TEST REPORT

Product	:	BE5100 Dual-Band Wi-Fi 7 Router(2.5GE)
Trade mark	:	Tenda
Model/Type reference	:	RE6L Pro,TE6L Pro
Serial Number	:	N/A
Report Number	:	EED32Q81740603
FCC ID	:	V7TRE6LP
Date of Issue	:	Dec. 19, 2024
Test Standards	:	47 CFR Part 15 Subpart E
Test result	:	PASS

Prepared for:

SHENZHEN TENDA TECHNOLOGY CO., LTD.
6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

Prepared by:

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Approved by:	Aaron Ma	Date:	Dec. 19, 2024

Check No.:2551301024

1 Version

Version No.	Date	Description
00	Dec. 19, 2024	Original

2 Test Summary

Test Item	Test Requirement	Test method	Result
DFS Detection Threshold	47 CFR Part 15 Subpart E Section 15.407 (h)(2)	KDB 905462 D02	PASS
U-NII Detection Bandwidth	47 CFR Part 15 Subpart E Section 15.407 (h)(2)	KDB 905462 D02	PASS
Channel Availability Check Time	47 CFR Part 15 Subpart E Section 15.407 (h)(2)(ii)	KDB 905462 D02	PASS
Channel Move Time	47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iii)	KDB 905462 D02	PASS
Channel Closing Transmission Time	47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iii)	KDB 905462 D02	PASS
Non-Occupancy Period	47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iv)	KDB 905462 D02	PASS
Statistical Performance Check	47 CFR Part 15 Subpart E Section 15.407 (h)(2)	KDB 905462 D02	PASS

Remark:

Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.
Volt: In this whole report Volt means Voltage.
Temp: In this whole report Temp means Temperature.
Humid: In this whole report Humid means humidity.
Press: In this whole report Press means Pressure.
N/A: In this whole report not application

Model No.: RE6L Pro,TE6L Pro

Only the model RE6L Pro was tested,their electrical circuit design, layout, components used and internal wiring are identical, Only the Model is different.

3 Content

4 General Information

4.1 Client Information

Applicant:	SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address of Applicant:	6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Manufacturer:	SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address of Manufacturer:	6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

4.2 General Description of EUT

Product Name:	BE5100 Dual-Band Wi-Fi 7 Router(2.5GE)	
Model No.(EUT):	RE6L Pro,TE6L Pro	
Test Mode No.:	RE6L Pro	
Trade mark:	Tenda	
Location for use:	Indoor use	
Type of Modulation:	IEEE 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11n(HT20/HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11ac(VHT20/VHT40/VHT80): OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) IEEE 802.11ax(HE20/HE40/HE80): OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM) IEEE 802.11be(EHT20/EHT40/EHT80): OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM,4096QAM) (Resource Unit with subcarriers:Full RU)	
Operating Frequency	U-NII-2A: 5250-5350MHz	
Operating Temperature:	0℃ to +40℃ (Manufacturer stated range)	
Sample Type:	Fixed production	
Test Power Grade:	Default(manufacturer declare)	
Test Software of EUT:	QATool_Dbg.exe(manufacturer declare)	
Antenna Configuration	☒ Single Transmitting (1T1R); ☒ MIMO (☐ 2T2R,☒ 3T3R,☐ 4T4R, ☐ Other);	
Antenna Type:	☐ Internal Antenna ☐ PCB Antenna ☐ Ceramic Antenna ☒ External Antenna ☐ Loop Antenna ☐ Other:	
Antenna Gain:	5G CON3: 6.52dBi, 5G CON4: 6.52dBi, 5G CON5: 6.52dBi, Beamforming gain: 4.50dBi	
Power Supply:	Adapter:	Model:TEKA-TC120150US Input:100-240V~50/60Hz,0.5A MAX Output:12.0V,1.5A
Test voltage:	DC 12.0V	
Sample Received Date:	Oct. 30, 2024	
Sample tested Date:	Oct. 30, 2024 to Dec. 18, 2024	

Operation Frequency each of channel

802.11a/802.11n/802.11ac/802.11ax/802.11be (20MHz) Frequency/Channel Operations:

U-NII-2A	
Channel	Frequency(MHz)
52	5260
56	5280
60	5300
64	5320
-	-
-	-
-	-
-	-

802.11n/802.11ac/802.11ax/802.11be (40MHz) Frequency/Channel Operations:

U-NII-2A	
Channel	Frequency(MHz)
54	5270
62	5310
-	-
-	-

802.11ac/802.11ax/802.11be (80MHz) Frequency/Channel Operations:

U-NII-2A	
Channel	Frequency(MHz)
58	5290
-	-

4.3 Description of Support Units

The EUT has been tested with associated equipment below.

1）support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Netbook	Asus	FL8700JP1065-0D8GXYQ2X10	FCC&CE	CTI
Tablet computer	Prentke Romich Company	ACN800-40	FCC&CE	CTI

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

4.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

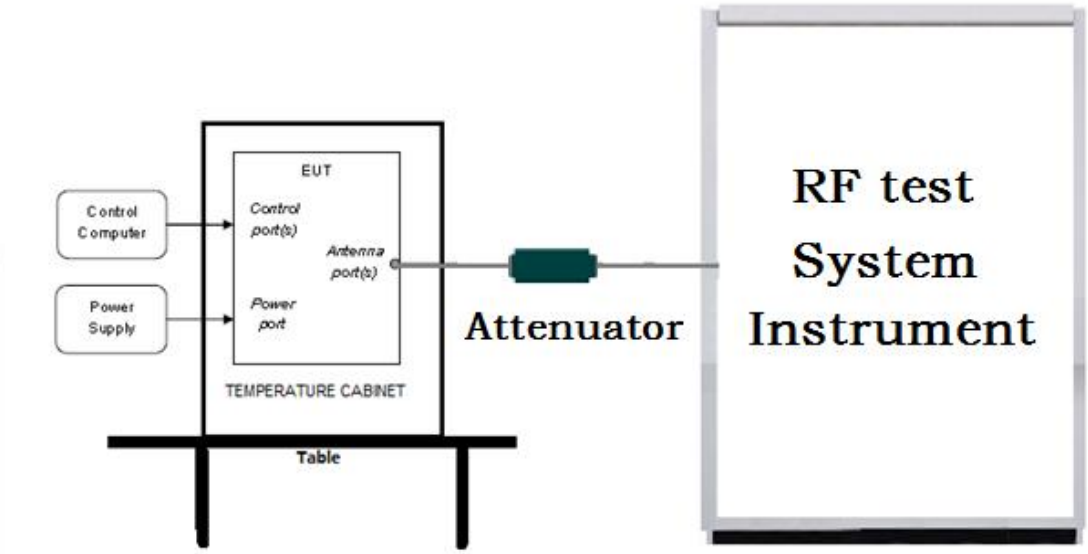
5 Equipment List

RF test system					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	Keysight	N9010A	MY54510339	12-14-2023 12-05-2024	12-13-2024 12-04-2025
Signal Generator	Keysight	N5182B	MY53051549	12-11-2023 11-30-2024	12-10-2024 11-29-2025
DC Power	Keysight	E3642A	MY56376072	12-11-2023 11-30-2024	12-10-2024 11-29-2025
Communication test set	R&S	CMW500	169004	03-08-2024	03-07-2025
RF control unit(power unit)	JS Tonscend	JS0806-2	22G8060592	07-22-2024	07-21-2025
Wi-Fi 7GHz Band Extendder	JS Tonscend	TS-WF7U2	2206200002	05-31-2024	05-30-2025
High-low temperature test chamber	Dong Guang Qin Zhuo	LK-80GA	QZ20150611879	12-11-2023 11-30-2024	12-10-2024 11-29-2025
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	05-29-2024	05-28-2025
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	V3.3.20	---	---
Spectrum Analyzer	R&S	FSV3044	101509	01-17-2024	01-16-2025

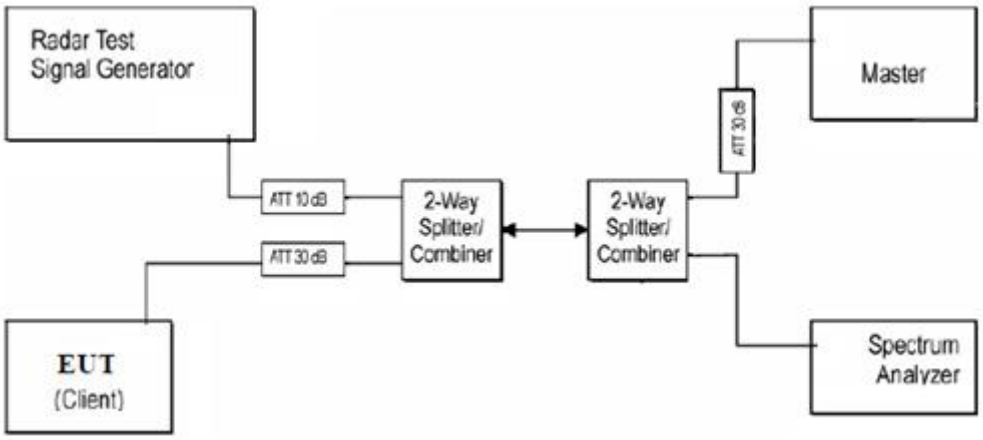
6 Test Requirement

6.1 Test setup

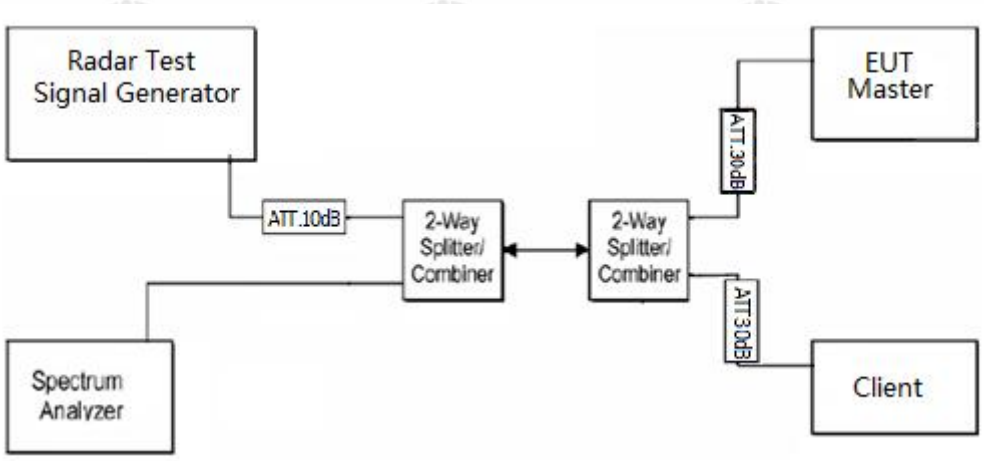
6.1.1 For Conducted test setup



6.1.2 Slave and Client device(EUT) block diagram of Test setup



6.1.3 Mast device(EUT) block diagram of Test setup



6.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	995mbar

6.3 Test Condition

6.3.1 Radar test waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

a) Short Pulse Radar Test Waveforms

Radar Type	Pulse width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	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

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4.For Short Pulse Radar Type 1, the same waveform is used a minimum of 30 times. If more than 30waveforms 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.

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4.

b) Long Pulse Radar Test Waveform

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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

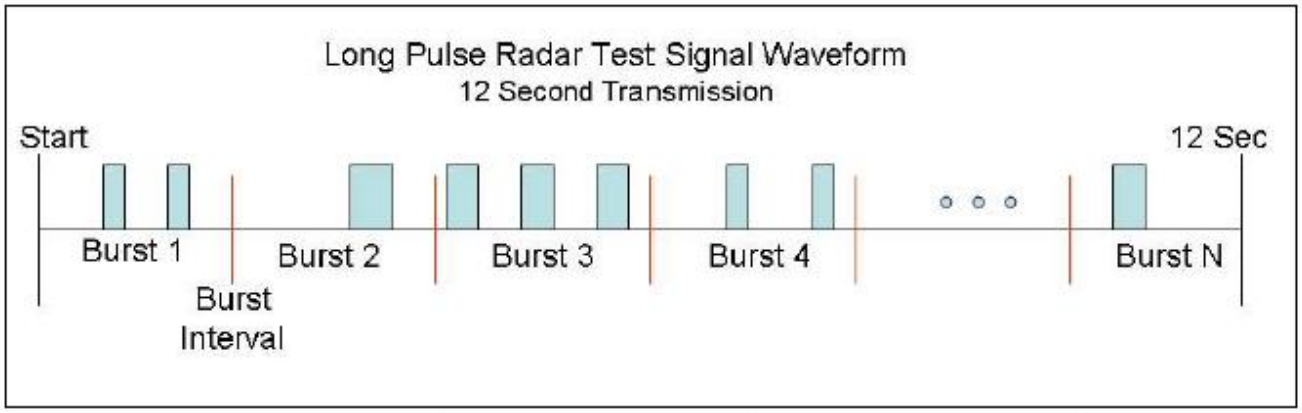
Each waveform is defined as follows:

1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst_Count.
3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses indifferent Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at5290 MHz and ends at 5310 MHz.
6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst,the random time interval between the first and second pulses is chosen independently of the random time interval between the second and third pulses.
7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval,is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen randomly.

A representative example of a Long Pulse Radar Type waveform:

1) The total test waveform length is 12 seconds.
2) Eight (8) Bursts are randomly generated for the Burst_Count.
3) Burst 1 has 2 randomly generated pulses.
4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
5) The PRI is randomly selected to be at 1213 microseconds.
6) Bursts 2 through 8 are generated using steps 3 – 5.
7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse Radar Test Waveform.



c) Frequency Hopping Radar Test Waveform

Radar Type	Pulse width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (m sec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

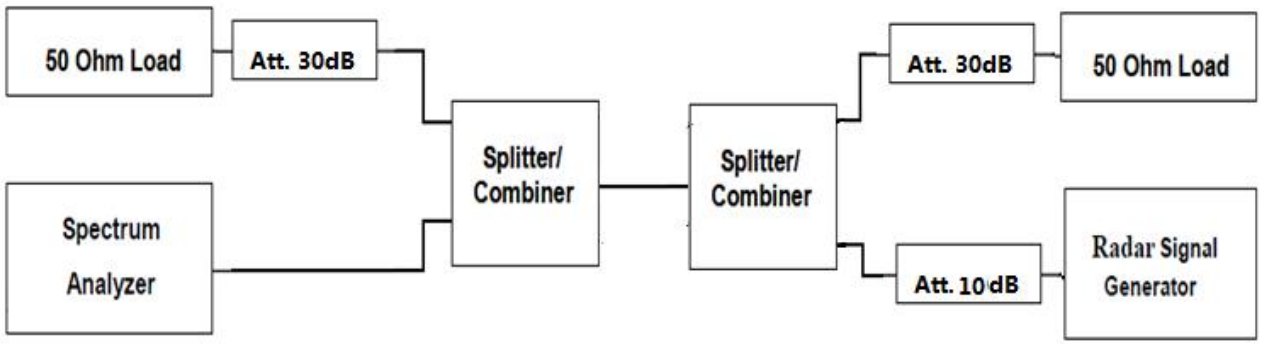
For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm.

d) Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted radar waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were replace 50ohm terminal from master and client device and no transmissions by either the master or client device. The spectrum analyzer was switched to the zero span (time domain) at the frequency of the radar waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz and 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm due to the interference threshold level is not required.

Conducted Calibration Setup



6.3.2 Technical requirement

a) Applicability of DFS Requirements

Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operation Mode		
	Master	Client without Radar Detection	Client with Radar Detection
Non-Occupancy Period	Yes	Not require	Yes
DFS Detection Threshold	Yes	Not require	Yes
Channel Availability Check Time	Yes	Not require	Not require
Uniform Spreading	Yes	Not require	Not require
U-NII Detection Bandwidth	Yes	Not require	Yes

Applicability of DFS requirements during normal operation

Requirement	Operation Mode		
	Master	Client without Radar Detection	Client with Radar Detection
DFS Detection Threshold	Yes	Not require	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not require	Yes

b) DFS Detection Thresholds and Response Requirement

DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value(See Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
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.	

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 60milliseconds over remaining 10 second period. See Notes 1 and 2
U-NII Detection Bandwidth	Minimum 80% of the UNII99% transmission power bandwidth See Note 3

Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short Pulse Radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.
- For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.

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 10second 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 1 is used and for each

frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

6.3.3 Parameters of radar test waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		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			
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: 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.

Table 6 – Long Pulse Radar Test Waveform

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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Table 7 – Frequency Hopping Radar Test Waveform

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

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15E	Subpart C-Intentional Radiators
2	FCC Order, ET Docket No.03-122 (FCC 06-96)	Compliance Measurement Procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5.25-5.35 GHz and 5.47-5.725 GHz Bands Incorporating Dynamic Frequency Selection

Test Results List:

FCC Part15E	Test method	Test item	Operation Mode verdict			Note
			Master	Client without Radar Detection	Client with Radar Detection	
47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iv)	FCC 06-96	Non-Occupancy Period	PASS	Not require	PASS	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)	FCC 06-96	DFS Detection Threshold	PASS	Not require	PASS	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)(ii)	FCC 06-96	Channel Availability Check Time	PASS	Not require	Not require	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)	FCC 06-96	U-NII Detection Bandwidth	PASS	Not require	PASS	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iii)	FCC 06-96	Channel Closing Transmission Time	PASS	PASS	PASS	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)(iii)	FCC 06-96	Channel Move Time	PASS	PASS	PASS	NOTE1
47 CFR Part 15 Subpart E Section 15.407 (h)(2)	FCC 06-96	Uniform Spreading	PASS	Not require	Not require	NOTE1

NOTE1: Refer to the report of EED32Q81740603 Appendix：5G Wi-Fi Band 2 DFS.Through pre-scan Madter mode and Mesh mode,have founded Madter mode was the worst case,and only the worst case data was recorded in the report.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32Q81740601 for EUT external and internal photos.

*** End of Report ***