DFS PORTION of FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

GEN7 AP

MODEL NUMBER: G7RL10S

FCC ID: RHK-G7RL10

REPORT NUMBER: 12049298-E1V1

ISSUE DATE: JANUARY 8, 2018

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	1/8/2018	Initial Issue	Henry Lau

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: DIGITAL PATH, INC.
1065 MARAUDER STREET
CHICO, CA 95973, U.S.A.

EUT DESCRIPTION: GEN7 AP

MODEL: G7RL10S

SERIAL NUMBER: 04:F0:21:37:E1:98 (MASTER) and
04:F0:21:36:8a:66 (SLAVE)

DATE TESTED: DECEMBER 04 to 05, 2017

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

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

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

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2. TEST METHODOLOGY

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

3. REFERENCE DOCUMENTS

Measurements of transmitter parameters as referenced in this report are documented in report number 100331-24 from testing performed at CKC Laboratories, 5046 Sierra Pines Drive, Mariposa, CA 95338

4. FACILITIES AND ACCREDITATION

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

UL Verification Services, Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

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

5.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Time	± 0.02 %

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

6. DYNAMIC FREQUENCY SELECTION

6.1. OVERVIEW

6.1.1. LIMITS

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

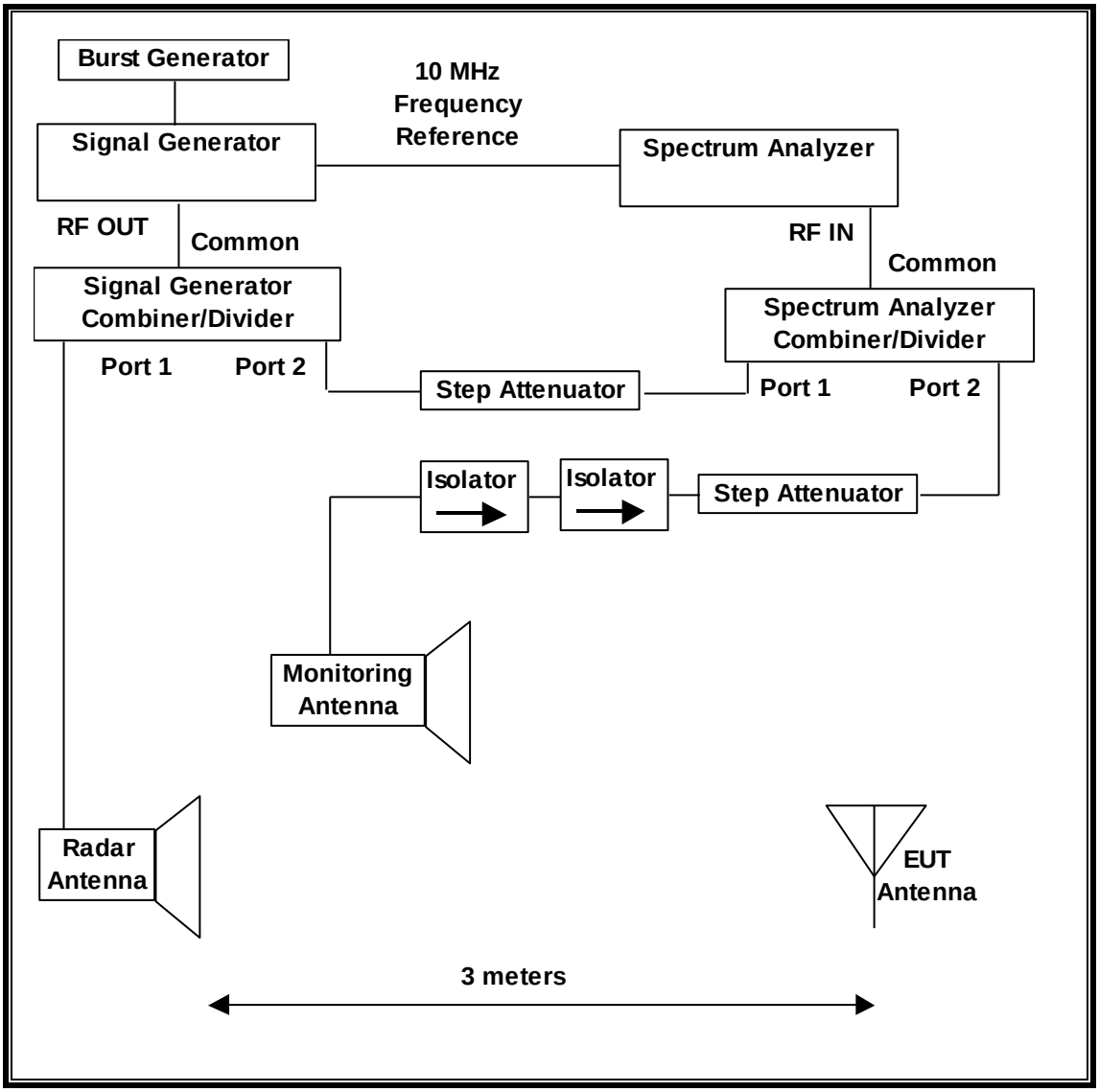
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

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

6.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

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

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

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

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

SYSTEM CALIBRATION

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

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

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

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. Streaming WLAN traffic from the Master to the Slave is initiated. The monitoring antenna is oriented to monitor the device under test and isolate the support device so that the activity from the support device does not appear in the sweep. A step attenuator is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	US51350187	06/22/18
Signal Generator, MXG X-Series RF Vector	Agilent	N5182B	MY51350337	04/21/18
Arbitrary Waveform Generator	Agilent / HP	33220A	MY44037572	04/06/18

6.1.3. 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	3.0	Channel Loading and Aggregate Closing Time
FCC 2006 Detection Bandwidth-PXA	3.0	Detection Bandwidth in 1 MHz Steps
FCC 2014 Detection Bandwidth-PXA	3.0	Detection Bandwidth in 5 MHz Steps
In Service Monitoring-PXA	3.0	In-Service Monitoring (Probability of Detection)
PXA Read	3.0.0.9	Signal Generator Screen Capture
SGXProject.exe	1.7	Radar Waveform Generation and Download

6.1.4. TEST ROOM ENVIRONMENT

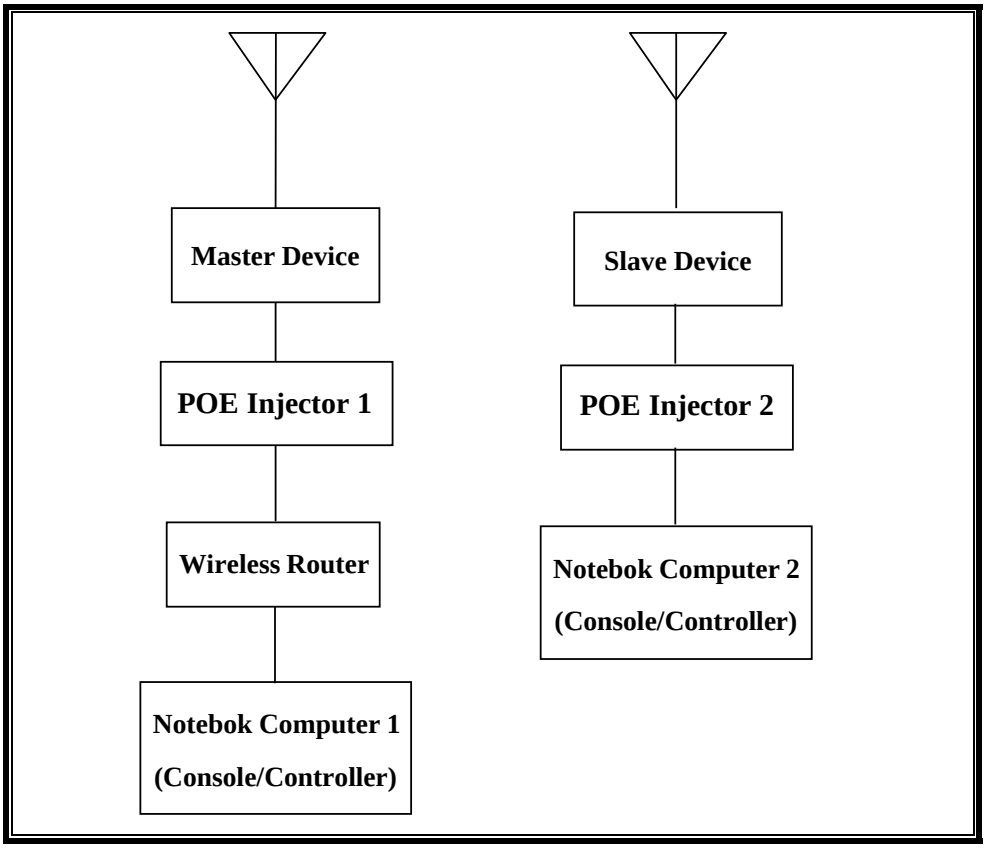
The test room temperature and humidity shall be maintained within normal temperature of 15~35 °C and normal humidity 20~75% (relative humidity).

ENVIRONMENT CONDITION

Parameter	Value
Temperature	25.6 and 25.3 °C
Humidity	21 and 24 %

6.1.5. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

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

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Gen7 AP (Master Device)	Digital Path	G7RL10S	04:F0:21:37:E1:98	RHK-G7RL10
P.O.E. Injector 1 (Master)	Ubiquity Networks	GP-C500-120G	1724-0001476	DoC
Notebook PC 1 (Master Console/Controller)	HP	ProBook 450 G3	5CD6386620	DoC
AC Adapter (Master Console PC)	Chicony Power Technology	PPP009C	F200001550001125	DoC
Gen7 AP (Slave Device)	Digital Path	G7RL10S	04:F0:21:36:8a:66	RHK-G7RL10
P.O.E. Injector 2 (Slave)	Foshan Shunde Great Power Supply Co., Ltd.	GRT-560110A	1709032784	Doc
Notebook PC 2 (Slave Console/Controller)	HP	HP 250 G6	CND7303KR2	Doc
AC Adapter (Slave Console PC)	Lite On Technology	HSTNN-LA40	WFTLC0A7Y86YRA	Doc
Wireless Dual Band Router (Hardwired Ethernet Use Only)	TPLink	TL-WDR3600	12C70602246	Doc
AC Adapter (Router)	Shenzen Honor Eletric co.	ADS-25E-12 12018EPCU	H161501E008995	Doc

6.1.6. DESCRIPTION OF EUT

The EUT operates over the 5470-5725 MHz ranges.

The EUT can be configured as a Master Device or a Slave Device without Radar Detection.

The highest power level within these bands is 29.96 dBm EIRP in the 5470-5725 MHz band.

The EUT supports from as few as one antenna to an array of up to as many as six antennas. The highest gain antenna assembly utilized with the EUT has a gain of 17.5 dBi in the 5 GHz band. The lowest gain antenna assembly utilized with the EUT has a gain of 9 dBi in the 5 GHz band.

Up to six antennas are utilized to meet the diversity and MIMO operational requirements.

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

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

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

The Slave device associated with the EUT during these tests has 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 802.11ac architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

The software installed in the Master and Slave devices is QSDK5.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462 and is not applicable to Slave Devices.

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

The Master Device is a Digital Path Access Point, FCC ID: RHK-G7RL10 . The minimum antenna gain for the Master Device is 9 dBi.

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

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

6.2. MASTER DEVICE RESULTS FOR 20 MHz BANDWIDTH

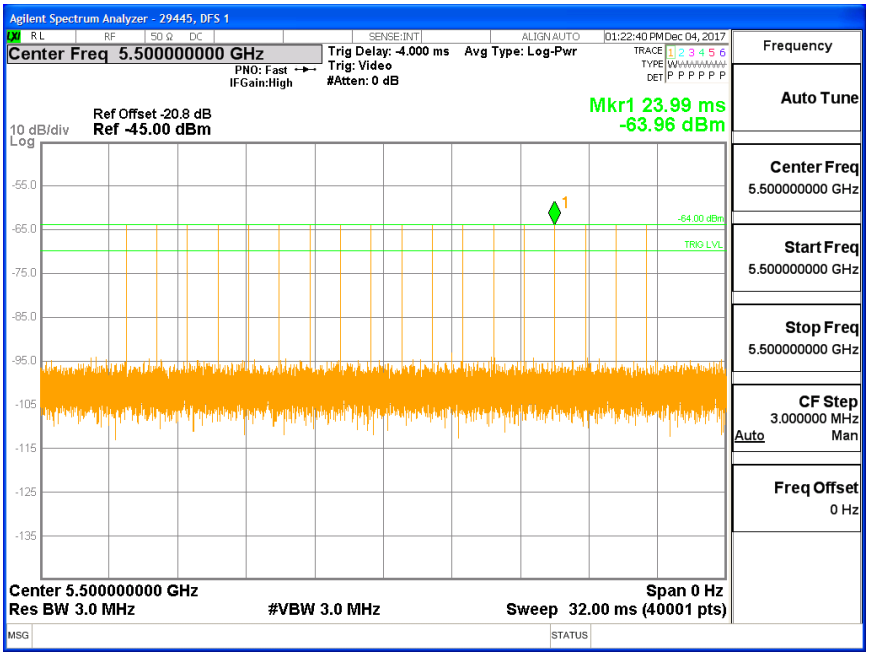
6.2.1. TEST CHANNEL

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

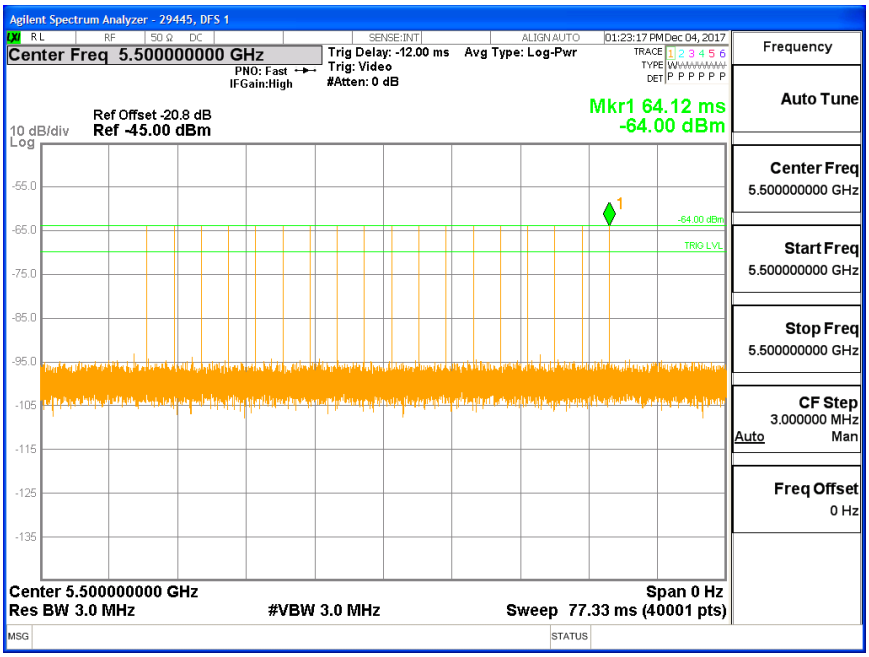
6.2.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

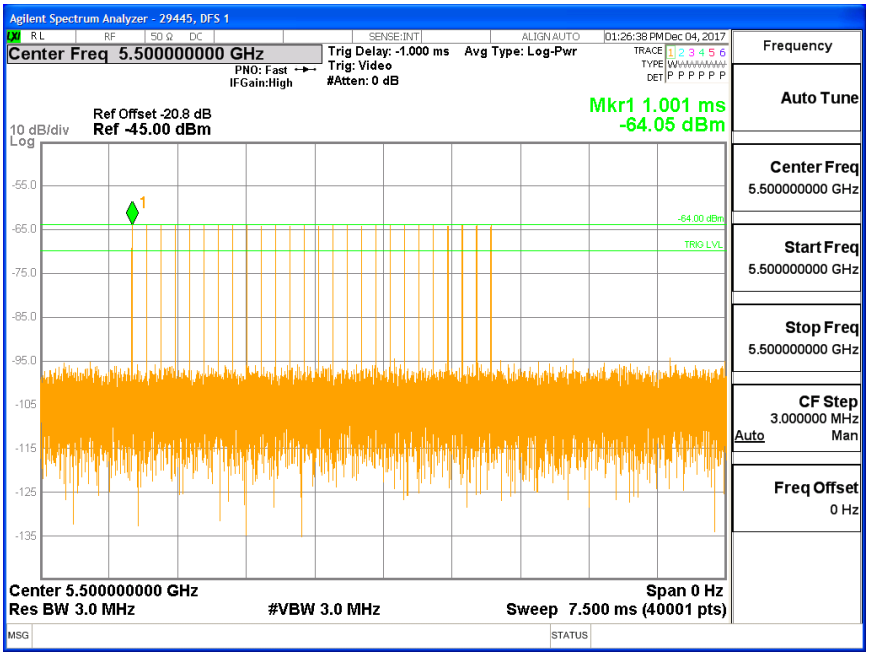
SHORT PULSE RADAR TYPE 0



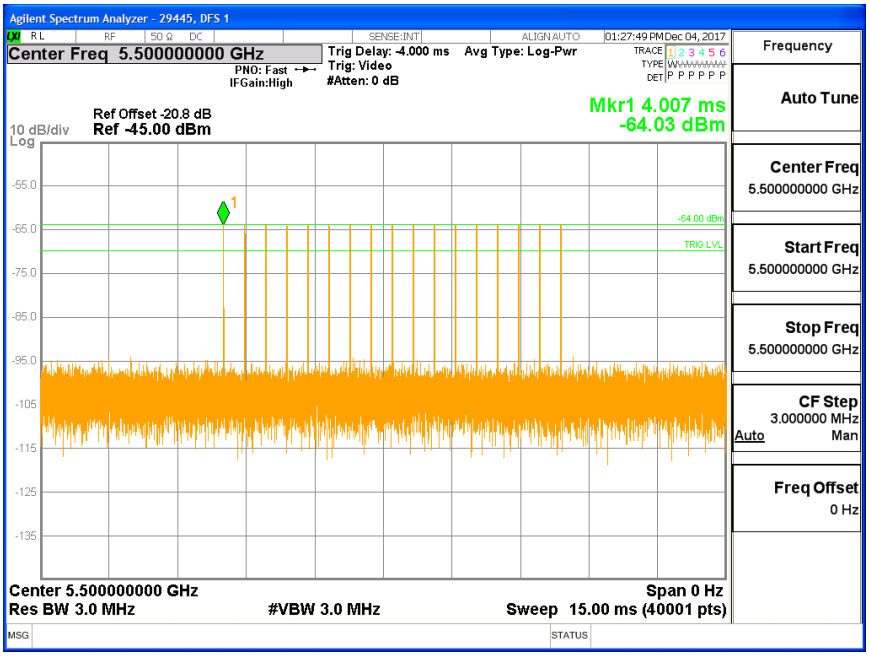
SAMPLE OF RADAR TYPE 1



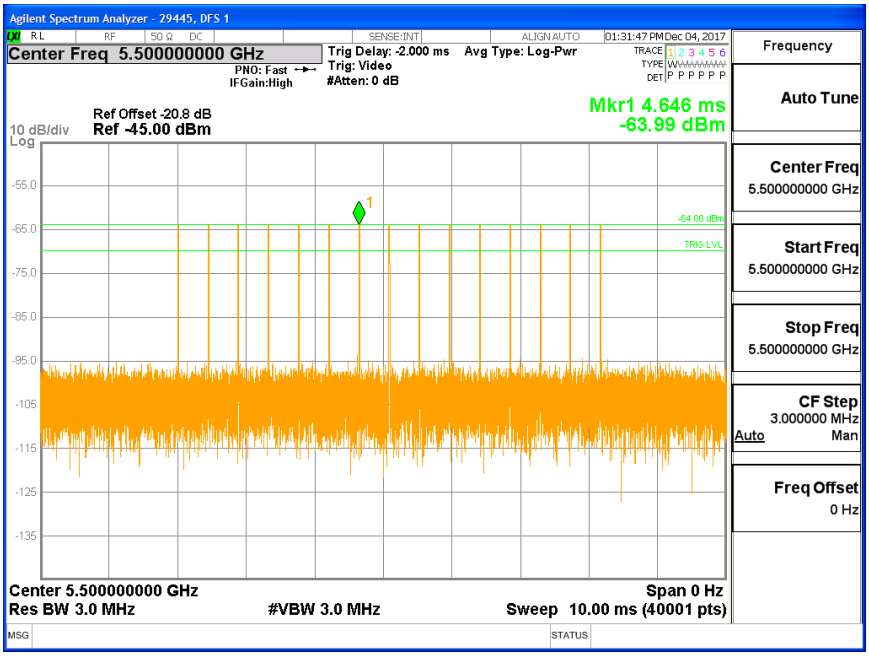
SAMPLE OF RADAR TYPE 2



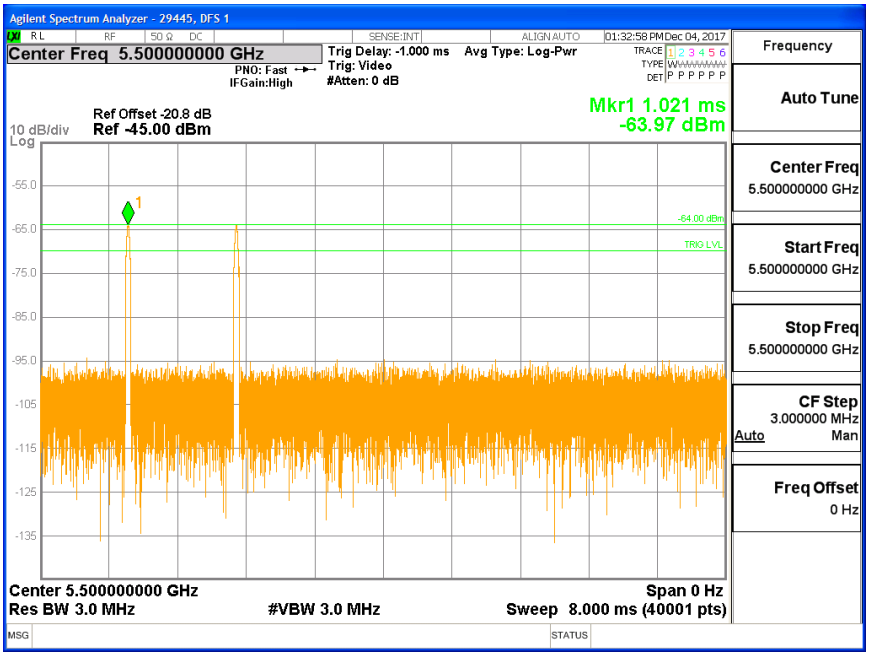
SAMPLE OF RADAR TYPE 3



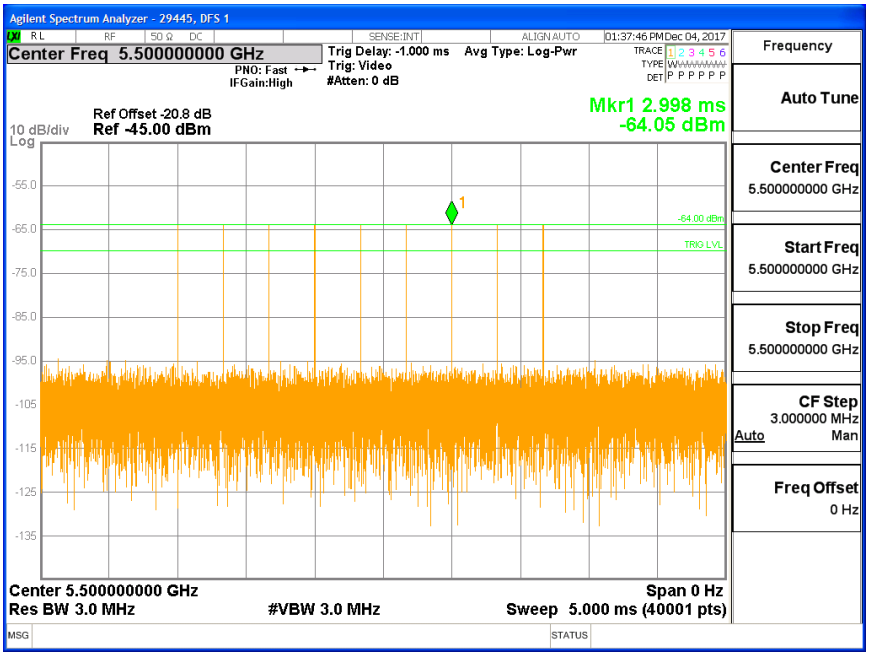
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

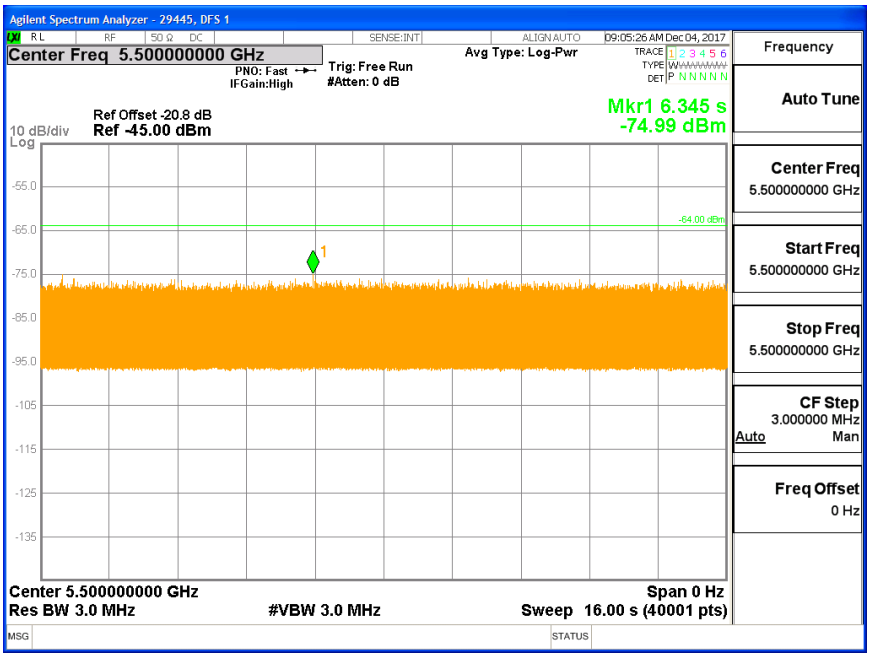


SINGLE BURST OF RADAR TYPE 6

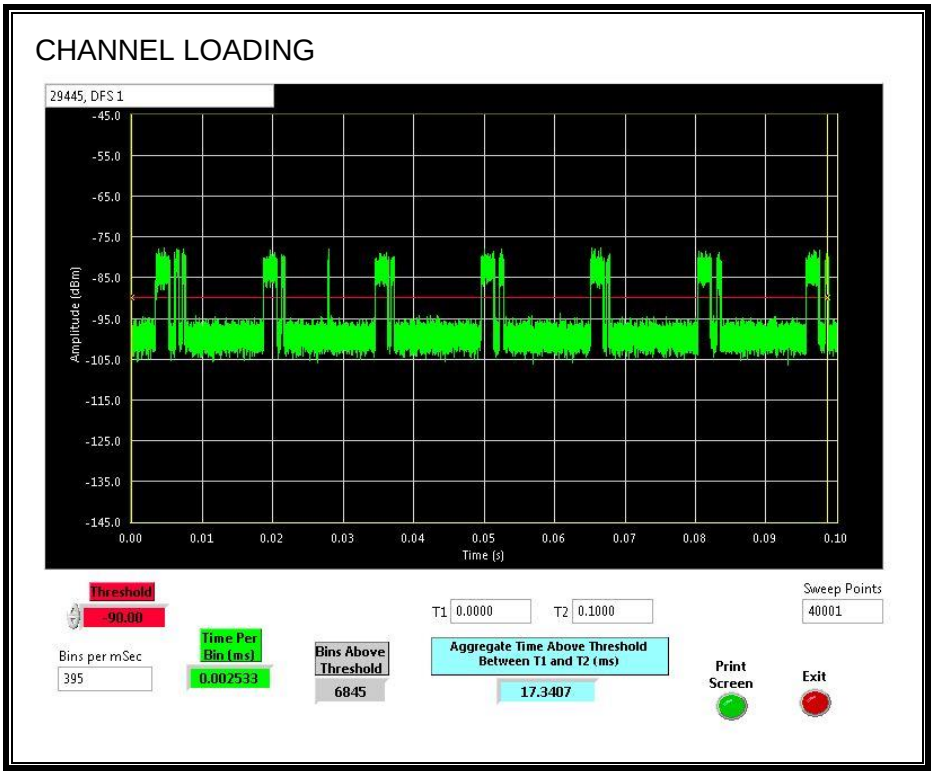


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.34%.

6.2.3. 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)
29.92	158.9	129.0	69.0

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)
31.02	103.4	72.4	3.4

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)
29.88	156.3	126.4	57.4

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

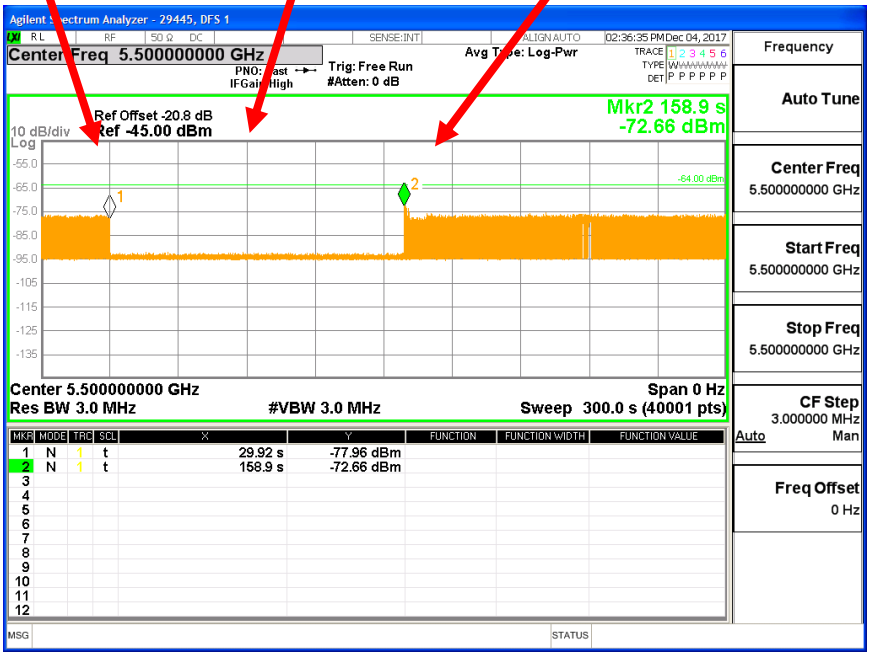
TIMING WITHOUT RADAR DURING CAC

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

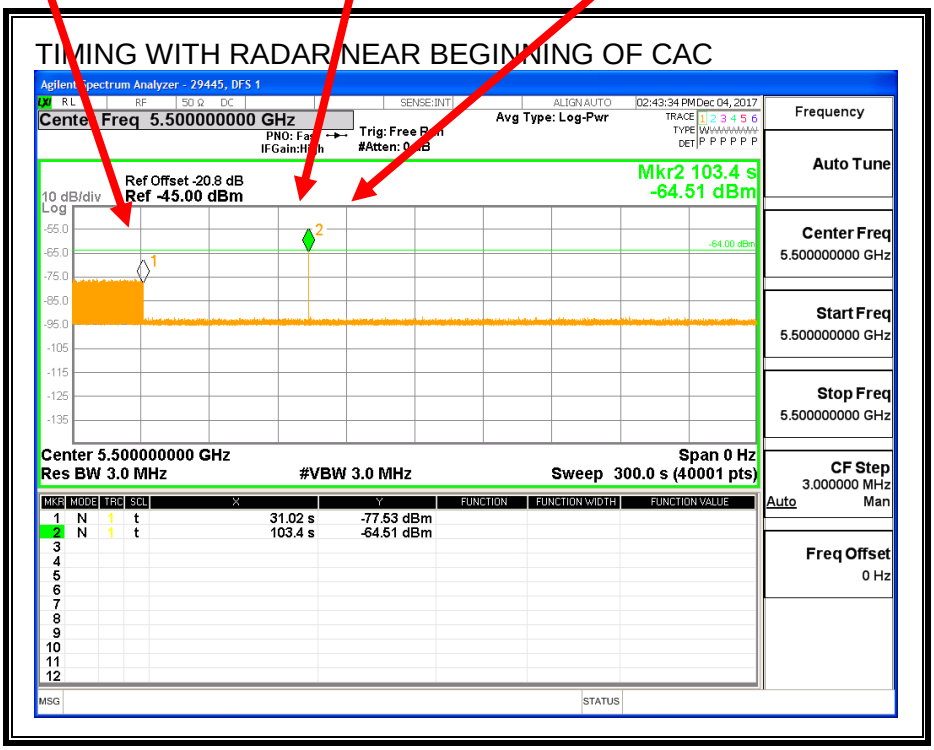
TIMING WITHOUT RADAR – NORMAL POWER-ON CYCLE



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



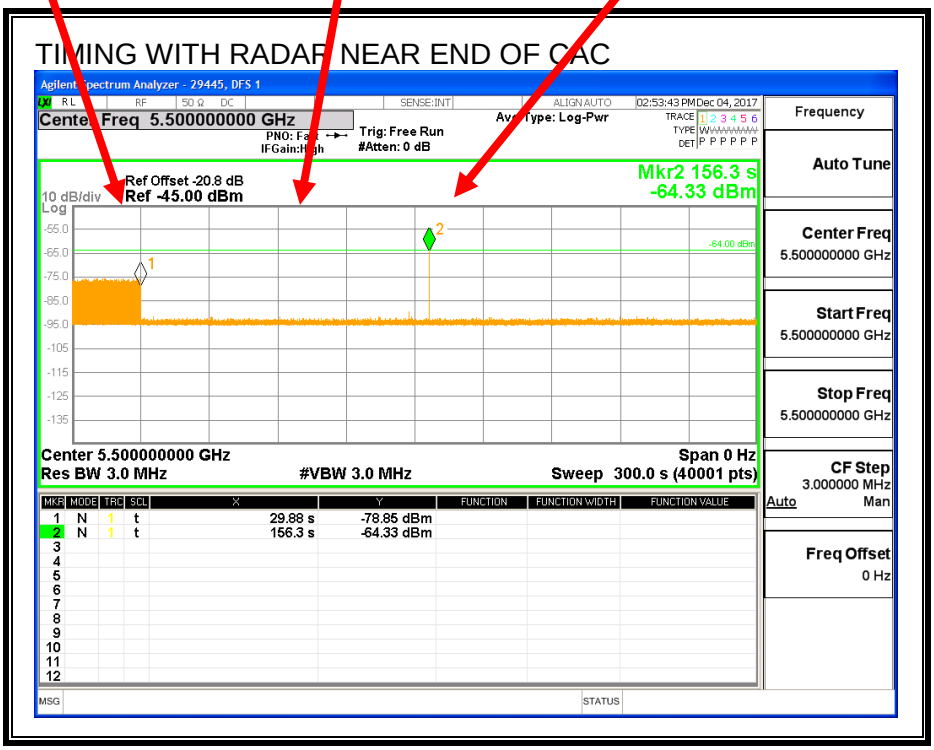
No EUT transmissions were observed after the radar signal.

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.

6.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

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

6.2.5. 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).

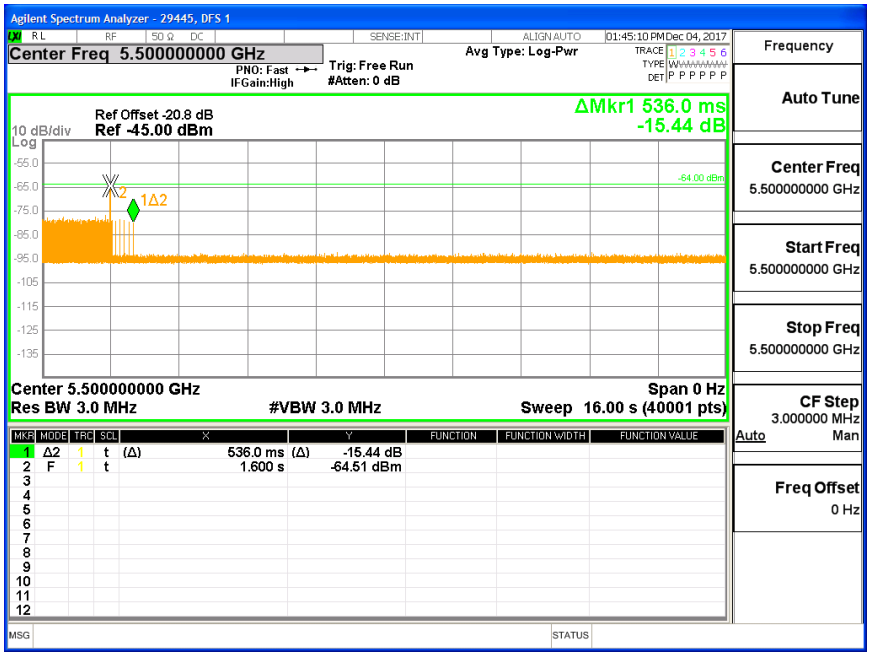
RESULTS

Channel Move Time (sec)	Limit (sec)
0.536	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.4	60

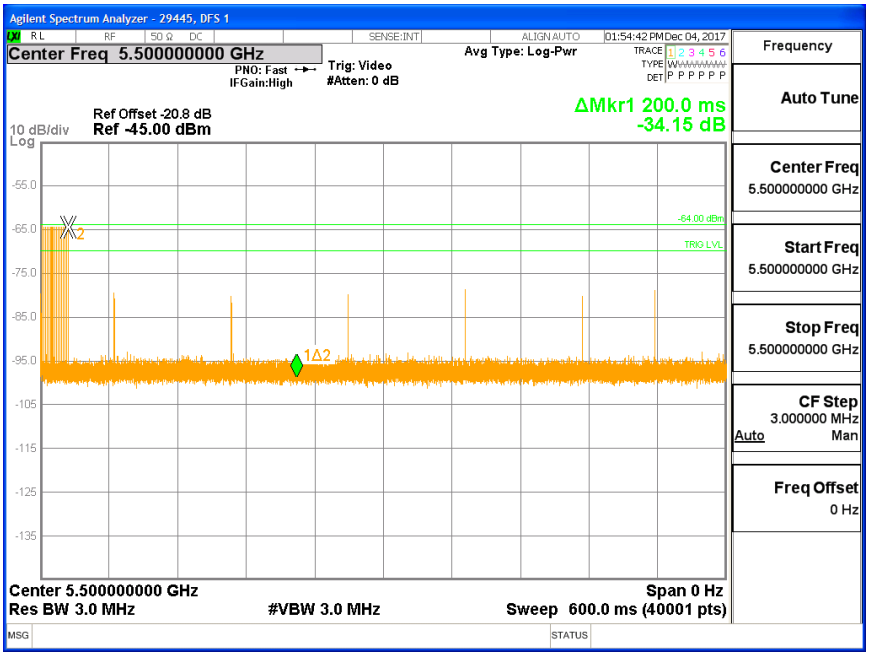
MOVE TIME

MOVE TIME



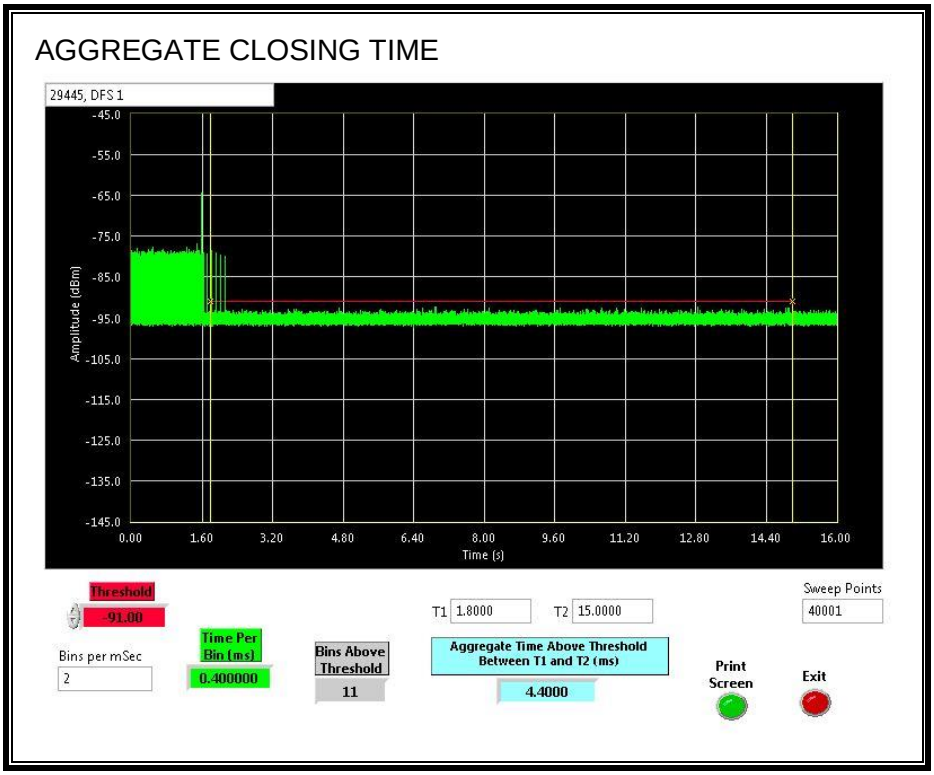
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

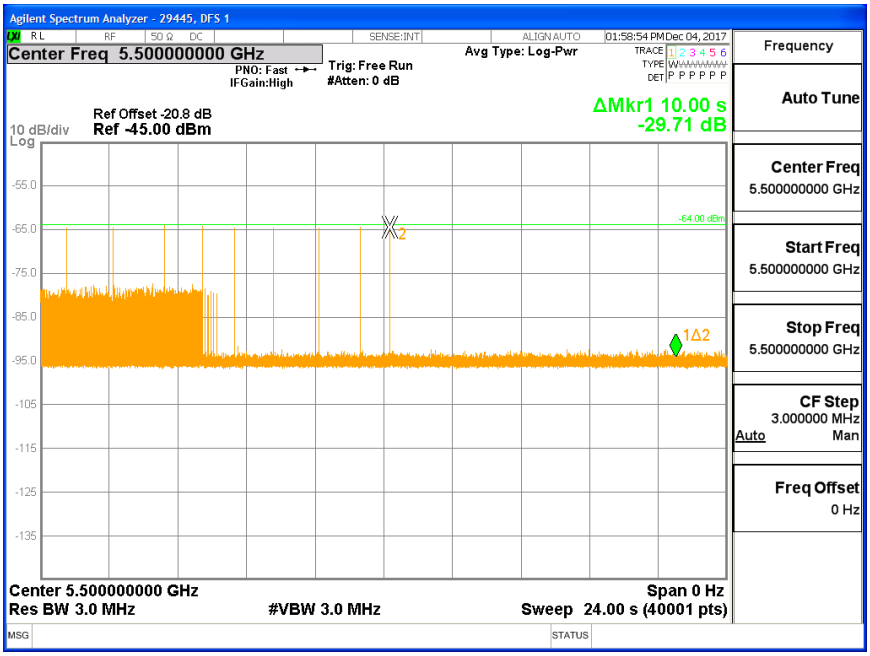
Only intermittent transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

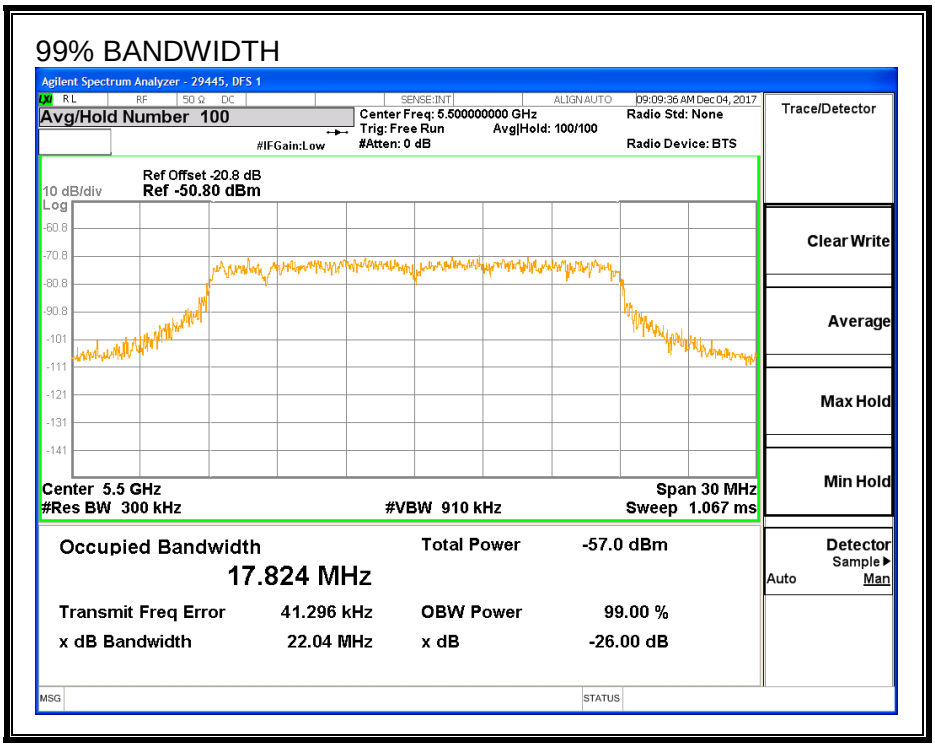
The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME FOR LONG PULSE RADAR



6.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5510	20	17.824	112.2	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

6.2.7. 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	17.82	DFS 1	29445	Version 3.0
FCC Short Pulse Type 2	30	90.00	60	Pass	5490	5510	17.82	DFS 1	29445	Version 3.0
FCC Short Pulse Type 3	30	93.33	60	Pass	5490	5510	17.82	DFS 1	29445	Version 3.0
FCC Short Pulse Type 4	30	83.33	60	Pass	5490	5510	17.82	DFS 1	29445	Version 3.0
Aggregate		91.67	80	Pass						
FCC Long Pulse Type 5	30	90.00	80	Pass	5490	5510	17.82	DFS 1	29445	Version 3.0
FCC Hopping Type 6	42	100.00	70	Pass	5490	5510		DFS 1	29445	Version 3.0

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	5500	Yes
1002	1	578	92	A	5504	Yes
1003	1	918	58	A	5501	Yes
1004	1	778	68	A	5498	Yes
1005	1	738	72	A	5494	Yes
1006	1	858	62	A	5491	Yes
1007	1	818	65	A	5505	Yes
1008	1	518	102	A	5500	Yes
1009	1	938	57	A	5504	Yes
1010	1	838	63	A	5505	Yes
1011	1	658	81	A	5497	Yes
1012	1	598	89	A	5504	Yes
1013	1	758	70	A	5507	Yes
1014	1	878	61	A	5508	Yes
1015	1	538	99	A	5494	Yes
1016	1	695	76	B	5502	Yes
1017	1	3004	18	B	5494	Yes
1018	1	1895	28	B	5508	Yes
1019	1	1786	30	B	5502	Yes
1020	1	2001	27	B	5495	Yes
1021	1	827	64	B	5502	Yes
1022	1	2525	21	B	5508	Yes
1023	1	1480	36	B	5504	Yes
1024	1	2113	25	B	5509	Yes
1025	1	1198	45	B	5505	Yes
1026	1	1960	27	B	5495	Yes
1027	1	1174	45	B	5508	Yes
1028	1	871	61	B	5493	Yes
1029	1	1568	34	B	5509	Yes
1030	1	2589	21	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	1.4	157	26	5494	Yes
2002	1.1	230	27	5498	No
2003	3.5	215	29	5504	Yes
2004	1.4	211	23	5509	Yes
2005	2.1	201	29	5508	Yes
2006	4.4	163	24	5509	Yes
2007	1.2	156	23	5509	Yes
2008	3.6	165	29	5492	Yes
2009	2.8	163	28	5499	Yes
2010	1.4	176	27	5493	Yes
2011	4.9	221	24	5502	Yes
2012	3.9	158	27	5491	Yes
2013	3.5	169	24	5501	Yes
2014	4.7	190	28	5495	Yes
2015	2.6	206	25	5506	Yes
2016	2	193	29	5504	Yes
2017	4.2	212	27	5497	Yes
2018	3.9	204	25	5503	Yes
2019	2.2	190	26	5505	No
2020	4.2	185	28	5505	Yes
2021	4.9	175	27	5505	Yes
2022	5	175	25	5502	Yes
2023	1.8	169	24	5503	Yes
2024	4.3	178	23	5507	Yes
2025	3.4	176	26	5496	Yes
2026	4.2	189	25	5492	Yes
2027	1.4	153	25	5501	Yes
2028	4.6	170	28	5504	No
2029	4.1	181	25	5497	Yes
2030	1.2	203	29	5497	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	461	17	5504	Yes
3002	7.7	423	17	5493	Yes
3003	9.8	483	18	5497	Yes
3004	9.5	457	17	5505	Yes
3005	7.8	412	16	5493	Yes
3006	9.9	399	18	5503	Yes
3007	6.4	367	18	5508	Yes
3008	8.7	500	18	5500	Yes
3009	9.6	363	17	5491	Yes
3010	8	258	18	5500	Yes
3011	7.1	384	16	5508	Yes
3012	7.9	292	16	5492	Yes
3013	7.3	431	17	5507	Yes
3014	8.3	485	17	5499	Yes
3015	7.8	268	16	5508	Yes
3016	7.1	335	17	5490	Yes
3017	6.9	382	18	5502	Yes
3018	6.4	344	16	5493	Yes
3019	8.5	404	17	5509	Yes
3020	8.2	378	16	5497	Yes
3021	8.7	333	18	5494	Yes
3022	8.6	320	17	5492	Yes
3023	9.2	288	17	5501	Yes
3024	7.4	421	16	5505	Yes
3025	8.3	284	16	5500	No
3026	8.9	429	17	5497	No
3027	9.9	305	18	5510	Yes
3028	6.6	464	18	5502	Yes
3029	6	352	16	5495	Yes
3030	7	288	16	5503	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	12.3	440	15	5504	Yes
4002	19.7	255	13	5508	Yes
4003	19.3	303	14	5501	Yes
4004	18.1	264	16	5506	Yes
4005	13.8	324	13	5502	No
4006	13.1	298	16	5502	Yes
4007	14.1	253	15	5502	Yes
4008	13.9	374	15	5495	Yes
4009	15.4	342	12	5506	Yes
4010	11.3	341	16	5501	Yes
4011	13.3	455	15	5498	Yes
4012	14.5	350	12	5502	No
4013	16.9	477	14	5499	Yes
4014	18.6	384	14	5506	Yes
4015	17.2	406	16	5492	Yes
4016	19.4	459	16	5498	Yes
4017	18.5	361	14	5506	Yes
4018	16.8	309	16	5508	Yes
4019	16.4	474	12	5502	No
4020	15.2	436	15	5501	Yes
4021	20	496	16	5492	Yes
4022	15.1	352	14	5505	Yes
4023	11.2	425	13	5491	Yes
4024	15.8	294	14	5507	Yes
4025	12.5	262	13	5497	Yes
4026	17.5	395	14	5502	Yes
4027	19.5	376	14	5505	Yes
4028	11.6	271	13	5505	Yes
4029	14	397	13	5508	No
4030	15.8	438	12	5493	No

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	No
10	5500	No
11	5495	Yes
12	5497	No
13	5495	Yes
14	5497	Yes
15	5498	Yes
16	5497	Yes
17	5498	Yes
18	5499	Yes
19	5494	Yes
20	5496	Yes
21	5504	Yes
22	5505	Yes
23	5504	Yes
24	5503	Yes
25	5503	Yes
26	5502	Yes
27	5505	Yes
28	5500	Yes
29	5501	Yes
30	5501	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	256	5490	6	Yes
2	731	5491	4	Yes
3	1206	5492	2	Yes
4	1681	5493	2	Yes
5	2156	5494	1	Yes
6	2631	5495	7	Yes
7	3106	5496	5	Yes
8	3581	5497	5	Yes
9	4056	5498	2	Yes
10	4531	5499	5	Yes
11	5006	5500	3	Yes
12	5481	5501	5	Yes
13	5956	5502	2	Yes
14	6431	5503	2	Yes
15	6906	5504	6	Yes
16	7381	5505	3	Yes
17	7856	5506	4	Yes
18	8331	5507	2	Yes
19	8806	5508	2	Yes
20	9281	5509	3	Yes
21	9756	5510	2	Yes
22	10231	5490	3	Yes
23	10706	5491	6	Yes
24	11181	5492	2	Yes
25	11656	5493	3	Yes
26	12131	5494	4	Yes
27	12606	5495	2	Yes
28	13081	5496	5	Yes
29	13556	5497	3	Yes
30	14031	5498	5	Yes
31	14506	5499	6	Yes
32	14981	5500	2	Yes
33	15456	5501	5	Yes
34	15931	5502	5	Yes
35	16406	5503	4	Yes
36	16881	5504	3	Yes
37	17356	5505	5	Yes
38	17831	5506	3	Yes
39	18306	5507	4	Yes
40	18781	5508	2	Yes
41	19256	5509	3	Yes
42	19731	5510	3	Yes

6.3. MASTER DEVICE RESULTS FOR 40 MHz BANDWIDTH

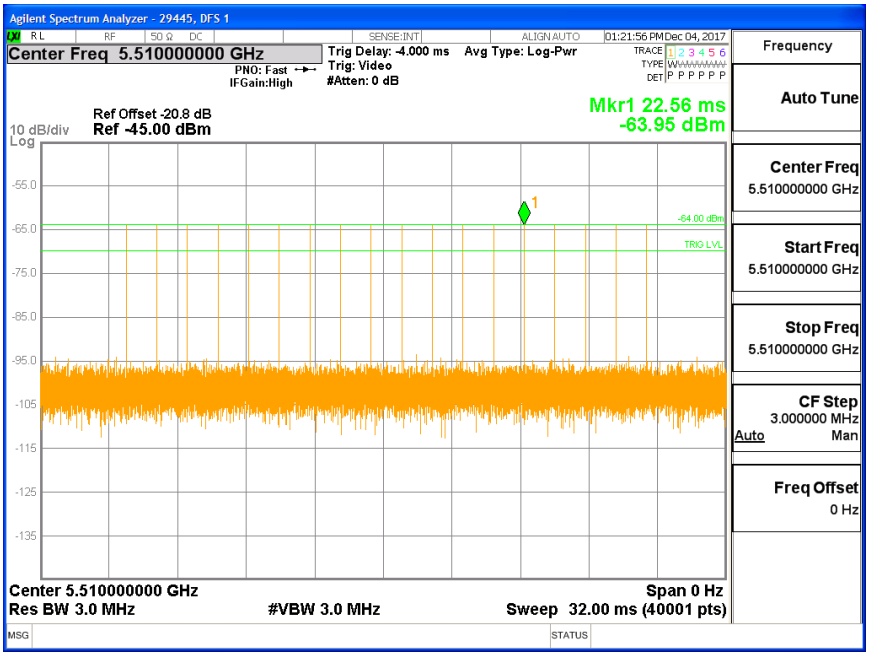
6.3.1. TEST CHANNEL

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

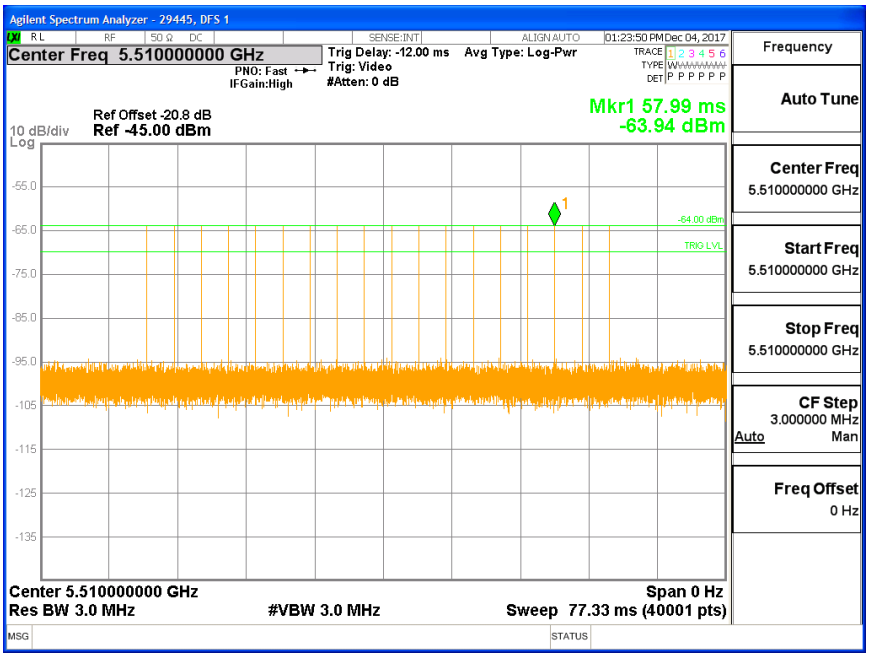
6.3.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

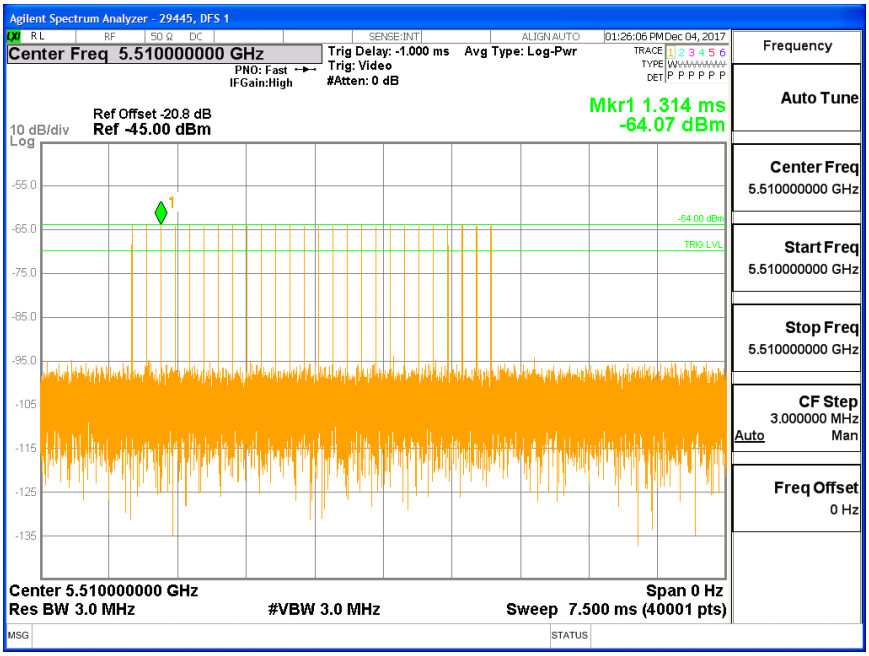
SHORT PULSE RADAR TYPE 0



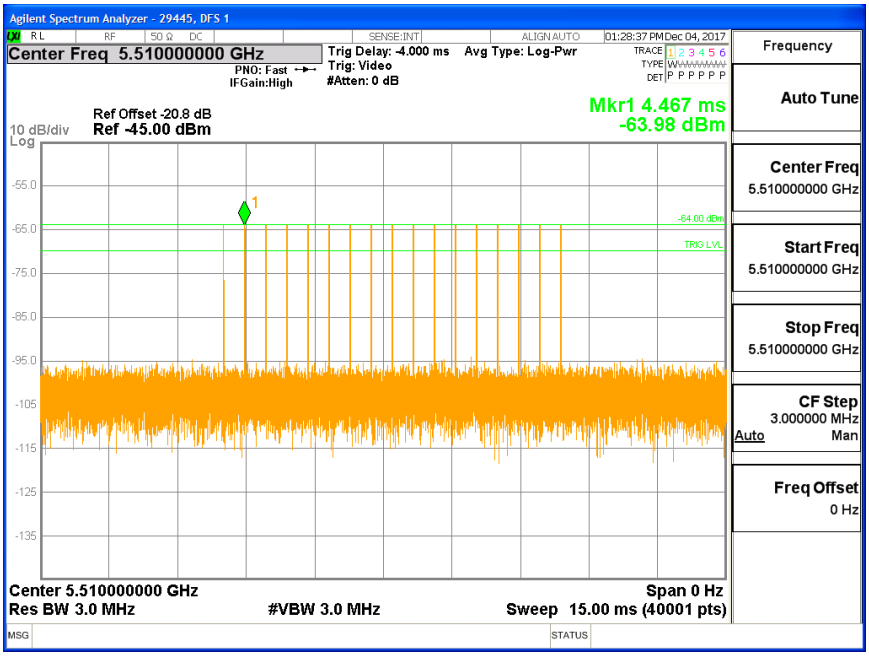
SAMPLE OF RADAR TYPE 1



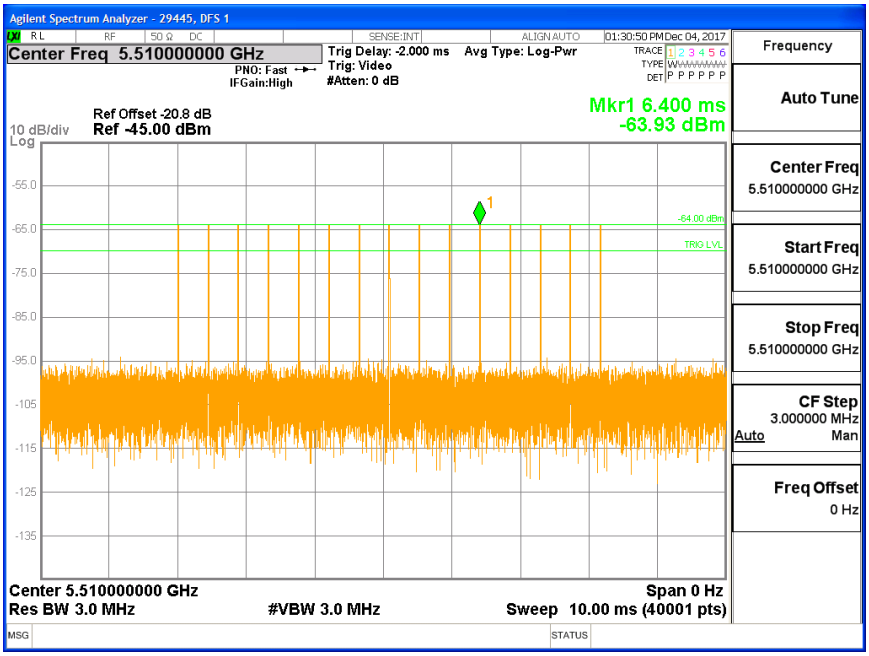
SAMPLE OF RADAR TYPE 2



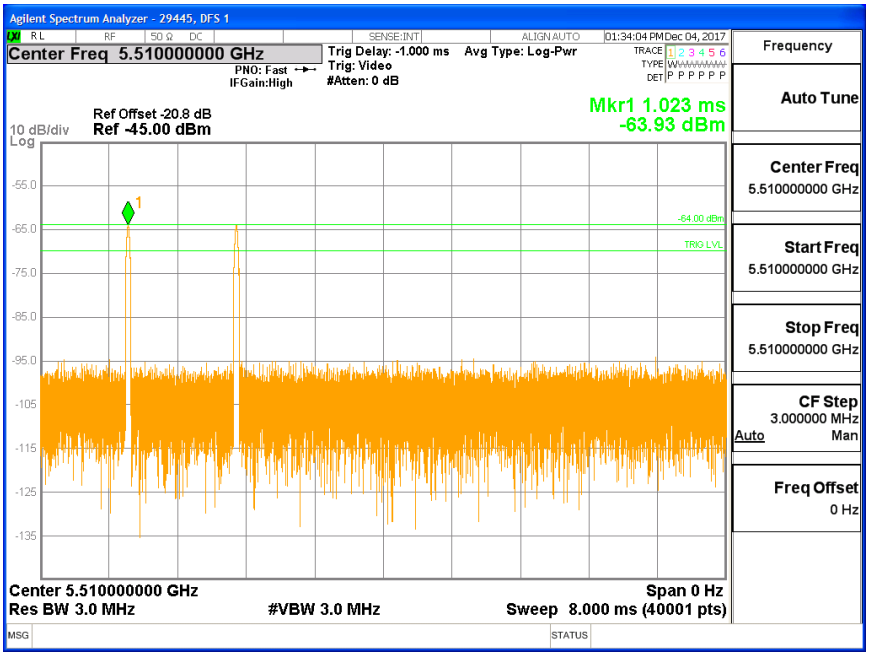
SAMPLE OF RADAR TYPE 3



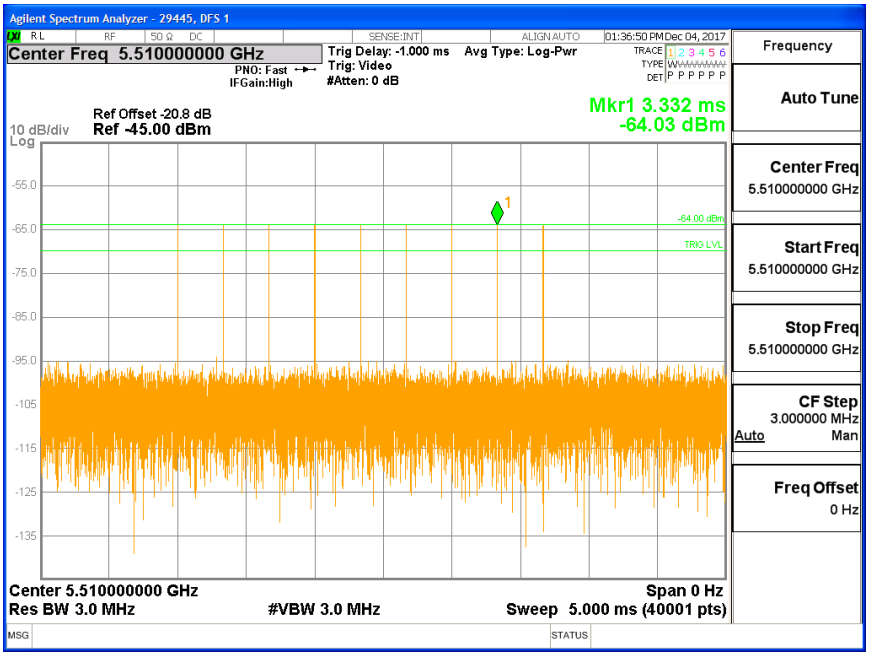
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

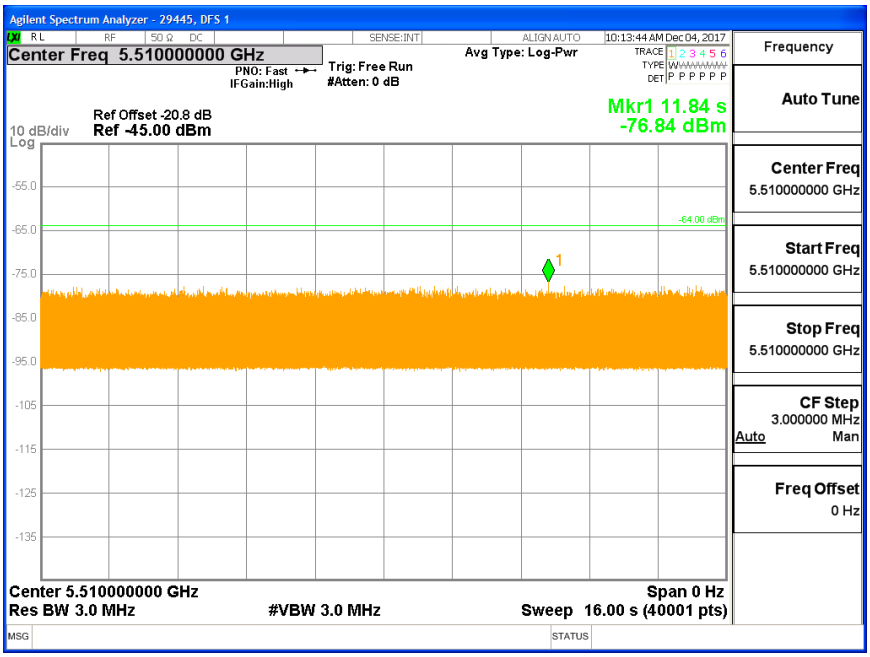


SINGLE BURST OF RADAR TYPE 6

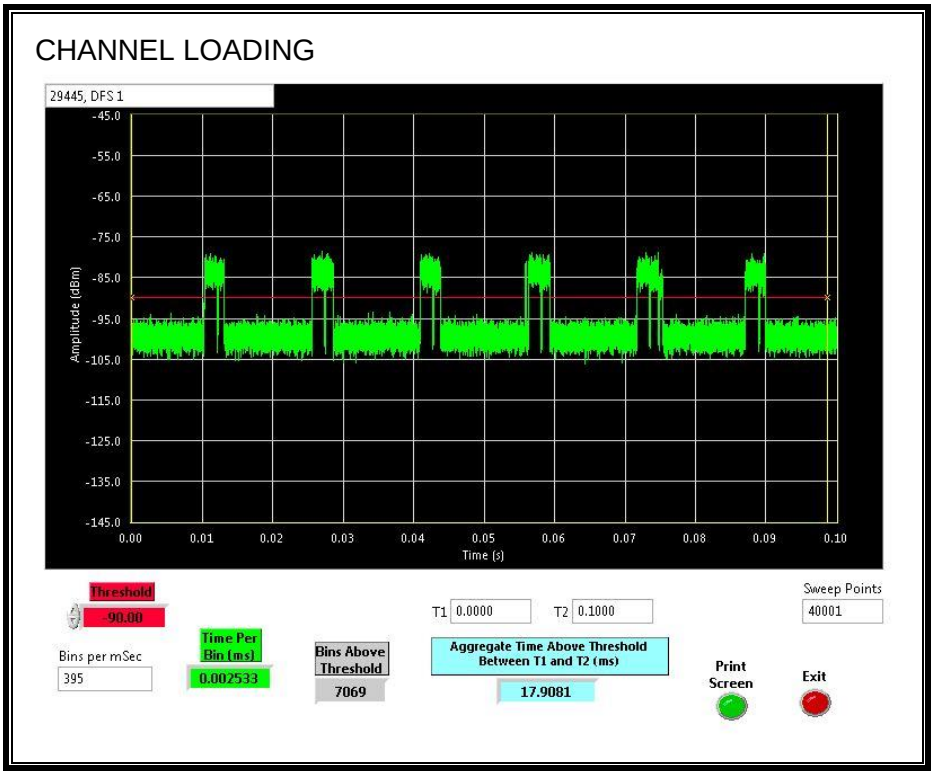


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 17.90%.

6.3.3. 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)
30.1	158.0	127.9	67.9

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)
30.65	101.6	71.0	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)
30.47	155.8	125.3	57.4

QUALITATIVE RESULTS

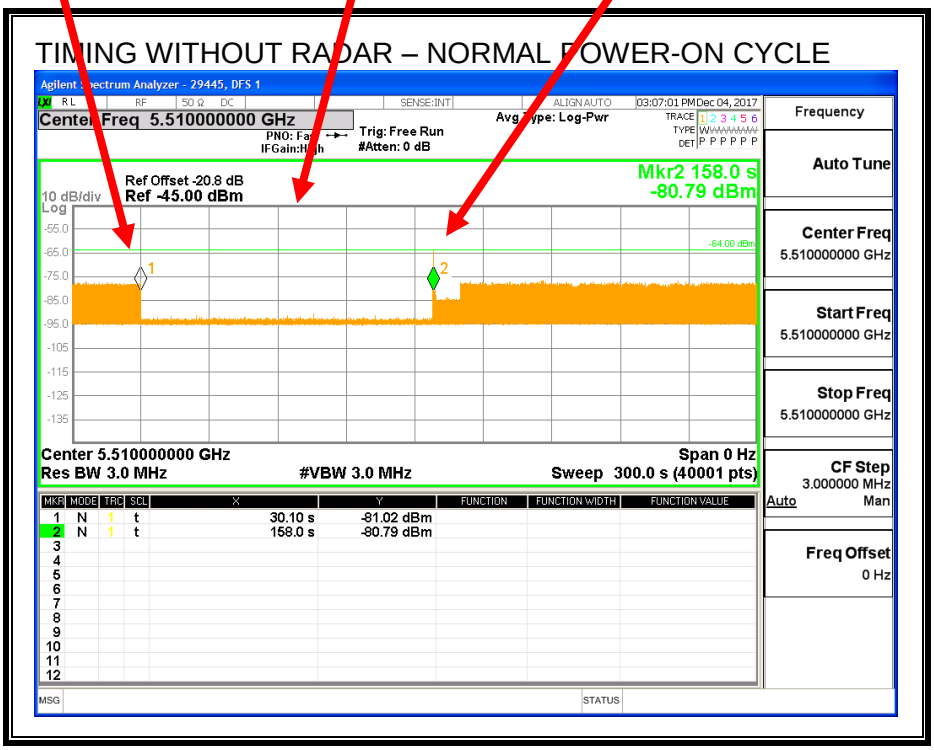
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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



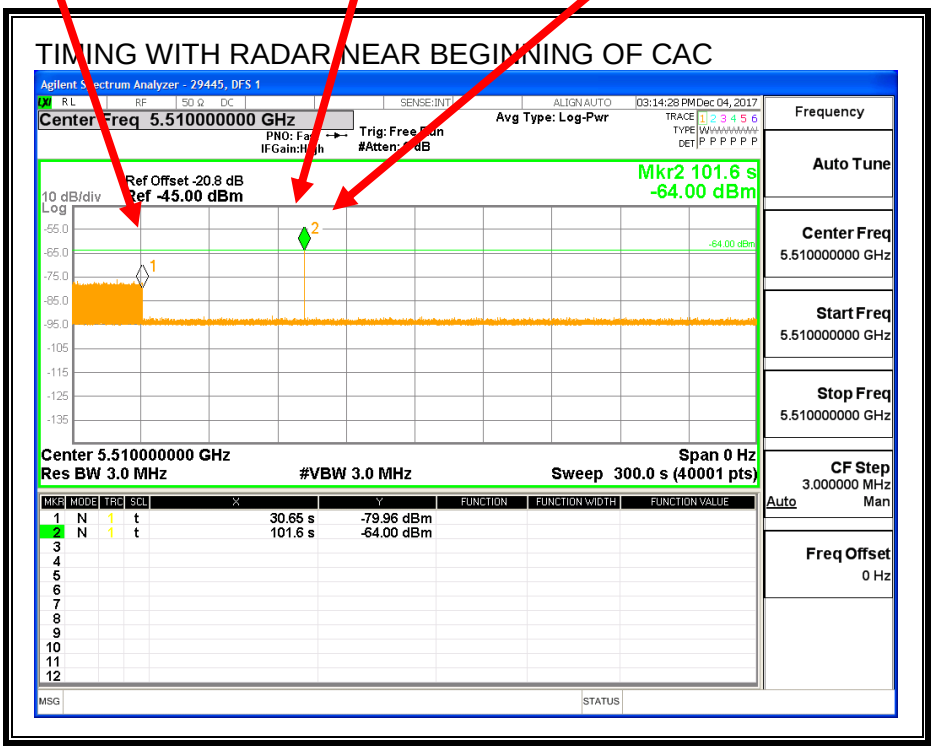
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



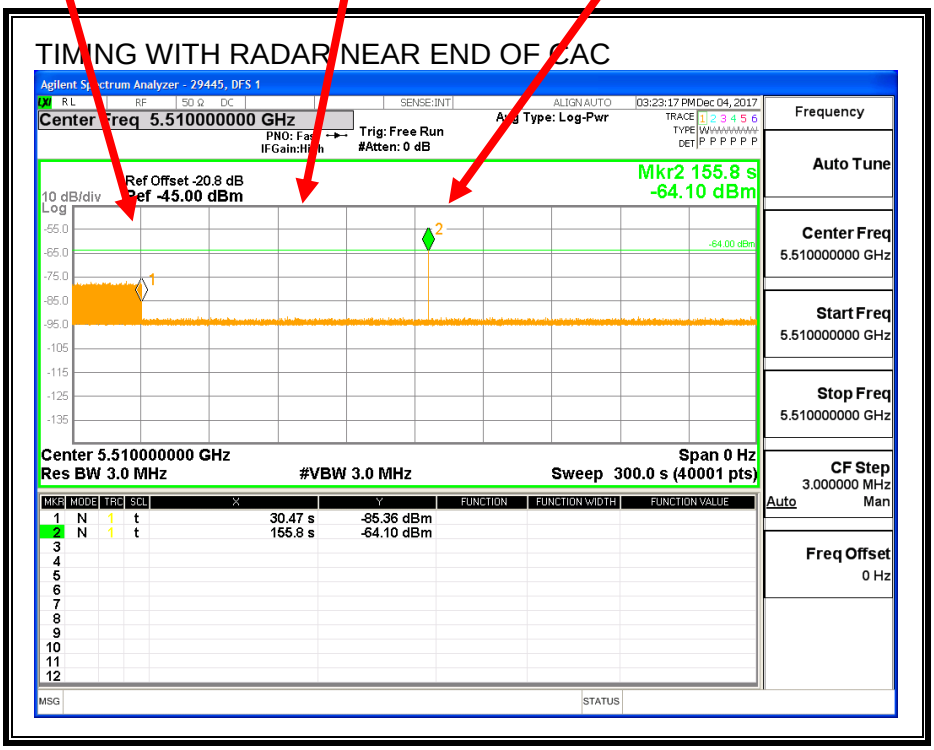
No EUT transmissions were observed after the radar signal.

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.

6.3.1. OVERLAPPING CHANNEL TESTS

RESULTS

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

6.3.2. 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).

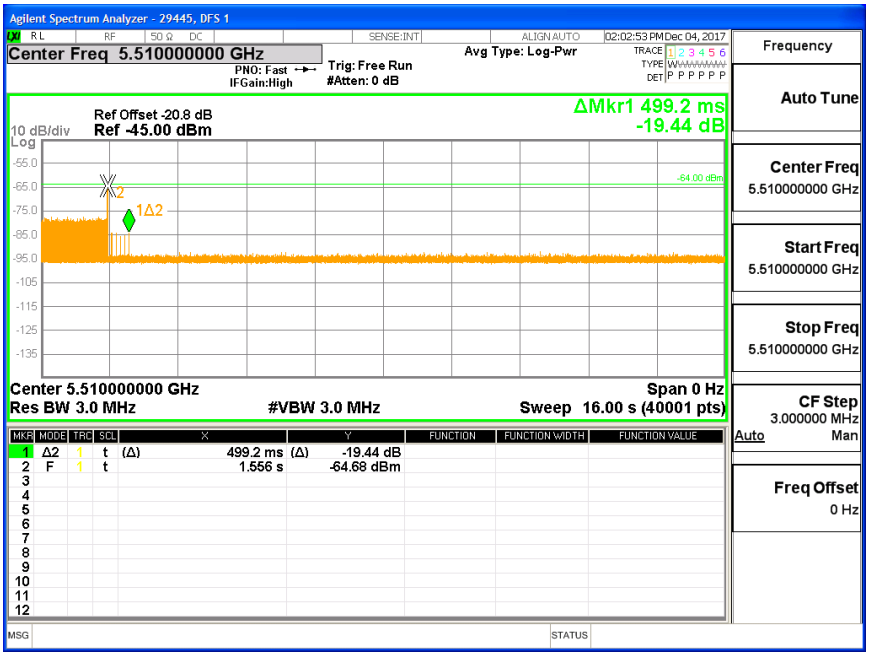
RESULTS

Channel Move Time (sec)	Limit (sec)
0.4992	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
3.6	60

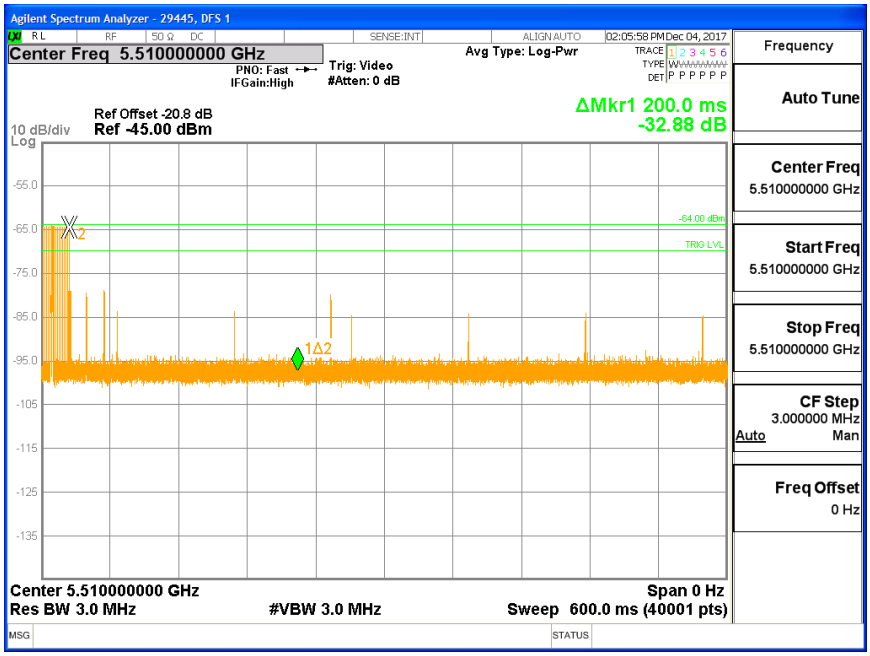
MOVE TIME

MOVE TIME



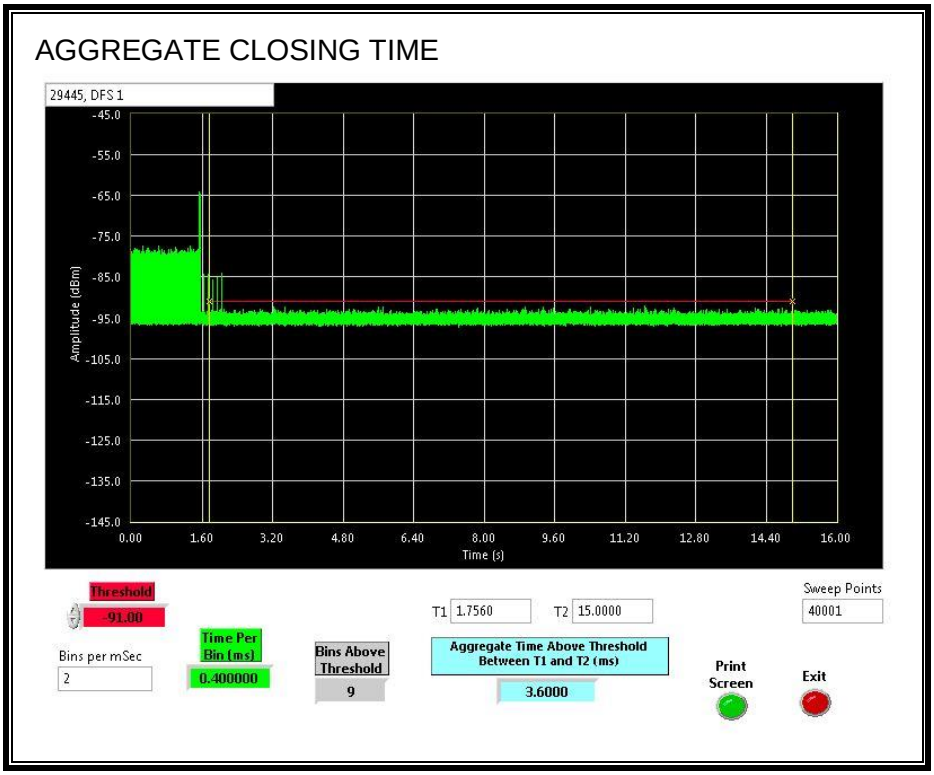
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

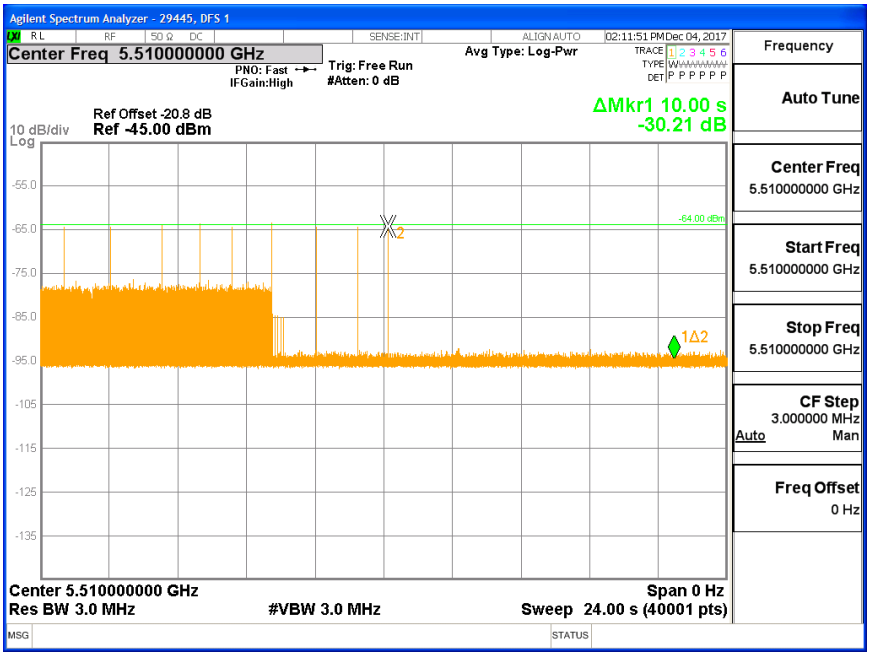
Only intermittent transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

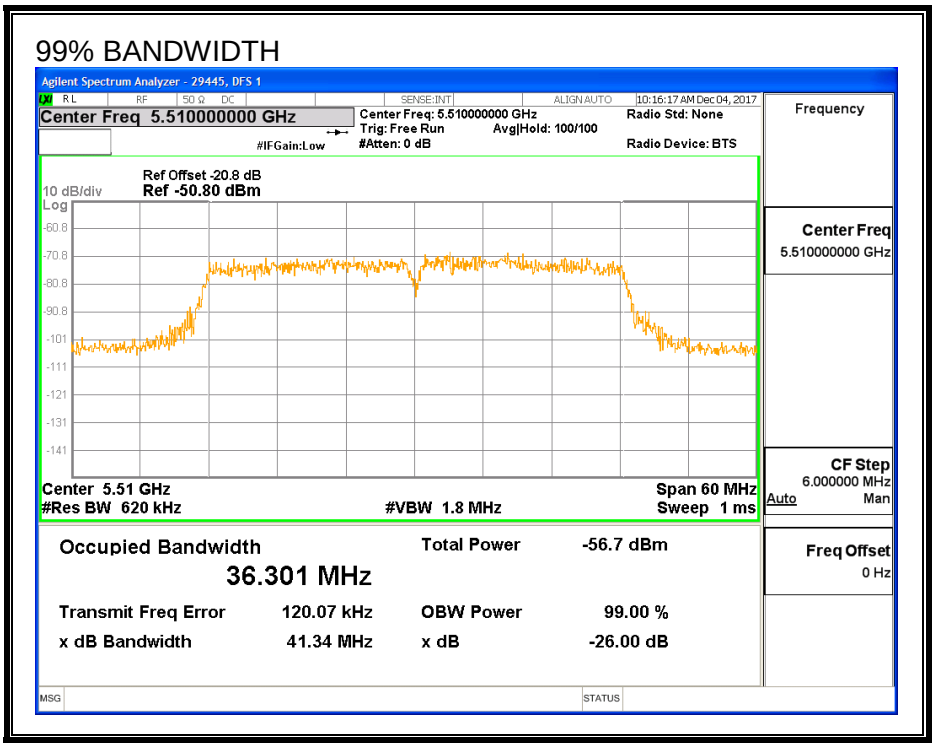
The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME FOR LONG PULSE RADAR



6.3.3. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5530	40	36.301	110.2	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	FH

6.3.4. 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	36.3	DFS 1	29445	Version 3.0
FCC Short Pulse Type 2	30	73.33	60	Pass	5490	5530	36.3	DFS 1	29445	Version 3.0
FCC Short Pulse Type 3	30	93.33	60	Pass	5490	5530	36.3	DFS 1	29445	Version 3.0
FCC Short Pulse Type 4	30	80.00	60	Pass	5490	5530	36.3	DFS 1	29445	Version 3.0
Aggregate		86.67	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5530	36.3	DFS 1	29445	Version 3.0
FCC Hopping Type 6	41	100.00	70	Pass	5490	5530		DFS 1	29445	Version 3.0

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	5529	Yes
1002	1	578	92	A	5507	Yes
1003	1	918	58	A	5528	Yes
1004	1	778	68	A	5526	Yes
1005	1	738	72	A	5510	Yes
1006	1	858	62	A	5514	Yes
1007	1	818	65	A	5521	Yes
1008	1	518	102	A	5491	Yes
1009	1	938	57	A	5527	Yes
1010	1	838	63	A	5493	Yes
1011	1	658	81	A	5519	Yes
1012	1	598	89	A	5505	Yes
1013	1	758	70	A	5501	Yes
1014	1	878	61	A	5499	Yes
1015	1	538	99	A	5496	Yes
1016	1	695	76	B	5494	Yes
1017	1	3004	18	B	5499	Yes
1018	1	1895	28	B	5496	Yes
1019	1	1786	30	B	5502	Yes
1020	1	2001	27	B	5497	Yes
1021	1	827	64	B	5528	Yes
1022	1	2525	21	B	5520	Yes
1023	1	1480	36	B	5498	Yes
1024	1	2113	25	B	5506	Yes
1025	1	1198	45	B	5525	Yes
1026	1	1960	27	B	5522	Yes
1027	1	1174	45	B	5520	Yes
1028	1	871	61	B	5509	Yes
1029	1	1568	34	B	5499	Yes
1030	1	2589	21	B	5517	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	1.4	157	26	5527	Yes
2002	1.1	230	27	5504	Yes
2003	3.5	215	29	5506	Yes
2004	1.4	211	23	5506	Yes
2005	2.1	201	29	5505	Yes
2006	4.4	163	24	5500	Yes
2007	1.2	156	23	5507	Yes
2008	3.6	165	29	5497	Yes
2009	2.8	163	28	5530	Yes
2010	1.4	176	27	5520	No
2011	4.9	221	24	5509	Yes
2012	3.9	158	27	5503	No
2013	3.5	169	24	5520	Yes
2014	4.7	190	28	5491	No
2015	2.6	206	25	5522	No
2016	2	193	29	5527	Yes
2017	4.2	212	27	5522	No
2018	3.9	204	25	5522	Yes
2019	2.2	190	26	5517	Yes
2020	4.2	185	28	5498	Yes
2021	4.9	175	27	5523	Yes
2022	5	175	25	5528	Yes
2023	1.8	169	24	5495	Yes
2024	4.3	178	23	5504	No
2025	3.4	176	26	5517	No
2026	4.2	189	25	5506	Yes
2027	1.4	153	25	5518	Yes
2028	4.6	170	28	5516	No
2029	4.1	181	25	5518	Yes
2030	1.2	203	29	5519	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	461	17	5527	Yes
3002	7.7	423	17	5515	Yes
3003	9.8	483	18	5506	Yes
3004	9.5	457	17	5510	Yes
3005	7.8	412	16	5525	Yes
3006	9.9	399	18	5518	Yes
3007	6.4	367	18	5514	Yes
3008	8.7	500	18	5507	Yes
3009	9.6	363	17	5511	Yes
3010	8	258	18	5508	Yes
3011	7.1	384	16	5498	No
3012	7.9	292	16	5527	Yes
3013	7.3	431	17	5523	Yes
3014	8.3	485	17	5496	Yes
3015	7.8	268	16	5524	Yes
3016	7.1	335	17	5491	Yes
3017	6.9	382	18	5494	Yes
3018	6.4	344	16	5509	Yes
3019	8.5	404	17	5512	Yes
3020	8.2	378	16	5515	Yes
3021	8.7	333	18	5510	Yes
3022	8.6	320	17	5521	Yes
3023	9.2	288	17	5527	No
3024	7.4	421	16	5504	Yes
3025	8.3	284	16	5505	Yes
3026	8.9	429	17	5528	Yes
3027	9.9	305	18	5523	Yes
3028	6.6	464	18	5502	Yes
3029	6	352	16	5522	Yes
3030	7	288	16	5498	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	12.3	440	15	5523	Yes
4002	19.7	255	13	5502	Yes
4003	19.3	303	14	5493	Yes
4004	18.1	264	16	5528	Yes
4005	13.8	324	13	5520	Yes
4006	13.1	298	16	5528	Yes
4007	14.1	253	15	5520	Yes
4008	13.9	374	15	5497	Yes
4009	15.4	342	12	5496	No
4010	11.3	341	16	5528	Yes
4011	13.3	455	15	5521	Yes
4012	14.5	350	12	5494	Yes
4013	16.9	477	14	5511	Yes
4014	18.6	384	14	5514	No
4015	17.2	406	16	5492	Yes
4016	19.4	459	16	5515	No
4017	18.5	361	14	5491	Yes
4018	16.8	309	16	5523	Yes
4019	16.4	474	12	5497	No
4020	15.2	436	15	5498	Yes
4021	20	496	16	5521	Yes
4022	15.1	352	14	5511	Yes
4023	11.2	425	13	5494	No
4024	15.8	294	14	5513	Yes
4025	12.5	262	13	5492	Yes
4026	17.5	395	14	5516	No
4027	19.5	376	14	5508	Yes
4028	11.6	271	13	5517	Yes
4029	14	397	13	5518	Yes
4030	15.8	438	12	5523	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	5496	Yes
12	5498	Yes
13	5496	Yes
14	5498	Yes
15	5499	Yes
16	5498	Yes
17	5498	Yes
18	5500	Yes
19	5494	Yes
20	5496	Yes
21	5523	Yes
22	5525	Yes
23	5523	Yes
24	5523	Yes
25	5522	Yes
26	5522	Yes
27	5525	Yes
28	5520	Yes
29	5521	Yes
30	5520	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	31	5490	13	Yes
2	506	5491	9	Yes
3	981	5492	7	Yes
4	1456	5493	12	Yes
5	1931	5494	17	Yes
6	2406	5495	10	Yes
7	2881	5496	7	Yes
8	3356	5497	8	Yes
9	3831	5498	10	Yes
10	4306	5499	8	Yes
11	4781	5500	8	Yes
12	5256	5501	8	Yes
13	5731	5502	7	Yes
14	6206	5503	14	Yes
15	6681	5504	9	Yes
16	7156	5505	9	Yes
17	7631	5506	14	Yes
18	8106	5507	4	Yes
19	8581	5508	5	Yes
20	9056	5509	10	Yes
21	9531	5510	11	Yes
22	10006	5511	8	Yes
23	10481	5512	6	Yes
24	10956	5513	9	Yes
25	11431	5514	8	Yes
26	11906	5515	8	Yes
27	12381	5516	7	Yes
28	12856	5517	8	Yes
29	13331	5518	13	Yes
30	13806	5519	6	Yes
31	14281	5520	8	Yes
32	14756	5521	6	Yes
33	15231	5522	8	Yes
34	15706	5523	10	Yes
35	16181	5524	9	Yes
36	16656	5525	6	Yes
37	17131	5526	11	Yes
38	17606	5527	12	Yes
39	18081	5528	9	Yes
40	18556	5529	7	Yes
41	19031	5530	4	Yes

6.4. MASTER DEVICE RESULTS FOR 80 MHz BANDWIDTH

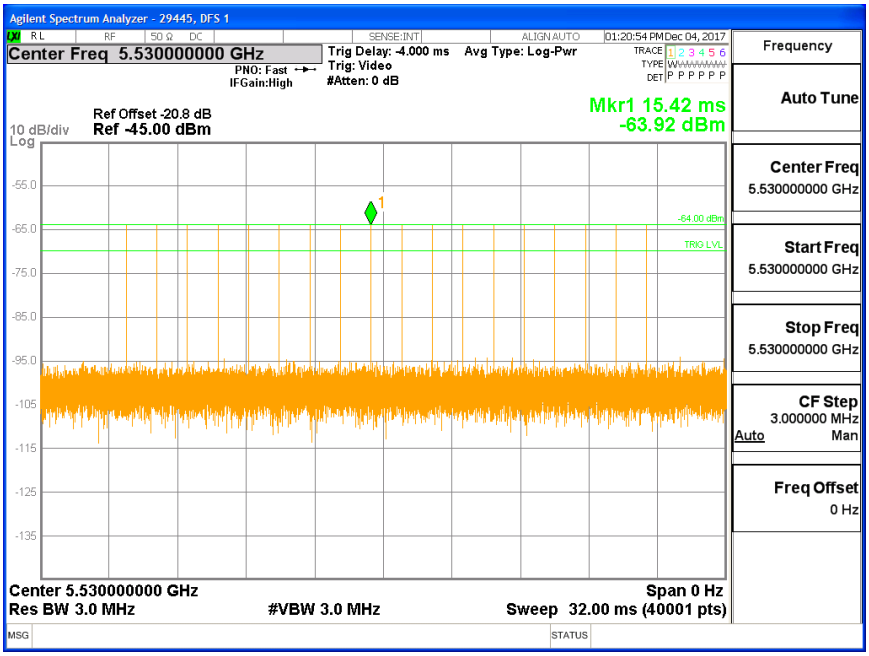
6.4.1. TEST CHANNEL

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

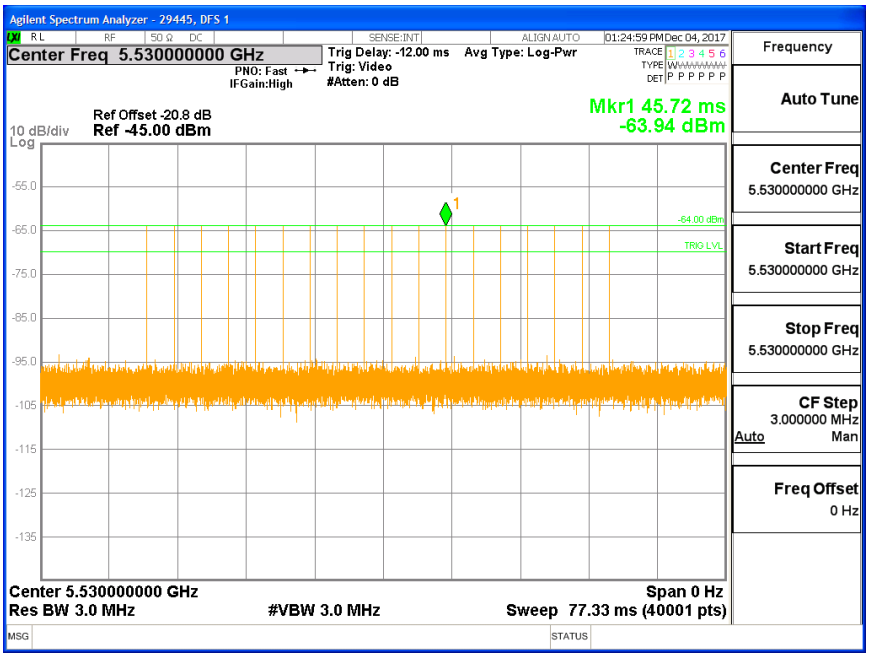
6.4.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

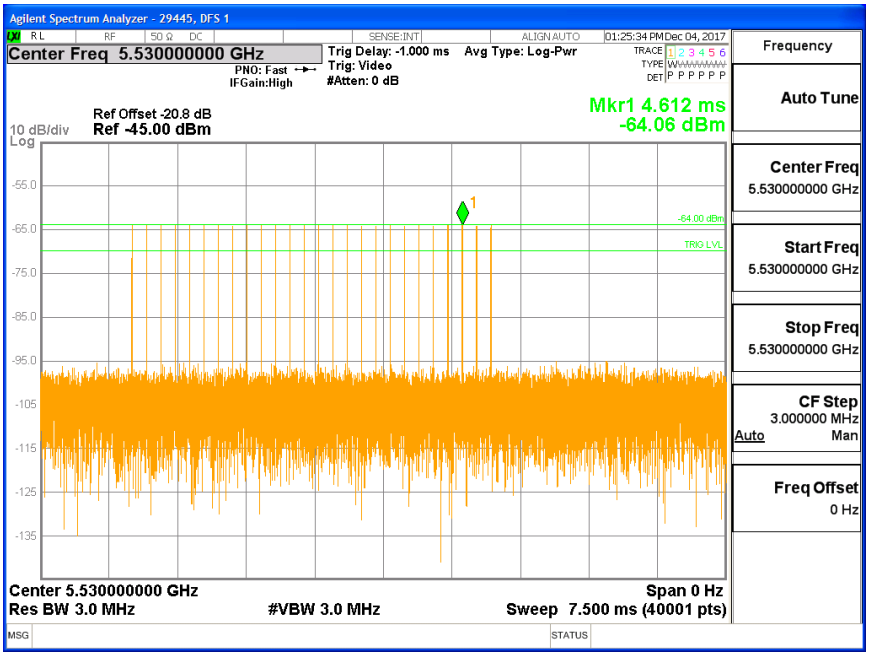
SHORT PULSE RADAR TYPE 0



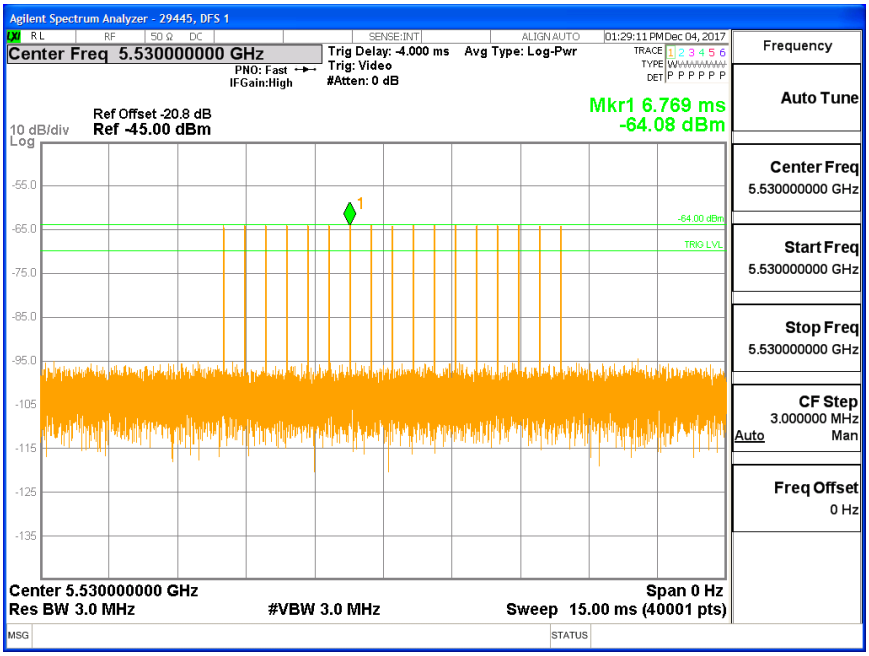
SAMPLE OF RADAR TYPE 1



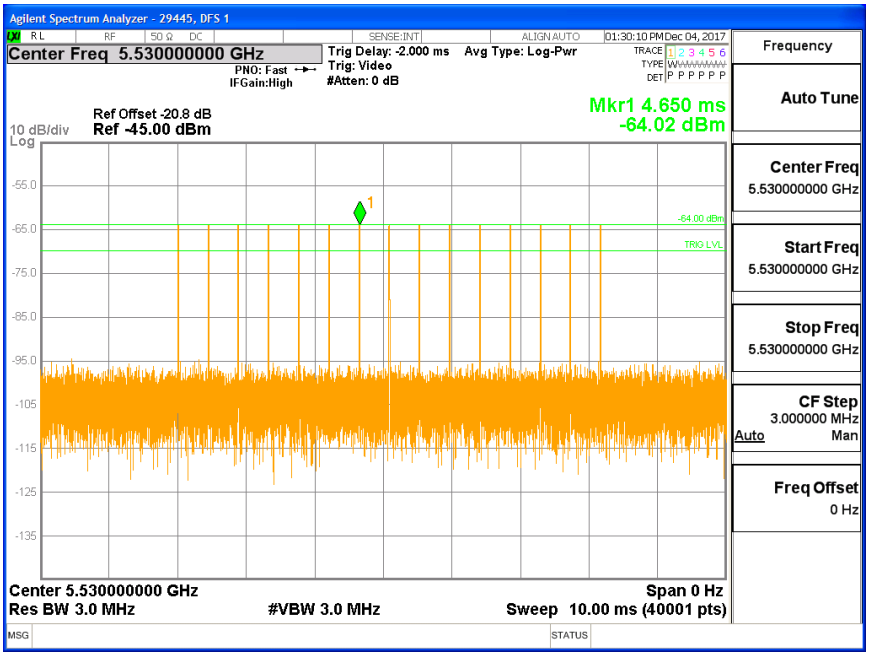
SAMPLE OF RADAR TYPE 2



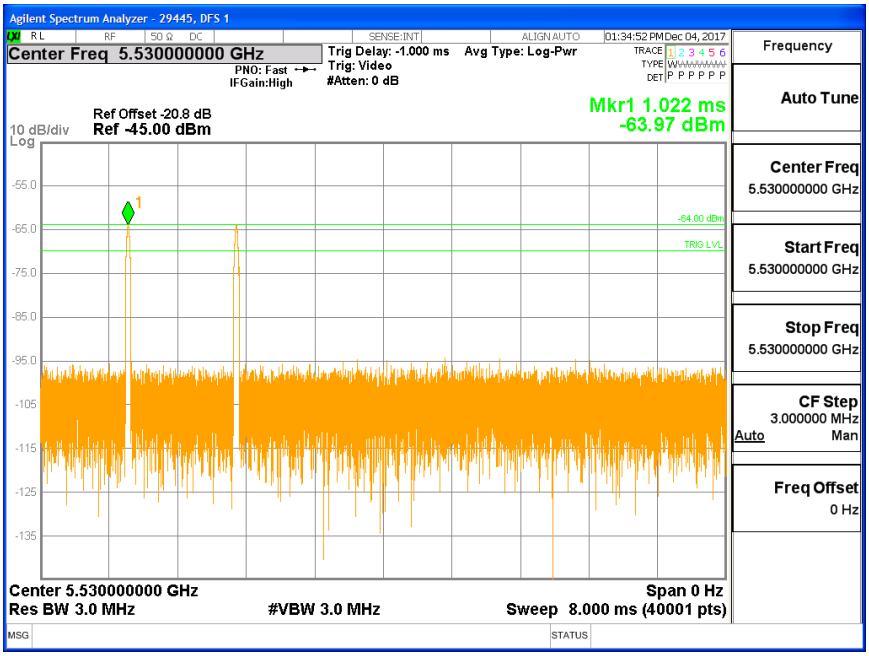
SAMPLE OF RADAR TYPE 3



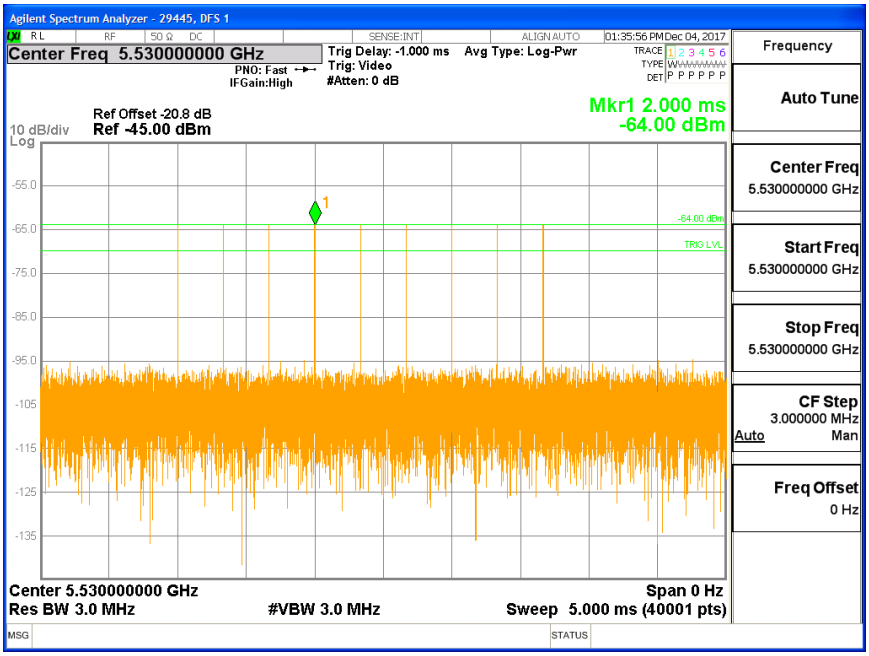
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

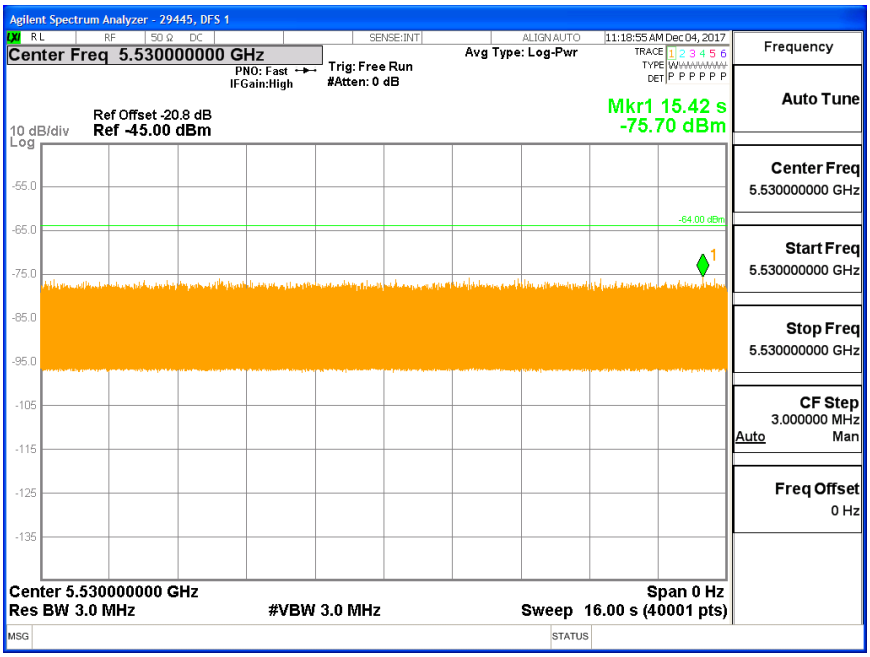


SINGLE BURST OF RADAR TYPE 6

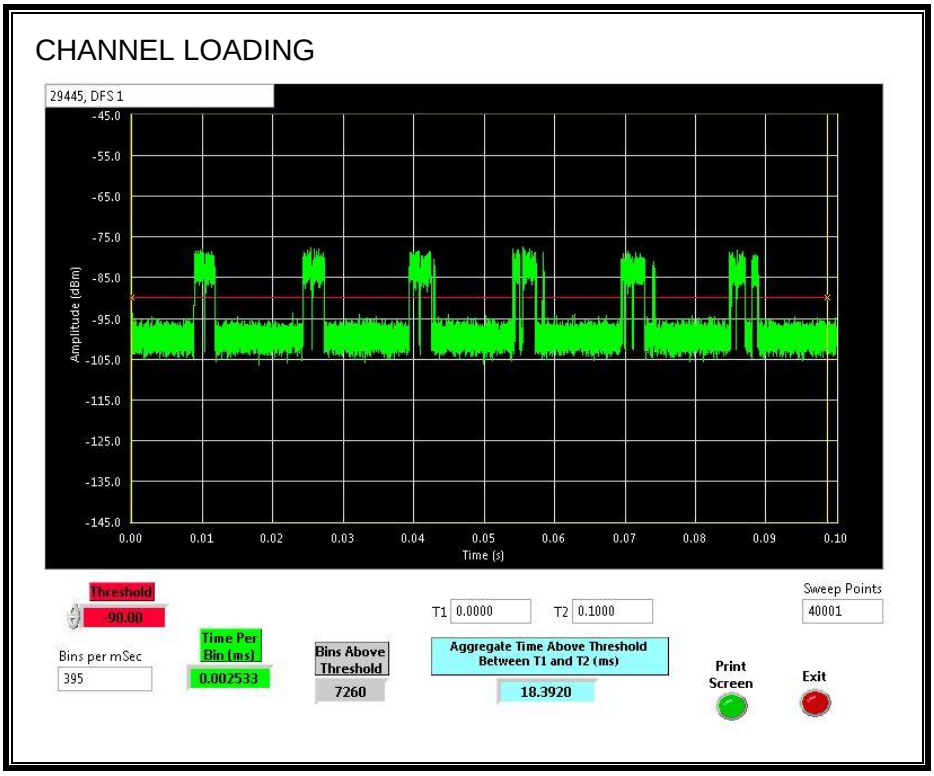


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 18.39%.

6.4.1. 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)
29.99	157.8	127.8	67.8

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)
30.5	100.8	70.3	2.5

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)
30.71	155.9	125.2	57.4

QUALITATIVE RESULTS

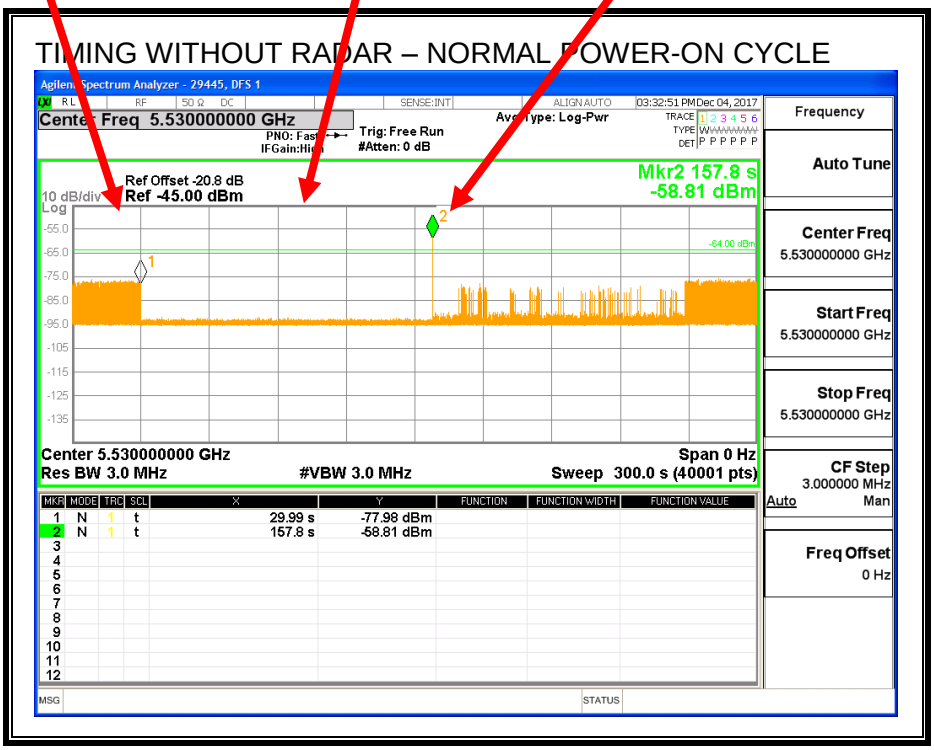
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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

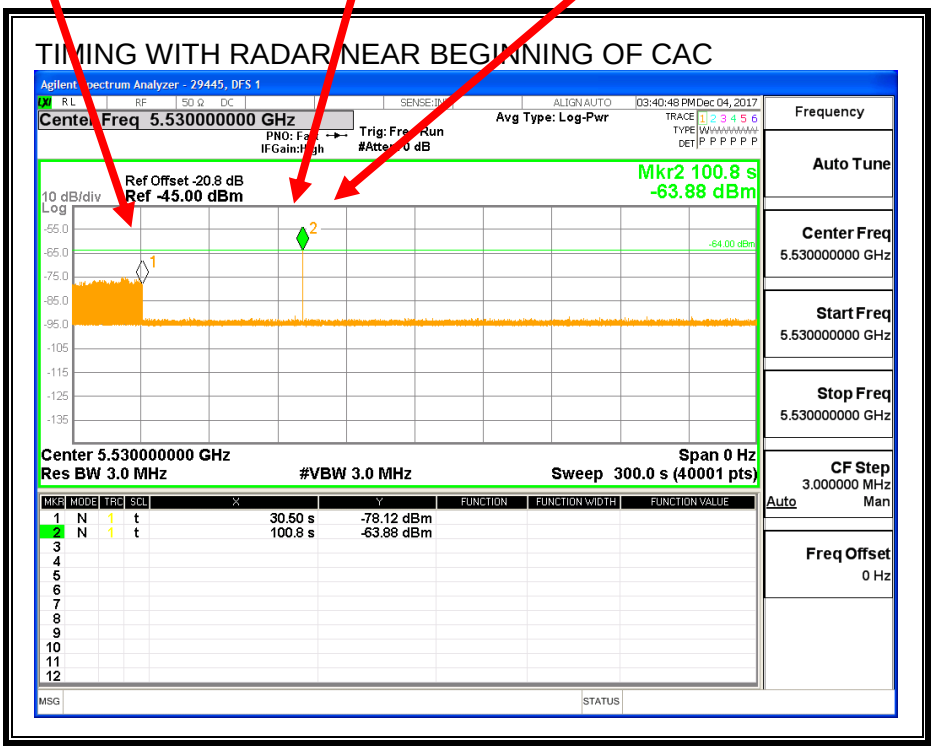
End of CAC
Traffic is Initiated



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



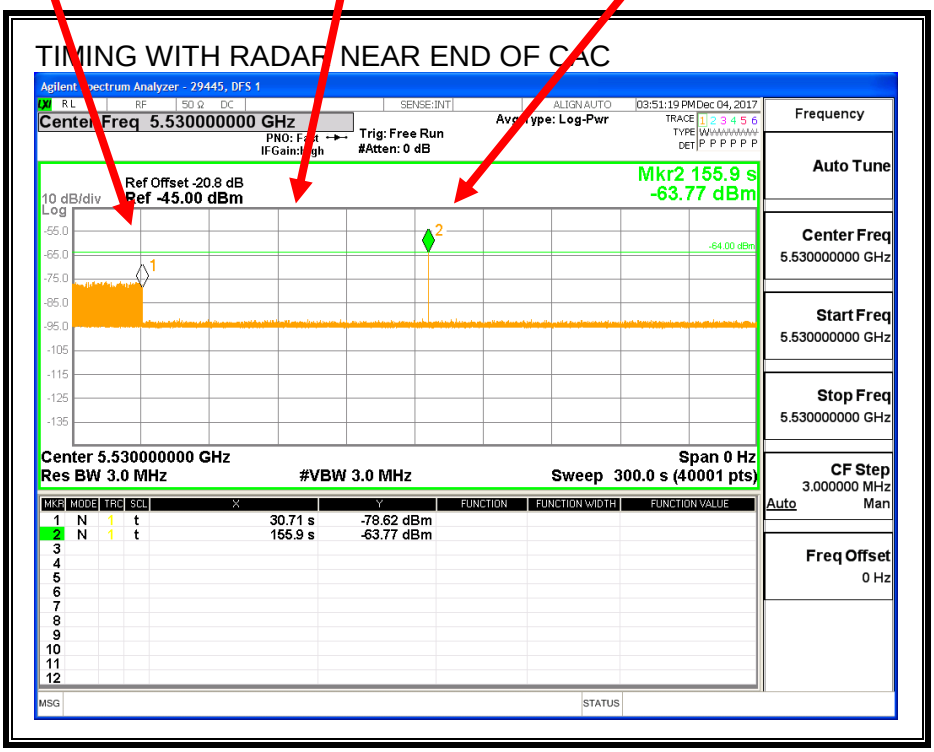
No EUT transmissions were observed after the radar signal.

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.

6.4.2. OVERLAPPING CHANNEL TESTS

RESULTS

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

6.4.3. 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).

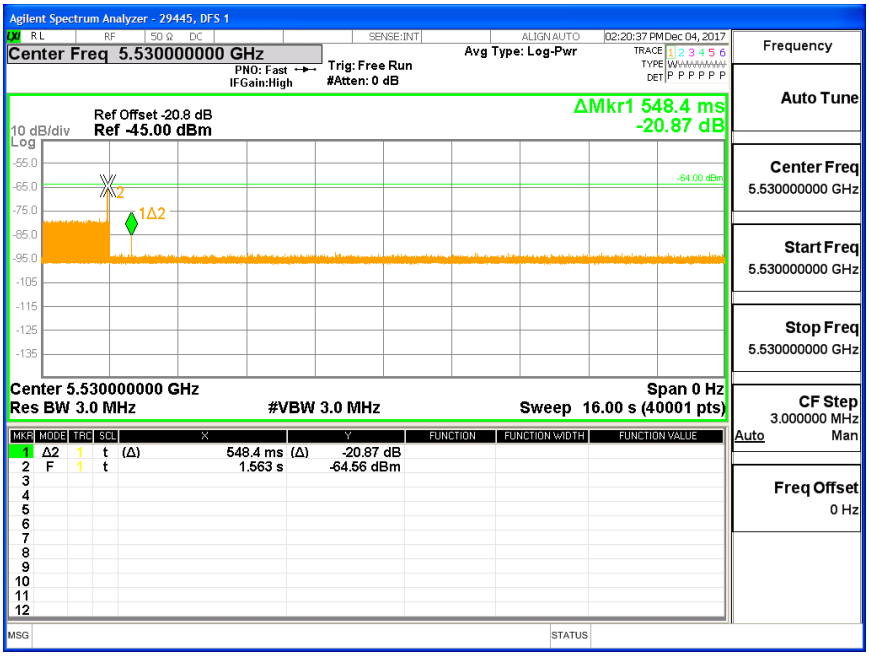
RESULTS

Channel Move Time (sec)	Limit (sec)
0.5484	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.4	60

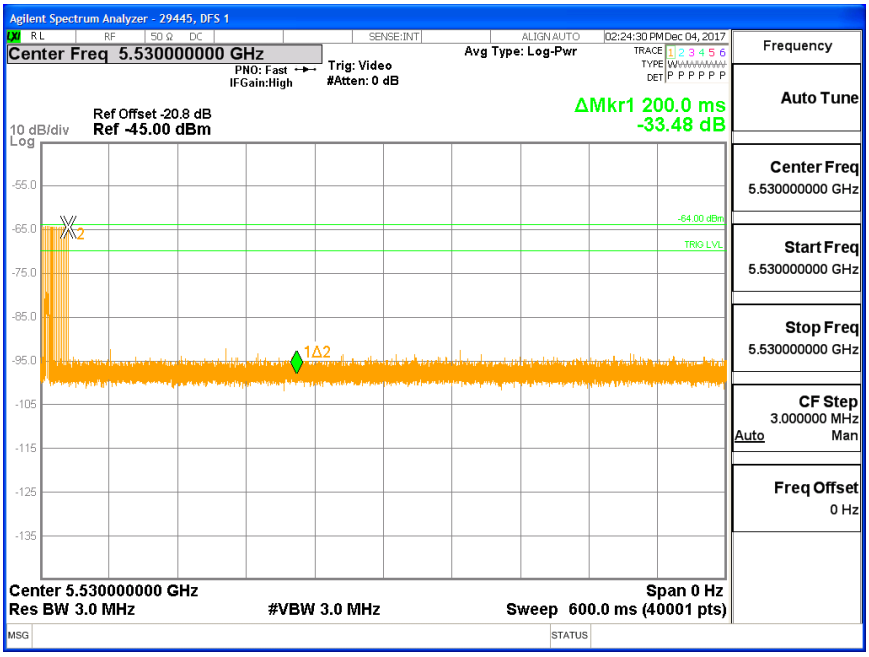
MOVE TIME

MOVE TIME



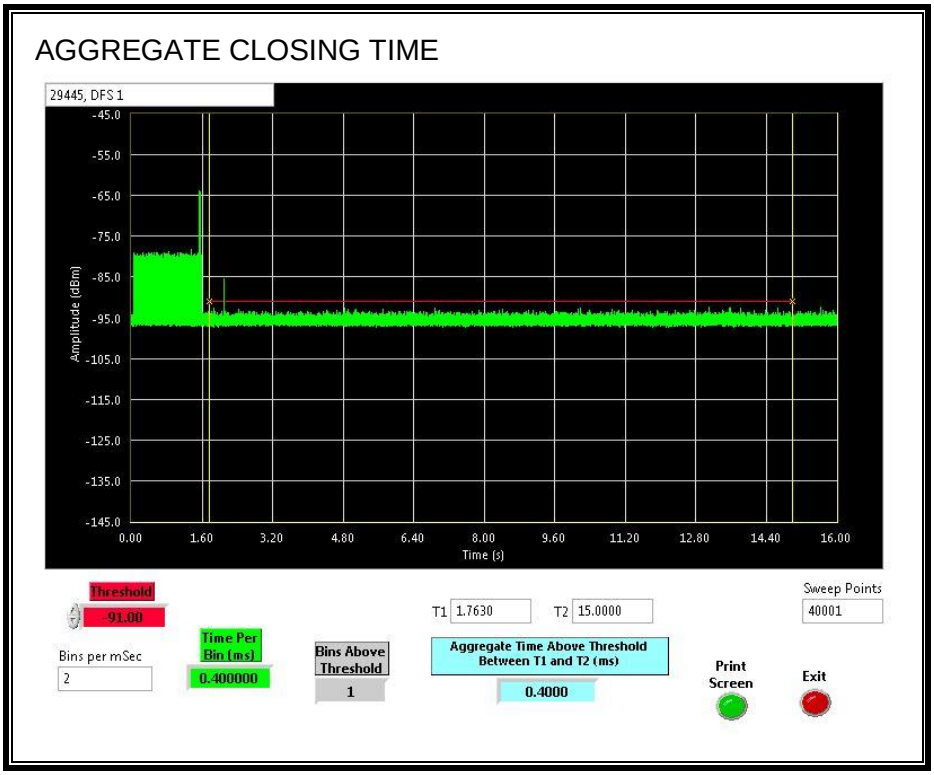
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

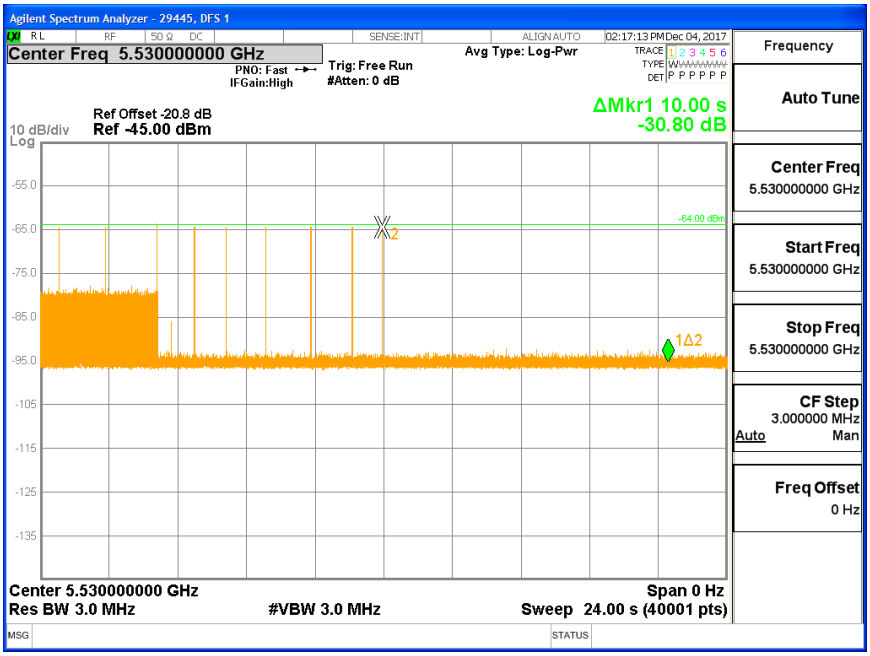
Only intermittent transmissions are observed during the aggregate monitoring period.



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

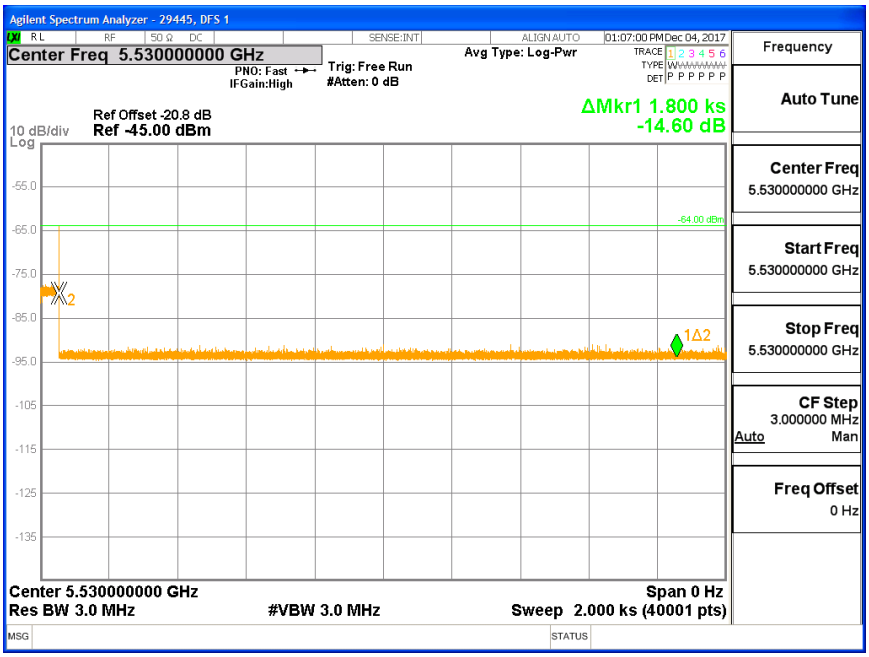


6.4.1. NON-OCCUPANCY PERIOD

RESULTS

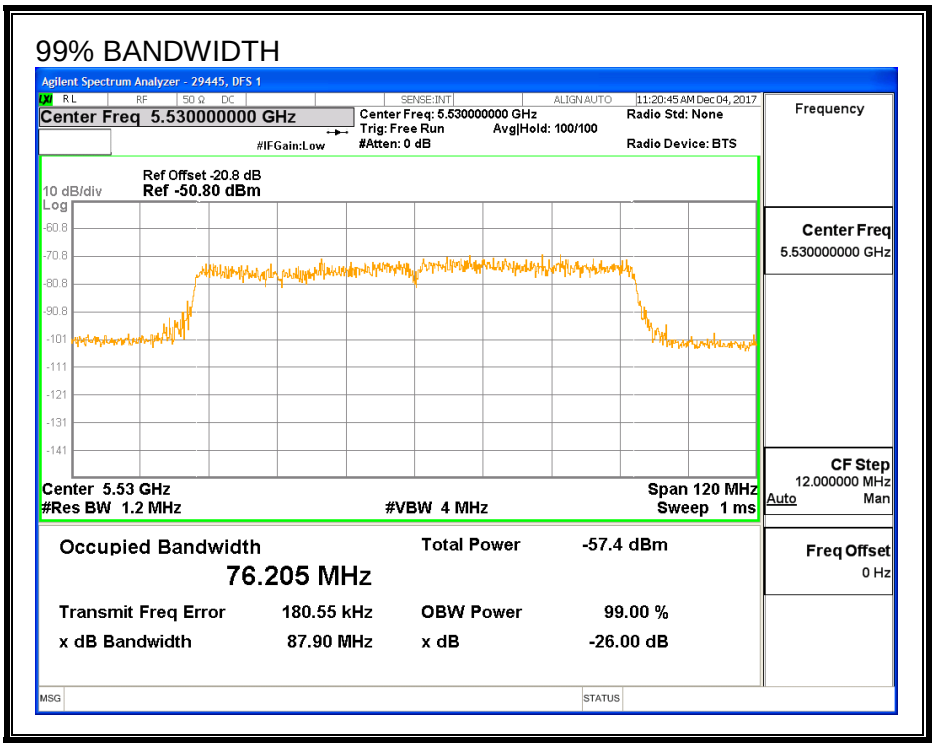
No EUT transmissions were observed on the test channel during the 30-minute observation time.

NON-OCCUPANCY PERIOD



6.4.2. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5490	5570	80	76.205	105.0	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

6.4.3. 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	76.2	DFS 1	29445	Version 3.0
FCC Short Pulse Type 2	30	76.67	60	Pass	5490	5570	76.2	DFS 1	29445	Version 3.0
FCC Short Pulse Type 3	30	96.67	60	Pass	5490	5570	76.2	DFS 1	29445	Version 3.0
FCC Short Pulse Type 4	30	90.00	60	Pass	5490	5570	76.2	DFS 1	29445	Version 3.0
Aggregate		90.00	80	Pass						
FCC Long Pulse Type 5	30	100.00	80	Pass	5490	5570	76.2	DFS 1	29445	Version 3.0
FCC Hopping Type 6	81	100.00	70	Pass	5490	5570		DFS 1	29445	Version 3.0

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	5500	Yes
1002	1	578	92	A	5534	Yes
1003	1	918	58	A	5558	Yes
1004	1	778	68	A	5536	Yes
1005	1	738	72	A	5497	Yes
1006	1	858	62	A	5531	Yes
1007	1	818	65	A	5522	No
1008	1	518	102	A	5497	Yes
1009	1	938	57	A	5550	Yes
1010	1	838	63	A	5496	Yes
1011	1	658	81	A	5532	Yes
1012	1	598	89	A	5510	Yes
1013	1	758	70	A	5509	Yes
1014	1	878	61	A	5535	Yes
1015	1	538	99	A	5497	Yes
1016	1	695	76	B	5493	Yes
1017	1	3004	18	B	5538	Yes
1018	1	1895	28	B	5502	Yes
1019	1	1786	30	B	5494	Yes
1020	1	2001	27	B	5564	Yes
1021	1	827	64	B	5499	Yes
1022	1	2525	21	B	5491	Yes
1023	1	1480	36	B	5509	Yes
1024	1	2113	25	B	5520	Yes
1025	1	1198	45	B	5518	Yes
1026	1	1960	27	B	5546	Yes
1027	1	1174	45	B	5554	Yes
1028	1	871	61	B	5568	Yes
1029	1	1568	34	B	5568	Yes
1030	1	2589	21	B	5559	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	1.4	157	26	5541	No
2002	1.1	230	27	5504	Yes
2003	3.5	215	29	5495	Yes
2004	1.4	211	23	5545	Yes
2005	2.1	201	29	5565	Yes
2006	4.4	163	24	5552	No
2007	1.2	156	23	5537	Yes
2008	3.6	165	29	5503	Yes
2009	2.8	163	28	5511	Yes
2010	1.4	176	27	5562	Yes
2011	4.9	221	24	5501	No
2012	3.9	158	27	5537	Yes
2013	3.5	169	24	5537	Yes
2014	4.7	190	28	5508	No
2015	2.6	206	25	5550	Yes
2016	2	193	29	5547	Yes
2017	4.2	212	27	5508	Yes
2018	3.9	204	25	5528	Yes
2019	2.2	190	26	5532	No
2020	4.2	185	28	5501	No
2021	4.9	175	27	5508	Yes
2022	5	175	25	5518	Yes
2023	1.8	169	24	5548	Yes
2024	4.3	178	23	5529	Yes
2025	3.4	176	26	5534	No
2026	4.2	189	25	5534	Yes
2027	1.4	153	25	5544	Yes
2028	4.6	170	28	5538	Yes
2029	4.1	181	25	5554	Yes
2030	1.2	203	29	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	8.2	461	17	5537	Yes
3002	7.7	423	17	5499	Yes
3003	9.8	483	18	5554	Yes
3004	9.5	457	17	5540	Yes
3005	7.8	412	16	5565	Yes
3006	9.9	399	18	5496	Yes
3007	6.4	367	18	5529	Yes
3008	8.7	500	18	5505	Yes
3009	9.6	363	17	5513	Yes
3010	8	258	18	5513	Yes
3011	7.1	384	16	5495	Yes
3012	7.9	292	16	5518	Yes
3013	7.3	431	17	5506	Yes
3014	8.3	485	17	5557	Yes
3015	7.8	268	16	5565	No
3016	7.1	335	17	5560	Yes
3017	6.9	382	18	5536	Yes
3018	6.4	344	16	5558	Yes
3019	8.5	404	17	5523	Yes
3020	8.2	378	16	5562	Yes
3021	8.7	333	18	5528	Yes
3022	8.6	320	17	5535	Yes
3023	9.2	288	17	5528	Yes
3024	7.4	421	16	5517	Yes
3025	8.3	284	16	5556	Yes
3026	8.9	429	17	5535	Yes
3027	9.9	305	18	5543	Yes
3028	6.6	464	18	5524	Yes
3029	6	352	16	5513	Yes
3030	7	288	16	5520	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	12.3	440	15	5567	No
4002	19.7	255	13	5567	Yes
4003	19.3	303	14	5552	Yes
4004	18.1	264	16	5516	Yes
4005	13.8	324	13	5548	Yes
4006	13.1	298	16	5544	Yes
4007	14.1	253	15	5549	Yes
4008	13.9	374	15	5553	Yes
4009	15.4	342	12	5550	Yes
4010	11.3	341	16	5555	Yes
4011	13.3	455	15	5500	Yes
4012	14.5	350	12	5539	Yes
4013	16.9	477	14	5532	Yes
4014	18.6	384	14	5519	Yes
4015	17.2	406	16	5565	Yes
4016	19.4	459	16	5546	Yes
4017	18.5	361	14	5523	Yes
4018	16.8	309	16	5530	No
4019	16.4	474	12	5525	No
4020	15.2	436	15	5493	Yes
4021	20	496	16	5524	Yes
4022	15.1	352	14	5503	Yes
4023	11.2	425	13	5491	Yes
4024	15.8	294	14	5509	Yes
4025	12.5	262	13	5505	Yes
4026	17.5	395	14	5548	Yes
4027	19.5	376	14	5495	Yes
4028	11.6	271	13	5533	Yes
4029	14	397	13	5507	Yes
4030	15.8	438	12	5518	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	5496	Yes
12	5498	Yes
13	5496	Yes
14	5498	Yes
15	5499	Yes
16	5498	Yes
17	5498	Yes
18	5500	Yes
19	5494	Yes
20	5496	Yes
21	5563	Yes
22	5565	Yes
23	5563	Yes
24	5563	Yes
25	5562	Yes
26	5562	Yes
27	5565	Yes
28	5560	Yes
29	5561	Yes
30	5560	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	350	5490	9	Yes
2	825	5491	14	Yes
3	1300	5492	22	Yes
4	1775	5493	22	Yes
5	2250	5494	19	Yes
6	2725	5495	15	Yes
7	3200	5496	12	Yes
8	3675	5497	12	Yes
9	4150	5498	19	Yes
10	4625	5499	16	Yes
11	5100	5500	13	Yes
12	5575	5501	15	Yes
13	6050	5502	13	Yes
14	6525	5503	18	Yes
15	7000	5504	14	Yes
16	7475	5505	14	Yes
17	7950	5506	13	Yes
18	8425	5507	18	Yes
19	8900	5508	25	Yes
20	9375	5509	14	Yes
21	9850	5510	12	Yes
22	10325	5511	21	Yes
23	10800	5512	21	Yes
24	11275	5513	16	Yes
25	11750	5514	13	Yes
26	12225	5515	15	Yes
27	12700	5516	25	Yes
28	13175	5517	17	Yes
29	13650	5518	11	Yes
30	14125	5519	19	Yes
31	14600	5520	14	Yes
32	15075	5521	14	Yes
33	15550	5522	15	Yes
34	16025	5523	20	Yes
35	16500	5524	20	Yes
36	16975	5525	17	Yes
37	17450	5526	14	Yes
38	17925	5527	16	Yes
39	18400	5528	14	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	18875	5529	16	Yes
41	19350	5530	22	Yes
42	19825	5531	17	Yes
43	20300	5532	14	Yes
44	20775	5533	9	Yes
45	21250	5534	19	Yes
46	21725	5535	18	Yes
47	22200	5536	11	Yes
48	22675	5537	13	Yes
49	23150	5538	13	Yes
50	23625	5539	15	Yes
51	24100	5540	17	Yes
52	24575	5541	18	Yes
53	25050	5542	16	Yes
54	25525	5543	20	Yes
55	26000	5544	17	Yes
56	26475	5545	18	Yes
57	26950	5546	15	Yes
58	27425	5547	19	Yes
59	27900	5548	21	Yes
60	28375	5549	14	Yes
61	28850	5550	17	Yes
62	29325	5551	20	Yes
63	29800	5552	14	Yes
64	30275	5553	17	Yes
65	30750	5554	15	Yes
66	31225	5555	20	Yes
67	31700	5556	17	Yes
68	32175	5557	20	Yes
69	32650	5558	22	Yes
70	33125	5559	18	Yes
71	33600	5560	21	Yes
72	34075	5561	20	Yes
73	34550	5562	15	Yes
74	35025	5563	24	Yes
75	35500	5564	19	Yes
76	35975	5565	23	Yes
77	36450	5566	14	Yes
78	36925	5567	16	Yes
79	37400	5568	17	Yes
80	37875	5569	18	Yes
81	38350	5570	14	Yes

6.5. APPLICABLE TESTS FOR SLAVE DEVICE CONFIGURATION

6.5.1. APPLICABILITY OF MASTER DEVICE CONFIGURATION TEST RESULTS

The EUT is identical for the two configurations: Master Device, and Slave with Radar Detection. Therefore the performance of the EUT in the Slave Device configuration, when the Slave detects a radar signal, is represented by the above tests of the Master Device Configuration.

6.5.2. ADDITIONAL APPLICABLE TESTS OF SLAVE DEVICE

Per KDB 905462 D02 section 5.1.2, clause c):

If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.

Therefore the following two test conditions must be performed to demonstrate compliance:

Channel shutdown tests to measure the performance of the Slave Device configuration, in response to the detection of a radar signal by the Master Device, are applicable.

Channel shutdown tests to measure the performance of the Master Device configuration, in response to the detection of a radar signal by the Slave Device, are applicable.

6.6. SLAVE DEVICE CONFIGURATION RESULTS FOR 20 MHz BANDWIDTH

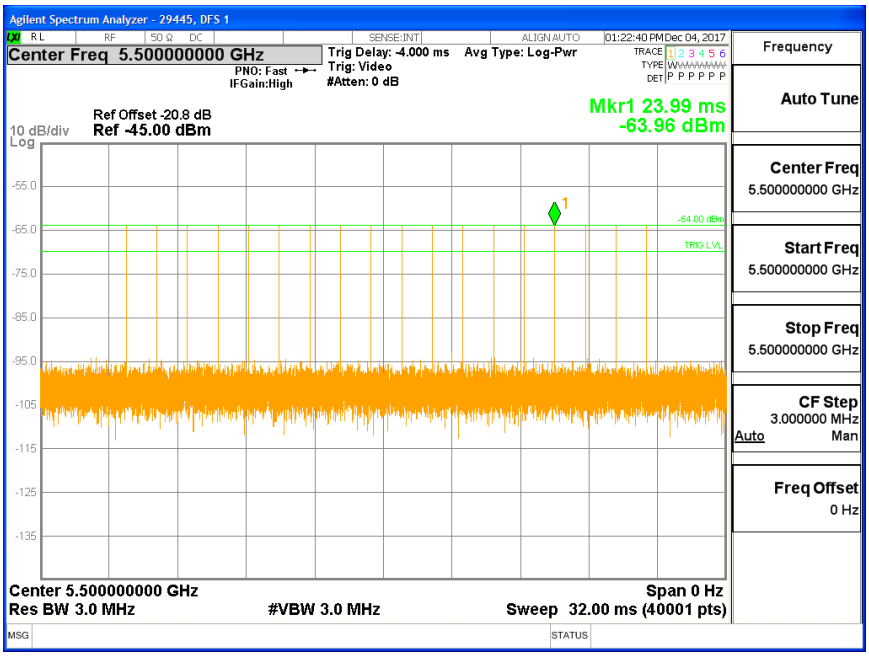
6.6.1. TEST CHANNEL

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

6.6.2. RADAR WAVEFORM AND TRAFFIC

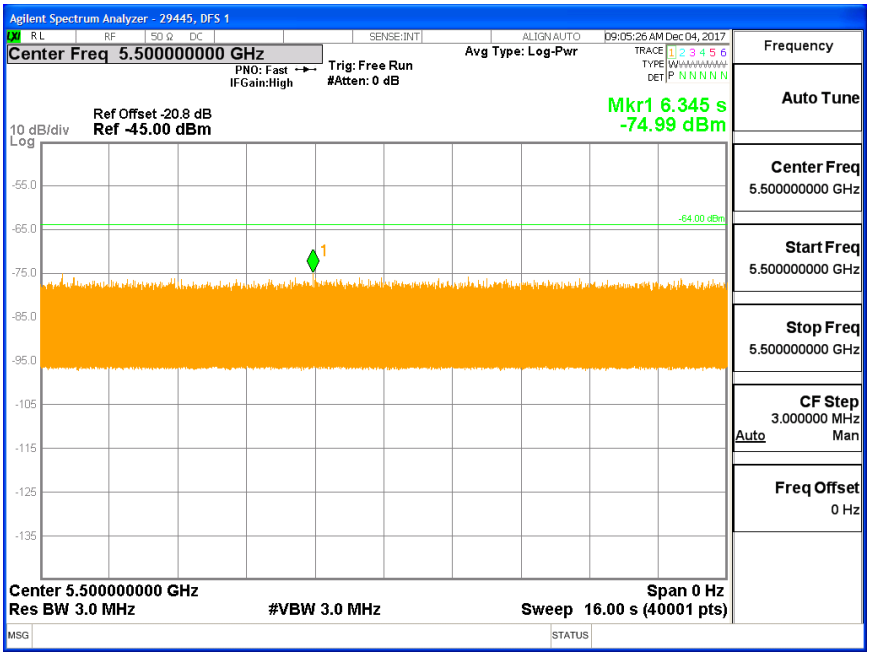
RADAR WAVEFORM

SAMPLE OF RADAR TYPE 0 AT RADAR DETECTION DEVICE

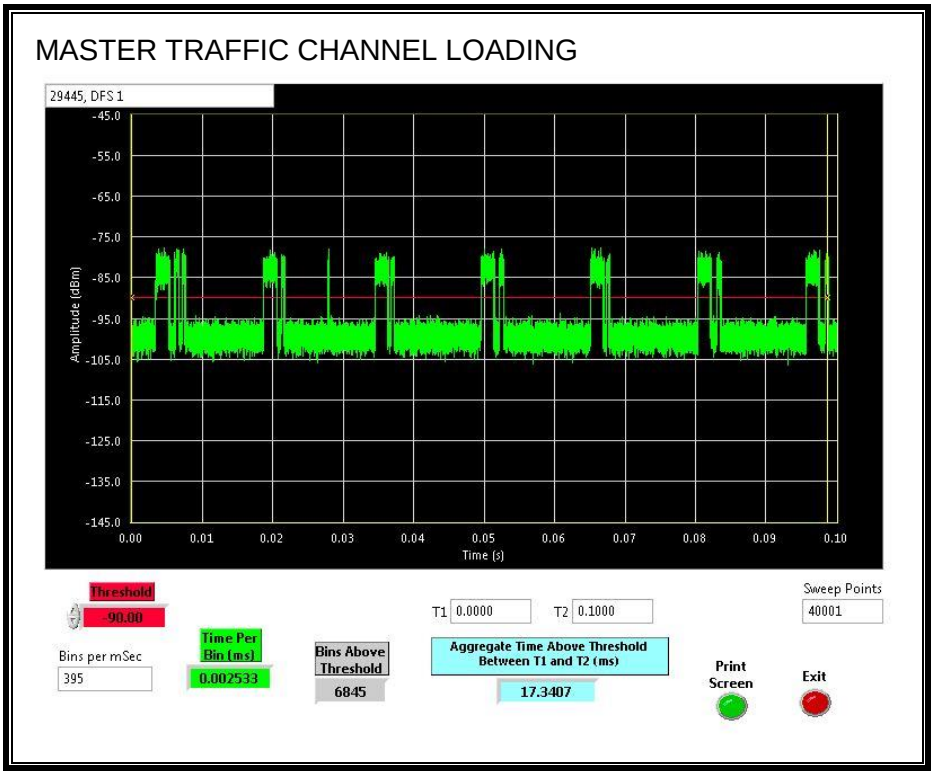


TRAFFIC

MASTER TRAFFIC



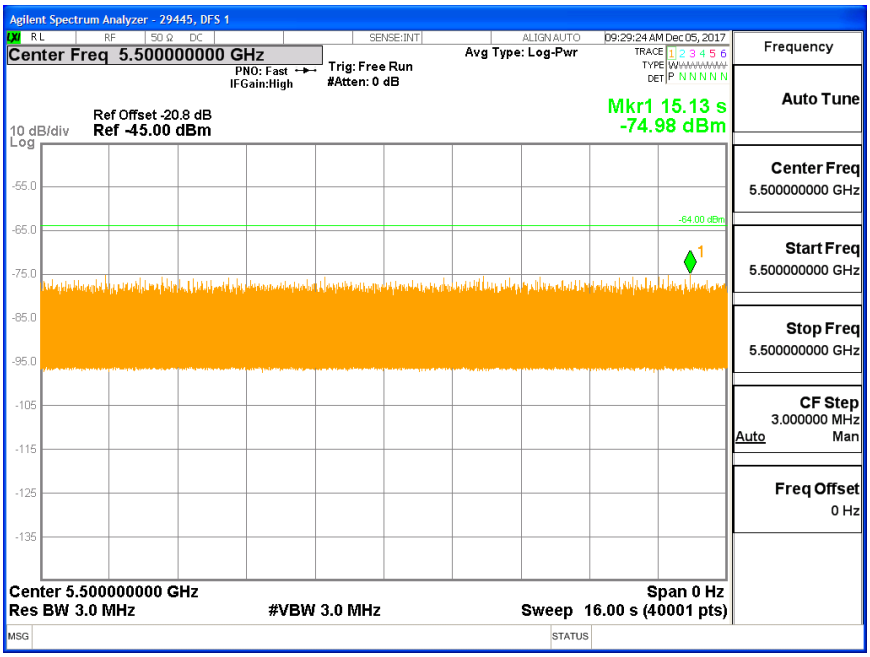
CHANNEL LOADING



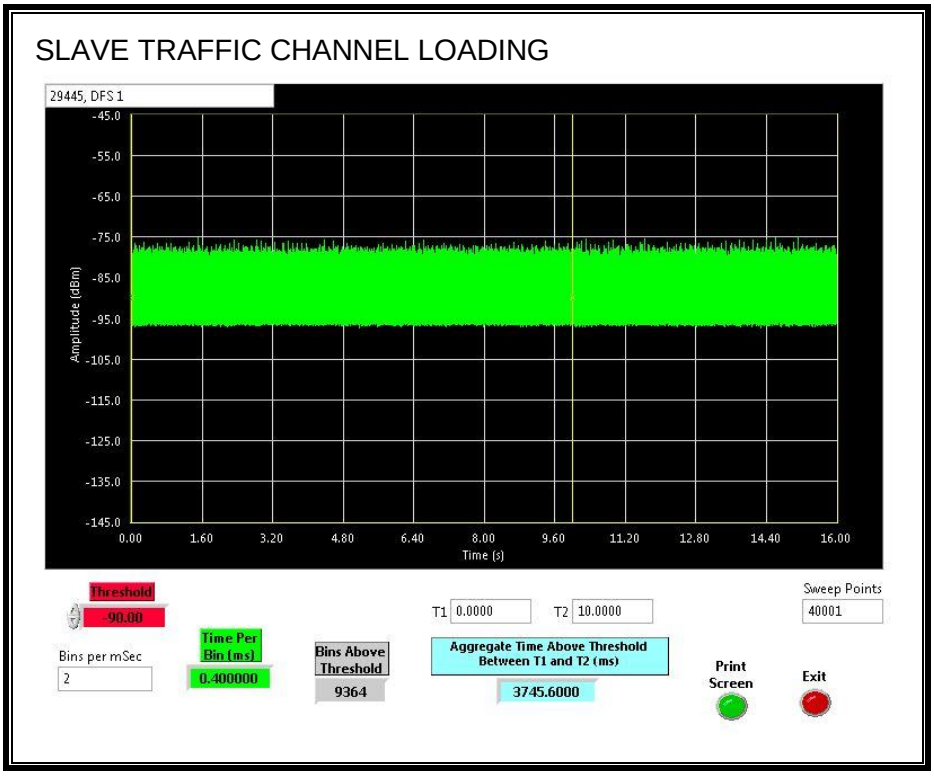
The level of traffic loading on the channel by the EUT is 17.34%.

TRAFFIC

SLAVE TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 37.45%.

6.6.3. MOVE AND CLOSING TIME OF SLAVE DEVICE IN RESPONSE TO DETECTION BY MASTER DEVICE

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).

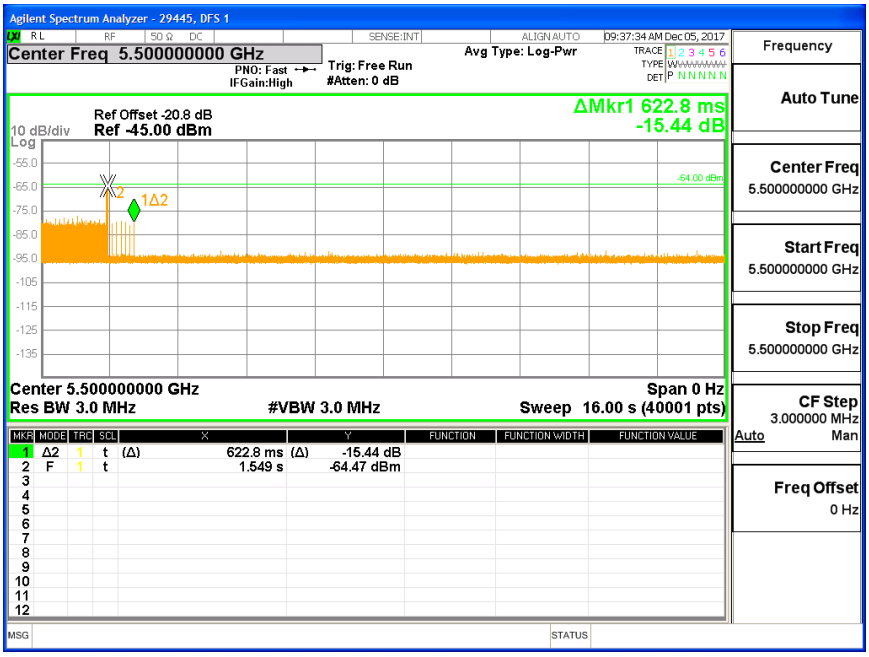
RESULTS

Channel Move Time (sec)	Limit (sec)
0.6228	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.0	60

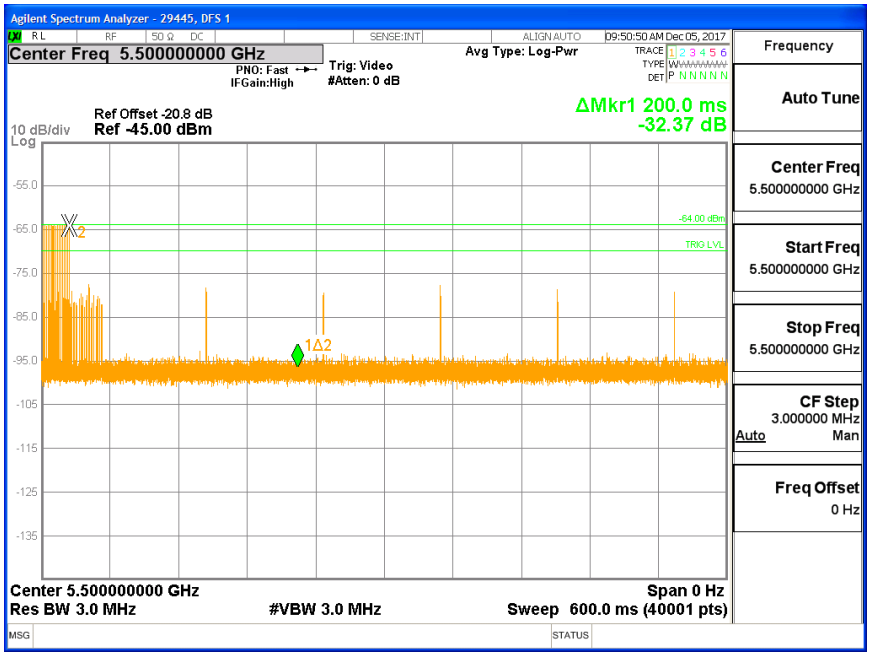
MOVE TIME

MOVE TIME



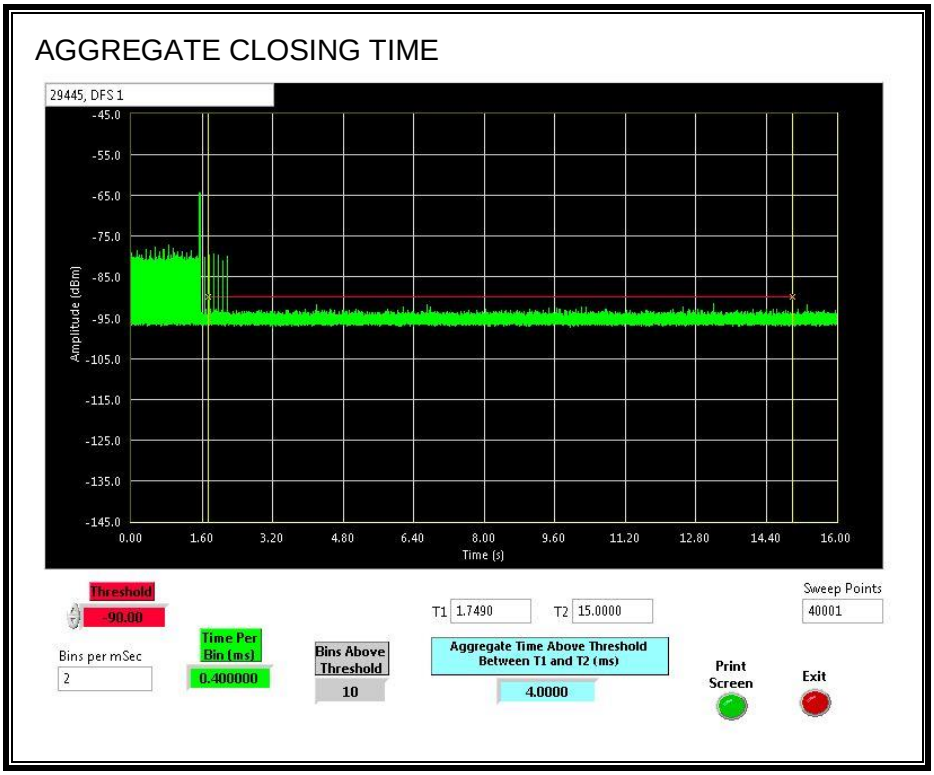
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



6.6.4. MOVE AND CLOSING TIME OF MASTER DEVICE IN RESPONSE TO DETECTION BY SLAVE DEVICE

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).

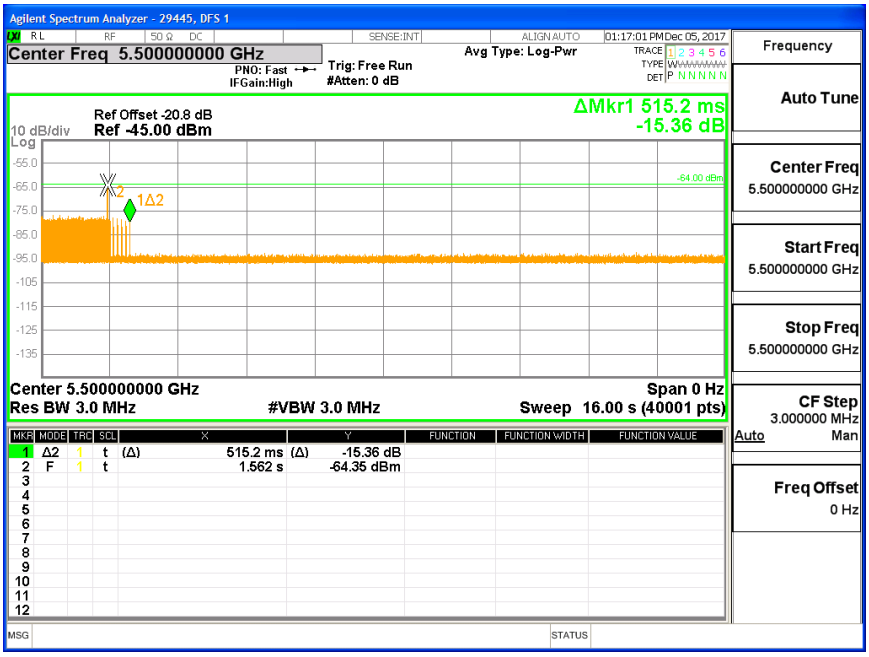
RESULTS

Channel Move Time (sec)	Limit (sec)
0.5152	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
5.2	60

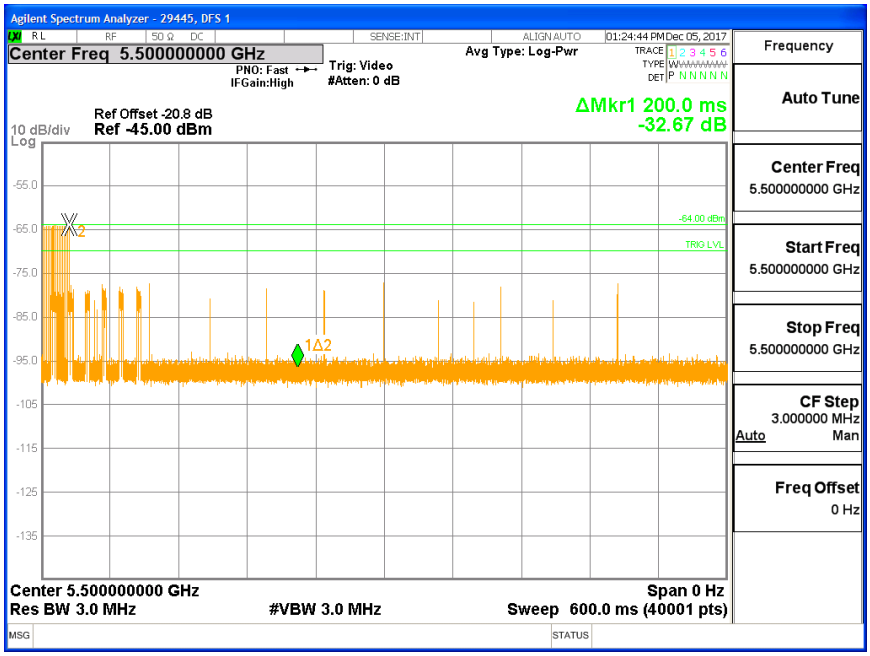
MOVE TIME

MOVE TIME



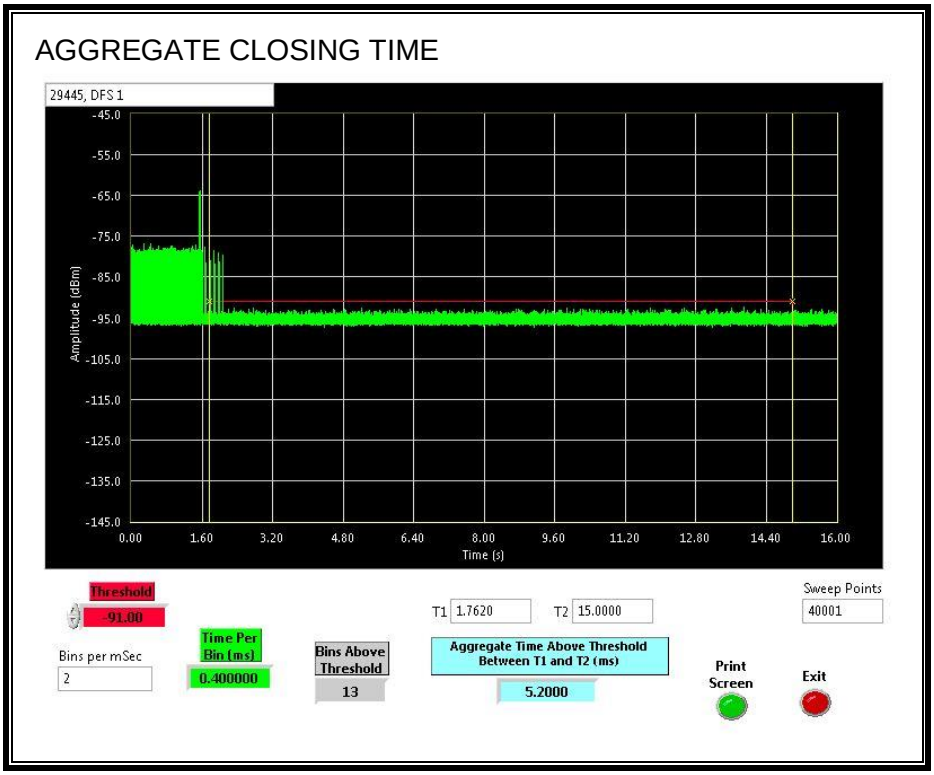
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



6.7. SLAVE DEVICE CONFIGURATION RESULTS FOR 40 MHz BANDWIDTH

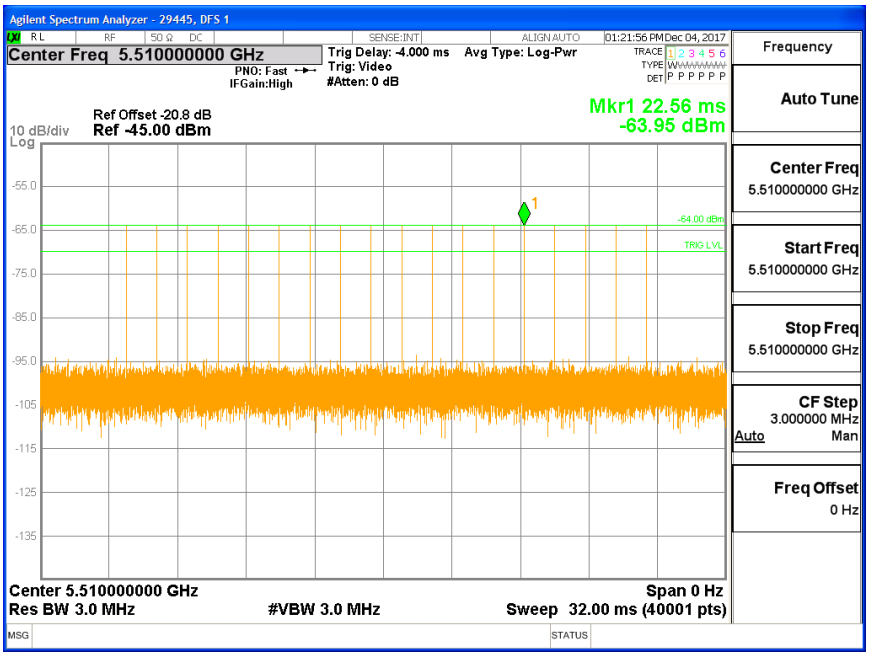
6.7.1. TEST CHANNEL

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

6.7.2. RADAR WAVEFORM AND TRAFFIC

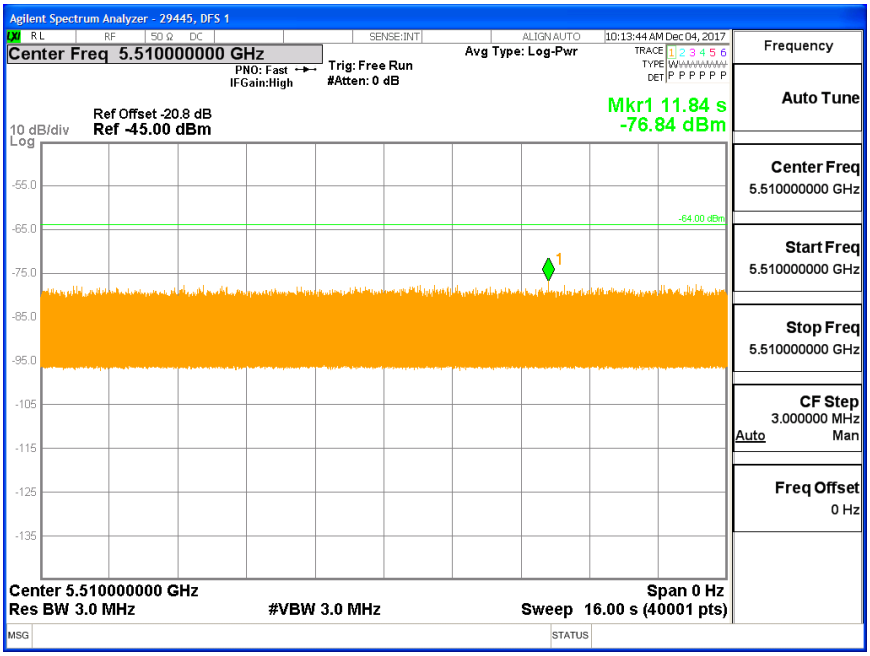
RADAR WAVEFORM

SAMPLE OF RADAR TYPE 0 AT RADAR DETECTION DEVICE

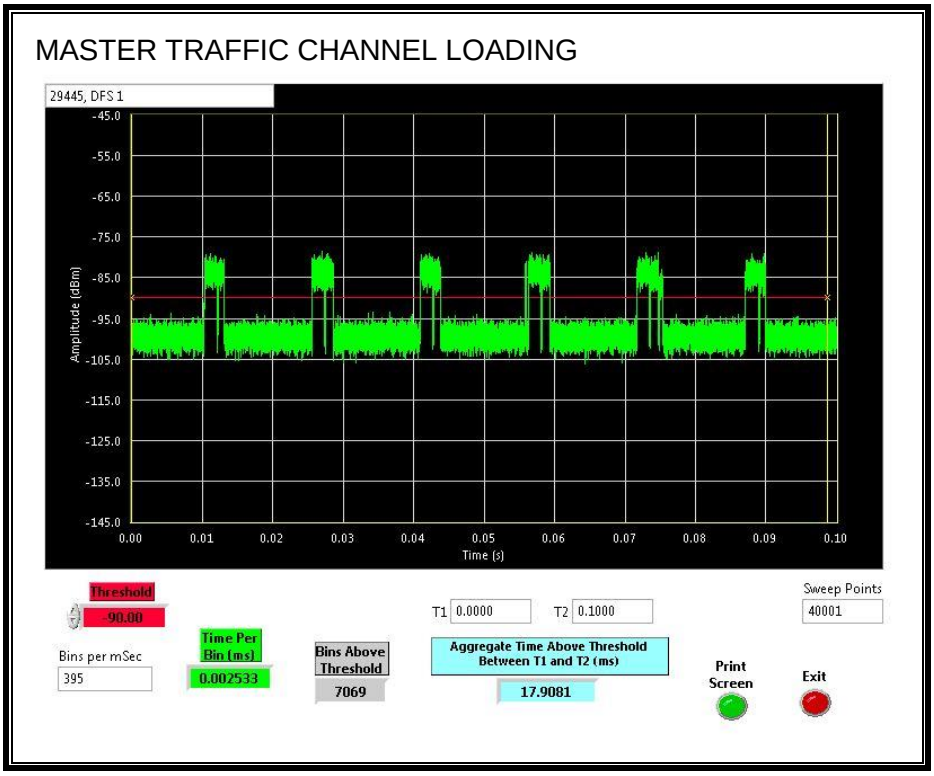


TRAFFIC

MASTER TRAFFIC



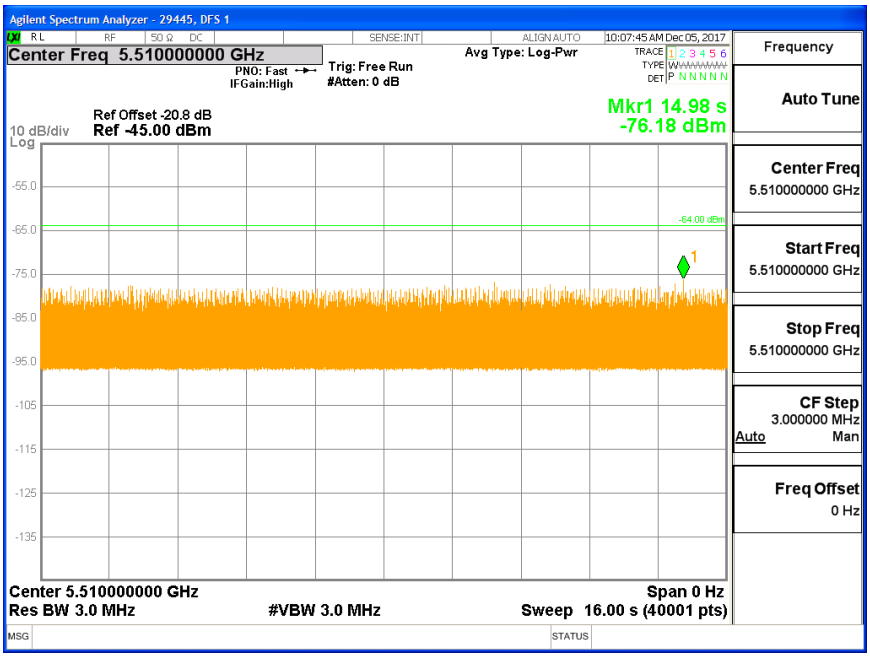
CHANNEL LOADING



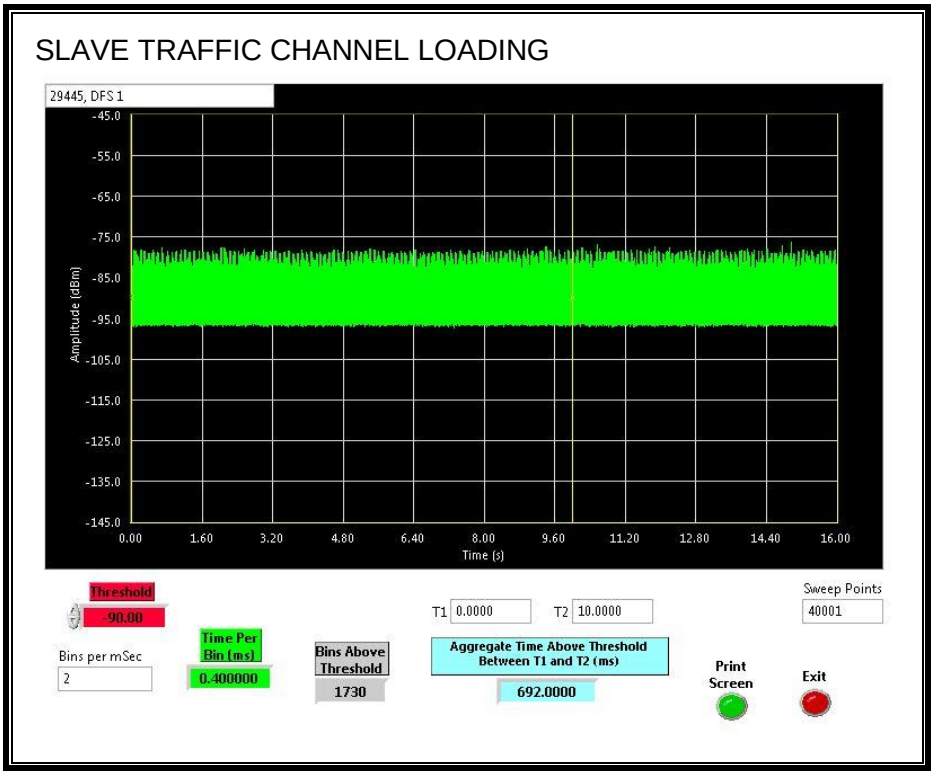
The level of traffic loading on the channel by the EUT is 17.9%.

TRAFFIC

SLAVE TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 6.92%.

The traffic loading of the Slave device became saturated at a level below the 17% requirement. Therefore the traffic loading by the Slave device that was measured represents the level attained while the Master device meets the 17% requirement.

6.7.3. MOVE AND CLOSING TIME OF SLAVE DEVICE IN RESPONSE TO DETECTION BY MASTER DEVICE

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).

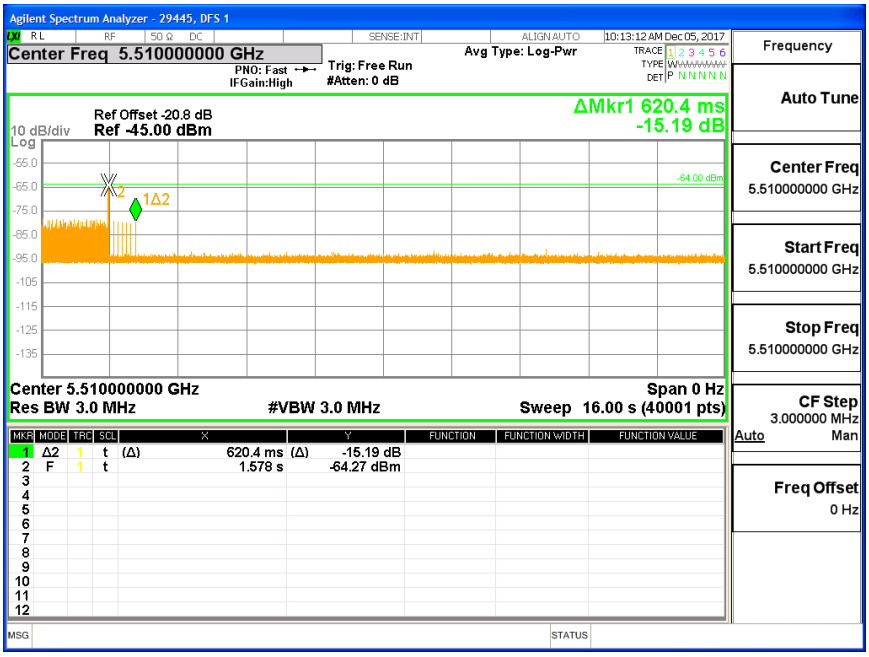
RESULTS

Channel Move Time (sec)	Limit (sec)
0.6204	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.0	60

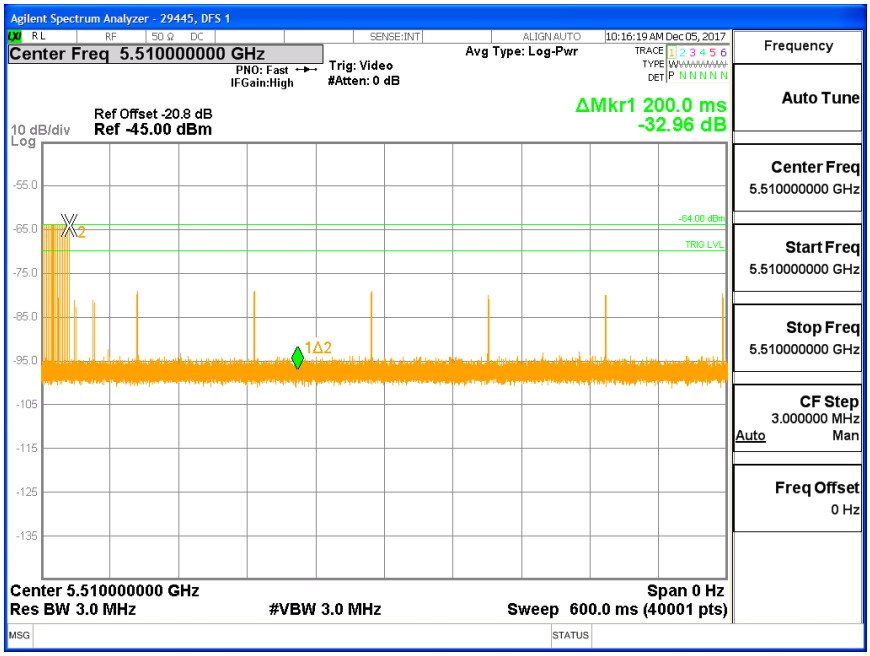
MOVE TIME

MOVE TIME



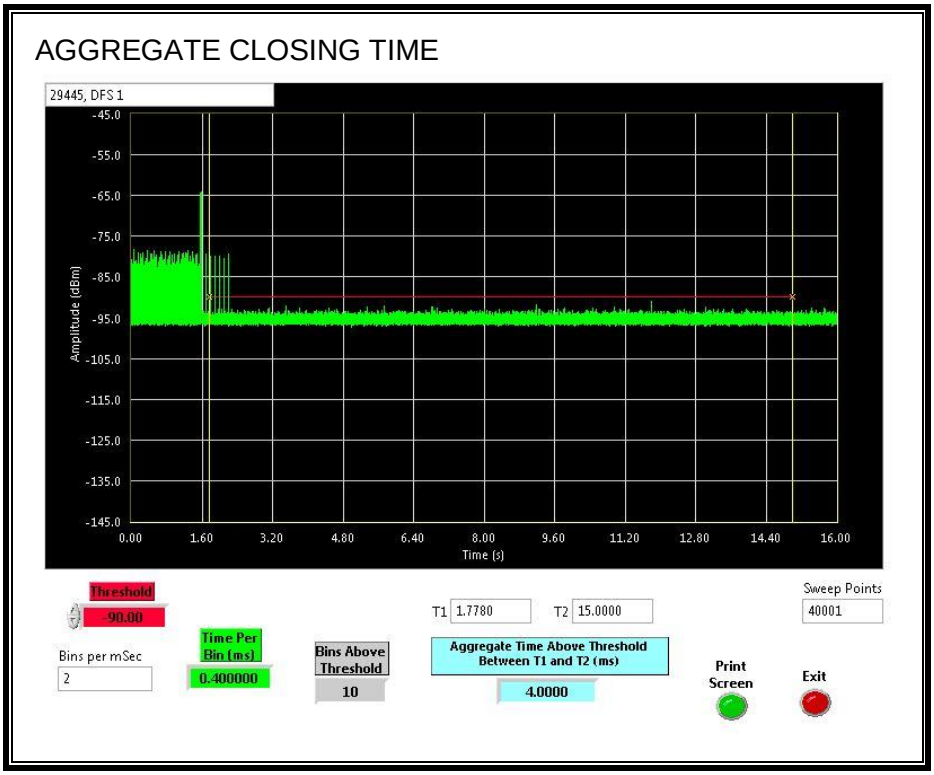
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



6.7.4. MOVE AND CLOSING TIME OF MASTER DEVICE IN RESPONSE TO DETECTION BY SLAVE DEVICE

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).

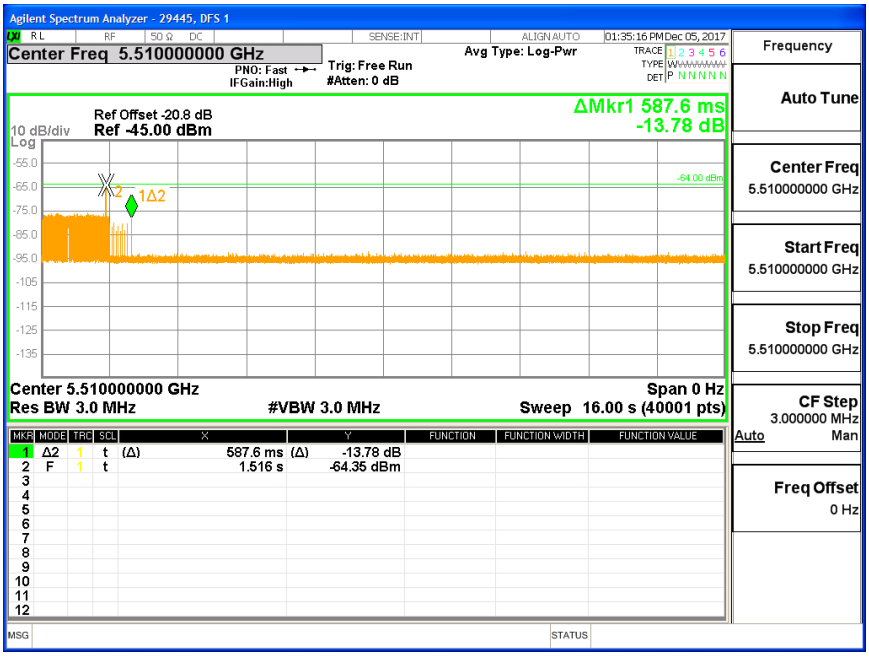
RESULTS

Channel Move Time (sec)	Limit (sec)
0.5876	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
7.6	60

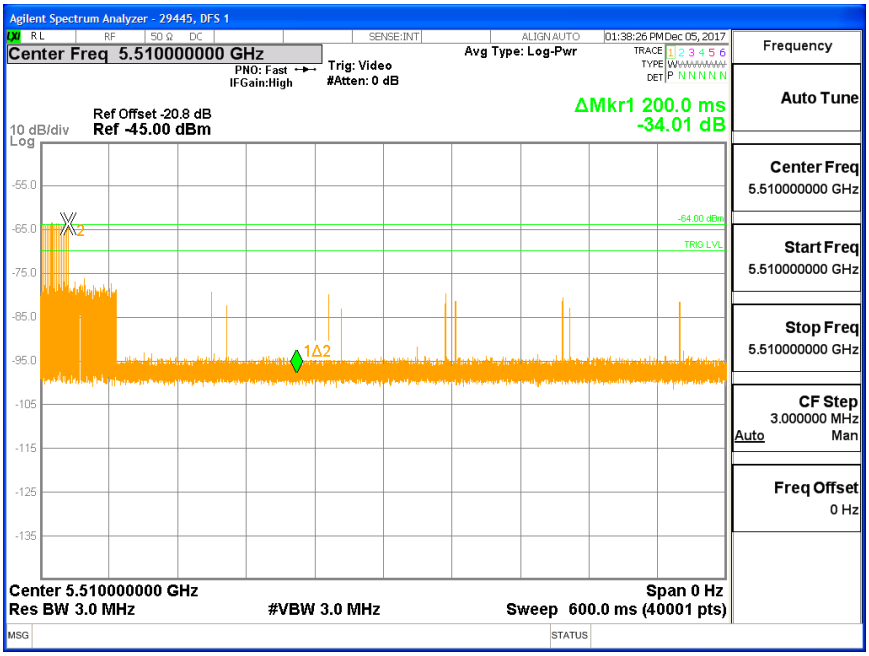
MOVE TIME

MOVE TIME



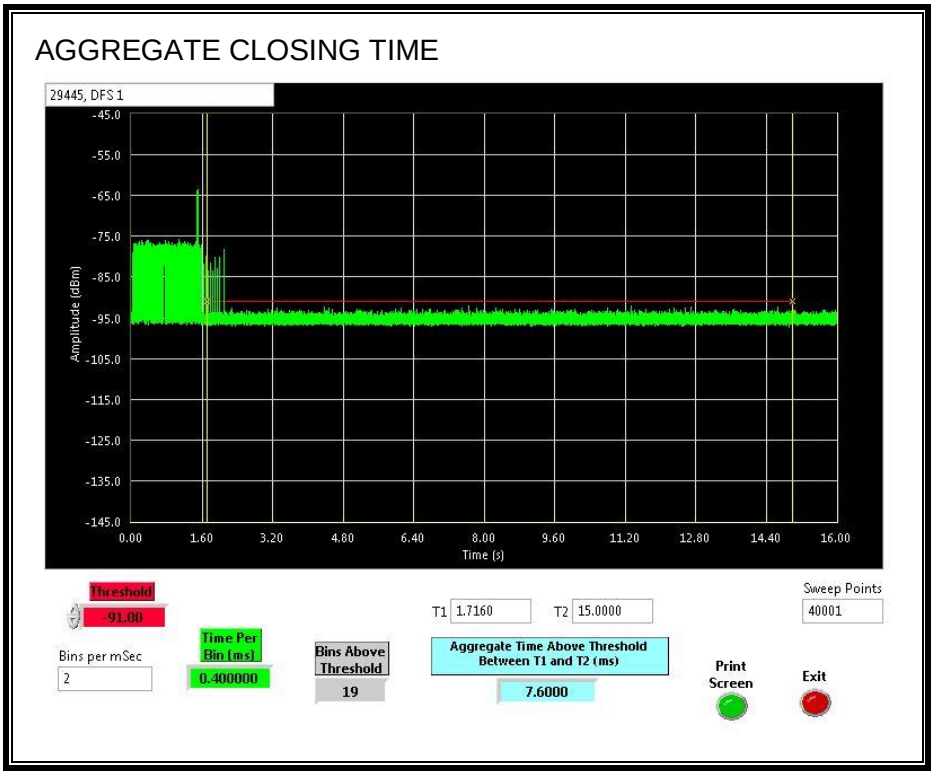
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



6.8. SLAVE DEVICE CONFIGURATION RESULTS FOR 80 MHz BANDWIDTH

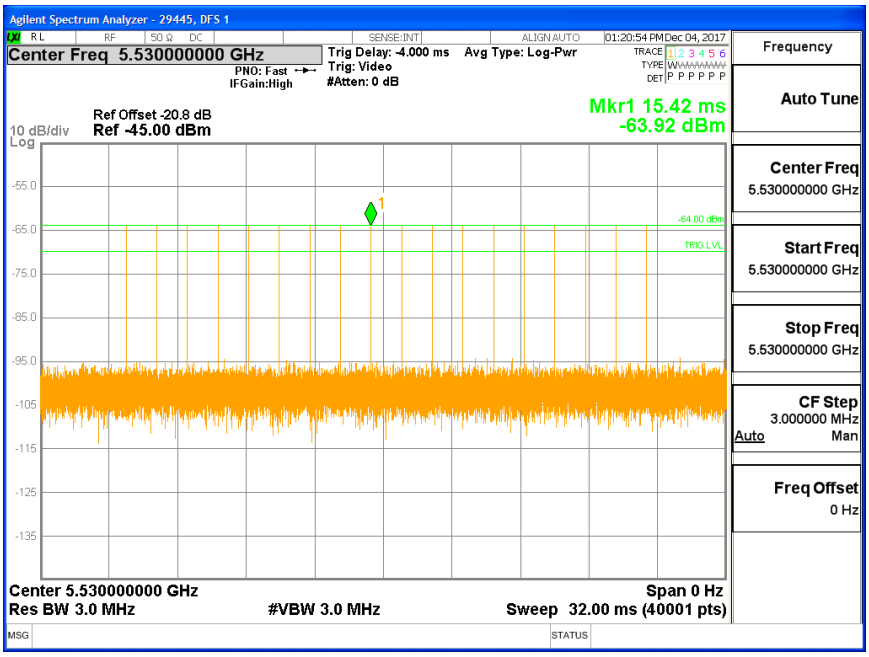
6.8.1. TEST CHANNEL

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

6.8.2. RADAR WAVEFORM AND TRAFFIC

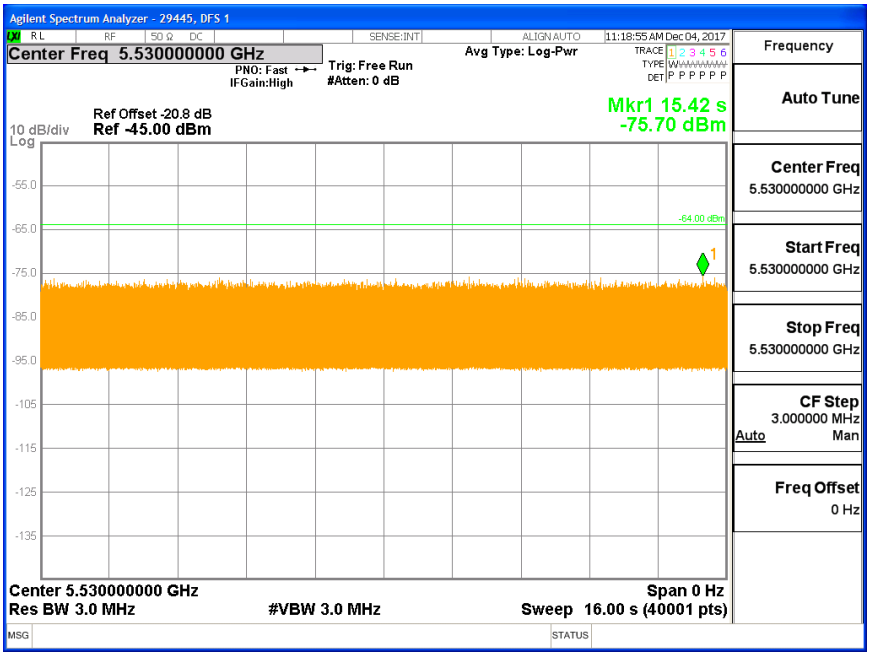
RADAR WAVEFORM

SAMPLE OF RADAR TYPE 0 AT RADAR DETECTION DEVICE

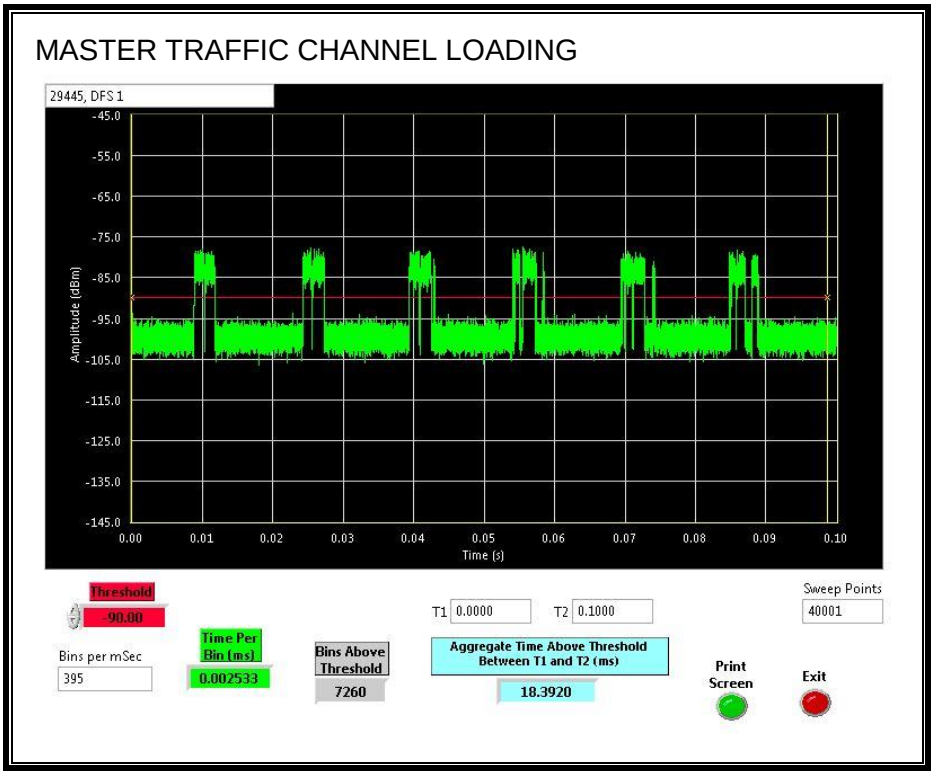


TRAFFIC

MASTER TRAFFIC



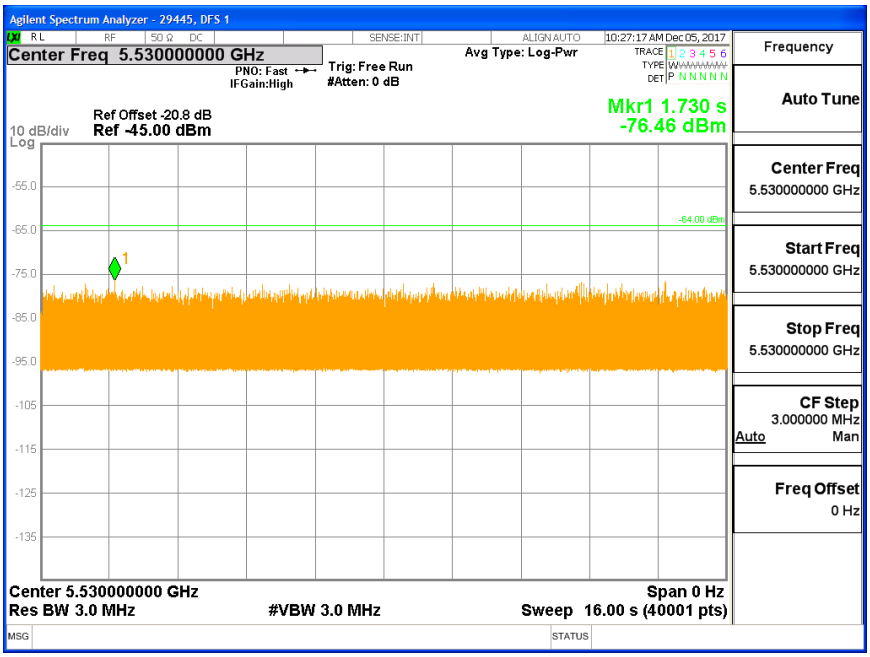
CHANNEL LOADING



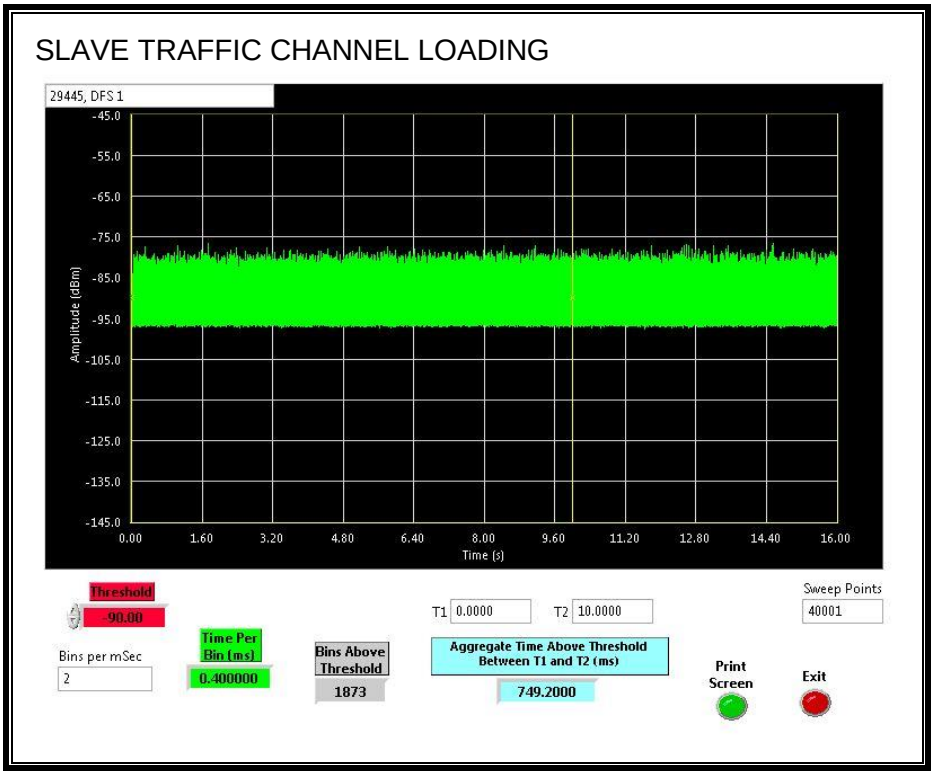
The level of traffic loading on the channel by the EUT is 18.39%.

TRAFFIC

SLAVE TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 7.49%.

The traffic loading of the Slave device became saturated at a level below the 17% requirement. Therefore the traffic loading by the Slave device that was measured represents the level attained while the Master device meets the 17% requirement.

6.8.3. MOVE AND CLOSING TIME OF SLAVE DEVICE IN RESPONSE TO DETECTION BY MASTER DEVICE

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).

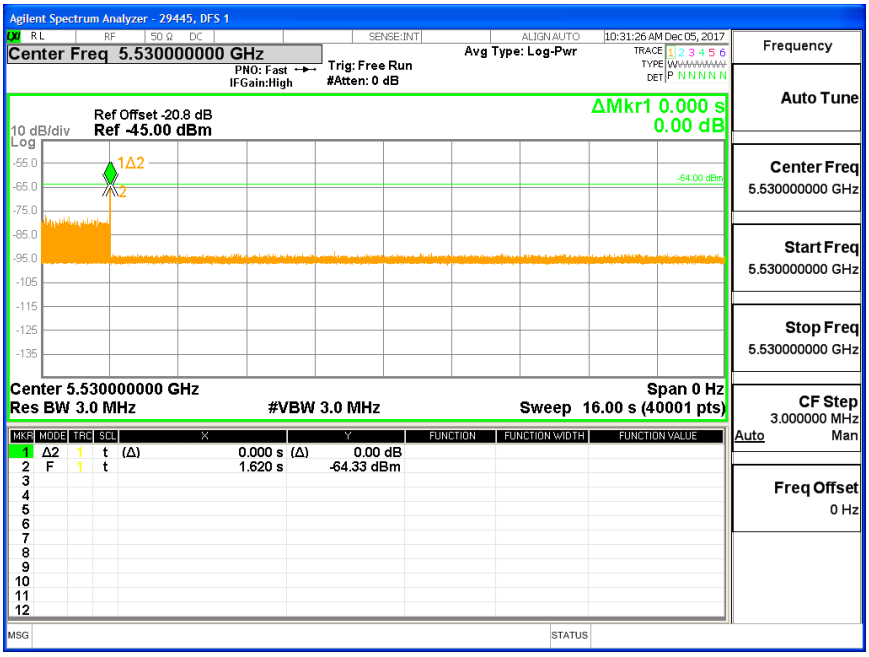
RESULTS

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

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

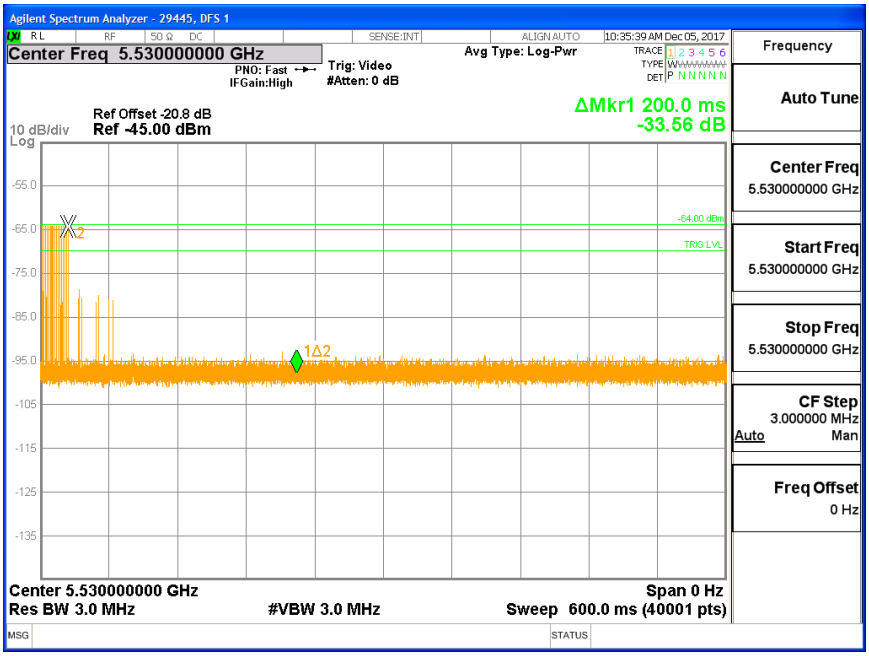
MOVE TIME

MOVE TIME



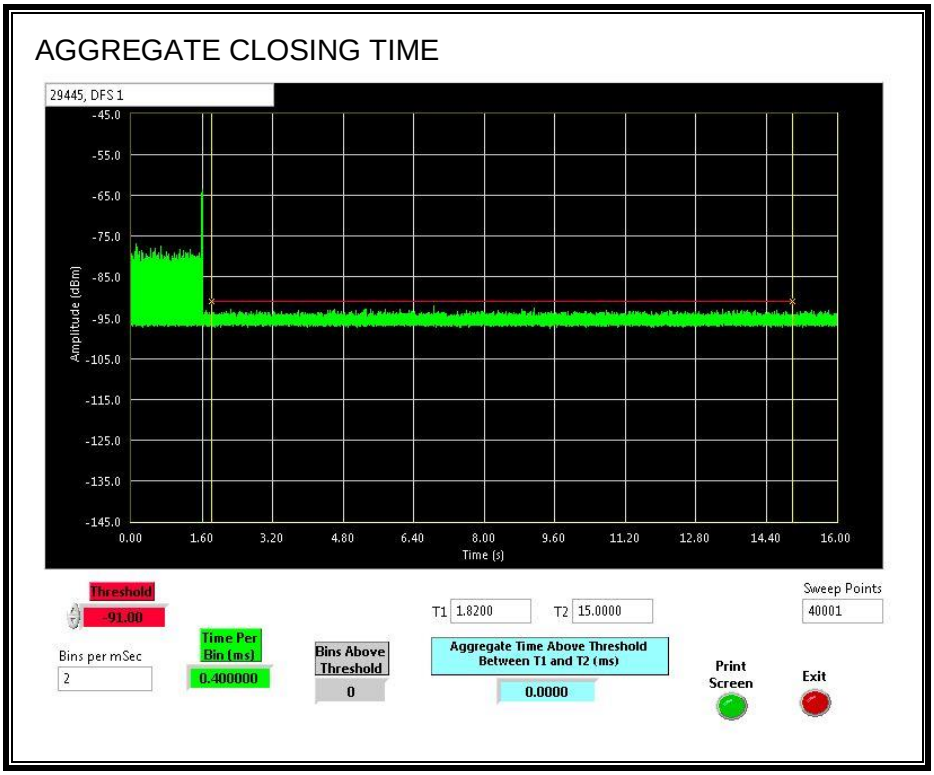
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

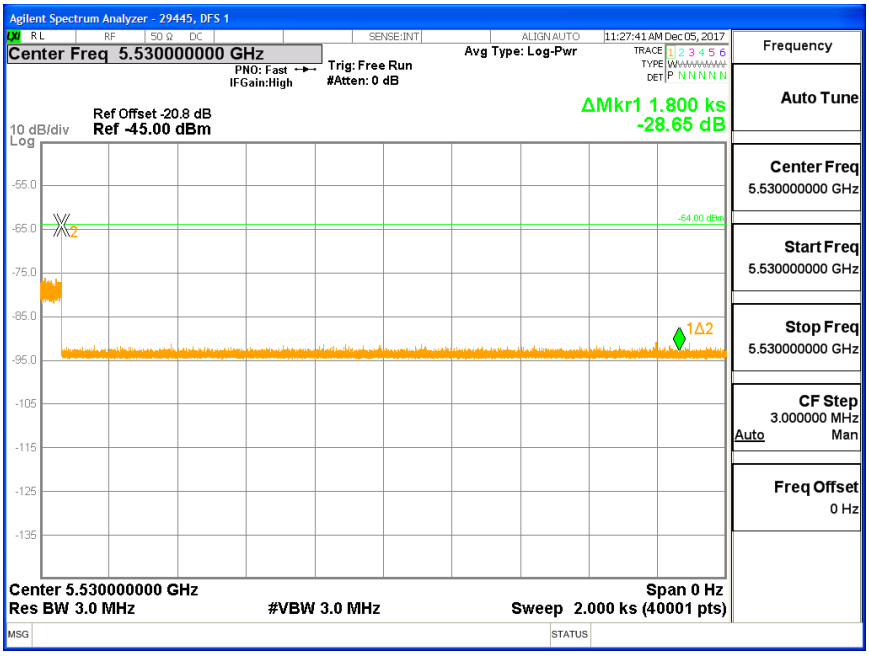


6.8.4. 30-MINUTE NON-OCCUPANCY PERIOD OF SLAVE IN RESPONSE TO DETECTION BY MASTER DEVICE

RESULTS

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

30-MINUTE NON-OCCUPANCY PERIOD



6.8.5. MOVE AND CLOSING TIME OF MASTER DEVICE IN RESPONSE TO DETECTION BY SLAVE DEVICE

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).

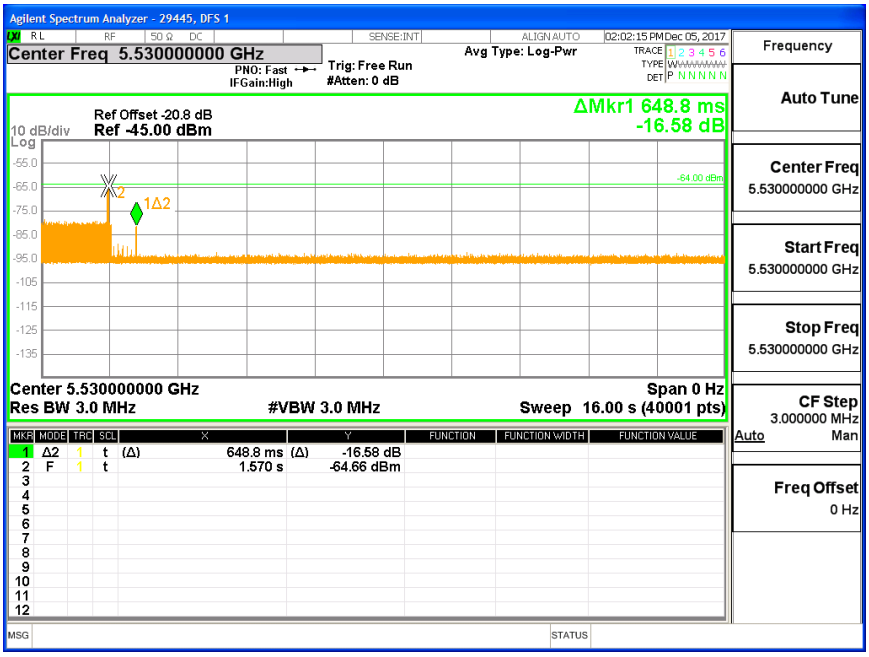
RESULTS

Channel Move Time (sec)	Limit (sec)
0.6488	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.4	60

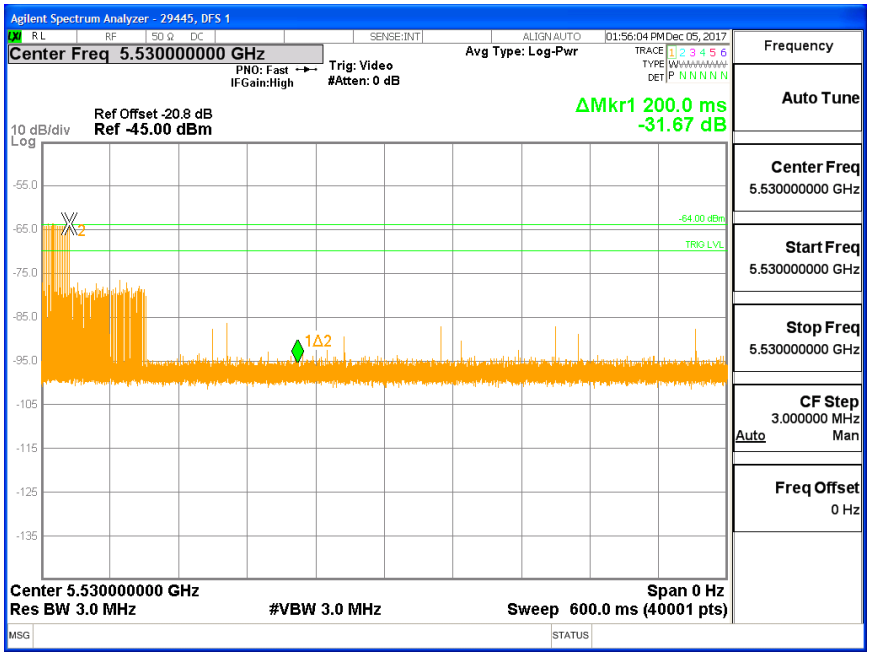
MOVE TIME

MOVE TIME



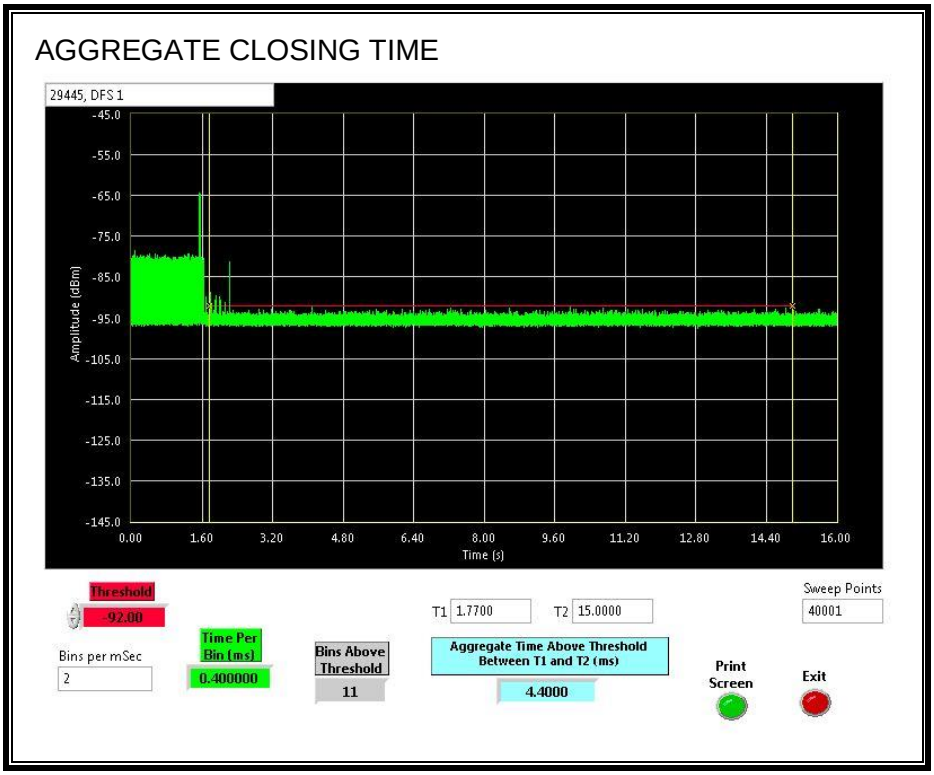
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.

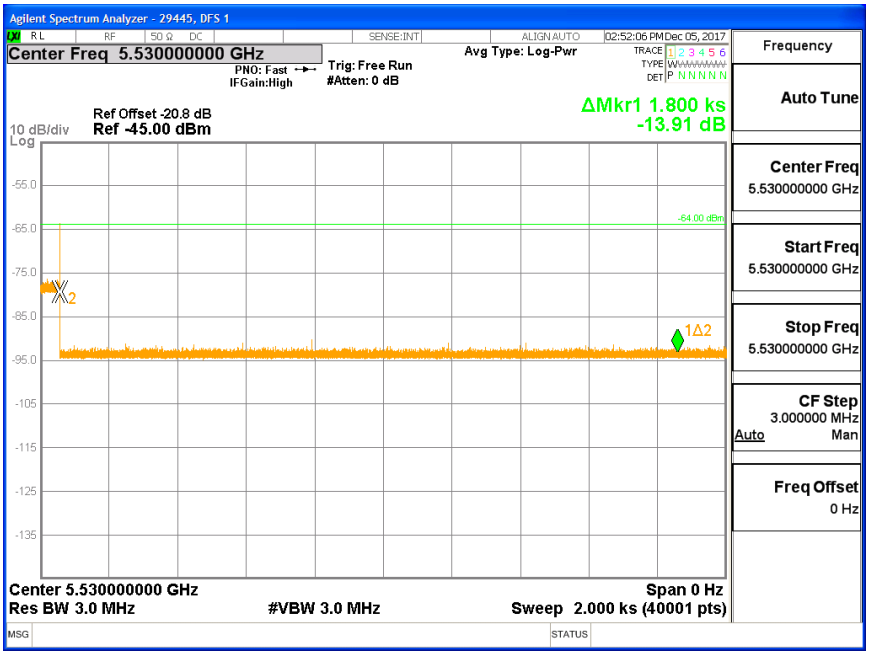


6.8.6. NON-OCCUPANCY PERIOD OF MASTER DEVICE IN RESPONSE TO DETECTION BY SLAVE DEVICE

RESULTS

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

NON-OCCUPANCY PERIOD



6.9. BRIDGE MODE RESULTS

Per KDB 905462, Section 5.1 (footnote 1):

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

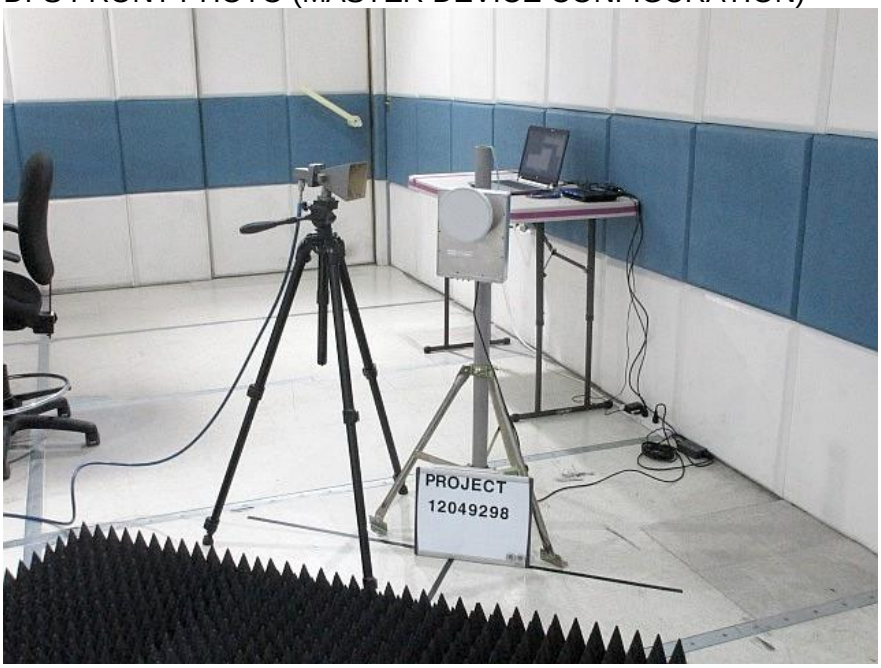
The EUT does not support Bridge Mode therefore this test was not performed.

7. SETUP PHOTOS

7.1. MASTER DEVICE TESTING

DYNAMIC FREQUENCY SELECTION MEASUREMENT SETUP

DFS FRONT PHOTO (MASTER DEVICE CONFIGURATION)

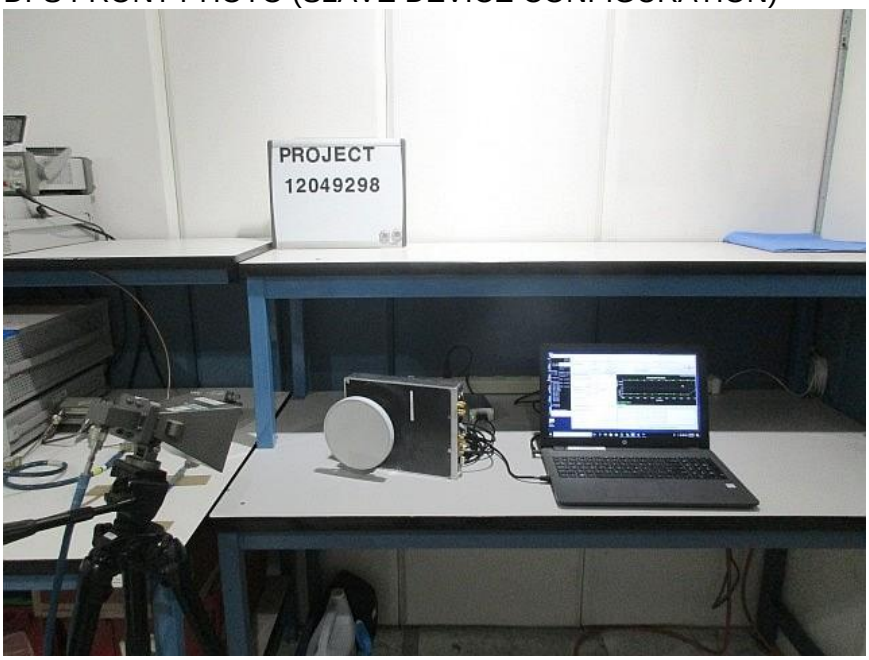


DFS BACK PHOTO (MASTER DEVICE CONFIGURATION)

7.2. STANDARD SLAVE DEVICE TESTING

DYNAMIC FREQUENCY SELECTION MEASUREMENT SETUP

DFS FRONT PHOTO (SLAVE DEVICE CONFIGURATION)



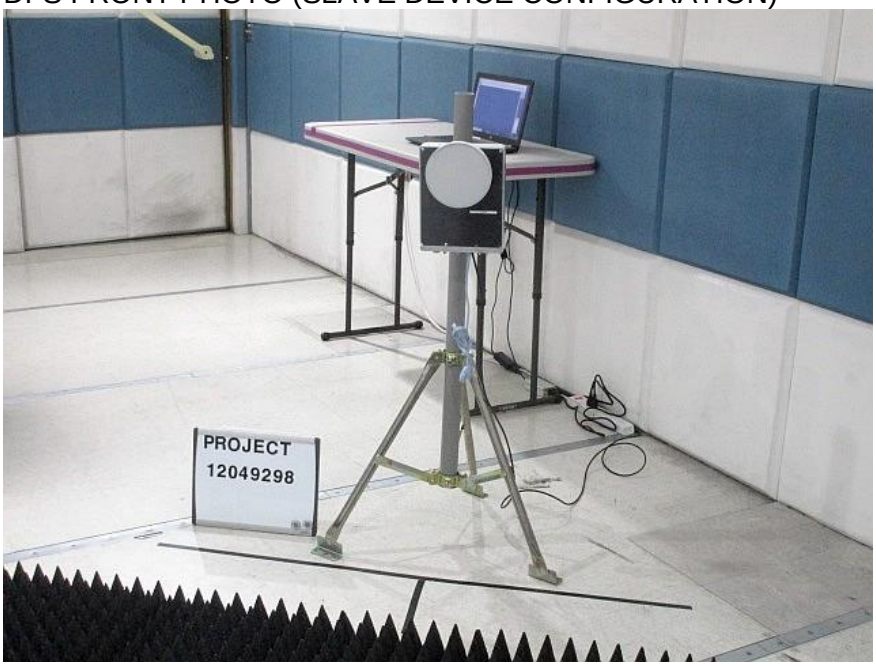
DFS SIDE PHOTO (SLAVE DEVICE CONFIGURATION)

7.3. SLAVE DEVICE WITH RADAR DETECTION TESTING

7.3.1. SLAVE DEVICE BEING SUBJECTED TO RADAR

DYNAMIC FREQUENCY SELECTION MEASUREMENT SETUP

DFS FRONT PHOTO (SLAVE DEVICE CONFIGURATION)



DFS BACK PHOTO (SLAVE DEVICE CONFIGURATION)

7.3.2. MASTER DEVICE IN RESPONSE TO DETECTION BY THE SLAVE DEVICE

DYNAMIC FREQUENCY SELECTION MEASUREMENT SETUP

DFS FRONT PHOTO (MASTER DEVICE CONFIGURATION)

DFS SIDE PHOTO (MASTER DEVICE CONFIGURATION)

END OF REPORT