FCC DFS Test Report

FCC ID	**: PPQ-WCBN3512R**
Equipment	**: WCBN3512R**
Brand Name	**: LITEON**
Model Name	**: WCBN3512R**
Applicant	**: LITE-ON Technology Corp. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C**
Manufacturer	**: LITE-ON TECHNOLOGY (Changzhou) CO., LTD A9 Building,No.88 Yanghu Road, Wujin Hi-Tech Industrial Development Zone ,Changzhou City, Jiangsu Province 213100 China**
Standard	**: 47 CFR FCC Part 15.407**

The product was received on Jun. 06, 2022, and testing was started from Jun. 14, 2022 and completed on Jun. 16, 2022. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.

Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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Appendix A. Test Photos

Photographs of EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FZ232501-01	01	Initial issue of report	Aug. 16, 2022

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.3	KDB 905462 7.8.1	DFS: UNII Detection Bandwidth Measurement	PASS	100% of the 99% BW
3.4	KDB 905462 7.8.2.1	DFS: Initial Channel Availability Check Time	PASS	CAC ≥ 60 sec
3.4	KDB 905462 7.8.2.2	DFS: Radar Burst at the Beginning of the Channel Availability Check Time	PASS	Detection Threshold: -63 dBm
3.4	KDB 905462 7.8.2.3	DFS: Radar Burst at the End of the Channel Availability Check Time	PASS	Detection Threshold: -63 dBm
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Channel Move Time (CMT)	PASS	CMT ≤ 10sec
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Channel Closing Transmission Time (CCTT)	PASS	CCTT ≤ 60 ms starting at CMT 200ms
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Non-Occupancy Period (NOP)	PASS	NOP ≥ 30 min
3.6	KDB 905462 7.8.4	DFS: Statistical Performance Check	PASS	Table 5 - 7 (KDB 905462)
3.1.4	KDB 905462 8.1	User Access Restrictions	PASS	DFS controls

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Sam Tsai
Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 RF General Information

Specification Items	Description			
Product Type	WLAN (2TX, 2RX)			
Radio Type	Intentional Transceiver			
Power Type	From host system			
Modulation	IEEE 802.11a: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11n/ac: see the below table			
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table			
Channel Bandwidth	20/40/80 MHz operating channel bandwidth			
Operating Mode	☒	Master		
	☐	Client with radar detection		
	☒	Client without radar detection		
Communication Mode	☒	IP Based (Load Based)	☐	Frame Based
TPC Function	☐	With TPC	☒	Without TPC
Weather Band (5600~5650MHz)	☐	With 5600~5650MHz	☒	Without 5600~5650MHz
Power-on cycle	20MHz: Requires 15.390 seconds to complete its power-on cycle.			
Software / Firmware Version	4.9.77			
Note: TPC is not required since the maximum EIRP is less than 500mW (27dBm).				

Type of EUT		
☐	Stand-alone	
☐	Combined (EUT where the radio part is fully integrated within another device)	
	Combined Equipment - Brand Name / Model No.:	…
☒	Plug-in radio (EUT intended for a variety of host systems)	
	Host System - Brand Name / Model No.:	SONY / YY2079C
☐	Other:	

Antenna & Bandwidth

Antenna	Two (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-8/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
802.11ac (VHT80)	2	MCS 0-9/Nss1-2

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40.
Note 2: HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
Note 3: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 (VHT: Very High Throughput). Then EUT support VHT20, VHT40, VHT80.
Note 4: VHT20, VHT40, VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
Note 5: Modulation modes consist of below configuration:
11a: IEEE 802.11a, HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	SHENZHEN SOUTH STAR	N12-8145-ROA	PCB	I-PEX
2	SHENZHEN SOUTH STAR	N12-8145-ROA	PCB	I-PEX

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	1	4.07	4.56	-
2	2	3.42	4.97	3.42

Note 1: The EUT has two antennas.

For 2.4 GHz function:

For IEEE 802.11b/g/n mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For 5 GHz function:

For IEEE 802.11a/n/ac mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

Only Ant. 2 (port 2) can be used as transmitting/receiving antenna.

1.1.3 DFS Band Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140, 144.

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 134, 142.

For 80MHz bandwidth systems, use Channel 58, 106, 138.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz U-NII-2A	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz U-NII-2C	100	5500 MHz	132	5660 MHz
	102	5510 MHz	134	5670 MHz
	104	5520 MHz	136	5680 MHz
	106	5530 MHz	138	5690 MHz
	108	5540 MHz	140	5700 MHz
	110	5550 MHz	142	5710 MHz
	112	5560 MHz	144	5720 MHz
	116	5580 MHz	-	-

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

The following reference test guidance is not within the scope of accreditation of TAF:

- KDB 905462 D03 Client Without DFS New Rules v01r02

1.3 Testing Location Information

Test Lab.：Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua	**ADD:** No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
(TAF: 3785**)**	**TEL:** 886-3-327-3456		**FAX:** 886-3-327-0973	
Test site Designation No. TW3785 with FCC.				
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
DFS	DFS01-HY	Peng	24.1~25.5°C / 51~58%	14/Jun/2022~16/Jun/2022

2 Test Configuration of EUT

2.1 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration (Master mode)	
IEEE Std.	**Test Channel Freq. (MHz)**
802.11n (HT20)	5500 MHz

Test Channel Frequencies Configuration (Client mode)	
IEEE Std.	**Test Channel Freq. (MHz)**
802.11ac (VHT80)	5530 MHz

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Dynamic Frequency Selection (DFS)
Test Condition	Conducted measurement at transmit chains The EUT shall be configured to operate at the highest transmitter output power setting. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the lowest gain shall be used.
Modulation Mode	802.11n (HT20) for Master mode 802.11ac (VHT80) for Client mode

2.3 Support Equipment

Support Equipment					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	AP (Master)	EDIMAX	EW-7679WAC	NDD9576791401	For Slave mode
2	Client(Slave)	DELL	Latitude E5540	PD9AX200NG	For Master mode
3	Notebook	HP	HSTNN-I42C	-	-
4	DC Power Supply	GW	GPC-6030D	-	-

3 Dynamic Frequency Selection (DFS) Test Result

3.1 General DFS Information

3.1.1 DFS Parameters

Table D.1: DFS requirement values	
Parameter	**Value**
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (Note 1).
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second periods. (Notes 1 and 2).
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth (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 Channel changes (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 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.	

Table D.2: Interference threshold values	
Maximum Transmit Power	**Value (see note)**
EIRP ≥ 200 mW	-64 dBm
EIRP < 200 mW and PSD < 10dBm/MHz	-62 dBm
EIRP < 200 mW and PSD ≥ 10dBm/MHz	-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.	

3.1.2 Applicability of DFS Requirements Prior to Use of a Channel

Requirement	DFS Operational mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	Yes	Not required (See the note)	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Note :
According to KDB 905462 D03 Client Without DFS New Rules v01r02 (b) 6."An analyzer plot that contains a single 30-minute sweep on the original channel "

3.1.3 Applicability of DFS Requirements during Normal Operation

Requirement	DFS Operational 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

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

3.1.4 User Access Restrictions

User Access Restrictions	
☒	DFS controls (hardware or software) related to radar detection are NOT accessible to the user. Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

3.1.5 Channel Loading/Data Streaming

☐	The data file (MPEG-4) has been transmitting in a streaming mode.
☒	Software to ping the client is permitted to simulate data transfer with random ping intervals.
☒	Minimum channel loading of approximately 17%.
☐	Unicast protocol has been used.

3.2 Radar Test Waveform Calibration

3.2.1 Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1A	1	15 unique PRI in KDB 905462 D02 Table 5a	$Roundup\left\{\left(\frac{1}{360}\right)\times\left(\frac{19\times10^6}{PRI}\right)\right\}$	60%	15
1B	1	15 unique PRI within 518-3066, Excluding 1A PRI		60%	15
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 1 through 4. If more than 30 waveforms are used for short pulse radar types 1 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.

3.2.2 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 Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Each waveform is defined as follows:

- The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 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.
- 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.
- 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.
- Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. 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 at 5290 MHz and ends at 5310 MHz.

- If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
- 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 independently.

3.2.3 Frequency Hopping Radar Test Waveform

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

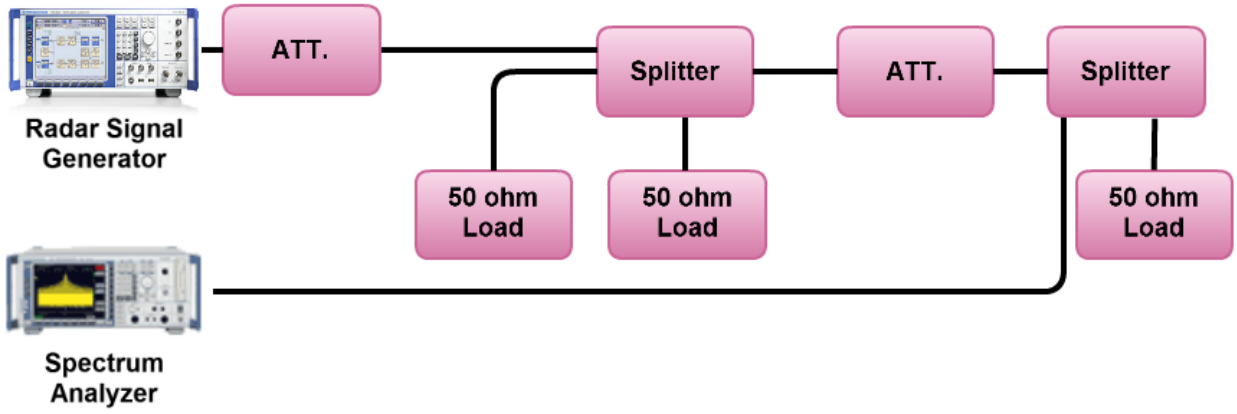
The FCC Type 6 waveform uses a static waveform with 100 bursts in the instruments ARB. In addition, the RF list mode is operated with a list containing 100 frequencies from a randomly generated list and it had be ensured that at least one of the random frequencies falls into the UNII Detection Bandwidth of the DUT. Each burst from the waveform file initiates a trigger pulse at the beginning that switches the RF list from one item to the next one.

3.2.4 DFS Threshold Level

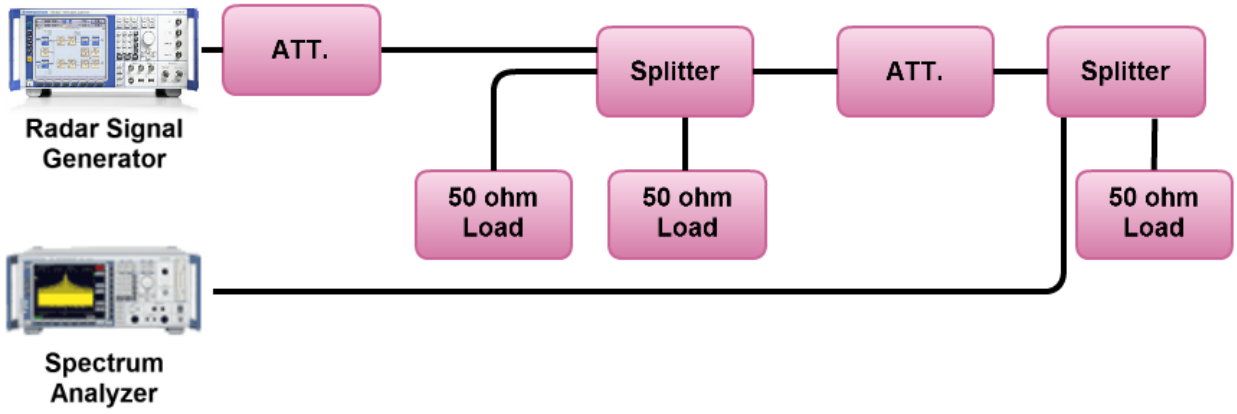
DFS Threshold Level	
DFS Threshold level: -63 dBm	☒ at the antenna connector
	☐ in front of the antenna
The Interference **Radar Detection Threshold Level** is *-64 dBm + 0 [dBi] + 1 dB* = -63 dBm. That had been taken into account the output power range and antenna gain.	

3.2.5 Calibration Setup

Master Conducted Calibration Setup

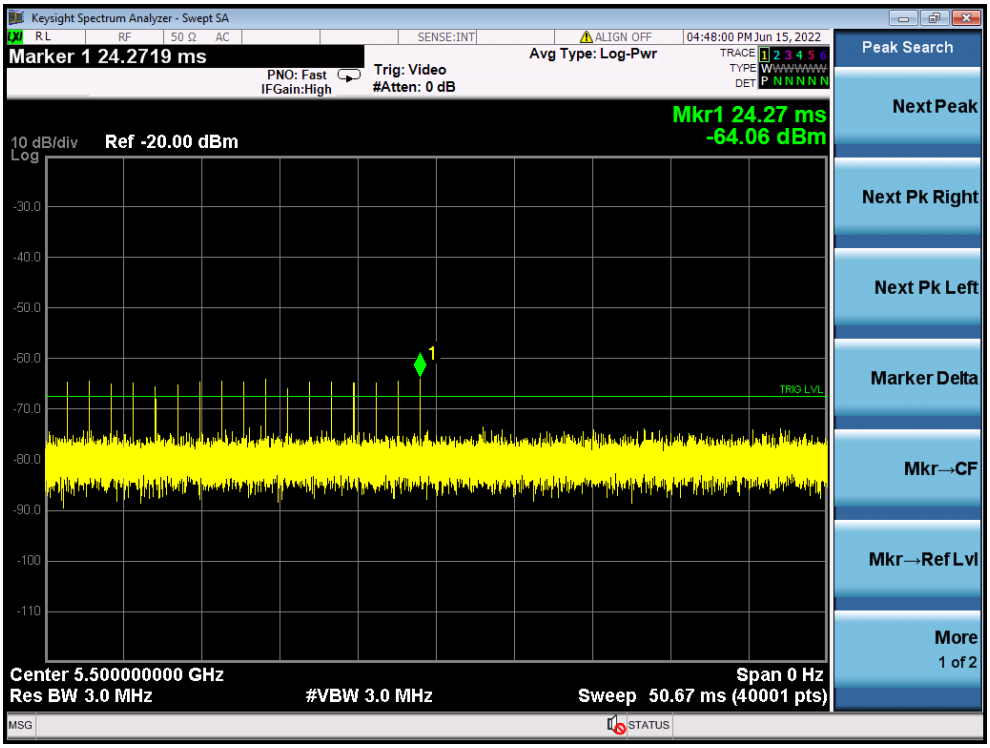


Client Conducted Calibration Setup

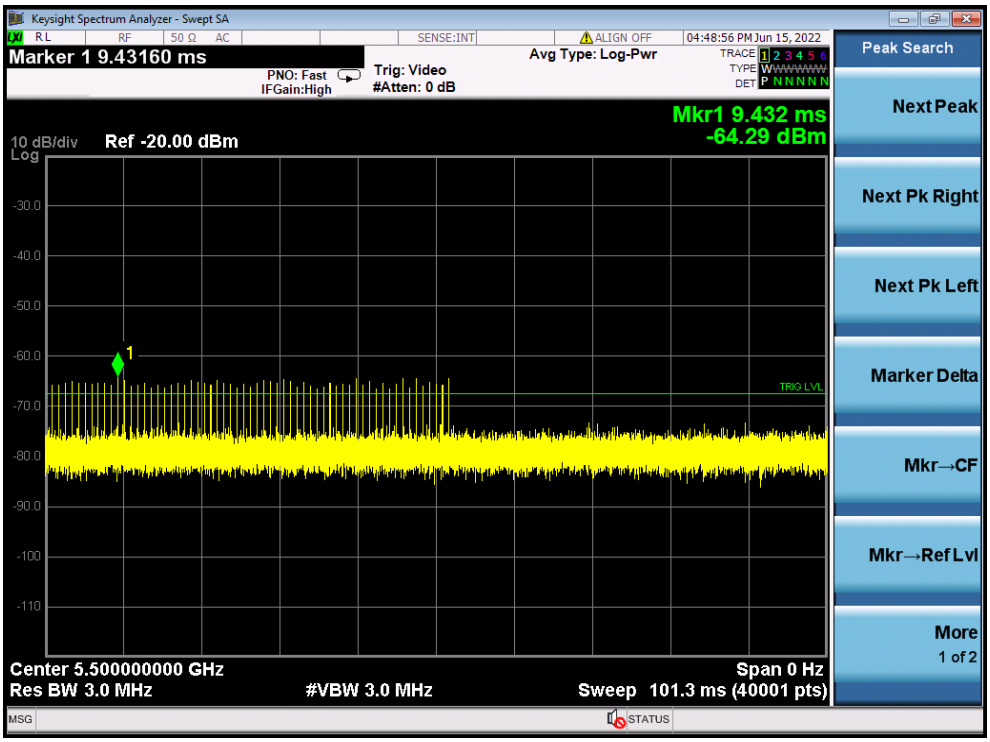


3.2.6 Radar Waveform calibration Plot

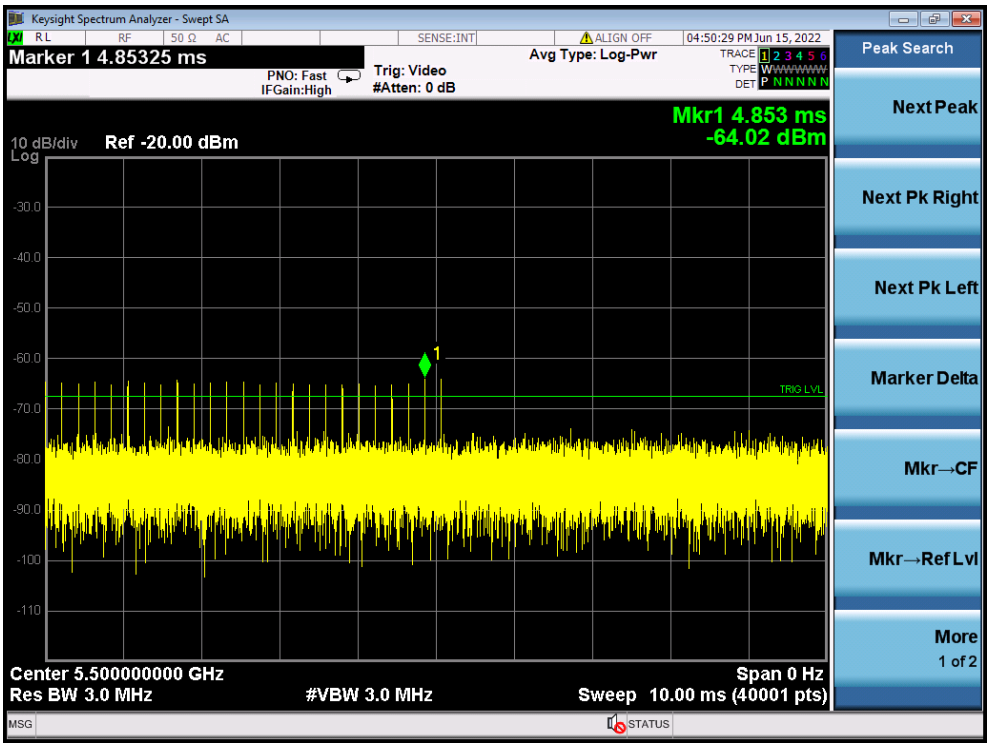
Radar #0 DFS detection threshold level



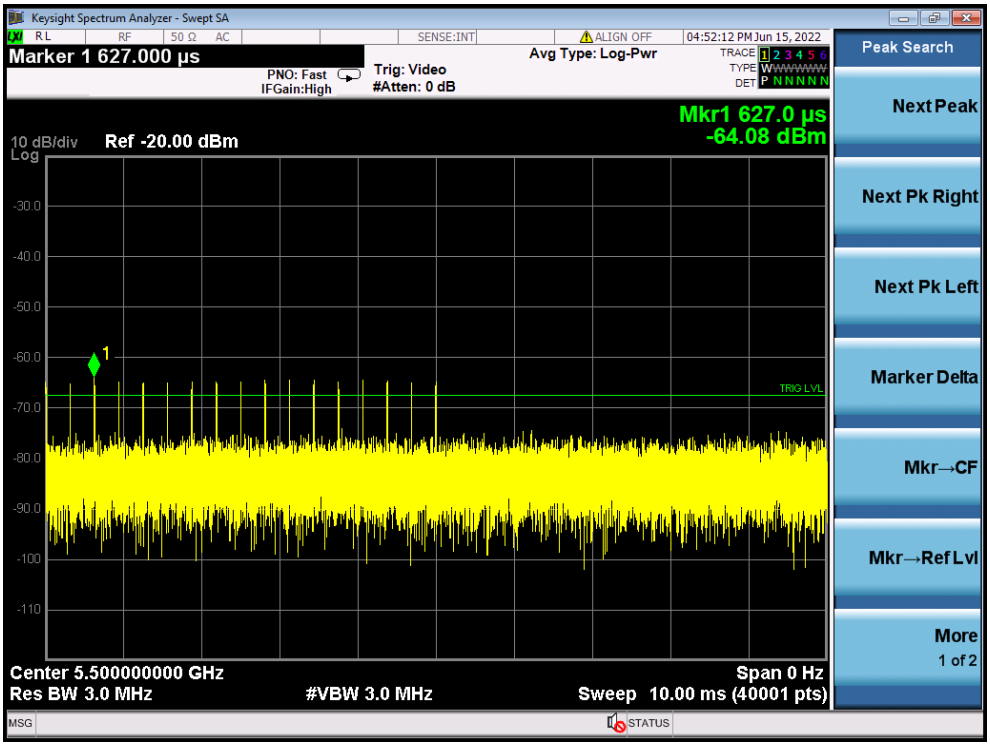
Radar #1 DFS detection threshold level



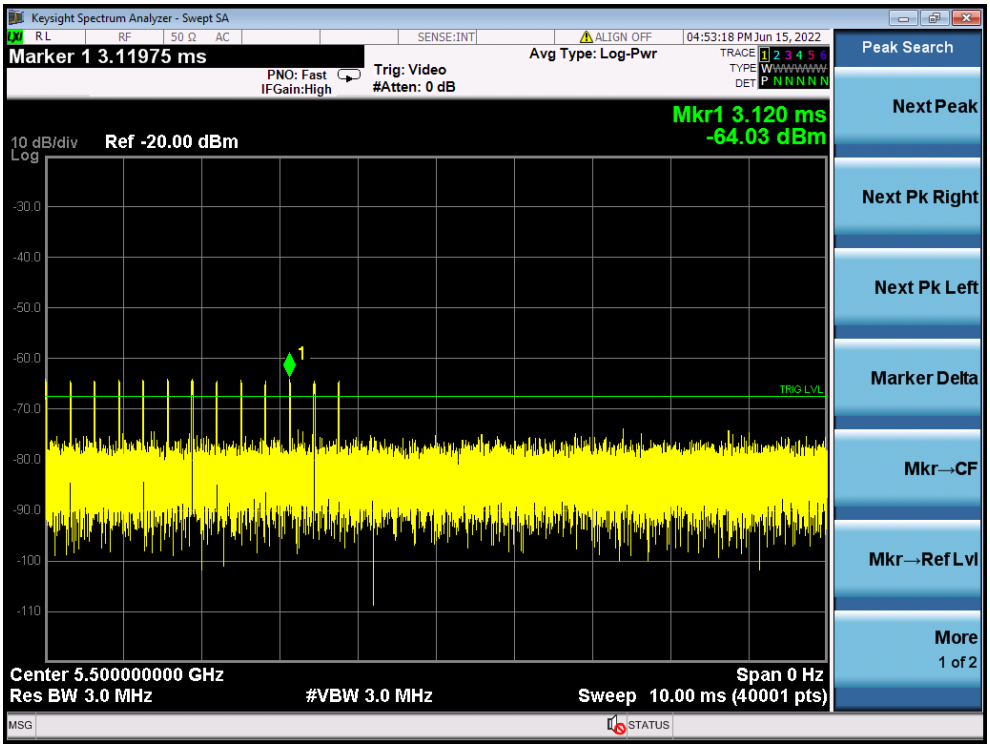
Radar #2 DFS detection threshold level



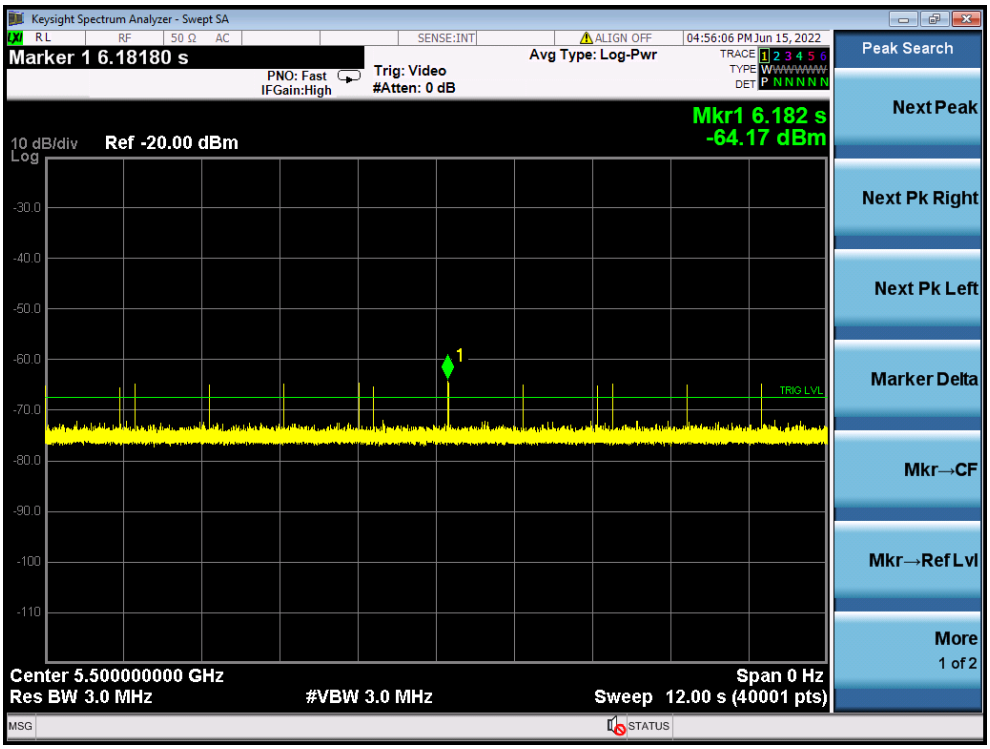
Radar #3 DFS detection threshold level



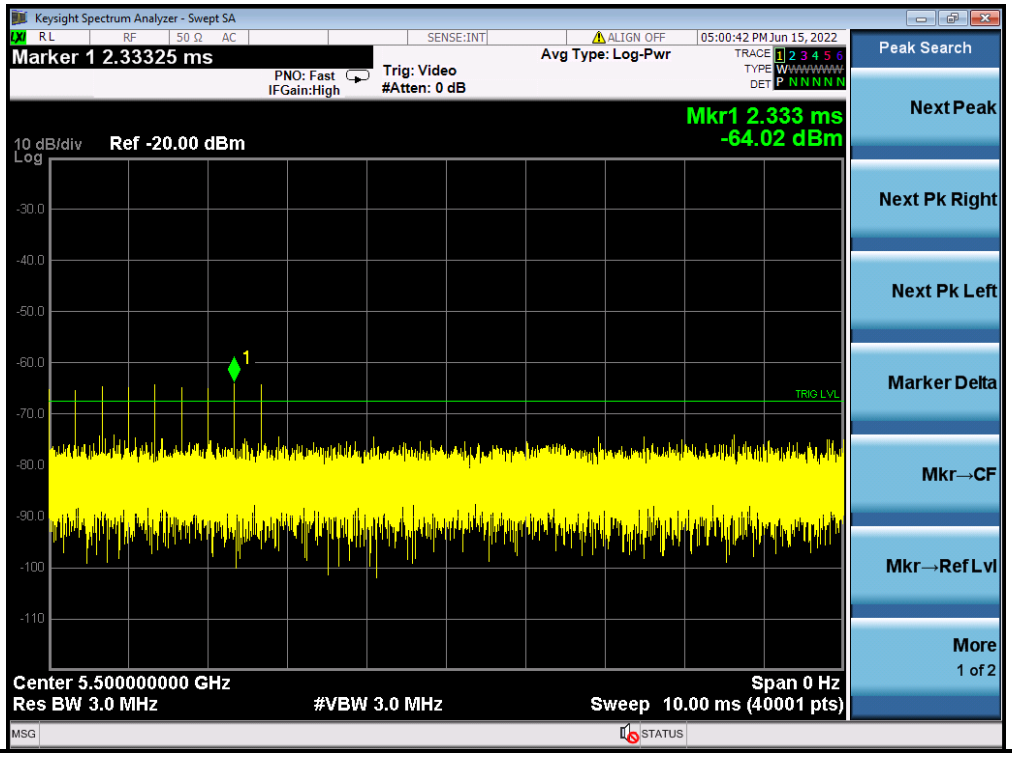
Radar #4 DFS detection threshold level



Radar #5 DFS detection threshold level



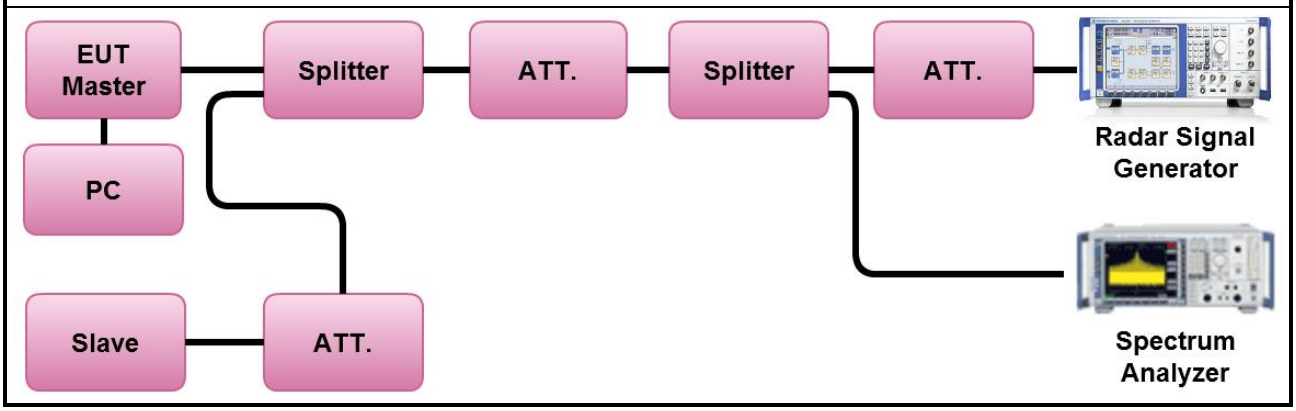
Radar #6 DFS detection threshold level



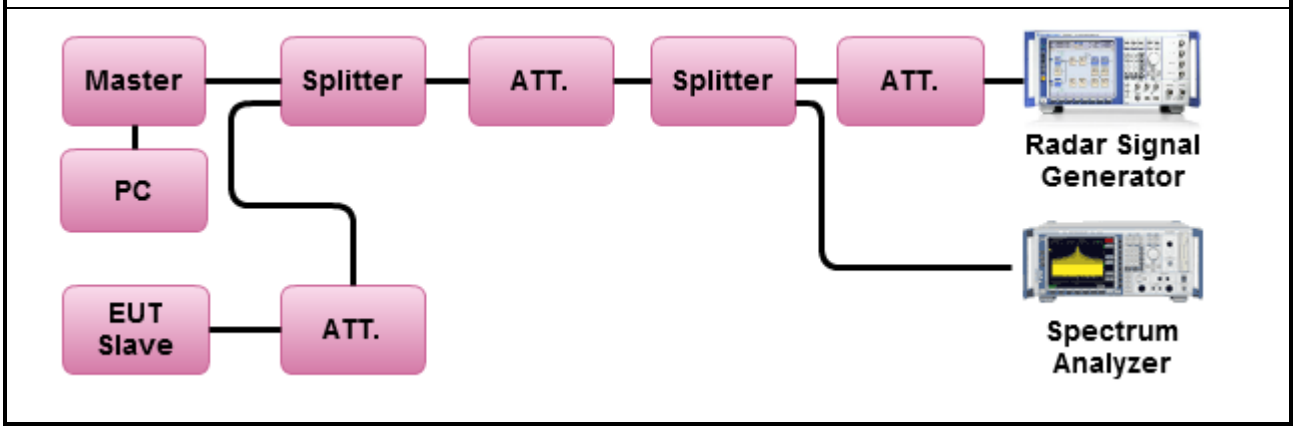
3.2.7 Test Setup

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move.

Master Conducted Measurement



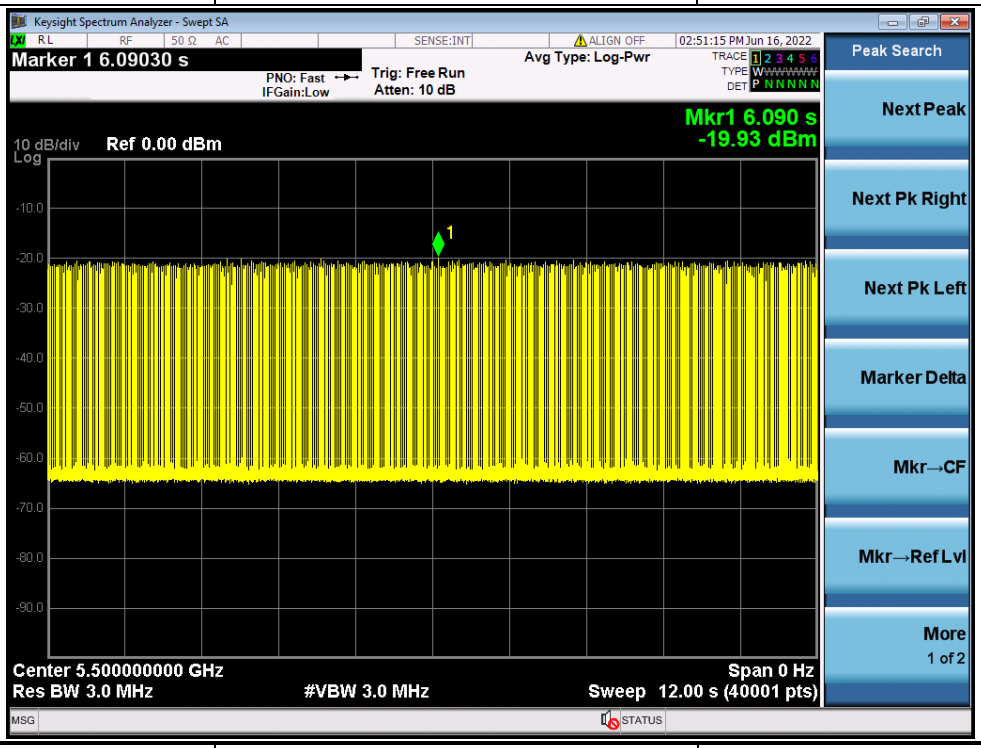
Client without Radar Detect Conducted Measurement



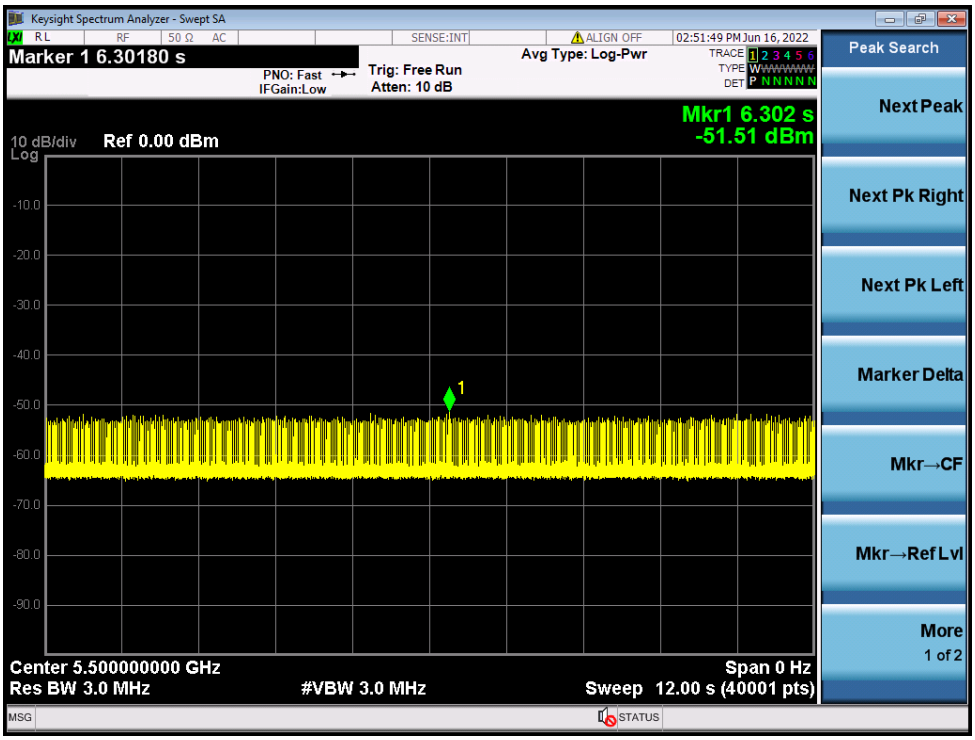
3.2.8 Data traffic Plot

Master mode

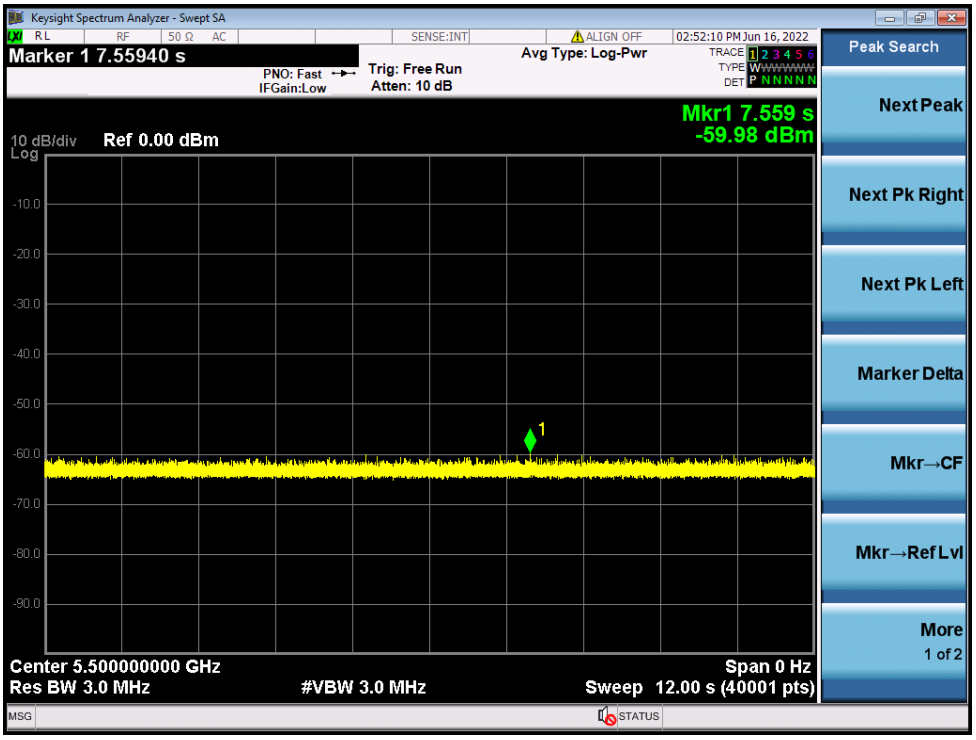
EUT Data traffic Plot	Modulation Mode: 802.11n (HT20)	Test Frequency: 5500 MHz



Client Data Traffic Plot	Modulation Mode: 802.11n (HT20)	Test Frequency: 5500 MHz

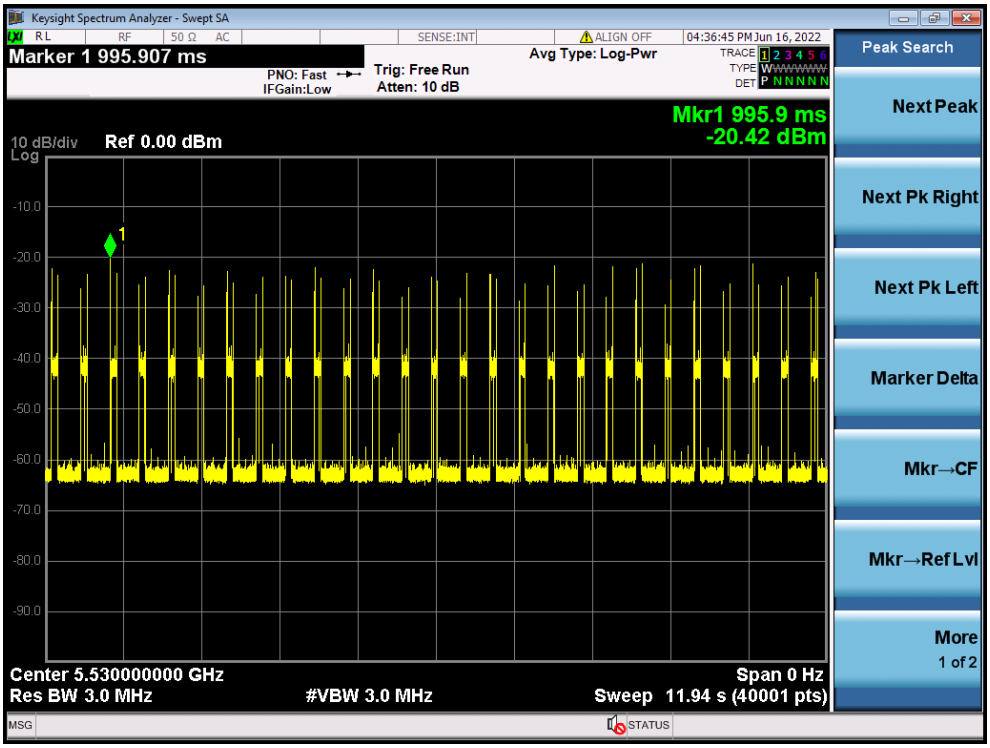


Without Data Traffic Plot	Modulation Mode: 802.11n (HT20)	Test Frequency: 5500 MHz

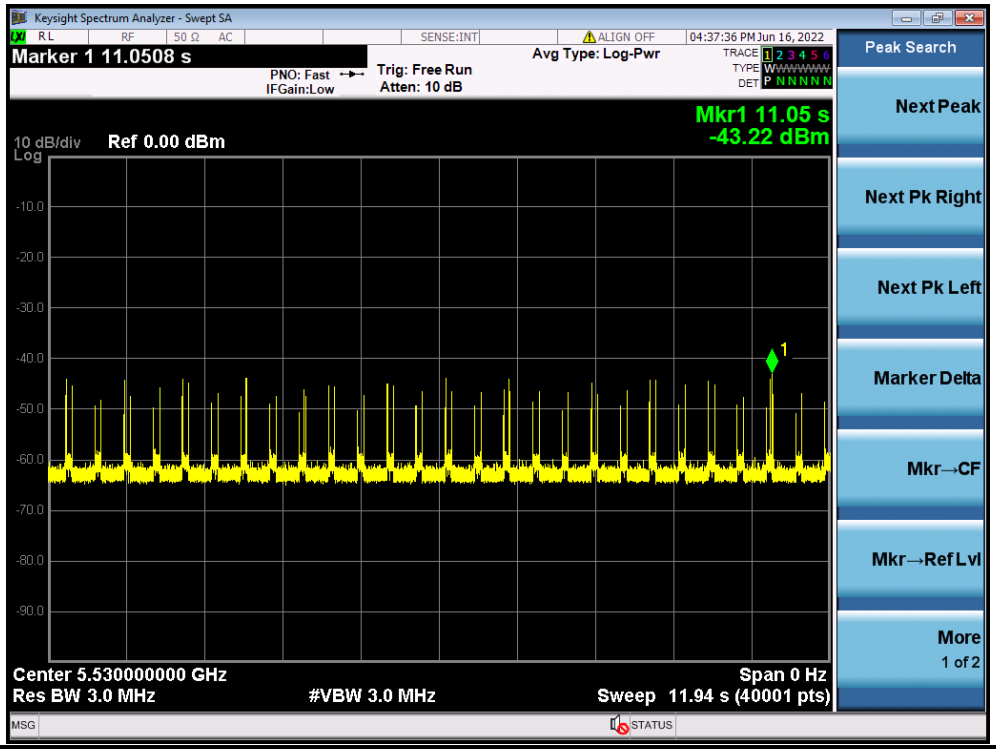


Client mode

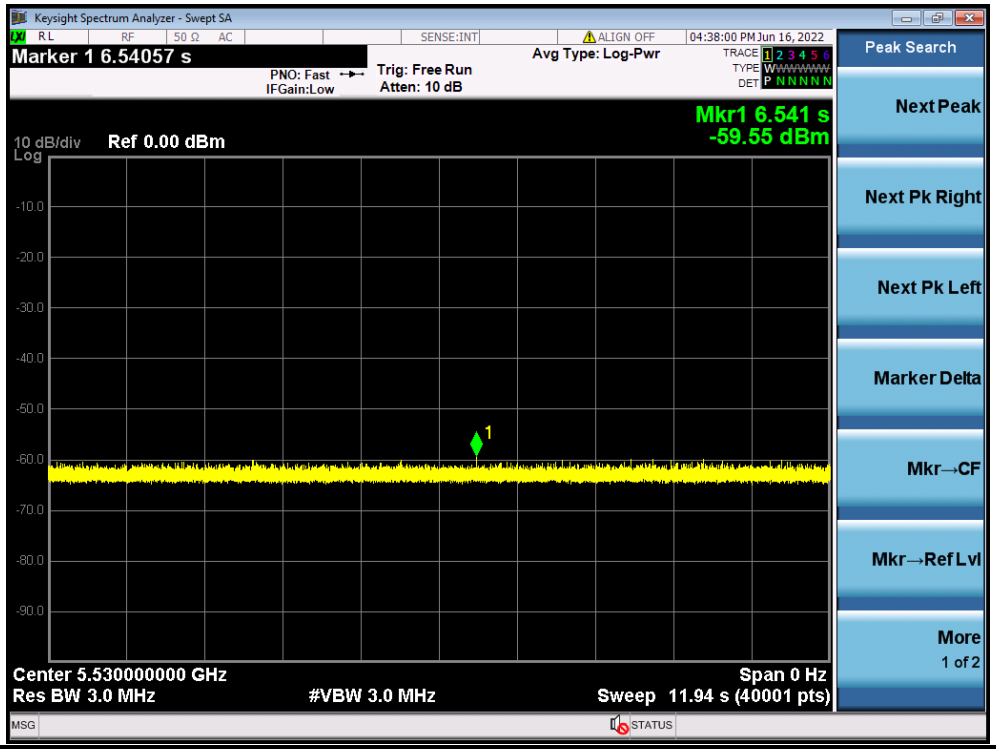
EUT Data traffic Plot	Modulation Mode: 802.11ac (VHT80)	Test Frequency: 5530 MHz



Master Data Traffic Plot	Modulation Mode: 802.11ac (VHT80)	Test Frequency: 5530 MHz



Without Data Traffic Plot	Modulation Mode: 802.11ac (VHT80)	Test Frequency: 5530 MHz



3.3 UNII Detection Bandwidth

3.3.1 UNII Detection Bandwidth Limit

Channel Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	UNII Detection Bandwidth Min. Limit (MHz)
20	17.969	18
UNII Detection Bandwidth is minimum 100% of the 99% power bandwidth. A single radar Burst is generated for a minimum of 10 trials, and the response of the UUT is noted. The UUT must detect the Radar Waveform 90% or more of the time.		

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method
☒ During the U-NII Detection Bandwidth detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic. The EUT is set up as a standalone device (no associated Client and no traffic). The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H. The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as F_L. UNII Detection Bandwidth = F_H - F_L.

3.3.4 Test Result of UNII Detection Bandwidth

EUT Frequency=5500 MHz											
Channel Bandwidth (MHz)	**20**										
Radar Frequency (MHz)	**DFS Detection Trials (1=Detection, 0= No Detection)**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
5490	1	1	1	1	1	1	1	1	1	1	100
5495	1	1	1	1	1	1	1	1	1	1	100
5500	0	1	1	1	1	1	1	1	1	1	90
5505	1	1	1	1	1	1	1	1	1	1	100
5510	1	1	1	1	1	1	1	1	1	1	100
Radar Type 0-Detection Bandwidth (MHz) =											20
UNII Detection Bandwidth Min. Limit (MHz) =											18
Test Result											**Complied**

3.4 Channel Availability Check (CAC)

3.4.1 Channel Availability Check Limit

Channel Availability Check Limit	
☒	The EUT shall perform a Channel Availability Check to ensure that there is no radar operating on the channel. After power-up sequence, receive at least 1 minute (60 sec) on the intended operating frequency.

3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

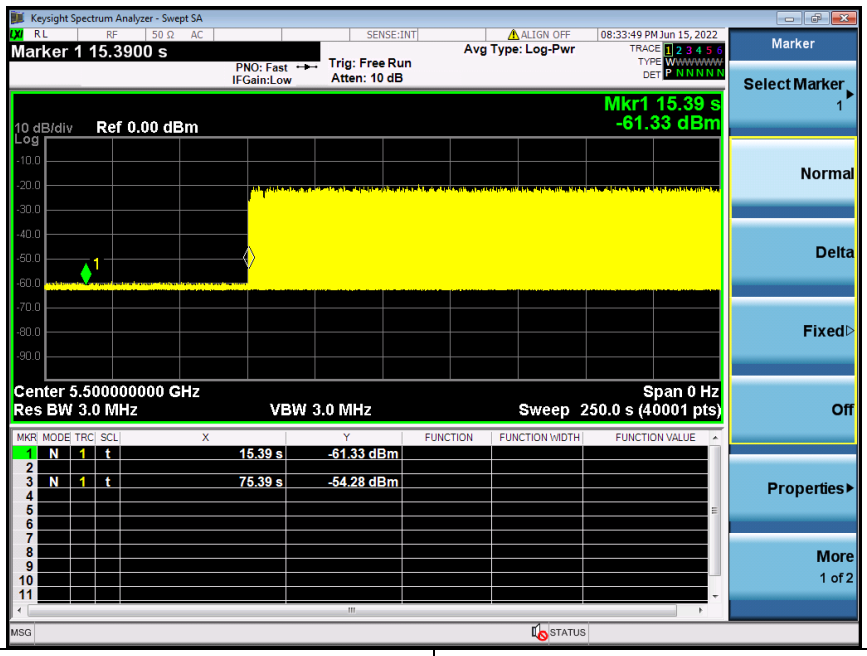
3.4.3 Test Procedures

Test Method	
☒	For Initial Channel Availability Check Time. The EUT does not emit beacon, control, or data signals on the test Channel until the power-up sequence has been completed and the UNII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms.
☒	For Radar Burst at the Beginning of the Channel Availability Check Time. To verify successful radar detection on the selected Channel during a period equal to the Beginning of the Channel Availability Check Time.
☒	For Radar Burst at the End of the Channel Availability Check Time. To verify successful radar detection on the selected Channel during a period equal to the End of the Channel Availability Check Time.

3.4.4 Test Result of Initial Channel Availability Check Time

Modulation Mode	Freq.	Radar Test Signal
802.11n (HT20)	5500 MHz	N/A

The EUT does not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle (15.390 sec). The initial power up time of the EUT is indicated by marker 1 (15.390 sec). Initial beacons/data transmissions are indicated by marker 3 (75.390 sec).

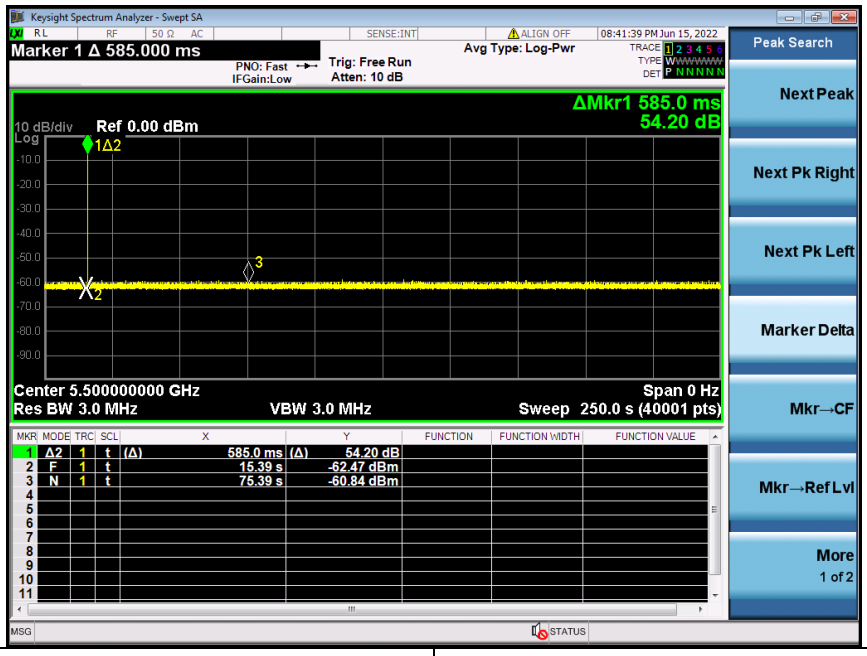


Test Result	Complied

3.4.5 Test Result of Radar Burst at the Beginning of the Channel Availability Check Time

Modulation Mode	Freq. (MHz)	Radar Type Signal
802.11n (HT20)	5500 MHz	0

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 234.025 seconds after the radar Burst has been generated. Verify that during the 250 seconds measurement window no EUT transmissions occurred.

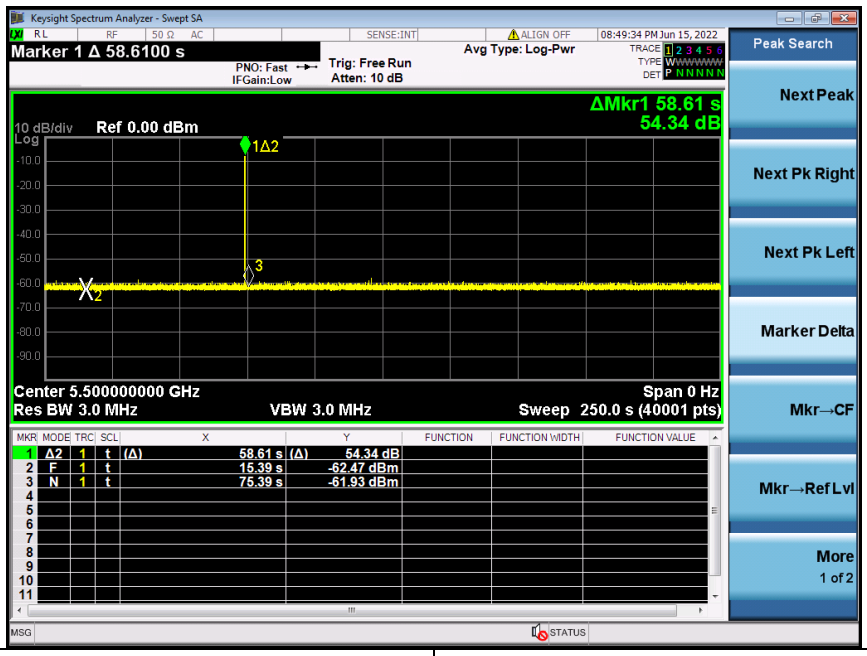


Test Result	Complied

3.4.6 Test Result of Radar Burst at the End of the Channel Availability Check Time

Modulation Mode	Freq. (MHz)	Radar Type Signal
802.11n (HT20)	5500 MHz	0

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 176 seconds after the radar Burst has been generated. Verify that during the 250 seconds measurement window no EUT transmissions occurred.



Test Result	Complied

3.5 In-service Monitoring

3.5.1 In-service Monitoring Limit

In-service Monitoring Limit	
Channel Move Time	10 sec
Channel Closing Transmission Time	200 ms + an aggregate of 60 ms over remaining 10 sec periods.
Non-occupancy period	Minimum 30 minutes

3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method	
☒	Verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time limits.
☒	Verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. One 12 sec plot needs to be reported for the Short Pulse Radar Types 0. And zoom-in a 60 ms plot verified channel closing time for the aggregate transmission time starting from 200ms after the end of the radar signal to the completion of the channel move.
☒	Verified during In-Service Monitoring; Non-Occupancy Period. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Non-Occupancy Period). Compare the Non-Occupancy Period limits.

3.5.4 Test Result of In-service Monitoring

Modulation Mode: 802.11n (HT20) for Master mode

Parameter	Test Result	Limit
	Type 0	
Test Channel (MHz)	5500 MHz	-
Channel Move Time (sec.)	0.5574	< 10s
Channel Closing Transmission Time (ms) (Note)	1.800	< 60ms
Non-Occupancy Period (min.)	≧30	≧ 30 min

Modulation Mode: 802.11ac (VHT80) for Client mode

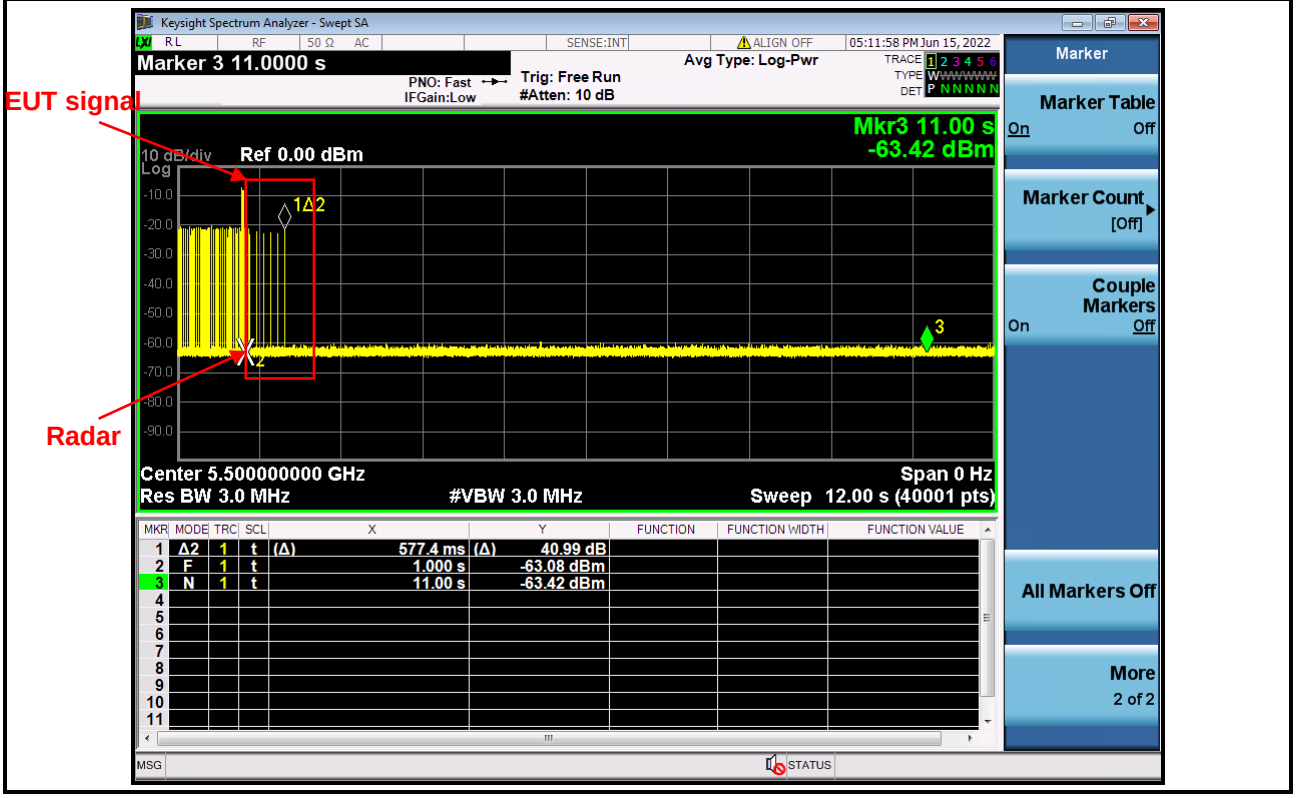
Parameter	Test Result	Limit
	Type 0	
Test Channel (MHz)	5530 MHz	-
Channel Move Time (sec.)	0.4673	＜ 10s
Channel Closing Transmission Time (ms) (Note)	2.985	＜ 60ms
Non-Occupancy Period (min.)	≧30	≧ 30 min

Note: 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 seconds period. The aggregate duration of control signals will not count quiet periods in between transmissions.

3.5.5 Test Plot of In-Service Monitoring for Channel Move Time

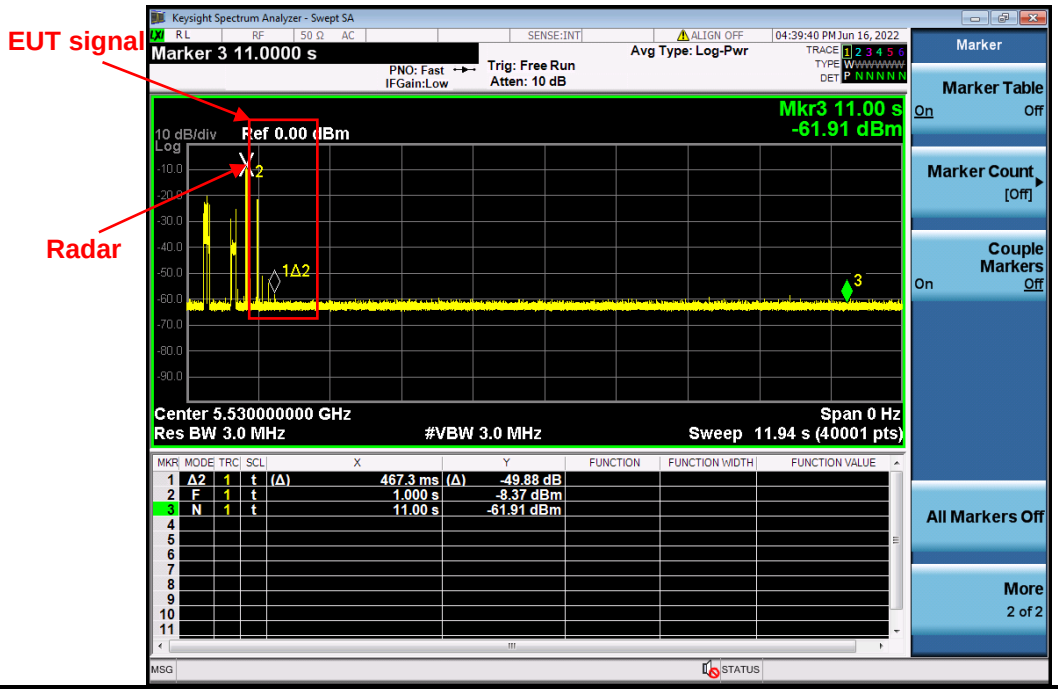
Master mode

Modulation Mode	Freq.	Radar Type
802.11n (HT20)	5500 MHz	0



Client mode

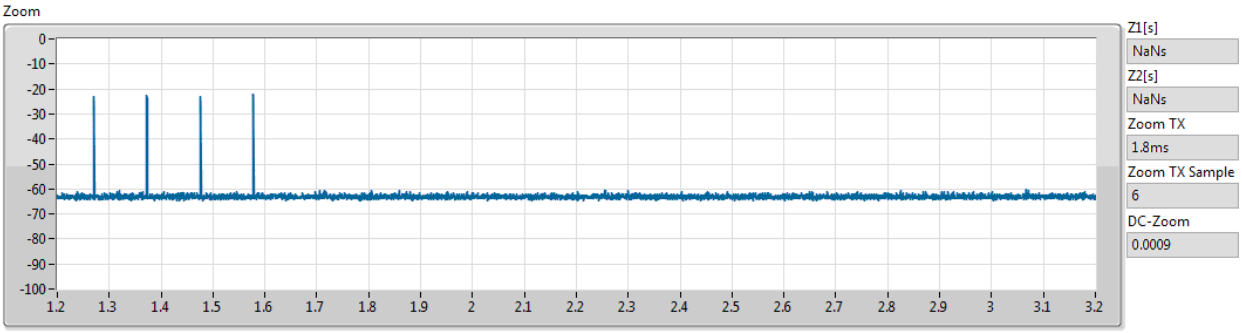
Modulation Mode	Freq.	Radar Type
802.11ac (VHT80)	5530 MHz	0



3.5.6 Test Plot of In-Service Monitoring for Channel Closing Transmission Time

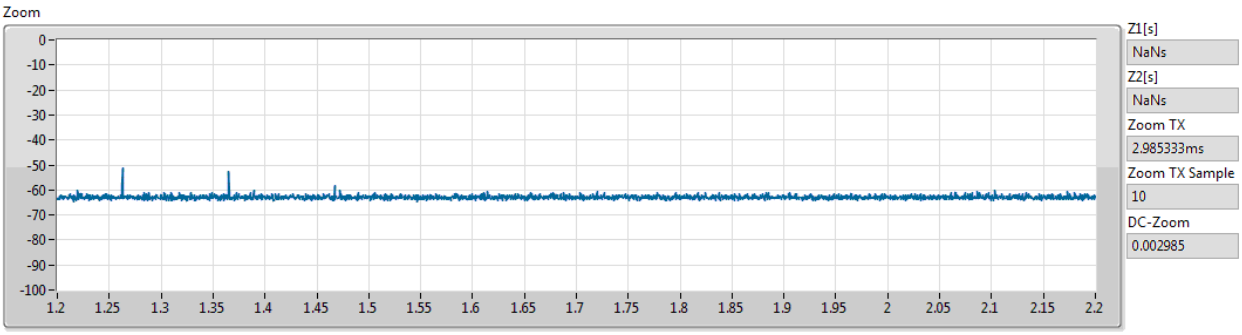
Master mode

Modulation Mode	Freq.	Radar Type
802.11n (HT20)	5500 MHz	0
Channel Closing Transmission Time is comprised of 200 ms starting at the beginning of the Channel Move Time plus 60ms additional intermittent control signals		



Client mode

Modulation Mode	Freq.	Radar Type
802.11ac (VHT80)	5530 MHz	0
Channel Closing Transmission Time is comprised of 200 ms starting at the beginning of the Channel Move Time plus 60ms additional intermittent control signals		



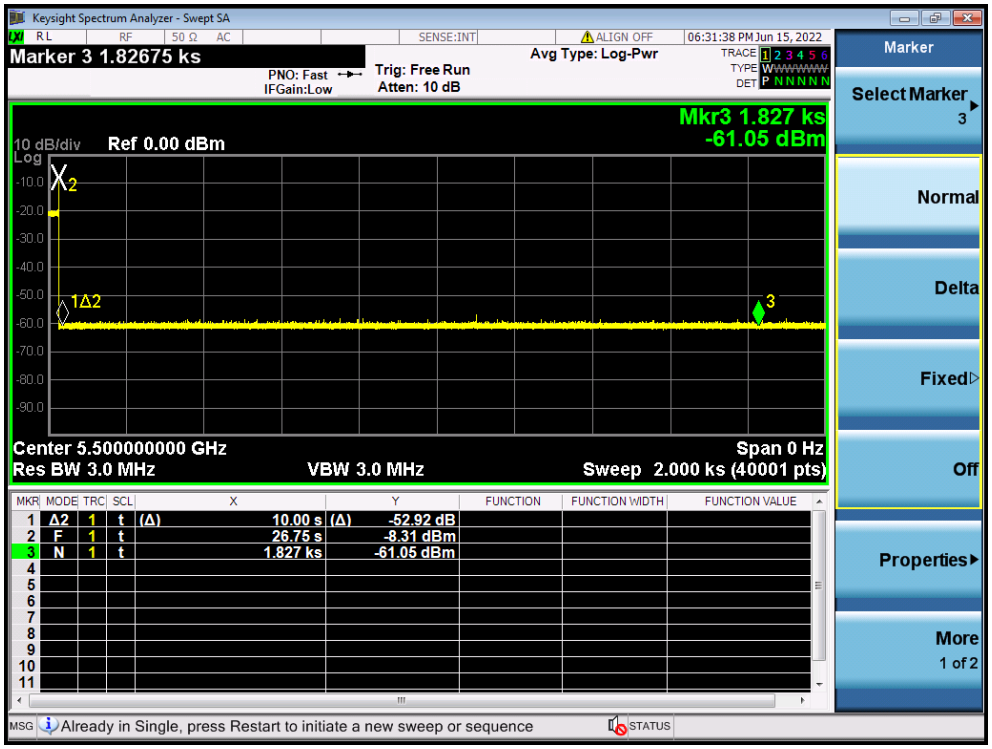
3.5.7 Test Plot of In-Service Monitoring for Non-Occupancy Period

Master mode

Modulation Mode	Freq.
802.11n (HT20)	5500 MHz

Non-Occupancy Period

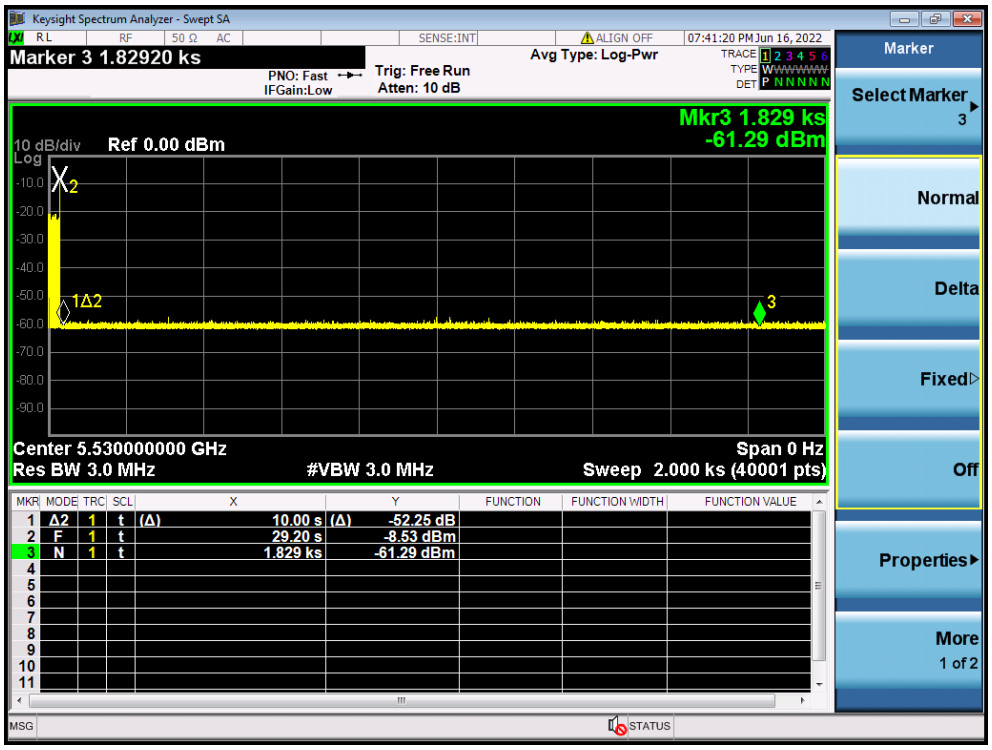
During the 30 minutes observation time, UUT did not make any transmissions on a channel after a radar signal was detected on that channel by either the Channel Availability Check or the In-Service Monitoring.



Client mode

Modulation Mode	Freq.
802.11ac (VHT80)	5530 MHz

Non-associated test
Master was off.
During the 30 minutes observation time, The UUT did not make any transmissions in the DFS band after UUT power up.



3.6 Statistical Performance Check

3.6.1 Statistical Performance Check Limit

Radar Type	Minimum Percentage of Successful Detection (Pd)	Minimum Trials
1	60%	30
2	60%	30
3	60%	30
4	60%	30
Aggregate (Radar Types 1-4)	80%	120
5	80%	30
6	70%	30

The percentage of successful detection is calculated by:

$$\frac{Total\,Waveform\,Detections}{Total\,Waveform\,Trails} \times 100 = \text{Probability of Detection Radar Waveform}$$

In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows:

$$\frac{Pd1 + Pd2 + Pd3 + Pd4}{4}$$

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method
☒ For Statistical Performance Check test. Demonstrating a minimum channel loading of approximately 17% or greater of the test. Observe the transmissions of the UUT at the end of the Burst on the Operating Channel for duration greater than 10 seconds for Short Pulse Radar Types 1-4 and 6 to ensure detection occurs. Then Observe the transmissions of the UUT at the end of the Burst on the Operating Channel for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.

3.6.4 Test Result of Statistical Performance Check

Modulation Mode: 802.11n (HT20)

Type 1 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulse Per Second)	PRI (us)	1=Detection 0=No Detection
1	5493	1	1930.5	518	1
2	5491	23	326.2	3066	1
3	5495	19	1139.0	878	1
4	5496	12	1355.0	738	1
5	5497	4	1730.1	578	1
6	5498	8	1519.8	658	0
7	5499	15	1253.1	798	1
8	5500	6	1618.1	618	1
9	5501	14	1285.3	778	1
10	5502	3	1792.1	558	1
11	5503	13	1319.3	758	1
12	5504	9	1474.9	678	1
13	5505	7	1567.4	638	1
14	5506	17	1193.3	838	1
15	5507	10	1432.7	698	1
16	5506	-	1692.0	591	1
17	5505	-	328.1	3048	1
18	5504	-	373.4	2678	1
19	5503	-	574.4	1741	1
20	5509	-	1216.5	822	1
21	5501	-	801.3	1248	1
22	5500	-	488.5	2047	1
23	5499	-	956.0	1046	1
24	5498	-	517.6	1932	1
25	5497	-	1422.5	703	1
26	5496	-	542.0	1845	1
27	5495	-	741.3	1349	1
28	5494	-	881.8	1134	1
29	5493	-	427.4	2340	0
30	5494	-	628.9	1590	1
Detection Percentage (%)					93.333
Limit					60%
Test Result					**Complied**

Type 2 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5493	2.6	221	23	1
2	5491	4.6	198	27	1
3	5495	1.1	184	29	1
4	5496	4.8	203	24	1
5	5497	2.4	162	25	1
6	5498	3.4	204	28	1
7	5499	2.3	170	27	1
8	5500	3.5	184	23	1
9	5501	4.9	150	27	1
10	5502	4.6	211	29	1
11	5503	2.9	158	23	1
12	5504	2.6	226	27	1
13	5505	1.6	204	26	1
14	5506	3.9	181	25	1
15	5507	4.6	202	24	1
16	5506	4.1	194	27	1
17	5505	2.3	193	28	1
18	5504	3.9	173	29	0
19	5503	4.3	188	23	1
20	5509	1.5	215	26	1
21	5501	4.9	227	27	0
22	5500	1.1	199	23	1
23	5499	4.5	155	29	1
24	5498	4.0	190	27	1
25	5497	2.4	151	23	0
26	5496	2.5	180	28	1
27	5495	2.5	228	23	1
28	5494	2.5	203	25	1
29	5493	1.5	188	25	1
30	5494	1.9	217	24	1
Detection Percentage (%)					90.000
Limit					60%
Test Result					**Complied**

Type 3 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection ; 0=No Detection
1	5493	8.0	205	16	1
2	5491	6.7	382	18	0
3	5495	8.6	418	16	1
4	5496	9.4	351	17	1
5	5497	7.4	383	18	1
6	5498	9.8	232	16	1
7	5499	9.1	377	17	1
8	5500	9.6	457	16	1
9	5501	8.0	471	18	1
10	5502	9.0	304	18	1
11	5503	8.0	316	17	1
12	5504	9.8	325	16	1
13	5505	8.0	409	17	0
14	5506	9.9	200	17	1
15	5507	8.8	458	16	1
16	5506	8.0	232	18	0
17	5505	8.3	250	16	1
18	5504	8.7	270	16	0
19	5503	7.7	350	17	1
20	5509	7.1	230	16	1
21	5501	7.3	416	18	1
22	5500	7.6	498	18	1
23	5499	7.3	286	17	1
24	5498	7.3	287	16	1
25	5497	7.5	462	17	0
26	5496	6.2	300	17	1
27	5495	6.4	323	18	1
28	5494	7.1	420	16	1
29	5493	7.2	395	18	1
30	5494	8.4	377	16	0
Detection Percentage (%)					80.000
Limit					60%
Test Result					**Complied**

Type 4 Radar Statistical Performance

Trial #	*Test Freq. (MHz)*	*Pulse Width (us)*	*PRI (us)*	*Pulses / Burst*	*1=Detection 0=No Detection*
1	5493	18.0	242	15	1
2	5491	19.9	279	12	1
3	5495	12.9	487	14	1
4	5496	15.0	452	13	1
5	5497	16.3	230	12	0
6	5498	19.8	238	13	1
7	5499	18.2	420	16	0
8	5500	16.3	452	15	0
9	5501	14.2	495	12	0
10	5502	17.8	228	16	0
11	5503	19.1	211	16	1
12	5504	18.4	283	15	1
13	5505	11.8	411	12	1
14	5506	14.2	284	13	1
15	5507	13.9	202	12	1
16	5506	17.8	340	14	1
17	5505	15.6	290	16	1
18	5504	14.6	250	16	1
19	5503	14.4	484	15	1
20	5509	18.9	387	13	1
21	5501	11.1	348	15	1
22	5500	13.8	291	16	1
23	5499	14.3	295	12	1
24	5498	12.5	300	12	1
25	5497	12.5	322	14	1
26	5496	12.5	383	13	1
27	5495	15.7	322	16	1
28	5494	19.8	469	13	0
29	5493	18.6	406	15	1
30	5494	15.9	238	14	1
Detection Percentage (%)					80.000
Limit					60%
Test Result					**Complied**

Total Type 1~4 Radar Statistical Performance

Radar Type #	Detection Percentage (%)
1	93.333
2	90.000
3	80.000
4	80.000
Aggregate (Radar Types 1-4)	85.833
Limit	80%
Test Result	**Complied**

Type 5 Radar Statistical Performance

Center Freq. (MHz)	Low Edge (MHz)	High Edge (MHz)	VSG Freq. (MHz)	Detection
5500	5491	5509		
Trial	Chirp	Offset		
1	11	0	5500.00	1
2	5	0	5500.00	1
3	20	0	5500.00	1
4	13	0	5500.00	1
5	11	0	5500.00	1
6	16	0	5500.00	0
7	11	0	5500.00	1
8	20	0	5500.00	1
9	9	0	5500.00	1
10	15	0	5500.00	1
11	20	1.00	5499.00	1
12	6	6.60	5493.40	0
13	13	3.80	5496.20	1
14	10	5.00	5495.00	1
15	16	2.60	5497.40	1
16	11	4.60	5495.40	1
17	7	6.20	5493.80	1
18	15	3.00	5497.00	0
19	7	6.20	5493.80	1
20	20	1.00	5499.00	1
21	6	6.60	5506.60	1
22	11	4.60	5504.60	1
23	16	2.60	5502.60	1
24	6	6.60	5506.60	0
25	9	5.40	5505.40	1
26	10	5.00	5505.00	1
27	18	1.80	5501.80	1
28	19	1.40	5501.40	1
29	14	3.40	5503.40	1
30	13	3.80	5503.80	1
Total				26
Detection Percentage (%)				87%
Limit				80%
Test Result				**Complied**

Data Sheet for Radar Type 5

Statistical Performance Check Result							
Radar Test Signal (#)		5		**Trail #**		1	
Burst of Number	13	**Burst Period(s)**	0.9230769	**Waveform Length(s)**	12	**Frequency**	Center
Burst Offset (us)	**Pulse Width (us)**	**Chirp Width (MHz)**	**Number of Pulses per Burst**	**PRI-1 (us)**	**PRI-2 (us)**	**PRI-3 (us)**	
591291	70	11	2	1208	1481	-	
815216	51.8	11	1	1896	-	-	
117197	97.9	11	3	1255	1463	1169	
340497	75.4	11	2	1776	1116	-	
563700	70.6	11	2	1361	1483	-	
786312	85.5	11	3	1168	1155	1192	
89901	70.6	11	2	1078	1126	-	
312423	97.5	11	3	1237	1833	1540	
536877	64.5	11	1	1698	-	-	
759212	81.4	11	2	1575	1490	-	
62185	99.2	11	3	1350	1982	1902	
285880	54.7	11	1	1722	-	-	
508479	75.7	11	2	1594	1682	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		**Trail #**		2	
Burst of Number	8	**Burst Period(s)**	1.5	**Waveform Length(s)**	12	**Frequency**	Center
Burst Offset (us)	**Pulse Width (us)**	**Chirp Width (MHz)**	**Number of Pulses per Burst**	**PRI-1 (us)**	**PRI-2 (us)**	**PRI-3 (us)**	
1190042	68.2	5	2	1790	1952	-	
56652	84.7	5	3	1714	1515	1061	
419783	69.6	5	2	1458	1500	-	
783608	56.5	5	1	1533	-	-	
1144211	84.2	5	3	1322	1988	1910	
11992	56.5	5	1	1411	-	-	
374471	97.5	5	3	1353	1981	1974	
738925	54.4	5	1	1365	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		3	
Burst of Number	20	Burst Period(s)	0.6	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
439705	70	20	2	1001	1246	-	
583092	84.7	20	3	1198	1120	1552	
132117	55.3	20	1	1264	-	-	
277048	64.5	20	1	1871	-	-	
421122	68.6	20	2	1381	1894	-	
564997	93.7	20	3	1306	1111	1754	
113465	96.8	20	3	1996	1535	1742	
258948	78.3	20	2	1239	1166	-	
403936	76.7	20	2	1221	1107	-	
545928	86.2	20	3	1947	1800	1806	
96115	72.3	20	2	1504	1176	-	
241508	64.6	20	1	1382	-	-	
384855	95.4	20	3	1598	1117	1511	
528969	85.4	20	3	1631	1870	1152	
78179	73.2	20	2	1729	1649	-	
223000	77.7	20	2	1815	1238	-	
368464	65.7	20	1	1941	-	-	
510325	90.2	20	3	1899	1935	1819	
60248	98.9	20	3	1194	1675	1570	
205316	79.6	20	2	1245	1375	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		4	
Burst of Number	14	Burst Period(s)	0.8571429	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
501575	51	13	1	1542	-	-	
707132	98.7	13	3	1613	1219	1066	
60818	91.5	13	3	1072	1397	1549	
267493	87	13	3	1253	1748	1762	
475767	66.3	13	1	1987	-	-	
680475	86.6	13	3	1785	1777	1797	
35313	95.2	13	3	1482	1137	1844	
242662	73.5	13	2	1059	1475	-	
449288	98	13	3	1180	1480	1096	
657034	74.6	13	2	1324	1427	-	
9842	92.4	13	3	1133	1753	1378	
217141	82	13	2	1236	1259	-	
422905	87.8	13	3	1803	1842	1900	
631115	72.9	13	2	1559	1726	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		5	
Burst of Number	13	Burst Period(s)	0.9230769	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
902081	100	11	3	1258	1396	1493	
206352	67.1	11	2	1492	1179	-	
429145	92.5	11	3	1410	1150	1042	
653709	60.9	11	1	1399	-	-	
877441	52	11	1	1193	-	-	
178469	91.8	11	3	1686	1403	1569	
402251	73.8	11	2	1067	1218	-	
625039	69.2	11	2	1841	1229	-	
847087	87.9	11	3	1073	1416	1755	
151064	95.2	11	3	1197	1512	1756	
374324	76.8	11	2	1437	1879	-	
596338	90.1	11	3	1352	1925	1666	
820999	80.4	11	2	1586	1132	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		6	
Burst of Number	17	Burst Period(s)	0.7058824	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
94587	82.8	16	2	1332	1689	-	
265527	61.5	16	1	1764	-	-	
435227	91.9	16	3	1301	1024	1167	
605381	90.8	16	3	1277	1091	1354	
73476	94	16	3	1185	1805	1109	
244588	57.6	16	1	1487	-	-	
414781	67.8	16	2	1026	1554	-	
586578	53.4	16	1	1110	-	-	
52576	71.4	16	2	1583	1653	-	
222476	93.3	16	3	1791	1766	1296	
393218	68.4	16	2	1678	1890	-	
562777	98.2	16	3	1510	1605	1418	
31603	82	16	2	1300	1523	-	
201756	98.6	16	3	1020	1070	1990	
372162	73.3	16	2	1999	1709	-	
542921	80.3	16	2	1205	1908	-	
10620	52	16	1	1445	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		**Trail #**		7	
Burst of Number	13	**Burst Period(s)**	0.9230769	**Waveform Length(s)**	12	**Frequency**	Center
Burst Offset (us)	**Pulse Width (us)**	**Chirp Width (MHz)**	**Number of Pulses per Burst**	**PRI-1 (us)**	**PRI-2 (us)**	**PRI-3 (us)**	
236763	93.9	11	3	1325	1401	1265	
458923	90.3	11	3	1962	1647	1876	
683506	76.8	11	2	1499	1242	-	
906848	72.4	11	2	1595	1013	-	
209338	85.5	11	3	1048	1368	1438	
433316	56	11	1	1646	-	-	
654365	85.2	11	3	1784	1878	1389	
880256	54.8	11	1	1659	-	-	
181618	88.1	11	3	1927	1928	1307	
405781	57.1	11	1	1664	-	-	
629680	55.8	11	1	1039	-	-	
852332	81.8	11	2	1050	1038	-	
154801	60.7	11	1	1557	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		8	
Burst of Number	20	Burst Period(s)	0.6	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
244340	96.4	20	3	1226	1572	2000	
390950	60.1	20	1	1346	-	-	
534907	76.3	20	2	1441	1284	-	
82690	56.2	20	1	1273	-	-	
227993	62.4	20	1	1031	-	-	
372695	62	20	1	1940	-	-	
517788	56	20	1	1889	-	-	
64471	83.9	20	3	1106	1311	1930	
209097	98.4	20	3	1260	1022	1606	
354143	74.3	20	2	1178	1917	-	
499561	70	20	2	1069	1249	-	
46749	69.5	20	2	1773	1652	-	
191589	78.6	20	2	1347	1603	-	
336486	73.9	20	2	1177	1608	-	
481767	74.1	20	2	1153	1089	-	
28998	62.7	20	1	1944	-	-	
173769	70.1	20	2	1224	1672	-	
317895	93.3	20	3	1217	1015	1957	
464152	50.5	20	1	1929	-	-	
11067	89	20	3	1945	1615	1847	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		9	
Burst of Number	11	Burst Period(s)	1.0909091	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
283763	85.8	9	3	1451	1023	1821	
548478	51.3	9	1	1960	-	-	
809743	86.6	9	3	1998	1989	1778	
1077369	63.2	9	1	1270	-	-	
251895	57.9	9	1	1730	-	-	
514624	97.4	9	3	1488	1953	1309	
780737	55.4	9	1	1002	-	-	
1044449	56.6	9	1	1654	-	-	
218719	86	9	3	1683	1425	1787	
483655	55.9	9	1	1417	-	-	
747738	50.5	9	1	1641	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		10	
Burst of Number	9	Burst Period(s)	0.75	Waveform Length(s)	12	Frequency	Center
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
695151	61.9	15	1	1713	-	-	
128132	71.6	15	2	1320	1648	-	
309769	60.6	15	1	1862	-	-	
489296	97	15	3	1244	1669	1873	
672580	58.2	15	1	1954	-	-	
105804	71.9	15	2	1694	1351	-	
286805	75.7	15	2	1869	1591	-	
467329	86.1	15	3	1161	1266	1887	
650589	61.2	15	1	1544	-	-	
83455	74.3	15	2	1934	1415	-	
264701	68.2	15	2	1422	1478	-	
444952	95.5	15	3	1657	1214	1610	
628454	65.9	15	1	1276	-	-	
61315	56.8	15	1	1335	-	-	
242712	52.9	15	1	1881	-	-	
424295	56.8	15	1	1634	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		11	
Burst of Number	20	Burst Period(s)	0.6	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
483494	82.2	20	2	1691	1029	-	
31130	61.1	20	1	1623	-	-	
175309	92.1	20	3	1303	1697	1836	
320742	68	20	2	1362	1450	-	
466659	63.9	20	1	1426	-	-	
13250	55.3	20	1	1823	-	-	
157701	92.9	20	3	1232	1191	1763	
302865	75	20	2	1571	1312	-	
446764	95	20	3	1254	1650	1207	
591996	73.6	20	2	1550	1846	-	
140621	63	20	1	1121	-	-	
283899	98.4	20	3	1343	1977	1926	
430680	65.1	20	1	1725	-	-	
575746	56.5	20	1	1761	-	-	
122072	99.4	20	3	1241	1118	1973	
266724	98	20	3	1588	1304	1028	
410761	92.5	20	3	1484	1733	1473	
556827	73.8	20	2	1574	1310	-	
104794	58	20	1	1380	-	-	
248823	97.9	20	3	1443	1326	1376	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		12	
Burst of Number	9	Burst Period(s)	1.3333333	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
878323	68	6	2	1562	1223	-	
1201036	77	6	2	1576	1195	-	
193430	65.9	6	1	1019	-	-	
515373	90.9	6	3	1728	1142	1206	
837168	94.4	6	3	1333	1997	1685	
1162414	57.1	6	1	1479	-	-	
153280	89.3	6	3	1447	1536	1062	
476708	64.6	6	1	1156	-	-	
798519	67.6	6	2	1975	1319	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		13	
Burst of Number	14	Burst Period(s)	0.8571429	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
721573	55.9	13	1	1087	-	-	
72983	70.6	13	2	1516	1373	-	
280517	56.4	13	1	1822	-	-	
488047	54.9	13	1	1667	-	-	
692783	90.5	13	3	1636	1670	1736	
47463	73.3	13	2	1462	1435	-	
253983	95.6	13	3	1681	1897	1538	
460713	94	13	3	1555	1620	1780	
667923	87.9	13	3	1140	1812	1329	
21923	86.7	13	3	1095	1456	1097	
229477	56.6	13	1	1581	-	-	
436459	78.8	13	2	1308	1289	-	
642305	85.7	13	3	1299	1852	1315	
852309	51.9	13	1	1250	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		14	
Burst of Number	12	Burst Period(s)	1	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
237287	84.6	10	3	1314	1508	1611	
480167	58.8	10	1	1472	-	-	
721239	77.4	10	2	1092	1904	-	
963224	71	10	2	1139	1671	-	
208121	54.6	10	1	1673	-	-	
449554	74.9	10	2	1469	1738	-	
691801	70.3	10	2	1233	1263	-	
934484	52.9	10	1	1687	-	-	
177771	92.1	10	3	1433	1826	1355	
419126	98.9	10	3	1915	1407	1428	
662911	55.1	10	1	1125	-	-	
902272	88.9	10	3	1635	1045	1643	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		15	
Burst of Number	17	Burst Period(s)	0.7058824	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
104782	55.1	16	1	1331	-	-	
274485	95.2	16	3	1288	1262	1779	
446644	51.1	16	1	1157	-	-	
615134	73.6	16	2	1965	1963	-	
83697	56.7	16	1	1637	-	-	
254526	66	16	1	1563	-	-	
424104	78.2	16	2	1872	1746	-	
596368	57.3	16	1	1323	-	-	
62396	89.1	16	3	1882	1328	1370	
233528	53	16	1	1432	-	-	
404155	56.6	16	1	1824	-	-	
572746	93.4	16	3	1699	1269	1507	
41534	74.7	16	2	1498	1593	-	
211866	83.3	16	2	1585	1892	-	
383319	53.8	16	1	1460	-	-	
553954	53.9	16	1	1727	-	-	
20589	54.5	16	1	1356	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		16	
Burst of Number	13	Burst Period(s)	0.9230769	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
249549	87.2	11	3	1529	1868	1392	
473814	51.3	11	1	1772	-	-	
696747	69.1	11	2	1145	1305	-	
919852	82.3	11	2	1614	1012	-	
222458	75	11	2	1477	1898	-	
445510	81.4	11	2	1625	1760	-	
669234	82	11	2	1290	1173	-	
891674	66.9	11	2	1526	1801	-	
194770	86.2	11	3	1172	1980	1227	
417571	84.6	11	3	1932	1394	1079	
640275	89.8	11	3	1601	1071	1880	
862582	97.4	11	3	1985	1745	1316	
167886	52.9	11	1	1294	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		17	
Burst of Number	9	Burst Period(s)	1.3333333	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
564844	78.5	7	2	1406	1829	-	
888379	57.6	7	1	1820	-	-	
1208797	99.8	7	3	1248	1692	1645	
202812	51.5	7	1	1298	-	-	
525477	68.1	7	2	1088	1213	-	
848768	50.3	7	1	1558	-	-	
1169382	92.8	7	3	1580	1573	1114	
162951	64.2	7	1	1854	-	-	
485678	79.9	7	2	1011	1387	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		18	
Burst of Number	16	Burst Period(s)	0.75	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
452762	90.6	15	3	1885	1390	1371	
636546	50.5	15	1	1103	-	-	
69136	78.3	15	2	1485	1175	-	
250688	62.9	15	1	1768	-	-	
431876	81.6	15	2	1211	1044	-	
613696	52.2	15	1	1684	-	-	
46710	84	15	3	1704	1338	1209	
227355	96.3	15	3	1920	1674	1384	
409287	71.3	15	2	1292	1421	-	
590397	71.1	15	2	1818	1060	-	
24536	66.3	15	1	1055	-	-	
205244	98.5	15	3	1712	1448	1291	
387827	54.9	15	1	1043	-	-	
566988	97.5	15	3	1749	1158	1404	
2150	86.1	15	3	1607	1867	1436	
183641	56.5	15	1	1721	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		19	
Burst of Number	9	Burst Period(s)	1.3333333	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
649004	80.2	7	2	1476	1792	-	
972632	63.8	7	1	1837	-	-	
1294265	69.1	7	2	1455	1715	-	
287125	56.7	7	1	1234	-	-	
609502	70.5	7	2	1127	1633	-	
931751	81.5	7	2	1629	1783	-	
1253215	88.5	7	3	1147	1810	1604	
247305	60	7	1	1363	-	-	
568977	86.1	7	3	1212	1662	1696	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		20	
Burst of Number	20	Burst Period(s)	0.6	Waveform Length(s)	12	Frequency	F_L+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
400523	74.5	20	2	1775	1082	-	
544232	99.1	20	3	1564	1074	1442	
92772	93.7	20	3	1995	1235	1293	
238062	73.1	20	2	1006	1337	-	
383830	65.2	20	1	1068	-	-	
529131	53.4	20	1	1021	-	-	
75357	61.2	20	1	1553	-	-	
219129	90.3	20	3	1807	1912	1551	
365634	57.2	20	1	1565	-	-	
510479	60.8	20	1	1909	-	-	
57360	68.5	20	2	1626	1163	-	
202693	54	20	1	1340	-	-	
347847	62.1	20	1	1408	-	-	
490344	99.8	20	3	1556	1877	1230	
39483	79.7	20	2	1701	1622	-	
184461	82.9	20	2	1302	1164	-	
328025	89.9	20	3	1520	1638	1769	
475199	63.2	20	1	1336	-	-	
21678	68.6	20	2	1502	1256	-	
166512	81	20	2	1398	1420	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		21	
Burst of Number	9	Burst Period(s)	1.3333333	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
694608	54.5	6	1	1034	-	-	
1016456	73.6	6	2	1590	1115	-	
8551	60.1	6	1	1933	-	-	
331564	63.7	6	1	1505	-	-	
653496	95.1	6	3	1405	1075	1220	
975332	88	6	3	1628	1744	1202	
1297079	86.6	6	3	1271	1914	1921	
291425	73.6	6	2	1188	1924	-	
614597	57.5	6	1	1916	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		22	
Burst of Number	13	Burst Period(s)	0.9230769	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
648947	59.4	11	1	1464	-	-	
872834	59.1	11	1	1077	-	-	
174442	62	11	1	1104	-	-	
397033	68.2	11	2	1747	1711	-	
619847	76.8	11	2	1972	1816	-	
844713	57	11	1	1706	-	-	
146857	53.2	11	1	1367	-	-	
369203	90.4	11	3	1731	1446	1170	
592949	73.2	11	2	1201	1710	-	
817479	56.1	11	1	1377	-	-	
119201	67.7	11	2	1130	1171	-	
342999	55.1	11	1	1007	-	-	
566579	58.1	11	1	1090	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		23	
Burst of Number	17	Burst Period(s)	0.7058824	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
601322	97.7	16	3	1345	1186	1735	
69798	86.6	16	3	1578	1884	1521	
240236	67.6	16	2	1861	1813	-	
411573	52.4	16	1	1913	-	-	
581299	68	16	2	1719	1414	-	
49079	64	16	1	1828	-	-	
218917	89.4	16	3	1765	1548	1453	
389991	73.8	16	2	1690	1216	-	
560724	80.6	16	2	1327	1280	-	
27969	68.2	16	2	1893	1857	-	
198477	69.9	16	2	1474	1501	-	
368635	79	16	2	1619	1964	-	
539754	81.5	16	2	1395	1160	-	
7017	50.9	16	1	1366	-	-	
177018	88.9	16	3	1080	1978	1740	
347849	80	16	2	1339	1850	-	
518155	78.1	16	2	1503	1848	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		24	
Burst of Number	9	Burst Period(s)	1.3333333	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
1303061	77.3	6	2	1858	1937	-	
296120	66.9	6	2	1452	1703	-	
618053	87.6	6	3	1461	1679	1471	
941705	82.8	6	2	1058	1582	-	
1262467	97.9	6	3	1561	1786	1369	
256754	51.6	6	1	1225	-	-	
579778	56.4	6	1	1349	-	-	
900681	85.8	6	3	1708	1025	1781	
1223080	85.3	6	3	1357	1971	1057	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		25	
Burst of Number	11	Burst Period(s)	1.0909091	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
177128	92.7	9	3	1040	1064	1252	
441120	76.5	9	2	1567	1231	-	
703834	92.6	9	3	1739	1434	1457	
968288	66.7	9	2	1774	1737	-	
144880	57.1	9	1	1532	-	-	
408948	50.9	9	1	1907	-	-	
672738	75.9	9	2	1054	1383	-	
935219	96.5	9	3	1802	1341	1046	
112148	75.9	9	2	1951	1400	-	
376130	73.5	9	2	1053	1677	-	
638910	96.2	9	3	1531	1865	1268	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		26	
Burst of Number	12	Burst Period(s)	1	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
826712	92.6	10	3	1834	1000	1983	
72998	69.9	10	2	1849	1518	-	
314688	72.5	10	2	1489	1958	-	
555527	84.2	10	3	1831	1182	1967	
797115	83.8	10	3	1843	1348	1459	
43224	78.8	10	2	1412	1979	-	
284734	91	10	3	1295	1086	1705	
526386	92.2	10	3	1003	1723	1148	
767431	89.3	10	3	1660	1724	1200	
13435	95.4	10	3	1439	1190	1942	
255680	56.1	10	1	1358	-	-	
497683	64.3	10	1	1759	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		27	
Burst of Number	19	Burst Period(s)	0.6315789	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
466662	60.4	18	1	1883	-	-	
616742	95.2	18	3	1991	1243	1334	
142355	78.8	18	2	1016	1100	-	
295519	50.7	18	1	1051	-	-	
446771	67.6	18	2	1527	1874	-	
599225	75.4	18	2	1809	1486	-	
123039	99.9	18	3	1010	1970	1741	
275129	85	18	3	1330	1318	1943	
428981	61.1	18	1	1968	-	-	
580996	66.7	18	2	1644	1065	-	
104670	82.7	18	2	1313	1261	-	
257432	71.4	18	2	1027	1037	-	
410696	62.9	18	1	1162	-	-	
561441	81.3	18	2	1939	1630	-	
86077	63.9	18	1	1122	-	-	
239011	61.1	18	1	1047	-	-	
390966	68.9	18	2	1204	1402	-	
544078	53.1	18	1	1950	-	-	
66876	85.1	18	3	1468	1129	1959	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		28	
Burst of Number	20	Burst Period(s)	0.6	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
208292	75.1	19	2	1577	1919	-	
354271	65.3	19	1	1286	-	-	
495997	83.9	19	3	1955	1534	1969	
45716	85.5	19	3	1624	1587	1386	
191235	57.3	19	1	1105	-	-	
334080	94.4	19	3	1901	1992	1495	
481017	53.3	19	1	2000	-	-	
27921	99	19	3	1379	1789	1592	
172578	69.1	19	2	1922	1830	-	
318204	60.7	19	1	1839	-	-	
463599	64.3	19	1	1423	-	-	
10138	96.6	19	3	1680	1440	1702	
154700	90	19	3	1798	1009	1196	
298982	86.6	19	3	1413	1524	1596	
445818	62.1	19	1	1287	-	-	
589319	82.1	19	2	1159	1856	-	
137185	71.5	19	2	1621	1119	-	
281563	78.3	19	2	1888	1860	-	
427881	50.1	19	1	1359	-	-	
572624	58.3	19	1	1825	-	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		29	
Burst of Number	15	Burst Period(s)	0.8	Waveform Length(s)	12	Frequency	F_H-(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
159228	71	14	2	1700	1429	-	
352518	76	14	2	1895	1181	-	
544323	88.6	14	3	1364	1961	1903	
737838	85	14	3	1757	1281	1372	
135567	75.8	14	2	1099	1174	-	
328212	87.2	14	3	1285	1014	1984	
522698	51.1	14	1	1994	-	-	
715290	71.3	14	2	1525	1528	-	
111884	52.4	14	1	1210	-	-	
305327	64.8	14	1	1966	-	-	
497761	79.9	14	2	1938	1811	-	
691696	73.2	14	2	1661	1143	-	
87610	86.1	14	3	1993	1282	1665	
281813	60.2	14	1	1041	-	-	
474637	81.1	14	2	1617	1017	-	

Statistical Performance Check Result							
Radar Test Signal (#)		5		Trail #		30	
Burst of Number	14	Burst Period(s)	0.8571429	Waveform Length(s)	12	Frequency	F_H+(0.4*Chirp width)
Burst Offset (us)	Pulse Width (us)	Chirp Width (MHz)	Number of Pulses per Burst	PRI-1 (us)	PRI-2 (us)	PRI-3 (us)	
713761	99.1	13	3	1466	1853	1864	
68606	76.6	13	2	1948	1018	-	
276396	59.6	13	1	1030	-	-	
482744	71.4	13	2	1513	1793	-	
691089	56.4	13	1	1743	-	-	
43150	64.2	13	1	1752	-	-	
250293	76.4	13	2	1251	1579	-	
457068	80.8	13	2	1838	1782	-	
665070	74.2	13	2	1093	1247	-	
17534	96.8	13	3	1855	1771	1135	
224742	70.1	13	2	1658	1283	-	
430908	92.7	13	3	1618	1514	1795	
638128	84.8	13	3	1430	1279	1509	
847663	50.7	13	1	1519	-	-	

Type 6 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulses / Hop	Pulse Width (us)	PRI (us)	1=Detection 0=No Detection
1	5500	9	1	333	1
2	5500	9	1	333	1
3	5500	9	1	333	1
4	5500	9	1	333	1
5	5500	9	1	333	1
6	5500	9	1	333	1
7	5500	9	1	333	1
8	5500	9	1	333	1
9	5500	9	1	333	1
10	5500	9	1	333	1
11	5500	9	1	333	1
12	5500	9	1	333	1
13	5500	9	1	333	1
14	5500	9	1	333	1
15	5500	9	1	333	1
16	5500	9	1	333	1
17	5500	9	1	333	1
18	5500	9	1	333	1
19	5500	9	1	333	1
20	5500	9	1	333	1
21	5500	9	1	333	1
22	5500	9	1	333	1
23	5500	9	1	333	1
24	5500	9	1	333	1
25	5500	9	1	333	1
26	5500	9	1	333	1
27	5500	9	1	333	1
28	5500	9	1	333	1
29	5500	9	1	333	1
30	5500	9	1	333	1
Detection Percentage (%)					100.000
Limit					70%
Test Result					**Complied**

4 Test Equipment and Calibration Data

Instrument	Manufacturer/ Brand Name	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	Keysight	N9010A	MY55150165	9kHz~7GHz	02/Dec/2021	01/Dec/2022
Vector Signal Generator	Keysight	N5182B	MY53051912	9kHz~6GHz	21/Mar/2022	20/Mar/2023
DFS-Adaptivity	Sporton	Ver 2.7	N/A	N/A	N/A	N/A
Keysight Signal Studio for DFS Radar Profiles	Keysight	2.0.0.0	N/A	N/A	N/A	N/A
InServiceMonitorUtility	Sporton	N/A	N/A	N/A	N/A	N/A

5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Threshold Level	1.2 dB	Confidence levels of 95%
Statistical Performance Check	3.33 %	Confidence levels of 95%
CMT	36.52 ms	Confidence levels of 95%
CCTT	8 ms	Confidence levels of 95%
NOP	0 min	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%