

Dynamic Frequency Selection Test Report  
for  
Elitegroup Computer Systems Co., Ltd.  
7" Pocketable Pad  
Model No.: (1)MICA-07..... (2)TABLET TB71.....  
FCC ID: WL6TB71A-W  
Brand: (1)ADVANTECH (2)ECS

Prepared for : Elitegroup Computer Systems Co., Ltd.  
No. 239, Sec. 2, Ti Ding Blvd.,  
Taipei, Taiwan

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## TEST REPORT VERIFICATION

Applicant : Elitegroup Computer Systems Co., Ltd.  
Manufacturer : Elitegroup Computer Systems Co., Ltd.  
EUT Description : 7" Pocketable Pad  
FCC ID : WL6TB71A-W  
(A) Model No. : (1)MICA-07..... (2)TABLET  
TB71.....  
(B) Serial No. : N/A  
(C) Brand : (1)ADVANTECH (2)ECS  
(D) Power Supply : DC 3.7V (Battery) or DC 5V (USB)  
(E) Test Voltage : DC 3.7V

Measurement Standards Used:

FCC RULES AND REGULATIONS PART 15 Subpart E, Oct. 2013  
(FCC CFR 47 Part 15E, §15.407)

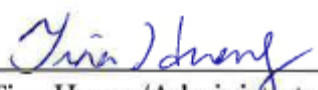
The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 limit.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the requirements of FCC Part 15 standard.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: 2014. 05. 29

Date of Report: 2014. 05. 30

Producer:   
(Tina Huang/Administrator)

Signatory:   
(Ben Cheng/Manager)

## 1. DESCRIPTION OF VERSION

| Edition No. | Date of Revision | Revision Summary | Report Number |
|-------------|------------------|------------------|---------------|
| 0           | 2014. 05. 30     | Original Report. | EM-F140303    |

## 2. SUMMARY OF MEASUREMENTS AND RESULTS

The EUT has been tested according to the applicable standards as referenced below.

| Description of Test Item                                                                               | Results |
|--------------------------------------------------------------------------------------------------------|---------|
| Channel Availability Check Time                                                                        | N/A     |
| Channel Move Time                                                                                      | PASS    |
| Non-Occupancy Period                                                                                   | N/A     |
| Channel Closing Transmission Time                                                                      | PASS    |
| U-NII Detection Bandwidth                                                                              | N/A     |
| N/A is an abbreviation for Not Applicable, sine the product is client without radar detection function |         |

### 3. GENERAL INFORMATION

#### 3.1. Description of Device (EUT)

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product           | 7" Pocketable Pad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Model Number      | (1)MICA-07..... (2)TABLET TB71.....<br>(The "." in the model name can be 0 to 9, A to Z, a to z, "-", "_", "\", "/" or blank, for marketing use only.)<br><br>Above two models difference in brand and model name, others are the same. The model TB71A-W is test in this report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Serial Number     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Brand Name        | (1)ADVANTECH (2)ECS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Applicant         | Elitegroup Computer Systems Co., Ltd.<br>No. 239, Sec. 2, Ti Ding Blvd., Taipei, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Manufacturer      | Elitegroup Computer Systems Co., Ltd.<br>No. 239, Sec. 2, Ti Ding Blvd., Taipei, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FCC ID            | WL6TB71A-W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Fundamental Range | 802.11b/g/n-HT20: 2412MHz ~ 2462MHz<br>802.11a: 5180MHz ~ 5240MHz (UNII Band I) and<br>5260MHz ~ 5320MHz (UNII Band II-2A) and<br>5500MHz ~ 5700MHz (UNII Band II-2C) and<br>5745MHz ~ 5825MHz (UNII Band III)<br>UNII Band II (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)<br>802.11n-HT20: 2412MHz ~ 2462MHz and<br>5180MHz ~ 5240MHz (UNII Band I) and<br>5260MHz ~ 5320MHz (UNII Band II-2A) and<br>5500MHz ~ 5700MHz (UNII Band II-2C) and<br>5745MHz ~ 5825MHz (UNII Band III)<br>UNII Band II (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)<br>802.11n-HT40: 5190MHz ~ 5230MHz (UNII Band I) and<br>5270MHz ~ 5310MHz (UNII Band II-2A) and<br>5510MHz ~ 5670MHz (UNII Band II-2C) and<br>5755MHz ~ 5795MHz (UNII Band III)<br>UNII Band II (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)<br>Bluetooth and BLE: 2402MHz ~ 2480MHz<br>NFC: 13.56MHz<br>GPS: 1575.42MHz |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Channel         | 802.11b/g: 11 channels<br>802.11a: UNII Band I: 4 channels<br>UNII Band II-2A: 4 channels<br>UNII Band II-2C: 8 channels<br>UNII Band III: 5 channels<br>802.11n-HT20: 2.4GHz: 11 channels 2.4G<br>UNI Band I: 4channels<br>UNII Band II-2A: 4 channels<br>UNII Band II-2C: 8 channels<br>UNII Band III: 5 channels<br>802.11n-HT40: UNII Band I: 2 channels<br>UNII Band II-2A: 2 channels<br>UNII Band II-2C: 3 channels<br>UNII Band III: 2 channels<br>Bluetooth: 79 channels<br>BLE: 40 channels<br>NFC: 1 Channel |
| Radio Technology          | 802.11b: DSSS Modulation (DBPSK/DQPSK/CCK)<br>802.11g: OFDM Modulation (BPSK/QPSK/16QAM/64QAM)<br>802.11a: OFDM Modulation (BPSK/QPSK/16QAM/64QAM)<br>802.11n: OFDM Modulation (MIMO)<br>(BPSK/QPSK/16QAM/64QAM)<br>Bluetooth: FHSS (GFSK, $\pi$ /4DQPSK, 8-DPSK)<br>BLE: GFSK<br>NFC: ASK                                                                                                                                                                                                                              |
| Data Transfer Rate        | 802.11b: 1/2/5.5/11Mbps<br>802.11a/g: 6/9/12/18/24/36/48/54Mbps<br>802.11n: up to 270Mbps<br>BT: 1/2/3Mbps<br>BLE: 1Mbps                                                                                                                                                                                                                                                                                                                                                                                                |
| Antenna Gain              | 2.4GHz: -1.35dBi<br>5GHz: 4.37dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Date of Receipt of Sample | 2014. 04. 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 3.2. Antenna Information

| Antenna Part Number                              | Manufacture                             | Antenna Type | Peak Gain W/ Cable loss (dBi) |      |                       |       |
|--------------------------------------------------|-----------------------------------------|--------------|-------------------------------|------|-----------------------|-------|
|                                                  |                                         |              | Frequency (MHz)               |      | Max Gain (Peak) (dBi) |       |
| WLAN/BT Antenna:<br>E22-003-007-037-8014b (Main) | INNETECH (Tianjin) Electronics Co. Ltd. | PCB Antenna  | 2400                          | 5180 | 1.33                  | -1.53 |
|                                                  |                                         |              | 2412                          | 5190 | 1.92                  | -1.53 |
|                                                  |                                         |              | 2417                          | 5310 | 2.07                  | 0.66  |
|                                                  |                                         |              | 2422                          | 5320 | 2.19                  | 0.05  |
|                                                  |                                         |              | 2427                          | 5500 | 2.44                  | -0.19 |
|                                                  |                                         |              | 2432                          | 5510 | 2.59                  | -0.41 |
|                                                  |                                         |              | 2437                          | 5670 | 2.78                  | -1.57 |
|                                                  |                                         |              | 2442                          | 5700 | 2.83                  | -3.16 |
|                                                  |                                         |              | 2447                          | 5745 | 2.87                  | -3.55 |
|                                                  |                                         |              | 2450                          | 5765 | 2.78                  | -2.70 |
|                                                  |                                         |              | 2452                          | 5785 | 2.76                  | -2.93 |
|                                                  |                                         |              | 2457                          | 5805 | 2.68                  | -3.46 |
|                                                  |                                         |              | 2462                          | 5825 | 2.47                  | -3.15 |
|                                                  |                                         |              | 2467                          |      | 2.38                  |       |
|                                                  |                                         |              | 2472                          |      | 2.52                  |       |
|                                                  |                                         |              | 2500                          |      | 2.17                  |       |
| WLAN Antenna:<br>E22-003-007-037-8014b (AUX)     | INNETECH (Tianjin) Electronics Co. Ltd. | PCB Antenna  | 2400                          | 5180 | 3.08                  | 0.61  |
|                                                  |                                         |              | 2412                          | 5190 | 3.43                  | 0.39  |
|                                                  |                                         |              | 2417                          | 5310 | 3.10                  | 0.91  |
|                                                  |                                         |              | 2422                          | 5320 | 3.07                  | 0.14  |
|                                                  |                                         |              | 2427                          | 5500 | 2.78                  | -0.35 |
|                                                  |                                         |              | 2432                          | 5510 | 2.68                  | -0.40 |
|                                                  |                                         |              | 2437                          | 5670 | 2.63                  | -0.62 |
|                                                  |                                         |              | 2442                          | 5700 | 2.49                  | -1.25 |
|                                                  |                                         |              | 2447                          | 5745 | 2.68                  | -1.02 |
|                                                  |                                         |              | 2450                          | 5765 | 2.60                  | 0.06  |
|                                                  |                                         |              | 2452                          | 5785 | 2.77                  | -0.30 |
|                                                  |                                         |              | 2457                          | 5805 | 2.75                  | -0.23 |
|                                                  |                                         |              | 2462                          | 5825 | 2.82                  | -0.09 |
|                                                  |                                         |              | 2467                          |      | 2.77                  |       |
|                                                  |                                         |              | 2472                          |      | 2.68                  |       |
|                                                  |                                         |              | 2500                          |      | 2.58                  |       |
| GPS Antenna                                      | INNETECH (Tianjin) Electronics Co. Ltd. | PCB Antenna  | 1565                          |      | -3.38                 |       |
|                                                  |                                         |              | 1575                          |      | -2.87                 |       |
|                                                  |                                         |              | 1585                          |      | -3.25                 |       |
|                                                  |                                         |              | 1597                          |      | -2.42                 |       |
|                                                  |                                         |              | 1602                          |      | -2.22                 |       |
|                                                  |                                         |              | 1606                          |      | -1.98                 |       |
|                                                  |                                         |              | 1616                          |      | -1.37                 |       |

### 3.3. Description of Key Component Lists

| Item                     |                                                                   | Supplier                    | Description                      | Character                                                                              |
|--------------------------|-------------------------------------------------------------------|-----------------------------|----------------------------------|----------------------------------------------------------------------------------------|
| System                   |                                                                   | Microsoft                   | Windows 8                        | ---                                                                                    |
| Main Board               |                                                                   | ECS                         | TB71A-W                          |                                                                                        |
| LCD Module               |                                                                   | CPTF                        | CLAT070WP0D                      | 7 inch CPT 800x1280 -10 point touch                                                    |
| CPU                      |                                                                   | Intel                       | Intel® Atom™ Processor Bay Trail | T Z3770, 1.46GHz<br>Burst frequency 2.39GHz<br>(Intel, BGA1380 pin)                    |
| GPU                      |                                                                   | Intel                       | ---                              | HD Graphics                                                                            |
| Memory                   |                                                                   | Hynix                       | H9CCNNN8KTMLBR-N TM              | LP DDR3 2GB<br>(up to 4G)                                                              |
| SSD                      |                                                                   | Sandisk                     | SDIN8DE4-32G                     | eMMC 32GB                                                                              |
| Battery Pack             |                                                                   | Sunwoda                     | MICA-071                         | 3.7V / 4100 mAh /15.17Wh                                                               |
| Front Camera             |                                                                   | LiteON                      | NL89A141                         | sensor Sony IMX175 .8MP                                                                |
| Rear Camera              |                                                                   | LiteON                      | 13P2SF206                        | sensor OV2722, 2MP                                                                     |
| Barcode Scanner          |                                                                   | Itermec                     | ED30                             | Decode Board + EA31 Imager                                                             |
| Touch Pad                |                                                                   | CPTF                        | CLAA070WP03                      | --                                                                                     |
| WLAN+BT Combo Module     |                                                                   | MITSUMI                     | DWM-W095A                        | WLAN: 2.412GHz to 2.472GHz<br>5.18GHz to 5.85GHz<br>BT4.0+BLE:<br>2.402GHz to 2.480GHz |
| NFC                      |                                                                   | NXP                         | PN544PC                          | 13.56MHz                                                                               |
| GNSS                     |                                                                   | MITSUMI                     | SPG-SF102                        | GPS: 1575.42MHz<br>GLONASS:<br>1598.0625 to 1605.375 MHz                               |
| WLAN/<br>BT<br>Antenna   | Main                                                              | INNETECH ELECTRONICS        | e22-003-007-037-8014b            | Laser Direct Structuring (LDS)<br>Antenna on frame                                     |
|                          | AUX                                                               | INNETECH ELECTRONICS        | e22-003-007-037-8014b            | Laser Direct Structuring (LDS)<br>Antenna on frame                                     |
| Stylus Pen               |                                                                   | FO                          | BLACK/#8513.                     | CAPACITIVE TOUCH PEN                                                                   |
| USB Charger              |                                                                   | Chicony                     | W12-010N3A                       | I/P: 100-240V~, 50-60Hz, 0.3A<br>O/P: 5V, 2A                                           |
| Docking                  | AdvanTech                                                         | MICA-071-DCRE               |                                  | DC 5V                                                                                  |
|                          | ECS                                                               | DOCKING TB71A-W             |                                  | DC 5V                                                                                  |
| Docking Power Adapter    | Asian                                                             | WA-20A05FU                  |                                  | I/P: 100-240V~, 0.6A, 50-60Hz<br>O/P: 5V, 4A                                           |
|                          | Power Cord: Non-Shielded, Undetached, 1.8m, Bonded a ferrite core |                             |                                  |                                                                                        |
| USB Charge Docking Cable |                                                                   | Shielded, Detachable, 1.2m  |                                  |                                                                                        |
| HDMI Docking Cable       |                                                                   | Shielded, Detachable, 0.17m |                                  |                                                                                        |
| USB3.0 Docking Cable     |                                                                   | Shielded, Detachable, 0.23m |                                  |                                                                                        |

Remark: For a more detailed features description, please refer to the manufacturer's specifications or the user manual.

## 3.4. Support Equipment

| Item                                       | Manufacturer | Model    | Remark                  |
|--------------------------------------------|--------------|----------|-------------------------|
| AP Server embedded with Wireless AC Module |              |          |                         |
| AP Server                                  | TP-LINK      | DIR-868L | FCC ID: KA2IR868LA1     |
| Wireless AC Module                         | Aplpha       | WMC-AC01 | FCC ID: RRK2012060056-1 |

## 3.5. Test Channel

| Frequency Band                    | Channel No.  | Frequency |
|-----------------------------------|--------------|-----------|
| 5260-5320MHz<br>(UNII Band II-2A) | <b>20MHz</b> |           |
|                                   | 52           | 5260MHz   |
|                                   | <b>40MHz</b> |           |
|                                   | 54           | 5270MHz   |
| 5500-5700MHz<br>(UNII Band II-2C) | <b>20MHz</b> |           |
|                                   | 100          | 5500MHz   |
|                                   | <b>40MHz</b> |           |
|                                   | 102          | 5510MHz   |

## 3.6. Description of Test Facility

|                      |   |                                                                                                                                         |
|----------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|
| Name of Firm         | : | <b>AUDIX Technology Corporation</b><br><b>EMC Department</b><br>No. 53-11, Dingfu, Linkou Dist.,<br>New Taipei City 244, Taiwan, R.O.C. |
| Test Site            | : | No. 53-11, Dingfu, Linkou Dist.,<br>New Taipei City 244, Taiwan, R.O.C.                                                                 |
| NVLAP Lab. Code      | : | 200077-0                                                                                                                                |
| TAF Accreditation No | : | 1724                                                                                                                                    |

## 3.7. Measurement Uncertainty

| Test Item       | Uncertainty         |
|-----------------|---------------------|
| DFS Measurement | $\pm 0.5\text{ms}$  |
| Threshold       | $\pm 0.33\text{dB}$ |

#### 4. TEST EQUIPMENT

| Item | Type                     | Manufacturer | Model No.  | Serial No.         | Cal. Due Date |
|------|--------------------------|--------------|------------|--------------------|---------------|
| 1.   | Vector Signal Generation | R&S          | SMU200A    | 104893             | 2014. 06. 26  |
| 2.   | Spectrum Analyzer        | Agilent      | N9030A-544 | US51350140         | 2014. 07. 29  |
|      | Spectrum Analyzer        | R&S          | FSV30      | 101181             | 2015. 03. 03  |
| 3.   | Attenuator (10dB) X2     | Worken       | WK0602-10  | 0120A02208001<br>S | N/A           |
| 4.   | Attenuator (30dB) X2     | Worken       | WK0602-30  | 0120A02208002<br>S | N/A           |

## 5. WORKING MODES AND REQUIREMENT TEST ITEM

### 5.1. Applicability of DFS Requirements Prior To Use A Channel

| Requirement                     | Operational Mode |                                |                             |
|---------------------------------|------------------|--------------------------------|-----------------------------|
|                                 | Master           | Client without radar detection | Client with radar detection |
| Non-Occupancy Period            | ✓                | Not required                   | ✓                           |
| DFS Detection Threshold         | ✓                | Not required                   | ✓                           |
| Channel Availability Check Time | ✓                | Not required                   | Not required                |
| Uniform Spreading               | ✓                | Not required                   | Not required                |
| U-NII Detection Bandwidth       | ✓                | Not required                   | ✓                           |

### 5.2. Applicability of DFS Requirements During Normal Operation

| Requirement                       | Operational Mode |                                |                             |
|-----------------------------------|------------------|--------------------------------|-----------------------------|
|                                   | Master           | Client without radar detection | Client with radar detection |
| DFS Detection Threshold           | ✓                | Not required                   | ✓                           |
| Channel Closing Transmission Time | ✓                | ✓                              | ✓                           |
| Channel Move Time                 | ✓                | ✓                              | ✓                           |
| U-NII Detection Bandwidth         | ✓                | Not required                   | ✓                           |

## 6. DFS DETECTION THRESHOLOS AND RADAR TEST

### WAVEFORMS

#### 6.1. Interference Threshold Value, Master or Client Incorporating In-Service Monitoring

| Maximum Transmit Power | Value (See Notes 1 and 2) |
|------------------------|---------------------------|
| $\geq 200$ milliwatt   | -64dBm                    |
| $< 200$ milliwatt      | -62dBm                    |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

The radar Detection Threshold, lowest antenna gain is the parameter of interference radar DFS detection threshold.

#### 6.2. Radar Test Waveform Minimum Step

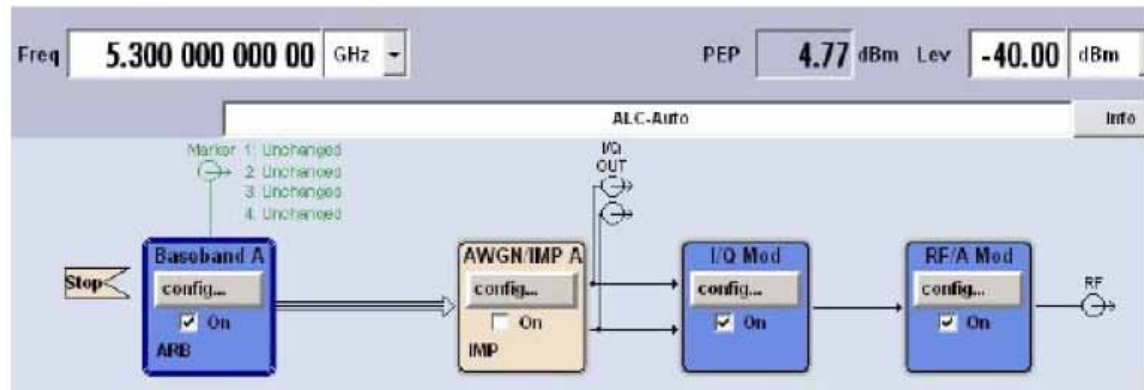
Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

#### 6.3. Short Pulse Radar Test Waveforms

| Radar Type                  | Pulse Width ( $\mu$ sec) | PRI ( $\mu$ sec) | Number of Pulse | Minimum Percentage of Successful Detection | Minimum number of Trials |
|-----------------------------|--------------------------|------------------|-----------------|--------------------------------------------|--------------------------|
| 1                           | 1                        | 1428             | 18              | 60%                                        | 30                       |
| 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                      |

A minimum of 30 unique waveforms are required for each of the short pulse radar type 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

FCC Radar Types (1~4) System Diagram



Used R&S SMU200A (Vector SG with two ARB)

B11: Base-band Generator with ARB (16M samples) and Digital Modulation

B13: Base-band Main Module

B106: frequency range (100 kHz to 6 GHz)

For selecting the waveform parameters from within the bounds of the signal type, system was random selection using uniform distribution.

#### 6.4. Long Pulse Radar Test Waveforms

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

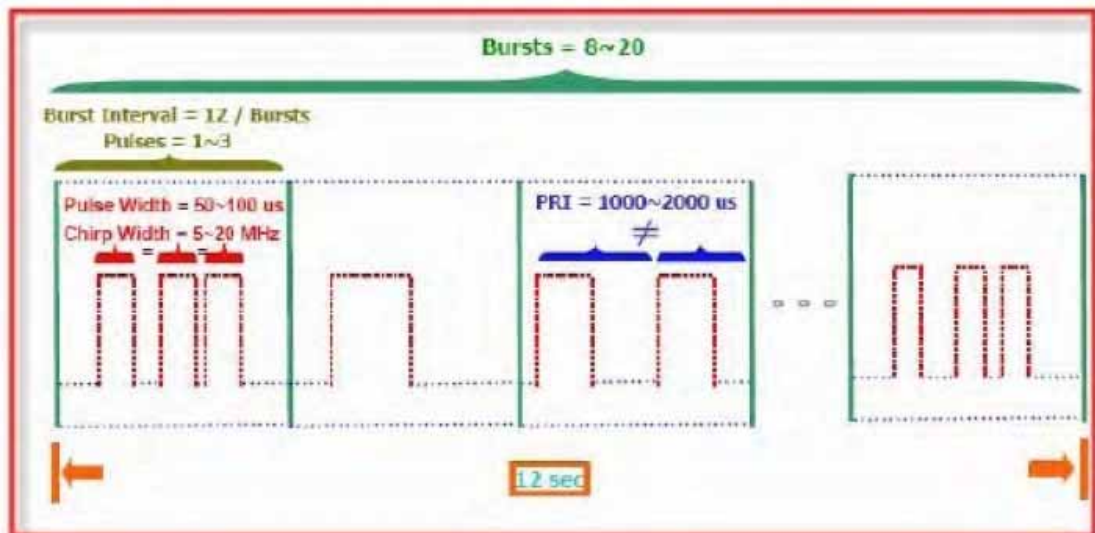
The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms. Each waveform is defined as following:

- (1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- (2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst\_Count.
- (3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- (4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- (5) Each pulse has a linear FM chirp between 5 and 20MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Burst may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300MHz and a 20MHz chirped signal, the chirp starts at 5290MHz and ends at 5310MHz.

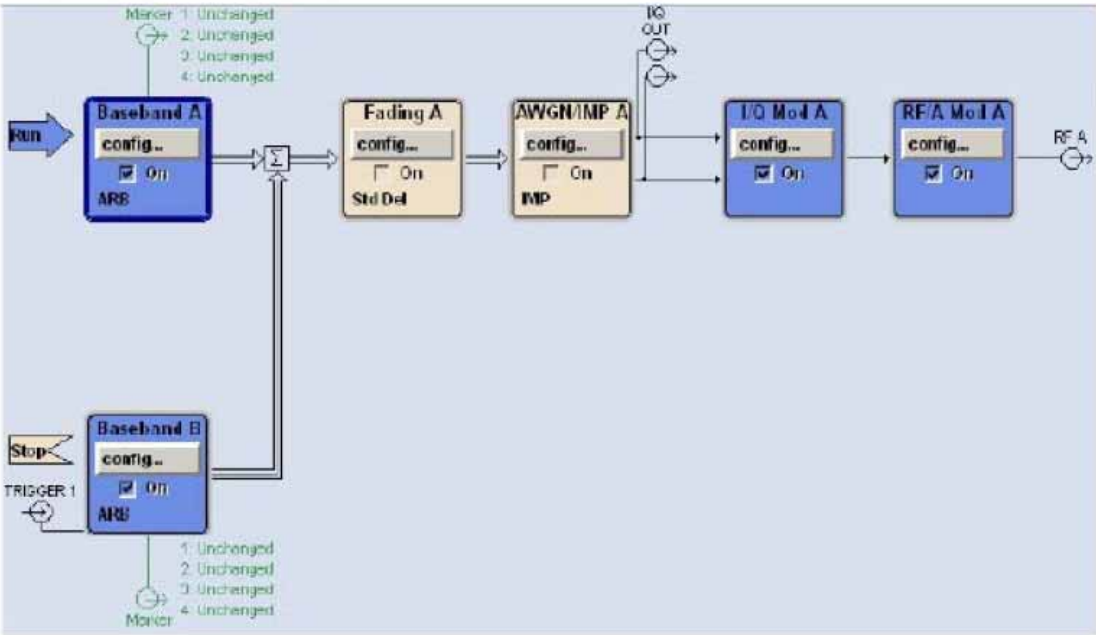
- (6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
- (7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst\_Count. Each interval is of length  $(12000000/\text{Burst\_Count})$  microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and  $[(12000000/\text{Burst\_Count}) - (\text{Total Burst length}) + (\text{One Random PRI interval})]$  microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

A representative example of a Long Pulse radar test waveform:

- (1) The total test signal length is 12 seconds.
- (2) 8 Bursts are randomly generated for the Burst\_Count.
- (3) Burst 1 has 2 randomly generated pulses.
- (4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
- (5) The PRI is randomly selected to be at 1213 microseconds.
- (6) Bursts 2 through 8 are generated using steps 3-5.
- (7) Each Burst is contained in even intervals of 1500000 microseconds. The starting location for Pulse 1. Burst 1 is randomly generated (1 to 1500000 minus the total Burst 1 length + 1 random PRI interval) at the 325001 microsecond step. Bursts 2 through 8 randomly fall in successive 1500000 microsecond intervals (i.e. Burst 2 falls in the 1500001-3000000 microsecond range).



FCC Radar Types (5) System Diagram

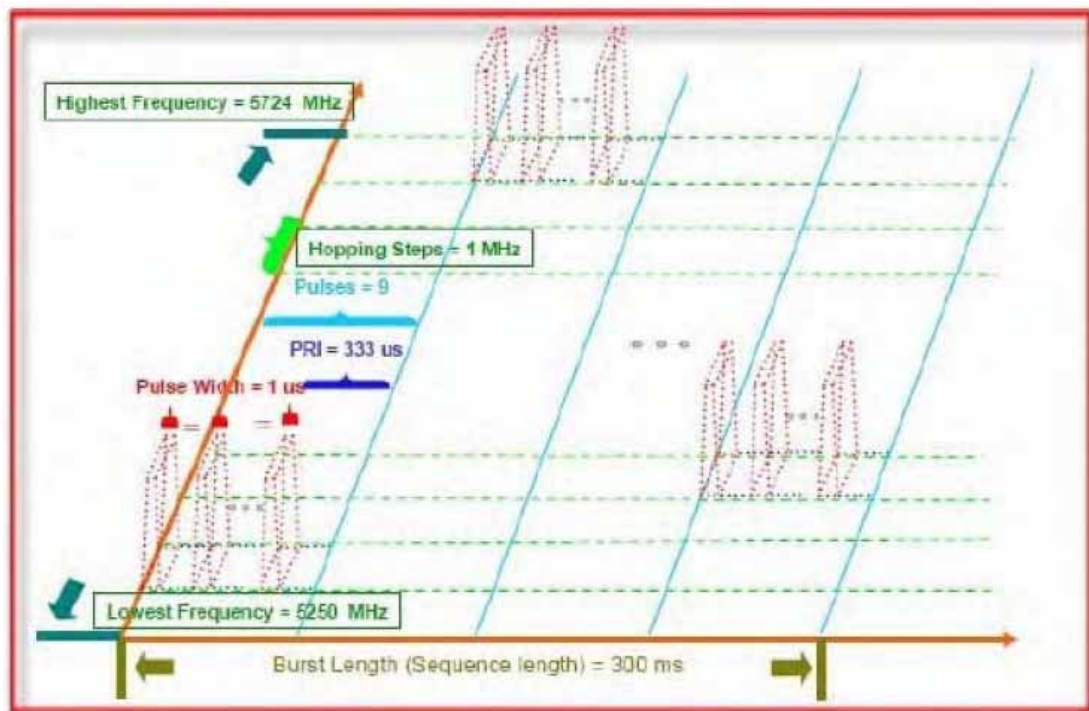


Used R&S SMU200A (Vector SG with two ARB)  
Path A/Path B Two B11: Base-band Generator with ARB (16M samples) and Digital Modulation  
B13: Base-band Main Module  
B106: frequency range (100 kHz to 6 GHz)  
For selecting the waveform parameters from within the bounds of the signal type, system was random selection using uniform distribution.

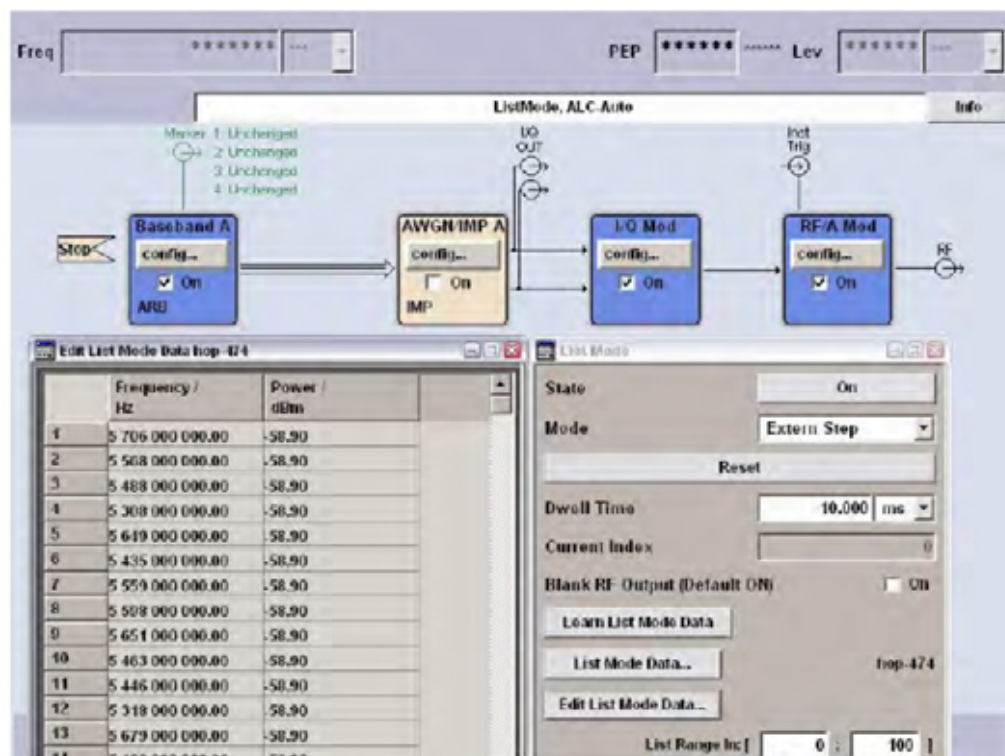
6.5. Frequency Hopping Pulse Radar Test Waveforms

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

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:  
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies form 5250-5274MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of random frequency, the frequencies remaining within the group are always treated as equally likely.



FCC Radar Types (6) System Diagram



Used R&S SMU200A (Vector SG with two ARB)

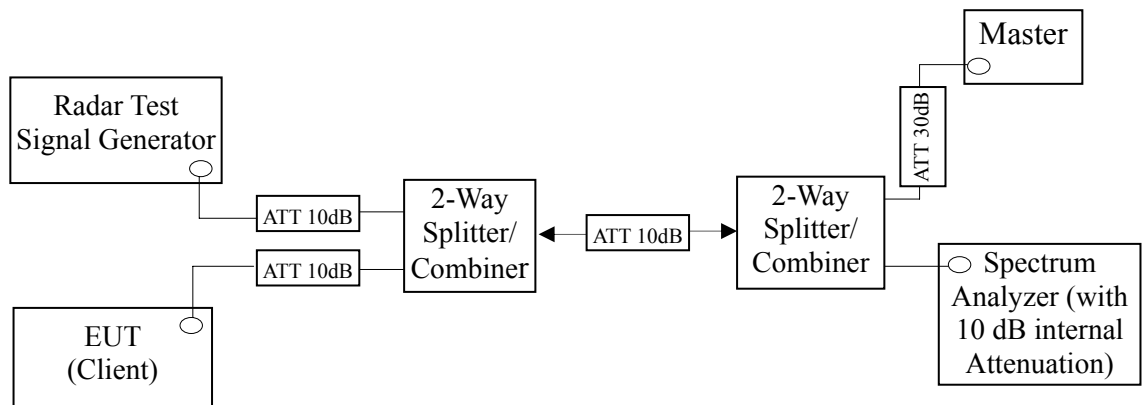
B11: Base-band Generator with ARB (16M samples) and Digital Modulation

B13: Base-band Main Module

B106: frequency range (100 kHz to 6 GHz)

For selecting the waveform parameters from within the bounds of the signal type, system was random selection using uniform distribution.

## 6.6. Conducted Calibration Setup



## 6.7. Radar Waveform Calibration Procedure

The measured frequency is 5500MHz and 5510MHz. The radar signal was the same as transmitted channels, and injected into the antenna port of AP (master) or Client Device with Radar Detection, measured the channel closing transmission time and channel move time. The calibrated conducted detection threshold level is set to -62dBm. The tested level is lower than required level hence it provides margin to the limit.

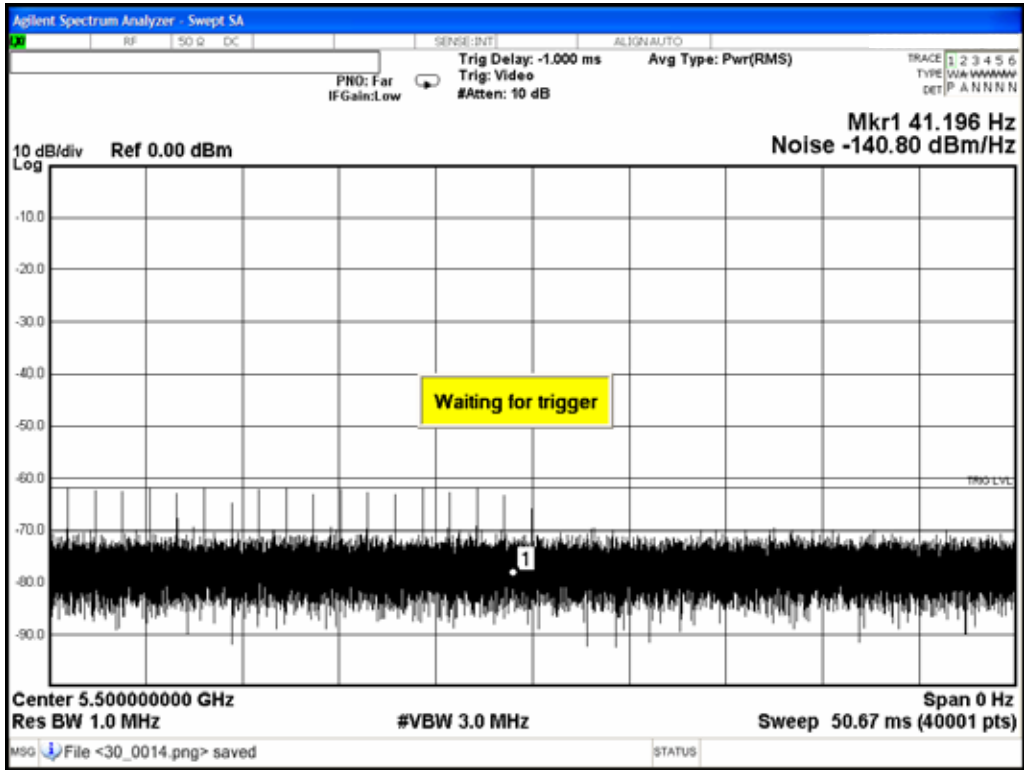
## 6.8. Calibration Deviation

There is no deviation with the original standard.

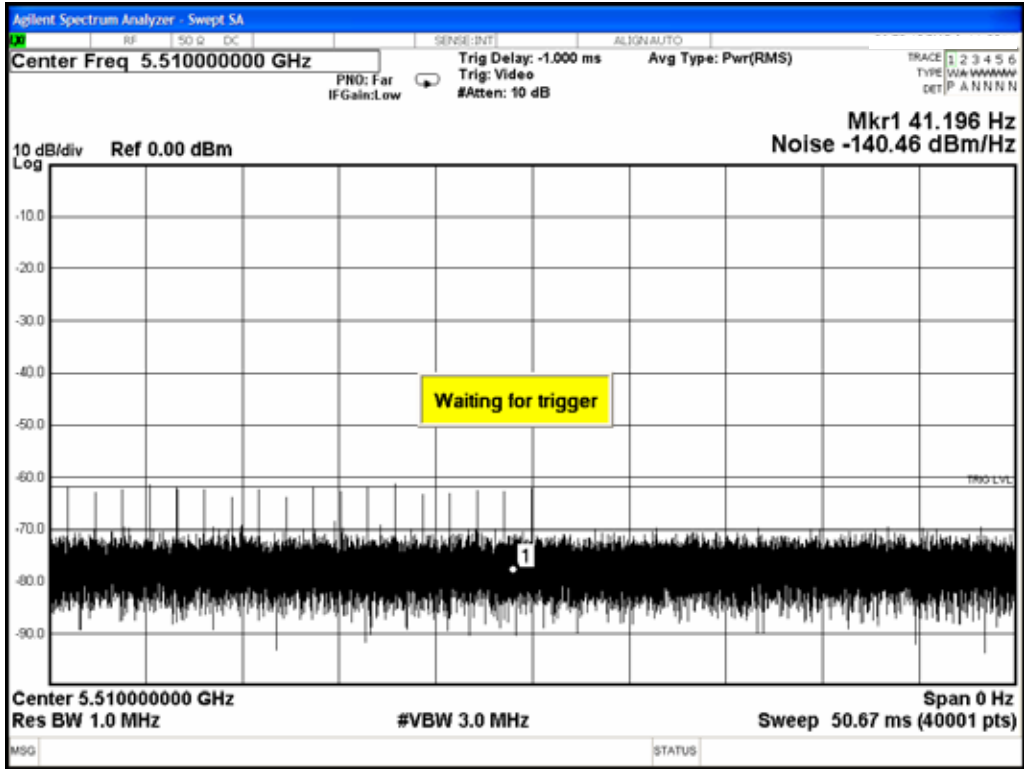
6.9. Radar Waveform Calibration Result

DFS detection threshold level and the burst of pulses on the Channel frequency

20MHz



40MHz

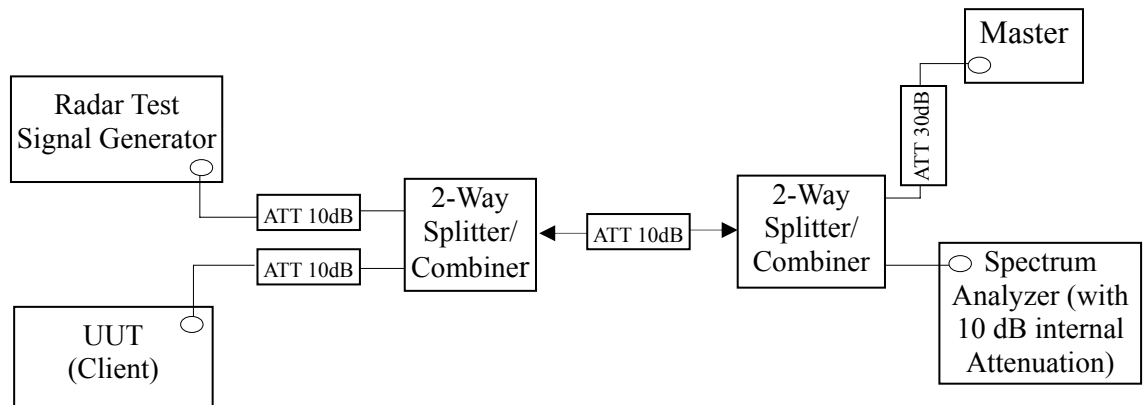


## 7. TEST SETUP AND TEST RESULT

### 7.1. Test Setup

#### 7.1.1. Test Setup Diagram

Following is the test setup for generated the radar waveforms and used to monitor UNII device.



#### 7.1.2. Test Setup Operation

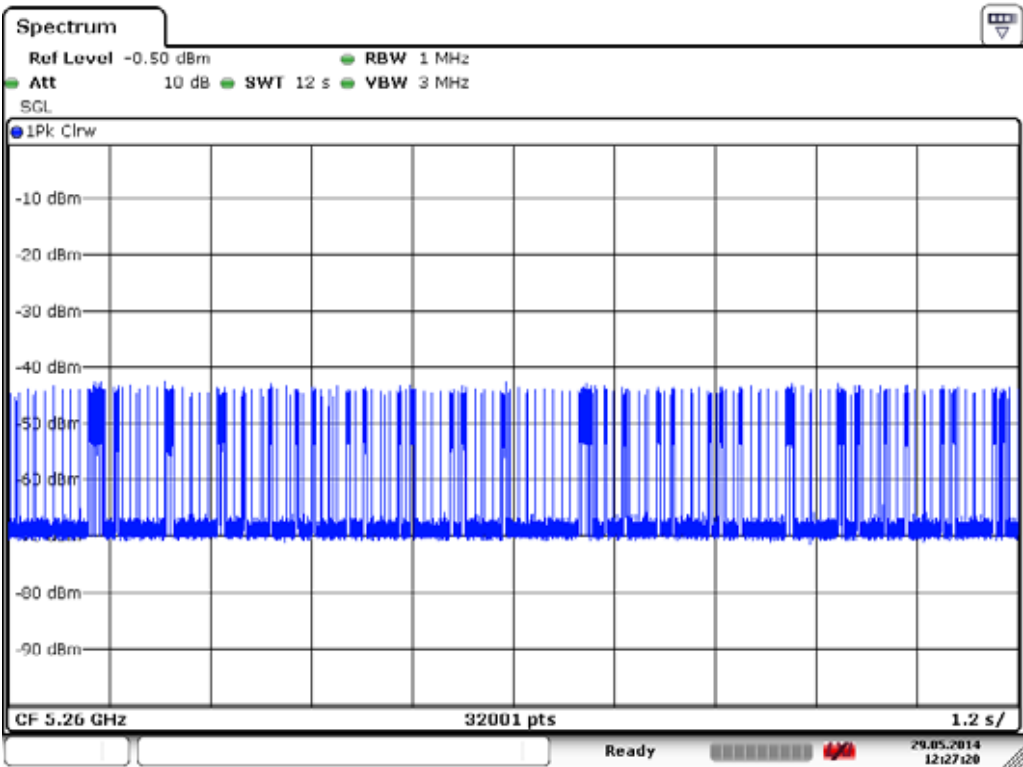
System testing was performed with the designated MPEG test file that streams full motion video from the Access Point to Client in full motion video mode using the media player with the V2.61 Codec package. This file is used by IP and Frame based systems for loading the test channel during the in-service compliance testing of the U-NII device. The waveform parameters from within the bounds of the signal type are selected randomly using uniform distribution.

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move. It is also used to monitor EUT transmissions during the Channel Availability Check Time.

7.1.3. Test Setup for Data Traffic Plot

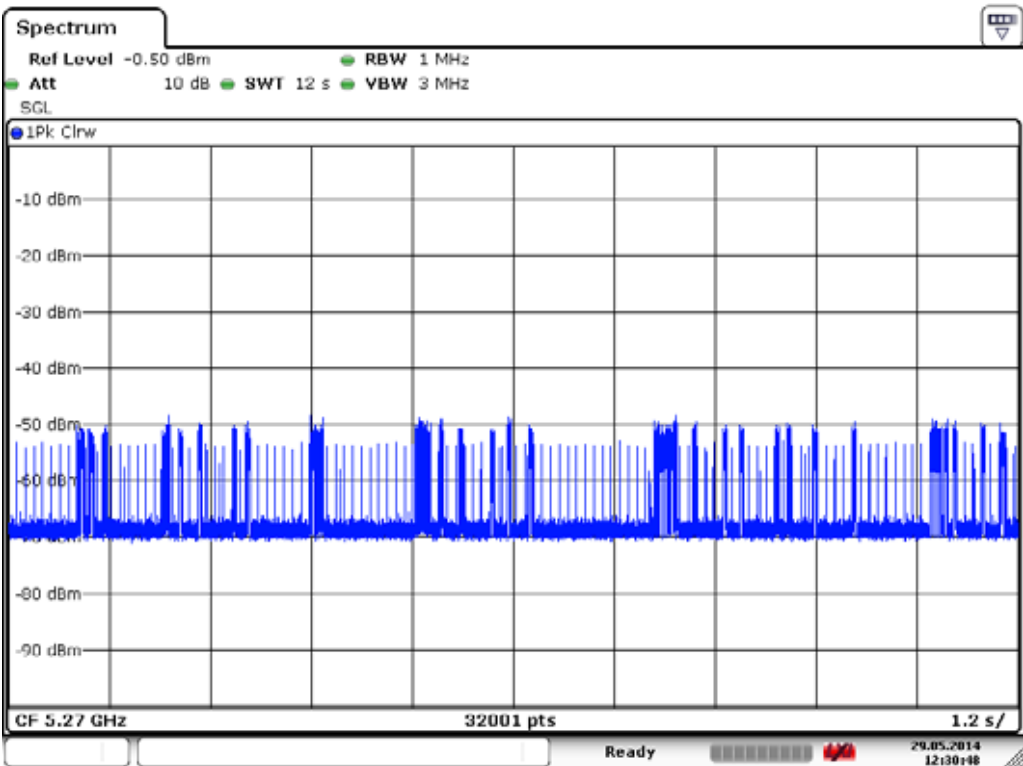
Test Date: 2014. 05. 29      Temperature: 25°C      Humidity:53%

20MHz



Date: 29.MAY.2014 12:27:21

40MHz



Date: 29.MAY.2014 12:30:49

## 7.2. Channel Move Time, Channel Closing Transmission Time Measurement

### 7.2.1. Limit

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Value                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Channel Move Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10 seconds<br>See Note 1.                                                                                 |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.<br>See Notes 1 and 2. |
| <p>Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:</p> <ol style="list-style-type: none"> <li>For the Short Pulse Radar Test Signals this instant is the end of the Burst.</li> <li>For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.</li> <li>For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.</li> </ol> <p>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.</p> |                                                                                                           |

### 7.2.2. Test Procedures

- 7.2.2.1. When a radar Burst with a level equal to the DFS Detection Threshold + 1dB is generated on the operating channel of the U-NII device. A U-NII device operating as a Client Device will associate with the Master of channel. Stream the MPEG test file from the Master Device to the Client Device on the selected channel for entire period of the test. At time to the radar waveform generator sends a Burst of pulses for each of the radar types at Detection Threshold + 1dB.
- 7.2.2.2. Observe the transmissions of the EUT at the end of the radar Burst on the Operating channel. Measure and record the transmissions from the EUT during the observation time [Channel Move Time]. One 10 Second plot be reported for the short Pulse Radar type 1-4 and one for the Long Pulse Radar Type test in a 22 second plot. The plot for the Short Pulse Radar types start at the end of the radar burst. The Channel Move Time will be calculated based on the plot of the short Pulse Radar Type. The Long Pulse Radar Type plot show the device ceased transmissions within the 10 second window after detection has occurred. The plot for the Long Pulse Radar type should start at the beginning of the 12 second waveform.

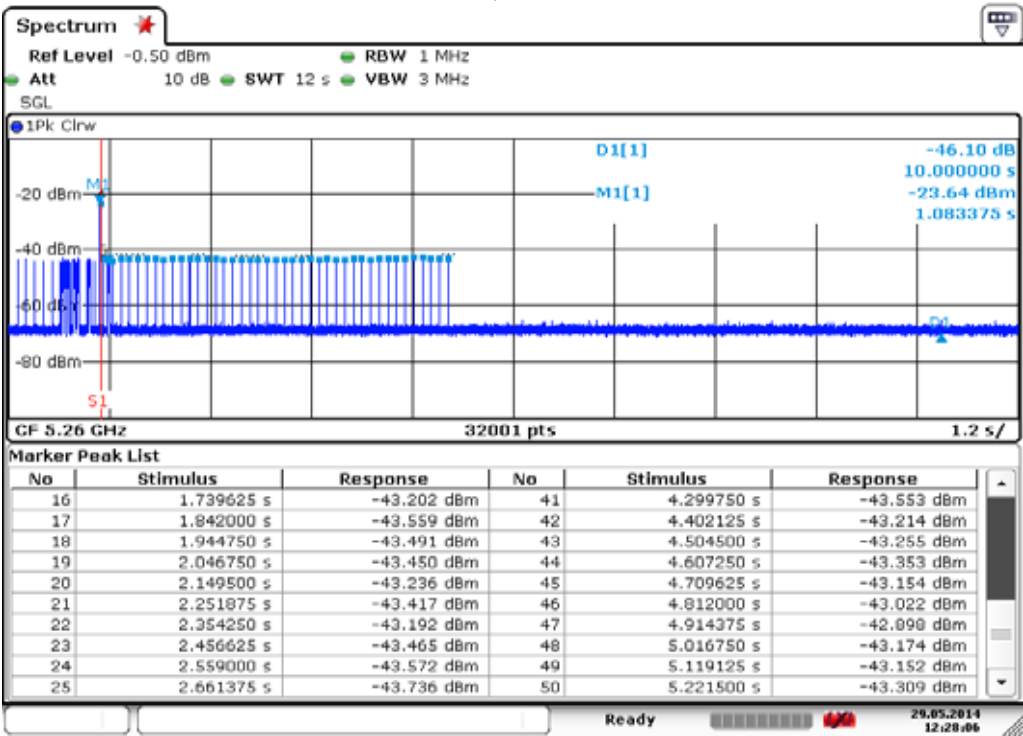
7.2.3. Test Result

Applicability of DFS Requirement During Normal Operation

7.2.3.1. Channel Closing Transmission Time & Channel Move Time  
(PASS)

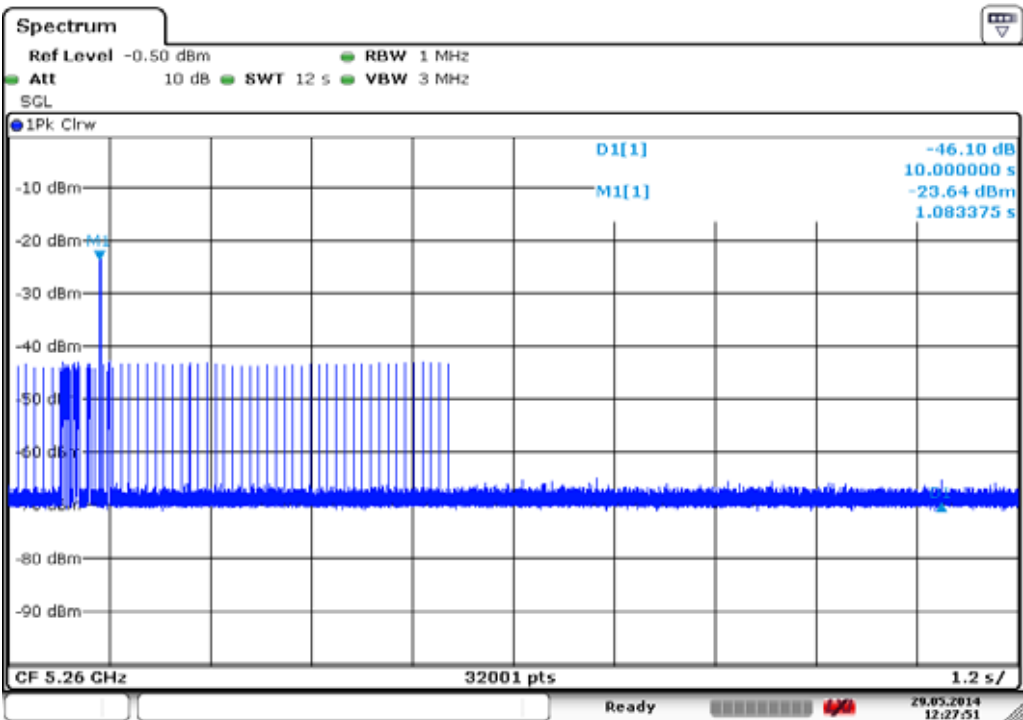
Test Date: 2014. 05. 29      Temperature: 25°C      Humidity:53%

Test Mode: UNII Band II-2A, 20MHz



Date: 29.MAY.2014 12:28:07

Channel move time > 10 S



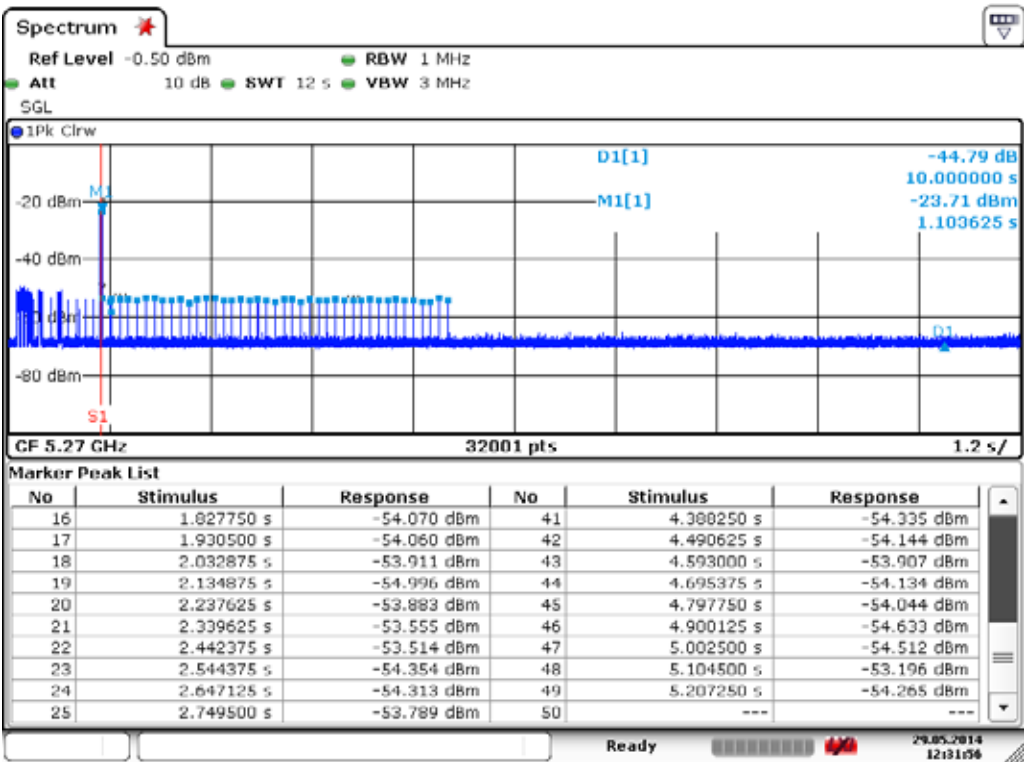
Date: 29.MAY.2014 12:27:51

Test Channel: CH 52, Test Frequency: 5260MHz

| Channel Closing Transmission Time Calculated |           |
|----------------------------------------------|-----------|
| Sweep Time(S) sec                            | 12        |
| Sweep points (P)                             | 32001     |
| Number of Sweep points in 10 sec (N)         | 50        |
| Channel Closing Time (C)                     | 18.749 ms |

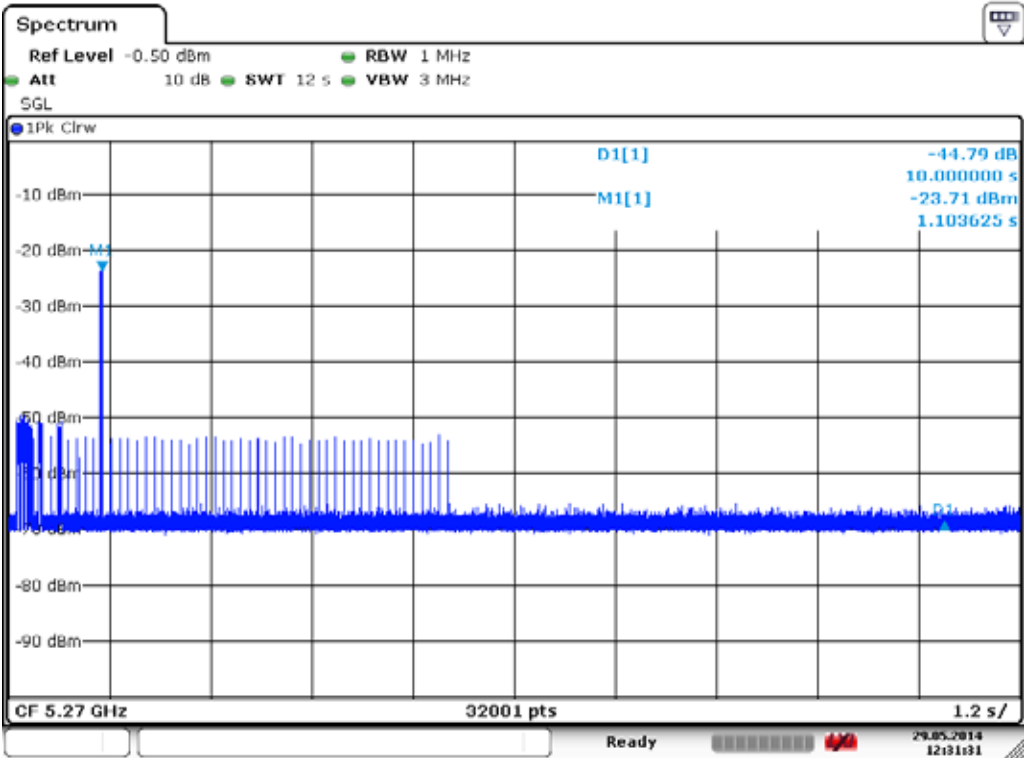
Channel closing time is calculated from  $C=N* \text{dwell}$ ; where dwell is the occupancy time per sweep point calculated by the formula:  $\text{dwell}=S/P$ . N is the number of sweep points indicating transmission after S1; where S1 is the radar signal detected.

Test Mode: UNII Band II-2A, 40MHz



Date: 29.MAY.2014 12:31:57

Channel move time > 10 S



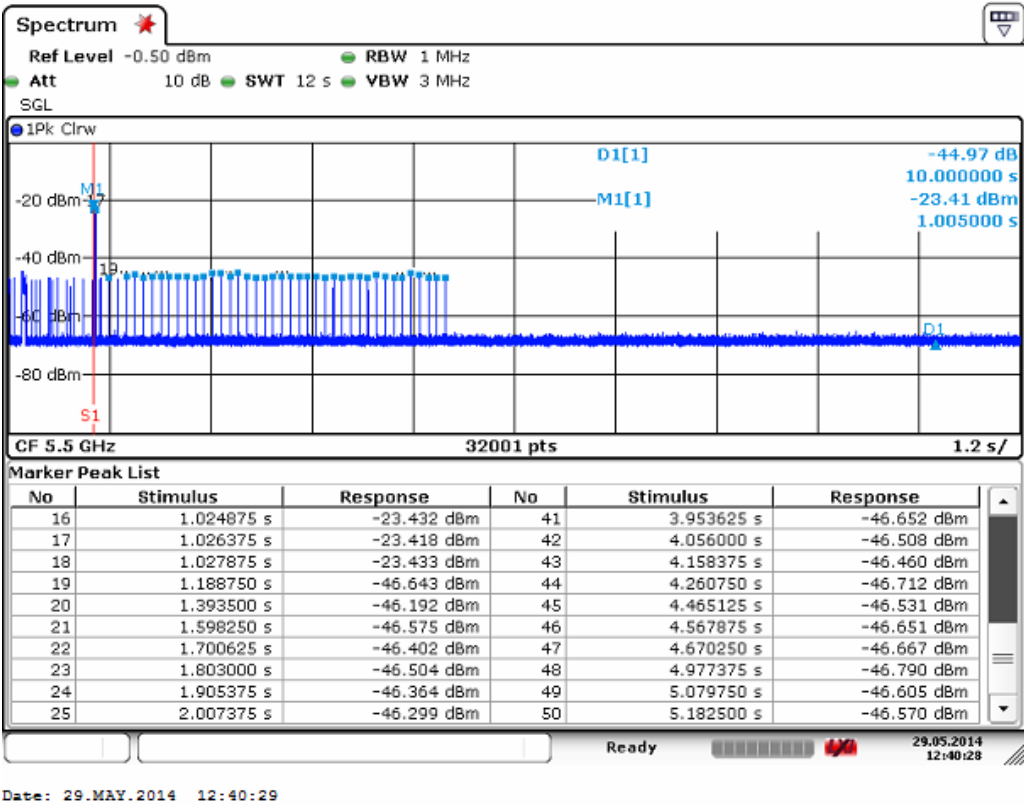
Date: 29.MAY.2014 12:31:32

Test Channel: CH 54, Test Frequency: 5270MHz

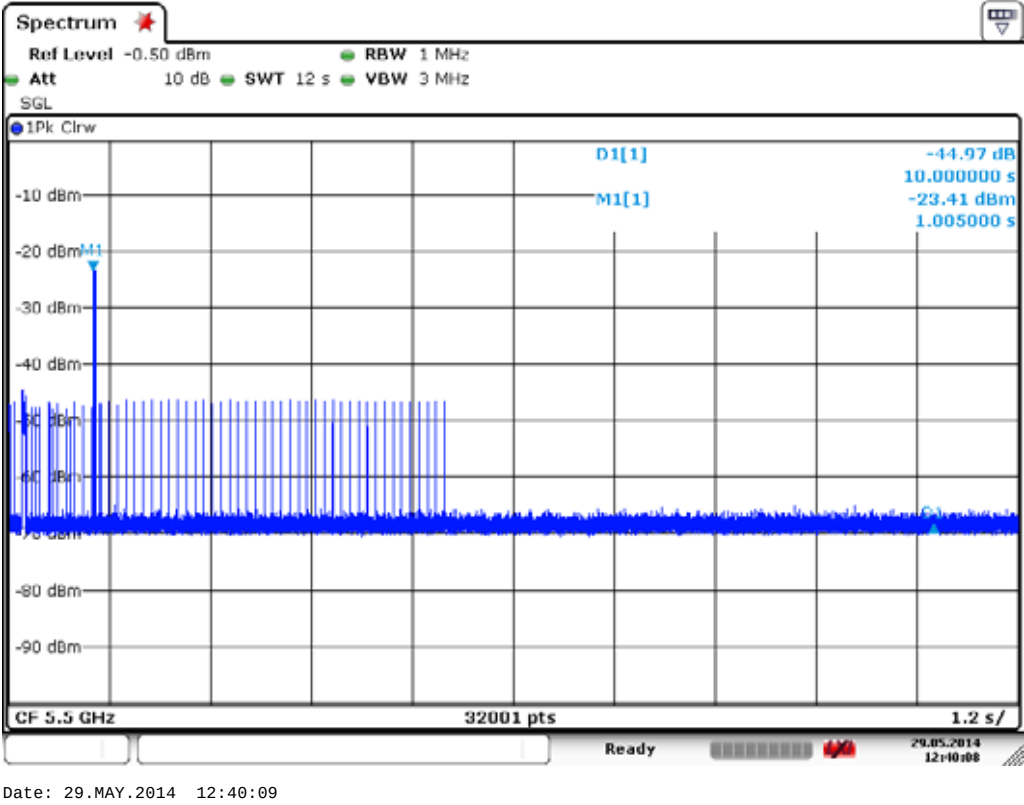
| Channel Closing Transmission Time Calculated |          |
|----------------------------------------------|----------|
| Sweep Time(S) sec                            | 12       |
| Sweep points (P)                             | 32001    |
| Number of Sweep points in 10 sec (N)         | 50       |
| Channel Closing Time (C)                     | 18.749ms |

Channel closing time is calculated from  $C=N* \text{dwell}$ ; where dwell is the occupancy time per sweep point calculated by the formula:  $\text{dwell}=S/P$ . N is the number of sweep points indicating transmission after S1; where S1 is the radar signal detected.

Test Mode: UNII Band II-2C, 20MHz



Channel move time > 10 S

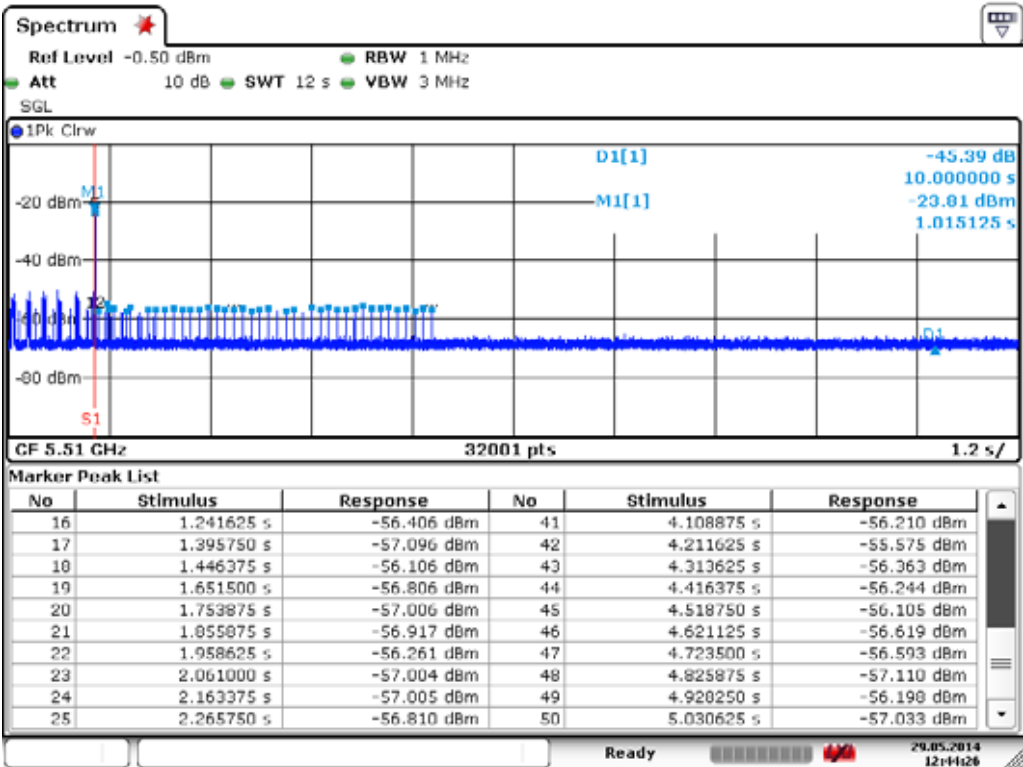


Test Channel: CH 100, Test Frequency: 5500MHz

| Channel Closing Transmission Time Calculated |           |
|----------------------------------------------|-----------|
| Sweep Time(S) sec                            | 12        |
| Sweep points (P)                             | 32001     |
| Number of Sweep points in 10 sec (N)         | 50        |
| Channel Closing Time (C)                     | 18.749 ms |

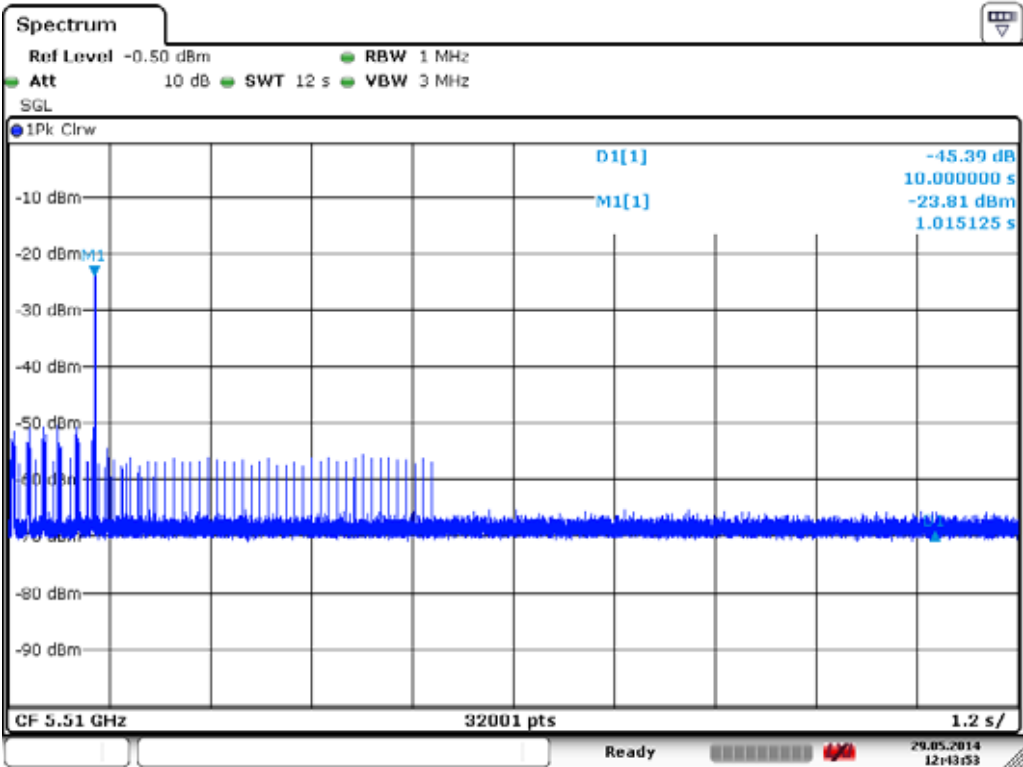
Channel closing time is calculated from  $C=N* \text{dwell}$ ; where dwell is the occupancy time per sweep point calculated by the formula:  $\text{dwell}=S/P$ . N is the number of sweep points indicating transmission after S1; where S1 is the radar signal detected.

Test Mode: UNII Band II-2C, 40MHz



Date: 29.MAY.2014 12:44:27

Channel move time > 10 S



Date: 29.MAY.2014 12:43:54

Test Channel: CH 102, Test Frequency: 5510MHz

| Channel Closing Transmission Time Calculated |          |
|----------------------------------------------|----------|
| Sweep Time(S) sec                            | 12       |
| Sweep points (P)                             | 32001    |
| Number of Sweep points in 10 sec (N)         | 50       |
| Channel Closing Time (C)                     | 18.749ms |

Channel closing time is calculated from  $C=N* \text{dwell}$ ; where dwell is the occupancy time per sweep point calculated by the formula:  $\text{dwell}=S/P$ . N is the number of sweep points indicating transmission after S1; where S1 is the radar signal detected.