FCC TEST REPORT
for
Cloud Antenne Services Sarl

Android tv box
Model No.: ZaapTV X, ZaapTV X2, X3, X8, X plus, X pro, HD609, HD709

Prepared for	:	Cloud Antenne Services Sarl
Address	:	Voie du Charot 3, 1003 Lausanne, Suisse

Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China Tel: (86) 755-26066544 Fax: (86) 755-26014772

Report Number	:	R011603394W
Date of Test	:	Mar. 14~31, 2016
Date of Report	:	Apr. 01, 2016

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TEST REPORT

Applicant	:	Cloud Antenne Services Sarl
Manufacturer	:	Cloud Antenne Services Sarl
EUT	:	Android tv box
Model No.	:	ZaapTV X, ZaapTV X2, X3, X8, X plus, X pro, HD609, HD709
Serial No.	:	N.A.
Trade Mark	:	ZaapTV
Rating	:	DC 12V, 1A

Measurement Procedure Used:
FCC Part15 Subpart E 2015, Paragraph 15.407

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart E requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Mar. 14~31, 2016

Prepared by : (Tested Engineer / Kebo Zhang)

Reviewer : (Project Manager / Dolly Mo)

Approved & Authorized Signer : (Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Android tv box

Model Number : ZaapTV X, ZaapTV X2, X3, X8, X plus, X pro, HD609, HD709
(Note: All samples are the same except the model number and colour, so we prepare "ZaapTV X" for test only.)

Adapter : Model: QFD015-120100
Input: 100-240V~50/60Hz 0.3A
Output: DC 12V, 1A

Test Power Supply : AC 120V, 60Hz for adapter/
AC 240V, 60Hz for adapter

RF Transmission Frequency : BT: 2402~2480MHz
WiFi: 2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20))
2422MHz~2452MHz (802.11n(HT40))
5G: 5180MHz~5240MHz 5745MHz~5825MHz (802.11n(HT20)

Channels : 40 For BT
WiFi: 11 For (802.11b/802.11g/802.11n(HT20))
5G: 9 For (802.11n(HT20))

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200
44	5220	48	5240
149	5745	153	5765
157	5785	161	5805
165	5825		

Antenna Specification : BT: 2 dBi
WiFi&5G: 2 dBi

Modulation : BT: GFSK
WiFi&5G:802.11b CCK; 802.11g OFDM; 802.11n MCS

Applicant : Cloud Antenne Services Sarl
Address : Voie du Charot 3, 1003 Lausanne, Suisse

Manufacturer : Cloud Antenne Services Sarl
Address : Voie du Charot 3, 1003 Lausanne, Suisse

Factory : WeTek Electronics Limited
Address : Level 10, Central Building, 1-3 Pedder Street, Central, Hong Kong.

Date of receipt : Mar. 14, 2016

Date of Test : Mar. 14~31, 2016

1.2. Auxiliary Equipment Used during Test

TV	:	Manufacturer: SONY M/N: KDL-26EX550 S/N: 1012240 CE , FCC: DOC

1.3. Description of Test Facility

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

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed 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 752021, July 10, 2013.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., 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 8058A, February 22, 2013.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.4. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal) Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC Part 15, Paragraph 15.247.

2.1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result
FCC Part 15, Paragraph 15.207 & 15.407	Conducted Emission	PASS
FCC Part 15, Paragraph 15.407(b)(1)(4)(5)(7)	Undesireable Emission Restricted Band	PASS
FCC Part 15, Paragraph 15.407(a)(1)	26dB Bandwidth	PASS
FCC Part 15, Paragraph 15.407(a)(1)(2)(3)	Maximum Conducted Output Power	PASS
FCC Part 15, Paragraph 15.407(a)(1)(2)(3)	Peak Power Spectrual Density	PASS
FCC Part 15, Paragraph 15.203	Antenna Requirement	PASS

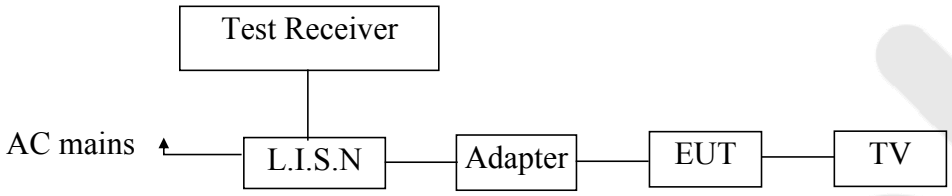
2.2. Description of Test Modes

The EUT has been tested under operating condition.
Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
IEEE802.11n(HT20): Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6 Mbps lowest data rate (worst case) are chosen for the final testing.

3. Conducted Emission Test

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (ON) and measure it.

3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 17, 2015	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 17, 2015	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 17, 2015	1 Year

3.7. Power Line Conducted Emission Measurement Results

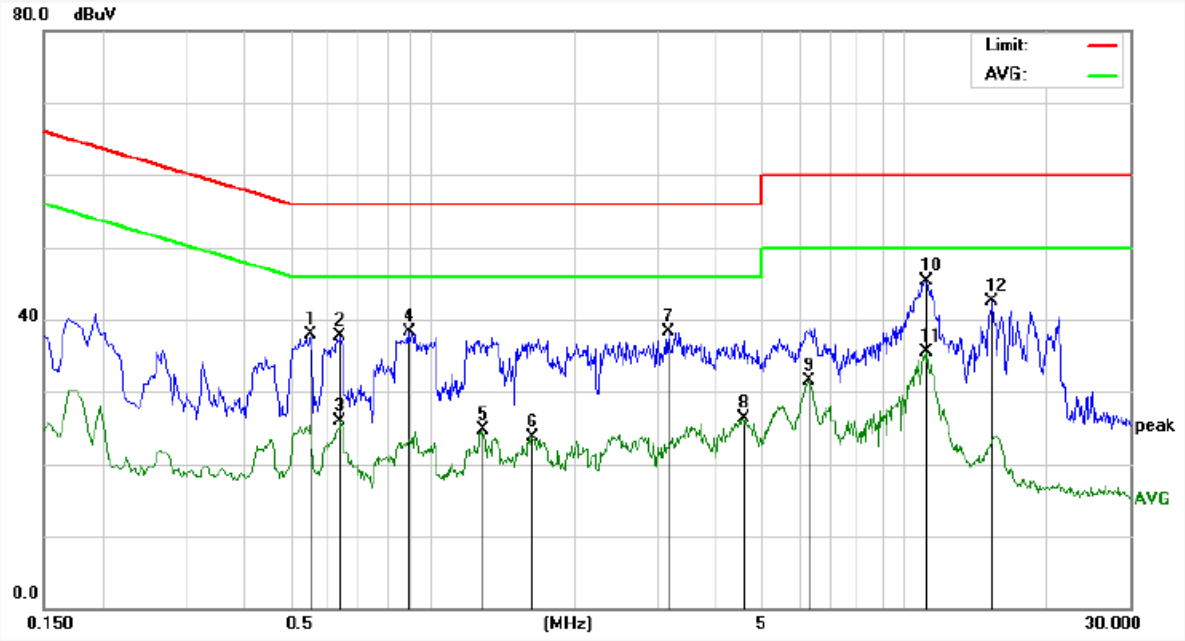
PASS.

The frequency range from 150KHz to 30 MHz is investigated.

Please refer the following pages.

CONDUCTED EMISSION TEST DATA

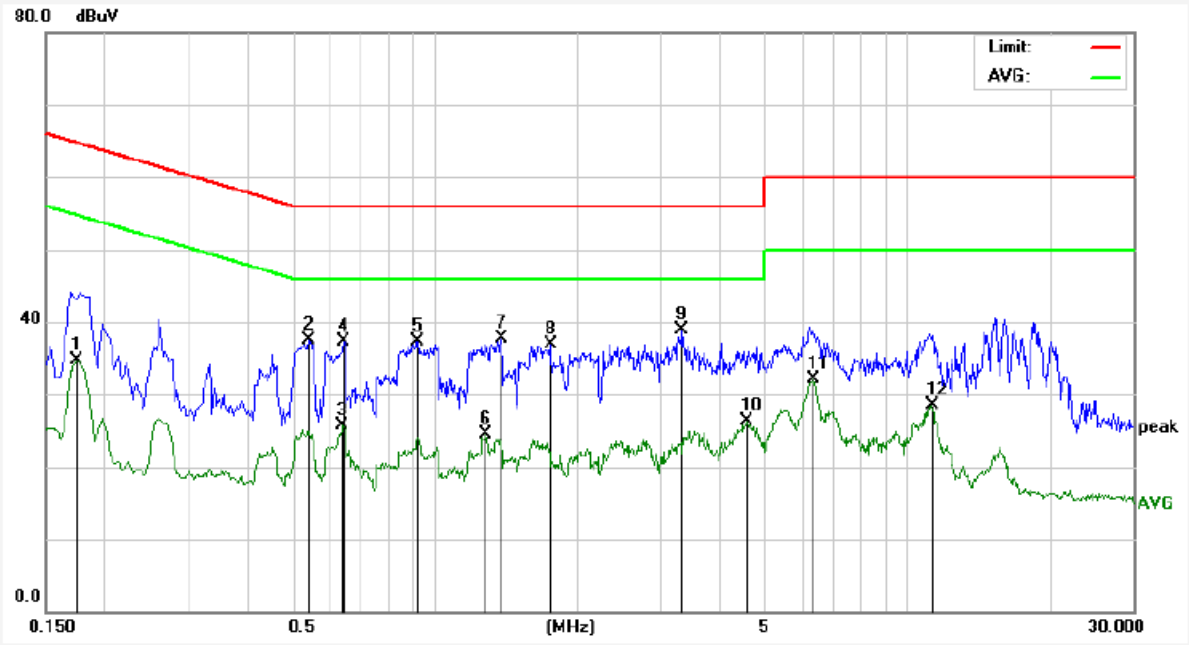
Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 120V, 60Hz for adapter
Comment:	Live Line
	Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.5540	17.82	20.00	37.82	56.00	-18.18	QP	
2	0.6380	17.62	20.00	37.62	56.00	-18.38	QP	
3	0.6380	5.82	20.00	25.82	46.00	-20.18	AVG	
4	0.8900	18.38	20.00	38.38	56.00	-17.62	QP	
5	1.2780	4.65	20.00	24.65	46.00	-21.35	AVG	
6	1.6300	3.77	20.00	23.77	46.00	-22.23	AVG	
7	3.1660	18.37	20.00	38.37	56.00	-17.63	QP	
8	4.5380	6.32	20.00	26.32	46.00	-19.68	AVG	
9	6.2500	11.41	20.00	31.41	50.00	-18.59	AVG	
10	11.1820	25.31	20.00	45.31	60.00	-14.69	QP	
11	11.1820	15.48	20.00	35.48	50.00	-14.52	AVG	
12	15.3420	22.49	20.00	42.49	60.00	-17.51	QP	

CONDUCTED EMISSION TEST DATA

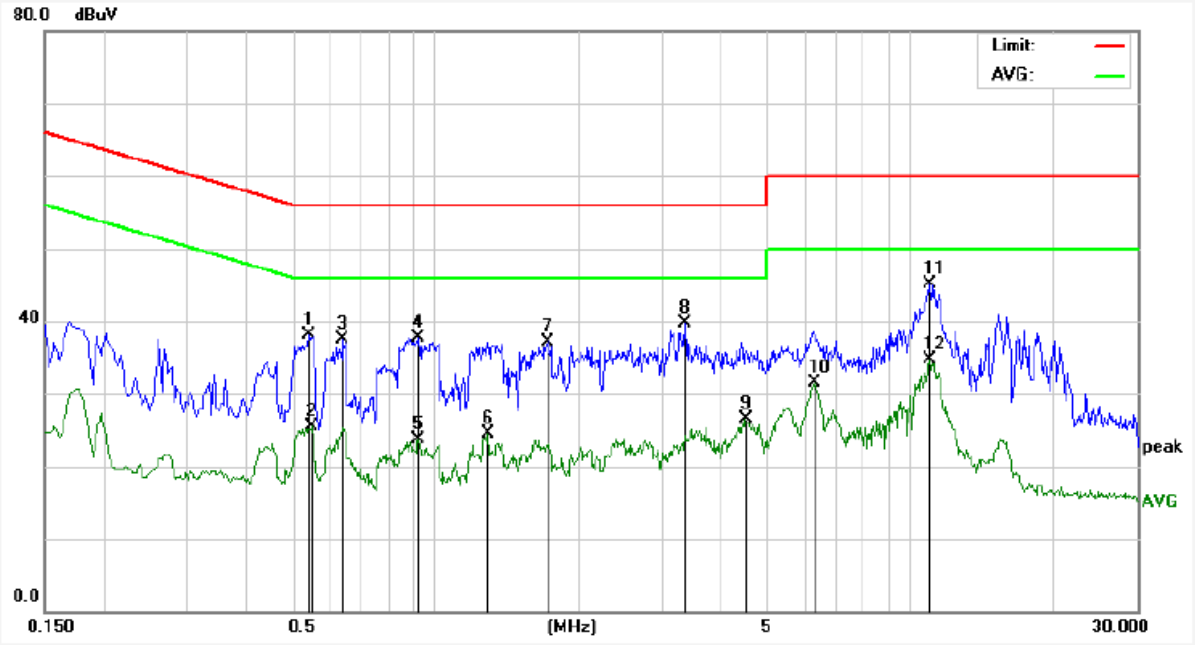
Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 120V, 60Hz for adapter
Comment:	Neutral Line
	Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1740	14.72	20.00	34.72	54.76	-20.04	AVG	
2	0.5420	17.58	20.00	37.58	56.00	-18.42	QP	
3	0.6380	5.75	20.00	25.75	46.00	-20.25	AVG	
4	0.6419	17.31	20.00	37.31	56.00	-18.69	QP	
5	0.9220	17.27	20.00	37.27	56.00	-18.73	QP	
6	1.2860	4.47	20.00	24.47	46.00	-21.53	AVG	
7	1.3820	17.66	20.00	37.66	56.00	-18.34	QP	
8	1.7540	16.92	20.00	36.92	56.00	-19.08	QP	
9	3.3340	18.85	20.00	38.85	56.00	-17.15	QP	
10	4.5939	6.23	20.00	26.23	46.00	-19.77	AVG	
11	6.2940	12.02	20.00	32.02	50.00	-17.98	AVG	
12	11.2500	8.52	20.00	28.52	50.00	-21.48	AVG	

CONDUCTED EMISSION TEST DATA

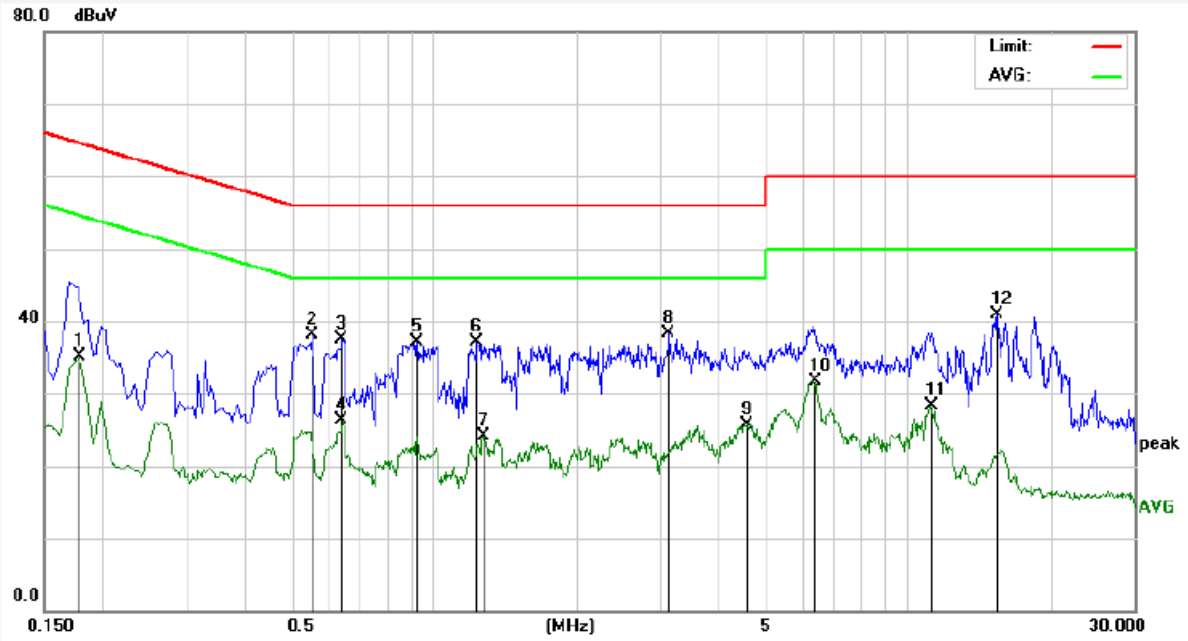
Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 240V, 60Hz for adapter
Comment:	Live Line
	Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.5420	18.19	20.00	38.19	56.00	-17.81	QP	
2	0.5500	5.59	20.00	25.59	46.00	-20.41	AVG	
3	0.6380	17.43	20.00	37.43	56.00	-18.57	QP	
4	0.9220	17.78	20.00	37.78	56.00	-18.22	QP	
5	0.9220	3.74	20.00	23.74	46.00	-22.26	AVG	
6	1.2900	4.58	20.00	24.58	46.00	-21.42	AVG	
7	1.7220	17.20	20.00	37.20	56.00	-18.80	QP	
8	3.3580	19.66	20.00	39.66	56.00	-16.34	QP	
9	4.4780	6.49	20.00	26.49	46.00	-19.51	AVG	
10	6.3140	11.47	20.00	31.47	50.00	-18.53	AVG	
11	10.9860	25.11	20.00	45.11	60.00	-14.89	QP	
12	10.9860	14.79	20.00	34.79	50.00	-15.21	AVG	

CONDUCTED EMISSION TEST DATA

Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 240V, 60Hz for adapter
Comment:	Neutral Line
	Tem.:25℃ Hum.:50%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1780	15.08	20.00	35.08	54.57	-19.49	AVG	
2	0.5540	18.15	20.00	38.15	56.00	-17.85	QP	
3	0.6380	17.44	20.00	37.44	56.00	-18.56	QP	
4	0.6419	6.34	20.00	26.34	46.00	-19.66	AVG	
5	0.9220	17.14	20.00	37.14	56.00	-18.86	QP	
6	1.2340	17.03	20.00	37.03	56.00	-18.97	QP	
7	1.2740	4.14	20.00	24.14	46.00	-21.86	AVG	
8	3.1260	18.30	20.00	38.30	56.00	-17.70	QP	
9	4.5620	5.73	20.00	25.73	46.00	-20.27	AVG	
10	6.3260	11.76	20.00	31.76	50.00	-18.24	AVG	
11	11.1820	8.35	20.00	28.35	50.00	-21.65	AVG	
12	15.4380	20.98	20.00	40.98	60.00	-19.02	QP	

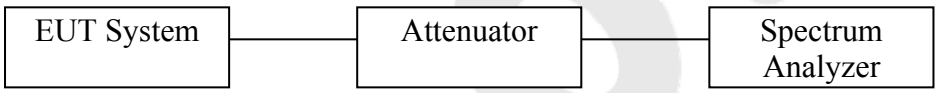
4.Bandwidth

4.1. Test Limit

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

4.2. Test Setup



4.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as:
26 dB &99%bandwidth
RBW = approximately 1% of the emission bandwidth;
Set the VBW＞RBW;
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.
6 dB bandwidth
RBW = 100kHz;
Set the video bandwidth (VBW) ≥ 3 RBW ;
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.

4. Measure the maximum width of the emission that is 26dB /6dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
5. Repeat until all the rest channels are investigated.

4.4. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2015	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2015	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2015	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2015	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2015	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2015	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

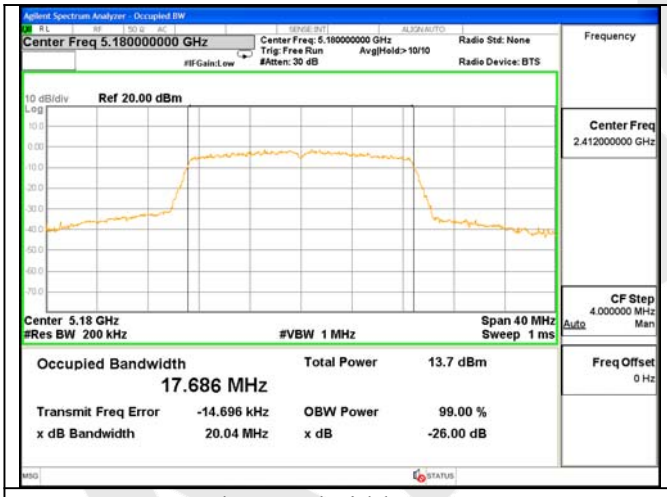
4.5. Test Results

Pass.
Please refer to the following data.

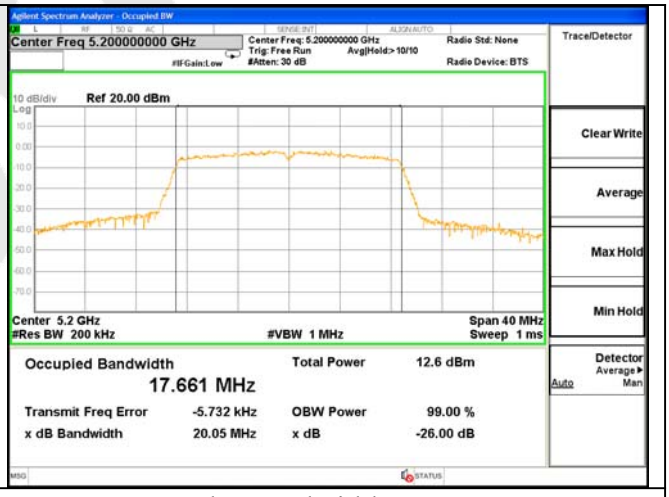
Bandwidth:

Test mode: IEEE 802.11n(HT20)

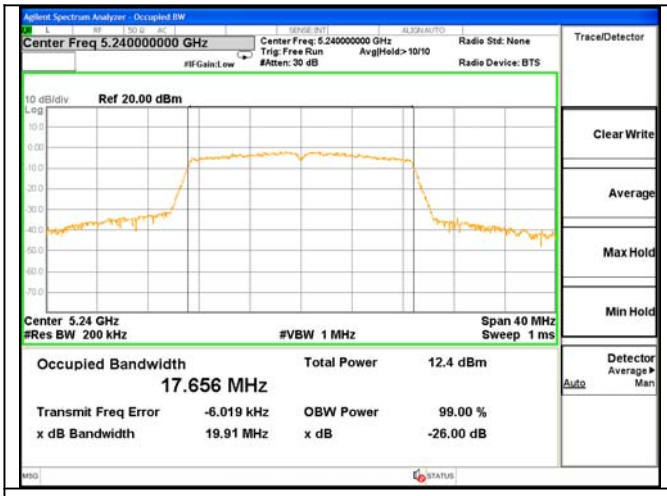
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.04	17.686
Mid	5200	20.05	17.661
High	5240	19.91	17.656
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5745	17.33	17.696
Mid	5785	17.686	17.686
High	5825	17.616	17.616



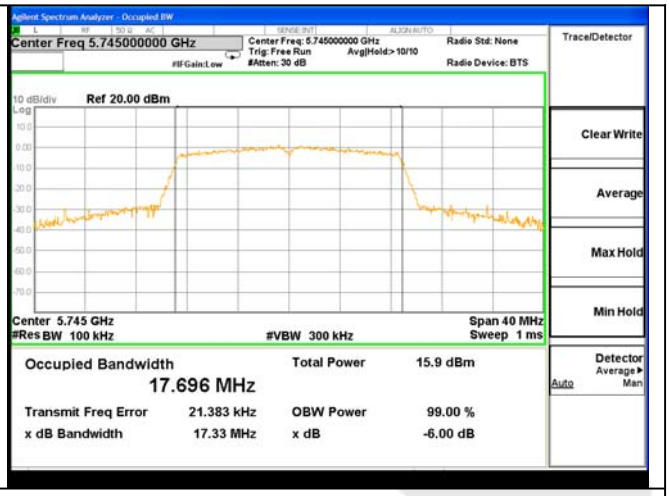
26dB Bandwidth
Test Mode: 802.11n(HT20)---5180



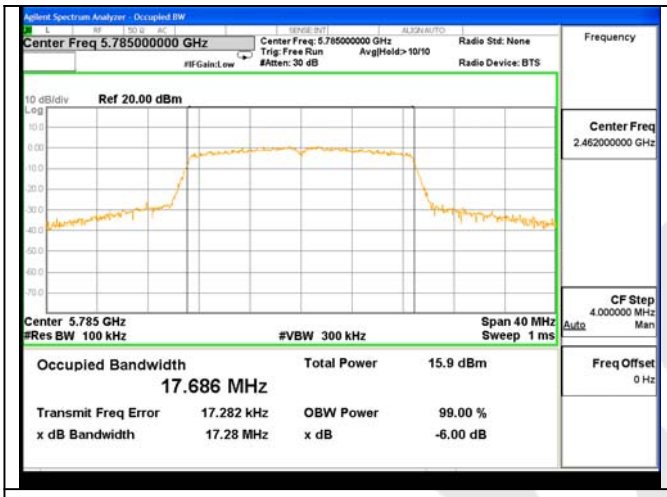
26dB Bandwidth
Test Mode: 802.11n(HT20)---5200



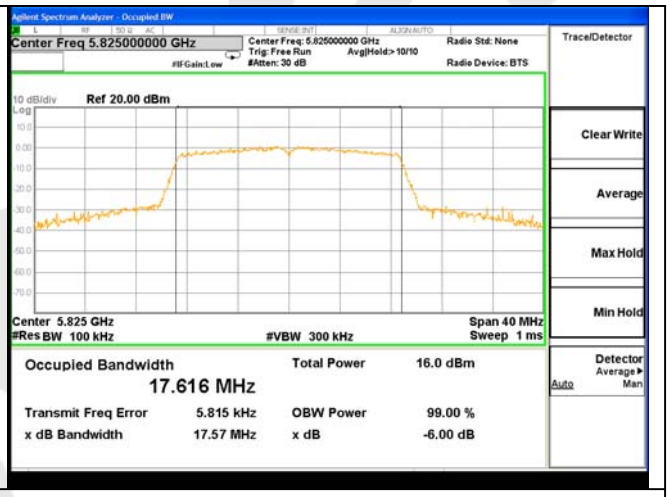
26dB Bandwidth
Test Mode: 802.11n(HT20)---5240



6dB Bandwidth
Test Mode: 802.11n(HT20)---5745



6dB Bandwidth
Test Mode: 802.11n(HT20)--5785



6dB Bandwidth
Test Mode: 802.11n(HT20)---5825

5. Maximum Conducted Output Power Test

5.1. Test Limit

1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

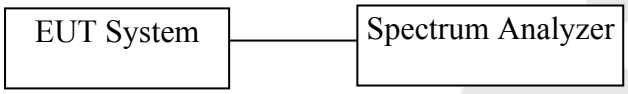
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional

gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2. Test Setup



5.3. Test Procedure

1. Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Set RBW = 1 MHz.
3. Set VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
5.Sweep time = auto.
6.Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
7. If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode.
9. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

5.4. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2015	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2015	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2015	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2015	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2015	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2015	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

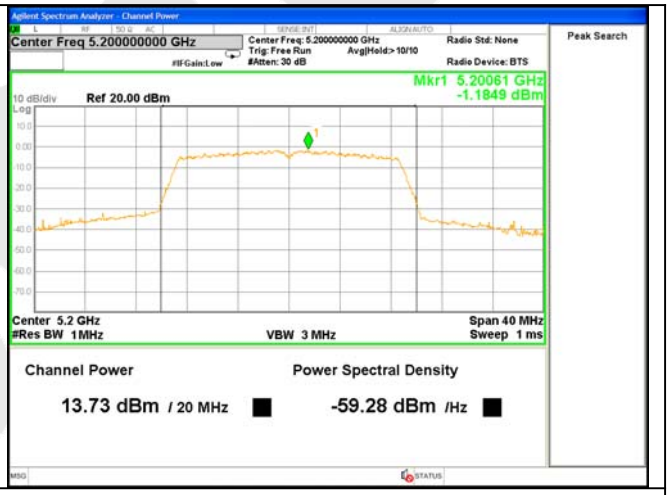
5.5. Test Results

Pass.
Please refer to the following data.

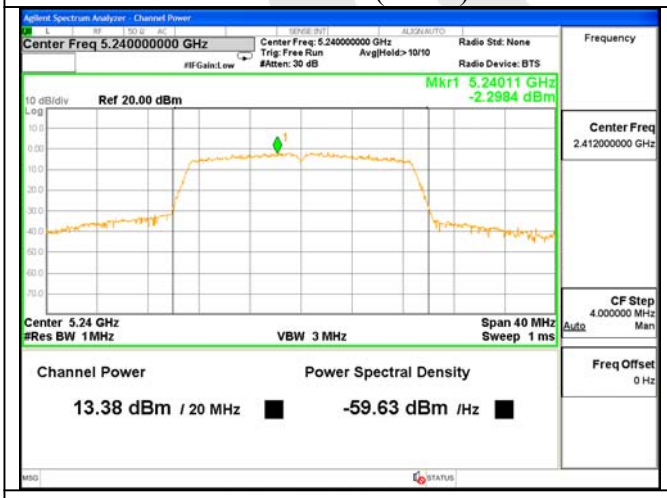
Test mode: IEEE 802.11n(HT20)

Channel	Frequency (MHz)	Maximum transmit power (dBm)	Limit (dBm)	Result
Low	5180	13.68	24	Pass
Mid	5200	13.73	24	Pass
High	5240	13.38	24	Pass
Low	5745	13.56	30	Pass
Mid	5785	13.60	30	Pass
High	5825	13.56	30	Pass

Test Mode: 802.11n(HT20)---5180



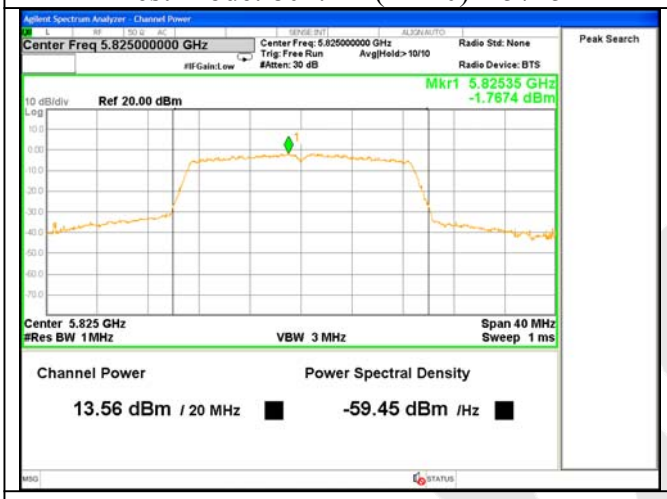
Test Mode: 802.11n(HT20)---5200



Test Mode: 802.11n(HT20)---5240

Test Mode: 802.11n(HT20)---5745

Test Mode: 802.11n(HT20)---5785



Test Mode: 802.11n(HT20)---5825

6. Peak Power Spectrual Density Test

6.1. Test Limit

1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

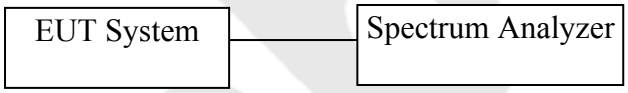
(3) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional

gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

6.2. Test Setup



6.3. Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz).

1. The EUT is directly connected to the spectrum analyzer;
2. Set RBW ≥ 1/T;
3. Set VBW ≥ 3 RBW. ;
3. 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;

6.4. Test Equipment

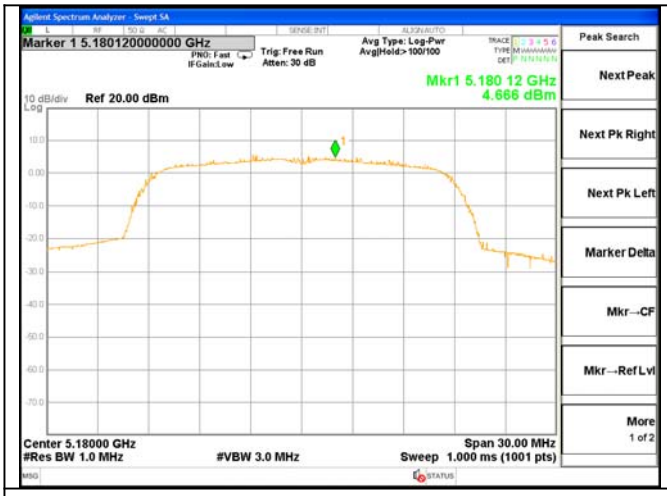
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2015	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2015	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2015	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2015	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2015	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2015	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

6.5. Test Results

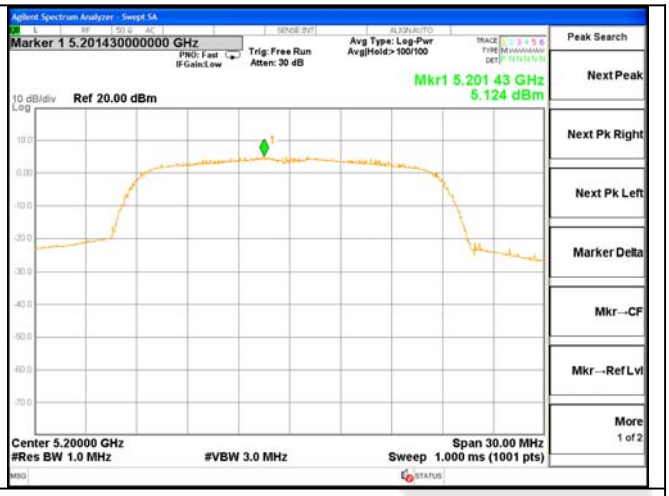
Pass.
Please refer to the following data.

Test mode: IEEE 802.11n(HT20)

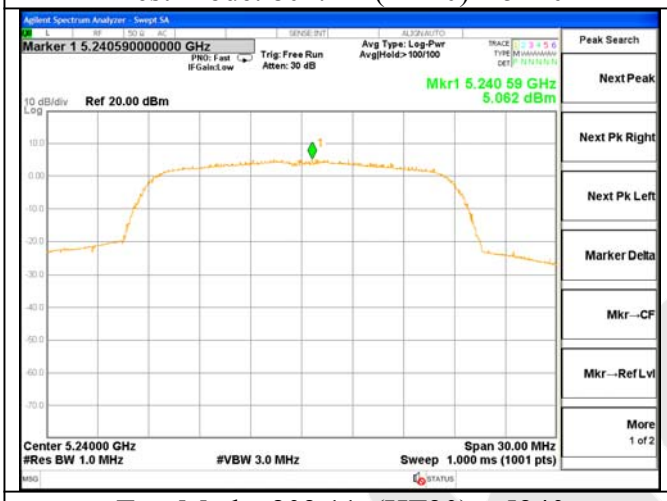
Channel	Frequency (MHz)	Final Power Spectral Density (dBm)	Limit (dBm)	Result
Low	5180	4.666	11	Pass
Mid	5200	5.124	11	Pass
High	5240	5.062	11	Pass
Low	5745	5.050	30	Pass
Mid	5785	5.172	30	Pass
High	5825	4.833	30	Pass



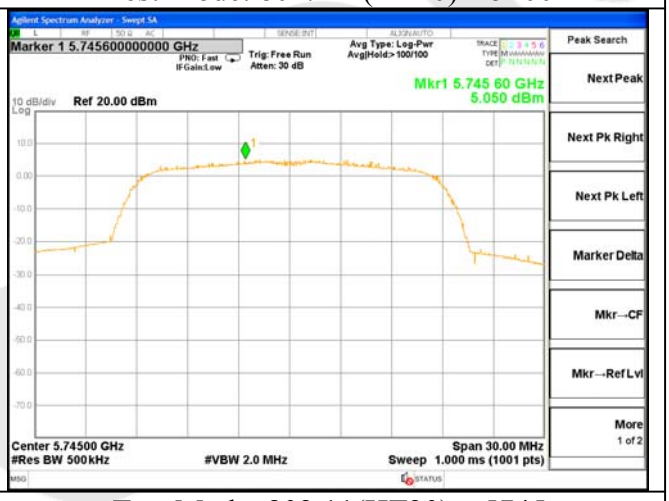
Test Mode: 802.11n(HT20)---5120



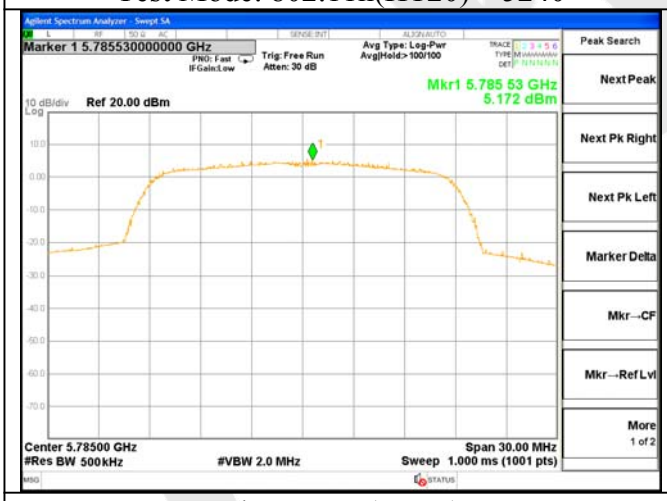
Test Mode: 802.11n(HT20)---5200



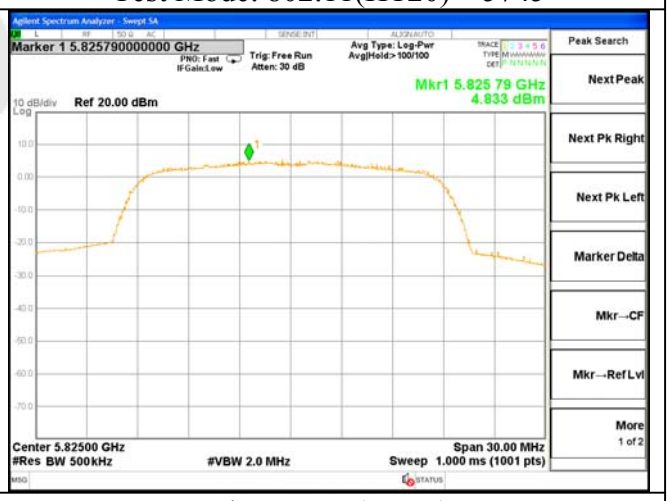
Test Mode: 802.11n(HT20)---5240



Test Mode: 802.11(HT20)---5745



Test Mode: 802.11(HT20)---5785



Test Mode: 802.11(HT20)---5825

7. Radiated Emission Test

7.1. Test Limit

8.1.1. Test Limits (< 30 MHZ)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

7.1.2. Test Limits (≥ 30 MHZ)

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHZ		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBμV/m @3m	54 dBμV/m @3m	ABOVE 960 MHz	54dBuV/m

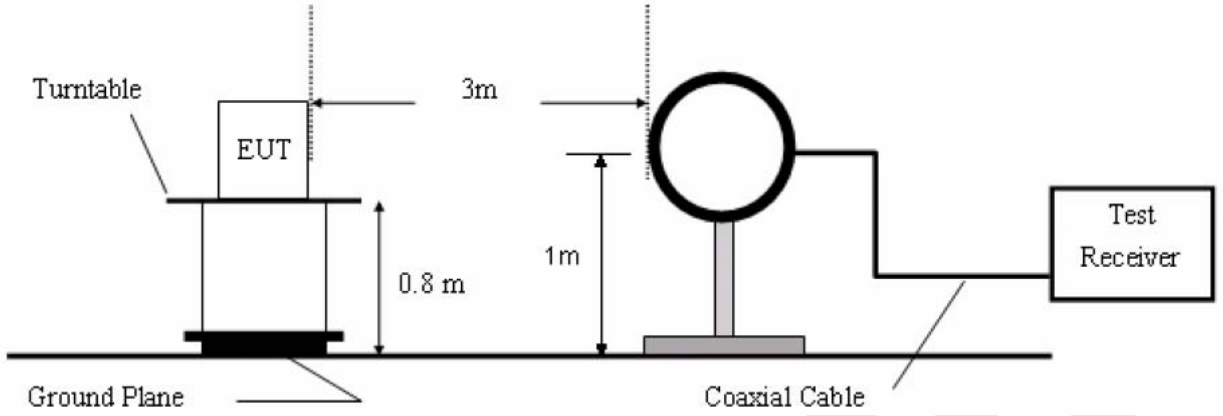
7.1.3. Restriction Band of Operation

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1]0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8

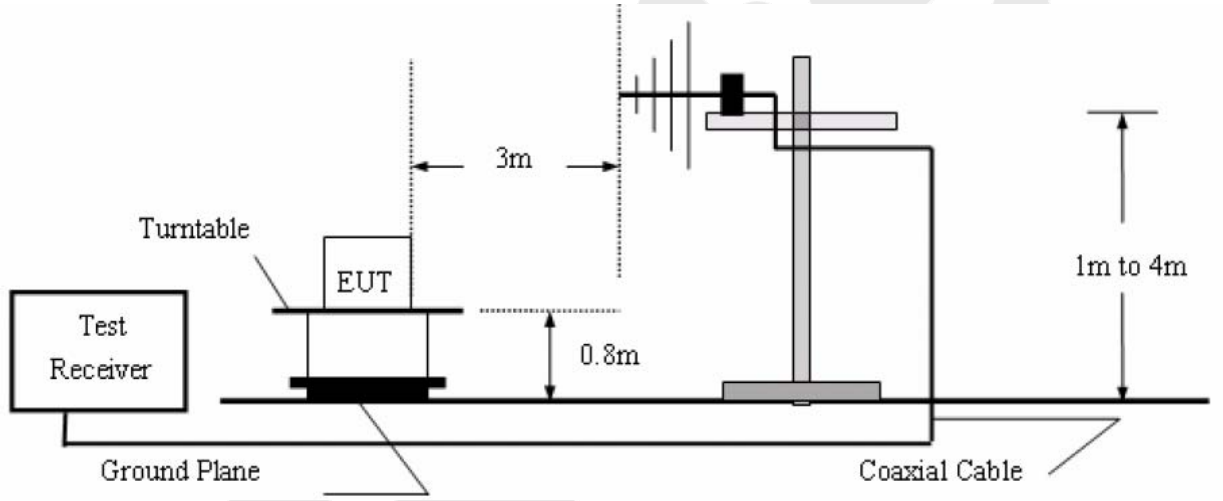
All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

7.2. Test Setup

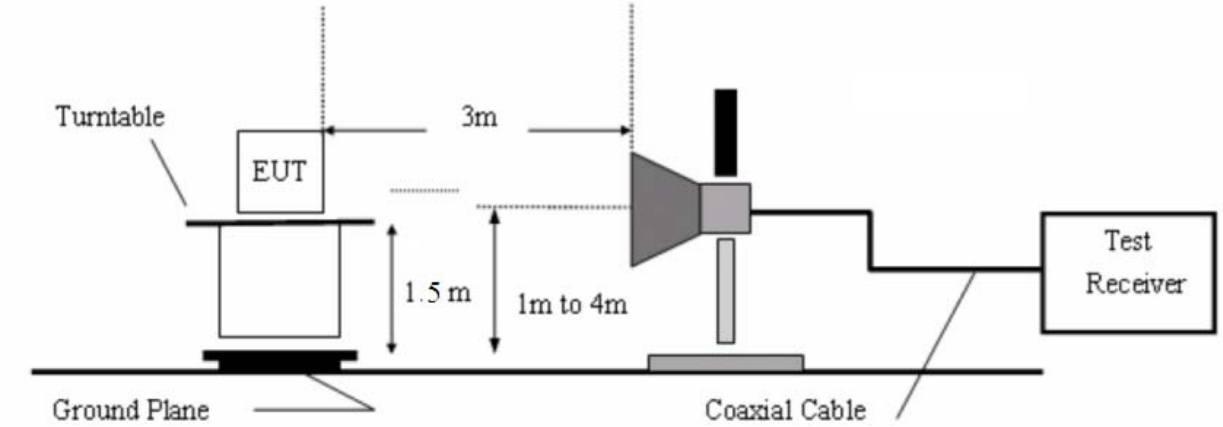
7.2.1. 9k to 30MHz emissions:



7.2.2. 30M to 1G emissions:



7.2.3. 1G to 40G emissions:



7.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.
For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turntable shall be rotated 360 degrees to determine the position of max. emission level. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

Measurements are made on 9KHz to 30MHz and 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz.
The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

The test results are listed in Section 8.5.

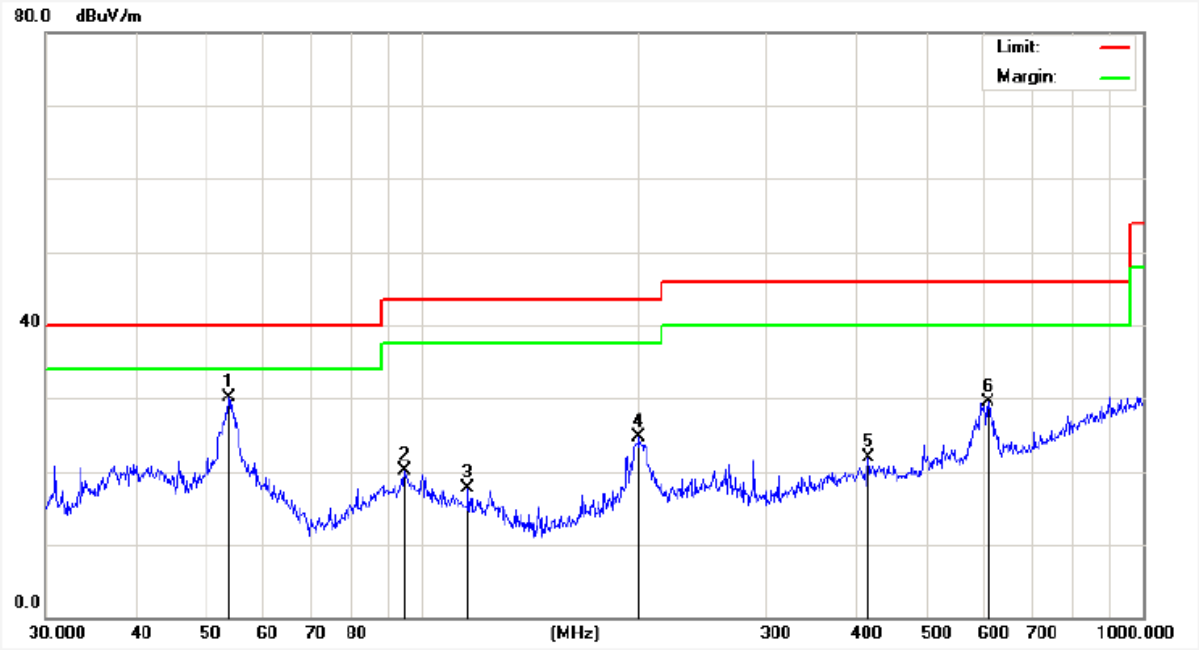
7.4. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2015	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2015	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2015	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2015	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2015	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2015	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year
14	Spectrum Analysis	Rohde & Schwarz	FSV40	132.1.3008K39-100965	Mar 17, 2016	1 Year
15	Pre-amplifier	Agilent	8449B	3008A00252	Mar 17, 2016	1 Year
16	Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Mar 17, 2016	1 Year

7.5. Test Results

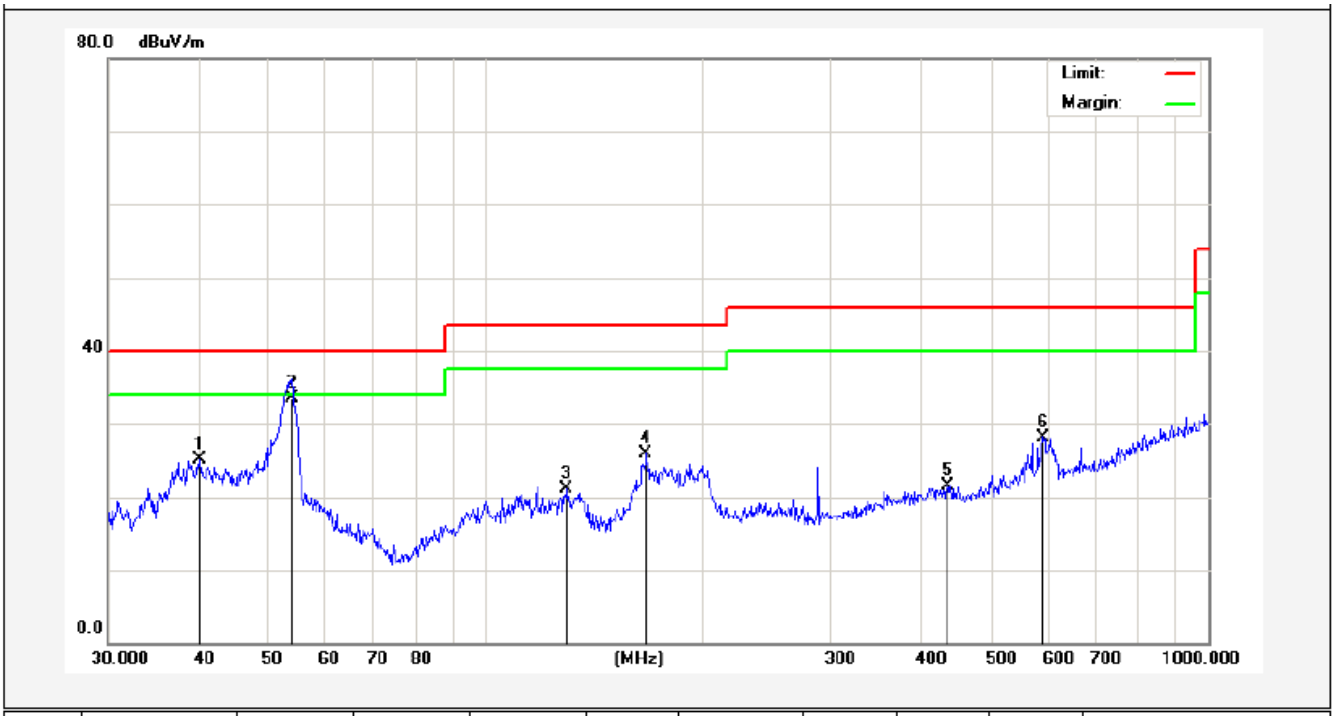
Please refer to the following pages. Only the worst case (x orientation).

Job No.:	**011603394I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART15 C _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	53.8818	44.90	-14.85	30.05	40.00	-9.95	peak			
2	94.4284	41.31	-21.22	20.09	43.50	-23.41	peak			
3	115.7256	38.72	-21.03	17.69	43.50	-25.81	peak			
4	199.9856	45.61	-20.87	24.74	43.50	-18.76	peak			
5	416.1791	34.42	-12.47	21.95	46.00	-24.05	peak			
6	609.9217	40.48	-10.97	29.51	46.00	-16.49	peak			

Job No.:	**011603394I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART15 C _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	40.1347	35.57	-10.42	25.15	40.00	-14.85	peak			
2	53.8817	48.41	-14.85	33.56	40.00	-6.44	QP	100	360	
3	129.4677	38.89	-17.73	21.16	43.50	-22.34	peak			
4	166.6513	43.66	-17.66	26.00	43.50	-17.50	peak			
5	435.5898	32.79	-11.22	21.57	46.00	-24.43	peak			
6	590.9737	37.59	-9.39	28.20	46.00	-17.80	peak			

Low Channel(5745MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
11490	48.51	38.34	H	74(Peak)/ 54(AV)
11490	46.45	36.45	V	74(Peak)/ 54(AV)
17235	49.58	38.28	H	74(Peak)/ 54(AV)
17235	48.25	37.38	V	74(Peak)/ 54(AV)
13748	46.64	36.28	H	74(Peak)/ 54(AV)
13748	44.57	34.38	V	74(Peak)/ 54(AV)
22980	--		H	74(Peak)/ 54(AV)
22980	--		V	74(Peak)/ 54(AV)

Middle Channel(5785MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
11570	48.64	38.14	H	74(Peak)/ 54(AV)
11570	47.25	37.64	V	74(Peak)/ 54(AV)
17355	50.67	40.35	H	74(Peak)/ 54(AV)
17355	47.28	37.87	V	74(Peak)/ 54(AV)
13486	46.38	36.41	H	74(Peak)/ 54(AV)
13486	46.28	36.38	V	74(Peak)/ 54(AV)
23140	--		H	74(Peak)/ 54(AV)
23140	--		V	74(Peak)/ 54(AV)

High Channel(5825MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
11650	48.48	38.52	H	74(Peak)/ 54(AV)
11650	46.28	36.48	V	74(Peak)/ 54(AV)
17475	48.47	38.29	H	74(Peak)/ 54(AV)
17475	45.29	35.94	V	74(Peak)/ 54(AV)
12849	44.28	34.18	H	74(Peak)/ 54(AV)
13579	45.49	35.29	V	74(Peak)/ 54(AV)
23300	--		H	74(Peak)/ 54(AV)
23300	--		V	74(Peak)/ 54(AV)

Low Channel(5180MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
10360	48.24	37.17	H	74(Peak)/ 54(AV)
10360	45.39	35.72	V	74(Peak)/ 54(AV)
15540	47.48	36.47	H	74(Peak)/ 54(AV)
15540	45.28	35.37	V	74(Peak)/ 54(AV)
17684	46.87	35.64	H	74(Peak)/ 54(AV)
17546	45.29	35.17	V	74(Peak)/ 54(AV)
20720	--		H	74(Peak)/ 54(AV)
20720	--		V	74(Peak)/ 54(AV)

Middle Channel(5200MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
10400	46.28	36.28	H	74(Peak)/ 54(AV)
10400	46.38	35.18	V	74(Peak)/ 54(AV)
15600	49.37	38.61	H	74(Peak)/ 54(AV)
15600	48.27	38.49	V	74(Peak)/ 54(AV)
18576	47.64	37.18	H	74(Peak)/ 54(AV)
18521	45.84	34.98	V	74(Peak)/ 54(AV)
20800	--		H	74(Peak)/ 54(AV)
20800	--		V	74(Peak)/ 54(AV)

High Channel(5240MHz)

Frequency (MHz)	Level@3m (dBμV/m)（PK）	Level@3m (dBμV/m)（AV）	Antenna Polarity (H/V)	Limit@3m (dBμV/m)
10480	47.34	35.48	H	74(Peak)/ 54(AV)
10480	45.29	34.97	V	74(Peak)/ 54(AV)
15720	43.97	36.48	H	74(Peak)/ 54(AV)
15720	44.28	34.58	V	74(Peak)/ 54(AV)
17678	43.79	35.39	H	74(Peak)/ 54(AV)
17528	44.97	34.87	V	74(Peak)/ 54(AV)
20960	--		H	74(Peak)/ 54(AV)
20960	--		V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
Note: 2. Remark "---" means that the emissions level is too low to be measured

8. Band Edge Test

8.1. Test Limit

For transmitter operating in the 5.15-5.25GHz band: all emissions outside of the 5.15-5.35GHz outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5.25-5.35GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz. Devices operating in the 5.25-5.35GHz band that generate emissions in the 5.15-5.25GHz band must meet all applicable technical requirements for operation in the 5.15-5.25GHz band (includeing indoor use) or alternatively meet an out-of-band emission EIRP limit of -27dBm/MHz in the 5.15-5.25GHz band.

For transmitters operating in the 5.45-5.725GHz band: all emissions outside of the 5.47-5.725GHz band shall not exceed an EIRP of -27dBm/MHz.

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

8.2. Test Setup

Same as clause 7.2.

8.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.
For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turntable shall be rotated 360 degrees to determine the position of max. emission level. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

Measurements are made on 9KHz to 30MHz and 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz.
The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 9.5.

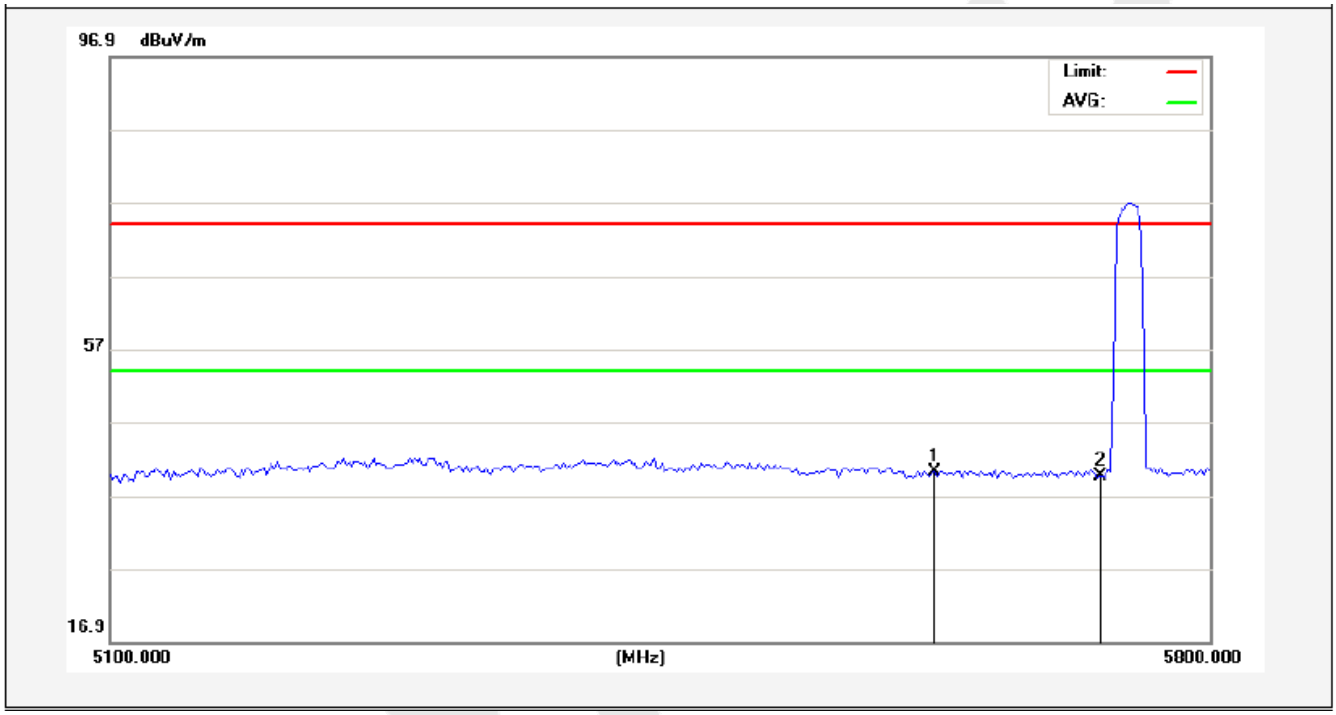
8.4. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2015	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2015	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2015	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2015	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2015	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2015	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year
14	Spectrum Analysis	Rohde & Schwarz	FSV40	132.1.3008K39 -100965	Mar 17, 2016	1 Year
15	Pre-amplifier	Agilent	8449B	3008A00252	Mar 17, 2016	1 Year
16	Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Mar 17, 2016	1 Year

8.5. Test Results

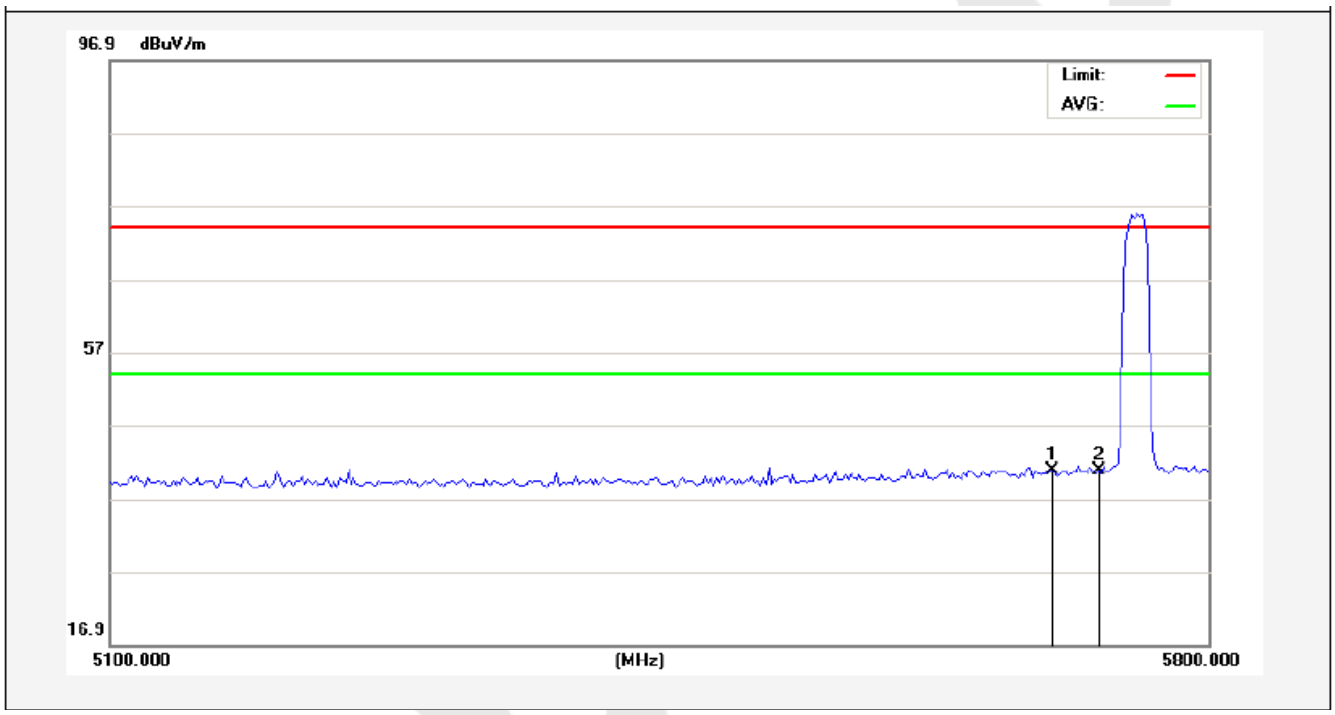
Please refer to the following pages.

Job No.:	**011603394I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5745MHz)**	**Distance:**	**3m**



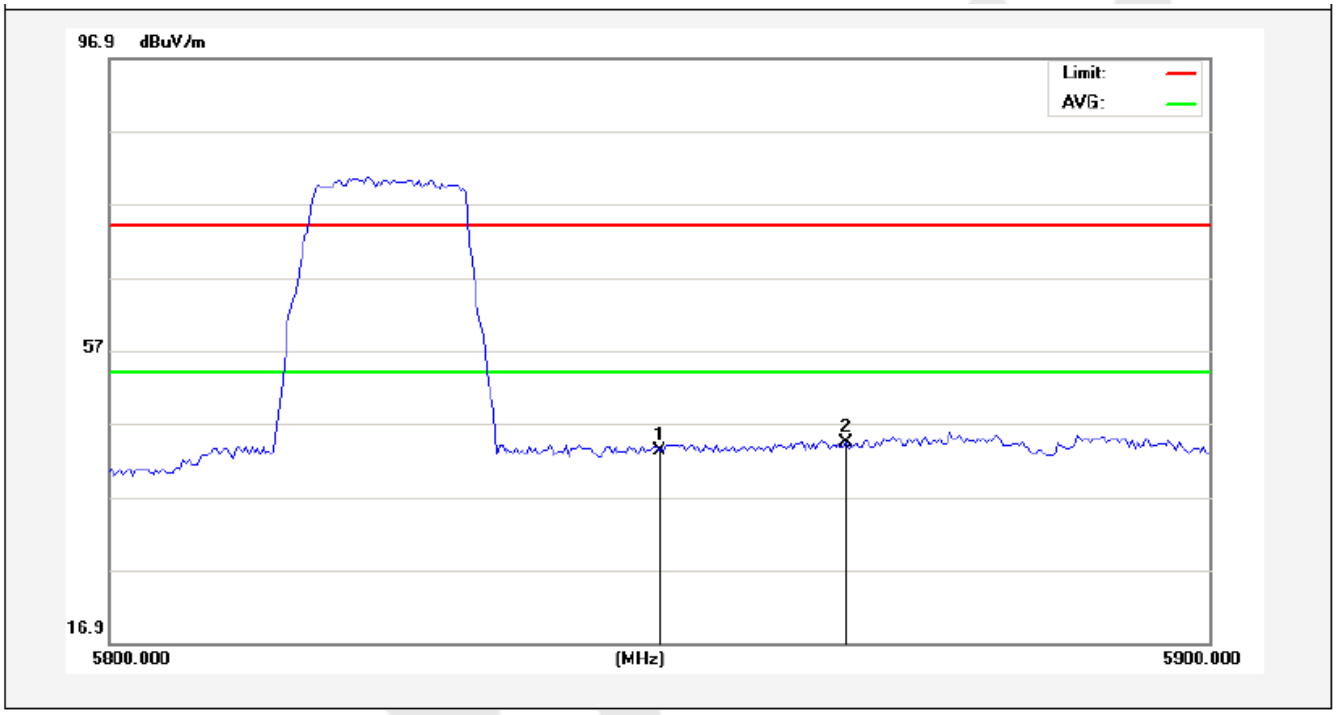
Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5725MHz, E[dBuV/m] = 39.70 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =39.70-95.2= -55.5dBm
The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5745MHz)**	**Distance:**	**3m**



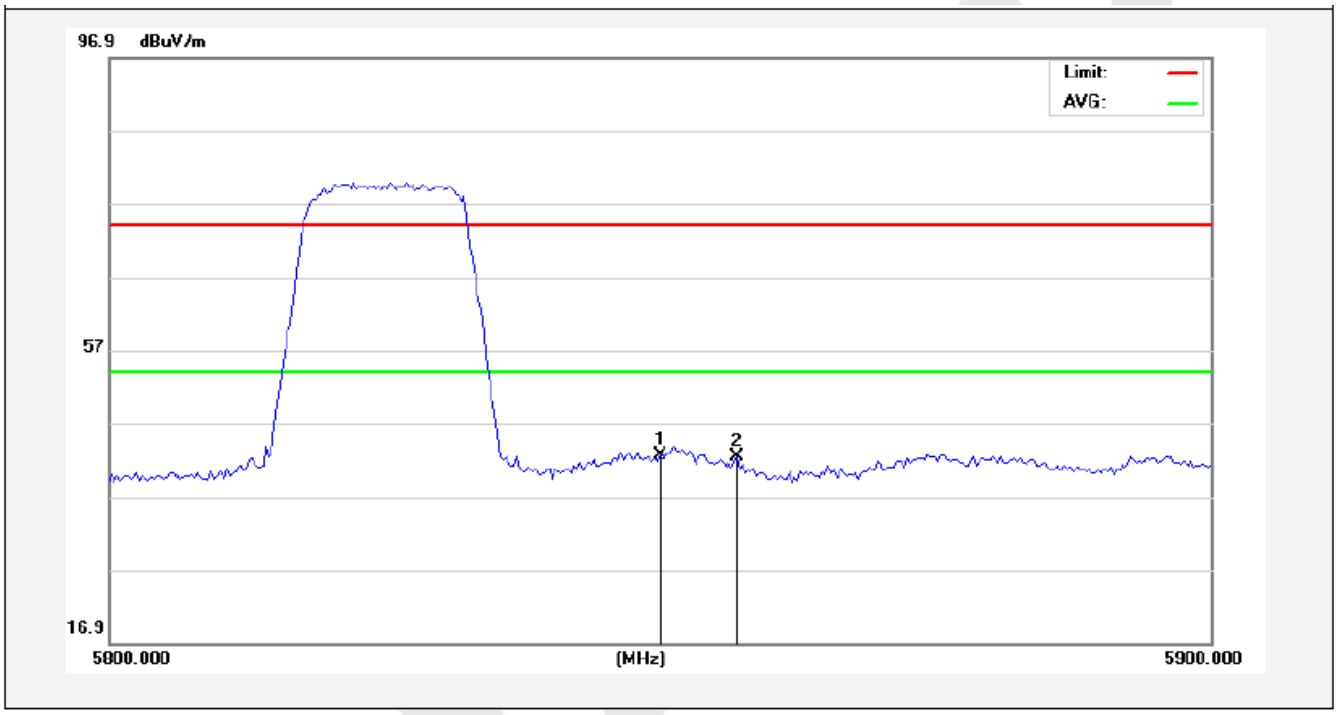
Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5725MHz, E[dBuV/m] = 40.78 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =40.78-95.2= -54.42dBm
The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5825MHz)**	**Distance:**	**3m**



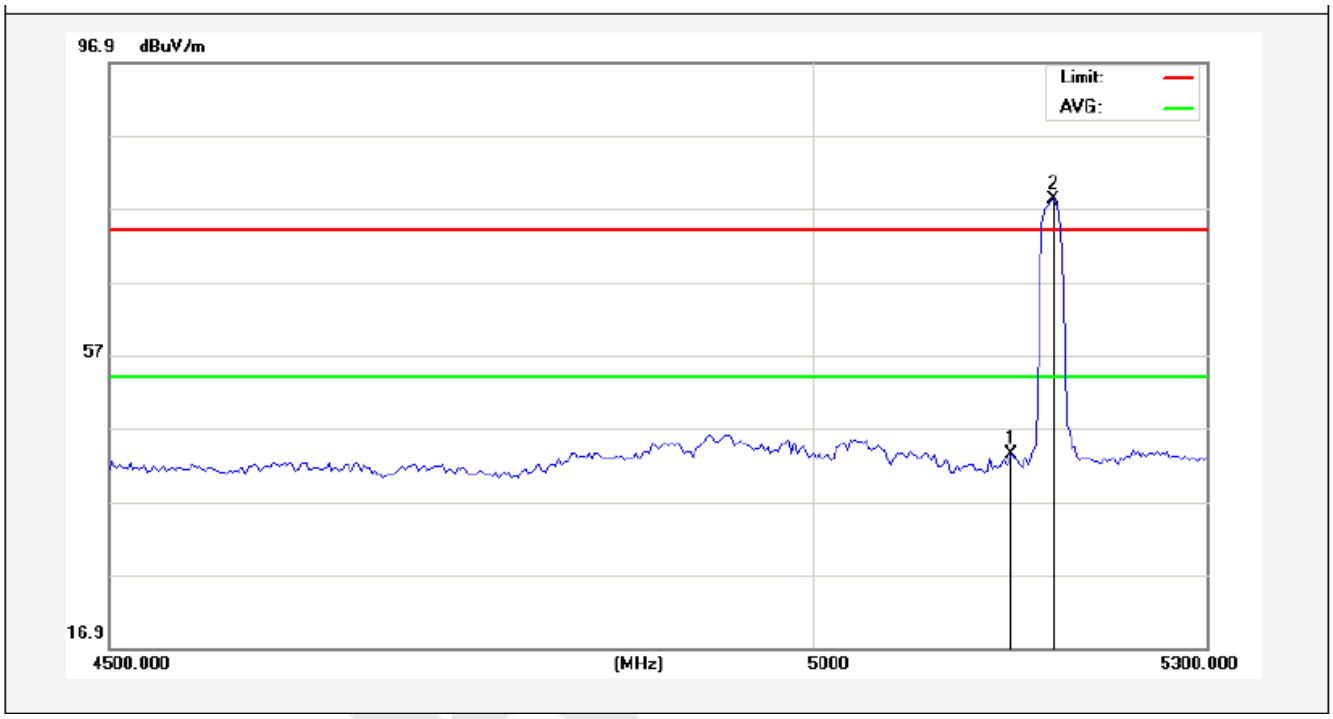
Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5850MHz, E[dBuV/m] = 44.32 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =44.32-95.2= -50.88dBm
The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5825MHz)**	**Distance:**	**3m**



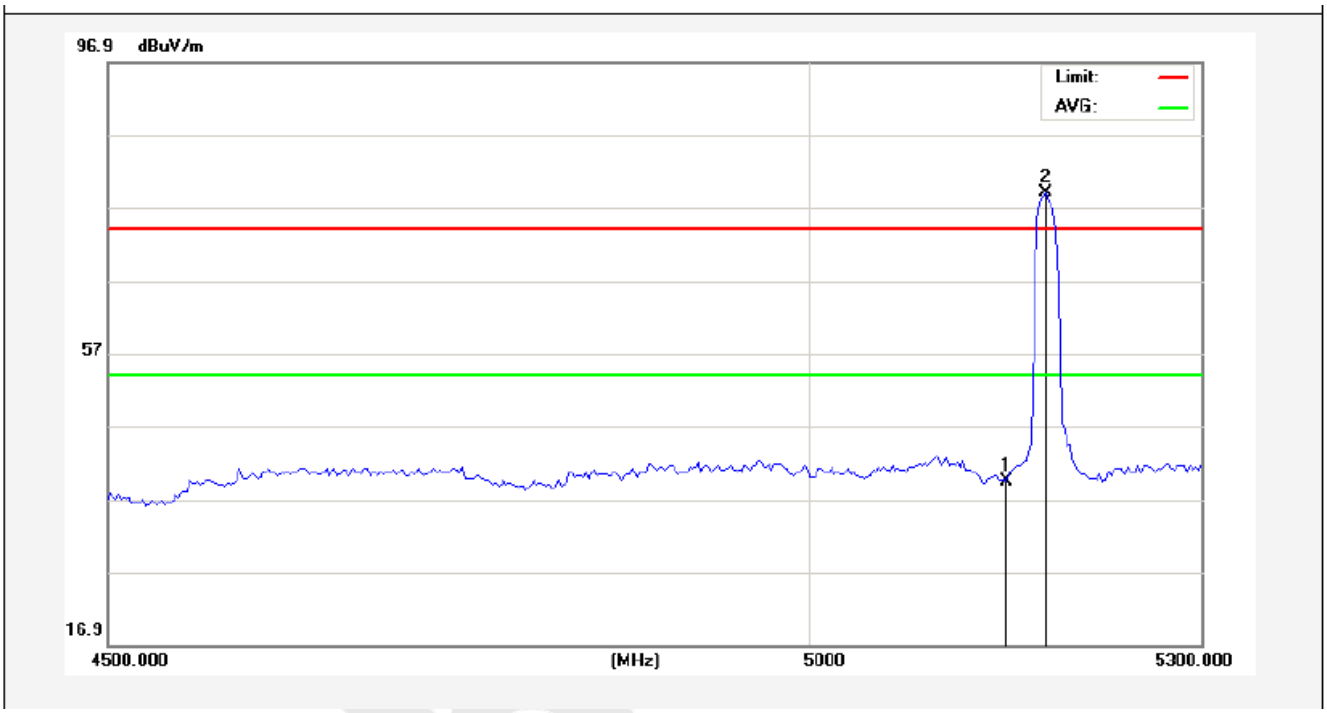
Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5850MHz, E[dBuV/m] = 42.52 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =42.52-95.2= -52.68dBm
The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5180MHz)**	**Distance:**	**3m**



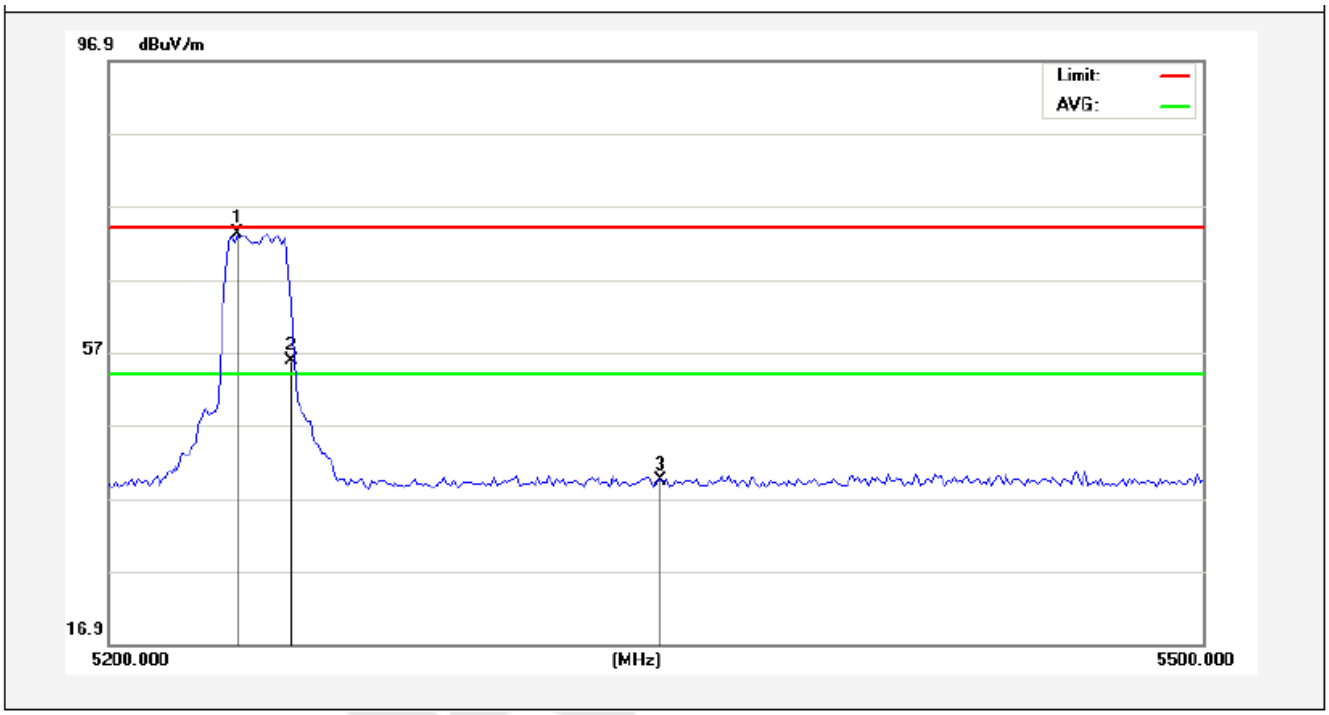
Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5150MHz, E[dBuV/m] =43.34 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =43.34-95.2= -51.86dBm
The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5180MHz)**	**Distance:**	**3m**



Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5150MHz, E[dBuV/m] = 34.66 dBuV/m
EIRP[dBm]=E[dBuV/m]-95.2 =34.66-95.2= -6dBm
The limit is -27dBm/MHz

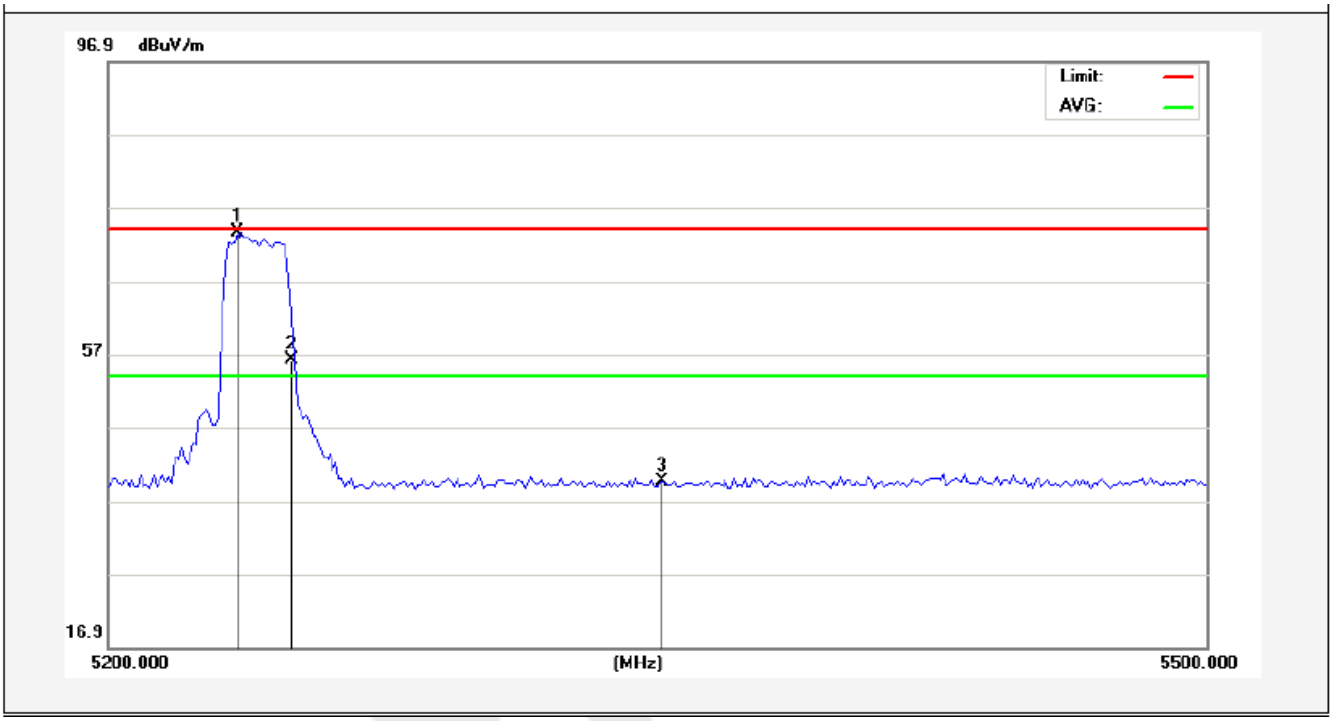
Job No.:	**011603394I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5240MHz)**	**Distance:**	**3m**



Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5250MHz, E1[dBuV/m] = 54.67dBuV/m;
There the frequency 5350MHz, E2[dBuV/m] = 36.14 dBuV/m
EIRP1[dBm]=E[dBuV/m]-95.2 =54.67-95.2= -40.53dBm
EIRP2[dBm]=E[dBuV/m]-95.2 =36.14-95.2= -59.06dBm

The limit is -27dBm/MHz

Job No.:	**011603394I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART15 E _3m**	**Power Source:**	**AC 120V, 60Hz for adapter**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON (5240MHz)**	**Distance:**	**3m**



Remark:
1. According to KDB 789033 section H) d) (iii), for measurement above 1000MHz @3m distance, the limit of EIRP is calculated as follows:
EIRP[dBm]=E[dBuV/m]-95.2
There the frequency 5250MHz, E1[dBuV/m] = 56.78dBuV/m;
There the frequency 5350MHz, E2[dBuV/m] = 38.28dBuV/m
EIRP1[dBm]=E[dBuV/m]-95.2 =56.78-95.2= -38.42dBm
EIRP2[dBm]=E[dBuV/m]-95.2 =38.28-95.2= -56.92dBm

The limit is -27dBm/MHz

9. ANTENNA APPLICATION

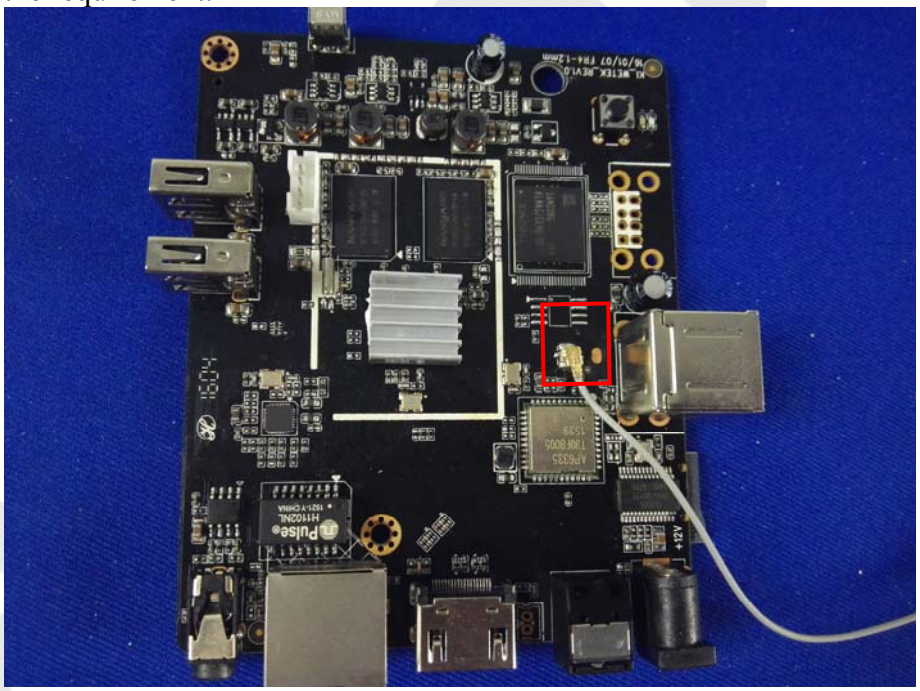
9.1. Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.407.

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

9.2. Result

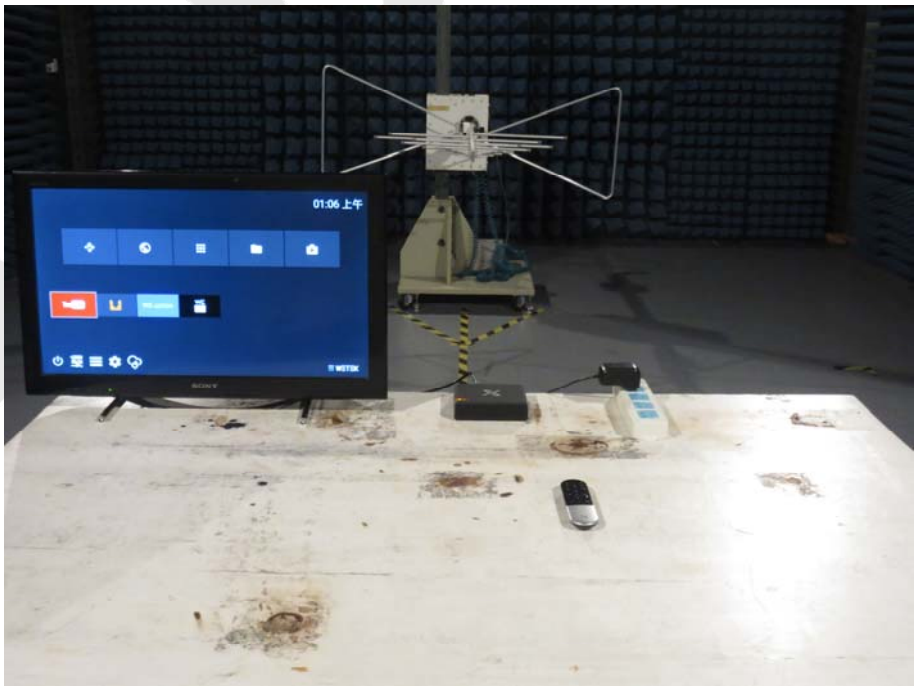
The EUT's antenna used a Integrated antenna which is permanently attached, The antenna's gain is 2dBi and meets the requirement.

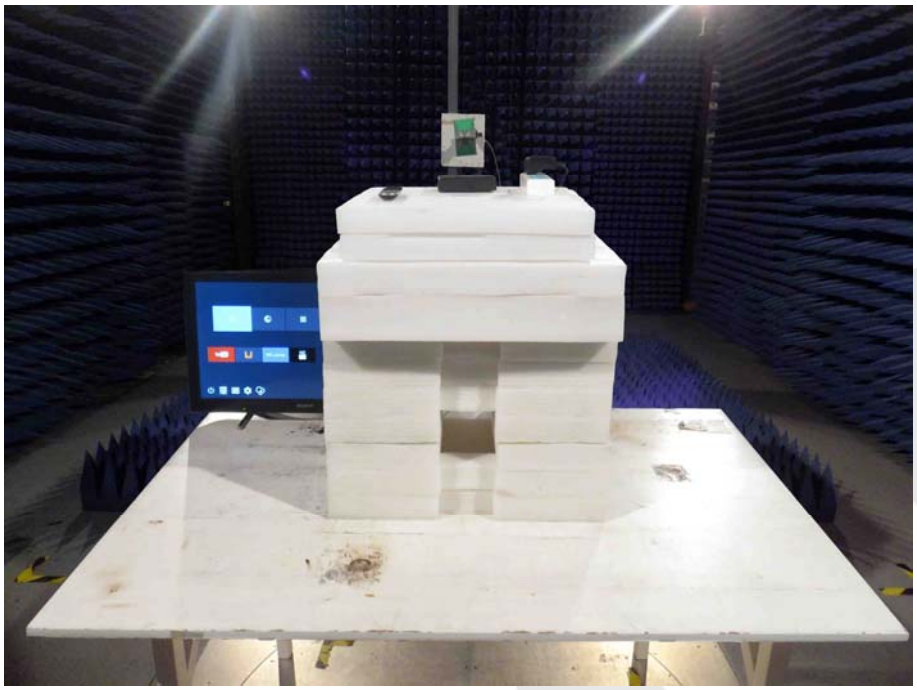


10. PHOTOGRAPH

10.1. Photo of Conducted Emission Measurement

10.2. Photo of Radiation Emission Test





APPENDIX I (EXTERNAL PHOTOS)

Figure 1
The EUT-Overall View

Figure 2
The EUT-Top View

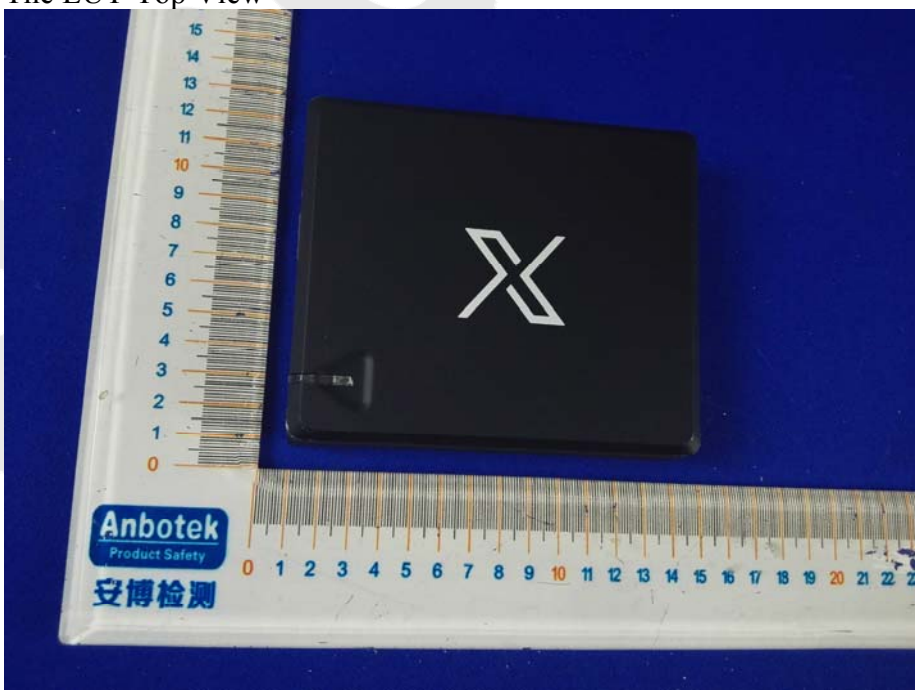


Figure 3
The EUT-Bottom View

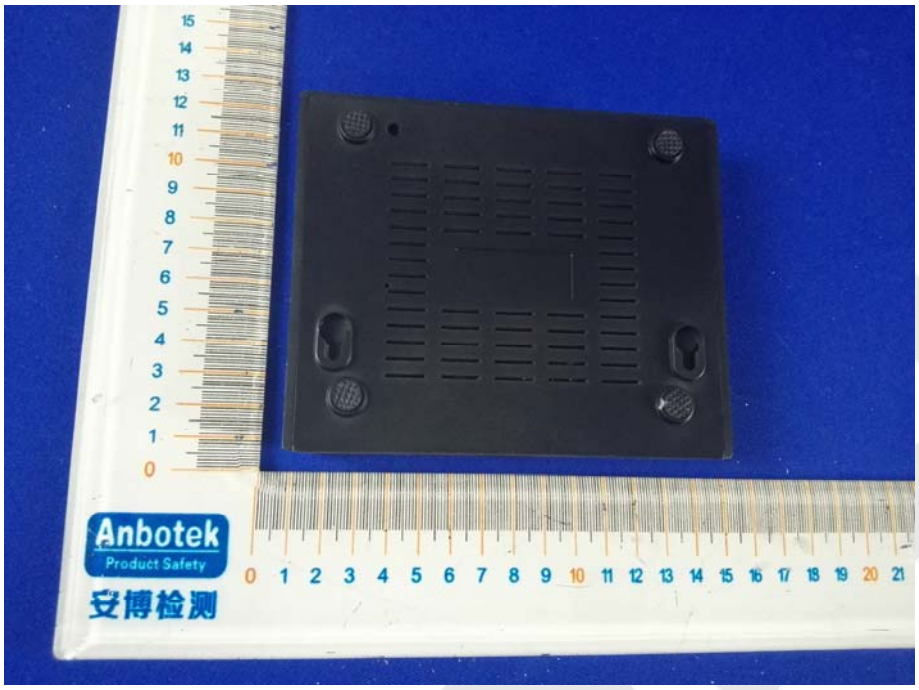


Figure 4
The EUT-Front View

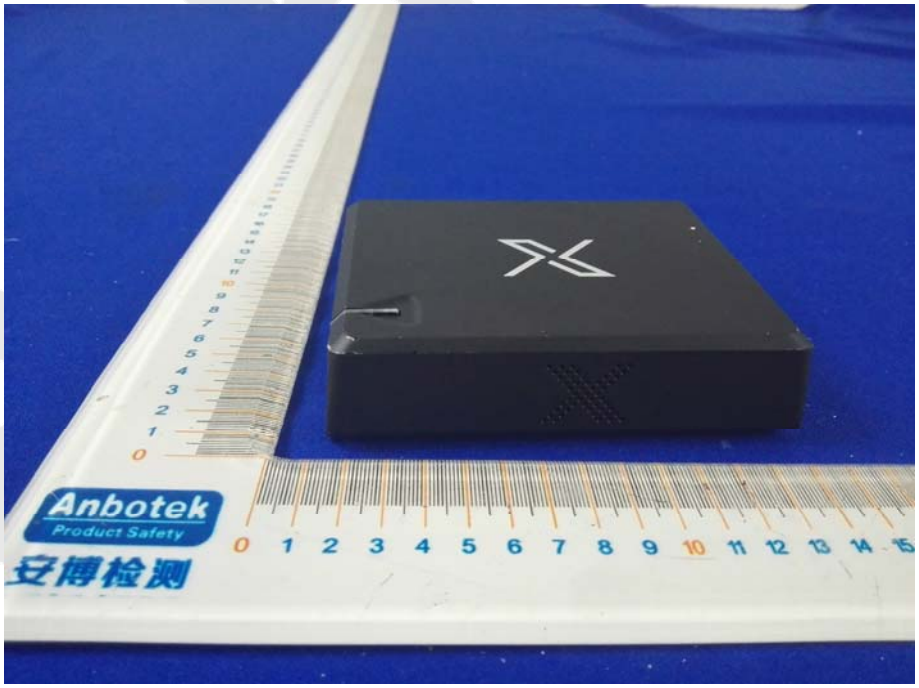


Figure 5
The EUT-Back View

Figure 6
The EUT-Right View

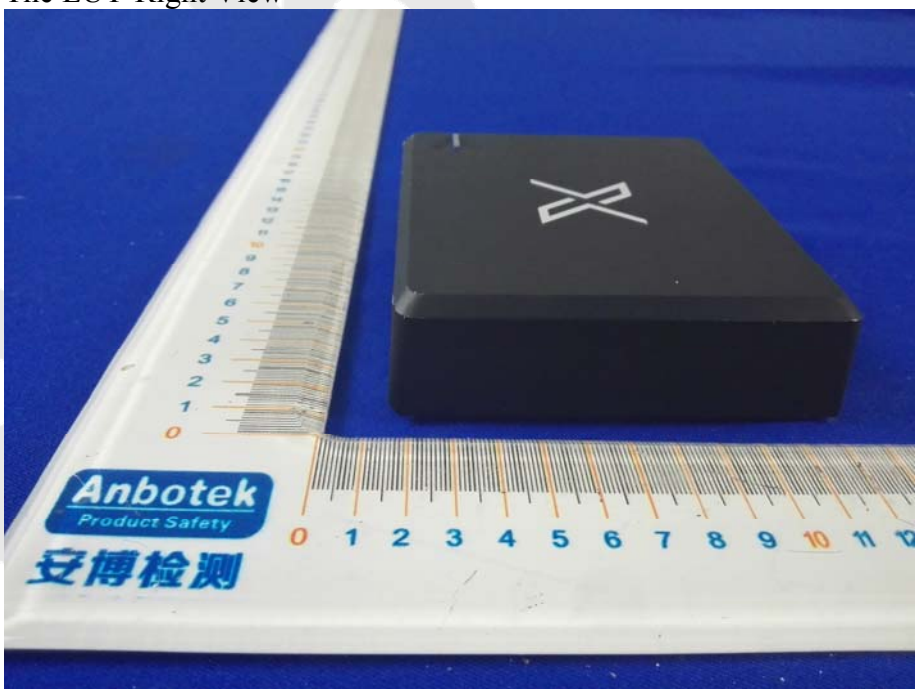


Figure 7
The EUT-Left View

APPENDIX Ⅱ(INTERNAL PHOTOS)

Figure 8
The EUT-Inside View

Figure 9
The EUT-Inside View

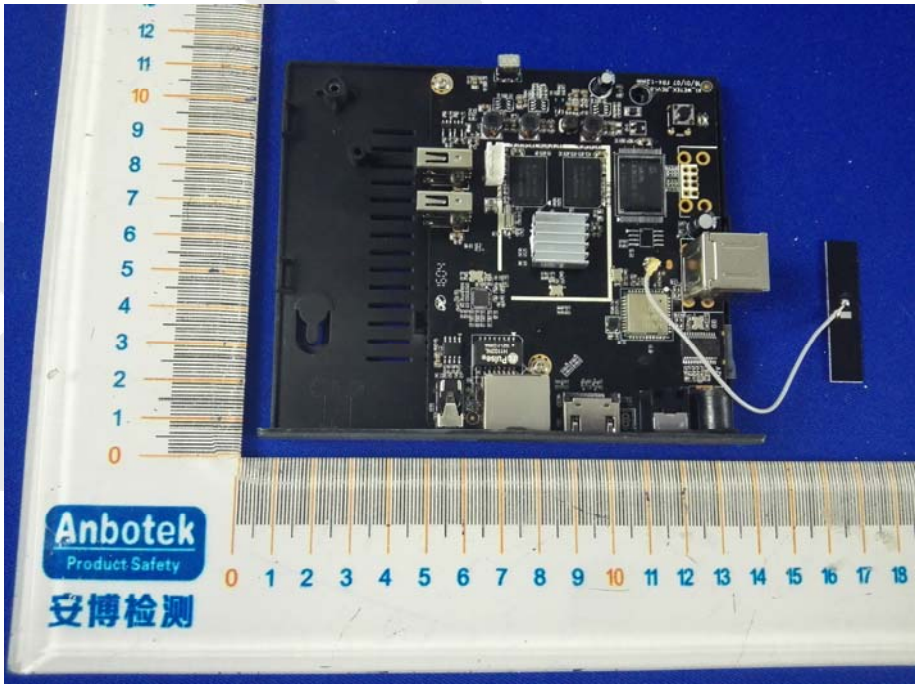


Figure 10
PCB of the EUT-Front View

Figure 11
PCB of the EUT-Back View

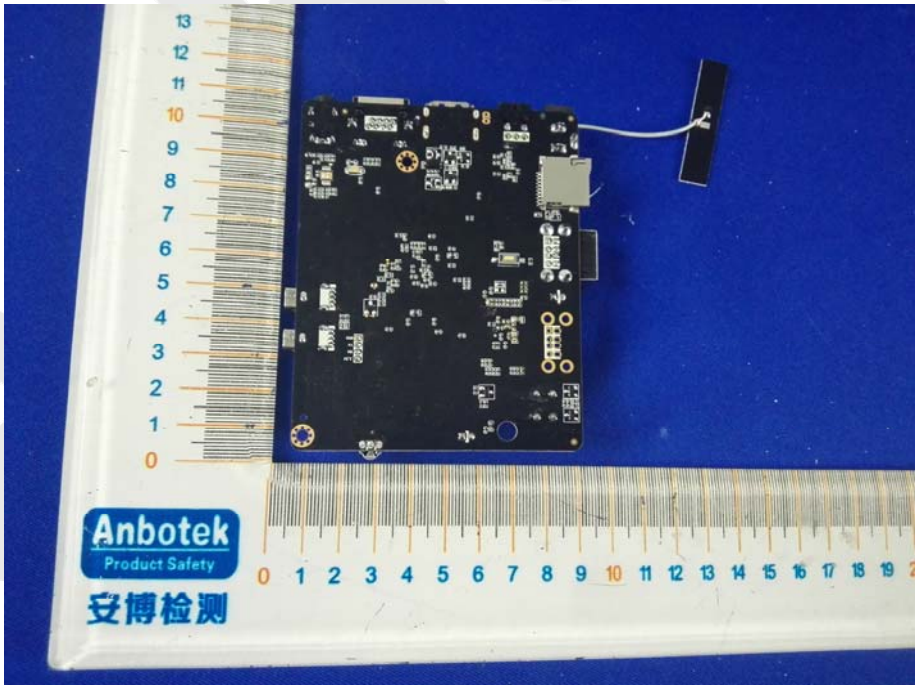


Figure 12
PCB of the EUT-Front View

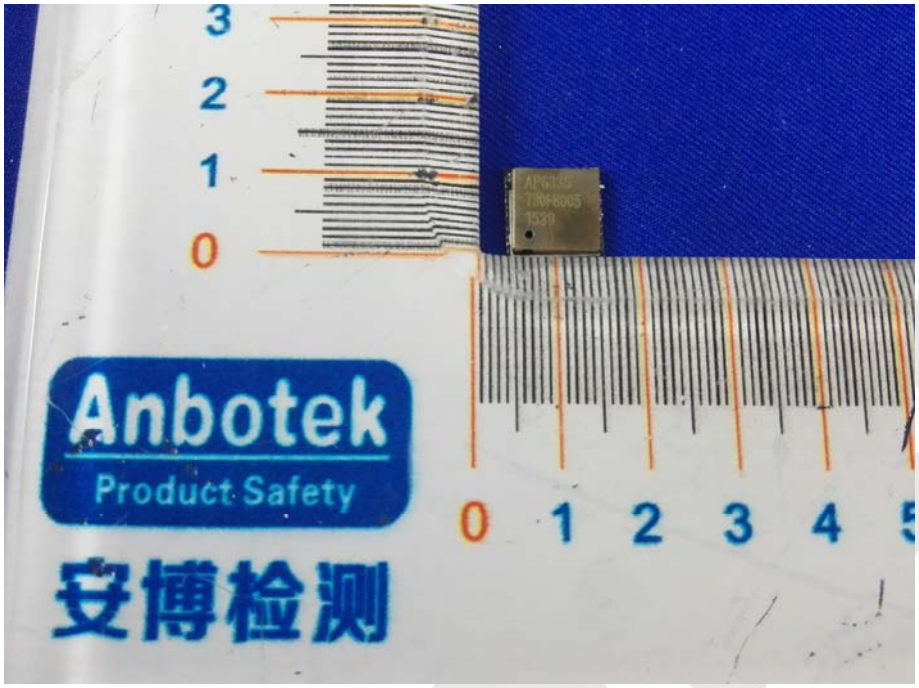


Figure 13
PCB of the EUT-Back View

Figure 14
PCB of the EUT-Front View

Figure 15
PCB of the EUT-Front View

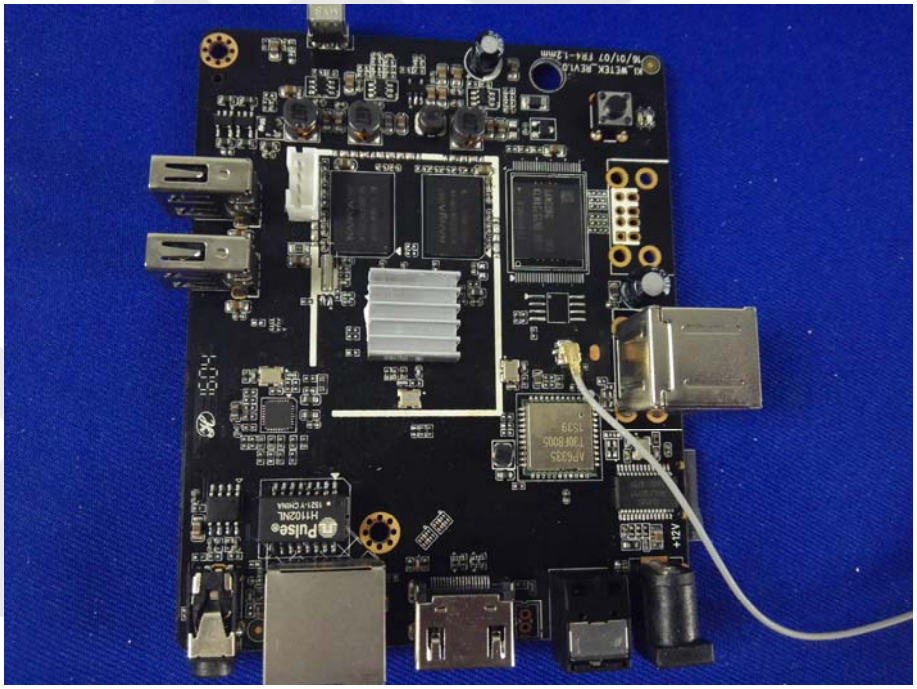


Figure 16
PCB of the EUT-Back View