

**ELECTROMAGNETIC EMISSIONS  
COMPLIANCE REPORT**

**Applicant:** silex technology, Inc.  
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,  
Japan

**Manufacturer:** silex technology, Inc.  
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,  
Japan

**Product Name:** AP-800AX

**Brand Name:** Silex Technology

**Model No.:** AP-800AX

**Model Difference:** N/A

**Report Number:** TERF2303000754ER

**FCC ID** N6C-AP800AX

**IC:** 4908A-AP800AX

**Date of EUT Received:** March 29, 2023

**Date of Test:** March 29, 2023 ~ July 10, 2023

**Issue Date:** August 21, 2023

Approved By

**Blue Yang**

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.407, ISSED RSS-247.

The results of this report relate only to the sample identified in this report.

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2303000754ER	00	Original.	July 20, 2023	Susan Lin	
TERF2303000754ER	01	Update channel number in section 1.3	August 21, 2023	Susan Lin	*

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	AP-800AX
Brand Name:	Silex Technology
Model No.:	AP-800AX
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	000001814
Power Supply:	12Vdc

### 1.2 DFS Firmware version:

Series Name	silex
Product Name	AP-800AX
Version	1.0.0b9
MAC Address	1c:bc:ec:00:07:16
Access Point Name	SX000716

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### 1.3 FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	OFDMA
	5260~5320	4	OFDMA
	5500~5720	12	OFDM
	5745-5825	5	OFDM
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	OFDM
	5270~5310	2	OFDM
	5510~5710	6	OFDM
	5755-5795	2	OFDM
ac_VHT/ ax_HE 80M	5210	1	OFDMA
	5290	1	OFDM
	5530~5690	3	OFDM
	5775	1	OFDM

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## IC WLAN 5GHz:

## WLAN 5 GHz for ISED (Master)

Wi-Fi	Frequency Range	Channels	Modulation Technology
a/ n_HT/ ac_VHT/ ax_HE 20M	5180~5240	4	OFDMA
	5260~5320	4	OFDMA
	(*)5500~5700	8	OFDM
	5720 (U-NII 2C)	1	OFDM
	5720 (U-NII 3)	1	OFDMA
	5745-5825	5	OFDM
n_HT ac_VHT/ ax_HE 40M	5190~5230	2	OFDM
	5270~5310	2	OFDM
	(*)5510~5670	3	OFDM
	5710 (U-NII 2C)	1	OFDM
	5710 (U-NII 3)	1	OFDMA
	5755-5795	2	OFDM
ac_VHT/ ax_HE 80M	5210	1	OFDMA
	5290	1	OFDM
	5530	1	OFDM
	5690 (U-NII 2C)	1	OFDM
	5690 (U-NII 3)	1	OFDM
	5775	1	OFDM

\*Note : TDWR frequencies are not available in Canada.

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## 1.4 Antenna Designation

Antenna Type	Ch0/Ch1	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Dipole	Ch0	ANTDP-039A0	5150~5250	1.1	4.11
			5250~5350	1.1	4.11
			5470~5725	1.2	4.21
			5725~5850	1.3	4.31
	Ch1		5150~5250	1.1	4.11
			5250~5350	1.1	4.11
			5470~5725	1.2	4.21
			5725~5850	1.3	4.31

**Note:**

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. Antenna information is provided by the applicant.

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## 1.5 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02  
RSS-247 issue 2 Feb. 2017

## 1.6 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 2		
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
Conducted G				
<b>Note:</b> Test site name is remarked on the equipment list in each section of this report as an indica- tion where measurements occurred in specific test site and address.				

## 1.7 Special Accessories

There are no special accessories used while test was conducted.

## 1.8 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SUMMARY OF TEST RESULT

FCC and ISED Rules	Description Of Test	Result
§15.407(h) FCC KDB 905462 D02 IC RSS-247 issue 1 §6.3	TPC and DFS Measurement	Compliant

## 3 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty		
TPC and DFS Measurement	+/-	1.04	Hz
Temperature	+/-	0.7	°C
Humidity	+/-	3	%
DC / AC Power Source	+/-	1	%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 4 TPC AND DFS MEASUREMENT

### 4.1 TPC Requirements

According to Part 15.407 (h)(1) Transmit power control (TPC). 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 500 mW.

Result:

N/A, e.i.r.p is less than 500 mW, TPC is not required.

### 4.2 DFS: Standard Applicable

According to §15.407(h)(2) and FCC KDB 905462 D02 , Radar Detection Function of Dynamic Frequency Selection (DFS).

Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth 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. Operators shall only use equipment with a DFS mechanism that is turned on when operating in these bands. The device must sense for radar signals at 100 percent of its emission bandwidth. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is -64 dBm. For devices that operate with less than 200 mW e.i.r.p. and a power spectral density of less than 10 dBm in a 1 MHz band, the minimum detection threshold is -62 dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. For the initial channel setting, the manufacturers shall be permitted to provide for either random channel selection or manual channel selection.

- (i) Operational Modes. The DFS requirement applies to the following operational modes:
  - (a) The requirement for channel availability check time applies in the master operational mode.
  - (b) The requirement for channel move time applies in both the master and slave operational modes.
- (ii) Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this section, is detected within 60 seconds.
- (iii) Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

**Non-occupancy Period.** A channel that has been flagged as containing a radar system,

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either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

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## 5 APPLICABLE STANDARDS

**Table 1: Applicability of DFS requirements prior to use of a channel**

Requirement	Operational Mode		
	Master	Client(without radar detection)	Client(with radar detection)
Non-occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Band-width	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
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission time	Yes	Yes
Channel Move time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

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Additional requirements for devices with multiple bandwidth mode	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
<b>Note:</b> 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.		

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

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
<b>Note 1:</b> This is the level at the input of the receiver assuming a 0 dBi receive antenna. <b>Note 2:</b> 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. <b>Note3:</b> EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

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Table 4: 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 + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
<p><b>Note 1:</b> 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.</p> <p><b>Note 2:</b> 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> <p><b>Note 3:</b> 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.</p>	

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**Table 5: Radar Test Waveforms**  
**Short Pulse Radar**

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 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A	Roundup $\left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	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
<b>Note 1:</b> Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

### Long Pulse Radar

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

### Frequency Hopping Radar

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

**The applicant of this given application confirms that information regarding the parameters of the detected Radar Waveforms is not available to the end user.**

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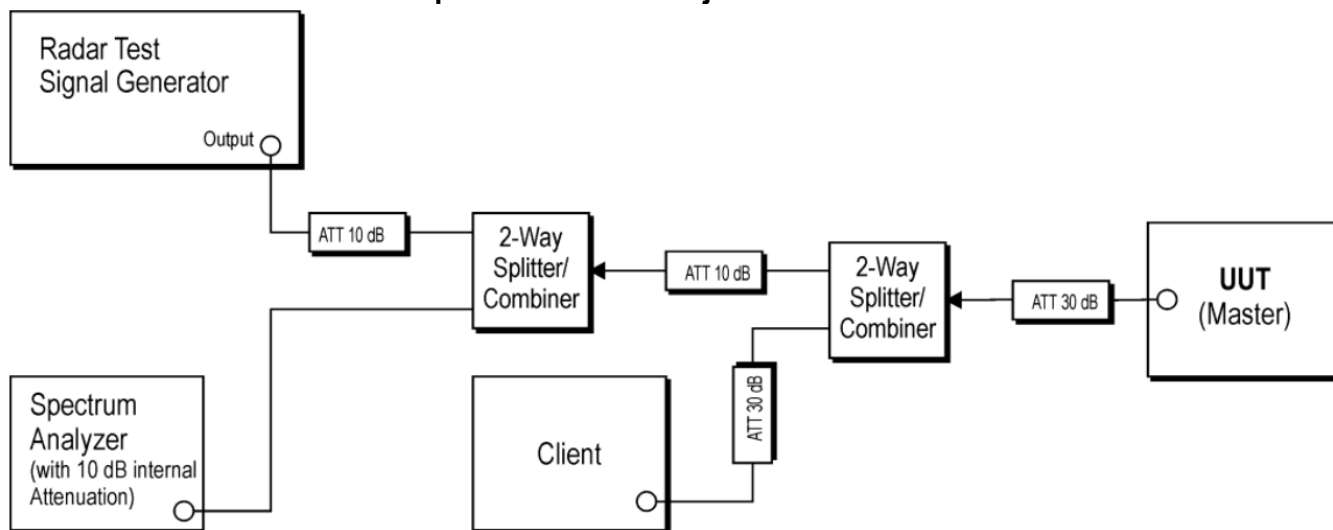
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## 6 TEST SETUP

### Setup for Master with injection at the Master



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## 7 TEST EQUIPMENT USED:

Conducted Emission Test Site: Conducted 6					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60240503	12/13/2022	12/12/2023
Signal Generator	KEYSIGHT	N5182B	MY61252553	09/22/2022	09/21/2023
Test Software	KEYSIGHT	N7607B Signal Studio for DFS Radar profile	Ver. 3.2.0.0	N.C.R	N.C.R
DC Block	Mini-Circuits	BLK-18-S+	1	12/13/2022	12/12/2023
Power Divider	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-017	12/13/2022	12/12/2023
Power Divider	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-018	12/13/2022	12/12/2023
Power Divider	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-020	12/13/2022	12/12/2023
Power Divider	RF-LAMBDA	RFLT2W1G18G	18112200209	12/13/2022	12/12/2023
Attenuator	Agilent	8495B	3308A22470	12/13/2022	12/12/2023
Attenuator	HP	8494B	2812A17605	12/13/2022	12/12/2023

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## 8 DESCRIPTION OF EUT:

EUT is a Master device with radar detection and DFS capability.

Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater.

The rated output power of the master unit is  $\geq 23\text{dBm}$ (EIRP).therefore the required interference threshold level is  $-64\text{dBm}$ .after correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is  $-64\text{dBm}$ .

The rated output power of the master unit is  $< 23\text{ dBm}$ (EIRP).therefore the required interference threshold level is  $-62\text{dBm}$ .after correction for antenna gain and procedural adjustments, the required threshold at the antenna port is  $-62\text{dBm}$ .

DFS Detection Threshold (dBm) =  $-64 + G$  (dBi), for conducted test.

DFS Detection Threshold (dBm)	Minimum of Peak Antenna Gain (dBi)	Threshold for test (dBm)
-62	1.1	-60.9

While calibrate the path on antenna port of DFS test equipment (master), measurements equipments (spectrum) is ensured to be 50 Ohms, and therefore verification on antenna gain measurement can be ignored.

The EUT uses one transmitter/receiver chains and one receive only chain, each connected to an antenna to perform radiated tests.

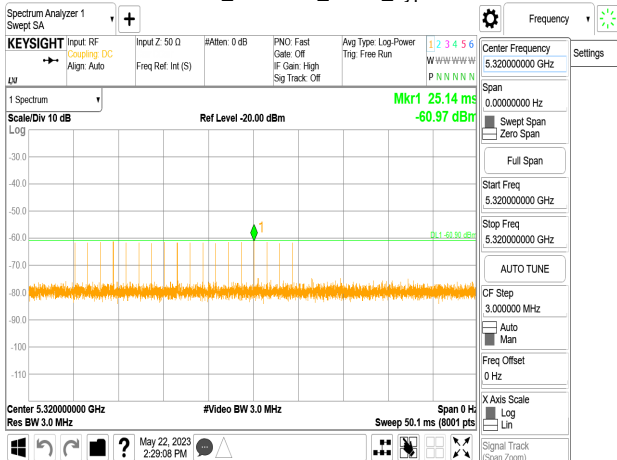
The Slave device associated with the EUT during these tests does not have radar detection capability.

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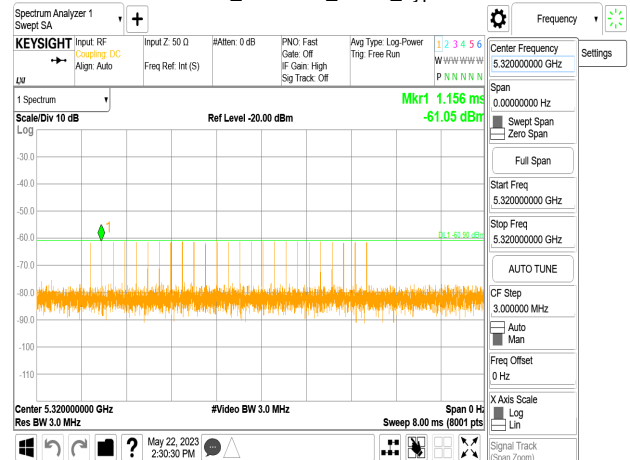
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## 9 RADAR TYPE WAVEFORM CALIBRATION AT DFS DETECTION THRESHOLD

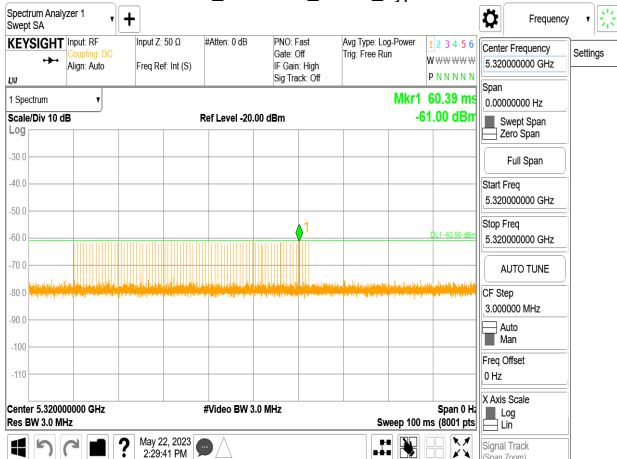
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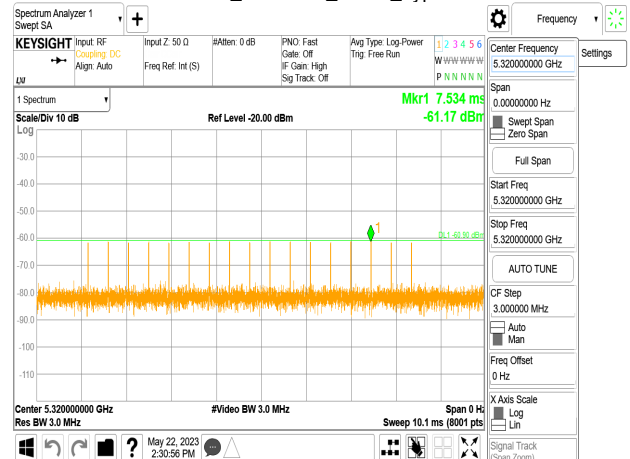
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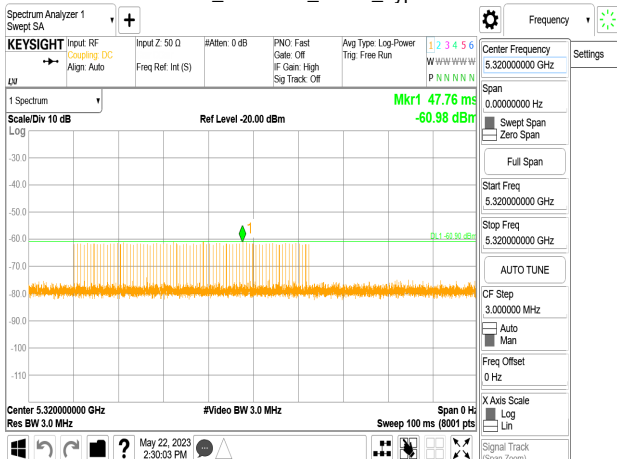
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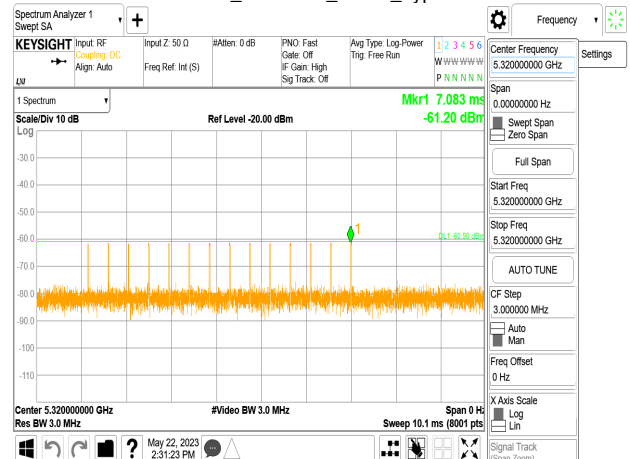
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HE20\_5320MHz\_Radar\_Type 1-B



HE20\_5320MHz\_Radar\_Type 4

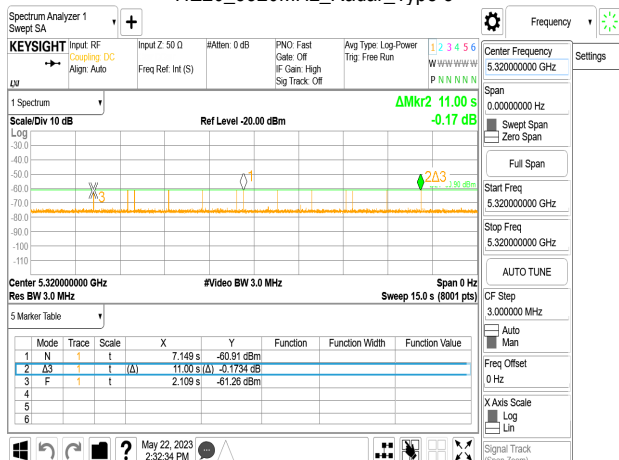


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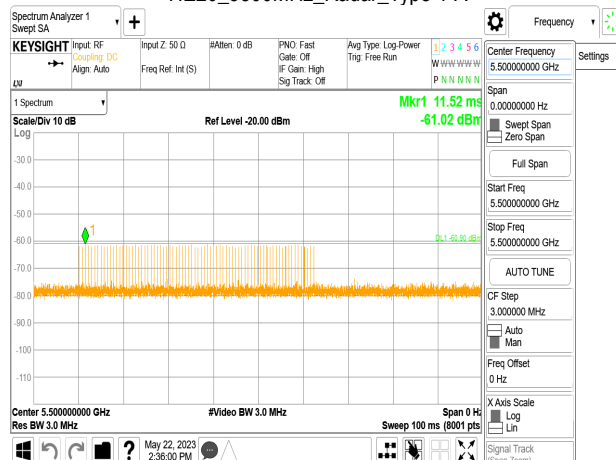
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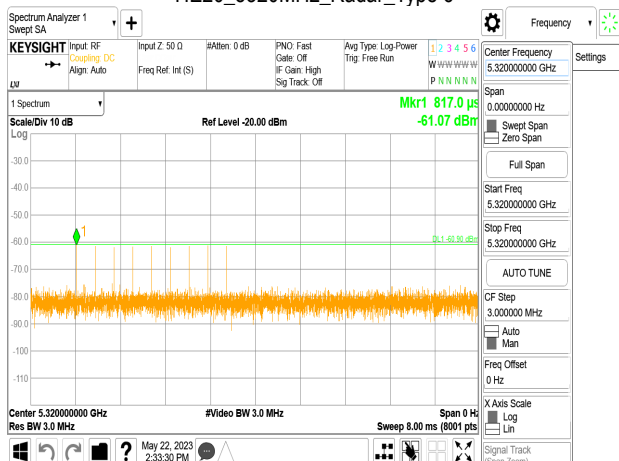
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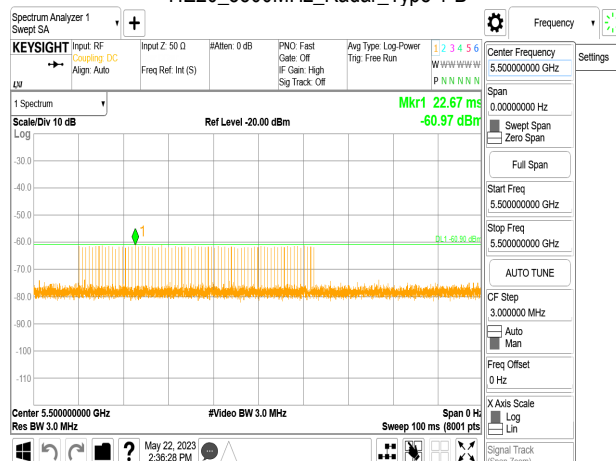
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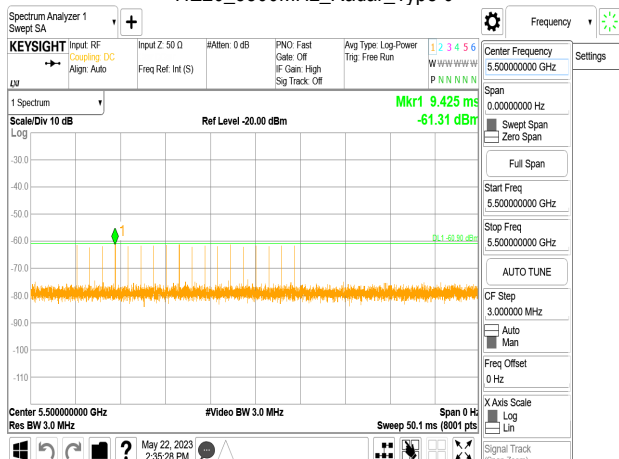
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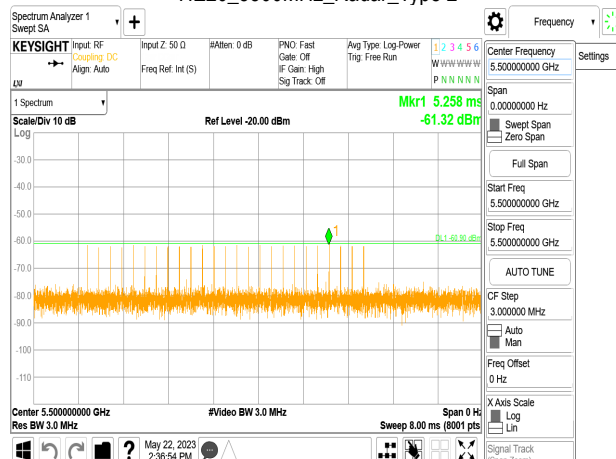
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HE20\_5500MHz\_Radar\_Type 0



HE20\_5500MHz\_Radar\_Type 2



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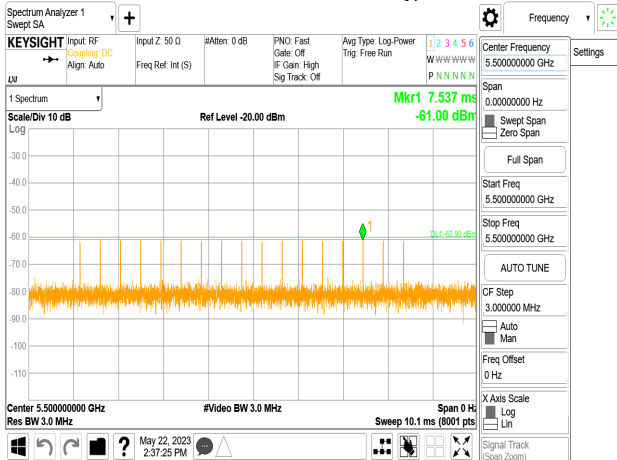
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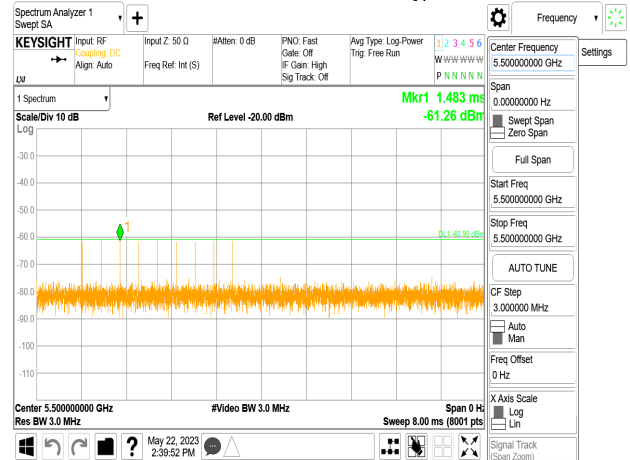
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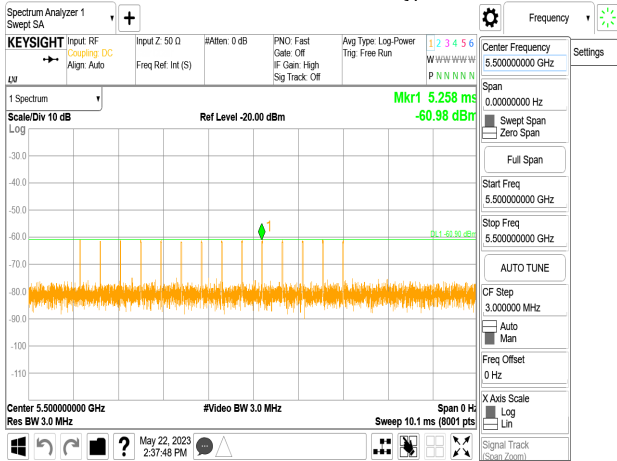
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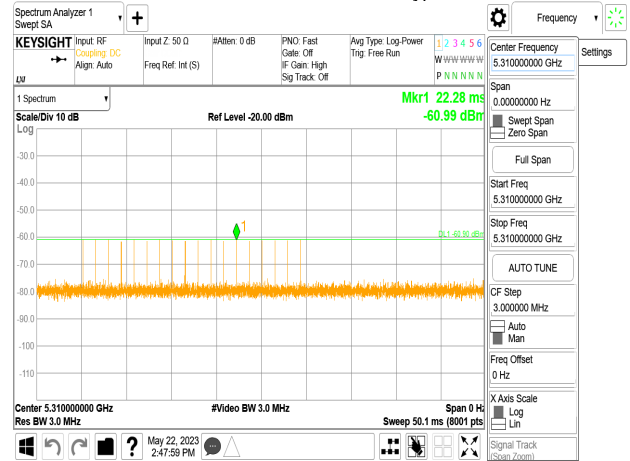
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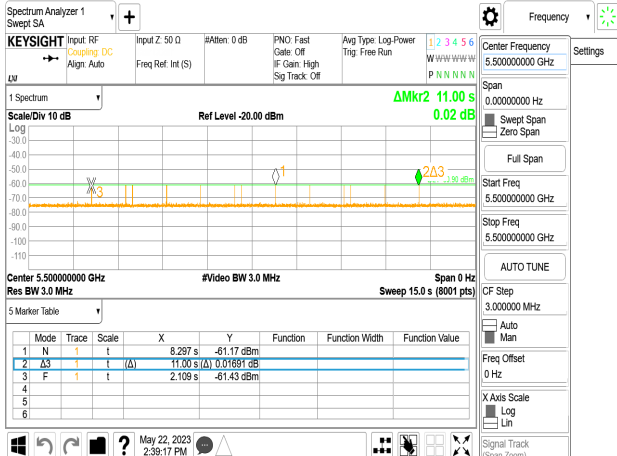
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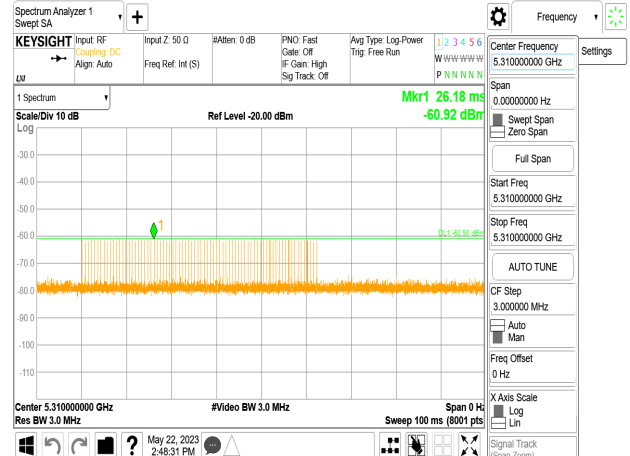
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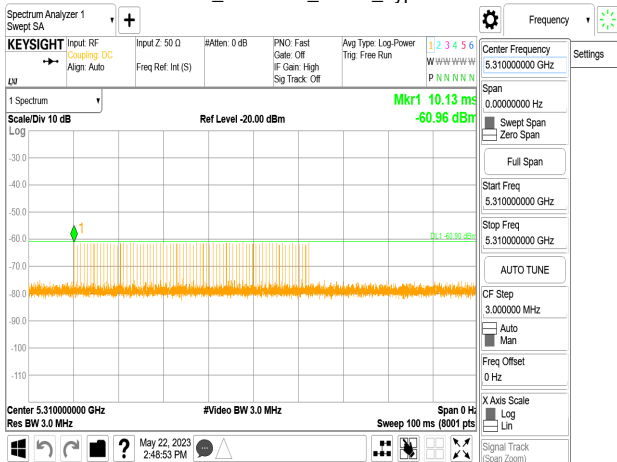


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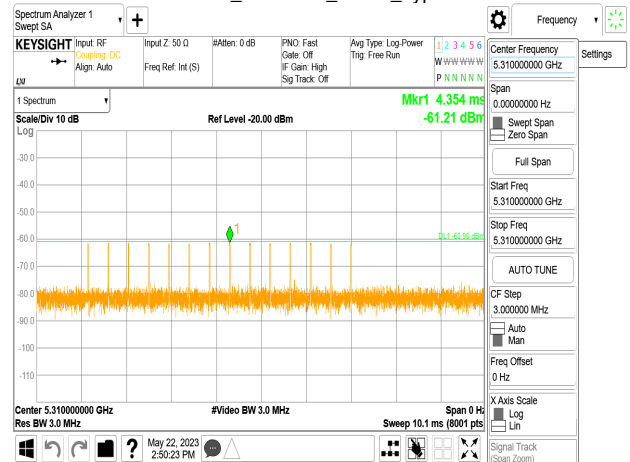
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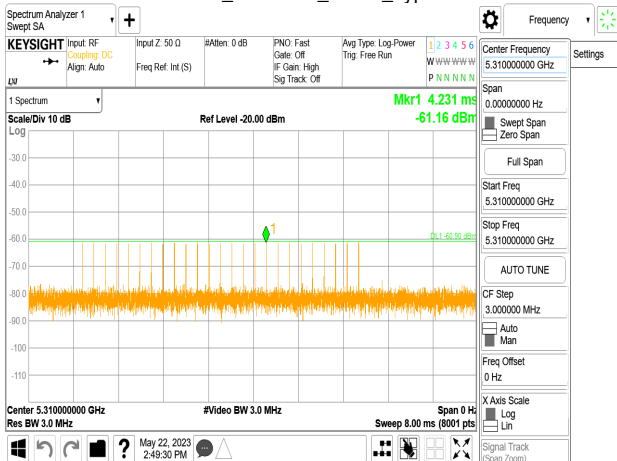
HE40\_5310MHz\_Radar\_Type 1-B



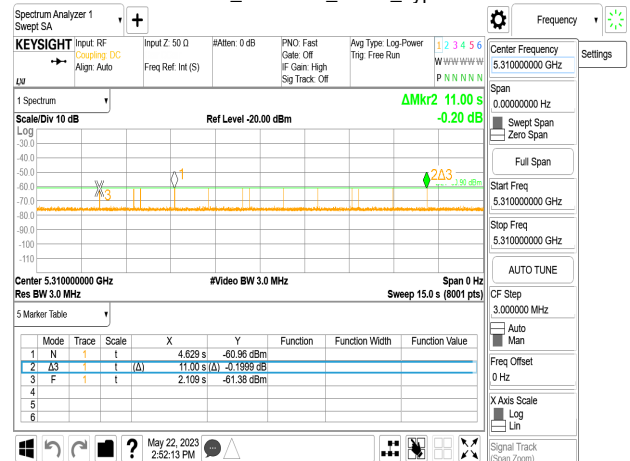
HE40\_5310MHz\_Radar\_Type 4



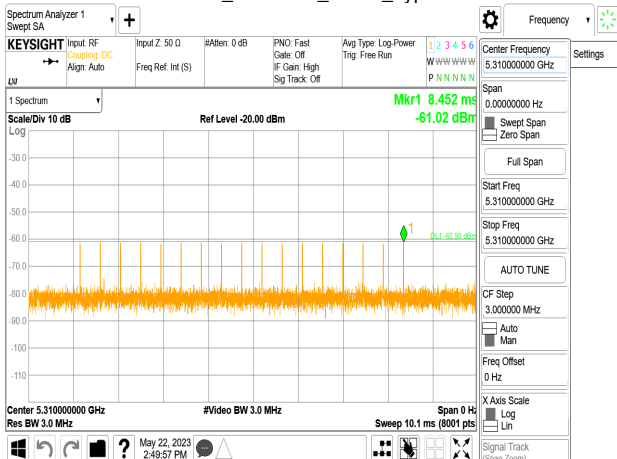
HE40\_5310MHz\_Radar\_Type 2



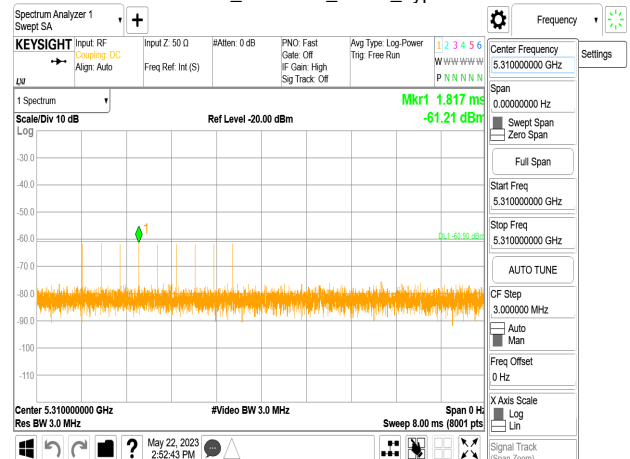
HE40\_5310MHz\_Radar\_Type 5



HE40\_5310MHz\_Radar\_Type 3



HE40\_5310MHz\_Radar\_Type 6

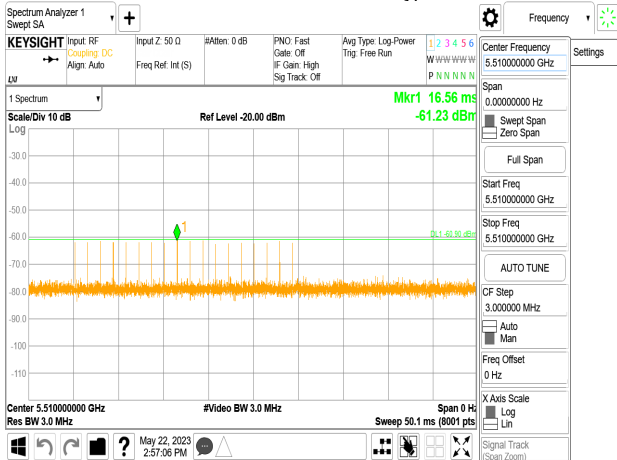


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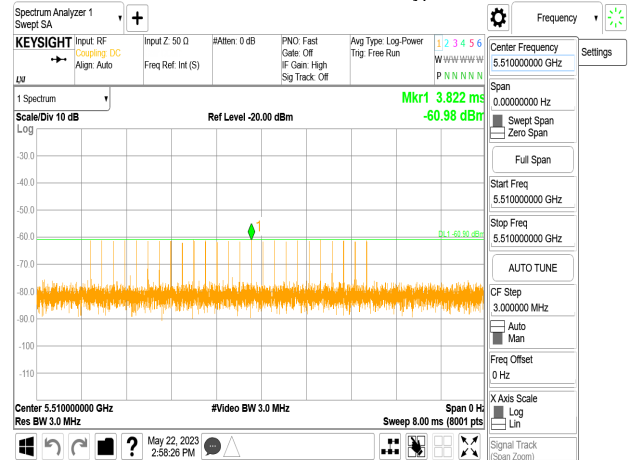
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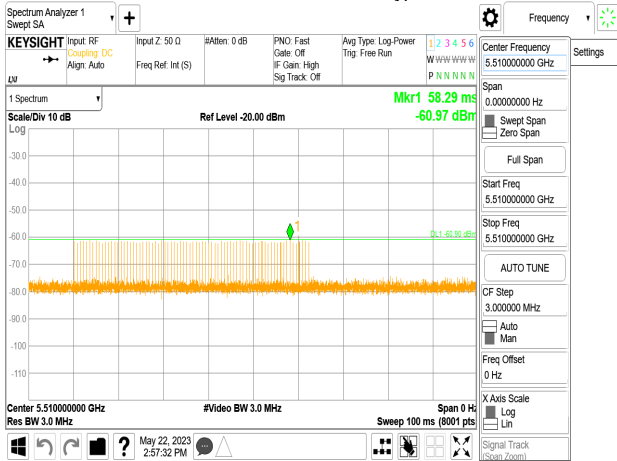
HE40\_5510MHz\_Radar\_Type 0



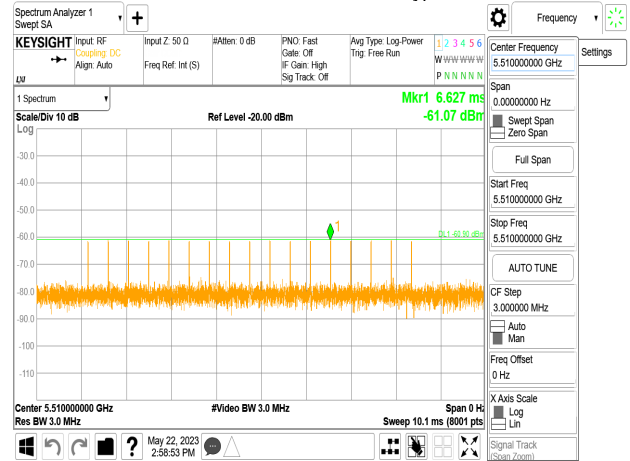
HE40\_5510MHz\_Radar\_Type 2



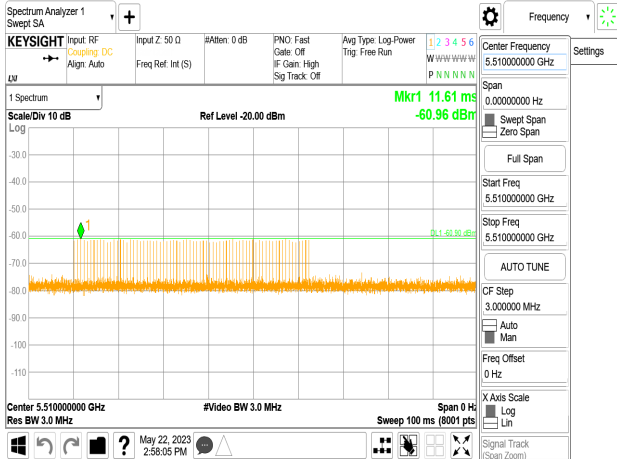
HE40\_5510MHz\_Radar\_Type 1-A



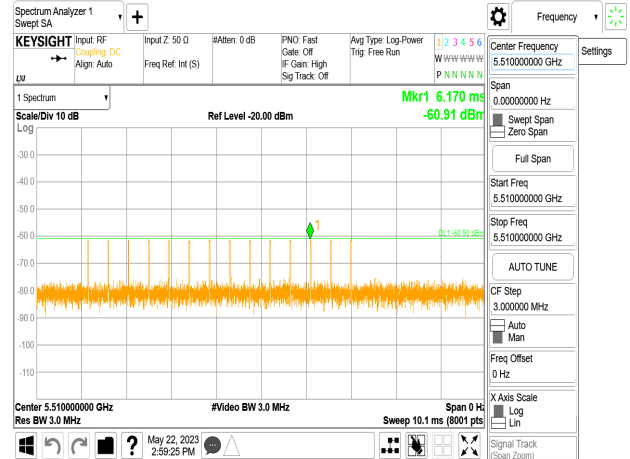
HE40\_5510MHz\_Radar\_Type 3



HE40\_5510MHz\_Radar\_Type 1-B



HE40\_5510MHz\_Radar\_Type 4



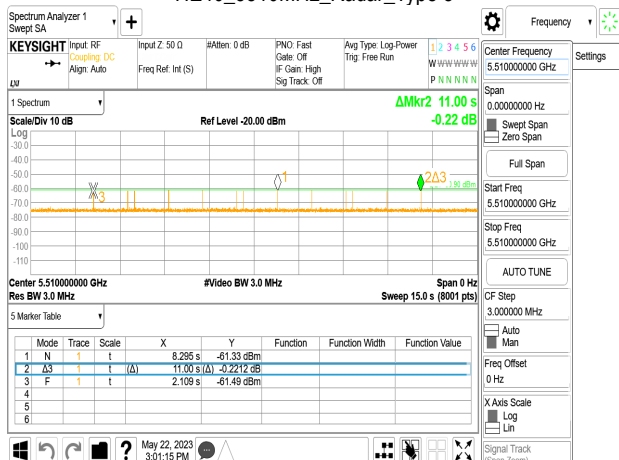
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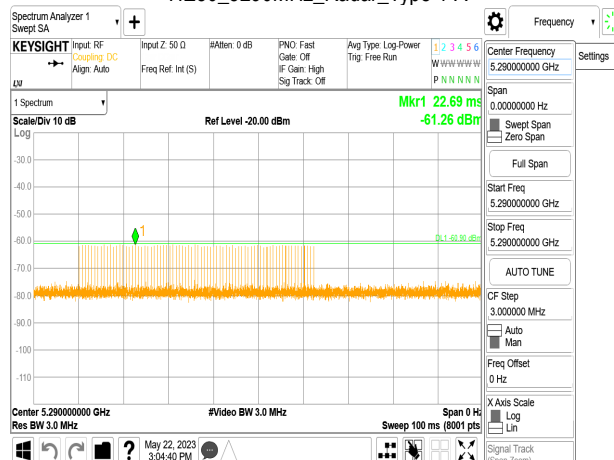
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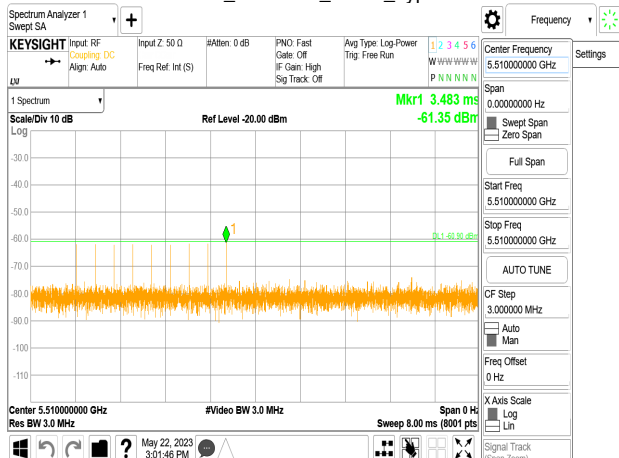
HE40\_5510MHz\_Radar\_Type 5



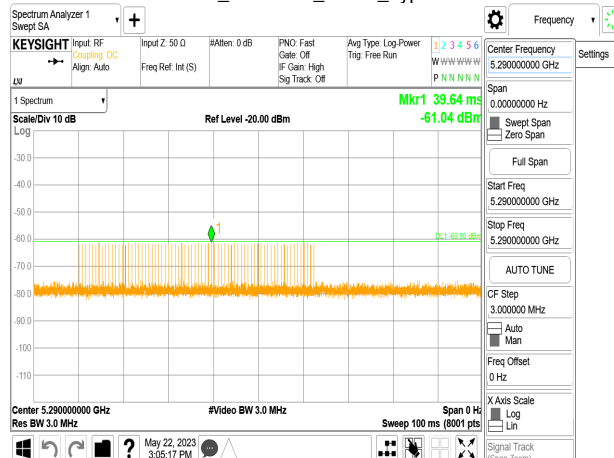
HE80\_5290MHz\_Radar\_Type 1-A



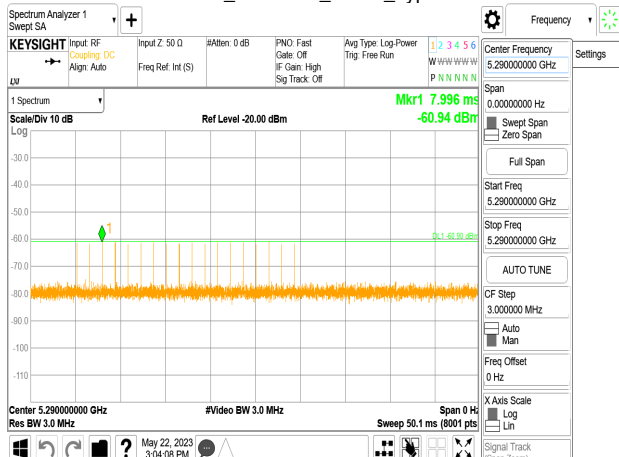
HE40\_5510MHz\_Radar\_Type 6



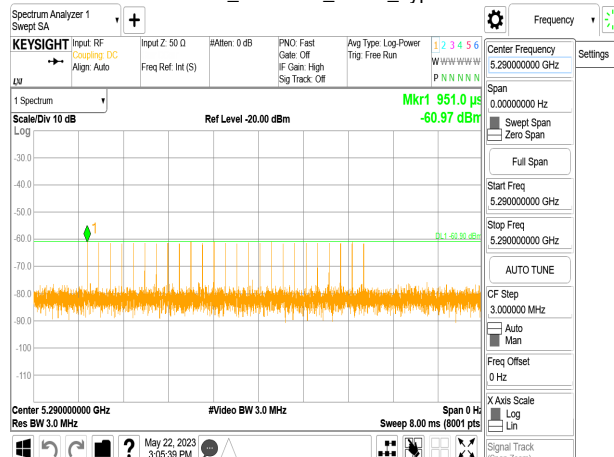
HE80\_5290MHz\_Radar\_Type 1-B



HE80\_5290MHz\_Radar\_Type 0



HE80\_5290MHz\_Radar\_Type 2



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t (886-2) 2299-3279

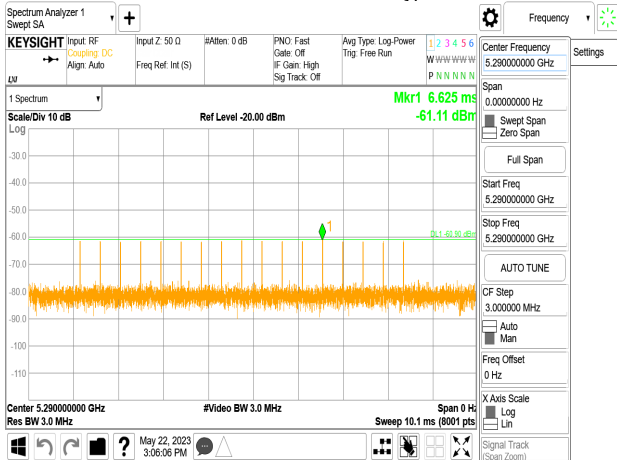
f (886-2) 2298-0488

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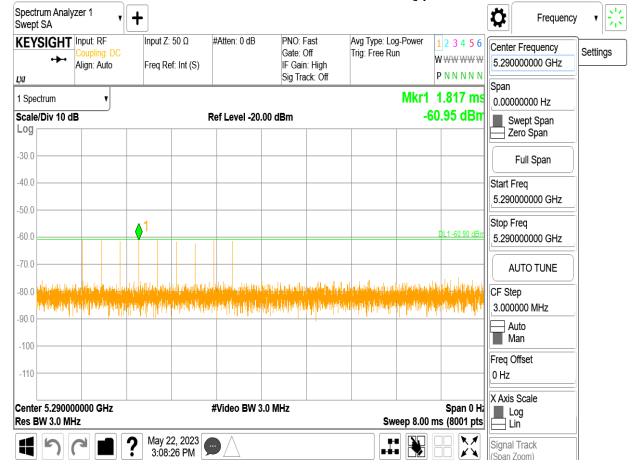
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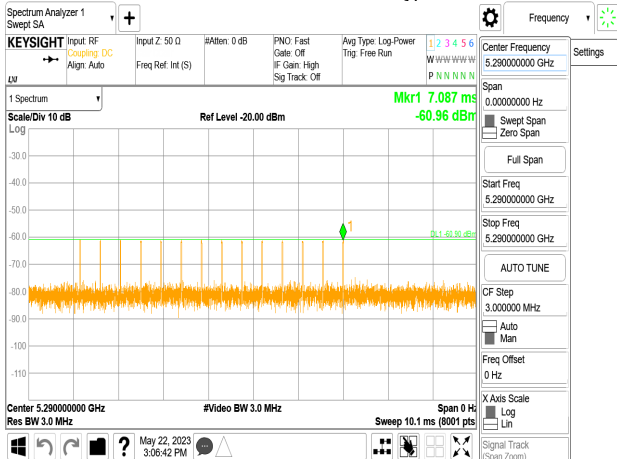
HE80\_5290MHz\_Radar\_Type 3



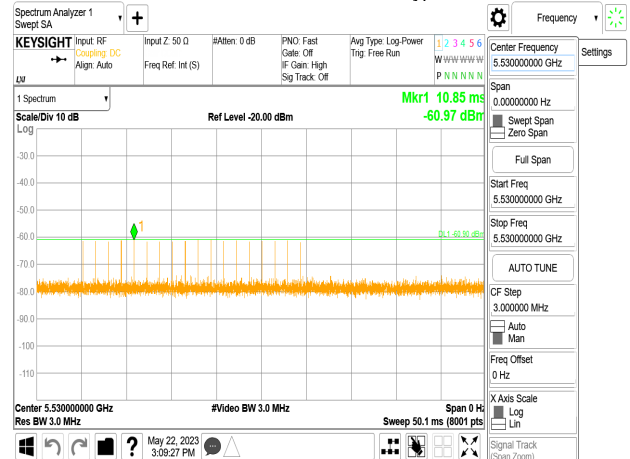
HE80\_5290MHz\_Radar\_Type 6



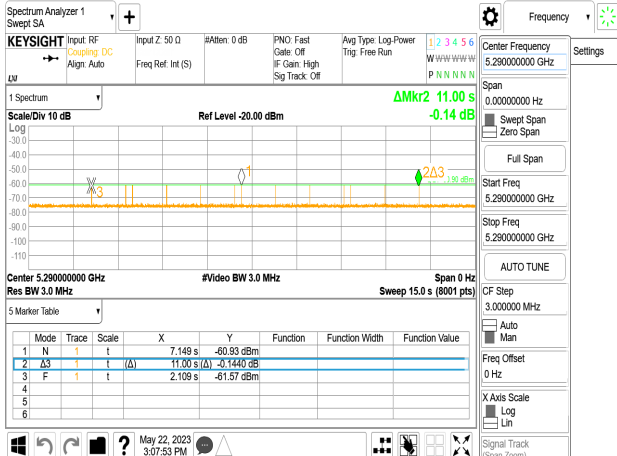
HE80\_5290MHz\_Radar\_Type 4



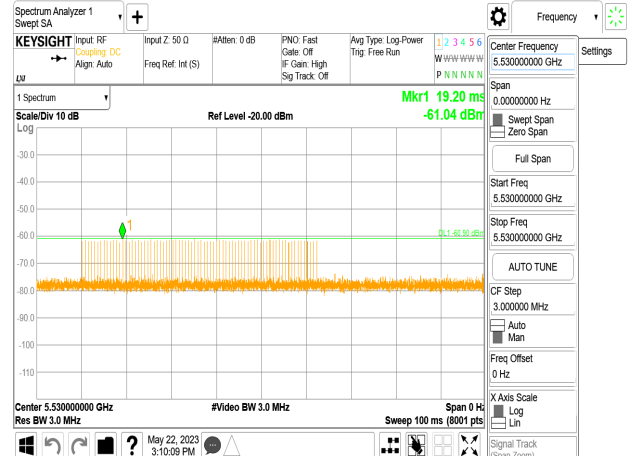
HE80\_5530MHz\_Radar\_Type 0



HE80\_5290MHz\_Radar\_Type 5



HE80\_5530MHz\_Radar\_Type 1-A



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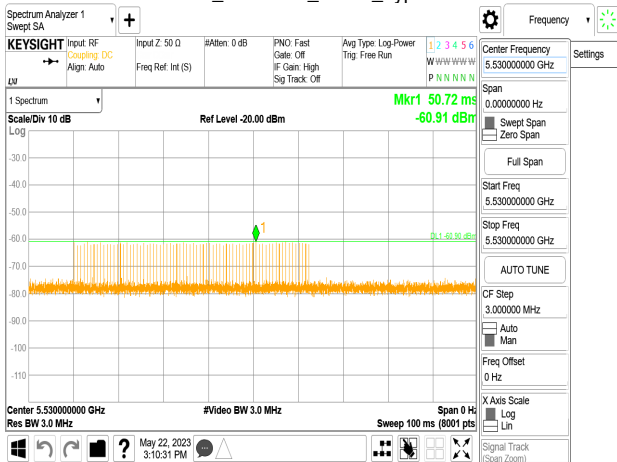
t (886-2) 2299-3279

f (886-2) 2298-0488

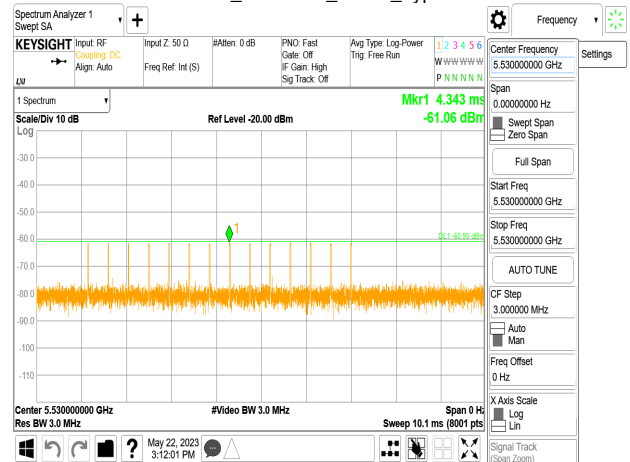
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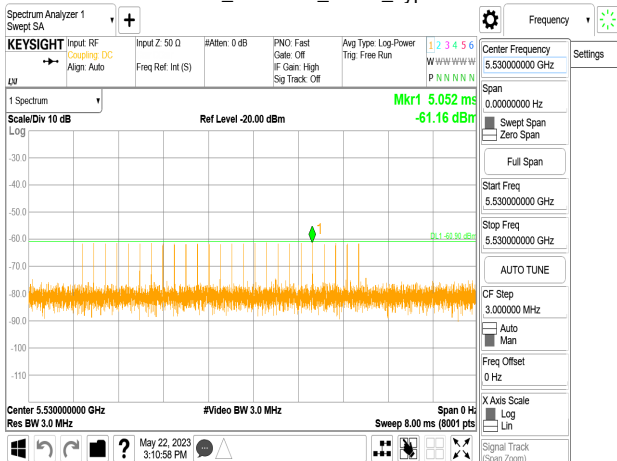
HE80\_5530MHz\_Radar\_Type 1-B



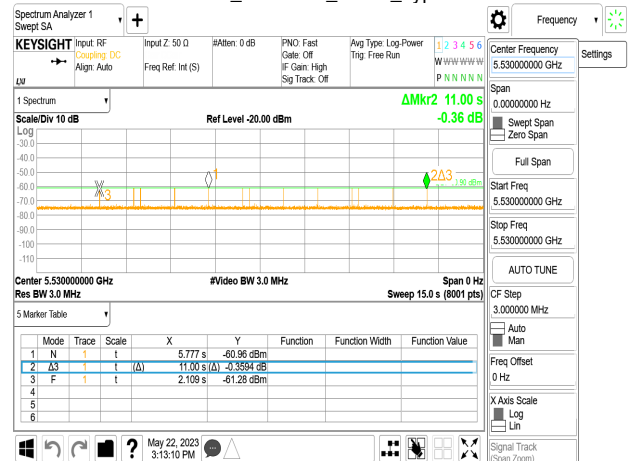
HE80\_5530MHz\_Radar\_Type 4



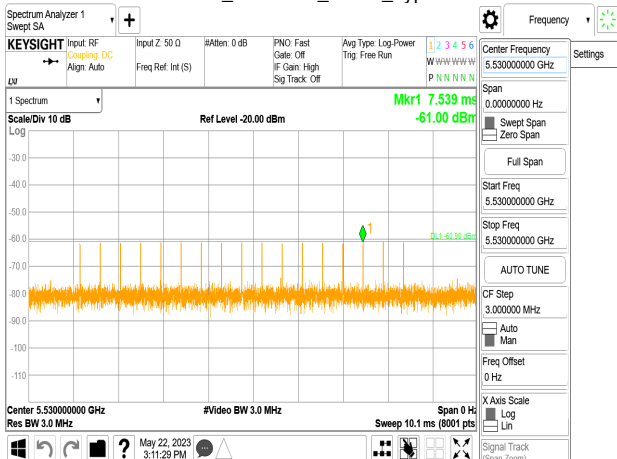
HE80\_5530MHz\_Radar\_Type 2



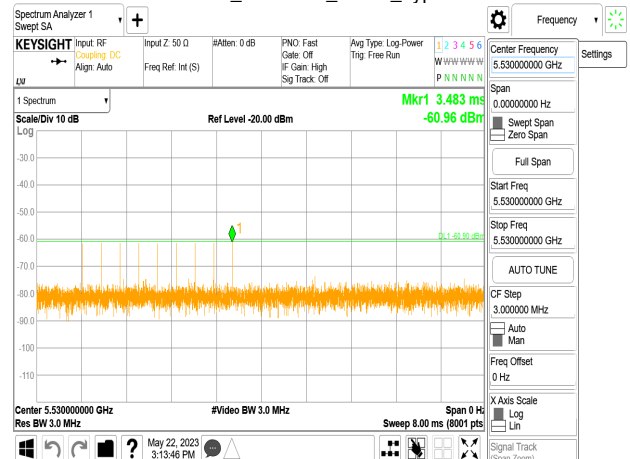
HE80\_5530MHz\_Radar\_Type 5



HE80\_5530MHz\_Radar\_Type 3



HE80\_5530MHz\_Radar\_Type 6



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## 10 CHANNEL CLOSING TRANSMISSION AND CHANNEL MOVE TIME MEASUREMENT (RADAR TYPE 0)

Channel Shutdown Result				
Detection Threshold Level (dBm)			-60.9	
Modulation Mode	Freq. (MHz)	Radar Test Signal	Channel Closing Transmission Time(ms) 200ms~10sec	Channel Move Time(s)
HE80	5290	Type 0	4	0.204
HE80	5530	Type 0	4	0.226
Limit			60 ms	10 sec
Result			Complied	

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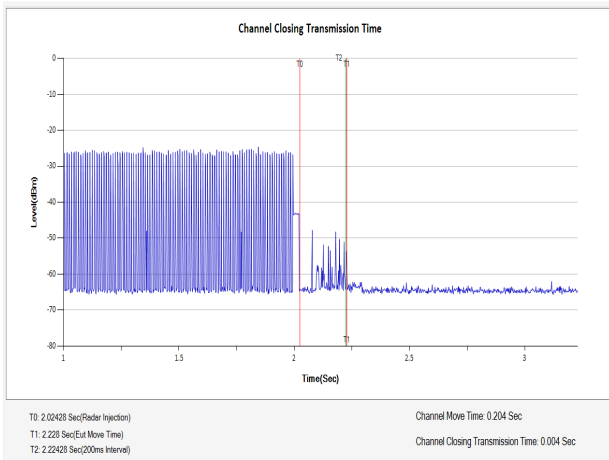
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f (886-2) 2298-0488

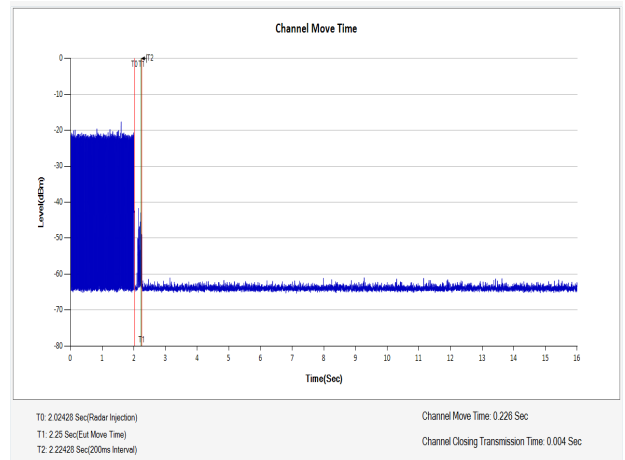
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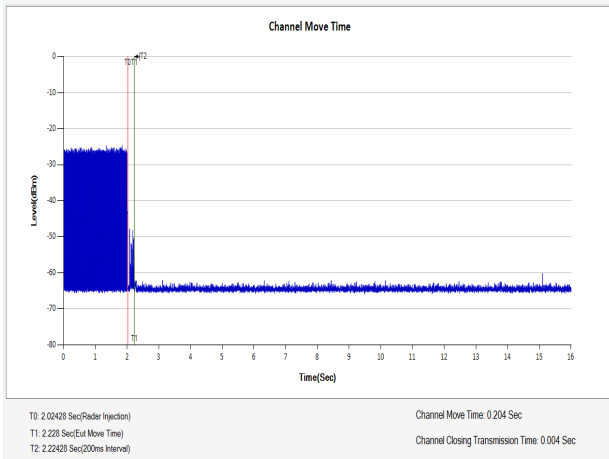
HE80\_5290MHz\_Channel Close Time



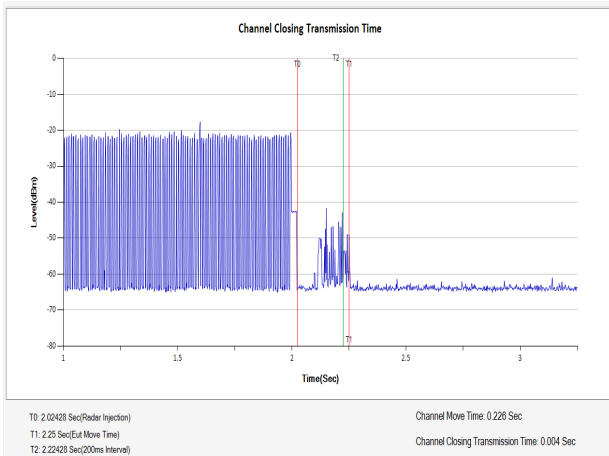
HE80\_5530MHz\_Channel Move Time



HE80\_5290MHz\_Channel Move Time



HE80\_5530MHz\_Channel Close Time



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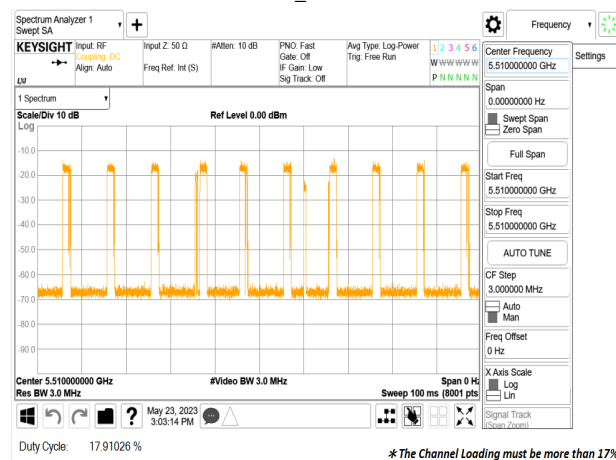
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## 11 DUTY CYCLE

HE20\_5320MHz



HE40\_5510MHz



HE20\_5500MHz



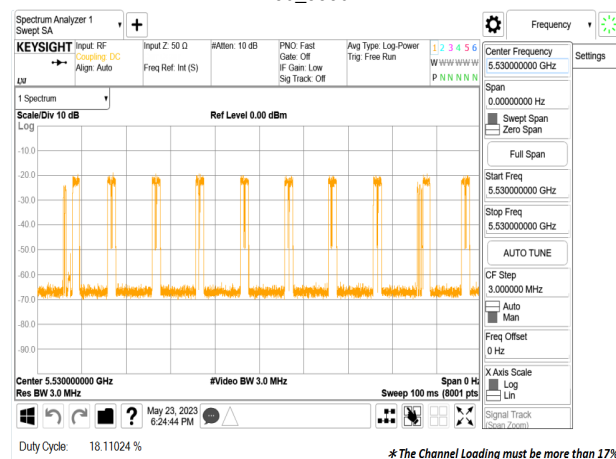
HE80\_5290MHz



HE40\_5310MHz



HE80\_5530MHz



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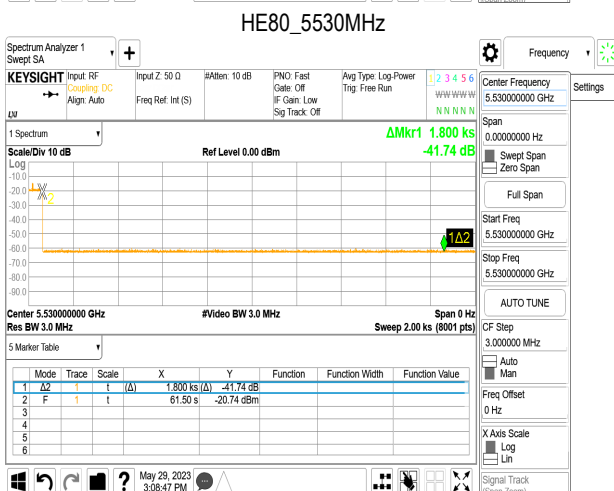
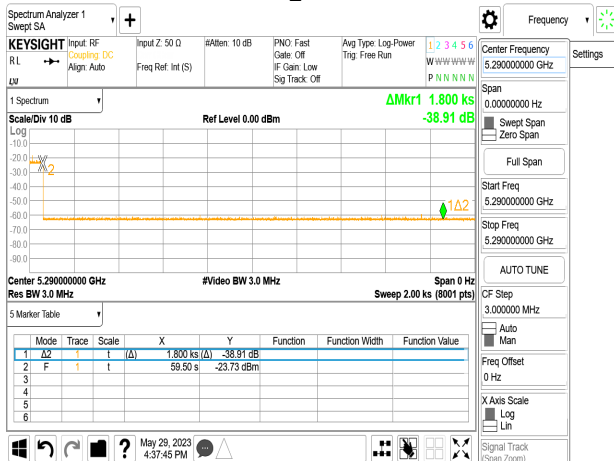
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## 12 NON-OCCUPANCY PERIOD MEASUREMENT

*To verify whether channel is unavailable to be operated in 30 minutes.*

$$1.8ks = 1800s = 1800 \text{ s/min} / 60 = 30\text{minute}$$

HE80\_5290MHz



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### 13.1 Test Result

[illegible]

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EUT operating Frequency(MHz)	:	5500	EUT 99% Bandwidth(MHz)	:	18.970
Radar Type	:	Type 0	Detction BW(MHz)	:	20
Test Result	:	Pass	※ FH: 5510	FL: 5490	

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EUT operating Frequency(MHz)	:	5310	EUT 99% Bandwidth(MHz)	:	37.763
Radar Type	:	Type 0	Detction BW(MHz)	:	40
Test Result	:	Pass	※ FH: 5330	FL: 5290	

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EUT operating Frequency(MHz)	:	5510	EUT 99% Bandwidth(MHz)	:	37.927
Radar Type	:	Type 0	Detction BW(MHz)	:	40
Test Result	:	Pass	※ FH: 5530	FL: 5490	

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EUT operating Frequency(MHz)	:	5290	EUT 99% Bandwidth(MHz)	:	77.382
Radar Type	:	Radar Type 0	Detction BW(MHz)	:	80
Test Result	:	Pass	※ FH: 5330	FL: 5250	

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## HE80 5530MHz

[illegible]

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