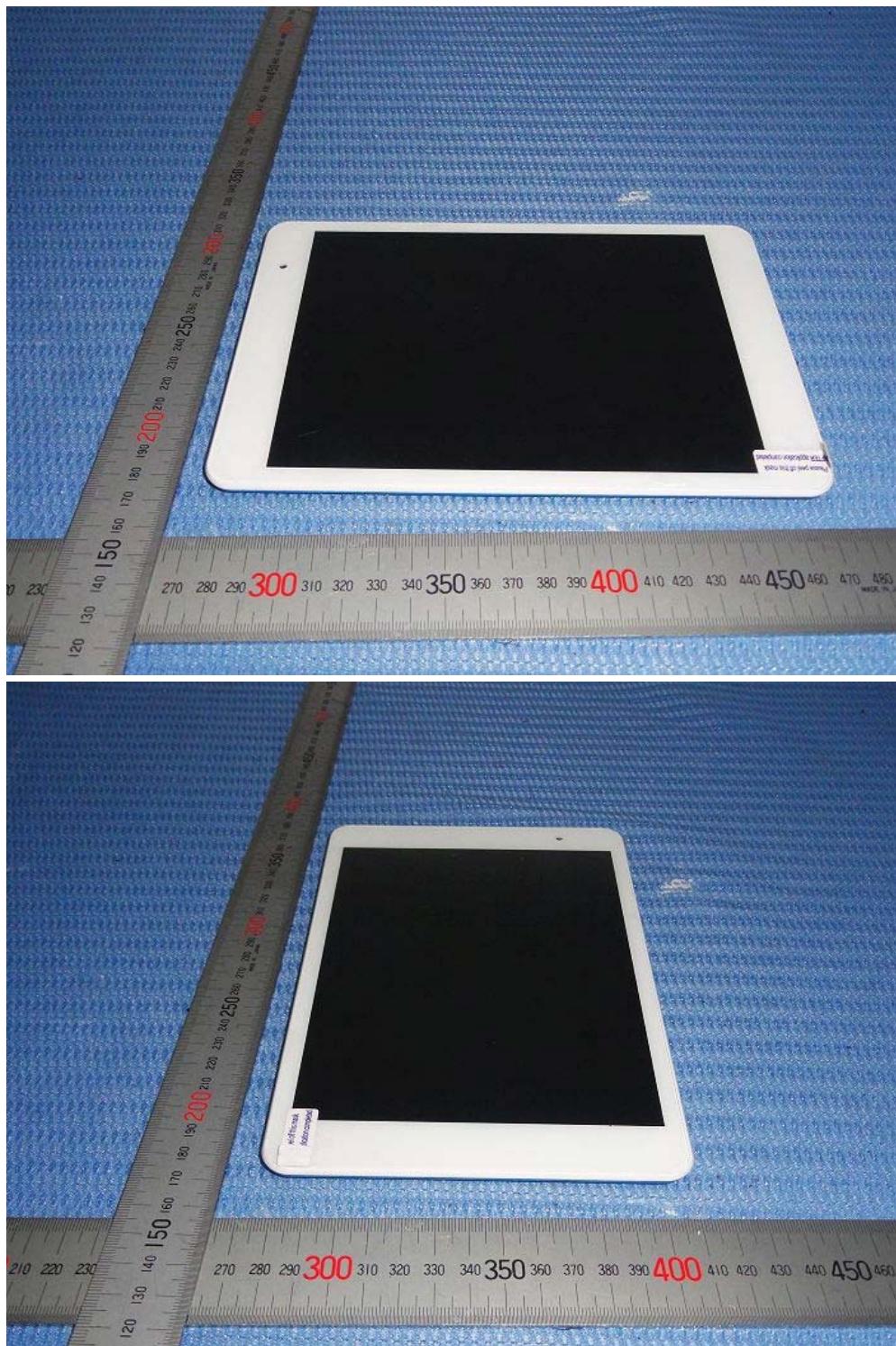
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Photographs – EUT

Outside view

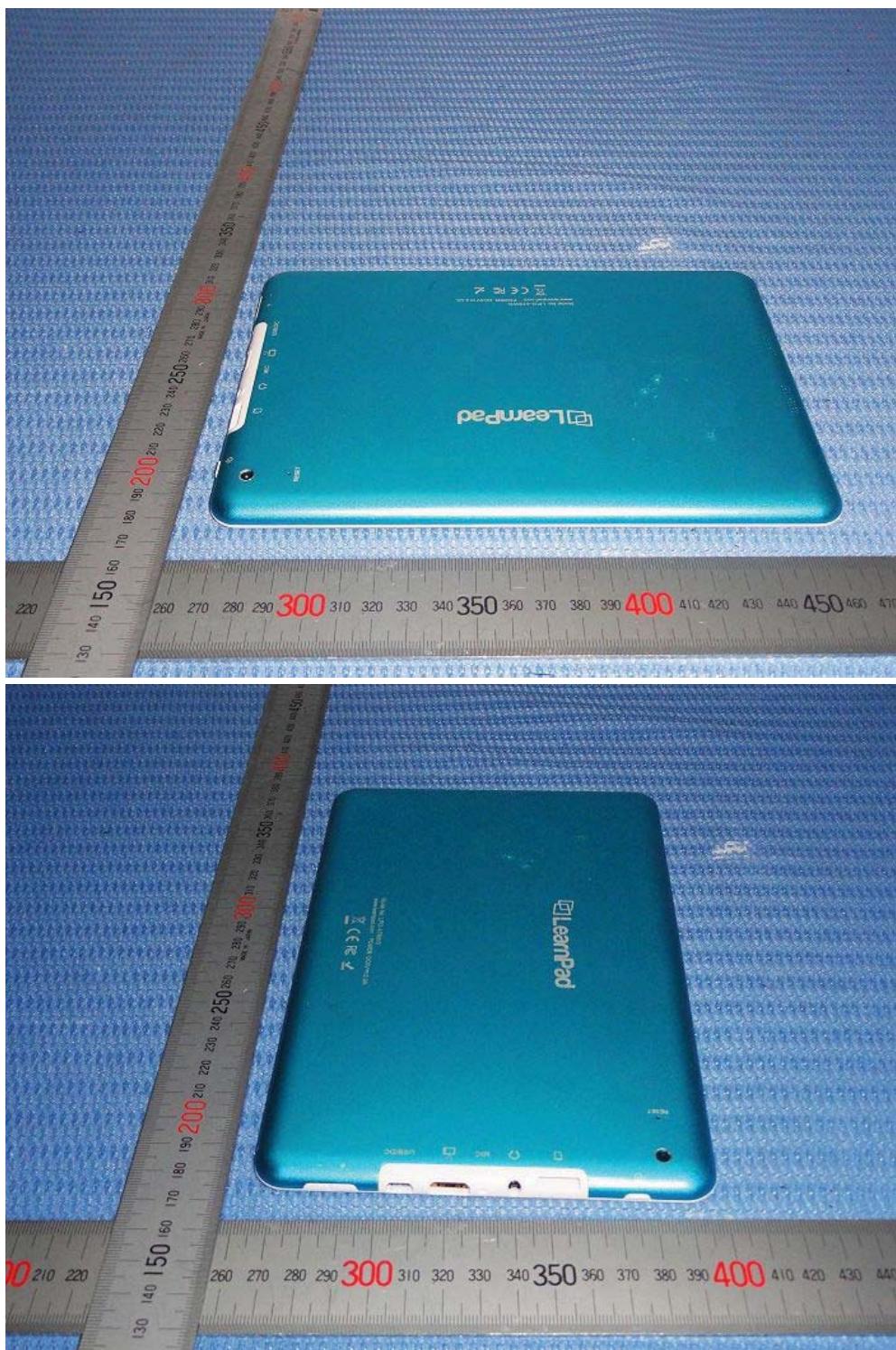


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Power Supply

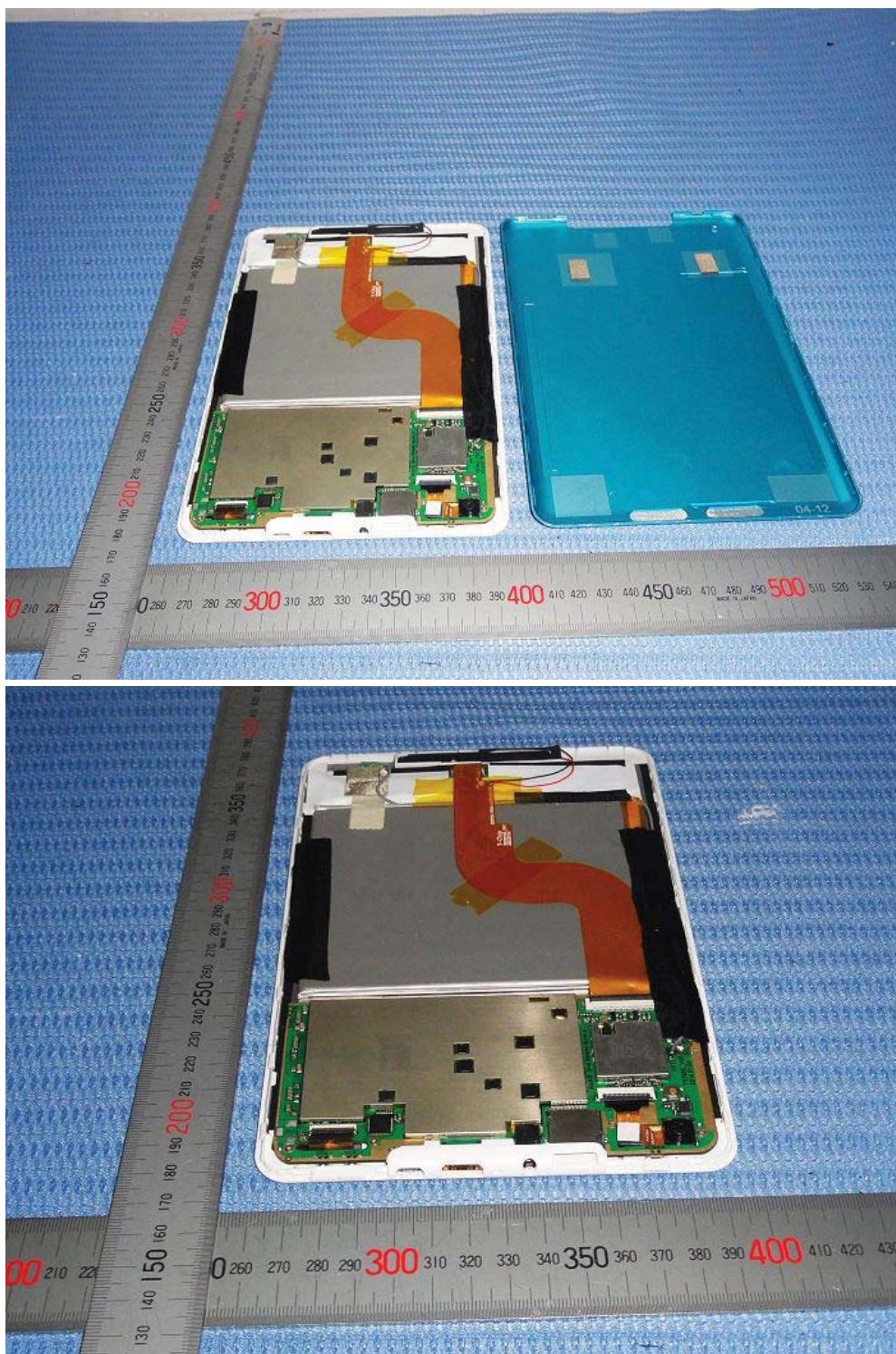


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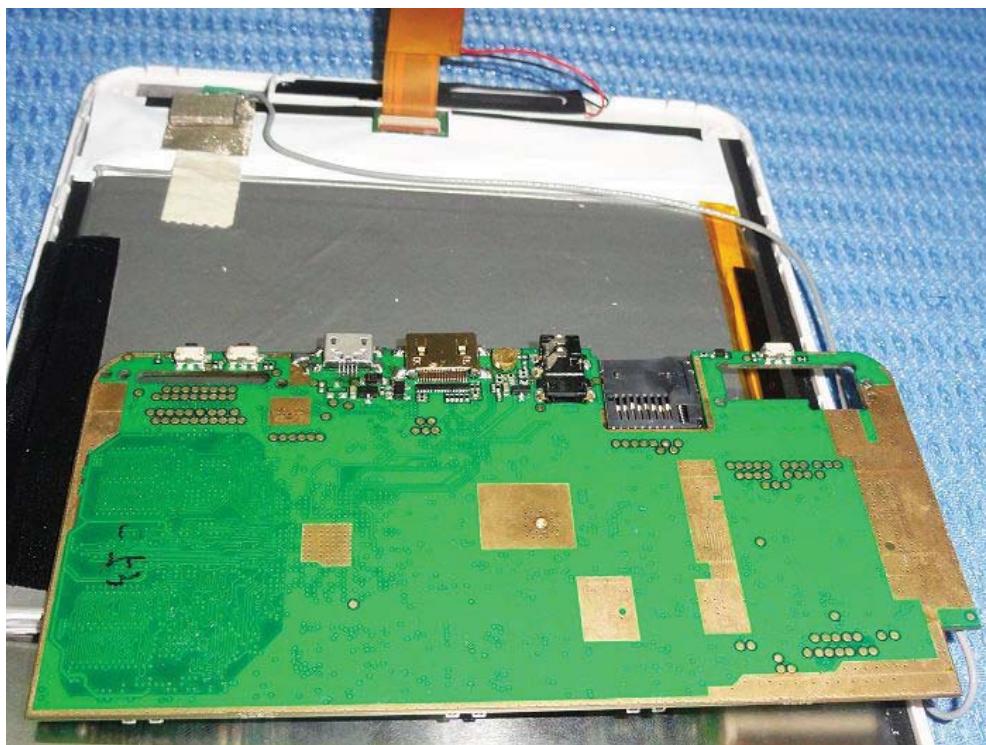
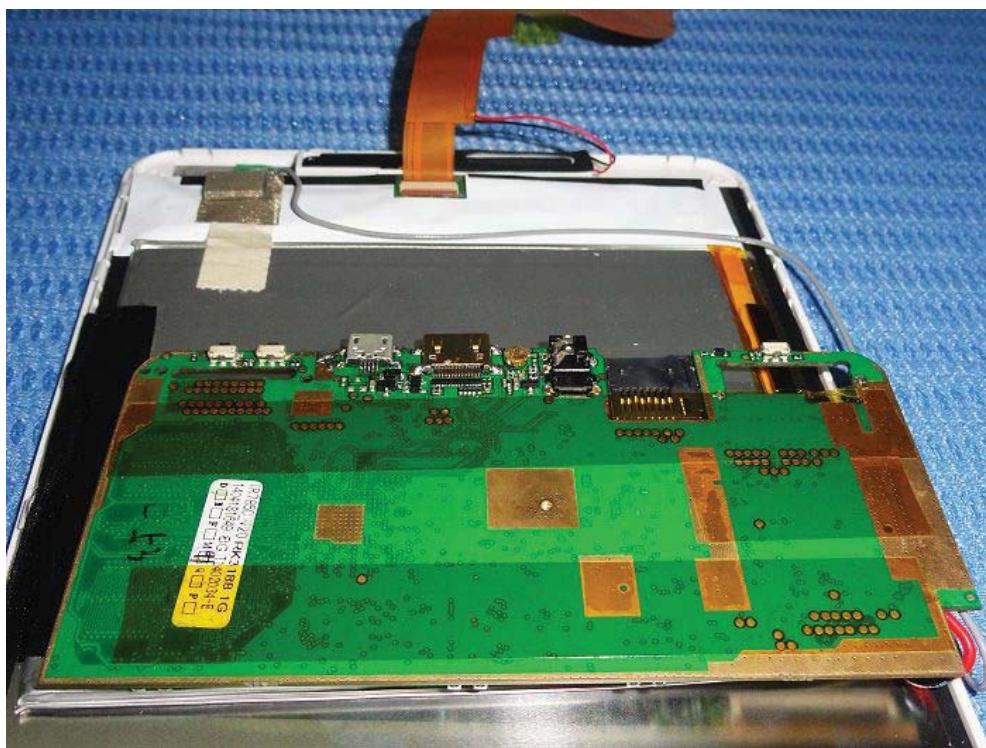


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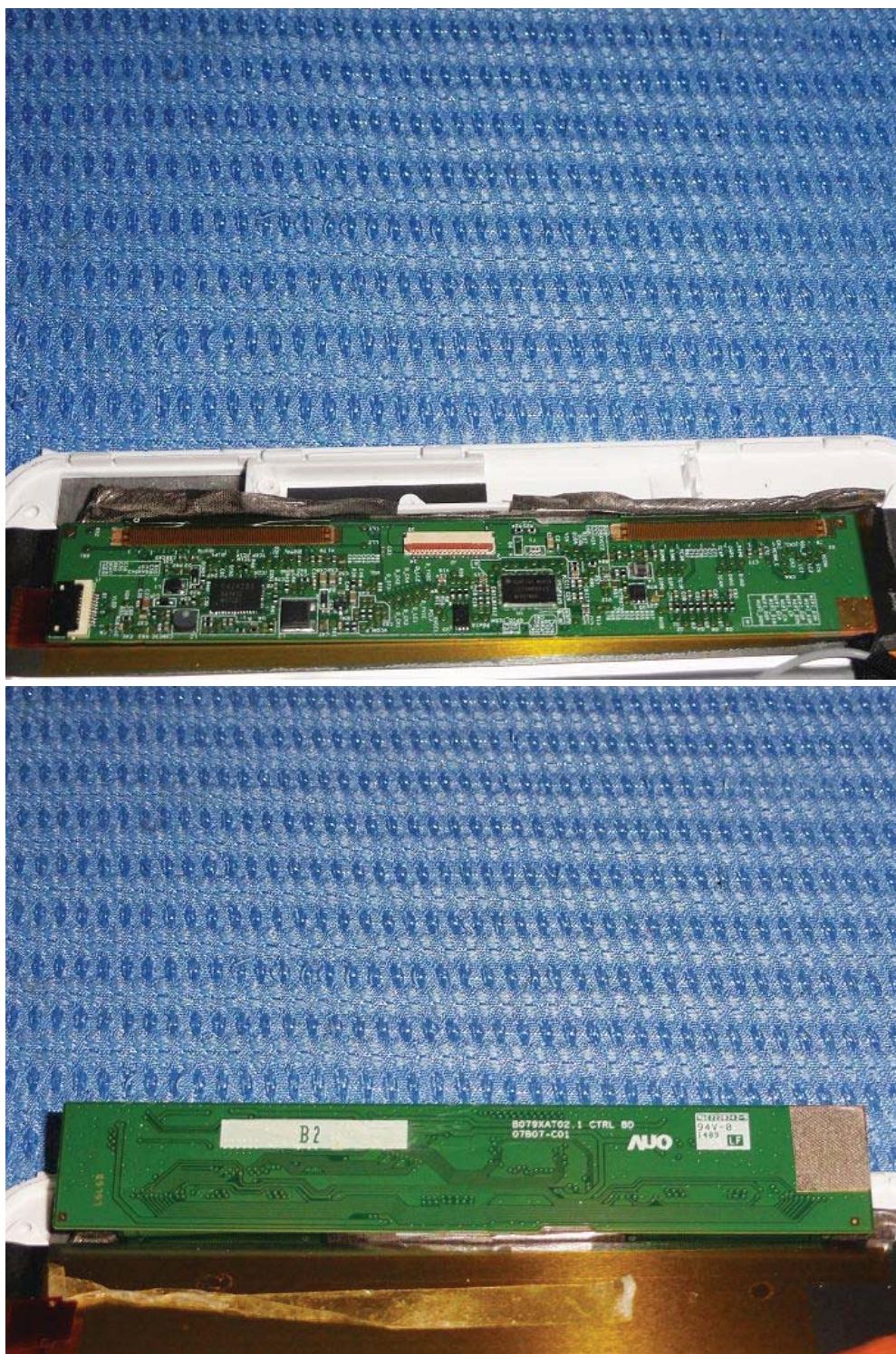


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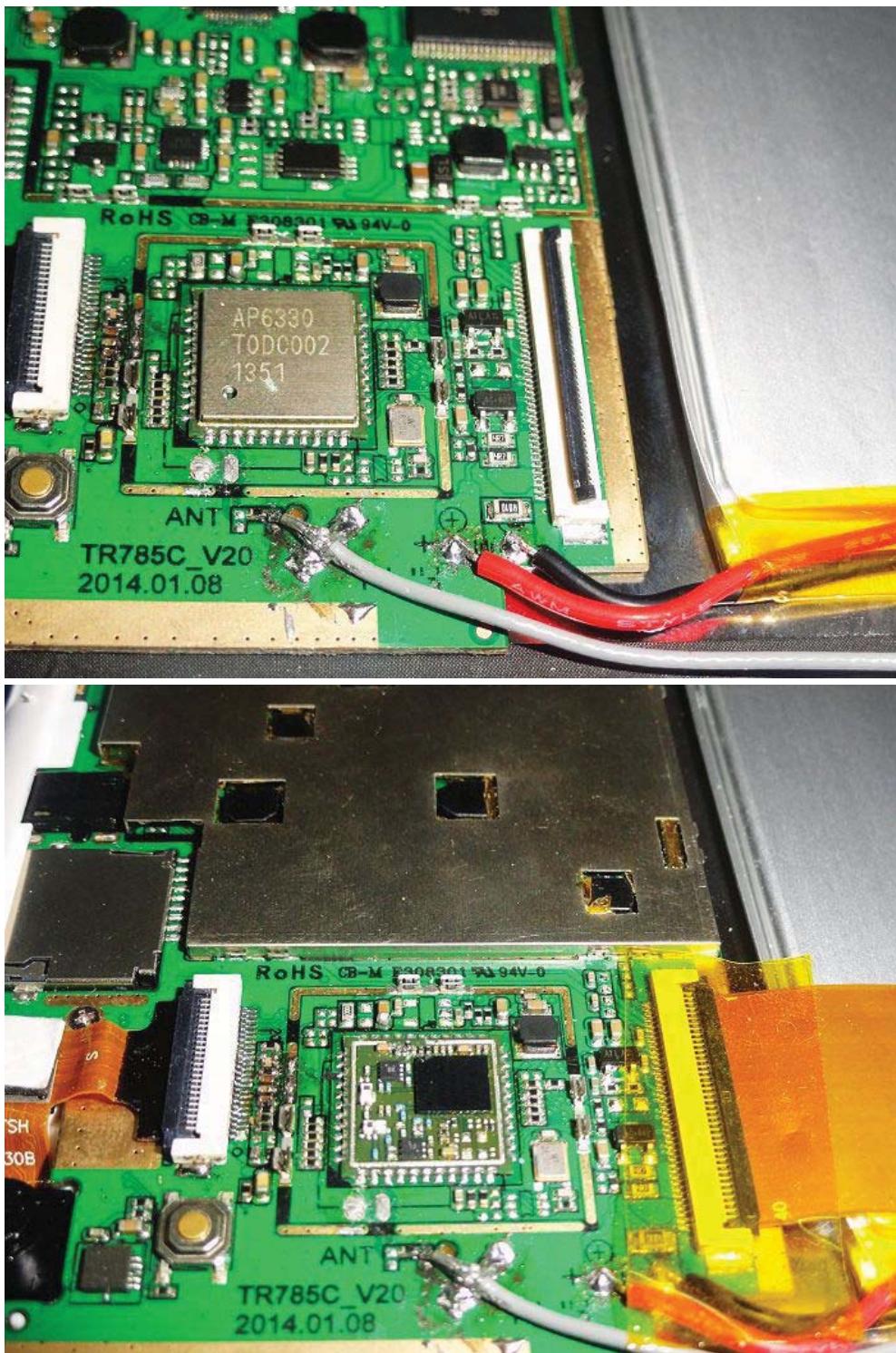


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Inside view



End of the report

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