DYNAMIC FREQUENCY SELECTION DFS Test Report

APPLICANT : Plume Design Inc
EQUIPMENT : Plume Adaptive Wifi

BRAND NAME : Plume Design Inc

MODEL NAME : B1A

FCC ID : 2AG7G-B1A

STANDARD : FCC Part 15 Subpart E

CLASSIFICATION: (NII) Unlicensed National Information Infrastructure

The product was received on Jan. 17, 2018 and completely tested on Feb. 06, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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Report Issued Date : Jun. 01, 2018

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Report No. : FZ811726

Report Version : Rev. 03

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FZ811726	Rev. 01	Initial issue of report	Apr. 02, 2018
FZ811726	Rev. 02	Revising antenna information.	May 10, 2018
FZ811726	Rev. 03	Adding radar test waveform test data in Appendix b.	Jun. 01, 2018

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SUMMARY OF DYNAMIC FREQUENCY SELECTION TEST

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

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1 General Description

1.1 Applicant

Plume Design Inc

290 S California Ave, Palo Alto, CA94306

1.2 Manufacturer

Plume Design Inc

290 S California Ave, Palo Alto, CA94306

1.3 Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, and Wi-Fi 5GHz 802.11a/n/ac

Product specification subjective to this standard					
• • • • • • • • • • • • • • • • • • • •					
	WLAN				
	<for ant.="" lb=""></for>				
	<ant. 1="">: IFA Antenna</ant.>				
	<ant. 2="">: IFA Antenna</ant.>				
Antenna Type	<for ant.="" hb=""></for>				
Antenna Type	<ant. 1="">: PIFA Antenna</ant.>				
	<ant. 2="">: PIFA Antenna</ant.>				
	<ant. 3="">: IFA Antenna</ant.>				
	<ant. 4="">: IFA Antenna</ant.>				
	Bluetooth: Slot Antenna				

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.
	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,
Test Site Location	Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL: +886-3-3273456 / FAX: +886-3-3284978
Test Site No.	Sporton Site No.
rest Site No.	DFS02-HY

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1.5 Applied Standards

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

- FCC Part 15 Subpart E
- FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
- FCC KDB 905462 D04 Operational Modes for DFS Testing New Rules v01

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

1.6 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID
1.	Notebook	Lenovo	Edge E335	PPD-AR5B95
2.	WLAN Dongle	CISCO	AE6000	Q87-AE6000

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2 Requirements and Parameters for DFS Test

2.1 Applicability of DFS Requirements

EUT is considered as a master device.

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

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

Table 2: Applicability of DFS requirements during normal operation

	Operational Mode			
Paguirament		Client	Client	
Requirement	Master	Without Radar	With Radar	
		Detection	Detection	
DFS Detection Threshold	Yes	Not required	Yes	
Channel Closing Transmission Time	Yes	Yes	Yes	
Channel Move Time	Yes	Yes	Yes	
U-NII Detection Bandwidth	Yes	Not required	Yes	
Client Beacon Test	N/A	Yes	Yes	

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	Operational Mode		
Additional requirements for devices with multiple bandwidth modes	Master or Client With Radar Detection	Client Without Radar Detection	
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required	
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link	
All other tests	Any single BW mode	Not required	

Note

Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

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2.2 DFS Detection Thresholds

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

Table 3: DFS Detection Thresholds for Master Devices

Maximum Transmit Power	Value (see notes 1, 2, and 3)	
EIRP ≥ 200 milliwatt	-64 dBm	
EIRP < 200 milliwatt and	CO AD	
power spectral density < 10 dBm/MHz	-62 dBm	
EIRP < 200 milliwatt that do not meet the power	64 dPm	
spectral density requirement	-64 dBm	

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

The radar Detection Threshold, lowest antenna gain is the parameter of Interference radar DFS detection threshold, The Interference Detection Threshold is the (-64dBm) + (6.78) [dBi]+ 1 dB= -56.22 dBm.

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2.3 DFS Response requirement values

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

Table 4: DFS Response Requirement Values

Parameter	Value	
Non-occupancy period	Minimum 30 minutes	
Channel Availability Check Time	60 seconds	
Channel Move Time	10 seconds See Note 1.	
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over	
	remaining 10 second period. See Notes 1 and 2.	
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth See Note 3.	

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

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2.4 Short Pulse Radar Test Waveforms

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

Radar Type	Pulse Width (µsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1.	See Note 1.
1	1	Test A Test B	Roundup $ \begin{bmatrix} \left(\frac{1}{360}\right). \\ \left(\frac{19 \cdot 10^6}{PRI_{\mu see}}\right) \end{bmatrix} $	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggrega	ite (Radar Ty	rpes 1-4)	80%	120	

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

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

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

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

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

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Table 5a - Pulse Repetition Intervals Values for Test A

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

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2.5 Long Pulse Radar Test Waveform

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

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

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

- (1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- (2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
- (3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- (4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- (5) 5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a **transmission period** will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz
- (6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
- (7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

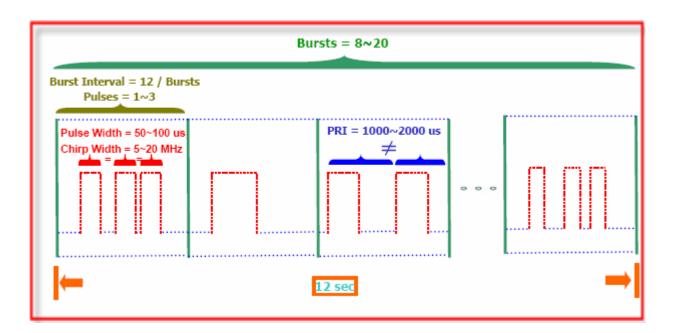
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A representative example of a Long Pulse radar test waveform:

- (1) The total test signal length is 12 seconds.
- (2) 8 Bursts are randomly generated for the Burst_Count.
- (3) Burst 1 has 2 randomly generated pulses.
- (4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
- (5) The PRI is randomly selected to be at 1213 microseconds.
- (6) Bursts 2 through 8 are generated using steps 3 5.
- (7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).



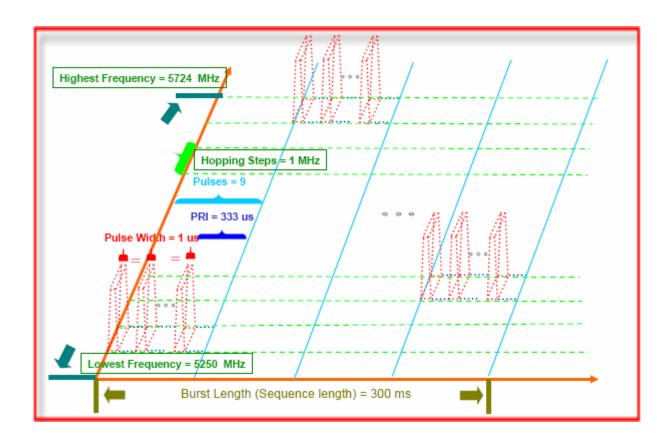
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2.6 Frequency Hopping Radar Test Waveform

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

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

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



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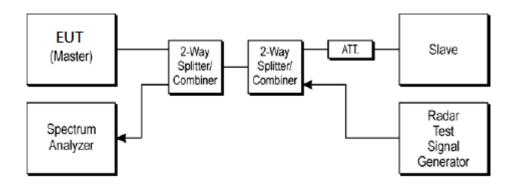
3 Calibration Setup and DFS Test Results

3.1 Calibration of Radar Waveform

3.1.1 Radar Waveform Calibration Procedure

The Interference Radar Detection Threshold Level is (-64) + (6.78) [dBi] + 1dB = -56.22 dBm that had been taken into account the output power range and antenna gain. The following equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for radar type 0~6. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz to measure the radar waveform. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was (-64dBm) + (6.78) [dBi]+ 1 dB= -56.22 dBm. Capture the spectrum analyzer plots on radar waveform.

3.1.2 Conducted Calibration Setup



3.1.3 Calibration Deviation

There is no deviation with the original standard.

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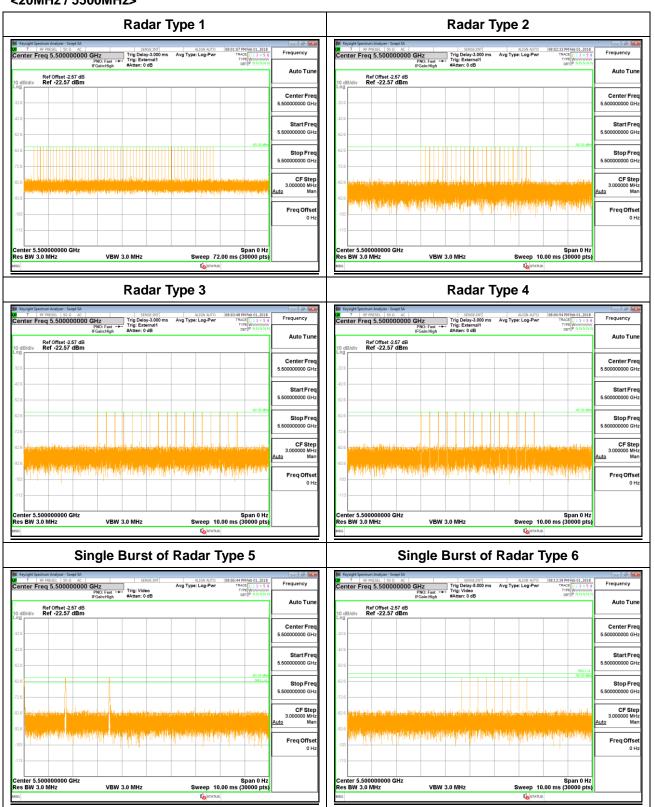
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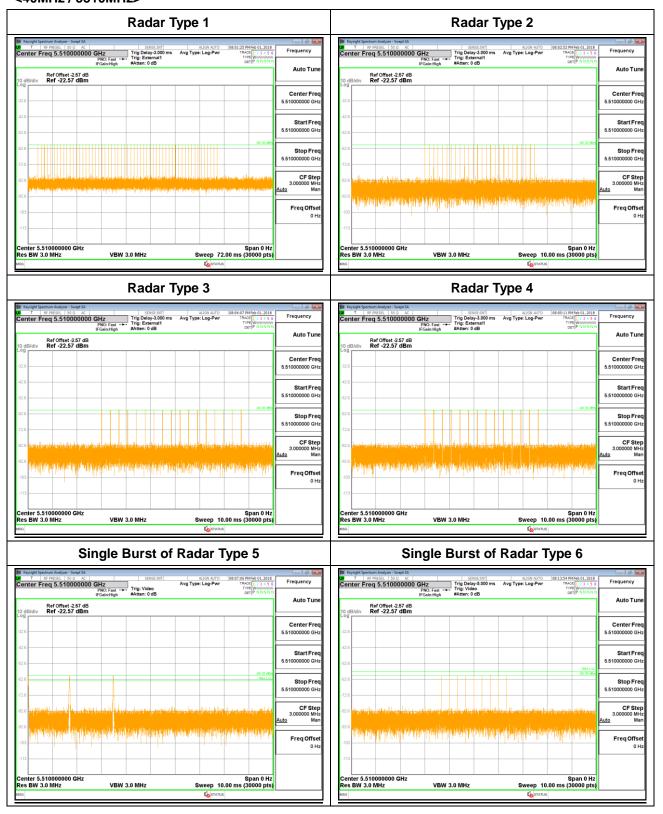
3.1.4 Radar Waveform Calibration Result

<20MHz / 5500MHz>



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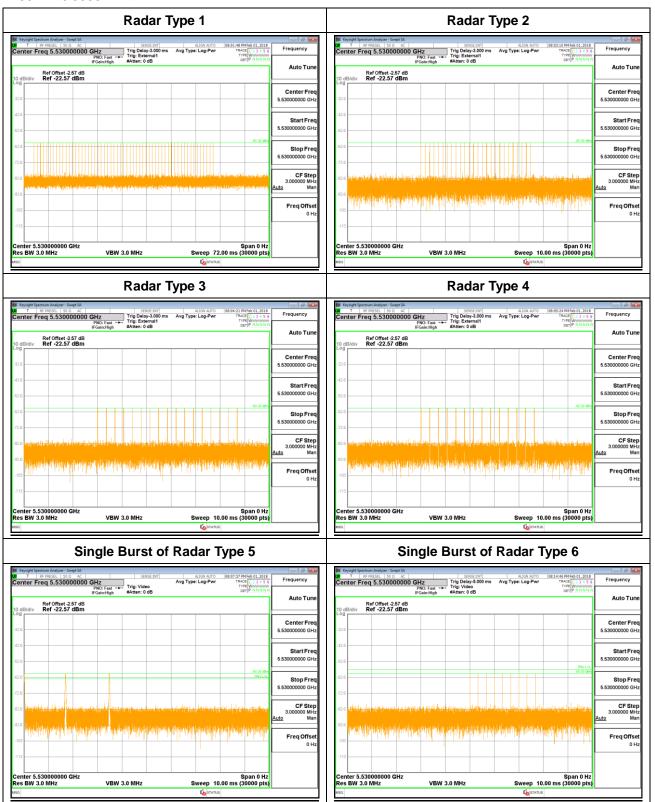
<40MHz / 5510MHz>



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<80MHz / 5530MHz>



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U-NII Detection Bandwidth (7.8.1)

3.1.5 Limit of U-NII Detection Bandwidth

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

During the U-NII Detection Bandwidth detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

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3.1.6 Test Procedures

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

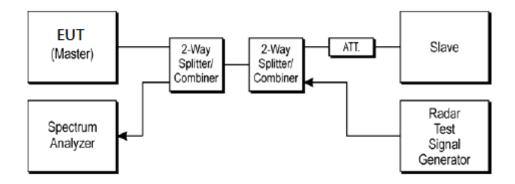
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3.1.7 Test Setup



3.1.8 Test Deviation

There is no deviation with the original standard.

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3.1.9 Result of U-NII Detection Bandwidth

<20MHz / 5500MHz>

Frequency	F.		Tria	al Num	ber (De	etectio	n = V, N	lo Dete	ection :	= N)		Rate	- /-
(MHz)	Fc	1	2	3	4	5	6	7	8	9	10	(%)	F _H /F _L
5489	-11	N	N	N	N	N	N	N	N	N	N	0%	
5490	-10	٧	V	V	٧	٧	٧	٧	٧	٧	٧	100%	FL
5491	-9	V	V	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5492	-8	V	V	V	٧	٧	V	V	٧	V	٧	100%	
5493	-7	٧	V	V	٧	٧	٧	٧	٧	٧	٧	100%	
5494	-6	٧	V	V	٧	٧	V	V	٧	V	٧	100%	
5495	-5	V	V	V	٧	٧	V	V	٧	V	٧	100%	
5500	0	٧	V	V	٧	٧	٧	V	٧	٧	٧	100%	
5505	+5	٧	V	V	٧	٧	V	V	٧	V	٧	100%	
5506	+6	V	V	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5507	+7	٧	V	V	٧	٧	٧	٧	٧	٧	٧	100%	
5508	+8	V	V	V	٧	٧	V	V	٧	V	٧	100%	
5509	+9	V	V	V	V	V	V	V	V	V	V	100%	
5510	+10	٧	V	V	٧	٧	V	V	٧	V	٧	100%	F _H
5511	+11	N	N	N	N	N	N	N	N	N	N	0%	

Detection Bandwidth = $F_H - F_L = 5510 - 5490 = 19$ MHz

EUT 99% Bandwidth = 18.573MHz (Refer to channel 100)

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<40MHz / 5510MHz>

Frequency	F.		Trial Number (Detection = V, No Detection = N)									Rate	- <i>/</i> -
(MHz)	Fc	1	2	3	4	5	6	7	8	9	10	(%)	F _H /F _L
5489	-21	N	N	N	N	N	N	N	N	N	N	0%	
5490	-20	٧	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	F∟
5491	-19	V	٧	٧	٧	٧	٧	V	٧	٧	٧	100%	
5492	-18	٧	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5493	-17	V	٧	٧	٧	٧	٧	V	٧	٧	٧	100%	
5494	-16	٧	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5495	-15	V	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5500	-10	V	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5505	-5	V	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5510	0	V	V	٧	٧	٧	٧	V	٧	٧	٧	100%	
5515	+5	V	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5520	+10	٧	V	٧	٧	٧	٧	V	٧	٧	٧	100%	
5525	+15	V	٧	٧	٧	٧	٧	٧	٧	٧	٧	100%	
5526	+16	٧	V	٧	٧	٧	٧	V	٧	٧	٧	100%	
5527	+17	V	٧	٧	٧	٧	٧	V	٧	٧	٧	100%	
5528	+18	V	V	V	٧	٧	٧	V	V	٧	V	100%	
5529	+19	V	V	V	V	٧	٧	V	V	٧	V	100%	
5530	+20	V	V	٧	٧	٧	٧	V	٧	٧	٧	100%	F _H
5531	-21	N	N	N	N	N	N	N	N	N	N	0%	

Detection Bandwidth = $F_H - F_L = 5530 - 5490 = 40 \text{ MHz}$

EUT 99% Bandwidth = **36.802** MHz (Refer to channel 102)

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<80MHz / 5530MHz>

Frequency	_		Trial Number (Detection = V, No Detection = N)								Rate		
(MHz)	Fc	1	2	3	4	5	6	7	8	9	10	(%)	F _H /F _L
5489	-41	N	N	N	N	N	N	N	N	N	N	0%	
5490	-40	V	V	V	V	V	٧	٧	٧	٧	٧	100%	FL
5491	-39	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5492	-38	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5493	-37	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5494	-36	V	V	V	V	V	٧	٧	٧	٧	V	100%	
5495	-35	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5500	-30	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5505	-25	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5510	-20	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5515	-15	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5520	-10	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5525	-5	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5530	0	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5535	+5	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5540	+10	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5545	+15	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5550	+20	V	V	V	V	V	٧	٧	٧	٧	V	100%	
5555	+25	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5560	+30	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5565	+35	V	V	V	V	V	٧	٧	٧	٧	٧	100%	
5566	+36	V	V	V	V	V	٧	٧	V	٧	٧	100%	
5567	+37	V	V	V	V	V	٧	٧	V	٧	٧	100%	
5568	+38	V	V	V	V	V	٧	٧	V	٧	٧	100%	
5569	+39	V	V	V	V	V	٧	٧	V	٧	٧	100%	
5570	+40	V	V	V	V	V	V	V	V	٧	٧	100%	F _H
5571	+41	N	N	N	N	N	N	N	N	N	N	0%	

Detection Bandwidth = $F_H - F_L = 5570 - 5490 = 80$ MHz EUT 99% Bandwidth = **75.064** MHz (Refer to channel 106)

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3.2 Channel Availability Check (7.8.2)

3.2.1 Limit of Channel Availability Check

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

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3.2.2 Test Procedures

3.3.2.1 Initial Channel Availability Check Time

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

- (1) The U-NII devices will be powered on and be instructed to operate on the appropriate U-NII Channel that must incorporate DFS functions. At the same time the EUT is powered on, the spectrum analyzer will be set to zero span mode with a 3 MHz RBW and 3 MHz VBW on the Channel occupied by the radar (Chr) with 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.

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

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

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

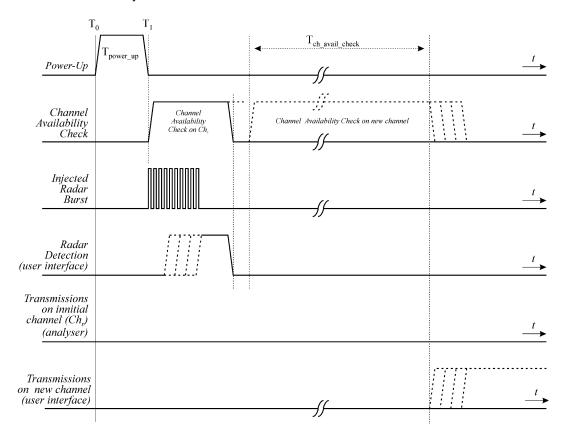


Figure 15: Example of timing for radar testing at the beginning of the Channel Availability Check Time

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

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

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

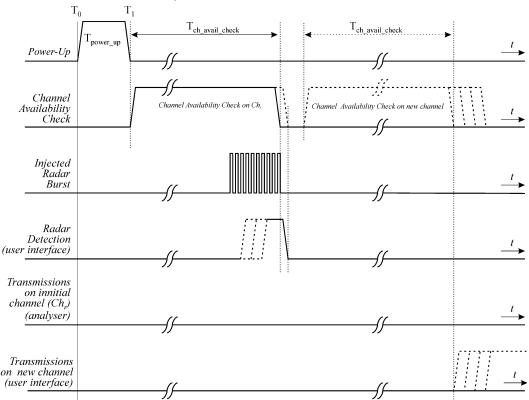


Figure 16: Example of timing for radar testing towards the end of the Channel Availability Check Time

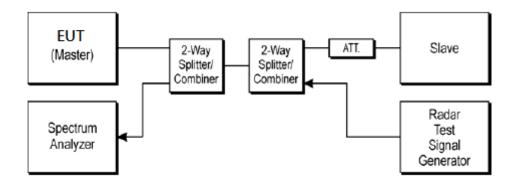
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3.2.3 Test Setup



3.2.4 Test Deviation

There is no deviation with the original standard.

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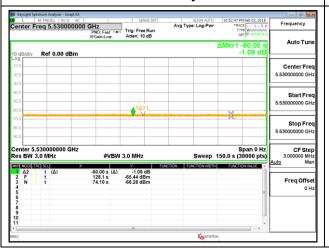
3.2.5 Result of Channel Availability Check Time

<80MHz / 5530MHz>

EUT Power up and Initial Channel Availability Check Time



Radar Burst at the Beginning of the Channel Availability Check Time



Radar Burst at the End of the Channel Availability Check Time

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3.3 In-Service Monitoring: Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period (7.8.3)

3.3.1 Limit of In-Service Monitoring

The EUT has In-Service Monitoring function to continuously monitor the radar signals, If radar is detected, it must leave the channel (Shutdown). The Channel Move Time to cease all transmissions on the current Channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec. The total duration of Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate Channel changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

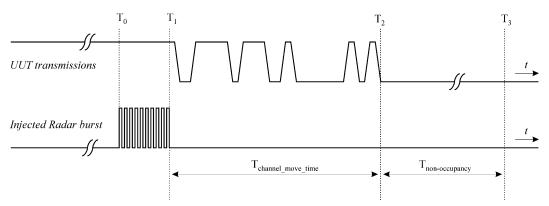
Non-Occupancy Period time is 30 minute during which a Channel will not be utilized after a Radar Waveform is detected on that Channel.

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3.3.2 Test Procedures

- (1) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.
- (2) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
- (3) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
- (4) Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).
- (5) At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- (6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.
- (7) When operating as a Master Device, monitor the EUT for more than 30 minutes following instant T2 to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.



- (8) One 12 seconds plot is reported for the Short Pulse Radar Type 0.
- (9) Measurement of the aggregate duration of the Channel Closing Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.4ms)= S (12000ms) / B (30000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is the sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.4 ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

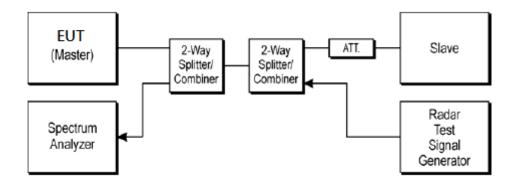
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3.3.3 Test Setup



3.3.4 Test Deviation

There is no deviation with the original standard.

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

Test Mode :	Master	Temperature :	24.3-25.2 ℃
Test Engineer :	AnAn Wu	Relative Humidity :	44-47%

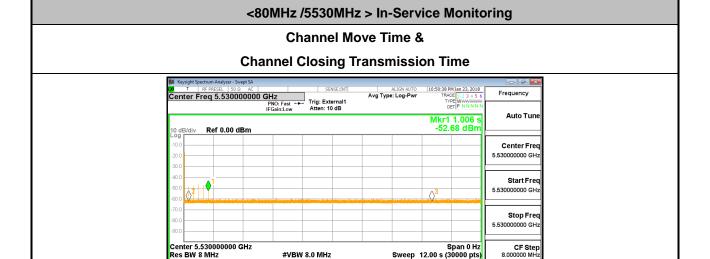
BW / Channel	Test Item	Test Result	Limit	Pass/Fail	
	Channel Move Time	1.006 s	< 10s	Pass	
90MU- /5520MU-	Channel Clasing Transmission Time	200ms +	< 260ms	Page	
80MHz /5530MHz	Channel Closing Transmission Time	3.2 ms	< 200111S	Pass	
	Non-Occupancy Period	≥ 30	≥ 30 min	Pass	

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

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



Non-Occupancy Period



Note:

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

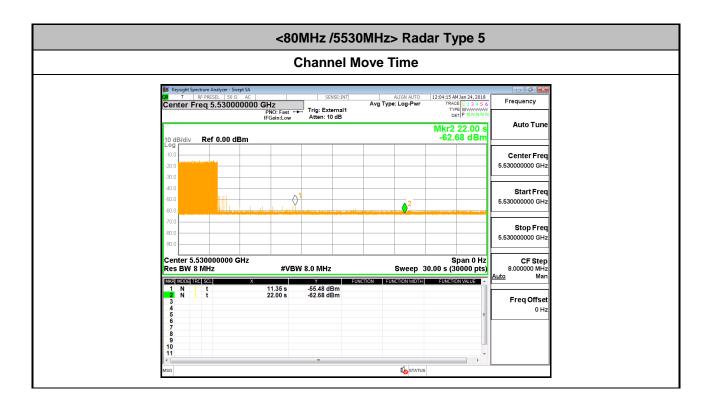
Channel Closing Transmission Time (200 + 3.2 ms) = 200 + Number (8) X Dwell (0.4 ms) < 260ms

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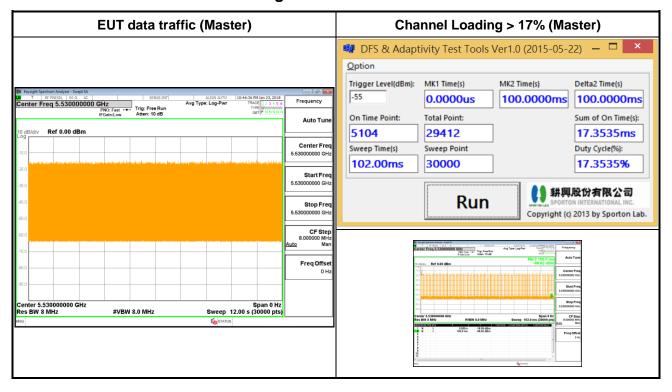
Freq Offset

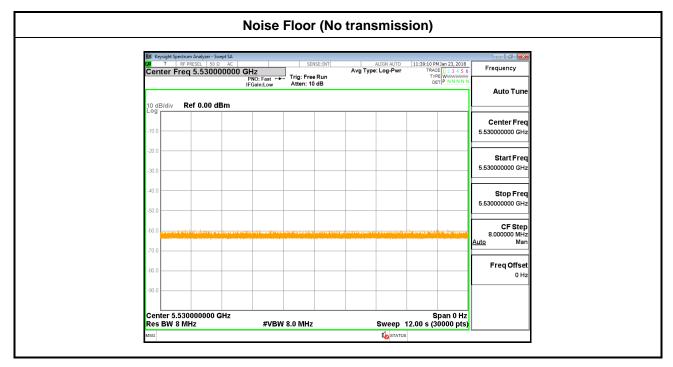
3.3.7 Long Pulsed Radar Type Channel Move Time Test Plots (22second)



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3.3.8 Data Traffic Channel Loading and Noise Floor Plots





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3.4 Statistical Performance Check (7.8.4)

3.4.1 Limit of Statistical Performance Check

Short Pulse Radar Test

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

$$\frac{\textit{TotalWaveformDetections}}{\textit{TotalWaveformTrials}} \times 100 \ = \text{Percentage of Successful Detection } \\ \textit{Radar Waveform} \, \text{N} = \text{P}_{\text{d}} \text{N}$$

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

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

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

Radar Type Pulse Width PRI Number Minimum Minimum of Pulses Percentage of Number of (µsec) (µsec) Trials Successful Detection 1 1428 18 60% 30 1 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

Table 5 - Short Pulse Radar Test Waveforms

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 1 through 4. For Short Pulse Radar Type 0, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for Short Pulse Radar Types 1 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

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Radar Type	Number of Trials	Number of Successful	Minimum Percentage
		Detections	of Successful
			Detection
1	35	29	82.9%
2	30	18	60%
3	30	27	90%
4	50	44	88%

Aggregate (82.9% + 60% + 90% + 88%)/4 = 80.2%

Test Characteristics for each radar Please refer to Appendix B

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Long Pulse Radar Test

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

Table 6 - Long Pulse Radar Test Waveform

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

Test Characteristics for each radar Please refer to Appendix B

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

Three subsets of trials will be performed with a minimum of ten trials per subset.

The subset of trials differs in where the Long Pulse Type 5 Signal is tuned in frequency:

- a) The Channel center frequency (subset case 1).
- b) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth (subset case 2).
- c) Tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth (subset case 3).

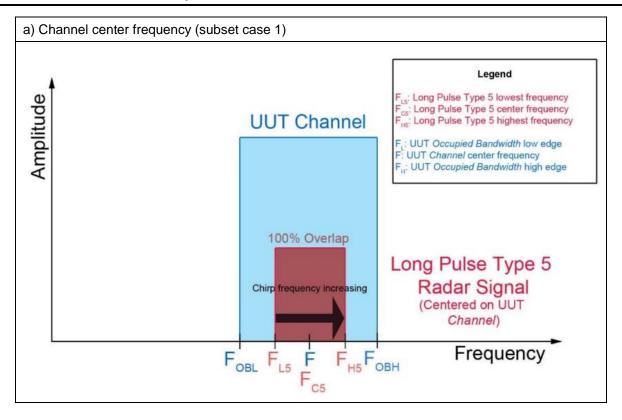
For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel.

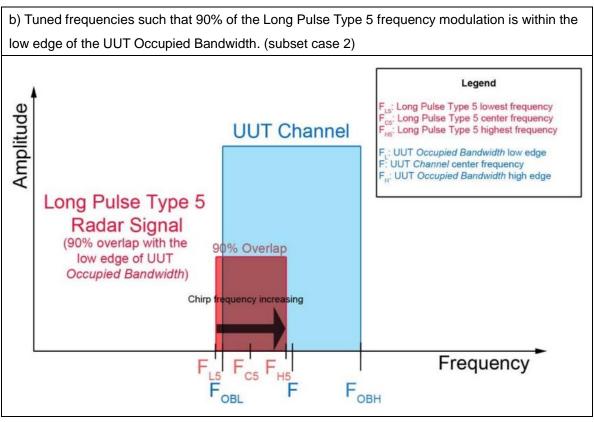
For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by: FL + (0.4 * Chirp Width [in MHz]) For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by: FH - (0.4 * Chirp Width [in MHz])

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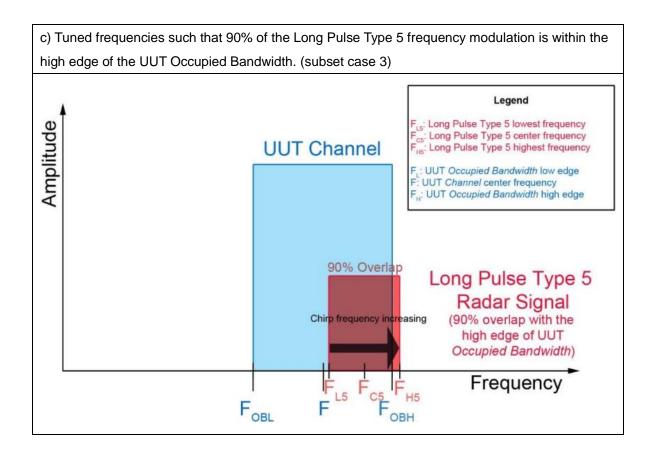
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The percentage of successful detection is calculated by:

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

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Frequency Hopping Radar Test

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

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

Table 7 - Frequency Hopping Radar Test Waveform

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

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

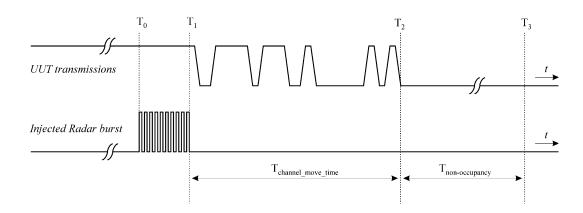
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues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

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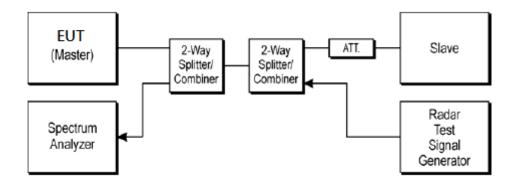
3.4.2 Test Procedures

- (1) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands.
- (2) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
- (3) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
- (4) At time T0 the Radar Waveform generator sends a Burst of pulses for each of the Radar Types 1-6 at DFS Detection Threshold levels on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- (5) Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 10 seconds for Short Pulse Radar Types 1-4 and 6 to ensure detection occurs.
- (6) Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs.



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3.4.3 Test Setup



3.4.4 Test Deviation

There is no deviation with the original standard.

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3.4.5 Result of Statistical Performance Check

<20MHz / 5500MHz >

20111127 33001411122		(Detection =	Y, No Detection	on = N)		
Trial Number	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
1	Υ	Υ	Υ	Υ	Υ	Υ
2	Υ	Υ	Υ	Υ	Υ	Y
3	Υ	Υ	Υ	Υ	Υ	Y
4	Υ	Υ	Υ	Υ	Υ	Y
5	Υ	Υ	Υ	Υ	Υ	Y
6	Υ	Υ	Υ	Υ	Υ	Y
7	Υ	Υ	Υ	Υ	Υ	Υ
8	Υ	Υ	Υ	Υ	Υ	Y
9	Υ	Υ	Υ	Υ	Υ	Υ
10	Υ	Υ	Υ	Υ	Y	Y
11	Υ	Υ	Υ	Υ	Υ	Υ
12	Υ	Υ	Υ	Υ	Υ	Υ
13	Υ	Υ	Υ	Υ	Υ	Υ
14	Υ	Υ	Υ	Υ	Υ	Υ
15	Υ	Υ	Υ	Υ	Υ	Υ
16	Υ	Υ	Υ	Υ	Υ	Υ
17	Υ	Υ	Υ	Υ	Υ	Υ
18	Υ	Υ	Υ	Υ	Υ	Υ
19	Υ	Υ	Υ	Υ	Υ	Υ
20	Υ	Υ	Υ	Υ	Υ	Υ
21	Υ	Υ	Υ	Υ	Υ	Υ
22	Υ	Υ	Υ	Υ	Υ	Υ
23	Υ	Υ	Υ	Υ	Υ	Υ
24	Υ	Υ	Υ	Υ	Υ	Υ
25	Υ	Υ	Υ	Υ	Υ	Υ
26	Υ	Υ	Υ	Υ	Υ	Y
27	Υ	Υ	Υ	Υ	Υ	Y
28	Υ	Y	Υ	Υ	Y	Y
29	Υ	Y	Y	Υ	Y	Y
30	Υ	Y	Y	Υ	Y	Y
Trial of Detection	30/30	30/30	30/30	30/30	30/30	30/30
Probability (%)	100%	100%	100%	100%	100%	100%
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probabili	ity of Radar Ty	ype 1~4 (%)	100% (>=80%)		

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<40MHz / 5510MHz >

4000127331000122		(Detection =	Y, No Detection	on = N)		
Trial Number	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
1	Υ	Υ	Υ	Υ	Υ	Υ
2	Υ	Υ	Y	Y	Υ	Y
3	Y	Υ	Y	Υ	Υ	Y
4	Y	Υ	Y	Υ	Υ	Y
5	Y	Υ	Y	Υ	Υ	Y
6	Y	Υ	Y	Υ	Υ	Y
7	Υ	Υ	Y	Υ	Υ	Υ
8	Υ	Υ	Υ	Υ	Υ	Υ
9	Υ	Υ	Υ	Υ	Υ	Υ
10	Υ	Υ	Υ	Υ	Υ	Υ
11	Υ	Υ	Υ	Υ	Υ	Υ
12	Υ	Υ	Υ	Υ	N	Υ
13	Υ	Υ	Υ	Υ	Υ	Υ
14	Υ	Υ	Υ	Υ	N	Υ
15	Υ	Υ	Υ	Υ	N	Υ
16	Υ	Υ	Υ	Υ	Υ	Υ
17	Υ	Υ	Υ	Υ	Υ	Υ
18	Υ	Υ	Υ	Υ	Υ	Υ
19	Υ	Υ	Υ	Υ	Υ	Υ
20	Υ	Υ	Υ	Υ	Υ	Υ
21	Υ	Υ	Υ	Υ	Υ	Υ
22	Υ	Υ	Υ	Υ	Υ	Υ
23	Υ	Υ	Υ	Υ	Υ	Υ
24	Υ	Υ	Υ	Υ	Υ	Υ
25	Υ	Υ	Υ	Υ	Υ	Υ
26	Υ	Υ	Υ	Υ	Υ	Υ
27	Υ	Υ	Υ	Υ	Υ	Υ
28	Υ	Υ	Υ	Υ	Υ	Υ
29	Υ	Υ	Υ	Υ	Υ	Υ
30	Y	Υ	Υ	Υ	Υ	Y
Trial of Detection	30/30	30/30	30/30	30/30	27/30	30/30
Probability (%)	100%	100%	100%	100%	90%	100%
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probabili	ty of Radar Ty	/pe 1~4 (%)	100% (>=80%)		

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<80MHz / 5530MHz >

(300M127 3330M1127		(Detection =	Y, No Detection	on = N)		
Trial Number	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
1	Υ	Υ	Υ	Υ	Υ	Υ
2	Υ	Υ	Y	Y	Υ	Υ
3	Υ	Υ	Y	Υ	Υ	Υ
4	Υ	Υ	Y	Υ	Υ	Υ
5	Υ	Υ	Y	Υ	Υ	Υ
6	Υ	Υ	Y	Υ	Υ	Υ
7	Υ	Υ	Y	Υ	Υ	Υ
8	Υ	Υ	Υ	Υ	Υ	Υ
9	Υ	Υ	Υ	Υ	Υ	Υ
10	Υ	Υ	Υ	Υ	Υ	Υ
11	Υ	Υ	Υ	Υ	Υ	Υ
12	Υ	Υ	Υ	Υ	Υ	Υ
13	Υ	Υ	Υ	Υ	Υ	Υ
14	Υ	Υ	Υ	Υ	Υ	Υ
15	Υ	Υ	Υ	Υ	Υ	Υ
16	Υ	Υ	Υ	Υ	Υ	Υ
17	Υ	Υ	Υ	Υ	Υ	Υ
18	Υ	Υ	Υ	Υ	Υ	Υ
19	Υ	Υ	Υ	Υ	Υ	Υ
20	Υ	Υ	Υ	Υ	Υ	Υ
21	Υ	Υ	Υ	Υ	Υ	Υ
22	Υ	Υ	Υ	Υ	Υ	Υ
23	Υ	Υ	Υ	Υ	Υ	Υ
24	Υ	Υ	Υ	Υ	Υ	Υ
25	Υ	Υ	Υ	Υ	Υ	Υ
26	Υ	Υ	Υ	Υ	Υ	Υ
27	Υ	Υ	Υ	Υ	Υ	Υ
28	Υ	Υ	Υ	Υ	Υ	Υ
29	Υ	Υ	Υ	Υ	Υ	Υ
30	Υ	Υ	Υ	Y	Υ	Υ
Trial of Detection	30/30	30/30	30/30	30/30	30/30	30/30
Probability (%)	100%	100%	100%	100%	100%	100%
Limit (%)	>= 60%	>= 60%	>= 60%	>= 60%	>= 80%	>= 70%
Average Probabili	ity of Radar Ty	/pe 1~4 (%)	100% (>=80%)		

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4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum	Agilent	N9010A	MY56070412	10Hz~7GHz	Aug. 08, 2017	Jan. 23, 2018 ~	Aug. 07, 2018	DFS
Analyzer	ig					Feb. 06, 2018	,	(DFS02-HY)
Signal	Agilont	E4438C	MY49070755	250KHz ~ 6GHz	Oct 02 2017	Jan. 23, 2018 ~	Oct. 01, 2018	DFS
Generator	Agilent	E4430C	W149070755	250KHZ ~ 0GHZ	Oct. 02, 2017	Feb. 06, 2018	Oct. 01, 2010	(DFS02-HY)
5		2Way SMA	145.4000	. =0 .0011	Calibration	Jan. 23, 2018 ~	Calibration	DFS
Power Divider	MTJ	Power Divider	MD10003	0.5G~6GHz from System	Feb. 06, 2018	from System	(DFS02-HY)	
		2Way SMA			Calibration	Jan. 23, 2018 ~	Calibration	DFS
Power Divider	MTJ	Power Divider	MD10007	0.5G~6GHz	from System	Feb. 06, 2018	from System	(DFS02-HY)
		2Way SMA			Calibration	Jan. 23, 2018 ~	Calibration	DFS
Power Divider	MTJ	Power Divider	MD10001	0.5G~6GHz	from System	Feb. 06, 2018	from System	(DFS02-HY)
		2Way SMA			Calibration	Jan. 23, 2018 ~	Calibration	DFS
Power Divider	MTJ	Power Divider	STI08-0011	2G~18GHz	from System	Feb. 06, 2018	from System	(DFS02-HY)
Danier Divid	NA/-l	4Way SMA	0120A0205600	0.50.001	Calibration	Jan. 23, 2018 ~	Calibration	DFS
Power Divider	Woken	Power Divider	2D	0.5G~6GHz	from System	Feb. 06, 2018	from System	(DFS02-HY)

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Appendix B. Radar Test Waveform

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	Pulse Repetition	Pulse Repetition	Pulse Repetition	Detection
Trial #	Frequency	Frequency	Interval	(Yes / No)
	Number (1 to 23)	(Pulses Per Second)	(Microseconds)	(Tes/NO)
1	22	1066.10	938	Yes
2	10	1432.66	698	Yes
3	6	1618.12	618	Yes
4	2	1858.74	538	Yes
5	19	1138.95	878	Yes
6	12	326.16	3066	Yes
7	7	1567.40	638	Yes
8	21	1089.32	918	Yes
9	17	1193.32	838	Yes
10	18	1165.50	858	Yes
11	15	1253.13	798	Yes
12	11	1392.76	718	Yes
13	4	1730.10	578	Yes
14	5	1672.24	598	Yes
15	3	1792.11	558	Yes
16		394.32	2536	Yes
17	7	1035.20	966	Yes
18	7	1209.19	827	Yes
19	7	399.84	2501	Yes
20	7	385.36	2595	Yes
21	7	897.67	1114	Yes
22	7	768.05	1302	Yes
23	7	328.41	3045	Yes
24	7	615.76	1624	Yes
25	7	347.46	2878	Yes
26	7	973.71	1027	Yes
27	7	402.41	2485	Yes
28	7	625.00	1600	Yes
29	1	853.24	1172	Yes
30	7	849.62	1177	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	29	4.80	210	Yes
2	25	2.30	192	Yes
3	26	3.00	229	Yes
4	28	4.00	151	Yes
5	29	4.70	221	Yes
6	23	1.50	153	Yes
7	24	1.70	212	Yes
8	28	3.90	150	Yes
9	23	1.10	169	Yes
10	23	1.50	176	Yes
11	27	3.50	205	Yes
12	27	3.70	190	Yes
13	26	3.10	155	Yes
14	24	1.80	230	Yes
15	25	2.40	206	Yes
16	29	4.60	168	Yes
17	24	2.00	167	Yes
18	26	3.30	219	Yes
19	25	2.60	194	Yes
20	27	3.30	163	Yes
21	25	2.10	200	Yes
22	23	1.00	223	Yes
23	28	4.00	175	Yes
24	24	1.60	203	Yes
25	26	2.90	174	Yes
26	29	4.60	170	Yes
27	26	3.00	214	Yes
28	27	3.30	202	Yes
29	28	4.30	180	Yes
30	25	2.60	182	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	18	9.80	298	Yes
2	17	7.30	456	Yes
3	17	8.00	347	Yes
4	18	9.00	202	Yes
5	18	9.70	249	Yes
6	16	6.50	455	Yes
7	16	6.70	308	Yes
8	18	8.90	336	Yes
9	16	6.10	310	Yes
10	16	6.50	272	Yes
11	17	8.50	266	Yes
12	18	8.70	345	Yes
13	17	8.10	439	Yes
14	16	6.80	360	Yes
15	17	7.40	281	Yes
16	18	9.60	241	Yes
17	16	7.00	384	Yes
18	17	8.30	318	Yes
19	17	7.60	326	Yes
20	17	8.30	289	Yes
21	16	7.10	230	Yes
22	16	6.00	461	Yes
23	18	9.00	367	Yes
24	16	6.60	208	Yes
25	17	7.90	402	Yes
26	18	9.60	396	Yes
27	17	8.00	332	Yes
28	17	8.30	464	Yes
29	18	9.30	292	Yes
30	17	7.60	494	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	16	19.50	298	Yes
2	13	14.00	456	Yes
3	14	15.40	347	Yes
4	15	17.60	202	Yes
5	16	19.30	249	Yes
6	12	12.10	455	Yes
7	12	12.60	308	Yes
8	15	17.50	336	Yes
9	12	11.30	310	Yes
10	12	12.10	272	Yes
11	15	16.60	266	Yes
12	15	17.10	345	Yes
13	14	15.80	439	Yes
14	12	12.80	360	Yes
15	13	14.10	281	Yes
16	16	19.00	241	Yes
17	13	13.20	384	Yes
18	14	16.10	318	Yes
19	14	14.70	326	Yes
20	14	16.30	289	Yes
21	13	13.60	230	Yes
22	12	11.20	461	Yes
23	15	17.80	367	Yes
24	12	12.50	208	Yes
25	14	15.40	402	Yes
26	16	19.10	396	Yes
27	14	15.60	332	Yes
28	14	16.20	464	Yes
29	16	18.40	292	Yes
30	14	14.60	494	Yes

Trial Number:				1		Detection	
Nur	Number of Bursts in Trial:			20	(Yes/No)		
Chi	rp Center Fre	equency:		5500		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	3	96.9	19	1570	1822	106712	
2	2	66.9	19	1497	1058	252058	
3	2	74.7	19	1908	1075	396672	
4	3	86.7	19	1130	1036	540810	
5	3	96	19	1643	1316	88981	
6	1	56.5	19	=	1012	234814	
7	1	58.8	19	-	1359	379867	
8	3	85.8	19	1600	1605	522103	
9	1	51.9	19	=	1284	71614	
10	1	56.3	19	-	1729	216660	
11	2	80.8	19	1859	1818	360582	
12	3	84.1	19	1115	1065	504961	
13	2	76.5	19	1740	1568	53546	
14	1	59.9	19	=	1176	198971	
15	2	67.2	19	1788	1702	342874	
16	3	94	19	1019	1928	486433	
17	1	62.4	19	-	1677	35818	
18	2	78.5	19	1270	1445	180616	
19	2	70.7	19	1886	1793	324951	
20	2	79.3	19	1868	1381	469916	

	Trial Numb	er:	2			Detection
Num	ber of Burst	s in Trial:		12		(Yes/No)
Chi	rp Center Fre	equency:		5500	Yes	
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	64.3	10	-	1183	29954
2	1	51.2	10	-	1661	272068
3	3	87.7	10	1981	1280	512810
4	1	58.3	10	-	1891	756151
5	2	74.3	10	1427	1789	114
6	3	95	10	1870	1707	241367
7	2	75.5	10	1247	1970	483617
8	2	78.9	10	1965	1025	725533
9	3	90.9	10	1534	1758	965173
10	2	70	10	1985	1590	212011
11	2	67.9	10	1597	1589	453853
12	2	81	10	1550	1869	695449
13						
14						
15						
16						
17						
18						
19						
20						

	Trial Number:			3		Detection
Num	ber of Burst	s in Trial:	14			(Yes/No)
Chi	Chirp Center Frequency:			5500		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	88.8	12	1120	1992	801626
2	2	73.3	12	1814	1342	156192
3	1	50.5	12	-	1969	363816
4	2	67.9	12	1671	1394	570490
5	3	85	12	1410	1546	776062
6	3	84.5	12	1023	1086	130549
7	3	98.6	12	1204	1503	337580
8	2	74	12	1920	1997	544432
9	1	63.2	12	-	1488	753505
10	2	77.4	12	1912	1051	105191
11	2	73.5	12	1735	1905	312109
12	2	71.7	12	1259	1767	519484
13	1	52.9	12	-	1616	727834
14	1	56.3	12	-	1452	79814
15						
16						
17						
18				•		
19				·		
20						

	Trial Numb	er:	4			Detection
Nun	nber of Burst	s in Trial:		14		(Yes/No) Yes
Chi	rp Center Fre	equency:		5500		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	92	16	1453	1531	235593
2	3	93.6	16	1365	1938	405662
3	3	83.5	16	1220	1947	575739
4	2	76.8	16	1154	1895	44560
5	1	61.1	16	-	1299	215555
6	3	99.8	16	1703	1552	384479
7	2	80.1	16	1672	1133	556131
8	3	96	16	1624	1511	23504
9	3	91	16	1234	1639	193631
10	3	95.7	16	1499	1679	363855
11	2	79.3	16	1836	1470	534746
12	1	66.4	16	-	1577	2572
13	1	62.4	16	-	1808	173331
14	1	51	16	-	1353	344314
15	2	81.1	16	1140	1195	514467
16	2	79.9	16	1085	1346	685006
17	3	95	16	1976	1147	151748
18						
19						
20						

	Trial Numb	er:		5		Detection (Yes/No) Yes
Num	ber of Burst	s in Trial:		19		
Chii	p Center Fre	equency:		5500		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	82	19	1811	1749	288160
2	3	88.5	19	1666	1237	439985
3	3	99.9	19	1442	1017	592173
4	3	95.3	19	1288	1209	116937
5	1	53.2	19	-	1095	270456
6	1	59.4	19	-	1750	422929
7	3	99.4	19	1024	1245	574161
8	1	59	19	-	1472	98650
9	2	77.9	19	1986	1733	250574
10	2	80	19	1072	1551	403553
11	3	96.8	19	1386	1477	554323
12	1	66	19	-	1340	79842
13	3	87	19	1357	1803	231502
14	2	77.7	19	1785	1610	384291
15	1	65.9	19	-	1239	538487
16	1	55.3	19	-	1951	60955
17	2	67.9	19	1877	1283	213250
18	1	52.9	19	-	1872	366410
19	2	81.9	19	1492	1402	518292
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	Trial Number:			6	Detection	
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chi	Chirp Center Frequency:			5500		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	95.4	7	1192	1915	88924
2	1	64	7	-	1124	412277
3	1	58.8	7	-	1435	735208
4	2	68.1	7	1424	1361	1057163
5	1	50.8	7	=	1248	49371
6	3	92.9	7	1354	1127	371570
7	2	82.4	7	1930	1932	694151
8	1	54.8	7	-	1587	1018329
9	3	88.7	7	1156	1853	9555
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	Trial Numb	er:	7			Detection
Nun	nber of Burst	s in Trial:		10		(Yes/No)
Chi	rp Center Fre	equency:		5500	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	=	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	=	1371	70697
12	1	61	16	=	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
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	Trial Number:			8		Detection
Num	ber of Burst	s in Trial:	17			(Yes/No)
Chi	Chirp Center Frequency:			5500		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	=	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	=	1371	70697
12	1	61	16	-	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
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	Trial Numb	er:		9		Detection
Nun	nber of Burst	s in Trial:		8	(Yes/No)	
Chi	rp Center Fre	equency:		5500		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	73.1	5	1918	1704	1194212
2	2	70.3	5	1258	1408	60791
3	3	99	5	1060	1318	423736
4	1	52.4	5	=	1473	787719
5	2	70.9	5	1103	1246	1150487
6	1	54.5	5	=	1792	16068
7	1	60.7	5	=	1925	379397
8	3	90.5	5	1903	1957	741098
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	Trial Number:			10		Detection
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chi	rp Center Fre	equency:		5500		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	55.8	7	-	1149	983578
2	2	82.5	7	1654	1732	1304480
3	1	53.8	7	-	1817	297437
4	2	82.8	7	1096	1990	619781
5	1	54.4	7	-	1391	943608
6	3	86.2	7	1221	1513	1263657
7	2	82.6	7	1167	1676	257460
8	1	52.3	7	-	1489	580737
9	1	56.7	7	=	1366	903834
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	Trial Numb	er:		11		Detection
Num	ber of Burst	s in Trial:	16			(Yes/No)
Chi	Chirp Center Frequency:			5496.3135		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	64.2	14	-	1262	689664
2	3	97.8	14	1426	1458	122057
3	1	61.2	14	-	1625	303964
4	3	96.3	14	1700	1091	483885
5	2	75.7	14	1519	1933	665345
6	3	98.4	14	1798	1432	99692
7	2	67.5	14	1517	1387	281125
8	1	62.9	14	-	1846	462974
9	2	78.4	14	1475	1523	643434
10	3	87	14	1756	1924	77426
11	2	75.3	14	1609	1572	258710
12	1	57.5	14	-	1721	440697
13	2	77.6	14	1090	1953	621079
14	3	99.4	14	1725	1150	55177
15	3	93.8	14	1979	1029	236046
16	3	98.8	14	1910	1823	416363
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	Trial Number:			12		Detection
Num	ber of Burst	s in Trial:		16	(Yes/No)	
Chir	Chirp Center Frequency:			5496.7135		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.6	15	-	1640	599889
2	2	68.4	15	1845	1581	32951
3	1	63	15	-	1040	214703
4	1	54.1	15	-	1367	396176
5	1	58.7	15	-	1277	577813
6	2	67.8	15	1155	1053	10665
7	2	79.6	15	1324	1344	191910
8	2	73.5	15	1233	1885	372937
9	2	77.4	15	1429	1493	554225
10	2	77.4	15	1116	1073	736136
11	3	87.4	15	1226	1020	169360
12	2	79.6	15	1971	1415	350498
13	3	97.2	15	1496	1878	530321
14	3	99.6	15	1363	1303	712162
15	2	81.7	15	1978	1343	147129
16	2	80.8	15	1199	1824	328353
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	Trial Numb	er:		13		Detection (Yes/No)
Nur	nber of Burst	s in Trial:		14		
Chi	irp Center Fre	equency:		5495.9135	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	58.7	13	-	1752	583469
2	3	87.8	13	1266	1278	788984
3	3	83.9	13	1983	1026	142501
4	1	51.4	13	=	1820	350428
5	2	73.3	13	1739	1171	557159
6	3	84.7	13	1865	1565	762630
7	3	97.5	13	1121	1641	117043
8	2	71.9	13	1375	1207	324586
9	2	81.4	13	1223	1448	531788
10	3	89.6	13	1461	1021	737631
11	3	92.6	13	1172	1126	91692
12	2	67.6	13	1765	1134	298946
13	3	85.5	13	1287	1298	505133
14	2	82.9	13	1383	1213	713561
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	Trial Numb	er:		14		Detection (Yes/No) Yes
Nun	nber of Burst	s in Trial:		10		
Chi	rp Center Fre	equency:		5493.9135		
Burst	Number of Pulses	(Microseconds)	(IVIHZ)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.3	8	1748	1434	92810
2	2	83.2	8	1413	1404	383193
3	1	60	8		1744	674152
4	3	84	8	1335	1759	962738
5	1	52.8	8	-	1356	57143
6	2	67.8	8	1826	1596	347252
7	2	69.5	8	1055	1304	638026
8	3	98.3	8	1851	1498	926578
9	3	98.1	8	1536	1857	21270
10	3	96.4	8	1227	1241	311358
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	Trial Numb	er:		15		Detection (Yes/No)
Nun	nber of Burst	s in Trial:		12		
Chi	rp Center Fre	equency:		5494.7135	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	68.1	10	1972	1578	501077
2	3	87.8	10	1714	1459	742116
3	2	68.9	10	1481	1035	985439
4	3	98.3	10	1505	1264	229480
5	1	60.9	10	-	1211	472415
6	3	88	10	1919	1837	711729
7	1	65.7	10	-	1710	956412
8	2	78.9	10	1430	1680	199958
9	1	55.2	10	-	1716	442353
10	3	94.5	10	1936	1104	682477
11	3	98.9	10	1082	1212	924477
12	3	89.8	10	1553	1188	169963
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	Trial Numb	er:		16		Detection (Yes/No)
Nun	ber of Burst	s in Trial:		19		
Chi	rp Center Fre	equency:		5498.3135		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	65.4	19	1	1879	260217
2	3	92.3	19	1881	1737	410966
3	2	75.4	19	1267	1576	564795
4	2	67	19	1954	1899	88405
5	2	71	19	1297	1883	240906
6	3	91.1	19	1802	1786	392350
7	2	72.7	19	1502	1022	546289
8	2	69.2	19	1980	1206	69726
9	2	75.3	19	1816	1734	222002
10	1	62	19	-	1709	375416
11	3	88	19	1916	1276	525280
12	3	94.6	19	1088	1527	50889
13	3	99.2	19	1142	1736	203122
14	1	54.2	19	-	1601	356660
15	2	69.5	19	1059	1897	508354
16	1	63.1	19	-	1450	32269
17	3	96.7	19	1982	1850	183808
18	1	63.9	19	-	1656	337811
19	1	61.3	19	-	1984	490331
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	Trial Number:		17			Detection	
Num	ber of Burst	s in Trial:	11			(Yes/No)	
Chiı	Chirp Center Frequency:			5493.9135		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	1	60.4	8	-	1063	23253	
2	3	89.7	8	1560	1755	286485	
3	3	87.6	8	1330	1670	550377	
4	3	83.4	8	1294	1001	813800	
5	3	85.6	8	1242	1948	1076802	
6	1	65.7	8	-	1421	254933	
7	3	99.2	8	1751	1261	517831	
8	1	61	8	=	1217	783550	
9	3	93.5	8	1705	1087	1044988	
10	2	73.8	8	1197	1764	222070	
11	1	63.6	8	=	1648	486519	
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	Trial Number:			18		Detection
Num	ber of Burst	s in Trial:	15			(Yes/No)
Chiı	Chirp Center Frequency:			5496.3135		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	62.3	14	-	1657	550203
2	3	91	14	1454	1018	741613
3	3	84	14	1460	1559	138600
4	3	88.5	14	1004	1414	331629
5	2	67.7	14	1950	1244	525340
6	2	67.7	14	1479	1054	719186
7	1	58.6	14	-	1364	115299
8	3	85.9	14	1888	1766	307665
9	3	96.8	14	1362	1630	500714
10	2	78.4	14	1174	1712	695056
11	2	75.5	14	1089	1629	91285
12	2	78.9	14	1917	1208	284506
13	2	71.1	14	1761	1034	477972
14	1	56	14	-	1333	672549
15	3	99.8	14	1407	1349	67357
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	Trial Numb	er:		19		Detection (Yes/No)
Nun	nber of Burst	s in Trial:		13		
Chi	rp Center Fre	equency:		5495.1135	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	74.3	11	1830.000	1384.000	300936
2	3	99.2	11	1884.000	1713.000	522847
3	1	56.7	11	-	1139.000	748812
4	2	68.5	11	1390.000	1852.000	50358
5	1	52.5	11	-	1977.000	273823
6	2	82.2	11	1341.000	1988.000	496489
7	3	91.3	11	1668.000	1642.000	718291
8	2	83.2	11	1941.000	1697.000	22869
9	3	88.4	11	1314.000	1491.000	245673
10	1	50.1	11	-	1136.000	470130
11	2	77.9	11	1109.000	1033.000	692973
12	1	58.9	11	-	1612.000	916856
13	3	89.8	11	1937.000	1160.000	218267
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	Trial Number:			20		Detection
Num	ber of Burst	s in Trial:		15	(Yes/No)	
Chiı	Chirp Center Frequency:			5496.3135		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.2	14	-	1162	383491
2	2	71.8	14	1622	1131	576085
3	2	80.1	14	1048	1575	769568
4	2	79.3	14	1010	1251	165655
5	3	95.4	14	1028	1100	358722
6	1	61.6	14	-	1376	553221
7	3	99.7	14	1374	1393	744158
8	3	97.1	14	1675	1076	141441
9	1	60.5	14	-	1232	335732
10	1	60.6	14	-	1508	529276
11	3	86.5	14	1563	1955	720038
12	1	51.7	14	-	1566	118094
13	1	54.5	14	-	1081	311928
14	1	60.8	14	-	1144	505652
15	2	67.2	14	1326	1441	697979
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	Trial Numb	er:		21		Detection
Num	ber of Burst	s in Trial:	11			(Yes/No)
Chi	Chirp Center Frequency:			5505.6865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	82.9	9	1032	1934	128412
2	3	85	9	1108	1692	391853
3	1	60.8	9	=	1039	657296
4	1	66.5	9	=	1628	921126
5	2	77.3	9	1184	1861	95904
6	3	85.9	9	1071	1858	359369
7	3	91.4	9	1467	1921	622482
8	3	100	9	1567	1922	885926
9	1	54.2	9	-	1110	63517
10	2	74.9	9	1722	1874	327080
11	2	71.2	9	1526	1332	591189
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	Trial Number:			22		Detection
Num	ber of Burst	s in Trial:		8	(Yes/No)	
Chiı	Chirp Center Frequency:			5507.2865		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	81.4	5	1013	1645	1176728
2	2	71.1	5	1545	1005	42541
3	1	57.8	5	-	1896	405897
4	3	95.6	5	1119	1840	768081
5	3	88.4	5	1300	1588	1130856
6	3	89.9	5	1193	1718	1493288
7	1	58.7	5	=	1926	361135
8	2	68.9	5	1047	1009	724402
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	Trial Numb	er:	23			Detection
Nur	nber of Burst	s in Trial:		17		(Yes/No) Yes
Ch	rp Center Fre	equency:		5502.4865		
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	84.7	17	1753	1329	509440
2	2	75	17	1715	1719	680435
3	3	98.4	17	1446	1996	148072
4	3	96.3	17	1504	1834	318091
5	3	83.5	17	1322	1887	488240
6	1	59.4	17	=	1727	661052
7	1	56.3	17	=	1799	127663
8	1	52.6	17	=	1180	298688
9	1	63.8	17	=	1835	469164
10	3	88.6	17	1528	1771	637004
11	2	70.3	17	1395	1521	106460
12	2	66.7	17	1165	1863	276907
13	3	98.1	17	1812	1157	446475
14	2	71.4	17	1819	1323	617736
15	2	74.1	17	1392	1069	85515
16	1	50.2	17	=	1945	256304
17	1	53.4	17	-	1482	427312
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	Trial Numb	er:	24			Detection
Num	ber of Burst	s in Trial:		10	(Yes/No)	
Chiı	Chirp Center Frequency:			5506.4865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	89.3	7	1077	1995	1014984
2	1	61.4	7	-	1471	109899
3	2	81.7	7	1509	1968	399910
4	1	53.8	7	-	1486	691252
5	1	59.8	7	-	1923	981572
6	2	71.9	7	1401	1626	73997
7	2	75.9	7	1214	1042	364536
8	1	54.3	7	-	1779	655288
9	2	74.1	7	1866	1833	944378
10	2	80.2	7	1320	1418	38248
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	Trial Numb	er:		25		Detection (Yes/No) Yes
Nun	nber of Burst	s in Trial:		14		
Chi	rp Center Fre	equency:		5504.4865		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.6	12	1301	1321	234547
2	3	89.3	12	1561	1463	440957
3	1	65	12	-	1682	649757
4	2	72.2	12	1711	1843	1769
5	3	96.6	12	1222	1515	208588
6	3	93	12	1464	1166	415305
7	3	85.7	12	1662	1296	621811
8	2	76.2	12	1726	1484	830192
9	3	92.2	12	1959	1309	182989
10	3	84.6	12	1476	1632	390031
11	3	88.7	12	1862	1796	596380
12	2	77.3	12	1573	1791	804536
13	1	57	12	-	1334	158200
14	2	71	12	1111	1308	365297
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Trial Number:			26			Detection
Number of Bursts in Trial:			19			(Yes/No)
Chi	rp Center Fre	equency:		5501.6865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	83.2	19	1564	1347	421156
2	2	77.6	19	1006	1673	573839
3	1	61.4	19	=	1416	97663
4	3	83.9	19	1257	1263	249353
5	1	58.2	19	=	1952	402989
6	2	73.2	19	1849	1186	554737
7	1	60	19	-	1723	78799
8	3	97.1	19	1043	1319	230700
9	1	57.5	19	-	1687	384341
10	3	92.1	19	1856	1031	534578
11	3	99.1	19	1170	1598	59756
12	2	78.5	19	1098	1524	212439
13	2	77.1	19	1097	1806	364817
14	1	65	19	-	1123	518756
15	2	74.8	19	1777	1900	41038
16	1	53	19	-	1368	194035
17	2	72.4	19	1328	1396	346135
18	3	92	19	1778	1049	497723
19	1	59.3	19	-	1913	22343
20						

	Trial Number:		27			Detection (Yes/No)	
Nur	Number of Bursts in Trial: Chirp Center Frequency:			14			
Chi				5504.0865		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)	
1	2	79.2	13	1762	1867	237289	
2	2	77.8	13	1350	1974	444452	
3	1	63.4	13	=	1665	652796	
4	3	98.8	13	1256	1067	4784	
5	1	66.3	13	=	1844	212234	
6	2	73.7	13	1946	1664	418804	
7	2	73.7	13	1807	1554	625996	
8	1	62.4	13	=	1973	834419	
9	3	95.3	13	1780	1962	185949	
10	2	81.9	13	1964	1411	393414	
11	1	65.7	13	=	1177	602025	
12	1	64.7	13	-	1684	809145	
13	1	62	13	=	1117	161268	
14	1	54.3	13	-	1838	368571	
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Trial Number:		28			Detection	
Num	Number of Bursts in Trial:			15	(Yes/No)	
Chiı	p Center Fre	equency:		5503.6865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	60.7	14	-	1419	537809
2	2	70.6	14	1400	1008	730584
3	2	82.2	14	1181	1151	126444
4	1	60.5	14	=	1828	320106
5	3	92	14	1514	1146	512163
6	3	96.1	14	1773	1084	705440
7	1	50.9	14	-	1633	102704
8	2	70.2	14	1282	1782	295803
9	2	81.6	14	1831	1960	488639
10	2	81.7	14	1889	1825	681810
11	2	72.9	14	1757	1516	78692
12	2	73.2	14	1738	1286	272008
13	2	68.1	14	1805	1196	465313
14	1	65.8	14	=	1694	659691
15	2	70.6	14	1339	1898	54892
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Trial Number:		29			Detection	
Nun	Number of Bursts in Trial: Chirp Center Frequency:			18	(Yes/No)	
Chi				5502.0865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	51.3	18	-	1169	207253
2	3	89.2	18	1512	1638	366654
3	1	62.1	18	=	1603	529716
4	3	96.8	18	1311	1685	25827
5	2	67.9	18	1848	1250	186829
6	2	77.9	18	1636	1813	347581
7	3	93.2	18	1011	1000	508475
8	2	69.8	18	1112	1254	6076
9	2	78.8	18	1099	1873	167037
10	3	95.1	18	1525	1425	327128
11	1	60.2	18	=	1784	489846
12	3	84.5	18	1949	1529	647855
13	1	60.8	18	=	1240	147594
14	1	64.7	18	-	1688	308773
15	1	65.1	18	=	1487	470193
16	3	91.8	18	1252	1829	628352
17	2	77.3	18	1078	1506	127456
18	3	87.1	18	1571	1810	287372
19						
20						

Trial Number:		30			Detection	
Num	Number of Bursts in Trial:			13	(Yes/No)	
Chirp Center Frequency:				5504.8865		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	74.1	11	1809	1420	622729
2	1	66.4	11	-	1770	847163
3	3	94.4	11	1683	1102	148846
4	3	92.7	11	1302	1378	371909
5	3	92.6	11	1772	1882	594224
6	2	80.4	11	1686	1062	818769
7	3	95.9	11	1451	1760	121441
8	1	58.4	11	=	1093	345478
9	1	58.9	11	-	1927	568573
10	3	96.3	11	1781	1141	789879
11	2	81.8	11	1447	1510	94133
12	2	75.9	11	1583	1178	317359
13	3	93.2	11	1827	1238	539675
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	Pulse Repetition	Pulse Repetition	Pulse Repetition	Detection
Trial #	Frequency	Frequency	Interval	(Yes / No)
	Number (1 to 23)	(Pulses Per Second)	(Microseconds)	(162/ NO)
1	18	1165.50	858	Yes
2	7	1567.40	638	Yes
3	9	1474.93	678	Yes
4	2	1858.74	538	Yes
5	17	1193.32	838	Yes
6	15	1253.13	798	Yes
7	20	1113.59	898	Yes
8	13	1319.26	758	Yes
9	12	326.16	3066	Yes
10	19	1138.95	878	Yes
11	14	1285.35	778	Yes
12	6	1618.12	618	Yes
13	12	1355.01	738	Yes
14	8	1519.76	658	Yes
15	21	1089.32	918	Yes
16		822.37	1216	Yes
17	7	357.65	2796	Yes
18	7	480.54	2081	Yes
19	7	914.08	1094	Yes
20	7	458.51	2181	Yes
21		668.90	1495	Yes
22	7	803.21	1245	Yes
23		359.71	2780	Yes
24	7	591.37	1691	Yes
25		589.62	1696	Yes
26	7	519.21	1926	Yes
27	7	718.39	1392	Yes
28		600.24	1666	Yes
29	7	736.92	1357	Yes
30	7	1051.52	951	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	29	4.80	210	Yes
2	25	2.30	192	Yes
3	26	3.00	229	Yes
4	28	4.00	151	Yes
5	29	4.70	221	Yes
6	23	1.50	153	Yes
7	24	1.70	212	Yes
8	28	3.90	150	Yes
9	23	1.10	169	Yes
10	23	1.50	176	Yes
11	27	3.50	205	Yes
12	27	3.70	190	Yes
13	26	3.10	155	Yes
14	24	1.80	230	Yes
15	25	2.40	206	Yes
16	29	4.60	168	Yes
17	24	2.00	167	Yes
18	26	3.30	219	Yes
19	25	2.60	194	Yes
20	27	3.30	163	Yes
21	25	2.10	200	Yes
22	23	1.00	223	Yes
23	28	4.00	175	Yes
24	24	1.60	203	Yes
25	26	2.90	174	Yes
26	29	4.60	170	Yes
27	26	3.00	214	Yes
28	27	3.30	202	Yes
29	28	4.30	180	Yes
30	25	2.60	182	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	18	9.80	298	Yes
2	17	7.30	456	Yes
3	17	8.00	347	Yes
4	18	9.00	202	Yes
5	18	9.70	249	Yes
6	16	6.50	455	Yes
7	16	6.70	308	Yes
8	18	8.90	336	Yes
9	16	6.10	310	Yes
10	16	6.50	272	Yes
11	17	8.50	266	Yes
12	18	8.70	345	Yes
13	17	8.10	439	Yes
14	16	6.80	360	Yes
15	17	7.40	281	Yes
16	18	9.60	241	Yes
17	16	7.00	384	Yes
18	17	8.30	318	Yes
19	17	7.60	326	Yes
20	17	8.30	289	Yes
21	16	7.10	230	Yes
22	16	6.00	461	Yes
23	18	9.00	367	Yes
24	16	6.60	208	Yes
25	17	7.90	402	Yes
26	18	9.60	396	Yes
27	17	8.00	332	Yes
28	17	8.30	464	Yes
29	18	9.30	292	Yes
30	17	7.60	494	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	16	19.50	298	Yes
2	13	14.00	456	Yes
3	14	15.40	347	Yes
4	15	17.60	202	Yes
5	16	19.30	249	Yes
6	12	12.10	455	Yes
7	12	12.60	308	Yes
8	15	17.50	336	Yes
9	12	11.30	310	Yes
10	12	12.10	272	Yes
11	15	16.60	266	Yes
12	15	17.10	345	Yes
13	14	15.80	439	Yes
14	12	12.80	360	Yes
15	13	14.10	281	Yes
16	16	19.00	241	Yes
17	13	13.20	384	Yes
18	14	16.10	318	Yes
19	14	14.70	326	Yes
20	14	16.30	289	Yes
21	13	13.60	230	Yes
22	12	11.20	461	Yes
23	15	17.80	367	Yes
24	12	12.50	208	Yes
25	14	15.40	402	Yes
26	16	19.10	396	Yes
27	14	15.60	332	Yes
28	14	16.20	464	Yes
29	16	18.40	292	Yes
30	14	14.60	494	Yes

Trial Number:		1			Detection		
Nun	Number of Bursts in Trial:			20		(Yes/No)	
Chi	rp Center Fre	equency:		5510		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	3	96.9	19	1570	1822	106712	
2	2	66.9	19	1497	1058	252058	
3	2	74.7	19	1908	1075	396672	
4	3	86.7	19	1130	1036	540810	
5	3	96	19	1643	1316	88981	
6	1	56.5	19	-	1012	234814	
7	1	58.8	19	-	1359	379867	
8	3	85.8	19	1600	1605	522103	
9	1	51.9	19	-	1284	71614	
10	1	56.3	19	-	1729	216660	
11	2	80.8	19	1859	1818	360582	
12	3	84.1	19	1115	1065	504961	
13	2	76.5	19	1740	1568	53546	
14	1	59.9	19	=	1176	198971	
15	2	67.2	19	1788	1702	342874	
16	3	94	19	1019	1928	486433	
17	1	62.4	19	-	1677	35818	
18	2	78.5	19	1270	1445	180616	
19	2	70.7	19	1886	1793	324951	
20	2	79.3	19	1868	1381	469916	

Trial Number:			2			Detection	
Num	Number of Bursts in Trial:			12	(Yes/No)		
Chiı	p Center Fre	equency:		5510		Yes	
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	1	64.3	10	-	1183	29954	
2	1	51.2	10	-	1661	272068	
3	3	87.7	10	1981	1280	512810	
4	1	58.3	10	-	1891	756151	
5	2	74.3	10	1427	1789	114	
6	3	95	10	1870	1707	241367	
7	2	75.5	10	1247	1970	483617	
8	2	78.9	10	1965	1025	725533	
9	3	90.9	10	1534	1758	965173	
10	2	70	10	1985	1590	212011	
11	2	67.9	10	1597	1589	453853	
12	2	81	10	1550	1869	695449	
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	Trial Number:		3			Detection
Num	ber of Burst	s in Trial:	14			(Yes/No)
Chi	Chirp Center Frequency:			5510		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	88.8	12	1120	1992	801626
2	2	73.3	12	1814	1342	156192
3	1	50.5	12	-	1969	363816
4	2	67.9	12	1671	1394	570490
5	3	85	12	1410	1546	776062
6	3	84.5	12	1023	1086	130549
7	3	98.6	12	1204	1503	337580
8	2	74	12	1920	1997	544432
9	1	63.2	12	-	1488	753505
10	2	77.4	12	1912	1051	105191
11	2	73.5	12	1735	1905	312109
12	2	71.7	12	1259	1767	519484
13	1	52.9	12	-	1616	727834
14	1	56.3	12	-	1452	79814
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	Trial Numb	er:		4		Detection (Yes/No) Yes
Nun	nber of Burst	s in Trial:		14		
Chi	rp Center Fre	equency:		5510		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	92	16	1453	1531	235593
2	3	93.6	16	1365	1938	405662
3	3	83.5	16	1220	1947	575739
4	2	76.8	16	1154	1895	44560
5	1	61.1	16	-	1299	215555
6	3	99.8	16	1703	1552	384479
7	2	80.1	16	1672	1133	556131
8	3	96	16	1624	1511	23504
9	3	91	16	1234	1639	193631
10	3	95.7	16	1499	1679	363855
11	2	79.3	16	1836	1470	534746
12	1	66.4	16	-	1577	2572
13	1	62.4	16	-	1808	173331
14	1	51	16	-	1353	344314
15	2	81.1	16	1140	1195	514467
16	2	79.9	16	1085	1346	685006
17	3	95	16	1976	1147	151748
18						
19						
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	Trial Numb	er:		5		Detection (Yes/No)
Nur	nber of Burst	s in Trial:		19		
Chi	rp Center Fre	equency:		5510		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	82	19	1811	1749	288160
2	3	88.5	19	1666	1237	439985
3	3	99.9	19	1442	1017	592173
4	3	95.3	19	1288	1209	116937
5	1	53.2	19	-	1095	270456
6	1	59.4	19	-	1750	422929
7	3	99.4	19	1024	1245	574161
8	1	59	19	-	1472	98650
9	2	77.9	19	1986	1733	250574
10	2	80	19	1072	1551	403553
11	3	96.8	19	1386	1477	554323
12	1	66	19	-	1340	79842
13	3	87	19	1357	1803	231502
14	2	77.7	19	1785	1610	384291
15	1	65.9	19	=	1239	538487
16	1	55.3	19	=	1951	60955
17	2	67.9	19	1877	1283	213250
18	1	52.9	19	=	1872	366410
19	2	81.9	19	1492	1402	518292
20						

	Trial Number:			6		Detection
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chi	Chirp Center Frequency:			5510		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	95.4	7	1192	1915	88924
2	1	64	7	-	1124	412277
3	1	58.8	7	-	1435	735208
4	2	68.1	7	1424	1361	1057163
5	1	50.8	7	-	1248	49371
6	3	92.9	7	1354	1127	371570
7	2	82.4	7	1930	1932	694151
8	1	54.8	7	-	1587	1018329
9	3	88.7	7	1156	1853	9555
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	Trial Numb	er:	7			Detection
Num	ber of Burst	s in Trial:	10			(Yes/No)
Chi	Chirp Center Frequency:			5510		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	-	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	=	1371	70697
12	1	61	16	-	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
18			İ			
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	Trial Number:		8			Detection
Num	ber of Burst	s in Trial:	17			(Yes/No)
Chi	Chirp Center Frequency:			5510		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	=	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	=	1371	70697
12	1	61	16	-	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
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	Trial Number:		9			Detection	
Num	ber of Burst	s in Trial:	8			(Yes/No)	
Chi	Chirp Center Frequency:			5510		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	2	73.1	5	1918	1704	1194212	
2	2	70.3	5	1258	1408	60791	
3	3	99	5	1060	1318	423736	
4	1	52.4	5	-	1473	787719	
5	2	70.9	5	1103	1246	1150487	
6	1	54.5	5	-	1792	16068	
7	1	60.7	5	=	1925	379397	
8	3	90.5	5	1903	1957	741098	
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	Trial Numb	er:		10		Detection
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chirp Center Frequency:				5510		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	55.8	7	-	1149	983578
2	2	82.5	7	1654	1732	1304480
3	1	53.8	7	-	1817	297437
4	2	82.8	7	1096	1990	619781
5	1	54.4	7	-	1391	943608
6	3	86.2	7	1221	1513	1263657
7	2	82.6	7	1167	1676	257460
8	1	52.3	7	-	1489	580737
9	1	56.7	7	-	1366	903834
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	Trial Numb	er:	11			Detection
Num	ber of Burst	s in Trial:	16			(Yes/No)
Chi	Chirp Center Frequency:			5497.199		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	64.2	14	-	1262	689664
2	3	97.8	14	1426	1458	122057
3	1	61.2	14	-	1625	303964
4	3	96.3	14	1700	1091	483885
5	2	75.7	14	1519	1933	665345
6	3	98.4	14	1798	1432	99692
7	2	67.5	14	1517	1387	281125
8	1	62.9	14	-	1846	462974
9	2	78.4	14	1475	1523	643434
10	3	87	14	1756	1924	77426
11	2	75.3	14	1609	1572	258710
12	1	57.5	14	-	1721	440697
13	2	77.6	14	1090	1953	621079
14	3	99.4	14	1725	1150	55177
15	3	93.8	14	1979	1029	236046
16	3	98.8	14	1910	1823	416363
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	Trial Number:		12			Detection
Num	ber of Burst	s in Trial:	16			(Yes/No)
Chir	Chirp Center Frequency:			5497.599		No
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.6	15	-	1640	599889
2	2	68.4	15	1845	1581	32951
3	1	63	15	-	1040	214703
4	1	54.1	15	-	1367	396176
5	1	58.7	15	-	1277	577813
6	2	67.8	15	1155	1053	10665
7	2	79.6	15	1324	1344	191910
8	2	73.5	15	1233	1885	372937
9	2	77.4	15	1429	1493	554225
10	2	77.4	15	1116	1073	736136
11	3	87.4	15	1226	1020	169360
12	2	79.6	15	1971	1415	350498
13	3	97.2	15	1496	1878	530321
14	3	99.6	15	1363	1303	712162
15	2	81.7	15	1978	1343	147129
16	2	80.8	15	1199	1824	328353
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	Trial Numb	er:		13		Detection (Yes/No)
Nur	nber of Burst	s in Trial:		14		
Chi	rp Center Fre	equency:		5496.799	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	58.7	13	-	1752	583469
2	3	87.8	13	1266	1278	788984
3	3	83.9	13	1983	1026	142501
4	1	51.4	13	=	1820	350428
5	2	73.3	13	1739	1171	557159
6	3	84.7	13	1865	1565	762630
7	3	97.5	13	1121	1641	117043
8	2	71.9	13	1375	1207	324586
9	2	81.4	13	1223	1448	531788
10	3	89.6	13	1461	1021	737631
11	3	92.6	13	1172	1126	91692
12	2	67.6	13	1765	1134	298946
13	3	85.5	13	1287	1298	505133
14	2	82.9	13	1383	1213	713561
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	Trial Number:		14			Detection
Num	ber of Burst	s in Trial:		10	(Yes/No)	
Chir	Chirp Center Frequency:			5494.799		No
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.3	8	1748	1434	92810
2	2	83.2	8	1413	1404	383193
3	1	60	8	=	1744	674152
4	3	84	8	1335	1759	962738
5	1	52.8	8	-	1356	57143
6	2	67.8	8	1826	1596	347252
7	2	69.5	8	1055	1304	638026
8	3	98.3	8	1851	1498	926578
9	3	98.1	8	1536	1857	21270
10	3	96.4	8	1227	1241	311358
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	Trial Numb	er:		15		Detection
Nun	nber of Burst	s in Trial:		12		(Yes/No)
Chi	rp Center Fre	equency:		5495.599	No	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	68.1	10	1972	1578	501077
2	3	87.8	10	1714	1459	742116
3	2	68.9	10	1481	1035	985439
4	3	98.3	10	1505	1264	229480
5	1	60.9	10	=	1211	472415
6	3	88	10	1919	1837	711729
7	1	65.7	10	=	1710	956412
8	2	78.9	10	1430	1680	199958
9	1	55.2	10	=	1716	442353
10	3	94.5	10	1936	1104	682477
11	3	98.9	10	1082	1212	924477
12	3	89.8	10	1553	1188	169963
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	Trial Number:		16			Detection
Num	ber of Burst	s in Trial:		19		(Yes/No)
Chi	rp Center Fre	equency:	5499.199			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	65.4	19	-	1879	260217
2	3	92.3	19	1881	1737	410966
3	2	75.4	19	1267	1576	564795
4	2	67	19	1954	1899	88405
5	2	71	19	1297	1883	240906
6	3	91.1	19	1802	1786	392350
7	2	72.7	19	1502	1022	546289
8	2	69.2	19	1980	1206	69726
9	2	75.3	19	1816	1734	222002
10	1	62	19	-	1709	375416
11	3	88	19	1916	1276	525280
12	3	94.6	19	1088	1527	50889
13	3	99.2	19	1142	1736	203122
14	1	54.2	19	=	1601	356660
15	2	69.5	19	1059	1897	508354
16	1	63.1	19	=	1450	32269
17	3	96.7	19	1982	1850	183808
18	1	63.9	19	-	1656	337811
19	1	61.3	19	-	1984	490331
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	Trial Numb	er:		17		Detection
Nun	nber of Burst	s in Trial:	11			(Yes/No)
Chi	rp Center Fre	equency:		5494.799		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	60.4	8	-	1063	23253
2	3	89.7	8	1560	1755	286485
3	3	87.6	8	1330	1670	550377
4	3	83.4	8	1294	1001	813800
5	3	85.6	8	1242	1948	1076802
6	1	65.7	8	-	1421	254933
7	3	99.2	8	1751	1261	517831
8	1	61	8	-	1217	783550
9	3	93.5	8	1705	1087	1044988
10	2	73.8	8	1197	1764	222070
11	1	63.6	8	-	1648	486519
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	Trial Number:			18		Detection
Num	ber of Burst	s in Trial:		15	(Yes/No)	
Chiı	Chirp Center Frequency:			5497.199		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	62.3	14	-	1657	550203
2	3	91	14	1454	1018	741613
3	3	84	14	1460	1559	138600
4	3	88.5	14	1004	1414	331629
5	2	67.7	14	1950	1244	525340
6	2	67.7	14	1479	1054	719186
7	1	58.6	14	=	1364	115299
8	3	85.9	14	1888	1766	307665
9	3	96.8	14	1362	1630	500714
10	2	78.4	14	1174	1712	695056
11	2	75.5	14	1089	1629	91285
12	2	78.9	14	1917	1208	284506
13	2	71.1	14	1761	1034	477972
14	1	56	14	=	1333	672549
15	3	99.8	14	1407	1349	67357
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	Trial Numb	er:		19		Detection
Num	ber of Burst	s in Trial:		13		(Yes/No)
Chi	Chirp Center Frequency:			5495.999		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	74.3	11	1830.000	1384.000	300936
2	3	99.2	11	1884.000	1713.000	522847
3	1	56.7	11	=	1139.000	748812
4	2	68.5	11	1390.000	1852.000	50358
5	1	52.5	11	=	1977.000	273823
6	2	82.2	11	1341.000	1988.000	496489
7	3	91.3	11	1668.000	1642.000	718291
8	2	83.2	11	1941.000	1697.000	22869
9	3	88.4	11	1314.000	1491.000	245673
10	1	50.1	11	=	1136.000	470130
11	2	77.9	11	1109.000	1033.000	692973
12	1	58.9	11	-	1612.000	916856
13	3	89.8	11	1937.000	1160.000	218267
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	Trial Number:			20		Detection
Num	ber of Burst	s in Trial:		15		(Yes/No)
Chir	Chirp Center Frequency:			5497.199		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.2	14	-	1162	383491
2	2	71.8	14	1622	1131	576085
3	2	80.1	14	1048	1575	769568
4	2	79.3	14	1010	1251	165655
5	3	95.4	14	1028	1100	358722
6	1	61.6	14	-	1376	553221
7	3	99.7	14	1374	1393	744158
8	3	97.1	14	1675	1076	141441
9	1	60.5	14	-	1232	335732
10	1	60.6	14	-	1508	529276
11	3	86.5	14	1563	1955	720038
12	1	51.7	14	-	1566	118094
13	1	54.5	14	-	1081	311928
14	1	60.8	14	-	1144	505652
15	2	67.2	14	1326	1441	697979
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	Trial Numb	er:	21			Detection
Nun	nber of Burst	s in Trial:	11			(Yes/No)
Chi	rp Center Fre	equency:		5524.801		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	82.9	9	1032	1934	128412
2	3	85	9	1108	1692	391853
3	1	60.8	9	-	1039	657296
4	1	66.5	9	-	1628	921126
5	2	77.3	9	1184	1861	95904
6	3	85.9	9	1071	1858	359369
7	3	91.4	9	1467	1921	622482
8	3	100	9	1567	1922	885926
9	1	54.2	9	-	1110	63517
10	2	74.9	9	1722	1874	327080
11	2	71.2	9	1526	1332	591189
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	Trial Number:			22		Detection
Num	ber of Burst	s in Trial:		8	(Yes/No)	
Chiı	Chirp Center Frequency:			5526.401		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	81.4	5	1013	1645	1176728
2	2	71.1	5	1545	1005	42541
3	1	57.8	5	-	1896	405897
4	3	95.6	5	1119	1840	768081
5	3	88.4	5	1300	1588	1130856
6	3	89.9	5	1193	1718	1493288
7	1	58.7	5	=	1926	361135
8	2	68.9	5	1047	1009	724402
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	Trial Numb	er:		23		Detection (Yes/No) Yes
Nur	nber of Burst	s in Trial:		17		
Chi	rp Center Fre	equency:		5521.601		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	84.7	17	1753	1329	509440
2	2	75	17	1715	1719	680435
3	3	98.4	17	1446	1996	148072
4	3	96.3	17	1504	1834	318091
5	3	83.5	17	1322	1887	488240
6	1	59.4	17	=	1727	661052
7	1	56.3	17	=	1799	127663
8	1	52.6	17	-	1180	298688
9	1	63.8	17	=	1835	469164
10	3	88.6	17	1528	1771	637004
11	2	70.3	17	1395	1521	106460
12	2	66.7	17	1165	1863	276907
13	3	98.1	17	1812	1157	446475
14	2	71.4	17	1819	1323	617736
15	2	74.1	17	1392	1069	85515
16	1	50.2	17	=	1945	256304
17	1	53.4	17	-	1482	427312
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	Trial Number:			24		Detection
Num	ber of Burst	s in Trial:		10	(Yes/No)	
Chir	Chirp Center Frequency:			5525.601		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	89.3	7	1077	1995	1014984
2	1	61.4	7	-	1471	109899
3	2	81.7	7	1509	1968	399910
4	1	53.8	7	-	1486	691252
5	1	59.8	7	-	1923	981572
6	2	71.9	7	1401	1626	73997
7	2	75.9	7	1214	1042	364536
8	1	54.3	7	-	1779	655288
9	2	74.1	7	1866	1833	944378
10	2	80.2	7	1320	1418	38248
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	Trial Numb	er:		25		Detection (Yes/No)
Nun	nber of Burst	s in Trial:		14		
Chi	rp Center Fre	equency:		5523.601	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.6	12	1301	1321	234547
2	3	89.3	12	1561	1463	440957
3	1	65	12	=	1682	649757
4	2	72.2	12	1711	1843	1769
5	3	96.6	12	1222	1515	208588
6	3	93	12	1464	1166	415305
7	3	85.7	12	1662	1296	621811
8	2	76.2	12	1726	1484	830192
9	3	92.2	12	1959	1309	182989
10	3	84.6	12	1476	1632	390031
11	3	88.7	12	1862	1796	596380
12	2	77.3	12	1573	1791	804536
13	1	57	12	=	1334	158200
14	2	71	12	1111	1308	365297
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	Trial Numb	er:	26			Detection
Num	ber of Burst	s in Trial:		19		(Yes/No)
Chi	rp Center Fre	equency:	5520.801			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	83.2	19	1564	1347	421156
2	2	77.6	19	1006	1673	573839
3	1	61.4	19	-	1416	97663
4	3	83.9	19	1257	1263	249353
5	1	58.2	19	=	1952	402989
6	2	73.2	19	1849	1186	554737
7	1	60	19	-	1723	78799
8	3	97.1	19	1043	1319	230700
9	1	57.5	19	-	1687	384341
10	3	92.1	19	1856	1031	534578
11	3	99.1	19	1170	1598	59756
12	2	78.5	19	1098	1524	212439
13	2	77.1	19	1097	1806	364817
14	1	65	19	=	1123	518756
15	2	74.8	19	1777	1900	41038
16	1	53	19	=	1368	194035
17	2	72.4	19	1328	1396	346135
18	3	92	19	1778	1049	497723
19	1	59.3	19	-	1913	22343
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	Trial Number: Number of Bursts in Trial:			27		Detection
Nur				14		(Yes/No)
Chi	rp Center Fre	equency:		5523.201		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	79.2	13	1762	1867	237289
2	2	77.8	13	1350	1974	444452
3	1	63.4	13	=	1665	652796
4	3	98.8	13	1256	1067	4784
5	1	66.3	13	=	1844	212234
6	2	73.7	13	1946	1664	418804
7	2	73.7	13	1807	1554	625996
8	1	62.4	13	=	1973	834419
9	3	95.3	13	1780	1962	185949
10	2	81.9	13	1964	1411	393414
11	1	65.7	13	-	1177	602025
12	1	64.7	13	-	1684	809145
13	1	62	13	=	1117	161268
14	1	54.3	13	-	1838	368571
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	Trial Numb	er:		28		Detection
Num	ber of Burst	s in Trial:		15		(Yes/No)
Chi	Chirp Center Frequency:			5522.801		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	60.7	14	-	1419	537809
2	2	70.6	14	1400	1008	730584
3	2	82.2	14	1181	1151	126444
4	1	60.5	14	-	1828	320106
5	3	92	14	1514	1146	512163
6	3	96.1	14	1773	1084	705440
7	1	50.9	14	-	1633	102704
8	2	70.2	14	1282	1782	295803
9	2	81.6	14	1831	1960	488639
10	2	81.7	14	1889	1825	681810
11	2	72.9	14	1757	1516	78692
12	2	73.2	14	1738	1286	272008
13	2	68.1	14	1805	1196	465313
14	1	65.8	14	-	1694	659691
15	2	70.6	14	1339	1898	54892
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	Trial Number:			29		Detection
Num	nber of Burst	s in Trial:	18			(Yes/No)
Chi	rp Center Fre	equency:		5521.201		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.3	18	-	1169	207253
2	3	89.2	18	1512	1638	366654
3	1	62.1	18	-	1603	529716
4	3	96.8	18	1311	1685	25827
5	2	67.9	18	1848	1250	186829
6	2	77.9	18	1636	1813	347581
7	3	93.2	18	1011	1000	508475
8	2	69.8	18	1112	1254	6076
9	2	78.8	18	1099	1873	167037
10	3	95.1	18	1525	1425	327128
11	1	60.2	18	=	1784	489846
12	3	84.5	18	1949	1529	647855
13	1	60.8	18	=	1240	147594
14	1	64.7	18	-	1688	308773
15	1	65.1	18	-	1487	470193
16	3	91.8	18	1252	1829	628352
17	2	77.3	18	1078	1506	127456
18	3	87.1	18	1571	1810	287372
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Trial Number:			30			Detection
Num	ber of Burst	s in Trial:	13			(Yes/No)
Chiı	p Center Fre	equency:		5524.001		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	74.1	11	1809	1420	622729
2	1	66.4	11	-	1770	847163
3	3	94.4	11	1683	1102	148846
4	3	92.7	11	1302	1378	371909
5	3	92.6	11	1772	1882	594224
6	2	80.4	11	1686	1062	818769
7	3	95.9	11	1451	1760	121441
8	1	58.4	11	-	1093	345478
9	1	58.9	11	-	1927	568573
10	3	96.3	11	1781	1141	789879
11	2	81.8	11	1447	1510	94133
12	2	75.9	11	1583	1178	317359
13	3	93.2	11	1827	1238	539675
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	Pulse Repetition	Pulse Repetition	Pulse Repetition	Detection
Trial #	Frequency	Frequency	Interval	(Yes / No)
	Number (1 to 23)	(Pulses Per Second)	(Microseconds)	(TES/ NO)
1	18	1165.50	858	Yes
2	7	1567.40	638	Yes
3	9	1474.93	678	Yes
4	2	1858.74	538	Yes
5	17	1193.32	838	Yes
6	15	1253.13	798	Yes
7	20	1113.59	898	Yes
8	13	1319.26	758	Yes
9	12	326.16	3066	Yes
10	19	1138.95	878	Yes
11	14	1285.35	778	Yes
12	6	1618.12	618	Yes
13	12	1355.01	738	Yes
14	8	1519.76	658	Yes
15	21	1089.32	918	Yes
16		822.37	1216	Yes
17	7	357.65	2796	Yes
18		480.54	2081	Yes
19	7	914.08	1094	Yes
20	7	458.51	2181	Yes
21	7	668.90	1495	Yes
22	7	803.21	1245	Yes
23		359.71	2780	Yes
24	7	591.37	1691	Yes
25	7	589.62	1696	Yes
26		519.21	1926	Yes
27	7	718.39	1392	Yes
28	7	600.24	1666	Yes
29	7	736.92	1357	Yes
30	7	1051.52	951	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	29	4.80	210	Yes
2	25	2.30	192	Yes
3	26	3.00	229	Yes
4	28	4.00	151	Yes
5	29	4.70	221	Yes
6	23	1.50	153	Yes
7	24	1.70	212	Yes
8	28	3.90	150	Yes
9	23	1.10	169	Yes
10	23	1.50	176	Yes
11	27	3.50	205	Yes
12	27	3.70	190	Yes
13	26	3.10	155	Yes
14	24	1.80	230	Yes
15	25	2.40	206	Yes
16	29	4.60	168	Yes
17	24	2.00	167	Yes
18	26	3.30	219	Yes
19	25	2.60	194	Yes
20	27	3.30	163	Yes
21	25	2.10	200	Yes
22	23	1.00	223	Yes
23	28	4.00	175	Yes
24	24	1.60	203	Yes
25	26	2.90	174	Yes
26	29	4.60	170	Yes
27	26	3.00	214	Yes
28	27	3.30	202	Yes
29	28	4.30	180	Yes
30	25	2.60	182	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	18	9.80	298	Yes
2	17	7.30	456	Yes
3	17	8.00	347	Yes
4	18	9.00	202	Yes
5	18	9.70	249	Yes
6	16	6.50	455	Yes
7	16	6.70	308	Yes
8	18	8.90	336	Yes
9	16	6.10	310	Yes
10	16	6.50	272	Yes
11	17	8.50	266	Yes
12	18	8.70	345	Yes
13	17	8.10	439	Yes
14	16	6.80	360	Yes
15	17	7.40	281	Yes
16	18	9.60	241	Yes
17	16	7.00	384	Yes
18	17	8.30	318	Yes
19	17	7.60	326	Yes
20	17	8.30	289	Yes
21	16	7.10	230	Yes
22	16	6.00	461	Yes
23	18	9.00	367	Yes
24	16	6.60	208	Yes
25	17	7.90	402	Yes
26	18	9.60	396	Yes
27	17	8.00	332	Yes
28	17	8.30	464	Yes
29	18	9.30	292	Yes
30	17	7.60	494	Yes

Trial #	Number Pulses per Burst	Pulse Width (Microseconds)	Pulse Repetition Interval (Microseconds)	Detection (Yes / No)
1	16	19.50	298	Yes
2	13	14.00	456	Yes
3	14	15.40	347	Yes
4	15	17.60	202	Yes
5	16	19.30	249	Yes
6	12	12.10	455	Yes
7	12	12.60	308	Yes
8	15	17.50	336	Yes
9	12	11.30	310	Yes
10	12	12.10	272	Yes
11	15	16.60	266	Yes
12	15	17.10	345	Yes
13	14	15.80	439	Yes
14	12	12.80	360	Yes
15	13	14.10	281	Yes
16	16	19.00	241	Yes
17	13	13.20	384	Yes
18	14	16.10	318	Yes
19	14	14.70	326	Yes
20	14	16.30	289	Yes
21	13	13.60	230	Yes
22	12	11.20	461	Yes
23	15	17.80	367	Yes
24	12	12.50	208	Yes
25	14	15.40	402	Yes
26	16	19.10	396	Yes
27	14	15.60	332	Yes
28	14	16.20	464	Yes
29	16	18.40	292	Yes
30	14	14.60	494	Yes

Trial Number:			1			Detection
Nun	Number of Bursts in Trial:			20		(Yes/No)
Chi	rp Center Fre	equency:		5530		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	96.9	19	1570	1822	106712
2	2	66.9	19	1497	1058	252058
3	2	74.7	19	1908	1075	396672
4	3	86.7	19	1130	1036	540810
5	3	96	19	1643	1316	88981
6	1	56.5	19	-	1012	234814
7	1	58.8	19	-	1359	379867
8	3	85.8	19	1600	1605	522103
9	1	51.9	19	-	1284	71614
10	1	56.3	19	-	1729	216660
11	2	80.8	19	1859	1818	360582
12	3	84.1	19	1115	1065	504961
13	2	76.5	19	1740	1568	53546
14	1	59.9	19	=	1176	198971
15	2	67.2	19	1788	1702	342874
16	3	94	19	1019	1928	486433
17	1	62.4	19	-	1677	35818
18	2	78.5	19	1270	1445	180616
19	2	70.7	19	1886	1793	324951
20	2	79.3	19	1868	1381	469916

	Trial Numb	er:		2		Detection	
Num	Number of Bursts in Trial:		12			(Yes/No)	
Chi	Chirp Center Frequency:			5530		Yes	
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	1	64.3	10	-	1183	29954	
2	1	51.2	10	-	1661	272068	
3	3	87.7	10	1981	1280	512810	
4	1	58.3	10	-	1891	756151	
5	2	74.3	10	1427	1789	114	
6	3	95	10	1870	1707	241367	
7	2	75.5	10	1247	1970	483617	
8	2	78.9	10	1965	1025	725533	
9	3	90.9	10	1534	1758	965173	
10	2	70	10	1985	1590	212011	
11	2	67.9	10	1597	1589	453853	
12	2	81	10	1550	1869	695449	
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14							
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18							
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	Trial Number:		3			Detection
Num	ber of Burst	s in Trial:		14		(Yes/No)
Chi	Chirp Center Frequency: 5530				Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	88.8	12	1120	1992	801626
2	2	73.3	12	1814	1342	156192
3	1	50.5	12	-	1969	363816
4	2	67.9	12	1671	1394	570490
5	3	85	12	1410	1546	776062
6	3	84.5	12	1023	1086	130549
7	3	98.6	12	1204	1503	337580
8	2	74	12	1920	1997	544432
9	1	63.2	12	-	1488	753505
10	2	77.4	12	1912	1051	105191
11	2	73.5	12	1735	1905	312109
12	2	71.7	12	1259	1767	519484
13	1	52.9	12	-	1616	727834
14	1	56.3	12	-	1452	79814
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	Trial Number: Number of Bursts in Trial:			4		Detection
Nun				14	(Yes/No)	
Chi	rp Center Fre	equency:		5530		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	92	16	1453	1531	235593
2	3	93.6	16	1365	1938	405662
3	3	83.5	16	1220	1947	575739
4	2	76.8	16	1154	1895	44560
5	1	61.1	16	-	1299	215555
6	3	99.8	16	1703	1552	384479
7	2	80.1	16	1672	1133	556131
8	3	96	16	1624	1511	23504
9	3	91	16	1234	1639	193631
10	3	95.7	16	1499	1679	363855
11	2	79.3	16	1836	1470	534746
12	1	66.4	16	-	1577	2572
13	1	62.4	16	-	1808	173331
14	1	51	16	-	1353	344314
15	2	81.1	16	1140	1195	514467
16	2	79.9	16	1085	1346	685006
17	3	95	16	1976	1147	151748
18						
19						
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	Trial Numb	er:		5		Detection (Yes/No) Yes
Nun	nber of Burst	s in Trial:		19		
Chi	rp Center Fre	equency:		5530		
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	82	19	1811	1749	288160
2	3	88.5	19	1666	1237	439985
3	3	99.9	19	1442	1017	592173
4	3	95.3	19	1288	1209	116937
5	1	53.2	19	=	1095	270456
6	1	59.4	19	=	1750	422929
7	3	99.4	19	1024	1245	574161
8	1	59	19	=	1472	98650
9	2	77.9	19	1986	1733	250574
10	2	80	19	1072	1551	403553
11	3	96.8	19	1386	1477	554323
12	1	66	19	=	1340	79842
13	3	87	19	1357	1803	231502
14	2	77.7	19	1785	1610	384291
15	1	65.9	19	-	1239	538487
16	1	55.3	19	=	1951	60955
17	2	67.9	19	1877	1283	213250
18	1	52.9	19		1872	366410
19	2	81.9	19	1492	1402	518292
20						

	Trial Number:			6		Detection
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chirp Center Frequency:				5530		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	95.4	7	1192	1915	88924
2	1	64	7	-	1124	412277
3	1	58.8	7	-	1435	735208
4	2	68.1	7	1424	1361	1057163
5	1	50.8	7	-	1248	49371
6	3	92.9	7	1354	1127	371570
7	2	82.4	7	1930	1932	694151
8	1	54.8	7	-	1587	1018329
9	3	88.7	7	1156	1853	9555
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	Trial Numb	er:	7			Detection
Nun	nber of Burst	s in Trial:	10			(Yes/No)
Chi	rp Center Fre	equency:	5530			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	-	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	-	1371	70697
12	1	61	16	-	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
18						
19						
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	Trial Numb	er:		8		Detection
Num	ber of Burst	s in Trial:		17		(Yes/No)
Chir	Chirp Center Frequency:			5530		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	88.8	16	1961	1351	473175
2	3	84.2	16	1538	1200	643526
3	3	84.2	16	1699	1667	112294
4	2	67.8	16	1272	1405	283131
5	2	83.2	16	1593	1620	453334
6	2	69.8	16	1225	1993	623750
7	3	83.4	16	1544	1113	91420
8	2	79.9	16	1292	1875	261940
9	1	53.9	16	-	1701	433273
10	2	67.9	16	1027	1128	603670
11	1	63.3	16	-	1371	70697
12	1	61	16	=	1580	241491
13	3	94.6	16	1440	1518	410848
14	3	98.2	16	1871	1423	580095
15	3	99.2	16	1153	1490	49423
16	3	84.6	16	1182	1907	219472
17	2	80.9	16	1944	1787	390071
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	Trial Numb	er:		9		Detection
Nun	nber of Burst	s in Trial:		8	(Yes/No)	
Chi	rp Center Fre	equency:		5530		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	73.1	5	1918	1704	1194212
2	2	70.3	5	1258	1408	60791
3	3	99	5	1060	1318	423736
4	1	52.4	5	=	1473	787719
5	2	70.9	5	1103	1246	1150487
6	1	54.5	5	=	1792	16068
7	1	60.7	5	=	1925	379397
8	3	90.5	5	1903	1957	741098
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	Trial Number:			10		Detection
Num	ber of Burst	s in Trial:		9	(Yes/No)	
Chirp Center Frequency:				5530		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	55.8	7	-	1149	983578
2	2	82.5	7	1654	1732	1304480
3	1	53.8	7	-	1817	297437
4	2	82.8	7	1096	1990	619781
5	1	54.4	7	=	1391	943608
6	3	86.2	7	1221	1513	1263657
7	2	82.6	7	1167	1676	257460
8	1	52.3	7	-	1489	580737
9	1	56.7	7	-	1366	903834
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	Trial Numb	er:	11			Detection
Nun	nber of Burst	s in Trial:	16			(Yes/No)
Chi	rp Center Fre	equency:		5498.068		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	64.2	14	-	1262	689664
2	3	97.8	14	1426	1458	122057
3	1	61.2	14	=	1625	303964
4	3	96.3	14	1700	1091	483885
5	2	75.7	14	1519	1933	665345
6	3	98.4	14	1798	1432	99692
7	2	67.5	14	1517	1387	281125
8	1	62.9	14	-	1846	462974
9	2	78.4	14	1475	1523	643434
10	3	87	14	1756	1924	77426
11	2	75.3	14	1609	1572	258710
12	1	57.5	14	=	1721	440697
13	2	77.6	14	1090	1953	621079
14	3	99.4	14	1725	1150	55177
15	3	93.8	14	1979	1029	236046
16	3	98.8	14	1910	1823	416363
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	Trial Number:			12		Detection
Num	ber of Burst	s in Trial:		16		(Yes/No)
Chir	Chirp Center Frequency:			5498.468		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.6	15	-	1640	599889
2	2	68.4	15	1845	1581	32951
3	1	63	15	-	1040	214703
4	1	54.1	15	-	1367	396176
5	1	58.7	15	-	1277	577813
6	2	67.8	15	1155	1053	10665
7	2	79.6	15	1324	1344	191910
8	2	73.5	15	1233	1885	372937
9	2	77.4	15	1429	1493	554225
10	2	77.4	15	1116	1073	736136
11	3	87.4	15	1226	1020	169360
12	2	79.6	15	1971	1415	350498
13	3	97.2	15	1496	1878	530321
14	3	99.6	15	1363	1303	712162
15	2	81.7	15	1978	1343	147129
16	2	80.8	15	1199	1824	328353
17						
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	Trial Numb	er:		13		Detection (Yes/No)
Nur	nber of Burst	s in Trial:		14		
Chi	rp Center Fre	equency:		5497.668	Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	1	58.7	13	-	1752	583469
2	3	87.8	13	1266	1278	788984
3	3	83.9	13	1983	1026	142501
4	1	51.4	13	=	1820	350428
5	2	73.3	13	1739	1171	557159
6	3	84.7	13	1865	1565	762630
7	3	97.5	13	1121	1641	117043
8	2	71.9	13	1375	1207	324586
9	2	81.4	13	1223	1448	531788
10	3	89.6	13	1461	1021	737631
11	3	92.6	13	1172	1126	91692
12	2	67.6	13	1765	1134	298946
13	3	85.5	13	1287	1298	505133
14	2	82.9	13	1383	1213	713561
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	Trial Numb	-		14		Detection (Yes/No)
Nur	mber of Burst	s in Trial:		10		
Ch	Chirp Center Frequency:			5495.668		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.3	8	1748	1434	92810
2	2	83.2	8	1413	1404	383193
3	1	60	8	-	1744	674152
4	3	84	8	1335	1759	962738
5	1	52.8	8	-	1356	57143
6	2	67.8	8	1826	1596	347252
7	2	69.5	8	1055	1304	638026
8	3	98.3	8	1851	1498	926578
9	3	98.1	8	1536	1857	21270
10	3	96.4	8	1227	1241	311358
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	Trial Numb	er:		15		Detection (Yes/No)
Nur	nber of Burst	s in Trial:		12		
Ch	irp Center Fre	equency:	5496.468			Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	68.1	10	1972	1578	501077
2	3	87.8	10	1714	1459	742116
3	2	68.9	10	1481	1035	985439
4	3	98.3	10	1505	1264	229480
5	1	60.9	10	=	1211	472415
6	3	88	10	1919	1837	711729
7	1	65.7	10	=	1710	956412
8	2	78.9	10	1430	1680	199958
9	1	55.2	10	=	1716	442353
10	3	94.5	10	1936	1104	682477
11	3	98.9	10	1082	1212	924477
12	3	89.8	10	1553	1188	169963
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	Trial Number:			16		Detection
Num	ber of Burst	s in Trial:		19		(Yes/No)
Chir	Chirp Center Frequency:			5500.068		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	65.4	19	-	1879	260217
2	3	92.3	19	1881	1737	410966
3	2	75.4	19	1267	1576	564795
4	2	67	19	1954	1899	88405
5	2	71	19	1297	1883	240906
6	3	91.1	19	1802	1786	392350
7	2	72.7	19	1502	1022	546289
8	2	69.2	19	1980	1206	69726
9	2	75.3	19	1816	1734	222002
10	1	62	19	-	1709	375416
11	3	88	19	1916	1276	525280
12	3	94.6	19	1088	1527	50889
13	3	99.2	19	1142	1736	203122
14	1	54.2	19	-	1601	356660
15	2	69.5	19	1059	1897	508354
16	1	63.1	19	-	1450	32269
17	3	96.7	19	1982	1850	183808
18	1	63.9	19	-	1656	337811
19	1	61.3	19	-	1984	490331
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	Trial Numb	er:		17		Detection	
Num	ber of Burst	s in Trial:	11			(Yes/No)	
Chiı	Chirp Center Frequency:			5495.668		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	1	60.4	8	-	1063	23253	
2	3	89.7	8	1560	1755	286485	
3	3	87.6	8	1330	1670	550377	
4	3	83.4	8	1294	1001	813800	
5	3	85.6	8	1242	1948	1076802	
6	1	65.7	8	=	1421	254933	
7	3	99.2	8	1751	1261	517831	
8	1	61	8	-	1217	783550	
9	3	93.5	8	1705	1087	1044988	
10	2	73.8	8	1197	1764	222070	
11	1	63.6	8	-	1648	486519	
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	Trial Numb	er:	18			Detection
Num	ber of Burst	s in Trial:		15		(Yes/No)
Chiı	Chirp Center Frequency:			5498.068		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	62.3	14	-	1657	550203
2	3	91	14	1454	1018	741613
3	3	84	14	1460	1559	138600
4	3	88.5	14	1004	1414	331629
5	2	67.7	14	1950	1244	525340
6	2	67.7	14	1479	1054	719186
7	1	58.6	14	-	1364	115299
8	3	85.9	14	1888	1766	307665
9	3	96.8	14	1362	1630	500714
10	2	78.4	14	1174	1712	695056
11	2	75.5	14	1089	1629	91285
12	2	78.9	14	1917	1208	284506
13	2	71.1	14	1761	1034	477972
14	1	56	14	-	1333	672549
15	3	99.8	14	1407	1349	67357
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	Trial Number:			19		Detection	
Num	ber of Burst	s in Trial:	13			(Yes/No)	
Chi	Chirp Center Frequency:			5496.868		Yes	
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)	
1	2	74.3	11	1830.000	1384.000	300936	
2	3	99.2	11	1884.000	1713.000	522847	
3	1	56.7	11	=	1139.000	748812	
4	2	68.5	11	1390.000	1852.000	50358	
5	1	52.5	11	=	1977.000	273823	
6	2	82.2	11	1341.000	1988.000	496489	
7	3	91.3	11	1668.000	1642.000	718291	
8	2	83.2	11	1941.000	1697.000	22869	
9	3	88.4	11	1314.000	1491.000	245673	
10	1	50.1	11	-	1136.000	470130	
11	2	77.9	11	1109.000	1033.000	692973	
12	1	58.9	11	-	1612.000	916856	
13	3	89.8	11	1937.000	1160.000	218267	
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	Trial Number:			20		Detection
Num	ber of Burst	s in Trial:	15			(Yes/No)
Chiı	Chirp Center Frequency:			5498.068		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.2	14	-	1162	383491
2	2	71.8	14	1622	1131	576085
3	2	80.1	14	1048	1575	769568
4	2	79.3	14	1010	1251	165655
5	3	95.4	14	1028	1100	358722
6	1	61.6	14	-	1376	553221
7	3	99.7	14	1374	1393	744158
8	3	97.1	14	1675	1076	141441
9	1	60.5	14	-	1232	335732
10	1	60.6	14	-	1508	529276
11	3	86.5	14	1563	1955	720038
12	1	51.7	14	-	1566	118094
13	1	54.5	14	-	1081	311928
14	1	60.8	14	=	1144	505652
15	2	67.2	14	1326	1441	697979
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	Trial Numb	er:		21		Detection
Nun	nber of Burst	s in Trial:	11			(Yes/No)
Chi	rp Center Fre	equency:		5563.932		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	82.9	9	1032	1934	128412
2	3	85	9	1108	1692	391853
3	1	60.8	9	-	1039	657296
4	1	66.5	9	-	1628	921126
5	2	77.3	9	1184	1861	95904
6	3	85.9	9	1071	1858	359369
7	3	91.4	9	1467	1921	622482
8	3	100	9	1567	1922	885926
9	1	54.2	9	-	1110	63517
10	2	74.9	9	1722	1874	327080
11	2	71.2	9	1526	1332	591189
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	Trial Numb	er:		22		Detection
Num	ber of Burst	s in Trial:	8			(Yes/No)
Chiı	Chirp Center Frequency:			5565.532		Yes
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (μsec)	Starting Location Within Interval (µsec)
1	2	81.4	5	1013	1645	1176728
2	2	71.1	5	1545	1005	42541
3	1	57.8	5	-	1896	405897
4	3	95.6	5	1119	1840	768081
5	3	88.4	5	1300	1588	1130856
6	3	89.9	5	1193	1718	1493288
7	1	58.7	5	=	1926	361135
8	2	68.9	5	1047	1009	724402
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	Trial Numb	er:	23			Detection
Nur	nber of Burst	s in Trial:		17		(Yes/No) Yes
Ch	rp Center Fre	equency:		5560.732		
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	84.7	17	1753	1329	509440
2	2	75	17	1715	1719	680435
3	3	98.4	17	1446	1996	148072
4	3	96.3	17	1504	1834	318091
5	3	83.5	17	1322	1887	488240
6	1	59.4	17	=	1727	661052
7	1	56.3	17	=	1799	127663
8	1	52.6	17	=	1180	298688
9	1	63.8	17	=	1835	469164
10	3	88.6	17	1528	1771	637004
11	2	70.3	17	1395	1521	106460
12	2	66.7	17	1165	1863	276907
13	3	98.1	17	1812	1157	446475
14	2	71.4	17	1819	1323	617736
15	2	74.1	17	1392	1069	85515
16	1	50.2	17	=	1945	256304
17	1	53.4	17	-	1482	427312
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	Trial Number:		24			Detection
Num	ber of Burst	s in Trial:	10			(Yes/No)
Chirp Center Frequency:				5564.732		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	3	89.3	7	1077	1995	1014984
2	1	61.4	7	-	1471	109899
3	2	81.7	7	1509	1968	399910
4	1	53.8	7	-	1486	691252
5	1	59.8	7	-	1923	981572
6	2	71.9	7	1401	1626	73997
7	2	75.9	7	1214	1042	364536
8	1	54.3	7	=	1779	655288
9	2	74.1	7	1866	1833	944378
10	2	80.2	7	1320	1418	38248
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	Trial Numb	er:		25		Detection (Yes/No) Yes
Nur	nber of Burst	s in Trial:		14		
Ch	rp Center Fre	equency:		5562.732		
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	78.6	12	1301	1321	234547
2	3	89.3	12	1561	1463	440957
3	1	65	12	-	1682	649757
4	2	72.2	12	1711	1843	1769
5	3	96.6	12	1222	1515	208588
6	3	93	12	1464	1166	415305
7	3	85.7	12	1662	1296	621811
8	2	76.2	12	1726	1484	830192
9	3	92.2	12	1959	1309	182989
10	3	84.6	12	1476	1632	390031
11	3	88.7	12	1862	1796	596380
12	2	77.3	12	1573	1791	804536
13	1	57	12	=	1334	158200
14	2	71	12	1111	1308	365297
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	Trial Numb	er:	26			Detection
Num	ber of Burst	s in Trial:		19		(Yes/No)
Chiı	Chirp Center Frequency:			5559.932		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	83.2	19	1564	1347	421156
2	2	77.6	19	1006	1673	573839
3	1	61.4	19	-	1416	97663
4	3	83.9	19	1257	1263	249353
5	1	58.2	19	=	1952	402989
6	2	73.2	19	1849	1186	554737
7	1	60	19	-	1723	78799
8	3	97.1	19	1043	1319	230700
9	1	57.5	19	-	1687	384341
10	3	92.1	19	1856	1031	534578
11	3	99.1	19	1170	1598	59756
12	2	78.5	19	1098	1524	212439
13	2	77.1	19	1097	1806	364817
14	1	65	19	=	1123	518756
15	2	74.8	19	1777	1900	41038
16	1	53	19	=	1368	194035
17	2	72.4	19	1328	1396	346135
18	3	92	19	1778	1049	497723
19	1	59.3	19	=	1913	22343
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	Trial Numb	er:		27		Detection (Yes/No) Yes
Nur	nber of Burst	s in Trial:		14		
Ch	irp Center Fre	equency:		5562.332		
Burst	Number of Pulses	(Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	79.2	13	1762	1867	237289
2	2	77.8	13	1350	1974	444452
3	1	63.4	13	-	1665	652796
4	3	98.8	13	1256	1067	4784
5	1	66.3	13	=	1844	212234
6	2	73.7	13	1946	1664	418804
7	2	73.7	13	1807	1554	625996
8	1	62.4	13	=	1973	834419
9	3	95.3	13	1780	1962	185949
10	2	81.9	13	1964	1411	393414
11	1	65.7	13	=	1177	602025
12	1	64.7	13	-	1684	809145
13	1	62	13	=	1117	161268
14	1	54.3	13	=	1838	368571
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	Trial Number:			28		Detection
Num	ber of Burst	s in Trial:	15			(Yes/No)
Chiı	Chirp Center Frequency:			5561.932		Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	60.7	14	-	1419	537809
2	2	70.6	14	1400	1008	730584
3	2	82.2	14	1181	1151	126444
4	1	60.5	14	-	1828	320106
5	3	92	14	1514	1146	512163
6	3	96.1	14	1773	1084	705440
7	1	50.9	14	-	1633	102704
8	2	70.2	14	1282	1782	295803
9	2	81.6	14	1831	1960	488639
10	2	81.7	14	1889	1825	681810
11	2	72.9	14	1757	1516	78692
12	2	73.2	14	1738	1286	272008
13	2	68.1	14	1805	1196	465313
14	1	65.8	14	=	1694	659691
15	2	70.6	14	1339	1898	54892
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Trial Number:			29			Detection
Num	ber of Burst	s in Trial:	18			(Yes/No)
Chirp Center Frequency:			5560.332			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	1	51.3	18	-	1169	207253
2	3	89.2	18	1512	1638	366654
3	1	62.1	18	-	1603	529716
4	3	96.8	18	1311	1685	25827
5	2	67.9	18	1848	1250	186829
6	2	77.9	18	1636	1813	347581
7	3	93.2	18	1011	1000	508475
8	2	69.8	18	1112	1254	6076
9	2	78.8	18	1099	1873	167037
10	3	95.1	18	1525	1425	327128
11	1	60.2	18	-	1784	489846
12	3	84.5	18	1949	1529	647855
13	1	60.8	18	-	1240	147594
14	1	64.7	18	-	1688	308773
15	1	65.1	18	-	1487	470193
16	3	91.8	18	1252	1829	628352
17	2	77.3	18	1078	1506	127456
18	3	87.1	18	1571	1810	287372
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Trial Number:			30			Detection
Num	ber of Burst	s in Trial:	13			(Yes/No)
Chirp Center Frequency:			5563.132			Yes
Burst	Number of Pulses	Pulse Width (Microseconds)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (µsec)	Pulse 2-to-3 Spacing (µsec)	Starting Location Within Interval (µsec)
1	2	74.1	11	1809	1420	622729
2	1	66.4	11	-	1770	847163
3	3	94.4	11	1683	1102	148846
4	3	92.7	11	1302	1378	371909
5	3	92.6	11	1772	1882	594224
6	2	80.4	11	1686	1062	818769
7	3	95.9	11	1451	1760	121441
8	1	58.4	11	=	1093	345478
9	1	58.9	11	-	1927	568573
10	3	96.3	11	1781	1141	789879
11	2	81.8	11	1447	1510	94133
12	2	75.9	11	1583	1178	317359
13	3	93.2	11	1827	1238	539675
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