



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

CERTIFICATION TEST REPORT

FOR

ePMP 5GHz E4K 8x8 802.11ax OUTDOOR ACCESS POINT

MODEL NUMBERS: ePMP 4500AP and ePMP 4500C

MODEL TESTED: ePMP 4500AP

FCC ID: Z8H89FT0065

IC: 109W-0065

REPORT NUMBER: 14684931-E1V1

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Prepared for
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Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CAMBIUM NETWORKS, INC.
3800 GOLF RD., SUITE 360
ROLLING MEADOWS, IL., 60008, U.S.A.

EUT DESCRIPTION: ePMP 5GHz E4K 8x8 802.11ax OUTDOOR ACCESS POINT

MODEL: ePMP 4500AP and ePMP 4500C

MODEL TESTED: ePMP 4500AP

SERIAL NUMBER: BC:E6:7C:10:03:67

DATE TESTED: FEBRUARY 13 to 14, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
DFS Portion of CFR 47 Part 15 Subpart E	Complies
DFS Portion of ISED 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. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

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.

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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 KDB 789033, KDB 905462 D02 and D03 and RSS-247 Issue 2.

3. SUMMARY OF TEST RESULTS

Requirement Description	Result	Remarks
DFS Portion of FCC 47 CFR PART 15 SUBPART E	Complies	
DFS Portion of ISED CANADA RSS-247 ISSUE 2	Complies	

4. REFERENCE DOCUMENTS

Measurements of transmitter parameters as referenced in this report and all other manufacturer's declarations relevant to the RF test requirements are documented in Sporton Labs report number FR093027-02.

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

5. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input checked="" type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, California, USA	US0104	2324A	550739
	Building 2: 47266 Benicia Street, Fremont, California, USA	US0104	2324A	550739
	Building 4: 47658 Kato Rd, Fremont, California, USA	US0104	2324A	550739

6. DECISION RULES AND MEASUREMENT UNCERTAINTY

6.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

6.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement).

7. DYNAMIC FREQUENCY SELECTION

7.1. OVERVIEW

7.1.1. LIMITS

INNOVATION, SCIENCE and ECONOMIC DEVELOPMENT CANADA (ISED)

ISED 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)
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	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. \geq 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
<p>Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna</p> <p>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.</p> <p>Note 3: E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.</p>	

Table 4: DFS Response requirement values

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

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: $\{(1/360) \times (19 \times 10^6 / \text{PRI}_{\text{usec}})\}$	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 <i>Detection Bandwidth</i> test, <i>Channel Move Time</i> , and <i>Channel Closing Time</i> tests.					

Table 6 – Long Pulse Radar Test Signal

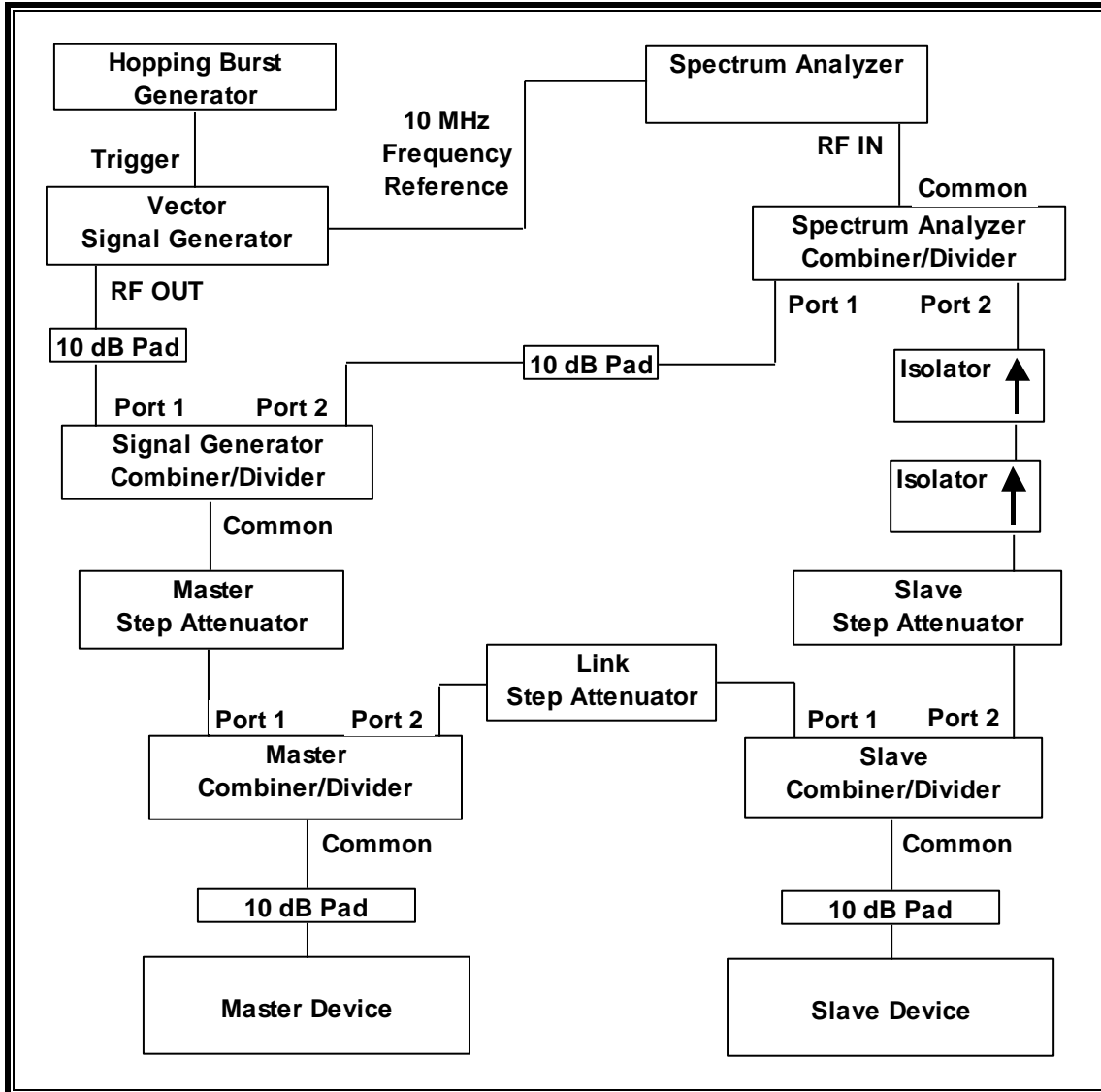
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

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

7.1.2. TEST AND MEASUREMENT SYSTEM

CONDUCTED 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.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), additional combiner/dividers are inserted between the Master Combiner/Divider and the pad connected to the Master Device (and/or between the Slave Combiner/Divider and the pad connected to the Slave Device). Additional pads may be utilized such that there is one pad at each RF port on each EUT.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected in place of the master device. 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 Link Step Attenuator 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 WLAN traffic level, as displayed on the spectrum analyzer, is confirmed to be at lower amplitude than the radar detection threshold and is confirmed to be the Radar Detection Device rather than the associated device. If a different setting of the Master Step Attenuator is required to meet the above conditions, a new System Calibration is performed for the new Master Step Attenuator setting.

TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	ID No.	Cal Due
Spectrum Analyzer, PXA, 3Hz to 8.4GHz	Keysight	N9030A	150667	01/31/24
Signal Generator, MXG X-Series RF Vector	Keysight	N5182B	215999	02/07/24
Frequency Extender	Keysight	N5182BX	213906	02/06/24
Arbitrary Waveform Generator	Agilent / HP	33220A	80815	01/31/24

Note: An MXG series Signal Generator and separate external Frequency Extender module are shown in the preceding test system block diagram as a stand-alone Vector Signal Generator.

7.1.3. 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	4.1	In-Service Monitoring (Probability of Detection)
PXA Read	3.1	Signal Generator Screen Capture
SGXProject.exe	1.7	Radar Waveform Generation and Download

7.1.4. TEST ROOM ENVIRONMENT

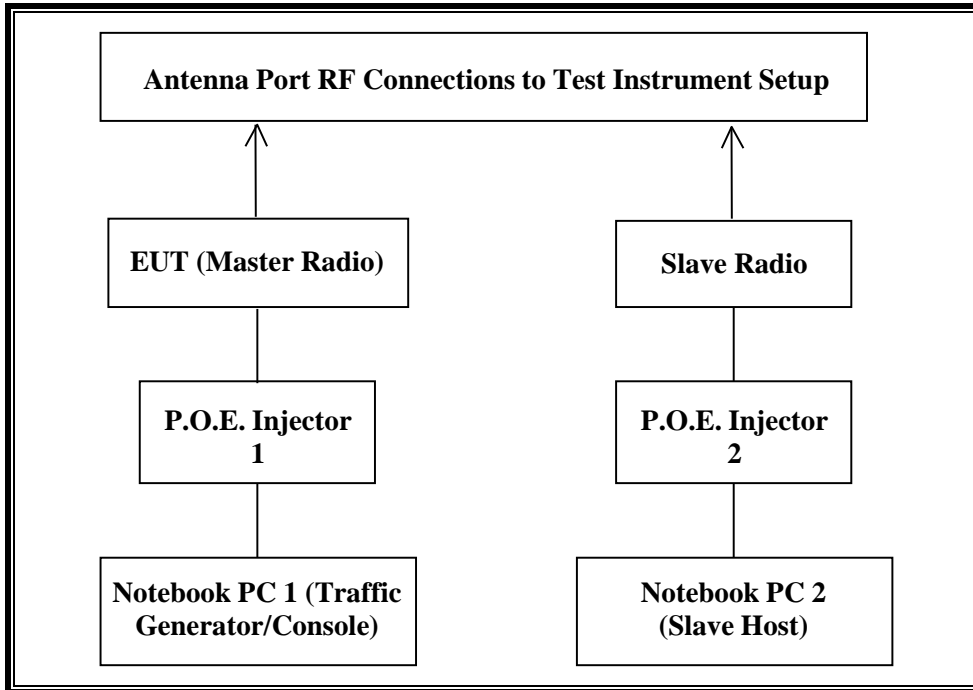
The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	24.2 and 24.5 °C
Humidity	35 and 26 %

7.1.5. SETUP OF EUT

CONDUCTED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

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

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
P.O.E. Injector 1 (Master)	Cambium Networks	NET-P60-56IN	N000000L142A21 53000001	DoC
Notebook PC 1 (Master Console)	Lenovo	Type 4236-B92	PB-HEX04 12/05	DoC
AC Adapter 1 (Notebook PC 1)	Lenovo	42T4418	11S42T4418Z1ZG WG08R90M	DoC
ePMP 5GHz Force 4525L (Slave Device)	Cambium Networks	4525L	BC:E6:7C:90:03: B1	Z8H89FT0062
P.O.E. Injector 2 (Slave)	Cambium Networks	NET-P15-30IN	N000900L001C18 47004449	DoC
Notebook PC 2 (Slave Host)	Lenovo	Type 20B7- S0A200	PF-02JN9J 14/06	DoC
AC Adapter 2 (Notebook PC 2)	Lenovo	ADLX65NLC2A	11S45N0259Z1ZS 974594A9	DoC

7.1.6. DESCRIPTION OF EUT

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

For ISED 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 the only antenna assembly utilized with the EUT has a gain of 17 dBi.

One integral orthogonally polarized antenna assembly is 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 antenna gain and procedural adjustments, the required conducted threshold at the antenna port is $-64 + 17 + 1 = -46$ dBm.

The calibrated conducted DFS Detection Threshold level is set to -46 dBm.

The EUT uses two transmitter/receiver chains, each connected to a 50-ohm coaxial antenna port. All antenna ports are connected to the test system via a power divider to perform conducted 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 802.11ax architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

Channel puncturing is not supported by the EUT.

The software installed in the EUT is version 5.4.2.2.

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 ePMP 5GHz E4K 8x8 802.11ax Outdoor Access Point, FCC ID: Z8H89FT0065. The minimum antenna gain for the Master Device is 17 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is $-64 + 17 + 1 = -46$ dBm.

The calibrated conducted DFS Detection Threshold level is set to -46 dBm.

The software installed in the access point is version 5.4.2.2.

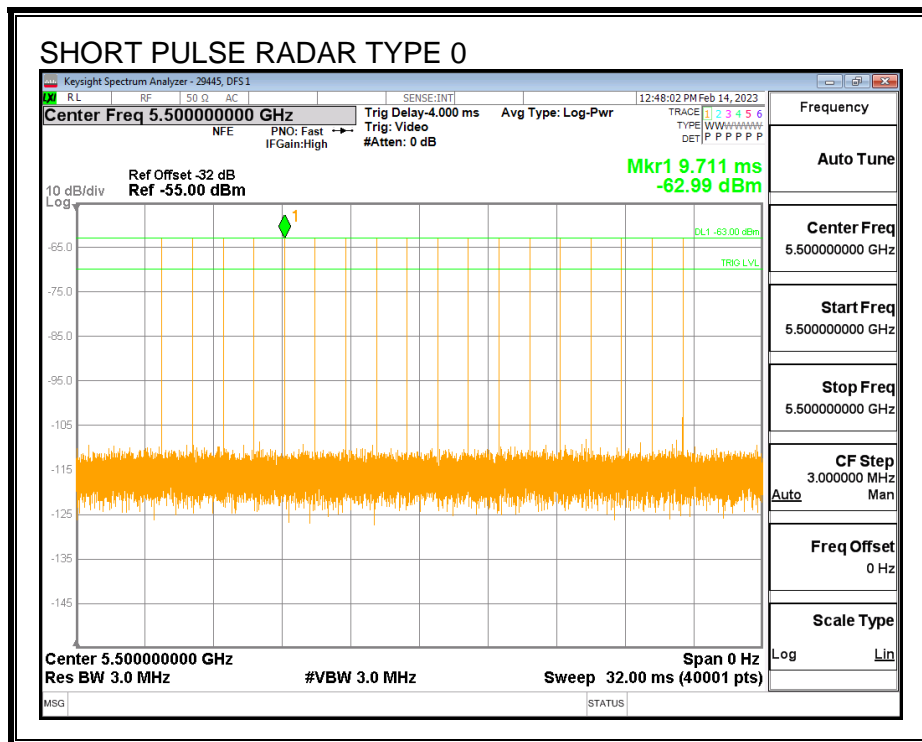
7.2. RESULTS FOR 20 MHz BANDWIDTH

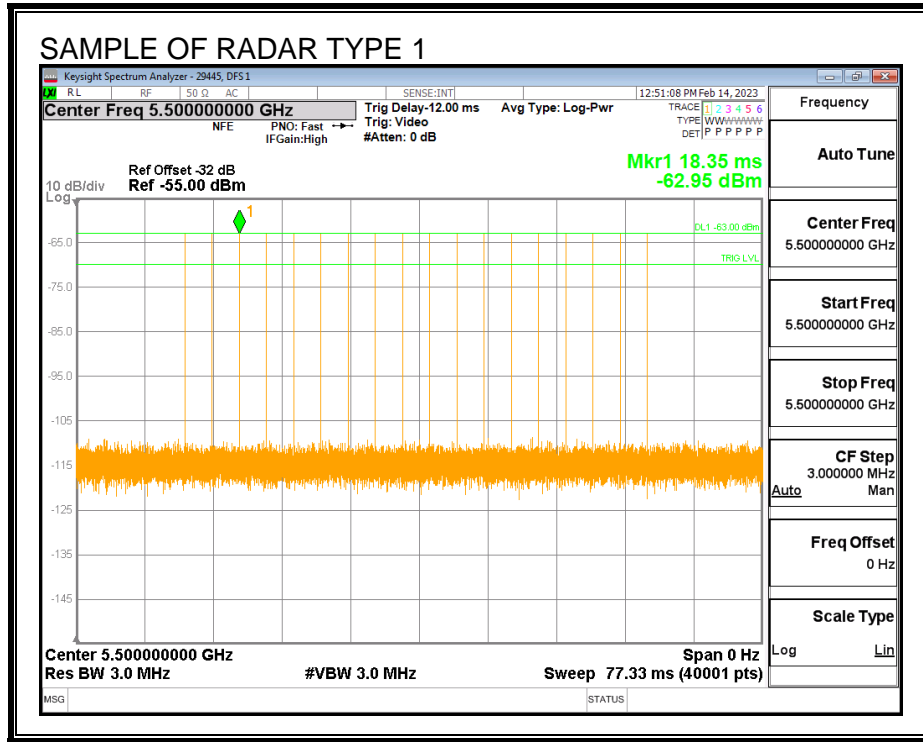
7.2.1. TEST CHANNEL

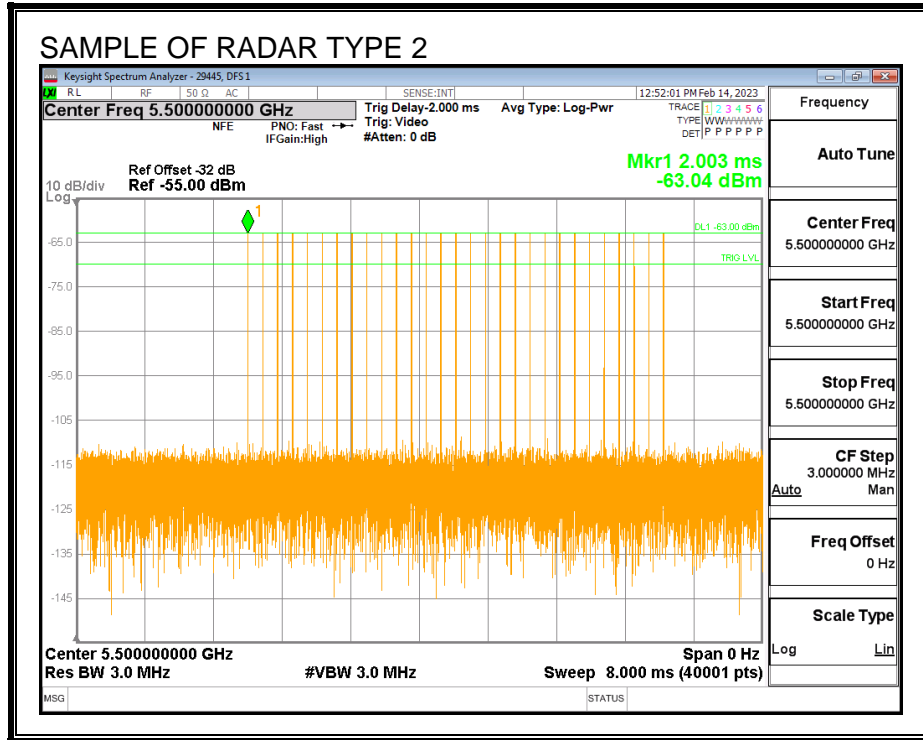
All tests were performed at a channel center frequency of 5500 MHz.

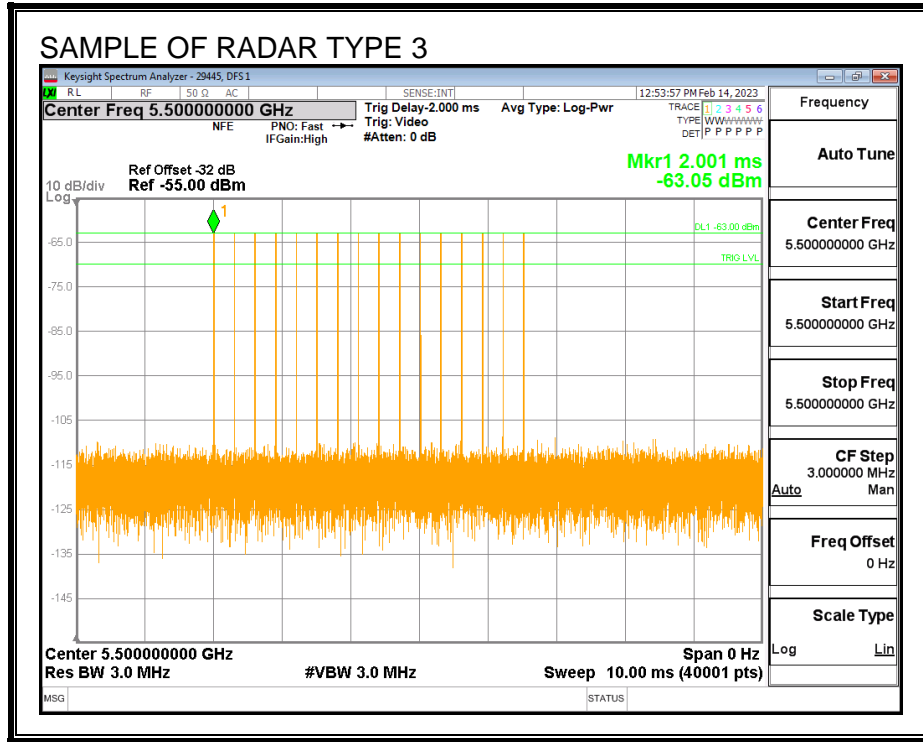
7.2.2. RADAR WAVEFORMS AND TRAFFIC

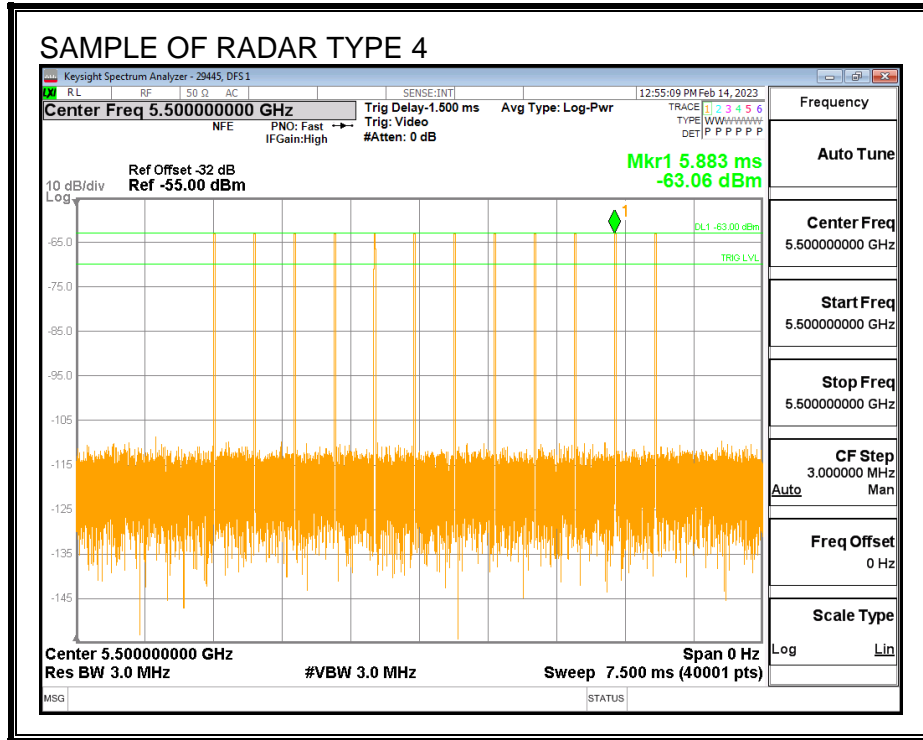
RADAR WAVEFORMS

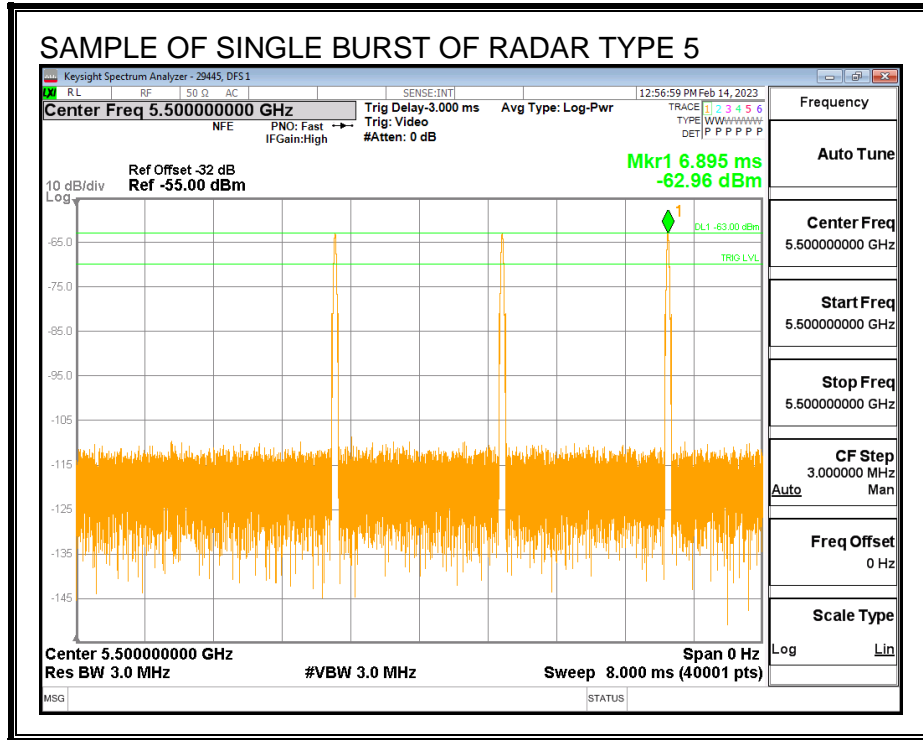


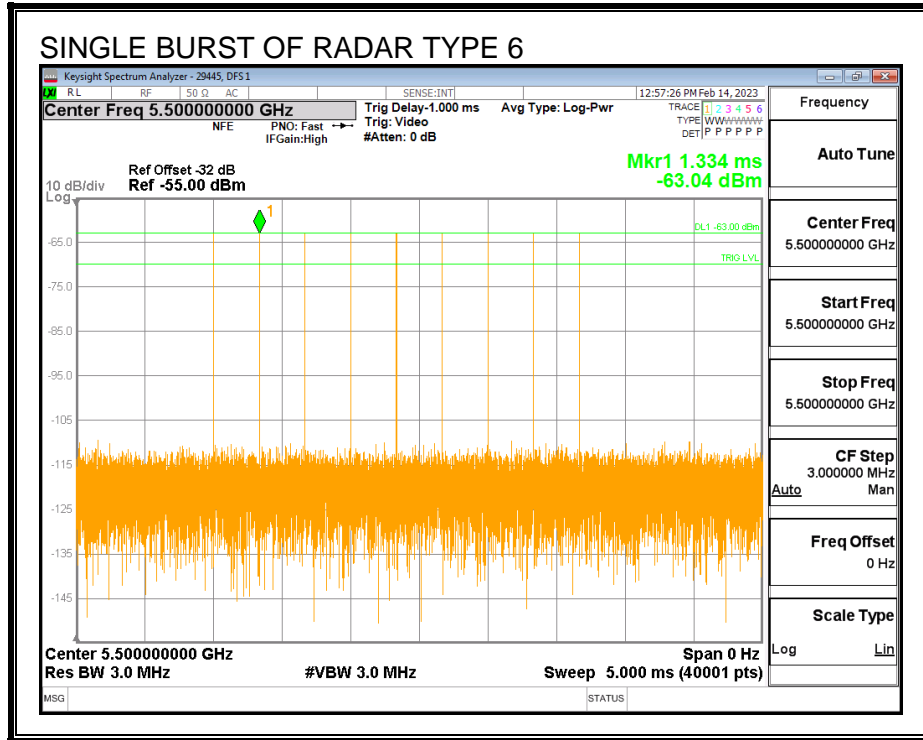




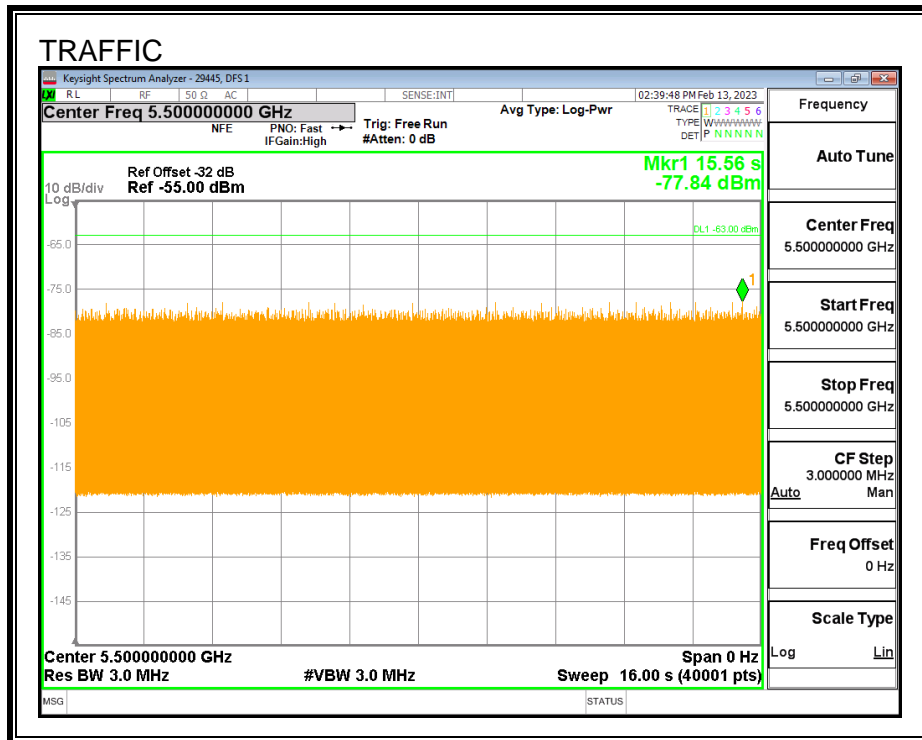




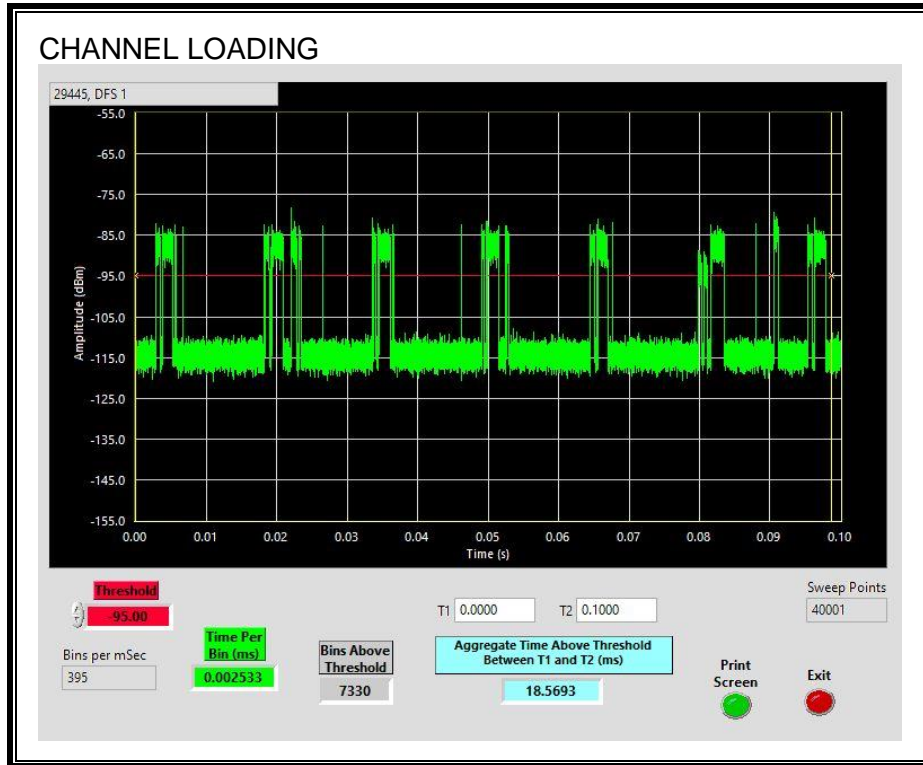




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 18.56%

7.2.3. CHANNEL AVAILABILITY CHECK TIME

Per Table 2 on page 6 of KDB 905462 D02, Channel Move Time and Channel Closing Transmission Time are only required to be tested using the widest supported channel bandwidth mode and all other timing tests may be tested using any single channel bandwidth mode. Therefore this test has not been performed for this channel bandwidth.

7.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

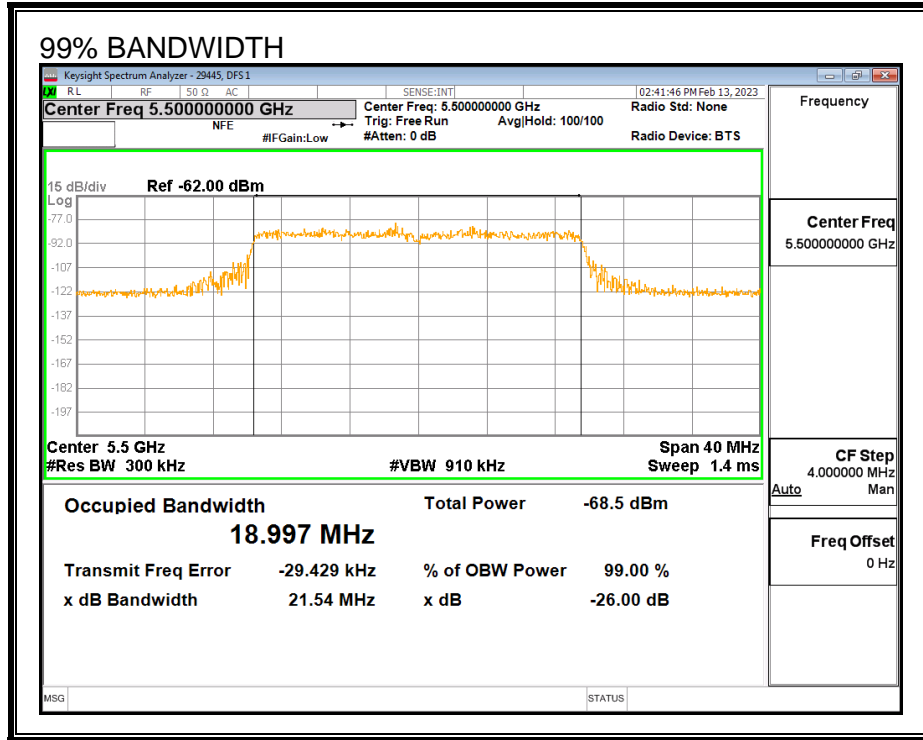
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.2.5. MOVE AND CLOSING TIME

Per Table 2 on page 6 of KDB 905462 D02, Channel Move Time and Channel Closing Transmission Time are only required to be tested using the widest supported channel bandwidth mode and all other timing tests may be tested using any single channel bandwidth mode. Therefore this test has not been performed for this channel bandwidth.

7.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5510	20	18.997	105.3	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	10	100	FH

7.2.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	96.67	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5510	19	DFS 1	29445	v4.1
Aggregate		99.17	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Hopping Type 6	42	97.62	70	Pass	5490	5510		DFS 1	29445	v4.1

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	5499	Yes
1002	1	698	76	A	5497	Yes
1003	1	538	99	A	5499	Yes
1004	1	638	83	A	5494	Yes
1005	1	658	81	A	5494	Yes
1006	1	758	70	A	5503	Yes
1007	1	598	89	A	5496	Yes
1008	1	738	72	A	5498	Yes
1009	1	838	63	A	5501	Yes
1010	1	558	95	A	5496	Yes
1011	1	678	78	A	5492	Yes
1012	1	778	68	A	5508	Yes
1013	1	798	67	A	5497	Yes
1014	1	918	58	A	5501	Yes
1015	1	858	62	A	5491	Yes
1016	1	781	68	B	5499	Yes
1017	1	2544	21	B	5500	Yes
1018	1	2241	24	B	5508	Yes
1019	1	1585	34	B	5502	Yes
1020	1	1411	38	B	5502	Yes
1021	1	2238	24	B	5491	Yes
1022	1	999	53	B	5506	Yes
1023	1	1955	27	B	5507	Yes
1024	1	846	63	B	5493	Yes
1025	1	737	72	B	5505	Yes
1026	1	2305	23	B	5492	Yes
1027	1	2326	23	B	5508	Yes
1028	1	1476	36	B	5490	Yes
1029	1	2979	18	B	5503	Yes
1030	1	1064	50	B	5493	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	5	173	29	5506	Yes
2002	4.5	161	23	5510	Yes
2003	2.6	180	24	5504	Yes
2004	2.2	172	29	5508	Yes
2005	4.6	157	27	5505	Yes
2006	2.6	153	25	5501	Yes
2007	3.3	223	24	5503	Yes
2008	1.4	185	25	5505	No
2009	2.3	222	28	5492	Yes
2010	4.8	188	24	5491	Yes
2011	4	229	27	5505	Yes
2012	4.7	199	26	5501	Yes
2013	4.1	163	23	5507	Yes
2014	1	181	29	5508	Yes
2015	4.7	192	26	5504	Yes
2016	3.9	213	23	5502	Yes
2017	3.7	228	24	5508	Yes
2018	3.2	216	28	5509	Yes
2019	1.3	154	29	5496	Yes
2020	5	227	27	5505	Yes
2021	1.4	212	25	5496	Yes
2022	1.3	208	23	5493	Yes
2023	2	198	29	5509	Yes
2024	4.2	160	27	5496	Yes
2025	1	197	26	5509	Yes
2026	1.6	163	28	5495	Yes
2027	2.7	203	25	5495	Yes
2028	3.4	174	24	5504	Yes
2029	2.8	219	27	5495	Yes
2030	3.8	198	27	5499	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	8.4	301	16	5495	Yes
3002	7.6	367	18	5494	Yes
3003	7.4	414	18	5491	Yes
3004	6.9	376	17	5491	Yes
3005	9.1	436	17	5495	Yes
3006	8.7	410	16	5493	Yes
3007	9.2	365	16	5495	Yes
3008	9.1	485	16	5498	Yes
3009	9.8	453	17	5506	Yes
3010	7.9	453	16	5504	Yes
3011	8.8	316	16	5502	Yes
3012	9.4	462	17	5510	Yes
3013	6.4	337	18	5502	Yes
3014	7.1	496	18	5494	Yes
3015	6.5	267	17	5509	Yes
3016	7.5	320	16	5504	Yes
3017	7.1	472	18	5494	Yes
3018	6.3	421	17	5499	Yes
3019	6.1	335	17	5506	Yes
3020	9.7	296	16	5506	Yes
3021	7.8	356	16	5501	Yes
3022	9.6	464	18	5509	Yes
3023	7.9	286	18	5501	Yes
3024	10	406	18	5498	Yes
3025	8.5	374	18	5507	Yes
3026	6.6	256	16	5491	Yes
3027	7.5	487	18	5505	Yes
3028	8.1	382	18	5492	Yes
3029	9.2	258	18	5493	Yes
3030	9.9	299	17	5504	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	18.4	438	12	5503	Yes
4002	11.5	492	16	5504	Yes
4003	19.7	393	12	5493	Yes
4004	18	342	12	5498	Yes
4005	17.6	256	13	5492	Yes
4006	16.4	468	16	5507	Yes
4007	12.1	410	12	5493	Yes
4008	16.2	385	12	5499	Yes
4009	12.4	457	14	5499	Yes
4010	17	327	15	5508	Yes
4011	13.7	294	14	5508	Yes
4012	18.7	427	15	5504	Yes
4013	16.4	408	14	5497	Yes
4014	12.8	303	14	5495	Yes
4015	15.2	430	13	5495	Yes
4016	16.9	470	13	5495	Yes
4017	15.5	359	15	5495	Yes
4018	17.7	412	15	5506	Yes
4019	16.8	314	15	5510	Yes
4020	15.1	262	15	5498	Yes
4021	19.5	310	16	5504	Yes
4022	18.3	389	14	5509	Yes
4023	18.3	331	15	5496	Yes
4024	13.4	305	16	5506	Yes
4025	18.6	378	12	5493	Yes
4026	14.1	498	13	5496	Yes
4027	19.9	466	12	5509	Yes
4028	11.6	348	13	5506	Yes
4029	13.5	329	13	5503	Yes
4030	19	474	12	5502	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	5498	Yes
12	5498	Yes
13	5497	Yes
14	5499	Yes
15	5493	Yes
16	5498	Yes
17	5494	Yes
18	5498	Yes
19	5498	Yes
20	5497	Yes
21	5501	Yes
22	5505	Yes
23	5503	Yes
24	5506	Yes
25	5503	Yes
26	5506	Yes
27	5503	Yes
28	5506	Yes
29	5503	Yes
30	5506	Yes

Note: The Type 5 randomized parameters tested are located in Appenix 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	830	5490	1	Yes
2	1305	5491	2	Yes
3	1780	5492	8	Yes
4	2255	5493	8	Yes
5	2730	5494	5	Yes
6	3680	5495	1	Yes
7	4155	5496	3	Yes
8	4630	5497	4	Yes
9	5105	5498	2	Yes
10	5580	5499	2	Yes
11	6055	5500	1	Yes
12	6530	5501	3	Yes
13	7005	5502	6	Yes
14	7480	5503	2	Yes
15	7955	5504	3	Yes
16	8430	5505	2	Yes
17	8905	5506	4	Yes
18	9380	5507	6	Yes
19	9855	5508	6	Yes
20	10330	5509	4	Yes
21	10805	5510	5	Yes
22	11280	5490	6	Yes
23	11755	5491	5	Yes
24	12230	5492	3	Yes
25	12705	5493	2	No
26	13180	5494	5	Yes
27	13655	5495	3	Yes
28	14130	5496	1	Yes
29	14605	5497	6	Yes
30	15080	5498	4	Yes
31	15555	5499	6	Yes
32	16030	5500	2	Yes
33	16505	5501	5	Yes
34	16980	5502	9	Yes
35	17455	5503	5	Yes
36	17930	5504	3	Yes
37	18405	5505	2	Yes
38	19355	5506	5	Yes
39	19830	5507	4	Yes
40	20305	5508	6	Yes
41	20780	5509	3	Yes
42	21255	5510	2	Yes

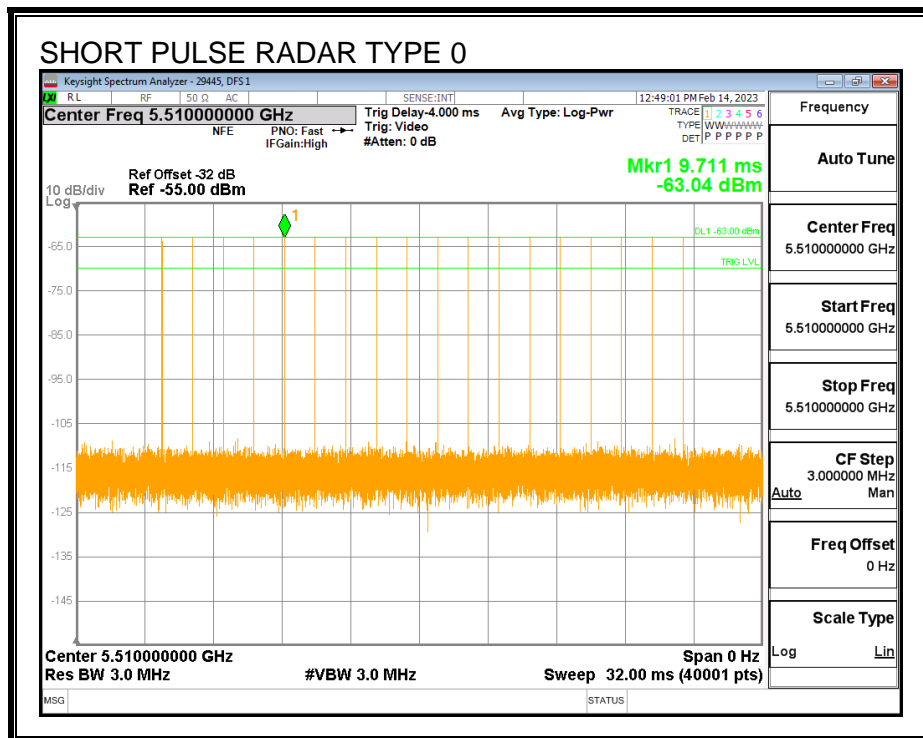
7.3. RESULTS FOR 40 MHz BANDWIDTH

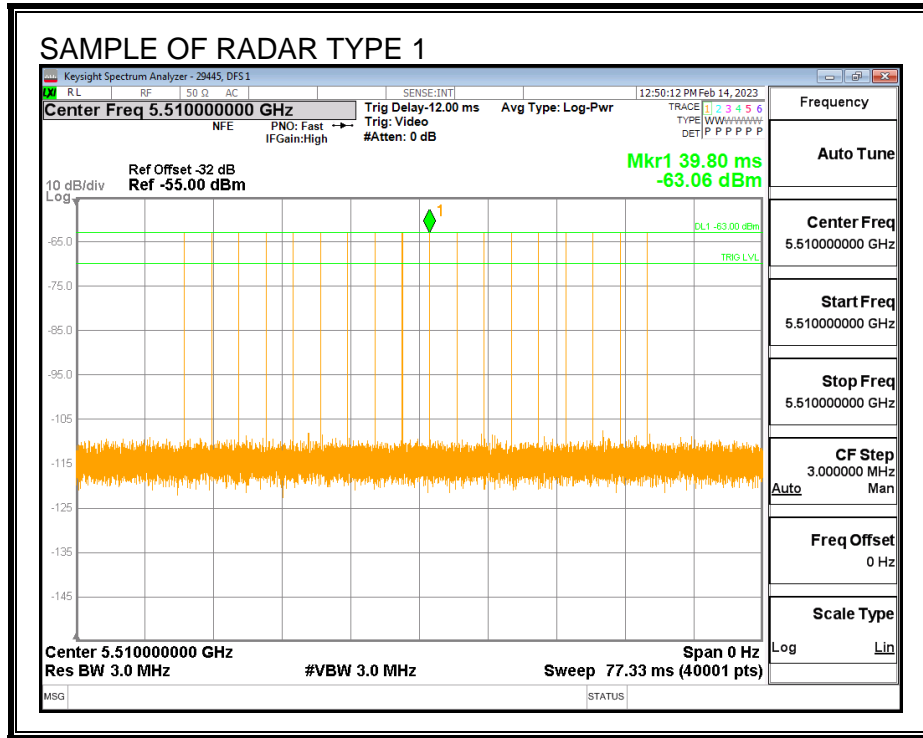
7.3.1. TEST CHANNEL

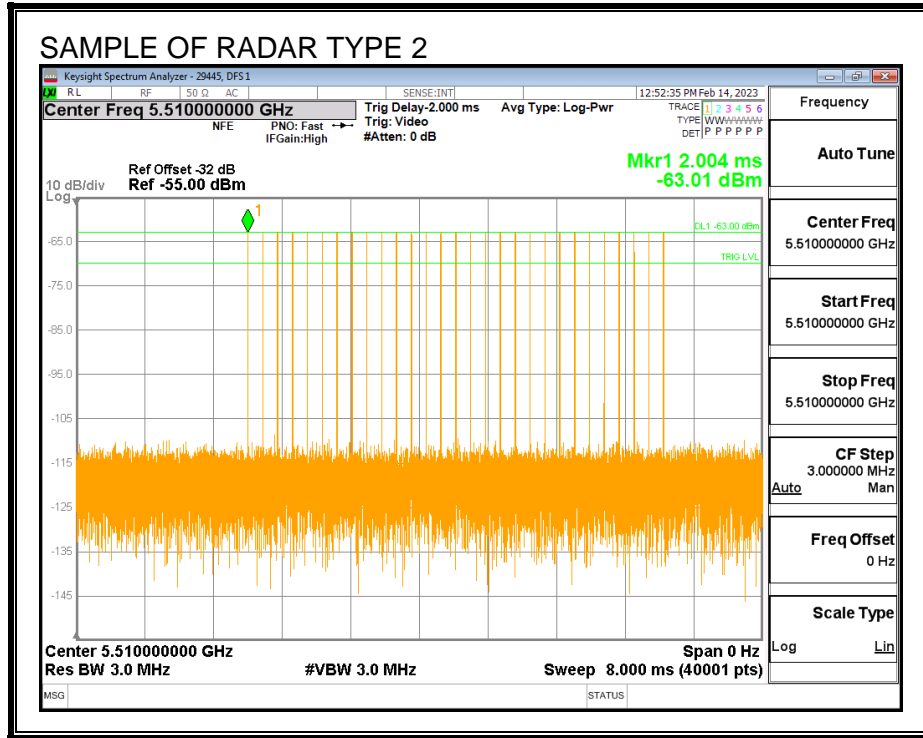
All tests were performed at a channel center frequency of 5510 MHz.

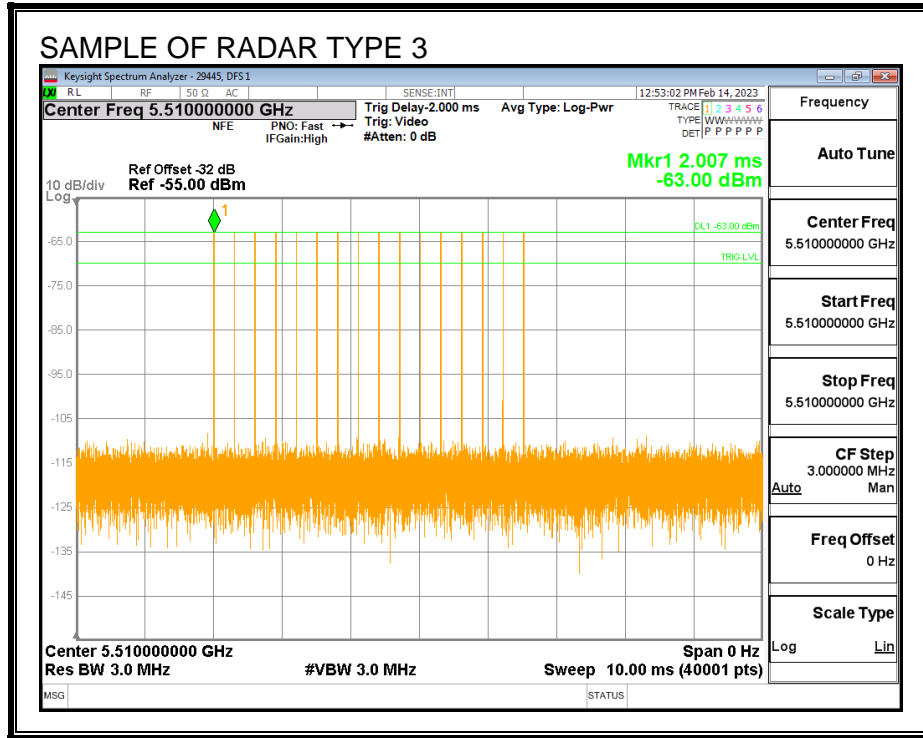
7.3.2. RADAR WAVEFORMS AND TRAFFIC

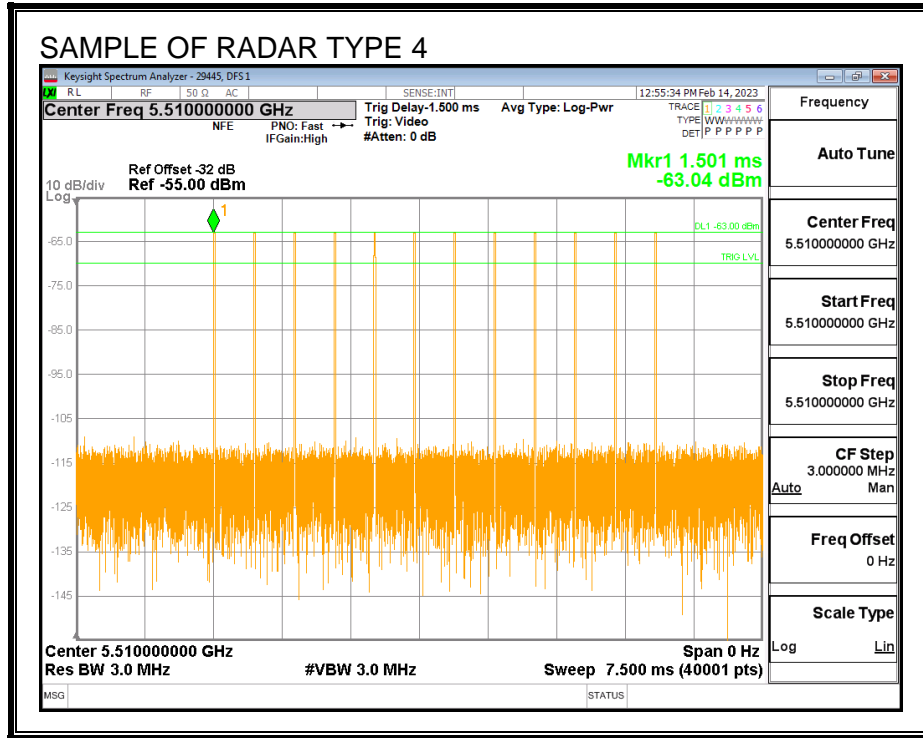
RADAR WAVEFORMS

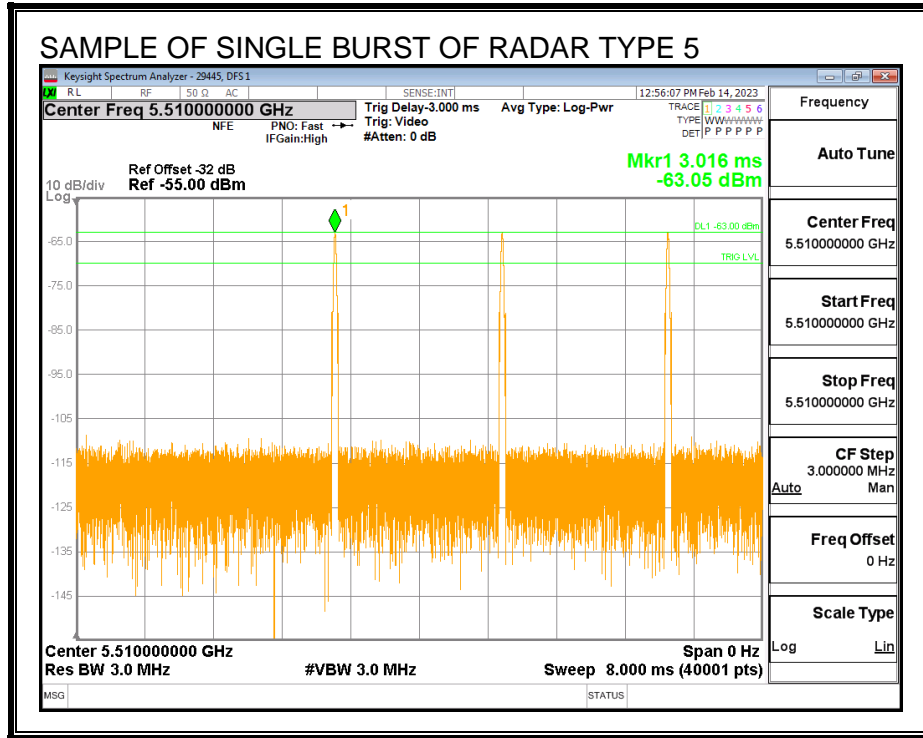


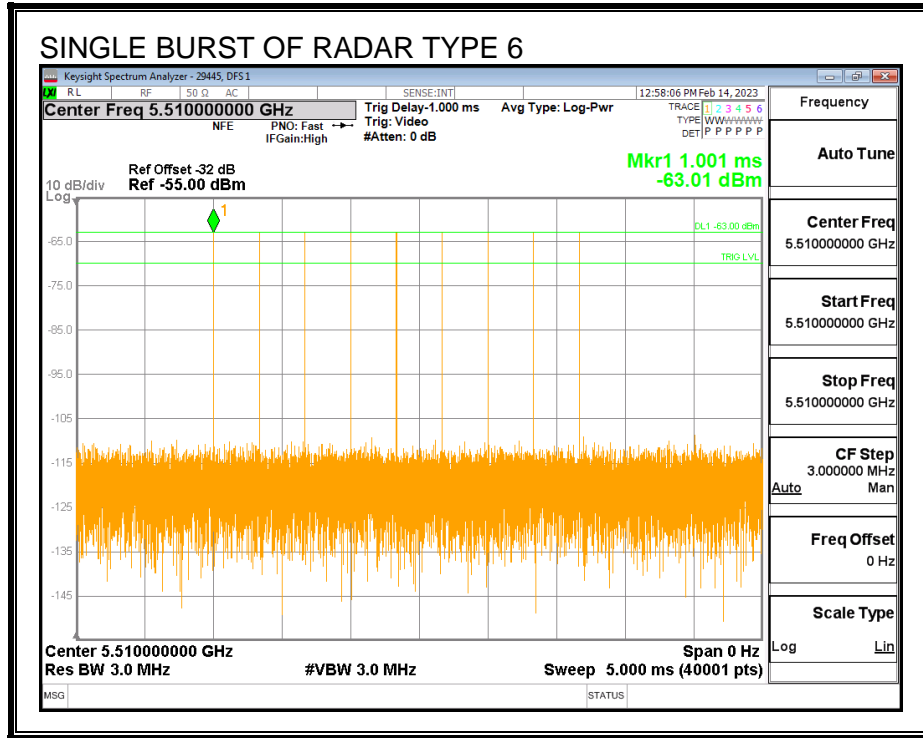




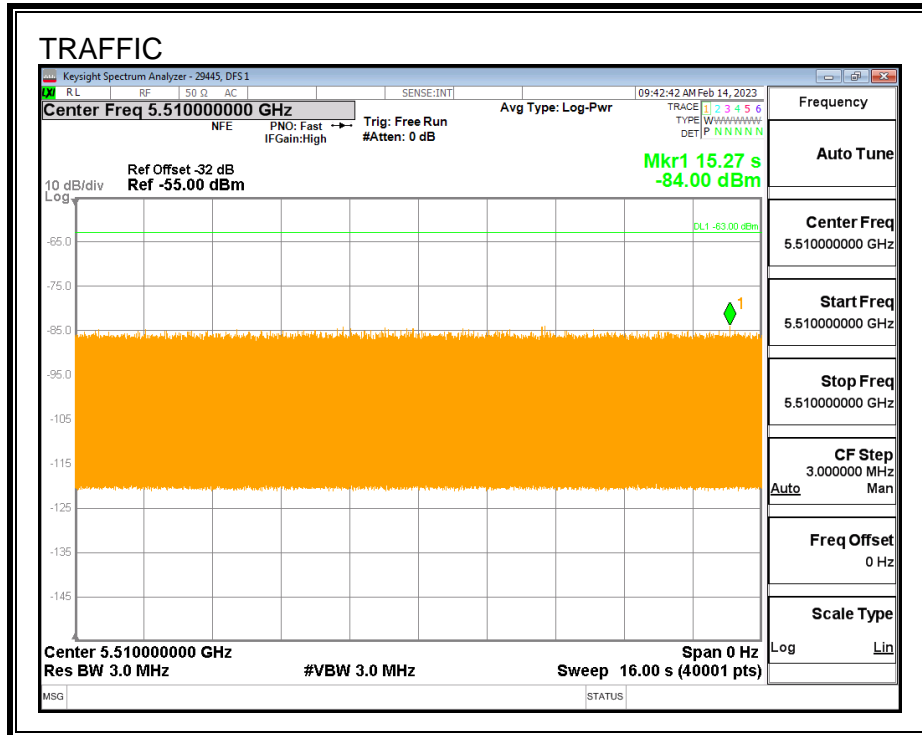




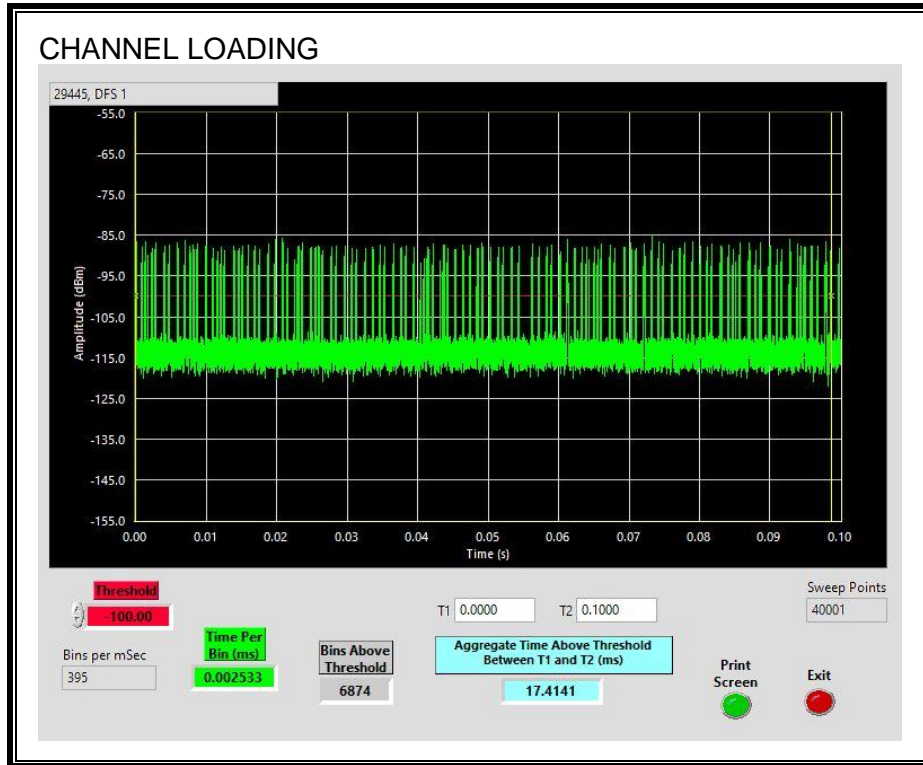




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.41%

7.3.3. CHANNEL AVAILABILITY CHECK TIME

Per Table 2 on page 6 of KDB 905462 D02, Channel Move Time and Channel Closing Transmission Time are only required to be tested using the widest supported channel bandwidth mode and all other timing tests may be tested using any single channel bandwidth mode. Therefore this test has not been performed for this channel bandwidth.

7.3.4. OVERLAPPING CHANNEL TESTS

RESULTS

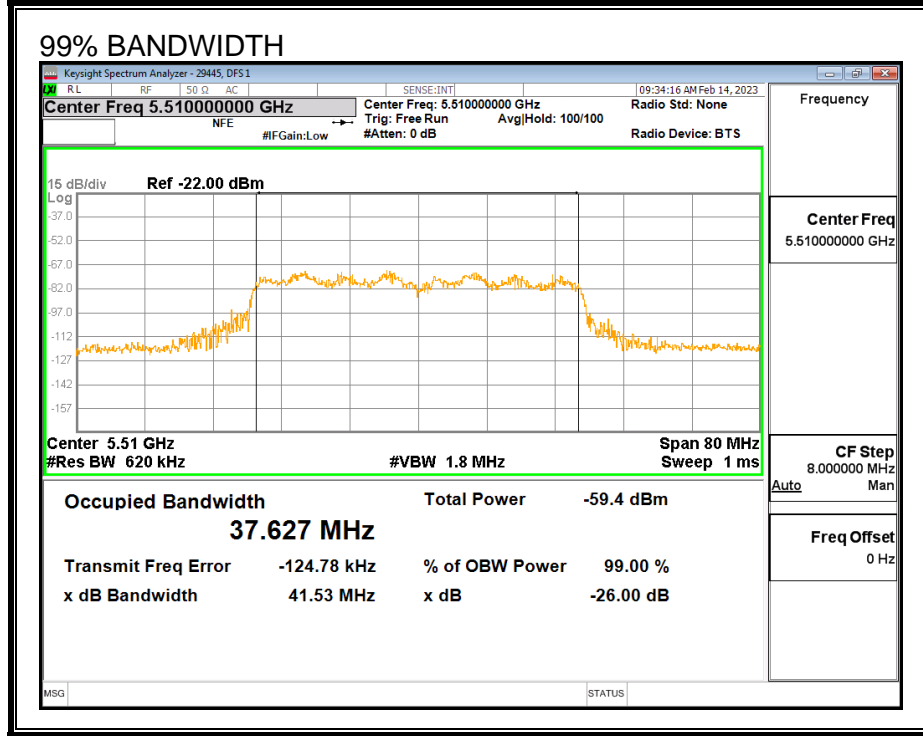
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.3.5. MOVE AND CLOSING TIME

Per Table 2 on page 6 of KDB 905462 D02, Channel Move Time and Channel Closing Transmission Time are only required to be tested using the widest supported channel bandwidth mode and all other timing tests may be tested using any single channel bandwidth mode. Therefore this test has not been performed for this channel bandwidth.

7.3.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5530	40	37.627	106.3	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	10	100	
5515	10	10	100	
5520	10	10	100	
5525	10	10	100	
5530	10	10	100	FH

7.3.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5530	37.63	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	86.67	60	Pass	5490	5530	37.63	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5530	37.63	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	96.67	60	Pass	5490	5530	37.63	DFS 1	29445	v4.1
Aggregate		95.83	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5530	37.63	DFS 1	29445	v4.1
FCC Hopping Type 6	41	100.00	70	Pass	5490	5530		DFS 1	29445	v4.1

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	5507	Yes
1002	1	698	76	A	5491	Yes
1003	1	538	99	A	5490	Yes
1004	1	638	83	A	5496	Yes
1005	1	658	81	A	5493	Yes
1006	1	758	70	A	5518	Yes
1007	1	598	89	A	5520	Yes
1008	1	738	72	A	5499	Yes
1009	1	838	63	A	5496	Yes
1010	1	558	95	A	5514	Yes
1011	1	678	78	A	5517	Yes
1012	1	778	68	A	5523	Yes
1013	1	798	67	A	5514	Yes
1014	1	918	58	A	5513	Yes
1015	1	858	62	A	5515	Yes
1016	1	781	68	B	5519	Yes
1017	1	2544	21	B	5513	Yes
1018	1	2241	24	B	5527	Yes
1019	1	1585	34	B	5502	Yes
1020	1	1411	38	B	5528	Yes
1021	1	2238	24	B	5524	Yes
1022	1	999	53	B	5524	Yes
1023	1	1955	27	B	5521	Yes
1024	1	846	63	B	5507	Yes
1025	1	737	72	B	5497	Yes
1026	1	2305	23	B	5528	Yes
1027	1	2326	23	B	5519	Yes
1028	1	1476	36	B	5521	Yes
1029	1	2979	18	B	5501	Yes
1030	1	1064	50	B	5502	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	5	173	29	5503	Yes
2002	4.5	161	23	5508	Yes
2003	2.6	180	24	5517	Yes
2004	2.2	172	29	5491	Yes
2005	4.6	157	27	5529	Yes
2006	2.6	153	25	5493	Yes
2007	3.3	223	24	5492	Yes
2008	1.4	185	25	5512	Yes
2009	2.3	222	28	5523	Yes
2010	4.8	188	24	5495	Yes
2011	4	229	27	5529	Yes
2012	4.7	199	26	5491	Yes
2013	4.1	163	23	5522	No
2014	1	181	29	5494	Yes
2015	4.7	192	26	5514	No
2016	3.9	213	23	5501	Yes
2017	3.7	228	24	5521	Yes
2018	3.2	216	28	5496	Yes
2019	1.3	154	29	5515	Yes
2020	5	227	27	5508	Yes
2021	1.4	212	25	5514	Yes
2022	1.3	208	23	5514	Yes
2023	2	198	29	5519	Yes
2024	4.2	160	27	5505	Yes
2025	1	197	26	5504	Yes
2026	1.6	163	28	5503	Yes
2027	2.7	203	25	5492	No
2028	3.4	174	24	5509	Yes
2029	2.8	219	27	5508	Yes
2030	3.8	198	27	5495	No

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	8.4	301	16	5504	Yes
3002	7.6	367	18	5521	Yes
3003	7.4	414	18	5509	Yes
3004	6.9	376	17	5516	Yes
3005	9.1	436	17	5493	Yes
3006	8.7	410	16	5505	Yes
3007	9.2	365	16	5518	Yes
3008	9.1	485	16	5517	Yes
3009	9.8	453	17	5507	Yes
3010	7.9	453	16	5491	Yes
3011	8.8	316	16	5512	Yes
3012	9.4	462	17	5493	Yes
3013	6.4	337	18	5529	Yes
3014	7.1	496	18	5499	Yes
3015	6.5	267	17	5518	Yes
3016	7.5	320	16	5508	Yes
3017	7.1	472	18	5504	Yes
3018	6.3	421	17	5527	Yes
3019	6.1	335	17	5500	Yes
3020	9.7	296	16	5490	Yes
3021	7.8	356	16	5495	Yes
3022	9.6	464	18	5527	Yes
3023	7.9	286	18	5506	Yes
3024	10	406	18	5521	Yes
3025	8.5	374	18	5492	Yes
3026	6.6	256	16	5515	Yes
3027	7.5	487	18	5501	Yes
3028	8.1	382	18	5504	Yes
3029	9.2	258	18	5503	Yes
3030	9.9	299	17	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	18.4	438	12	5521	No
4002	11.5	492	16	5495	Yes
4003	19.7	393	12	5505	Yes
4004	18	342	12	5527	Yes
4005	17.6	256	13	5521	Yes
4006	16.4	468	16	5509	Yes
4007	12.1	410	12	5520	Yes
4008	16.2	385	12	5496	Yes
4009	12.4	457	14	5499	Yes
4010	17	327	15	5494	Yes
4011	13.7	294	14	5491	Yes
4012	18.7	427	15	5523	Yes
4013	16.4	408	14	5529	Yes
4014	12.8	303	14	5514	Yes
4015	15.2	430	13	5493	Yes
4016	16.9	470	13	5517	Yes
4017	15.5	359	15	5491	Yes
4018	17.7	412	15	5500	Yes
4019	16.8	314	15	5509	Yes
4020	15.1	262	15	5496	Yes
4021	19.5	310	16	5529	Yes
4022	18.3	389	14	5490	Yes
4023	18.3	331	15	5509	Yes
4024	13.4	305	16	5512	Yes
4025	18.6	378	12	5527	Yes
4026	14.1	498	13	5495	Yes
4027	19.9	466	12	5525	Yes
4028	11.6	348	13	5498	Yes
4029	13.5	329	13	5529	Yes
4030	19	474	12	5492	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5510	Yes
2	5510	Yes
3	5510	Yes
4	5510	Yes
5	5510	Yes
6	5510	Yes
7	5510	Yes
8	5510	Yes
9	5510	Yes
10	5510	Yes
11	5499	Yes
12	5499	Yes
13	5497	Yes
14	5500	Yes
15	5494	Yes
16	5499	Yes
17	5495	Yes
18	5499	Yes
19	5499	Yes
20	5497	Yes
21	5520	Yes
22	5524	Yes
23	5522	Yes
24	5526	Yes
25	5522	Yes
26	5526	Yes
27	5522	Yes
28	5526	Yes
29	5522	Yes
30	5526	Yes

Note: The Type 5 randomized parameters tested are located in Appenix 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	494	5490	13	Yes
2	969	5491	10	Yes
3	1444	5492	7	Yes
4	1919	5493	11	Yes
5	2394	5494	14	Yes
6	2869	5495	10	Yes
7	3344	5496	8	Yes
8	3819	5497	8	Yes
9	4294	5498	11	Yes
10	4769	5499	8	Yes
11	5244	5500	7	Yes
12	5719	5501	6	Yes
13	6194	5502	6	Yes
14	6669	5503	12	Yes
15	7144	5504	8	Yes
16	7619	5505	9	Yes
17	8094	5506	13	Yes
18	8569	5507	4	Yes
19	9044	5508	7	Yes
20	9519	5509	9	Yes
21	9994	5510	7	Yes
22	10469	5511	6	Yes
23	10944	5512	7	Yes
24	11419	5513	9	Yes
25	11894	5514	7	Yes
26	12369	5515	8	Yes
27	12844	5516	6	Yes
28	13319	5517	6	Yes
29	13794	5518	11	Yes
30	14269	5519	5	Yes
31	14744	5520	9	Yes
32	15219	5521	11	Yes
33	15694	5522	7	Yes
34	16169	5523	11	Yes
35	16644	5524	9	Yes
36	17119	5525	6	Yes
37	17594	5526	11	Yes
38	18069	5527	12	Yes
39	18544	5528	9	Yes
40	19019	5529	10	Yes
41	19494	5530	5	Yes

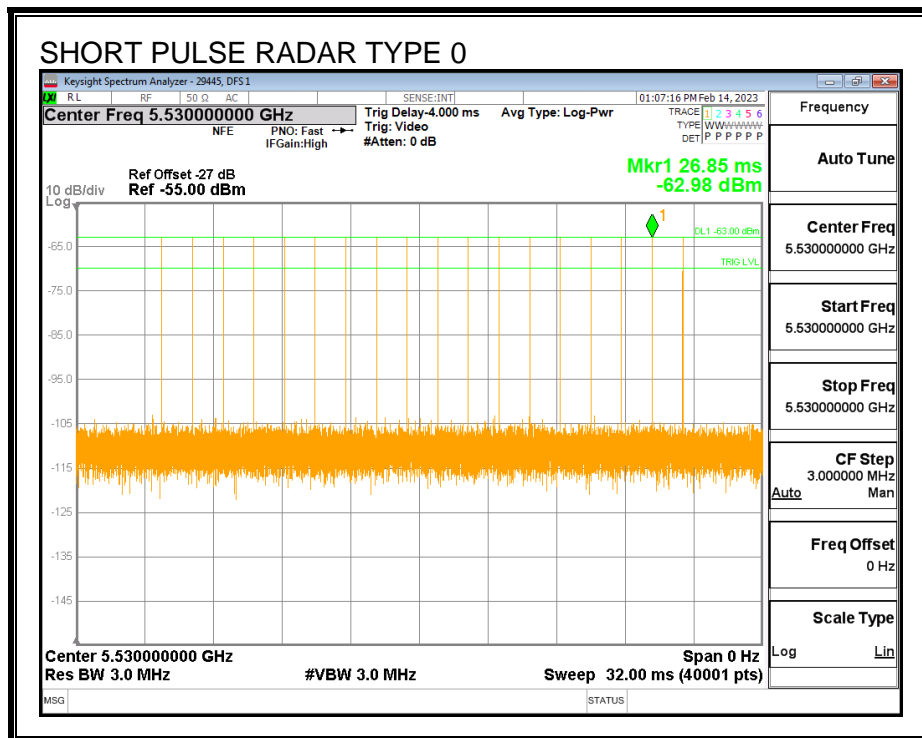
7.4. RESULTS FOR 80 MHz BANDWIDTH

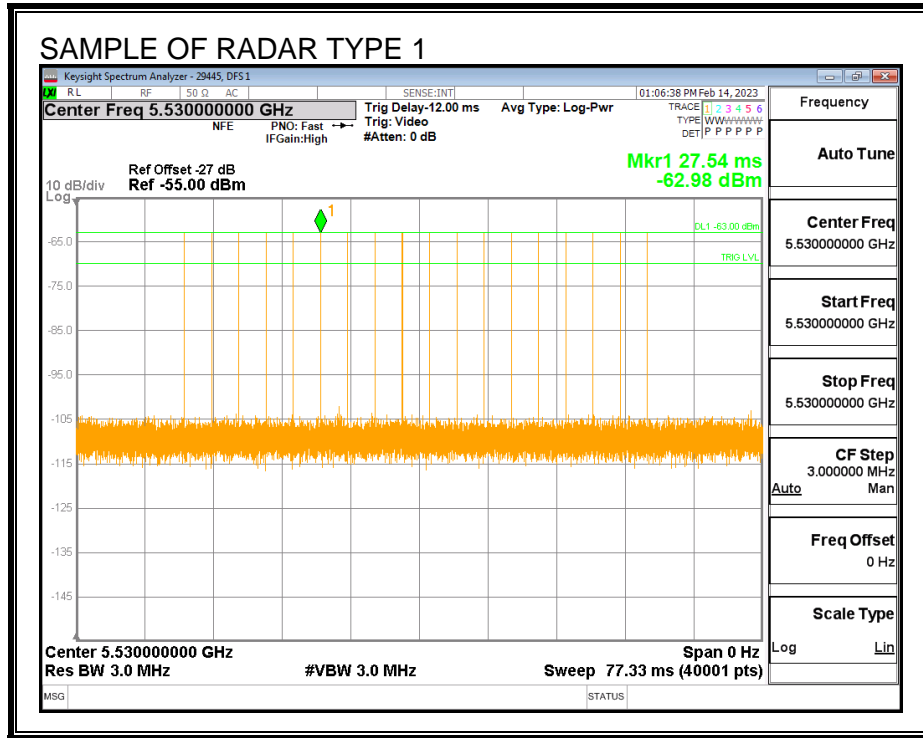
7.4.1. TEST CHANNEL

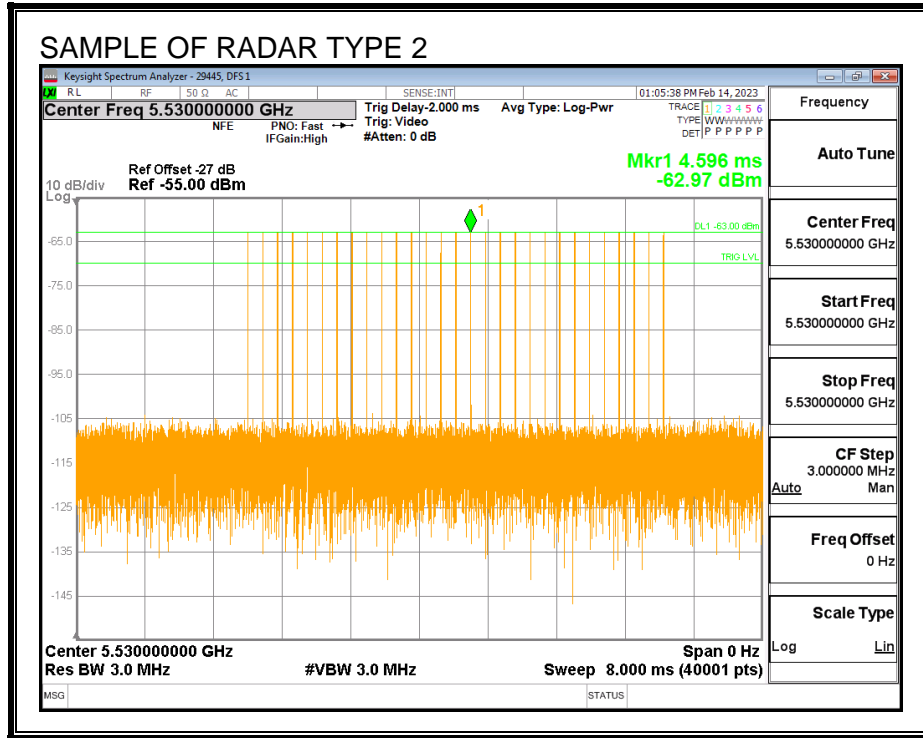
All tests were performed at a channel center frequency of 5530 MHz.

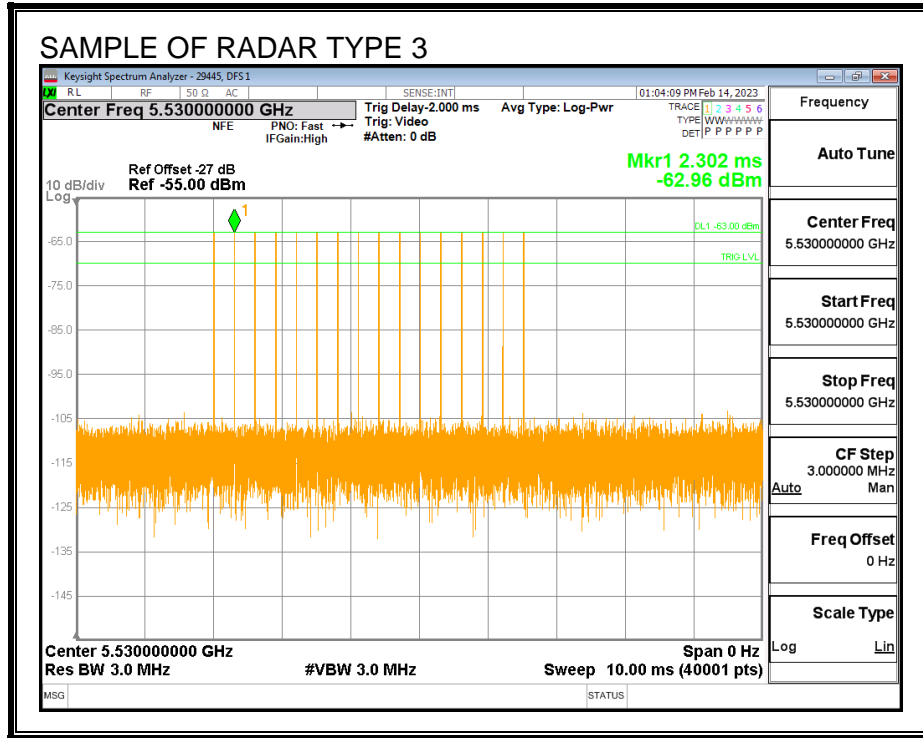
7.4.2. RADAR WAVEFORMS AND TRAFFIC

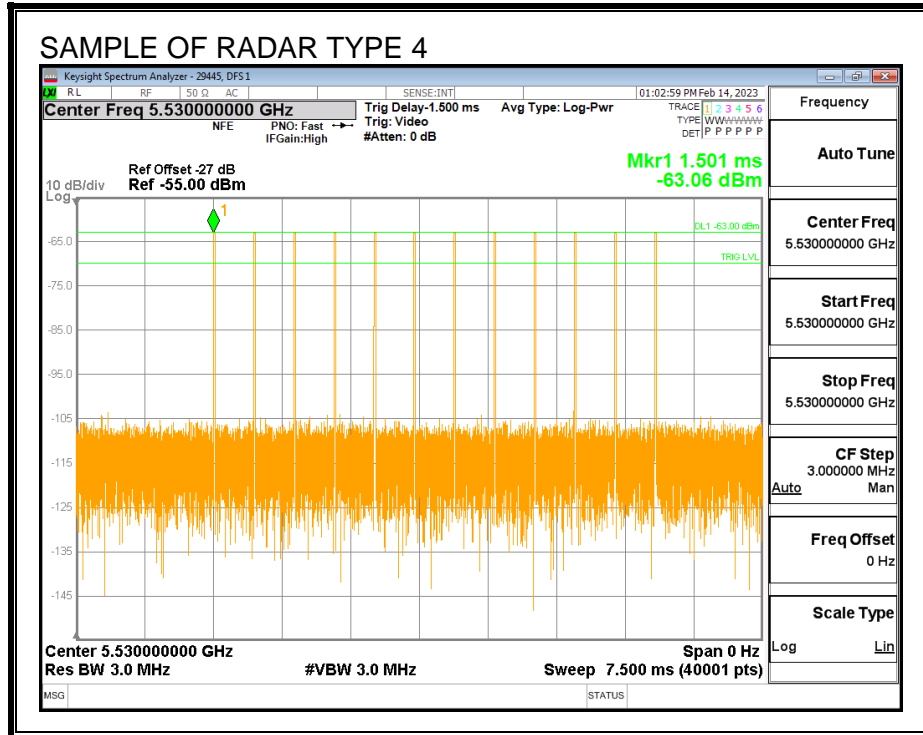
RADAR WAVEFORMS

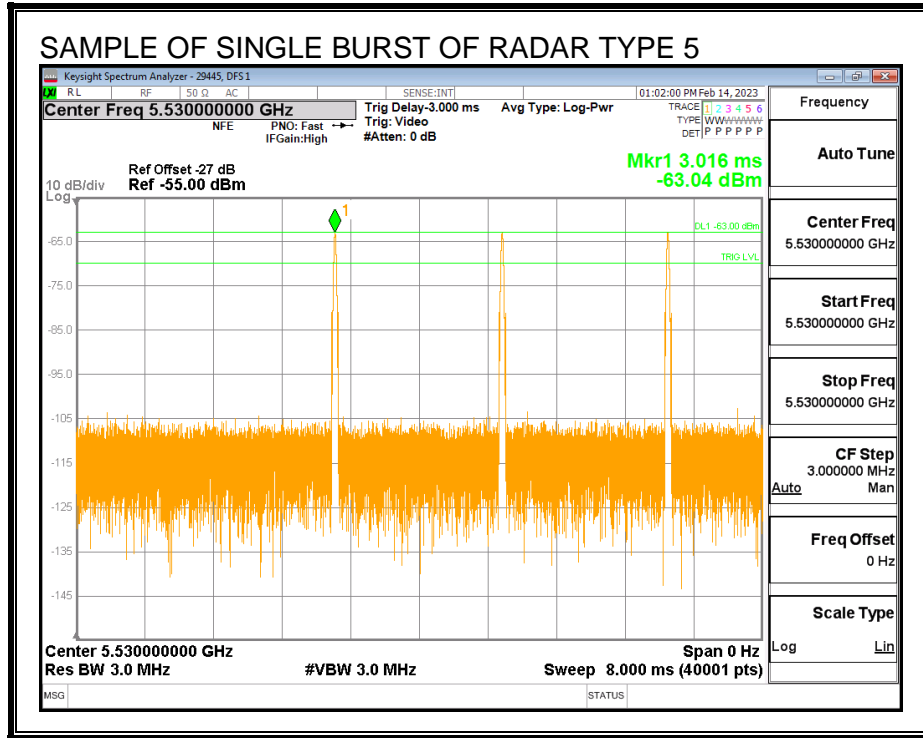


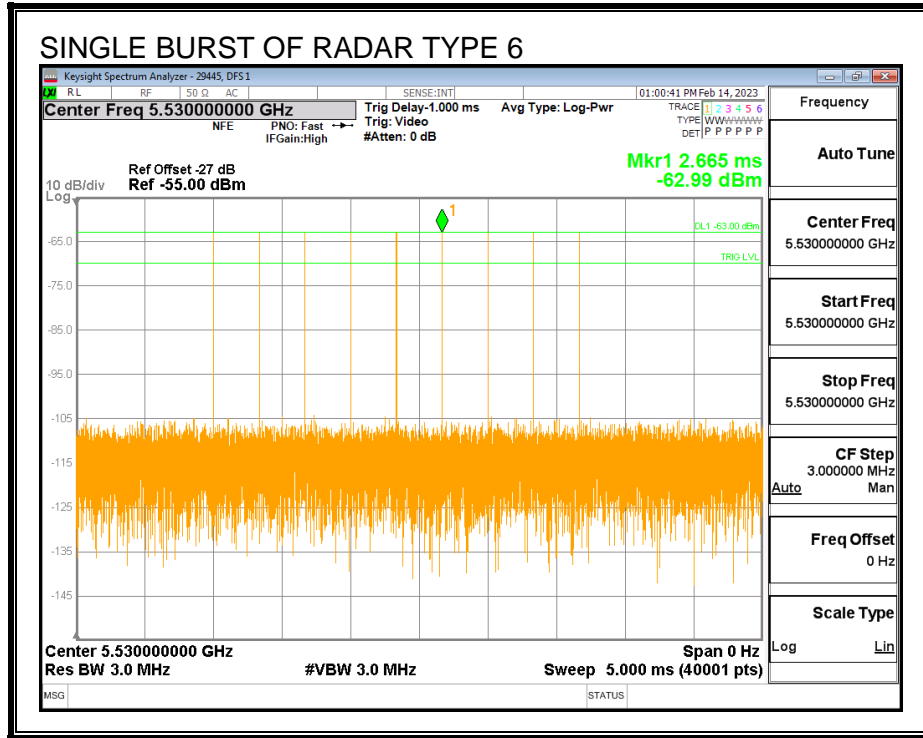




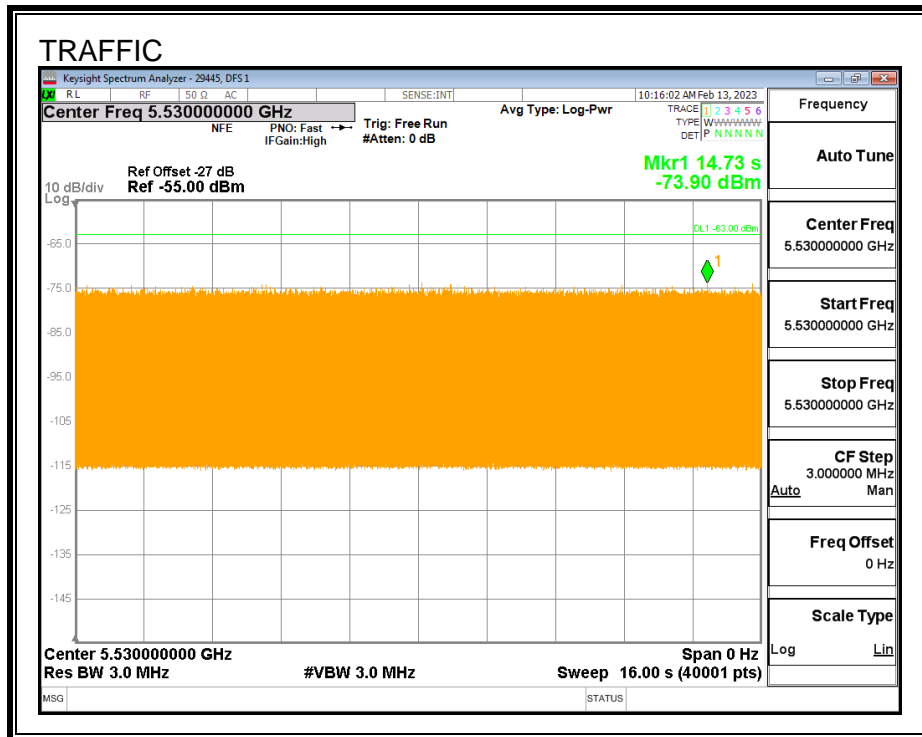




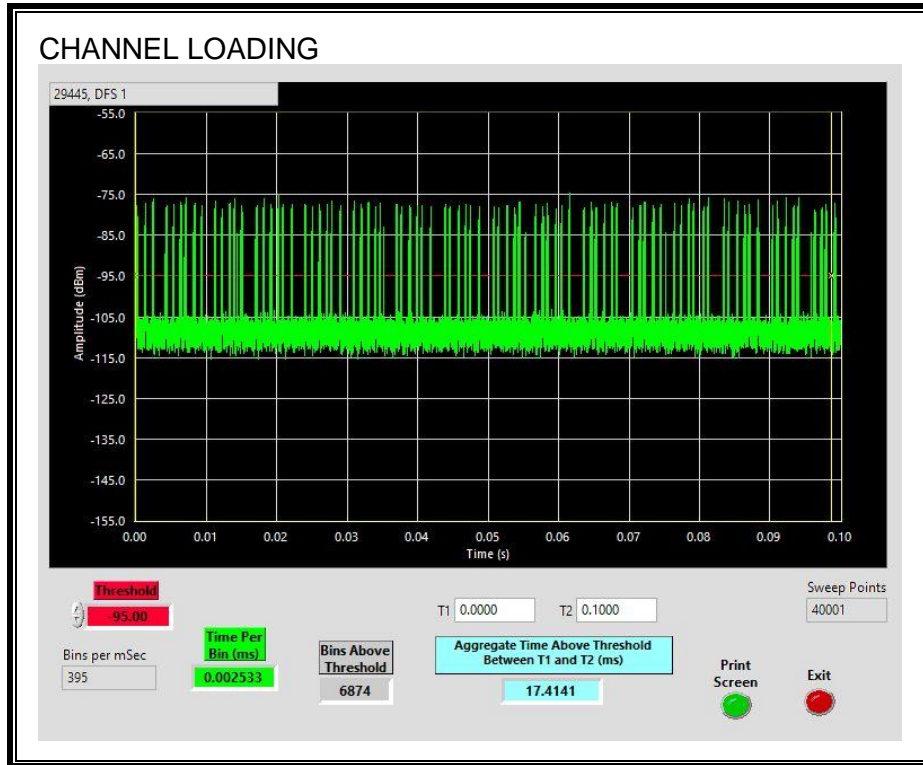




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.41%

7.4.3. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel then the EUT was rebooted. 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, the EUT was rebooted. 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, the EUT was rebooted. 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)
30.72	138.4	107.7	47.7

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)
30.72	81.74	51.0	3.3

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)
30.66	136.0	105.3	57.7

QUALITATIVE RESULTS

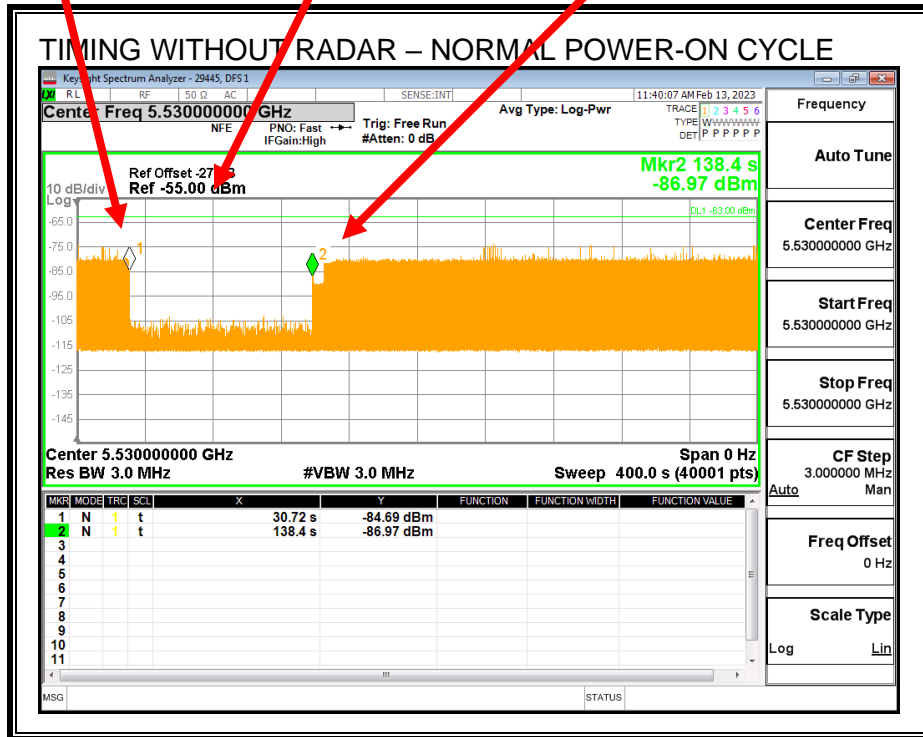
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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



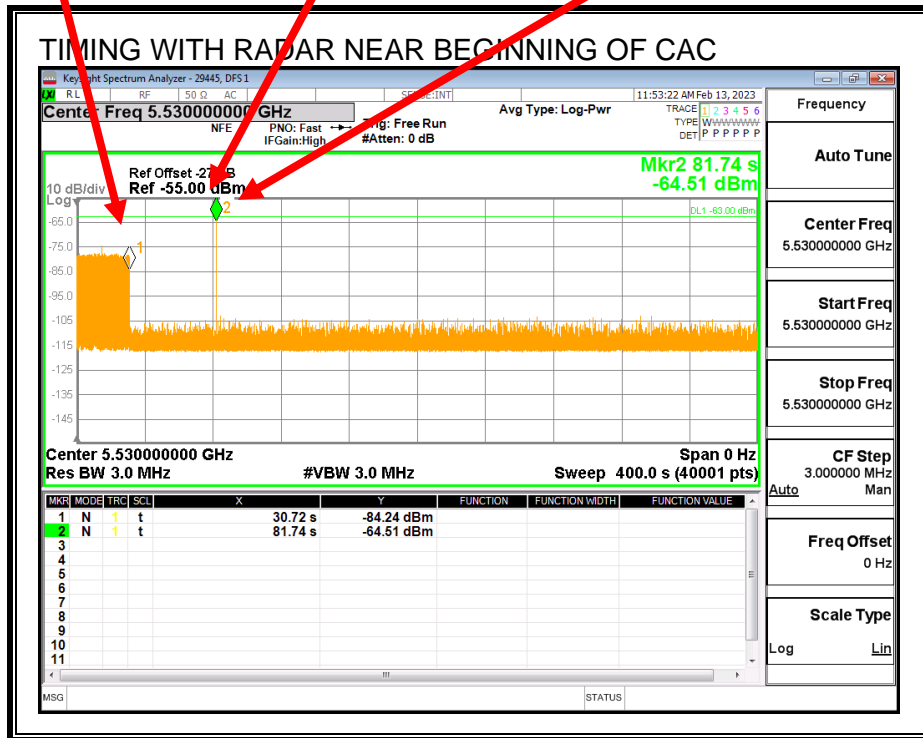
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



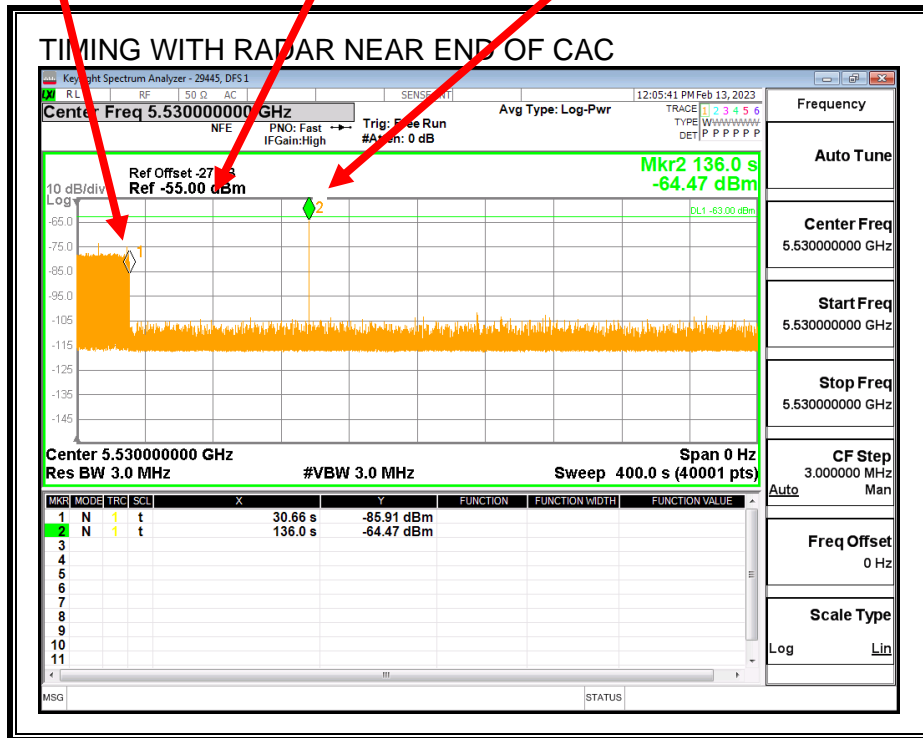
No EUT transmissions were observed after the radar signal.

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.

7.4.4. OVERLAPPING CHANNEL TESTS

RESULTS

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

7.4.5. 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)

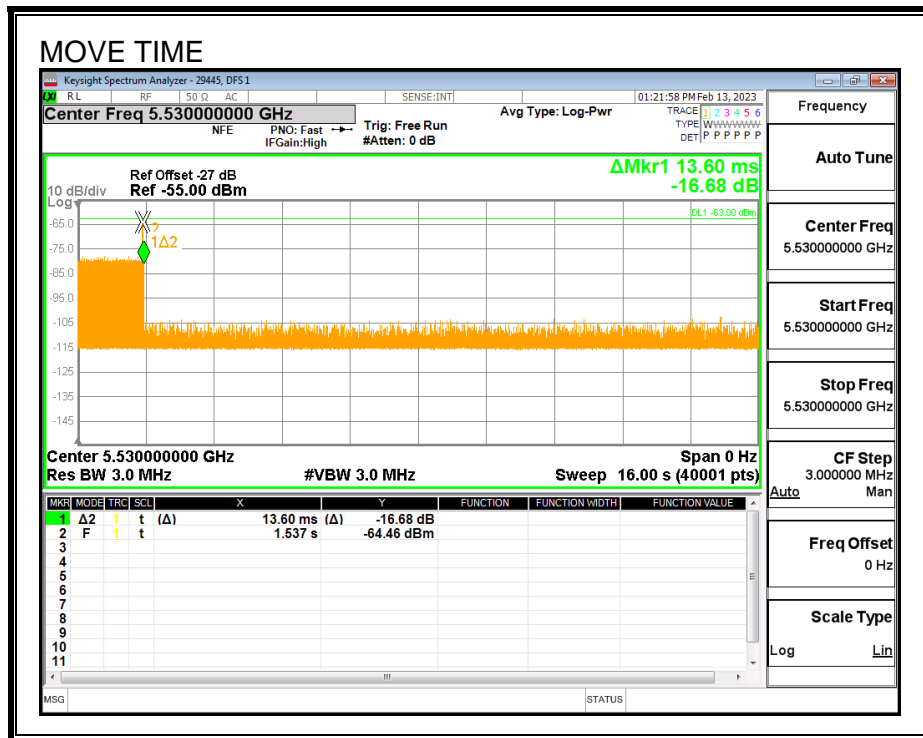
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

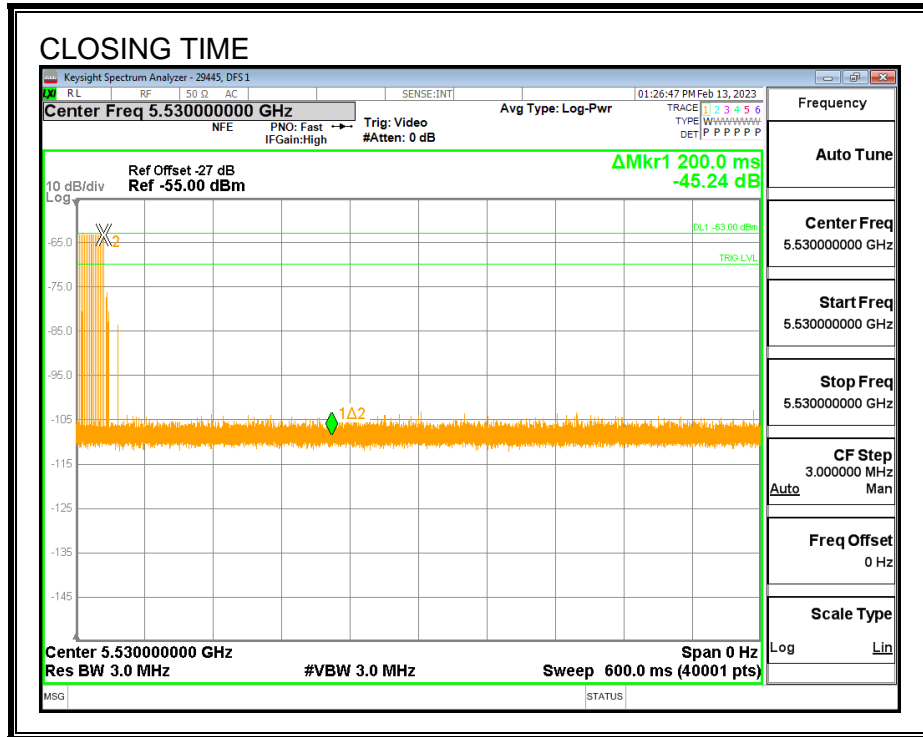
Channel Move Time (sec)	Limit (sec)
0.0136	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



CHANNEL CLOSING TIME



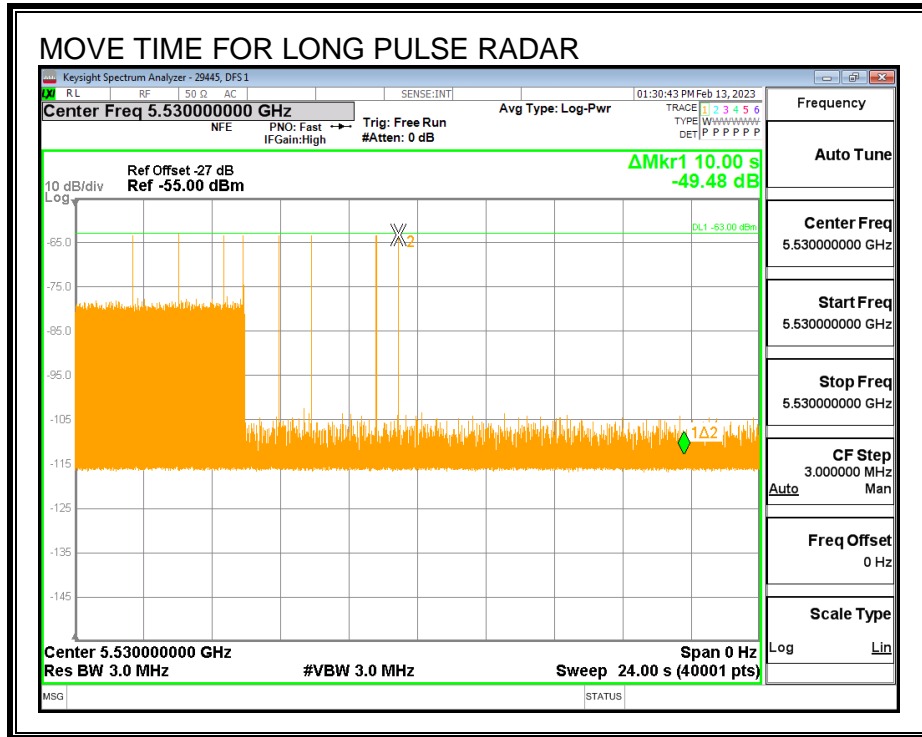
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

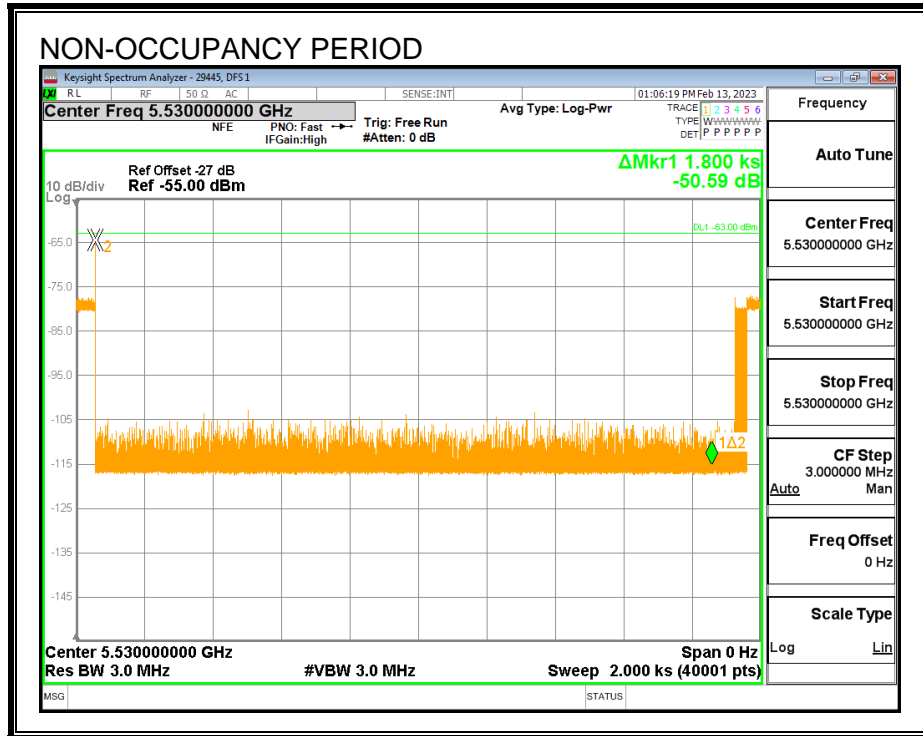
The traffic ceases prior to 10 seconds after the end of the radar waveform.



7.4.6. NON-OCCUPANCY PERIOD

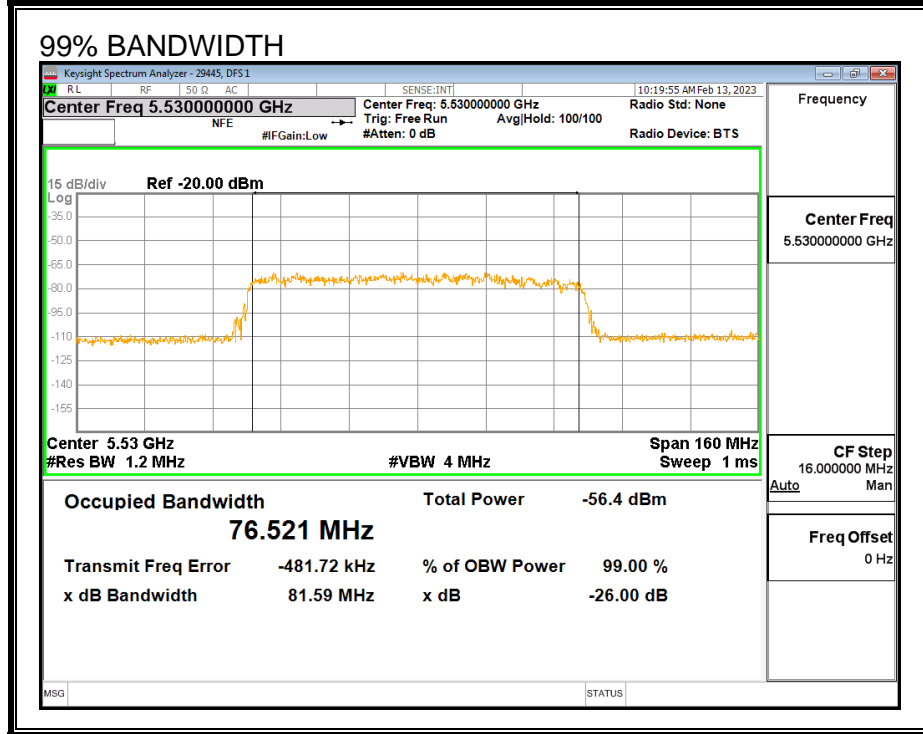
RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time. After the 30-minute non-occupancy period the EUT performed a new CAC, then resumed transmissions upon detecting no radar during this CAC period.



7.4.7. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5570	80	76.521	104.5	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	
5515	10	10	100	
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	9	90	
5565	10	10	100	
5570	10	10	100	FH

7.4.8. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5570	76.52	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	90.00	60	Pass	5490	5570	76.52	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5570	76.52	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5570	76.52	DFS 1	29445	v4.1
Aggregate		97.50	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5570	76.52	DFS 1	29445	v4.1
FCC Hopping Type 6	81	100.00	70	Pass	5490	5570		DFS 1	29445	v4.1

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	5569	Yes
1002	1	698	76	A	5516	Yes
1003	1	538	99	A	5491	Yes
1004	1	638	83	A	5531	Yes
1005	1	658	81	A	5559	Yes
1006	1	758	70	A	5535	Yes
1007	1	598	89	A	5568	Yes
1008	1	738	72	A	5555	Yes
1009	1	838	63	A	5547	Yes
1010	1	558	95	A	5553	Yes
1011	1	678	78	A	5535	Yes
1012	1	778	68	A	5564	Yes
1013	1	798	67	A	5539	Yes
1014	1	918	58	A	5551	Yes
1015	1	858	62	A	5555	Yes
1016	1	781	68	B	5507	Yes
1017	1	2544	21	B	5550	Yes
1018	1	2241	24	B	5535	Yes
1019	1	1585	34	B	5520	Yes
1020	1	1411	38	B	5556	Yes
1021	1	2238	24	B	5522	Yes
1022	1	999	53	B	5509	Yes
1023	1	1955	27	B	5499	Yes
1024	1	846	63	B	5520	Yes
1025	1	737	72	B	5503	Yes
1026	1	2305	23	B	5506	Yes
1027	1	2326	23	B	5523	Yes
1028	1	1476	36	B	5569	Yes
1029	1	2979	18	B	5561	Yes
1030	1	1064	50	B	5557	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	5	173	29	5547	Yes
2002	4.5	161	23	5491	Yes
2003	2.6	180	24	5503	Yes
2004	2.2	172	29	5557	Yes
2005	4.6	157	27	5518	Yes
2006	2.6	153	25	5556	Yes
2007	3.3	223	24	5552	No
2008	1.4	185	25	5549	Yes
2009	2.3	222	28	5537	Yes
2010	4.8	188	24	5532	Yes
2011	4	229	27	5495	Yes
2012	4.7	199	26	5494	Yes
2013	4.1	163	23	5532	Yes
2014	1	181	29	5569	No
2015	4.7	192	26	5510	Yes
2016	3.9	213	23	5531	Yes
2017	3.7	228	24	5557	Yes
2018	3.2	216	28	5540	Yes
2019	1.3	154	29	5514	Yes
2020	5	227	27	5506	Yes
2021	1.4	212	25	5556	Yes
2022	1.3	208	23	5515	Yes
2023	2	198	29	5548	Yes
2024	4.2	160	27	5559	Yes
2025	1	197	26	5501	Yes
2026	1.6	163	28	5547	Yes
2027	2.7	203	25	5501	Yes
2028	3.4	174	24	5501	Yes
2029	2.8	219	27	5552	No
2030	3.8	198	27	5507	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	8.4	301	16	5531	Yes
3002	7.6	367	18	5543	Yes
3003	7.4	414	18	5531	Yes
3004	6.9	376	17	5525	Yes
3005	9.1	436	17	5554	Yes
3006	8.7	410	16	5526	Yes
3007	9.2	365	16	5520	Yes
3008	9.1	485	16	5541	Yes
3009	9.8	453	17	5538	Yes
3010	7.9	453	16	5564	Yes
3011	8.8	316	16	5502	Yes
3012	9.4	462	17	5533	Yes
3013	6.4	337	18	5567	Yes
3014	7.1	496	18	5503	Yes
3015	6.5	267	17	5520	Yes
3016	7.5	320	16	5540	Yes
3017	7.1	472	18	5542	Yes
3018	6.3	421	17	5547	Yes
3019	6.1	335	17	5563	Yes
3020	9.7	296	16	5566	Yes
3021	7.8	356	16	5523	Yes
3022	9.6	464	18	5499	Yes
3023	7.9	286	18	5555	Yes
3024	10	406	18	5518	Yes
3025	8.5	374	18	5565	Yes
3026	6.6	256	16	5533	Yes
3027	7.5	487	18	5509	Yes
3028	8.1	382	18	5566	Yes
3029	9.2	258	18	5548	Yes
3030	9.9	299	17	5524	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	18.4	438	12	5506	Yes
4002	11.5	492	16	5514	Yes
4003	19.7	393	12	5560	Yes
4004	18	342	12	5549	Yes
4005	17.6	256	13	5498	Yes
4006	16.4	468	16	5499	Yes
4007	12.1	410	12	5568	Yes
4008	16.2	385	12	5529	Yes
4009	12.4	457	14	5552	Yes
4010	17	327	15	5568	Yes
4011	13.7	294	14	5519	Yes
4012	18.7	427	15	5495	Yes
4013	16.4	408	14	5521	Yes
4014	12.8	303	14	5532	Yes
4015	15.2	430	13	5515	Yes
4016	16.9	470	13	5522	Yes
4017	15.5	359	15	5530	Yes
4018	17.7	412	15	5514	Yes
4019	16.8	314	15	5516	Yes
4020	15.1	262	15	5570	Yes
4021	19.5	310	16	5544	Yes
4022	18.3	389	14	5530	Yes
4023	18.3	331	15	5548	Yes
4024	13.4	305	16	5552	Yes
4025	18.6	378	12	5494	Yes
4026	14.1	498	13	5556	Yes
4027	19.9	466	12	5553	Yes
4028	11.6	348	13	5556	Yes
4029	13.5	329	13	5492	Yes
4030	19	474	12	5499	Yes

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	5499	Yes
12	5499	Yes
13	5498	Yes
14	5500	Yes
15	5494	Yes
16	5500	Yes
17	5496	Yes
18	5499	Yes
19	5499	Yes
20	5498	Yes
21	5560	Yes
22	5564	Yes
23	5561	Yes
24	5565	Yes
25	5561	Yes
26	5565	Yes
27	5561	Yes
28	5565	Yes
29	5561	Yes
30	5565	Yes

Note: The Type 5 randomized parameters that were tested are located in Appenix 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	807	5490	9	Yes
2	1282	5491	15	Yes
3	1757	5492	22	Yes
4	2232	5493	21	Yes
5	2707	5494	22	Yes
6	3182	5495	13	Yes
7	3657	5496	13	Yes
8	4132	5497	12	Yes
9	4607	5498	17	Yes
10	5082	5499	12	Yes
11	5557	5500	10	Yes
12	6032	5501	14	Yes
13	6507	5502	11	Yes
14	6982	5503	15	Yes
15	7457	5504	16	Yes
16	7932	5505	14	Yes
17	8407	5506	13	Yes
18	8882	5507	17	Yes
19	9357	5508	24	Yes
20	9832	5509	13	Yes
21	10307	5510	16	Yes
22	10782	5511	19	Yes
23	11257	5512	18	Yes
24	11732	5513	17	Yes
25	12207	5514	11	Yes
26	12682	5515	16	Yes
27	13157	5516	25	Yes
28	13632	5517	16	Yes
29	14107	5518	14	Yes
30	14582	5519	19	Yes
31	15057	5520	12	Yes
32	15532	5521	15	Yes
33	16007	5522	14	Yes
34	16482	5523	18	Yes
35	16957	5524	17	Yes
36	17432	5525	11	Yes
37	17907	5526	12	Yes
38	18382	5527	14	Yes
39	18857	5528	15	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	19332	5529	19	Yes
41	19807	5530	22	Yes
42	20282	5531	18	Yes
43	20757	5532	16	Yes
44	21232	5533	11	Yes
45	21707	5534	21	Yes
46	22182	5535	18	Yes
47	22657	5536	12	Yes
48	23132	5537	16	Yes
49	23607	5538	15	Yes
50	24082	5539	14	Yes
51	24557	5540	14	Yes
52	25032	5541	13	Yes
53	25507	5542	18	Yes
54	25982	5543	16	Yes
55	26457	5544	14	Yes
56	26932	5545	16	Yes
57	27407	5546	16	Yes
58	27882	5547	23	Yes
59	28357	5548	15	Yes
60	28832	5549	21	Yes
61	29307	5550	19	Yes
62	29782	5551	18	Yes
63	30257	5552	13	Yes
64	30732	5553	14	Yes
65	31207	5554	13	Yes
66	31682	5555	19	Yes
67	32157	5556	12	Yes
68	32632	5557	20	Yes
69	33107	5558	18	Yes
70	33582	5559	19	Yes
71	34057	5560	21	Yes
72	34532	5561	22	Yes
73	35007	5562	14	Yes
74	35482	5563	25	Yes
75	35957	5564	20	Yes
76	36432	5565	23	Yes
77	36907	5566	17	Yes
78	37382	5567	19	Yes
79	37857	5568	18	Yes
80	38332	5569	18	Yes
81	38807	5570	16	Yes

7.5. BRIDGE MODE RESULTS

Per KDB 905462 D02, Section 5.1 (footnote 2):

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 where they act as master and client must also employ DFS function for the master. 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.

8. APENDIX A: FCC LONG PULSE TYPE 5 RADAR PARAMETERS

FCC Long Pulse 02-13-2023 07:04:17

Waveform Num = 1

Num of Bursts = 8

Burst Interval (us) = 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	1300775	3	11	80	1948	1931	1837	1300775	0	1499999
2	1622853	3	11	70	1983	1649	1239	2929344	1500000	2999999
3	1564368	1	11	70	1118	0	0	4498583	3000000	4499999
4	676605	3	11	85	1999	1513	1888	5176306	4500000	5999999
5	1252052	2	11	50	1033	1700	0	6433758	6000000	7499999
6	1139275	2	11	55	1478	1169	0	7575766	7500000	8999999
7	2265646	1	11	60	1581	0	0	9844059	9000000	10499999
8	780296	2	11	75	1461	1076	0	10625936	10500000	11999999

Total number of pulses in waveform = 17

Waveform Num = 2
Num of Bursts = 11
Burst Interval (us) = 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	110285	2	18	60	1529	1752	0	110285	0	1090908
2	1543580	2	18	65	1632	1614	0	1657146	1090909	2181817
3	1247330	1	18	50	1127	0	0	2907722	2181818	3272726
4	1248310	1	18	100	1170	0	0	4157159	3272727	4363635
5	1247805	1	18	90	1684	0	0	5406134	4363636	5454544
6	194823	2	18	60	1196	1571	0	5602641	5454545	6545453
7	1936004	1	18	85	1717	0	0	7541412	6545454	7636362
8	890943	3	18	60	1863	1161	1384	8434072	7636363	8727271
9	557825	1	18	100	1264	0	0	8996305	8727272	9818180
10	1648398	1	18	60	1144	0	0	10645967	9818181	10909089
11	558610	1	18	100	1555	0	0	11205721	10909090	11999998

Total number of pulses in waveform = 16

Waveform Num = 3
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	198050	2	8	90	1058	1991	0	198050	0	631578
2	649652	3	8	60	1769	1726	1341	850751	631579	1263157
3	719410	1	8	80	1855	0	0	1574997	1263158	1894736
4	880780	3	8	75	1367	1641	1041	2457632	1894737	2526315
5	315584	3	8	90	1820	1777	1392	2777265	2526316	3157894
6	906471	2	8	85	1906	1546	0	3688725	3157895	3789473
7	489969	1	8	70	1692	0	0	4182146	3789474	4421052
8	514677	3	8	100	1837	1871	1828	4698515	4421053	5052631
9	616482	3	8	85	1239	1956	1128	5320533	5052632	5684210
10	783991	1	8	100	1743	0	0	6108847	5684211	6315789
11	220996	3	8	75	1888	1452	1410	6331586	6315790	6947368
12	950066	1	8	85	1289	0	0	7286402	6947369	7578947
13	323155	1	8	75	1169	0	0	7610846	7578948	8210526
14	953390	1	8	60	1581	0	0	8565405	8210527	8842105
	328022									

15		2	8	75	1461	1076	0	8895008	8842106	9473684
	720785									
16		1	8	95	1589	0	0	9618330	9473685	10105263
	678479									
17		2	8	90	1101	1375	0	10298398	10105264	10736842
	462700									
18		2	8	80	1521	1085	0	10763574	10736843	11368421
	1183645									
19		1	8	85	1332	0	0	11949825	11368422	12000000
Total number of pulses in waveform = 36										

Waveform Num = 4
 Num of Bursts = 10
 Burst Interval (us) = 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	1146909	1	17	90	1684	0	0	1146909	0	1199999
2	214350	2	17	60	1196	1571	0	1362943	1200000	2399999
3	2130000	1	17	85	1717	0	0	3495710	2400000	3599999
4	980377	3	17	60	1863	1161	1384	4477804	3600000	4799999
5	613756	1	17	100	1264	0	0	5095968	4800000	5999999
6	1813419	1	17	60	1144	0	0	6910651	6000000	7199999
7	614541	1	17	100	1555	0	0	7526336	7200000	8399999
8	2056592	3	17	60	1435	1785	1058	9584483	8400000	9599999
9	932994	1	17	95	1204	0	0	10521755	9600000	10799999
10	1298808	3	17	65	1350	1016	1606	11821767	10800000	11999999

Total number of pulses in waveform = 17

Waveform Num = 5
 Num of Bursts = 14
 Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	766452	2	17	70	1641	1041	0	766452	0	857142
2	429297	3	17	90	1820	1777	1392	1198431	857143	1714285
3	1232321	2	17	85	1906	1546	0	2435741	1714286	2571428
4	665524	1	17	70	1692	0	0	3104717	2571429	3428571
5	699595	3	17	100	1837	1871	1828	3806004	3428572	4285714
6	838414	3	17	85	1239	1956	1128	4649954	4285715	5142857
7	1065292	1	17	100	1743	0	0	5719569	5142858	6000000
8	300169	3	17	75	1888	1452	1410	6021481	6000001	6857143
9	1291277	1	17	85	1289	0	0	7317508	6857144	7714286
10	438802	1	17	75	1169	0	0	7757599	7714287	8571429
11	1294600	1	17	60	1581	0	0	9053368	8571430	9428572
12	445496	2	17	75	1461	1076	0	9500445	9428573	10285715
13	979169	1	17	95	1589	0	0	10482151	10285716	11142858
14	921502	2	17	90	1101	1375	0	11405242	11142859	12000001

Total number of pulses in waveform = 26

Waveform Num = 6
Num of Bursts = 16
Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	498130	2	14	50	1042	1127	0	498130	0	749999
2	857452	1	14	100	1170	0	0	1357751	750000	1499999
3	857293	1	14	90	1684	0	0	2216214	1500000	2249999
4	133800	2	14	60	1196	1571	0	2351698	2250000	2999999
5	1329765	1	14	85	1717	0	0	3684230	3000000	3749999
6	611467	3	14	60	1863	1161	1384	4297414	3750000	4499999
7	383041	1	14	100	1264	0	0	4684863	4500000	5249999
8	1132704	1	14	60	1144	0	0	5818831	5250000	5999999
9	383826	1	14	100	1555	0	0	6203801	6000000	6749999
10	1283357	3	14	60	1435	1785	1058	7488713	6750000	7499999
11	582759	1	14	95	1204	0	0	8075750	7500000	8249999
12	810378	3	14	65	1350	1016	1606	8887332	8250000	8999999
13	587393	2	14	90	1486	1367	0	9478697	9000000	9749999
14	856622	1	14	95	1880	0	0	10338172	9750000	10499999
	649739									

15		3	14	90	1392	1400	1598	10989791	10500000	11249999
	771450									
16		3	14	80	1845	1067	1418	11765631	11250000	11999999

Total number of pulses in waveform = 29

Waveform Num = 7
 Num of Bursts = 16
 Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	731823	3	20	95	1871	1828	1443	731823	0	749999
2	332043	2	20	60	1956	1128	0	1069008	750000	1499999
3	932383	1	20	100	1743	0	0	2004475	1500000	2249999
4	262562	3	20	75	1888	1452	1410	2268780	2250000	2999999
5	1129202	1	20	85	1289	0	0	3402732	3000000	3749999
6	383869	1	20	75	1169	0	0	3787890	3750000	4499999
7	1132525	1	20	60	1581	0	0	4921584	4500000	5249999
8	389696	2	20	75	1461	1076	0	5312861	5250000	5999999
9	856437	1	20	95	1589	0	0	6171835	6000000	6749999
10	806066	2	20	90	1101	1375	0	6979490	6750000	7499999
11	549798	2	20	80	1521	1085	0	7531764	7500000	8249999
12	1406277	1	20	85	1332	0	0	8940647	8250000	8999999
13	658931	1	20	90	1110	0	0	9600910	9000000	9749999
14	574378	3	20	100	1358	1213	1196	10176398	9750000	10499999
	856285									

15		1	20	55	1709	0	0	11036450	10500000	11249999
	498435									
16		3	20	100	1221	1863	1161	11536594	11250000	11999999

Total number of pulses in waveform = 28

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)
1	101271	3	5	60	1247	1153	1187	101271	0	705881
2	1241259	3	5	65	1966	1555	1272	1346117	705882	1411763
3	102184	1	5	70	1785	0	0	1453094	1411764	2117645
4	1171821	3	5	65	1829	1204	1769	2626700	2117646	2823527
5	792821	2	5	65	1016	1606	0	3424323	2823528	3529409
6	552896	2	5	90	1486	1367	0	3979841	3529410	4235291
7	806085	1	5	95	1880	0	0	4788779	4235292	4941173
8	611325	3	5	90	1392	1400	1598	5401984	4941174	5647055
9	725805	3	5	80	1845	1067	1418	6132179	5647056	6352937
10	827620	2	5	100	1931	1837	0	6964129	6352938	7058819
11	761090	3	5	70	1983	1649	1239	7728987	7058820	7764701
12	735468	1	5	70	1118	0	0	8469326	7764702	8470583
13	317108	3	5	85	1999	1513	1888	8787552	8470584	9176465
14	587216	2	5	50	1033	1700	0	9380168	9176466	9882347
	535030									

15		2	5	55	1478	1169	0	9917931	9882348	10588229
	1064385									
16		1	5	60	1581	0	0	10984963	10588230	11294111
	366719									
17		2	5	75	1461	1076	0	11353263	11294112	11999993
Total number of pulses in waveform = 37										

Waveform Num = 9
Num of Bursts = 11
Burst Interval (us) = 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	110285	2	18	60	1529	1752	0	110285	0	1090908
2	1543580	2	18	65	1632	1614	0	1657146	1090909	2181817
3	1247330	1	18	50	1127	0	0	2907722	2181818	3272726
4	1248310	1	18	100	1170	0	0	4157159	3272727	4363635
5	1247805	1	18	90	1684	0	0	5406134	4363636	5454544
6	194823	2	18	60	1196	1571	0	5602641	5454545	6545453
7	1936004	1	18	85	1717	0	0	7541412	6545454	7636362
8	890943	3	18	60	1863	1161	1384	8434072	7636363	8727271
9	557825	1	18	100	1264	0	0	8996305	8727272	9818180
10	1648398	1	18	60	1144	0	0	10645967	9818181	10909089
11	558610	1	18	100	1555	0	0	11205721	10909090	11999998

Total number of pulses in waveform = 16

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)
1	198050	2	8	90	1058	1991	0	198050	0	631578
2	649652	3	8	60	1769	1726	1341	850751	631579	1263157
3	719410	1	8	80	1855	0	0	1574997	1263158	1894736
4	880780	3	8	75	1367	1641	1041	2457632	1894737	2526315
5	315584	3	8	90	1820	1777	1392	2777265	2526316	3157894
6	906471	2	8	85	1906	1546	0	3688725	3157895	3789473
7	489969	1	8	70	1692	0	0	4182146	3789474	4421052
8	514677	3	8	100	1837	1871	1828	4698515	4421053	5052631
9	616482	3	8	85	1239	1956	1128	5320533	5052632	5684210
10	783991	1	8	100	1743	0	0	6108847	5684211	6315789
11	220996	3	8	75	1888	1452	1410	6331586	6315790	6947368
12	950066	1	8	85	1289	0	0	7286402	6947369	7578947
13	323155	1	8	75	1169	0	0	7610846	7578948	8210526
14	953390	1	8	60	1581	0	0	8565405	8210527	8842105
	328022									

15		2	8	75	1461	1076	0	8895008	8842106	9473684
	720785									
16		1	8	95	1589	0	0	9618330	9473685	10105263
	678479									
17		2	8	90	1101	1375	0	10298398	10105264	10736842
	462700									
18		2	8	80	1521	1085	0	10763574	10736843	11368421
	1183645									
19		1	8	85	1332	0	0	11949825	11368422	12000000
Total number of pulses in waveform = 36										

Waveform Num = 11
Num of Bursts = 10
Burst Interval (us) = 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	1146909	1	17	90	1684	0	0	1146909	0	1199999
2	214350	2	17	60	1196	1571	0	1362943	1200000	2399999
3	2130000	1	17	85	1717	0	0	3495710	2400000	3599999
4	980377	3	17	60	1863	1161	1384	4477804	3600000	4799999
5	613756	1	17	100	1264	0	0	5095968	4800000	5999999
6	1813419	1	17	60	1144	0	0	6910651	6000000	7199999
7	614541	1	17	100	1555	0	0	7526336	7200000	8399999
8	2056592	3	17	60	1435	1785	1058	9584483	8400000	9599999
9	932994	1	17	95	1204	0	0	10521755	9600000	10799999
10	1298808	3	17	65	1350	1016	1606	11821767	10800000	11999999

Total number of pulses in waveform = 17

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)
1	766452	2	17	70	1641	1041	0	766452	0	857142
2	429297	3	17	90	1820	1777	1392	1198431	857143	1714285
3	1232321	2	17	85	1906	1546	0	2435741	1714286	2571428
4	665524	1	17	70	1692	0	0	3104717	2571429	3428571
5	699595	3	17	100	1837	1871	1828	3806004	3428572	4285714
6	838414	3	17	85	1239	1956	1128	4649954	4285715	5142857
7	1065292	1	17	100	1743	0	0	5719569	5142858	6000000
8	300169	3	17	75	1888	1452	1410	6021481	6000001	6857143
9	1291277	1	17	85	1289	0	0	7317508	6857144	7714286
10	438802	1	17	75	1169	0	0	7757599	7714287	8571429
11	1294600	1	17	60	1581	0	0	9053368	8571430	9428572
12	445496	2	17	75	1461	1076	0	9500445	9428573	10285715
13	979169	1	17	95	1589	0	0	10482151	10285716	11142858
14	921502	2	17	90	1101	1375	0	11405242	11142859	12000001

Total number of pulses in waveform = 26

Waveform Num = 13
Num of Bursts = 16
Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	498130	2	14	50	1042	1127	0	498130	0	749999
2	857452	1	14	100	1170	0	0	1357751	750000	1499999
3	857293	1	14	90	1684	0	0	2216214	1500000	2249999
4	133800	2	14	60	1196	1571	0	2351698	2250000	2999999
5	1329765	1	14	85	1717	0	0	3684230	3000000	3749999
6	611467	3	14	60	1863	1161	1384	4297414	3750000	4499999
7	383041	1	14	100	1264	0	0	4684863	4500000	5249999
8	1132704	1	14	60	1144	0	0	5818831	5250000	5999999
9	383826	1	14	100	1555	0	0	6203801	6000000	6749999
10	1283357	3	14	60	1435	1785	1058	7488713	6750000	7499999
11	582759	1	14	95	1204	0	0	8075750	7500000	8249999
12	810378	3	14	65	1350	1016	1606	8887332	8250000	8999999
13	587393	2	14	90	1486	1367	0	9478697	9000000	9749999
14	856622	1	14	95	1880	0	0	10338172	9750000	10499999
	649739									

15		3	14	90	1392	1400	1598	10989791	10500000	11249999
16	771450	3	14	80	1845	1067	1418	11765631	11250000	11999999

Total number of pulses in waveform = 29

Waveform Num = 14
 Num of Bursts = 16
 Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	731823	3	20	95	1871	1828	1443	731823	0	749999
2	332043	2	20	60	1956	1128	0	1069008	750000	1499999
3	932383	1	20	100	1743	0	0	2004475	1500000	2249999
4	262562	3	20	75	1888	1452	1410	2268780	2250000	2999999
5	1129202	1	20	85	1289	0	0	3402732	3000000	3749999
6	383869	1	20	75	1169	0	0	3787890	3750000	4499999
7	1132525	1	20	60	1581	0	0	4921584	4500000	5249999
8	389696	2	20	75	1461	1076	0	5312861	5250000	5999999
9	856437	1	20	95	1589	0	0	6171835	6000000	6749999
10	806066	2	20	90	1101	1375	0	6979490	6750000	7499999
11	549798	2	20	80	1521	1085	0	7531764	7500000	8249999
12	1406277	1	20	85	1332	0	0	8940647	8250000	8999999
13	658931	1	20	90	1110	0	0	9600910	9000000	9749999
14	574378	3	20	100	1358	1213	1196	10176398	9750000	10499999
	856285									

15		1	20	55	1709	0	0	11036450	10500000	11249999
	498435									
16		3	20	100	1221	1863	1161	11536594	11250000	11999999

Total number of pulses in waveform = 28

Waveform Num = 15
Num of Bursts = 17
Burst Interval (us) = 705882

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	101271	3	5	60	1247	1153	1187	101271	0	705881
2	1241259	3	5	65	1966	1555	1272	1346117	705882	1411763
3	102184	1	5	70	1785	0	0	1453094	1411764	2117645
4	1171821	3	5	65	1829	1204	1769	2626700	2117646	2823527
5	792821	2	5	65	1016	1606	0	3424323	2823528	3529409
6	552896	2	5	90	1486	1367	0	3979841	3529410	4235291
7	806085	1	5	95	1880	0	0	4788779	4235292	4941173
8	611325	3	5	90	1392	1400	1598	5401984	4941174	5647055
9	725805	3	5	80	1845	1067	1418	6132179	5647056	6352937
10	827620	2	5	100	1931	1837	0	6964129	6352938	7058819
11	761090	3	5	70	1983	1649	1239	7728987	7058820	7764701
12	735468	1	5	70	1118	0	0	8469326	7764702	8470583
13	317108	3	5	85	1999	1513	1888	8787552	8470584	9176465
14	587216	2	5	50	1033	1700	0	9380168	9176466	9882347
	535030									

15		2	5	55	1478	1169	0	9917931	9882348	10588229
	1064385									
16		1	5	60	1581	0	0	10984963	10588230	11294111
	366719									
17		2	5	75	1461	1076	0	11353263	11294112	11999993
Total number of pulses in waveform = 37										

Waveform Num = 16
Num of Bursts = 11
Burst Interval (us) = 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	110285	2	18	60	1529	1752	0	110285	0	1090908
2	1543580	2	18	65	1632	1614	0	1657146	1090909	2181817
3	1247330	1	18	50	1127	0	0	2907722	2181818	3272726
4	1248310	1	18	100	1170	0	0	4157159	3272727	4363635
5	1247805	1	18	90	1684	0	0	5406134	4363636	5454544
6	194823	2	18	60	1196	1571	0	5602641	5454545	6545453
7	1936004	1	18	85	1717	0	0	7541412	6545454	7636362
8	890943	3	18	60	1863	1161	1384	8434072	7636363	8727271
9	557825	1	18	100	1264	0	0	8996305	8727272	9818180
10	1648398	1	18	60	1144	0	0	10645967	9818181	10909089
11	558610	1	18	100	1555	0	0	11205721	10909090	11999998

Total number of pulses in waveform = 16

Waveform Num = 17
Num of Bursts = 19
Burst Interval (us) = 631579

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	198050	2	8	90	1058	1991	0	198050	0	631578
2	649652	3	8	60	1769	1726	1341	850751	631579	1263157
3	719410	1	8	80	1855	0	0	1574997	1263158	1894736
4	880780	3	8	75	1367	1641	1041	2457632	1894737	2526315
5	315584	3	8	90	1820	1777	1392	2777265	2526316	3157894
6	906471	2	8	85	1906	1546	0	3688725	3157895	3789473
7	489969	1	8	70	1692	0	0	4182146	3789474	4421052
8	514677	3	8	100	1837	1871	1828	4698515	4421053	5052631
9	616482	3	8	85	1239	1956	1128	5320533	5052632	5684210
10	783991	1	8	100	1743	0	0	6108847	5684211	6315789
11	220996	3	8	75	1888	1452	1410	6331586	6315790	6947368
12	950066	1	8	85	1289	0	0	7286402	6947369	7578947
13	323155	1	8	75	1169	0	0	7610846	7578948	8210526
14	953390	1	8	60	1581	0	0	8565405	8210527	8842105
	328022									

15		2	8	75	1461	1076	0	8895008	8842106	9473684
	720785									
16		1	8	95	1589	0	0	9618330	9473685	10105263
	678479									
17		2	8	90	1101	1375	0	10298398	10105264	10736842
	462700									
18		2	8	80	1521	1085	0	10763574	10736843	11368421
	1183645									
19		1	8	85	1332	0	0	11949825	11368422	12000000

Total number of pulses in waveform = 36

Waveform Num = 18
Num of Bursts = 10
Burst Interval (us) = 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	1146909	1	17	90	1684	0	0	1146909	0	1199999
2	214350	2	17	60	1196	1571	0	1362943	1200000	2399999
3	2130000	1	17	85	1717	0	0	3495710	2400000	3599999
4	980377	3	17	60	1863	1161	1384	4477804	3600000	4799999
5	613756	1	17	100	1264	0	0	5095968	4800000	5999999
6	1813419	1	17	60	1144	0	0	6910651	6000000	7199999
7	614541	1	17	100	1555	0	0	7526336	7200000	8399999
8	2056592	3	17	60	1435	1785	1058	9584483	8400000	9599999
9	932994	1	17	95	1204	0	0	10521755	9600000	10799999
10	1298808	3	17	65	1350	1016	1606	11821767	10800000	11999999

Total number of pulses in waveform = 17

Waveform Num = 19
Num of Bursts = 14
Burst Interval (us) = 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	766452	2	17	70	1641	1041	0	766452	0	857142
2	429297	3	17	90	1820	1777	1392	1198431	857143	1714285
3	1232321	2	17	85	1906	1546	0	2435741	1714286	2571428
4	665524	1	17	70	1692	0	0	3104717	2571429	3428571
5	699595	3	17	100	1837	1871	1828	3806004	3428572	4285714
6	838414	3	17	85	1239	1956	1128	4649954	4285715	5142857
7	1065292	1	17	100	1743	0	0	5719569	5142858	6000000
8	300169	3	17	75	1888	1452	1410	6021481	6000001	6857143
9	1291277	1	17	85	1289	0	0	7317508	6857144	7714286
10	438802	1	17	75	1169	0	0	7757599	7714287	8571429
11	1294600	1	17	60	1581	0	0	9053368	8571430	9428572
12	445496	2	17	75	1461	1076	0	9500445	9428573	10285715
	979169									

13		1	17	95	1589	0	0	10482151	10285716	11142858
	921502									
14		2	17	90	1101	1375	0	11405242	11142859	12000001

Total number of pulses in waveform = 26

Waveform Num = 20
Num of Bursts = 16
Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	498130	2	14	50	1042	1127	0	498130	0	749999
2	857452	1	14	100	1170	0	0	1357751	750000	1499999
3	857293	1	14	90	1684	0	0	2216214	1500000	2249999
4	133800	2	14	60	1196	1571	0	2351698	2250000	2999999
5	1329765	1	14	85	1717	0	0	3684230	3000000	3749999
6	611467	3	14	60	1863	1161	1384	4297414	3750000	4499999
7	383041	1	14	100	1264	0	0	4684863	4500000	5249999
8	1132704	1	14	60	1144	0	0	5818831	5250000	5999999
9	383826	1	14	100	1555	0	0	6203801	6000000	6749999
10	1283357	3	14	60	1435	1785	1058	7488713	6750000	7499999
11	582759	1	14	95	1204	0	0	8075750	7500000	8249999
12	810378	3	14	65	1350	1016	1606	8887332	8250000	8999999
13	587393	2	14	90	1486	1367	0	9478697	9000000	9749999
14	856622	1	14	95	1880	0	0	10338172	9750000	10499999
	649739									

15		3	14	90	1392	1400	1598	10989791	10500000	11249999
	771450									
16		3	14	80	1845	1067	1418	11765631	11250000	11999999

Total number of pulses in waveform = 29

Waveform Num = 21
 Num of Bursts = 16
 Burst Interval (us) = 750000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	731823	3	20	95	1871	1828	1443	731823	0	749999
2	332043	2	20	60	1956	1128	0	1069008	750000	1499999
3	932383	1	20	100	1743	0	0	2004475	1500000	2249999
4	262562	3	20	75	1888	1452	1410	2268780	2250000	2999999
5	1129202	1	20	85	1289	0	0	3402732	3000000	3749999
6	383869	1	20	75	1169	0	0	3787890	3750000	4499999
7	1132525	1	20	60	1581	0	0	4921584	4500000	5249999
8	389696	2	20	75	1461	1076	0	5312861	5250000	5999999
9	856437	1	20	95	1589	0	0	6171835	6000000	6749999
10	806066	2	20	90	1101	1375	0	6979490	6750000	7499999
11	549798	2	20	80	1521	1085	0	7531764	7500000	8249999
12	1406277	1	20	85	1332	0	0	8940647	8250000	8999999
13	658931	1	20	90	1110	0	0	9600910	9000000	9749999
	574378									

14		3	20	100	1358	1213	1196	10176398	9750000	10499999
	856285	15		1	20	55	1709	0	11036450	10500000
11249999										
	730857									
16		3	20	100	1533	1174	1473	11769016	11250000	11999999

Total number of pulses in waveform = 28

Waveform Num = 22
Num of Bursts = 8
Burst Interval (us) = 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	696775	1	10	80	1559	0	0	696775	0	1499999
2	1216123	2	10	75	1071	1611	0	1914457	1500000	2999999
3	1227326	3	10	80	1225	1524	1747	3144465	3000000	4499999
4	2123312	2	10	65	1627	1140	0	5272273	4500000	5999999
5	1715817	1	10	50	1653	0	0	6990857	6000000	7499999
6	1716750	1	10	100	1166	0	0	8709260	7500000	8999999
7	1716426	1	10	90	1679	0	0	10426852	9000000	10499999
8	268118	2	10	60	1191	1097	0	10696649	10500000	11999999

Total number of pulses in waveform = 13

Waveform Num = 23
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	208143	3	16	100	1969	1216	1858	208143	0	1333332
2	1465251	2	16	90	1003	1935	0	1678437	1333333	2666665
3	1170992	1	16	55	1182	0	0	2852367	2666666	3999998
4	1730483	3	16	65	1961	1550	1267	4584032	3999999	5333331
5	1156905	3	16	70	1311	1053	1986	5745715	5333332	6666664
6	1374803	3	16	60	1764	1722	1337	7124868	6666665	7999997
7	1523266	1	16	80	1850	0	0	8652957	7999998	9333330
8	1864050	3	16	75	1362	1636	1568	10518857	9333331	10666663
9	668873	3	16	90	1815	1772	1387	11192296	10666664	11999996

Total number of pulses in waveform = 22

Waveform Num = 24
Num of Bursts = 15
Burst Interval (us) = 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	546396	3	7	75	1841	1063	1413	546396	0	799999
2	565235	2	7	100	1926	1833	0	1115948	800000	1599999
3	666645	2	7	70	1978	1644	0	1786352	1600000	2399999
4	1403503	2	7	55	1422	1114	0	3193477	2400000	3199999
5	409373	1	7	85	1525	0	0	3605386	3200000	3999999
6	573029	3	7	70	1405	1020	1028	4179940	4000000	4799999
7	994532	1	7	75	1174	0	0	5177925	4800000	5599999
8	865386	3	7	50	1319	1251	1576	6044485	5600000	6399999
9	838226	2	7	75	1456	1071	0	6886857	6400000	7199999
10	490100	1	7	95	1584	0	0	7379484	7200000	7999999
11	859947	2	7	90	1096	1370	0	8241015	8000000	8799999
12	586581	2	7	55	1516	1080	0	8830062	8800000	9599999
13	899523	2	7	85	1327	1918	0	9732181	9600000	10399999
14	945057	3	7	55	1798	1679	1953	10680483	10400000	11199999
15	618983	1	7	60	1097	0	0	11304896	11200000	11999999

Total number of pulses in waveform = 30

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)
1	208143	3	16	100	1969	1216	1858	208143	0	1333332
2	1465251	2	16	90	1003	1935	0	1678437	1333333	2666665
3	1170992	1	16	55	1182	0	0	2852367	2666666	3999998
4	1730483	3	16	65	1961	1550	1267	4584032	3999999	5333331
5	1156905	3	16	70	1311	1053	1986	5745715	5333332	6666664
6	1374803	3	16	60	1764	1722	1337	7124868	6666665	7999997
7	1523266	1	16	80	1850	0	0	8652957	7999998	9333330
8	1864050	3	16	75	1362	1636	1568	10518857	9333331	10666663
9	668873	3	16	90	1815	1772	1387	11192296	10666664	11999996

Total number of pulses in waveform = 22

Waveform Num = 26
 Num of Bursts = 15
 Burst Interval (us) = 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	546396	3	7	75	1841	1063	1413	546396	0	799999
2	565235	2	7	100	1926	1833	0	1115948	800000	1599999
3	666645	2	7	70	1978	1644	0	1786352	1600000	2399999
4	1403503	2	7	55	1422	1114	0	3193477	2400000	3199999
5	409373	1	7	85	1525	0	0	3605386	3200000	3999999
6	573029	3	7	70	1405	1020	1028	4179940	4000000	4799999
7	994532	1	7	75	1174	0	0	5177925	4800000	5599999
8	865386	3	7	50	1319	1251	1576	6044485	5600000	6399999
9	838226	2	7	75	1456	1071	0	6886857	6400000	7199999
10	490100	1	7	95	1584	0	0	7379484	7200000	7999999
11	859947	2	7	90	1096	1370	0	8241015	8000000	8799999
12	586581	2	7	55	1516	1080	0	8830062	8800000	9599999
13	899523	2	7	85	1327	1918	0	9732181	9600000	10399999
14	945057	3	7	55	1798	1679	1953	10680483	10400000	11199999
15	618983	1	7	60	1097	0	0	11304896	11200000	11999999

Total number of pulses in waveform = 30

Waveform Num = 27
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	208143	3	16	100	1969	1216	1858	208143	0	1333332
2	1465251	2	16	90	1003	1935	0	1678437	1333333	2666665
3	1170992	1	16	55	1182	0	0	2852367	2666666	3999998
4	1730483	3	16	65	1961	1550	1267	4584032	3999999	5333331
5	1156905	3	16	70	1311	1053	1986	5745715	5333332	6666664
6	1374803	3	16	60	1764	1722	1337	7124868	6666665	7999997
7	1523266	1	16	80	1850	0	0	8652957	7999998	9333330
8	1864050	3	16	75	1362	1636	1568	10518857	9333331	10666663
9	668873	3	16	90	1815	1772	1387	11192296	10666664	11999996

Total number of pulses in waveform = 22

Waveform Num = 28
 Num of Bursts = 15
 Burst Interval (us) = 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	546396	3	7	75	1841	1063	1413	546396	0	799999
2	565235	2	7	100	1926	1833	0	1115948	800000	1599999
3	666645	2	7	70	1978	1644	0	1786352	1600000	2399999
4	1403503	2	7	55	1422	1114	0	3193477	2400000	3199999
5	409373	1	7	85	1525	0	0	3605386	3200000	3999999
6	573029	3	7	70	1405	1020	1028	4179940	4000000	4799999
7	994532	1	7	75	1174	0	0	5177925	4800000	5599999
8	865386	3	7	50	1319	1251	1576	6044485	5600000	6399999
9	838226	2	7	75	1456	1071	0	6886857	6400000	7199999
10	490100	1	7	95	1584	0	0	7379484	7200000	7999999
11	859947	2	7	90	1096	1370	0	8241015	8000000	8799999
12	586581	2	7	55	1516	1080	0	8830062	8800000	9599999
13	899523	2	7	85	1327	1918	0	9732181	9600000	10399999
14	945057	3	7	55	1798	1679	1953	10680483	10400000	11199999
15	618983	1	7	60	1097	0	0	11304896	11200000	11999999

Total number of pulses in waveform = 30

Waveform Num = 29
Num of Bursts = 9
Burst Interval (us) = 1333333

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	208143	3	16	100	1969	1216	1858	208143	0	1333332
2	1465251	2	16	90	1003	1935	0	1678437	1333333	2666665
3	1170992	1	16	55	1182	0	0	2852367	2666666	3999998
4	1730483	3	16	65	1961	1550	1267	4584032	3999999	5333331
5	1156905	3	16	70	1311	1053	1986	5745715	5333332	6666664
6	1374803	3	16	60	1764	1722	1337	7124868	6666665	7999997
7	1523266	1	16	80	1850	0	0	8652957	7999998	9333330
8	1864050	3	16	75	1362	1636	1568	10518857	9333331	10666663
9	668873	3	16	90	1815	1772	1387	11192296	10666664	11999996

Total number of pulses in waveform = 22

Waveform Num = 30
 Num of Bursts = 15
 Burst Interval (us) = 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	546396	3	7	75	1841	1063	1413	546396	0	799999
2	565235	2	7	100	1926	1833	0	1115948	800000	1599999
3	666645	2	7	70	1978	1644	0	1786352	1600000	2399999
4	1403503	2	7	55	1422	1114	0	3193477	2400000	3199999
5	409373	1	7	85	1525	0	0	3605386	3200000	3999999
6	573029	3	7	70	1405	1020	1028	4179940	4000000	4799999
7	994532	1	7	75	1174	0	0	5177925	4800000	5599999
8	865386	3	7	50	1319	1251	1576	6044485	5600000	6399999
9	838226	2	7	75	1456	1071	0	6886857	6400000	7199999
10	490100	1	7	95	1584	0	0	7379484	7200000	7999999
11	859947	2	7	90	1096	1370	0	8241015	8000000	8799999
12	586581	2	7	55	1516	1080	0	8830062	8800000	9599999
13	899523	2	7	85	1327	1918	0	9732181	9600000	10399999
14	945057	3	7	55	1798	1679	1953	10680483	10400000	11199999
15	618983	1	7	60	1097	0	0	11304896	11200000	11999999

Total number of pulses in waveform = 30