TEST REPORT

Applicant Name :	Shenzhen Jiteng Network Technology Co., Ltd
Address :	No.1202, Bitian Pavilion, Bizhong Garden, No.10 Bibo First Street, Bibo Community, Huangbei Street, Luohu District,Shenzhen City, China
Report Number :	SZNS1211210-64046E-00C
FCC ID:	2AY4C-GM02

Test Standard (s)

FCC PART 15.407

Sample Description

Product:	Mini PC
Trademark:	GEEKOM
Tested Model:	GM08i5T
Multiple Model:	GMXXiXT, GMXXiXTS, X substitutes 0, 1, 3, 5, 7, 8
Date Received:	2021-12-10
Date of Test:	2021-12-17 to 2021-12-22
Report Date:	2021-12-23

Test Result:	Pass*

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

Prepared and Checked By:

Fan Yang
EMC Engineer

Approved By:

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Mini PC
Tested Model	GM08i5T
Multiple Model	GMXXiXT, GMXXiXTS, X substitutes 0, 1, 3, 5, 7, 8
Model Difference	Please refer to the DoS letter
Frequency Range	5G Wi-Fi: 5150-5250 MHz; 5725-5850 MHz
Maximum Average Conducted Output Power	5150-5250 MHz 14.61dBm (802.11a), 14.77dBm(802.11n20), 17.37dBm(802.11n40), 14.53dBm (802.11ac20), 16.62dBm (802.11ac40), 14.46dBm (802.11ac80) 5725-5850 MHz 14.47dBm (802.11a), 14.34dBm(802.11n20), 14.61dBm(802.11n40), 14.67dBm (802.11ac20), 14.46dBm (802.11ac40), 14.40dBm (802.11ac80)
Modulation Technique	OFDM
Antenna Specification*	Internal Antenna: Ant 0: 2.5dBi(provided by the applicant) Ant 1: 2.5dBi(provided by the applicant)
Voltage Range	DC 19V from Adapter
Sample number	SZNS1211210-64046E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: HKA09019047-6U Input: AC 100-240V, 50/60Hz, 1.5A Output: DC 19V, 4.74A

Objective

This type approval report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

The device only supports 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes, which was declared by manufacturer.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a, 802.11n20, 802.11ac20 channel 36, 40, 48 were tested;
For 802.11n40/ac40 channel 38, 46 were tested.
For 802.11ac80 channel 42 was tested

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a, 802.11n20, 802.11ac20 channel 149, 157, 165 were tested; For 802.11n40/ac40, channel 151, 159 were tested. For 802.11ac80, channel 155 were tested.

EUT Exercise Software

"DRTU"* software was used to test and power level as below:

Frequency Range (MHz)	Mode	Date rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150-5250 5725-5850	802.11a	6Mbps	default	default	default
	802.11n20	MCS0	default	default	default
	802.11n40	MCS0	default	default	default
	802.11 ac20	MCS0	default	default	default
	802.11 ac40	MCS0	default	default	default
	802.11 ac80	MCS0	default	default	default

The worst-case data rates are determined to be as above for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths and modulations. The device supports SISO and MIMO 2T2R in all modes. Per pretest, 2TX mode was the worst mode and recorded in this report.

Duty cycle

Please refer to the Appendix.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

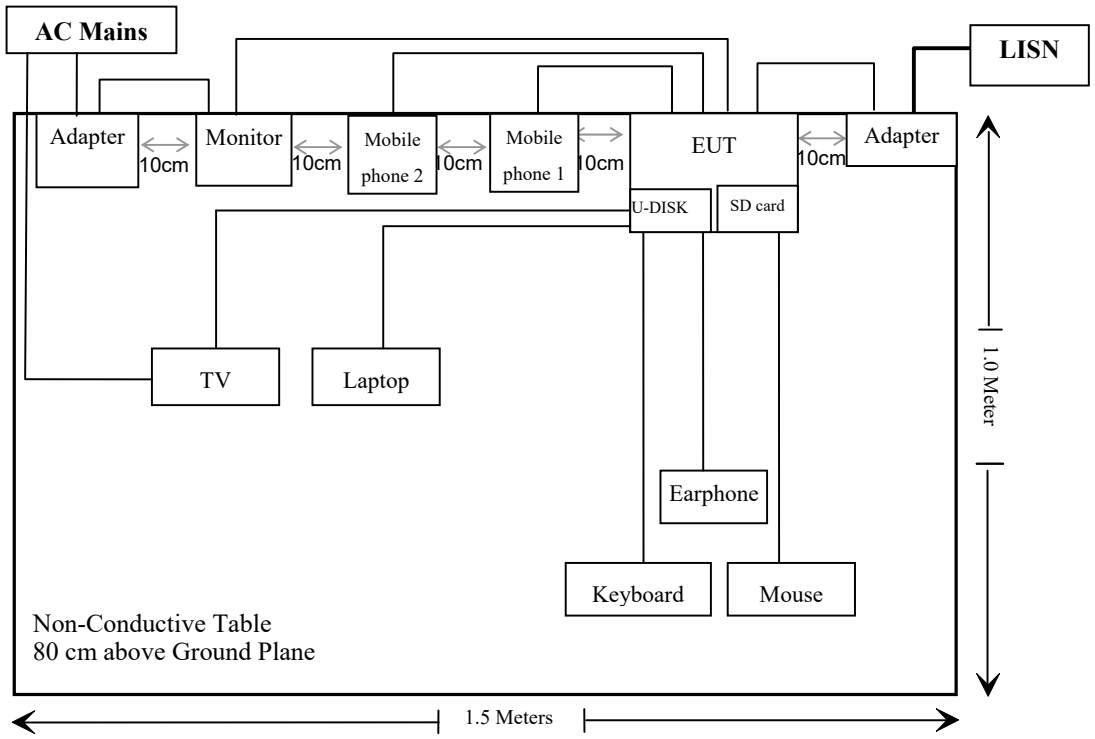
Manufacturer	Description	Model	Serial Number
DELL	Keyboard	KB216d1	Unknown
DELL	Mouse	MS116c	Unknown
PHILIPS	Monitor	275M7C	UK02141059255272
XIAOMI	TV	L43M5-ES	25131/114100057334
DELL	laptop	LatitudeE5570	6DCCRC2
Kingston	U-DISK	DTSE9 16GB	Unknown
SanDisk	SD Card	Ultra 32GB	Unknown
HUAWEI	Mobile Phone 1	HUAWEI Mate30	FEC0220506013544
XIAOMI	Mobile Phone 2	MI 10	957921bb
HUAWEI	Earphone	Unknown	Unknown

External I/O Cable

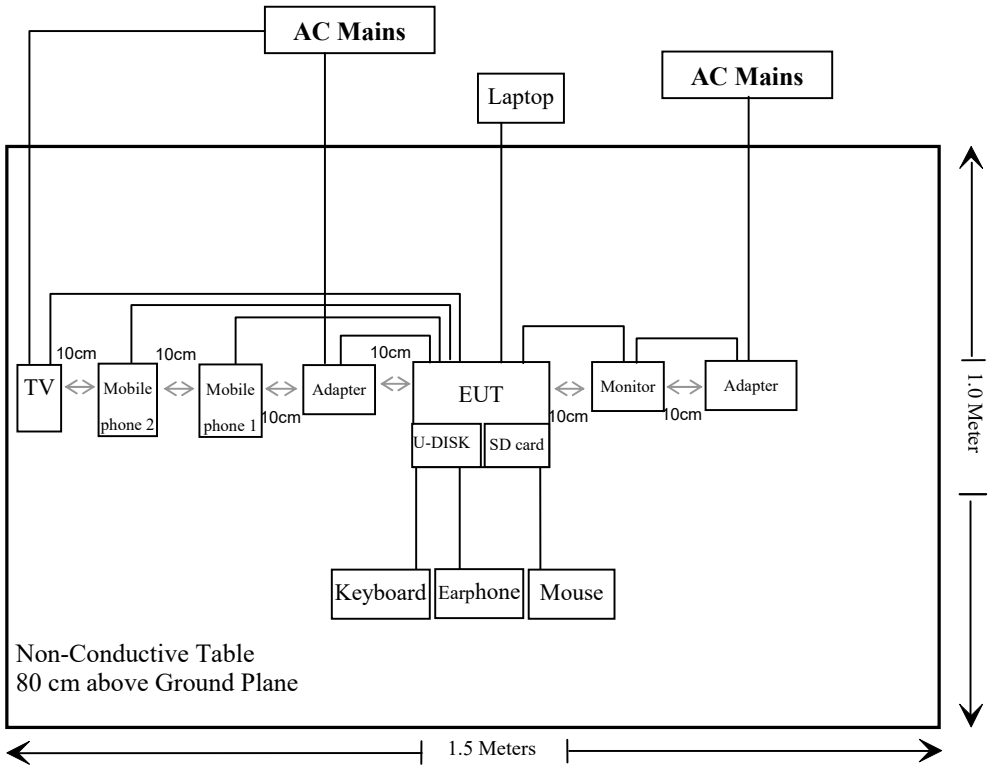
Cable Description	Length (m)	From Port	To
Unshielded Detachable AC output Cable	1.2	Adapter	LISN/AC Mains
Unshielded Detachable DC power Cable	1.7	EUT	Adapter
Unshielded Detachable HDMI Cable	1.05	EUT	TV
Unshielded Detachable DP Cable	0.95	EUT	Monitor
Unshielded Detachable USB Cable	1.5	EUT	Mouse
Unshielded Detachable USB Cable	1.5	EUT	Keyboard
Unshielded Detachable RJ45 Cable	3	EUT	Notebook
Unshielded Detachable earphone Cable	0.75	EUT	Earphone
Unshielded Detachable USB Cable	1.15	EUT	Mobile phone1
Unshielded Detachable USB Cable	0.95	EUT	Mobile phone2

Block Diagram of Test Setup

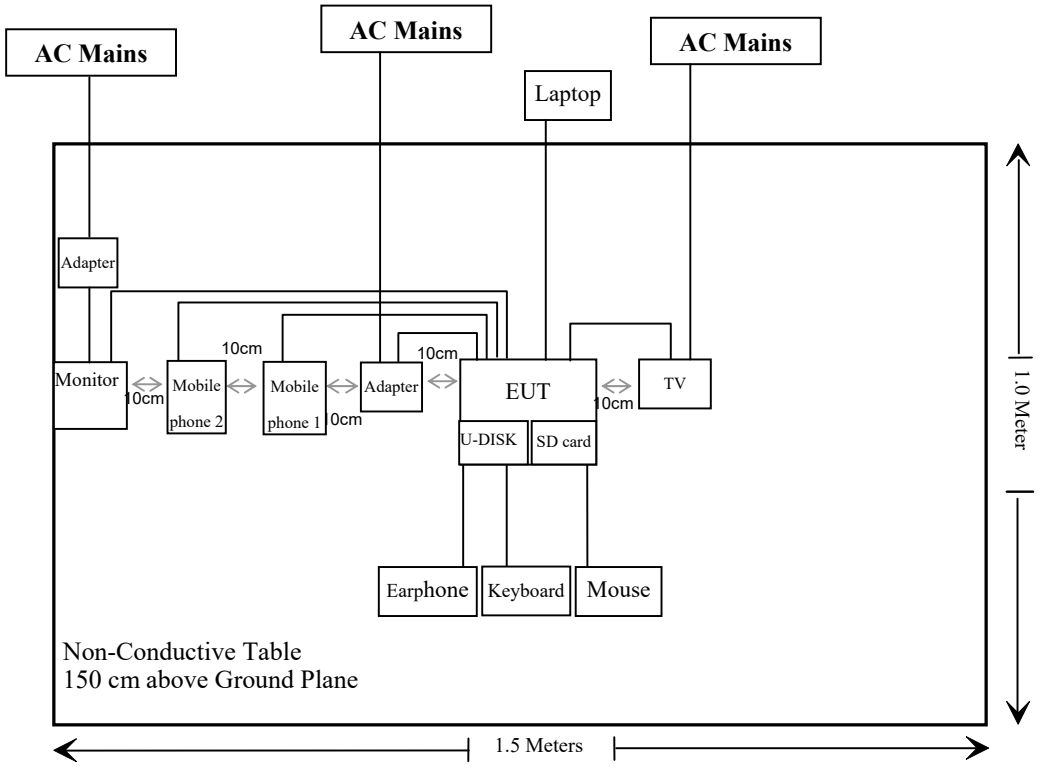
For conducted emission:
AC Mains:



For Radiated emission:
Below 1GHz:



Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(8) & §15.207(a)	Conducted Emissions	Compliant
§15.205 & §15.209 & §15.407(b) (1), (4), (7), (8), (9), (10)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (12), (e)	Bandwidth	Compliant
§15.407(a) (1), (3)	Conducted Transmitter Output Power	Compliant
§15.407 (a) (1), (3)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/02/03	2022/02/02
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50Ω Coaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Conducted Emission Test Software: e3 19821b(V9)					
Radiated Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2020/12/25	2021/12/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/5/18	2022/5/17
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/9	2022/11/8
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2021/11/11	2022/11/10
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-10m	No.7	2021/11/09	2022/11/08
Unknown	RF Coaxial Cable	N-2m	No.8	2021/11/09	2022/11/08
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2020/12/25	2021/12/24
CD	High Pass Filter	WHNX6.0/26.5G-6SS	4	2020/12/25	2021/12/24
Radiated Emission Test Software: e3 19821b(V9)					
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/5/18	2022/5/17
Rohde & Schwarz	Open Switch and Control Unit	OSP120 +OSP -B157	101244 + 100866	2020/12/24	2021/12/23

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:
Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

For worst case:

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
BT	2402-2480	2.5	1.78	-7.0	0.20	20	0.0001	1.0
BLE	2402-2480	2.5	1.78	-6.0	0.25	20	0.0001	1.0
2.4G Wi-Fi	2412-2462	2.5	1.78	16.0	39.81	20	0.0141	1.0
5G Wi-Fi	5150-5250	2.5	1.78	17.5	56.23	20	0.0199	1.0
	5725-5850	2.5	1.78	15.0	31.62	20	0.0112	1.0

Note: 1. The BT function can transmit at the same time with the Wi-Fi function.
2. The 2.4G Wi-Fi function can transmit at the same time with the 5G Wi-Fi function.

Simultaneous transmitting consideration:

The ratio= MPE_{BT}/limit + $MPE_{2.4G\ Wi\text{-}Fi}$/limit+$MPE_{5G\ Wi\text{-}Fi}$/limit=0.0001/1+0.0141/1+0.0199/1=0.0341＜1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has two internal antennas used arrangement for Wi-Fi, which was permanently attached and the antenna gain is 2.5dBi, fulfill the requirement of this section. Please refer to the EUT photos.

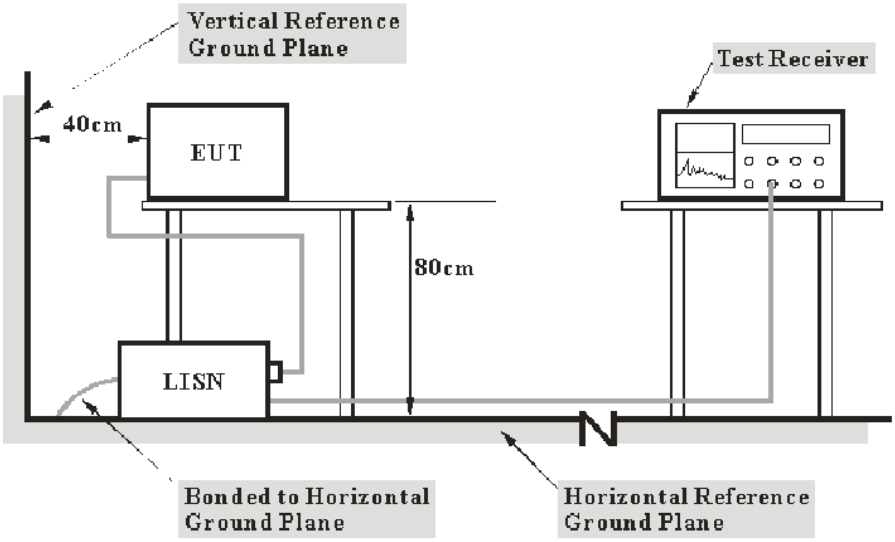
Result: Compliant.

FCC §15.407 (B) (8) §15.207 (A) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (8)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Transd Factor = LISN VDF + Cable Loss

The "**Over limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

Over Limit = Level – Limit
Level = Read Level + Factor

Test Data

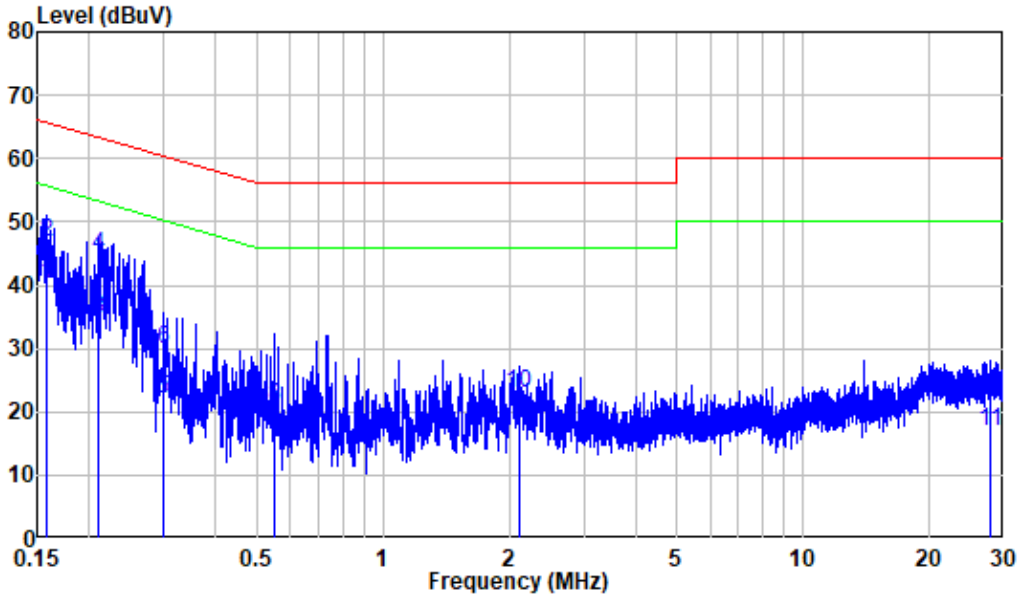
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	64 %
ATM Pressure:	101.0 kPa

The testing was performed by Bin Duan on 2021-12-17.

EUT operation mode: 5G Wi-Fi Transmitting (Worst case as below)

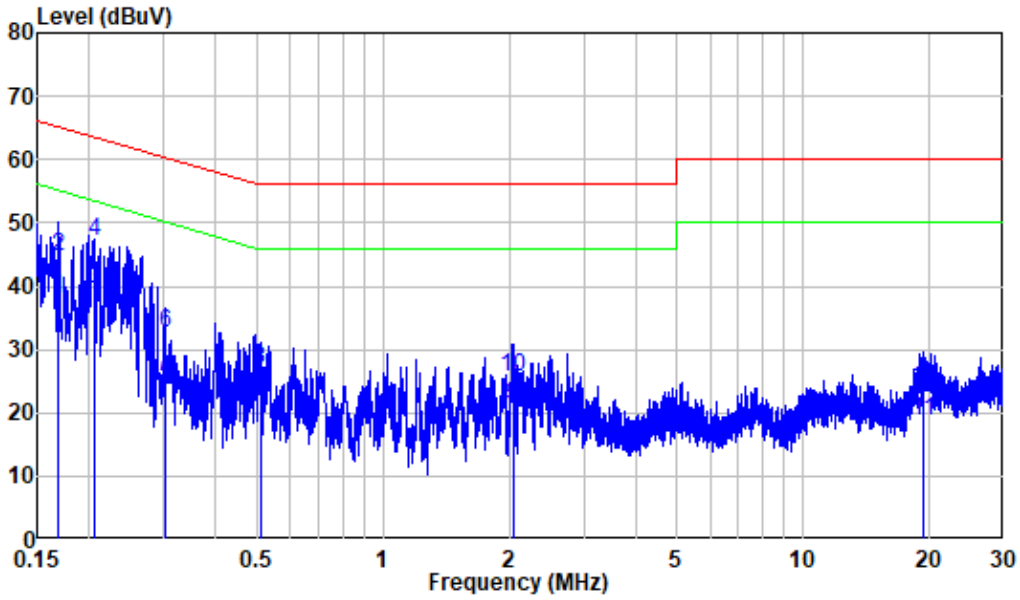
AC 120V/60 Hz, Line



Site : Shielding Room
Condition: Line
Mode : 5G WIFI Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.158	9.88	30.13	40.01	55.55	-15.54	Average
2	0.158	9.88	37.00	46.88	65.55	-18.67	QP
3	0.211	9.80	24.83	34.63	53.18	-18.55	Average
4	0.211	9.80	34.85	44.65	63.18	-18.53	QP
5	0.300	9.80	12.30	22.10	50.23	-28.13	Average
6	0.300	9.80	20.05	29.85	60.23	-30.38	QP
7	0.551	9.81	5.03	14.84	46.00	-31.16	Average
8	0.551	9.81	11.05	20.86	56.00	-35.14	QP
9	2.100	9.92	9.46	19.38	46.00	-26.62	Average
10	2.100	9.92	12.91	22.83	56.00	-33.17	QP
11	27.800	10.44	6.40	16.84	50.00	-33.16	Average
12	27.800	10.44	11.58	22.02	60.00	-37.98	QP

AC 120V/60 Hz, Neutral



Site : Shielding Room
Condition: Neutral
Mode : 5G WIFI Transmitting
Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.169	9.94	28.11	38.05	55.01	-16.96	Average
2	0.169	9.94	34.79	44.73	65.01	-20.28	QP
3	0.205	10.00	29.47	39.47	53.40	-13.93	Average
4	0.205	10.00	37.23	47.23	63.40	-16.17	QP
5	0.302	9.95	14.44	24.39	50.17	-25.78	Average
6	0.302	9.95	22.69	32.64	60.17	-27.53	QP
7	0.509	9.91	11.96	21.87	46.00	-24.13	Average
8	0.509	9.91	17.08	26.99	56.00	-29.01	QP
9	2.035	9.92	11.20	21.12	46.00	-24.88	Average
10	2.035	9.92	15.62	25.54	56.00	-30.46	QP
11	19.313	10.18	8.54	18.72	50.00	-31.28	Average
12	19.313	10.18	13.58	23.76	60.00	-36.24	QP

§15.205 & §15.209 & §15.407(B) (1), (4), (7), (8) , (9), (10) – UNDESIRABLE EMISSION

Applicable Standard

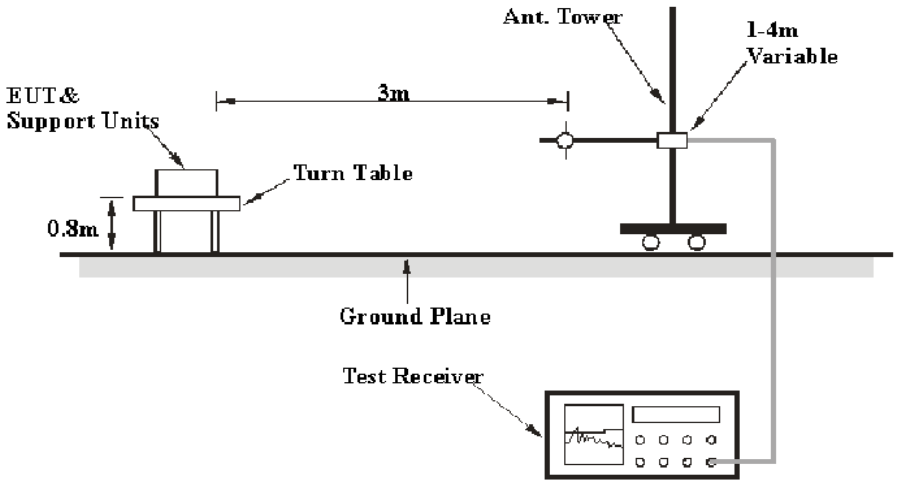
FCC §15.407 (b) (1), (4), (7), (8), (9), (10); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b) (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

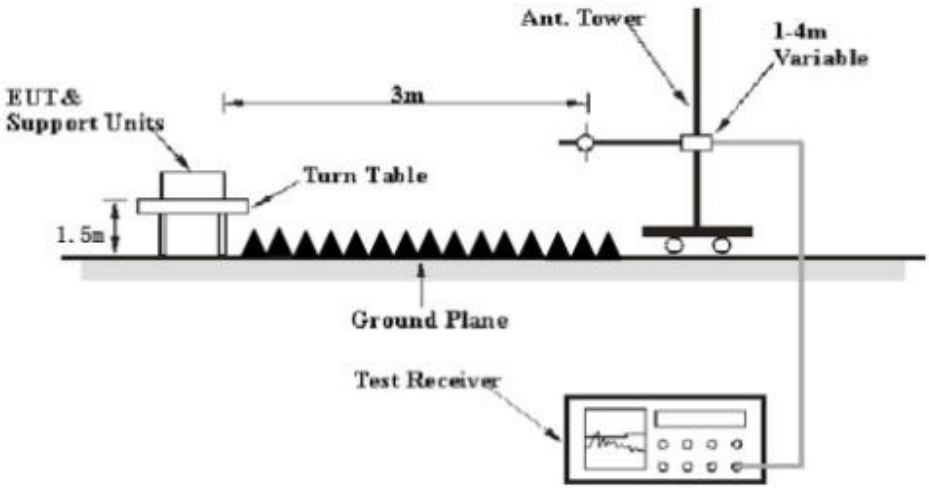
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

EMI Test Receiver & Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz Note 1	/	Average
	1MHz	＞1/T Note 2	/	Average

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

Test Procedure

Radiated Spurious Emission

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

According to ANSI C63.10-2013,9.4: For field strength measurements made at other than the distance at which the applicable limit is specified,extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance). In some cases, a different distance correction factor may be required;

$$E_{\mathrm{SpecLimit}} = E_{\mathrm{Meas}} + 20\log\left(\frac{d_{\mathrm{Meas}}}{d_{\mathrm{SpecLimit}}}\right)$$

where

$E_{SpecLimit}$	is the field strength of the emission at the distance specified by the limit, in dBµV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBµV/m
d_{Meas}	is the measurement distance, in m
$d_{SpecLimit}$	is the distance specified by the limit, in m

So the extrapolation factor of 1m is 20*lg(1/3)= -9.5 dB

Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

Test Data

Environmental Conditions

Temperature:	25-26 ℃
Relative Humidity:	51-64 %
ATM Pressure:	101.2 kPa

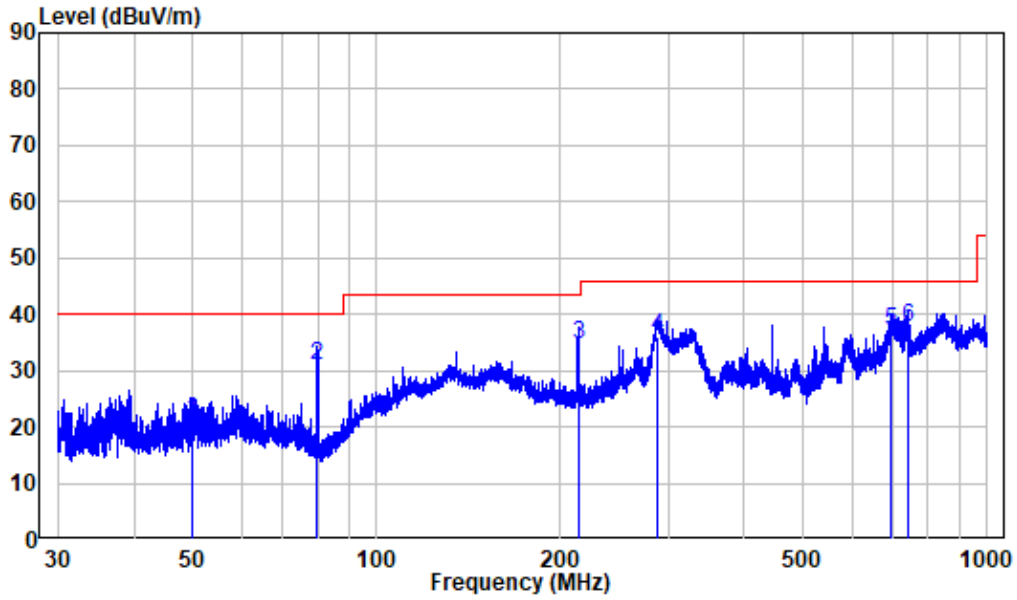
The testing was performed by Bin Deng and Chao Mo from 2021-12-19 to 2021-12-22.

EUT operation mode: Transmitting

(Scan with 802.11a/n20/n40/ac20/ac40/ac80 modes, the worst case as below)

30 MHz~1 GHz:

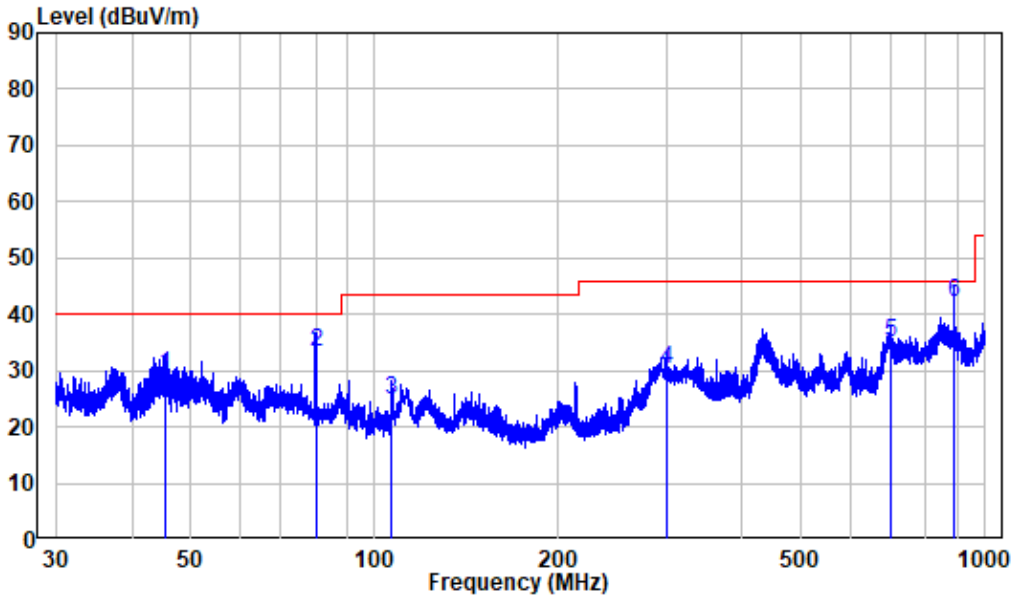
Horizontal:



Site : chamber
Condition: 3m HORIZONTAL
Test Mode: 5G WIFI Transmitting
Power : AC 120V/60HZ

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	49.79	-9.92	31.13	21.21	40.00	-18.79	QP
2	79.98	-16.79	47.54	30.75	40.00	-9.25	QP
3	213.76	-11.72	46.37	34.65	43.50	-8.85	QP
4	289.13	-9.33	45.29	35.96	46.00	-10.04	QP
5	694.42	-1.52	38.59	37.07	46.00	-8.93	QP
6	741.93	-0.82	38.35	37.53	46.00	-8.47	QP

Vertical



Site : chamber
Condition: 3m VERTICAL
Test Mode: 5G WIFI Transmitting
Power : AC 120V/60HZ

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.26	-9.95	39.02	29.07	40.00	-10.93	QP
2	80.01	-16.79	49.91	33.12	40.00	-6.88	QP
3	106.43	-11.94	36.90	24.96	43.50	-18.54	QP
4	300.10	-9.23	39.38	30.15	46.00	-15.85	QP
5	699.00	-1.61	36.62	35.01	46.00	-10.99	QP
6	890.34	0.94	41.14	42.08	46.00	-3.92	QP

2TX Mode (Worst case)

1 ~ 40 GHz:

Band 1:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)				
5G 11A BAND1, Low Channel									
4500	43.10	PK	86	1.7	H	-4.72	38.38	74	-35.62
4500	45.99	PK	63	2.4	V	-4.72	41.27	74	-32.73
5150	45.70	PK	206	2.2	H	-2.73	42.97	74	-31.03
5150	46.47	PK	24	1.7	V	-2.73	43.74	74	-30.26
10360	30.26	PK	103	2	H	8.12	38.38	68.2	-29.82
10360	28.82	PK	133	2.3	V	8.12	36.94	68.2	-31.26
5G 11A BAND1, Middle Channel									
10400	29.44	PK	170	1.8	H	8.24	37.68	68.2	-30.52
10400	27.93	PK	96	2.1	V	8.24	36.17	68.2	-32.03
5G 11A BAND1, High Channel									
5350	44.42	PK	25	2	H	-2.33	42.09	74	-31.91
5350	45.32	PK	160	1.2	V	-2.33	42.99	74	-31.01
5460	42.73	PK	265	2.4	H	-2.26	40.47	74	-33.53
5460	44.39	PK	346	1.6	V	-2.26	42.13	74	-31.87
10480	29.28	PK	18	1.1	H	8.57	37.85	68.2	-30.35
10480	27.94	PK	120	1.8	V	8.57	36.51	68.2	-31.69
5G 11N20 BAND1, Low Channel									
4500	45.19	PK	224	2	H	-4.72	40.47	74	-33.53
4500	45.28	PK	104	2.4	V	-4.72	40.56	74	-33.44
5150	47.44	PK	258	2.2	H	-2.73	44.71	74	-29.29
5150	46.90	PK	69	2.4	V	-2.73	44.17	74	-29.83
10360	29.53	PK	21	1	H	8.12	37.65	68.2	-30.55
10360	28.29	PK	223	1.2	V	8.12	36.41	68.2	-31.79
5G 11N20 BAND1, Middle Channel									
10400	30.02	PK	144	1.6	H	8.24	38.26	68.2	-29.94
10400	28.02	PK	138	1.2	V	8.24	36.26	68.2	-31.94
5G 11N20 BAND1, High Channel									
5350	44.09	PK	238	1.2	H	-2.33	41.76	74	-32.24
5350	46.14	PK	35	2.4	V	-2.33	43.81	74	-30.19
5460	43.29	PK	292	1.6	H	-2.26	41.03	74	-32.97
5460	43.59	PK	264	2.4	V	-2.26	41.33	74	-32.67
10480	29.31	PK	35	2.1	H	8.57	37.88	68.2	-30.32
10480	27.97	PK	120	1.9	V	8.57	36.54	68.2	-31.66
5G 11N40 BAND1, Low Channel									
4500	46.57	PK	274	2.1	H	-4.72	41.85	74	-32.15
4500	48.13	PK	268	1.7	V	-4.72	43.41	74	-30.59
5150	45.74	PK	160	1.4	H	-2.73	43.01	74	-30.99

5150	51.05	PK	64	1	V	-2.73	48.32	74	-25.68
10380	29.12	PK	94	1.4	H	8.19	37.31	68.2	-30.89
10380	27.09	PK	323	1.8	V	8.19	35.28	68.2	-32.92
5G 11N40 BAND1, High Channel									
5350	46.67	PK	94	1	H	-2.33	44.34	74	-29.66
5350	46.90	PK	254	1	V	-2.33	44.57	74	-29.43
5460	46.26	PK	80	2.2	H	-2.26	44.00	74	-30
5460	45.00	PK	325	1.8	V	-2.26	42.74	74	-31.26
10460	31.32	PK	17	1.1	H	8.48	39.80	68.2	-28.4
10460	28.92	PK	268	1.8	V	8.48	37.40	68.2	-30.8
5G 11ac 20 BAND1, Low Channel									
4500	44.77	PK	329	1.8	H	-4.72	40.05	74	-33.95
4500	48.04	PK	245	1.2	V	-4.72	43.32	74	-30.68
5150	46.54	PK	212	1	H	-2.73	43.81	74	-30.19
5150	48.07	PK	130	1.3	V	-2.73	45.34	74	-28.66
10360	29.13	PK	55	1.4	H	8.12	37.25	68.2	-30.95
10360	26.31	PK	89	1.2	V	8.12	34.43	68.2	-33.77
5G 11ac 20 BAND1, Middle Channel									
10400	29.04	PK	275	1.2	H	8.24	37.28	68.2	-30.92
10400	27.55	PK	69	2.4	V	8.24	35.79	68.2	-32.41
5G 11ac 20 BAND1, High Channel									
10480	28.02	PK	178	1.4	H	8.57	36.59	68.2	-31.61
10480	27.08	PK	255	2.1	V	8.57	35.65	68.2	-32.55
5350	44.07	PK	55	1.1	H	-2.33	41.74	74	-32.26
5350	46.95	PK	290	1.1	V	-2.33	44.62	74	-29.38
5460	45.34	PK	173	1.2	H	-2.26	43.08	74	-30.92
5460	44.21	PK	121	1.2	V	-2.26	41.95	74	-32.05
5G 11ac 40 BAND1, Low Channel									
4500	45.15	PK	275	1.1	H	-4.72	40.43	74	-33.57
4500	46.83	PK	172	1.2	V	-4.72	42.11	74	-31.89
5150	48.07	PK	295	1.6	H	-2.73	45.34	74	-28.66
5150	47.06	PK	64	2	V	-2.73	44.33	74	-29.67
10380	28.91	PK	296	1.6	H	8.19	37.10	68.2	-31.1
10380	27.00	PK	325	1.6	V	8.19	35.19	68.2	-33.01
5G 11ac 40 BAND1, High Channel									
5350	47.82	PK	326	1.7	H	-2.33	45.49	74	-28.51
5350	48.52	PK	268	1.2	V	-2.33	46.19	74	-27.81
5460	46.65	PK	135	1.4	H	-2.26	44.39	74	-29.61
5460	47.47	PK	9	2.3	V	-2.26	45.21	74	-28.79
10460	28.39	PK	283	2.3	H	8.48	36.87	68.2	-31.33
10460	26.96	PK	127	1.8	V	8.48	35.44	68.2	-32.76
5G 11ac 80 BAND1									
4500	44.64	PK	48	2.5	H	-4.72	39.92	74	-34.08
4500	46.76	PK	53	1.8	V	-4.72	42.04	74	-31.96
5150	56.58	PK	298	1.5	H	-2.73	53.85	74	-20.15
5150	58.73	PK	15	2.4	V	-2.73	56.00	74	-18
5150	48.76	AV	127	2	V	-2.73	46.03	54	-7.97

5350	46.07	PK	346	1.4	H	-2.33	43.74	74	-30.26
5350	47.02	PK	218	1.5	V	-2.33	44.69	74	-29.31
5460	44.40	PK	42	2.1	H	-2.26	42.14	74	-31.86
5460	44.71	PK	136	2.1	V	-2.26	42.45	74	-31.55
10420	28.51	PK	239	2.1	H	8.31	36.82	68.2	-31.38
10420	27.13	PK	268	2.2	V	8.31	35.44	68.2	-32.76

Band 4:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBuV)	PK/QP/AV		Height (m)	Polar (H/V)				
5G 11A BAND4 5745, Low Channel									
5725	51.71	PK	131	1.4	H	-1.96	49.75	122.2	-72.45
5725	59.21	PK	325	1.8	V	-1.96	57.25	122.2	-64.95
5720	48.64	PK	38	2.3	H	-1.96	46.68	110.8	-64.12
5720	55.36	PK	17	1.1	V	-1.96	53.40	110.8	-57.4
5700	47.07	PK	268	1.8	H	-2.02	45.05	105.2	-60.15
5700	48.57	PK	260	1.2	V	-2.02	46.55	105.2	-58.65
5650	47.12	PK	329	1.8	H	-1.95	45.17	68.2	-23.03
5650	47.75	PK	113	2.5	V	-1.95	45.80	68.2	-22.4
11490	32.25	PK	245	1.2	H	6.63	38.88	74	-35.12
11490	32.07	PK	257	1.3	V	6.63	38.70	74	-35.3
5G 11A BAND4 5785, Middle Channel									
11570	31.80	PK	62	2.4	H	6.59	38.39	74	-35.61
11570	32.19	PK	130	1.3	V	6.59	38.78	74	-35.22
5G 11A BAND4 5825, High Channel									
5850	50.98	PK	9	1.3	H	-1.81	49.17	122.2	-73.03
5850	51.28	PK	153	1.7	V	-1.81	49.47	122.2	-72.73
5855	47.84	PK	253	1.4	H	-1.82	46.02	110.8	-64.78
5855	49.54	PK	167	2.3	V	-1.82	47.72	110.8	-63.08
5875	47.18	PK	55	1.7	H	-1.84	45.34	105.2	-59.86
5875	49.41	PK	111	1.4	V	-1.84	47.57	105.2	-57.63
5925	46.64	PK	32	1.3	H	-1.83	44.81	68.2	-23.39
5925	36.34	PK	52	2.3	V	-1.83	34.51	68.2	-33.69
11650	32.32	PK	55	1.1	H	6.77	39.09	74	-34.91
11650	32.91	PK	245	1.7	V	6.77	39.68	74	-34.32
5G 11N20 BAND4, Low Channel									
5725	51.84	PK	293	1.3	H	-1.96	49.88	122.2	-72.32
5725	56.71	PK	173	1.2	V	-1.96	54.75	122.2	-67.45
5720	50.46	PK	121	1.5	H	-1.96	48.50	110.8	-62.3
5720	51.02	PK	121	1.2	V	-1.96	49.06	110.8	-61.74
5700	47.30	PK	88	2.3	H	-2.02	45.28	105.2	-59.92
5700	49.61	PK	204	2.5	V	-2.02	47.59	105.2	-57.61
5650	58.81	PK	275	1.1	H	-1.95	56.86	68.2	-11.34

5650	48.16	PK	348	1.3	V	-1.95	46.21	68.2	-21.99
11490	32.85	PK	172	1.2	H	6.63	39.48	74	-34.52
11490	32.49	PK	63	1.2	V	6.63	39.12	74	-34.88
5G 11N20 BAND4, Middle Channel									
11570	32.70	PK	151	2.1	H	6.59	39.29	74	-34.71
11570	32.20	PK	64	2	V	6.59	38.79	74	-35.21
5G 11N20 BAND4, High Channel									
5850	50.32	PK	296	1.6	H	-1.81	48.51	122.2	-73.69
5850	50.65	PK	325	1.6	V	-1.81	48.84	122.2	-73.36
5855	47.34	PK	328	1.1	H	-1.82	45.52	110.8	-65.28
5855	49.20	PK	326	1.7	V	-1.82	47.38	110.8	-63.42
5875	46.79	PK	140	1.4	H	-1.84	44.95	105.2	-60.25
5875	48.53	PK	268	1.2	V	-1.84	46.69	105.2	-58.51
5925	45.91	PK	116	2.5	H	-1.83	44.08	68.2	-24.12
5925	48.10	PK	245	2.3	V	-1.83	46.27	68.2	-21.93
11650	32.78	PK	216	1.5	H	6.77	39.55	74	-34.45
11650	31.64	PK	9	2.3	V	6.77	38.41	74	-35.59
5G 11N40 BAND4, Low Channel									
5725	56.73	PK	283	2.3	H	-1.96	54.77	122.2	-67.43
5725	61.79	PK	127	1.8	V	-1.96	59.83	122.2	-62.37
5720	52.23	PK	89	2.1	H	-1.96	50.27	110.8	-60.53
5720	58.03	PK	48	2.5	V	-1.96	56.07	110.8	-54.73
5700	47.25	PK	101	1.8	H	-2.02	45.23	105.2	-59.97
5700	50.51	PK	53	1.8	V	-2.02	48.49	105.2	-56.71
5650	45.86	PK	116	2	H	-1.95	43.91	68.2	-24.29
5650	49.01	PK	298	1.5	V	-1.95	47.06	68.2	-21.14
11510	36.55	PK	288	1.4	H	6.59	43.14	74	-30.86
11510	32.79	PK	15	2.4	V	6.59	39.38	74	-34.62
5G 11N40 BAND4, High Channel									
5850	46.98	PK	346	1.4	H	-1.81	45.17	122.2	-77.03
5850	48.34	PK	9	2.2	V	-1.81	46.53	122.2	-75.67
5855	47.77	PK	218	1.5	H	-1.82	45.95	110.8	-64.85
5855	48.04	PK	11	2.5	V	-1.82	46.22	110.8	-64.58
5875	45.60	PK	42	2.1	H	-1.84	43.76	105.2	-61.44
5875	46.86	PK	124	1.5	V	-1.84	45.02	105.2	-60.18
5925	45.58	PK	136	2.1	H	-1.83	43.75	68.2	-24.45
5925	46.52	PK	121	1.8	V	-1.83	44.69	68.2	-23.51
11590	37.49	PK	239	2.1	H	6.57	44.06	74	-29.94
11590	32.34	PK	268	2.2	V	6.57	38.91	74	-35.09
5G 11ac20 BAND4, Low Channel									
5725	52.15	PK	228	1.2	H	-1.96	50.19	122.2	-72.01
5725	55.84	PK	224	1.9	V	-1.96	53.88	122.2	-68.32
5720	48.95	PK	42	2.2	H	-1.96	46.99	110.8	-63.81
5720	51.00	PK	168	1.7	V	-1.96	49.04	110.8	-61.76
5700	47.39	PK	339	1.4	H	-2.02	45.37	105.2	-59.83
5700	48.24	PK	252	1.7	V	-2.02	46.22	105.2	-58.98

5650	45.87	PK	13	1.7	H	-1.95	43.92	68.2	-24.28
5650	46.04	PK	97	2.4	V	-1.95	44.09	68.2	-24.11
11490	32.66	PK	84	2.1	H	6.63	39.29	74	-34.71
11490	32.12	PK	143	1.4	V	6.63	38.75	74	-35.25
5G 11ac20 BAND4, Middle Channel									
11570	32.73	PK	167	2	H	6.59	39.32	74	-34.68
11570	32.49	PK	33	1.7	V	6.59	39.08	74	-34.92
5G 11ac20 BAND4, High Channel									
5850	47.37	PK	21	1.5	H	-1.81	45.56	122.2	-76.64
5850	49.74	PK	62	2.4	V	-1.81	47.93	122.2	-74.27
5855	47.08	PK	241	1.7	H	-1.82	45.26	110.8	-65.54
5855	50.33	PK	223	1	V	-1.82	48.51	110.8	-62.29
5875	47.33	PK	43	2.1	H	-1.84	45.49	105.2	-59.71
5875	47.64	PK	275	1.1	V	-1.84	45.80	105.2	-59.4
5925	46.13	PK	131	2.1	H	-1.83	44.30	68.2	-23.9
5925	47.96	PK	302	1.3	V	-1.83	46.13	68.2	-22.07
11650	32.62	PK	107	2.4	H	6.77	39.39	74	-34.61
11650	31.09	PK	173	1.4	V	6.77	37.86	74	-36.14
5G 11ac40 BAND4 5755, Low Channel									
5725	55.59	PK	182	2.3	H	-1.96	53.63	122.2	-68.57
5725	63.33	PK	193	2.1	V	-1.96	61.37	122.2	-60.83
5720	55.07	PK	219	2.2	H	-1.96	53.11	110.8	-57.69
5720	60.84	PK	220	1.5	V	-1.96	58.88	110.8	-51.92
5700	46.85	PK	268	1.6	H	-2.02	44.83	105.2	-60.37
5700	49.48	PK	253	1.1	V	-2.02	47.46	105.2	-57.74
5650	46.56	PK	118	1.2	H	-1.95	44.61	68.2	-23.59
5650	48.18	PK	141	2.2	V	-1.95	46.23	68.2	-21.97
11510	32.98	PK	210	1.9	H	6.59	39.57	74	-34.43
11510	32.53	PK	160	1.6	V	6.59	39.12	74	-34.88
5G 11ac40 BAND4 5795, High Channel									
5850	46.87	PK	309	1.1	H	-1.81	45.06	122.2	-77.14
5850	48.00	PK	323	1.8	V	-1.81	46.19	122.2	-76.01
5855	47.02	PK	89	1.8	H	-1.82	45.20	110.8	-65.6
5855	47.89	PK	91	1.4	V	-1.82	46.07	110.8	-64.73
5875	46.20	PK	80	1.6	H	-1.84	44.36	105.2	-60.84
5875	47.85	PK	182	1.4	V	-1.84	46.01	105.2	-59.19
5925	45.40	PK	233	1.8	H	-1.83	43.57	68.2	-24.63
5925	46.62	PK	93	1.3	V	-1.83	44.79	68.2	-23.41
11590	32.95	PK	188	2.1	H	6.57	39.52	74	-34.48
11590	32.87	PK	259	1.7	V	6.57	39.44	74	-34.56
5G 11AC80 BAND4 5775									
5725	56.19	PK	46	1.8	H	-1.96	54.23	122.2	-67.97
5725	61.48	PK	234	2.4	V	-1.96	59.52	122.2	-62.68
5720	59.57	PK	54	1.9	H	-1.96	57.61	110.8	-53.19
5720	63.84	PK	277	2	V	-1.96	61.88	110.8	-48.92
5700	56.68	PK	289	2.4	H	-2.02	54.66	105.2	-50.54

5700	60.94	PK	92	1.5	V	-2.02	58.92	105.2	-46.28
5650	47.82	PK	214	1.7	H	-1.95	45.87	68.2	-22.33
5650	51.08	PK	113	2	V	-1.95	49.13	68.2	-19.07
5850	54.85	PK	227	2.2	H	-1.81	53.04	122.2	-69.16
5850	60.93	PK	20	2.2	V	-1.81	59.12	122.2	-63.08
5855	52.42	PK	317	1.2	H	-1.82	50.60	110.8	-60.2
5855	59.30	PK	312	1.1	V	-1.82	57.48	110.8	-53.32
5875	46.62	PK	143	1.2	V	-1.84	44.78	105.2	-60.42
5875	50.76	PK	125	1.5	H	-1.84	48.92	105.2	-56.28
5925	44.55	PK	19	1	V	-1.83	42.72	68.2	-25.48
5925	47.49	PK	248	1.6	H	-1.83	45.66	68.2	-22.54
11550	31.76	PK	48	2.2	H	6.61	38.37	74	-35.63
11550	33.67	PK	131	2	V	6.61	40.28	74	-33.72

2.4G Wi-Fi (802.11b mode, 2437MHz) & 5G Wi-Fi (802.11ac20 mode, 5180MHz) Simultaneously Transmission:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
694.72	40.41	QP	348	1.3	H	-1.52	38.89	46	-7.11
80.01	50.27	QP	234	1.5	V	-16.79	33.48	40	-6.52
3296.96	59.38	PK	303	1.4	H	-5.94	53.44	74	-20.56
2471.47	58.68	PK	172	1.3	V	-7.21	51.47	74	-22.53

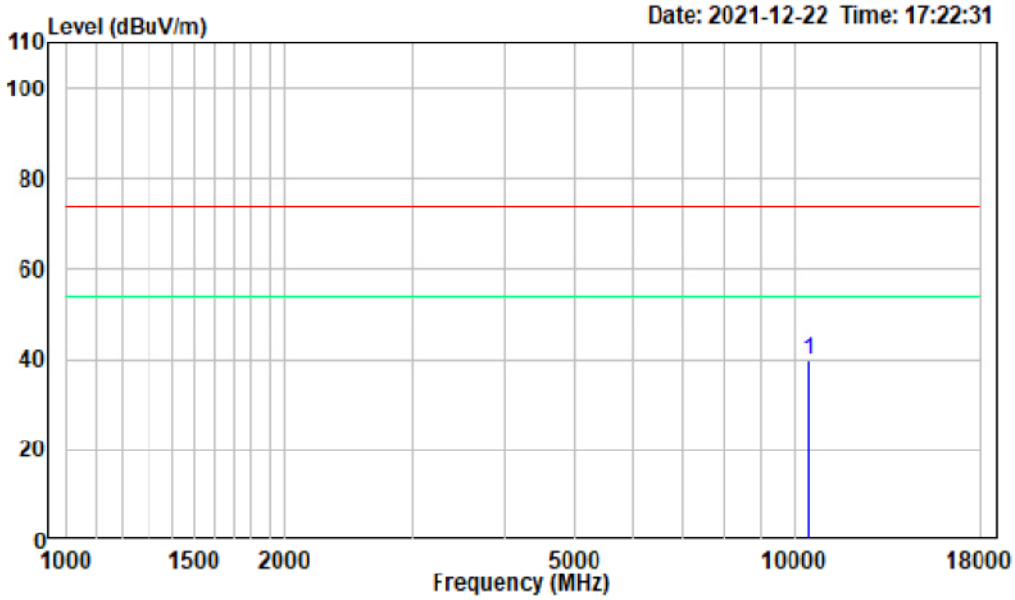
Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin =Corrected Amplitude – Limit
The other spurious emission which is in the noise floor level was not recorded.
The test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

1-18 GHz:

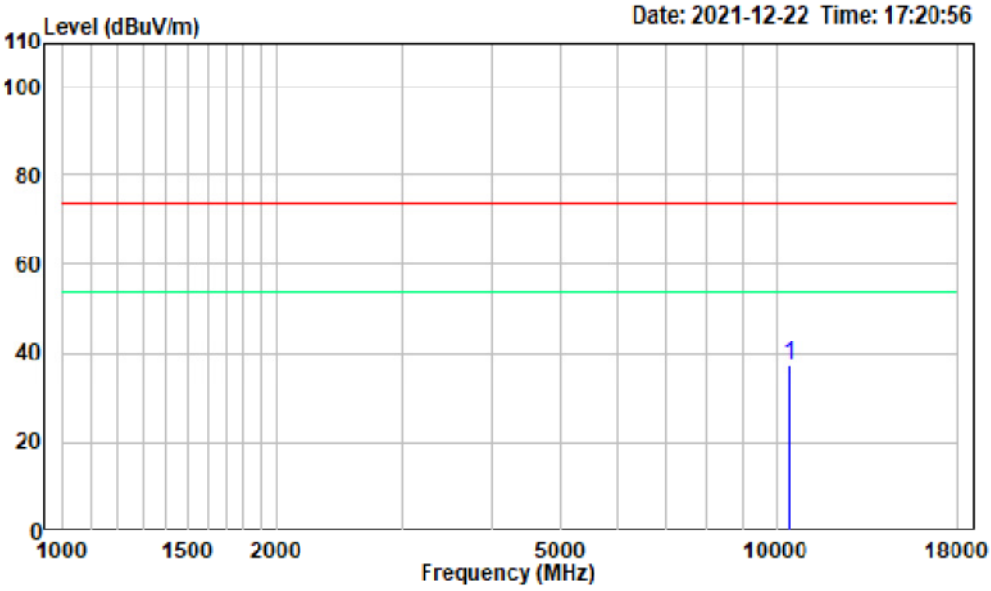
Pre-scan plots:

802.11N40 5230MHz

Horizontal:



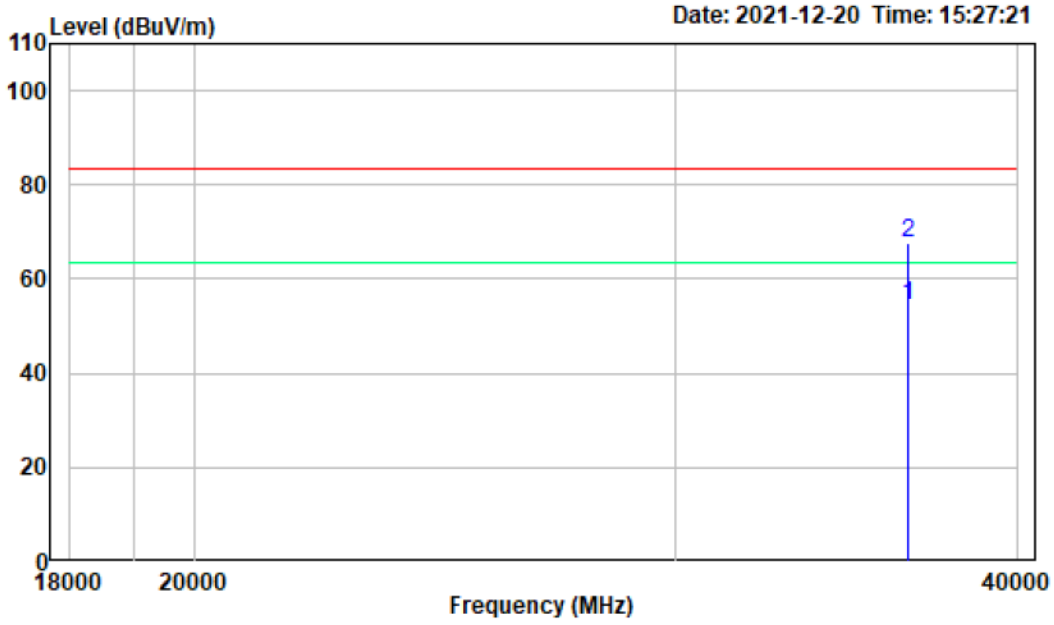
Vertical:



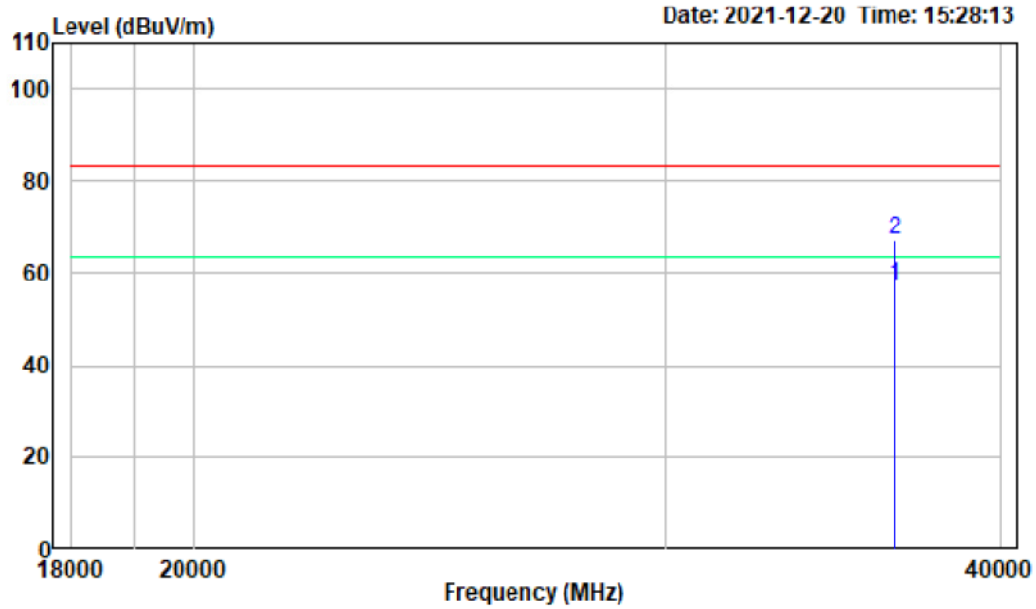
18-40 GHz: Test @ 1m

Pre-scan plots:

802.11N40 5230MHz
Horizontal:



Vertical:



FCC §15.407(a)(e) – BANDWIDTH

Applicable Standard

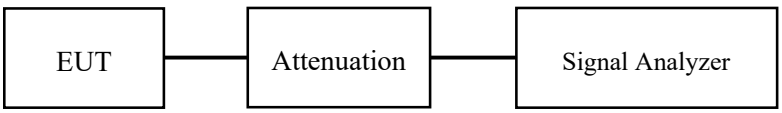
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. **Minimum Emission Bandwidth for the band 5.725-5.85 GHz**
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2021-12-20 and 2021-12-22.

EUT operation mode: Transmitting

Test Result: Pass; please refer to the Appendix.

FCC §15.407(a) (1) (3) – CONDUCTED TRANSMITTER OUTPUT POWER

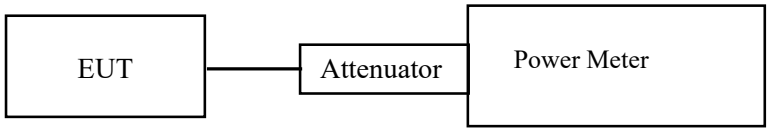
Applicable Standard

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2021-12-20.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) (1) (3) - POWER SPECTRAL DENSITY

Applicable Standard

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2021-12-20.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

Appendix A1: Emission Bandwidth

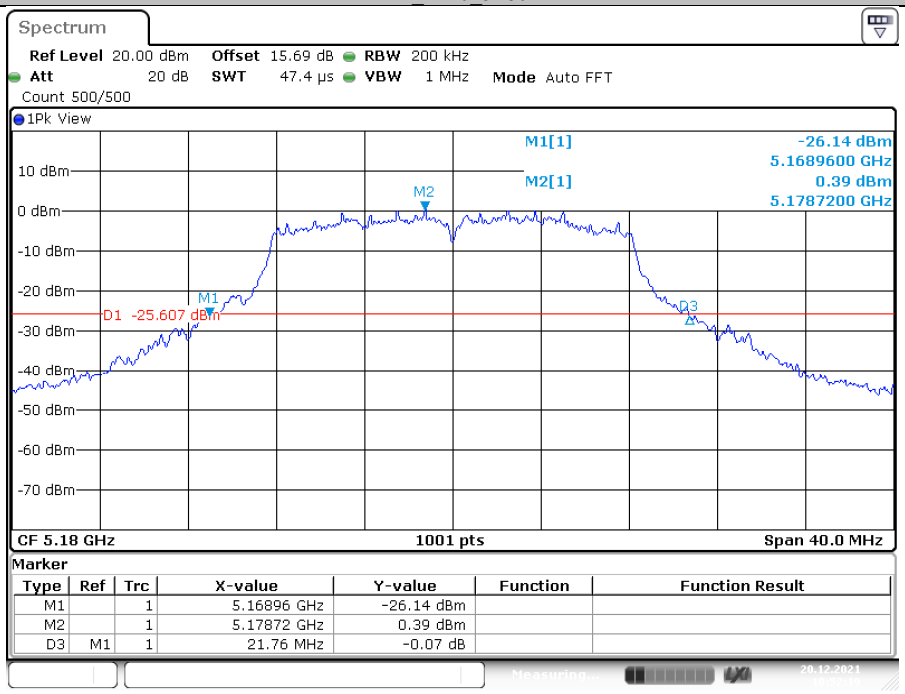
Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant0	5180	21.760	5168.960	5190.720	---	PASS
		5200	22.040	5188.640	5210.680	---	PASS
		5240	22.360	5228.960	5251.320	---	PASS
		5745	23.120	5733.640	5756.760	---	PASS
		5785	22.720	5773.560	5796.280	---	PASS
		5825	21.080	5814.560	5835.640	---	PASS
11N20	Ant0	5180	22.280	5169.000	5191.280	---	PASS
		5200	22.240	5189.080	5211.320	---	PASS
		5240	22.280	5228.640	5250.920	---	PASS
		5745	22.000	5733.880	5755.880	---	PASS
		5785	21.880	5773.920	5795.800	---	PASS
		5825	22.840	5813.880	5836.720	---	PASS
11N40	Ant0	5190	42.480	5168.880	5211.360	---	PASS
		5230	44.720	5207.200	5251.920	---	PASS
		5755	44.400	5731.960	5776.360	---	PASS
		5795	43.840	5772.280	5816.120	---	PASS
11AC20	Ant0	5180	22.120	5168.920	5191.040	---	PASS
		5200	22.200	5188.800	5211.000	---	PASS
		5240	22.560	5228.440	5251.000	---	PASS
		5745	21.600	5734.000	5755.600	---	PASS
		5785	23.160	5773.320	5796.480	---	PASS
		5825	22.320	5813.640	5835.960	---	PASS
11AC40	Ant0	5190	42.960	5168.320	5211.280	---	PASS
		5230	44.400	5207.920	5252.320	---	PASS
		5755	45.360	5732.600	5777.960	---	PASS
		5795	44.480	5772.680	5817.160	---	PASS
11AC80	Ant0	5210	81.440	5169.360	5250.800	---	PASS
		5775	81.920	5734.360	5816.280	---	PASS

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	21.360	5169.360	5190.720	---	PASS
		5200	22.040	5189.240	5211.280	---	PASS
		5240	22.480	5228.800	5251.280	---	PASS
		5745	23.360	5733.320	5756.680	---	PASS
		5785	22.320	5773.560	5795.880	---	PASS
		5825	22.040	5813.920	5835.960	---	PASS
11N20	Ant1	5180	22.040	5169.000	5191.040	---	PASS
		5200	22.320	5188.880	5211.200	---	PASS
		5240	22.640	5228.760	5251.400	---	PASS
		5745	22.640	5733.920	5756.560	---	PASS
		5785	22.080	5773.720	5795.800	---	PASS
		5825	22.360	5813.640	5836.000	---	PASS
11N40	Ant1	5190	41.760	5169.200	5210.960	---	PASS
		5230	42.080	5208.880	5250.960	---	PASS
		5755	43.040	5733.400	5776.440	---	PASS
		5795	42.560	5773.800	5816.360	---	PASS
11AC20	Ant1	5180	21.640	5169.520	5191.160	---	PASS
		5200	22.400	5188.960	5211.360	---	PASS
		5240	22.120	5228.880	5251.000	---	PASS
		5745	22.800	5733.600	5756.400	---	PASS
		5785	22.320	5773.920	5796.240	---	PASS
		5825	21.880	5813.840	5835.720	---	PASS
11AC40	Ant1	5190	41.360	5169.200	5210.560	---	PASS
		5230	42.800	5208.560	5251.360	---	PASS
		5755	42.640	5733.480	5776.120	---	PASS
		5795	42.800	5773.400	5816.200	---	PASS
11AC80	Ant1	5210	81.280	5169.360	5250.640	---	PASS
		5775	81.920	5734.040	5815.960	---	PASS

Test Graphs

11A_Ant0_5180



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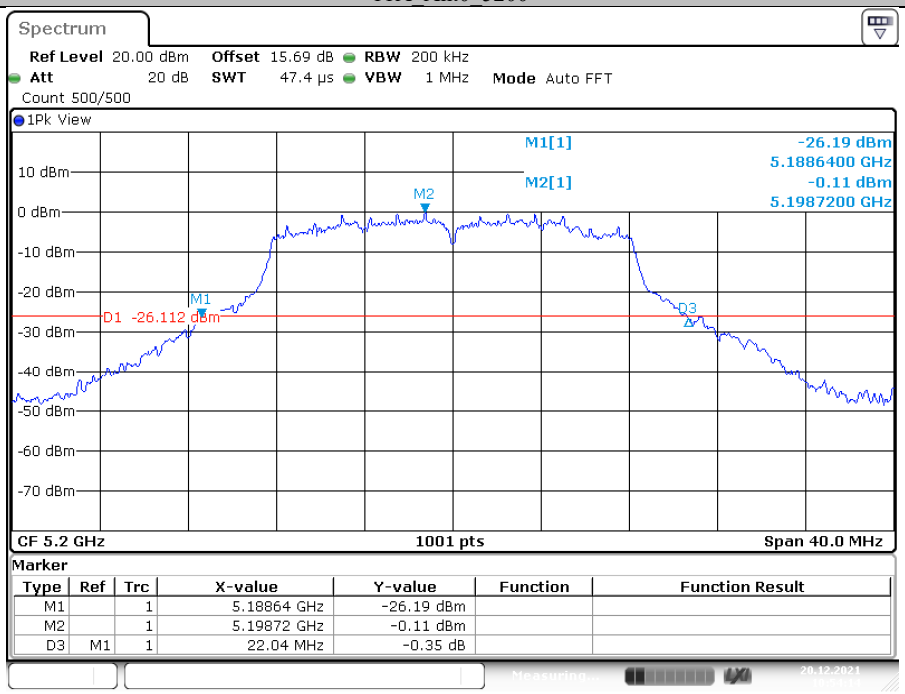

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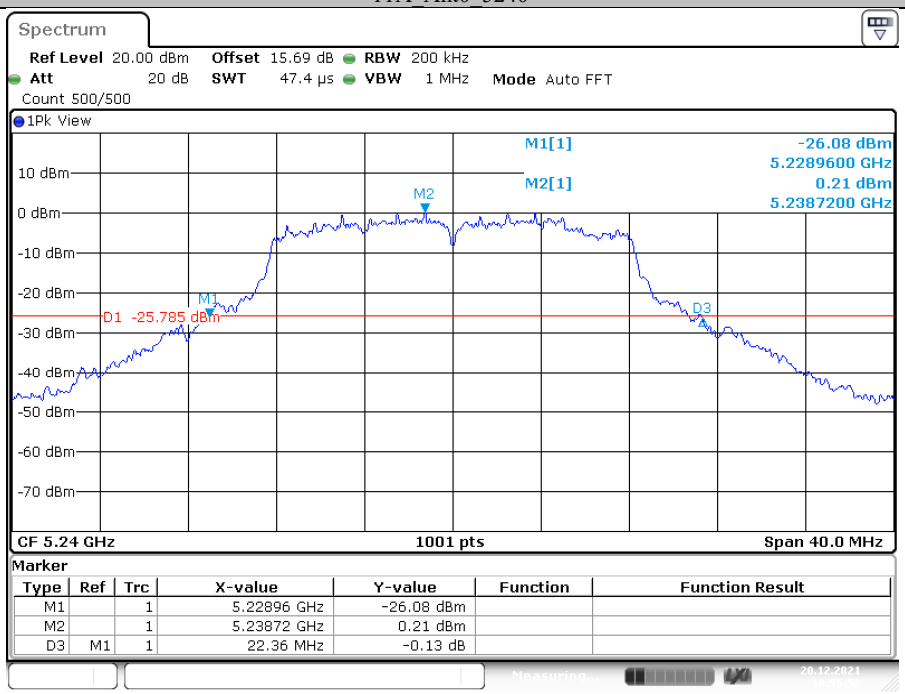

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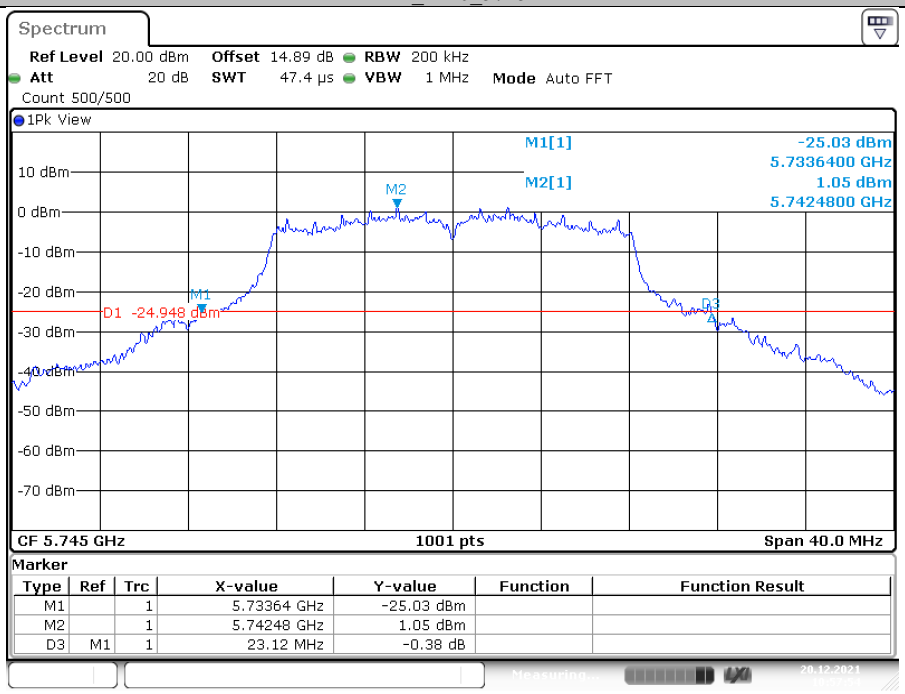

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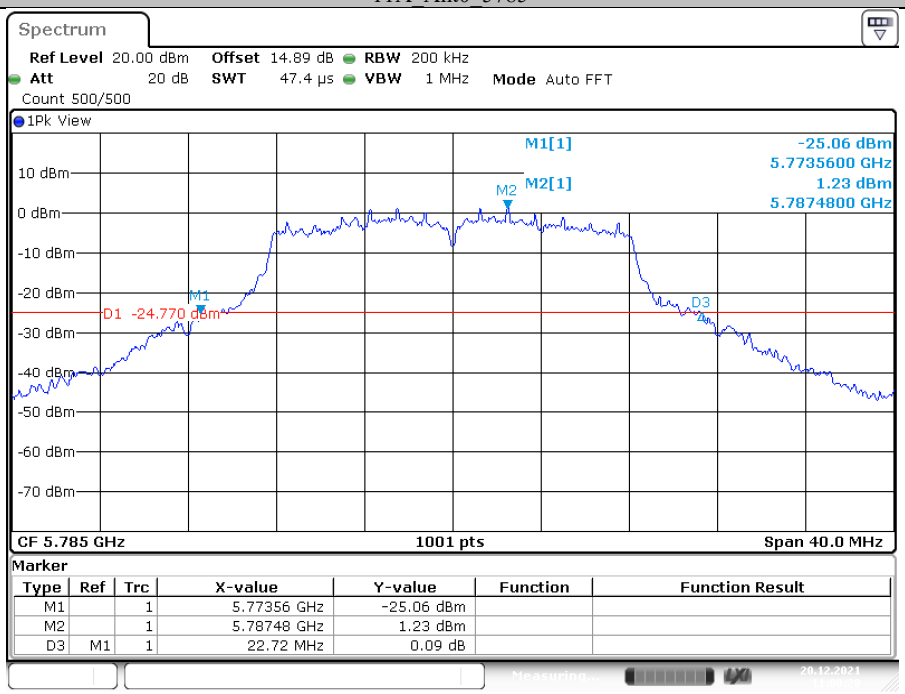

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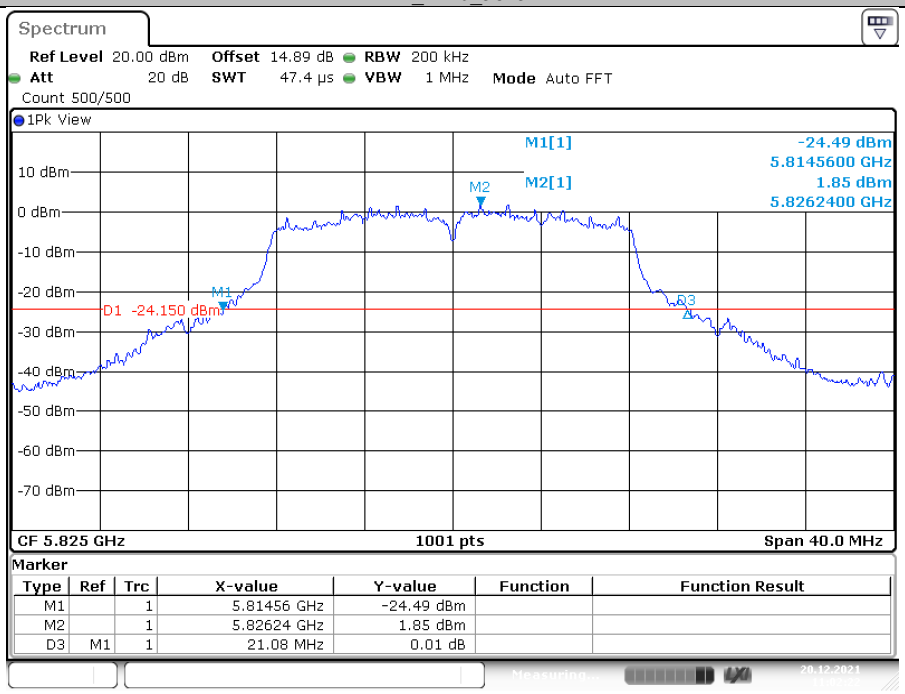

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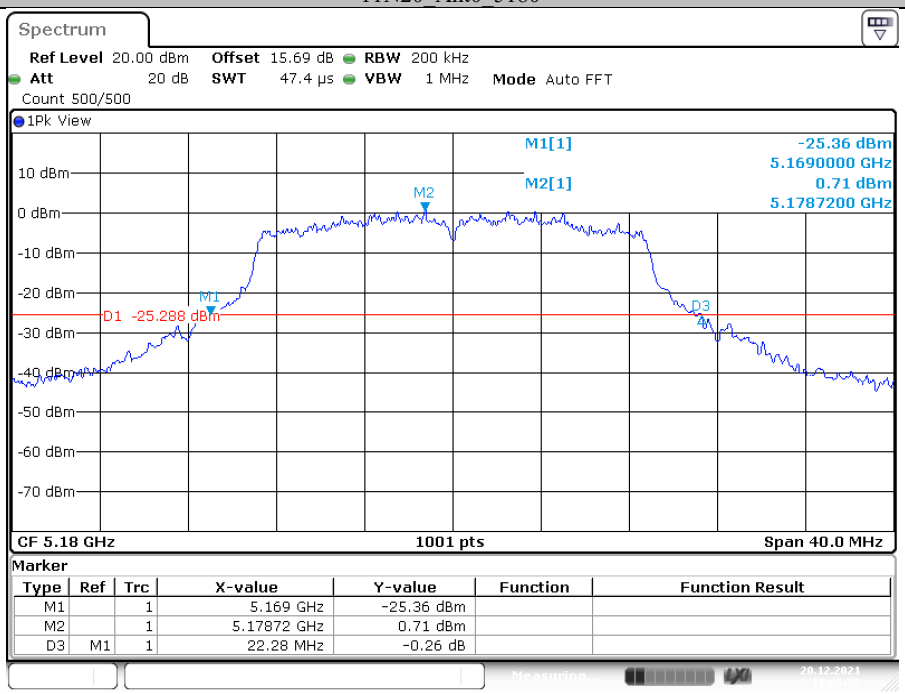

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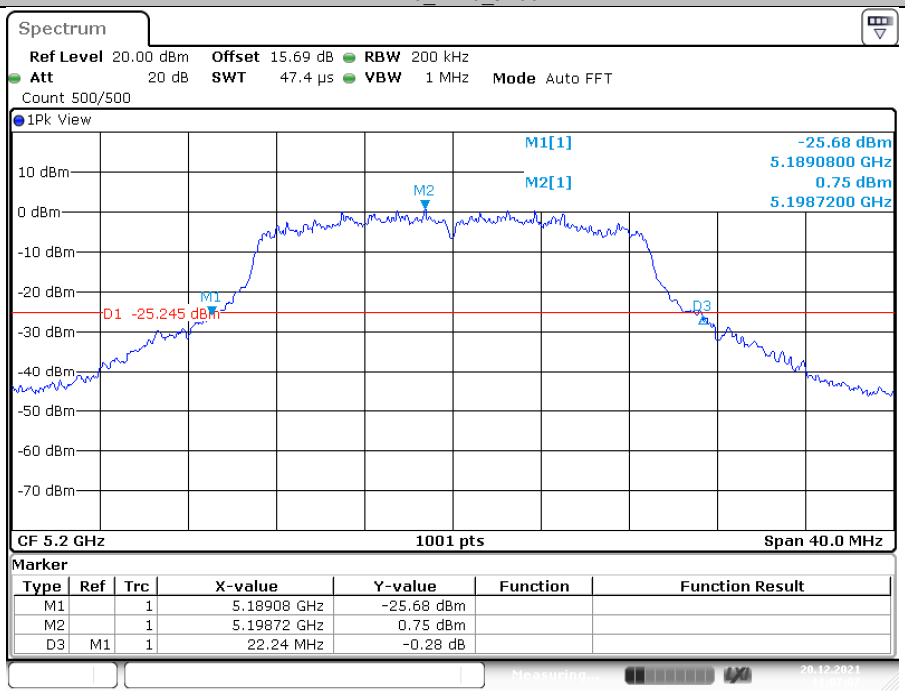

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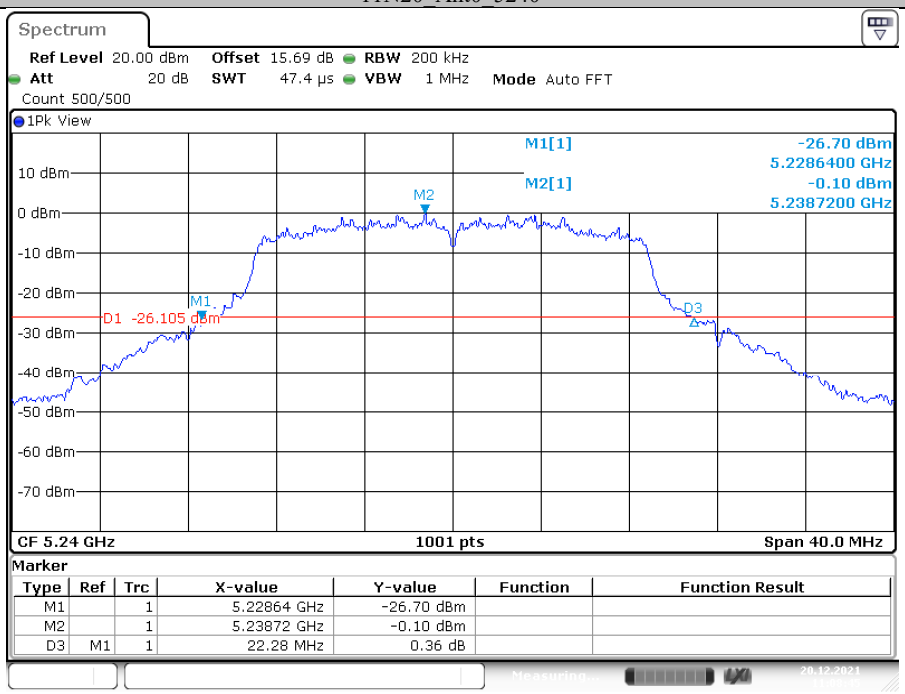

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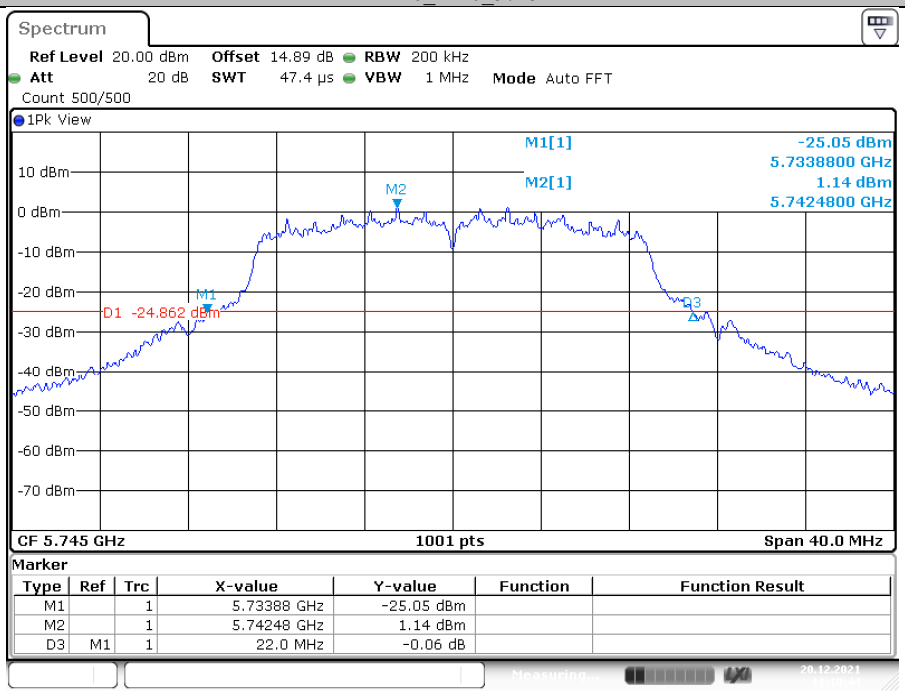

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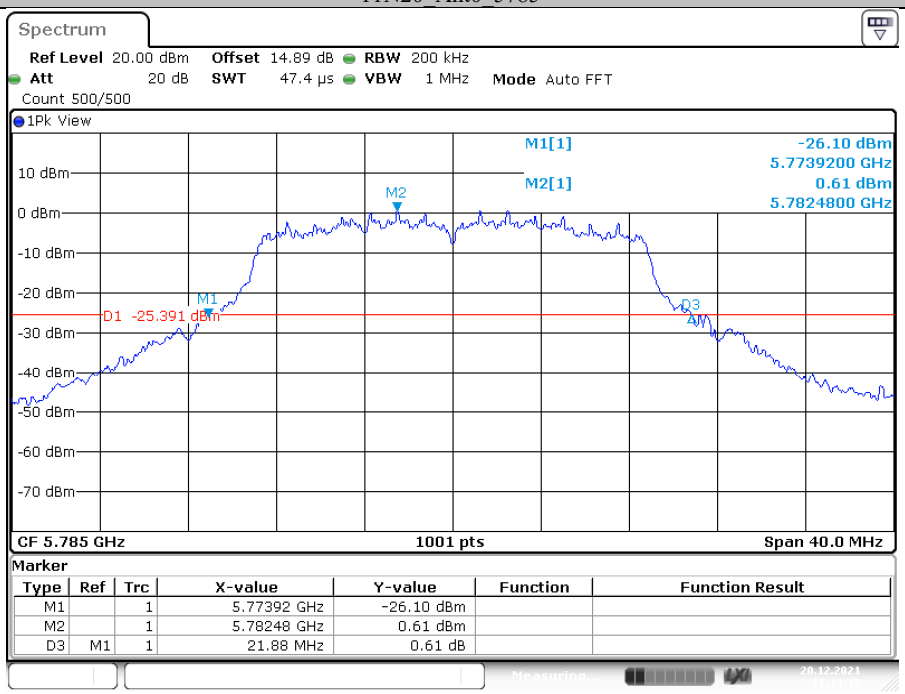

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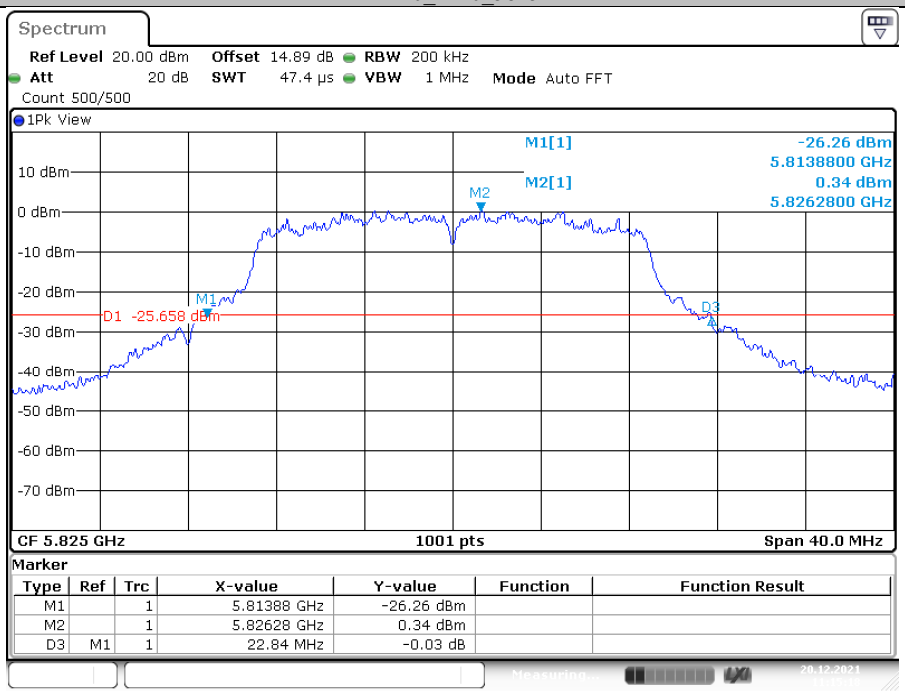

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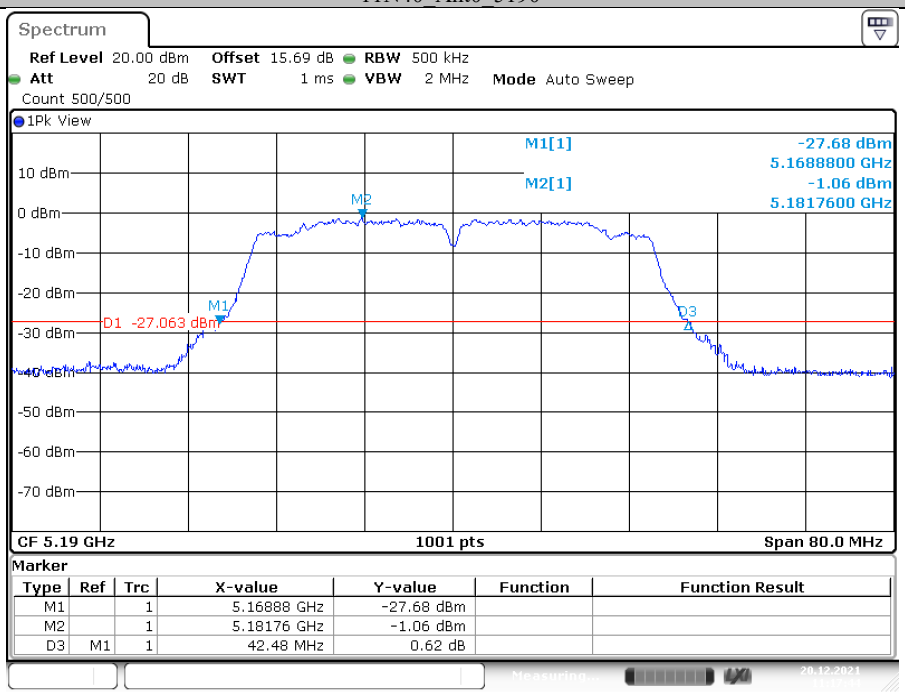

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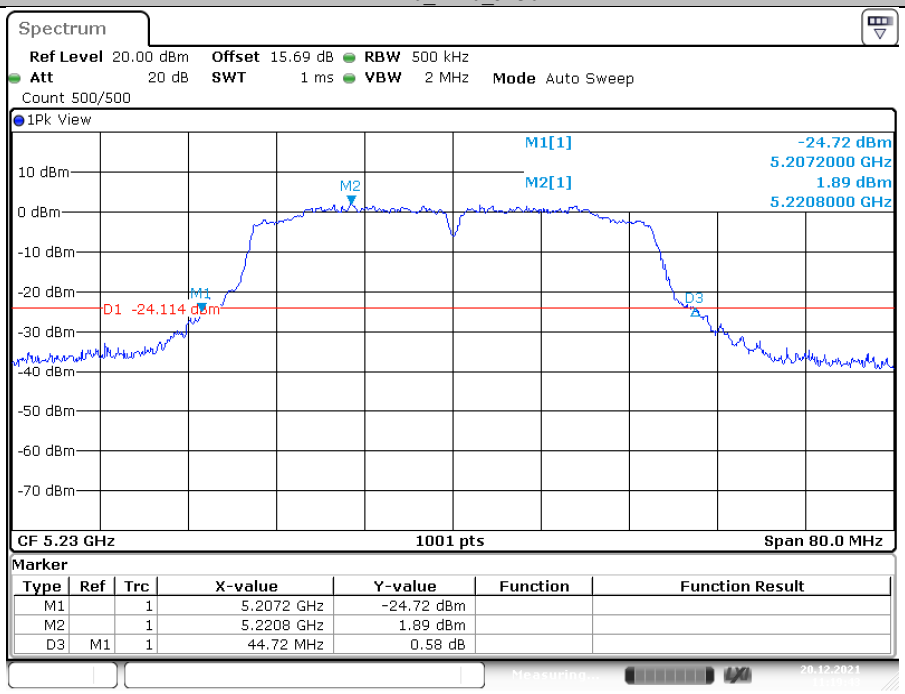

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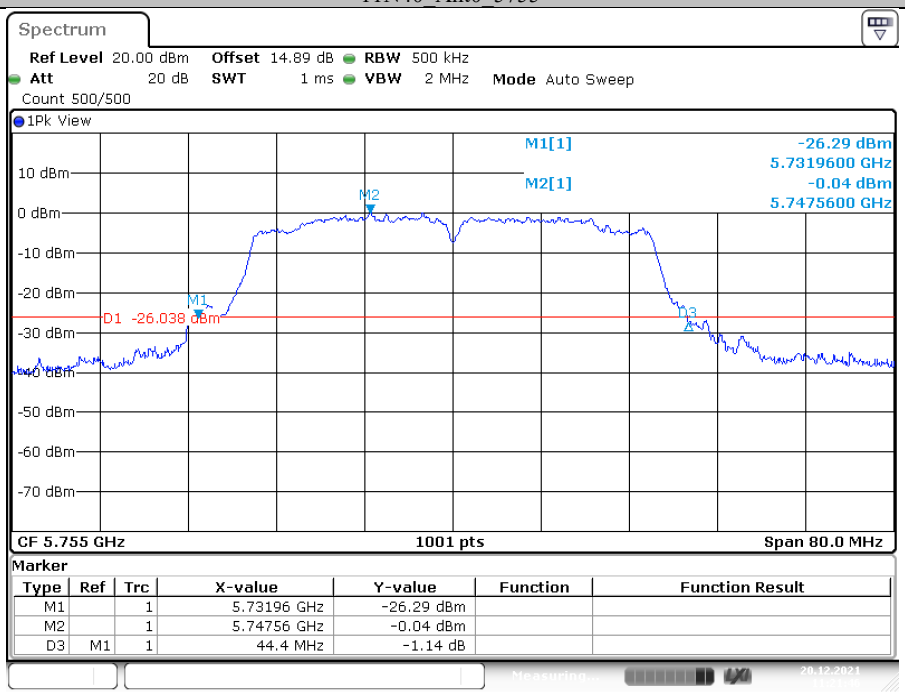

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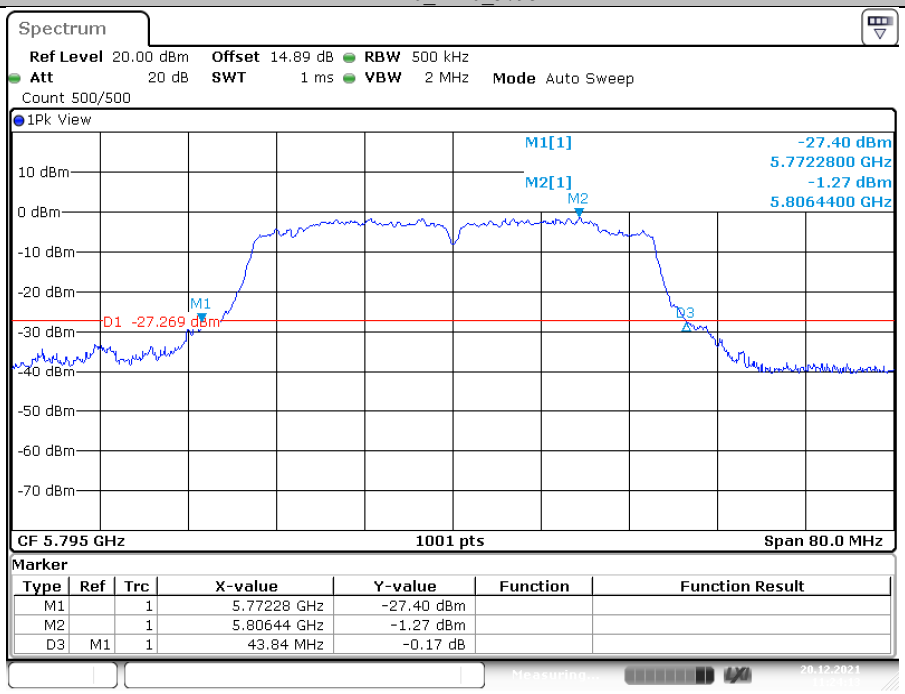

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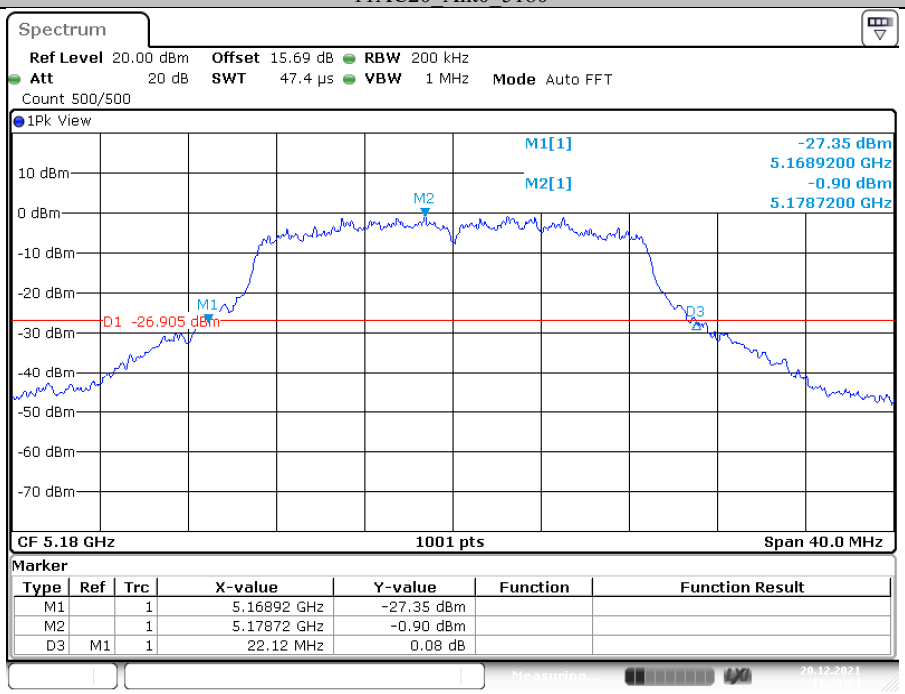

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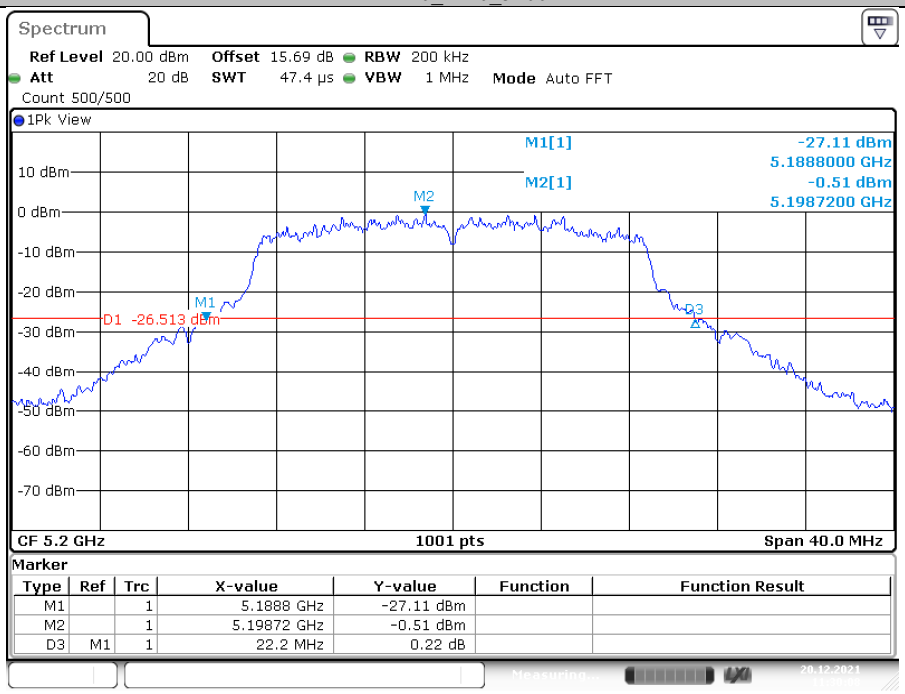

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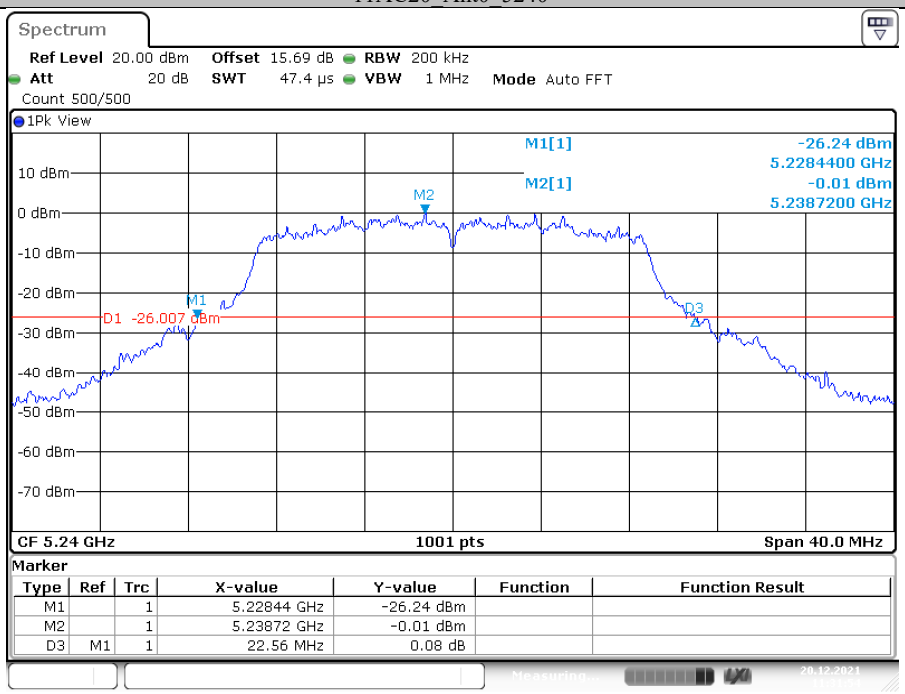

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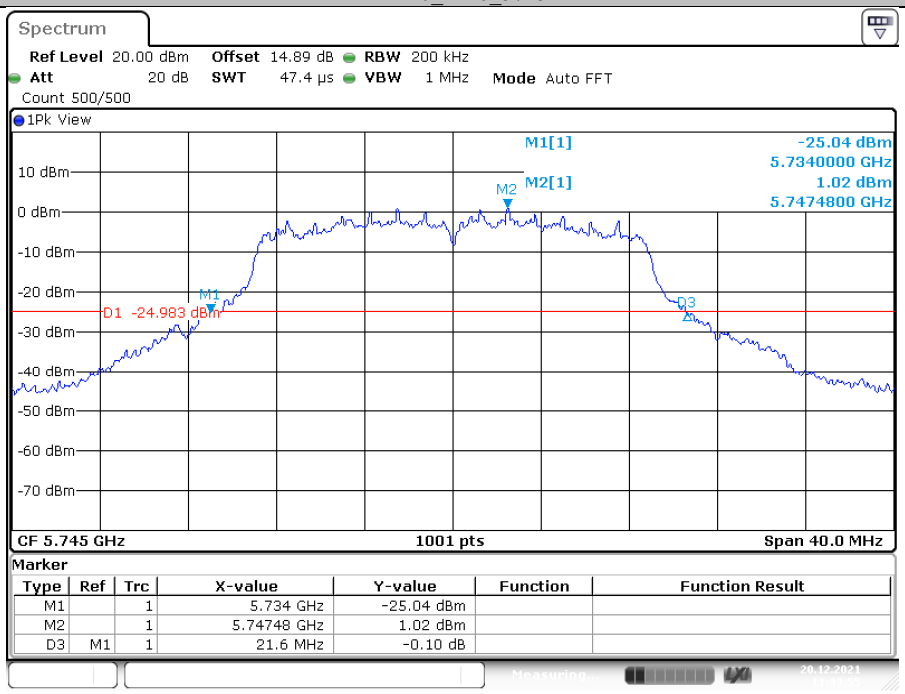
11AC20_Ant0_5745



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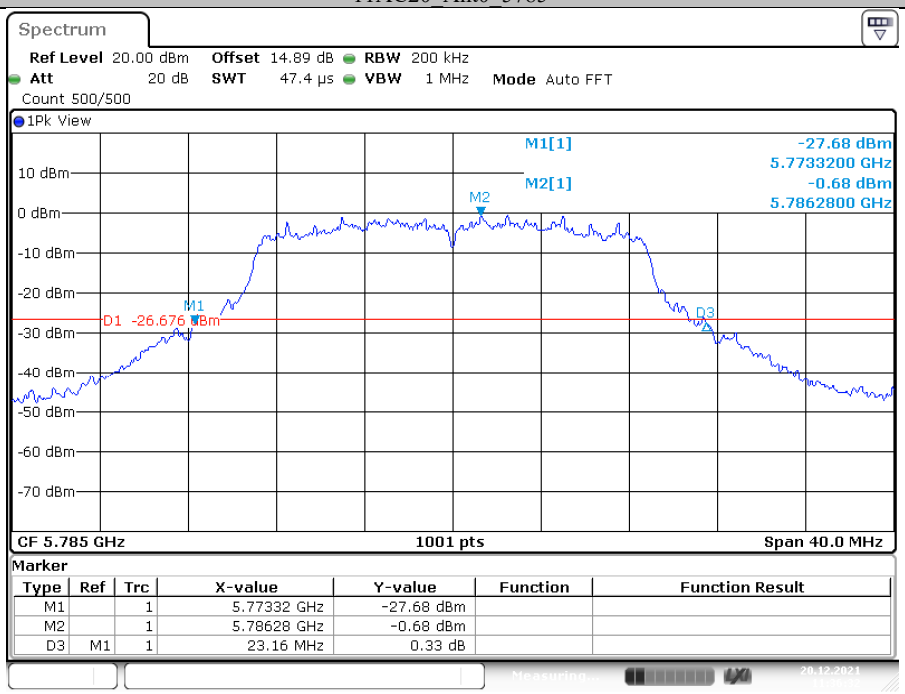

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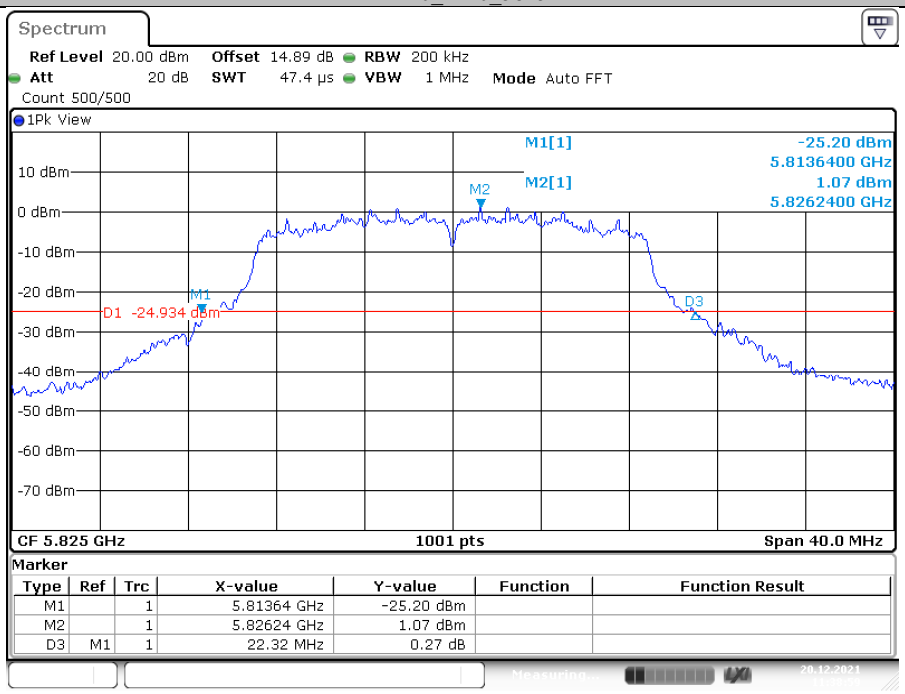

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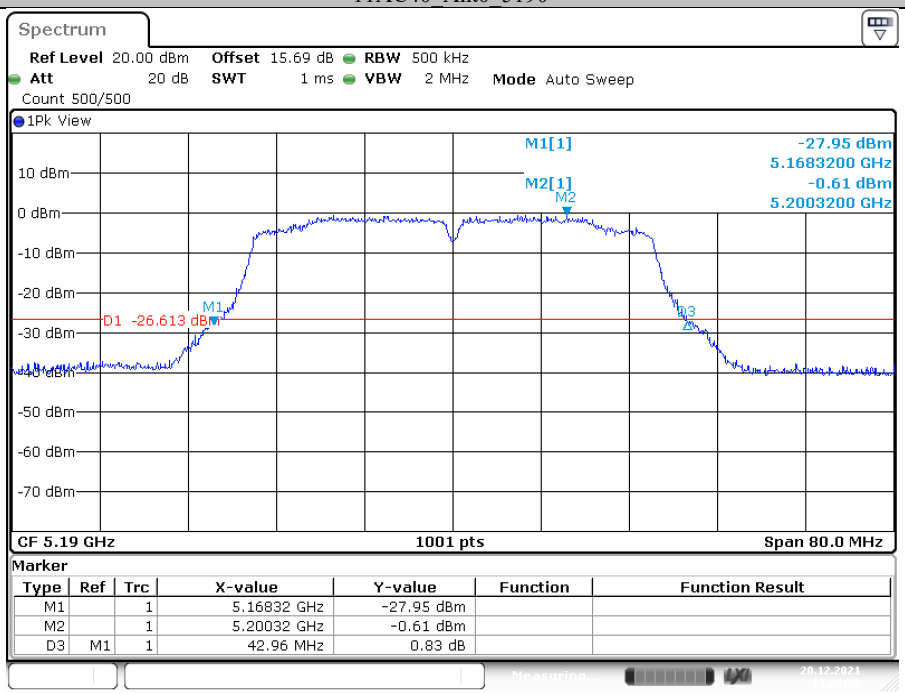

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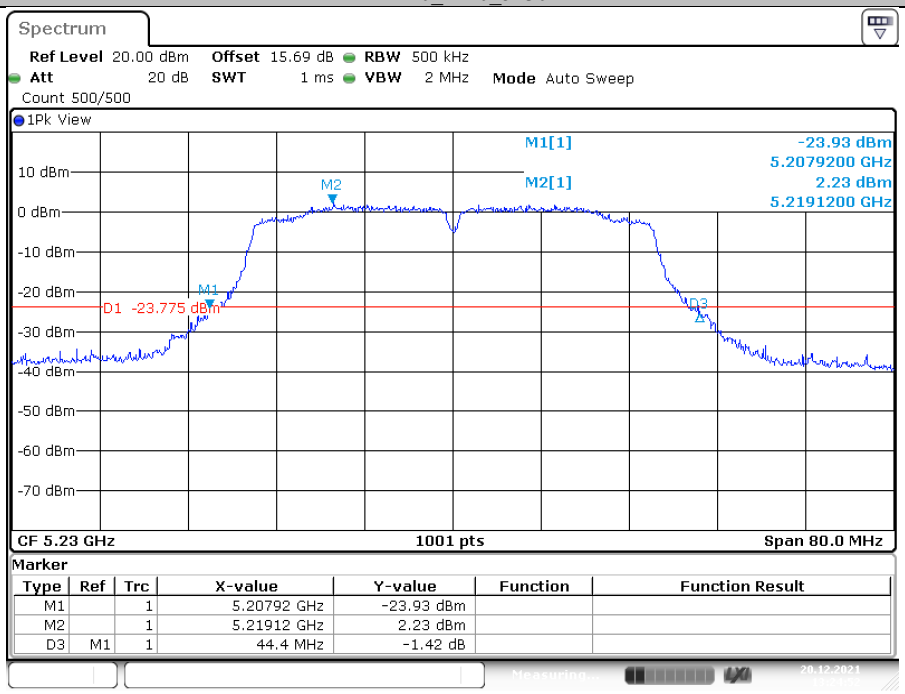

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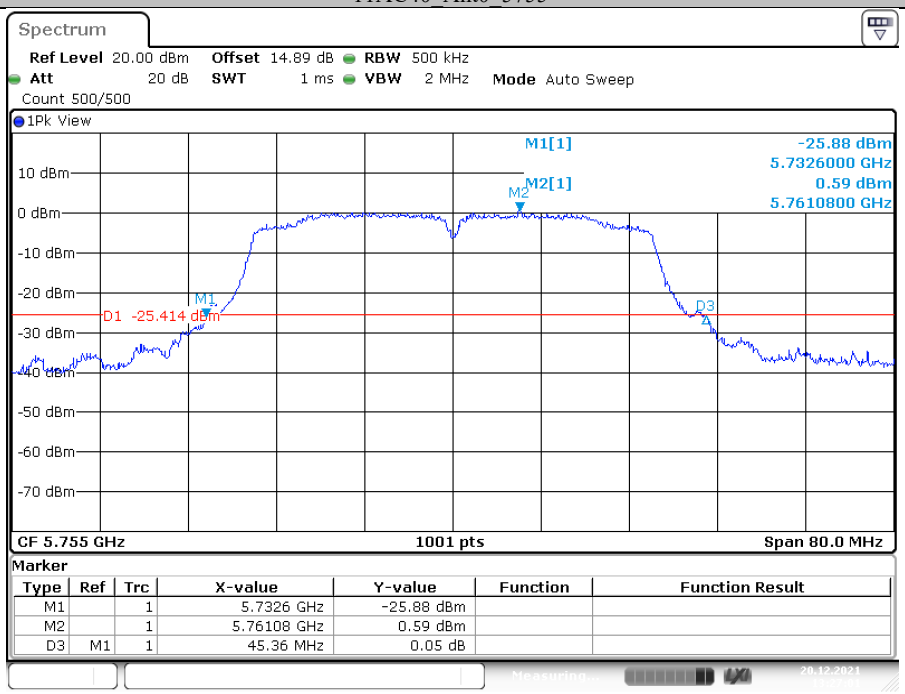

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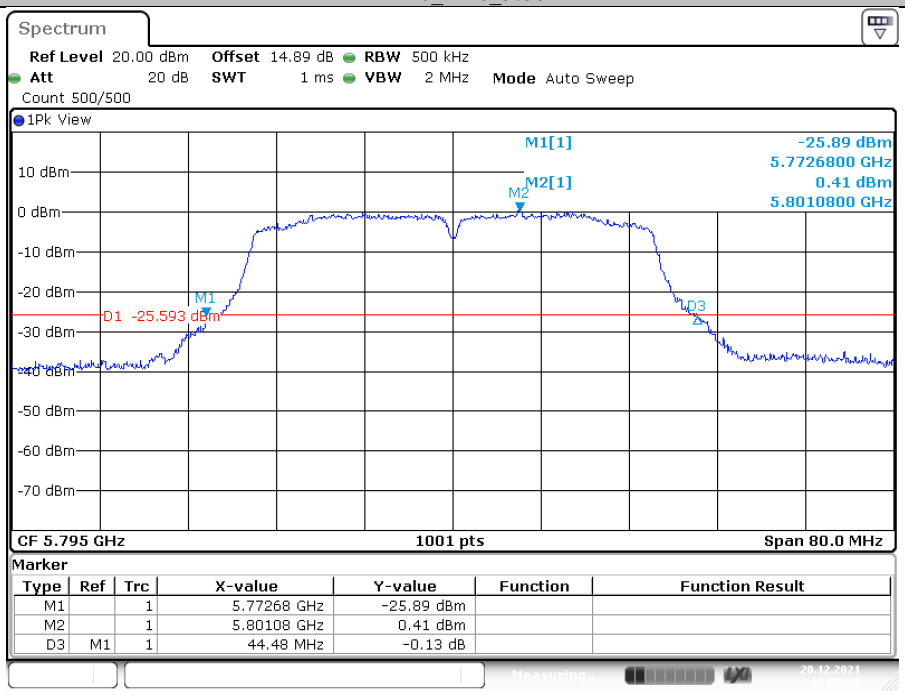

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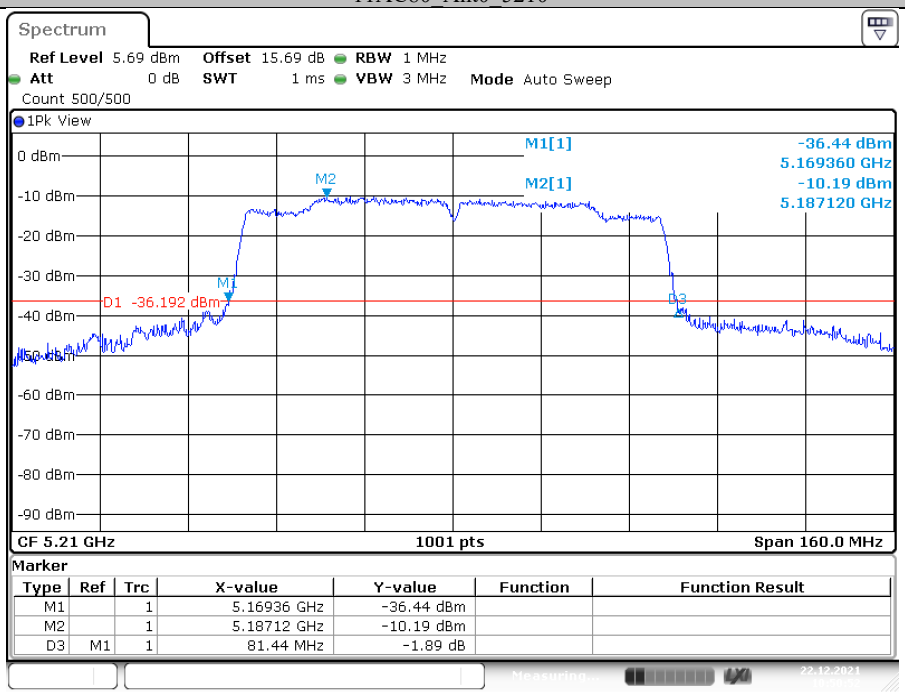

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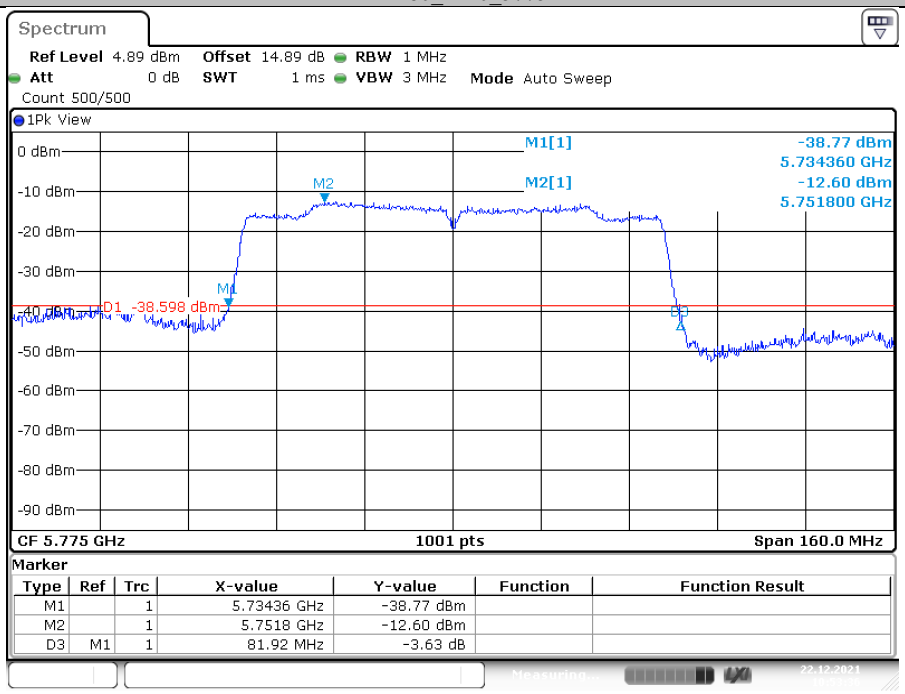

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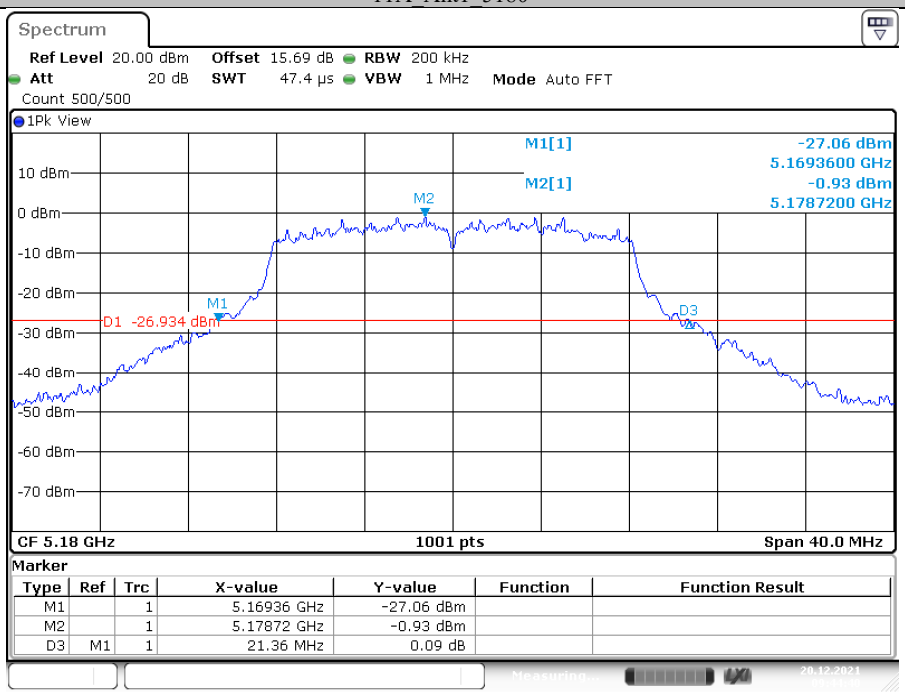

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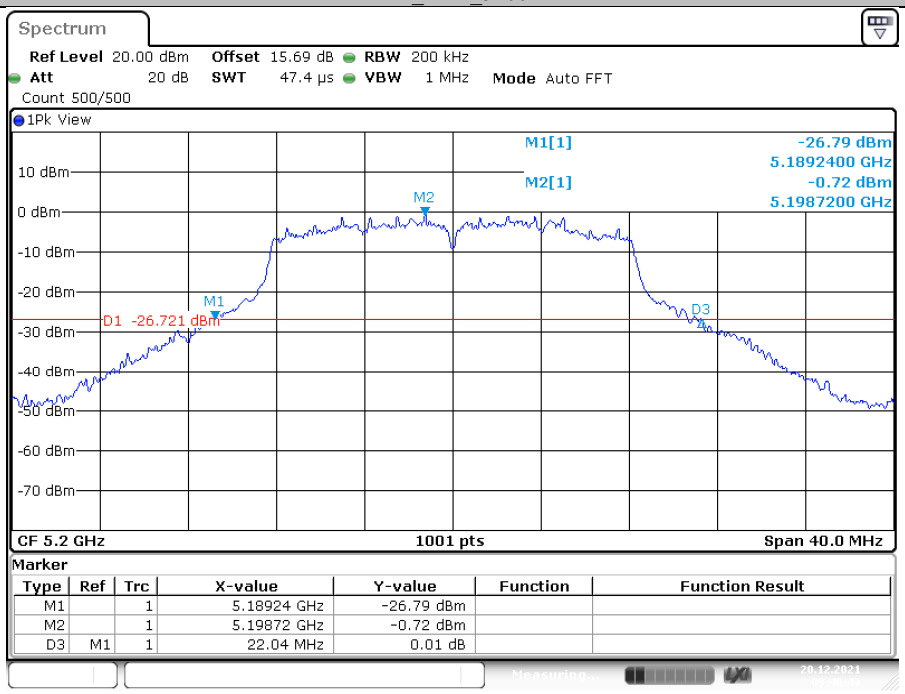

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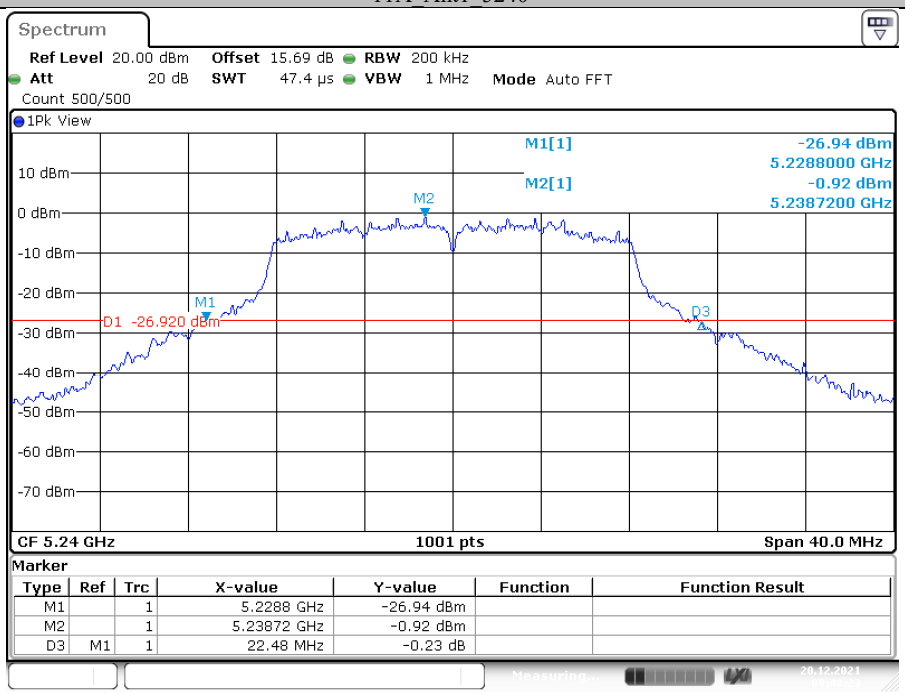

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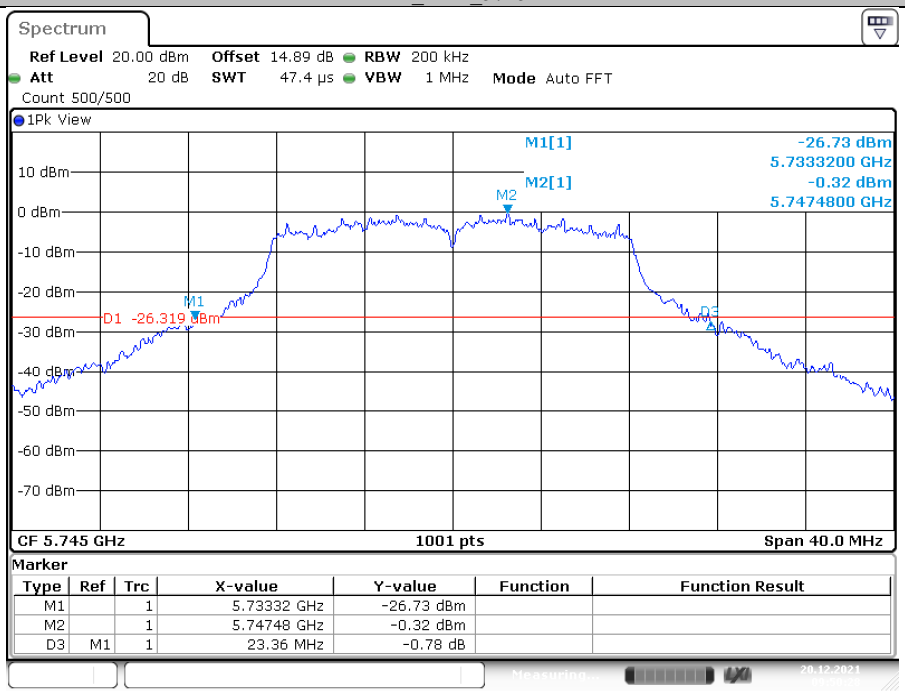

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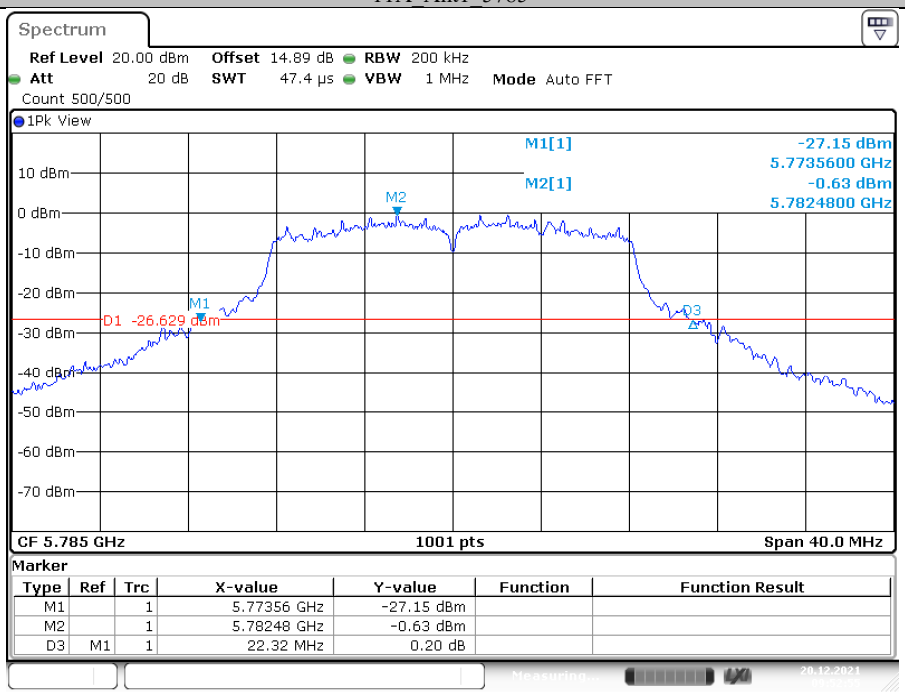

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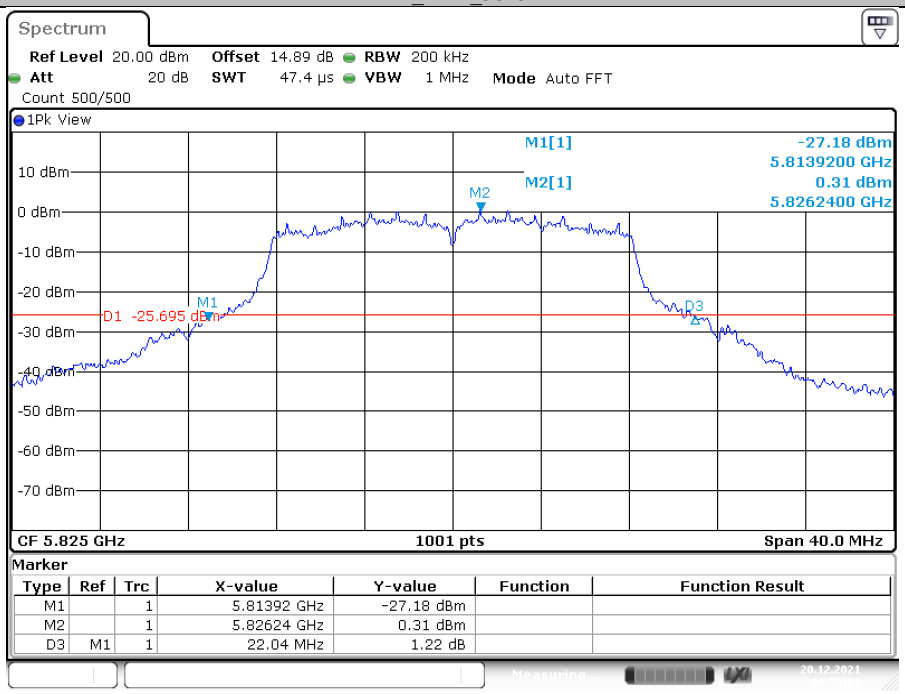

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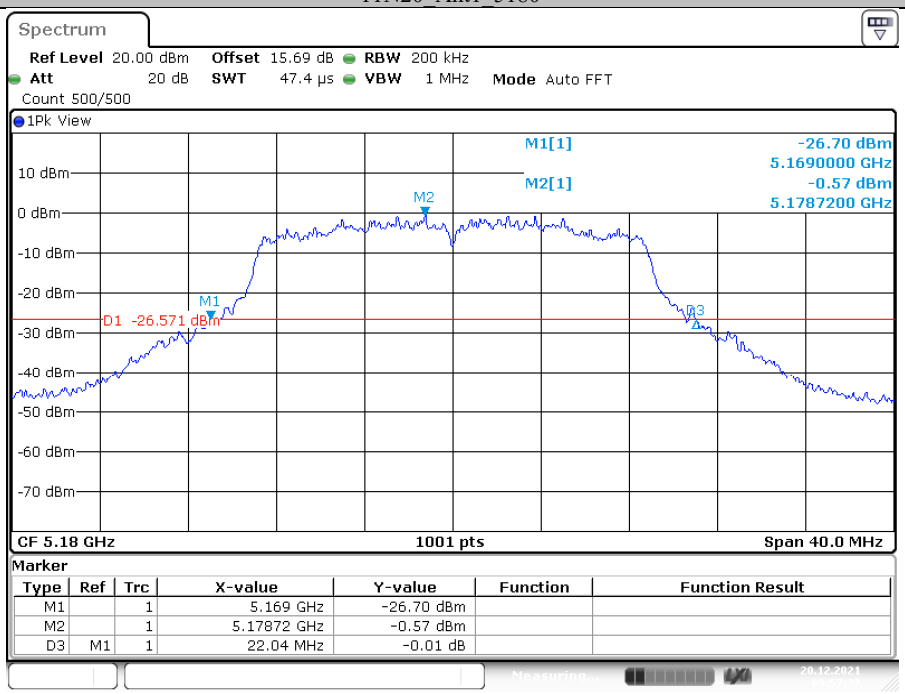

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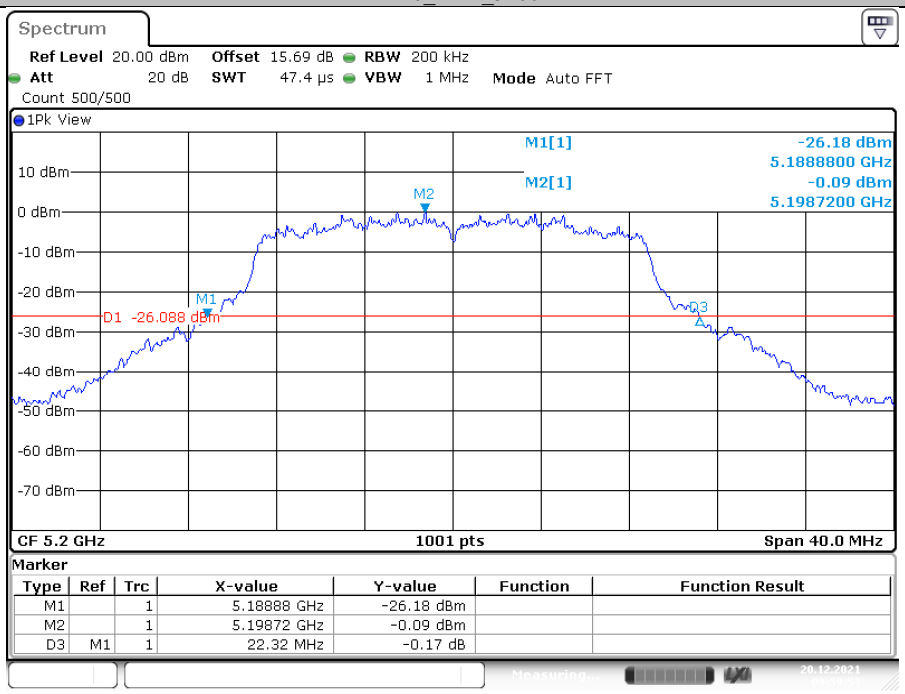

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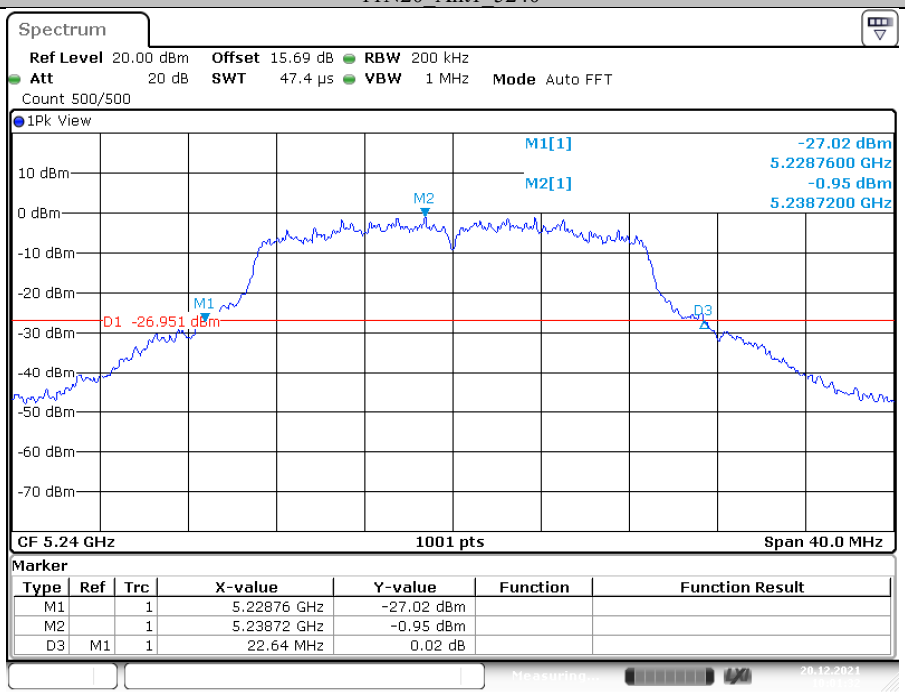

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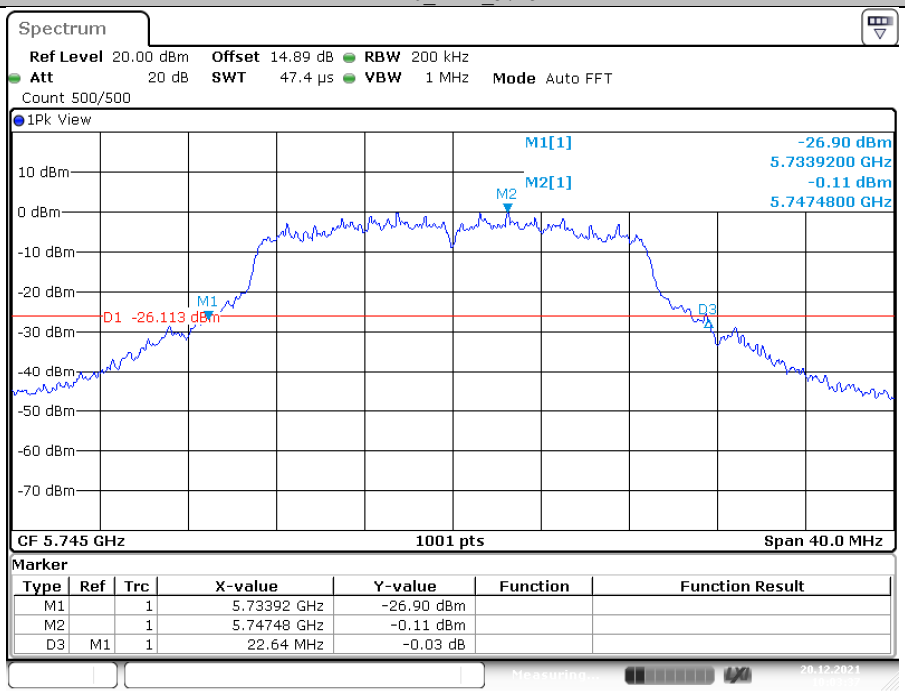

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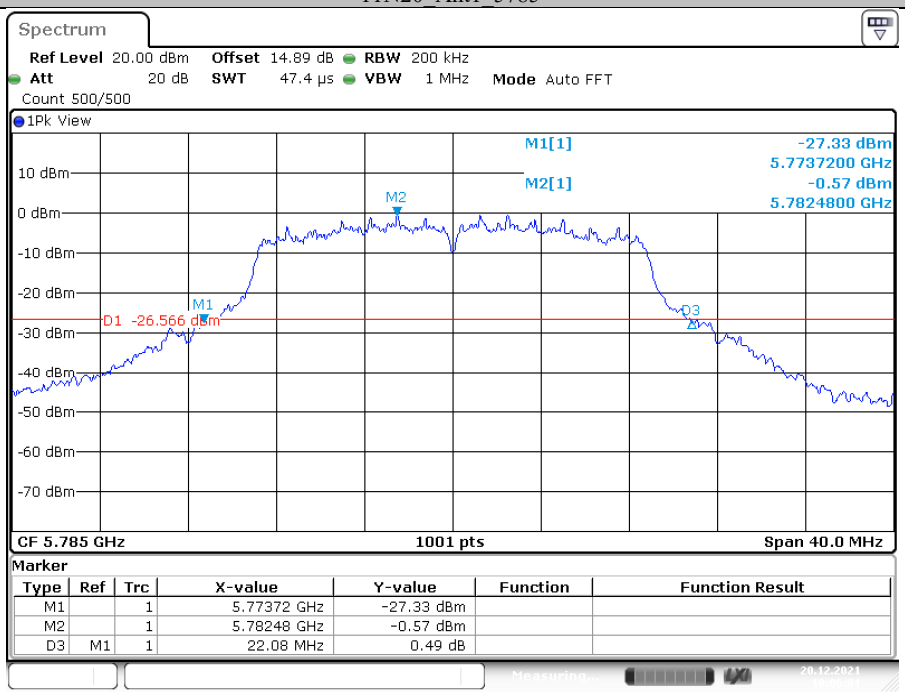

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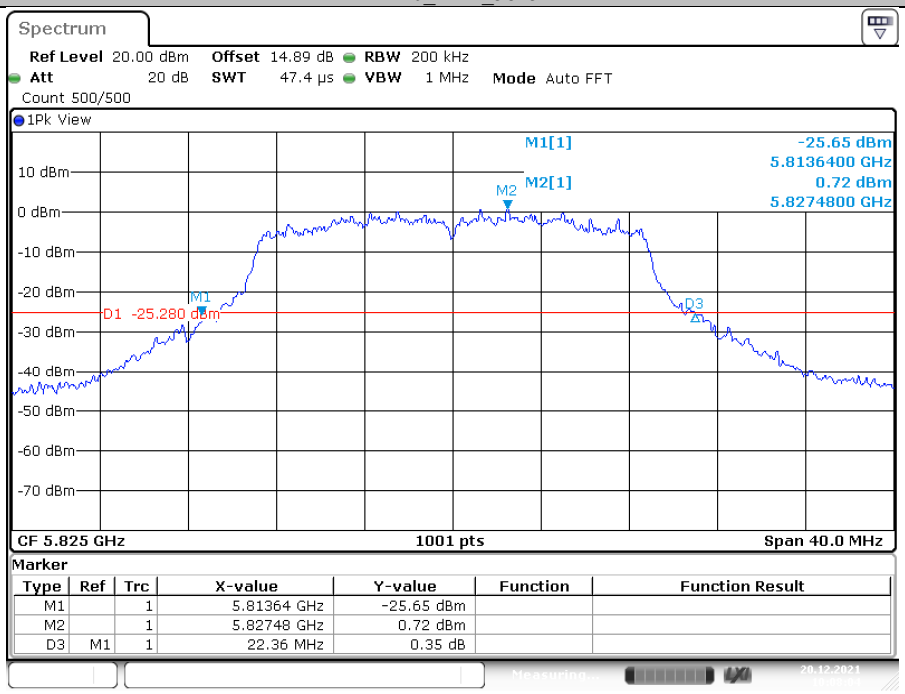

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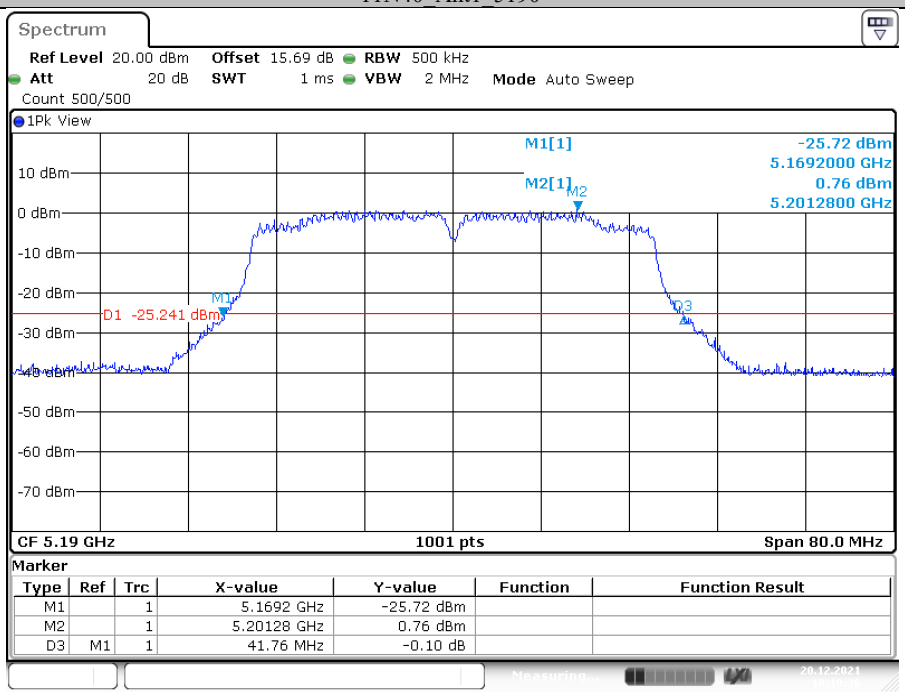

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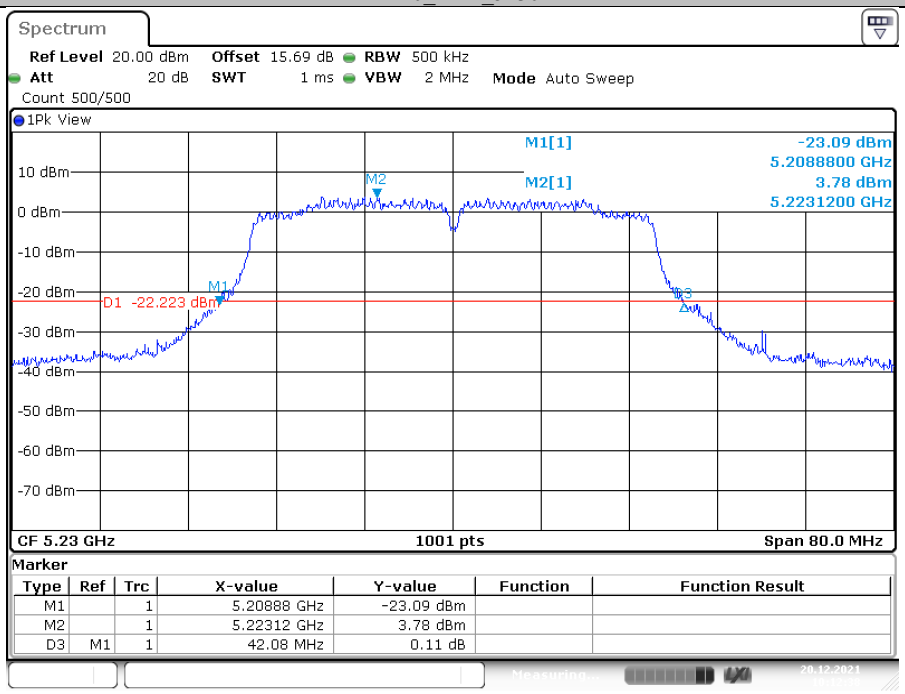

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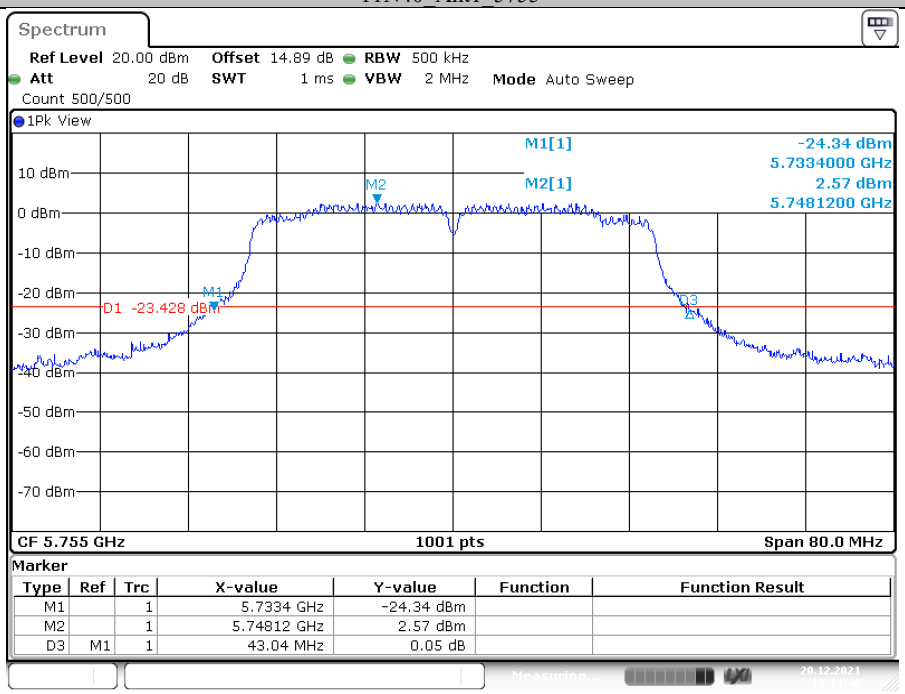

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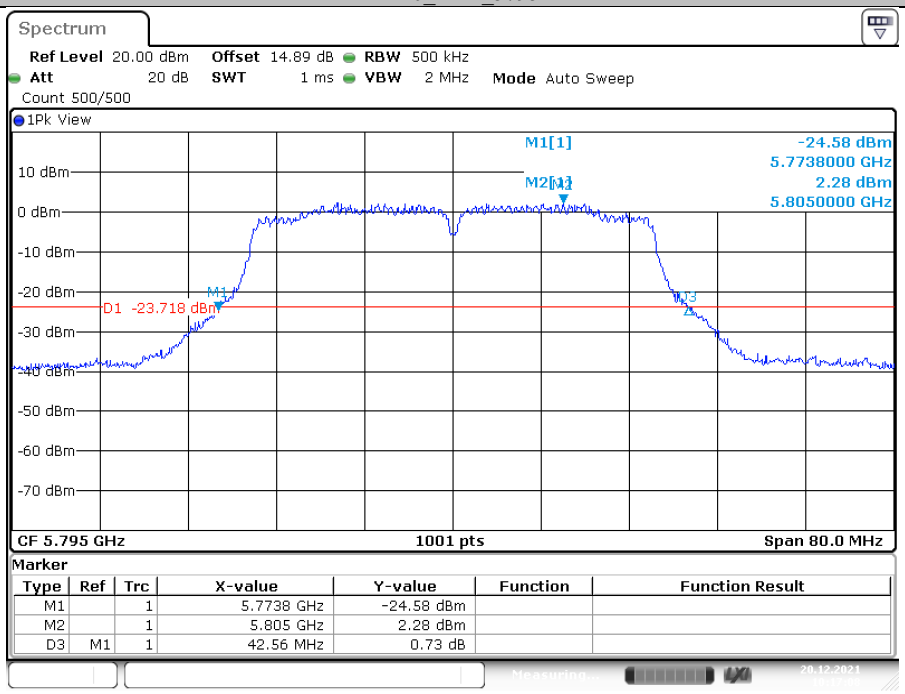

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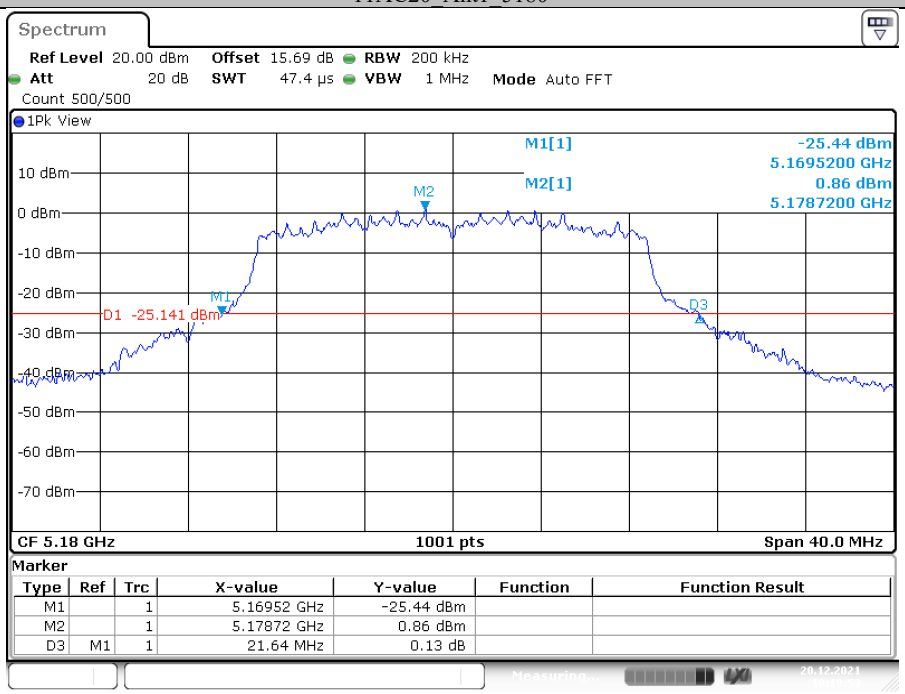

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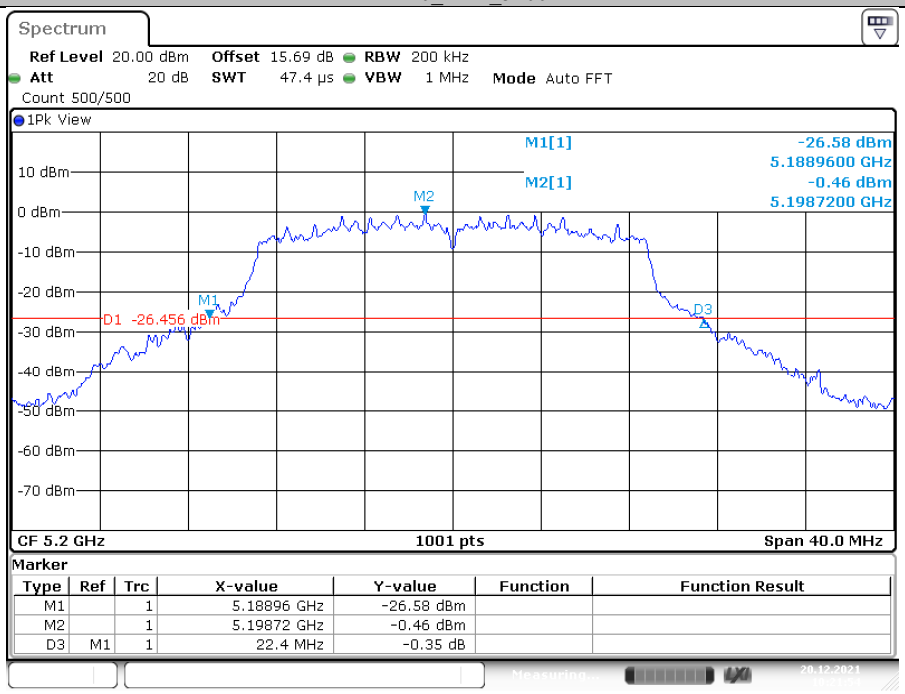

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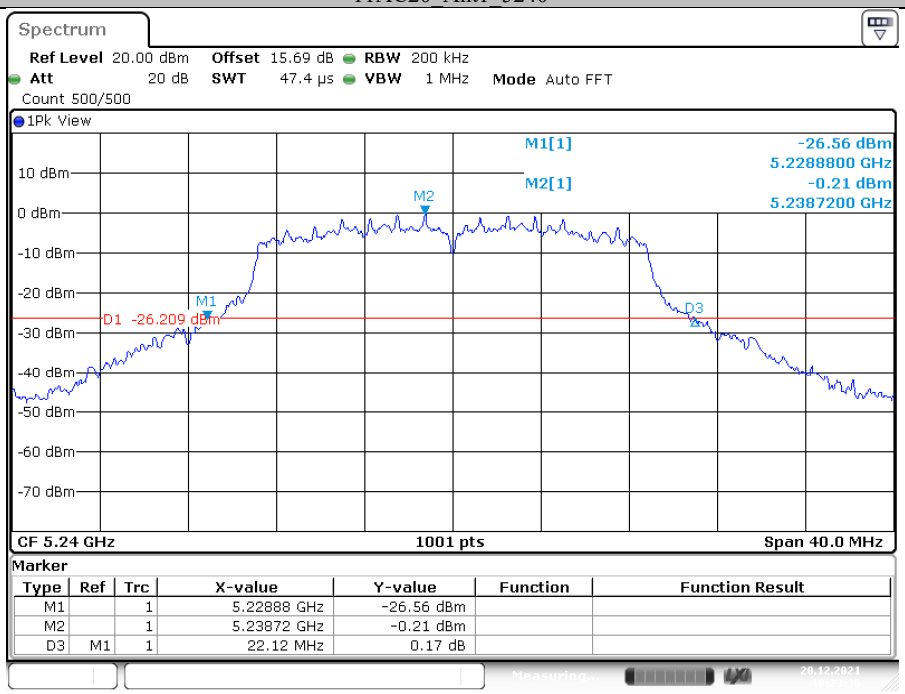

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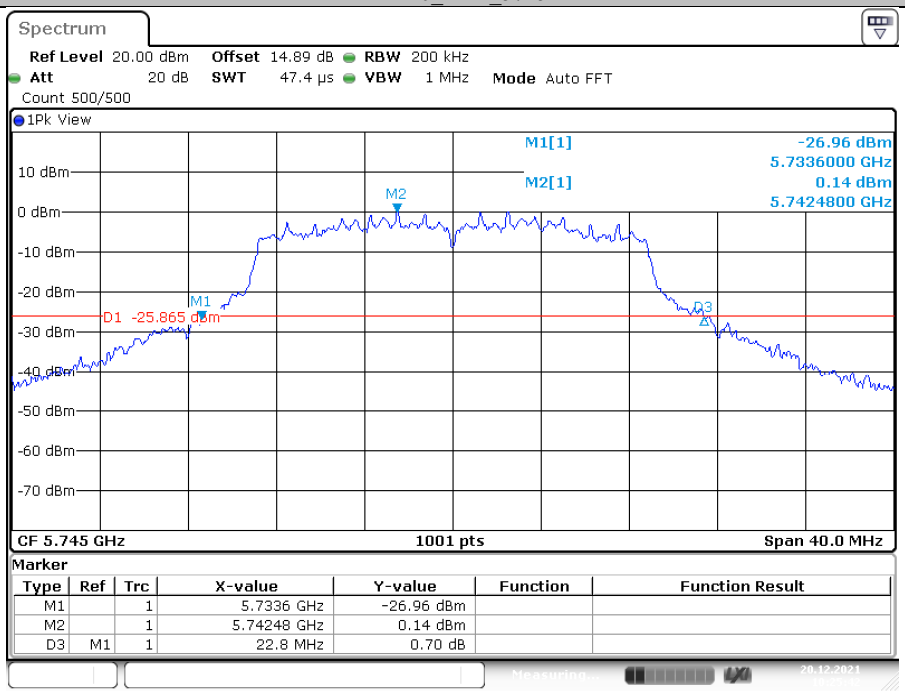

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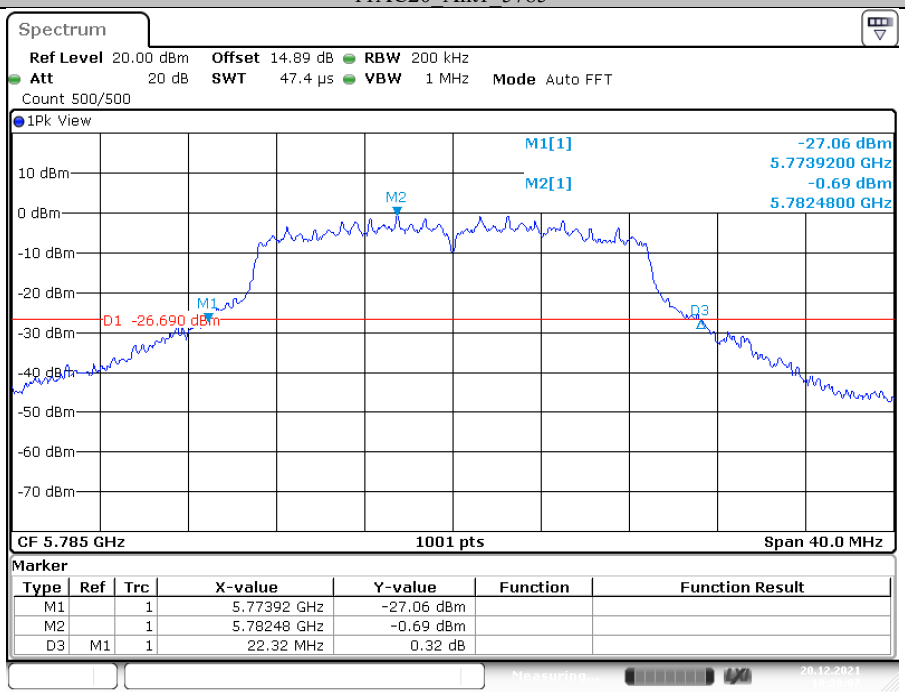

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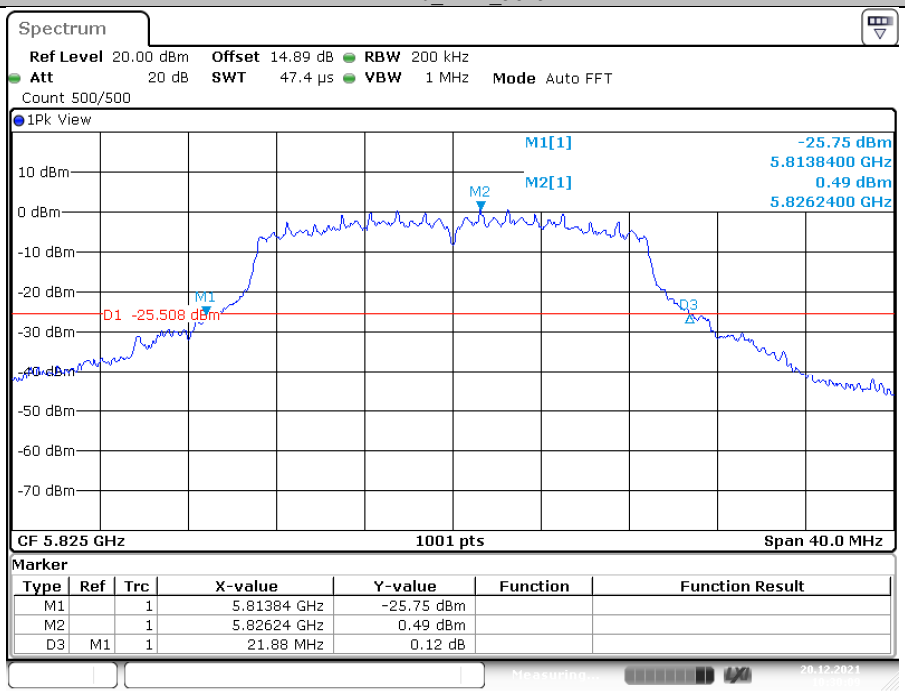

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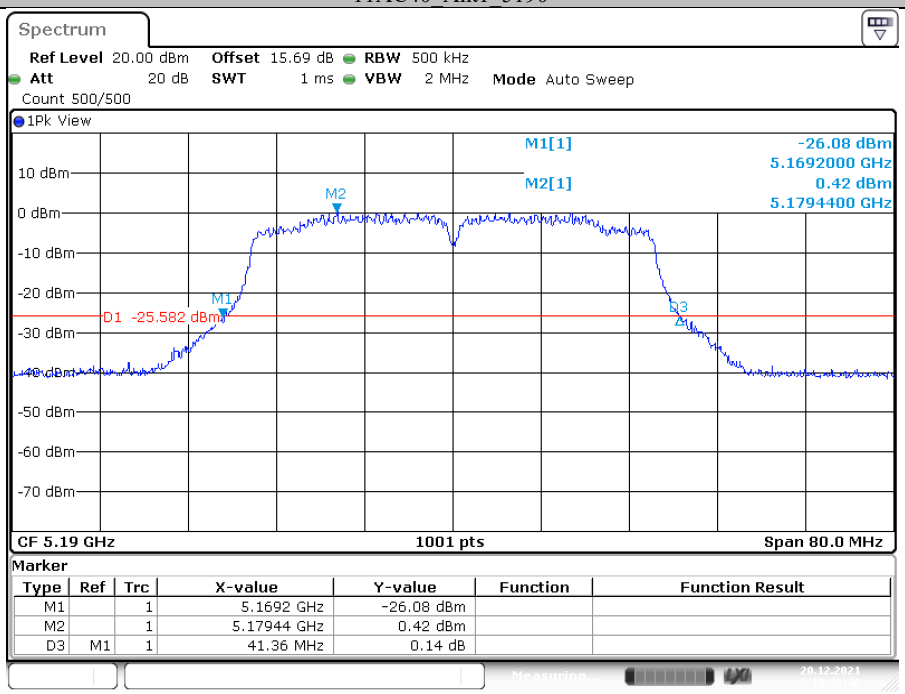

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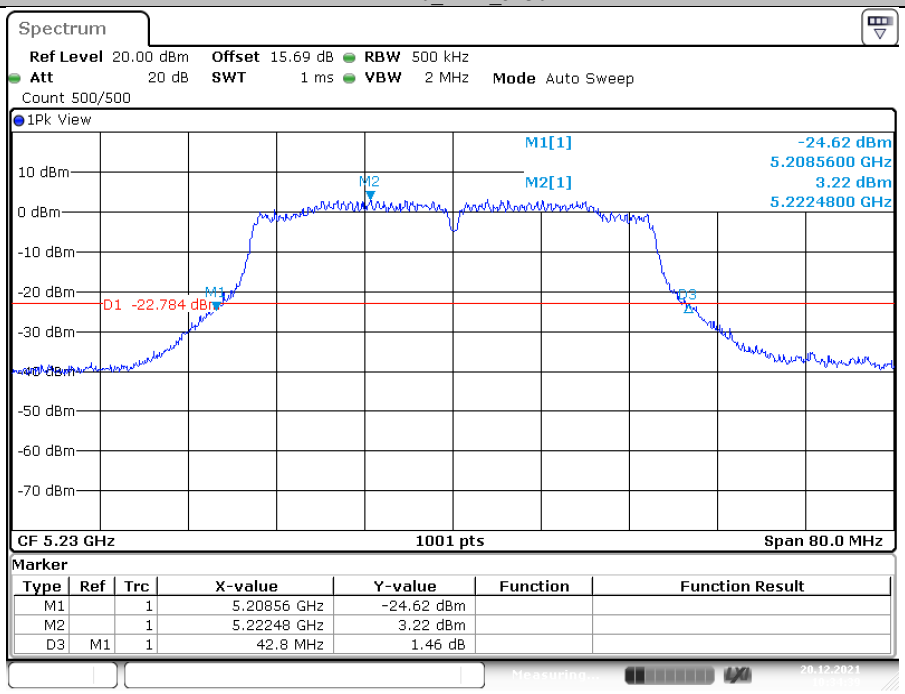

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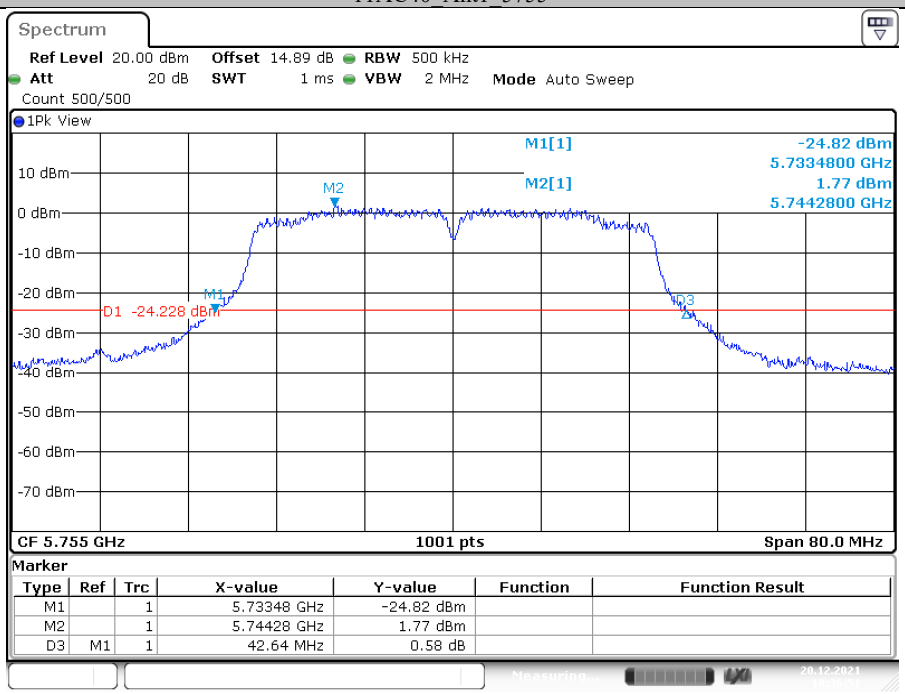

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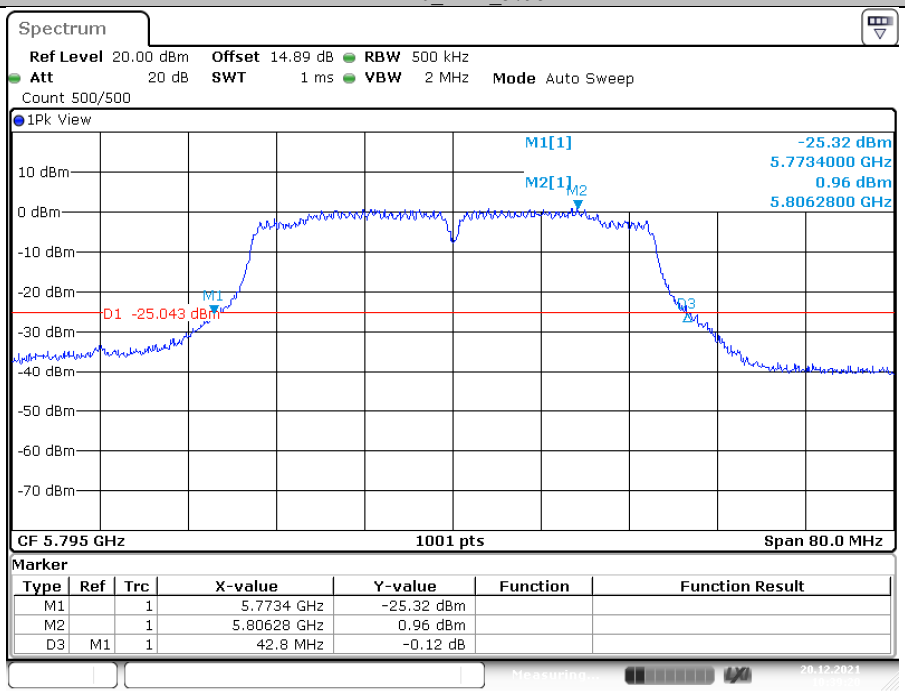

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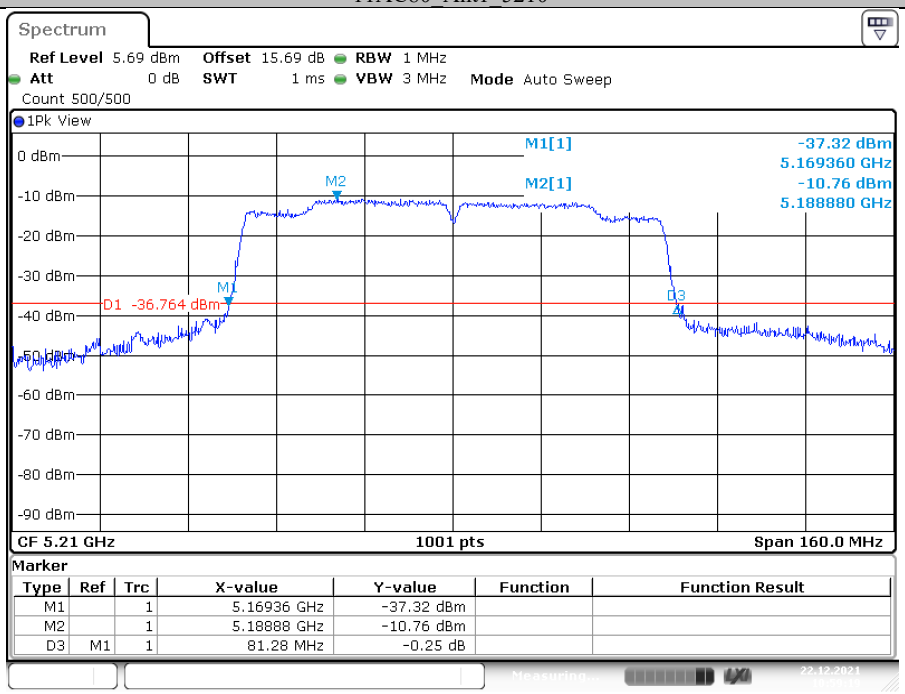

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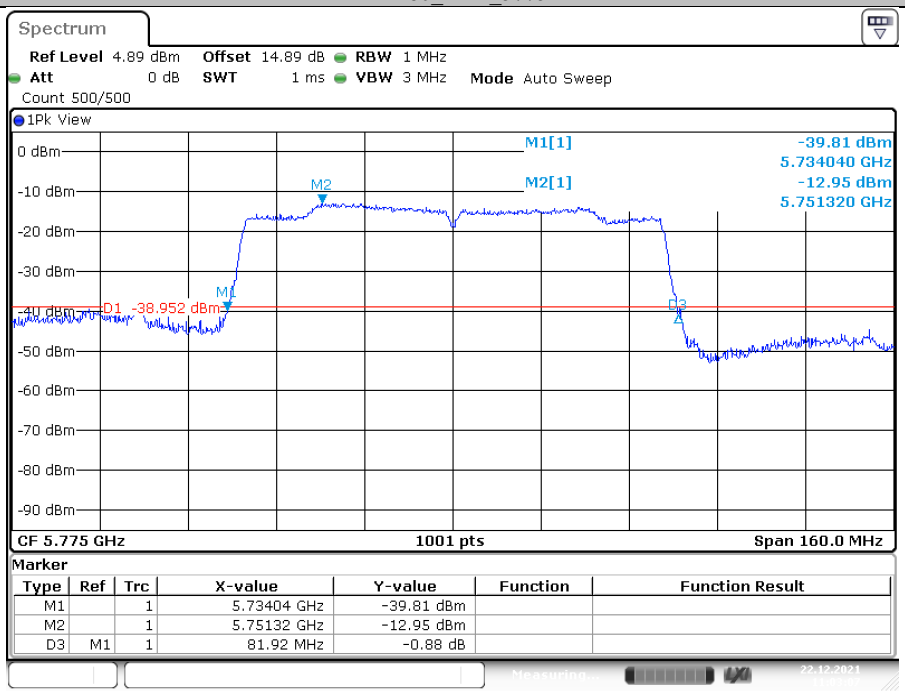


Date: 22.DEC.2021 11:03:07

Appendix A2: Occupied channel bandwidth
Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant0	5180	16.863	5171.568	5188.432	---	PASS
		5200	16.903	5191.528	5208.432	---	PASS
		5240	16.943	5231.568	5248.511	---	PASS
		5745	17.143	5736.409	5753.551	---	PASS
		5785	17.143	5776.409	5793.551	---	PASS
		5825	16.943	5816.528	5833.472	---	PASS
11N20	Ant0	5180	18.262	5170.889	5189.151	---	PASS
		5200	18.302	5190.849	5209.151	---	PASS
		5240	18.302	5230.849	5249.151	---	PASS
		5745	18.382	5735.809	5754.191	---	PASS
		5785	18.302	5775.849	5794.151	---	PASS
		5825	18.262	5815.889	5834.151	---	PASS
11N40	Ant0	5190	36.444	5171.778	5208.222	---	PASS
		5230	36.523	5211.778	5248.302	---	PASS
		5755	36.523	5736.698	5773.222	---	PASS
		5795	36.444	5776.858	5813.302	---	PASS
11AC20	Ant0	5180	18.182	5170.929	5189.111	---	PASS
		5200	18.262	5190.849	5209.111	---	PASS
		5240	18.302	5230.849	5249.151	---	PASS
		5745	18.302	5735.849	5754.151	---	PASS
		5785	18.302	5775.849	5794.151	---	PASS
		5825	18.262	5815.889	5834.151	---	PASS
11AC40	Ant0	5190	36.284	5171.858	5208.142	---	PASS
		5230	36.364	5211.858	5248.222	---	PASS
		5755	36.444	5736.778	5773.222	---	PASS
		5795	36.523	5776.778	5813.302	---	PASS
11AC80	Ant0	5210	75.445	5172.278	5247.722	---	PASS
		5775	75.764	5737.118	5812.882	---	PASS

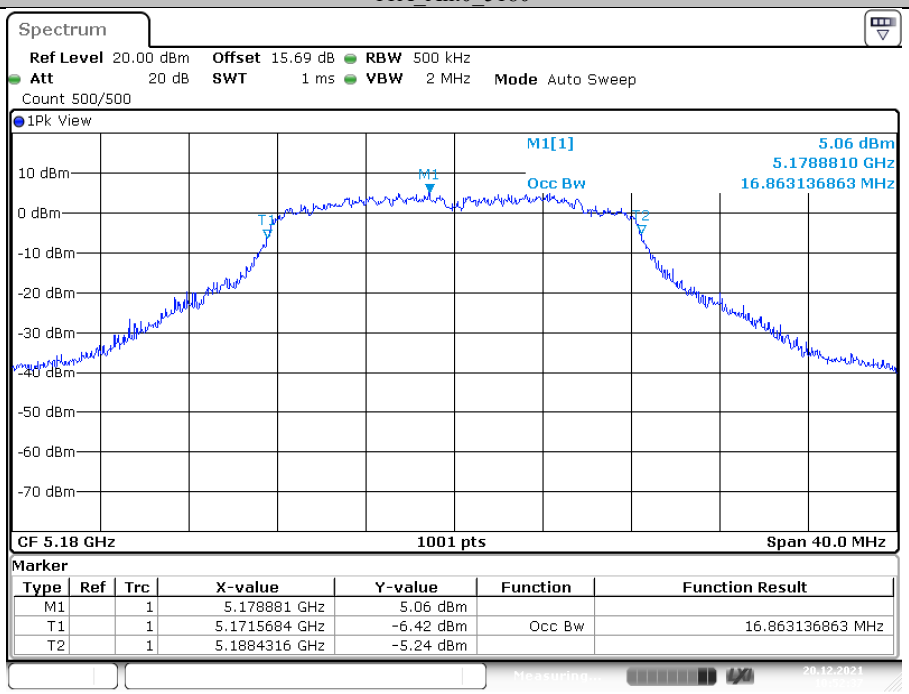
Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2A band and U-NII-2C band.

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.863	5171.568	5188.432	---	PASS
		5200	16.903	5191.568	5208.472	---	PASS
		5240	17.023	5231.489	5248.511	---	PASS
		5745	17.063	5736.449	5753.511	---	PASS
		5785	17.063	5776.409	5793.472	---	PASS
		5825	16.943	5816.528	5833.472	---	PASS
11N20	Ant1	5180	18.182	5170.929	5189.111	---	PASS
		5200	18.302	5190.849	5209.151	---	PASS
		5240	18.382	5230.809	5249.191	---	PASS
		5745	18.342	5735.809	5754.151	---	PASS
		5785	18.342	5775.809	5794.151	---	PASS
		5825	18.222	5815.889	5834.111	---	PASS
11N40	Ant1	5190	36.204	5171.938	5208.142	---	PASS
		5230	36.284	5211.858	5248.142	---	PASS
		5755	36.284	5736.858	5773.142	---	PASS
		5795	36.364	5776.858	5813.222	---	PASS
11AC20	Ant1	5180	17.902	5171.049	5188.951	---	PASS
		5200	17.942	5191.009	5208.951	---	PASS
		5240	17.982	5231.009	5248.991	---	PASS
		5745	18.022	5735.969	5753.991	---	PASS
		5785	17.942	5776.009	5793.951	---	PASS
		5825	17.902	5816.049	5833.951	---	PASS
11AC40	Ant1	5190	36.204	5171.938	5208.142	---	PASS
		5230	36.284	5211.858	5248.142	---	PASS
		5755	36.204	5736.858	5773.062	---	PASS
		5795	36.364	5776.858	5813.222	---	PASS
11AC80	Ant1	5210	75.445	5172.278	5247.722	---	PASS
		5775	75.764	5737.118	5812.882	---	PASS

Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2A band and U-NII-2C band.

Test Graphs

11A_Ant0_5180



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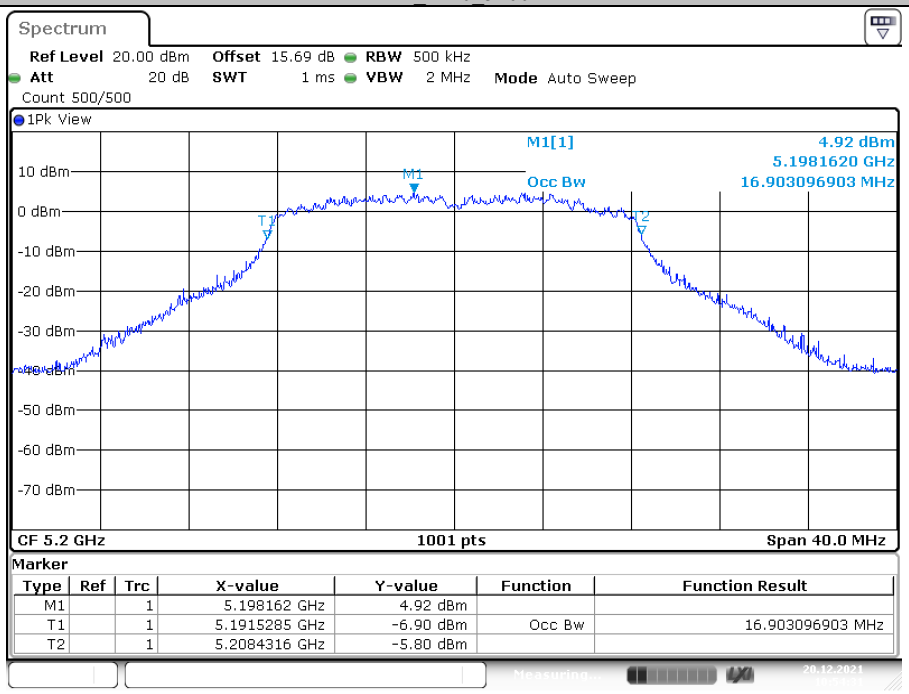

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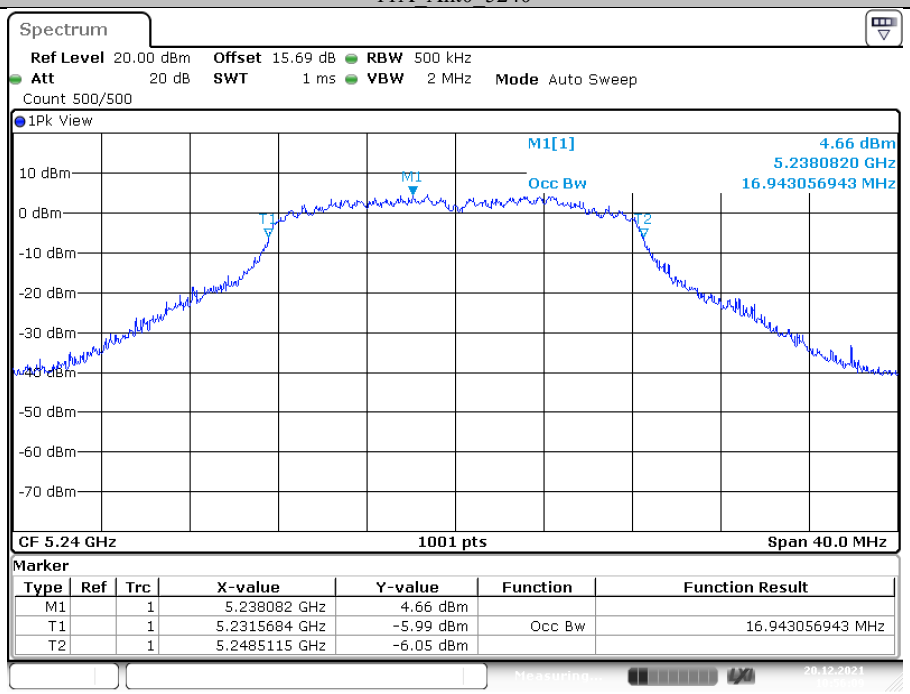

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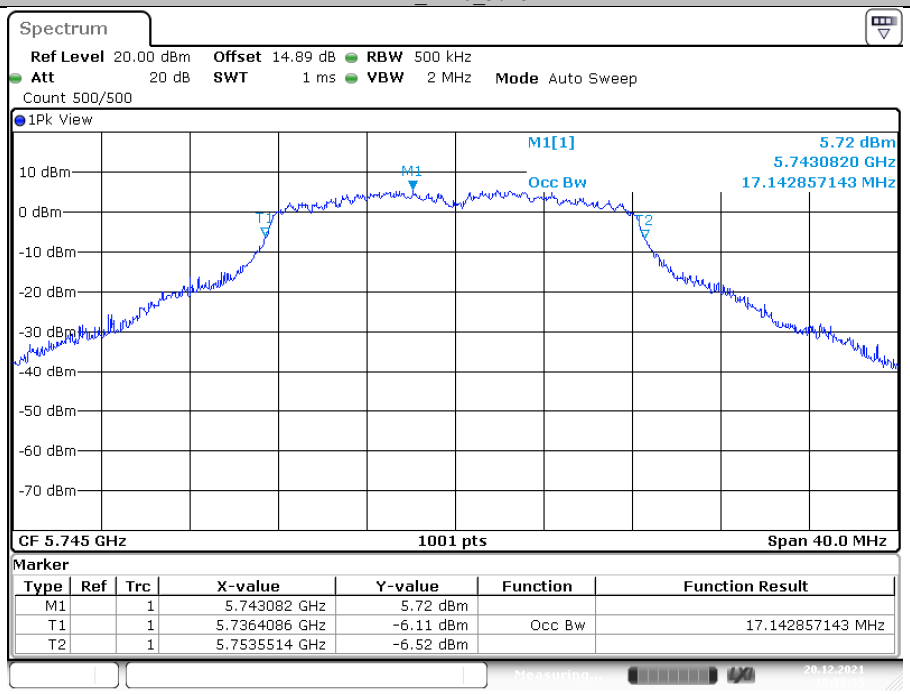

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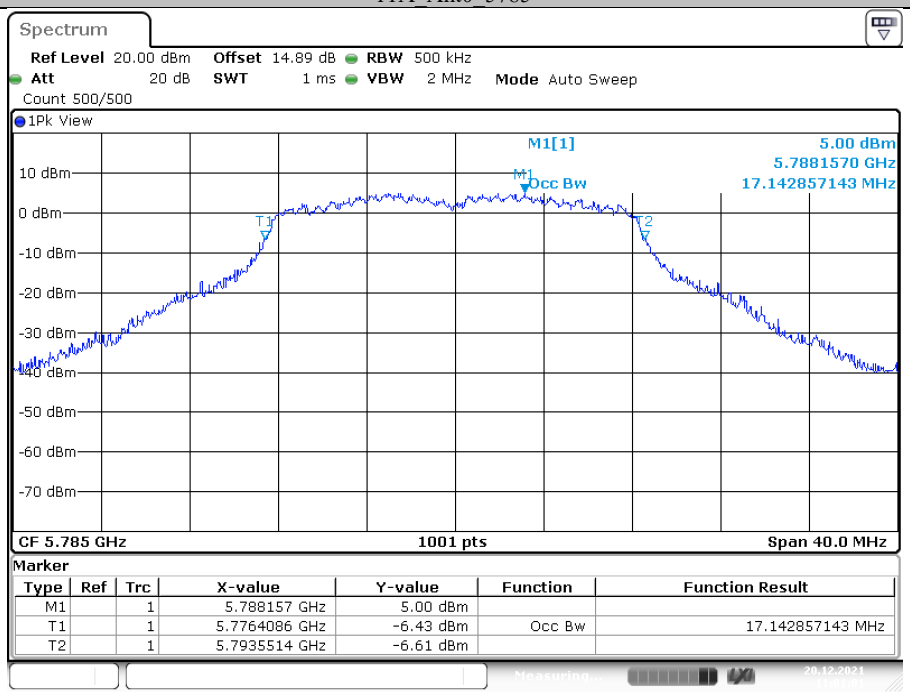

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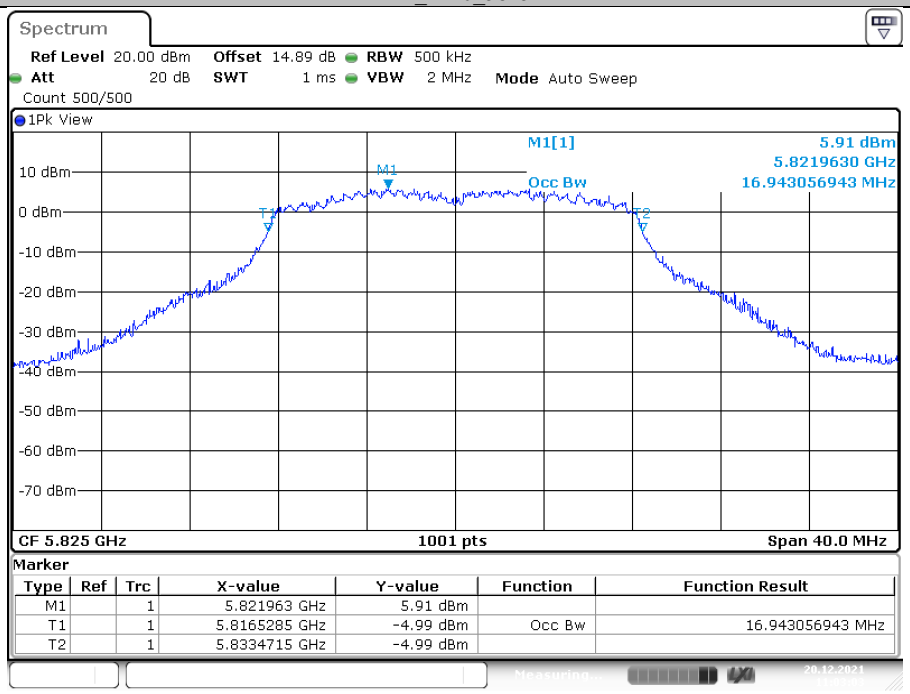
11A_Ant0_5825



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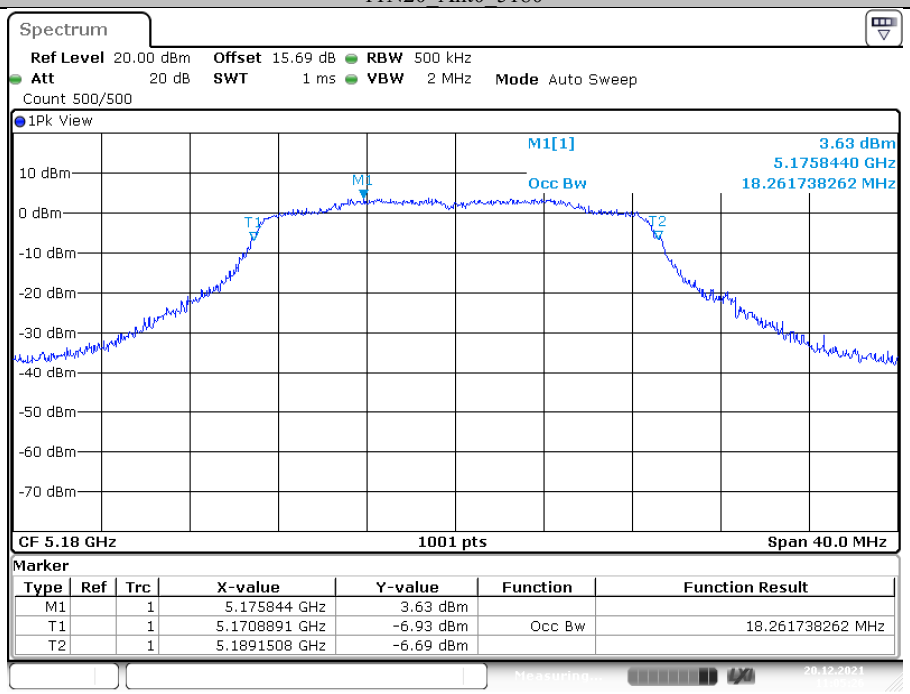

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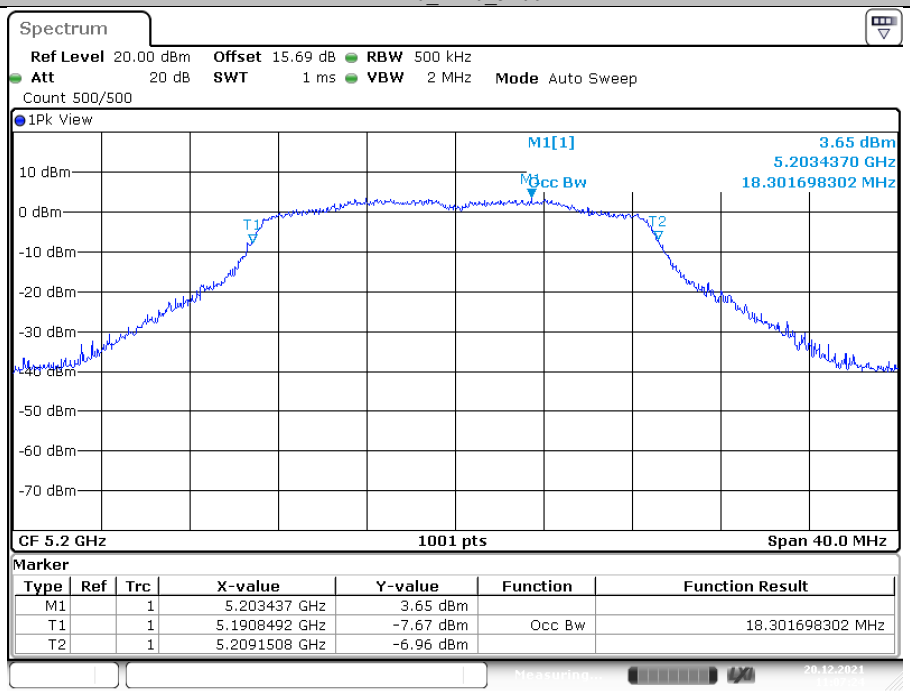

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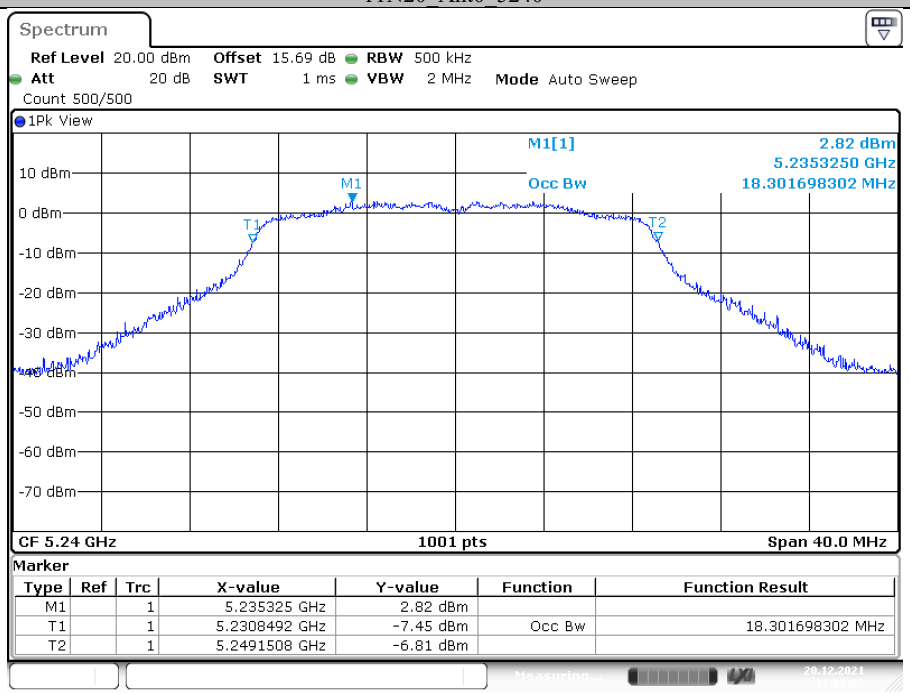

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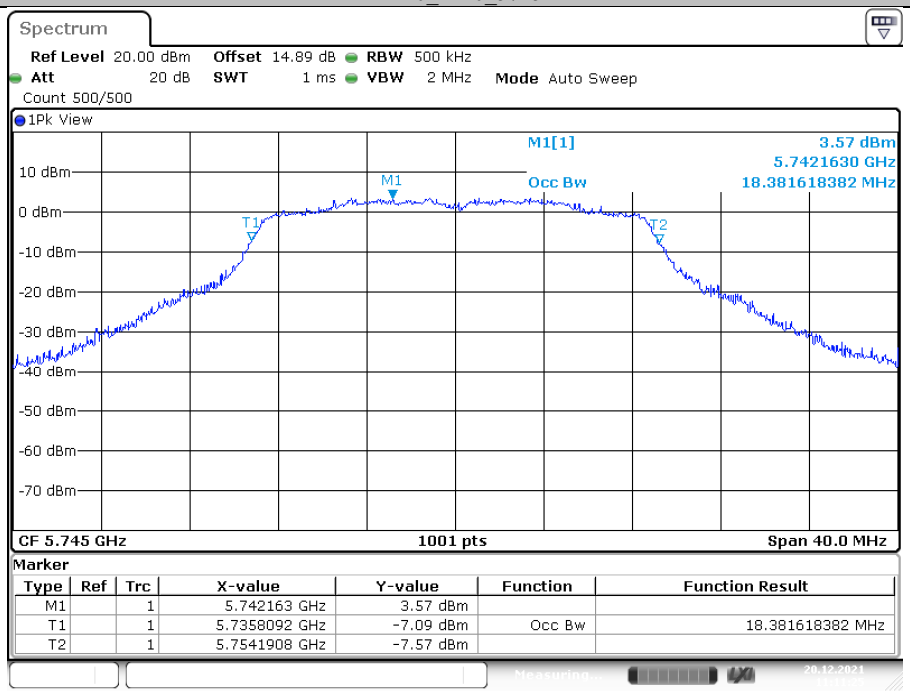

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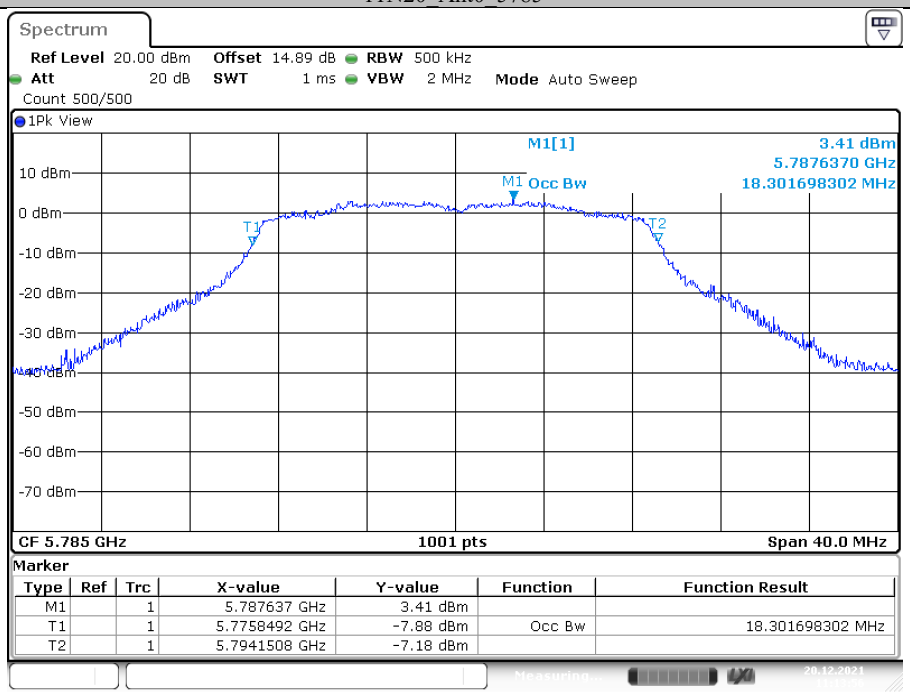

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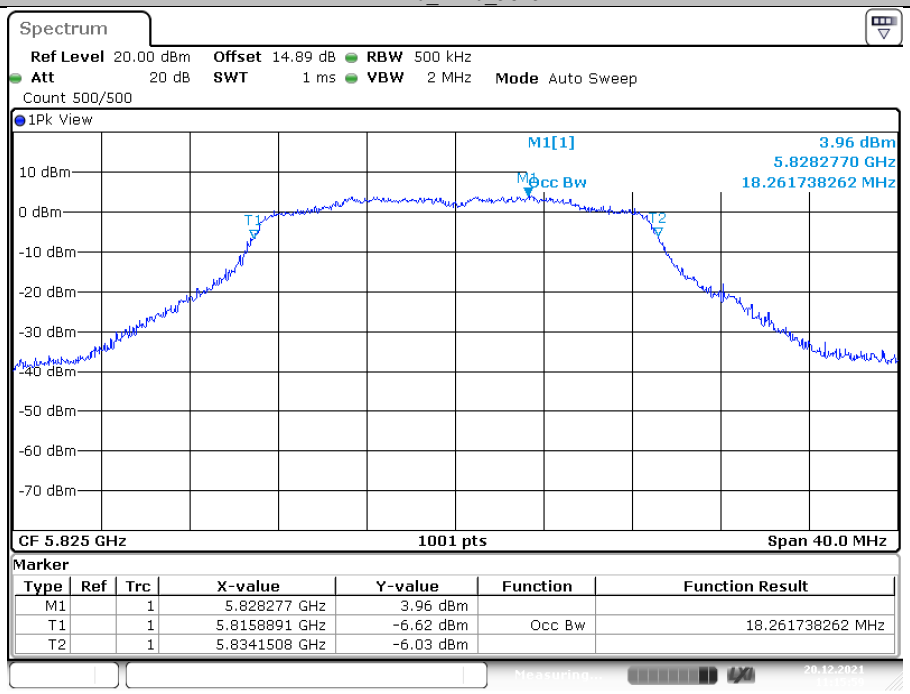

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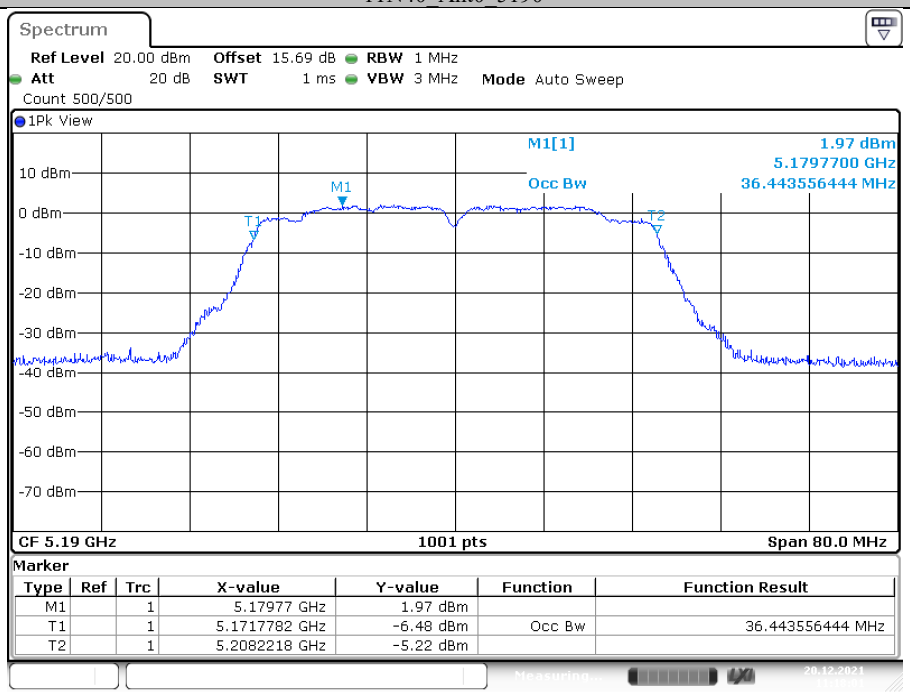

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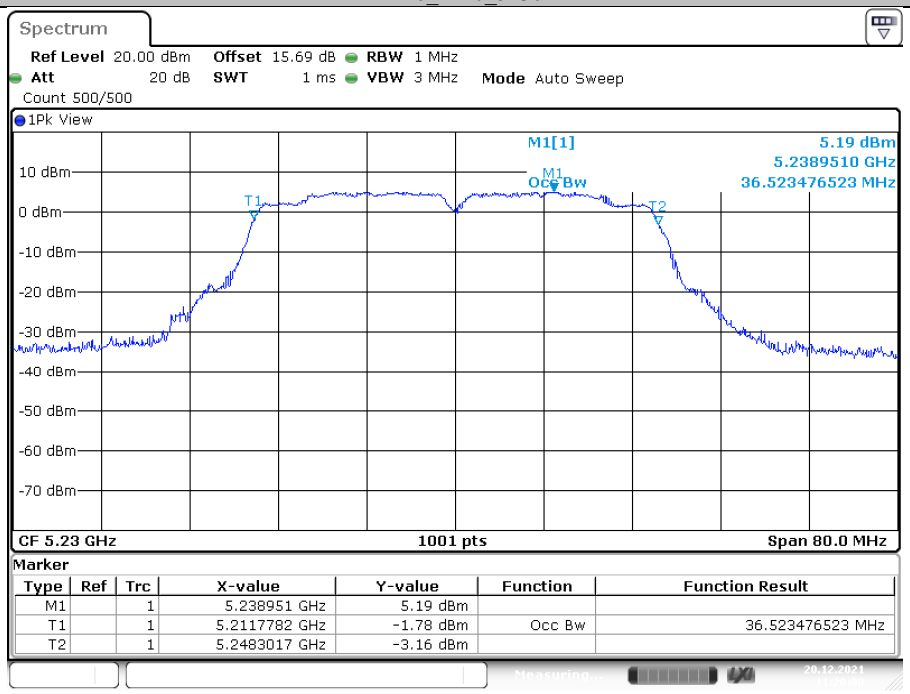

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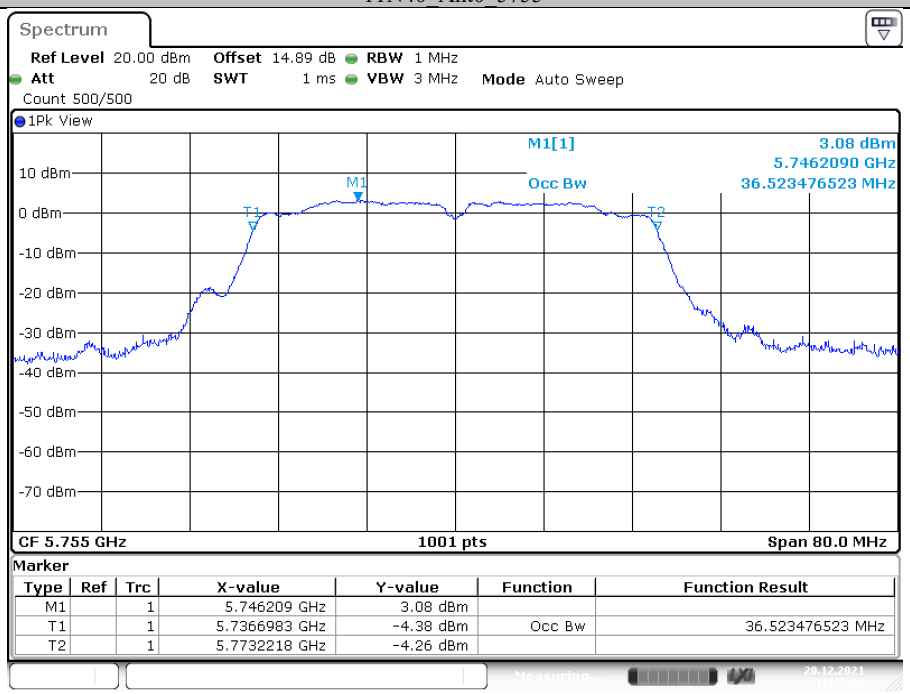

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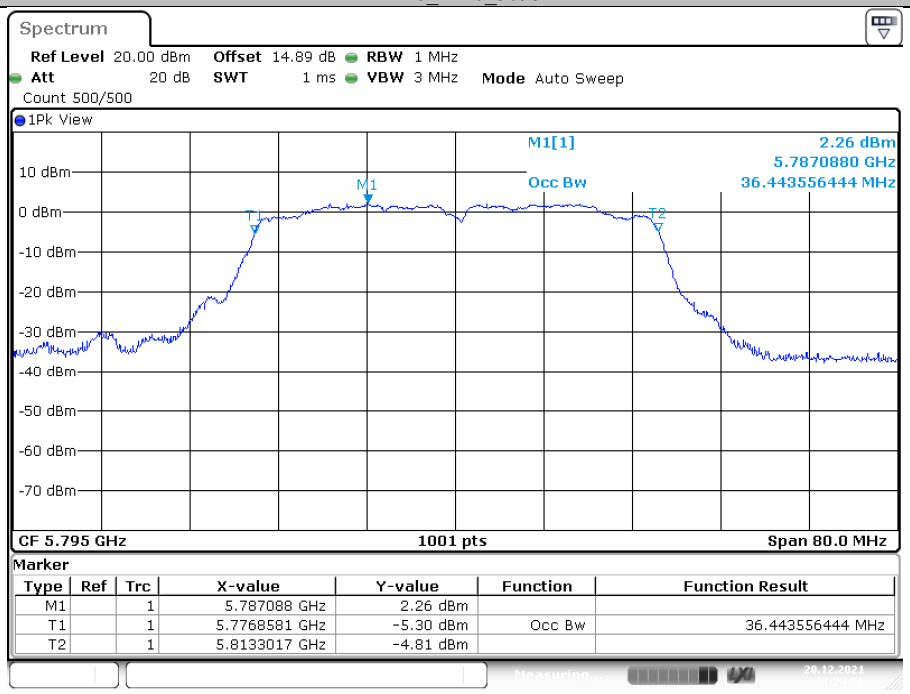

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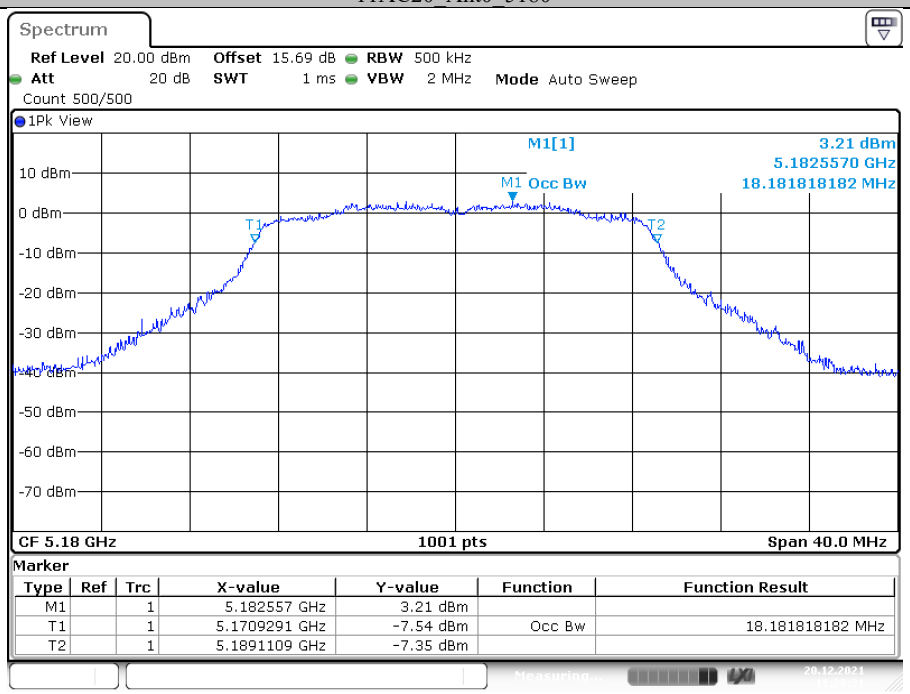
11AC20_Ant0_5180



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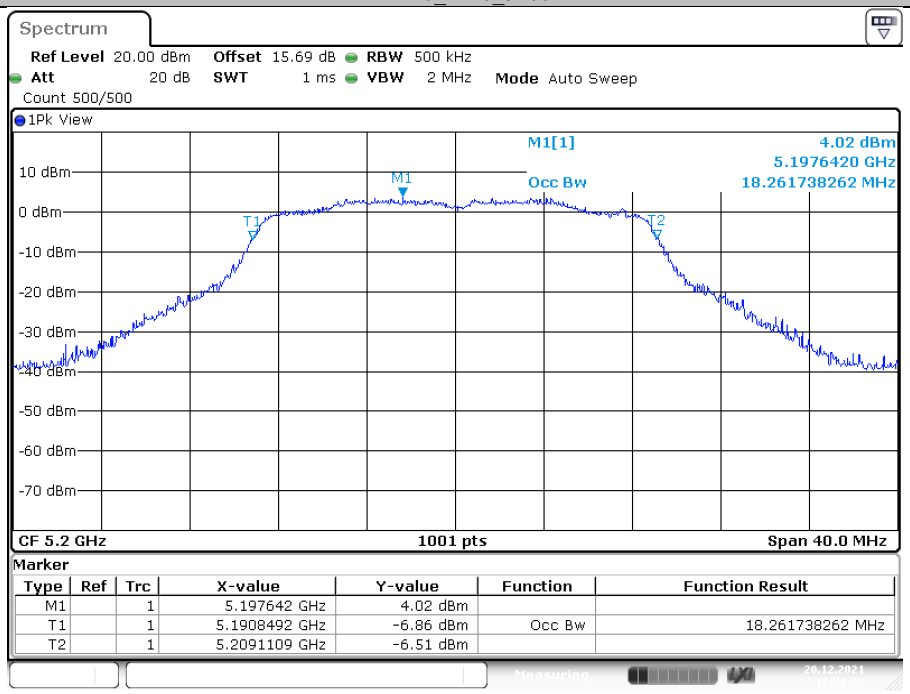

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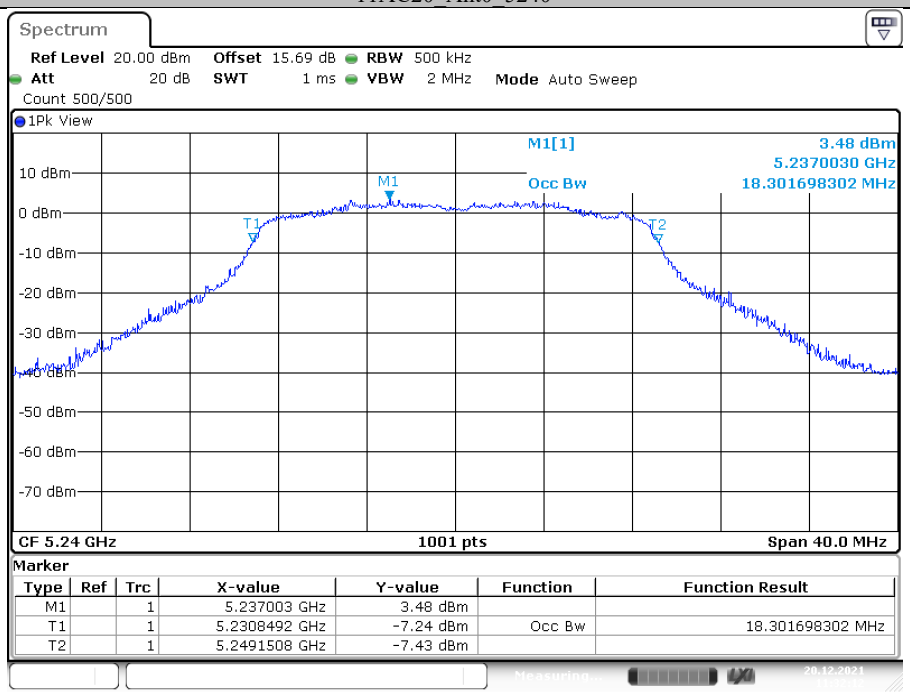

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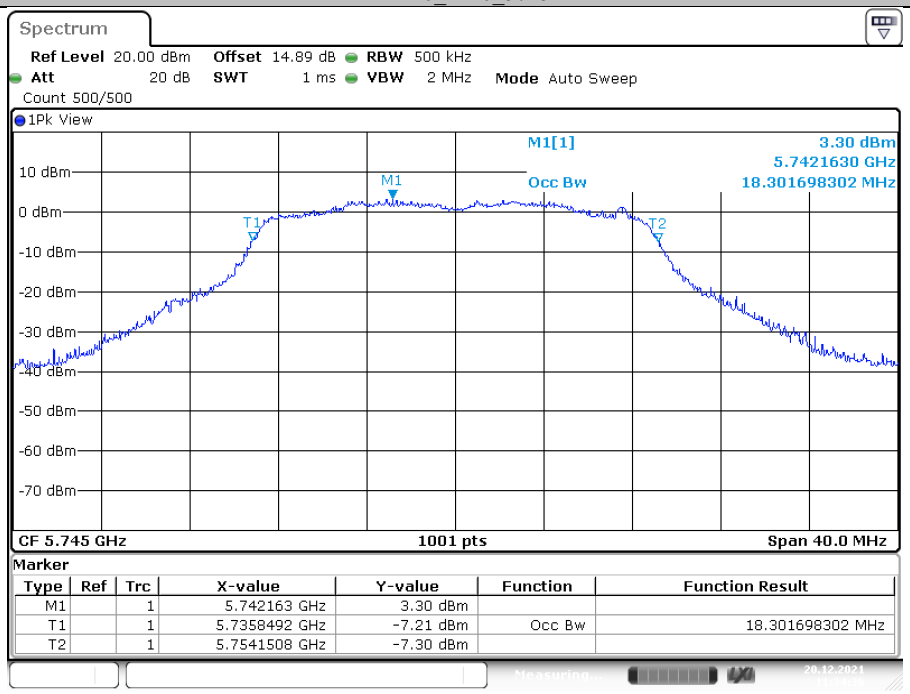

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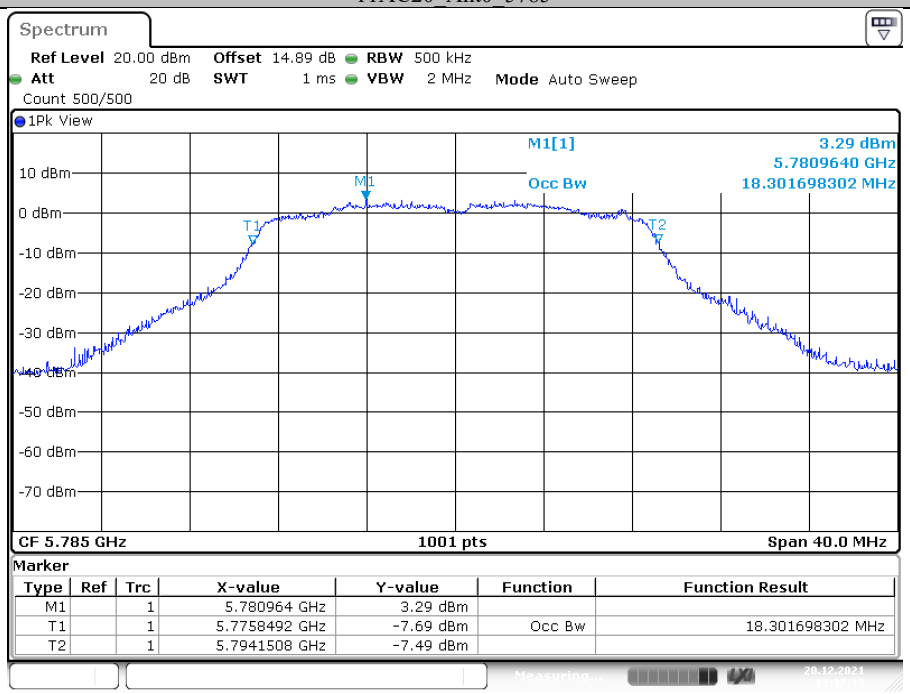

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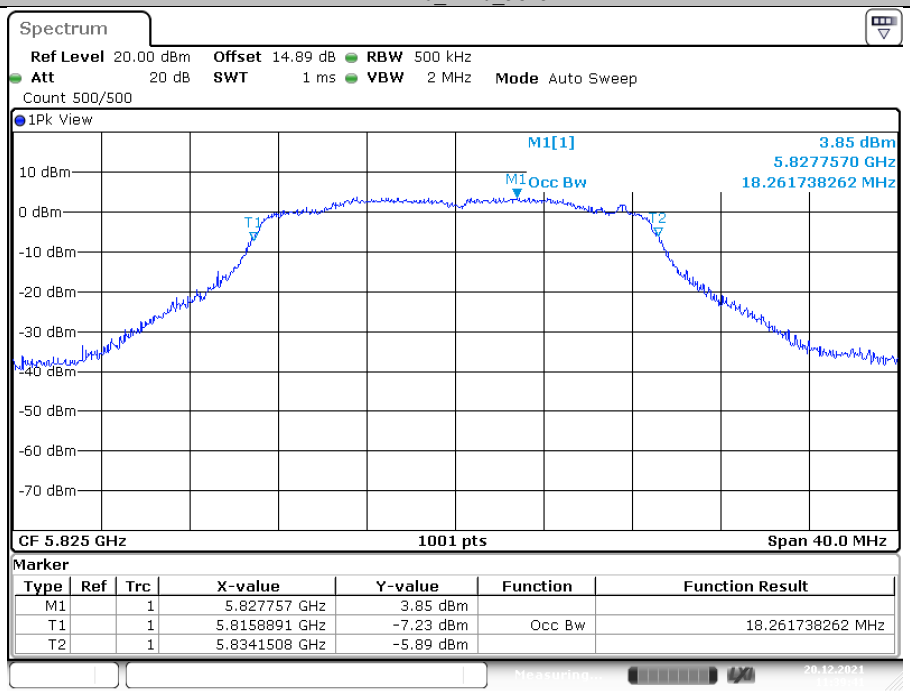
11AC20_Ant0_5825



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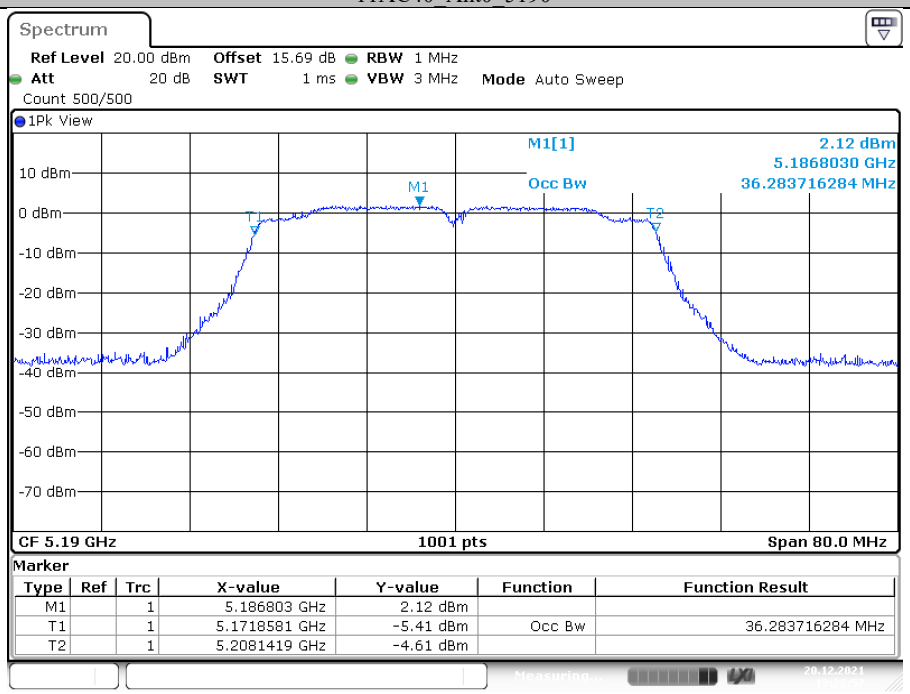

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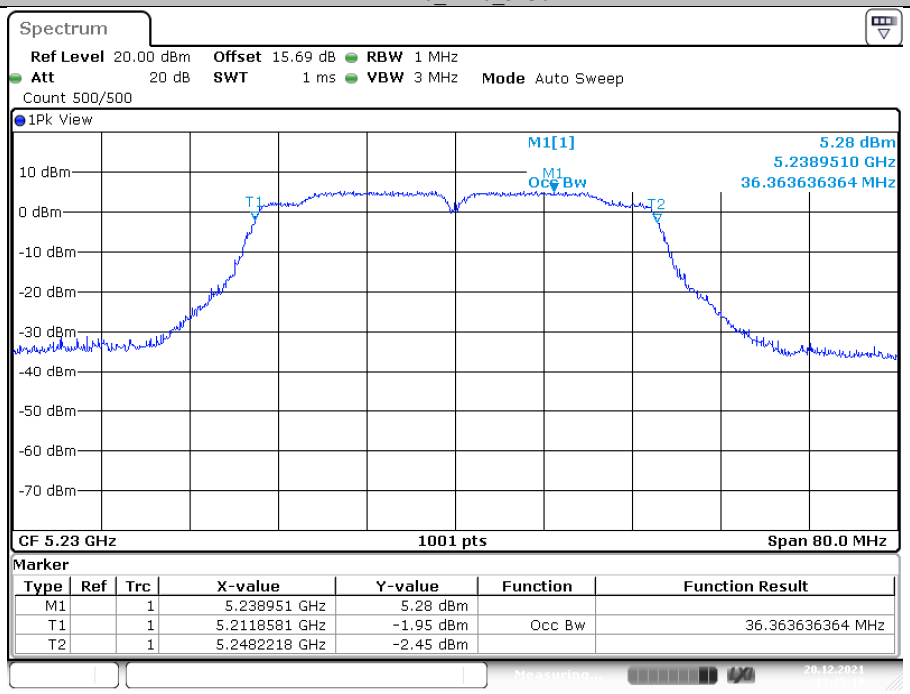

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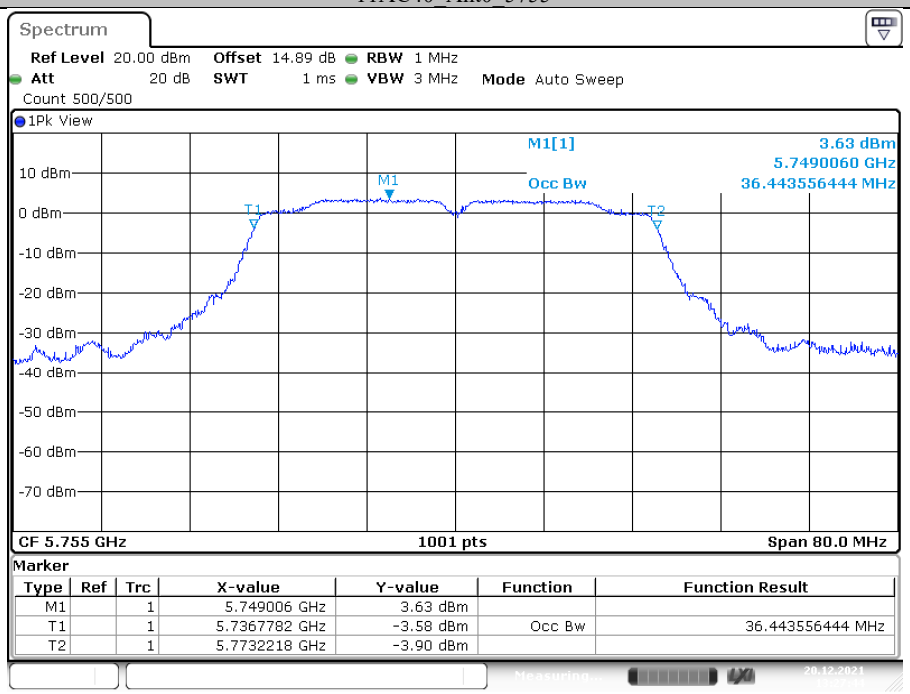

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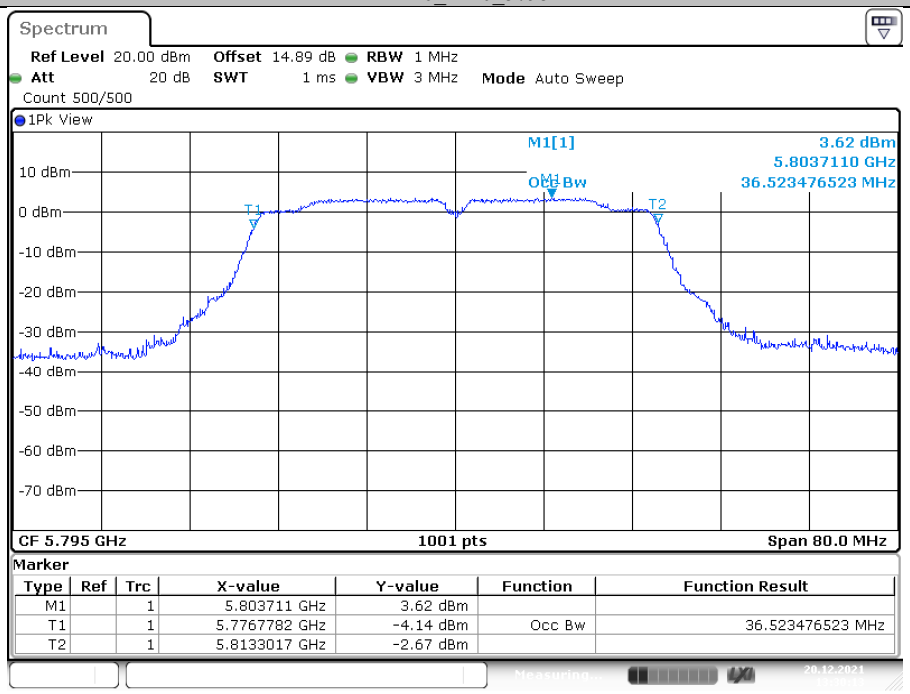

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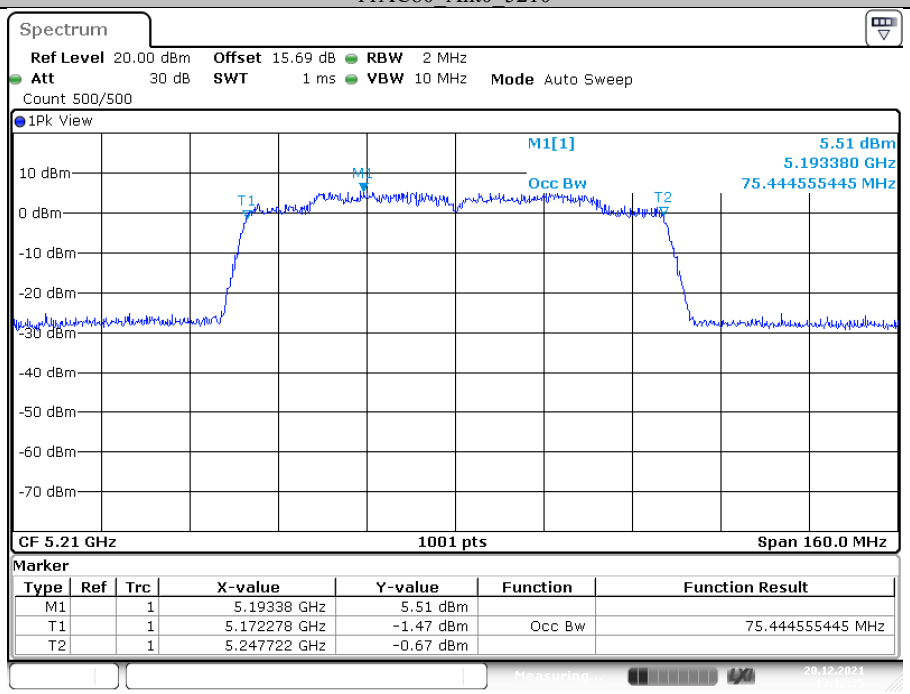

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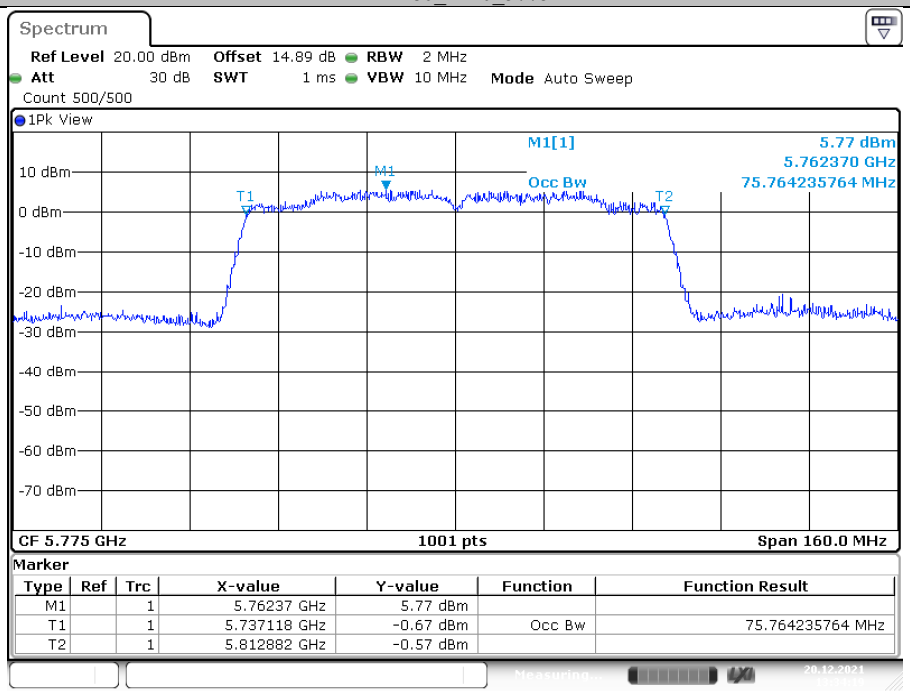

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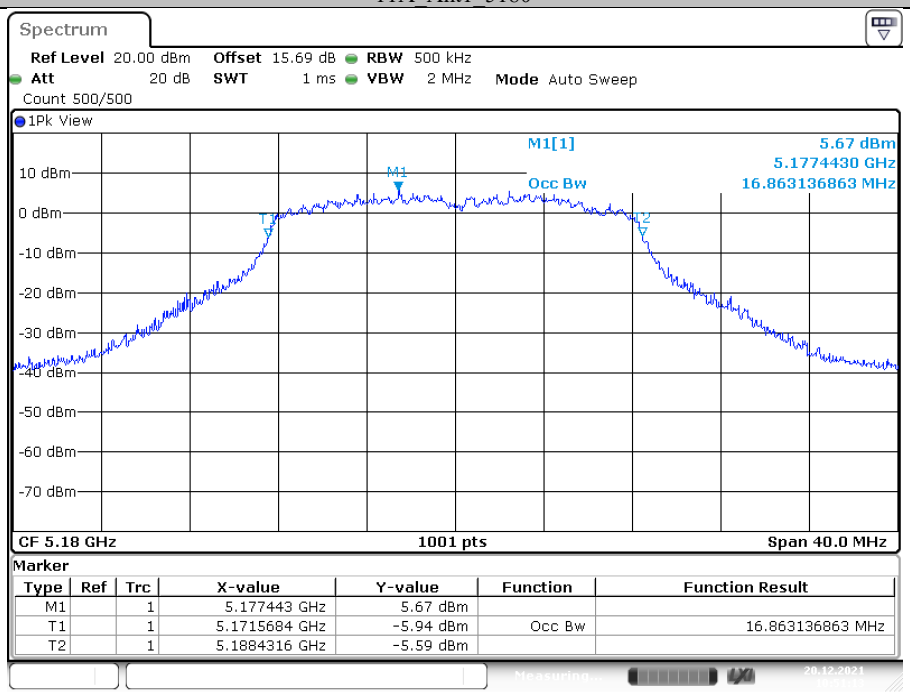

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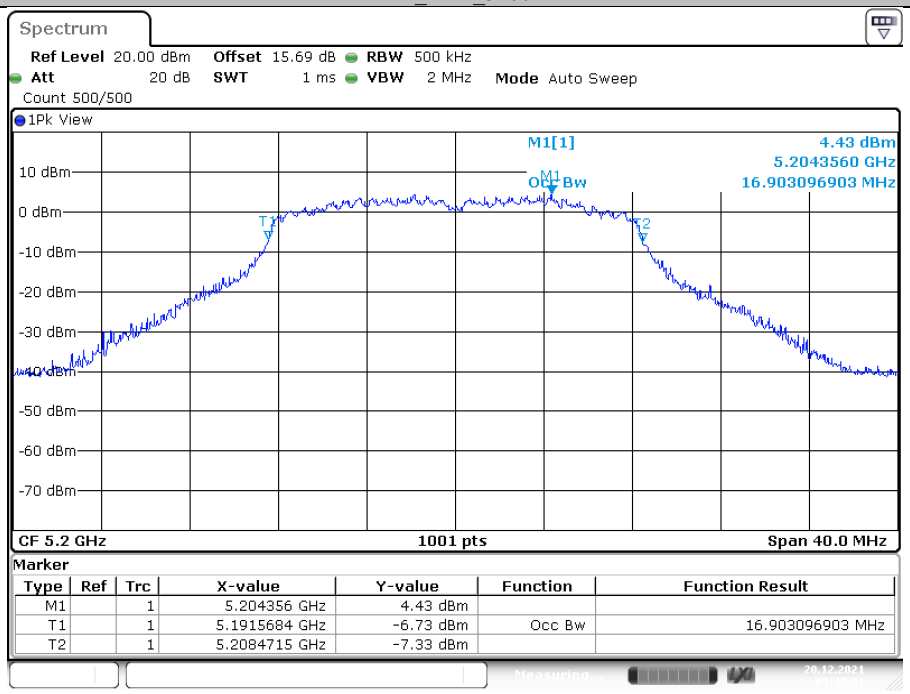

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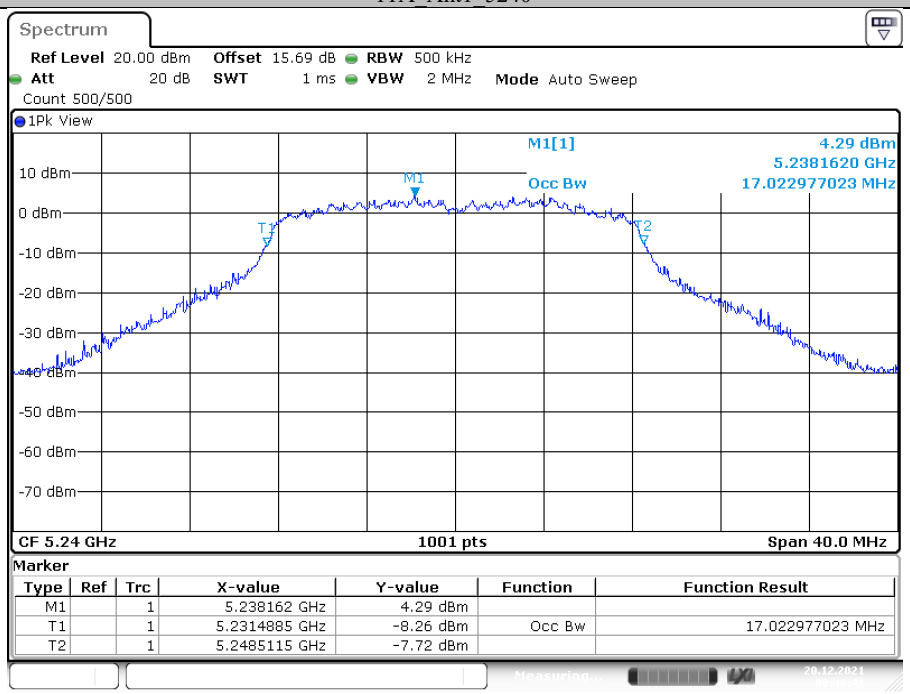

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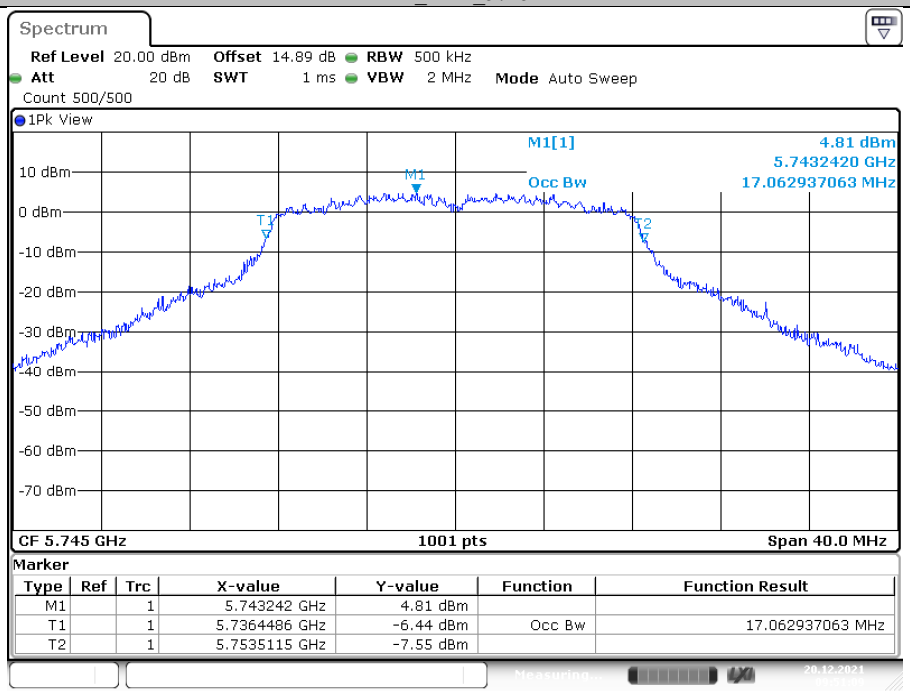

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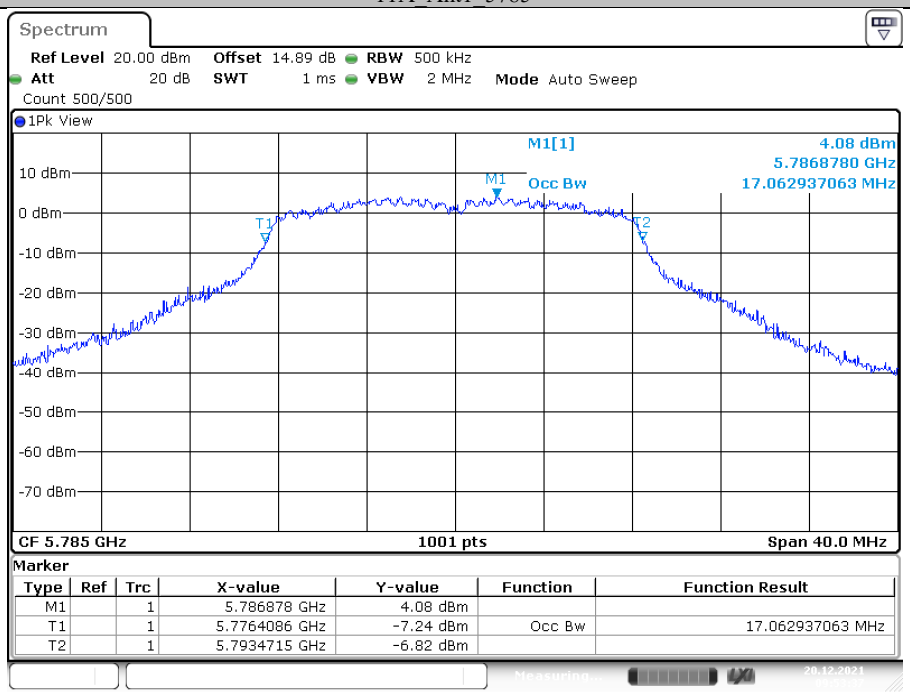

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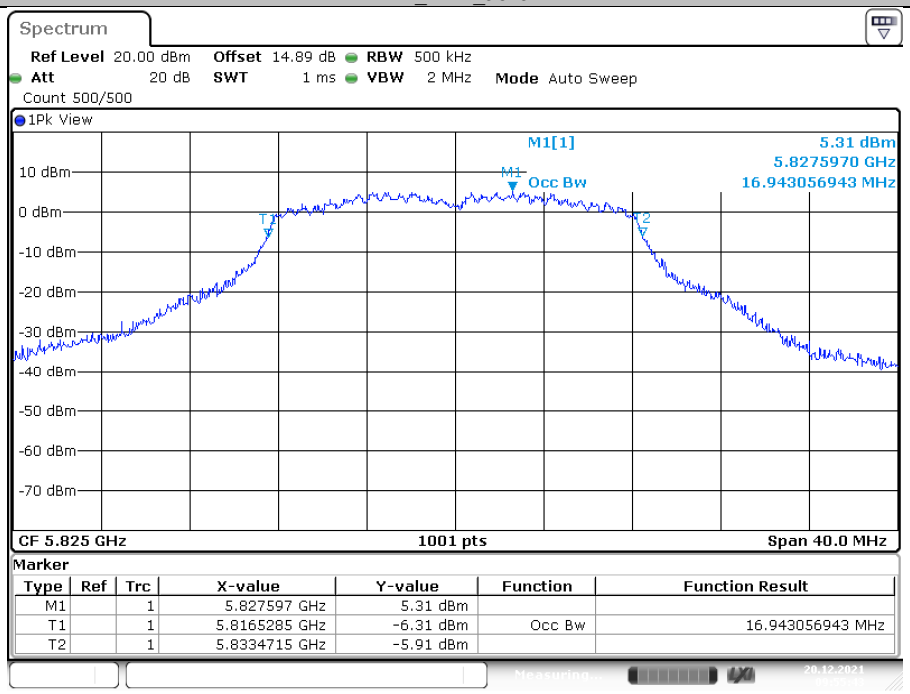

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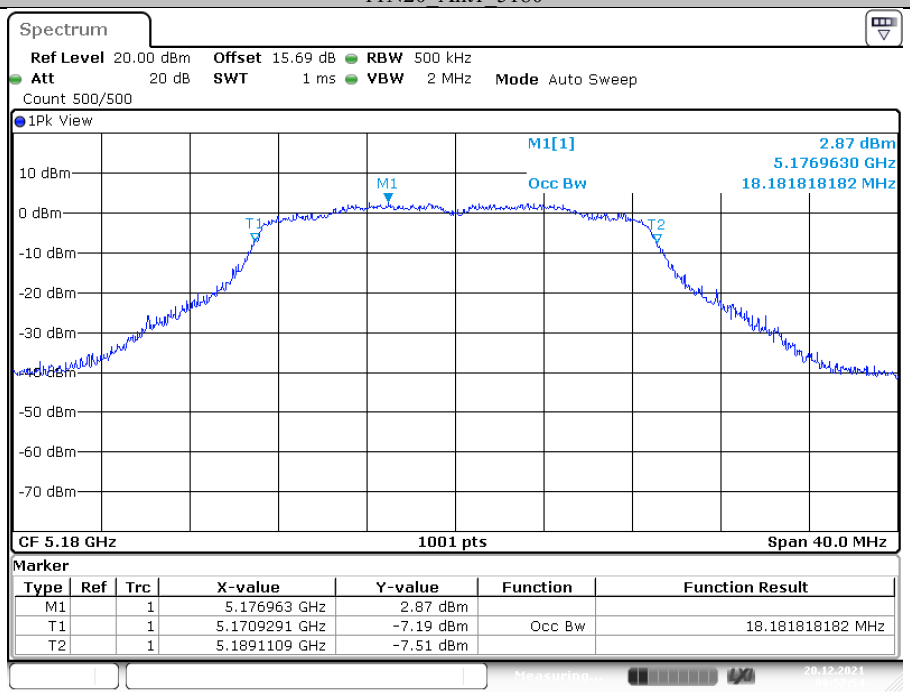

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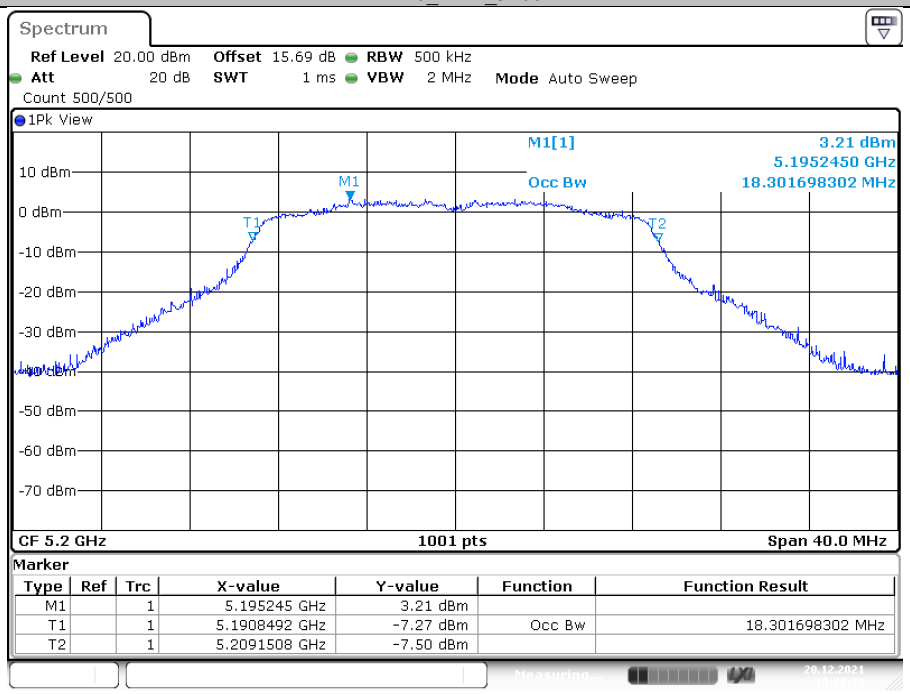

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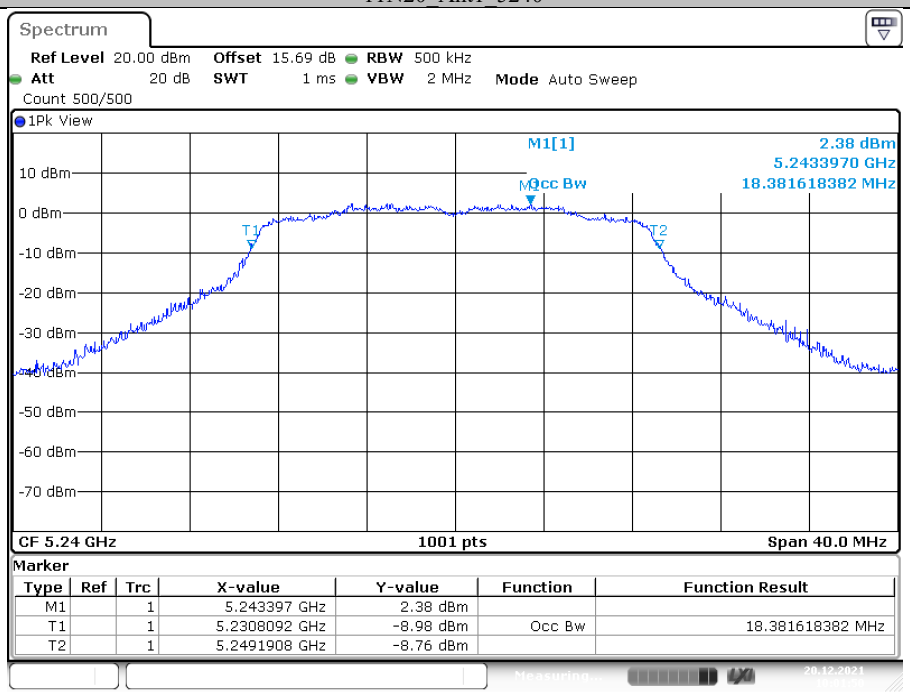

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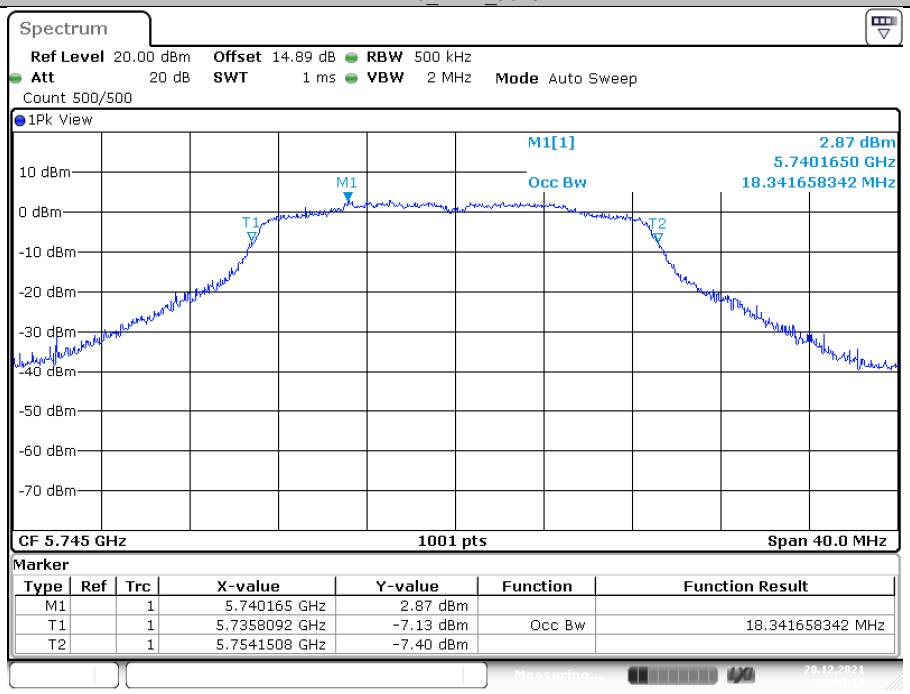

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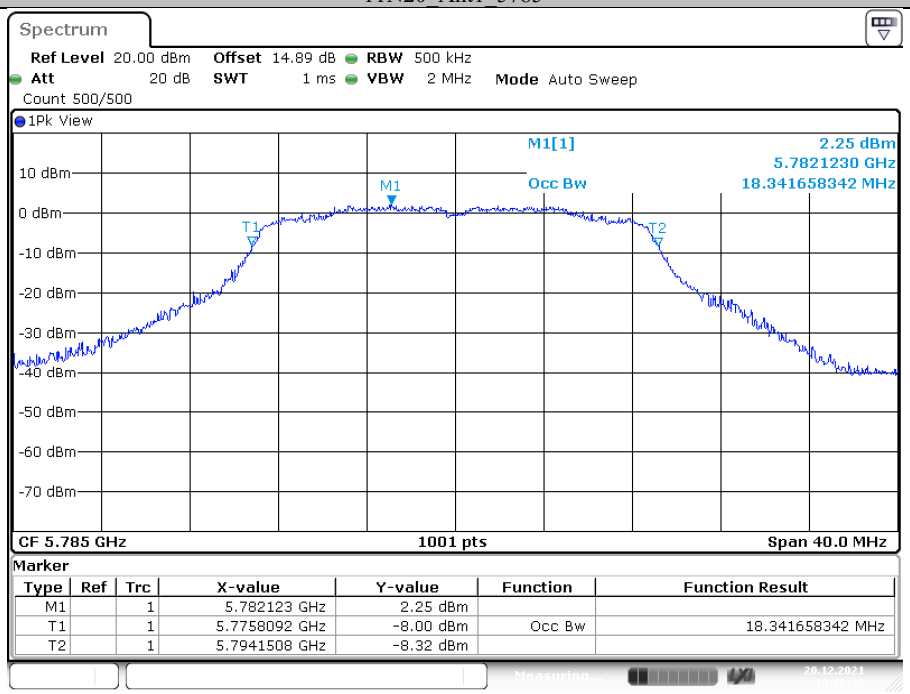

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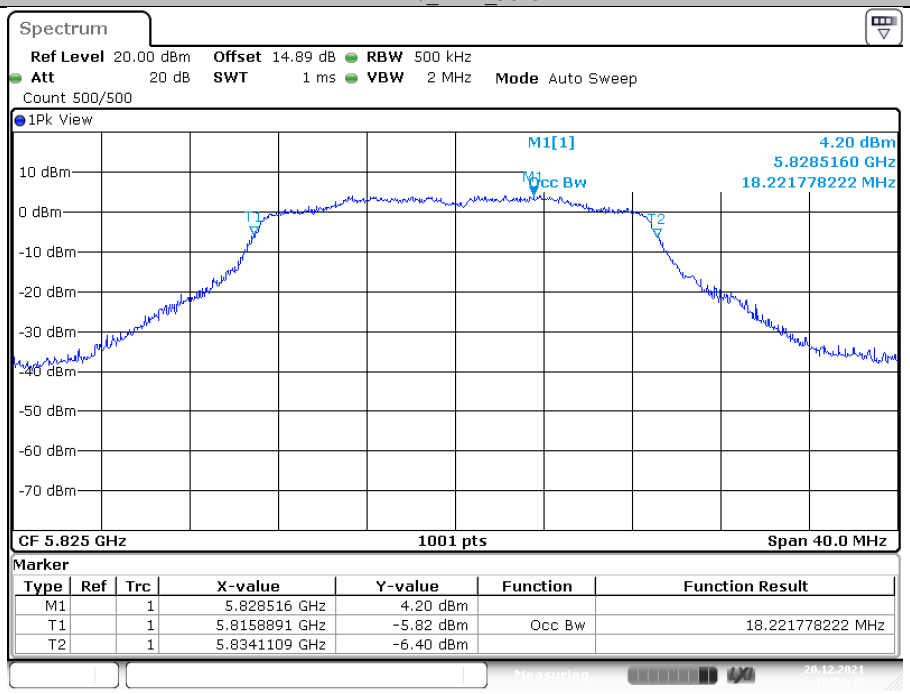

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