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Report No.: 1703TW0106-U7
Report Version: V01
Issue Date: 06-02-2017

DFS MEASUREMENT REPORT

FCC PART 15 Subpart E WLAN 802.11a/n/ac

FCC ID:	Q9DAPINH203
APPLICANT:	Hewlett Packard Enterprise Company
Application Type:	Class III Permissible Change
Product:	ACCESS POINT
Model No.:	APINH203
Brand Name:	aruba a Hewlett Packard Enterprise company , Hewlett Packard Enterprise
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15.407 Section (h)(2) KDB 905462 D02v02, KDB 905462 D04v01
Type of Device:	☒ Master Device ☐ Client Device (No radar detection) ☐ Client Device with radar detection
Test Date:	December 28, 2016 ~ March 08, 2017

Reviewed By : Paddy Chen
(Paddy Chen)

Approved By : Chenz Ker
(Chenz Ker)

Testing Laboratory
3261

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 905462 D02v02. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
1703TW0106-U7	Rev. 01	Initial report	06-02-2017	Valid

CONTENTS

Description Page

§2.1033 General Information

Applicant:	Hewlett Packard Enterprise Company
Applicant Address:	3000 Hanover St. Palo Alto, CA 94304, USA
Manufacturer:	Hewlett Packard Enterprise Company
Manufacturer Address:	3000 Hanover St. Palo Alto, CA 94304, USA
Test Site:	MRT Technology (Taiwan) Co., Ltd
Test Site Address:	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT Registration No.:	153292
FCC Rule Part(s):	Part 15.407
Model No.:	APINH203
FCC ID:	Q9DAPINH203
Test Device Serial No.:	CNCKK2S0PL ☐ Production ☒ Pre-Production ☐ Engineering
FCC Classification:	Unlicensed National Information Infrastructure (UNII)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- **MRT facility is a FCC registered (MRT Reg. No. 153292) test facility with the site description report on file and is designated by the FCC as an Accredited Test Film.**
- **MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (TAF) under the American Association for Laboratory Accreditation Program (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, Taiwan, EU and TELEC Rules.**

TAF certificate here

Testing Laboratory
3261

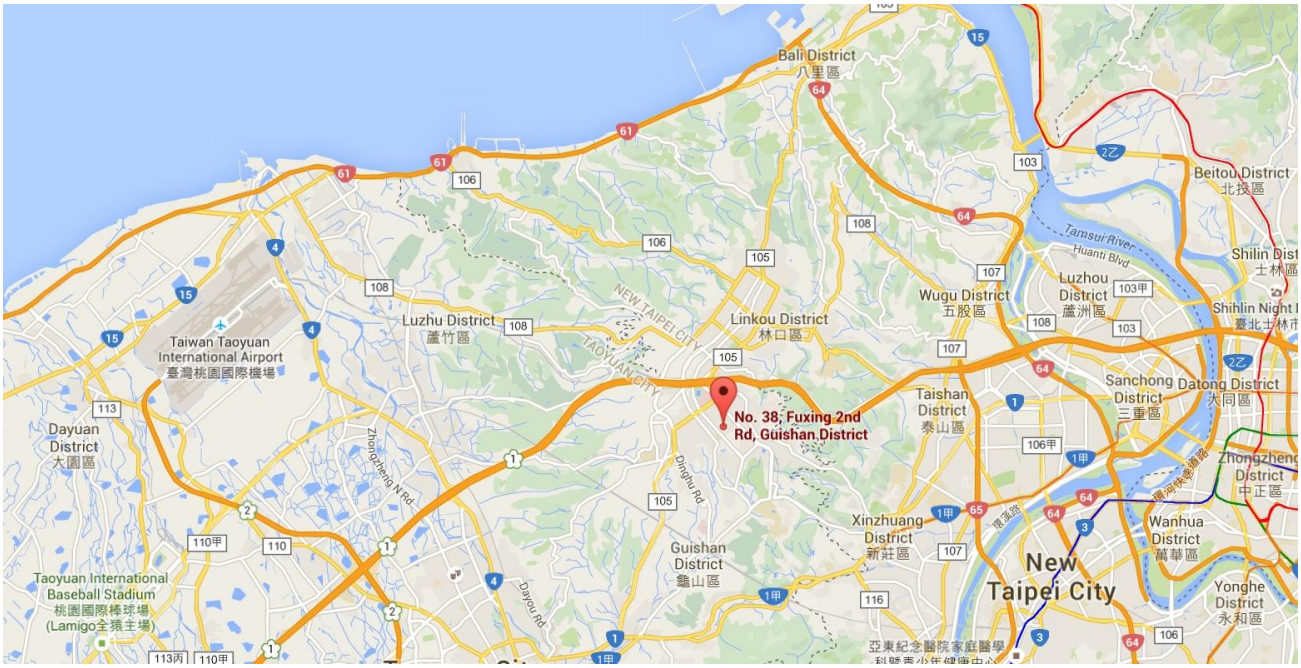
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	ACCESS POINT
Model No.:	APINH203
Brand Name:	aruba a Hewlett Packard Enterprise company , Hewlett Packard Enterprise
Software Version:	AoS6.5.4.0 build 59763
Operating Temperature:	0 ~ 40 °C
Power Type:	POE input
Frequency Range	**2.4GHz:** For 802.11b/g/n-HT20: 2412~2462 MHz For 802.11n-HT40: 2422~2452 MHz **5GHz:** For 802.11a/n-HT20: 5180~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n-HT40: 5190~5310MHz, 5510~5670MHz, 5755~5795MHz For 802.11ac-VHT20: 5180~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11ac-VHT40: 5190~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Type of Modulation	802.11a/n/ac: OFDM
Power-on cycle	Requires 142.9 seconds to complete its power-on cycle
Uniform Spreading (For DFS Frequency Band)	For the 5250-5350MHz, 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.

Note: The applicant has provided one POE adapter (Manufacturer: MICROSEMI & Model: PD-9001GR/AT/AC & Output: 55VDC, 0.6A) for approval testing and it is not for sale.

2.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	TX Paths	Max Antenna Gain (dBi)	Directional Gain (dBi)
PCB Antenna	2412 ~ 2462	1 (Note 3)	4.3	N/A
		2	3.8	6.8
	5150 ~ 5850	1 (Note 3)	6.3	N/A
		2	4	7.0

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode, and the transmitter output signal is correlated.

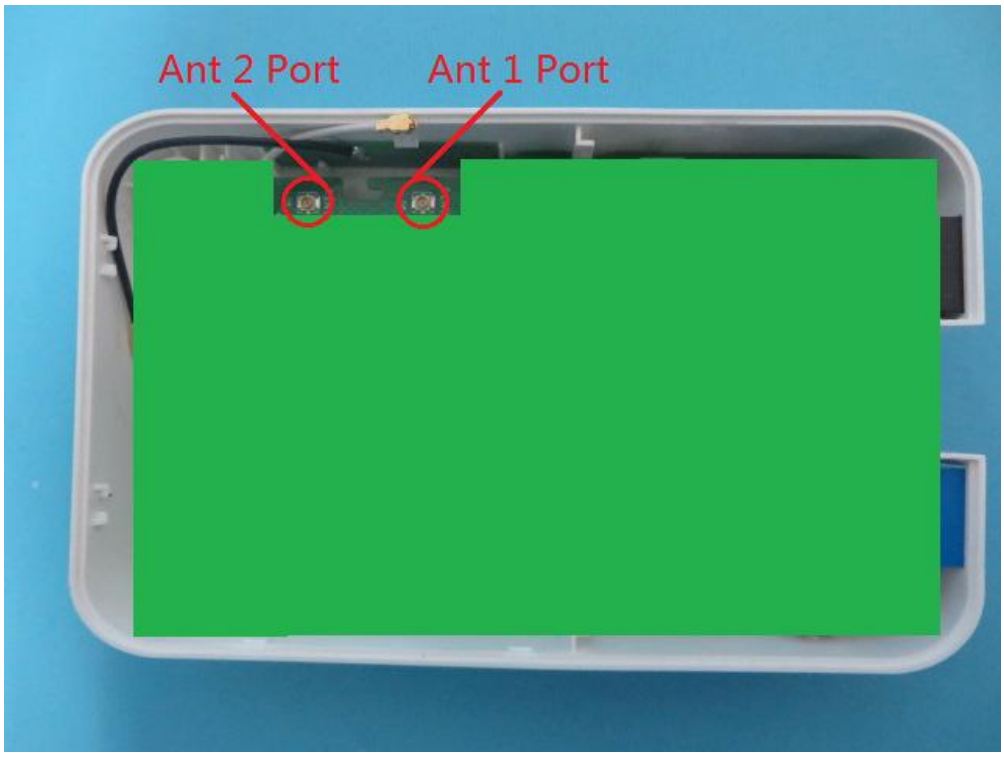
For CDD transmissions, directional gain = G_{ANT} + Array Gain, Array Gain = 3.0 dBi which is declared by the applicant. For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $N_{ANT} \leq 4$.

Note 2: The EUT also supports Beam Forming technology, and the Beam Forming only support 802.11n/ac mode. Directional gain = G_{ANT} + BF Gain, BF Gain = 3.0 dBi which is declared by the applicant.

Note 3: For SISO mode, only Ant 2 port can transmit 2.4GHz and Ant 1 port can transmit 5GHz.

2.3. Description of Antenna RF Port

Antenna RF Port				
--	2.4GHz RF Port		5GHz RF Port	
Software Control Port for 1Tx	--	Ant 2	Ant 1	--
Software Control Port for 2Tx	Ant 1	Ant 2	Ant 1	Ant 2



2.4. Operating Frequency and Channel List

802.11a/n-HT20 Center Working Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260 MHz	56	5280 MHz	60	5300 MHz
64	5320 MHz	100	5500 MHz	104	5520 MHz
108	5540 MHz	112	5560 MHz	116	5580 MHz
120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz

802.11ac-VHT20 Center Working Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260 MHz	56	5280 MHz	60	5300 MHz
64	5320 MHz	100	5500 MHz	104	5520 MHz
108	5540 MHz	112	5560 MHz	116	5580 MHz
120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz
144	5720 MHz	--	--	--	--

802.11n-HT40 Center Working Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz	102	5510 MHz
110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz	--	--	--	--

802.11ac-VHT40 Center Working Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz	102	5510 MHz
110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz	142	5710MHz	--	--

802.11ac-VHT80 Center Working Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
58	5290 MHz	106	5530 MHz	122	5610 MHz
138	5690 MHz	--	--	--	--

2.5. Test Mode

Test Mode	Mode 1: Communication with Notebook

3. DFS DETECTION THRESHOLDS AND RADAR TEST WAVEFORMS

3.1. Applicability

The following table from FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 lists the applicable requirements for the DFS testing.

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

Table 3-1: Applicability of DFS Requirements Prior to Use of a Channel

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

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

Table 3-2: Applicability of DFS Requirements during normal operation

3.2. DFS Devices Requirements

Per FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 the following are the requirements for Master Devices:

(a) The Master Device will use DFS in order to detect Radar Waveforms with received signal strength above the DFS Detection Threshold in the 5250 ~ 5350 MHz and 5470 ~ 5725 MHz bands. DFS is not required in the 5150 ~ 5250 MHz or 5725 ~ 5825 MHz bands.

(b) Before initiating a network on a Channel, the Master Device will perform a Channel Availability Check for a specified time duration (Channel Availability Check Time) to ensure that there is no radar system operating on the Channel, using DFS described under subsection a) above.

(c) The Master Device initiates a U-NII network by transmitting control signals that will enable other U-NII devices to Associate with the Master Device.

(d) During normal operation, the Master Device will monitor the Channel (In-Service Monitoring) to ensure that there is no radar system operating on the Channel, using DFS described under a).

(e) If the Master Device has detected a Radar Waveform during In-Service Monitoring as described under d), the Operating Channel of the U-NII network is no longer an Available Channel. The Master Device will instruct all associated Client Device(s) to stop transmitting on this Channel within the Channel Move Time. The transmissions during the Channel Move Time will be limited to the Channel Closing Transmission Time.

(f) Once the Master Device has detected a Radar Waveform it will not utilize the Channel for the duration of the Non-Occupancy Period.

(g) If the Master Device delegates the In-Service Monitoring to a Client Device, then the combination will be tested to the requirements described under d) through f) above.

Channel Move Time and Channel Closing Transmission Time requirements are listed in the following table.

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

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 3-3: DFS Response Requirements

3.3. DFS Detection Threshold Values

The DFS detection thresholds are defined for Master devices and Client Devices with In-service monitoring. These detection thresholds are listed in the following table.

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

Table 3-4: Detection Thresholds for Master Devices and Client Devices with Radar Detection

3.4. Parameters of DFS Test Signals

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.

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 3-6	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\text{usec}}}\right)\right\}$	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 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 3-5: Parameters for Short Pulse Radar Waveforms

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.

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 3-6: Pulse Repetition Intervals Values for Test A

Long Pulse Radar Test Waveform

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

Table 3-7: Parameters for Long Pulse Radar Waveforms

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

Frequency Hopping Radar Test Waveform

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

Table 3-8: Parameters for Frequency Hopping Radar Waveforms

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

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

3.5. Conducted Test Setup

The FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 describes a radiated test setup and a conducted test setup. The conducted test setup was used for this testing. Figure 3-1 shows the typical test setup.

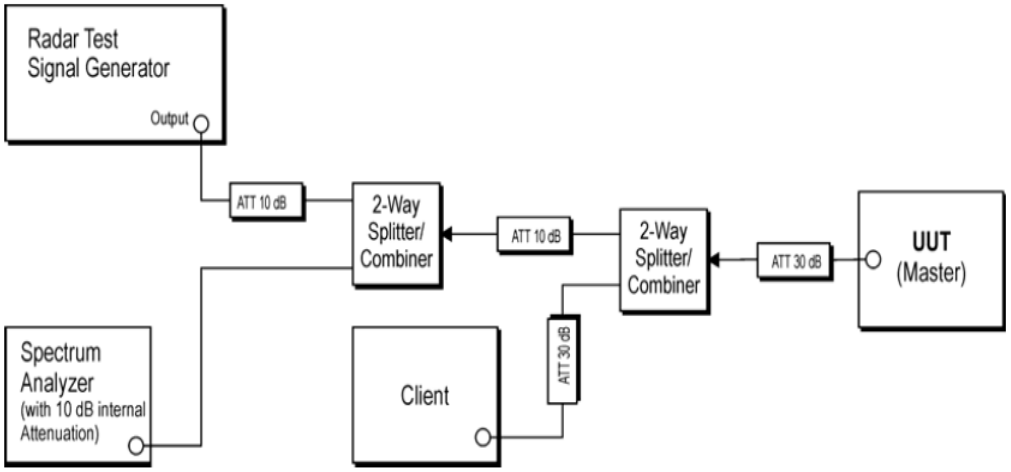


Figure 3-1: Conducted Test Setup where UUT is a Master and Radar Test Waveforms are injected into the Masters

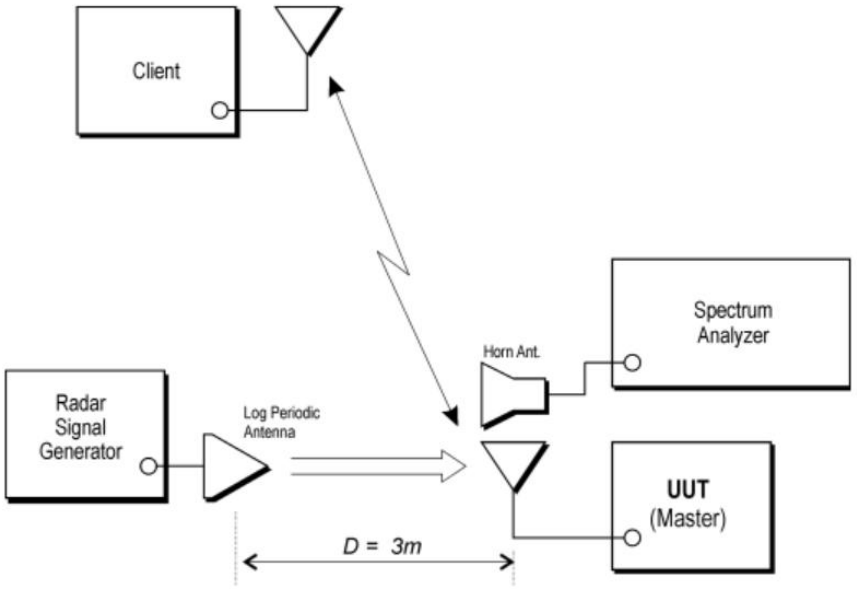


Figure 3-2: Radiated Test Setup where UUT is a Bridge or Mesh mode and Radar Test Waveforms are injected into the UUT

4. TEST EQUIPMENT CALIBRATION DATE

Dynamic Frequency Selection (DFS) - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cal. Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	2016/07/11
MXG X-Series Microwave Analog Signal Generator	Keysight	N5183B	MRTTWA00080	2016/10/09
Combiner	WOKEN	0120N02208001D	MRTTWA00081	N/A
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTTWA00003	2016/04/06
				2017/04/06

Client Information

Instrument	Manufacturer	Type No.
Wireless Network Adapter	Intel	7260HMW

Software	Version	Manufacturer	Function
Pulse Building	N/A	Agilent	Radar Signal Generation Software
DFS Tool	V 6.9.2	Agilent	DFS Test Software

5. TEST RESULT

5.1. Summary

Company Name: **Hewlett Packard Enterprise Company**

FCC ID: **Q9DAPINH203**

Parameter	Limit	Test Result	Reference
UNII Detection Bandwidth Measurement	Refer Table 3-3	Pass	Section 5.4
Initial Channel Availability Check Time	Refer Table 3-3	Pass	Section 5.5
Radar Burst at the Beginning of the Channel Availability Check Time	Refer Table 3-3	Pass	Section 5.6
Radar Burst at the End of the Channel Availability Check Time	Refer Table 3-3	Pass	Section 5.7
In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time	Refer Table 3-3	Pass	Section 5.8
Non-Occupancy Period	Refer Table 3-3	Pass	Section 5.8
Statistical Performance Check	Refer Table 3-3	Pass	Section 5.9

5.2. Radar Waveform Calibration

5.2.1. Calibration Setup

The conducted test setup was used for this calibration testing. Figure 3-2 shows the typical test setup.

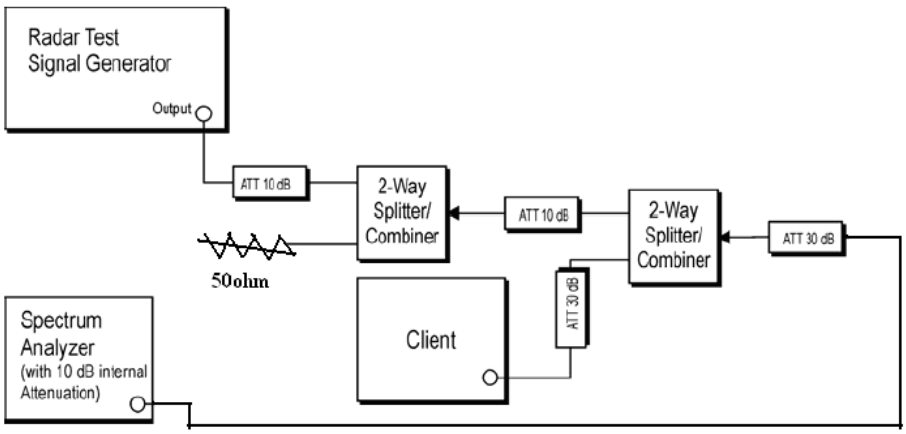


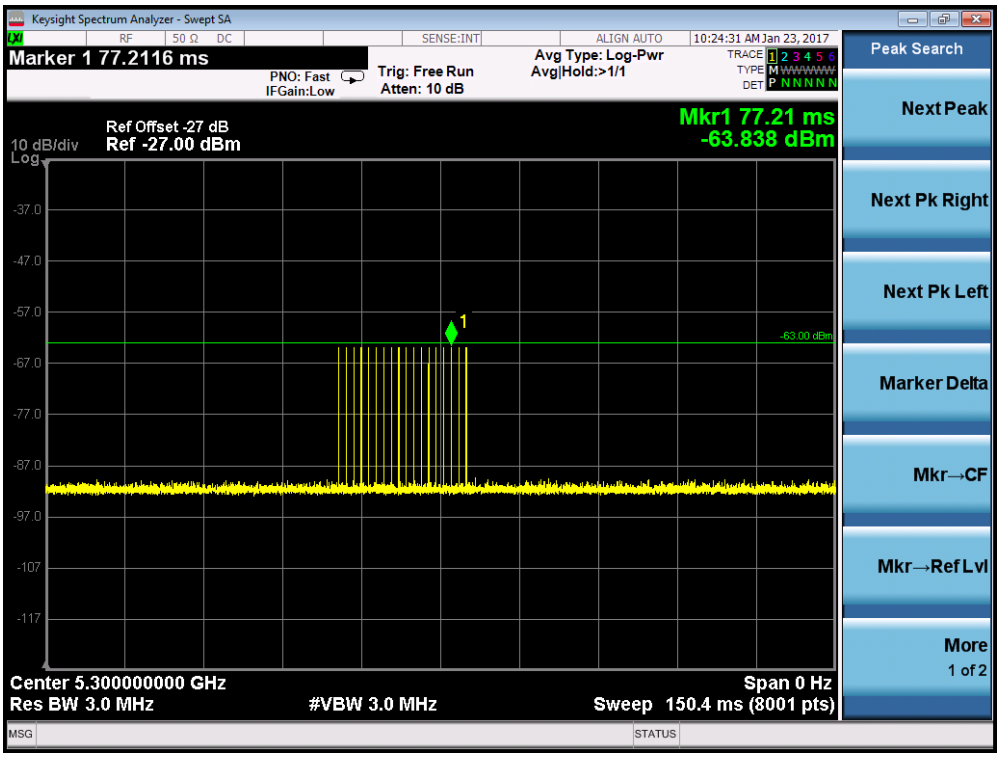
Figure 3-2: Conducted Test Setup

5.2.2. Calibration Procedure

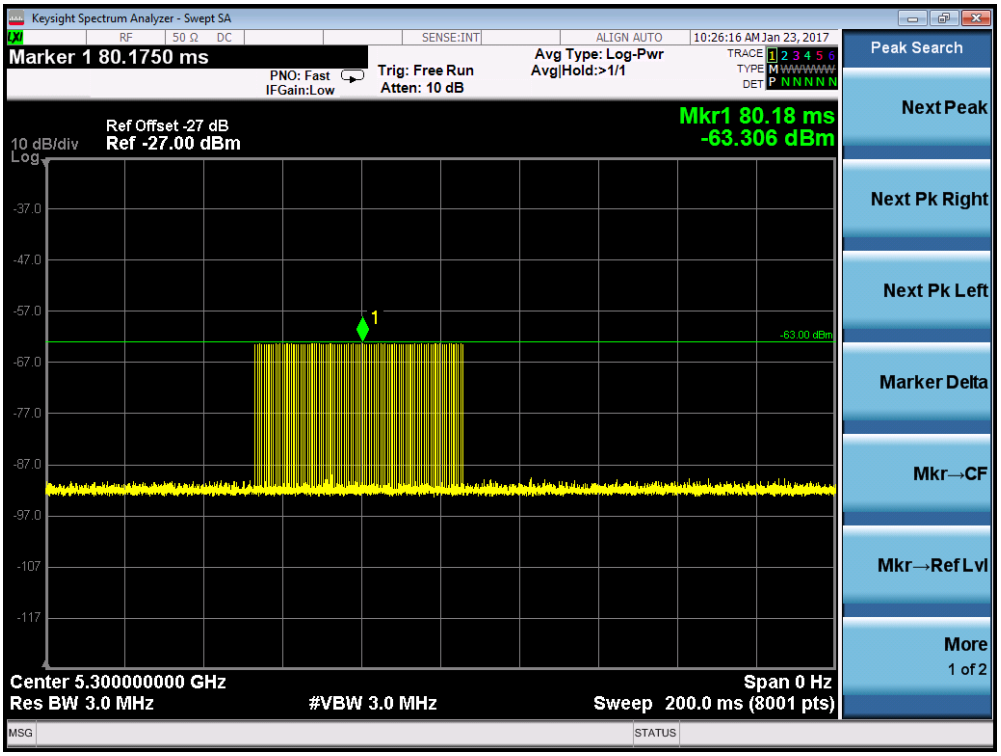
The Interference Radar Detection Threshold Level is (-64dBm) + (0) [dBi] + 1 dB= -63 dBm that had been taken into account the output power range and antenna gain. The above equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for each radar type. During this process there were replace 50ohm terminal form Master and Client device and no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to at least 3MHz. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was (-64dBm) + (0) [dBi] + 1 dB= -63dBm. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.

5.2.3. Cablibration Result

Radar #0 DFS detection threshold level and the burst of pulses on the Channel frequency

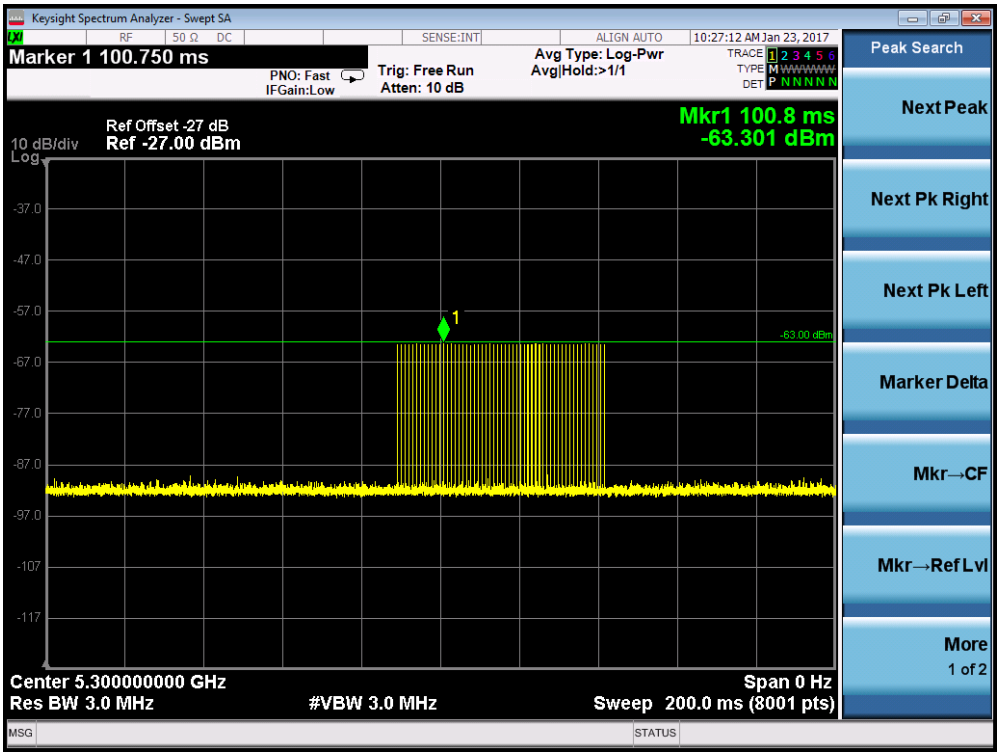


Radar #1(Test A) DFS detection threshold level and the burst of pulses on the Channel frequency



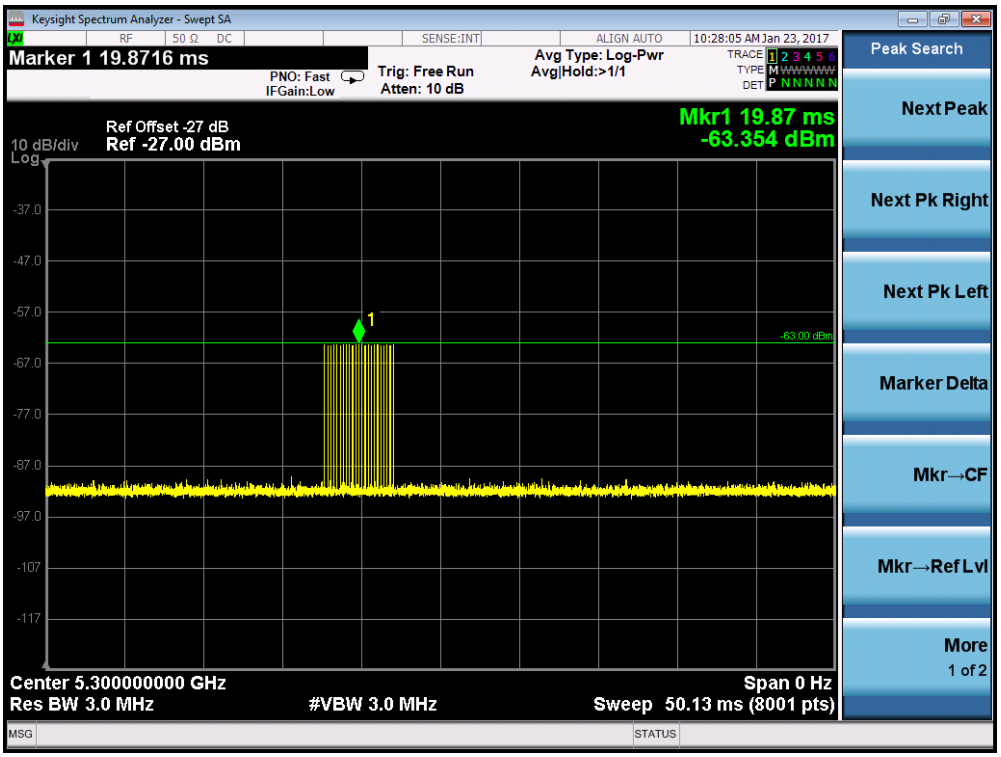
PRI = 578us and the number of pulses = 92

Radar #1(Test B) DFS detection threshold level and the burst of pulses on the Channel frequency

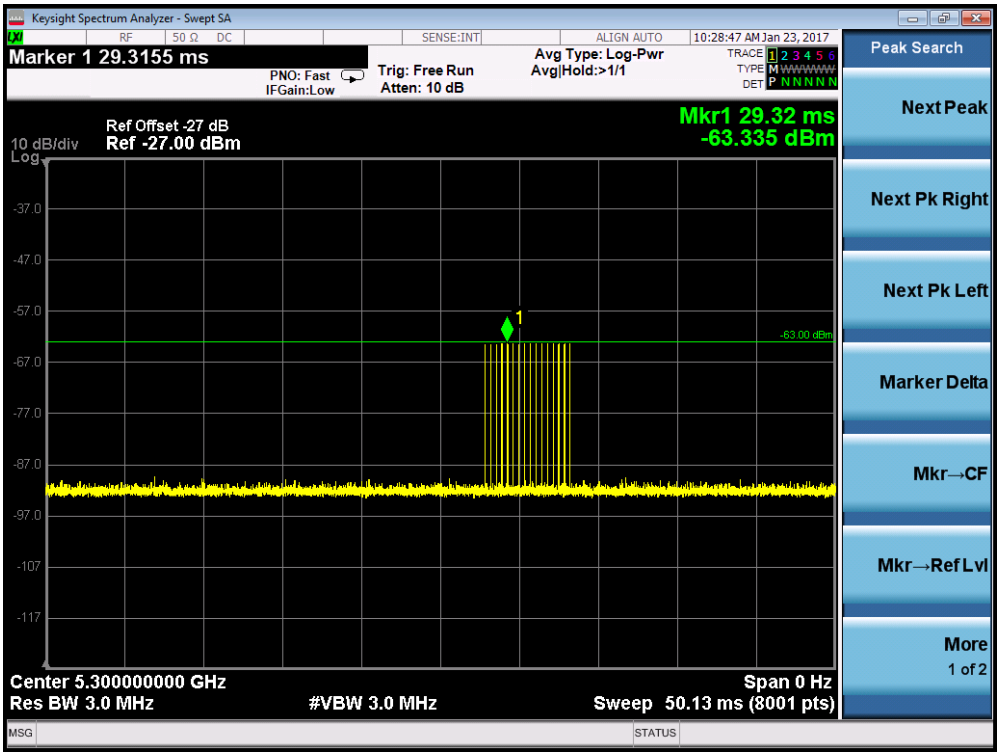


PRI = 0.967ms and the number of pulses = 55

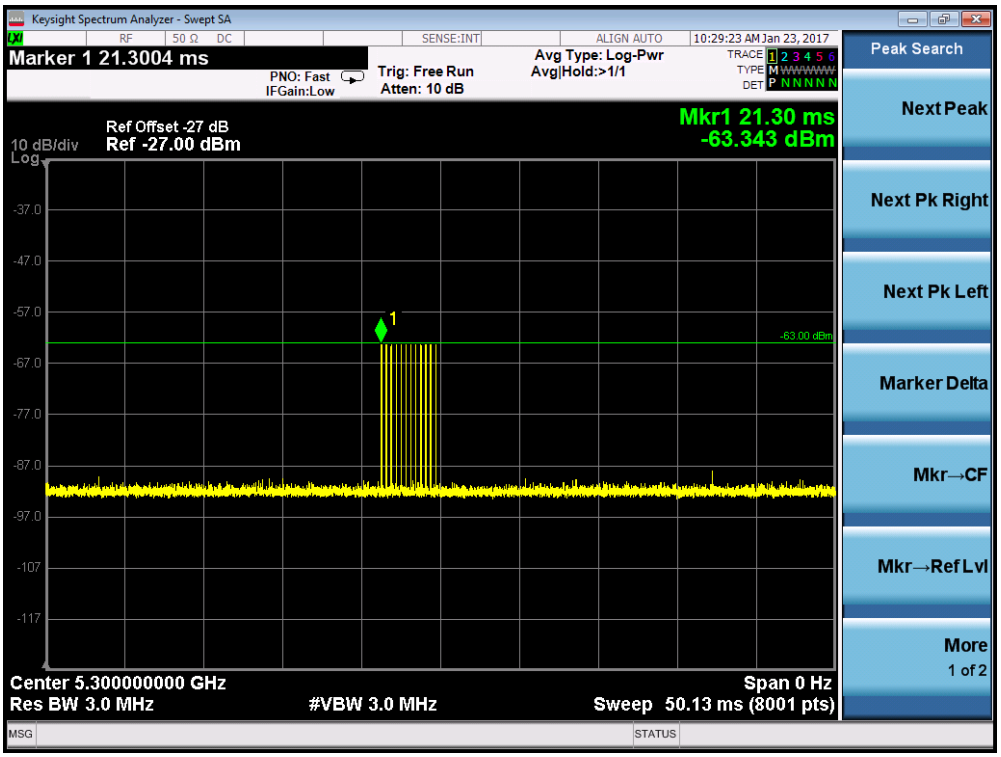
Radar #2 DFS detection threshold level and the burst of pulses on the Channel frequency



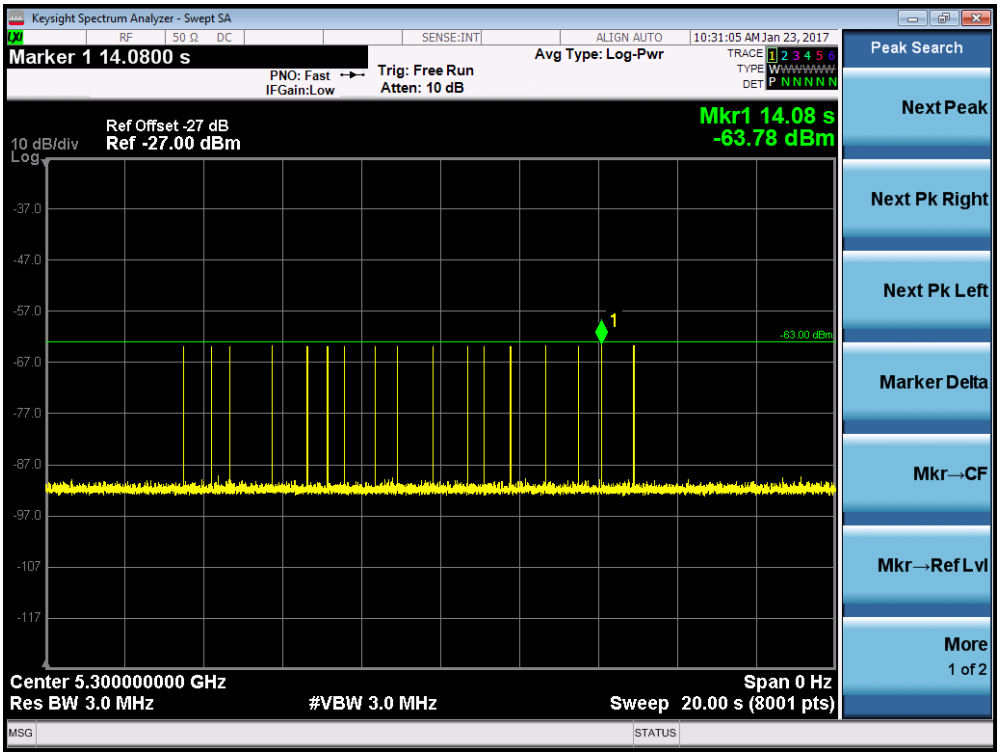
Radar #3 DFS detection threshold level and the burst of pulses on the Channel frequency



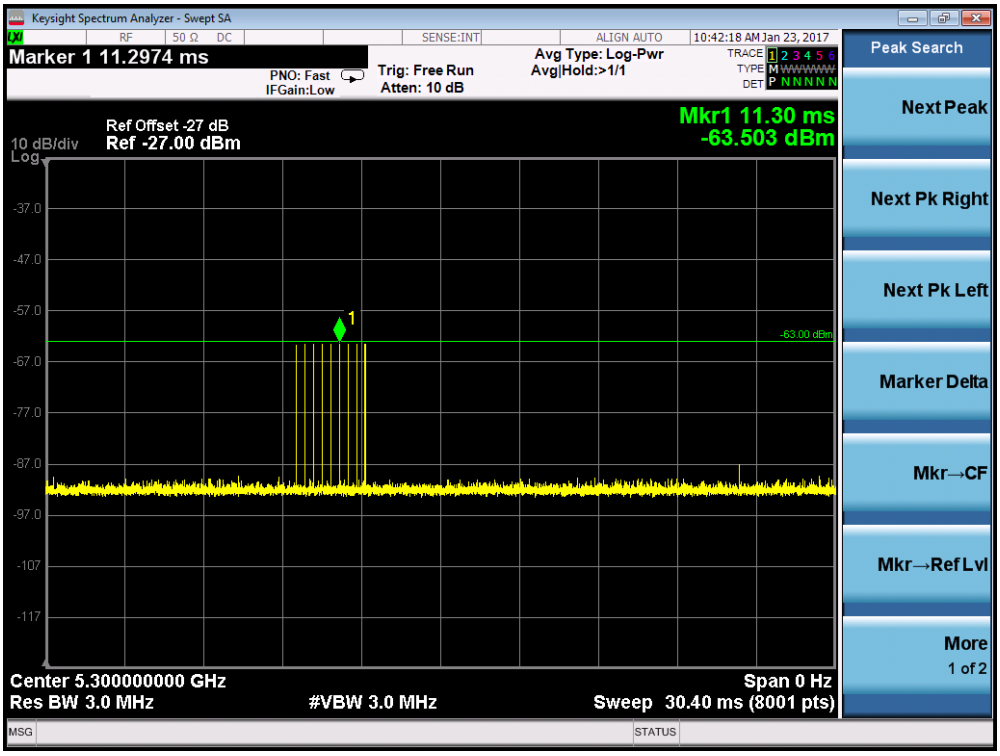
Radar #4 DFS detection threshold level and the burst of pulses on the Channel frequency



Radar #5 DFS detection threshold level and 12sec long burst on the Channel frequency

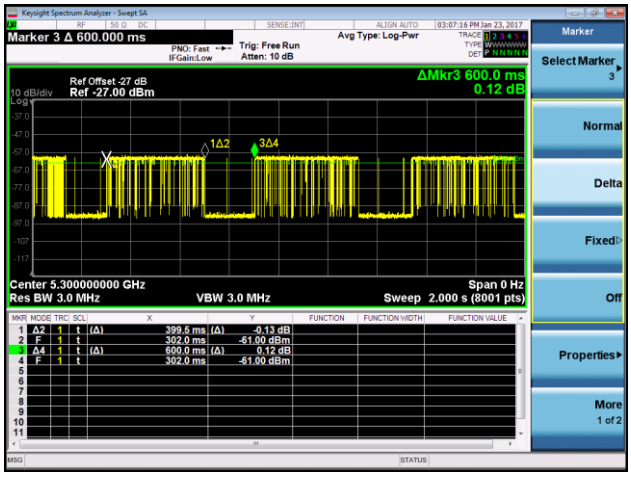
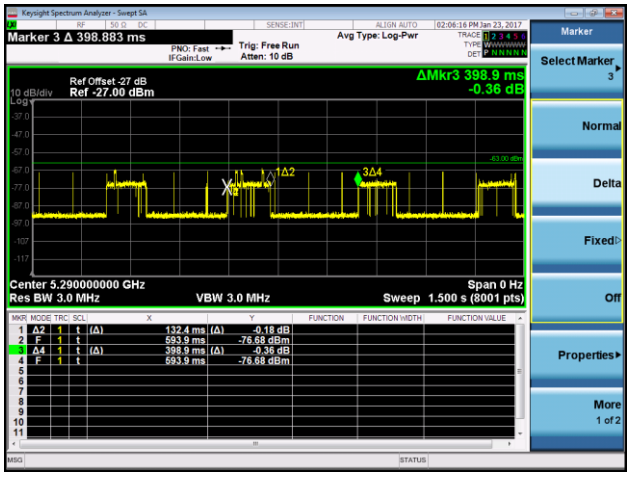


Radar #6 DFS detection threshold level and a single hop (9 pulses) on the Channel frequency within UNII detection bandwidth



5.2.4. Channel Loading Test Result

System testing was performed with the designated MPEG test file that streams full motion video from the ACCESS POINT to the Client in full motion video mode using the media player with the V2.61 Codec package. This file is used by IP and Frame based systems for loading the test channel during the In-service compliance testing of the U-NII device. Packet ratio = Time On / (Time On + Off Time).

Channel Loading Plot	
802.11a 5300MHz	802.11ac-VHT80 5290MHz
	

Test Mode	Test Frequency	Packet ratio	Requirement ratio	Test Result
802.11a	5300 MHz	66.58%	≥ 17%	Pass
802.11ac-VHT80	5290 MHz	33.19%	≥ 17%	Pass

5.3. UNII Detection Bandwidth Measurement

5.3.1. Test Limit

Minimum 100% of the UNII 99% transmission power bandwidth. During the U-NII Detection Bandwidth detection test, each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

5.3.2. Test Procedure

1. Adjust the equipment to produce a single Burst of any one of the Short Pulse Radar Types 0-4 in Table 3-5 at the center frequency of the EUT Operating Channel at the specified DFS Detection Threshold level.
2. The generating equipment is configured as shown in the Conducted Test Setup above section 3.5.
3. The EUT is set up as a stand-alone device (no associated Client or Master, as appropriate) and no traffic. Frame based systems will be set to a talk/listen ratio reflecting the worst case (maximum) that is user configurable during this test.
4. Generate a single radar Burst, and note the response of the EUT. Repeat for a minimum of 10 trials. The EUT must detect the Radar Waveform using the specified U-NII Detection Bandwidth criterion shown in Table 3-5. In cases where the channel bandwidth may exceed past the DFS band edge on specific channels (i.e., 802.11ac or wideband frame based systems) select a channel that has the entire emission bandwidth within the DFS band. If this is not possible, test the detection BW to the DFS band edge.
5. Starting at the center frequency of the UUT operating Channel, increase the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion specified in Table 3-3. Repeat this measurement in 1MHz steps at frequencies 5 MHz below where the detection rate begins to fall. Record the highest frequency (denote as FH) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies above FH is not required to demonstrate compliance.
6. Starting at the center frequency of the EUT operating Channel, decrease the radar frequency in 1 MHz steps, repeating the above item 4 test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion. Record the lowest frequency (denote as FL) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies below FL is not required to demonstrate compliance.
7. The U-NII Detection Bandwidth is calculated as follows: U-NII Detection Bandwidth = FH – FL
8. The U-NII Detection Bandwidth must be at least 100% of the EUT transmitter 99% power, otherwise, the EUT does not comply with DFS requirements.

5.3.3. Test Result

EUT Frequency = 5300MHz for 802.11a											
Radar Frequency (MHz)	DFS Detection Trials (1=Detection, 0= No Detection)										
	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
5290	0	0	0	0	0	0	0	0	0	0	0%
5291 FL	1	1	1	1	1	1	1	1	1	1	100%
5292	1	1	1	1	1	1	1	1	1	1	100%
5293	1	1	1	1	1	1	1	1	1	1	100%
5294	1	1	1	1	1	1	1	1	1	1	100%
5295	1	1	1	1	1	1	1	1	1	1	100%
5300	1	1	1	1	1	1	1	1	1	1	100%
5305	1	1	1	1	1	1	1	1	1	1	100%
5306	1	1	1	1	1	1	1	1	1	1	100%
5307	1	1	1	1	1	1	1	1	1	1	100%
5308	1	1	1	1	1	1	1	1	1	1	100%
5309 FH	1	1	1	1	1	1	1	1	1	1	100%
5310	0	0	0	0	0	0	0	0	0	0	0%
Detection Bandwidth = FH - FL = 5309MHz - 5291MHz = 18MHz											
EUT 99% Bandwidth = 16.81MHz (see note)											
UNII Detection Bandwidth Min. Limit (MHz): 16.81MHz x 100% = 16.81MHz											

Note: All UNII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5300MHz. The 99% channel bandwidth is 16.81MHz. (See the 99% BW section of the RF report for further measurement details).

EUT Frequency = 5310MHz for 802.11n-HT40											
Radar Frequency (MHz)	**DFS Detection Trials (1=Detection, 0= No Detection)**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
5290	0	0	0	0	0	0	0	0	0	0	0%
5291	0	0	0	0	0	0	0	0	0	0	0%
5292 FL	1	1	1	1	1	1	1	1	1	1	100%
5293	1	1	1	1	1	1	1	1	1	1	100%
5294	1	1	1	1	1	1	1	1	1	1	100%
5295	1	1	1	1	1	1	1	1	1	1	100%
5300	1	1	1	1	1	1	1	1	1	1	100%
5305	1	1	1	1	1	1	1	1	1	1	100%
5310	1	1	1	1	1	1	1	1	1	1	100%
5315	1	1	1	1	1	1	1	1	1	1	100%
5320	1	1	1	1	1	1	1	1	1	1	100%
5325	1	1	1	1	1	1	1	1	1	1	100%
5326	1	1	1	1	1	1	1	1	1	1	100%
5327	1	1	1	1	1	1	1	1	1	1	100%
5328	1	1	1	1	1	1	1	1	1	1	100%
5329 FH	1	1	1	1	1	1	1	1	1	1	100%
5330	0	0	0	0	0	0	0	0	0	0	0%
Detection Bandwidth = FH - FL = 5329MHz - 5292MHz = 37MHz											
EUT 99% Bandwidth = 36.43MHz (see note)											
UNII Detection Bandwidth Min. Limit (MHz): 36.43MHz x 100% = 36.43MHz											

Note: All UNII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5310MHz. The 99% channel bandwidth is 36.43MHz. (See the 99% BW section of the RF report for further measurement details).

EUT Frequency = 5290MHz for 802.11ac-VHT80											
Radar Frequency (MHz)	DFS Detection Trials (1=Detection, 0= No Detection)										
	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
5250	0	0	0	0	0	0	0	0	0	0	0%
5251 FL	1	1	1	1	1	1	1	1	1	1	100%
5252	1	1	1	1	1	1	1	1	1	1	100%
5253	1	1	1	1	1	1	1	1	1	1	100%
5254	1	1	1	1	1	1	1	1	1	1	100%
5255	1	1	1	1	1	1	1	1	1	1	100%
5260	1	1	1	1	1	1	1	1	1	1	100%
5265	1	1	1	1	1	1	1	1	1	1	100%
5270	1	1	1	1	1	1	1	1	1	1	100%
5275	1	1	1	1	1	1	1	1	1	1	100%
5280	1	1	1	1	1	1	1	1	1	1	100%
5285	1	1	1	1	1	1	1	1	1	1	100%
5290	1	1	1	1	1	1	1	1	1	1	100%
5295	1	1	1	1	1	1	1	1	1	1	100%
5300	1	1	1	1	1	1	1	1	1	1	100%
5305	1	1	1	1	1	1	1	1	1	1	100%
5310	1	1	1	1	1	1	1	1	1	1	100%
5315	1	1	1	1	1	1	1	1	1	1	100%
5320	1	1	1	1	1	1	1	1	1	1	100%
5325	1	1	1	1	1	1	1	1	1	1	100%
5326	1	1	1	1	1	1	1	1	1	1	100%
5327	1	1	1	1	1	1	1	1	1	1	100%
5328	1	1	1	1	1	1	1	1	1	1	100%
5329 FH	1	1	1	1	1	1	1	1	1	1	100%
5330	0	0	0	0	0	0	0	0	0	0	0%
Detection Bandwidth = FH - FL = 5329MHz - 5251MHz = 78MHz											
EUT 99% Bandwidth = 75.96MHz (see note)											
UNII Detection Bandwidth Min. Limit (MHz): 75.96MHz x 100% = 75.96MHz											

Note: All UNII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5290MHz. The 99% channel bandwidth is 75.96MHz. (See the 99% BW section of the RF report for further measurement details).

5.4. Initial Channel Availability Check Time Measurement

5.4.1. Test Limit

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

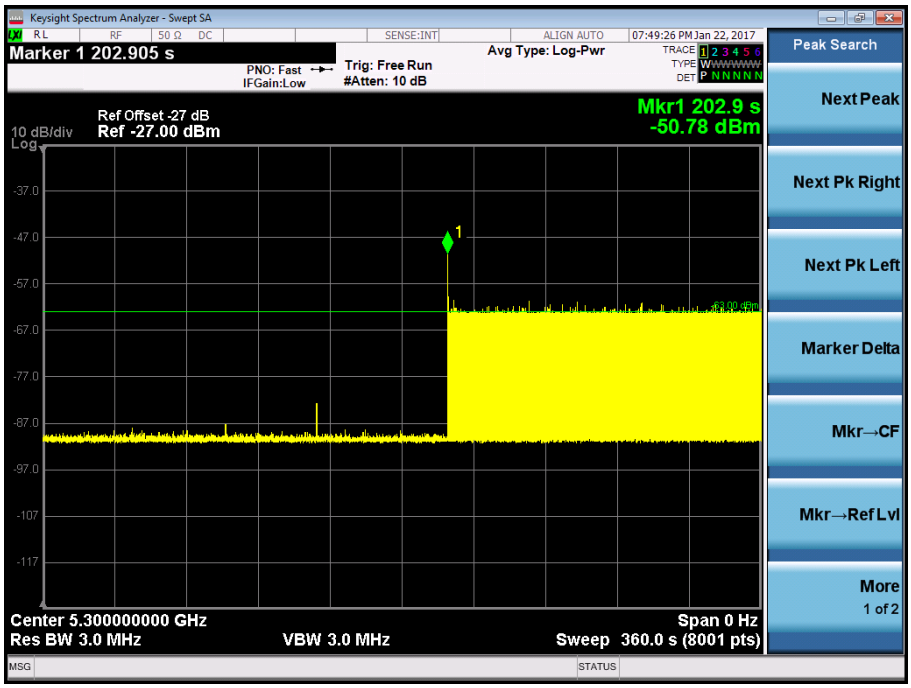
5.4.2. Test Procedure

1. The U-NII devices will be powered on and be instructed to operate on the appropriate U-NII Channel that must incorporate DFS functions. At the same time the EUT is powered on, the spectrum analyzer will be set to zero span mode with a 3 MHz RBW and 3 MHz VBW on the Channel occupied by the radar (Chr) with a 2.5 minute sweep time. The spectrum analyzer's sweep will be started at the same time power is applied to the U-NII device.
2. The EUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle.
3. Confirm that the EUT initiates transmission on the channel. Measurement system showing its nominal noise floor is marker1.

5.4.3. Test Result

The EUT does not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle (142.9 sec). Initial beacons/data transmissions are indicated by marker 1 (202.9 sec).

Initial Channel Availability Check Time for 802.11a



5.5. Radar Burst at the Beginning of the Channel Availability Check Time Measurement

5.5.1. Test Limit

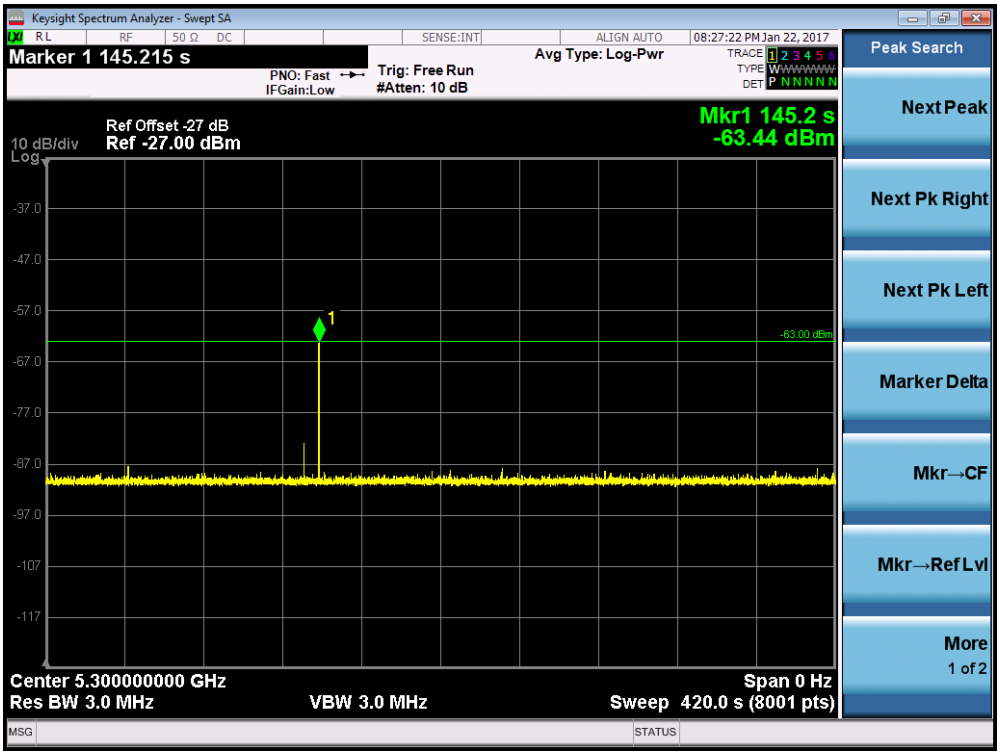
In beginning of the Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC on that channel.

5.5.2. Test Procedure

1. 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 occurs at the beginning of the Channel Availability Check Time.
2. The EUT is in completion power-up cycle (from T0 to T1). T1 denotes the instant when the EUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T1 and will end no sooner than T1 + 60 seconds. A single Burst of one of Short Pulse Radar Types 0-4 at DFS Detection Threshold + 1 dB will commence within a 6 second window starting at T1.
3. Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 2.5 minutes after the radar Burst has been generated. Verify that during the 2.5 minutes measurement window no EUT transmissions occurred.

5.5.3. Test Result

Radar Burst at the Beginning of the Channel Availability Check Time for 802.11a



5.6. Radar Burst at the End of the Channel Availability Check Time Measurement

5.6.1. Test Limit

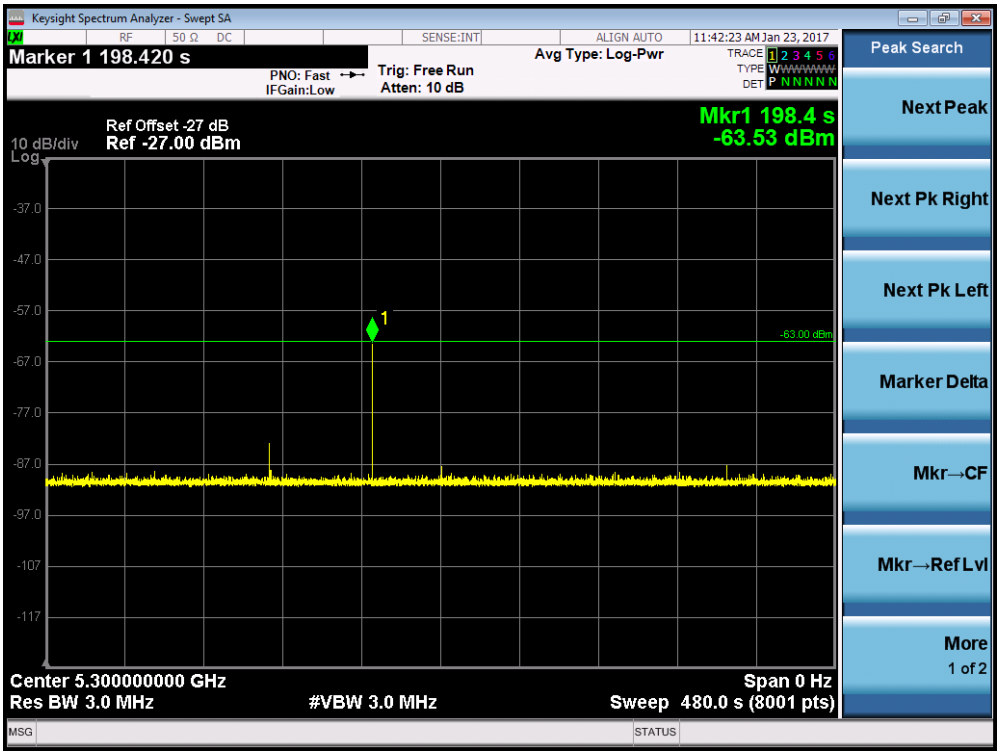
In the end of Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC on that channel.

5.6.2. Test Procedure

1. 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 occurs at the beginning of the Channel Availability Check Time.
2. The EUT is powered on at T0. T1 denotes the instant when the EUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T1 and will end no sooner thanT1 + 60 seconds. A single Burst of one of Short Pulse Radar Types 0-4 at DFS Detection Threshold + 1 dB will commence within a 6 second window starting at T1+ 54 seconds.
3. Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 2.5 minutes after the radar Burst has been generated. Verify that during the 2.5 minutes measurement window no EUT transmissions occurred.

5.6.3. Test Result

Radar Burst at the End of the Channel Availability Check Time for 802.11a



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

5.7.1. Test Limit

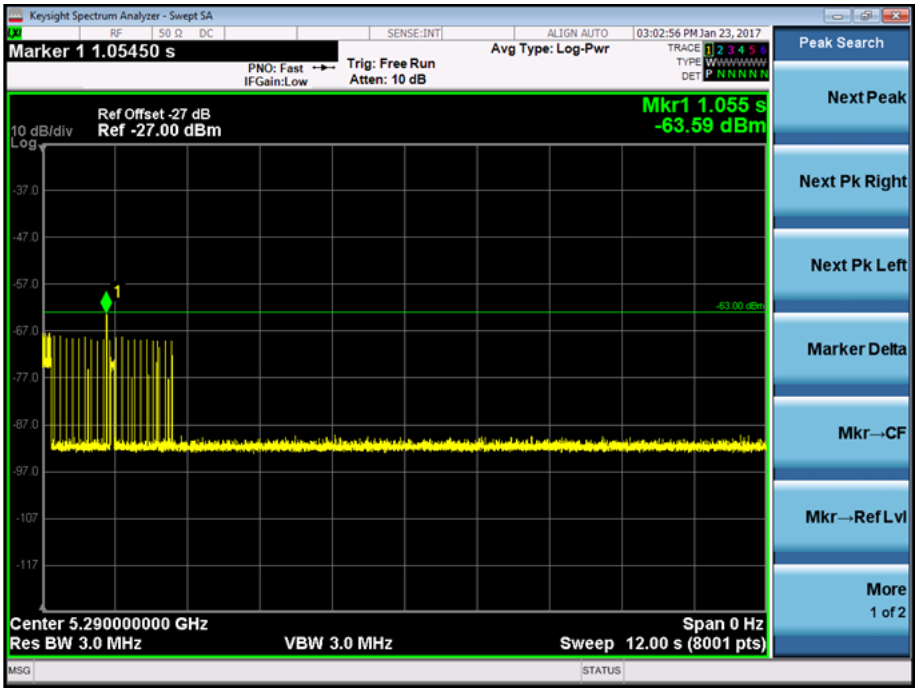
The EUT has In-Service Monitoring function to continuously monitor the radar signals. If the radar is detected, must leave the channel (Shutdown). The Channel Move Time to cease all transmissions on the current channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec. The total duration of Channel Closing Transmission Time is 260ms, consisting of data signals and the aggregate of control signals, by a U-NII device during the Channel Move Time. The Non-Occupancy Period time is 30 minute during which a Channel will not be utilized after a Radar Waveform is detected on that Channel.

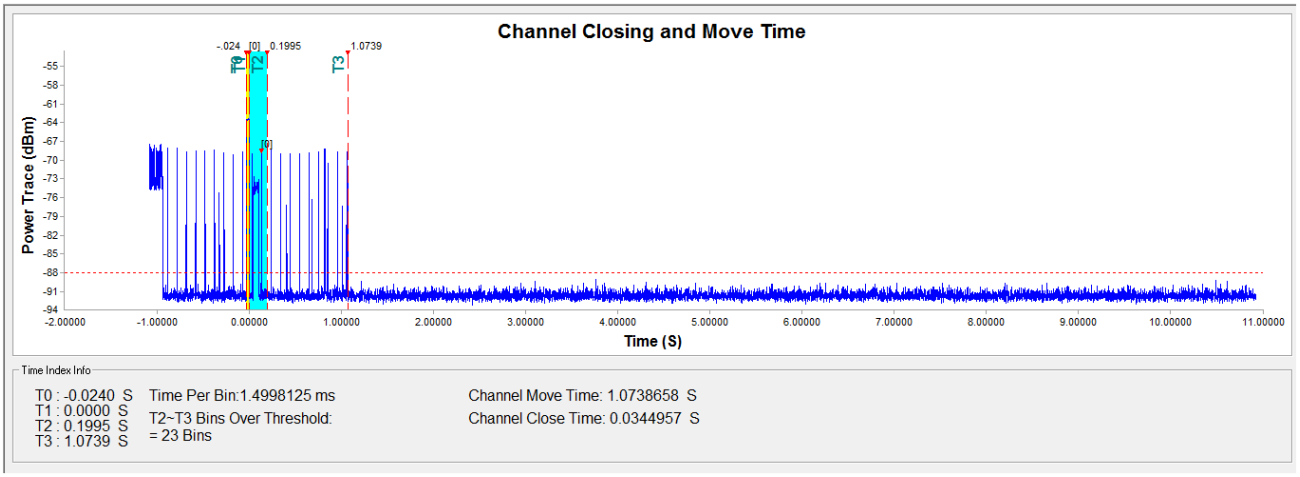
5.7.2. Test Procedure Used

1. The test should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0.
2. When the radar burst with a level equal to the DFS Detection Threshold + 1dB is generated on the Operating Channel of the U-NII device. A U-NII device operating as a Master Device will associate with the Client Device at Channel. Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test. At time T0 the Radar Waveform generator sends a Burst of pulses for each of the radar types at Detection Threshold + 1dB.
3. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the EUT during the observation time (Channel Move Time).
4. Measurement of the aggregate duration of the Channel Closing Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (1.5ms) = S (12 sec) / B (8000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is the sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C = N X Dwell; where C is the Closing Time, N is the number of spectrum analyzer sampling bins showing a U-NII transmission and Dwell is the dwell time per bin.
5. Measure the EUT for more than 30 minutes following the channel close/move time to verify that the EUT does not resume any transmissions on this Channel.

5.7.3. Test Result

Channel Move Time and Channel Closing Transmission Time for 802.11ac-VHT80 – 5290MHz





Non-Occupancy Period for 802.11ac-VHT80 – 5290MHz

Parameter	Test Result	Limit
	Type 0	
Channel Move Time (s)	1.074s	<10s
Channel Closing Transmission Time (ms) (Note)	34.5ms	< 60ms
Non-Occupancy Period (min)	≥ 30min	≥ 30 min

Note: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 seconds period. The aggregate duration of control signals will not count quiet periods in between transmissions.

5.8. Statistical Performance Check Measurement

5.8.1. Test Limit

The minimum percentage of successful detection requirements found in below table when a radar burst with a level equal to the DFS Detection Threshold + 1dB is generated on the Operating Channel of the U-NII device (In- Service Monitoring).

Radar Type	Minimum Number of Trails	Detection Probability
0	30	Pd > 60%
1	30(15 of test A and 15 of test B)	Pd > 60%
2	30	Pd > 60%
3	30	Pd > 60%
4	30	Pd > 60%
Aggregate (Radar Types 1-4)	120	Pd > 80%
5	30	Pd > 80%
6	30	Pd > 70%

The percentage of successful detection is calculated by:
(Total Waveform Detections / Total Waveform Trails) * 100 = Probability of Detection Radar Waveform In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows: (Pd1 + Pd2 + Pd3 + Pd4) / 4.

5.8.2. Test Procedure

1. Stream the MPEG test file from the Master Device to the Client Device on the test Channel for the entire period of the test.
2. At time T0 the Radar Waveform generator sends the individual waveform for each of the Radar Types 1-6, at levels equal to the DFS Detection Threshold + 1dB, on the Operating Channel.
3. Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 10 seconds for Short Pulse Radar Types 0 to ensure detection occurs.
4. Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs.
5. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.
6. The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in below table.

5.8.3. Test Result

Statistical Performance Check for 802.11a

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5292	1	878	61	1
2	5292	1	918	58	1
3	5293	1	718	74	1
4	5293	1	678	78	1
5	5294	1	898	59	1
6	5294	1	538	99	1
7	5295	1	758	70	1
8	5295	1	858	62	1
9	5296	1	778	68	1
10	5296	1	618	86	1
11	5297	1	818	65	1
12	5297	1	518	102	1
13	5298	1	3066	18	1
14	5299	1	938	57	1
15	5300	1	658	81	1
16	5301	1	1058	50	1
17	5302	1	2772	20	1
18	5302	1	1402	38	1
19	5303	1	825	64	1
20	5303	1	1405	38	1
21	5304	1	2442	22	1
22	5304	1	1297	41	1
23	5305	1	933	57	1
24	5305	1	650	82	1
25	5306	1	2837	19	1
26	5306	1	1462	37	1
27	5307	1	539	98	1
28	5307	1	1908	28	1
29	5308	1	2635	21	1
30	5308	1	2207	24	1
Detection Percentage (%)					100%

Radar Type 2 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5292	3.0	191	26	1
2	5292	1.6	179	29	1
3	5293	2.3	158	26	1
4	5293	4.3	166	24	1
5	5294	4.7	184	23	1
6	5294	3.8	225	26	1
7	5295	4.0	153	28	1
8	5295	3.4	193	29	1
9	5296	3.5	188	25	1
10	5296	2.8	176	29	1
11	5297	2.1	193	29	1
12	5297	2.0	161	24	1
13	5298	1.5	157	27	1
14	5299	2.1	182	28	1
15	5300	3.3	168	28	1
16	5301	2.3	189	24	1
17	5302	3.0	192	26	1
18	5302	4.2	228	26	1
19	5303	2.3	198	26	1
20	5303	2.1	173	27	1
21	5304	3.8	230	27	1
22	5304	3.3	177	24	1
23	5305	4.8	163	25	1
24	5305	4.5	166	27	1
25	5306	1.3	187	24	1
26	5306	2.7	185	26	1
27	5307	3.0	169	24	1
28	5307	3.9	193	26	1
29	5308	1.8	201	28	1
30	5308	3.1	171	23	1
Detection Percentage (%)					100%

Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5292	7.2	256	17	1
2	5292	8.5	440	18	1
3	5293	6.0	388	18	1
4	5293	9.6	311	16	1
5	5294	7.4	386	18	1
6	5294	7.9	463	17	1
7	5295	7.1	261	16	1
8	5295	7.5	414	17	1
9	5296	7.2	384	18	1
10	5296	6.3	264	17	1
11	5297	9.7	325	18	1
12	5297	8.5	416	18	1
13	5298	8.2	337	17	1
14	5299	8.0	367	16	1
15	5300	7.6	325	16	1
16	5301	7.9	492	16	1
17	5302	7.3	384	18	1
18	5302	6.6	382	17	1
19	5303	9.5	374	17	1
20	5303	7.4	287	18	1
21	5304	6.2	450	17	1
22	5304	9.5	250	17	1
23	5305	9.8	491	17	1
24	5305	8.9	359	17	1
25	5306	9.6	308	17	1
26	5306	7.4	382	17	1
27	5307	8.7	251	17	1
28	5307	9.7	295	16	1
29	5308	8.4	265	18	1
30	5308	6.1	307	18	1
Detection Percentage (%)					100%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5292	13.8	492	15	1
2	5292	19.1	375	12	1
3	5293	11.3	362	12	1
4	5293	11.9	292	14	1
5	5294	12.1	348	15	1
6	5294	12.7	389	16	1
7	5295	18.7	397	15	1
8	5295	13.1	361	14	1
9	5296	18.0	369	15	1
10	5296	11.0	492	16	1
11	5297	15.3	354	13	1
12	5297	11.9	500	15	1
13	5298	14.2	369	13	1
14	5299	20.0	415	14	1
15	5300	12.8	278	13	1
16	5301	14.8	459	14	1
17	5302	18.8	440	16	1
18	5302	14.9	415	13	1
19	5303	14.0	378	14	1
20	5303	16.5	480	12	1
21	5304	12.0	356	13	1
22	5304	19.8	329	13	1
23	5305	15.7	277	16	1
24	5305	16.5	481	16	1
25	5306	12.3	327	14	1
26	5306	14.5	472	16	1
27	5307	19.7	373	13	1
28	5307	19.6	488	13	1
29	5308	18.4	254	16	1
30	5308	14.2	316	15	1
Detection Percentage (%)					100%

Note: In addition an average minimum percentage of successful detection across all four Short pulse radar test waveforms is as follows: $\frac{P_d1+P_d2+P_d3+P_d4}{4}$ = (100%+100%+100%+100%)/4 = 100% (>80%)

Radar Type 5 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	1=Detection 0=No Detection	Trail #	Test Freq. (MHz)	1=Detection 0=No Detection
1	5296.0	1	16	5300.0	1
2	5295.2	1	17	5300.0	0
3	5296.8	1	18	5300.0	1
4	5299.2	1	19	5300.0	1
5	5298.8	1	20	5300.0	1
6	5294.0	1	21	5305.6	1
7	5295.6	1	22	5304.0	1
8	5299.6	1	23	5306.0	0
9	5294.4	1	24	5300.8	1
10	5297.6	1	25	5303.2	0
11	5300.0	1	26	5304.8	1
12	5300.0	1	27	5300.4	1
13	5300.0	1	28	5304.4	1
14	5300.0	1	29	5302.4	1
15	5300.0	1	30	5301.2	1
Detection Percentage (%)					90%

Type 5 Radar Waveform_1

Num of Bursts = 15
Burst Interval (us)= 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	523522	3	10	60	1878	1290	1862	523522	0	799999
2	976622	3	10	100	1810	1484	1127	1505174	800000	1599999
3	239833	2	10	75	1530	1403	0	1749428	1600000	2399999
4	1355586	1	10	60	1396	0	0	3107947	2400000	3199999
5	450488	3	10	55	1140	1904	1257	3559831	3200000	3999999
6	836493	2	10	80	1257	1114	0	4400625	4000000	4799999
7	972286	2	10	60	1940	1783	0	5375282	4800000	5599999
8	455878	3	10	60	1893	1275	1570	5834883	5600000	6399999
9	1199826	2	10	80	1609	1797	0	7039447	6400000	7199999
10	711801	3	10	90	1958	1500	1322	7754654	7200000	7999999
11	613309	2	10	65	1507	1580	0	8372743	8000000	8799999
12	1217550	2	10	100	1213	1161	0	9593380	8800000	9599999
13	631685	3	10	90	1199	1161	1492	10227439	9600000	10399999
14	524940	1	10	60	1685	0	0	10756231	10400000	11199999
15	993607	1	10	65	1473	0	0	11751523	11200000	11999999

Total number of pulses in waveform = 33

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Type 5 Radar Waveform_2

Num of Bursts = 16
Burst Interval (us)= 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	475166	3	8	50	1822	1388	1406	475166	0	749999
2	559852	3	8	75	1254	1099	1558	1039634	750000	1499999
3	952671	3	8	70	1707	1540	1403	1996216	1500000	2249999
4	544681	2	8	80	1951	1145	0	2545547	2250000	2999999
5	550503	3	8	80	1022	1155	1559	3099146	3000000	3749999
6	1182020	2	8	70	1020	1725	0	4284902	3750000	4499999
7	298017	2	8	60	1846	1483	0	4585664	4500000	5249999
8	751737	1	8	55	1188	0	0	5340730	5250000	5999999
9	1113593	2	8	90	1800	1565	0	6455511	6000000	6749999
10	932619	2	8	85	1556	1868	0	7391495	6750000	7499999
11	723129	3	8	70	1865	1284	1457	8118048	7500000	8249999
12	299165	2	8	70	1563	1368	0	8421819	8250000	8999999
13	884161	3	8	95	1722	1312	1516	9308911	9000000	9749999
14	724466	3	8	75	1778	1711	1934	10037927	9750000	10499999
15	1028392	1	8	95	1189	0	0	11071742	10500000	11249999
16	401470	2	8	80	1713	1538	0	11474401	11250000	11999999

Total number of pulses in waveform = 37
****

Type 5 Radar Waveform_3

Num of Bursts = 13
Burst Interval (us)= 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	667887	1	12	90	1697	0	0	667887	0	923076
2	977346	3	12	60	1334	1422	1528	1646930	923077	1846153
3	307881	1	12	65	1509	0	0	1959095	1846154	2769230
4	1119748	3	12	75	1177	1042	1965	3080352	2769231	3692307
5	1245744	3	12	60	1294	1509	1173	4330280	3692308	4615384
6	673930	1	12	75	1385	0	0	5008186	4615385	5538461
7	696909	1	12	60	1768	0	0	5706480	5538462	6461538
8	1052353	2	12	60	1709	1936	0	6760601	6461539	7384615
9	1302637	2	12	50	1245	1540	0	8066883	7384616	8307692
10	376451	1	12	80	1540	0	0	8446119	8307693	9230769
11	914171	1	12	75	1824	0	0	9361830	9230770	10153846
12	1579574	3	12	100	1410	1054	1172	10943228	10153847	11076923
13	227983	1	12	95	1475	0	0	11174847	11076924	12000000

Total number of pulses in waveform = 23
****

Type 5 Radar Waveform_4

Num of Bursts = 18
Burst Interval (us)= 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	80667	1	18	55	1252	0	0	80667	0	666666
2	1004590	1	18	95	1082	0	0	1086509	666667	1333333
3	652990	3	18	50	1424	1025	1913	1740581	1333334	2000000
4	383694	1	18	70	1897	0	0	2128637	2000001	2666667
5	1155507	3	18	100	1007	1899	1174	3286041	2666668	3333334
6	149828	2	18	90	1400	1864	0	3439949	3333335	4000001
7	565878	2	18	60	1174	1372	0	4009091	4000002	4666668
8	1258136	1	18	85	1901	0	0	5269773	4666669	5333335
9	163566	1	18	50	1435	0	0	5435240	5333336	6000002
10	1208322	1	18	50	1960	0	0	6644997	6000003	6666669
11	206812	2	18	70	1304	1288	0	6853769	6666670	7333336
12	766914	2	18	55	1743	1001	0	7623275	7333337	8000003
13	665318	3	18	65	1559	1289	1733	8291337	8000004	8666670
14	887318	2	18	90	1254	1042	0	9183236	8666671	9333337
15	335659	3	18	70	1523	1475	1637	9521191	9333338	10000004
16	1047071	2	18	100	1699	1100	0	10572897	10000005	10666671
17	111206	2	18	50	1516	1409	0	10686902	10666672	11333338
18	903051	3	18	65	1538	1442	1012	11592878	11333339	12000005

Total number of pulses in waveform = 35
****

Type 5 Radar Waveform_5

Num of Bursts = 10
Burst Interval (us)= 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	318113	3	17	50	1436	1962	1442	318113	0	1199999
2	2008621	3	17	50	1432	1876	1301	2331574	1200000	2399999
3	676407	3	17	85	1645	1695	1029	3012590	2400000	3599999
4	1057704	3	17	95	1248	1459	1829	4074663	3600000	4799999
5	1772591	2	17	100	1073	1890	0	5851790	4800000	5999999
6	500309	1	17	70	1951	0	0	6355062	6000000	7199999
7	1189923	3	17	55	1230	1218	1062	7546936	7200000	8399999
8	1549837	3	17	80	1589	1513	1623	9100283	8400000	9599999
9	1181412	1	17	85	1742	0	0	10286420	9600000	10799999
10	675020	3	17	65	1655	1579	1390	10963182	10800000	11999999

Total number of pulses in waveform = 25

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Type 5 Radar Waveform_6

Num of Bursts = 13
Burst Interval (us)= 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	449054	2	5	80	1467	1990	0	449054	0	923076
2	1262969	1	5	90	1643	0	0	1715480	923077	1846153
3	372855	1	5	70	1181	0	0	2089978	1846154	2769230
4	1484457	3	5	55	1393	1013	1011	3575616	2769231	3692307
5	676869	2	5	85	1202	1585	0	4255902	3692308	4615384
6	1197628	1	5	55	1415	0	0	5456317	4615385	5538461
7	349815	2	5	55	1964	1799	0	5807547	5538462	6461538
8	1161906	3	5	50	1919	1005	1828	6973216	6461539	7384615
9	1135290	2	5	100	1919	1731	0	8113258	7384616	8307692
10	524321	1	5	65	1813	0	0	8641229	8307693	9230769
11	1180406	3	5	50	1421	1899	1076	9823448	9230770	10153846
12	564886	3	5	75	1493	1233	1232	10392730	10153847	11076923
13	1479245	1	5	60	1958	0	0	11875933	11076924	12000000

Total number of pulses in waveform = 25

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Type 5 Radar Waveform_7

Num of Bursts = 16
Burst Interval (us)= 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	531991	2	9	90	1939	1390	0	531991	0	749999
2	832490	2	9	70	1624	1240	0	1367810	750000	1499999
3	782927	1	9	90	1758	0	0	2153601	1500000	2249999
4	821383	1	9	75	1979	0	0	2976742	2250000	2999999
5	659312	3	9	70	1518	1624	1475	3638033	3000000	3749999
6	573798	2	9	90	1010	1412	0	4216448	3750000	4499999
7	888927	3	9	65	1714	1368	1438	5107797	4500000	5249999
8	157082	3	9	65	1633	1076	1977	5269399	5250000	5999999
9	1356305	1	9	50	1684	0	0	6630390	6000000	6749999
10	578995	1	9	50	1628	0	0	7211069	6750000	7499999
11	417029	2	9	85	1482	1009	0	7629726	7500000	8249999
12	1220749	1	9	50	1684	0	0	8852966	8250000	8999999
13	314921	2	9	55	1320	1796	0	9169571	9000000	9749999
14	937756	3	9	80	1685	1958	1349	10110443	9750000	10499999
15	974535	2	9	90	1734	1279	0	11089970	10500000	11249999
16	483189	2	9	100	1395	1825	0	11576172	11250000	11999999

Total number of pulses in waveform = 31

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Type 5 Radar Waveform_8

Num of Bursts = 16
Burst Interval (us)= 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	294155	1	19	95	1960	0	0	294155	0	749999
2	716803	1	19	95	1998	0	0	1012918	750000	1499999
3	1114866	1	19	75	1515	0	0	2129782	1500000	2249999
4	365753	3	19	65	1450	1442	1616	2497050	2250000	2999999
5	972972	2	19	90	1468	1422	0	3474530	3000000	3749999
6	911287	1	19	65	1924	0	0	4388707	3750000	4499999
7	592453	1	19	70	1947	0	0	4983084	4500000	5249999
8	865866	2	19	75	1970	1642	0	5850897	5250000	5999999
9	299031	1	19	80	1316	0	0	6153540	6000000	6749999
10	1122069	3	19	55	1576	1375	1508	7276925	6750000	7499999
11	930060	3	19	65	1458	1326	1425	8211444	7500000	8249999
12	128585	1	19	50	1624	0	0	8344238	8250000	8999999
13	800317	3	19	60	1842	1224	1329	9146179	9000000	9749999
14	913888	1	19	80	1101	0	0	10064462	9750000	10499999
15	458870	2	19	50	1165	1748	0	10524433	10500000	11249999
16	985067	1	19	100	1915	0	0	11512413	11250000	11999999

Total number of pulses in waveform = 27

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Type 5 Radar Waveform_9

Num of Bursts = 17
Burst Interval (us)= 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us
1	314107	3	6	90	1931	1548	1843	314107	0	705881
2	622872	2	6	50	1039	1104	0	942301	705882	1411763
3	660492	1	6	95	1490	0	0	1604936	1411764	2117645
4	609315	1	6	55	1985	0	0	2215741	2117646	2823527
5	1074452	3	6	55	1029	1369	1835	3292178	2823528	3529409
6	471706	2	6	55	1829	1764	0	3768117	3529410	4235291
7	1151552	3	6	60	1047	1454	1604	4923262	4235292	4941173
8	434702	2	6	65	1273	1918	0	5362069	4941174	5647055
9	565944	2	6	70	1870	1701	0	5931204	5647056	6352937
10	997645	3	6	65	1302	1460	1841	6932420	6352938	7058819
11	216420	2	6	90	1980	1072	0	7153443	7058820	7764701
12	832625	2	6	70	1929	1680	0	7989120	7764702	8470583
13	1122377	2	6	100	1466	1337	0	9115106	8470584	9176465
14	724382	1	6	50	1694	0	0	9842291	9176466	9882347
15	706223	2	6	95	1156	1056	0	10550208	9882348	10588229
16	285745	3	6	80	1741	1018	1790	10838165	10588230	11294111
17	892576	3	6	70	1625	1726	1652	11735290	11294112	11999993

Total number of pulses in waveform = 37

****

Type 5 Radar Waveform_10

Num of Bursts = 14
Burst Interval (us)= 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	303272	2	14	55	1347	1067	0	303272	0	857142
2	962799	2	14	95	1367	1912	0	1268485	857143	1714285
3	498900	1	14	55	1565	0	0	1770664	1714286	2571428
4	1027401	1	14	95	1133	0	0	2799630	2571429	3428571
5	1345426	2	14	60	1975	1274	0	4146189	3428572	4285714
6	954858	3	14	65	1214	1670	1680	5104296	4285715	5142857
7	555040	3	14	55	1058	1184	1310	5663900	5142858	6000000
8	537860	1	14	85	1587	0	0	6205312	6000001	6857143
9	918540	3	14	55	1147	1727	1003	7125439	6857144	7714286
10	1183264	2	14	85	1107	1932	0	8312580	7714287	8571429
11	635746	2	14	90	1827	1123	0	8951365	8571430	9428572
12	1313096	1	14	95	1239	0	0	10267411	9428573	10285715
13	767113	3	14	80	1483	1428	1274	11035763	10285716	11142858
14	746258	1	14	100	1841	0	0	11786206	11142859	12000001

Total number of pulses in waveform = 27

****

Type 5 Radar Waveform_11

Num of Bursts = 19
Burst Interval (us)= 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	511958	3	10	50	1570	1405	1757	511958	0	631578
2	640642	1	10	50	1354	0	0	1157332	631579	1263157
3	453785	1	10	90	1137	0	0	1612471	1263158	1894736
4	392136	2	10	95	1502	1885	0	2005744	1894737	2526315
5	998149	3	10	55	1298	1412	1223	3007280	2526316	3157894
6	464347	3	10	80	1213	1454	1047	3475560	3157895	3789473
7	471915	3	10	65	1350	1655	1174	3951189	3789474	4421052
8	873792	1	10	85	1106	0	0	4829160	4421053	5052631
9	762878	1	10	55	1686	0	0	5593144	5052632	5684210
10	536907	3	10	60	1163	1470	1906	6131737	5684211	6315789
11	638692	2	10	65	1779	1669	0	6774968	6315790	6947368
12	391559	1	10	65	1927	0	0	7169975	6947369	7578947
13	583342	2	10	100	1141	1210	0	7755244	7578948	8210526
14	1018655	3	10	55	1928	1745	1880	8776250	8210527	8842105
15	60345	3	10	60	1078	1338	1525	8842148	8842106	9473684
16	1023345	2	10	60	1105	1249	0	9869434	9473685	10105263
17	245390	3	10	90	1733	1035	1132	10117178	10105264	10736842
18	1140651	1	10	90	1180	0	0	11261729	10736843	11368421
19	300612	3	10	90	1652	1087	1296	11563521	11368422	12000000

Total number of pulses in waveform = 41
****

Type 5 Radar Waveform_12

Num of Bursts = 19
Burst Interval (us)= 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	522692	2	14	60	1945	1488	0	522692	0	631578
2	267682	3	14	70	1942	1189	1017	793807	631579	1263157
3	685336	1	14	100	1849	0	0	1483291	1263158	1894736
4	983394	1	14	55	1499	0	0	2468534	1894737	2526315
5	366805	2	14	65	1125	1240	0	2836838	2526316	3157894
6	697670	2	14	70	1556	1723	0	3536873	3157895	3789473
7	720112	1	14	75	1976	0	0	4260264	3789474	4421052
8	422889	2	14	80	1638	1765	0	4685129	4421053	5052631
9	957176	1	14	75	1805	0	0	5645708	5052632	5684210
10	116222	1	14	55	1292	0	0	5763735	5684211	6315789
11	1037384	2	14	90	1919	1952	0	6802411	6315790	6947368
12	332410	2	14	90	1019	1942	0	7138692	6947369	7578947
13	759033	1	14	70	1957	0	0	7900686	7578948	8210526
14	905122	3	14	50	1182	1310	1190	8807765	8210527	8842105
15	76076	3	14	80	1281	1713	1451	8887523	8842106	9473684
16	1138136	3	14	65	1556	1205	1837	10030104	9473685	10105263
17	688882	3	14	80	1805	1063	1501	10723584	10105264	10736842
18	557288	3	14	90	1819	1397	1697	11285241	10736843	11368421
19	377688	2	14	50	1822	1689	0	11667842	11368422	12000000

Total number of pulses in waveform = 38
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Type 5 Radar Waveform_13

Num of Bursts = 9
Burst Interval (us)= 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	65153	1	18	65	1426	0	0	65153	0	1333332
2	2144539	2	18	95	1102	1258	0	2211118	1333333	2666665
3	1307349	1	18	100	1075	0	0	3520827	2666666	3999998
4	671335	3	18	55	1294	1798	1259	4193237	3999999	5333331
5	1188534	1	18	95	1741	0	0	5386122	5333332	6666664
6	1454554	2	18	100	1822	1152	0	6842417	6666665	7999997
7	1770327	2	18	55	1176	1378	0	8615718	7999998	9333330
8	940690	3	18	95	1352	1738	1595	9558962	9333331	10666663
9	2099900	2	18	80	1318	1858	0	11663547	10666664	11999996

Total number of pulses in waveform = 17
****

Type 5 Radar Waveform_14

Num of Bursts = 20
Burst Interval (us)= 600000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	547734	1	5	100	1947	0	0	547734	0	599999
2	562035	3	5	65	1739	1944	1629	1111716	600000	1199999
3	225557	3	5	55	1920	1932	1637	1342585	1200000	1799999
4	673263	2	5	85	1152	1763	0	2021337	1800000	2399999
5	684087	3	5	60	1152	1151	1917	2708339	2400000	2999999
6	353274	2	5	95	1733	1675	0	3065833	3000000	3599999
7	604555	3	5	95	1746	1075	1961	3673796	3600000	4199999
8	1101858	3	5	70	1755	1527	1485	4780436	4200000	4799999
9	468201	3	5	90	1217	1782	1358	5253404	4800000	5399999
10	214161	2	5	60	1025	1411	0	5471922	5400000	5999999
11	576821	1	5	85	1314	0	0	6051179	6000000	6599999
12	1127449	2	5	60	1928	1635	0	7179942	6600000	7199999
13	92302	1	5	85	1747	0	0	7275807	7200000	7799999
14	591889	1	5	70	1943	0	0	7869443	7800000	8399999
15	935478	2	5	60	1882	1419	0	8806864	8400000	8999999
16	600113	3	5	70	1784	1590	1907	9410278	9000000	9599999
17	768704	1	5	80	1453	0	0	10184263	9600000	10199999
18	327537	2	5	50	1553	1459	0	10513253	10200000	10799999
19	557904	3	5	80	1531	1055	1518	11074169	10800000	11399999
20	856430	1	5	75	1302	0	0	11934703	11400000	11999999

Total number of pulses in waveform = 42

****

Type 5 Radar Waveform_15

Num of Bursts = 8
Burst Interval (us)= 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	511928	3	8	60	1265	1925	1942	511928	0	1499999
2	2140322	2	8	90	1712	1835	0	2657382	1500000	2999999
3	660806	1	8	70	1242	0	0	3321735	3000000	4499999
4	1524290	2	8	95	1416	1838	0	4847267	4500000	5999999
5	1729419	1	8	80	1935	0	0	6579940	6000000	7499999
6	1347395	2	8	50	1160	1056	0	7929270	7500000	8999999
7	1621566	2	8	65	1582	1556	0	9553052	9000000	10499999
8	1235961	3	8	60	1424	1618	1292	10792151	10500000	11999999

Total number of pulses in waveform = 16

****

Type 5 Radar Waveform_16

Num of Bursts = 18
Burst Interval (us)= 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	40096	1	19	65	1052	0	0	40096	0	666666
2	867611	3	19	80	1609	1485	1119	908759	666667	1333333
3	441495	2	19	100	1741	1937	0	1354467	1333334	2000000
4	915902	2	19	85	1559	1792	0	2274047	2000001	2666667
5	454021	3	19	100	1909	1582	1404	2731419	2666668	3333334
6	709853	2	19	50	1053	1913	0	3446167	3333335	4000001
7	634640	1	19	95	1883	0	0	4083773	4000002	4666668
8	1236480	3	19	80	1510	1693	1943	5322136	4666669	5333335
9	265904	3	19	75	1366	1555	1635	5593186	5333336	6000002
10	564510	1	19	60	1396	0	0	6162252	6000003	6666669
11	1112665	1	19	65	1935	0	0	7276313	6666670	7333336
12	217997	1	19	65	1980	0	0	7496245	7333337	8000003
13	740467	3	19	65	1005	1287	1854	8238692	8000004	8666670
14	721811	3	19	90	1842	1056	1028	8964649	8666671	9333337
15	501250	2	19	70	1980	1246	0	9469825	9333338	10000004
16	929746	3	19	55	1510	1631	1505	10402797	10000005	10666671
17	429437	3	19	60	1701	1785	1177	10836880	10666672	11333338
18	594273	3	19	80	1916	1168	1504	11435816	11333339	12000005

Total number of pulses in waveform = 40

****

Type 5 Radar Waveform_17

Num of Bursts = 18
Burst Interval (us)= 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	140111	2	6	50	1277	1017	0	140111	0	666666
2	687770	1	6	75	1538	0	0	830175	666667	1333333
3	612545	2	6	75	1493	1754	0	1444258	1333334	2000000
4	616907	3	6	90	1984	1577	1192	2064412	2000001	2666667
5	876748	1	6	55	1201	0	0	2945913	2666668	3333334
6	530784	3	6	60	1174	1819	1767	3477898	3333335	4000001
7	524971	1	6	95	1439	0	0	4007629	4000002	4666668
8	1016053	1	6	55	1938	0	0	5025121	4666669	5333335
9	486443	2	6	80	1136	1949	0	5513502	5333336	6000002
10	994728	1	6	100	1697	0	0	6511315	6000003	6666669
11	699909	1	6	80	1733	0	0	7212921	6666670	7333336
12	125296	2	6	90	1738	1590	0	7339950	7333337	8000003
13	686972	1	6	75	1720	0	0	8030250	8000004	8666670
14	1149291	1	6	55	1826	0	0	9181261	8666671	9333337
15	622685	3	6	65	1879	1928	1719	9805772	9333338	10000004
16	412969	1	6	80	1548	0	0	10224267	10000005	10666671
17	473104	3	6	75	1588	1104	1023	10698919	10666672	11333338
18	724990	1	6	100	1712	0	0	11427624	11333339	12000005

Total number of pulses in waveform = 30
****

Type 5 Radar Waveform_18

Num of Bursts = 11
Burst Interval (us)= 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	426984	3	12	55	1046	1840	1738	426984	0	1090908
2	1206641	3	12	85	1760	1010	1849	1638249	1090909	2181817
3	1036055	1	12	60	1211	0	0	2678923	2181818	3272726
4	1521750	3	12	70	1915	1891	1929	4201884	3272727	4363635
5	531311	1	12	65	1916	0	0	4738930	4363636	5454544
6	1789403	1	12	85	1248	0	0	6530249	5454545	6545453
7	893467	1	12	55	1397	0	0	7424964	6545454	7636362
8	226837	1	12	70	1952	0	0	7653198	7636363	8727271
9	1164753	1	12	95	1064	0	0	8819903	8727272	9818180
10	2082702	2	12	50	1231	1905	0	10903669	9818181	10909089
11	778688	1	12	80	1054	0	0	11685493	10909090	11999998

Total number of pulses in waveform = 18
****

Type 5 Radar Waveform_19

Num of Bursts = 13
Burst Interval (us)= 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	232768	2	9	90	1344	1828	0	232768	0	923076
2	1443531	1	9	55	1934	0	0	1679471	923077	1846153
3	1071779	3	9	55	1366	1183	1238	2753184	1846154	2769230
4	311205	3	9	85	1388	1811	1584	3068176	2769231	3692307
5	1017015	2	9	95	1536	1875	0	4089974	3692308	4615384
6	1069190	3	9	95	1257	1098	1973	5162575	4615385	5538461
7	574818	3	9	50	1907	1483	1135	5741721	5538462	6461538
8	1315225	1	9	80	1807	0	0	7061471	6461539	7384615
9	921830	2	9	90	1817	1823	0	7985108	7384616	8307692
10	384102	3	9	100	1977	1026	1866	8372850	8307693	9230769
11	1005313	1	9	55	1050	0	0	9383032	9230770	10153846
12	1375093	2	9	85	1787	1472	0	10759175	10153847	11076923
13	770068	1	9	65	1483	0	0	11532502	11076924	12000000

Total number of pulses in waveform = 27
****

Type 5 Radar Waveform_20

Num of Bursts = 16
Burst Interval (us)= 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	211165	3	17	80	1514	1998	1208	211165	0	749999
2	1228535	3	17	55	1456	1046	1495	1444420	750000	1499999
3	126839	3	17	90	1055	1291	1944	1575256	1500000	2249999
4	1393322	3	17	65	1143	1077	1004	2972868	2250000	2999999
5	291906	1	17	55	1289	0	0	3267998	3000000	3749999
6	987500	3	17	100	1254	1650	1319	4256787	3750000	4499999
7	299203	3	17	70	1339	1025	1116	4560213	4500000	5249999
8	948752	2	17	65	1158	1600	0	5512445	5250000	5999999
9	559707	1	17	85	1925	0	0	6074910	6000000	6749999
10	690590	3	17	75	1900	1035	1631	6767425	6750000	7499999
11	1135455	3	17	55	1537	1265	1085	7907446	7500000	8249999
12	1072460	2	17	80	1318	1745	0	8983793	8250000	8999999
13	116942	2	17	75	1685	1816	0	9103798	9000000	9749999
14	1100512	1	17	85	1526	0	0	10207811	9750000	10499999
15	938114	2	17	100	1256	1806	0	11147451	10500000	11249999
16	100454	2	17	95	1692	1358	0	11250967	11250000	11999999

Total number of pulses in waveform = 37
****

Type 5 Radar Waveform_21

Num of Bursts = 11
Burst Interval (us)= 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	786163	2	6	85	1131	1768	0	786163	0	1090908
2	1315441	1	6	90	1002	0	0	2104503	1090909	2181817
3	1150245	1	6	85	1974	0	0	3255750	2181818	3272726
4	291740	3	6	50	1046	1345	1013	3549464	3272727	4363635
5	1172311	3	6	75	1482	1415	1490	4725179	4363636	5454544
6	839967	2	6	60	1762	1903	0	5569533	5454545	6545453
7	1077817	1	6	80	1883	0	0	6651015	6545454	7636362
8	1661244	1	6	55	1558	0	0	8314142	7636363	8727271
9	821377	1	6	70	1992	0	0	9137077	8727272	9818180
10	774582	1	6	70	1177	0	0	9913651	9818181	10909089
11	1431320	3	6	75	1394	1452	1745	11346148	10909090	11999998

Total number of pulses in waveform = 19
****

Type 5 Radar Waveform_22

Num of Bursts = 14
Burst Interval (us)= 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	124003	3	10	85	1671	1213	1438	124003	0	857142
2	758973	1	10	85	1383	0	0	887298	857143	1714285
3	1080302	3	10	50	1509	1088	1392	1968983	1714286	2571428
4	1248142	1	10	100	1638	0	0	3221114	2571429	3428571
5	705806	1	10	80	1475	0	0	3928558	3428572	4285714
6	955101	2	10	75	1941	1545	0	4885134	4285715	5142857
7	717645	2	10	50	1352	1601	0	5606265	5142858	6000000
8	641801	2	10	100	1819	1088	0	6251019	6000001	6857143
9	894859	3	10	85	1206	1217	1911	7148785	6857144	7714286
10	939004	2	10	80	1258	1728	0	8092123	7714287	8571429
11	1002310	2	10	70	1184	1038	0	9097419	8571430	9428572
12	370145	2	10	75	1756	1339	0	9469786	9428573	10285715
13	1229772	3	10	95	1383	1227	1443	10702653	10285716	11142858
14	605183	2	10	70	1156	1244	0	11311889	11142859	12000001

Total number of pulses in waveform = 29
****

Type 5 Radar Waveform_23

Num of Bursts = 19
Burst Interval (us)= 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	218549	1	5	95	1900	0	0	218549	0	631578
2	596331	1	5	100	1431	0	0	816780	631579	1263157
3	784430	3	5	85	1848	1472	1421	1602641	1263158	1894736
4	421986	3	5	95	1138	1835	1943	2029368	1894737	2526315
5	692311	1	5	65	1124	0	0	2726595	2526316	3157894
6	968438	3	5	80	1720	1427	1904	3696157	3157895	3789473
7	102266	1	5	75	1540	0	0	3803474	3789474	4421052
8	723505	2	5	95	1021	1722	0	4528519	4421053	5052631
9	530666	2	5	50	1264	1529	0	5061928	5052632	5684210
10	924538	2	5	50	1918	1283	0	5989259	5684211	6315789
11	330489	1	5	60	1532	0	0	6322949	6315790	6947368
12	1219467	2	5	50	1684	1859	0	7543948	6947369	7578947
13	280285	3	5	80	1155	1546	1960	7827776	7578948	8210526
14	633415	3	5	50	1665	1446	1285	8465852	8210527	8842105
15	952492	2	5	90	1626	1991	0	9422740	8842106	9473684
16	626190	3	5	80	1237	1076	1284	10052547	9473685	10105263
17	157463	3	5	50	1125	1228	1692	10213607	10105264	10736842
18	1021961	2	5	80	1101	1841	0	11239613	10736843	11368421
19	192162	1	5	55	1707	0	0	11434717	11368422	12000000

Total number of pulses in waveform = 39
****

Type 5 Radar Waveform_24

Num of Bursts = 12
Burst Interval (us)= 1000000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	638327	1	18	65	1542	0	0	638327	0	999999
2	1138779	1	18	75	1503	0	0	1778648	1000000	1999999
3	242558	3	18	95	1912	1750	1674	2022709	2000000	2999999
4	1883539	1	18	65	1113	0	0	3911584	3000000	3999999
5	646231	1	18	80	1013	0	0	4558928	4000000	4999999
6	1357836	2	18	80	1750	1191	0	5917777	5000000	5999999
7	873647	1	18	85	1687	0	0	6794365	6000000	6999999
8	205729	3	18	100	1768	1880	1942	7001781	7000000	7999999
9	1133258	3	18	50	1271	1166	1999	8140629	8000000	8999999
10	1599420	1	18	60	1118	0	0	9744485	9000000	9999999
11	979079	2	18	70	1512	1810	0	10724682	10000000	10999999
12	582345	3	18	80	1940	1786	1896	11310349	11000000	11999999

Total number of pulses in waveform = 22
****

Type 5 Radar Waveform_25

Num of Bursts = 13
Burst Interval (us)= 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	910338	3	12	50	1472	1767	1278	910338	0	923076
2	591084	3	12	70	1401	1777	1167	1505939	923077	1846153
3	1137504	3	12	95	1064	1907	1986	2647788	1846154	2769230
4	423222	1	12	85	1193	0	0	3075967	2769231	3692307
5	1055984	1	12	85	1591	0	0	4133144	3692308	4615384
6	641860	2	12	90	1672	1120	0	4776595	4615385	5538461
7	1245488	3	12	55	1053	1706	1104	6024875	5538462	6461538
8	1005346	1	12	85	1485	0	0	7034084	6461539	7384615
9	603817	3	12	90	1896	1520	1383	7639386	7384616	8307692
10	1567711	1	12	90	1412	0	0	9211896	8307693	9230769
11	155465	1	12	70	1390	0	0	9368773	9230770	10153846
12	1306180	3	12	75	1184	1887	1273	10676343	10153847	11076923
13	689310	2	12	100	1732	1694	0	11369997	11076924	12000000

Total number of pulses in waveform = 27
****

Type 5 Radar Waveform_26

Num of Bursts = 9
Burst Interval (us)= 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	447854	1	8	70	1177	0	0	447854	0	1333332
2	1044163	3	8	65	1910	1714	1222	1493194	1333333	2666665
3	1624517	2	8	80	1729	1058	0	3122557	2666666	3999998
4	984860	2	8	80	1434	1606	0	4110204	3999999	5333331
5	1911041	1	8	85	1766	0	0	6024285	5333332	6666664
6	783485	1	8	75	1098	0	0	6809536	6666665	7999997
7	2505351	3	8	65	1715	1003	1175	9315985	7999998	9333330
8	886412	1	8	85	1215	0	0	10206290	9333331	10666663
9	1230702	1	8	60	1941	0	0	11438207	10666664	11999996

Total number of pulses in waveform = 15
****

Type 5 Radar Waveform_27

Num of Bursts = 11
Burst Interval (us)= 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	154449	3	19	80	1387	1719	1774	154449	0	1090908
2	980998	2	19	65	1798	1567	0	1140327	1090909	2181817
3	1200591	3	19	65	1427	1265	1568	2344283	2181818	3272726
4	1274569	1	19	55	1807	0	0	3623112	3272727	4363635
5	1065526	2	19	90	1645	1608	0	4690445	4363636	5454544
6	1679267	2	19	75	1982	1741	0	6372965	5454545	6545453
7	1180670	3	19	80	1429	1569	1232	7557358	6545454	7636362
8	327451	3	19	70	1558	1741	1852	7889039	7636363	8727271
9	1901246	3	19	60	1280	1382	1566	9795436	8727272	9818180
10	959246	2	19	100	1865	1174	0	10758910	9818181	10909089
11	1075002	1	19	100	1552	0	0	11836951	10909090	11999998

Total number of pulses in waveform = 25
****

Type 5 Radar Waveform_28

Num of Bursts = 19
Burst Interval (us)= 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	213135	1	9	55	1063	0	0	213135	0	631578
2	813875	1	9	60	1529	0	0	1028073	631579	1263157
3	774027	2	9	90	1306	1127	0	1803629	1263158	1894736
4	270671	2	9	85	1486	1349	0	2076733	1894737	2526315
5	896849	3	9	80	1750	1942	1729	2976417	2526316	3157894
6	621205	2	9	65	1981	1818	0	3603043	3157895	3789473
7	378585	1	9	100	1274	0	0	3985427	3789474	4421052
8	845226	3	9	60	1121	1165	1175	4831927	4421053	5052631
9	296645	3	9	80	1940	1853	1493	5132033	5052632	5684210
10	875397	2	9	65	1268	1365	0	6012716	5684211	6315789
11	875915	1	9	90	1447	0	0	6891264	6315790	6947368
12	564413	1	9	75	1633	0	0	7457124	6947369	7578947
13	719409	1	9	80	1768	0	0	8178166	7578948	8210526
14	194776	2	9	55	1172	1168	0	8374710	8210527	8842105
15	540493	2	9	80	1907	1402	0	8917543	8842106	9473684
16	1165899	2	9	60	1667	1931	0	10086751	9473685	10105263
17	253309	1	9	70	1535	0	0	10343658	10105264	10736842
18	821476	2	9	70	1518	1589	0	11166669	10736843	11368421
19	802593	3	9	75	1853	1083	1079	11972369	11368422	12000000

Total number of pulses in waveform = 35
****

Type 5 Radar Waveform_29

Num of Bursts = 9
Burst Interval (us)= 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	494178	2	14	65	1728	1868	0	494178	0	1333332
2	1537856	2	14	100	1046	1259	0	2035630	1333333	2666665
3	657012	3	14	55	1655	1394	1626	2694947	2666666	3999998
4	1779772	1	14	65	1369	0	0	4479394	3999999	5333331
5	1886106	3	14	55	1698	1920	1836	6366869	5333332	6666664
6	1345448	2	14	50	1408	1080	0	7717771	6666665	7999997
7	927581	3	14	80	1624	1156	1268	8647840	7999998	9333330
8	1735186	1	14	65	1963	0	0	10387074	9333331	10666663
9	1576616	2	14	70	1907	1072	0	11965653	10666664	11999996

Total number of pulses in waveform = 19
****

Type 5 Radar Waveform_30

Num of Bursts = 13
Burst Interval (us)= 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	428179	1	17	85	1941	0	0	428179	0	923076
2	865488	2	17	75	1675	1974	0	1295608	923077	1846153
3	706662	3	17	60	1367	1190	1749	2005919	1846154	2769230
4	835928	1	17	95	1257	0	0	2846153	2769231	3692307
5	1241219	3	17	85	1587	1195	1490	4088629	3692308	4615384
6	1160976	2	17	60	1152	1740	0	5253877	4615385	5538461
7	654180	2	17	75	1608	1166	0	5910949	5538462	6461538
8	1283280	2	17	60	1368	1190	0	7197003	6461539	7384615
9	778292	3	17	55	1937	1697	1025	7977853	7384616	8307692
10	476241	2	17	55	1750	1505	0	8458753	8307693	9230769
11	1469708	2	17	95	1362	1133	0	9931716	9230770	10153846
12	300339	3	17	50	1275	1427	1659	10234550	10153847	11076923
13	1583214	3	17	100	1957	1981	1759	11822125	11076924	12000000

Total number of pulses in waveform = 29
****

Radar Type 6 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	1=Detection 0=No Detection	Trail #	Test Freq. (MHz)	1=Detection 0=No Detection
1	5292	1	16	5301	1
2	5292	1	17	5302	1
3	5293	1	18	5302	1
4	5293	1	19	5303	1
5	5294	1	20	5303	1
6	5294	1	21	5304	1
7	5295	1	22	5304	1
8	5295	1	23	5305	1
9	5296	1	24	5305	1
10	5296	1	25	5306	1
11	5297	1	26	5306	1
12	5297	1	27	5307	1
13	5298	1	28	5307	1
14	5299	1	29	5308	1
15	5300	1	30	5308	1
Detection Percentage (%)					100%

Radar waveform #1			Radar waveform #2		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
10	5276	30	1	5277	3
16	5322	48	31	5318	93
24	5280	72	47	5320	141
28	5314	84	53	5321	159
35	5303	105	56	5317	168
36	5321	108	67	5300	201
43	5330	129	75	5286	225
44	5301	132	78	5322	234
62	5325	186	83	5328	249
65	5286	195	85	5291	255
80	5275	240	89	5296	267
88	5279	264	92	5305	276
90	5323	270	95	5299	285
95	5277	285	99	5315	297

Radar waveform #3			Radar waveform #4		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5324	3	4	5300	12
7	5323	21	10	5305	30
8	5319	24	11	5287	33
15	5306	45	13	5311	39
21	5305	63	14	5271	42
25	5274	75	25	5288	75
26	5308	78	28	5315	84
27	5280	81	31	5314	93
37	5307	111	32	5274	96
39	5314	117	37	5299	111
41	5320	123	55	5306	165
59	5293	177	69	5318	207
60	5276	180	86	5303	258
67	5299	201	88	5329	264
73	5286	219	92	5330	276
78	5298	234	95	5285	285
82	5325	246	97	5304	291
83	5328	249	--	--	--
86	5292	258	--	--	--

Radar waveform #5			Radar waveform #6		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5282	3	0	5270	0
3	5290	9	1	5329	3
28	5293	84	13	5277	39
34	5301	102	40	5315	120
39	5315	117	45	5330	135
56	5324	168	48	5301	144
57	5299	171	64	5287	192
69	5285	207	69	5326	207
76	5325	228	82	5308	246
94	5321	282	98	5297	294
--	--	--	99	5312	297

Radar waveform #7			Radar waveform #8		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
5	5290	15	6	5315	18
6	5296	18	13	5325	39
39	5297	117	17	5278	51
41	5322	123	24	5318	72
48	5277	144	26	5287	78
66	5323	198	35	5304	105
74	5313	222	36	5292	108
--	--	--	39	5293	117
--	--	--	49	5290	147
--	--	--	55	5306	165
--	--	--	61	5320	183
--	--	--	67	5323	201
--	--	--	68	5272	204
--	--	--	69	5283	207
--	--	--	77	5277	231
--	--	--	81	5326	243

Radar waveform #9			Radar waveform #10		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5290	3	18	5300	54
7	5272	21	27	5324	81
12	5277	36	40	5315	120
17	5312	51	41	5322	123
18	5315	54	43	5291	129
23	5307	69	44	5276	132
25	5280	75	47	5308	141
30	5299	90	59	5329	177
50	5313	150	61	5318	183
56	5279	168	63	5273	189
60	5321	180	65	5295	195
66	5274	198	72	5275	216
69	5292	207	81	5326	243
71	5325	213	82	5328	246
83	5330	249	88	5314	264
91	5309	273	96	5316	288

Radar waveform #11			Radar waveform #12		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Frequency (MHz)	Hopping Number	Pulse Start (ms)
23	5304	69	f	5294	21
24	5328	72	16	5289	48
27	5294	81	24	5274	72
29	5291	87	31	5282	93
33	5286	99	38	5272	114
43	5329	129	51	5270	153
49	5275	147	63	5296	189
55	5322	165	78	5287	234
59	5307	177	89	5277	267
61	5310	183	--	--	--
66	5297	198	--	--	--
67	5311	201	--	--	--
82	5278	246	--	--	--

Radar waveform #13			Radar waveform #14		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
5	5310	15	7	5318	21
14	5299	42	13	5315	39
19	5314	57	19	5286	57
21	5279	63	36	5292	108
24	5305	72	41	5311	123
30	5327	90	46	5291	138
35	5323	105	65	5303	195
39	5287	117	67	5328	201
49	5272	147	68	5327	204
58	5328	174	79	5326	237
74	5283	222	95	5272	285
85	5277	255	--	--	--
91	5274	273	--	--	--

Radar waveform #15			Radar waveform #16		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
9	5320	27	25	5316	75
20	5281	60	48	5319	144
55	5282	165	57	5294	171
59	5288	177	61	5325	183
63	5277	189	71	5313	213
66	5271	198	72	5327	216
73	5321	219	86	5277	258
75	5294	225	87	5312	261
86	5290	258	91	5323	273
96	5312	288	93	5275	279
97	5329	291	95	5329	285
--	--	--	97	5321	291
--	--	--	99	5322	297