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FCC RADIO TEST REPORT

Applicant's company	**PEGATRON CORPORATION**
Applicant Address	5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 11259, Taiwan
FCC ID	**VUIDPC3829A**
Manufacturer's company	**Maintek Computer (Suzhou) Co., Ltd**
Manufacturer Address	Bldg. 6 NB, 233 Jin Feng Rd, Suzhou District Jiangsu China

Product Name	Wireless cable modem
Brand Name	technicolor
Model No.	DPC3829XXXX (X = 0-9 and A~Z or blank)
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Mar. 12, 2014
Final Test Date	Apr. 13, 2016
Submission Type	Class II Change

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a/ac of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r02, KDB662911 D01 v02r01, KDB644545 D03 v01.**

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR441114-01AB	Rev. 01	Initial issue of report	Apr. 22, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Wireless cable modem
Brand Name	:	technicolor
Model No.	:	DPC3829XXXX (X = 0-9 and A~Z or blank)
Applicant	:	PEGATRON CORPORATION
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 12, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	13.05 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(e)	6dB Spectrum Bandwidth	Complies	-
4.4	15.407(a)	Maximum Conducted Output Power	Complies	3.75 dB
4.5	15.407(a)	Power Spectral Density	Complies	8.15 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.08 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.01 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	IEEE 802.11a: WLAN (1TX, 1RX) IEEE 802.11n/ac: WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Internal Power Supply
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.47 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz Band 4: IEEE 802.11a: 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.23 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 22.11 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 20.57 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 20.83 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.22 dBm Band 4: IEEE 802.11a: 22.75 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 26.24 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.25 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.30 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☐ With beamforming	☒ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

Antenna	Single (TX)			Three (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X	X	X	X
IEEE 802.11n	X	X	X	V	V	X
IEEE 802.11ac	X	X	X	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40.

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 and VHT80.

Note 3: Modulation modes consist of below configuration:
HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

3.2. Accessories

Others
Power Cable, Non-shielded, 1.45m
RJ-45 Cable, Non-shielded, 1.2m

3.3. Table for Filed Antenna

Ant.	Brand Holder	Model Name	P/N	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	HL TECHNOLOGY GROUP LIMITED	EPC-3829AD (T-housing)	290-30054	PCB Antenna	I-PEX	4.94	-
2	HL TECHNOLOGY GROUP LIMITED	EPC-3829AD (T-housing)	290-30055	PCB Antenna	I-PEX	4.41	2.49
3	HL TECHNOLOGY GROUP LIMITED	EPC-3829AD (T-housing)	290-30056	PCB Antenna	I-PEX	2.7	-
4	HL TECHNOLOGY GROUP LIMITED	EPC-3829AD (T-housing)	290-30057	PCB Antenna	I-PEX	-	2.16
5	HL TECHNOLOGY GROUP LIMITED	EPC-3829AD (T-housing)	290-30058	PCB Antenna	I-PEX	-	2.57

Note1: The EUT has five Antennas.

Note2: According to the above antennas, there are three antennas will transit simultaneously (one is Horizontal and the others are Vertical).

For 2.4GHz function:

For IEEE 802.11n mode (3TX/3RX)

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

Chain 1, Chain 2 and Chain 3 could transmit/receive simultaneously.

For IEEE 802.11b/g mode (1TX/1RX)

Only Chain 3 can be used as transmitting/receiving antenna.

For 5GHz function:

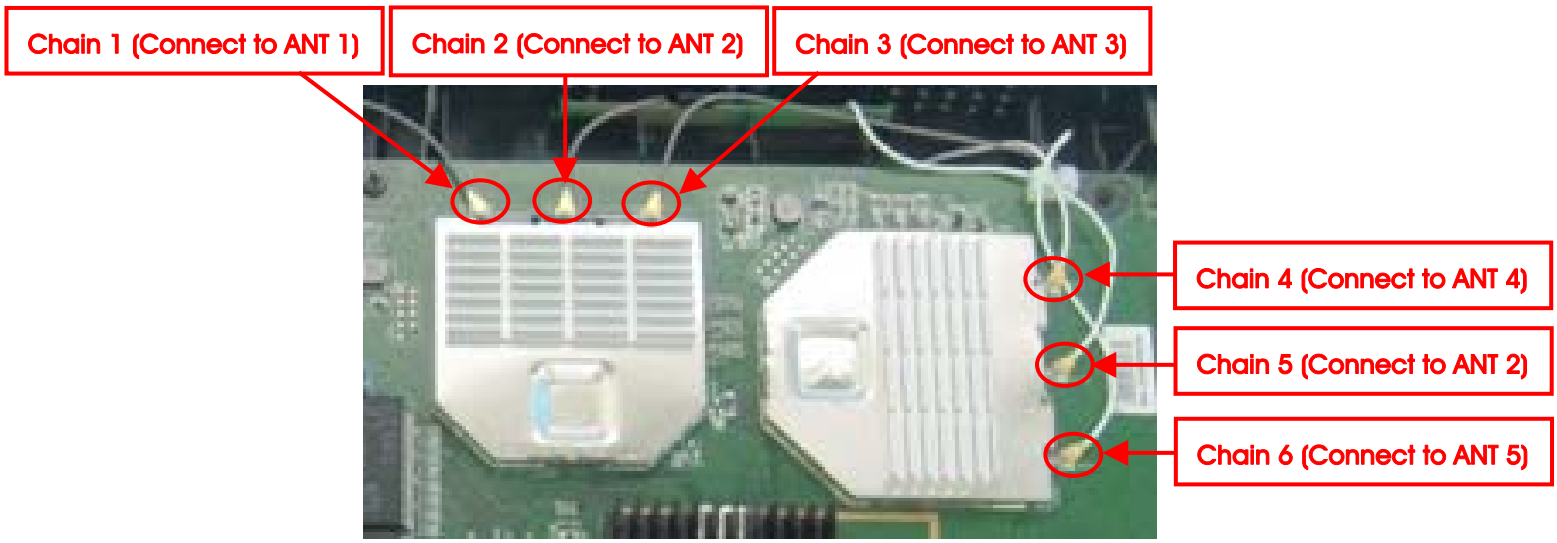
For IEEE 802.11n/ac mode (3TX/3RX)

Chain 4, Chain 5 and Chain 6 can be used as transmitting/receiving antenna.

Chain 4, Chain 5 and Chain 6 could transmit/receive simultaneously.

For IEEE 802.11a mode (1TX/1RX)

Only Chain 6 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	CTX		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	6
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	4+5+6
	11ac VHT40	Band 4	MCS0/Nss1	151/159	4+5+6
	11ac VHT80	Band 4	MCS0/Nss1	155	4+5+6
Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6

Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
Frequency Stability	20 MHz	Band 1&4	-	40/157	4
	40 MHz	Band 1&4	-	38/151	4
	80 MHz	Band 1&4	-	42/155	4

Note 1: The EUT can only use Y axis position.

Note 2: VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

The following test modes were performed for all tests:

For Conducted Emission and Radiated Emission below 1GHz test:

Mode 1. EUT CTX Y axis with 2.4GHz

Mode 2. EUT CTX Y axis with 5GHz

Mode 2 is the worst case, so it was selected to record in this test report.

For Radiated Emission above 1GHz test:

Mode 1. EUT CTX Y axis

For Co-location MPE and Radiated Emission Co-location Test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA441114-01) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR441114AA and FR441114AB

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Changing 5GHz Band 1 to "New Rules" from "Old Rules".	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. Maximum Conducted Output Power 3. Power Spectral Density 4. Radiated Emissions (above 1GHz) 5. Band Edge Emissions 6. Frequency Stability
Changing 5GHz Band 4 to "New Rules" from "Old Rules".	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions (above 1GHz) 6. Band Edge Emissions 7. Frequency Stability
Changing brand name: technicolor. Changing Applicant Address, Manufacturer's company and address. **Applicant Address:** 5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 11259, Taiwan. **Manufacturer Company:** Maintek Computer (Suzhou) Co., Ltd. **Manufacturer address:** Bldg. 6 NB, 233 Jin Feng Rd, Suzhou District Jiangsu China.	After evaluating, it is not necessary to re-test all test items.

Note: Test results of LISN and Radiated Emissions below 1GHz are based on original report FR441114AA and FR441114AB.

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB and TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

3.9. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test Software Version	Mtool 2.0.0.9					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	87	88	72	78	90	90
802.11ac MCS0/Nss1 VHT20	63	56	60	80	82	87
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	63		60		72	87
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	71				76	

3.10. EUT Operation during Test

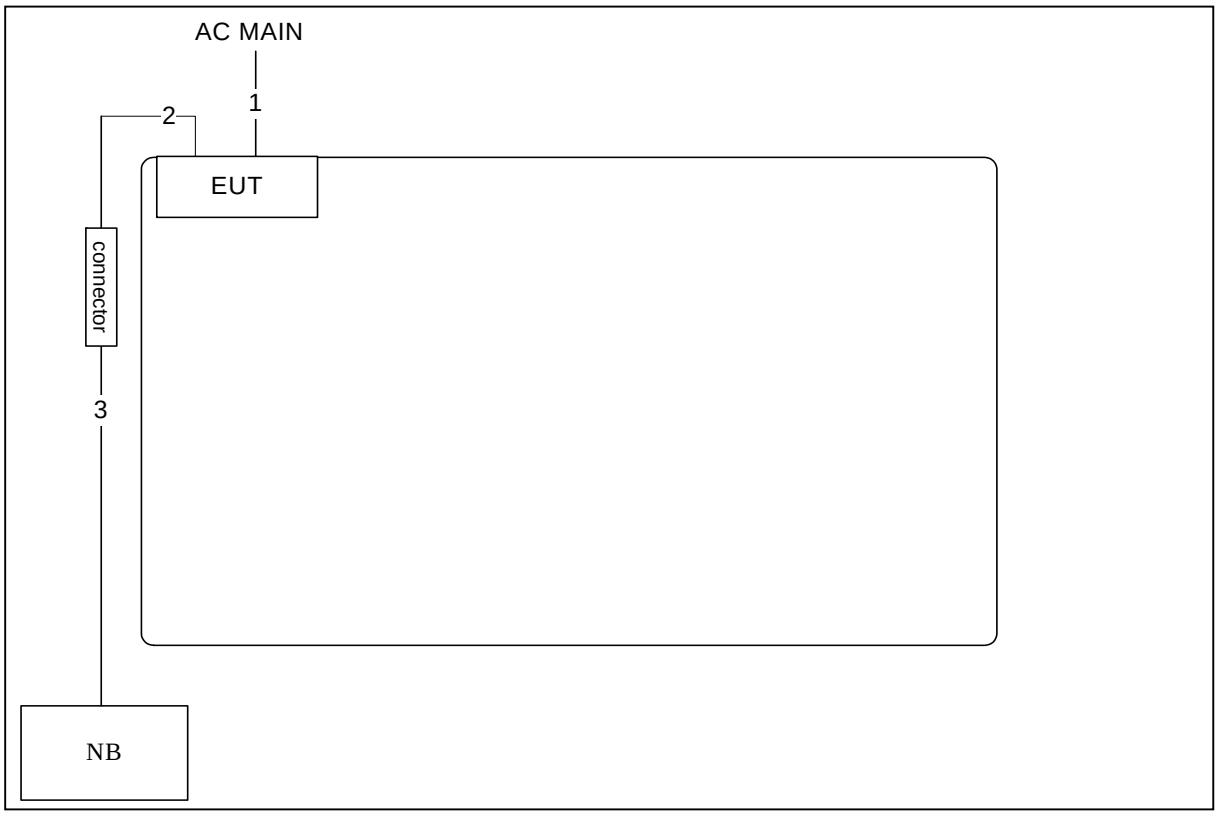
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.064	2.100	98.29%	0.08	0.01
802.11ac MCS0/Nss1 VHT20	1.924	1.965	97.91%	0.09	0.52
802.11ac MCS0/Nss1 VHT40	0.918	0.982	93.48%	0.29	1.09
802.11ac MCS0/Nss1 VHT80	0.442	0.487	90.76%	0.42	2.26

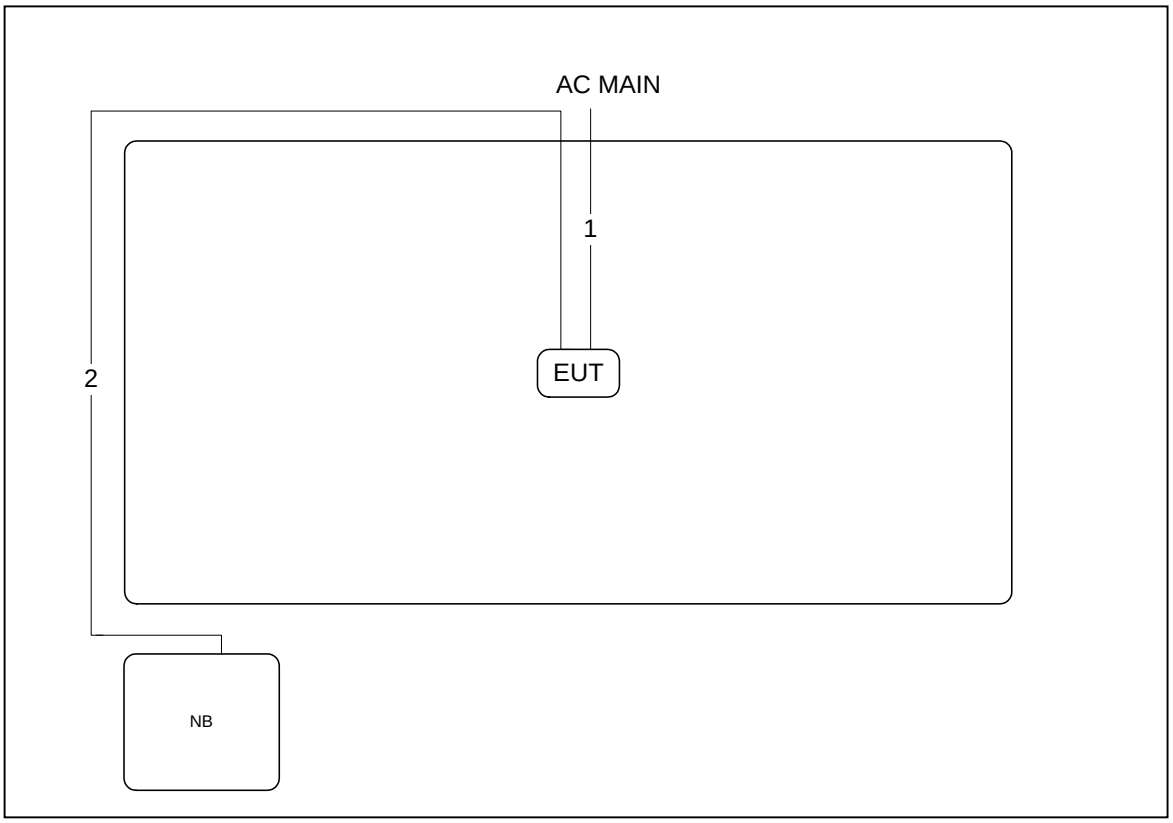
3.12. Test Configurations

3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length (m)
1	Power cable	No	1.45
2	RJ-45 cable	No	1.2
3	RJ-45 cable	No	10

3.12.2. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length (m)
1	Power cable	No	1.45
2	RJ-45 cable	No	10

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

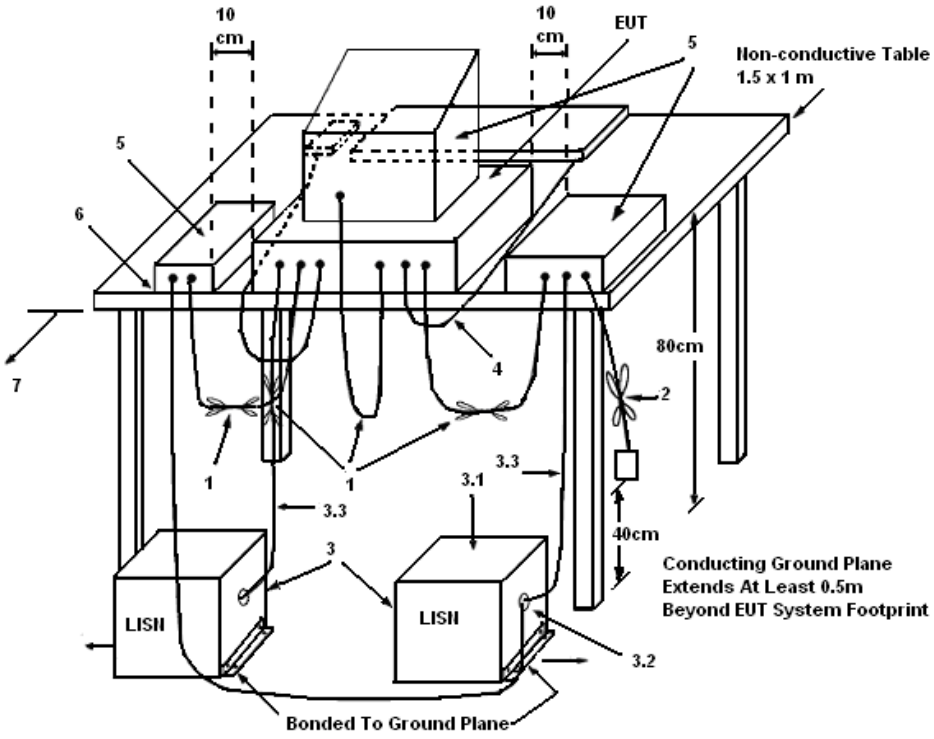
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

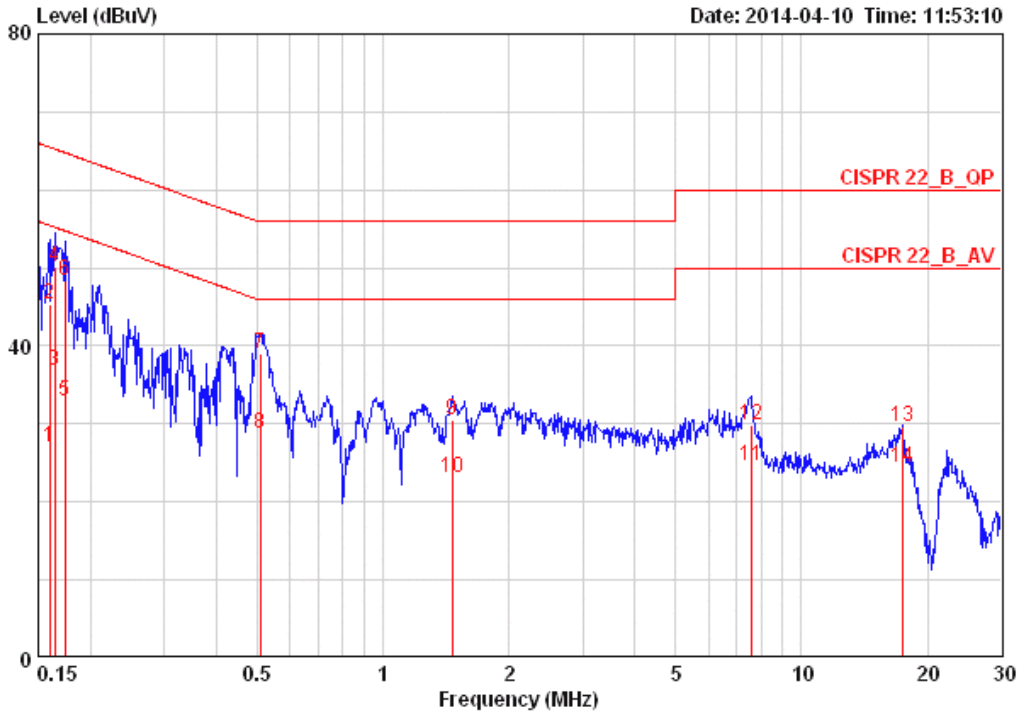
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

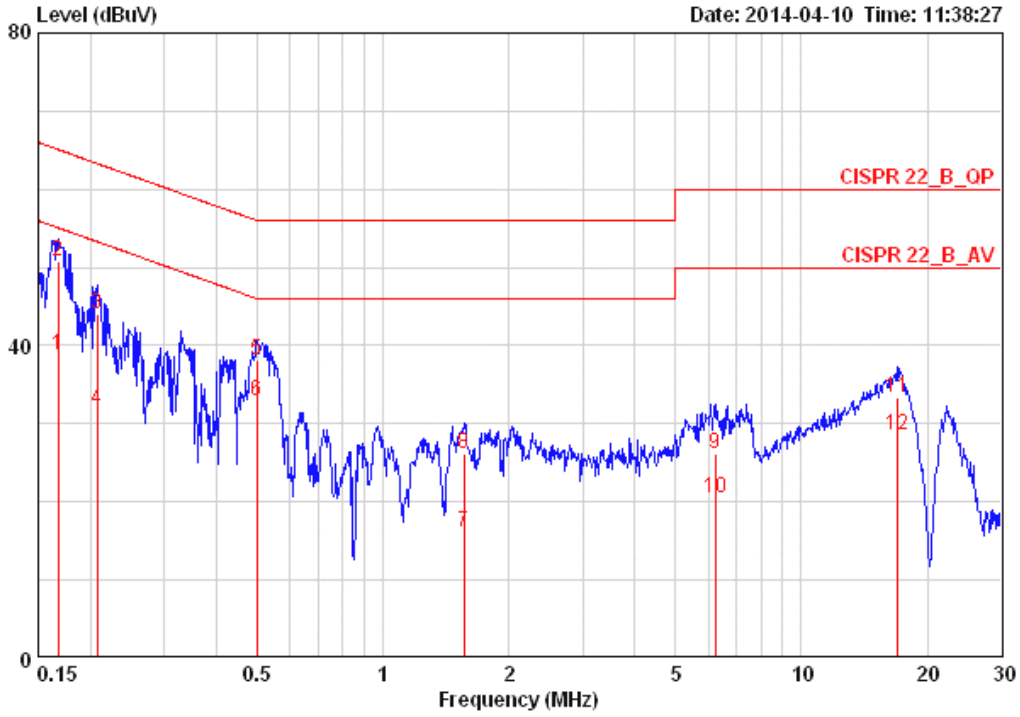
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	51%
Test Engineer	Sollo Luo	Phase	Line
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1	0.15985	27.13	-28.34	55.47	0.15	26.82	0.16	LINE	AVERAGE
2	0.15985	45.31	-20.16	65.47	0.15	45.00	0.16	LINE	QP
3	0.16414	36.84	-18.41	55.25	0.15	36.53	0.16	LINE	AVERAGE
4 @	0.16414	50.13	-15.12	65.25	0.15	49.82	0.16	LINE	QP
5	0.17399	32.81	-21.96	54.77	0.15	32.50	0.16	LINE	AVERAGE
6	0.17399	48.41	-16.36	64.77	0.15	48.10	0.16	LINE	QP
7	0.51007	38.97	-17.03	56.00	0.15	38.63	0.19	LINE	QP
8	0.51007	28.68	-17.32	46.00	0.15	28.34	0.19	LINE	AVERAGE
9	1.464	30.51	-25.49	56.00	0.17	30.11	0.23	LINE	QP
10	1.464	23.07	-22.93	46.00	0.17	22.67	0.23	LINE	AVERAGE
11	7.566	24.71	-25.29	50.00	0.33	24.02	0.36	LINE	AVERAGE
12	7.566	29.90	-30.10	60.00	0.33	29.21	0.36	LINE	QP
13	17.383	29.72	-30.28	60.00	0.54	28.70	0.48	LINE	QP
14	17.383	24.37	-25.63	50.00	0.54	23.35	0.48	LINE	AVERAGE

Temperature	24°C	Humidity	51%
Test Engineer	Sollo Luo	Phase	Neutral
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1	0.16765	38.76	-16.31	55.08	0.07	38.53	0.16	NEUTRAL	AVERAGE
2 @	0.16765	50.73	-14.34	65.08	0.07	50.50	0.16	NEUTRAL	QP
3	0.20723	44.03	-19.29	63.32	0.07	43.79	0.17	NEUTRAL	QP
4	0.20723	31.89	-21.43	53.32	0.07	31.65	0.17	NEUTRAL	AVERAGE
5	0.49937	38.10	-17.91	56.01	0.07	37.84	0.18	NEUTRAL	QP
6 @	0.49937	32.96	-13.05	46.01	0.07	32.70	0.18	NEUTRAL	AVERAGE
7	1.560	16.14	-29.86	46.00	0.10	15.81	0.23	NEUTRAL	AVERAGE
8	1.560	26.19	-29.81	56.00	0.10	25.86	0.23	NEUTRAL	QP
9	6.219	26.26	-33.74	60.00	0.18	25.74	0.34	NEUTRAL	QP
10	6.219	20.57	-29.43	50.00	0.18	20.05	0.34	NEUTRAL	AVERAGE
11	16.928	33.44	-26.56	60.00	0.39	32.57	0.47	NEUTRAL	QP
12	16.928	28.61	-21.39	50.00	0.39	27.74	0.47	NEUTRAL	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

26dB Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.2.3. Test Procedures

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.2.4. Test Setup Layout

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.6.4.

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

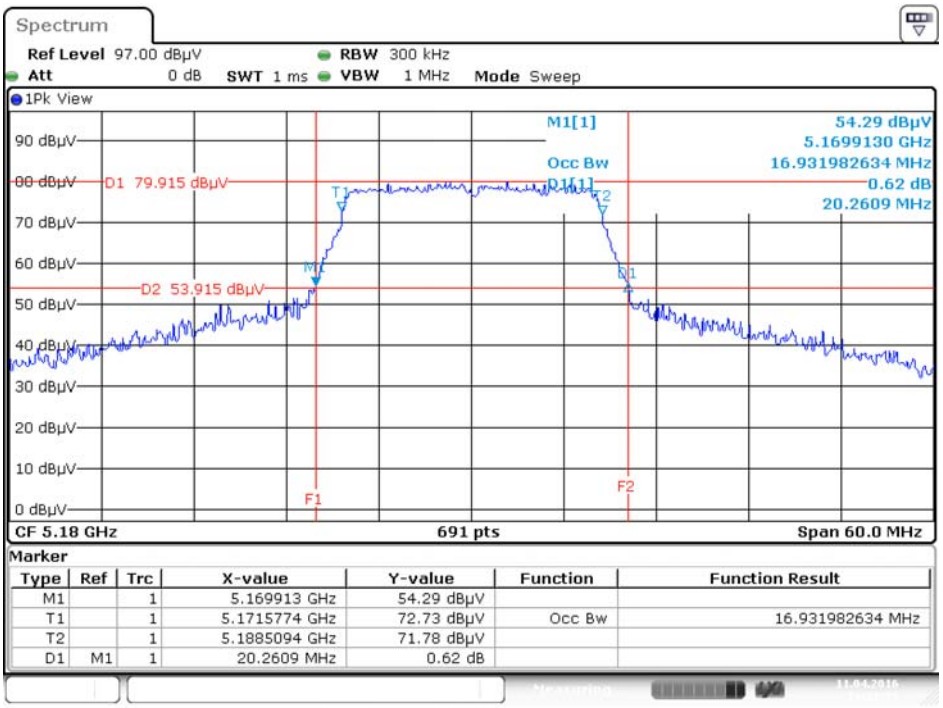
The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	24°C	Humidity	46%
Test Engineer	Paul Chen		

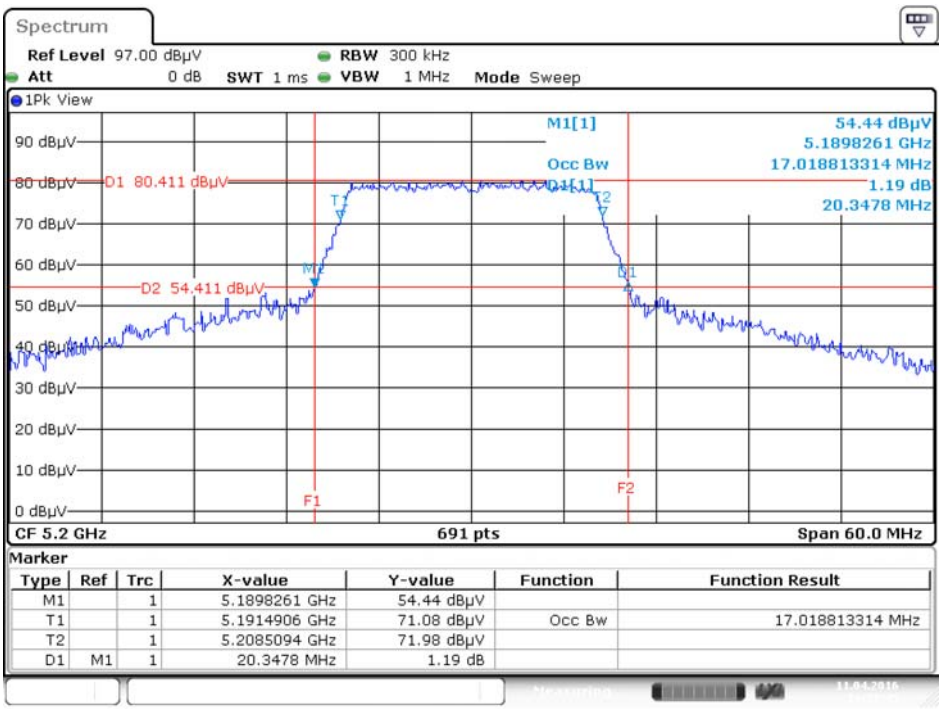
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	20.26	16.93
	5200 MHz	20.35	17.02
	5240 MHz	20.26	16.85
	5745 MHz	20.43	17.02
	5785 MHz	33.13	17.89
	5825 MHz	32.70	17.45
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.43	17.97
	5200 MHz	20.35	18.06
	5240 MHz	20.26	17.97
	5745 MHz	22.00	18.06
	5785 MHz	22.00	17.97
	5825 MHz	30.09	18.23
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.29	36.32
	5230 MHz	40.29	36.47
	5755 MHz	40.58	36.61
	5795 MHz	74.35	37.19
802.11ac MCS0/Nss1 VHT80	5210 MHz	81.74	75.83
	5775 MHz	83.19	75.83

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5180 MHz



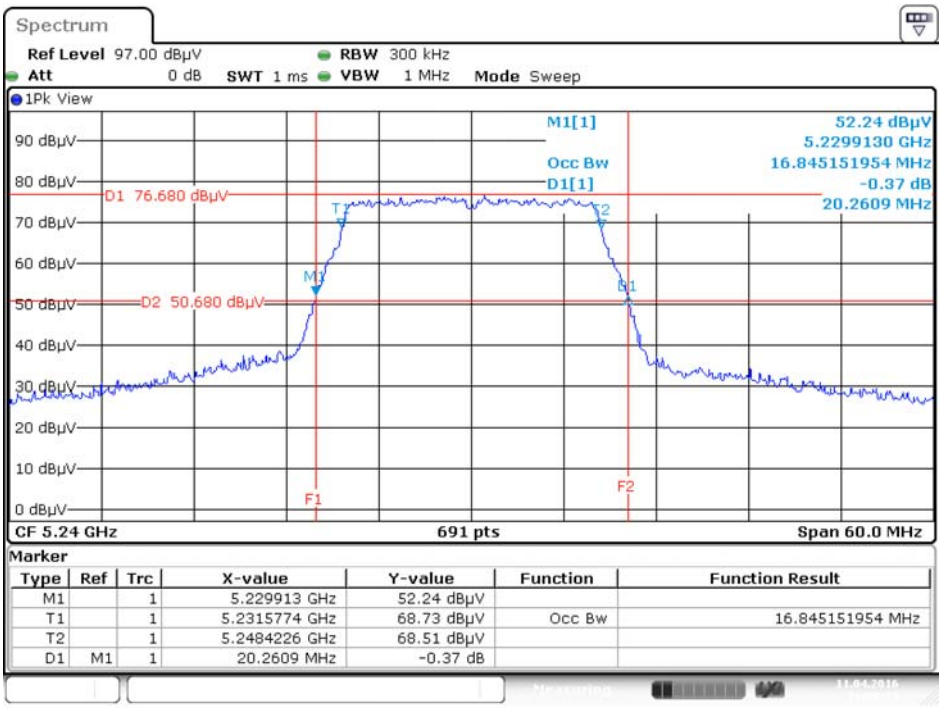
Date: 11.APR.2016 19:22:51

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5200 MHz



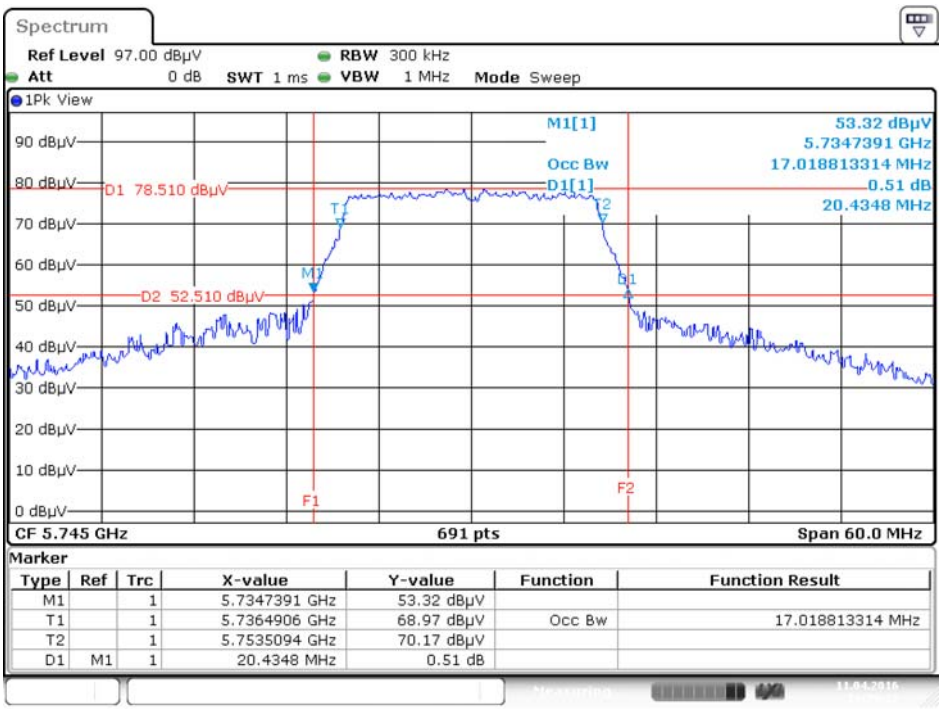
Date: 11.APR.2016 19:27:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5240 MHz



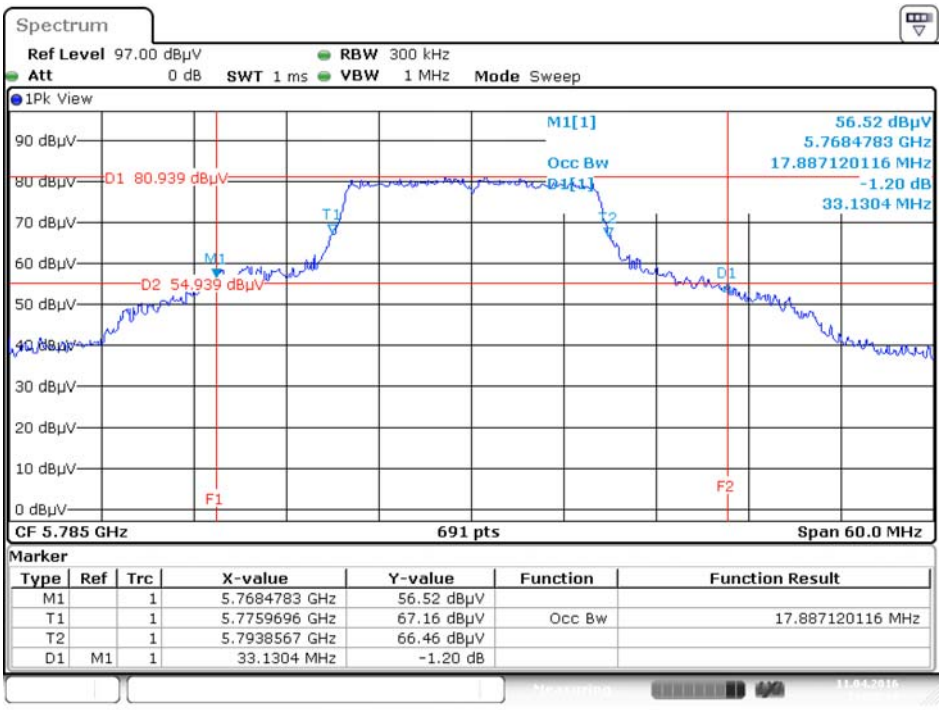
Date: 11.APR.2016 19:28:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5745 MHz



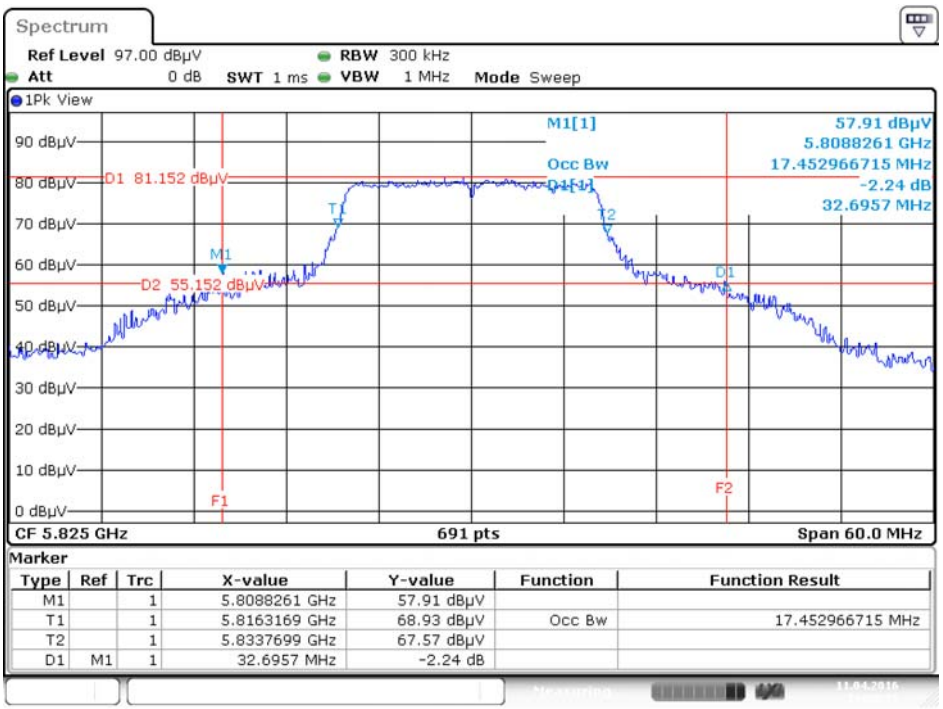
Date: 11.APR.2016 19:29:37

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5785 MHz



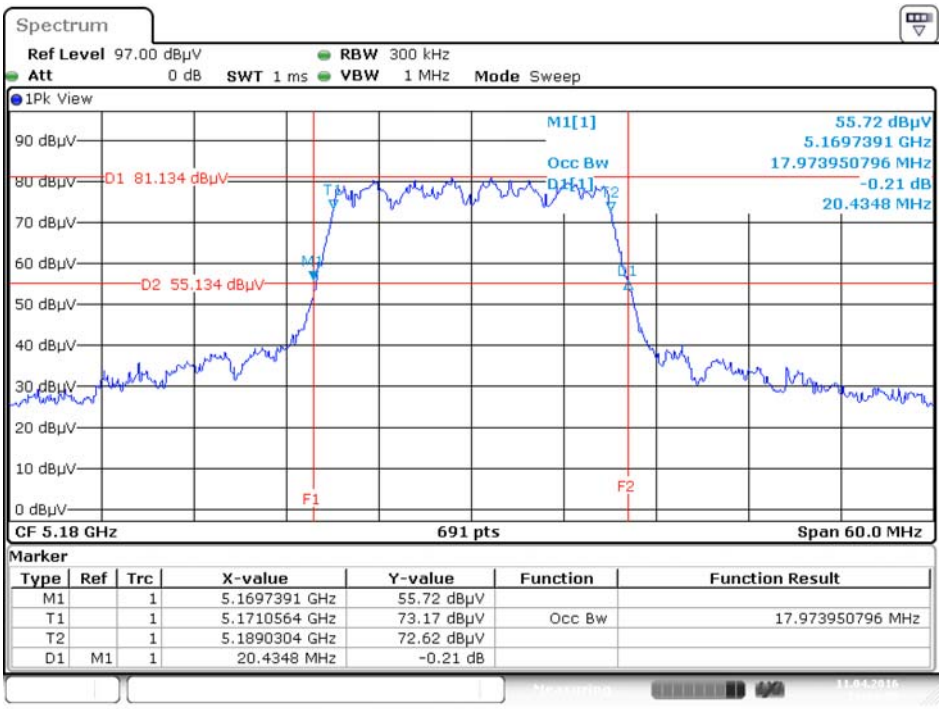
Date: 11.APR.2016 19:30:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5825 MHz



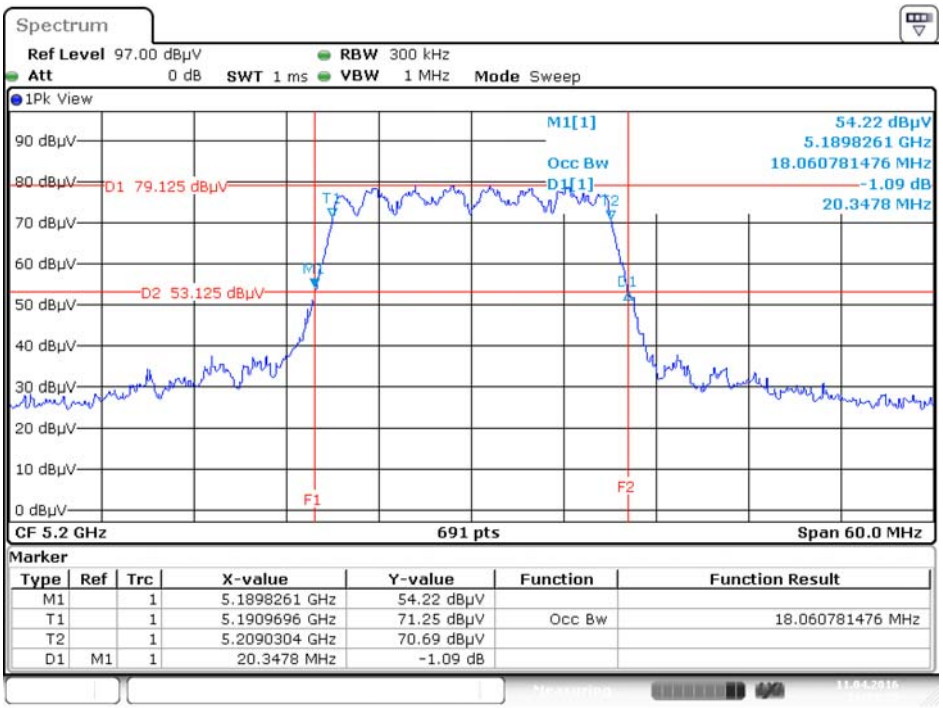
Date: 11.APR.2016 19:30:51

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5180 MHz



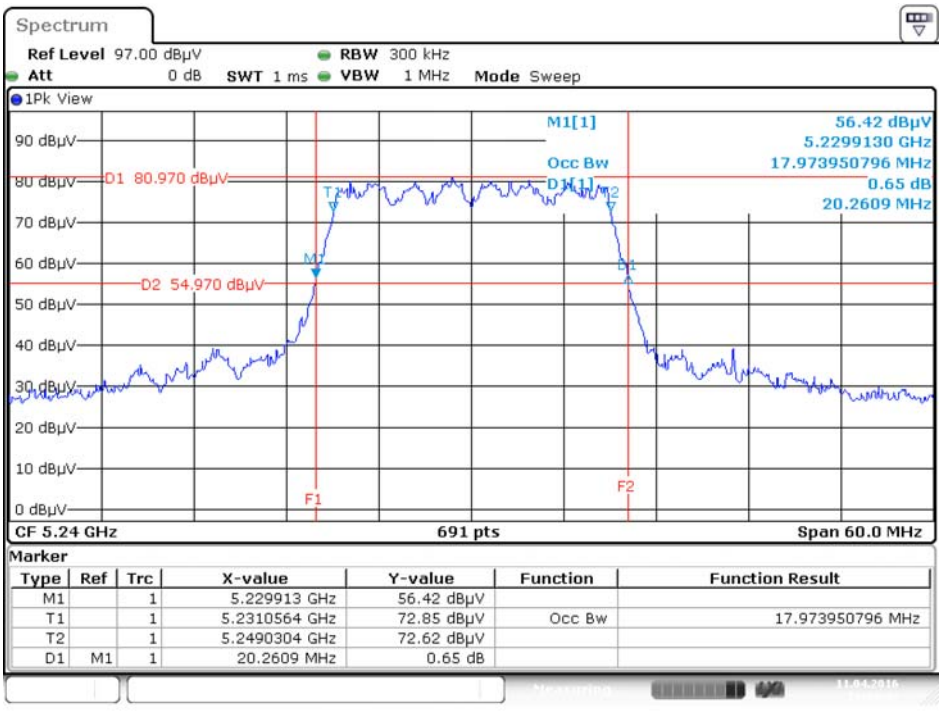
Date: 11.APR.2016 19:34:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5200 MHz



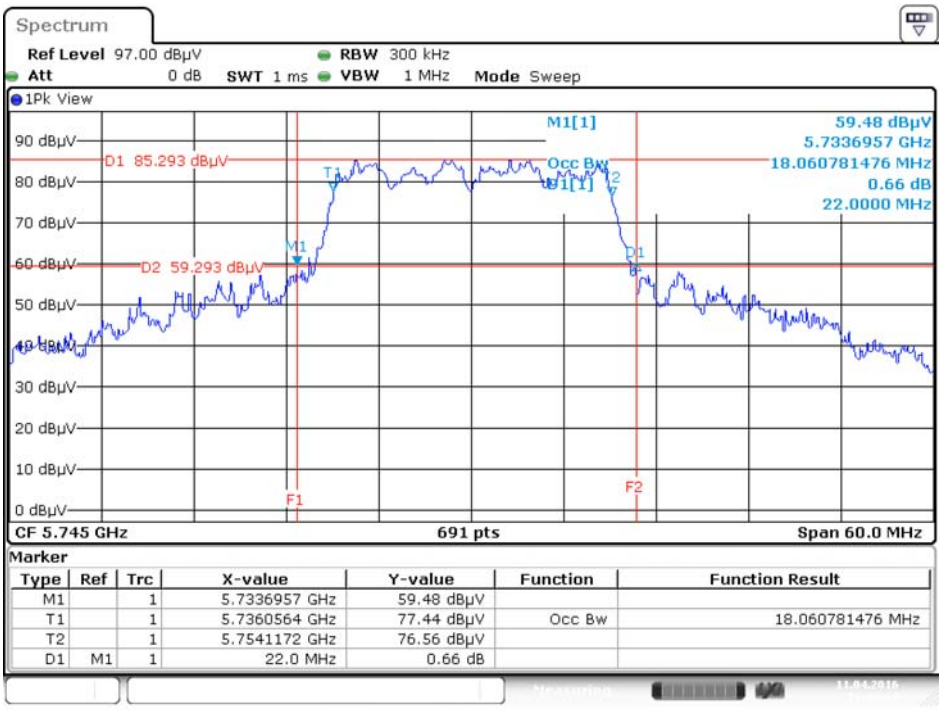
Date: 11.APR.2016 19:35:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5240 MHz



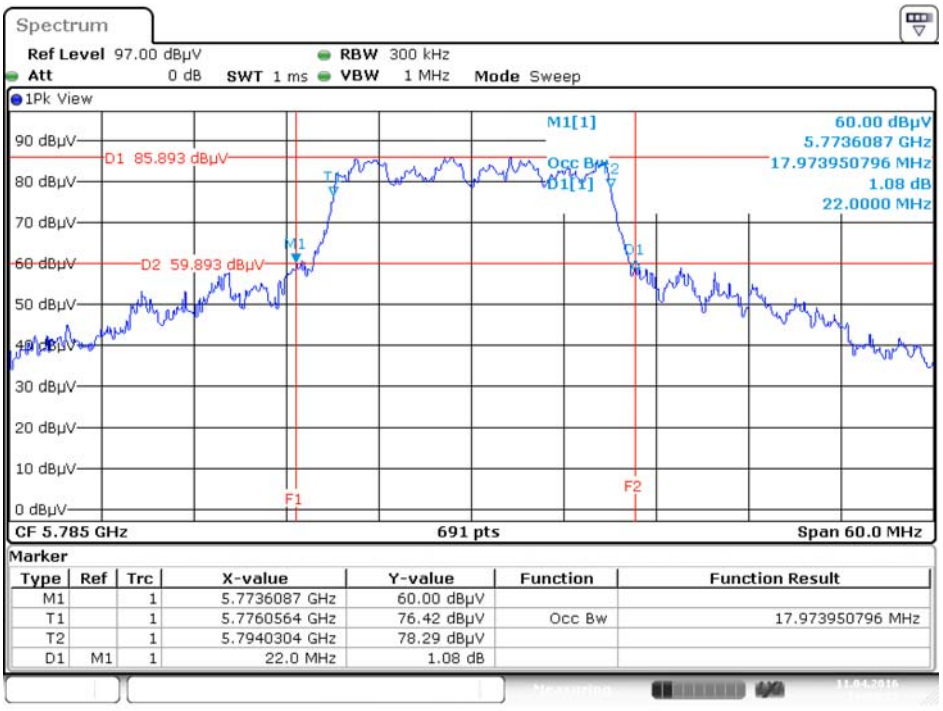
Date: 11.APR.2016 19:44:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5745 MHz



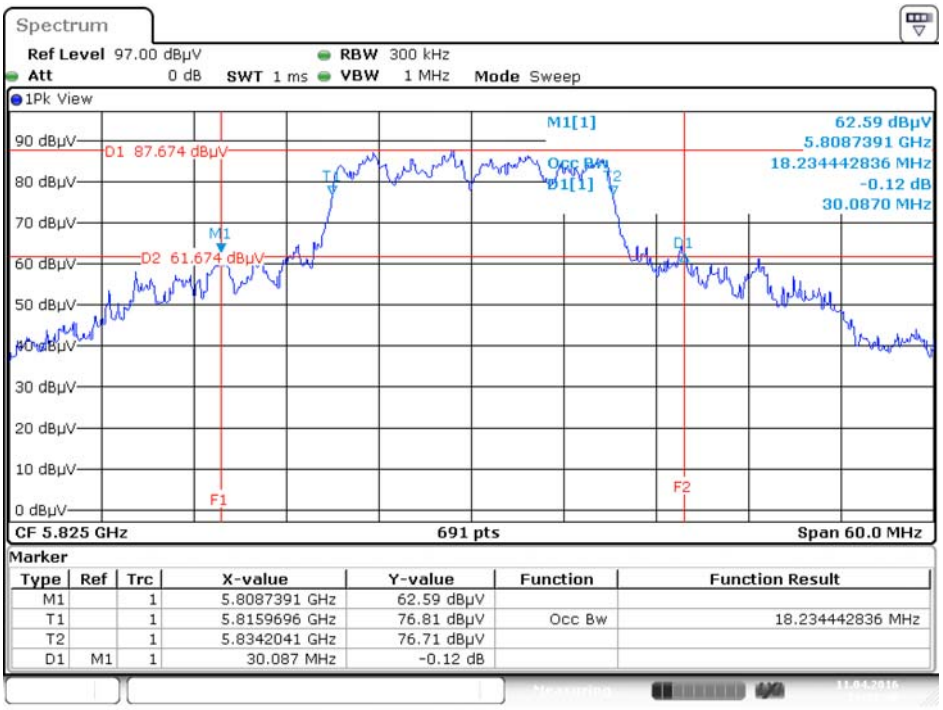
Date: 11.APR.2016 19:34:15

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



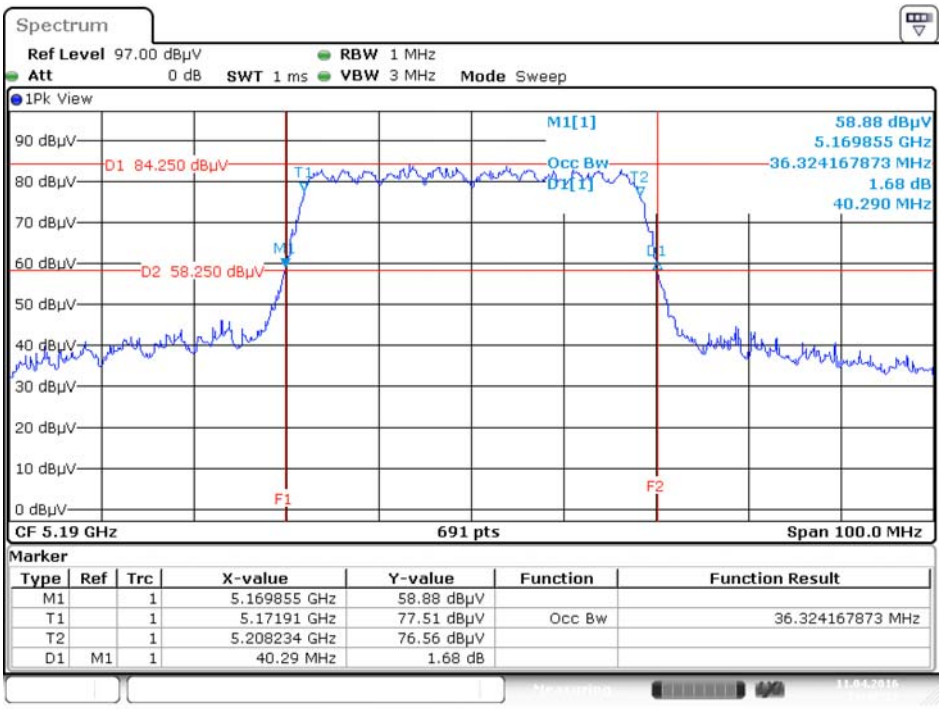
Date: 11.APR.2016 19:33:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5825 MHz



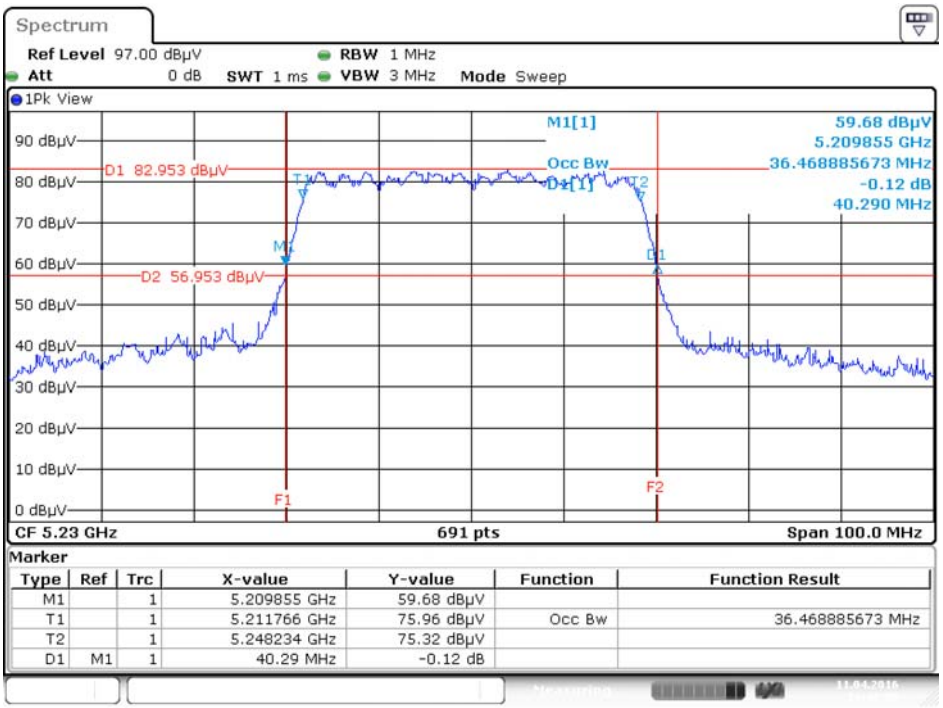
Date: 11.APR.2016 19:32:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5190 MHz



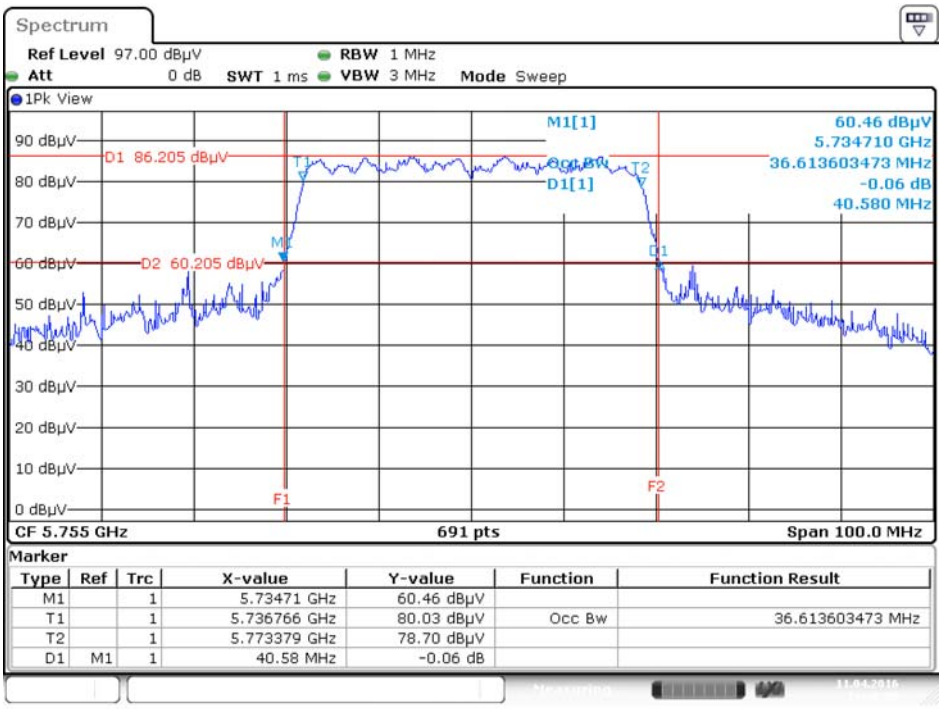
Date: 11.APR.2016 19:47:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5230 MHz



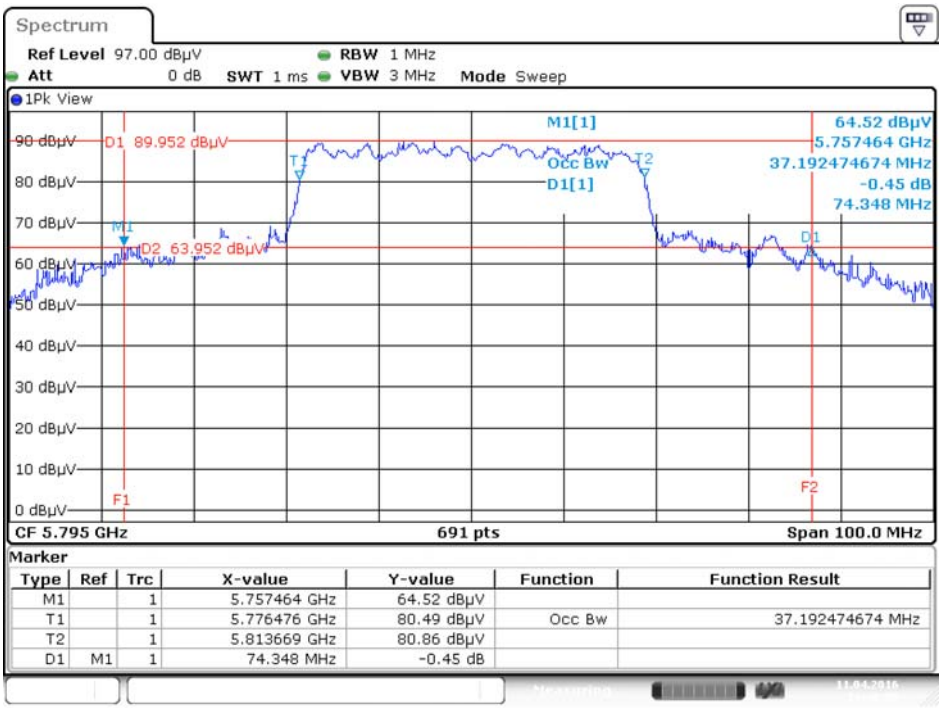
Date: 11.APR.2016 19:47:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5755 MHz



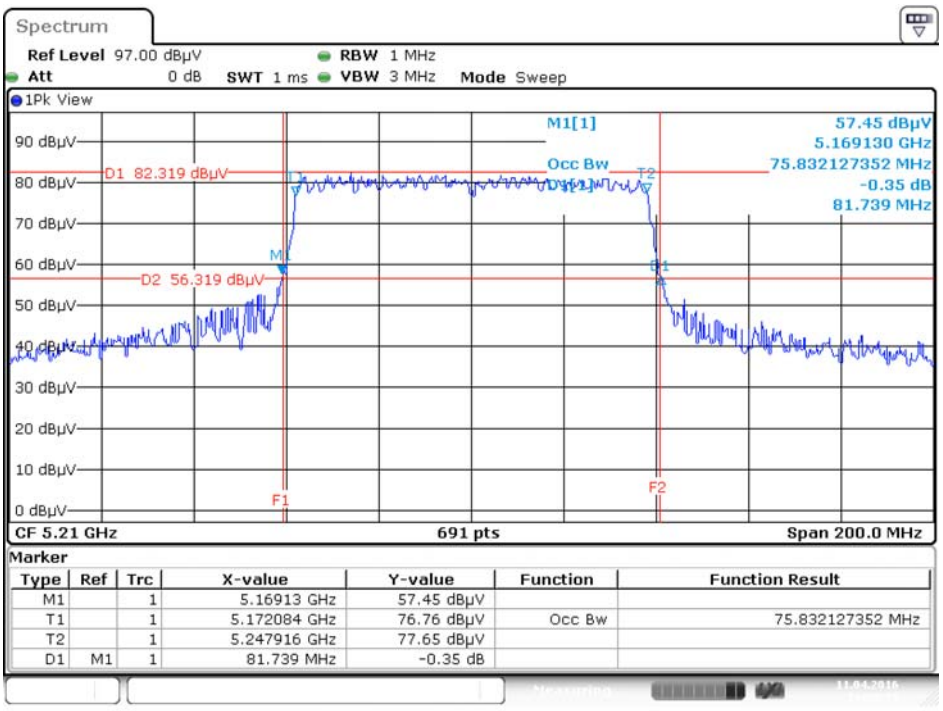
Date: 11.APR.2016 19:48:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5795 MHz



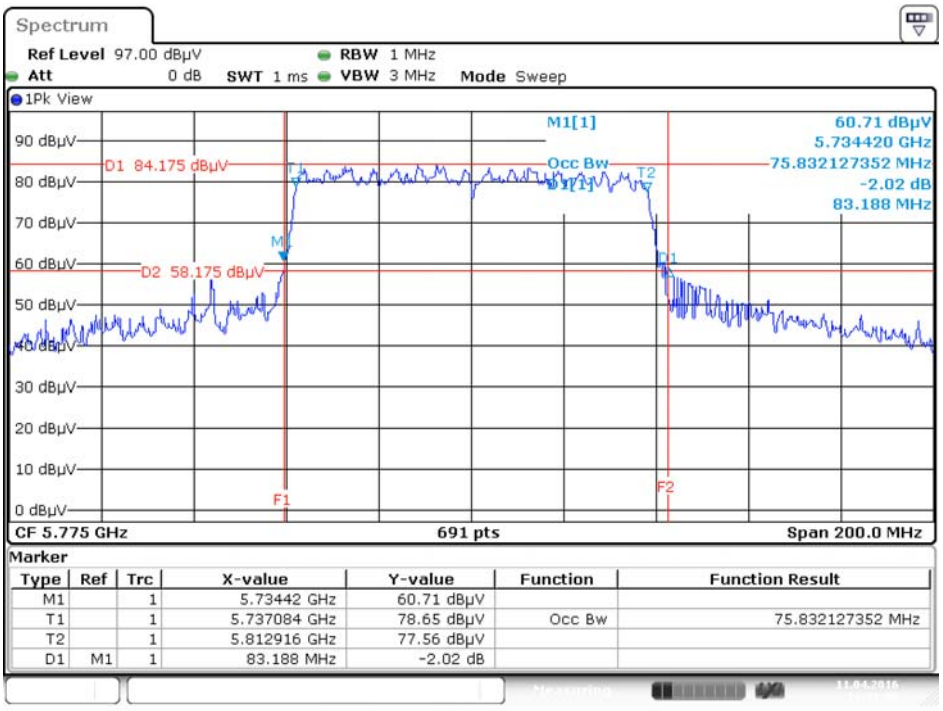
Date: 11.APR.2016 19:48:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5210 MHz



Date: 11.APR.2016 19:50:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



Date: 11.APR.2016 19:51:06

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.6.4.

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 6dB Spectrum Bandwidth

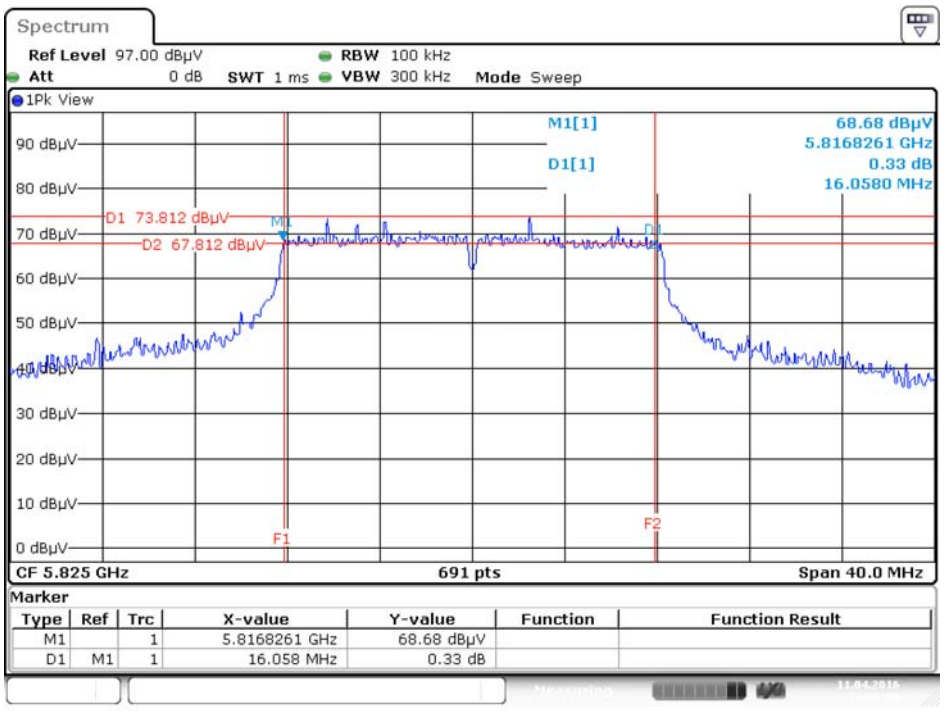
Temperature	24°C	Humidity	46%
Test Engineer	Paul Chen		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.46	500	Complies
	5785 MHz	16.35	500	Complies
	5825 MHz	16.06	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.10	500	Complies
	5785 MHz	16.99	500	Complies
	5825 MHz	17.33	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.41	500	Complies
	5795 MHz	36.41	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.94	500	Complies

Note: All the test values were listed in the report.

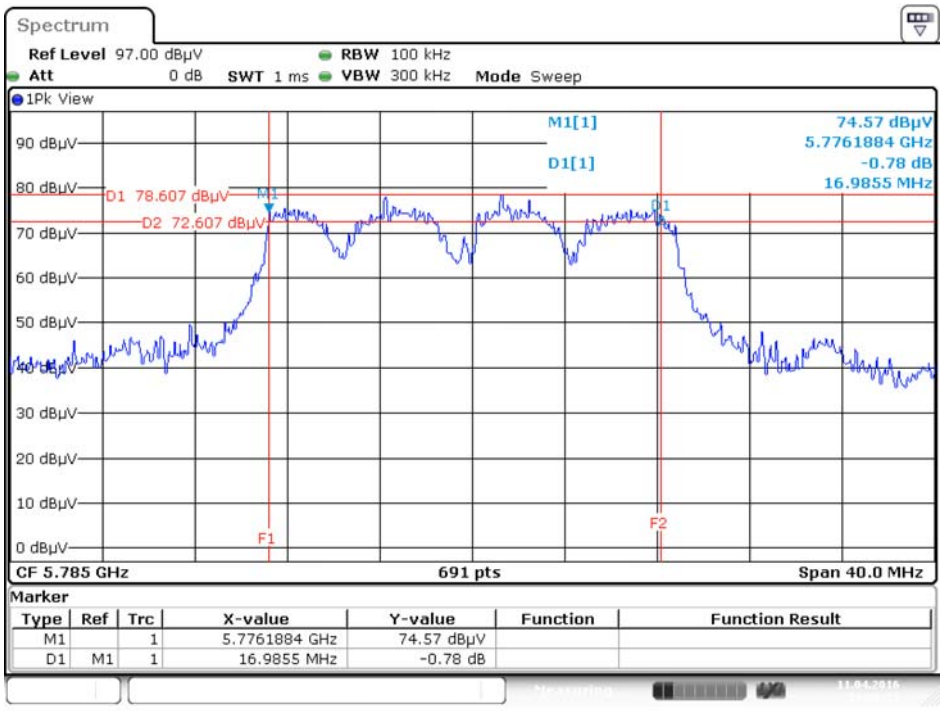
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 6 / 5825 MHz



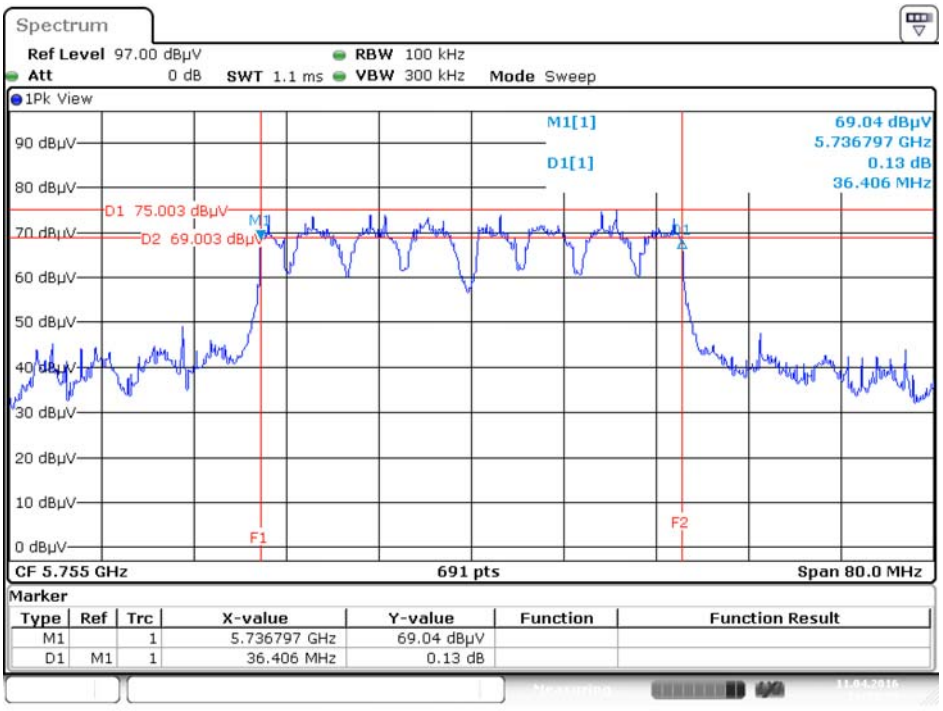
Date: 11.APR.2016 19:58:09

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



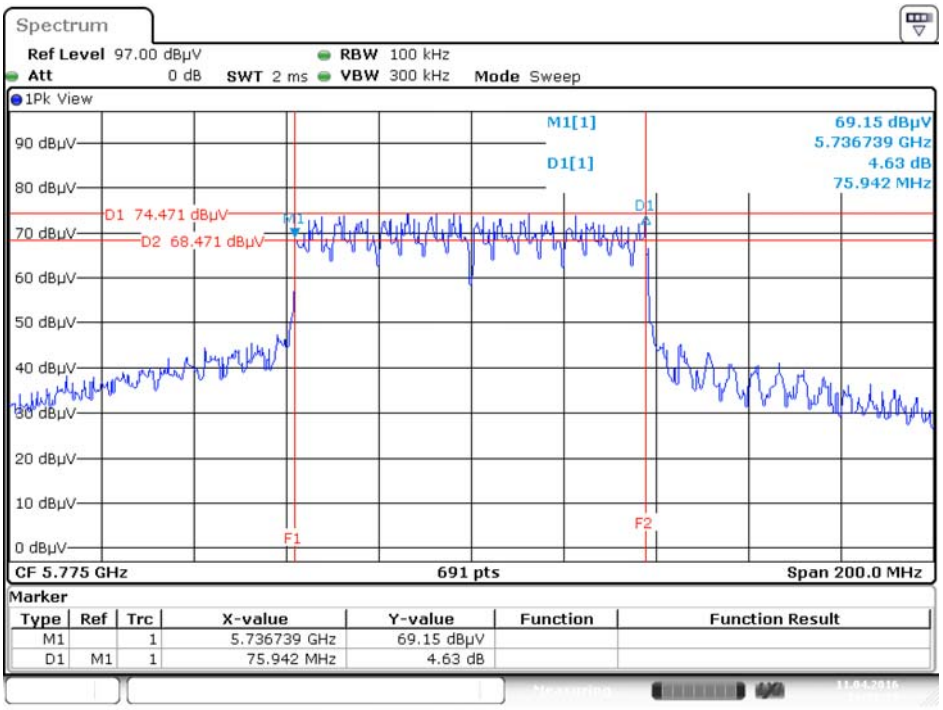
Date: 11.APR.2016 19:56:21

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5755MHz



Date: 11.APR.2016 19:53:53

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



Date: 11.APR.2016 19:52:39

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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).
	☒	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). 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.
	☐	Mobile and portable client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.

☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). 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.

4.4.2. Measuring Instruments and Setting

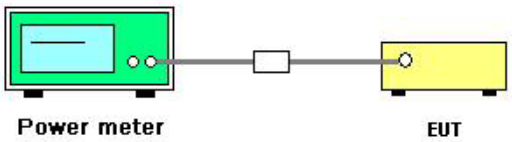
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	46%
Test Engineer	Paul Chen	Test Date	Apr. 11, 2016

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 6		
802.11a	5180 MHz	21.67	30.00	Complies
	5200 MHz	22.11	30.00	Complies
	5240 MHz	17.61	30.00	Complies
	5745 MHz	19.96	30.00	Complies
	5785 MHz	22.75	30.00	Complies
	5825 MHz	22.72	30.00	Complies

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	16.22	15.72	15.41	20.57	30.00	Complies
	5200 MHz	14.79	14.29	13.95	19.13	30.00	Complies
	5240 MHz	15.71	15.21	14.69	19.99	30.00	Complies
	5745 MHz	19.70	19.36	19.95	24.45	30.00	Complies
	5785 MHz	20.57	20.07	20.41	25.13	30.00	Complies
	5825 MHz	21.60	21.28	21.52	26.24	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.50	16.01	15.61	20.83	30.00	Complies
	5230 MHz	15.50	15.10	14.77	19.90	30.00	Complies
	5755 MHz	17.80	17.29	17.98	22.47	30.00	Complies
	5795 MHz	21.50	21.31	21.63	26.25	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	17.60	17.42	17.32	22.22	30.00	Complies
	5775 MHz	18.60	18.22	18.76	23.30	30.00	Complies

4.5. Power Spectral Density Measurement

4.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.4.1.

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☒	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☐	Mobile and portable client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

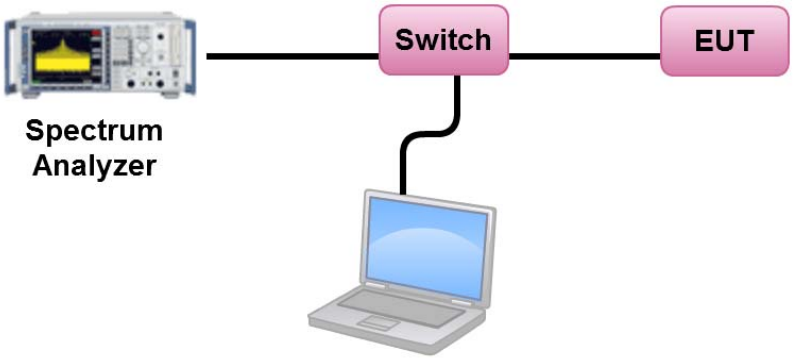
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.	

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

Temperature	24°C	Humidity	46%
Test Engineer	Paul Chen		

Configuration IEEE 802.11a / Chain 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.41	17.00	Complies
40	5200 MHz	8.85	17.00	Complies
48	5240 MHz	4.27	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	6.68	-3.01	3.67	30.00	Complies
157	5785 MHz	9.46	-3.01	6.45	30.00	Complies
165	5825 MHz	9.49	-3.01	6.48	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	7.31	17.00	Complies
40	5200 MHz	5.82	17.00	Complies
48	5240 MHz	6.72	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.23	-3.01	8.22	30.00	Complies
157	5785 MHz	11.86	-3.01	8.85	30.00	Complies
165	5825 MHz	12.95	-3.01	9.94	30.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.68dBi<6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	4.70	17.00	Complies
46	5230 MHz	3.71	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	6.32	-3.01	3.31	30.00	Complies
159	5795 MHz	10.00	-3.01	6.99	30.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.68dBi<6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	3.06	17.00	Complies

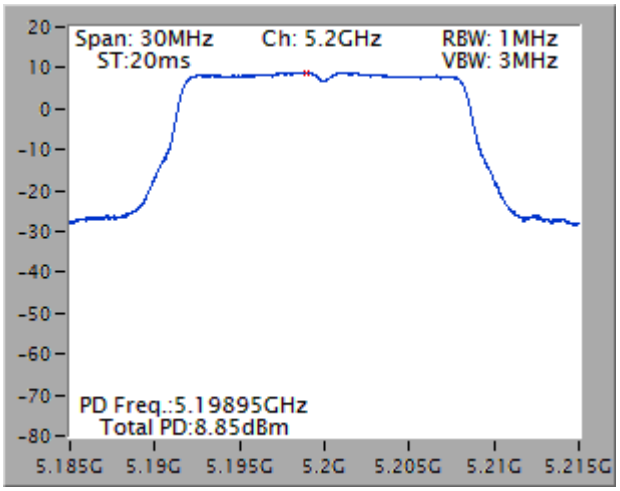
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	4.22	-3.01	1.21	30.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.68dBi<6dBi, so the limit doesn't reduce.

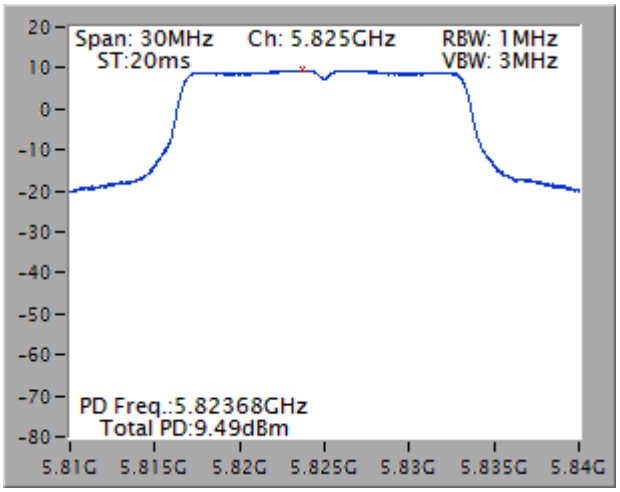
Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

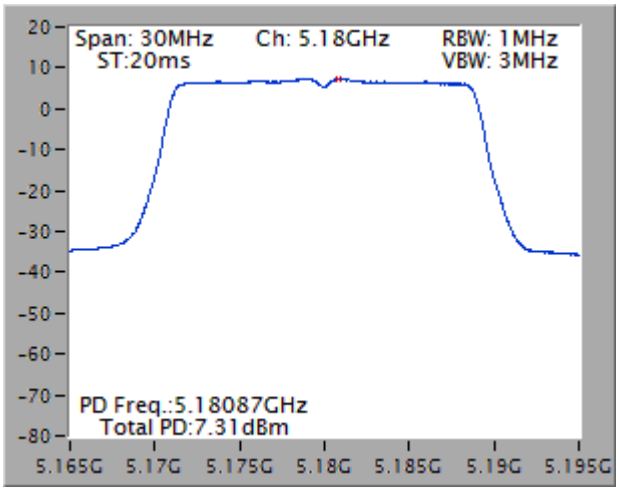
Power Density Plot on Configuration IEEE 802.11a / Chain 6 / 5200 MHz



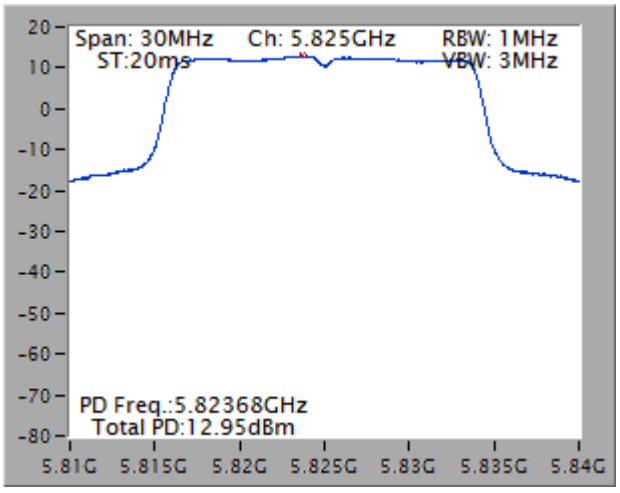
Power Density Plot on Configuration IEEE 802.11a / Chain 6 / 5825 MHz



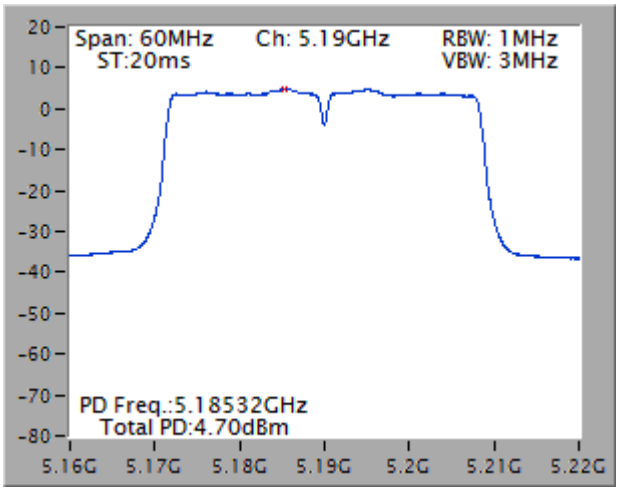
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5180 MHz



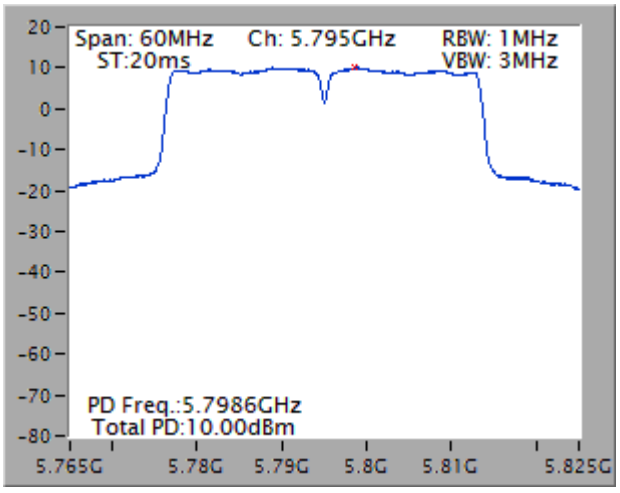
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5825 MHz



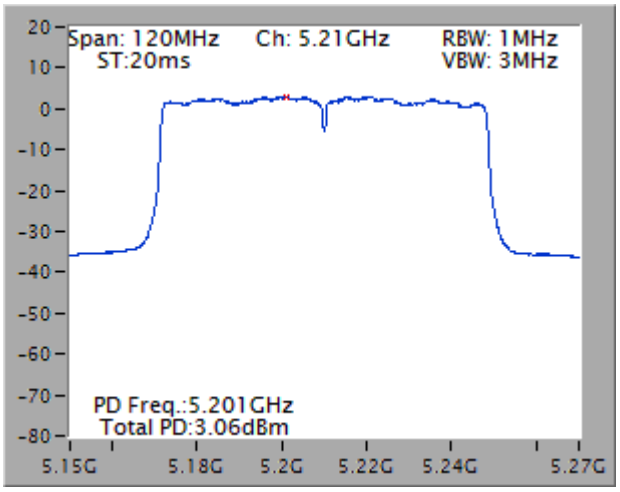
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5190 MHz



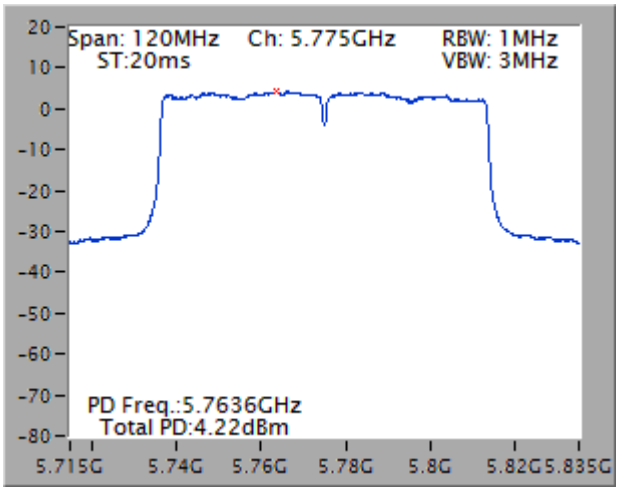
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5795 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



4.6. Radiated Emissions Measurement

4.6.1. Limit

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 e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 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 e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

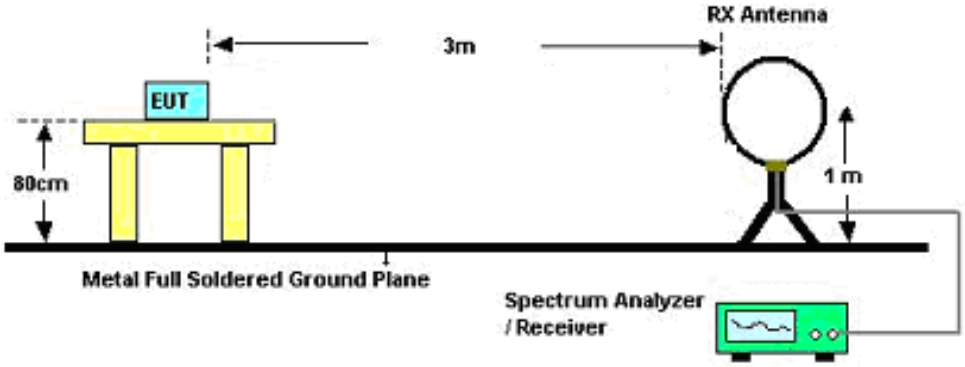
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

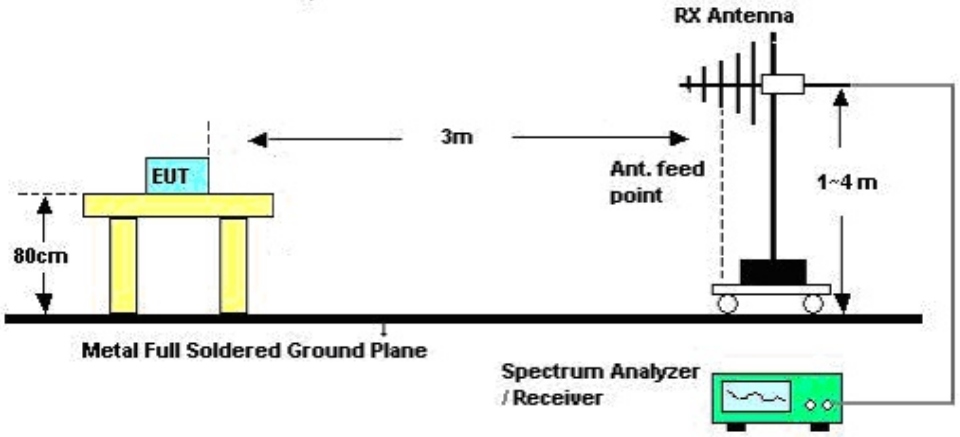
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

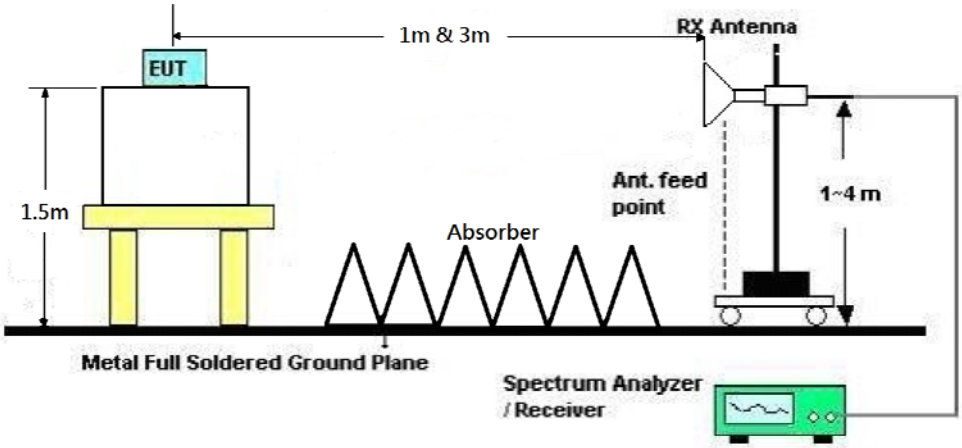
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24°C	Humidity	58%
Test Engineer	YC Chen	Configurations	CTX
Test Date	Apr. 07, 2014		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

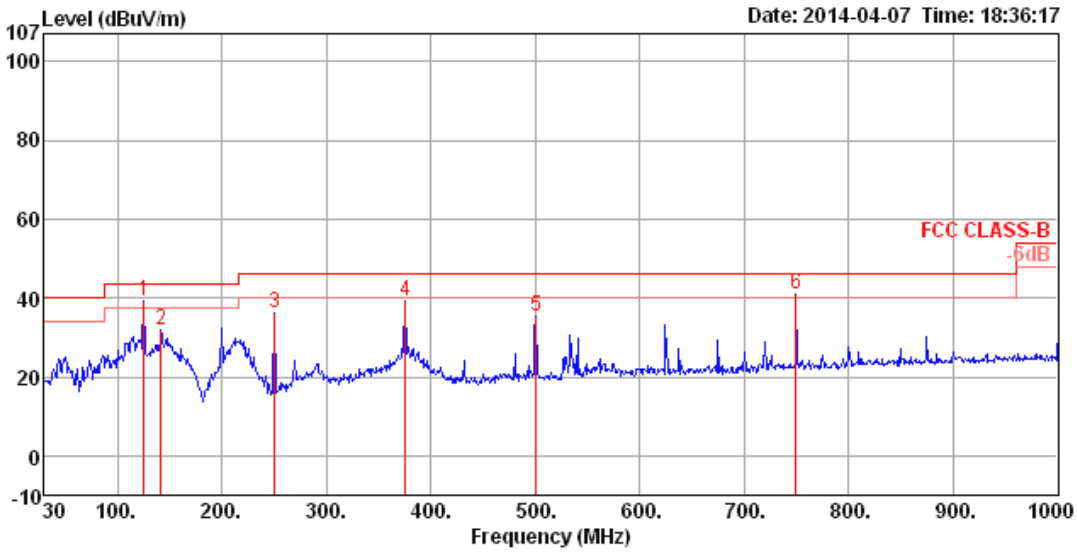
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.6.8. Results of Radiated Emissions (30MHz~1GHz)

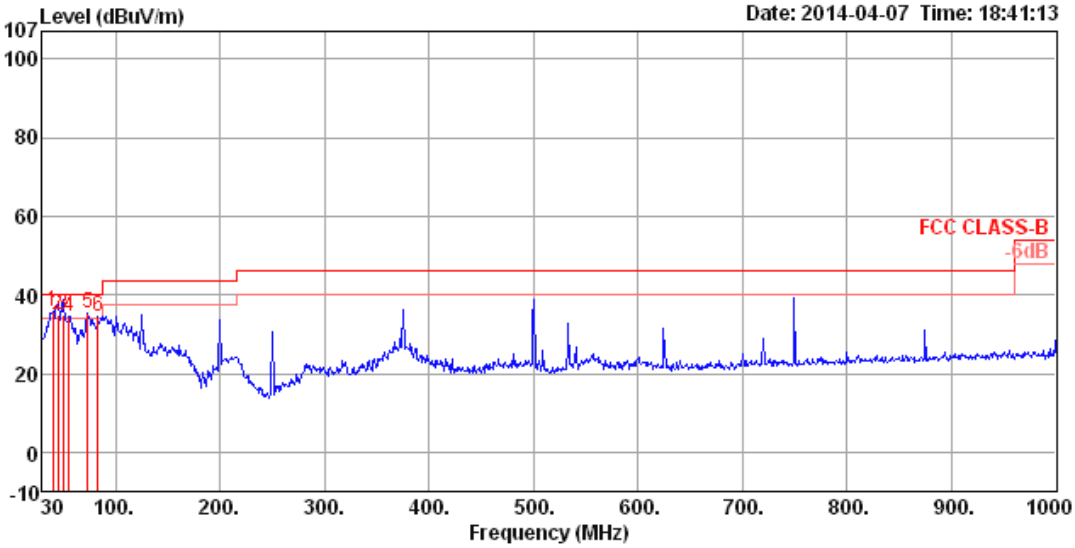
Temperature	24°C	Humidity	58%
Test Engineer	YC Chen	Configurations	CTX

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	125.06	39.35	43.50	-4.15	57.86	1.33	11.73	31.57	300	257	HORIZONTAL	Peak
2	141.55	32.05	43.50	-11.45	51.43	1.41	10.74	31.53	200	102	HORIZONTAL	Peak
3	250.19	35.99	46.00	-10.01	53.67	1.90	11.91	31.49	125	117	HORIZONTAL	Peak
4	375.32	39.03	46.00	-6.97	53.09	2.44	14.93	31.43	100	137	HORIZONTAL	Peak
5	500.45	35.37	46.00	-10.63	47.04	2.82	16.92	31.41	150	302	HORIZONTAL	Peak
6	749.74	41.15	46.00	-4.85	49.30	3.53	19.69	31.37	100	214	HORIZONTAL	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	39.70	35.63	40.00	-4.37	54.34	0.74	12.43	31.88	100	199	VERTICAL	Peak
2	44.55	34.81	40.00	-5.19	56.11	0.79	9.74	31.83	100	359	VERTICAL	QP
3	49.40	34.70	40.00	-5.30	57.78	0.83	7.88	31.79	100	16	VERTICAL	QP
4	55.22	34.46	40.00	-5.54	59.43	0.87	5.94	31.78	100	0	VERTICAL	Peak
5	73.65	35.31	40.00	-4.69	60.19	1.02	5.80	31.70	150	17	VERTICAL	Peak
6	83.35	34.53	40.00	-5.47	57.81	1.07	7.34	31.69	150	340	VERTICAL	Peak

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6.9. Results for Radiated Emissions (1GHz~40GHz)

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 36 / Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15536.60	49.41	54.00	-4.59	32.72	13.38	38.45	35.14	180	308	Average	HORIZONTAL
2	15541.60	64.79	74.00	-9.21	48.10	13.38	38.45	35.14	180	308	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15517.60	60.17	74.00	-13.83	43.48	13.38	38.45	35.14	178	116	Peak	VERTICAL
2	15536.00	47.01	54.00	-6.99	30.32	13.38	38.45	35.14	178	116	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 40 / Chain 6
Test Date	Apr. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15601.74	48.40	54.00	-5.60	32.00	13.87	38.15	35.62	162	269	Average	HORIZONTAL
2	15601.74	61.74	74.00	-12.26	45.34	13.87	38.15	35.62	162	269	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15602.48	47.75	54.00	-6.25	31.35	13.87	38.15	35.62	142	65	Average	VERTICAL
2	15602.48	60.01	74.00	-13.99	43.61	13.87	38.15	35.62	142	65	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 48 / Chain 6
Test Date	Apr. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15721.06	46.56	54.00	-7.44	30.35	13.95	37.91	35.65	164	128	Average	HORIZONTAL
2	15721.06	59.58	74.00	-14.42	43.37	13.95	37.91	35.65	164	128	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15719.23	46.39	54.00	-7.61	30.18	13.95	37.91	35.65	184	299	Average	VERTICAL
2	15719.23	59.53	74.00	-14.47	43.32	13.95	37.91	35.65	184	299	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 149 / Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11485.50	55.49	74.00	-18.51	39.79	10.75	39.70	34.75	196	59	Peak	HORIZONTAL
2	11489.00	43.37	54.00	-10.63	27.67	10.75	39.70	34.75	196	59	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11492.00	43.42	54.00	-10.58	27.72	10.75	39.70	34.75	165	314	Average	VERTICAL
2	11493.50	55.72	74.00	-18.28	40.02	10.75	39.70	34.75	165	314	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 157 / Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.70	59.90	74.00	-14.10	44.25	10.76	39.65	34.76	164	329	Peak	HORIZONTAL
2	11573.00	47.55	54.00	-6.45	31.90	10.76	39.65	34.76	164	329	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.70	56.94	74.00	-17.06	41.29	10.76	39.65	34.76	167	300	Peak	VERTICAL
2	11574.80	44.93	54.00	-9.07	29.28	10.76	39.65	34.76	167	300	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 165 / Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11595.50	43.47	54.00	-10.53	27.86	10.76	39.62	34.77	174	306	Average	HORIZONTAL
2	11609.90	56.12	74.00	-17.88	40.51	10.76	39.62	34.77	174	306	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11598.90	43.42	54.00	-10.58	27.81	10.76	39.62	34.77	172	260	Average	VERTICAL
2	11616.00	56.26	74.00	-17.74	40.65	10.76	39.62	34.77	172	260	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15518.00	47.37	54.00	-6.63	30.68	13.38	38.45	35.14	216	225	Average	HORIZONTAL
2	15527.90	60.16	74.00	-13.84	43.47	13.38	38.45	35.14	216	225	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15515.40	47.27	54.00	-6.73	30.58	13.38	38.45	35.14	177	344	Average	VERTICAL
2	15519.60	59.88	74.00	-14.12	43.19	13.38	38.45	35.14	177	344	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15609.80	46.96	54.00	-7.04	30.43	13.38	38.34	35.19	189	134	Average	HORIZONTAL
2	15611.30	59.55	74.00	-14.45	43.02	13.38	38.34	35.19	189	134	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15605.20	46.74	54.00	-7.26	30.21	13.38	38.34	35.19	164	167	Average	VERTICAL
2	15605.70	59.65	74.00	-14.35	43.12	13.38	38.34	35.19	164	167	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15699.00	46.92	54.00	-7.08	30.54	13.39	38.23	35.24	218	152	Average	HORIZONTAL
2	15715.10	59.56	74.00	-14.44	43.18	13.39	38.23	35.24	218	152	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15700.40	60.46	74.00	-13.54	44.08	13.39	38.23	35.24	184	221	Peak	VERTICAL
2	15711.00	46.68	54.00	-7.32	30.30	13.39	38.23	35.24	184	221	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 4 + Chain 5 + Chain 6
Test Date	Apr. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11493.54	53.92	54.00	-0.08	38.35	11.02	39.90	35.35	173	216	Average	HORIZONTAL
2	11493.54	66.93	74.00	-7.07	51.36	11.02	39.90	35.35	173	216	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11488.74	53.25	54.00	-0.75	37.68	11.02	39.90	35.35	156	236	Average	VERTICAL
2	11491.26	65.93	74.00	-8.07	50.36	11.02	39.90	35.35	156	236	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11569.50	66.77	74.00	-7.23	51.12	10.76	39.65	34.76	278	324	Peak	HORIZONTAL
2	11570.20	53.89	54.00	-0.11	38.24	10.76	39.65	34.76	278	324	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11569.90	50.93	54.00	-3.07	35.28	10.76	39.65	34.76	165	263	Average	VERTICAL
2	11569.90	63.77	74.00	-10.23	48.12	10.76	39.65	34.76	165	263	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.40	64.46	74.00	-9.54	48.87	10.77	39.59	34.77	150	293	Peak	HORIZONTAL
2	11650.00	51.60	54.00	-2.40	36.01	10.77	39.59	34.77	150	293	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.00	67.28	74.00	-6.72	51.69	10.77	39.59	34.77	258	330	Peak	VERTICAL
2	11650.20	53.75	54.00	-0.25	38.16	10.77	39.59	34.77	258	330	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15546.30	46.95	54.00	-7.05	30.26	13.38	38.45	35.14	189	116	Average	HORIZONTAL
2	15546.80	58.93	74.00	-15.07	42.24	13.38	38.45	35.14	189	116	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15545.40	46.58	54.00	-7.42	29.89	13.38	38.45	35.14	174	186	Average	VERTICAL
2	15556.40	59.96	74.00	-14.04	43.35	13.38	38.39	35.16	174	186	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15691.30	59.42	74.00	-14.58	43.04	13.39	38.23	35.24	191	278	Peak	HORIZONTAL
2	15713.50	46.72	54.00	-7.28	30.34	13.39	38.23	35.24	191	278	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15692.40	59.39	74.00	-14.61	43.01	13.39	38.23	35.24	167	165	Peak	VERTICAL
2	15703.10	46.78	54.00	-7.22	30.40	13.39	38.23	35.24	167	165	Average	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11509.00	61.68	74.00	-12.32	45.98	10.75	39.70	34.75	278	330	Peak	HORIZONTAL
2	11509.20	48.95	54.00	-5.05	33.25	10.75	39.70	34.75	278	330	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11505.20	57.32	74.00	-16.68	41.62	10.75	39.70	34.75	166	263	Peak	VERTICAL
2	11510.40	45.25	54.00	-8.75	29.55	10.75	39.70	34.75	166	263	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.30	53.50	54.00	-0.50	37.89	10.76	39.62	34.77	256	338	Average	HORIZONTAL
2	11594.00	67.70	74.00	-6.30	52.09	10.76	39.62	34.77	256	338	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.70	49.73	54.00	-4.27	34.12	10.76	39.62	34.77	166	264	Average	VERTICAL
2	11595.00	62.90	74.00	-11.10	47.29	10.76	39.62	34.77	166	264	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15605.10	47.13	54.00	-6.87	30.60	13.38	38.34	35.19	200	341	Average	HORIZONTAL
2	15628.10	59.75	74.00	-14.25	43.22	13.38	38.34	35.19	200	341	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15605.60	46.83	54.00	-7.17	30.30	13.38	38.34	35.19	158	253	Average	VERTICAL
2	15615.50	59.47	74.00	-14.53	42.94	13.38	38.34	35.19	158	253	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 4 + Chain 5 + Chain 6
Test Date	Apr. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11542.15	44.67	54.00	-9.33	29.16	11.04	39.83	35.36	146	168	Average	HORIZONTAL
2	11542.15	57.16	74.00	-16.84	41.65	11.04	39.83	35.36	146	168	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11551.39	44.60	54.00	-9.40	29.15	11.05	39.77	35.37	184	266	Average	VERTICAL
2	11551.39	59.81	74.00	-14.19	44.36	11.05	39.77	35.37	184	266	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.7. Band Edge Emissions Measurement

4.7.1. Limit

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 e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 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 e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.7.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

The test procedure is the same as section 4.6.3.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 6
Test Date	Mar. 29, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	53.95	54.00	-0.05	46.69	8.68	31.52	32.94	182	214	Average	HORIZONTAL
2	5150.00	72.12	74.00	-1.88	64.86	8.68	31.52	32.94	182	214	Peak	HORIZONTAL
3	5178.00	111.07			103.78	8.68	31.55	32.94	182	214	Peak	HORIZONTAL
4	5179.00	100.10			92.81	8.68	31.55	32.94	182	214	Average	HORIZONTAL
5	5394.00	62.63	74.00	-11.37	55.08	8.76	31.72	32.93	182	214	Peak	HORIZONTAL
6	5396.00	50.82	54.00	-3.18	43.27	8.76	31.72	32.93	182	214	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5039.00	53.23	54.00	-0.77	46.04	8.70	31.44	32.95	225	36	Average	VERTICAL
2	5039.00	63.90	74.00	-10.10	56.71	8.70	31.44	32.95	225	36	Peak	VERTICAL
3	5201.00	100.29			92.99	8.68	31.56	32.94	225	36	Average	VERTICAL
4	5203.00	110.71			103.39	8.69	31.57	32.94	225	36	Peak	VERTICAL
5	5359.00	53.99	54.00	-0.01	46.48	8.75	31.69	32.93	225	36	Average	VERTICAL
6	5362.00	64.22	74.00	-9.78	56.71	8.75	31.69	32.93	225	36	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5021.00	51.86	54.00	-2.14	44.70	8.70	31.41	32.95	232	77	Average	VERTICAL
2	5021.00	62.72	74.00	-11.28	55.56	8.70	31.41	32.95	232	77	Peak	VERTICAL
3	5241.00	97.39			90.04	8.70	31.59	32.94	232	77	Average	VERTICAL
4	5242.00	107.35			99.99	8.70	31.59	32.93	232	77	Peak	VERTICAL
5	5400.00	53.87	54.00	-0.13	46.32	8.76	31.72	32.93	232	77	Average	VERTICAL
6	5403.00	64.07	74.00	-9.93	56.49	8.78	31.73	32.93	232	77	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 24, 2016 / Mar. 29, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5715.00	66.73	68.20	-1.47	58.74	8.93	32.06	33.00	181	204	Peak	HORIZONTAL
2	5725.00	78.06	78.20	-0.14	70.06	8.92	32.08	33.00	181	204	Peak	HORIZONTAL
3	5746.00	100.97			92.99	8.90	32.10	33.02	181	204	Average	HORIZONTAL
4	5747.00	110.79			102.81	8.90	32.10	33.02	181	204	Peak	HORIZONTAL
5	5857.00	59.73	78.20	-18.47	51.61	8.93	32.24	33.05	181	204	Peak	HORIZONTAL
6	5906.00	65.51	68.20	-2.69	57.33	8.97	32.28	33.07	181	204	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5621.00	68.01	68.20	-0.19	60.02	9.02	31.94	32.97	180	201	Peak	HORIZONTAL
2	5725.00	62.10	78.20	-16.10	54.10	8.92	32.08	33.00	180	201	Peak	HORIZONTAL
3	5783.00	114.13			106.14	8.88	32.14	33.03	180	201	Peak	HORIZONTAL
4	5784.00	104.13			96.14	8.88	32.14	33.03	180	201	Average	HORIZONTAL
5	5852.00	59.78	78.20	-18.42	51.70	8.91	32.22	33.05	180	201	Peak	HORIZONTAL
6	5944.00	66.94	68.20	-1.26	58.67	9.02	32.34	33.09	180	201	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5667.00	67.27	68.20	-0.93	59.27	8.98	32.00	32.98	180	191	Peak	HORIZONTAL
2	5722.00	59.87	78.20	-18.33	51.88	8.93	32.06	33.00	180	191	Peak	HORIZONTAL
3	5824.00	114.12			106.07	8.90	32.20	33.05	180	191	Peak	HORIZONTAL
4	5826.00	103.88			95.83	8.90	32.20	33.05	180	191	Average	HORIZONTAL
5	5850.00	73.41	78.20	-4.79	65.33	8.91	32.22	33.05	180	191	Peak	HORIZONTAL
6	5861.00	68.01	68.20	-0.19	59.90	8.93	32.24	33.06	180	191	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 29, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5022.00	64.58	74.00	-9.42	57.42	8.70	31.41	32.95	232	103	Peak	HORIZONTAL
2	5023.00	53.80	54.00	-0.20	46.64	8.70	31.41	32.95	232	103	Average	HORIZONTAL
3	5180.00	95.33			88.04	8.68	31.55	32.94	232	103	Average	HORIZONTAL
4	5180.00	102.34			95.05	8.68	31.55	32.94	232	103	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5040.00	53.93	54.00	-0.07	46.74	8.70	31.44	32.95	242	99	Average	HORIZONTAL
2	5041.00	64.48	74.00	-9.52	57.29	8.70	31.44	32.95	242	99	Peak	HORIZONTAL
3	5199.00	95.32			88.02	8.68	31.56	32.94	242	99	Average	HORIZONTAL
4	5199.00	106.74			99.44	8.68	31.56	32.94	242	99	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5075.00	53.97	54.00	-0.03	46.76	8.69	31.46	32.94	286	98	Average	HORIZONTAL
2	5075.00	64.94	74.00	-9.06	57.73	8.69	31.46	32.94	286	98	Peak	HORIZONTAL
3	5239.00	96.31			88.96	8.70	31.59	32.94	286	98	Average	HORIZONTAL
4	5239.00	107.26			99.91	8.70	31.59	32.94	286	98	Peak	HORIZONTAL
5	5399.00	51.50	54.00	-2.50	43.95	8.76	31.72	32.93	286	98	Average	HORIZONTAL
6	5403.00	63.79	74.00	-10.21	56.21	8.78	31.73	32.93	286	98	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 29, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5584.00	66.00	68.20	-2.20	58.04	9.02	31.90	32.96	228	187	Peak	VERTICAL
2	5724.00	77.64	78.20	-0.56	69.64	8.92	32.08	33.00	228	187	Peak	VERTICAL
3	5744.00	98.73			90.74	8.90	32.10	33.01	228	187	Average	VERTICAL
4	5744.00	109.97			101.98	8.90	32.10	33.01	228	187	Peak	VERTICAL
5	5850.00	58.21	78.20	-19.99	50.13	8.91	32.22	33.05	228	187	Peak	VERTICAL
6	5909.00	67.99	68.20	-0.21	59.77	8.99	32.30	33.07	228	187	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5618.00	67.55	68.20	-0.65	59.56	9.02	31.94	32.97	220	197	Peak	HORIZONTAL
2	5724.00	59.75	78.20	-18.45	51.75	8.92	32.08	33.00	220	197	Peak	HORIZONTAL
3	5784.00	103.03			95.04	8.88	32.14	33.03	220	197	Average	HORIZONTAL
4	5784.00	114.13			106.14	8.88	32.14	33.03	220	197	Peak	HORIZONTAL
5	5859.00	65.94	78.20	-12.26	57.82	8.93	32.24	33.05	220	197	Peak	HORIZONTAL
6	5939.00	68.10	68.20	-0.10	59.86	9.01	32.32	33.09	220	197	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5669.00	66.93	68.20	-1.27	58.93	8.98	32.00	32.98	204	183	Peak	VERTICAL
2	5724.00	56.38	78.20	-21.82	48.38	8.92	32.08	33.00	204	183	Peak	VERTICAL
3	5824.00	101.09			93.04	8.90	32.20	33.05	204	183	Average	VERTICAL
4	5824.00	111.76			103.71	8.90	32.20	33.05	204	183	Peak	VERTICAL
5	5850.00	71.42	78.20	-6.78	63.34	8.91	32.22	33.05	204	183	Peak	VERTICAL
6	5984.00	68.07	68.20	-0.13	59.73	9.06	32.38	33.10	204	183	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 29, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5043.00	53.98	54.00	-0.02	46.79	8.70	31.44	32.95	231	103	Average	HORIZONTAL
2	5045.00	64.06	74.00	-9.94	56.87	8.70	31.44	32.95	231	103	Peak	HORIZONTAL
3	5186.00	104.86			97.57	8.68	31.55	32.94	231	103	Peak	HORIZONTAL
4	5195.00	94.47			87.17	8.68	31.56	32.94	231	103	Average	HORIZONTAL
5	5354.00	50.81	54.00	-3.19	43.32	8.74	31.68	32.93	231	103	Average	HORIZONTAL
6	5355.00	61.47	74.00	-12.53	53.96	8.75	31.69	32.93	231	103	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5062.00	64.52	74.00	-9.48	57.33	8.69	31.45	32.95	238	101	Peak	HORIZONTAL
2	5065.00	53.78	54.00	-0.22	46.59	8.69	31.45	32.95	238	101	Average	HORIZONTAL
3	5234.00	94.97			87.62	8.70	31.59	32.94	238	101	Average	HORIZONTAL
4	5234.00	105.58			98.23	8.70	31.59	32.94	238	101	Peak	HORIZONTAL
5	5383.00	61.11	74.00	-12.89	53.59	8.75	31.70	32.93	238	101	Peak	HORIZONTAL
6	5384.00	50.34	54.00	-3.66	42.82	8.75	31.70	32.93	238	101	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 29, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5714.00	67.92	68.20	-0.28	59.93	8.93	32.06	33.00	237	194	Peak	HORIZONTAL
2	5725.00	69.59	78.20	-8.61	61.59	8.92	32.08	33.00	237	194	Peak	HORIZONTAL
3	5759.00	97.75			89.76	8.89	32.12	33.02	237	194	Average	HORIZONTAL
4	5760.00	107.73			99.74	8.89	32.12	33.02	237	194	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5633.00	66.73	68.20	-1.47	58.73	9.01	31.96	32.97	222	197	Peak	HORIZONTAL
2	5720.00	67.94	78.20	-10.26	59.95	8.93	32.06	33.00	222	197	Peak	HORIZONTAL
3	5789.00	99.24			91.25	8.86	32.16	33.03	222	197	Average	HORIZONTAL
4	5799.00	110.98			102.99	8.86	32.16	33.03	222	197	Peak	HORIZONTAL
5	5850.00	71.68	78.20	-6.52	63.60	8.91	32.22	33.05	222	197	Peak	HORIZONTAL
6	5864.00	68.13	68.20	-0.07	60.02	8.93	32.24	33.06	222	197	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Paul Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 4 + Chain 5 + Chain 6
Test Date	Mar. 29, 2016		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5056.00	53.61	54.00	-0.39	46.42	8.69	31.45	32.95	263	104	Average	HORIZONTAL
2	5148.00	66.10	74.00	-7.90	58.84	8.68	31.52	32.94	263	104	Peak	HORIZONTAL
3	5195.00	102.42			95.12	8.68	31.56	32.94	263	104	Peak	HORIZONTAL
4	5219.00	92.76			85.43	8.69	31.58	32.94	263	104	Average	HORIZONTAL
5	5358.00	60.57	74.00	-13.43	53.06	8.75	31.69	32.93	263	104	Peak	HORIZONTAL
6	5379.00	50.14	54.00	-3.86	42.62	8.75	31.70	32.93	263	104	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5709.00	68.15	68.20	-0.05	60.16	8.93	32.06	33.00	193	195	Peak	HORIZONTAL
2	5719.00	72.41	78.20	-5.79	64.42	8.93	32.06	33.00	193	195	Peak	HORIZONTAL
3	5764.00	92.63			84.64	8.89	32.12	33.02	193	195	Average	HORIZONTAL
4	5765.00	105.06			97.08	8.89	32.12	33.03	193	195	Peak	HORIZONTAL
5	5853.00	69.86	78.20	-8.34	61.78	8.91	32.22	33.05	193	195	Peak	HORIZONTAL
6	5864.00	66.67	68.20	-1.53	58.56	8.93	32.24	33.06	193	195	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5775 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.8. Frequency Stability Measurement

4.8.1. Limit

In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

4.8.2. Measuring Instruments and Setting

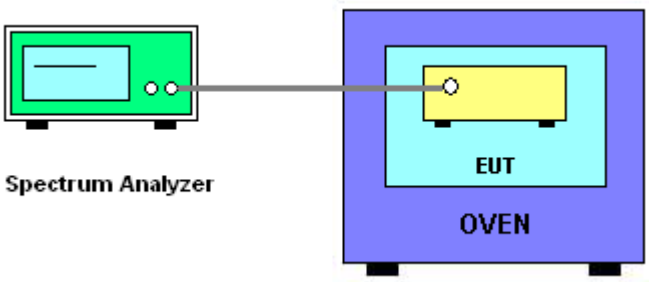
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. 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.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is -30°C~50°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Temperature	24°C	Humidity	46%
Test Engineer	Paul Chen	Test Date	Apr. 11, 2016

Mode: 20 MHz / Chain 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5200.0000	5199.9998	5199.9996	5199.9995
110.00	5199.9997	5199.9990	5199.9988	5199.9981
93.50	5199.9988	5199.9978	5199.9968	5199.9959
Max. Deviation (MHz)	**0.0012**	**0.0022**	**0.0032**	**0.0041**
Max. Deviation (ppm)	**0.23**	**0.42**	**0.62**	**0.79**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5200.0067	5200.0060	5200.0059	5200.0049
-20	5200.0055	5200.0052	5200.0044	5200.0038
-10	5200.0044	5200.0039	5200.0030	5200.0022
0	5200.0028	5200.0025	5200.0017	5200.0007
10	5200.0011	5200.0001	5199.9991	5199.9988
20	5199.9997	5199.9995	5199.9986	5199.9979
30	5199.9887	5199.9879	5199.9875	5199.9869
40	5199.9885	5199.9883	5199.9882	5199.9875
50	5199.9880	5199.9876	5199.9866	5199.9865
Max. Deviation (MHz)	**0.0120**	**0.0124**	**0.0134**	**0.0135**
Max. Deviation (ppm)	**2.31**	**2.38**	**2.58**	**2.60**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5785.0007	5785.0002	5784.9993	5784.9992
110.00	5784.9997	5784.9996	5784.9992	5784.9991
93.50	5784.9996	5784.9993	5784.9986	5784.9985
Max. Deviation (MHz)	**0.0007**	**0.0007**	**0.0014**	**0.0015**
Max. Deviation (ppm)	**0.12**	**0.12**	**0.24**	**0.26**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5785.0071	5785.0061	5785.0055	5785.0052
-20	5785.0057	5785.0054	5785.0044	5785.0035
-10	5785.0037	5785.0029	5785.0024	5785.0017
0	5785.0031	5785.0021	5785.0016	5785.0014
10	5785.0016	5785.0007	5784.9998	5784.9988
20	5784.9997	5784.9995	5784.9986	5784.9976
30	5784.9887	5784.9880	5784.9877	5784.9869
40	5784.9884	5784.9881	5784.9877	5784.9874
50	5784.9882	5784.9872	5784.9865	5784.9858
Max. Deviation (MHz)	**0.0118**	**0.0128**	**0.0135**	**0.0142**
Max. Deviation (ppm)	**2.04**	**2.21**	**2.33**	**2.45**
Result	Complies			

Mode: 40 MHz / Chain 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5190.0003	5189.9998	5189.9989	5189.9987
110.00	5189.9997	5189.9994	5189.9992	5189.9988
93.50	5189.9994	5189.9985	5189.9984	5189.9977
Max. Deviation (MHz)	**0.0006**	**0.0015**	**0.0016**	**0.0023**
Max. Deviation (ppm)	**0.12**	**0.29**	**0.31**	**0.44**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5190.0053	5190.0049	5190.0041	5190.0034
-20	5190.0051	5190.0046	5190.0038	5190.0029
-10	5190.0031	5190.0030	5190.0020	5190.0011
0	5190.0021	5190.0016	5190.0014	5190.0011
10	5190.0012	5190.0005	5189.9998	5189.9996
20	5189.9997	5189.9988	5189.9979	5189.9971
30	5189.9887	5189.9879	5189.9875	5189.9874
40	5189.9883	5189.9880	5189.9872	5189.9867
50	5189.9879	5189.9871	5189.9862	5189.9856
Max. Deviation (MHz)	**0.0121**	**0.0129**	**0.0138**	**0.0144**
Max. Deviation (ppm)	**2.33**	**2.49**	**2.66**	**2.77**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5755.0003	5754.9999	5754.9990	5754.9984
110.00	5754.9997	5754.9993	5754.9992	5754.9991
93.50	5754.9987	5754.9979	5754.9969	5754.9959
Max. Deviation (MHz)	**0.0013**	**0.0021**	**0.0031**	**0.0041**
Max. Deviation (ppm)	**0.23**	**0.36**	**0.54**	**0.71**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5755.0051	5755.0049	5755.0046	5755.0042
-20	5755.0035	5755.0032	5755.0022	5755.0015
-10	5755.0020	5755.0017	5755.0015	5755.0014
0	5755.0018	5755.0012	5755.0003	5754.9993
10	5755.0002	5755.0001	5754.9993	5754.9989
20	5754.9997	5754.9987	5754.9977	5754.9967
30	5754.9887	5754.9882	5754.9877	5754.9869
40	5754.9882	5754.9876	5754.9867	5754.9859
50	5754.9873	5754.9872	5754.9866	5754.9860
Max. Deviation (MHz)	**0.0127**	**0.0128**	**0.0134**	**0.0141**
Max. Deviation (ppm)	**2.21**	**2.22**	**2.33**	**2.45**
Result	Complies			

Mode: 80 MHz / Chain 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5210.0003	5209.9997	5209.9996	5209.9988
110.00	5209.9997	5209.9988	5209.9987	5209.9983
93.50	5209.9987	5209.9980	5209.9973	5209.9969
Max. Deviation (MHz)	**0.0013**	**0.0020**	**0.0027**	**0.0031**
Max. Deviation (ppm)	**0.25**	**0.38**	**0.52**	**0.60**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5210.0047	5210.0037	5210.0029	5210.0024
-20	5210.0042	5210.0036	5210.0034	5210.0029
-10	5210.0032	5210.0026	5210.0017	5210.0014
0	5210.0017	5210.0015	5210.0011	5210.0003
10	5210.0008	5210.0003	5209.9999	5209.9992
20	5209.9997	5209.9996	5209.9992	5209.9991
30	5209.9887	5209.9879	5209.9876	5209.9875
40	5209.9871	5209.9865	5209.9857	5209.9848
50	5209.9852	5209.9843	5209.9842	5209.9834
Max. Deviation (MHz)	**0.0148**	**0.0157**	**0.0158**	**0.0166**
Max. Deviation (ppm)	**2.84**	**3.01**	**3.03**	**3.19**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5775.0006	5775.0005	5774.9995	5774.9993
110.00	5774.9997	5774.9996	5774.9989	5774.9979
93.50	5774.9996	5774.9986	5774.9982	5774.9978
Max. Deviation (MHz)	**0.0006**	**0.0014**	**0.0018**	**0.0022**
Max. Deviation (ppm)	**0.10**	**0.24**	**0.31**	**0.38**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5775.0075	5775.0066	5775.0064	5775.0057
-20	5775.0056	5775.0053	5775.0051	5775.0045
-10	5775.0036	5775.0035	5775.0026	5775.0023
0	5775.0024	5775.0019	5775.0009	5775.0000
10	5775.0007	5775.0004	5774.9995	5774.9992
20	5774.9997	5774.9989	5774.9986	5774.9984
30	5774.9887	5774.9879	5774.9876	5774.9870
40	5774.9871	5774.9868	5774.9858	5774.9851
50	5774.9868	5774.9867	5774.9864	5774.9855
Max. Deviation (MHz)	**0.0132**	**0.0133**	**0.0142**	**0.0149**
Max. Deviation (ppm)	**2.29**	**2.30**	**2.46**	**2.58**
Result	Complies			

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9 kHz ~ 2.75 GHz	Apr. 12, 2013	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150 kHz ~ 100 MHz	Nov. 23, 2013	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Nov. 23, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150 kHz ~ 30 MHz	Dec. 04, 2013	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Apr. 16, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

N.C.R means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%