

## **TEST REPORT**

### **Covering the DYNAMIC FREQUENCY SELECTION (DFS) REQUIREMENTS OF**

### **FCC Part 15 Subpart E (UNII), RSS-247, Issue 1**

### **Hewlett Packard Model(s): SDGOB-1506 and SDGOB-1505**

IC CERTIFICATION #: 466D-SDGOB1505 and 466D-SDGOB1506  
FCC ID: B94SDGOB1505 and B94SDGOB1506

COMPANY: Hewlett Packard  
3000 Hanover Street  
Palo Alto, CA, 94304

TEST SITE: National Technical Systems - Silicon Valley  
41039 Boyce Road  
Fremont, CA 94538

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TEST ENGINEER: Mehran Birgani

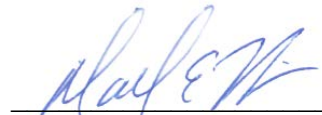
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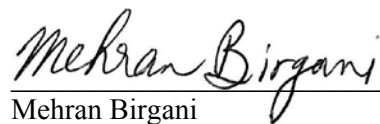
PROGRAM MGR /  
TECHNICAL REVIEWER:



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Mark Hill  
Staff Engineer

REPORT PREPARER:



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Mehran Birgani  
EMC Engineer

QUALITY ASSURANCE DELEGATE



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David Guidotti  
Senior Technical Writer

**REVISION HISTORY**

| Rev # | Date                  | Comments          | Modified By |
|-------|-----------------------|-------------------|-------------|
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**SCOPE**

Test data has been taken pursuant to the relevant DFS requirements of the following standard(s):

- FCC Part 15 Subpart E Unlicensed National Information Infrastructure (U-NII) Devices.
- RSS-247, Issue 1, Digital Transmission Systems (DTSSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices

Tests were performed in accordance with these standards together with the current published versions of the basic standards referenced therein including FCC KDB 905462 D03 as outlined in NTS Silicon Valley test procedures. The test results recorded herein are based on a single type test of the Hewlett Packard model SDGOB-1505 and therefore apply only to the tested sample. The sample was selected and prepared by Tarandeep Kaur of Hewlett Packard

**OBJECTIVE**

The objective of the manufacturer is to comply with the standards identified in the previous section. In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards. Compliance with some DFS features is covered through a manufacturer statement or through observation of the device.

Testing was performed only on model SDGOB-1505. This model was considered representative of the SDGOB-1506. Refer to the product description section for full details.

**STATEMENT OF COMPLIANCE**

The tested sample of the Hewlett Packard model SDGOB-1505 complied with the DFS requirements of FCC Part 15.407(h)(2), RSS-247 Section 6.3.

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

**DEVIATIONS FROM THE STANDARD**

No deviations were made from the test methods and requirements covered by the scope of this report.

**TEST RESULTS****TEST RESULTS SUMMARY – FCC Part 15, CLIENT DEVICE**

| Table 1 - FCC Part 15 Subpart E Client Device Test Result Summary                           |            |               |                                   |              |            |        |
|---------------------------------------------------------------------------------------------|------------|---------------|-----------------------------------|--------------|------------|--------|
| Description                                                                                 | Radar Type | EUT Frequency | Measured Value                    | Requirement  | Test Data  | Status |
| Channel closing transmission time                                                           | Type 0     | 5510 MHz      | 0 ms                              | 1000 ms      | Appendix C | Pass   |
| Channel move time                                                                           | Type 0     | 5510 MHz      | 0.1 s                             | 10 s         | Appendix C | Pass   |
| Non-occupancy period - associated                                                           | Type 0     | 5510 MHz      | > 30 minutes                      | > 30 minutes | Appendix C | Pass   |
| Passive Scanning                                                                            | N/A        | N/A           | Refer to manufacturer attestation |              |            |        |
| 1) Tests were performed using the conducted radiated test method.                           |            |               |                                   |              |            |        |
| 2) Channel availability check and detection threshold are not applicable to client devices. |            |               |                                   |              |            |        |

**MEASUREMENT UNCERTAINTIES**

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level, with a coverage factor (k=2) and were calculated in accordance with UKAS document LAB 34.

| Measurement                                                | Measurement Unit | Expanded Uncertainty         |
|------------------------------------------------------------|------------------|------------------------------|
| Timing<br>(Channel move time, aggregate transmission time) | ms               | Timing resolution<br>± 0.24% |
| Timing<br>(non occupancy period)                           | seconds          | 5 seconds                    |
| DFS Threshold (radiated)                                   | dBm              | 1.6                          |
| DFS Threshold (conducted)                                  | dBm              | 1.2                          |

**EQUIPMENT UNDER TEST (EUT) DETAILS****GENERAL**

The Hewlett Packard model SDGOB-1505 is an IEEE 802.11 a/b/g/n wireless network adapter that operates in both the 2.4GHz and 5GHz bands. The card supports 802.11n modes in 20MHz and 40MHz.

The sample was received on August 04, 2015 and tested on August 04, 2015. The EUT consisted of the following component(s):

| Manufacturer    | Model      | Description | Serial Number |
|-----------------|------------|-------------|---------------|
| Hewlett Packard | SDGOB-1505 | 802.11abgn  | 707781772513  |

**OTHER EUT DETAILS**

SDGOB-1506:

USB interface

Wifi + BLE operation supported

Wifi operation 2.4GHz and 5GHz bands

802.11 a/b/g/n20 2x2 operation

40MHz bandwidths supported in 5GHz bands only

BT Low Energy only

WiFi+BT simultaneous Tx not supported

Two configurations: one using fixed internal/onboard antennas, and one with u.FL connectors to allow for external antennas.

SDGOB-1505 is identical to the SDGOB-1506, except that the BLE function is disabled via a resistor change.

The manufacturer declared values for the EUT operational characteristics that affect DFS are as follows:

**Operating Modes (5250 – 5350 MHz, 5470 – 5725 MHz)**

☒ Client Device without In-Service Monitoring

**Antenna Gains / EIRP (5250 – 5350 MHz, 5470 – 5725 MHz)**

|                            | 5250 – 5350 MHz | 5470 – 5725 MHz |
|----------------------------|-----------------|-----------------|
| Lowest Antenna Gain (dBi)  | 1.9             | 1.9             |
| Highest Antenna Gain (dBi) | 3.5             | 3.5             |

**Channel Protocol**

☒ IP Based

Note: Testing was performed using the external antenna option (1.9dBi).

**ENCLOSURE**

The EUT has no enclosure. It is designed to be installed within the enclosure of a host computer.

**MODIFICATIONS**

The EUT did not require modifications during testing in order to comply with the requirements of the standards referenced in this test report.

**SUPPORT EQUIPMENT**

The following equipment was used as local support equipment for testing:

| Manufacturer | Model         | Description         | Serial Number      | FCC ID |
|--------------|---------------|---------------------|--------------------|--------|
| <i>Cisco</i> | <i>WAP371</i> | <i>Access Point</i> | <i>CCQ17410HNR</i> |        |
| HP           | 6910p         | Laptop              | CND8280MD5         | DoC    |
| Lenovo       | G560          | Laptop              | CBU4495771         | DoC    |

The italicized device was the master device.

**EUT INTERFACE PORTS**

The I/O cabling configuration during testing was as follows:

| Port         | Connected To    | Cable(s)    |                        |            |
|--------------|-----------------|-------------|------------------------|------------|
|              |                 | Description | Shielded or Unshielded | Length (m) |
| EUT          | Laptop (Lenovo) | USB         | Shielded               | 1.0        |
| Access Point | Laptop (HP)     | STP         | Shielded               | 10.0       |

**EUT OPERATION**

The EUT was operating with the following software listed below. The software is secured by encryption to prevent the user from disabling the DFS function.

Client Device: 6.37.214.12

The manufacturer provided special software that over-rode the non-occupancy mechanism (allowing return to the same channel) for the purposes of determining the probability of detection. This test feature was disabled and the normal operating software enabled for verifying the 30-minute non-occupancy period and channel move time.

During the in-service monitoring detection probability and channel moving tests the system was configured with a streaming video file from the master device (sourced by the PC connected to the master device via an Ethernet interface) to the client device.

The streamed file was FCC movie and the client device was using classic media player to view the file. The channel loading was evaluated to be 20% (refer to figure 10) meeting the approximately 17% loading as required by FCC KDB 905462 D02

**RADAR WAVEFORMS**

| Table 2 - FCC Short Pulse Radar Test Waveforms                                                                                       |    |                                                   |                                                                                                             |                                                           |                                    |                                |
|--------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------|--------------------------------|
| Radar Type                                                                                                                           |    | Pulse Width<br>(μsec)                             | PRI<br>(μsec)                                                                                               | Pulses /<br>burst                                         | Minimum<br>Detection<br>Percentage | Minimum<br>Number of<br>Trials |
| 0                                                                                                                                    |    | 1                                                 | 1428                                                                                                        | 18                                                        | See <b>Note 1</b>                  |                                |
| 1                                                                                                                                    | 1a | 1                                                 | 15 unique PRI<br>values randomly<br>selected from<br>the list of 23 PRI<br>values in <b>Note 2</b><br>below | Round<br>Up<br>1/360*<br>19*10 <sup>6</sup> /<br>PRI μsec | 60%                                | 15                             |
|                                                                                                                                      | 1b |                                                   | 518-3066 with<br>minimum<br>increment of 1<br>μsec, excluding<br>PRI values<br>selected in 1a               |                                                           |                                    | 15                             |
| 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 is used for the detection bandwidth test, channel move time, and channel closing time tests. |    |                                                   |                                                                                                             |                                                           |                                    |                                |
| <b>Note 2:</b> Pulse repetition intervals values for Test 1a above                                                                   |    |                                                   |                                                                                                             |                                                           |                                    |                                |
| Pulse Repetition Frequency<br>Number                                                                                                 |    | Pulse Repetition Frequency<br>(Pulses Per Second) |                                                                                                             | Pulse Repetition Interval<br>(Microseconds)               |                                    |                                |
| 1                                                                                                                                    |    | 1930.5                                            |                                                                                                             | 518                                                       |                                    |                                |
| 2                                                                                                                                    |    | 1858.7                                            |                                                                                                             | 538                                                       |                                    |                                |
| 3                                                                                                                                    |    | 1792.1                                            |                                                                                                             | 558                                                       |                                    |                                |
| 4                                                                                                                                    |    | 1730.1                                            |                                                                                                             | 578                                                       |                                    |                                |
| 5                                                                                                                                    |    | 1672.2                                            |                                                                                                             | 598                                                       |                                    |                                |
| 6                                                                                                                                    |    | 1618.1                                            |                                                                                                             | 618                                                       |                                    |                                |
| 7                                                                                                                                    |    | 1567.4                                            |                                                                                                             | 638                                                       |                                    |                                |
| 8                                                                                                                                    |    | 1519.8                                            |                                                                                                             | 658                                                       |                                    |                                |
| 9                                                                                                                                    |    | 1474.9                                            |                                                                                                             | 678                                                       |                                    |                                |
| 10                                                                                                                                   |    | 1432.7                                            |                                                                                                             | 698                                                       |                                    |                                |
| 11                                                                                                                                   |    | 1392.8                                            |                                                                                                             | 718                                                       |                                    |                                |
| 12                                                                                                                                   |    | 1355                                              |                                                                                                             | 738                                                       |                                    |                                |
| 13                                                                                                                                   |    | 1319.3                                            |                                                                                                             | 758                                                       |                                    |                                |
| 14                                                                                                                                   |    | 1285.3                                            |                                                                                                             | 778                                                       |                                    |                                |
| 15                                                                                                                                   |    | 1253.1                                            |                                                                                                             | 798                                                       |                                    |                                |
| 16                                                                                                                                   |    | 1222.5                                            |                                                                                                             | 818                                                       |                                    |                                |
| 17                                                                                                                                   |    | 1193.3                                            |                                                                                                             | 838                                                       |                                    |                                |
| 18                                                                                                                                   |    | 1165.6                                            |                                                                                                             | 858                                                       |                                    |                                |
| 19                                                                                                                                   |    | 1139                                              |                                                                                                             | 878                                                       |                                    |                                |
| 20                                                                                                                                   |    | 1113.6                                            |                                                                                                             | 898                                                       |                                    |                                |
| 21                                                                                                                                   |    | 1089.3                                            |                                                                                                             | 918                                                       |                                    |                                |
| 22                                                                                                                                   |    | 1066.1                                            |                                                                                                             | 938                                                       |                                    |                                |
| 23                                                                                                                                   |    | 326.2                                             |                                                                                                             | 3066                                                      |                                    |                                |

**Table 3 - FCC Long Pulse Radar Test Waveforms**

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

**Table 4 - FCC Frequency Hopping Radar Test Waveforms**

| Radar Type | Pulse Width (μsec) | PRI (μsec) | Pulses / hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Detection Percentage | Minimum Number of Trials |
|------------|--------------------|------------|--------------|--------------------|--------------------------------|------------------------------|--------------------------|
| 6          | 1                  | 333        | 9            | 0.333              | 300                            | 70%                          | 30                       |

## DFS TEST METHODS

### RADIATED TEST METHOD

The combination of master and slave devices is located in an anechoic chamber. The simulated radar waveform is transmitted from a directional horn antenna (typically an EMCO 3115) toward the unit performing the radar detection (radar detection device, RDD). Every effort is made to ensure that the main beam of the EUT's antenna is aligned with the radar-generating antenna which is oriented in vertical polarization.

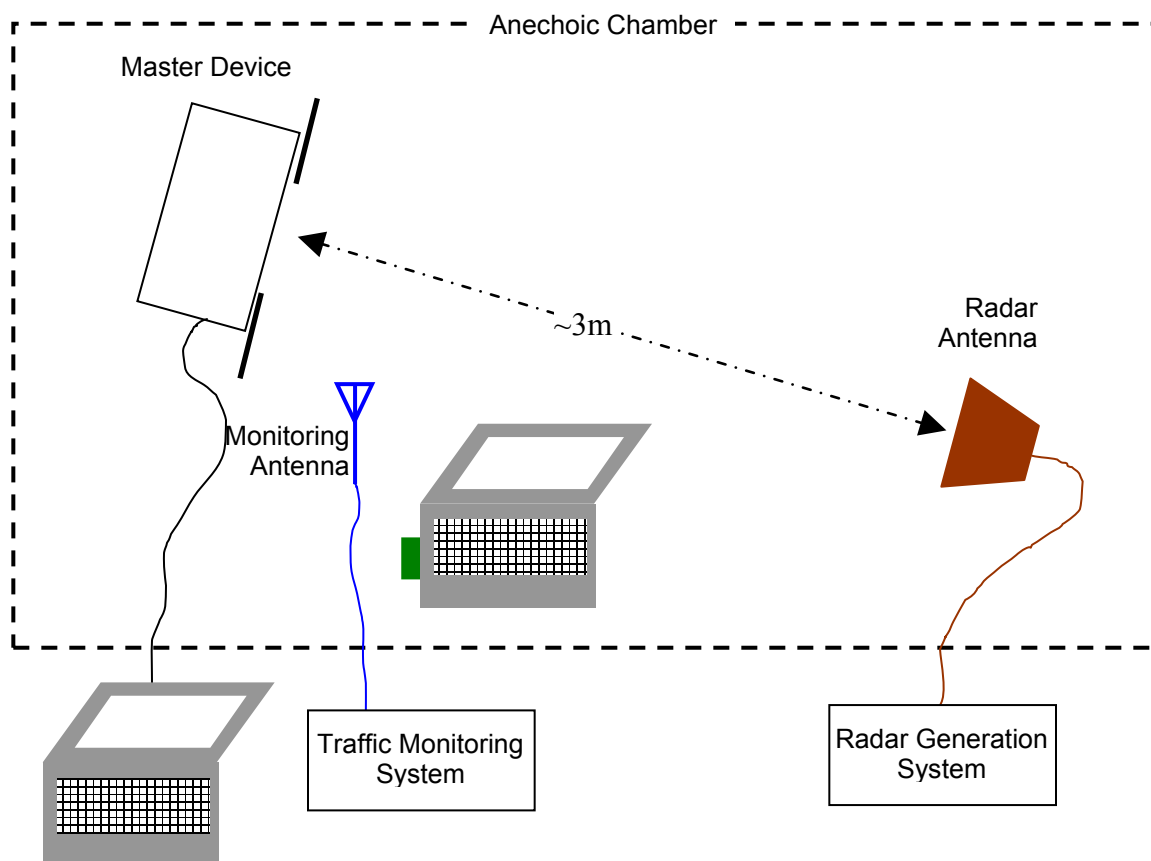


Figure 1 Test Configuration for radiated Measurement Method

The signal level of the simulated waveform is set to a reference level equal to the threshold level (plus 1dB if testing against FCC requirements). Lower levels may also be applied on request of the manufacturer. The level reported is the level at the RDD antenna and so it is not corrected for the RDD's antenna gain. The RDD is configured with the lowest gain antenna assembly intended for use with the device.

The signal level is verified by measuring the CW signal level from the radar generation system using a reference antenna of gain  $G_{REF}$  (dBi). The radar signal level is calculated from the measured level,  $R$  (dBm), and any cable loss,  $L$  (dB), between the reference antenna and the measuring instrument:

$$\text{Applied level (dBm)} = R - G_{REF} + L$$

If both master and client devices have radar detection capability then the device not under test is positioned with absorbing material between its antenna and the radar generating antenna, and the radar level at the non RDD is verified to be at least 20dB below the threshold level to ensure that any responses are due to the RDD detecting radar.

The antenna connected to the channel monitoring subsystem is positioned to allow both master and client transmissions to be observed, with the level of the EUT's transmissions between 6 and 10dB higher than those from the other device.

## **DFS MEASUREMENT INSTRUMENTATION**

### **RADAR GENERATION SYSTEM**

An Agilent PSG is used as the radar-generating source. The integral arbitrary waveform generators are programmed using Agilent's "Pulse Building" software and NTS Silicon Valley custom software to produce the required waveforms, with the capability to produce both un-modulated and modulated (FM Chirp) pulses. Where there are multiple values for a specific radar parameter then the software selects a value at random and, for FCC tests, the software verifies that the resulting waveform is truly unique.

With the exception of the hopping waveforms required by the FCC's rules (see below), the radar generator is set to a single frequency within the radar detection bandwidth of the EUT. The frequency is varied from trial to trial by stepping in 5MHz steps. For radar types with variable parameters, each detection probability trial is performed using a unique set of parameters obtained by a random selection with uniform distribution for each of the variable parameters.

Frequency hopping radar waveforms are simulated using a time domain model. A randomly hopping sequence algorithm (which uses each channel in the hopping radar's range once in a hopping sequence) generates a hop sequence. A segment of the first 100 elements of the hop sequence are then examined to determine if it contains one or more frequencies within the radar detection bandwidth of the EUT. If it does not then the first element of the segment is discarded and the next frequency in the sequence is added. The process repeats until a valid segment is produced. The radar system is then programmed to produce bursts at time slots coincident with the frequencies within the segment that fall in the detection bandwidth. The frequency of the generator is stepped in 1 MHz increments across the EUT's detection range.

The radar signal level is verified during testing using a long duration pulse waveform generated in the same manner as the normal radar generated signals.

The generator output is connected to the coupling port of the conducted set-up or to the radar-generating antenna. The radar generating antenna (when used) is oriented for vertical polarization.

**CHANNEL MONITORING SYSTEM**

Channel monitoring is achieved using a spectrum analyzer and digital storage oscilloscope. The analyzer is configured in a zero-span mode, center frequency set to the radar waveform's frequency or the center frequency of the EUT's operating channel. The IF output of the analyzer is connected to one input of the oscilloscope.

A signal generator output is set to send either the modulating signal directly or a pulse gate with an output pulse co-incident with each radar pulse. This output is connected to a second input on the oscilloscope and the oscilloscope displays both the channel traffic (via the if input) and the radar pulses on its display.

For in service monitoring tests the analyzer sweep time is set to > 20 seconds and the oscilloscope is configured with a data record length of 10 seconds for the short duration and frequency hopping waveforms, 20 seconds for the long duration waveforms. Both instruments are set for a single acquisition sequence. The analyzer is triggered 500ms before the start of the waveform and the oscilloscope is triggered directly by the modulating pulse train. Timing measurements for aggregate channel transmission time and channel move time are made from the oscilloscope data, with the end of the waveform clearly identified by the pulse train on one trace. The analyzer trace data is used to confirm that the last transmission occurred within the 10-second record of the oscilloscope. If necessary the record length of the oscilloscope is expanded to capture the last transmission on the channel prior to the channel move.

Channel availability check time timing plots are made using the analyzer. The analyzer is triggered at start of the EUT's channel availability check and used to verify that the EUT does not transmit when radar is applied during the check time.

The analyzer detector and oscilloscope sampling mode is set to peak detect for all plots.

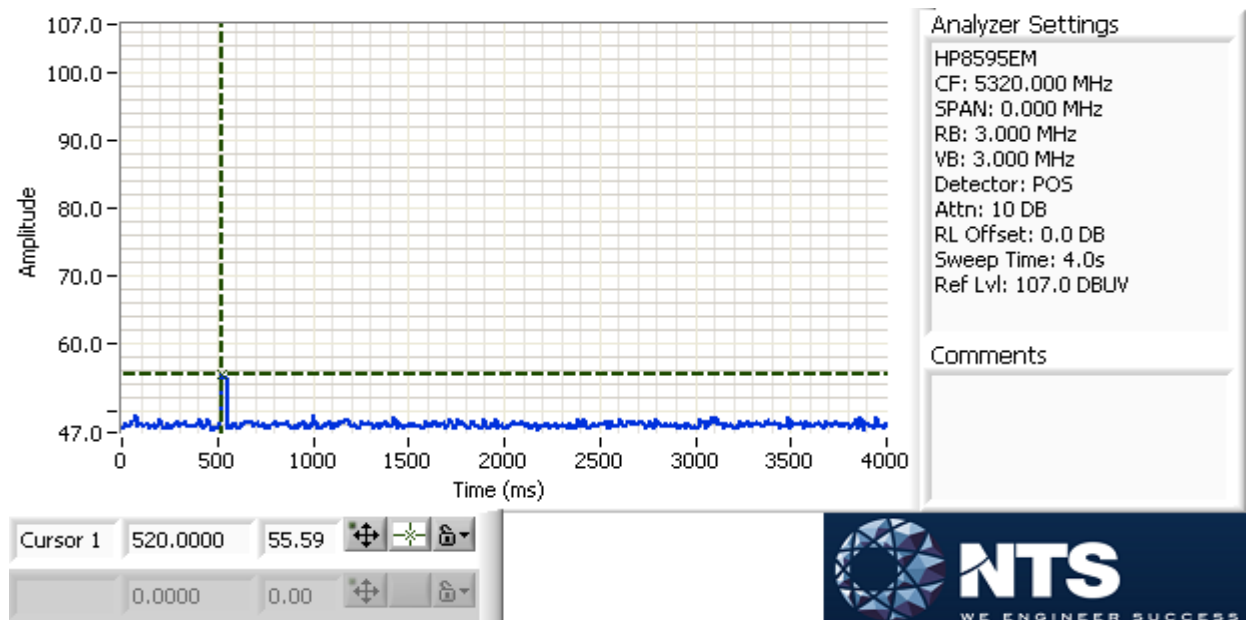
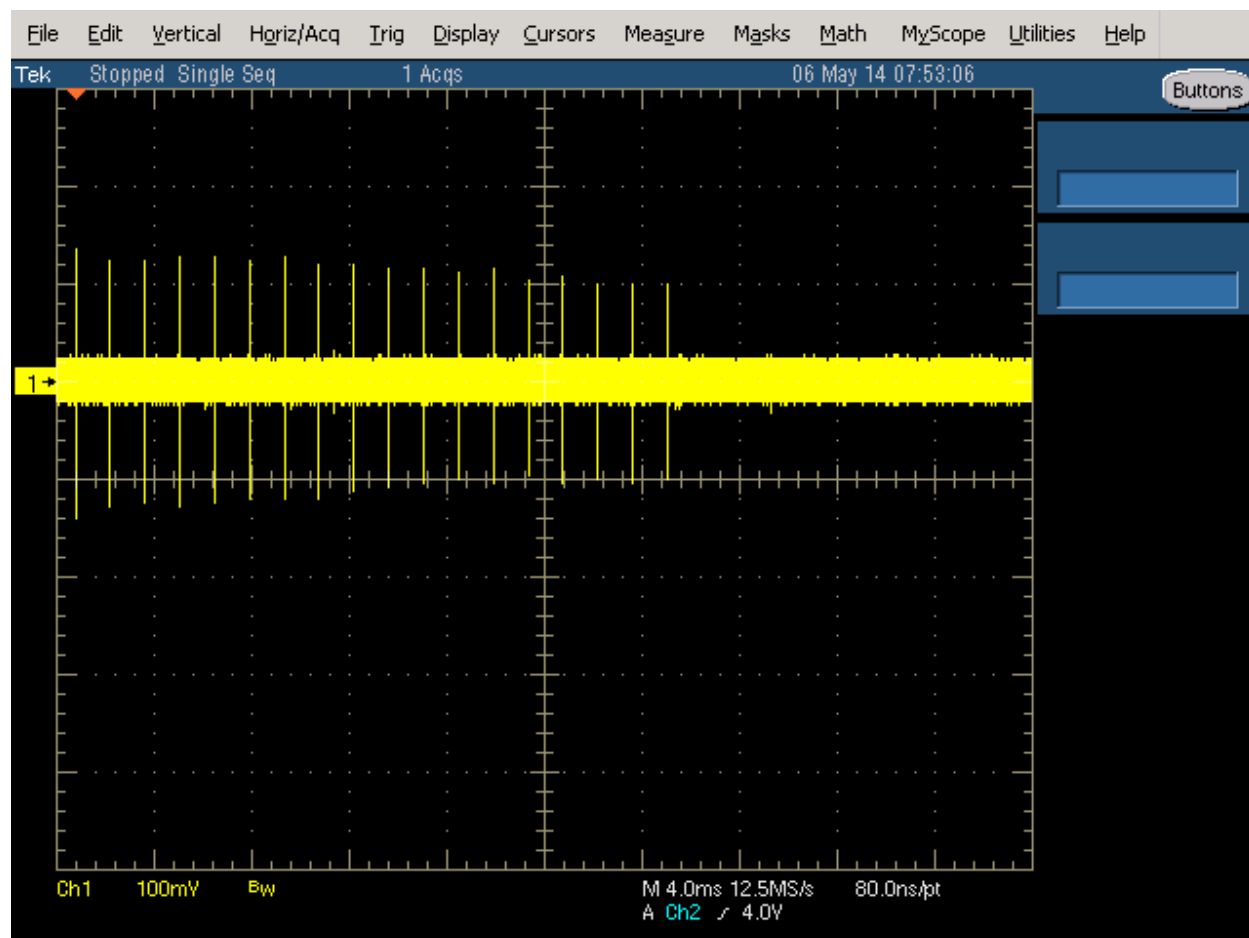


Figure 2 SA Noise Floor During Testing (radar shown at 520 ms)

**RADAR GENERATOR PLOTS**

The radar generator was connected to Spectrum Analyzer (SA) input, with the SA set to zero span, 3 MHz RBW, 3 MHz VBW. The SA IF output was connected to an oscilloscope to provide timing plots.



**Figure 3 FCC Type 1 Radar (18 pulses)**

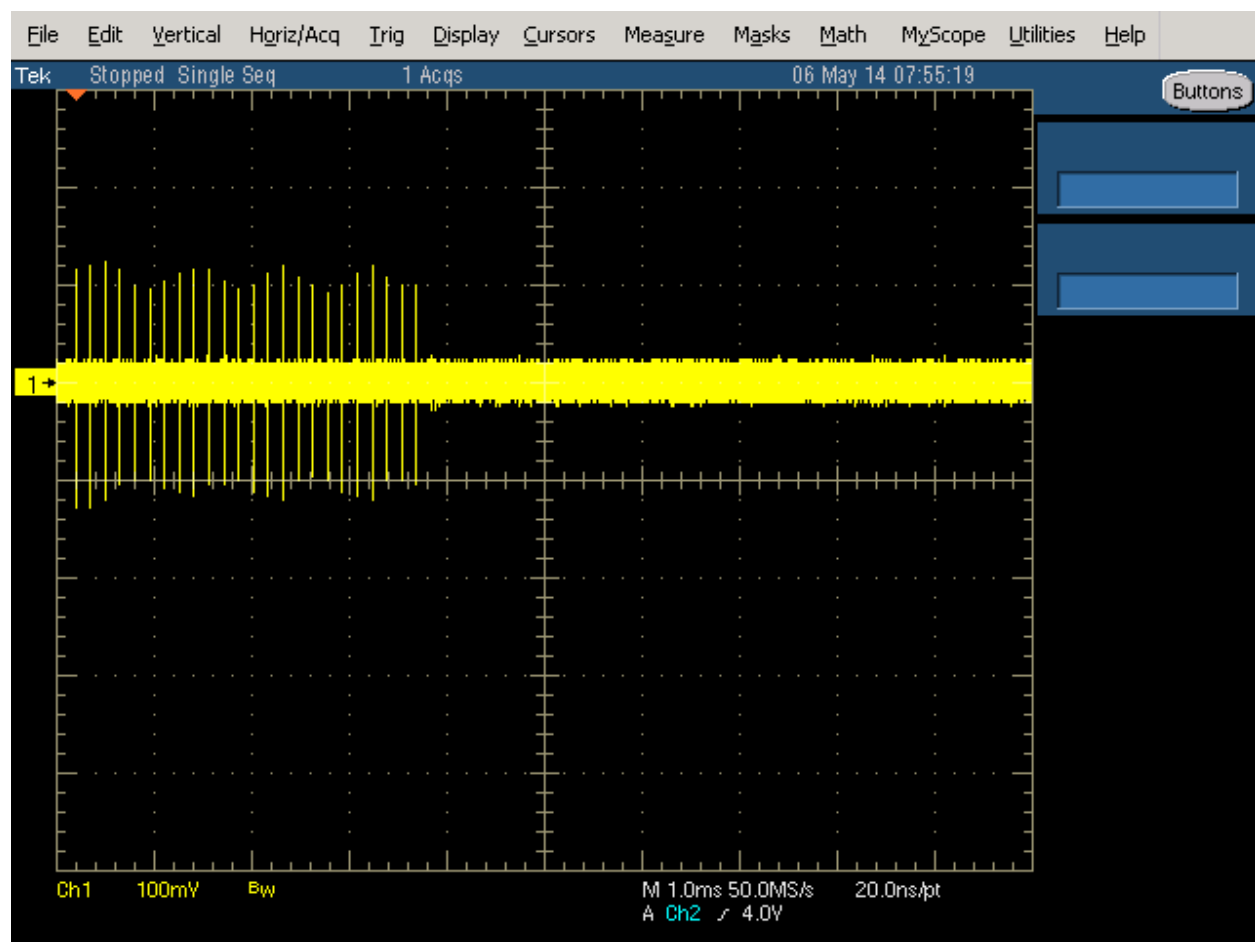


Figure 4 FCC Type 2 Radar (24 pulses)

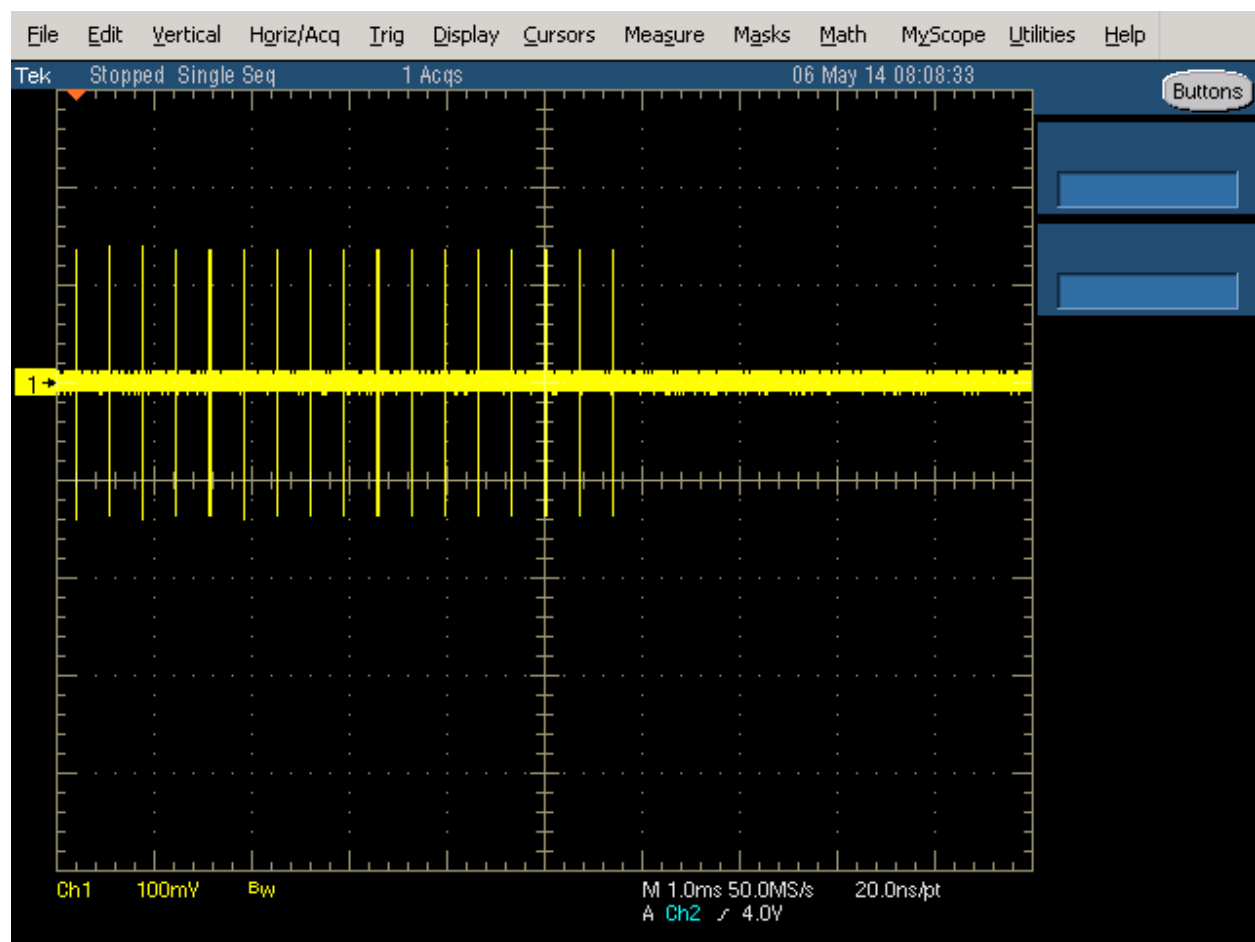


Figure 5 FCC Type 3 Radar (17 pulses)

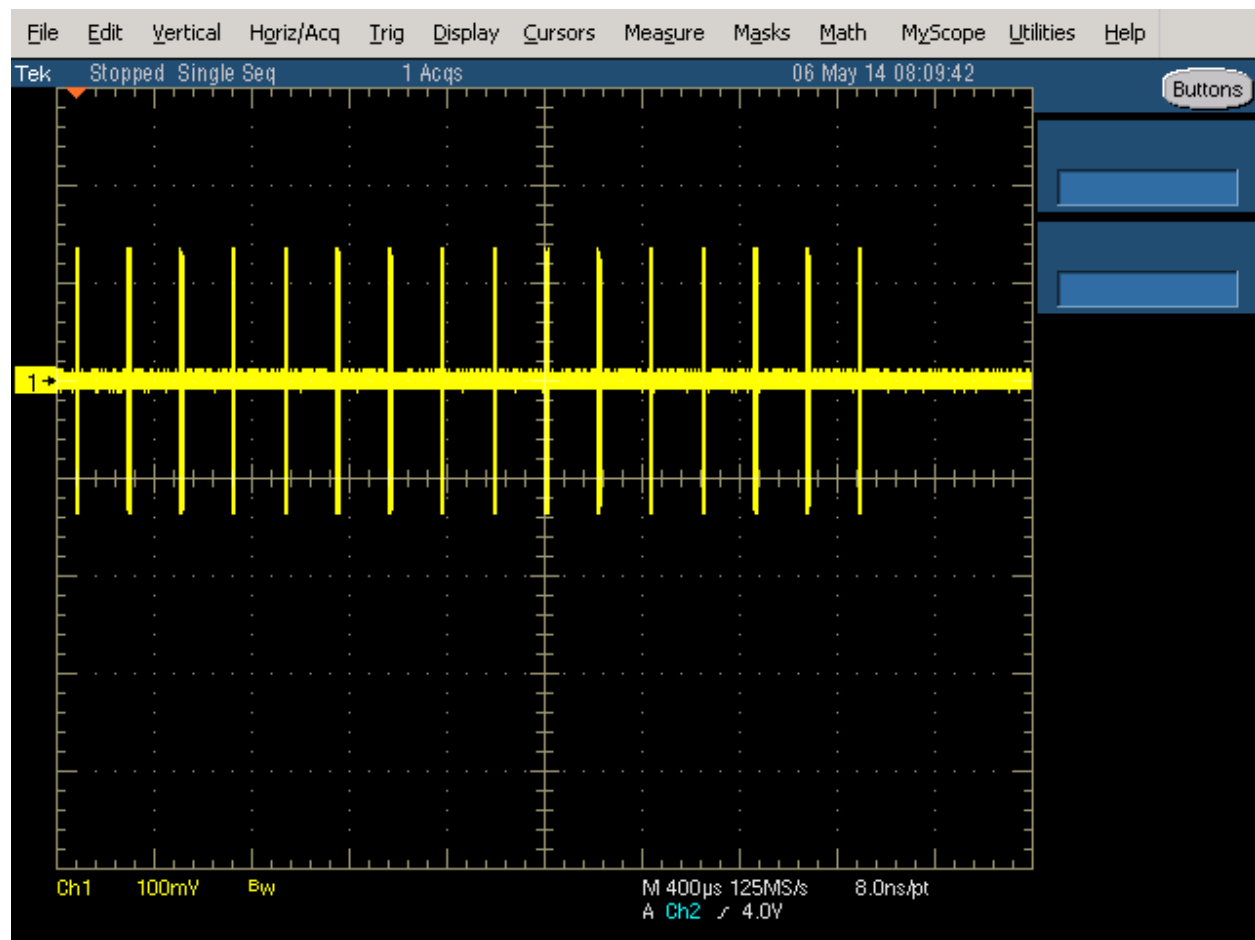


Figure 6 FCC Type 4 Radar (16 pulses)



Figure 7 FCC Type 5 Radar (burst with three pulses, 1650 μs first period)

The shape is round due to chirped frequency during pulse as the SA is in zero span with 3 MHz BW.

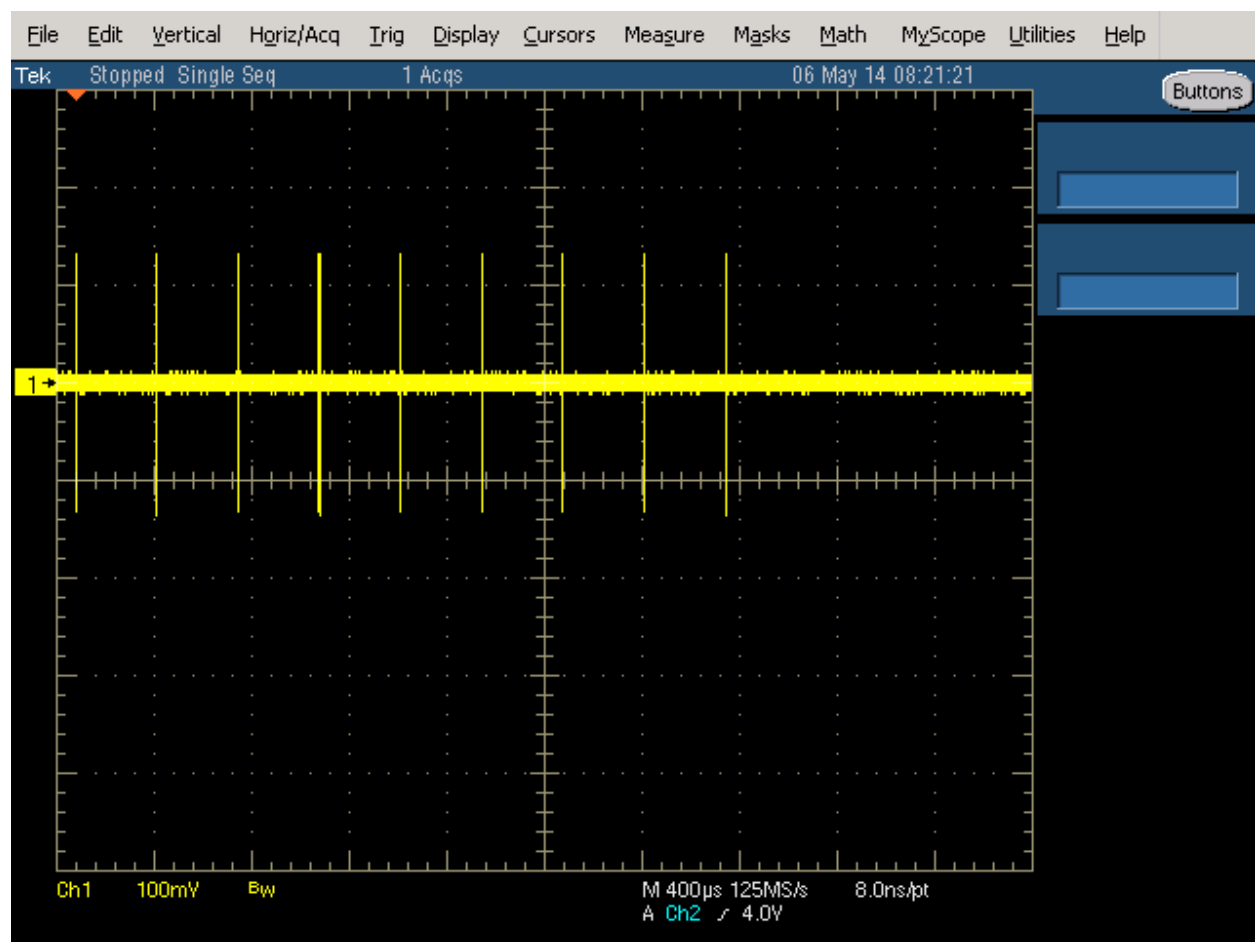


Figure 8 FCC Type 6 Radar (9 pulses in each burst)

**DFS MEASUREMENT METHODS****DFS – CHANNEL CLOSING TRANSMISSION TIME AND CHANNEL MOVE TIME**

Channel clearing and closing times are measured by applying a burst of radar with the device configured to change channel and by observing the channel for transmissions. The time between the end of the applied radar waveform and the final transmission on the channel is the channel move time.

The aggregate transmission closing time is measured in one of two ways:

FCC/KCC Notice No. 2010-48 – the total time of all individual transmissions from the EUT that are observed starting 200ms at the end of the last radar pulse in the waveform. This value is required to be less than 60ms.

**DFS – CHANNEL NON-OCCUPANCY AND VERIFICATION OF PASSIVE SCANNING**

The channel that was in use prior to radar detection by the master is additionally monitored for 30 minutes to ensure no transmissions on the vacated channel over the required non-occupancy period. This is achieved by tuning the spectrum analyzer to the vacated channel in zero-span mode and connecting the IF output to an oscilloscope. The oscilloscope is triggered by the radar pulse and set to provide a single sweep (in peak detect mode) that lasts for at least 30 minutes after the end of the channel move time.

For devices with a client-mode that are being evaluated against FCC rules the manufacturer must supply an attestation letter stating that the client device does not employ any active scanning techniques (i.e. does not transmit in the DFS bands without authorization from a Master device).

**DFS CHANNEL AVAILABILITY CHECK TIME**

It is preferred that the EUT report when it starts the radar channel availability check. If the EUT does not report the start of the check time, then the time to start transmitting on a channel after switching the device on is measured to approximate the time from power-on to the end of the channel availability check. The start of the channel availability check is assumed to be 60 seconds prior to the first transmission on the channel.

To evaluate the channel availability check, a single burst of one radar type is applied within the first 2 seconds of the start of the channel availability check and it is verified that the device does not use the channel by continuing to monitor the channel for a period of at least 60 seconds. The test is repeated by applying a burst of radar in the last 2 seconds (i.e. between 58 and 60 seconds after the start of CAC when evaluating a 60-second CAC) of the channel availability check.

**TRANSMIT POWER CONTROL (TPC)**

Compliance with the transmit power control requirements for devices is demonstrated through measurements showing multiple power levels and manufacturer statements explaining how the power control is implemented.

**SAMPLE CALCULATIONS****DETECTION PROBABILITY / SUCCESS RATE**

The detection probability, or success rate, for any one radar waveform equals the number of successful trials divided by the total number of trials for that waveform.

**THRESHOLD LEVEL**

The threshold level is the level of the simulated radar waveform at the EUT's antenna. If the test is performed in a conducted fashion then the level at the rf input equals the level at the antenna plus the gain of the antenna assembly, in dBi. The gain of the antenna assembly equals the gain of the antenna minus the loss of the cabling between the rf input and the antenna. The lowest gain value for all antenna assemblies intended for use with the device is used when making this calculation.

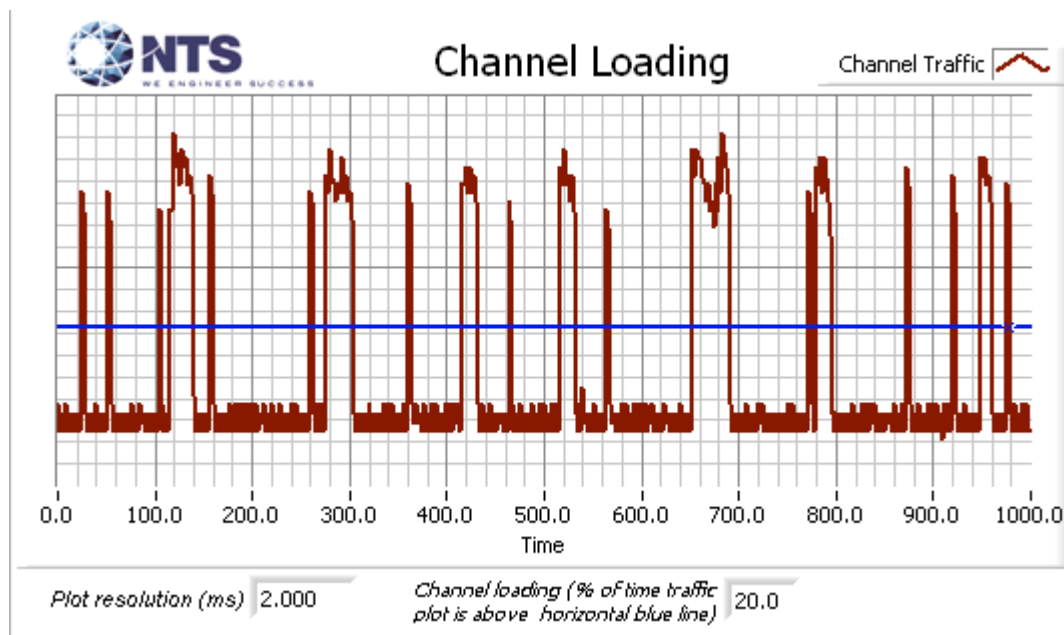
If the test is performed using the radiated method then the threshold level is the level at the antenna.

**Appendix A Test Equipment Calibration Data**

| <b><u>Manufacturer</u></b> | <b><u>Description</u></b>                      | <b><u>Model #</u></b> | <b><u>Asset #</u></b> | <b><u>Cal Due</u></b> |
|----------------------------|------------------------------------------------|-----------------------|-----------------------|-----------------------|
| Hewlett Packard            | EMC Spectrum Analyzer, 9 kHz - 6.5 GHz         | 8595EM                | 787                   | 18-Aug-15             |
| ETS Lindgren               | Antenna, Horn, 1-18 GHz                        | 3117                  | 1662                  | 04-Jun-16             |
| Agilent                    | PSG, Vector Signal Generator, (250kHz - 20GHz) | E8267C                | 1877                  | 16-Jun-16             |
| Technologies               |                                                |                       |                       |                       |
| Tektronix                  | 500MHz, 2CH, 5GS/s Scope                       | TDS5052B              | 2118                  | 30-Oct-15             |

**Appendix B Test Data Tables for Radar Detection Probability**

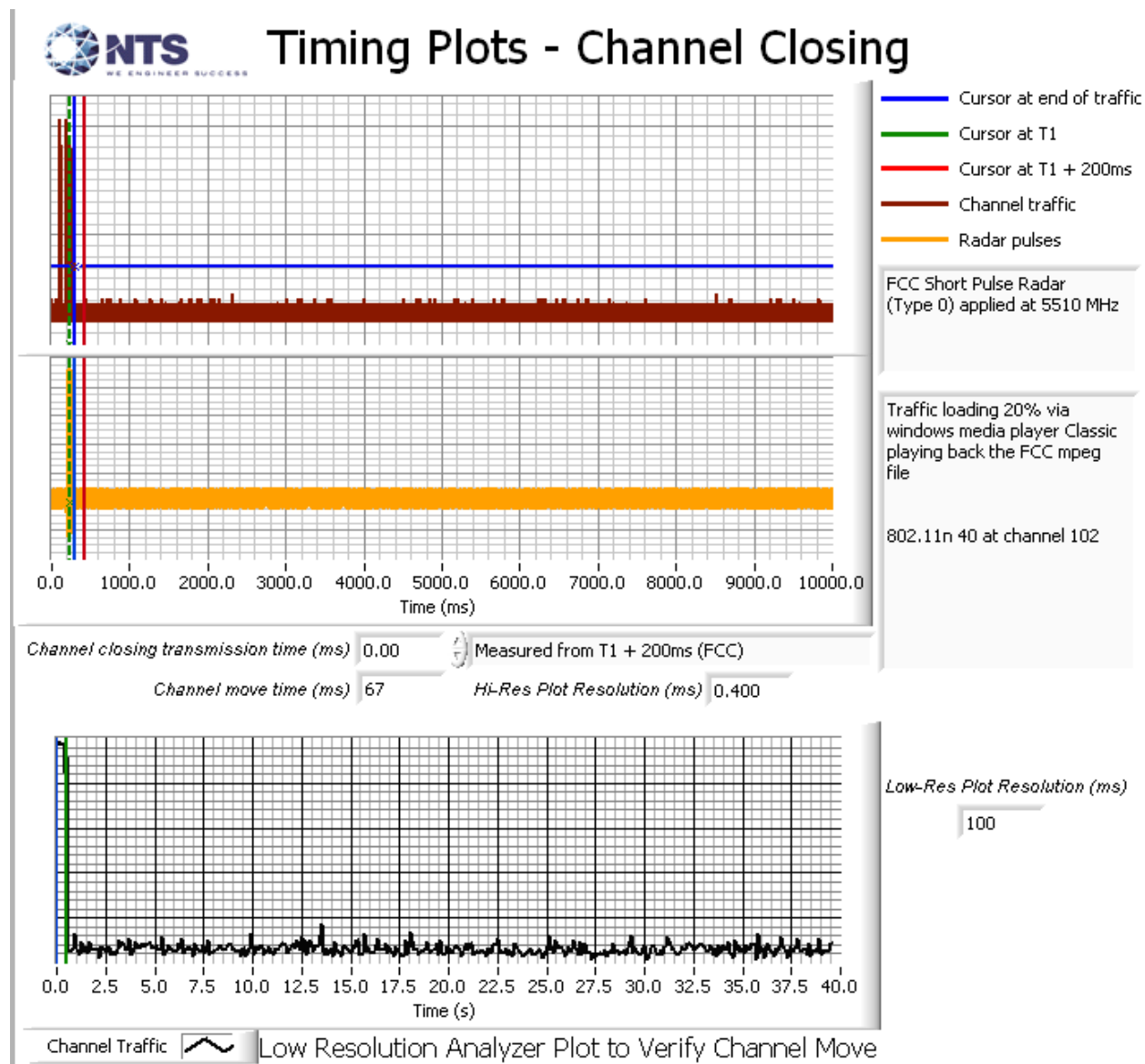
The plot below shows the channel loading during testing as evaluated over a 2 seconds period. The traffic was generated by FCC movie.



**Figure 9 Channel Utilization During In-Service Detection Measurements (n40 mode)**

**Appendix C Test Data Tables and Plots for Channel Closing****FCC PART 15 SUBPART E Channel Closing Measurements**

| Table 5 - FCC Part 15 Subpart E Channel Closing Test Results |                                                |       |                   |       |        |
|--------------------------------------------------------------|------------------------------------------------|-------|-------------------|-------|--------|
| Waveform Type                                                | Channel Closing Transmission Time <sup>1</sup> |       | Channel Move Time |       | Result |
|                                                              | Measured                                       | Limit | Measured          | Limit |        |
| Radar Type 0                                                 | 0 ms                                           | 60 ms | 0.1 s             | 10 s  | Pass   |

**Figure 10 Channel Closing Time and Channel Move Time (n40 mode) – 40 second plot**

<sup>1</sup> Channel closing time for FCC measurements is the aggregate transmission time starting from 200ms after the end of the radar signal to the completion of the channel move.

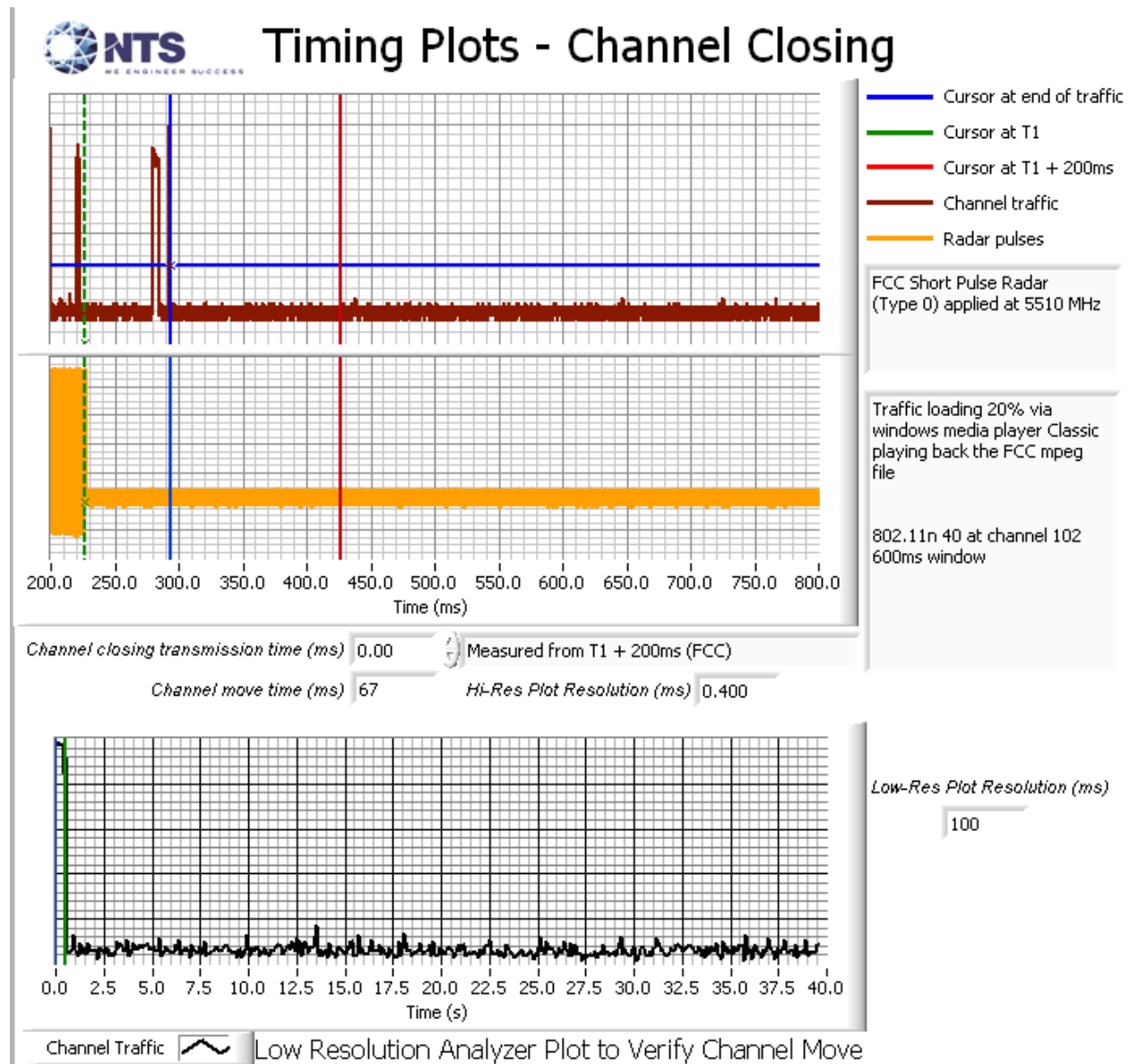
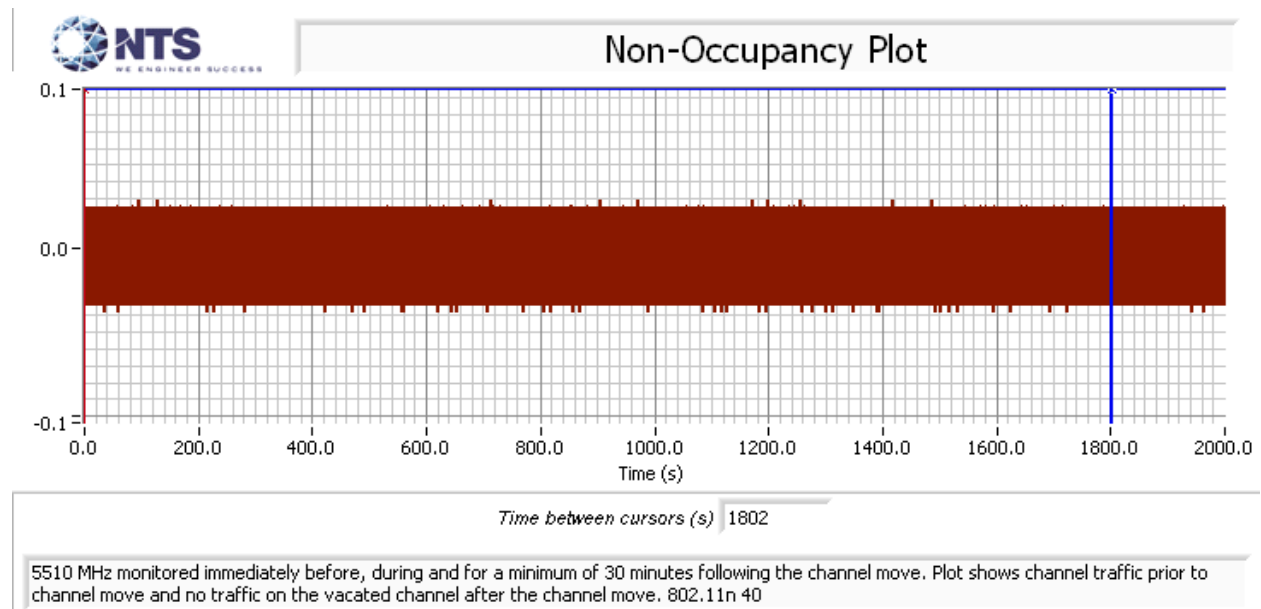


Figure 11 Close-Up of Transmissions Occurring More Than 200ms After The End of Radar (n40 mode)



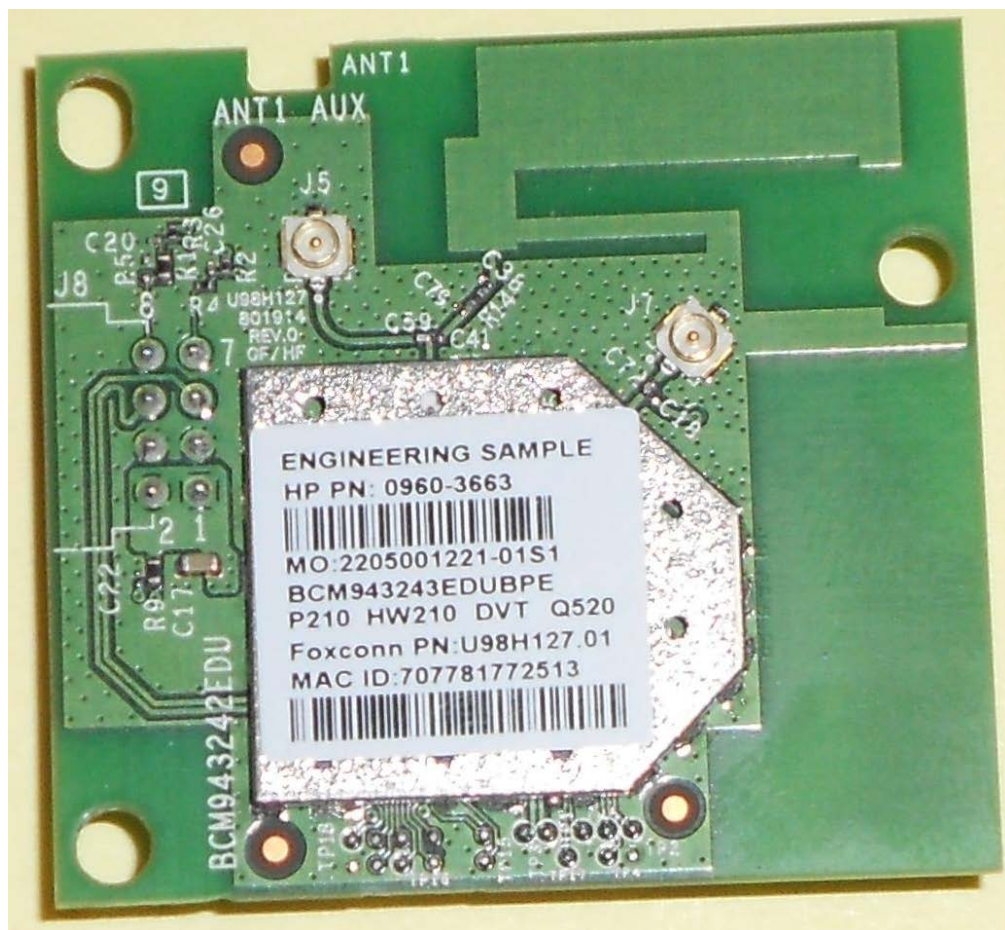
**Figure 12 Radar Channel Non-Occupancy Plot (n40 mode)**

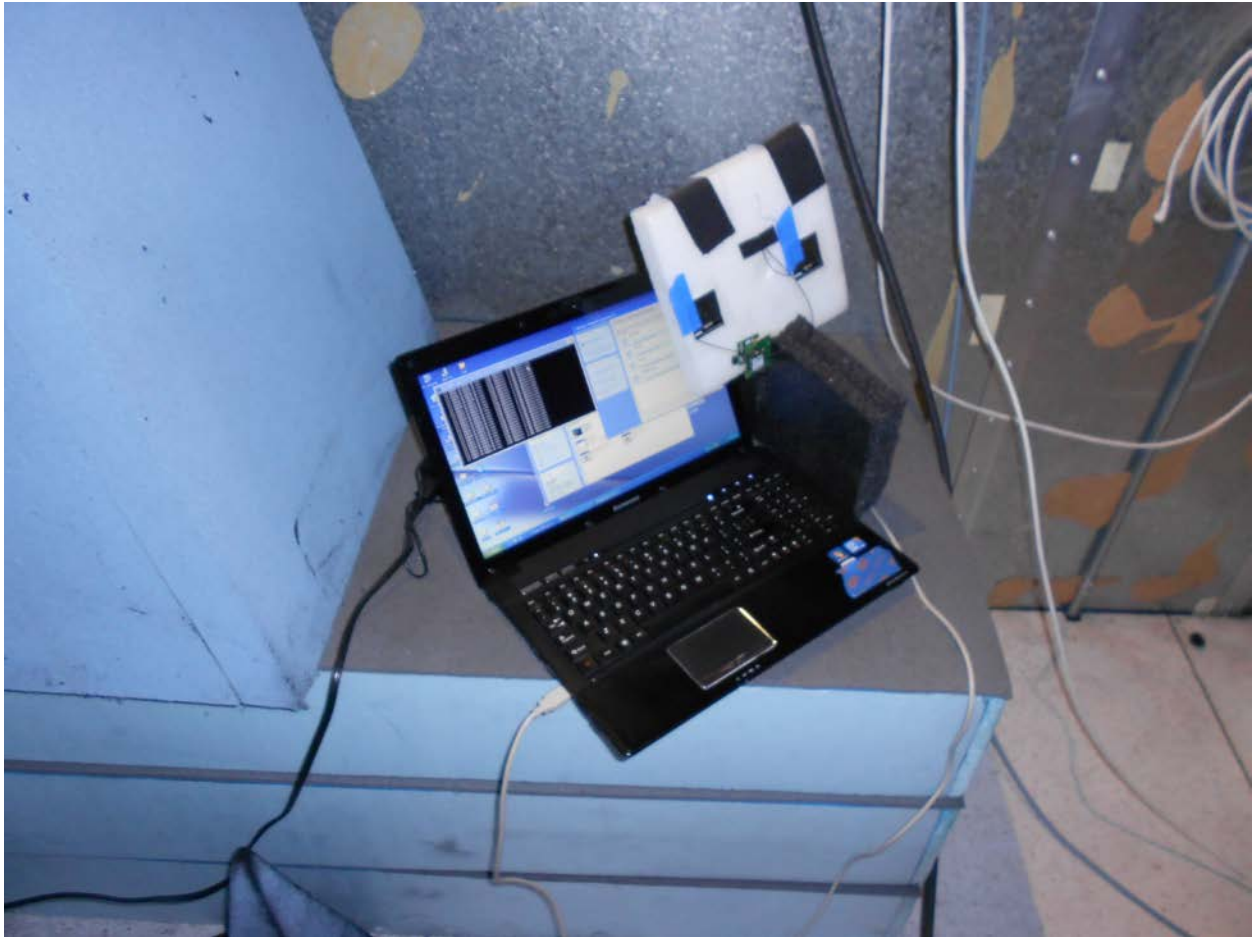
The non-occupancy plot was made over a 30-minute time period following the channel move time with the analyzer IF output connected to the scope and tuned to the vacated channel. No transmissions were observed on the vacated channel after the channel move had been completed.

After the channel move the client device stopped transmitting on the vacated channel.  
After the channel move the client re-associated with the master device on the new channel.

**Appendix D Channel Plan**

| Bandwidth                                                 | Channel # | Scanning | DFS        |
|-----------------------------------------------------------|-----------|----------|------------|
| <b>2.4GHz Band</b>                                        |           |          |            |
| 20MHz                                                     | 1 - 11    | Active   | No - N/A   |
| Operation on channels 12 & 13 for 20MHz is not supported. |           |          |            |
|                                                           |           |          |            |
| <b>UNII1 Band</b>                                         |           |          |            |
| 20MHz                                                     | 36 - 48   | Active   | No - N/A   |
| 40MHz                                                     | 38, 46    | Active   | No - N/A   |
|                                                           |           |          |            |
| <b>UNII2a Band</b>                                        |           |          |            |
| 20MHz                                                     | 52 - 64   | Passive  | DFS Client |
| 40MHz                                                     | 54, 62    | Passive  | DFS Client |
|                                                           |           |          |            |
| <b>UNII2c Band (added via FCC C3PC)</b>                   |           |          |            |
| 20MHz                                                     | 100 – 140 | Passive  | DFS Client |
| 40MHz                                                     | 102 – 134 | Passive  | DFS Client |
|                                                           |           |          |            |
| <b>UNII3 Band</b>                                         |           |          |            |
| 20MHz                                                     | 149 - 165 | Active   | No - N/A   |
| 40MHz                                                     | 151, 159  | Active   | No - N/A   |
|                                                           |           |          |            |

**Appendix E Test Configuration Photograph(s)**



***End of Report***

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