

TEST REPORT

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Report Number: 2401A25033E-RF-00E
FCC ID: 2BEGB-A01A11

Test Standard (s)

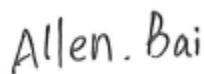
FCC PART 15.407

Sample Description

Product Type: Projector
Model No.: A01A11
Multiple Model(s) No.: A**A11 (" ** " =01-99 , indicates for different market or business purposes)
Trade Mark: N/A
Date Received: 2024-12-27
Issue Date: 2025-06-13

| | |
|--------------|-------|
| Test Result: | Pass▲ |
|--------------|-------|

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Allen Bai
RF Engineer

Approved By:

Nancy Wang
RF Supervisor

Note: The information marked* is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.
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DOCUMENT REVISION HISTORY

| Revision Number | Report Number | Description of Revision | Date of Revision |
|-----------------|--------------------|-------------------------|------------------|
| 0 | 2401A25033E-RF-00E | Original Report | 2025-06-13 |

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

| | |
|--|--|
| Product | Projector |
| Tested Model | A01A11 |
| Multiple Model(s) | A**A11("=="=01-99 , indicates for different market or business purposes) |
| Frequency Range | 5250-5350MHz; 5470-5725MHz |
| Mode | 802.11a/n20/n40 |
| Maximum Conducted Average Output Power | 5250-5350MHz: 14.73dBm 5470-5725MHz: 15.51dBm |
| Modulation Technique | OFDM |
| Antenna Specification [#] | 4.19dBi (provided by the applicant) |
| Voltage Range | AC 120V |
| Sample serial number | 2WQQ-9 (Assigned by BACL, Shenzhen) |
| Sample/EUT Status | Good condition |
| Adapter Information | N/A |
| Note: The Multiple models are electrically identical with the test model except for model number and sales channel. Please refer to the declaration letter [#] for more detail, which was provided by manufacturer. | |

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts E of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC Part 15, Subpart E, section 15.407 Dynamic Frequency Selection (DFS) for devices operating in the bands 5250-5350 MHz, 5470-5725 MHz.

Test Methodology

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02.

Each test item follows test standards and with no deviation.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

EUT Exercise Software

N/A

Equipment Modifications

N/A

Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|---|---------------|
| Lenovo | PC | TIANYI510Pro-18ICB | R3NO28B21001 |
| Lenovo | LED display | L2364A | U310FZR9 |
| Lenovo | Keyboard | EKB-536A | 811A19A5 |
| DELL | Mouse | Ms116P | Ms116P |
| Grandstream | Router | GWN7665 (FCC ID: YZZGWN7665) (IC: 11964A-GWN7665) | C074AD251F0A |
| DELL | Notebook | Latitude E6410 | 11429208685 |

External I/O Cable

| Cable Description | Length (m) | From Port | To |
|------------------------------------|------------|-----------|----------|
| Unshielded detachable AC cable | 1.5 | EUT | AC Mains |
| Un-shielding Detachable AC Cable | 0.5 | PoE | AC Mains |
| Un-shielding Detachable RJ45 Cable | 1.5 | PoE | Router |
| Un-shielding Detachable RJ45 Cable | 1.5 | Router | Notebook |

SUMMARY OF TEST RESULTS

The following result table represents the list of measurements required under the CFR §47 Part 15.407(h), and KDB: 905462 D02 UNII DFS Compliance Procedures New Rules v02

| Items | Description of Test | Result |
|--------------------------------|---|----------------|
| Detection Bandwidth | UNII Detection Bandwidth | Not Applicable |
| Performance Requirements Check | Initial Channel Availability Check Time (CAC) | Not Applicable |
| | Radar Burst at the Beginning of the CAC | Not Applicable |
| | Radar Burst at the End of the CAC | Not Applicable |
| In-Service Monitoring | Channel Move Time | Compliant |
| | Channel Closing Transmission Time | Compliant |
| | Non-Occupancy Period | Compliant |
| Radar Detection | Statistical Performance Check | Not Applicable |

Note: EUT is client without radar detection

TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-----------------------------|-----------------|---------------|------------------|----------------------|
| Tonscend | RF control Unit | JS0806-2 | 19D8060154 | 2024/08/06 | 2025/08/05 |
| Rohde & Schwarz | Spectrum Analyzer | FSV40 | 101473 | 2024/12/04 | 2025/12/03 |
| Keysight | MXG Vector Signal Generator | N5182B | MY53051503 | 2024/12/04 | 2025/12/03 |
| Unknown | 10dB Attenuator | Unknown | F-03-EM014 | 2024/06/27 | 2025/06/26 |
| JFW | 30dB Attenuator | 50FH-030-100 RF | F-03-EM032 | 2024/06/27 | 2025/06/26 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

APPLICABLE STANDARDS

DFS Requirement

CFR §47 Part 15.407(h)

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

| Requirement | Operational Mode | | |
|--|------------------|--------------------------------|-----------------------------|
| | Master | Client Without Radar Detection | Client With Radar Detection |
| <i>Non-Occupancy Period</i> | Yes | Not required | Yes |
| <i>DFS Detection Threshold</i> | Yes | Not required | Yes |
| <i>Channel Availability Check Time</i> | Yes | Not required | Not required |
| <i>U-NII Detection Bandwidth</i> | Yes | Not required | Yes |

Table 2: Applicability of DFS requirements during normal operation

| Requirement | Operational Mode | |
|--|--|--------------------------------|
| | Master Device or Client with Radar Detection | Client Without Radar Detection |
| <i>DFS Detection Threshold</i> | Yes | Not required |
| <i>Channel Closing Transmission Time</i> | Yes | Yes |
| <i>Channel Move Time</i> | Yes | Yes |
| <i>U-NII Detection Bandwidth</i> | Yes | Not required |

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

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

| Maximum Transmit Power | Value (See Notes 1, 2, and 3) |
|--|----------------------------------|
| EIRP \geq 200 milliwatt | -64 dBm |
| EIRP $<$ 200 milliwatt and power spectral density $<$ 10 dBm/MHz | -62 dBm |
| EIRP $<$ 200 milliwatt that do not meet the power spectral density requirement | -64 dBm |

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

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

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response Requirement Values

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

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel move* (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 5 – Short Pulse Radar Test Waveforms

| Radar Type | Pulse Width (μsec) | PRI (μsec) | Number of Pulses | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|------------------------------------|--------------------|---|---|--|--------------------------|
| 0 | 1 | 1428 | 18 | See Note 1 | See Note 1 |
| 1 | 1 | Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a | Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$ | 60% | 30 |
| | | Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A | | | |
| 2 | 1-5 | 150-230 | 23-29 | 60% | 30 |
| 3 | 6-10 | 200-500 | 16-18 | 60% | 30 |
| 4 | 11-20 | 200-500 | 12-16 | 60% | 30 |
| Aggregate (Radar Types 1-4) | | | | 80% | 120 |

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. 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. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 usec is selected, the number of pulses would be Roundup $\left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{3066} \right) \right\} = \text{Roundup}\{17.2\} = 18$.

Table 5a - Pulse Repetition Intervals Values for Test A

| Pulse Repetition Frequency Number | Pulse Repetition Frequency (Pulses Per Second) | Pulse Repetition Interval (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 |

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

| Radar Type | Number of Trials | Number of Successful Detections | Minimum Percentage of Successful Detection |
|--|------------------|---------------------------------|--|
| 1 | 35 | 29 | 82.9% |
| 2 | 30 | 18 | 60% |
| 3 | 30 | 27 | 90% |
| 4 | 50 | 44 | 88% |
| Aggregate $(82.9\% + 60\% + 90\% + 88\%)/4 = 80.2\%$ | | | |

Table 6 – Long Pulse Radar Test Waveform

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

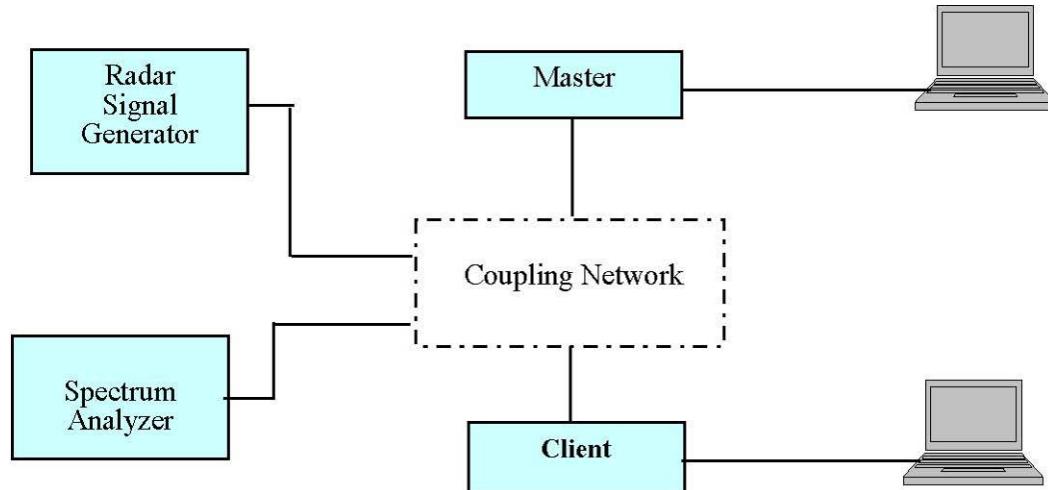
Table 7 – Frequency Hopping Radar Test Waveform

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

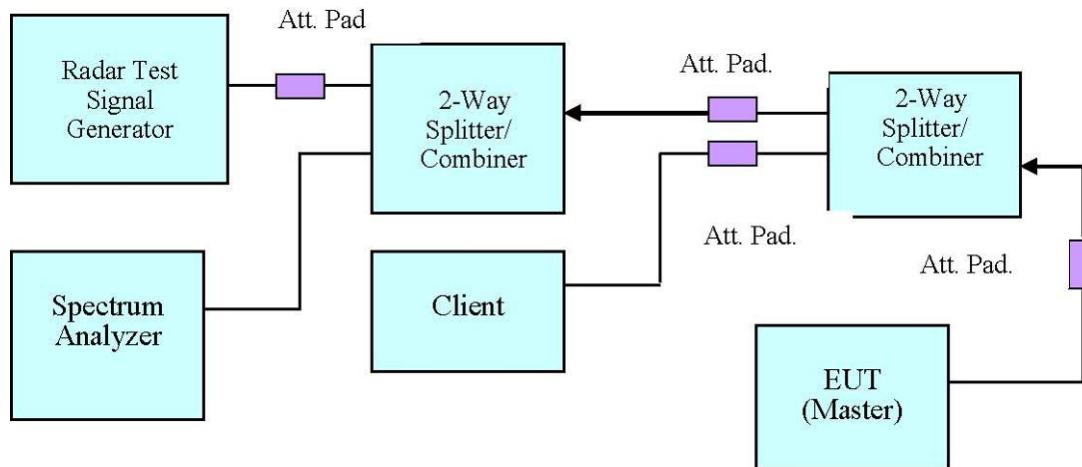
DFS Measurement System

DFS measurement system consists of two subsystems: (1) The radar signal generating subsystem and (2) the traffic monitoring subsystem.

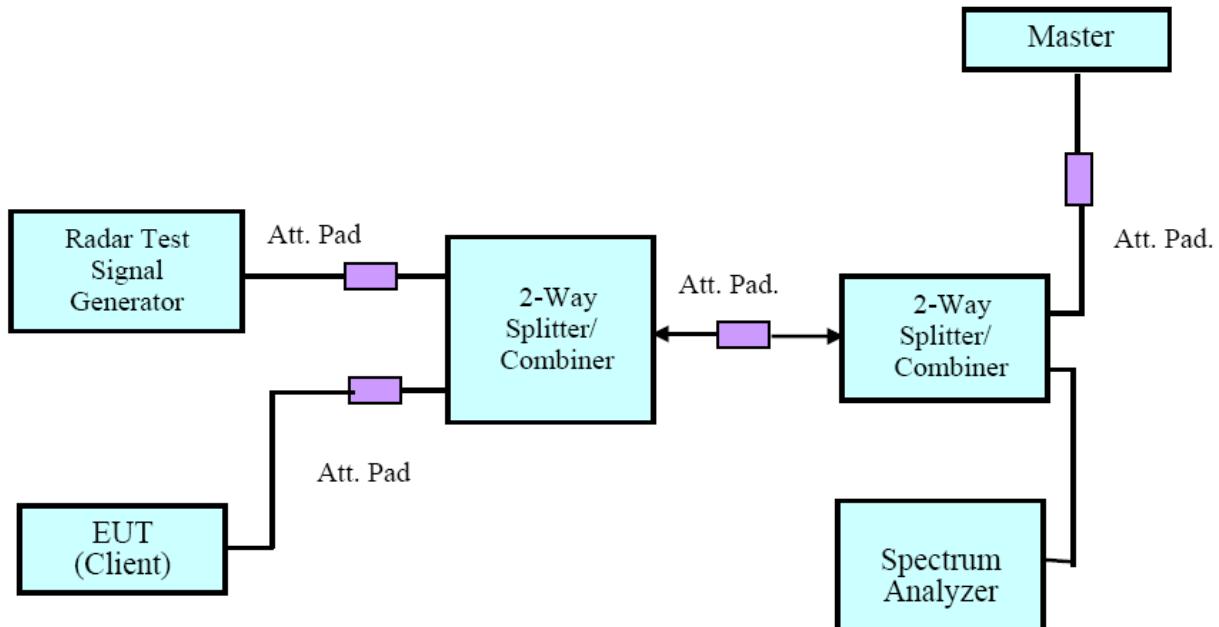
System Block Diagram



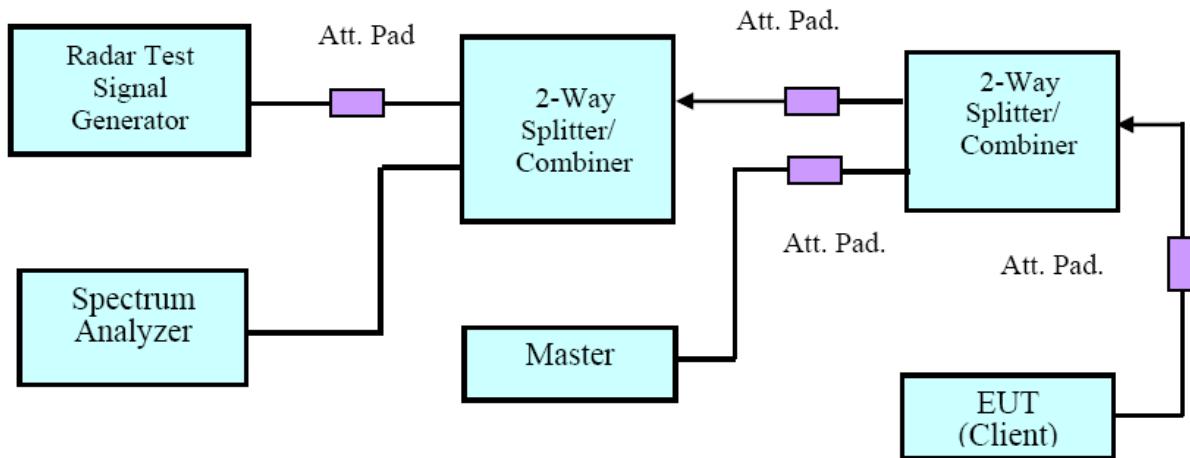
Conducted Method



Setup for Master with injection at the Master

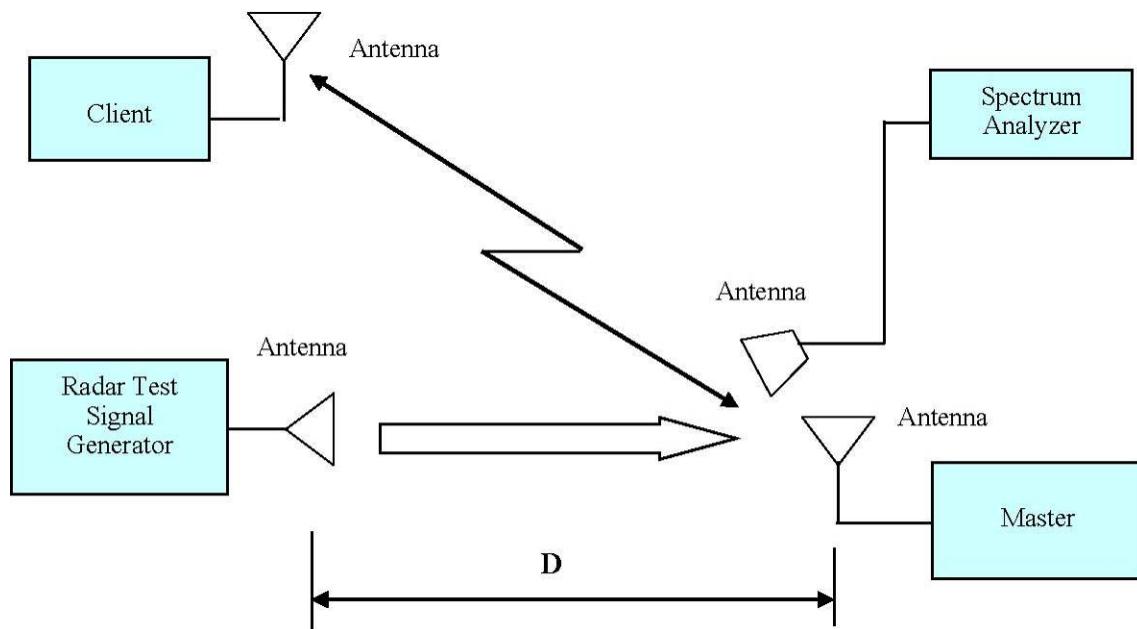


Setup for Client with injection at the Master



Setup for Client with injection at the Client

Radiated Method



Test Procedure

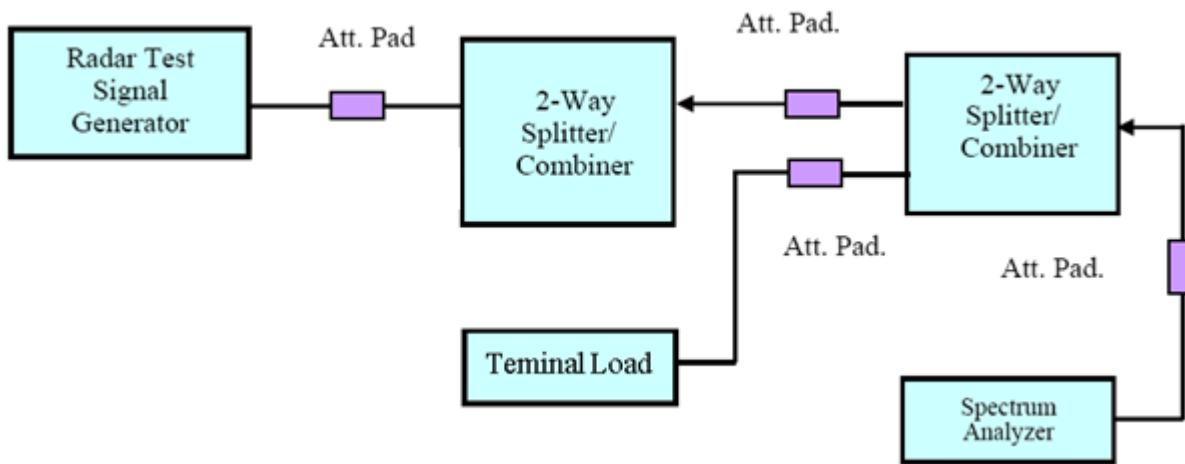
A spectrum analyzer is used as a monitor verifies that the EUT status including Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the diction and Channel move.

TEST RESULTS

Description of EUT

The calibrated radiated DFS detection threshold level is set to -62dBm.

Radar Waveform Calibration



Test Data

Environmental Conditions

| | |
|--------------------|---------|
| Temperature: | 22.5 °C |
| Relative Humidity: | 46 % |
| ATM Pressure: | 101 kPa |

The testing was performed by Navilite Cai on 2025-03-18.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the Appendix.

CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

Test Procedure

Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. repeat using a long pulse radar type5 waveform.

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.

The aggregate channel closing transmission time is calculated as follows:

$$\text{Aggregate Transmission Time} = N * \text{Dwell Time}$$

N is the number of spectrum analyzer bins showing a device transmission Dwell Time is the dwell time per bin (i.e. Dwell Time = S/B, S is the sweep time and B is the number of bin, i.e. 8192)

Test Data

Environmental Conditions

| | |
|--------------------|---------|
| Temperature: | 22.5 °C |
| Relative Humidity: | 46 % |
| ATM Pressure: | 101 kPa |

The testing was performed by Navilite Cai on 2025-03-18.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the Appendix.

NON-OCCUPANCY PERIOD

Test Procedure

Measure the EUT for more than 30 minutes following the channel close.move time to verify that the EUT does not resume any transmissions on this channel. Provide one plot to demonstrate no transmission on the channel for the non-occupancy period (30 minutes observation time)

Test Data

Environmental Conditions

| | |
|---------------------------|---------|
| Temperature: | 22.5 °C |
| Relative Humidity: | 46 % |
| ATM Pressure: | 101 kPa |

The testing was performed by Navilite Cai on 2025-03-18.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment 2401A25033E-RF External photo and 2401A25033E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401A25033E-RFB Test Setup photo.

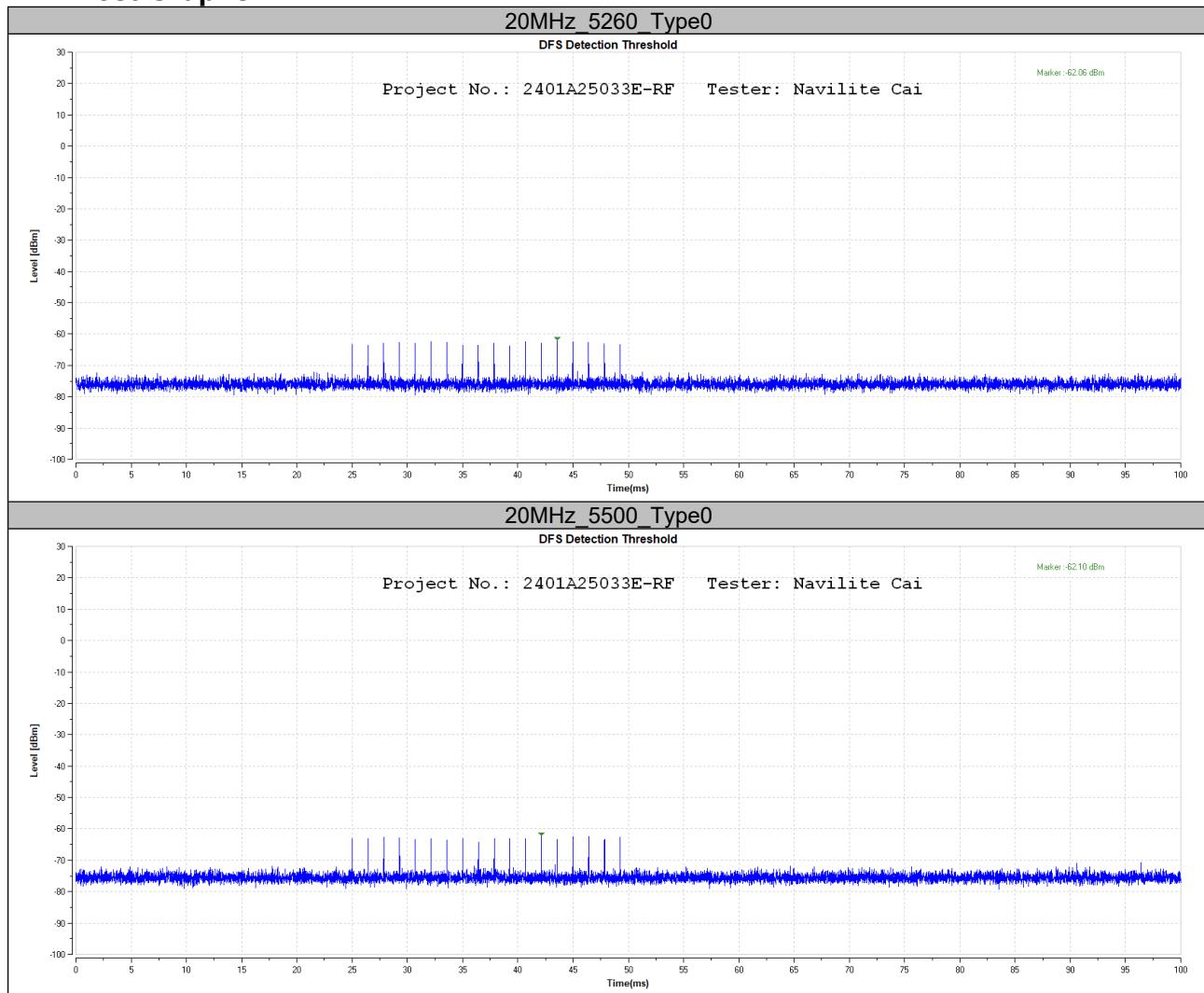
APPENDIX

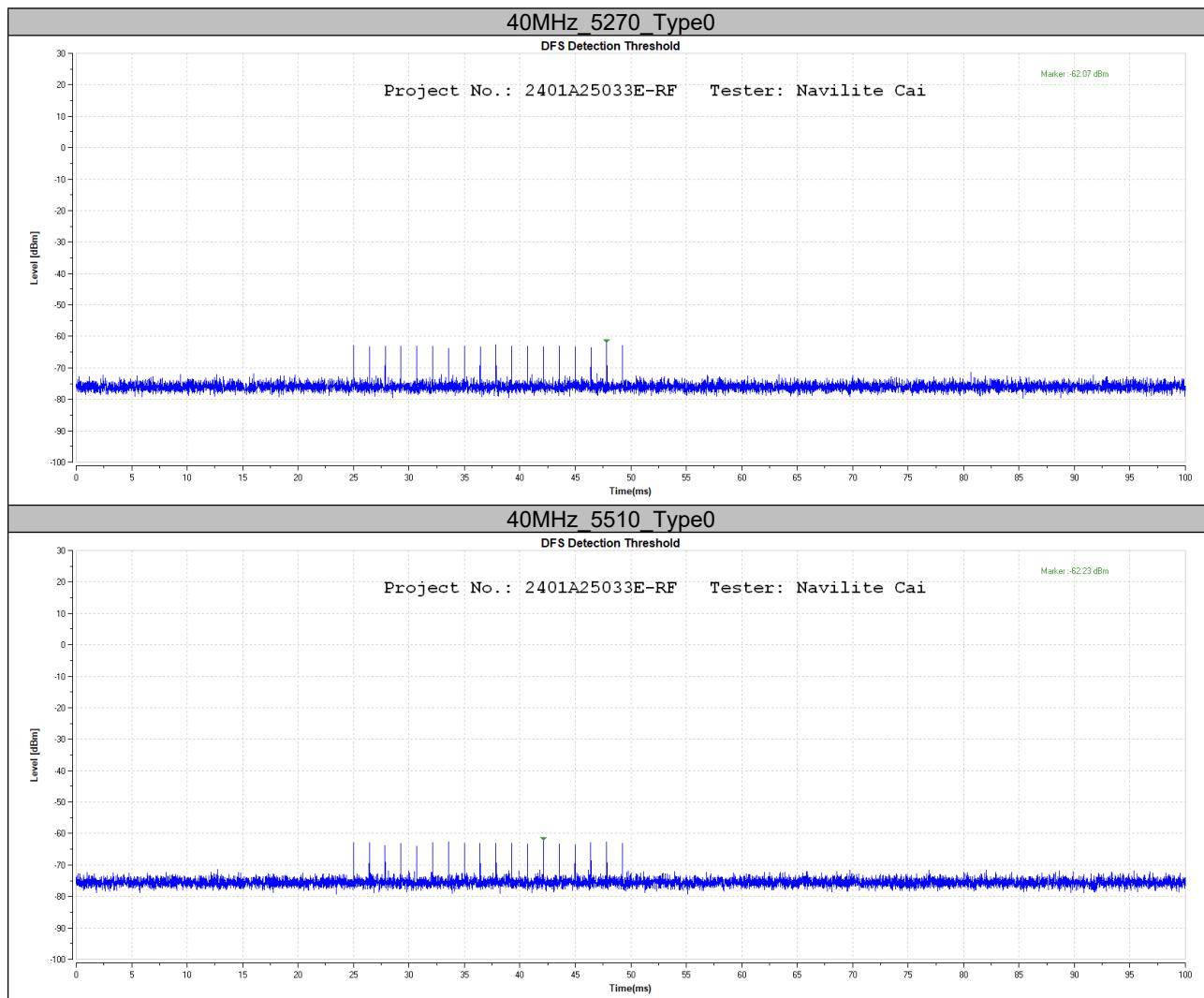
Appendix A: DFS Detection Thresholds

Test Result

| Test Mode | Freq[MHz] | Radar Type | Result[dBm] | Limit[dBm] | Verdict |
|-----------|-----------|------------|-------------|------------|---------|
| 20MHz | 5260 | Type0 | -62.06 | -62.00 | PASS |
| | 5500 | Type0 | -62.10 | -62.00 | PASS |
| 40MHz | 5270 | Type0 | -62.07 | -62.00 | PASS |
| | 5510 | Type0 | -62.23 | -62.00 | PASS |

Test Graphs



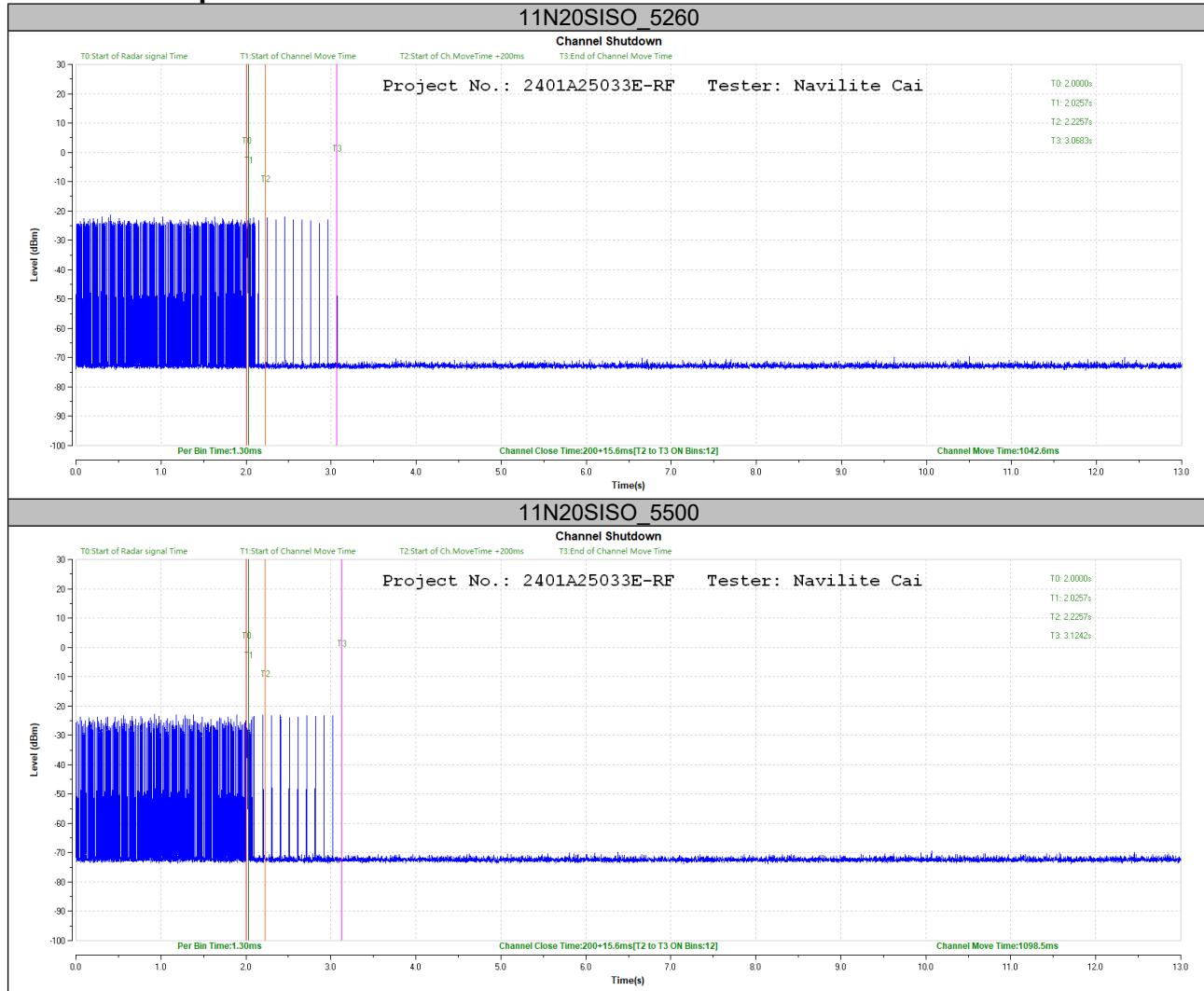


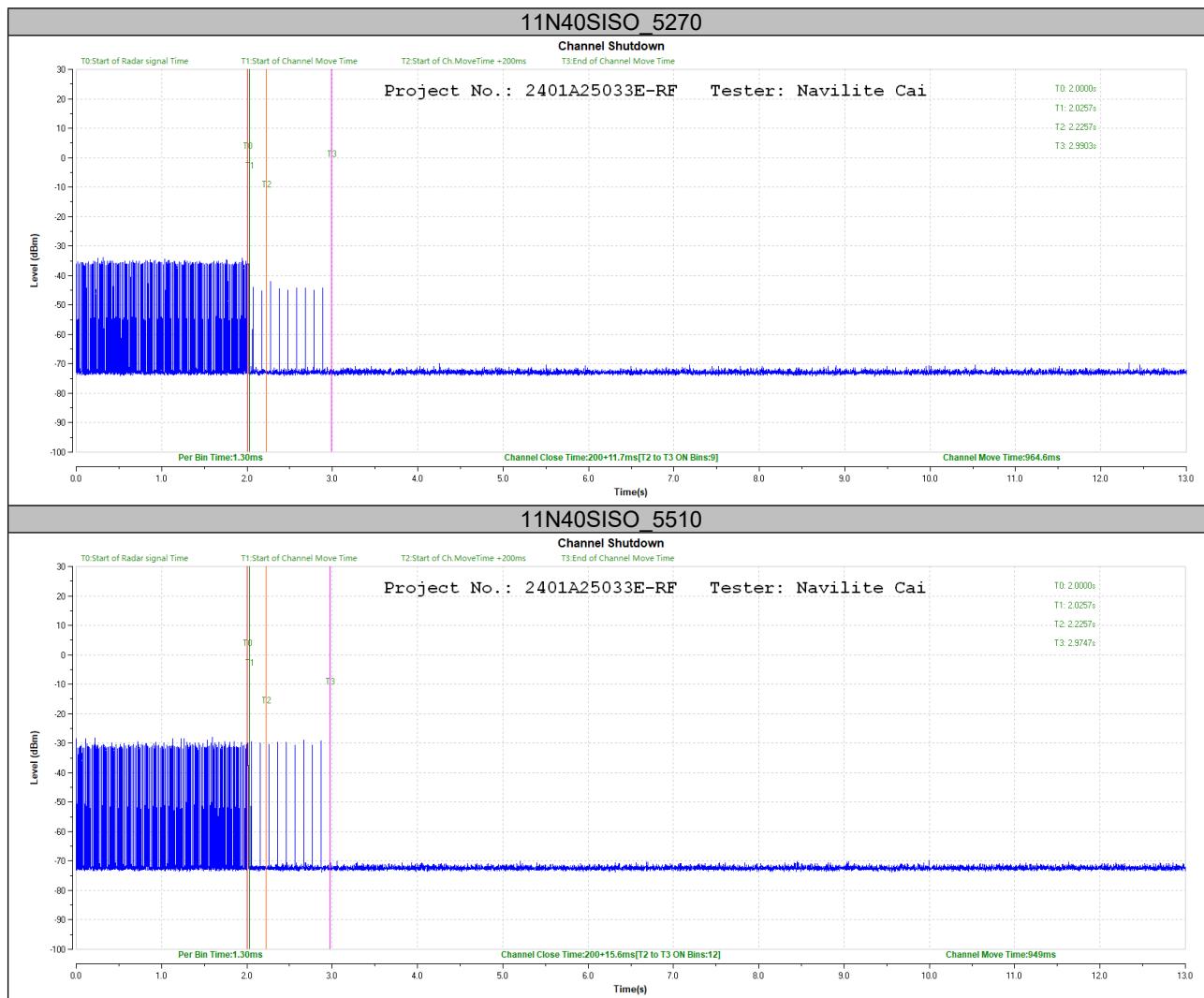
Appendix B: Channel Move Time and Channel Closing Transmission Time

Test Result

| Test Mode | Freq(MHz) | CCTT[ms] | Limit[ms] | CMT[ms] | Limit[ms] | Verdict |
|-----------|-----------|----------|-----------|---------|-----------|---------|
| 11N20SISO | 5260 | 200+15.6 | 200+60 | 1042.6 | 10000 | PASS |
| | 5500 | 200+15.6 | 200+60 | 1098.5 | 10000 | PASS |
| 11N40SISO | 5270 | 200+11.7 | 200+60 | 964.6 | 10000 | PASS |
| | 5510 | 200+15.6 | 200+60 | 949 | 10000 | PASS |

Test Graphs



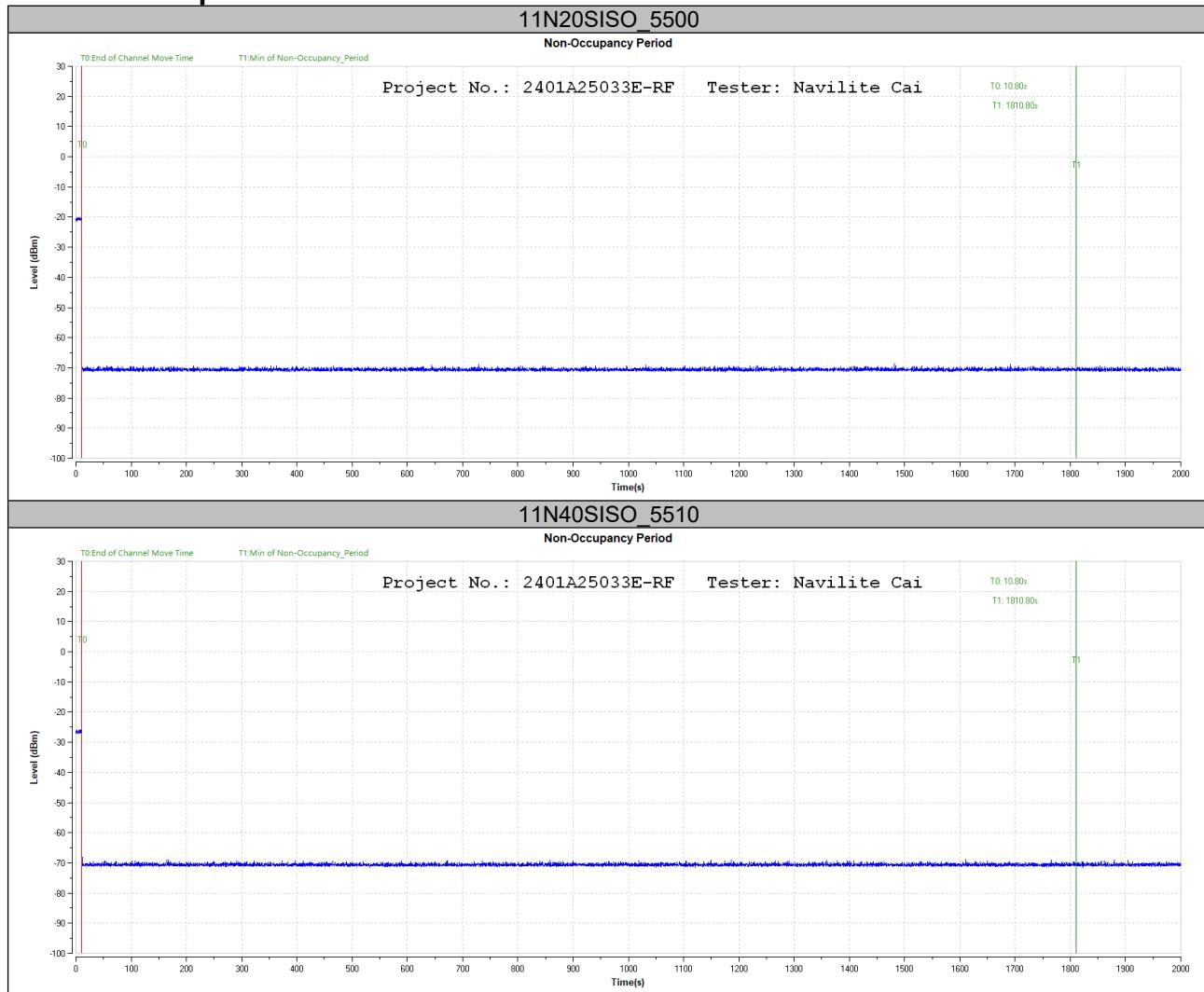


Appendix C: Non-Occupancy Period

Test Result

| Test Mode | Freq(MHz) | Result | Limit[s] | Verdict |
|-----------|-----------|----------------|----------|---------|
| 11N20SISO | 5500 | see test graph | ≥1800 | PASS |
| 11N40SISO | 5510 | see test graph | ≥1800 | PASS |

Test Graphs



***** END OF REPORT *****