Radio Test Report
ARIB STD-T71
MIC notice 88 Appendix 45

Client Information:

Applicant:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Applicant add.:	F2, Building 3 , Li jincheng Industrial Park , Industrial east Road, Longhua Street, Longhua District,ShenZhen City, China

Product Information:

Product Name:	Tablet PC
Model No.:	HiPad X
Serial Model:	N/A
Brand Name:	CHUWI

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

No.22, Jinqianling Third Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

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Date of Receipt:	June 15, 2022	Date of Test:	June 15~June 23, 2022
Date of Issue:	June 24, 2022	Test Result:	Pass

This device has been tested and found to comply with the stated standard(s), indicated in the test report and are applicable only to the tested sample identified in the report.

Reviewed by: Simba Huang Simba huang

Approved by: Seal-Chen Seal.chen

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Test Requirement	Description of Test	Result
MIC Notice No.88 Appendix No.45 Article 2, paragraph 1, item 19-3	Frequency Error	Complies
	Occupied Bandwidth (99%)	Complies
	RF Output Power/Tolerance	Complies
	E.I.R.P	Complies
	Unwanted Emission Strength	Complies
	Adjacent Channel Leakage Power	Complies
	Out-Band Leakage Power	Complies
	Secondary Radiation Emission Strength	Complies
	Transmission Burst Length	Complies
	Interference Prevention Function	Complies
	Carrier Sensing Function	Complies
	Construction Protection Confirmation	Complies

1.1 TEST FACILITY

Dongguan Yaxu (AiT) Technology Limited
Add. : No.22, Jinqianling Third Street, Jitigang, Huangjiang,Dongguan, Guangdong, China
IC Registration No.:6819A-1
CNAS Registration No.:L6177

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

No.	Item	Uncertainty
1	Frequency Error / 99% & 90% Bandwidth	± 0.85 x 10^{-7}
2	Antenna Power	± 0.70 dB
3	Spurious Emissions	± 0.80 dB
4	DC / AC Power Source	±1.4%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Manufacturer:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Manufacturer Address:	F2, Building 3 , Li jincheng Industrial Park , Industrial east Road, Longhua Street, Longhua District,ShenZhen City, China
Product Name:	Tablet PC
Model No.:	HiPad X
Brand Name:	CHUWI
Derivative model No.:	N/A
Operating Frequency	802.11a/n/ac:5180.0MHz ~ 5240.0MHz
Type of Modulation:	OFDM
Number of Channels	4 Channels for 20MHz bandwidth(5180-5240MHz) 2 Channels for 40MHz bandwidth(5190-5230MHz) 1 Channels for 80MHz bandwidth(5210MHz)
Antenna Type	FPCB Antenna
Antenna gain:	1.20dBi(2.4GHz), 0.8dBi(5.2GHz)
Normal antenna power:	W52: 802.11a:0.5 mW/MHz 802.11n(HT20):0.5mW/MHz 802.11n(HT40):0.5 mW/MHz 802.11ac(HT20):0.5mW/MHz 802.11ac(HT40):0.5 mW/MHz 802.11 ac(HT80):0.2mW/MHz
Power Supply Range:	DC 3.8V form battery
Normal Test Voltage:	The same as above
Hard Ware Version:	Z101L
Soft Ware Version:	V1.0
Model difference:	N/A

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11a /n(20) /ac 20: CH36/ CH40/ CH 48,
Mode 2	802.11n(40)/ac40: CH 38/ CH 46,
Mode 3	802.11ac(80) CH 42

Final Test Mode	Description
Mode 1	802.11a /n(20) /ac 20: CH36/ CH40/ CH 48,
Mode 2	802.11n(40)/ac40: CH 38/ CH 46
Mode 3	802.11ac(80) CH 42

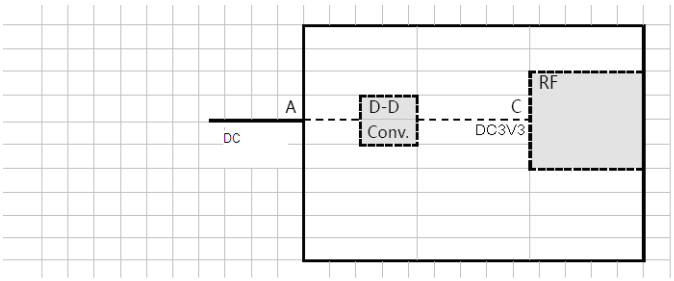
Note: This device 5GHz and 2.4GHz can not transmit simultaneously.

3. TEST CONDITIONS

The WIFI module was tested while in a continuous transmitter/receiver mode.

Power supply: The EUT has the input voltage to the circuit of RF unit complies with output voltage limitation (±1%) against input voltage fluctuation (±10%).

So, all measurements were conducted at only rated voltage DC 3.8V.



Test below:
1: The fluctuation of C point is under ±1%, when input voltage from A point to the test equipment is fluctuated by ±10%.

The measurement result of the voltage fluctuation at RF circuit when DC 3.8V +/- 10%

DC 3.8V	DC3V3
3.8V	3.33V
4.2V	3.33V
3.4V	3.33V

Pre-test the EUT in all voltage mode at the DC 4.2V, DC 3.8V and DC3.4V and conducted to determine the worst-case mode, only the worst-case results (DC 3.8V) are recorded in this report.

The EUT has the input voltage to the circuit of RF unit complies with output voltage limitation (±1%) against input voltage fluctuation (±10%).

So, all measurements were conducted at only rated voltage DC 3.8V.

Temperature: 5.0 -35.0 °C

Humidity: 45-85 % RH

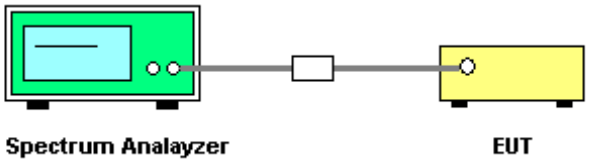
Atmospheric Pressure: 1000 -1010 mbar

Parameters of test software setting

During testing channel & power controlling software provided by the manufacturer was used to control the operating channel as well as the output power level.

Test software Version	Test program: Enter EngineerMode		
Channels	Low	Middle	High
802.11a Parameters	9	9	9
802.11n(20) Parameters	9	9	9
802.11 n(40) Parameters	8	8	8
802.11 ac(20) Parameters	9	9	9
802.11 ac(40) Parameters	8	8	8
802.11 ac(80) Parameters	9	9	9

3.1 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.2 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Tablet PC	CHUWI	HiPad X	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

3.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date	Cal. Lab
1	SIGNAL Analyzer	R&S	FSV40	101470	2021.08.30	2022.08.29	Guangzhou Lisai
2	EMI Measuring Receiver	R&S	ESR	101660	2021.08.30	2022.08.29	Guangzhou Lisai
3	Mobile phone	Samsung	GALAXY S4	R33D20 SQYNW	N/A	N/A	N/A
4	DC Power supply	Manson	HCS-3604	G521100129	2021.08.30	2022.08.29	Guangzhou Lisai
5	Digital Phosphor Oscilloscope	Tektronix	TDS3012	B021220	2021.08.30	2022.08.29	Guangzhou Lisai
6	Signal Generator	Agilent	N5182A	MY50143009	2021.08.30	2022.08.29	Guangzhou Lisai

4. RF SHIELDING METHOD

The product applies for Japan RF certification. We use shiled for preventing end- user to access RF parts easily. The shiled can only be opened by forced, which will result in damaging the case.Please refer to following for photo for details.

5. FREQUENCY ERROR

5.1 LIMIT

Item	Limits
Frequency Error	+/-20ppm

5.2 MEASURING INSTRUMENTS AND SETTING

The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.3 TEST PROCEDURES

(1)In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.

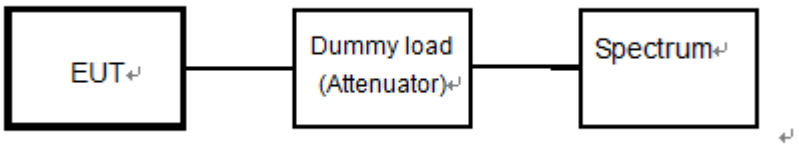
(2)In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.

(3)In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.

(4)In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

5.4 TEST SETUP LAYOUT



5.5 EUT OPERATION DURING TEST

The EUT was placed on the test table and programmed in un-modulation function.

5.6 TEST RESULT:

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Please refer to Appendix C.1

NOTE:

*1).*The nominal frequency shall be confirmed by the applicant and test lab.

2). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

6. OCCUPIED BANDWIDTH MEASUREMENT (99% POWER BANDWIDTH)

6.1 LIMIT

Band	Limits
For W52 & W53 & W56 Band	≤18MHz(20MHz Mode OFDM,DSSS,etc.) ≤20MHz(20MHz Mode OFDM) ≤40MHz (40MHz Mode OFDM) ≤80MHz (80MHz Mode OFDM)

6.2 TEST PROCEDURES

1. Setting of SA is following as: RBW: 300KHz /VBW:300KHz/Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
2. EUT have transmitted each modulation signal and fixed channelize (For DSSS or OFDM Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than specific value as section 3.2.1.

6.3 TEST SETUP LAYOUT

6.4 TEST DEVIATION

There is no deviation with the original standard.

6.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULT:

Test result:

Please refer to Appendix C.4

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

7. SPREAD BANDWIDTH MEASUREMENT

7.1 LIMIT

Item	Limits
Spread Bandwidth	≥500kHz

7.2 MEASURING INSTRUMENTS AND SETTING

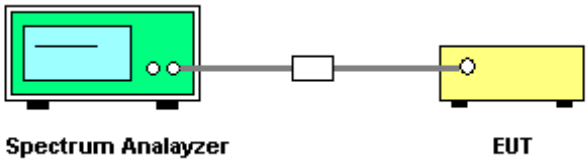
TEST PROCEDURES

1. Setting of SA is following as: RBW: 300KHz I VBW: 300KHz / Sweep Mode: Continuous sweep /Detect mode: Positive peak / Trace mode: Max hold.

2. EUT have transmitted each modulation signal and fixed channelize (For DSSS Device) or continuous maximum power of hopping mode (For FHSS Device).

3. SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and must greater than 500kHz.

7.3 TEST SETUP LAYOUT



7.4 TEST DEVIATION

There is no deviation with the original standard.

7.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULT:

Please refer to Appendix C.5

NOTE:
1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;
Test result: The unit does meet the requirements.

8. SPURIOUS EMISSIONS FOR TRANSMITTER MEASUREMENT AND OUT-BAND LEAKAGE POWER

8.1 LIMIT

Clause	Condition	Frequency (MHz)	Limit
Article 2-1, Item 19-3	W52 Band, 18-20 Mhz Bandwidth f=MHz difference from 5240MHz	5142 or less	2.5 μ W/MHz
		5142 – 5150	15 μ W/MHz
		5250 -5250.2	10*(1-(8/3)(f-9.75))mW/MHz
		5250.2 -5251	10*(1-(f-9))mW/MHz
		5251 – 5260	10*((-1-(8/90)(f-11)))mW/MHz
		5260 – 5266.7	10*(-1.8-(6/50)(f-20))mW/MHz
		5266.7 or more	2.5mW/MHz
	W52 Band, 40 Mhz Bandwidth f=MHz difference from 5230MHz	5141.6 or less	2.5 μ W/MHz
		5141.6 – 5150	15 μ W/MHz
		5250 – 5251	10*(-(f-20)+log(1/2))
		5251 – 5270	10*(-(8/190)(f-21)-1+log(1/2))
		5270 – 5278.4	10*(-(3/50)(f-40)-1.8+log(1/2))
		5278.4 or more	2.5 μ W/MHz
	W52 Band, 80 Mhz Bandwidth f=MHz difference from 5210MHz	5123.2 or less	2.5 μ W/MHz
		5123.2 - 5150	15 μ W/MHz
		5250 - 5251	10*(-(f-40)+log(1/4)) mW/MHz
		5251 - 5290	10*(-(8/390)(f-41)-1+log(1/4)) mW/MHz
		5290 – 5296.7	10*(-(3/100)(f-80)-1.8+log(1/4)) mW/MHz
		5296.7 or more	2.5 μ W/MHz

Article 2-1, Item 19-3 W53:

20MHz system	
OBW : 18MHz or less	OBW : 18 - 20 MHz
5,233.3 MHz or less : 2.5 μW/MHz	5,233.3 MHz or less : 2.5 μW/MHz
5,233.3 - 5,240 MHz : $10^{-1.8-(6/50)(f-20)}$mW/MHz	5,233.3 - 5,240 MHz : $10^{-1.8-(6/50)(f-20)}$mW/MHz
5,240 - 5,249 MHz : $10^{-1-(8/90)(f-11)}$mW/MHz	5,240 - 5,249 MHz : $10^{-1-(8/90)(f-11)}$mW/MHz
5,249 - 5,250 MHz : $10^{1-(f-9)}$mW/MHz	5,249 - 5,249.8 MHz : $10^{1-(f-9)}$mW/MHz
5,350 MHz or more : 2.5 μW/MHz	5,249.8 - 5,250 MHz : $10^{1-(8/3)(f-9.75)}$mW/MHz
	5,350 MHz or more : 2.5 μW/MHz
f = MHz, Difference from 5260 (MHz)	f = MHz, Difference from 5260 (MHz)

40MHz system	80MHz system
5,221.6 MHz or less : 2.5 μW/MHz	5,203.3 MHz or less : 2.5 μW/MHz
5,221.6 - 5,230 MHz : $10^{-(3/50)(f-40)-1.8+\log(1/2)}$mW/MHz	5,203.3 - 5,210 MHz : $10^{-(3/100)(f-80)-1.8+\log(1/4)}$mW/MHz
5,230 - 5,249 MHz : $10^{-(8/190)(f-21)-1+\log(1/2)}$mW/MHz	5,210 - 5,249 MHz : $10^{-(8/390)(f-41)-1+\log(1/4)}$mW/MHz
5,249 - 5,250 MHz : $10^{-(f-20)+log(1/2)}$mW/MHz	5,249 - 5,250 MHz : $10^{-(f-40)+log(1/4)}$mW/MHz
5,350 - 5,358.4 MHz : 15 μW/MHz	5,350 - 5,376.8 MHz : 15 μW/MHz
5,358.4 MHz or more : 2.5 μW/MHz	5,376.8 MHz or more : 2.5 μW/MHz
f = MHz, Difference from 5270 (MHz)	f = MHz, Difference from 5290 (MHz)

Article 2-1, Item 19-3 W56:

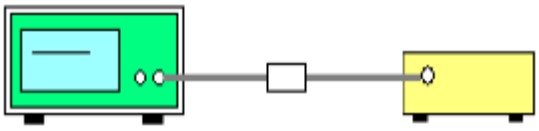
20MHz system	
DSSS, etc.	OFDM
5,470 MHz or less : 12.5 uW/MHz	5,460 MHz or less : 2.5 uW/MHz
	5,460 - 5,470 MHz : 12.5 uW/MHz
5,730 MHz or more : 12.5 uW/MHz	5,745 - 5,765 MHz : 12.5 uW/MHz
	Over 5,765 MHz : 2.5 uW/MHz

40MHz system	80MHz system
5,460 MHz or less : 12.5 uW/MHz	5,460 MHz or less : 12.5 uW/MHz
5,460 - 5,470 MHz : 50 uW/MHz	5,460 - 5,469.5 MHz : 50 uW/MHz
5,770 MHz or more : 12.5 uW/MHz	5,469.5 - 5,470 MHz : 51.2 uW/MHz
	5,770 MHz or more : 12.5 uW/MHz

8.2. TEST PROCEDURES

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RB:100KHz / VB:100KHz
Above 1GHz RB:1MHz / VB:1MHz / AT: 10dB Ref: 0dBm / Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 0.25μW.
4. SA adjusted to start frequency and stop frequency 26GHz .Then to mark peak reading value + cable loss shall be less than 2.5uW/MHz.
5. If the Result Value is over the requirement, we need to measurement as below steps
6. Span 1~10MHz to find the frequency that have maximum value.
7. Setting of SA is following as: Span: Zero/RBW: 100KHz/VBW: 100KHz under 1GHz, Sweep time: Auto / Sweep Mode: Singled sweep / Detect mode: Sample.
8. Calculated the mean power value, add all value of test point and division sample point number.
9. Report the mean power

8.3. TEST SETUP LAYOUT



8.4. TEST DEVIATION

There is no deviation with the original standard.

8.5. TEST RESULT:

Please refer to Appendix C.6

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

9. ADJACENT CHANNEL POWER TOLERANCE

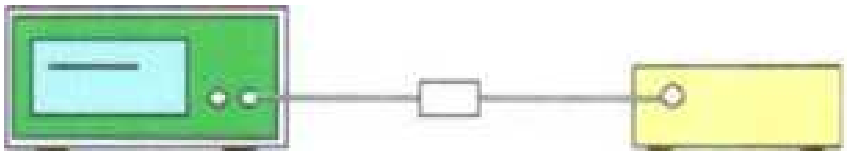
9.1 LIMIT

20MHz system		40MHz system	80MHz system	160MHz system
DSSS, etc	OFDM	OFDM	OFDM	OFDM
Fc±20MHz ±9MHz BW：-25dBc	Fc±20MHz ±10MHz BW：-25dBc	Fc±40MHz ±20MHz BW：-25dBc	Fc±80MHz ±40MHz BW：-25dBc	Fc±80MHz ±40MHz BW：-25dBc
Fc±40MHz ±9MHz BW：-40dBc	Fc±40MHz ±10MHz BW：-40dBc	Fc±80MHz ±20MHz BW：-40dBc		

9.2 TEST PROCEDURES

1. EUT has the continuous reception mode and fixed only one channelize.
2 .SA set RBW: 300KHz and VBW: 300KHz, Span 120MHz (BW=20MHz)/240MHz (BW=40MHz) /480MHz (BW=80MHz),RMS Detector, trace Maximum Hold and use ACLR Option.
3. Frequency spacing and measuring bandwidth be specified in section 3.6.1.
4. Reporting the worst value

9.3 TEST SETUP



9.4 TEST DEVIATION

There is no deviation with the original standard.

9.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

9.6 TEST RESULT:

Please refer to Appendix C.9

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

10. RF OUTPUT POWER / TOLERANCE

Band	Item	Limits
W52 Band W53 Band W56 Band	Antenna Power Density	≤10mW(Other)or≤10mW/MHz(DS,OBW≤20MHz) ≤10mW/MHz(OFDM,OBW≤20MHz) ≤5mW/MHz (OFDM,OBW≤40MHz) ≤2.5 mW/MHz (OFDM,OBW≤80MHz)
W52 Band W53 Band	Antenna Power Error	+20%, -80%
W56 Band	Antenna Power Error	+50%, -50%

10.1 TEST DEVIATION

There is no deviation with the original standard.

10.2 EUT OPERATION DURING TEST

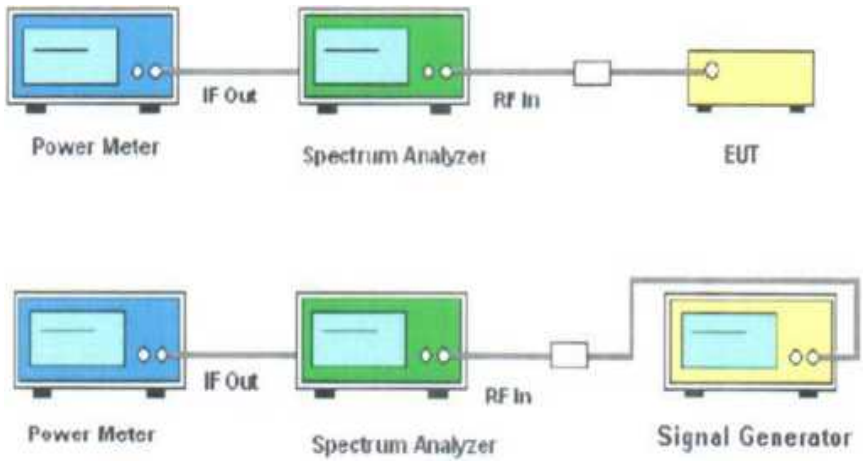
The EUT was programmed to be in continuously transmitting mode.

10.3 TEST PROCEDURES

1. A power meter is connected on the IF output port of the spectrum analyzer.
2. Adjust the spectrum analyzer to have the center frequency the same with the measured carrier. RBW=VBW=1MHz, detector mode is positive peak. Turn off the averaging function and use zero span.
3. The calibrating signal power shall be reduced to 0dBm and it shall be verified that the power meter reading also reduces by 10dB.
4. Connect the equipment to be measured. Using the following settings of the spectrum analyzer in combination with "max hold" function, find the frequency of highest power output in the power envelope: center frequency equal to operating frequency; RBW&VBW:1MHz; detector mode: positive peak; averaging: off; span: 3 times the spectrum width; amplitude: adjust for middle of the instrument's range. The frequency found shall be recorded.
5. Set the center frequency of the spectrum analyzer to the found frequency and switch to zero span. The power meter indicates the measured power density “E”.
6. Remove the EUT and put the replacing standard signal generator (SSG). Set the standard signal generator (SSG) at same frequency and transmit on, then set SSG output power at Pt to give the equivalent output level of "E”.
7. Calculate antenna power density by the formula below PD=Pt+10*log(1/x).x:The duty cycle of the EUT in continuously transmitting mode

   Pt: Output power of the SSG
8. Antenna Power Error is definition that actual measure antenna power tolerance between +20%to-80% power range that base on manufacturer declare the conducted power density.

10.4 TEST SETUP



10.5 TEST RESULT:

Please refer to Appendix C.2

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

11. E.I.R.P MEASUREMENT

11.1 LIMIT

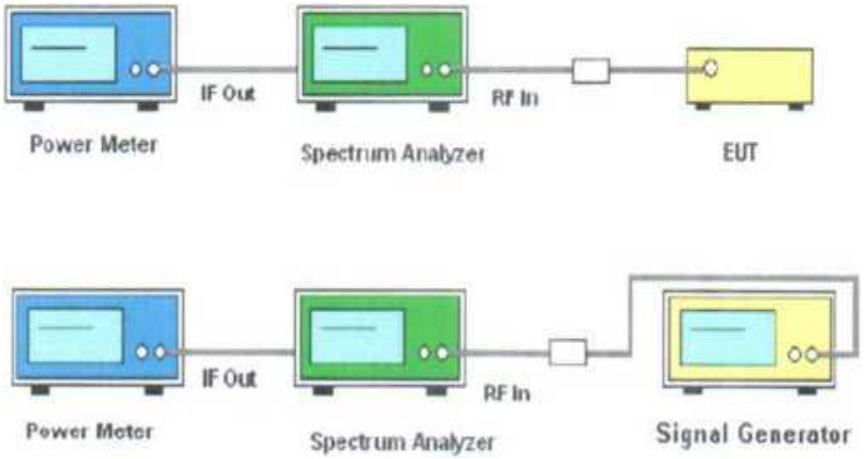
Operation Band	item		20MHz system		40MHz system	80MHz system	160MHz system
W52&W53	Antenna Power		DSSS,etc	OFDM	OFDM	OFDM	OFDM
			10mW/MHz	10mW/MHz	5mW/MHz	2.5mW/MHz	1.25mW/MHz
	Antenna power Tolerance		+20%, -80%				
	EIRP	W52	10mW/MHz		5mW/MHz	2.5mW/MHz	1.25mW/MHz
		W53	10mW/MHz: with TPC 5mW/MHz: without TPC		5mW/MHz: with TPC 2.5mW/MHz: without TPC	2.5mW/MHz: with TPC 1.25mW/MHz: without TPC	1.25mW/MHz: with TPC 0.625mW/MHz: without TPC
W56	Antenna Pwer		DSSS,etc	OFDM	OFDM	OFDM	OFDM
			10mW/MHz	10mW/MHz	5mW/MHz	2.5mW/MHz	1.25mW/MHz
	Antenna power Tolerance		+50%, -50%				
	EIRP		50mW/MHz: with TPC 25mW/MHz: without TPC		25mW/MHz: with TPC 12.5mW/MHz: without TPC	12.5mW/MHz: with TPC 6.25mW/MHz: without TPC	1.25mW/MHz: with TPC 0.625mW/MHz: without TPC

11.2 TEST PROCEDURES

1. A power meter is connected on the IF output port of the spectrum analyzer.
2. Adjust the spectrum analyzer to have the center frequency the same with the measured carrier. RBW=VBW=1MHz, detector mode is positive peak. Turn off the averaging function and use zero span.
3. The calibrating signal power shall be reduced to 0dBm and it shall be verified that the power meter reading also reduces by 10dB.
4. Connect the equipment to be measured. Using the following settings of the spectrum analyzer in combination with "max hold" function, find the frequency of highest power output in the power envelope: center frequency equal to operating frequency; RBW&VBW:1MHz; detector mode: positive peak; averaging: off; span: 3 times the spectrum width; amplitude: adjust for middle of the instrument's range. The frequency found shall be recorded.
5. Set the center frequency of the spectrum analyzer to the found frequency and switch to zero span. The power meter indicates the measured power density “E”.
6. Remove the EUT and put the replacing standard signal generator (SSG). Set the standard signal generator (SSG) at same frequency and transmit on, then set SSG output power at Pt to give the equivalent output level of "E”.
7. Calculate antenna power density by the formula below PD=Pt+10*log(1/x).x:The duty cycle of the EUT in continuously transmitting mode

   Pt: Output power of the SSG
8. Antenna Power Error is definition that actual measure antenna power tolerance between +20%to-80% power range that base on manufacturer declare the conducted power density.
9. EIRP=conductedpower+antennagain

11.3 TEST SETUP



11.4 TEST DEVIATION

There is no deviation with the original standard.

11.5 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

11.6 TEST RESULT OF TRANSMISSION ANTENNA GAIN (EIRP ANTENNA POWER)

Please refer to Appendix C.3

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

2).EIRP=conductedpower+antennagain

Test result: The unit does meet the requirements.

12. SPURIOUS EMISSIONS FOR RECEIVER

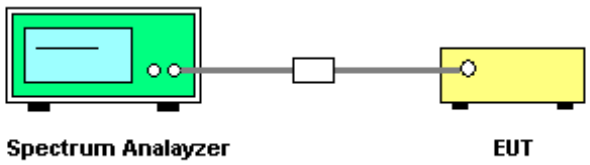
12.1 LIMIT

Item	Limits
Rx Spurious Emission	≤4nW (f<1GHz)
	≤20nW (1GHz≤f)

12.2 TEST PROCEDURE

1. EUT have the continuous reception mode and fixed only one channelize.
2. SA set RBW:100KHz and VBW: 100KHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW.
3. SA set RBW: 1MHz and VBW: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW.
4. If power level of lower emissions are more than 1/10 of limit (.0.4nW for f < 1GHz, 2nW for f >=1GHz), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

12.3 TEST SETUP LAYOUT



12.4 TEST DEVIATION

There is no deviation with the original standard.

12.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously reception mode.

12.6 TEST RESULT OF LIMITATION OF COLLATERAL EMISSION OF RECEIVER

Please refer to Appendix C.8

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

13. TRANSMISSION BURST LENGTH

13.1 LIMITS OF BURST LENGTH

Item	Limits
Transmission Burst	≤8ms

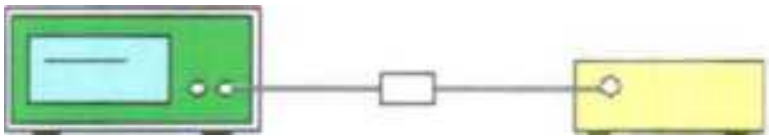
13.2 MEASURING INSTRUMENTS

See list of measuring instruments of this test report.

13.3 TEST PROCEDURES

1. Setting of SA is following as: RBW: 1MHz/VBW:1MHz /Sweep Mode:Single sweep/Detect mode: Positive peak/Zero Span I Sweet time: more than burst length.
2. Measure the maximum time duration of one burst length.

13.4 TEST SETUP



Spectrum Analyzer EUT

13.5 TEST DEVIATION

There is no deviation with the original standard.

13.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

13.7 TEST RESULT OF TRANSMISSION BURST LENGTH

Please refer to Appendix C.7

NOTE:

1). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80;

Test result: The unit does meet the requirements.

14. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

14.1 LIMIT

Item	Limits
Identification code	≧48 bits

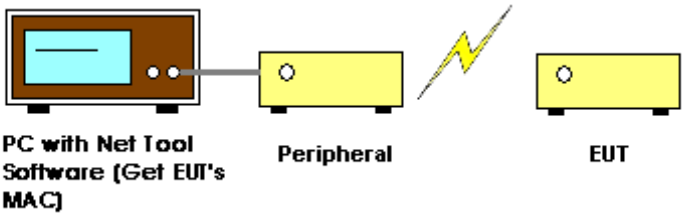
14.2 MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

14.3 TEST PROCEDURES

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification ocde: a. Transmit the predetermined identification codes form the counterpart. b . Check if communication is normal. c. Transmit the signals other than predetermined ID codes form the counterpart. d. check if the EUT stops the transmission, or if it displays that idnetification codes are different from the predetermined ones.

14.4 TEST SETUP LAYOUT



14.5 TEST DEVIATION

There is no deviation with the original standard.

14.6 EUT OPERATION DURING TEST

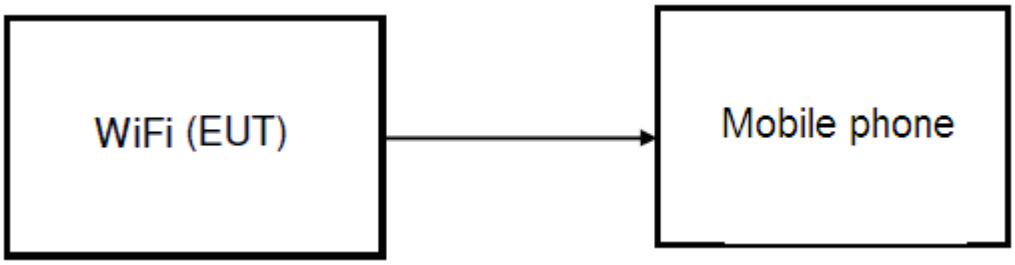
The EUT was programmed to be in normal transmitting mode.

14.7 TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT

EUT：	Tablet PC	Test Date:	June 22,2022
Temperature:	25^{0}C	Tested by:	Simba Huang
Humidity:	55 % RH	Test result:	CONFORM

The device consists of the PIFA antenna and 5 GHz WIFI IC; Component IC CPU also can use the protocol function to protect interference come from outside.

We can use the EUT connect a Mobile phone as AP to detect WiFi ID information, Test configuration:



Test Procedure:

The measuring method is according to MIC Notice No.88 Appendix No.43. Run the WiFi and keep WiFi connecting at Mobile phone. The MIC address will be found in the incoming settings.

Test Results:

WAN Configuration	
Attain IP Protocol	Getting IP from DHCP server...
MAC Address	A0:08:2B:22:03:05:1A

Test result: The unit does meet the requirements.

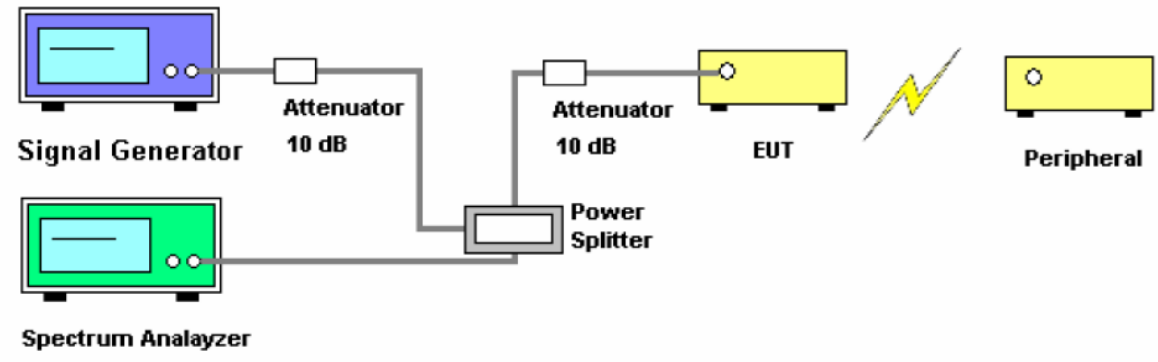
15. CARRIER SENSE CAPABILITY

15.1 LIMIT

EUT stop RF transmission signal after carrier inject to EUT

15.2 TEST PROCEDURE

Measurement System Diagram



1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is (on 22.79+G-20*log(f)dBm)(G is the antenna gain, f is the test frequency).
2. turn off the RF signal of the SG.
3. EUT have transmitted the maximum modulation signal and fixed channelize.
4. Setting of SA :RBW/VBW=1MHz/1MHz,Span=50MHz,Sweep time=auto, Sweep mode=continuous, Detect mode=positive peak
5. SG RF signal on.
6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous transmitted signal.

Test Mode	Normal Voltage	High Voltage	Low Voltage
802.11 n40	OK	OK	OK
802.11 ac40	OK	OK	OK
802.11 ac80	OK	OK	OK

Pin=22.79+Gr-20*log(freq_MHz)[dBm]
Limit:100mw/m eirp
Confirmed at -50dBm
Result:OK

EUT TEST PHOTO

Measurement Photos