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

CERTIFICATION TEST REPORT

FOR

XE3-4 Wi-Fi 6e Indoor Access Point

MODEL NUMBER: XE3-4

FCC ID: Z8H-89FT0067
ISED ID: 109W-0067

REPORT NUMBER: 14049553-E1V3

ISSUE DATE: January 13, 2022

Prepared for
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ROLLING MEADOWS
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	11/05/21	Initial Issue	--
V2	01/13/22	Corrected FCC ID and model description.	Edgard Rincand
V3	01/13/22	Updated FCC registration number.	Grace Rincand

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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: XE3-4 Wi-Fi 6e Indoor Access Point

MODEL: XE3-4

SERIAL NUMBER: W8XH046QCDB9

DATE TESTED: OCTOBER 18 TO 20, 2021

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

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Edgard Rincand
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UL Verification Services Inc.

Prepared By:

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UL Verification Services Inc.

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: FR142329AN and IC report: CR142329AN

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)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.		

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

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

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

Table 4: DFS Response requirement values

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

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

Table 5 – Short Pulse Radar Test Waveforms

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

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

Table 6 – Long Pulse Radar Test Signal

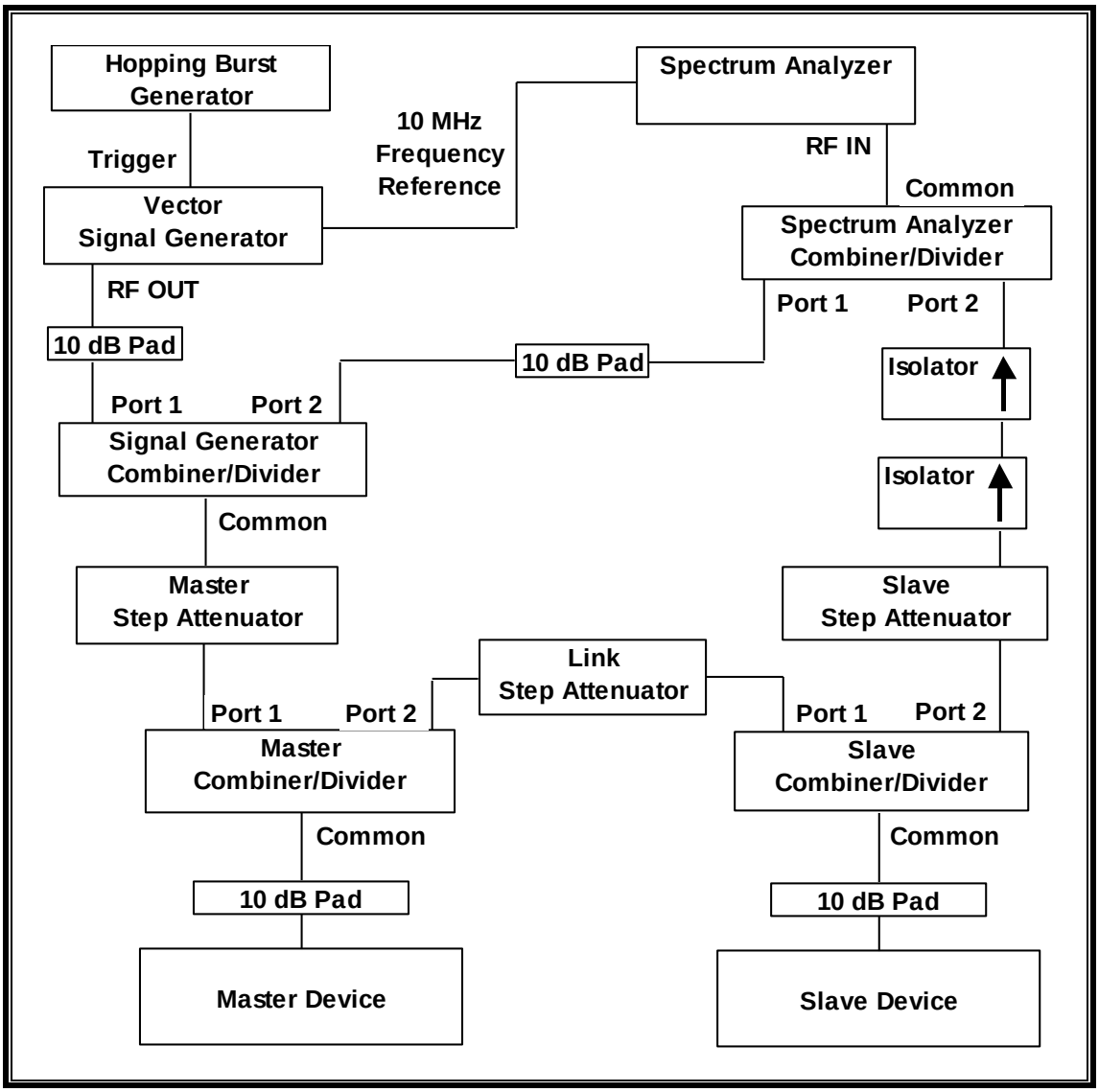
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

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

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 44GHz	Keysight	N9030A	150667	02/24/22
Signal Generator, MXG X-Series RF Vector	Agilent	N5182B	150666	01/26/22
Arbitrary Waveform Generator	Agilent / HP	33220A	80815	01/28/22

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

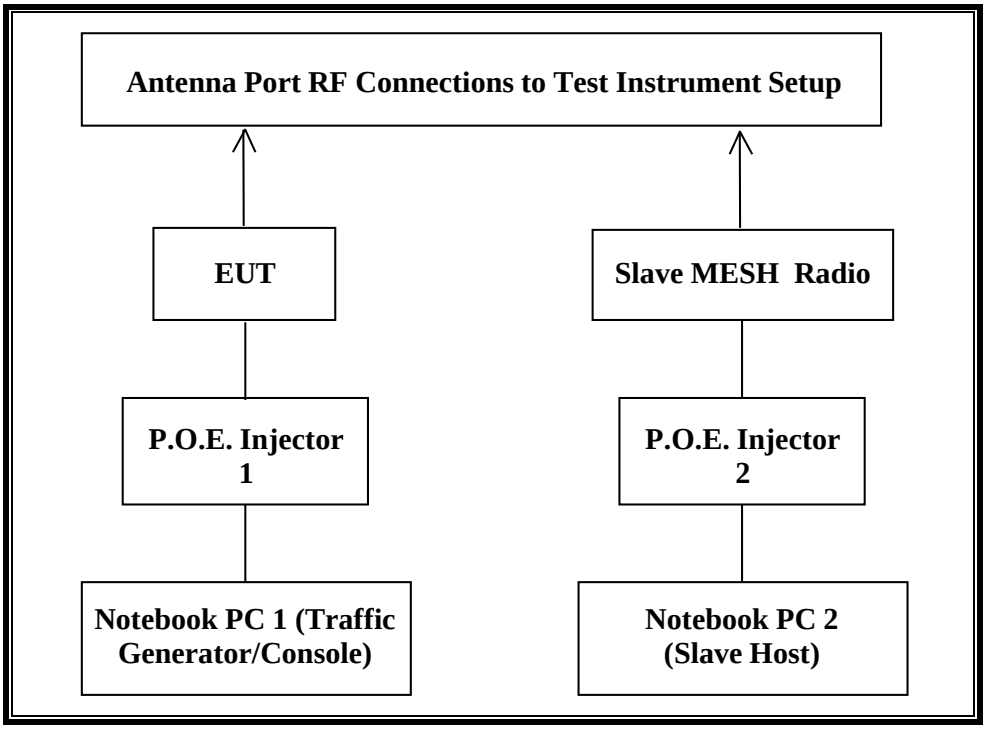
The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	23.5, 23.2 and 24.3 °C
Humidity	36, 37 and 31 %

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 (EUT)	Cambium Networks	NET-P60-56IN	N000000L142A2020000461	DoC
Notebook PC 1 (EUT Console)	Lenovo	Type 4236-B92	PB-HEX04 12/05	DoC
AC Adapter 1 (Notebook PC 1)	Lenovo	42T4418	11S42T4418Z1ZGWG08R90M	DoC
XV3-4 Wi-Fi 6e 4x4 Access Point (Slave MESH Radio)	Cambium Networks	XV3-4	W8XH046TLXVJ	Z8H89FT0067
P.O.E. Injector 2 (Slave)	Cambium Networks	NET-P30-56IN	N000000L142A2028000149	DoC
Notebook PC 2 (Slave Host)	Lenovo	Type 20B7-S0A200	PF-02JN9J 14/06	DoC
AC Adapter 2 (Notebook PC 2)	Lenovo	ADLX65NLC2A	11S45N0259Z1ZS974594A9	DoC

7.1.5. DESCRIPTION OF EUT

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

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

For FCC the EUT utilizes the 802.11ax architecture. Four nominal channel bandwidths are implemented: 20 MHz, 40 MHz, 80 MHz and 160 MHz.

For ISED the EUT utilizes the 802.11ax architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz. The EUT does not support a channel bandwidth of 160 MHz for Canada.

The EUT is a Master Device.

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 5 dBi in the 5250-5350 MHz band and 5 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.

One orthogonally polarized dual input Omni antenna assembly is utilized to meet the diversity and MIMO operational requirements.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –64 + 5 + 1 = -58 dBm.

The calibrated conducted DFS Detection Threshold level is set to –59 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses two transmitter/receiver chains, each connected to a 50-ohm coaxial antenna port. All antenna ports are connected to the test system via a power divider to perform conducted tests.

The Slave 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).

Channel puncturing is not supported by the EUT.

The software installed in the Master EUT is 6.4-a0.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

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

The Master Device is a Cambium Networks XE3-4 Wi-Fi 6e 4x4 Access Point, FCC ID: Z8H89FT0067. The minimum antenna gain for the Master Device is 5 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –64 + 5 + 1 = -58 dBm.

The calibrated radiated DFS Detection Threshold level is set to –59 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The software installed in the Master EUT is 6.4-a0.

7.2. RESULTS FOR 20 MHz BANDWIDTH

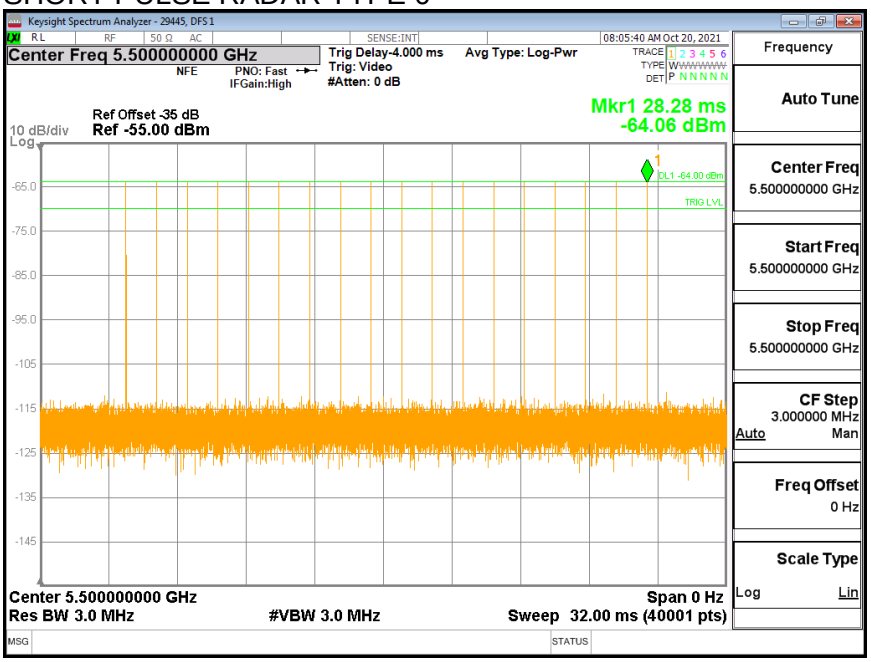
7.2.1. TEST CHANNEL

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

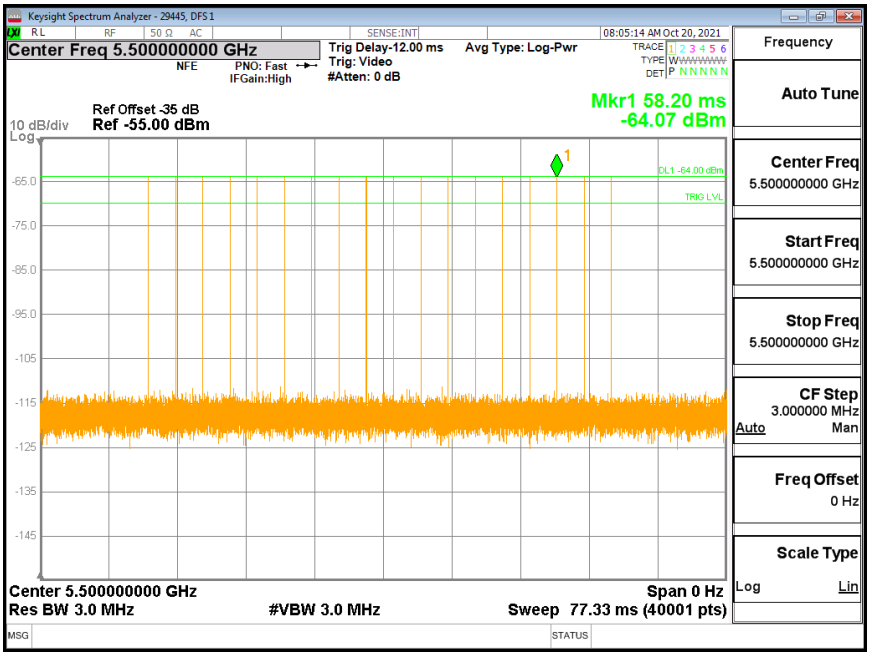
7.2.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

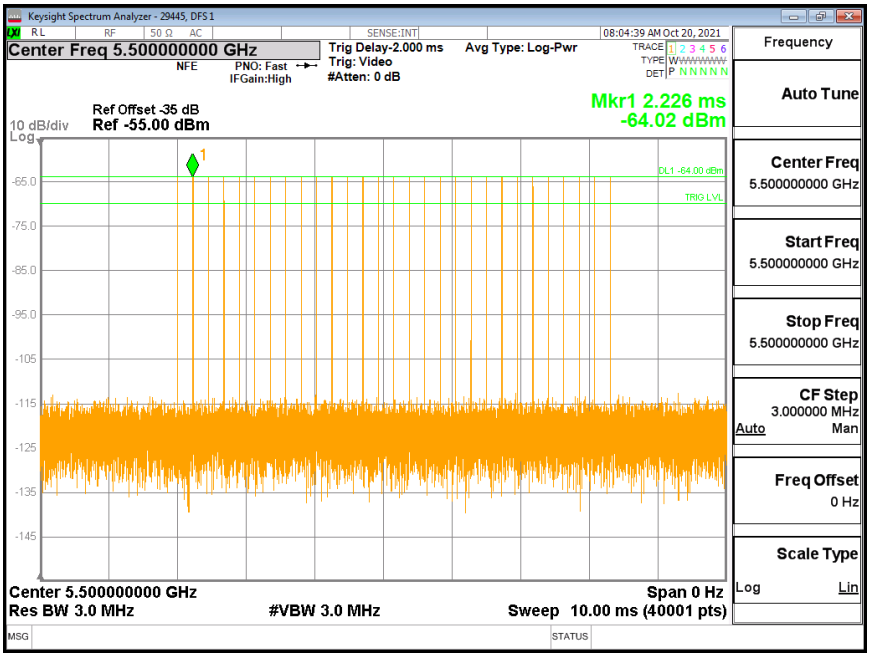
SHORT PULSE RADAR TYPE 0



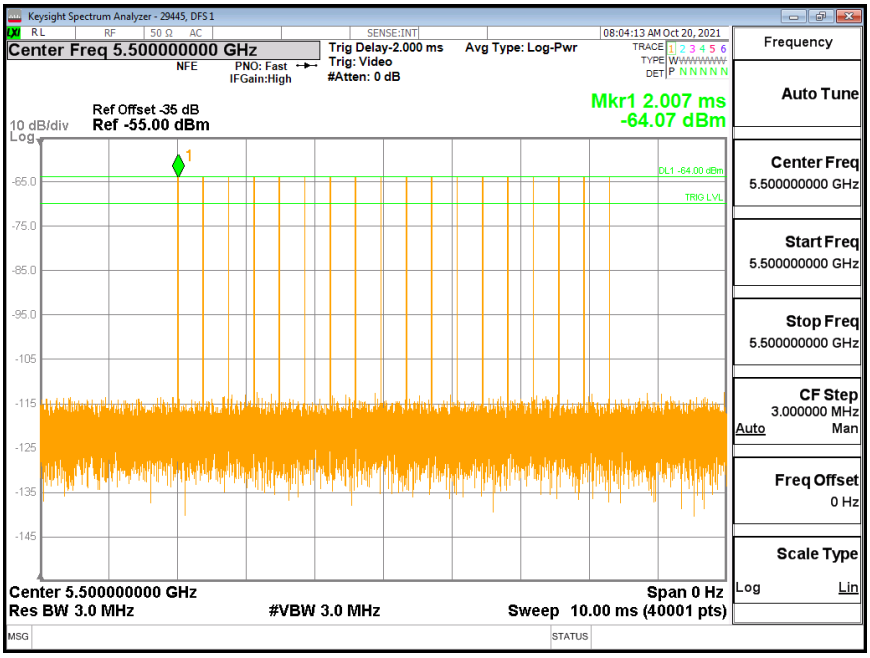
SAMPLE OF RADAR TYPE 1



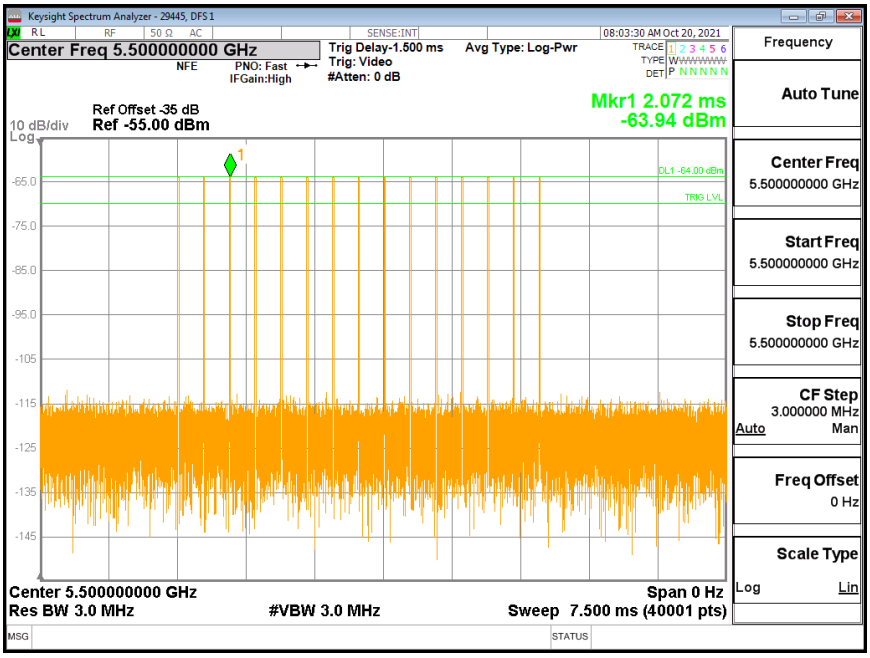
SAMPLE OF RADAR TYPE 2



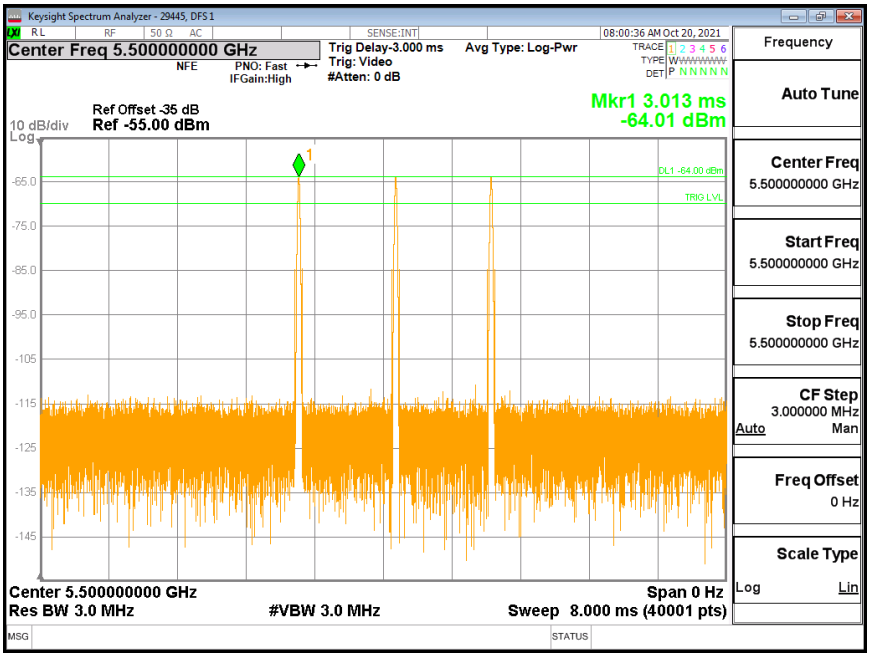
SAMPLE OF RADAR TYPE 3



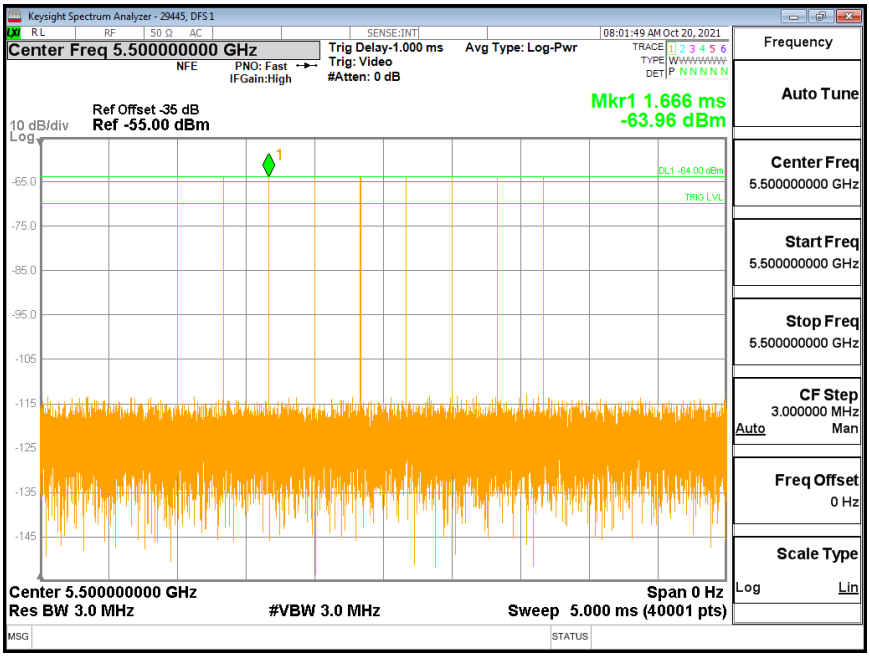
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

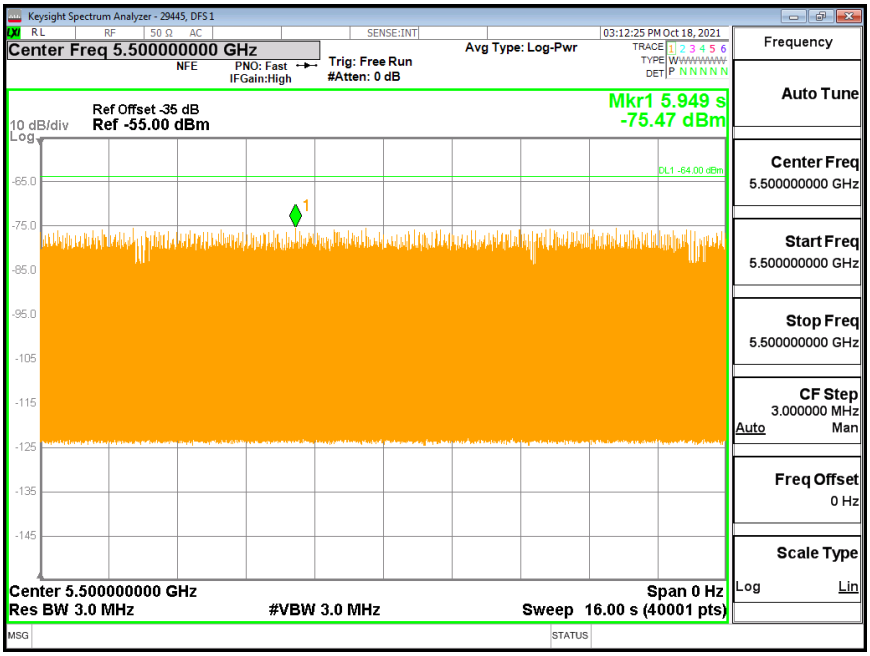


SINGLE BURST OF RADAR TYPE 6

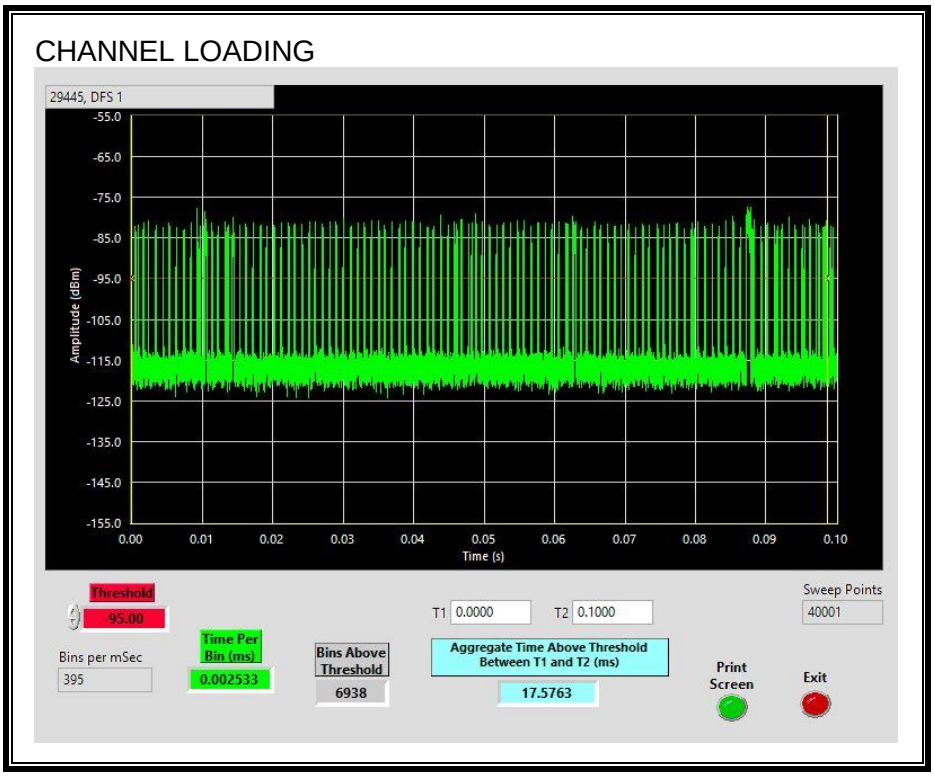


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.57%

7.2.3. CHANNEL AVAILABILITY CHECK TIME

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

7.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

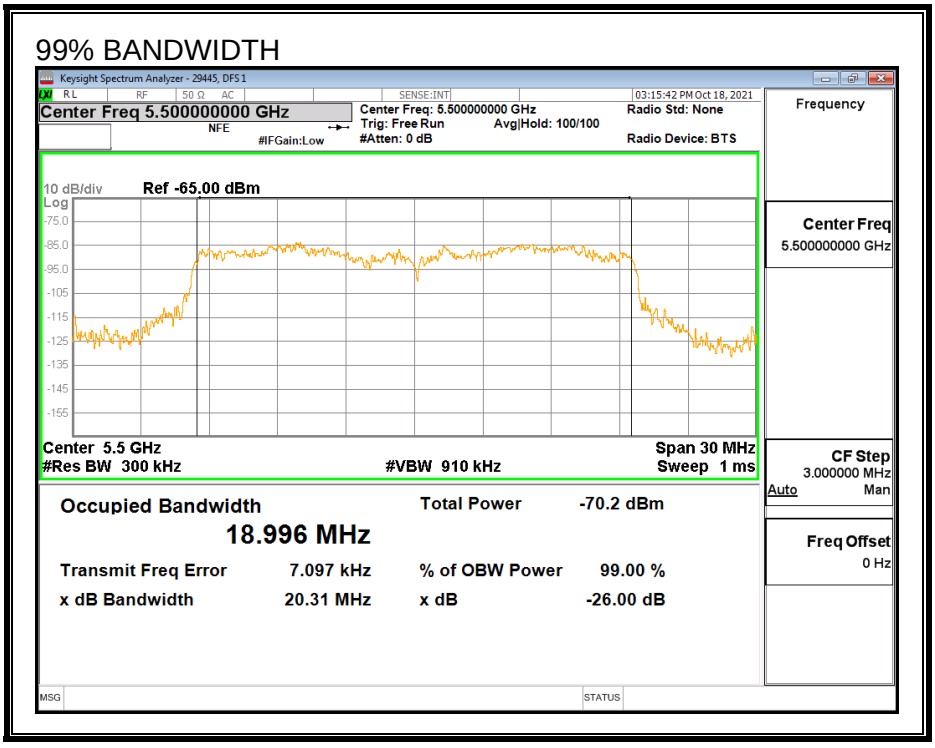
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.2.5. MOVE AND CLOSING TIME

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

7.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5510	20	18.996	105.3	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

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

7.2.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	96.67	60	Pass	5490	5510	19	DFS 1	29445	v4.1
Aggregate		98.33	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5510	19	DFS 1	29445	v4.1
FCC Hopping Type 6	42	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	5505	Yes
1002	1	598	89	A	5507	Yes
1003	1	558	95	A	5503	Yes
1004	1	578	92	A	5508	Yes
1005	1	838	63	A	5494	Yes
1006	1	638	83	A	5505	Yes
1007	1	918	58	A	5507	Yes
1008	1	738	72	A	5496	Yes
1009	1	618	86	A	5500	Yes
1010	1	898	59	A	5497	Yes
1011	1	698	76	A	5495	Yes
1012	1	518	102	A	5507	Yes
1013	1	938	57	A	5502	Yes
1014	1	858	62	A	5502	Yes
1015	1	818	65	A	5503	Yes
1016	1	1327	40	B	5502	Yes
1017	1	1348	40	B	5510	Yes
1018	1	3046	18	B	5492	Yes
1019	1	2001	27	B	5494	Yes
1020	1	2634	21	B	5504	Yes
1021	1	1719	31	B	5502	Yes
1022	1	2480	22	B	5496	Yes
1023	1	1695	32	B	5495	Yes
1024	1	1392	38	B	5496	Yes
1025	1	2089	26	B	5510	Yes
1026	1	562	94	B	5510	Yes
1027	1	2742	20	B	5506	Yes
1028	1	2698	20	B	5506	Yes
1029	1	2460	22	B	5507	Yes
1030	1	2545	21	B	5497	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	2.2	225	29	5498	Yes
2002	1.5	165	26	5502	Yes
2003	1.3	181	27	5509	Yes
2004	4.9	168	24	5508	Yes
2005	2.9	188	25	5492	Yes
2006	2.6	179	29	5501	Yes
2007	3.1	165	28	5504	Yes
2008	3	204	29	5492	Yes
2009	3.6	193	24	5498	Yes
2010	1.8	193	23	5492	Yes
2011	2.7	230	29	5505	Yes
2012	3.3	196	24	5492	Yes
2013	4.3	156	28	5500	Yes
2014	1	207	27	5498	Yes
2015	4.5	214	23	5496	Yes
2016	1.4	150	23	5498	Yes
2017	5	199	27	5509	Yes
2018	4.3	183	23	5490	Yes
2019	4.1	155	25	5506	Yes
2020	3.6	224	28	5509	Yes
2021	1.7	162	23	5496	Yes
2022	3.5	197	27	5500	Yes
2023	1.8	220	26	5490	Yes
2024	3.9	178	27	5505	Yes
2025	2.4	168	26	5494	Yes
2026	4.6	210	28	5499	Yes
2027	1.4	204	27	5502	Yes
2028	2	170	26	5494	Yes
2029	3.1	211	25	5499	Yes
2030	3.8	224	24	5498	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3

Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.2	370	18	5501	Yes
3002	9.2	423	18	5501	Yes
3003	8.8	325	18	5491	Yes
3004	8	273	18	5490	Yes
3005	7.8	438	18	5510	Yes
3006	7.3	400	17	5509	Yes
3007	9.5	342	18	5507	Yes
3008	7.2	316	18	5501	Yes
3009	9.6	389	16	5500	Yes
3010	7.6	258	17	5505	Yes
3011	6.1	477	16	5494	Yes
3012	8.3	359	17	5502	Yes
3013	7.3	340	16	5509	Yes
3014	9.8	485	16	5508	No
3015	6.8	361	16	5498	Yes
3016	7.5	402	18	5503	Yes
3017	6.9	290	17	5491	Yes
3018	7.9	344	17	5508	Yes
3019	7.5	496	17	5505	Yes
3020	6.7	445	17	5504	Yes
3021	8.7	492	17	5495	Yes
3022	8.2	320	16	5496	Yes
3023	8.2	263	17	5502	Yes
3024	10	488	17	5507	Yes
3025	8.3	309	18	5504	Yes
3026	6.3	430	16	5500	Yes
3027	8.9	398	18	5507	Yes
3028	9.2	280	16	5502	Yes
3029	6	260	18	5508	Yes
3030	8.5	406	18	5494	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	14.7	282	15	5492	Yes
4002	11.6	323	15	5508	Yes
4003	19.3	462	12	5491	Yes
4004	12.3	265	15	5504	Yes
4005	16.2	417	13	5508	Yes
4006	18.9	365	15	5506	Yes
4007	14.1	413	13	5500	Yes
4008	13	374	16	5494	Yes
4009	17.8	434	15	5502	Yes
4010	14	322	16	5492	Yes
4011	19.3	277	12	5505	Yes
4012	14.7	264	13	5506	No
4013	16.2	483	13	5503	Yes
4014	12.2	365	14	5503	Yes
4015	14.1	345	13	5503	Yes
4016	19.6	374	12	5498	Yes
4017	17.8	367	12	5496	Yes
4018	14.7	408	16	5497	Yes
4019	13.3	296	14	5494	Yes
4020	11.2	350	16	5497	Yes
4021	19.3	384	14	5498	Yes
4022	12.9	451	12	5508	Yes
4023	17.2	498	15	5507	Yes
4024	16.1	459	13	5509	Yes
4025	11.8	268	16	5492	Yes
4026	11.1	493	14	5490	Yes
4027	16.4	449	16	5501	Yes
4028	11.9	436	12	5501	Yes
4029	13.3	403	16	5507	Yes
4030	18.4	285	12	5492	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	5495	Yes
12	5499	Yes
13	5494	Yes
14	5497	Yes
15	5497	Yes
16	5499	Yes
17	5496	Yes
18	5497	Yes
19	5495	Yes
20	5498	Yes
21	5502	Yes
22	5503	Yes
23	5505	Yes
24	5502	Yes
25	5502	Yes
26	5503	Yes
27	5505	Yes
28	5502	Yes
29	5502	Yes
30	5503	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	505	5490	7	Yes
2	980	5491	5	Yes
3	1455	5492	4	Yes
4	1930	5493	6	Yes
5	2405	5494	7	Yes
6	2880	5495	6	Yes
7	3355	5496	4	Yes
8	3830	5497	4	Yes
9	4305	5498	5	Yes
10	4780	5499	4	Yes
11	5255	5500	6	Yes
12	5730	5501	4	Yes
13	6205	5502	3	Yes
14	6680	5503	6	Yes
15	7155	5504	6	Yes
16	7630	5505	4	Yes
17	8105	5506	8	Yes
18	8580	5507	3	Yes
19	9055	5508	4	Yes
20	9530	5509	4	Yes
21	10005	5510	6	Yes
22	10480	5490	3	Yes
23	10955	5491	1	Yes
24	11430	5492	7	Yes
25	11905	5493	4	Yes
26	12380	5494	6	Yes
27	12855	5495	3	Yes
28	13330	5496	4	Yes
29	13805	5497	5	Yes
30	14280	5498	1	Yes
31	14755	5499	5	Yes
32	15230	5500	3	Yes
33	15705	5501	5	Yes
34	16180	5502	5	Yes
35	16655	5503	3	Yes
36	17130	5504	3	Yes
37	17605	5505	5	Yes
38	18080	5506	7	Yes
39	18555	5507	5	Yes
40	19030	5508	4	Yes
41	19505	5509	1	Yes
42	19980	5510	3	Yes

7.3. RESULTS FOR 40 MHz BANDWIDTH

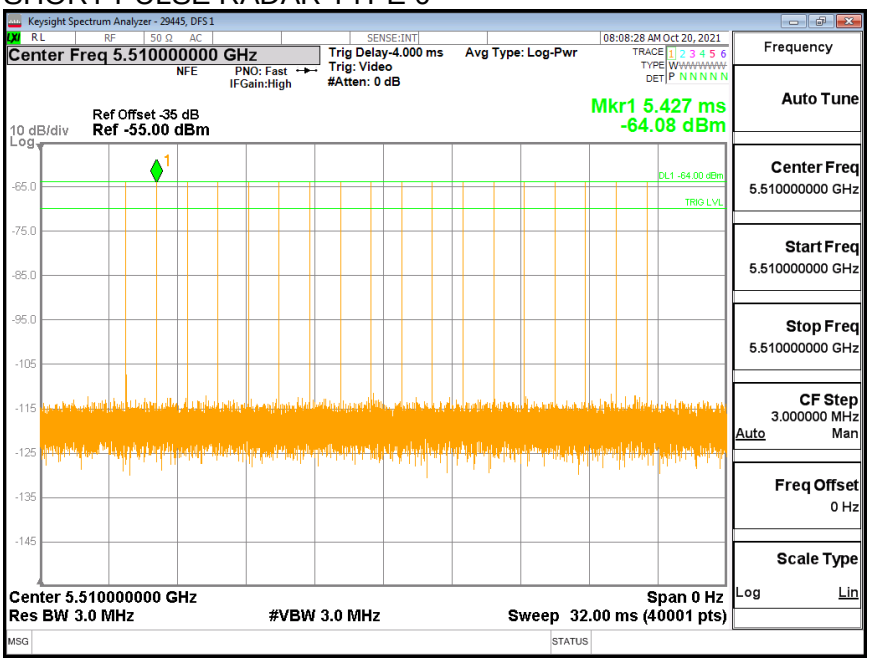
7.3.1. TEST CHANNEL

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

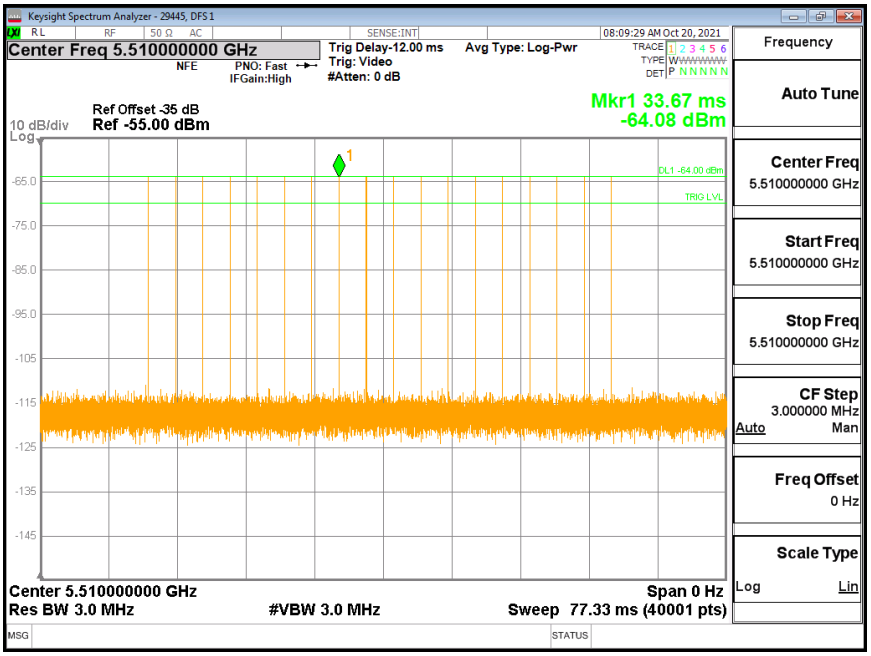
7.3.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

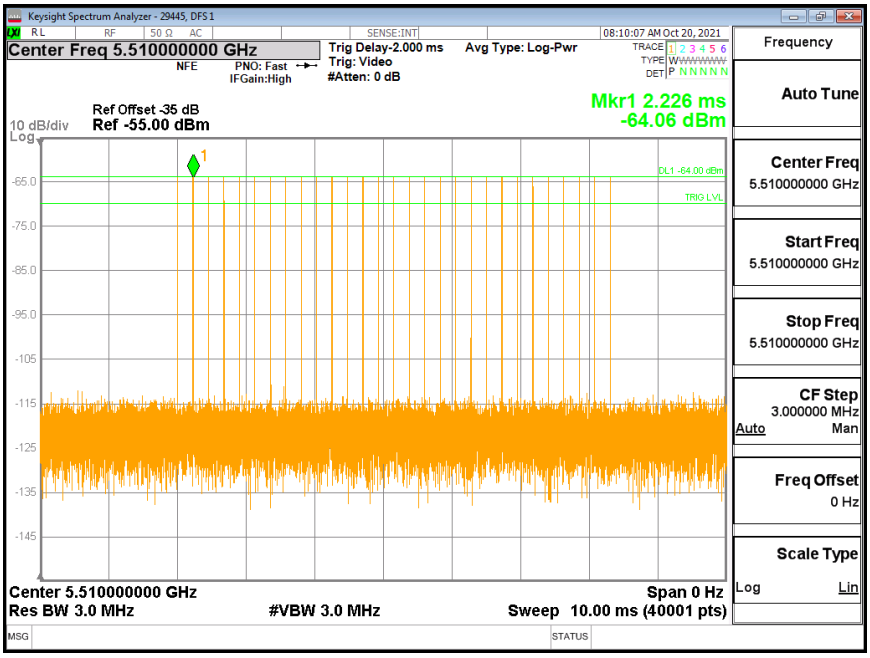
SHORT PULSE RADAR TYPE 0



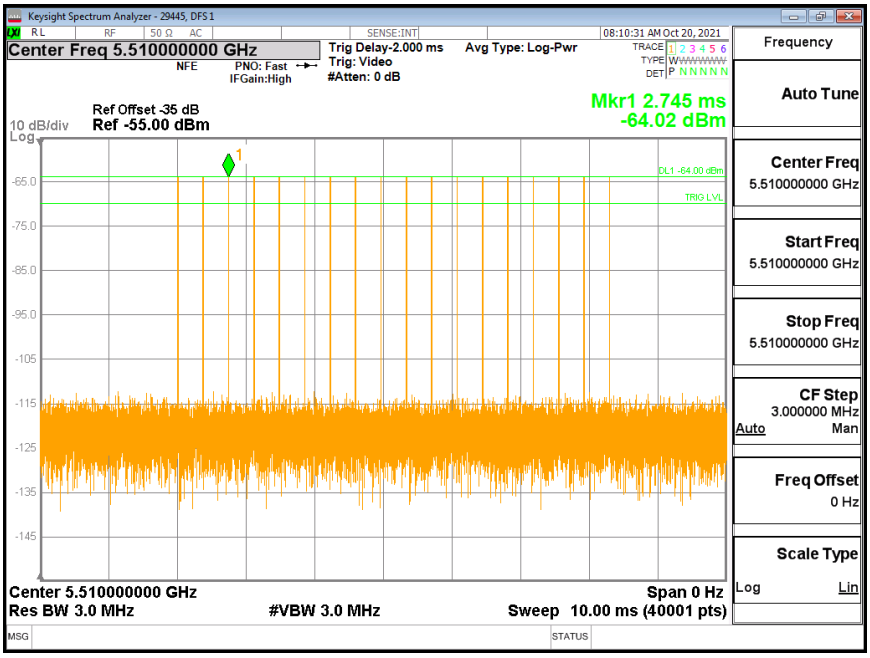
SAMPLE OF RADAR TYPE 1



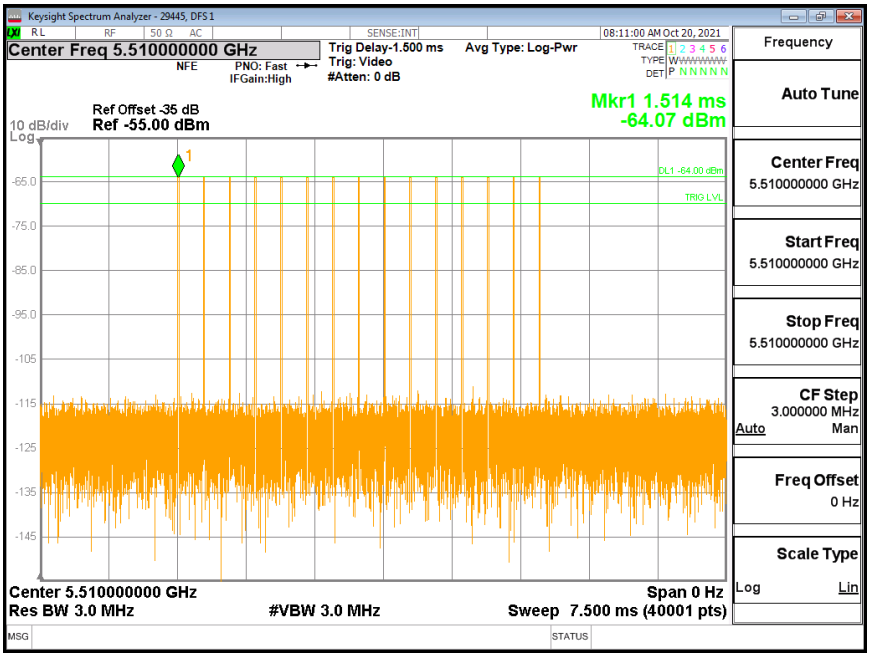
SAMPLE OF RADAR TYPE 2



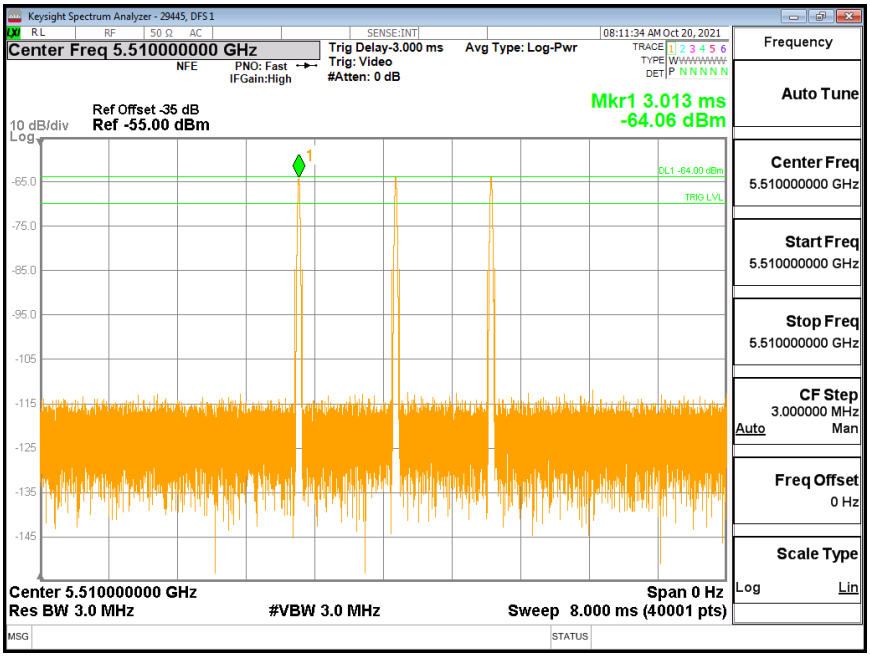
SAMPLE OF RADAR TYPE 3



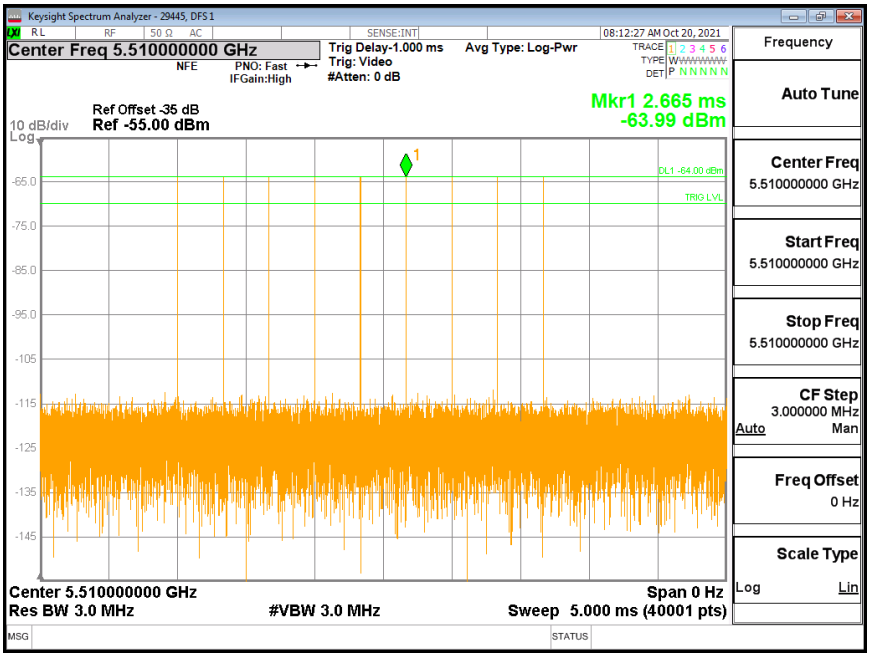
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

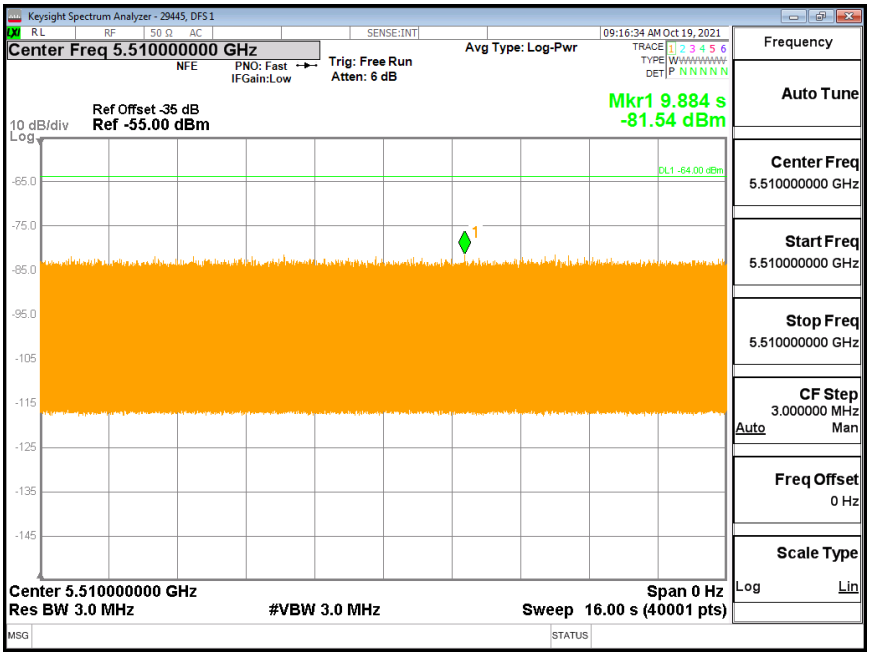


SINGLE BURST OF RADAR TYPE 6

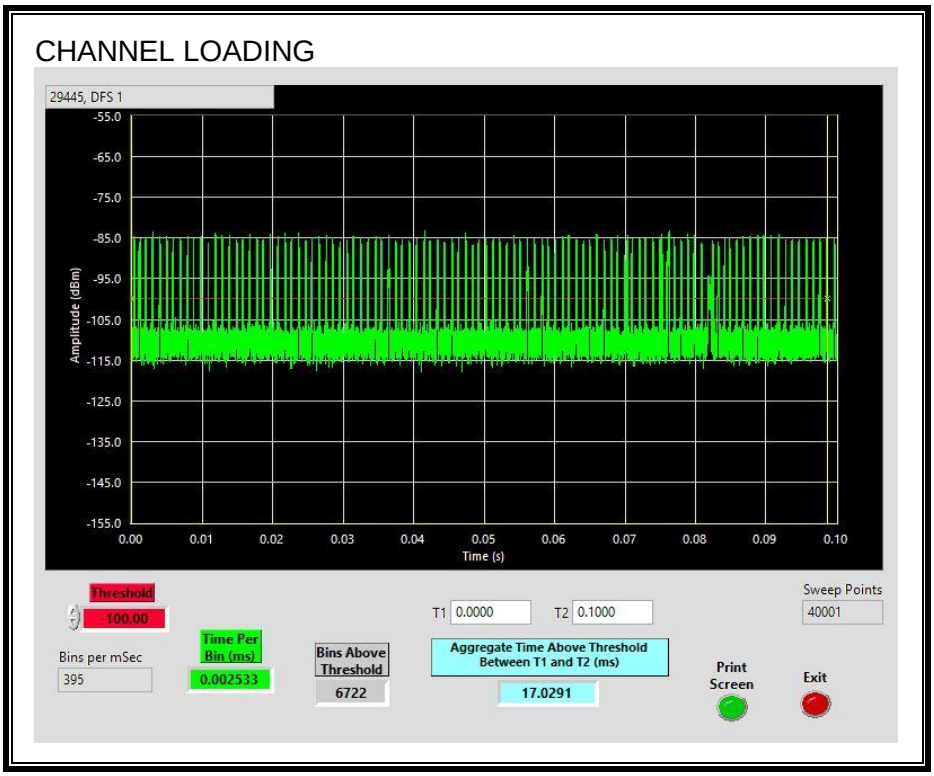


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.029%

7.3.3. CHANNEL AVAILABILITY CHECK TIME

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

7.3.4. OVERLAPPING CHANNEL TESTS

RESULTS

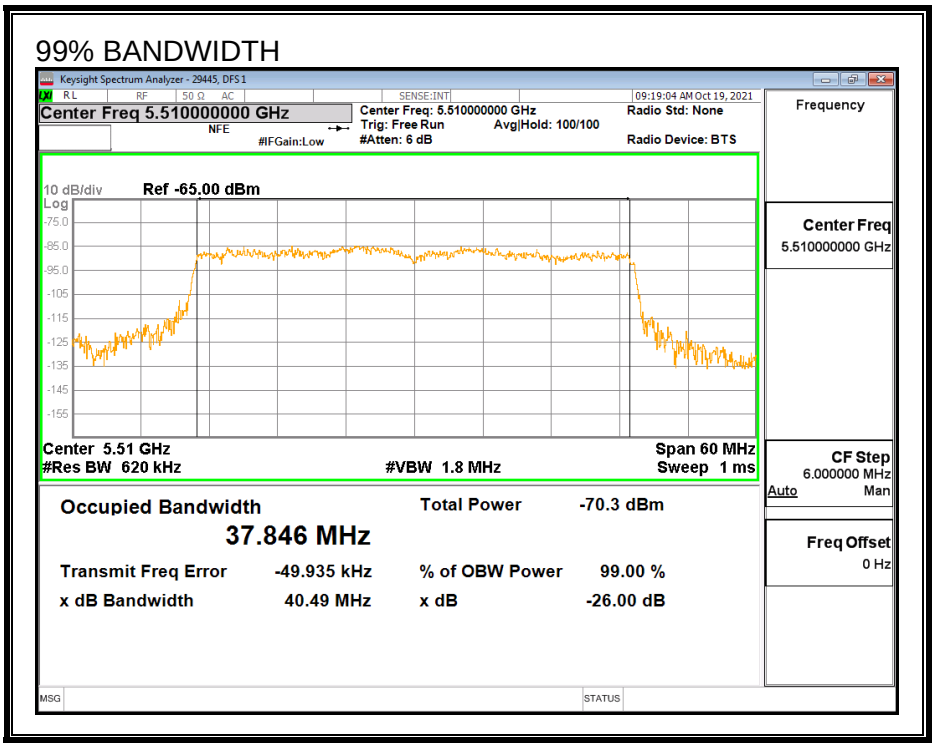
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

7.3.5. MOVE AND CLOSING TIME

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

7.3.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5530	40	37.846	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	10	100	
5515	10	10	100	
5520	10	10	100	
5525	10	10	100	
5530	10	10	100	FH

7.3.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5530	37.84	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5530	37.84	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5530	37.84	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5530	37.84	DFS 1	29445	v4.1
Aggregate		99.17	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5530	37.84	DFS 1	29445	v4.1
FCC Hopping Type 6	41	100.00	70	Pass	5490	5530		DFS 1	29445	v4.1

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5507	Yes
1002	1	598	89	A	5521	Yes
1003	1	558	95	A	5492	Yes
1004	1	578	92	A	5514	Yes
1005	1	838	63	A	5497	Yes
1006	1	638	83	A	5521	Yes
1007	1	918	58	A	5501	Yes
1008	1	738	72	A	5513	Yes
1009	1	618	86	A	5509	Yes
1010	1	898	59	A	5522	Yes
1011	1	698	76	A	5504	Yes
1012	1	518	102	A	5500	Yes
1013	1	938	57	A	5518	Yes
1014	1	858	62	A	5520	Yes
1015	1	818	65	A	5517	Yes
1016	1	1327	40	B	5520	Yes
1017	1	1348	40	B	5519	Yes
1018	1	3046	18	B	5494	Yes
1019	1	2001	27	B	5523	Yes
1020	1	2634	21	B	5508	Yes
1021	1	1719	31	B	5506	Yes
1022	1	2480	22	B	5515	Yes
1023	1	1695	32	B	5493	Yes
1024	1	1392	38	B	5498	Yes
1025	1	2089	26	B	5522	Yes
1026	1	562	94	B	5494	Yes
1027	1	2742	20	B	5513	Yes
1028	1	2698	20	B	5524	Yes
1029	1	2460	22	B	5492	Yes
1030	1	2545	21	B	5499	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	2.2	225	29	5494	Yes
2002	1.5	165	26	5523	Yes
2003	1.3	181	27	5519	Yes
2004	4.9	168	24	5524	Yes
2005	2.9	188	25	5499	Yes
2006	2.6	179	29	5503	Yes
2007	3.1	165	28	5506	Yes
2008	3	204	29	5518	Yes
2009	3.6	193	24	5494	Yes
2010	1.8	193	23	5498	Yes
2011	2.7	230	29	5497	Yes
2012	3.3	196	24	5492	Yes
2013	4.3	156	28	5508	Yes
2014	1	207	27	5515	Yes
2015	4.5	214	23	5512	Yes
2016	1.4	150	23	5513	Yes
2017	5	199	27	5523	Yes
2018	4.3	183	23	5527	Yes
2019	4.1	155	25	5500	Yes
2020	3.6	224	28	5503	Yes
2021	1.7	162	23	5514	Yes
2022	3.5	197	27	5513	Yes
2023	1.8	220	26	5510	Yes
2024	3.9	178	27	5503	Yes
2025	2.4	168	26	5528	Yes
2026	4.6	210	28	5510	Yes
2027	1.4	204	27	5497	Yes
2028	2	170	26	5529	Yes
2029	3.1	211	25	5513	Yes
2030	3.8	224	24	5527	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.2	370	18	5499	Yes
3002	9.2	423	18	5530	Yes
3003	8.8	325	18	5508	Yes
3004	8	273	18	5498	Yes
3005	7.8	438	18	5512	Yes
3006	7.3	400	17	5505	Yes
3007	9.5	342	18	5516	Yes
3008	7.2	316	18	5522	Yes
3009	9.6	389	16	5528	Yes
3010	7.6	258	17	5497	Yes
3011	6.1	477	16	5523	Yes
3012	8.3	359	17	5500	No
3013	7.3	340	16	5502	Yes
3014	9.8	485	16	5513	Yes
3015	6.8	361	16	5493	Yes
3016	7.5	402	18	5497	Yes
3017	6.9	290	17	5499	Yes
3018	7.9	344	17	5499	Yes
3019	7.5	496	17	5492	Yes
3020	6.7	445	17	5506	Yes
3021	8.7	492	17	5512	Yes
3022	8.2	320	16	5491	Yes
3023	8.2	263	17	5507	Yes
3024	10	488	17	5492	Yes
3025	8.3	309	18	5506	Yes
3026	6.3	430	16	5519	Yes
3027	8.9	398	18	5509	Yes
3028	9.2	280	16	5497	Yes
3029	6	260	18	5492	Yes
3030	8.5	406	18	5509	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	14.7	282	15	5505	Yes
4002	11.6	323	15	5500	Yes
4003	19.3	462	12	5504	Yes
4004	12.3	265	15	5529	Yes
4005	16.2	417	13	5529	Yes
4006	18.9	365	15	5518	Yes
4007	14.1	413	13	5521	Yes
4008	13	374	16	5491	Yes
4009	17.8	434	15	5504	Yes
4010	14	322	16	5521	Yes
4011	19.3	277	12	5507	Yes
4012	14.7	264	13	5514	Yes
4013	16.2	483	13	5496	Yes
4014	12.2	365	14	5500	Yes
4015	14.1	345	13	5493	Yes
4016	19.6	374	12	5491	Yes
4017	17.8	367	12	5501	Yes
4018	14.7	408	16	5508	Yes
4019	13.3	296	14	5495	Yes
4020	11.2	350	16	5513	Yes
4021	19.3	384	14	5519	Yes
4022	12.9	451	12	5493	Yes
4023	17.2	498	15	5502	Yes
4024	16.1	459	13	5517	Yes
4025	11.8	268	16	5524	Yes
4026	11.1	493	14	5519	Yes
4027	16.4	449	16	5526	Yes
4028	11.9	436	12	5490	Yes
4029	13.3	403	16	5507	Yes
4030	18.4	285	12	5497	No

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	5496	Yes
12	5499	Yes
13	5495	Yes
14	5498	Yes
15	5497	Yes
16	5499	Yes
17	5497	Yes
18	5497	Yes
19	5495	Yes
20	5499	Yes
21	5522	Yes
22	5523	Yes
23	5525	Yes
24	5521	Yes
25	5522	Yes
26	5523	Yes
27	5525	Yes
28	5521	Yes
29	5522	Yes
30	5523	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	633	5490	6	Yes
2	1108	5491	12	Yes
3	1583	5492	9	Yes
4	2058	5493	6	Yes
5	2533	5494	7	Yes
6	3008	5495	9	Yes
7	3483	5496	8	Yes
8	3958	5497	8	Yes
9	4433	5498	7	Yes
10	4908	5499	10	Yes
11	5383	5500	10	Yes
12	5858	5501	11	Yes
13	6333	5502	9	Yes
14	6808	5503	5	Yes
15	7283	5504	8	Yes
16	7758	5505	10	Yes
17	8233	5506	10	Yes
18	8708	5507	10	Yes
19	9183	5508	9	Yes
20	9658	5509	10	Yes
21	10133	5510	9	Yes
22	10608	5511	6	Yes
23	11083	5512	5	Yes
24	11558	5513	9	Yes
25	12033	5514	10	Yes
26	12508	5515	7	Yes
27	12983	5516	8	Yes
28	13458	5517	13	Yes
29	13933	5518	9	Yes
30	14408	5519	3	Yes
31	14883	5520	10	Yes
32	15358	5521	12	Yes
33	15833	5522	10	Yes
34	16308	5523	6	Yes
35	16783	5524	6	Yes
36	17258	5525	5	Yes
37	17733	5526	5	Yes
38	18208	5527	9	Yes
39	18683	5528	13	Yes
40	19158	5529	10	Yes
41	19633	5530	11	Yes

7.4. RESULTS FOR 80 MHz BANDWIDTH

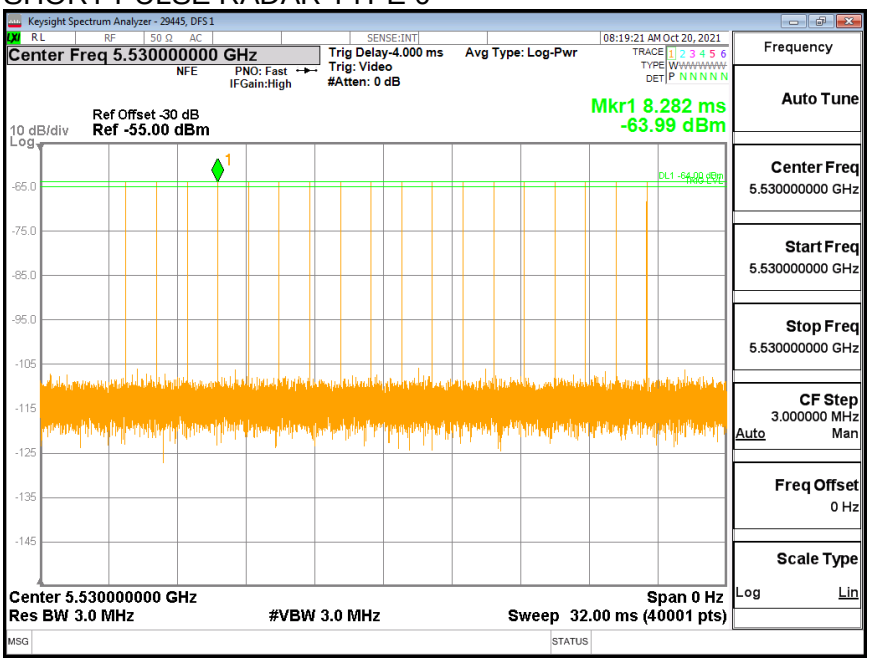
7.4.1. TEST CHANNEL

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

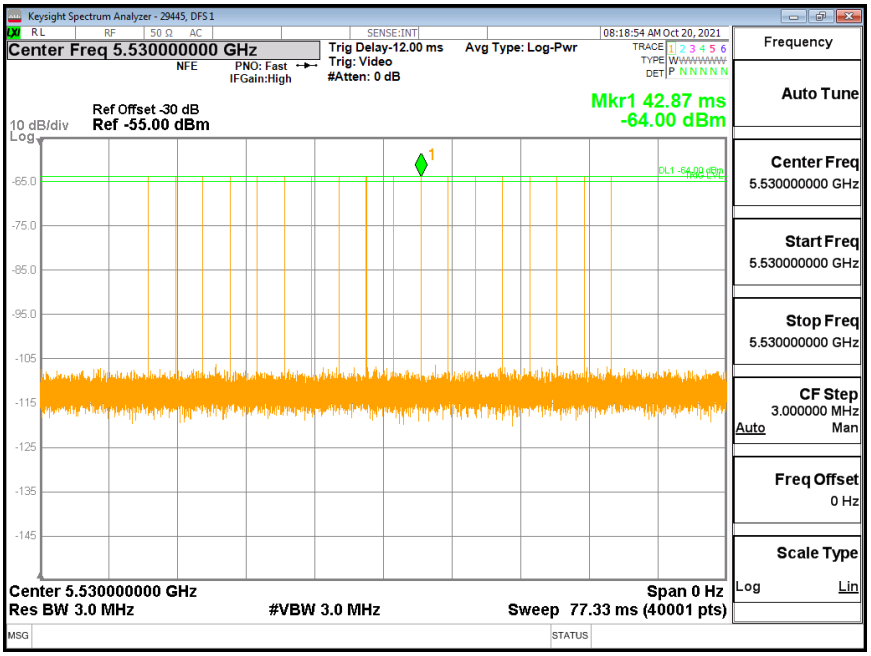
7.4.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

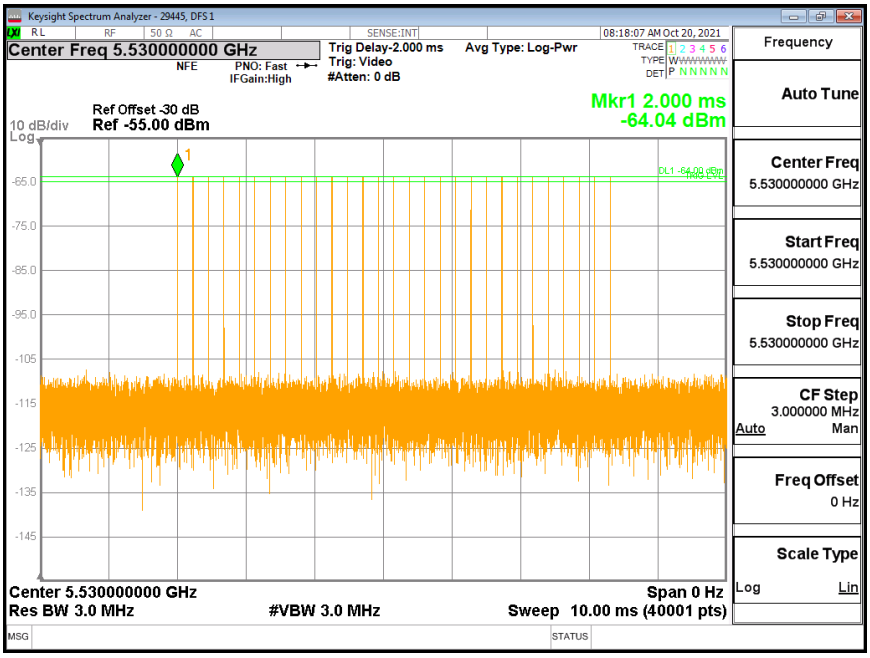
SHORT PULSE RADAR TYPE 0



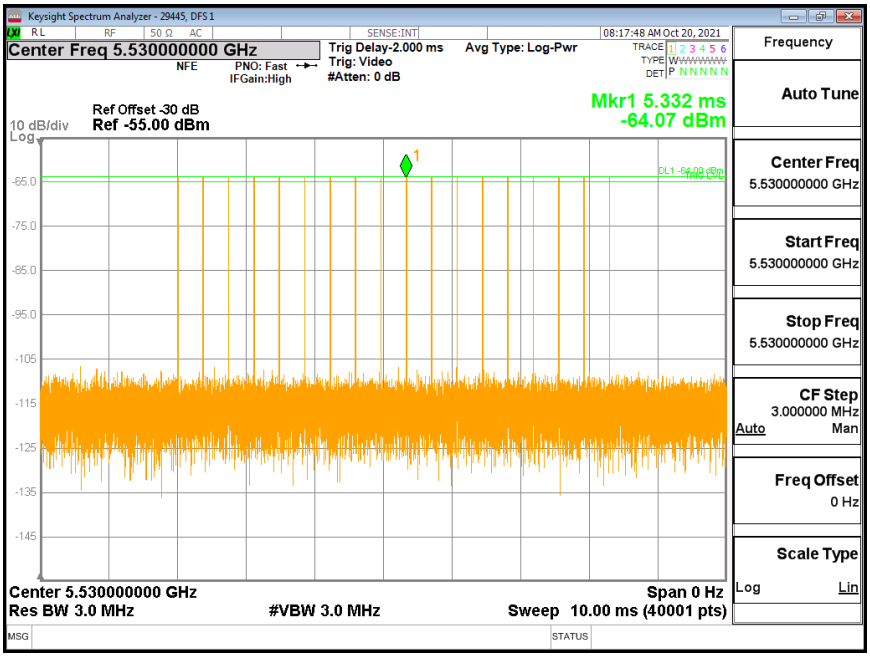
SAMPLE OF RADAR TYPE 1



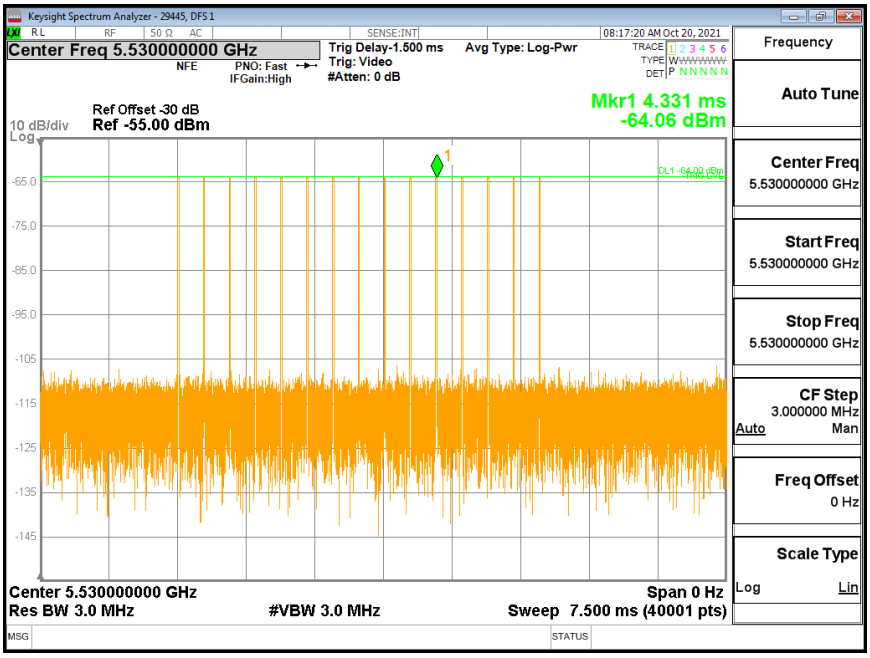
SAMPLE OF RADAR TYPE 2



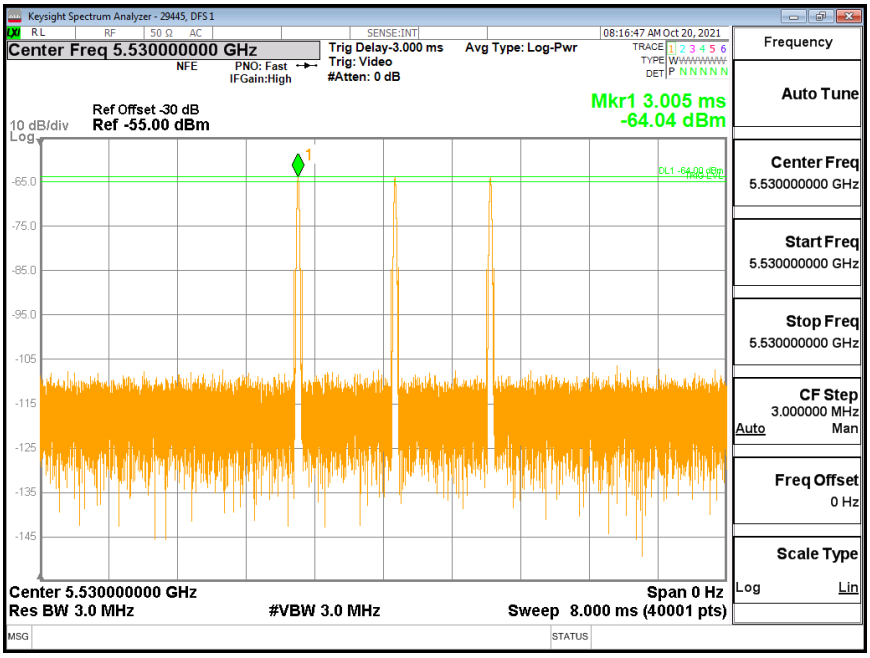
SAMPLE OF RADAR TYPE 3



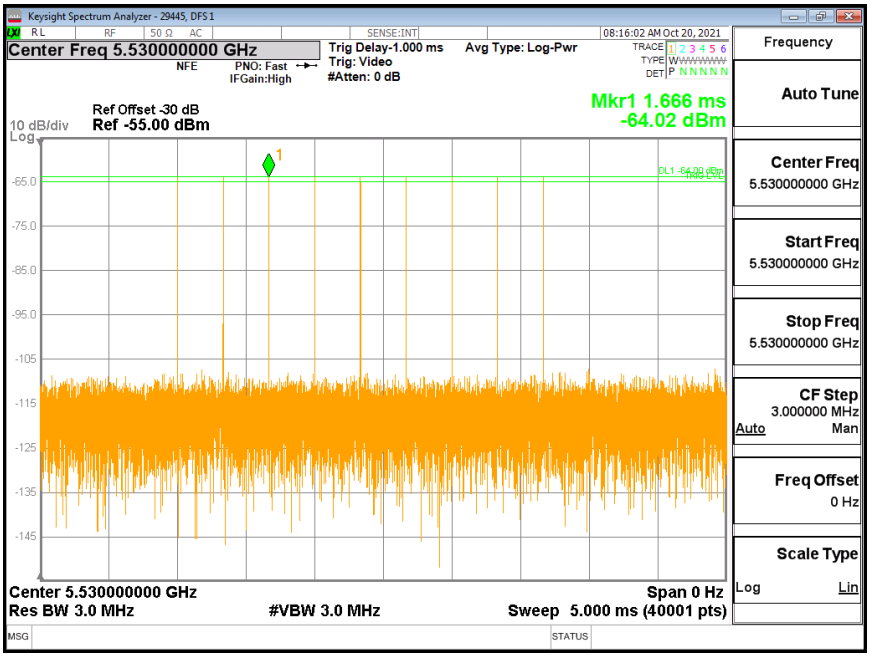
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

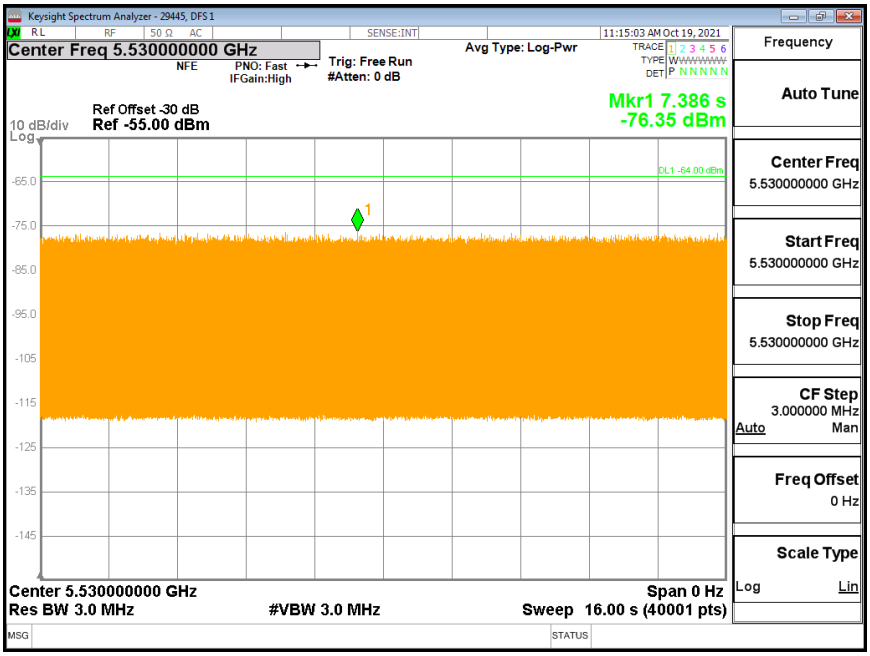


SINGLE BURST OF RADAR TYPE 6

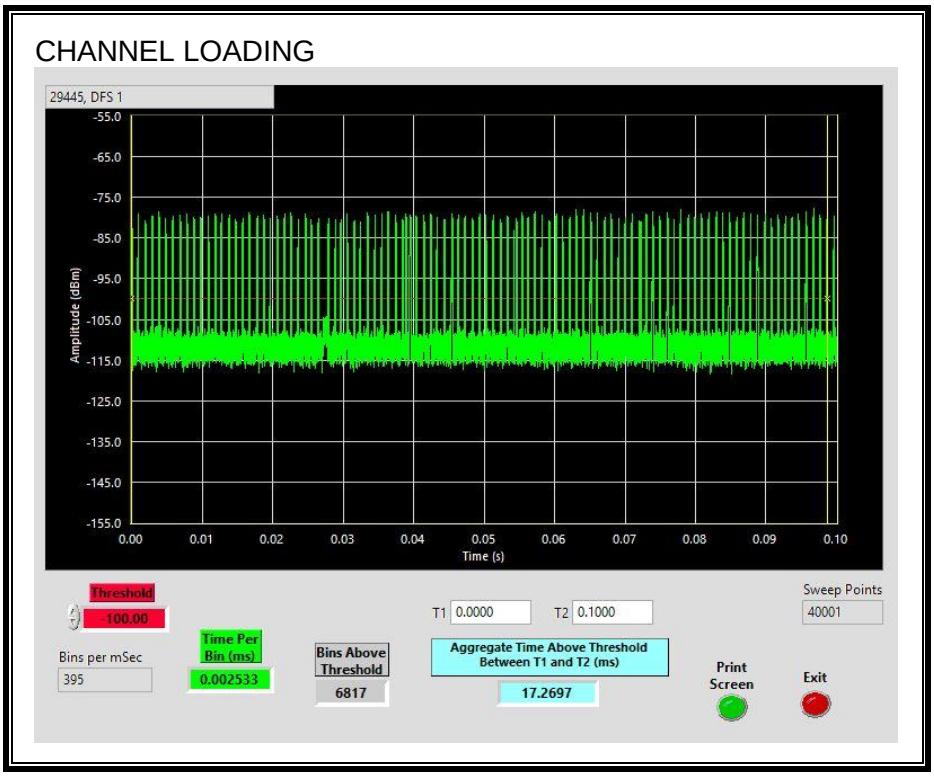


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.26%

7.4.3. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

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

PROCEDURE FOR TIMING OF RADAR BURST

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

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

QUANTITATIVE RESULTS

No Radar Triggered

Timing of Reboot (sec)	Timing of Start of Traffic (sec)	Total Power-up Cycle Time (sec)	Initial Power-up Cycle Time (sec)
29.97	220.4	190.4	130.4

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)
30.45	166.2	135.8	5.3

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
30.54	216.5	186.0	55.5

QUALITATIVE RESULTS

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

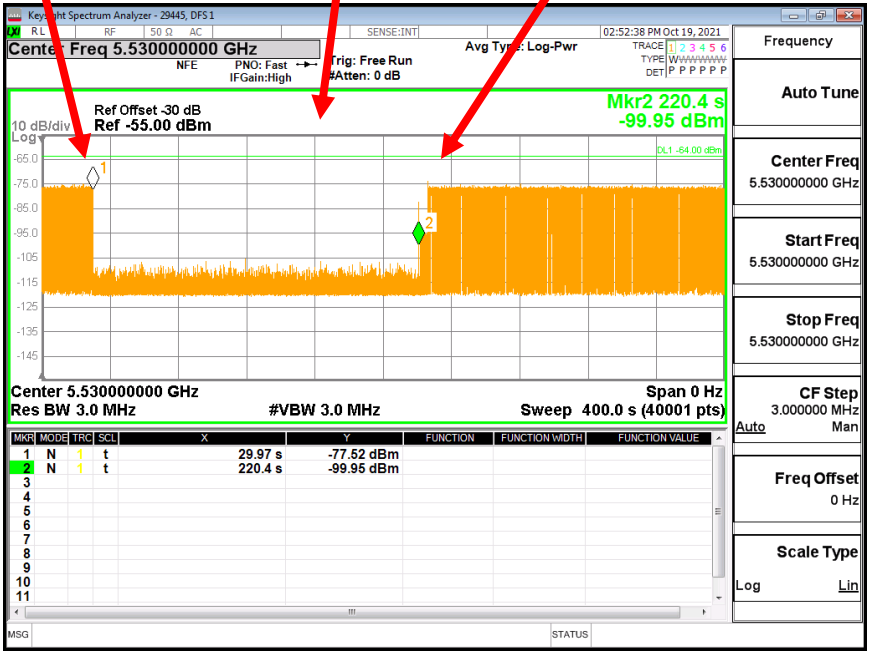
TIMING WITHOUT RADAR DURING CAC

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

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated

TIMING WITHOUT RADAR – NORMAL POWER-ON CYCLE



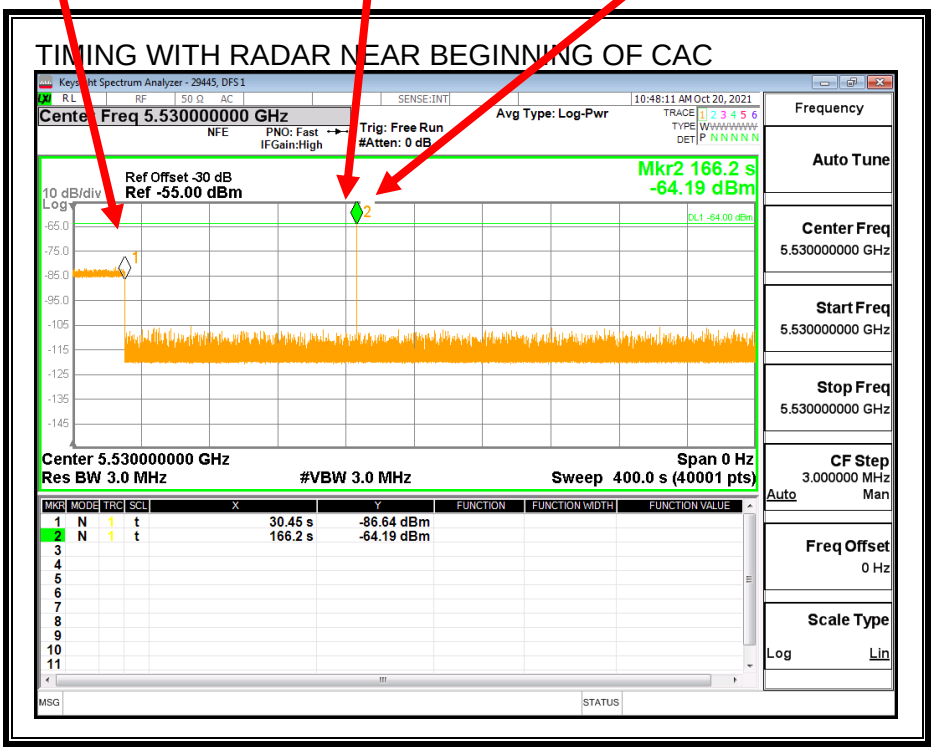
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

TIMING WITH RADAR NEAR BEGINNING OF CAC

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

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



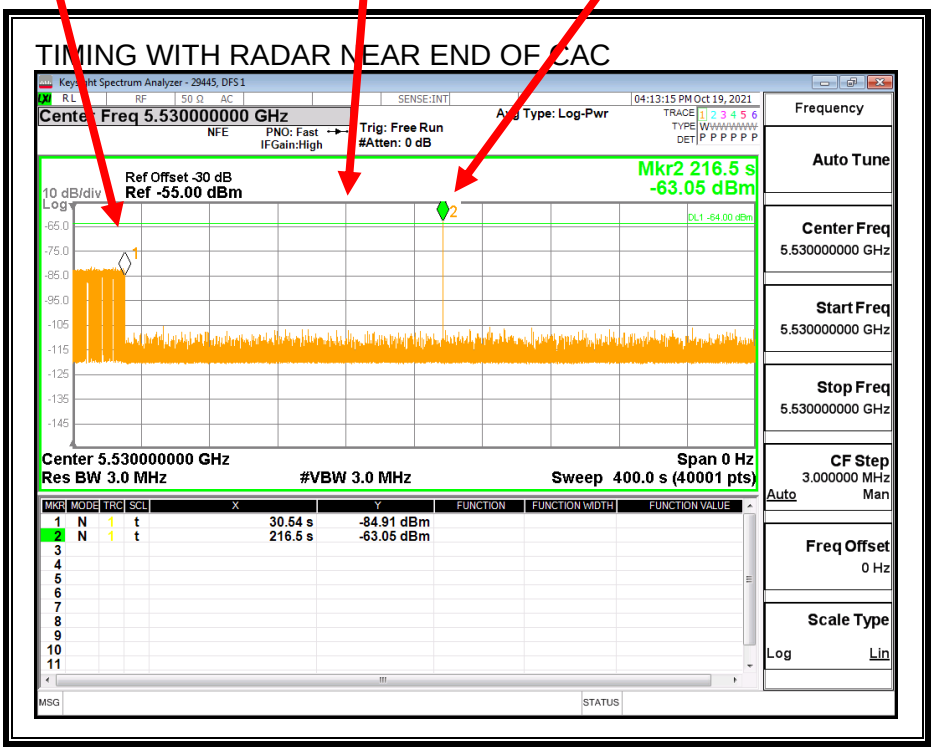
No EUT transmissions were observed after the radar signal.

TIMING WITH RADAR NEAR END OF CAC

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

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

7.4.4. OVERLAPPING CHANNEL TESTS

RESULTS

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

7.4.5. MOVE AND CLOSING TIME

REPORTING NOTES

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

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

The aggregate channel closing transmission time is calculated as follows:

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

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

RESULTS

Channel Move Time (sec)	Limit (sec)
0	10

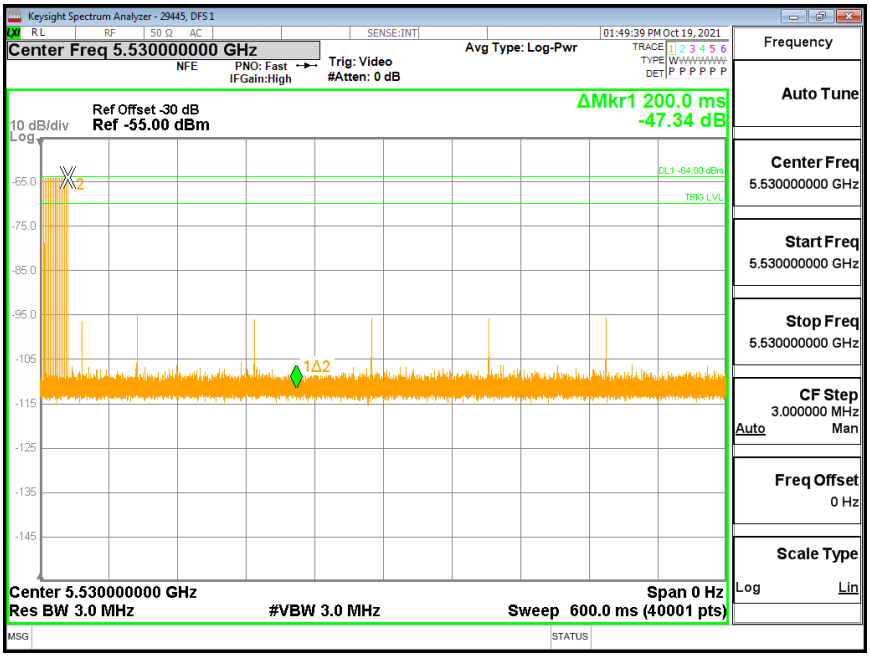
Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0	60

MOVE TIME

MOVE TIME

CHANNEL CLOSING TIME

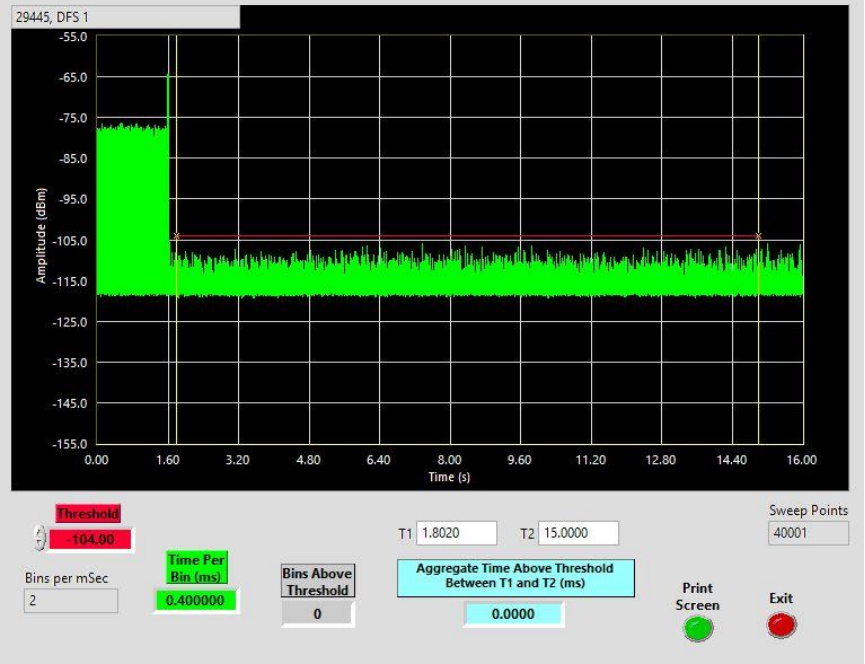
CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

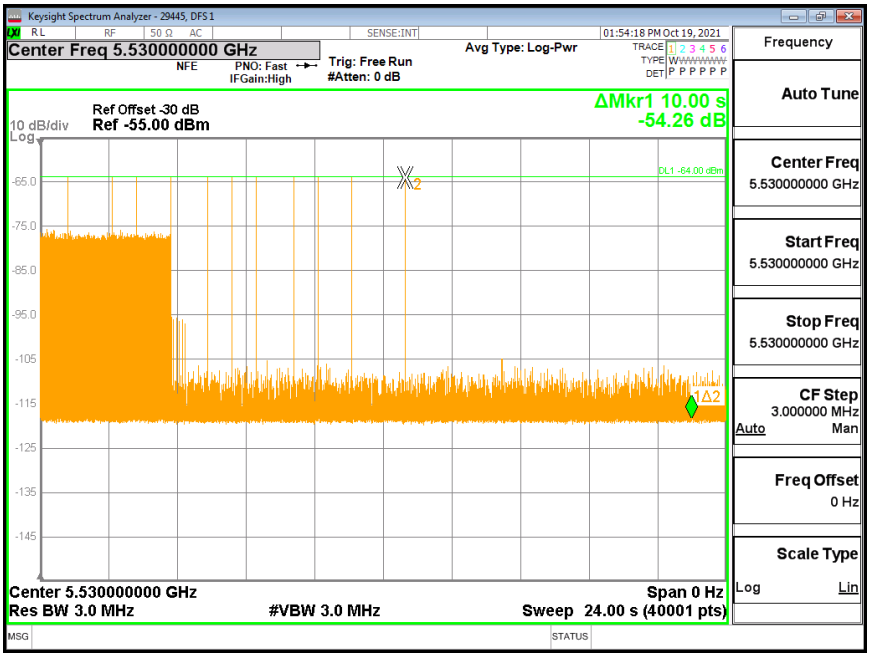
AGGREGATE CLOSING TIME



LONG PULSE CHANNEL MOVE TIME

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

MOVE TIME FOR LONG PULSE RADAR

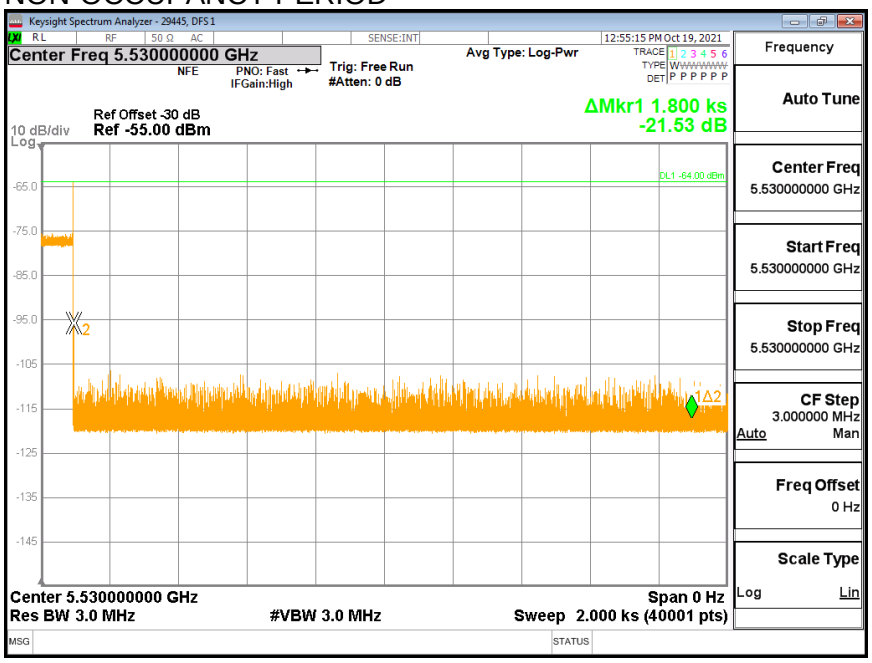


7.4.6. NON-OCCUPANCY PERIOD

RESULTS

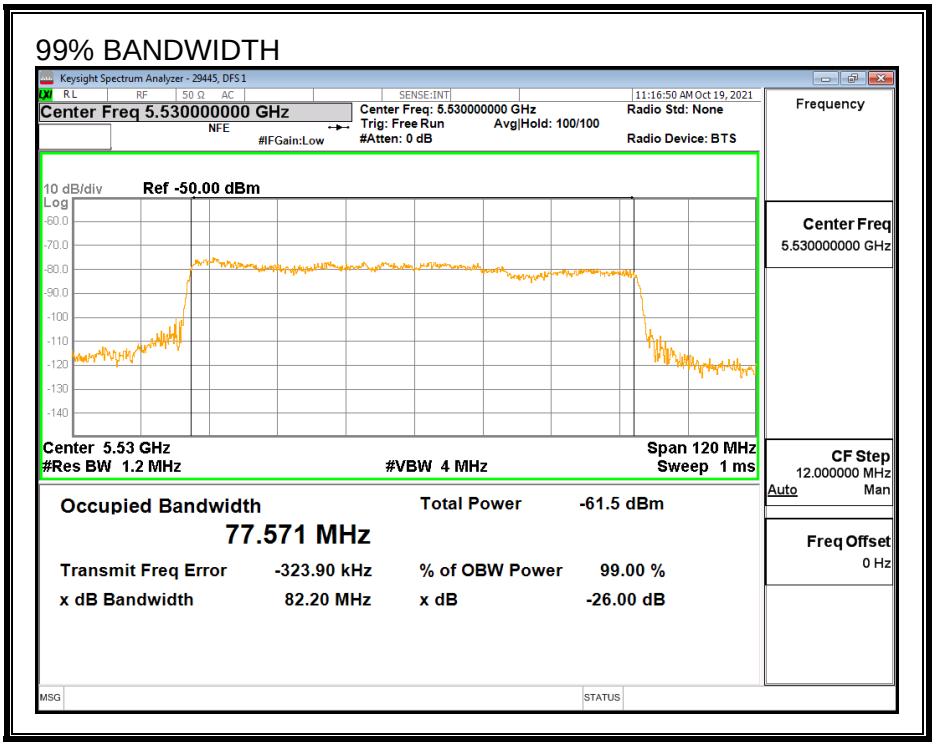
No EUT transmissions were observed on the test channel during the 30-minute observation time.

NON-OCCUPANCY PERIOD



7.4.7. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

F_L (MHz)	F_H (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5570	80	77.571	103.1	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	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

7.4.8. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	96.67	60	Pass	5490	5570	77.57	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	96.67	60	Pass	5490	5570	77.57	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	93.33	60	Pass	5490	5570	77.57	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	90.00	60	Pass	5490	5570	77.57	DFS 1	29445	v4.1
Aggregate		94.17	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5570	77.57	DFS 1	29445	v4.1
FCC Hopping Type 6	81	100.00	70	Pass	5490	5570		DFS 1	29445	v4.1

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5569	Yes
1002	1	598	89	A	5545	Yes
1003	1	558	95	A	5496	Yes
1004	1	578	92	A	5527	Yes
1005	1	838	63	A	5528	Yes
1006	1	638	83	A	5515	Yes
1007	1	918	58	A	5499	Yes
1008	1	738	72	A	5506	Yes
1009	1	618	86	A	5554	Yes
1010	1	898	59	A	5538	Yes
1011	1	698	76	A	5521	Yes
1012	1	518	102	A	5512	Yes
1013	1	938	57	A	5523	No
1014	1	858	62	A	5526	Yes
1015	1	818	65	A	5532	Yes
1016	1	1327	40	B	5560	Yes
1017	1	1348	40	B	5491	Yes
1018	1	3046	18	B	5555	Yes
1019	1	2001	27	B	5525	Yes
1020	1	2634	21	B	5549	Yes
1021	1	1719	31	B	5492	Yes
1022	1	2480	22	B	5499	Yes
1023	1	1695	32	B	5522	Yes
1024	1	1392	38	B	5501	Yes
1025	1	2089	26	B	5536	Yes
1026	1	562	94	B	5525	Yes
1027	1	2742	20	B	5520	Yes
1028	1	2698	20	B	5561	Yes
1029	1	2460	22	B	5493	Yes
1030	1	2545	21	B	5535	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	2.2	225	29	5491	Yes
2002	1.5	165	26	5535	Yes
2003	1.3	181	27	5551	Yes
2004	4.9	168	24	5525	No
2005	2.9	188	25	5495	Yes
2006	2.6	179	29	5563	Yes
2007	3.1	165	28	5563	Yes
2008	3	204	29	5516	Yes
2009	3.6	193	24	5498	Yes
2010	1.8	193	23	5515	Yes
2011	2.7	230	29	5522	Yes
2012	3.3	196	24	5527	Yes
2013	4.3	156	28	5566	Yes
2014	1	207	27	5523	Yes
2015	4.5	214	23	5540	Yes
2016	1.4	150	23	5527	Yes
2017	5	199	27	5561	Yes
2018	4.3	183	23	5562	Yes
2019	4.1	155	25	5520	Yes
2020	3.6	224	28	5546	Yes
2021	1.7	162	23	5494	Yes
2022	3.5	197	27	5568	Yes
2023	1.8	220	26	5497	Yes
2024	3.9	178	27	5512	Yes
2025	2.4	168	26	5568	Yes
2026	4.6	210	28	5565	Yes
2027	1.4	204	27	5503	Yes
2028	2	170	26	5538	Yes
2029	3.1	211	25	5504	Yes
2030	3.8	224	24	5506	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.2	370	18	5503	Yes
3002	9.2	423	18	5530	Yes
3003	8.8	325	18	5542	Yes
3004	8	273	18	5505	Yes
3005	7.8	438	18	5557	Yes
3006	7.3	400	17	5524	Yes
3007	9.5	342	18	5519	Yes
3008	7.2	316	18	5545	Yes
3009	9.6	389	16	5499	Yes
3010	7.6	258	17	5538	No
3011	6.1	477	16	5517	Yes
3012	8.3	359	17	5563	Yes
3013	7.3	340	16	5567	Yes
3014	9.8	485	16	5547	Yes
3015	6.8	361	16	5510	Yes
3016	7.5	402	18	5522	Yes
3017	6.9	290	17	5553	Yes
3018	7.9	344	17	5504	Yes
3019	7.5	496	17	5497	No
3020	6.7	445	17	5563	Yes
3021	8.7	492	17	5559	Yes
3022	8.2	320	16	5557	Yes
3023	8.2	263	17	5549	Yes
3024	10	488	17	5548	Yes
3025	8.3	309	18	5560	Yes
3026	6.3	430	16	5531	Yes
3027	8.9	398	18	5498	Yes
3028	9.2	280	16	5499	Yes
3029	6	260	18	5502	Yes
3030	8.5	406	18	5529	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	14.7	282	15	5527	Yes
4002	11.6	323	15	5569	Yes
4003	19.3	462	12	5523	Yes
4004	12.3	265	15	5545	Yes
4005	16.2	417	13	5554	Yes
4006	18.9	365	15	5497	Yes
4007	14.1	413	13	5499	Yes
4008	13	374	16	5529	Yes
4009	17.8	434	15	5568	Yes
4010	14	322	16	5496	Yes
4011	19.3	277	12	5545	Yes
4012	14.7	264	13	5541	Yes
4013	16.2	483	13	5520	Yes
4014	12.2	365	14	5495	Yes
4015	14.1	345	13	5499	Yes
4016	19.6	374	12	5534	Yes
4017	17.8	367	12	5510	Yes
4018	14.7	408	16	5562	Yes
4019	13.3	296	14	5518	Yes
4020	11.2	350	16	5547	Yes
4021	19.3	384	14	5538	Yes
4022	12.9	451	12	5510	No
4023	17.2	498	15	5506	No
4024	16.1	459	13	5555	Yes
4025	11.8	268	16	5548	Yes
4026	11.1	493	14	5526	Yes
4027	16.4	449	16	5543	Yes
4028	11.9	436	12	5530	Yes
4029	13.3	403	16	5507	Yes
4030	18.4	285	12	5527	No

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5530	Yes
2	5530	Yes
3	5530	Yes
4	5530	Yes
5	5530	Yes
6	5530	Yes
7	5530	Yes
8	5530	Yes
9	5530	Yes
10	5530	Yes
11	5496	Yes
12	5499	Yes
13	5495	Yes
14	5498	Yes
15	5497	Yes
16	5499	Yes
17	5497	Yes
18	5497	Yes
19	5495	Yes
20	5499	Yes
21	5562	Yes
22	5563	Yes
23	5565	Yes
24	5561	Yes
25	5562	Yes
26	5563	Yes
27	5565	Yes
28	5561	Yes
29	5562	Yes
30	5563	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	788	5490	12	Yes
2	1263	5491	16	Yes
3	1738	5492	19	Yes
4	2213	5493	21	Yes
5	2688	5494	17	Yes
6	3163	5495	14	Yes
7	3638	5496	13	Yes
8	4113	5497	10	Yes
9	4588	5498	18	Yes
10	5063	5499	9	Yes
11	5538	5500	9	Yes
12	6013	5501	15	Yes
13	6488	5502	13	Yes
14	6963	5503	18	Yes
15	7438	5504	19	Yes
16	7913	5505	19	Yes
17	8388	5506	18	Yes
18	8863	5507	15	Yes
19	9338	5508	22	Yes
20	9813	5509	16	Yes
21	10288	5510	20	Yes
22	10763	5511	20	Yes
23	11238	5512	17	Yes
24	11713	5513	21	Yes
25	12188	5514	12	Yes
26	12663	5515	16	Yes
27	13138	5516	24	Yes
28	13613	5517	15	Yes
29	14088	5518	14	Yes
30	14563	5519	19	Yes
31	15038	5520	13	Yes
32	15513	5521	16	Yes
33	15988	5522	15	Yes
34	16463	5523	18	Yes
35	16938	5524	16	Yes
36	17413	5525	11	Yes
37	17888	5526	11	Yes
38	18363	5527	14	Yes
39	18838	5528	16	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	19313	5529	19	Yes
41	19788	5530	21	Yes
42	20263	5531	20	Yes
43	20738	5532	19	Yes
44	21213	5533	11	Yes
45	21688	5534	25	Yes
46	22163	5535	20	Yes
47	22638	5536	16	Yes
48	23113	5537	18	Yes
49	23588	5538	15	Yes
50	24063	5539	13	Yes
51	24538	5540	11	Yes
52	25013	5541	11	Yes
53	25488	5542	14	Yes
54	25963	5543	16	Yes
55	26438	5544	14	Yes
56	26913	5545	15	Yes
57	27388	5546	18	Yes
58	27863	5547	23	Yes
59	28338	5548	17	Yes
60	28813	5549	20	Yes
61	29288	5550	20	Yes
62	29763	5551	18	Yes
63	30238	5552	12	Yes
64	30713	5553	17	Yes
65	31188	5554	13	Yes
66	31663	5555	19	Yes
67	32138	5556	12	Yes
68	32613	5557	21	Yes
69	33088	5558	16	Yes
70	33563	5559	20	Yes
71	34038	5560	23	Yes
72	34513	5561	19	Yes
73	34988	5562	12	Yes
74	35463	5563	24	Yes
75	35938	5564	19	Yes
76	36413	5565	22	Yes
77	36888	5566	18	Yes
78	37363	5567	20	Yes
79	37838	5568	19	Yes
80	38313	5569	18	Yes
81	38788	5570	19	Yes

7.5. RESULTS FOR 160 MHz BANDWIDTH

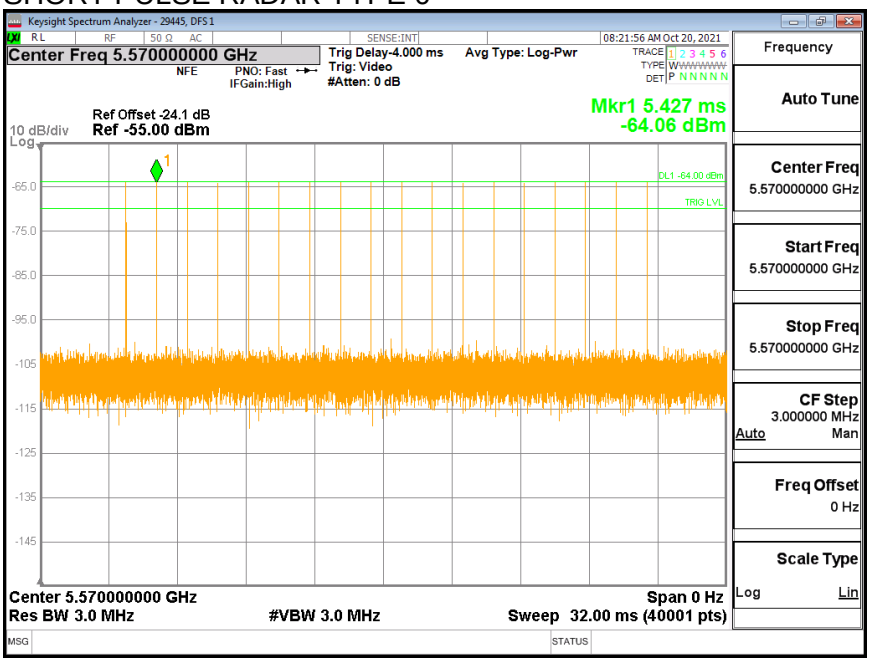
7.5.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5570 MHz.

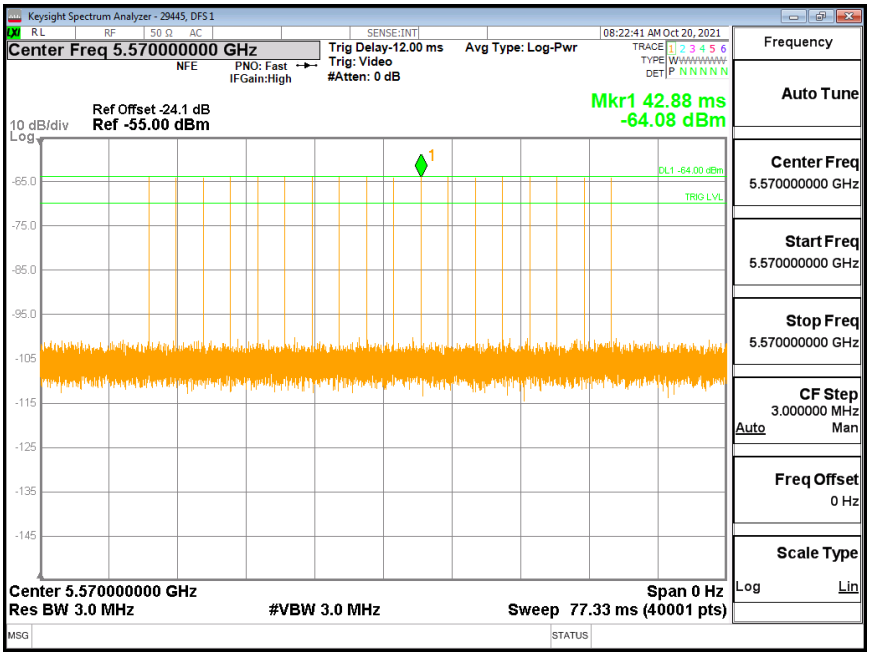
7.5.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

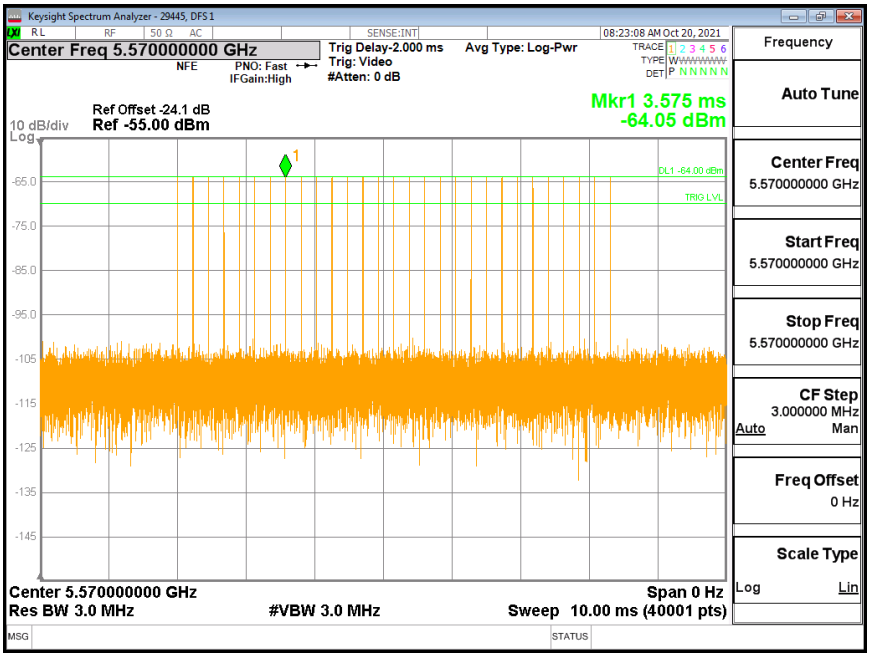
SHORT PULSE RADAR TYPE 0



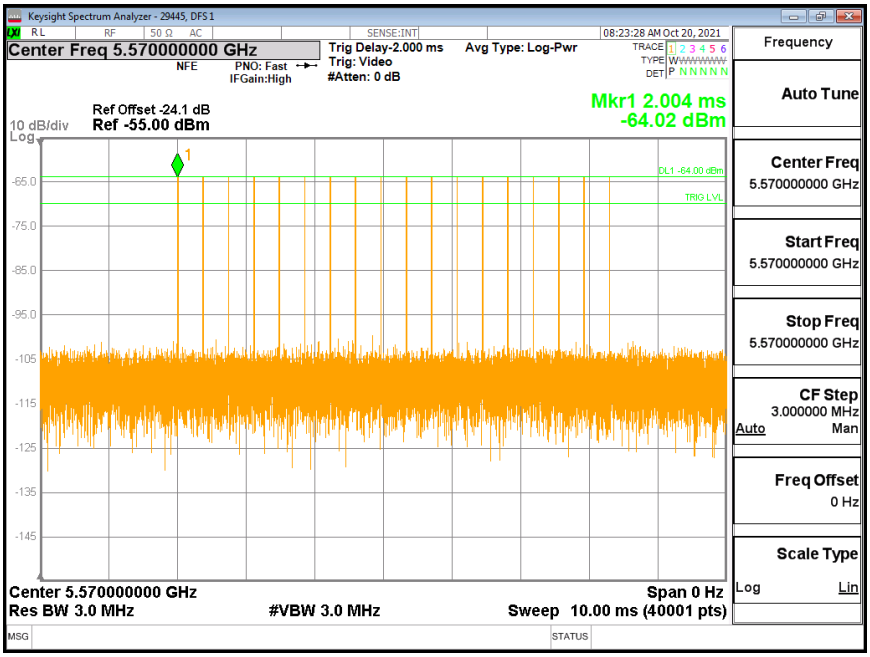
SAMPLE OF RADAR TYPE 1



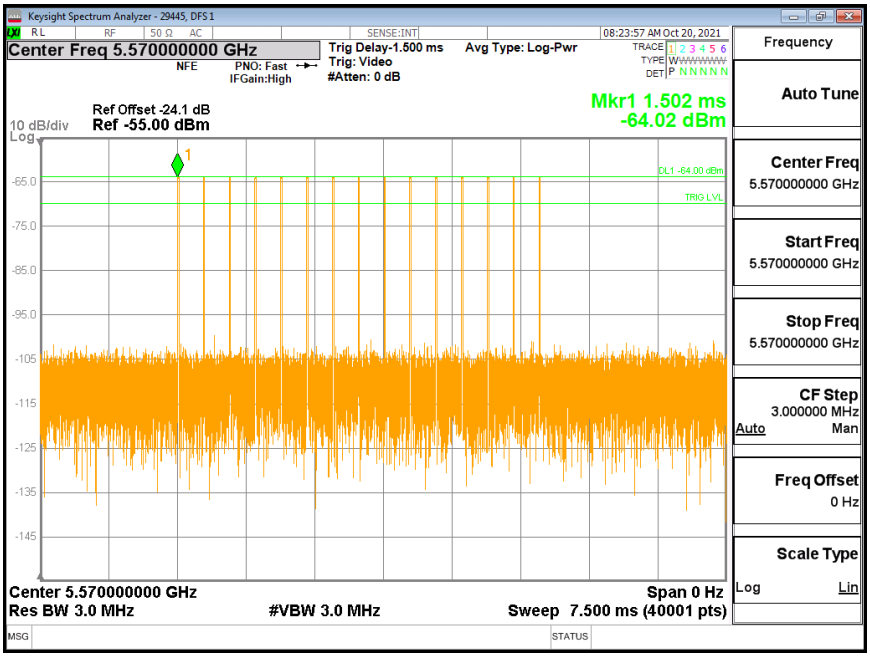
SAMPLE OF RADAR TYPE 2



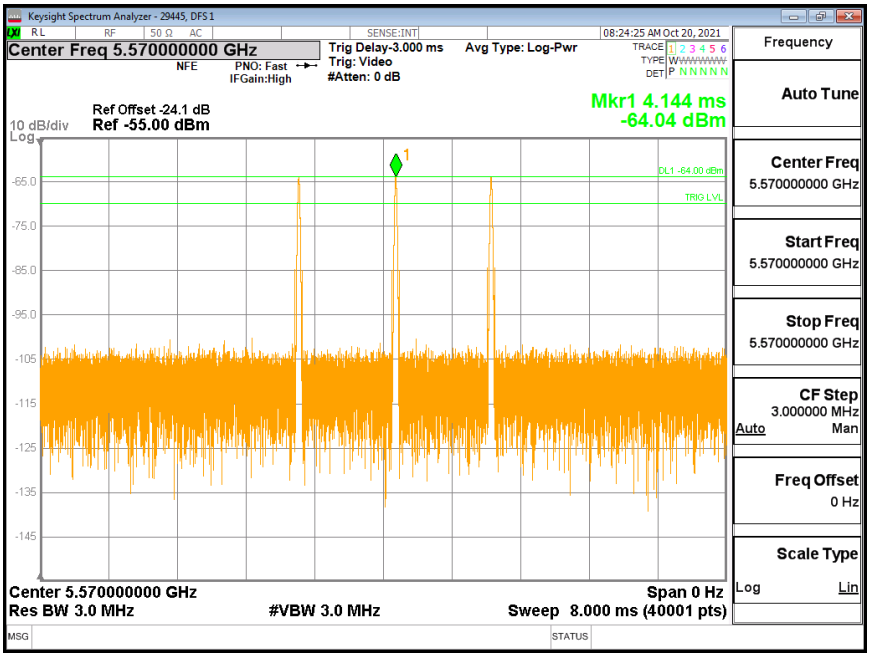
SAMPLE OF RADAR TYPE 3



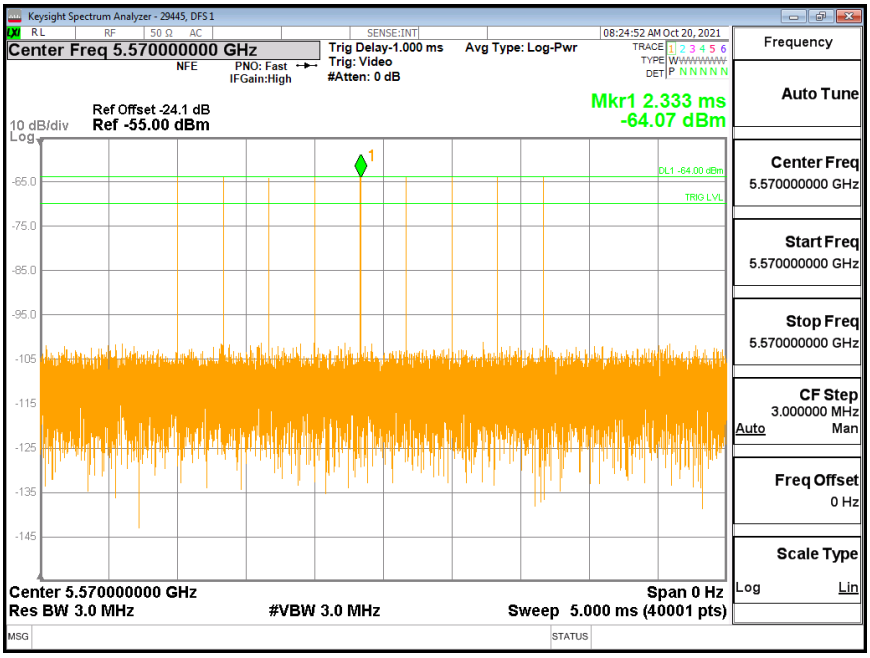
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

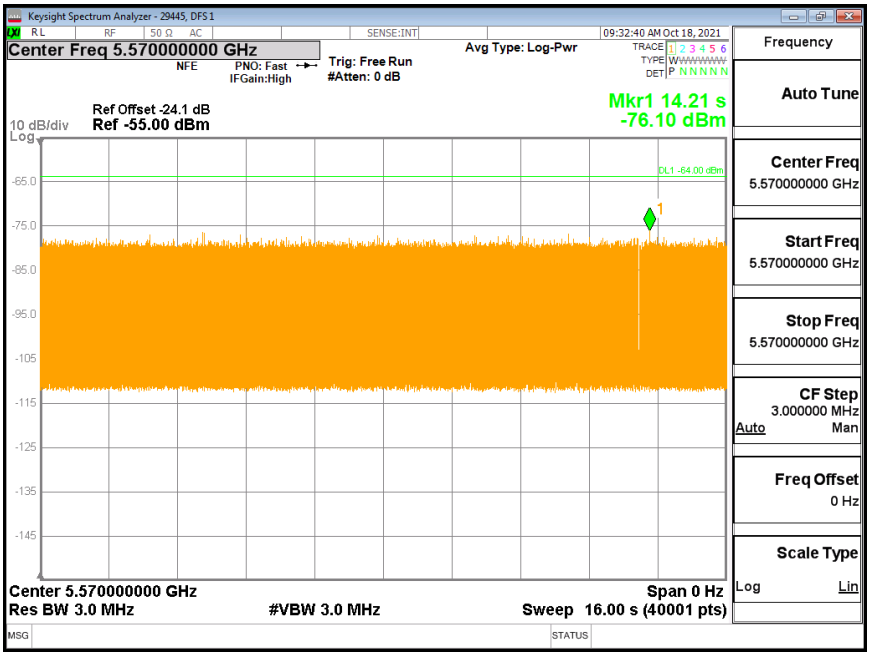


SINGLE BURST OF RADAR TYPE 6

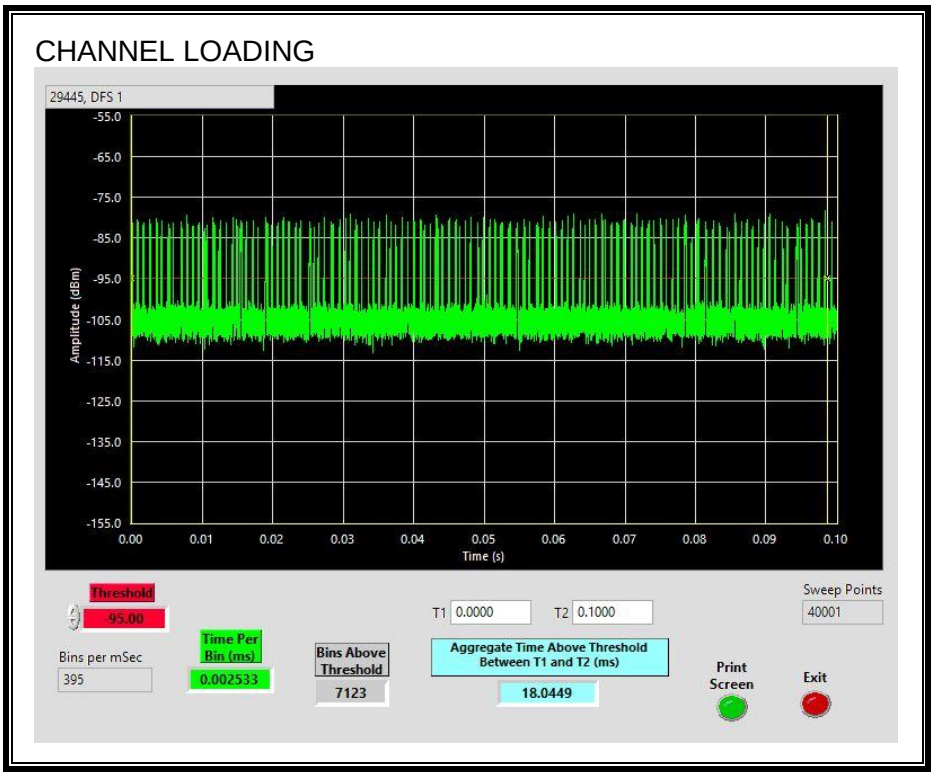


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 18.04%

7.5.3. 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)
29.39	220.3	190.9	130.9

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	164.6	134.3	3.3

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
30.08	217.5	187.4	56.5

QUALITATIVE RESULTS

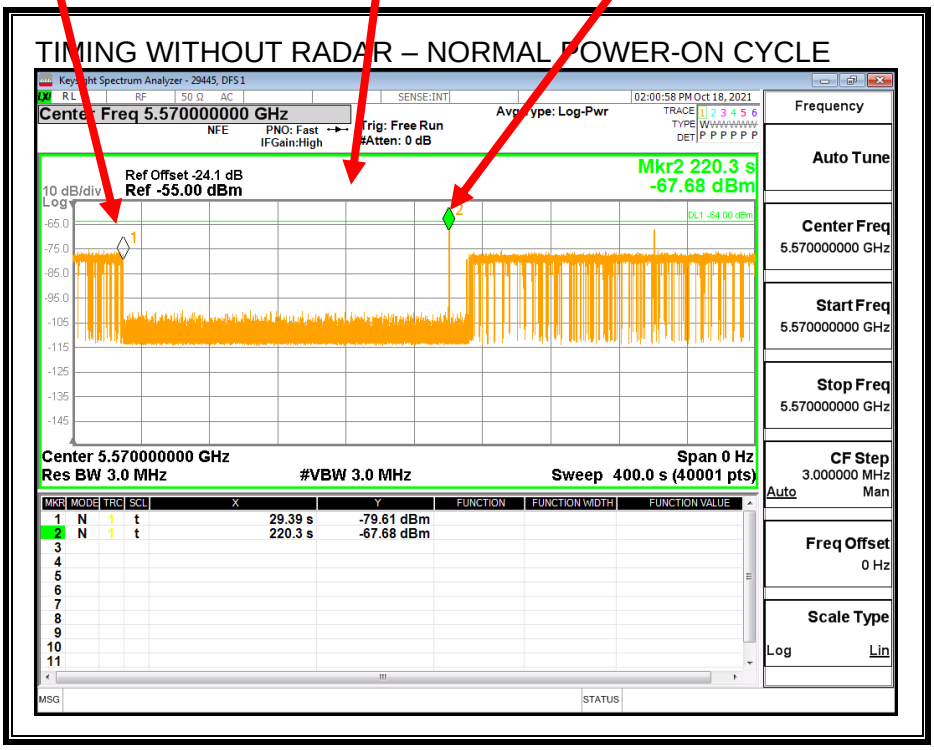
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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



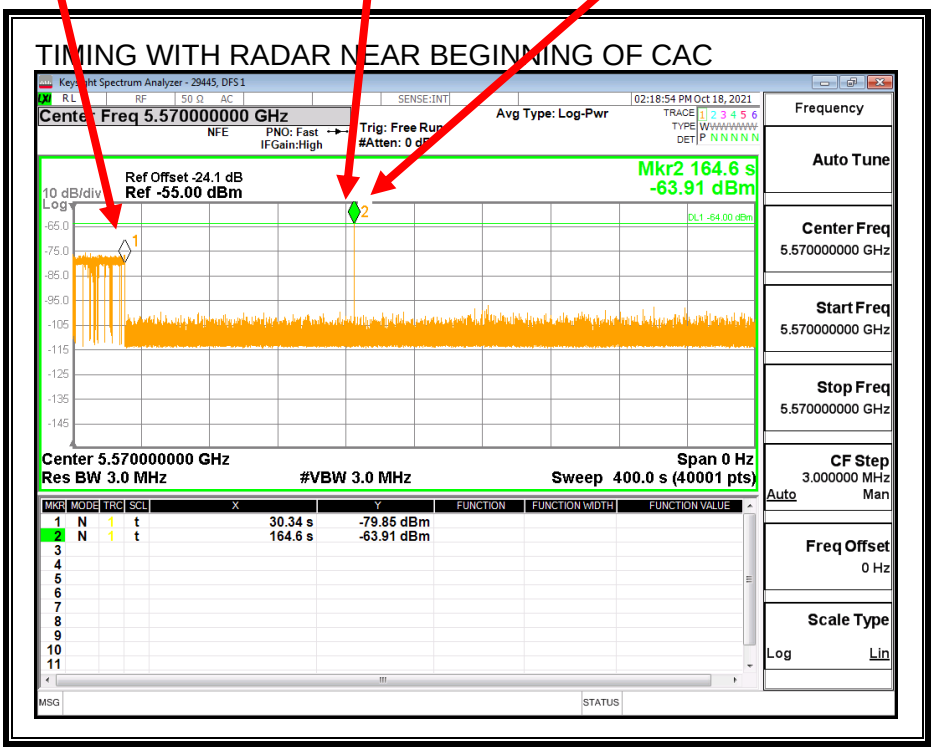
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



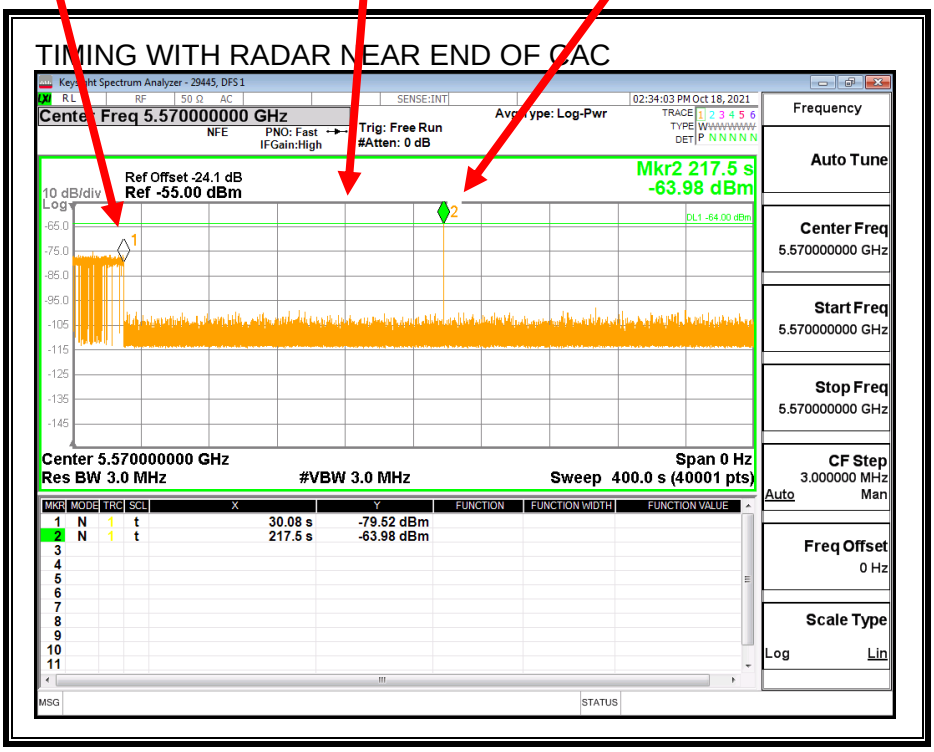
No EUT transmissions were observed after the radar signal.

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.

7.5.4. 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

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	10

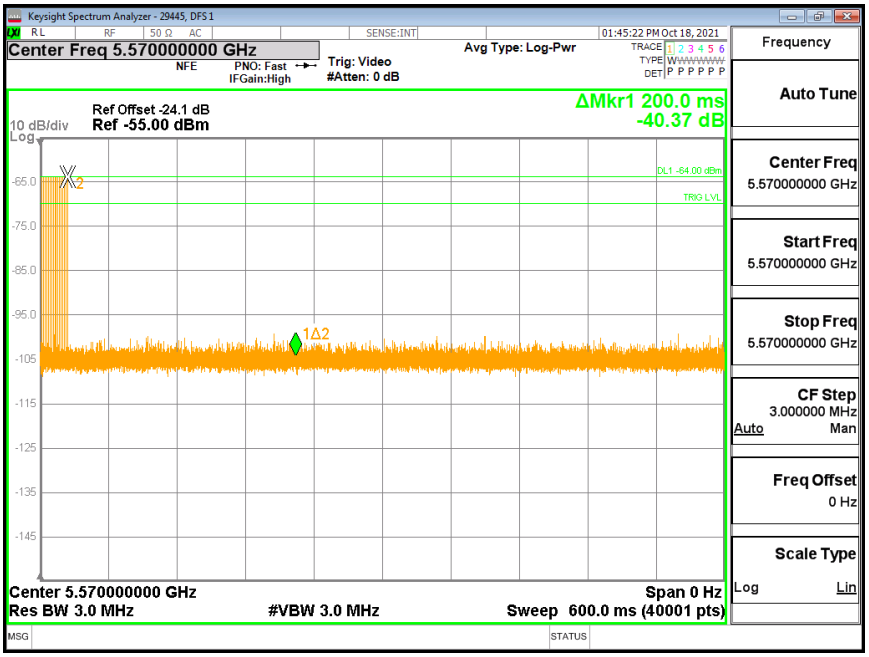
Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0	60

MOVE TIME

MOVE TIME

CHANNEL CLOSING TIME

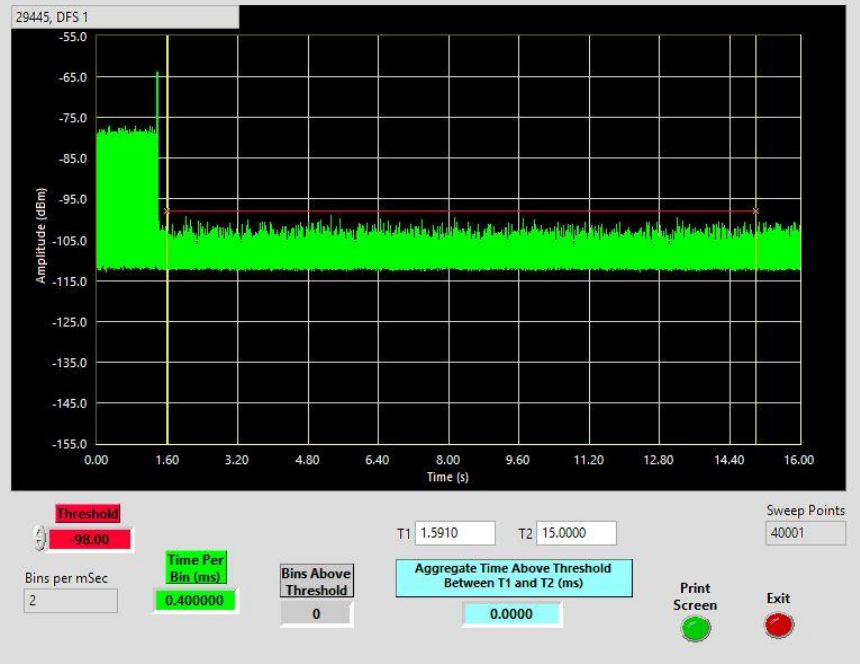
CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

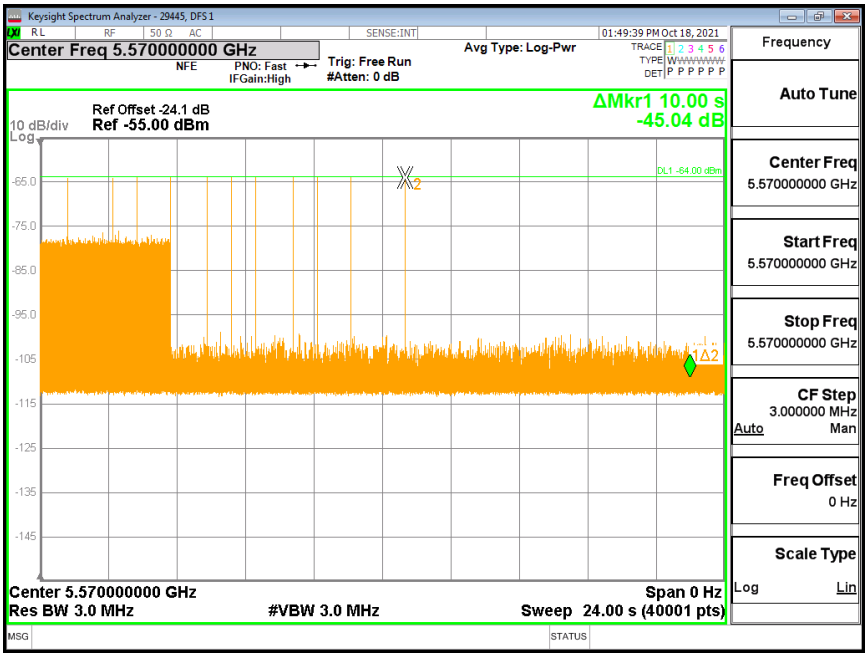
AGGREGATE CLOSING TIME



LONG PULSE CHANNEL MOVE TIME

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

MOVE TIME FOR LONG PULSE RADAR

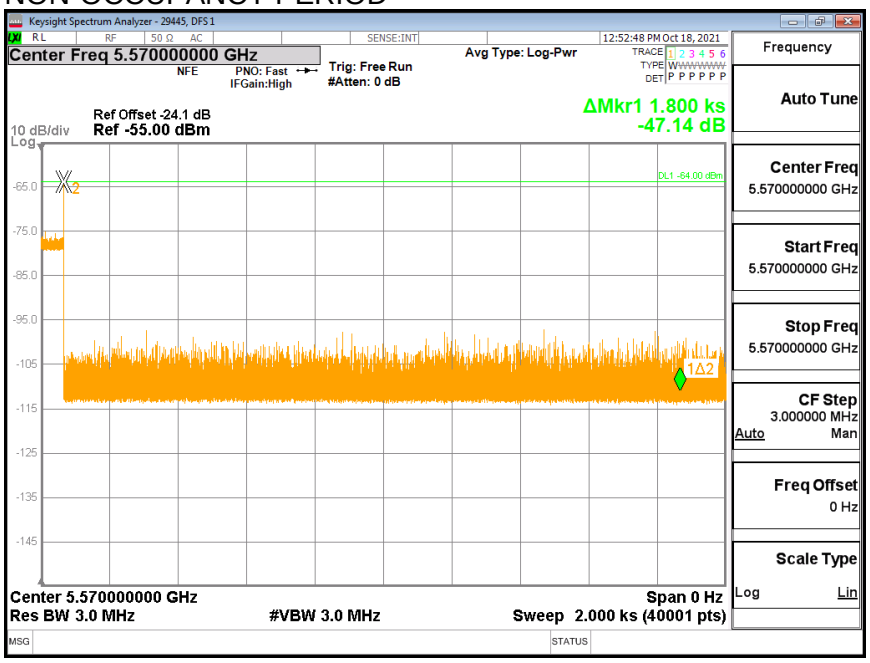


7.5.6. NON-OCCUPANCY PERIOD

RESULTS

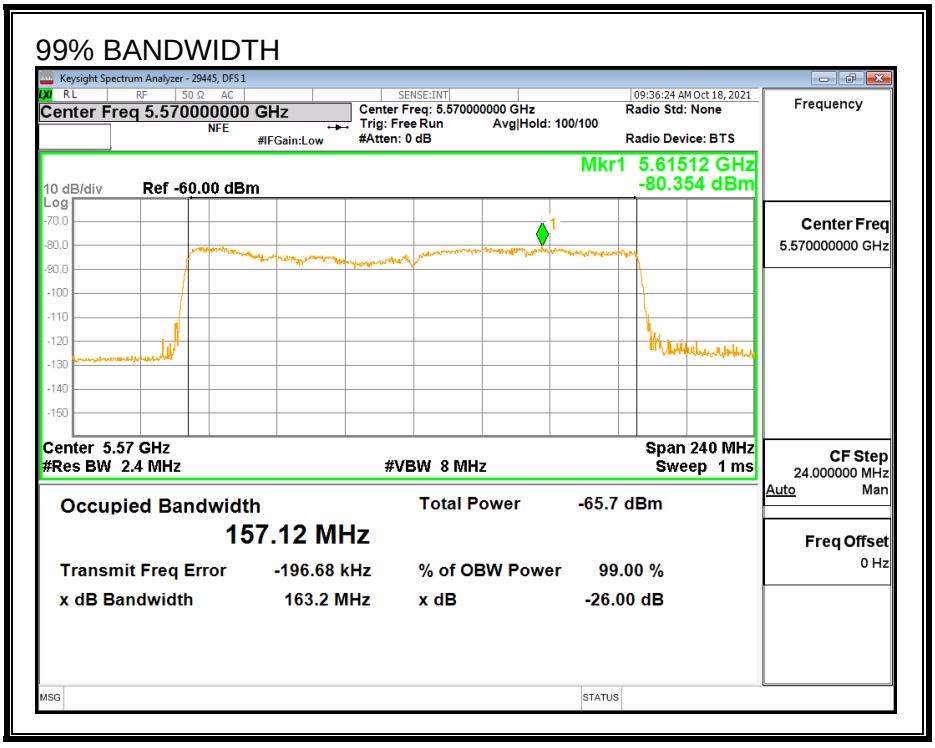
No EUT transmissions were observed on the test channel during the 30-minute observation time.

NON-OCCUPANCY PERIOD



7.5.7. 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	5650	160	157.12	101.8	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	
5575	10	10	100	
5580	10	10	100	
5585	10	10	100	
5590	10	10	100	
5595	10	10	100	
5600	10	10	100	
5605	10	10	100	
5610	10	10	100	
5615	10	10	100	
5620	10	10	100	
5625	10	10	100	
5630	10	10	100	
5635	10	10	100	
5640	10	10	100	
5645	10	10	100	
5650	10	10	100	FH

7.5.8. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	OBW	Test Location	Employee Number	In-Service Monitoring Version
FCC Short Pulse Type 1	30	96.67	60	Pass	5490	5650	157.12	DFS 1	29445	v4.1
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5650	157.12	DFS 1	29445	v4.1
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5650	157.12	DFS 1	29445	v4.1
FCC Short Pulse Type 4	30	93.33	60	Pass	5490	5650	157.12	DFS 1	29445	v4.1
Aggregate		97.50	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5650	157.12	DFS 1	29445	v4.1
FCC Hopping Type 6	161	100.00	70	Pass	5490	5650		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	5583	Yes
1002	1	598	89	A	5513	Yes
1003	1	558	95	A	5572	Yes
1004	1	578	92	A	5598	Yes
1005	1	838	63	A	5499	Yes
1006	1	638	83	A	5527	Yes
1007	1	918	58	A	5623	Yes
1008	1	738	72	A	5596	Yes
1009	1	618	86	A	5536	Yes
1010	1	898	59	A	5596	Yes
1011	1	698	76	A	5578	Yes
1012	1	518	102	A	5543	Yes
1013	1	938	57	A	5520	Yes
1014	1	858	62	A	5648	Yes
1015	1	818	65	A	5589	Yes
1016	1	1327	40	B	5536	Yes
1017	1	1348	40	B	5637	Yes
1018	1	3046	18	B	5575	Yes
1019	1	2001	27	B	5508	Yes
1020	1	2634	21	B	5564	Yes
1021	1	1719	31	B	5506	Yes
1022	1	2480	22	B	5552	Yes
1023	1	1695	32	B	5648	Yes
1024	1	1392	38	B	5608	Yes
1025	1	2089	26	B	5504	Yes
1026	1	562	94	B	5645	Yes
1027	1	2742	20	B	5603	Yes
1028	1	2698	20	B	5603	Yes
1029	1	2460	22	B	5603	Yes
1030	1	2545	21	B	5532	No

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	2.2	225	29	5618	Yes
2002	1.5	165	26	5515	Yes
2003	1.3	181	27	5641	Yes
2004	4.9	168	24	5633	Yes
2005	2.9	188	25	5614	Yes
2006	2.6	179	29	5515	Yes
2007	3.1	165	28	5525	Yes
2008	3	204	29	5508	Yes
2009	3.6	193	24	5564	Yes
2010	1.8	193	23	5529	Yes
2011	2.7	230	29	5529	Yes
2012	3.3	196	24	5607	Yes
2013	4.3	156	28	5580	Yes
2014	1	207	27	5545	Yes
2015	4.5	214	23	5616	Yes
2016	1.4	150	23	5595	Yes
2017	5	199	27	5622	Yes
2018	4.3	183	23	5621	Yes
2019	4.1	155	25	5565	Yes
2020	3.6	224	28	5618	Yes
2021	1.7	162	23	5609	Yes
2022	3.5	197	27	5527	Yes
2023	1.8	220	26	5502	Yes
2024	3.9	178	27	5537	Yes
2025	2.4	168	26	5552	Yes
2026	4.6	210	28	5519	Yes
2027	1.4	204	27	5645	Yes
2028	2	170	26	5545	Yes
2029	3.1	211	25	5537	Yes
2030	3.8	224	24	5525	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3

Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	8.2	370	18	5570	Yes
3002	9.2	423	18	5647	Yes
3003	8.8	325	18	5502	Yes
3004	8	273	18	5512	Yes
3005	7.8	438	18	5511	Yes
3006	7.3	400	17	5564	Yes
3007	9.5	342	18	5645	Yes
3008	7.2	316	18	5510	Yes
3009	9.6	389	16	5614	Yes
3010	7.6	258	17	5598	Yes
3011	6.1	477	16	5509	Yes
3012	8.3	359	17	5644	Yes
3013	7.3	340	16	5570	Yes
3014	9.8	485	16	5646	Yes
3015	6.8	361	16	5517	Yes
3016	7.5	402	18	5593	Yes
3017	6.9	290	17	5509	Yes
3018	7.9	344	17	5545	Yes
3019	7.5	496	17	5618	Yes
3020	6.7	445	17	5558	Yes
3021	8.7	492	17	5558	Yes
3022	8.2	320	16	5515	Yes
3023	8.2	263	17	5517	Yes
3024	10	488	17	5548	Yes
3025	8.3	309	18	5641	Yes
3026	6.3	430	16	5549	Yes
3027	8.9	398	18	5634	Yes
3028	9.2	280	16	5572	Yes
3029	6	260	18	5604	Yes
3030	8.5	406	18	5558	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	14.7	282	15	5585	Yes
4002	11.6	323	15	5590	Yes
4003	19.3	462	12	5619	Yes
4004	12.3	265	15	5559	Yes
4005	16.2	417	13	5502	Yes
4006	18.9	365	15	5581	Yes
4007	14.1	413	13	5646	Yes
4008	13	374	16	5636	Yes
4009	17.8	434	15	5528	Yes
4010	14	322	16	5556	Yes
4011	19.3	277	12	5494	No
4012	14.7	264	13	5526	Yes
4013	16.2	483	13	5557	Yes
4014	12.2	365	14	5529	Yes
4015	14.1	345	13	5512	No
4016	19.6	374	12	5571	Yes
4017	17.8	367	12	5584	Yes
4018	14.7	408	16	5550	Yes
4019	13.3	296	14	5626	Yes
4020	11.2	350	16	5570	Yes
4021	19.3	384	14	5525	Yes
4022	12.9	451	12	5617	Yes
4023	17.2	498	15	5642	Yes
4024	16.1	459	13	5576	Yes
4025	11.8	268	16	5510	Yes
4026	11.1	493	14	5559	Yes
4027	16.4	449	16	5573	Yes
4028	11.9	436	12	5506	Yes
4029	13.3	403	16	5604	Yes
4030	18.4	285	12	5598	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5570	Yes
2	5570	Yes
3	5570	Yes
4	5570	Yes
5	5570	Yes
6	5570	Yes
7	5570	Yes
8	5570	Yes
9	5570	Yes
10	5570	Yes
11	5496	Yes
12	5500	Yes
13	5495	Yes
14	5498	Yes
15	5498	Yes
16	5500	Yes
17	5497	Yes
18	5498	Yes
19	5496	Yes
20	5499	Yes
21	5641	Yes
22	5643	Yes
23	5645	Yes
24	5641	Yes
25	5641	Yes
26	5643	Yes
27	5645	Yes
28	5641	Yes
29	5641	Yes
30	5643	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	750	5490	31	Yes
2	1225	5491	35	Yes
3	1700	5492	38	Yes
4	2175	5493	40	Yes
5	2650	5494	34	Yes
6	3125	5495	31	Yes
7	3600	5496	32	Yes
8	4075	5497	32	Yes
9	4550	5498	28	Yes
10	5025	5499	26	Yes
11	5500	5500	32	Yes
12	5975	5501	35	Yes
13	6450	5502	35	Yes
14	6925	5503	33	Yes
15	7400	5504	38	Yes
16	7875	5505	43	Yes
17	8350	5506	35	Yes
18	8825	5507	30	Yes
19	9300	5508	30	Yes
20	9775	5509	32	Yes
21	10250	5510	35	Yes
22	10725	5511	32	Yes
23	11200	5512	32	Yes
24	11675	5513	35	Yes
25	12150	5514	27	Yes
26	12625	5515	36	Yes
27	13100	5516	34	Yes
28	13575	5517	31	Yes
29	14050	5518	31	Yes
30	14525	5519	39	Yes
31	15000	5520	35	Yes
32	15475	5521	40	Yes
33	15950	5522	29	Yes
34	16425	5523	31	Yes
35	16900	5524	36	Yes
36	17375	5525	32	Yes
37	17850	5526	31	Yes
38	18325	5527	31	Yes
39	18800	5528	33	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	19275	5529	33	Yes
41	19750	5530	30	Yes
42	20225	5531	30	Yes
43	20700	5532	35	Yes
44	21175	5533	38	Yes
45	21650	5534	37	Yes
46	22125	5535	40	Yes
47	22600	5536	30	Yes
48	23075	5537	33	Yes
49	23550	5538	33	Yes
50	24025	5539	31	Yes
51	24500	5540	31	Yes
52	24975	5541	27	Yes
53	25450	5542	36	Yes
54	25925	5543	38	Yes
55	26400	5544	30	Yes
56	26875	5545	27	Yes
57	27350	5546	28	Yes
58	27825	5547	39	Yes
59	28300	5548	25	Yes
60	28775	5549	40	Yes
61	29250	5550	31	Yes
62	29725	5551	29	Yes
63	30200	5552	35	Yes
64	30675	5553	36	Yes
65	31150	5554	38	Yes
66	31625	5555	31	Yes
67	32100	5556	32	Yes
68	32575	5557	33	Yes
69	33050	5558	33	Yes
70	33525	5559	32	Yes
71	34000	5560	45	Yes
72	34475	5561	31	Yes
73	34950	5562	33	Yes
74	35425	5563	33	Yes
75	35900	5564	35	Yes
76	36375	5565	37	Yes
77	36850	5566	36	Yes
78	37325	5567	34	Yes
79	37800	5568	33	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

80	38275	5569	33	Yes
81	38750	5570	40	Yes
82	39225	5571	33	Yes
83	39700	5572	33	Yes
84	40175	5573	33	Yes
85	40650	5574	31	Yes
86	41125	5575	39	Yes
87	41600	5576	40	Yes
88	42075	5577	33	Yes
89	42550	5578	32	Yes
90	43025	5579	43	Yes
91	43500	5580	34	Yes
92	43975	5581	32	Yes
93	44450	5582	39	Yes
94	44925	5583	30	Yes
95	45400	5584	32	Yes
96	45875	5585	38	Yes
97	46350	5586	34	Yes
98	46825	5587	26	Yes
99	47300	5588	34	Yes
100	47775	5589	37	Yes
101	48250	5590	33	Yes
102	48725	5591	35	Yes
103	49200	5592	32	Yes
104	49675	5593	37	Yes
105	50150	5594	30	Yes
106	50625	5595	32	Yes
107	51100	5596	31	Yes
108	51575	5597	25	Yes
109	52050	5598	34	Yes
110	52525	5599	38	Yes
111	53000	5600	36	Yes
112	53475	5601	34	Yes
113	53950	5602	38	Yes
114	54425	5603	33	Yes
115	54900	5604	36	Yes
116	55375	5605	40	Yes
117	55850	5606	39	Yes
118	56325	5607	32	Yes
119	56800	5608	34	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

120	57275	5609	36	Yes
121	57750	5610	34	Yes
122	58225	5611	32	Yes
123	58700	5612	36	Yes
124	59175	5613	27	Yes
125	59650	5614	40	Yes
126	60125	5615	37	Yes
127	60600	5616	41	Yes
128	61075	5617	33	Yes
129	61550	5618	31	Yes
130	62025	5619	35	Yes
131	62500	5620	34	Yes
132	62975	5621	33	Yes
133	63450	5622	35	Yes
134	63925	5623	32	Yes
135	64400	5624	28	Yes
136	64875	5625	36	Yes
137	65350	5626	37	Yes
138	289	5627	35	Yes
139	764	5628	27	Yes
140	1239	5629	35	Yes
141	1714	5630	39	Yes
142	2189	5631	37	Yes
143	2664	5632	32	Yes
144	3139	5633	32	Yes
145	3614	5634	32	Yes
146	4089	5635	34	Yes
147	4564	5636	34	Yes
148	5039	5637	23	Yes
149	5514	5638	31	Yes
150	5989	5639	35	Yes
151	6464	5640	33	Yes
152	6939	5641	30	Yes
153	7414	5642	35	Yes
154	7889	5643	38	Yes
155	8364	5644	38	Yes
156	8839	5645	33	Yes
157	9314	5646	31	Yes
158	9789	5647	30	Yes
159	10264	5648	33	Yes
160	10739	5649	31	Yes
161	11214	5650	34	Yes

7.6. BRIDGE MODE RESULTS

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

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

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