

# DFS PORTION of FCC 47 CFR PART 15 SUBPART E DFS PORTION of INDUSTRY CANADA RSS-210 ISSUE 8

**CERTIFICATION TEST REPORT** 

FOR

802.11a/b/g/n/ac WIRELESS ACCESS POINT

**MODEL NUMBER: AP-7532** 

FCC ID: UZ7AP7532 IC: 109AN-AP7532

REPORT NUMBER: 14U18922-1

**ISSUE DATE: DECEMBER 8, 2014** 

Prepared for MOTOROLA SOLUTIONS, INC. 6480 VIA DEL ORO DRIVE SAN JOSE, CA 95119, U.S.A.

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NVLAP LAB CODE 200065-0

# **Revision History**

| Rev. | lssue<br>Date | Revisions                   | Revised By |  |
|------|---------------|-----------------------------|------------|--|
|      | 10/09/14      | Initial Issue               | T. Lee     |  |
| A    | 12/8/14       | Update Product Model Number | C. Cheung  |  |

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Pass

# **1. ATTESTATION OF TEST RESULTS**

**INDUSTRY CANADA RSS-GEN Issue 8** 

| COMPANY NAME:     | MOTOROLA SOLUTIONS, INC.<br>6480 VIA DEL ORO DRIVE<br>SAN JOSE, CA. 95119, U.S.A. |              |  |
|-------------------|---|--------------|--|
| EUT DESCRIPTION:  | 802.11a/b/g/n/ac WIRELESS ACCESS  | POINT        |  |
| MODEL:            | AP-7532   |              |  |
| SERIAL NUMBER:    | 14106522200877  |              |  |
| DATE TESTED:      | OCTOBER 02, 2014  |              |  |
|                   | APPLICABLE STANDARDS  |              |  |
| STA               | ANDARD  | TEST RESULTS |  |
| DFS Portion of CF | R 47 Part 15 Subpart E  | 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:

TIM LEE PROGRAM MANAGER UL Verification Services Inc.

Tested By:

Douglas Comelisen

DOUG ANDERSON EMC ENGINEER UL Verification Services Inc.

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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, ANSI C63.10-2009, RSS-GEN Issue 8.

# 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 <u>http://ts.nist.gov/standards/scopes/2000650.htm</u>.

# 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%.

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# 5. DYNAMIC FREQUENCY SELECTION

# 5.1. OVERVIEW

# 5.1.1. LIMITS

# INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 8 A9.3

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.

# <u>FCC</u>

§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".

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# 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<br>(without DFS) | Client<br>(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   | Master Device or Client with    | Client                 |  |  |  |  |
|---|---------------------------------|------------------------|--|--|--|--|
| devices with multiple bandwidth   | Radar DFS                       | (without DFS)          |  |  |  |  |
| modes   |                                 |                        |  |  |  |  |
| U-NII Detection Bandwidth and   | All BW modes must be            | Not required           |  |  |  |  |
| Statistical Performance Check   | tested                          |                        |  |  |  |  |
| Channel Move Time and Channel   | Test using widest BW mode       | Test using the         |  |  |  |  |
| Closing Transmission Time   | available                       | 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 freque  | encies between the bonded 20 MH | z channel blocks.      |  |  |  |  |

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

| Maximum Transmit Power   | Value       |  |  |  |  |
|--|-------------|--|--|--|--|
|  | (see notes) |  |  |  |  |
| E.I.R.P. ≥ 200 milliwatt   | -64 dBm     |  |  |  |  |
| E.I.R.P. < 200 milliwatt and   | -62 dBm     |  |  |  |  |
| power spectral density < 10 dBm/MHz  |             |  |  |  |  |
| E.I.R.P. < 200 milliwatt that do not meet power spectral   | -64 dBm     |  |  |  |  |
| density requirement  |             |  |  |  |  |
| <b>Note 1:</b> This is the level at the input of the receiver assuming a 0 dBi receive antenna<br><b>Note 2:</b> Throughout these test procedures an additional 1 dB has been added to the amplitude<br>of the test transmission waveforms to account for variations in measurement equipment. This<br>will ensure that the test signal is at or above the detection threshold level to trigger a DFS<br>response. |             |  |  |  |  |
| <b>Note 3:</b> E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB  |             |  |  |  |  |

publication 662911 D01.

| 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 +<br>approx. 60 milliseconds<br>over remaining 10 second<br>period.<br>(See Notes 1 and 2) |
| U-NII Detection Bandwidth         | Minimum 100% of the U-<br>NII 99% transmission<br>power bandwidth.<br>(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  | Pulse  | PRI                               | Pulses  | Minimum       | Minimum  |  |  |  |
|--------|--|-----------------------------------|---|---------------|----------|--|--|--|
| Туре   | Width  | (usec)                            |   | Percentage    | Trials   |  |  |  |
|        | (usec)   |                                   |   | of Successful |          |  |  |  |
| 0      | 4  | 4.400                             | 10  | Detection     | Cas Nata |  |  |  |
| 0      | 1  | 1428                              | 18  | See Note 1    | See Note |  |  |  |
| 1      | 1  | Test A: 15 unique                 |   | 60%           | 30       |  |  |  |
|        | I  | PRI values randomly               |   | 0078          | 30       |  |  |  |
|        |  | selected from the list            | Roundup:  |               |          |  |  |  |
|        |  | of 23 PRI values in               | $\{(1/360) \times (19 \times 10^6 \text{ PRI}_{\text{usec}})\}$ |               |          |  |  |  |
|        |  | table 5a                          |   |               |          |  |  |  |
|        |  | Test B: 15 unique                 |   |               |          |  |  |  |
|        |  | PRI values randomly               |   |               |          |  |  |  |
|        |  | selected within the               |   |               |          |  |  |  |
|        |  | range of 518-3066                 |   |               |          |  |  |  |
|        |  | usec. With a<br>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  |                                   |   |               |          |  |  |  |
|        | <b>Note 1:</b> Short Pulse Radar Type 0 should be used for the <i>Detection Bandwidth</i> test, <i>Channel</i> |                                   |   |               |          |  |  |  |
| Move 7 | Move Time, and Channel Closing Time tests.   |                                   |   |               |          |  |  |  |

Table 6 – Long Pulse Radar Test Signal

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

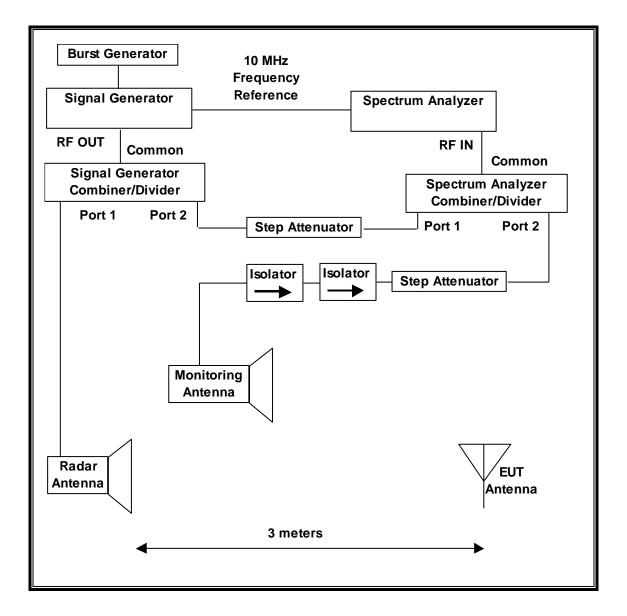
# Table 7 – Frequency Hopping Radar Test Signal

| Radar<br>Waveform | Pulse<br>Width | PRI<br>(µsec) | Pulses<br>per | Hopping<br>Rate | Hopping<br>Sequence | Minimum<br>Percentage of | Minimum<br>Trials |
|-------------------|----------------|---------------|---------------|-----------------|---------------------|--------------------------|-------------------|
| Туре              | (µsec)         |               | Нор           | (kHz)           | Length<br>(msec)    | Successful<br>Detection  |                   |
| 6                 | 1              | 333           | 9             | 0.333           | 300                 | 70%                      | 30                |

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# 5.1.2. TEST AND MEASUREMENT SYSTEM

# RADIATED METHOD SYSTEM BLOCK DIAGRAM



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# 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

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# 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

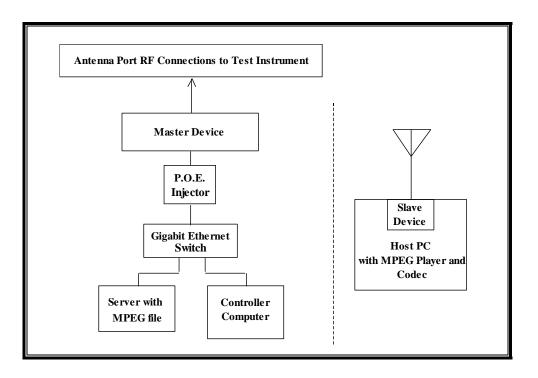
The following test and measurement equipment was utilized for the DFS tests documented in this report:

| TEST EQUIPMENT LIST            |              |        |              |          |  |  |
|--------------------------------|--------------|--------|--------------|----------|--|--|
| Description                    | Manufacturer | Model  | Asset Number | Cal Due  |  |  |
| Spectrum Analyzer, 26.5 GHz    | Agilent / HP | E4440A | C01178       | 09/05/15 |  |  |
| Vector Signal Generator, 20GHz | Agilent / HP | E8267C | C01066       | 09/03/15 |  |  |
| Arbitrary Waveform Generator   | Agilent / HP | 33220A | C01146       | 04/03/15 |  |  |

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# 5.1.3. SETUP OF EUT

# RADIATED METHOD EUT TEST SETUP



#### SUPPORT EQUIPMENT

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

| PEF  | RIPHERAL SUPP | PORT EQUIPM | MENT LIST          |            |
|--|---------------|-------------|--------------------|------------|
| Description  | Manufacturer  | Model       | Serial Number      | FCC ID     |
| AC Adapter (EUT)                                       | PowerDsine    | 9001G       | D094565000006C7A00 | DoC        |
| Notebook PC (Controller/Server)                        | HP            | 8470P       | CNU25193B6         | DoC        |
| AC Adapter (Controller/Server PC)                      | HP            | PPP009L-E   | WCNXA0C3U3SEGF     | DoC        |
| Notebook PC (Console)                                  | HP            | 8460P       | CNU2032CKJ         | DoC        |
| AC Adapter (Console)                                   | HP            | PPP009L-E   | WCNXA0C3U3SEGF     | DoC        |
| Notebook PC (Slave Radio Host)                         | HP            | 8470P       | CNU25193C2         | DoC        |
| AC Adapter (Slave Host PC)                             | HP            | PPP09L-E    | WCNXA0C1R3R8DW     | DoC        |
| 802.11a/b/g/n/ac USB Converter<br>(Slave Radio Device) | Cisco         | AE600       | 12R10602307395     | QB7-AE6000 |
| Gigabit Ethernet Switch                                | Netgear       | GS108       | 1DR1773V01EE3      | DoC        |
| P.O.E. Injector  | Netgear       | DV-1280-3   | No Serial Number   | DoC        |

# 5.1.4. DESCRIPTION OF EUT

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

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

The EUT supports both Master and Client DFS modes of operation, Client Mode DFS was tested by Sporton see report (FR44180 4-06).

The highest power level within these bands is 27.31 dBm EIRP in the 5250-5350 MHz band and 28.61 dBm EIRP in the 5470-5725 MHz band.

The highest gain antenna assembly utilized with the EUT has a gain of 6 dBi in the 5250-5350 MHz band and 6 dBi in the 5470-5725 MHz band. The lowest gain antenna assembly utilized with the EUT has a gain of 1.7 dBi in the 5250-5350 MHz band and 1.7 dBi in the 5470-5725 MHz band.

The antenna used during testing was the ML-2452-APAG2A1-01 (1.7 dBi Dipole).

Three 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 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 three 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 is generated by streaming the video file TestFile.mp2 "6 ½ Magic Hours" from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec 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 EUT is version 5.7.0.0-203475X.

# UNIFORM CHANNEL SPREADING

See Manufacturer's Attestation.

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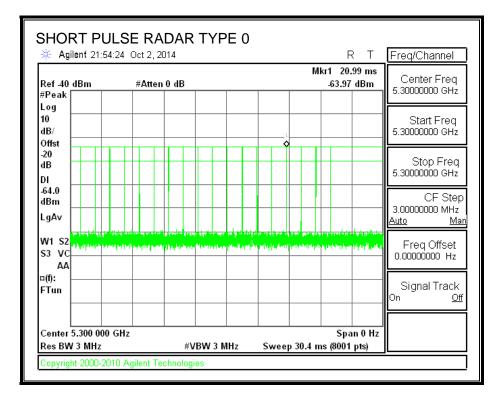
# 5.2. RESULTS FOR 20 MHz BANDWIDTH

# 5.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5300 MHz.

# 5.2.2. RADAR WAVEFORMS AND TRAFFIC

# RADAR WAVEFORMS



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| 🔆 Agilent 22:0                   | 2:50 Oct 2, 20 | 014    |       |           | RT                         | Freq/Channel                                 |
|----------------------------------|----------------|--------|-------|-----------|----------------------------|--|
| Ref -40 dBm<br>#Peak             | #Atten         | 0 dB   |       | M         | kr1 59.04 ms<br>-64.05 dBm | Center Freq<br>5.3000000 GHz                 |
| Log<br>10<br>dB/<br>Offst        |                |        |       |           |                            | Start Freq<br>5.3000000 GHz                  |
| -20<br>dB<br>DI                  |                |        |       |           |                            | Stop Freq<br>5.3000000 GHz                   |
| -64.0<br>dBm<br>LgA∨             |                |        |       |           |                            | CF Step<br>3.00000000 MHz<br><u>Auto Man</u> |
| W1 S2<br>S3 VS<br>AA             |                |        |       |           |                            | Freq Offset<br>0.00000000 Hz                 |
| ¤(f):<br>FTun                    |                |        |       |           |                            | Signal Track<br>On <u>Off</u>                |
| Center 5.300 000<br>Res BW 3 MHz | GHz            | #VBW 3 | MHz S | weep 80 n | Span 0 Hz<br>ns (8001 pts) |  |

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| 🔆 Agilent 22                   | :U7:19 C                            | )ct 2, 20 | J14  |         |           |         | F                |        | Freq/Channel                                |
|--------------------------------|-------------------------------------|-----------|------|---------|-----------|---------|------------------|--------|---|
| Ref -40 dBm<br>#Peak           |                                     | #Atten    | 0 dB |         |           | MI      | GT 2.4<br>-63.98 |        | Center Freq<br>5.30000000 GHz               |
| Log<br>10<br>dB/<br>Offst      |                                     | 1         |      |         |           |         |                  |        | Start Freq<br>5.3000000 GHz                 |
| -20<br>dB<br>DI                |                                     |           |      |         |           |         |                  |        | Stop Freq<br>5.3000000 GHz                  |
| -64.0<br>dBm<br>LgAv           |                                     |           |      |         |           |         |                  |        | CF Step<br>3.00000000 MHz<br><u>Auto Ma</u> |
| W1 S2<br>S3 VS<br>AA           | गणपुर ही सार ।<br>. 1811 (सं. 26.9) |           |      |         |           |         |                  |        | Eroa Offect                                 |
| ¤(f):<br>FTun                  |                                     |           |      |         |           |         |                  |        | Signal Track<br>On <u>Off</u>               |
| Center 5.300 0<br>Res BW 3 MHz |                                     |           | #1   | /BW 3 N | <br>Sween | 10.13 m |                  | n 0 Hz |   |

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| ₩ Agilent 22<br>Ref -40 dBm    | <br>#Atten |     |   | М           | kr1 7.211<br>-63.96 d | <br>Freq/Channel                        |
|--------------------------------|------------|-----|---|-------------|-----------------------|---|
| #Peak<br>Log                   |            |     |   |             |                       | 5.30000000 GHz                          |
| 10<br>dB/                      |            |     | 11  |             |                       | Start Freq<br>5.3000000 GHz             |
| Offst<br>-20<br>dB             |            |     |   |             |                       | <br>Stop Freq<br>5.3000000 GHz          |
| DI<br>-64.0<br>dBm<br>LgAv     |            |     |   |             |                       | <br>CF Step<br>3.0000000 MHz            |
| ~                              |            |     | a na bai na bai na ma<br>Na shini na bai na bai |             |                       | Auto Ma<br>Freq Offset<br>0.00000000 Hz |
| ¤(f):<br>FTun                  |            |     |   |             |                       | <br>Signal Track<br>On <u>Of</u>        |
| Center 5.300 0<br>Res BW 3 MHz |            | #11 | BW 3 MHz  | <br>. 15 17 | Span<br>s (8001 pt    |   |

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| 🔆 Agilent 2                 | 2:23:50                       | Oct 2, 2   | J14                              |         |                        |                                   |                              | F                                       |                            | Freq/Channel                                  |
|-----------------------------|-------------------------------|--|----------------------------------|---------|------------------------|-----------------------------------|------------------------------|---|----------------------------|---|
| Ref -40 dBm_<br>#Peak       |                               | #Atten   | 0 dB                             |         |                        |                                   | M                            | kr1 3.3<br>-64.08                       |                            | Center Freq<br>5.3000000 GHz                  |
| Log<br>10<br>dB/<br>Offst   |                               |  | 1                                |         |                        |                                   |                              |   |                            | Start Freq<br>5.30000000 GHz                  |
| -20<br>dB<br>DI             |                               |  |                                  |         |                        |                                   |                              |   |                            | Stop Freq<br>5.30000000 GHz                   |
| -64.0<br>dBm<br>LgA∨        |                               |  |                                  |         |                        |                                   |                              |   |                            | CF Step<br>3.00000000 MHz<br><u>Auto Ma</u> i |
| W1 S2<br>S3 VS<br>AA        | 0 700 1000 0<br>.04.14.14.14. | n i charann i<br>An tha an tha | an capter<br><u>at a sta d</u> i |         | an han ber<br>An gaint | arnen geber<br>a <u>fski</u> ster | reservente<br>Antrippi er er | an in constantin<br>An Anna in Anna Inn | nisen n Dar<br>Nisen n Dar | Freq Offset<br>0.00000000 Hz                  |
| ¤(f):<br>FTun               |                               |  |                                  |         |                        |                                   |                              |   |                            | Signal Track<br>On <u>Off</u>                 |
| Center 5.300<br>Res BW 3 MH |                               | :  | #1                               | /BW 3 N | 147                    | Sween                             | 10.13 m                      | •                                       | in 0 Hz                    |   |

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| 🔆 Agilent 22:30:0                  | 04 Oct 2, 20 |        | ST OF R |           | RΤ                        | Freq/Channel                                 |
|------------------------------------|--------------|--------|---------|-----------|---------------------------|--|
| Ref -40 dBm<br>#Peak               | #Atten (     | ) dB   |         | Mk        | r1 1.009 ms<br>-63.96 dBm | Center Freq<br>5.3000000 GHz                 |
| Log<br>10<br>dB/                   |              |        |         |           |                           | Start Freq<br>5.3000000 GHz                  |
| -20<br>dB<br>DI                    |              |        |         |           |                           | Stop Freq<br>5.3000000 GHz                   |
| -64.0<br>dBm<br>LgAv               |              |        |         |           |                           | CF Step<br>3.00000000 MHz<br><u>Auto Mar</u> |
| W1 S2<br>S3 VS476                  |              |        |         |           |                           | Freq Offset<br>0.00000000 Hz                 |
| ¤(f):<br>FTun                      |              |        |         |           |                           | Signal Track<br>On <u>Off</u>                |
| Center 5.300 000 G<br>Res BW 3 MHz | GHz          | #VBW 3 | MHz     | Sweep 8 m | Span 0 Hz<br>s (8001 pts) |  |

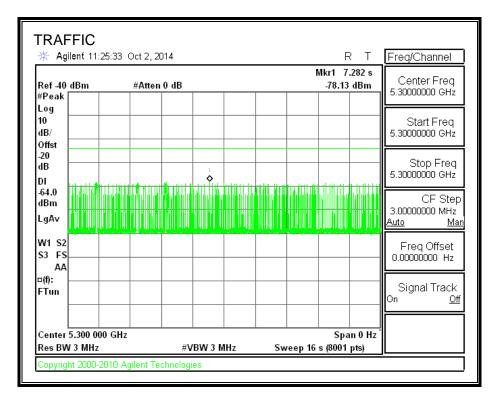
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| 🔆 Agilent 22:36:                 | 11 Oct 2, 2014  |  |  | R T Freq/Channel                 |
|----------------------------------|---|--|--|----------------------------------|
| Ref 40 dBm<br>#Peak              | #Atten 0 dB   |  | Mkr1 2.3<br>_63.99   | 333 ms<br>0 dBm<br>5.30000000 GH |
| Log<br>10<br>dB/<br>Offst        |   | 1  |  | Start Free<br>5.30000000 GH      |
| -20<br>dB<br>DI                  |   |  |  | Stop Fre<br>5.30000000 GH        |
| -64.0<br>dBm                     |   |  |  | CF Sta<br>3.00000000 MH          |
| W1 S2<br>S3 VS                   | a interferin d'Arrennender<br>National d'Arrenne fin dèch | ur (re ji pina i s., brazia n<br>re petre antenetra i anteni | ur a fan man fan fan fan de male<br>Ar finis liter oar fan fan de male | Freq Offse                       |
| ¤(f):<br>FTun                    |   |  |  | Signal Trac                      |
| Center 5.300 000<br>Res BW 3 MHz |   | VBW 3 MHz  | Spa<br>Sweep 5 ms (8001  | an 0 Hz                          |

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## TRAFFIC



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# 5.2.3. CHANNEL AVAILABILITY CHECK TIME

# PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5300 MHz and commence a CAC period. The time to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

# PROCEDURE FOR TIMING OF RADAR BURST

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5300 MHz and commence a CAC period. A radar signal was triggered within 0 to 6 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5300 MHz and commence a CAC period. A radar signal was triggered within 54 to 60 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

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## QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS

## No Radar Triggered

| Beginning | Timing of        | CAC Period |  |  |
|-----------|------------------|------------|--|--|
| of CAC    | Start of Traffic | Time       |  |  |
| (sec)     | (sec)            | (sec)      |  |  |
| 0         | 60.75            | 60.75      |  |  |

#### **Radar Near Beginning of CAC**

| Beginning | Timing of   | Radar Relative  |
|-----------|-------------|-----------------|
| of CAC    | Radar Burst | to Start of CAC |
| (sec)     | (sec)       | (sec)           |
| 0         | 2.550       | 2.550           |

## Radar Near End of CAC

| Beginning | Timing of   | Radar Relative  |
|-----------|-------------|-----------------|
| of CAC    | Radar Burst | to Start of CAC |
| (sec)     | (sec)       | (sec)           |
| 0         | 59.67       | 59.67           |

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# QUANTITATIVE RESULTS BASED ON LOG FILE TIME STAMPS

## No Radar Triggered

| Beginning of | End of CAC |            |
|--------------|------------|------------|
| CAC          |            | CAC Time   |
| (hh:mm:ss)   | (hh:mm:ss) | (hh:mm:ss) |
| 22:28:09     | 22:29:09   | 0:01:00    |

#### Radar Near Beginning of CAC

| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 22:36:45     | 22:36:47       | 0:00:02         |

## Radar Near End of CAC

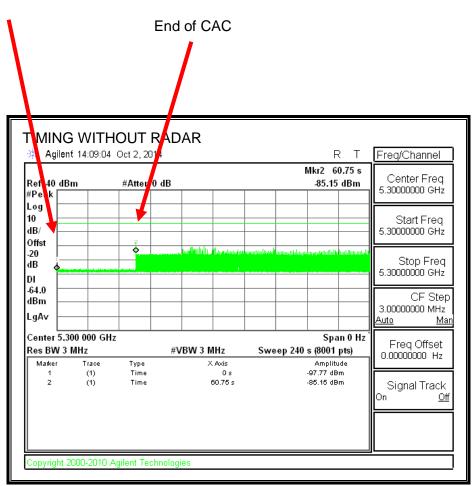
| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 22:51:20     | 22:52:19       | 0:00:59         |

# **QUALITATIVE RESULTS**

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

# TIMING WITHOUT RADAR DURING CAC

Command to Switch Channels Start of CAC



Transmissions begin on channel after completion of the CAC period.

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#### Log File of CAC Timing Without Radar

Jan 06 22:28:09 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 0 (cfg.c:584)

Jan 06 22:28:10 2014: ap7532-15E794 : %DOT11-6-CLIENT\_ASSOCIATED: Client '00-23-14-04-9B-34' associated to wlan '1' ssid '7532' on radio 'ap7532-15E794:R2'

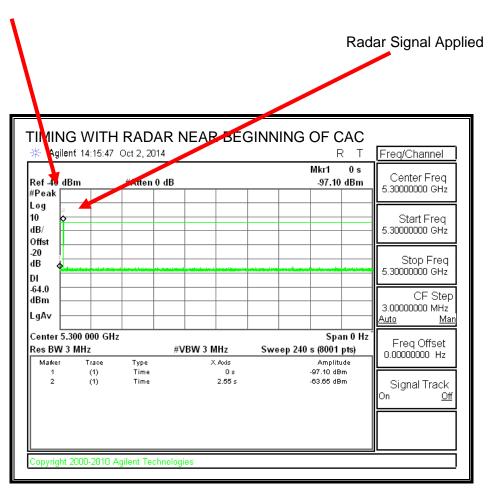
Total number of radios displayed: 2 ap7532-15E794(config-device-84-24-8D-15-E7-94-if-radio2)#DLS DFS State PRE-ISM Channel Availability Check -> In-Service Monitoring(ISM)

Jan 06 22:29:09 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> In-Service Monitoring(ISM).

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## TIMING WITH RADAR NEAR BEGINNING OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the Beginning of CAC

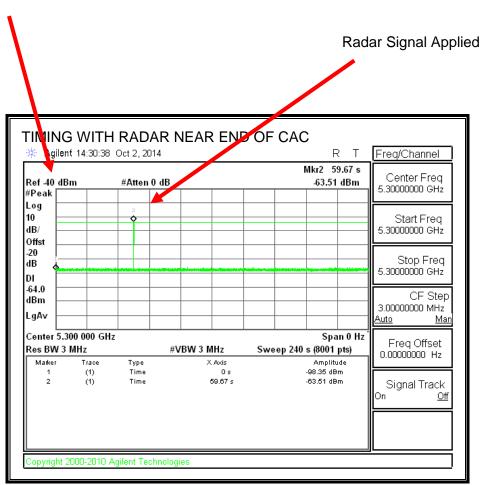
Jan 06 22:36:45 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 0 (cfg.c:584)

Jan 06 22:36:47 2014: ap7532-15E794 : %RADIO-4-RADAR\_DETECTED: Radar found on channel 60 freq 5300 MHz

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## TIMING WITH RADAR NEAR END OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the End of CAC

Jan 06 22:51:20 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 0 (cfg.c:584)

Jan 06 22:52:19 2014: ap7532-15E794 : %RADIO-4-RADAR\_DETECTED: Radar found on channel 60 freq 5300 MHz

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# 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

## **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)

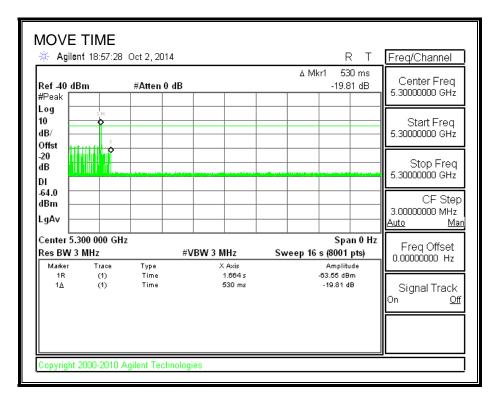
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

#### <u>RESULTS</u>

| Channel Move Time | Limit |
|-------------------|-------|
| (sec)             | (sec) |
| 0.530             | 10    |

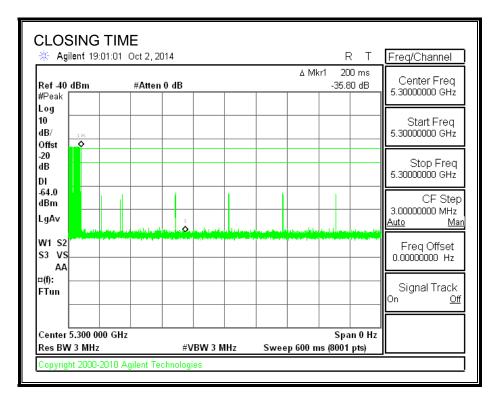
| Aggregate Channel Closing Transmission Time | Limit  |
|---|--------|
| (msec)                                      | (msec) |
| 12.0  | 60     |

#### MOVE TIME



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## **CHANNEL CLOSING TIME**

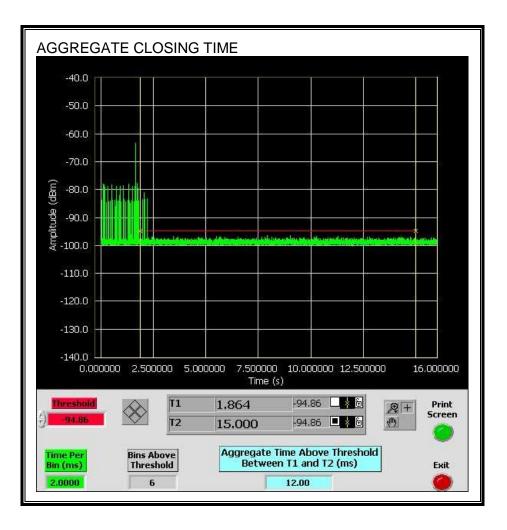


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## AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.

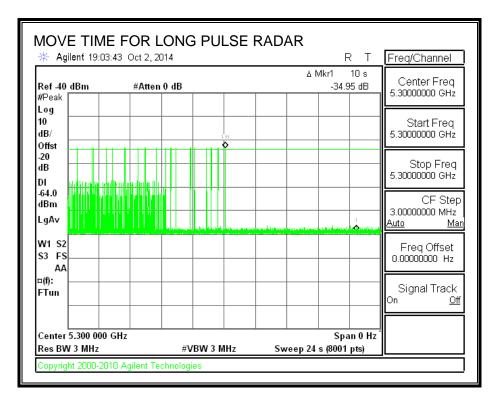


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# LONG PULSE CHANNEL MOVE TIME

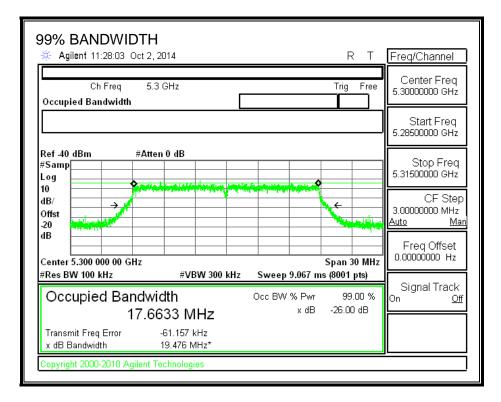
The traffic ceases prior to 10 seconds after the end of the radar waveform.



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# 5.2.6. DETECTION BANDWIDTH

# **REFERENCE PLOT OF 99% POWER BANDWIDTH**



# **RESULTS**

| FL    | FH    | Detection | 99% Power | Ratio of        | Minimum |
|-------|-------|-----------|-----------|-----------------|---------|
|       |       | Bandwidth | Bandwidth | Detection BW to | Limit   |
|       |       |           |           | 99% Power BW    |         |
| (MHz) | (MHz) | (MHz)     | (MHz)     | (%)             | (%)     |
| 5291  | 5309  | 18        | 17.663    | 101.9           | 100     |

# **DETECTION BANDWIDTH PROBABILITY**

|               | width Test Results   |                       |                |       |
|---------------|----------------------|-----------------------|----------------|-------|
| FCC Type 0 Wa | veform: 1 us Pulse V | Vidth, 1428 us PRI, 1 | 8 Pulses per l | Burst |
| Frequency     | Detection            | Mark                  |                |       |
| (MHz)         |                      |                       | (%)            |       |
| 5291          | 10                   | 10                    | 100            | FL    |
| 5292          | 10                   | 10                    | 100            |       |
| 5293          | 10                   | 10                    | 100            |       |
| 5294          | 10                   | 10                    | 100            |       |
| 5295          | 10                   | 10                    | 100            |       |
| 5300          | 10                   | 10                    | 100            |       |
| 5305          | 10                   | 10                    | 100            |       |
| 5306          | 10                   | 10                    | 100            |       |
| 5307          | 10                   | 10                    | 100            |       |
| 5308          | 10                   | 10                    | 100            |       |
| 5309          | 10                   | 10                    | 100            | FH    |

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# **5.2.7. IN-SERVICE MONITORING**

### **RESULTS**

| FCC Radar Test Summ    | ary              |           |       |           |  |  |
|------------------------|------------------|-----------|-------|-----------|--|--|
| Signal Type            | Number of Trials | Detection | Limit | Pass/Fail |  |  |
|                        |                  | (%)       | (%)   |           |  |  |
| FCC Short Pulse Type 1 | 30               | 96.67     | 60    | Pass      |  |  |
| FCC Short Pulse Type 2 | 30               | 100.00    | 60    | Pass      |  |  |
| FCC Short Pulse Type 3 | 30               | 100.00    | 60    | Pass      |  |  |
| FCC Short Pulse Type 4 | 30               | 93.33     | 60    | Pass      |  |  |
| Aggregate              |                  | 97.50     | 80    | Pass      |  |  |
| FCC Long Pulse Type 5  | 30               | 100.00    | 80    | Pass      |  |  |
| FCC Hopping Type 6     | 38               | 100.00    | 70    | Pass      |  |  |

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### **TYPE 1 DETECTION PROBABILITY**

| us Pulse Width |      | e Radar Type 1   |       |                      |  |  |
|----------------|------|------------------|-------|----------------------|--|--|
| Waveform       | PRI  | Pulses Per Burst | Test  | Successful Detection |  |  |
|                | (us) |                  | (A/B) | (Yes/No)             |  |  |
| 1001           | 3066 | 18               | A     | No                   |  |  |
| 1002           | 858  | 62               | Α     | Yes                  |  |  |
| 1003           | 798  | 67               | Α     | Yes                  |  |  |
| 1004           | 578  | 92               | Α     | Yes                  |  |  |
| 1005           | 898  | 59               | Α     | Yes                  |  |  |
| 1006           | 758  | 70               | Α     | Yes                  |  |  |
| 1007           | 538  | 99               | Α     | Yes                  |  |  |
| 1008           | 618  | 86               | 86 A  |                      |  |  |
| 1009           | 598  | 89               | Α     | Yes                  |  |  |
| 1010           | 658  | 81               | Α     | Yes                  |  |  |
| 1011           | 818  | 65               | Α     | Yes                  |  |  |
| 1012           | 518  | 102              | Α     | Yes                  |  |  |
| 1013           | 878  | 61               | Α     | Yes                  |  |  |
| 1014           | 938  | 57               | Α     | Yes                  |  |  |
| 1015           | 778  | 68               | Α     | Yes                  |  |  |
| 1016           | 678  | 78               | В     | Yes                  |  |  |
| 1017           | 2994 | 18               | В     | Yes                  |  |  |
| 1018           | 2392 | 23               | В     | Yes                  |  |  |
| 1019           | 1657 | 32               | В     | Yes                  |  |  |
| 1020           | 1180 | 45               | В     | Yes                  |  |  |
| 1021           | 610  | 87               | В     | Yes                  |  |  |
| 1022           | 2876 | 19               | В     | Yes                  |  |  |
| 1023           | 724  | 73               | В     | Yes                  |  |  |
| 1024           | 2465 | 22               | В     | Yes                  |  |  |
| 1025           | 552  | 96               | В     | Yes                  |  |  |
| 1026           | 887  | 60               | В     | Yes                  |  |  |
| 1027           | 2021 | 27               | В     | Yes                  |  |  |
| 1028           | 557  | 95               | В     | Yes                  |  |  |
| 1029           | 652  | 81               | В     | Yes                  |  |  |
| 1030           | 2452 | 22               | В     | Yes                  |  |  |

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# **TYPE 2 DETECTION PROBABILITY**

| Pulse Width | PRI   | Pulses Per Burst  | urst Successful Detection   |  |  |  |  |
|-------------|---|---|---|--|--|--|--|
| (us)        | (us)  |   | (Yes/No)  |  |  |  |  |
| 4.9         | 161.00  | 23  | Yes   |  |  |  |  |
| 3.9         | 178.00  | 24  | Yes   |  |  |  |  |
| 1.4         | 230.00  | 29  | Yes   |  |  |  |  |
| 4.5         | 219.00  | 25  | Yes   |  |  |  |  |
| 2.1         | 172.00  | 24  | Yes   |  |  |  |  |
| 2.5         | 210.00  | 29  | Yes   |  |  |  |  |
| 1.5         | 172.00  | 28  | Yes   |  |  |  |  |
| 3.5         | 152.00  | 28  | Yes   |  |  |  |  |
| 1.5         | 160.00  | 25  | Yes   |  |  |  |  |
| 4.3         | 177.00  | 28  | Yes   |  |  |  |  |
| 4.7         | 159.00  | 25  | Yes   |  |  |  |  |
| 4.1         | 229.00  | 28  | Yes   |  |  |  |  |
| 4.5         | 189.00  | 28  | Yes   |  |  |  |  |
| 1.9         | 213.00  | 24  | Yes   |  |  |  |  |
| 2           | 230.00  | 27  | Yes   |  |  |  |  |
| 4.1         | 152.00  | 23  | Yes   |  |  |  |  |
| 4           | 174.00  | 24  | Yes   |  |  |  |  |
| 1.1         | 224.00  | 27  | Yes   |  |  |  |  |
| 4.3         | 184.00  | 23  | Yes   |  |  |  |  |
| 1           | 216.00  | 28  | Yes   |  |  |  |  |
| 4.6         | 214.00  | 24  | Yes   |  |  |  |  |
| 2.9         | 188.00  | 27  | Yes   |  |  |  |  |
| 2           | 175.00  | 29  | Yes   |  |  |  |  |
| 3.7         | 187.00  | 27  | Yes   |  |  |  |  |
| 1.5         | 193.00  | 23  | Yes   |  |  |  |  |
| 4.9         | 200.00  | 29  | Yes   |  |  |  |  |
| 2.6         | 230.00  | 28  | Yes   |  |  |  |  |
| 2.1         | 229.00  | 28  | Yes   |  |  |  |  |
| 1.4         | 222.00  | 28  | Yes   |  |  |  |  |
|             | 3.9<br>1.4<br>4.5<br>2.1<br>2.5<br>1.5<br>3.5<br>1.5<br>4.3<br>4.7<br>4.1<br>4.5<br>1.9<br>2<br>4.1<br>4<br>1.1<br>4.3<br>1<br>4.6<br>2.9<br>2<br>3.7<br>1.5<br>4.9<br>2<br>3.7<br>1.5<br>4.9<br>2.6<br>2.1 | 3.9         178.00           1.4         230.00           4.5         219.00           2.1         172.00           2.5         210.00           1.5         172.00           3.5         152.00           1.5         160.00           4.3         177.00           4.7         159.00           4.1         229.00           4.5         189.00           1.9         213.00           2         230.00           4.1         152.00           1.5         189.00           1.9         213.00           2         230.00           4.1         152.00           4.1         152.00           4.1         152.00           1.1         224.00           4.3         184.00           1         216.00           4.6         214.00           2.9         188.00           2         175.00           3.7         187.00           1.5         193.00           4.9         200.00           2.6         230.00           2.1         229.00 | 3.9         178.00         24           1.4         230.00         29           4.5         219.00         25           2.1         172.00         24           2.5         210.00         29           1.5         172.00         28           3.5         152.00         28           1.5         160.00         25           4.3         177.00         28           4.7         159.00         25           4.1         229.00         28           4.5         189.00         28           4.5         189.00         28           1.9         213.00         24           2         230.00         27           4.1         152.00         23           4         174.00         24           2         230.00         27           4.1         152.00         23           1         216.00         28           4.5         188.00         27           4.3         184.00         23           1         216.00         28           4.6         214.00         27           2 <t< td=""></t<> |  |  |  |  |

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# TYPE 3 DETECTION PROBABILITY

| Waveform | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|----------|---------------------|-------------|------------------|----------------------------------|
| 3001     | 8.2                 | 414.00      | 16               | Yes                              |
| 3002     | 7.6                 | 398.00      | 17               | Yes                              |
| 3003     | 6                   | 433.00      | 18               | Yes                              |
| 3004     | 5.2                 | 356.00      | 16               | Yes                              |
| 3005     | 7.8                 | 411.00      | 16               | Yes                              |
| 3006     | 6.8                 | 428.00      | 17               | Yes                              |
| 3007     | 10                  | 475.00      | 18               | Yes                              |
| 3008     | 8.9                 | 344.00      | 18               | Yes                              |
| 3009     | 9.7                 | 325.00      | 18               | Yes                              |
| 3010     | 7.5                 | 311.00      | 18               | Yes                              |
| 3011     | 5.4                 | 271.00      | 16               | Yes                              |
| 3012     | 8.5                 | 426.00      | 16               | Yes                              |
| 3013     | 8                   | 296.00      | 16               | Yes                              |
| 3014     | 9.3                 | 390.00      | 17               | Yes                              |
| 3015     | 9.7                 | 357.00      | 16               | Yes                              |
| 3016     | 9.2                 | 303.00      | 16               | Yes                              |
| 3017     | 9.6                 | 454.00      | 16               | Yes                              |
| 3018     | 9.2                 | 271.00      | 16               | Yes                              |
| 3019     | 5                   | 286.00      | 16               | Yes                              |
| 3020     | 7.6                 | 279.00      | 16               | Yes                              |
| 3021     | 5.3                 | 405.00      | 16               | Yes                              |
| 3022     | 9.6                 | 404.00      | 16               | Yes                              |
| 3023     | 6.5                 | 420.00      | 18               | Yes                              |
| 3024     | 5.4                 | 416.00      | 17               | Yes                              |
| 3025     | 6.4                 | 425.00      | 17               | Yes                              |
| 3026     | 6.1                 | 296.00      | 18               | Yes                              |
| 3027     | 9.9                 | 333.00      | 17               | Yes                              |
| 3028     | 5.5                 | 422.00      | 18               | Yes                              |
| 3029     | 7.7                 | 487         | 17               | Yes                              |
| 3030     | 5.2                 | 309         | 18               | Yes                              |

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# **TYPE 4 DETECTION PROBABILITY**

| Waveform | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|----------|---------------------|-------------|------------------|----------------------------------|
| 4001     | 18                  | 390.00      | 13               | No                               |
| 4002     | 16.1                | 457.00      | 12               | Yes                              |
| 4003     | 17.9                | 428.00      | 16               | Yes                              |
| 4004     | 19.5                | 375.00      | 12               | Yes                              |
| 4005     | 15                  | 328.00      | 13               | Yes                              |
| 4006     | 10.9                | 369.00      | 15               | Yes                              |
| 4007     | 14.2                | 372.00      | 12               | Yes                              |
| 4008     | 12.1                | 497.00      | 13               | Yes                              |
| 4009     | 14.6                | 371.00      | 16               | Yes                              |
| 4010     | 14.9                | 452.00      | 13               | Yes                              |
| 4011     | 18.1                | 497.00      | 16               | Yes                              |
| 4012     | 16.2                | 389.00      | 15               | Yes                              |
| 4013     | 18.6                | 393.00      | 15               | Yes                              |
| 4014     | 10.1                | 354.00      | 12               | Yes                              |
| 4015     | 18.1                | 273.00      | 13               | Yes                              |
| 4016     | 12                  | 360.00      | 14               | Yes                              |
| 4017     | 14.6                | 290.00      | 13               | Yes                              |
| 4018     | 19                  | 302.00      | 13               | Yes                              |
| 4019     | 11.3                | 293.00      | 15               | Yes                              |
| 4020     | 18.7                | 400.00      | 16               | Yes                              |
| 4021     | 16.2                | 327.00      | 15               | Yes                              |
| 4022     | 18.6                | 343.00      | 14               | Yes                              |
| 4023     | 10.9                | 403.00      | 14               | Yes                              |
| 4024     | 17.2                | 482.00      | 14               | Yes                              |
| 4025     | 17.2                | 298.00      | 12               | Yes                              |
| 4026     | 13.1                | 300.00      | 16               | Yes                              |
| 4027     | 15.7                | 411.00      | 12               | Yes                              |
| 4028     | 16.7                | 328.00      | 15               | Yes                              |
| 4029     | 10.4                | 347.00      | 13               | Yes                              |
| 4030     | 19.6                | 378.00      | 12               | No                               |

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# TYPE 5 DETECTION PROBABILITY

| Trial | Successful Detection |
|-------|----------------------|
|       | (Yes/No)             |
| 1     | Yes                  |
| 2     | Yes                  |
| 3     | Yes                  |
| 4     | Yes                  |
| 5     | Yes                  |
| 6     | Yes                  |
| 7     | Yes                  |
| 8     | Yes                  |
| 9     | Yes                  |
| 10    | Yes                  |
| 11    | Yes                  |
| 12    | Yes                  |
| 13    | Yes                  |
| 14    | Yes                  |
| 15    | Yes                  |
| 16    | Yes                  |
| 17    | Yes                  |
| 18    | Yes                  |
| 19    | Yes                  |
| 20    | Yes                  |
| 21    | Yes                  |
| 22    | Yes                  |
| 23    | Yes                  |
| 24    | Yes                  |
| 25    | Yes                  |
| 26    | Yes                  |
| 27    | Yes                  |
| 28    | Yes                  |
| 29    | Yes                  |
| 30    | Yes                  |

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

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### **TYPE 6 DETECTION PROBABILITY**

|         | e Width, 333 us PRI, 9 |                  | 1 Burst per Hop | <u>}</u>   |
|---------|------------------------|------------------|-----------------|------------|
| TIA Aug | ust 2005 Hopping Se    |                  |                 |            |
| Trial   | Starting Index         | Signal Generator |                 | Successful |
|         | Within Sequence        | Frequency        | Detection BW    | Detection  |
|         |                        | (MHz)            |                 | (Yes/No)   |
| 1       | 79                     | 5291             | 3               | Yes        |
| 2       | 554                    | 5292             | 4               | Yes        |
| 3       | 1029                   | 5293             | 3               | Yes        |
| 4       | 1504                   | 5294             | 3               | Yes        |
| 5       | 1979                   | 5295             | 5               | Yes        |
| 6       | 2929                   | 5296             | 5               | Yes        |
| 7       | 3404                   | 5297             | 4               | Yes        |
| 8       | 3879                   | 5298             | 6               | Yes        |
| 9       | 4354                   | 5299             | 3               | Yes        |
| 10      | 4829                   | 5300             | 4               | Yes        |
| 11      | 5304                   | 5301             | 4               | Yes        |
| 12      | 5779                   | 5302             | 2               | Yes        |
| 13      | 6254                   | 5303             | 2               | Yes        |
| 14      | 6729                   | 5304             | 5               | Yes        |
| 15      | 7204                   | 5305             | 4               | Yes        |
| 16      | 7679                   | 5306             | 2               | Yes        |
| 17      | 8154                   | 5307             | 1               | Yes        |
| 18      | 8629                   | 5308             | 5               | Yes        |
| 19      | 9104                   | 5309             | 2               | Yes        |
| 20      | 9579                   | 5291             | 5               | Yes        |
| 21      | 10054                  | 5292             | 2               | Yes        |
| 22      | 10529                  | 5293             | 3               | Yes        |
| 23      | 11004                  | 5294             | 5               | Yes        |
| 24      | 11479                  | 5295             | 4               | Yes        |
| 25      | 11954                  | 5296             | 3               | Yes        |
| 26      | 12429                  | 5297             | 4               | Yes        |
| 27      | 12904                  | 5298             | 5               | Yes        |
| 28      | 13379                  | 5299             | 8               | Yes        |
| 29      | 13854                  | 5300             | 6               | Yes        |
| 30      | 14329                  | 5301             | 4               | Yes        |
| 31      | 14804                  | 5302             | 4               | Yes        |
| 32      | 15279                  | 5303             | 4               | Yes        |
| 33      | 15754                  | 5304             | 4               | Yes        |
| 34      | 16229                  | 5305             | 5               | Yes        |
| 35      | 16704                  | 5306             | 3               | Yes        |
| 36      | 17179                  | 5307             | 2               | Yes        |
| 37      | 17654                  | 5308             | 4               | Yes        |
| 38      | 18129                  | 5309             | 4               | Yes        |

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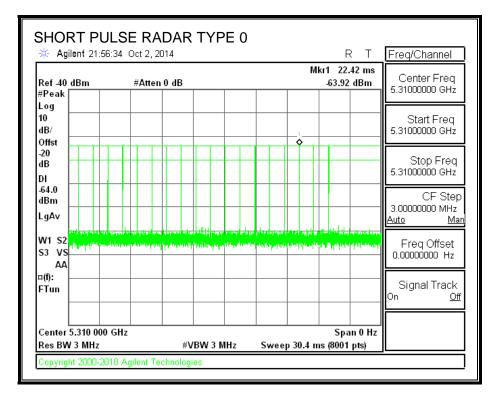
# 5.3. RESULTS FOR 40 MHz BANDWIDTH

# 5.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5310 MHz.

# 5.3.2. RADAR WAVEFORMS AND TRAFFIC

# RADAR WAVEFORMS



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| SAMPLE C                         |                |          | 1      | F                  | ≀ T          | Freq/Channel                                |
|----------------------------------|----------------|----------|--------|--------------------|--------------|---|
| Ref⊶40 dBm<br>#Peak              | #Atter         | 0 dB     |        | Mkr1 28.<br>-64.03 |              | Center Freq<br>5.31000000 GHz               |
| Log<br>10<br>dB/<br>Offst        |                | 1        |        |                    |              | Start Freq<br>5.31000000 GHz                |
| -20<br>dB<br>DI                  |                |          |        |                    |              | Stop Freq<br>5.31000000 GHz                 |
| -64.0<br>dBm<br>LgAv             |                |          |        |                    |              | CF Step<br>3.0000000 MHz<br><u>Auto Man</u> |
| W1 S2 Period                     |                |          |        |                    |              | Freq Offset<br>0.00000000 Hz                |
| ¤(f):<br>FTun                    |                |          |        |                    |              | Signal Track<br><sup>On <u>Off</u></sup>    |
| Center 5.310 000<br>Res BW 3 MHz | ) GHz          | #VBW 3 I | MHz Sw | Spa<br>2001 Spa    | n0Hz<br>pts) |   |
| Copyright 2000-20                | 010 Agilent Te |          |        | 1000 En 20 113     | 1.01         |   |

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| 🔆 Agilent                  | 22.00 | J.U |    | 0 |   | 2,. | 20  | 14  |    |   | <br> |         |   |  | м | cr1 3   | R | T    | Fre                 | μCΠ          | anne          | J                 |
|----------------------------|-------|-----|----|---|---|-----|-----|-----|----|---|------|---------|---|--|---|---|---|------|---------------------|--------------|---------------|-------------------|
| Ref-40 dBm<br>#Peak        | •     |     |    | # | A | tte | n ( | 0 0 | IB |   | <br> |         | _ |  |   | -64.0   |   | <br> | C<br>5.31           | ente<br>0000 | r Fre<br>00 G | ∋q<br>Hz          |
| Log<br>10<br>dB/<br>Offst  |       |     |    |   |   |     |     |     |    | 1 |      |         |   |  |   |   |   | _    |                     | Star<br>0000 |               |                   |
| -20<br>dB<br>DI            |       |     |    |   |   |     |     |     |    | Ť |      |         |   |  |   |   |   |      | 5.31                | Sto<br>0000  | p Fr<br>00 G  |                   |
| -64.0<br>dBm<br>LgAv       |       |     |    |   |   |     |     |     |    |   |      |         |   |  |   |   |   | _    | 3.00<br><u>Auto</u> | 0000         | CF S<br>00 M  |                   |
| W1 S2<br>S3 VS             |       |     |    |   |   |     |     |     |    |   |      |         |   |  |   | en a fina de la<br>La la cala da La<br>La la cala da La cala da |   |      |                     | req          |               |                   |
| ¤(f):<br>FTun              |       |     |    |   |   |     |     |     |    |   |      |         | _ |  |   |   |   | <br> | S<br>On             | igna         | l Tra         | ick<br><u>Off</u> |
| Center 5.310<br>Res BW 3 M |       | G   | Hz |   |   |     |     |     |    |   | <br> | <br>/Hz |   |  |   | S <br>s (800  |   | Hz   |                     |              |               |                   |

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| * Agilent 22:                   |        | #Atten |    |        |           | М     | F<br>1 2.2<br>64.07 | 47 ms   | Freq/Channel<br>Center Freq                |
|---------------------------------|--------|--------|----|--------|-----------|-------|---------------------|---------|--|
| #Peak                           |        | #Atten |    |        |           |       | -64.07              | abm     | 5.31000000 GHz                             |
| Log<br>10<br>dB/<br>Offst       | 1      |        |    |        |           |       |                     |         | Start Freq<br>5.31000000 GHz               |
| -20<br>dB<br>DI                 | Ť      |        |    |        |           |       |                     |         | Stop Freq<br>5.31000000 GHz                |
| -64.0<br>dBm<br>LgAv            |        |        |    |        |           |       |                     |         | CF Step<br>3.0000000 MHz<br><u>Auto Ma</u> |
| W1 S2<br>S3 VS<br>AA            |        |        |    |        |           |       |                     |         | Freq Offset<br>0.00000000 Hz               |
| ¤(f):<br>FTun                   |        |        |    |        |           |       |                     |         | Signal Track<br>On <u>Of</u> f             |
| Center 5.310 00<br>Res BW 3 MHz | )0 GHz |        | #1 | BW 3 N | <br>Sweep | 45.47 | •                   | in 0 Hz |  |

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| 🔆 Agilent                 | 22.20.10                           | 00.2,2 | 014  |         |   |          |         | F                 | · ·    | Freq/Channel                                |
|---------------------------|------------------------------------|--------|------|---------|---|----------|---------|-------------------|--------|---|
| Ref 40 dBn<br>#Peak ∣     | <u>1</u>                           | #Atten | 0 dB |         |   |          |         | cr1 5.3<br>_63.93 |        | Center Freq<br>5.31000000 GHz               |
| Log<br>10<br>dB/<br>Offst |                                    |        |      |         | 1 |          |         |                   |        | Start Freq<br>5.31000000 GHz                |
| -20<br>dB<br>DI           |                                    |        |      |         |   |          |         |                   |        | Stop Freq<br>5.31000000 GHz                 |
| -64.0<br>dBm<br>LgAv      |                                    |        |      |         |   |          |         |                   |        | CF Step<br>3.00000000 MHz<br><u>Auto Ma</u> |
| VVI 32                    | ilaya nana nani<br>Layak nda layat |        |      |         |   |          |         |                   |        | Freq Offset<br>0.00000000 Hz                |
| ¤(f):<br>FTun             |                                    |        |      |         |   |          |         |                   |        | Signal Track<br>On <u>Of</u>                |
| Center 5.31<br>Res BW 3 M |                                    | z      | 404  | /BW 3 N |   | <b>6</b> | 10.13 m | •                 | n 0 Hz |   |

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| SAMPLE C                                       |       |       |         |    |    | // // /  |                   |                | Freq/Channel                                |
|--|-------|-------|---------|----|----|----------|-------------------|----------------|---|
| Ref -40 dBm<br>#Peak                           | #Atte | en0dB |         |    |    | м        | Gr1 2.5<br>_63.87 |                | Center Freq<br>5.31000000 GHz               |
| Log<br>10<br>dB/<br>Offst                      |       | 1     |         |    |    |          |                   |                | Start Freq<br>5.3100000 GHz                 |
| -20<br>dB<br>DI                                |       | Ň     |         |    |    |          |                   |                | Stop Freq<br>5.31000000 GHz                 |
| -64.0<br>dBm<br>LgA∨                           |       |       |         |    |    |          |                   |                | CF Step<br>3.0000000 MHz<br><u>Auto Man</u> |
| W1 S2<br>S3 VS <mark>p-telgapolis</mark><br>AA |       |       |         |    |    |          |                   |                | Freq Offset<br>0.00000000 Hz                |
| ¤(f):<br>FTun                                  |       |       |         |    |    |          |                   |                | Signal Track<br>On <u>Off</u>               |
| Center 5.310 000<br>Res BW 3 MHz               | ) GHz | #V    | /BW 3 M | Hz | Sw | veep 8 m | •                 | n 0 Hz<br>pts) |   |

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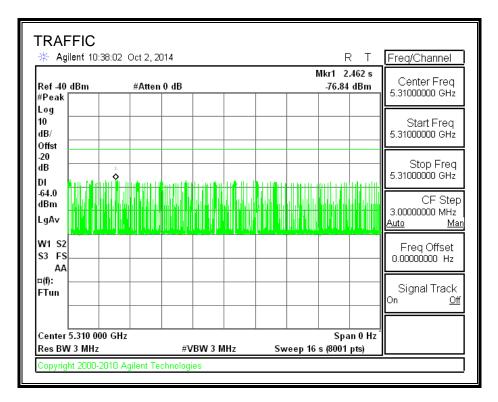
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| 🔆 Agilent 22:3                   | 4:16 Oct 2, 2014                            |            |         | R T                        | Freq/Channel                  |
|----------------------------------|---|------------|---------|----------------------------|-------------------------------|
| Ref 40 dBm<br>#Peak              | #Atten 0 dE                                 | 3          |         | kr1 1.666 ms<br>-63.93 dBm | Center Freq<br>5.31000000 GHz |
| Log<br>10<br>dB/                 | 1   |            |         |                            | Start Freq<br>5.31000000 GHz  |
| -20<br>dB                        |   |            |         |                            | Stop Freq<br>5.31000000 GHz   |
| DI<br>-64.0<br>dBm<br>LgAv       |   |            |         |                            | CF Step<br>3.00000000 MHz     |
| W1 S2<br>S3 VS<br>AA             | land an |            |         |                            |                               |
| ¤(f):<br>FTun                    |   |            |         |                            | Signal Track<br>On <u>Off</u> |
| Center 5.310 000<br>Res BW 3 MHz | ) GHz                                       | #VBW 3 MHz | Sween 5 | Span 0 Hz<br>ns (8001 pts) |                               |

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### TRAFFIC



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# 5.3.3. CHANNEL AVAILABILITY CHECK TIME

# PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5310 MHz and commence a CAC period. The time to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

# PROCEDURE FOR TIMING OF RADAR BURST

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5310 MHz and commence a CAC period. A radar signal was triggered within 0 to 6 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5310 MHz and commence a CAC period. A radar signal was triggered within 54 to 60 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

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### **QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS**

## No Radar Triggered

| Beginning | Timing of        | CAC Period |
|-----------|------------------|------------|
| of CAC    | Start of Traffic | Time       |
| (sec)     | (sec)            | (sec)      |
| 0         | 60.78            | 60.78      |

#### **Radar Near Beginning of CAC**

| Beginning | Timing of   | Radar Relative  |
|-----------|-------------|-----------------|
| of CAC    | Radar Burst | to Start of CAC |
| (sec)     | (sec)       | (sec)           |
| 0         | 4.83        | 4.83            |

#### Radar Near End of CAC

| Beginning | Timing of   | Radar Relative  |
|-----------|-------------|-----------------|
| of CAC    | Radar Burst | to Start of CAC |
| (sec)     | (sec)       | (sec)           |
| 0         | 56.94       | 56.94           |

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## QUANTITATIVE RESULTS BASED ON LOG FILE TIME STAMPS

### No Radar Triggered

| Beginning of | End of CAC |            |
|--------------|------------|------------|
| CAC          |            | CAC Time   |
| (hh:mm:ss)   | (hh:mm:ss) | (hh:mm:ss) |
| 23:03:58     | 23:04:58   | 0:01:00    |

#### Radar Near Beginning of CAC

| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 0:08:17      | 0:08:22        | 0:00:05         |

### Radar Near End of CAC

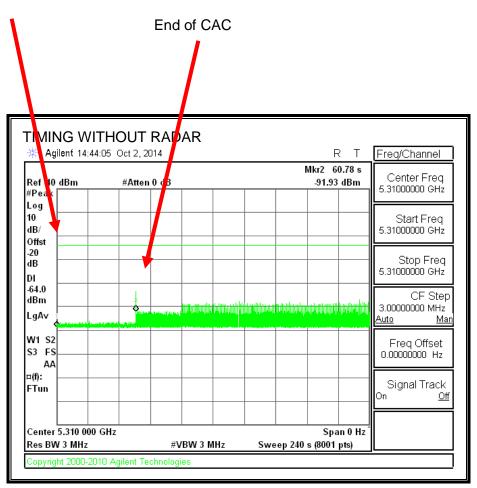
| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 23:53:56     | 23:54:53       | 0:00:57         |

# **QUALITATIVE RESULTS**

| Timing of<br>Radar Burst      | Display on Control<br>Computer | Spectrum Analyzer Display   |
|-------------------------------|--------------------------------|---|
| No Radar<br>Triggered         | EUT marks Channel as active    | Transmissions begin on channel<br>after completion of the initial<br>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

Command to Switch Channels Start of CAC



Transmissions begin on channel after completion of the CAC period.

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#### Log File of CAC Timing Without Radar

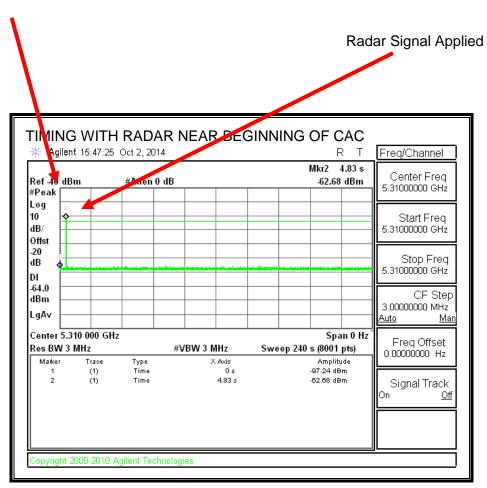
Jan 06 23:03:58 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 1 (cfg.c:584) Jan 06 23:03:58 2014: ap7532-15E794 : %DOT11-6-CLIENT\_ASSOCIATED: Client '00-23-14-04-9B-34' associated to wlan '1' ssid '7532' on radio 'ap7532-15E794:R2' DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check Jan 06 23:03:58 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check. DLS DFS State PRE-ISM Channel Availability Check -> In-Service Monitoring(ISM)

Jan 06 23:04:58 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> In-Service Monitoring(ISM).

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#### TIMING WITH RADAR NEAR BEGINNING OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the Beginning of CAC

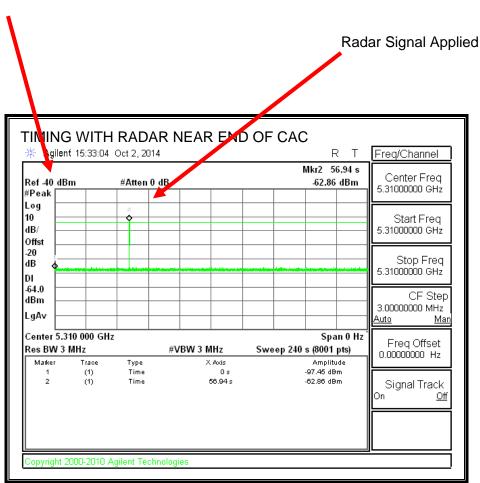
DLS DFS State IDLE -> PRE-ISM Channel Availability Check width is 40 (cfg.c:565) Jan 07 00:08:17 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 1 (cfg.c:584) DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check Jan 07 00:08:22 2014: ap7532-15E794 : %RADIO-4-RADAR\_DETECTED: Radar found on

channel 60 freq 5300 MHz

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### TIMING WITH RADAR NEAR END OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the End of CAC

DLS DFS State IDLE -> PRE-ISM Channel Availability Check width is 40 cfq.c:565)

Jan 06 23:53:56 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel Availability Check.

radio->info.current\_channel is 60 sys\_idx: 1 cfg.c:584)
DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel
Availability Check

Jan 06 23:53:56 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check.

ap7532-15E794#Type 7 Radar Detection. Detected pulse index=0 fm\_min=0 fm\_max=0 nconsecq\_pulses=4. Time from last detection = 394, = 6min 34sec DLS - time to delete the timer DLS DFS State PRE-ISM Channel Availability Check -> IDLE

Jan 06 23:54:53 2014: %KERN-4-WARNING: Type 7 Radar Detection. Detected pulse index=0 fm\_min=0 fm\_max=0 nconsecq\_pulses=4. Time from last detection = 394, = 6min 34sec .

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# 5.3.1. OVERLAPPING CHANNEL TESTS

### **RESULTS**

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

These tests are not applicable.

# 5.3.2. 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)

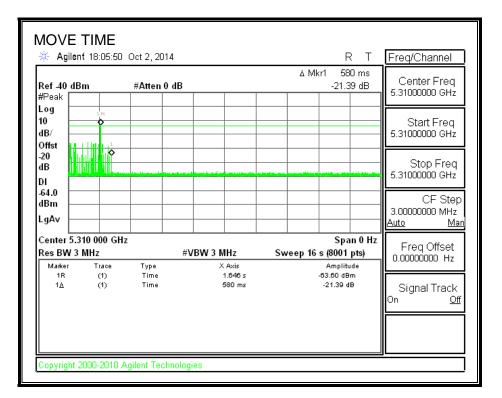
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

# **RESULTS**

| Channel Move Time | Limit |
|-------------------|-------|
| (sec)             | (sec) |
| 0.580             | 10    |

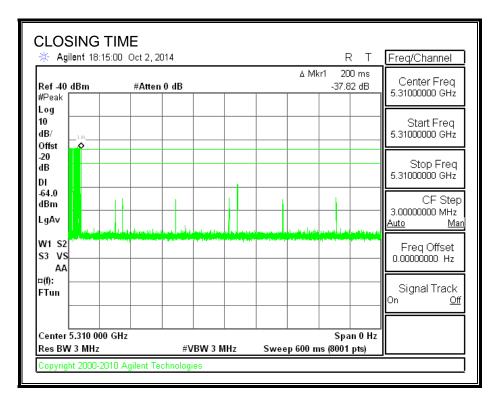
| Aggregate Channel Closing Transmission Time | Limit  |
|---|--------|
| (msec)                                      | (msec) |
| 12.0  | 60     |

#### MOVE TIME



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### **CHANNEL CLOSING TIME**

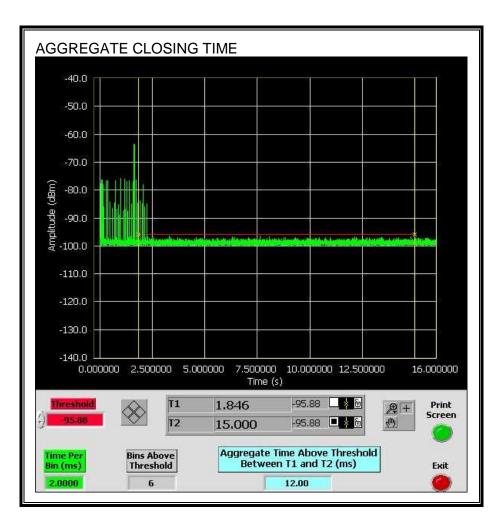


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### AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.

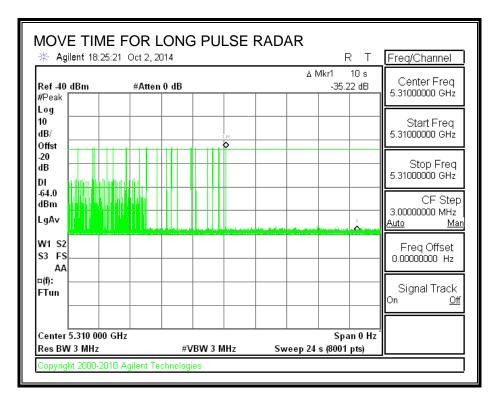


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# LONG PULSE CHANNEL MOVE TIME

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

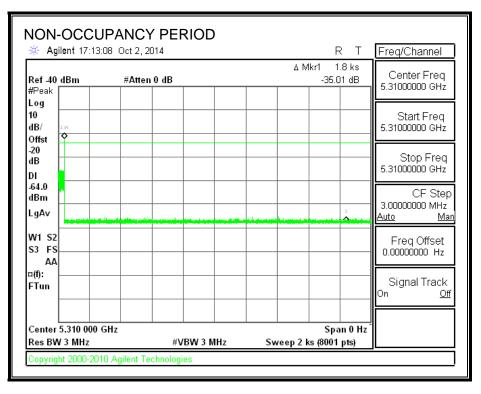


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# 5.3.3. NON-OCCUPANCY PERIOD

# **RESULTS**

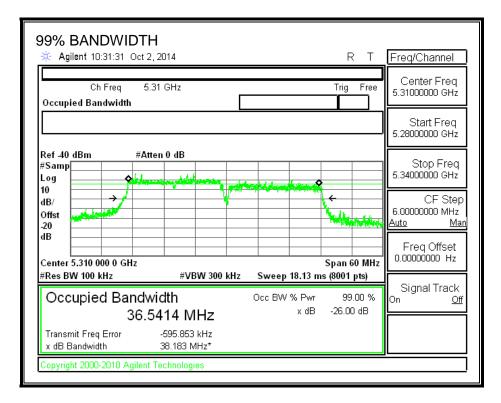
No EUT transmissions were observed on the test channel during the 30-minute observation time.



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# **5.3.4. DETECTION BANDWIDTH**

# **REFERENCE PLOT OF 99% POWER BANDWIDTH**



# **RESULTS**

| FL    | FH    | Detection | 99% Power | Ratio of        | Minimum |
|-------|-------|-----------|-----------|-----------------|---------|
|       |       | Bandwidth | Bandwidth | Detection BW to | Limit   |
|       |       |           |           | 99% Power BW    |         |
| (MHz) | (MHz) | (MHz)     | (MHz)     | (%)             | (%)     |
| 5291  | 5329  | 38        | 36.541    | 104.0           | 100     |

# **DETECTION BANDWIDTH PROBABILITY**

| TI | ECTION BAN    | IDWIDTH PROBAB       | ILITY RESULTS          |              |       |
|----|---------------|----------------------|------------------------|--------------|-------|
| De | etection Band | width Test Results   |                        |              |       |
| FC | C Type 0 War  | veform: 1 us Pulse V | Nidth, 1428 us PRI, 18 | 8 Pulses per | Burst |
|    | Frequency     | Number of Trials     | Number Detected        | Detection    | Mark  |
|    | (MHz)         |                      |                        | (%)          |       |
|    | 5291          | 10                   | 10                     | 100          | FL    |
|    | 5292          | 10                   | 10                     | 100          |       |
|    | 5293          | 10                   | 10                     | 100          |       |
|    | 5294          | 10                   | 10                     | 100          |       |
|    | 5295          | 10                   | 10                     | 100          |       |
|    | 5300          | 10                   | 10                     | 100          |       |
|    | 5305          | 10                   | 10                     | 100          |       |
|    | 5310          | 10                   | 9                      | 90           |       |
|    | 5315          | 10                   | 10                     | 100          |       |
|    | 5320          | 10                   | 10                     | 100          |       |
|    | 5325          | 10                   | 10                     | 100          |       |
|    | 5326          | 10                   | 10                     | 100          |       |
|    | 5327          | 10                   | 10                     | 100          |       |
|    | 5328          | 10                   | 10                     | 100          |       |
|    | 5329          | 10                   | 10                     | 100          | FH    |

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# **5.3.5. IN-SERVICE MONITORING**

#### **RESULTS**

| FCC Radar Test Summ    | ary              |                  |              |           |
|------------------------|------------------|------------------|--------------|-----------|
| Signal Type            | Number of Trials | Detection<br>(%) | Limit<br>(%) | Pass/Fail |
| FCC Short Pulse Type 1 | 30               | 96.67            | 60           | Pass      |
| FCC Short Pulse Type 2 | 30               | 100.00           | 60           | Pass      |
| FCC Short Pulse Type 3 | 30               | 100.00           | 60           | Pass      |
| FCC Short Pulse Type 4 | 30               | 100.00           | 60           | Pass      |
| Aggregate              |                  | 99.17            | 80           | Pass      |
| FCC Long Pulse Type 5  | 30               | 100.00           | 80           | Pass      |
| FCC Hopping Type 6     | 39               | 100.00           | 70           | Pass      |

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### **TYPE 1 DETECTION PROBABILITY**

| us Pulse Width | C Short Puls |                  |       |                                  |  |
|----------------|--------------|------------------|-------|----------------------------------|--|
| Waveform       | PRI          | Pulses Per Burst | Test  | Successful Detection<br>(Yes/No) |  |
|                | (us)         |                  | (A/B) |                                  |  |
| 1001           | 3066         | 18               | A     | No                               |  |
| 1002           | 858          | 62               | Α     | Yes                              |  |
| 1003           | 798          | 67               | Α     | Yes                              |  |
| 1004           | 578          | 92               | Α     | Yes                              |  |
| 1005           | 898          | 59               | Α     | Yes                              |  |
| 1006           | 758          | 70               | Α     | Yes                              |  |
| 1007           | 538          | 99               | Α     | Yes                              |  |
| 1008           | 618          | 86               | Α     | Yes                              |  |
| 1009           | 598          | 89               | Α     | Yes                              |  |
| 1010           | 658          | 81               | Α     | Yes                              |  |
| 1011           | 818          | 65               | Α     | Yes                              |  |
| 1012           | 518          | 102              | Α     | Yes                              |  |
| 1013           | 878          | 61               | Α     | Yes                              |  |
| 1014           | 938          | 57               | Α     | Yes                              |  |
| 1015           | 778          | 68               | Α     | Yes                              |  |
| 1016           | 678          | 78               | В     | Yes                              |  |
| 1017           | 2994         | 18               | В     | Yes                              |  |
| 1018           | 2392         | 23               | В     | Yes                              |  |
| 1019           | 1657         | 32               | В     | Yes                              |  |
| 1020           | 1180         | 45               | В     | Yes                              |  |
| 1021           | 610          | 87               | В     | Yes                              |  |
| 1022           | 2876         | 19               | В     | Yes                              |  |
| 1023           | 724          | 73               | В     | Yes                              |  |
| 1024           | 2465         | 22               | В     | Yes                              |  |
| 1025           | 552          | 96               | В     | Yes                              |  |
| 1026           | 887          | 60               | В     | Yes                              |  |
| 1027           | 2021         | 27               | В     | Yes                              |  |
| 1028           | 557          | 95               | В     | Yes                              |  |
| 1029           | 652          | 81               | В     | Yes                              |  |
| 1030           | 2452         | 22               | В     | Yes                              |  |

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### **TYPE 2 DETECTION PROBABILITY**

| Pulses Per Burst Successful Dete | ection      |
|----------------------------------|-------------|
| (Yes/No)                         |             |
| ) 23 Yes                         |             |
| 0 24 Yes                         |             |
| ) 29 Yes                         |             |
| ) 25 Yes                         |             |
| 0 24 Yes                         |             |
| 0 29 Yes                         |             |
| 0 28 Yes                         |             |
| 0 28 Yes                         |             |
| 0 25 Yes                         |             |
| 0 28 Yes                         |             |
| 0 25 Yes                         |             |
| 0 28 Yes                         |             |
| 0 28 Yes                         |             |
| 0 24 Yes                         |             |
| 0 27 Yes                         |             |
| 0 23 Yes                         |             |
| 0 24 Yes                         |             |
| 0 27 Yes                         |             |
| 0 23 Yes                         |             |
| 0 28 Yes                         |             |
| 0 24 Yes                         |             |
| ) 27 Yes                         |             |
| 0 29 Yes                         |             |
| 0 27 Yes                         |             |
| ) 23 Yes                         |             |
| ) 29 Yes                         |             |
| 0 28 Yes                         |             |
| 0 28 Yes                         |             |
| 0 28 Yes                         |             |
| 0 29 Yes<br>0 28 Yes<br>0 28 Yes | ;<br>;<br>; |

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### TYPE 3 DETECTION PROBABILITY

| Naveform | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|----------|---------------------|-------------|------------------|----------------------------------|
| 3001     | 8.2                 | 414.00      | 16               | Yes                              |
| 3002     | 7.6                 | 398.00      | 17               | Yes                              |
| 3003     | 6                   | 433.00      | 18               | Yes                              |
| 3004     | 5.2                 | 356.00      | 16               | Yes                              |
| 3005     | 7.8                 | 411.00      | 16               | Yes                              |
| 3006     | 6.8                 | 428.00      | 17               | Yes                              |
| 3007     | 10                  | 475.00      | 18               | Yes                              |
| 3008     | 8.9                 | 344.00      | 18               | Yes                              |
| 3009     | 9.7                 | 325.00      | 18               | Yes                              |
| 3010     | 7.5                 | 311.00      | 18               | Yes                              |
| 3011     | 5.4                 | 271.00      | 16               | Yes                              |
| 3012     | 8.5                 | 426.00      | 16               | Yes                              |
| 3013     | 8                   | 296.00      | 16               | Yes                              |
| 3014     | 9.3                 | 390.00      | 17               | Yes                              |
| 3015     | 9.7                 | 357.00      | 16               | Yes                              |
| 3016     | 9.2                 | 303.00      | 16               | Yes                              |
| 3017     | 9.6                 | 454.00      | 16               | Yes                              |
| 3018     | 9.2                 | 271.00      | 16               | Yes                              |
| 3019     | 5                   | 286.00      | 16               | Yes                              |
| 3020     | 7.6                 | 279.00      | 16               | Yes                              |
| 3021     | 5.3                 | 405.00      | 16               | Yes                              |
| 3022     | 9.6                 | 404.00      | 16               | Yes                              |
| 3023     | 6.5                 | 420.00      | 18               | Yes                              |
| 3024     | 5.4                 | 416.00      | 17               | Yes                              |
| 3025     | 6.4                 | 425.00      | 17               | Yes                              |
| 3026     | 6.1                 | 296.00      | 18               | Yes                              |
| 3027     | 9.9                 | 333.00      | 17               | Yes                              |
| 3028     | 5.5                 | 422.00      | 18               | Yes                              |
| 3029     | 7.7                 | 487         | 17               | Yes                              |
| 3030     | 5.2                 | 309         | 18               | Yes                              |

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### **TYPE 4 DETECTION PROBABILITY**

| Waveform<br>■ | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|---------------|---------------------|-------------|------------------|----------------------------------|
| 4001          | 18                  | 390.00      | 13               | Yes                              |
| 4002          | 16.1                | 457.00      | 12               | Yes                              |
| 4003          | 17.9                | 428.00      | 16               | Yes                              |
| 4004          | 19.5                | 375.00      | 12               | Yes                              |
| 4005          | 15                  | 328.00      | 13               | Yes                              |
| 4006          | 10.9                | 369.00      | 15               | Yes                              |
| 4007          | 14.2                | 372.00      | 12               | Yes                              |
| 4008          | 12.1                | 497.00      | 13               | Yes                              |
| 4009          | 14.6                | 371.00      | 16               | Yes                              |
| 4010          | 14.9                | 452.00      | 13               | Yes                              |
| 4011          | 18.1                | 497.00      | 16               | Yes                              |
| 4012          | 16.2                | 389.00      | 15               | Yes                              |
| 4013          | 18.6                | 393.00      | 15               | Yes                              |
| 4014          | 10.1                | 354.00      | 12               | Yes                              |
| 4015          | 18.1                | 273.00      | 13               | Yes                              |
| 4016          | 12                  | 360.00      | 14               | Yes                              |
| 4017          | 14.6                | 290.00      | 13               | Yes                              |
| 4018          | 19                  | 302.00      | 13               | Yes                              |
| 4019          | 11.3                | 293.00      | 15               | Yes                              |
| 4020          | 18.7                | 400.00      | 16               | Yes                              |
| 4021          | 16.2                | 327.00      | 15               | Yes                              |
| 4022          | 18.6                | 343.00      | 14               | Yes                              |
| 4023          | 10.9                | 403.00      | 14               | Yes                              |
| 4024          | 17.2                | 482.00      | 14               | Yes                              |
| 4025          | 17.2                | 298.00      | 12               | Yes                              |
| 4026          | 13.1                | 300.00      | 16               | Yes                              |
| 4027          | 15.7                | 411.00      | 12               | Yes                              |
| 4028          | 16.7                | 328.00      | 15               | Yes                              |
| 4029          | 10.4                | 347.00      | 13               | Yes                              |

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### TYPE 5 DETECTION PROBABILITY

| Trial | Successful Detection |  |  |  |
|-------|----------------------|--|--|--|
|       | (Yes/No)             |  |  |  |
| 1     | Yes                  |  |  |  |
| 2     | Yes                  |  |  |  |
| 3     | Yes                  |  |  |  |
| 4     | Yes                  |  |  |  |
| 5     | Yes                  |  |  |  |
| 6     | Yes                  |  |  |  |
| 7     | Yes                  |  |  |  |
| 8     | Yes                  |  |  |  |
| 9     | Yes                  |  |  |  |
| 10    | Yes                  |  |  |  |
| 11    | Yes                  |  |  |  |
| 12    | Yes                  |  |  |  |
| 13    | Yes                  |  |  |  |
| 14    | Yes                  |  |  |  |
| 15    | Yes                  |  |  |  |
| 16    | Yes                  |  |  |  |
| 17    | Yes                  |  |  |  |
| 18    | Yes                  |  |  |  |
| 19    | Yes                  |  |  |  |
| 20    | Yes                  |  |  |  |
| 21    | Yes                  |  |  |  |
| 22    | Yes                  |  |  |  |
| 23    | Yes                  |  |  |  |
| 24    | Yes                  |  |  |  |
| 25    | Yes                  |  |  |  |
| 26    | Yes                  |  |  |  |
| 27    | Yes                  |  |  |  |
| 28    | Yes                  |  |  |  |
| 29    | Yes                  |  |  |  |
| 30    | Yes                  |  |  |  |

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

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### **TYPE 6 DETECTION PROBABILITY**

| 1 us Pulse | for FCC Hopping Rada<br>Width, 333 us PRI, 9             | 9 Pulses per Burst,                              | 1 Burst per Hop             | 9                                   |
|------------|--|--|-----------------------------|-------------------------------------|
| Trial      | ust 2005 Hopping Se<br>Starting Index<br>Within Sequence | Guence<br>Signal Generator<br>Frequency<br>(MHz) | Hops within<br>Detection BW | Successful<br>Detection<br>(Yes/No) |
| 1          | 257  | 5291   | 10                          | Yes                                 |
| 2          | 732  | 5292   | 7                           | Yes                                 |
| 3          | 1207   | 5293   | 6                           | Yes                                 |
| 4          | 1682   | 5294   | 7                           | Yes                                 |
| 5          | 2157   | 5295   | 9                           | Yes                                 |
| 6          | 2632   | 5296   | 8                           | Yes                                 |
| 7          | 3107   | 5297   | 7                           | Yes                                 |
| 8          | 3582   | 5298   | 3                           | Yes                                 |
| 9          | 4057   | 5299   | 12                          | Yes                                 |
| 10         | 4532   | 5300   | 9                           | Yes                                 |
| 11         | 5007   | 5301   | 6                           | Yes                                 |
| 12         | 5482   | 5302   | 7                           | Yes                                 |
| 13         | 5957   | 5303   | 9                           | Yes                                 |
| 14         | 6432   | 5304   | 11                          | Yes                                 |
| 15         | 6907   | 5305   | 6                           | Yes                                 |
| 16         | 7382   | 5306   | 11                          | Yes                                 |
| 17         | 7857   | 5307   | 10                          | Yes                                 |
| 18         | 8332   | 5308   | 10                          | Yes                                 |
| 19         | 8807   | 5309   | 8                           | Yes                                 |
| 20         | 9282   | 5310   | 9                           | Yes                                 |
| 21         | 9757   | 5311   | 5                           | Yes                                 |
| 22         | 10232  | 5312   | 9                           | Yes                                 |
| 23         | 10707  | 5313   | 9                           | Yes                                 |
| 24         | 11182  | 5314   | 8                           | Yes                                 |
| 25         | 11657  | 5315   | 10                          | Yes                                 |
| 26         | 12132  | 5316   | 5                           | Yes                                 |
| 27         | 12607  | 5317   | 12                          | Yes                                 |
| 28         | 13082  | 5318   | 7                           | Yes                                 |
| 29         | 13557  | 5319   | 8                           | Yes                                 |
| 30         | 14032  | 5320   | 3                           | Yes                                 |
| 31         | 14507  | 5321   | 9                           | Yes                                 |
| 32         | 14982  | 5322   | 7                           | Yes                                 |
| 33         | 15457  | 5323   | 6                           | Yes                                 |
| 34         | 15932  | 5324   | 7                           | Yes                                 |
| 35         | 16407  | 5325   | 5                           | Yes                                 |
| 36         | 16882  | 5326   | 9                           | Yes                                 |
| 37         | 17357  | 5327   | 10                          | Yes                                 |
| 38         | 17832  | 5328   | 6                           | Yes                                 |
| 39         | 18307  | 5329   | 10                          | Yes                                 |
|            |  |  |                             |                                     |

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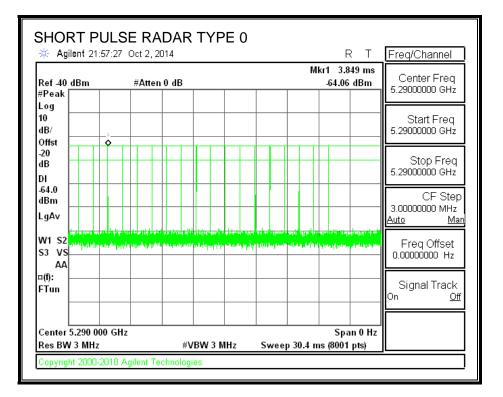
# 5.4. RESULTS FOR 80 MHz BANDWIDTH

## 5.4.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5290 MHz.

## 5.4.2. RADAR WAVEFORMS AND TRAFFIC

## RADAR WAVEFORMS



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| SAMPLE                          |   |             | YPE <sup>·</sup> | 1   |     |         | R                  | т              | Freq/Channel                                |
|---------------------------------|---|-------------|------------------|-----|-----|---------|--------------------|----------------|---|
| Ref -40 dBm<br>#Peak            |   | Atten 0 dB  |                  |     |     | М       | kr1 59.0<br>-63.94 | 04 ms          | Center Freq<br>5.29000000 GHz               |
| Log<br>10<br>dB/<br>Offst       |   |             |                  |     |     | 1       |                    |                | Start Freq<br>5.29000000 GHz                |
| -20<br>dB<br>DI                 |   |             |                  |     |     |         |                    |                | Stop Freq<br>5.29000000 GHz                 |
| -64.0<br>dBm<br>LgA∨            |   |             |                  |     |     |         |                    |                | CF Step<br>3.0000000 MHz<br><u>Auto Man</u> |
| W1 S2                           | na na ana ana ana ana ana ana ana ana a |             |                  |     |     |         |                    |                | Freq Offset<br>0.00000000 Hz                |
| ¤(f):<br>FTun                   |   |             |                  |     |     |         |                    |                | Signal Track<br>On <u>Off</u>               |
| Center 5.290 00<br>Res BW 3 MHz |   |             | #VBW 3 M         | ЛНz | Swe | ep 80 m | Spa<br>1s (8001    | n 0 Hz<br>pts) |   |
| Copyright 2000-                 | 2010 Agile                              | ent Technol | ogies            |     |     |         |                    |                |   |

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| 🔆 Agi                    | lent 22            | 2.10 |   |    | _      |    | 2,  | 20   | 14  |    |  |      |      |  | -                            | Mkı | 13.   | R<br>.09 |     | ⊤<br>ns | Free         |                 |                |                 |
|--------------------------|--------------------|------|---|----|--------|----|-----|------|-----|----|--|------|------|--|------------------------------|-----|-------|----------|-----|---------|--------------|-----------------|----------------|-----------------|
| Ref -40<br>#Peak ∣       | dBm                | Τ    |   |    | ;<br>T | #Δ | tte | n    | 0 ( | ΙB |  | <br> |      |  |                              |     | -63.9 | 0 (      | dBı | n       | С<br>5.29    | entei<br>100000 | r Fre<br>00 GH | q<br>Iz         |
| Log<br>10<br>dB/         |                    |      |   |    |        |    |     |      | 1   |    |  |      |      |  |                              |     |       |          |     |         |              |                 | t Fre<br>00 GH |                 |
| Offst<br>-20<br>dB<br>DI |                    |      |   |    |        | T  |     |      | Í   |    |  |      |      |  |                              |     |       |          |     |         | 5.29         |                 | p Fre<br>00 G⊦ |                 |
| -64.0<br>dBm<br>LgAv     |                    |      |   |    |        |    |     |      |     |    |  |      |      |  |                              |     |       |          |     |         | 3.00<br>Auto |                 | CF St<br>00 MH |                 |
| W1 S2                    | nen pins<br>       |      |   |    |        |    |     | 1, s |     |    |  |      |      |  | run <sup>0</sup> m<br>karden |     |       |          |     |         | II F         |                 | Offse<br>100 H |                 |
| ¤(f):<br>FTun            |                    |      |   |    |        |    |     |      |     |    |  |      |      |  |                              |     |       |          |     |         | S<br>On      | ignal           | l Trac         | :k<br><u>Of</u> |
| Center                   | 5.290 0<br>/ 3 MH; |      | G | Hz |        |    |     |      |     |    |  | <br> | //Hz |  | 10.13                        |     |       |          |     | Hz      |              |                 |                |                 |

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| ✤ Agilent 22: Ref -40 dBm          |                          | tten 0 dB                   |   | М   | kr1 6.386 ms<br>-63.96 dBm                 | Freq/Channel<br>Center Freq  |
|------------------------------------|--------------------------|-----------------------------|---|---|--|------------------------------|
| #Peak                              |                          |                             |   |   |  | 5.29000000 GHz               |
| Log<br>10<br>dB/                   |                          |                             | 1.  |   |  | Start Freq<br>5.29000000 GHz |
| Offst<br>-20<br>dB                 | ₩₩                       |                             | ♦   |   |  | Stop Freq                    |
| DI<br>-64.0<br>dBm                 |                          |                             |   |   |  | CF Step<br>3.00000000 MHz    |
| LgAv<br>W1 S2                      | ण सम्प्रती प्रयोजन्त्रभा | र का हर रह कि जि            | na marina da tanàna                             | p <sup>in</sup> and straty seals a seal time search | ere a sector a la sector da una            | <u>Auto Ma</u>               |
| S3 VS <mark>tipsterby</mark><br>AA | estepholyd Allephol      | ala da la da da da da da da | ar and haddeding a <sub>b</sub> io activity (in | klahyklikingten eintonisten                         | (Archine place) (1919 provide 1919) (1919) | Freq Offset<br>0.00000000 Hz |
| ¤(f):<br>FTun                      |                          |                             |   |   |  | Signal Track<br>On <u>Of</u> |
| Center 5.290 00<br>Res BW 3 MHz    | )0 GHz                   |                             | VBW 3 MHz                                       | Sweep 15.47 n                                       | Span 0 Hz                                  |                              |

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| 🔆 Agilent 22:2                  | 26:37 Oct 2, 2                                   | 2014 |        |     |       |         | F                |                | Freq/Channel                                 |
|---------------------------------|--|------|--------|-----|-------|---------|------------------|----------------|--|
| Ref -40 dBm<br>#Peak            | #Atte  | n0dB |        |     |       | M       | kr1 3.<br>_63.97 | 34 ms<br>dBm   | Center Freq<br>5.29000000 GHz                |
| Log<br>10<br>dB/<br>Offst       |  | 1    |        |     |       |         |                  |                | Start Freq<br>5.29000000 GHz                 |
| dB<br>DI                        |  |      |        |     |       |         |                  |                | Stop Freq<br>5.29000000 GHz                  |
| -64.0<br>dBm<br>LgAv            |  |      |        |     |       |         |                  |                | CF Step<br>3.00000000 MHz<br><u>Auto Mar</u> |
| VVI 52                          | <mark>erijado selje negleta</mark><br>Kontradije |      |        |     |       |         |                  |                | Freq Offset<br>0.00000000 Hz                 |
| ¤(f):<br>FTun                   |  |      |        |     |       |         |                  |                | Signal Track<br>On <u>Off</u>                |
| Center 5.290 00<br>Res BW 3 MHz | 0 GHz  | #VI  | BW 3 M | IHz | Sweep | 10.13 m | •                | n 0 Hz<br>pts) |  |

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| 🔆 Agilent 22:2                   | 7:54 Oct 2, 2014 |            |   | RT                  | Freq/Channel                                |
|----------------------------------|------------------|------------|---|---------------------|---|
| Ref -40 dBm<br>#Peak             | #Atten 0         | 1B         |   | 2.086 ms<br>03 dBm  | Center Freq<br>5.29000000 GHz               |
| Log<br>10<br>dB/                 | 1                |            |   |                     | Start Freq<br>5.2900000 GHz                 |
| -20<br>dB<br>DI                  |                  |            |   |                     | Stop Freq<br>5.29000000 GHz                 |
| -64.0<br>dBm<br>LgAv             |                  |            |   |                     | CF Step<br>3.0000000 MHz<br><u>Auto Mar</u> |
| S3 VS                            |                  |            | 1127127471247147471197471274717474747474747<br>1127127471474747474747474747474747474747 |                     | Freq Offset<br>0.00000000 Hz                |
| ¤(f):<br>FTun                    |                  |            |   |                     | Signal Track<br>On <u>Off</u>               |
| Center 5.290 000<br>Res BW 3 MHz | ) GHz            | #VBW 3 MHz | S<br>Sweep 8 ms (80   | pan 0 Hz<br>01 pts) |   |

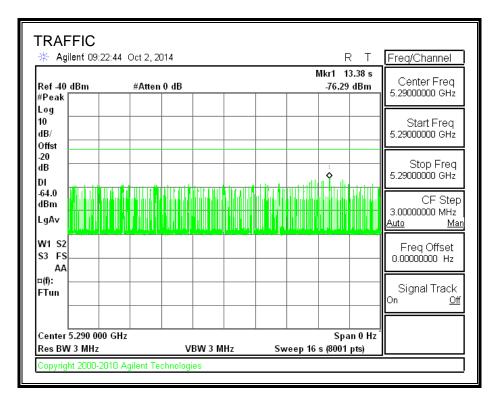
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| 🔆 Agilent 22:                   | 57.50 UCL2,2   | 014  |                      |           |         |   | 13                             |          | q/Channel                 |
|---------------------------------|--|------|----------------------|-----------|---------|---|--------------------------------|----------|---------------------------|
| Ref -40 dBm<br>#Peak            | #Atten   | 0 dB |                      |           |         | M   | kr1 1.333 r<br>-64.00 dBi      |          | enter Freq<br>000000 GHz  |
| Log<br>10<br>dB/<br>Offst       | 1  |      |                      |           |         |   |                                |          | Start Freq<br>000000 GHz  |
| -20<br>dB<br>DI                 |  |      |                      |           |         |   |                                | 5.29     | Stop Freq<br>000000 GHz   |
| -64.0<br>dBm                    |  |      |                      |           |         |   |                                |          | CF Step                   |
| LgAv                            |  |      |                      |           |         |   |                                | Auto     | <u>Mai</u>                |
|                                 | y a ty sy balande yn<br>Y ddillig y fel fel fel fel yn |      | nieni in<br>Viennapi | intinen ( | nren ve | or <sup>u</sup> perseko<br>el <sup>tit</sup> opisioig | Nggalihuliri)<br>manandihuliri |          | req Offset<br>0000000 Hz  |
| ¤(f):<br>FTun                   |  |      |                      |           |         |   |                                | Si<br>On | ignal Track<br><u>Off</u> |
| Center 5.290 00<br>Res BW 3 MHz | 0 GHz  |      | 3W 3 N               |           |         |   | Span 0<br>ns (8001 pts         |          |                           |

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### TRAFFIC



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## 5.4.3. CHANNEL AVAILABILITY CHECK TIME

### PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5290 MHz and commence a CAC period. The time to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

## PROCEDURE FOR TIMING OF RADAR BURST

A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5290 MHz and commence a CAC period. A radar signal was triggered within 0 to 6 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. A sweep was started on the spectrum analyzer when a software command was issued to the EUT to change to 5290 MHz and commence a CAC period. A radar signal was triggered within 54 to 60 seconds after the beginning of the CAC period and transmissions on the channel were monitored on the spectrum analyzer.

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### QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS

### No Radar Triggered

| Beginning | Timing of        | CAC Period |
|-----------|------------------|------------|
| of CAC    | Start of Traffic | Time       |
| (sec)     | (sec)            | (sec)      |
| 0         | 60.7             | 60.7       |

#### **Radar Near Beginning of CAC**

| Beginning | Timing of   | Radar Relative  |
|-----------|-------------|-----------------|
| of CAC    | Radar Burst | to Start of CAC |
| (sec)     | (sec)       | (sec)           |
| 0         | 2.73        | 2.730           |

### Radar Near End of CAC

| Beginning  | Timing of      | Radar Relative  |
|------------|----------------|-----------------|
| of CAC     | Radar Burst    | to Start of CAC |
| (sec)<br>0 | (sec)<br>56.82 | (sec)<br>56.82  |
| •          | 00.02          | 00102           |

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### QUANTITATIVE RESULTS BASED ON LOG FILE TIME STAMPS

### No Radar Triggered

| Beginning of | End of CAC |            |
|--------------|------------|------------|
| CAC          |            | CAC Time   |
| (hh:mm:ss)   | (hh:mm:ss) | (hh:mm:ss) |
| 23:25:52     | 23:26:52   | 0:01:00    |

### Radar Near Beginning of CAC

| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 23:34:32     | 23:34:34       | 0:00:02         |

### Radar Near End of CAC

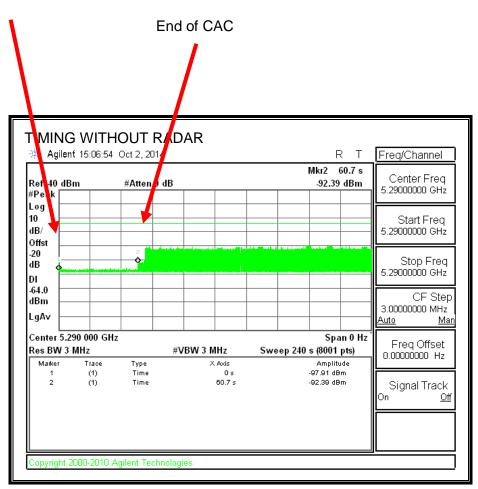
| Beginning of | Radar Detected | Radar Relative  |
|--------------|----------------|-----------------|
| CAC          |                | to Start of CAC |
| (hh:mm:ss)   | (hh:mm:ss)     | (hh:mm:ss)      |
| 23:43:08     | 23:44:05       | 0:00:57         |

### **QUALITATIVE RESULTS**

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

### TIMING WITHOUT RADAR DURING CAC

Command to Switch Channels Start of CAC



Transmissions begin on channel after completion of the CAC period.

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#### Log File of CAC Timing Without Radar

Jan 06 23:25:52 2014: %KERN-4-WARNING: DLS DFS State In-Service Monitoring(ISM) -> PRE-ISM Channel Availability Check. DLS - calling wlu\_iovar\_setint with wl\_set\_dfs\_test\_mode (wl.c:724) DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check

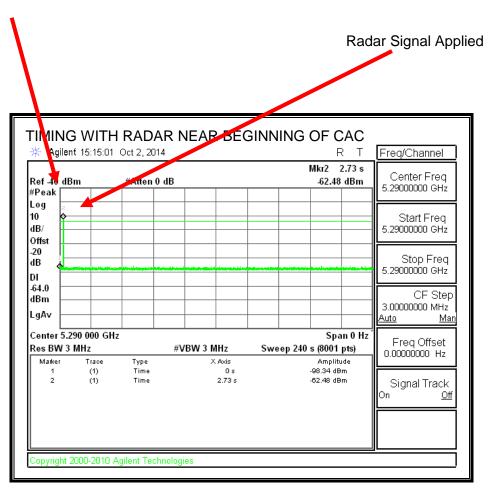
Jan 06 23:25:52 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check. width is 80

Jan 06 23:26:52 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> In-Service Monitoring(ISM).

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### TIMING WITH RADAR NEAR BEGINNING OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the Beginning of CAC

DLS - calling wlu\_iovar\_setint with wl\_set\_dfs\_test\_mode (wl.c:724)
DLS DFS State IDLE -> PRE-ISM Channel Availability Check
width is 80
 (cfg.c:572)
Jan 06 23:34:32 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel
Availability Check.
radio->info.current\_channel is 60 sys\_idx: 2
 (cfg.c:584)
Type 7 Radar Detection. Detected pulse index=0 fm\_min=0 fm\_max=0
nconsecq\_pulses=4. Time from last detection = 874, = 14min 34sec
DLS - time to delete the timer

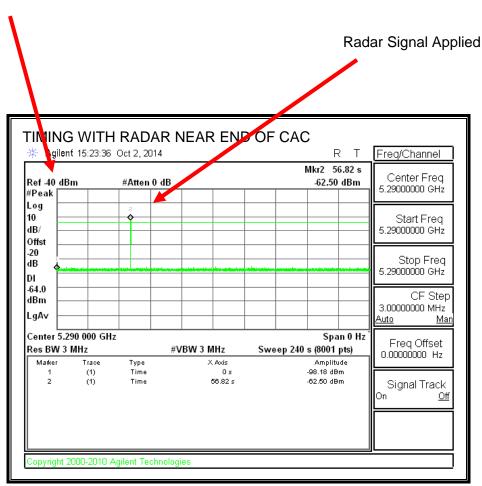
DLS DFS State PRE-ISM Channel Availability Check -> IDLE

Jan 06 23:34:34 2014: ap7532-15E794 : %RADIO-4-RADAR\_DETECTED: Radar found on channel 60 freq 5300 MHz

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### TIMING WITH RADAR NEAR END OF CAC

Command to Switch Channels Start of CAC



No EUT transmissions were observed after the radar signal.

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#### Log File of Radar at the End of CAC

DLS DFS State IDLE -> PRE-ISM Channel Availability Check width is 80 (cfg.c:572) Jan 06 23:43:08 2014: %KERN-4-WARNING: DLS DFS State IDLE -> PRE-ISM Channel Availability Check. DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check Jan 06 23:43:08 2014: %KERN-4-WARNING: DLS DFS State PRE-ISM Channel Availability Check -> PRE-ISM Channel Availability Check. radio->info.current\_channel is 60 sys\_idx: 2 (cfg.c:584) ap7532-15E794(config-device-84-24-8D-15-E7-94-if-radio2)#Type 7 Radar Detection. Detected pulse index=0 fm min=0 fm max=0 nconsecq pulses=4. Time from last de DLS - time to delete the timer DLS DFS State PRE-ISM Channel Availability Check -> IDLE Jan 06 23:44:05 2014: ap7532-15E794 : %RADIO-4-RADAR\_DETECTED: Radar found on

channel 60 freq 5300 MHz

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## 5.4.4. OVERLAPPING CHANNEL TESTS

### **RESULTS**

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

## 5.4.5. MOVE AND CLOSING TIME

### **REPORTING NOTES**

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

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

The aggregate channel closing transmission time is calculated as follows:

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

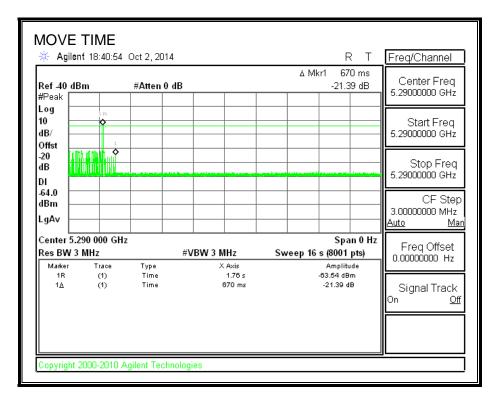
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

#### <u>RESULTS</u>

| Channel Move Time | Limit |
|-------------------|-------|
| (sec)             | (sec) |
| 0.067             | 10    |

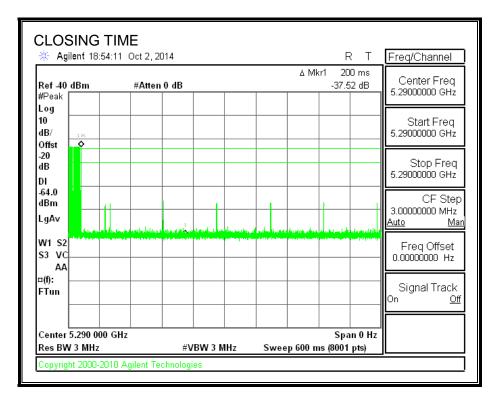
| Aggregate Channel Closing Transmission Time | Limit  |
|---|--------|
| (msec)                                      | (msec) |
| 14.0  | 60     |

### MOVE TIME



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### **CHANNEL CLOSING TIME**

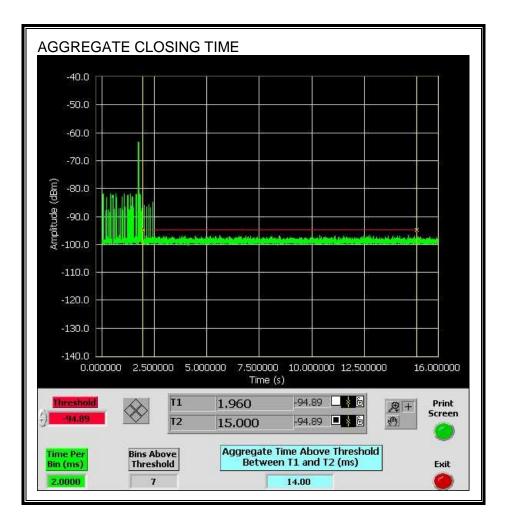


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### AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.

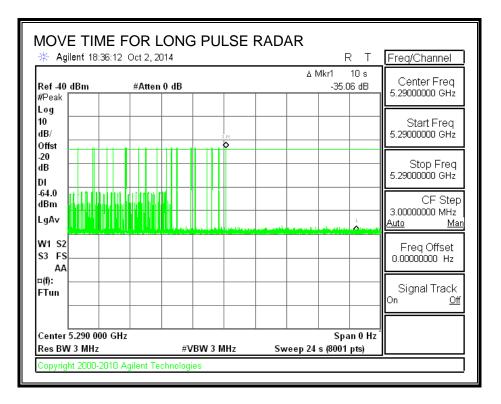


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## LONG PULSE CHANNEL MOVE TIME

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



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## 5.4.6. NON-OCCUPANCY PERIOD

### **RESULTS**

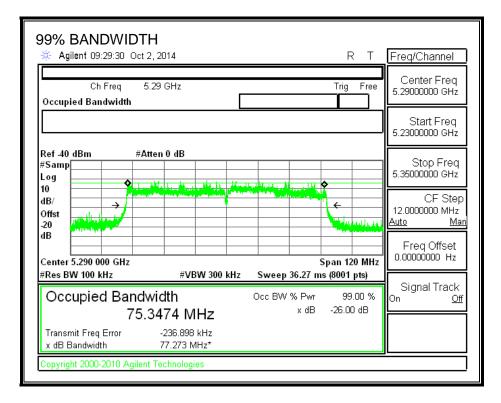
No EUT transmissions were observed on the test channel during the 30-minute observation time.

| Agilent 17:59:                   | 48 Oct 2, 2014 |          |         | RT                         | Freq/Channel                        |
|----------------------------------|----------------|----------|---------|----------------------------|-------------------------------------|
| ef 40 dBm<br>Peak                | #Atten 0 dB    |          | 14      | Mkr1 1.8 ks<br>-33.94 dB   | Center Freq<br>5.29000000 GHz       |
| og                               |                |          |         |                            |                                     |
| /<br>B/ <u>⊥</u> ℝ<br>ffst ♦     |                |          |         |                            | Start Freq<br>5.29000000 GHz        |
| 0 D                              |                |          |         |                            | Stop Freq<br>5.2900000 GHz          |
| 4.0<br>Bm ↓<br>gAv               |                |          |         | 1                          | CF Ste<br>3.00000000 MHz<br>Auto M: |
| /1 S2<br>3 FS<br>AA              |                |          |         |                            | Freq Offset<br>0.00000000 Hz        |
| f):<br>Гип                       |                |          |         |                            | Signal Track<br>On <u>O</u>         |
| enter 5.290 000 (<br>es BW 3 MHz |                | 3W 3 MHz | Sween 2 | Span 0 Hz<br>ks (8001 pts) |                                     |

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## 5.4.7. DETECTION BANDWIDTH

## **REFERENCE PLOT OF 99% POWER BANDWIDTH**



### **RESULTS**

| FL    | FH    | Detection | 99% Power | Ratio of        | Minimum |
|-------|-------|-----------|-----------|-----------------|---------|
|       |       | Bandwidth | Bandwidth | Detection BW to | Limit   |
|       |       |           |           | 99% Power BW    |         |
| (MHz) | (MHz) | (MHz)     | (MHz)     | (%)             | (%)     |
| 5247  | 5330  | 83        | 75.347    | 110.2           | 100     |

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### DETECTION BANDWIDTH PROBABILITY

| DE- | <b>FECTION BAN</b> | DWIDTH PROBABI       | ILITY RESULTS          |              |       |
|-----|--------------------|----------------------|------------------------|--------------|-------|
| ſ   | Detection Band     | width Test Results   |                        |              |       |
| ſ   | FCC Type 0 Wav     | veform: 1 us Pulse V | Nidth, 1428 us PRI, 14 | 8 Pulses per | Burst |
| 1   | Frequency          | Number of Trials     |                        | Detection    | Mark  |
|     | (MHz)              |                      |                        | (%)          |       |
|     | 5247               | 10                   | 10                     | 100          | FL    |
|     | 5248               | 10                   | 10                     | 100          |       |
|     | 5249               | 10                   | 10                     | 100          |       |
|     | 5250               | 10                   | 10                     | 100          |       |
|     | 5255               | 10                   | 10                     | 100          |       |
|     | 5260               | 10                   | 10                     | 100          |       |
|     | 5265               | 10                   | 10                     | 100          |       |
|     | 5270               | 10                   | 10                     | 100          |       |
|     | 5275               | 10                   | 10                     | 100          |       |
|     | 5280               | 10                   | 10                     | 100          |       |
|     | 5285               | 10                   | 10                     | 100          |       |
|     | 5290               | 10                   | 10                     | 100          |       |
|     | 5295               | 10                   | 10                     | 100          |       |
|     | 5300               | 10                   | 10                     | 100          |       |
|     | 5305               | 10                   | 10                     | 100          |       |
|     | 5310               | 10                   | 10                     | 100          |       |
|     | 5315               | 10                   | 10                     | 100          |       |
|     | 5320               | 10                   | 10                     | 100          |       |
|     | 5325               | 10                   | 10                     | 100          |       |
|     | 5330               | 10                   | 10                     | 100          | FH    |

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# 5.4.8. IN-SERVICE MONITORING

### **RESULTS**

| FCC Radar Test Summ    | ary              |                  |              |           |
|------------------------|------------------|------------------|--------------|-----------|
| Signal Type            | Number of Trials | Detection<br>(%) | Limit<br>(%) | Pass/Fail |
| FCC Short Pulse Type 1 | 30               | 96.67            | 60           | Pass      |
| FCC Short Pulse Type 2 | 30               | 100.00           | 60           | Pass      |
| FCC Short Pulse Type 3 | 30               | 100.00           | 60           | Pass      |
| FCC Short Pulse Type 4 | 30               | 93.33            | 60           | Pass      |
| Aggregate              |                  | 97.50            | 80           | Pass      |
| FCC Long Pulse Type 5  | 30               | 96.67            | 80           | Pass      |
| FCC Hopping Type 6     | 84               | 100.00           | 70           | Pass      |

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### **TYPE 1 DETECTION PROBABILITY**

| Data Sheet for FC | C Short Puls | e Radar Type 1   |       |                      |
|-------------------|--------------|------------------|-------|----------------------|
| 1 us Pulse Width  |              |                  |       |                      |
| Waveform          | PRI          | Pulses Per Burst | Test  | Successful Detection |
|                   | (us)         |                  | (A/B) | (Yes/No)             |
| 1001              | 3066         | 18               | A     | No                   |
| 1002              | 858          | 62               | Α     | Yes                  |
| 1003              | 798          | 67               | Α     | Yes                  |
| 1004              | 578          | 92               | Α     | Yes                  |
| 1005              | 898          | 59               | Α     | Yes                  |
| 1006              | 758          | 70               | Α     | Yes                  |
| 1007              | 538          | 99               | Α     | Yes                  |
| 1008              | 618          | 86               | Α     | Yes                  |
| 1009              | 598          | 89               | Α     | Yes                  |
| 1010              | 658          | 81               | Α     | Yes                  |
| 1011              | 818          | 65               | Α     | Yes                  |
| 1012              | 518          | 102              | Α     | Yes                  |
| 1013              | 878          | 61               | Α     | Yes                  |
| 1014              | 938          | 57               | Α     | Yes                  |
| 1015              | 778          | 68               | Α     | Yes                  |
| 1016              | 678          | 78               | В     | Yes                  |
| 1017              | 2994         | 18               | В     | Yes                  |
| 1018              | 2392         | 23               | В     | Yes                  |
| 1019              | 1657         | 32               | В     | Yes                  |
| 1020              | 1180         | 45               | В     | Yes                  |
| 1021              | 610          | 87               | В     | Yes                  |
| 1022              | 2876         | 19               | В     | Yes                  |
| 1023              | 724          | 73               | В     | Yes                  |
| 1024              | 2465         | 22               | В     | Yes                  |
| 1025              | 552          | 96               | В     | Yes                  |
| 1026              | 887          | 60               | В     | Yes                  |
| 1027              | 2021         | 27               | В     | Yes                  |
| 1028              | 557          | 95               | В     | Yes                  |
| 1029              | 652          | 81               | В     | Yes                  |
| 1030              | 2452         | 22               | В     | Yes                  |

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### TYPE 2 DETECTION PROBABILITY

| Waveform | Pulse Width | PRI    | Pulses Per Burst | Successful Detection |
|----------|-------------|--------|------------------|----------------------|
|          | (us)        | (us)   |                  | (Yes/No)             |
| 2001     | 4.9         | 161.00 | 23               | Yes                  |
| 2002     | 3.9         | 178.00 | 24               | Yes                  |
| 2003     | 1.4         | 230.00 | 29               | Yes                  |
| 2004     | 4.5         | 219.00 | 25               | Yes                  |
| 2005     | 2.1         | 172.00 | 24               | Yes                  |
| 2006     | 2.5         | 210.00 | 29               | Yes                  |
| 2007     | 1.5         | 172.00 | 28               | Yes                  |
| 2008     | 3.5         | 152.00 | 28               | Yes                  |
| 2009     | 1.5         | 160.00 | 25               | Yes                  |
| 2010     | 4.3         | 177.00 | 28               | Yes                  |
| 2011     | 4.7         | 159.00 | 25               | Yes                  |
| 2012     | 4.1         | 229.00 | 28               | Yes                  |
| 2013     | 4.5         | 189.00 | 28               | Yes                  |
| 2014     | 1.9         | 213.00 | 24               | Yes                  |
| 2015     | 2           | 230.00 | 27               | Yes                  |
| 2016     | 4.1         | 152.00 | 23               | Yes                  |
| 2017     | 4           | 174.00 | 24               | Yes                  |
| 2018     | 1.1         | 224.00 | 27               | Yes                  |
| 2019     | 4.3         | 184.00 | 23               | Yes                  |
| 2020     | 1           | 216.00 | 28               | Yes                  |
| 2021     | 4.6         | 214.00 | 24               | Yes                  |
| 2022     | 2.9         | 188.00 | 27               | Yes                  |
| 2023     | 2           | 175.00 | 29               | Yes                  |
| 2024     | 3.7         | 187.00 | 27               | Yes                  |
| 2025     | 1.5         | 193.00 | 23               | Yes                  |
| 2026     | 4.9         | 200.00 | 29               | Yes                  |
| 2027     | 2.6         | 230.00 | 28               | Yes                  |
| 2028     | 2.1         | 229.00 | 28               | Yes                  |
| 2029     | 1.4         | 222.00 | 28               | Yes                  |
| 2030     | 1.6         | 157.00 | 28               | Yes                  |

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### TYPE 3 DETECTION PROBABILITY

| Naveform | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|----------|---------------------|-------------|------------------|----------------------------------|
| 3001     | 8.2                 | 414.00      | 16               | Yes                              |
| 3002     | 7.6                 | 398.00      | 17               | Yes                              |
| 3003     | 6                   | 433.00      | 18               | Yes                              |
| 3004     | 5.2                 | 356.00      | 16               | Yes                              |
| 3005     | 7.8                 | 411.00      | 16               | Yes                              |
| 3006     | 6.8                 | 428.00      | 17               | Yes                              |
| 3007     | 10                  | 475.00      | 18               | Yes                              |
| 3008     | 8.9                 | 344.00      | 18               | Yes                              |
| 3009     | 9.7                 | 325.00      | 18               | Yes                              |
| 3010     | 7.5                 | 311.00      | 18               | Yes                              |
| 3011     | 5.4                 | 271.00      | 16               | Yes                              |
| 3012     | 8.5                 | 426.00      | 16               | Yes                              |
| 3013     | 8                   | 296.00      | 16               | Yes                              |
| 3014     | 9.3                 | 390.00      | 17               | Yes                              |
| 3015     | 9.7                 | 357.00      | 16               | Yes                              |
| 3016     | 9.2                 | 303.00      | 16               | Yes                              |
| 3017     | 9.6                 | 454.00      | 16               | Yes                              |
| 3018     | 9.2                 | 271.00      | 16               | Yes                              |
| 3019     | 5                   | 286.00      | 16               | Yes                              |
| 3020     | 7.6                 | 279.00      | 16               | Yes                              |
| 3021     | 5.3                 | 405.00      | 16               | Yes                              |
| 3022     | 9.6                 | 404.00      | 16               | Yes                              |
| 3023     | 6.5                 | 420.00      | 18               | Yes                              |
| 3024     | 5.4                 | 416.00      | 17               | Yes                              |
| 3025     | 6.4                 | 425.00      | 17               | Yes                              |
| 3026     | 6.1                 | 296.00      | 18               | Yes                              |
| 3027     | 9.9                 | 333.00      | 17               | Yes                              |
| 3028     | 5.5                 | 422.00      | 18               | Yes                              |
| 3029     | 7.7                 | 487         | 17               | Yes                              |

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### **TYPE 4 DETECTION PROBABILITY**

| Waveform | Pulse Width<br>(us) | PRI<br>(us) | Pulses Per Burst | Successful Detection<br>(Yes/No) |
|----------|---------------------|-------------|------------------|----------------------------------|
| 4001     | 18                  | 390.00      | 13               | Yes                              |
| 4002     | 16.1                | 457.00      | 12               | Yes                              |
| 4003     | 17.9                | 428.00      | 16               | No                               |
| 4004     | 19.5                | 375.00      | 12               | Yes                              |
| 4005     | 15                  | 328.00      | 13               | Yes                              |
| 4006     | 10.9                | 369.00      | 15               | Yes                              |
| 4007     | 14.2                | 372.00      | 12               | Yes                              |
| 4008     | 12.1                | 497.00      | 13               | Yes                              |
| 4009     | 14.6                | 371.00      | 16               | Yes                              |
| 4010     | 14.9                | 452.00      | 13               | Yes                              |
| 4011     | 18.1                | 497.00      | 16               | Yes                              |
| 4012     | 16.2                | 389.00      | 15               | Yes                              |
| 4013     | 18.6                | 393.00      | 15               | Yes                              |
| 4014     | 10.1                | 354.00      | 12               | Yes                              |
| 4015     | 18.1                | 273.00      | 13               | Yes                              |
| 4016     | 12                  | 360.00      | 14               | Yes                              |
| 4017     | 14.6                | 290.00      | 13               | Yes                              |
| 4018     | 19                  | 302.00      | 13               | Yes                              |
| 4019     | 11.3                | 293.00      | 15               | Yes                              |
| 4020     | 18.7                | 400.00      | 16               | Yes                              |
| 4021     | 16.2                | 327.00      | 15               | No                               |
| 4022     | 18.6                | 343.00      | 14               | Yes                              |
| 4023     | 10.9                | 403.00      | 14               | Yes                              |
| 4024     | 17.2                | 482.00      | 14               | Yes                              |
| 4025     | 17.2                | 298.00      | 12               | Yes                              |
| 4026     | 13.1                | 300.00      | 16               | Yes                              |
| 4027     | 15.7                | 411.00      | 12               | Yes                              |
| 4028     | 16.7                | 328.00      | 15               | Yes                              |
| 4029     | 10.4                | 347.00      | 13               | Yes                              |
| 4030     | 19.6                | 378.00      | 12               | Yes                              |

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### TYPE 5 DETECTION PROBABILITY

| Sheet for FCC L<br>Trial | Successful Detection |  |
|--------------------------|----------------------|--|
|                          | (Yes/No)             |  |
| 1                        | Yes                  |  |
| 2                        | Yes                  |  |
| 3                        | Yes                  |  |
| 4                        | Yes                  |  |
| 5                        | Yes                  |  |
| 6                        | Yes                  |  |
| 7                        | Yes                  |  |
| 8                        | Yes                  |  |
| 9                        | Yes                  |  |
| 10                       | No                   |  |
| 11                       | Yes                  |  |
| 12                       | Yes                  |  |
| 13                       | Yes                  |  |
| 14                       | Yes                  |  |
| 15                       | Yes                  |  |
| 16                       | Yes                  |  |
| 17                       | Yes                  |  |
| 18                       | Yes                  |  |
| 19                       | Yes                  |  |
| 20                       | Yes                  |  |
| 21                       | Yes                  |  |
| 22                       | Yes                  |  |
| 23                       | Yes                  |  |
| 24                       | Yes                  |  |
| 25                       | Yes                  |  |
| 26                       | Yes                  |  |
| 27                       | Yes                  |  |
| 28                       | Yes                  |  |
| 29                       | Yes                  |  |
| 30                       | Yes                  |  |

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

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### **TYPE 6 DETECTION PROBABILITY**

|          | for FCC Hopping Rada<br>Width, 333 us PRI, 9 |                  | 1 Burst per Hop | 9          |
|----------|--|------------------|-----------------|------------|
| NTIA Aug | ust 2005 Hopping Se                          | quence           |                 |            |
| Trial    | Starting Index                               | Signal Generator | Hops within     | Successful |
| THAT     | Within Sequence                              | Frequency        | Detection BW    | Detection  |
|          |  | (MHz)            |                 | (Yes/No)   |
| 1        | 186  | 5247             | 18              | Yes        |
| 2        | 661  | 5248             | 15              | Yes        |
| 3        | 1136   | 5249             | 16              | Yes        |
| 4        | 1611   | 5250             | 18              | Yes        |
| 5        | 2086   | 5251             | 14              | Yes        |
| 6        | 2561   | 5252             | 16              | Yes        |
| 7        | 3036   | 5253             | 16              | Yes        |
| 8        | 3511   | 5254             | 12              | Yes        |
| 9        | 3986   | 5255             | 17              | Yes        |
| 10       | 4461   | 5256             | 16              | Yes        |
| 11       | 4936   | 5257             | 13              | Yes        |
| 12       | 5411   | 5258             | 8               | Yes        |
| 13       | 5886   | 5259             | 17              | Yes        |
| 14       | 6361   | 5260             | 18              | Yes        |
| 15       | 6836   | 5261             | 18              | Yes        |
| 16       | 7311   | 5262             | 15              | Yes        |
| 17       | 7786   | 5263             | 16              | Yes        |
| 18       | 8261   | 5264             | 25              | Yes        |
| 19       | 8736   | 5265             | 22              | Yes        |
| 20       | 9211   | 5266             | 13              | Yes        |
| 21       | 9686   | 5267             | 17              | Yes        |
| 22       | 10161  | 5268             | 10              | Yes        |
| 23       | 10636  | 5269             | 24              | Yes        |
| 24       | 11111  | 5270             | 18              | Yes        |
| 25       | 11586  | 5271             | 17              | Yes        |
| 26       | 12061  | 5272             | 19              | Yes        |
| 27       | 12536  | 5273             | 14              | Yes        |
| 28       | 13011  | 5274             | 20              | Yes        |
| 29       | 13486  | 5275             | 17              | Yes        |
| 30       | 13961  | 5276             | 21              | Yes        |
| 31       | 14436  | 5277             | 23              | Yes        |
| 32       | 14911  | 5278             | 17              | Yes        |
| 33       | 15386  | 5279             | 16              | Yes        |
| 34       | 15861  | 5280             | 18              | Yes        |
| 35       | 16336  | 5281             | 13              | Yes        |
| 36       | 16811  | 5282             | 17              | Yes        |
| 37       | 17286  | 5283             | 17              | Yes        |
| 38       | 17761  | 5284             | 9               | Yes        |
| 39       | 18236  | 5285             | 13              | Yes        |

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### **TYPE 6 DETECTION PROBABILITY (CONTINUED)**

| 40         | 18711            | 5286 | 18 | Yes |
|------------|------------------|------|----|-----|
| 41         | 19186            | 5287 | 12 | Yes |
| 42         | 19661            | 5288 | 16 | Yes |
| 43         | 20136            | 5289 | 15 | Yes |
| 44         | 20611            | 5290 | 21 | Yes |
| 45         | 21086            | 5291 | 19 | Yes |
| 46         | 21561            | 5292 | 15 | Yes |
| 47         | 22036            | 5293 | 21 | Yes |
| 48         | 22511            | 5294 | 16 | Yes |
| 40         | 22986            | 5295 | 12 | Yes |
| 4 <i>5</i> | 23461            | 5296 | 15 | Yes |
| 51         | 23936            | 5297 | 20 | Yes |
| 52         | 24411            | 5298 | 18 | Yes |
| 53         | 24886            | 5299 | 24 | Yes |
| 55         | 25361            | 5300 | 15 | Yes |
| 55         | 25836            | 5301 | 7  | Yes |
| 55         | 26311            | 5302 | 11 | Yes |
| 57         | 26786            | 5303 | 16 | Yes |
| 57         | 27261            | 5304 | 18 | Yes |
| 59         | 27736            | 5305 | 16 | Yes |
| 60         | 28211            | 5306 | 10 | Yes |
| 61         | 28686            | 5307 | 19 | Yes |
| 62         | 20000            | 5308 | 20 | Yes |
| 63         | 29636            | 5309 | 13 | Yes |
| 64         | 30111            | 5310 | 13 | Yes |
| 65         | 30586            | 5311 | 14 | Yes |
| 66         | 31061            | 5312 | 20 | Yes |
| 67         | 31536            | 5313 | 17 | Yes |
| 68         | 32011            | 5314 | 16 | Yes |
| 69         | 32486            | 5315 | 18 | Yes |
| 70         | -32575           | 5316 | 14 | Yes |
| 71         | -32100           | 5317 | 20 | Yes |
| 72         | -31625           | 5318 | 17 | Yes |
| 73         | -31150           | 5319 | 18 | Yes |
| 74         | -30675           | 5320 | 20 | Yes |
| 75         | -30200           | 5321 | 20 | Yes |
| 76         | -29725           | 5322 | 22 | Yes |
| 77         | -29725           | 5323 | 13 | Yes |
| 78         | -29250           | 5323 | 7  | Yes |
| 78         |                  | 5325 | 22 | Yes |
| 80         | -28300<br>-27825 | 5325 | 16 | Yes |
| 80         | -27350           | 5320 | 18 | Yes |
| 81         | -26875           | 5328 | 18 | Yes |
| 82         |                  | 5328 | 25 | Yes |
| 83         | -26400<br>-25925 | 5330 | 23 | Yes |
| 04         | -25925           | 2220 | 22 | res |

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