Test Report No:
2550032R-RFUSV18S-A

TEST REPORT (Dynamic Frequency Selection)
FCC Rules&Regulations

Product Name	System-On-Module
Brand Name	AMobile
Model No.	SoM-SD700, SoM-SD510
FCC ID	2AQ5W-SOM510-700
Applicant´s Name / Address	AMobile Solutions Corp. 8F.-1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan
Manufacturer's Name / Address	AMobile Solutions Corp. 8F.-1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart E Section 15.407 ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By	Vera Hsu Vera Hsu
Approved By	Allen Lin Allen Lin
Date of Receipt	May 05, 2025
Date of Issue	Jul. 15, 2025
Report Version	V1.0

INDEX

page

Competences and Guarantees 3
General Conditions 3
Revision History 4
Summary of Test Result 5
Comments and Remarks 5
1. General Information 6
1.1. EUT Description 6
1.2. EUT Information 7
1.3. Applicable Standards 7
1.4. Testing Location Information 7
1.5. Measurement Uncertainty 8
1.6. List of Test Equipment 8
2. Test Configuration of EUT 9
2.1. Test Condition 9
2.2. Test Channel Frequencies Configuration 9
2.3. The Worst Case Measurement Configuration 9
2.4. Tested System Details 9
2.5. Standard Requirement 9
2.6. UNII Device Description 10
3. General DFS Information 11
3.1. Test Setup 11
3.2. DFS Detection Thresholds 11
4. Radar Test Waveforms 13
4.1. Radar Waveform Calibration 17
4.2. Radar Waveform Calibration Result 18
4.3. Master Data Traffic Plot Result 20
5. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period 23
5.1. Test Procedure 23
5.2. Test Requirement 23
5.3. Test Result of Channel Move Time and Channel Closing Transmission Time 24
5.4. Test Result of Non-Occupancy Period 27
Appendix A. Test Setup Photograph 30

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.
In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 15, 2025

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
5	In-Service Monitoring for Channel Move Time (CMT)	PASS	-
5	In-Service Monitoring for Channel Closing Transmission Time (CCTT)	PASS	-
5	In-Service Monitoring for Non-Occupancy Period (NOP)	PASS	-
Note: Since the product is client without radar detection function, only Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period are required to perform.			

Comments and Explanations
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

DFS Frequency Range	5250 ~ 5350 MHz 5470 ~ 5725 MHz	
DFS Operating Frequency / Number of DFS Channels	IEEE 802.11a IEEE 802.11n/ac (20 MHz)	5260~5320MHz / 4 Channels 5500~5720MHz / 12 Channels
	IEEE 802.11n/ac (40 MHz)	5270~5310MHz / 2 Channels 5510~5710MHz / 6 Channels
	IEEE 802.11ac (80 MHz)	5290MHz / 1 Channel 5530~5690MHz / 3 Channel
Type of Modulation	IEEE 802.11a/n	OFDM-BPSK, QPSK, 16QAM, 64QAM
	IEEE 802.11ac	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM
Channel Control	Auto	
Channel Bandwidth	20/40/80 MHz	

The difference for each model is shown as below:

EUT	Model No.	Platform	Description
1	SoM-SD700	MT8390	The differences are platform and CPU/GPU. All under same layout.
2	SoM-SD510	MT8370	

From the above models, model: SoM-SD700 was selected as representative model for the test and its data was recorded in this report.

Antenna Information							
Ant.	Brand Name	Part No.	Type	Antenna Gain (dBi)			
				U-NII 1	U-NII 2A	U-NII 2C	U-NII 3
1	Cortec	AN0750-74S05BSM	Dipole	3.07	2.66	2.55	2.85
2	Cortec	AN0750-74S05BSM	Dipole	3.07	2.66	2.55	2.85

For IEEE 802.11a/n/ac Mode: (2TX, 2RX)

Both Ant. 1 and Ant. 2 can be used as transmitting/receiving antennas, and they can transmit/receive signal simultaneously.

1.2. EUT Information

EUT Power Type	From Adapter / Host system			
Firmware Version	V001_Beta 1			
Operating Mode	☐	Master		
	☐	Client with radar detection		
	☒	Client without radar detection		
Communication Mode	☒	IP Based (Load Based)	☐	Frame Based
TPC Function	☒	With TPC Function	☐	Without TPC Function
Weather Band (5600 ~ 5650 MHz)	☒	With 5600 ~ 5650 MHz	☐	Without 5600 ~ 5650 MHz
Beamforming Function	☐	With beamforming	☒	Without beamforming

1.3. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB 905462 D02v02

1.4. Testing Location Information

Testing Location Information		
Test Laboratory：DEKRA Testing and Certification Co., Ltd.		
	1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.
	2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958 Test site Designation No. TW3024 with FCC. Conformity Assessment Body Identifier (CABID) TW3024 with ISED.
Test site number for address 1 includes HC-SR02 and HC-CB10. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
DFS	HC-SR10	Igor Tseng	24 / 62	2025/5/26

1.5. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

Test item	Uncertainty
DFS	± 0.74 dB

1.6. List of Test Equipment

HC-SR10

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
MXG Vector Signal Generator	Keysight	N5182B	MY53052548	9 kHz-6 GHz	2025/1/6	2026/1/5
Spectrum Analyzer	Keysight	N9010B	MY57110159	10 Hz-7 GHz	2025/2/25	2026/2/24
MIMO Power Switch Box	Pallas	4PS6A-1	TW5451093	N/A	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	AC 120V/60Hz

2.2. Test Channel Frequencies Configuration

IEEE Std.	Test Channel Frequency
802.11ac (20 MHz)	5500 MHz
802.11ac (40 MHz)	5510 MHz
802.11ac (80 MHz)	5290 MHz
	5530 MHz

2.3. The Worst Case Measurement Configuration

Tests Item	Dynamic Frequency Selection (DFS)
Test Condition	The EUT shall be configured to operate at the highest transmitter output power setting. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the lowest gain shall be used.

Note:
Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.4. Tested System Details

No.	Equipment	Brand Name	Model No.	Serial No.	FCC ID
1	Notebook	DELL	Latitude E7440	9TN6YY1	-
2	Master	ASUS	RT-BE96U	R9IG6G201216VYW	MSQ-RTBE6G00

2.5. Standard Requirement

U-NII devices operating in the 5.25 ~ 5.35 GHz band and the 5.47 ~ 5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an E.I.R.P. of less than 500mW.
U-NII devices operating in the 5.25 ~ 5.35 GHz and 5.47 ~ 5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

2.6. UNII Device Description

1. The EUT operates in the following DFS band:
   5250 ~ 5350 MHz
   5470 ~ 5725 MHz

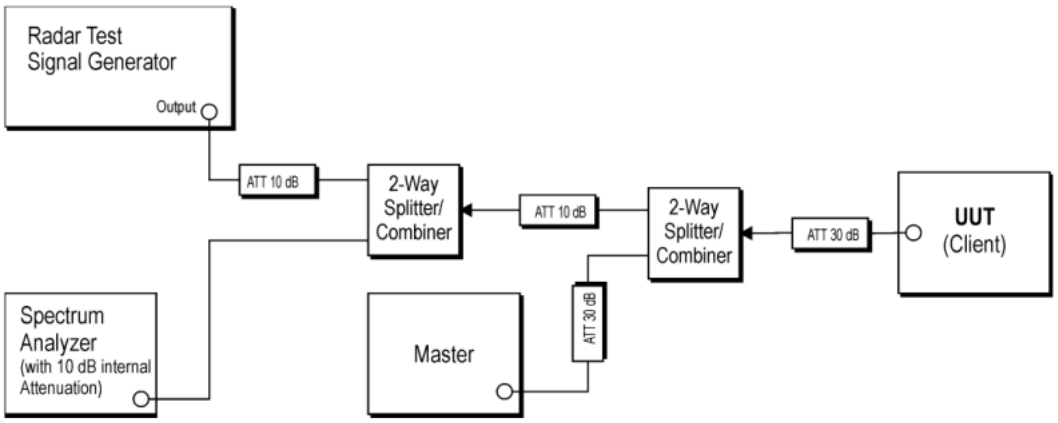
2. Below are the available 50 ohm antenna assemblies and their corresponding gains. 0 dBi gain was used to set the -64 dBm threshold level during calibration of the test setup.

3. WLAN traffic is generated by the test software “iPerf 3” from the Master device to the Slave device in the transfer data rate >17%.

4. For the 5250 ~ 5350 MHz and 5470 ~ 5725 MHz bands, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

3. General DFS Information

3.1. Test Setup



3.2. DFS Detection Thresholds

(1) Interference Threshold value, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥200 milliwatt	-64dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64dBm
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.	

(2) DFS Response requirement values

Parameter	Value
Non-Occupancy Period	Minimum 30 Minutes
Channel Availability Check Time	60 Seconds
Channel Move Time	10 Seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period (See Note 1 and Note 2)
U-NII Detection Bandwidth	Minimum 100% of the 99% 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.

4. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

(1) 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 Test B:15 unique PRI values randomly selected within the range of 518-3066μsec, with a minimum increment of 1μsec, excluding PRI values selected in Test A	$Roundup = \left\{ \left(\frac{1}{360}\right) \cdot \left(\frac{19.10^6}{\mathrm{PRI}_{\mu sec}}\right) \right\}$	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
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.

(2) Long Pulse Radar Test Signal

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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the long pulse radar test signal. If more than 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 follows:

(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 frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.

(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 (12,000,000 / 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 [(12,000,000 / Burst_Count) – (Total Burst Length) + (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.

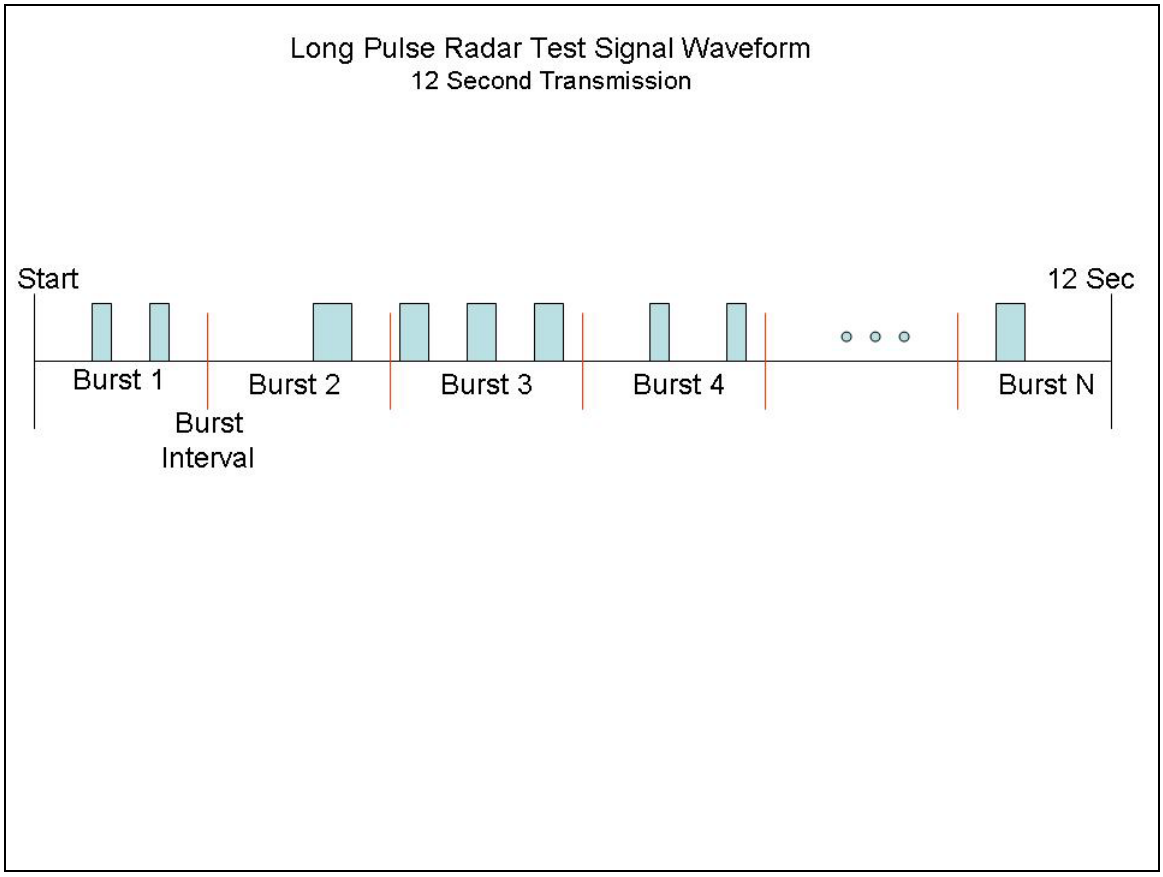
(4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.

(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 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical Representation of a Long Pulse radar Test Waveform



(3) Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (μsec)	PRI (μsec)	Hopping Sequence Length (msec)	Pulses Per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	0.333	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[1] from the hopping sequence defined by the following algorithm:

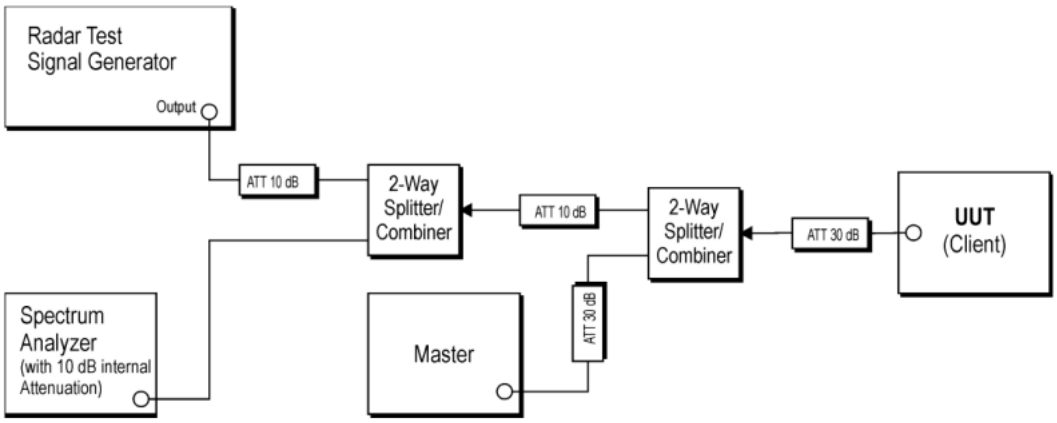
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

4.1. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted radar waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were replace 50ohm terminal from master and client device and no transmissions by either the master or client device. The spectrum analyzer was switched to the zero span (time domain) at the frequency of the radar waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz and 50MHz.

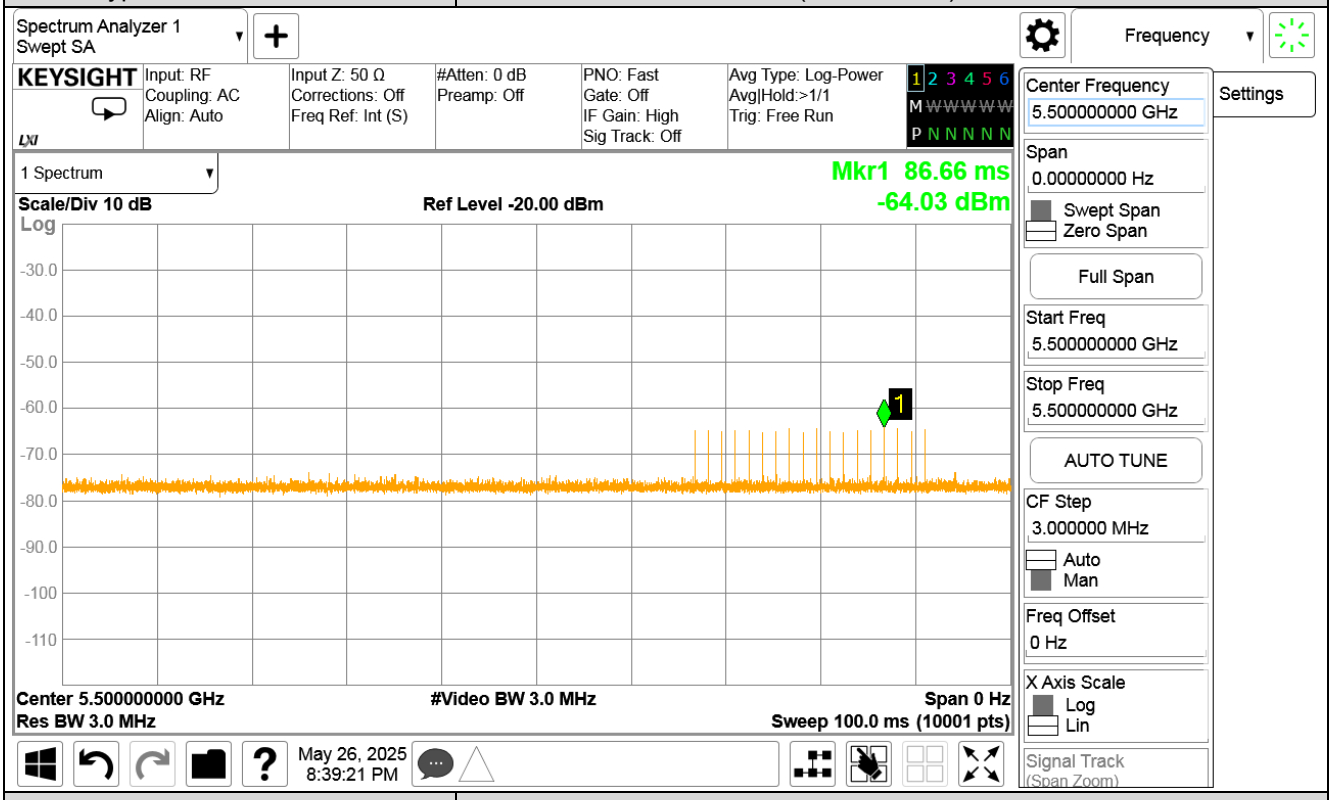
The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -64dBm due to the interference threshold level is not required.

Conducted Calibration Setup

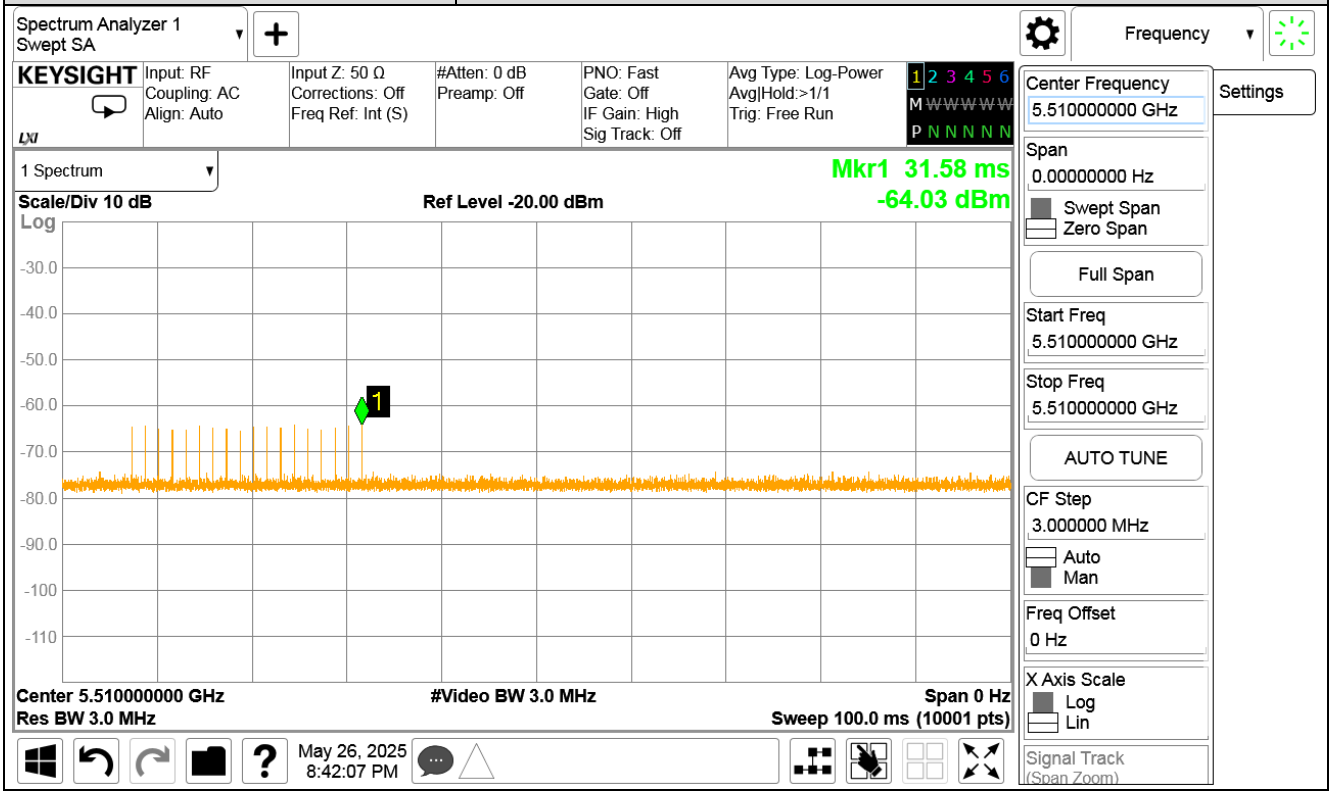


4.2. Radar Waveform Calibration Result

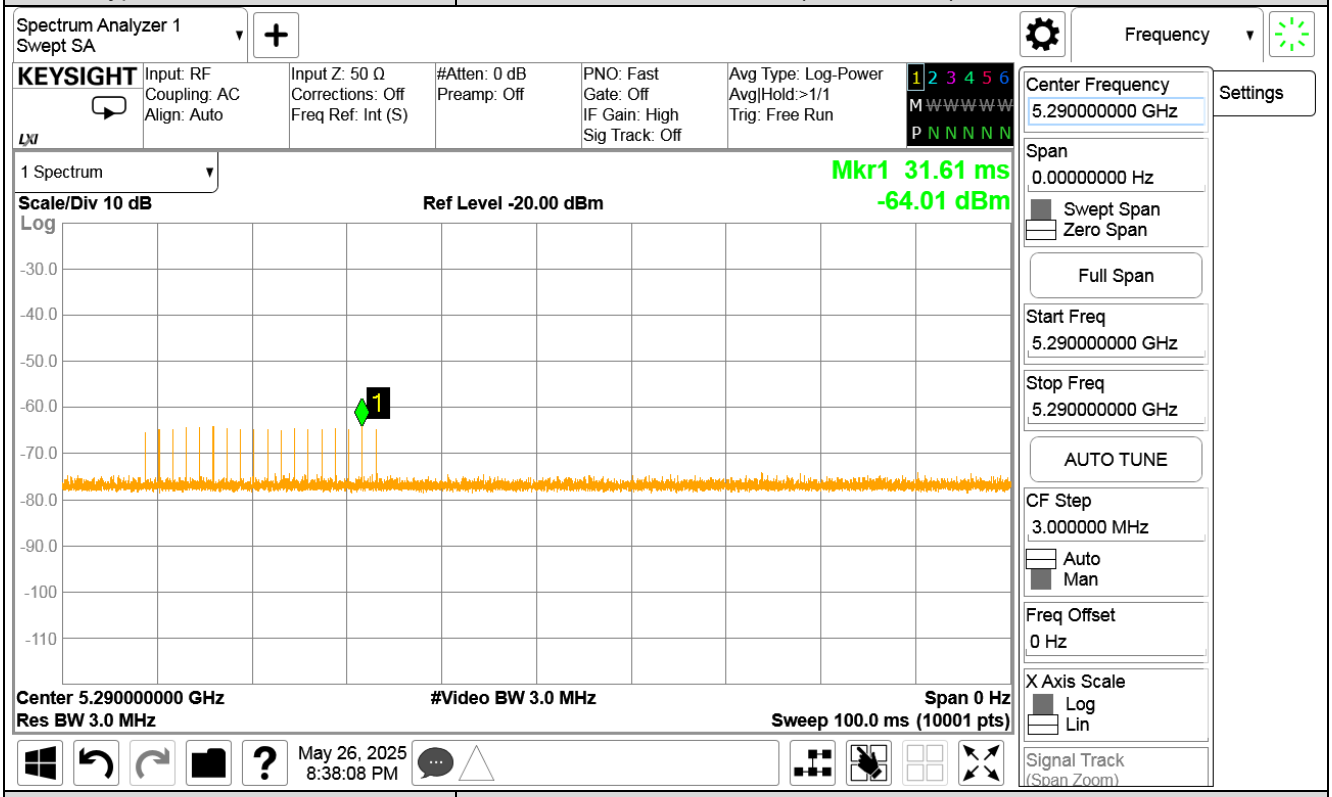
Radar Type 0	Calibration Plot - 5500 MHz (BW 20 MHz)



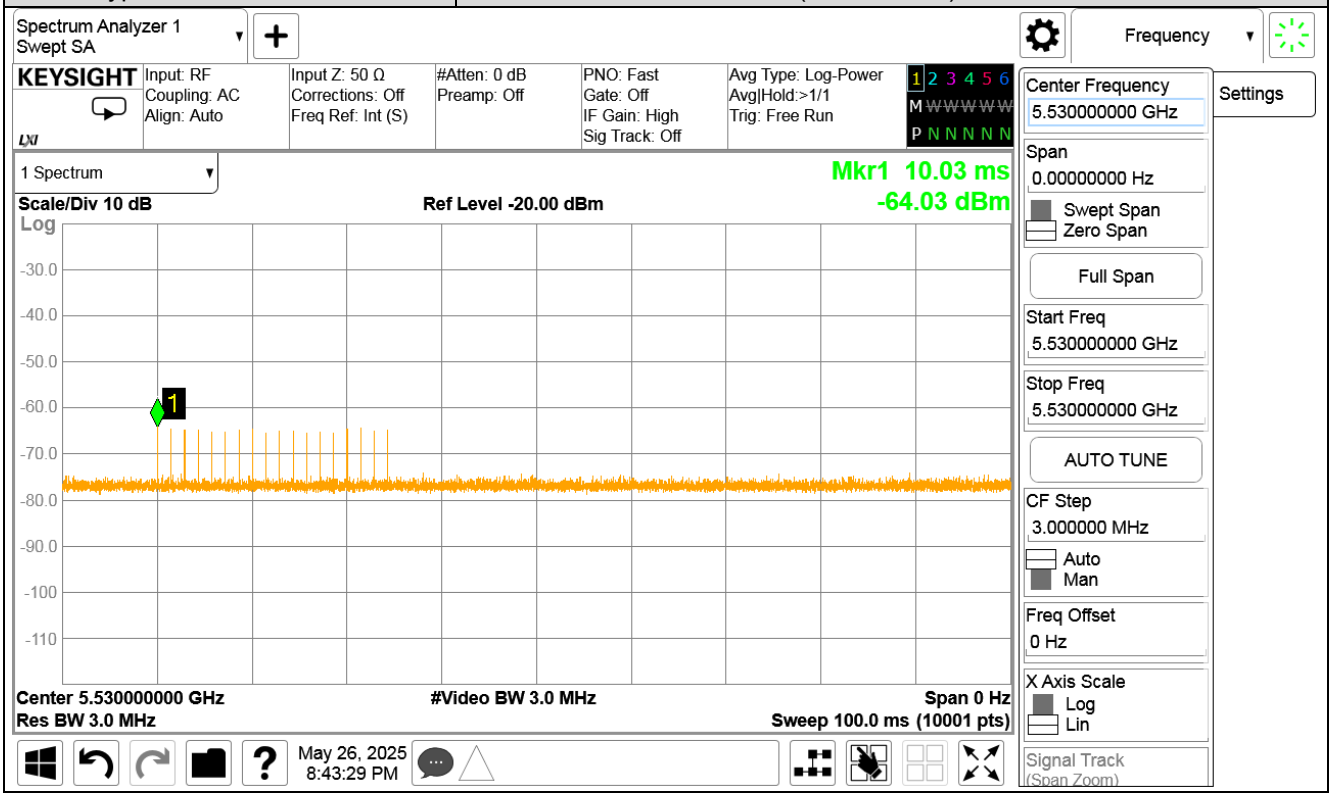
Radar Type 0	Calibration Plot - 5510 MHz (BW 40 MHz)



Radar Type 0	Calibration Plot - 5290 MHz (BW 80 MHz)



Radar Type 0	Calibration Plot - 5530 MHz (BW 80 MHz)



4.3. Master Data Traffic Plot Result

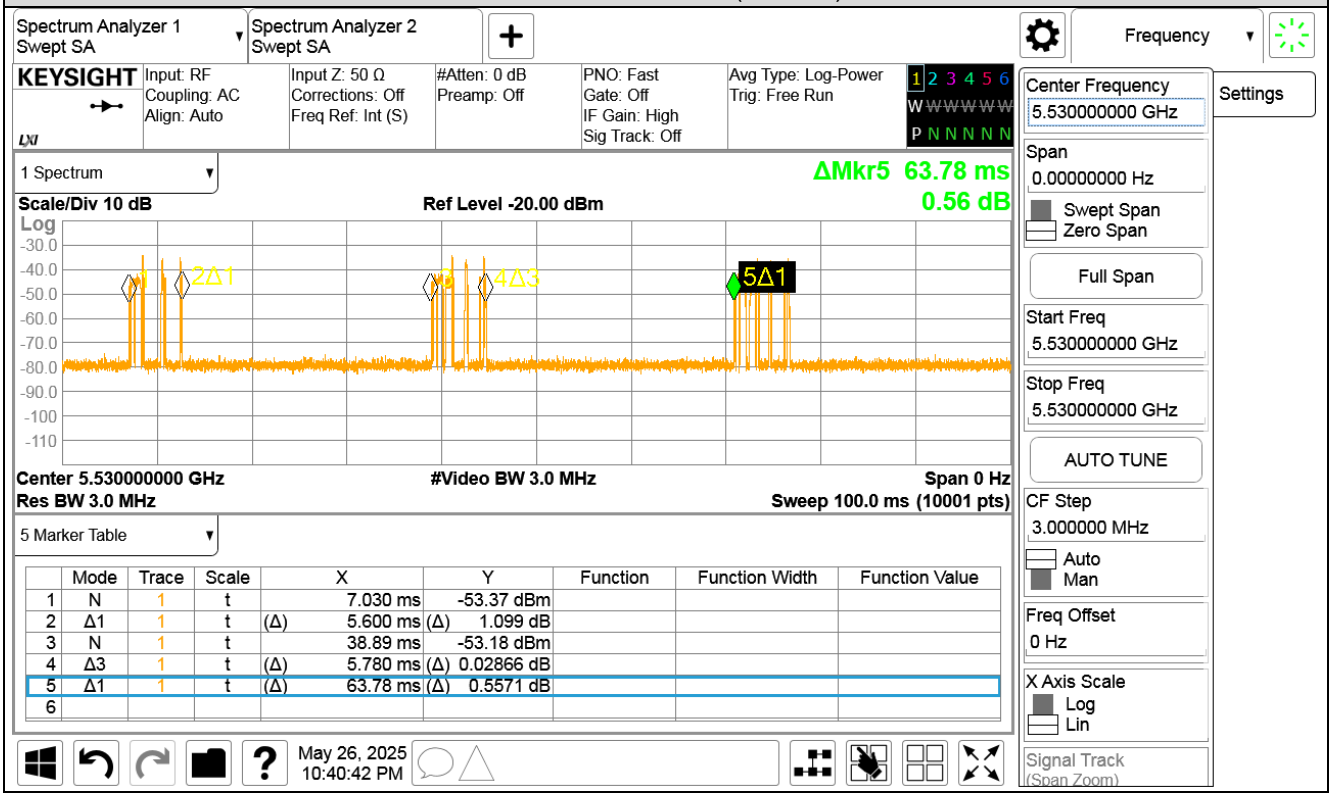
Modulation	Frequency (MHz)	Channel Loading (%)	Requirement loading (%)	Result
802.11ac (20 MHz)	5500	21.53	> 17	Pass
802.11ac (40 MHz)	5510	17.79	> 17	Pass
802.11ac (80 MHz)	5290	18.55	> 17	Pass
	5530	17.84	> 17	Pass

Plot of WLAN Traffic - 802.11ac (20 MHz), 5500 MHz

Plot of WLAN Traffic - 802.11ac (40 MHz), 5510 MHz

Plot of WLAN Traffic - 802.11ac (80 MHz), 5290 MHz

Plot of WLAN Traffic - 802.11ac (80 MHz), 5530 MHz



5. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

5.1. Test Procedure

The EUT was tested according to U-NII test procedure of KDB 905462 D02v02.

These tests define how the following DFS parameters are verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time, and Non-Occupancy Period. The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at test channel frequency. Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test.

At time T0 the Radar Waveform generator sends a Burst of pulses for each of the radar types.

Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time results to the limit defined in the DFS Response requirement values table.

Measure the UUT for more than 30 minutes following the channel close/move time to verify that the UUT does not resume any transmissions on this Channel.

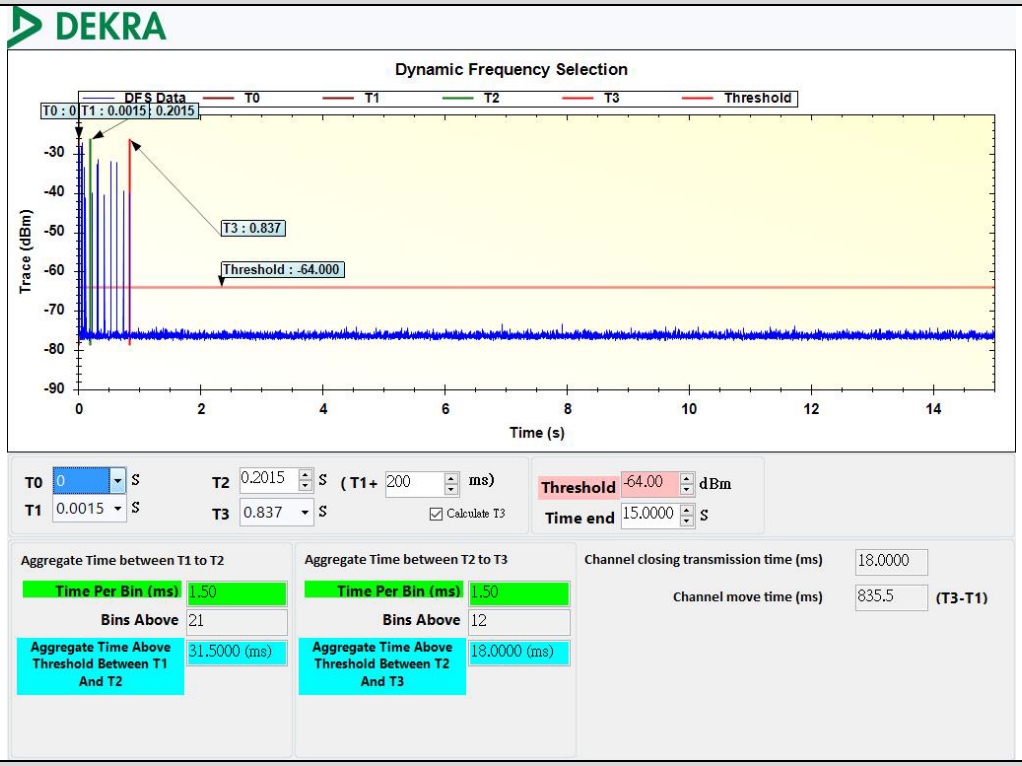
5.2. Test Requirement

Parameter	Value
Channel Move Time	10 Seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period
Non-Occupancy Period	Minimum 30 minutes

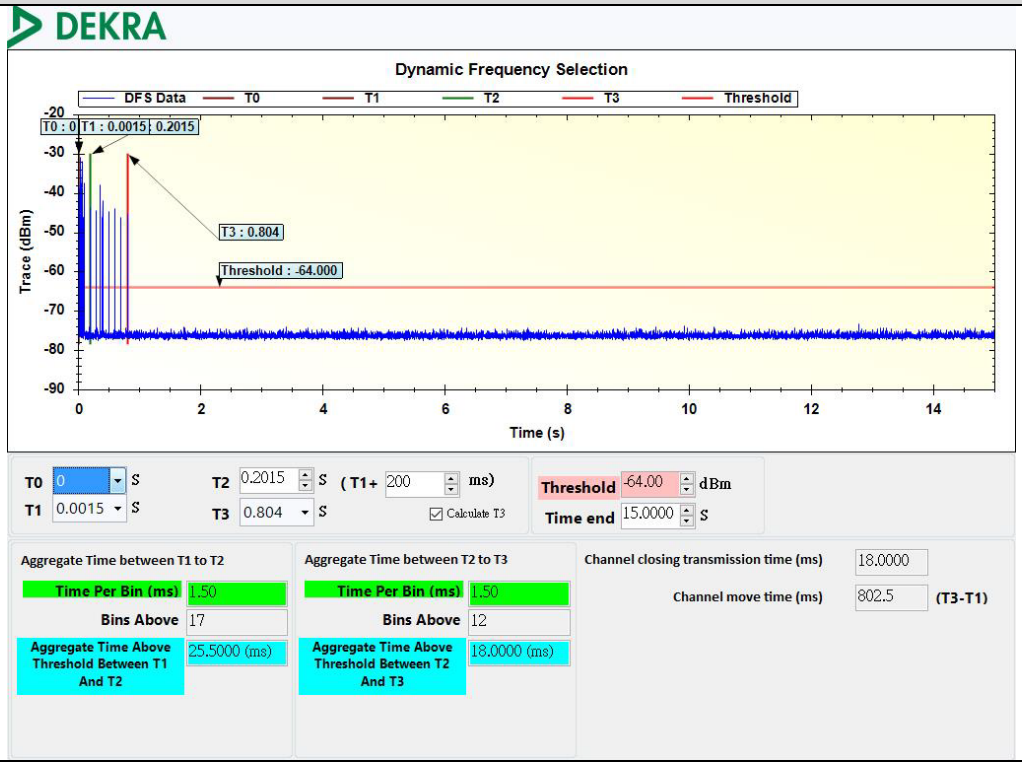
5.3. Test Result of Channel Move Time and Channel Closing Transmission Time

Modulation	Frequency (MHz)	Channel Closing Transmission		Channel Move Time	
		Result (ms)	Limit (s)	Result (ms)	Limit (s)
802.11ac (20 MHz)	5500	18.0	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period	835.5	10
802.11ac (40 MHz)	5510	18.0		802.5	
802.11ac (80 MHz)	5290	19.5		850.5	
	5530	16.5		763.5	
The results showed that after radar signal injected the channel move time was less than 10 seconds and channel transmission closing time less than 200 milliseconds and an aggregate of no more than 60 milliseconds.					

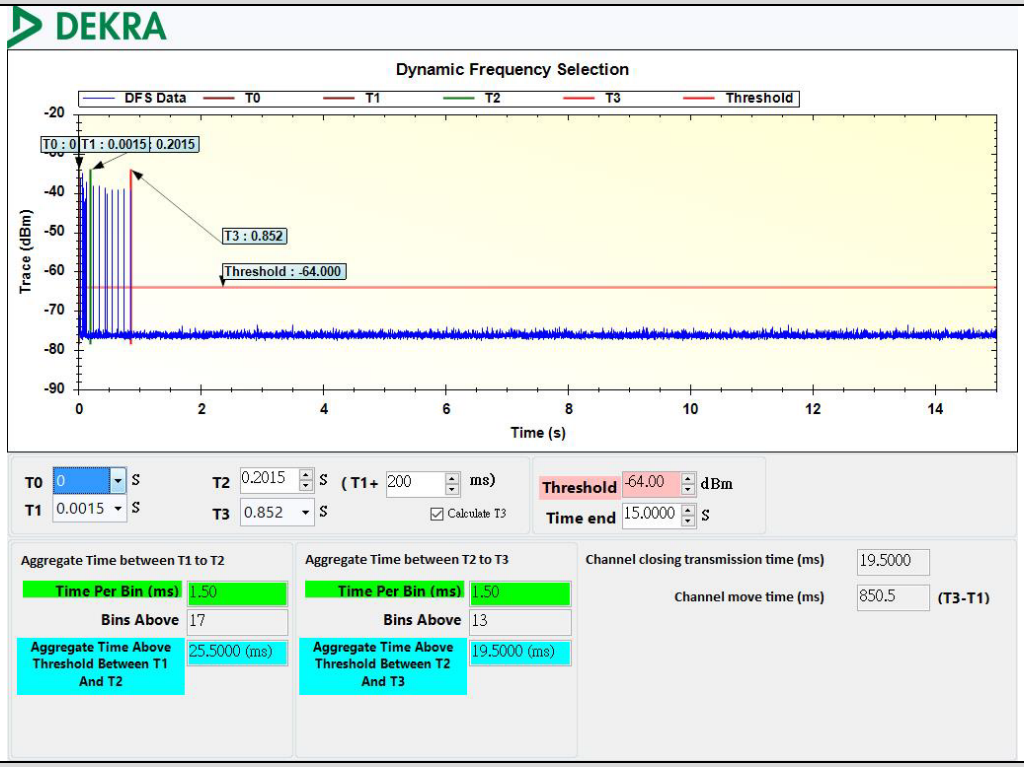
Channel Move Time and Channel Closing Transmission Time - 802.11ac (20 MHz), 5500 MHz



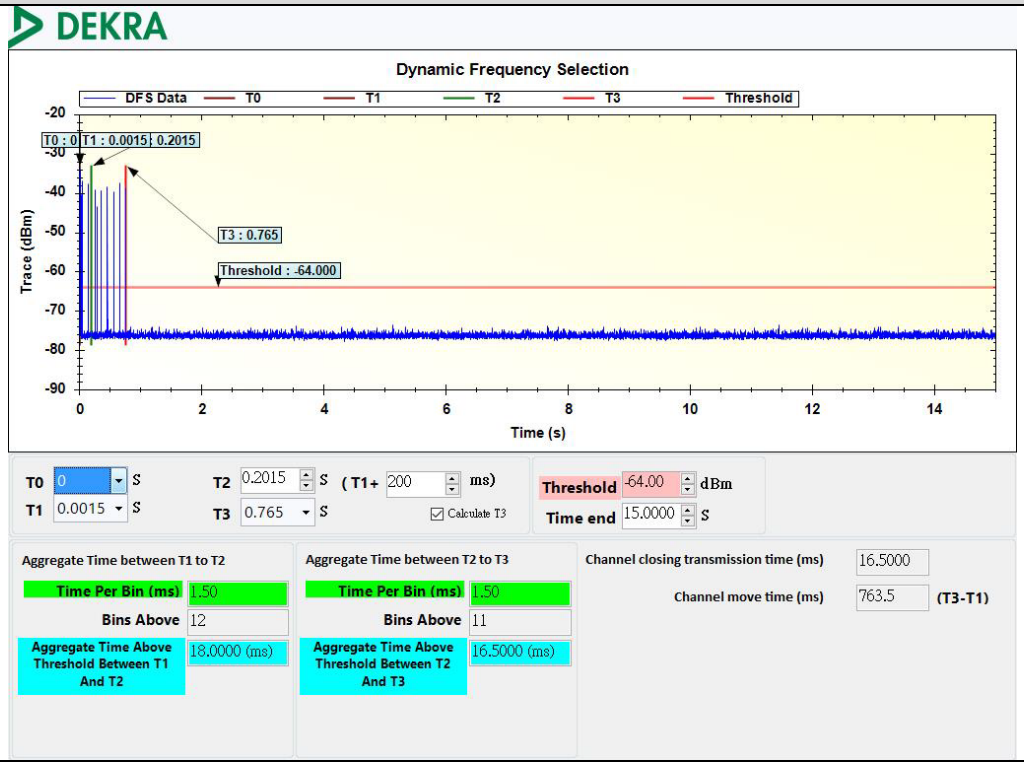
Channel Move Time and Channel Closing Transmission Time - 802.11ac (40 MHz), 5510 MHz



Channel Move Time and Channel Closing Transmission Time - 802.11ac (80 MHz), 5290 MHz



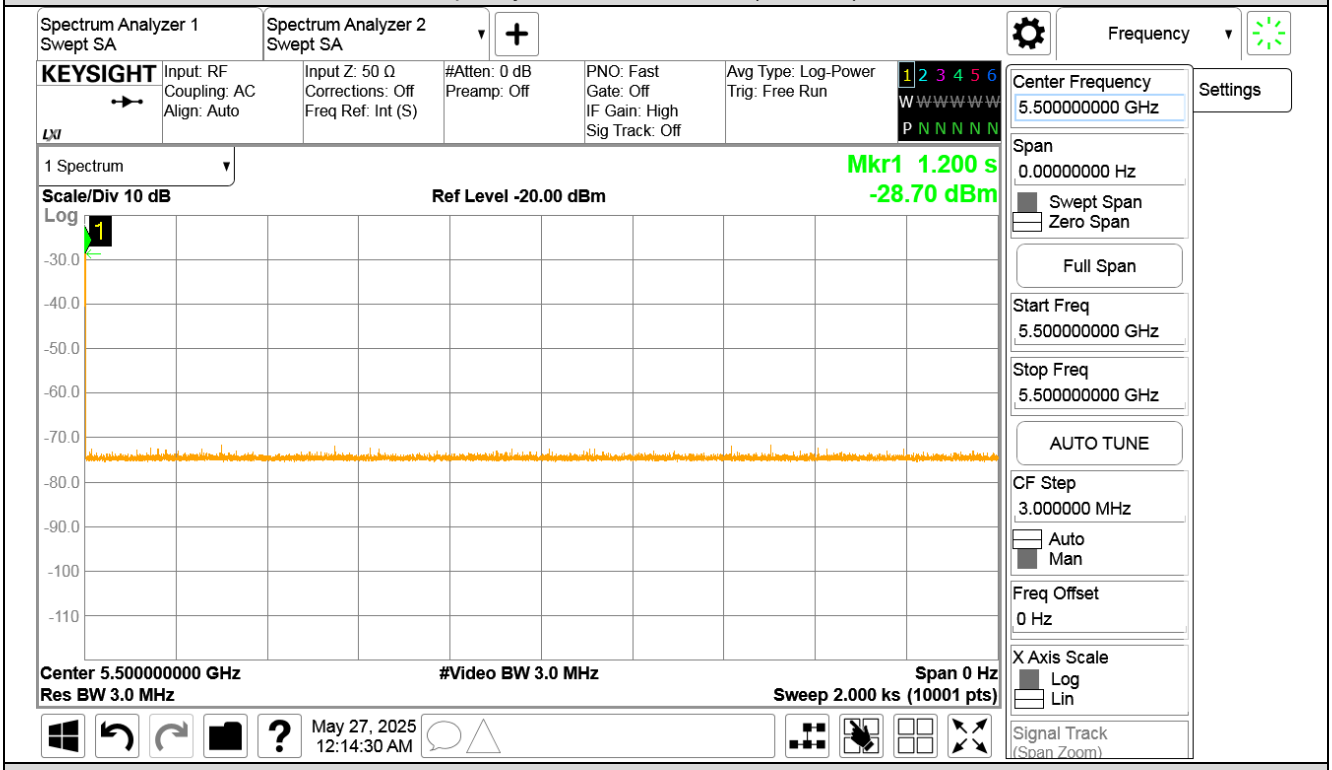
Channel Move Time and Channel Closing Transmission Time - 802.11ac (80 MHz), 5530 MHz



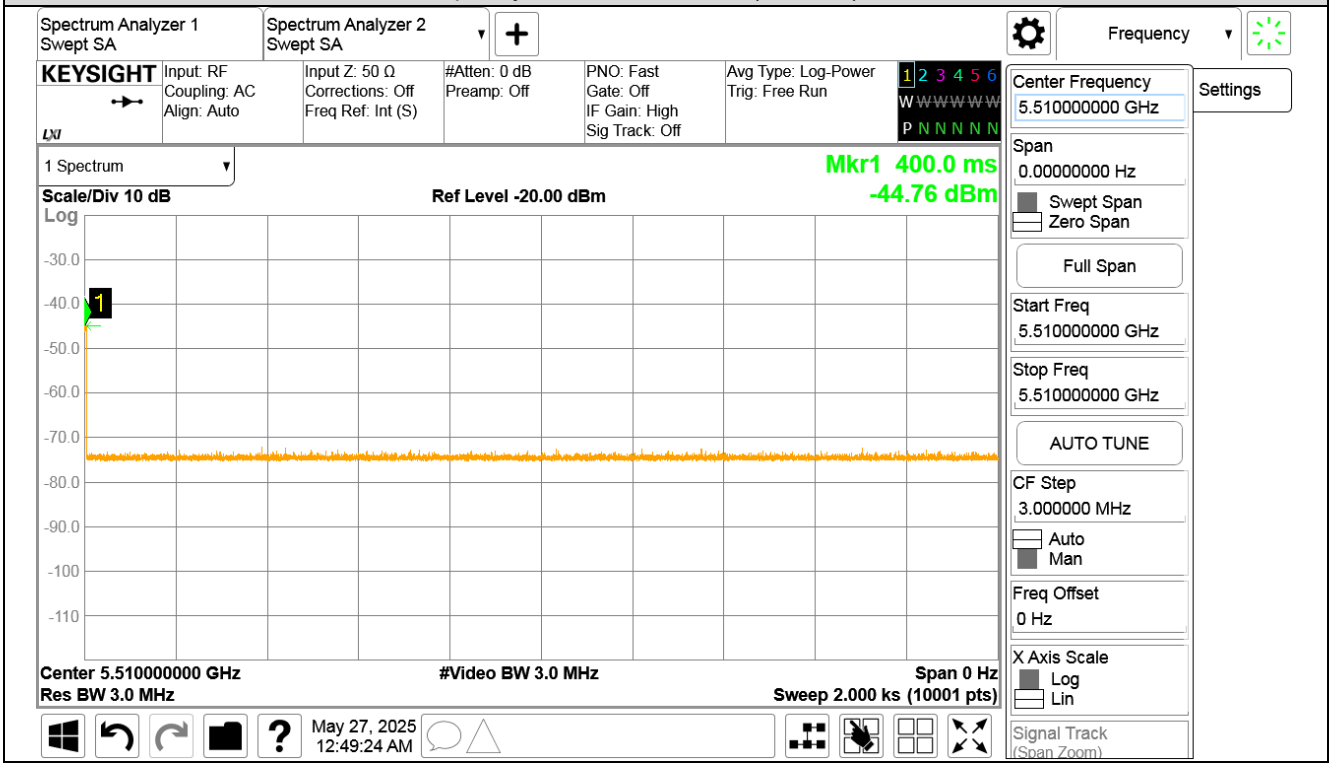
5.4. Test Result of Non-Occupancy Period

Non-Occupancy Period				
Modulation	Frequency (MHz)	Test Result (Minutes)	Limit (Minutes)	Result
802.11ac (20 MHz)	5500	> 30	> 30	Pass
802.11ac (40 MHz)	5510	> 30	> 30	Pass
802.11ac (80 MHz)	5290	> 30	> 30	Pass
	5530	> 30	> 30	Pass
No EUT transmissions were observed on the test channel during 30 minutes observation time.				

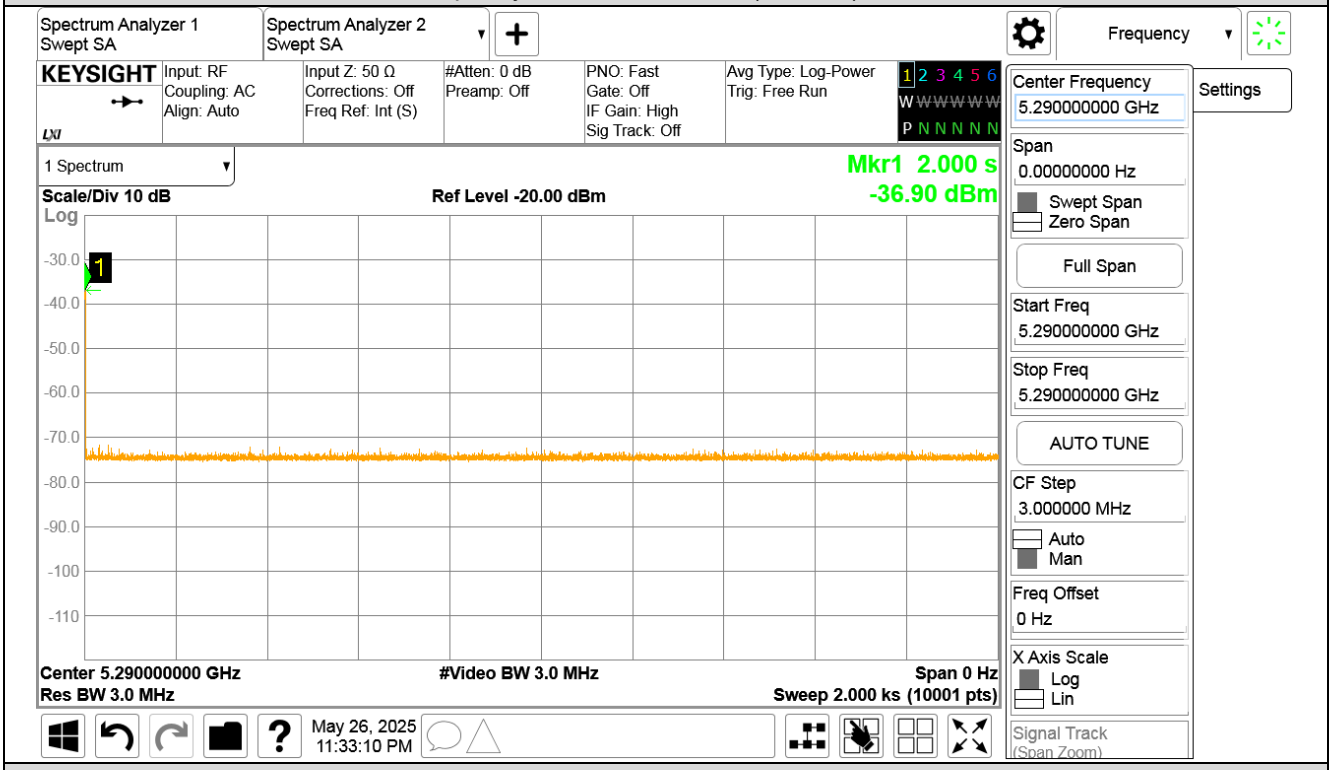
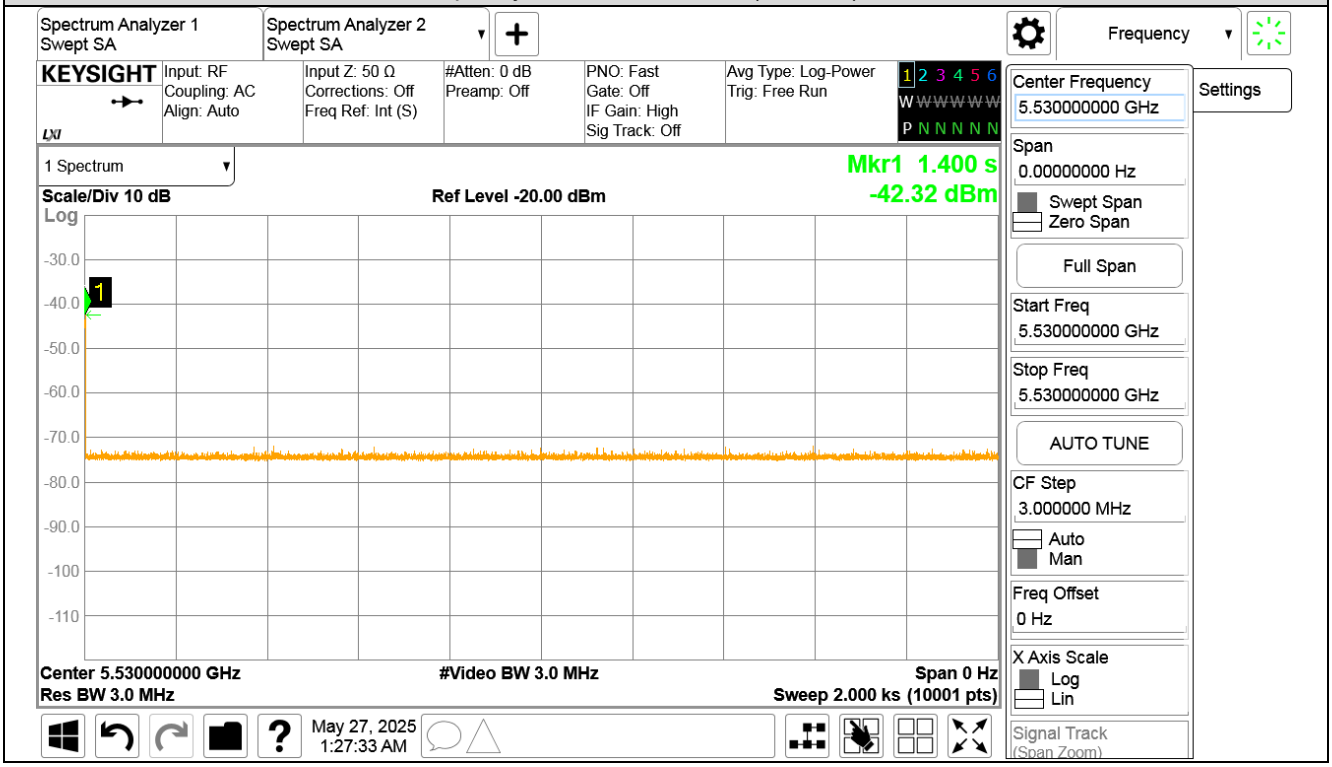
Non-Occupancy Period - 802.11ac (20 MHz), 5500 MHz



Non-Occupancy Period - 802.11ac (40 MHz), 5510 MHz



Non-Occupancy Period - 802.11ac (80 MHz), 5290 MHz



Non-Occupancy Period - 802.11ac (80 MHz), 5530 MHz