



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

CERTIFICATION TEST REPORT

FOR

XE3-4TN Wi-Fi 6e4x4 ACCESS POINT OUTDOOR TRI-BAND with SDR

MODEL NUMBER: XE3-4T

FCC ID: Z8H89FT0073

IC: 109W-0073

REPORT NUMBER: 14659373-E1V1

ISSUE DATE: 2023-02-10

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023/02/10	Initial Issue	--

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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: XE3-4TN Wi-Fi 6e4x4 ACCESS POINT OUTDOOR
TRI-BAND with SDR

MODEL: XE3-4T

SERIAL NUMBER: WOYG007C32LR

DATE TESTED: JANUARY 23 to 26, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
DFS Portion of CFR 47 Part 15 Subpart E	Complies
DFS Portion of ISSED 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.

Approved & Released For
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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 FCC report and IC report number FD290202.

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
☒	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
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
<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)
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. 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. 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.	

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

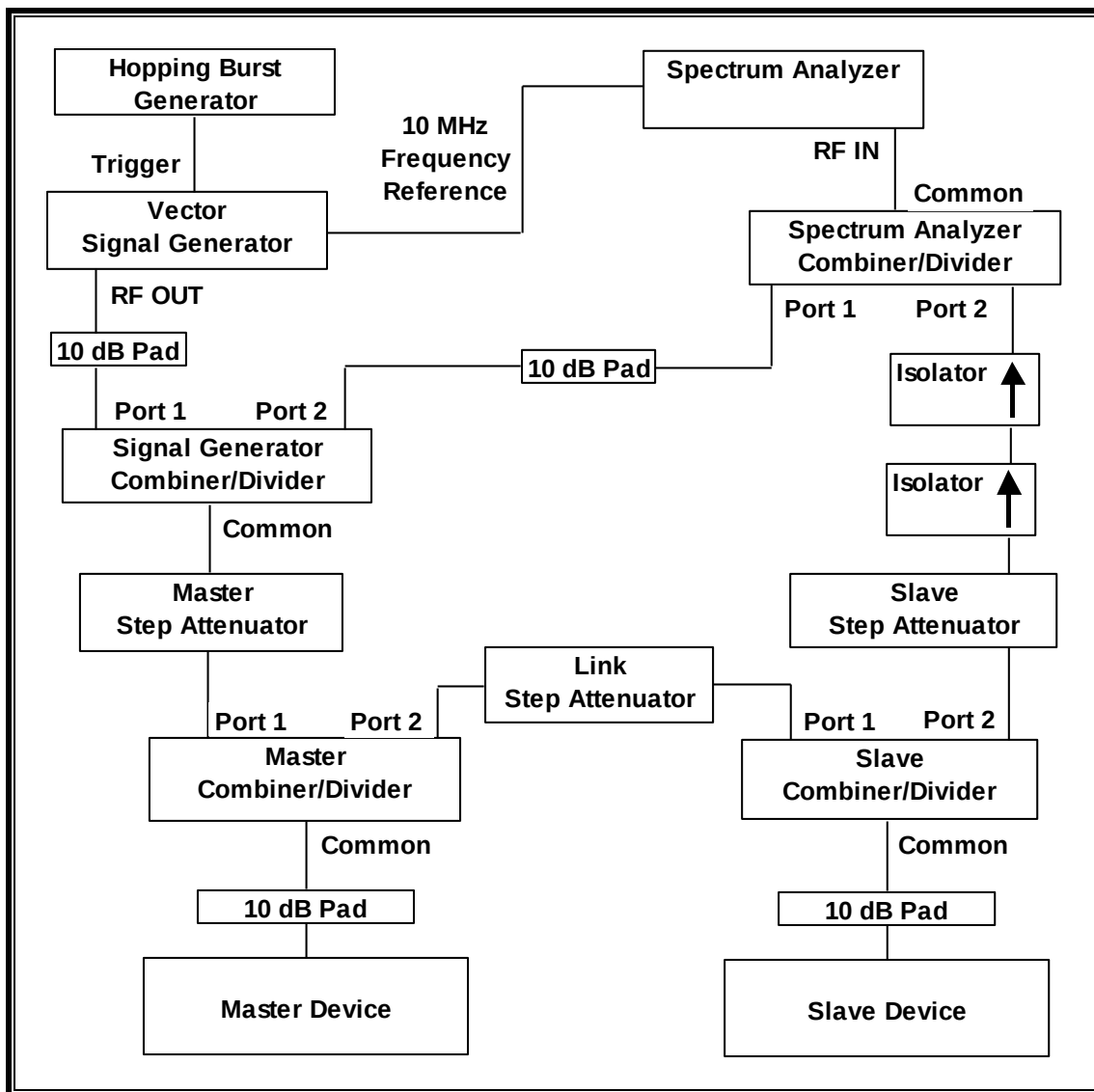
Radar Waveform Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

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	01/31/23
Signal Generator, MXG X-Series RF Vector	Keysight	N5182B	215999	02/08/23
Arbitrary Waveform Generator	Agilent / HP	33220A	80815	01/31/23

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

TEST ROOM ENVIRONMENT

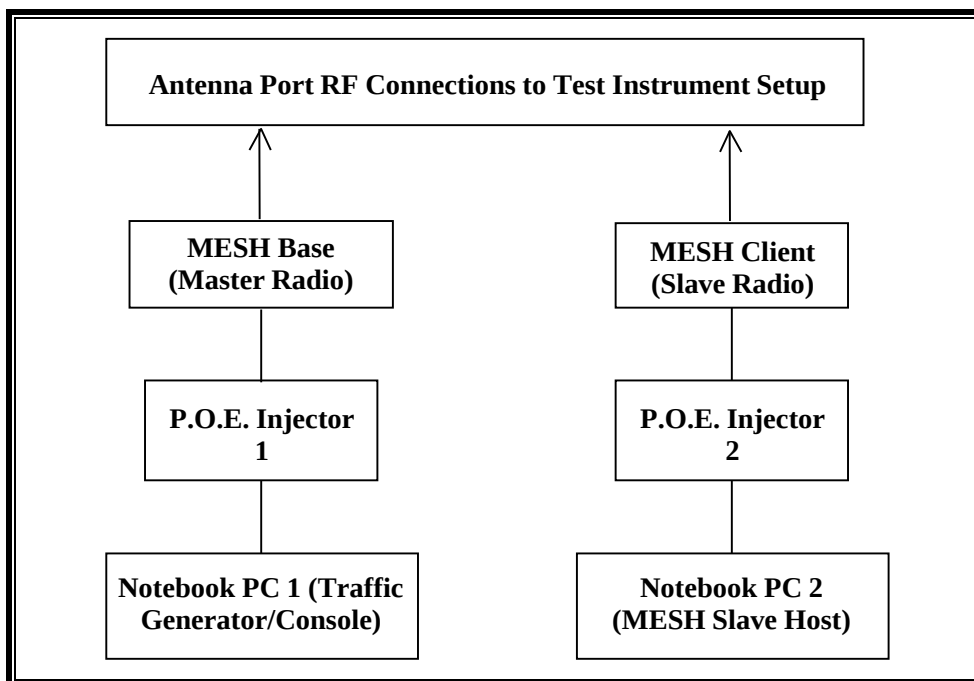
The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	23.4, 24.3, 24.7 and 24.7 °C
Humidity	20, 23, 26 and 25 %

7.1.4. 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
XE3-4TN Wi-Fi 6e 4x4 Access Point Outdoor Tri-Band with SDR (MESH Slave Radio)	Cambium Networks	XE3-4T	WOYG0078BS91	Z8H89FT0073
P.O.E. Injector 2 (MESH Slave)	Cambium Networks	NET-P60-56IN	N000000L142A20 280000149	DoC
Notebook PC 2 (MESH Slave Host)	Lenovo	Type 20B7-S0A200	PF-02JN9J 14/06	DoC
AC Adapter 2 (Notebook PC 2)	Lenovo	ADLX65NLC2A	11S45N0259Z1ZS 974594A9	DoC

7.1.5. DESCRIPTION OF EUT

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

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

The EUT is a connectorized Outdoor Multi-Radio 6e 4x4 Access Point.

The EUT can be configured as a MESH Base (Master) Device or a MESH Client (Slave) Device without Radar Detection.

The EUT as tested is a MESH Base (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 highest gain antenna assembly utilized with the EUT has a gain of 18 dBi in the 5250-5350 MHz band and 18 dBi in the 5470-5725 MHz band. The manufacturer has declared that the lowest gain antenna assembly utilized with the EUT has a gain of 5 dBi in the 5250-5350 MHz band and 5 dBi in the 5470-5725 MHz band.

Radio 2 uses two N-Type antenna connectors, each connected to a 50-ohm coaxial antenna port, to meet the diversity and MIMO operational requirements. The tested antenna ports are connected to the test system via a power divider to perform conducted tests.

Radio 3 uses two N-Type antenna connectors, each connected to a 50-ohm coaxial antenna port, to meet the diversity and MIMO operational requirements. The tested antenna ports are connected to the test system via a power divider to perform conducted tests.

The rated output power of the Master unit is $> 23\text{dBm}$ (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 $-64 + 5 + 1 = -58\text{ dBm}$.

The calibrated conducted DFS Detection Threshold level is set to -58 dBm .

The MESH Client 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. Radio 2 implements two nominal channel bandwidths: 20 MHz and 40 MHz.

The EUT utilizes the 802.11ax architecture. Radio 3 implements three nominal channel bandwidths: 20 MHz, 40 MHz and 80 MHz.

Channel puncturing is not supported by the EUT.

The software installed in the EUT is revision 6.5.2-a0.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

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

The Master Device EUT is a Cambium Networks XE3-4TN Wi-Fi 6e 4x4 Access Point Outdoor Tri-Band with SDR, FCC ID: Z8H89FT0073. The minimum antenna gain for the Master Device is 5 dBi.

The rated output power of the Master unit is $> 23\text{dBm}$ (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 $-64 + 5 + 1 = -58\text{ dBm}$.

The calibrated conducted DFS Detection Threshold level is set to -58 dBm . The tested level is lower than the required level hence it provides a margin to the limit.

The software installed in the EUT is 6.5.2-a0.

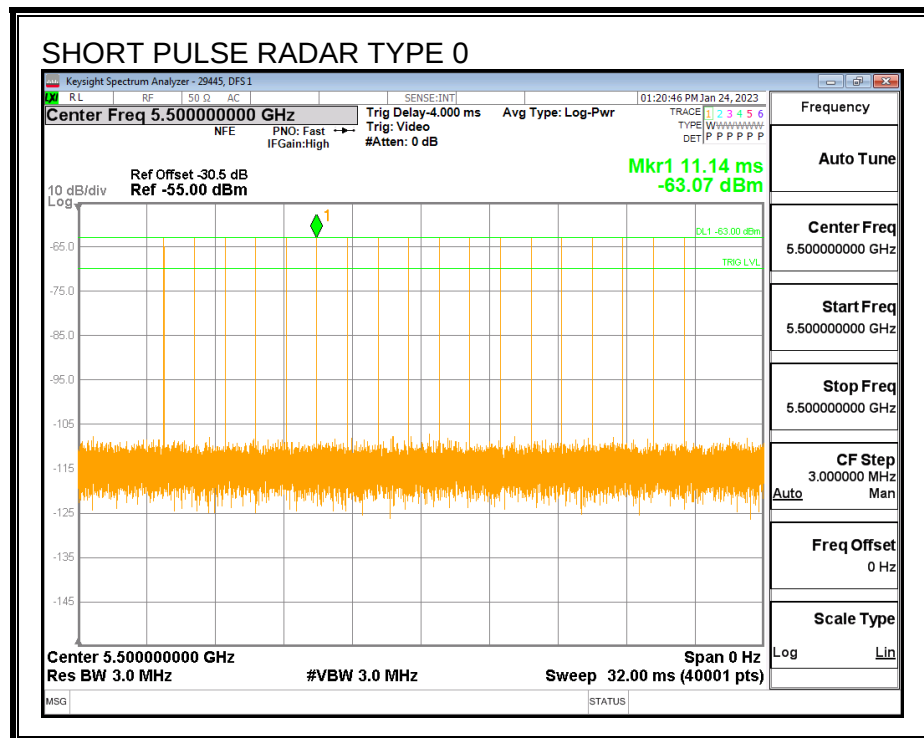
7.2. RADIO 2 RESULTS FOR 20 MHz BANDWIDTH

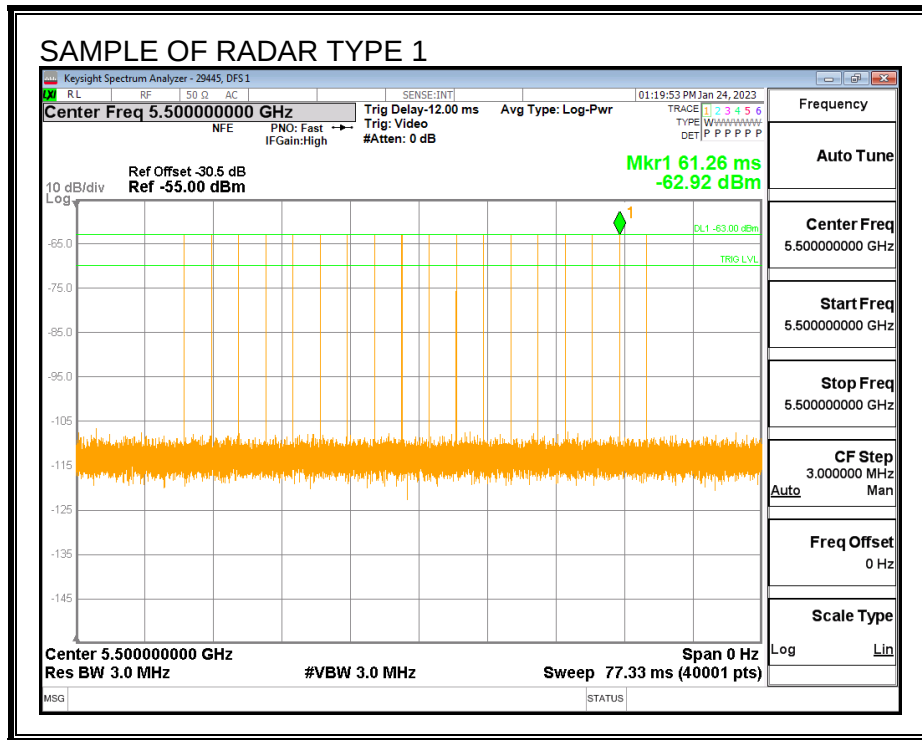
7.2.1. TEST CHANNEL

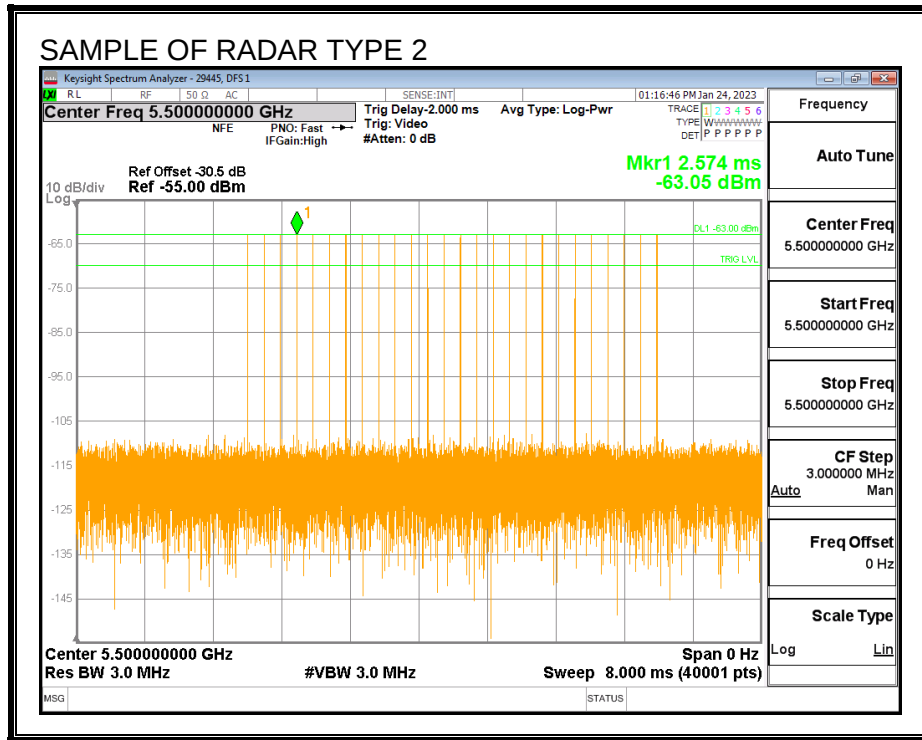
All tests were performed at a channel center frequency of 5500 MHz.

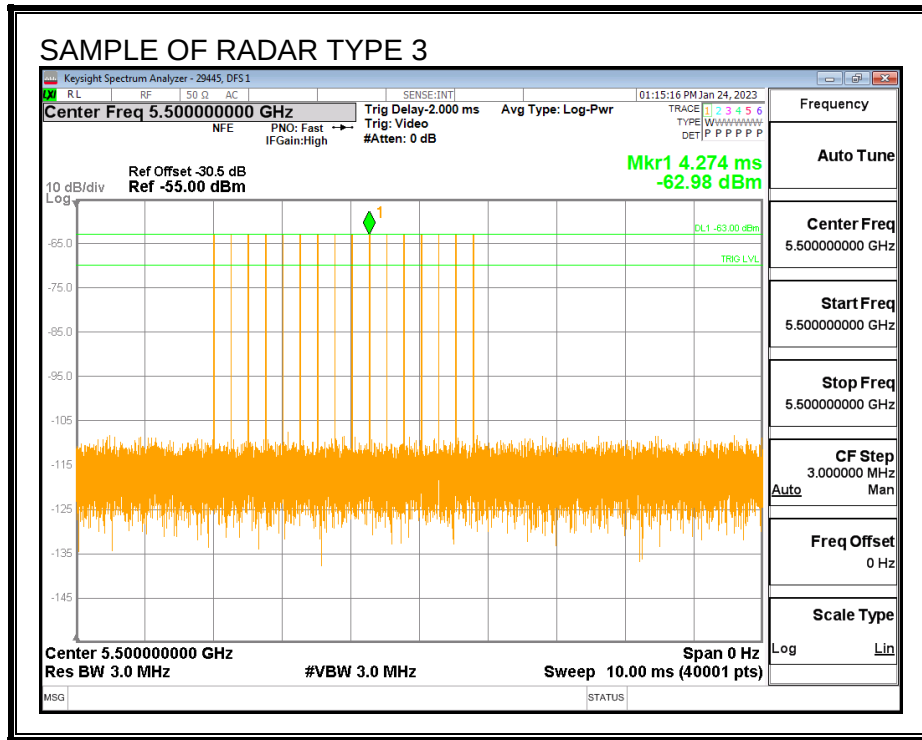
7.2.2. RADAR WAVEFORMS AND TRAFFIC

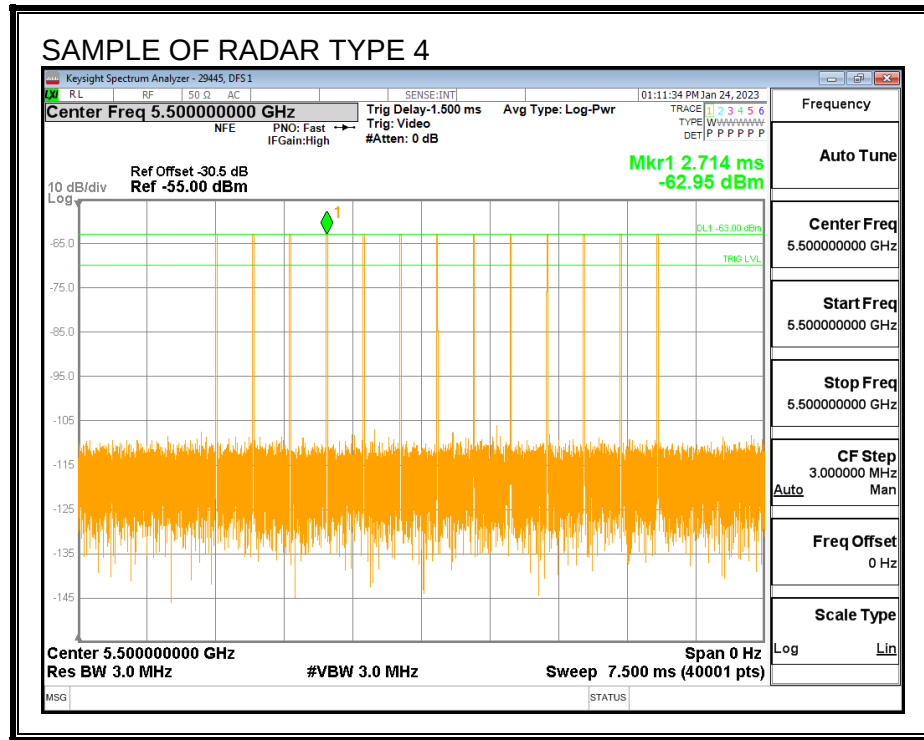
RADAR WAVEFORMS

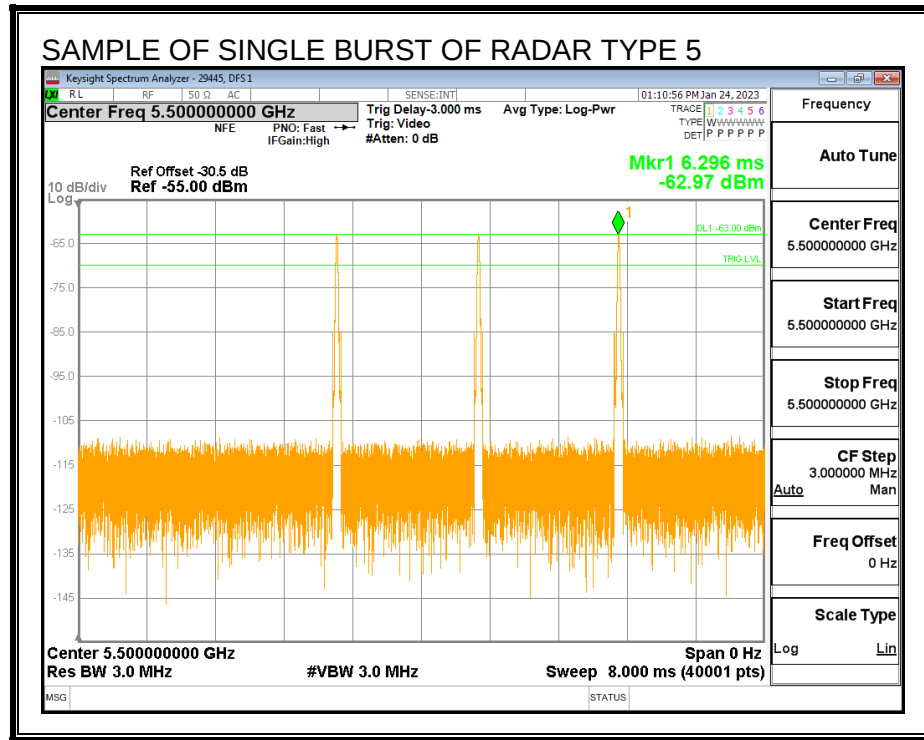


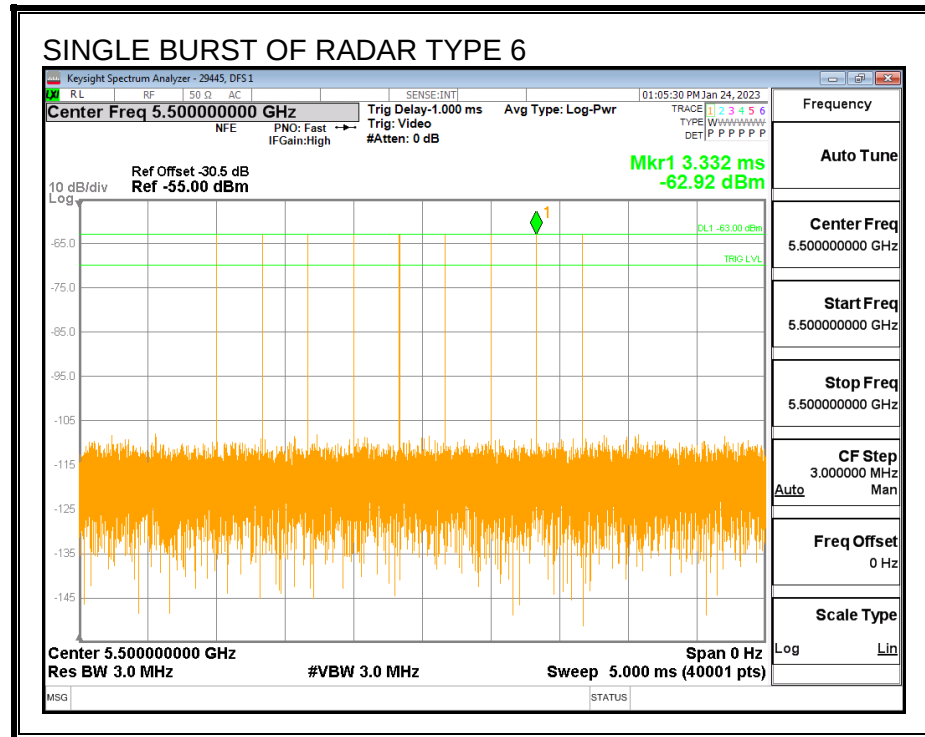




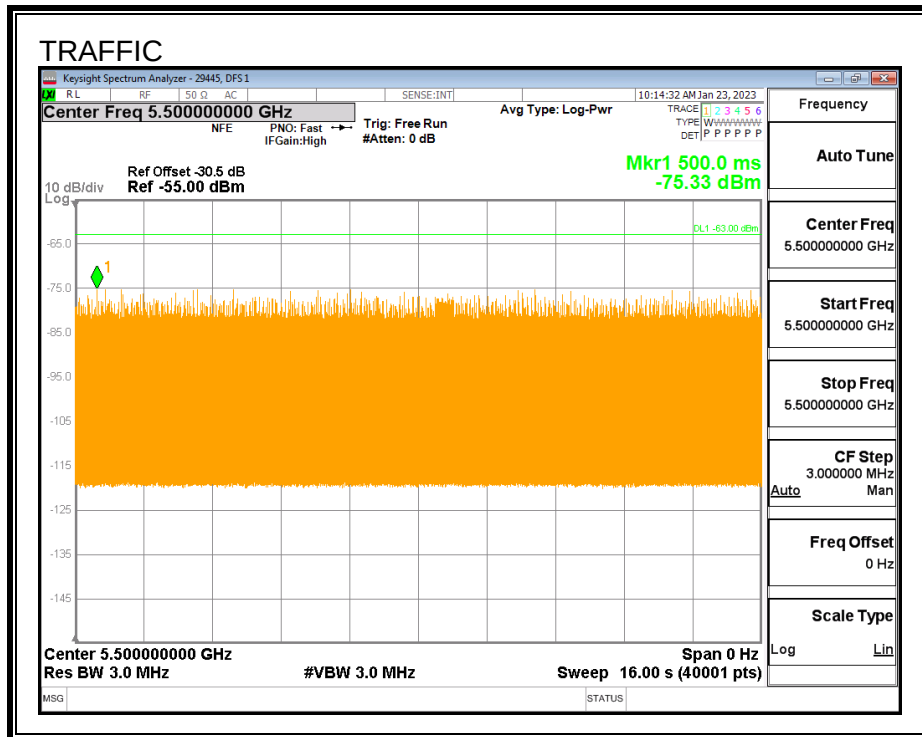




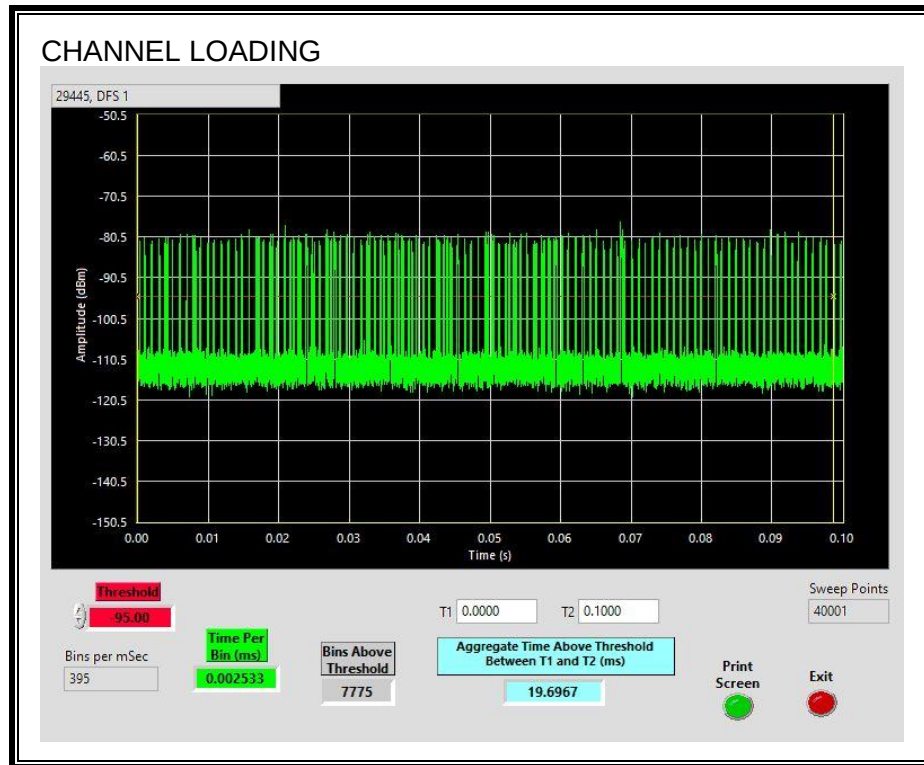




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 19.69%

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

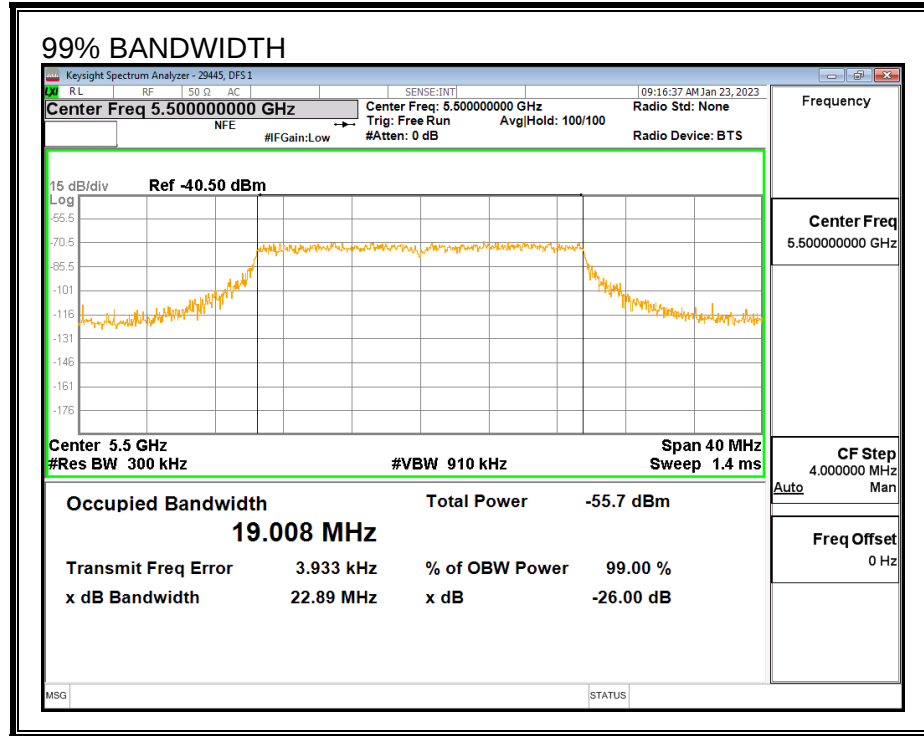
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

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	19.008	105.2	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	96.67	60	Pass	5490	5510	19.01	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5510	19.01	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5510	19.01	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5510	19.01	DFS 1	29445	v4.1
Aggregate		98.33	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5510	19.01	DFS 1	29445	v4.1
FCC Hopping Type 6	42	100.00	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	5495	Yes
1002	1	578	92	A	5501	Yes
1003	1	878	61	A	5505	Yes
1004	1	818	65	A	5509	Yes
1005	1	718	74	A	5500	No
1006	1	678	78	A	5492	Yes
1007	1	618	86	A	5494	Yes
1008	1	778	68	A	5492	Yes
1009	1	558	95	A	5490	Yes
1010	1	838	63	A	5495	Yes
1011	1	698	76	A	5509	Yes
1012	1	518	102	A	5501	Yes
1013	1	898	59	A	5505	Yes
1014	1	598	89	A	5506	Yes
1015	1	938	57	A	5497	Yes
1016	1	1282	42	B	5505	Yes
1017	1	1238	43	B	5509	Yes
1018	1	1000	53	B	5496	Yes
1019	1	1085	49	B	5508	Yes
1020	1	976	55	B	5502	Yes
1021	1	2544	21	B	5507	Yes
1022	1	2565	21	B	5497	Yes
1023	1	520	102	B	5506	Yes
1024	1	2024	27	B	5503	Yes
1025	1	1303	41	B	5506	Yes
1026	1	2936	18	B	5492	Yes
1027	1	1150	46	B	5506	Yes
1028	1	1718	31	B	5508	Yes
1029	1	2609	21	B	5507	Yes
1030	1	758	70	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	1.7	191	26	5508	Yes
2002	2.6	228	29	5501	Yes
2003	1	194	24	5505	Yes
2004	4.3	154	27	5506	Yes
2005	5	205	26	5493	Yes
2006	4.4	169	23	5495	Yes
2007	1.3	186	23	5504	Yes
2008	5	197	27	5506	Yes
2009	4.2	219	23	5500	Yes
2010	4	153	24	5509	Yes
2011	3.5	222	28	5493	Yes
2012	1.6	160	23	5503	Yes
2013	1.2	152	27	5504	Yes
2014	1.7	218	26	5494	Yes
2015	1.6	214	23	5501	Yes
2016	2.3	204	29	5496	Yes
2017	4.5	166	27	5507	Yes
2018	1.3	202	27	5503	Yes
2019	1.9	168	29	5497	Yes
2020	3	209	25	5510	Yes
2021	3.7	179	24	5492	Yes
2022	3.1	224	28	5501	Yes
2023	4.1	204	27	5507	Yes
2024	3.7	172	24	5503	Yes
2025	2.9	193	28	5498	Yes
2026	2.7	208	29	5497	Yes
2027	2.2	196	26	5494	Yes
2028	4.4	215	28	5501	Yes
2029	4	207	25	5495	Yes
2030	4.5	193	23	5491	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	9.4	252	16	5491	Yes
3002	6	471	17	5502	Yes
3003	8.2	471	17	5495	Yes
3004	9.1	334	16	5502	Yes
3005	9.7	480	17	5499	Yes
3006	6.7	355	16	5493	Yes
3007	7.4	263	18	5502	Yes
3008	6.8	284	17	5499	Yes
3009	7.8	338	17	5497	Yes
3010	7.4	490	18	5505	Yes
3011	6.6	439	17	5492	Yes
3012	6.4	353	17	5495	Yes
3013	10	314	16	5508	Yes
3014	8.1	374	17	5498	Yes
3015	9.9	482	16	5500	Yes
3016	8.2	304	18	5500	Yes
3017	6.2	424	18	5506	Yes
3018	8.8	392	18	5495	Yes
3019	6.9	274	16	5491	Yes
3020	7.8	254	18	5505	Yes
3021	8.4	400	18	5492	Yes
3022	9.5	276	18	5493	Yes
3023	6.1	317	17	5496	Yes
3024	9.6	456	16	5510	Yes
3025	6.5	259	16	5505	Yes
3026	6.1	411	16	5505	Yes
3027	9.4	360	16	5507	No
3028	9.2	273	16	5496	Yes
3029	8.7	486	18	5504	Yes
3030	6.8	428	16	5506	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	16.9	402	13	5492	Yes
4002	13.1	475	14	5497	Yes
4003	17.7	344	15	5501	Yes
4004	14.3	312	14	5497	Yes
4005	19.4	445	15	5492	Yes
4006	17	426	15	5490	Yes
4007	13.5	321	14	5504	Yes
4008	15.9	447	14	5491	Yes
4009	17.6	488	13	5510	Yes
4010	16.2	377	16	5492	Yes
4011	18.4	430	15	5509	Yes
4012	17.4	331	16	5498	Yes
4013	15.8	280	16	5498	Yes
4014	11.1	327	12	5490	Yes
4015	19	406	14	5509	Yes
4016	19	349	15	5495	Yes
4017	14	323	16	5505	Yes
4018	19.3	396	12	5508	Yes
4019	14.8	265	13	5505	Yes
4020	11.4	484	13	5505	Yes
4021	12.2	366	14	5500	Yes
4022	14.2	346	13	5492	Yes
4023	19.7	492	12	5499	Yes
4024	17.8	368	12	5504	Yes
4025	14.7	409	16	5495	Yes
4026	13.3	297	14	5505	Yes
4027	15.5	351	16	5492	Yes
4028	19.4	252	14	5506	Yes
4029	12.9	452	12	5509	Yes
4030	17.3	499	15	5500	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	5497	Yes
12	5498	Yes
13	5497	Yes
14	5498	Yes
15	5497	Yes
16	5498	Yes
17	5497	Yes
18	5498	Yes
19	5497	Yes
20	5498	Yes
21	5503	Yes
22	5502	Yes
23	5503	Yes
24	5502	Yes
25	5502	Yes
26	5505	Yes
27	5505	Yes
28	5501	Yes
29	5504	Yes
30	5502	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

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	652	5490	4	Yes
2	1127	5491	5	Yes
3	1602	5492	3	Yes
4	2552	5493	3	Yes
5	3027	5494	4	Yes
6	3502	5495	2	Yes
7	3977	5496	5	Yes
8	4452	5497	5	Yes
9	4927	5498	3	Yes
10	5402	5499	7	Yes
11	5877	5500	6	Yes
12	6352	5501	6	Yes
13	6827	5502	4	Yes
14	7302	5503	5	Yes
15	7777	5504	6	Yes
16	8252	5505	7	Yes
17	8727	5506	6	Yes
18	9202	5507	5	Yes
19	9677	5508	5	Yes
20	10152	5509	5	Yes
21	10627	5510	2	Yes
22	11102	5490	4	Yes
23	11577	5491	4	Yes
24	12052	5492	4	Yes
25	12527	5493	2	Yes
26	13002	5494	5	Yes
27	13477	5495	5	Yes
28	13952	5496	4	Yes
29	14427	5497	2	Yes
30	14902	5498	3	Yes
31	15377	5499	3	Yes
32	15852	5500	5	Yes
33	16327	5501	4	Yes
34	16802	5502	3	Yes
35	17277	5503	5	Yes
36	17752	5504	4	Yes
37	18227	5505	5	Yes
38	18702	5506	5	Yes
39	19177	5507	5	Yes
40	19652	5508	8	Yes
41	20127	5509	5	Yes
42	20602	5510	4	Yes

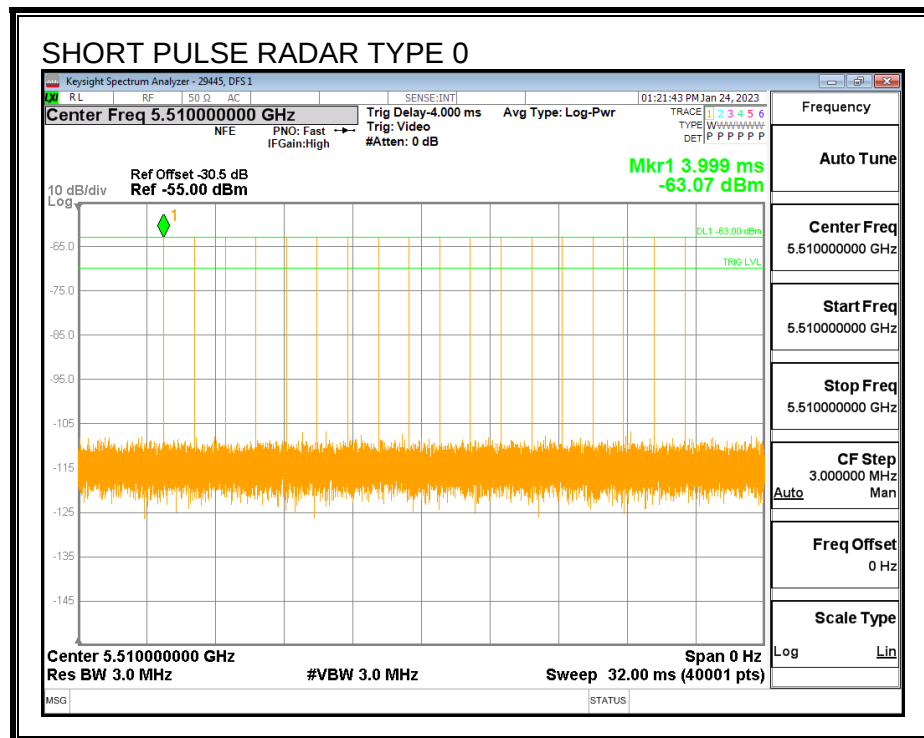
7.3. RADIO 2 RESULTS FOR 40 MHz BANDWIDTH

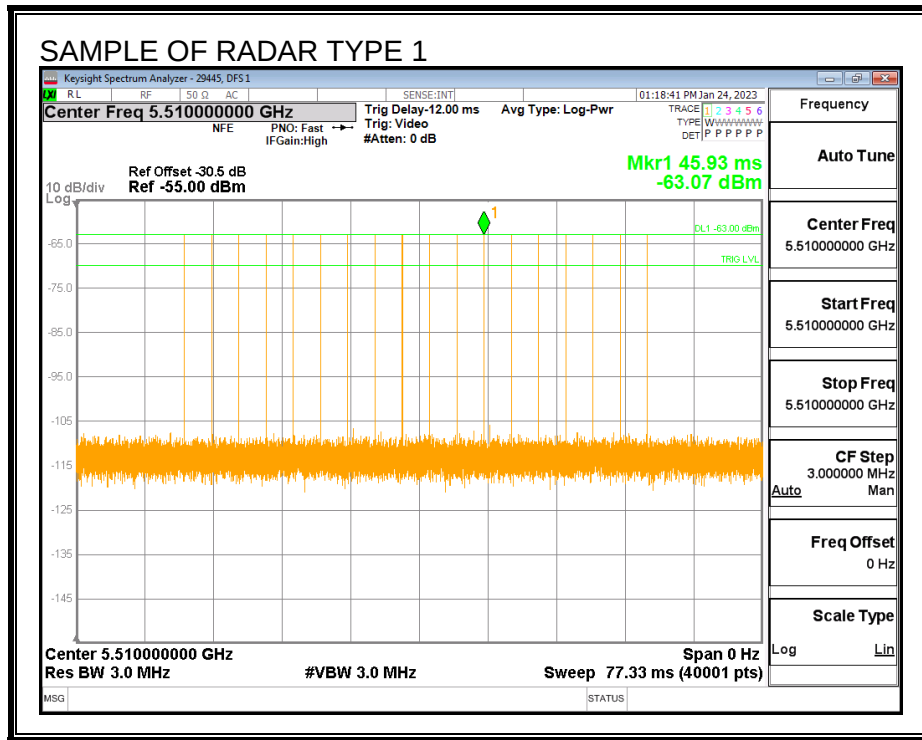
7.3.1. TEST CHANNEL

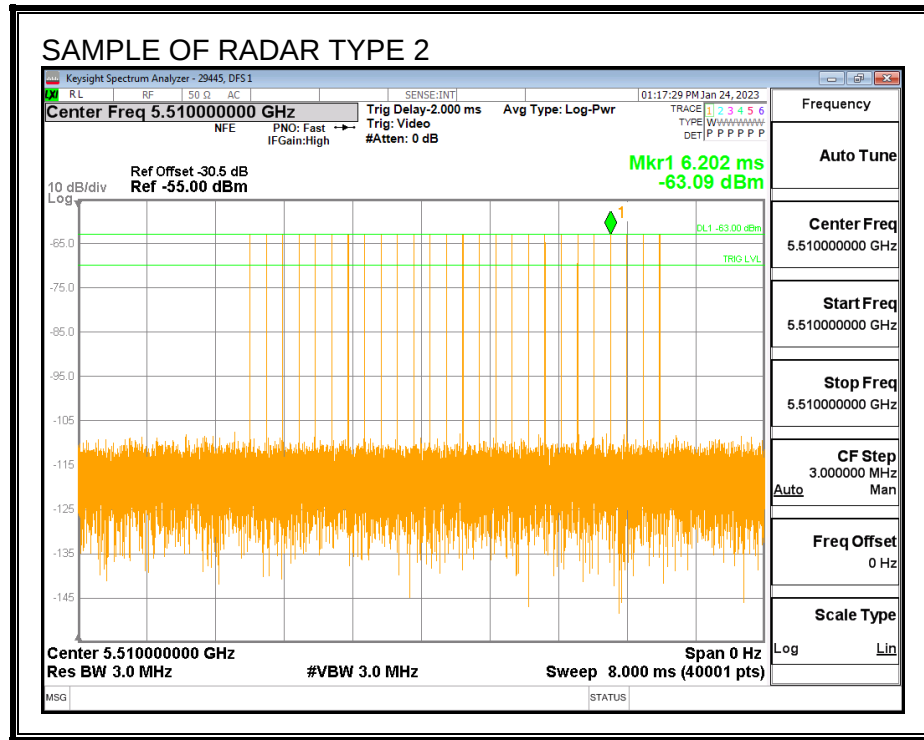
All tests were performed at a channel center frequency of 5510 MHz.

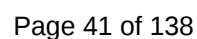
7.3.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

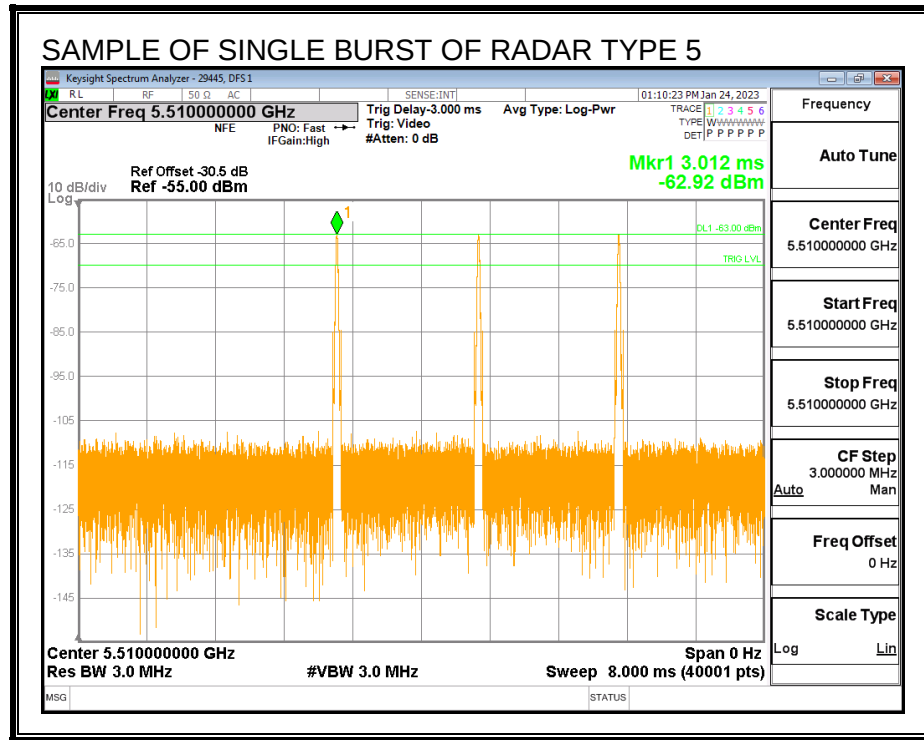


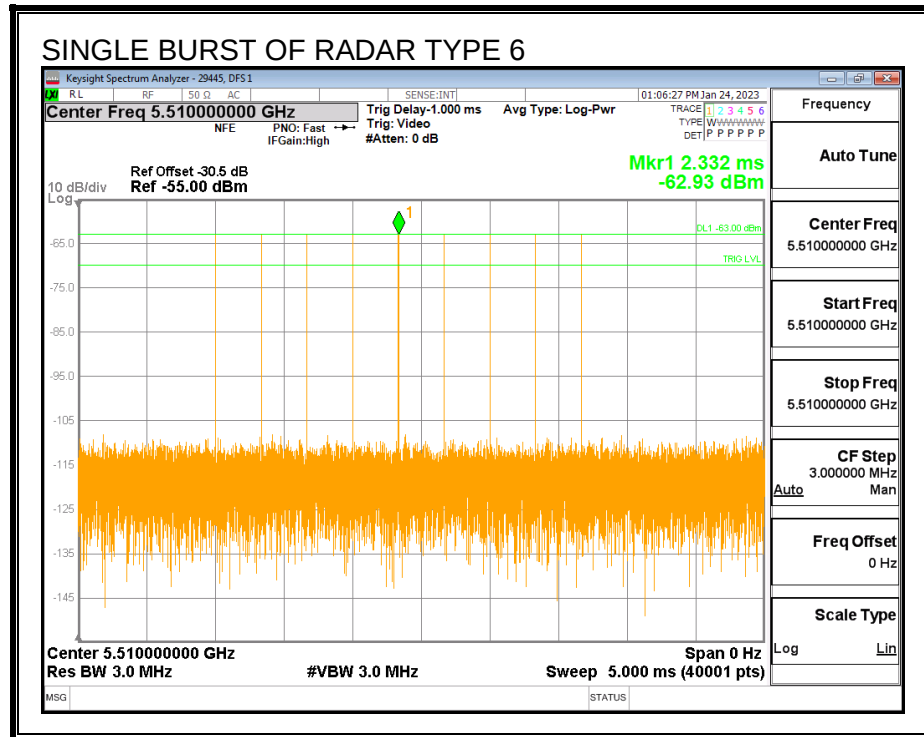




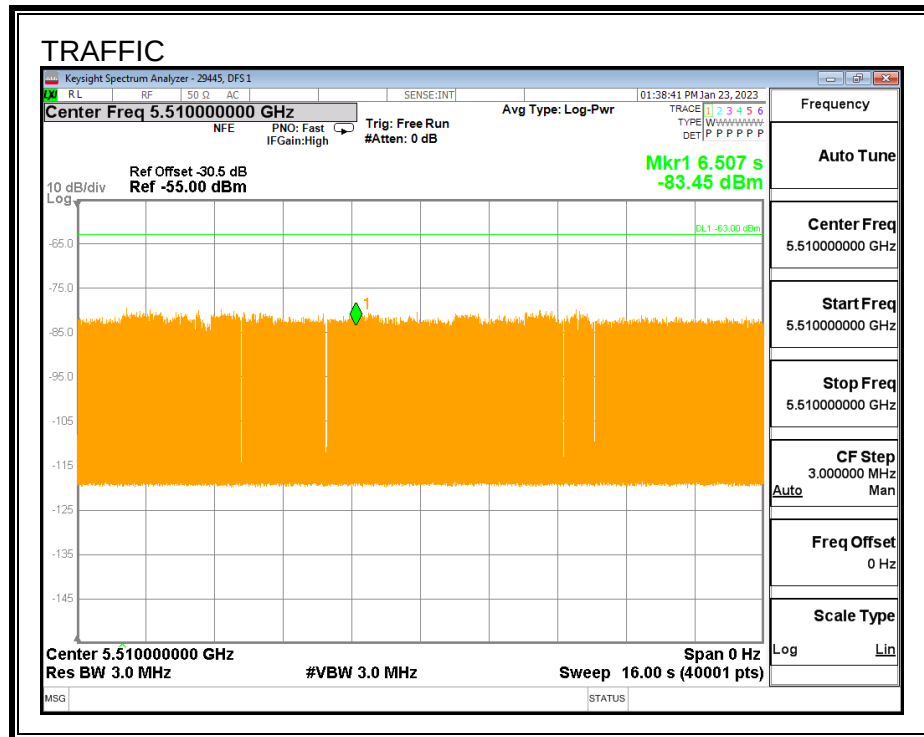




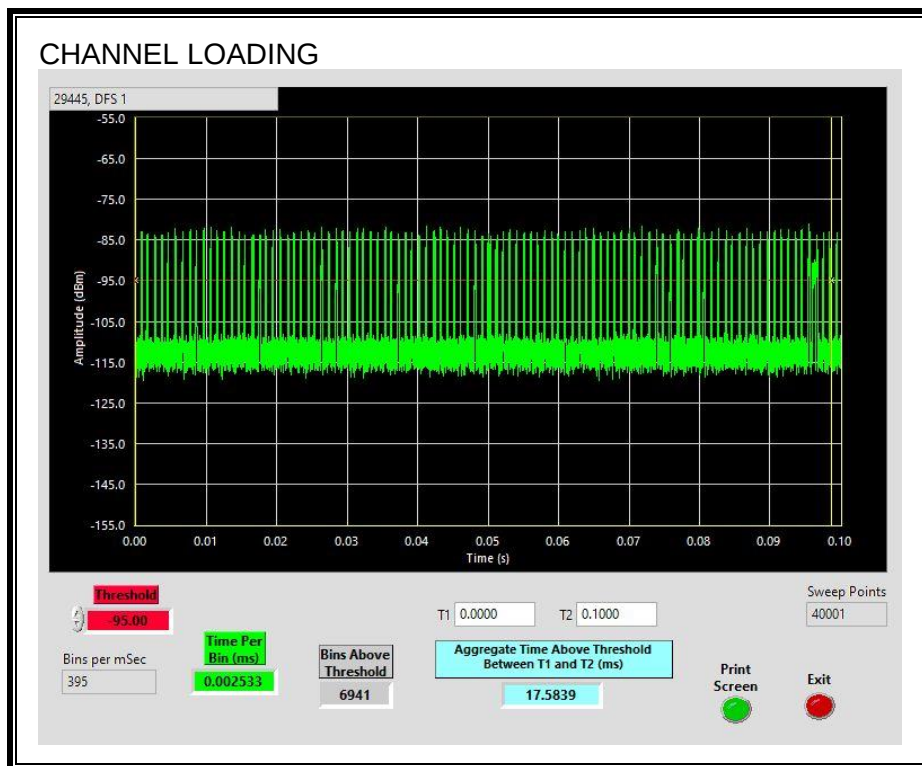




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.58%

7.3.3. 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)
30.91	236.0	205.1	145.1

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)
30.34	178.4	148.1	3.0

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)
30.65	234.8	204.2	59.1

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

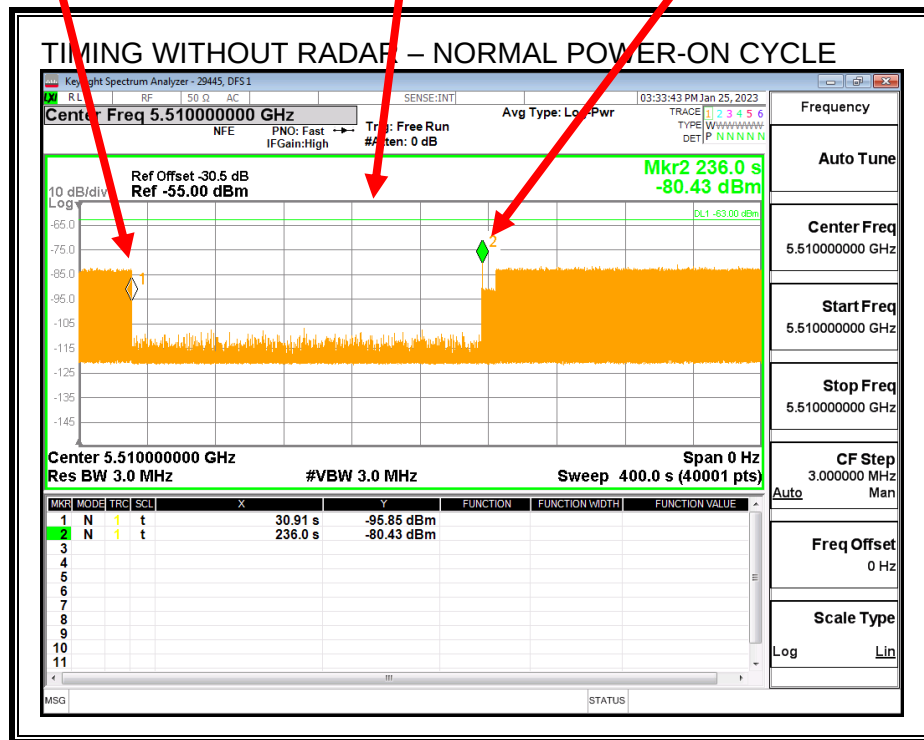
Start of Initial Power-up cycle

End of Initial Power-up cycle

Start of CAC

End of CAC

Traffic is Initiated



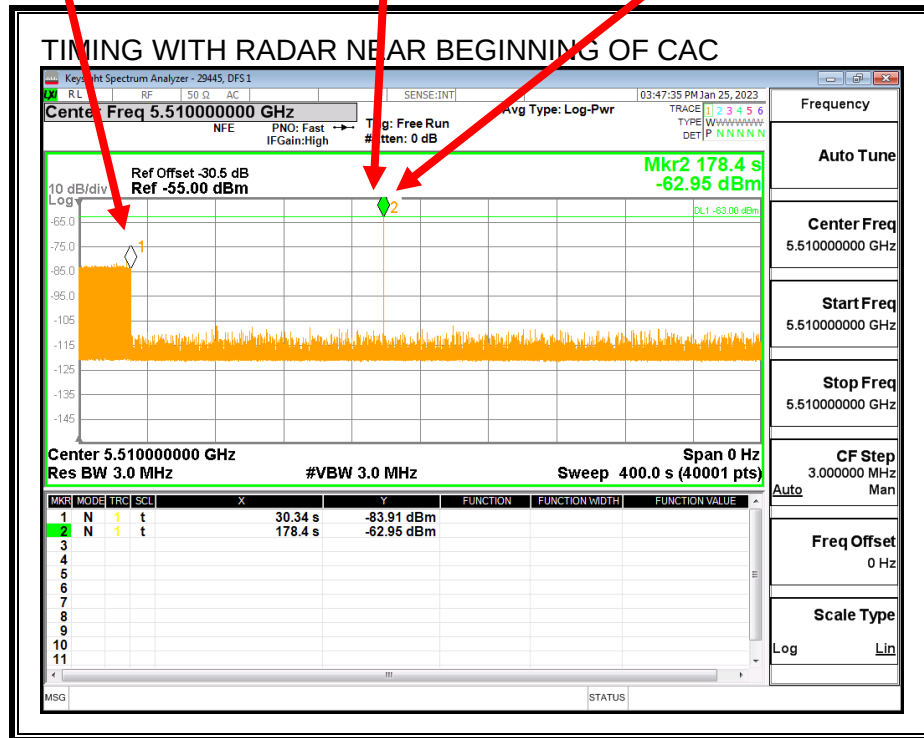
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



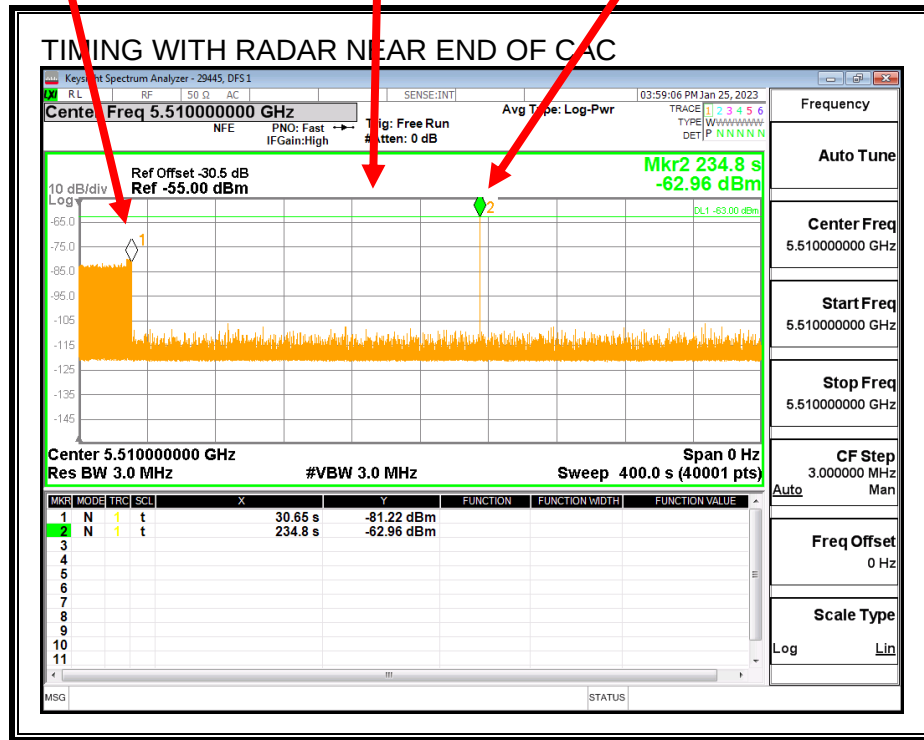
No EUT transmissions were observed after the radar signal.

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.

7.3.4. 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

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)
0.490	10

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

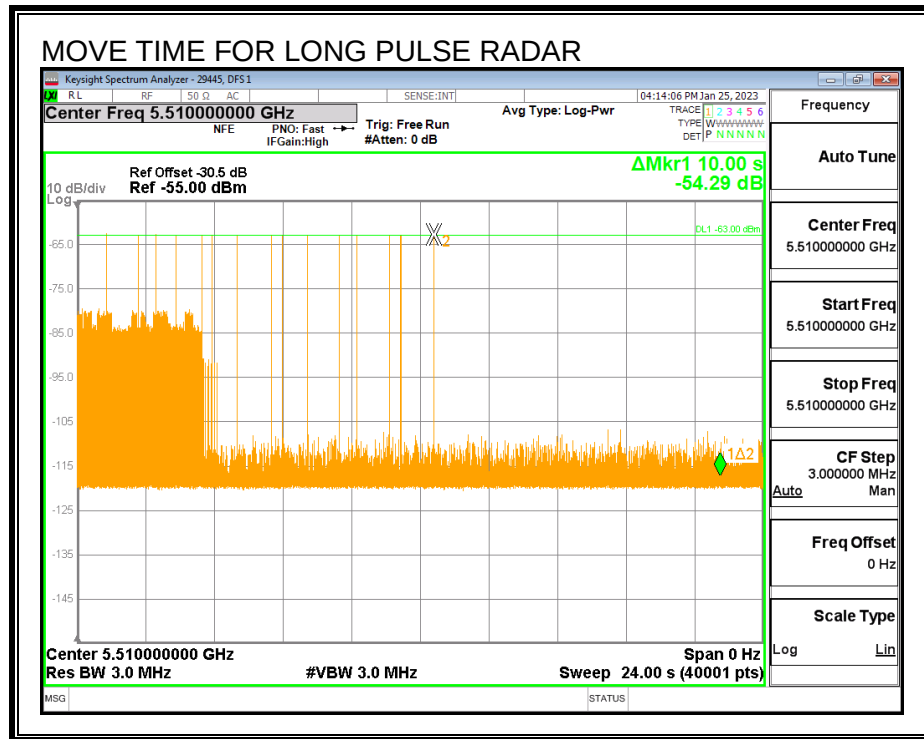
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

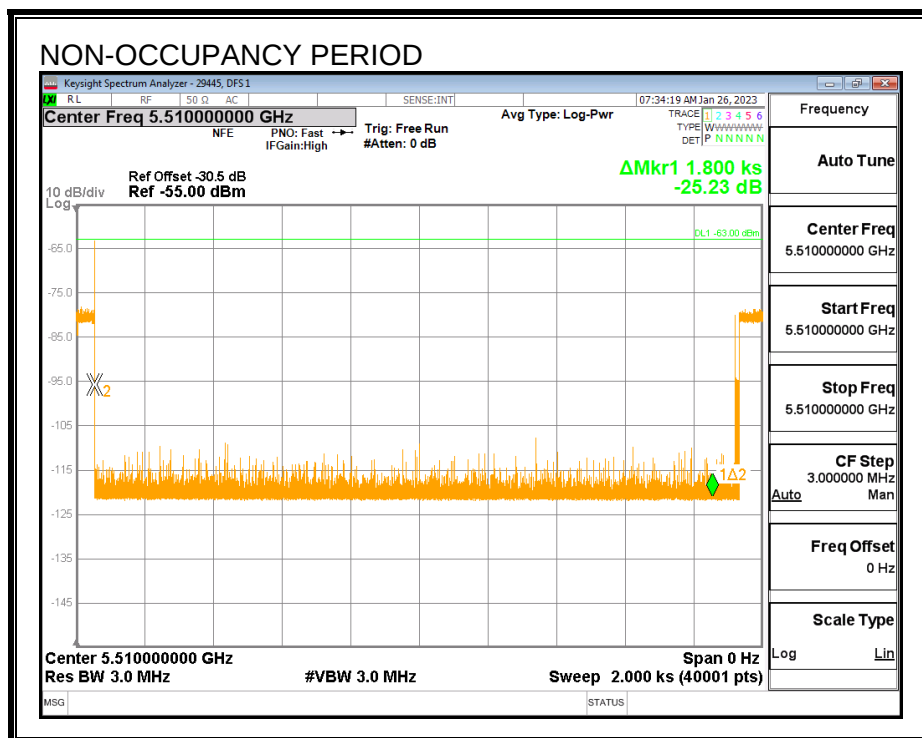
The traffic ceases prior to 10 seconds after the end of the radar waveform.



7.3.6. NON-OCCUPANCY PERIOD

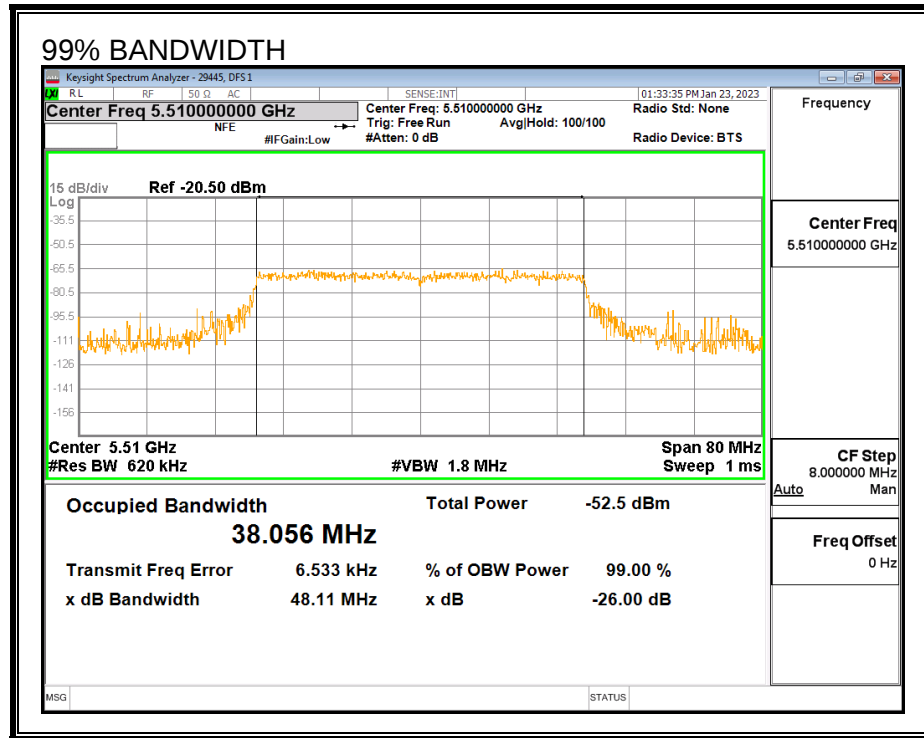
RESULTS

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.



7.3.7. 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	5530	40	38.056	105.1	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	9	90	
5510	10	10	100	
5515	10	9	90	
5520	10	9	90	
5525	10	10	100	
5530	10	9	90	FH

7.3.8. 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	96.67	60	Pass	5490	5530	38.06	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5530	38.06	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5530	38.06	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	93.33	60	Pass	5490	5530	38.06	DFS 1	29445	v4.1
Aggregate		97.50	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5530	38.06	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	5519	Yes
1002	1	578	92	A	5508	Yes
1003	1	878	61	A	5526	Yes
1004	1	818	65	A	5525	Yes
1005	1	718	74	A	5505	Yes
1006	1	678	78	A	5517	No
1007	1	618	86	A	5504	Yes
1008	1	778	68	A	5506	Yes
1009	1	558	95	A	5502	Yes
1010	1	838	63	A	5499	Yes
1011	1	698	76	A	5512	Yes
1012	1	518	102	A	5499	Yes
1013	1	898	59	A	5522	Yes
1014	1	598	89	A	5519	Yes
1015	1	938	57	A	5528	Yes
1016	1	1282	42	B	5508	Yes
1017	1	1238	43	B	5517	Yes
1018	1	1000	53	B	5520	Yes
1019	1	1085	49	B	5523	Yes
1020	1	976	55	B	5521	Yes
1021	1	2544	21	B	5506	Yes
1022	1	2565	21	B	5527	Yes
1023	1	520	102	B	5507	Yes
1024	1	2024	27	B	5513	Yes
1025	1	1303	41	B	5518	Yes
1026	1	2936	18	B	5501	Yes
1027	1	1150	46	B	5529	Yes
1028	1	1718	31	B	5514	Yes
1029	1	2609	21	B	5508	Yes
1030	1	758	70	B	5503	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	1.7	191	26	5508	Yes
2002	2.6	228	29	5502	Yes
2003	1	194	24	5524	Yes
2004	4.3	154	27	5526	Yes
2005	5	205	26	5504	Yes
2006	4.4	169	23	5509	Yes
2007	1.3	186	23	5522	Yes
2008	5	197	27	5520	Yes
2009	4.2	219	23	5519	Yes
2010	4	153	24	5499	Yes
2011	3.5	222	28	5492	Yes
2012	1.6	160	23	5521	Yes
2013	1.2	152	27	5526	Yes
2014	1.7	218	26	5514	Yes
2015	1.6	214	23	5509	Yes
2016	2.3	204	29	5513	Yes
2017	4.5	166	27	5496	Yes
2018	1.3	202	27	5493	Yes
2019	1.9	168	29	5527	Yes
2020	3	209	25	5518	Yes
2021	3.7	179	24	5495	Yes
2022	3.1	224	28	5512	Yes
2023	4.1	204	27	5520	Yes
2024	3.7	172	24	5499	Yes
2025	2.9	193	28	5493	Yes
2026	2.7	208	29	5522	Yes
2027	2.2	196	26	5523	Yes
2028	4.4	215	28	5499	Yes
2029	4	207	25	5520	Yes
2030	4.5	193	23	5494	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	9.4	252	16	5506	Yes
3002	6	471	17	5528	Yes
3003	8.2	471	17	5511	Yes
3004	9.1	334	16	5510	Yes
3005	9.7	480	17	5515	Yes
3006	6.7	355	16	5503	Yes
3007	7.4	263	18	5520	Yes
3008	6.8	284	17	5502	Yes
3009	7.8	338	17	5519	Yes
3010	7.4	490	18	5530	Yes
3011	6.6	439	17	5514	Yes
3012	6.4	353	17	5515	Yes
3013	10	314	16	5503	Yes
3014	8.1	374	17	5492	Yes
3015	9.9	482	16	5491	Yes
3016	8.2	304	18	5510	Yes
3017	6.2	424	18	5501	Yes
3018	8.8	392	18	5523	Yes
3019	6.9	274	16	5524	Yes
3020	7.8	254	18	5522	Yes
3021	8.4	400	18	5499	Yes
3022	9.5	276	18	5505	Yes
3023	6.1	317	17	5509	Yes
3024	9.6	456	16	5507	Yes
3025	6.5	259	16	5492	Yes
3026	6.1	411	16	5491	Yes
3027	9.4	360	16	5493	Yes
3028	9.2	273	16	5501	Yes
3029	8.7	486	18	5500	Yes
3030	6.8	428	16	5493	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	16.9	402	13	5498	Yes
4002	13.1	475	14	5527	Yes
4003	17.7	344	15	5497	Yes
4004	14.3	312	14	5526	Yes
4005	19.4	445	15	5514	No
4006	17	426	15	5519	Yes
4007	13.5	321	14	5494	Yes
4008	15.9	447	14	5502	Yes
4009	17.6	488	13	5503	Yes
4010	16.2	377	16	5503	Yes
4011	18.4	430	15	5527	Yes
4012	17.4	331	16	5491	Yes
4013	15.8	280	16	5509	Yes
4014	11.1	327	12	5522	Yes
4015	19	406	14	5525	Yes
4016	19	349	15	5520	Yes
4017	14	323	16	5507	Yes
4018	19.3	396	12	5514	No
4019	14.8	265	13	5506	Yes
4020	11.4	484	13	5494	Yes
4021	12.2	366	14	5521	Yes
4022	14.2	346	13	5507	Yes
4023	19.7	492	12	5522	Yes
4024	17.8	368	12	5517	Yes
4025	14.7	409	16	5497	Yes
4026	13.3	297	14	5509	Yes
4027	15.5	351	16	5520	Yes
4028	19.4	252	14	5502	Yes
4029	12.9	452	12	5519	Yes
4030	17.3	499	15	5515	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	5498	Yes
12	5498	Yes
13	5498	Yes
14	5498	Yes
15	5498	Yes
16	5498	Yes
17	5498	Yes
18	5498	Yes
19	5498	Yes
20	5498	Yes
21	5522	Yes
22	5522	Yes
23	5522	Yes
24	5522	Yes
25	5522	Yes
26	5525	Yes
27	5525	Yes
28	5521	Yes
29	5523	Yes
30	5521	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

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	517	5490	11	Yes
2	992	5491	8	Yes
3	1467	5492	6	Yes
4	1942	5493	11	Yes
5	2417	5494	18	Yes
6	2892	5495	8	Yes
7	3367	5496	7	Yes
8	3842	5497	7	Yes
9	4317	5498	10	Yes
10	4792	5499	9	Yes
11	5267	5500	6	Yes
12	5742	5501	8	Yes
13	6217	5502	6	Yes
14	6692	5503	13	Yes
15	7167	5504	9	Yes
16	7642	5505	9	Yes
17	8117	5506	14	Yes
18	8592	5507	5	Yes
19	9067	5508	5	Yes
20	9542	5509	10	Yes
21	10017	5510	10	Yes
22	10492	5511	9	Yes
23	10967	5512	7	Yes
24	11442	5513	8	Yes
25	11917	5514	8	Yes
26	12392	5515	8	Yes
27	12867	5516	7	Yes
28	13342	5517	9	Yes
29	13817	5518	15	Yes
30	14292	5519	7	Yes
31	14767	5520	9	Yes
32	15242	5521	6	Yes
33	15717	5522	11	Yes
34	16192	5523	10	Yes
35	16667	5524	9	Yes
36	17142	5525	7	Yes
37	17617	5526	11	Yes
38	18092	5527	11	Yes
39	18567	5528	6	Yes
40	19042	5529	8	Yes
41	19517	5530	4	Yes

7.3.9. RADIO 2 BRIDGE MODE RESULTS

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

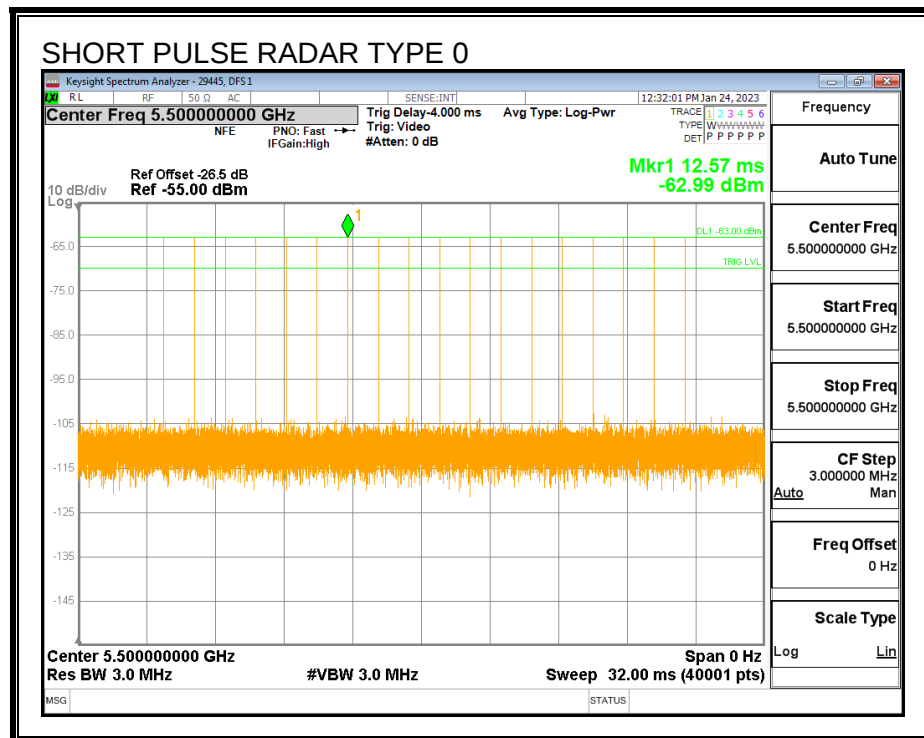
7.4. RADIO 3 RESULTS FOR 20 MHz BANDWIDTH

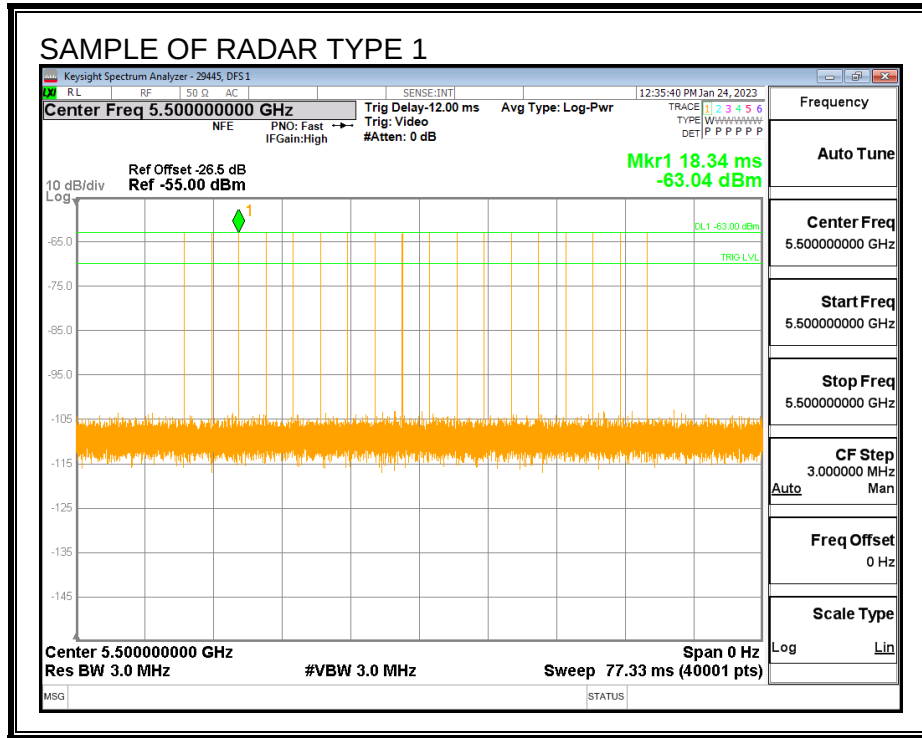
7.4.1. TEST CHANNEL

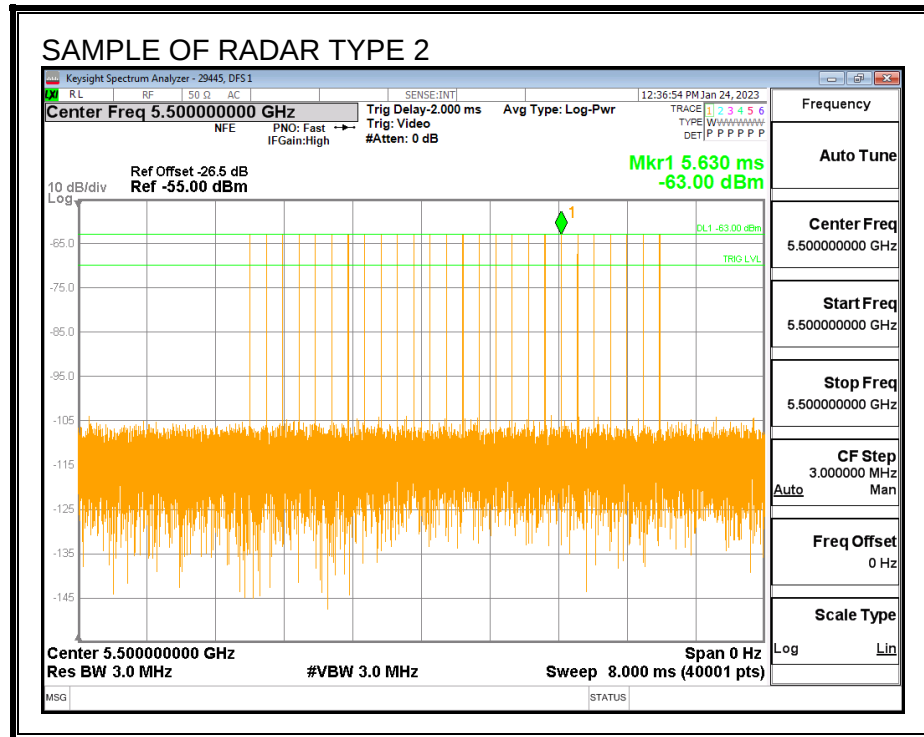
All tests were performed at a channel center frequency of 5500 MHz.

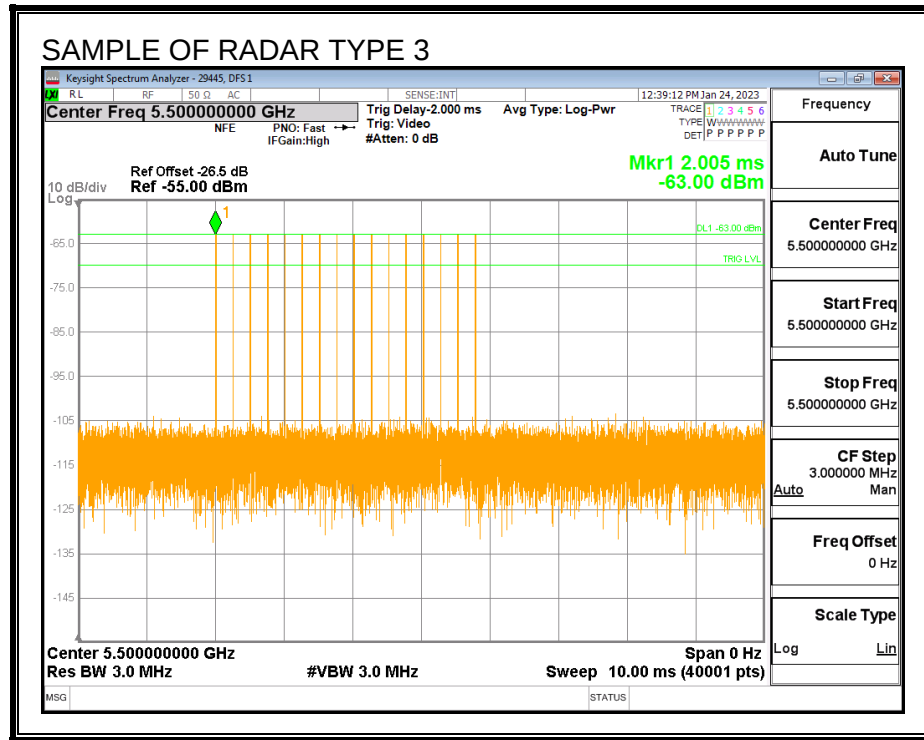
7.4.2. RADAR WAVEFORMS AND TRAFFIC

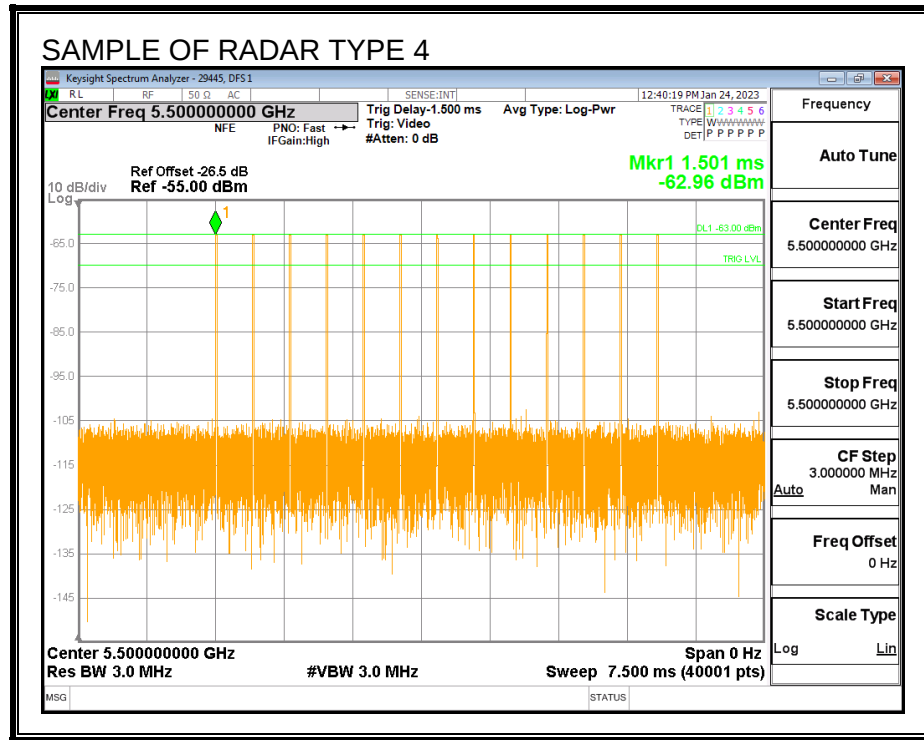
RADAR WAVEFORMS

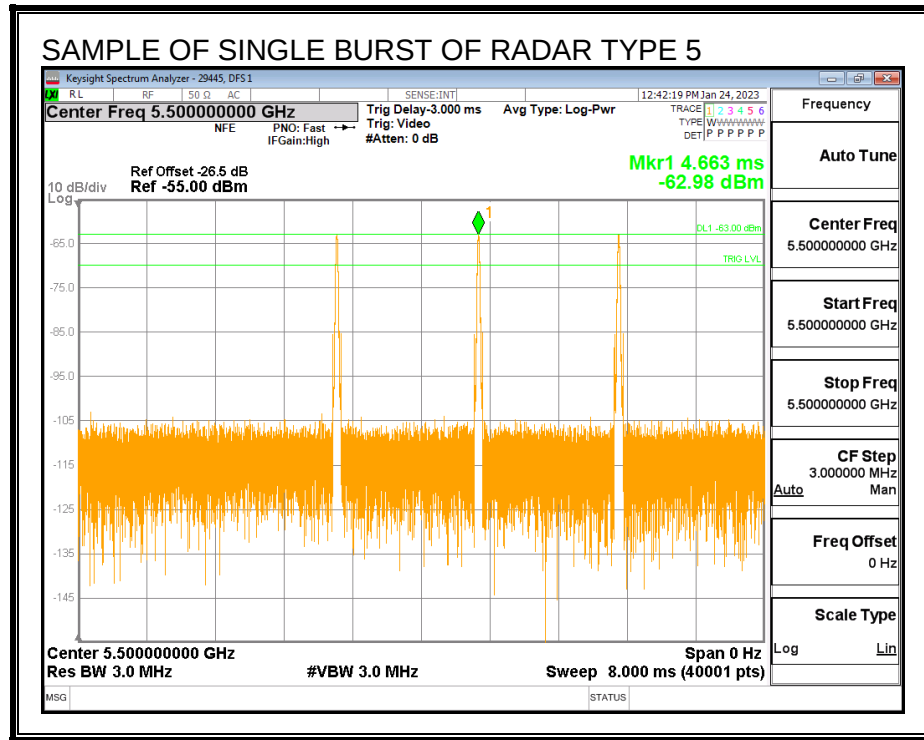


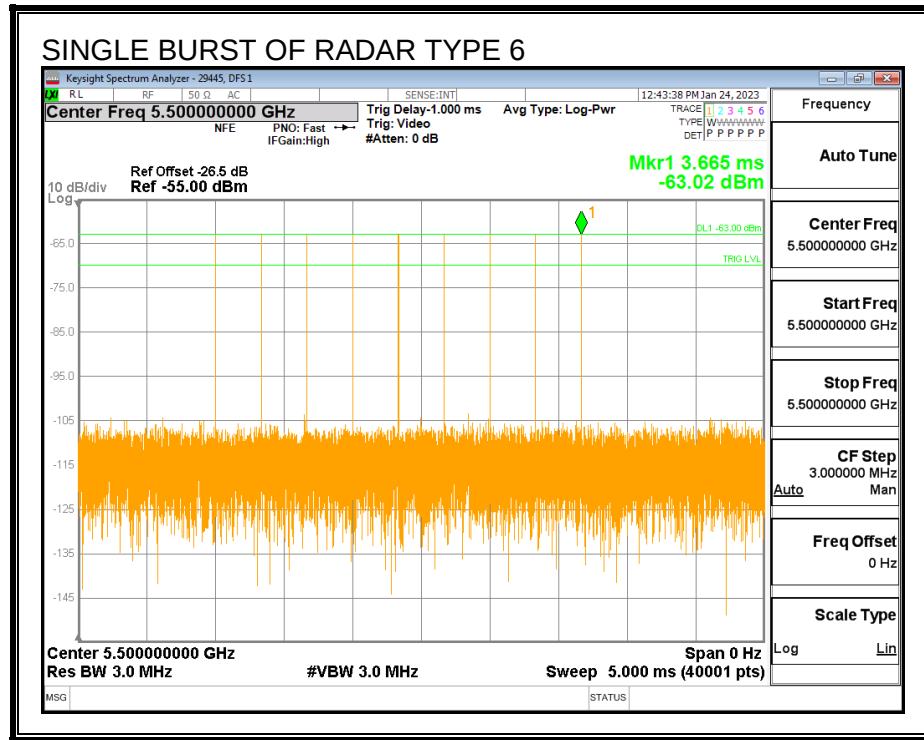




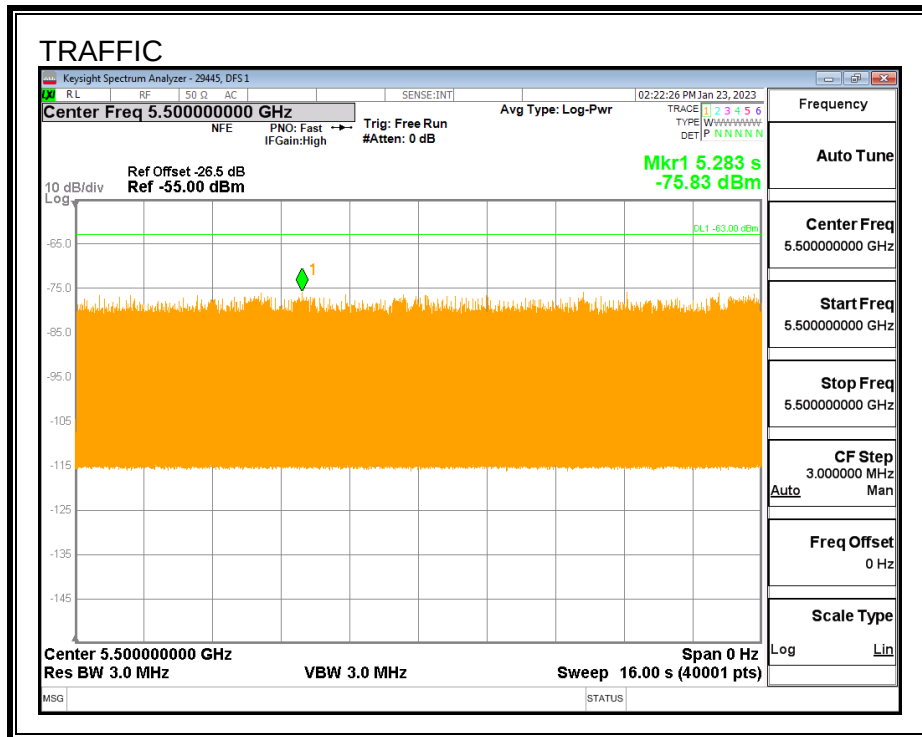




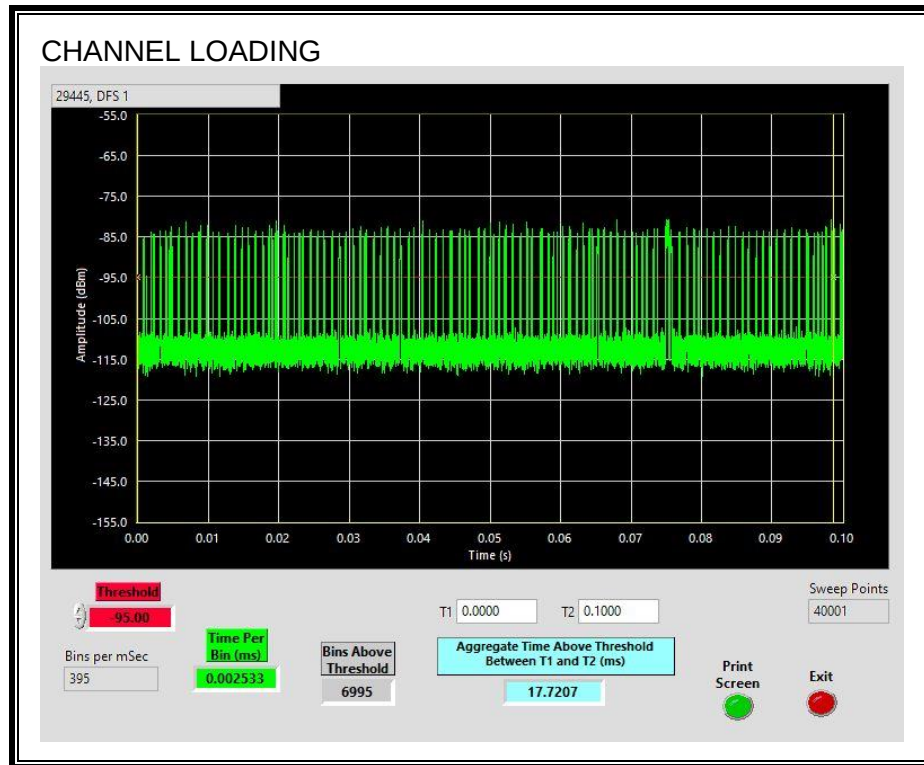




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.72%

7.4.3. 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.

7.4.4. OVERLAPPING CHANNEL TESTS

RESULTS

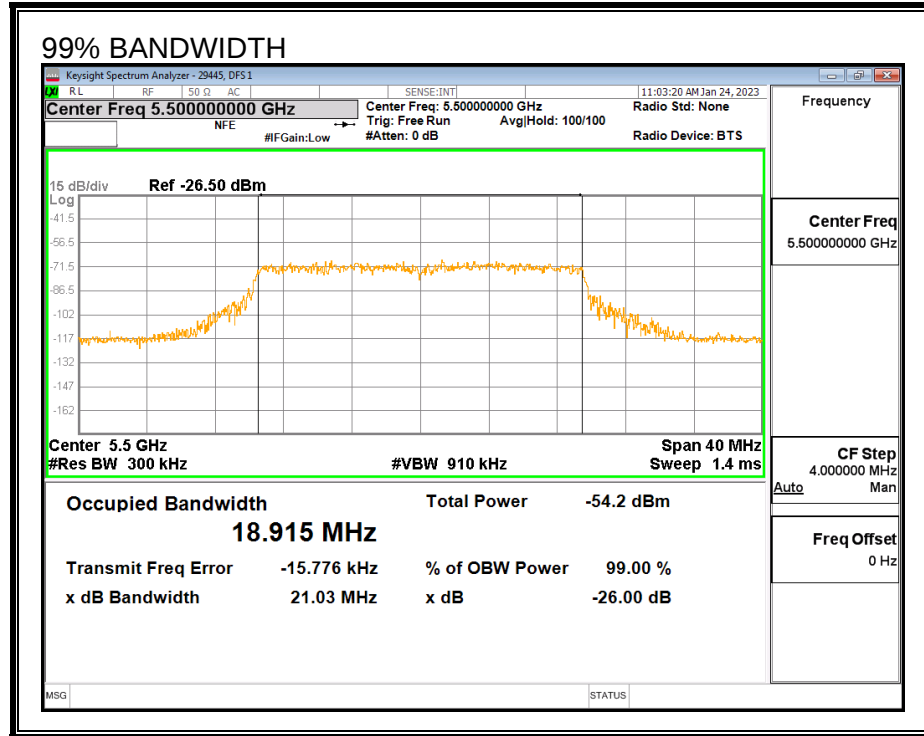
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.4.5. MOVE AND CLOSING TIME

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.

7.4.6. 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	18.915	105.7	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

7.4.7. 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	18.91	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5510	18.91	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5510	18.91	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5510	18.91	DFS 1	29445	v4.1
Aggregate		100.00	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5510	18.91	DFS 1	29445	v4.1
FCC Hopping Type 6	42	100.00	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	5497	Yes
1002	1	578	92	A	5494	Yes
1003	1	878	61	A	5497	Yes
1004	1	818	65	A	5495	Yes
1005	1	718	74	A	5510	Yes
1006	1	678	78	A	5494	Yes
1007	1	618	86	A	5510	Yes
1008	1	778	68	A	5506	Yes
1009	1	558	95	A	5501	Yes
1010	1	838	63	A	5493	Yes
1011	1	698	76	A	5503	Yes
1012	1	518	102	A	5507	Yes
1013	1	898	59	A	5498	Yes
1014	1	598	89	A	5510	Yes
1015	1	938	57	A	5500	Yes
1016	1	1282	42	B	5500	Yes
1017	1	1238	43	B	5503	Yes
1018	1	1000	53	B	5496	Yes
1019	1	1085	49	B	5504	Yes
1020	1	976	55	B	5499	Yes
1021	1	2544	21	B	5502	Yes
1022	1	2565	21	B	5507	Yes
1023	1	520	102	B	5497	Yes
1024	1	2024	27	B	5493	Yes
1025	1	1303	41	B	5492	Yes
1026	1	2936	18	B	5494	Yes
1027	1	1150	46	B	5498	Yes
1028	1	1718	31	B	5510	Yes
1029	1	2609	21	B	5499	Yes
1030	1	758	70	B	5500	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	1.7	191	26	5502	Yes
2002	2.6	228	29	5500	Yes
2003	1	194	24	5497	Yes
2004	4.3	154	27	5499	Yes
2005	5	205	26	5494	Yes
2006	4.4	169	23	5495	Yes
2007	1.3	186	23	5506	Yes
2008	5	197	27	5510	Yes
2009	4.2	219	23	5507	Yes
2010	4	153	24	5490	Yes
2011	3.5	222	28	5497	Yes
2012	1.6	160	23	5504	Yes
2013	1.2	152	27	5499	Yes
2014	1.7	218	26	5500	Yes
2015	1.6	214	23	5506	Yes
2016	2.3	204	29	5490	Yes
2017	4.5	166	27	5491	Yes
2018	1.3	202	27	5490	Yes
2019	1.9	168	29	5501	Yes
2020	3	209	25	5507	Yes
2021	3.7	179	24	5490	Yes
2022	3.1	224	28	5506	Yes
2023	4.1	204	27	5502	Yes
2024	3.7	172	24	5499	Yes
2025	2.9	193	28	5492	Yes
2026	2.7	208	29	5492	Yes
2027	2.2	196	26	5506	Yes
2028	4.4	215	28	5503	Yes
2029	4	207	25	5509	Yes
2030	4.5	193	23	5502	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	9.4	252	16	5497	Yes
3002	6	471	17	5497	Yes
3003	8.2	471	17	5499	Yes
3004	9.1	334	16	5492	Yes
3005	9.7	480	17	5501	Yes
3006	6.7	355	16	5509	Yes
3007	7.4	263	18	5495	Yes
3008	6.8	284	17	5494	Yes
3009	7.8	338	17	5508	Yes
3010	7.4	490	18	5504	Yes
3011	6.6	439	17	5498	Yes
3012	6.4	353	17	5496	Yes
3013	10	314	16	5492	Yes
3014	8.1	374	17	5490	Yes
3015	9.9	482	16	5504	Yes
3016	8.2	304	18	5502	Yes
3017	6.2	424	18	5501	Yes
3018	8.8	392	18	5497	Yes
3019	6.9	274	16	5501	Yes
3020	7.8	254	18	5506	Yes
3021	8.4	400	18	5503	Yes
3022	9.5	276	18	5507	Yes
3023	6.1	317	17	5500	Yes
3024	9.6	456	16	5494	Yes
3025	6.5	259	16	5496	Yes
3026	6.1	411	16	5503	Yes
3027	9.4	360	16	5500	Yes
3028	9.2	273	16	5498	Yes
3029	8.7	486	18	5504	Yes
3030	6.8	428	16	5502	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	16.9	402	13	5508	Yes
4002	13.1	475	14	5490	Yes
4003	17.7	344	15	5493	Yes
4004	14.3	312	14	5492	Yes
4005	19.4	445	15	5503	Yes
4006	17	426	15	5506	Yes
4007	13.5	321	14	5494	Yes
4008	15.9	447	14	5509	Yes
4009	17.6	488	13	5494	Yes
4010	16.2	377	16	5495	Yes
4011	18.4	430	15	5498	Yes
4012	17.4	331	16	5503	Yes
4013	15.8	280	16	5506	Yes
4014	11.1	327	12	5499	Yes
4015	19	406	14	5507	Yes
4016	19	349	15	5493	Yes
4017	14	323	16	5493	Yes
4018	19.3	396	12	5497	Yes
4019	14.8	265	13	5505	Yes
4020	11.4	484	13	5503	Yes
4021	12.2	366	14	5503	Yes
4022	14.2	346	13	5509	Yes
4023	19.7	492	12	5507	Yes
4024	17.8	368	12	5494	Yes
4025	14.7	409	16	5506	Yes
4026	13.3	297	14	5496	Yes
4027	15.5	351	16	5507	Yes
4028	19.4	252	14	5495	Yes
4029	12.9	452	12	5496	Yes
4030	17.3	499	15	5497	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	5498	Yes
14	5498	Yes
15	5498	Yes
16	5498	Yes
17	5498	Yes
18	5498	Yes
19	5498	Yes
20	5498	Yes
21	5503	Yes
22	5502	Yes
23	5503	Yes
24	5502	Yes
25	5502	Yes
26	5505	Yes
27	5505	Yes
28	5501	Yes
29	5504	Yes
30	5502	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

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	819	5490	2	Yes
2	1294	5491	2	Yes
3	1769	5492	7	Yes
4	2244	5493	8	Yes
5	2719	5494	6	Yes
6	3194	5495	1	Yes
7	3669	5496	2	Yes
8	4144	5497	4	Yes
9	4619	5498	4	Yes
10	5094	5499	2	Yes
11	5569	5500	2	Yes
12	6044	5501	1	Yes
13	6519	5502	3	Yes
14	6994	5503	6	Yes
15	7469	5504	2	Yes
16	7944	5505	3	Yes
17	8419	5506	2	Yes
18	8894	5507	3	Yes
19	9369	5508	7	Yes
20	9844	5509	4	Yes
21	10319	5510	4	Yes
22	10794	5490	3	Yes
23	11269	5491	6	Yes
24	11744	5492	4	Yes
25	12219	5493	3	Yes
26	12694	5494	4	Yes
27	13169	5495	5	Yes
28	13644	5496	3	Yes
29	14119	5497	3	Yes
30	14594	5498	6	Yes
31	15069	5499	3	Yes
32	15544	5500	5	Yes
33	16019	5501	2	Yes
34	16494	5502	5	Yes
35	16969	5503	9	Yes
36	17444	5504	4	Yes
37	17919	5505	3	Yes
38	18394	5506	2	Yes
39	18869	5507	1	Yes
40	19344	5508	6	Yes
41	19819	5509	3	Yes
42	20294	5510	5	Yes

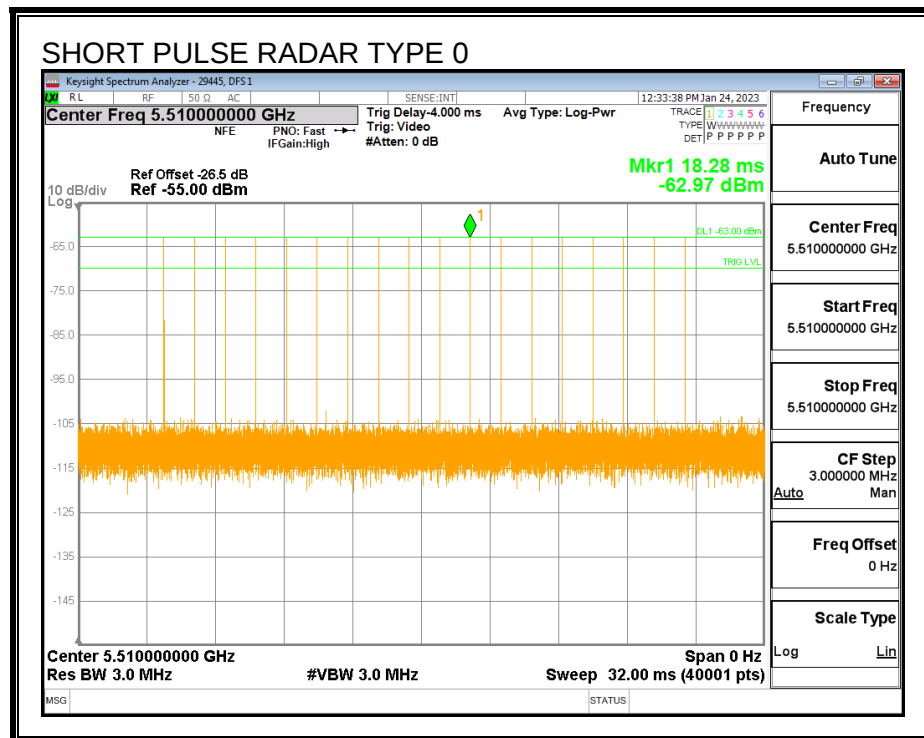
7.5. RADIO 3 RESULTS FOR 40 MHz BANDWIDTH

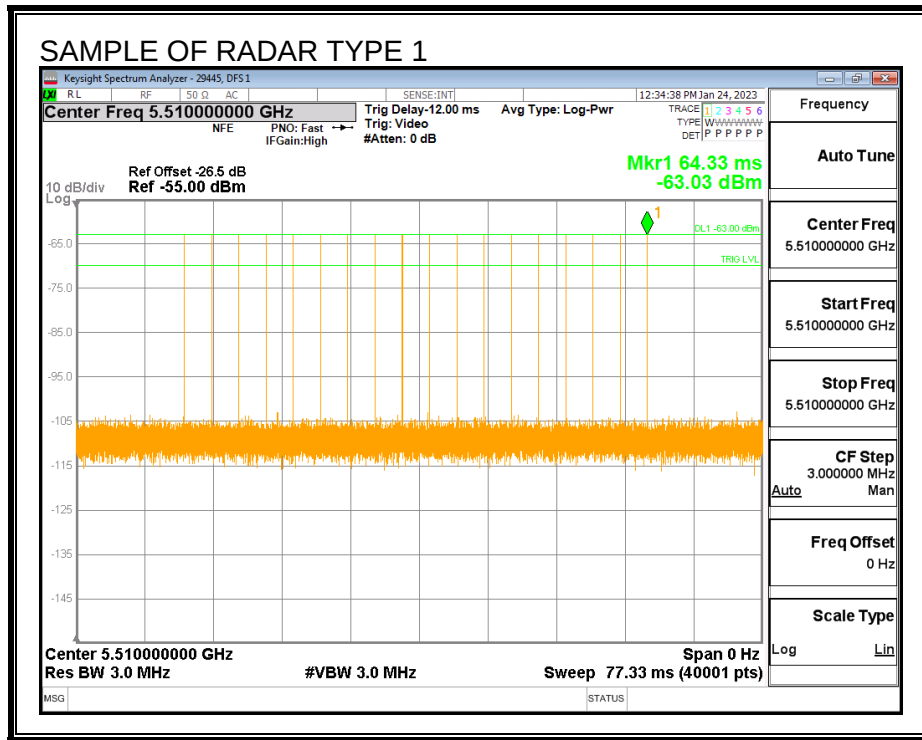
7.5.1. TEST CHANNEL

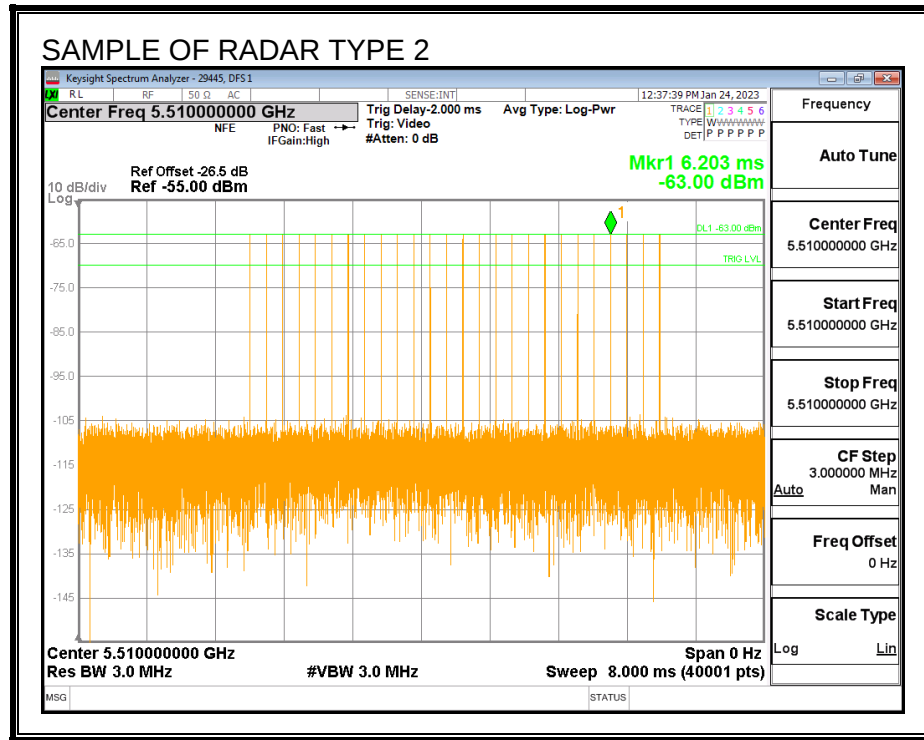
All tests were performed at a channel center frequency of 5510 MHz.

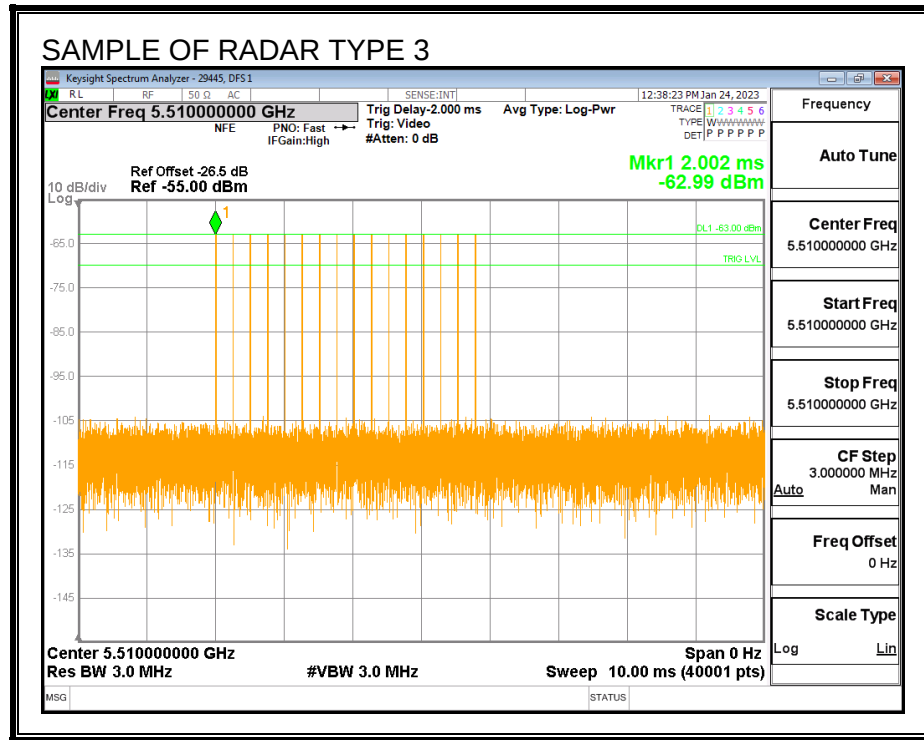
7.5.2. RADAR WAVEFORMS AND TRAFFIC

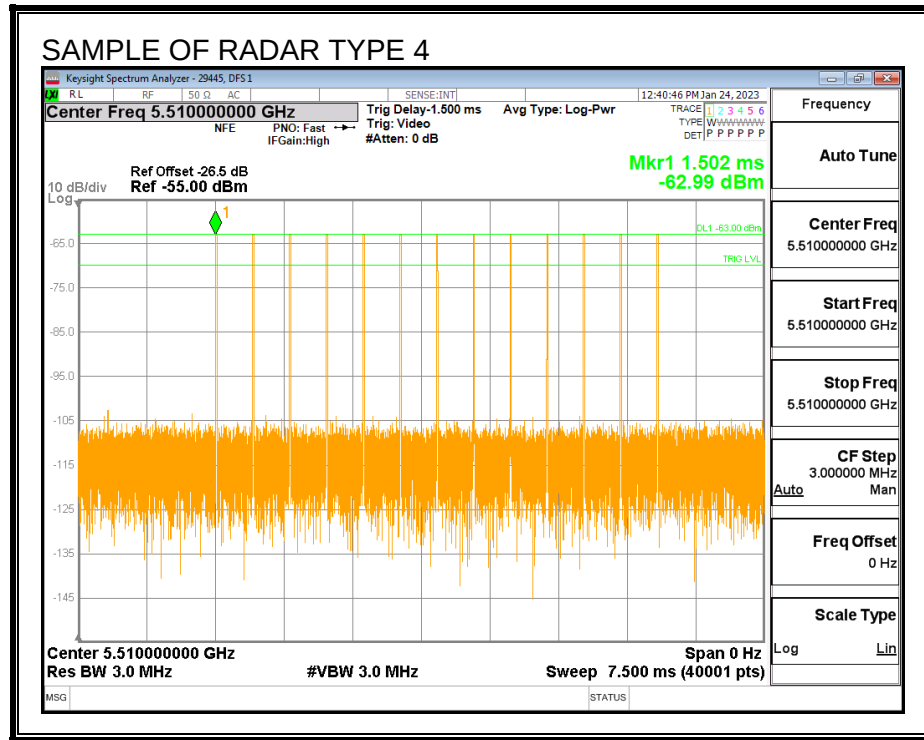
RADAR WAVEFORMS

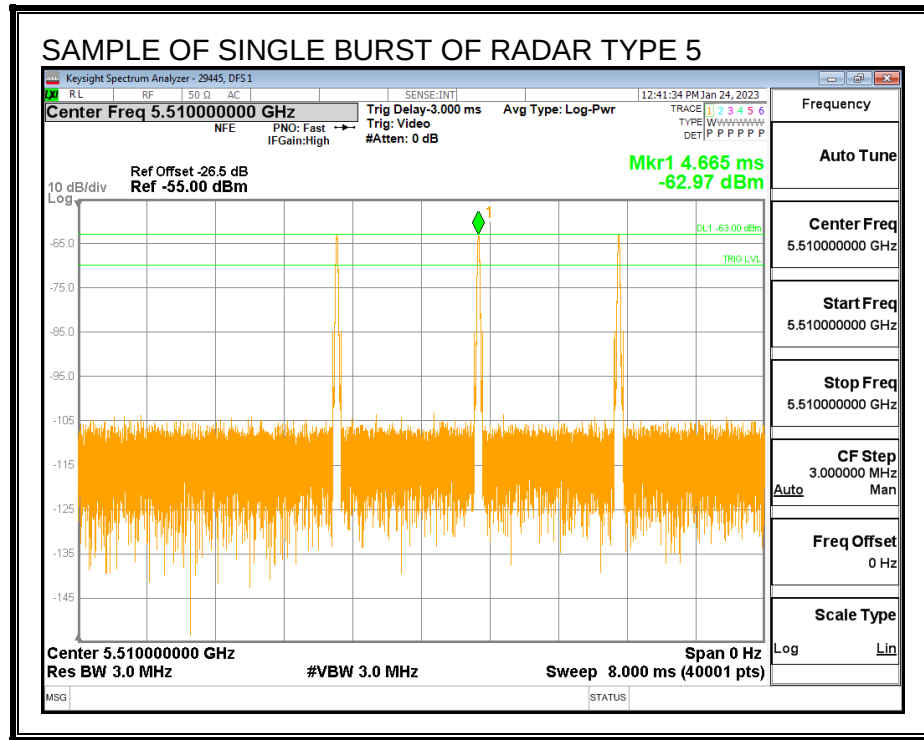


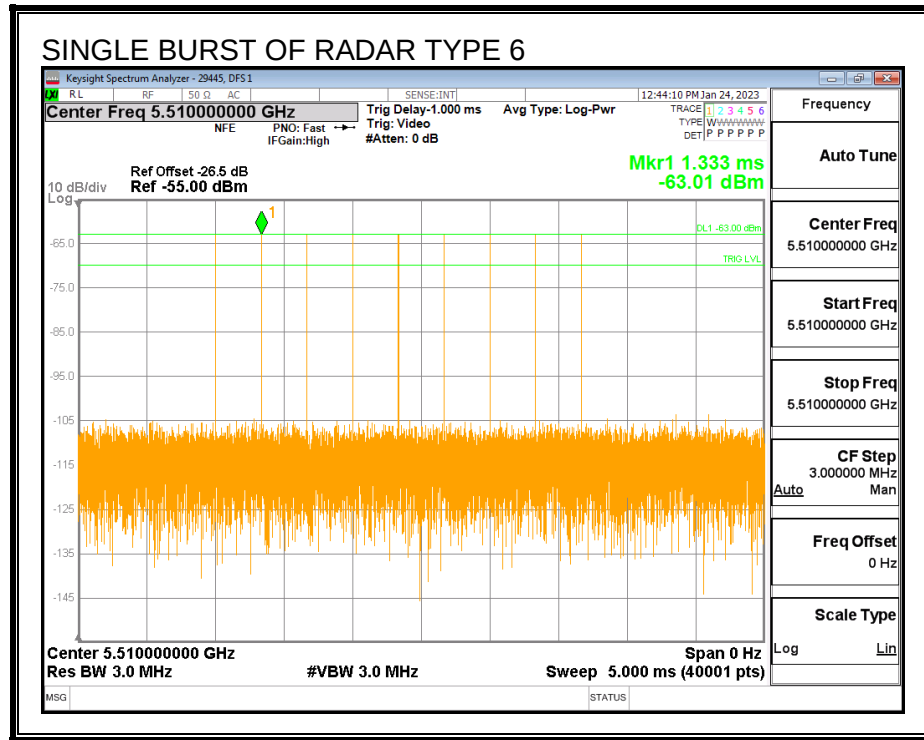




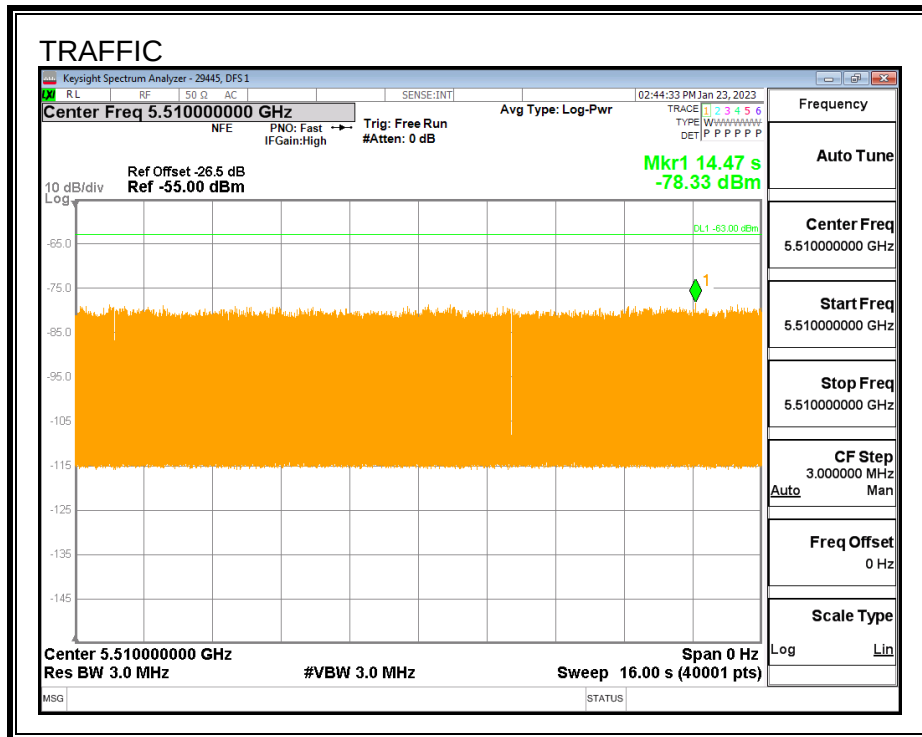




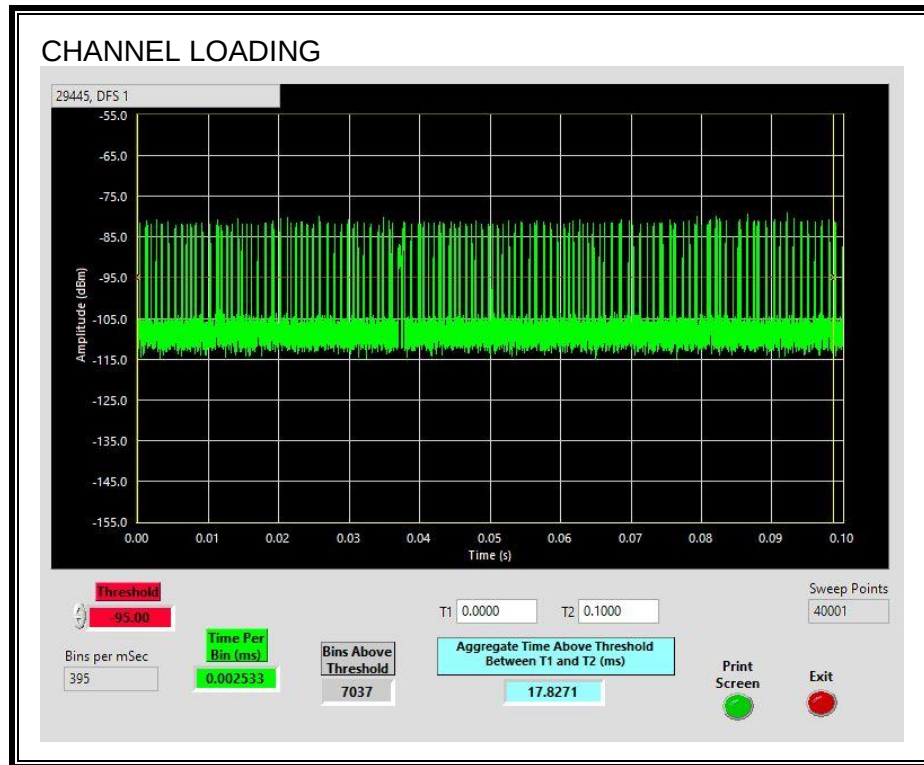




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.82%

7.5.3. 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.

7.5.4. OVERLAPPING CHANNEL TESTS

RESULTS

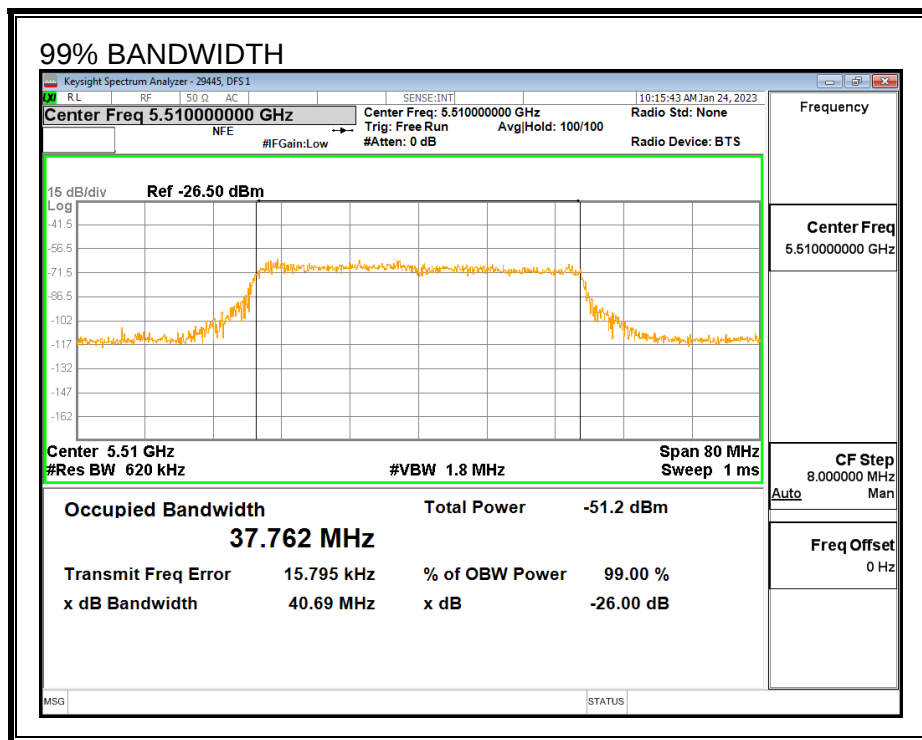
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.5.5. 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.

7.5.6. 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	37.762	105.9	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

7.5.7. 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	96.67	60	Pass	5490	5530	37.76	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5530	37.76	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5530	37.76	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5530	37.76	DFS 1	29445	v4.1
Aggregate		99.17	80	Pass						
FCC Long Pulse Type 5	30	96.67	80	Pass	5490	5530	37.76	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	5524	Yes
1002	1	578	92	A	5512	Yes
1003	1	878	61	A	5501	No
1004	1	818	65	A	5529	Yes
1005	1	718	74	A	5506	Yes
1006	1	678	78	A	5507	Yes
1007	1	618	86	A	5518	Yes
1008	1	778	68	A	5509	Yes
1009	1	558	95	A	5519	Yes
1010	1	838	63	A	5503	Yes
1011	1	698	76	A	5510	Yes
1012	1	518	102	A	5517	Yes
1013	1	898	59	A	5506	Yes
1014	1	598	89	A	5518	Yes
1015	1	938	57	A	5518	Yes
1016	1	1282	42	B	5520	Yes
1017	1	1238	43	B	5498	Yes
1018	1	1000	53	B	5511	Yes
1019	1	1085	49	B	5520	Yes
1020	1	976	55	B	5495	Yes
1021	1	2544	21	B	5495	Yes
1022	1	2565	21	B	5518	Yes
1023	1	520	102	B	5490	Yes
1024	1	2024	27	B	5527	Yes
1025	1	1303	41	B	5520	Yes
1026	1	2936	18	B	5502	Yes
1027	1	1150	46	B	5499	Yes
1028	1	1718	31	B	5504	Yes
1029	1	2609	21	B	5496	Yes
1030	1	758	70	B	5519	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	1.7	191	26	5507	Yes
2002	2.6	228	29	5493	Yes
2003	1	194	24	5495	Yes
2004	4.3	154	27	5525	Yes
2005	5	205	26	5529	Yes
2006	4.4	169	23	5517	Yes
2007	1.3	186	23	5514	Yes
2008	5	197	27	5521	Yes
2009	4.2	219	23	5502	Yes
2010	4	153	24	5512	Yes
2011	3.5	222	28	5508	Yes
2012	1.6	160	23	5490	Yes
2013	1.2	152	27	5506	Yes
2014	1.7	218	26	5509	Yes
2015	1.6	214	23	5491	Yes
2016	2.3	204	29	5494	Yes
2017	4.5	166	27	5503	Yes
2018	1.3	202	27	5503	Yes
2019	1.9	168	29	5494	Yes
2020	3	209	25	5511	Yes
2021	3.7	179	24	5529	Yes
2022	3.1	224	28	5497	Yes
2023	4.1	204	27	5511	Yes
2024	3.7	172	24	5528	Yes
2025	2.9	193	28	5505	Yes
2026	2.7	208	29	5503	Yes
2027	2.2	196	26	5505	Yes
2028	4.4	215	28	5519	Yes
2029	4	207	25	5528	Yes
2030	4.5	193	23	5493	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	9.4	252	16	5513	Yes
3002	6	471	17	5527	Yes
3003	8.2	471	17	5509	Yes
3004	9.1	334	16	5522	Yes
3005	9.7	480	17	5509	Yes
3006	6.7	355	16	5492	Yes
3007	7.4	263	18	5501	Yes
3008	6.8	284	17	5515	Yes
3009	7.8	338	17	5501	Yes
3010	7.4	490	18	5525	Yes
3011	6.6	439	17	5498	Yes
3012	6.4	353	17	5525	Yes
3013	10	314	16	5525	Yes
3014	8.1	374	17	5501	Yes
3015	9.9	482	16	5516	Yes
3016	8.2	304	18	5513	Yes
3017	6.2	424	18	5494	Yes
3018	8.8	392	18	5491	Yes
3019	6.9	274	16	5503	Yes
3020	7.8	254	18	5491	Yes
3021	8.4	400	18	5512	Yes
3022	9.5	276	18	5507	Yes
3023	6.1	317	17	5495	Yes
3024	9.6	456	16	5528	Yes
3025	6.5	259	16	5499	Yes
3026	6.1	411	16	5528	Yes
3027	9.4	360	16	5492	Yes
3028	9.2	273	16	5506	Yes
3029	8.7	486	18	5525	Yes
3030	6.8	428	16	5516	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	16.9	402	13	5491	Yes
4002	13.1	475	14	5490	Yes
4003	17.7	344	15	5518	Yes
4004	14.3	312	14	5511	Yes
4005	19.4	445	15	5521	Yes
4006	17	426	15	5511	Yes
4007	13.5	321	14	5504	Yes
4008	15.9	447	14	5508	Yes
4009	17.6	488	13	5511	Yes
4010	16.2	377	16	5515	Yes
4011	18.4	430	15	5528	Yes
4012	17.4	331	16	5492	Yes
4013	15.8	280	16	5499	Yes
4014	11.1	327	12	5530	Yes
4015	19	406	14	5500	Yes
4016	19	349	15	5512	Yes
4017	14	323	16	5524	Yes
4018	19.3	396	12	5492	Yes
4019	14.8	265	13	5524	Yes
4020	11.4	484	13	5507	Yes
4021	12.2	366	14	5522	Yes
4022	14.2	346	13	5511	Yes
4023	19.7	492	12	5508	Yes
4024	17.8	368	12	5529	Yes
4025	14.7	409	16	5525	Yes
4026	13.3	297	14	5507	Yes
4027	15.5	351	16	5508	Yes
4028	19.4	252	14	5492	Yes
4029	12.9	452	12	5507	Yes
4030	17.3	499	15	5515	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	5498	Yes
12	5499	Yes
13	5498	Yes
14	5499	Yes
15	5498	Yes
16	5499	Yes
17	5498	Yes
18	5499	Yes
19	5498	No
20	5499	Yes
21	5522	Yes
22	5522	Yes
23	5522	Yes
24	5522	Yes
25	5522	Yes
26	5524	Yes
27	5525	Yes
28	5520	Yes
29	5523	Yes
30	5521	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

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	760	5490	8	Yes
2	1235	5491	10	Yes
3	1710	5492	13	Yes
4	2185	5493	7	Yes
5	2660	5494	5	Yes
6	3135	5495	11	Yes
7	3610	5496	9	Yes
8	4085	5497	9	Yes
9	4560	5498	8	Yes
10	5035	5499	6	Yes
11	5510	5500	5	Yes
12	5985	5501	11	Yes
13	6460	5502	7	Yes
14	6935	5503	8	Yes
15	7410	5504	9	Yes
16	7885	5505	8	Yes
17	8360	5506	9	Yes
18	8835	5507	9	Yes
19	9310	5508	11	Yes
20	9785	5509	10	Yes
21	10260	5510	9	Yes
22	10735	5511	11	Yes
23	11210	5512	7	Yes
24	11685	5513	12	Yes
25	12160	5514	7	Yes
26	12635	5515	10	Yes
27	13110	5516	6	Yes
28	13585	5517	7	Yes
29	14060	5518	6	Yes
30	14535	5519	11	Yes
31	15010	5520	7	Yes
32	15485	5521	7	Yes
33	15960	5522	7	Yes
34	16435	5523	9	Yes
35	16910	5524	9	Yes
36	17385	5525	6	Yes
37	17860	5526	9	Yes
38	18335	5527	12	Yes
39	18810	5528	7	Yes
40	19285	5529	5	Yes
41	19760	5530	7	Yes

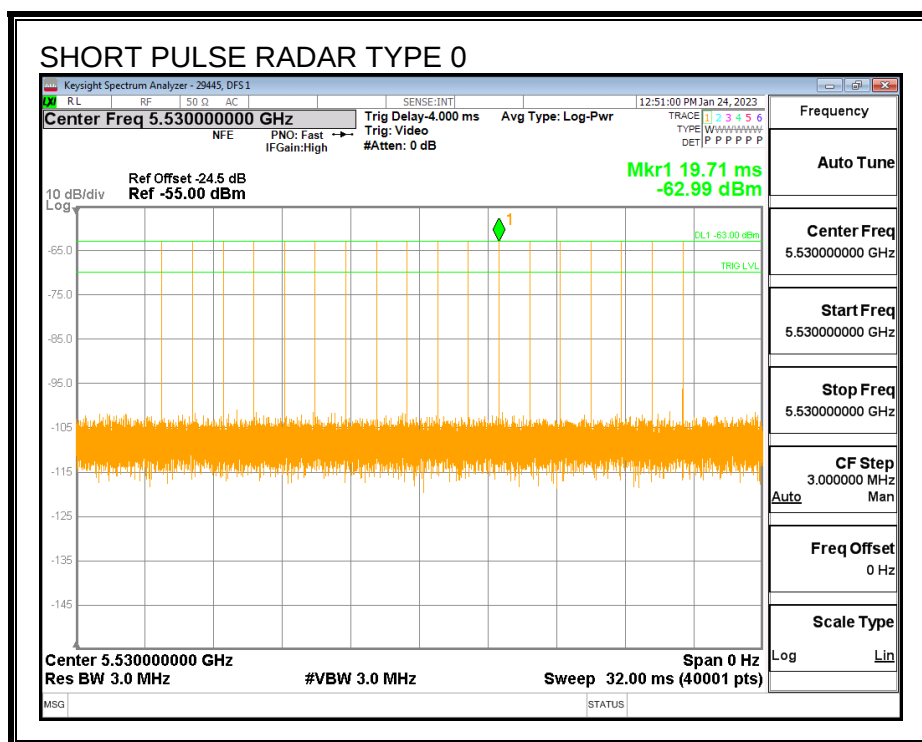
7.6. RADIO 3 RESULTS FOR 80 MHz BANDWIDTH

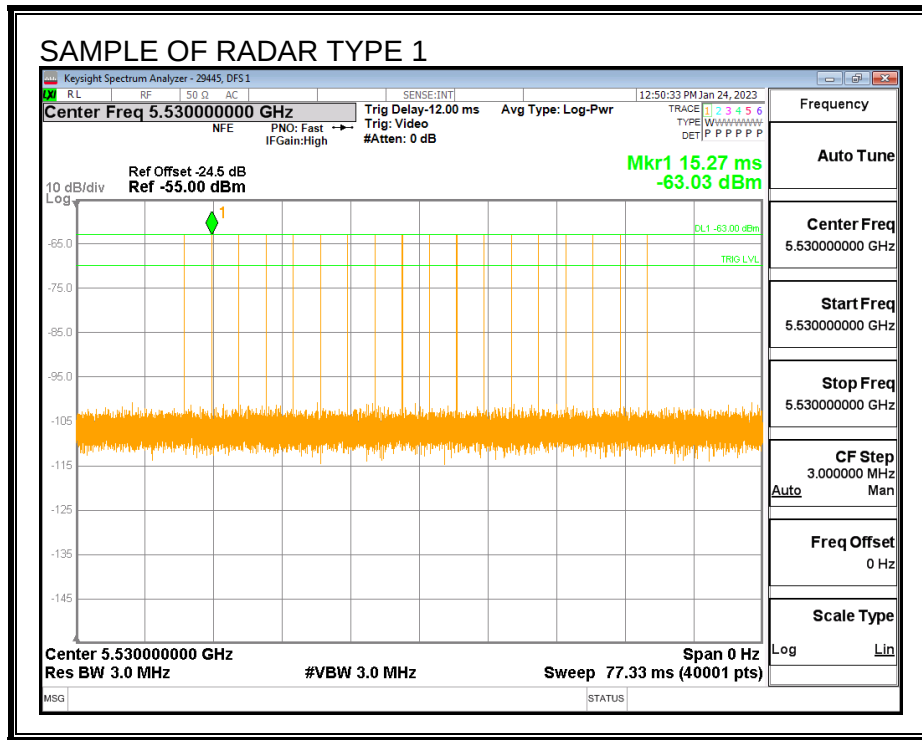
7.6.1. TEST CHANNEL

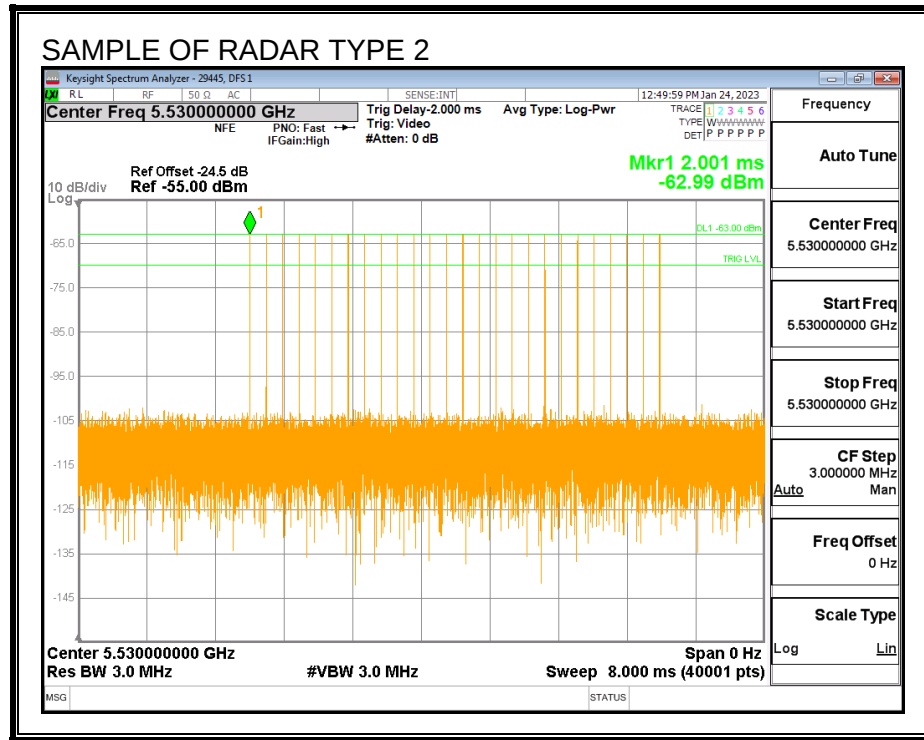
All tests were performed at a channel center frequency of 5530 MHz.

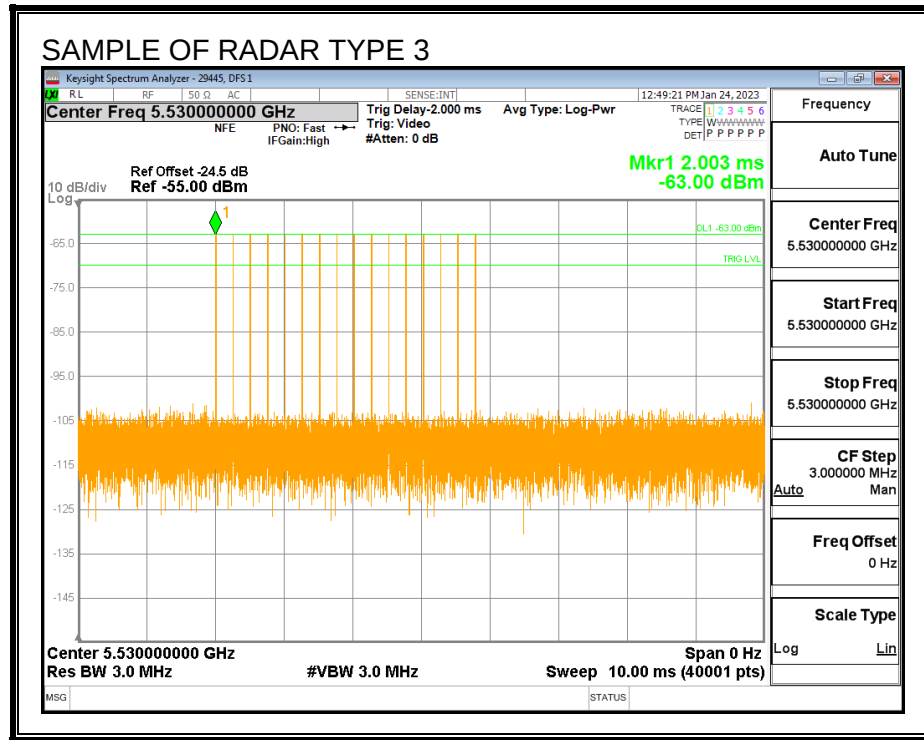
7.6.2. RADAR WAVEFORMS AND TRAFFIC

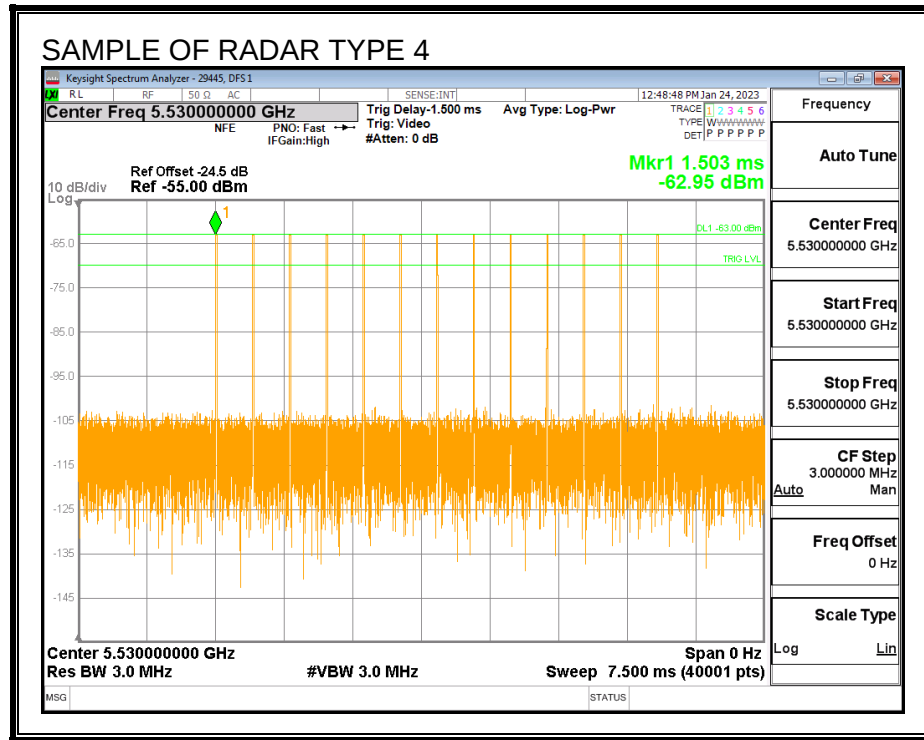
RADAR WAVEFORMS

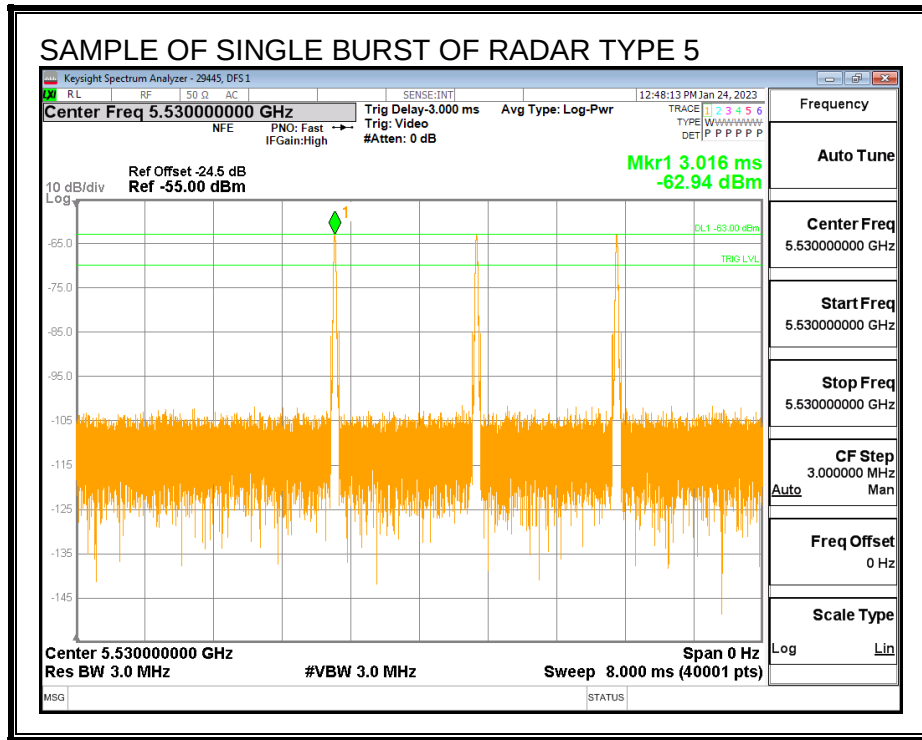


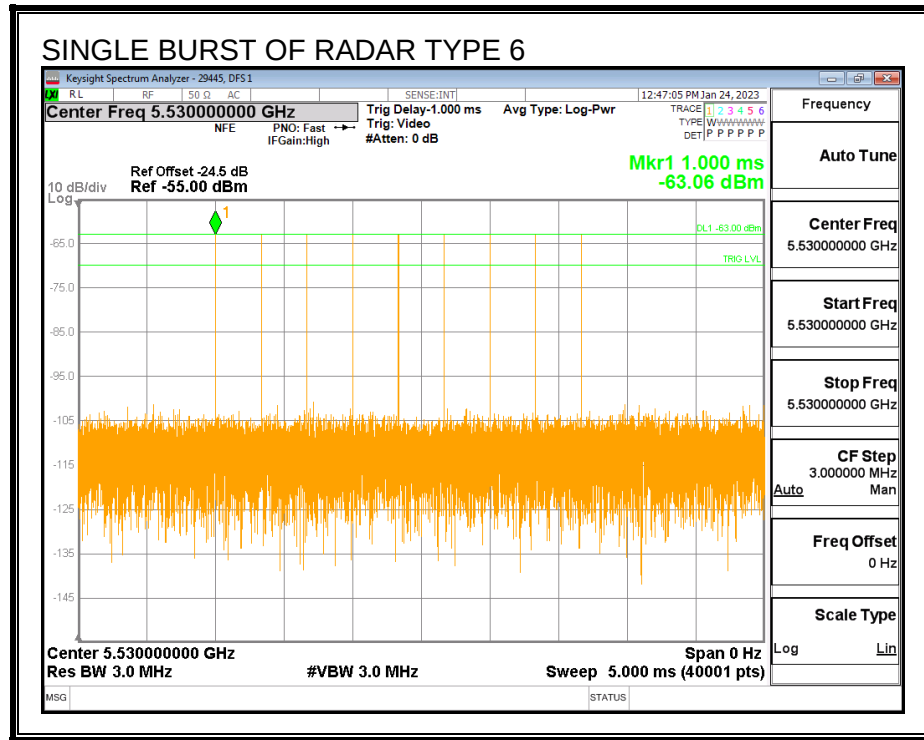




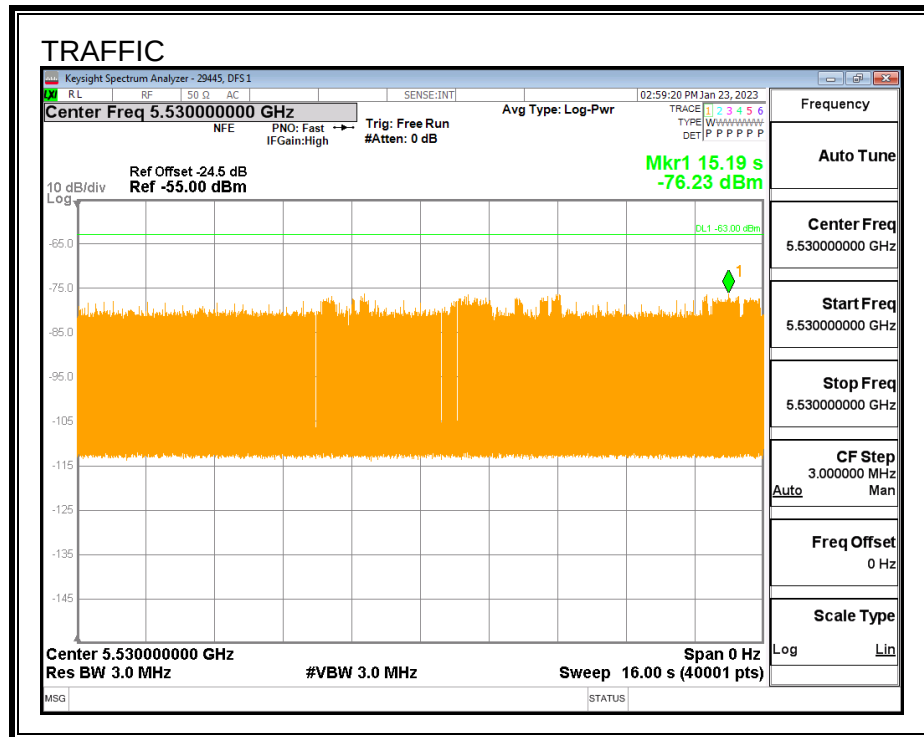




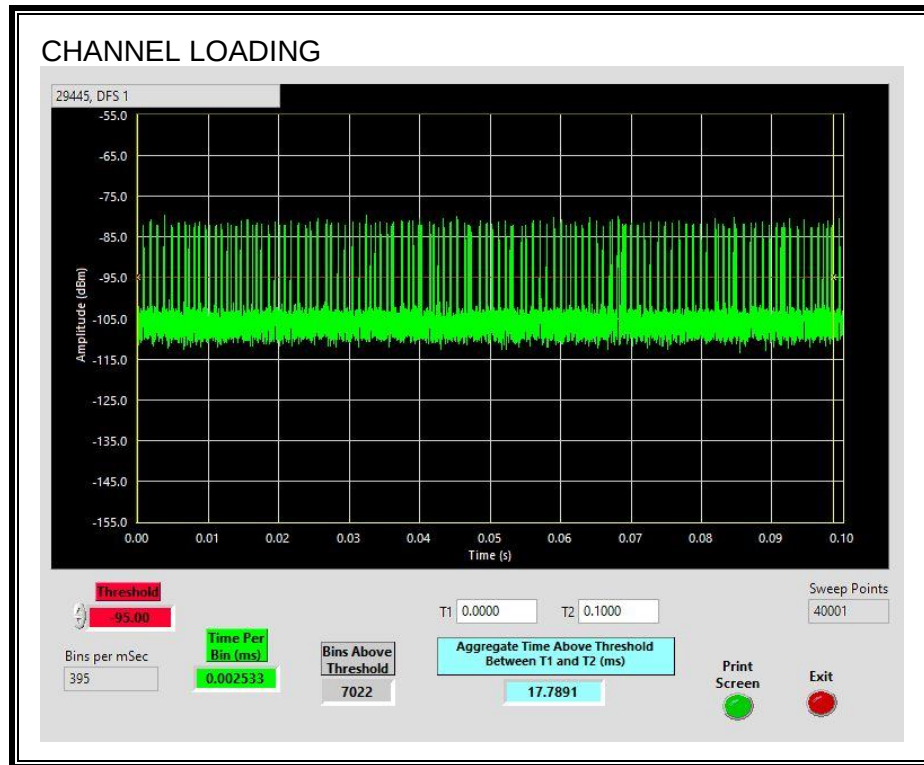




TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.78%

7.6.3. 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)
30.37	232.5	202.1	142.1

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)
30.79	176.4	145.6	3.5

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)
30.89	230.7	199.8	57.7

QUALITATIVE RESULTS

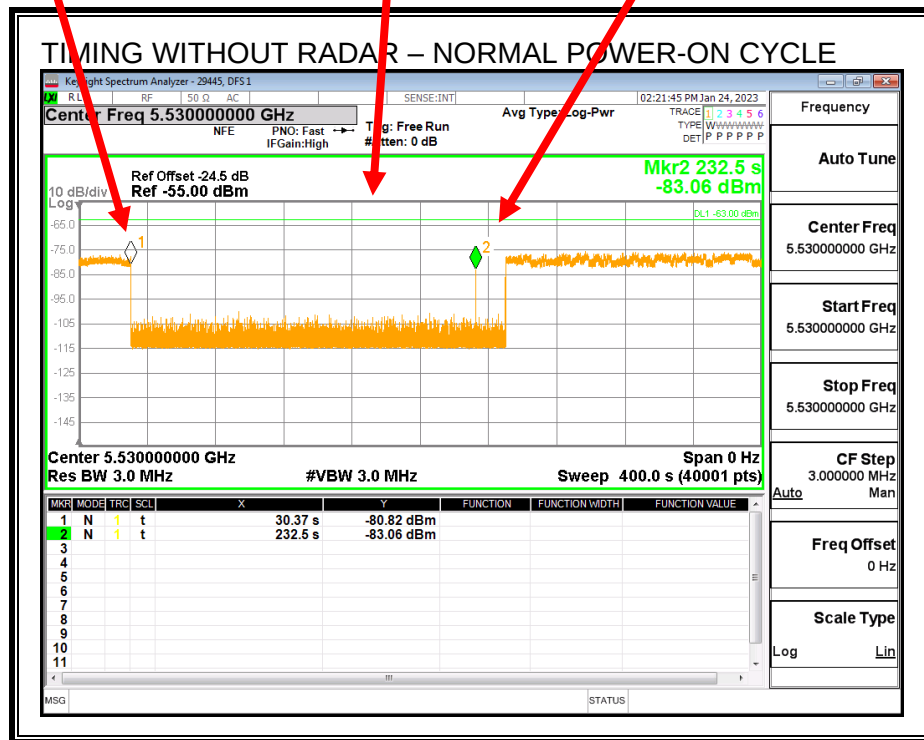
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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



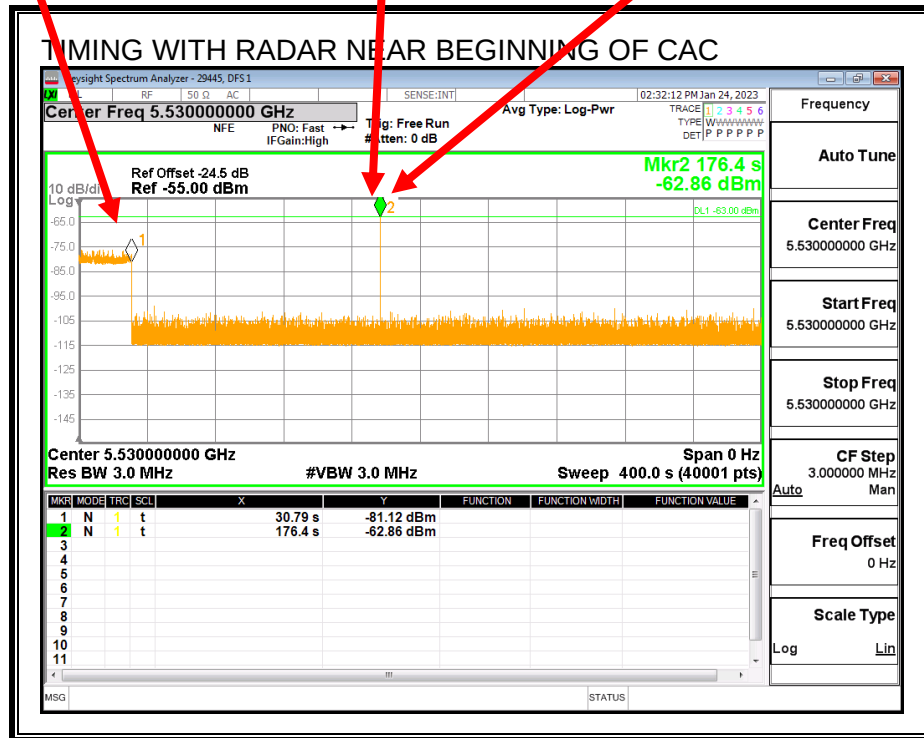
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



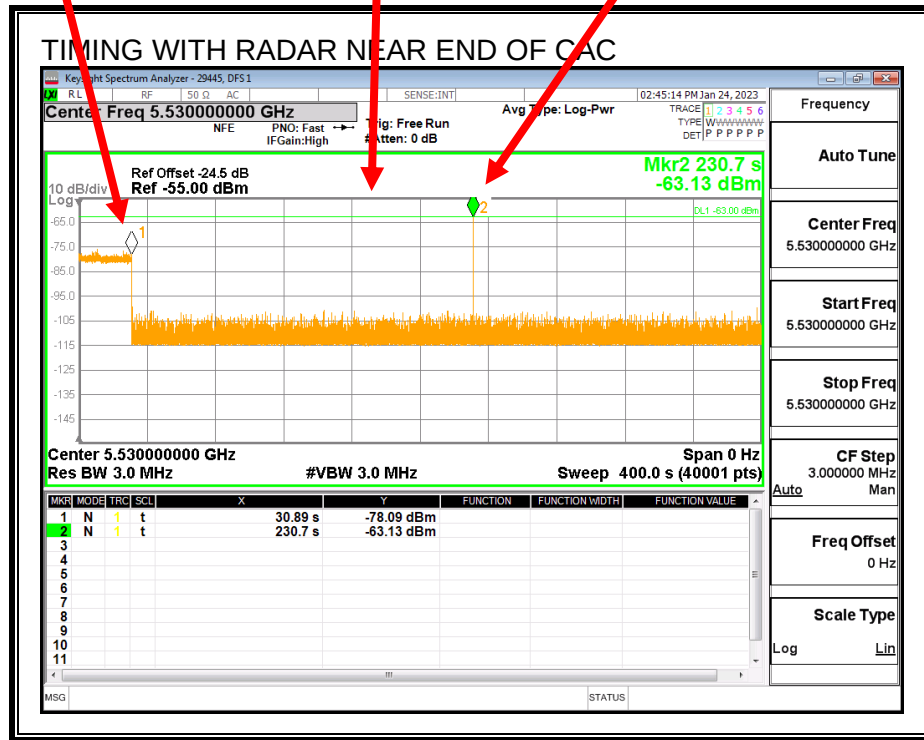
No EUT transmissions were observed after the radar signal.

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.

7.6.4. OVERLAPPING CHANNEL TESTS

RESULTS

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

7.6.5. 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)

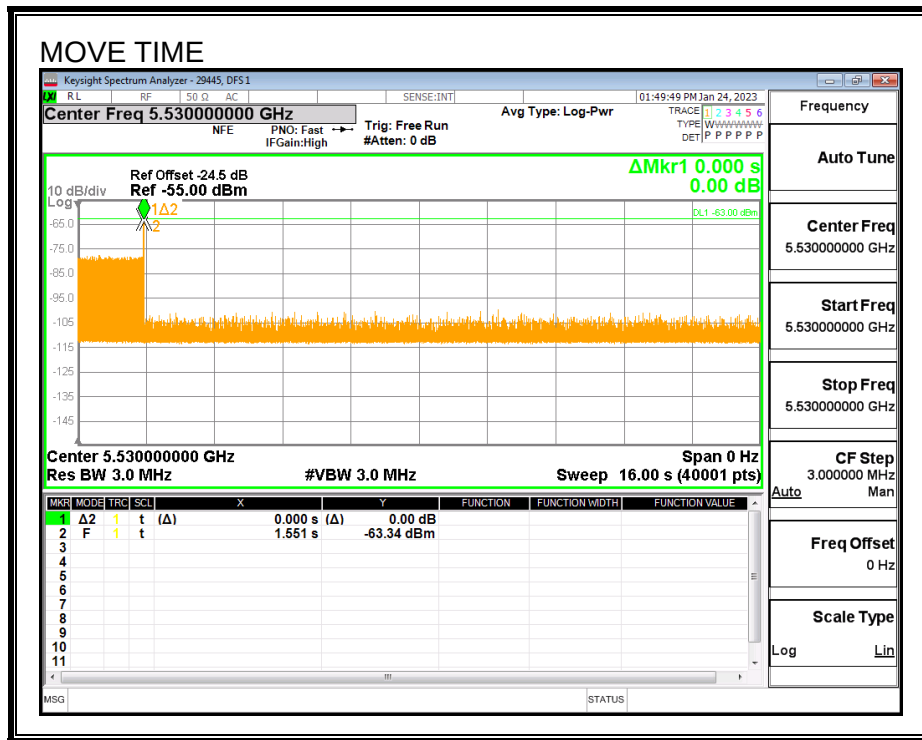
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

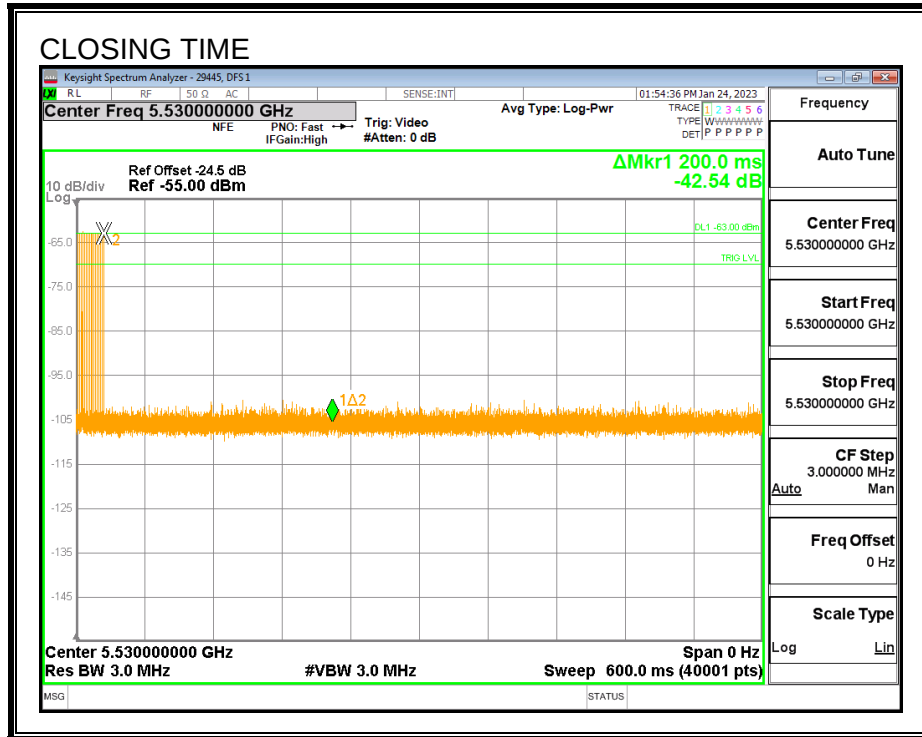
Channel Move Time (sec)	Limit (sec)
0.000	10

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

MOVE TIME

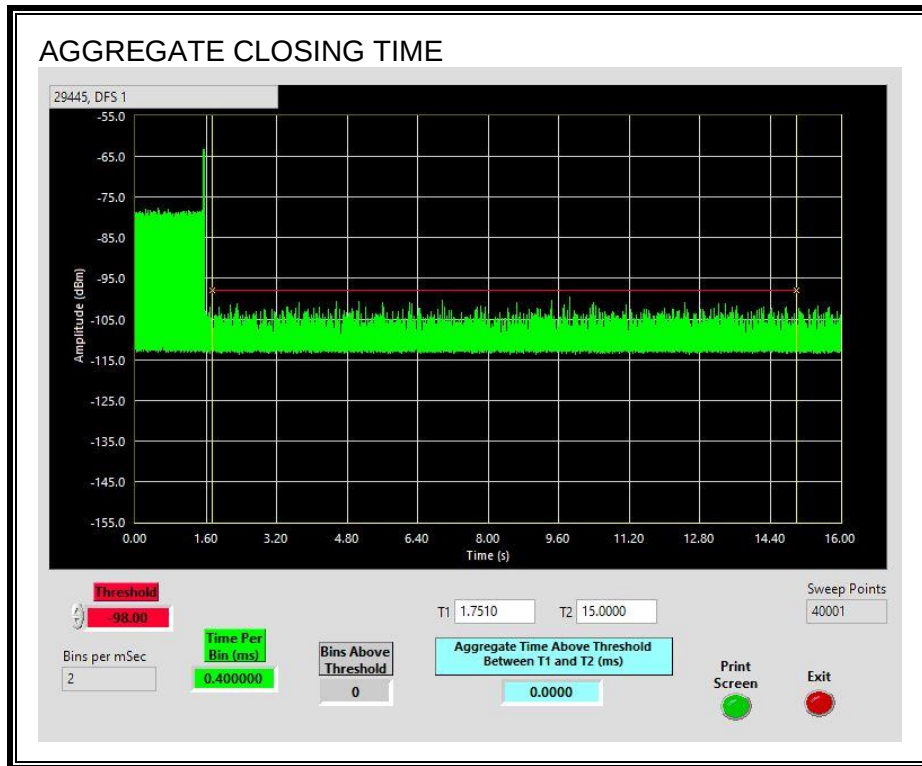


CHANNEL CLOSING TIME



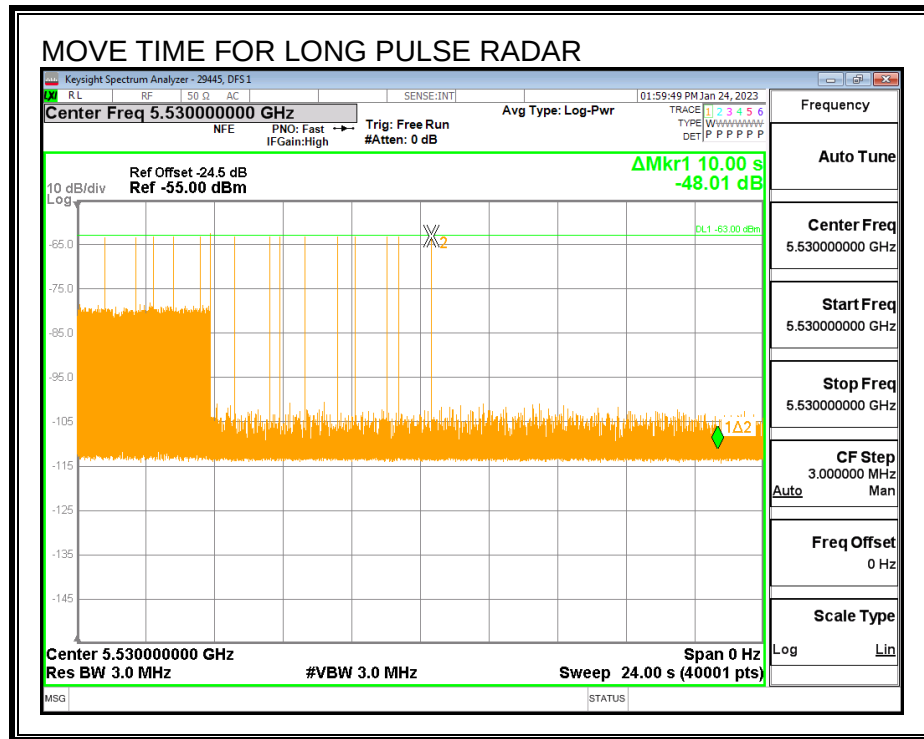
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

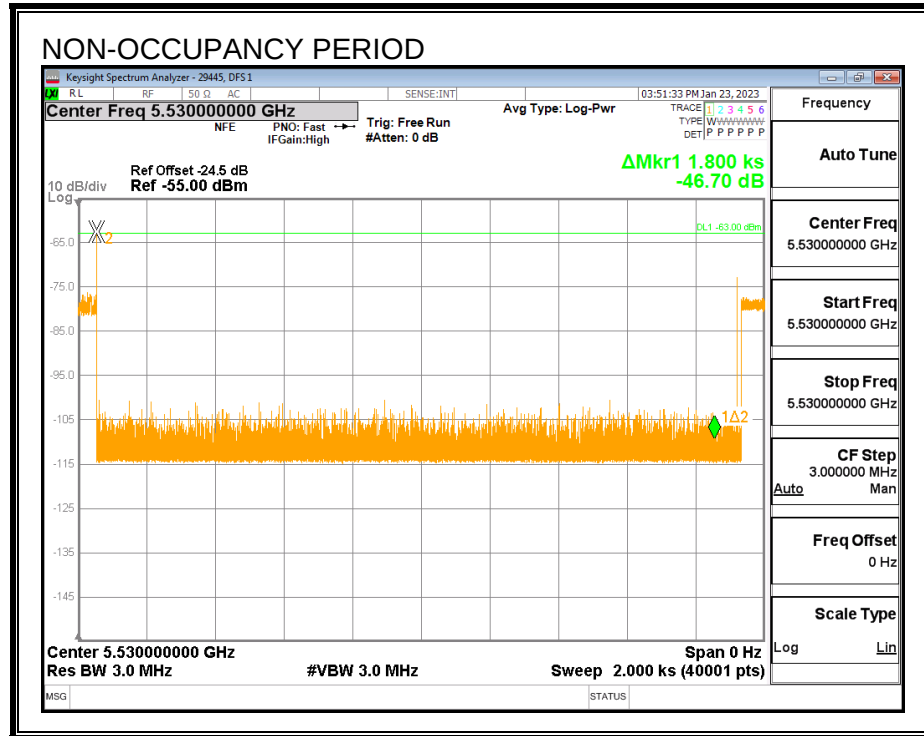
The traffic ceases prior to 10 seconds after the end of the radar waveform.



7.6.6. NON-OCCUPANCY PERIOD

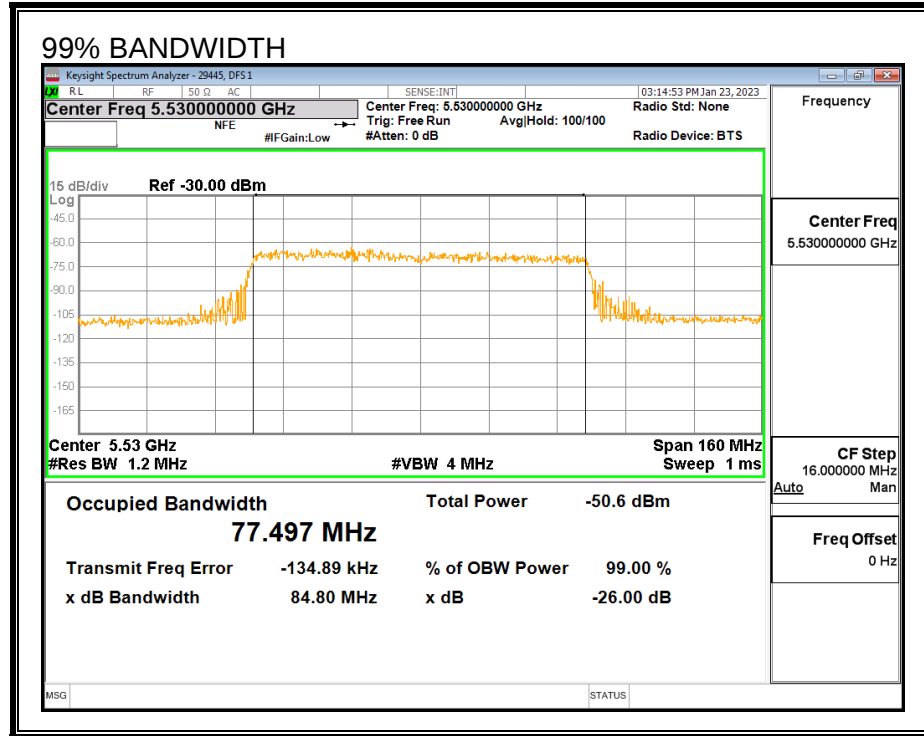
RESULTS

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.



7.6.7. 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	77.497	103.2	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	
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

7.6.8. 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	77.5	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5570	77.5	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5570	77.5	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	96.67	60	Pass	5490	5570	77.5	DFS 1	29445	v4.1
Aggregate		98.33	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5570	77.5	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	5546	Yes
1002	1	578	92	A	5568	Yes
1003	1	878	61	A	5533	Yes
1004	1	818	65	A	5542	Yes
1005	1	718	74	A	5567	Yes
1006	1	678	78	A	5522	Yes
1007	1	618	86	A	5506	Yes
1008	1	778	68	A	5533	Yes
1009	1	558	95	A	5497	Yes
1010	1	838	63	A	5545	Yes
1011	1	698	76	A	5493	Yes
1012	1	518	102	A	5536	Yes
1013	1	898	59	A	5561	Yes
1014	1	598	89	A	5563	Yes
1015	1	938	57	A	5518	Yes
1016	1	1282	42	B	5496	Yes
1017	1	1238	43	B	5565	Yes
1018	1	1000	53	B	5491	Yes
1019	1	1085	49	B	5530	Yes
1020	1	976	55	B	5530	Yes
1021	1	2544	21	B	5532	Yes
1022	1	2565	21	B	5560	Yes
1023	1	520	102	B	5497	Yes
1024	1	2024	27	B	5508	Yes
1025	1	1303	41	B	5529	Yes
1026	1	2936	18	B	5562	Yes
1027	1	1150	46	B	5501	Yes
1028	1	1718	31	B	5568	Yes
1029	1	2609	21	B	5559	Yes
1030	1	758	70	B	5495	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	1.7	191	26	5554	Yes
2002	2.6	228	29	5498	Yes
2003	1	194	24	5497	Yes
2004	4.3	154	27	5491	Yes
2005	5	205	26	5552	Yes
2006	4.4	169	23	5567	Yes
2007	1.3	186	23	5531	Yes
2008	5	197	27	5554	Yes
2009	4.2	219	23	5515	Yes
2010	4	153	24	5498	Yes
2011	3.5	222	28	5524	Yes
2012	1.6	160	23	5567	Yes
2013	1.2	152	27	5560	Yes
2014	1.7	218	26	5517	Yes
2015	1.6	214	23	5492	Yes
2016	2.3	204	29	5531	Yes
2017	4.5	166	27	5547	Yes
2018	1.3	202	27	5529	Yes
2019	1.9	168	29	5557	Yes
2020	3	209	25	5553	Yes
2021	3.7	179	24	5492	Yes
2022	3.1	224	28	5564	Yes
2023	4.1	204	27	5506	Yes
2024	3.7	172	24	5506	Yes
2025	2.9	193	28	5535	Yes
2026	2.7	208	29	5521	Yes
2027	2.2	196	26	5525	Yes
2028	4.4	215	28	5495	Yes
2029	4	207	25	5532	Yes
2030	4.5	193	23	5534	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	9.4	252	16	5540	Yes
3002	6	471	17	5499	Yes
3003	8.2	471	17	5546	Yes
3004	9.1	334	16	5547	Yes
3005	9.7	480	17	5557	Yes
3006	6.7	355	16	5496	Yes
3007	7.4	263	18	5496	Yes
3008	6.8	284	17	5537	Yes
3009	7.8	338	17	5545	Yes
3010	7.4	490	18	5540	Yes
3011	6.6	439	17	5520	Yes
3012	6.4	353	17	5538	Yes
3013	10	314	16	5495	No
3014	8.1	374	17	5545	Yes
3015	9.9	482	16	5525	Yes
3016	8.2	304	18	5531	Yes
3017	6.2	424	18	5557	Yes
3018	8.8	392	18	5501	Yes
3019	6.9	274	16	5500	Yes
3020	7.8	254	18	5524	Yes
3021	8.4	400	18	5506	Yes
3022	9.5	276	18	5523	Yes
3023	6.1	317	17	5542	Yes
3024	9.6	456	16	5548	Yes
3025	6.5	259	16	5520	Yes
3026	6.1	411	16	5499	Yes
3027	9.4	360	16	5548	Yes
3028	9.2	273	16	5502	Yes
3029	8.7	486	18	5515	Yes
3030	6.8	428	16	5515	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	16.9	402	13	5562	Yes
4002	13.1	475	14	5492	Yes
4003	17.7	344	15	5491	Yes
4004	14.3	312	14	5500	Yes
4005	19.4	445	15	5570	Yes
4006	17	426	15	5530	Yes
4007	13.5	321	14	5512	Yes
4008	15.9	447	14	5545	Yes
4009	17.6	488	13	5516	Yes
4010	16.2	377	16	5532	Yes
4011	18.4	430	15	5496	Yes
4012	17.4	331	16	5505	Yes
4013	15.8	280	16	5534	Yes
4014	11.1	327	12	5511	Yes
4015	19	406	14	5524	Yes
4016	19	349	15	5528	Yes
4017	14	323	16	5491	Yes
4018	19.3	396	12	5556	Yes
4019	14.8	265	13	5513	Yes
4020	11.4	484	13	5503	Yes
4021	12.2	366	14	5518	Yes
4022	14.2	346	13	5519	Yes
4023	19.7	492	12	5564	Yes
4024	17.8	368	12	5493	No
4025	14.7	409	16	5523	Yes
4026	13.3	297	14	5515	Yes
4027	15.5	351	16	5553	Yes
4028	19.4	252	14	5507	Yes
4029	12.9	452	12	5518	Yes
4030	17.3	499	15	5541	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	5498	Yes
12	5499	Yes
13	5498	Yes
14	5499	Yes
15	5498	Yes
16	5499	Yes
17	5498	Yes
18	5499	Yes
19	5498	Yes
20	5499	Yes
21	5562	Yes
22	5562	Yes
23	5562	Yes
24	5562	Yes
25	5562	Yes
26	5564	Yes
27	5565	Yes
28	5560	Yes
29	5563	Yes
30	5561	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

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	680	5490	21	Yes
2	1155	5491	15	Yes
3	1630	5492	18	Yes
4	2105	5493	12	Yes
5	2580	5494	18	Yes
6	3055	5495	17	Yes
7	3530	5496	20	Yes
8	4005	5497	17	Yes
9	4480	5498	13	Yes
10	4955	5499	23	Yes
11	5430	5500	18	Yes
12	5905	5501	21	Yes
13	6380	5502	21	Yes
14	6855	5503	15	Yes
15	7330	5504	21	Yes
16	7805	5505	17	Yes
17	8280	5506	22	Yes
18	8755	5507	12	Yes
19	9230	5508	14	Yes
20	9705	5509	19	Yes
21	10180	5510	20	Yes
22	10655	5511	14	Yes
23	11130	5512	15	Yes
24	11605	5513	19	Yes
25	12080	5514	19	Yes
26	12555	5515	17	Yes
27	13030	5516	17	Yes
28	13505	5517	16	Yes
29	13980	5518	15	Yes
30	14455	5519	16	Yes
31	14930	5520	22	Yes
32	15405	5521	19	Yes
33	15880	5522	17	Yes
34	16355	5523	15	Yes
35	16830	5524	24	Yes
36	17305	5525	20	Yes
37	17780	5526	17	Yes
38	18255	5527	18	Yes
39	18730	5528	13	Yes
40	19205	5529	12	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

41	19680	5530	20	Yes
42	20155	5531	20	Yes
43	20630	5532	19	Yes
44	21105	5533	17	Yes
45	21580	5534	7	Yes
46	22055	5535	14	Yes
47	22530	5536	19	Yes
48	23005	5537	19	Yes
49	23480	5538	19	Yes
50	23955	5539	18	Yes
51	24430	5540	19	Yes
52	24905	5541	9	Yes
53	25380	5542	17	Yes
54	25855	5543	12	Yes
55	26330	5544	15	Yes
56	26805	5545	18	Yes
57	27280	5546	15	Yes
58	27755	5547	15	Yes
59	28230	5548	14	Yes
60	28705	5549	16	Yes
61	29180	5550	14	Yes
62	29655	5551	22	Yes
63	30130	5552	20	Yes
64	30605	5553	16	Yes
65	31080	5554	19	Yes
66	31555	5555	21	Yes
67	32030	5556	14	Yes
68	32505	5557	14	Yes
69	32980	5558	16	Yes
70	33455	5559	14	Yes
71	33930	5560	11	Yes
72	34405	5561	19	Yes
73	34880	5562	16	Yes
74	35355	5563	15	Yes
75	35830	5564	15	Yes
76	36305	5565	15	Yes
77	36780	5566	16	Yes
78	37255	5567	18	Yes
79	37730	5568	13	Yes
80	38205	5569	16	Yes
81	38680	5570	13	Yes

7.7. RADIO 3 BRIDGE MODE RESULTS

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

FCC Long Pulse 01-23-2023 07:04:04

Waveform Num = 1

Num of Bursts = 15

Burst Interval (us) = 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	456033	3	16	100	1651	1634	1540	456033	0	799999
2	1089721	2	16	55	1686	1352	0	1550579	800000	1599999
3	606549	2	16	95	1130	1822	0	2160166	1600000	2399999
4	707799	2	16	70	1702	1215	0	2870917	2400000	3199999
5	913934	1	16	55	1728	0	0	3787768	3200000	3999999
6	354659	2	16	100	1241	1882	0	4144155	4000000	4799999
7	864625	3	16	90	1027	1960	1283	5011903	4800000	5599999
8	1206121	1	16	60	1163	0	0	6222294	5600000	6399999
9	360791	3	16	100	1575	1291	1933	6584248	6400000	7199999
10	877775	2	16	90	1078	1010	0	7466822	7200000	7999999
11	1126157	1	16	60	1788	0	0	8595067	8000000	8799999
12	612491	3	16	70	1035	1626	1874	9209346	8800000	9599999
13	1115477	3	16	75	1386	1660	1060	10329358	9600000	10399999
14	400336	3	16	65	1839	1797	1412	10733800	10400000	11199999
15	1149735	2	16	85	1925	1565	0	11888583	11200000	11999999

Total number of pulses in waveform = 33

```
Waveform Num = 2
Num of Bursts = 9
Burst Interval (us) = 1333333
```

[illegible]

Waveform Num = 3
 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	719118	1	11	85	1634	0	0	719118	0	1333332
2	1080651	2	11	75	1146	1686	0	1801403	1333333	2666665
3	1796136	3	11	85	1831	1130	1822	3600371	2666666	3999998
4	1180855	2	11	70	1702	1215	0	4786009	3999999	5333331
5	1524867	1	11	55	1728	0	0	6313793	5333332	6666664
6	591779	2	11	100	1241	1882	0	6907300	6666665	7999997
7	1443504	3	11	90	1027	1960	1283	8353927	7999998	9333330
8	2012895	1	11	60	1163	0	0	10371092	9333331	10666663
9	602230	3	11	100	1575	1291	1933	10974485	10666664	11999996

Total number of pulses in waveform = 18

Waveform Num = 4
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 5
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 6
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 7
Num of Bursts = 12
Burst Interval (us) = 1000000
```

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	478455	2	16	80	1489	1523	0	478455	0	999999
2	877865	1	16	55	1301	0	0	1359332	1000000	1999999
3	759766	2	16	60	1548	1771	0	2120399	2000000	2999999
4	1414508	2	16	65	1651	1634	0	3538226	3000000	3999999
5	809293	2	16	75	1146	1686	0	4350804	4000000	4999999
6	1345803	3	16	85	1831	1130	1822	5699439	5000000	5999999
7	884855	2	16	70	1702	1215	0	6589077	6000000	6999999
8	1143034	1	16	55	1728	0	0	7735028	7000000	7999999
9	443579	2	16	100	1241	1882	0	8180335	8000000	8999999
10	1081705	3	16	90	1027	1960	1283	9265163	9000000	9999999
11	1508661	1	16	60	1163	0	0	10778094	10000000	10999999
12	451331	3	16	100	1575	1291	1933	11230588	11000000	11999999

Total number of pulses in waveform = 24

Waveform Num = 8
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 9
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 10
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 11
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 12
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 13
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 14
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 15
Num of Bursts = 12
Burst Interval (us) = 1000000
```

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	478455	2	16	80	1489	1523	0	478455	0	999999
2	877865	1	16	55	1301	0	0	1359332	1000000	1999999
3	759766	2	16	60	1548	1771	0	2120399	2000000	2999999
4	1414508	2	16	65	1651	1634	0	3538226	3000000	3999999
5	809293	2	16	75	1146	1686	0	4350804	4000000	4999999
6	1345803	3	16	85	1831	1130	1822	5699439	5000000	5999999
7	884855	2	16	70	1702	1215	0	6589077	6000000	6999999
8	1143034	1	16	55	1728	0	0	7735028	7000000	7999999
9	443579	2	16	100	1241	1882	0	8180335	8000000	8999999
10	1081705	3	16	90	1027	1960	1283	9265163	9000000	9999999
11	1508661	1	16	60	1163	0	0	10778094	10000000	10999999
12	451331	3	16	100	1575	1291	1933	11230588	11000000	11999999

Total number of pulses in waveform = 24

Waveform Num = 16
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 17
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 18
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 19
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 20
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 21
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 22
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1288508	3	17	75	1386	1660	1060	3611376	2769231	3692307
5	462306	3	17	65	1839	1797	1412	4077788	3692308	4615384
6	1327532	2	17	85	1925	1565	0	5410368	4615385	5538461
7	716766	1	17	70	1711	0	0	6130624	5538462	6461538
8	753632	3	17	100	1857	1890	1847	6885967	6461539	7384615
9	1392106	1	17	85	1258	0	0	8283667	7384616	8307692
10	723876	2	17	100	1138	1488	0	9008801	8307693	9230769
11	613328	3	17	50	1532	1908	1472	9624755	9230770	10153846
12	808879	1	17	50	1719	0	0	10438546	10153847	11076923
13	701086	2	17	60	1497	1189	0	11141351	11076924	12000000

Total number of pulses in waveform = 25

```
Waveform Num = 23
Num of Bursts = 12
Burst Interval (us) = 1000000
```

[illegible]

Waveform Num = 24
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	292285	1	17	50	1334	0	0	292285	0	923076
2	1393979	1	17	90	1746	0	0	1687598	923077	1846153
3	630024	2	17	50	1626	1874	0	2319368	1846154	2769230
4	1133453	2	17	60	1071	1345	0	3456321	2769231	3692307
5	676630	2	17	80	1960	1525	0	4135367	3692308	4615384
6	809939	1	17	55	1303	0	0	4948791	4615385	5538461
7	701221	2	17	60	1550	1773	0	5651315	5538462	6461538
8	1305334	2	17	65	1653	1636	0	6959972	6461539	7384615
9	746752	2	17	75	1148	1687	0	7710013	7384616	8307692
10	754178	3	17	85	1302	1601	1824	8467026	8307693	9230769
11	1304394	2	17	70	1704	1217	0	9776147	9230770	10153846
12	1054918	1	17	55	1730	0	0	10833986	10153847	11076923
13	409283	2	17	100	1243	1884	0	11244999	11076924	12000000

Total number of pulses in waveform = 23

```
Waveform Num = 25
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	169045	1	17	70	1285	0	0	169045	0	631578
2	953540	1	17	60	1165	0	0	1123870	631579	1263157
3	284661	3	17	100	1045	1293	1935	1409696	1263158	1894736
4	692465	2	17	90	1080	1011	0	2106434	1894737	2526315
5	554066	1	17	60	1259	0	0	2662591	2526316	3157894
6	818123	3	17	70	1037	1627	1344	3481973	3157895	3789473
7	546591	3	17	75	1388	1130	1062	4032572	3789474	4421052
8	649170	3	17	65	1841	1798	1414	4685322	4421053	5052631
9	719459	1	17	85	1927	0	0	5409834	5052632	5684210
10	879865	3	17	80	1439	1713	1645	6291626	5684211	6315789
11	315391	3	17	95	1892	1849	1464	6611814	6315790	6947368
12	417999	3	17	60	1978	1618	1918	7035018	6947369	7578947
13	540051	2	17	90	1696	1019	0	7580583	7578948	8210526
14	1079588	3	17	75	1431	1515	1054	8662886	8210527	8842105
15	489842	1	17	80	1200	0	0	9156728	8842106	9473684
16	786101	1	17	50	1345	0	0	9944029	9473685	10105263
17	462506	2	17	80	1960	1525	0	10407880	10105264	10736842
18	553449	1	17	55	1303	0	0	10964814	10736843	11368421
19	479392	2	17	60	1550	1773	0	11445509	11368422	12000000
Total number of pulses in waveform = 39										

Waveform Num = 26
 Num of Bursts = 13
 Burst Interval (us) = 923077

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	489971	2	10	80	1542	1575	0	489971	0	923076
2	1299820	1	10	85	1353	0	0	1792908	923077	1846153
3	211452	2	10	65	1601	1824	0	2005713	1846154	2769230
4	1305470	2	10	70	1704	1217	0	3314608	2769231	3692307
5	1054918	1	10	55	1730	0	0	4372447	3692308	4615384
6	409283	2	10	100	1243	1884	0	4783460	4615385	5538461
7	998440	3	10	90	1029	1430	1285	5785027	5538462	6461538
8	1392689	1	10	60	1165	0	0	7181460	6461539	7384615
9	416623	3	10	100	1045	1293	1935	7599248	7384616	8307692
10	1013899	2	10	90	1080	1011	0	8617420	8307693	9230769
11	810556	1	10	60	1259	0	0	9430067	9230770	10153846
12	1197128	3	10	70	1037	1627	1344	10628454	10153847	11076923
13	800399	3	10	75	1388	1130	1062	11432861	11076924	12000000

Total number of pulses in waveform = 26

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)
1	425613	3	9	90	1414	1422	1088	425613	0	631578
2	648765	3	9	80	1867	1558	1439	1078302	631579	1263157
3	739773	2	9	100	1952	1859	0	1822939	1263158	1894736
4	680864	3	9	75	1473	1670	1260	2507614	1894737	2526315
5	494565	2	9	100	1140	1490	0	3006582	2526316	3157894
6	419003	3	9	50	1002	1910	1474	3428215	3157895	3789473
7	708357	2	9	50	1721	1311	0	4140958	3789474	4421052
8	322388	1	9	75	1190	0	0	4466378	4421053	5052631
9	1188258	2	9	90	1602	1585	0	5655826	5052632	5684210
10	215773	2	9	75	1097	1105	0	5874786	5684211	6315789
11	924722	2	9	80	1251	1550	0	6801710	6315790	6947368
12	554223	1	9	70	1328	0	0	7358734	6947369	7578947
13	311962	2	9	75	1575	1533	0	7672024	7578948	8210526
14	911900	3	9	65	1944	1661	1302	8587032	8210527	8842105
15	386487	3	9	55	1447	1379	1704	8978426	8842106	9473684
16	954861	2	9	55	1114	1730	0	9937817	9473685	10105263
17	279421	2	9	100	1243	1884	0	10220082	10105264	10736842
18	682019	3	9	90	1029	1430	1285	10905228	10736843	11368421
19	951741	1	9	60	1165	0	0	11860713	11368422	12000000

Total number of pulses in waveform = 42

Waveform Num = 28
 Num of Bursts = 18
 Burst Interval (us) = 666667

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	155281	1	20	65	1935	0	0	155281	0	666666
2	732948	2	20	90	1080	1011	0	890164	666667	1333333
3	584940	1	20	60	1259	0	0	1477195	1333334	2000000
4	863744	3	20	70	1037	1627	1344	2342198	2000001	2666667
5	577143	3	20	75	1388	1130	1062	2923349	2666668	3333334
6	685475	3	20	65	1841	1798	1414	3612404	3333335	4000001
7	759652	1	20	85	1927	0	0	4377109	4000002	4666668
8	929052	3	20	80	1439	1713	1645	5308088	4666669	5333335
9	333058	3	20	95	1892	1849	1464	5645943	5333336	6000002
10	441416	3	20	60	1978	1618	1918	6092564	6000003	6666669
11	570318	2	20	90	1696	1019	0	6668396	6666670	7333336
12	1139877	3	20	75	1431	1515	1054	7810988	7333337	8000003
13	517151	1	20	80	1200	0	0	8332139	8000004	8666670
14	829862	1	20	50	1345	0	0	9163201	8666671	9333337
15	488313	2	20	80	1960	1525	0	9652859	9333338	10000004
16	584323	1	20	55	1303	0	0	10240667	10000005	10666671
17	506094	2	20	60	1550	1773	0	10748064	10666672	11333338
18	941437	2	20	65	1653	1636	0	11692824	11333339	12000005

Total number of pulses in waveform = 37

Waveform Num = 29
 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	753684	1	13	85	1353	0	0	753684	0	799999
2	183168	2	13	65	1601	1824	0	938205	800000	1599999
3	1130799	2	13	70	1704	1217	0	2072429	1600000	2399999
4	913933	1	13	55	1730	0	0	2989283	2400000	3199999
5	354575	2	13	100	1243	1884	0	3345588	3200000	3999999
6	864841	3	13	90	1029	1430	1285	4213556	4000000	4799999
7	1206511	1	13	60	1165	0	0	5423811	4800000	5599999
8	360906	3	13	100	1045	1293	1935	5785882	5600000	6399999
9	878182	2	13	90	1080	1011	0	6668337	6400000	7199999
10	702260	1	13	60	1259	0	0	7372688	7200000	7999999
11	1037103	3	13	70	1037	1627	1344	8411050	8000000	8799999
12	693236	3	13	75	1388	1130	1062	9108294	8800000	9599999
13	823435	3	13	65	1841	1798	1414	9935309	9600000	10399999
14	912385	1	13	85	1927	0	0	10852747	10400000	11199999
15	1115958	3	13	80	1439	1713	1645	11970632	11200000	11999999

Total number of pulses in waveform = 31

Waveform Num = 30
 Num of Bursts = 20
 Burst Interval (us) = 600000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri (us)	Pulse 2 Pri (us)	Pulse 3 Pri (us)	Start Loc (us)	Start Burst Interval (us)	End Burst Interval (us)
1	154861	3	18	95	1464	1473	1670	154861	0	599999
2	895219	3	18	80	1918	1140	1490	1054687	600000	1199999
3	397475	3	18	50	1002	1910	1474	1456710	1200000	1799999
4	672729	2	18	50	1721	1311	0	2133825	1800000	2399999
5	306197	1	18	75	1190	0	0	2443054	2400000	2999999
6	1128637	2	18	90	1602	1585	0	3572881	3000000	3599999
7	204945	2	18	75	1097	1105	0	3781013	3600000	4199999
8	878301	2	18	80	1251	1550	0	4661516	4200000	4799999
9	526436	1	18	70	1328	0	0	5190753	4800000	5399999
10	296318	2	18	75	1575	1533	0	5488399	5400000	5999999
11	866025	3	18	65	1944	1661	1302	6357532	6000000	6599999
12	367016	3	18	55	1447	1379	1704	6729455	6600000	7199999
13	906836	2	18	55	1114	1730	0	7640821	7200000	7799999
14	265383	2	18	100	1243	1884	0	7909048	7800000	8399999
15	647741	3	18	90	1029	1430	1285	8559916	8400000	8999999
16	903971	1	18	60	1165	0	0	9467631	9000000	9599999
17	270366	3	18	100	1045	1293	1935	9739162	9600000	10199999
18	657642	2	18	90	1080	1011	0	10401077	10200000	10799999
19	526280	1	18	60	1259	0	0	10929448	10800000	11399999
20	777063	3	18	70	1037	1627	1344	11707770	11400000	11999999

Total number of pulses in waveform = 44