

Dynamic Frequency Selection (DFS) Test Report
WP-WIFI6 Series Access Point
In
IR1835-K9, IR1833-K9, IR1831-K9 & IR1821-K9

Cisco Industrial Wireless Hazardous Location Access Point

2.4 GHz / 5 GHz 802.11 a/ac/ax/b/g/n Wi-Fi radio
WP-WIFI6-A, WP-WIFI6-B, WP-WIFI6-D, WP-WIFI6-T, WP-WIFI6-S

FCC ID: LDKWPWIFI6
IC: 2461A-WPWIFI6

5250-5350, 5470-5725 MHz

Against the following Specifications:

CFR47 Part 15.407

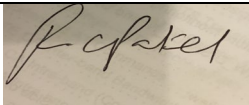
RSS 247

LP0002:2020

Cisco Systems

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This report replaces any previously entered test report under EDCS – 21727754. This test report has been electronically authorized and archived using the CISCO Engineering Document Control system.

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Section 1: Overview

The samples were assessed against the tests detailed in section 3 under the requirements of the following specifications:

Specifications:
CFR47 Part 15.407
RSS-247
LP0002:2018

Section 2: Assessment Information**2.1 General**

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

Temperature	15°C to 35°C (54°F to 95°F)
Atmospheric Pressure	860mbar to 1060mbar (25.4" to 31.3")
Humidity	10% to 75*%
- e) All AC testing was performed at one or more of the following supply voltages:
110V 60 Hz (+/-20%). The device also supports DC power supply range of +12-36vDC

Units of Measurement

The units of measurements defined in the appendices are reported in specific terms, which are test dependent. Where radiated measurements are concerned these are defined at a particular distance. Basic voltage measurements are defined in units of [dBuV]

As an example, the basic calculation for all measurements is as follows:

$$\text{Emission level [dBuV]} = \text{Indicated voltage level [dBuV]} + \text{Cable Loss [dB]} + \text{Other correction factors [dB]}$$

The combinations of correction factors are dependent upon the exact test configurations [see test equipment lists for further details] and may include:-

Antenna Factors, Pre Amplifier Gain, LISN Loss, Pulse Limiter Loss and Filter Insertion Loss..

Note: to convert the results from dBuV/m to uV/m use the following formula:-

$$\text{Level in uV/m} = \text{Common Antilogarithm } [(X \text{ dBuV/m})/20] = Y \text{ uV/m}$$

Measurement Uncertainty Values

voltage and power measurements	± 2 dB
conducted EIRP measurements	± 1.4 dB
radiated measurements	± 3.2 dB
frequency measurements	$\pm 2.4 \cdot 10^{-7}$
temperature measurements	$\pm 0.54^{\circ}$
humidity measurements	$\pm 2.3\%$
DC and low frequency measurements	$\pm 2.5\%$

Where relevant measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Radiated emissions (expanded uncertainty, confidence interval 95%)

30 MHz - 300 MHz	+/- 3.8 dB
300 MHz - 1000 MHz	+/- 4.3 dB
1 GHz - 10 GHz	+/- 4.0 dB
10 GHz - 18GHz	+/- 8.2 dB
18GHz - 26.5GHz	+/- 4.1 dB
26.5GHz - 40GHz	+/- 3.9 dB

Conducted emissions (expanded uncertainty, confidence interval 95%)

30 MHz – 40GHz	+/- 0.38 dB
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A product is considered to comply with a requirement if the nominal measured value is below the limit line.
The product is considered to not be in compliance in case the nominal measured value is above the limit line.

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2.2 Date of testing

4th April 2021 to 25th April 2021

2.3 Report Issue Date

7th May 2021

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System 13253354. The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled.

2.4 Testing facilities

This assessment was performed by:

Testing Laboratory

Cisco Systems, Inc.,
125 West Tasman Drive
San Jose, CA 95134, USA

Registration Numbers for Industry Canada

Cisco System Site	Address	Site Identifier
Building P, 10m Chamber	125 West Tasman Dr San Jose, CA 95134	Company #: 2461A-2
Building P, 5m Chamber	125 West Tasman Dr San Jose, CA 95134	Company #: 2461A-1
Building I, 5m Chamber	285 W. Tasman Drive San Jose, California 95134	Company #: 2461M-1

Test Engineers

Ronak Patel

2.5 Equipment Assessed (EUT)

Radio Module: WP-WIFI6-B

Host System: IR1835-K9

2.6 EUT Description

WP-WIFI6 is Wifi 802.11ax Wi-Fi 6 access point module for industrial IoT routing and gateway platforms which is a field replaceable Wifi interface module designed for IR1800 series platform. It includes a 2x2 MIMO 802.11ax 2.4 GHz radio and a 2x2 MIMO 802.11ax 5 GHz radio

IR1835-K9 is the next generation of IR829, based on IOS XE, with advanced features such as modular WiFi, modular Cellular/WAN, CAN Bus, Dead Reckoning etc.

The product has the following interfaces:

4 GE LAN Ports

1 GE WAN / 1 Fiber Port (Alternate to GE Copper port)

1 RS-232 Serial

1 RS232/RS485

1 Type-A USB for Storage

1 GPS Slot1.6 EUT Description

1 WIFI Slot

1 mSATA Slot

2 Cellular PIM Slots [Main Aux and GPS (Only on Sierra Wireless Modules)]

Alarm Port

Micro-USB

DC Power input (DC Min/Max 9-32)

WiFi module Model/PID Differences

The WP-WIFI6 Access Point module is designed for use in many countries with varying regulatory requirements. The WP-WIFI6-A and WP-WIFI6-B, both have the same identical components, electronics circuitries, PCB layout and enclosure. The WP-WIFI6-A module is configured with the Canada country code and the WP-WIFI6-B module is configured with US country code. The US and Canada country codes are configured according to the test results demonstrated compliance in the RF conducted emissions FCC/RSS test reports. The difference between the 2 PIDs (WP-WIFI6-A and WP-WIFI6-B) is the UNII-1 (5150MHz – 5250MHz) band is not supported in the WP-WIFI6-A PID.

Host system Model/PID differences

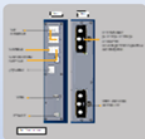
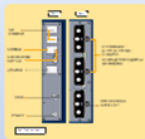
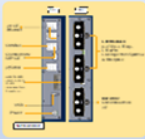
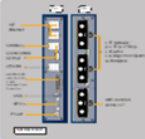
IR1821-K9

IR1831-K9

IR1833-K9

IR1835-K9 ----- System Tested

The following host models are in the same IR18xx family. IR1835-K9 is the highly populated host model out of all 4 models and selected model for testing. The radio WP-WiFi6-E module in these host has the same identical components, electronics circuitries, and PCB layout. Below table summarizes the differences between all four host models.

	IR1821-K9	No PoE IR1831-K9	With PoE IR1833-K9	IR1835-K9
				
Processor	600MHz	600MHz	600MHz	1200MHz
Memory	4GB	4GB	4GB	8GB
Single LTE Slots	✓	✗	✗	✗
Dual LTE Slot	✗	✓	✓	✓
WiFi (FRU)	✓	✓	✓	✓
PoE	✗	✗	✓	✓
mSATA (FRU)	✗	✗	✓	✓
Dedicated GPS (FRU)	✗	✗	✓	✓
GPIO	✗	✗	✗	✓
Serial Interface	RS232 (1)	RS232 (2)	RS232 (2)	RS232, RS232/485

Antenna Specification

The following antennas are supported by this product series.

Frequency	Part Number	Antenna Type	Peak Antenna Gain (dBi)	>30 degree 5 GHz Antenna Gain (dBi)
2.4/5 GHz	W-ANTM2050D-RPSMA=	Omnidirectional swivel stick dipole	2 / 4	0
	W-ANTM2-O-2-RPSMA	Omnidirectional	4 / 4	0
	ANT-7-5G4WL2G1-O=	7-in-1 vehicle mount omnidirectional	8 / 8	3
	5G-ANTM-O-4-B=	9-in-1 vehicle mount omnidirectional	8 / 8	3

System testing was performed with IPERF traffic that streams continuously from the Master to the Client IP based system.

Information regarding the parameters of the detected Radar Waveforms is not available to the end user.

For the 5250-5350 MHz and 5470-5725 MHz bands, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

Section 3: Result Summary

3.1 Results Summary Table

Basic Standard	Technical Requirements / Details	Result
FCC 15.407 RSS-247	Dynamic Frequency Selection (DFS) Detection Threshold	Pass
FCC 15.407 RSS-247	Channel Availability Check Time	Pass
FCC 15.407 RSS-247	Channel Move Time	Pass
FCC 15.407 RSS-247	Channel Closing Time	Pass
FCC 15.407 RSS-247	Non-Occupancy Period	Pass
FCC 15.407 RSS-247	U-NII Detection Bandwidth	Pass

Section 4: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

4.1 Sample Details

Sample No.	Equipment Details	Manufacturer	Hardware Rev.	Firmware Rev.	Software Rev.	Serial Number
S01	WP-WIFI6-B	Cisco Systems	02	1570.15621. r41881 41881	[iot-diags-2- lnx:/users/tinht an/cscic/cscic_ build/CHEETA H]	FOC24490FGR
S02	IR1835-K9 (Host System)	Cisco Systems	02	Cisco IOS XE Software, Version BLD_POLARI S_DEV_LATE ST_20210130 _114245_V17 _6_0_27	ir1800- universalk9.BL D_POLARIS DEV_LATEST _20210130_11 4245_V17_6_ 0_27.SSA.bin	FCW2446P0UN
S03	FSP150-AHAN3	FSP Group Inc.	A0	N/A	N/A	FST2442QACB
S04	Support Laptop	Asus	FX504G	NA	NA	JANRCX002576412

4.2 System Details

System Number	Description	Sample Description	Samples	System under test	Support equipment
1	Used for 20, 40, and 80MHz	Wifi AP module	S01	☒	☐
		IR1835 Host system	S02	☒	☐
		AC-DC Power Adapter	S03	☐	☒
		Support Laptop	S04	☐	☒

4.3 Mode of Operation Details

Mode#	Description	Comments
1	20MHz BW DFS Tests	DFS Tests with traffic: 17-23% Traffic Loading using IPERF AP Running Image: 8.8.1.10 Cisco AP Firmware, (ap3g3): bundle-ax-bcm32-non-me-0205.img Compiled Wed Feb 10 07:47:19 GMT 2021
2	40MHz BW DFS Tests	DFS Tests with traffic: 17-23 % Traffic Loading using IPERF AP Running Image: 8.8.1.10 Cisco AP Firmware, (ap3g3): bundle-ax-bcm32-non-me-0205.img Compiled Wed Feb 10 07:47:19 GMT 2021
3	80MHz BW DFS Tests	DFS Tests with traffic: 17-23 % Traffic Loading using IPERF AP Running Image: 8.8.1.10 Cisco AP Firmware, (ap3g3): bundle-ax-bcm32-non-me-0205.img Compiled Wed Feb 10 07:47:19 GMT 2021

Appendix A: Dynamic Frequency Selection (DFS)

15.407: U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

U-NII devices operating in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

A.1 UNII Device Description

Refer to the Radio Theory of Operation for supported modes. The modes included in this report represent the worst-case data for all modes. The following antennas are supported by this product series. The data included in this report represent the worst-case data for all antennas.

A.2 DFS Detection Thresholds

1. Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01 v02r01.	

2. DFS Response requirement values

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

A.3 Radar Test Waveforms

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

1. Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Numbers of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 shall only be used for the channel availability and detection bandwidth tests. It should be noted that any of the radar test waveforms 0 – 4 can be used for the channel availability and detection bandwidth tests.					

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

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For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 μ sec is selected, the number of pulses would be $\text{Roundup}\left\{\left(\frac{1}{360}\right) \cdot \left(\frac{19 \cdot 10^6}{3066}\right)\right\} = \text{Roundup}\{17.2\} = 18$

Table 5a – Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355.0	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139.0	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful Detection
1	35	29	82.9%
2	30	18	60%
3	30	27	90%
4	50	44	88%
Aggregate $(82.9\% + 60\% + 90\% + 88\%)/4 = 80.2\%$			

2. Long Pulse Radar Test Waveform

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

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.

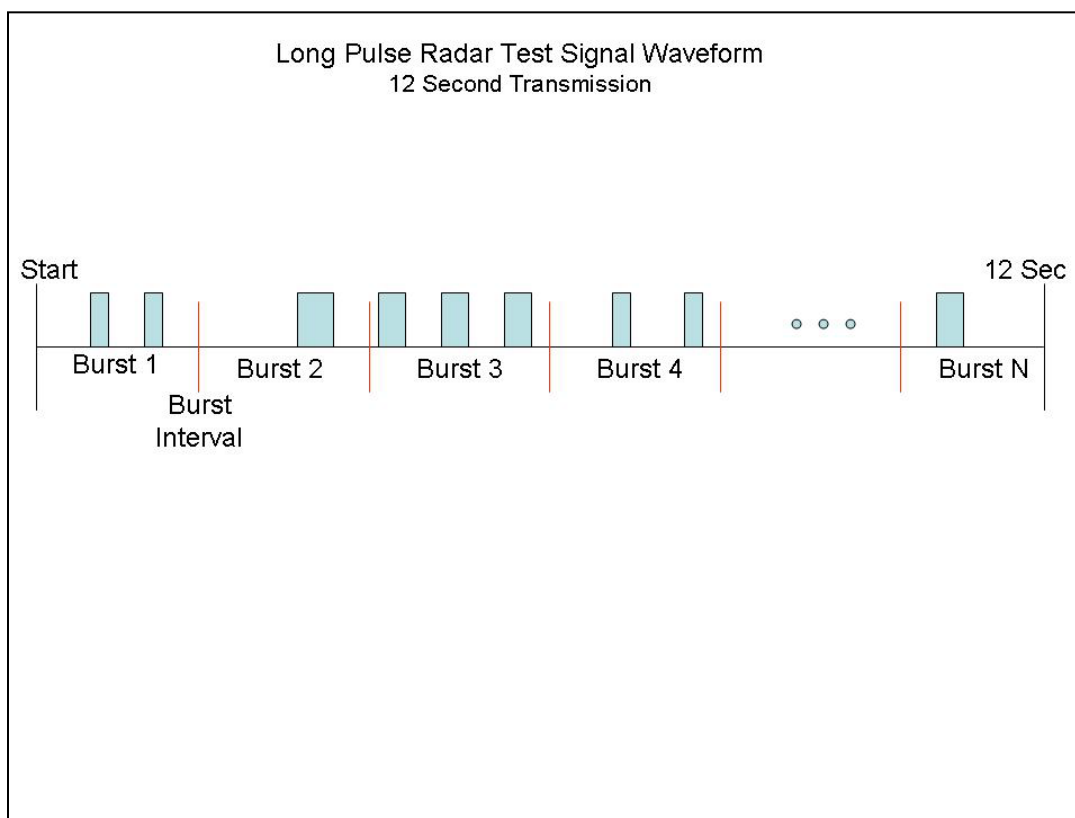
Each waveform is defined as follows:

- 1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
- 3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- 4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- 5) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. 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 $(12,000,000 / \text{Burst Count})$ microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and $[(12,000,000 / \text{Burst Count}) - (\text{Total Burst Length}) + (\text{One Random PRI Interval})]$ microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen randomly.

A representative example of a Long Pulse radar 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).

Graphical Representation of a Long Pulse radar Test Waveform



3. Long Pulse 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	.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 selected¹ 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.

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Appendix B: Dynamic Frequency Selection / Test Results

Standards Reference

FCC 15.407 / RSS-247

Test Procedure

Ref. KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

DFS Test parameters
Span = 0 Hz
RBW ≥ 3 MHz
VBW ≥ 3 MHz
Detector = Peak
Trace = Single Sweep

Samples, Systems, and Modes

Samples, Systems, and Modules					
System Number	Description	Sample Description	Samples	System under test	Support equipment
1	Used for 20, 40, and 80MHz	Wifi AP module	S01	☒	☐
		IR1835 Host system	S02	☒	☐
		AC-DC Power Adapter	S03	☐	☒
		Support Laptop	S04	☐	☒
Tested By: Ronak Patel			Date of testing: 4 th April 2021 to 25 th April 2021		
Test Result: PASS					

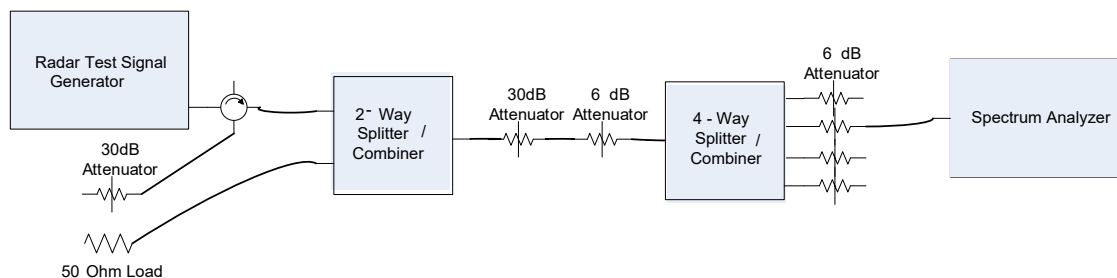
Test Equipment

See Appendix C for list of test equipment

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The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -63dBm.



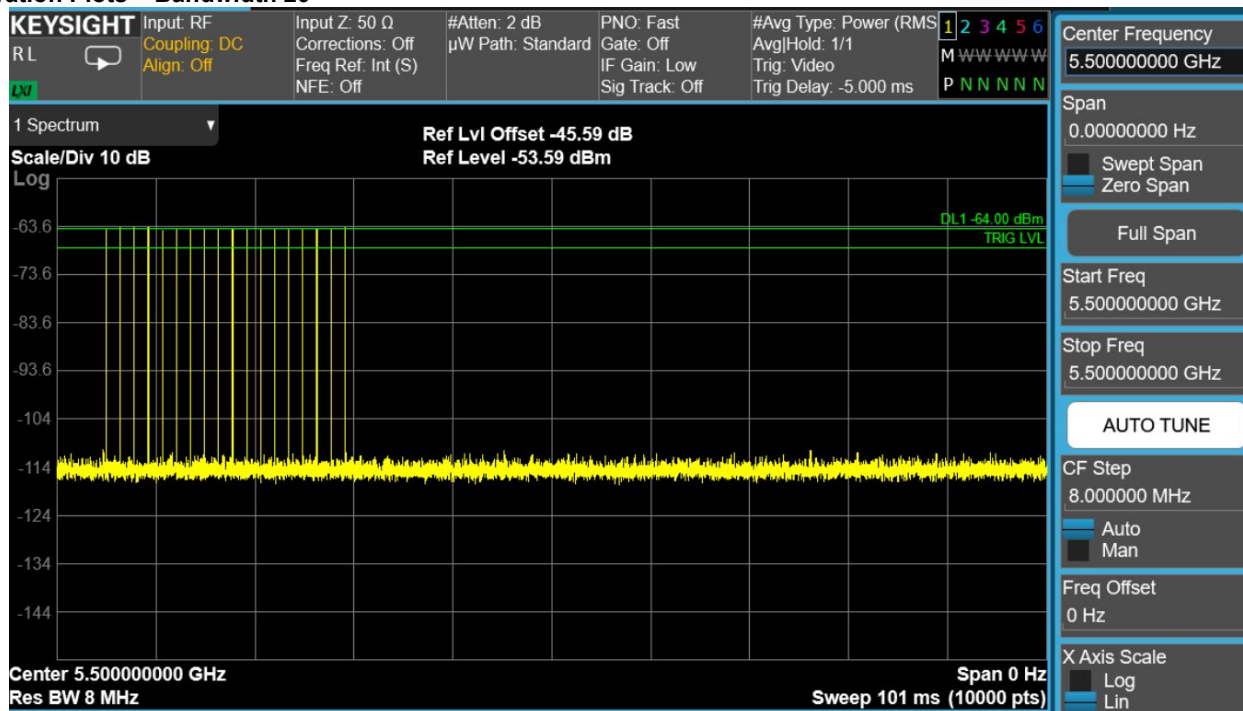
Conducted Calibration Setup

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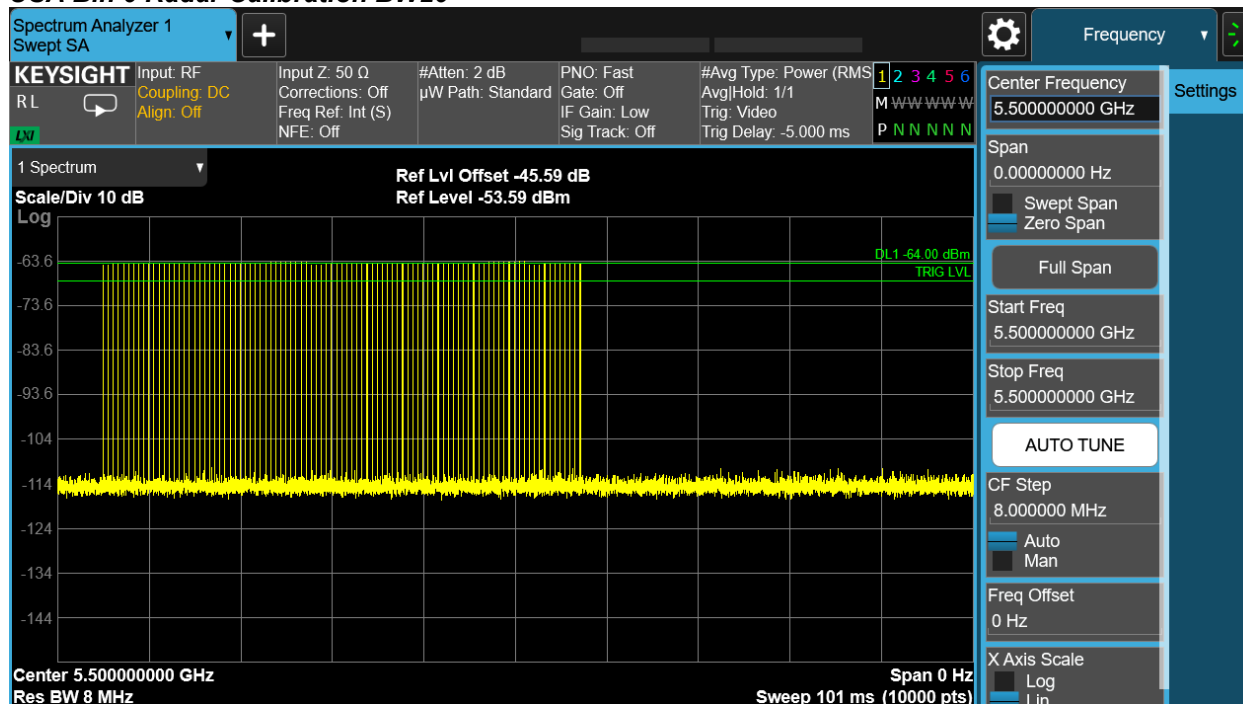
Calibration Plots

Following are the calibration plots for each of the required radar waveforms.

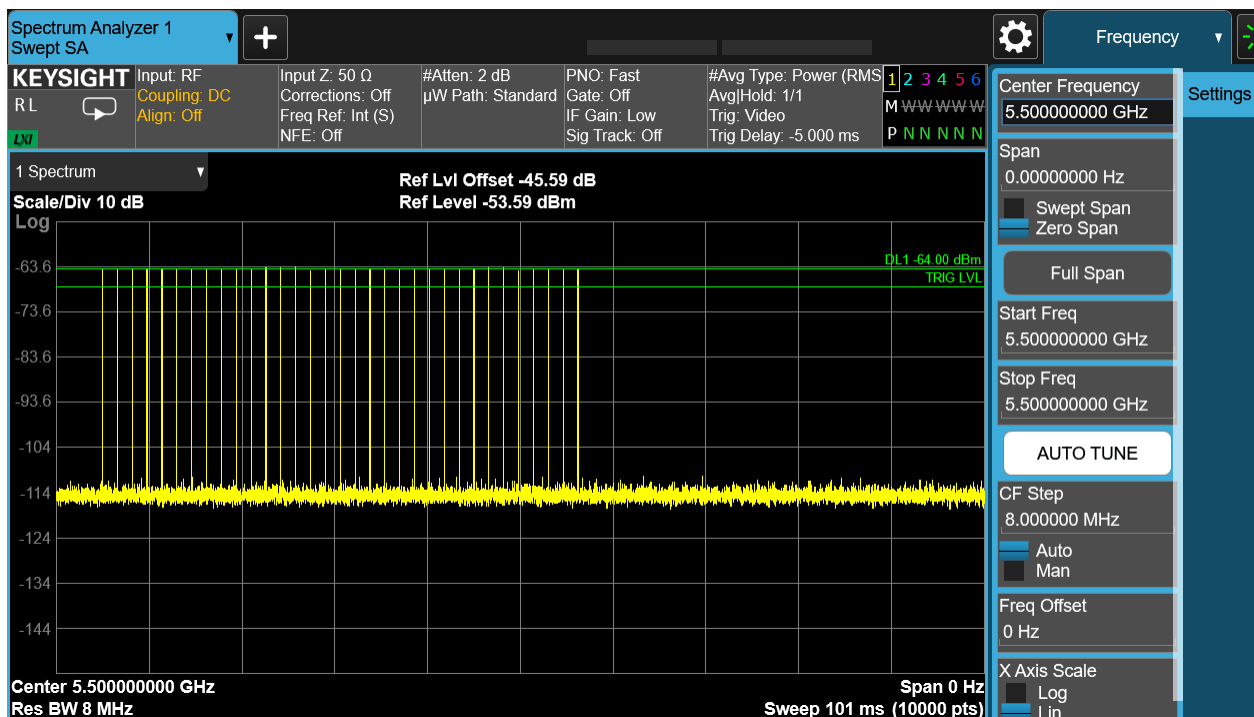
Calibration Plots – Bandwidth 20



USA Bin 0 Radar Calibration BW20



USA Bin 1A Radar Calibration BW20



USA Bin 1B Radar Calibration BW20



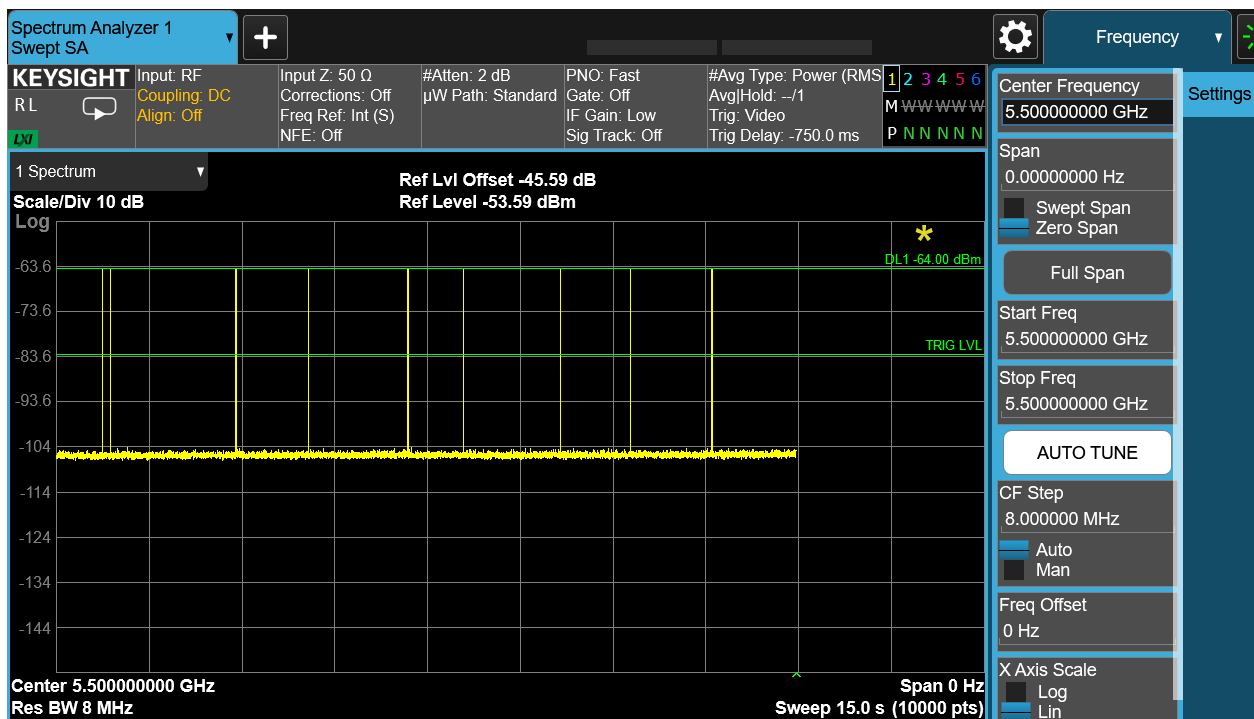
USA Bin 2 Radar Calibration BW20



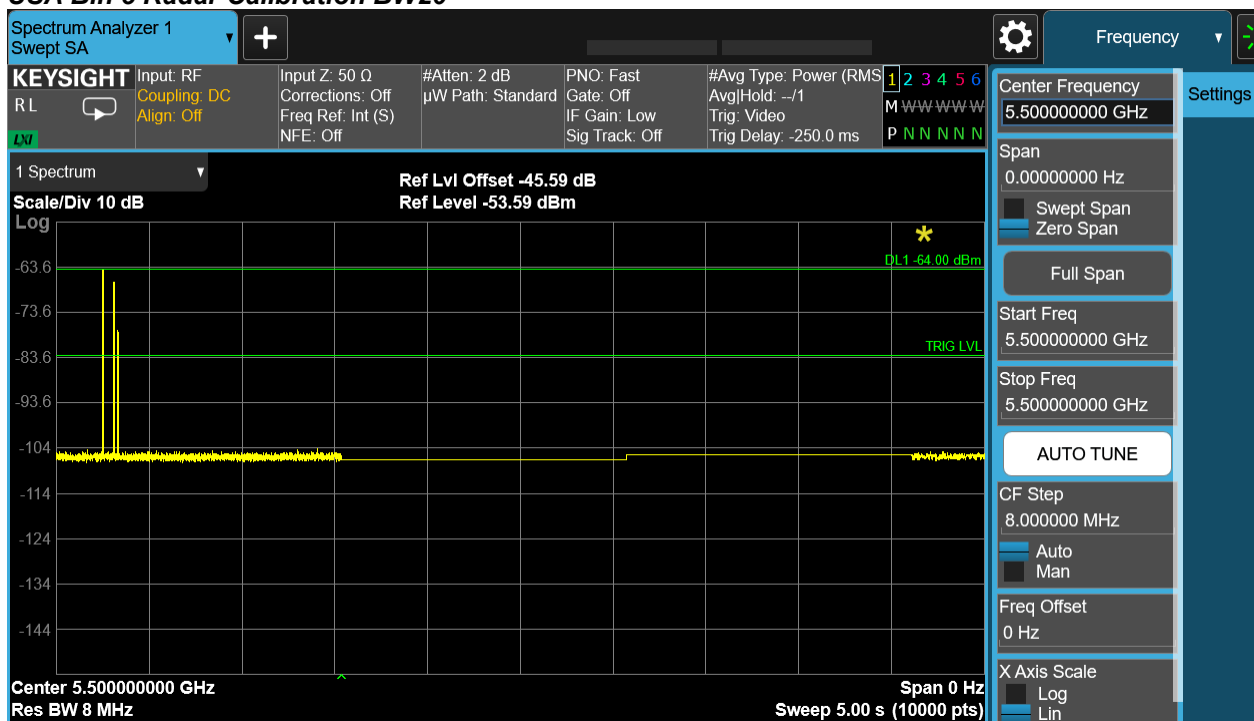
USA Bin 3 Radar Calibration BW20



USA Bin 4 Radar Calibration BW20

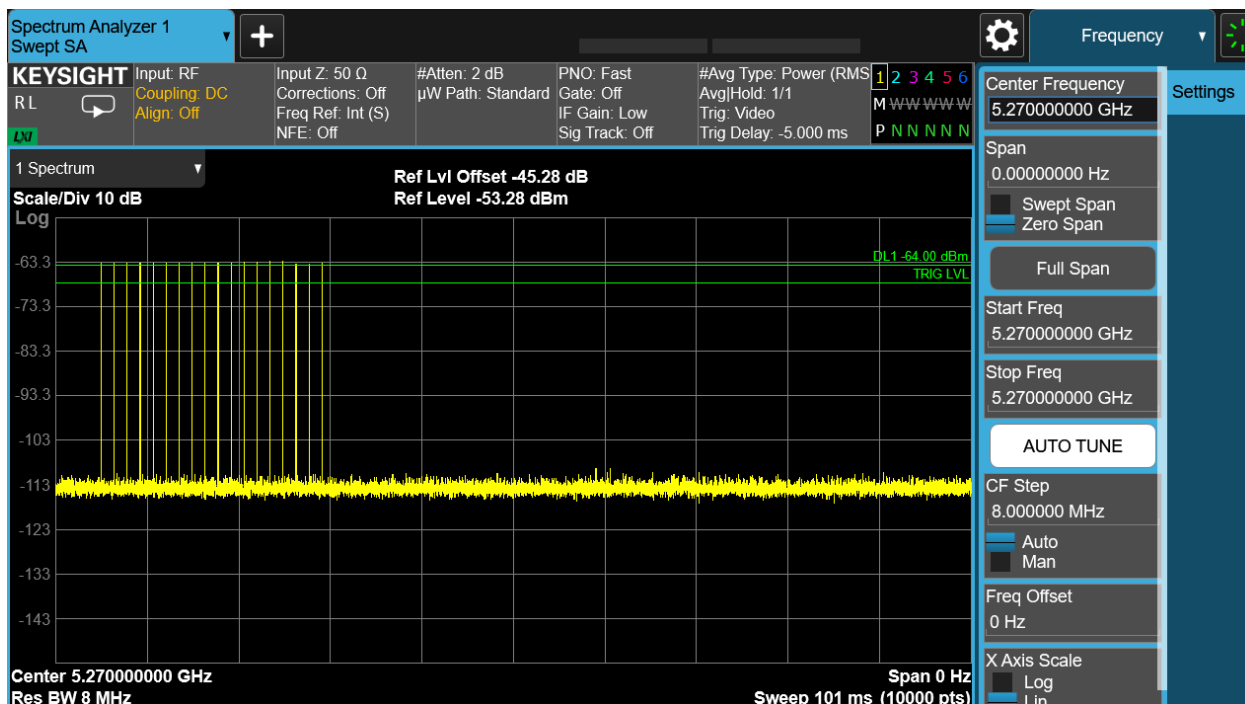


USA Bin 5 Radar Calibration BW20

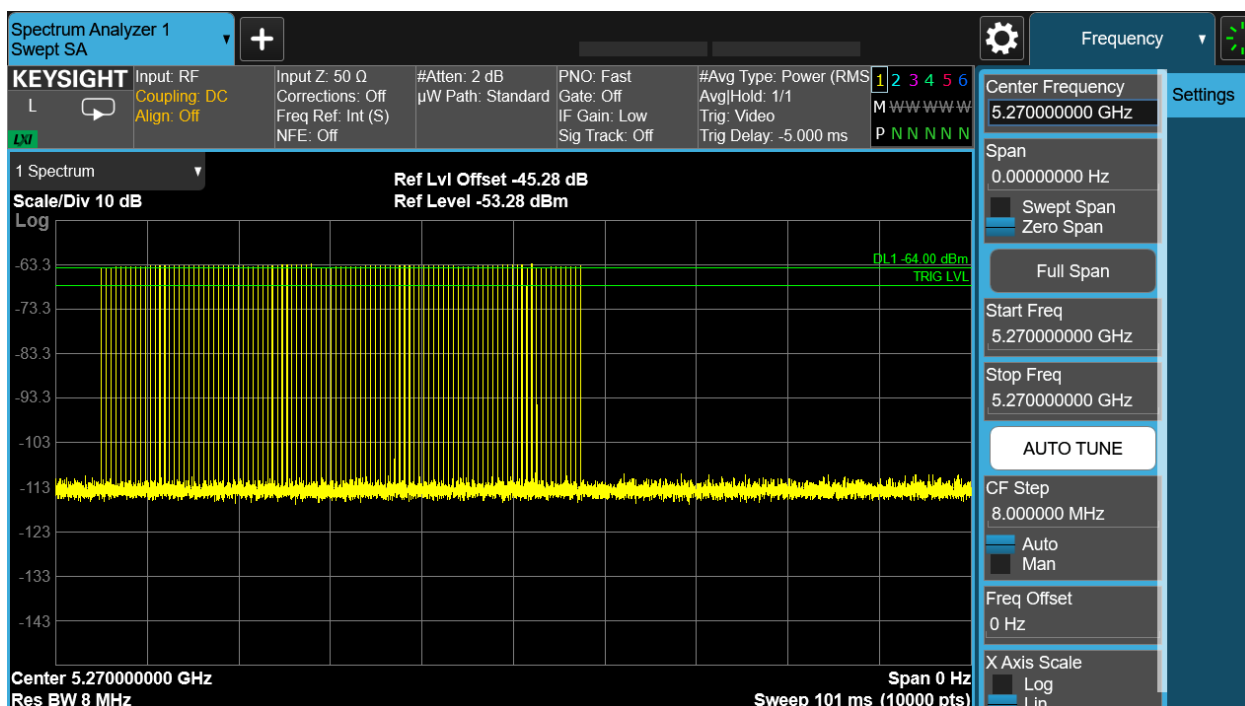


USA Frequency Hopping Radar Calibration BW20

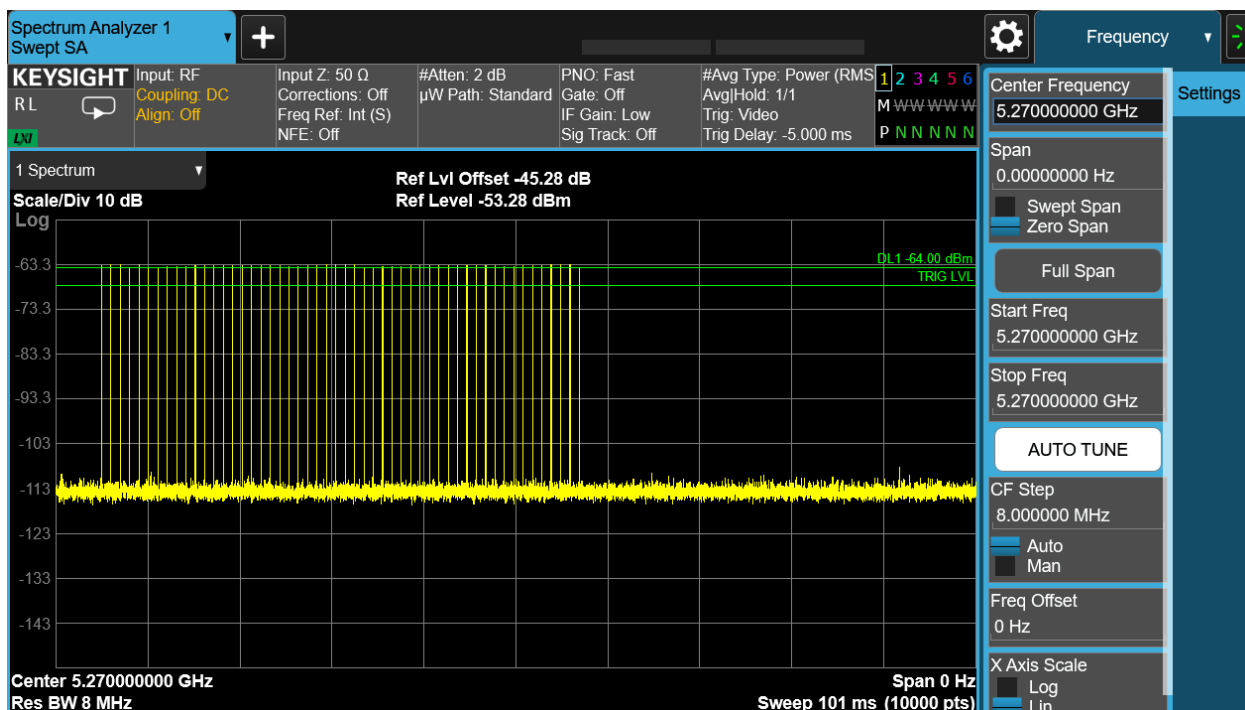
DFS Test Report No – 21727754
Calibration Plots – Bandwidth 40



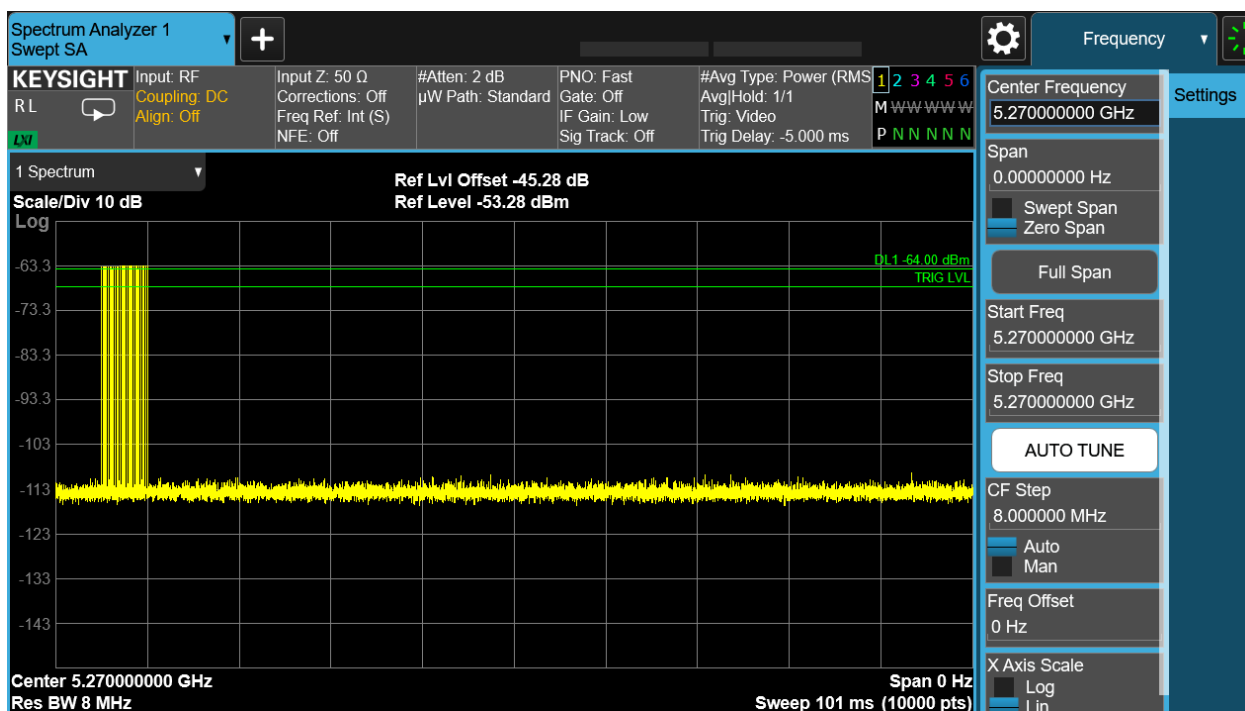
USA Bin 0 Radar Calibration BW40



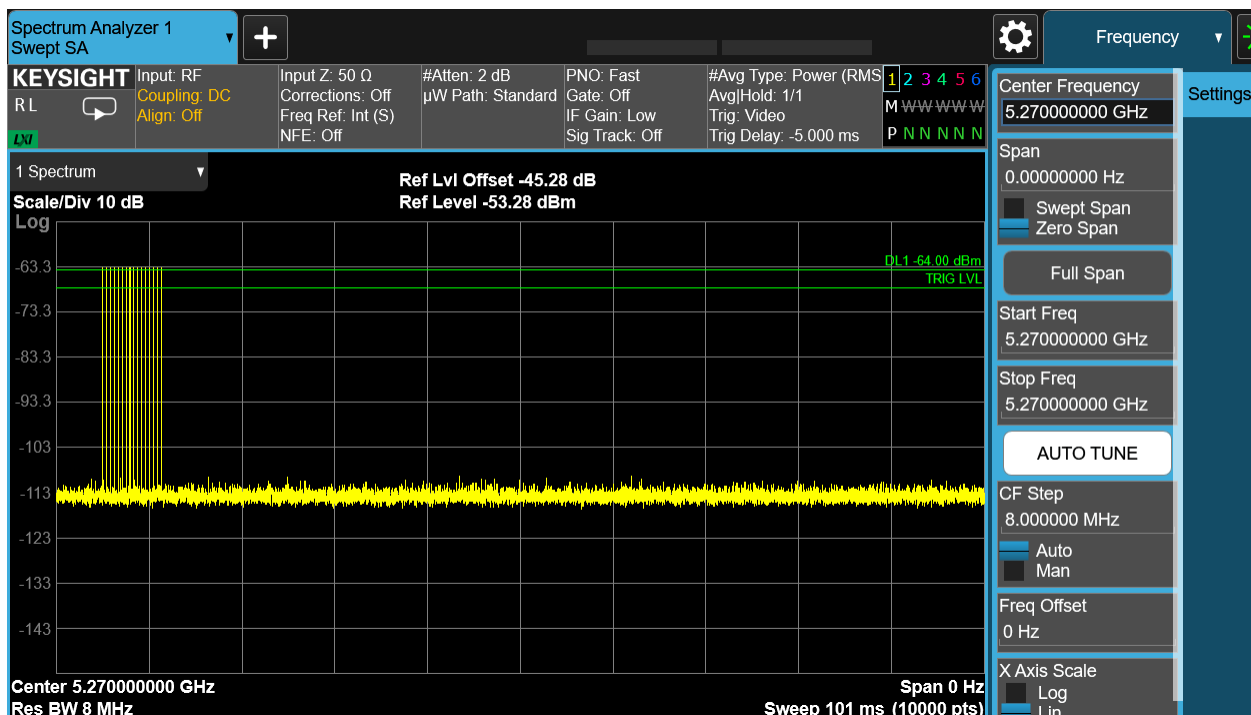
USA Bin 1A Radar Calibration BW40



USA Bin 1B Radar Calibration BW40



USA Bin 2 Radar Calibration BW40

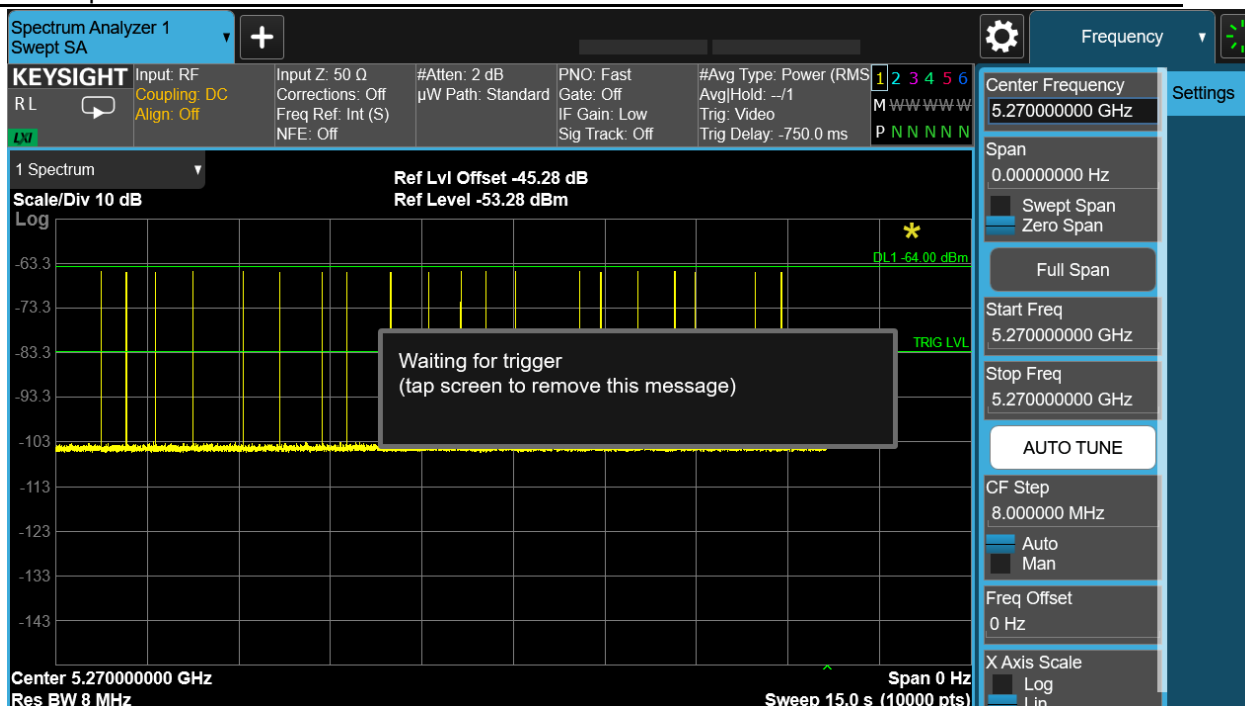


USA Bin 3 Radar Calibration BW40

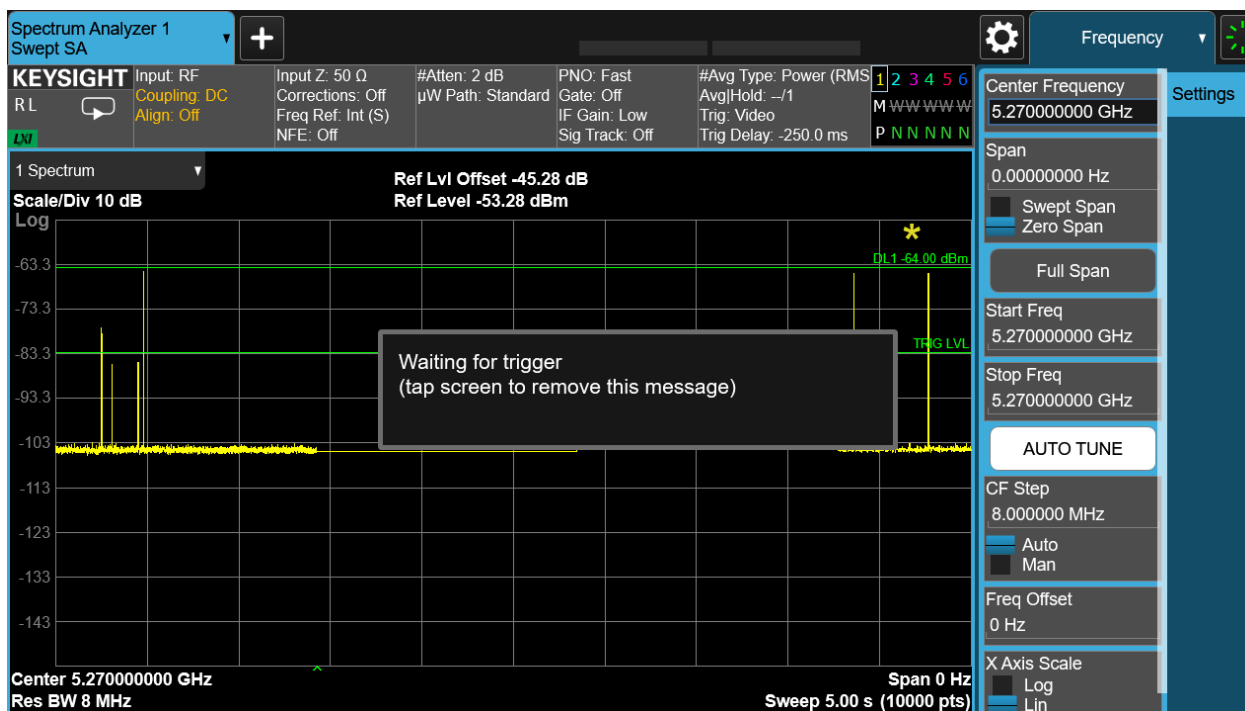


USA Bin 4 Radar Calibration BW40

DFS Test Report No – 21727754



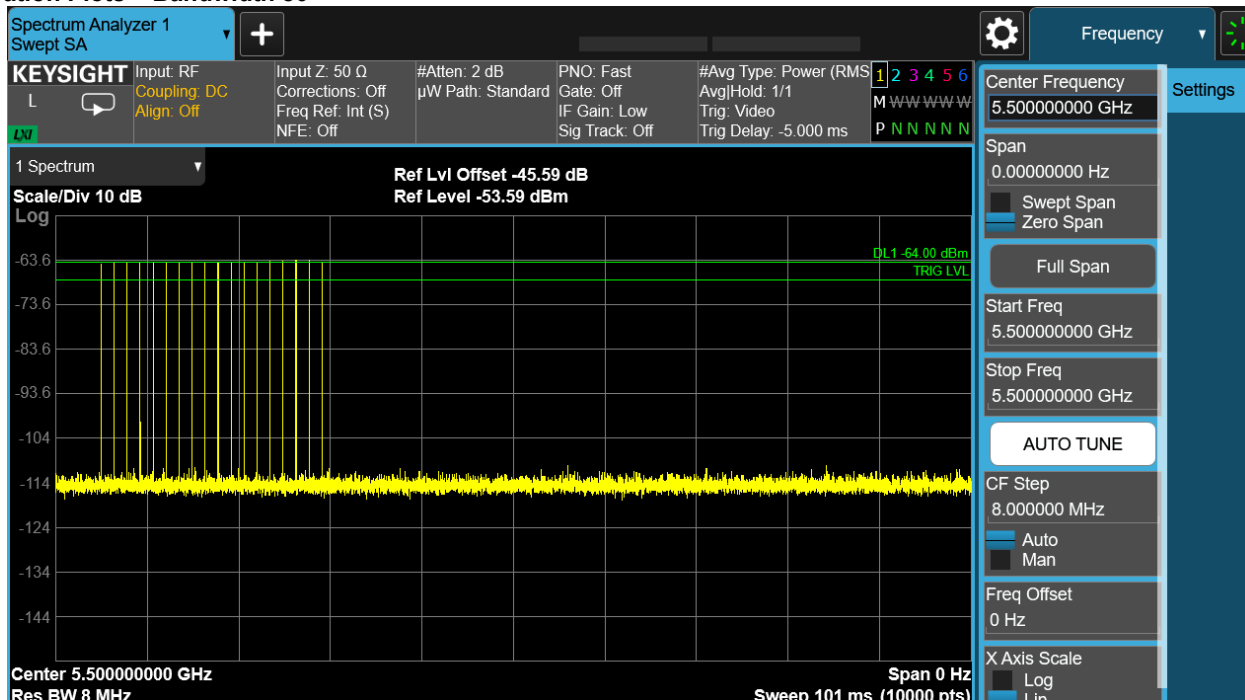
USA Bin 5 Radar Calibration BW40



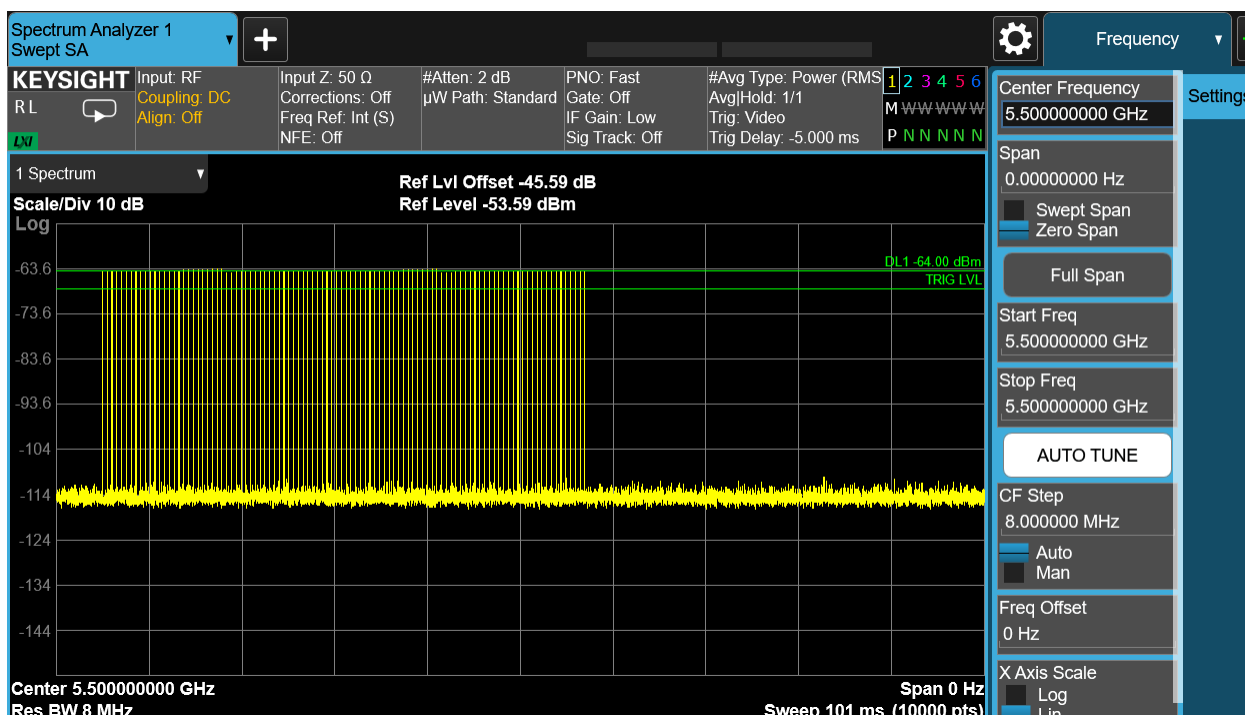
USA Frequency Hopping Radar Calibration BW40

DFS Test Report No – 21727754

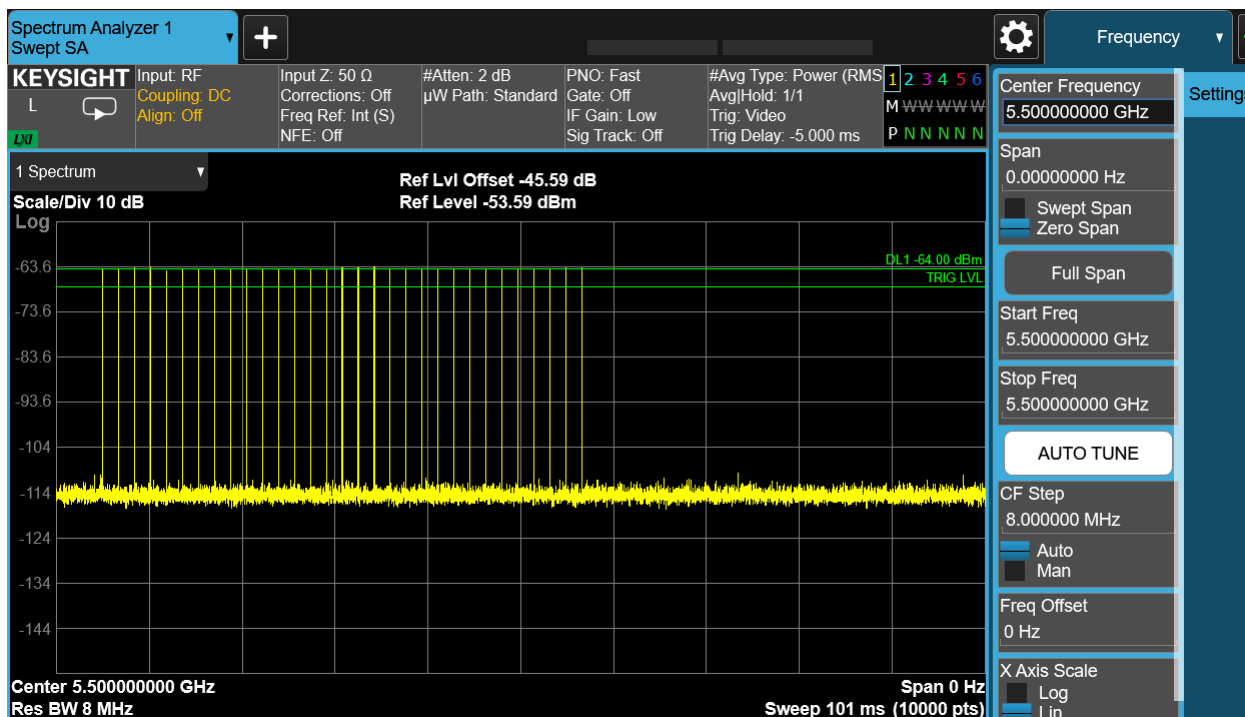
Calibration Plots – Bandwidth 80



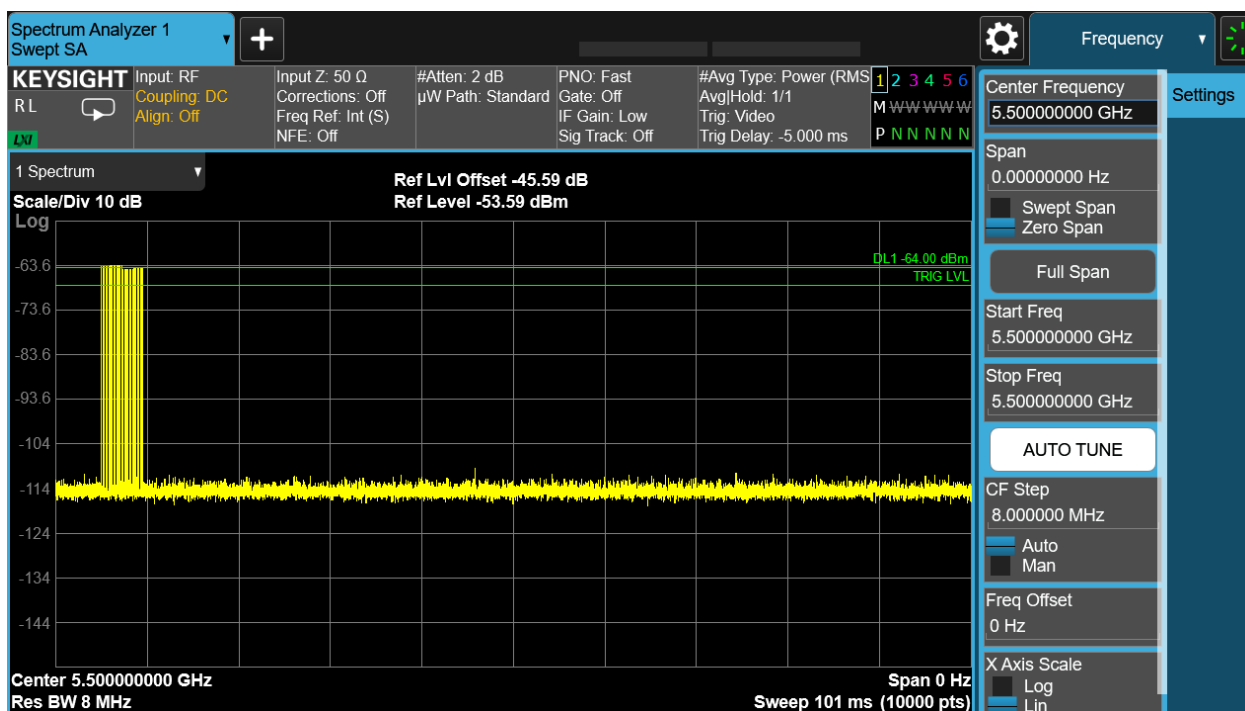
USA Bin 0 Radar Calibration BW80



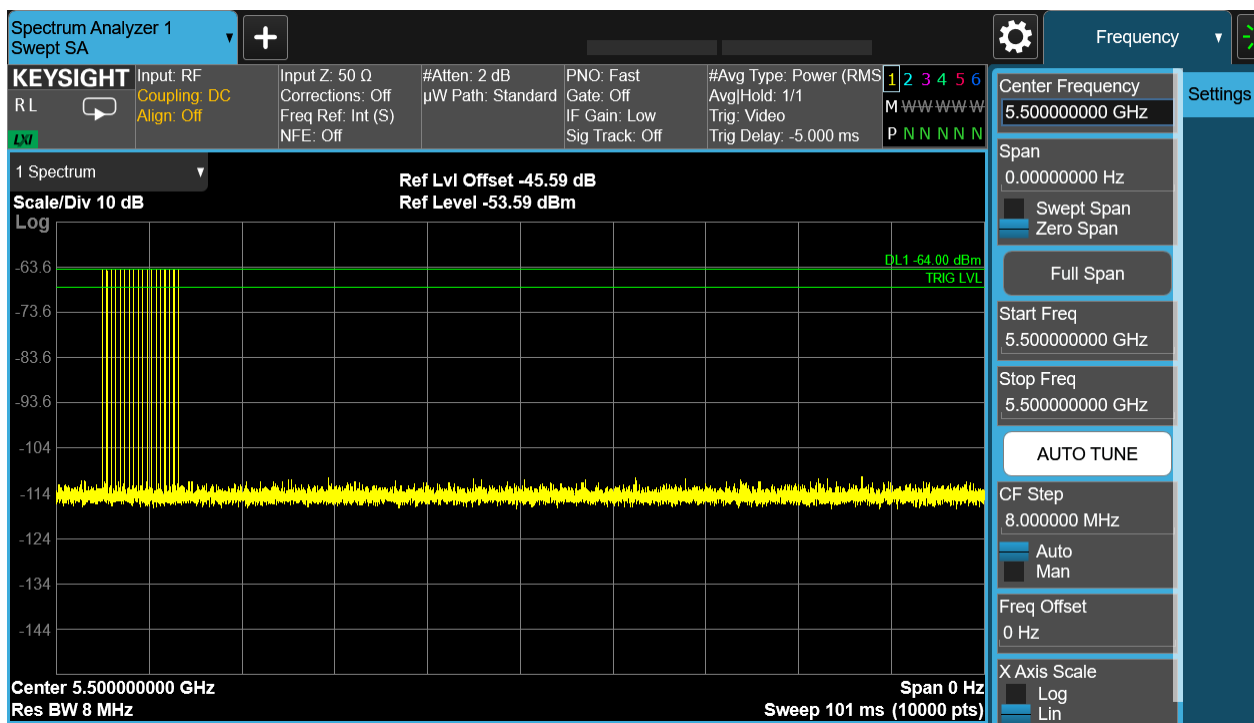
USA Bin 1A Radar Calibration BW80



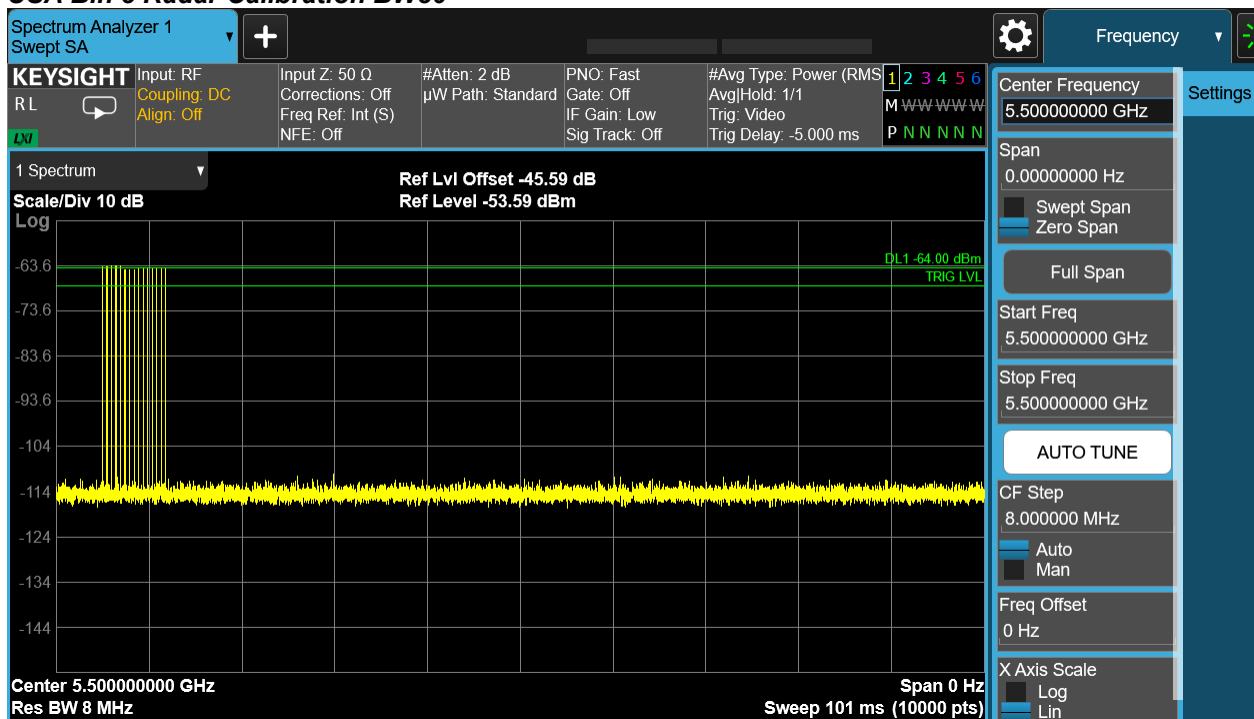
USA Bin 1B Radar Calibration BW80



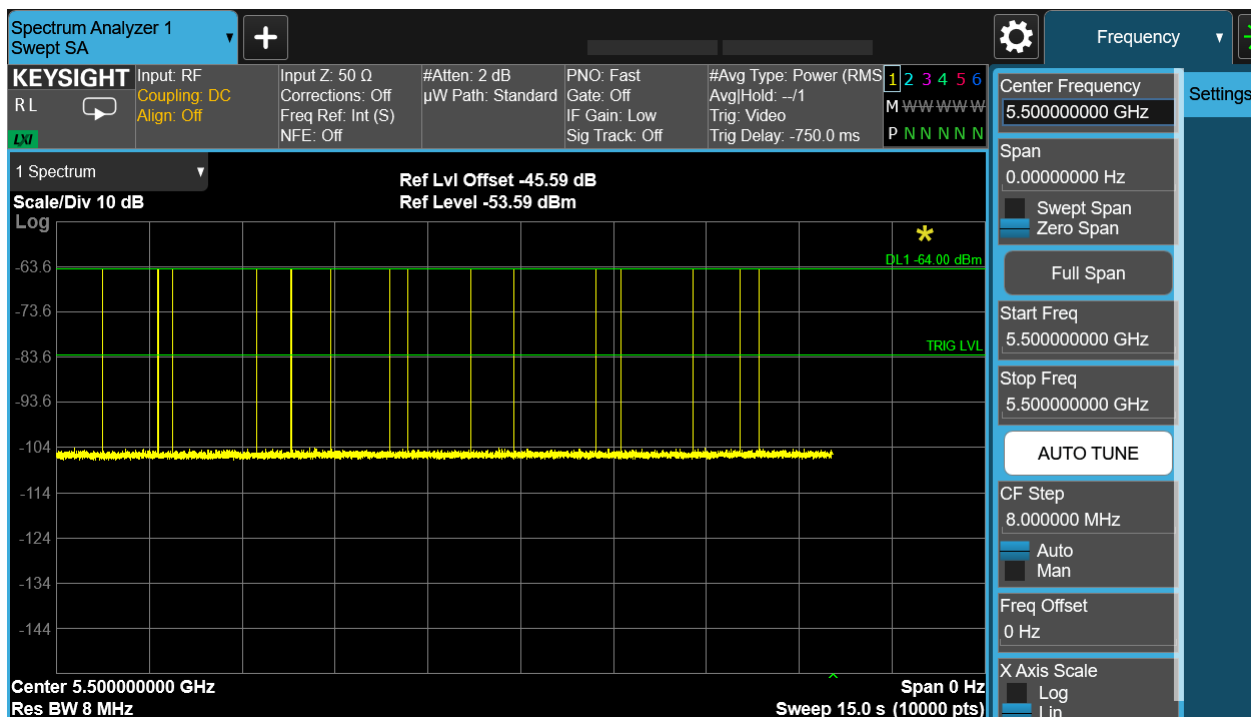
USA Bin 2 Radar Calibration BW80



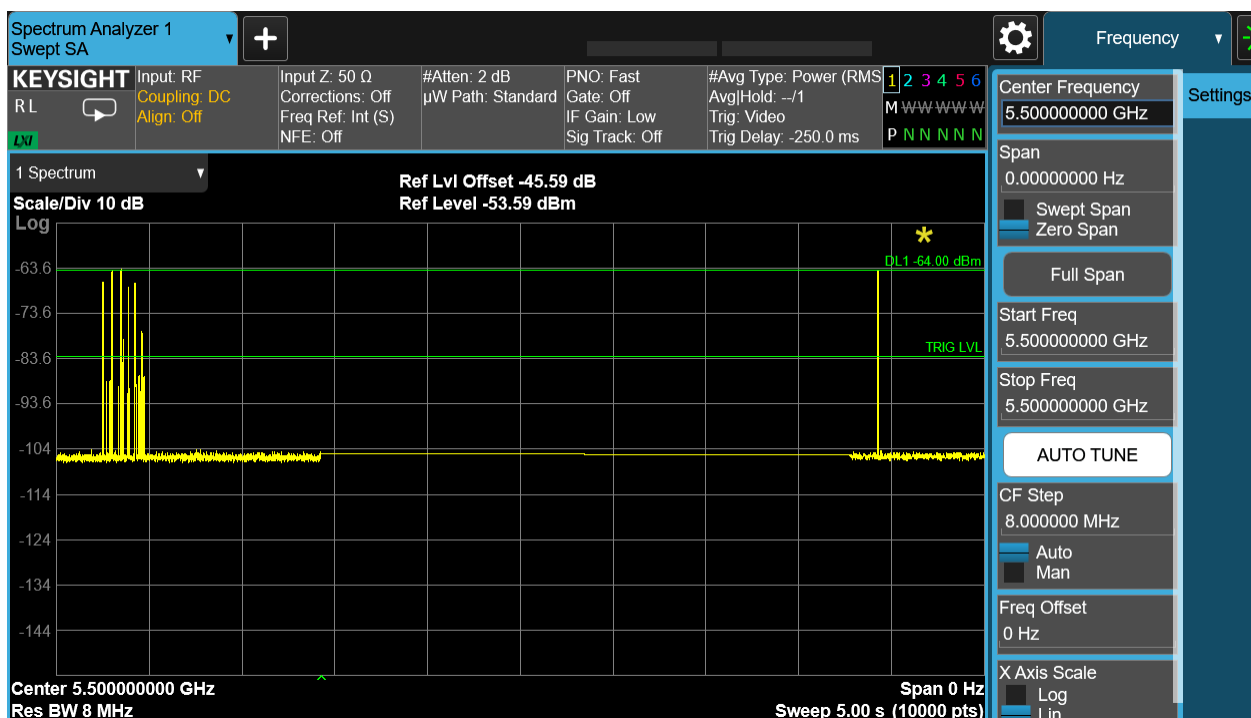
USA Bin 3 Radar Calibration BW80



USA Bin 4 Radar Calibration BW80



USA Bin 5 Radar Calibration BW80

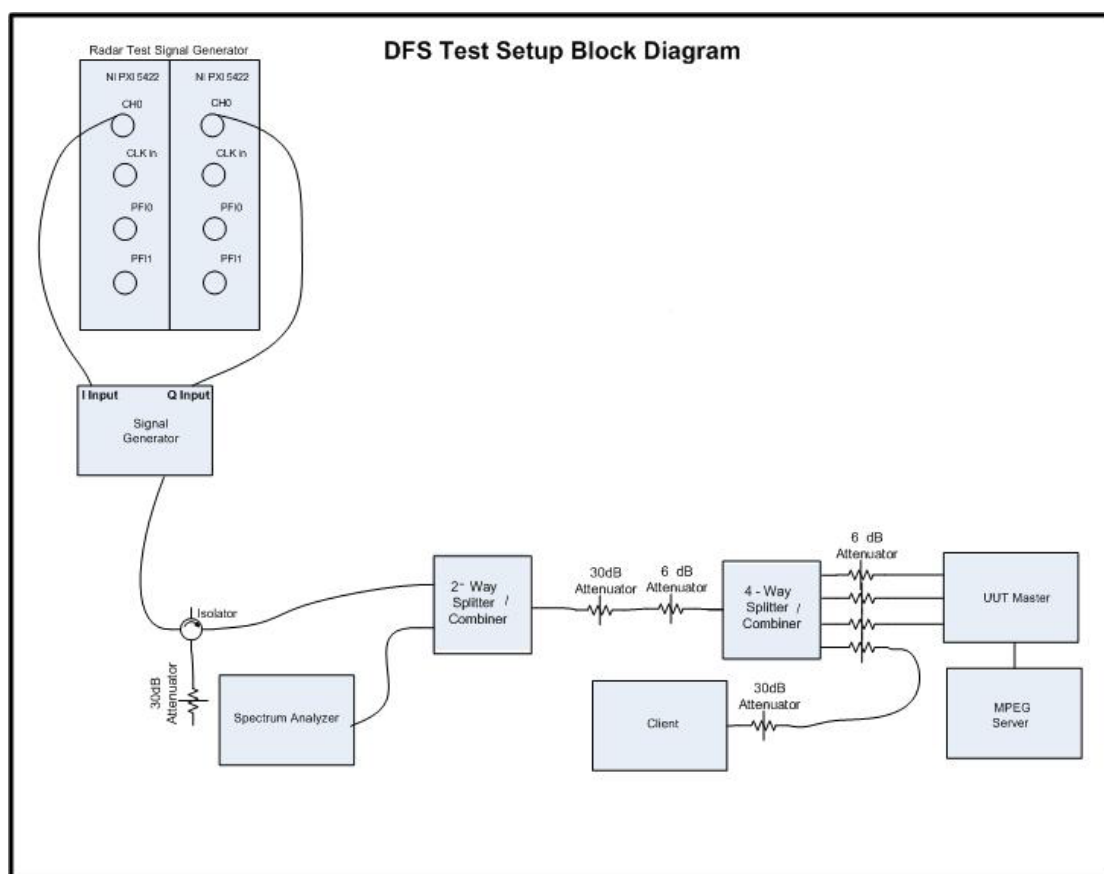


USA Frequency Hopping Radar Calibration BW80

B.1 Test Procedure/Results

A spectrum analyzer is used as a monitor to verify that the UUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time) and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move. It is also used to monitor UUT transmissions during the Channel Availability Check Time.

Following is the test setup used to generate the Radar Waveforms, and for all DFS tests described herein.



Conducted Setup: Radar Test Waveforms are injected into the Master

B.2 UNII Detection Bandwidth**Test Procedure**

Ref. KDB 905462 D02 UNII section 7.8.1

All DFS testing was done at 5500 MHz. The 99% channel bandwidth for 20MHz signals is 19 MHz, the the 99% channel bandwidth for 40MHz signals is 38 MHz and the 99% channel bandwidth for 80MHz signals is 78. See the 99% OBW section included below.

The generating equipment is configured as shown in the Conducted Test Setup above. A single *Burst* of the desired radar profile is produced at 5500MHz at a -60dBm level. The UUT is set up as a standalone device (no associated Client and no traffic).

A single radar Burst is generated for a minimum of 10 trials, and the response of the UUT is noted. The UUT must detect the Radar Waveform 90% or more of the time.

The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H .

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as F_L .

The U-NII Detection Bandwidth is calculated as follows:

$$\text{U-NII Detection Bandwidth} = F_H - F_L$$

The U-NII Detection Bandwidth must be at least 100% of the UUT transmitter 99% power bandwidth (19 MHz for 20MHz signals, 38 MHz for 40 MHz signals and 78 MHz for 80 MHz otherwise, the UUT does not comply with DFS requirements).

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99% Occupied Bandwidth

Frequency (MHz)	Mode	Data Rate (Mbps)	99% BW (MHz)
5500	HE20, M0 to M9 1ss	m0h1	19.092
5510	HE40, M0 to M9 1ss	m0h1	37.644
5530	HE80, M0 to M9 1ss	m0h1	77.212

20MHz UNII Detection Bandwidth

USA Bin 0													power=-63dB	
	DFS Detection Trials (1=Detection, Blank= No Detection)													
Radar Frequency	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)	Detection Bandwidth (MHz)	Limit (MHz)	
5490	1	1	1	1	1	1	1	1	1	1	100	20	20	
5491	1	1	1	1	1	1	1	1	1	1	100			
5492	1	1	1	1	1	1	1	1	0	1	90			
5493	1	1	1	1	1	1	1	1	1	1	100			
5494	1	1	1	1	1	1	1	1	1	1	100			
5495	1	1	1	1	1	1	1	1	1	1	100			
5496	1	1	1	1	1	1	1	1	1	1	100			
5497	1	1	1	1	1	1	1	1	1	1	100			
5498	1	1	1	1	1	1	1	1	1	1	100			
5499	1	1	1	1	1	1	1	1	1	1	100			
5500	1	1	1	1	1	1	1	1	1	1	100			
5501	1	1	1	1	1	1	1	1	1	1	100			
5502	1	1	1	1	1	1	1	1	1	1	100			
5503	1	1	1	1	1	1	1	1	1	0	90			
5504	1	1	1	1	1	1	1	1	1	1	100			
5505	1	1	1	1	1	1	1	1	1	1	100			
5506	1	1	1	1	1	1	1	1	1	1	100			
5507	1	1	1	1	1	1	1	1	1	1	100			
5508	1	1	1	1	1	1	1	1	1	0	90			
5509	1	1	1	1	1	1	1	1	1	1	100			
5510	1	1	1	1	1	1	1	1	1	1	100			

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40MHz UNII Detection Bandwidth

USA Bin 0											power=-63dB		
Radars Frequency	DFS Detection Trials (1=Detection, Blank= No Detection)											Detection Bandwidth (MHz)	Limit (MHz)
	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)		
5490	0	0	0	0	0	0	0	0	0	0	0	38	40
5491	1	1	1	1	1	1	1	1	1	1	100		
5492	1	1	1	1	1	1	1	1	1	1	100		
5493	1	1	1	1	1	1	1	1	1	1	100		
5494	1	1	1	1	1	1	1	1	1	1	100		
5495	0	1	1	1	1	1	1	1	1	1	90		
5496	1	1	1	1	1	1	1	1	1	1	100		
5497	1	1	1	1	1	1	1	1	1	1	100		
5498	1	1	1	1	1	1	1	1	1	1	100		
5499	1	1	1	1	1	1	1	1	1	1	100		
5500	1	1	1	1	1	1	1	1	1	1	100		
5501	1	1	1	1	1	1	1	1	1	1	100		
5502	1	1	1	1	1	0	1	1	1	1	90		
5503	1	1	1	1	1	1	1	1	1	1	100		
5504	1	1	1	1	1	1	1	1	1	1	100		
5505	1	1	1	1	1	1	1	1	1	1	100		
5506	1	0	1	1	1	1	0	1	1	1	90		
0	1	1	1	1	1	1	1	1	1	1	0		
0	1	1	1	1	0	1	1	1	1	1	0		
5507	1	1	1	1	1	1	1	1	1	1	100		
5508	1	1	0	1	1	1	1	1	1	1	90		
5509	1	1	1	1	1	1	1	1	1	1	100		
5510	1	1	1	1	1	1	1	1	1	1	100		
5511	1	1	1	1	1	1	1	1	1	1	100		
5512	1	1	1	1	1	1	0	1	1	1	90		
5513	1	1	1	1	1	1	1	1	1	1	100		
5514	1	1	1	1	1	1	1	1	1	0	90		
5515	1	1	1	1	1	1	1	1	1	1	100		
5516	1	1	1	1	1	1	1	1	1	1	100		
5517	1	1	1	1	1	1	1	1	1	1	100		
5518	1	1	1	1	1	1	1	1	1	1	100		
5519	1	1	1	1	1	1	1	1	1	1	100		
5520	1	1	1	1	1	1	1	1	1	1	100		
5521	1	1	1	1	1	1	1	1	1	1	100		
5522	1	1	1	1	1	1	1	1	1	1	100		
5523	1	1	1	1	1	1	1	1	1	1	100		
5524	1	1	1	1	1	1	1	1	1	1	100		
5525	1	1	1	1	1	1	1	1	1	1	100		
5526	1	1	1	1	1	1	1	1	1	1	100		
5527	1	1	1	1	1	1	1	1	1	1	100		
5528	1	1	1	1	1	1	1	1	1	1	100		
5529	1	1	1	1	1	1	1	1	1	1	100		
5530	0	0	0	0	0	0	0	0	0	0	0		

80MHz UNII Detection Bandwidth

USA Bin 0	DFS Detection Trials (1=Detection, Blank= No Detection)											power=-63dB	
Radar Frequency	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)	Detection Bandwidth (MHz)	Limit (MHz)
5490	0	0	0	0	0	0	0	0	0	0	0	78	80
5491	1	1	1	1	1	1	1	1	1	1	100		
5492	1	1	1	1	1	1	1	1	1	1	100		
5493	1	1	1	1	1	1	1	1	1	1	100		
5494	1	1	1	1	1	1	1	1	1	1	100		
5495	1	1	1	1	1	1	1	1	1	1	100		
5496	1	1	1	1	1	1	1	1	1	1	100		
5497	1	1	1	1	1	1	1	1	1	1	100		
5498	1	1	1	1	1	1	1	1	1	1	100		
5499	1	1	1	1	1	1	1	1	1	1	100		
5500	1	1	1	1	1	1	1	1	1	1	100		
5501	1	1	1	1	1	1	1	1	1	1	100		
5502	1	1	1	1	1	1	1	1	1	1	100		
5503	1	1	1	1	1	1	1	1	1	1	100		
5504	1	1	1	1	1	1	1	1	1	1	100		
5505	1	1	1	1	1	1	1	1	1	1	100		
5506	1	1	1	1	1	1	1	1	1	1	100		
5507	1	1	1	1	1	1	1	1	1	1	100		
5508	1	1	1	1	1	1	1	1	1	1	100		
5509	1	1	1	1	1	1	1	1	1	1	100		
5510	1	1	1	1	1	1	1	1	1	0	90		
5511	1	1	1	1	1	1	1	1	1	1	100		
5512	1	1	1	1	1	1	1	1	1	1	100		
5513	1	1	1	1	1	1	1	1	1	1	100		
5514	1	1	1	1	1	1	1	1	1	1	100		
5515	1	1	0	1	1	1	1	1	1	1	90		
5516	1	1	1	1	1	1	1	1	1	1	100		
5517	1	1	1	1	1	1	1	1	1	1	100		
5518	1	1	1	1	1	1	1	1	1	1	100		
5519	1	1	1	1	1	1	1	1	1	1	100		
5520	1	1	0	1	1	1	1	1	1	1	90		
5521	1	1	1	1	1	1	1	1	1	1	100		
5522	1	1	1	1	1	1	1	1	1	1	100		
5523	1	1	1	1	1	1	1	1	1	1	100		
5524	1	1	1	1	1	1	1	1	1	1	100		
5525	1	1	1	1	1	1	0	1	1	1	90		

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5526	1	1	1	1	1	1	1	1	1	1	100
5527	1	1	1	1	1	1	1	1	1	1	100
5528	1	1	1	1	1	1	1	1	1	1	100
5529	1	1	1	1	1	1	1	1	0	1	90
5530	1	1	1	1	1	1	1	1	1	1	100
5531	1	1	1	1	1	1	1	1	1	1	100
5532	1	1	1	1	1	1	1	1	1	1	100
5533	1	1	1	1	1	1	1	1	1	1	100
5534	1	1	1	1	1	1	1	1	1	1	100
5535	1	1	1	1	1	1	1	1	1	1	100
5536	1	1	1	1	1	1	1	1	1	1	100
5537	1	1	1	1	1	1	1	1	1	1	100
5538	1	1	1	1	1	1	1	1	1	1	100
5539	1	1	1	1	1	1	1	1	1	1	100
5540	1	1	1	1	1	1	1	1	1	1	100
5541	1	1	1	1	1	1	1	1	1	1	100
5542	1	1	1	1	1	1	1	1	1	1	100
5543	1	1	1	1	1	1	1	1	1	1	100
5544	1	1	1	1	1	1	1	1	1	1	100
5545	1	1	1	1	1	1	1	1	1	1	100
5546	1	1	1	1	1	1	1	1	1	1	100
5547	1	1	1	1	1	1	1	1	1	1	100
5548	1	1	1	1	1	1	1	1	1	1	100
5549	1	1	1	1	1	1	1	1	1	1	100
5550	1	1	1	1	1	1	1	1	1	1	100
5551	1	1	1	1	1	1	1	1	1	1	100
5552	1	1	1	1	1	1	1	1	1	1	100
5553	1	1	1	1	1	1	1	1	1	1	100
5554	1	1	1	1	1	1	1	1	1	1	100
5555	1	1	1	1	1	1	1	1	1	1	100
5556	1	1	1	1	1	1	1	1	1	1	100
5557	1	1	1	1	1	1	1	1	1	1	100
5558	1	1	1	1	1	1	1	1	1	1	100
5559	1	1	1	1	1	1	1	1	1	1	100
5560	1	1	1	1	1	1	1	1	1	1	100
5561	1	1	1	1	1	1	1	1	1	1	100
5562	1	1	1	1	1	1	1	1	1	1	100
5563	1	1	1	1	1	1	1	1	1	1	100
5564	1	1	1	1	1	1	1	1	1	1	100
5565	1	1	1	1	1	1	1	1	1	1	100
5566	1	1	1	1	1	1	1	1	1	1	100
5567	1	1	1	1	1	1	1	1	1	1	100

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5568	1	1	1	1	1	1	1	1	1	1	1	100		
5569	1	1	1	1	1	1	1	1	1	1	1	100		
5570	0	0	0	0	0	0	0	0	0	0	0	0		

B.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 selected 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 (-63dBm) occurs at the beginning of the Channel Availability Check Time.

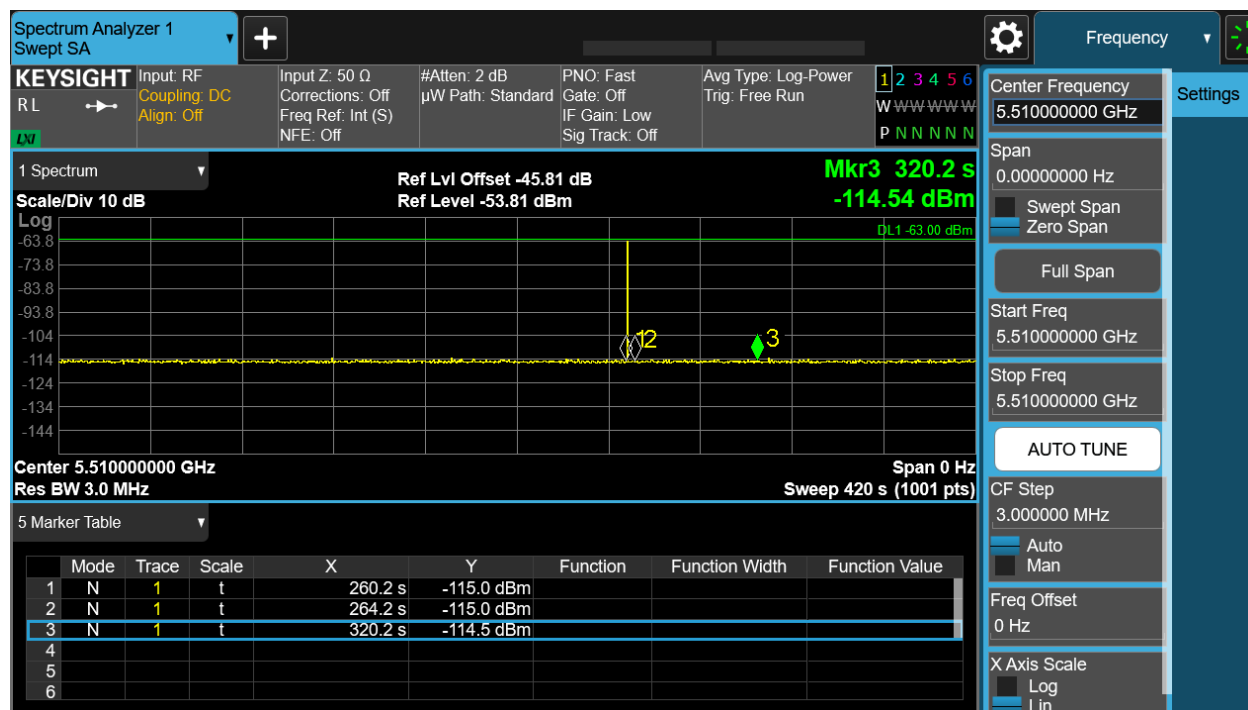
The UUT is powered on at T_0 . T_1 denotes the instant when the UUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T_1 and will end no sooner than $T_1 + 60$ seconds.

A single Burst of short pulse of radar type 0 at -63 dBm will commence within a 6 second window starting at T_1 .

Visual indication on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5510MHz will continue for 2.5 minutes after the radar Burst has been generated.

Verify that during the 2.5-minute measurement window no UUT transmissions occurred at 5510MHz.

Radar Burst at the Beginning of the Channel Availability Check Time



BW40

B.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 selected 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 (-63dBm) occurs at the end of the Channel Availability Check Time.

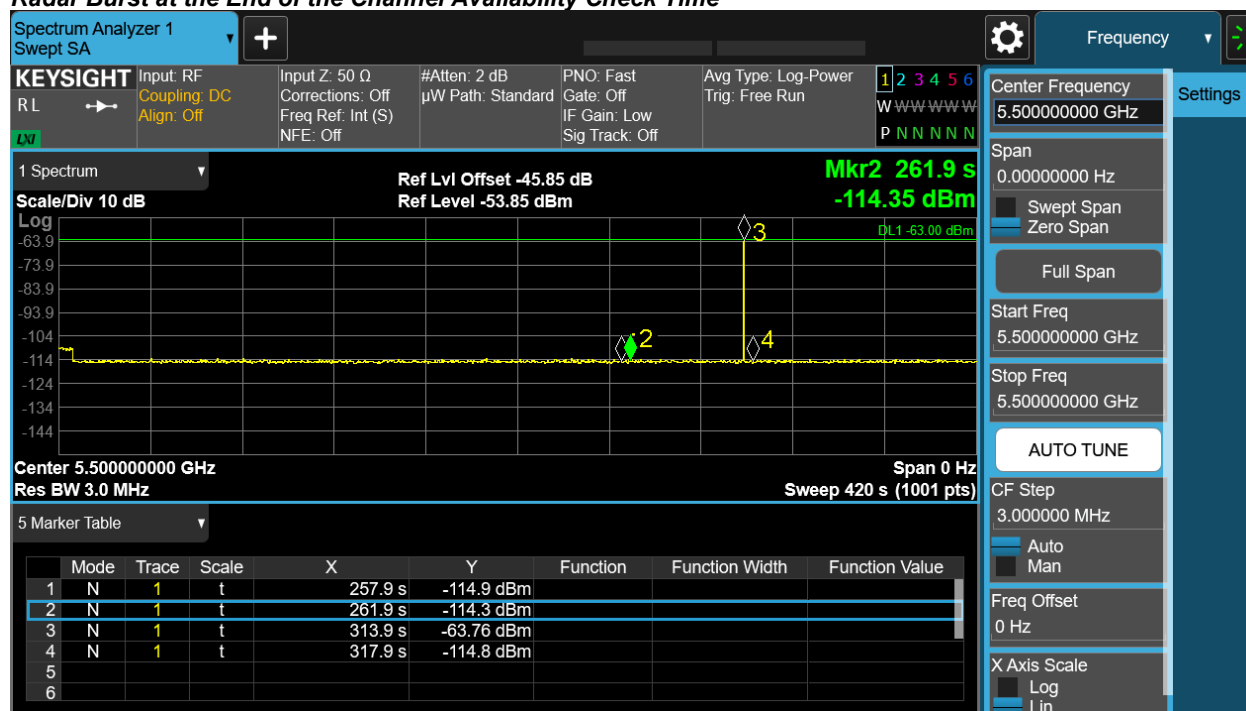
The UUT is powered on at T_0 . T_1 denotes the instant when the UUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T_1 and will end no sooner than $T_1 + 60$ seconds.

A single Burst of short pulse of radar type 0 at -63 dBm will commence within a 6 second window starting at $T_1 + 54$ seconds.

Visual indication on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5500MHz will continue for 2.5 minutes after the radar Burst has been generated.

Verify that during the 2.5-minute measurement window no UUT transmissions occurred at 5510MHz.

Radar Burst at the End of the Channel Availability Check Time



BW20

B.5 In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time, and Non-Occupancy Period

These tests define how the following DFS parameters are verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time, and Non-Occupancy Period.

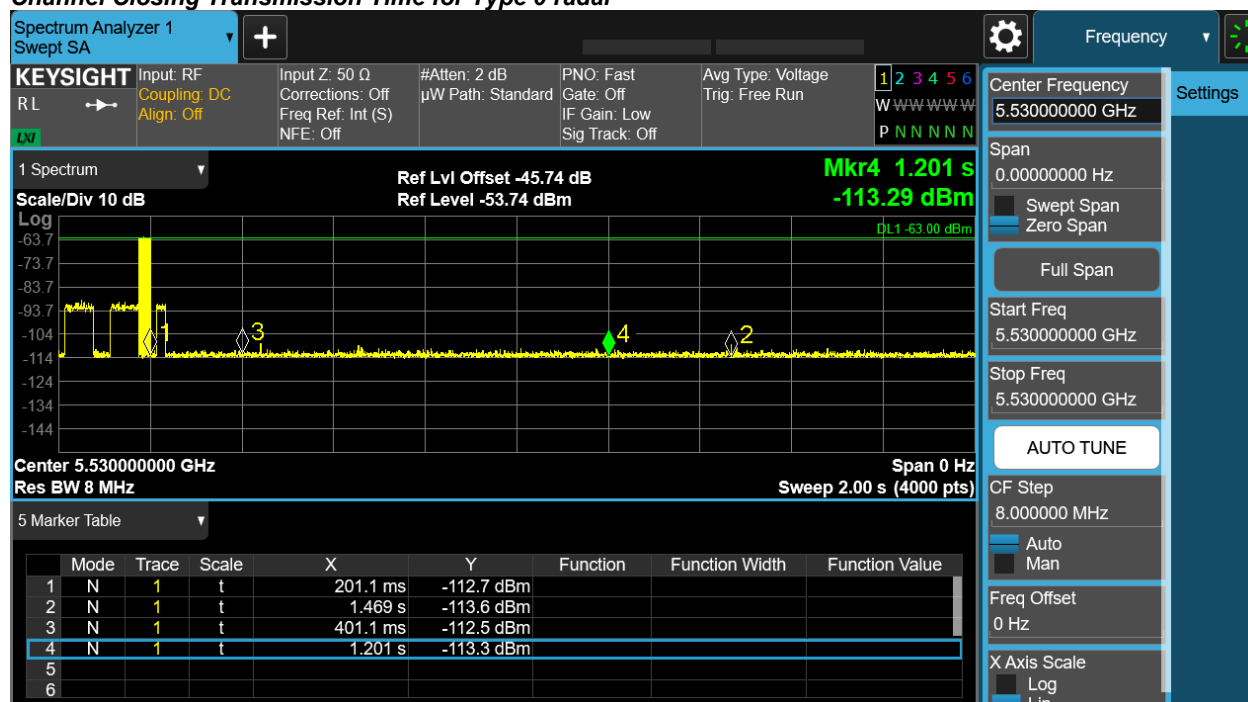
The steps below define the procedure to determine the above-mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1dB (-63dBm) is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5500 MHz.

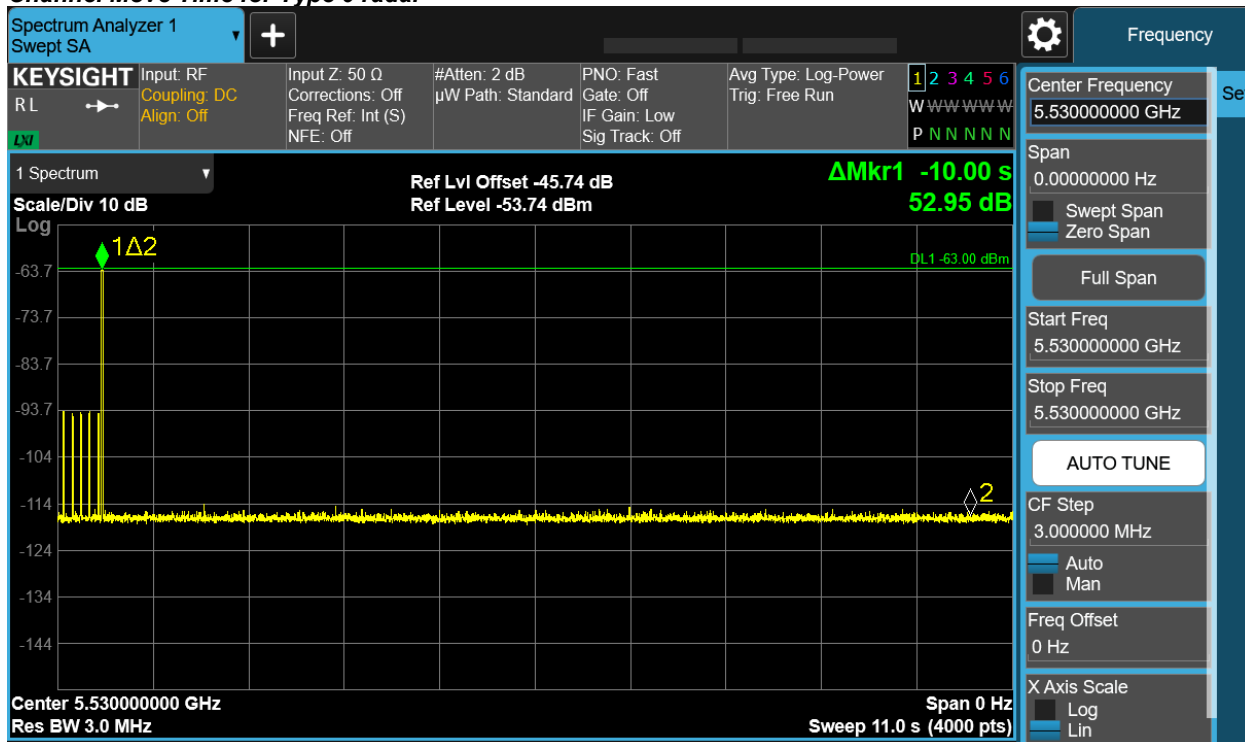
At time T_0 the Radar Waveform generator sends a Burst of pulses for radar type 0 at -63dBm.

Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time results to the limits defined in the *DFS Response requirement values table*.

Channel Closing Transmission Time for Type 0 radar

**BW80**

Channel Move Time for Type 0 radar

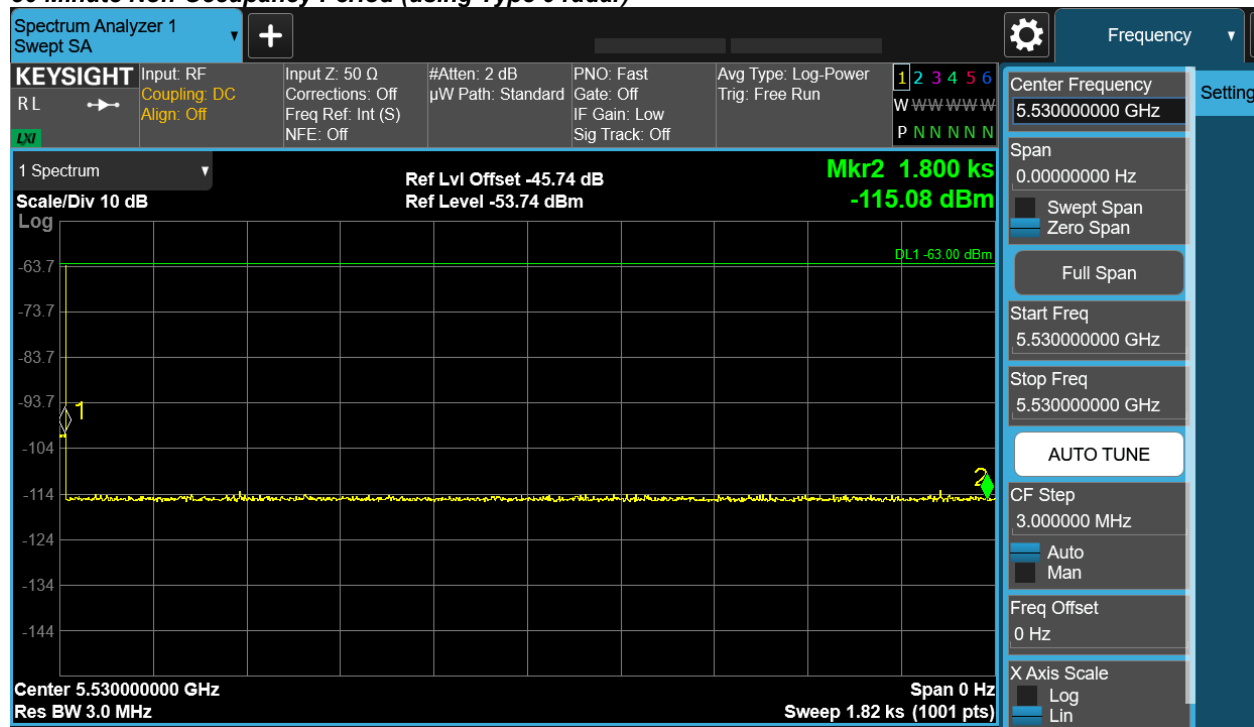


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Measure the UUT for more than 30 minutes following the channel close/move time to verify that the UUT does not resume any transmissions on this Channel.

30 Minute Non-Occupancy Period (using Type 0 radar)



BW80MHz

B.6 Statistical Performance Check

The steps below define the procedure to determine the minimum percentage of detection when a radar burst with a level equal to the DFS Detection Threshold + 1dB (-63dBm) is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5500 MHz.

The Radar Waveform generator sends the individual waveform for each of the radar types 1-6 at -63dbm. Statistical data will be gathered to determine the ability of the device to detect the radar test waveforms. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs. The percentage of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100 = \text{Probability of Detection Radar Waveform}$$

The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in the *Radar Test Waveforms* section. The data represents the worst-case detection for 20 MHz, 40 MHz, and 80 MHz signal bandwidths.

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Channel 5500 MHz, 20MHz BW, Statistical Performance

USA Bin 0					freq=5500, rate=6, bw=19 MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	18	1	1428	0	70.0%	60.0%
2	5494	18	1	1428	0		
3	5494	18	1	1428	1		
4	5494	18	1	1428	1		
5	5494	18	1	1428	1		
6	5494	18	1	1428	0		
7	5494	18	1	1428	1		
8	5494	18	1	1428	0		
9	5495	18	1	1428	1		
10	5495	18	1	1428	1		
11	5495	18	1	1428	1		
12	5495	18	1	1428	1		
13	5495	18	1	1428	0		
14	5495	18	1	1428	1		
15	5495	18	1	1428	0		
16	5500	18	1	1428	1		
17	5500	18	1	1428	0		
18	5500	18	1	1428	1		
19	5500	18	1	1428	1		
20	5500	18	1	1428	1		
21	5500	18	1	1428	0		
22	5500	18	1	1428	1		
23	5500	18	1	1428	1		
24	5505	18	1	1428	1		
25	5505	18	1	1428	1		
26	5505	18	1	1428	1		
27	5505	18	1	1428	1		
28	5505	18	1	1428	1		
29	5505	18	1	1428	0		
30	5505	18	1	1428	1		

USA Bin 1A/1B : 1A					freq=5500, rate=6, bw=19 MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	99	1	538	1	80.0%	60.0%
2	5494	68	1	778	1		
3	5494	78	1	678	1		
4	5494	78	1	678	1		
5	5494	99	1	538	1		
6	5494	68	1	778	1		
7	5494	67	1	798	1		
8	5494	65	1	818	1		
9	5495	92	1	578	1		
10	5495	68	1	778	1		
11	5495	59	1	898	0		
12	5495	83	1	638	1		
13	5495	89	1	598	1		
14	5495	92	1	578	1		
15	5495	57	1	938	1		
16	5500	26	1	2040	0		
17	5500	46	1	1153	0		
18	5500	22	1	2462	0		
19	5500	21	1	2592	1		
20	5500	21	1	2623	1		
21	5500	38	1	1391	1		
22	5500	51	1	1045	1		
23	5500	21	1	2580	1		
24	5505	51	1	1047	1		
25	5505	77	1	686	1		
26	5505	25	1	2166	0		
27	5505	35	1	1548	1		
28	5505	67	1	792	0		
29	5505	69	1	768	1		
30	5505	57	1	942	1		

USA Bin 1A/1B : 1B							
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	59	1	898	1	76.7%	60.0%
2	5494	70	1	758	1		
3	5494	58	1	918	1		
4	5494	81	1	658	1		
5	5494	95	1	558	0		
6	5494	92	1	578	1		
7	5494	76	1	698	1		
8	5494	92	1	578	1		
9	5495	67	1	798	1		
10	5495	63	1	838	1		
11	5495	63	1	838	0		
12	5495	99	1	538	0		
13	5495	83	1	638	1		
14	5495	76	1	698	1		
15	5495	57	1	938	0		
16	5500	22	1	2422	0		
17	5500	64	1	832	1		
18	5500	28	1	1935	1		
19	5500	28	1	1905	1		
20	5500	22	1	2455	1		
21	5500	20	1	2716	0		
22	5500	96	1	552	1		
23	5500	30	1	1783	1		
24	5505	48	1	1105	1		
25	5505	28	1	1925	1		
26	5505	18	1	3059	1		
27	5505	23	1	2314	0		
28	5505	25	1	2118	1		
29	5505	24	1	2274	1		
30	5505	30	1	1772	1		

USA Bin 2

freq=5500, rate=6mbps, bw=19MHz

Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	25	4.5	194	0	70.0%	60.0%
2	5494	28	2.5	161	0		
3	5494	29	3.8	221	1		
4	5494	26	2.3	184	1		
5	5494	25	1.2	167	1		
6	5494	28	3.3	218	1		
7	5494	24	4.5	223	1		
8	5494	27	1.1	217	0		
9	5495	29	4.2	187	1		
10	5495	25	3.5	174	0		
11	5495	25	2.9	188	1		
12	5495	29	4.9	158	0		
13	5495	23	3.9	224	0		
14	5495	25	2.8	206	1		
15	5495	23	4.1	164	1		
16	5500	24	4.5	215	1		
17	5500	24	1.1	187	1		
18	5500	24	2.2	185	0		
19	5500	23	2.5	199	0		
20	5500	23	3.9	186	1		
21	5500	28	2.5	213	1		
22	5500	23	2.9	196	0		
23	5500	26	4.5	196	1		
24	5505	25	1.7	229	1		
25	5505	27	3	172	1		
26	5505	28	2.9	209	1		
27	5505	26	3.8	156	1		
28	5505	25	2.3	228	1		
29	5505	28	2.2	158	1		
30	5505	28	4.4	181	1		

USA Bin 3					freq=5500, rate=6mbps, bw=19MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	17	9.6	207	0	86.7%	60.0%
2	5494	16	7.5	370	1		
3	5494	17	7	260	1		
4	5494	18	6.4	322	1		
5	5494	18	10	407	1		
6	5494	17	9	295	1		
7	5494	16	7.9	420	1		
8	5494	18	6.1	289	1		
9	5495	18	8.8	463	1		
10	5495	16	9	330	0		
11	5495	18	8.5	470	1		
12	5495	17	6.2	462	1		
13	5495	16	6.8	424	1		
14	5495	17	7.7	436	1		
15	5495	16	6.4	360	1		
16	5500	17	7	347	1		
17	5500	16	6.4	225	0		
18	5500	17	7.7	356	1		
19	5500	17	7.5	446	1		
20	5500	17	7.3	422	1		
21	5500	16	9.4	365	1		
22	5500	18	9	239	1		
23	5500	16	10	472	1		
24	5505	18	9.2	369	1		
25	5505	18	8.7	466	0		
26	5505	16	7.8	495	1		
27	5505	18	8.1	401	1		
28	5505	16	7.6	468	1		
29	5505	18	7.6	310	1		
30	5505	17	8.4	302	1		

USA Bin 4 (JP)					freq=5500, rate=6mbps, bw=19MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5494	15	13.7	216	0	76.7%	60.0%
2	5494	14	19.2	226	1		
3	5494	16	17.9	434	1		
4	5494	13	14.1	472	0		
5	5494	13	12.7	473	1		
6	5494	14	11.9	271	1		
7	5494	15	14.6	220	1		
8	5494	12	19.7	334	1		
9	5495	13	13.4	342	1		
10	5495	12	13.7	382	1		
11	5495	12	19.6	428	1		
12	5495	12	15.9	259	1		
13	5495	15	13.9	421	1		
14	5495	14	15.8	395	0		
15	5495	15	18.8	396	1		
16	5500	16	11.2	387	1		
17	5500	16	15.2	389	0		
18	5500	14	12.9	273	1		
19	5500	12	14.9	327	1		
20	5500	16	15.9	490	1		
21	5500	13	14	456	1		
22	5500	14	17.5	363	1		
23	5500	15	16.5	429	1		
24	5505	12	17.5	320	1		
25	5505	16	14.1	345	0		
26	5505	14	12.7	218	0		
27	5505	13	18	322	0		
28	5505	16	17.7	326	1		
29	5505	16	17	327	1		
30	5505	16	19	357	1		

In addition, an average minimum percentage of successful detection across all four Short pulse radar test waveforms is required and is calculated as follows:

$$\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (80 + 76.7 + 86.7 + 76.7) / 4 = 80.02\% (>80\%)$$

USA Bin 5 (JP)					freq=5500, rate=6mbps bw=19MHz						
Trial	Burst #	Pulses	Frequency (MHz)	Chirp (MHz)	PW (uS)	Inter-pulse spacing (uS)	Inter-pulse spacing (uS)	Pulse Start (S)	1=Detection 0=No Detection	Detection Percentage	Limit
1	1	3	5493.4	6	85	1898	1272	0.234302	0	83.3%	80.0%
2	1	1	5494.6	9	60			0.038556	1		
3	1	3	5494.2	8	65	1270	1985	0.597275	1		
4	1	2	5497.8	17	70	1789		0.740747	1		
5	1	2	5493.4	6	75	1201		0.131972	1		
6	1	1	5497.8	17	90			0.245463	1		
7	1	3	5497.4	16	100	1020	1137	0.33645	1		
8	1	3	5495.8	12	85	1512	1571	0.321842	1		
9	1	3	5496.6	14	85	1766	1133	0.29892	1		
10	1	1	5497	15	100			0.206061	1		
11	1	3	5500	11	85	1510	1646	0.676103	1		
12	1	1	5500	10	85			0.333425	1		
13	1	2	5500	16	55	1188		1.228737	0		
14	1	2	5500	6	55	1155		0.607031	1		
15	1	3	5500	6	70	1394	1888	0.179355	1		
16	1	3	5500	10	95	1815	1569	0.378173	1		
17	1	3	5500	19	100	1097	1305	0.461363	0		
18	1	1	5500	6	80			0.566891	1		
19	1	2	5500	20	50	1690		0.464517	1		
20	1	1	5500	5	90			0.024286	0		
21	1	2	5506.6	6	60	1104		0.074579	0		
22	1	1	5503.4	14	55			0.191742	1		
23	1	3	5503.8	13	70	1052	1852	0.42253	1		
24	1	1	5501.8	18	85			0.486836	1		
25	1	1	5505.4	9	70			0.053127	1		
26	1	1	5502.6	16	75			0.354688	1		
27	1	1	5503.4	14	100			0.928298	1		
28	1	2	5503	15	100	1566		0.156955	1		
29	1	3	5504.2	12	55	1449	1196	1.461483	1		
30	1	2	5501.8	18	100	1810		0.764772	1		

USA Bin 5 Trial #1							
1	3	5493.4	6	85	1898	1272	0.234302
2	1	5493.4	6	90			1.775188
3	3	5493.4	6	95	1762	1549	1.97862
4	1	5493.4	6	50			3.408768
5	2	5493.4	6	95	1375		4.601755
6	2	5493.4	6	85	1418		4.716299
7	3	5493.4	6	70	1318	1621	5.860582
8	3	5493.4	6	55	1733	1441	6.524968
9	1	5493.4	6	95			7.899215
10	3	5493.4	6	85	1970	1699	8.326935
11	3	5493.4	6	50	1167	1833	9.959747
12	3	5493.4	6	80	1381	1399	10.763571
13	3	5493.4	6	100	1485	1534	11.642868
0	0	0	0	0			0
USA Bin 5 Trial #2							
1	1	5494.6	9	60			0.038556
2	2	5494.6	9	60	1379		0.786069
3	1	5494.6	9	75			1.561278
4	3	5494.6	9	85	1714	1487	2.583725
5	1	5494.6	9	60			3.486275
6	1	5494.6	9	100			4.231888
7	1	5494.6	9	100			4.925675
8	3	5494.6	9	55	1314	1937	5.540143
9	2	5494.6	9	70	1955		5.859862
10	3	5494.6	9	90	1069	1534	6.818234
11	2	5494.6	9	50	1627		7.176569
12	3	5494.6	9	55	1502	1612	7.911393
13	3	5494.6	9	100	1645	1327	8.623459
14	2	5494.6	9	85	1910		9.823773
15	1	5494.6	9	90			10.214486
16	2	5494.6	9	65	1166		11.201747
17	2	5494.6	9	85	1036		11.393258
0	0	0	0	0			0

USA Bin 5 Trial #3							
1	3	5494.2	8	65	1270	1985	0.597275
2	2	5494.2	8	90	1552		0.891749
3	3	5494.2	8	100	1504	1198	2.13935
4	3	5494.2	8	90	1492	1357	2.919426
5	2	5494.2	8	100	1145		3.77973
6	1	5494.2	8	60			4.765082
7	1	5494.2	8	75			5.422799
8	3	5494.2	8	70	1816	1148	6.176489
9	3	5494.2	8	100	1339	1978	6.526886
10	3	5494.2	8	100	1366	1157	7.265294
11	3	5494.2	8	95	1684	1832	8.69353
12	2	5494.2	8	85	1223		9.140665
13	3	5494.2	8	75	1014	1380	10.025537
14	2	5494.2	8	85	1605		10.436185
15	2	5494.2	8	75	1765		11.899143
0	0	0	0	0			0
USA Bin 5 Trial #4							
1	2	5497.8	17	70	1789		0.740747
2	1	5497.8	17	80			1.197012
3	2	5497.8	17	90	1061		2.852358
4	1	5497.8	17	90			4.200796
5	1	5497.8	17	100			4.993381
6	2	5497.8	17	85	1324		6.304499
7	3	5497.8	17	100	1052	1503	6.942912
8	3	5497.8	17	85	1908	1243	8.021235
9	3	5497.8	17	85	1550	1944	9.134298
10	3	5497.8	17	80	1365	1568	10.660951
11	1	5497.8	17	100			11.064957
0	0	0	0	0			0
USA Bin 5 Trial #5							
1	2	5493.4	6	75	1201		0.131972
2	3	5493.4	6	65	1444	1669	1.23809
3	2	5493.4	6	90	1202		1.708127
4	1	5493.4	6	55			1.954606
5	1	5493.4	6	90			2.63079
6	3	5493.4	6	90	1053	1276	3.664606
7	3	5493.4	6	100	1866	1736	3.907208
8	2	5493.4	6	70	1387		4.814557

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9	2	5493.4	6	65	1465		5.205297
10	2	5493.4	6	50	1779		6.195704
11	2	5493.4	6	60	1763		6.923254
12	2	5493.4	6	95	1506		7.350407
13	1	5493.4	6	50			7.625812
14	2	5493.4	6	100	1740		8.342697
15	3	5493.4	6	100	1381	1869	9.073821
16	2	5493.4	6	80	1623		9.870045
17	1	5493.4	6	90			10.496487
18	2	5493.4	6	90	1940		11.227266
19	2	5493.4	6	60	1925		11.877053
0	0	0	0	0			0
USA Bin 5 Trial #6							
1	1	5497.8	17	90			0.245463
2	2	5497.8	17	70	1193		2.159675
3	3	5497.8	17	90	1565	1033	3.213768
4	2	5497.8	17	60	1467		3.510532
5	2	5497.8	17	70	1117		4.456895
6	2	5497.8	17	50	1805		5.988328
7	2	5497.8	17	70	1322		7.502379
8	1	5497.8	17	60			8.009717
9	3	5497.8	17	55	1204	1434	9.301473
10	2	5497.8	17	60	1682		10.453112
11	2	5497.8	17	65	1037		11.306466
0	0	0	0	0			0
USA Bin 5 Trial #7							
1	3	5497.4	16	100	1020	1137	0.336450
2	1	5497.4	16	100			0.871641
3	3	5497.4	16	95	1410	1559	2.395526
4	1	5497.4	16	85			2.517033
5	1	5497.4	16	85			3.847951
6	1	5497.4	16	60			4.113716
7	3	5497.4	16	90	1184	1157	5.026136
8	2	5497.4	16	65	1621		5.920503
9	2	5497.4	16	75	1832		6.909493
10	2	5497.4	16	80	1443		7.433793
11	3	5497.4	16	95	1890	1954	8.259016
12	2	5497.4	16	90	1906		9.048078
13	1	5497.4	16	55			9.669005
14	2	5497.4	16	75	1917		10.659812

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15	2	5497.4	16	75	1516		11.781982
0	0	0	0	0			0
USA Bin 5 Trial #8							
1	3	5495.8	12	85	1512	1571	0.321842
2	3	5495.8	12	95	1530	1272	2.072872
3	2	5495.8	12	75	1644		3.031959
4	1	5495.8	12	65			4.173969
5	2	5495.8	12	95	1090		5.372034
6	2	5495.8	12	70	1000		5.547317
7	3	5495.8	12	50	1598	1905	7.365904
8	3	5495.8	12	60	1977	1487	8.419252
9	3	5495.8	12	95	1562	1928	9.414441
10	2	5495.8	12	100	1348		9.859728
11	3	5495.8	12	65	1176	1025	11.960018
0	0	0	0	0			0
USA Bin 5 Trial #9							
1	3	5496.6	14	85	1766	1133	0.298920
2	3	5496.6	14	60	1535	1562	0.649527
3	2	5496.6	14	70	1775		1.518939
4	1	5496.6	14	70			2.516425
5	2	5496.6	14	100	1924		2.763592
6	3	5496.6	14	50	1623	1447	3.52542
7	1	5496.6	14	100			3.927052
8	3	5496.6	14	50	1476	1419	4.595379
9	3	5496.6	14	70	1956	1179	5.565707
10	2	5496.6	14	85	1333		5.758407
11	1	5496.6	14	75			6.457233
12	1	5496.6	14	60			7.519469
13	3	5496.6	14	70	1259	1926	8.140971
14	3	5496.6	14	80	1345	1258	8.338578
15	2	5496.6	14	55	1516		8.926944
16	1	5496.6	14	65			9.737143
17	1	5496.6	14	80			10.421324
18	1	5496.6	14	80			10.865184
19	1	5496.6	14	80			11.738947
0	0	0	0	0			0
USA Bin 5 Trial #10							
1	1	5497.0	15	100			0.206061
2	2	5497	15	70	1646		1.501033
3	2	5497	15	60	1576		3.709183

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4	3	5497	15	75	1099	1820	4.32681
5	2	5497	15	90	1331		6.018742
6	3	5497	15	70	1362	1067	7.592154
7	1	5497	15	60			9.279653
8	3	5497	15	90	1928	1679	10.430552
9	3	5497	15	100	1457	1754	11.63637
0	0	0	0	0			0
USA Bin 5 Trial #11							
1	3	5500.0	11	85	1510	1646	0.676103
2	1	5500	11	50			1.965288
3	1	5500	11	65			3.207624
4	2	5500	11	80	1337		4.162404
5	3	5500	11	55	1202	1473	4.82913
6	3	5500	11	60	1512	1197	6.8244
7	1	5500	11	95			8.072148
8	1	5500	11	55			8.819945
9	2	5500	11	65	1498		9.929093
10	3	5500	11	50	1716	1129	11.486644
0	0	0	0	0			0
USA Bin 5 Trial #12							
1	1	5500.0	10	85			0.333425
2	1	5500	10	80			0.851823
3	3	5500	10	85	1510	1792	1.586986
4	3	5500	10	60	1675	1699	1.984478
5	1	5500	10	55			3.102189
6	2	5500	10	80	1231		3.448519
7	1	5500	10	55			3.854191
8	3	5500	10	65	1867	1902	4.828158
9	1	5500	10	80			5.636083
10	2	5500	10	100	1768		6.144287
11	3	5500	10	95	1761	1241	6.363025
12	1	5500	10	55			7.158775
13	3	5500	10	50	1672	1444	7.922475
14	2	5500	10	95	1502		8.830294
15	2	5500	10	100	1742		8.848053
16	2	5500	10	60	1472		9.746342
17	1	5500	10	70			10.176106
18	3	5500	10	55	1861	1631	10.872657
19	3	5500	10	60	1592	1744	11.97533
0	0	0	0	0			0

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USA Bin 5 Trial #13							
1	2	5500.0	16	55	1188		1.228737
2	1	5500	16	95			2.406126
3	2	5500	16	55	1033		3.000959
4	3	5500	16	60	1382	1013	5.009501
5	1	5500	16	95			5.684271
6	2	5500	16	75	1892		7.022999
7	3	5500	16	100	1147	1206	8.612825
8	1	5500	16	95			9.619781
9	2	5500	16	60	1964		11.625904
0	0	0	0	0			0
USA Bin 5 Trial #14							
1	2	5500.0	6	55	1155		0.607031
2	1	5500	6	60			1.101106
3	1	5500	6	100			2.402803
4	1	5500	6	75			3.283469
5	2	5500	6	65	1989		4.244687
6	3	5500	6	80	1718	1580	5.068533
7	2	5500	6	55	1519		5.562142
8	1	5500	6	80			7.356377
9	3	5500	6	75	1536	1520	7.621466
10	1	5500	6	75			9.04933
11	3	5500	6	60	1350	1431	9.48589
12	3	5500	6	75	1950	1852	10.640303
13	3	5500	6	50	1092	1830	11.129129
0	0	0	0	0			0
USA Bin 5 Trial #15							
1	3	5500.0	6	70	1394	1888	0.179355
2	3	5500	6	85	1365	1545	1.464561
3	3	5500	6	60	1589	1186	2.255662
4	3	5500	6	50	1130	1961	3.092494
5	1	5500	6	95			3.982335
6	3	5500	6	85	1156	1533	4.724726
7	3	5500	6	95	1752	1707	5.979946
8	2	5500	6	85	1023		6.790228
9	3	5500	6	70	1752	1064	7.339282
10	3	5500	6	60	1209	1978	8.40647
11	3	5500	6	85	1218	1549	8.618873
12	2	5500	6	75	1367		10.200022
13	2	5500	6	80	1630		10.579558

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14	3	5500	6	75	1356	1940	11.854516
0	0	0	0	0			0
USA Bin 5 Trial #16							
1	3	5500.0	10	95	1815	1569	0.378173
2	2	5500	10	95	1405		1.040964
3	3	5500	10	55	1416	1255	2.098784
4	3	5500	10	65	1132	1719	2.895939
5	1	5500	10	55			3.67459
6	2	5500	10	70	1956		4.767135
7	3	5500	10	80	1955	1275	5.34147
8	1	5500	10	60			6.437957
9	3	5500	10	85	1045	1907	7.178075
10	3	5500	10	70	1693	1669	7.862863
11	3	5500	10	65	1028	1269	8.833913
12	3	5500	10	70	1046	1259	9.691155
13	3	5500	10	90	1717	1455	10.656002
14	2	5500	10	65	1627		11.241934
0	0	0	0	0			0
USA Bin 5 Trial #17							
1	3	5500.0	19	100	1097	1305	0.461363
2	2	5500	19	50	1243		1.347839
3	2	5500	19	100	1952		1.724759
4	1	5500	19	65			2.864629
5	1	5500	19	50			3.652285
6	2	5500	19	90	1220		4.017419
7	1	5500	19	75			4.919497
8	1	5500	19	55			5.43771
9	2	5500	19	50	1862		6.625463
10	2	5500	19	55	1014		6.864048
11	1	5500	19	90			8.224903
12	2	5500	19	50	1465		8.864135
13	3	5500	19	90	1084	1859	9.164697
14	2	5500	19	90	1310		10.016126
15	3	5500	19	80	1512	1624	10.620921
16	2	5500	19	65	1136		11.69724
0	0	0	0	0			0
USA Bin 5 Trial #18							
1	1	5500.0	6	80			0.566891
2	1	5500	6	55			1.037073
3	2	5500	6	70	1498		1.659947

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4	3	5500	6	55	1445	1153	2.101909
5	1	5500	6	50			2.715162
6	1	5500	6	70			3.138624
7	1	5500	6	95			4.070847
8	3	5500	6	70	1360	1510	4.663904
9	2	5500	6	100	1159		5.218754
10	1	5500	6	95			5.535305
11	1	5500	6	75			6.36304
12	3	5500	6	95	1573	1622	7.07119
13	3	5500	6	60	1740	1495	7.562756
14	2	5500	6	80	1173		8.019624
15	1	5500	6	95			8.583238
16	3	5500	6	55	1508	1830	9.534695
17	1	5500	6	55			9.841078
18	3	5500	6	75	1035	1566	10.337706
19	2	5500	6	90	1101		10.919181
20	2	5500	6	100	1673		11.553742
0	0	0	0	0			0
USA Bin 5 Trial #19							
1	2	5500.0	20	50	1690		0.464517
2	3	5500	20	100	1088	1345	0.97337
3	3	5500	20	95	1202	1029	1.679939
4	2	5500	20	90	1734		2.253651
5	3	5500	20	65	1897	1217	3.728666
6	2	5500	20	80	1981		4.370759
7	3	5500	20	55	1309	1688	5.032151
8	2	5500	20	80	1962		5.611779
9	2	5500	20	70	1619		6.737691
10	1	5500	20	75			6.75222
11	2	5500	20	65	1739		7.680851
12	2	5500	20	50	1558		8.813286
13	1	5500	20	70			9.281124
14	1	5500	20	80			9.880323
15	1	5500	20	85			10.641416
16	1	5500	20	100			11.454835
0	0	0	0	0			0

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USA Bin 5 Trial #20							
1	1	5500.0	5	90			0.024286
2	1	5500	5	100			1.010854
3	3	5500	5	95	1003	1026	2.301609
4	1	5500	5	50			2.897643
5	3	5500	5	55	1073	1312	3.516951
6	2	5500	5	85	1576		4.117727
7	1	5500	5	70			5.305112
8	1	5500	5	50			6.256088
9	1	5500	5	65			6.777231
10	1	5500	5	70			7.300338
11	3	5500	5	75	1826	1555	8.559323
12	3	5500	5	60	1500	1819	9.211097
13	1	5500	5	50			9.891033
14	1	5500	5	100			10.806422
15	3	5500	5	100	1254	1819	11.73745
0	0	0	0	0			0

USA Bin 5 Trial #21

1	2	5506.6	6	60	1104		0.074579
2	1	5506.6	6	95			0.800707
3	1	5506.6	6	60			2.010839
4	1	5506.6	6	55			3.001024
5	2	5506.6	6	95	1451		3.497235
6	2	5506.6	6	75	1390		4.584674
7	3	5506.6	6	55	1102	1934	5.308751
8	3	5506.6	6	80	1991	1489	6.011021
9	3	5506.6	6	55	1800	1810	6.408595
10	2	5506.6	6	90	1173		7.709522
11	3	5506.6	6	60	1682	1170	8.162649
12	3	5506.6	6	100	1657	1403	8.99234
13	3	5506.6	6	85	1425	1596	9.917438
14	3	5506.6	6	50	1833	1660	10.633353
15	3	5506.6	6	55	1293	1333	11.407073
0	0	0	0	0			0

USA Bin 5 Trial #22

1	1	5503.4	14	55			0.191742
2	3	5503.4	14	65	1014	1597	1.949719
3	3	5503.4	14	65	1280	1941	2.834309
4	1	5503.4	14	55			3.088808
5	2	5503.4	14	75	1056		4.069237

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6	3	5503.4	14	95	1063	1714	5.226071
7	3	5503.4	14	65	1044	1832	6.178787
8	1	5503.4	14	85			7.254816
9	1	5503.4	14	100			8.092154
10	2	5503.4	14	80	1117		9.623278
11	3	5503.4	14	70	1907	1383	10.522251
12	2	5503.4	14	55	1427		11.101217
0	0	0	0	0			0

USA Bin 5 Trial #23

1	3	5503.8	13	70	1052	1852	0.422530
2	1	5503.8	13	90			1.147814
3	1	5503.8	13	65			1.569708
4	2	5503.8	13	80	1752		2.779502
5	3	5503.8	13	80	1321	1570	3.478899
6	3	5503.8	13	60	1715	1808	4.015131
7	2	5503.8	13	55	1669		4.956014
8	3	5503.8	13	95	1749	1734	5.725765
9	2	5503.8	13	70	1971		6.633991
10	2	5503.8	13	75	1934		7.076739
11	2	5503.8	13	90	1041		8.162181
12	2	5503.8	13	55	1649		8.719042
13	1	5503.8	13	95			9.414733
14	2	5503.8	13	95	1848		10.211165
15	1	5503.8	13	80			11.096767
16	1	5503.8	13	90			11.82675
0	0	0	0	0			0

USA Bin 5 Trial #24

1	1	5501.8	18	85			0.486836
2	1	5501.8	18	70			1.423668
3	2	5501.8	18	80	1645		1.713635
4	2	5501.8	18	95	1427		2.709047
5	1	5501.8	18	50			3.738665
6	3	5501.8	18	65	1720	1373	4.078744
7	3	5501.8	18	80	1409	1601	5.210372
8	3	5501.8	18	80	1259	1222	6.331247
9	3	5501.8	18	60	1670	1112	6.710949
10	3	5501.8	18	75	1966	1650	7.240243
11	1	5501.8	18	65			8.574981
12	2	5501.8	18	100	1303		9.209426
13	3	5501.8	18	50	1094	1749	10.015306
14	1	5501.8	18	80			10.959829

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15	3	5501.8	18	85	1085	1236	11.967682
0	0	0	0	0			0
USA Bin 5 Trial #25							
1	1	5505.4	9	70			0.053127
2	3	5505.4	9	70	1686	1285	1.216082
3	2	5505.4	9	90	1232		2.209061
4	2	5505.4	9	100	1101		3.194438
5	1	5505.4	9	80			4.317381
6	3	5505.4	9	90	1224	1191	5.302172
7	1	5505.4	9	75			5.906729
8	2	5505.4	9	55	1535		6.611465
9	3	5505.4	9	85	1196	1581	7.762617
10	1	5505.4	9	85			9.051402
11	3	5505.4	9	70	1871	1620	9.396486
12	3	5505.4	9	65	1409	1901	10.881357
13	2	5505.4	9	95	1044		11.992937
0	0	0	0	0			0
USA Bin 5 Trial #26							
1	1	5502.6	16	75			0.354688
2	2	5502.6	16	95	1563		1.058956
3	3	5502.6	16	100	1810	1950	1.267863
4	3	5502.6	16	50	1221	1460	2.141091
5	1	5502.6	16	90			2.534348
6	1	5502.6	16	55			3.685798
7	1	5502.6	16	70			3.8228
8	2	5502.6	16	95	1838		4.709362
9	3	5502.6	16	75	1142	1803	5.180746
10	2	5502.6	16	50	1192		5.850784
11	3	5502.6	16	90	1138	1041	6.679279
12	2	5502.6	16	75	1774		7.305455
13	2	5502.6	16	90	1539		7.887767
14	3	5502.6	16	75	1970	1321	8.317806
15	1	5502.6	16	70			8.859022
16	2	5502.6	16	85	1519		9.569051
17	2	5502.6	16	80	1669		10.23357
18	2	5502.6	16	100	1989		11.01966
19	2	5502.6	16	70	1463		11.954331
0	0	0	0	0			0

USA Bin 5 Trial #27

1	1	5503.4	14	100			0.928298
2	3	5503.4	14	60	1774	1471	1.954092
3	2	5503.4	14	85	1613		2.26205
4	3	5503.4	14	75	1447	1812	3.682819
5	3	5503.4	14	55	1763	1768	4.694541
6	1	5503.4	14	95			6.394618
7	2	5503.4	14	85	1852		6.823621
8	3	5503.4	14	60	1542	1827	8.213249
9	2	5503.4	14	70	1645		9.037875
10	2	5503.4	14	100	1689		10.080519
11	3	5503.4	14	90	1860	1855	11.601529
0	0	0	0	0			0

USA Bin 5 Trial #28

1	2	5503.0	15	100	1566		0.156955
2	3	5503	15	75	1505	1432	1.442895
3	2	5503	15	65	1334		2.341343
4	2	5503	15	80	1707		2.990777
5	1	5503	15	75			3.644855
6	1	5503	15	65			4.072238
7	3	5503	15	65	1080	1363	5.185003
8	1	5503	15	55			5.75388
9	3	5503	15	55	1949	1725	7.15978
10	3	5503	15	85	1082	1563	7.61484
11	3	5503	15	60	1579	1445	8.439664
12	3	5503	15	90	1485	1097	9.481957
13	2	5503	15	60	1032		9.622819
14	2	5503	15	100	1111		10.985441
15	1	5503	15	90			11.370561
0	0	0	0	0			0

USA Bin 5 Trial #29

1	3	5504.2	12	55	1449	1196	1.461483
2	2	5504.2	12	70	1419		2.603406
3	3	5504.2	12	70	1725	1832	4.004531
4	1	5504.2	12	85			5.682063
5	3	5504.2	12	95	1334	1633	7.066483
6	3	5504.2	12	95	1773	1943	7.685675
7	1	5504.2	12	50			9.786609
8	1	5504.2	12	50			11.808734
0	0	0	0	0			0

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USA Bin 5 Trial #30

1	2	5501.8	18	100	1810		0.764772
2	3	5501.8	18	100	1906	1088	1.635771
3	2	5501.8	18	75	1113		3.31882
4	2	5501.8	18	55	1978		5.012647
5	2	5501.8	18	50	1522		5.633361
6	2	5501.8	18	55	1168		7.939394
7	2	5501.8	18	95	1475		9.279036
8	2	5501.8	18	50	1895		10.609294
9	1	5501.8	18	55			11.717072
0	0	0	0	0			0

Frequency Hopping			freq=5500, rate=6, bw=19 MHz			
Trial	Hop #	Freq (GHz)	Pulse Start (mS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	16	5495	48	1	100%	70.0%
2	22	5502	66	1		
3	22	5506	66	1		
4	5	5510	15	1		
5	18	5507	54	1		
6	25	5509	75	1		
7	29	5493	87	1		
8	50	5505	150	1		
9	3	5499	9	1		
10	8	5510	24	1		
11	3	5507	9	1		
12	48	5502	144	1		
13	22	5497	66	1		
14	34	5509	102	1		
15	46	5509	138	1		
16	22	5505	66	1		
17	66	5507	198	1		
18	0	5503	0	1		
19	12	5503	36	1		
20	7	5503	21	1		
21	22	5494	66	1		
22	8	5506	24	1		
23	6	5505	18	1		
24	16	5503	48	1		
25	41	5500	123	1		
26	36	5490	108	1		
27	2	5492	6	1		
28	7	5506	21	1		
29	20	5509	60	1		
30	27	5507	81	1		

USA Frequency Hopping Trial #1

16	5495	48
0	0	0

USA Frequency Hopping Trial #2

22	5502	66
69	5490	207
76	5495	228
81	5492	243
0	0	0

USA Frequency Hopping Trial #3

22	5506	66
38	5502	114
48	5495	144
82	5503	246
91	5498	273
0	0	0

USA Frequency Hopping Trial #4

5	5510	15
22	5507	66
81	5496	243
0	0	0

USA Frequency Hopping Trial #5

18	5507	54
26	5496	78
27	5503	81
58	5502	174
85	5492	255
93	5501	279
97	5509	291
0	0	0

USA Frequency Hopping Trial #6

25	5509	75
31	5503	93
51	5493	153
53	5508	159
63	5495	189
81	5506	243
86	5501	258
93	5497	279
0	0	0

USA Frequency Hopping Trial #7

29	5493	87
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69	5491	207
88	5495	264
95	5504	285
0	0	0

USA Frequency Hopping Trial #8

50	5505	150
69	5509	207
82	5500	246
0	0	0

USA Frequency Hopping Trial #9

3	5499	9
23	5497	69
26	5510	78
49	5504	147
82	5506	246
0	0	0

USA Frequency Hopping Trial #10

8	5510	24
32	5490	96
39	5506	117
48	5494	144
55	5491	165
56	5498	168
72	5500	216
86	5505	258
93	5495	279
0	0	0

USA Frequency Hopping Trial #11

3	5507	9
7	5508	21
0	0	0

USA Frequency Hopping Trial #12

48	5502	144
65	5498	195
85	5492	255
86	5496	258
0	0	0

USA Frequency Hopping Trial #13

22	5497	66
64	5509	192
76	5493	228
0	0	0

USA Frequency Hopping Trial #14

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34	5509	102
42	5499	126
0	0	0
USA Frequency Hopping Trial #15		
46	5509	138
88	5505	264
0	0	0
USA Frequency Hopping Trial #16		
22	5505	66
25	5496	75
40	5508	120
50	5499	150
66	5490	198
83	5501	249
0	0	0
USA Frequency Hopping Trial #17		
66	5507	198
76	5495	228
91	5510	273
0	0	0
USA Frequency Hopping Trial #18		
0	5503	0
5	5494	15
21	5491	63
46	5498	138
81	5501	243
87	5507	261
97	5510	291
0	0	0
USA Frequency Hopping Trial #19		
12	5503	36
36	5496	108
78	5507	234
0	0	0
USA Frequency Hopping Trial #20		
7	5503	21
38	5491	114
41	5506	123
85	5500	255
0	0	0
USA Frequency Hopping Trial #21		
22	5494	66
26	5506	78

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40	5508	120
77	5505	231
0	0	0
USA Frequency Hopping Trial #22		
8	5506	24
30	5509	90
71	5490	213
0	0	0
USA Frequency Hopping Trial #23		
6	5505	18
10	5495	30
43	5502	129
69	5499	207
84	5490	252
96	5503	288
0	0	0
USA Frequency Hopping Trial #24		
16	5503	48
31	5497	93
55	5510	165
65	5493	195
88	5506	264
91	5494	273
0	0	0
USA Frequency Hopping Trial #25		
41	5500	123
45	5503	135
60	5510	180
0	0	0
USA Frequency Hopping Trial #26		
36	5490	108
59	5491	177
66	5492	198
82	5507	246
0	0	0
USA Frequency Hopping Trial #27		
2	5492	6
24	5493	72
46	5491	138
97	5508	291
0	0	0
USA Frequency Hopping Trial #28		
7	5506	21

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25	5507	75
35	5509	105
88	5493	264
0	0	0

USA Frequency Hopping Trial #29

20	5509	60
24	5499	72
96	5497	288
0	0	0

USA Frequency Hopping Trial #30

27	5507	81
60	5503	180
82	5493	246
89	5506	267
0	0	0

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 0					freq=5510, rate=m0, bw=38MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	18	1	1428	0	90%	60.0%
2	5491	18	1	1428	1		
3	5493	18	1	1428	1		
4	5493	18	1	1428	1		
5	5496	18	1	1428	1		
6	5496	18	1	1428	1		
7	5499	18	1	1428	1		
8	5499	18	1	1428	1		
9	5502	18	1	1428	0		
10	5502	18	1	1428	1		
11	5505	18	1	1428	1		
12	5505	18	1	1428	1		
13	5508	18	1	1428	1		
14	5508	18	1	1428	1		
15	5510	18	1	1428	1		
16	5510	18	1	1428	1		
17	5512	18	1	1428	1		
18	5512	18	1	1428	0		
19	5515	18	1	1428	1		
20	5515	18	1	1428	1		
21	5518	18	1	1428	1		
22	5518	18	1	1428	1		
23	5521	18	1	1428	1		
24	5521	18	1	1428	1		
25	5524	18	1	1428	1		
26	5524	18	1	1428	1		
27	5527	18	1	1428	1		
28	5527	18	1	1428	1		
29	5529	18	1	1428	1		
30	5529	18	1	1428	1		

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 1A/1B :1A					freq=5510, rate=m0, bw=38MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	92	1	578	1	86.7%	60.0%
2	5491	18	1	3066	1		
3	5493	72	1	738	1		
4	5493	72	1	738	1		
5	5496	89	1	598	1		
6	5496	70	1	758	0		
7	5499	65	1	818	1		
8	5499	81	1	658	0		
9	5502	61	1	878	0		
10	5502	63	1	838	0		
11	5505	62	1	858	1		
12	5505	81	1	658	1		
13	5508	99	1	538	1		
14	5508	57	1	938	1		
15	5510	86	1	618	1		
16	5510	28	1	1927	1		
17	5512	87	1	610	1		
18	5512	73	1	723	1		
19	5515	18	1	2995	1		
20	5515	19	1	2843	1		
21	5518	71	1	744	1		
22	5518	34	1	1597	1		
23	5521	18	1	3056	1		
24	5521	55	1	962	1		
25	5524	34	1	1591	1		
26	5524	25	1	2187	1		
27	5527	26	1	2070	1		
28	5527	66	1	807	1		
29	5529	38	1	1410	1		
30	5529	46	1	1159	1		

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 1A/1B: 1B					freq=5510, rate=m0, bw=38MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	86	1	618	1	93.3%	60.0%
2	5491	62	1	858	1		
3	5493	59	1	898	1		
4	5493	59	1	898	1		
5	5496	92	1	578	1		
6	5496	78	1	678	1		
7	5499	61	1	878	1		
8	5499	83	1	638	1		
9	5502	57	1	938	1		
10	5502	18	1	3066	1		
11	5505	63	1	838	1		
12	5505	62	1	858	1		
13	5508	67	1	798	1		
14	5508	68	1	778	1		
15	5510	83	1	638	1		
16	5510	25	1	2164	1		
17	5512	21	1	2578	1		
18	5512	26	1	2057	1		
19	5515	23	1	2380	1		
20	5515	32	1	1650	1		
21	5518	20	1	2684	1		
22	5518	89	1	596	1		
23	5521	27	1	1955	1		
24	5521	41	1	1309	1		
25	5524	29	1	1859	1		
26	5524	18	1	2982	0		
27	5527	33	1	1639	1		
28	5527	20	1	2679	1		
29	5529	21	1	2561	0		
30	5529	51	1	1040	1		

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 2					freq=5510, rate=m0. bw=38MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	26	1.6	177	1	76.7%	60.0%
2	5491	25	3.8	213	1		
3	5493	24	2.2	179	0		
4	5493	28	3.5	152	0		
5	5496	26	1.6	180	0		
6	5496	27	4.7	169	1		
7	5499	27	1.8	224	1		
8	5499	25	4.6	197	1		
9	5502	27	2.9	177	1		
10	5502	23	3.6	208	1		
11	5505	23	2.1	223	1		
12	5505	28	3.7	187	1		
13	5508	24	4.8	150	1		
14	5508	27	4.6	211	1		
15	5510	25	3.1	214	1		
16	5510	26	3.3	185	1		
17	5512	24	3.2	155	1		
18	5512	28	4.8	210	1		
19	5515	26	2.4	176	1		
20	5515	29	4.1	207	1		
21	5518	25	3.6	210	1		
22	5518	23	3.7	185	1		
23	5521	23	3.1	188	0		
24	5521	28	4	186	1		
25	5524	24	2.1	205	0		
26	5524	23	3.5	196	1		
27	5527	24	1.9	159	0		
28	5527	28	1.4	223	0		
29	5529	26	1.5	158	1		
30	5529	26	4.1	207	1		

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 3					freq=5510, rate=m0. bw=38MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	18	6.9	420	1	70%	60.0%
2	5491	17	7.5	499	0		
3	5493	16	9.2	251	0		
4	5493	16	6.1	277	1		
5	5496	18	7.3	465	1		
6	5496	17	6.7	331	1		
7	5499	18	9	271	1		
8	5499	17	10	311	1		
9	5502	18	9.7	467	1		
10	5502	17	6.8	235	0		
11	5505	17	9.7	363	1		
12	5505	16	9.8	499	1		
13	5508	17	6	460	1		
14	5508	17	6.6	288	0		
15	5510	16	7.6	342	1		
16	5510	18	7.6	403	1		
17	5512	17	6.8	404	1		
18	5512	17	7.1	321	1		
19	5515	18	9.9	417	0		
20	5515	16	6.3	469	1		
21	5518	17	8.7	442	1		
22	5518	17	8.2	220	1		
23	5521	17	6.7	257	1		
24	5521	18	8.2	311	0		
25	5524	16	7.7	203	1		
26	5524	17	8.6	489	0		
27	5527	16	6.4	227	1		
28	5527	18	8.4	277	1		
29	5529	17	6.8	209	0		
30	5529	18	6.4	310	0		

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 4				freq=5510, rate=m0. bw=38MHz			
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	14	11.5	359	0	83.3%	60.0%
2	5491	14	19.2	346	1		
3	5493	14	15.2	265	1		
4	5493	13	11.1	487	1		
5	5496	16	12.8	350	1		
6	5496	14	13.2	408	0		
7	5499	14	11.1	289	1		
8	5499	13	16.1	404	1		
9	5502	15	16	458	1		
10	5502	16	19.6	434	1		
11	5505	12	16.8	235	1		
12	5505	14	12	215	1		
13	5508	12	14.8	370	1		
14	5508	16	19.2	204	1		
15	5510	12	11.6	476	1		
16	5510	12	17.2	392	1		
17	5512	12	11.1	380	1		
18	5512	14	13.2	328	1		
19	5515	16	11.1	200	1		
20	5515	14	11.9	467	0		
21	5518	16	18.3	211	1		
22	5518	15	16.7	204	1		
23	5521	16	14.4	399	1		
24	5521	12	17.8	279	0		
25	5524	16	12.5	433	0		
26	5524	14	11.5	209	1		
27	5527	14	18.7	423	1		
28	5527	15	17.1	292	1		
29	5529	14	19.4	223	1		
30	5529	16	19.3	260	1		

In addition, an average minimum percentage of successful detection across all four Short pulse radar test waveforms is required and is calculated as follows:

$$\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (93.3 + 76.7 + 70 + 83.3)/4 = 80.825\% (>80\%)$$

Channel 5510 MHz, 40MHz BW, Statistical Performance

USA Bin 5 (JP)	freq=5510, rate=m0., traffic=200, bw=40.0										
	Trial	Burst #	Pulses	Frequency (MHz)	Chirp (MHz)	PW (uS)	Inter-pulse spacing (uS)	Inter-pulse spacing (uS)	Pulse Start (S)	1=Detection 0=No Detection	Detection Percentage
	1	1	2	5492.8	7	75	1151		0.444246	1	93.3%
	2	1	2	5496.4	16	90	1598		0.029044	1	
	3	1	3	5493.6	9	80	1255	1236	0.031326	0	
	4	1	2	5492.4	6	65	1772		0.229222	1	
	5	1	1	5496.4	16	95			0.108876	1	
	6	1	3	5492.8	7	55	1227	1216	0.108032	1	
	7	1	3	5497.6	19	95	1836	1577	0.022092	1	
	8	1	3	5493.2	8	100	1016	1486	0.264848	1	
	9	1	1	5493.6	9	95			0.308336	1	
	10	1	1	5493.6	9	100			0.835252	1	
	11	1	3	5510	6	65	1291	1152	0.226242	1	
	12	1	1	5510	14	55			0.22579	1	
	13	1	2	5510	10	75	1722		0.306887	1	
	14	1	1	5510	15	100			0.504577	1	
	15	1	1	5510	18	55			0.075254	1	
	16	1	2	5510	12	55	1845		0.250942	1	
	17	1	2	5510	16	80	1076		0.161156	1	
	18	1	1	5510	16	90			0.871558	1	
	19	1	1	5510	12	50			0.578613	1	
	20	1	3	5510	18	85	1926	1570	0.267578	1	
	21	1	3	5528	5	70	1761	1397	0.278084	0	
	22	1	2	5528	5	85	1272		0.964187	1	
	23	1	2	5525.2	12	80	1518		1.105694	1	
	24	1	1	5527.2	7	60			0.128018	1	
	25	1	2	5526	10	75	1436		0.007188	1	
	26	1	3	5526	10	95	1168	1316	0.406101	1	
	27	1	2	5523.2	17	65	1615		0.172771	1	
	28	1	2	5522.4	19	65	1856		0.434412	1	
	29	1	3	5526	10	100	1433	1801	0.858201	1	
	30	1	1	5523.2	17	90			0.654792	1	

USA Bin 5 Trial #1							
1	2	5492.8	7	75	1151		0.444246
2	1	5492.8	7	85			1.237431
3	2	5492.8	7	85	1418		2.278408
4	2	5492.8	7	70	1498		2.41854
5	1	5492.8	7	70			3.73848
6	3	5492.8	7	85	1983	1551	4.277358
7	3	5492.8	7	100	1176	1524	4.806927
8	2	5492.8	7	70	1147		5.758475
9	3	5492.8	7	50	1659	1001	7.045575
10	2	5492.8	7	80	1173		7.671713
11	1	5492.8	7	85			8.696111
12	1	5492.8	7	70			8.972824
13	3	5492.8	7	90	1776	1106	9.836485
14	1	5492.8	7	60			10.626049
15	2	5492.8	7	70	1179		11.254437
0	0	0	0	0			0
USA Bin 5 Trial #2		1	5496.4	16	50		3.476209
1	2	5496.4	16	90	1598		0.029044
2	1	5496.4	16	75			0.653184
3	1	5496.4	16	75			1.509846
4	3	5496.4	16	90	1419	1721	1.947135
5	3	5496.4	16	75	1214	1919	2.693672
6	1	5496.4	16	60			3.184973
7	2	5496.4	16	50	1730		3.852182
8	3	5496.4	16	85	1949	1361	4.777709
9	2	5496.4	16	85	1317		5.382968
10	3	5496.4	16	95	1031	1311	5.839304
11	3	5496.4	16	95	1447	1114	6.454914
12	1	5496.4	16	100			7.034497
13	2	5496.4	16	55	1959		8.11824
14	3	5496.4	16	55	1639	1457	8.317906
15	1	5496.4	16	60			9.163325
16	3	5496.4	16	65	1395	1808	9.64044
17	3	5496.4	16	100	1076	1359	10.229079
18	1	5496.4	16	55			11.044668
19	2	5496.4	16	100	1851		11.459173
0	0	0	0	0			0
USA Bin 5 Trial #3		2	5497.2	18	95	1722	8.15543
1	3	5493.6	9	80	1255	1236	0.031326
2	2	5493.6	9	75	1429		0.860476

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3	3	5493.6	9	85	1059	1047	2.214144
4	1	5493.6	9	55			2.413267
5	1	5493.6	9	85			3.057935
6	2	5493.6	9	90	1635		4.373253
7	2	5493.6	9	100	1637		4.696272
8	3	5493.6	9	80	1370	1750	5.435133
9	1	5493.6	9	70			6.178696
10	2	5493.6	9	100	1655		6.984632
11	1	5493.6	9	60			8.137443
12	2	5493.6	9	75	1096		8.865129
13	1	5493.6	9	100			9.574263
14	2	5493.6	9	95	1661		10.240847
15	1	5493.6	9	85			10.570324
16	3	5493.6	9	100	1122	1827	11.874557
0	0	0	0	0			0
USA Bin 5 Trial #4	3	5494	10	50	1707	1978	7.899441
1	2	5492.4	6	65	1772		0.229222
2	3	5492.4	6	80	1069	1921	1.332
3	2	5492.4	6	80	1370		2.396674
4	3	5492.4	6	85	1671	1779	4.111238
5	2	5492.4	6	95	1227		5.448236
6	1	5492.4	6	75			6.189462
7	2	5492.4	6	100	1892		6.807821
8	2	5492.4	6	75	1380		8.482829
9	1	5492.4	6	55			9.48476
10	3	5492.4	6	60	1355	1660	9.979334
11	3	5492.4	6	95	1237	1506	11.572199
0	0	0	0	0			0
USA Bin 5 Trial #5	2	5495.2	13	75	1174		4.151909
1	1	5496.4	16	95			0.108876
2	2	5496.4	16	60	1745		0.888478
3	2	5496.4	16	65	1641		2.146564
4	2	5496.4	16	95	1776		2.544541
5	3	5496.4	16	95	1450	1524	3.157209
6	1	5496.4	16	95			4.265365
7	2	5496.4	16	65	1700		5.029266
8	2	5496.4	16	65	1566		5.489212
9	1	5496.4	16	70			6.144548
10	1	5496.4	16	70			7.467988
11	1	5496.4	16	95			7.907317
12	3	5496.4	16	65	1201	1431	8.51628
13	2	5496.4	16	50	1295		9.341355

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14	1	5496.4	16	75			9.90859
15	3	5496.4	16	85	1371	1994	10.720355
16	2	5496.4	16	75	1779		11.774251
0	0	0	0	0			0
USA Bin 5 Trial #6	1	5495.6	14	100			7.944622
1	3	5492.8	7	55	1227	1216	0.108032
2	3	5492.8	7	85	1761	1423	1.537347
3	2	5492.8	7	95	1193		3.769339
4	3	5492.8	7	80	1581	1547	4.720944
5	3	5492.8	7	90	1764	1127	6.21129
6	2	5492.8	7	70	1628		7.443715
7	3	5492.8	7	75	1357	1634	8.05984
8	3	5492.8	7	55	1266	1866	10.362618
9	2	5492.8	7	75	1046		11.244631
0	0	0	0	0			0
USA Bin 5 Trial #7	3	5493.6	9	60	1514	1890	6.277887
1	3	5497.6	19	95	1836	1577	0.022092
2	3	5497.6	19	55	1929	1977	0.799419
3	1	5497.6	19	95			2.114388
4	3	5497.6	19	50	1597	1341	2.347224
5	1	5497.6	19	100			3.673364
6	1	5497.6	19	90			3.765369
7	1	5497.6	19	55			5.026918
8	1	5497.6	19	90			5.6147
9	3	5497.6	19	70	1709	1094	6.134257
10	2	5497.6	19	100	1000		6.798435
11	2	5497.6	19	95	1504		8.207121
12	2	5497.6	19	90	1178		8.445472
13	2	5497.6	19	60	1054		9.103752
14	3	5497.6	19	90	1360	1305	10.328404
15	3	5497.6	19	85	1377	1638	11.123691
16	3	5497.6	19	85	1490	1642	11.694376
0	0	0	0	0			0
USA Bin 5 Trial #8	3	5495.6	14	90	1892	1804	11.276159
1	3	5493.2	8	100	1016	1486	0.264848
2	1	5493.2	8	60			1.26037
3	2	5493.2	8	70	1648		1.9138
4	2	5493.2	8	60	1895		2.629588
5	1	5493.2	8	50			3.516036
6	2	5493.2	8	95	1548		4.275423
7	1	5493.2	8	55			4.85406
8	2	5493.2	8	90	1154		5.889852

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9	3	5493.2	8	55	1372	1303	7.029165
10	3	5493.2	8	80	1811	1462	7.627564
11	2	5493.2	8	80	1786		8.410648
12	2	5493.2	8	65	1831		9.32898
13	2	5493.2	8	80	1213		9.92833
14	1	5493.2	8	50			10.775604
15	1	5493.2	8	55			11.422684
0	0	0	0	0			0
USA Bin 5 Trial #9	2	5495.2	13	75	1229		2.517111
1	1	5493.6	9	95			0.308336
2	3	5493.6	9	60	1253	1990	1.847595
3	2	5493.6	9	95	1733		3.173968
4	1	5493.6	9	50			4.026574
5	3	5493.6	9	70	1292	1049	4.643795
6	2	5493.6	9	95	1640		6.444528
7	1	5493.6	9	85			6.918263
8	2	5493.6	9	55	1529		8.029853
9	1	5493.6	9	50			8.974602
10	1	5493.6	9	65			10.146529
11	2	5493.6	9	95	1148		11.470034
0	0	0	0	0			0
USA Bin 5 Trial #10	3	5495.2	13	65	1683	1606	10.403823
1	1	5493.6	9	100			0.835252
2	3	5493.6	9	60	1684	1416	1.841435
3	2	5493.6	9	85	1173		2.78228
4	2	5493.6	9	55	1403		3.333766
5	2	5493.6	9	55	1824		5.267116
6	3	5493.6	9	50	1931	1231	6.031577
7	2	5493.6	9	60	1161		7.419988
8	1	5493.6	9	55			8.480837
9	3	5493.6	9	80	1948	1146	9.004597
10	3	5493.6	9	70	1500	1900	10.176698
11	3	5493.6	9	80	1871	1303	11.085433
0	0	0	0	0			0
USA Bin 5 Trial #11	2	5510	15	100	1597		9.685649
1	3	5510.0	6	65	1291	1152	0.226242
2	1	5510	6	80			0.909368
3	1	5510	6	75			2.226324
4	1	5510	6	75			3.104213
5	3	5510	6	90	1262	1005	3.312105
6	3	5510	6	90	1101	1588	4.231832
7	1	5510	6	100			5.126951

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8	1	5510	6	60			6.099194
9	3	5510	6	75	1603	1881	6.723205
10	3	5510	6	100	1239	1448	7.240039
11	2	5510	6	80	1547		8.741901
12	2	5510	6	85	1892		8.828455
13	1	5510	6	75			9.977443
14	2	5510	6	85	1264		10.412265
15	3	5510	6	95	1492	1361	11.360962
0	0	0	0	0			0
USA Bin 5 Trial #12	0	0	0	0			0
1	1	5510.0	14	55			0.225790
2	2	5510	14	75	1974		0.641505
3	3	5510	14	70	1961	1753	1.362469
4	3	5510	14	85	1110	1907	2.039267
5	3	5510	14	50	1250	1332	2.95334
6	2	5510	14	100	1876		3.594797
7	1	5510	14	75			3.745081
8	3	5510	14	100	1487	1134	4.319004
9	1	5510	14	90			5.374617
10	1	5510	14	100			5.74326
11	2	5510	14	70	1120		6.003825
12	1	5510	14	100			6.783927
13	1	5510	14	70			7.46052
14	2	5510	14	95	1685		8.341893
15	3	5510	14	60	1796	1104	8.411036
16	1	5510	14	90			9.237918
17	3	5510	14	100	1430	1398	9.927128
18	1	5510	14	75			10.388928
19	2	5510	14	70	1398		10.919105
20	3	5510	14	75	1069	1109	11.861853
0	0	0	0	0			0
USA Bin 5 Trial #13	1	5510	5	100			2.696164
1	2	5510.0	10	75	1722		0.306887
2	2	5510	10	50	1881		1.120071
3	3	5510	10	95	1141	1983	1.54918
4	3	5510	10	75	1083	1694	2.241676
5	3	5510	10	65	1991	1186	3.308599
6	2	5510	10	65	1770		3.615629
7	2	5510	10	95	1839		4.469785
8	1	5510	10	55			4.674434
9	2	5510	10	80	1561		5.630682
10	1	5510	10	90			6.489781

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11	3	5510	10	90	1993	1992	6.796578
12	3	5510	10	85	1526	1061	7.372247
13	2	5510	10	70	1439		8.6338
14	1	5510	10	65			9.020434
15	1	5510	10	60			9.530984
16	2	5510	10	75	1636		10.070016
17	3	5510	10	70	1775	1005	11.010128
18	3	5510	10	80	1926	1250	11.700304
0	0	0	0	0			0
USA Bin 5 Trial #14	2	5510	11	55	1786		2.716305
1	1	5510.0	15	100			0.504577
2	3	5510	15	100	1360	1194	1.009792
3	3	5510	15	70	1153	1331	1.848111
4	3	5510	15	60	1940	1496	2.189087
5	1	5510	15	65			2.999275
6	1	5510	15	75			3.431646
7	2	5510	15	90	1853		4.303008
8	1	5510	15	65			5.327375
9	2	5510	15	55	1034		5.752522
10	2	5510	15	80	1940		6.269502
11	2	5510	15	65	1868		7.258459
12	1	5510	15	80			7.507529
13	1	5510	15	95			8.188381
14	3	5510	15	70	1056	1930	9.127353
15	3	5510	15	65	1376	1349	9.407977
16	1	5510	15	75			10.434309
17	1	5510	15	60			10.868369
18	3	5510	15	50	1820	1727	11.639242
0	0	0	0	0			0
USA Bin 5 Trial #15	3	5510	14	100	1832	1531	6.591792
1	1	5510.0	18	55			0.075254
2	1	5510	18	65			1.228342
3	2	5510	18	100	1260		1.873058
4	1	5510	18	80			2.715519
5	3	5510	18	85	1106	1127	3.27625
6	1	5510	18	80			3.945529
7	3	5510	18	100	1648	1062	4.926154
8	1	5510	18	50			5.47316
9	2	5510	18	90	1369		6.157979
10	3	5510	18	70	1159	1549	6.911819
11	1	5510	18	65			7.384397
12	2	5510	18	100	1178		8.029278

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13	2	5510	18	85	1424		8.819914
14	1	5510	18	90			9.845893
15	1	5510	18	75			10.442955
16	2	5510	18	50	1002		11.132351
17	2	5510	18	60	1871		11.706268
0	0	0	0	0			0
USA Bin 5 Trial #16	2	5510	9	85	1211		10.232317
1	2	5510.0	12	55	1845		0.250942
2	2	5510	12	65	1059		1.642544
3	2	5510	12	90	1559		2.500204
4	2	5510	12	65	1346		2.789944
5	3	5510	12	75	1953	1783	4.101163
6	3	5510	12	75	1047	1897	4.888734
7	2	5510	12	60	1239		5.801907
8	3	5510	12	70	1004	1376	6.224335
9	3	5510	12	55	1386	1885	7.430386
10	1	5510	12	50			8.330218
11	1	5510	12	50			8.916791
12	3	5510	12	90	1184	1314	10.154923
13	3	5510	12	80	1223	1757	10.546538
14	3	5510	12	50	1039	1025	11.842156
0	0	0	0	0			0
USA Bin 5 Trial #17	3	5510	10	85	1192	1334	9.069871
1	2	5510.0	16	80	1076		0.161156
2	1	5510	16	65			1.036406
3	2	5510	16	65	1548		1.854686
4	3	5510	16	85	1290	1994	2.194828
5	2	5510	16	70	1335		2.732005
6	3	5510	16	50	1308	1524	3.572916
7	3	5510	16	100	1862	1205	3.881365
8	1	5510	16	65			4.721071
9	1	5510	16	75			5.132973
10	1	5510	16	95			6.299013
11	1	5510	16	80			6.542917
12	3	5510	16	100	1165	1754	7.222268
13	3	5510	16	95	1152	1708	7.585671
14	3	5510	16	100	1948	1829	8.366184
15	3	5510	16	95	1637	1348	9.041011
16	3	5510	16	75	1723	1053	9.856445
17	1	5510	16	70			10.663973
18	3	5510	16	55	1389	1984	11.179642
19	2	5510	16	55	1871		11.48818

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0	0	0	0	0			0
USA Bin 5 Trial #18	1	5510.0	5	55			0.505825
1	1	5510.0	16	90			0.871558
2	2	5510	16	85	1843		2.093177
3	3	5510	16	70	1346	1029	3.916944
4	2	5510	16	65	1101		4.684176
5	1	5510	16	85			6.162005
6	1	5510	16	55			8.719984
7	1	5510	16	90			10.252212
8	2	5510	16	75	1546		11.916847
0	0	0	0	0			0
USA Bin 5 Trial #19	3	5510	5	100	1547	1478	10.74943
1	1	5510.0	12	50			0.578613
2	2	5510	12	60	1413		1.395527
3	2	5510	12	70	1761		2.069092
4	3	5510	12	50	1027	1292	2.658132
5	3	5510	12	60	1315	1723	3.653973
6	3	5510	12	80	1178	1938	4.080481
7	3	5510	12	55	1089	1733	4.527417
8	3	5510	12	90	1495	1484	5.969833
9	3	5510	12	50	1071	1997	6.540901
10	2	5510	12	55	1021		6.820391
11	3	5510	12	90	1635	1459	7.642652
12	2	5510	12	50	1948		8.742039
13	3	5510	12	80	1126	1247	9.178515
14	2	5510	12	100	1941		10.335423
15	1	5510	12	90			10.645073
16	2	5510	12	90	1910		11.534212
0	0	0	0	0			0
USA Bin 5 Trial #20	2	5526.8	8	95	1581		11.936584
1	3	5510.0	18	85	1926	1570	0.267578
2	1	5510	18	50			1.850412
3	2	5510	18	100	1172		2.816756
4	3	5510	18	65	1228	1998	3.713401
5	3	5510	18	95	1888	1353	4.499377
6	2	5510	18	55	1902		5.746399
7	3	5510	18	85	1771	1148	6.956882
8	3	5510	18	85	1254	1964	7.915298
9	2	5510	18	55	1482		8.938927
10	1	5510	18	90			9.108664
11	2	5510	18	50	1907		10.480986
12	2	5510	18	70	1121		11.46235

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0	0	0	0	0			0
USA Bin 5 Trial #21	1	5525.6	11	50			7.470095
1	3	5528.0	5	70	1761	1397	0.278084
2	3	5528	5	50	1176	1997	2.899212
3	1	5528	5	90			3.804643
4	3	5528	5	95	1852	1438	5.961044
5	1	5528	5	70			6.42449
6	3	5528	5	75	1253	1368	8.482843
7	2	5528	5	50	1510		9.376366
8	2	5528	5	85	1176		11.12456
0	0	0	0	0			0
USA Bin 5 Trial #22	1	5522.4	19	90			0.378177
1	2	5528.0	5	85	1272		0.964187
2	3	5528	5	65	1436	1557	1.135334
3	1	5528	5	65			3.087018
4	1	5528	5	60			4.019929
5	1	5528	5	90			5.131403
6	2	5528	5	75	1147		5.637027
7	1	5528	5	50			6.975495
8	2	5528	5	100	1320		8.65041
9	1	5528	5	55			8.826572
10	3	5528	5	70	1527	1416	9.897848
11	1	5528	5	55			10.926021
0	0	0	0	0			0
USA Bin 5 Trial #23	1	5522.4	19	95			8.73441
1	2	5525.2	12	80	1518		1.105694
2	2	5525.2	12	60	1743		1.83469
3	2	5525.2	12	60	1551		3.881025
4	1	5525.2	12	75			4.592041
5	2	5525.2	12	60	1186		6.370876
6	3	5525.2	12	100	1065	1982	6.701919
7	1	5525.2	12	65			8.199349
8	2	5525.2	12	70	1097		9.851771
9	2	5525.2	12	75	1932		11.547129
0	0	0	0	0			0
USA Bin 5 Trial #24	3	5525.6	11	50	1217	1143	4.307871
1	1	5527.2	7	60			0.128018
2	3	5527.2	7	80	1244	1641	2.240164
3	3	5527.2	7	100	1724	1113	3.896548
4	2	5527.2	7	65	1374		4.510412
5	2	5527.2	7	75	1950		6.493476
6	3	5527.2	7	50	1606	1044	6.821567

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7	3	5527.2	7	90	1014	1764	8.525667
8	2	5527.2	7	60	1162		9.334009
9	1	5527.2	7	85			11.063787
0	0	0	0	0			0
USA Bin 5 Trial #25	1	5525.6	11	90			0.257088
1	2	5526.0	10	75	1436		0.007188
2	3	5526	10	90	1268	1716	1.229261
3	3	5526	10	95	1174	1025	1.290545
4	3	5526	10	70	1033	1601	2.266111
5	3	5526	10	65	1781	1074	2.574787
6	3	5526	10	100	1194	1858	3.349109
7	1	5526	10	100			4.159702
8	1	5526	10	90			4.780289
9	1	5526	10	80			5.090126
10	1	5526	10	65			5.892897
11	2	5526	10	100	1268		6.899328
12	3	5526	10	70	1084	1353	7.176381
13	3	5526	10	75	1441	1040	8.177783
14	3	5526	10	95	1252	1940	8.247663
15	3	5526	10	100	1758	1227	9.078601
16	1	5526	10	75			10.069311
17	3	5526	10	80	1529	1852	10.451327
18	2	5526	10	75	1116		11.136566
19	3	5526	10	100	1148	1631	11.570743
0	0	0	0	0			0
USA Bin 5 Trial #26	2	5522.4	19	65	1343		1.250116
1	3	5526.0	10	95	1168	1316	0.406101
2	1	5526	10	55			1.234216
3	1	5526	10	70			2.039453
4	1	5526	10	85			3.08554
5	1	5526	10	75			4.245435
6	3	5526	10	85	1501	1100	4.557493
7	3	5526	10	65	1859	1359	5.474243
8	3	5526	10	65	1047	1416	6.666744
9	3	5526	10	60	1788	1418	7.217672
10	2	5526	10	100	1915		7.889654
11	1	5526	10	100			9.340751
12	1	5526	10	75			10.00528
13	2	5526	10	70	1461		10.327094
14	3	5526	10	85	1851	1551	11.910048
0	0	0	0	0			0
USA Bin 5 Trial #27							

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1	2	5523.2	17	65	1615		0.172771
2	3	5523.2	17	95	1336	1544	1.020823
3	1	5523.2	17	85			1.421811
4	1	5523.2	17	75			2.418593
5	1	5523.2	17	85			3.007959
6	2	5523.2	17	70	1516		3.333916
7	3	5523.2	17	50	1233	1644	4.444758
8	1	5523.2	17	75			5.058532
9	2	5523.2	17	95	1907		5.881007
10	2	5523.2	17	50	1066		6.000102
11	3	5523.2	17	55	1856	1756	6.864019
12	3	5523.2	17	100	1585	1950	7.509236
13	2	5523.2	17	95	1029		8.544429
14	3	5523.2	17	75	1210	1108	8.668049
15	1	5523.2	17	70			9.714744
16	1	5523.2	17	55			10.344354
17	3	5523.2	17	55	1620	1823	11.128842
18	3	5523.2	17	90	1472	1827	11.946616
0	0	0	0	0			0
USA Bin 5 Trial #28	2	5526	10	85	1192		11.660137
1	2	5522.4	19	65	1856		0.434412
2	3	5522.4	19	65	1712	1954	1.212467
3	3	5522.4	19	100	1767	1597	1.946611
4	1	5522.4	19	70			2.137435
5	3	5522.4	19	65	1833	1544	2.897243
6	3	5522.4	19	65	1172	1432	3.886248
7	1	5522.4	19	85			4.363917
8	1	5522.4	19	65			4.893819
9	2	5522.4	19	75	1888		5.455433
10	1	5522.4	19	70			6.026218
11	1	5522.4	19	50			7.142418
12	1	5522.4	19	50			7.809329
13	2	5522.4	19	50	1085		8.395171
14	3	5522.4	19	55	1554	1978	9.208234
15	1	5522.4	19	95			9.604985
16	1	5522.4	19	55			10.627926
17	2	5522.4	19	100	1998		10.982195
18	3	5522.4	19	50	1198	1749	11.358873
0	0	0	0	0			0
USA Bin 5 Trial #29	3	5523.6	16	90	1409	1771	3.831612
1	3	5526.0	10	100	1433	1801	0.858201
2	3	5526	10	65	1308	1770	1.271984

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3	2	5526	10	65	1569		2.430749
4	3	5526	10	95	1493	1877	3.545252
5	3	5526	10	100	1297	1261	4.568537
6	1	5526	10	50			5.541122
7	3	5526	10	90	1635	1368	7.097833
8	2	5526	10	90	1081		8.058182
9	2	5526	10	70	1780		9.496302
10	1	5526	10	80			10.765625
11	3	5526	10	100	1867	1208	11.176988
0	0	0	0	0			0
USA Bin 5 Trial #30	1	5523.6	16	55			11.446731
1	1	5523.2	17	90			0.654792
2	1	5523.2	17	50			1.214952
3	3	5523.2	17	50	1652	1966	1.587539
4	3	5523.2	17	85	1967	1806	2.28129
5	2	5523.2	17	85	1790		3.5179
6	3	5523.2	17	80	1139	1253	4.020369
7	1	5523.2	17	85			4.435194
8	2	5523.2	17	70	1384		5.294672
9	1	5523.2	17	90			6.315579
10	2	5523.2	17	90	1008		6.519998
11	1	5523.2	17	100			7.118123
12	3	5523.2	17	85	1294	1589	8.054259
13	3	5523.2	17	60	1357	1116	8.983118
14	1	5523.2	17	65			9.212317
15	3	5523.2	17	55	1267	1683	10.474204
16	3	5523.2	17	65	1433	1734	10.696881
17	2	5523.2	17	70	1007		11.581489
0	0	0	0	0			0
0	0	0	0	0			0

USA Frequency Hopping (JP)				freq=5510, rate=m0, bw=38MHz		
Trial	Hop #	Freq (GHz)	Pulse Start (mS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	7	5520	21	1	100.0%	70.0%
2	11	5518	33	1		
3	0	5522	0	1		
4	2	5526	6	1		
5	11	5519	33	1		
6	13	5496	39	1		
7	11	5495	33	1		
8	6	5493	18	1		
9	2	5506	6	1		
10	16	5508	48	1		
11	2	5501	6	1		
12	42	5521	126	1		
13	1	5524	3	1		
14	8	5498	24	1		
15	9	5491	27	1		
16	23	5515	69	1		
17	30	5511	90	1		
18	4	5520	12	1		
19	0	5501	0	1		
20	7	5517	21	1		
21	0	5509	0	1		
22	0	5507	0	1		
23	8	5513	24	1		
24	21	5510	63	1		
25	2	5499	6	1		
26	14	5501	42	1		
27	0	5508	0	1		
28	14	5522	42	1		
29	2	5496	6	1		
30	16	5491	48	1		

USA Frequency Hopping Trial #1

7	5520	21
21	5501	63
25	5514	75
29	5508	87
31	5515	93
44	5493	132
57	5512	171
80	5517	240
83	5495	249
94	5528	282
0	0	0

USA Frequency Hopping Trial #2

11	5518	33
38	5527	114
40	5510	120
63	5498	189
71	5517	213
74	5529	222
95	5528	285
0	0	0

USA Frequency Hopping Trial #3

0	5522	0
16	5495	48
34	5527	102
40	5511	120
41	5497	123
80	5504	240
81	5492	243
99	5528	297
0	0	0

USA Frequency Hopping Trial #4

2	5526	6
30	5496	90
41	5504	123
45	5494	135
51	5527	153
54	5511	162
80	5497	240
83	5524	249
84	5525	252
89	5522	267

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95	5514	285
99	5512	297
0	0	0

USA Frequency Hopping Trial #5

11	5519	33
20	5503	60
28	5513	84
34	5522	102
37	5493	111
39	5505	117
56	5510	168
59	5527	177
64	5499	192
81	5506	243
90	5516	270
0	0	0

USA Frequency Hopping Trial #6

13	5496	39
32	5498	96
34	5523	102
52	5511	156
66	5506	198
98	5501	294
0	0	0

USA Frequency Hopping Trial #7

11	5495	33
27	5508	81
35	5515	105
40	5521	120
42	5523	126
88	5498	264
0	0	0

USA Frequency Hopping Trial #8

6	5493	18
16	5503	48
22	5498	66
25	5513	75
42	5519	126
53	5500	159
54	5525	162
68	5495	204
0	0	0

USA Frequency Hopping Trial #9

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2	5506	6
3	5511	9
10	5505	30
24	5502	72
46	5507	138
48	5517	144
57	5514	171
66	5521	198
81	5519	243
85	5494	255
88	5504	264
93	5500	279
97	5525	291
0	0	0

USA Frequency Hopping Trial #10

16	5508	48
19	5525	57
52	5517	156
57	5501	171
58	5512	174
78	5503	234
0	0	0

USA Frequency Hopping Trial #11

2	5501	6
10	5525	30
11	5509	33
49	5507	147
79	5516	237
0	0	0

USA Frequency Hopping Trial #12

42	5521	126
72	5518	216
88	5500	264
0	0	0

USA Frequency Hopping Trial #13

1	5524	3
27	5513	81
36	5493	108
78	5506	234
0	0	0

USA Frequency Hopping Trial #14

8	5498	24
11	5510	33

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41	5522	123
56	5508	168
86	5492	258
92	5513	276
0	0	0

USA Frequency Hopping Trial #15

9	5491	27
18	5496	54
27	5517	81
35	5503	105
38	5523	114
43	5527	129
50	5498	150
60	5493	180
90	5507	270
0	0	0

USA Frequency Hopping Trial #16

23	5515	69
55	5518	165
71	5509	213
84	5527	252
93	5512	279
95	5529	285
98	5493	294
0	0	0

USA Frequency Hopping Trial #17

30	5511	90
34	5507	102
44	5528	132
59	5516	177
82	5494	246
84	5496	252
88	5512	264
97	5503	291
0	0	0

USA Frequency Hopping Trial #18

4	5520	12
7	5516	21
26	5507	78
31	5501	93
47	5492	141
53	5524	159
0	0	0

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USA Frequency Hopping Trial #19

0	5501	0
2	5500	6
24	5526	72
54	5528	162
63	5524	189
74	5496	222
94	5498	282
95	5502	285
0	0	0

USA Frequency Hopping Trial #20

7	5517	21
13	5500	39
22	5507	66
25	5491	75
27	5521	81
31	5516	93
45	5529	135
62	5508	186
64	5504	192
79	5513	237
84	5494	252
90	5498	270
93	5528	279
0	0	0

USA Frequency Hopping Trial #21

0	5509	0
16	5526	48
25	5507	75
40	5491	120
42	5513	126
44	5517	132
63	5529	189
69	5505	207
0	0	0

USA Frequency Hopping Trial #22

0	5507	0
1	5504	3
5	5515	15
13	5528	39
20	5506	60
26	5493	78
52	5494	156

DFS Test Report No – 21727754

67	5518	201
71	5508	213
88	5520	264
93	5516	279
0	0	0

USA Frequency Hopping Trial #23

8	5513	24
18	5499	54
23	5510	69
29	5523	87
49	5508	147
54	5507	162
62	5494	186
0	0	0

USA Frequency Hopping Trial #24

21	5510	63
23	5493	69
26	5501	78
39	5508	117
44	5499	132
51	5526	153
56	5525	168
58	5528	174
65	5517	195
81	5504	243
84	5521	252
95	5498	285
0	0	0

USA Frequency Hopping Trial #25

2	5499	6
8	5501	24
12	5492	36
25	5522	75
34	5528	102
57	5517	171
74	5497	222
82	5510	246
91	5514	273
93	5512	279
98	5525	294
0	0	0

USA Frequency Hopping Trial #26

14	5501	42
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DFS Test Report No – 21727754

22	5496	66
27	5499	81
28	5515	84
29	5522	87
30	5527	90
34	5497	102
35	5509	105
37	5502	111
63	5507	189
71	5491	213
95	5521	285
0	0	0

USA Frequency Hopping Trial #27

0	5508	0
18	5510	54
37	5529	111
46	5501	138
59	5518	177
68	5517	204
75	5491	225
0	0	0

USA Frequency Hopping Trial #28

14	5522	42
15	5525	45
17	5510	51
31	5497	93
35	5494	105
55	5528	165
56	5503	168
75	5512	225
0	0	0

USA Frequency Hopping Trial #29

2	5496	6
9	5495	27
12	5512	36
48	5506	144
57	5527	171
60	5516	180
78	5526	234
80	5492	240
0	0	0

USA Frequency Hopping Trial #30

16	5491	48
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23	5526	69
29	5503	87
36	5529	108
76	5516	228
77	5507	231
81	5524	243
93	5499	279
96	5495	288
0	0	0

DFS Test Report No – 21727754

Channel 5530 MHz, 80MHz BW, Statistical Performance

USA Bin 0					freq=5530, rate=m0x1, bw=78.0		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	18	1	1428	1	80.0%	60.0%
2	5491	18	1	1428	1		
3	5496	18	1	1428	1		
4	5496	18	1	1428	1		
5	5558	18	1	1428	0		
6	5558	18	1	1428	1		
7	5508	18	1	1428	0		
8	5508	18	1	1428	1		
9	5514	18	1	1428	0		
10	5514	18	1	1428	1		
11	5520	18	1	1428	1		
12	5520	18	1	1428	1		
13	5526	18	1	1428	1		
14	5526	18	1	1428	1		
15	5530	18	1	1428	1		
16	5530	18	1	1428	1		
17	5534	18	1	1428	1		
18	5534	18	1	1428	1		
19	5540	18	1	1428	0		
20	5540	18	1	1428	1		
21	5546	18	1	1428	1		
22	5546	18	1	1428	0		
23	5552	18	1	1428	1		
24	5552	18	1	1428	0		
25	5558	18	1	1428	1		
26	5558	18	1	1428	1		
27	5564	18	1	1428	1		
28	5564	18	1	1428	1		
29	5569	18	1	1428	1		
30	5569	18	1	1428	1		

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USA Bin 1A/1B :1A					freq=5530, rate=m0x1, bw=78.0		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	92	1	578	0	63.3%	60.0%
2	5491	65	1	818	1		
3	5496	89	1	598	1		
4	5496	18	1	3066	1		
5	5558	58	1	918	1		
6	5558	61	1	878	1		
7	5508	70	1	758	1		
8	5508	72	1	738	1		
9	5514	86	1	618	1		
10	5514	92	1	578	1		
11	5520	67	1	798	1		
12	5520	95	1	558	1		
13	5526	72	1	738	1		
14	5526	70	1	758	1		
15	5530	95	1	558	1		
16	5530	20	1	2769	0		
17	5534	71	1	752	0		
18	5534	64	1	829	1		
19	5540	19	1	2868	1		
20	5540	32	1	1693	1		
21	5546	22	1	2424	1		
22	5546	22	1	2495	0		
23	5552	39	1	1383	1		
24	5552	25	1	2121	0		
25	5558	70	1	759	0		
26	5558	28	1	1953	0		
27	5564	22	1	2450	0		
28	5564	24	1	2261	0		
29	5569	23	1	2340	0		
30	5569	47	1	1141	0		

USA Bin 1A/1B :1B					freq=5530, rate=m0x1, bw=78MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5491	58	1	918	0	80.0%	60.0%
2	5491	72	1	738	1		
3	5496	74	1	718	1		
4	5496	76	1	698	0		
5	5558	62	1	858	0		
6	5558	65	1	818	1		
7	5508	81	1	658	1		
8	5508	67	1	798	1		
9	5514	57	1	938	1		
10	5514	89	1	598	1		
11	5520	83	1	638	1		
12	5520	63	1	838	1		
13	5526	76	1	698	1		
14	5526	18	1	3066	1		
15	5530	58	1	918	1		
16	5530	23	1	2391	1		
17	5534	38	1	1411	1		
18	5534	19	1	2874	1		
19	5540	85	1	621	1		
20	5540	18	1	3018	1		
21	5546	33	1	1610	0		
22	5546	37	1	1433	1		
23	5552	22	1	2504	1		
24	5552	32	1	1679	1		
25	5558	18	1	3055	1		
26	5558	60	1	887	1		
27	5564	23	1	2372	0		
28	5564	32	1	1701	1		
29	5569	40	1	1333	0		
30	5569	21	1	2570	0		

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USA Bin 2					freq=5530, rate=m0x1, bw=78.0		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5493	24	3.5	195	1	86.7%	60.0%
2	5493	29	1.3	220	0		
3	5496	25	2.8	201	1		
4	5496	24	3	226	1		
5	5558	29	4.3	229	1		
6	5558	26	4	188	1		
7	5508	28	3.6	172	1		
8	5508	26	1.5	194	1		
9	5514	26	2.6	180	0		
10	5514	29	1.9	181	1		
11	5520	25	1.2	223	1		
12	5520	28	3.6	168	1		
13	5526	23	4.6	210	1		
14	5526	23	3.7	209	1		
15	5530	23	2.6	211	1		
16	5530	26	2	197	1		
17	5534	26	1.8	216	1		
18	5534	27	3.1	223	1		
19	5540	25	3.4	172	1		
20	5540	25	1.3	221	1		
21	5546	25	1	186	1		
22	5546	28	4.3	220	0		
23	5552	27	3.7	155	1		
24	5552	23	1.6	191	1		
25	5558	26	3.1	176	1		
26	5558	28	2	179	1		
27	5564	28	3	179	1		
28	5564	28	3.3	216	1		
29	5567	28	5	221	0		
30	5567	29	4.8	188	1		

USA Bin 3					freq=5530, rate=m0x1, bw=78.0		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5493	17	8.5	370	0	86.7%	60.0%
2	5493	16	7.8	413	1		
3	5496	18	9.9	317	1		
4	5496	18	7	298	1		
5	5558	17	7.3	389	1		
6	5558	16	8.4	245	1		
7	5508	16	7.9	270	1		
8	5508	16	7.8	359	1		
9	5514	18	8.1	257	1		
10	5514	18	9.6	259	1		
11	5520	17	9.4	222	1		
12	5520	16	6.6	335	1		
13	5526	17	7.4	455	1		
14	5526	18	9.3	201	1		
15	5530	17	9	339	1		
16	5530	16	7.7	266	0		
17	5534	17	7.7	302	1		
18	5534	17	7.6	476	1		
19	5540	18	8.8	399	1		
20	5540	16	8.3	410	0		
21	5546	18	9.1	306	1		
22	5546	17	6.8	291	1		
23	5552	16	9.8	476	1		
24	5552	17	6.6	389	1		
25	5558	18	9.5	309	0		
26	5558	16	9.3	362	1		
27	5564	18	7.7	497	1		
28	5564	17	8.1	463	1		
29	5567	16	7.2	313	1		
30	5567	16	6.2	303	1		

USA Bin 4					freq=5530, rate=m0x1, bw=78MHz		
Trial	Frequency	Pulses	PW (uS)	PRI (uS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	5493	14	11.2	277	1	66.7%	60.0%
2	5493	12	19	427	0		
3	5496	12	12.3	404	1		
4	5496	12	15.4	212	0		
5	5558	14	16.6	267	1		
6	5558	12	14.8	304	1		
7	5508	15	11.8	450	0		
8	5508	14	14.3	412	1		
9	5514	12	16.1	213	1		
10	5514	14	12.5	467	0		
11	5520	16	15.2	242	0		
12	5520	15	16.9	253	0		
13	5526	15	19.2	393	1		
14	5526	14	11.2	466	1		
15	5530	15	17.6	268	1		
16	5530	16	12.8	271	1		
17	5534	16	16.8	234	0		
18	5534	12	11.4	226	1		
19	5540	14	14.8	270	1		
20	5540	12	15.9	227	0		
21	5546	16	16.9	202	0		
22	5546	14	16.2	239	1		
23	5552	12	12.9	320	0		
24	5552	15	13.6	324	1		
25	5558	12	11	341	1		
26	5558	15	16.6	274	1		
27	5564	14	11.4	251	1		
28	5564	15	17.5	478	1		
29	5567	16	14.2	386	1		
30	5567	13	17.7	329	1		

In addition, an average minimum percentage of successful detection across all four Short pulse radar test waveforms is required and is calculated as follows:

$$\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (80 + 86.7 + 86.7 + 66.7)/4 = 80.025\% (>80\%)$$

USA Bin 5			freq=5530, rate=m0x1, bw=78MHz								
Trial	Burst #	Pulses	Frequency (MHz)	Chirp (MHz)	PW (uS)	Inter-pulse spacing (uS)	Inter-pulse spacing (uS)	Pulse Start (S)	1=Detection 0=No Detection	Detection Percentage	Limit
1	1	1	5498.3	17	95			0.038294	0	86.7%	80.0%
2	1	2	5497.9	16	70	1857		0.654896	1		
3	1	1	5494.7	8	70			0.456746	1		
4	1	3	5499.1	19	100	1637	1271	1.078698	1		
5	1	2	5499.5	20	95	1764		0.379065	1		
6	1	2	5498.7	18	50	1315		0.203069	1		
7	1	2	5496.7	13	65	1128		0.724701	1		
8	1	1	5494.3	7	90			0.96045	1		
9	1	3	5495.9	11	85	1240	1288	0.057393	1		
10	1	2	5495.5	10	90	1441		0.268523	0		
11	1	3	5530	19	60	1994	1880	0.177321	1		
12	1	2	5530	19	90	1426		0.532161	1		
13	1	1	5530	6	55			0.693207	1		
14	1	3	5530	13	70	1024	1563	0.207314	1		
15	1	1	5530	7	95			0.102896	1		
16	1	2	5530	15	60	1409		0.561002	1		
17	1	3	5530	11	90	1344	1299	0.635107	1		
18	1	1	5530	7	75			0.244075	1		
19	1	1	5530	11	60			1.070144	1		
20	1	3	5530	19	60	1081	1988	1.439028	1		
21	1	1	5563.7	12	60			0.179915	1		
22	1	1	5565.7	7	60			0.574298	0		
23	1	1	5561.3	18	65			1.130089	1		
24	1	3	5562.1	16	70	1475	1451	0.145458	1		
25	1	3	5564.1	11	60	1609	1042	0.380918	1		
26	1	2	5563.3	13	90	1654		0.83829	1		
27	1	3	5565.7	7	65	1728	1139	0.403963	1		
28	1	1	5566.5	5	90			0.206585	1		
29	1	2	5563.7	12	55	1444		1.060355	1		
30	1	2	5566.1	6	75	2000		0.472613	0		

USA Bin 5 Trial #1

1	1	5498.3	17	95			0.038294
2	3	5498.3	17	95	1711	1464	1.57632
3	1	5498.3	17	65			3.526643
4	3	5498.3	17	65	1483	1600	3.976117
5	2	5498.3	17	100	1175		4.92398
6	2	5498.3	17	85	1362		7.095426
7	2	5498.3	17	95	1841		8.256825
8	2	5498.3	17	70	1273		9.504795
9	3	5498.3	17	100	1098	1048	10.749017
10	1	5498.3	17	75			11.516338
0	0	0	0	0			0

USA Bin 5 Trial #2

1	2	5497.9	16	70	1857		0.654896
2	2	5497.9	16	60	1143		1.856448
3	3	5497.9	16	70	1980	1057	3.024289
4	2	5497.9	16	50	1913		4.208537
5	3	5497.9	16	55	1085	1236	5.418045
6	1	5497.9	16	90			6.504629
7	2	5497.9	16	85	1259		6.941565
8	3	5497.9	16	95	1564	1472	7.712151
9	3	5497.9	16	75	1803	1591	8.827932
10	1	5497.9	16	65			10.342066
11	2	5497.9	16	100	1037		11.138775
0	0	0	0	0			0

USA Bin 5 Trial #3

1	1	5494.7	8	70			0.456746
2	2	5494.7	8	100	1388		1.371875
3	1	5494.7	8	75			3.419816
4	2	5494.7	8	60	1898		5.093679
5	2	5494.7	8	80	1551		5.590737
6	2	5494.7	8	85	1671		7.122048
7	1	5494.7	8	80			8.863702
8	1	5494.7	8	70			9.780749
9	2	5494.7	8	55	1085		10.807735
0	0	0	0	0			0

USA Bin 5 Trial #4

1	3	5499.1	19	100	1637	1271	1.078698
2	2	5499.1	19	100	1124		1.425996
3	2	5499.1	19	85	1234		2.979758
4	1	5499.1	19	65			4.672827
5	3	5499.1	19	60	1801	1646	6.017192

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6	1	5499.1	19	70			7.891111
7	1	5499.1	19	65			8.814893
8	2	5499.1	19	85	1111		10.500785
9	3	5499.1	19	85	1218	1973	11.028237
0	0	0	0	0			0
USA Bin 5 Trial #5							
1	2	5499.5	20	95	1764		0.379065
2	3	5499.5	20	95	1356	1516	0.810312
3	1	5499.5	20	85			2.222167
4	1	5499.5	20	80			2.845225
5	3	5499.5	20	70	1462	1738	3.947204
6	3	5499.5	20	50	1765	1376	4.171802
7	3	5499.5	20	50	1197	1360	5.127559
8	3	5499.5	20	70	1994	1161	5.794418
9	1	5499.5	20	95			6.406845
10	3	5499.5	20	95	1234	1648	7.642086
11	3	5499.5	20	90	1430	1849	8.558262
12	2	5499.5	20	50	1409		9.130151
13	3	5499.5	20	70	1081	1662	9.729085
14	2	5499.5	20	70	1068		10.449789
15	2	5499.5	20	65	1982		11.433564
0	0	0	0	0			0
USA Bin 5 Trial #6							
1	2	5498.7	18	50	1315		0.203069
2	2	5498.7	18	55	1040		1.049672
3	1	5498.7	18	95			1.49379
4	3	5498.7	18	90	1015	1077	1.975434
5	1	5498.7	18	65			2.500582
6	1	5498.7	18	50			3.521989
7	1	5498.7	18	60			3.987935
8	1	5498.7	18	85			4.441807
9	3	5498.7	18	85	1573	1551	5.282979
10	2	5498.7	18	100	1948		5.705785
11	2	5498.7	18	95	1315		6.584219
12	1	5498.7	18	95			6.796383
13	1	5498.7	18	95			7.406126
14	3	5498.7	18	95	1060	1449	8.014579
15	3	5498.7	18	65	1399	1965	8.475657
16	3	5498.7	18	50	1131	1905	9.113597
17	2	5498.7	18	85	1031		10.041232
18	2	5498.7	18	70	1114		10.511717
19	1	5498.7	18	100			11.34573
20	1	5498.7	18	75			11.741342

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0	0	0	0	0		0
USA Bin 5 Trial #7						
1	2	5496.7	13	65	1128	0.724701
2	2	5496.7	13	55	1913	1.774528
3	2	5496.7	13	55	1847	3.460667
4	1	5496.7	13	95		5.195225
5	3	5496.7	13	55	1724	1077 5.359567
6	3	5496.7	13	60	1227	1853 7.302214
7	2	5496.7	13	50	1664	8.357774
8	1	5496.7	13	50		9.974153
9	2	5496.7	13	95	1830	11.434334
0	0	0	0	0		0
USA Bin 5 Trial #8						
1	1	5494.3	7	90		0.960450
2	2	5494.3	7	90	1359	2.318857
3	1	5494.3	7	95		2.735343
4	1	5494.3	7	80		4.848434
5	2	5494.3	7	75	1162	6.506108
6	2	5494.3	7	60	1620	7.378912
7	3	5494.3	7	90	1885	1169 8.921189
8	1	5494.3	7	85		9.56133
9	2	5494.3	7	65	1959	10.721312
0	0	0	0	0		0
USA Bin 5 Trial #9						
1	3	5495.9	11	85	1240	1288 0.057393
2	1	5495.9	11	75		1.429324
3	3	5495.9	11	70	1727	1706 1.760613
4	3	5495.9	11	100	1558	1414 2.927951
5	2	5495.9	11	50	1804	3.571478
6	1	5495.9	11	70		4.204986
7	2	5495.9	11	65	1782	4.797413
8	2	5495.9	11	75	1788	5.897369
9	2	5495.9	11	65	1092	6.593684
10	2	5495.9	11	50	1712	6.910763
11	3	5495.9	11	100	1500	1148 7.528642
12	3	5495.9	11	55	1646	1669 8.765627
13	2	5495.9	11	60	1004	9.178965
14	2	5495.9	11	55	1614	10.142642
15	3	5495.9	11	90	1300	1536 11.200298
16	1	5495.9	11	65		11.911831
0	0	0	0	0		0
USA Bin 5 Trial #10						
1	2	5495.5	10	90	1441	0.268523

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2	3	5495.5	10	55	1258	1372	1.139216
3	3	5495.5	10	75	1562	1745	1.409269
4	2	5495.5	10	80	1017		2.036688
5	1	5495.5	10	100			2.758252
6	2	5495.5	10	55	1867		3.364677
7	3	5495.5	10	70	1098	1985	3.849416
8	3	5495.5	10	100	1410	1042	4.392315
9	1	5495.5	10	60			5.038299
10	1	5495.5	10	75			5.842234
11	2	5495.5	10	50	1198		6.493661
12	1	5495.5	10	55			7.163649
13	1	5495.5	10	95			7.63074
14	1	5495.5	10	85			8.278164
15	1	5495.5	10	70			8.457893
16	2	5495.5	10	80	1045		9.514049
17	3	5495.5	10	60	1722	1808	10.050908
18	1	5495.5	10	85			10.285399
19	1	5495.5	10	95			11.340354
20	3	5495.5	10	75	1619	1691	11.488248
0	0	0	0	0			0
USA Bin 5 Trial #11							
1	3	5530.0	19	60	1994	1880	0.177321
2	3	5530	19	70	1964	1406	1.79561
3	2	5530	19	65	1276		2.992408
4	2	5530	19	70	1977		3.640414
5	1	5530	19	80			4.859497
6	1	5530	19	55			6.933749
7	3	5530	19	95	1019	1205	8.172223
8	3	5530	19	80	1289	1426	9.180419
9	2	5530	19	80	1390		9.618659
10	1	5530	19	50			11.836635
0	0	0	0	0			0
USA Bin 5 Trial #12							
1	2	5530.0	19	90	1426		0.532161
2	2	5530	19	80	1557		1.166522
3	1	5530	19	95			2.034582
4	2	5530	19	55	1565		2.590259
5	1	5530	19	55			3.938412
6	2	5530	19	55	1968		5.090313
7	1	5530	19	85			5.767721
8	2	5530	19	90	1762		6.151845
9	1	5530	19	55			7.556077
10	2	5530	19	95	1152		8.218646

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11	3	5530	19	65	1232	1720	9.070071
12	2	5530	19	55	1875		10.252877
13	1	5530	19	85			11.084117
14	3	5530	19	50	1026	1565	11.178654
0	0	0	0	0			0
USA Bin 5 Trial #13							
1	1	5530.0	6	55			0.693207
2	2	5530	6	65	1775		1.694431
3	1	5530	6	100			2.205439
4	3	5530	6	65	1978	1574	3.394206
5	1	5530	6	100			3.521585
6	2	5530	6	85	1581		4.527229
7	3	5530	6	70	1666	1975	5.967275
8	3	5530	6	100	1277	1770	6.371269
9	1	5530	6	60			7.517622
10	2	5530	6	85	1922		8.305415
11	2	5530	6	100	1146		9.121819
12	1	5530	6	65			9.806961
13	1	5530	6	80			10.638682
14	1	5530	6	70			11.51072
0	0	0	0	0			0
USA Bin 5 Trial #14							
1	3	5530.0	13	70	1024	1563	0.207314
2	2	5530	13	95	1759		1.193496
3	1	5530	13	95			1.864204
4	3	5530	13	55	1124	1243	2.42506
5	1	5530	13	70			3.03627
6	2	5530	13	100	1826		3.512414
7	1	5530	13	90			4.128372
8	1	5530	13	65			4.753008
9	2	5530	13	70	1031		5.636593
10	2	5530	13	60	1648		6.407212
11	1	5530	13	95			7.24342
12	2	5530	13	70	1555		7.994732
13	1	5530	13	90			8.204587
14	3	5530	13	95	1157	1470	9.136803
15	2	5530	13	100	1960		9.497745
16	2	5530	13	85	1617		10.272621
17	2	5530	13	80	1712		10.878123
18	1	5530	13	75			11.965032
0	0	0	0	0			0
USA Bin 5 Trial #15							
1	1	5530.0	7	95			0.102896

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2	3	5530	7	90	1278	1856	1.44929
3	2	5530	7	60	1382		2.30488
4	3	5530	7	100	1234	1064	2.936237
5	1	5530	7	60			3.446252
6	1	5530	7	60			4.433616
7	2	5530	7	100	1095		5.45671
8	2	5530	7	50	1183		6.159083
9	3	5530	7	95	1665	1122	6.939787
10	2	5530	7	85	1261		7.97936
11	3	5530	7	85	1440	1332	8.172313
12	1	5530	7	80			9.599299
13	1	5530	7	55			9.793107
14	3	5530	7	95	1358	1174	11.174649
15	1	5530	7	70			11.854992
0	0	0	0	0			0
USA Bin 5 Trial #16							
1	2	5530.0	15	60	1409		0.561002
2	2	5530	15	90	1638		0.870745
3	2	5530	15	60	1875		1.979947
4	3	5530	15	70	1184	1330	2.444257
5	1	5530	15	60			3.935078
6	1	5530	15	70			4.156582
7	2	5530	15	70	1762		4.95419
8	3	5530	15	100	1000	1800	5.863895
9	1	5530	15	60			6.85897
10	3	5530	15	95	1727	1713	7.513133
11	3	5530	15	60	1715	1511	8.491695
12	1	5530	15	100			9.42294
13	2	5530	15	100	1289		10.386661
14	1	5530	15	100			10.91497
15	3	5530	15	85	1335	1129	11.322464
0	0	0	0	0			0
USA Bin 5 Trial #17							
1	3	5530.0	11	90	1344	1299	0.635107
2	1	5530	11	65			1.654032
3	1	5530	11	80			2.038959
4	2	5530	11	90	1186		3.069208
5	2	5530	11	90	1952		4.082822
6	3	5530	11	95	1364	1246	4.480062
7	3	5530	11	90	1867	1219	5.272767
8	2	5530	11	90	1053		6.683978
9	3	5530	11	60	1343	1583	7.227576
10	3	5530	11	65	1679	1270	7.850566

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11	2	5530	11	95	1679		9.122747
12	2	5530	11	50	1414		10.051342
13	2	5530	11	80	1718		10.759107
14	3	5530	11	80	1180	1947	11.383414
0	0	0	0	0			0
USA Bin 5 Trial #18							
1	1	5530.0	7	75			0.244075
2	3	5530	7	100	1216	1864	1.048517
3	3	5530	7	55	1653	1872	1.906832
4	1	5530	7	90			3.1085
5	2	5530	7	70	1961		3.748128
6	1	5530	7	55			4.986008
7	2	5530	7	50	1367		5.548524
8	1	5530	7	70			6.660831
9	3	5530	7	60	1412	1786	8.087914
10	1	5530	7	50			8.743542
11	3	5530	7	55	1579	1692	9.291479
12	3	5530	7	90	1406	1531	11.033917
13	3	5530	7	85	1136	1615	11.690962
0	0	0	0	0			0
USA Bin 5 Trial #19							
1	1	5530.0	11	60			1.070144
2	2	5530	11	80	1425		1.287853
3	1	5530	11	90			2.409211
4	3	5530	11	85	1425	1434	4.217484
5	2	5530	11	65	1992		5.155411
6	3	5530	11	75	1948	1778	6.165317
7	3	5530	11	80	1528	1057	8.189084
8	1	5530	11	70			8.816484
9	2	5530	11	60	1022		9.69553
10	2	5530	11	85	1395		11.877206
0	0	0	0	0			0
USA Bin 5 Trial #20							
1	3	5530.0	19	60	1081	1988	1.439028
2	2	5530	19	50	1120		2.056777
3	2	5530	19	50	1772		4.472881
4	3	5530	19	90	1084	1226	4.900022
5	1	5530	19	65			7.151832
6	1	5530	19	50			7.565744
7	2	5530	19	70	1906		9.281945
8	3	5530	19	80	1333	1640	11.817303
0	0	0	0	0			0
USA Bin 5 Trial #21							

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1	1	5563.7	12	60			0.179915
2	2	5563.7	12	80	1910		0.716621
3	2	5563.7	12	70	1695		1.409796
4	1	5563.7	12	100			2.484615
5	1	5563.7	12	50			2.871198
6	3	5563.7	12	60	1859	1281	3.510467
7	2	5563.7	12	75	1798		4.253277
8	1	5563.7	12	95			4.896145
9	1	5563.7	12	80			5.363404
10	2	5563.7	12	70	1756		6.142819
11	1	5563.7	12	75			6.904549
12	2	5563.7	12	60	1171		7.937586
13	2	5563.7	12	90	1735		8.535428
14	3	5563.7	12	100	1532	1657	8.912594
15	2	5563.7	12	70	1030		9.953317
16	1	5563.7	12	80			10.005479
17	2	5563.7	12	100	1006		11.051104
18	3	5563.7	12	80	1156	1690	11.400452
0	0	0	0	0			0
USA Bin 5 Trial #22							
1	1	5565.7	7	60			0.574298
2	2	5565.7	7	95	1957		0.980116
3	2	5565.7	7	65	1225		1.420595
4	2	5565.7	7	65	1475		2.615258
5	3	5565.7	7	85	1545	1092	3.204937
6	1	5565.7	7	100			3.411517
7	3	5565.7	7	100	1649	1458	4.345439
8	2	5565.7	7	75	1225		5.242231
9	1	5565.7	7	55			5.791655
10	2	5565.7	7	90	1198		6.586577
11	1	5565.7	7	70			7.077038
12	3	5565.7	7	50	1081	1283	7.573283
13	2	5565.7	7	85	1680		8.325813
14	1	5565.7	7	65			9.109418
15	3	5565.7	7	90	1467	1651	9.364866
16	3	5565.7	7	90	1901	1085	10.228298
17	1	5565.7	7	60			11.268511
18	2	5565.7	7	75	1087		11.83283
0	0	0	0	0			0
USA Bin 5 Trial #23							
1	1	5561.3	18	65			1.130089
2	3	5561.3	18	80	1295	1543	1.58201
3	1	5561.3	18	70			3.543983

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4	2	5561.3	18	100	1768		5.302106
5	2	5561.3	18	100	1668		5.657182
6	3	5561.3	18	75	1602	1728	7.561393
7	2	5561.3	18	90	1486		9.276933
8	2	5561.3	18	60	1557		9.81492
9	2	5561.3	18	50	1583		11.002574
0	0	0	0	0			0
USA Bin 5 Trial #24							
1	3	5562.1	16	70	1475	1451	0.145458
2	3	5562.1	16	75	1671	1837	1.178298
3	3	5562.1	16	60	1108	1678	2.032224
4	3	5562.1	16	55	1171	1554	3.270829
5	2	5562.1	16	65	1764		4.401396
6	3	5562.1	16	80	1412	1745	4.708722
7	1	5562.1	16	65			5.842026
8	2	5562.1	16	70	1318		7.257092
9	3	5562.1	16	70	1855	1730	8.247615
10	3	5562.1	16	65	1820	1011	8.886735
11	1	5562.1	16	50			10.046961
12	2	5562.1	16	90	1268		10.786851
13	2	5562.1	16	60	1252		11.602862
0	0	0	0	0			0
USA Bin 5 Trial #25							
1	3	5564.1	11	60	1609	1042	0.380918
2	3	5564.1	11	100	1381	1874	1.193909
3	3	5564.1	11	90	1451	1033	1.339222
4	1	5564.1	11	75			2.114272
5	1	5564.1	11	60			2.996113
6	3	5564.1	11	50	1198	1573	3.462365
7	3	5564.1	11	95	1828	1601	4.629301
8	2	5564.1	11	95	1007		5.050962
9	2	5564.1	11	75	1891		5.861191
10	1	5564.1	11	80			6.524459
11	3	5564.1	11	90	1227	1100	7.012266
12	1	5564.1	11	50			7.975193
13	1	5564.1	11	75			8.05178
14	2	5564.1	11	80	1098		9.253208
15	2	5564.1	11	85	1722		9.959564
16	2	5564.1	11	100	1582		10.578728
17	2	5564.1	11	90	1923		10.797417
18	3	5564.1	11	60	1217	1980	11.499462
0	0	0	0	0			0
USA Bin 5 Trial #26							

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1	2	5563.3	13	90	1654		0.838290
2	1	5563.3	13	90			1.384472
3	1	5563.3	13	95			2.140741
4	2	5563.3	13	90	1742		3.147491
5	2	5563.3	13	85	1209		3.901052
6	3	5563.3	13	95	1157	1800	5.532568
7	3	5563.3	13	85	1652	1573	6.409997
8	2	5563.3	13	50	1007		7.101036
9	1	5563.3	13	100			7.946115
10	3	5563.3	13	90	1929	1144	8.8886
11	2	5563.3	13	70	1539		9.820004
12	1	5563.3	13	90			10.733631
13	1	5563.3	13	60			11.348878
0	0	0	0	0			0
USA Bin 5 Trial #27							
1	3	5565.7	7	65	1728	1139	0.403963
2	2	5565.7	7	60	1105		1.116597
3	2	5565.7	7	90	1858		2.018604
4	1	5565.7	7	55			3.254666
5	2	5565.7	7	90	1011		3.737413
6	2	5565.7	7	60	1655		4.758882
7	2	5565.7	7	85	1223		5.88149
8	1	5565.7	7	70			7.159505
9	2	5565.7	7	95	1899		7.457069
10	2	5565.7	7	70	1559		9.150646
11	1	5565.7	7	70			10.076086
12	3	5565.7	7	95	1213	1939	10.634441
13	1	5565.7	7	65			11.403013
0	0	0	0	0			0
USA Bin 5 Trial #28							
1	1	5566.5	5	90			0.206585
2	2	5566.5	5	70	1077		0.925494
3	3	5566.5	5	50	1999	1053	1.55016
4	1	5566.5	5	55			2.363778
5	3	5566.5	5	65	1380	1892	2.718076
6	3	5566.5	5	75	1860	1071	3.227424
7	1	5566.5	5	65			4.035764
8	2	5566.5	5	80	1912		4.512989
9	3	5566.5	5	85	1485	1828	5.133032
10	1	5566.5	5	95			5.872834
11	1	5566.5	5	50			6.778583
12	3	5566.5	5	50	1095	1010	7.259847
13	2	5566.5	5	50	1129		7.603238

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14	2	5566.5	5	85	1965		8.746835
15	1	5566.5	5	80			8.906751
16	1	5566.5	5	70			10.005702
17	1	5566.5	5	60			10.572819
18	3	5566.5	5	65	2000	1127	10.898452
19	1	5566.5	5	80			11.72059
0	0	0	0	0			0
USA Bin 5 Trial #29							
1	2	5563.7	12	55	1444		1.060355
2	2	5563.7	12	95	1017		2.036375
3	1	5563.7	12	50			3.59634
4	2	5563.7	12	65	1070		4.201176
5	1	5563.7	12	55			5.051014
6	2	5563.7	12	70	1061		6.849619
7	3	5563.7	12	80	1514	1166	7.530536
8	1	5563.7	12	85			9.108897
9	3	5563.7	12	80	1756	1512	10.301663
10	2	5563.7	12	50	1637		11.142484
0	0	0	0	0			0
USA Bin 5 Trial #30							
1	2	5566.1	6	75	2000		0.472613
2	1	5566.1	6	90			1.173106
3	1	5566.1	6	55			1.862778
4	3	5566.1	6	60	1114	1567	2.054924
5	1	5566.1	6	85			2.76594
6	3	5566.1	6	55	1149	1481	3.423262
7	2	5566.1	6	60	1586		3.876061
8	1	5566.1	6	65			4.568928
9	3	5566.1	6	60	1941	1538	5.390353
10	2	5566.1	6	55	1800		6.082925
11	2	5566.1	6	75	1107		6.461722
12	1	5566.1	6	65			7.253801
13	1	5566.1	6	100			7.683819
14	1	5566.1	6	60			8.249868
15	1	5566.1	6	90			9.383621
16	2	5566.1	6	60	1027		9.557292
17	3	5566.1	6	65	1531	1659	10.488653
18	1	5566.1	6	50			11.283868
19	1	5566.1	6	85			11.558174
0	0	0	0	0			0

USA Frequency Hopping (JP)

freq=5530, rate=m0x1, bw=78MHz

Trial	Hop #	Freq (GHz)	Pulse Start (mS)	1=Detection 0=No Detection	Detection Percentage	Limit
1	1	5521	3	1	100.0%	70.0%
2	6	5553	18	1		
3	4	5555	12	1		
4	3	5506	9	1		
5	5	5517	15	1		
6	0	5498	0	1		
7	1	5546	3	1		
8	14	5518	42	1		
9	9	5550	27	1		
10	4	5541	12	1		
11	4	5534	12	1		
12	6	5524	18	1		
13	11	5535	33	1		
14	2	5500	6	1		
15	3	5563	9	1		
16	3	5530	9	1		
17	8	5513	24	1		
18	11	5513	33	1		
19	7	5496	21	1		
20	2	5534	6	1		
21	5	5522	15	1		
22	1	5537	3	1		
23	1	5542	3	1		
24	8	5523	24	1		
25	10	5550	30	1		
26	11	5503	33	1		
27	7	5501	21	1		
28	29	5541	87	1		
29	12	5561	36	1		
30	7	5503	21	1		

USA Frequency Hopping Trial #1

1	5521	3
4	5535	12
8	5556	24
9	5499	27
10	5508	30
11	5538	33
16	5522	48
23	5533	69
25	5505	75
26	5523	78
29	5567	87
32	5550	96
33	5559	99
69	5524	207
74	5547	222
79	5546	237
82	5551	246
83	5552	249
85	5545	255
90	5514	270
92	5493	276
0	0	0

USA Frequency Hopping Trial #2

6	5553	18
21	5507	63
34	5514	102
48	5496	144
58	5567	174
64	5522	192
71	5548	213
82	5509	246
91	5544	273
0	0	0

USA Frequency Hopping Trial #3

4	5555	12
13	5534	39
19	5551	57
26	5505	78
27	5535	81
28	5542	84
41	5499	123

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44	5507	132
50	5527	150
57	5503	171
62	5556	186
67	5498	201
71	5546	213
77	5520	231
81	5566	243
0	0	0

USA Frequency Hopping Trial #4

3	5506	9
4	5512	12
7	5509	21
9	5556	27
12	5546	36
18	5542	54
31	5558	93
35	5554	105
47	5567	141
59	5566	177
70	5537	210
72	5531	216
80	5533	240
82	5521	246
87	5529	261
88	5502	264
89	5498	267
91	5532	273
93	5492	279
94	5528	282
98	5510	294
0	0	0

USA Frequency Hopping Trial #5

5	5517	15
11	5515	33
13	5527	39
19	5522	57
21	5557	63
22	5510	66
25	5561	75
29	5525	87
32	5524	96
45	5529	135

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61	5493	183
85	5501	255
86	5506	258
87	5495	261
94	5503	282
96	5565	288
0	0	0

USA Frequency Hopping Trial #6

0	5498	0
13	5500	39
14	5562	42
18	5516	54
33	5551	99
35	5567	105
37	5525	111
41	5514	123
42	5508	126
51	5520	153
58	5556	174
60	5549	180
62	5542	186
66	5494	198
71	5526	213
76	5546	228
84	5523	252
89	5496	267
94	5554	282
95	5568	285
97	5553	291
99	5524	297
0	0	0

USA Frequency Hopping Trial #7

1	5546	3
4	5525	12
10	5493	30
18	5498	54
26	5524	78
28	5545	84
32	5555	96
34	5551	102
37	5536	111
40	5529	120
42	5508	126

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48	5566	144
49	5526	147
52	5561	156
70	5541	210
74	5533	222
75	5516	225
77	5512	231
79	5528	237
84	5567	252
88	5494	264
92	5496	276
98	5553	294
0	0	0

USA Frequency Hopping Trial #8

14	5518	42
15	5568	45
16	5550	48
17	5523	51
21	5526	63
22	5535	66
23	5563	69
36	5558	108
48	5536	144
51	5505	153
54	5513	162
55	5539	165
59	5541	177
71	5496	213
87	5559	261
91	5552	273
95	5527	285
0	0	0

USA Frequency Hopping Trial #9

9	5550	27
14	5509	42
21	5562	63
22	5567	66
34	5555	102
37	5541	111
42	5520	126
46	5497	138
48	5528	144
50	5560	150

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56	5530	168
70	5512	210
74	5494	222
82	5568	246
83	5540	249
88	5517	264
94	5518	282
95	5561	285
98	5547	294
0	0	0

USA Frequency Hopping Trial #10

4	5541	12
6	5515	18
9	5565	27
11	5496	33
21	5551	63
25	5502	75
40	5506	120
44	5542	132
59	5532	177
60	5546	180
71	5530	213
74	5560	222
75	5493	225
80	5539	240
83	5524	249
84	5563	252
91	5559	273
98	5521	294
0	0	0

USA Frequency Hopping Trial #11

4	5534	12
7	5554	21
8	5548	24
25	5525	75
27	5563	81
42	5519	126
50	5514	150
51	5522	153
52	5542	156
57	5555	171
68	5496	204
71	5517	213

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0	0	0
USA Frequency Hopping Trial #12		
6	5524	18
10	5502	30
19	5493	57
26	5565	78
27	5492	81
65	5526	195
73	5513	219
75	5509	225
84	5563	252
86	5535	258
90	5545	270
94	5508	282
96	5496	288
98	5553	294
0	0	0
USA Frequency Hopping Trial #13		
11	5535	33
15	5496	45
20	5559	60
24	5525	72
25	5505	75
36	5537	108
37	5522	111
38	5551	114
51	5502	153
60	5557	180
61	5520	183
69	5492	207
71	5561	213
72	5539	216
79	5547	237
80	5504	240
82	5518	246
87	5554	261
91	5519	273
92	5564	276
96	5506	288
0	0	0
USA Frequency Hopping Trial #14		
2	5500	6
6	5524	18

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17	5496	51
21	5555	63
22	5516	66
29	5543	87
32	5564	96
37	5548	111
39	5536	117
41	5563	123
50	5533	150
52	5544	156
61	5530	183
66	5517	198
70	5521	210
79	5529	237
88	5550	264
0	0	0

USA Frequency Hopping Trial #15

3	5563	9
4	5496	12
6	5544	18
7	5543	21
18	5510	54
29	5501	87
40	5550	120
45	5566	135
47	5530	141
58	5538	174
78	5564	234
85	5513	255
89	5557	267
90	5535	270
97	5492	291
98	5545	294
0	0	0

USA Frequency Hopping Trial #16

3	5530	9
8	5522	24
9	5553	27
13	5506	39
21	5546	63
35	5537	105
39	5547	117
40	5531	120

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45	5529	135
73	5544	219
95	5535	285
97	5532	291
0	0	0

USA Frequency Hopping Trial #17

8	5513	24
13	5531	39
18	5543	54
28	5519	84
36	5496	108
38	5549	114
49	5521	147
55	5551	165
63	5499	189
70	5514	210
72	5564	216
73	5495	219
81	5563	243
84	5557	252
92	5555	276
93	5510	279
0	0	0

USA Frequency Hopping Trial #18

11	5513	33
13	5523	39
16	5560	48
17	5496	51
26	5543	78
28	5494	84
34	5568	102
43	5505	129
44	5542	132
45	5502	135
57	5529	171
58	5520	174
70	5516	210
75	5559	225
77	5528	231
86	5499	258
95	5545	285
99	5498	297
0	0	0

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USA Frequency Hopping Trial #19

7	5496	21
12	5502	36
18	5557	54
21	5566	63
27	5538	81
29	5532	87
32	5509	96
34	5526	102
36	5562	108
42	5507	126
43	5553	129
44	5505	132
46	5527	138
47	5521	141
51	5543	153
73	5561	219
76	5537	228
78	5520	234
88	5558	264
91	5494	273
95	5495	285
96	5504	288
0	0	0

USA Frequency Hopping Trial #20

2	5534	6
5	5509	15
7	5512	21
9	5568	27
14	5558	42
18	5535	54
27	5563	81
36	5493	108
42	5497	126
45	5492	135
46	5550	138
66	5521	198
67	5541	201
69	5566	207
71	5522	213
76	5528	228
81	5555	243
85	5560	255

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88	5553	264
98	5562	294
0	0	0

USA Frequency Hopping Trial #21

5	5522	15
17	5539	51
23	5559	69
38	5561	114
55	5501	165
65	5514	195
76	5529	228
81	5536	243
91	5500	273
94	5535	282
96	5512	288
0	0	0

USA Frequency Hopping Trial #22

1	5537	3
5	5564	15
18	5567	54
22	5534	66
23	5558	69
35	5536	105
44	5493	132
52	5508	156
53	5531	159
55	5559	165
62	5510	186
67	5545	201
69	5514	207
71	5550	213
86	5494	258
90	5560	270
91	5502	273
93	5535	279
0	0	0

USA Frequency Hopping Trial #23

1	5542	3
12	5530	36
13	5566	39
21	5495	63
23	5555	69
24	5533	72

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37	5509	111
40	5502	120
48	5564	144
55	5535	165
60	5504	180
62	5541	186
74	5496	222
75	5537	225
76	5511	228
90	5559	270
92	5549	276
0	0	0

USA Frequency Hopping Trial #24

8	5523	24
11	5535	33
15	5543	45
24	5549	72
27	5522	81
37	5515	111
65	5556	195
67	5539	201
68	5498	204
72	5494	216
77	5551	231
79	5533	237
88	5492	264
97	5520	291
98	5514	294
0	0	0

USA Frequency Hopping Trial #25

10	5550	30
14	5565	42
16	5567	48
19	5536	57
21	5534	63
23	5529	69
31	5495	93
36	5555	108
37	5521	111
39	5498	117
48	5500	144
50	5544	150
67	5492	201

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68	5545	204
80	5535	240
83	5542	249
84	5519	252
85	5552	255
89	5524	267
91	5515	273
97	5551	291
0	0	0

USA Frequency Hopping Trial #26

11	5503	33
20	5509	60
34	5532	102
36	5508	108
41	5567	123
45	5558	135
49	5528	147
59	5511	177
63	5551	189
69	5548	207
70	5542	210
74	5554	222
75	5525	225
84	5536	252
96	5550	288
97	5537	291
99	5522	297
0	0	0

USA Frequency Hopping Trial #27

7	5501	21
14	5519	42
16	5532	48
24	5547	72
34	5492	102
36	5529	108
45	5500	135
46	5552	138
50	5518	150
57	5562	171
69	5515	207
70	5514	210
71	5502	213
78	5553	234

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83	5549	249
85	5543	255
88	5565	264
92	5561	276
95	5540	285
98	5517	294
0	0	0

USA Frequency Hopping Trial #28

29	5541	87
31	5530	93
34	5558	102
48	5552	144
52	5522	156
54	5498	162
55	5559	165
58	5555	174
61	5504	183
65	5512	195
80	5509	240
98	5566	294
99	5550	297
0	0	0

USA Frequency Hopping Trial #29

12	5561	36
16	5556	48
19	5514	57
20	5551	60
26	5544	78
28	5537	84
29	5562	87
32	5567	96
43	5511	129
61	5524	183
78	5542	234
81	5523	243
96	5543	288
0	0	0

USA Frequency Hopping Trial #30

7	5503	21
15	5534	45
19	5533	57
23	5501	69
26	5531	78

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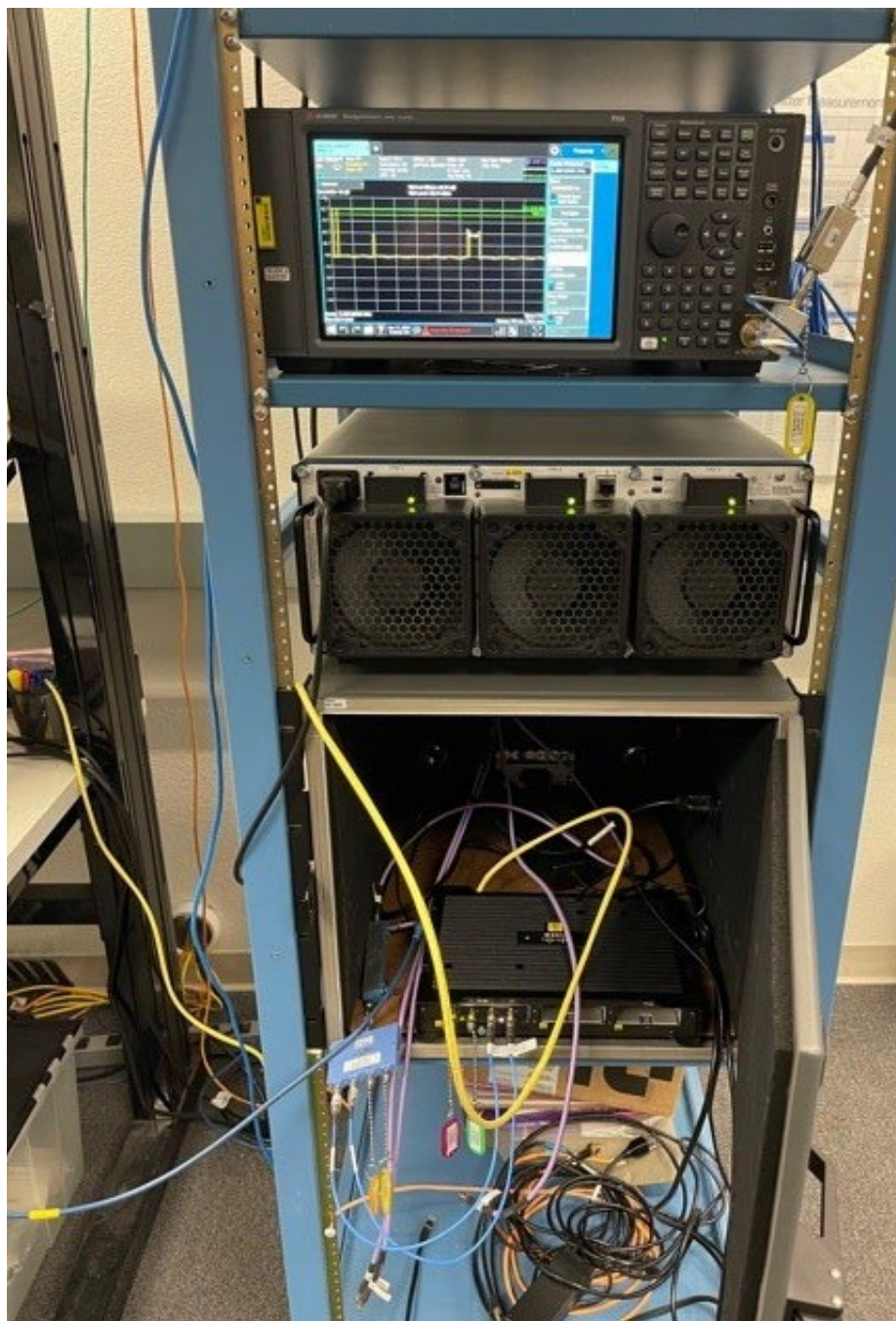
27	5519	81
37	5518	111
40	5559	120
46	5566	138
47	5542	141
64	5522	192
84	5530	252
92	5564	276
0	0	0

Appendix C: List of Test Equipment Used to perform the test

Equip#	Manufacturer/ Model	Description	Last Cal	Next Cal
58721	Cisco/Automation Test Insertion Loss	Rack 11	Cal Not Required	
58803	National Instruments / PXIe-1085	Chasis	Cal Not Required	
58787	National Instruments / PXIe-8840	Up to 2.6 GHz Quad-Core PXI Express Controller	Cal Not Required	
58790	National Instruments PXI-5422	200 MS/s, 16-bit Arbitrary Waveform Generator	3-Feb-21	3-Feb-22
58790	National Instruments PXI-5422	200 MS/s, 16-bit Arbitrary Waveform Generator	3-Feb-21	3-Feb-22
58788	National Instruments PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Cal Not Required	
58789	National Instruments PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Cal Not Required	
58786	National Instruments PXI-2799	Switch 1x1	Cal Not Required	
58785	Keysight (Agilent/HP)/ N9030B-550 OPT LNP EP0	PXA Signal Analyzer, 2Hz-50GHz with Options LNP and EP0	13-Jun-20	13-Jun-21
58813	Keysight N5182B	MXG X-Series RF Vector Signal Generator	22-Sep-20	22-Sep-21
54235	PASTERNAK/ PE5019-1	Torque wrench	9-Mar-21	9-Mar-22
55358	Mini-Circuits ZFSC-2-10G	SPLITTER, 2-10GHZ	3-Mar-21	3-Mar-22
58283	Pulsar PS4-09-452/4S	Splitter	27-Aug-21	27-Aug-22
54698	DITOM D3C2060	Splitter	3-Mar-21	3-Mar-22
58272	KRYTAR/1850	500MHz to 18.5 GHz SMA Directional Coupler	30-Jul-20	30-Jul-21
56045	HUBER + SUHNER Sucoflex 100	SMA Cable 18GHz	5-Mar-21	5-Mar-22
55902	DYNAWAVE SMSM-A2PH-018	SMA Cable, 18 IN	26-Feb-21	26-Feb-22
55897	DYNAWAVE SMSM-A2PH-018	SMA Cable, 18 IN	23-Feb-21	23-Feb-22
49488	JFW, 50HF-010	SMA 10 dB Attenuator	12-Mar-21	12-Mar-22
55588	AEROFLEX/BWS30-W2	30dB SMA Attenuator	11-Mar-21	11-Mar-22
42630	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
42626	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
42635	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
42633	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
42625	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
42627	PASTERNAK/PE6072	SMA 50 Ohm Termination	9-Mar-21	9-Mar-22
58256	COMET/ T7611-4	WEB SENSOR FOR REMOTE THERMOMETER HYGROMETER	3-Feb-21	3-Feb-22

Appendix D: Photographs of Test Setups

Title: DFS Test Setup





Appendix E: Software Used to Perform Testing

Cisco Internal LabView Radio Test Automation Software – DFS Automation S/W Version 152

Appendix F: Test Procedures

Measurements were made in accordance with

- KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
- RSS-247 section A9.3a allows the use of applicable FCC KDBs

Test procedures are summarized below:

FCC DFS Test Procedures	EDCS # 1445052
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Appendix G: Scope of Accreditation (A2LA certificate number 1178-01)

The scope of accreditation of Cisco Systems, Inc. can be found on the A2LA web page at:

<http://www.a2la.org/scopepdf/1178-01.pdf>

AppendixH: Worst Case Justification

N/A

Appendix J: UUT Software Info

DFS Tests with traffic: 17-23% Traffic Loading using IPERF
AP Running Image: 8.8.1.10
Cisco AP Firmware, (ap3g3): bundle-ax-bcm32-non-me-0205.img
Compiled Wed Feb 10 07:47:19 GMT 2021