FCC DFS TEST REPORT

FCC ID	:	**TVE-241001**
Equipment	:	**Network Security Gateway**
Brand Name	:	**FORTINET**
Model Name	:	**FortiWiFi 70G-POExxxxxxxxxx, FORTIWIFI-70G-POExxxxxxxxxx, FWF-70G-POExxxxxxxxxx, FortiWiFi 71G-POExxxxxxxxxx, FORTIWIFI-71G-POExxxxxxxxxx, FWF-71G-POExxxxxxxxxx (where "x" can be used as "0-9", or "A-Z", or "-", or blank for software changes or marketing purposes only)**
Applicant	:	**Fortinet, Inc.** **909 Kifer Road, Sunnyvale CA 94086, USA**
Manufacturer	:	**Fortinet, Inc.** **909 Kifer Road, Sunnyvale CA 94086, USA**
Standard	:	**FCC Part 15 Subpart E**

The product was received on Dec. 04, 2024 and testing was performed from Dec. 06, 2024 to Dec. 09, 2024. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in FCC Part 15 Subpart E 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 (USA) Inc., the test report shall not be reproduced except in full.

Neil Kao

Approved by: Neil Kao

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035

Table of Contents

History of this test report

Report No.	Version	Description	Issue Date
FZ241209001	01	Initial issue of report	Feb. 25, 2025

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	7.8.1	U-NII Detection Bandwidth	Pass	-
3.3	7.8.2	Channel Availability Check Time	Pass	-
3.4	7.8.3	Channel Move Time	Pass	-
		Channel Closing Transmission Time	Pass	-
		Non-Occupancy Period Test	Pass	-
3.5	7.8.4	Statistical Performance Check	Pass	-

Conformity Assessment Condition:
The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Feature of Equipment Under Test

Product Feature	
Equipment	Network Security Gateway
Model Name	FortiWiFi 70G-POExxxxxxxxxx, FORTIWIFI-70G-POExxxxxxxxxx, FWF-70G-POExxxxxxxxxx, FortiWiFi 71G-POExxxxxxxxxx, FORTIWIFI-71G-POExxxxxxxxxx, FWF-71G-POExxxxxxxxxx (where “x” can be used as “0-9”, or “A-Z”, or “-“, or blank for software changes or marketing purposes only)

Remark: The above EUT's information was declared by manufacturer.

1.2 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
DFS Function	Master
Tx/Rx Channel Frequency Range	5250 MHz ~ 5350 MHz 5470 MHz ~ 5725 MHz
EUT support WLAN function	802.11 a/n HT20/HT40 802.11 ac VHT20/VHT40/VHT80 802.11 ax HE20/HE40/HE80
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11 ax : OFDM (BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM)

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

Antenna Information						
Ant.	**Port.**	**Brand**	**Model Name**	**Antenna Type**	**Connector**	**Support**
1	1	WIESON	ARY118-0047-001-00	Dipole Antenna	SMA	2.4G+5G
2	2	WIESON	ARY118-0047-001-00	Dipole Antenna	SMA	2.4G+5G
3	3	WIESON	ARY118-0047-001-00	Dipole Antenna	SMA	5G

Gain (dBi)				Remark
Ant.	**Port.**	**Band 2**	**Band 3**	
1	1	2.60	2.01	2.4G+5G Tx/Rx
2	2	2.60	2.01	2.4G+5G Tx/Rx
3	3	2.60	2.01	RX only

1.3 Testing Facility

Test Site	Sporton International (USA) Inc.
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300
Test Site No.	**Sporton Site No.**
	DFS01-CA

FCC Designation No.: US1250

1.4 Modification of EUT

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

1.5 Applied Standards

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

- FCC Part 15 Subpart E
- FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
- FCC KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.6 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	HW / FW Version	Power Cord
1.	Notebook	MSI	MS-16J5	PD93165NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Notebook	HP ENVY	13-ba1063cl	PD9AX201D2	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2 Requirements and Parameters for DFS Test

2.1 Summary of Dynamic Frequency Selection Test

UNII	Description	Limit
U-NII 2-A 5250-5350 MHz	Channel Availability Check Time	> 60sec
	U-NII Detection Bandwidth	> 100% of the U-NII 99% transmission power bandwidth
	Statistical Performance Check	Type 1,2,3,4 >= 60% Type 1~4 and 5 >= 80% Type 6 >= 70%
	Channel Move Time	< 10 sec
	Channel Closing Transmission Time	< 200 ms + aggregate of 60 ms over remaining 10 s period
	Non-Occupancy Period Test	> 30 minutes
U-NII 2-C 5470-5725 MHz	Channel Availability Check Time	> 60sec
	U-NII Detection Bandwidth	> 100% of the U-NII 99% transmission power bandwidth
	Statistical Performance Check	Type 1,2,3,4 >= 60% Type 1~4 and 5 >= 80% Type 6 >= 70%
	Channel Move Time	< 10 sec
	Channel Closing Transmission Time	< 200 ms + aggregate of 60 ms over remaining 10 s period
	Non-Occupancy Period Test	> 30 minutes

2.2 Applicability of DFS Requirements

EUT is considered as a master device.

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

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

Table 2: Applicability of DFS requirements during normal operation

Requirement	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
Client Beacon Test	N/A	Yes	Yes

Additional requirements for devices with multiple bandwidth modes	Operational Mode	
	Master 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.

2.3 DFS Detection Thresholds

Table 3 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

Table 3: DFS Detection Thresholds for Master Devices

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

The radar *Detection Threshold*, lowest antenna gain is the parameter of Interference radar DFS detection threshold, The Interference Detection Threshold is the -64dBm.

2.4 DFS Response requirement values

Table 4 provides the response requirements for Master and Client Devices incorporating DFS.

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth See Note 3.
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate 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.	

2.5 Short Pulse Radar Test Waveforms

Radar Type 0 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time.

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.
1	1	Test A Test B	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

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

Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a
Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

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

The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number (1 to 23)	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355.0	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.5	858
19	1139.0	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

2.6 Long Pulse Radar Test Waveform

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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms. Each waveform is defined as follows:

Note: The center frequency for each of the 30 trials of the Bin 5 radar shall be randomly selected within 80% of the Occupied Bandwidth.

(1) The transmission period for the Long Pulse Radar test signal is 12 seconds.

(2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst_Count.

(3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.

(4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.

(5) 5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a **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

(6) 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.

(7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

A representative example of a Long Pulse radar test waveform:

(1) The total test signal length is 12 seconds.

(2) 8 Bursts are randomly generated for the Burst_Count.

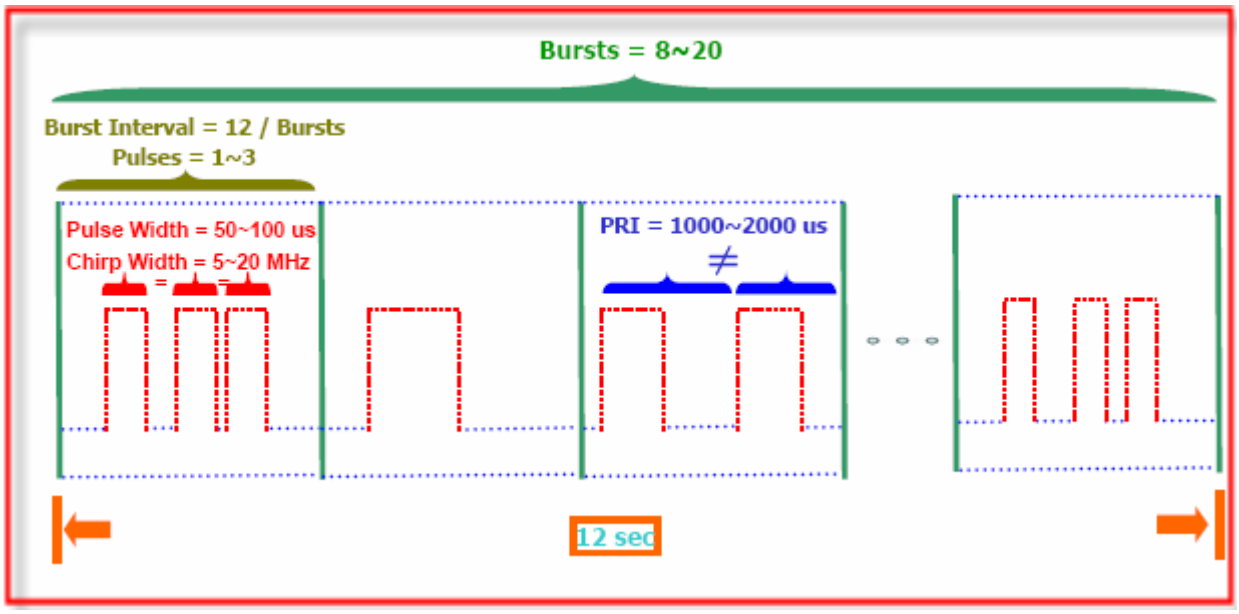
(3) Burst 1 has 2 randomly generated pulses.

(4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.

(5) The PRI is randomly selected to be at 1213 microseconds.

(6) Bursts 2 through 8 are generated using steps 3 – 5.

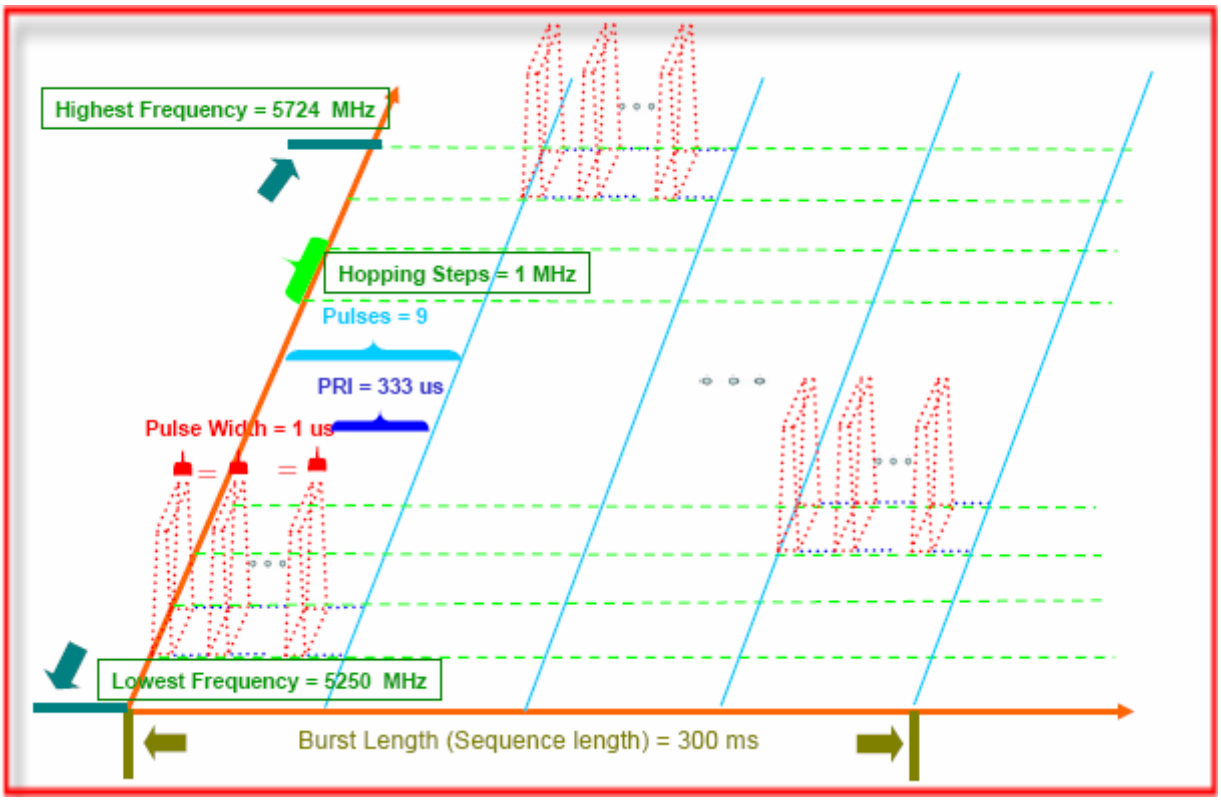
(7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).



2.7 Frequency Hopping Radar Test Waveform

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

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.



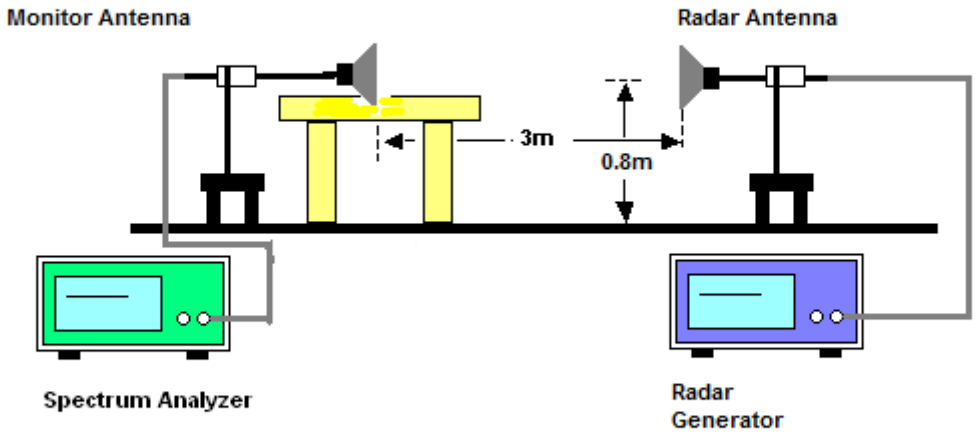
3 Calibration Setup and DFS Test Results

3.1 Calibration of Radar Waveform

3.1.1 Radar Waveform Calibration Procedure

The Interference Radar Detection Threshold Level is -64dBm that had been taken into account the output power range and antenna gain. The following equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for radar type 0~6. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz to measure the radar waveform. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was -64dBm. Capture the spectrum analyzer plots on radar waveform.

3.1.2 Calibration Setup



3.1.3 Calibration Deviation

There is no deviation with the original standard.

3.1.4 Radar Waveform Calibration Result

<20MHz / 5300MHz>

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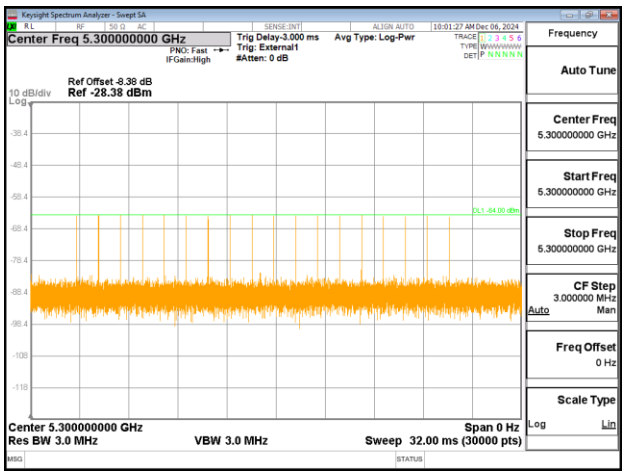	
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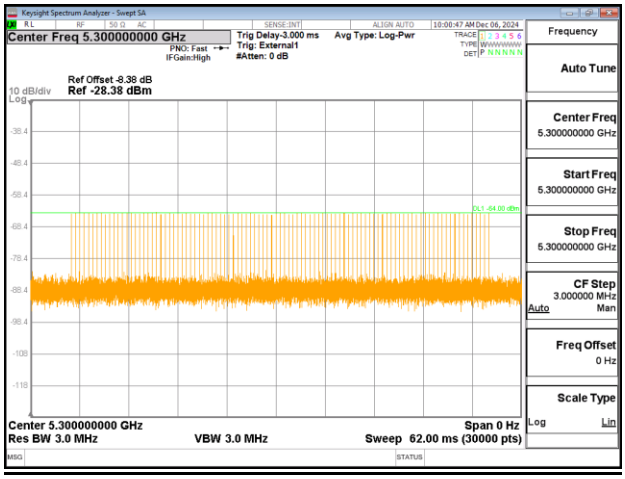	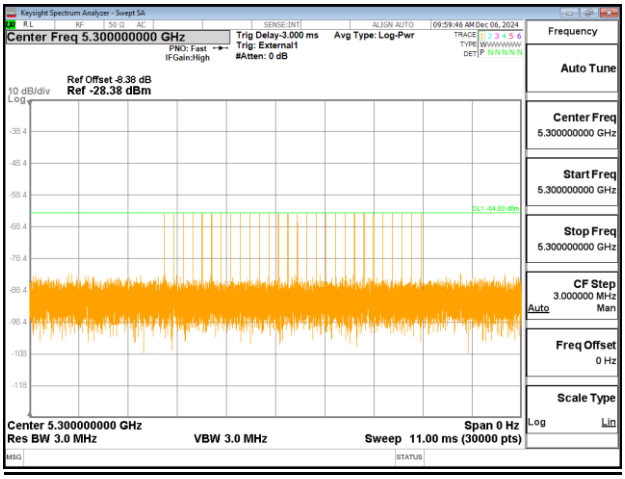

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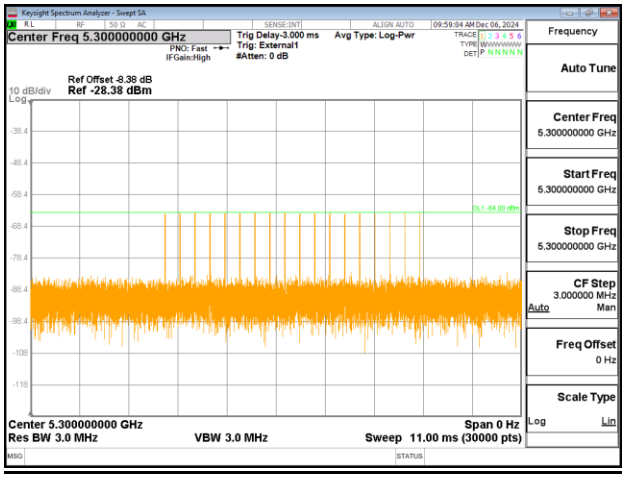
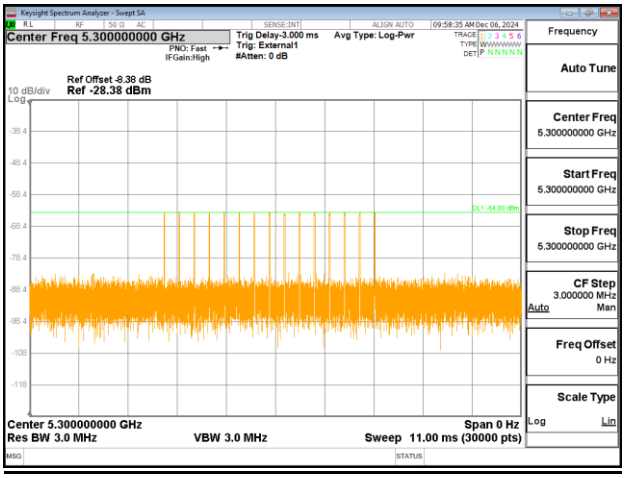
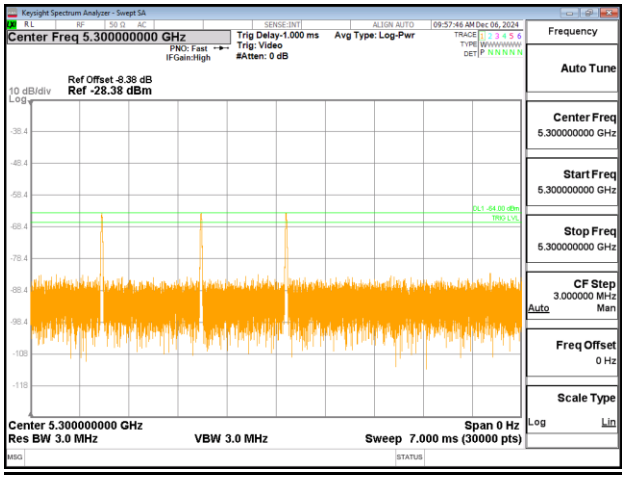
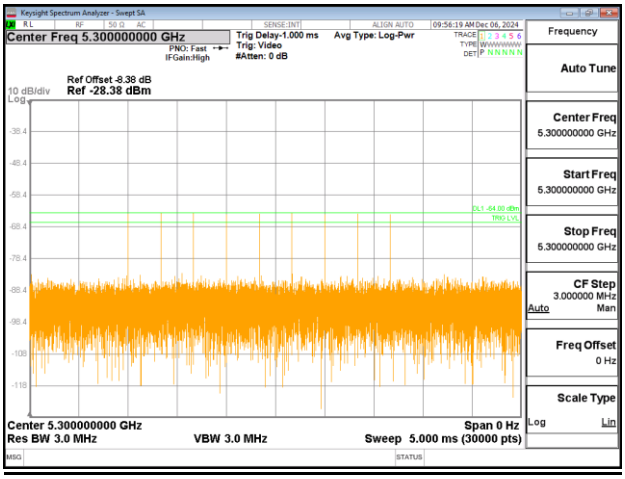
	
Single Burst of Radar Type 5	**Single Burst of Radar Type 6**
	

<40MHz / 5310MHz>

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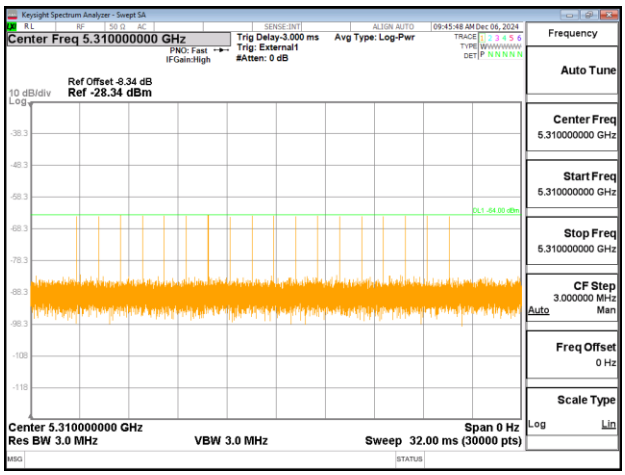	
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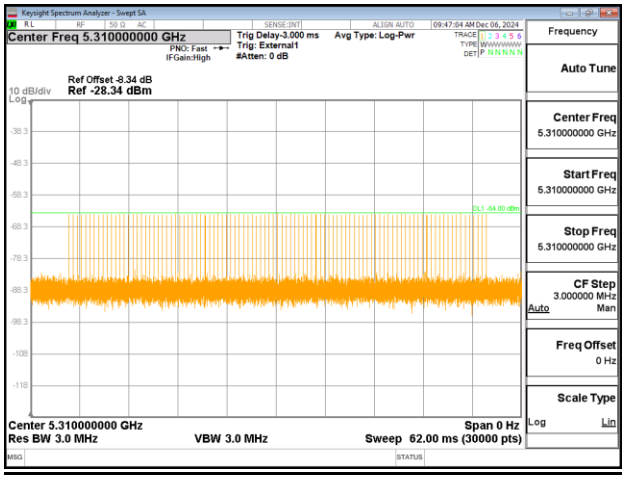	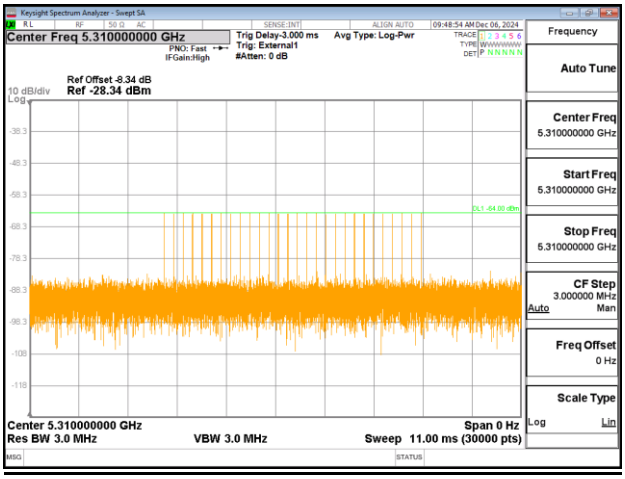

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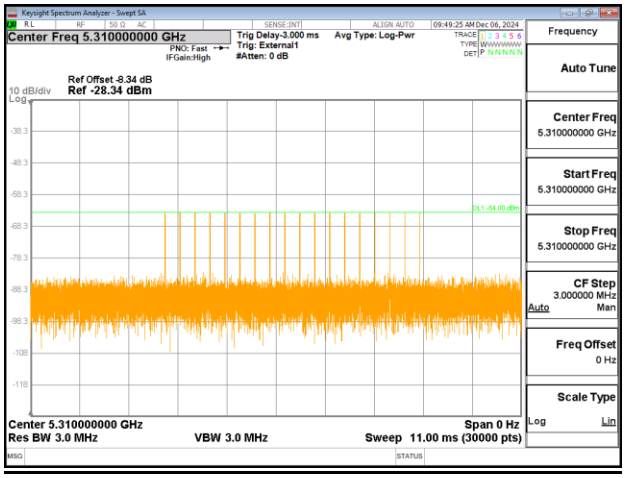	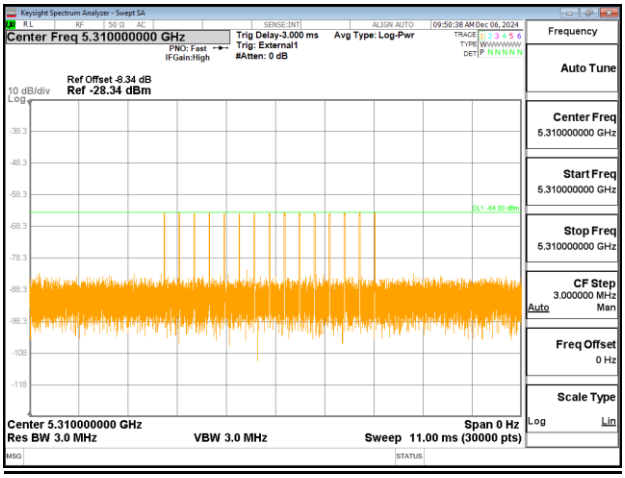
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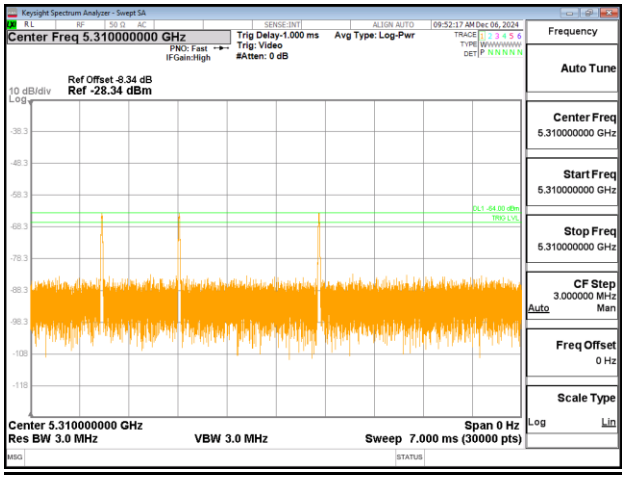	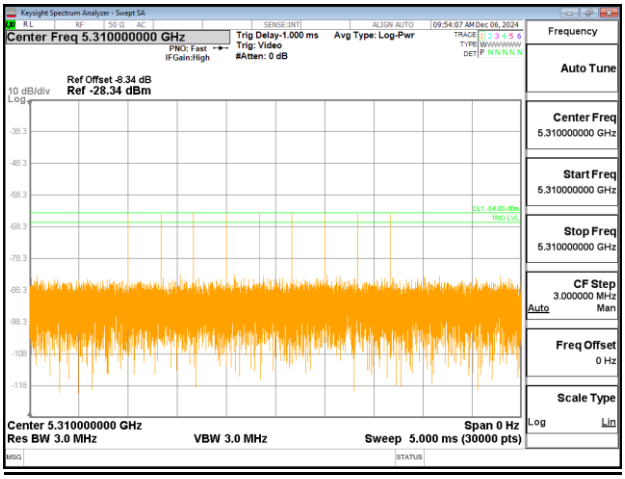

<80MHz / 5290MHz>

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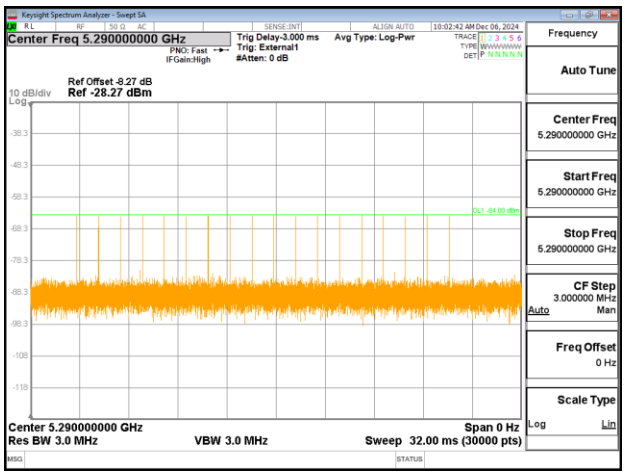	
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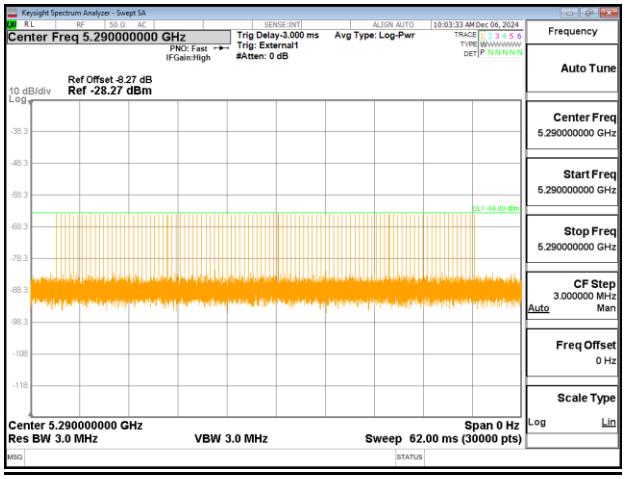	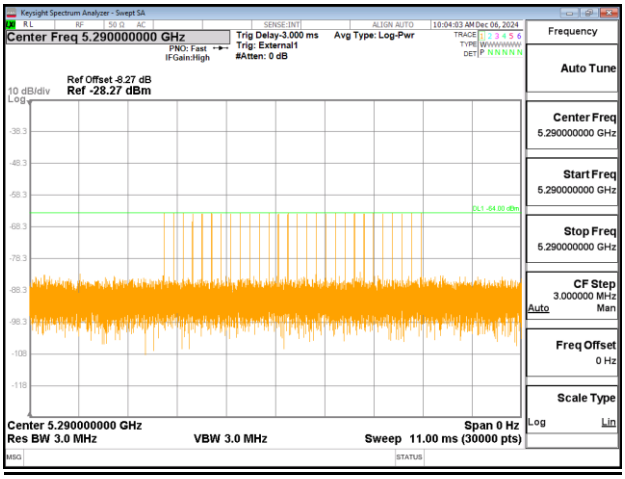

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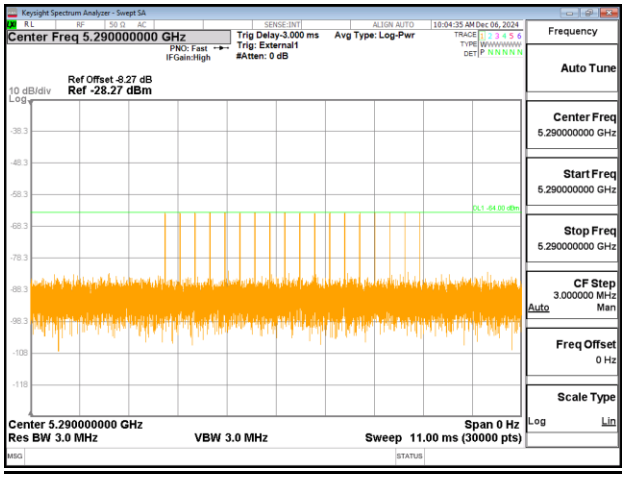
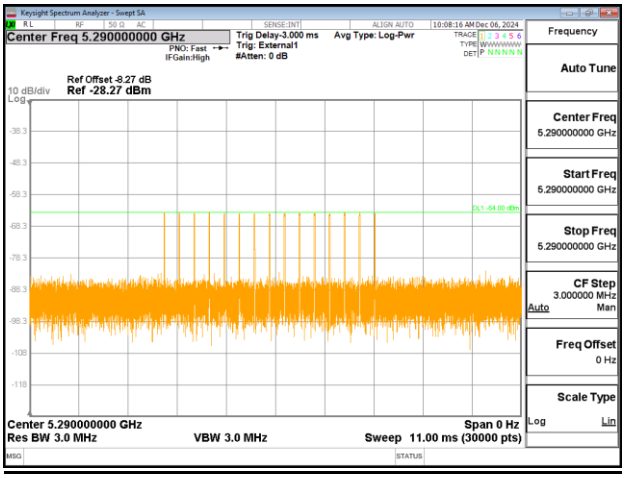
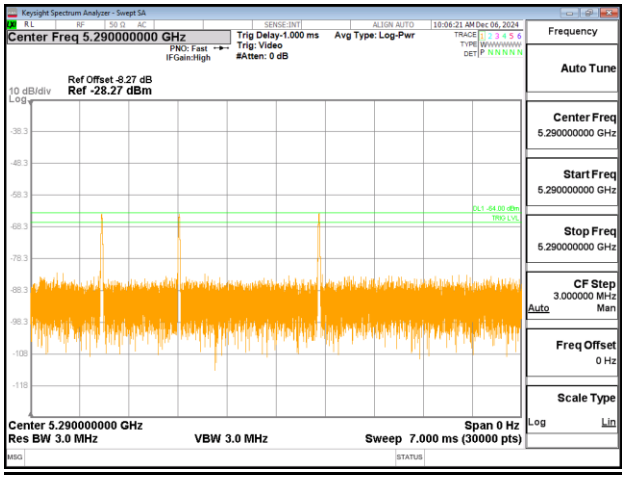
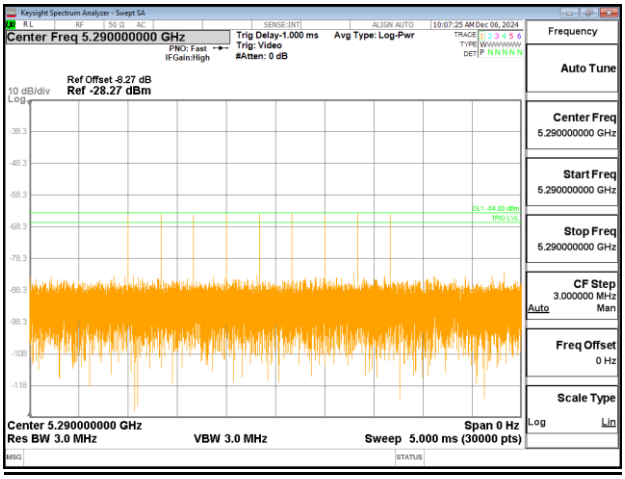
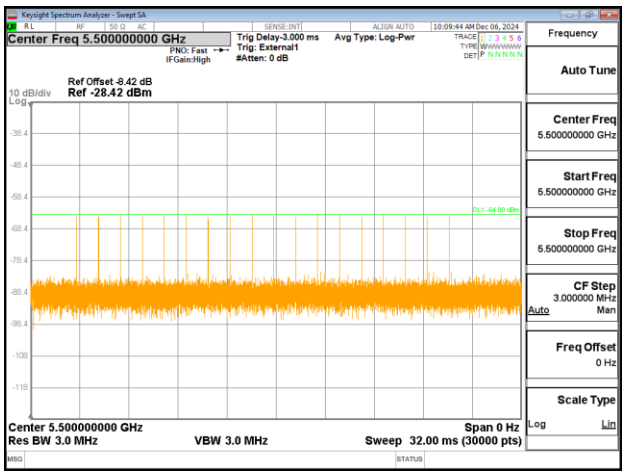
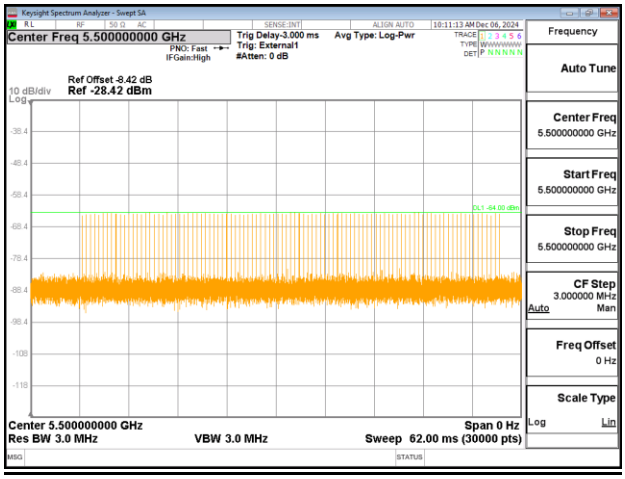
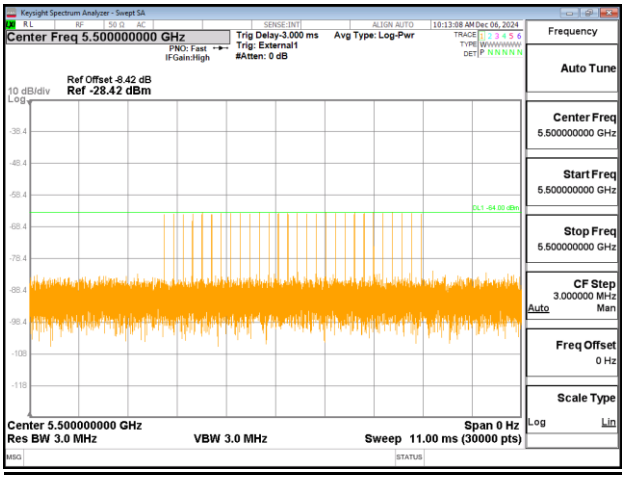
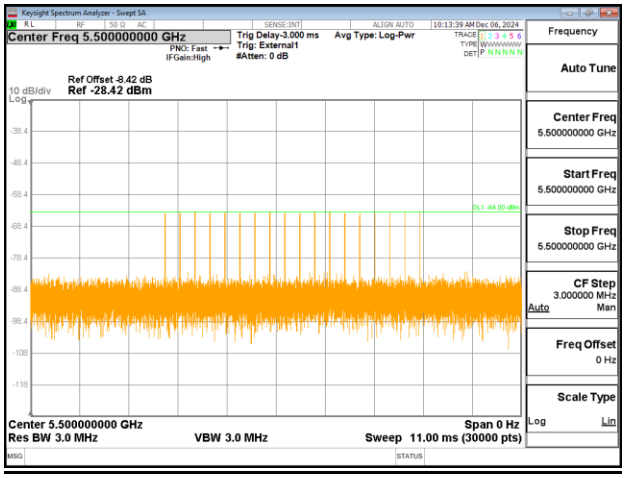
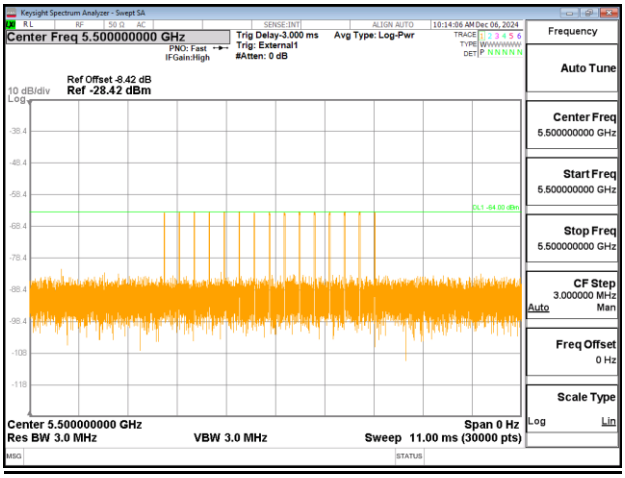
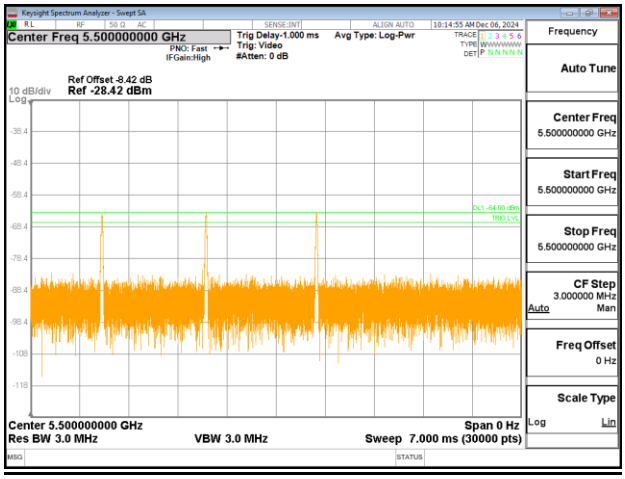
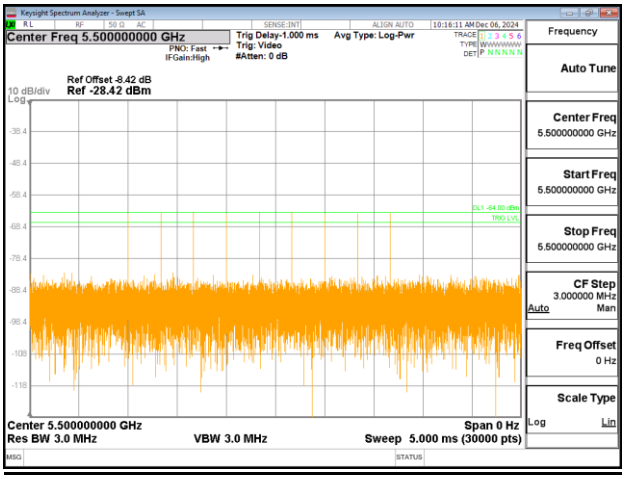
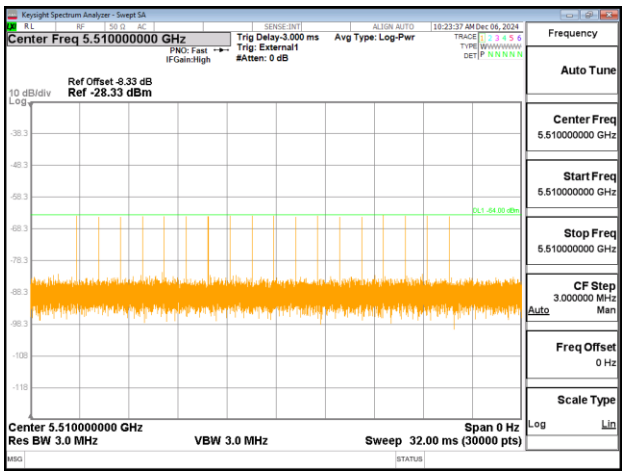
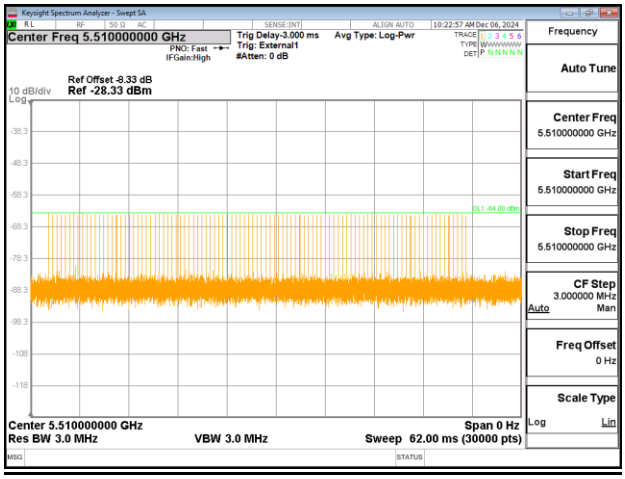
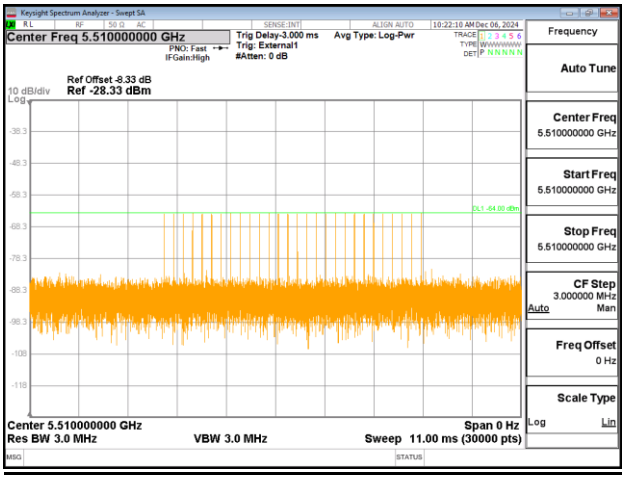
	
Single Burst of Radar Type 5	**Single Burst of Radar Type 6**
	

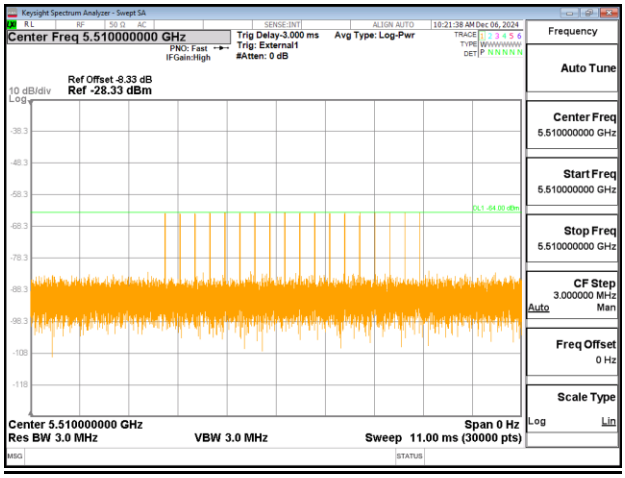
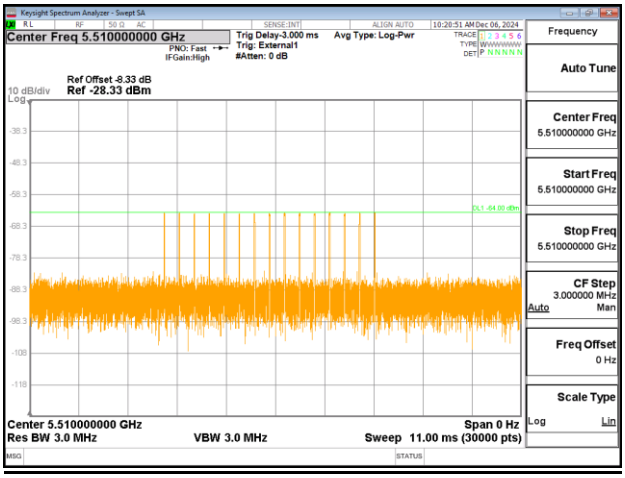
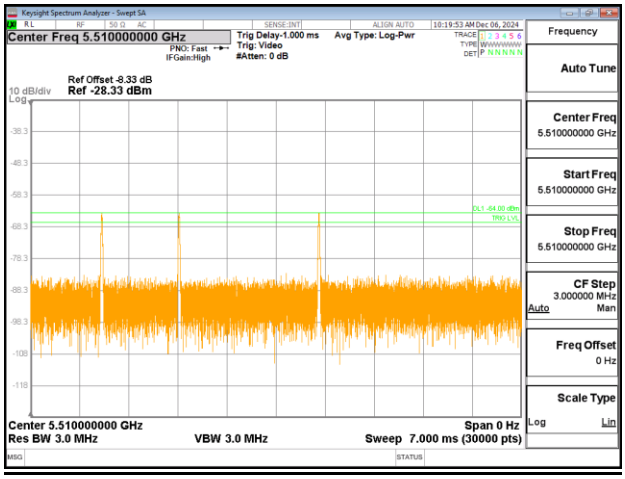
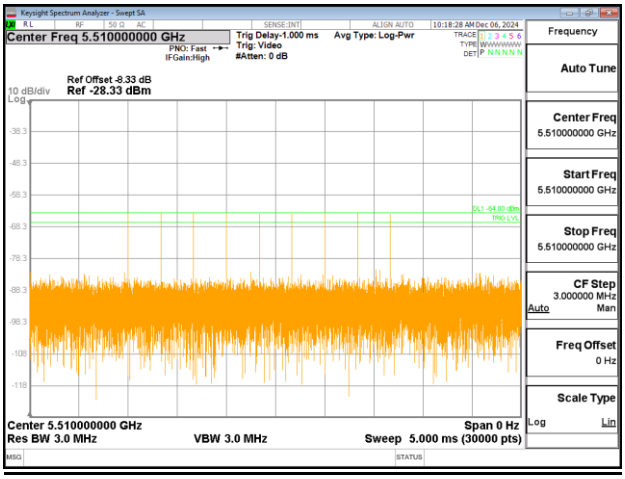
<20MHz / 5500MHz>

Radar Type 0	
	
Radar Type 1	**Radar Type 2**
	

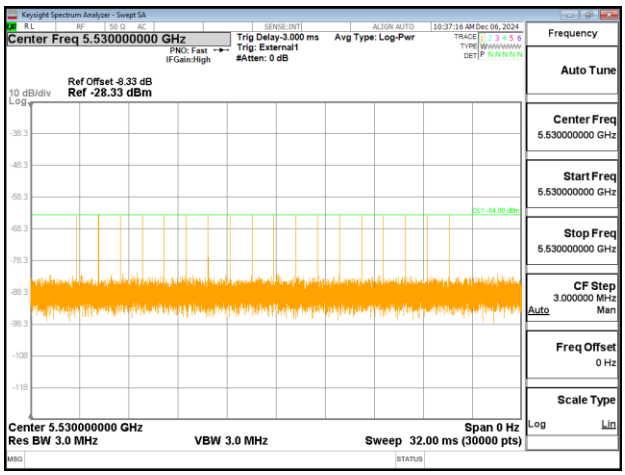
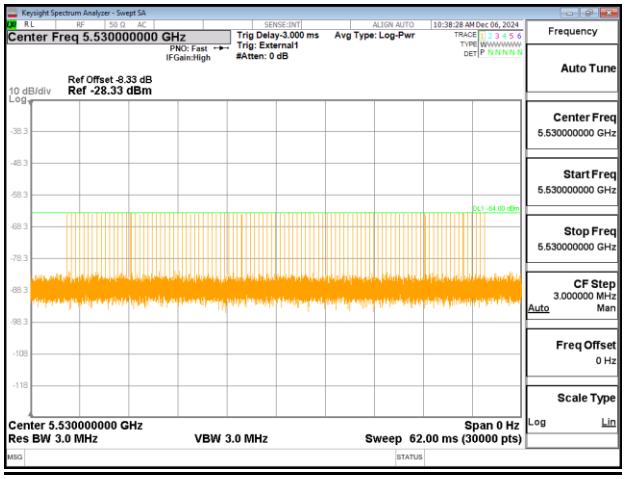
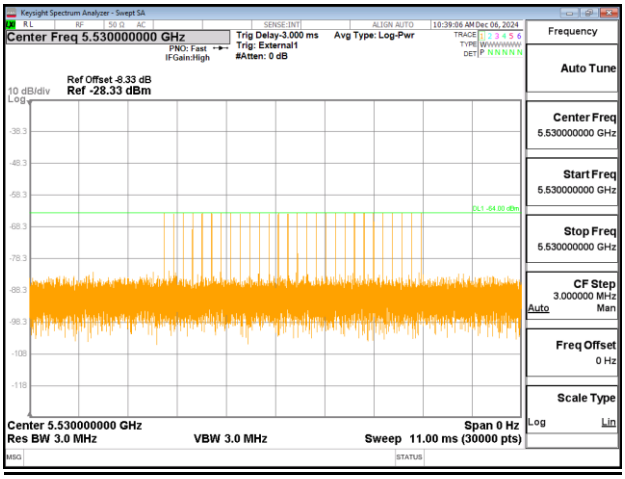
Radar Type 3	Radar Type 4
	
Single Burst of Radar Type 5	**Single Burst of Radar Type 6**
	

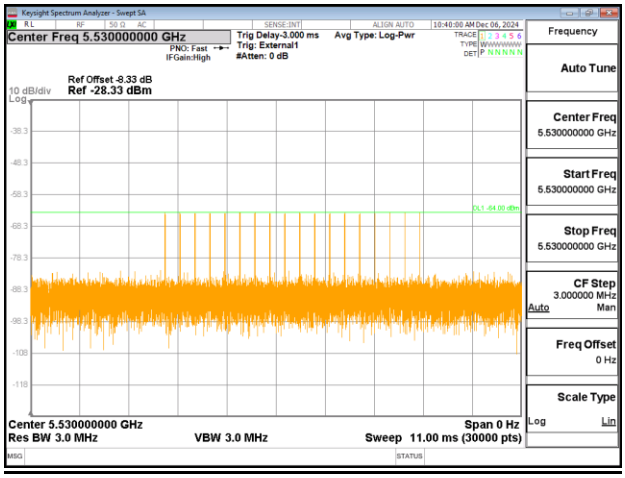
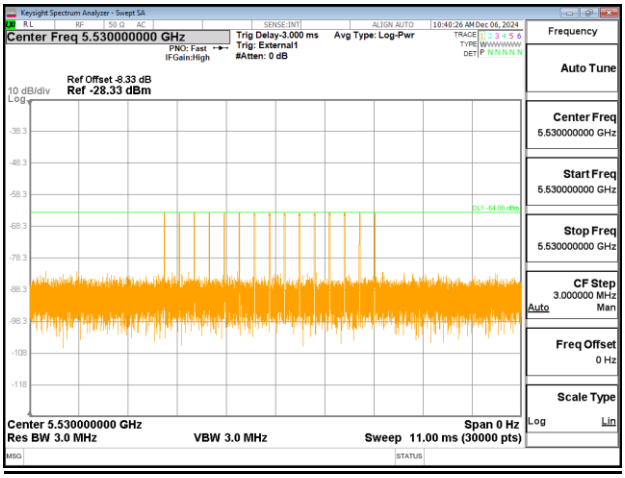
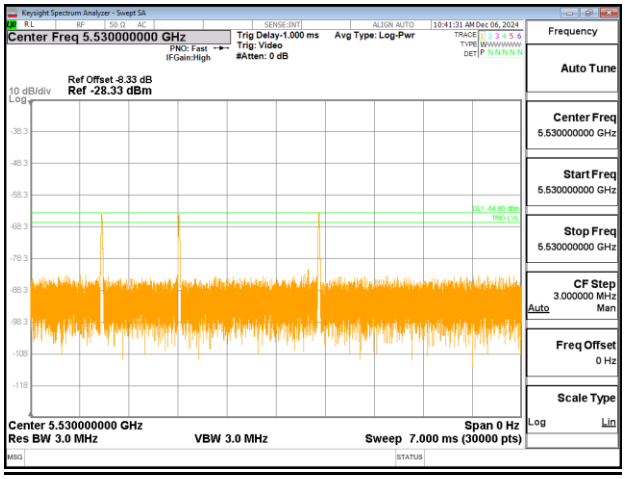
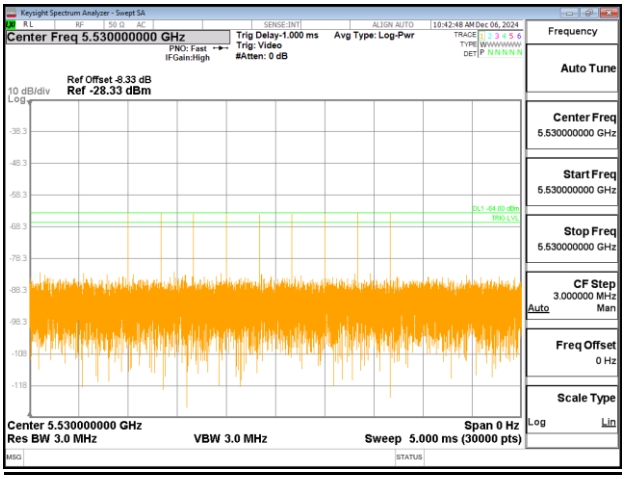
<40MHz / 5510MHz>

Radar Type 0	
	
Radar Type 1	**Radar Type 2**
	

Radar Type 3	Radar Type 4
	
Single Burst of Radar Type 5	**Single Burst of Radar Type 6**
	

<80MHz / 5530MHz>

Radar Type 0	
	
Radar Type 1	**Radar Type 2**
	

Radar Type 3	Radar Type 4
	
Single Burst of Radar Type 5	**Single Burst of Radar Type 6**
	

3.2 U-NII Detection Bandwidth

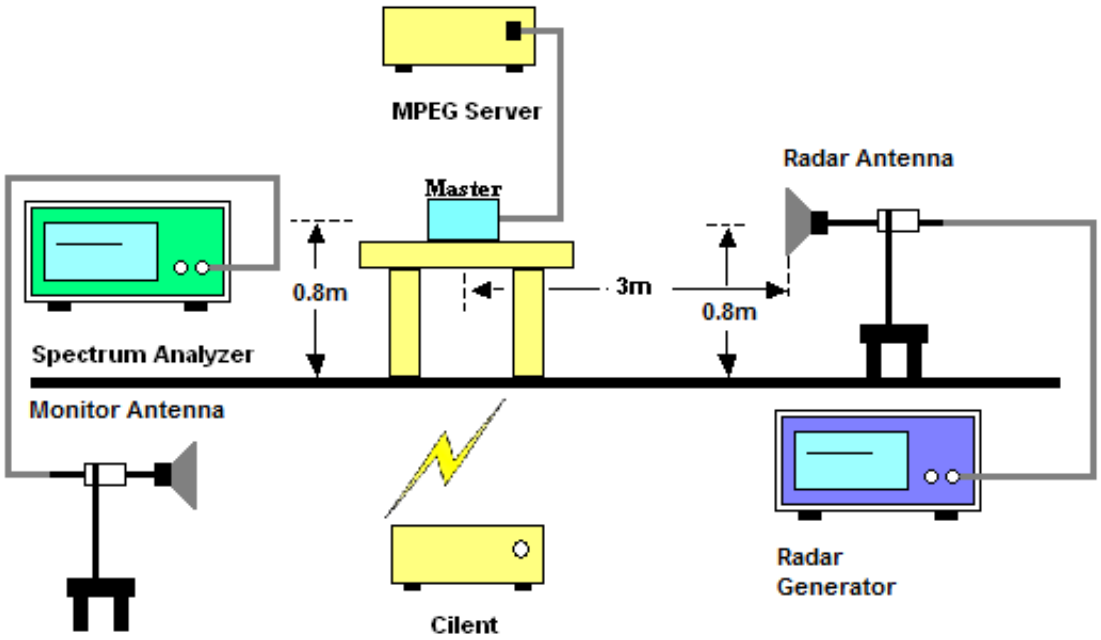
3.2.1 Limit of U-NII Detection Bandwidth

The U-NII Detection Bandwidth shall contain minimum 100% of the 99% power bandwidth.
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.

3.2.2 Test Procedures

(1) Adjust the equipment to produce a single burst of the Short Pulse Radar Type 0 at the center frequency of the EUT Operating Channel at the specified DFS Detection Threshold level.
(2) Set the EUT up as a standalone device (no associated Client or Master, as appropriate) and no traffic. Frame based systems will be set to a talk/listen ratio of 0%/100% during this test.
(3) Generate a single radar burst, and note the response of the EUT. Repeat for a minimum of 10 trials. The EUT must detect the Radar Waveform using the specified U-NII Detection Bandwidth criterion.
(4) Starting at the center frequency of the EUT operating Channel, increase the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion specified in report clause 2.3. Repeat this measurement in 1MHz steps at frequencies 5 MHz below where the detection rate begins to fall. Record the highest frequency (denote as F_H) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies above FH is not required to demonstrate compliance.
(5) Starting at the center frequency of the EUT operating Channel, decrease the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion specified in report clause 2.3. Repeat this measurement in 1MHz steps at frequencies 5 MHz above where the detection rate begins to fall. Record the lowest frequency (denote as F_L) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies below FL is not required to demonstrate compliance.
(6) The U-NII Detection Bandwidth is calculated as follows:
U-NII Detection Bandwidth = $F_H - F_L$

3.2.3 Test Setup



3.2.4 Test Deviation

There is no deviation with the original standard.

3.2.5 Result of U-NII Detection Bandwidth

<20MHz / 5300MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5285	-15	N	N	N	N	N	N	N	N	N	N	0	
5286	-14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_L**
5287	-13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5288	-12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5289	-11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5290	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5291	-9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5292	-8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5293	-7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5294	-6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5295	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5300	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5305	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5306	+6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5307	+7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5308	+8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5309	+9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5310	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5311	+11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5312	+12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5313	+13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_H**
5314	+14	N	N	N	N	N	N	N	N	N	N	0	
Detection Bandwidth = $F_H - F_L$ = **5313** – **5286** = **27** MHz EUT 99% Bandwidth = 19.373 MHz (Refer to channel 60)													

<40MHz / 5310MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5281	-29	N	N	N	N	N	N	N	N	N	N	0%	
5282	-28	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_L
5283	-27	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5284	-26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5285	-25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5286	-24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5287	-23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5288	-22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5289	-21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5290	-20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5291	-19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5292	-18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5293	-17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5294	-16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5295	-15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5300	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5305	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5310	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5315	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5320	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5325	+15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5326	+16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5327	+17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5328	+18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5329	+19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5330	+20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5331	+21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5332	+22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5333	+23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5334	+24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5335	+25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_H**
5336	+26	Y	Y	Y	Y	Y	N	N	N	N	N	50%	
Detection Bandwidth = F_H – F_L = **5335** – **5282** = **53** MHz EUT 99% Bandwidth = 37.667 MHz (Refer to channel 62)													

<80MHz / 5290MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5240	-50	N	N	N	N	N	N	N	N	N	N	0%	
5241	-49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_L
5242	-48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5243	-47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5244	-46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5245	-45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5246	-44	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5247	-43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5248	-42	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	90%	
5249	-41	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5250	-40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5251	-39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5252	-38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5253	-37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5254	-36	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5255	-35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5260	-30	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	90%	
5265	-25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5270	-20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5275	-15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5380	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5285	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5290	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5295	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5300	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5305	+15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5310	+20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5315	+25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5320	+30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5325	+35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5326	+36	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5327	+37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5328	+38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5329	+39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5330	+40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5331	+41	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5332	+42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5333	+43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5334	+44	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5335	+45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5336	+46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5337	+47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5338	+48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5339	+49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5340	+50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_H**
5341	+51	Y	N	Y	Y	Y	N	N	N	N	N	40%	
Detection Bandwidth = $F_H - F_L$ = **5340** – **5241** = **99** MHz EUT 99% Bandwidth = 75.106 MHz (Refer to channel 58)													

<20MHz / 5500MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5484	-16	N	N	N	N	N	N	N	N	N	N	0%	
5485	-15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_L
5486	-14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5487	-13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5488	-12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5489	-11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5490	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5491	-9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5492	-8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5493	-7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5494	-6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5495	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5500	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5505	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5506	+6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5507	+7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5508	+8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5509	+9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5510	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5511	+11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5512	+12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5513	+13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5514	+14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5515	+15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_H
5516	+16	N	N	N	N	N	N	N	N	N	N	0%	

Detection Bandwidth = $F_H - F_L$ = **5515** – **5485** = **30** MHz

EUT 99% Bandwidth = 19.19 MHz (Refer to channel 100)

<40MHz / 5510MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5479	-31	N	Y	N	N	N	N	N	N	N	N	10%	
5480	-30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_L
5481	-29	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5482	-28	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5483	-27	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5484	-26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5485	-25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5486	-24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5487	-23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5488	-22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5489	-21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5490	-20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5491	-19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5492	-18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5493	-17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5494	-16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5495	-15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5500	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5505	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5510	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5515	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5520	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5525	+15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5526	+16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5527	+17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5528	+18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5529	+19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5530	+20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5531	+21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5532	+22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5533	+23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5534	+24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5535	+25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5536	+26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5537	+27	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5538	+28	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5539	+29	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_H**
5540	+30	N	Y	N	N	Y	N	Y	N	Y	N	40%	
Detection Bandwidth = $F_H - F_L$ = **5539** – **5480** = **59** MHz EUT 99% Bandwidth = 37.715 MHz (Refer to channel 102)													

<80MHz / 5530MHz>

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5474	-56	Y	Y	Y	Y	N	Y	N	N	N	N	50%	
5475	-55	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	F_L
5476	-54	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5477	-53	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5478	-52	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5479	-51	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5480	-50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5481	-49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5482	-48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5483	-47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5484	-46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5485	-45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5486	-44	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5487	-43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5488	-42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5489	-41	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5490	-40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5491	-39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5492	-38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5493	-37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5494	-36	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5495	-35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5500	-30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5505	-25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5510	-20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5515	-15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5520	-10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5525	-5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5530	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5535	+5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	

Frequency (MHz)	Fc	Trial Number (Detection = Y, No Detection = N)										Rate (%)	F_H/F_L
		1	2	3	4	5	6	7	8	9	10		
5540	+10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5545	+15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5550	+20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5555	+25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5560	+30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5565	+35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5566	+36	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5567	+37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5568	+38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5569	+39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5570	+40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5571	+41	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5572	+42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5573	+43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5574	+44	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5575	+45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5576	+46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	
5577	+47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	**F_H**
5578	+48	Y	Y	N	Y	Y	N	Y	Y	N	Y	70%	
Detection Bandwidth = $F_H - F_L$ = **5577** – **5475** = **102** MHz EUT 99% Bandwidth = 77.011 MHz (Refer to channel 106)													

3.3 Channel Availability Check

3.3.1 Limit of Channel Availability Check

The Initial Channel Availability Check Time tests that the EUT does not emit beacon, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for radar waveforms for **one minute** on the test Channel.

3.3.2 Test Procedures of Initial Channel Availability Check Time

This test does not use any radar waveforms and only needs to be performed one time.

(1) The U-NII devices will be powered on and be instructed to operate on the appropriate U-NII Channel that must incorporate DFS functions. At the same time the EUT is powered on, the spectrum analyzer will be set to zero span mode with a 3 MHz RBW and 3 MHz VBW on the Channel occupied by the radar (Chr) with at least a 2.5 minute sweep time. The spectrum analyzer's sweep will be started at the same time power is applied to the U-NII device.
(2) The EUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle.

3.3.3 Radar Burst at the Beginning of the Channel Availability Check Time

The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB occurs at the beginning of the Channel Availability Check Time. This is illustrated in Figure 15.

(1) The Radar Waveform generator and EUT are connected using the applicable test setup and the power of the EUT is switched off.
(2) The EUT is powered on at T0. T1 denotes the instant when the EUT has completed its power-up sequence (Tpower_up). The Channel Availability Check Time commences on Chr at instant T1 and will end no sooner than T1 + Tch_avail_check.
(3) A single Burst of one of the Short Pulse Radar Types 1-4 will commence within a 6 second window starting at T1. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
(4) Visual indication or measured results on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of Chr for EUT emissions will continue for 2.5 minutes after the radar Burst has been generated.
(5) Verify that during the 2.5 minute measurement window no EUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.

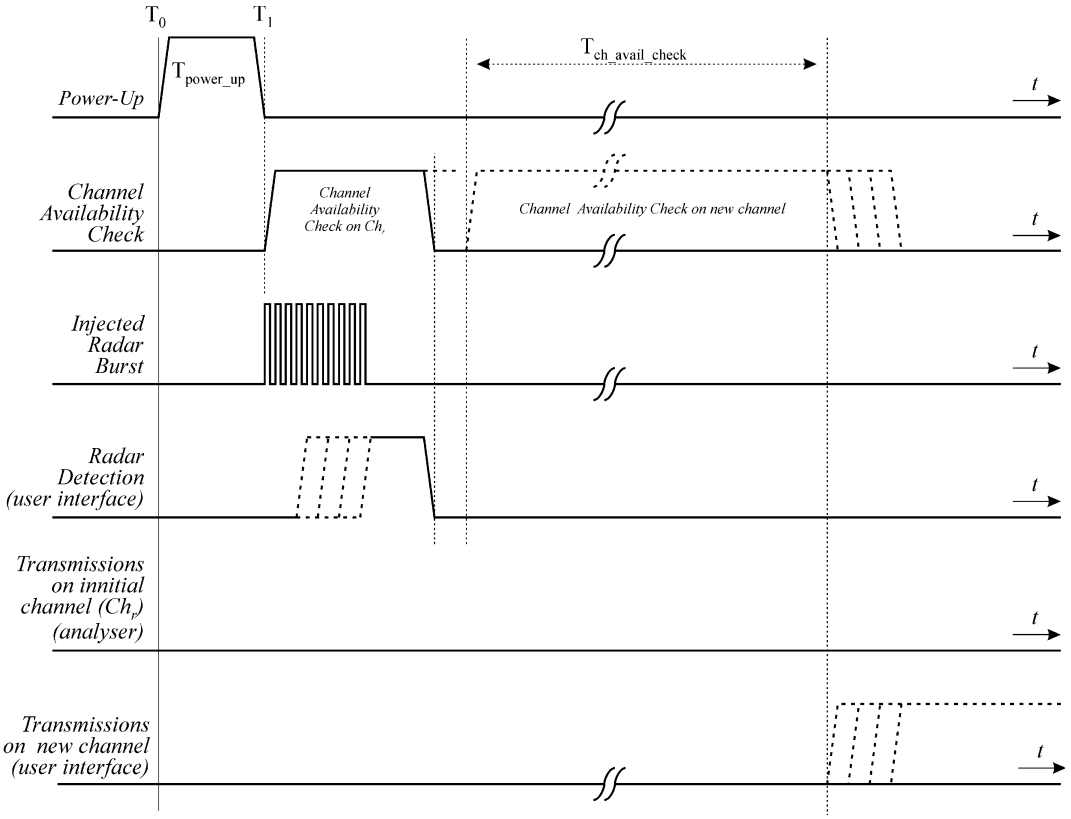


Figure 15: Example of timing for radar testing at the beginning of the Channel Availability Check Time

3.3.4 Radar Burst at the End of the Channel Availability Check Time

The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1dB occurs at the end of the Channel Availability Check Time. This is illustrated in Figure 16.

(1) The Radar Waveform generator and EUT are connected using the applicable test setup and the power of the EUT is switched off.
(2) The EUT is powered on at T0. T1 denotes the instant when the EUT has completed its power-up sequence (Tpower_up). The Channel Availability Check Time commences on Chr at instant T1 and will end no sooner than T1 + Tch_avail_check.
(3) A single Burst of one of the Short Pulse Radar Types 1-4 will commence within a 6 second window starting at T1 + 54 seconds. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
(4) Visual indication or measured results on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of Chr for EUT emissions will continue for 2.5 minutes after the radar Burst has been generated.
(5) Verify that during the 2.5 minute measurement window no EUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.

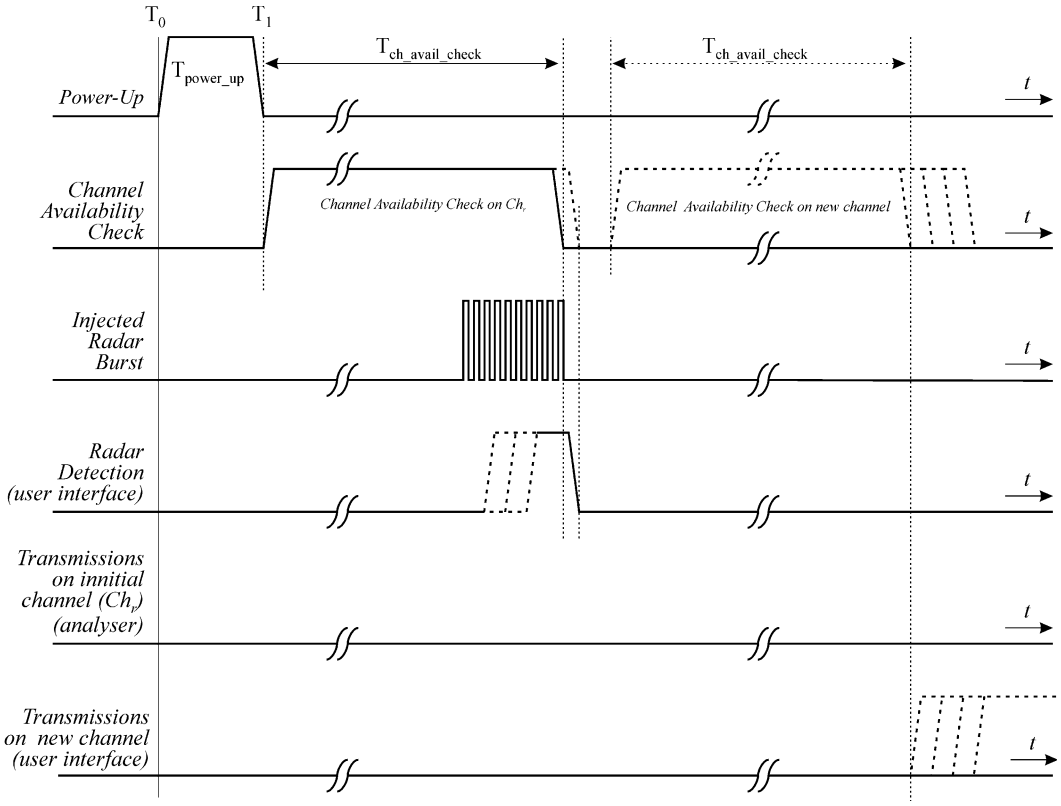
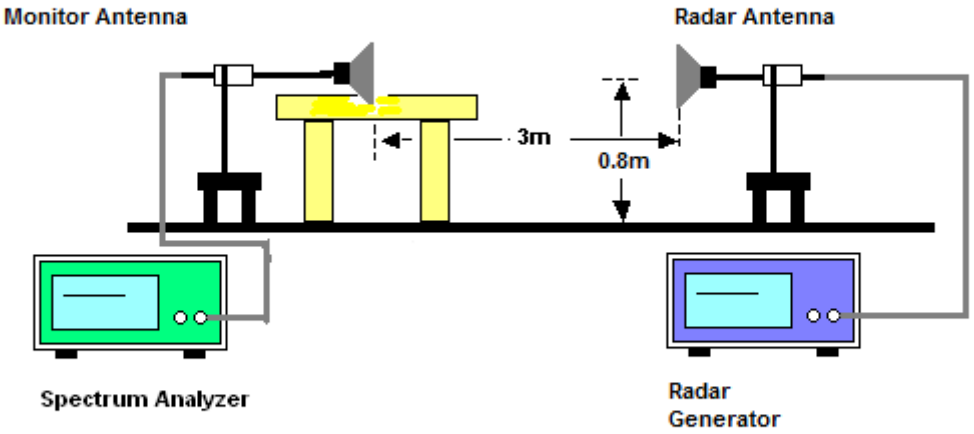


Figure 16: Example of timing for radar testing towards the end of the Channel Availability Check Time

3.3.5 Test Setup



3.3.6 Test Deviation

There is no deviation with the original standard.

3.3.7 Result of Channel Availability Check Time

<80MHz / 5290MHz>

EUT Power up and Initial Channel Availability Check Time	
	
Radar Burst at the Beginning of the Channel Availability Check Time	**Radar Burst at the End of the Channel Availability Check Time**
	

Marker 1(Delta 2): 60 seconds before End of Channel Availability Check

Marker 2: End of Channel Availability Check

Marker 3: 54 seconds or 6 seconds before End of Channel Availability Check

<80MHz / 5530MHz>

EUT Power up and Initial Channel Availability Check Time	
	
Radar Burst at the Beginning of the Channel Availability Check Time	**Radar Burst at the End of the Channel Availability Check Time**
	

Marker 1(Delta 2): 60 seconds before End of Channel Availability Check

Marker 2: End of Channel Availability Check

Marker 3: 54 seconds or 6 seconds before End of Channel Availability Check

3.4 In-Service Monitoring: Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

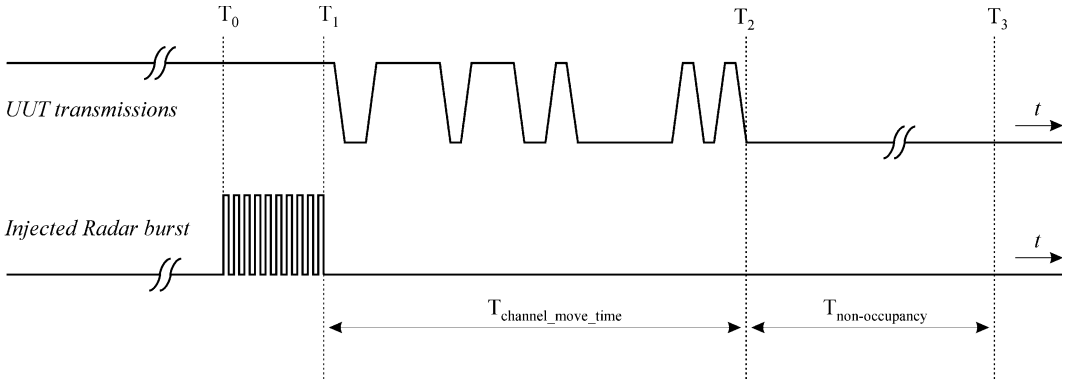
3.4.1 Limit of In-Service Monitoring

The EUT has In-Service Monitoring function to continuously monitor the radar signals, If radar is detected, it must leave the channel (Shutdown). The Channel Move Time to cease all transmissions on the current Channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec. The total duration of 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.
Non-Occupancy Period time is 30 minute during which a Channel will not be utilized after a Radar Waveform is detected on that Channel.

3.4.2 Test Procedures

(1) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.
(2) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
(3) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
(4) Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).
(5) At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
(6) 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). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.

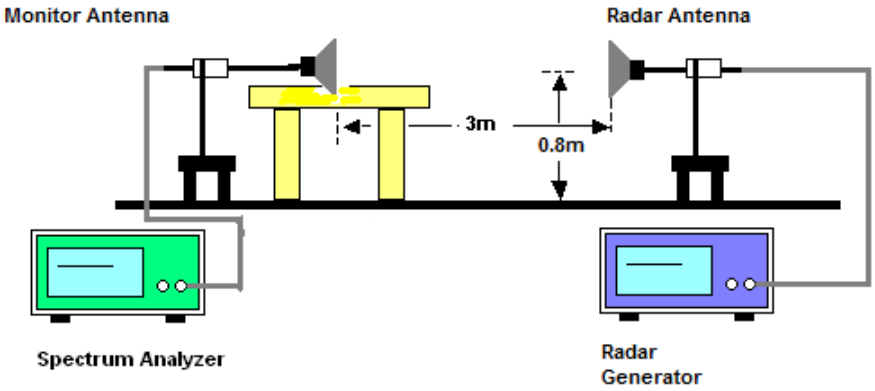
(7) When operating as a Master Device, monitor the EUT for more than 30 minutes following instant T2 to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.



(8) One 12 seconds plot is reported for the Short Pulse Radar Type 0.

(9) Measurement of the aggregate duration of the Channel Closing Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.4ms)= S (12000ms) / B (30000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is the sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.4 ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

3.4.3 Test Setup



3.4.4 Test Deviation

There is no deviation with the original standard.

3.4.5 Result of Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period for Client Beacon Test

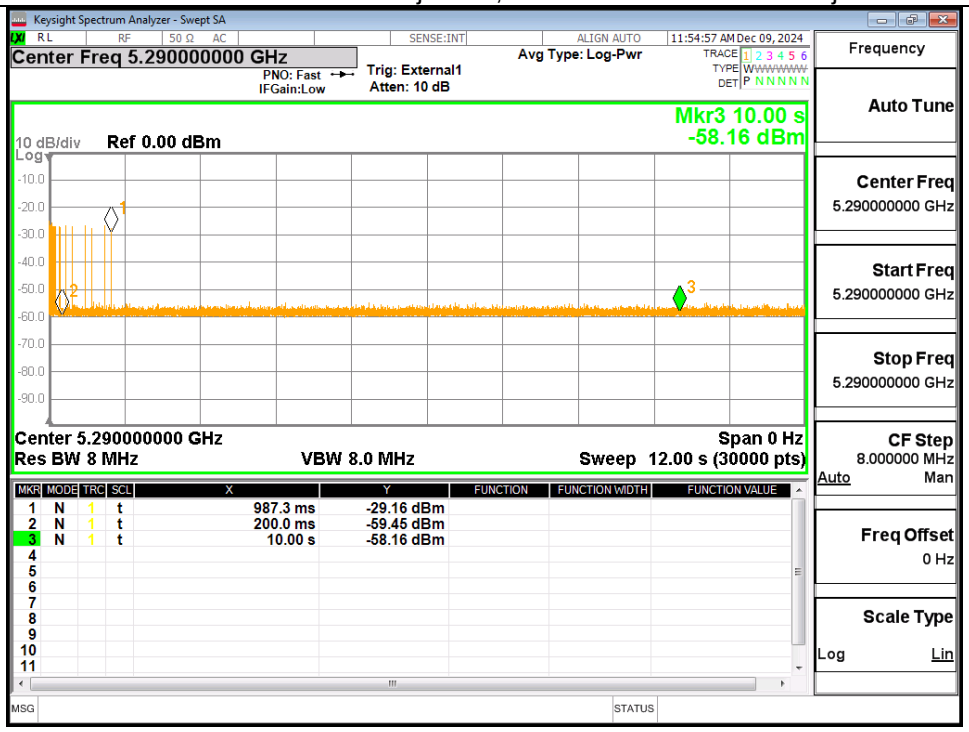
Test Mode :	Master	**Temperature :**	19.1~20.1℃
Test Engineer :	Liliana Gonzalez	**Relative Humidity :**	34.5~45.3%

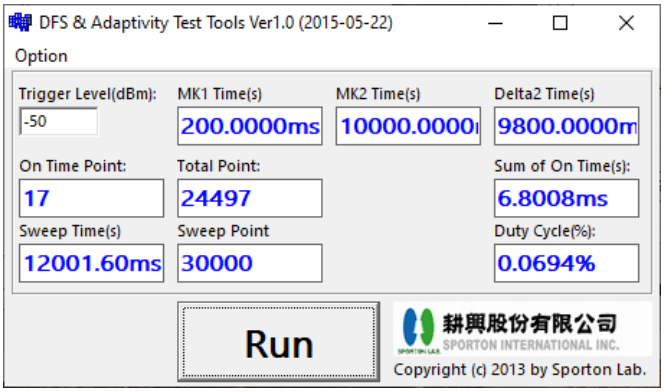
BW / Channel	Test Item	Test Result	Limit	Pass/Fail
80MHz / 5290MHz	Channel Move Time	**0.9873 s**	**＜ 10s**	**Pass**
	Channel Closing Transmission Time	**200ms + 6.8008 ms**	**＜ 260ms**	**Pass**
	Non-Occupancy Period	**≥ 30**	**≥ 30 min**	**Pass**
80MHz / 5530MHz	Channel Move Time	**0.01397 s**	**＜ 10s**	**Pass**
	Channel Closing Transmission Time	**200ms + 0.0 ms**	**＜ 260ms**	**Pass**
	Non-Occupancy Period	**≥ 30**	**≥ 30 min**	**Pass**

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.

3.4.6 Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period Test Plots

<80MHz / 5290MHz > In-Service Monitoring
Channel Move Time & **Channel Closing Transmission Time** Marker 1: signal found within channel moving time. Marker 2: 200ms after radar injected ; Marker 3: 10s after radar injected.





Note:

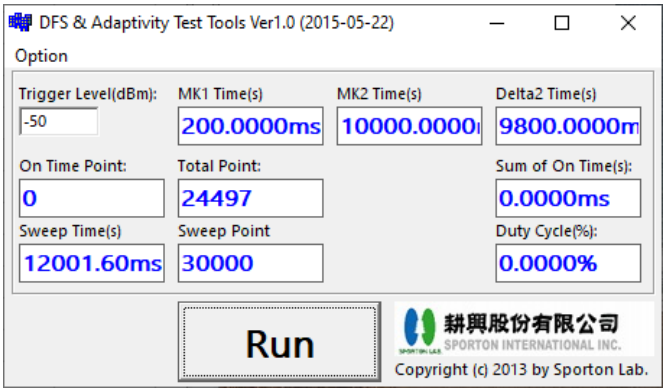
Dwell (0.4 ms)= Sweep Time (12000 ms) / Sweep Point Bins (30000)

Channel Closing Transmission Time (200 + 6.8 ms) = 200 + Number (17) X Dwell (0.4 ms) < 260ms

Non-Occupancy Period

Marker 2: radar injected ; Delta 1: 30 minutes after radar injected

<80MHz / 5530MHz > In-Service Monitoring
Channel Move Time & **Channel Closing Transmission Time** Marker 1: signal found within channel moving time. Marker 2: 200ms after radar injected ; Marker 3: 10s after radar injected.



Note:

Dwell (0.4 ms)= Sweep Time (12000 ms) / Sweep Point Bins (30000)

Channel Closing Transmission Time (200 + 0.0 ms) = 200 + Number (0) X Dwell (0.4 ms) < 260ms

Non-Occupancy Period

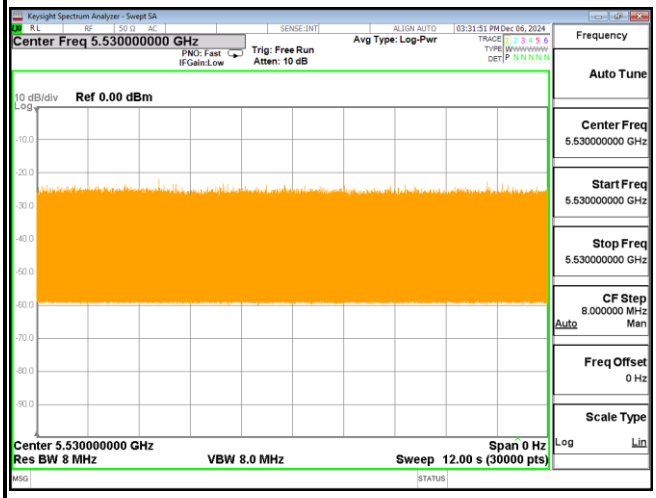
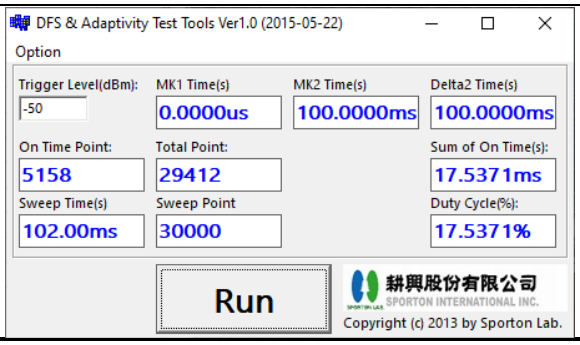
Marker 2: radar injected ; Delta 1: 30 minutes after radar injected

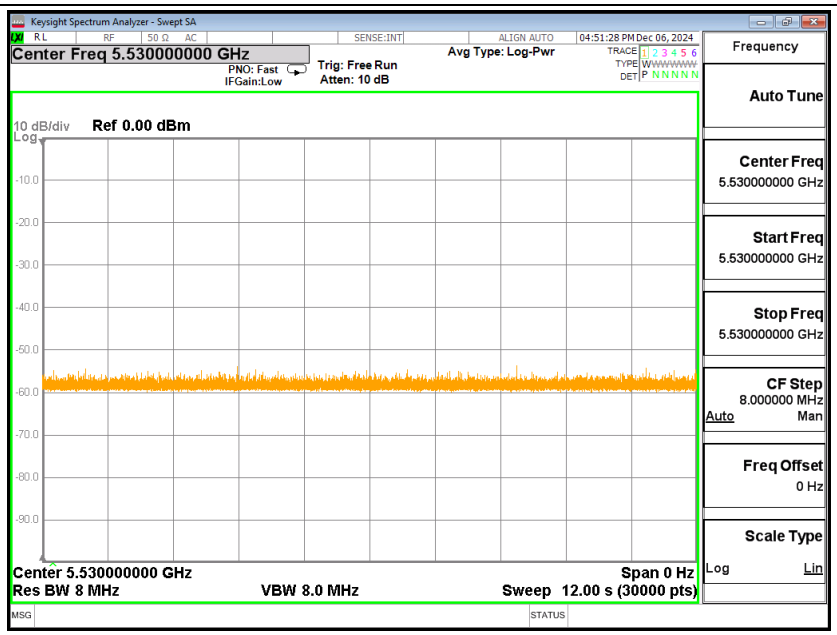
3.4.7 Long Pulsed Radar Type Channel Move Time Test Plots (22second)

<80MHz / 5290MHz > Radar Type 5
Channel Move Time
Marker 1: End of transmission time ; Marker 2: 22seconds after radar injected

<80MHz / 5530MHz > Radar Type 5
Channel Move Time
Marker 1: End of transmission time ; Marker 2: 22seconds after radar injected

3.4.8 Data Traffic Channel Loading and Noise Floor Plots

EUT data traffic (Master)	Channel Loading > 17% (Master)
	 

Noise Floor (No transmission)


3.5 Statistical Performance Check

3.5.1 Limit of Statistical Performance Check

Short Pulse Radar Test

Once the performance requirements check is complete, statistical data will be gathered, to determine the ability of the device to detect the radar test waveforms (Short Pulse Radar Types 1-4) found in **Table 5**. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trials. The percentage of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100$$ = Percentage of Successful Detection *Radar Waveform* N = $P_d N$

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

$$\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4}$$

The minimum number of trails, minimum percentage of successful detection and the aggregate minimum percentage of successful detection are found in **Table 5**.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 1 through 4. For Short Pulse Radar Type 0, the same waveform is used a minimum of 30 times. 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.

An example of aggregate detection probability calculation is listed in following table:

Radar Type	Number of Trials	Number of Successful Detections	Percentage of Successful Detection
1	30	29	96.7%
2	30	18	60%
3	30	27	90%
4	30	30	100%
Aggregate (96.7% + 60% + 90% + 100%)/4 = 86.67%			

Long Pulse Radar Test

Statistical data will be gathered to determine the ability of the device to detect the Long Pulse Radar Type 5 found in **Table 6**. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trials.

Table 6 – Long Pulse Radar Test Waveform

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

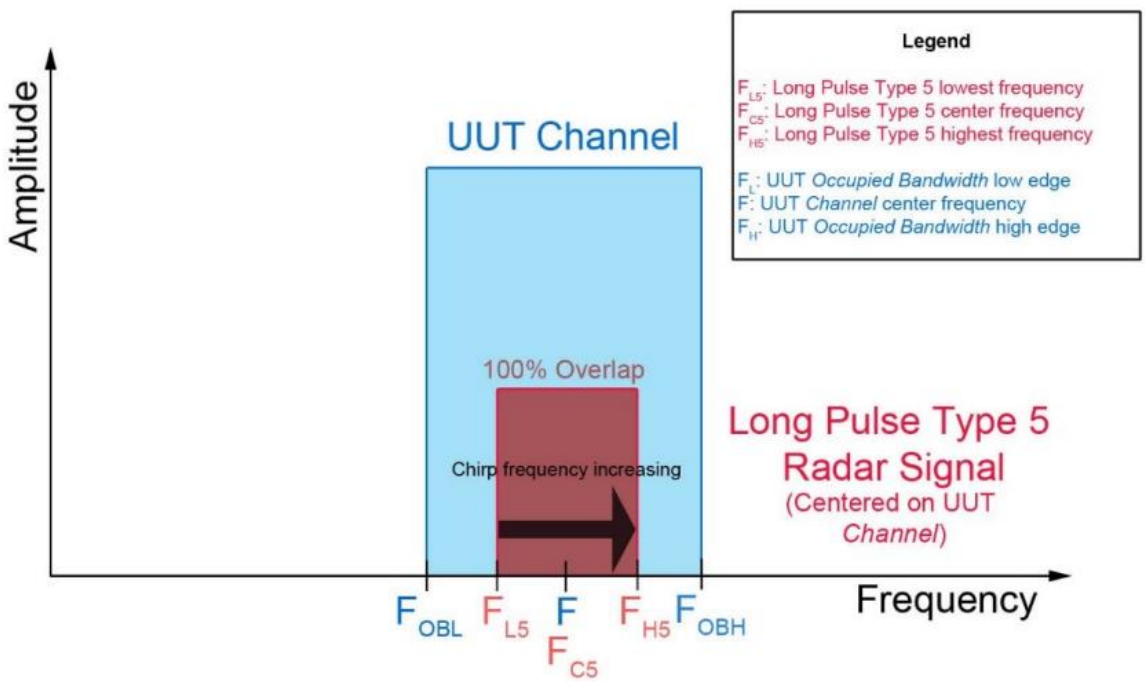
The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Three subsets of trials will be performed with a minimum of ten trials per subset.
The subset of trials differs in where the Long Pulse Type 5 Signal is tuned in frequency:
a) The Channel center frequency (subset case 1).
b) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth (subset case 2).
c) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth (subset case 3).

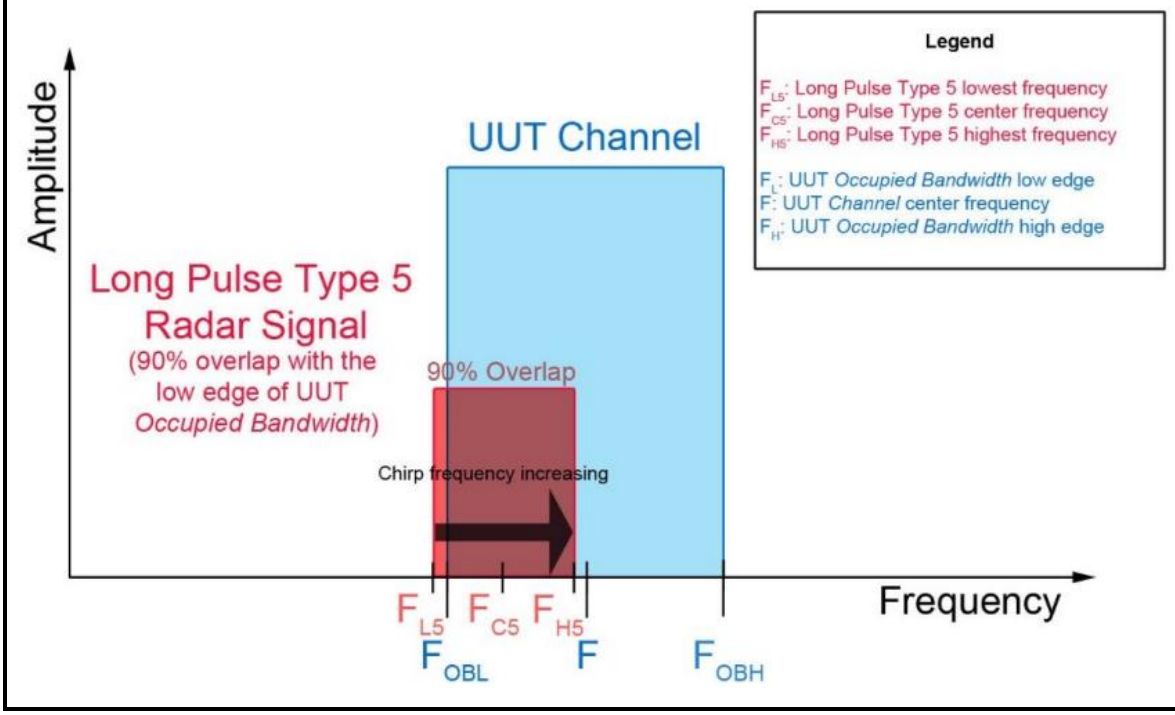
For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel.
For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by: $FL + (0.4 * Chirp\ Width\ [in\ MHz])$
For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by: $FH - (0.4 * Chirp\ Width\ [in\ MHz])$
Note: The FH and FL are Occupied Bandwidth low edge and high edge, where

FH = Fc + (OBW / 2) and FL = Fc – (OBW / 2)

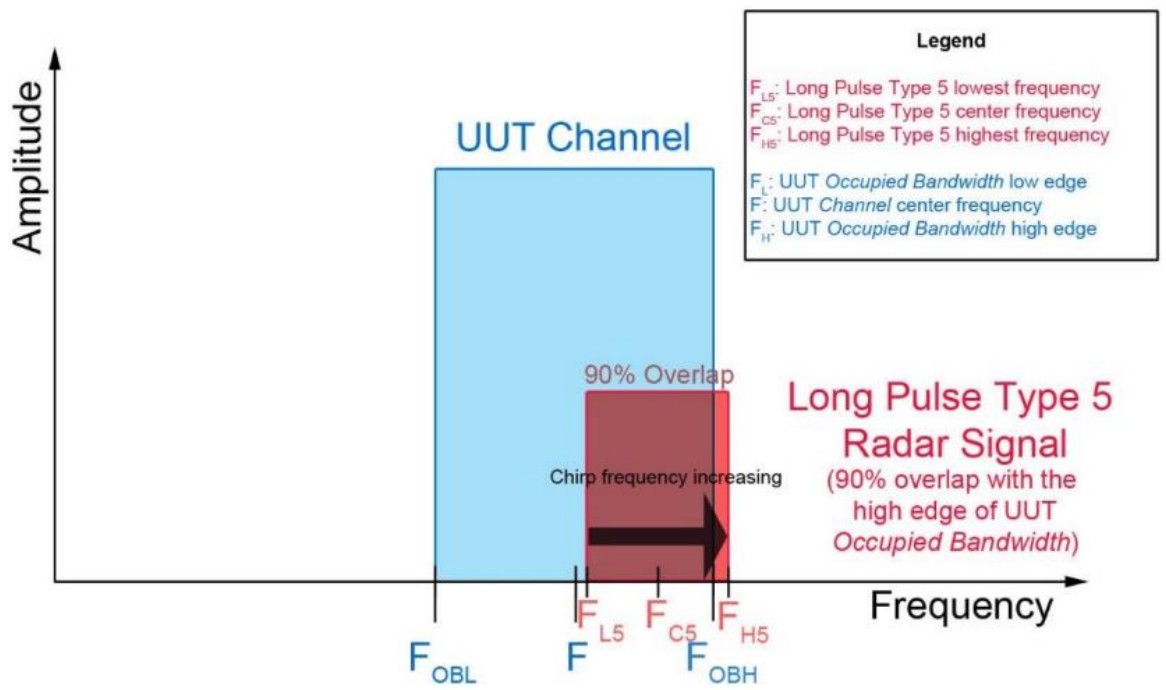
a) Channel center frequency (subset case 1)



b) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth. (subset case 2)



c) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth. (subset case 3)



The percentage of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100$$

Frequency Hopping Radar Test

Statistical data will be gathered to determine the ability of the device to detect the Frequency Hopping radar test signal (radar type 6) found in **Table 7**. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs. The probability of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100$$

Table 7 – Frequency Hopping Radar Test Waveform

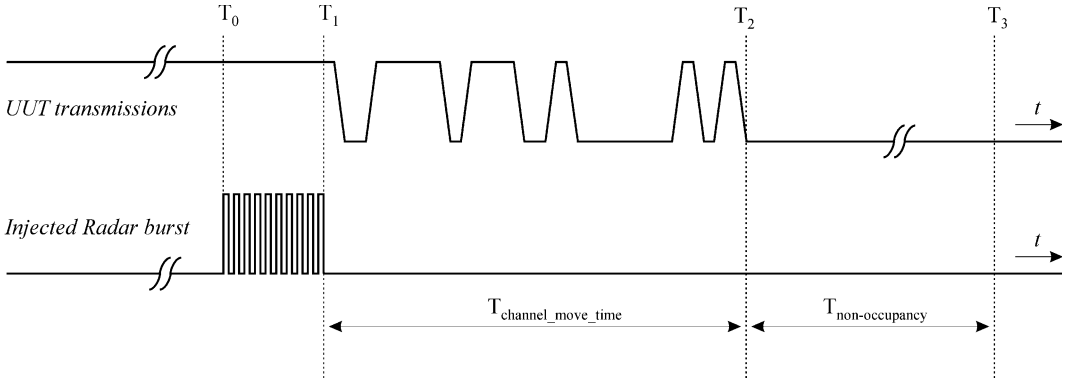
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

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

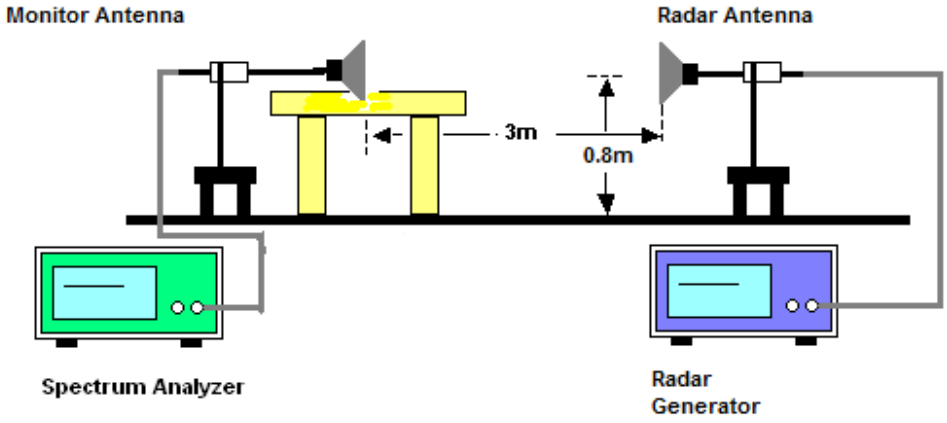
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues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

3.5.2 Test Procedures

(1) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands.
(2) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
(3) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
(4) At time T0 the Radar Waveform generator sends a Burst of pulses for each of the Radar Types 1-6 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
(5) Observe the transmissions of the EUT 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.
(6) Observe the transmissions of the EUT 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.



3.5.3 Test Setup



3.5.4 Test Deviation

There is no deviation with the original standard.

3.5.5 Result of Statistical Performance Check

<20MHz / 5300MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**N**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
14	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**Y**	**N**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
30	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Trial of Detection	**30/30**	**29/30**	**29/30**	**29/30**	**30/30**	**29/30**
Probability (%)	**100%**	**96.67%**	**96.67%**	**96.67%**	**100%**	**96.67%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**97.5%** (>=80%)			

<40MHz /5310MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
14	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
30	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Trial of Detection	**30/30**	**30/30**	**30/30**	**30/30**	**30/30**	**30/30**
Probability (%)	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**100%** (>=80%)			

<80MHz / 5290MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
14	**Y**	**Y**	**N**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
30	**Y**	**N**	**Y**	**N**	**Y**	**Y**
Trial of Detection	**30/30**	**27/30**	**29/30**	**27/30**	**30/30**	**30/30**
Probability (%)	**100%**	**90%**	**96.67%**	**90%**	**100%**	**100%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**94.17%** (>=80%)			

<20MHz / 5500MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
14	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
30	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Trial of Detection	**30/30**	**29/30**	**30/30**	**29/30**	**30/30**	**30/30**
Probability (%)	**100%**	**96.67%**	**100%**	**96.67%**	**100%**	**100%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**98.33%** (>=80%)			

<40MHz / 5510MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
14	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
30	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Trial of Detection	**30/30**	**30/30**	**30/30**	**30/30**	**30/30**	**30/30**
Probability (%)	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**100%** (>=80%)			

<80MHz / 5530MHz>

(Detection = Y, No Detection = N)						
Trial Number	**Type 1**	**Type 2**	**Type 3**	**Type 4**	**Type 5**	**Type 6**
1	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
2	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
3	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
4	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
5	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
6	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
7	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
8	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
9	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
10	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
11	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
12	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
13	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
14	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
15	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
17	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
18	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
19	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
20	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
21	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
22	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
23	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
25	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
26	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
27	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
28	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
29	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
30	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Trial of Detection	**30/30**	**30/30**	**30/30**	**28/30**	**30/30**	**30/30**
Probability (%)	**100%**	**100%**	**100%**	**93.33%**	**100%**	**100%**
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probability of Radar Type 1~4 (%)			**98.33%** (>=80%)			

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
RF Vector Generator	Keysight	N5182B	MY57300963	9KHz~6GHz	Mar. 26, 2024	Dec. 06, 2024~ Dec. 09, 2024	Mar. 25, 2025	DFS (DFS01-CA)
Frequency Extender for EXG or MXG	Keysight	N5182BX07	MY59360230	9kHz~7.2GHz	Mar. 26, 2024	Dec. 06, 2024~ Dec. 09, 2024	Mar. 25, 2025	DFS (DFS01-CA
EXA Signal Analyzer	Keysight	N9010A	MY56070412	10Hz~7GHz	Nov. 01, 2024	Dec. 06, 2024~ Dec. 09, 2024	Oct. 31, 2025	DFS (DFS01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	01894	1GHz ~18GHz	Aug. 07, 2024	Dec. 06, 2024~ Dec. 09, 2024	Aug. 06, 2025	DFS (DFS01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	01895	1GHz ~18GHz	Aug. 15, 2024	Dec. 06, 2024~ Dec. 09, 2024	Aug. 14, 2025	DFS (DFS01-CA)
Hygrometer	Testo	608-H1	45142588	Temperature & Humidity	Aug. 14, 2024	Dec. 06, 2024~ Dec. 09, 2024	Aug. 13, 2025	DFS (DFS01-CA)

Appendix A. DFS Radar Parameters

Channel 60 Bandwidth 20MHz

DFS Radar Parameters
FCC Radar Type 1
Channel 60 Bandwidth 20MHz

Trial #	Pulse Repetition Frequency Number (1 to 23)	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	2	1858.74	538	Yes
2	17	1193.32	838	Yes
3	3	1792.11	558	Yes
4	18	1165.50	858	Yes
5	11	1392.76	718	Yes
6	22	1066.10	938	Yes
7	6	1618.12	618	Yes
8	14	1285.35	778	Yes
9	21	1089.32	918	Yes
10	13	1319.26	758	Yes
11	12	1355.01	738	Yes
12	9	1474.93	678	Yes
13	16	1222.49	818	Yes
14	10	1432.66	698	Yes
15	1	1930.50	518	Yes
16		397.61	2515	Yes
17		1410.44	709	Yes
18		597.37	1674	Yes
19		1594.90	627	Yes
20		363.77	2749	Yes
21		936.33	1068	Yes
22		464.04	2155	Yes
23		442.09	2262	Yes
24		849.62	1177	Yes
25		492.13	2032	Yes
26		564.02	1773	Yes
27		1485.88	673	Yes
28		572.41	1747	Yes
29		1061.57	942	Yes
30		478.24	2091	Yes

DFS Radar Parameters
FCC Radar Type 2
Channel 60 Bandwidth 20MHz

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	28	4.10	213	Yes
2	27	3.70	193	Yes
3	28	4.00	223	Yes
4	29	4.90	207	Yes
5	27	3.80	159	Yes
6	26	2.90	188	Yes
7	24	2.00	155	Yes
8	26	2.90	194	Yes
9	24	1.70	151	Yes
10	29	5.00	196	Yes
11	28	4.20	183	Yes
12	23	1.00	216	Yes
13	27	3.80	218	Yes
14	29	4.60	225	Yes
15	24	1.60	162	Yes
16	24	1.80	166	Yes
17	28	4.30	182	Yes
18	28	3.90	208	Yes
19	25	2.30	206	Yes
20	24	2.10	202	Yes
21	23	1.20	164	Yes
22	28	3.90	200	Yes
23	28	4.30	192	Yes
24	25	2.40	175	Yes
25	29	4.60	150	Yes
26	24	1.80	205	Yes
27	28	4.30	180	Yes
28	29	4.80	170	Yes
29	27	3.70	173	No
30	25	2.40	154	Yes

DFS Radar Parameters
FCC Radar Type 3
Channel 60 Bandwidth 20MHz

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	18	9.10	336	Yes
2	18	8.70	384	Yes
3	18	9.00	307	Yes
4	18	9.90	306	Yes
5	18	8.80	283	Yes
6	17	7.90	401	Yes
7	16	7.00	219	Yes
8	17	7.90	365	Yes
9	16	6.70	249	Yes
10	18	10.00	417	Yes
11	18	9.20	241	Yes
12	16	6.00	449	Yes
13	18	8.80	268	Yes
14	18	9.60	492	Yes
15	16	6.60	486	Yes
16	16	6.80	429	Yes
17	18	9.30	212	No
18	18	8.90	278	Yes
19	16	7.30	467	Yes
20	16	7.10	276	Yes
21	16	6.20	446	Yes
22	18	8.90	319	Yes
23	18	9.30	442	Yes
24	17	7.40	418	Yes
25	18	9.60	409	Yes
26	16	6.80	201	Yes
27	18	9.30	482	Yes
28	18	9.80	440	Yes
29	17	8.70	362	Yes
30	17	7.40	221	Yes

DFS Radar Parameters
FCC Radar Type 4
Channel 60 Bandwidth 20MHz

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	15	18.00	336	Yes
2	15	17.10	384	Yes
3	15	17.80	307	Yes
4	16	19.80	306	Yes
5	15	17.30	283	Yes
6	14	15.30	401	Yes
7	13	13.30	219	Yes
8	14	15.30	365	Yes
9	12	12.60	249	Yes
10	16	19.90	417	Yes
11	15	18.10	241	Yes
12	12	11.00	449	Yes
13	15	17.30	268	No
14	16	19.10	492	Yes
15	12	12.30	486	Yes
16	13	12.80	429	Yes
17	16	18.40	212	Yes
18	15	17.50	278	Yes
19	13	13.90	467	Yes
20	13	13.50	276	Yes
21	12	11.50	446	Yes
22	15	17.50	319	Yes
23	16	18.30	442	Yes
24	13	14.10	418	Yes
25	16	19.10	409	Yes
26	13	12.80	201	Yes
27	16	18.30	482	Yes
28	16	19.50	440	Yes
29	15	17.00	362	Yes
30	13	14.10	221	Yes

DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			1			Detection (Yes/No)
Number of Bursts in Trial:			18			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.6	17	1994	1973	9067
2	3	84	17	1723	1389	169686
3	3	87.4	17	1927	1725	330042
4	3	98.6	17	1569	1727	490454
5	3	84.9	17	1644	1516	650944
6	2	74	17	1786	-	150275
7	1	63.1	17	-	-	311873
8	2	73.7	17	1136	-	472275
9	1	59	17	-	-	634334
10	3	99.4	17	1575	1199	130155
11	3	89.5	17	1212	1657	290798
12	1	50.4	17	-	-	453028
13	3	85	17	1714	1712	611207
14	3	94.9	17	1395	1935	110206
15	1	57.4	17	-	-	272289
16	1	60.1	17	-	-	433545
17	3	90.8	17	1682	1280	591728
18	3	85.7	17	1360	1094	90561
19						
20						

Trial Number:			2			Detection (Yes/No)
Number of Bursts in Trial:			16			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	66.2	15	-	-	283951
2	1	64.2	15	-	-	465254
3	1	52.9	15	-	-	647370
4	3	86.2	15	1792	1884	79634
5	3	90.6	15	1656	1928	260195
6	2	67.2	15	1125	-	442224
7	3	94.8	15	1620	1672	621861
8	1	60.2	15	-	-	57606
9	3	90.6	15	1987	1589	238015
10	3	96.8	15	1045	1686	419294
11	2	83	15	1931	-	600609
12	2	67.2	15	1126	-	35213
13	2	70.8	15	1104	-	216613
14	1	56.1	15	-	-	398329
15	1	62.9	15	-	-	580239
16	1	61.2	15	-	-	12913
17						
18						
19						
20						

DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			3			Detection
Number of Bursts in Trial:			17			(Yes/No)
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	87.6	16	1254	1690	182343
2	1	51.4	16	-	-	353866
3	1	50.9	16	-	-	524376
4	1	63.4	16	-	-	695648
5	3	93.7	16	1311	1270	161434
6	3	86.4	16	1449	1768	331154
7	2	67.3	16	1773	-	502145
8	3	88.6	16	1083	1276	671840
9	1	56.4	16	-	-	140978
10	3	87.5	16	1206	1306	310646
11	3	87.7	16	1805	1668	480007
12	3	92.4	16	1349	1477	651232
13	2	82.2	16	1418	-	119612
14	2	67.5	16	1518	-	290126
15	3	98.3	16	1120	1508	459842
16	2	80.9	16	1955	-	630820
17	2	76.1	16	1584	-	98619
18						
19						
20						

Trial Number:			4			Detection
Number of Bursts in Trial:			20			(Yes/No)
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	63.2	20	-	-	229181
2	1	54.4	20	-	-	374322
3	1	59.1	20	-	-	519117
4	3	83.6	20	1744	1095	65779
5	1	52.3	20	-	-	211315
6	3	93.4	20	1307	1231	354933
7	2	70.2	20	1216	-	500427
8	1	53.7	20	-	-	48226
9	2	74.6	20	1578	-	192821
10	3	83.5	20	1761	1371	336628
11	1	66.4	20	-	-	483786
12	3	90.7	20	1230	1057	30216
13	3	91.8	20	1365	1250	174614
14	2	78.6	20	1062	-	320008
15	3	83.4	20	1130	1268	463834
16	3	87.5	20	1373	1984	12361
17	2	73.7	20	1467	-	157316
18	1	57.2	20	-	-	302909
19	1	55.9	20	-	-	448149
20	1	59.1	20	-	-	593210

DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			5			Detection (Yes/No)
Number of Bursts in Trial:			17			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	77.3	16	1440	-	164167
2	3	92.1	16	1310	1814	333750
3	2	79.8	16	1447	-	504748
4	3	96.9	16	1239	1394	674745
5	1	64.3	16	-	-	143436
6	2	79.8	16	1602	-	313665
7	1	53.1	16	-	-	484892
8	2	79.5	16	1154	-	655199
9	1	52.4	16	-	-	122379
10	2	78.1	16	1800	-	292327
11	2	73	16	1845	-	462556
12	3	98.5	16	1228	1294	632615
13	1	52.1	16	-	-	101309
14	3	91.2	16	1883	1621	270652
15	1	57.6	16	-	-	442881
16	1	51.6	16	-	-	613632
17	1	53.8	16	-	-	80252
18						
19						
20						

Trial Number:			6			Detection (Yes/No)
Number of Bursts in Trial:			14			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	77.6	12	1588	-	304443
2	3	85.3	12	1685	1510	510896
3	1	58	12	-	-	720276
4	2	80.8	12	1218	-	71785
5	1	59.6	12	-	-	279611
6	2	69	12	1379	-	486274
7	1	52.9	12	-	-	694876
8	1	50.9	12	-	-	46361
9	3	97.9	12	2000	1957	252703
10	1	64.6	12	-	-	461160
11	1	58.8	12	-	-	669001
12	1	54.3	12	-	-	20794
13	1	54.8	12	-	-	228308
14	1	58.4	12	-	-	436053
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DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			7			Detection (Yes/No)
Number of Bursts in Trial:			11			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	60.2	9	-	-	818774
2	3	92.3	9	1393	1876	1080503
3	2	71.7	9	1407	-	257936
4	3	98.8	9	1747	1840	520528
5	2	71.1	9	1866	-	785166
6	2	74.7	9	1480	-	1049391
7	1	62.2	9	-	-	225609
8	2	69.2	9	1548	-	489054
9	2	72.5	9	1397	-	752818
10	3	90.3	9	1886	1532	1014808
11	3	90.7	9	1701	1670	192484
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Trial Number:			8			Detection (Yes/No)
Number of Bursts in Trial:			14			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.3	12	-	-	359308
2	3	96.6	12	1497	1988	564690
3	1	60.4	12	-	-	774518
4	2	67.9	12	1450	-	125923
5	3	88.6	12	1507	1639	332268
6	1	50.6	12	-	-	541113
7	2	71	12	1014	-	747881
8	2	81.7	12	1274	-	100397
9	3	83.7	12	1839	1661	306878
10	3	96.2	12	1523	1689	513383
11	2	72	12	1664	-	721912
12	3	98	12	1196	1512	74747
13	2	78.4	12	1182	-	282098
14	2	67.7	12	1702	-	488859
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DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			9			Detection (Yes/No)
Number of Bursts in Trial:			10			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	73.1	7	1364	-	975670
2	2	76.9	7	1522	-	69089
3	3	96	7	1272	1409	358937
4	1	66.5	7	-	-	650317
5	1	65.2	7	-	-	941477
6	3	94.3	7	1933	1580	33291
7	2	75.2	7	1387	-	323696
8	3	97.6	7	1545	1594	613282
9	2	69.6	7	1748	-	904225
10	1	62.7	7	-	-	1196509
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Trial Number:			10			Detection (Yes/No)
Number of Bursts in Trial:			20			
Chirp Center Frequency:			5300			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	56.1	20	-	-	143870
2	2	80.4	20	1002	-	288444
3	3	92.4	20	1052	1026	433052
4	3	86.5	20	1114	1923	576554
5	2	77	20	1581	-	125631
6	3	91.6	20	1857	1496	269495
7	1	58.3	20	-	-	416129
8	1	62.7	20	-	-	561919
9	2	67.7	20	1173	-	107921
10	3	90.1	20	1100	1680	252172
11	1	58.3	20	-	-	398735
12	2	72.4	20	1118	-	542487
13	3	92.5	20	1554	1227	89869
14	2	83	20	1877	-	234893
15	1	59.3	20	-	-	380314
16	1	64	20	-	-	525659
17	3	87.9	20	1642	1499	72040
18	2	72.6	20	1607	-	216976
19	2	71.1	20	1960	-	361350
20	1	62.3	20	-	-	507617

DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			11			Detection (Yes/No)
Number of Bursts in Trial:			18			
Chirp Center Frequency:			5297			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.3	17	1296	1132	60362
2	3	94.4	17	1566	1110	221036
3	3	93.4	17	1629	1669	381462
4	2	81.1	17	1303	-	543745
5	3	98.1	17	1913	1038	40590
6	3	97.9	17	1463	1064	201381
7	1	66.3	17	-	-	363165
8	1	52.7	17	-	-	525073
9	1	57.3	17	-	-	20884
10	3	96	17	1091	1730	181500
11	1	65.5	17	-	-	343685
12	1	53.7	17	-	-	504566
13	2	77	17	1461	-	1005
14	3	97.7	17	1266	1324	161656
15	1	61.7	17	-	-	323702
16	1	58.2	17	-	-	484676
17	1	58.3	17	-	-	646100
18	3	84.5	17	1411	1335	141846
19						
20						

Trial Number:			12			Detection (Yes/No)
Number of Bursts in Trial:			8			
Chirp Center Frequency:			5292			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	54.7	5	-	-	684311
2	3	92.2	5	1565	1521	1045363
3	3	87.8	5	1298	1506	1408838
4	1	59.3	5	-	-	276117
5	2	80.2	5	1271	-	639188
6	3	88.3	5	1979	1504	1001018
7	1	59.4	5	-	-	1366636
8	1	50.6	5	-	-	231346
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DFS Radar Parameters
FCC Radar Type 5
Channel 60 Bandwidth 20MHz

Trial Number:			13			Detection (Yes/No)
Number of Bursts in Trial:			17			
Chirp Center Frequency:			5297			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	84.4	16	1634	1900	278151
2	1	62.9	16	-	-	450159
3	1	57.2	16	-	-	621538
4	1	51.1	16	-	-	87782
5	1	56.4	16	-	-	258419
6	1	52.5	16	-	-	429383
7	2	76.5	16	1293	-	598724
8	1	57.2	16	-	-	66726
9	2	74.5	16	1683	-	236805
10	1	61.8	16	-	-	408327
11	3	87	16	1359	1187	577233
12	1	61.2	16	-	-	45667
13	3	88.5	16	1044	1438	215570
14	2	79.2	16	1391	-	386802
15	2	75.2	16	1019	-	557031
16	1	55.6	16	-	-	24618
17	1	55.3	16	-	-	195430
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Trial Number:			14			Detection (Yes/No)
Number of Bursts in Trial:			19			
Chirp Center Frequency:			5298			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	71.7	19	1526	-	326702
2	2	74.6	19	1981	-	478682
3	1	54.5	19	-	-	3185
4	3	95.4	19	1674	1828	155143
5	3	94.9	19	1074	1223	307912
6	2	71.3	19	1151	-	461080
7	1	51	19	-	-	614176
8	1	55.7	19	-	-	137218
9	1	53.3	19	-	-	290100
10	2	67.8	19	1027	-	441912
11	2	78.9	19	1319	-	594225
12	2	74.5	19	1039	-	118178
13	2	79	19	1208	-	270449
14	1	64.1	19	-	-	424064
15	1	55.1	19	-	-	576398
16	2	71.7	19	1570	-	99223
17	3	97.4	19	1243	1437	251271
18	1	63.4	19	-	-	405216
19	1	53.4	19	-	-	557528
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Trial Number:			15			Detection
Number of Bursts in Trial:			9			(Yes/No)
Chirp Center Frequency:			5293			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	95.6	7	1586	1457	170138
2	1	56.2	7	-	-	493426
3	3	89.6	7	1696	1141	814736
4	1	62.9	7	-	-	1139813
5	2	77.3	7	1222	-	130673
6	2	69.7	7	1562	-	453315
7	2	73.2	7	1622	-	775955
8	3	99.9	7	1821	1559	1096915
9	2	71.2	7	1399	-	90893
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Trial Number:			16			Detection
Number of Bursts in Trial:			10			(Yes/No)
Chirp Center Frequency:			5294			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	97.1	8	1623	1722	371663
2	3	96.1	8	1681	1292	661572
3	2	75.6	8	1924	-	952619
4	2	67	8	1117	-	46039
5	2	82.2	8	1543	-	336305
6	1	53.9	8	-	-	627188
7	1	58.4	8	-	-	917986
8	1	63.6	8	-	-	10290
9	1	54.8	8	-	-	301004
10	1	55.2	8	-	-	591531
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Trial Number:			17			Detection (Yes/No)
Number of Bursts in Trial:			18			
Chirp Center Frequency:			5298			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	89.6	18	1421	1756	487237
2	3	91.6	18	1825	1995	647235
3	1	56.1	18	-	-	147067
4	3	95.5	18	1442	1520	307255
5	1	53	18	-	-	469715
6	3	84.7	18	1351	1356	628933
7	3	97.6	18	1810	1089	126803
8	2	82.8	18	1648	-	287825
9	3	95.6	18	1713	1906	447241
10	3	97.8	18	1137	1383	608504
11	2	81.9	18	1101	-	107206
12	3	89.6	18	1403	1282	267479
13	3	91.2	18	1846	1210	428229
14	1	65.7	18	-	-	591217
15	2	71.7	18	1976	-	87337
16	1	60	18	-	-	248819
17	3	99.2	18	1211	1700	408602
18	2	82.2	18	1493	-	570475
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Trial Number:			18			Detection (Yes/No)
Number of Bursts in Trial:			17			
Chirp Center Frequency:			5297			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	61.6	16	-	-	71687
2	2	77.3	16	1797	-	241880
3	2	75.7	16	1776	-	412030
4	2	71.7	16	1308	-	582851
5	2	71.4	16	1838	-	50468
6	2	79.9	16	1246	-	220929
7	1	58.6	16	-	-	392304
8	1	57.3	16	-	-	562775
9	3	92.3	16	1606	1711	29452
10	1	61.9	16	-	-	200544
11	3	92.4	16	1021	1502	369915
12	2	75	16	1695	-	540538
13	1	55.6	16	-	-	8542
14	3	91.5	16	1997	1563	178410
15	2	66.8	16	1631	-	349299
16	3	92.1	16	1402	1462	519193
17	2	73.9	16	1534	-	689983
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Trial Number:			19			Detection (Yes/No)
Number of Bursts in Trial:			12			
Chirp Center Frequency:			5294			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	61.9	10	-	-	224524
2	3	89.5	10	1501	1779	464931
3	1	60.7	10	-	-	709105
4	3	86.5	10	1611	1133	948374
5	2	78.3	10	1958	-	194321
6	2	79.7	10	1799	-	436096
7	3	87	10	1794	1458	677069
8	2	77.6	10	1414	-	920116
9	1	52.1	10	-	-	164751
10	3	89.4	10	1625	1880	405422
11	1	57.5	10	-	-	649444
12	1	54.8	10	-	-	891478
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Trial Number:			20			Detection (Yes/No)
Number of Bursts in Trial:			11			
Chirp Center Frequency:			5294			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	59.9	9	-	-	147262
2	3	95.3	9	1816	1388	410080
3	2	72.1	9	1329	-	674896
4	1	54.8	9	-	-	939552
5	2	76.3	9	1184	-	114556
6	1	52	9	-	-	379047
7	2	77.6	9	1033	-	642808
8	2	79.6	9	1593	-	906147
9	2	67.8	9	1425	-	82022
10	2	70.2	9	1917	-	345708
11	2	76.3	9	1978	-	609578
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Trial Number:			21			Detection (Yes/No)
Number of Bursts in Trial:			8			
Chirp Center Frequency:			5308			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	86.8	5	1164	1485	1201288
2	3	95.7	5	1221	1323	68128
3	3	92.5	5	1424	1907	430646
4	3	85.7	5	1427	1541	793540
5	3	90.5	5	1419	1386	1156671
6	2	70.6	5	1257	-	23451
7	3	92.1	5	1724	1733	385970
8	3	90.4	5	1929	1726	748389
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Trial Number:			22			Detection (Yes/No)
Number of Bursts in Trial:			17			
Chirp Center Frequency:			5303			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	72.7	16	1583	-	522381
2	3	99.1	16	1343	1568	691747
3	3	91.8	16	1692	1071	160120
4	1	59.8	16	-	-	331826
5	2	70.6	16	1300	-	501499
6	3	88.4	16	1614	1260	670547
7	3	95.7	16	1802	1322	139107
8	3	83.4	16	1297	1284	309507
9	3	97.6	16	1267	1833	479372
10	3	88.7	16	1244	1346	650181
11	3	94.1	16	1894	1431	118125
12	2	69.3	16	1861	-	288605
13	3	90.5	16	1937	1632	457859
14	1	51.1	16	-	-	631556
15	1	52.4	16	-	-	97738
16	2	82.4	16	1473	-	268018
17	1	66.6	16	-	-	439304
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Trial Number:			23			Detection (Yes/No)
Number of Bursts in Trial:			18			
Chirp Center Frequency:			5303			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	70.2	17	1069	-	574869
2	2	70.2	17	1573	-	72160
3	2	79.3	17	1378	-	233119
4	3	89.5	17	1259	1129	393337
5	3	89.3	17	1490	1219	554119
6	1	62.5	17	-	-	52523
7	1	56	17	-	-	213904
8	3	91.7	17	1734	1368	373207
9	1	63.2	17	-	-	536251
10	2	73.9	17	1121	-	32594
11	3	90.9	17	1302	1283	193254
12	3	85.8	17	1342	1636	353500
13	3	94.1	17	1377	1009	514600
14	3	96.5	17	1891	1474	12706
15	1	57	17	-	-	174022
16	1	60	17	-	-	335422
17	3	99.1	17	1791	1068	494443
18	3	84.8	17	1392	1704	655147
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Trial Number:			24			Detection (Yes/No)
Number of Bursts in Trial:			12			
Chirp Center Frequency:			5306			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	55.8	10	-	-	231606
2	2	68.1	10	1753	-	472844
3	3	85.5	10	1248	1171	714415
4	1	51.5	10	-	-	957775
5	1	66.4	10	-	-	201747
6	2	80.7	10	1189	-	443510
7	2	68.7	10	1249	-	685382
8	2	80	10	1022	-	927175
9	3	90.9	10	1439	1165	171473
10	2	73.8	10	1755	-	413360
11	1	50.9	10	-	-	656236
12	3	85.8	10	1558	1096	895991
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Trial Number:			25			Detection (Yes/No)
Number of Bursts in Trial:			19			
Chirp Center Frequency:			5302			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	85.6	19	1240	1940	89217
2	3	93.3	19	1162	1962	241316
3	1	60.1	19	-	-	395323
4	2	69	19	1514	-	547085
5	2	70.3	19	1234	-	70620
6	1	50.4	19	-	-	223515
7	1	62.8	19	-	-	376501
8	1	50.9	19	-	-	528863
9	3	83.5	19	1823	1188	51703
10	3	86.6	19	1426	1859	203571
11	3	85.7	19	1605	1470	355881
12	2	68.1	19	1538	-	509435
13	1	57.4	19	-	-	33128
14	1	64.5	19	-	-	185875
15	1	54.8	19	-	-	339020
16	3	97.6	19	1032	1591	489912
17	1	53.5	19	-	-	14324
18	3	92.2	19	1871	1262	166218
19	3	87.1	19	1666	1193	318698
20						

Trial Number:			26			Detection (Yes/No)
Number of Bursts in Trial:			10			
Chirp Center Frequency:			5306			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	59.2	8	-	-	899364
2	3	91.5	8	1542	1667	1186379
3	1	66.4	8	-	-	282179
4	3	96.7	8	1887	1384	571207
5	1	64.2	8	-	-	863219
6	2	81.2	8	1645	-	1152849
7	2	68.6	8	1889	-	245984
8	1	53.7	8	-	-	536953
9	3	98.7	8	1949	1127	825237
10	2	70.8	8	1203	-	1117263
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Trial Number:			27			Detection (Yes/No)
Number of Bursts in Trial:			18			
Chirp Center Frequency:			5303			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	59.2	17	-	-	116807
2	2	71.6	17	1157	-	277489
3	2	82.3	17	1847	-	438495
4	3	90.8	17	1619	1829	597884
5	2	77.4	17	1415	-	96704
6	3	88.3	17	1047	1637	257131
7	3	97.6	17	1641	1827	417123
8	2	75.7	17	1332	-	579616
9	2	75.1	17	1081	-	76930
10	2	76.2	17	1320	-	237792
11	1	56.5	17	-	-	399475
12	3	97.3	17	1597	1013	558620
13	3	98.1	17	1305	1098	57044
14	1	51.3	17	-	-	218634
15	2	69.3	17	1005	-	379179
16	2	82.4	17	1728	-	539651
17	2	67.3	17	1056	-	37269
18	3	94.2	17	1201	1049	197990
19						
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Trial Number:			28			Detection (Yes/No)
Number of Bursts in Trial:			20			
Chirp Center Frequency:			5302			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.9	19	-	-	324129
2	2	75.9	19	1077	-	468229
3	2	71.1	19	1053	-	15694
4	2	76.5	19	1119	-	160689
5	3	98.7	19	1468	1263	304677
6	3	86.7	19	1061	1851	449193
7	3	91.7	19	1051	1969	593082
8	3	94.3	19	1599	1213	142421
9	2	69.2	19	1385	-	287594
10	3	96.6	19	1905	1579	430530
11	3	95.9	19	1971	1908	575008
12	3	87.8	19	1996	1333	124407
13	1	51.6	19	-	-	270277
14	3	96.7	19	1175	1750	413170
15	1	64.1	19	-	-	560270
16	2	80.1	19	1967	-	106911
17	2	74.2	19	1111	-	251861
18	1	64.9	19	-	-	397278
19	1	53.4	19	-	-	542669
20	2	77.3	19	1646	-	89110

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Trial Number:			29			Detection (Yes/No)
Number of Bursts in Trial:			16			
Chirp Center Frequency:			5304			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	80	15	1812	-	292422
2	2	76.2	15	1553	-	474079
3	1	57.2	15	-	-	656513
4	2	71.8	15	1910	-	89149
5	2	78.5	15	1920	-	270267
6	1	66	15	-	-	452215
7	2	80.5	15	1921	-	632633
8	1	61.9	15	-	-	66997
9	3	93.4	15	1705	1843	247257
10	1	65.1	15	-	-	430136
11	2	77.4	15	1807	-	610347
12	2	81.9	15	1159	-	44577
13	1	63.9	15	-	-	226177
14	2	74.5	15	1671	-	406919
15	1	51.8	15	-	-	589568
16	2	72.8	15	1041	-	22274
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Trial Number:			30			Detection (Yes/No)
Number of Bursts in Trial:			12			
Chirp Center Frequency:			5306			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	99.7	10	1313	1601	271230
2	2	82.8	10	2000	-	513202
3	2	72.9	10	1596	-	754690
4	3	95.7	10	1058	1417	996429
5	3	99.2	10	1911	1868	241139
6	2	83.1	10	1694	-	483392
7	2	69.1	10	1789	-	724913
8	1	51	10	-	-	968241
9	2	79.9	10	1186	-	212108
10	3	87.3	10	1844	1736	452907
11	2	74.6	10	1362	-	695850
12	1	59.9	10	-	-	939239
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