DFS PORTION of FCC 47 CFR PART 15 SUBPART E
DFS PORTION of INDUSTRY CANADA RSS-247 ISSUE 1

CERTIFICATION TEST REPORT

FOR

CnPILOT INDOOR E400 802.11ac ACCESS POINT

MODEL NUMBER: C000100P400A

FCC ID: Z8H89FT0018
IC: 109W-0018

REPORT NUMBER: 15N20615-1A

ISSUE DATE: OCTOBER 13, 2015

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

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/31/15	Initial Issue	C. Cheung
A	10/13/15	Correct Typo	C. Cheung

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: CnPILOT INDOOR E400 802.11ac ACCESS POINT

MODEL: C000100P400A

SERIAL NUMBER: NI2CA1118000E / 00 11 74 00 00 1f (CONDUCTED / RADIATED)

DATE TESTED: AUGUST 17 to 20, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
DFS Portion of CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass

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.

Approved & Released For
UL Verification Services Inc. By:

CONAN CHEUNG
PROJECT LEAD
UL Verification Services Inc.

Tested By:

DOUG ANDERSON
EMC ENGINEER
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 06-96, FCC KDB 789033, KDB 905462 D02 and D03, ANSI C63.10-2013, RSS-247 Issue 1.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

5. DYNAMIC FREQUENCY SELECTION

5.1. OVERVIEW

5.1.1. LIMITS

INDUSTRY CANADA

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

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

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

FCC

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

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

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

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.		

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

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

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

Table 4: DFS Response requirement values

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

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

Table 5 – Short Pulse Radar Test Waveforms

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

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

Table 6 – Long Pulse Radar Test Signal

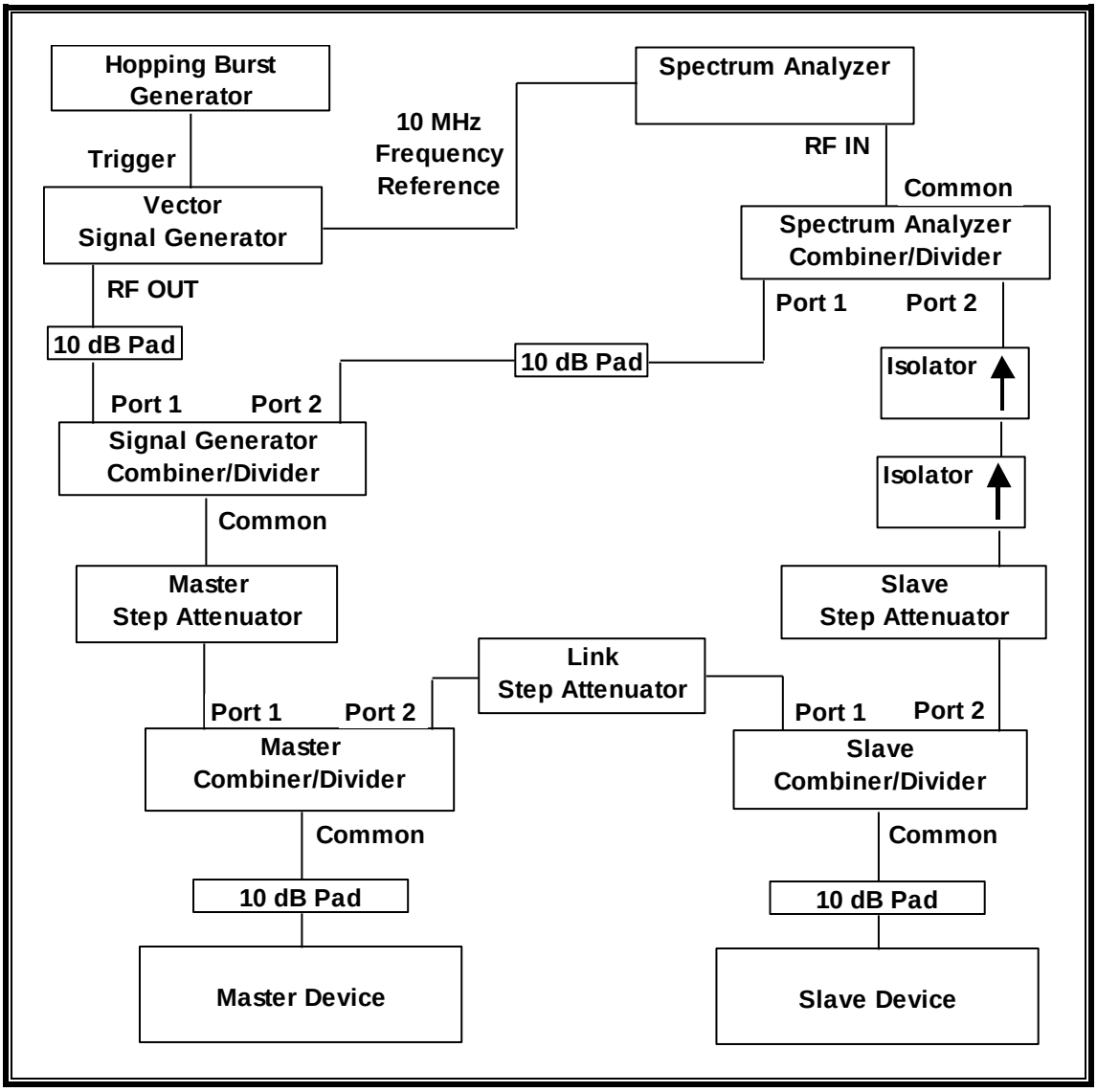
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

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

5.1.2. TEST AND MEASUREMENT SYSTEM (CONDUCTED CONFIGURATION)

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 are 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. The video test file is streamed to generate WLAN traffic. 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.

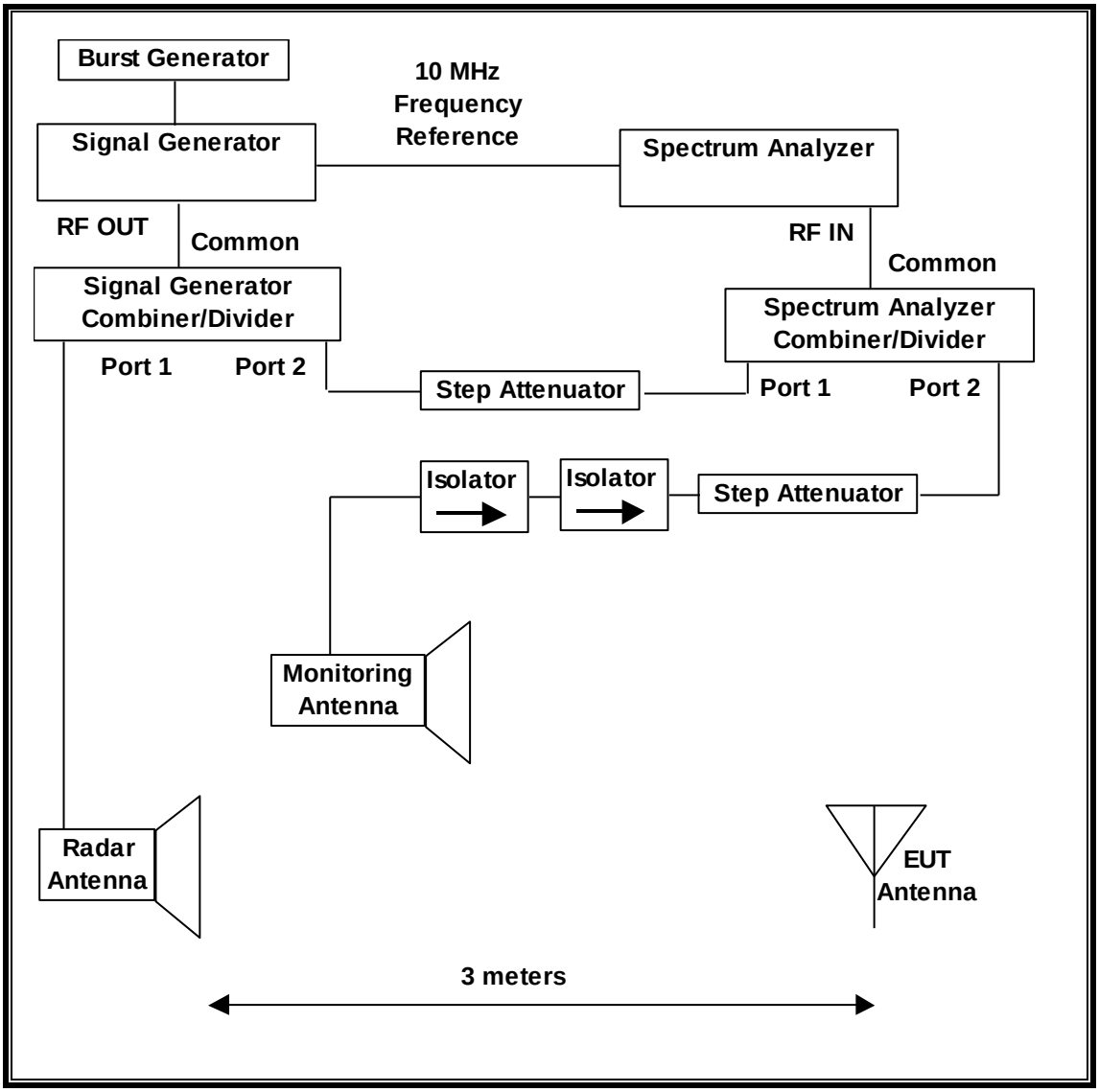
TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the 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	06/01/16
Signal Generator, MXG X-Series RF Vector	Agilent	N5172B	MY51350337	02/17/16
Arbitrary Waveform Generator	Agilent / HP	33220A	C01168	04/03/16

5.1.3. TEST AND MEASUREMENT SYSTEM (RADIATED CONFIGURATION)

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. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

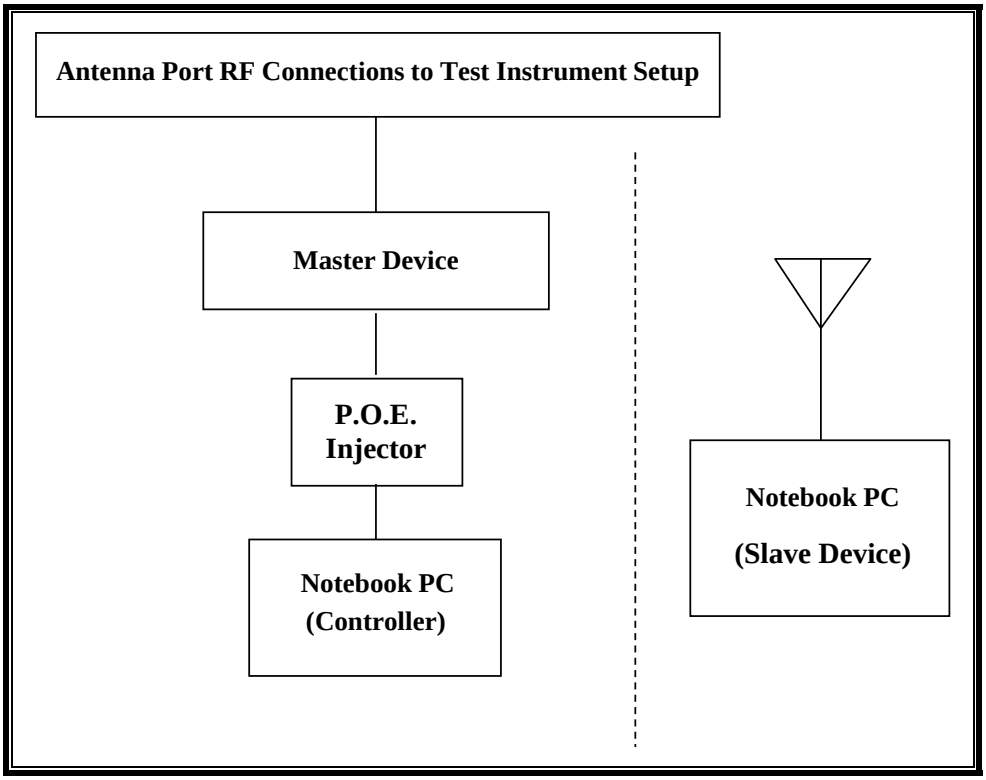
TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	US51350187	06/01/16
Signal Generator, MXG X-Series RF Vector	Agilent	N5172B	MY51350337	02/17/16
Arbitrary Waveform Generator	Agilent / HP	33220A	C01168	04/03/16

5.1.4. SETUP OF EUT (CONDICTED CONFIGURATION)

CONDUCTED 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**
P.O.E.Injector (EUT)	Alpha Network	APoE48V-1G	No Serial Number	DoC
Notebook PC (Controller)	Motorola	HK1322	3433JC0021	DoC
AC Adapter (Controller PC)	Hipro	HP-OW120F13	F3-070900274301	DoC
Notebook PC (Slave Device 1)	Apple	A1502	C02NXEDDG3QH	QDS-BRCM1069
AC Adapter (Slave PC 1)	Delta Electronics	A1435	C0445173LSQG6KAC	DoC
Notebook PC (Slave Device 2)	Apple	A1465	C02PJJV3GFWM	QDS-BRCM1072
AC Adapter (Slave PC 2)	Lite On Technology	A1436	C06514405YBG6HJAR	DoC

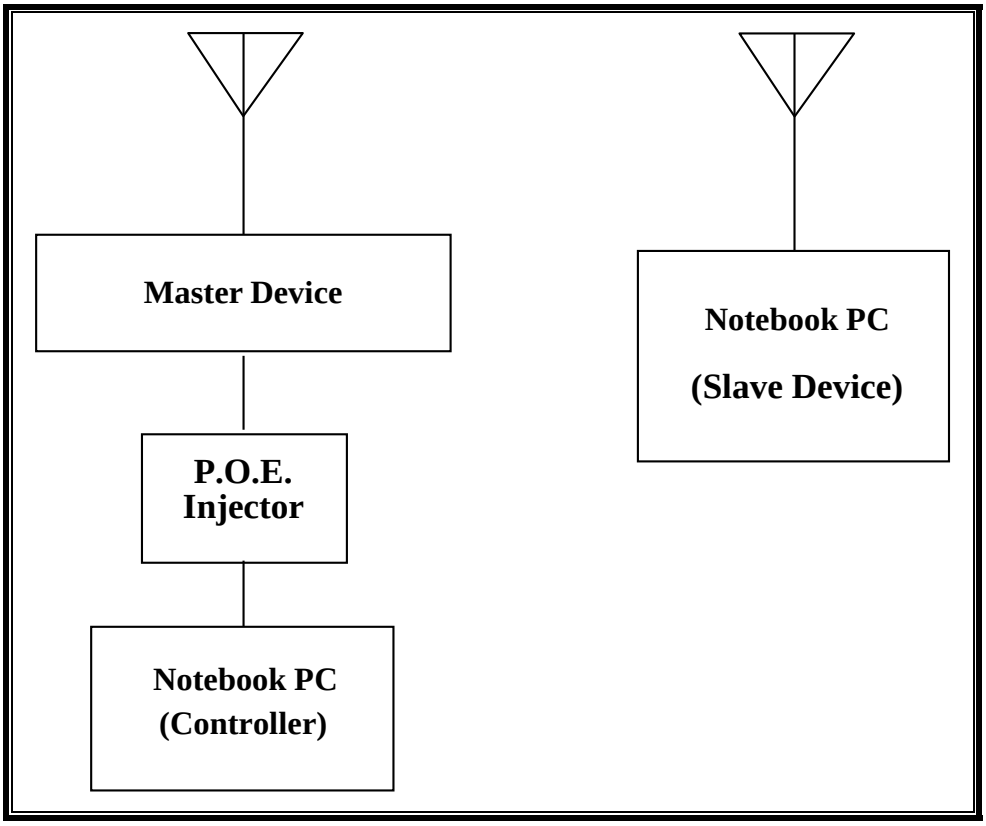
Note:

Slave Device 1 was used during 20 MHz and 40 MHz channel bandwidth testing.

Slave Device 2 was used during 80 MHz channel bandwidth testing.

5.1.5. SETUP OF EUT (RADIATED CONFIGURATION)

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**
P.O.E.Injector (EUT)	Alpha Network	APoE48V-1G	No Serial Number	DoC
Notebook PC (Controller)	Motorola	HK1322	3433JC0021	DoC
AC Adapter (Controller PC)	Hipro	HP-OW120F13	F3-070900274301	DoC
Notebook PC (Slave Device)	Apple	A1502	C02NXEDDG3QH	QDS-BRCM1069
AC Adapter (Slave PC)	Delta Electronics	A1435	C0445173LSQG6KAC	DoC

5.1.6. DESCRIPTION OF EUT (CONDUCTED CONFIGURATION)

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

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

The EUT is a Master Device.

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

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

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

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

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

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

WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the EUT 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 access point is revision 1.0-A0 build 2015-08-06.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

5.1.7. DESCRIPTION OF EUT (RADIATED CONFIGURATION)

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

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

The EUT is a Master Device.

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

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

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

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

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

WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the EUT 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 access point is revision 1.0-A0 build 2015-08-06.

UNIFORM CHANNEL SPREADING

This function is not required per KDB 905462.

5.2. TEST RESULTS FOR 20 MHz BANDWIDTH (CONDUCTED CONFIGURATION)

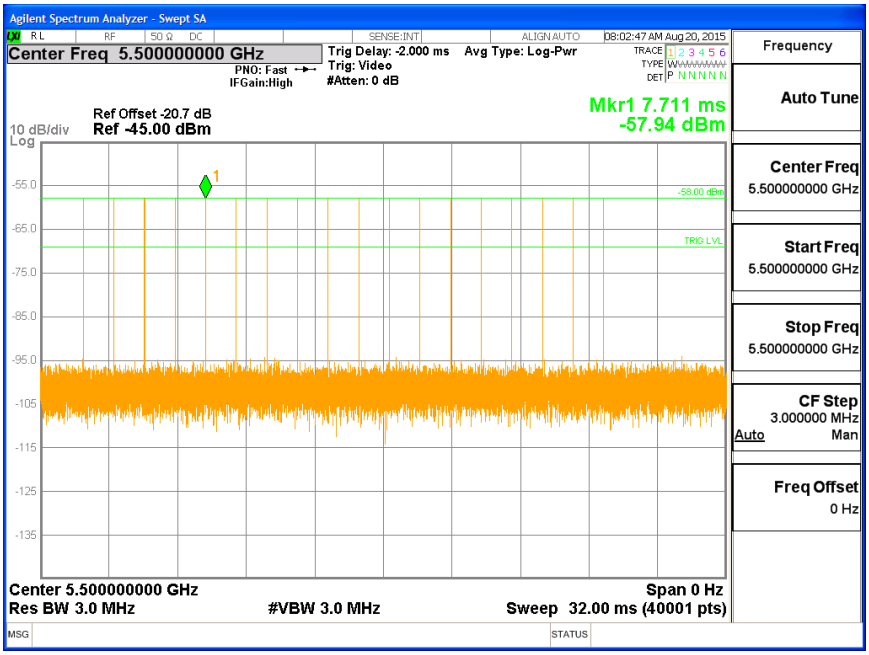
5.2.1. TEST CHANNEL

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

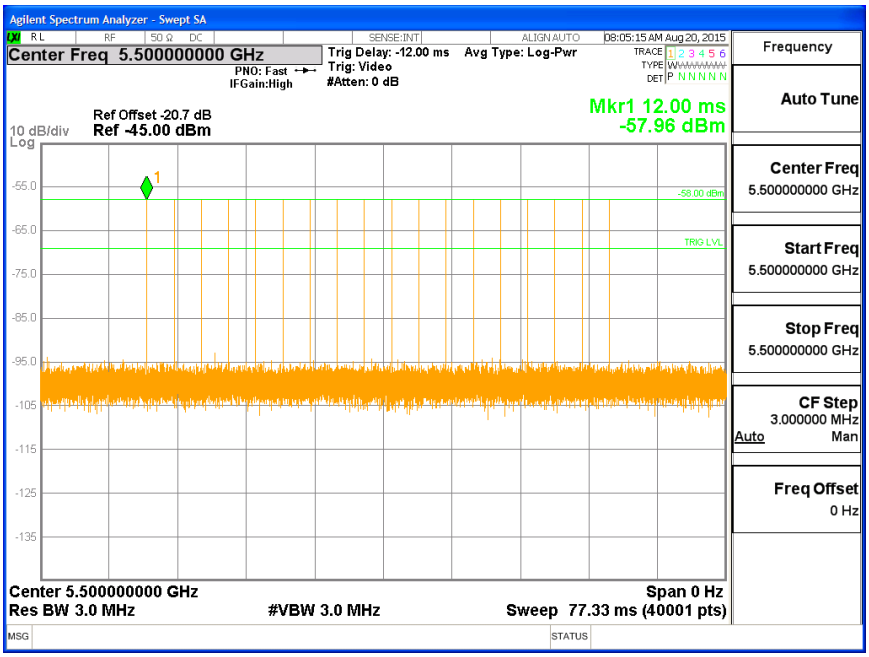
5.2.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

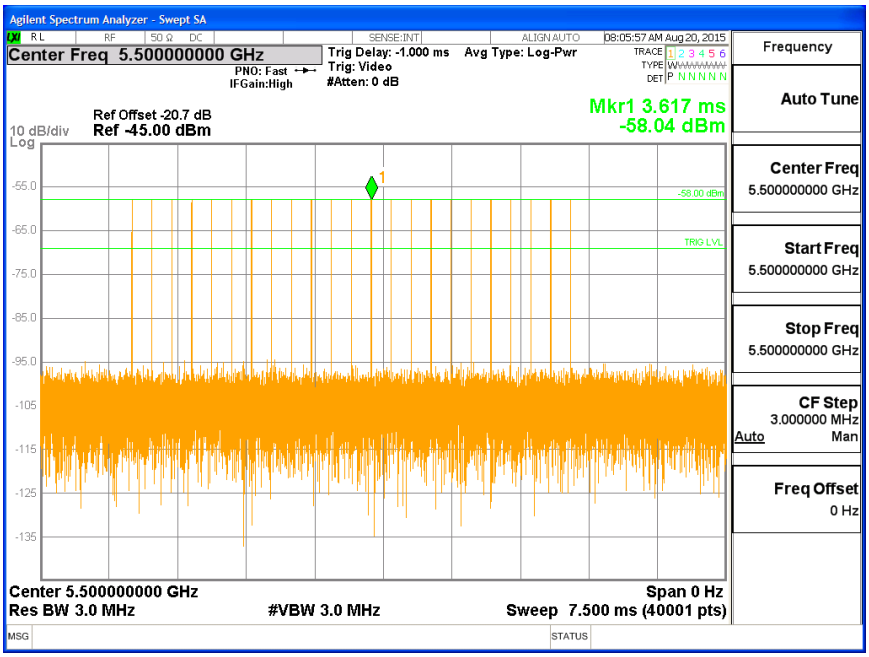
SHORT PULSE RADAR TYPE 0



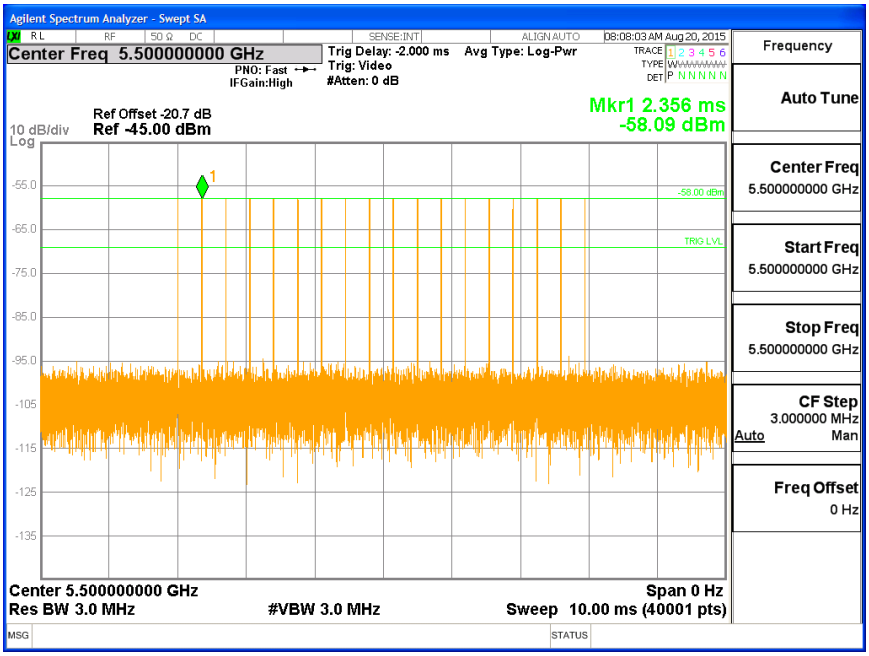
SAMPLE OF RADAR TYPE 1



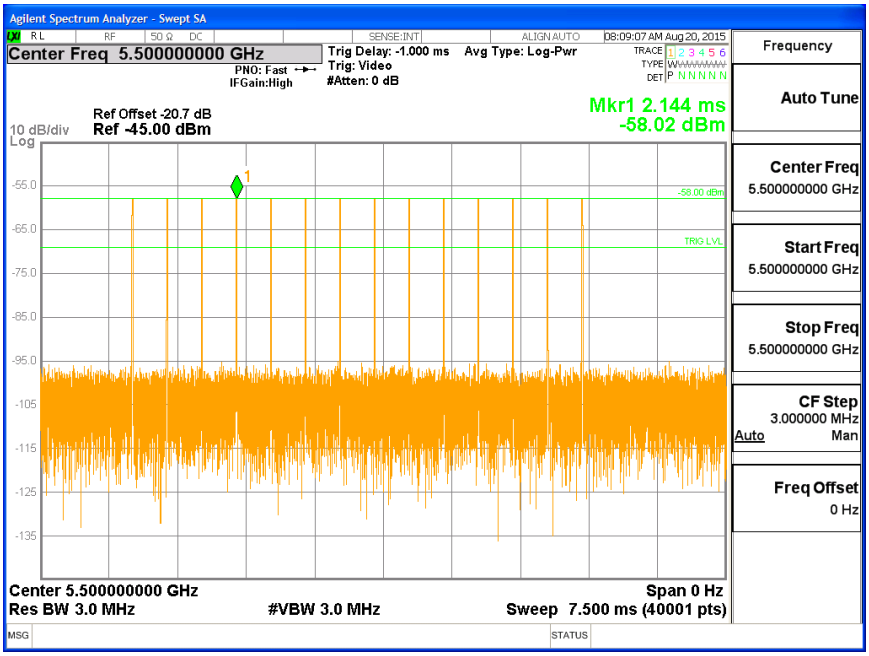
SAMPLE OF RADAR TYPE 2



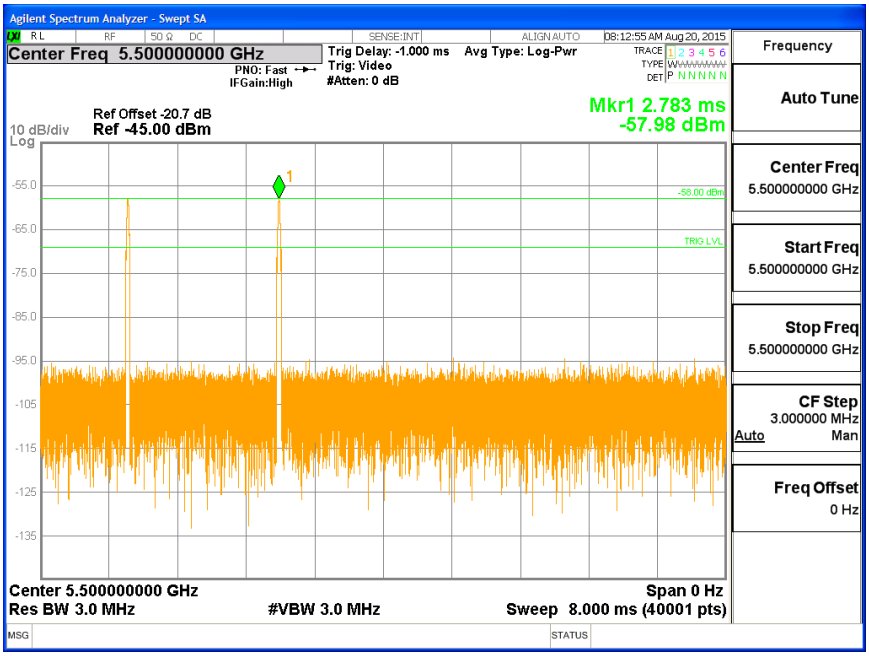
SAMPLE OF RADAR TYPE 3



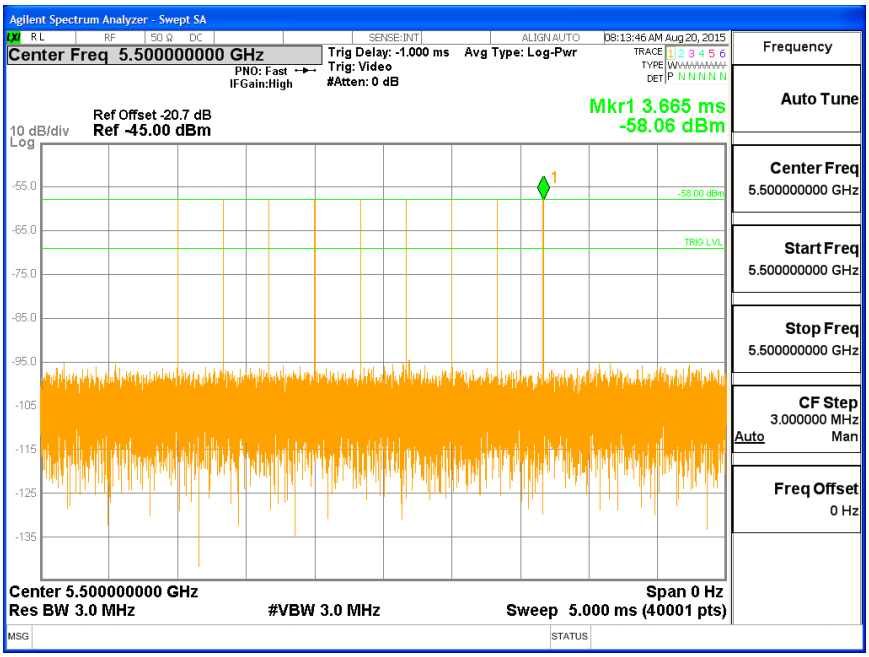
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

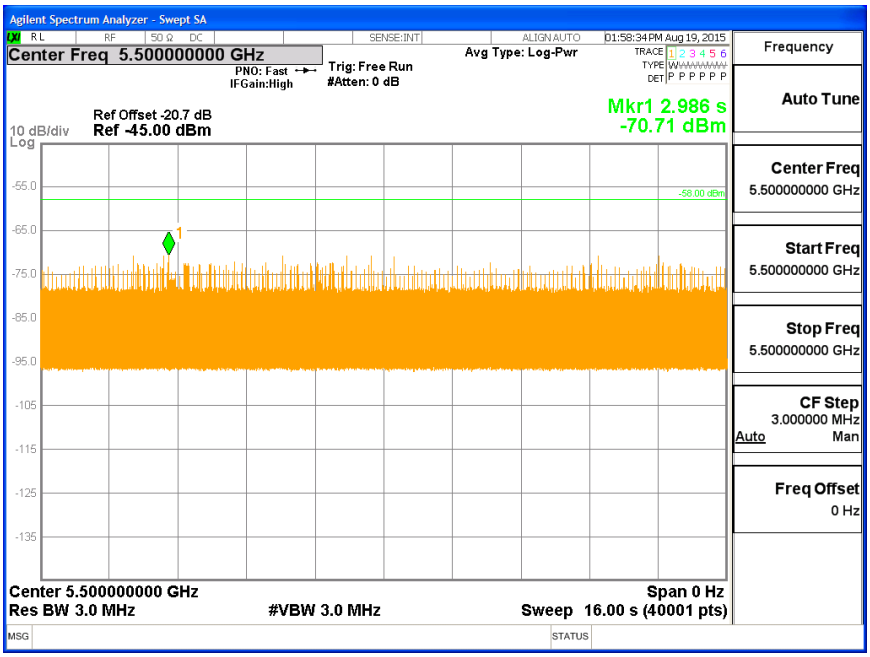


SINGLE BURST OF RADAR TYPE 6

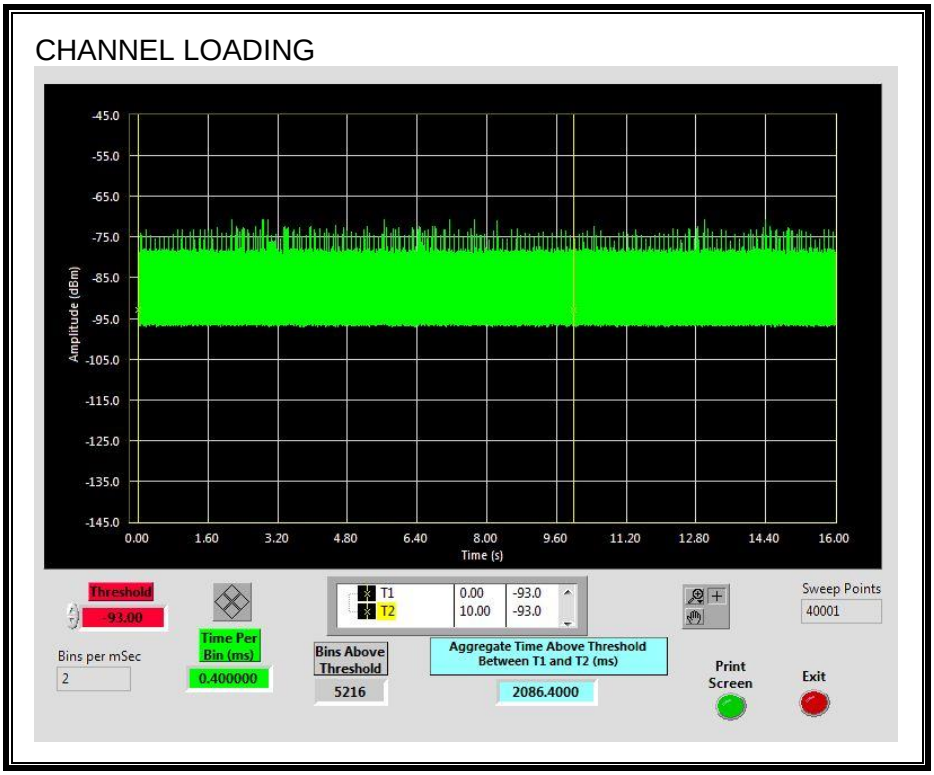


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 20.86%

5.2.3. CHANNEL AVAILABILITY CHECK TIME

This test is not required for this channel bandwidth per table two, page five of KDB 905462, therefore it has not been performed.

5.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

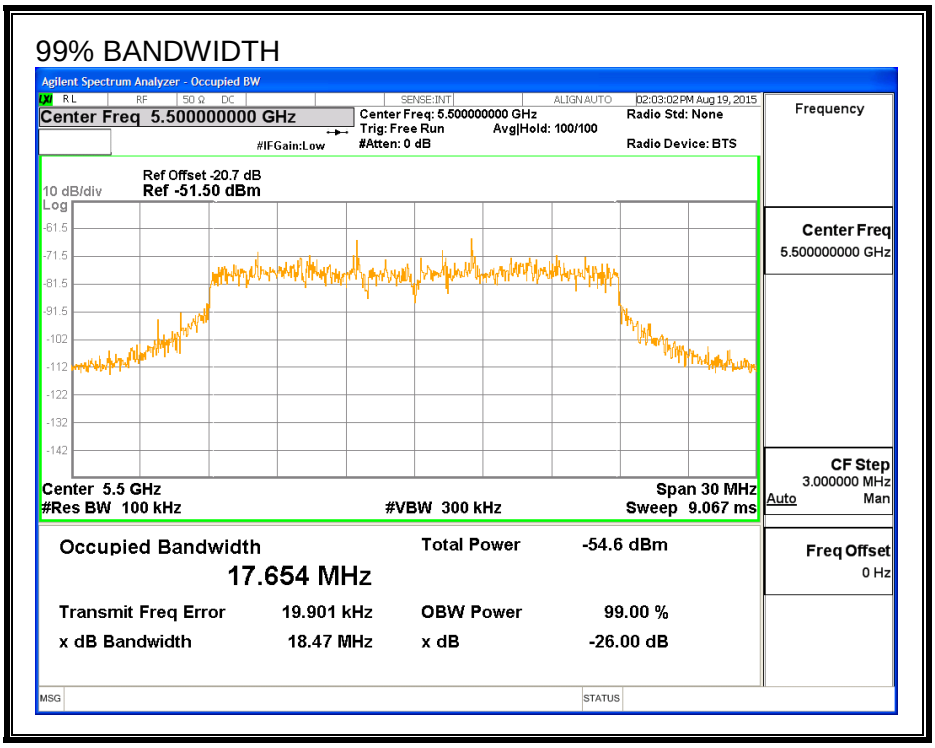
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

5.2.5. MOVE AND CLOSING TIME

This test is not required for this channel bandwidth per table two, page five of KDB 905462, therefore it has not been performed.

5.2.6. 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	17.654	113.3	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

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

5.2.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		80% of Det BW	
					FL	FH	FL5	FH5
FCC Short Pulse Type 1	30	100.00	60	Pass	5490	5510		
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5510		
FCC Short Pulse Type 3	30	100.00	60	Pass	5490	5510		
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5510		
Aggregate		100.00	80	Pass				
FCC Long Pulse Type 5	30	96.67	80	Pass	5490	5510	5492	5508
FCC Hopping Type 6	42	100.00	70	Pass	5490	5510		

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	638	83	A	5500	Yes
1003	1	818	65	A	5500	Yes
1004	1	618	86	A	5500	Yes
1005	1	598	89	A	5500	Yes
1006	1	878	61	A	5500	Yes
1007	1	738	72	A	5500	Yes
1008	1	558	95	A	5500	Yes
1009	1	658	81	A	5500	Yes
1010	1	938	57	A	5500	Yes
1011	1	538	99	A	5500	Yes
1012	1	678	78	A	5500	Yes
1013	1	898	59	A	5500	Yes
1014	1	798	67	A	5500	Yes
1015	1	518	102	A	5500	Yes
1016	1	1365	39	B	5500	Yes
1017	1	1932	28	B	5500	Yes
1018	1	2824	19	B	5500	Yes
1019	1	973	55	B	5500	Yes
1020	1	800	66	B	5500	Yes
1021	1	1626	33	B	5500	Yes
1022	1	547	97	B	5500	Yes
1023	1	2856	19	B	5500	Yes
1024	1	1747	31	B	5500	Yes
1025	1	1638	33	B	5500	Yes
1026	1	1853	29	B	5500	Yes
1027	1	679	78	B	5500	Yes
1028	1	2377	23	B	5500	Yes
1029	1	1332	40	B	5500	Yes
1030	1	1965	27	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	3	218.00	23	5500	Yes
2002	1.2	180.00	25	5500	Yes
2003	2	174.00	24	5500	Yes
2004	4.5	183.00	23	5500	Yes
2005	3.7	181.00	26	5500	Yes
2006	4.5	194.00	26	5500	Yes
2007	1.7	158.00	26	5500	Yes
2008	4.8	175.00	29	5500	Yes
2009	4.4	186.00	26	5500	Yes
2010	1.5	208.00	29	5500	Yes
2011	3.4	223.00	27	5500	Yes
2012	2.9	211.00	27	5500	Yes
2013	1	230.00	29	5500	Yes
2014	4.8	222.00	26	5500	Yes
2015	3.1	207.00	25	5500	Yes
2016	1	203.00	29	5500	Yes
2017	1.7	193.00	28	5500	Yes
2018	4	154.00	23	5500	Yes
2019	4.8	191.00	26	5500	Yes
2020	3.2	157.00	28	5500	Yes
2021	2.4	198.00	24	5500	Yes
2022	3.2	168.00	23	5500	Yes
2023	2.5	213.00	27	5500	Yes
2024	3.5	150.00	26	5500	Yes
2025	3.1	161.00	24	5500	Yes
2026	2.4	182.00	27	5500	Yes
2027	2.1	197.00	28	5500	Yes
2028	1.6	185.00	25	5500	Yes
2029	3.8	204.00	27	5500	Yes
2030	3.5	196.00	24	5500	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	8.7	349.00	18	5500	Yes
3002	8.5	336.00	17	5500	Yes
3003	9.4	304.00	17	5500	Yes
3004	7.1	437.00	16	5500	Yes
3005	5.5	417.00	17	5500	Yes
3006	6.2	312.00	18	5500	Yes
3007	7.5	439.00	17	5500	Yes
3008	8.5	346.00	16	5500	Yes
3009	7.7	486.00	18	5500	Yes
3010	8.9	422.00	18	5500	Yes
3011	8.4	323.00	16	5500	Yes
3012	7.5	389.00	18	5500	Yes
3013	7.2	436.00	18	5500	Yes
3014	6.6	398.00	17	5500	Yes
3015	9.3	458.00	18	5500	Yes
3016	8.9	432.00	17	5500	Yes
3017	9.4	387.00	16	5500	Yes
3018	9.3	256.00	16	5500	Yes
3019	5	475.00	17	5500	Yes
3020	7.9	475.00	17	5500	Yes
3021	9	338.00	16	5500	Yes
3022	9.7	484.00	17	5500	Yes
3023	5.9	359.00	16	5500	Yes
3024	6.9	267.00	18	5500	Yes
3025	6.1	288.00	17	5500	Yes
3026	7.3	342.00	17	5500	Yes
3027	6.8	494.00	18	5500	Yes
3028	5.9	443.00	17	5500	Yes
3029	5.6	357	17	5500	Yes
3030	5	318	16	5500	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	15.3	378.00	14	5500	Yes
4002	19.9	486.00	12	5500	Yes
4003	15.7	308.00	16	5500	Yes
4004	10.7	428.00	12	5500	Yes
4005	17	396.00	16	5500	Yes
4006	12.5	278.00	12	5500	Yes
4007	14.7	258.00	16	5500	Yes
4008	16.1	404.00	16	5500	Yes
4009	18.8	280.00	15	5500	Yes
4010	10.6	321.00	15	5500	Yes
4011	19.1	460.00	12	5500	Yes
4012	11.4	263.00	12	5500	Yes
4013	10.4	415.00	12	5500	Yes
4014	18.7	364.00	12	5500	Yes
4015	18.2	277.00	13	5500	Yes
4016	16.9	490.00	16	5500	Yes
4017	12.1	432.00	12	5500	Yes
4018	16.7	406.00	13	5500	Yes
4019	12.5	479.00	14	5500	Yes
4020	17.6	348.00	15	5500	Yes
4021	13.8	316.00	14	5500	Yes
4022	19.4	449.00	15	5500	Yes
4023	16.9	430.00	15	5500	Yes
4024	12.9	325.00	14	5500	Yes
4025	15.6	451.00	14	5500	Yes
4026	17.5	492.00	13	5500	Yes
4027	15.9	381.00	16	5500	Yes
4028	18.3	434.00	15	5500	Yes
4029	17.3	335.00	16	5500	Yes
4030	15.5	284.00	16	5500	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5496	No
2	5496	Yes
3	5495	Yes
4	5503	Yes
5	5503	Yes
6	5500	Yes
7	5500	Yes
8	5504	Yes
9	5495	Yes
10	5506	Yes
11	5505	Yes
12	5503	Yes
13	5497	Yes
14	5498	Yes
15	5505	Yes
16	5495	Yes
17	5507	Yes
18	5507	Yes
19	5494	Yes
20	5503	Yes
21	5507	Yes
22	5502	Yes
23	5500	Yes
24	5496	Yes
25	5503	Yes
26	5504	Yes
27	5506	Yes
28	5508	Yes
29	5500	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	41	5490	6	Yes
2	516	5491	4	Yes
3	991	5492	4	Yes
4	1466	5493	5	Yes
5	1941	5494	7	Yes
6	2416	5495	6	Yes
7	2891	5496	5	Yes
8	3366	5497	3	Yes
9	3841	5498	5	Yes
10	4316	5499	5	Yes
11	4791	5500	5	Yes
12	5266	5501	4	Yes
13	5741	5502	2	Yes
14	6216	5503	7	Yes
15	6691	5504	5	Yes
16	7166	5505	4	Yes
17	7641	5506	8	Yes
18	8116	5507	3	Yes
19	8591	5508	4	Yes
20	9066	5509	4	Yes
21	9541	5510	6	Yes
22	10016	5490	5	Yes
23	10491	5491	1	Yes
24	10966	5492	5	Yes
25	11441	5493	5	Yes
26	11916	5494	5	Yes
27	12391	5495	3	Yes
28	12866	5496	3	Yes
29	13341	5497	6	Yes
30	13816	5498	1	Yes
31	14291	5499	6	Yes
32	14766	5500	3	Yes
33	15241	5501	5	Yes
34	15716	5502	5	Yes
35	16191	5503	3	Yes
36	16666	5504	3	Yes
37	17141	5505	5	Yes
38	17616	5506	6	Yes
39	18091	5507	3	Yes
40	18566	5508	5	Yes
41	19041	5509	1	Yes
42	19516	5510	4	Yes

5.3. TEST RESULTS FOR 40 MHz BANDWIDTH (CONDUCTED CONFIGURATION)

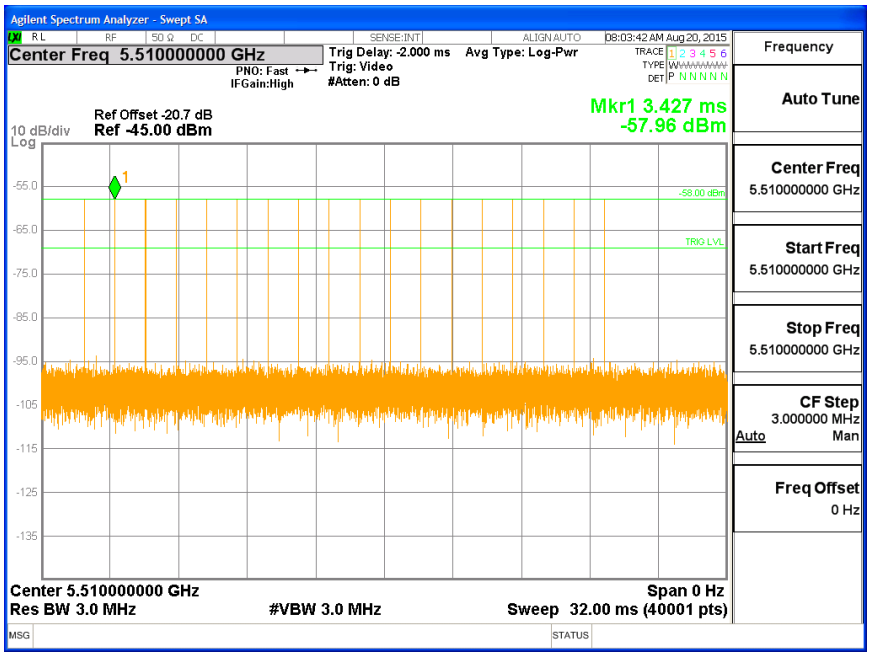
5.3.1. TEST CHANNEL

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

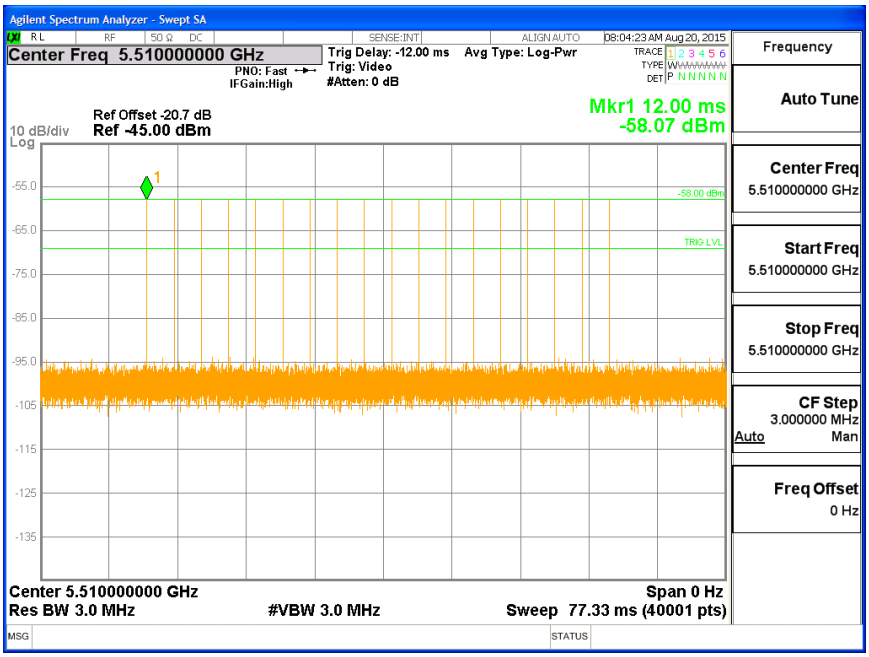
5.3.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

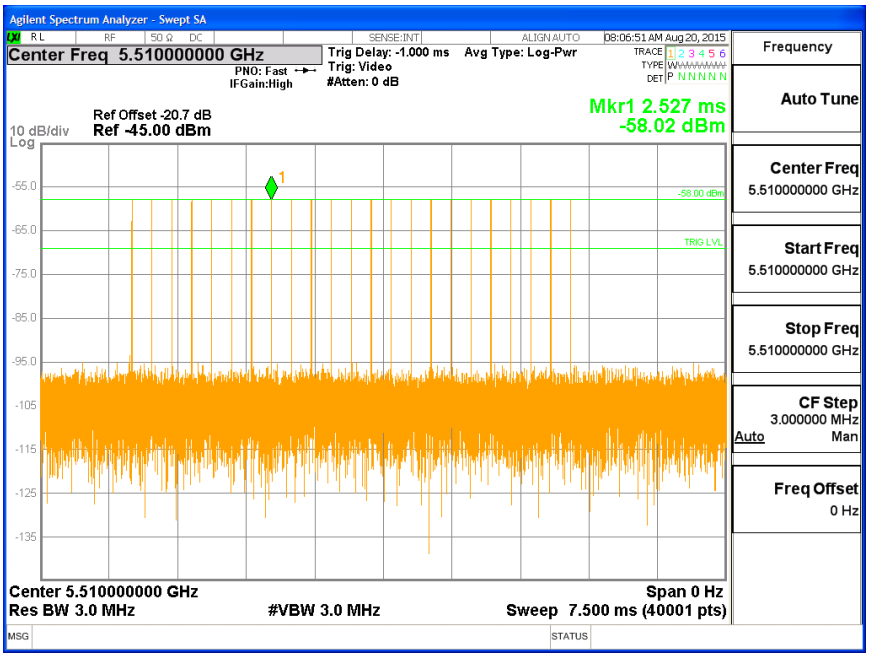
SHORT PULSE RADAR TYPE 0



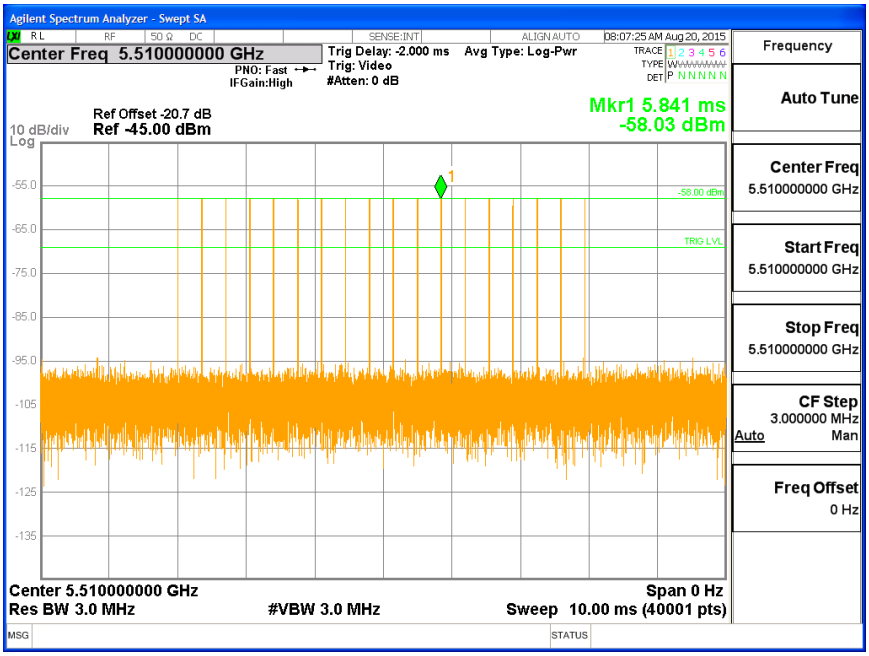
SAMPLE OF RADAR TYPE 1



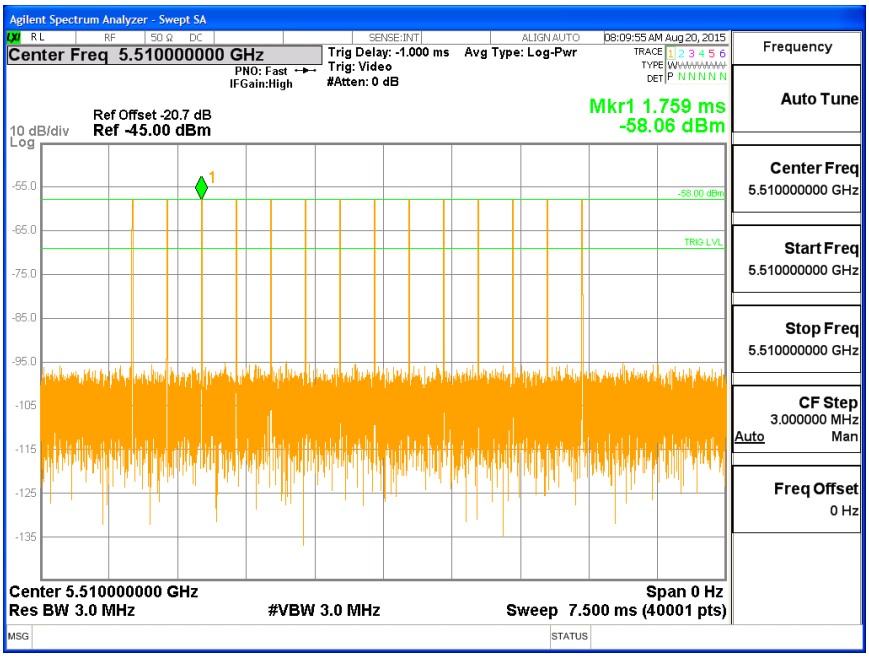
SAMPLE OF RADAR TYPE 2



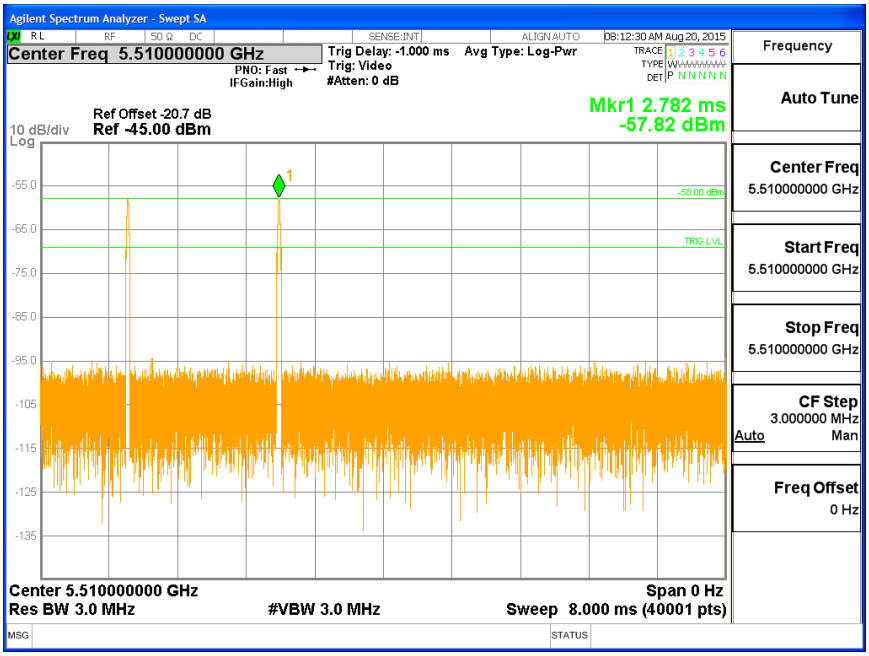
SAMPLE OF RADAR TYPE 3



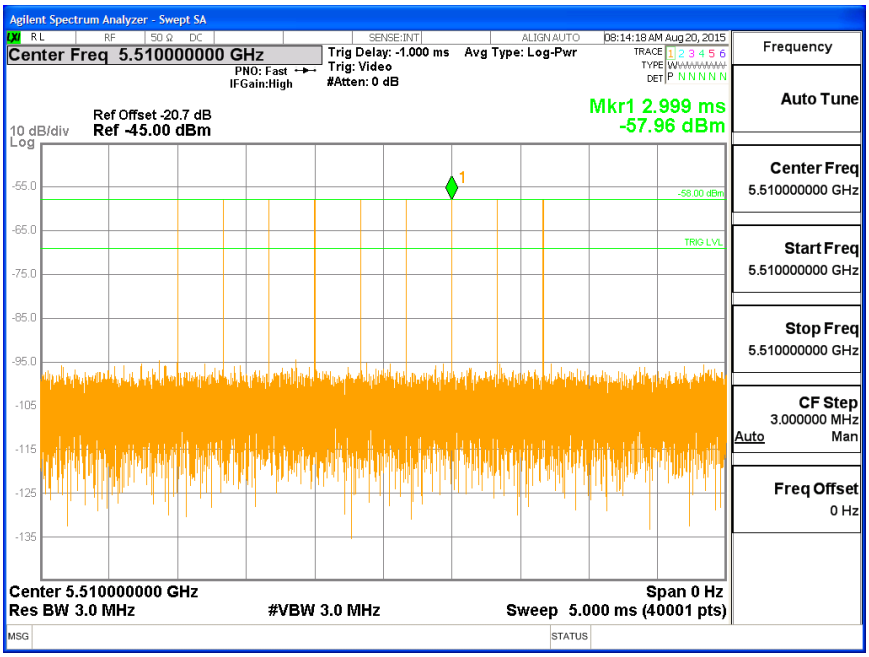
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

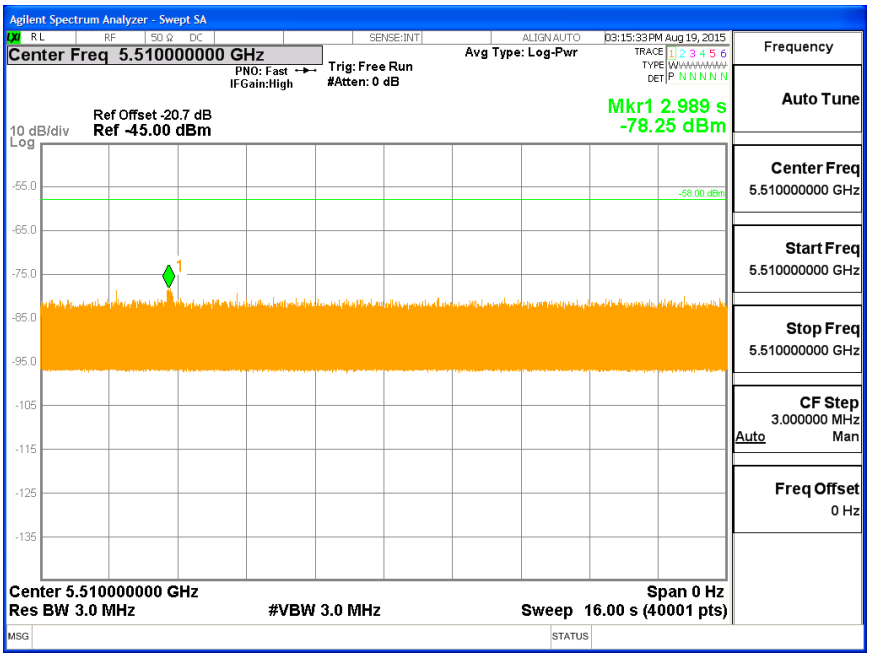


SINGLE BURST OF RADAR TYPE 6

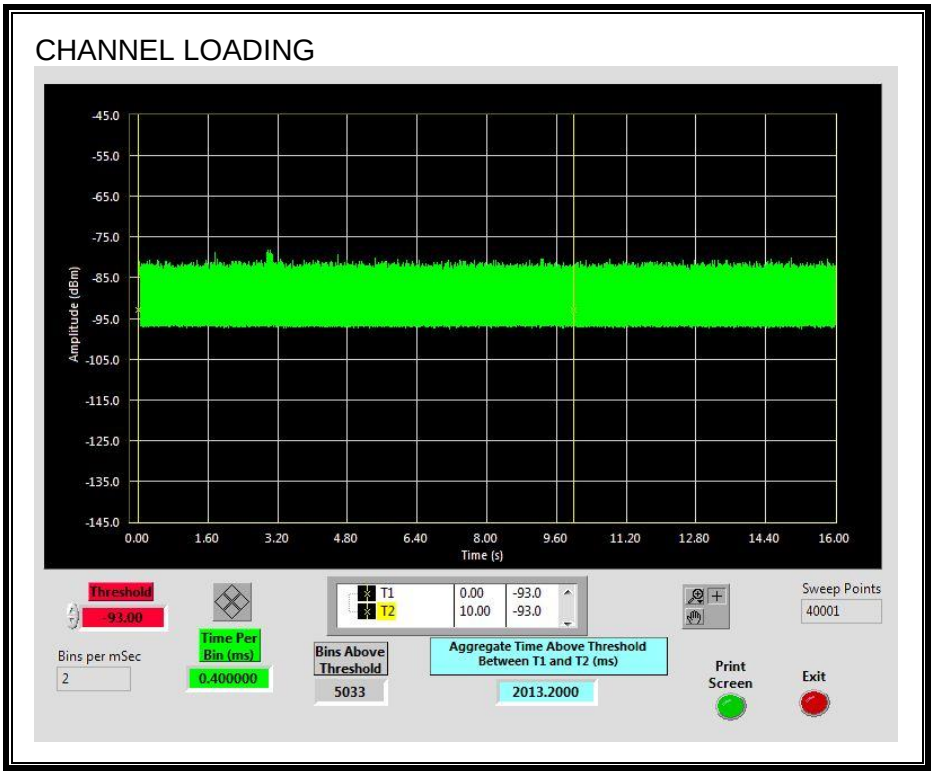


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 20.13%

5.3.3. CHANNEL AVAILABILITY CHECK TIME

This test is not required for this channel bandwidth per table two, page five of KDB 905462, therefore it has not been performed.

5.3.1. OVERLAPPING CHANNEL TESTS

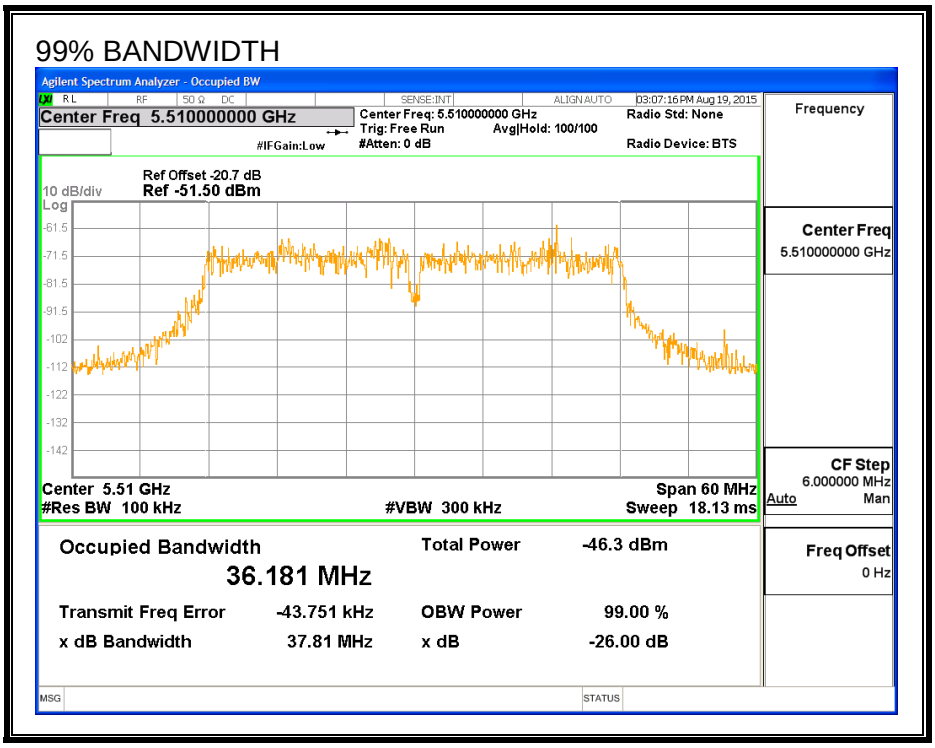
The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

5.3.2. MOVE AND CLOSING TIME

This test is not required for this channel bandwidth per table two, page five of KDB 905462, therefore it has not been performed.

5.3.1. 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 (%)
5491	5530	39	36.181	107.8	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of	Number	Detection (%)	Mark
5491	10	10	100	FL
5492	10	10	100	
5493	10	10	100	
5494	10	10	100	
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

5.3.2. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		80% of Det BW	
					FL	FH	FL5	FH5
FCC Short Pulse Type 1	30	100.00	60	Pass	5491	5530		
FCC Short Pulse Type 2	30	100.00	60	Pass	5491	5530		
FCC Short Pulse Type 3	30	96.67	60	Pass	5491	5530		
FCC Short Pulse Type 4	30	93.33	60	Pass	5491	5530		
Aggregate		97.50	80	Pass				
FCC Long Pulse Type 5	30	100.00	80	Pass	5491	5530	5495	5526
FCC Hopping Type 6	40	97.50	70	Pass	5491	5530		

Random radar frequencies with at least one trial at the channel center frequency were tested for 40 MHz channel bandwidth at client request.

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1

Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5519	Yes
1002	1	638	83	A	5503	Yes
1003	1	818	65	A	5503	Yes
1004	1	618	86	A	5493	Yes
1005	1	598	89	A	5516	Yes
1006	1	878	61	A	5497	Yes
1007	1	738	72	A	5499	Yes
1008	1	558	95	A	5525	Yes
1009	1	658	81	A	5522	Yes
1010	1	938	57	A	5517	Yes
1011	1	538	99	A	5502	Yes
1012	1	678	78	A	5499	Yes
1013	1	898	59	A	5516	Yes
1014	1	798	67	A	5504	Yes
1015	1	518	102	A	5524	Yes
1016	1	1365	39	B	5514	Yes
1017	1	1932	28	B	5510	Yes
1018	1	2824	19	B	5503	Yes
1019	1	973	55	B	5496	Yes
1020	1	800	66	B	5506	Yes
1021	1	1626	33	B	5524	Yes
1022	1	547	97	B	5505	Yes
1023	1	2856	19	B	5521	Yes
1024	1	1747	31	B	5520	Yes
1025	1	1638	33	B	5526	Yes
1026	1	1853	29	B	5513	Yes
1027	1	679	78	B	5523	Yes
1028	1	2377	23	B	5526	Yes
1029	1	1332	40	B	5512	Yes
1030	1	1965	27	B	5510	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	3	218.00	23	5503	Yes
2002	1.2	180.00	25	5520	Yes
2003	2	174.00	24	5501	Yes
2004	4.5	183.00	23	5523	Yes
2005	3.7	181.00	26	5529	Yes
2006	4.5	194.00	26	5497	Yes
2007	1.7	158.00	26	5506	Yes
2008	4.8	175.00	29	5527	Yes
2009	4.4	186.00	26	5515	Yes
2010	1.5	208.00	29	5502	Yes
2011	3.4	223.00	27	5525	Yes
2012	2.9	211.00	27	5510	Yes
2013	1	230.00	29	5505	Yes
2014	4.8	222.00	26	5492	Yes
2015	3.1	207.00	25	5529	Yes
2016	1	203.00	29	5512	Yes
2017	1.7	193.00	28	5516	Yes
2018	4	154.00	23	5524	Yes
2019	4.8	191.00	26	5523	Yes
2020	3.2	157.00	28	5494	Yes
2021	2.4	198.00	24	5525	Yes
2022	3.2	168.00	23	5529	Yes
2023	2.5	213.00	27	5505	Yes
2024	3.5	150.00	26	5504	Yes
2025	3.1	161.00	24	5507	Yes
2026	2.4	182.00	27	5505	Yes
2027	2.1	197.00	28	5492	Yes
2028	1.6	185.00	25	5495	Yes
2029	3.8	204.00	27	5519	Yes
2030	3.5	196.00	24	5509	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	8.7	349.00	18	5510	Yes
3002	8.5	336.00	17	5493	Yes
3003	9.4	304.00	17	5502	Yes
3004	7.1	437.00	16	5501	Yes
3005	5.5	417.00	17	5501	Yes
3006	6.2	312.00	18	5499	Yes
3007	7.5	439.00	17	5494	Yes
3008	8.5	346.00	16	5518	Yes
3009	7.7	486.00	18	5499	Yes
3010	8.9	422.00	18	5514	Yes
3011	8.4	323.00	16	5524	Yes
3012	7.5	389.00	18	5523	Yes
3013	7.2	436.00	18	5500	Yes
3014	6.6	398.00	17	5500	Yes
3015	9.3	458.00	18	5517	Yes
3016	8.9	432.00	17	5502	Yes
3017	9.4	387.00	16	5497	Yes
3018	9.3	256.00	16	5525	Yes
3019	5	475.00	17	5515	No
3020	7.9	475.00	17	5517	Yes
3021	9	338.00	16	5506	Yes
3022	9.7	484.00	17	5492	Yes
3023	5.9	359.00	16	5514	Yes
3024	6.9	267.00	18	5529	Yes
3025	6.1	288.00	17	5508	Yes
3026	7.3	342.00	17	5498	Yes
3027	6.8	494.00	18	5502	Yes
3028	5.9	443.00	17	5492	Yes
3029	5.6	357	17	5499	Yes
3030	5	318	16	5530	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	15.3	378.00	14	5505	Yes
4002	19.9	486.00	12	5510	Yes
4003	15.7	308.00	16	5494	Yes
4004	10.7	428.00	12	5494	Yes
4005	17	396.00	16	5522	Yes
4006	12.5	278.00	12	5527	Yes
4007	14.7	258.00	16	5528	Yes
4008	16.1	404.00	16	5492	Yes
4009	18.8	280.00	15	5527	Yes
4010	10.6	321.00	15	5524	Yes
4011	19.1	460.00	12	5502	Yes
4012	11.4	263.00	12	5522	Yes
4013	10.4	415.00	12	5519	Yes
4014	18.7	364.00	12	5513	Yes
4015	18.2	277.00	13	5518	Yes
4016	16.9	490.00	16	5492	Yes
4017	12.1	432.00	12	5494	Yes
4018	16.7	406.00	13	5494	No
4019	12.5	479.00	14	5528	Yes
4020	17.6	348.00	15	5511	Yes
4021	13.8	316.00	14	5518	Yes
4022	19.4	449.00	15	5512	Yes
4023	16.9	430.00	15	5524	Yes
4024	12.9	325.00	14	5501	Yes
4025	15.6	451.00	14	5501	Yes
4026	17.5	492.00	13	5496	Yes
4027	15.9	381.00	16	5511	Yes
4028	18.3	434.00	15	5528	Yes
4029	17.3	335.00	16	5498	No
4030	15.5	284.00	16	5503	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5497	Yes
2	5512	Yes
3	5512	Yes
4	5503	Yes
5	5496	Yes
6	5513	Yes
7	5514	Yes
8	5504	Yes
9	5510	Yes
10	5498	Yes
11	5518	Yes
12	5500	Yes
13	5526	Yes
14	5525	Yes
15	5503	Yes
16	5522	Yes
17	5514	Yes
18	5495	Yes
19	5521	Yes
20	5522	Yes
21	5512	Yes
22	5511	Yes
23	5519	Yes
24	5501	Yes
25	5507	Yes
26	5496	Yes
27	5516	Yes
28	5505	Yes
29	5497	Yes
30	5512	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	233	5491	11	Yes
2	708	5492	9	Yes
3	1183	5493	10	Yes
4	1658	5494	5	Yes
5	2133	5495	3	Yes
6	2608	5496	10	Yes
7	3083	5497	9	Yes
8	3558	5498	6	Yes
9	4033	5499	7	Yes
10	4508	5500	12	Yes
11	4983	5501	7	Yes
12	5458	5502	13	Yes
13	5933	5503	6	Yes
14	6408	5504	8	Yes
15	6883	5505	10	Yes
16	7358	5506	8	Yes
17	7833	5507	12	Yes
18	8308	5508	8	Yes
19	8783	5509	8	Yes
20	9258	5510	5	Yes
21	9733	5511	13	Yes
22	10208	5512	10	Yes
23	10683	5513	9	Yes
24	11158	5514	7	Yes
25	11633	5515	11	Yes
26	12108	5516	6	Yes
27	12583	5517	6	Yes
28	13058	5518	8	Yes
29	13533	5519	3	Yes
30	14008	5520	9	Yes
31	14483	5521	9	Yes
32	14958	5522	5	Yes
33	15433	5523	9	Yes
34	15908	5524	8	Yes
35	16383	5525	8	Yes
36	16858	5526	9	Yes
37	17333	5527	9	Yes
38	17808	5528	11	Yes
39	18283	5529	3	Yes
40	18758	5530	6	No

5.4. TEST RESULTS FOR 80 MHz BANDWIDTH (CONDUCTED CONFIGURATION)

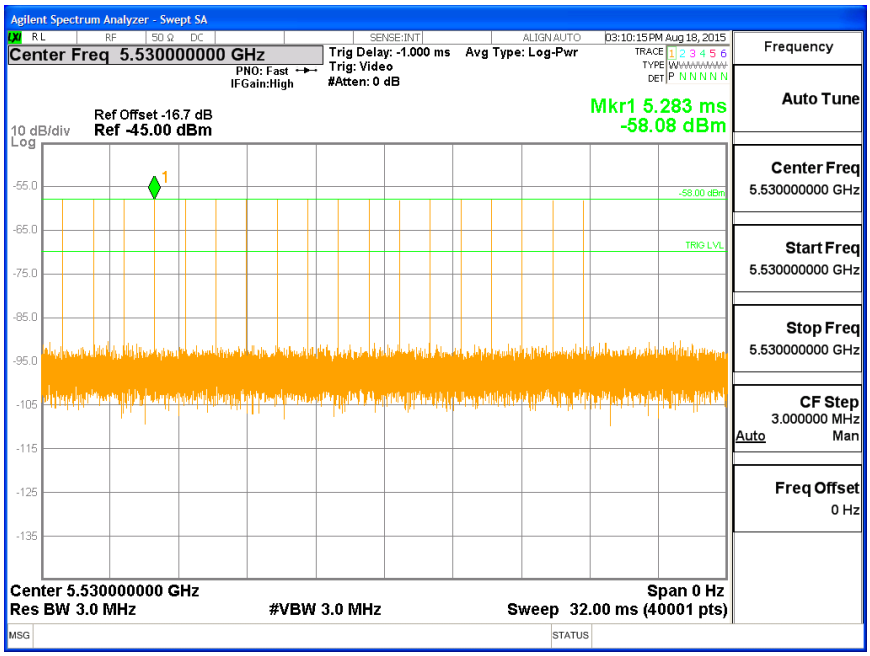
5.4.1. TEST CHANNEL

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

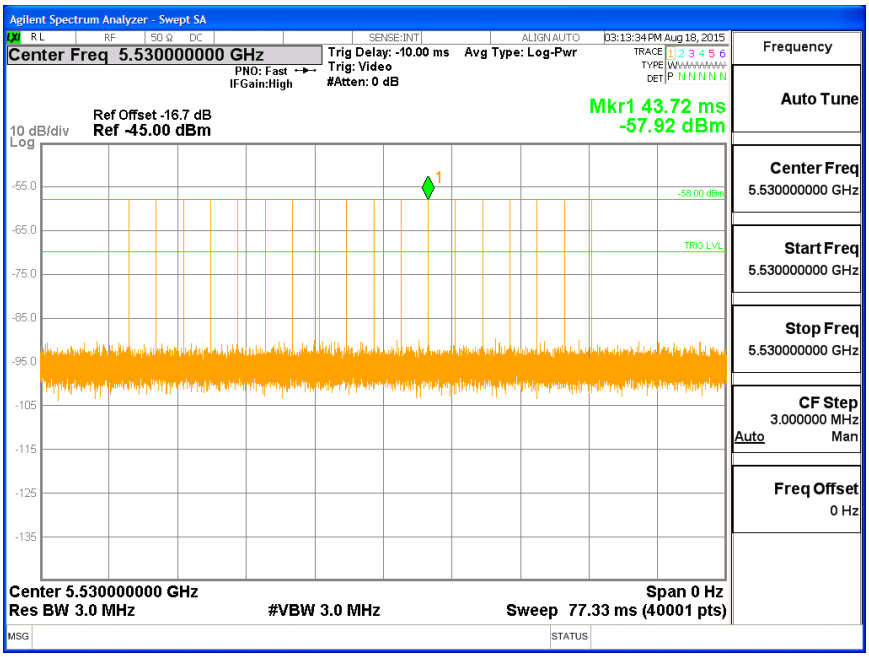
5.4.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

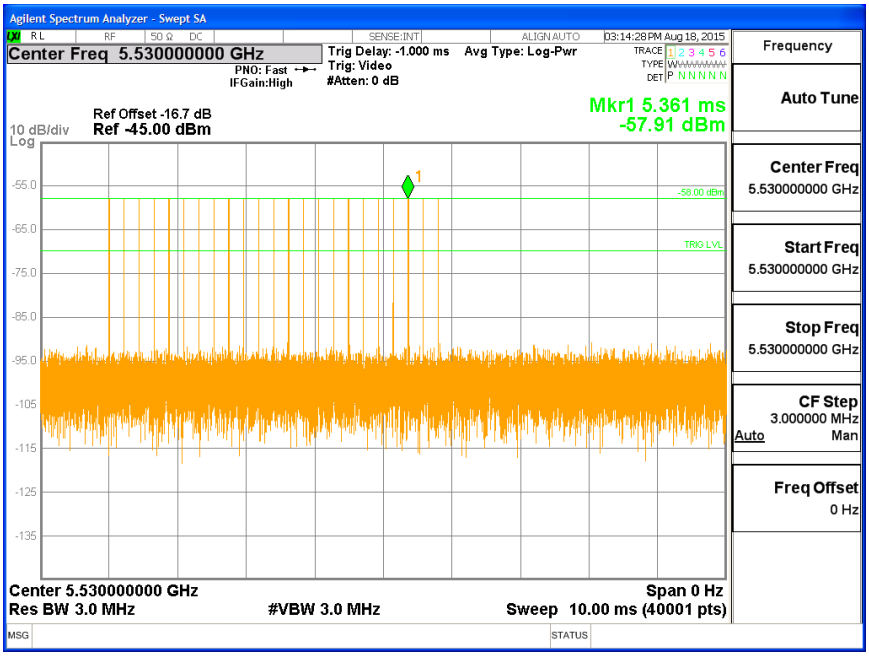
SHORT PULSE RADAR TYPE 0



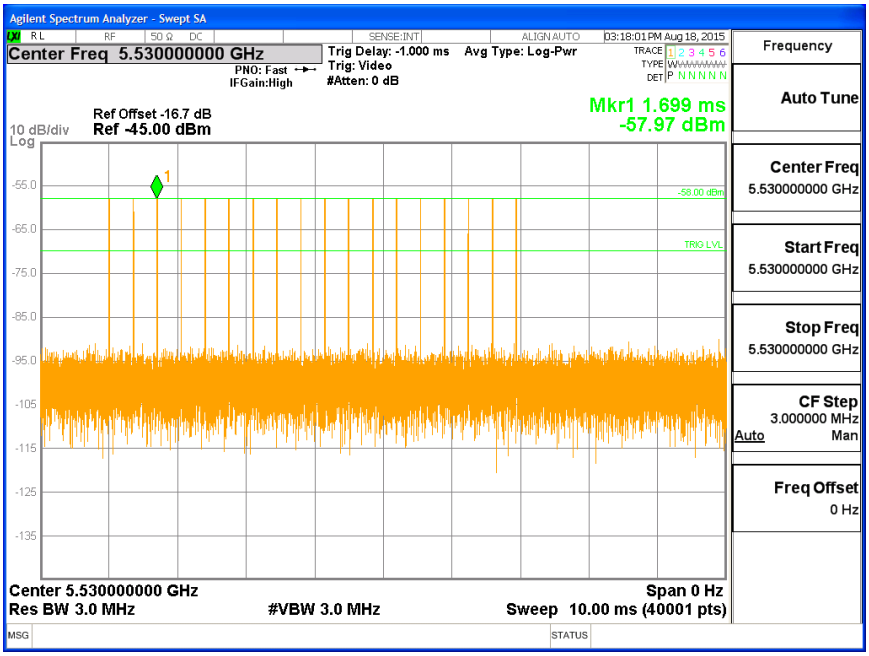
SAMPLE OF RADAR TYPE 1



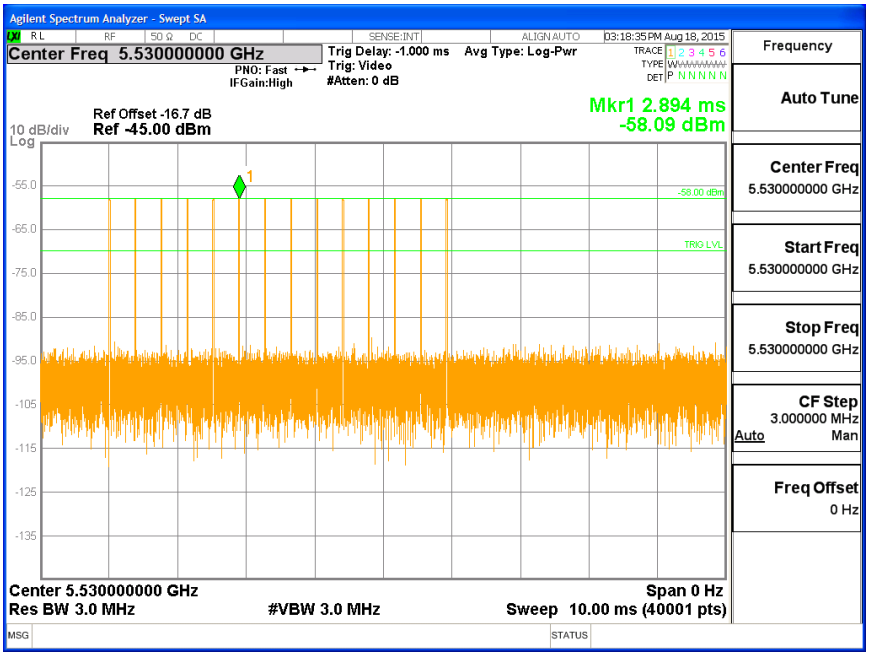
SAMPLE OF RADAR TYPE 2



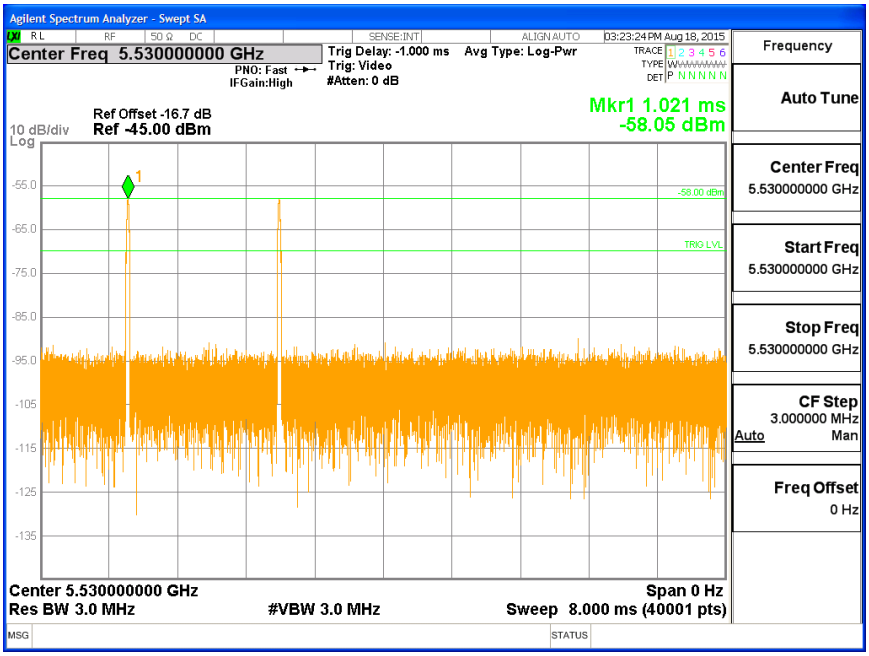
SAMPLE OF RADAR TYPE 3



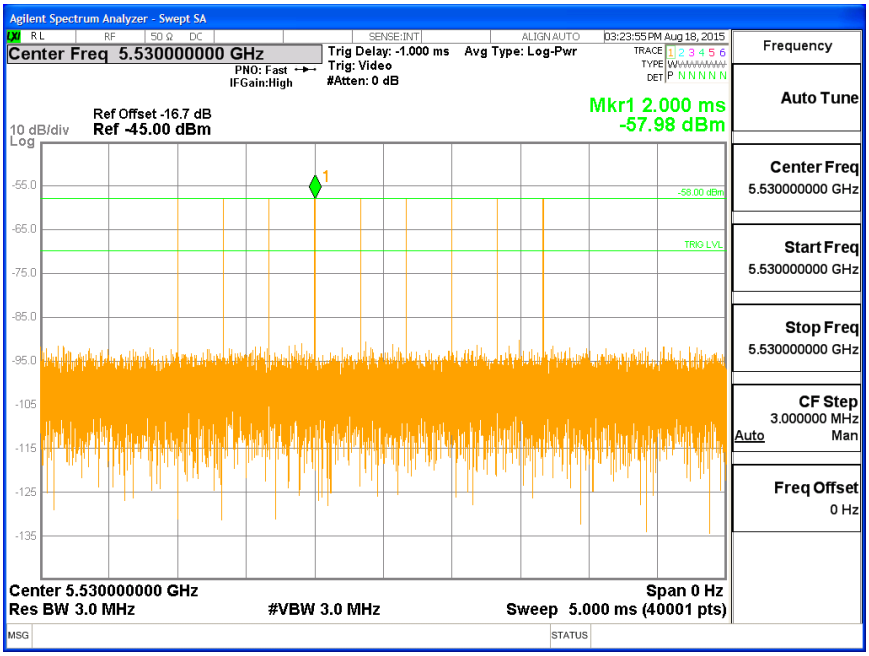
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

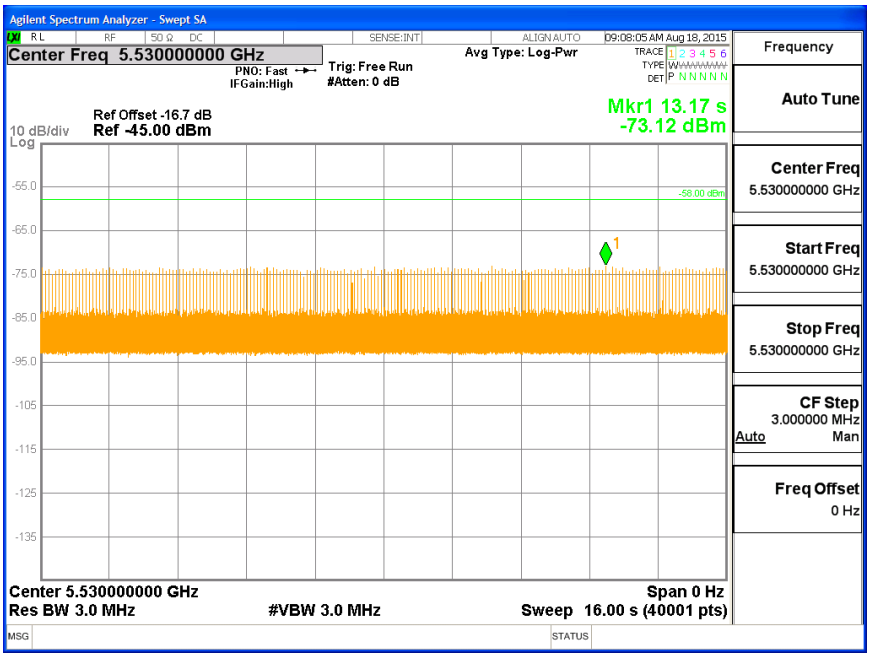


SINGLE BURST OF RADAR TYPE 6

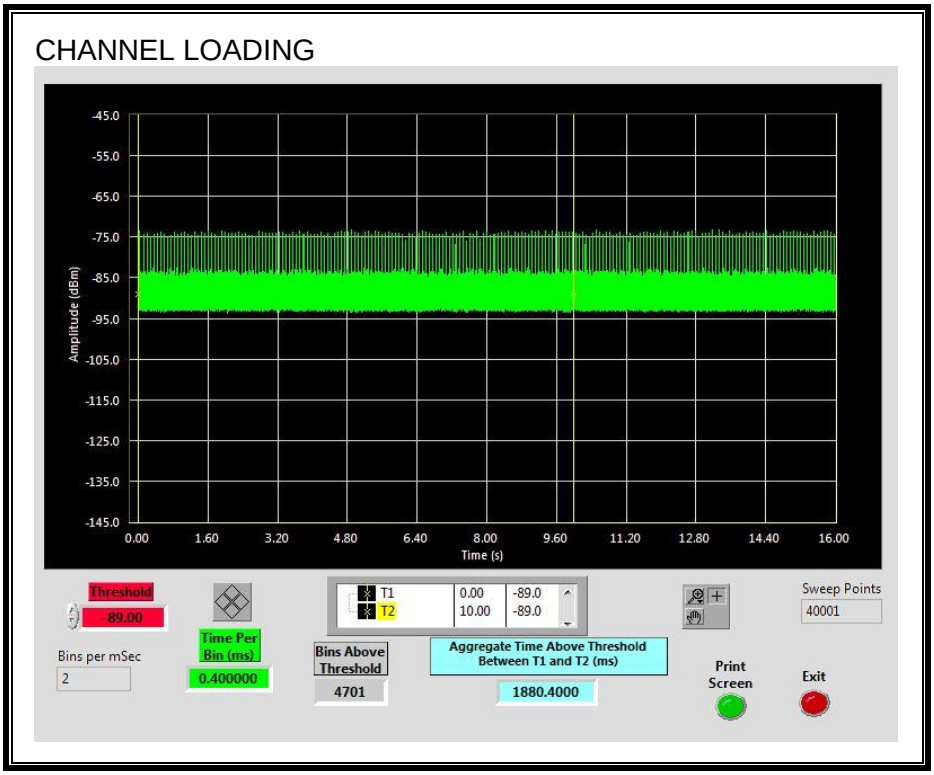


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 18.8%

5.4.1. 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)
30.35	142.1	111.8	51.8

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)
30.1	86.99	56.9	5.1

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
30.21	137.8	107.6	55.8

QUALITATIVE RESULTS

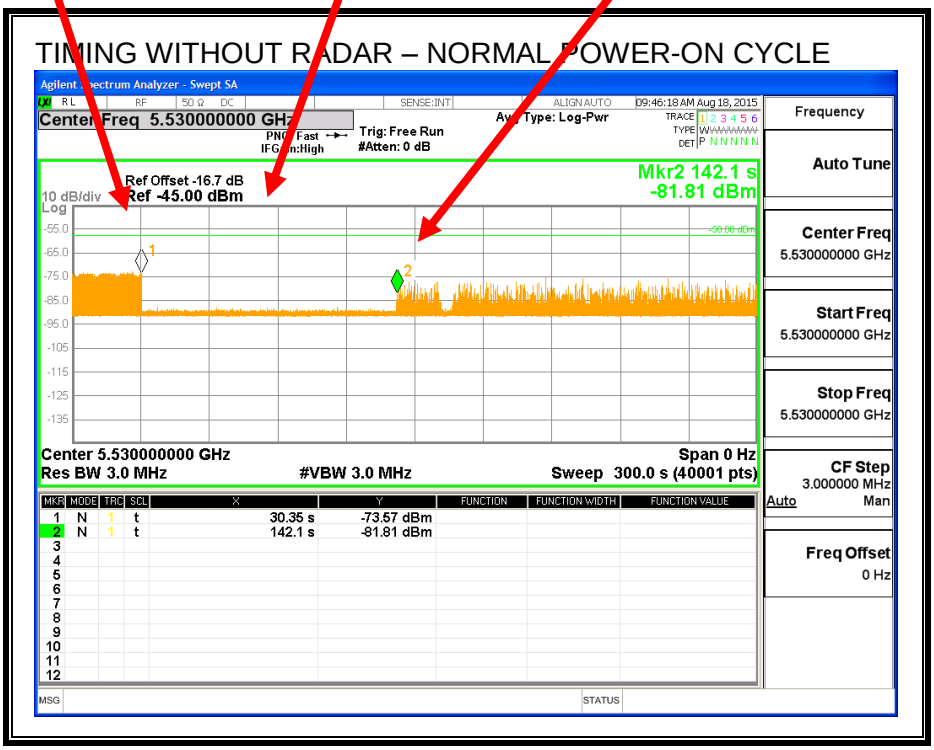
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within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



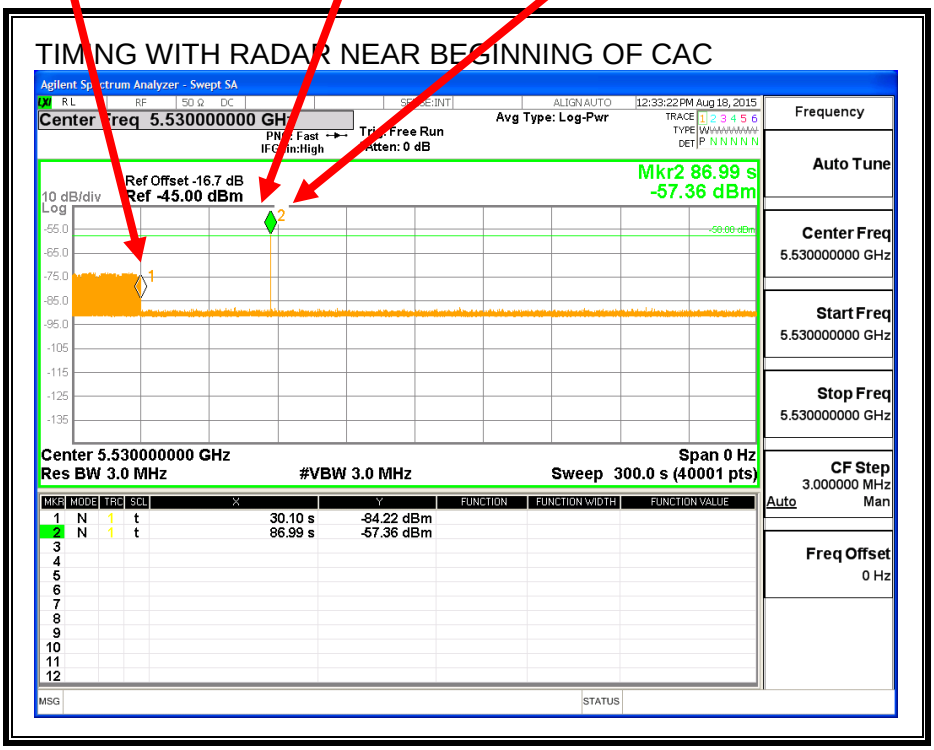
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

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



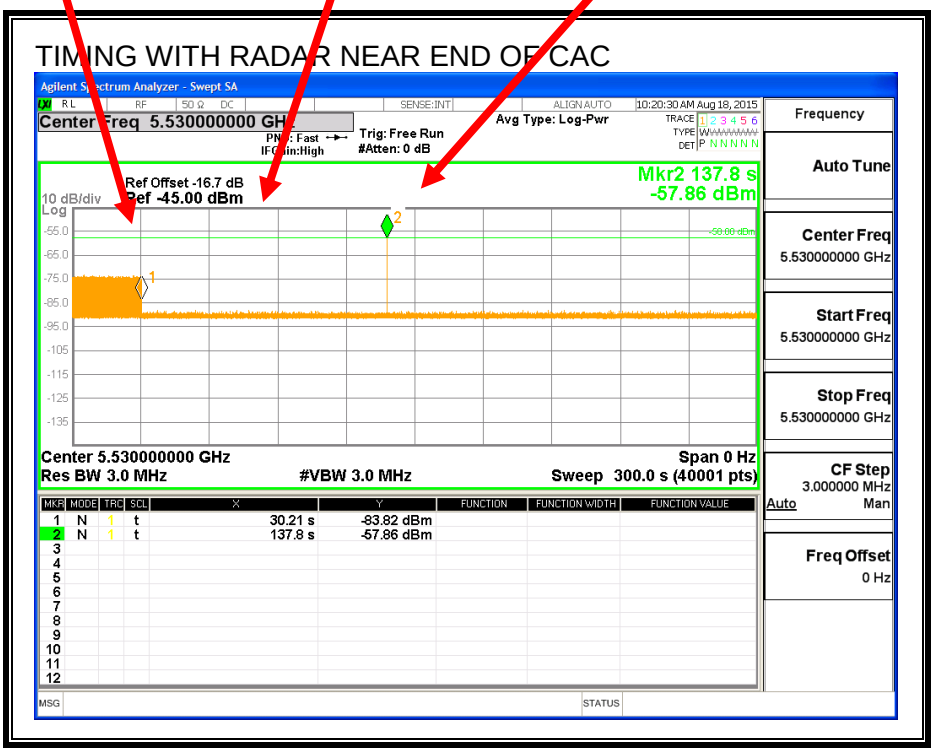
No EUT transmissions were observed after the radar signal.

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.

5.4.2. OVERLAPPING CHANNEL TESTS

RESULTS

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

5.4.3. 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).

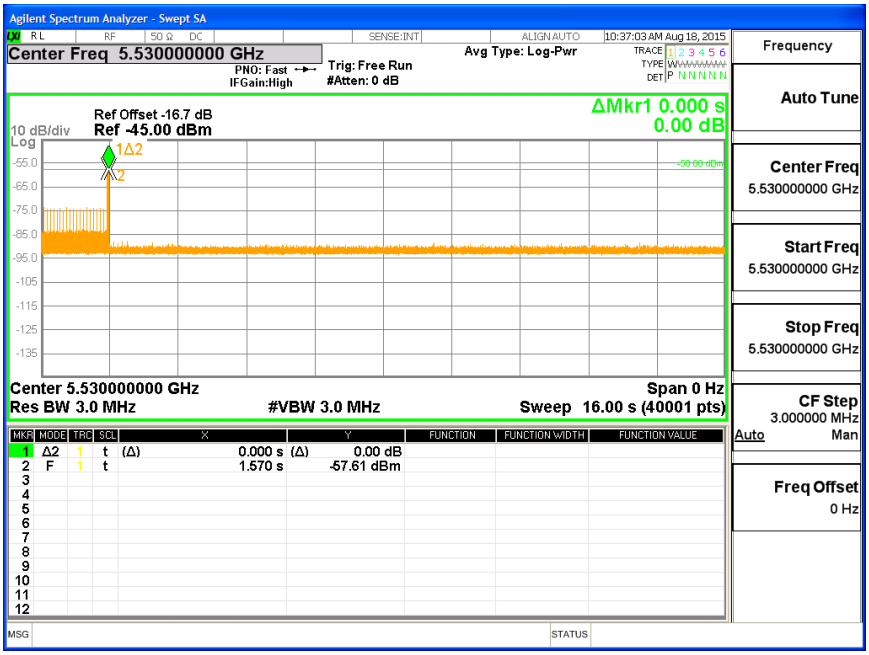
RESULTS

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

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

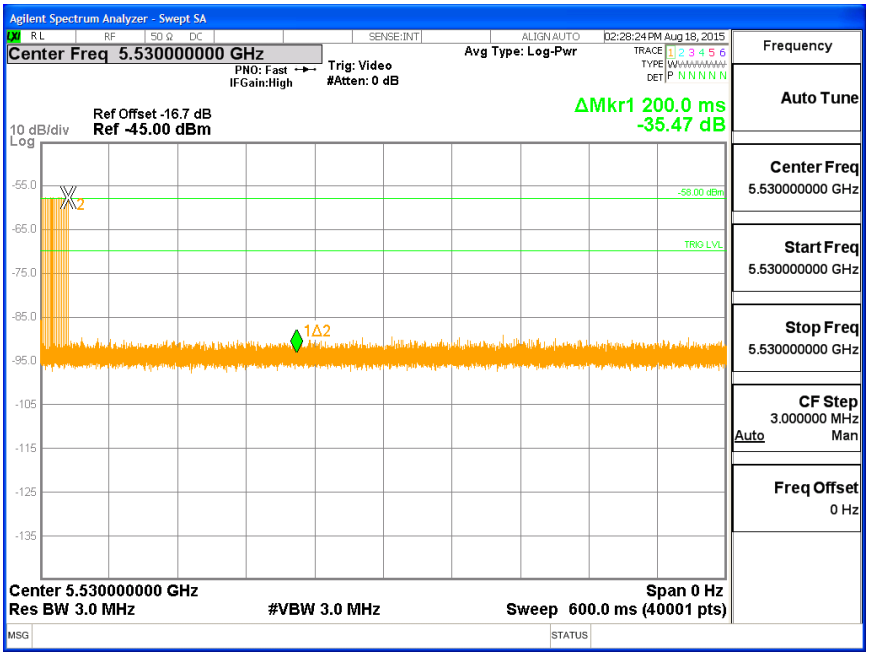
MOVE TIME

MOVE TIME



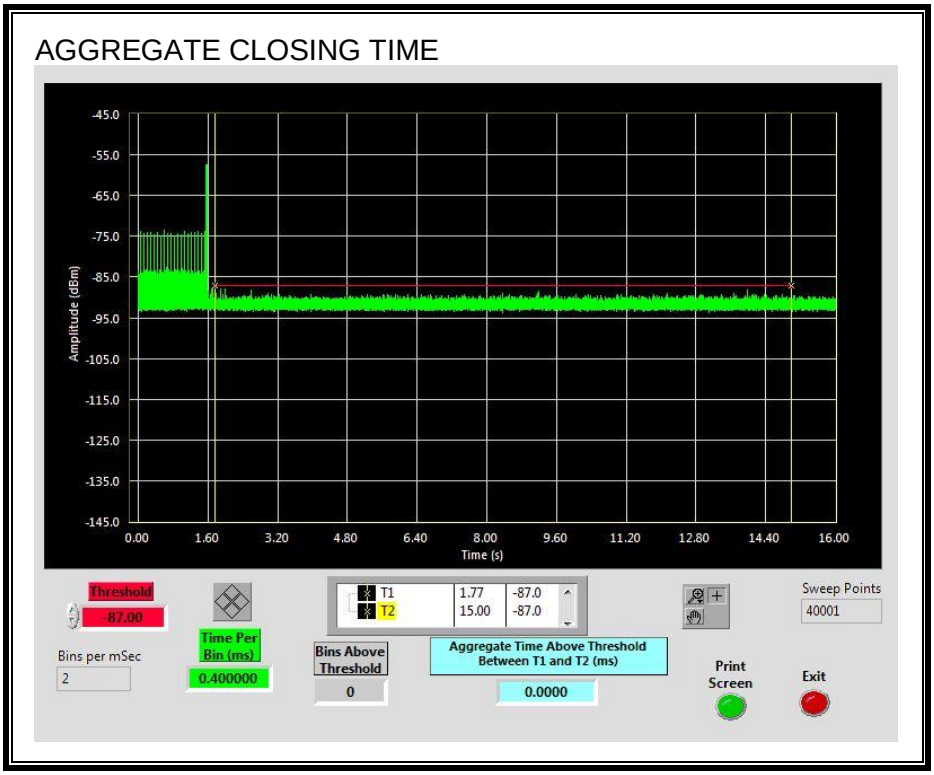
CHANNEL CLOSING TIME

CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

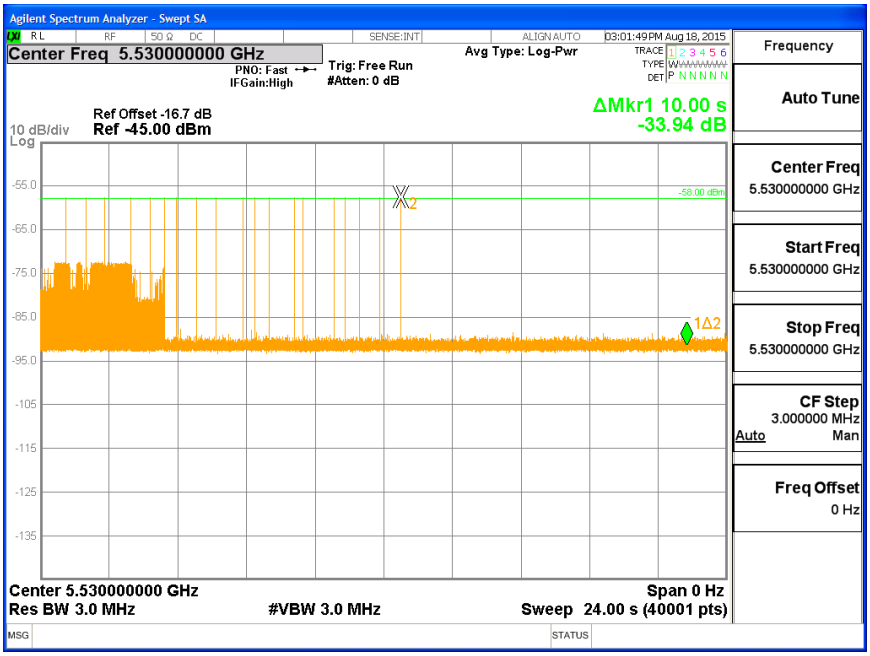
No transmissions are observed during the aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

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

MOVE TIME FOR LONG PULSE RADAR



5.4.1. NON-OCCUPANCY PERIOD

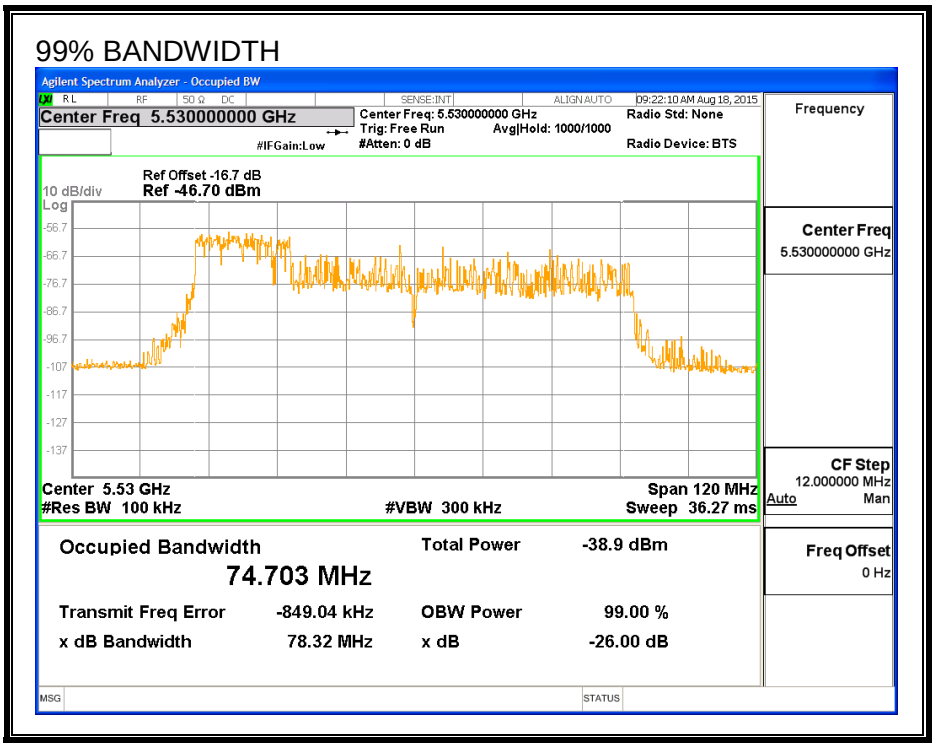
RESULTS

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

NON-OCCUPANCY PERIOD

5.4.2. 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	74.703	107.1	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of	Number	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	9	90	FH

5.4.3. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth FL	Detection Bandwidth FH	80% of Det BW FL5	80% of Det BW FH5
FCC Short Pulse Type 1	30	96.67	60	Pass	5490	5570		
FCC Short Pulse Type 2	30	100.00	60	Pass	5490	5570		
FCC Short Pulse Type 3	30	86.67	60	Pass	5490	5570		
FCC Short Pulse Type 4	30	100.00	60	Pass	5490	5570		
Aggregate		95.83	80	Pass				
FCC Long Pulse Type 5 (Fixed Frequency)	30	100.00	80	Pass	5490	5570		
FCC Long Pulse Type 5 (Random Frequency)	30	100.00	80	Pass	5490	5570	5498	5562
FCC Hopping Type 6	81	100.00	70	Pass	5490	5570		

Supplemental FCC Type 5 Long Pulse testing at a fixed center frequency of 5530 MHz was performed for this channel bandwidth only. This test is not required by KDB905462.

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	5530	Yes
1002	1	638	83	A	5530	Yes
1003	1	818	65	A	5530	Yes
1004	1	618	86	A	5530	No
1005	1	598	89	A	5530	Yes
1006	1	878	61	A	5530	Yes
1007	1	738	72	A	5530	Yes
1008	1	558	95	A	5530	Yes
1009	1	658	81	A	5530	Yes
1010	1	938	57	A	5530	Yes
1011	1	538	99	A	5530	Yes
1012	1	678	78	A	5530	Yes
1013	1	898	59	A	5530	Yes
1014	1	798	67	A	5530	Yes
1015	1	518	102	A	5530	Yes
1016	1	1365	39	B	5530	Yes
1017	1	1932	28	B	5530	Yes
1018	1	2824	19	B	5530	Yes
1019	1	973	55	B	5530	Yes
1020	1	800	66	B	5530	Yes
1021	1	1626	33	B	5530	Yes
1022	1	547	97	B	5530	Yes
1023	1	2856	19	B	5530	Yes
1024	1	1747	31	B	5530	Yes
1025	1	1638	33	B	5530	Yes
1026	1	1853	29	B	5530	Yes
1027	1	679	78	B	5530	Yes
1028	1	2377	23	B	5530	Yes
1029	1	1332	40	B	5530	Yes
1030	1	1965	27	B	5530	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	3	218.00	23	5530	Yes
2002	1.2	180.00	25	5530	Yes
2003	2	174.00	24	5530	Yes
2004	4.5	183.00	23	5530	Yes
2005	3.7	181.00	26	5530	Yes
2006	4.5	194.00	26	5530	Yes
2007	1.7	158.00	26	5530	Yes
2008	4.8	175.00	29	5530	Yes
2009	4.4	186.00	26	5530	Yes
2010	1.5	208.00	29	5530	Yes
2011	3.4	223.00	27	5530	Yes
2012	2.9	211.00	27	5530	Yes
2013	1	230.00	29	5530	Yes
2014	4.8	222.00	26	5530	Yes
2015	3.1	207.00	25	5530	Yes
2016	1	203.00	29	5530	Yes
2017	1.7	193.00	28	5530	Yes
2018	4	154.00	23	5530	Yes
2019	4.8	191.00	26	5530	Yes
2020	3.2	157.00	28	5530	Yes
2021	2.4	198.00	24	5530	Yes
2022	3.2	168.00	23	5530	Yes
2023	2.5	213.00	27	5530	Yes
2024	3.5	150.00	26	5530	Yes
2025	3.1	161.00	24	5530	Yes
2026	2.4	182.00	27	5530	Yes
2027	2.1	197.00	28	5530	Yes
2028	1.6	185.00	25	5530	Yes
2029	3.8	204.00	27	5530	Yes
2030	3.5	196.00	24	5530	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	8.7	349.00	18	5530	Yes
3002	8.5	336.00	17	5530	Yes
3003	9.4	304.00	17	5530	Yes
3004	7.1	437.00	16	5530	Yes
3005	5.5	417.00	17	5530	No
3006	6.2	312.00	18	5530	Yes
3007	7.5	439.00	17	5530	Yes
3008	8.5	346.00	16	5530	Yes
3009	7.7	486.00	18	5530	Yes
3010	8.9	422.00	18	5530	Yes
3011	8.4	323.00	16	5530	Yes
3012	7.5	389.00	18	5530	Yes
3013	7.2	436.00	18	5530	Yes
3014	6.6	398.00	17	5530	Yes
3015	9.3	458.00	18	5530	Yes
3016	8.9	432.00	17	5530	Yes
3017	9.4	387.00	16	5530	Yes
3018	9.3	256.00	16	5530	Yes
3019	5	475.00	17	5530	No
3020	7.9	475.00	17	5530	Yes
3021	9	338.00	16	5530	Yes
3022	9.7	484.00	17	5530	Yes
3023	5.9	359.00	16	5530	Yes
3024	6.9	267.00	18	5530	Yes
3025	6.1	288.00	17	5530	Yes
3026	7.3	342.00	17	5530	Yes
3027	6.8	494.00	18	5530	Yes
3028	5.9	443.00	17	5530	Yes
3029	5.6	357	17	5530	No
3030	5	318	16	5530	No

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	15.3	378.00	14	5530	Yes
4002	19.9	486.00	12	5530	Yes
4003	15.7	308.00	16	5530	Yes
4004	10.7	428.00	12	5530	Yes
4005	17	396.00	16	5530	Yes
4006	12.5	278.00	12	5530	Yes
4007	14.7	258.00	16	5530	Yes
4008	16.1	404.00	16	5530	Yes
4009	18.8	280.00	15	5530	Yes
4010	10.6	321.00	15	5530	Yes
4011	19.1	460.00	12	5530	Yes
4012	11.4	263.00	12	5530	Yes
4013	10.4	415.00	12	5530	Yes
4014	18.7	364.00	12	5530	Yes
4015	18.2	277.00	13	5530	Yes
4016	16.9	490.00	16	5530	Yes
4017	12.1	432.00	12	5530	Yes
4018	16.7	406.00	13	5530	Yes
4019	12.5	479.00	14	5530	Yes
4020	17.6	348.00	15	5530	Yes
4021	13.8	316.00	14	5530	Yes
4022	19.4	449.00	15	5530	Yes
4023	16.9	430.00	15	5530	Yes
4024	12.9	325.00	14	5530	Yes
4025	15.6	451.00	14	5530	Yes
4026	17.5	492.00	13	5530	Yes
4027	15.9	381.00	16	5530	Yes
4028	18.3	434.00	15	5530	Yes
4029	17.3	335.00	16	5530	Yes
4030	15.5	284.00	16	5530	Yes

TYPE 5 DETECTION PROBABILITY AT A FIXED CENTER FREQUENCY (SUPPLEMENTAL)

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	5530	Yes
12	5530	Yes
13	5530	Yes
14	5530	Yes
15	5530	Yes
16	5530	Yes
17	5530	Yes
18	5530	Yes
19	5530	Yes
20	5530	Yes
21	5530	Yes
22	5530	Yes
23	5530	Yes
24	5530	Yes
25	5530	Yes
26	5530	Yes
27	5530	Yes
28	5530	Yes
29	5530	Yes
30	5530	Yes

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

TYPE 5 DETECTION PROBABILITY AT RANDOM FREQUENCIES WITHIN AN 80& SPAN OF THE 99% OCCUPIED BANDWIDTH

Data Sheet for FCC Long Pulse Radar Type 5

Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5551	Yes
2	5506	Yes
3	5517	Yes
4	5517	Yes
5	5535	Yes
6	5536	Yes
7	5546	Yes
8	5508	Yes
9	5534	Yes
10	5537	Yes
11	5559	Yes
12	5556	Yes
13	5545	Yes
14	5546	Yes
15	5522	Yes
16	5511	Yes
17	5544	Yes
18	5513	Yes
19	5556	Yes
20	5536	Yes
21	5521	Yes
22	5546	Yes
23	5506	Yes
24	5520	Yes
25	5548	Yes
26	5541	Yes
27	5537	Yes
28	5562	Yes
29	5517	Yes
30	5502	Yes

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

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop
NTIA August 2005 Hopping Sequence

Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	162	5490	21	Yes
2	637	5491	20	Yes
3	1112	5492	13	Yes
4	1587	5493	13	Yes
5	2062	5494	16	Yes
6	2537	5495	17	Yes
7	3012	5496	20	Yes
8	3487	5497	16	Yes
9	3962	5498	10	Yes
10	4437	5499	22	Yes
11	4912	5500	14	Yes
12	5387	5501	16	Yes
13	5862	5502	13	Yes
14	6337	5503	15	Yes
15	6812	5504	17	Yes
16	7287	5505	18	Yes
17	7762	5506	21	Yes
18	8237	5507	16	Yes
19	8712	5508	18	Yes
20	9187	5509	27	Yes
21	9662	5510	19	Yes
22	10137	5511	12	Yes
23	10612	5512	13	Yes
24	11087	5513	19	Yes
25	11562	5514	17	Yes
26	12037	5515	17	Yes
27	12512	5516	17	Yes
28	12987	5517	24	Yes
29	13462	5518	17	Yes
30	13937	5519	7	Yes
31	14412	5520	23	Yes
32	14887	5521	20	Yes
33	15362	5522	18	Yes
34	15837	5523	13	Yes
35	16312	5524	19	Yes
36	16787	5525	13	Yes
37	17262	5526	17	Yes
38	17737	5527	19	Yes
39	18212	5528	19	Yes

TYPE 6 DETECTION PROBABILITY (CONTINUED)

40	18687	5529	16	Yes
41	19162	5530	20	Yes
42	19637	5531	16	Yes
43	20112	5532	23	Yes
44	20587	5533	13	Yes
45	21062	5534	10	Yes
46	21537	5535	13	Yes
47	22012	5536	18	Yes
48	22487	5537	20	Yes
49	22962	5538	16	Yes
50	23437	5539	10	Yes
51	23912	5540	13	Yes
52	24387	5541	16	Yes
53	24862	5542	20	Yes
54	25337	5543	15	Yes
55	25812	5544	22	Yes
56	26287	5545	17	Yes
57	26762	5546	21	Yes
58	27237	5547	10	Yes
59	27712	5548	12	Yes
60	28187	5549	17	Yes
61	28662	5550	18	Yes
62	29137	5551	18	Yes
63	29612	5552	15	Yes
64	30087	5553	17	Yes
65	30562	5554	18	Yes
66	31037	5555	20	Yes
67	31512	5556	18	Yes
68	31987	5557	11	Yes
69	32462	5558	16	Yes
70	32937	5559	19	Yes
71	33412	5560	9	Yes
72	33887	5561	18	Yes
73	34362	5562	15	Yes
74	34837	5563	17	Yes
75	35312	5564	14	Yes
76	35787	5565	10	Yes
77	36262	5566	20	Yes
78	36737	5567	21	Yes
79	37212	5568	13	Yes
80	37687	5569	11	Yes
81	38162	5570	12	Yes

6. BRIDGE MODE RESULTS

Per KDB 905462, Section 5.1 (footnote 1):

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

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

6.1. SUPPLEMENTAL CLIENT REQUESTED VERIFICATION TEST RESULTS FOR 80 MHz BANDWIDTH (RADIATED CONFIGURATION)

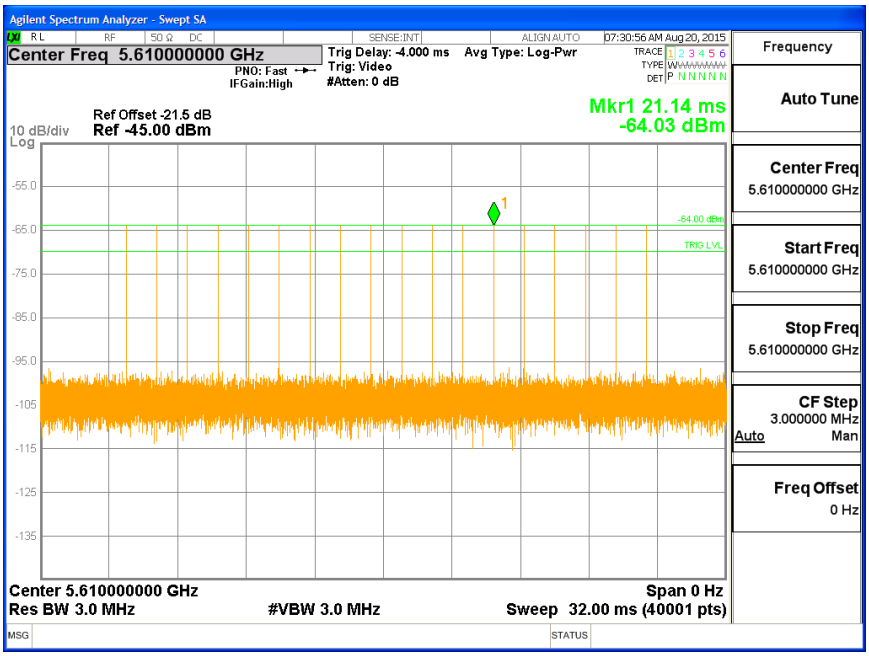
6.1.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5610 MHz.

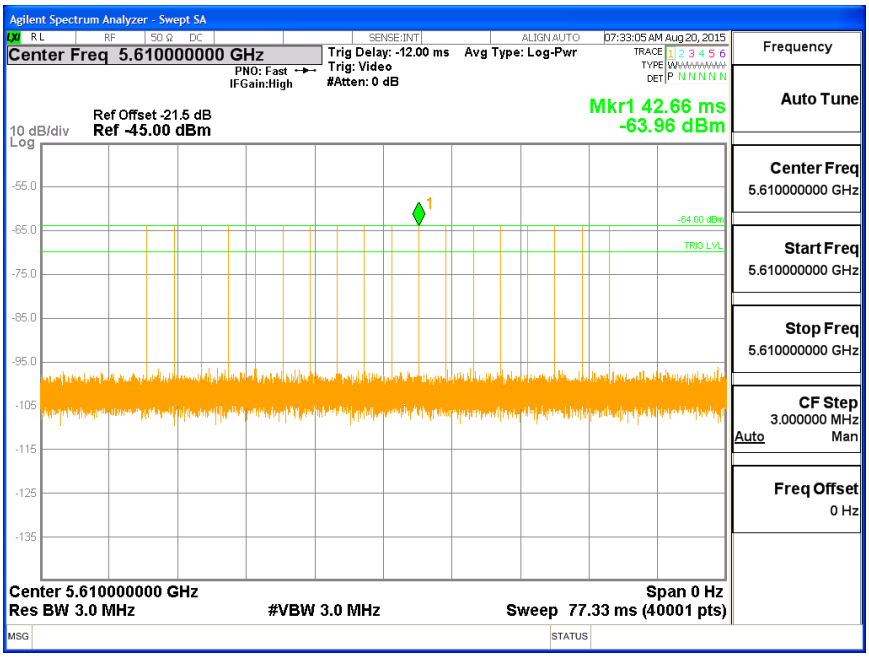
6.1.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

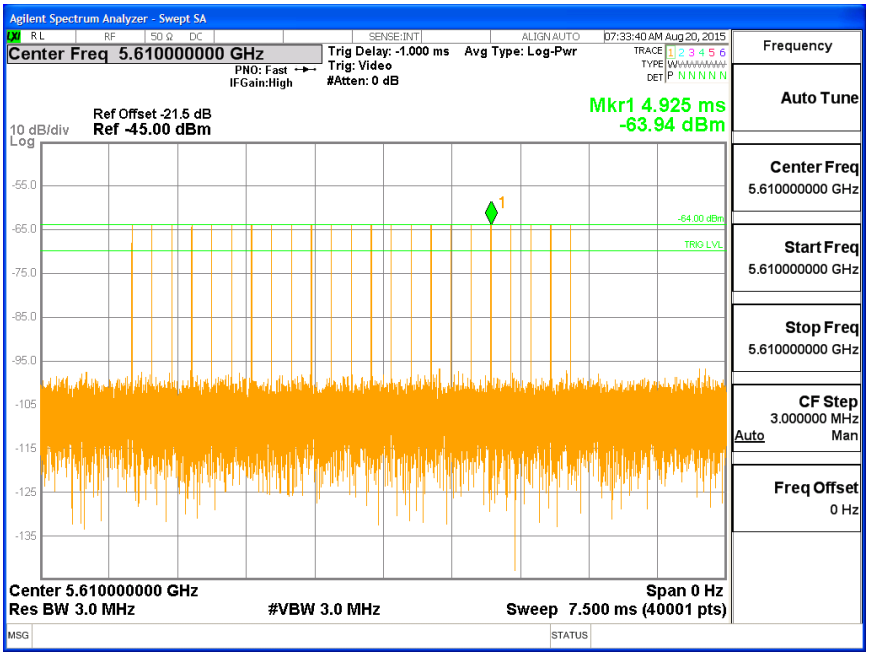
SHORT PULSE RADAR TYPE 0



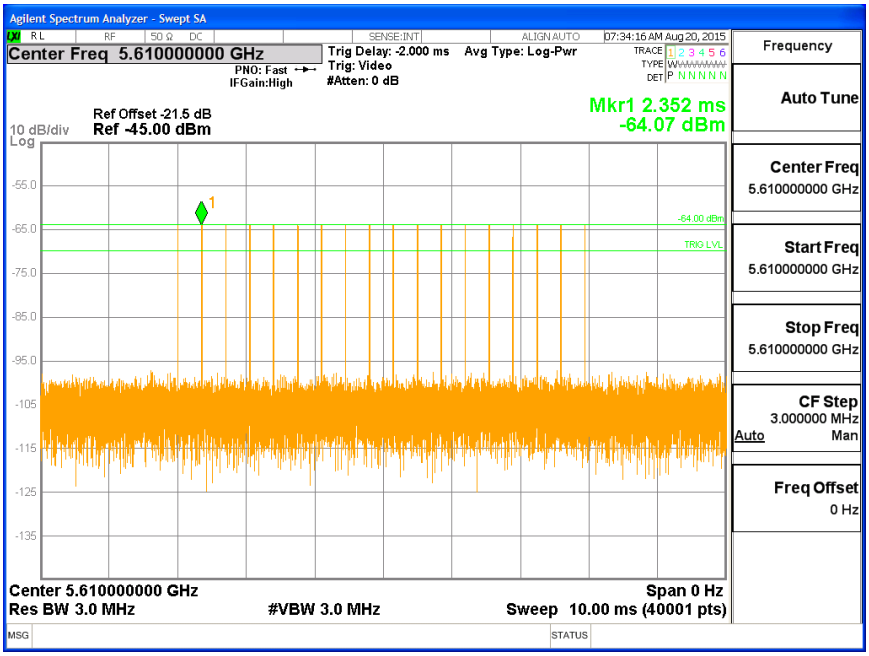
SAMPLE OF RADAR TYPE 1



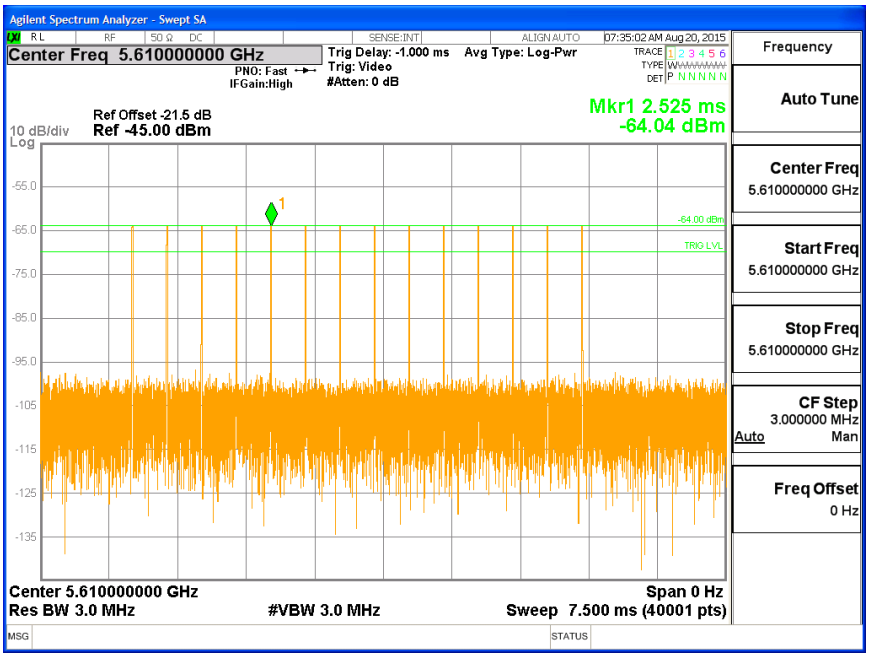
SAMPLE OF RADAR TYPE 2



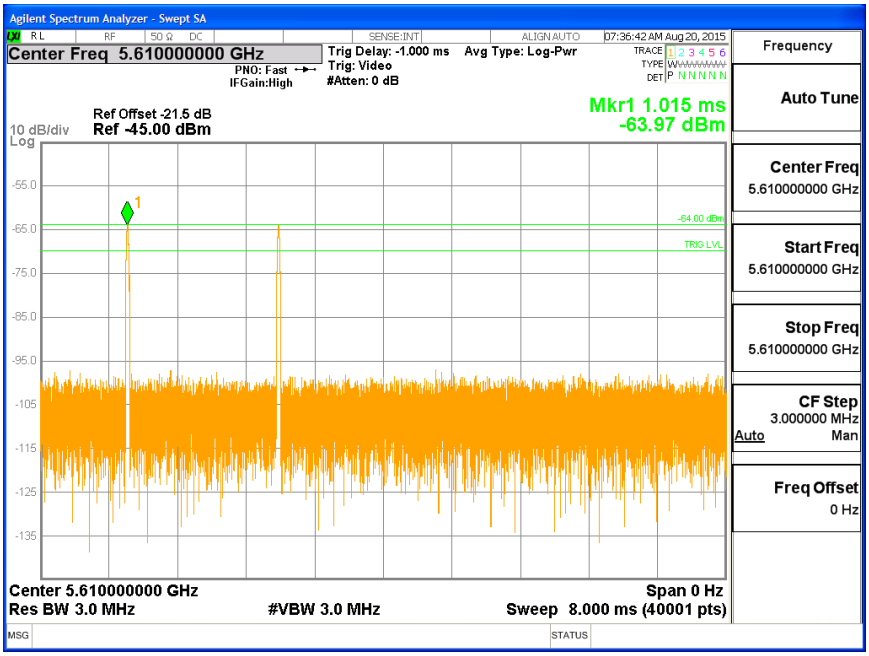
SAMPLE OF RADAR TYPE 3



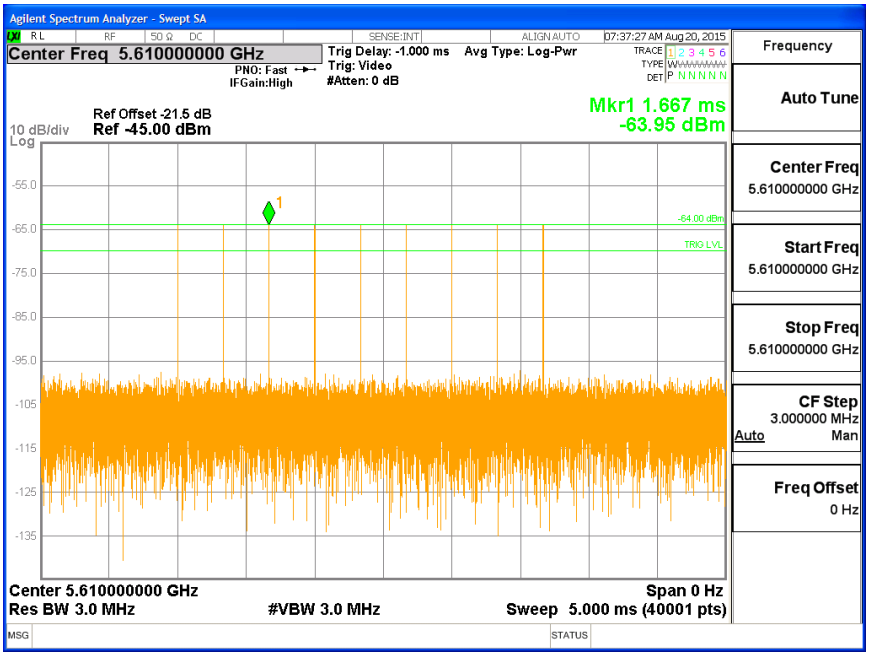
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

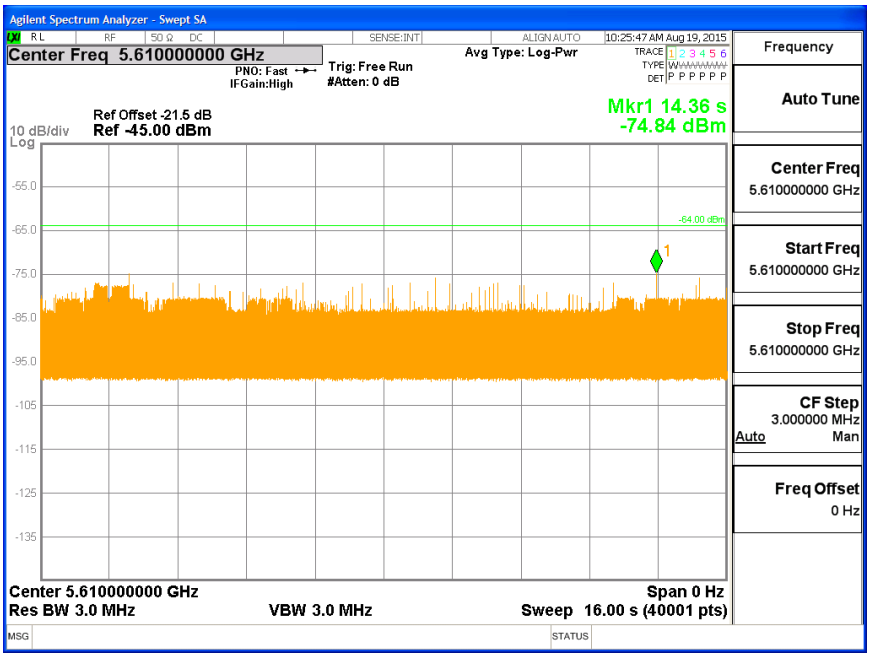


SINGLE BURST OF RADAR TYPE 6

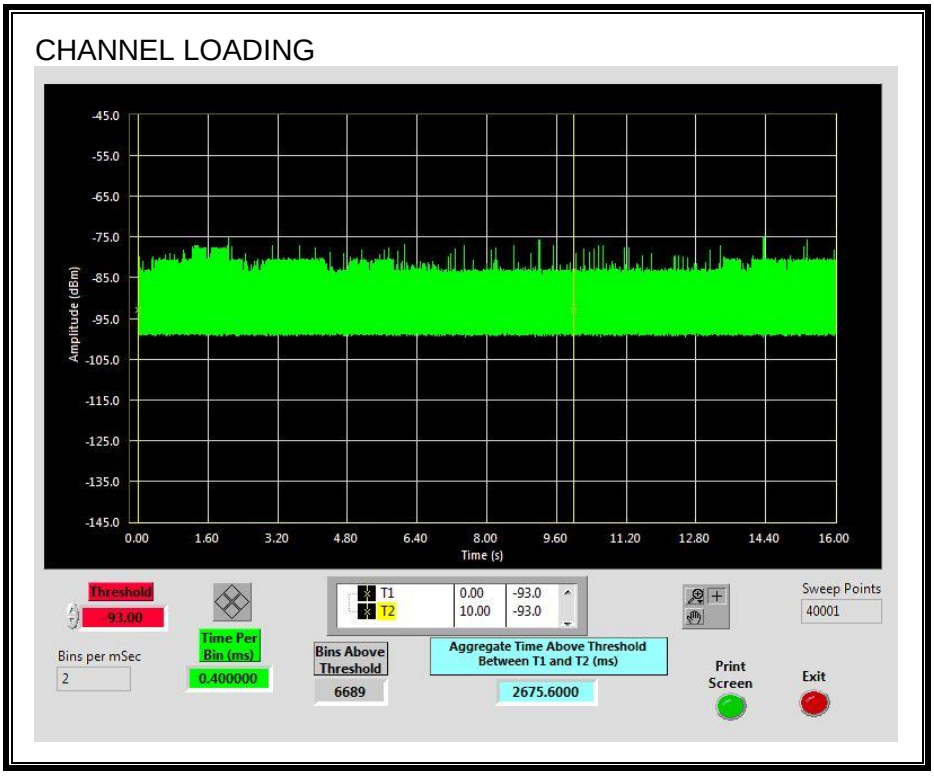


TRAFFIC

TRAFFIC



CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 26.75%

6.1.3. FCC VERSUS IC REGIONAL VARIANCE

Whereas:

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

RSS-247 Issue 1

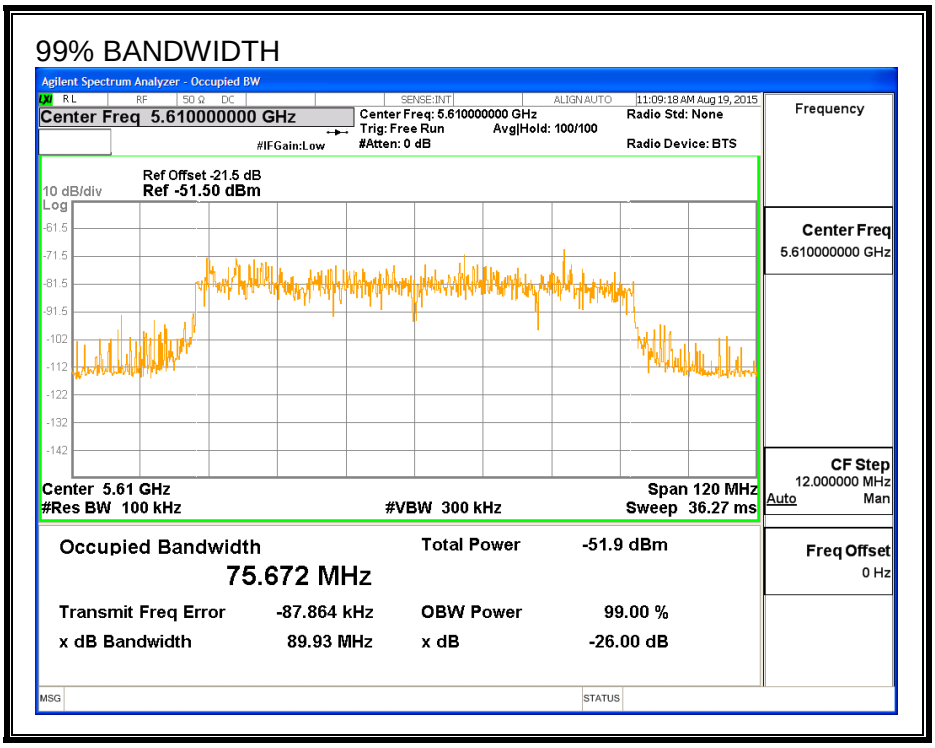
Note: For the band 5600–5650 MHz, no operation is permitted.

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.

EUTs configured for Canada do not support operation in the 5600 MHz to 5650 MHz frequency band.

6.1.4. 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 (%)
5570	5650	80	75.672	105.7	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of	Number	Detection (%)	Mark
5570	10	10	100	FL
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

6.1.5. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary

Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		80% of Det BW	
					FL	FH	FL5	FH5
FCC Short Pulse Type 1	30	96.67	60	Pass	5570	5650		
FCC Short Pulse Type 2	30	96.67	60	Pass	5570	5650		
FCC Short Pulse Type 3	30	83.33	60	Pass	5570	5650		
FCC Short Pulse Type 4	30	96.67	60	Pass	5570	5650		
Aggregate		93.33	80	Pass				
FCC Long Pulse Type 5 (Random Frequency)	30	100.00	80	Pass	5570	5650	5578	5642
FCC Hopping Type 6	81	100.00	70	Pass	5570	5650		

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	5610	Yes
1002	1	638	83	A	5610	Yes
1003	1	818	65	A	5610	Yes
1004	1	618	86	A	5610	Yes
1005	1	598	89	A	5610	Yes
1006	1	878	61	A	5610	Yes
1007	1	738	72	A	5610	Yes
1008	1	558	95	A	5610	Yes
1009	1	658	81	A	5610	Yes
1010	1	938	57	A	5610	Yes
1011	1	538	99	A	5610	Yes
1012	1	678	78	A	5610	Yes
1013	1	898	59	A	5610	Yes
1014	1	798	67	A	5610	Yes
1015	1	518	102	A	5610	Yes
1016	1	1365	39	B	5610	Yes
1017	1	1932	28	B	5610	Yes
1018	1	2824	19	B	5610	Yes
1019	1	973	55	B	5610	Yes
1020	1	800	66	B	5610	Yes
1021	1	1626	33	B	5610	Yes
1022	1	547	97	B	5610	Yes
1023	1	2856	19	B	5610	Yes
1024	1	1747	31	B	5610	Yes
1025	1	1638	33	B	5610	Yes
1026	1	1853	29	B	5610	Yes
1027	1	679	78	B	5610	Yes
1028	1	2377	23	B	5610	No
1029	1	1332	40	B	5610	Yes
1030	1	1965	27	B	5610	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	3	218.00	23	5610	Yes
2002	1.2	180.00	25	5610	No
2003	2	174.00	24	5610	Yes
2004	4.5	183.00	23	5610	Yes
2005	3.7	181.00	26	5610	Yes
2006	4.5	194.00	26	5610	Yes
2007	1.7	158.00	26	5610	Yes
2008	4.8	175.00	29	5610	Yes
2009	4.4	186.00	26	5610	Yes
2010	1.5	208.00	29	5610	Yes
2011	3.4	223.00	27	5610	Yes
2012	2.9	211.00	27	5610	Yes
2013	1	230.00	29	5610	Yes
2014	4.8	222.00	26	5610	Yes
2015	3.1	207.00	25	5610	Yes
2016	1	203.00	29	5610	Yes
2017	1.7	193.00	28	5610	Yes
2018	4	154.00	23	5610	Yes
2019	4.8	191.00	26	5610	Yes
2020	3.2	157.00	28	5610	Yes
2021	2.4	198.00	24	5610	Yes
2022	3.2	168.00	23	5610	Yes
2023	2.5	213.00	27	5610	Yes
2024	3.5	150.00	26	5610	Yes
2025	3.1	161.00	24	5610	Yes
2026	2.4	182.00	27	5610	Yes
2027	2.1	197.00	28	5610	Yes
2028	1.6	185.00	25	5610	Yes
2029	3.8	204.00	27	5610	Yes
2030	3.5	196.00	24	5610	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	8.7	349.00	18	5610	Yes
3002	8.5	336.00	17	5610	Yes
3003	9.4	304.00	17	5610	No
3004	7.1	437.00	16	5610	Yes
3005	5.5	417.00	17	5610	No
3006	6.2	312.00	18	5610	Yes
3007	7.5	439.00	17	5610	Yes
3008	8.5	346.00	16	5610	Yes
3009	7.7	486.00	18	5610	Yes
3010	8.9	422.00	18	5610	Yes
3011	8.4	323.00	16	5610	Yes
3012	7.5	389.00	18	5610	Yes
3013	7.2	436.00	18	5610	Yes
3014	6.6	398.00	17	5610	Yes
3015	9.3	458.00	18	5610	Yes
3016	8.9	432.00	17	5610	Yes
3017	9.4	387.00	16	5610	No
3018	9.3	256.00	16	5610	Yes
3019	5	475.00	17	5610	No
3020	7.9	475.00	17	5610	Yes
3021	9	338.00	16	5610	Yes
3022	9.7	484.00	17	5610	Yes
3023	5.9	359.00	16	5610	Yes
3024	6.9	267.00	18	5610	Yes
3025	6.1	288.00	17	5610	Yes
3026	7.3	342.00	17	5610	Yes
3027	6.8	494.00	18	5610	Yes
3028	5.9	443.00	17	5610	Yes
3029	5.6	357	17	5610	Yes
3030	5	318	16	5610	No

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	15.3	378.00	14	5610	Yes
4002	19.9	486.00	12	5610	Yes
4003	15.7	308.00	16	5610	Yes
4004	10.7	428.00	12	5610	Yes
4005	17	396.00	16	5610	Yes
4006	12.5	278.00	12	5610	Yes
4007	14.7	258.00	16	5610	Yes
4008	16.1	404.00	16	5610	Yes
4009	18.8	280.00	15	5610	Yes
4010	10.6	321.00	15	5610	Yes
4011	19.1	460.00	12	5610	Yes
4012	11.4	263.00	12	5610	No
4013	10.4	415.00	12	5610	Yes
4014	18.7	364.00	12	5610	Yes
4015	18.2	277.00	13	5610	Yes
4016	16.9	490.00	16	5610	Yes
4017	12.1	432.00	12	5610	Yes
4018	16.7	406.00	13	5610	Yes
4019	12.5	479.00	14	5610	Yes
4020	17.6	348.00	15	5610	Yes
4021	13.8	316.00	14	5610	Yes
4022	19.4	449.00	15	5610	Yes
4023	16.9	430.00	15	5610	Yes
4024	12.9	325.00	14	5610	Yes
4025	15.6	451.00	14	5610	Yes
4026	17.5	492.00	13	5610	Yes
4027	15.9	381.00	16	5610	Yes
4028	18.3	434.00	15	5610	Yes
4029	17.3	335.00	16	5610	Yes
4030	15.5	284.00	16	5610	Yes

TYPE 5 DETECTION PROBABILITY AT RANDOM FREQUENCIES WITHIN AN 80& SPAN OF THE 99% OCCUPIED BANDWIDTH

Data Sheet for FCC Long Pulse Radar Type 5

Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5583	Yes
2	5629	Yes
3	5615	Yes
4	5618	Yes
5	5632	Yes
6	5593	Yes
7	5579	Yes
8	5621	Yes
9	5641	Yes
10	5588	Yes
11	5582	Yes
12	5610	Yes
13	5609	Yes
14	5621	Yes
15	5584	Yes
16	5615	Yes
17	5628	Yes
18	5609	Yes
19	5625	Yes
20	5581	Yes
21	5626	Yes
22	5634	Yes
23	5608	Yes
24	5627	Yes
25	5597	Yes
26	5596	Yes
27	5586	Yes
28	5595	Yes
29	5588	Yes
30	5619	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	356	5570	15	Yes
2	831	5571	20	Yes
3	1306	5572	14	Yes
4	1781	5573	16	Yes
5	2256	5574	12	Yes
6	2731	5575	21	Yes
7	3206	5576	21	Yes
8	3681	5577	25	Yes
9	4156	5578	20	Yes
10	4631	5579	12	Yes
11	5106	5580	13	Yes
12	5581	5581	18	Yes
13	6056	5582	20	Yes
14	6531	5583	15	Yes
15	7006	5584	20	Yes
16	7481	5585	22	Yes
17	7956	5586	18	Yes
18	8431	5587	17	Yes
19	8906	5588	18	Yes
20	9381	5589	19	Yes
21	9856	5590	20	Yes
22	10331	5591	15	Yes
23	10806	5592	16	Yes
24	11281	5593	16	Yes
25	11756	5594	19	Yes
26	12231	5595	11	Yes
27	12706	5596	15	Yes
28	13181	5597	15	Yes
29	13656	5598	21	Yes
30	14131	5599	15	Yes
31	14606	5600	23	Yes
32	15081	5601	22	Yes
33	15556	5602	14	Yes
34	16031	5603	17	Yes
35	16506	5604	11	Yes
36	16981	5605	20	Yes
37	17456	5606	18	Yes
38	17931	5607	16	Yes
39	18406	5608	16	Yes

TYPE 6 DETECTION PROBABILITY (CONT.)

40	18881	5609	10	Yes
41	19356	5610	18	Yes
42	19831	5611	14	Yes
43	20306	5612	17	Yes
44	20781	5613	21	Yes
45	21256	5614	17	Yes
46	21731	5615	19	Yes
47	22206	5616	17	Yes
48	22681	5617	25	Yes
49	23156	5618	14	Yes
50	23631	5619	19	Yes
51	24106	5620	13	Yes
52	24581	5621	21	Yes
53	25056	5622	10	Yes
54	25531	5623	18	Yes
55	26006	5624	13	Yes
56	26481	5625	17	Yes
57	26956	5626	18	Yes
58	27431	5627	12	Yes
59	27906	5628	16	Yes
60	28381	5629	18	Yes
61	28856	5630	7	Yes
62	29331	5631	24	Yes
63	29806	5632	16	Yes
64	30281	5633	15	Yes
65	30756	5634	16	Yes
66	31231	5635	17	Yes
67	31706	5636	15	Yes
68	32181	5637	19	Yes
69	32656	5638	11	Yes
70	33131	5639	17	Yes
71	33606	5640	16	Yes
72	34081	5641	18	Yes
73	34556	5642	15	Yes
74	35031	5643	13	Yes
75	35506	5644	13	Yes
76	35981	5645	18	Yes
77	36456	5646	14	Yes
78	36931	5647	16	Yes
79	37406	5648	13	Yes
80	37881	5649	15	Yes
81	38356	5650	15	Yes

6.1.6. BRIDGE MODE RESULTS

Per KDB 905462, Section 5.1 (footnote 1):

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

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

7. SETUP PHOTOS

7.1. DYNAMIC FREQUENCY SELECTION MEASUREMENT SETUP

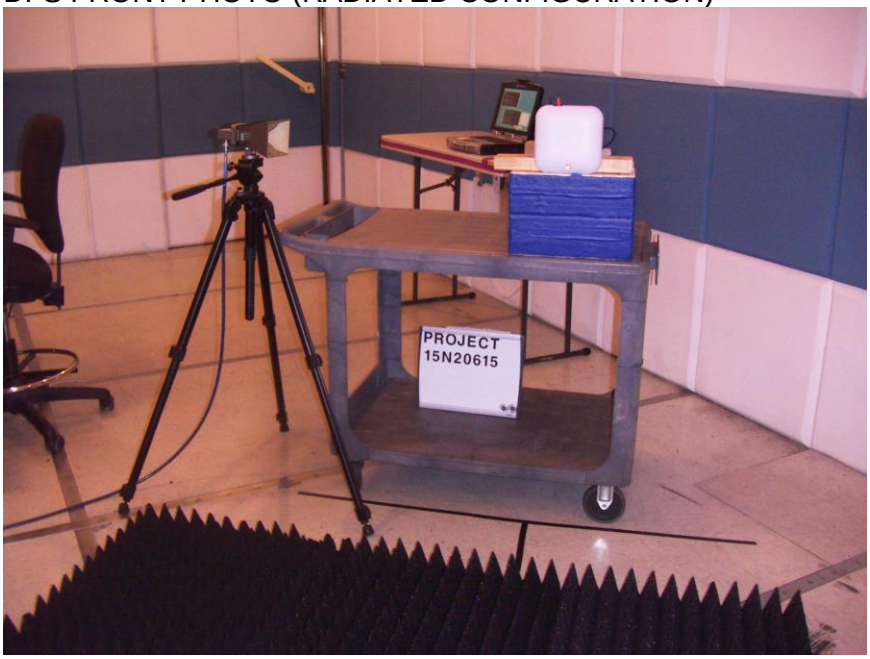
7.1.1. CONDUCTED CONFIGURATION

DFS FRONT PHOTO (CONDUCTED CONFIGURATION)

DFS BACK PHOTO (CONDUCTED CONFIGURATION)

7.1.2. RADIATED CONFIGURATION

DFS FRONT PHOTO (RADIATED CONFIGURATION)



DFS BACK PHOTO (RADIATED CONFIGURATION)

END OF REPORT

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888