RF TEST REPORT

ARIB-STD-T71
DFS

APPLICANT
eero LLC

MODEL NAME
R010001

REPORT NUMBER
HA220516-AER-001-R10

TEST REPORT

Date of Issue
August 13, 2020

Test Site
Hyundai C-Tech, Inc. dba HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

Applicant	eero LLC
Applicant Address	660 3rd Street, 4th Floor, San Francisco, CA 94107, USA
Model Name	R010001
EUT Type	Wireless Router / Access Point
RF Specification	802.11a/n/ac/ax
Modulation Type	OFDM / OFDM-A
Manufacturer	eero LLC
Applicable Standard	ARIB STD-T71, Test method temporarily determined by TELEC Article 2 Paragraph 1, Items 19-3
Test Period	July 23, 2022 - August 3, 2022

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By	**Reviewed By**
Yongsoo Park	Sunwoo Kim
Test Engineer	Technical Manager

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA220516-AER-001-R10	August 13, 2022	Initial Release

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Hyundai C-Tech, Inc. dba HCT America, Inc., 1726 Ringwood Ave, San Jose, CA 95131, USA. TEL: +1-510-933-8848 FAX: +1-510-933-8849

1. GENERAL INFORMATION

EUT DESCRIPTION

Model	R010001
Serial Number	GGC1-UCD1-1432-OB1U
EUT Type	Wireless Router / Access Point
Power Supply	5.0 V d.c. (USB type C - External adaptor supplying 100 V a.c.) / 3.0 A
RF Specification	WIFI 2.4 GHz : 802.11b/g/n(HT20/40)/ ax(HE20/40) WIFI 5 GHz : 802.11a/n(HT20/40)/ ac(VHT20/40/80/160)/ ax(HE20/40/80/160) Bluetooth 5.0 LE (1M) IEEE 802.15.4
Dimension (L x W x H)	Approx. 97 mm x 97 mm x 67 mm (L x W x H)
Operating Environment	Indoor
Operating Temperature	0 ℃ - 40 ℃

RF SPECIFICATION SUBJECT TO THE REPORT

Equipment Category	Low Power Data Communication System in the 5 GHz band		
RF Specification	IEEE 802.11a / 802.11n HT20 / 802.11ac VHT20 / 802.11ax HE20 IEEE 802.11n HT40 / 802.11ac VHT40 / 802.11ax HE40 IEEE 802.11ac VHT80 / 802.11ax HE80 IEEE 802.11ac VHT160 / 802.11ax HE160		
Operating Frequency Range	5250 MHz – 5350 MHz (DFS band) 5470 MHz – 5730 MHz (DFS band)		
Frequency Range Alignment	W53	20 MHz BW : 5260 MHz – 5320 MHz (4 channels) 40 MHz BW : 5270 MHz – 5310 MHz (2 channels) 80 MHz BW : 5290 MHz (1 channel)	
	W56	20 MHz BW : 5500 MHz – 5720 MHz (12 channels) 40 MHz BW : 5510 MHz – 5710 MHz (6 channels) 80 MHz BW : 5530 MHz – 5690 MHz (3 channels) 160 MHz BW : 5570 MHz (1 channel)	
Modulation Type	OFDM : 802.11a/n/ac OFDM-A : 802.11ax		
Applicable Standard(s)	Article 2 Paragraph 1, Items 19-3		
TPC Feature	☒ Yes	☐ No	
Dynamic Frequency Selection	☒ Master		
	☒ Slave with radar detection		
	☐ Slave without radar detection		
Operating Temperature Range [1)]	Normal Temperature	21.7 ℃	
	Extreme Lowest Temperature	0 ℃	
	Extreme Highest Temperature	40 ℃	
Antenna Specification [2)]	Integrated Antenna Peak Gain : 3.39 dBi Uncorrelated / 6.39 dBi Correlated		
Firmware Version [3)]	eeroOS 6.13		
Hardware Version [3)]	Rev. A		

Note :

1. Operating temperature range is declared by the manufacturer.
2. Antenna information is based on the document provided by the manufacturer.
3. Firmware and Hardware Version are as received by the client.

ANTENNA CONFIGURATION

The device employs 2x2 MIMO technologies with possible configurations below.

Frequency	Configuration	SDM	CDD
		ANT1 + ANT2	ANT1 + ANT2
2.4 GHz	802.11b	X	O
	802.11g	X	O
	802.11n	O	O
	802.11ax	O	O
5 GHz	802.11a	X	O
	802.11n	O	O
	802.11ac	O	O
	802.11ax	O	O

The equipment under test supports Cyclic Diversity mode (CDD signals can be correlated).
CDD mode was picked as worst case for testing even though the device support both CDD and SDM

ANTENNA DIRECTIONAL GAIN

Antenna Type	Type	RF Technology	Frequency	Gain (Ant 1)	Gain (Ant 2)
PCB	Dipole	802.11b/g/n/ax	2.4 GHz	3.69 dBi	3.06 dBi
PCB	Dipole	802.11a/n/ac	5 GHz	4.50 dBi	4.22 dBi
Metal	Monopole	BLE / IEEE 802.15.4	2.4 GHz	2.90 dBi	

Ant 1 : 2.4 GHz (Chain 0) / 5 GHz (Chain 1)
Ant 2 : 2.4 GHz (Chain 1) / 5 GHz (Chain 0)

Directional Gain (2.4 GHz : Uncorrelated) = $10 \log[(10^{(3.69/10)}+10^{(3.06/10)}) / 2] = 3.39$ dBi
Directional Gain (5 GHz : Uncorrelated) = $10 \log[(10^{(4.50/10)}+10^{(4.22/10)}) / 2] = 4.36$ dBi

Directional Gain (2.4 GHz : Correlated) = $10 \log[(10^{(3.69/20)}+10^{(3.06/20)})^2 / 2] = 6.39$ dBi
Directional Gain (5 GHz : Correlated) = $10 \log[(10^{(4.50/20)}+10^{(4.22/20)})^2 / 2] = 7.37$ dBi

The device does not support beam foaming.

2. FACILITIES AND ACCREDITATION

The SAC (Semi-Anechoic Chamber) and conducted measurement test site is located at 1726 Ringwood Avenue, San Jose, California 95131, USA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Accredited Laboratory

A2LA has accredited

HYUNDAI C-TECH, INC. DBA HCT AMERICA, INC.

San Jose, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 10th day of June 2021.

Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4201.01
Valid to July 31, 2023

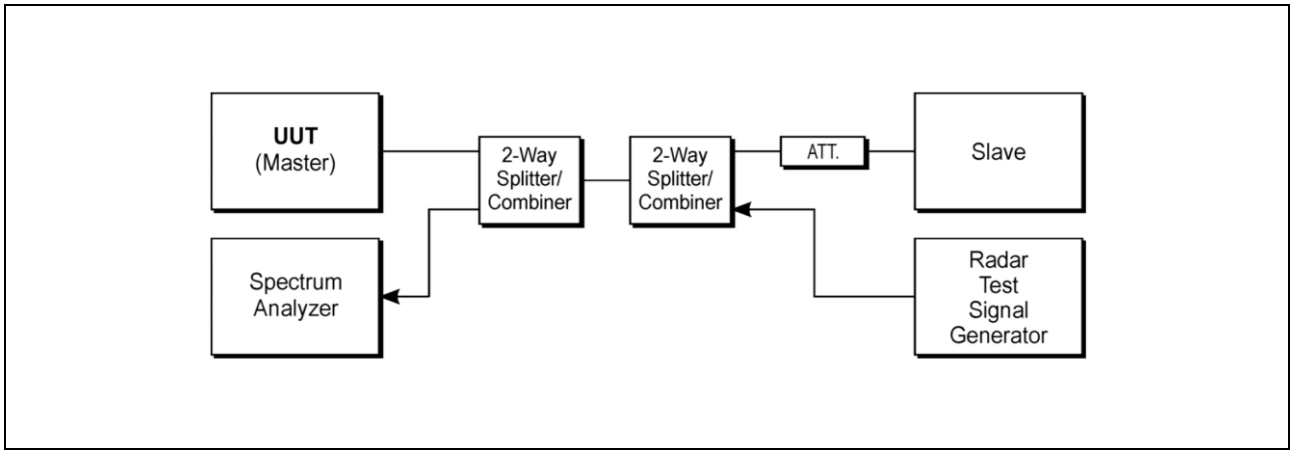
For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

All receiving equipment are compliant against CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

3. TEST PROCEDURE

3.1 Test Setup Block Diagram

Set-up A is a set-up whereby the UUT is an RLAN device operating in master mode. Radar test signals are injected into the UUT. This set-up also contains an RLAN device operating in slave mode which is associated with the UUT.



3.2 Test Procedure : W53 Band

Radar Test Signal : Variable Pulse Type 1, 2 / Chirp Type 3, 4, 5, 6, 7, 8
(See section 4.2, 'DFS Radar Parameter' in the report)

(1) Checking available channels

A. Set the standard signal generator to be in non-transmission state.
B. Set EUT to be in state of available channel checking by initializing EUT and confirm with the spectrum analyzer that EUT does not radiate emissions.
C. In a time slot selected randomly from the time period of available channel checking, set the standard signal input generator to be in transmission state and apply quasi radar pulses at the prescribed level to EUT.
D. Confirm with the spectrum analyzer that EUT does not radiate emissions when radar pulses are input to EUT.
E. Repeat Steps A to D four times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected.

(2) Monitoring of operating channel

A. Set the standard signal generator to be in non-transmission state.
B. Set EUT to be in state of operating channel monitoring by initializing it and transmit waves at the test frequency.
C. Set the communication load conditions for EUT so that the transmission speed for signals that do not include error correction and control signals may amount to 50% of the maximum signal transmission speed for radio equipment, and establish communications with the external test device.
D. Set the standard signal generator to be in transmission state and apply quasi radar pulses at the prescribed input level to EUT.
E. Confirm that EUT stops radiating emissions when radar pulses are input to EUT using the spectrum analyzer.
F. Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected. The measurement operation, however, shall be terminated when a radar pulse has been detected 15 times.
G. If the number of occurrences of quasi radar signal detection is 11 to 14 in Step F, repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find the number of occurrences of quasi radar pulse detection by adding the value in Step F and the one in this step.

3.3 Test Procedure : W56 Band

Radar Test Signal : Variable Pulse Type 1 – 6, Chirped Radar Pulse with 5-20 MHz width, Frequency Hopping Radar Wave (See section 4.2, 'DFS Radar Parameter' in the report)

Confirm operations of the dynamic frequency selection function as follows using the test signals listed above as quasi radar pulses.

(1) Confirming available channels

A. Set the output of the standard signal generator to be in non-transmission state.
B. Set EUT to be in state of available channel checking by initializing EUT and confirm with the spectrum analyzer that EUT does not radiate emissions.
C. In a time slot selected randomly from the time period of available channel checking, set the standard signal generator to be in transmission state and apply quasi radar pulses at the prescribed input level to EUT.
D. Confirm with the spectrum analyzer whether EUT detects a radar pulse when quasi radar pulses are input to EUT at first try.
E. Repeat Steps A to D four times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected.

(2) Monitoring of operating channel

A. Set the standard signal generator to be in non-transmission state.
B. Set EUT to be in state of operating channel monitoring by initializing it and transmit waves at the test frequency.
C. Establish communications with the external test device under the prescribed communication load conditions.
D. Set the output of the standard signal generator to be in transmission state and apply quasi radar pulses at the prescribed input level to EUT.
E. Confirm with the spectrum analyzer that EUT stops radiating emissions when quasi radar pulses are input to EUT.
F. Find the number of occurrences of quasi radar pulse detection by following Steps (a) to (c) for the test signal (Fixed and Variable Pulse Type 1 – 6)

(a) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected. The measurement operation, however, shall be terminated when a radar pulse has been detected 18 times.
(b) If the number of occurrences of quasi radar signal detection is 11 to 14 in Step (a), go to Step G below. If the number is 15 to 17, go to Step (c) below.
(c) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected.

G. Find the mean of probabilities of detecting quasi radar pulses.

(a) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected.
(b) Find a total of the numbers of occurrences of quasi radar signal detection and a total of the numbers of tests for each of six types of test signals listed in section 4.2 in the report

H. Find the number of occurrences of quasi radar signal detection for the test signal (Chirp Radar) by following Steps (a) to (c) below.

(a) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected. The measurement operation, however, shall be terminated when a radar pulse has been detected 18 times.
(b) If the number of occurrences of quasi radar signal detection is 15 to 17 in Step (a), go to Step (c) below.
(c) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. Find the number of occurrences of quasi radar signal detection by adding the value in Step (a) and the one in this step.

I. Find the number of occurrences of quasi radar signal detection for the test signal (Frequency Hopping) by following Steps (a) to (c) below.

(a) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected. The measurement operation, however, shall be terminated when a radar pulse has been detected 16 times.
(b) If the number of occurrences of quasi radar signal detection is 13 to 15 in Step (a), go to Step (c) below.
(c) Repeat Steps A to E 20 times and record each time whether EUT radiates emissions or not. If EUT does not radiate emissions, assume that a radar pulse has been detected and find how many times it has been detected.

4. TECHNICAL REQUIREMENTS AND PARAMETERS FOR DFS TEST

4.1 DFS Test Requirements

Parameter	Value
Channel Availability Check Time	≥ 60 s
Channel Closing Transmission Time	≤ 260 ms
Channel Move Time	≤ 10 s
Non-Occupancy Period	≥ 30 minutes

4.2 Radar Detection Threshold

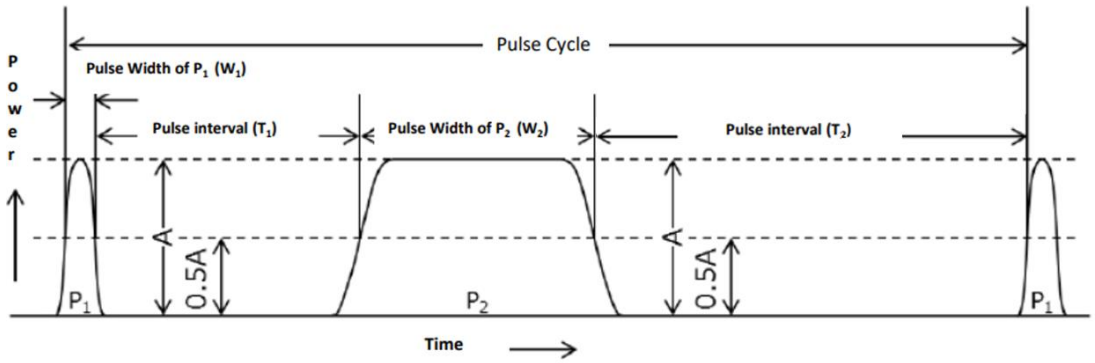
Maximum e.i.r.p.	Value (See note 1 2)
Maximum e.i.r.p. < 200 mW	-62 dBm + G_{ANT} (dBi)
Maximum e.i.r.p. ≥ 200 mW	-64 dBm + G_{ANT} (dBi)
NOTE 1 : This is the level at the input of the receiver assuming a 0 dBi receiver antenna.	

4.3 Parameter of Radar Test Signals

W53 : Parameters of DFS Radar Type						
Radar Classification	Pulse Width [us]		Repetition Frequency PRF [PPS]		Minimum Number of Pulse per Burst for each PRF [PPB]	Note
	Min	Max	Min	Max		
1 – Variable	0.5	5	200	1000	10	-
2 – Variable	0.5	15	200	1600	15	-
3 – Chirp	0.5	5	200	1000	Min{Max{22,[0.026xPRF]}, 30}	See note 4
4 – Chirp	0.5	15	200	1600	Min{Max{22,[0.026xPRF]}, 30}	
5 – Chirp	0.5	1.5	1114	1118	30	See note 5
6 – Chirp	0.5	1.5	928	932	25	
7 – Chirp	0.5	1.5	886	890	24	
8 – Chirp	0.5	1.5	738	742	20	
Detection Probability for each radar test signals ≥ 60 %						

NOTE 1 : Channel loading is 30% of maximum transmission data rate

NOTE 2 : Pulse width is the pulse with of P_1 (W_1) in the following figure, and 'Repetition Frequency' is the reciprocal of the pulse cycle in the following figure. Also, the pulse width and frequency are any one value between the minimum value and the maximum value.



NOTE 3 : In the figure above, 'A' indicates the maximum power of P_1 and P_2, and the shift width of frequency (chirp width) for performing linear frequency modulation during the pulse period, the pulse interval of P_1 (T_1). The differences between the pulse width of P_2 (W_2) and the pulse width of P_1 (W_1)

NOTE 4 : Radar classification 3, 4

Chirp width	± 0.5 ~ 1.0 MHz
Pulse interval (T_1)	≥ 70 us
Pulse width of P_2 (W_2)	20 us ≤ W_2 ≤ 110 us
Differences between P_1 and P_2 : $\lvert W_2 - W_1 \rvert$	≥ 15 us
Duty ratio	≤ 10 %

NOTE 5 : Radar classification 5,6,7, and 8

Chirp width	± 0.5 ~ 1.0 MHz
Pulse interval (T_1)	≥ 50 us
Pulse width of P_2 (W_2)	28.5 us ≤ W_2 ≤ 33.6 us

W56 : Parameters of DFS Radar Type				
Radar Classification	**Pulse Width [μs]**	**Pulse Repetition Frequency [Hz]**	**Pulse per Burst [PPB]**	**Repetition Cycle [s]**
1 – Fixed	0.5	720	18	15.0
2 – Fixed	1.0	700	18	15.0
3 – Fixed	2.0	250	18	15.0
4 – Variable	1 – 5 (1 μs step)	4 347 – 6 667 Hz	23 – 29 (1 step)	15.0
5 – Variable	6 – 10 (1 μs step)	2 000 – 5 000 Hz	16 – 18 (1 step)	15.0
6 – Variable	11 – 20 (1 μs step)	2 000 – 5 000 Hz	12 - 16 (1 step)	15.0
Detection Probability ≥ 60 % Aggregate (Radar test signals 1 ~ 6) ≥ 80 %				
NOTE 1 : Channel loading is 17% of maximum transmission data rate				

W56 : Parameters of DFS Radar Type – Chirp (5-20 MHz)				
Radar Classification	**Pulse Width [μs]**	**Pulse Repetition Frequency [Hz]**	**Pulse per Burst [PPB]**	**Number of Bursts**
1	50 – 100 (1 step)	5000 – 1000 (1 step)	1 – 3	8 – 20
Detection Probability ≥ 80 %				
NOTE 1 : Channel loading is 17% of maximum transmission data rate NOTE 2 : A mass number of continuous pulses (burst) shall be radiated for 12 seconds NOTE 3 : Chirp width : 5 MHz – 20 MHz (5 MHz or frequency width with the integral multiple of 1 MHz – 5 MHz) In this case the chirp width is arbitrary to each burst. Chirp width in the same burst shall be an equal thing NOTE 4 : The pulse width of two or more pulses within a single burst shall be equal. NOTE 5 : If there are two or more pulses within a single burst, the pulse repetition frequency (PRF) of the burst shall not be relevant with the PRF of the next burst.				

W56 : Parameters of DFS Radar Type – Frequency Hopping (5250 – 5724 MHz)				
Radar Classification	**Pulse Width [μs]**	**Pulse Repetition Frequency [Hz]**	**Pulse per Burst [PPB]**	**Number of Bursts**
1	1	3000	1 – 3	300
Detection Probability ≥ 70 %				
NOTE 1 : Channel loading is 17% of maximum transmission data rate NOTE 2 : A mass number of continuous pulses NOTE 3 : Hopping frequency : 5250 MHz – 5724 MHz (5250 MHz or arbitrary frequencies with the integral multiple of 1 MHz – 5250 MHz) NOTE 4 : Switching interval of the hopping frequencies : 3 ms. Total switching interval of all the hopping frequencies : 300 ms. NOTE 5 : Burst interval : 3 ms				

5. TEST SUMMARY

Rule Part	Test Items	Test Method	Result
Article 2, Paragraph 1, Item 19-3	Channel Availability Check	Conducted	Compliant
Article 2, Paragraph 1, Item 19-3	Radar Detection Probability	Conducted	Compliant
Article 2, Paragraph 1, Item 19-3	Channel Closing Time	Conducted	Compliant
Article 2, Paragraph 1, Item 19-3	Channel Move Time	Conducted	Compliant
Article 2, Paragraph 1, Item 19-3	Non-Occupancy Period	Conducted	Compliant

Note:
1. DFS was performed according to the test method shown in Article 2, Paragraph 1, Items 19-3
2. This report contains only DFS test result.

6. DYNAMIC FREQUENCY SELECTION

6.1 Calibration of Radar Waveform

6.1.1 Detection Threshold Level

DFS Detection Threshold Level		
☒	Maximum e.i.r.p. < 200 mW	-62 dBm + G_{ANT} (dBi)
☒	Maximum e.i.r.p. ≥ 200 mW	-64 dBm + G_{ANT} (dBi)

The Interference Radar Detection Threshold for W53 : -62 + G_{ANT} (dBi) = -62 dBm + 4.36 dBi = -57.64 dBm.
The Interference Radar Detection Threshold for W56 : -64 + G_{ANT} (dBi) = -64 dBm + 4.36 dBi = -59.64 dBm

Considering the insertion loss of the cables and dividers connected between VSG and SA, (insertion loss 14.63 dB)

DUT input level for W53 from the vector signal generator is -43.01 dBm
DUT input level for W56 from the vector signal generator is -45.01 dBm

6.1.2 Channel Loading

Iperf is used to generate data traffic between control PC and the slave PC.

For W53 band (5250 – 5350 MHz), monitoring of operating channel with about 30% loading
For W56 band (5470 – 5730 MHz), monitoring of operating channel with about 17% loading

TEST PLOTS

Radar Waveform Calibration : W53	
Type 1 – Variable	**Type 2 - Variable**
	
Type 3 – Chirp	**Type 4 - Chirp**
	
Type 5 - Chirp	**Type 6 - Chirp**
	

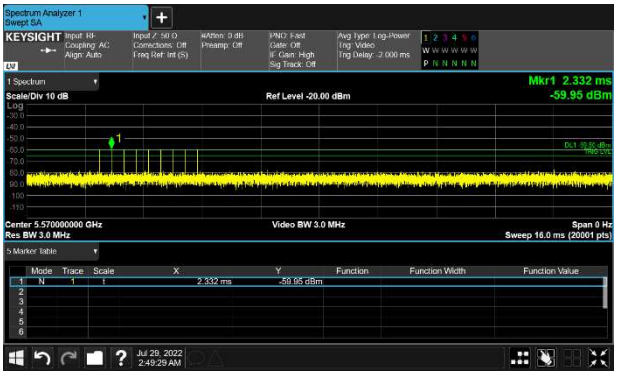
TEST PLOTS

Radar Waveform Calibration : W53	
Type 7 – Chirp	**Type 8 – Chirp**
	

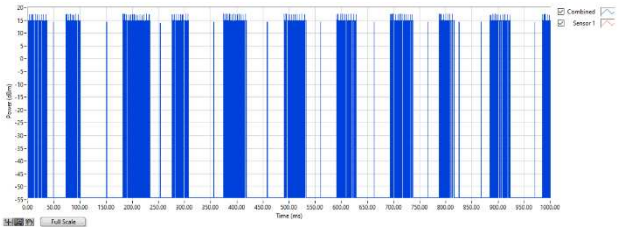
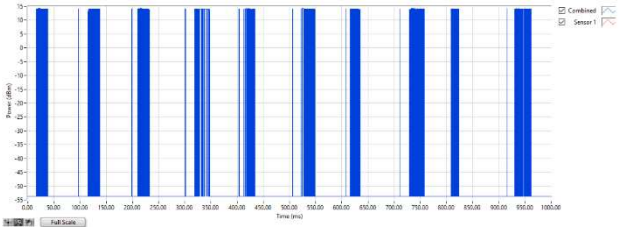
TEST PLOTS

Radar Waveform Calibration : W56	
Type 1 – Fixed	**Type 2 - Fixed**
	
Type 3 – Fixed	**Type 4 - Variable**
	
Type 5 - Variable	**Type 6 - Variable**
	

TEST PLOTS

Radar Waveform Calibration : W56	
Type 1 – Chirp (Single Burst)	**Type 1 – Frequency Hopping (Single Burst)**
	

TEST PLOTS

Channel Loading	
W53 (5290 MHz)	**W56 (5570 MHz)**
 Duty Cycle 30.4659 %	 Duty Cycle 17.8341 %

6.2 Channel Availability Check

6.2.1 Purpose

The Channel Availability Check (CAC) is defined as a mechanism by which a RLAN device checks a channel for the presence of radar signals. This mechanism is used for identifying Available Channels. There shall be no transmissions by the device within the channel being checked during this process. If no radars have been detected, the channel becomes an Available Channel.

For devices that support multiple Nominal Channel Bandwidths, the Channel Availability Check may be performed once using the widest Nominal Channel Bandwidth. All narrower channels within the tested bandwidth become Available Channels providing no radar was detected.

6.2.2. Limit

The Channel Availability Check shall be performed during a continuous period in time (Channel Availability Check Time) which shall not be less than 60 sec as shown in section 4.1 of the test report.

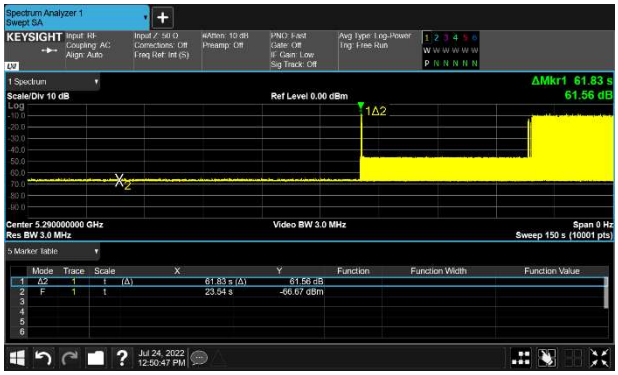
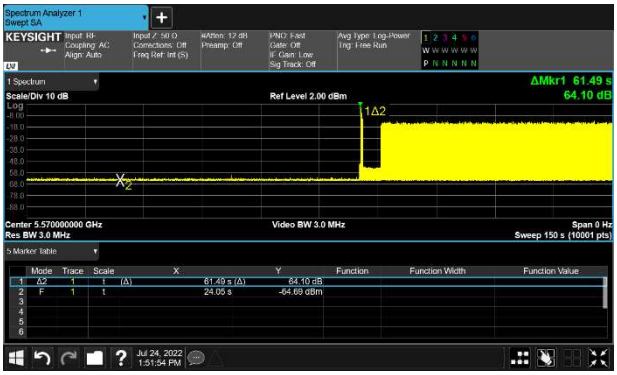
During the Channel Availability Check, the RLAN shall be capable of detecting any of the radar test signals that fall within the ranges with a level above the Radar Detection Threshold. The minimum required detection probability is 4 successful detections out of 4 trials.

6.2.3. Test Result

Channel Availability Check

Frequency (MHz)	Channel Availability Check (s)	Limit (s)	Result
5290	61.83	≥ 60	Compliant
5570	61.49	≥ 60	Compliant

TEST PLOTS

W53 (5290 MHz)	W56 (5570 MHz)
	

Detection Probability during Channel Availability Check

Frequency Band W53
Test Frequency 5290 MHz
Mode 802.11ax HE80

Radar Classification	No of Trial	No of Successful Detection	Detection Rate (%)	Limit (%)	Result
1 – Variable	4	4	100 %	100 %	Compliant
2 – Variable	4	4	100 %	100 %	Compliant
3 – Chirp	4	4	100 %	100 %	Compliant
4 – Chirp	4	4	100 %	100 %	Compliant
5 – Chirp	4	4	100 %	100 %	Compliant
6 – Chirp	4	4	100 %	100 %	Compliant
7 – Chirp	4	4	100 %	100 %	Compliant
8 – Chirp	4	4	100 %	100 %	Compliant

Frequency Band W56
Test Frequency 5570 MHz
Mode 802.11ax HE160

Radar Classification	No of Trial	No of Successful Detection	Detection Rate (%)	Limit (%)	Result
1 – Fixed	4	4	100 %	100 %	Compliant
2 – Fixed	4	4	100 %	100 %	Compliant
3 – Fixed	4	4	100 %	100 %	Compliant
4 – Variable	4	4	100 %	100 %	Compliant
5 – Variable	4	4	100 %	100 %	Compliant
6 – Variable	4	4	100 %	100 %	Compliant
7 – Chirp (1)	4	4	100 %	100 %	Compliant
8 – Hopping	4	4	100 %	100 %	Compliant

Note:
(1) Chirp 00 was applied for detection testing

6.3 In-Service Monitoring

6.3.1 Purpose

The In-Service Monitoring is defined as the process by which a RLAN monitors the Operating Channel for the presence of radar signals.

6.3.2. Limit

During the In-Service Monitoring , the RLAN shall be capable of detecting any of the radar test signals that fall within the ranges with a level above the Radar Detection Threshold defined in the section 4.2 of the report. The minimum required In-Service Monitoring associated with a given radar test signal is defined in section 4.3 of the report

6.3.3. Test Result

Summary of Detection Probability : In-Service monitoring

Frequency Band	W53
Test Frequency	5290 MHz
Mode	802.11ax HE80

Radar Classification	No of Trial	No of Successful Detection	Detection Rate (%)	Limit (%)	Result
1 – Variable	20	19	95 %	≥ 60 %	Compliant
2 – Variable	20	18	90 %	≥ 60 %	Compliant
3 – Chirp	20	20	100 %	≥ 60 %	Compliant
4 – Chirp	20	20	100 %	≥ 60 %	Compliant
5 – Chirp	20	20	100 %	≥ 60 %	Compliant
6 – Chirp	20	20	100 %	≥ 60 %	Compliant
7 – Chirp	20	20	100 %	≥ 60 %	Compliant
8 – Chirp	20	20	100 %	≥ 60 %	Compliant

Frequency Band	W56
Test Frequency	5570 MHz
Mode	802.11ax HE160

Radar Classification	No of Trial	No of Successful Detection	Detection Rate (%)	Limit (%)	Result
1 – Fixed	20	20	100 %	≥ 60 %	Compliant
2 – Fixed	20	20	100 %	≥ 60 %	Compliant
3 – Fixed	20	20	100 %	≥ 60 %	Compliant
4 – Variable	20	20	100 %	≥ 60 %	Compliant
5 – Variable	20	20	100 %	≥ 60 %	Compliant
6 – Variable	20	20	100 %	≥ 60 %	Compliant
Aggregate	(100% + 100% + 100% + 100% + 100% + 100%) / 6 = 100 %			≥ 80 %	Compliant
1 – Chirp	20	20	100 %	≥ 80 %	Compliant
1 - Hopping	20	20	100 %	≥ 70 %	Compliant

Frequency Band	W53
Radar Classification	Type 1 - Variable
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 1 – Variable Pulse				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	0.6	769	10	O
2	0.7	635	10	O
3	0.8	421	10	O
4	1.0	302	10	O
5	1.5	972	10	O
6	1.7	767	10	O
7	1.7	598	10	O
8	2.1	618	10	O
9	2.5	996	10	O
10	2.8	937	10	O
11	2.8	741	10	X
12	3.0	397	10	O
13	3.2	672	10	O
14	3.3	685	10	O
15	3.9	965	10	O
16	3.9	707	10	O
17	4.0	352	10	O
18	4.8	859	10	O
19	4.8	667	10	O
20	5.0	346	10	O
Successful Detection (%)				95 %
Limit (%)				≥ 60 %
Result				Compliant

Frequency Band	W53
Radar Classification	Type 2 - Variable
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 2 – Variable Pulse				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	0.9	1324	15	O
2	10.5	954	15	O
3	10.8	311	15	O
4	11.7	1050	15	O
5	12.0	535	15	O
6	12.6	1241	15	O
7	12.9	382	15	O
8	13.0	899	15	O
9	14.2	353	15	X
10	1.5	768	15	O
11	2.1	862	15	O
12	2.1	1543	15	O
13	4.1	1474	15	O
14	6.9	833	15	O
15	6.9	692	15	O
16	7.3	1232	15	O
17	8.8	547	15	O
18	9.0	1097	15	O
19	9.4	737	15	O
20	9.8	828	15	X
Successful Detection (%)				90 %
Limit (%)				≥ 60 %
Result				Compliant

Frequency Band	W53
Radar Classification	Type 3 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 3 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	3.3	690	90.0	690	22	O
2	3.1	960	90.0	960	25	O
3	1.4	930	60.0	930	24	O
4	2.5	390	30.0	390	22	O
5	4.5	610	90.0	610	22	O
6	0.8	440	40.0	440	22	O
7	4.7	780	80.0	780	22	O
8	2.7	620	40.0	620	22	O
9	0.9	900	30.0	900	23	O
10	0.7	570	100.0	570	22	O
11	2.0	830	80.0	830	22	O
12	1.1	610	40.0	610	22	O
13	2.7	330	40.0	330	22	O
14	2.9	240	50.0	240	22	O
15	1.6	860	30.0	860	22	O
16	2.5	960	90.0	960	25	O
17	1.1	730	90.0	730	22	O
18	3.8	880	50.0	880	23	O
19	4.9	860	70.0	860	22	O
20	1.3	580	80.0	580	22	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W53
Radar Classification	Type 4 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 4 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.5	320	90.0	320	22	O
2	5.0	880	60.0	880	23	O
3	0.5	1280	60.0	1280	30	O
4	14.7	320	50.0	320	22	O
5	3.0	1450	100.0	1450	30	O
6	4.9	200	90.0	200	22	O
7	7.1	580	40.0	580	22	O
8	1.0	600	80.0	600	22	O
9	4.6	940	50.0	940	24	O
10	8.9	620	50.0	620	22	O
11	6.9	360	80.0	360	22	O
12	13.2	870	90.0	870	23	O
13	5.8	1430	90.0	1430	30	O
14	6.0	920	30.0	920	24	O
15	6.4	1390	50.0	1390	30	O
16	12.4	830	60.0	830	22	O
17	3.1	650	70.0	650	22	O
18	4.3	610	70.0	610	22	O
19	7.9	880	50.0	880	23	O
20	13.7	990	70.0	990	26	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W53
Radar Classification	Type 5 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 5 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.4	1115	32.5	1115	30	O
2	1.4	1116	29.5	1116	30	O
3	0.5	1116	29.5	1116	30	O
4	1.1	1115	29.5	1115	30	O
5	0.7	1117	28.5	1117	30	O
6	0.5	1114	32.5	1114	30	O
7	1.0	1114	30.5	1114	30	O
8	1.2	1117	28.5	1117	30	O
9	1.3	1116	31.5	1116	30	O
10	1.3	1115	29.5	1115	30	O
11	0.8	1116	30.5	1116	30	O
12	1.0	1117	32.5	1117	30	O
13	1.1	1115	28.5	1115	30	O
14	0.9	1114	30.5	1114	30	O
15	1.1	1115	29.5	1115	30	O
16	0.6	1117	29.5	1117	30	O
17	1.3	1116	30.5	1116	30	O
18	0.9	1114	32.5	1114	30	O
19	0.6	1117	32.5	1117	30	O
20	1.4	1116	30.5	1116	30	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W53
Radar Classification	Type 6 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 6 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.1	928	28.5	928	25	O
2	0.9	929	29.5	929	25	O
3	0.6	930	32.5	930	25	O
4	0.5	928	32.5	928	25	O
5	0.5	928	31.5	928	25	O
6	0.5	928	31.5	928	25	O
7	1.3	931	29.5	931	25	O
8	1.3	929	31.5	929	25	O
9	1.4	931	29.5	931	25	O
10	0.9	931	28.5	931	25	O
11	1.3	930	31.5	930	25	O
12	0.6	931	30.5	931	25	O
13	1.2	930	31.5	930	25	O
14	0.7	931	31.5	931	25	O
15	0.9	931	32.5	931	25	O
16	1.0	931	32.5	931	25	O
17	0.9	928	28.5	928	25	O
18	1.2	931	31.5	931	25	O
19	1.2	930	29.5	930	25	O
20	1.0	931	31.5	931	25	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W53
Radar Classification	Type 7 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 7 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	0.7	887	31.5	887	24	O
2	0.8	887	32.5	887	24	O
3	1.2	888	30.5	888	24	O
4	1.3	888	30.5	888	24	O
5	0.8	888	32.5	888	24	O
6	0.5	889	32.5	889	24	O
7	1.4	887	31.5	887	24	O
8	1.4	889	30.5	889	24	O
9	0.5	889	28.5	889	24	O
10	1.1	887	29.5	887	24	O
11	0.6	887	31.5	887	24	O
12	1.4	889	29.5	889	24	O
13	0.5	888	29.5	888	24	O
14	0.5	889	31.5	889	24	O
15	0.6	888	29.5	888	24	O
16	0.9	886	32.5	886	24	O
17	1.0	886	31.5	886	24	O
18	0.9	887	31.5	887	24	O
19	1.1	886	33.5	886	24	O
20	1.3	887	30.5	887	24	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W53
Radar Classification	Type 8 - Chirp
Test Frequency	5290 MHz
Mode	802.11ax HE80

W53 Radar Type 8 – Chirp						
Trial #	**P_1, Pulse width (us)**	**P_1, PRF (Hz)**	**P_2, Pulse width (us)**	**P_2, PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.1	739	31.5	739	20	O
2	0.6	741	32.5	741	20	O
3	0.7	739	32.5	739	20	O
4	0.5	740	30.5	740	20	O
5	0.7	740	29.5	740	20	O
6	0.8	740	32.5	740	20	O
7	0.6	739	30.5	739	20	O
8	0.6	739	30.5	739	20	O
9	1.1	739	29.5	739	20	O
10	1.0	740	28.5	740	20	O
11	1.0	740	28.5	740	20	O
12	0.9	741	31.5	741	20	O
13	0.5	740	32.5	740	20	O
14	1.3	741	29.5	741	20	O
15	1.3	740	29.5	740	20	O
16	1.0	740	32.5	740	20	O
17	1.0	738	31.5	738	20	O
18	1.1	741	29.5	741	20	O
19	0.8	741	29.5	741	20	O
20	1.0	740	29.5	740	20	O
Successful Detection (%)						100 %
Limit (%)						≥ 60 %
Result						Compliant

Frequency Band	W56
Radar Classification	Type 1 / 2 / 3 - Fixed
Test Frequency	5570 MHz
Mode	802.11ax HE160

Radar Type	Pulse width (us)	PRF (Hz)	Pulses / Burst (PPB)	Detection		Detection Probability	Limit
				Trial #	Success		
1 – Fixed	0.5	720	18	20	20	100 %	≥ 60 %
2 – Fixed	1.0	700	18	20	20	100 %	≥ 60 %
3 – Fixed	2.0	250	18	20	20	100 %	≥ 60 %
Result						Compliant	

Frequency Band	W56
Radar Classification	Type 4 - Variable
Test Frequency	5570 MHz
Mode	802.11ax HE160

W56 Radar Type 4 – Variable Pulse				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.0	6588	27	O
2	1.0	6313	28	O
3	1.0	6165	25	O
4	1.0	5790	28	O
5	1.0	5219	25	O
6	1.0	4921	23	O
7	1.0	4531	28	O
8	2.0	6447	23	O
9	2.0	6357	27	O
10	2.0	5382	27	O
11	2.0	4494	27	O
12	4.0	6146	27	O
13	4.0	6131	28	O
14	4.0	5886	25	O
15	4.0	5845	24	O
16	4.0	4679	26	O
17	5.0	5821	24	O
18	5.0	5727	24	O
19	5.0	4638	23	O
20	5.0	4509	29	O
Successful Detection (%)				100 %
Limit (%)				≥ 60 %
Result				Compliant

Frequency Band	W56
Radar Classification	Type 5 - Variable
Test Frequency	5570 MHz
Mode	802.11ax HE160

W56 Radar Type 5 – Variable Pulse				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	10.0	4423	17	O
2	10.0	4058	16	O
3	10.0	2011	16	O
4	6.0	3779	16	O
5	6.0	3779	17	O
6	6.0	3167	18	O
7	6.0	2718	16	O
8	7.0	4221	17	O
9	8.0	4693	17	O
10	8.0	4566	17	O
11	8.0	4263	18	O
12	8.0	3945	18	O
13	8.0	3406	17	O
14	8.0	2803	17	O
15	8.0	2739	18	O
16	8.0	2347	17	O
17	8.0	2038	16	O
18	9.0	4708	17	O
19	9.0	3877	18	O
20	9.0	3241	16	O
Successful Detection (%)				100 %
Limit (%)				≥ 60 %
Result				Compliant

Frequency Band	W56
Radar Classification	Type 6 - Variable
Test Frequency	5570 MHz
Mode	802.11ax HE160

W56 Radar Type 6 – Variable Pulse				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	11.0	4346	12	O
2	12.0	3990	13	O
3	13.0	3164	15	O
4	14.0	3530	15	O
5	15.0	4312	13	O
6	15.0	2145	15	O
7	16.0	4513	16	O
8	16.0	4437	15	O
9	16.0	4218	12	O
10	16.0	2210	15	O
11	17.0	4958	13	O
12	17.0	4085	15	O
13	17.0	3887	16	O
14	17.0	3085	14	O
15	17.0	2998	14	O
16	17.0	2011	13	O
17	18.0	4305	12	O
18	18.0	2884	15	O
19	19.0	3697	15	O
20	19.0	3625	14	O
Successful Detection (%)				100 %
Limit (%)				≥ 60 %
Result				Compliant

Frequency Band	W56
Radar Classification	Type 1 – Chirp (5 – 20 MHz)
Test Frequency	5570 MHz
Mode	802.11ax HE160

Radar Type 1 – Chirp (5 – 20 MHz)				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	See Section 6.6 (Chirp 00)			O
2	See Section 6.6 (Chirp 01)			O
3	See Section 6.6 (Chirp 02)			O
4	See Section 6.6 (Chirp 03)			O
5	See Section 6.6 (Chirp 04)			O
6	See Section 6.6 (Chirp 05)			O
7	See Section 6.6 (Chirp 06)			O
8	See Section 6.6 (Chirp 07)			O
9	See Section 6.6 (Chirp 08)			O
10	See Section 6.6 (Chirp 09)			O
11	See Section 6.6 (Chirp 10)			O
12	See Section 6.6 (Chirp 11)			O
13	See Section 6.6 (Chirp 12)			O
14	See Section 6.6 (Chirp 13)			O
15	See Section 6.6 (Chirp 14)			O
16	See Section 6.6 (Chirp 15)			O
17	See Section 6.6 (Chirp 16)			O
18	See Section 6.6 (Chirp 17)			O
19	See Section 6.6 (Chirp 18)			O
20	See Section 6.6 (Chirp 19)			O
Successful Detection (%)				100 %
Limit (%)				80 %
Result				Compliant

Frequency Band	W56
Radar Classification	Type 1 - Hopping
Test Frequency	5570 MHz
Mode	802.11ax HE160

W56 Radar Type 1 – Hopping				
Trial #	**Pulse width (us)**	**PRF (Hz)**	**Pulses / Burst (PPB)**	**Detection (O / X)**
1	1.0	3000	9	O
2	1.0	3000	9	O
3	1.0	3000	9	O
4	1.0	3000	9	O
5	1.0	3000	9	O
6	1.0	3000	9	O
7	1.0	3000	9	O
8	1.0	3000	9	O
9	1.0	3000	9	O
10	1.0	3000	9	O
11	1.0	3000	9	O
12	1.0	3000	9	O
13	1.0	3000	9	O
14	1.0	3000	9	O
15	1.0	3000	9	O
16	1.0	3000	9	O
17	1.0	3000	9	O
18	1.0	3000	9	O
19	1.0	3000	9	O
20	1.0	3000	9	O
Successful Detection (%)				100 %
Limit (%)				≥ 70 %
Result				Compliant

6.4 Channel Shutdown

6.4.1 Purpose

The Channel Shutdown is defined as the process initiated by the RLAN device on the Operating Channel. This process shall start immediately after a radar signal has been detected on the Operating Channel. The master device shall instruct all associated slave devices to stop transmitting on this channel, which they shall do within the Channel Move Time. Slave devices with a Radar Interference Detection function, shall stop their own transmissions on an Operating Channel within the Channel Move Time upon detecting a radar signal within this channel.

6.4.2. Limit

The Channel Move Time and the Channel Closing Transmission Time shall not exceed the limit defined in section 4.1 of this test report.

6.4.3. Test Result

Operating Frequency (MHz)	Channel Bandwidth (MHz)	Radar type	Channel Closing Tx Time (ms)	Limit (ms)	Result
5290	80	1 – Variable	26	≤ 260	Compliant
5570	160	1 – Fixed	26	≤ 260	Compliant

Operating Frequency (MHz)	Channel Bandwidth (MHz)	Radar type	Channel Move Time (s)	Limit (s)	Result
5290	80	1 – Variable	0.120	≤ 10	Compliant
5570	160	1 – Fixed	0.147	≤ 10	Compliant

TEST PLOTS

W53 (5290 MHz)	W56 (5570 MHz)
	

6.5 Non-Occupancy Period

6.5.1 Purpose

The Non-Occupancy Period is defined as the time during which the RLAN device shall not make any transmissions on a channel after a radar signal was detected on that channel.

NOTE 1 : For equipment having simultaneous transmissions on multiple (adjacent or non-adjacent) operating channels, only the channel(s) containing the frequency on which radar was detected is subject to the Non-Occupancy Period requirement. The equipment is allowed to continue transmissions on other Operating Channels.

NOTE 2: After the Non-Occupancy Period, the channel needs to be identified again as an Available Channel before the RLAN device may start transmitting again on this channel.

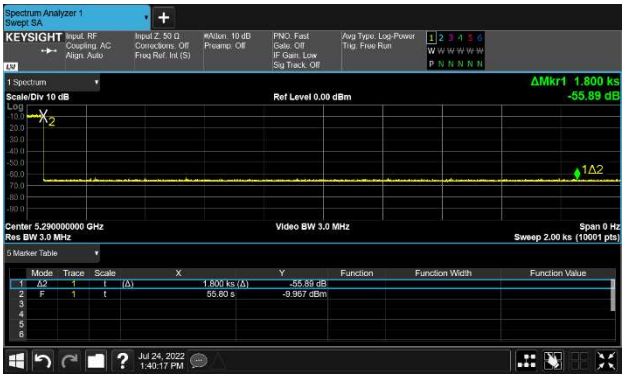
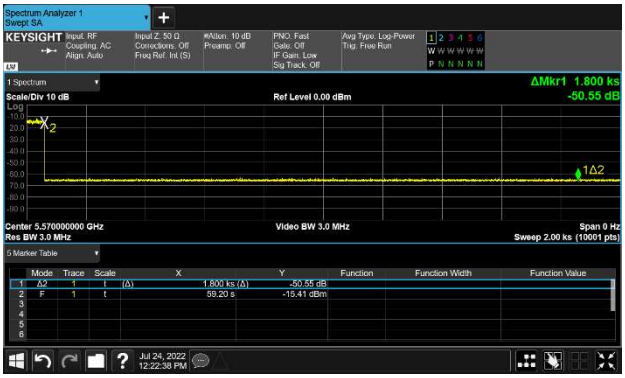
6.5.2 Limit

The Non-Occupancy Period shall not be less than 30 mins

6.5.3. Test Result

Operating Frequency (MHz)	Radar type	Non-Occupancy Period (s)	Limit (s)	Result
5290	1 – Variable	No emission detected within 1800 s	≥ 1800	Compliant
5570	1 – Fixed	No emission detected within 1800 s	≥ 1800	Compliant

TEST PLOTS

W53 (5290 MHz)	W56 (5570 MHz)
	

6.6 Specification of W56 Chirp Radar

Chirp 00		Number of Burst Segment = 14 Total Burst Segment Length = 857142 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	16	96211	76	1074	1585	758044	857142
2	3	10	764901	75	1082	1772	89162	857142
3	1	17	500053	99	0	0	356990	857142
4	1	16	725870	83	0	0	131189	857142
5	3	17	702339	58	1767	1363	151499	857142
6	3	15	816297	99	1893	1023	37632	857142
7	2	19	776995	51	1244	0	78801	857142
8	1	19	42004	96	0	0	815042	857142
9	2	18	817849	63	1357	0	37810	857142
10	2	18	89742	91	1658	0	765560	857142
11	3	9	635148	52	1731	1716	218391	857142
12	3	18	713107	87	1153	1684	140937	857142
13	2	19	847139	51	1368	0	8533	857142
14	1	15	77413	75	0	0	779654	857142

Chirp 01		Number of Burst Segment = 17 Total Burst Segment Length = 705882 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	7	284157	90	1811	1864	417780	705882
2	2	6	649793	63	1064	0	54899	705882
3	3	19	98754	60	1121	1179	604648	705882
4	2	12	459664	51	1027	0	245089	705882
5	1	19	560224	87	0	0	145571	705882
6	2	14	229448	77	1663	0	474617	705882
7	1	7	180239	50	0	0	525593	705882
8	2	18	329799	81	1710	0	374211	705882
9	1	7	454571	79	0	0	251232	705882
10	3	18	527671	75	1911	1163	174912	705882
11	3	15	100843	98	1511	1560	601674	705882
12	2	5	616774	71	1089	0	87877	705882
13	3	10	612328	85	1717	1764	89818	705882
14	1	15	435402	83	0	0	270397	705882
15	1	14	153242	88	0	0	552552	705882
16	2	15	272542	74	1755	0	431437	705882
17	3	9	258241	77	1736	1737	443937	705882

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Chirp 02		Number of Burst Segment = 13 Total Burst Segment Length = 923076 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	6	187601	76	1901	0	733422	923076
2	3	14	779371	82	1254	1783	140422	923076
3	3	14	509279	53	1728	1283	410627	923076
4	1	8	68956	83	0	0	854037	923076
5	2	15	542835	57	1830	0	378297	923076
6	2	10	821275	59	1571	0	100112	923076
7	2	11	484772	72	1394	0	436766	923076
8	2	11	119447	86	1339	0	802118	923076
9	3	15	703193	94	1537	1697	216367	923076
10	3	8	147520	59	1686	1620	772073	923076
11	1	5	337599	68	0	0	585409	923076
12	2	14	408415	54	1163	0	513390	923076
13	1	20	308712	86	0	0	614278	923076

Chirp 03		Number of Burst Segment = 13 Total Burst Segment Length = 923076 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	9	779523	57	1742	0	141697	923076
2	3	6	464595	61	1040	1450	455808	923076
3	1	18	799915	54	0	0	123107	923076
4	3	19	242619	56	1156	1296	677837	923076
5	1	7	83882	73	0	0	839121	923076
6	2	8	655084	90	1597	0	266215	923076
7	1	9	352216	84	0	0	570776	923076
8	1	19	378195	81	0	0	544800	923076
9	3	19	464164	98	1003	1158	456457	923076
10	3	20	411342	71	1719	1279	508523	923076
11	1	17	906394	91	0	0	16591	923076
12	1	16	87097	80	0	0	835899	923076
13	3	19	359634	61	959	1321	560979	923076

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Chirp 04		Number of Burst Segment = 12 Total Burst Segment Length = 1000000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	16	58699	87	1622	1170	938248	1000000
2	3	9	799345	100	1320	1062	197973	1000000
3	3	15	855336	65	1557	944	141968	1000000
4	1	10	909127	79	0	0	90794	1000000
5	1	13	904068	62	0	0	95870	1000000
6	3	15	717647	85	950	1827	279321	1000000
7	3	5	81028	58	1618	1223	915957	1000000
8	1	11	834706	69	0	0	165225	1000000
9	2	20	756266	78	1712	0	241866	1000000
10	3	14	141919	51	1862	1112	854954	1000000
11	3	19	182626	100	1322	1378	814374	1000000
12	2	5	218404	61	1256	0	780218	1000000

Chirp 05		Number of Burst Segment = 14 Total Burst Segment Length = 857142 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	17	2070	97	1175	0	853703	857142
2	2	17	125366	97	1754	0	729828	857142
3	2	17	629902	70	1182	0	225918	857142
4	1	15	52493	52	0	0	804597	857142
5	1	14	40422	88	0	0	816632	857142
6	1	9	688958	55	0	0	168129	857142
7	3	7	245988	87	1327	1431	608135	857142
8	1	18	838965	77	0	0	18100	857142
9	2	9	340208	51	1935	0	514897	857142
10	1	12	447943	84	0	0	409115	857142
11	3	12	289108	61	1146	1107	565598	857142
12	1	17	741143	54	0	0	115945	857142
13	3	7	25352	80	1670	1456	828424	857142
14	1	16	922	84	0	0	856136	857142

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Chirp 06		Number of Burst Segment = 9 Total Burst Segment Length = 1333333 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	19	859260	86	1081	1439	471295	1333333
2	3	10	961045	57	1229	1318	369570	1333333
3	2	14	708222	79	1372	0	623581	1333333
4	1	9	256075	53	0	0	1077205	1333333
5	1	20	514652	84	0	0	818597	1333333
6	2	16	494716	64	1892	0	836597	1333333
7	2	12	1289857	97	1311	0	41971	1333333
8	2	5	922092	78	1566	0	409519	1333333
9	2	11	683685	98	1481	0	647971	1333333

Chirp 07		Number of Burst Segment = 19 Total Burst Segment Length = 631578 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	20	311493	58	1521	0	318448	631578
2	3	16	21089	83	1840	1327	607073	631578
3	3	7	114451	89	1279	971	514610	631578
4	3	11	386975	84	1175	1086	242090	631578
5	1	12	227289	95	0	0	404194	631578
6	2	8	61908	90	1791	0	567699	631578
7	2	17	488337	76	1036	0	142053	631578
8	2	19	455813	94	1190	0	174387	631578
9	2	12	162516	78	1569	0	467337	631578
10	2	11	271961	66	1711	0	357774	631578
11	3	14	562709	53	1369	1498	65843	631578
12	3	10	432782	50	1222	1891	195533	631578
13	2	12	261541	97	1169	0	368674	631578
14	1	17	64201	64	0	0	567313	631578
15	3	13	365181	57	1628	999	263599	631578
16	1	19	37535	61	0	0	593982	631578
17	2	12	235386	73	1120	0	394926	631578
18	3	13	549358	67	1813	1618	78588	631578
19	2	17	18644	50	1747	0	611087	631578

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Chirp 08		Number of Burst Segment = 15 Total Burst Segment Length = 800000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	5	54507	100	0	0	745393	800000
2	1	10	133876	99	0	0	666025	800000
3	3	16	361018	53	1441	1261	436121	800000
4	3	8	64148	71	1473	1160	733006	800000
5	3	10	323910	54	1023	1641	473264	800000
6	1	6	111786	61	0	0	688153	800000
7	3	5	193320	95	939	964	604492	800000
8	3	9	20999	100	1386	1018	776297	800000
9	2	14	451299	92	975	0	347542	800000
10	1	8	639264	55	0	0	160681	800000
11	1	20	643968	78	0	0	155954	800000
12	1	20	298629	82	0	0	501289	800000
13	3	6	255819	93	958	1694	541250	800000
14	3	9	469806	73	1321	1453	327201	800000
15	1	16	769526	63	0	0	30411	800000

Chirp 09		Number of Burst Segment = 17 Total Burst Segment Length = 705882 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	12	592481	77	1551	0	111696	705882
2	3	19	226883	56	1284	1459	476088	705882
3	1	20	432063	61	0	0	273758	705882
4	3	14	685755	81	1554	934	17396	705882
5	2	17	200465	75	1525	0	503742	705882
6	3	14	575415	79	1499	1895	126836	705882
7	3	12	524403	54	1044	1446	178827	705882
8	3	20	566554	99	1031	1347	136653	705882
9	2	5	643556	69	1353	0	60835	705882
10	3	16	519994	80	1030	1867	182751	705882
11	3	16	36215	51	976	1506	667032	705882
12	2	17	354506	66	1476	0	349768	705882
13	1	13	362668	57	0	0	343157	705882
14	2	16	22361	94	1580	0	681753	705882
15	3	16	164276	60	1166	1150	539110	705882
16	2	19	194983	84	1891	0	508840	705882
17	3	10	544853	52	1404	1023	158446	705882

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Chirp 10		Number of Burst Segment = 17 Total Burst Segment Length = 705882 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	12	575962	96	0	0	129824	705882
2	3	5	627009	63	1236	1849	75599	705882
3	2	16	307696	68	1929	0	396121	705882
4	3	17	574840	95	1225	1404	128128	705882
5	1	18	309612	82	0	0	396188	705882
6	3	17	51842	63	987	1727	651137	705882
7	2	7	537907	79	1308	0	166509	705882
8	2	13	143386	51	1388	0	561006	705882
9	3	13	170978	66	1201	1438	532067	705882
10	1	7	320963	63	0	0	384856	705882
11	3	9	192238	88	1813	1902	509665	705882
12	2	19	160305	69	1930	0	543509	705882
13	1	18	678563	56	0	0	27263	705882
14	3	14	608912	79	1595	1248	93890	705882
15	1	9	640076	94	0	0	65712	705882
16	1	14	659382	55	0	0	46445	705882
17	2	13	235583	100	1826	0	468273	705882

Chirp 11		Number of Burst Segment = 13 Total Burst Segment Length = 923076 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	9	13735	65	1333	1425	906388	923076
2	2	12	609561	82	1894	0	311457	923076
3	1	9	662433	85	0	0	260558	923076
4	2	14	541968	84	1714	0	379226	923076
5	2	20	909823	94	1900	0	11165	923076
6	1	12	322453	99	0	0	600524	923076
7	1	10	726990	85	0	0	196001	923076
8	2	12	194995	64	1258	0	726695	923076
9	1	8	556979	65	0	0	366032	923076
10	2	8	376589	66	1736	0	544619	923076
11	1	19	289486	61	0	0	633529	923076
12	3	16	301948	56	1888	1752	617320	923076
13	1	10	42963	70	0	0	880043	923076

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Chirp 12		Number of Burst Segment = 10 Total Burst Segment Length = 1200000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	9	405492	71	0	0	794437	1200000
2	2	5	412144	63	1176	0	786554	1200000
3	2	12	1008781	71	1302	0	189775	1200000
4	2	16	901390	83	1103	0	297341	1200000
5	3	12	234860	61	1640	1718	961599	1200000
6	1	12	179430	74	0	0	1020496	1200000
7	1	18	319384	90	0	0	880526	1200000
8	1	5	57888	66	0	0	1142046	1200000
9	3	7	640319	69	1201	1908	556365	1200000
10	3	15	444421	76	1297	1026	753028	1200000

Chirp 13		Number of Burst Segment = 16 Total Burst Segment Length = 750000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	14	734690	61	1315	0	13873	750000
2	3	12	588984	87	1054	1283	158418	750000
3	2	9	418444	54	1604	0	329844	750000
4	1	13	317443	68	0	0	432489	750000
5	2	17	299247	92	1526	0	449043	750000
6	1	18	200553	97	0	0	549350	750000
7	2	11	360740	84	1016	0	388076	750000
8	2	9	19018	79	1811	0	729013	750000
9	2	13	14765	64	1702	0	733405	750000
10	2	19	147073	86	1167	0	601588	750000
11	3	5	41315	71	1506	1877	705089	750000
12	3	20	657645	71	1906	1661	88575	750000
13	3	14	340547	61	1642	1343	406285	750000
14	2	6	246005	87	1194	0	502627	750000
15	2	7	56603	51	1005	0	692290	750000
16	3	15	485375	63	1300	1620	261516	750000

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Chirp 14		Number of Burst Segment = 12 Total Burst Segment Length = 1000000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	17	152356	83	0	0	847561	1000000
2	2	7	912431	94	1224	0	86157	1000000
3	1	11	330699	81	0	0	669220	1000000
4	1	20	258253	66	0	0	741681	1000000
5	1	6	670812	76	0	0	329112	1000000
6	1	13	811314	83	0	0	188603	1000000
7	3	15	367159	80	1609	1210	629782	1000000
8	1	19	458928	61	0	0	541011	1000000
9	1	9	182012	80	0	0	817908	1000000
10	3	20	406399	97	1318	950	591042	1000000
11	3	19	426151	87	1371	1241	570976	1000000
12	1	13	644271	58	0	0	355671	1000000

Chirp 15		Number of Burst Segment = 8 Total Burst Segment Length = 1500000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	3	10	743150	63	1365	1218	754078	1500000
2	2	19	265722	81	1338	0	1232778	1500000
3	2	9	1430606	86	1261	0	67961	1500000
4	1	7	1061576	83	0	0	438341	1500000
5	3	7	1044990	81	1001	1192	452574	1500000
6	1	18	424791	68	0	0	1075141	1500000
7	1	9	638017	85	0	0	861898	1500000
8	1	20	1131418	67	0	0	368515	1500000

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Chirp 16		Number of Burst Segment = 15 Total Burst Segment Length = 800000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	17	789197	66	1055	0	9616	800000
2	2	7	783995	65	1117	0	14758	800000
3	2	12	747885	100	1249	0	50666	800000
4	2	6	123778	69	1190	0	674894	800000
5	2	9	512722	65	1695	0	285453	800000
6	2	7	184891	74	1219	0	613742	800000
7	1	10	71310	100	0	0	728590	800000
8	3	19	422620	69	1428	1086	374659	800000
9	3	5	234607	76	1302	1314	562549	800000
10	2	10	533619	67	1005	0	265242	800000
11	1	14	792856	85	0	0	7059	800000
12	1	5	383308	53	0	0	416639	800000
13	2	7	758473	53	1834	0	39587	800000
14	3	15	447823	74	1336	1526	349093	800000
15	2	20	149523	94	1635	0	648654	800000

Chirp 17		Number of Burst Segment = 8 Total Burst Segment Length = 1500000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	10	522063	95	0	0	977842	1500000
2	3	18	1172056	56	1164	1508	325104	1500000
3	1	6	924614	87	0	0	575299	1500000
4	1	5	826266	93	0	0	673641	1500000
5	2	15	606941	91	970	0	891907	1500000
6	3	7	910785	83	1664	1684	585618	1500000
7	3	20	1261256	63	1349	1863	235343	1500000
8	1	7	1137245	83	0	0	362672	1500000

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Chirp 18		Number of Burst Segment = 20 Total Burst Segment Length = 600000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	1	11	114344	83	0	0	485573	600000
2	1	9	590052	96	0	0	9852	600000
3	1	18	244355	80	0	0	355565	600000
4	1	11	137008	68	0	0	462924	600000
5	2	16	232163	73	1646	0	366045	600000
6	1	17	309452	81	0	0	290467	600000
7	1	7	464167	66	0	0	135767	600000
8	1	19	475558	59	0	0	124383	600000
9	2	20	128229	75	1600	0	470021	600000
10	3	18	1068	87	1676	1430	595565	600000
11	3	16	367013	93	949	1398	230361	600000
12	3	11	157865	60	979	1488	439488	600000
13	1	15	527316	81	0	0	72603	600000
14	2	8	246987	57	1053	0	351846	600000
15	3	16	330186	81	1794	1389	266388	600000
16	1	20	542146	87	0	0	57767	600000
17	2	14	392399	77	1773	0	205674	600000
18	2	15	272642	64	1095	0	326135	600000
19	3	17	543007	73	1903	1157	53714	600000
20	1	18	101252	77	0	0	498671	600000

Chirp 19		Number of Burst Segment = 16 Total Burst Segment Length = 750000 us						
Burst Segment	No of Pulse	Chirp Width (MHz)	T1 (us)	Pulse Width (us)	T3 (us)	T4 (us)	T5 (us)	Total Length (us)
1	2	14	183314	70	1881	0	564665	750000
2	3	5	344534	58	1002	1354	402936	750000
3	2	19	332638	56	1666	0	415584	750000
4	3	9	37779	50	1236	1408	709427	750000
5	2	13	576206	71	1790	0	171862	750000
6	2	12	676158	78	1655	0	72031	750000
7	3	6	672337	61	1075	959	75446	750000
8	2	6	73639	83	1577	0	674618	750000
9	1	20	463568	77	0	0	286355	750000
10	1	12	226516	75	0	0	523409	750000
11	2	19	376297	78	1139	0	372408	750000
12	3	11	390419	58	1326	1131	356950	750000
13	2	15	511126	79	1478	0	237238	750000
14	3	14	453681	93	1331	1770	292939	750000
15	2	17	457820	58	1895	0	290169	750000
16	3	8	70653	77	1641	1059	676416	750000

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7. LIST OF TEST EQUIPMENT

No.	Instrument	Model No.	Manufacture	Serial No.	Calibration Date	Calibration Lab	Calibration Method
☒	Signal Analyzer (10 Hz ~ 26.5 GHz)	N9020B	Keysight	MY57431494	2022-07-14	HCT America	Note 2(c)
☒	Attenuator (10 dB) (DC ~ 26.5 GHz)	CFAD261002	CERNEX	-	2022-01-13	HCT America	Note 2(c)
☒	Attenuator (20 dB) (DC ~ 26.5 GHz)	8493C	HP	09072	2022-01-13	HCT America	Note 2(c)
☒	Power Divider 2 way (DC ~ 6 GHz)	802-2-6.000	MECA	1	2022-06-01	HCT America	Note 2(c)
☒	Power Divider 2 way (DC ~ 6 GHz)	802-2-6.000	MECA	2	2022-06-01	HCT America	Note 2(c)
☒	DFS Radar Simulator (SA)	3025C	AEROFLEX	302570/248	2022-01-09	HCT America	Note 2(c)
☒	DFS Radar simulator (VSG)	3035C	AEROFLEX	303570/536	2022-01-09	HCT America	Note 2(c)
☒	DFS Test Software	-	AEROFLEX	-	-	-	-
☒	Vector Signal Generator	SMW200A	Rohde & Schwarz	1046864	2022-04-01	HCT America	Note 2(c)

Note(s) :

1. The calibration interval of the above test instrument is 12 months and the calibration was done in a designated calibration agency under Article 102.18 paragraph(1).
2. Calibration Method :
   (a) Calibration conducted by the National Institute of Information and Communications Technology(NICT) or a designated calibration agency under Article 102-18 paragraph (1) of the Radio Law.
   (b) Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
   (c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
   (d) Calibration conducted by using other equipment that listed above from (a) to (c).

APPENDIX A. TEST SETUP PHOTOS

The setup photos are provided as a separate document.

Hyundai C-Tech, Inc. dba HCT America, Inc., 1726 Ringwood Ave, San Jose, CA 95131, USA. TEL: +1-510-933-8848 FAX: +1-510-933-8849

APPENDIX B. PHOTOGRAPHS OF EUT

B.1. EXTERNAL PHOTOS

The external photos are provided as a separate document.

B.2. INTERNAL PHOTOS

The internal photos are provided as a separate document.

END OF TEST REPORT

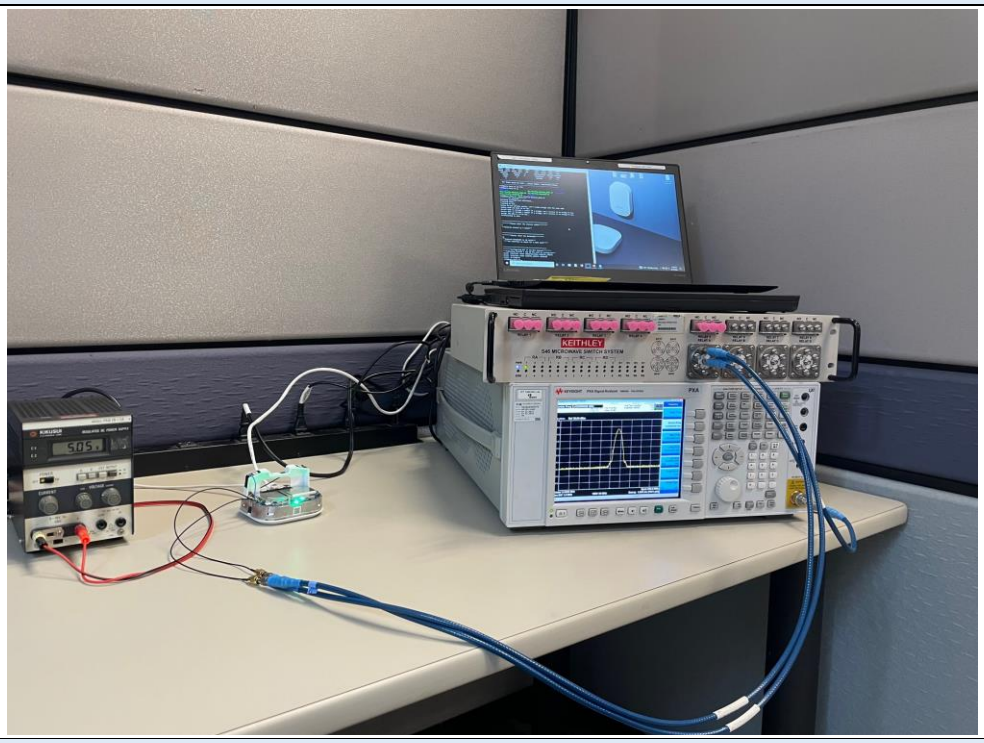
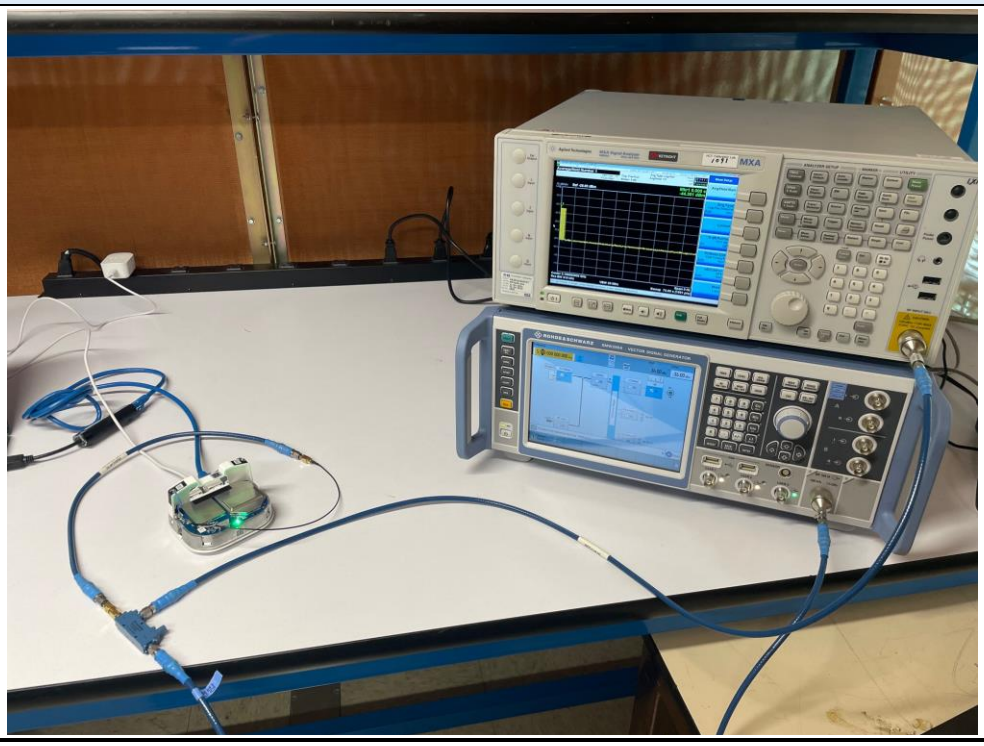
Hyundai C-Tech, Inc. dba HCT America, Inc., 1726 Ringwood Ave, San Jose, CA 95131, USA. TEL: +1-510-933-8848 FAX: +1-510-933-8849

APPENDIX A

TEST SETUP PHOTOS

Applicant	eero LLC
Model Name	R010001
Test Report Reference Number:	HA220516-AER-001-R01 HA220516-AER-001-R02 HA220516-AER-001-R03 HA220516-AER-001-R04 HA220516-AER-001-R10

RF Conducted Test Setup

RF Conducted Test

Carrier Sense Test


DFS Test