

DFS MEASUREMENT REPORT

FCC PART 15 Subpart E

FCC ID: 2AXJ4RE305V4

Applicant: TP-Link Corporation Limited

Application Type: Certification

Product: AC1200 Wi-Fi Range Extender

Model No.: RE305

Brand Name: tp-link

FCC Classification: Unlicensed National Information Infrastructure (NII)

FCC Rule Part(s): Part 15 Subpart E - 15.407 Section (h)(2)

Type of Device: Master Device
Client with Radar Detection

Receive Date: March 08, 2021

Test Date: March 11 ~ April 08, 2021

Tested By : Kevin Ker
(Kevin Ker)

Reviewed By : Paddy Chen
(Paddy Chen)

Approved By : Chenz Ker
(Chenz Ker)



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.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2101TW0002-U3	Rev. 01	Initial report	2021-04-27	Valid

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General Information

Applicant	TP-Link Corporation Limited
Applicant Address	Room 901, 9/F., New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hongkong
Manufacturer	TP-Link Corporation Limited
Manufacturer Address	Room 901, 9/F., New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hongkong
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 FCC Registration No.	291082
FCC Rule Part(s)	Part 15.407
Test Device Serial No.	N/A ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.

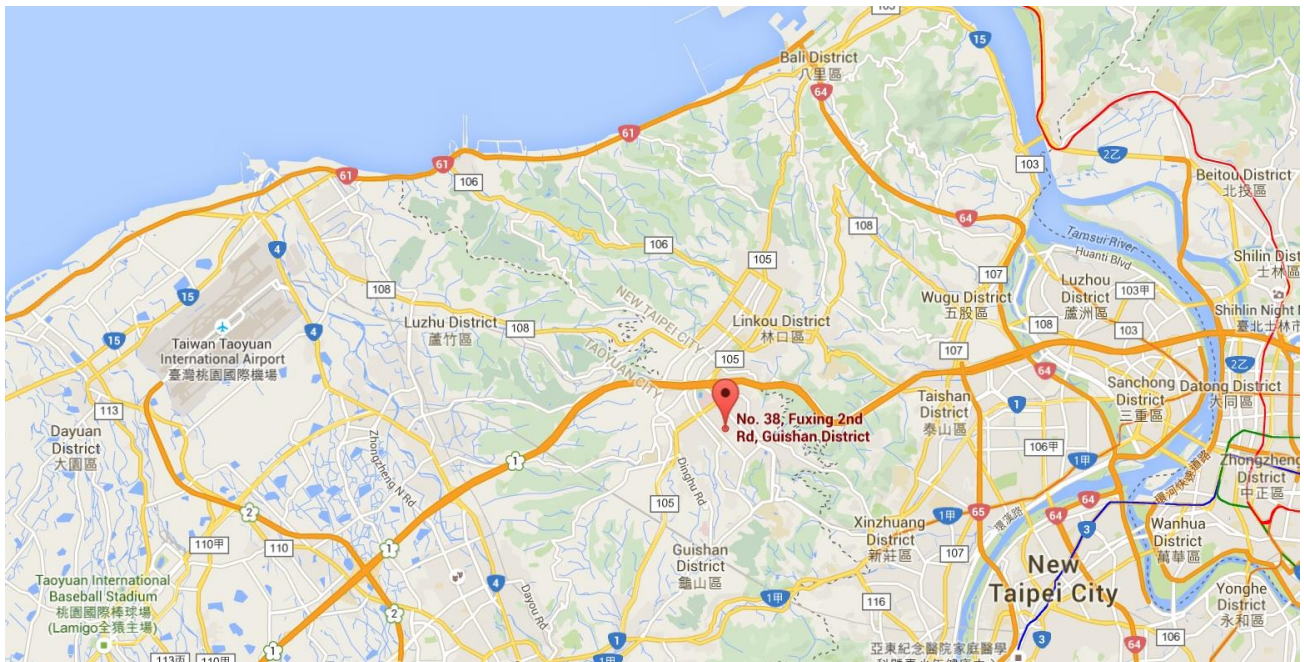
1. INTRODUCTION

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 Innovation, Science and Economic Development Canada and 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:	AC1200 Wi-Fi Range Extender
Model No.:	RE305
Brand Name:	tp-link
Wi-Fi Specification:	802.11a/b/g/n/ac
Operating Mode:	Master, Client with Radar Detection
EUT Identification No.:	20210308Sample#19
Frequency Range:	<u>2.4GHz:</u> For 802.11b/g/n-HT20: 2412 ~ 2462 MHz For 802.11n-HT40: 2422 ~ 2452 MHz <u>5GHz:</u> For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5260~5320 MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40: 5190~5230MHz, 5270~5310 MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz
Type of Modulation:	802.11b: DSSS 802.11a/g/n/ac: OFDM
TPC mechanism:	Support (Details refer to operational description)
Power-on cycle:	Requires 22.1 seconds to complete its power-on cycle
Uniform Spreading (For DFS Frequency Band):	For the 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.

2.2. Operating Frequency and Channel List for this Report

802.11a/n-HT20/ac-VHT20

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/ac-VHT40

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	5710 MHz	--	--

802.11ac-VHT80

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

2.3. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	T _x Paths	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
Dipole Antenna	2412 ~ 2462	2	1	--	1	4.01
	5150 ~ 5850	2	1	4.01	1	4.01

Note 1: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

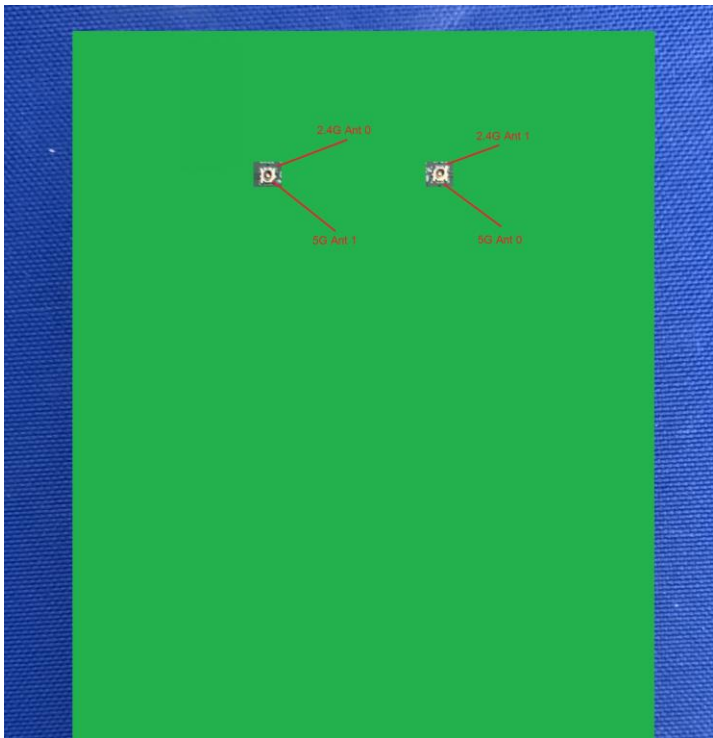
- For power spectral density (PSD) measurements on all devices,
Array Gain = $10 \log (N_{ANT} / N_{SS})$ dB;
- For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB for $N_{ANT} \leq 4$;

Note 2: The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac, not include 802.11a/b/g. BF Directional gain = $G_{ANT} + 10 \log (N_{ANT})$.

Note 3: All information declared by manufacturer.

2.4. Description of Antenna RF Port

Antenna RF Port		
Software Control Port	2.4GHz & 5GHz RF Port	
	Ant 0	Ant 1
		

2.5. Test Channels for this Report

Test Mode	Test Channel	Test Frequency
802.11ac-VHT20	100	5500 MHz
802.11ac-VHT40	102	5510 MHz
802.11ac-VHT80	106	5530 MHz

2.6. Test Mode

Test Mode	Mode 1: Operating under AP mode Mode 2: Operating under Client with Radar Detection Mode
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2.7. Applied Standards

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

- FCC Part15 Subpart E (Section 15.407 Section (h)(2))
- KDB 905462 D02v02
- KDB 905462 D04v01

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 $\geq$ 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.	

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	Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	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 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.

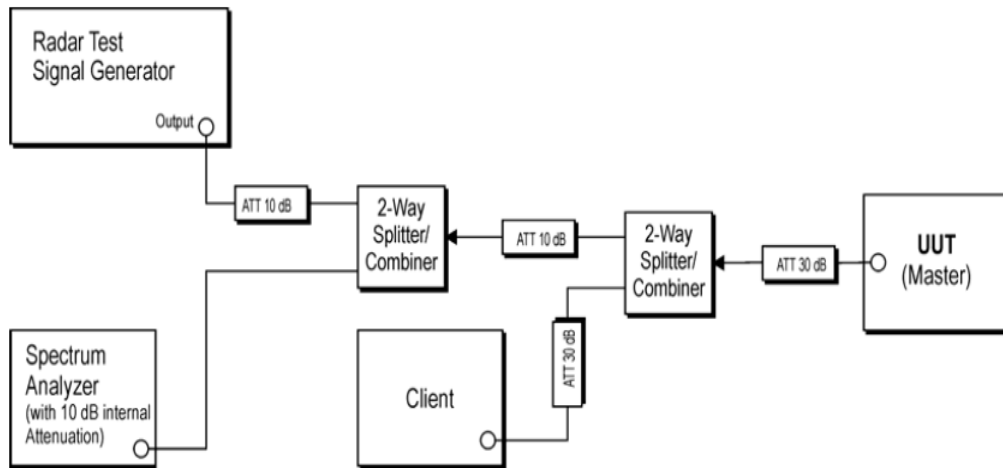


Figure 3-1: Conducted Test Setup where UUT is a Master and Radar Test Waveforms are injected into the Masters

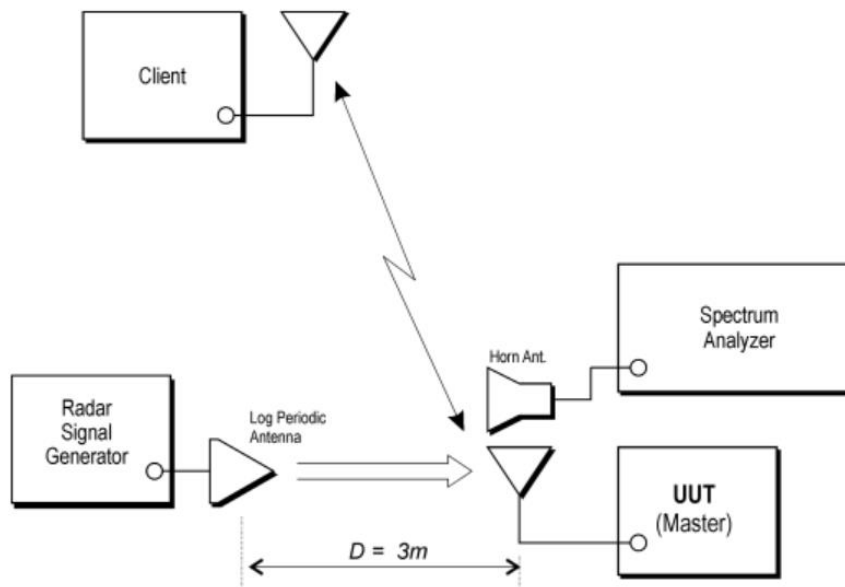


Figure 3-2: Radiated Test Setup where UUT is a Master and Radar Test Waveforms are injected into the UUT

4. TEST EQUIPMENT CALIBRATION DATE

Dynamic Frequency Selection (DFS)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2021/10/02
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2021/07/14
Vector Signal Generator	Keysight	N5182B	MRTTWA00010	1 year	2021/04/24
Combiner	WOKEN	0120A04208001S	MRTTWE00008	1 year	2021/06/18

Client Information

Instrument	Manufacturer	Type No.
HP 525 Wireless 802.11ac	HP	JG994A
AC1200 Wi-Fi Range Extender	tp-link	RE305

Software	Version	Manufacturer	Function
Pulse Building(N7607B)	V3.0.0	Keysight	Radar Signal Generation Software
DFS Tool	V6.7	Keysight	DFS Test Software

5. TEST RESULT

5.1. Summary

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.

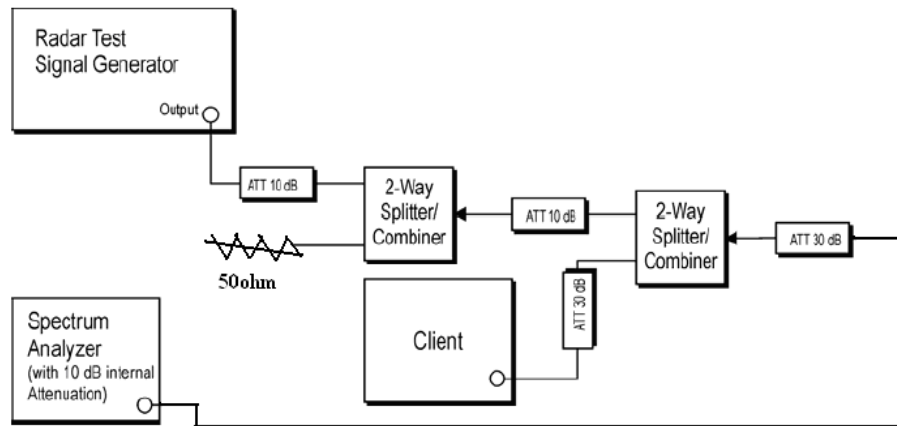


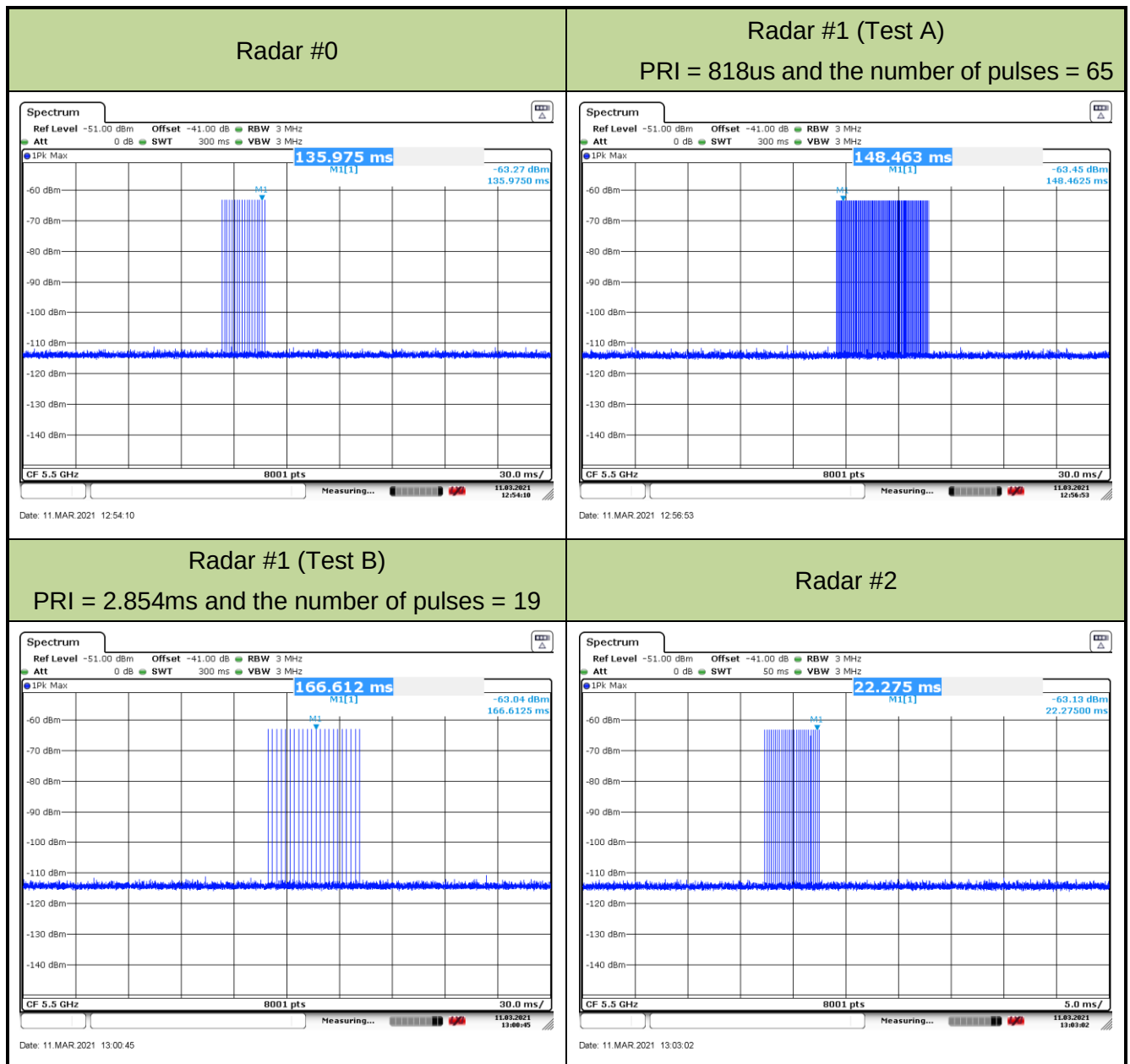
Figure 3-2: Conducted Test Setup

5.2.2. Calibration Procedure

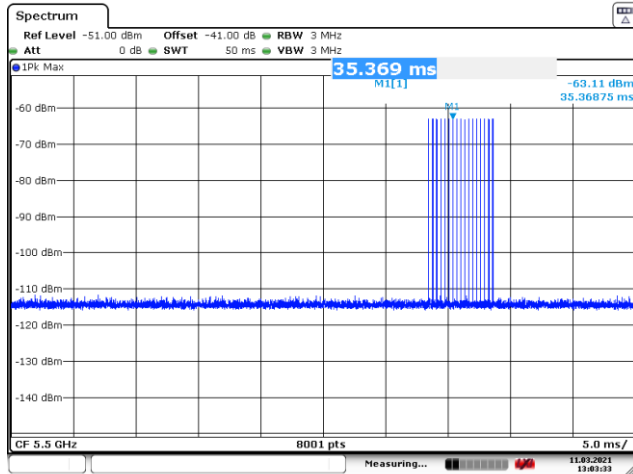
The Interference Radar Detection Threshold Level is $(-64\text{dBm}) + (0) [\text{dBi}] + 1 \text{ dB} = -63 \text{ dBm}$ that had been taken into account the output power range and antenna gain. The above equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was 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 $(-64\text{dBm}) + (0) [\text{dBi}] + 1 \text{ dB} = -63\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.

5.2.3. Calibration Result

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Radar Waveform Calibration		

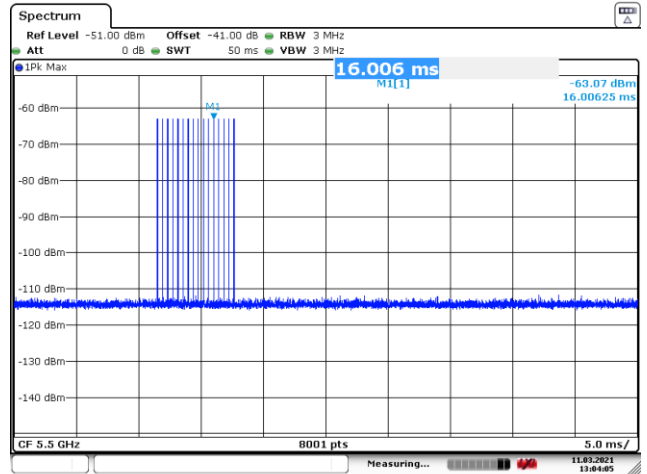


Radars #3



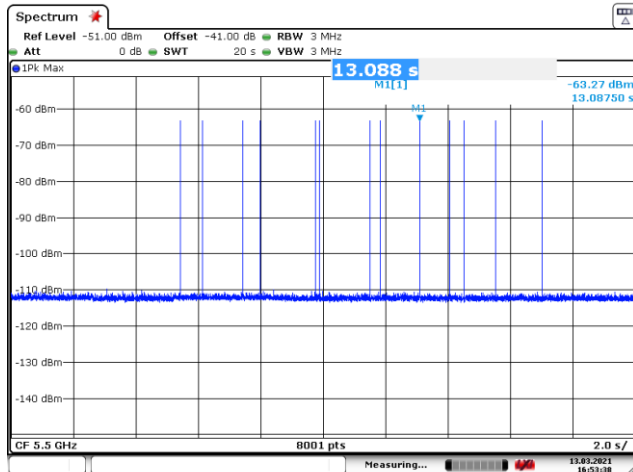
Date: 11.MAR.2021 13:03:34

Radars #4



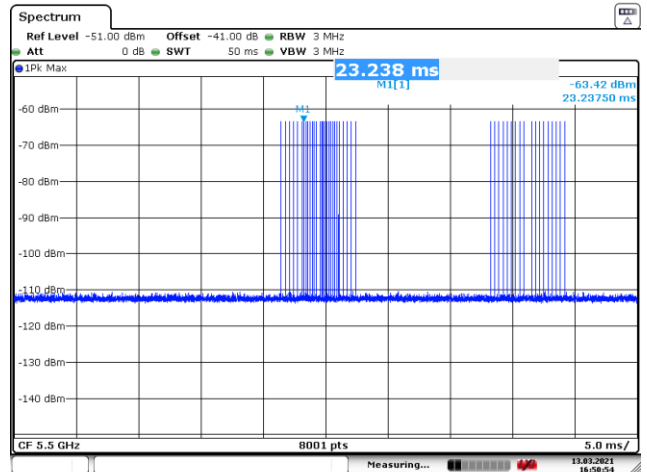
Date: 11.MAR.2021 13:04:05

Radars #5



Date: 13.MAR.2021 16:53:38

Radars #6



Date: 13.MAR.2021 16:50:54

5.2.4. Channel Loading Test Result

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/04/06
Test Item	Channel Loading – Mode 1		

802.11ac-VHT20 (5500MHz)		802.11ac-VHT40 (5510MHz)																																																										
Ref Level -50.50 dBm Offset -40.50 dB RBW 3 MHz Att 0 dB SWT 300 ms VBW 3 MHz 1Pk Clrw D2[1] 1.39 dB M1[1] 35.0125 ms D1 150.9375 ms D2 6.825 ms CF 5.5 GHz 8001 pts 30.0 ms/ Marker <table><thead><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-value</th><th>Y-value</th><th>Function</th><th>Function Result</th></tr></thead><tbody><tr><td>M1</td><td>1</td><td></td><td>150.9375 ms</td><td>-77.99 dBm</td><td></td><td></td></tr><tr><td>D1</td><td>M1</td><td>1</td><td>6.825 ms</td><td>1.80 dB</td><td></td><td></td></tr><tr><td>D2</td><td>M1</td><td>1</td><td>35.0125 ms</td><td>1.39 dB</td><td></td><td></td></tr></tbody></table> Date: 13.MAR.2021 15:32:19		Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		150.9375 ms	-77.99 dBm			D1	M1	1	6.825 ms	1.80 dB			D2	M1	1	35.0125 ms	1.39 dB			Ref Level -50.50 dBm Offset -40.50 dB RBW 3 MHz Att 0 dB SWT 200 ms VBW 3 MHz 1Pk Clrw D2[1] 4.32 dB M1[1] 25.9500 ms D1 84.0750 ms D2 5.9 ms CF 5.51 GHz 8001 pts 20.0 ms/ Marker <table><thead><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-value</th><th>Y-value</th><th>Function</th><th>Function Result</th></tr></thead><tbody><tr><td>M1</td><td>1</td><td></td><td>84.075 ms</td><td>-86.20 dBm</td><td></td><td></td></tr><tr><td>D1</td><td>M1</td><td>1</td><td>5.9 ms</td><td>5.36 dB</td><td></td><td></td></tr><tr><td>D2</td><td>M1</td><td>1</td><td>25.95 ms</td><td>4.32 dB</td><td></td><td></td></tr></tbody></table> Date: 13.MAR.2021 13:58:38			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		84.075 ms	-86.20 dBm			D1	M1	1	5.9 ms	5.36 dB			D2	M1	1	25.95 ms	4.32 dB		
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																						
M1	1		150.9375 ms	-77.99 dBm																																																								
D1	M1	1	6.825 ms	1.80 dB																																																								
D2	M1	1	35.0125 ms	1.39 dB																																																								
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																						
M1	1		84.075 ms	-86.20 dBm																																																								
D1	M1	1	5.9 ms	5.36 dB																																																								
D2	M1	1	25.95 ms	4.32 dB																																																								
802.11ac-VHT80 (5530MHz)																																																												
Ref Level -51.00 dBm Offset -41.00 dB RBW 3 MHz Att 0 dB SWT 500 ms VBW 3 MHz 1Pk Clrw D2[1] -0.33 dB M1[1] 25.9375 ms D1 315.9375 ms D2 4.9375 ms CF 5.53 GHz 8001 pts 50.0 ms/ Marker <table><thead><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-value</th><th>Y-value</th><th>Function</th><th>Function Result</th></tr></thead><tbody><tr><td>M1</td><td>1</td><td></td><td>315.9375 ms</td><td>-83.55 dBm</td><td></td><td></td></tr><tr><td>D1</td><td>M1</td><td>1</td><td>4.9375 ms</td><td>-1.15 dB</td><td></td><td></td></tr><tr><td>D2</td><td>M1</td><td>1</td><td>25.9375 ms</td><td>-0.33 dB</td><td></td><td></td></tr></tbody></table> Date: 13.MAR.2021 10:40:01		Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		315.9375 ms	-83.55 dBm			D1	M1	1	4.9375 ms	-1.15 dB			D2	M1	1	25.9375 ms	-0.33 dB																																	
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																						
M1	1		315.9375 ms	-83.55 dBm																																																								
D1	M1	1	4.9375 ms	-1.15 dB																																																								
D2	M1	1	25.9375 ms	-0.33 dB																																																								
Test Mode	Test Frequency	Packet ratio	Requirement ratio	Test Result																																																								
802.11ac-VHT20	5500 MHz	19.49%	≥ 17%	Pass																																																								
802.11ac-VHT40	5510 MHz	22.74%	≥ 17%	Pass																																																								
802.11ac-VHT80	5530 MHz	19.04%	≥ 17%	Pass																																																								
Note: System testing was performed with the designated iperf test file. 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).																																																												

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Channel Loading – Mode 2		

802.11ac-VHT20 (5500MHz)		802.11ac-VHT40 (5510MHz)		
 Date: 6 APR 2021 13:35:55		 Date: 1 APR 2021 09:56:54		
802.11ac-VHT80 (5530MHz)				
 Date: 31 MAR 2021 15:01:01				
Test Mode	Test Frequency	Packet ratio	Requirement ratio	Test Result
802.11ac-VHT20	5500 MHz	23.67%	≥ 17%	Pass
802.11ac-VHT40	5510 MHz	19.54%	≥ 17%	Pass
802.11ac-VHT80	5530 MHz	20.07%	≥ 17%	Pass
Note: System testing was performed with the designated iperf test file. 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).				

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: $\text{U-NII Detection Bandwidth} = \text{FH} - \text{FL}$
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

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Detection Bandwidth (802.11ac-VHT20 mode - 5500MHz)		

Radar Frequency (MHz)	DFS Detection Trials (1=Detection, 0= No Detection)										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5490	0	0	0	0	0	0	0	0	0	0	0%
5491 FL	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%
5500	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	0	0	0	0	0	0	0	0	0	0	0%

Note 1: All NII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5500MHz. The 99% channel bandwidth is 17.57MHz. (See the 99% BW section of the RF report for further measurement details).

Note 2: Detection Bandwidth = FH - FL = 5509MHz – 5491MHz = 18MHz

Note 3: NII Detection Bandwidth Min. Limit (MHz): 17.57MHz x 100% = 17.57MHz.

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Detection Bandwidth (802.11ac-VHT40 mode - 5510MHz)		

Radar Frequency (MHz)	DFS Detection Trials (1=Detection, 0= No Detection)										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5490	0	0	0	0	0	0	0	0	0	0	0%
5491 FL	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%
5500	1	1	1	1	1	1	1	1	1	1	100%
5505	1	1	1	1	1	1	1	1	1	1	100%
5510	1	1	1	1	1	1	1	1	1	1	100%
5515	1	1	1	1	1	1	1	1	1	1	100%
5520	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 FH	1	1	1	1	1	1	1	1	1	1	100%
5530	0	0	0	0	0	0	0	0	0	0	0%

Note 1: All NII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5510MHz. The 99% channel bandwidth is 36.11MHz. (See the 99% BW section of the RF report for further measurement details).

Note 2: Detection Bandwidth = FH - FL = 5529MHz - 5491MHz = 38MHz.

Note 3: NII Detection Bandwidth Min. Limit (MHz): 36.11MHz x 100% = 36.11MHz.

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Detection Bandwidth (802.11ac-VHT80 mode - 5530MHz)		

Radar Frequency (MHz)	DFS Detection Trials (1=Detection, 0= No Detection)										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5490	0	0	0	0	0	0	0	0	0	0	0%
5491 FL	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%
5500	1	1	1	1	1	1	1	1	1	1	100%
5505	1	1	1	1	1	1	1	1	1	1	100%
5510	1	1	1	1	1	1	1	1	1	1	100%
5515	1	1	1	1	1	1	1	1	1	1	100%
5520	1	1	1	1	1	1	1	1	1	1	100%
5525	1	1	1	1	1	1	1	1	1	1	100%
5530	1	1	1	1	1	1	1	1	1	1	100%
5535	1	1	1	1	1	1	1	1	1	1	100%
5540	1	1	1	1	1	1	1	1	1	1	100%
5545	1	1	1	1	1	1	1	1	1	1	100%
5550	1	1	1	1	1	1	1	1	1	1	100%
5555	1	1	1	1	1	1	1	1	1	1	100%
5560	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%
5568	1	1	1	1	1	1	1	1	1	1	100%
5569 FH	1	1	1	1	1	1	1	1	1	1	100%
5570	0	0	0	0	0	0	0	0	0	0	0%

Note 1: All NII channels for this device have identical Channel bandwidths. Therefore, all DFS testing was done at 5530MHz. The 99% channel bandwidth is 75.36MHz. (See the 99% BW section of the RF report for further measurement details).

Note 2: Detection Bandwidth = FH - FL = 5569MHz - 5491MHz = 78MHz.

Note 3: NII Detection Bandwidth Min. Limit (MHz): 75.36MHz x 100% = 75.36MHz.

5.4. Initial Channel Availability Check Time Measurement

5.4.1. Test Limit

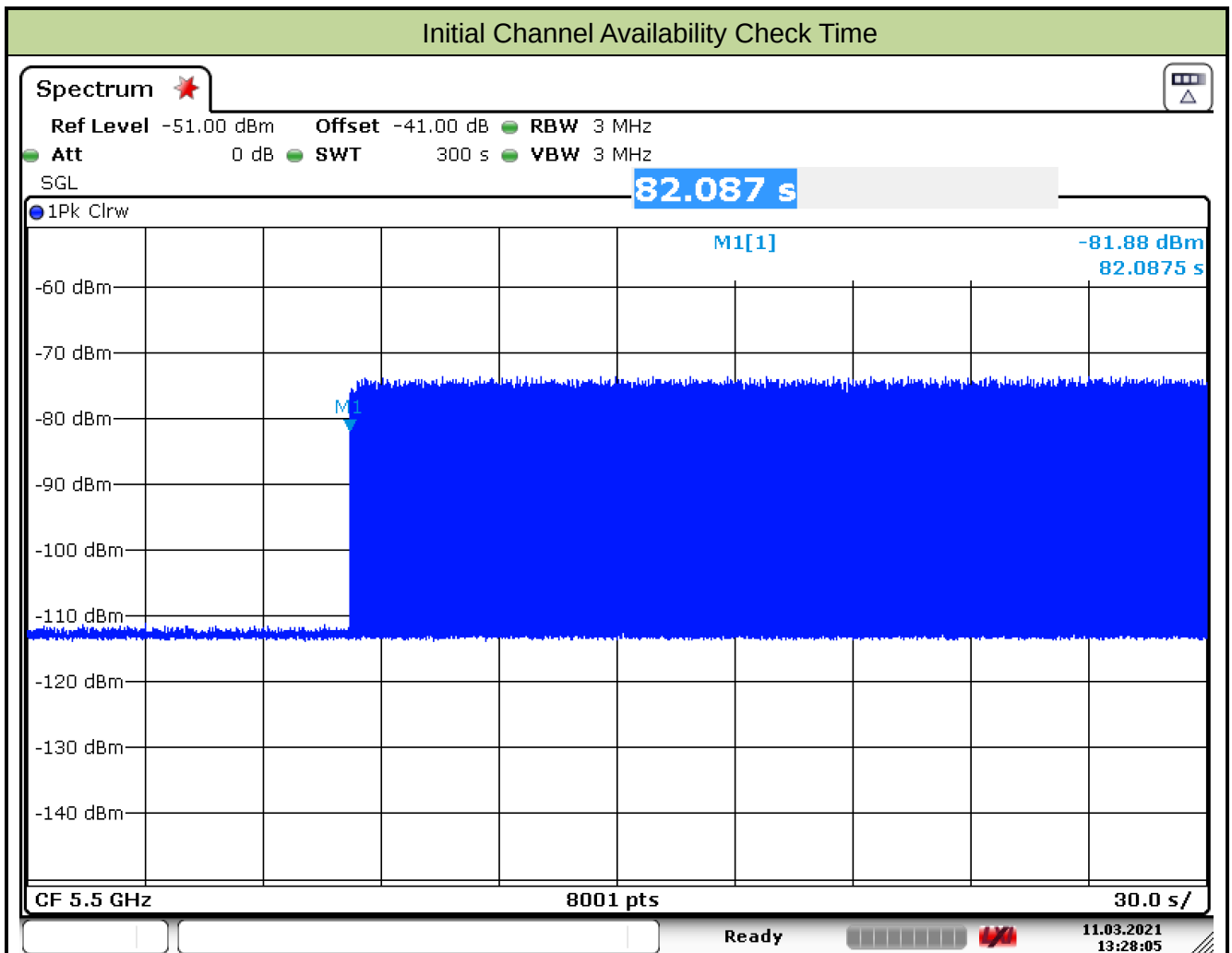
The EUT shall perform a Channel Availability Check to ensure that there is no radar operating on the channel. After power-up sequence, receive at least 1 minute on the intended operating frequency.

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

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/11
Test Item	Initial Channel Availability Check Time (802.11ac-VHT20 mode - 5500MHz)		



Date: 11.MAR.2021 13:28:05

Note: The EUT does not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle (22.1 sec). Initial beacons/data transmissions are indicated by marker 1 (82.1 sec).

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

5.5.1. Test Limit

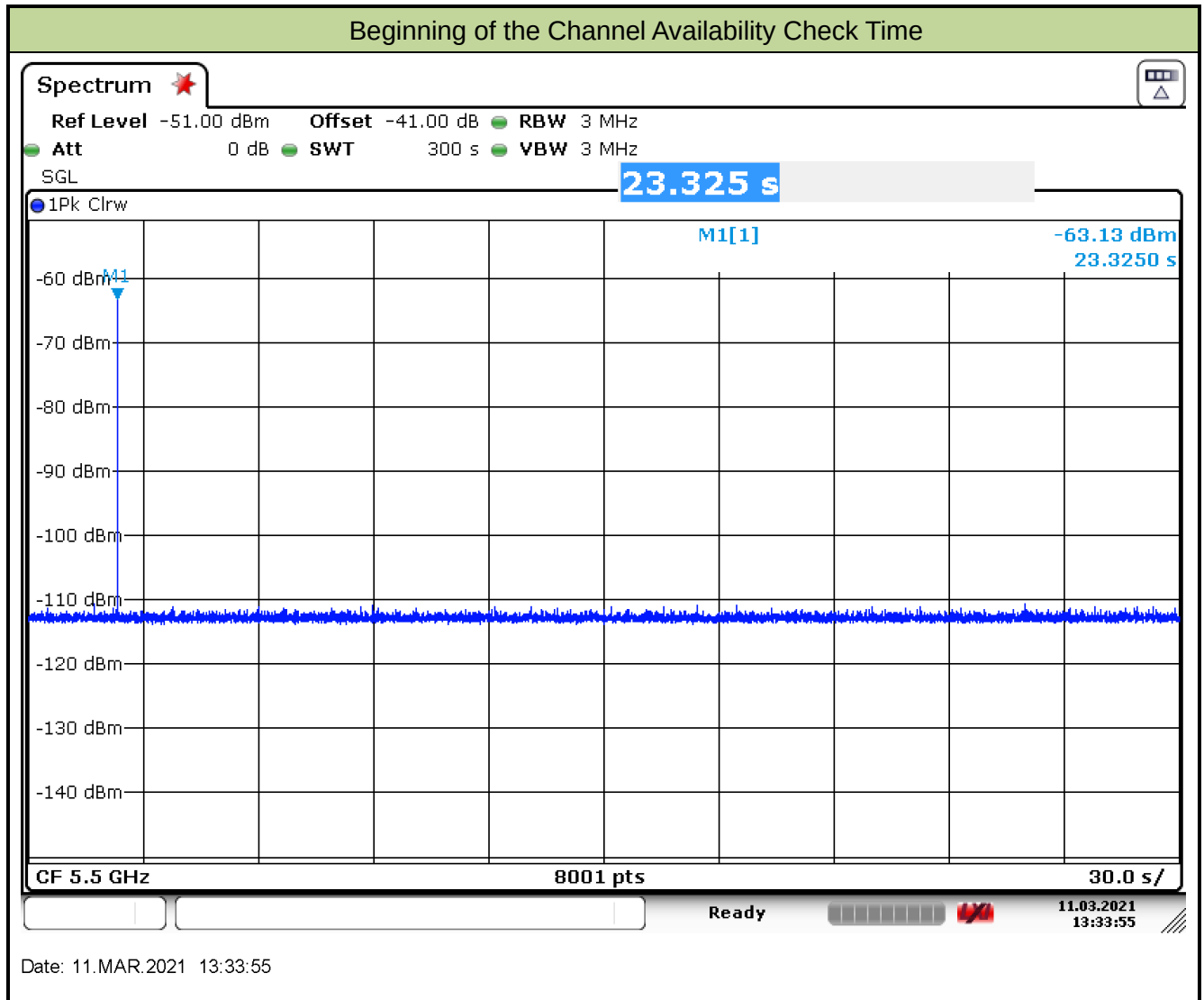
In beginning of the Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC on that channel.

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

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/11
Test Item	Beginning of the Channel Availability Check Time (802.11ac-VHT20 mode - 5500MHz)		



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

5.6.1. Test Limit

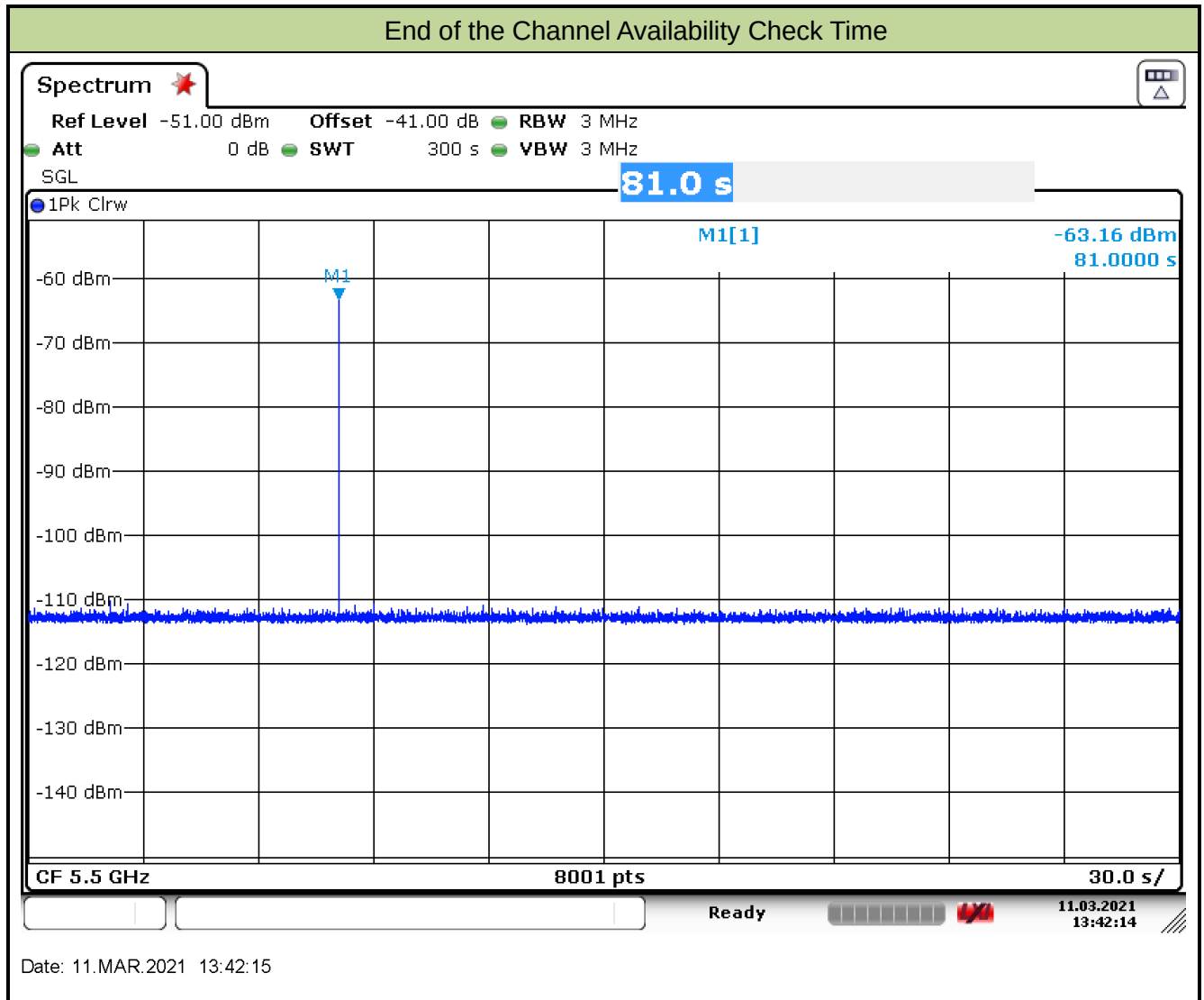
In the end of Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC on that channel.

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 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+ 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

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/11
Test Item	End of the Channel Availability Check Time (802.11ac-VHT20 mode - 5500MHz)		



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

5.7.1. Test Limit

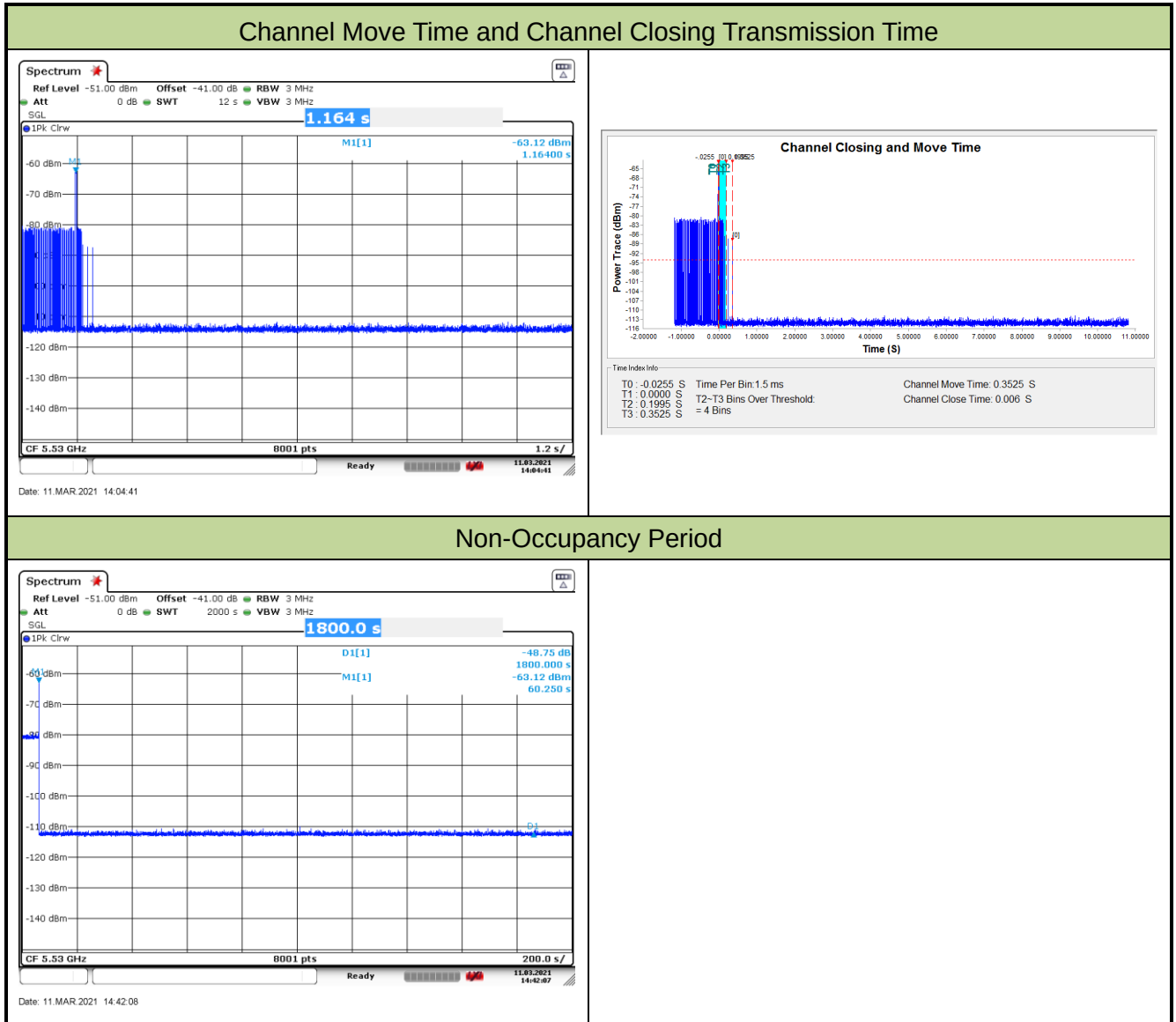
The EUT has In-Service Monitoring function to continuously monitor the radar signals. If the radar is detected, must leave the channel (Shutdown). The Channel Move Time to cease all transmissions on the current channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec. 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: $Dwell (1.5ms) = S (12 \text{ sec}) / B (8000)$; 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: $C = N \times Dwell$; 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

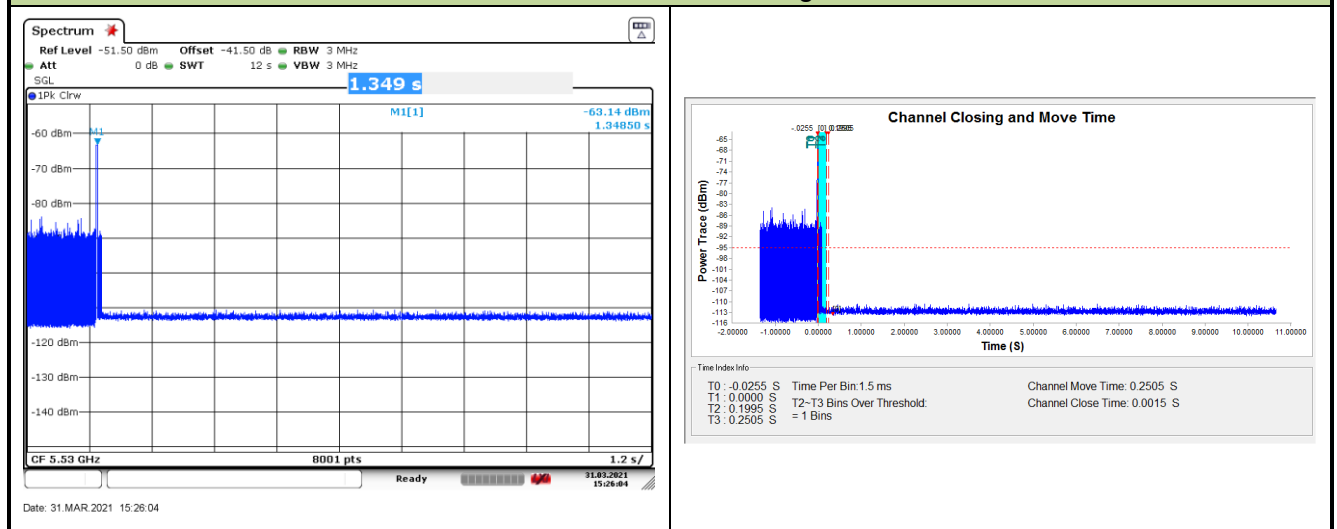
Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/11
Test Item	Channel Move Time and Channel Closing Transmission Time (802.11ac-VHT80 mode - 5530MHz) – Mode 1		



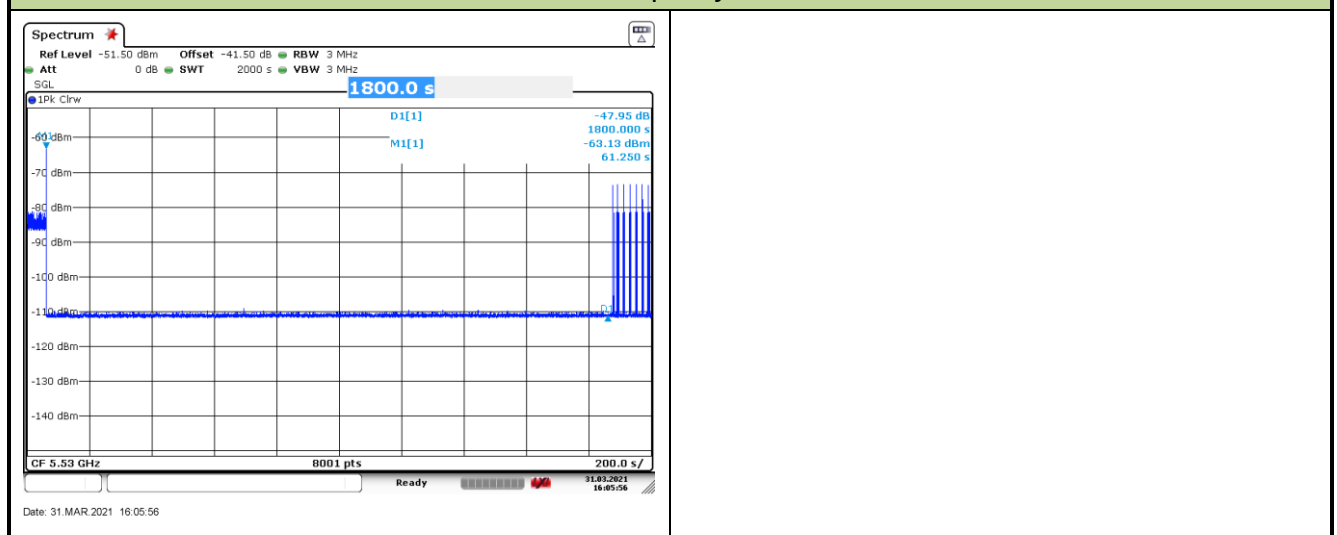
Parameter	Test Result	Limit
	Type 0	
Channel Move Time (s)	0.353s	<10s
Channel Closing Transmission Time (ms) (Note)	6.0ms	< 60ms
Non-Occupancy Period (min)	≥ 30min	≥ 30min
Note: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time 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.		

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/31
Test Item	Channel Move Time and Channel Closing Transmission Time (802.11ac-VHT80 mode - 5530MHz) – Mode 2		

Channel Move Time and Channel Closing Transmission Time



Non-Occupancy Period



Parameter	Test Result	Limit
	Type 0	
Channel Move Time (s)	0.251s	<10s
Channel Closing Transmission Time (ms) (Note)	1.5ms	< 60ms
Non-Occupancy Period (min)	≥ 30min	≥ 30min
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:

$(\text{Total Waveform Detections} / \text{Total Waveform Trails}) * 100 = \text{Probability of Detection Radar}$

Waveform In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows: $(Pd1 + Pd2 + Pd3 + Pd4) / 4$.

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

Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Radar Statistical Performance Check (802.11ac-VHT20 – 5500MHz) – Mode 1		

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	1	538	98	1
2	5491.1	1	858	62	1
3	5491.8	1	578	92	1
4	5492.5	1	698	76	1
5	5493.2	1	518	102	1
6	5493.9	1	758	70	1
7	5494.5	1	818	65	1
8	5495.2	1	3066	18	1
9	5495.9	1	838	63	1
10	5497.1	1	678	78	1
11	5498.2	1	798	67	1
12	5499.4	1	898	59	1
13	5500.0	1	778	68	1
14	5500.9	1	658	81	0
15	5501.7	1	738	72	1
16	5502.6	1	2854	19	1
17	5503.4	1	2531	21	1
18	5504.3	1	1279	42	1
19	5504.8	1	1045	51	1
20	5505.4	1	980	54	1
21	5505.9	1	2559	21	1
22	5506.5	1	1395	38	1
23	5506.8	1	540	98	1
24	5507.2	1	1668	32	1
25	5507.5	1	2538	21	1
26	5507.9	1	604	88	1



Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
27	5508.2	1	734	72	1
28	5508.6	1	807	66	1
29	5508.9	1	2848	19	1
30	5509.6	1	945	56	1
Detection Percentage (%)					96.7%



Radar Type 2 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	3.7	185	24	0
2	5491.1	2.4	188	27	1
3	5491.8	1.0	188	24	1
4	5492.5	3.5	182	26	1
5	5493.2	2.8	229	29	1
6	5493.9	3.5	178	27	1
7	5494.5	4.0	220	26	0
8	5495.2	3.6	219	27	1
9	5495.9	2.1	204	28	1
10	5497.1	4.2	208	25	1
11	5498.2	2.5	190	27	0
12	5499.4	4.5	186	23	1
13	5500.0	3.7	220	23	1
14	5500.9	1.0	223	29	1
15	5501.7	5.0	154	23	1
16	5502.6	1.1	167	28	1
17	5503.4	1.9	189	24	0
18	5504.3	4.1	157	26	1
19	5504.8	1.1	224	28	1
20	5505.4	3.4	200	28	1
21	5505.9	5.0	155	23	0
22	5506.5	4.9	212	28	1
23	5506.8	4.5	199	23	1
24	5507.2	1.9	229	26	1
25	5507.5	2.0	201	29	1
26	5507.9	3.8	203	29	0
27	5508.2	4.0	182	26	1
28	5508.6	3.9	177	23	1
29	5508.9	1.8	161	25	1
30	5509.6	1.6	166	28	1
Detection Percentage (%)					80%

Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	6.7	293	17	1
2	5491.1	6.4	441	16	0
3	5491.8	9.6	319	17	1
4	5492.5	7.7	378	16	1
5	5493.2	8.3	233	16	1
6	5493.9	6.7	347	18	1
7	5494.5	9.6	486	16	1
8	5495.2	7.7	333	17	1
9	5495.9	7.0	353	17	0
10	5497.1	9.9	293	18	1
11	5498.2	7.9	203	18	1
12	5499.4	7.8	414	18	0
13	5500.0	9.1	321	16	1
14	5500.9	8.5	492	16	1
15	5501.7	6.2	289	16	1
16	5502.6	8.0	312	16	0
17	5503.4	10.0	357	16	1
18	5504.3	9.7	381	17	1
19	5504.8	9.7	306	18	1
20	5505.4	9.7	338	17	1
21	5505.9	7.3	470	18	0
22	5506.5	6.2	376	18	1
23	5506.8	8.6	284	17	1
24	5507.2	9.5	208	16	1
25	5507.5	7.1	494	16	1
26	5507.9	8.1	247	17	1
27	5508.2	8.5	232	16	1
28	5508.6	6.2	446	16	1
29	5508.9	7.1	237	17	1
30	5509.6	6.1	355	18	1
Detection Percentage (%)					83.3%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	11.3	370	14	0
2	5491.1	12.6	473	16	1
3	5491.8	14.2	230	14	1
4	5492.5	19.6	276	12	1
5	5493.2	13.1	447	15	0
6	5493.9	17.3	223	13	1
7	5494.5	12.3	398	14	1
8	5495.2	18.8	359	14	1
9	5495.9	12.8	434	15	0
10	5497.1	17.6	469	12	1
11	5498.2	11.7	245	14	1
12	5499.4	19.3	353	12	1
13	5500.0	14.4	370	13	1
14	5500.9	16.7	376	14	1
15	5501.7	19.2	285	14	1
16	5502.6	17.3	444	15	1
17	5503.4	17.1	240	13	1
18	5504.3	15.0	401	14	0
19	5504.8	13.1	343	15	0
20	5505.4	14.0	296	14	1
21	5505.9	14.7	233	16	1
22	5506.5	11.7	278	13	1
23	5506.8	13.9	235	14	0
24	5507.2	15.2	488	16	1
25	5507.5	17.5	278	14	1
26	5507.9	16.7	441	14	1
27	5508.2	17.9	496	14	1
28	5508.6	14.6	497	14	0
29	5508.9	18.2	207	13	1
30	5509.6	13.0	393	16	1
Detection Percentage (%)					76.7%

Note: In addition, an average minimum percentage of successful detection across all four Short pulse radar

test waveforms is as follows: $\frac{P_d1 + P_d2 + P_d3 + P_d4}{4} = (96.7\% + 80\% + 83.3\% + 76.7\%) / 4 = 84.2\% (>80\%)$

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	5500.0	1	16	5493.6	1
2	5500.0	1	17	5498.0	1
3	5500.0	1	18	5496.8	1
4	5500.0	1	19	5492.8	1
5	5500.0	1	20	5495.2	1
6	5500.0	1	21	5505.6	1
7	5500.0	1	22	5502.8	1
8	5500.0	1	23	5505.6	1
9	5500.0	1	24	5503.2	1
10	5500.0	1	25	5506.0	1
11	5496.8	1	26	5502.0	1
12	5495.2	1	27	5502.0	1
13	5494.8	1	28	5507.2	1
14	5497.2	1	29	5504.4	1
15	5494.8	1	30	5507.6	1
Detection Percentage (%)					100%

Type 5 Radar Waveform_1

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	53.9	11	1853	1865	255.176
2	2	72.8	11	1303		298.267
3	2	53.5	11	1894		483.854
4	3	55.9	11	1036	1992	456.761
5	2	62.2	11	1988		60.369
6	2	59.6	11	1179		823.006
7	2	75.4	11	1079		507.633
8	3	97.1	11	1100	1756	22.05
9	1	99.6	11			165.697
10	1	92	11			701.784
11	3	86.1	11	1358	1191	591.031
12	3	60.7	11	1701	1841	678.629
13	3	99.7	11	1122	1377	363.586
14	3	81.1	11	1458	1024	655.643

Type 5 Radar Waveform_2

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	90.3	9			176.538
2	3	77.6	9	1174	1951	360.797
3	2	94.5	9	1551		774.564
4	2	69.9	9	1441		188.791
5	2	59.2	9	1142		635.739
6	1	81.3	9			587.816
7	1	84.1	9			672.813
8	2	99.4	9	1294		597.64
9	2	90.6	9	1678		149.977
10	1	80.4	9			445.384
11	1	74.4	9			687.201
12	3	76.5	9	1401	1166	764.329
13	1	68	9			430.086
14	1	77.4	9			286.943

Type 5 Radar Waveform_3

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	91.2	16	1254		345.019
2	3	65.4	16	1223	1831	162.697
3	3	75.9	16	2000	1826	89.884
4	3	56.7	16	1978	1799	318.061
5	1	96.8	16			773.659
6	2	83	16	1965		593.546
7	1	67.9	16			842.713
8	2	52.2	16	1591		190.93
9	1	95.6	16			253.597
10	2	50.9	16	1191		812.564
11	1	86.7	16			731.421
12	2	91.1	16	1266		678.729
13	1	88.1	16			40.586
14	1	94.5	16			507.043

Type 5 Radar Waveform_4

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	63.1	13	1748		201.792
2	2	73.1	13	1101		580.14
3	2	51.1	13	1368		94.28
4	2	93.9	13	1747		187.06
5	2	73.3	13	1659		75.61
6	1	80.6	13			703.43
7	2	78.9	13	1800		728.24
8	2	64.6	13	1687		466.54
9	2	64.3	13	1214		477.21
10	1	76.4	13			50.16
11	1	60.5	13			588.59
12	2	65.1	13	1499		21.21
13	3	50.4	13	1096	1642	74.01
14	2	71.1	13	1172		662.3
15	2	76.7	13	1294		131.2
16	2	85.8	13	1945		667.9

Type 5 Radar Waveform_5

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	87.3	5	1789		446.041
2	1	62.3	5			556.697
3	1	55.2	5			119.014
4	2	89.6	5	1368		843.691
5	2	50.8	5	1411		585.759
6	3	72.5	5	1327	1953	358.386
7	1	51.2	5			156.543
8	2	69.3	5	1152		316.81
9	2	70.9	5	1505		583.047
10	2	94.7	5	1641		507.714
11	3	52.6	5	1662	1356	385.211
12	1	85.3	5			613.729
13	2	62.6	5	1154		586.986
14	3	94.8	5	1687	1339	642.843

Type 5 Radar Waveform_6

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	98.8	12	1959	1501	13.474
2	3	51.9	12	1879	1894	538.693
3	3	63.6	12	1407	1153	322.596
4	2	68.3	12	1629		905.489
5	2	92.4	12	1476		225.902
6	1	50.5	12			863.155
7	2	52.7	12	1558		769.288
8	2	64.6	12	1340		37.372
9	2	74.1	12	1898		59.125
10	1	94.8	12			435.938
11	2	57.6	12	1515		231.951
12	3	79.9	12	1296	1438	752.054
13	2	54.5	12	1243		146.677

Type 5 Radar Waveform_7

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	86.3	12			317.236
2	2	56.7	12	1244		1003.761
3	1	61.6	12			421.142
4	1	56.3	12			922.923
5	2	98	12	1200		673.724
6	3	60.3	12	1896	1961	1056.615
7	1	64.2	12			57.175
8	3	53.7	12	1978	1762	856.076
9	3	66.8	12	1336	1048	695.157
10	2	58.6	12	1940		563.818
11	2	55.2	12	1041		590.009

Type 5 Radar Waveform_8

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	90.4	9	1656		658.622
2	2	65.8	9	1976		927.36
3	1	84.2	9			623.9
4	3	85.9	9	1974	1033	714.14
5	2	58.2	9	1501		422.09
6	1	99	9			4.58
7	2	63.7	9	1471		13.87
8	2	85	9	1652		388.17
9	1	62.2	9			449.82
10	3	64.8	9	1274	1100	54.16
11	2	70.9	9	1026		363.9
12	2	81	9	1455		726.2

Type 5 Radar Waveform_9

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	81.1	5			226.355
2	3	82.5	5	1782	1247	532.633
3	2	86.8	5	1684		259.736
4	3	51	5	1616	1475	93.389
5	3	97	5	1339	1858	584.612
6	1	53.4	5			545.715
7	2	69.7	5	1845		554.818
8	2	60.1	5	1695		604.582
9	3	83.5	5	1144	1828	162.485
10	2	80.6	5	1732		164.548
11	2	56.3	5	1087		836.431
12	3	63.8	5	1676	1098	711.854
13	3	88.6	5	1367	1975	227.377

Type 5 Radar Waveform_10

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	83.6	10	1733	1071	464.651
2	2	58.4	10	1711		471.62
3	2	99	10	1492		873.21
4	2	66.6	10	1218		746.5
5	1	84.4	10			967.42
6	1	66.4	10			894.14
7	3	90.4	10	1526	1512	427.04
8	1	55.1	10			969.96
9	1	76.9	10			244.24
10	1	57.9	10			704.44
11	3	73.5	10	1348	1145	975.5
12	2	88.5	10	1174		785

Type 5 Radar Waveform_11

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	66.8	16			249.131
2	2	57.4	16	1416		885.763
3	2	53	16	1647		35.136
4	2	73.3	16	1465		595.159
5	3	76	16	1923	1062	835.972
6	1	63.6	16			769.865
7	2	72.8	16	1696		102.098
8	3	84.8	16	1299	1594	28.682
9	2	83	16	1357		398.015
10	1	63.8	16			406.098
11	2	94.5	16	1378		633.541
12	3	90.1	16	1531	1210	429.054
13	1	87.6	16			679.977

Type 5 Radar Waveform_12

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	96.2	12	1977		843.367
2	1	51.7	12			74.577
3	2	74.1	12	1645		363.726
4	3	63.4	12	1153	1509	193.049
5	2	84.7	12	1091		477.042
6	2	96.5	12	1749		847.205
7	3	97.8	12	1030	1526	555.878
8	3	83.9	12	1239	1071	436.462
9	3	93.3	12	1981	1993	643.855
10	2	65.9	12	1425		447.358
11	1	59.9	12			509.351
12	3	86.2	12	1974	1176	732.254
13	2	85.8	12	1798		502.777

Type 5 Radar Waveform_13

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	81.4	11			519.005
2	1	92.7	11			264.001
3	2	75.8	11	1290		204.312
4	3	88	11	1546	1437	568.613
5	1	92.7	11			326.424
6	1	66.1	11			173.855
7	2	76.1	11	1597		503.536
8	3	79.1	11	1204	1022	311.187
9	1	87.4	11			109.868
10	3	50.9	11	1440	1522	538.969
11	1	63.1	11			344.041
12	2	73.5	11	1209		410.102
13	1	86	11			212.523
14	2	95.8	11	1730		353.304
15	2	86.8	11	1711		62.225
16	1	90.5	11			16.916
17	3	64.3	11	1810	1394	75.037
18	2	90.6	11	1867		362.858
19	3	83.8	11	1522	1940	464.879

Type 5 Radar Waveform_14

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	51.8	17			412.365
2	3	93.8	17	1917	1216	388.911
3	1	77.5	17			487.342
4	2	55.8	17	1418		421.073
5	3	67.4	17	1075	1369	498.444
6	2	66.7	17	1902		69.995
7	2	94.1	17	1901		574.666
8	1	83.5	17			78.247
9	1	93.2	17			99.978
10	2	63.7	17	1634		160.089
11	2	64.6	17	1920		482.721
12	3	67.1	17	1243	1201	541.312
13	2	77.7	17	1427		386.283
14	3	62.8	17	1948	1954	334.284
15	3	55.8	17	1037	1796	513.965
16	2	60.3	17	1713		510.056
17	1	56	17			510.037
18	2	72.6	17	1372		359.058
19	1	70.8	17			340.179

Type 5 Radar Waveform_15

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	84.8	11			447.84
2	3	54.2	11	1432	1571	523.421
3	2	76.3	11	1826		343.242
4	2	62.7	11	1759		380.633
5	2	61.6	11	1025		174.064
6	2	84.5	11	1886		200.275
7	3	78.2	11	1236	1559	4.966
8	1	82.8	11			232.377
9	3	57.3	11	1421	1584	82.058
10	2	79.7	11	1491		458.449
11	2	83.4	11	1042		85.561
12	1	93	11			576.152
13	2	52.9	11	1293		535.703
14	1	88.1	11			22.304
15	2	75.7	11	1144		598.295
16	2	91.1	11	1204		232.476
17	3	89.6	11	1395	1011	535.437
18	2	88.6	11	1299		487.358
19	2	96.1	11	1664		463.379

Type 5 Radar Waveform_16

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	81.1	8	1252		344.439
2	2	59.8	8	1418		132.907
3	2	78	8	1602		471.23
4	3	86	8	1608	1503	12.89
5	1	71.7	8			383.91
6	3	60.9	8	1034	1923	430.46
7	2	79.8	8	1448		644.16
8	1	73.7	8			247.38
9	1	85.9	8			2.51
10	2	98.5	8	1314		388.04
11	3	76.4	8	1821	1370	161.68
12	2	51.5	8	1163		500.48
13	2	50.3	8	1136		211.55
14	2	65	8	1570		349.9
15	2	96.9	8	1280		328.7

Type 5 Radar Waveform_17

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	89.1	19			672.57
2	2	59.2	19	1750		355.72
3	2	74.2	19	1520		594.04
4	3	97.8	19	1540	1726	957.86
5	1	75.9	19			639.21
6	2	69.3	19	1360		189
7	2	73	19	1205		465.82
8	3	68.7	19	1385	1362	134.46
9	1	68	19			1027.9
10	3	82.6	19	1938	1567	495.9

Type 5 Radar Waveform_18

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	88.5	16	1822		343.824
2	2	73.1	16	1109		328.082
3	1	91.8	16			542.707
4	3	57.5	16	1034	1197	99.66
5	2	58.3	16	1490		224.393
6	2	71.8	16	1527		268.887
7	3	74.2	16	1809	1273	449.25
8	3	80.5	16	1327	1539	658.953
9	1	79.2	16			650.277
10	1	96.5	16			292.96
11	3	79.5	16	1808	1879	495.923
12	2	50.9	16	1764		6.237
13	2	81.5	16	1132		660.39
14	3	93.7	16	1344	1885	628.283
15	2	82.5	16	1143		82.147
16	2	85.4	16	1733		542.6
17	3	57.6	16	1263	1621	648.433
18	2	85.1	16	1649		229.367

Type 5 Radar Waveform_19

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	92.7	6	1216		654.02
2	2	84.5	6	1640		87.205
3	3	61.9	6	1127	1792	635.877
4	2	72.7	6	1261		644.74
5	2	71.9	6	1883		16.293
6	3	82.2	6	1096	1361	319.487
7	2	69	6	1248		409.51
8	2	59.5	6	1094		339.843
9	2	82.4	6	1869		335.647
10	2	70.7	6	1987		440.45
11	2	76.2	6	1553		633.523
12	2	76.8	6	1527		569.797
13	1	51.7	6			477.46
14	3	77.1	6	1606	1767	184.133
15	2	77.6	6	1285		279.557
16	2	92.2	6	1648		569.5
17	2	90.1	6	1051		89.633
18	1	73.6	6			328.067

Type 5 Radar Waveform_20

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	89.3	12	1999	1117	74.855
2	2	58.9	12	1544		72.394
3	2	54.3	12	1534		248.995
4	2	89.7	12	1657		58.903
5	1	65.8	12			288.201
6	2	69.2	12	1029		124.508
7	2	70.5	12	1003		332.206
8	3	67.9	12	1268	1048	138.824
9	3	64.7	12	1268	1811	216.261
10	2	73.2	12	1205		549.289
11	2	66.5	12	1478		280.126
12	1	76	12			655.394
13	2	77.9	12	1907		65.602
14	2	82.6	12	1836		57.209
15	2	50.8	12	1507		415.147
16	2	73	12	1824		485.765
17	2	50.4	12	1559		5.882

Type 5 Radar Waveform_21

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	87.8	10	1872	1133	186.489
2	2	67	10	1283		614.283
3	2	80.8	10	1663		299.407
4	2	54.4	10	1194		425.63
5	1	51.4	10			466.263
6	2	77.5	10	1225		276.607
7	3	72	10	1139	1762	414.61
8	2	98.4	10	1662		234.243
9	2	60.5	10	1806		163.067
10	1	71.3	10			401.28
11	2	69.9	10	1042		332.283
12	2	91.9	10	1464		516.537
13	2	64.8	10	1825		46.85
14	1	96	10			550.673
15	2	72.1	10	1329		491.297
16	1	77.4	10			317.1
17	1	67	10			489.633
18	1	60.9	10			118.367

Type 5 Radar Waveform_22

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	68.7	17	1599		212.822
2	1	72.7	17			120.782
3	2	66.3	17	1692		519.747
4	2	60.3	17	1683		482.69
5	2	75	17	1561		451.243
6	2	57.5	17	1784		35.587
7	3	54.3	17	1859	1053	561.7
8	3	64.5	17	1598	1841	528.293
9	2	53.4	17	1147		530.387
10	2	55.4	17	1151		240.23
11	2	93	17	1697		531.033
12	2	74.2	17	1895		408.157
13	3	90.6	17	1456	1761	395.77
14	2	73.7	17	1699		141.083
15	2	53.3	17	1484		468.397
16	1	59.3	17			254.2
17	2	70.4	17	1931		449.233
18	2	94.1	17	1510		180.467

Type 5 Radar Waveform_23

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	56.6	10	1729	1401	785.58
2	1	83.5	10			478.95
3	1	65.3	10			656.25
4	2	84.3	10	1783		367.4
5	2	54.5	10	1042		519.84
6	2	66.6	10	1504		474.25
7	2	88.5	10	1829		672.97
8	2	68.4	10	1103		454.42
9	3	62.3	10	1283	1708	169.39
10	2	66.3	10	1715		97.44
11	2	72.6	10	1532		248.47
12	2	51	10	1069		223.63
13	1	60.6	10			609.3
14	2	56.9	10	1699		355.9
15	3	54.7	10	1850	1816	443.3

Type 5 Radar Waveform_24

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	57	16			203.869
2	2	89.8	16	1484		29.918
3	2	90.7	16	1018		282.577
4	2	60.8	16	1764		161.73
5	3	66.6	16	1632	1340	636.943
6	2	99.4	16	1399		224.617
7	3	53	16	1846	1588	332.92
8	3	64.9	16	1266	1856	369.463
9	1	52.9	16			92.127
10	1	67.6	16			152.62
11	2	73.1	16	1214		95.803
12	2	58.7	16	1445		366.917
13	1	58.7	16			412.77
14	2	67.8	16	1929		331.433
15	3	77.7	16	1556	1628	87.317
16	3	64.2	16	1490	1033	378.3
17	1	78.2	16			277.833
18	3	77.3	16	1381	1777	250.867

Type 5 Radar Waveform_25

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	97.2	9	1337	1276	320.126
2	2	87	9	1763		810.997
3	3	82.8	9	1561	1392	495.354
4	1	71	9			278.151
5	2	93.8	9	1754		568.679
6	2	70.3	9	1784		653.686
7	1	78.1	9			263.033
8	2	57.8	9	1984		88.25
9	2	59.1	9	1176		219.927
10	3	53	9	1100	1660	62.264
11	2	74.9	9	1858		520.141
12	3	90.9	9	1486	1458	778.229
13	2	65.9	9	1507		246.986
14	3	65.7	9	1385	1473	560.243

Type 5 Radar Waveform_26

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	95.1	19	1757		621.963
2	2	57.1	19	1653		268.1
3	2	86.9	19	1360		160.33
4	3	76.6	19	1548	1347	1091.27
5	1	95.9	19			1058.21
6	3	87.2	19	1469	1955	442.1
7	2	57.8	19	1393		364.68
8	1	95	19			947.15
9	1	89.2	19			28.36
10	2	66.2	19	1741		990

Type 5 Radar Waveform_27

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	82.5	19	1239		975.087
2	2	90.3	19	1598		846.45
3	2	58.1	19	1182		832.23
4	1	81.9	19			320.56
5	1	70.7	19			443.92
6	2	66.3	19	1017		718.84
7	3	84	19	1935	1472	413
8	2	97.8	19	1708		682.56
9	3	63.2	19	1863	1711	832.7
10	2	83.7	19	1912		998.6

Type 5 Radar Waveform_28

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	62.4	6	1073		148.907
2	3	77.8	6	1514	1166	256.166
3	3	93.2	6	1976	1448	237.882
4	1	67.1	6			106.843
5	2	70.2	6	1730		504.954
6	3	90.2	6	1338	1533	206.755
7	2	68.1	6	1244		204.206
8	3	87.6	6	1616	1181	18.287
9	3	60.1	6	1143	1336	31.208
10	3	94.4	6	1788	1694	31.719
11	2	76.5	6	1890		28.491
12	2	85.7	6	1079		1.782
13	2	80.6	6	1979		147.593
14	2	99	6	1467		191.084
15	2	94.8	6	1111		21.595
16	2	50.5	6	1168		180.296
17	1	92.8	6			535.837
18	2	92.7	6	1209		618.658
19	1	73.6	6			466.279

Type 5 Radar Waveform_29

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	50.2	13			182.831
2	2	82.1	13	1016		227.841
3	3	65.4	13	1558	1488	374.002
4	2	64.5	13	1879		19.583
5	1	69.6	13			527.434
6	2	82.4	13	1123		233.675
7	2	50.6	13	1249		587.645
8	2	51.8	13	1239		256.716
9	2	51.5	13	1868		104.037
10	2	77.7	13	1642		688.818
11	2	93.2	13	1780		509.909

Type 5 Radar Waveform_30

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	85.9	5	1082	1775	843.738
2	2	61.7	5	1706		722.093
3	2	51.5	5	1576		745.726
4	1	50.6	5			733.929
5	3	71.6	5	1017	1766	431.912
6	1	60.5	5			895.505
7	1	50.5	5			165.378
8	2	87.8	5	1251		736.052
9	2	90	5	1199		650.815
10	2	54.1	5	1198		717.848
11	2	57.6	5	1136		530.071
12	2	80.5	5	1996		174.654
13	2	97.8	5	1977		650.077

Radar Type 6 - Radar Statistical Performance

Trail #	1=Detection 0=No Detection	Trail #	1=Detection 0=No Detection
1	1	16	1
2	1	17	1
3	1	18	1
4	1	19	1
5	1	20	1
6	1	21	1
7	1	22	1
8	1	23	1
9	1	24	1
10	1	25	1
11	1	26	1
12	1	27	1
13	1	28	1
14	1	29	1
15	1	30	1
Detection Percentage (%)			100%

Radar waveform #1			Radar waveform #2		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
34	5494	102	6	5499	18
53	5491	159	47	5492	141
69	5509	207	65	5498	195
--	--	--	71	5501	213
--	--	--	97	5504	291

Radar waveform #3			Radar waveform #4		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
21	5509	63	39	5499	117
29	5504	87	54	5495	162
31	5493	93	72	5505	216
--	--	--	80	5502	240
--	--	--	95	5503	285
--	--	--	99	5497	297

Radar waveform #5			Radar waveform #6		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
14	5493	42	14	5496	42
18	5492	54	17	5490	51
26	5508	78	26	5509	78
30	5494	90	32	5504	96
99	5504	297	46	5508	138
--	--	--	50	5506	150
--	--	--	57	5502	171

Radar waveform #7			Radar waveform #8		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
46	5510	138	17	5503	51
53	5504	159	67	5507	201
58	5502	174	72	5493	216
--	--	--	85	5510	255
--	--	--	90	5504	270

Radar waveform #9			Radar waveform #10		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
39	5500	117	3	5506	9
64	5506	192	34	5499	102
--	--	--	78	5503	234
--	--	--	98	5498	294

Radar waveform #11			Radar waveform #12		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Frequency (MHz)	Hopping Number	Pulse Start (ms)
51	5497	153	24	5500	72
62	5509	186	45	5505	135
71	5502	213	92	5507	276
81	5494	243	--	--	--

Radar waveform #13			Radar waveform #14		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
6	5508	18	33	5503	99
17	5501	51	49	5504	147
42	5491	126	77	5495	231
65	5505	195	81	5500	243
70	5502	210	--	--	--
84	5507	252	--	--	--

Radar waveform #15			Radar waveform #16		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
4	5501	12	1	5492	3
21	5494	63	2	5491	6
36	5498	108	97	5507	291
45	5502	135	--	--	--
70	5510	210	--	--	--
87	5500	261	--	--	--
94	5496	282	--	--	--
99	5493	297	--	--	--

Radar waveform #17			Radar waveform #18		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
67	5496	201	16	5502	48
82	5497	246	44	5508	132
96	5499	288	45	5493	135
--	--	--	79	5501	237

Radar waveform #19			Radar waveform #20		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
17	5508	51	4	5509	12
37	5504	111	7	5493	21
100	5507	300	25	5494	75
--	--	--	35	5499	105
--	--	--	66	5496	198
--	--	--	73	5500	219
--	--	--	82	5495	246
--	--	--	91	5492	273
--	--	--	100	5501	300

Radar waveform #21			Radar waveform #22		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
9	5493	27	2	5508	6
54	5498	162	28	5491	84
64	5492	192	49	5505	147
87	5490	261	66	5506	198

Radar waveform #23			Radar waveform #24		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
9	5495	27	30	5494	90
21	5506	63	39	5498	117
100	5492	300	59	5507	177
--	--	--	61	5510	183

Radar waveform #25			Radar waveform #26		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
61	5500	183	9	5504	27
88	5499	264	24	5497	72
95	5497	285	70	5492	210
97	5492	291	71	5507	213
--	--	--	73	5508	219

Radar waveform #27			Radar waveform #28		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
91	5499	273	31	5502	93
--	--	--	35	5493	105
--	--	--	37	5504	111
--	--	--	38	5505	114
--	--	--	40	5498	120
--	--	--	71	5495	213
--	--	--	72	5510	216
--	--	--	74	5499	222

Radar waveform #29			Radar waveform #30		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
2	5493	6	39	5508	117
16	5509	48	74	5496	222
76	5510	228	90	5492	270



Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Radar Statistical Performance Check (802.11ac-VHT40 mode – 5510MHz) – Mode 1		

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	1	658	81	1
2	5491.9	1	518	102	1
3	5492.8	1	718	74	1
4	5493.7	1	538	98	1
5	5494.6	1	858	62	1
6	5495.5	1	3066	18	1
7	5496.3	1	698	76	1
8	5497.2	1	618	86	1
9	5498.1	1	938	57	1
10	5499.7	1	878	61	1
11	5501.2	1	918	58	1
12	5502.8	1	818	65	1
13	5504.4	1	578	92	1
14	5505.9	1	798	67	1
15	5507.5	1	898	59	1
16	5509.0	1	884	60	1
17	5510.0	1	2646	20	1
18	5511.3	1	2644	20	1
19	5512.7	1	2066	26	1
20	5514.0	1	2017	27	1
21	5515.3	1	1656	32	1
22	5516.7	1	1024	52	1
23	5518.0	1	1992	27	1
24	5519.6	1	1060	50	1
25	5521.2	1	1993	27	1
26	5522.9	1	2194	25	1



Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
27	5524.5	1	2194	25	1
28	5526.1	1	588	90	1
29	5527.8	1	1902	28	1
30	5529.0	1	2897	19	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	5491.0	2.6	162	25	0
2	5491.9	4.9	158	25	1
3	5492.8	4.9	162	27	1
4	5493.7	1.1	222	29	1
5	5494.6	2.9	212	26	0
6	5495.5	1.5	165	27	1
7	5496.3	1.7	230	27	1
8	5497.2	5.0	215	27	1
9	5498.1	2.8	154	26	0
10	5499.7	2.8	197	28	1
11	5501.2	2.1	223	26	1
12	5502.8	3.1	161	24	1
13	5504.4	4.3	212	27	1
14	5505.9	2.9	158	26	0
15	5507.5	1.0	182	23	1
16	5509.0	2.5	186	23	0
17	5510.0	2.5	156	27	1
18	5511.3	1.0	201	26	1
19	5512.7	4.3	173	29	1
20	5514.0	4.8	174	25	1
21	5515.3	2.9	221	26	1
22	5516.7	3.1	197	28	1
23	5518.0	1.5	217	25	0
24	5519.6	2.6	164	27	1
25	5521.2	2.4	200	26	1
26	5522.9	3.5	203	25	0
27	5524.5	1.8	164	27	1
28	5526.1	2.9	159	24	1
29	5527.8	2.7	213	29	1
30	5529.0	2.6	168	27	0
Detection Percentage (%)					73.3%



Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	9.5	474	17	1
2	5491.9	6.3	374	17	1
3	5492.8	8.6	472	18	1
4	5493.7	6.4	380	17	1
5	5494.6	8.4	245	17	1
6	5495.5	6.5	277	17	1
7	5496.3	6.1	418	18	1
8	5497.2	8.4	421	17	1
9	5498.1	6.3	337	16	0
10	5499.7	9.3	308	17	1
11	5501.2	9.0	303	18	1
12	5502.8	9.4	204	17	1
13	5504.4	8.2	315	16	1
14	5505.9	9.3	233	16	1
15	5507.5	9.9	363	17	1
16	5509.0	7.2	222	16	0
17	5510.0	8.0	415	17	1
18	5511.3	8.8	339	16	0
19	5512.7	7.6	369	16	0
20	5514.0	7.6	469	17	1
21	5515.3	9.4	435	18	1
22	5516.7	9.0	308	16	1
23	5518.0	6.2	207	17	1
24	5519.6	7.0	366	18	0
25	5521.2	6.0	439	17	1
26	5522.9	9.4	232	16	1
27	5524.5	8.1	307	18	1
28	5526.1	9.1	281	18	1
29	5527.8	7.1	340	18	0
30	5529.0	6.5	321	18	1
Detection Percentage (%)					80%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	11.3	499	16	1
2	5491.9	18.3	433	14	1
3	5492.8	13.9	325	16	1
4	5493.7	11.2	402	12	0
5	5494.6	17.5	457	13	1
6	5495.5	14.3	323	16	1
7	5496.3	11.3	457	16	1
8	5497.2	20.0	299	15	1
9	5498.1	13.3	423	15	1
10	5499.7	11.3	440	14	1
11	5501.2	20.0	205	15	0
12	5502.8	14.7	326	16	1
13	5504.4	17.3	452	14	1
14	5505.9	15.4	390	13	0
15	5507.5	11.1	286	13	0
16	5509.0	14.7	362	15	1
17	5510.0	19.4	462	16	1
18	5511.3	18.9	456	14	1
19	5512.7	13.4	420	12	1
20	5514.0	14.3	348	14	1
21	5515.3	13.8	386	15	1
22	5516.7	16.1	346	12	1
23	5518.0	16.7	250	12	1
24	5519.6	19.6	420	15	1
25	5521.2	18.1	225	12	0
26	5522.9	16.3	391	13	1
27	5524.5	17.5	263	16	1
28	5526.1	16.2	216	13	0
29	5527.8	13.4	246	15	1
30	5529.0	19.9	301	13	1
Detection Percentage (%)					80%

Note: In addition an average minimum percentage of successful detection across all four Short pulse radar test

waveforms is as follows: $\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (100\% + 73.3\% + 80\% + 80\%) / 4 = 83.3\% (>80\%)$

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	5510.0	1	16	5498.6	1
2	5510.0	1	17	5493.0	1
3	5510.0	1	18	5495.8	1
4	5510.0	1	19	5495.8	1
5	5510.0	1	20	5498.6	1
6	5510.0	1	21	5526.6	1
7	5510.0	1	22	5526.2	1
8	5510.0	1	23	5522.6	1
9	5510.0	1	24	5521.4	1
10	5510.0	1	25	5525.4	1
11	5498.6	1	26	5527.0	1
12	5497.8	1	27	5526.2	1
13	5499.0	1	28	5525.0	1
14	5497.4	1	29	5523.4	1
15	5493.0	1	30	5521.8	1
Detection Percentage (%)					100%

Type 5 Radar Waveform_1						
Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	94.8	20			600.518
2	3	55.5	20	1024	1963	490.28
3	2	76.7	20	1649		286.58
4	1	96.5	20			508.16
5	2	60.1	20	1928		138.34
6	2	65.4	20	1332		672.12
7	2	59.9	20	1082		423.16
8	2	98.5	20	1169		134.05
9	2	87	20	1021		462.7
10	2	53.3	20	1888		686.4
11	1	78.2	20			158.85
12	2	95.3	20	1477		369.4
13	1	95.1	20			424.13
14	1	52.2	20			560.7
15	3	57.6	20	1135	1165	503.4
16	2	66.2	20	1010		495.5

Type 5 Radar Waveform_2

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	88.7	12	1367		231.67
2	2	86.2	12	1553		359.471
3	2	85.9	12	1395		953.892
4	1	68.4	12			49.063
5	2	99.1	12	1461		653.974
6	1	58.3	12			746.135
7	2	86.5	12	1397		397.435
8	2	64.8	12	1098		479.296
9	3	70.8	12	1076	1984	629.407
10	1	90.7	12			302.018
11	2	66.3	12	1158		498.309

Type 5 Radar Waveform_3

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	50	16	1686	1733	48.877
2	2	72.8	16	1042		1025.911
3	2	52.5	16	1390		980.762
4	1	82.3	16			893.503
5	3	51.9	16	1140	1247	5.344
6	2	88.8	16	1848		945.475
7	1	74.9	16			193.395
8	2	95.5	16	1336		317.476
9	2	53.4	16	1860		141.647
10	2	51.6	16	1528		577.618
11	2	90.8	16	1895		453.209

Type 5 Radar Waveform_4

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	77.2	13	1603	1135	729.182
2	2	94.9	13	1174		204.277
3	2	71.4	13	1423		20.764
4	2	59.2	13	1098		22.911
5	1	62.9	13			268.019
6	1	77.6	13			846.756
7	3	74.1	13	1288	1085	390.383
8	3	62.3	13	1876	1117	310.71
9	3	92.2	13	1887	1327	423.967
10	2	79.6	13	1948		684.224
11	3	53.8	13	1788	1307	220.471
12	2	91.5	13	1797		728.029
13	2	75.1	13	1577		320.886
14	1	57.4	13			665.643

Type 5 Radar Waveform_5

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	77.3	19			47.573
2	3	78.1	19	1693	1177	745.87
3	1	51.7	19			168.9
4	2	71.4	19	1002		578.54
5	1	74.1	19			416.64
6	1	71.2	19			177.26
7	2	53.7	19	1070		45.06
8	3	91.6	19	1729	1526	430.46
9	3	73.7	19	1653	1453	483.7
10	3	85.4	19	1723	1643	331
11	1	81.5	19			284.88
12	2	54.7	19	1033		37.46
13	1	94.5	19			402.9
14	2	57.2	19	1858		80.5
15	2	83.9	19	1714		669.6

Type 5 Radar Waveform_6

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	79.1	9			935.114
2	2	63.5	9	1017		399.631
3	3	95.4	9	1277	1227	635.452
4	2	57.8	9	1569		747.183
5	3	93.6	9	1290	1240	632.134
6	3	59.6	9	1333	1687	587.615
7	2	85.6	9	1552		524.795
8	2	73.5	9	1428		640.486
9	3	88.4	9	1196	1513	848.937
10	1	60.4	9			1071.218
11	2	50.9	9	1558		389.609

Type 5 Radar Waveform_7

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	80	19	1907		782.935
2	2	64.6	19	1522		632.82
3	3	87	19	1131	1416	189.12
4	2	64.8	19	1268		286.14
5	2	74.6	19	1605		225.59
6	3	61.1	19	1841	1698	64.23
7	1	81.5	19			9.85
8	2	58	19	1490		596.43
9	1	55.6	19			351.42
10	2	55.8	19	1584		298.14
11	1	92	19			2.76
12	1	73.6	19			341.78
13	2	84.5	19	1781		449.6
14	2	60	19	1718		190.5
15	1	82.8	19			72.3

Type 5 Radar Waveform_8

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	64.3	8	1905		286.32
2	1	59.8	8			271.65
3	3	70.9	8	1921	1902	617.6
4	3	89.9	8	1007	1499	453.22
5	1	86.7	8			401.27
6	2	72.4	8	1700		568.3
7	2	66.8	8	1634		389.63
8	2	72.2	8	1448		92.02
9	3	93.4	8	1880	1803	514.91
10	2	63.8	8	1767		165.35
11	1	52.3	8			462.32
12	2	50.3	8	1977		750.44
13	2	54.1	8	1209		170.91
14	2	70.9	8	1575		583.1
15	1	66.2	8			643

Type 5 Radar Waveform_9

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	55.4	9	1129		717.132
2	2	56	9	1398		962.251
3	3	58.5	9	1615	1956	668.872
4	3	62.4	9	1368	1603	277.643
5	2	87.9	9	1994		446.324
6	2	83.8	9	1405		237.895
7	2	80.2	9	1770		796.745
8	2	51.9	9	1414		421.976
9	2	84.9	9	1395		558.347
10	3	87.9	9	1112	1507	279.818
11	2	58.7	9	1891		1047.709

Type 5 Radar Waveform_10

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	50	13			966.062
2	3	93.2	13	1308	1386	970.821
3	1	96.9	13			308.032
4	1	95.7	13			806.413
5	1	82.8	13			563.554
6	2	86.8	13	1915		374.805
7	3	84.8	13	1823	1352	65.565
8	1	95.9	13			431.886
9	3	80.4	13	1971	1279	305.017
10	2	97.7	13	1200		546.118
11	2	78.1	13	1428		476.009

Type 5 Radar Waveform_11

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	97.5	19	1939		147.607
2	3	88.7	19	1745	1400	131.481
3	1	69.8	19			421.91
4	3	78.2	19	1506	1387	543.87
5	1	78.1	19			150.69
6	1	66.6	19			658.06
7	3	92.1	19	1824	1202	500.18
8	3	60.2	19	1673	1479	258.66
9	2	91.5	19	1498		619.85
10	2	75.4	19	1130		434.88
11	3	90.7	19	1614	1018	406.88
12	2	96.9	19	1312		316.4
13	3	87.3	19	1931	1766	86.17
14	1	83.2	19			588.3
15	1	85.6	19			134.1
16	2	58.4	19	1468		115.4

Type 5 Radar Waveform_12

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	77.4	17	1806	1312	264.627
2	1	64.1	17			180.014
3	2	73.8	17	1848		323.455
4	2	52.4	17	1375		524.263
5	2	89.5	17	1802		602.601
6	2	73.4	17	1979		70.358
7	2	76.9	17	1229		336.756
8	2	79.1	17	1102		267.254
9	3	56.3	17	1118	1932	504.301
10	2	76.6	17	1818		310.639
11	1	53.3	17			150.206
12	3	67	17	1347	1365	484.064
13	2	52.8	17	1880		267.052
14	3	58.5	17	1512	1187	447.909
15	3	97.5	17	1504	1876	139.047
16	3	72.8	17	1963	1309	493.965
17	2	81	17	1869		67.782

Type 5 Radar Waveform_13

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	58.6	20	1585	1799	14.881
2	3	52.5	20	1789	1911	282.803
3	2	74.2	20	1935		439.696
4	2	94.6	20	1236		234.889
5	2	74.2	20	1495		885.782
6	1	83.9	20			71.165
7	3	77	20	1139	1149	294.948
8	2	93.6	20	1183		221.612
9	1	69	20			5.825
10	1	84	20			471.668
11	2	74.8	20	1628		89.161
12	3	77.7	20	1950	1316	94.454
13	2	81.2	20	1527		862.177

Type 5 Radar Waveform_14

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	81	16	1581	1076	731.76
2	3	62.7	16	1299	1977	7.455
3	2	80.6	16	1112		538.216
4	2	99.8	16	1188		522.909
5	3	96.3	16	1362	1197	71.652
6	2	94	16	1553		253.015
7	2	70.4	16	1468		277.078
8	2	79.4	16	1020		17.112
9	2	95.3	16	1281		15.795
10	2	90.9	16	1027		566.318
11	2	91.5	16	1832		278.061
12	2	68.6	16	1513		89.854
13	3	51	16	1806	1110	796.077

Type 5 Radar Waveform_15

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	62.9	5	1846		97.306
2	2	61.7	5	1761		66.576
3	3	92.6	5	1741	1026	364.81
4	1	73.1	5			255.7
5	2	81.3	5	1021		187.11
6	3	60.6	5	1556	1186	388.2
7	1	69.6	5			483.2
8	1	65	5			298.22
9	2	58.1	5	1291		362.43
10	2	89.4	5	1009		408.21
11	1	51.1	5			61.21
12	3	88.4	5	1052	1959	121.1
13	2	82.7	5	1669		265
14	2	89.8	5	1588		64.38
15	2	61.2	5	1991		59.46
16	2	64.5	5	1076		181.58
17	2	50.7	5	1834		365.49
18	3	86.5	5	1766	1966	137
19	2	62.9	5	1011		321.5
20	2	97.3	5	1956		427.6

Type 5 Radar Waveform_16

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	92.1	19			318.927
2	3	87	19	1589	1271	349.688
3	1	90.4	19			436.222
4	2	81.3	19	1542		290.563
5	1	68.5	19			120.534
6	3	96.3	19	1611	1528	615.245
7	1	89.2	19			326.026
8	2	52	19	1193		559.037
9	3	72.1	19	1123	1227	1.798
10	1	70.2	19			596.289
11	1	97.1	19			164.061
12	2	68	19	1035		160.472
13	3	63.6	19	1595	1669	324.463
14	2	81.3	19	1519		559.224
15	3	67.2	19	1089	1542	226.705
16	2	70.1	19	1131		102.486
17	2	57.7	19	1404		534.137
18	2	65.6	19	1405		373.358
19	3	72.6	19	1357	1983	323.779

Type 5 Radar Waveform_17

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	96.6	5	1403	1967	489.023
2	2	50.3	5	1211		309.72
3	2	75.1	5	1039		9.66
4	2	63.4	5	1151		281.07
5	2	94	5	1437		844.2
6	2	97.7	5	1668		23.02
7	3	73.8	5	1745	1789	94.25
8	3	57.5	5	1217	1955	363.86
9	2	84.7	5	1106		1095.7
10	3	68.3	5	1491	1244	883.9

Type 5 Radar Waveform_18

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	59.9	12	1304		313.638
2	1	97.1	12			643.141
3	3	57.7	12	1537	1255	270.662
4	3	58.4	12	1911	1092	993.693
5	1	81.1	12			144.684
6	3	51.8	12	1366	1743	715.095
7	2	95.7	12	1375		543.705
8	2	66.7	12	1130		619.286
9	3	70.2	12	1537	1589	226.477
10	2	60.3	12	1808		592.618
11	1	95.5	12			1003.709

Type 5 Radar Waveform_19

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	75.6	12	1956		196.143
2	3	92.2	12	1421	1579	294.723
3	2	94	12	1797		138.336
4	2	89	12	1006		197.489
5	3	73.6	12	1421	1259	61.092
6	3	95.7	12	1871	1850	453.575
7	2	86.5	12	1023		15.548
8	2	60.8	12	1467		779.902
9	1	62.4	12			500.885
10	1	66.7	12			575.648
11	2	67.1	12	1754		158.001
12	1	71.2	12			503.354
13	2	56.1	12	1713		239.177

Type 5 Radar Waveform_20

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	57.6	19	1722		68.034
2	3	84.4	19	1709	1312	1157.02
3	2	67.9	19	1884		222.9
4	3	63.2	19	1529	1272	327.73
5	3	54.9	19	1218	1063	252.88
6	3	89.8	19	1975	1582	902.86
7	1	61.2	19			534.8
8	2	60.6	19	1715		507.42
9	2	96.3	19	1186		386.54
10	2	97	19	1010		153.4

Type 5 Radar Waveform_21

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	66.2	6	1688		623.827
2	2	62.4	6	1826		429.31
3	2	87.3	6	1758		706.77
4	2	72.9	6	1374		317.51
5	2	73.4	6	1437		163.5
6	1	70.1	6			179.47
7	1	77.5	6			612.06
8	3	59.3	6	1948	1289	562.1
9	3	63.5	6	1192	1668	767.75
10	2	94.8	6	1441		476.09
11	3	88.8	6	1696	1461	221.07
12	3	80.8	6	1922	1655	237.21
13	3	82.9	6	1978	1563	63.6
14	2	81.8	6	1992		717.7
15	1	61.8	6			461.2

Type 5 Radar Waveform_22

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	71	7	1090		31.592
2	1	58.9	7			786.87
3	1	79.4	7			356.91
4	2	90.9	7	1197		1004.72
5	3	75.9	7	1219	1783	273
6	2	76	7	1222		86.8
7	3	60.8	7	1654	1579	748.23
8	2	56.7	7	1075		364.27
9	2	92.1	7	1664		487.7
10	2	92.1	7	1960		59.8

Type 5 Radar Waveform_23

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	51.4	16	1833		388.558
2	1	53	16			129.505
3	2	59.8	16	1378		394.227
4	3	99.4	16	1125	1631	439.93
5	2	74.6	16	1935		133.663
6	1	82.3	16			448.497
7	2	92.4	16	1970		200
8	2	86.6	16	1835		209.283
9	3	87.2	16	1543	1613	468.917
10	2	90.1	16	1761		174.08
11	2	90	16	1460		201.533
12	1	88.8	16			644.847
13	1	96.5	16			560.67
14	3	91.9	16	1514	1204	40.583
15	1	75.8	16			459.997
16	3	89.8	16	1614	1983	50.3
17	2	97.3	16	1346		569.233
18	2	56.1	16	1104		183.767

Type 5 Radar Waveform_24

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	90.2	19	1444		145.222
2	3	76.1	19	1333	1931	440.571
3	1	58.3	19			507.082
4	2	84.4	19	1467		421.043
5	2	74.5	19	1918		1.604
6	2	81	19	1879		151.545
7	1	56.9	19			322.446
8	2	67.6	19	1313		286.897
9	2	71.4	19	1310		310.028
10	2	69.8	19	1522		434.089
11	3	89.7	19	1935	1704	100.501
12	2	89.4	19	1857		46.272
13	3	75.1	19	1476	1136	545.963
14	2	84.8	19	1066		378.414
15	2	64.3	19	1992		332.445
16	2	80.9	19	1555		543.916
17	1	94.7	19			591.637
18	3	78.2	19	1454	1685	251.558
19	2	94.6	19	1744		618.879

Type 5 Radar Waveform_25

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	75.3	9	1762		118.074
2	2	53.8	9	1282		497.06
3	2	81.4	9	1709		276.68
4	2	70.7	9	1536		642.49
5	1	91.6	9			483.43
6	2	86.3	9	1327		672.89
7	2	64.2	9	1778		416.71
8	3	90.4	9	1075	1093	525.69
9	2	55.3	9	1815		519.66
10	3	67.1	9	1516	1357	667.43
11	1	62.5	9			142.69
12	1	90.8	9			628.02
13	1	52.3	9			23.56
14	2	77.3	9	1038		390.3
15	2	70.7	9	1393		211.7
16	2	58.6	9	1931		150.7

Type 5 Radar Waveform_26

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	80.1	5	1963		812.763
2	2	94	5	1037		916.751
3	3	69.3	5	1930	1379	258.562
4	2	53.8	5	1148		527.583
5	1	61.2	5			549.714
6	3	88.2	5	1772	1191	42.495
7	2	68.5	5	1046		178.525
8	2	71	5	1440		326.546
9	3	86.2	5	1845	1298	217.197
10	3	92.3	5	1610	1624	140.228
11	2	90.2	5	1750		1057.309

Type 5 Radar Waveform_27

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	63	7	1038	1695	358.187
2	2	89.9	7	1788		547.12
3	2	50.7	7	1152		705.91
4	2	71.1	7	1904		333.64
5	2	98	7	1647		47.7
6	3	84.2	7	1472	1068	728.44
7	2	85.2	7	1275		468.02
8	1	88	7			596.15
9	3	79.6	7	1362	1991	691.63
10	2	64.3	7	1922		161.33
11	1	64.9	7			413.96
12	2	83.6	7	1912		343
13	1	98.2	7			73.88
14	3	77.1	7	1386	1446	215.01
15	3	91.4	7	1946	1093	434.4
16	2	91.8	7	1163		645.2

Type 5 Radar Waveform_28

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	90.3	10			648.351
2	1	89.4	10			668.628
3	2	99.6	10	1251		170.145
4	3	87.4	10	1464	1794	604.573
5	2	52.2	10	1207		410.071
6	2	86.6	10	1103		34.928
7	3	87.4	10	1442	1219	315.536
8	2	64.1	10	1785		47.984
9	2	83.8	10	1836		493.181
10	2	96.7	10	1376		587.659
11	3	65.2	10	1296	1250	125.946
12	2	98.2	10	1228		368.064
13	3	74.7	10	1182	1421	193.562
14	2	87	10	1516		378.699
15	2	81.8	10	1998		410.547
16	2	67.4	10	1658		629.865
17	2	83.4	10	1677		374.482

Type 5 Radar Waveform_29

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	84.4	14	1117		488.912
2	3	69	14	1320	1391	130.973
3	1	88.9	14			114.092
4	2	99	14	1449		574.643
5	3	87.9	14	1828	1734	522.034
6	3	50.5	14	1502	1142	63.225
7	2	96.9	14	1777		624.216
8	2	79.1	14	1195		252.017
9	3	84	14	1238	1336	561.608
10	2	92.7	14	1192		613.319
11	3	55	14	1132	1937	258.571
12	2	58.1	14	1881		260.332
13	2	72.4	14	1520		608.653
14	1	53	14			31.214
15	1	66.6	14			343.725
16	1	97.6	14			255.256
17	1	58.3	14			321.437
18	2	94	14	1951		60.758
19	1	54.7	14			480.879

Type 5 Radar Waveform_30

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	56	18	1625	1959	86.865
2	3	66.8	18	1262	1630	48.342
3	1	58.8	18			447.777
4	1	75.7	18			260.63
5	3	92.7	18	1980	1537	171.573
6	2	82.7	18	1775		363.017
7	1	80.1	18			525.01
8	2	82	18	1861		52.123
9	2	82.5	18	1306		611.197
10	3	86.8	18	1334	1995	104.46
11	2	59.1	18	1407		596.933
12	3	62.9	18	1550	1179	454.197
13	3	61	18	1882	1746	253.12
14	2	70.8	18	1052		474.503
15	1	80.1	18			13.617
16	1	62.9	18			54.6
17	3	69.1	18	1497	1271	41.233
18	1	93.6	18			524.567

Radar Type 6 - Radar Statistical Performance

Trail #	1=Detection 0=No Detection	Trail #	1=Detection 0=No Detection
1	1	16	1
2	1	17	1
3	1	18	1
4	1	19	1
5	1	20	1
6	1	21	1
7	1	22	1
8	1	23	1
9	1	24	1
10	1	25	1
11	1	26	1
12	1	27	1
13	1	28	1
14	1	29	1
15	1	30	1
Detection Percentage (%)			100%

Radar waveform #1			Radar waveform #2		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
2	5519	6	10	5514	30
6	5522	18	28	5523	84
9	5496	27	51	5515	153
31	5530	93	55	5501	165
37	5491	111	56	5508	168
40	5512	120	57	5494	171
70	5523	210	78	5516	234
86	5505	258	79	5530	237
89	5527	267	96	5520	288
97	5492	291	99	5525	297

Radar waveform #3			Radar waveform #4		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
5	5492	15	7	5519	21
8	5523	24	22	5496	66
28	5507	84	23	5528	69
35	5516	105	37	5504	111
46	5518	138	50	5520	150
47	5526	141	57	5505	171
67	5498	201	68	5516	204
68	5509	204	--	--	--
71	5490	213	--	--	--

Radar waveform #5			Radar waveform #6		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
2	5512	6	4	5500	12
41	5494	123	48	5497	144
42	5525	126	51	5501	153
45	5521	135	59	5525	177
46	5493	138	78	5499	234
63	5520	189	85	5508	255
--	--	--	87	5491	261
--	--	--	93	5518	279

Radar waveform #7			Radar waveform #8		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
22	5516	66	10	5500	30
24	5490	72	29	5518	87
25	5524	75	40	5490	120
27	5523	81	52	5504	156
38	5506	114	55	5512	165
68	5527	204	75	5492	225

Radar waveform #9			Radar waveform #10		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
5	5509	15	6	5522	18
24	5518	72	10	5492	30
37	5503	111	16	5500	48
41	5507	123	24	5494	72
42	5502	126	26	5503	78
58	5500	174	29	5507	87
65	5499	195	30	5530	90
89	5513	267	74	5518	222
95	5505	285	80	5493	240
--	--	--	82	5512	246
--	--	--	96	5527	288

Radar waveform #11			Radar waveform #12		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
9	5514	27	6	5526	18
11	5530	33	10	5525	30
16	5515	48	16	5510	48
17	5504	51	24	5503	72
20	5494	60	31	5516	93
51	5500	153	55	5502	165
66	5496	198	62	5519	186
80	5509	240	68	5497	204
88	5495	264	77	5515	231
92	5516	276	87	5527	261
98	5502	294	--	--	--

Radar waveform #13			Radar waveform #14		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
17	5523	51	1	5513	3
19	5520	57	2	5497	6
26	5529	78	25	5505	75
29	5511	87	34	5528	102
52	5493	156	62	5493	186
54	5513	162	77	5515	231
58	5527	174	83	5511	249
74	5522	222	93	5507	279
82	5505	246	--	--	--

Radar waveform #15			Radar waveform #16		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
3	5524	9	5	5528	15
10	5494	30	10	5501	30
15	5502	45	13	5522	39
36	5522	108	40	5494	120
69	5491	207	54	5498	162
74	5510	222	55	5512	165
76	5493	228	72	5525	216
92	5501	276	81	5515	243
94	5503	282	82	5504	246
97	5506	291	94	5505	282
98	5529	294	--	--	--

Radar waveform #17			Radar waveform #18		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5500	3	4	5513	12
16	5496	48	19	5509	57
18	5525	54	21	5528	63
21	5530	63	51	5501	153
31	5497	93	55	5522	165
85	5513	255	58	5511	174
--	--	--	60	5504	180
--	--	--	61	5490	183
--	--	--	70	5529	210
--	--	--	95	5496	285

Radar waveform #19			Radar waveform #20		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
19	5505	57	9	5512	27
23	5503	69	32	5498	96
32	5512	96	36	5504	108
42	5499	126	59	5526	177
43	5498	129	75	5514	225
73	5519	219	82	5521	246
--	--	--	95	5516	285

Radar waveform #21			Radar waveform #22		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5500	3	11	5511	33
15	5493	45	30	5519	90
21	5524	63	38	5530	114
26	5521	78	56	5528	168
30	5492	90	67	5524	201
49	5508	147	68	5525	204
68	5496	204	69	5509	207
--	--	--	74	5499	222
--	--	--	75	5506	225
--	--	--	82	5520	246
--	--	--	85	5496	255
--	--	--	92	5512	276
--	--	--	99	5494	297
--	--	--	100	5526	300

Radar waveform #23			Radar waveform #24		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
7	5496	21	1	5492	3
38	5518	114	11	5498	33
46	5515	138	40	5523	120
48	5495	144	58	5496	174
51	5519	153	68	5507	204
68	5522	204	88	5494	264
75	5506	225	--	--	--
84	5503	252	--	--	--
89	5508	267	--	--	--

Radar waveform #25			Radar waveform #26		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5517	3	2	5502	6
6	5504	18	7	5513	21
8	5520	24	18	5501	54
54	5508	162	37	5492	111
90	5501	270	44	5512	132
98	5516	294	49	5493	147
--	--	--	68	5522	204
--	--	--	76	5491	228

Radar waveform #27			Radar waveform #28		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
10	5515	30	19	5527	57
50	5516	150	31	5515	93
54	5502	162	35	5524	105
65	5529	195	55	5530	165
67	5523	201	79	5493	237
70	5507	210	82	5523	246
80	5506	240	96	5507	288
85	5512	255	99	5512	297

Radar waveform #29			Radar waveform #30		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
16	5510	48	19	5495	57
22	5526	66	37	5506	111
43	5504	129	40	5502	120
77	5505	231	46	5504	138
79	5518	237	54	5527	162
83	5524	249	81	5522	243
87	5491	261	92	5516	276
95	5522	285	--	--	--



Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/03/13
Test Item	Radar Statistical Performance Check (802.11ac-VHT80 mode – 5530MHz) – Mode 1		

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	1	558	95	1
2	5493.6	1	618	86	1
3	5496.2	1	598	89	1
4	5498.8	1	738	72	1
5	5501.4	1	818	65	1
6	5504.0	1	678	78	1
7	5506.5	1	658	81	1
8	5509.1	1	638	83	1
9	5511.7	1	778	68	1
10	5514.3	1	798	67	1
11	5517.6	1	918	58	1
12	5520.8	1	878	61	1
13	5524.0	1	3066	18	1
14	5527.3	1	758	70	1
15	5530.0	1	858	62	1
16	5533.2	1	1042	51	1
17	5536.5	1	527	100	1
18	5539.7	1	2141	25	1
19	5543.0	1	825	64	1
20	5546.2	1	2354	23	1
21	5548.5	1	1126	47	0
22	5550.8	1	2638	20	1
23	5553.0	1	926	57	1
24	5555.3	1	2737	20	1
25	5557.6	1	2304	23	1
26	5559.9	1	558	95	1



Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
27	5559.9	1	574	92	1
28	5562.2	1	1791	30	1
29	5564.4	1	1066	50	1
30	5566.7	1	957	56	1
Detection Percentage (%)					96.7%



Radar Type 2 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	3.5	176	28	1
2	5493.6	1.8	174	28	1
3	5496.2	2.4	182	25	1
4	5498.8	2.3	202	28	1
5	5501.4	3.4	220	29	1
6	5504.0	3.3	203	26	1
7	5506.5	3.8	211	27	1
8	5509.1	1.1	163	25	1
9	5511.7	4.6	224	25	1
10	5514.3	4.7	189	24	1
11	5517.6	1.9	216	24	1
12	5520.8	2.5	218	28	1
13	5524.0	4.7	183	24	1
14	5527.3	1.8	191	27	1
15	5530.0	3.5	218	25	1
16	5533.2	4.0	164	29	1
17	5536.5	4.7	212	25	0
18	5539.7	4.0	225	26	1
19	5543.0	1.1	167	25	1
20	5546.2	1.5	182	27	1
21	5548.5	1.2	159	26	1
22	5550.8	4.8	183	28	1
23	5553.0	2.7	187	26	1
24	5555.3	1.1	217	27	1
25	5557.6	4.3	216	25	1
26	5559.9	4.8	213	23	1
27	5562.2	2.5	207	25	1
28	5564.4	1.3	200	29	1
29	5566.7	1.2	167	29	1
30	5569.0	1.9	227	29	1
Detection Percentage (%)					96.7%



Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	8.0	389	16	0
2	5493.6	8.7	274	17	1
3	5496.2	6.8	277	17	1
4	5498.8	7.3	417	16	0
5	5501.4	9.4	244	17	1
6	5504.0	9.9	240	18	1
7	5506.5	7.5	300	17	1
8	5509.1	8.3	380	17	0
9	5511.7	8.3	264	17	1
10	5514.3	9.2	329	18	0
11	5517.6	9.0	421	17	1
12	5520.8	8.7	264	17	1
13	5524.0	7.9	353	17	1
14	5527.3	7.3	487	17	1
15	5530.0	9.0	371	17	1
16	5533.2	6.0	208	17	1
17	5536.5	6.6	411	17	1
18	5539.7	7.6	492	18	1
19	5543.0	9.4	256	17	0
20	5546.2	7.8	490	16	1
21	5548.5	9.2	416	16	0
22	5550.8	8.7	279	18	1
23	5553.0	9.4	386	17	1
24	5555.3	6.6	384	17	1
25	5557.6	6.7	492	17	1
26	5559.9	9.7	425	16	0
27	5562.2	8.1	244	16	1
28	5564.4	9.2	466	17	1
29	5566.7	8.4	281	17	1
30	5569.0	8.9	337	16	0
Detection Percentage (%)					73.3%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491.0	14.8	242	15	0
2	5493.6	13.1	278	12	1
3	5496.2	13.6	339	13	1
4	5498.8	16.8	355	14	1
5	5501.4	11.6	321	15	1
6	5504.0	13.4	405	12	1
7	5506.5	11.7	352	12	1
8	5509.1	18.1	427	14	1
9	5511.7	12.9	419	13	1
10	5514.3	18	440	14	1
11	5517.6	11.7	218	14	1
12	5520.8	15.3	302	12	1
13	5524.0	16.9	285	13	1
14	5527.3	17.7	390	13	1
15	5530.0	11.6	350	16	1
16	5533.2	13	484	12	1
17	5536.5	13.9	373	13	1
18	5539.7	13	212	16	1
19	5543.0	12.6	407	14	1
20	5546.2	14.8	416	15	1
21	5548.5	11.5	362	14	1
22	5550.8	12.2	204	16	1
23	5553.0	18.7	437	16	0
24	5555.3	15.9	401	13	1
25	5557.6	13.6	235	12	1
26	5559.9	18.7	379	14	0
27	5562.2	18.1	286	15	1
28	5564.4	17.6	237	13	1
29	5566.7	18.6	374	16	1
30	5569.0	18	362	12	1
Detection Percentage (%)					90%

Note: In addition an average minimum percentage of successful detection across all four Short pulse radar test

waveforms is as follows: $\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (96.7\% + 96.7\% + 73.3\% + 90\%) / 4 = 89.2\% (>80\%)$

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	5530.0	1	16	5493.0	1
2	5530.0	1	17	5493.0	1
3	5530.0	1	18	5493.8	1
4	5530.0	1	19	5494.2	1
5	5530.0	1	20	5497.4	1
6	5530.0	1	21	5566.2	1
7	5530.0	1	22	5561.8	1
8	5530.0	1	23	5561.4	1
9	5530.0	1	24	5566.6	1
10	5530.0	1	25	5562.6	1
11	5493.8	1	26	5561.0	1
12	5497.4	1	27	5562.2	1
13	5499.0	1	28	5561.0	1
14	5493.8	1	29	5564.6	1
15	5497.0	1	30	5561.4	1
Detection Percentage (%)					100%

Type 5 Radar Waveform_1

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	58.4	12			222.662
2	3	51.7	12	1157	1210	20.821
3	1	64	12			377.206
4	3	61.3	12	1659	1587	11.899
5	1	99.4	12			853.642
6	3	84.1	12	1753	1516	54.815
7	1	86.2	12			769.958
8	2	64.1	12	1244		179.852
9	3	81.5	12	1219	1872	506.305
10	3	79	12	1937	1520	556.808
11	2	81.3	12	1725		88.551
12	2	75.2	12	1110		174.854
13	1	90.6	12			739.677

Type 5 Radar Waveform_2

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	54.7	16	1309		78.9
2	1	74.3	16			603.29
3	3	69.8	16	1255	1069	1021.1
4	2	83.6	16	1192		80.68
5	2	72.8	16	1124		704.44
6	3	86.4	16	1069	1209	1151.65
7	3	70.6	16	1463	1108	182.27
8	2	81.2	16	1961		422.41
9	3	71	16	1900	1395	1004.2
10	3	96.8	16	1328	1615	770.3

Type 5 Radar Waveform_3

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	81.6	6	1982		835.134
2	1	73	6			731.95
3	2	70.5	6	1644		59.91
4	3	61.4	6	1179	1156	322.1
5	3	90.4	6	1649	1071	367.18
6	3	95.9	6	1032	1228	70.71
7	2	87.4	6	1971		197.48
8	2	59.4	6	1286		485.7
9	2	66.4	6	1739		197.34
10	1	78.8	6			715.67
11	2	67.8	6	1357		379.1
12	1	80.1	6			210.1

Type 5 Radar Waveform_4

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	72.1	12	1434		435.622
2	2	98.8	12	1123		1040.97
3	2	81.7	12	1020		230.67
4	1	87	12			1065.2
5	2	73.6	12	1568		515.59
6	1	75	12			828.54
7	2	57.9	12	1021		606.54
8	2	96.3	12	1868		1166.6
9	3	75.2	12	1000	1434	0.2
10	2	75.2	12	1496		1000.6

Type 5 Radar Waveform_5

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	72.1	19			551.438
2	1	90.7	19			583.82
3	3	63.3	19	1918	1021	1117.66
4	3	62.1	19	1106	1422	425.18
5	2	53.6	19	1677		366.8
6	3	89.1	19	1500	1946	852.81
7	3	58.9	19	1395	1121	24.31
8	2	91.8	19	1525		306.23
9	2	98.2	19	1777		167.17
10	2	53.8	19	1936		453

Type 5 Radar Waveform_6

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	56.9	11	1591	1203	339.565
2	1	97.6	11			635.28
3	3	94.7	11	1936	1411	378.04
4	2	74.5	11	1368		717.53
5	2	73.5	11	1712		255.21
6	2	99.7	11	1512		515.94
7	3	85.4	11	1817	1068	670.6
8	2	86	11	1855		767.99
9	2	94.4	11	1629		415.29
10	2	56.1	11	1196		763.32
11	3	73.8	11	1786	1760	349.58
12	2	66.1	11	1201		301.31
13	1	75.5	11			183.03
14	2	95.5	11	1555		763.7
15	2	61.9	11	1385		44.6

Type 5 Radar Waveform_7

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	82.5	5	1034		487.123
2	2	95.8	5	1625		362.29
3	2	82.4	5	1229		522.56
4	3	57.3	5	1087	1220	171.65
5	3	72	5	1124	1883	87.26
6	3	78.4	5	1745	1256	211.41
7	2	90.1	5	1382		81.16
8	1	52.3	5			133.26
9	2	50.5	5	1513		10.22
10	3	62	5	1244	1162	189.33
11	2	52.8	5	1727		537.52
12	3	85.6	5	1808	1421	366.9
13	2	90	5	1897		551.43
14	2	69.6	5	1316		401.6
15	3	93.2	5	1979	1550	463.37
16	2	51.6	5	1136		99.24
17	2	97.5	5	1281		464.5
18	2	75.6	5	1386		209.2
19	2	85.5	5	1265		436.8
20	3	95.4	5	1753	1965	23.8

Type 5 Radar Waveform_8

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	92.6	10	1890		294.365
2	1	57.7	10			825.5
3	2	62.8	10	1980		525.35
4	3	86.1	10	1881	1882	632.98
5	2	92.4	10	1402		479.17
6	2	80.9	10	1815		292.73
7	3	92.7	10	1303	1864	470.21
8	2	64.1	10	1283		77.36
9	2	77	10	1417		656.23
10	2	55.8	10	1963		367.44
11	3	77.1	10	1274	1305	954.4
12	2	82.5	10	1598		882.7

Type 5 Radar Waveform_9

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	99.3	7	1565		69.305
2	3	75.2	7	1870	1326	601.021
3	1	62.8	7			199.362
4	2	96.5	7	1600		54.283
5	2	93.8	7	1525		234.184
6	2	85.3	7	1893		240.615
7	2	59.4	7	1994		210.296
8	2	72.9	7	1323		556.057
9	2	73.3	7	1393		19.838
10	3	88.7	7	1890	1817	202.819
11	2	64.2	7	1533		409.431
12	2	98.1	7	1130		541.392
13	1	70.1	7			594.193
14	2	98.5	7	1393		326.664
15	2	90.7	7	1808		454.165
16	1	65.2	7			318.786
17	2	64.8	7	1596		510.337
18	1	83.6	7			211.558
19	2	59.7	7	1889		274.279

Type 5 Radar Waveform_10

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	55.1	20			270.318
2	2	69.7	20	1070		534.52
3	2	68.5	20	1570		163.37
4	1	77.1	20			223.23
5	3	98.3	20	1637	1070	538.44
6	2	94	20	1402		600.25
7	1	61.4	20			5.63
8	2	87.1	20	1886		164.28
9	2	53.3	20	1399		121.8
10	2	80.9	20	1496		35.8
11	3	60.1	20	1335	1822	374.51
12	3	94.3	20	1705	1768	254.6
13	3	68.5	20	1009	1467	647.06
14	1	84.7	20			394.5
15	2	69.8	20	1478		417.1
16	2	56.3	20	1971		161.2

Type 5 Radar Waveform_11

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	84.8	7			709.581
2	2	62.8	7	1237		386.16
3	2	69.3	7	1786		254.79
4	2	72.8	7	1366		202.29
5	2	97.5	7	1913		677
6	2	86.8	7	1276		98.56
7	2	99.1	7	1441		4.25
8	3	80.4	7	1168	1452	557.73
9	2	63.8	7	1643		199.02
10	3	98.4	7	1115	1638	699.35
11	1	54.1	7			249.69
12	2	75.1	7	1404		597.35
13	3	74.5	7	1141	1595	296.48
14	3	95.8	7	1210	1206	146.91
15	2	79.6	7	1985		732.4
16	2	84	7	1628		494.9

Type 5 Radar Waveform_12

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	67	16			403.648
2	1	63.3	16			182.772
3	1	64.9	16			528.965
4	3	98.9	16	1568	1133	145.953
5	2	81.2	16	1840		48.941
6	2	61.8	16	1738		430.858
7	2	51.6	16	1142		337.246
8	3	65.8	16	1976	1841	208.434
9	2	56.5	16	1301		268.201
10	2	93.5	16	1615		65.909
11	3	72.4	16	1786	1152	142.706
12	2	86	16	1496		84.304
13	3	73.1	16	1306	1127	353.152
14	2	51.3	16	1073		39.479
15	3	91.7	16	1347	1845	526.747
16	2	60.2	16	1211		462.665
17	2	71.3	16	1832		79.882

Type 5 Radar Waveform_13

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	77	20	1758		756.385
2	2	56.6	20	1499		882.071
3	2	59.7	20	1698		82.802
4	2	76.7	20	1956		451.013
5	2	79.3	20	1208		555.664
6	2	68.7	20	1002		165.485
7	2	53	20	1931		416.395
8	3	50.5	20	1353	1862	861.866
9	2	62.5	20	1674		755.097
10	2	88.8	20	1407		11.738
11	3	52.3	20	1048	1185	690.409

Type 5 Radar Waveform_14

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	76.8	7			728.641
2	1	62.9	7			536.24
3	2	52.2	7	1563		134.62
4	1	51	7			723.33
5	2	67.6	7	1656		518.02
6	1	84.2	7			283.46
7	2	73.6	7	1502		577.95
8	1	59.3	7			524.8
9	2	59.7	7	1025		270.79
10	1	82.8	7			36.2
11	3	80	7	1045	1453	82.88
12	2	79.8	7	1839		527.84
13	3	98.3	7	1529	1657	250.12
14	3	53.1	7	1662	1507	571.2
15	3	96.8	7	1533	1914	108.1
16	1	69.9	7			58.4

Type 5 Radar Waveform_15

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	67.1	15	1729	1123	743.04
2	3	78	15	1487	1667	405.963
3	3	61.3	15	1852	1558	312.566
4	1	75.8	15			811.999
5	2	66.6	15	1385		662.102
6	2	82.9	15	1796		757.815
7	1	90.8	15			122.148
8	3	76.6	15	1081	1947	457.032
9	3	66.7	15	1170	1075	381.435
10	1	75.3	15			520.238
11	3	99.2	15	1573	1527	768.041
12	2	81.7	15	1590		766.454
13	3	53.4	15	1725	1537	461.877

Type 5 Radar Waveform_16

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	50.3	5	1359	1355	557.914
2	2	64	5	1914		527.71
3	3	97.1	5	1197	1184	578.52
4	3	80	5	1243	1679	286.07
5	3	93.8	5	1276	1149	675.2
6	3	69.5	5	1937	1342	902.34
7	2	71.9	5	1949		611.74
8	1	91.2	5			688.2
9	1	77	5			964.3
10	2	98.2	5	1623		721.9

Type 5 Radar Waveform_17

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	77.8	5	1030		615.98
2	2	61.6	5	1934		116.62
3	2	99.6	5	1624		249.487
4	2	79.6	5	1596		533.72
5	3	88.6	5	1790	1384	394.583
6	3	83.5	5	1951	1798	176.047
7	3	72.6	5	1951	1495	124.69
8	1	98.7	5			308.493
9	1	94.2	5			656.917
10	2	64.7	5	1247		458.36
11	1	69.8	5			426.263
12	1	51.4	5			556.907
13	2	92.7	5	1651		254.7
14	2	68.9	5	1926		341.733
15	3	95.1	5	1010	1938	291.177
16	2	89.3	5	1148		559.9
17	3	96.2	5	1577	1479	508.933
18	3	56	5	1766	1486	64.767

Type 5 Radar Waveform_18

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	92.2	7	1683		644.396
2	1	53.2	7			550.718
3	2	99.6	7	1944		600.845
4	3	66.8	7	1647	1692	376.963
5	2	92.3	7	1329		51.481
6	3	55.2	7	1250	1904	659.108
7	2	95.3	7	1944		229.496
8	2	60.4	7	1018		168.684
9	2	84.1	7	1632		63.581
10	3	50.3	7	1360	1590	470.369
11	2	78.9	7	1599		31.136
12	2	70.9	7	1149		621.094
13	1	72.6	7			368.222
14	2	69.5	7	1685		276.389
15	3	61.4	7	1396	1536	472.947
16	3	96.5	7	1660	1733	626.365
17	3	73.5	7	1467	1518	211.682

Type 5 Radar Waveform_19

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	81.8	8	1428		616.147
2	1	78.1	8			360.69
3	2	52.6	8	1907		753.91
4	1	71.2	8			630.46
5	1	80	8			716.42
6	2	72.2	8	1523		323.35
7	2	75	8	1718		30.02
8	2	74.1	8	1895		254.21
9	2	94.4	8	1862		178.45
10	3	58.4	8	1717	1883	694.76
11	2	80.4	8	1427		270.6
12	3	72.6	8	1797	1498	370.2

Type 5 Radar Waveform_20

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	62.2	16			334.065
2	3	90.1	16	1485	1226	482.9
3	2	81.6	16	1693		523.05
4	3	65.1	16	1108	1405	707.29
5	2	90.5	16	1243		120.61
6	3	88.9	16	1085	1665	28.52
7	3	63.1	16	1188	1768	473.18
8	2	71.6	16	1381		43.78
9	2	90.5	16	1413		628.12
10	2	83.7	16	1324		563.83
11	1	78.3	16			489.57
12	1	83.7	16			112.94
13	3	55.5	16	1065	1197	521.83
14	2	63.1	16	1490		388.2
15	1	98.9	16			442.1
16	1	79.8	16			677.6

Type 5 Radar Waveform_21

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	85.8	7	1599		677.954
2	2	83.5	7	1806		784.85
3	2	73.1	7	1971		682.52
4	1	87.1	7			387.13
5	2	88.4	7	1568		395.34
6	2	59.3	7	1071		540.21
7	1	61.7	7			63.4
8	2	64	7	1852		106.71
9	1	87	7			251.63
10	1	64.7	7			176.74
11	2	89.3	7	1298		551.4
12	2	55.8	7	1922		150.2

Type 5 Radar Waveform_22

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	69.2	18	1654	1028	63.415
2	3	85.6	18	1826	1821	667.74
3	2	75.7	18	1276		548.68
4	2	50.9	18	1719		137.9
5	1	73.3	18			709.19
6	2	64.8	18	1517		701.88
7	2	84.3	18	1463		556.05
8	2	95.6	18	1843		579.17
9	2	79	18	1663		335.67
10	1	90.5	18			205.61
11	3	83.4	18	1358	1298	723.27
12	1	82.9	18			448.06
13	2	72.4	18	1667		522.5
14	1	82.1	18			253.7
15	3	95.4	18	1105	1766	371.3
16	1	87.3	18			624.8

Type 5 Radar Waveform_23

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	57	19	1792		487.604
2	1	71.6	19			157.854
3	2	97.6	19	1315		110.747
4	1	53.2	19			524.54
5	3	88.2	19	1442	1808	657.553
6	3	89.7	19	1894	1977	29.197
7	2	63.2	19	1136		99.25
8	2	76.3	19	1418		403.393
9	3	85.8	19	1910	1858	171.297
10	3	87.1	19	1381	1819	628.28
11	1	74.2	19			600.253
12	2	86.4	19	1137		611.877
13	1	67.1	19			538.02
14	2	73.1	19	1662		645.383
15	2	55.9	19	1228		543.457
16	2	81.9	19	1471		458.2
17	3	54.7	19	1817	1140	328.233
18	1	70.4	19			314.067

Type 5 Radar Waveform_24

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	59.1	6	1701	1228	286.431
2	3	50.9	6	1703	1724	149.621
3	2	65.5	6	1469		347.487
4	1	61	6			585.07
5	2	75.2	6	1287		635.793
6	1	69.7	6			115.927
7	1	66.7	6			591.45
8	2	70.8	6	1660		150.393
9	2	66.5	6	1700		80.657
10	2	95.7	6	1991		216.47
11	2	88.3	6	1201		636.143
12	2	68.6	6	1179		471.837
13	2	85.7	6	1073		92.92
14	2	53.4	6	1573		381.243
15	3	69.8	6	1238	1488	509.617
16	3	84.1	6	1555	1010	154.7
17	2	68.6	6	1738		20.133
18	2	90.5	6	1654		118.767

Type 5 Radar Waveform_25

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	92.5	16			419.006
2	3	91.2	16	1661	1360	935.4
3	2	73.8	16	1499		957.7
4	1	65.7	16			106.81
5	2	91.2	16	1058		180.81
6	3	84.4	16	1725	1777	69.39
7	3	64	16	1289	1694	1146.73
8	1	53.8	16			749.87
9	2	55.4	16	1015		1121.7
10	2	65.4	16	1478		350

Type 5 Radar Waveform_26

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	92.2	20	1376		686.341
2	1	53.9	20			873.52
3	3	51.3	20	1145	1853	84.27
4	1	61.7	20			192.57
5	1	94	20			1151.1
6	2	78.8	20	1755		174.43
7	3	79.5	20	1308	1759	1175.68
8	3	58.7	20	1961	1764	216.24
9	1	53.9	20			310.18
10	3	60	20	1837	1966	240.2

Type 5 Radar Waveform_27

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	58.8	17			116.351
2	2	67.8	17	1628		204.853
3	3	94.1	17	1294	1526	909.366
4	1	52.1	17			585.559
5	1	85.7	17			591.542
6	3	54.7	17	1335	1135	426.475
7	3	99	17	1197	1614	562.468
8	1	83.3	17			509.392
9	1	96.1	17			560.055
10	3	81.7	17	1473	1724	277.928
11	1	72	17			135.151
12	3	85.2	17	1911	1294	133.754
13	2	60.9	17	1679		302.977

Type 5 Radar Waveform_28

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	2	91.4	20	1005		463.613
2	2	81.9	20	1577		842.023
3	1	57.8	20			486.676
4	3	63.2	20	1079	1815	795.359
5	1	87.3	20			621.542
6	3	87.8	20	1378	1794	276.455
7	1	64.3	20			585.348
8	3	55.2	20	1147	1985	887.432
9	2	98.2	20	1693		168.845
10	2	54.2	20	1882		104.858
11	2	72.2	20	1465		720.891
12	2	82.7	20	1232		671.154
13	2	63.1	20	1018		892.877

Type 5 Radar Waveform_29

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	3	81.7	11	1099	1478	279.315
2	2	91.5	11	1035		651.498
3	2	85.4	11	1177		16.015
4	1	78	11			194.143
5	2	73.5	11	1510		647.141
6	2	64	11	1202		498.718
7	1	91.3	11			644.216
8	1	71.3	11			96.104
9	1	84	11			257.001
10	2	97	11	1448		532.189
11	3	57.6	11	1766	1086	173.106
12	1	87.4	11			525.104
13	2	70.7	11	1752		537.372
14	2	78.1	11	1754		406.559
15	2	52.2	11	1357		321.347
16	2	79	11	1441		365.565
17	3	93.5	11	1911	1395	416.182

Type 5 Radar Waveform_30

Burst	Number of Pulses	Pulse Width (μ sec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μ sec)	Pulse 2-to-3 PRI (μ sec)	Start Location Within Interval (msec)
1	1	53.9	19			675.308
2	2	99.3	19	1952		250.58
3	3	88.9	19	1830	1888	256.15
4	3	82.5	19	1736	1825	516.54
5	1	99.9	19			48.62
6	2	62.5	19	1200		431.7
7	1	51.2	19			141.85
8	2	87.2	19	1416		458.85
9	2	54.2	19	1482		59.04
10	1	98.4	19			22.67
11	3	53.6	19	1556	1845	306.16
12	2	91.4	19	1327		160.32
13	2	85.5	19	1144		530.66
14	2	51.1	19	1173		288.8
15	3	55.7	19	1276	1392	532.6
16	2	54.5	19	1629		543

Radar Type 6 - Radar Statistical Performance

Trail #	1=Detection 0=No Detection	Trail #	1=Detection 0=No Detection
1	1	16	1
2	1	17	1
3	1	18	1
4	1	19	1
5	1	20	1
6	1	21	1
7	1	22	1
8	1	23	1
9	1	24	1
10	1	25	1
11	1	26	1
12	1	27	1
13	1	28	1
14	1	29	1
15	1	30	1
Detection Percentage (%)		100%	



Radar waveform #1			Radar waveform #2		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
12	5548	36	4	5512	12
14	5527	42	5	5528	15
16	5559	48	7	5529	21
21	5523	63	8	5562	24
29	5561	87	10	5541	30
34	5505	102	13	5503	39
37	5510	111	18	5501	54
41	5539	123	20	5519	60
54	5555	162	36	5558	108
60	5496	180	41	5554	123
91	5515	273	50	5518	150
93	5502	279	55	5537	165
95	5499	285	58	5496	174
99	5514	297	61	5544	183
--	--	--	70	5540	210
--	--	--	86	5514	258
--	--	--	89	5565	267
--	--	--	90	5559	270
--	--	--	100	5502	300

Radar waveform #3			Radar waveform #4		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
3	5513	9	2	5522	6
4	5563	12	9	5567	27
16	5553	48	11	5506	33
19	5521	57	22	5547	66
20	5534	60	24	5508	72
23	5535	69	50	5552	150
24	5545	72	52	5497	156
29	5546	87	54	5560	162
34	5496	102	58	5523	174
49	5515	147	70	5542	210
54	5512	162	73	5496	219
66	5556	198	82	5494	246
70	5569	210	83	5564	249
75	5519	225	85	5517	255
90	5543	270	92	5566	276
91	5552	273	98	5490	294
97	5507	291	--	--	--

Radar waveform #5			Radar waveform #6		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
17	5561	51	1	5492	3
22	5545	66	9	5565	27
25	5534	75	10	5552	30
27	5512	81	13	5544	39
28	5499	84	16	5506	48
34	5555	102	33	5491	99
40	5492	120	36	5534	108
42	5496	126	40	5500	120
45	5495	135	44	5537	132
51	5498	153	47	5530	141
53	5497	159	56	5559	168
57	5569	171	72	5522	216
58	5505	174	80	5518	240
62	5539	186	81	5554	243
64	5527	192	100	5496	300
69	5554	207	--	--	--
78	5517	234	--	--	--
81	5536	243	--	--	--
86	5504	258	--	--	--
90	5506	270	--	--	--
94	5552	282	--	--	--
97	5509	291	--	--	--

Radar waveform #7			Radar waveform #8		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
2	5500	6	11	5547	33
13	5566	39	14	5538	42
22	5540	66	17	5562	51
28	5495	84	29	5503	87
41	5538	123	30	5552	90
43	5514	129	53	5511	159
64	5529	192	77	5536	231
69	5505	207	79	5496	237
70	5501	210	81	5561	243
79	5548	237	92	5531	276
91	5490	273	100	5518	300
100	5534	300	--	--	--

Radar waveform #9			Radar waveform #10		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
7	5494	21	2	5501	6
9	5514	27	7	5493	21
11	5563	33	11	5514	33
13	5555	39	23	5540	69
14	5499	42	34	5533	102
35	5562	105	54	5548	162
41	5510	123	55	5512	165
47	5500	141	56	5544	168
49	5526	147	57	5558	171
55	5531	165	66	5561	198
58	5515	174	70	5537	210
62	5564	186	72	5565	216
65	5523	195	74	5520	222
67	5534	201	75	5560	225
68	5511	204	76	5525	228
74	5549	222	79	5523	237
75	5495	225	81	5511	243
80	5497	240	82	5528	246
94	5525	282	93	5521	279
96	5568	288	--	--	--
98	5520	294	--	--	--
99	5554	297	--	--	--



Radar waveform #11			Radar waveform #12		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5569	3	4	5494	12
26	5556	78	6	5531	18
29	5533	87	9	5540	27
30	5540	90	22	5518	66
35	5521	105	24	5551	72
39	5565	117	32	5493	96
40	5535	120	36	5502	108
41	5497	123	41	5510	123
46	5509	138	45	5492	135
49	5504	147	61	5524	183
51	5526	153	69	5562	207
61	5537	183	71	5555	213
68	5568	204	72	5570	216
69	5490	207	73	5560	219
70	5557	210	75	5525	225
73	5531	219	76	5545	228
85	5510	255	77	5552	231
86	5563	258	79	5534	237
94	5529	282	80	5504	240
--	--	--	81	5557	243
--	--	--	88	5568	264
--	--	--	99	5491	297
--	--	--	100	5536	300



Radar waveform #13			Radar waveform #14		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
13	5542	39	6	5538	18
18	5540	54	8	5551	24
28	5503	84	14	5549	42
31	5497	93	17	5563	51
42	5495	126	19	5532	57
45	5496	135	23	5510	69
51	5505	153	31	5506	93
52	5558	156	38	5497	114
60	5502	180	50	5543	150
70	5527	210	53	5529	159
76	5555	228	62	5496	186
78	5538	234	63	5564	189
80	5543	240	67	5515	201
82	5519	246	68	5503	204
87	5526	261	69	5512	207
88	5525	264	70	5511	210
91	5554	273	73	5554	219
94	5508	282	76	5505	228
--	--	--	80	5570	240
--	--	--	81	5536	243
--	--	--	84	5557	252
--	--	--	85	5561	255
--	--	--	86	5548	258
--	--	--	89	5518	267
--	--	--	90	5519	270
--	--	--	93	5540	279
--	--	--	96	5516	288

Radar waveform #15			Radar waveform #16		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
5	5536	15	10	5532	30
10	5539	30	11	5491	33
12	5568	36	12	5543	36
15	5495	45	18	5493	54
21	5530	63	23	5536	69
30	5525	90	30	5545	90
38	5561	114	32	5533	96
46	5505	138	43	5528	129
54	5494	162	44	5503	132
56	5508	168	56	5498	168
57	5564	171	58	5505	174
66	5555	198	59	5561	177
72	5509	216	60	5560	180
95	5499	285	72	5490	216
--	--	--	79	5511	237
--	--	--	85	5504	255
--	--	--	88	5529	264
--	--	--	97	5550	291
--	--	--	99	5562	297

Radar waveform #17			Radar waveform #18		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
6	5491	18	1	5497	3
7	5565	21	9	5515	27
13	5537	39	11	5556	33
20	5533	60	15	5506	45
22	5515	66	22	5537	66
26	5553	78	31	5540	93
27	5512	81	38	5499	114
56	5505	168	43	5491	129
57	5493	171	46	5559	138
61	5508	183	47	5523	141
66	5554	198	62	5522	186
85	5500	255	64	5552	192
94	5498	282	67	5529	201
98	5492	294	71	5503	213
--	--	--	82	5490	246
--	--	--	87	5511	261
--	--	--	88	5519	264
--	--	--	97	5563	291

Radar waveform #19			Radar waveform #20		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5530	3	1	5559	3
9	5551	27	8	5508	24
12	5539	36	13	5510	39
14	5503	42	19	5505	57
21	5495	63	32	5541	96
39	5532	117	34	5518	102
41	5557	123	37	5504	111
52	5537	156	39	5538	117
75	5565	225	44	5566	132
79	5491	237	46	5516	138
81	5527	243	49	5520	147
83	5490	249	50	5517	150
87	5538	261	55	5554	165
93	5549	279	62	5501	186
96	5541	288	63	5519	189
100	5526	300	68	5502	204
1	5530	3	73	5491	219
9	5551	27	74	5533	222
--	--	--	80	5564	240
--	--	--	88	5550	264

Radar waveform #21			Radar waveform #22		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
9	5556	27	12	5568	36
16	5505	48	18	5505	54
18	5494	54	22	5516	66
21	5569	63	23	5550	69
24	5503	72	25	5529	75
28	5511	84	30	5495	90
31	5548	93	44	5567	132
50	5508	150	68	5565	204
56	5525	168	78	5536	234
62	5527	186	82	5515	246
63	5493	189	85	5513	255
68	5552	204	88	5520	264
72	5543	216	95	5552	285
76	5545	228	100	5498	300
77	5558	231	--	--	--
78	5562	234	--	--	--
84	5546	252	--	--	--
91	5554	273	--	--	--

Radar waveform #23			Radar waveform #24		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5551	3	15	5511	45
15	5554	45	17	5545	51
19	5548	57	22	5536	66
21	5516	63	23	5498	69
28	5559	84	25	5560	75
31	5530	93	38	5519	114
37	5539	111	39	5562	117
40	5529	120	55	5543	165
45	5564	135	57	5533	171
52	5497	156	64	5507	192
55	5535	165	65	5512	195
65	5491	195	76	5540	228
67	5562	201	82	5513	246
74	5509	222	94	5526	282
83	5536	249	98	5535	294
87	5543	261	100	5561	300
88	5496	264	--	--	--
89	5508	267	--	--	--
95	5550	285	--	--	--
96	5490	288	--	--	--
100	5514	300	--	--	--

Radar waveform #25			Radar waveform #26		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
6	5514	18	12	5522	36
9	5510	27	21	5543	63
28	5536	84	32	5537	96
29	5565	87	35	5525	105
31	5555	93	41	5561	123
33	5554	99	45	5518	135
41	5537	123	50	5552	150
44	5499	132	53	5506	159
45	5505	135	59	5526	177
46	5558	138	63	5514	189
49	5556	147	65	5510	195
69	5564	207	66	5542	198
70	5551	210	75	5564	225
84	5545	252	--	--	--
88	5526	264	--	--	--
89	5559	267	--	--	--
95	5529	285	--	--	--
96	5506	288	--	--	--
100	5501	300	--	--	--



Radar waveform #27			Radar waveform #28		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
12	5508	36	6	5515	18
15	5498	45	16	5491	48
22	5546	66	17	5538	51
30	5496	90	22	5559	66
45	5501	135	28	5533	84
48	5543	144	40	5500	120
62	5509	186	45	5546	135
64	5558	192	51	5529	153
68	5551	204	54	5519	162
78	5534	234	58	5532	174
93	5523	279	61	5549	183
99	5495	297	63	5564	189
12	5508	36	69	5511	207
15	5498	45	72	5551	216
22	5546	66	78	5527	234
30	5496	90	79	5542	237
45	5501	135	94	5543	282
48	5543	144	--	--	--
62	5509	186	--	--	--
64	5558	192	--	--	--
68	5551	204	--	--	--
78	5534	234	--	--	--
93	5523	279	--	--	--
99	5495	297	--	--	--

Radar waveform #29			Radar waveform #30		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5541	3	8	5516	24
6	5508	18	12	5500	36
7	5492	21	13	5522	39
13	5534	39	30	5493	90
15	5495	45	44	5520	132
16	5550	48	52	5503	156
29	5506	87	56	5556	168
31	5537	93	59	5566	177
35	5513	105	68	5552	204
39	5552	117	91	5558	273
63	5505	189	99	5550	297
74	5545	222	--	--	--
77	5497	231	--	--	--
79	5522	237	--	--	--
88	5565	264	--	--	--
91	5549	273	--	--	--



Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/04/08
Test Item	Radar Statistical Performance Check (802.11ac-VHT20 – 5500MHz) - Mode 2		

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	1	838	63	1
2	5491.1	1	618	86	1
3	5491.8	1	538	98	0
4	5492.5	1	898	59	1
5	5493.2	1	518	102	1
6	5493.9	1	918	58	1
7	5494.5	1	758	70	1
8	5495.2	1	718	74	1
9	5495.9	1	798	67	1
10	5496.6	1	938	57	1
11	5497.3	1	658	81	1
12	5498.0	1	3066	18	1
13	5498.7	1	678	78	1
14	5499.4	1	578	92	1
15	5500.0	1	858	62	1
16	5500.7	1	3057	18	1
17	5501.3	1	631	84	1
18	5502.0	1	1452	37	1
19	5502.6	1	1427	37	1
20	5503.3	1	2331	23	1
21	5504.0	1	951	56	1
22	5504.6	1	2267	24	1
23	5505.3	1	2710	20	1
24	5505.9	1	909	58	1
25	5506.6	1	1976	27	1
26	5507.3	1	2810	19	1



Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
27	5507.9	1	2041	26	1
28	5508.6	1	1142	47	1
29	5509.2	1	1844	29	1
30	5509.6	1	1749	31	1
Detection Percentage (%)					96.7%

Radar Type 2 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	2.2	166	26	0
2	5491.1	1.9	201	24	1
3	5491.8	1.9	212	29	1
4	5492.5	3.2	200	28	1
5	5493.2	3.6	213	23	0
6	5493.9	3.4	209	28	1
7	5494.5	3.7	197	25	0
8	5495.2	1.6	158	28	1
9	5495.9	1.9	164	26	1
10	5496.6	4.0	173	25	1
11	5497.3	1.6	177	27	1
12	5498.0	4.0	196	23	1
13	5498.7	1.8	210	24	1
14	5499.4	3.9	221	29	0
15	5500.0	3.7	200	24	1
16	5500.7	3.3	159	26	0
17	5501.3	1.5	181	26	0
18	5502.0	1.7	202	25	1
19	5502.6	3.6	227	23	1
20	5503.3	3.6	206	28	1
21	5504.0	1.0	154	28	1
22	5504.6	2.6	151	27	1
23	5505.3	1.2	155	26	0
24	5505.9	4.8	173	25	1
25	5506.6	2.8	151	27	1
26	5507.3	1.0	172	26	1
27	5507.9	4.7	182	23	0
28	5508.6	3.9	205	23	1
29	5509.2	1.3	223	25	1
30	5509.6	3.1	162	27	1
Detection Percentage (%)					73.3%

Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	8.8	474	17	0
2	5491.1	7.8	311	18	1
3	5491.8	8.4	342	17	1
4	5492.5	6.0	398	17	1
5	5493.2	8.1	380	17	1
6	5493.9	6.8	228	17	0
7	5494.5	9.9	210	18	1
8	5495.2	9.5	381	17	1
9	5495.9	9.6	261	18	1
10	5496.6	8.7	447	16	1
11	5497.3	6.1	422	18	1
12	5498.0	6.0	463	17	0
13	5498.7	8.4	221	17	0
14	5499.4	8.4	496	17	1
15	5500.0	8.4	246	18	1
16	5500.7	7.2	457	17	1
17	5501.3	6.6	350	17	1
18	5502.0	9.4	368	16	1
19	5502.6	6.9	385	16	1
20	5503.3	6.9	389	16	1
21	5504.0	6.3	337	17	1
22	5504.6	8.4	495	17	0
23	5505.3	9.0	446	18	1
24	5505.9	8.5	420	18	1
25	5506.6	6.5	284	18	1
26	5507.3	8.9	376	16	1
27	5507.9	7.5	205	18	1
28	5508.6	9.6	394	17	0
29	5509.2	6.8	399	17	1
30	5509.6	8.3	216	17	1
Detection Percentage (%)					80%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5490.4	14.1	384	16	1
2	5491.1	15.3	226	14	1
3	5491.8	15.6	239	16	1
4	5492.5	13.8	426	13	1
5	5493.2	14.6	453	15	1
6	5493.9	13.9	454	15	0
7	5494.5	12.4	417	15	1
8	5495.2	16.8	282	13	0
9	5495.9	16.5	220	14	1
10	5496.6	13.5	278	14	0
11	5497.3	15.5	337	13	1
12	5498.0	12.9	418	14	1
13	5498.7	16.8	308	13	1
14	5499.4	11.8	287	13	1
15	5500.0	11.9	283	13	1
16	5500.7	12.6	291	12	1
17	5501.3	19.6	251	16	1
18	5502.0	15.5	423	15	1
19	5502.6	17.8	320	16	0
20	5503.3	14.4	381	15	1
21	5504.0	12.4	331	13	0
22	5504.6	15.9	222	16	0
23	5505.3	15	231	12	1
24	5505.9	13.5	470	13	1
25	5506.6	11.8	383	14	0
26	5507.3	12.4	499	15	1
27	5507.9	11.3	414	13	0
28	5508.6	12	429	13	0
29	5509.2	13.9	322	13	1
30	5509.6	18.4	436	16	1
Detection Percentage (%)					70%

Note: In addition an average minimum percentage of successful detection across all four Short pulse radar test

waveforms is as follows: $\frac{P_d1 + P_d2 + P_d3 + P_d4}{4} = (96.7\% + 73.3\% + 80\% + 70\%)/4 = 80\% (= 80\%)$

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	5500.0	1	16	5499.0	1
2	5500.0	1	17	5493.8	1
3	5500.0	1	18	5495.8	1
4	5500.0	1	19	5495.8	1
5	5500.0	1	20	5496.2	1
6	5500.0	1	21	5503.4	1
7	5500.0	1	22	5505.4	1
8	5500.0	1	23	5507.0	1
9	5500.0	1	24	5504.6	1
10	5500.0	1	25	5501.8	1
11	5495.0	1	26	5501.0	1
12	5495.0	1	27	5501.0	1
13	5494.2	1	28	5505.4	1
14	5497.0	1	29	5503.0	1
15	5494.6	1	30	5505.8	1
Detection Percentage (%)					100%

Type 5 Radar Waveform_1						
Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	76.3	15	1342		194.743
2	2	65.2	15	1312		255.873
3	3	77	15	1508	1740	463.866
4	2	92.5	15	1081		804.889
5	2	55.4	15	1183		774.102
6	2	58.8	15	1272		648.365
7	2	73.4	15	1310		767.008
8	2	95.6	15	1468		314.302
9	3	67.4	15	1591	1592	244.835
10	3	82.4	15	1322	1521	114.818
11	2	64.8	15	1232		829.331
12	1	84.7	15			782.754
13	1	71	15			62.477

Type 5 Radar Waveform_2

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	54.4	10			9.56
2	1	60.8	10			149.83
3	1	93.6	10			28.08
4	3	92.3	10	1076	1549	74.6
5	1	77.2	10			199.85
6	3	70.6	10	1283	1447	876.52
7	1	99.9	10			204.94
8	2	94.5	10	1645		363.43
9	1	61.3	10			751.6
10	2	66.5	10	1380		361.6

Type 5 Radar Waveform_3

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	67.5	9			32.243
2	2	66.9	9	1672		58.045
3	3	94.5	9	1388	1979	18.032
4	2	87.5	9	1903		144.513
5	2	63.2	9	1484		548.914
6	3	67.7	9	1594	1715	261.455
7	2	73.3	9	1755		15.366
8	1	73.6	9			52.037
9	1	60	9			137.498
10	3	84.2	9	1233	1499	232.409
11	2	69.5	9	1338		172.711
12	3	76.9	9	1987	1232	350.982
13	2	81.5	9	1176		524.243
14	2	64.6	9	1852		236.174
15	3	56	9	1213	1435	474.745
16	1	67.9	9			620.316
17	2	79.3	9	1520		333.637
18	3	50.9	9	1189	1325	135.358
19	2	55.3	9	1410		305.479

Type 5 Radar Waveform_4

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	57	18	1597		372.119
2	3	64	18	1761	1977	375.508
3	2	72.6	18	1196		549.725
4	2	82.6	18	1871		467.313
5	3	56.4	18	1773	1569	674.491
6	1	77.3	18			328.818
7	2	69.8	18	1400		628.106
8	1	99.8	18			365.404
9	2	51.2	18	1520		643.271
10	1	62.8	18			218.839
11	3	67.7	18	1517	1185	31.646
12	2	74.7	18	1307		462.204
13	3	85.6	18	1676	1066	229.322
14	2	53.6	18	1677		13.619
15	2	51.1	18	1134		73.457
16	3	51.3	18	1076	1589	279.265
17	2	74.6	18	1903		85.382

Type 5 Radar Waveform_5

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	99.2	15	1107		351.685
2	2	87	15	1397		593.748
3	2	67.9	15	1475		105.125
4	2	70	15	1394		610.383
5	2	66.5	15	1970		145.511
6	1	87.4	15			521.048
7	2	89.1	15	1454		251.916
8	2	96.9	15	1662		36.644
9	3	72.1	15	1963	1142	638.811
10	2	59	15	1224		238.039
11	2	92.3	15	1313		694.946
12	3	67.6	15	1507	1454	423.034
13	2	83.4	15	1242		257.532
14	3	76.3	15	1575	1516	587.559
15	2	81.5	15	1770		45.507
16	2	89.2	15	1868		599.165
17	1	94.4	15			107.982

Type 5 Radar Waveform_6

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	98.8	18			46.863
2	2	76.1	18	1450		610.833
3	3	52	18	1311	1370	614.747
4	3	90.2	18	1143	1910	313.72
5	2	91	18	1160		54.713
6	1	71.5	18			461.907
7	1	62	18			653.32
8	3	67.7	18	1861	1994	488.973
9	2	51.4	18	1828		322.937
10	2	81.5	18	1879		600.66
11	2	85.1	18	1184		269.043
12	3	61.7	18	1803	1837	470.847
13	2	81.9	18	1871		614.63
14	3	82.8	18	1636	1168	284.983
15	2	76.4	18	1187		234.587
16	3	75.7	18	1978	1159	283.3
17	2	53.1	18	1112		296.333
18	2	61.1	18	1570		308.867

Type 5 Radar Waveform_7

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	69.8	6	1366		300.084
2	1	53.7	6			148.046
3	1	68.6	6			386.03
4	1	94.5	6			344.97
5	2	75.5	6	1740		326.73
6	1	79.3	6			416.13
7	3	98.5	6	1615	1932	291.32
8	2	53.9	6	1848		719.55
9	2	92.1	6	1119		41.76
10	3	94.8	6	1345	1794	726.35
11	2	66.7	6	1665		285.51
12	1	88.2	6			293.16
13	2	50.2	6	1586		62.73
14	3	96.4	6	1559	1667	217.87
15	1	83	6			379.8
16	1	54.4	6			99.8

Type 5 Radar Waveform_8

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	72.2	6			339.056
2	3	70.6	6	1015	1978	119.546
3	1	77.2	6			61.224
4	3	61	6	1166	1744	651.931
5	1	63.3	6			491.119
6	1	52.9	6			718.836
7	2	98.2	6	1257		255.073
8	2	96.8	6	1617		583.19
9	1	77.3	6			494.437
10	2	95.9	6	1037		741.844
11	2	63.5	6	1756		22.161
12	3	82.7	6	1410	1204	31.489
13	1	90.8	6			402.886
14	2	76.6	6	1406		830.643

Type 5 Radar Waveform_9

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	73.9	18			151.006
2	2	50	18	1755		341.391
3	1	71.1	18			645.022
4	2	77.5	18	1770		403.683
5	3	61.5	18	1637	1907	587.094
6	3	82.4	18	1545	1544	597.285
7	1	72.5	18			1032.775
8	2	82.1	18	1988		940.236
9	1	62.3	18			239.807
10	2	74.6	18	1455		682.018
11	2	81	18	1142		156.309

Type 5 Radar Waveform_10

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	74.8	20	1266		282.76
2	2	96.6	20	1707		356.103
3	2	99.1	20	1861		171.467
4	3	77.9	20	1817	1349	617.03
5	1	75.7	20			265.343
6	2	62	20	1153		10.187
7	2	85.1	20	1492		239.27
8	3	52.8	20	1829	1238	129.023
9	2	66.6	20	1390		417.667
10	3	79.1	20	1629	1280	161.05
11	2	98.1	20	1307		331.643
12	2	55.8	20	1539		327.007
13	3	70.2	20	1168	1444	608.21
14	2	87.3	20	1867		579.123
15	3	95.7	20	1627	1189	365.427
16	2	52	20	1464		611.9
17	3	72.9	20	1534	1589	240.233
18	2	79.4	20	1880		657.967

Type 5 Radar Waveform_11

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	63.8	11	1466		601.282
2	2	87.6	11	1309		720.24
3	2	54.5	11	1905		640.25
4	2	57.2	11	1438		103.83
5	2	64.6	11	1173		311.67
6	1	77.5	11			380.32
7	2	50.3	11	1840		281.98
8	3	66.1	11	1649	1538	261.13
9	2	90	11	1937		680.28
10	2	75.8	11	1602		594.13
11	2	62.4	11	1977		216.99
12	3	96.9	11	1411	1158	404.75
13	3	54	11	1904	1254	715.7
14	2	62.8	11	1551		228.5
15	2	95.9	11	1202		429.2
16	2	81.3	11	1519		227.3

Type 5 Radar Waveform_12

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	3	97.9	6	1701	1975	206.054
2	2	85.2	6	1813		301.249
3	2	88.5	6	1530		214.22
4	1	80.2	6			424.4
5	2	61.8	6	1476		540.35
6	2	69.6	6	1134		382.94
7	1	98.3	6			100.51
8	2	83.8	6	1746		10.93
9	2	83.1	6	1520		274.59
10	1	76.2	6			247.63
11	3	96.5	6	1493	1224	258.17
12	2	51.4	6	1269		494.1
13	2	89.2	6	1222		374.53
14	1	98.3	6			550.92
15	3	73.6	6	1085	1621	248.65
16	1	65.7	6			115.73
17	2	84.9	6	1997		267.48
18	2	57.9	6	1460		481.6
19	2	96.8	6	1888		343.5
20	1	67.5	6			406.1

Type 5 Radar Waveform_13

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	3	95.2	10	1577	1194	0.198
2	3	73.5	10	1053	1414	425.011
3	2	78.2	10	1009		313.742
4	1	78.1	10			190.353
5	3	75.8	10	1808	1276	228.594
6	2	95.9	10	1173		530.395
7	2	64.3	10	1840		492.626
8	1	70	10			325.367
9	2	82.9	10	1736		439.578
10	1	56.3	10			185.759
11	2	92.8	10	1126		124.741
12	3	83.2	10	1265	1836	78.932
13	3	90.8	10	1490	1814	510.743
14	3	79.8	10	1488	1750	306.014
15	1	82.7	10			16.015
16	2	99.8	10	1373		551.716
17	2	66.9	10	1646		343.137
18	3	74.7	10	1160	1756	408.158
19	2	89.5	10	1496		505.079

Type 5 Radar Waveform_14

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	77	9	1182		719.697
2	3	67.5	9	1586	1499	382.11
3	1	79.4	9			233.77
4	2	99.8	9	1364		461.44
5	1	84.3	9			545.74
6	1	77	9			608.88
7	2	50	9	1670		580.19
8	3	72.2	9	1126	1324	146.86
9	2	97.5	9	1739		97.4
10	3	58.2	9	1290	1004	31.42
11	3	70.4	9	1413	1685	690.75
12	2	78.8	9	1743		462.7
13	3	60.7	9	1579	1063	36.56
14	2	70	9	1802		710
15	2	64.8	9	1138		579.3

Type 5 Radar Waveform_15

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	87.9	15	1386		554.584
2	1	70.6	15			460.917
3	1	52.1	15			420.454
4	2	80.4	15	1585		617.181
5	2	97.4	15	1618		179.659
6	1	50.7	15			104.976
7	2	82.9	15	1289		392.423
8	3	63.9	15	1980	1422	510.25
9	1	64.2	15			748.637
10	3	77	15	1948	1156	712.324
11	1	63.8	15			258.771
12	2	89.9	15	1730		849.029
13	3	97.4	15	1762	1419	84.186
14	2	72.1	15	1083		112.443

Type 5 Radar Waveform_16

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	92.2	10	1916		680.092
2	3	64.8	10	1370	1517	50.535
3	1	62.1	10			541.54
4	3	75.6	10	1832	1160	541.29
5	3	94.1	10	1187	1266	372.15
6	2	86.9	10	1363		240.4
7	2	57	10	1320		427.16
8	2	61.5	10	1131		124.76
9	2	77.2	10	1329		318.65
10	1	92.5	10			523.52
11	2	93.7	10	1695		529.47
12	3	57.5	10	1599	1944	725.63
13	2	92.1	10	1001		489.25
14	1	76.1	10			232.77
15	2	90.6	10	1488		536.8
16	1	80.4	10			681.9

Type 5 Radar Waveform_17

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	76.2	7			589.79
2	3	99.5	7	1363	1942	760.65
3	2	68.7	7	1963		633.83
4	2	73.8	7	1920		281.88
5	2	93.5	7	1128		430.97
6	3	76.3	7	1796	1219	446.14
7	2	78.2	7	1696		366.86
8	2	86.9	7	1767		557.43
9	3	63.9	7	1962	1926	575.56
10	3	63	7	1090	1563	19.06
11	2	66.8	7	1834		106.72
12	2	54.9	7	1724		503.45
13	2	81.7	7	1909		92.38
14	3	77	7	1986	1393	484.7
15	1	54.9	7			214.4

Type 5 Radar Waveform_18

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	88.8	19	1631		1284.5
2	1	63.1	19			1063.86
3	1	94.1	19			862.48
4	1	80.3	19			1356.25
5	1	71.1	19			820.57
6	3	73.9	19	1049	1320	170.69
7	3	61.2	19	1774	1797	223.21
8	2	93.8	19	1440		189.2

Type 5 Radar Waveform_19

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	92.2	18	1738		290.121
2	2	74.8	18	1625		439.278
3	2	86.6	18	1658		383.335
4	1	77.5	18			312.623
5	2	53.9	18	1382		626.941
6	1	63.1	18			206.568
7	2	61.3	18	1538		344.406
8	2	95.6	18	1176		80.654
9	3	98.3	18	1225	1042	78.171
10	1	58.4	18			434.379
11	2	83.2	18	1114		580.426
12	3	71.1	18	1854	1560	57.464
13	3	78.4	18	1505	1016	608.982
14	3	80.7	18	1154	1577	581.209
15	3	81.6	18	1852	1947	41.747
16	3	63.2	18	1262	1077	159.365
17	1	97.3	18			177.782

Type 5 Radar Waveform_20

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	99.5	17	1093		221.98
2	2	74.4	17	1878		530.29
3	1	96	17			495.46
4	2	67.1	17	1228		336.46
5	1	64	17			116.23
6	3	85.2	17	1425	1062	264.42
7	2	86	17	1313		551.63
8	2	69.3	17	1600		34.61
9	3	63	17	1850	1871	265.82
10	3	95.4	17	1469	1519	191.01
11	2	91.7	17	1831		133.57
12	1	55.9	17			149.14
13	2	61.8	17	1644		149.69
14	2	92.3	17	1099		136.56
15	2	58.9	17	1692		189.77
16	2	83.9	17	1976		276.07
17	1	81.2	17			367.26
18	2	51.5	17	1815		2.8
19	2	73.5	17	1204		486.2
20	3	59.9	17	1194	1416	289.8

Type 5 Radar Waveform_21

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	66.8	18			227.182
2	2	88.1	18	1708		232.674
3	2	95.1	18	1921		511.54
4	2	52	18	1484		292.96
5	3	99.5	18	1960	1489	163.1
6	2	81	18	1987		60.21
7	1	93.4	18			169.9
8	2	87.2	18	1975		507.51
9	3	70.8	18	1790	1248	361.45
10	2	73.2	18	1905		429.64
11	2	58.8	18	1654		374.93
12	2	91.6	18	1289		219.07
13	3	94.4	18	1076	1919	171.17
14	2	50.1	18	1694		125.21
15	2	56.7	18	1886		556.42
16	1	90.4	18			22.01
17	1	55.6	18			42.89
18	1	75.7	18			271.8
19	2	60.2	18	1733		466.1
20	3	84.8	18	1626	1205	401.9

Type 5 Radar Waveform_22

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	3	96.9	19	1349	1770	877.15
2	2	65.8	19	1060		110.327
3	3	70.3	19	1830	1606	1040.723
4	2	55.2	19	1044		562.33
5	2	97.7	19	1140		586.037
6	2	85.7	19	1664		683.923
7	2	83.3	19	1378		1132.44
8	2	59.9	19	1059		628.127
9	2	93.1	19	1253		284.533

Type 5 Radar Waveform_23

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	3	85.4	10	1991	1816	544.271
2	1	76.8	10			574.473
3	3	83.7	10	1513	1220	345.147
4	2	75.5	10	1920		61.77
5	2	75.8	10	1122		505.003
6	2	65.9	10	1011		369.907
7	1	64.5	10			245.5
8	2	62.4	10	1622		317.083
9	1	94.9	10			573.127
10	1	85.9	10			393.57
11	3	62.9	10	1694	1410	88.053
12	2	70.5	10	1215		417.837
13	2	75.9	10	1418		126.48
14	1	70.6	10			59.643
15	1	69.8	10			576.737
16	2	85.4	10	1841		24
17	2	73.5	10	1006		254.933
18	3	70	10	1174	1165	387.167

Type 5 Radar Waveform_24

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	56.5	19			452.906
2	1	84.1	19			998.841
3	2	71.7	19	1612		447.672
4	2	70.6	19	1312		856.623
5	3	99.8	19	1384	1850	572.384
6	2	53.6	19	1032		534.335
7	3	60.9	19	1893	1159	73.815
8	1	54.7	19			222.696
9	2	98.1	19	1652		958.947
10	2	76.4	19	1723		133.518
11	2	95.2	19	1225		537.309

Type 5 Radar Waveform_25

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	3	90.4	15	1970	1797	817.231
2	3	96.6	15	1832	1654	655.177
3	3	86	15	1922	1568	74.334
4	3	83.9	15	1152	1631	237.361
5	3	97	15	1388	1493	600.589
6	2	86.8	15	1055		465.326
7	1	55.9	15			504.803
8	2	91.2	15	1869		236.71
9	2	67.2	15	1396		360.377
10	1	78.3	15			267.884
11	3	72	15	1526	1370	740.161
12	1	81.5	15			589.429
13	3	50.8	15	1011	1077	281.086
14	2	66.1	15	1200		342.243

Type 5 Radar Waveform_26

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	80.9	13	1324		152.355
2	2	68.1	13	1706		593.061
3	3	71.8	13	1665	1224	316.452
4	1	61.8	13			339.653
5	3	97.3	13	1190	1170	70.914
6	2	82.5	13	1931		539.915
7	2	96.8	13	1996		504.406
8	1	86.5	13			215.767
9	2	57.6	13	1593		370.438
10	2	62.2	13	1742		172.729
11	3	59	13	1797	1872	124.471
12	2	99.6	13	1485		341.452
13	3	55.9	13	1260	1829	200.253
14	3	74.4	13	1348	1766	149.744
15	2	95.8	13	1427		424.625
16	2	60.8	13	1395		121.816
17	2	57.5	13	1289		229.737
18	2	64.3	13	1007		101.158
19	3	57	13	1079	1277	58.679

Type 5 Radar Waveform_27

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	79.6	11			498.111
2	2	86	11	1240		460.038
3	2	77.3	11	1868		10.785
4	2	70.4	11	1412		469.463
5	3	79.2	11	1518	1054	187.301
6	1	57.5	11			470.198
7	2	90.7	11	1869		442.506
8	2	88.6	11	1039		161.994
9	2	78.7	11	1513		579.381
10	3	74.2	11	1972	1756	91.789
11	2	81.6	11	1007		232.956
12	2	65.2	11	1648		160.664
13	2	57.3	11	1664		167.522
14	2	70.3	11	1054		479.109
15	3	74.4	11	1242	1157	361.147
16	1	86.5	11			288.865
17	2	97	11	1459		279.382

Type 5 Radar Waveform_28

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	98.9	8	1517		104.895
2	3	83.4	8	1209	1070	715.843
3	3	71.3	8	1355	1267	552.166
4	1	61.8	8			462.929
5	1	65.3	8			866.902
6	2	98	8	1309		143.465
7	2	73.3	8	1451		593.508
8	3	82.1	8	1921	1828	5.622
9	2	53.7	8	1438		595.785
10	1	72.9	8			712.218
11	2	70.7	8	1034		851.831
12	2	69.9	8	1349		797.554
13	2	97.6	8	1671		749.677

Type 5 Radar Waveform_29

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	99.2	9	1435		599.201
2	1	64.3	9			248.448
3	1	82.8	9			169.057
4	3	53.7	9	1745	1884	503.37
5	2	84.6	9	1387		504.513
6	2	69.1	9	1975		105.647
7	1	66.6	9			469.59
8	2	53.8	9	1125		164.403
9	3	73.9	9	1399	1543	610.827
10	1	87.7	9			20.41
11	3	57.4	9	1041	1280	458.423
12	1	97.4	9			530.467
13	3	75.3	9	1387	1347	619
14	1	66.4	9			343.723
15	1	74.3	9			232.067
16	3	95.6	9	1974	1366	471.8
17	2	51.4	9	1789		184.633
18	1	92.1	9			245.167

Type 5 Radar Waveform_30

Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	2	59.5	6	1217		105.115
2	3	51.5	6	1615	1362	429.021
3	3	93	6	1592	1288	99.962
4	3	67.8	6	1204	1011	110.853
5	2	68	6	1741		84.584
6	3	74.6	6	1644	1751	616.735
7	2	68.3	6	1907		554.816
8	3	91.1	6	1381	1903	434.047
9	1	57.9	6			488.648
10	1	84.1	6			488.949
11	2	64	6	1600		75.681
12	1	58.3	6			319.022
13	2	59.4	6	1275		279.643
14	2	64.5	6	1327		90.374
15	2	57.7	6	1574		242.855
16	1	94.6	6			240.046
17	2	87.9	6	1427		89.737
18	2	68.9	6	1863		76.958
19	2	77.1	6	1981		261.179

Radar Type 6 - Radar Statistical Performance

Trail #	1=Detection 0=No Detection	Trail #	1=Detection 0=No Detection
1	1	16	1
2	1	17	1
3	1	18	1
4	1	19	1
5	1	20	1
6	1	21	1
7	1	22	1
8	1	23	1
9	1	24	1
10	1	25	1
11	1	26	1
12	1	27	1
13	1	28	1
14	1	29	1
15	1	30	1
Detection Percentage (%)			100%

Radar waveform #1			Radar waveform #2		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
7	5294	21	6	5301	18
15	5296	45	30	5306	90
39	5305	117	31	5300	93
55	5310	165	32	5299	96
--	--	--	35	5304	105
--	--	--	62	5302	186
--	--	--	99	5290	297

Radar waveform #3			Radar waveform #4		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
8	5304	24	10	5295	30
48	5294	144	13	5294	39
65	5299	195	23	5304	69
68	5295	204	49	5306	147

Radar waveform #5			Radar waveform #6		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
23	5290	69	5	5294	15
31	5299	93	14	5298	42
42	5294	126	15	5293	45
92	5298	276	54	5300	162
--	--	--	68	5292	204

Radar waveform #7			Radar waveform #8		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
13	5300	39	4	5305	12
17	5290	51	6	5308	18
38	5294	114	37	5295	111
77	5303	231	49	5301	147
93	5308	279	55	5296	165
--	--	--	66	5299	198

Radar waveform #9			Radar waveform #10		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5294	3	39	5306	117
24	5303	72	42	5308	126
27	5309	81	61	5294	183
31	5291	93	78	5291	234
75	5295	225	91	5299	273

Radar waveform #11			Radar waveform #12		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Frequency (MHz)	Hopping Number	Pulse Start (ms)
3	5307	9	30	5292	90
6	5310	18	39	5295	117
68	5509	204	60	5297	180
82	5513	246	79	5290	237
--	--	--	91	5296	273
--	--	--	94	5309	282

Radar waveform #13			Radar waveform #14		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
24	5297	72	1	5296	3
64	5291	192	21	5300	63
80	5292	240	26	5303	78
88	5309	264	68	5290	204
100	5305	300	--	--	--

Radar waveform #15			Radar waveform #16		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
1	5306	3	30	5292	90
6	5294	18	68	5297	204
24	5292	72	100	5309	300
42	5307	126	--	--	--
73	5298	219	--	--	--
83	5308	249	--	--	--

Radar waveform #17			Radar waveform #18		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
7	5298	21	28	5308	84
26	5297	78	37	5307	111
84	5310	252	58	5298	174
--	--	--	72	5294	216
--	--	--	92	5306	276

Radar waveform #19			Radar waveform #20		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
11	5297	33	51	5302	153
52	5302	156	87	5299	261
78	5310	234	--	--	--

Radar waveform #21			Radar waveform #22		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
4	5290	12	2	5301	6
15	5297	45	64	5290	192
27	5295	81	73	5291	219
47	5306	141	78	5303	234
54	5305	162	83	5295	249
73	5292	219	--	--	--
90	5300	270	--	--	--
97	5299	291	--	--	--

Radar waveform #23			Radar waveform #24		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
11	5310	33	3	5297	9
52	5294	156	75	5296	225
56	5300	168	95	5306	285
77	5293	231	--	--	--
87	5302	261	--	--	--

Radar waveform #25			Radar waveform #26		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
69	5306	207	30	5299	90
89	5291	267	38	5306	114
--	--	--	45	5296	135
			52	5303	156
			81	5310	243
--	--	--	96	5301	288

Radar waveform #27			Radar waveform #28		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
4	5294	12	24	5300	72
27	5297	81	31	5302	93
34	5300	102	43	5303	129
82	5303	246	76	5294	228
--	--	--	96	5298	288

Radar waveform #29			Radar waveform #30		
Hopping Number	Frequency (MHz)	Pulse Start (ms)	Hopping Number	Frequency (MHz)	Pulse Start (ms)
10	5296	30	2	5307	6
64	5305	192	9	5303	27
86	5304	258	28	5305	84
94	5310	282	57	5302	171
--	--	--	61	5290	183
--	--	--	92	5297	276



Product	AC1200 Wi-Fi Range Extender	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2021/04/08
Test Item	Radar Statistical Performance Check (802.11ac-VHT40 mode – 5510MHz) – Mode 2		

Radar Type 1 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491	1	838	63	1
2	5492	1	758	70	1
3	5494	1	918	58	1
4	5495	1	778	68	1
5	5524	1	578	92	1
6	5498	1	658	81	1
7	5499	1	798	67	1
8	5500	1	598	89	1
9	5501	1	938	57	1
10	5496	1	738	72	1
11	5504	1	678	78	1
12	5505	1	558	95	1
13	5507	1	818	65	1
14	5511	1	618	86	1
15	5509	1	898	59	1
16	5510	1	2763	20	1
17	5514	1	1234	43	1
18	5519	1	1696	32	1
19	5529	1	2882	19	1
20	5515	1	1475	36	1
21	5517	1	1374	39	1
22	5518	1	1318	40	1
23	5503	1	2756	20	1
24	5520	1	2050	26	1
25	5522	1	2810	19	1
26	5523	1	2488	22	1



Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
27	5513	1	2833	19	1
28	5526	1	2262	24	1
29	5527	1	2606	21	1
30	5508	1	685	77	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	5491	1.7	176	28	1
2	5492	1.9	185	27	1
3	5494	3.9	212	25	0
4	5495	2.5	159	25	1
5	5524	4.3	229	25	1
6	5498	1.5	227	24	1
7	5499	2.5	186	23	1
8	5500	3.2	185	27	1
9	5501	4.4	173	25	0
10	5496	4.0	221	25	1
11	5504	4.3	208	27	1
12	5505	3.2	164	28	1
13	5507	3.8	179	23	1
14	5511	4.3	193	25	1
15	5509	2.6	222	24	1
16	5510	4.3	150	24	1
17	5514	4.6	210	26	1
18	5519	2.9	218	26	1
19	5529	2.7	183	26	1
20	5515	3.2	220	27	0
21	5517	3.1	179	27	0
22	5518	4.2	159	28	1
23	5503	1.0	194	24	1
24	5520	3.0	192	29	1
25	5522	1.8	205	27	1
26	5523	2.4	205	26	1
27	5513	2.5	160	24	1
28	5526	3.8	201	24	0
29	5527	4.3	196	25	1
30	5508	4.1	201	26	0
Detection Percentage (%)					80%

Radar Type 3 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491	9.7	271	16	1
2	5492	6.0	213	18	1
3	5494	7.5	378	16	1
4	5495	8.5	286	16	1
5	5524	9.1	463	16	1
6	5498	6.4	258	18	1
7	5499	7.2	400	16	1
8	5500	8.7	261	17	1
9	5501	9.0	432	18	1
10	5496	6.5	435	17	1
11	5504	7.4	477	18	1
12	5505	9.9	236	17	1
13	5507	8.5	354	16	1
14	5511	7.4	376	18	1
15	5509	7.8	329	16	1
16	5510	8.0	281	17	1
17	5514	6.4	356	18	1
18	5519	7.1	220	17	1
19	5529	7.3	246	18	0
20	5515	6.6	381	17	1
21	5517	8.3	486	18	1
22	5518	6.6	397	17	1
23	5503	9.5	391	17	1
24	5520	6.0	248	17	1
25	5522	7.4	274	16	1
26	5523	7.2	455	17	0
27	5513	6.4	407	17	1
28	5526	6.7	255	17	1
29	5527	6.5	493	18	1
30	5508	7.4	328	18	1
Detection Percentage (%)					93.3%

Radar Type 4 - Radar Statistical Performance

Trail #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5491	15.9	297	15	1
2	5492	13.6	257	14	1
3	5494	11.5	341	13	0
4	5495	18.5	457	14	1
5	5524	11.9	324	14	0
6	5498	19.9	240	13	1
7	5499	17.1	391	12	1
8	5500	15.1	288	13	1
9	5501	15.0	441	16	1
10	5496	13.4	462	15	1
11	5504	13.2	352	14	1
12	5505	17.3	264	16	0
13	5507	14.4	220	15	1
14	5511	14.2	437	12	1
15	5509	19.3	399	12	0
16	5510	18.3	321	15	0
17	5514	15.7	255	13	1
18	5519	14.8	398	14	1
19	5529	19.4	304	14	1
20	5515	16.1	364	12	0
21	5517	15.3	454	12	1
22	5518	15.0	484	14	0
23	5503	12.1	244	16	1
24	5520	14.6	283	15	1
25	5522	14.7	442	14	1
26	5523	19.6	469	14	1
27	5513	19.5	399	13	1
28	5526	14.9	447	16	1
29	5527	19.6	476	14	1
30	5508	18.1	392	12	1
Detection Percentage (%)					76.7%

Note: In addition an average minimum percentage of successful detection across all four Short pulse radar test

waveforms is as follows: $\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4} = (100\% + 80\% + 93.3\% + 76.7\%) / 4 = 87.5\% (>80\%)$

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	5510.0	1	5496.2	5494.6	1
2	5510.0	1	5497.4	5495.8	1
3	5510.0	1	5499.0	5495.4	1
4	5510.0	1	5498.2	5496.2	1
5	5510.0	1	5494.6	5494.6	1
6	5510.0	1	5526.2	5521.8	1
7	5510.0	1	5524.6	5526.6	1
8	5510.0	1	5526.2	5521.8	1
9	5510.0	1	5523.8	5524.2	1
10	5510.0	1	5523.8	5526.6	1
11	5497.0	1	5525.0	5521.0	1
12	5494.2	1	5523.0	5522.6	1
13	5498.6	1	5524.2	5524.2	1
14	5496.6	1	5526.2	5523.0	1
15	5495.4	1	5525.8	5526.6	1
Detection Percentage (%)					100%

Type 5 Radar Waveform_1						
Burst	Number of Pulses	Pulse Width (μsec)	Chirp Width (MHz)	Pulse 1-to-2 PRI (μsec)	Pulse 2-to-3 PRI (μsec)	Start Location Within Interval (msec)
1	1	58.2	11			732.195
2	2	74.3	11	1369		778.85
3	1	54.8	11			285.05
4	2	51.3	11	1651		150.47
5	3	71.7	11	1849	1482	658.31
6	3	58.6	11	1708	1930	299.58
7	2	76.1	11	1839		257.98
8	2	62.2	11	1568		127.21
9	2	77.4	11	1290		787.6
10	1	76.3	11			17.22
11	2	69.3	11	1527		774.75
12	2	76.8	11	1600		532.28
13	2	54.5	11	1365		666.3
14	1	52.8	11			237.7
15	1	71.4	11			661.6