DFS PORTION of FCC 47 CFR PART 15 SUBPART E
DFS PORTION of INDUSTRY CANADA RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

FOR

INDOOR ACCESS POINT

MODEL NUMBER: cnPilot e430

FCC ID: Z8H89FT0039
IC: 109W-0039

REPORT NUMBER: 12429259-E1V2

ISSUE DATE: SEPTEMBER 19, 2018

Prepared for
CAMBIUM NETWORKS
3800 GOLF ROAD
ROLLING MEADOWS, IL 60008-4023, U.S.A.

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	08/10/18	Initial Issue	Henry Lau
V2	09/19/18	Added FCC Type 5 Parameters to Appendix A	Henry Lau

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CAMBIUM NETWORKS
3800 GOLF ROAD
ROLLING MEADOWS, IL 60008-4023, U.S.A.

EUT DESCRIPTION: INDOOR ACCESS POINT

MODEL: cnPilot e430

SERIAL NUMBER: W5TM006Q6P61

DATE TESTED: AUGUST 06 and 07, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
DFS Portion of CFR 47 Part 15 Subpart E	Complies
DFS Portion of INDUSTRY CANADA RSS-247 Issue 2	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the DFS portion of FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, KDB 905462 D02 and D03 and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty level has been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Time	± 0.02 %

The Uncertainty figure is valid to a confidence level of 95%.

5. DYNAMIC FREQUENCY SELECTION

5.1. OVERVIEW

5.1.1. LIMITS

INDUSTRY CANADA

IC RSS-247 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-247 Issue 2

Note: For the band 5600–5650 MHz, no operation is permitted.

Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600–5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band.

FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
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

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
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 all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.		

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see notes)
E.I.R.P. ≥ 200 mill watt	-64 dBm
E.I.R.P. < 200 mill watt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 mill watt that do not meet power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note 3: E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.

Table 4: DFS Response requirement values

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

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: {(1/360) x (19 x 10^6 PRI_{usec})}	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the *Detection Bandwidth* test, *Channel Move Time*, and *Channel Closing Time* tests.

Table 6 – Long Pulse Radar Test Signal

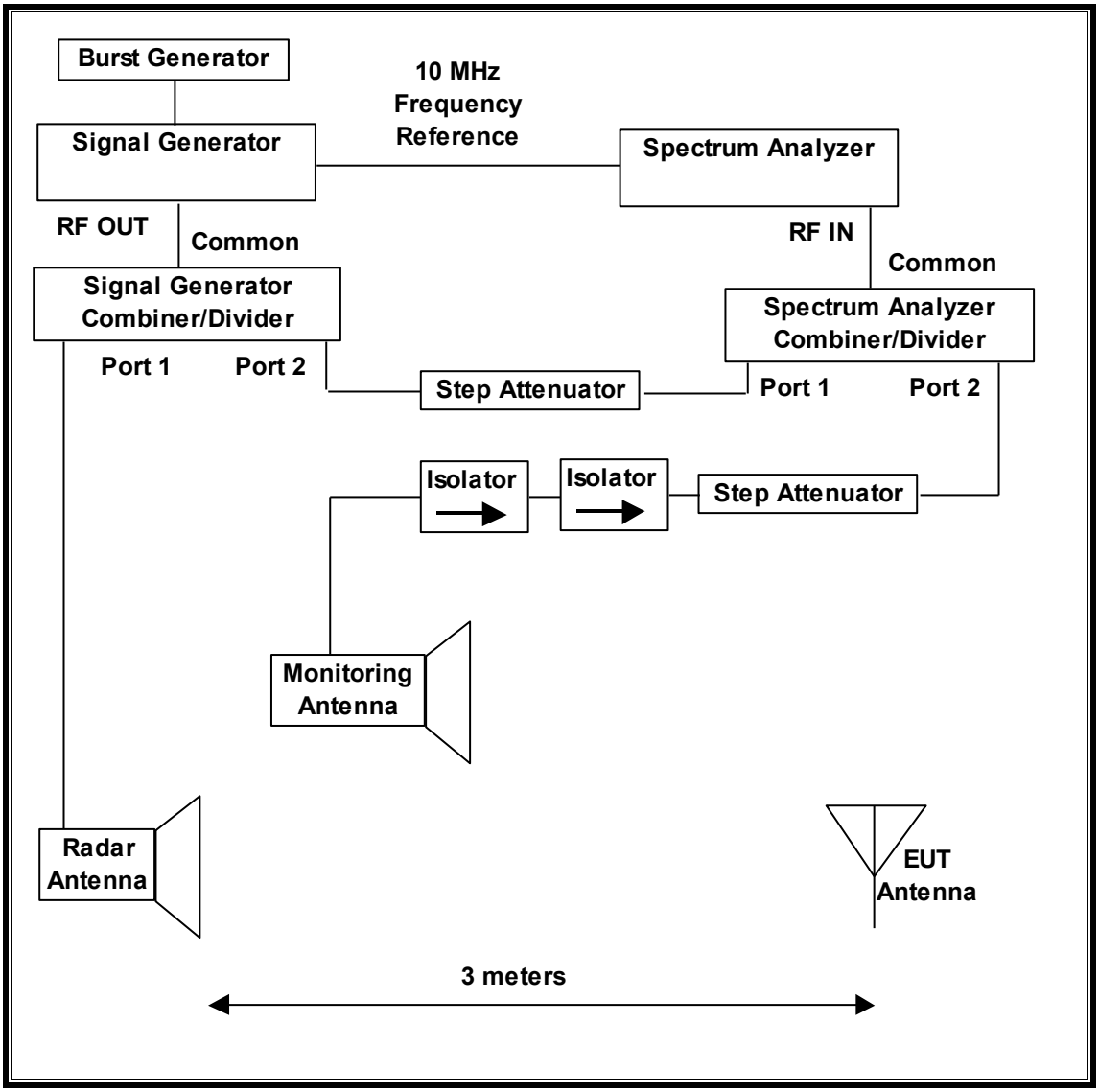
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform 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

5.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 1, 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. Traffic that meets or exceed the minimum loading requirement is streamed from the Master device to the Slave Device. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**ID No.**	**Cal Due**
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	T1634	02/22/19
Signal Generator, MXG X-Series RF Vector	Agilent	N5182B	T1134	04/23/19
Arbitrary Waveform Generator	Agilent / HP	33220A	T190	04/23/19

5.1.3. TEST AND MEASUREMENT SOFTWARE

The following test and measurement software was utilized for the tests documented in this report:

TEST SOFTWARE LIST		
Name	**Version**	**Test / Function**
Aggregate Time-PXA	3.1	Channel Loading and Aggregate Closing Time
FCC 2014 Detection Bandwidth-PXA	3.1.1	Detection Bandwidth in 5 MHz Steps
In Service Monitoring-PXA	3.3.4	In-Service Monitoring (Probability of Detection)
PXA Read	3.1	Signal Generator Screen Capture Utility
SGXProject.exe	1.7	Radar Waveform Generation and Download

5.1.4. TEST ROOM ENVIRONMENT

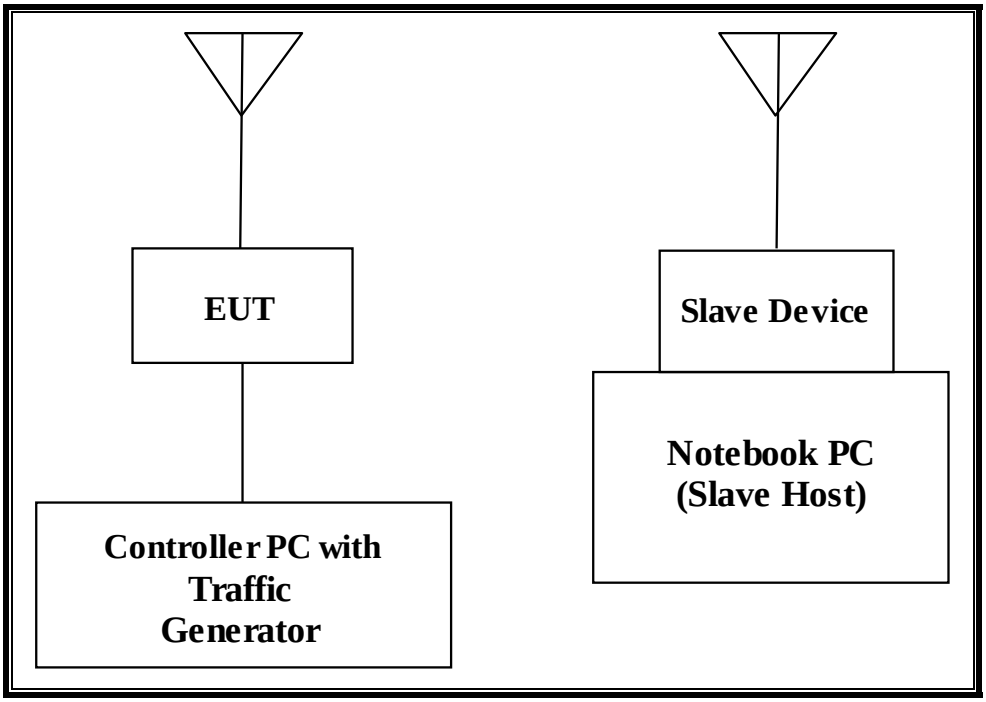
The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	24.8 and 24.6 °C
Humidity	41 and 41 %

5.1.5. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Carrier P.O.E. Adapter (EUT)	Alfa	APoE48V-1G	No Serial Number	DoC
Notebook PC (EUT Controller/Console)	Lenovo	Type 20B7-S0A200	PF-02JN9J 14/06	DoC
AC Adapter (Console/Controller PC)	Lenovo	ADLX65NCC2A	11S45N0263Z1ZSH D41A5JY	DoC
WiFi USB Adapter	Netgear	A6210	48415A5H0A496	PY313400249
Notebook PC (Slave Host)	Motorola	ML900	3433FQ0285	DoC
AC Adapter (Host PC)	MSL	AD-C019M-M	None	DoC

5.1.6. DESCRIPTION OF EUT

For FCC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

For IC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges, excluding the 5600-5650 MHz range.

The EUT is a Master Device.

The manufacturer has declared that the highest power level within these bands is 30 dBm EIRP in the 5250-5350 MHz band and 30 dBm EIRP in the 5470-5725 MHz band.

The manufacturer has declared that only antenna assembly utilized with the EUT has a gain of 5 dBi.

Two identical antennas are utilized to meet the diversity and MIMO operational requirements.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –63 dBm.

The EUT uses two transmitter/receiver chains, each connected to an antenna to perform radiated tests.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the Master Device to the Slave Device using iPerf version 2.0.5 software package.

TPC is required since the maximum EIRP is greater than 500 mW (27 dBm).

The EUT utilizes the 802.11a/n/ac architecture. In the 5250-5350 MHz and 5470-5725 MHz ranges, two nominal channel bandwidths are implemented: 20 MHz and 80 MHz.

The software installed in the EUT is revision 3.4.4.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a Cambium Networks Access Point, FCC ID: Z8H89FT0039. The minimum antenna gain for the Master Device is 5 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –63 dBm.

5.2. RESULTS FOR 20 MHz BANDWIDTH

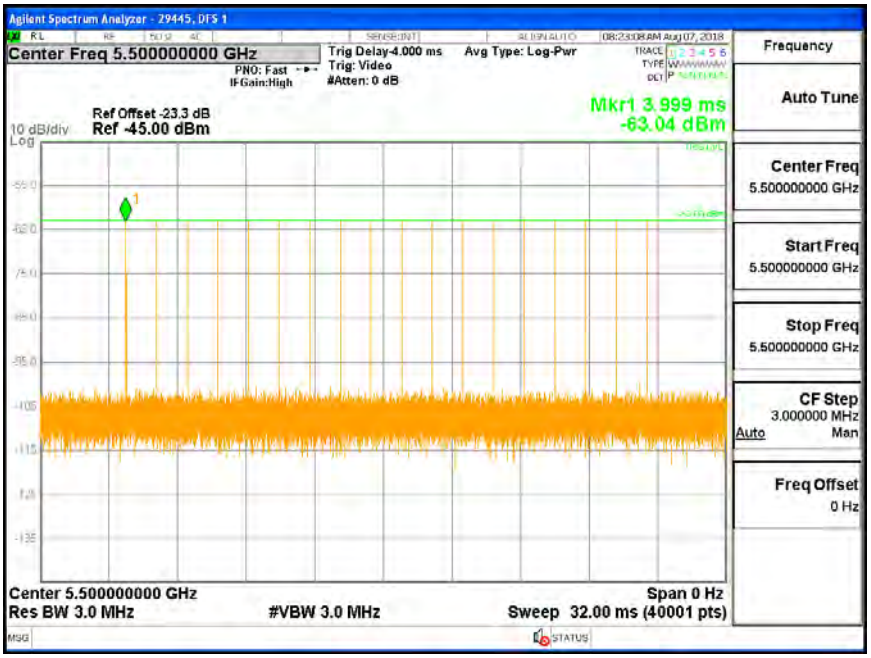
5.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5500 MHz.

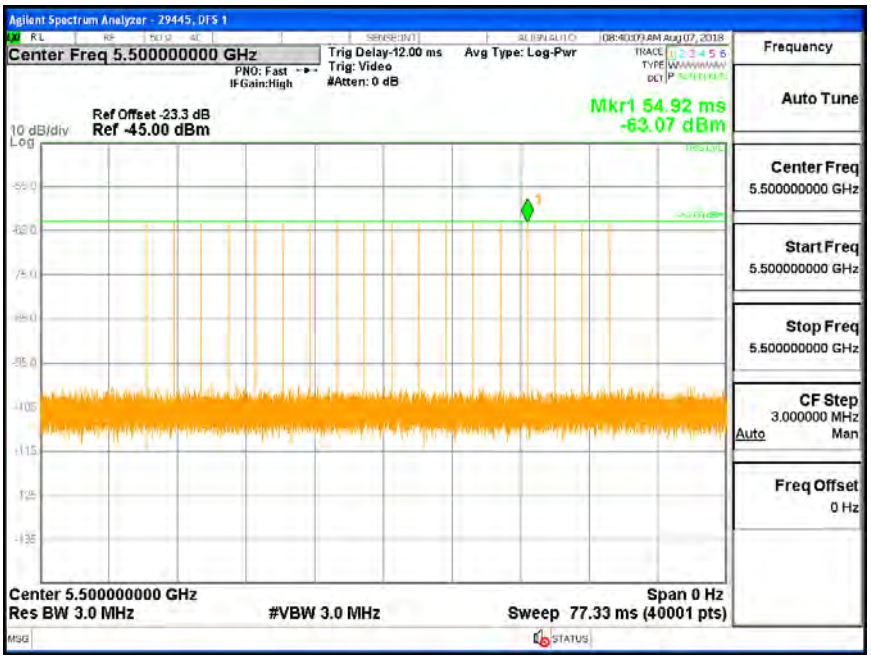
5.2.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

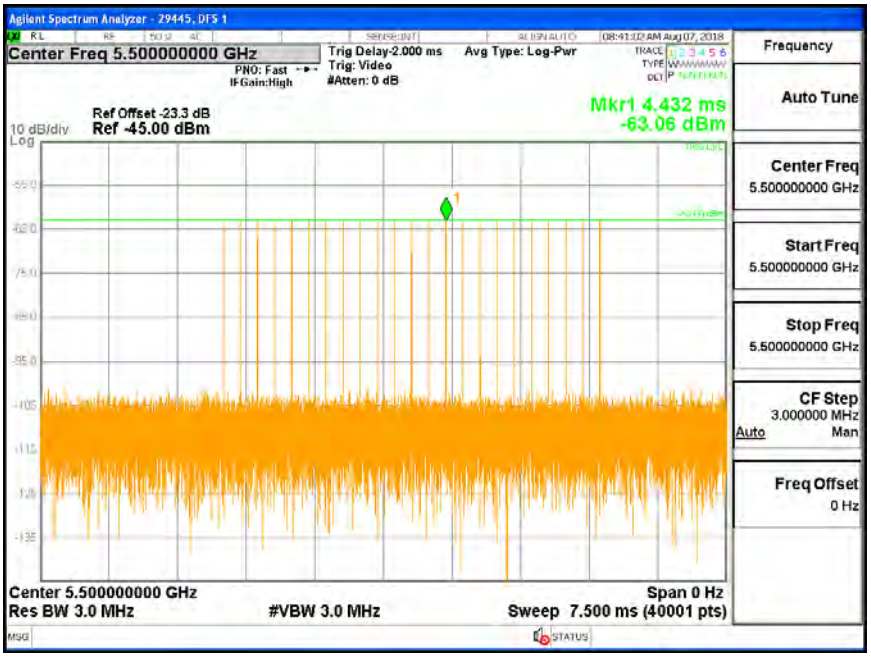
SHORT PULSE RADAR TYPE 0



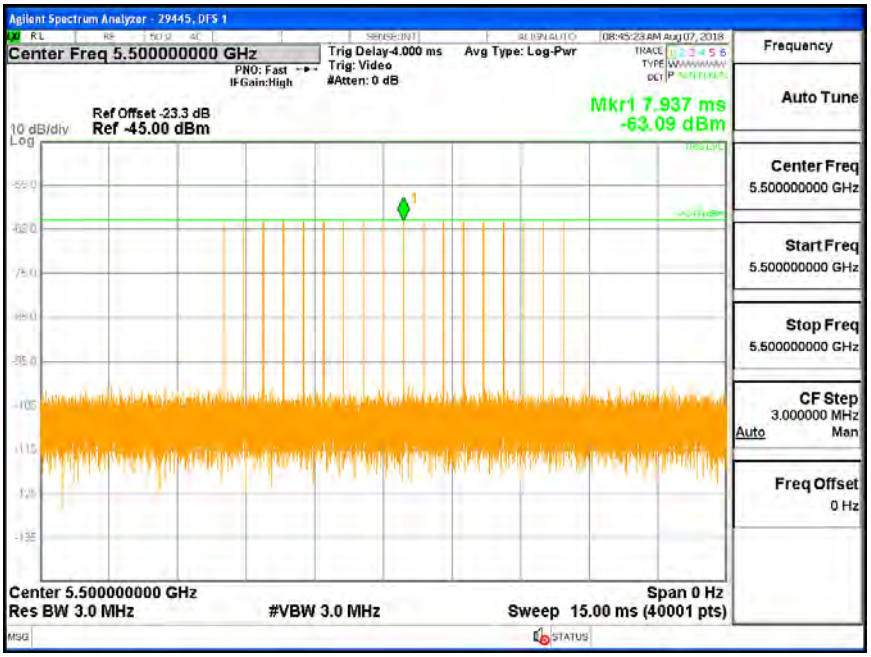
SAMPLE OF RADAR TYPE 1



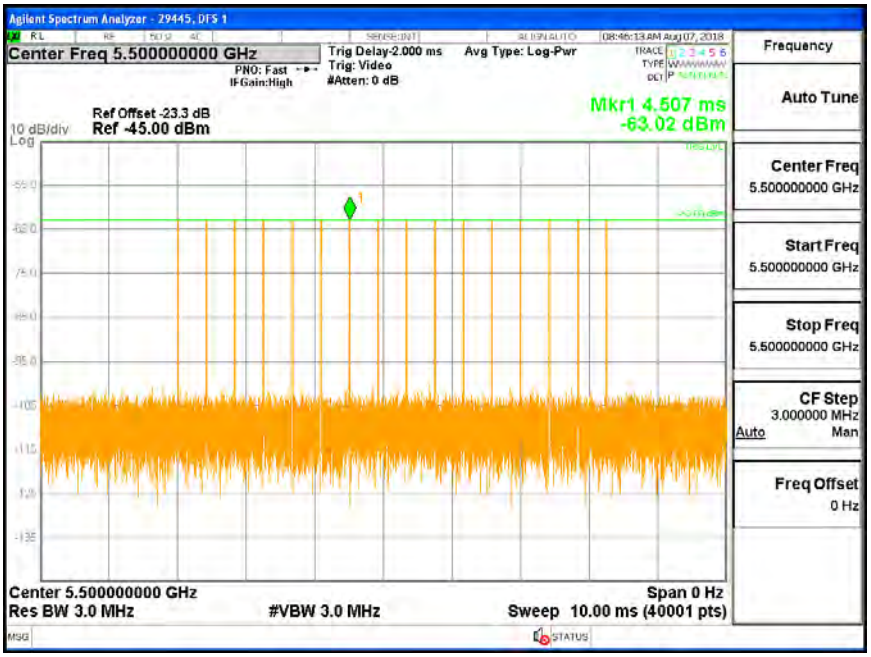
SAMPLE OF RADAR TYPE 2



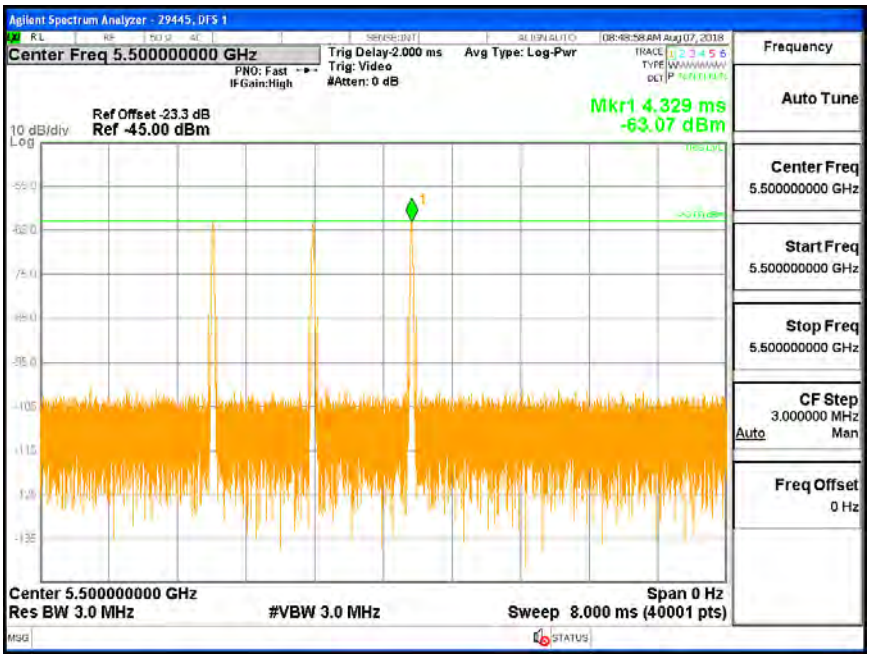
SAMPLE OF RADAR TYPE 3



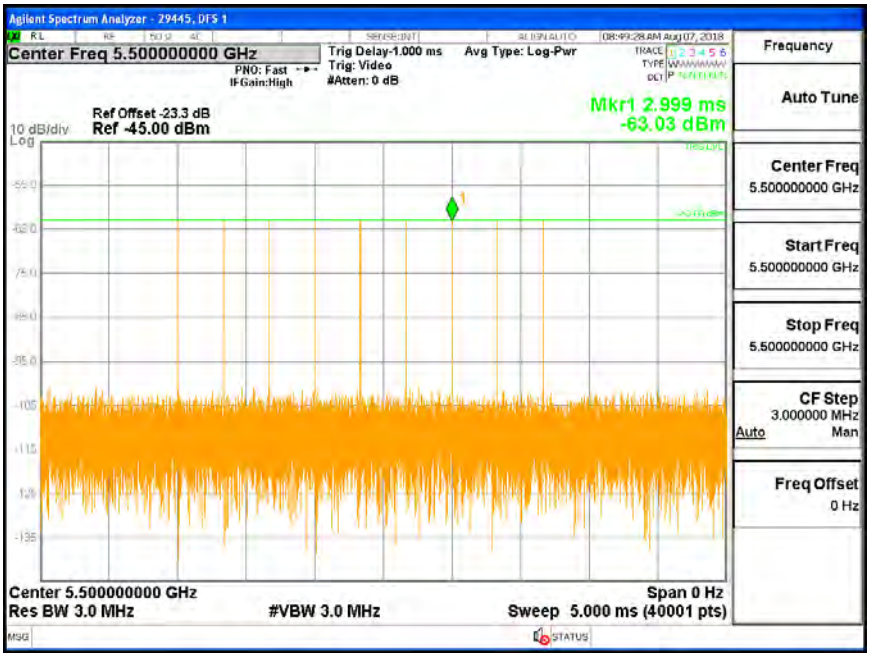
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

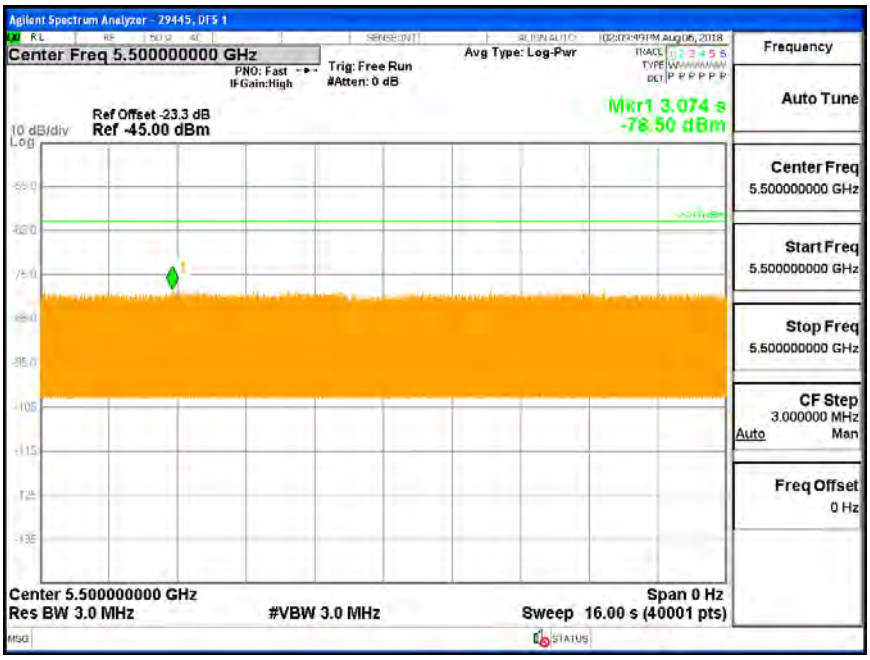


SINGLE BURST OF RADAR TYPE 6

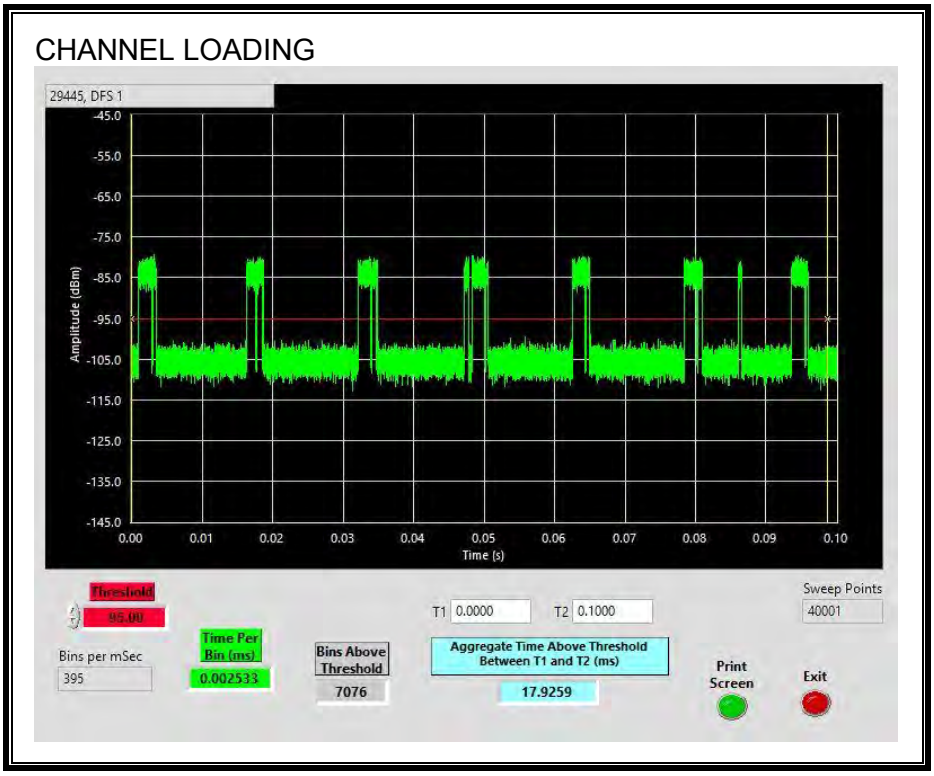


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.925%

5.2.3. CHANNEL AVAILABILITY CHECK TIME

Note: Per table 2 of KDB 905462 D02, this test is only required to be performed at the highest supported channel bandwidth. Therefore the manufacturer has chosen not to perform this test for 20 MHz channel bandwidth.

5.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable. The manufacturer's channel mapping plan prohibits overlapping channel from occurring.

5.2.5. MOVE AND CLOSING TIME

Note: Per table 2 of KDB 905462 D02, this test is only required to be performed at the highest supported channel bandwidth. Therefore the manufacturer has chosen not to perform this test for 20 MHz channel bandwidth.

5.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH

99% BANDWIDTH

RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5510	20	17.794	112.4	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results		29445	DFS 1	
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5490	10	10	100	FL
5495	10	10	100	
5500	10	10	100	
5505	10	10	100	
5510	10	9	90	FH

5.2.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	93.33	60	Pass	5490	5510	17.79	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 2	30	86.67	60	Pass	5490	5510	17.79	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5510	17.79	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 4	30	93.33	60	Pass	5490	5510	17.79	DFS 1	29445	Version 3.3.4
Aggregate		92.50	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5510	17.79	DFS 1	29445	Version 3.3.4
FCC Hopping Type 6	42	97.62	70	Pass	5490	5510		DFS 1	29445	Version 3.3.4

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1

Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5490	Yes
1002	1	658	81	A	5503	Yes
1003	1	598	89	A	5501	Yes
1004	1	578	92	A	5494	Yes
1005	1	538	99	A	5506	Yes
1006	1	558	95	A	5502	Yes
1007	1	798	67	A	5502	Yes
1008	1	818	65	A	5495	Yes
1009	1	898	59	A	5507	Yes
1010	1	918	58	A	5496	Yes
1011	1	878	61	A	5505	Yes
1012	1	938	57	A	5499	Yes
1013	1	618	86	A	5502	Yes
1014	1	838	63	A	5503	Yes
1015	1	738	72	A	5509	Yes
1016	1	1135	47	B	5502	Yes
1017	1	1573	34	B	5504	Yes
1018	1	2335	23	B	5508	Yes
1019	1	1550	35	B	5510	No
1020	1	1247	43	B	5491	No
1021	1	591	90	B	5509	Yes
1022	1	2965	18	B	5495	Yes
1023	1	1244	43	B	5504	Yes
1024	1	2553	21	B	5509	Yes
1025	1	962	55	B	5495	Yes
1026	1	2400	22	B	5494	Yes
1027	1	2291	24	B	5506	Yes
1028	1	1312	41	B	5496	Yes
1029	1	1332	40	B	5503	Yes
1030	1	3030	18	B	5494	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
2001	1.8	187	23	5493	Yes
2002	2.6	157	29	5493	Yes
2003	2	164	26	5493	Yes
2004	3	182	26	5497	Yes
2005	2.5	150	23	5497	Yes
2006	1.8	214	26	5503	Yes
2007	1.6	186	27	5505	Yes
2008	1.1	174	24	5502	Yes
2009	3.2	193	26	5494	No
2010	1	228	23	5495	Yes
2011	3.4	171	28	5498	Yes
2012	1.4	209	23	5502	No
2013	3.9	199	29	5496	Yes
2014	2.1	161	23	5508	Yes
2015	3	155	23	5502	Yes
2016	3.6	202	28	5493	Yes
2017	4.6	162	28	5491	Yes
2018	1.3	175	27	5507	Yes
2019	4.8	220	24	5497	Yes
2020	1.7	156	23	5500	Yes
2021	1.2	205	24	5510	Yes
2022	4.6	189	24	5496	Yes
2023	4.4	161	25	5492	No
2024	3.9	229	29	5490	No
2025	1.9	211	23	5492	Yes
2026	3.8	202	24	5493	Yes
2027	2.1	226	26	5502	Yes
2028	4.2	184	28	5505	Yes
2029	2.6	173	26	5506	Yes
2030	4.9	216	28	5498	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.9	437	18	5494	Yes
3002	7.3	332	17	5508	Yes
3003	8.3	459	17	5500	Yes
3004	9.1	499	17	5497	No
3005	8.5	388	18	5507	Yes
3006	9.5	441	18	5499	Yes
3007	9	343	18	5503	Yes
3008	8.3	291	18	5508	Yes
3009	6.2	339	16	5504	Yes
3010	9.8	418	17	5493	Yes
3011	9.7	360	18	5505	Yes
3012	7.5	334	18	5504	Yes
3013	9.9	407	16	5495	Yes
3014	7.9	276	17	5507	Yes
3015	6.3	495	16	5491	Yes
3016	6.7	377	17	5501	Yes
3017	7.6	358	17	5504	Yes
3018	6	252	16	5493	Yes
3019	9.2	379	16	5509	Yes
3020	7.8	420	16	5505	Yes
3021	7.2	308	17	5499	Yes
3022	8.2	362	16	5495	Yes
3023	9.9	263	17	5509	Yes
3024	7	463	16	5508	Yes
3025	9	259	18	5510	Yes
3026	8.5	472	16	5505	Yes
3027	6.5	281	17	5509	Yes
3028	6.2	255	17	5503	Yes
3029	8.6	461	18	5504	Yes
3030	6.6	448	16	5508	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
4001	13.8	416	16	5510	Yes
4002	18.8	298	12	5504	Yes
4003	11.7	278	12	5498	Yes
4004	17.2	306	16	5494	Yes
4005	15.3	300	16	5500	Yes
4006	12.2	341	15	5491	Yes
4007	19.9	480	13	5508	No
4008	17.8	283	15	5496	Yes
4009	16.9	317	13	5506	Yes
4010	19.5	384	15	5504	Yes
4011	14.8	431	14	5509	Yes
4012	13.6	392	16	5500	Yes
4013	18.5	452	15	5493	Yes
4014	17.8	426	13	5495	Yes
4015	13.9	381	14	5505	Yes
4016	18.5	368	15	5508	No
4017	20	336	15	5501	Yes
4018	16	469	16	5497	Yes
4019	17.9	450	15	5501	Yes
4020	14.3	478	14	5503	Yes
4021	12.5	471	12	5499	Yes
4022	14.2	261	16	5506	Yes
4023	17	401	16	5498	Yes
4024	15	454	13	5494	Yes
4025	14	489	16	5506	Yes
4026	16.7	304	14	5494	Yes
4027	11.9	351	12	5500	Yes
4028	19.9	313	12	5509	Yes
4029	15.6	373	13	5509	Yes
4030	14.9	347	12	5494	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5500	Yes
2	5500	Yes
3	5500	Yes
4	5500	Yes
5	5500	Yes
6	5500	Yes
7	5500	Yes
8	5500	Yes
9	5500	Yes
10	5500	Yes
11	5494	Yes
12	5497	Yes
13	5497	Yes
14	5494	Yes
15	5497	Yes
16	5497	Yes
17	5494	Yes
18	5494	Yes
19	5496	Yes
20	5497	Yes
21	5502	Yes
22	5504	Yes
23	5506	Yes
24	5501	Yes
25	5506	Yes
26	5504	Yes
27	5504	Yes
28	5502	Yes
29	5504	Yes
30	5506	Yes

Note: The Type 5 randomized parameters tested are shown in appendix A.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	339	5490	2	Yes
2	814	5491	2	Yes
3	1289	5492	7	Yes
4	1764	5493	7	Yes
5	2239	5494	6	Yes
6	2714	5495	1	Yes
7	3189	5496	2	Yes
8	3664	5497	4	Yes
9	4139	5498	4	Yes
10	4614	5499	2	Yes
11	5089	5500	2	Yes
12	5564	5501	1	No
13	6039	5502	3	Yes
14	6514	5503	6	Yes
15	6989	5504	2	Yes
16	7464	5505	3	Yes
17	7939	5506	2	Yes
18	8414	5507	3	Yes
19	8889	5508	7	Yes
20	9364	5509	4	Yes
21	9839	5510	4	Yes
22	10314	5490	4	Yes
23	10789	5491	6	Yes
24	11264	5492	5	Yes
25	11739	5493	3	Yes
26	12214	5494	4	Yes
27	12689	5495	4	Yes
28	13164	5496	3	Yes
29	13639	5497	3	Yes
30	14114	5498	6	Yes
31	14589	5499	3	Yes
32	15064	5500	5	Yes
33	15539	5501	2	Yes
34	16014	5502	5	Yes
35	16489	5503	8	Yes
36	16964	5504	4	Yes
37	17439	5505	3	Yes
38	17914	5506	2	Yes
39	18389	5507	1	Yes
40	18864	5508	6	Yes
41	19339	5509	3	Yes
42	19814	5510	5	Yes

5.3. RESULTS FOR 80 MHz BANDWIDTH

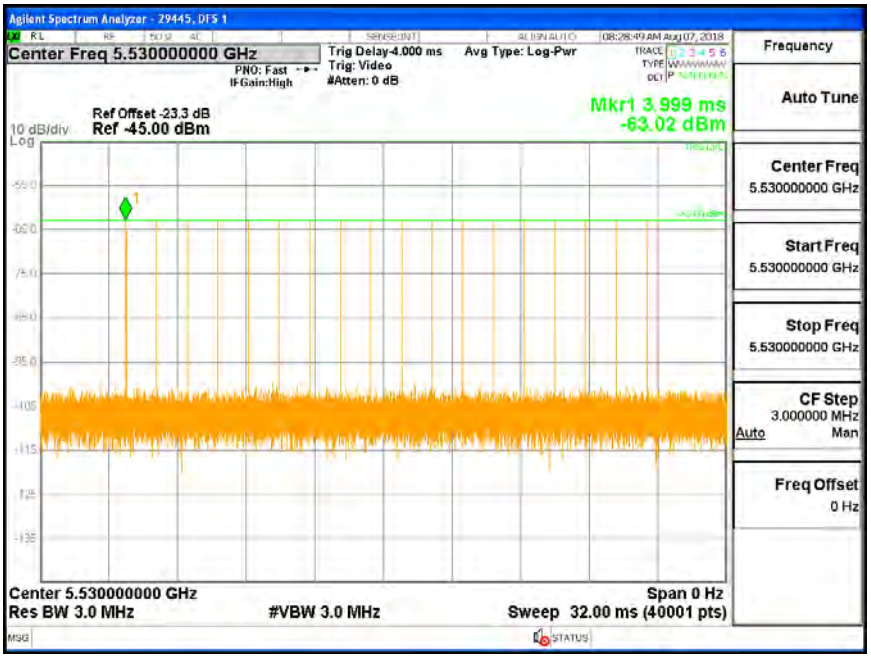
5.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5530 MHz.

5.3.2. RADAR WAVEFORMS AND TRAFFIC

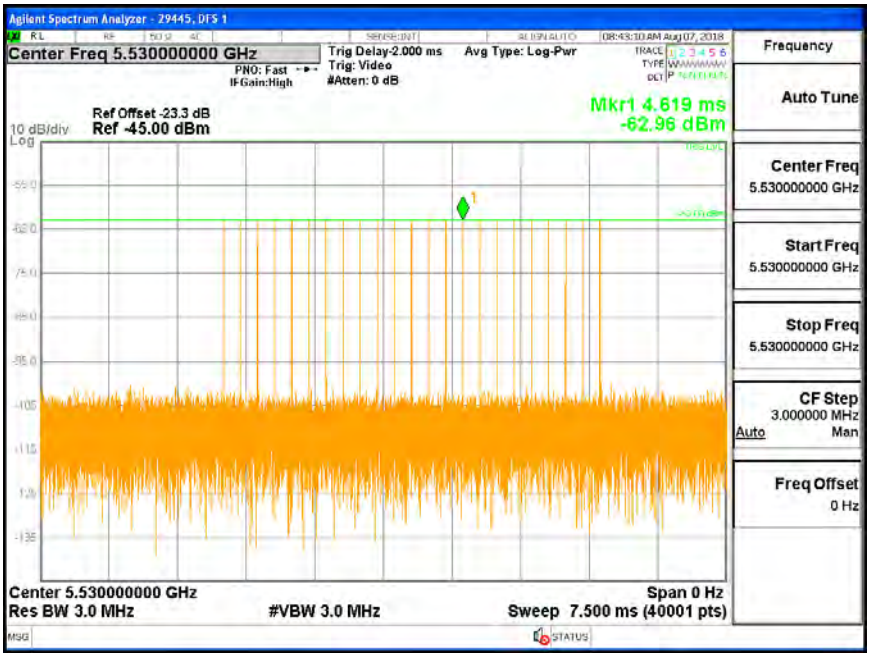
RADAR WAVEFORMS

SHORT PULSE RADAR TYPE 0

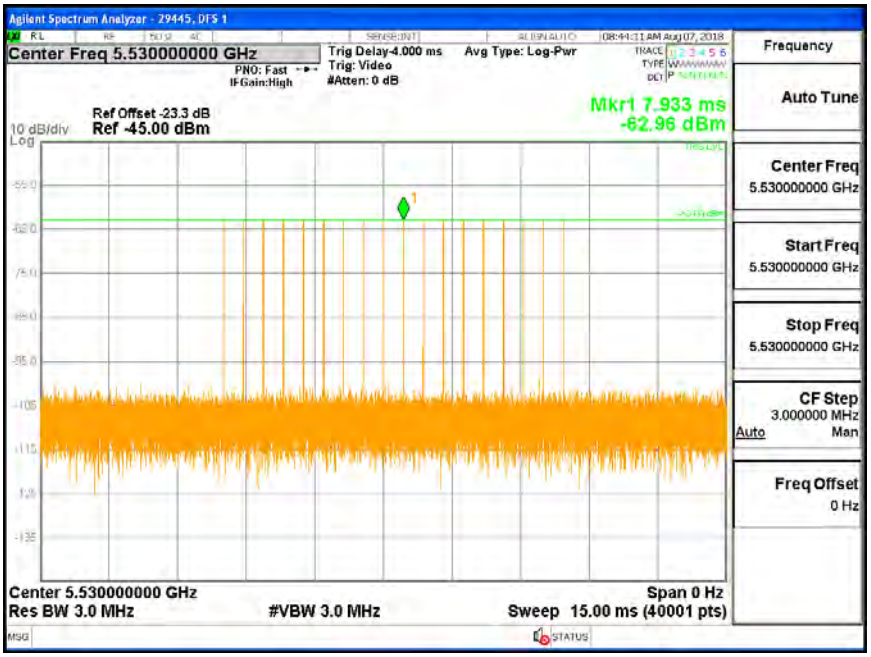


SAMPLE OF RADAR TYPE 1

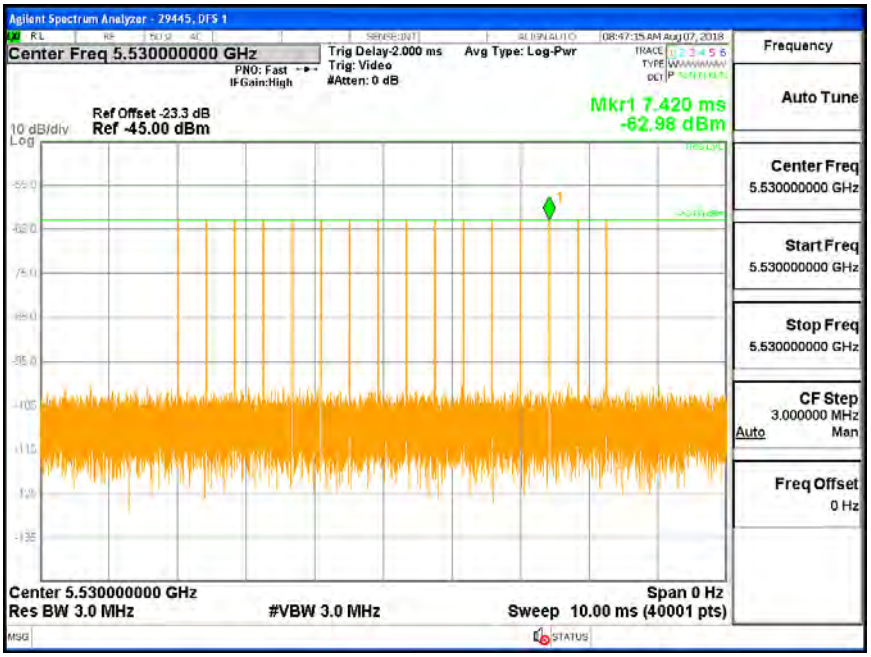
SAMPLE OF RADAR TYPE 2



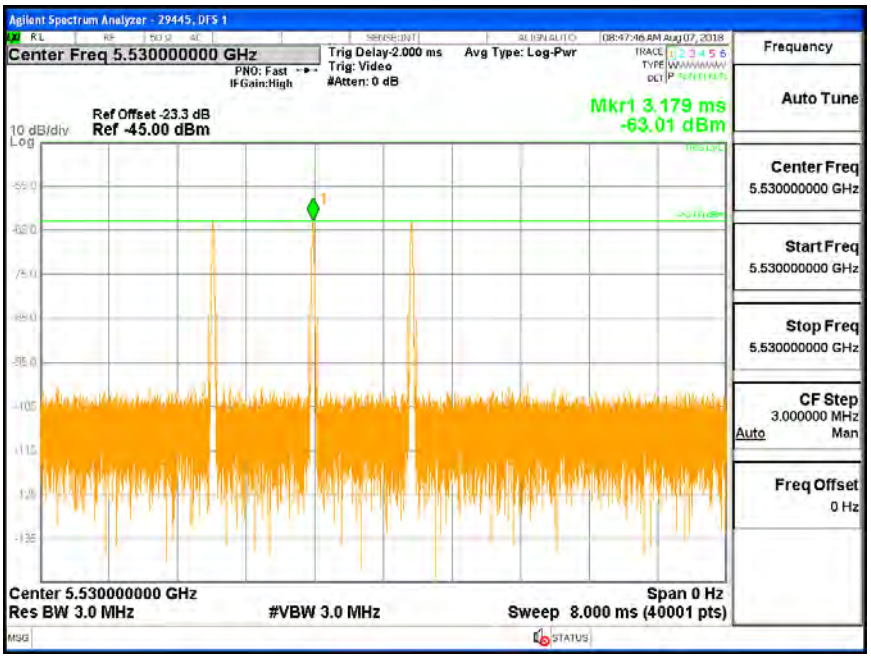
SAMPLE OF RADAR TYPE 3



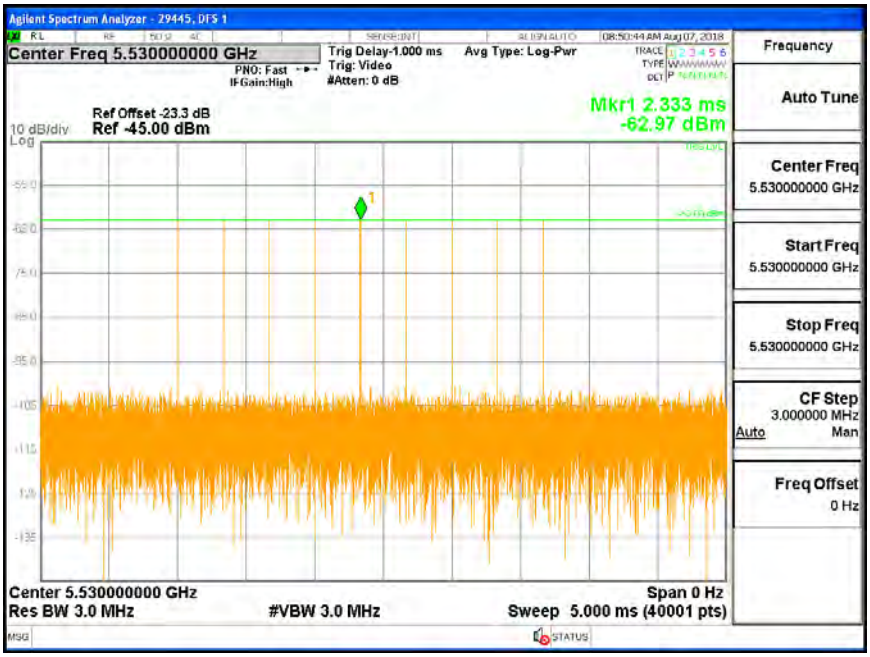
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5



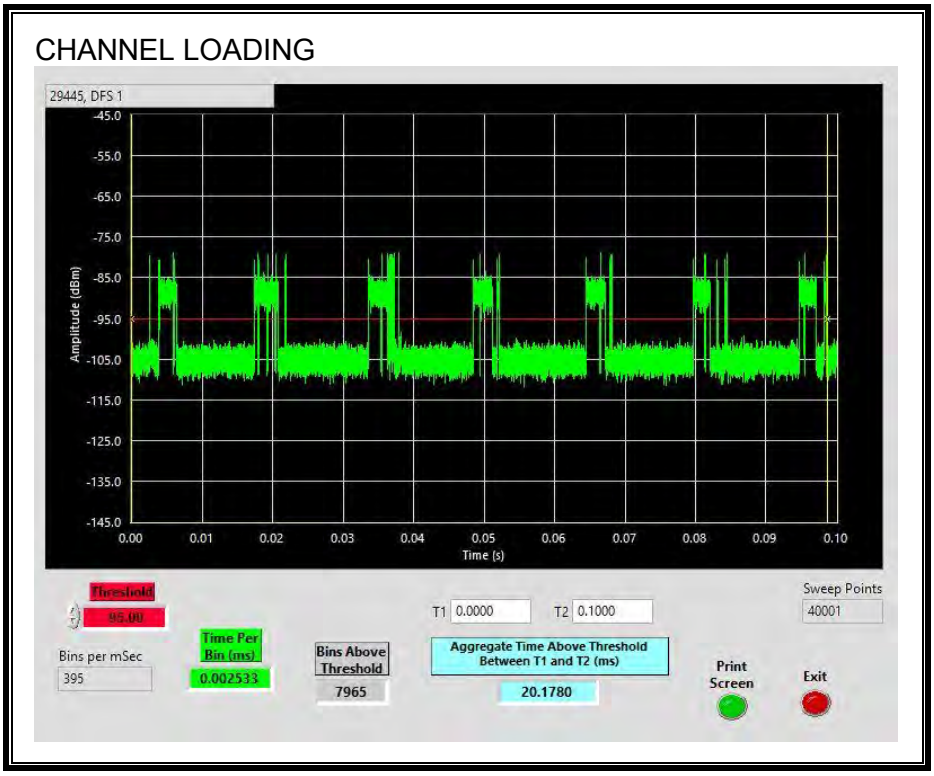
SINGLE BURST OF RADAR TYPE 6



TRAFFIC

TRAFFIC

CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 20.178%

5.3.3. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel then a software reboot command was issued to the EUT. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, a software reboot command was issued to the EUT. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, a software reboot command was issued to the EUT. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

QUANTITATIVE RESULTS

No Radar Triggered

Timing of Reboot (sec)	Timing of Start of Traffic (sec)	Total Power-up Cycle Time (sec)	Initial Power-up Cycle Time (sec)
35.27	142.5	107.2	47.2

Radar Near Beginning of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
34.61	84.97	50.4	3.1

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
34.7	140.1	105.4	58.2

QUALITATIVE RESULTS

Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

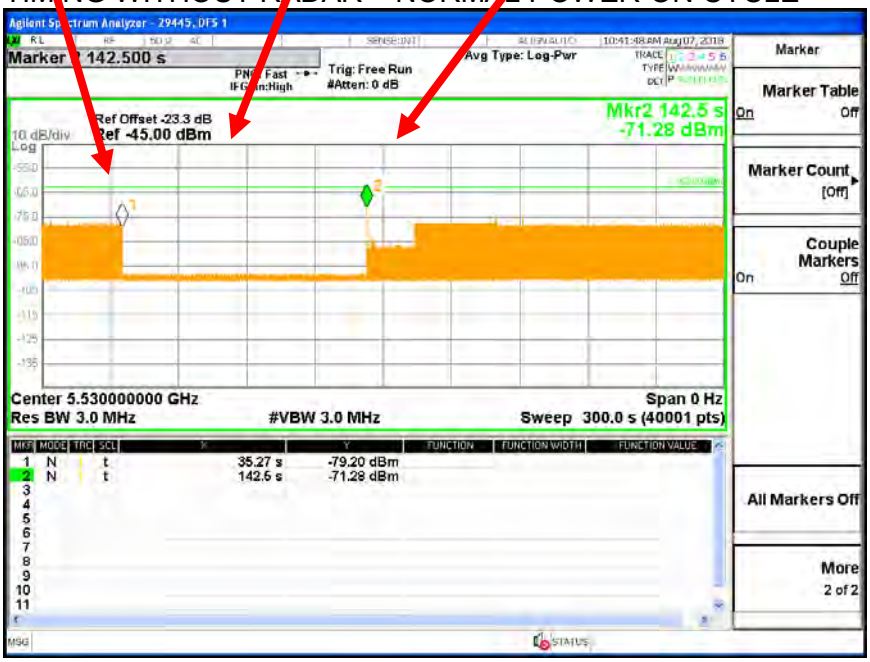
TIMING WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated

TIMING WITHOUT RADAR – NORMAL POWER-ON CYCLE



Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

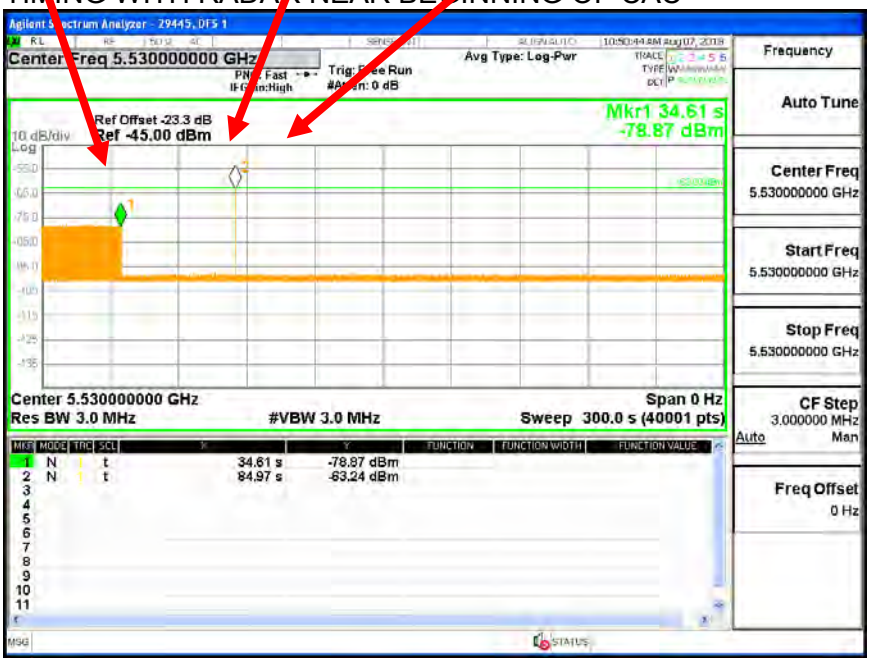
TIMING WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied

TIMING WITH RADAR NEAR BEGINNING OF CAC



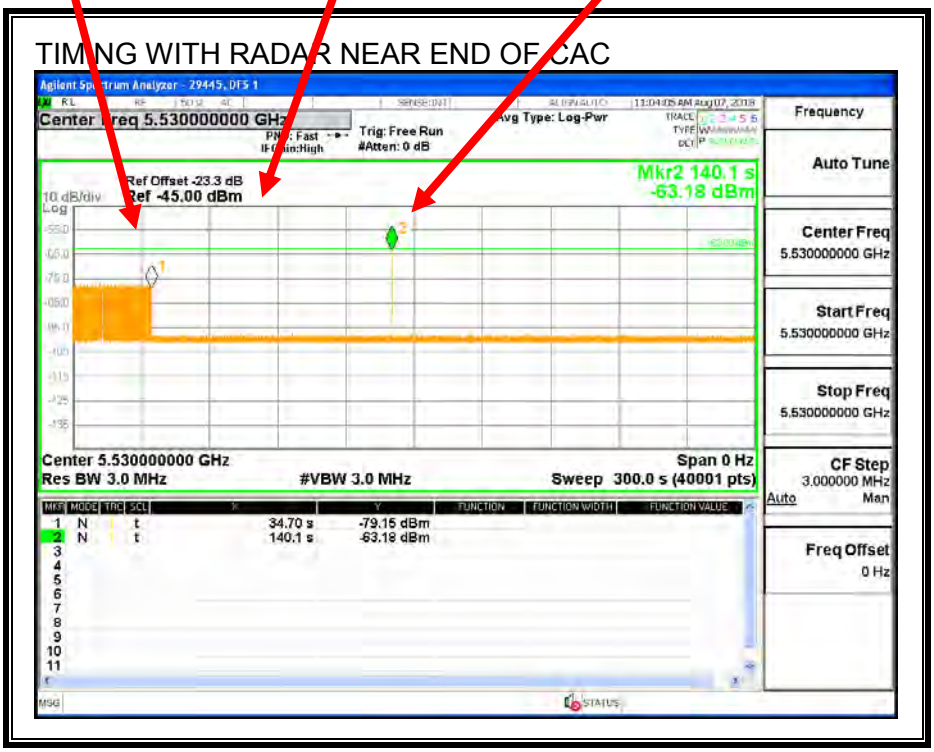
No EUT transmissions were observed after the radar signal.

TIMING WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

5.3.4. OVERLAPPING CHANNEL TESTS

RESULTS

The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

5.3.5. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time (sec)	Limit (sec)
0.504	10

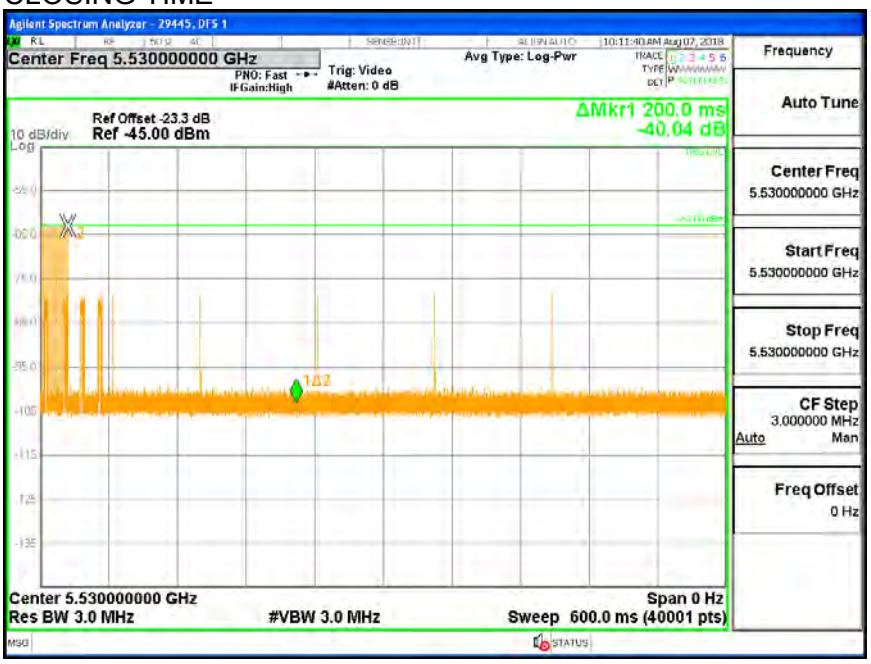
Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
2.4	60

MOVE TIME

MOVE TIME

CHANNEL CLOSING TIME

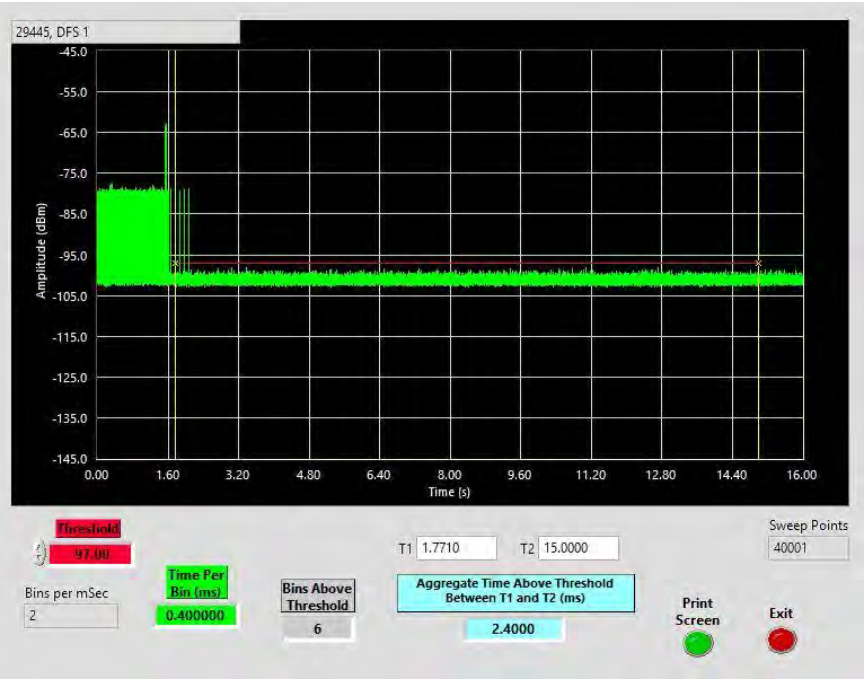
CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.

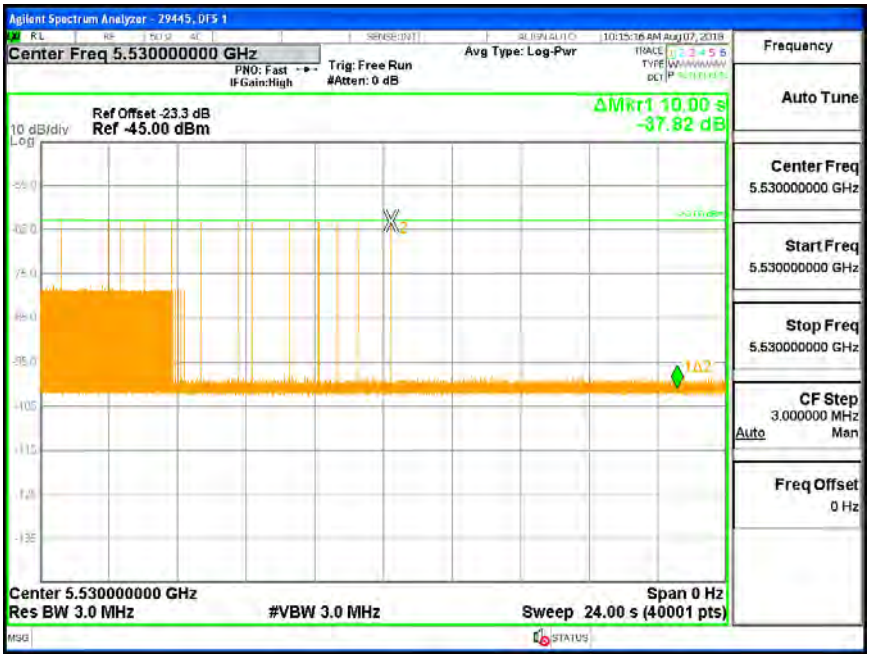
AGGREGATE CLOSING TIME



LONG PULSE CHANNEL MOVE TIME

The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME FOR LONG PULSE RADAR

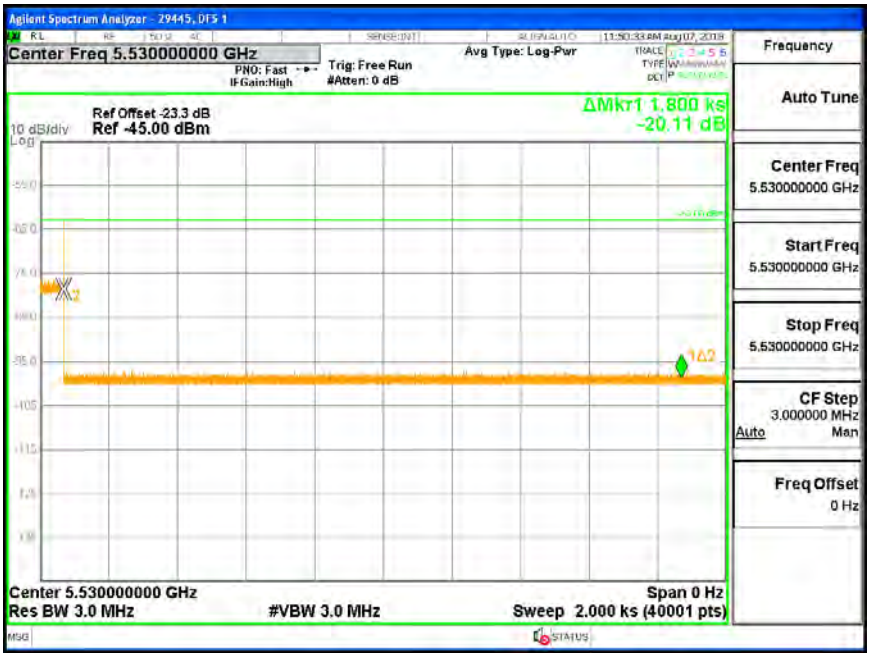


5.3.6. NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.

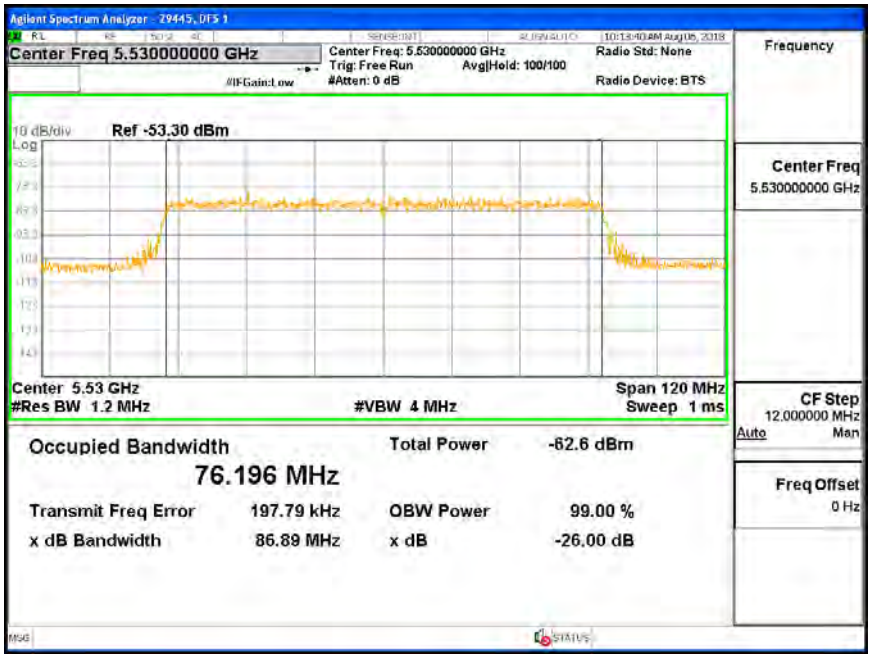
NON-OCCUPANCY PERIOD



5.3.7. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH

99% BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5492	5570	78	76.196	102.4	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results		29445	DFS 1	
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5492	10	10	100	FL
5493	20	18	90	
5494	10	9	90	
5495	10	10	100	
5500	10	10	100	
5505	10	10	100	
5510	10	10	100	
5515	10	9	90	
5520	10	10	100	
5525	10	10	100	
5530	10	10	100	
5535	10	10	100	
5540	10	10	100	
5545	10	10	100	
5550	10	10	100	
5555	10	10	100	
5560	10	10	100	
5565	10	10	100	
5570	10	10	100	FH

5.3.8. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	86.67	60	Pass	5492	5570	76.2	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 2	30	76.67	60	Pass	5492	5570	76.2	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 3	30	100.00	60	Pass	5492	5570	76.2	DFS 1	29445	Version 3.3.4
FCC Short Pulse Type 4	30	66.67	60	Pass	5492	5570	76.2	DFS 1	29445	Version 3.3.4
Aggregate		82.50	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5492	5570	76.2	DFS 1	29445	Version 3.3.4
FCC Hopping Type 6	79	88.61	70	Pass	5492	5570		DFS 1	29445	Version 3.3.4

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1

Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5561	Yes
1002	1	658	81	A	5493	No
1003	1	598	89	A	5559	Yes
1004	1	578	92	A	5539	Yes
1005	1	538	99	A	5496	Yes
1006	1	558	95	A	5518	Yes
1007	1	798	67	A	5515	No
1008	1	818	65	A	5533	Yes
1009	1	898	59	A	5555	Yes
1010	1	918	58	A	5561	Yes
1011	1	878	61	A	5511	Yes
1012	1	938	57	A	5512	Yes
1013	1	618	86	A	5549	Yes
1014	1	838	63	A	5545	Yes
1015	1	738	72	A	5561	Yes
1016	1	1135	47	B	5497	Yes
1017	1	1573	34	B	5526	Yes
1018	1	2335	23	B	5501	Yes
1019	1	1550	35	B	5550	Yes
1020	1	1247	43	B	5546	Yes
1021	1	591	90	B	5548	Yes
1022	1	2965	18	B	5503	No
1023	1	1244	43	B	5507	Yes
1024	1	2553	21	B	5509	No
1025	1	962	55	B	5501	Yes
1026	1	2400	22	B	5570	Yes
1027	1	2291	24	B	5540	Yes
1028	1	1312	41	B	5557	Yes
1029	1	1332	40	B	5537	Yes
1030	1	3030	18	B	5546	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
2001	1.8	187	23	5525	Yes
2002	2.6	157	29	5496	Yes
2003	2	164	26	5495	Yes
2004	3	182	26	5569	No
2005	2.5	150	23	5507	Yes
2006	1.8	214	26	5493	No
2007	1.6	186	27	5565	Yes
2008	1.1	174	24	5529	Yes
2009	3.2	193	26	5510	Yes
2010	1	228	23	5500	Yes
2011	3.4	171	28	5498	No
2012	1.4	209	23	5544	Yes
2013	3.9	199	29	5524	Yes
2014	2.1	161	23	5496	Yes
2015	3	155	23	5566	Yes
2016	3.6	202	28	5492	No
2017	4.6	162	28	5511	Yes
2018	1.3	175	27	5510	No
2019	4.8	220	24	5514	Yes
2020	1.7	156	23	5561	Yes
2021	1.2	205	24	5569	No
2022	4.6	189	24	5538	Yes
2023	4.4	161	25	5541	Yes
2024	3.9	229	29	5507	Yes
2025	1.9	211	23	5531	Yes
2026	3.8	202	24	5548	Yes
2027	2.1	226	26	5498	No
2028	4.2	184	28	5553	Yes
2029	2.6	173	26	5498	Yes
2030	4.9	216	28	5525	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.9	437	18	5534	Yes
3002	7.3	332	17	5524	Yes
3003	8.3	459	17	5494	Yes
3004	9.1	499	17	5539	Yes
3005	8.5	388	18	5562	Yes
3006	9.5	441	18	5538	Yes
3007	9	343	18	5547	Yes
3008	8.3	291	18	5564	Yes
3009	6.2	339	16	5505	Yes
3010	9.8	418	17	5493	Yes
3011	9.7	360	18	5517	Yes
3012	7.5	334	18	5557	Yes
3013	9.9	407	16	5502	Yes
3014	7.9	276	17	5502	Yes
3015	6.3	495	16	5493	Yes
3016	6.7	377	17	5558	Yes
3017	7.6	358	17	5534	Yes
3018	6	252	16	5535	Yes
3019	9.2	379	16	5551	Yes
3020	7.8	420	16	5549	Yes
3021	7.2	308	17	5520	Yes
3022	8.2	362	16	5493	Yes
3023	9.9	263	17	5501	Yes
3024	7	463	16	5538	Yes
3025	9	259	18	5542	Yes
3026	8.5	472	16	5529	Yes
3027	6.5	281	17	5499	Yes
3028	6.2	255	17	5544	Yes
3029	8.6	461	18	5530	Yes
3030	6.6	448	16	5497	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
4001	13.8	416	16	5514	Yes
4002	18.8	298	12	5527	No
4003	11.7	278	12	5536	No
4004	17.2	306	16	5519	Yes
4005	15.3	300	16	5518	Yes
4006	12.2	341	15	5550	Yes
4007	19.9	480	13	5494	Yes
4008	17.8	283	15	5539	No
4009	16.9	317	13	5533	Yes
4010	19.5	384	15	5560	Yes
4011	14.8	431	14	5565	Yes
4012	13.6	392	16	5537	No
4013	18.5	452	15	5533	No
4014	17.8	426	13	5499	Yes
4015	13.9	381	14	5497	Yes
4016	18.5	368	15	5524	Yes
4017	20	336	15	5550	Yes
4018	16	469	16	5500	Yes
4019	17.9	450	15	5561	No
4020	14.3	478	14	5508	Yes
4021	12.5	471	12	5531	No
4022	14.2	261	16	5548	Yes
4023	17	401	16	5540	Yes
4024	15	454	13	5506	Yes
4025	14	489	16	5554	No
4026	16.7	304	14	5543	Yes
4027	11.9	351	12	5532	No
4028	19.9	313	12	5499	Yes
4029	15.6	373	13	5551	Yes
4030	14.9	347	12	5509	No

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5530	Yes
2	5530	Yes
3	5530	Yes
4	5530	Yes
5	5530	Yes
6	5530	Yes
7	5530	Yes
8	5530	Yes
9	5530	Yes
10	5530	Yes
11	5495	Yes
12	5497	Yes
13	5498	Yes
14	5495	Yes
15	5497	Yes
16	5498	Yes
17	5495	Yes
18	5495	Yes
19	5497	Yes
20	5497	Yes
21	5561	Yes
22	5563	Yes
23	5566	Yes
24	5560	Yes
25	5565	Yes
26	5563	Yes
27	5563	Yes
28	5561	Yes
29	5563	Yes
30	5566	Yes

Note: The Type 5 randomized parameters tested are shown in appendix A.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	300	5492	14	Yes
2	775	5493	16	Yes
3	1250	5494	20	Yes
4	1725	5495	20	Yes
5	2200	5496	12	Yes
6	2675	5497	14	Yes
7	3150	5498	12	Yes
8	3625	5499	13	No
9	4100	5500	15	Yes
10	4575	5501	9	No
11	5050	5502	11	Yes
12	5525	5503	18	No
13	6000	5504	16	No
14	6475	5505	13	Yes
15	6950	5506	19	Yes
16	7425	5507	16	Yes
17	7900	5508	23	Yes
18	8375	5509	15	Yes
19	8850	5510	19	Yes
20	9325	5511	14	Yes
21	9800	5512	19	Yes
22	10275	5513	15	Yes
23	10750	5514	17	Yes
24	11225	5515	21	Yes
25	11700	5516	14	Yes
26	12175	5517	13	Yes
27	12650	5518	17	Yes
28	13125	5519	16	Yes
29	13600	5520	15	Yes
30	14075	5521	20	Yes
31	14550	5522	14	Yes
32	15025	5523	16	Yes
33	15500	5524	15	Yes
34	15975	5525	16	Yes
35	16450	5526	19	Yes
36	16925	5527	11	Yes
37	17400	5528	9	No
38	17875	5529	17	No
39	18350	5530	15	No

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	18825	5531	17	No
41	19300	5532	20	No
42	19775	5533	21	Yes
43	20250	5534	20	Yes
44	20725	5535	17	Yes
45	21200	5536	23	Yes
46	21675	5537	18	Yes
47	22150	5538	18	Yes
48	22625	5539	20	Yes
49	23100	5540	14	Yes
50	23575	5541	15	Yes
51	24050	5542	10	Yes
52	24525	5543	8	Yes
53	25000	5544	11	Yes
54	25475	5545	16	Yes
55	25950	5546	12	Yes
56	26425	5547	14	Yes
57	26900	5548	17	Yes
58	27375	5549	26	Yes
59	27850	5550	16	Yes
60	28325	5551	22	Yes
61	28800	5552	19	Yes
62	29275	5553	17	Yes
63	29750	5554	12	Yes
64	30225	5555	18	Yes
65	30700	5556	16	Yes
66	31175	5557	16	Yes
67	31650	5558	14	Yes
68	32125	5559	20	Yes
69	32600	5560	14	Yes
70	33075	5561	17	Yes
71	33550	5562	25	Yes
72	34025	5563	16	Yes
73	34500	5564	13	Yes
74	34975	5565	24	Yes
75	35450	5566	16	Yes
76	35925	5567	23	Yes
77	36400	5568	17	Yes
78	36875	5569	19	Yes
79	37350	5570	11	Yes

5.4. BRIDGE MODE RESULTS

Per KDB 905462, Section 5.1 (footnote 1):

Networks Access Points with Bridge and/or MESH modes of operation are permitted to operate in the DFS bands but must employ a DFS function. The functionality of the Bridge mode as specified in §15.403(a) must be validated in the DFS test report. Devices operating as relays must also employ DFS function. The method used to validate the functionality must be documented and validation data must be documented. Bridge mode can be validated by performing a test statistical performance check (Section 7.8.4) on any one of the radar types. This is an abbreviated test to verify DFS functionality. MESH mode operational methodology must be submitted in the application for certification for evaluation by the FCC.

This device does not support Bridge Mode therefore this test was not performed.

7. APPENDIX A

FCC Type 5 Parameters

FCC Long Pulse 08-06-2018 07:35:34

Waveform Num = 1
Num of Bursts = 13
Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	82681									
1		3	15	95	1167	1150	1056	82681	0	923076
	1637303									
2		1	15	85	1202	0	0	1723357	923077	1846153
	432675									
3		2	15	55	1347	1647	0	2157234	1846154	2769230
	809821									
4		1	15	100	1894	0	0	2970049	2769231	3692307
	952478									
5		3	15	55	1672	1629	1244	3924421	3692308	4615384
	1043516									
6		3	15	75	1758	1398	1697	4972482	4615385	5538461
	1298409									
7		1	15	75	1475	0	0	6275744	5538462	6461538
	463048									
8		3	15	85	1723	1680	1295	6740267	6461539	7384615
	1327769									
9		2	15	55	1808	1449	0	8072734	7384616	8307692
	996943									
10		3	15	65	1595	1526	1851	9072934	8307693	9230769
	659646									
11		3	15	65	1262	1346	1886	9737552	9230770	10153846
	716076									
12		1	15	70	1031	0	0	10458122	10153847	11076923
	1149892									
13		1	15	95	1176	0	0	11609045	11076924	12000000

Total number of pulses in waveform = 27

Waveform Num = 2
Num of Bursts = 13
Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	122723									
1		3	11	65	1313	1929	1937	122723	0	923076
	1146271									
2		1	11	70	1081	0	0	1274173	923077	1846153
	1016146									
3		2	11	100	1227	1159	0	2291400	1846154	2769230
	1376427									
4		2	11	70	1406	1363	0	3670213	2769231	3692307
	141292									
5		2	11	60	1775	1492	0	3814274	3692308	4615384
	991119									
6		2	11	85	1004	1278	0	4808660	4615385	5538461
	1597063									
7		2	11	50	1424	1989	0	6408005	5538462	6461538
	117926									
8		2	11	80	1235	1826	0	6529344	6461539	7384615
	1091606									
9		3	11	50	1706	1586	1860	7624011	7384616	8307692
	714490									
10		1	11	55	1005	0	0	8343653	8307693	9230769
	1000373									
11		3	11	80	1620	1818	1877	9345031	9230770	10153846
	1577304									
12		3	11	50	1287	1637	1911	10927650	10153847	11076923
	227328									
13		1	11	55	1056	0	0	11159813	11076924	12000000

Total number of pulses in waveform = 27

Waveform Num = 3
Num of Bursts = 8
Burst Interval (us) = 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	262694									
1		1	15	95	1458	0	0	262694	0	1499999
	2675939									
2		2	15	85	1338	1219	0	2940091	1500000	2999999
	998164									
3		3	15	60	1732	1107	1672	3940812	3000000	4499999
	1317200									
4		1	15	60	1919	0	0	5262523	4500000	5999999
	1548740									
5		3	15	70	1697	1389	1270	6813182	6000000	7499999
	1764003									
6		2	15	90	1783	1689	0	8581541	7500000	8999999
	1623990									
7		3	15	65	1303	1501	1091	10209003	9000000	10499999
	1176895									
8		2	15	90	1971	1321	0	11389793	10500000	11999999

Total number of pulses in waveform = 17

Waveform Num = 4
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	755536									
1		3	18	90	1304	1262	1346	755536	0	857142
	379753									
2		2	18	55	1390	1031	0	1139201	857143	1714285
	1066728									
3		1	18	95	1176	0	0	2208350	1714286	2571428
	628948									
4		2	18	70	1791	1355	0	2838474	2571429	3428571
	656758									
5		3	18	100	1133	1192	1441	3498378	3428572	4285714
	919436									
6		2	18	80	1954	1227	0	4421580	4285715	5142857
	1028658									
7		2	18	75	1373	1406	0	5453419	5142858	6000000
	656870									
8		3	18	75	1184	1775	1492	6113068	6000001	6857143
	919060									
9		2	18	85	1004	1278	0	7036579	6857144	7714286
	1482628									
10		2	18	50	1424	1989	0	8521489	7714287	8571429
	109473									
11		2	18	80	1235	1826	0	8634375	8571430	9428572
	1013336									
12		3	18	50	1706	1586	1860	9650772	9428573	10285715
	663181									
13		1	18	55	1005	0	0	10319105	10285716	11142858
	928801									
14		3	18	80	1620	1818	1877	11248911	11142859	12000001

Total number of pulses in waveform = 31

Waveform Num = 5
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	593237									
1		1	6	85	1911	0	0	593237	0	705881
	174097									
2		1	6	55	1056	0	0	769245	705882	1411763
	1253196									
3		1	6	85	1202	0	0	2023497	1411764	2117645
	330593									
4		2	6	55	1347	1647	0	2355292	2117646	2823527
	618711									
5		1	6	100	1894	0	0	2976997	2823528	3529409
	727747									
6		3	6	55	1672	1629	1244	3706638	3529410	4235291
	796739									
7		3	6	75	1758	1398	1697	4507922	4235292	4941173
	991925									
8		1	6	75	1475	0	0	5504700	4941174	5647055
	353690									
9		3	6	85	1723	1680	1295	5859865	5647056	6352937
	1014009									
10		2	6	55	1808	1449	0	6878572	6352938	7058819
	761200									
11		3	6	65	1595	1526	1851	7643029	7058820	7764701
	503657									
12		3	6	65	1262	1346	1886	8151658	7764702	8470583
	547033									
13		1	6	70	1031	0	0	8703185	8470584	9176465
	879006									
14		1	6	95	1176	0	0	9583222	9176466	9882347
	517695									
15		2	6	70	1791	1355	0	10102093	9882348	10588229
	540424									
16		3	6	100	1133	1192	1441	10645663	10588230	11294111
	756482									
17		2	6	80	1954	1227	0	11405911	11294112	11999993

Total number of pulses in waveform = 33

Waveform Num = 6
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	442525									
1		2	12	70	1363	1979	0	442525	0	857142
	524735									
2		1	12	90	1492	0	0	970602	857143	1714285
	921627									
3		2	12	85	1004	1278	0	1893721	1714286	2571428
	1482628									
4		2	12	50	1424	1989	0	3378631	2571429	3428571
	109473									
5		2	12	80	1235	1826	0	3491517	3428572	4285714
	1013336									
6		3	12	50	1706	1586	1860	4507914	4285715	5142857
	663181									
7		1	12	55	1005	0	0	5176247	5142858	6000000
	928801									
8		3	12	80	1620	1818	1877	6106053	6000001	6857143
	1464016									
9		3	12	50	1287	1637	1911	7575384	6857144	7714286
	211030									
10		1	12	55	1056	0	0	7791249	7714287	8571429
	1522168									
11		1	12	85	1202	0	0	9314473	8571430	9428572
	401686									
12		2	12	55	1347	1647	0	9717361	9428573	10285715
	751805									
13		1	12	100	1894	0	0	10472160	10285716	11142858
	884256									
14		3	12	55	1672	1629	1244	11358310	11142859	12000001

Total number of pulses in waveform = 27

Waveform Num = 7
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	341021									
1		3	13	70	1697	1389	1270	341021	0	631578
	740135									
2		2	13	90	1783	1689	0	1085512	631579	1263157
	681406									
3		3	13	65	1303	1501	1091	1770390	1263158	1894736
	493969									
4		2	13	90	1971	1321	0	2268254	1894737	2526315
	446060									
5		2	13	95	1834	1740	0	2717606	2526316	3157894
	784117									
6		1	13	65	1886	0	0	3505297	3157895	3789473
	490372									
7		1	13	70	1031	0	0	3997555	3789474	4421052
	786336									
8		1	13	95	1176	0	0	4784922	4421053	5052631
	463045									
9		2	13	70	1791	1355	0	5249143	5052632	5684210
	483277									
10		3	13	100	1133	1192	1441	5735566	5684211	6315789
	676436									
11		2	13	80	1954	1227	0	6415768	6315790	6947368
	756989									
12		2	13	75	1373	1406	0	7175938	6947369	7578947
	483388									
13		3	13	75	1184	1775	1492	7662105	7578948	8210526
	676060									
14		2	13	85	1004	1278	0	8342616	8210527	8842105
	1091139									
15		2	13	50	1424	1989	0	9436037	8842106	9473684
	80556									
16		2	13	80	1235	1826	0	9520006	9473685	10105263
	745569									
17		3	13	50	1706	1586	1860	10268636	10105264	10736842
	487647									
18		1	13	55	1005	0	0	10761435	10736843	11368421
	683951									
19		3	13	80	1620	1818	1877	11446391	11368422	12000000

Total number of pulses in waveform = 40

Waveform Num = 8
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	593237									
1		1	6	85	1911	0	0	593237	0	705881
	174097									
2		1	6	55	1056	0	0	769245	705882	1411763
	1253196									
3		1	6	85	1202	0	0	2023497	1411764	2117645
	330593									
4		2	6	55	1347	1647	0	2355292	2117646	2823527
	618711									
5		1	6	100	1894	0	0	2976997	2823528	3529409
	727747									
6		3	6	55	1672	1629	1244	3706638	3529410	4235291
	796739									
7		3	6	75	1758	1398	1697	4507922	4235292	4941173
	991925									
8		1	6	75	1475	0	0	5504700	4941174	5647055
	353690									
9		3	6	85	1723	1680	1295	5859865	5647056	6352937
	1014009									
10		2	6	55	1808	1449	0	6878572	6352938	7058819
	761200									
11		3	6	65	1595	1526	1851	7643029	7058820	7764701
	503657									
12		3	6	65	1262	1346	1886	8151658	7764702	8470583
	547033									
13		1	6	70	1031	0	0	8703185	8470584	9176465
	879006									
14		1	6	95	1176	0	0	9583222	9176466	9882347
	517695									
15		2	6	70	1791	1355	0	10102093	9882348	10588229
	540424									
16		3	6	100	1133	1192	1441	10645663	10588230	11294111
	756482									
17		2	6	80	1954	1227	0	11405911	11294112	11999993

Total number of pulses in waveform = 33

Waveform Num = 9
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	442525									
1		2	12	70	1363	1979	0	442525	0	857142
	524735									
2		1	12	90	1492	0	0	970602	857143	1714285
	921627									
3		2	12	85	1004	1278	0	1893721	1714286	2571428
	1482628									
4		2	12	50	1424	1989	0	3378631	2571429	3428571
	109473									
5		2	12	80	1235	1826	0	3491517	3428572	4285714
	1013336									
6		3	12	50	1706	1586	1860	4507914	4285715	5142857
	663181									
7		1	12	55	1005	0	0	5176247	5142858	6000000
	928801									
8		3	12	80	1620	1818	1877	6106053	6000001	6857143
	1464016									
9		3	12	50	1287	1637	1911	7575384	6857144	7714286
	211030									
10		1	12	55	1056	0	0	7791249	7714287	8571429
	1522168									
11		1	12	85	1202	0	0	9314473	8571430	9428572
	401686									
12		2	12	55	1347	1647	0	9717361	9428573	10285715
	751805									
13		1	12	100	1894	0	0	10472160	10285716	11142858
	884256									
14		3	12	55	1672	1629	1244	11358310	11142859	12000001

Total number of pulses in waveform = 27

Waveform Num = 10
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	341021									
1		3	13	70	1697	1389	1270	341021	0	631578
	740135									
2		2	13	90	1783	1689	0	1085512	631579	1263157
	681406									
3		3	13	65	1303	1501	1091	1770390	1263158	1894736
	493969									
4		2	13	90	1971	1321	0	2268254	1894737	2526315
	446060									
5		2	13	95	1834	1740	0	2717606	2526316	3157894
	784117									
6		1	13	65	1886	0	0	3505297	3157895	3789473
	490372									
7		1	13	70	1031	0	0	3997555	3789474	4421052
	786336									
8		1	13	95	1176	0	0	4784922	4421053	5052631
	463045									
9		2	13	70	1791	1355	0	5249143	5052632	5684210
	483277									
10		3	13	100	1133	1192	1441	5735566	5684211	6315789
	676436									
11		2	13	80	1954	1227	0	6415768	6315790	6947368
	756989									
12		2	13	75	1373	1406	0	7175938	6947369	7578947
	483388									
13		3	13	75	1184	1775	1492	7662105	7578948	8210526
	676060									
14		2	13	85	1004	1278	0	8342616	8210527	8842105
	1091139									
15		2	13	50	1424	1989	0	9436037	8842106	9473684
	80556									
16		2	13	80	1235	1826	0	9520006	9473685	10105263
	745569									
17		3	13	50	1706	1586	1860	10268636	10105264	10736842
	487647									
18		1	13	55	1005	0	0	10761435	10736843	11368421
	683951									
19		3	13	80	1620	1818	1877	11446391	11368422	12000000

Total number of pulses in waveform = 40

Waveform Num = 11
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	593237									
1		1	6	85	1911	0	0	593237	0	705881
	174097									
2		1	6	55	1056	0	0	769245	705882	1411763
	1253196									
3		1	6	85	1202	0	0	2023497	1411764	2117645
	330593									
4		2	6	55	1347	1647	0	2355292	2117646	2823527
	618711									
5		1	6	100	1894	0	0	2976997	2823528	3529409
	727747									
6		3	6	55	1672	1629	1244	3706638	3529410	4235291
	796739									
7		3	6	75	1758	1398	1697	4507922	4235292	4941173
	991925									
8		1	6	75	1475	0	0	5504700	4941174	5647055
	353690									
9		3	6	85	1723	1680	1295	5859865	5647056	6352937
	1014009									
10		2	6	55	1808	1449	0	6878572	6352938	7058819
	761200									
11		3	6	65	1595	1526	1851	7643029	7058820	7764701
	503657									
12		3	6	65	1262	1346	1886	8151658	7764702	8470583
	547033									
13		1	6	70	1031	0	0	8703185	8470584	9176465
	879006									
14		1	6	95	1176	0	0	9583222	9176466	9882347
	517695									
15		2	6	70	1791	1355	0	10102093	9882348	10588229
	540424									
16		3	6	100	1133	1192	1441	10645663	10588230	11294111
	756482									
17		2	6	80	1954	1227	0	11405911	11294112	11999993

Total number of pulses in waveform = 33

Waveform Num = 12
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	442525									
1		2	12	70	1363	1979	0	442525	0	857142
	524735									
2		1	12	90	1492	0	0	970602	857143	1714285
	921627									
3		2	12	85	1004	1278	0	1893721	1714286	2571428
	1482628									
4		2	12	50	1424	1989	0	3378631	2571429	3428571
	109473									
5		2	12	80	1235	1826	0	3491517	3428572	4285714
	1013336									
6		3	12	50	1706	1586	1860	4507914	4285715	5142857
	663181									
7		1	12	55	1005	0	0	5176247	5142858	6000000
	928801									
8		3	12	80	1620	1818	1877	6106053	6000001	6857143
	1464016									
9		3	12	50	1287	1637	1911	7575384	6857144	7714286
	211030									
10		1	12	55	1056	0	0	7791249	7714287	8571429
	1522168									
11		1	12	85	1202	0	0	9314473	8571430	9428572
	401686									
12		2	12	55	1347	1647	0	9717361	9428573	10285715
	751805									
13		1	12	100	1894	0	0	10472160	10285716	11142858
	884256									
14		3	12	55	1672	1629	1244	11358310	11142859	12000001

Total number of pulses in waveform = 27

Waveform Num = 13
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	341021									
1		3	13	70	1697	1389	1270	341021	0	631578
	740135									
2		2	13	90	1783	1689	0	1085512	631579	1263157
	681406									
3		3	13	65	1303	1501	1091	1770390	1263158	1894736
	493969									
4		2	13	90	1971	1321	0	2268254	1894737	2526315
	446060									
5		2	13	95	1834	1740	0	2717606	2526316	3157894
	784117									
6		1	13	65	1886	0	0	3505297	3157895	3789473
	490372									
7		1	13	70	1031	0	0	3997555	3789474	4421052
	786336									
8		1	13	95	1176	0	0	4784922	4421053	5052631
	463045									
9		2	13	70	1791	1355	0	5249143	5052632	5684210
	483277									
10		3	13	100	1133	1192	1441	5735566	5684211	6315789
	676436									
11		2	13	80	1954	1227	0	6415768	6315790	6947368
	756989									
12		2	13	75	1373	1406	0	7175938	6947369	7578947
	483388									
13		3	13	75	1184	1775	1492	7662105	7578948	8210526
	676060									
14		2	13	85	1004	1278	0	8342616	8210527	8842105
	1091139									
15		2	13	50	1424	1989	0	9436037	8842106	9473684
	80556									
16		2	13	80	1235	1826	0	9520006	9473685	10105263
	745569									
17		3	13	50	1706	1586	1860	10268636	10105264	10736842
	487647									
18		1	13	55	1005	0	0	10761435	10736843	11368421
	683951									
19		3	13	80	1620	1818	1877	11446391	11368422	12000000

Total number of pulses in waveform = 40

Waveform Num = 14
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	593237									
1		1	6	85	1911	0	0	593237	0	705881
	174097									
2		1	6	55	1056	0	0	769245	705882	1411763
	1253196									
3		1	6	85	1202	0	0	2023497	1411764	2117645
	330593									
4		2	6	55	1347	1647	0	2355292	2117646	2823527
	618711									
5		1	6	100	1894	0	0	2976997	2823528	3529409
	727747									
6		3	6	55	1672	1629	1244	3706638	3529410	4235291
	796739									
7		3	6	75	1758	1398	1697	4507922	4235292	4941173
	991925									
8		1	6	75	1475	0	0	5504700	4941174	5647055
	353690									
9		3	6	85	1723	1680	1295	5859865	5647056	6352937
	1014009									
10		2	6	55	1808	1449	0	6878572	6352938	7058819
	761200									
11		3	6	65	1595	1526	1851	7643029	7058820	7764701
	503657									
12		3	6	65	1262	1346	1886	8151658	7764702	8470583
	547033									
13		1	6	70	1031	0	0	8703185	8470584	9176465
	879006									
14		1	6	95	1176	0	0	9583222	9176466	9882347
	517695									
15		2	6	70	1791	1355	0	10102093	9882348	10588229
	540424									
16		3	6	100	1133	1192	1441	10645663	10588230	11294111
	756482									
17		2	6	80	1954	1227	0	11405911	11294112	11999993

Total number of pulses in waveform = 33

Waveform Num = 15
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	442525									
1		2	12	70	1363	1979	0	442525	0	857142
	524735									
2		1	12	90	1492	0	0	970602	857143	1714285
	921627									
3		2	12	85	1004	1278	0	1893721	1714286	2571428
	1482628									
4		2	12	50	1424	1989	0	3378631	2571429	3428571
	109473									
5		2	12	80	1235	1826	0	3491517	3428572	4285714
	1013336									
6		3	12	50	1706	1586	1860	4507914	4285715	5142857
	663181									
7		1	12	55	1005	0	0	5176247	5142858	6000000
	928801									
8		3	12	80	1620	1818	1877	6106053	6000001	6857143
	1464016									
9		3	12	50	1287	1637	1911	7575384	6857144	7714286
	211030									
10		1	12	55	1056	0	0	7791249	7714287	8571429
	1522168									
11		1	12	85	1202	0	0	9314473	8571430	9428572
	401686									
12		2	12	55	1347	1647	0	9717361	9428573	10285715
	751805									
13		1	12	100	1894	0	0	10472160	10285716	11142858
	884256									
14		3	12	55	1672	1629	1244	11358310	11142859	12000001

Total number of pulses in waveform = 27

Waveform Num = 16
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	341021									
1		3	13	70	1697	1389	1270	341021	0	631578
	740135									
2		2	13	90	1783	1689	0	1085512	631579	1263157
	681406									
3		3	13	65	1303	1501	1091	1770390	1263158	1894736
	493969									
4		2	13	90	1971	1321	0	2268254	1894737	2526315
	446060									
5		2	13	95	1834	1740	0	2717606	2526316	3157894
	784117									
6		1	13	65	1886	0	0	3505297	3157895	3789473
	490372									
7		1	13	70	1031	0	0	3997555	3789474	4421052
	786336									
8		1	13	95	1176	0	0	4784922	4421053	5052631
	463045									
9		2	13	70	1791	1355	0	5249143	5052632	5684210
	483277									
10		3	13	100	1133	1192	1441	5735566	5684211	6315789
	676436									
11		2	13	80	1954	1227	0	6415768	6315790	6947368
	756989									
12		2	13	75	1373	1406	0	7175938	6947369	7578947
	483388									
13		3	13	75	1184	1775	1492	7662105	7578948	8210526
	676060									
14		2	13	85	1004	1278	0	8342616	8210527	8842105
	1091139									
15		2	13	50	1424	1989	0	9436037	8842106	9473684
	80556									
16		2	13	80	1235	1826	0	9520006	9473685	10105263
	745569									
17		3	13	50	1706	1586	1860	10268636	10105264	10736842
	487647									
18		1	13	55	1005	0	0	10761435	10736843	11368421
	683951									
19		3	13	80	1620	1818	1877	11446391	11368422	12000000

Total number of pulses in waveform = 40

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

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	593237									
1		1	6	85	1911	0	0	593237	0	705881
	174097									
2		1	6	55	1056	0	0	769245	705882	1411763
	1253196									
3		1	6	85	1202	0	0	2023497	1411764	2117645
	330593									
4		2	6	55	1347	1647	0	2355292	2117646	2823527
	618711									
5		1	6	100	1894	0	0	2976997	2823528	3529409
	727747									
6		3	6	55	1672	1629	1244	3706638	3529410	4235291
	796739									
7		3	6	75	1758	1398	1697	4507922	4235292	4941173
	991925									
8		1	6	75	1475	0	0	5504700	4941174	5647055
	353690									
9		3	6	85	1723	1680	1295	5859865	5647056	6352937
	1014009									
10		2	6	55	1808	1449	0	6878572	6352938	7058819
	761200									
11		3	6	65	1595	1526	1851	7643029	7058820	7764701
	503657									
12		3	6	65	1262	1346	1886	8151658	7764702	8470583
	547033									
13		1	6	70	1031	0	0	8703185	8470584	9176465
	565976									
14		3	6	80	1895	1295	1151	9270192	9176466	9882347
	1067993									
15		2	6	50	1030	1646	0	10342526	9882348	10588229
	468875									
16		3	6	100	1159	1800	1099	10814077	10588230	11294111
	539754									
17		3	6	100	1878	1201	1184	11357889	11294112	11999993

Total number of pulses in waveform = 36

Waveform Num = 18
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1130348									
1		3	6	60	1903	1493	1210	1130348	0	1333332
	1524929									
2		1	6	70	1723	0	0	2659883	1333333	2666665
	886797									
3		3	6	60	1767	1141	1707	3548403	2666666	3999998
	1170586									
4		1	6	65	1954	0	0	4723604	3999999	5333331
	1376129									
5		3	6	70	1732	1423	1304	6101687	5333332	6666664
	1509267									
6		3	6	95	1818	1724	1757	7615413	6666665	7999997
	1170774									
7		1	6	65	1535	0	0	8791486	7999998	9333330
	1376371									
8		3	6	75	1783	1005	1355	10169392	9333331	10666663
	1567519									
9		2	6	95	1868	1775	0	11741054	10666664	11999996

Total number of pulses in waveform = 20

Waveform Num = 19
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	255787									
1		3	11	80	1176	1894	1065	255787	0	705881
	876720									
2		1	11	100	1680	0	0	1136642	705882	1411763
	948602									
3		3	11	70	1826	1390	1347	2086924	1411764	2117645
	317796									
4		3	11	85	1227	1475	1116	2409283	2117646	2823527
	546841									
5		1	11	100	1262	0	0	2959942	2823528	3529409
	848013									
6		2	11	75	1407	1441	0	3809217	3529410	4235291
	993370									
7		1	11	50	1219	0	0	4805435	4235292	4941173
	161856									
8		2	11	55	1466	1689	0	4968510	4941174	5647055
	1063890									
9		1	11	60	1569	0	0	6035555	5647056	6352937
	740047									
10		2	11	50	1980	1064	0	6777171	6352938	7058819
	806551									
11		1	11	95	1108	0	0	7586766	7058820	7764701
	806860									
12		1	11	90	1621	0	0	8394734	7764702	8470583
	432876									
13		1	11	55	1133	0	0	8829231	8470584	9176465
	806954									
14		1	11	50	1646	0	0	9637318	9176466	9882347
	469231									
15		3	11	100	1159	1800	1099	10108195	9882348	10588229
	539754									
16		3	11	100	1878	1201	1184	10652007	10588230	11294111
	804311									
17		1	11	50	1697	0	0	11460581	11294112	11999993

Total number of pulses in waveform = 30

Waveform Num = 20
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	234898									
1		1	12	95	1149	0	0	234898	0	631578
	484325									
2		3	12	100	1929	1252	1767	720372	631579	1263157
	878645									
3		3	12	85	1279	1287	1954	1603965	1263158	1894736
	648853									
4		3	12	70	1732	1423	1304	2257338	1894737	2526315
	711934									
5		3	12	95	1818	1724	1757	2973731	2526316	3157894
	553300									
6		1	12	65	1535	0	0	3532330	3157895	3789473
	650266									
7		3	12	75	1783	1005	1355	4184131	3789474	4421052
	740152									
8		2	12	95	1868	1775	0	4928426	4421053	5052631
	680633									
9		3	12	70	1920	1586	1176	5612702	5052632	5684210
	657817									
10		1	12	70	1056	0	0	6275201	5684211	6315789
	283753									
11		3	12	80	1937	1450	1826	6560010	6315790	6947368
	524758									
12		2	12	100	1971	1637	0	7089981	6947369	7578947
	1106931									
13		2	12	55	1415	1107	0	8200520	7578948	8210526
	323020									
14		1	12	60	1518	0	0	8526062	8210527	8842105
	328116									
15		2	12	70	1398	1013	0	8855696	8842106	9473684
	720860									
16		1	12	90	1526	0	0	9578967	9473685	10105263
	678617									
17		2	12	85	1038	1312	0	10259110	10105264	10736842
	1091901									
18		2	12	80	1458	1022	0	11353361	10736843	11368421
	554584									
19		1	12	80	1270	0	0	11910425	11368422	12000000

Total number of pulses in waveform = 39

Waveform Num = 21
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1191350									
1		1	16	90	1621	0	0	1191350	0	1333332
	818319									
2		1	16	55	1133	0	0	2011290	1333333	2666665
	1525699									
3		1	16	50	1646	0	0	3538122	2666666	3999998
	887992									
4		3	16	100	1159	1800	1099	4427760	3999999	5333331
	1022326									
5		3	16	100	1878	1201	1184	5454144	5333332	6666664
	1523056									
6		1	16	50	1697	0	0	6981463	6666665	7999997
	1512069									
7		3	16	75	1210	1851	1149	8495229	7999998	9333330
	1022124									
8		3	16	100	1929	1252	1767	9521563	9333331	10666663
	1862363									
9		3	16	85	1279	1287	1954	11388874	10666664	11999996

Total number of pulses in waveform = 19

Waveform Num = 22
Num of Bursts = 18
Burst Interval (us) = 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	552277									
1		3	11	70	1304	1578	1979	552277	0	666666
	333239									
2		3	11	85	1757	1715	1330	890377	666667	1333333
	957286									
3		2	11	80	1843	1483	0	1852465	1333334	2000000
	517163									
4		1	11	65	1629	0	0	2372954	2000001	2666667
	543849									
5		3	11	95	1775	1808	1765	2918432	2666668	3333334
	651048									
6		3	11	80	1176	1894	1065	3574828	3333335	4000001
	827812									
7		1	11	100	1680	0	0	4406775	4000002	4666668
	895622									
8		3	11	70	1826	1390	1347	5304077	4666669	5333335
	300043									
9		3	11	85	1227	1475	1116	5608683	5333336	6000002
	516324									
10		1	11	100	1262	0	0	6128825	6000003	6666669
	800783									
11		2	11	75	1407	1441	0	6930870	6666670	7333336
	938033									
12		1	11	50	1219	0	0	7871751	7333337	8000003
	152844									
13		2	11	55	1466	1689	0	8025814	8000004	8666670
	1004570									
14		1	11	60	1569	0	0	9033539	8666671	9333337
	698793									
15		2	11	50	1980	1064	0	9733901	9333338	10000004
	761630									
16		1	11	95	1108	0	0	10498575	10000005	10666671
	761940									
17		1	11	90	1621	0	0	11261623	10666672	11333338
	408785									
18		1	11	55	1133	0	0	11672029	11333339	12000005

Total number of pulses in waveform = 34

Waveform Num = 23
Num of Bursts = 8
Burst Interval (us) = 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	237901									
1		2	5	85	1852	1911	0	237901	0	1499999
	2569803									
2		3	5	55	1322	1672	1946	2811467	1500000	2999999
	370057									
3		1	5	60	1090	0	0	3186464	3000000	4499999
	2665231									
4		1	5	85	1236	0	0	5852785	4500000	5999999
	703761									
5		2	5	60	1851	1149	0	6557782	6000000	7499999
	1151067									
6		3	5	100	1929	1252	1767	7711849	7500000	8999999
	2095996									
7		3	5	85	1279	1287	1954	9812793	9000000	10499999
	1547409									
8		3	5	70	1732	1423	1304	11364722	10500000	11999999

Total number of pulses in waveform = 18

Waveform Num = 24
Num of Bursts = 20
Burst Interval (us) = 600000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	201177									
1		3	18	85	1757	1715	1330	201177	0	599999
	860978									
2		2	18	80	1843	1483	0	1066957	600000	1199999
	465284									
3		1	18	65	1629	0	0	1535567	1200000	1799999
	489188									
4		3	18	95	1775	1808	1765	2026384	1800000	2399999
	585461									
5		3	18	80	1176	1894	1065	2617193	2400000	2999999
	744664									
6		1	18	100	1680	0	0	3365992	3000000	3599999
	805556									
7		3	18	70	1826	1390	1347	4173228	3600000	4199999
	269863									
8		3	18	85	1227	1475	1116	4447654	4200000	4799999
	464443									
9		1	18	100	1262	0	0	4915915	4800000	5399999
	720489									
10		2	18	75	1407	1441	0	5637666	5400000	5999999
	843960									
11		1	18	50	1219	0	0	6484474	6000000	6599999
	137524									
12		2	18	55	1466	1689	0	6623217	6600000	7199999
	903723									
13		1	18	60	1569	0	0	7530095	7200000	7799999
	628659									
14		2	18	50	1980	1064	0	8160323	7800000	8399999
	685263									
15		1	18	95	1108	0	0	8848630	8400000	8999999
	685572									
16		1	18	90	1621	0	0	9535310	9000000	9599999
	367832									
17		1	18	55	1133	0	0	9904763	9600000	10199999
	685667									
18		1	18	50	1646	0	0	10591563	10200000	10799999
	398565									
19		3	18	100	1159	1800	1099	10991774	10800000	11399999
	458320									
20		3	18	100	1878	1201	1184	11454152	11400000	11999999

Total number of pulses in waveform = 38

Waveform Num = 25
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1130348									
1		3	6	60	1903	1493	1210	1130348	0	1333332
	1524929									
2		1	6	70	1723	0	0	2659883	1333333	2666665
	886797									
3		3	6	60	1767	1141	1707	3548403	2666666	3999998
	1170586									
4		1	6	65	1954	0	0	4723604	3999999	5333331
	1376129									
5		3	6	70	1732	1423	1304	6101687	5333332	6666664
	1509267									
6		3	6	95	1818	1724	1757	7615413	6666665	7999997
	1170774									
7		1	6	65	1535	0	0	8791486	7999998	9333330
	1376371									
8		3	6	75	1783	1005	1355	10169392	9333331	10666663
	1567519									
9		2	6	95	1868	1775	0	11741054	10666664	11999996

Total number of pulses in waveform = 20

Waveform Num = 26
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	255787									
1		3	11	80	1176	1894	1065	255787	0	705881
	876720									
2		1	11	100	1680	0	0	1136642	705882	1411763
	948602									
3		3	11	70	1826	1390	1347	2086924	1411764	2117645
	317796									
4		3	11	85	1227	1475	1116	2409283	2117646	2823527
	546841									
5		1	11	100	1262	0	0	2959942	2823528	3529409
	848013									
6		2	11	75	1407	1441	0	3809217	3529410	4235291
	993370									
7		1	11	50	1219	0	0	4805435	4235292	4941173
	161856									
8		2	11	55	1466	1689	0	4968510	4941174	5647055
	1063890									
9		1	11	60	1569	0	0	6035555	5647056	6352937
	740047									
10		2	11	50	1980	1064	0	6777171	6352938	7058819
	806551									
11		1	11	95	1108	0	0	7586766	7058820	7764701
	806860									
12		1	11	90	1621	0	0	8394734	7764702	8470583
	432876									
13		1	11	55	1133	0	0	8829231	8470584	9176465
	806954									
14		1	11	50	1646	0	0	9637318	9176466	9882347
	469231									
15		3	11	100	1159	1800	1099	10108195	9882348	10588229
	539754									
16		3	11	100	1878	1201	1184	10652007	10588230	11294111
	804311									
17		1	11	50	1697	0	0	11460581	11294112	11999993

Total number of pulses in waveform = 30

Waveform Num = 27
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	234898									
1		1	12	95	1149	0	0	234898	0	631578
	484325									
2		3	12	100	1929	1252	1767	720372	631579	1263157
	878645									
3		3	12	85	1279	1287	1954	1603965	1263158	1894736
	648853									
4		3	12	70	1732	1423	1304	2257338	1894737	2526315
	711934									
5		3	12	95	1818	1724	1757	2973731	2526316	3157894
	553300									
6		1	12	65	1535	0	0	3532330	3157895	3789473
	650266									
7		3	12	75	1783	1005	1355	4184131	3789474	4421052
	740152									
8		2	12	95	1868	1775	0	4928426	4421053	5052631
	680633									
9		3	12	70	1920	1586	1176	5612702	5052632	5684210
	657817									
10		1	12	70	1056	0	0	6275201	5684211	6315789
	283753									
11		3	12	80	1937	1450	1826	6560010	6315790	6947368
	524758									
12		2	12	100	1971	1637	0	7089981	6947369	7578947
	1106931									
13		2	12	55	1415	1107	0	8200520	7578948	8210526
	323020									
14		1	12	60	1518	0	0	8526062	8210527	8842105
	328116									
15		2	12	70	1398	1013	0	8855696	8842106	9473684
	720860									
16		1	12	90	1526	0	0	9578967	9473685	10105263
	678617									
17		2	12	85	1038	1312	0	10259110	10105264	10736842
	1091901									
18		2	12	80	1458	1022	0	11353361	10736843	11368421
	554584									
19		1	12	80	1270	0	0	11910425	11368422	12000000

Total number of pulses in waveform = 39

Waveform Num = 28
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1191350									
1		1	16	90	1621	0	0	1191350	0	1333332
	818319									
2		1	16	55	1133	0	0	2011290	1333333	2666665
	1525699									
3		1	16	50	1646	0	0	3538122	2666666	3999998
	887992									
4		3	16	100	1159	1800	1099	4427760	3999999	5333331
	1022326									
5		3	16	100	1878	1201	1184	5454144	5333332	6666664
	1523056									
6		1	16	50	1697	0	0	6981463	6666665	7999997
	1512069									
7		3	16	75	1210	1851	1149	8495229	7999998	9333330
	1022124									
8		3	16	100	1929	1252	1767	9521563	9333331	10666663
	1862363									
9		3	16	85	1279	1287	1954	11388874	10666664	11999996

Total number of pulses in waveform = 19

Waveform Num = 29
Num of Bursts = 18
Burst Interval (us) = 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	552277									
1		3	11	70	1304	1578	1979	552277	0	666666
	333239									
2		3	11	85	1757	1715	1330	890377	666667	1333333
	957286									
3		2	11	80	1843	1483	0	1852465	1333334	2000000
	517163									
4		1	11	65	1629	0	0	2372954	2000001	2666667
	543849									
5		3	11	95	1775	1808	1765	2918432	2666668	3333334
	651048									
6		3	11	80	1176	1894	1065	3574828	3333335	4000001
	827812									
7		1	11	100	1680	0	0	4406775	4000002	4666668
	895622									
8		3	11	70	1826	1390	1347	5304077	4666669	5333335
	300043									
9		3	11	85	1227	1475	1116	5608683	5333336	6000002
	516324									
10		1	11	100	1262	0	0	6128825	6000003	6666669
	800783									
11		2	11	75	1407	1441	0	6930870	6666670	7333336
	938033									
12		1	11	50	1219	0	0	7871751	7333337	8000003
	152844									
13		2	11	55	1466	1689	0	8025814	8000004	8666670
	1004570									
14		1	11	60	1569	0	0	9033539	8666671	9333337
	698793									
15		2	11	50	1980	1064	0	9733901	9333338	10000004
	761630									
16		1	11	95	1108	0	0	10498575	10000005	10666671
	761940									
17		1	11	90	1621	0	0	11261623	10666672	11333338
	408785									
18		1	11	55	1133	0	0	11672029	11333339	12000005

Total number of pulses in waveform = 34

Waveform Num = 30
Num of Bursts = 8
Burst Interval (us) = 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	237901									
1		2	5	85	1852	1911	0	237901	0	1499999
	2569803									
2		3	5	55	1322	1672	1946	2811467	1500000	2999999
	370057									
3		1	5	60	1090	0	0	3186464	3000000	4499999
	2665231									
4		1	5	85	1236	0	0	5852785	4500000	5999999
	703761									
5		2	5	60	1851	1149	0	6557782	6000000	7499999
	1151067									
6		3	5	100	1929	1252	1767	7711849	7500000	8999999
	2095996									
7		3	5	85	1279	1287	1954	9812793	9000000	10499999
	1547409									
8		3	5	70	1732	1423	1304	11364722	10500000	11999999

Total number of pulses in waveform = 18

END OF REPORT