



TEST REPORT

Applicant:Shenzhen CWELL Electronic Technology Co., Ltd.Address:&th Floor, Building 4, Block A, Hongchuang Technology Center,
Xikeng Community, Fucheng Street, Longhua District, 518110,
Shenzhen, ChinaProduct Name:4G Android PoC RadioFCC ID:2A8NJ-F41
47 CFR Part 15, Subpart E(15.407)
FCC KDB 905462 D02 UNII DFS Compliance Procedures New
Rules v02Report Number:2402T74162E-RF-00E
Report Date:2024/11/4

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

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Report No.: 2402T74162E-RF-00E

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402T74162E-RF-00E	Original Report	2024/11/4

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	4G Android PoC Radio
EUT Model:	F41
Multiple Models:	F51, F81, T60
Operation Frequency:	Band2: 5260-5320 MHz (802.11a/n ht20) 5270-5310 MHz(802.11n ht40)
Maximum Average Output Power (Conducted):	11.02dBm
Modulation Type:	802.11a/n: OFDM-BPSK, QPSK, 16QAM, 64QAM
Rated Input Voltage:	DC 3.8V from battery or DC 5.0V from adapter or DC 5.0V from Base
Serial Number:	2KWI-4
EUT Received Date:	2024/5/9
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.2 Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
Adapter	Shenzhen Fanyajiahe Electronic Technology co.,Ltd	FYJH-F5200	Input: 100-240Vac 50/60Hz 0.3A Output: 5.0Vdc 2A
Base	Shenzhen CWELL Electronic Technology Co., Ltd.	Unknown	Input: 100-240Vac 50/60Hz Output: 5.0Vdc

**1.3 Antenna Information Detail **:

Antenna Manufacturer	Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
ShenZhen QiXinTongDa Technology Co.,Ltd.	FPC	50	5.15~5.85GHz	-0.27dBi
The design of compliance with §15.203:				
Unit uses a pern	nanently attached a	antenna.		
Unit uses a uniq	ue coupling to the	intentional radiator.		
Unit was profest antenna is emplo	sionally installed,	and installer shall be respo	nsible for verifying that	the correct

1.4 Equipment Modifications

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

2. DESCRIPTION OF TEST CONFIGURATION

2.1 EUT Operation Condition

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.	
Equipment Modifications:	No	
EUT Exercise Software:	Tfgen	
WLAN traffic is generated by software "Tfgen", software is used by IP and Frame based systems for		
loading the test channel during the In-service compliance testing of the U-NII device. Data pakge		
streamed from the Access Point to the Client using the software "Tfgen".		

2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T430	AA887-03
Tenda	Router	RX12PRO	ED331010215000033

Note: The mater Wireless Router FCC ID: 9034A-RX12P.

2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	То
/	/	/	/	/	/

2.4 Block Diagram of Test Setup



2.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

3. SUMMARY OF TEST RESULTS

The following result table represents the list of measurements required under the KDB: 905462 D02 UNII DFS Compliance Procedures New Rules v02

Items	Description of Test	Result
Detection Bandwidth	UNII Detection Bandwidth	Not applicable
Deutenner	Initial Channel Availability Check Time (CAC)	Not applicable
Requirements	Radar Burst at the Beginning of the CAC	Not applicable
Check	Radar Burst at the End of the CAC	Not applicable
	Channel Move Time	Compliant
In-Service Monitoring	Channel Closing Transmission Time	Compliant
	Non-Occupancy Period	Compliant
Radar Detection	Statistical Performance Check	Not applicable

Note:

Not applicable: The EUT is a client unit without radar detection.

4. REQUIREMENTS AND TEST PROCEDURES

4.1 DFS Requirement

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master Device or Client with Radar Detection	Client Without Radar Detection	
DFS Detection Threshold	Yes	Not required	
Channel Closing Transmission Time	Yes	Yes	
Channel Move Time	Yes	Yes	
U-NII Detection Bandwidth	Yes	Not required	

Additional requirements for devices	Master Device or Client	Client Without	
with multiple bandwidth modes	with Radar Detection	Radar Detection	
U-NII Detection Bandwidth and	All BW modes must be	Not required	
Statistical Performance Check	tested		
Channel Move Time and Channel	Test using widest BW mode	Test using the widest	
Closing Transmission Time	available	BW mode available	
		for the link	
All other tests	Any single BW mode	Not required	
Note: Frequencies selected for statistical p	erformance check (Section 7.8	.4) should include	
several frequencies within the radar detection bandwidth and frequencies near the edge of			
the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in			
each of the bonded 20 MHz channe	ls and the channel center freque	ency	

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value				
	(See Notes 1, 2, and 3)				
$EIRP \ge 200 \text{ milliwatt}$	-64 dBm				
EIRP < 200 milliwatt and	-62 dBm				
power spectral density < 10 dBm/MHz					
EIRP < 200 milliwatt that do not meet the power spectral	-64 dBm				
density requirement					
Note 1: This is the level at the input of the receiver assuming a 0 dBi	receive antenna.				
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test					
transmission waveforms to account for variations in measurement equipment. This will ensure that the					
test signal is at or above the detection threshold level to trigger a DFS response.					
Note3: EIRP is based on the highest antenna gain. For MIMO device	es refer to KDB Publication 662911				
D01.					

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
	See Note 1.
Channel Closing Transmission Time	200 milliseconds + an
	aggregate of 60
	milliseconds over
	remaining 10 second
	period.
	See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-
	NII 99% transmission
	power bandwidth. See
	Note 3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1/28	10	See Note 1	See Note
U U	1	1420	10	See Note 1	1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A	$\operatorname{Roundup} \left\{ \begin{pmatrix} \frac{1}{360} \end{pmatrix} \cdot \\ \begin{pmatrix} \frac{19 \cdot 10^6}{\operatorname{PRI}_{\mu \operatorname{sec}}} \end{pmatrix} \right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types	1-4)		80%	120
Note 1: Sh	ort Pulse Rada	r Type () should be u	sed for the detection ha	ndwidth test_ch	annel move

Table 5 – Short Pulse Radar Test Waveforms

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 usec is selected, the number of pulses

would be Roundup $\left\{ \left(\frac{1}{360}\right) \cdot \left(\frac{19 \cdot 10^6}{3066}\right) \right\} = \text{Roundup}\{17.2\} = 18.$

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
б	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 5a - Pulse Repetition Intervals Values for Test A

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

Radar Type	Number of Trials	Number of Successful	Minimum Percentage			
		Detections	of Successful			
			Detection			
1	35	29	82.9%			
2	30	18	60%			
3	30	27	90%			
4	50	44	88%			
Aggregate (82.9% + 60% + 90% + 88%)/4 = 80.2%						

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Radar	Pulse	Chirp	PRI	Number	Number	Minimum	Minimum			
Type	Width	Width	(µsec)	of Pulses	of Bursts	Percentage of	Number of			
	(µsec)	(MHz)		per Burst		Successful	Trials			
				_		Detection				
5	50-100	5-20	1000-	1-3	8-20	80%	30			
			2000							

Table 6 – Long Pulse Radar Test Waveform

Table 7 – Frequency Hopping Kadar Test waveform									
Radar	Pulse	PRI	Pulses	Hopping	Hopping	Minimum	Minimum		
Type	Width	(µsec)	per	Rate	Sequence	Percentage of	Number of		
	(µsec)		Hop	(kHz)	Length	Successful	Trials		
					(msec)	Detection			
6	1	333	9	0.333	300	70%	30		

Table 7 – Frequency Hopping Radar Test Waveform

4.2 Test Procedure

A spectrum analyzer is used as a monitor verifies that the EUT status including Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the diction and Channel move.

5. Test DATA AND RESULTS

Serial Number:	2KWI-4	Test Date:	2024/9/19
Test Site:	RF	Test Mode:	Traffic
Tester:	Tower Qing	Test Result:	Pass

Environmental Conditions:						
Temperature: (℃)	26.4	Relative Humidity: (%)	50	ATM Pressure: (kPa	100.4	

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G- 10dB	F-08-EM505	2024/06/07	2025/06/06
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G- 10dB	F-08-EM509	2024/06/07	2025/06/06
Eastsheep	Coaxial Attenuator	2W-SMA-JK-6G- 10dB	F-08-EM510	2024/06/07	2025/06/06
Agilent	Vector Signal Generator	N5182A	MY49060274	2023/10/18	2024/10/17
Agilent	Analog Signal Generator	N5181A	MY48180151	2023/10/18	2024/10/17
Keysight	MXA Signal Analyzer	N9020A	MY48490106	2023/10/18	2024/10/17
Tonscend	RF Control Unit	JS0806-2	19G8060171	2023/10/18	2024/10/17

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

5.1 Radar Waveform Calibration

Test	Frequency	Radar Type	Result
Bandwidth	[MHz]		[dBm]
40M	5310	Type0	-62.60

Plots of Radar Waveforms



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5.2 Channel Move Time And Channel Closing Transmission Time

5.2.1 Test Procedure

Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = N*Dwell Time

N is the number of spectrum analyzer bins showing a device transmission Dwell Time is the dwell time per bin (i.e. Dwell Time = S/B, S is the sweep time and B is the number of bin, i.e. 8192)

5.2.2 Test Results

Test Mode	Frequency [MHz]	CCTT [ms]	Limit [ms]	CMT [ms]	Limit [ms]	Verdict
11N40SISO	5310	200+7.68	200+60	720.6	10000	PASS

Please refer to the following tables and plots.



5310 MHz

5.3 Non-occupancy Period

5.3.1 Test Procedure

Measure the EUT for more than 30 minutes following the channel close/move time to very that the EUT does not resume any transmissions on this channel. Provide one plot to demonstrate no transmission on the channel for the non-occupancy period (30 minutes observation time)

5.3.2 Test Result

Test Mode	Frequency [MHz]	Result	Limit [s]	Verdict
11N40SISO	5310	see test graph	≥1800	PASS

Please refer to the following plots.



5310 MHz

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2402T74162E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402T74162E-RF-INP EUT INTERNAL PHOTOGRAPHS.

EXHIBIT B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2402T74162E-RF-00E-TSP TEST SETUP PHOTOGRAPHS.

***** END OF REPORT *****

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