Test report No.: 2370318R-RFUSDFSV02-A

TEST REPORT

Product Name	Celer, Celer-5G, Celer-LTE1, Celer-LTE2
Trademark	Windbit
Model and /or type reference	TLDPH00P1, TLDPH01P1, TLDPH02P1, TLDPH03P1
FCC ID	YUATLDPH00P1
Applicant´s name / address	Teldat S.A. Parque Tecnologico de Madrid c/ Isaac Newton, Tres Cantos, 28760 Spain
Manufacturer´s name	Teldat S.A.
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart E 15.407 (h) KDB 905462
Verdict Summary	IN COMPLIANCE
Documented By (Senior Project Specialist / Genie Chang)	Genie Chang
Tested By (Senior Engineer / Benjamin Pan)	Benjamin Pan
Approved By (Senior Engineer / Jack Hsu)	Jack Hsu
Date of Receipt	2023/07/11
Date of Issue	2023/12/14
Report Version	V1.0

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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.

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

Report No.	Version	Description	Issued Date
2370318R-RFUSDFSV02-A	V1.0	Initial issue of report.	2023/12/14

1. General Information

1.1. Standard Requirement

FCC Part 15.407:

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 30dBm. 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.

1.2. EUT Description

Product Name	Celer, Celer-5G, Celer-LTE1, Celer-LTE2
Trademark	Windbit
Model and /or type reference	TLDPH00P1, TLDPH01P1, TLDPH02P1, TLDPH03P1
FCC ID	YUATLDPH00P1
EUT Rated Voltage	DC 12V-24V
EUT Test Voltage	DC 12V
Frequency Range	802.11a/n/ac/ax-20 MHz: 5180-5320 MHz, 5500-5720 MHz, 5745-5825 MHz 802.11n/ac/ax-40 MHz: 5190-5310 MHz, 5510-5710 MHz, 5755-5795 MHz 802.11ac/ax-80 MHz: 5210-5290 MHz, 5530-5690 MHz, 5775 MHz
Number of Channels	802.11a/n/ac/ax-20 MHz: 25 CH 802.11n/ac/ax-40 MHz: 12 CH 802.11ac/ax-80 MHz: 6 CH
Data Rate	802.11a: 6-54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201 Mbps
Type of Modulation	802.11a/n/ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Channel Control	Auto
Channel Bandwidth	20/40/80MHz
DFS Function	■ Master □ Slave
TPC Function	■ <500mW not required □≧ 500mW employ a TPC*
Communication Mode	■ IP Based Systems □ Frame Based System □ Other System
Molex Cable	MFR: Dong Wei, M/N: DWE-EJ-382, Non-shielded, 1m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	MASTER WAVE TECHNOLOGY CO., LTD.	98614PRSX000 (Main)	Dipole	4.10 dBi for 5150~5250 MHz 4.10 dBi for 5250~5350 MHz 4.41 dBi for 5470~5725 MHz 4.73 dBi for 5725~5850 MHz
		98614PRSX000 (Aux)		4.10 dBi for 5150~5250 MHz 4.10 dBi for 5250~5350 MHz 4.41 dBi for 5470~5725 MHz 4.73 dBi for 5725~5850 MHz

Note:
1. The antenna of EUT is conforming to FCC 15.203.
2. The antenna gain as by the manufacturer provided.
3. Each antenna has been evaluated and only the worst case (higher gain antenna) is presented in the report.

802.11a/n/ac/ax-20 MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220	48	5240
52	5260	56	5280	60	5300	64	5320
100	5500	104	5520	108	5540	112	5560
116	5580	120	5600	124	5620	128	5640
132	5660	136	5680	140	5700	144	5720
149	5745	153	5765	157	5785	161	5805
165	5825	--	--	--	--	--	--

802.11n/ac/ax-40 MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	54	5270	62	5310
102	5510	110	5550	118	5590	126	5630
134	5670	142	5710	151	5755	159	5795

802.11ac/ax-80MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	58	5290	106	5530	122	5610
138	5690	155	5775	--	--	--	--

Test Mode	Mode 1	Transmit (802.11ax-20 MHz) Transmit (802.11ax-40 MHz) Transmit (802.11ax-80 MHz)

1.3. UNII Device Description

(1) The EUT operates in the following DFS band:

1. 5250-5350 MHz
2. 5470-5725 MHz

(2) The U-NII device maximum power is 26.27 dBm(E.I.R.P).

Master mode:

Below are the available 50 ohm antenna assemblies and their corresponding gains. 0 dBi gain was used to set the -61 dBm threshold level (-62dBm +1 dB) during calibration of the test setup.

Slave mode:

Below are the available 50 ohm antenna assemblies and their corresponding gains. 0dBi gain was used to set the -63 dBm threshold level (-64dBm +1 dB) during calibration of the test setup.

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

(4) For the 5250-5350 MHz and 5470-5725MHz 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.

(5) Master mode:

The client device is a Notebook pc contains Intel WLAN radio Module card (Model: AX200NGW). The Intel WLAN Module card FCC ID: PD9AX200NG.

(6) This device does not support partial RU function.

1.4. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Radiated Emission	Temperature (°C)	10~40 ℃	24.7 ℃
	Humidity (%RH)	10~90 %	68.3 %

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

1.5. Test Equipment

Dynamic Frequency Selection (DFS) / HY-SR06

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	R&S	FSV30	103467	2023/05/30
Vector Signal Generator	R&S	SMBV100	261871	2023/05/30
Horn Antenna	ETS-Lindgren	3117	00203799	2021/12/27
Horn Antenna	ETS-Lindgren	3117	00203800	2023/01/12

Note: Horn Antenna is calibrated every two years, the other equipments are calibrated every one year.

Instrument	Manufacturer	Type No.	Serial No
Notebook Pc	Dell	Inspiron 14 5459	1599Q72
RF Cable	WOKEN	L1406-031C	S02-130729-305
RF Cable	SUHNER	SUCOFLEX 106	3474516
Access Point	ASUS	RT-AX88U	JCITHP000040

Software	Manufacturer	Function
R&S Pulse Sequencer DFS V 2.6,7.6.2023 Build: 8558 Rev: 5141	R&S	Radar Signal Generation Software
Iperf v2.0.8	iperf.fr	Streaming data

1.6. Uncertainty

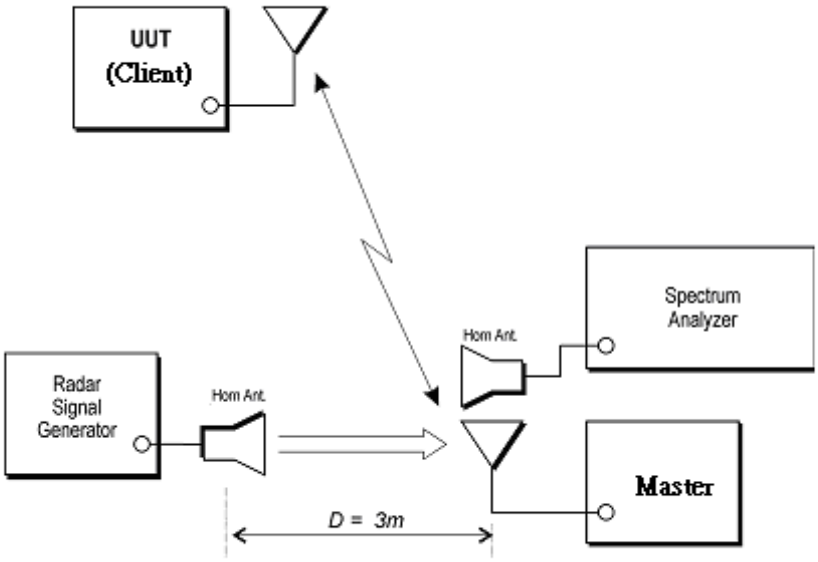
Uncertainties have been calculated according to the DEKRA internal document.
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.
Measurement uncertainties evaluated for each testing system 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.

Test item	**Uncertainty**
UNII Detection Bandwidth	±0.53%
Initial Channel Availability Check Time	±0.53%
Radar Burst at the Beginning of the Channel Availability Check Time	±0.53%
Radar Burst at the End of the Channel Availability Check Time	±0.53%
In-Service Monitoring for Channel Move Time and Channel Closing Transmission Time and Non-Occupancy Period	±0.53%
Statistical Performance Check	±0.53%

1.7. Summary of Test Results

Test item	**Result**
UNII Detection Bandwidth	Pass
Initial Channel Availability Check Time	Pass
Radar Burst at the Beginning of the Channel Availability Check Time	Pass
Radar Burst at the End of the Channel Availability Check Time	Pass
In-Service Monitoring for Channel Move Time and Channel Closing Transmission Time and Non-Occupancy Period	Pass
Statistical Performance Check	Pass
UNII Detection Bandwidth	Pass

2. Test Setup



2.1. 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. **Note 3:** 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 Notes 1 and 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.

2.2. 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	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	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.

(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.

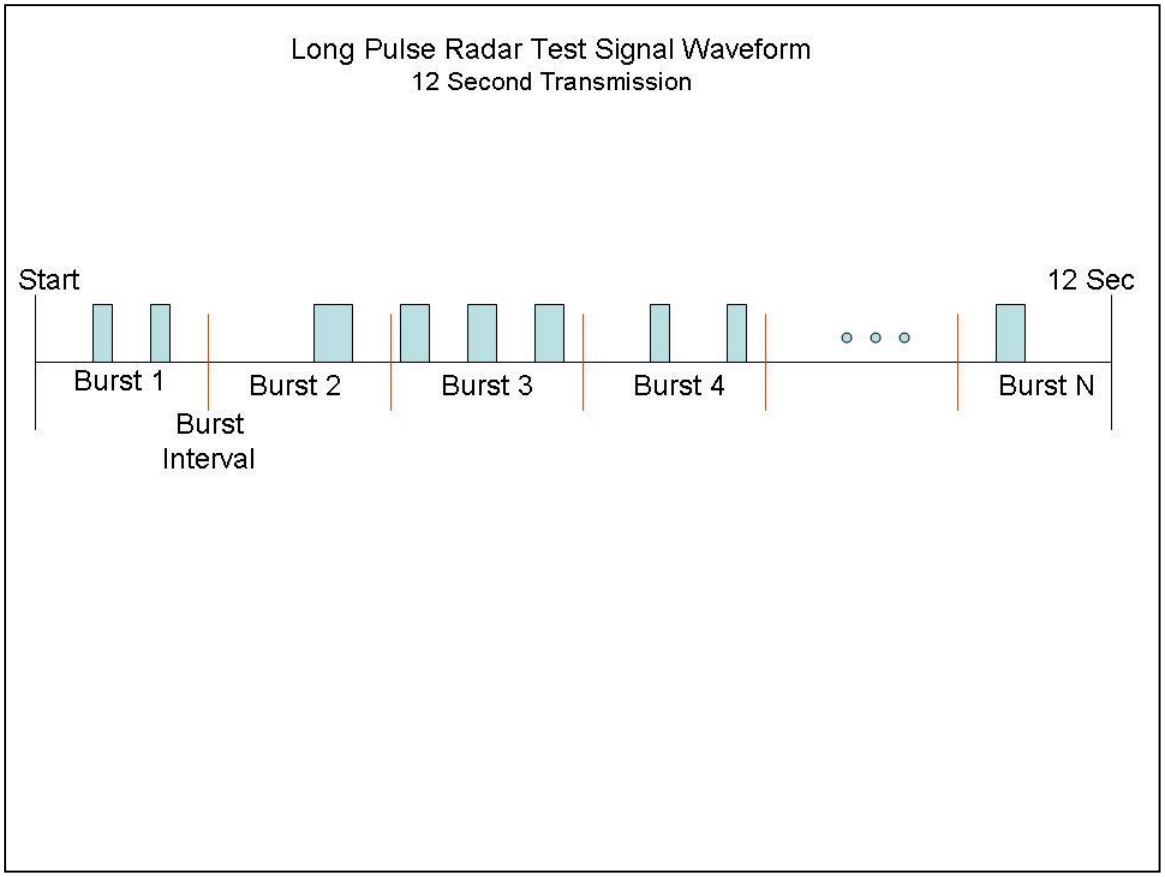
Each waveform is defined as follows:

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:

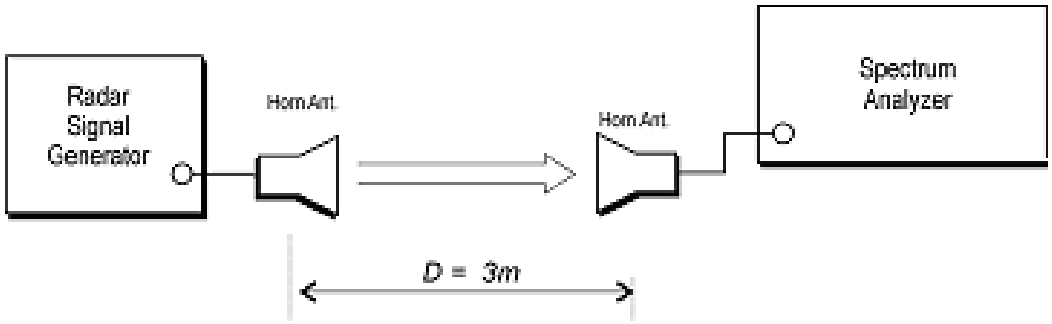
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues 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.

2.3. 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 3 MHz.

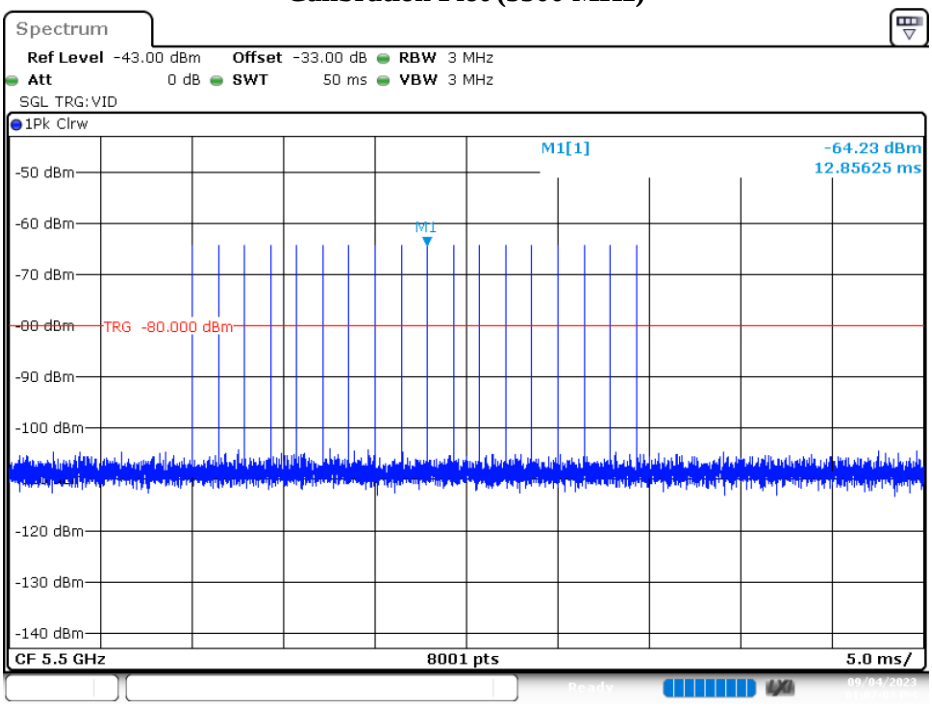
The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm due to the interference threshold level is not required.

Radiated Calibration Setup



2.4. Radar Waveform Calibration Result

Radar Type 0
Calibration Plot (5500 MHz)



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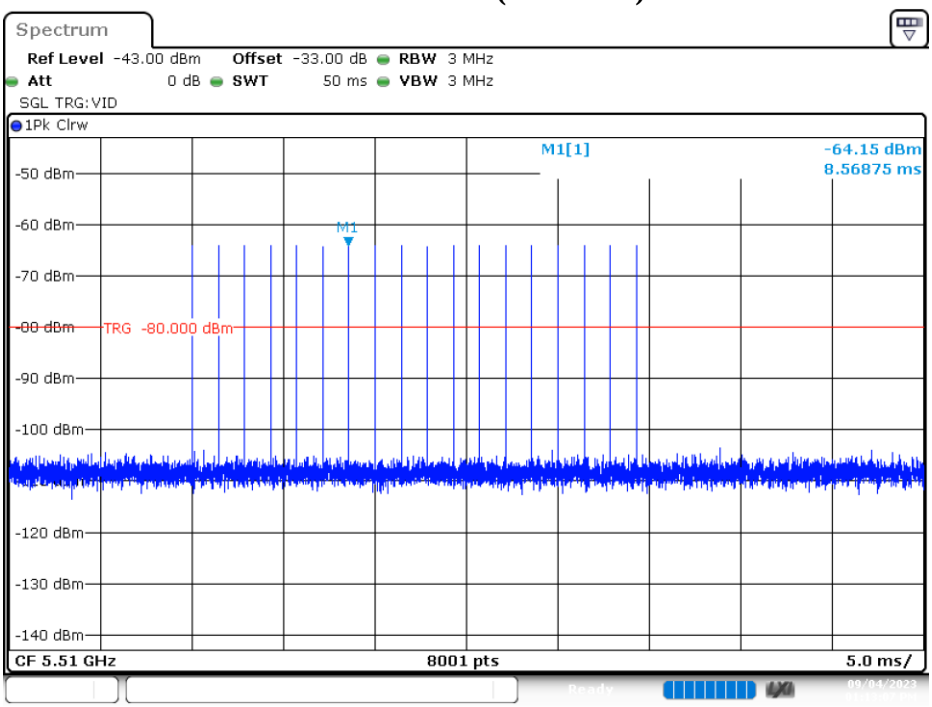
Calibration Plot (5510 MHz)



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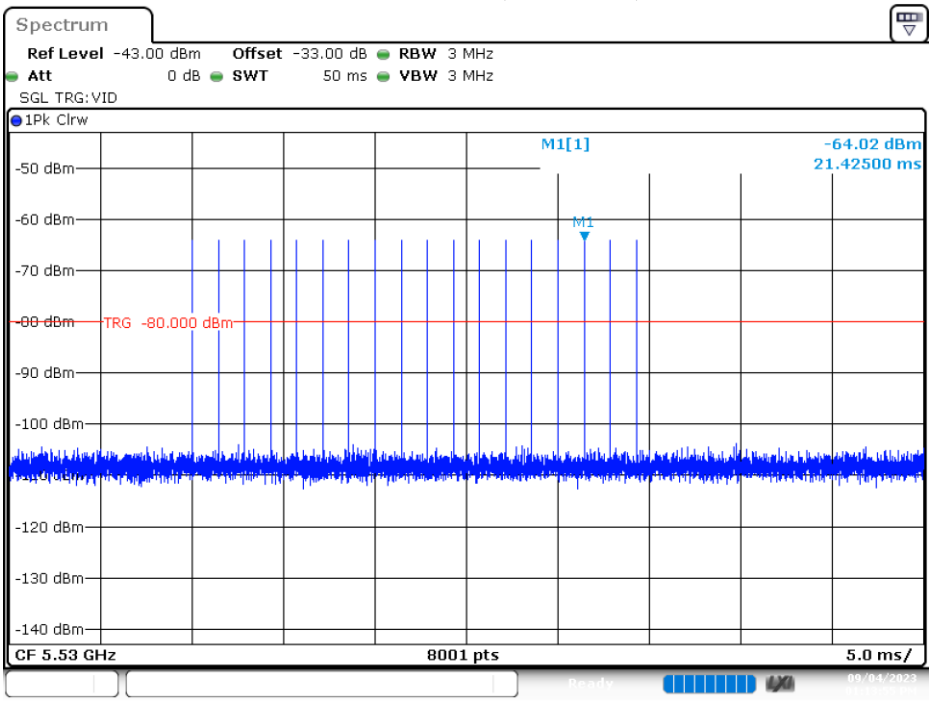
Calibration Plot (5530 MHz)



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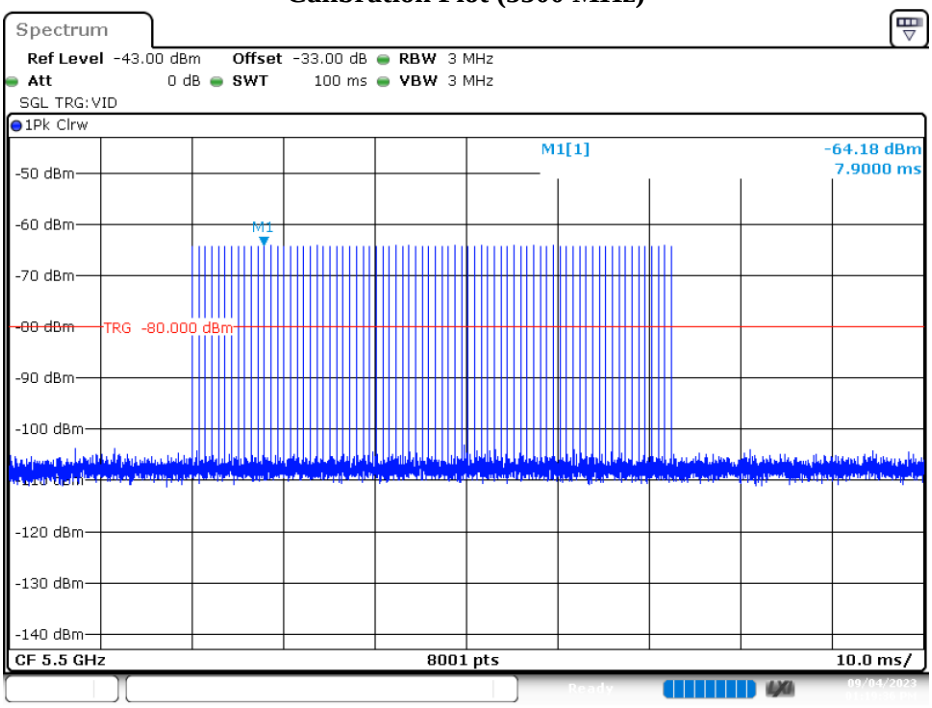
Radar Type 1-A

Calibration Plot (5500 MHz)



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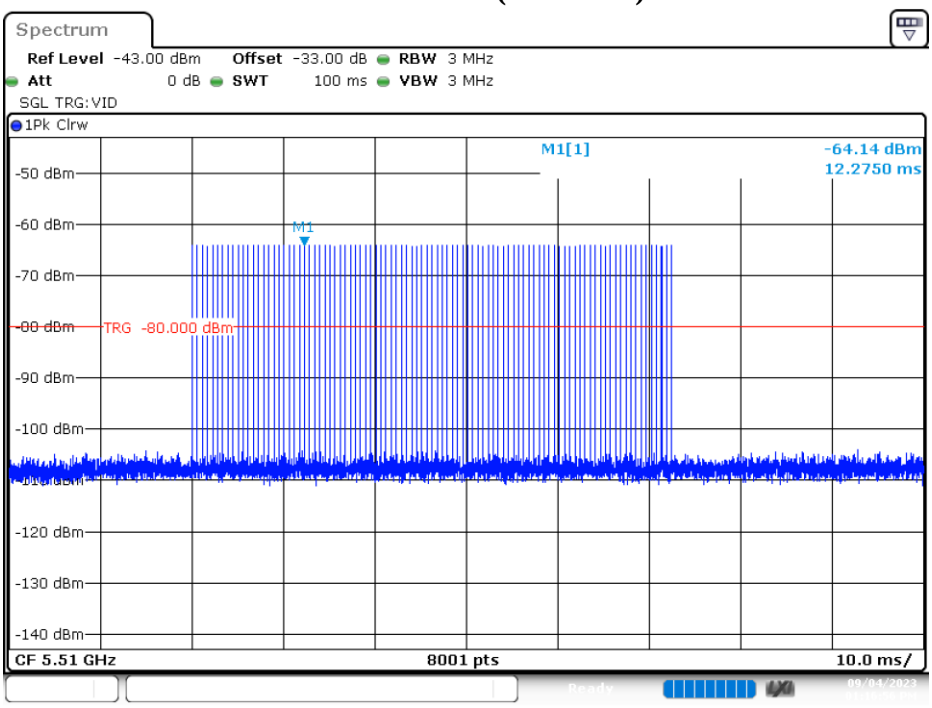
Calibration Plot (5510 MHz)



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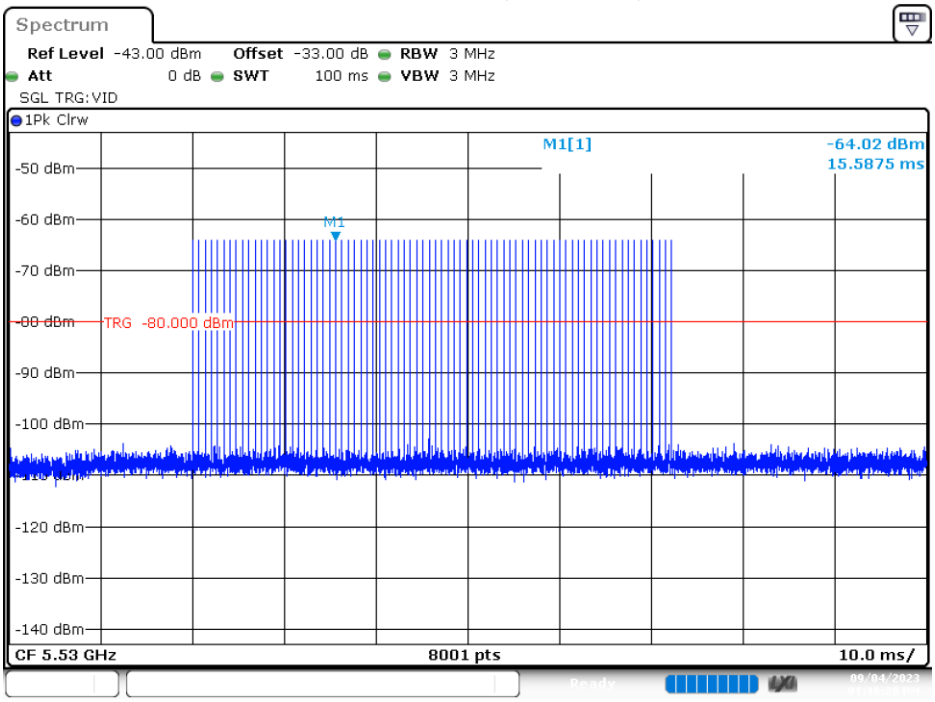
Calibration Plot (5530 MHz)



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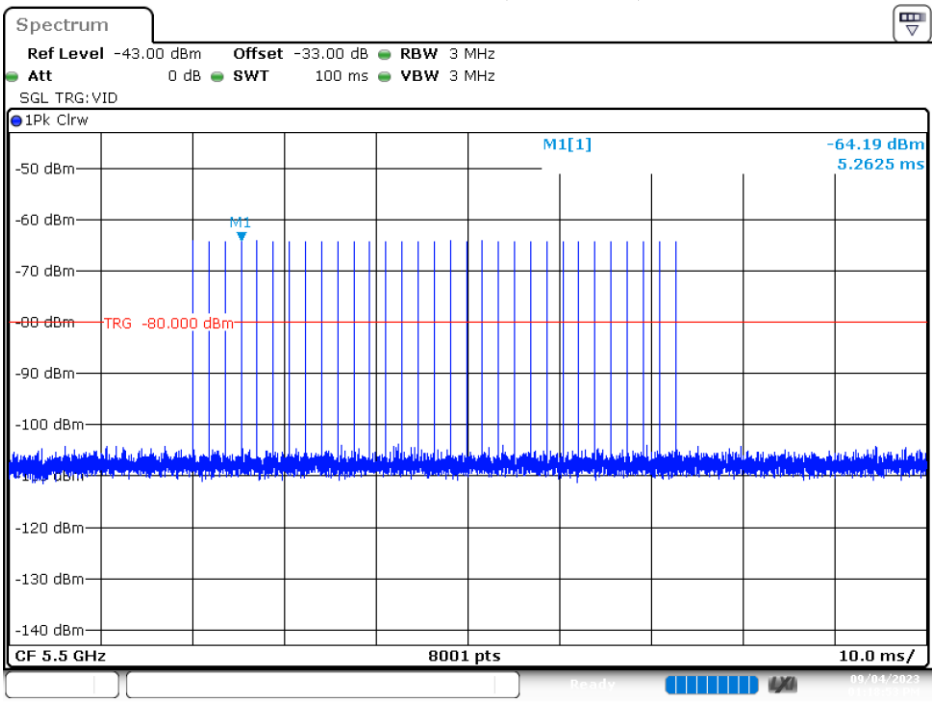
Radar Type 1-B

Calibration Plot (5500 MHz)



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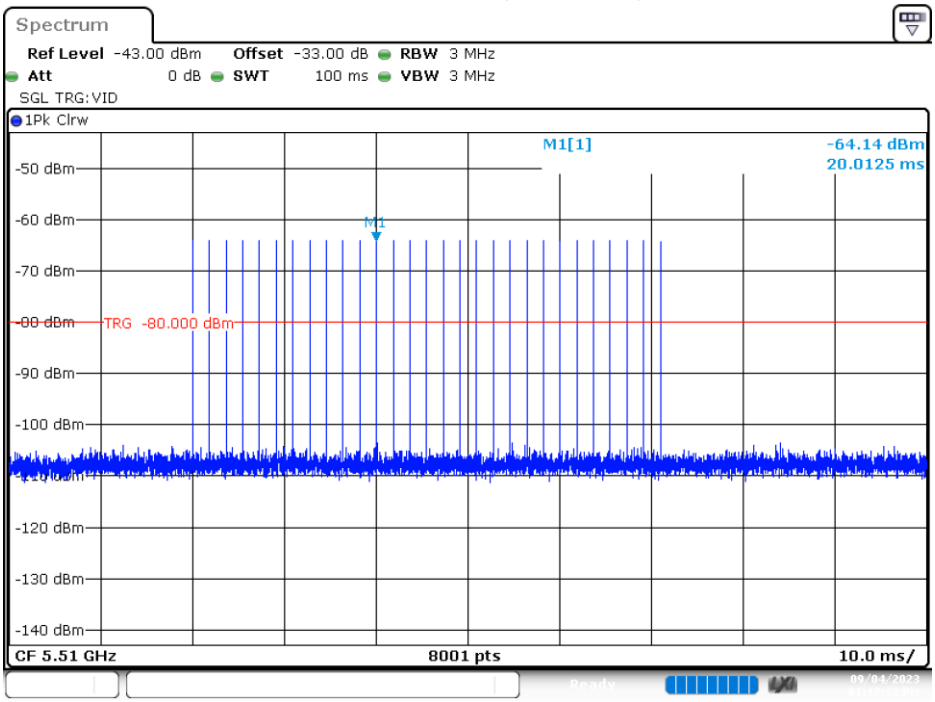
Calibration Plot (5510 MHz)



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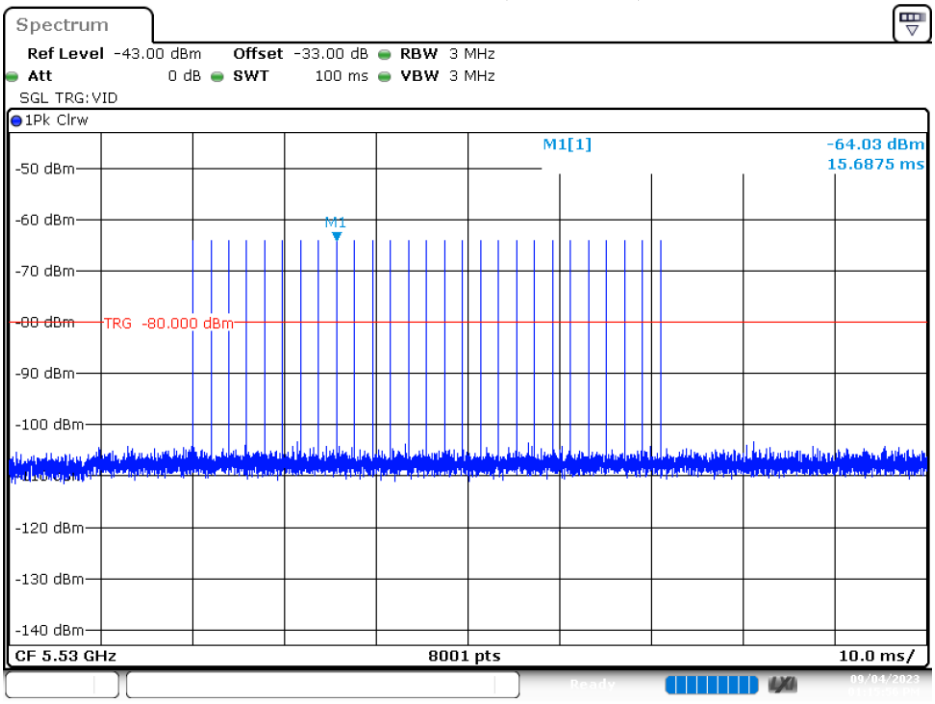
Calibration Plot (5530 MHz)



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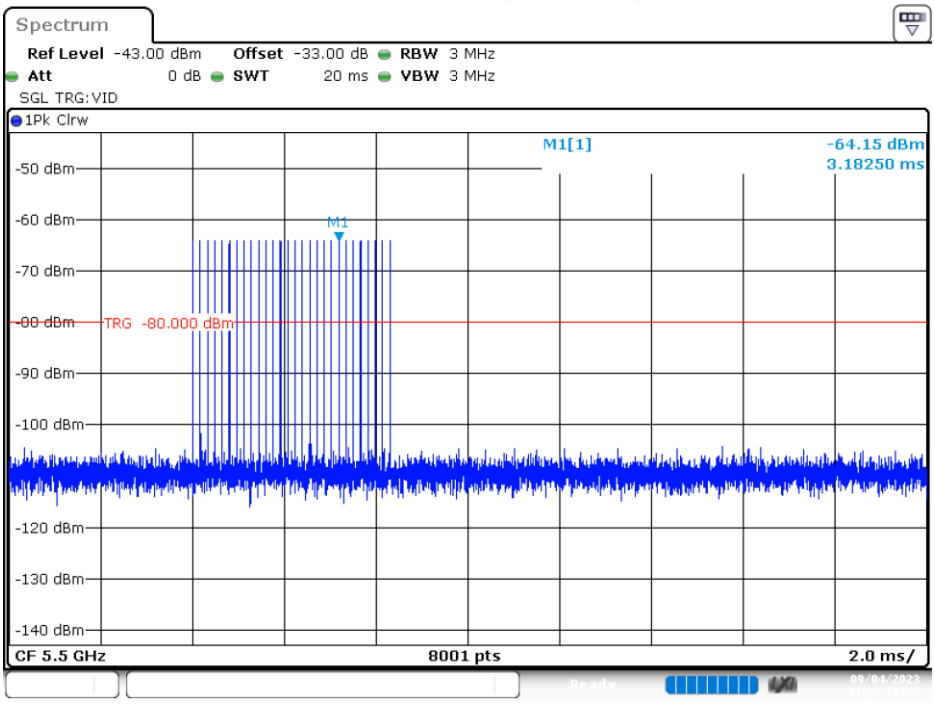
Radar Type 2

Calibration Plot (5500 MHz)



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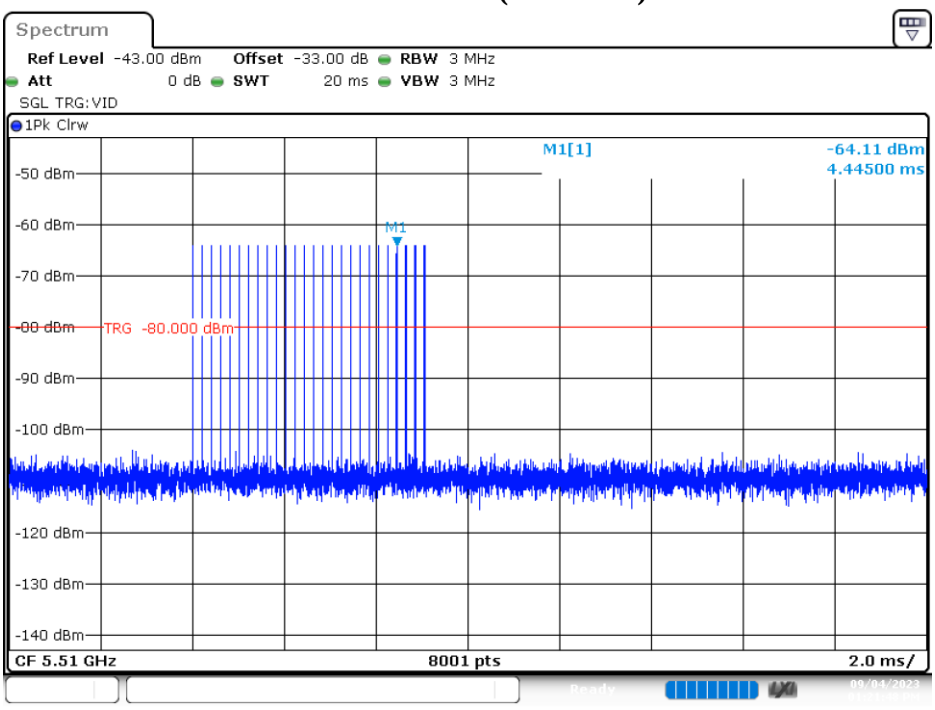
Calibration Plot (5510 MHz)



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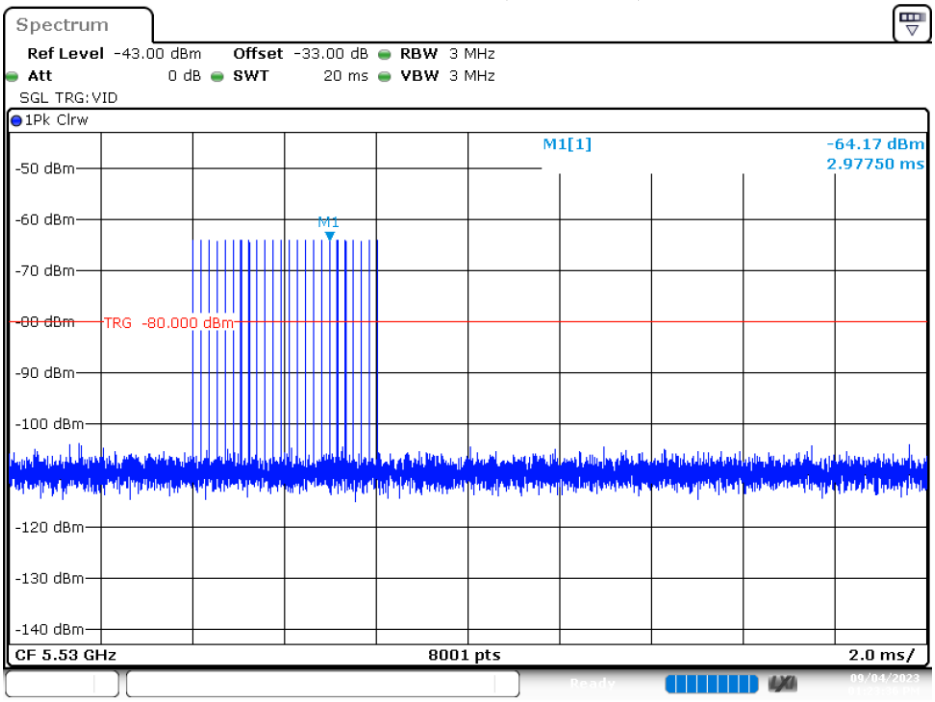
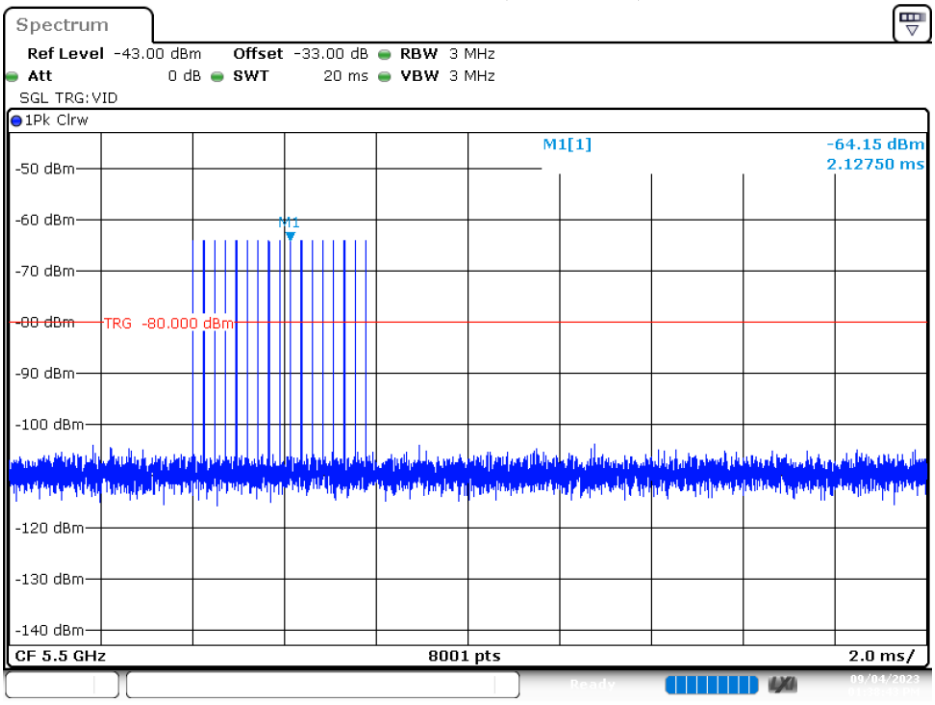
Calibration Plot (5530 MHz)



Date: 4.SEP.2023 13:23:36

Radar Type 3

Calibration Plot (5500 MHz)



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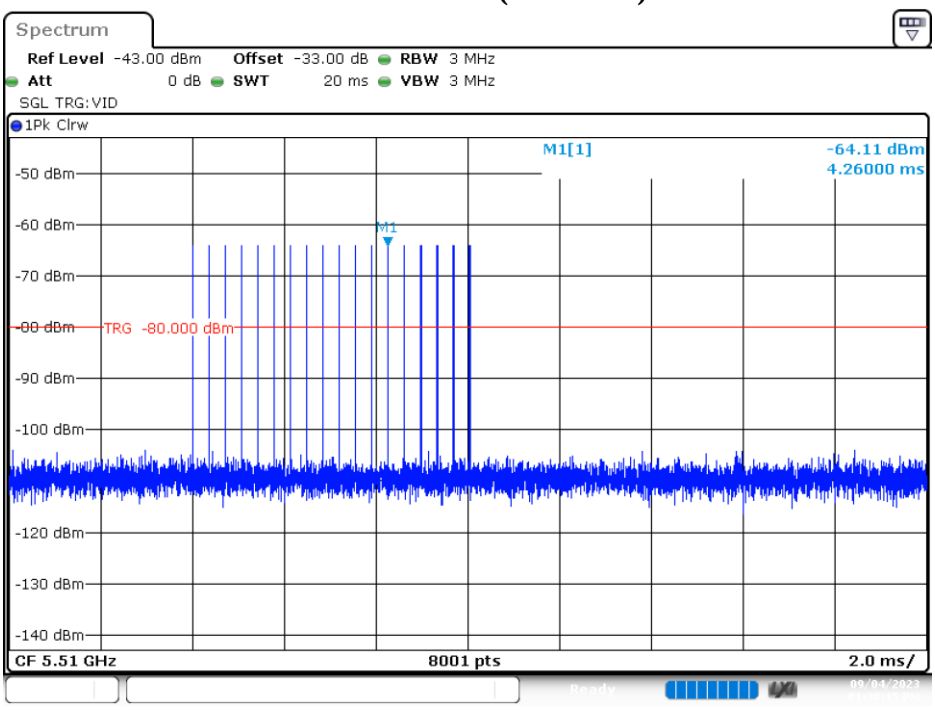
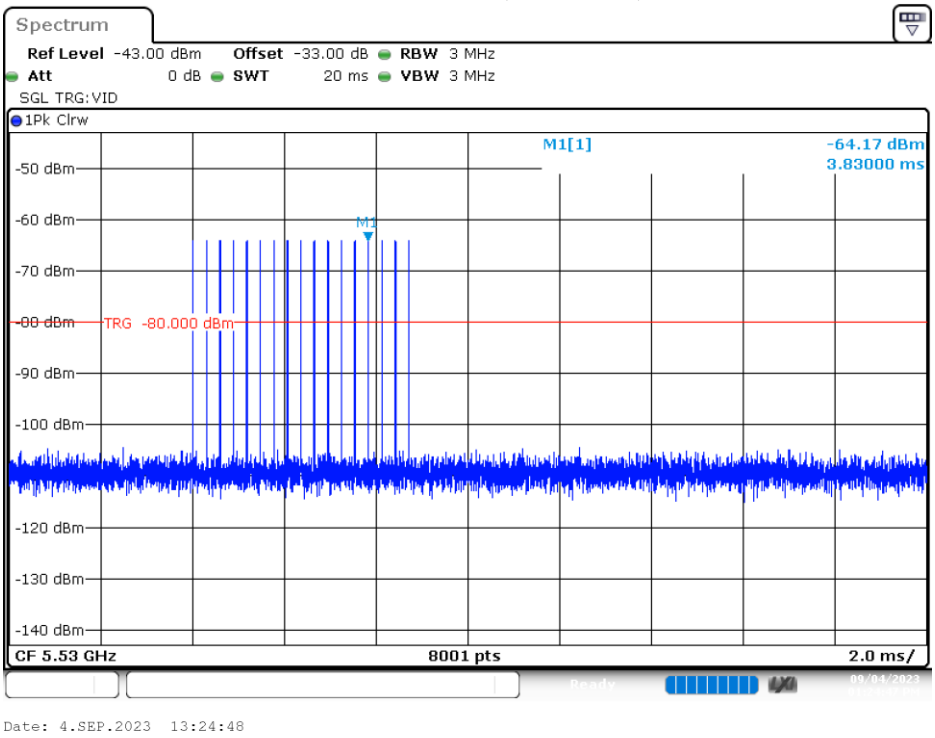
Calibration Plot (5510 MHz)



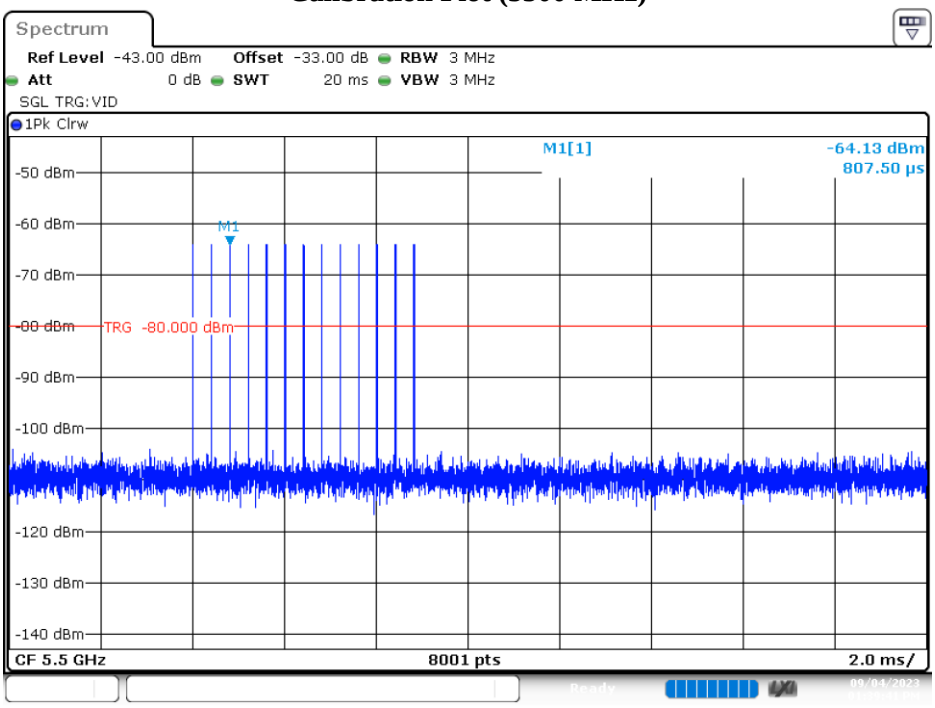
Date: 4.SEP.2023 13:38:16

Calibration Plot (5530 MHz)



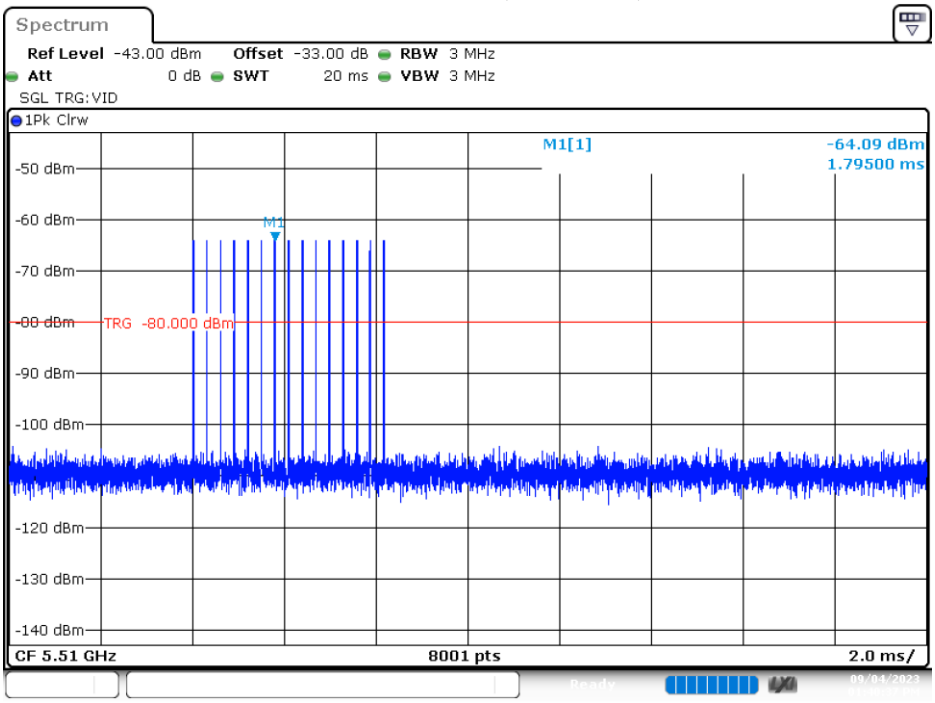
Date: 4.SEP.2023 13:24:48

Radar Type 4
Calibration Plot (5500 MHz)



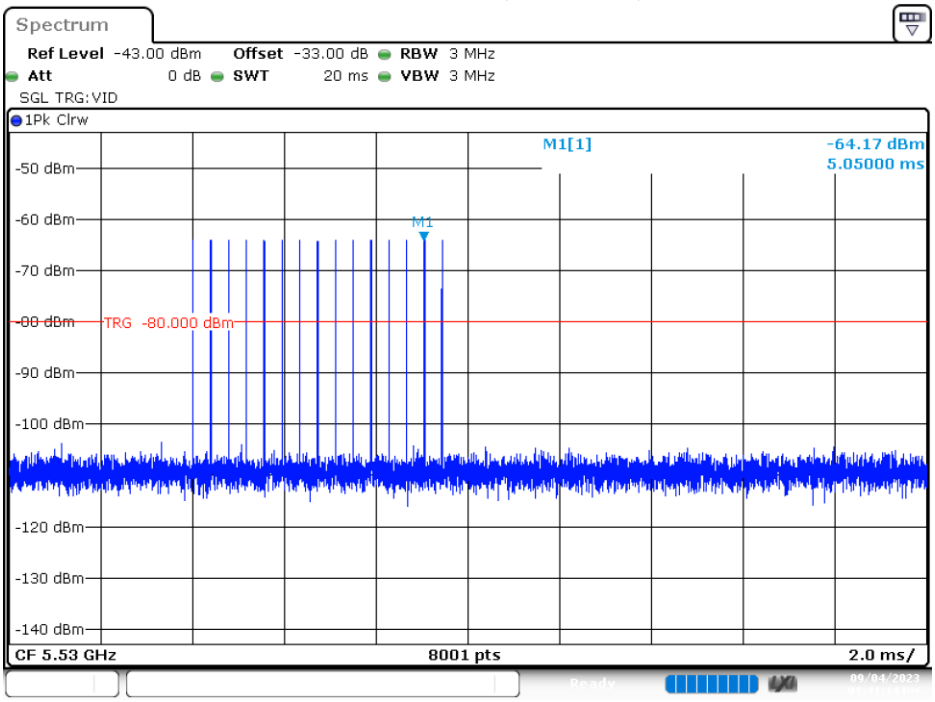
Date: 4.SEP.2023 13:39:42

Calibration Plot (5510 MHz)



Date: 4.SEP.2023 13:40:37

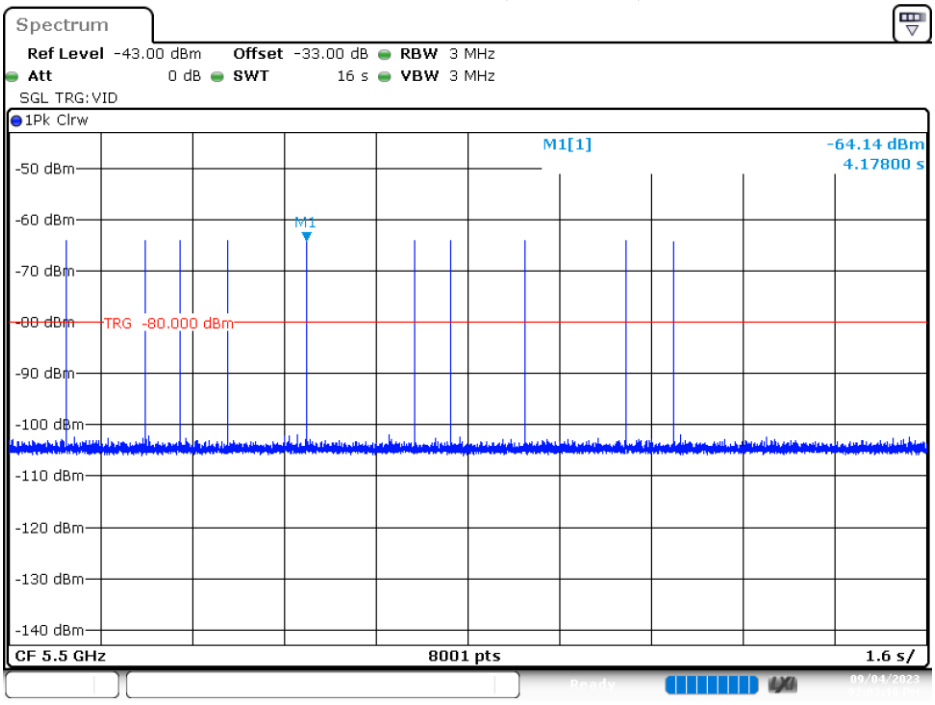
Calibration Plot (5530 MHz)



Date: 4.SEP.2023 13:41:14

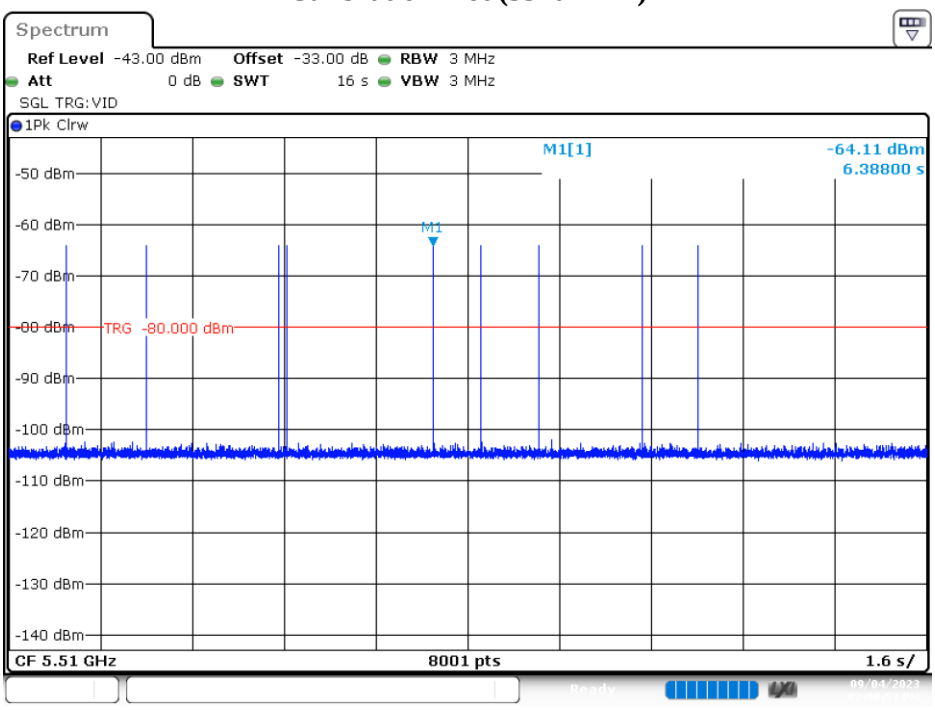
Radar Type 5

Calibration Plot (5500 MHz)



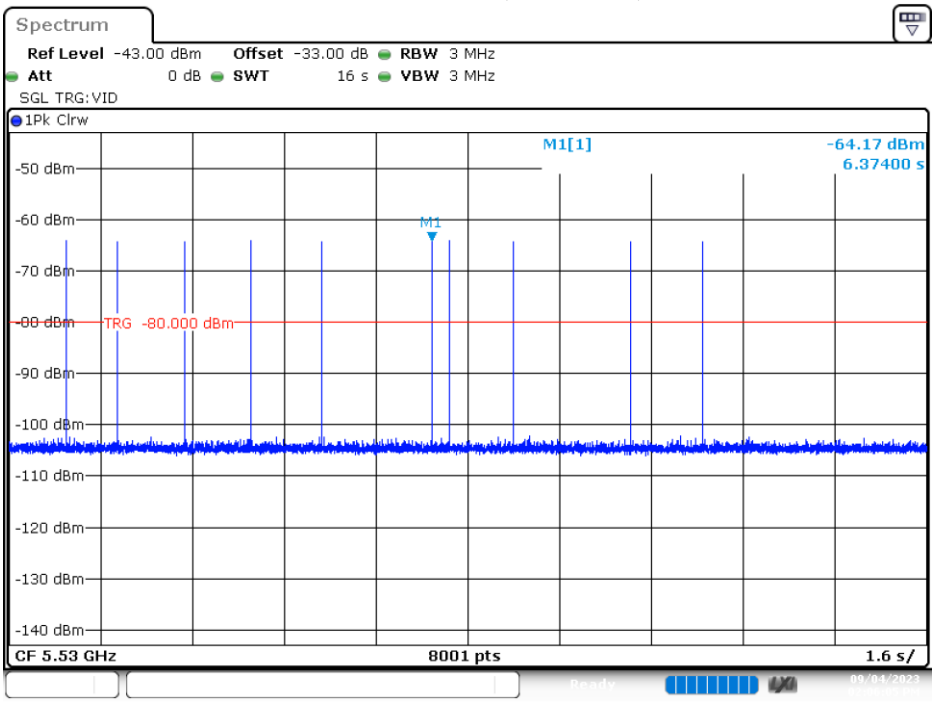
Date: 4.SEP.2023 14:02:16

Calibration Plot (5510 MHz)



Date: 4.SEP.2023 14:00:53

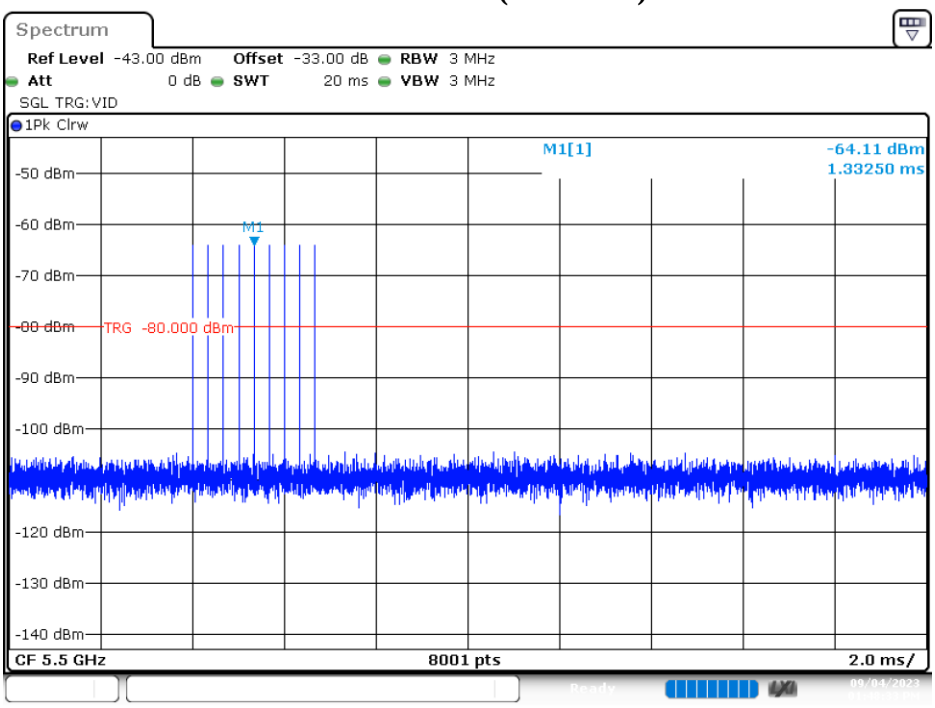
Calibration Plot (5530 MHz)



Date: 4.SEP.2023 14:06:06

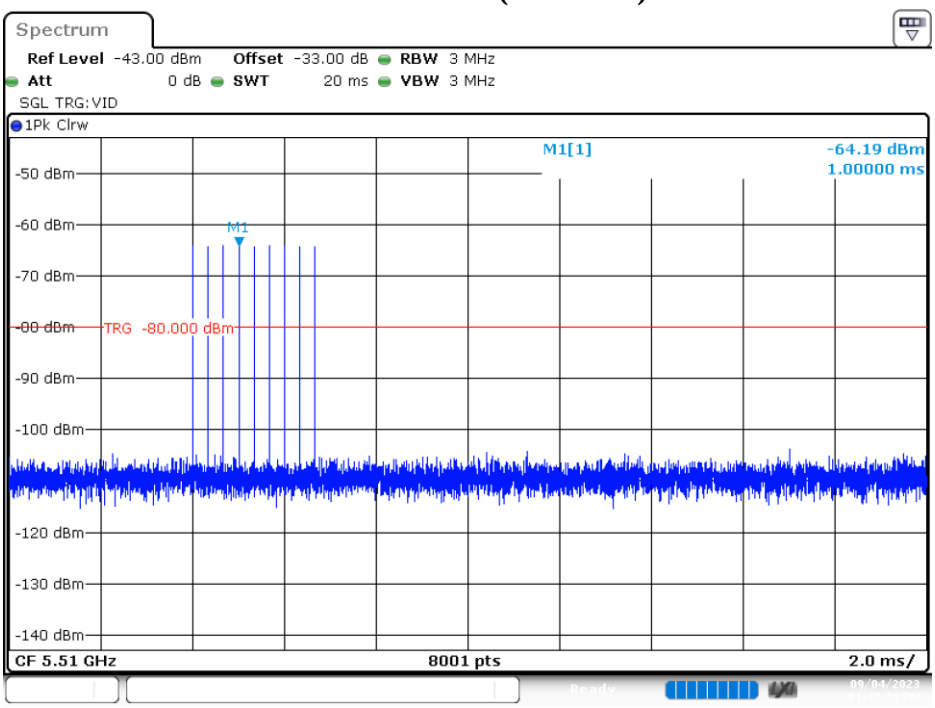
Radar Type 6

Calibration Plot (5500 MHz)



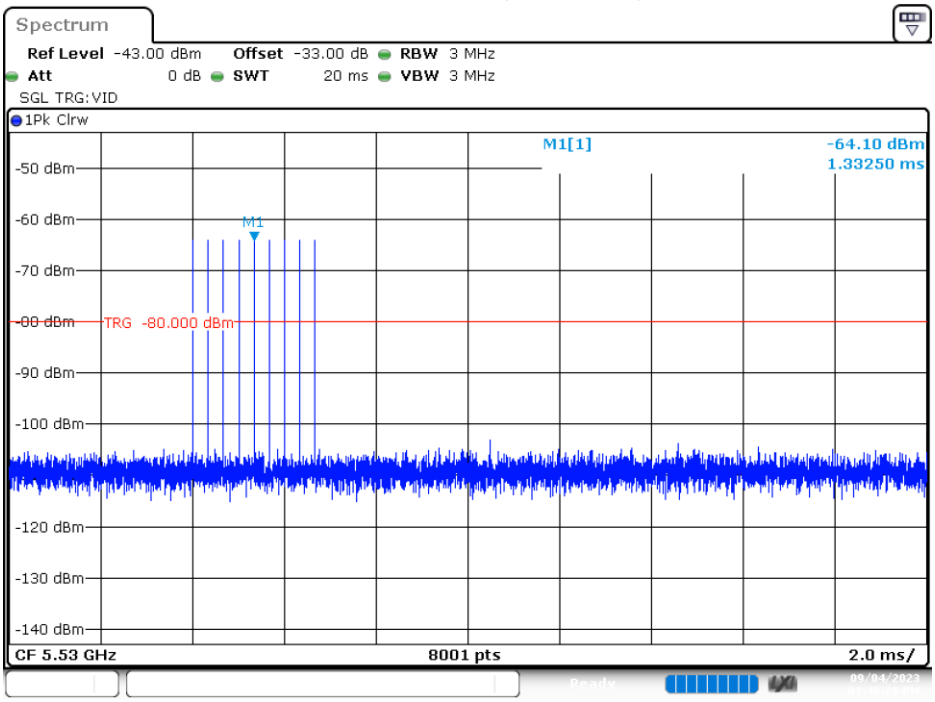
Date: 4.SEP.2023 13:48:33

Calibration Plot (5510 MHz)



Date: 4.SEP.2023 13:47:24

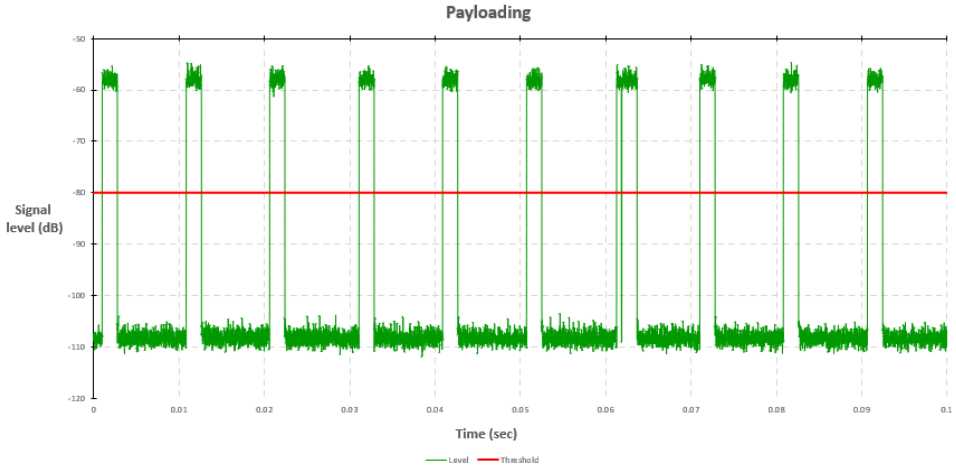
Calibration Plot (5530 MHz)



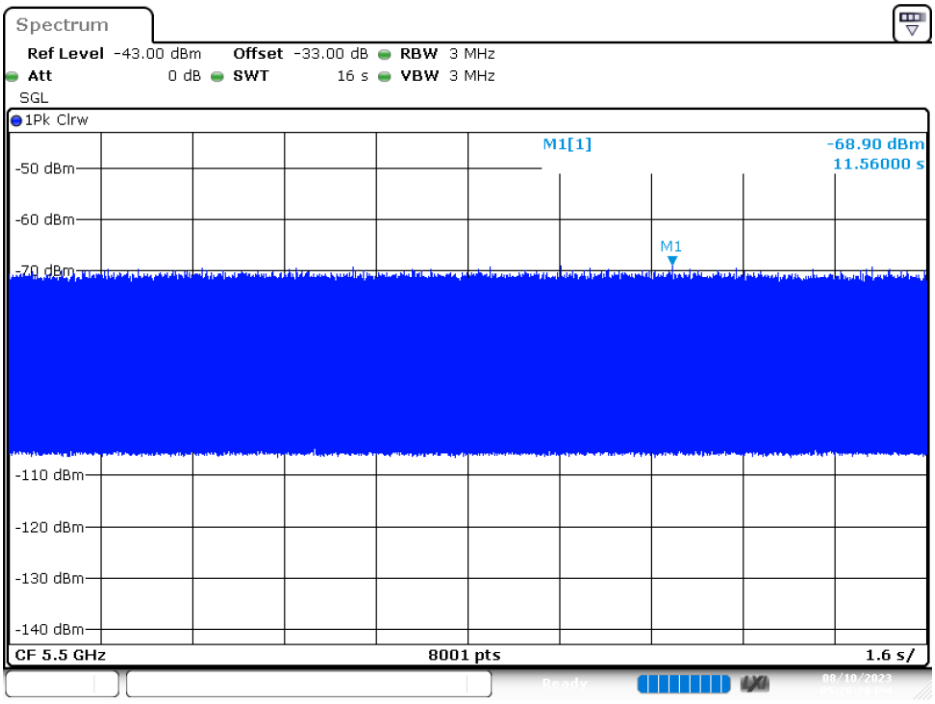
Date: 4.SEP.2023 13:46:27

2.5. Master Data Traffic Plot Result

Plot of WLAN Traffic at 5500 MHz



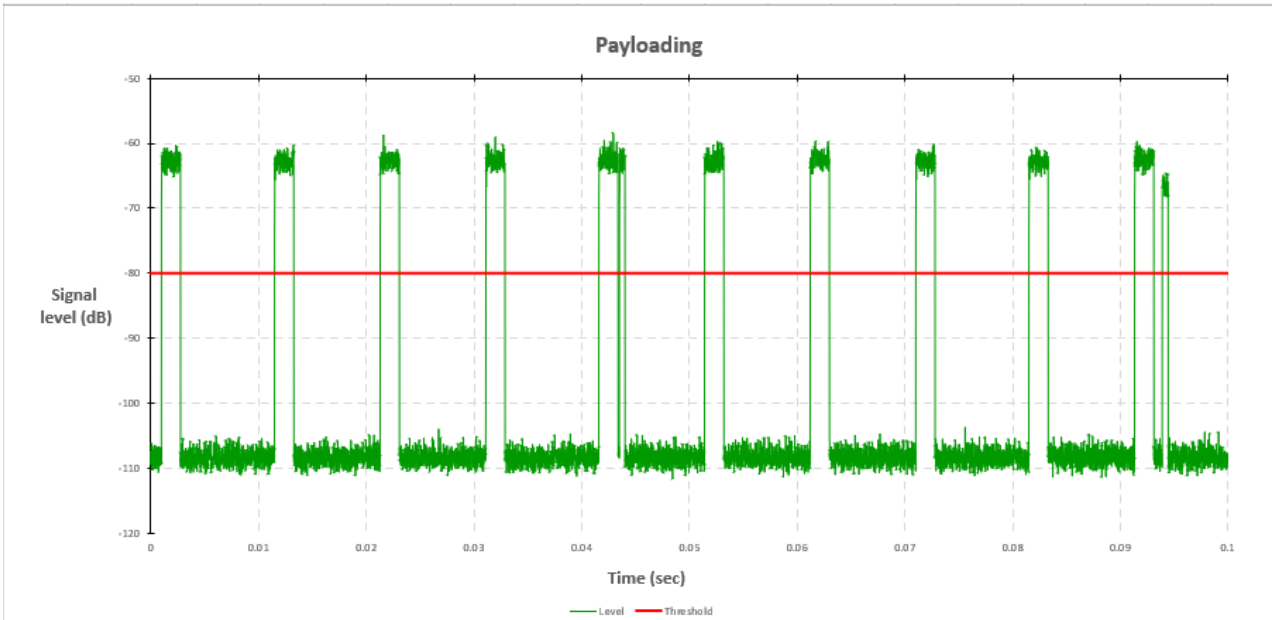
Packet ratio: 18.4101987251594%



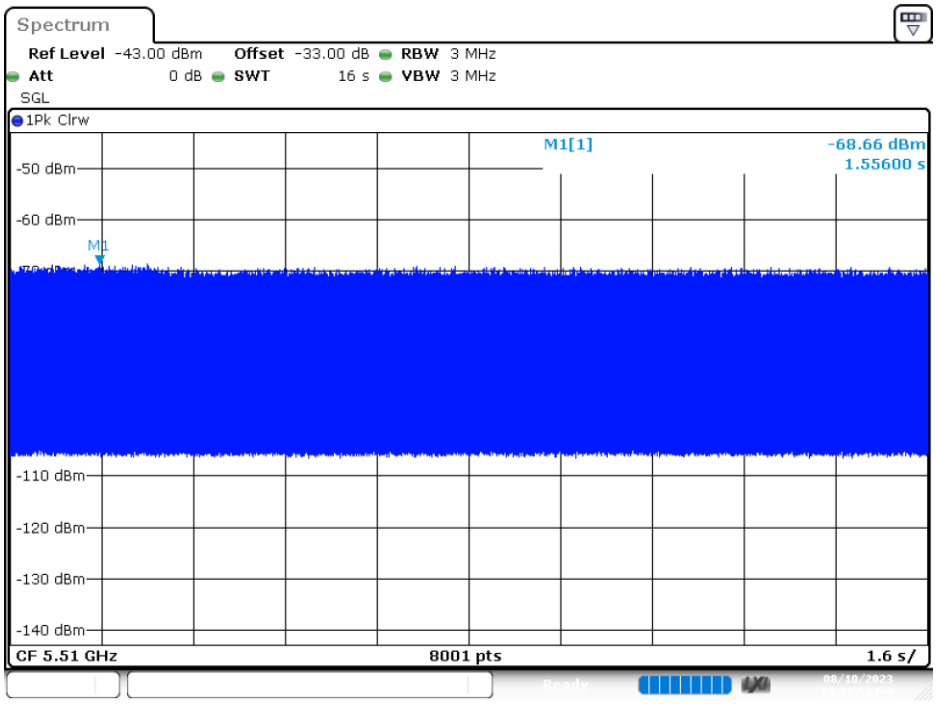
Date: 10.AUG.2023 17:20:29

Channel loading	Requirement loading
18.41 %	>17%

Plot of WLAN Traffic at 5510 MHz



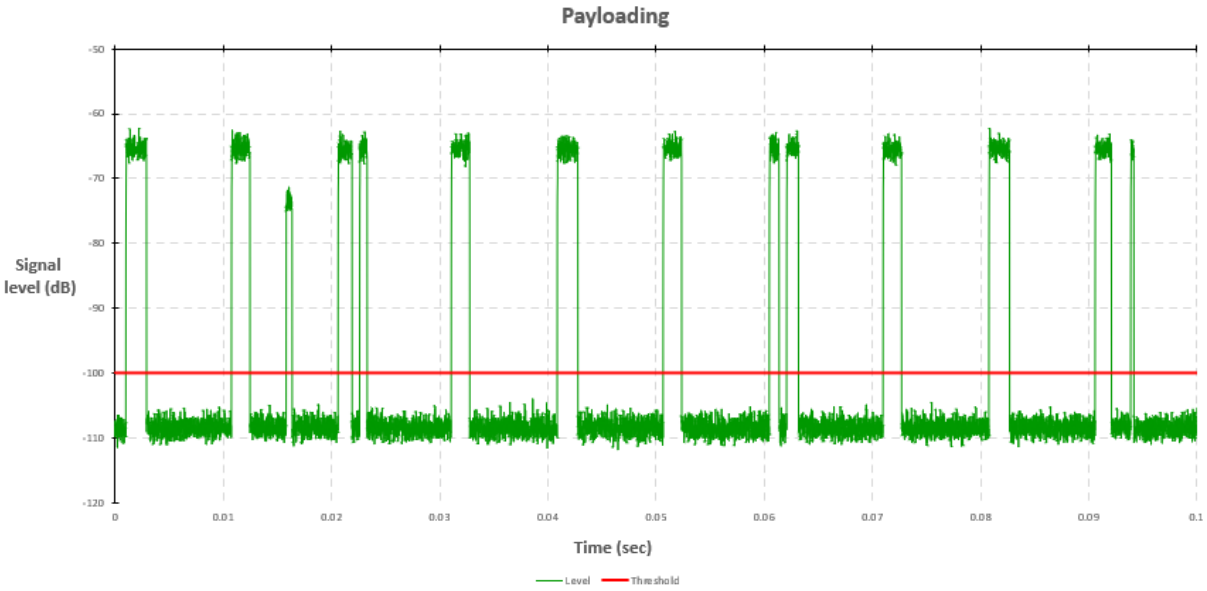
Packet ratio: 18.8976377952756%



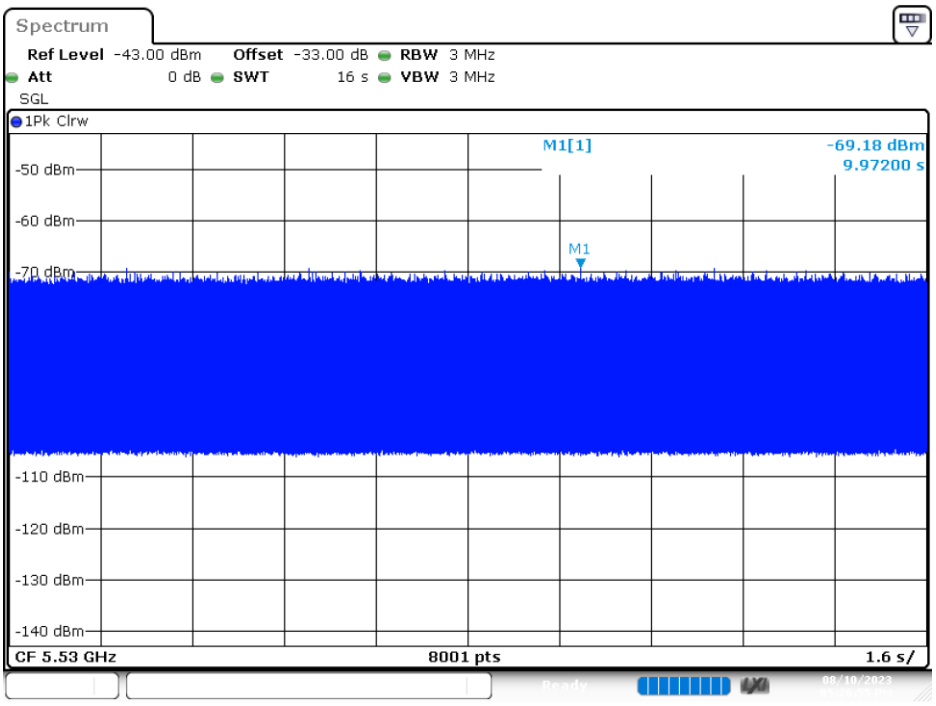
Date: 10.AUG.2023 17:23:52

Channel loading	Requirement loading
18.90 %	>17%

Plot of WLAN Traffic at 5530 MHz



Packet ratio: 18.960129983752%



Date: 10.AUG.2023 17:26:55

Channel loading	Requirement loading
18.96 %	>17%

3. UNII Detection Bandwidth

3.1. Test Procedure

The EUT was tested according to U-NII test procedure of KDB905462 D02 for compliance to FCC 47CFR15.407 requirements.

The generating equipment is configured as shown in the radiated Test Setup above. A single *Burst* of the short pulse radar type 0 is produced at 5300MHz and 5510 at a -63dBm level. The EUT is set up as a standalone device (no associated Client and no traffic).

A single radar Burst is generated for a minimum of 10 trials, and the response of the EUT is noted.

The EUT must detect the Radar Waveform 90% or more of the time. The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as Fh.

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as Fl.

The U-NII Detection Bandwidth is calculated as follows:

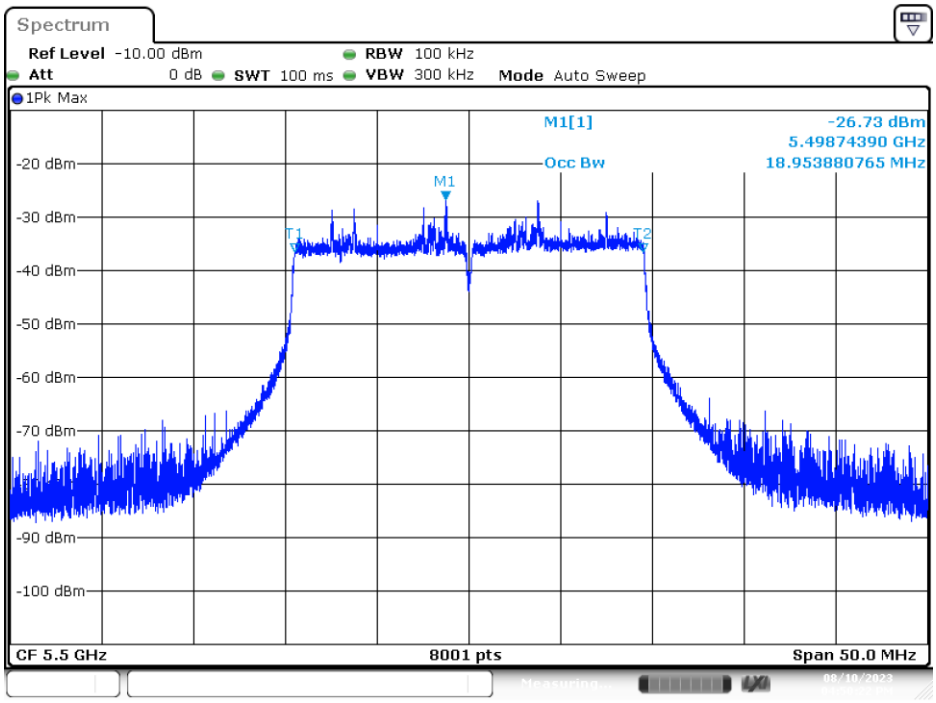
U-NII Detection Bandwidth = $F_H - F_L$

The U-NII Detection Bandwidth must be at least 100% of the EUT transmitter 99% power, otherwise, the EUT does not comply with DFS requirements.

3.2. Test Requirement

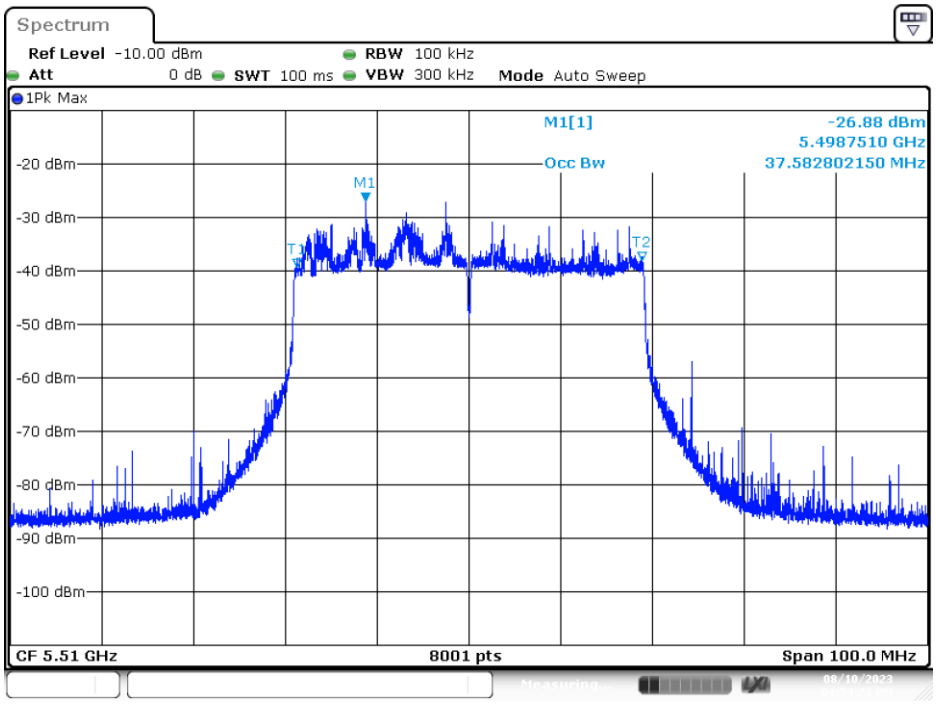
All UNII 20/40MHz and 80MHz channels for this device have identical Channel bandwidths. All UNII 20/40/80MHz channels for this device also have identical Channel bandwidths. Therefore, all DFS testing was done at 5300MHz、5500MHz、5510MHz and 5530MHz. The 99% channel bandwidth for 20MHz signals is 17.43 MHz, and the 99% channel bandwidth for 40MHz signals is 35.96 MHz and 80MHz signals is 75.12MHz.Uncertainty

802.11ax-20 MHz



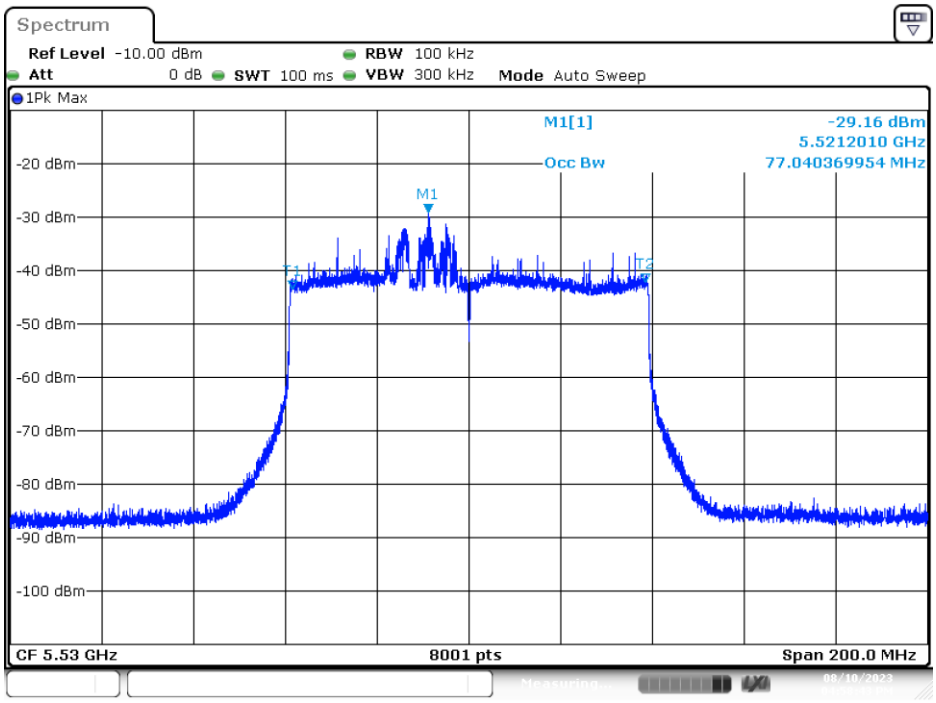
Date: 10.AUG.2023 16:50:23

802.11ax-40 MHz



Date: 10.AUG.2023 16:54:23

802.11ax80 MHz



Date: 10.AUG.2023 16:58:43

3.3. Test Result of UNII Detection Bandwidth

Product : Celer, Celer-5G, Celer-LTE1, Celer-LTE2
Test Item : UNII Detection Bandwidth
Radar Type : Type 0
Test Mode : Transmit (802.11ax-20 MHz)
Test Date : 2023/09/04

Test Channel: 5500 MHz											
Radar Frequency	**DFS Detection Trials (1= Detection, 0= No Detection)**										**Detection Rate**
(MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**(%)**
5490	1	1	1	1	1	1	1	1	1	0	90.00
5491 (FL)	1	1	1	1	1	1	1	1	1	1	100.00
5492	1	1	1	1	1	1	1	1	1	1	100.00
5493	1	1	1	1	1	1	1	1	1	1	100.00
5494	1	1	1	1	1	1	1	1	1	1	100.00
5495	1	1	1	1	1	1	1	1	1	1	100.00
5496	1	1	1	1	1	1	1	1	1	1	100.00
5497	1	1	1	1	1	1	1	1	1	1	100.00
5498	1	1	1	1	1	1	1	1	1	1	100.00
5499	1	1	1	1	1	1	1	1	1	1	100.00
5500	1	1	1	1	1	1	1	1	1	1	100.00
5501	1	1	1	1	1	1	1	1	1	1	100.00
5502	1	1	1	1	1	1	1	1	1	1	100.00
5503	1	1	1	1	1	1	1	1	1	1	100.00
5504	1	1	1	1	1	1	1	1	1	1	100.00
5505	1	1	1	1	1	1	1	1	1	1	100.00
5506	1	1	1	1	1	1	1	1	1	1	100.00
5507	1	1	1	1	1	1	1	1	1	1	100.00
5508	1	1	1	1	1	1	1	1	1	1	100.00
5509	1	1	1	1	1	1	1	1	1	1	100.00
5510 (FH)	1	0	1	0	1	1	0	1	0	1	60.00
Detection Bandwidth = FH - FL = 5509 MHz – 5490 MHz = 19 MHz											
EUT 99% Bandwidth = 18.9539 MHz											
UNII Detection Bandwidth Min. Limit = 18.9539 MHz X 100% = 18.9539 MHz											

Product : Celer, Celer-5G, Celer-LTE1, Celer-LTE2
Test Item : UNII Detection Bandwidth
Radar Type : Type 0
Test Mode : Transmit (802.11ax-40 MHz)
Test Date : 2023/09/04

Test Channel: 5510 MHz											
Radar Frequency	**DFS Detection Trials (1= Detection, 0= No Detection)**										**Detection Rate**
(MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**(%)**
5490	1	1	0	1	1	1	1	1	0	1	80.00
5491 (FL)	1	1	1	1	1	1	1	1	1	1	100.00
5492	1	1	1	1	1	1	1	1	1	1	100.00
5493	1	1	1	1	1	1	1	1	1	1	100.00
5494	1	1	1	1	1	1	1	1	1	1	100.00
5495	1	1	1	1	1	1	1	1	1	1	100.00
5496	1	1	1	1	1	1	1	1	1	1	100.00
5497	1	1	1	1	1	1	1	1	1	1	100.00
5498	1	1	1	1	1	1	1	1	1	1	100.00
5499	1	1	1	1	1	1	1	1	1	1	100.00
5500	1	1	1	1	1	1	1	1	1	1	100.00
5501	1	1	1	1	1	1	1	1	1	1	100.00
5502	1	1	1	1	1	1	1	1	1	1	100.00
5503	1	1	1	1	1	1	1	1	1	1	100.00
5504	1	1	1	1	1	1	1	1	1	1	100.00
5505	1	1	1	1	1	1	1	1	1	1	100.00
5506	1	1	1	1	1	1	1	1	1	1	100.00
5507	1	1	1	1	1	1	1	1	1	1	100.00
5508	1	1	1	1	1	1	1	1	1	1	100.00
5509	1	1	1	1	1	1	1	1	1	1	100.00
5510	1	1	1	1	1	1	1	1	1	1	100.00
5511	1	1	1	1	1	1	1	1	1	1	100.00
5512	1	1	1	1	1	1	1	1	1	1	100.00
5513	1	1	1	1	1	1	1	1	1	1	100.00
5514	1	1	1	1	1	1	1	1	1	1	100.00
5515	1	1	1	1	1	1	1	1	1	1	100.00
5516	1	1	1	1	1	1	1	1	1	1	100.00

5517	1	1	1	1	1	1	1	1	1	1	100.00
5518	1	1	1	1	1	1	1	1	1	1	100.00
5519	1	1	1	1	1	1	1	1	1	1	100.00
5520	1	1	1	1	1	1	1	1	1	1	100.00
5521	1	1	1	1	1	1	1	1	1	1	100.00
5522	1	1	1	1	1	1	1	1	1	1	100.00
5523	1	1	1	1	1	1	1	1	1	1	100.00
5524	1	1	1	1	1	1	1	1	1	1	100.00
5525	1	1	1	1	1	1	1	1	1	1	100.00
5526	1	1	1	1	1	1	1	1	1	1	100.00
5527	1	1	1	1	1	1	1	1	1	1	100.00
5528	1	1	1	1	1	1	1	1	1	1	100.00
5529 (FH)	1	1	0	1	1	1	1	1	1	1	90.00
5530	1	0	0	0	1	0	0	1	0	1	40.00
Detection Bandwidth = FH - FL = 5529 MHz – 5491 MHz = 38 MHz											
EUT 99% Bandwidth = 37.5828 MHz											
UNII Detection Bandwidth Min. Limit = 37.5828 MHz X 100% = 37.5828 MHz											

Product : Celer, Celer-5G, Celer-LTE1, Celer-LTE2
Test Item : UNII Detection Bandwidth
Radar Type : Type 0
Test Mode : Transmit (802.11ax-80 MHz)
Test Date : 2023/09/04

Test Channel: 5530 MHz											
Radar Frequency	**DFS Detection Trials (1= Detection, 0= No Detection)**										**Detection Rate**
(MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**(%)**
5490	0	1	0	0	1	0	1	0	1	0	40.00
5491	1	1	1	1	1	1	1	0	1	1	90.00
5492 (FL)	1	1	1	1	1	1	1	1	1	1	100.00
5493	1	1	1	1	1	1	1	1	1	1	100.00
5494	1	1	1	1	1	1	1	1	1	1	100.00
5495	1	1	1	1	1	1	1	1	1	1	100.00
5496	1	1	1	1	1	1	1	1	1	1	100.00
5497	1	1	1	1	1	1	1	1	1	1	100.00
5498	1	1	1	1	1	1	1	1	1	1	100.00
5499	1	1	1	1	1	1	1	1	1	1	100.00
5500	1	1	1	1	1	1	1	1	1	1	100.00
5501	1	1	1	1	1	1	1	1	1	1	100.00
5502	1	1	1	1	1	1	1	1	1	1	100.00
5503	1	1	1	1	1	1	1	1	1	1	100.00
5504	1	1	1	1	1	1	1	1	1	1	100.00
5505	1	1	1	1	1	1	1	1	1	1	100.00
5506	1	1	1	1	1	1	1	1	1	1	100.00
5507	1	1	1	1	1	1	1	1	1	1	100.00
5508	1	1	1	1	1	1	1	1	1	1	100.00
5509	1	1	1	1	1	1	1	1	1	1	100.00
5510	1	1	1	1	1	1	1	1	1	1	100.00
5511	1	1	1	1	1	1	1	1	1	1	100.00
5512	1	1	1	1	1	1	1	1	1	1	100.00
5513	1	1	1	1	1	1	1	1	1	1	100.00
5514	1	1	1	1	1	1	1	1	1	1	100.00
5515	1	1	1	1	1	1	1	1	1	1	100.00
5516	1	1	1	1	1	1	1	1	1	1	100.00

5517	1	1	1	1	1	1	1	1	1	1	100.00
5518	1	1	1	1	1	1	1	1	1	1	100.00
5519	1	1	1	1	1	1	1	1	1	1	100.00
5520	1	1	1	1	1	1	1	1	1	1	100.00
5521	1	1	1	1	1	1	1	1	1	1	100.00
5522	1	1	1	1	1	1	1	1	1	1	100.00
5523	1	1	1	1	1	1	1	1	1	1	100.00
5524	1	1	1	1	1	1	1	1	1	1	100.00
5525	1	1	1	1	1	1	1	1	1	1	100.00
5526	1	1	1	1	1	1	1	1	1	1	100.00
5527	1	1	1	1	1	1	1	1	1	1	100.00
5528	1	1	1	1	1	1	1	1	1	1	100.00
5529	1	1	1	1	1	1	1	1	1	1	100.00
5530	1	1	1	1	1	1	1	1	1	1	100.00
5531	1	1	1	1	1	1	1	1	1	1	100.00
5532	1	1	1	1	1	1	1	1	1	1	100.00
5533	1	1	1	1	1	1	1	1	1	1	100.00
5534	1	1	1	1	1	1	1	1	1	1	100.00
5535	1	1	1	1	1	1	1	1	1	1	100.00
5536	1	1	1	1	1	1	1	1	1	1	100.00
5537	1	1	1	1	1	1	1	1	1	1	100.00
5538	1	1	1	1	1	1	1	1	1	1	100.00
5539	1	1	1	1	1	1	1	1	1	1	100.00
5540	1	1	1	1	1	1	1	1	1	1	100.00
5541	1	1	1	1	1	1	1	1	1	1	100.00
5542	1	1	1	1	1	1	1	1	1	1	100.00
5543	1	1	1	1	1	1	1	1	1	1	100.00
5544	1	1	1	1	1	1	1	1	1	1	100.00
5545	1	1	1	1	1	1	1	1	1	1	100.00
5546	1	1	1	1	1	1	1	1	1	1	100.00
5547	1	1	1	1	1	1	1	1	1	1	100.00
5548	1	1	1	1	1	1	1	1	1	1	100.00
5549	1	1	1	1	1	1	1	1	1	1	100.00
5550	1	1	1	1	1	1	1	1	1	1	100.00
5551	1	1	1	1	1	1	1	1	1	1	100.00
5552	1	1	1	1	1	1	1	1	1	1	100.00
5553	1	1	1	1	1	1	1	1	1	1	100.00

5554	1	1	1	1	1	1	1	1	1	1	100.00
5555	1	1	1	1	1	1	1	1	1	1	100.00
5556	1	1	1	1	1	1	1	1	1	1	100.00
5557	1	1	1	1	1	1	1	1	1	1	100.00
5558	1	1	1	1	1	1	1	1	1	1	100.00
5559	1	1	1	1	1	1	1	1	1	1	100.00
5560	1	1	1	1	1	1	1	1	1	1	100.00
5561	1	1	1	1	1	1	1	1	1	1	100.00
5562	1	1	1	1	1	1	1	1	1	1	100.00
5563	1	1	1	1	1	1	1	1	1	1	100.00
5564	1	1	1	1	1	1	1	1	1	1	100.00
5565	1	1	1	1	1	1	1	1	1	1	100.00
5566	1	1	1	1	1	1	1	1	1	1	100.00
5567	1	1	1	1	1	1	1	1	1	1	100.00
5568	1	1	1	1	1	1	1	1	1	1	100.00
5569 (FH)	1	1	1	1	1	1	1	1	1	1	100.00
5570	1	0	1	1	1	1	0	1	0	1	70.00
Detection Bandwidth = FH - FL = 5569 MHz – 5491 MHz = 78 MHz											
EUT 99% Bandwidth = 77.0404 MHz											
UNII Detection Bandwidth Min. Limit = 77.0404 MHz X 100% = 77.0404 MHz											

4. Initial Channel Availability Check Time

4.1. Test Procedure

The EUT was tested according to U-NII test procedure of KDB905462 D02 for compliance to FCC 47CFR 15.407 requirements.

The U-NII device is powered on and instructed to operate at 5530MHz. At the same time the UUT is powered on, the spectrum analyzer is set to zero span mode with a 3 MHz resolution bandwidth at 5530MHz with a 2.5minute sweep time. The analyzer's sweep will be started the same time power is applied to the U-NII device.

The EUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle.

The initial power up time of the EUT is indicated by marker1 in the plot, Initial beacons/data transmissions are indicated by marker 1R.

4.2. Test Requirement

The EUT shall perform a channel availability check to ensure that there is no radar operation on the channel, after power-up sequence, receiver at least 1 minute on the intended operation frequency.