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DFS TEST REPORT

FCC PART 15 SUBPART E 15.407

Report Reference No. : CTL2506042031-WF03

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Product Name : Standalone Route v1

Model/Type reference : SR01

List Model(s)..... : N/A

Trade Mark..... : N/A

FCC ID..... : 2AYHD-SR01

Applicant's name : Hyphametrics,Inc.

Address of applicant : 149 E 23 St. #2052 New York, NY 10010 United States

Test Firm..... : Shenzhen CTL Testing Technology Co., Ltd.

Address of Test Firm : Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road,
Nanshan District, Shenzhen, China 518055

Test specification..... :

Standard : 47 CFR FCC Part 15 Subpart E 15.407

TRF Originator : Shenzhen CTL Testing Technology Co., Ltd.

Master TRF..... : Dated 2011-01

Date of receipt of test item : Jul 14, 2025

Date of Test Date..... : Jul 14, 2025- Aug 07, 2025

Date of Issue : Aug 08, 2025

Result..... : Pass

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TEST REPORT

Test Report No. :	CTL2506042031-WF03	Aug 08, 2025
		Date of issue

Equipment under Test : Standalone Route v1

Sample No : CTL2506042031

Model /Type : SR01

Listed Models : N/A

Applicant : **Hyphametrics,Inc.**

Address : 149 E 23 St. #2052 New York, NY 10010 United States

Manufacturer : **Shenzhen Geniatech INC., Ltd.**

Address : Room 02-04, 10/F, Block A, Building 8, Shenzhen International Innovation Valley, Dashi Road, Nanshan District, Shenzhen, Guangdong, China

Test result	Pass *
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* In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:

[KDB 905462 D02](#) UNII DFS Compliance Procedures New Rules v02

[KDB 905462 D03](#) UNII Clients Without Radar Detection New Rules v01r02

[KDB 905462 D04](#) Operational Modes for DFS Testing New Rules v01

[FCC Rules Part 15 Subpart E](#)—Unlicensed National Information Infrastructure Devices

1.2. Test Description

Test Description	FCC CFR 47/ ISED Rule Part	Limit	Test Result
In-Service Monitoring	15.407(h)(2)(iv)	Monitor Co-channel Radar	Pass
Channel Availability Check	15.407 (h)(2)(ii)	60s Detection	Pass
Channel Move Time	15.407 (h)(2)(iii)	10s	Pass
Channel Closing Transmission Time	15.407 (h)(2)(iii)	200ms + Aggregate 60ms over remaining 10s period	Pass
Non-Occupancy Period	15.407 (h)(2)(iv)	30 minutes	Pass

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co.,Ltd.

Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: 9618B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission9KHz~30MHz	±3.66dB	(1)

Radiated Emission 30~1000MHz	$\pm 4.08\text{dB}$	(1)
Radiated Emission Above 1GHz	$\pm 4.32\text{dB}$	(1)
Conducted Disturbance 0.15~30MHz	$\pm 3.20\text{dB}$	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	Standalone Route v1		
Model/Type reference:	SR01		
EUT Rate Voltage:	AC 100-240V~50/60Hz		
Adapter information	Model: SA130C-120100U INPUT: 100-240V~50/60Hz, 0.4A OUTPUT: 12.0V---1A,		
Test Voltage:	AC 120V 60Hz		
Wi-Fi 5GHz			
Supported type:	20MHz system	40MHz system	80MHz system
	802.11a 802.11n 802.11ac	802.11n 802.11ac	802.11ac
Operation frequency:	5180MHz-5240MHz 5260MHz-5320MHz 5500MHz-5700MHz 5745MHz-5825MHz	5190MHz-5230MHz 5270MHz-5310MHz 5510MHz-5670MHz 5755MHz-5795MHz	5210MHz 5290MHz 5530MHz 5610MHz 5775MHz
Modulation:	OFDM	OFDM	OFDM
Channel number:	24	11	5
Channel separation:	20MHz	40MHz	80MHz
Antenna type:	FPC Antenna		
Antenna gain:	Antenna 1: Band 1:5.31dBi Band 2A: 5.41dBi Band 2C:5.63dBi Band 3:5.29dBi Antenna 2: Band 1:5.29dBi Band 2A:5.54dBi Band 2C:5.57dBi Band 3:5.18dBi		
Directional Gain:	8.32dBi		
MIMO:	Support		
TPC Function:	Not Support		
Operational mode:	Master		

Note1: For more details, please refer to the user's manual of the EUT.

Note2: Antenna gain provided by the applicant.

Note3: Directional Gain= $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{G_N/10})/N_{ANT}]$ dBi

2.3. Description of Test Modes

The EUT operates over the 5260 MHz - 5320 MHz and 5500 MHz - 5700 MHz ranges.

The EUT is a slave device without radar detection.

TPC is not required since the maximum EIRP is less than 500 mW.

The EUT utilizes the 802.11a/n/ac/ax architecture.

The nominal channel bandwidth is implemented: 20, 40, 80 MHz

2.4. Measurement Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	N9020A	US46220290	2025/04/29	2026/04/28
Vector Signal Generator	Agilent	N5182A	MY50142850	2025/04/29	2026/04/28
Power measurement module	TSTPASS	TSPS2023R	TSCB220016	2025/04/30	2026/4/29
Test Software					
Name of Software			Version		
TST-PASS			V2.0		

2.5. Description of Support Units

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.

No.	Product	Manufacturer	Model	Certification
1	Notebook computer	Huawei Technologies Co Ltd	KPL-W00	FCC

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Applicability of DFS requirements

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Client. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables 1 and 2 for the applicability of DFS requirements for each of the operational modes

Table 1. DFS Applicability

Requirement	Operation 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
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2. DFS Applicability during Normal Operation

Requirement	Operation Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

3.2. Test Limits and Radar Signal Parameters

DETECTION THRESHOLD VALUES:

Table 3: Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 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.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response Requirement Values

Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	-64 dBm
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 UNII99% 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	

3.3. PARAMETERS OF DFS TEST SIGNALS

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: Parameters for Short Pulse Radar 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	Roundup $\left\{ \begin{array}{l} \frac{1}{360} \\ 19 \cdot 10^6 \\ \text{PRI } \mu\text{sec} \end{array} \right\}$	60%	30
		Test B: 15 unique PRI values Randomly selected within the range of 518-3066 μ sec, with a minimum increment of 1			

		μ sec, 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
				80%	120
Note1: 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 5a: Pulse Repetition Intervals Values for Test A

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
6	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 6: Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μ sec)	Chirp Width (MHz)	PRI (μ sec)	Number of Pulses per <i>Burst</i>	Number of <i>Bursts</i>	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 (The center frequency for each of the 30 trials of the Bin 5 radar shall be randomly selected within 80% of the Occupied Bandwidth.) 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 (μ sec)	Chirp Width (MHz)	PRI (μ sec)	Number of Pulses per <i>Burst</i>	Number of <i>Bursts</i>	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

3.4. Calibration of Radar Waveform

Test Setup

The KDB905462 D02 v02 describes a radiated test setup and a conducted test setup. A conducted test setup was used for this testing. Figure 3-1 shows the typical test setup. Each one channel selected between 5260 and 5320 MHz, 5500 and 5700 is chosen for the testing.

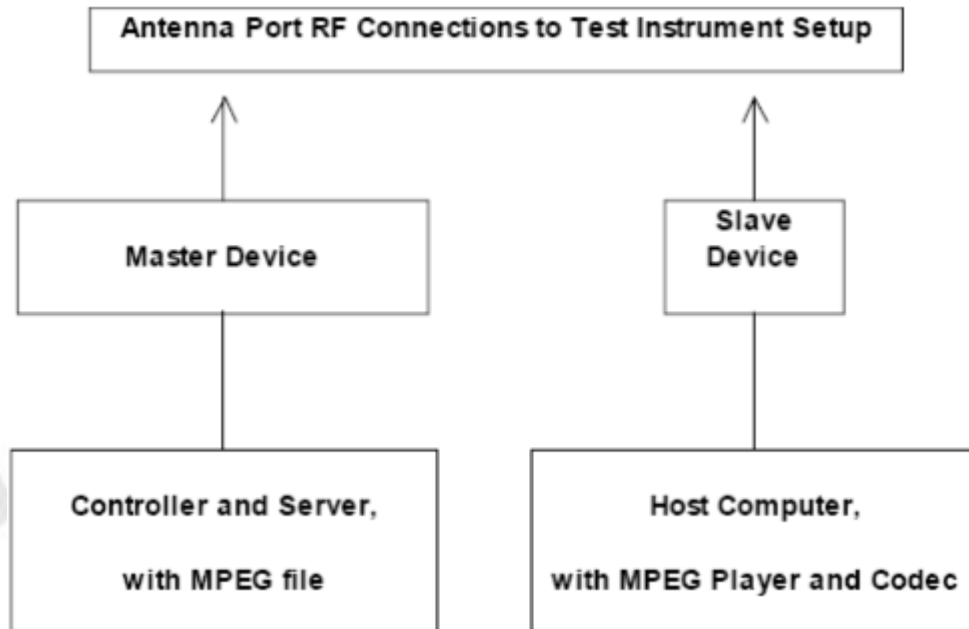


Figure 3-1 Test Setup for Conducted Measurement

Test Procedure

1. A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected in place of the master device and the signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of -62dBm as measured on the spectrum analyzer.
2. Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. Measure the amplitude and calculate the difference from -62dBm . Adjust the Reference Level Offset of the spectrum analyzer to this difference.
3. The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of -62dBm and the spectrum analyzer will still indicate the level as received by the Master Device.
4. Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

3.5. Conducted Calibration Test Setup

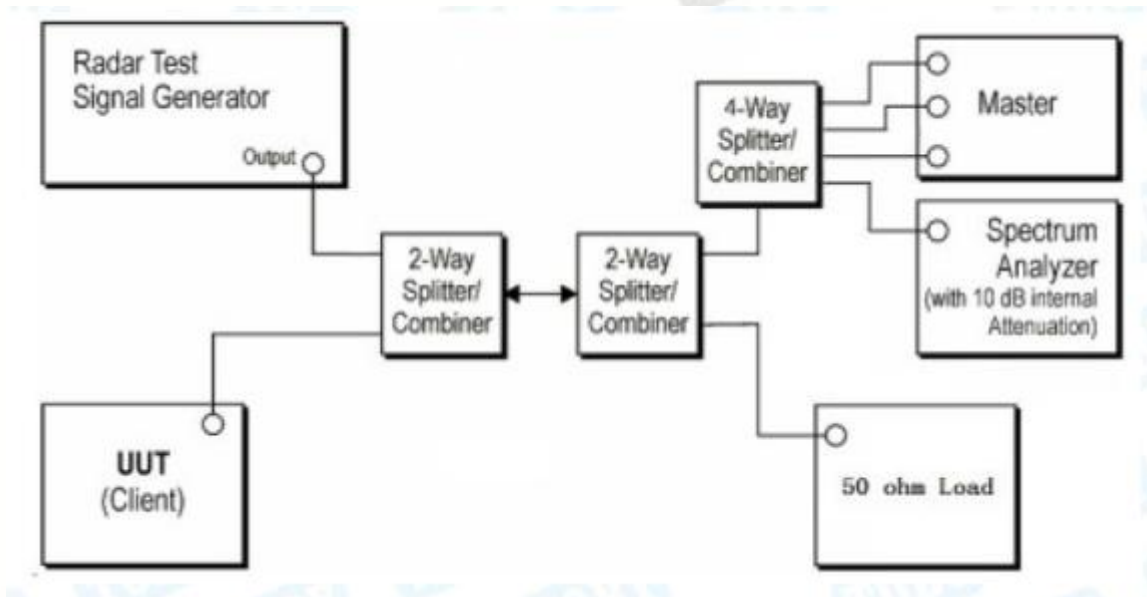


Figure 3-2 Test Setup for Conducted Measurement Radar Verification

Deviation from Test Standard:

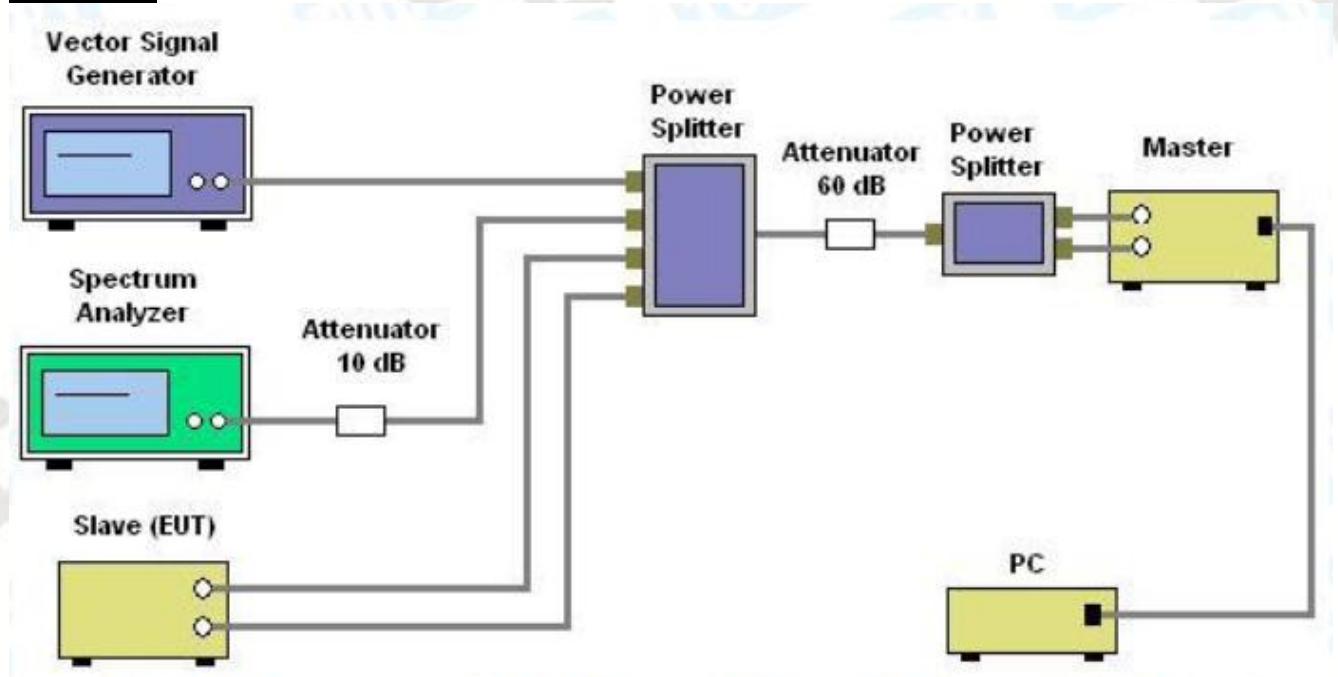
No Deviation

3.6. U-NII DFS Testing

Test Procedure

1. Master device and client device are set up by conduction method as the following configuration.
2. The client device is connected to notebook and to access a IP address on wireless connection with the master device.
3. Then the master device is connected to another notebook to access a IP address.
4. Finally, let the two IP addresses run traffic with each other through the Run flow software "Lan test" to reach 17% channel loading as below:

Test Setup



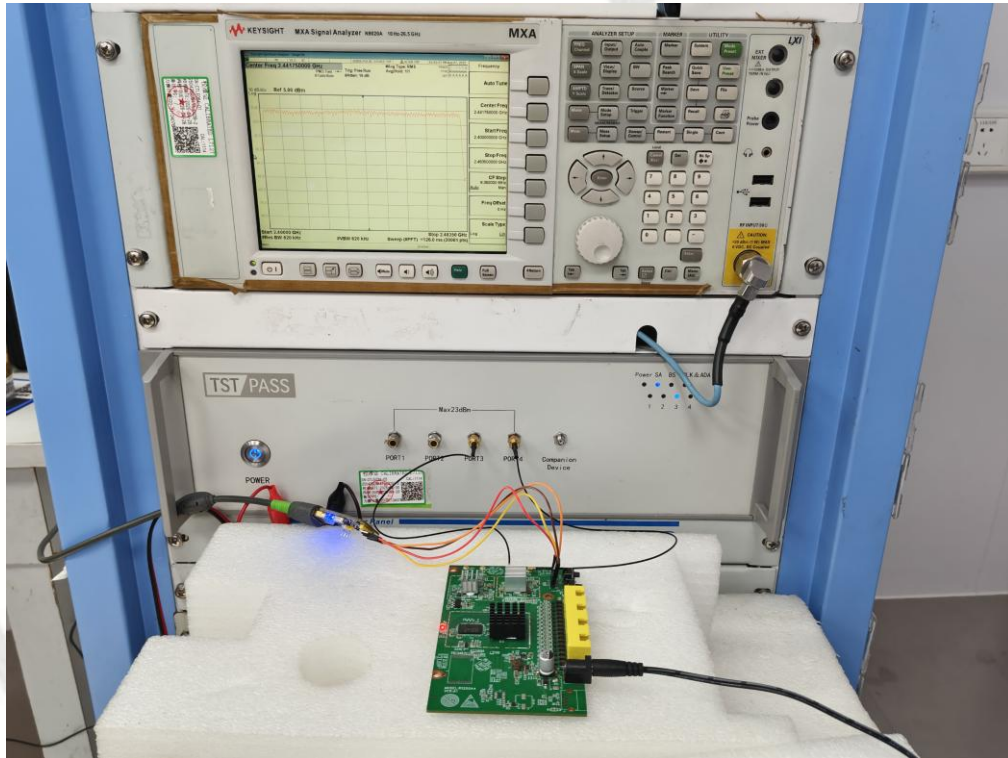
3.7. TEST RESULT

According to 905462 D02V02, Channel Move Time and Channel Closing Transmission Time Test using the widest BW mode for each WIFI operation modes.

Raw data reference to CTL2506042031-WF03_5G_Band_2A_DFS_Appendix.

Raw data reference to CTL2506042031-WF03_5G_Band_2C_DFS_Appendix.

4. EUT TEST PHOTOS



5. Photos of the EUT

Reference to the test report No.CTL2506042031-WF01.

***** End of Report *****