



FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : CDMA/LTE Ufi
BRAND NAME : ZTE
MODEL NAME : MF975U
FCC ID : SRQ-MF975U
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jun. 24, 2015 and testing was completed on Aug. 04, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤24 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤11 dBm	Pass	-
3.4	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm	Pass	Under limit 5.58 dB at 5149.800 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.47 dB at 0.530 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CDMA/LTE Ufi
Brand Name	ZTE
Model Name	MF975U
FCC ID	SRQ-MF975U
EUT supports Radios application	CDMA/EV-DO/LTE/ WLAN2.4GHz 802.11b/g/n HT20/HT40 WLAN5GHz 802.11a/n HT20/HT40/ WLAN5GHz 802.11ac VHT20/VHT40/VHT80
MEID Code	Conducted: 004401783463595 Radiation: 004401783463397 Conduction: 004401783463397
HW Version	xz3A
SW Version	USCC_MF975U_V1.0.0B04
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard			
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz		
Maximum Output Power to Antenna	802.11a : 9.76 dBm / 0.0095 W 802.11n HT20 : 10.00 dBm / 0.0100 W 802.11n HT40 : 9.92 dBm / 0.0098 W 802.11ac VHT20 : 9.63 dBm / 0.0092 W 802.11ac VHT40 : 9.02 dBm / 0.0080 W 802.11ac VHT80 : 8.08 dBm / 0.0064 W		
99% Occupied Bandwidth	802.11a : 17.10 MHz 802.11n HT20 : 18.80 MHz 802.11n HT40 : 36.30 MHz 802.11ac VHT20: 18.10 MHz 802.11ac VHT40 : 36.90 MHz 802.11ac VHT80 : 75.24 MHz		
Antenna Type / Gain	Chain Port 0 : IFA Antenna with gain 2.40 dBi Chain Port 1 : IFA Antenna with gain 2.50 dBi		
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
Antenna Function Description		Chain Port 0	Chain Port 1
	802.11a	V	V
	802.11n/ac SISO	V	V
	802.11n/ac MIMO	V	V



1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-KS	03CH02-KS	CO01-KS
			418269

Note: The test site complies with ANSI C63.4 2009 requirement.

1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240
	42	5210		

Note: The above Frequency and Channel in boldface were 802.11n HT40.



2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

WLAN 5GHz 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
			6Mbps								
CH 36	5180	0	9.53	CH 36	9.38	9.37	9.39	9.34	9.31	9.30	9.45
CH 44	5220	0	9.14								
CH 48	5240	0	9.21								
CH 36	5180	1	9.54	CH 48	9.58	9.64	9.69	9.57	9.49	9.72	9.51
CH 44	5220	1	9.47								
CH 48	5240	1	9.76								

WLAN 5GHz 802.11n-HT20 Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
			MCS0								
CH 36	5180	0	9.51	CH 36	9.27	9.35	9.39	9.42	9.40	9.39	9.43
CH 44	5220	0	9.22								
CH 48	5240	0	9.17								
CH 36	5180	1	9.44	CH 48	9.39	9.52	9.56	9.53	9.63	9.58	9.57
CH 44	5220	1	9.33								
CH 48	5240	1	9.66								
CH 36	5180	0+1(0)	6.84	CH 36	6.56	6.55	6.61	6.76	6.75	6.75	6.80
CH 44	5220	0+1(0)	6.83								
CH 48	5240	0+1(0)	6.68								
CH 36	5180	0+1(1)	7.14	CH 36	7.11	7.03	6.94	7.03	6.98	6.96	7.00
CH 44	5220	0+1(1)	7.00								
CH 48	5240	0+1(1)	7.05								
CH 36	5180	0+1	10.00	CH 36	9.85	9.81	9.79	9.91	9.88	9.87	9.91
CH 44	5220	0+1	9.92								
CH 48	5240	0+1	9.88								



WLAN 5GHz 802.11n-HT40 Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
			MCS0								
CH 38	5190	0	9.75	CH 38	9.65	9.74	9.60	9.66	9.64	9.68	9.71
CH 46	5230	0	9.52								
CH 38	5190	1	9.76	CH 46	9.79	9.77	9.74	9.88	9.75	9.80	9.90
CH 46	5230	1	9.92								
CH 38	5190	0+1(0)	6.30	CH 46	6.58	6.58	6.66	6.66	6.65	6.64	6.60
CH 46	5230	0+1(0)	6.67								
CH 38	5190	0+1(1)	6.62	CH 46	6.63	6.77	6.66	6.76	6.72	6.76	6.64
CH 46	5230	0+1(1)	6.79								
CH 38	5190	0+1	9.47	CH 46	9.62	9.69	9.67	9.72	9.70	9.71	9.63
CH 46	5230	0+1	9.74								

WLAN 5GHz 802.11ac VHT20 Average Power (dBm)												
Power vs. Channel				Power vs. Data Rate								
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
			MCS0									
CH 36	5180	0	9.52	CH 36	9.23	9.41	9.35	9.43	9.42	9.48	9.32	9.46
CH 44	5220	0	9.27									
CH 48	5240	0	9.22									
CH 36	5180	1	9.61	CH 36	9.30	9.43	9.57	9.55	9.54	9.59	9.56	9.60
CH 44	5220	1	9.47									
CH 48	5240	1	9.44									
CH 36	5180	0+1(0)	5.85	CH 48	6.29	6.42	6.49	6.57	6.48	6.65	6.58	6.52
CH 44	5220	0+1(0)	6.32									
CH 48	5240	0+1(0)	6.59									
CH 36	5180	0+1(1)	6.44	CH 48	6.46	6.58	6.61	6.57	6.58	6.56	6.60	6.62
CH 44	5220	0+1(1)	6.37									
CH 48	5240	0+1(1)	6.64									
CH 36	5180	0+1	9.17	CH 48	9.39	9.51	9.56	9.58	9.54	9.62	9.60	9.58
CH 44	5220	0+1	9.36									
CH 48	5240	0+1	9.63									



WLAN 5GHz 802.11ac VHT40 Average Power (dBm)													
Power vs. Channel				Power vs. Data Rate									
Channel	Frequency (MHz)	Chain Port	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 38	5190	0	8.90	CH 38	8.81	8.88	8.75	8.84	8.83	8.86	8.66	8.84	8.85
CH 46	5230	0	8.76										
CH 38	5190	1	8.69	CH 46	8.76	8.80	8.68	8.74	8.72	8.77	8.69	8.67	8.71
CH 46	5230	1	8.92										
CH 38	5190	0+1(0)	5.80	CH 38	5.58	5.70	5.66	5.69	5.67	5.63	5.68	5.71	5.59
CH 46	5230	0+1(0)	5.35										
CH 38	5190	0+1(1)	6.22	CH 38	6.06	6.12	6.14	6.11	6.32	6.02	6.00	6.05	6.04
CH 46	5230	0+1(1)	6.04										
CH 38	5190	0+1	9.02	CH 38	8.84	8.92	8.92	8.92	9.02	8.84	8.85	8.89	8.83
CH 46	5230	0+1	8.72										

WLAN 5GHz 802.11ac VHT80 Average Power (dBm)													
Power vs. Channel				Power vs. Data Rate									
Channel	Frequency (MHz)	Chain Port	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 42	5210	0	7.93	CH 42	7.76	7.83	7.86	7.79	7.77	7.84	7.78	7.85	7.91
CH 42	5210	1	8.08	CH 42	7.99	8.07	8.02	7.98	7.96	8.06	8.01	8.05	7.97
CH 42	5210	0+1(0)	4.91	CH 42	4.64	4.63	4.81	4.62	4.72	4.79	4.77	4.77	4.78
CH 42	5210	0+1(1)	4.89	CH 42	4.93	4.85	4.88	4.81	4.86	4.81	4.83	4.74	4.95
CH 42	5210	0+1	7.91	CH 42	7.80	7.76	7.85	7.73	7.80	7.81	7.81	7.76	7.88

Note: Chain Port 0+1 is a calculated result from sum of the power Chain Port 0+1(0) and Chain Port 0+1(1).



2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : CDMA2000 BC0 Idle + WLAN (5GHz) Link + USB Cable (Charging from Adapter)
Remark: For Radiated TCs, the tests were performed with adapter and USB cable.	



Ch. #		Band I : 5180-5240 MHz	
		802.11a	
L	Low	36	
M	Middle	44	
H	High	48	

Ch. #		Band I : 5180-5240 MHz	
		802.11n HT20	
L	Low	36	
M	Middle	44	
H	High	48	

Ch. #		Band I : 5180-5240 MHz	
		802.11n HT40	
L	Low	38	
M	Middle	-	
H	High	46	

Ch. #		Band I : 5180-5240 MHz	
		802.11ac VHT20	
L	Low	36	
M	Middle	44	
H	High	48	

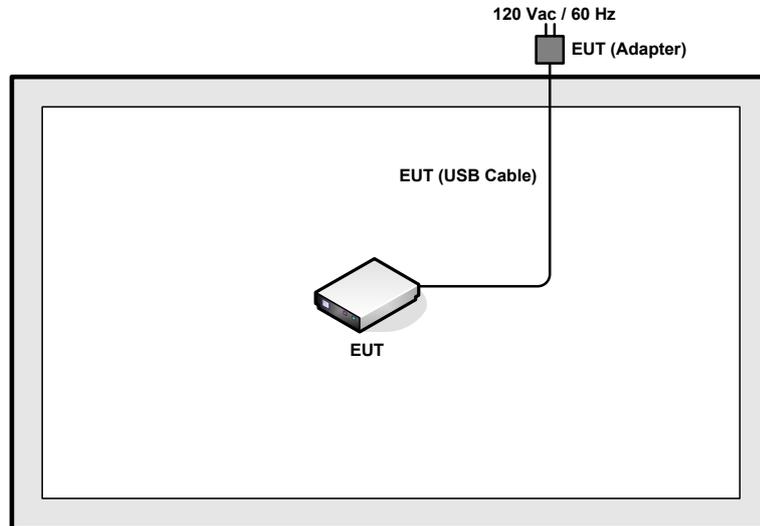
Ch. #		Band I : 5180-5240 MHz	
		802.11ac VHT40	
L	Low	38	
M	Middle	-	
H	High	46	

Ch. #		Band I : 5180-5240 MHz	
		802.11ac VHT80	
L	Low	-	
M	Middle	42	
H	High	-	

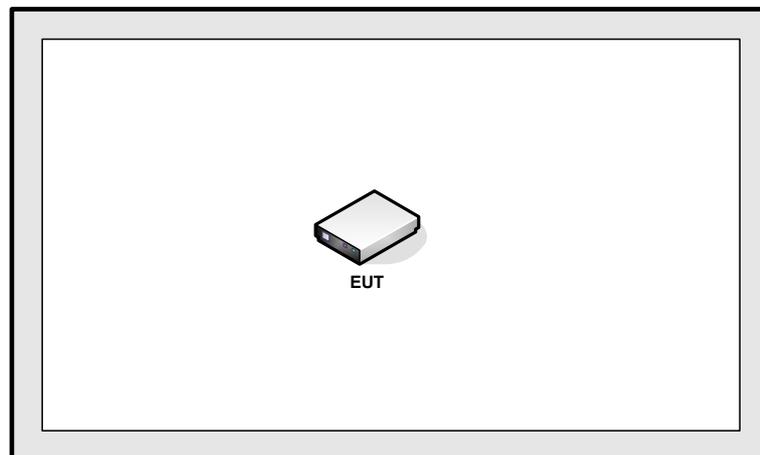
2.4 Connection Diagram of Test System

<WLAN5GHz 802.11a/n HT20/HT40/WLAN5GHz 802.11ac VHT20/VHT40/VHT80

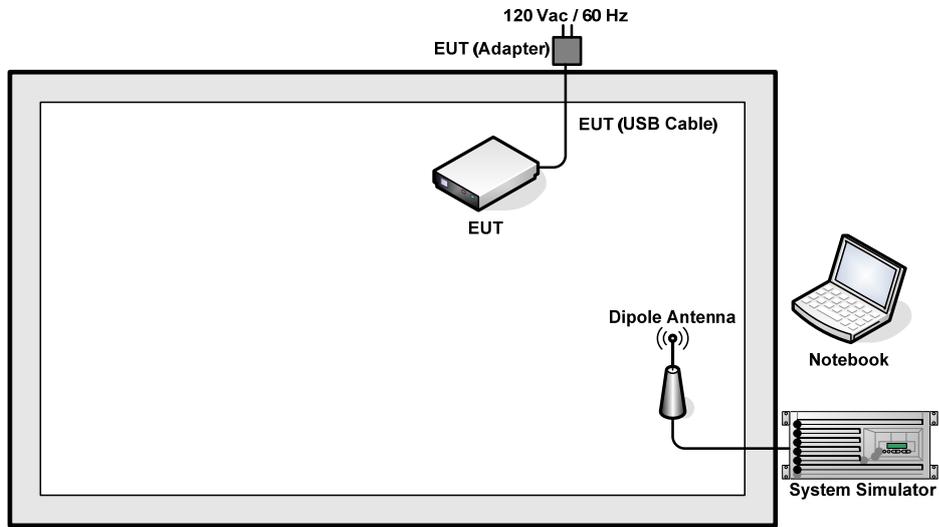
Tx Mode>



<WLAN5GHz 802.11ac VHT80 Chain Port 1 Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	DC Power Supply	GW INSTEK	GPD-2303S	N/A	N/A	Unshielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 7.5 dB.

Offset (dB) = RF cable loss(dB).

= 7.5 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

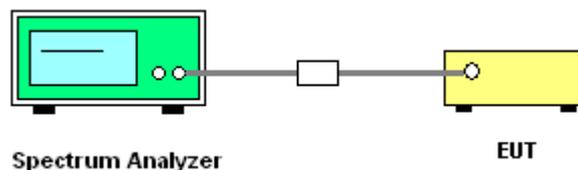
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. 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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) $\geq 3 * RBW$.
8. Measure and record the results in the test report.

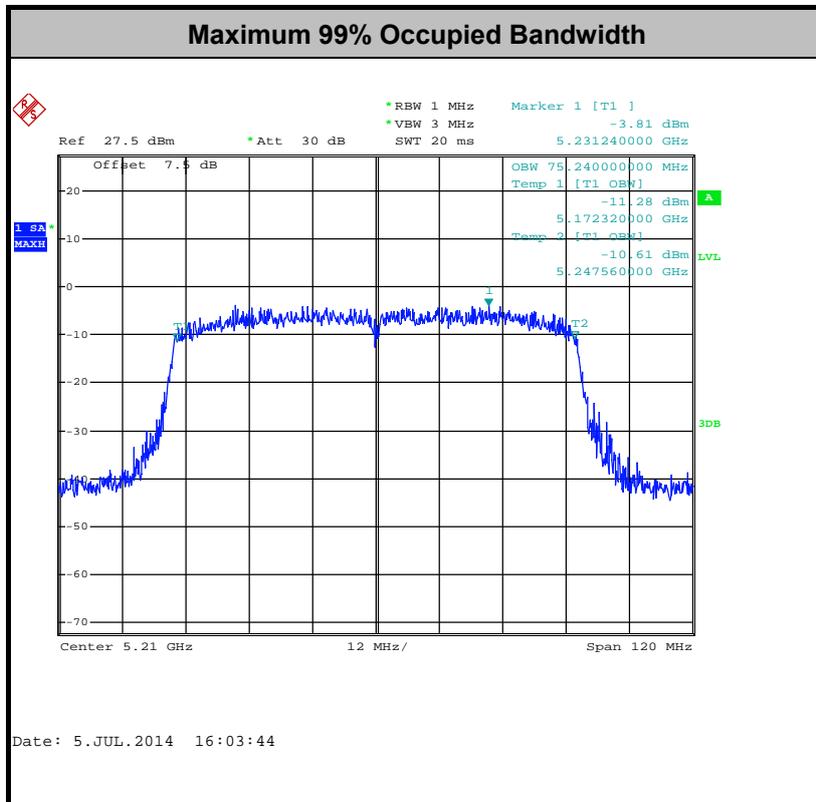
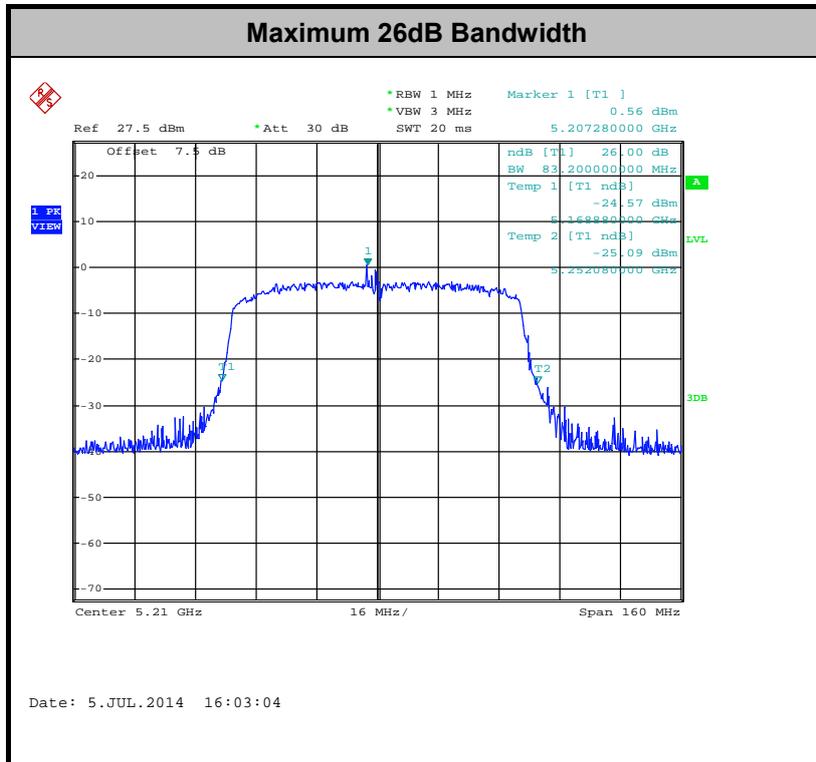
3.1.4 Test Setup





3.1.5 Test Result of 26dB & 99% Occupied Bandwidth Plots

Please refer to Appendix A.



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

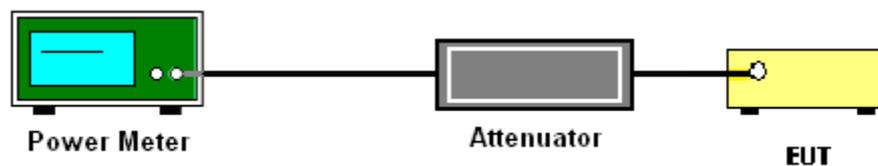
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
Section F) Maximum power spectral density.

Method SA-2

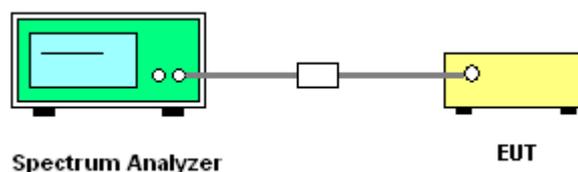
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW \geq 3 MHz.
 - Number of points in sweep \geq 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

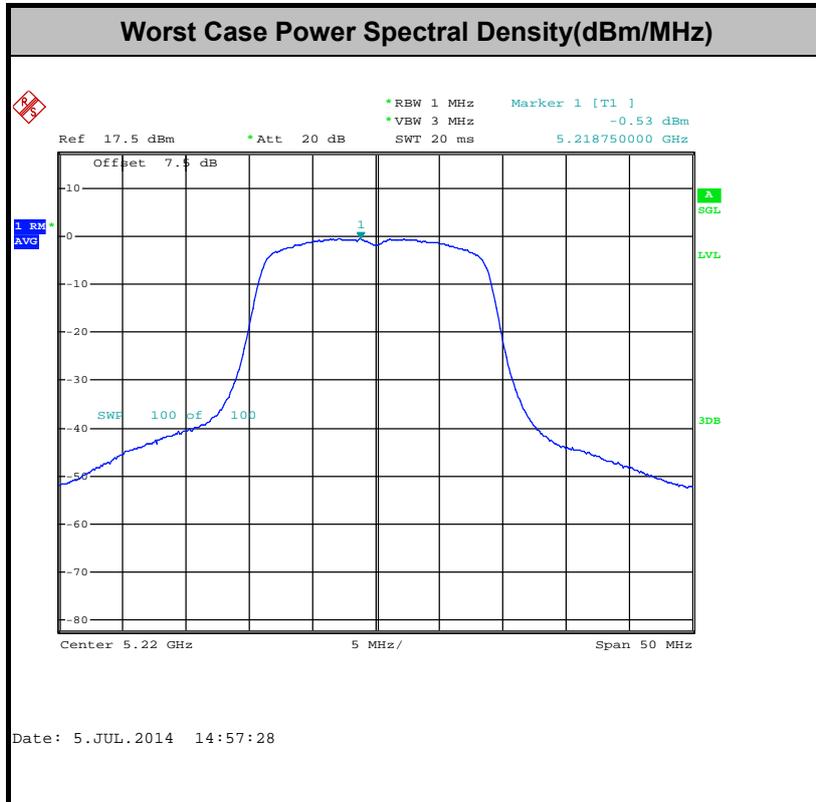
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



Note: Average Power Density (dB) = Measured value+ Duty Factor



3.4 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table

Frequency (MHz)	Field Strength (microvolts/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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \text{ } \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

- (3) KDB789033 v01 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.



3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

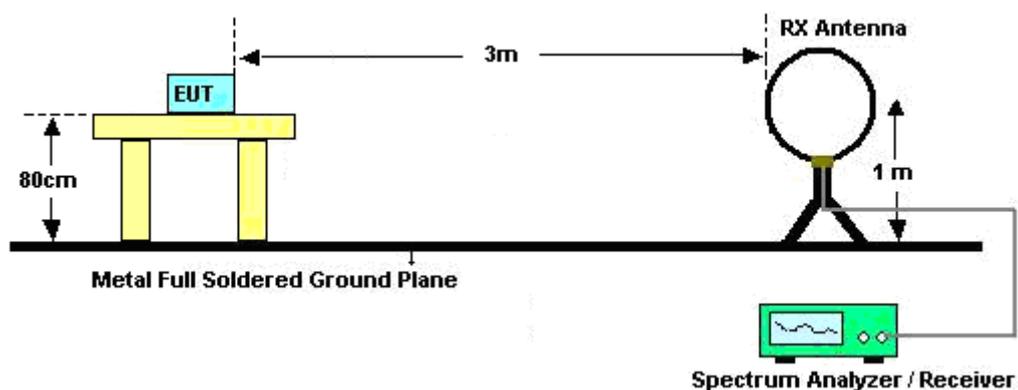
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
0	802.11a	95.318	2.065	0.484	1kHz
1	802.11a	95.318	2.065	0.484	1kHz
1	802.11n HT40	90.331	0.948	1.055	3kHz
1	802.11n VHT80	84.032	0.465	2.150	3kHz
0+1	802.11n HT20	94.921	1.923	0.520	1kHz
0+1	802.11n HT40	91.316	0.945	1.058	3kHz
0+1	802.11n VHT20	95.353	1.933	0.517	1kHz
0+1	802.11n VHT40	91.491	0.951	1.052	3kHz
0+1	802.11n VHT80	84.294	0.467	2.143	3kHz

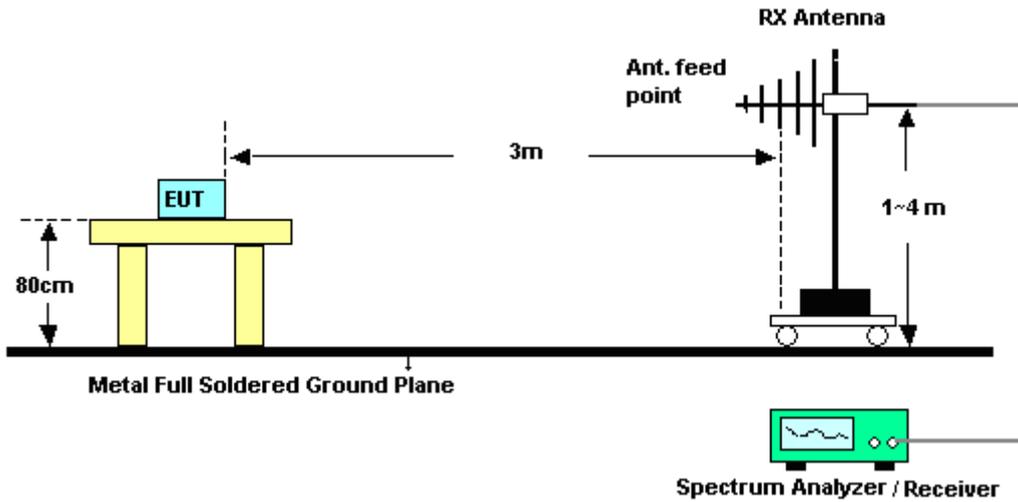
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

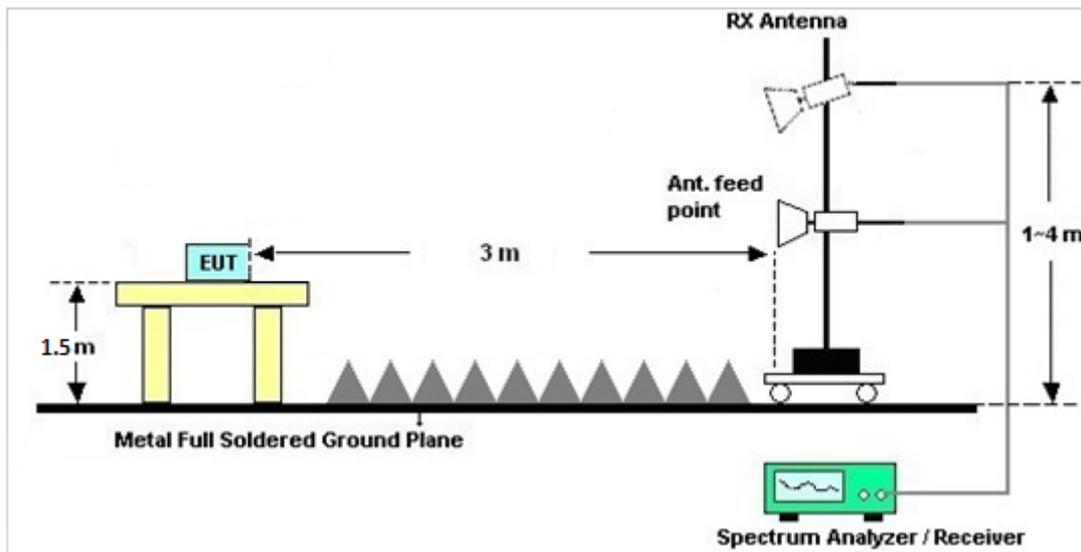
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B.

3.4.7 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.



3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

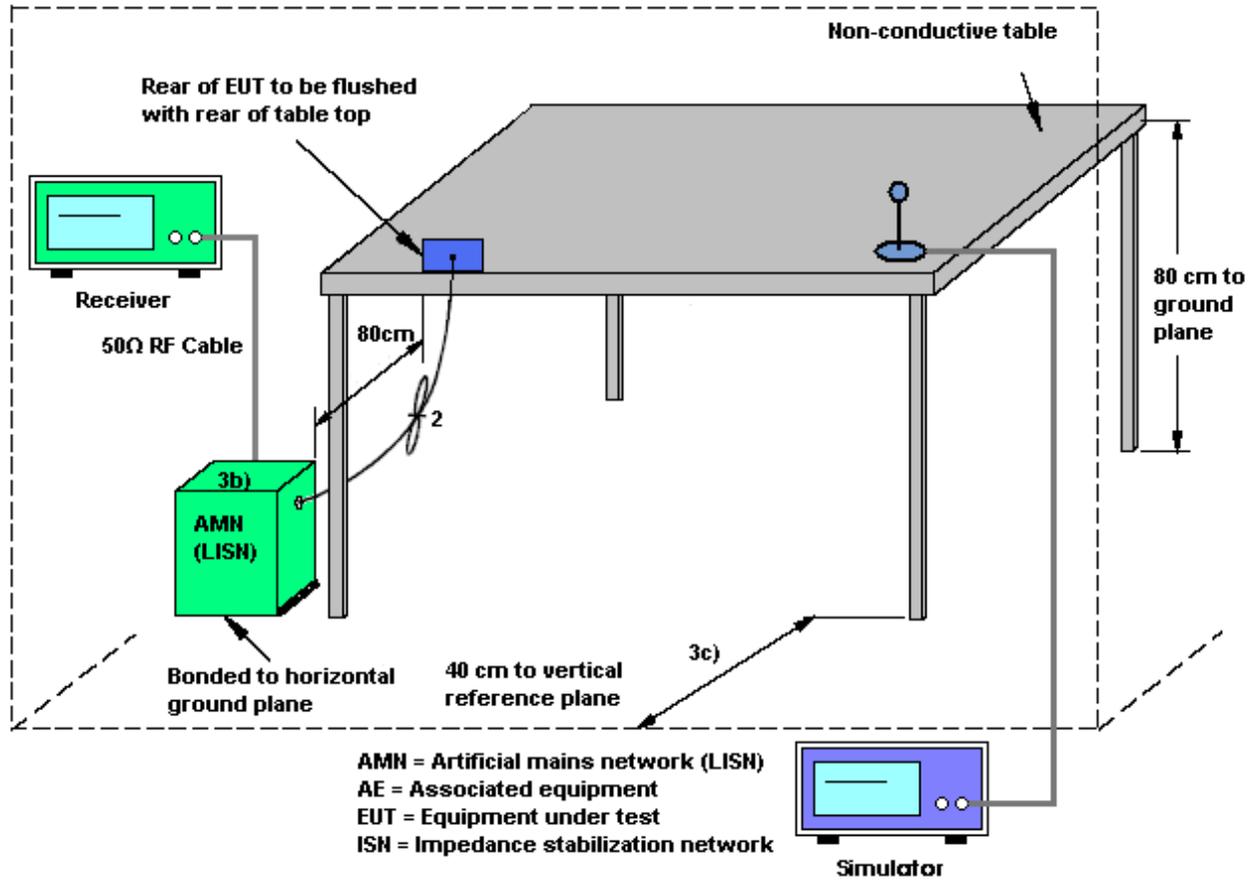
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

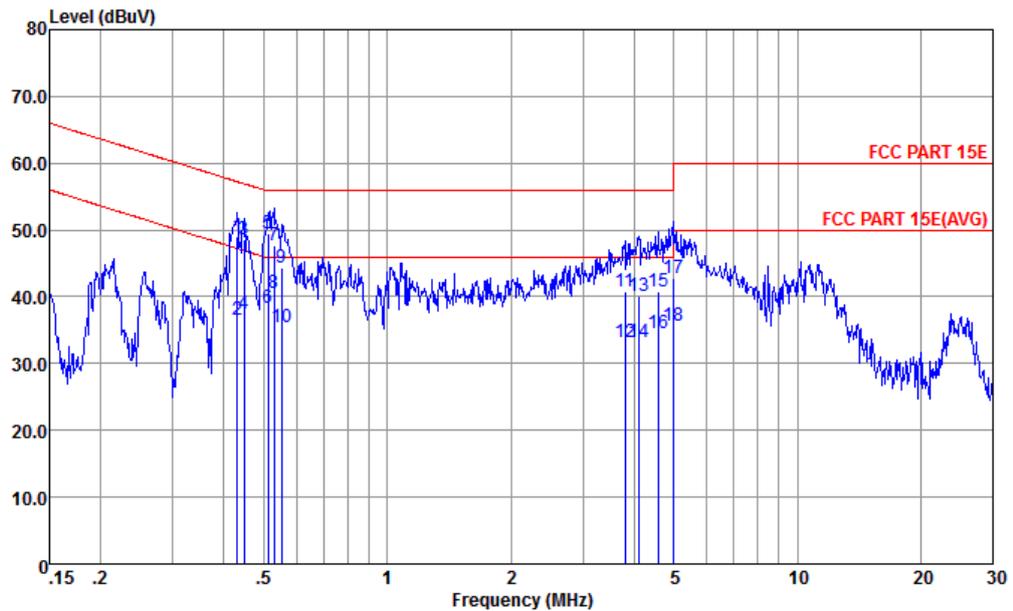
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Eko Guan	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + WLAN (5GHz) Link + USB Cable (Charging from Adapter)		



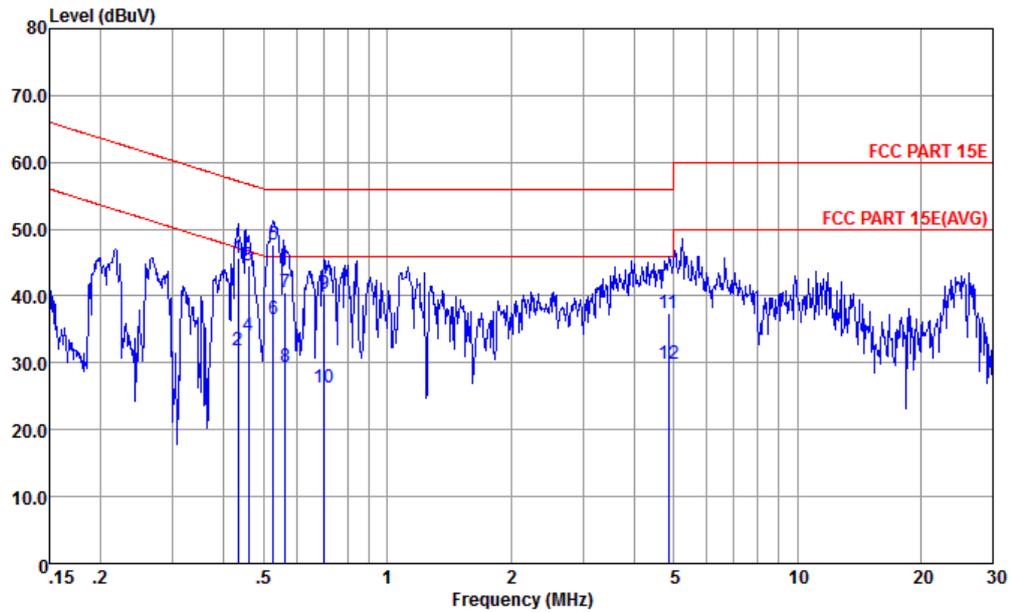
Site : CO01-KS
 Condition : FCC PART 15E LISN-L20140306 LINE

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.43	49.09	-8.15	57.24	38.20	0.27	10.62	QP
2	0.43	36.59	-10.65	47.24	25.70	0.27	10.62	Average
3	0.45	48.67	-8.26	56.93	37.80	0.25	10.62	QP
4	0.45	37.37	-9.56	46.93	26.50	0.25	10.62	Average
5	0.51	49.53	-6.47	56.00	38.70	0.20	10.63	QP
6	0.51	38.43	-7.57	46.00	27.60	0.20	10.63	Average
7	0.53	47.73	-8.27	56.00	36.90	0.20	10.63	QP
8 *	0.53	40.53	-5.47	46.00	29.70	0.20	10.63	Average
9	0.55	44.43	-11.57	56.00	33.60	0.20	10.63	QP
10	0.55	35.53	-10.47	46.00	24.70	0.20	10.63	Average
11	3.80	40.80	-15.20	56.00	29.80	0.18	10.82	QP
12	3.80	33.10	-12.90	46.00	22.10	0.18	10.82	Average
13	4.11	40.12	-15.88	56.00	29.10	0.19	10.83	QP
14	4.11	33.22	-12.78	46.00	22.20	0.19	10.83	Average
15	4.57	40.84	-15.16	56.00	29.81	0.19	10.84	QP
16	4.57	34.44	-11.56	46.00	23.41	0.19	10.84	Average
17	4.98	42.75	-13.25	56.00	31.70	0.20	10.85	QP
18	4.98	35.55	-10.45	46.00	24.50	0.20	10.85	Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Eko Guan	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + WLAN (5GHz) Link + USB Cable (Charging from Adapter)		



Site : CO01-KS
 Condition : FCC PART 15E LISN-N20140306 NEUTRAL

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.43	45.78	-11.42	57.20	34.80	0.36	10.62	QP
2	0.43	31.78	-15.42	47.20	20.80	0.36	10.62	Average
3	0.46	44.66	-12.05	56.71	33.71	0.33	10.62	QP
4	0.46	34.16	-12.55	46.71	23.21	0.33	10.62	Average
5 *	0.53	47.61	-8.39	56.00	36.69	0.29	10.63	QP
6	0.53	36.61	-9.39	46.00	25.69	0.29	10.63	Average
7	0.56	40.50	-15.50	56.00	29.60	0.27	10.63	QP
8	0.56	29.50	-16.50	46.00	18.60	0.27	10.63	Average
9	0.70	40.34	-15.66	56.00	29.50	0.20	10.64	QP
10	0.70	26.24	-19.76	46.00	15.40	0.20	10.64	Average
11	4.85	37.54	-18.46	56.00	26.49	0.20	10.85	QP
12	4.85	29.94	-16.06	46.00	18.89	0.20	10.85	Average

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

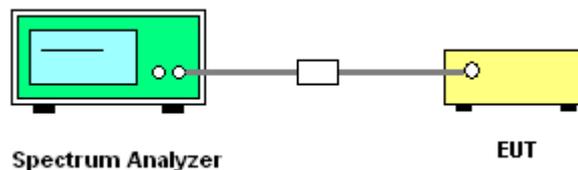
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.



3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.8 Antenna Requirements

3.8.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.

The EUT supports CDD mode.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.



	Chain Port 0	Chain Port 1	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band I	2.40	2.50	5.46	5.46	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 28, 2014	Jul. 05, 2015	Oct. 27, 2015	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Jan. 23, 2015	Jul. 05, 2015	Jan. 22, 2016	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 23, 2015	Jul. 05, 2015	Jan. 22, 2016	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 25, 2014	Jul. 05, 2015	Oct. 24, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Sep. 29, 2014	Aug. 04, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz; Max 30dBm	Sep. 25, 2014	Aug. 04, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 13, 2014	Aug. 04, 2015	Nov. 12, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Sep. 13, 2014	Aug. 04, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Aug. 04, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Aug. 04, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Sep. 04, 2014	Aug. 04, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	May 04, 2015	Aug. 04, 2015	May 03, 2016	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz Gain 30dB	Oct. 28, 2014	Aug. 04, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Aug. 04, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 04, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Aug. 04, 2015	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 04, 2015	Jul. 28, 2015	May 03, 2016	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 25, 2014	Jul. 28, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 25, 2014	Jul. 28, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 25, 2014	Jul. 28, 2015	Oct. 24, 2015	Conduction (CO01-KS)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Appendix A. Conducted Test Results

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2015/7/5	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

Band I													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)		Note
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	36	5180		17.10		22.20	-			22.33	
11a	6Mbps	1	44	5220		17.10		22.05	-			22.33	
11a	6Mbps	1	48	5240		17.10		22.15	-			22.33	
HT20	MCS0	1	36	5180		18.00		22.70	-			22.55	
HT20	MCS0	1	44	5220		17.95		22.95	-			22.54	
HT20	MCS0	1	48	5240		18.05		22.90	-			22.56	
HT40	MCS0	1	38	5190		36.10		43.47	-			23.01	
HT40	MCS0	1	46	5230		36.30		43.56	-			23.01	
VHT20	MCS0	1	36	5180		18.00		22.95	-			22.55	
VHT20	MCS0	1	44	5220		18.10		22.95	-			22.58	
VHT20	MCS0	1	48	5240		18.00		23.00	-			22.55	
VHT40	MCS0	1	38	5190		36.20		42.93	-			23.01	
VHT40	MCS0	1	46	5230		36.30		43.56	-			23.01	
VHT80	MCS0	1	42	5210		75.12		82.88	-			23.01	
HT20	MCS0	2	36	5180	18.75	18.70	24.35	24.40	-			22.72	
HT20	MCS0	2	44	5220	18.80	18.65	24.60	24.40	-			22.71	
HT20	MCS0	2	48	5240	18.70	18.70	24.60	24.35	-			22.72	
HT40	MCS0	2	38	5190	36.20	36.20	43.29	42.93	-			23.01	
HT40	MCS0	2	46	5230	36.10	36.30	43.56	43.11	-			23.01	
VHT20	MCS0	2	36	5180	17.95	18.00	22.80	22.70	-			22.54	
VHT20	MCS0	2	44	5220	18.10	18.00	22.95	22.85	-			22.55	
VHT20	MCS0	2	48	5240	18.00	18.05	22.95	22.90	-			22.55	
VHT40	MCS0	2	38	5190	36.90	36.70	45.63	45.36	-			23.01	
VHT40	MCS0	2	46	5230	36.80	36.90	46.17	45.63	-			23.01	
VHT80	MCS0	2	42	5210	75.24	75.12	83.20	81.28	-			23.01	

TEST RESULTS DATA
Average Power Table

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	36	5180	0.20	0.20	9.53	9.54		24.00	24.00	2.40	2.50	Pass
11a	6Mbps	1	44	5220	0.20	0.20	9.14	9.47		24.00	24.00	2.40	2.50	Pass
11a	6Mbps	1	48	5240	0.20	0.20	9.21	9.76		24.00	24.00	2.40	2.50	Pass
HT20	MCS0	1	36	5180	0.23	0.21	9.51	9.44		24.00	24.00	2.40	2.50	Pass
HT20	MCS0	1	44	5220	0.23	0.21	9.22	9.33		24.00	24.00	2.40	2.50	Pass
HT20	MCS0	1	48	5240	0.23	0.21	9.17	9.66		24.00	24.00	2.40	2.50	Pass
HT40	MCS0	1	38	5190	0.39	0.44	9.75	9.76		24.00	24.00	2.40	2.50	Pass
HT40	MCS0	1	46	5230	0.39	0.44	9.52	9.92		24.00	24.00	2.40	2.50	Pass
VHT20	MCS0	1	36	5180	0.24	0.23	9.52	9.61		24.00	24.00	2.40	2.50	Pass
VHT20	MCS0	1	44	5220	0.24	0.23	9.27	9.47		24.00	24.00	2.40	2.50	Pass
VHT20	MCS0	1	48	5240	0.24	0.23	9.22	9.44		24.00	24.00	2.40	2.50	Pass
VHT40	MCS0	1	38	5190	0.45	0.36	8.90	8.69		24.00	24.00	2.40	2.50	Pass
VHT40	MCS0	1	46	5230	0.45	0.36	8.76	8.92		24.00	24.00	2.40	2.50	Pass
VHT80	MCS0	1	42	5210	0.78	0.76	7.93	8.08		24.00	24.00	2.40	2.50	Pass
HT20	MCS0	2	36	5180	0.23	0.23	6.84	7.14	10.00	24.00		5.46		Pass
HT20	MCS0	2	44	5220	0.23	0.23	6.83	7.00	9.92	24.00		5.46		Pass
HT20	MCS0	2	48	5240	0.23	0.23	6.68	7.05	9.88	24.00		5.46		Pass
HT40	MCS0	2	38	5190	0.39	0.40	6.30	6.62	9.47	24.00		5.46		Pass
HT40	MCS0	2	46	5230	0.39	0.40	6.67	6.79	9.74	24.00		5.46		Pass
VHT20	MCS0	2	36	5180	0.21	0.22	5.85	6.44	9.17	24.00		5.46		Pass
VHT20	MCS0	2	44	5220	0.21	0.22	6.32	6.37	9.36	24.00		5.46		Pass
VHT20	MCS0	2	48	5240	0.21	0.22	6.59	6.64	9.63	24.00		5.46		Pass
VHT40	MCS0	2	38	5190	0.39	0.42	5.80	6.22	9.02	24.00		5.46		Pass
VHT40	MCS0	2	46	5230	0.39	0.42	5.35	6.04	8.72	24.00		5.46		Pass
VHT80	MCS0	2	42	5210	0.74	0.74	4.91	4.89	7.91	24.00		5.46		Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
					Ant 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	36	5180	0.20	0.20		-0.92		11.00	11.00	2.40	2.50	Pass
11a	6Mbps	1	44	5220	0.20	0.20		-0.69		11.00	11.00	2.40	2.50	Pass
11a	6Mbps	1	48	5240	0.20	0.20		-0.63		11.00	11.00	2.40	2.50	Pass
HT20	MCS0	1	36	5180	0.23	0.21		-0.69		11.00	11.00	2.40	2.50	Pass
HT20	MCS0	1	44	5220	0.23	0.21		-0.55		11.00	11.00	2.40	2.50	Pass
HT20	MCS0	1	48	5240	0.23	0.21		-0.48		11.00	11.00	2.40	2.50	Pass
HT40	MCS0	1	38	5190	0.39	0.44		-3.34		11.00	11.00	2.40	2.50	Pass
HT40	MCS0	1	46	5230	0.39	0.44		-3.36		11.00	11.00	2.40	2.50	Pass
VHT20	MCS0	1	36	5180	0.24	0.23		-0.41		11.00	11.00	2.40	2.50	Pass
VHT20	MCS0	1	44	5220	0.24	0.23		-0.30		11.00	11.00	2.40	2.50	Pass
VHT20	MCS0	1	48	5240	0.24	0.23		-0.37		11.00	11.00	2.40	2.50	Pass
VHT40	MCS0	1	38	5190	0.45	0.36		-3.95		11.00	11.00	2.40	2.50	Pass
VHT40	MCS0	1	46	5230	0.45	0.36		-4.05		11.00	11.00	2.40	2.50	Pass
VHT80	MCS0	1	42	5210	0.78	0.76		-7.62		11.00	11.00	2.40	2.50	Pass
HT20	MCS0	2	36	5180	0.23	0.23			-4.84	11.00		5.46	Pass	
HT20	MCS0	2	44	5220	0.23	0.23			-6.49	11.00		5.46	Pass	
HT20	MCS0	2	48	5240	0.23	0.23			-6.23	11.00		5.46	Pass	
HT40	MCS0	2	38	5190	0.39	0.40			-3.60	11.00		5.46	Pass	
HT40	MCS0	2	46	5230	0.39	0.40			-3.45	11.00		5.46	Pass	
VHT20	MCS0	2	36	5180	0.21	0.22			-0.71	11.00		5.46	Pass	
VHT20	MCS0	2	44	5220	0.21	0.22			-0.47	11.00		5.46	Pass	
VHT20	MCS0	2	48	5240	0.21	0.22			-0.43	11.00		5.46	Pass	
VHT40	MCS0	2	38	5190	0.39	0.42			-9.66	11.00		5.46	Pass	
VHT40	MCS0	2	46	5230	0.39	0.42			-9.36	11.00		5.46	Pass	
VHT80	MCS0	2	42	5210	0.74	0.74			-9.25	11.00		5.46	Pass	

TEST RESULTS DATA
Frequency Stability

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.6	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	4.35	
11a	6Mbps	1	36	5180	5179.950	-0.050	-9.65	20	3.8	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	-30	3.8	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	50	3.8	



Appendix B. Radiated Test Results

Band 1 - 5150~5250MHz WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz	*	5178	101.79	-	-	96.24	35.03	7.03	36.51	150	360	P	H
	*	5178	92.14	-	-	86.59	35.03	7.03	36.51	150	360	A	H
		5149.95	55.12	-18.88	74	49.61	35.02	7.02	36.53	150	360	P	H
		5148.95	40.32	-13.68	54	34.81	35.02	7.02	36.53	150	360	A	H
	*	5178	97.39	-	-	91.84	35.03	7.03	36.51	300	328	P	V
	*	5178	88.17	-	-	82.62	35.03	7.03	36.51	300	328	A	V
		5149.3	54.78	-19.22	74	49.27	35.02	7.02	36.53	300	328	P	V
		5148.45	38.64	-15.36	54	33.13	35.02	7.02	36.53	300	328	A	V
802.11a CH 44 5220MHz	*	5222	103.03	-	-	97.45	35.03	7.05	36.5	150	360	P	H
	*	5222	93.39	-	-	87.81	35.03	7.05	36.5	150	360	A	H
	*	5222	98.36	-	-	92.78	35.03	7.05	36.5	150	347	P	V
	*	5222	88.9	-	-	83.32	35.03	7.05	36.5	150	347	A	V
802.11a CH 48 5240MHz	*	5244	102.63	-	-	97	35.04	7.09	36.5	153	325	P	H
	*	5238	92.45	-	-	86.84	35.04	7.07	36.5	150	325	A	H
		5390.15	51.07	-22.93	74	45.28	35.06	7.23	36.5	150	325	P	H
		5381.35	36.66	-17.34	54	30.87	35.06	7.23	36.5	150	325	A	H
	*	5244	100.69	-	-	95.06	35.04	7.09	36.5	300	242	P	V
	*	5242	90.95	-	-	85.32	35.04	7.09	36.5	300	242	A	V
		5385.65	50.45	-23.55	74	44.66	35.06	7.23	36.5	300	242	P	V
		5388.95	36.74	-17.26	54	30.95	35.06	7.23	36.5	300	242	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 0	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36		10360	48.85	-25.15	74	37.78	38.1	10.3	37.33	300	154	P	H
5180MHz		10360	48.79	-25.21	74	37.72	38.1	10.3	37.33	300	145	P	V
802.11a CH 44		10440	47.65	-26.35	74	36.48	38.15	10.33	37.31	300	201	P	H
5220MHz		10440	47.86	-26.14	74	36.69	38.15	10.33	37.31	100	120	P	V
802.11a CH 48		10480	47.5	-26.5	74	36.26	38.19	10.35	37.3	150	162	P	H
5240MHz		10479	47.53	-26.47	74	36.29	38.19	10.35	37.3	200	162	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		97.9	27.54	-15.96	43.5	49.68	11.82	1.28	35.24	100	154	P	H
		340.4	23.44	-22.56	46	41.65	14.39	2.42	35.02	-	-	P	H
		408.3	18.51	-27.49	46	34.68	16.34	2.67	35.18	-	-	P	H
		631.4	20.24	-25.76	46	32.95	18.81	3.35	34.87	-	-	P	H
		826.37	21.43	-24.57	46	31.28	20.72	3.86	34.43	-	-	P	H
		914.64	24.27	-21.73	46	33.28	21.49	4.06	34.56	-	-	P	H
		36.79	33.42	-6.58	40	51.66	16.08	0.8	35.12	100	147	P	V
		160.95	26.18	-17.32	43.5	48.65	10.81	1.63	34.91	-	-	P	V
		383.08	18.29	-27.71	46	35.22	15.67	2.58	35.18	-	-	P	V
		443.22	19.45	-26.55	46	34.72	16.89	2.78	34.94	-	-	P	V
		620.73	21.4	-24.6	46	34.29	18.71	3.31	34.91	-	-	P	V
		835.1	21.08	-24.92	46	30.74	20.86	3.88	34.4	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 1 - 5150~5250MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz	*	5176	103.23	-	-	97.68	35.03	7.03	36.51	150	357	P	H
	*	5176	93.74	-	-	88.19	35.03	7.03	36.51	150	357	A	H
		5149.65	57.69	-16.31	74	52.18	35.02	7.02	36.53	150	357	P	H
		5149.95	41.29	-12.71	54	35.78	35.02	7.02	36.53	150	357	A	H
	*	5178	91.68	-	-	86.13	35.03	7.03	36.51	150	58	P	V
	*	5176	82.07	-	-	76.52	35.03	7.03	36.51	150	58	A	V
		5149.95	50.62	-23.38	74	45.11	35.02	7.02	36.53	150	58	P	V
		5148.2	36.53	-17.47	54	31.02	35.02	7.02	36.53	150	58	A	V
802.11a CH 44 5220MHz	*	5222	103.88	-	-	98.3	35.03	7.05	36.5	169	355	P	H
	*	5218	94.49	-	-	88.91	35.03	7.05	36.5	169	355	A	H
	*	5222	96.11	-	-	90.53	35.03	7.05	36.5	308	130	P	V
	*	5216	86.64	-	-	81.06	35.03	7.05	36.5	308	130	A	V
802.11a CH 48 5240MHz	*	5242	103.22	-	-	97.59	35.04	7.09	36.5	170	353	P	H
	*	5242	93.67	-	-	88.04	35.04	7.09	36.5	170	353	A	H
		5356.1	51.21	-22.79	74	45.46	35.05	7.2	36.5	170	353	P	H
		5383.9	36.99	-17.01	54	31.2	35.06	7.23	36.5	170	353	A	H
	*	5242	96.77	-	-	91.14	35.04	7.09	36.5	322	128	P	V
	*	5242	87.16	-	-	81.53	35.04	7.09	36.5	322	128	A	V
		5352.05	50.32	-23.68	74	44.57	35.05	7.2	36.5	322	128	P	V
		5388.2	36.74	-17.26	54	30.95	35.06	7.23	36.5	322	128	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36		10360	49.37	-24.63	74	38.3	38.1	10.3	37.33	300	294	P	H
5180MHz		10359	48.45	-25.55	74	37.38	38.1	10.3	37.33	300	232	P	V
802.11a CH 44		10440	47.83	-26.17	74	36.66	38.15	10.33	37.31	162	225	P	H
5220MHz		10440	47.83	-26.17	74	36.66	38.15	10.33	37.31	300	179	P	V
802.11a CH 48		10480	48.24	-25.76	74	37	38.19	10.35	37.3	162	221	P	H
5240MHz		10479	47.8	-26.2	74	36.56	38.19	10.35	37.3	195	216	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38 5190MHz	*	5192	100.63	-	-	95.07	35.03	7.03	36.5	150	176	P	H
	*	5194	91.07	-	-	85.51	35.03	7.03	36.5	150	176	A	H
		5149.45	66.33	-7.67	74	60.82	35.02	7.02	36.53	150	176	P	H
	!	5149.8	48.42	-5.58	54	42.91	35.02	7.02	36.53	150	176	A	H
	*	5194	90.08	-	-	84.52	35.03	7.03	36.5	150	236	P	V
	*	5192	80.76	-	-	75.2	35.03	7.03	36.5	150	236	A	V
		5150	53.32	-20.68	74	47.81	35.02	7.02	36.53	150	236	P	V
	5149.8	39.66	-14.34	54	34.15	35.02	7.02	36.53	150	236	A	V	
802.11n HT40 CH 46 5230MHz	*	5234	100.52	-	-	94.91	35.04	7.07	36.5	150	356	P	H
	*	5234	90.97	-	-	85.36	35.04	7.07	36.5	150	356	A	H
		5369.5	52.58	-21.42	74	46.81	35.06	7.21	36.5	150	356	P	H
		5359.6	38.28	-15.72	54	32.53	35.05	7.2	36.5	150	356	A	H
	*	5234	94.22	-	-	88.61	35.04	7.07	36.5	309	128	P	V
	*	5238	84.5	-	-	78.89	35.04	7.07	36.5	309	128	A	V
		5380.1	50.82	-23.18	74	45.03	35.06	7.23	36.5	309	128	P	V
	5374.65	38.29	-15.71	54	32.52	35.06	7.21	36.5	309	128	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38		10380	46.39	-27.61	74	35.31	38.11	10.3	37.33	150	245	P	H
5190MHz		10380	47.11	-26.89	74	36.03	38.11	10.3	37.33	150	169	P	V
802.11n HT40 CH 46		10460	46.21	-27.79	74	35.03	38.16	10.33	37.31	150	78	P	H
5230MHz		10460	46.67	-27.33	74	35.49	38.16	10.33	37.31	150	174	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 42 5210MHz	*	5202	92.28	-	-	86.72	35.03	7.03	36.5	292	355	P	H
	*	5204	81.86	-	-	76.3	35.03	7.03	36.5	292	355	A	H
		5148.7	60.66	-13.34	74	55.15	35.02	7.02	36.53	292	355	P	H
		5145.2	42.78	-11.22	54	37.27	35.02	7.02	36.53	292	355	A	H
		5364.95	55.24	-18.76	74	49.47	35.06	7.21	36.5	292	355	P	H
		5353.6	40.38	-13.62	54	34.63	35.05	7.2	36.5	292	355	A	H
	*	5208	85.45	-	-	79.87	35.03	7.05	36.5	300	123	P	V
	*	5220	75.01	-	-	69.43	35.03	7.05	36.5	300	123	A	V
		5146.05	51.65	-22.35	74	46.14	35.02	7.02	36.53	300	123	P	V
		5123.7	38.92	-15.08	54	33.43	35.02	7.01	36.54	300	123	A	V
	5350.1	52.18	-21.82	74	46.43	35.05	7.2	36.5	300	123	P	V	
	5354.8	38.65	-15.35	54	32.9	35.05	7.2	36.5	300	123	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80		10420	47.7	-26.3	74	36.56	38.14	10.32	37.32	150	160	P	H
CH 42 5210MHz		10420	46.99	-27.01	74	35.85	38.14	10.32	37.32	150	78	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		97.9	28.54	-14.96	43.5	50.68	11.82	1.28	35.24	100	165	P	H
		195.87	22.23	-21.27	43.5	45.94	9.54	1.82	35.07	-	-	P	H
		328.76	24.35	-21.65	46	42.79	14.13	2.38	34.95	-	-	P	H
		542.16	18.78	-27.22	46	32.11	18.06	3.11	34.5	-	-	P	H
		723.55	21.45	-24.55	46	32.93	19.54	3.62	34.64	-	-	P	H
		914.64	25.27	-20.73	46	34.28	21.49	4.06	34.56	-	-	P	H
		35.82	31.2	-8.8	40	48.77	16.84	0.79	35.2	100	18	P	V
		160.95	22.18	-21.32	43.5	44.65	10.81	1.63	34.91	-	-	P	V
		443.22	17.45	-28.55	46	32.72	16.89	2.78	34.94	-	-	P	V
		620.73	19.4	-26.6	46	32.29	18.71	3.31	34.91	-	-	P	V
		801.15	21.7	-24.3	46	32.11	20.32	3.81	34.54	-	-	P	V
		891.36	24.63	-21.37	46	33.8	21.35	4.01	34.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz
WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		98.8	25.67	-17.83	43.5	47.72	11.96	1.29	35.3	100	231	P	H
		195.87	18.23	-25.27	43.5	41.94	9.54	1.82	35.07	-	-	P	H
		340.4	24.44	-21.56	46	42.65	14.39	2.42	35.02	-	-	P	H
		614.91	21.02	-24.98	46	33.99	18.65	3.3	34.92	-	-	P	H
		723.55	22.45	-23.55	46	33.93	19.54	3.62	34.64	-	-	P	H
		988.36	24.64	-29.36	54	33.13	21.93	4.24	34.66	-	-	P	H
		35.82	32.2	-7.8	40	49.77	16.84	0.79	35.2	120	181	P	V
		162.89	26.02	-17.48	43.5	48.55	10.74	1.64	34.91	-	-	P	V
		443.22	22.45	-23.55	46	37.72	16.89	2.78	34.94	-	-	P	V
		638.19	21.71	-24.29	46	34.32	18.88	3.37	34.86	-	-	P	V
		835.1	25.08	-20.92	46	34.74	20.86	3.88	34.4	-	-	P	V
		891.36	26.63	-19.37	46	35.8	21.35	4.01	34.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz
WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 LF		97.9	30.11	-13.39	43.5	52.25	11.82	1.28	35.24	185	94	P	H
		340.4	26.44	-19.56	46	44.65	14.39	2.42	35.02	-	-	P	H
		578.05	23.28	-22.72	46	36.47	18.37	3.2	34.76	-	-	P	H
		631.4	24.24	-21.76	46	36.95	18.81	3.35	34.87	-	-	P	H
		723.55	25.45	-20.55	46	36.93	19.54	3.62	34.64	-	-	P	H
		914.64	28.27	-17.73	46	37.28	21.49	4.06	34.56	-	-	P	H
		35.82	31.2	-8.8	40	48.77	16.84	0.79	35.2	122	132	P	V
		50.37	30.11	-9.89	40	55.44	8.84	0.93	35.1	-	-	P	V
		160.95	25.18	-18.32	43.5	47.65	10.81	1.63	34.91	-	-	P	V
		420.91	17.21	-28.79	46	33.05	16.54	2.71	35.09	-	-	P	V
		729.37	21.37	-24.63	46	32.74	19.59	3.63	34.59	-	-	P	V
		903	23.52	-22.48	46	32.63	21.42	4.03	34.56	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz	*	5182	103.18	-	-	97.63	35.03	7.03	36.51	174	69	P	H
	*	5182	92.87	-	-	87.32	35.03	7.03	36.51	174	69	A	H
		5146.8	54.44	-19.56	74	48.93	35.02	7.02	36.53	174	69	P	H
		5148.75	42.14	-11.86	54	36.63	35.02	7.02	36.53	174	69	A	H
	*	5178	100.53	-	-	94.98	35.03	7.03	36.51	300	348	P	V
	*	5178	90.44	-	-	84.89	35.03	7.03	36.51	300	348	A	V
		5149	52.55	-21.45	74	47.04	35.02	7.02	36.53	300	348	P	V
	5133.95	38.1	-15.9	54	32.61	35.02	7.01	36.54	300	348	A	V	
802.11n HT20 CH 44 5220MHz	*	5216	102.29	-	-	96.71	35.03	7.05	36.5	300	294	P	H
	*	5216	92.11	-	-	86.53	35.03	7.05	36.5	300	294	A	H
	*	5222	98.87	-	-	93.29	35.03	7.05	36.5	300	329	P	V
	*	5222	88.58	-	-	83	35.03	7.05	36.5	300	329	A	V
802.11n HT20 CH 48 5240MHz	*	5236	102.54	-	-	96.93	35.04	7.07	36.5	300	78	P	H
	*	5236	92.6	-	-	86.99	35.04	7.07	36.5	300	78	A	H
		5396.85	52.14	-21.86	74	46.33	35.06	7.25	36.5	300	78	P	H
		5360.3	38.55	-15.45	54	32.8	35.05	7.2	36.5	300	78	A	H
	*	5242	97.07	-	-	91.44	35.04	7.09	36.5	297	360	P	V
	*	5240	86.96	-	-	81.35	35.04	7.07	36.5	297	360	A	V
		5393.3	51.16	-22.84	74	45.37	35.06	7.23	36.5	297	360	P	V
	5350	38.19	-15.81	54	32.44	35.05	7.2	36.5	297	360	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 36 5180MHz		10360	48.05	-25.95	74	36.98	38.1	10.3	37.33	162	138	P	H
		10359	48.67	-25.33	74	37.6	38.1	10.3	37.33	166	285	P	V
802.11n HT20 CH 44 5220MHz		10440	47.75	-26.25	74	36.58	38.15	10.33	37.31	162	85	P	H
		10440	48.11	-25.89	74	36.94	38.15	10.33	37.31	300	199	P	V
802.11n HT20 CH 48 5240MHz		10480	46.78	-27.22	74	35.54	38.19	10.35	37.3	195	138	P	H
		10479	47.11	-26.89	74	35.87	38.19	10.35	37.3	150	196	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38 5190MHz	*	5198	100.65	-	-	95.09	35.03	7.03	36.5	150	360	P	H
	*	5198	90.67	-	-	85.11	35.03	7.03	36.5	150	360	A	H
		5149.75	61.1	-12.9	74	55.59	35.02	7.02	36.53	150	360	P	H
		5149.65	45.96	-8.04	54	40.45	35.02	7.02	36.53	150	360	A	H
	*	5198	97.16	-	-	91.6	35.03	7.03	36.5	150	281	P	V
	*	5198	87.78	-	-	82.22	35.03	7.03	36.5	150	281	A	V
		5149.25	58.04	-15.96	74	52.53	35.02	7.02	36.53	150	281	P	V
	5149.45	42.54	-11.46	54	37.03	35.02	7.02	36.53	150	281	A	V	
802.11n HT40 CH 46 5230MHz	*	5226	102.04	-	-	96.43	35.04	7.07	36.5	159	3	P	H
	*	5226	92.82	-	-	87.21	35.04	7.07	36.5	159	3	A	H
		5381.8	51.88	-22.12	74	46.09	35.06	7.23	36.5	159	3	P	H
		5361.9	39.09	-14.91	54	33.32	35.06	7.21	36.5	159	3	A	H
	*	5232	93.15	-	-	87.54	35.04	7.07	36.5	330	139	P	V
	*	5232	84.11	-	-	78.5	35.04	7.07	36.5	330	139	A	V
		5394.05	51.42	-22.58	74	45.63	35.06	7.23	36.5	330	139	P	V
	5366.85	38.81	-15.19	54	33.04	35.06	7.21	36.5	330	139	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38		10380	48.08	-25.92	74	37	38.11	10.3	37.33	300	41	P	H
5190MHz		10380	48.86	-25.14	74	37.78	38.11	10.3	37.33	170	194	P	V
802.11n HT40 CH 46		10461	47.4	-26.6	74	36.18	38.18	10.34	37.3	150	165	P	H
5230MHz		10461	46.8	-27.2	74	35.58	38.18	10.34	37.3	150	221	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 36 5180MHz	*	5182	104.1	-	-	98.55	35.03	7.03	36.51	150	331	P	H
	*	5182	94.18	-	-	88.63	35.03	7.03	36.51	150	331	A	H
		5149.1	56.72	-17.28	74	51.21	35.02	7.02	36.53	150	331	P	H
		5148.65	43.82	-10.18	54	38.31	35.02	7.02	36.53	150	331	A	H
	*	5182	101.17	-	-	95.62	35.03	7.03	36.51	150	353	P	V
	*	5182	91.17	-	-	85.62	35.03	7.03	36.51	150	353	A	V
		5145.25	54.51	-19.49	74	49	35.02	7.02	36.53	150	353	P	V
	5148.75	41.37	-12.63	54	35.86	35.02	7.02	36.53	150	353	A	V	
802.11ac VHT20 CH 44 5220MHz	*	5222	102.36	-	-	96.78	35.03	7.05	36.5	150	343	P	H
	*	5222	92.35	-	-	86.77	35.03	7.05	36.5	150	343	A	H
	*	5222	99.96	-	-	94.38	35.03	7.05	36.5	150	353	P	V
	*	5222	89.98	-	-	84.4	35.03	7.05	36.5	150	353	A	V
802.11ac VHT20 CH 48 5240MHz	*	5238	103.93	-	-	98.32	35.04	7.07	36.5	172	88	P	H
	*	5236	93.8	-	-	88.19	35.04	7.07	36.5	172	88	A	H
		5351.9	52.02	-21.98	74	46.27	35.05	7.2	36.5	172	88	P	H
		5385.15	38.04	-15.96	54	32.25	35.06	7.23	36.5	172	88	A	H
	*	5242	98.67	-	-	93.04	35.04	7.09	36.5	300	329	P	V
	*	5242	88.68	-	-	83.05	35.04	7.09	36.5	300	329	A	V
		5397.25	51	-23	74	45.19	35.06	7.25	36.5	300	329	P	V
	5350.6	37.95	-16.05	54	32.2	35.05	7.2	36.5	300	329	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20		10359	49.15	-24.85	74	38.08	38.1	10.3	37.33	162	185	P	H
CH 36		10359	48.25	-25.75	74	37.18	38.1	10.3	37.33	162	145	P	V
5180MHz													
802.11ac VHT20		10440	48.28	-25.72	74	37.11	38.15	10.33	37.31	162	197	P	H
CH 44		10440	47.65	-26.35	74	36.48	38.15	10.33	37.31	300	206	P	V
5220MHz													
802.11ac VHT20		10480	48.01	-25.99	74	36.77	38.19	10.35	37.3	162	195	P	H
CH 48		10479	47.42	-26.58	74	36.18	38.19	10.35	37.3	162	158	P	V
5240MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 38 5190MHz	*	5192	99.56	-	-	94	35.03	7.03	36.5	150	193	P	H
	*	5190	90.25	-	-	84.7	35.03	7.03	36.51	150	193	A	H
		5149.35	59.38	-14.62	74	53.87	35.02	7.02	36.53	150	193	P	H
		5149.5	43.79	-10.21	54	38.28	35.02	7.02	36.53	150	193	A	H
	*	5192	96.55	-	-	90.99	35.03	7.03	36.5	300	247	P	V
	*	5192	87.09	-	-	81.53	35.03	7.03	36.5	300	247	A	V
		5149.8	57.44	-16.56	74	51.93	35.02	7.02	36.53	300	247	P	V
	5149.85	42.5	-11.5	54	36.99	35.02	7.02	36.53	300	247	A	V	
802.11ac VHT40 CH 46 5230MHz	*	5234	102.35	-	-	96.74	35.04	7.07	36.5	150	241	P	H
	*	5234	92.86	-	-	87.25	35.04	7.07	36.5	150	241	A	H
		5368.8	51.67	-22.33	74	45.9	35.06	7.21	36.5	150	241	P	H
		5360.85	38.98	-15.02	54	33.21	35.06	7.21	36.5	150	250	A	H
	*	5226	95.71	-	-	90.1	35.04	7.07	36.5	300	213	P	V
	*	5236	86.46	-	-	80.85	35.04	7.07	36.5	300	213	A	V
		5359.4	51.39	-22.61	74	45.64	35.05	7.2	36.5	300	213	P	V
	5350.35	38.58	-15.42	54	32.83	35.05	7.2	36.5	300	213	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40		10380	48.64	-25.36	74	37.56	38.11	10.3	37.33	150	171	P	H
CH 38 5190MHz		10380	47.56	-26.44	74	36.48	38.11	10.3	37.33	162	245	P	V
802.11ac VHT40		10460	48.16	-25.84	74	36.98	38.16	10.33	37.31	174	115	P	H
CH 46 5230MHz		10461	47.36	-26.64	74	36.14	38.18	10.34	37.3	169	205	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 42 5210MHz	*	5208	93.74	-	-	88.16	35.03	7.05	36.5	300	65	P	H
	*	5208	83.27	-	-	77.69	35.03	7.05	36.5	300	65	A	H
		5144.55	58.23	-15.77	74	52.72	35.02	7.02	36.53	300	65	P	H
		5148.75	44.24	-9.76	54	38.73	35.02	7.02	36.53	300	65	A	H
		5371.6	55.3	-18.7	74	49.53	35.06	7.21	36.5	300	65	P	H
		5352.85	38.98	-15.02	54	33.23	35.05	7.2	36.5	300	65	A	H
	*	5210	95.61	-	-	90.03	35.03	7.05	36.5	150	252	P	V
	*	5198	84.3	-	-	78.74	35.03	7.03	36.5	150	252	A	V
		5146.95	60.39	-13.61	74	54.88	35.02	7.02	36.53	150	252	P	V
		5145.7	45.58	-8.42	54	40.07	35.02	7.02	36.53	150	252	A	V
	5350.15	52.44	-21.56	74	46.69	35.05	7.2	36.5	150	252	P	V	
	5360.25	38.44	-15.56	54	32.69	35.05	7.2	36.5	150	252	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80		10420	48.22	-25.78	74	37.08	38.14	10.32	37.32	169	52	P	H
CH 42 5210MHz		10419	47.18	-26.82	74	36.04	38.14	10.32	37.32	159	78	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz
WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 LF		97.9	27.54	-15.96	43.5	49.68	11.82	1.28	35.24	132	221	P	H
		195.87	21.23	-22.27	43.5	44.94	9.54	1.82	35.07	-	-	P	H
		340.4	26.44	-19.56	46	44.65	14.39	2.42	35.02	-	-	P	H
		491.72	22.19	-23.81	46	36.62	17.25	2.93	34.61	-	-	P	H
		691.54	23.83	-22.17	46	35.88	19.25	3.54	34.84	-	-	P	H
		741.98	23.98	-22.02	46	35.08	19.72	3.66	34.48	-	-	P	H
		38.73	30.19	-9.81	40	49.78	14.56	0.82	34.97	145	216	P	V
		160.95	23.18	-20.32	43.5	45.65	10.81	1.63	34.91	-	-	P	V
		341.37	19.29	-26.71	46	37.49	14.41	2.42	35.03	-	-	P	V
		540.22	20.77	-25.23	46	34.16	18.02	3.1	34.51	-	-	P	V
		620.73	20.4	-25.6	46	33.29	18.71	3.31	34.91	-	-	P	V
		835.1	21.08	-24.92	46	30.74	20.86	3.88	34.4	-	-	P	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against limit line. 												



Emission below 1GHz
WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		97.9	23.54	-19.96	43.5	45.68	11.82	1.28	35.24	100	203	P	H
		195.87	16.23	-27.27	43.5	39.94	9.54	1.82	35.07	-	-	P	H
		340.4	25.44	-20.56	46	43.65	14.39	2.42	35.02	-	-	P	H
		548.95	21.14	-24.86	46	34.33	18.18	3.13	34.5	-	-	P	H
		691.54	22.83	-23.17	46	34.88	19.25	3.54	34.84	-	-	P	H
		884.57	23.77	-22.23	46	32.97	21.31	3.99	34.5	-	-	P	H
		35.82	30.2	-9.8	40	47.77	16.84	0.79	35.2	122	188	P	V
		162.89	24.02	-19.48	43.5	46.55	10.74	1.64	34.91	-	-	P	V
		357.86	18.33	-27.67	46	36.11	14.85	2.48	35.11	-	-	P	V
		620.73	20.4	-25.6	46	33.29	18.71	3.31	34.91	-	-	P	V
		747.8	20.64	-25.36	46	31.62	19.78	3.67	34.43	-	-	P	V
		891.36	24.63	-21.37	46	33.8	21.35	4.01	34.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz
WIFI 802.11ac VHT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT20 LF		97.9	30.11	-13.39	43.5	52.25	11.82	1.28	35.24	185	94	P	H
		340.4	26.44	-19.56	46	44.65	14.39	2.42	35.02	-	-	P	H
		578.05	23.28	-22.72	46	36.47	18.37	3.2	34.76	-	-	P	H
		631.4	24.24	-21.76	46	36.95	18.81	3.35	34.87	-	-	P	H
		723.55	25.45	-20.55	46	36.93	19.54	3.62	34.64	-	-	P	H
		914.64	28.27	-17.73	46	37.28	21.49	4.06	34.56	-	-	P	H
		35.82	31.2	-8.8	40	48.77	16.84	0.79	35.2	122	132	P	V
		50.37	30.11	-9.89	40	55.44	8.84	0.93	35.1	-	-	P	V
		160.95	25.18	-18.32	43.5	47.65	10.81	1.63	34.91	-	-	P	V
		420.91	17.21	-28.79	46	33.05	16.54	2.71	35.09	-	-	P	V
		729.37	21.37	-24.63	46	32.74	19.59	3.63	34.59	-	-	P	V
		903	23.52	-22.48	46	32.63	21.42	4.03	34.56	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz
WIFI 802.11ac VHT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT40 LF		34.85	27.77	-12.23	40	44.66	17.6	0.78	35.27	132	162	P	H
		160.95	20.82	-22.68	43.5	43.29	10.81	1.63	34.91	-	-	P	H
		253.1	19.34	-26.66	46	40.59	11.52	2.09	34.86	-	-	P	H
		328.76	26.35	-19.65	46	44.79	14.13	2.38	34.95	-	-	P	H
		614.91	20.02	-25.98	46	32.99	18.65	3.3	34.92	-	-	P	H
		773.02	21.29	-24.71	46	31.99	20.03	3.74	34.47	-	-	P	H
		35.82	32.2	-7.8	40	49.77	16.84	0.79	35.2	102	78	P	V
		160.95	21.18	-22.32	43.5	43.65	10.81	1.63	34.91	-	-	P	V
		316.15	15.55	-30.45	46	34.23	13.86	2.33	34.87	-	-	P	V
		556.71	18.58	-27.42	46	31.75	18.24	3.15	34.56	-	-	P	V
		686.69	19.79	-26.21	46	31.88	19.22	3.53	34.84	-	-	P	V
		989.33	22.68	-31.32	54	31.16	21.94	4.25	34.67	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz
WIFI 802.11ac VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 LF		97.9	25.54	-17.96	43.5	47.68	11.82	1.28	35.24	144	100	P	H
		195.87	19.23	-24.27	43.5	42.94	9.54	1.82	35.07	-	-	P	H
		340.4	24.44	-21.56	46	42.65	14.39	2.42	35.02	-	-	P	H
		631.4	21.24	-24.76	46	33.95	18.81	3.35	34.87	-	-	P	H
		723.55	22.45	-23.55	46	33.93	19.54	3.62	34.64	-	-	P	H
		914.64	25.27	-20.73	46	34.28	21.49	4.06	34.56	-	-	P	H
		38.73	33.19	-6.81	40	52.78	14.56	0.82	34.97	185	100	P	V
		50.37	31.11	-8.89	40	56.44	8.84	0.93	35.1	-	-	P	V
		160.95	22.18	-21.32	43.5	44.65	10.81	1.63	34.91	-	-	P	V
		482.99	18.59	-27.41	46	33.16	17.2	2.9	34.67	-	-	P	V
		571.26	18.58	-27.42	46	31.75	18.33	3.19	34.69	-	-	P	V
		891.36	21.63	-24.37	46	30.8	21.35	4.01	34.53	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.