



FCC RF Test Report

APPLICANT : CASTLES TECHNOLOGY CO., LTD.
EQUIPMENT : POS Terminal
BRAND NAME : 
MODEL NAME : S1P2
FCC ID : WIYS1P2001
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure
TEST DATE(S) : May 25, 2024 ~ Jun. 04, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR441703E	Rev. 01	Initial issue of report	Jul. 19, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit for U-NII-1/2A/2C	Result	Remark
3.1	2.1049 & 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 11 dBm/MHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	Pass	Under limit 4.06 dB at 5735.04 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 4.11 dB at 0.505 MHz
3.6	15.203 & 15.407(a)	Antenna Requirement	15.203 & 15.407(a)	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

CASTLES TECHNOLOGY CO., LTD.

6F, NO. 207-5, SEC. 3, BEIXIN RD., XINDIAN DISTRICT, NEW TAIPEI CITY 231030, TAIWAN (R.O.C)

1.2 Manufacturer

CASTLES TECHNOLOGY CO., LTD.

6F, NO. 207-5, SEC. 3, BEIXIN RD., XINDIAN DISTRICT, NEW TAIPEI CITY 231030, TAIWAN (R.O.C)

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	POS Terminal
Brand Name	 CASTLES TECHNOLOGY
Model Name	S1P2
FCC ID	WIYS1P2001
SN	Conducted: 191241009839 Conduction: 191241009842 Radiation: 191241009836
HW Version	HW-V-1D.00
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 14.98 dBm / 0.0315 W 802.11n HT20 : 13.72 dBm / 0.0236 W 802.11n HT40 : 13.84 dBm / 0.0242 W 802.11ac VHT20: 12.81 dBm / 0.0191 W 802.11ac VHT40: 12.83 dBm / 0.0192 W 802.11ac VHT80: 12.80 dBm / 0.0191 W <5260 MHz ~ 5320 MHz> 802.11a : 15.06 dBm / 0.0321 W 802.11n HT20 : 13.86 dBm / 0.0243 W 802.11n HT40 : 13.80 dBm / 0.0240 W 802.11ac VHT20: 12.85 dBm / 0.0193 W 802.11ac VHT40: 12.82 dBm / 0.0191 W 802.11ac VHT80: 12.83 dBm / 0.0192 W <5500 MHz ~ 5700 MHz > 802.11a : 14.99 dBm / 0.0316 W 802.11n HT20 : 13.77 dBm / 0.0238 W 802.11n HT40 : 13.75 dBm / 0.0237 W 802.11ac VHT20: 12.77 dBm / 0.0189 W 802.11ac VHT40: 12.76 dBm / 0.0189 W 802.11ac VHT80: 12.74 dBm / 0.0188 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.143 MHz 802.11n HT20 : 18.022 MHz 802.11n HT40 : 36.204 MHz 802.11ac VHT80 : 75.445 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.143 MHz 802.11n HT20 : 18.062 MHz 802.11n HT40 : 36.204 MHz 802.11ac VHT80 : 75.604 MHz <5500 MHz ~ 5700 MHz> 802.11a : 17.103 MHz 802.11n HT20 : 18.062 MHz 802.11n HT40 : 36.284 MHz 802.11ac VHT80 : 75.445 MHz
Antenna Type / Gain	<5180 MHz ~ 5240 MHz> Monopole Antenna with gain 2.11 dBi <5260 MHz ~ 5320 MHz> Monopole Antenna with gain 1.56 dBi <5500 MHz ~ 5700 MHz> Monopole Antenna with gain 1.90 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:

1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.
2. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing has assessed only 802.11n HT20/ HT40 by referring to their higher Output power.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH06-KS	AUDIX	E3	210616
3.	CO01-KS	AUDIX	E3	6.2009-8-24



1.8 Applicable Standards

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

- ♦ 47 CFR Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5180-5240 MHz U-NII-1	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210	-	-

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5260-5320 MHz U-NII-2A	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290	-	-

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5500-5700MHz U-NII-2C	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Note:

1. The above Frequency and Channel in "*" are 40MHz bandwidth.
2. The above Frequency and Channel in "[#]" are 80MHz bandwidth.



2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

SISO Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

AC Conducted Emission	Mode 1 : WCDMA Band V + BT Link + WLAN Link(2.4G) + Adaptor
Remark: For Radiated Test Cases, The tests were performance with Adapter.	

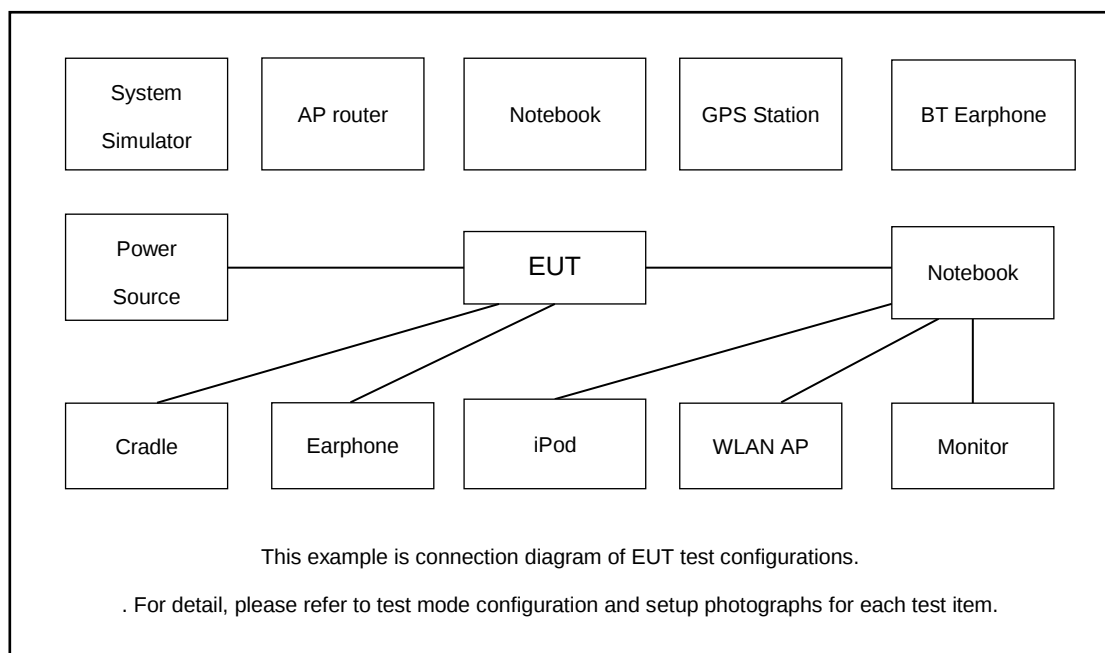
RSE Co-location
GSM850 Link + WLAN 5G 802.11n HT20_CH140 TX Bluetooth-LE 2Mbps _CH38 TX + WLAN 5G 802.11n HT20_CH140 TX

Ch. #		U-NII-1	U-NII-2A	U-NII-2C
		20M BW	20M BW	20M BW
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

Ch. #		U-NII-1	U-NII-2A	U-NII-2C
		40M BW	40M BW	40M BW
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134

Ch. #		U-NII-1	U-NII-2A	U-NII-2C
		80M BW	80M BW	80M BW
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	-

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded,1.8m
2.	Bluetooth Earphone	Lenovo	thinkplus-BH3	N/A	N/A	N/A
3.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
4.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.



2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.7 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.7 + 10 = 14.7 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB and 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

3.1.2 Measuring Instruments

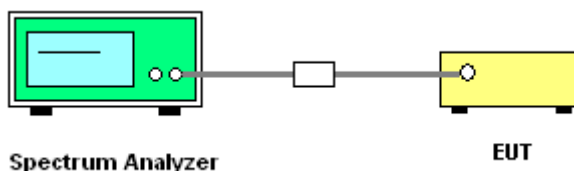
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

☒	Section C) Bandwidth Measurement 1. Emission Bandwidth (EBW) and 99% OBW
	1. Set RBW = approximately 1% of the emission bandwidth. 2. Set the VBW > RBW. 3. Detector = Peak. 4. Trace mode = max hold 5. Measure the maximum width of the emission that is 26 dB down from the peak 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%. 6. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set to 1%~5% of the OBW and set the Video bandwidth (VBW) $\geq 3 * RBW$. 7. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable 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.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log_{10} B$, where B is the 26 dB emission bandwidth in megahertz.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

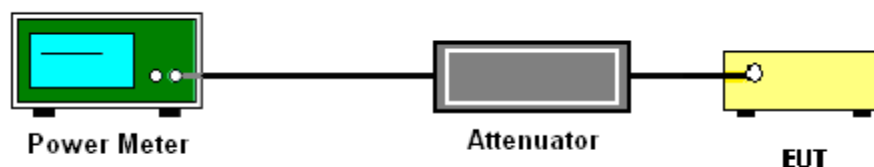
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



**3.2.5 Test Result of Maximum Conducted Output Power**

FCC U-NII-1 single antenna									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail
					Ant 1	Ant 1	Ant 1	Ant 1	
11a	6Mbps	1	36	5180	0.13	14.98	24.00	2.11	Pass
11a	6Mbps	1	44	5220	0.13	14.80	24.00	2.11	Pass
11a	6Mbps	1	48	5240	0.13	14.94	24.00	2.11	Pass
HT20	MCS0	1	36	5180	0.14	13.61	24.00	2.11	Pass
HT20	MCS0	1	44	5220	0.14	13.59	24.00	2.11	Pass
HT20	MCS0	1	48	5240	0.14	13.72	24.00	2.11	Pass
HT40	MCS0	1	38	5190	0.28	13.84	24.00	2.11	Pass
HT40	MCS0	1	46	5230	0.28	13.74	24.00	2.11	Pass
VHT20	MCS0	1	36	5180	0.14	12.70	24.00	2.11	Pass
VHT20	MCS0	1	44	5220	0.14	12.81	24.00	2.11	Pass
VHT20	MCS0	1	48	5240	0.14	12.70	24.00	2.11	Pass
VHT40	MCS0	1	38	5190	0.30	12.83	24.00	2.11	Pass
VHT40	MCS0	1	46	5230	0.30	12.75	24.00	2.11	Pass
VHT80	MCS0	1	42	5210	0.58	12.80	24.00	2.11	Pass



FCC U-NII-2A single antenna										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 1	Ant 1	Ant 1		
11a	6Mbps	1	52	5260	0.13	14.85	23.94	1.56	26.99	Pass
11a	6Mbps	1	60	5300	0.13	15.04	23.93	1.56	26.99	Pass
11a	6Mbps	1	64	5320	0.13	15.06	23.97	1.56	26.99	Pass
HT20	MCS0	1	52	5260	0.14	13.86	23.98	1.56	26.99	Pass
HT20	MCS0	1	60	5300	0.14	13.66	23.98	1.56	26.99	Pass
HT20	MCS0	1	64	5320	0.14	13.83	23.98	1.56	26.99	Pass
HT40	MCS0	1	54	5270	0.28	13.80	23.98	1.56	26.99	Pass
HT40	MCS0	1	62	5310	0.28	13.75	23.98	1.56	26.99	Pass
VHT20	MCS0	1	52	5260	0.14	12.73	23.98	1.56	26.99	Pass
VHT20	MCS0	1	60	5300	0.14	12.81	23.98	1.56	26.99	Pass
VHT20	MCS0	1	64	5320	0.14	12.85	23.98	1.56	26.99	Pass
VHT40	MCS0	1	54	5270	0.30	12.82	23.98	1.56	26.99	Pass
VHT40	MCS0	1	62	5310	0.30	12.77	23.98	1.56	26.99	Pass
VHT80	MCS0	1	58	5290	0.58	12.83	23.98	1.56	26.99	Pass



FCC U-NII-2C single antenna										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
					Ant 1	Ant 1	Ant 1	Ant 1		
11a	6Mbps	1	100	5500	0.13	14.99	23.93	1.90	26.99	Pass
11a	6Mbps	1	116	5580	0.13	14.71	23.95	1.90	26.99	Pass
11a	6Mbps	1	140	5700	0.13	14.59	23.94	1.90	26.99	Pass
HT20	MCS0	1	100	5500	0.14	13.77	23.98	1.90	26.99	Pass
HT20	MCS0	1	116	5580	0.14	13.70	23.97	1.90	26.99	Pass
HT20	MCS0	1	140	5700	0.14	13.39	23.98	1.90	26.99	Pass
HT40	MCS0	1	102	5510	0.28	13.75	23.98	1.90	26.99	Pass
HT40	MCS0	1	110	5550	0.28	13.71	23.98	1.90	26.99	Pass
HT40	MCS0	1	134	5670	0.28	13.42	23.98	1.90	26.99	Pass
VHT20	MCS0	1	100	5500	0.14	12.77	23.98	1.90	26.99	Pass
VHT20	MCS0	1	116	5580	0.14	12.61	23.97	1.90	26.99	Pass
VHT20	MCS0	1	140	5700	0.14	12.51	23.98	1.90	26.99	Pass
VHT40	MCS0	1	102	5510	0.30	12.75	23.98	1.90	26.99	Pass
VHT40	MCS0	1	110	5550	0.30	12.76	23.98	1.90	26.99	Pass
VHT40	MCS0	1	134	5670	0.30	12.57	23.98	1.90	26.99	Pass
VHT80	MCS0	1	106	5530	0.58	12.74	23.98	1.90	26.99	Pass

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, 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, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Section F) Maximum power spectral density.

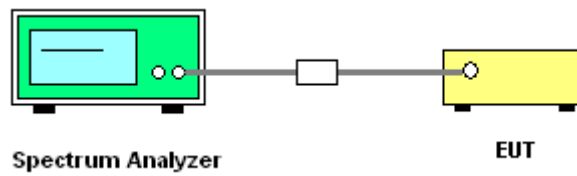
For devices operating in the bands UNII-1/2A/2C

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3



(3) EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.2

Note: The following formula is used to convert the EIRP to field strength.

$$\text{EIRP} = E_{\text{Meas}} + 20\log(d_{\text{Meas}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

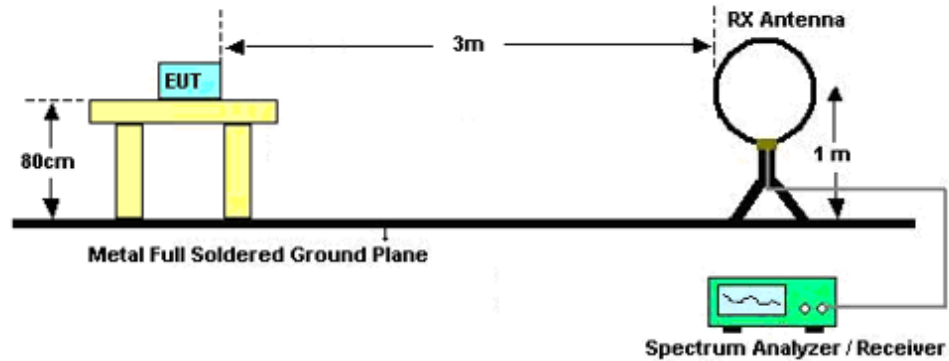
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

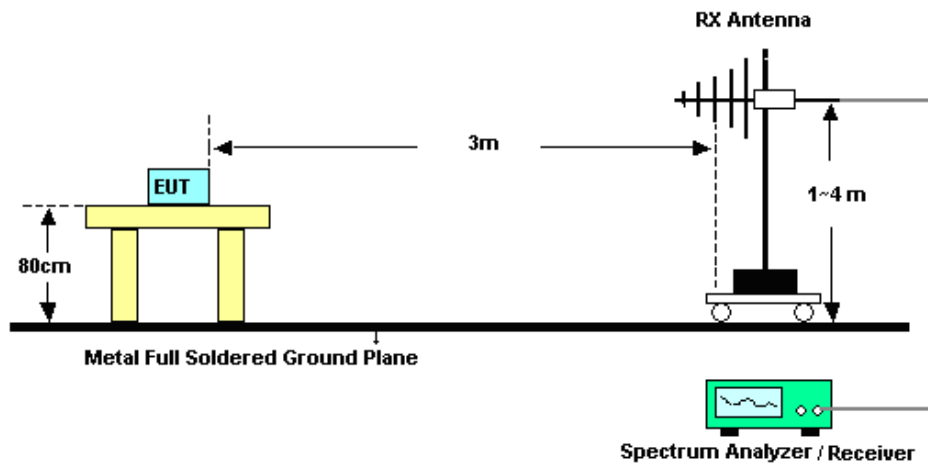
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

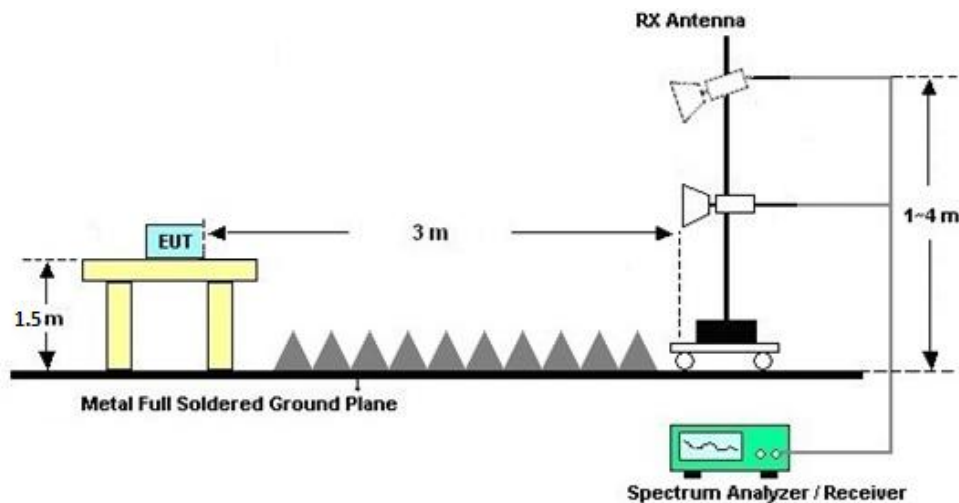
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



**3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

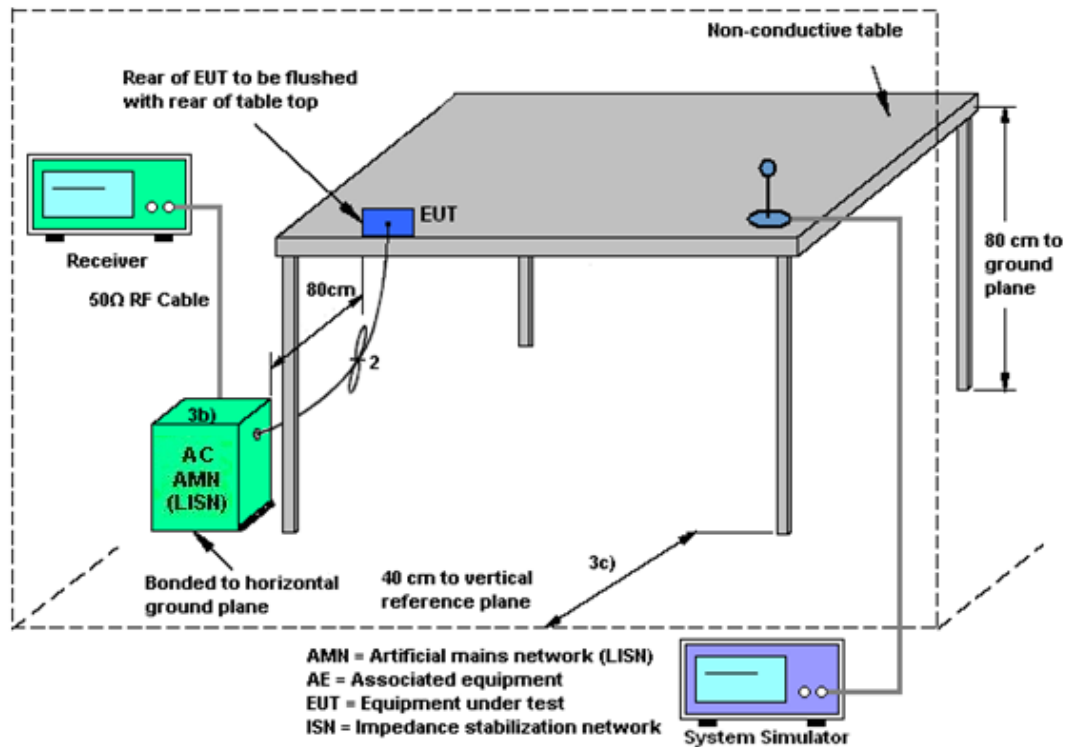
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2), if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Ma x 30dBm	Oct. 10, 2023	May 31, 2024~Jun. 03, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz~44GHz	Oct. 10, 2023	May 31, 2024~Jun. 03, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 10, 2023	May 31, 2024~Jun. 03, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz~1GHz	Aug. 19, 2023	May 31, 2024~Jun. 03, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00240132	1GHz~18GHz	Jul. 12, 2023	May 31, 2024~Jun. 03, 2024	Jul. 11, 2024	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 05, 2024	May 31, 2024~Jun. 03, 2024	Jan. 04, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	380827	9KHz ~1GHZ	Jul. 06, 2023	May 31, 2024~Jun. 03, 2024	Jul. 05, 2024	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 04, 2024	May 31, 2024~Jun. 03, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2082395	1Ghz-18Ghz	Jan. 04, 2024	May 31, 2024~Jun. 03, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5G Hz	Oct. 10, 2023	May 31, 2024~Jun. 03, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 31, 2024~Jun. 03, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 31, 2024~Jun. 03, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 31, 2024~Jun. 03, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr 18, 2024	Jun. 04, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jun. 04, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr 18, 2024	Jun. 04, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jun. 04, 2024	Oct. 10, 2024	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	May 25, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	May 25, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	May 25, 2024	Jan. 01, 2025	Conducted (TH01-KS)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	± 2.26 dB
Occupied Channel Bandwidth	$\pm 0.1\%$
Conducted Power	± 0.46 dB
Conducted Power Spectral Density	± 0.88 dB
Frequency	± 0.4 Hz

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.84dB
---	--------

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.30dB
---	--------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.06dB
---	--------

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.18dB
---	--------

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.38dB
---	--------

----- THE END -----



Appendix A. Conducted Test Results



Ambient Condition: 25 °C, 45 %RH

Test Date: 2024/5/25

Test Engineer: Jacob Zhang

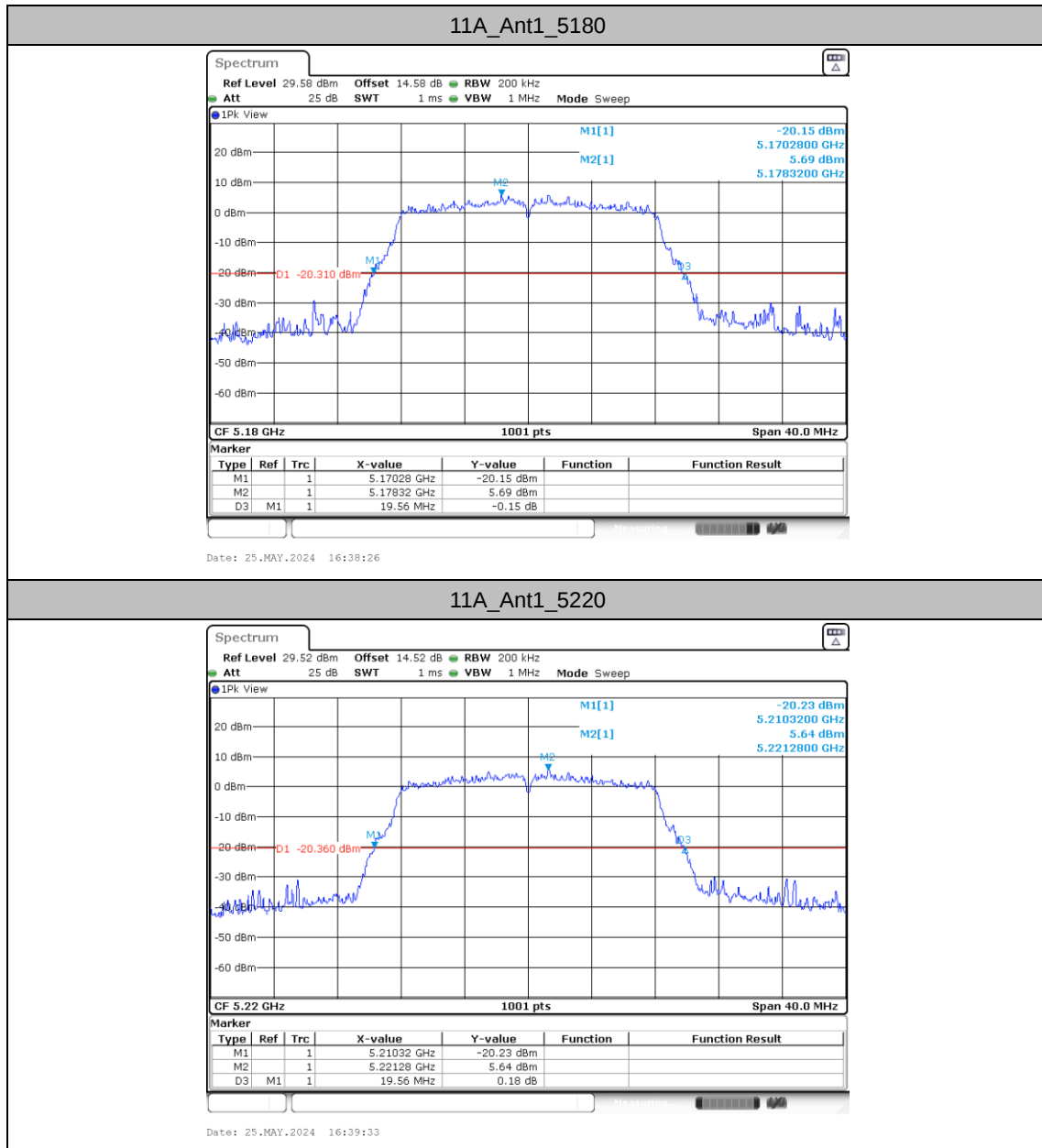
Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	19.56	5170.28	5189.84
		5220	19.56	5210.32	5229.88
		5240	19.76	5230.24	5250.00
		5260	19.68	5250.04	5269.72
		5300	19.64	5290.24	5309.88
		5320	19.80	5310.12	5329.92
		5500	19.64	5490.16	5509.80
		5580	19.72	5570.16	5589.88
		5700	19.68	5690.12	5709.80
11N20SISO	Ant1	5180	19.88	5170.04	5189.92
		5220	19.96	5210.04	5230.00
		5240	20.04	5230.04	5250.08
		5260	20.04	5250.04	5270.08
		5300	20.20	5289.92	5310.12
		5320	20.04	5309.92	5329.96
		5500	20.04	5490.00	5510.04
		5580	19.80	5570.12	5589.92
		5700	20.00	5690.00	5710.00
11N40SISO	Ant1	5190	41.04	5169.68	5210.72
		5230	40.72	5209.68	5250.40
		5270	40.80	5249.68	5290.48
		5310	40.40	5289.84	5330.24
		5510	40.40	5489.84	5530.24
		5550	40.64	5529.84	5570.48
		5670	40.88	5649.52	5690.40
11AC80SISO	Ant1	5210	81.12	5169.52	5250.64
		5290	81.28	5249.52	5330.80
		5530	81.12	5489.52	5570.64

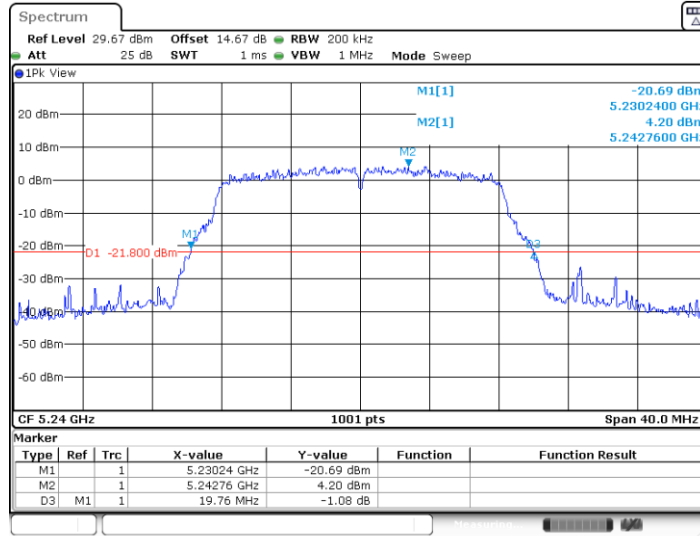


Test Graphs



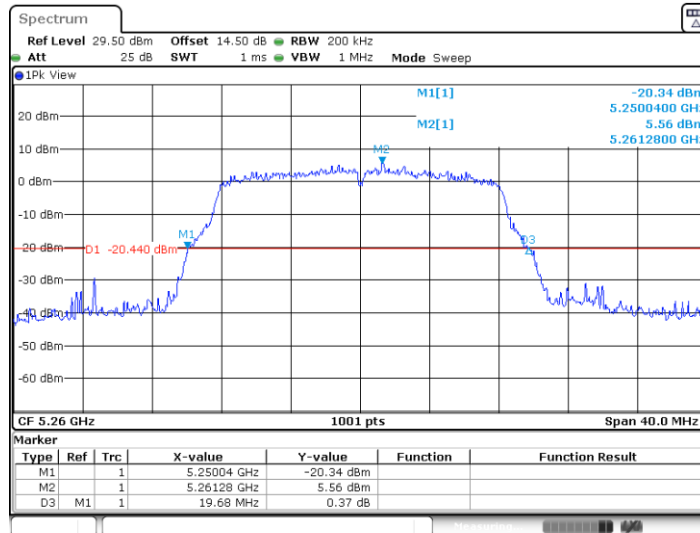


11A_Ant1_5240



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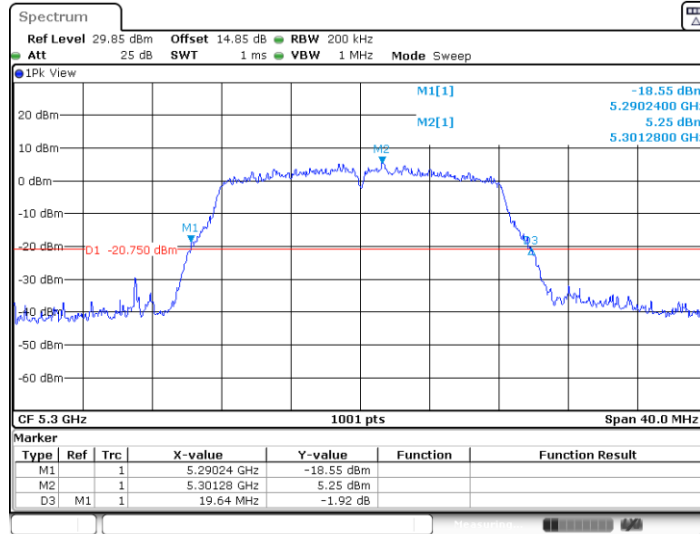
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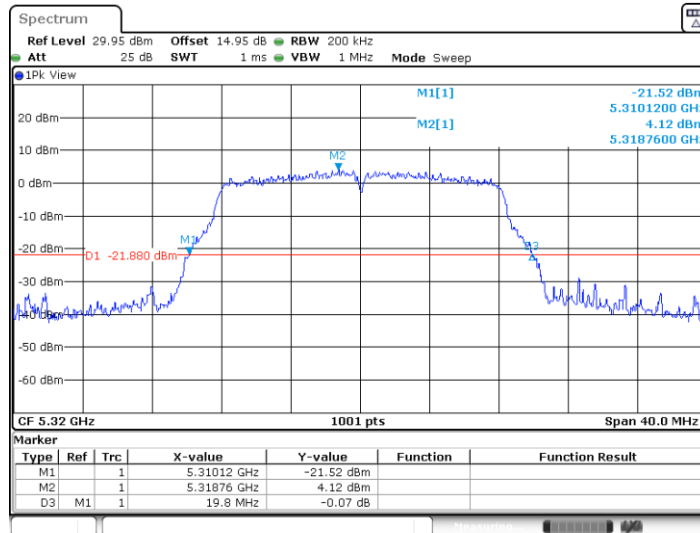


11A_Ant1_5300



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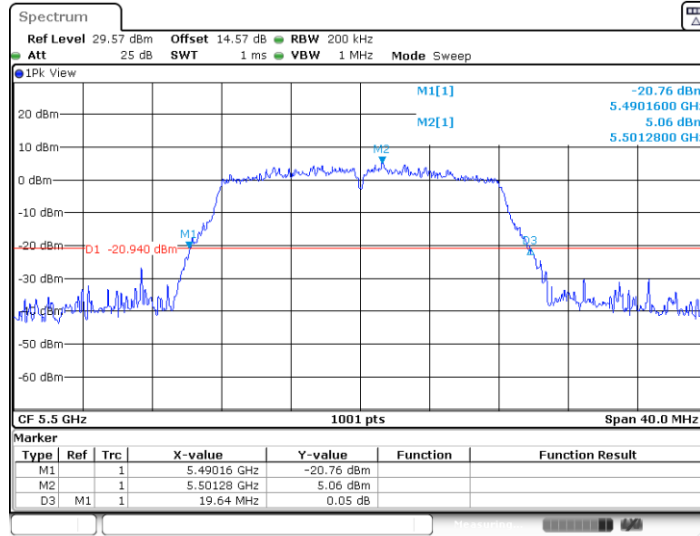
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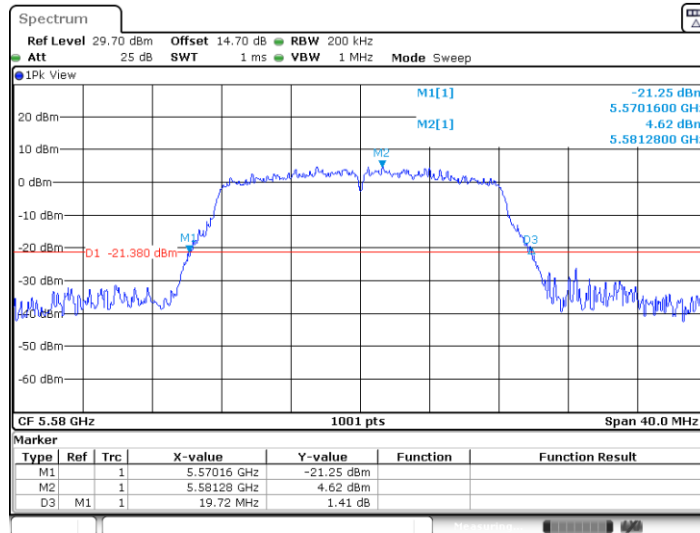


11A_Ant1_5500



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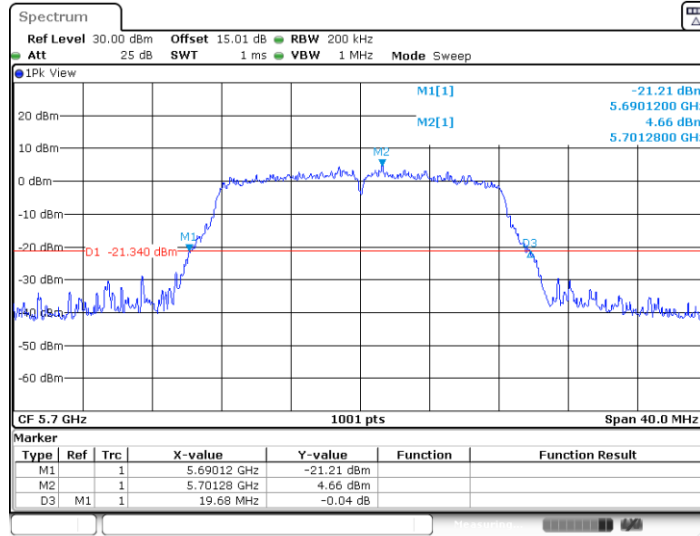
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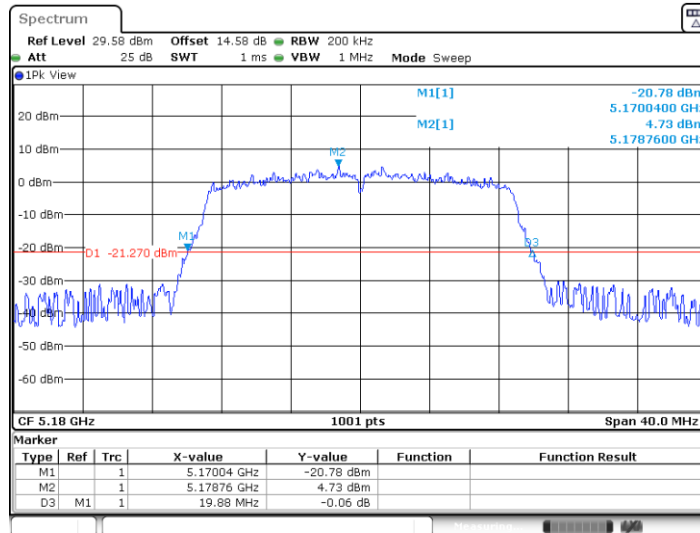


11A_Ant1_5700



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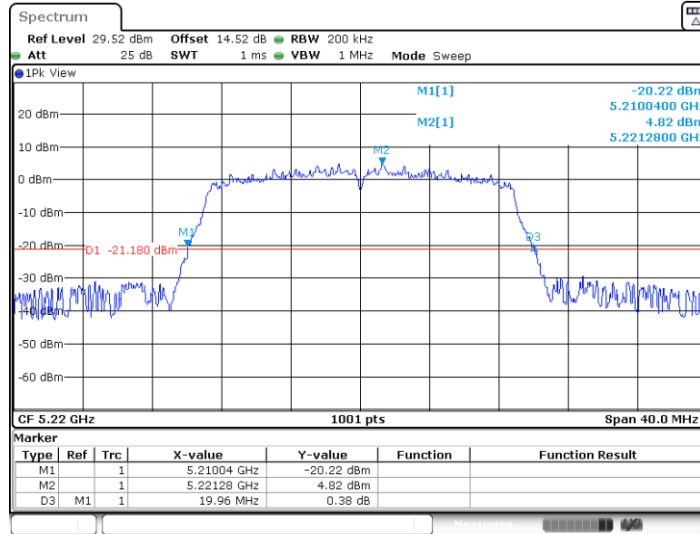
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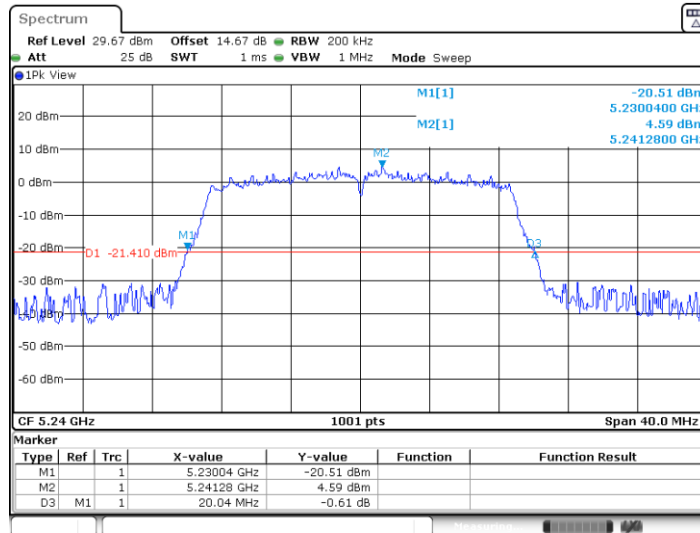


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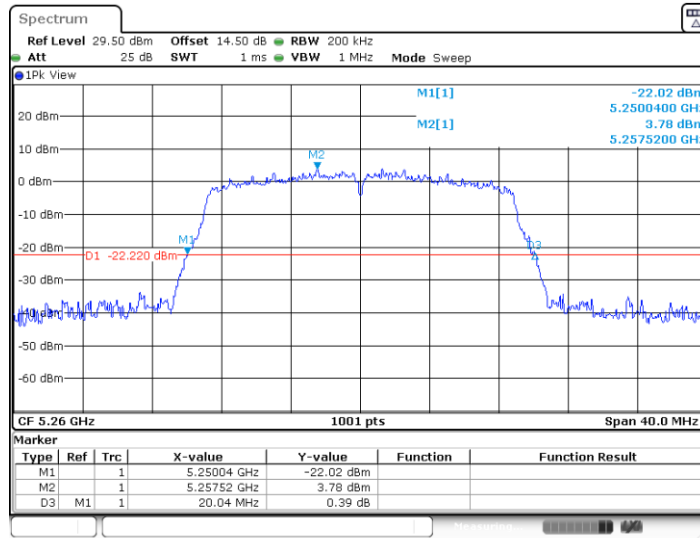
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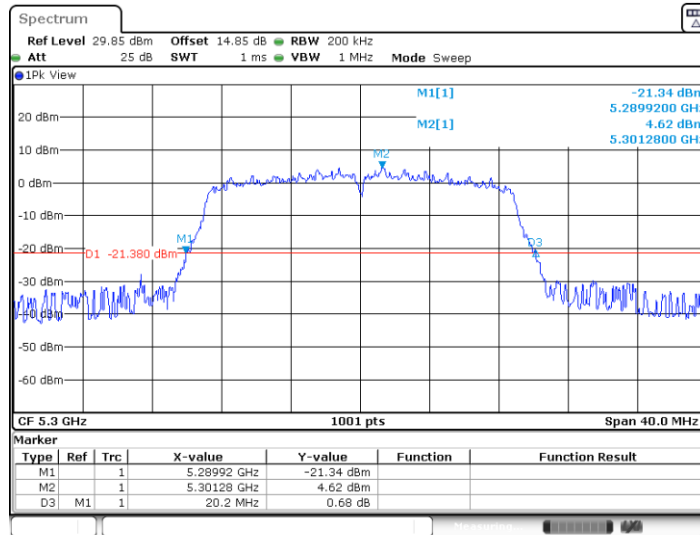


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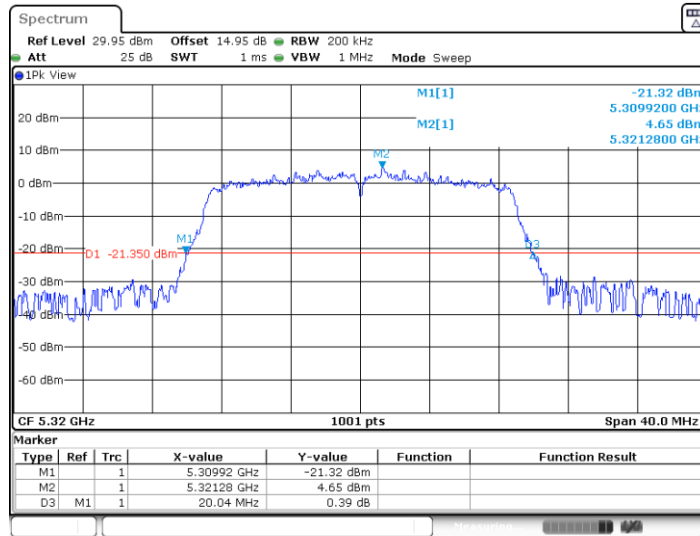
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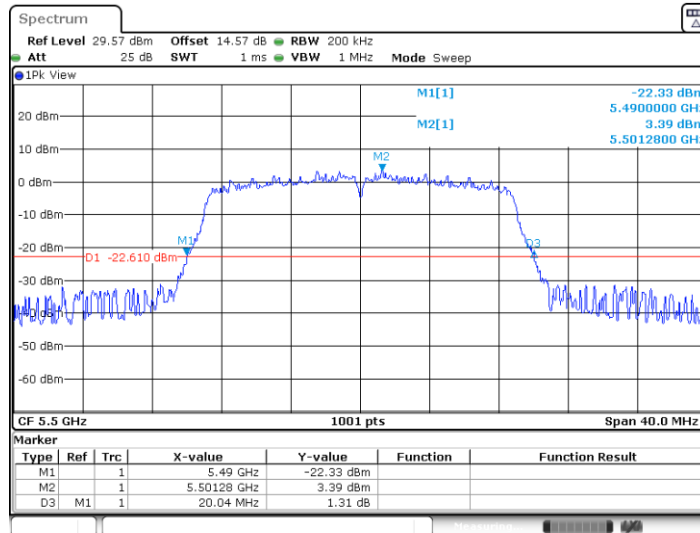


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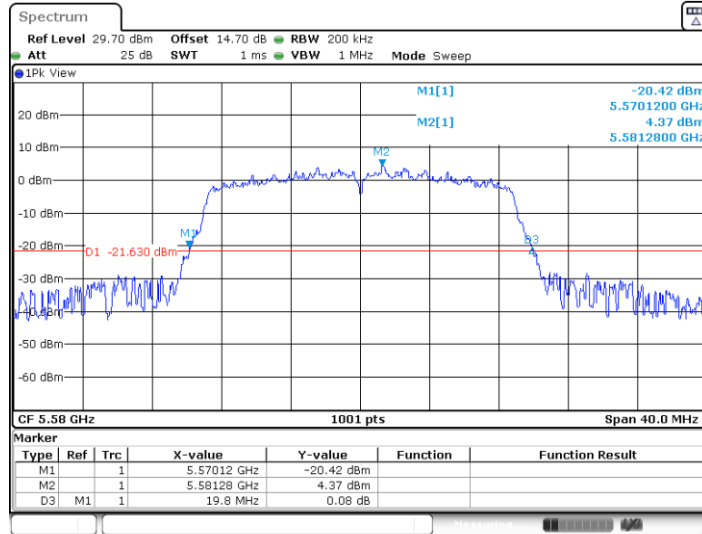
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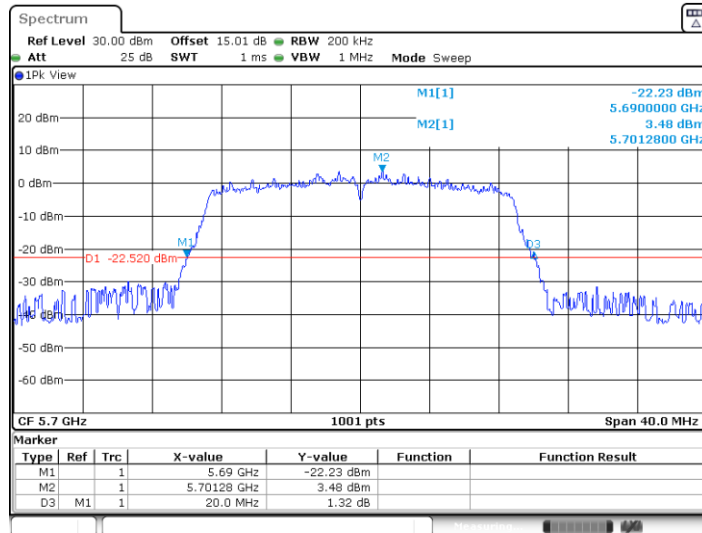


11N20SISO_Ant1_5580



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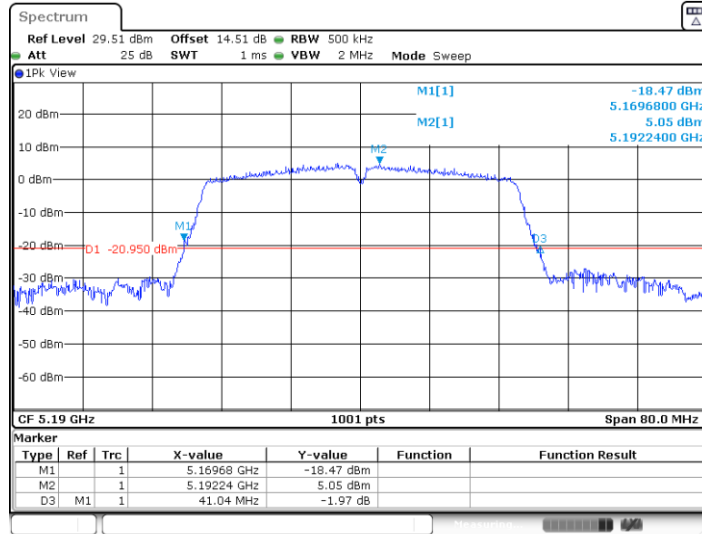
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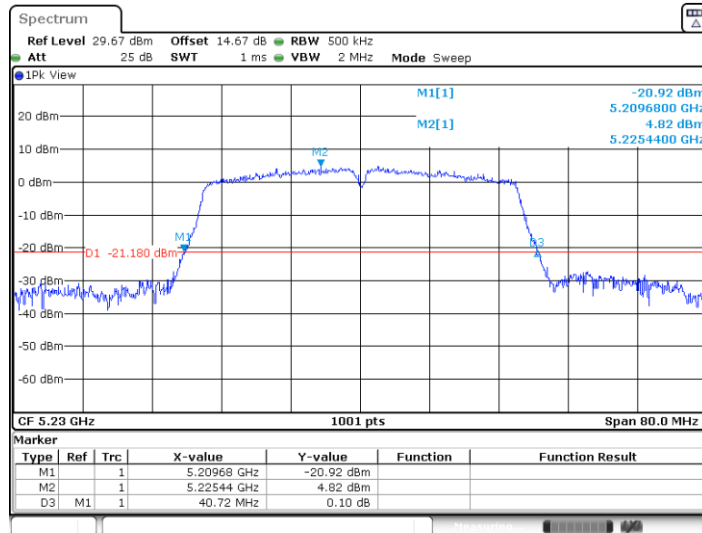


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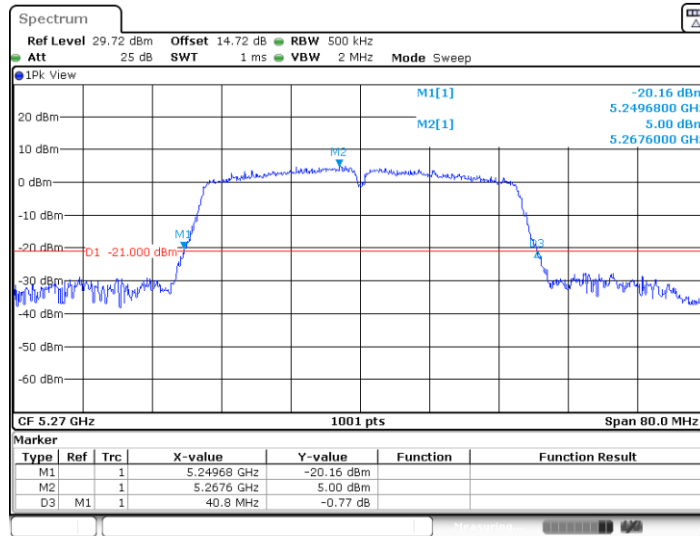
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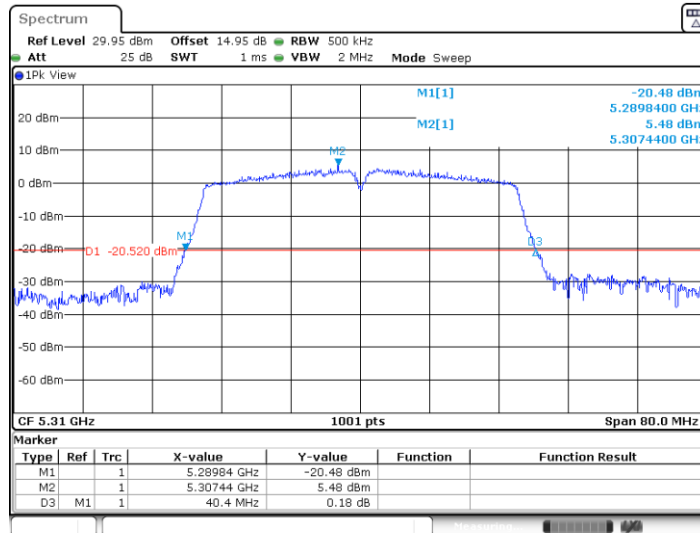


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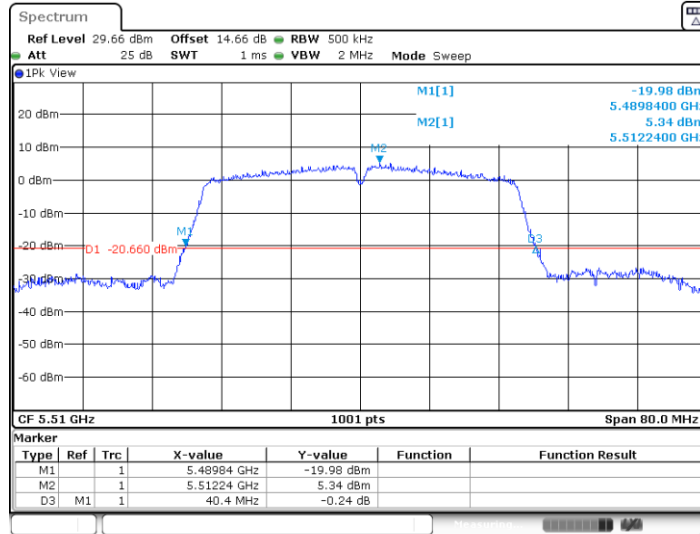
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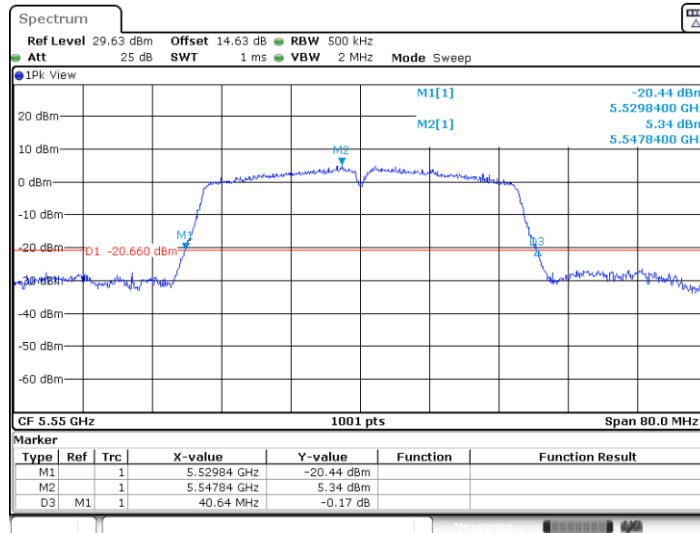


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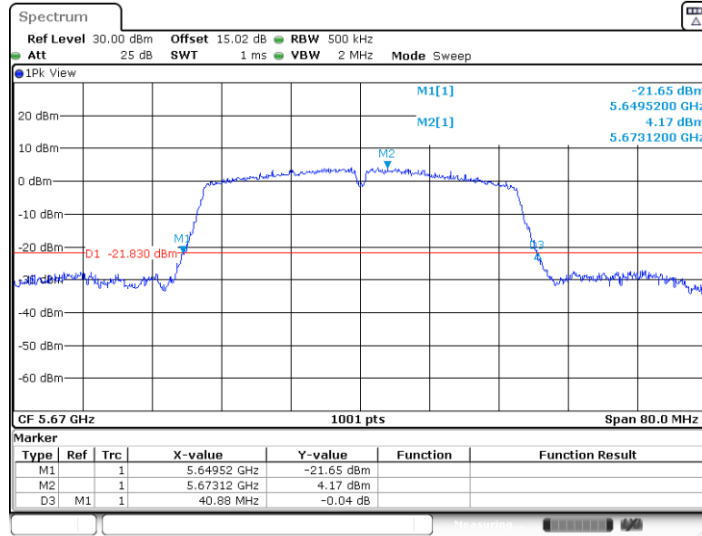
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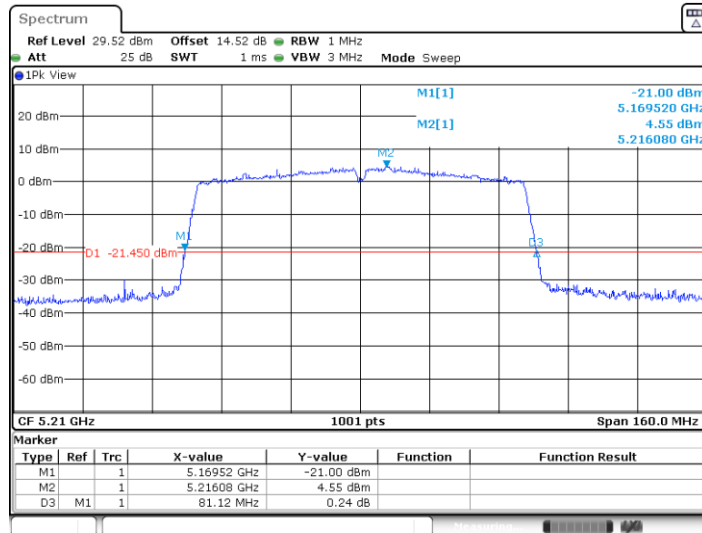


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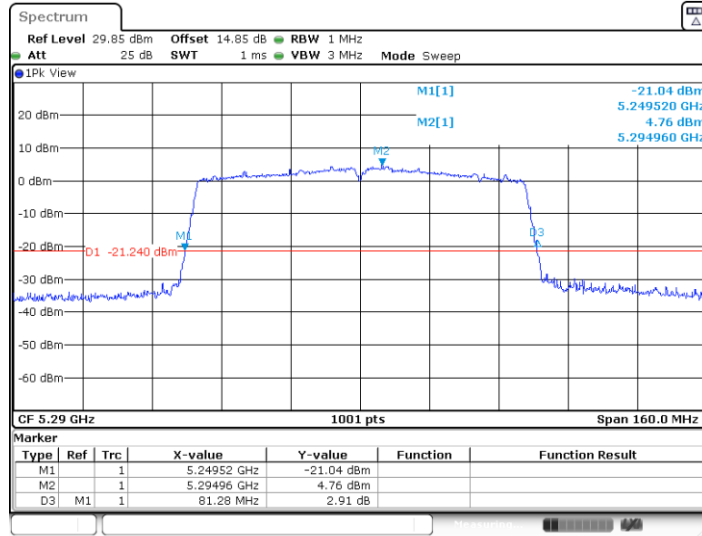
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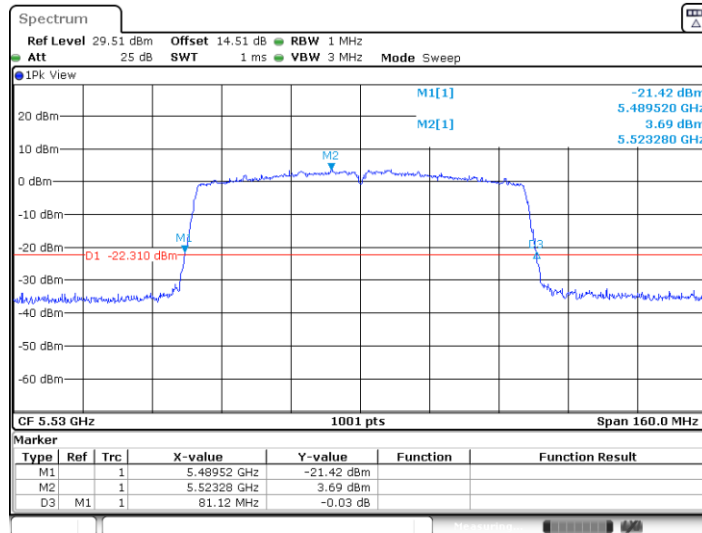


11AC80SISO_Ant1_5290



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11AC80SISO_Ant1_5530



Date: 25.MAY.2024 16:56:46



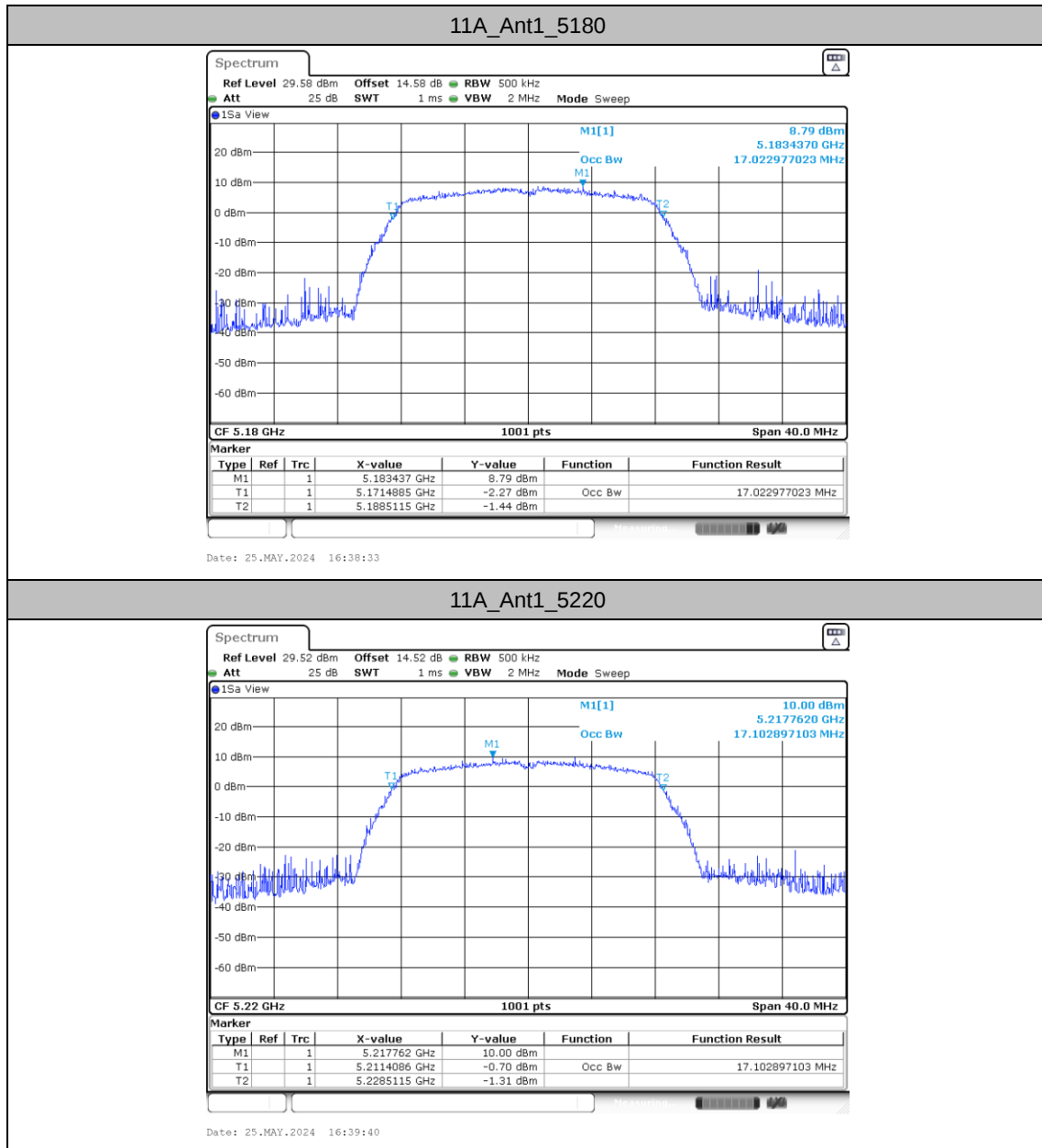
Occupied channel bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	17.023	5171.4885	5188.5115
		5220	17.103	5211.4086	5228.5115
		5240	17.143	5231.4486	5248.5914
		5260	16.983	5251.4885	5268.4715
		5300	17.063	5291.4486	5308.5115
		5320	17.143	5311.4486	5328.5914
		5500	17.103	5491.4486	5508.5514
		5580	17.103	5571.4486	5588.5514
		5700	17.103	5691.4486	5708.5514
11N20SISO	Ant1	5180	17.982	5171.0090	5188.9910
		5220	17.982	5211.0090	5228.9910
		5240	18.022	5231.0090	5249.0310
		5260	17.942	5250.9690	5268.9111
		5300	17.982	5291.0090	5308.9910
		5320	18.062	5311.0090	5329.0709
		5500	18.022	5491.0090	5509.0310
		5580	18.062	5570.9690	5589.0310
		5700	18.062	5690.9690	5709.0310
11N40SISO	Ant1	5190	36.204	5171.9381	5208.1419
		5230	36.204	5211.9381	5248.1419
		5270	36.204	5251.8581	5288.0619
		5310	36.204	5291.9381	5328.1419
		5510	36.284	5491.8581	5528.1419
		5550	36.204	5531.9381	5568.1419
		5670	36.204	5651.8581	5688.0619
11AC80SISO	Ant1	5210	75.445	5172.2777	5247.7223
		5290	75.604	5252.2777	5327.8821
		5530	75.445	5492.2777	5567.7223

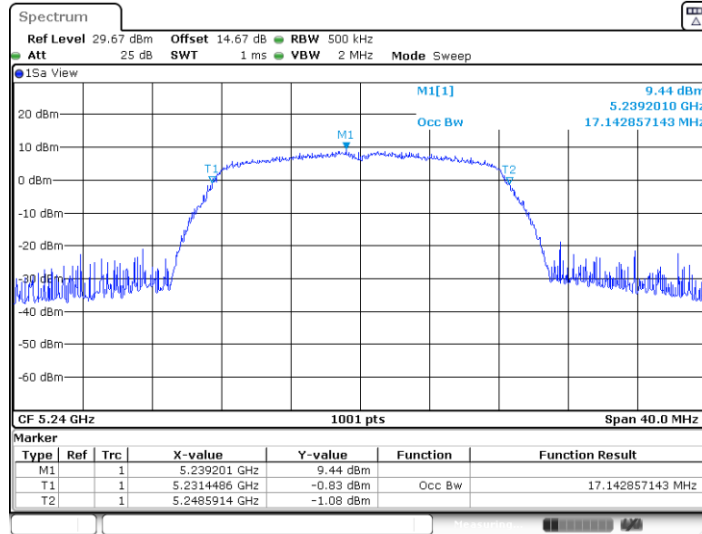


Test Graphs

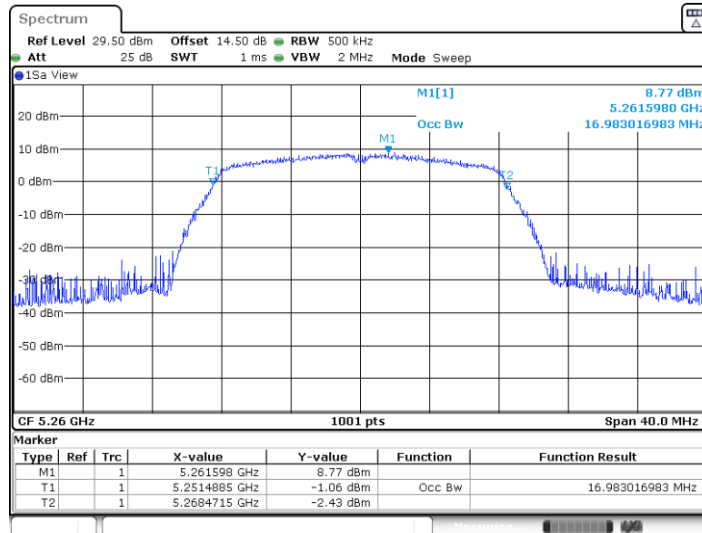




11A_Ant1_5240

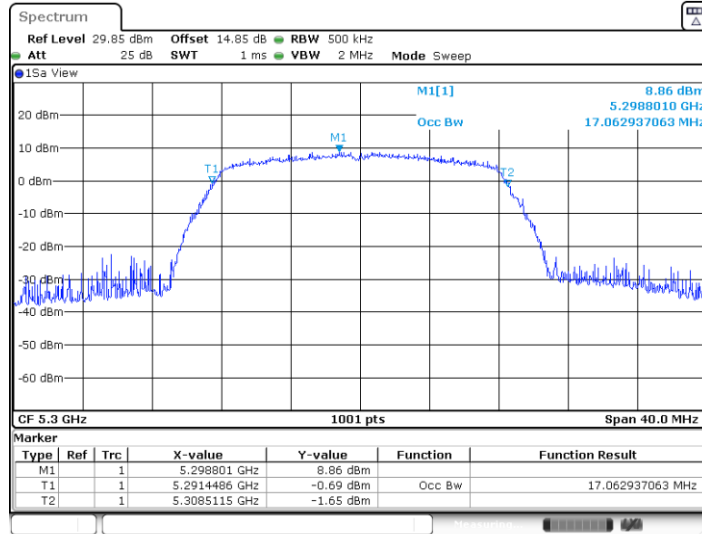


11A_Ant1_5260



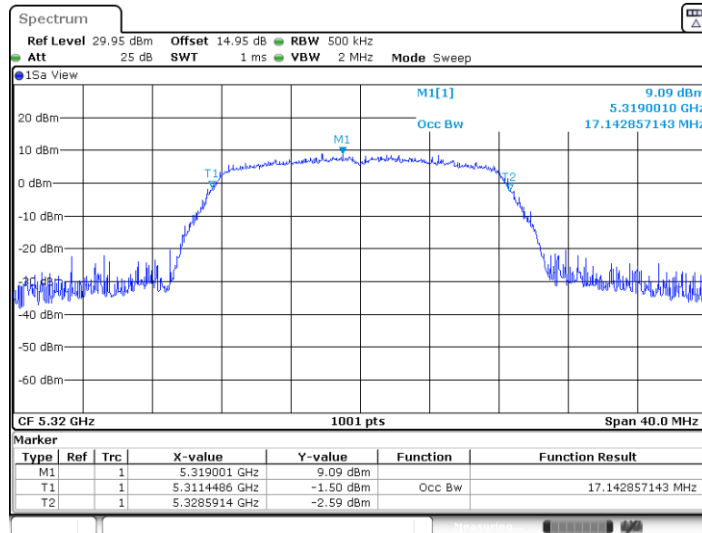


11A_Ant1_5300



Date: 25.MAY.2024 16:41:09

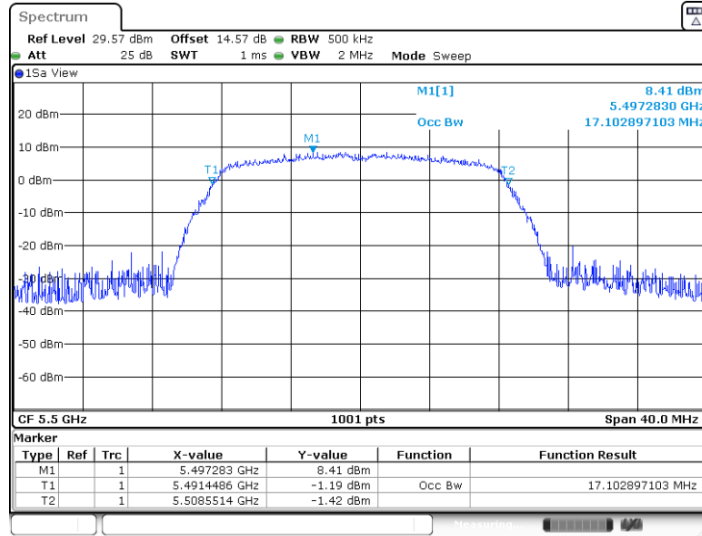
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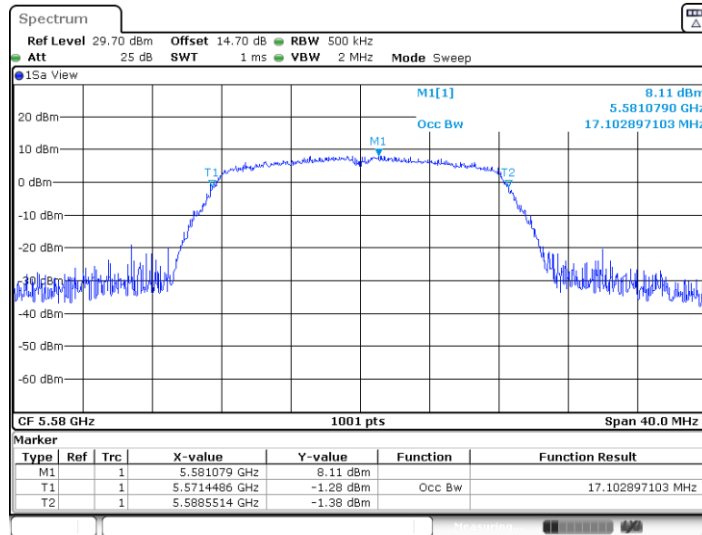
Date: 25.MAY.2024 16:41:52



11A_Ant1_5500

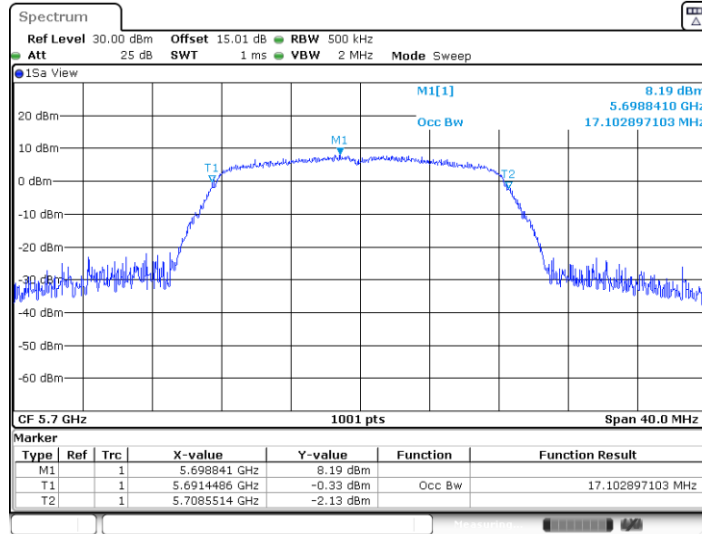


11A_Ant1_5580



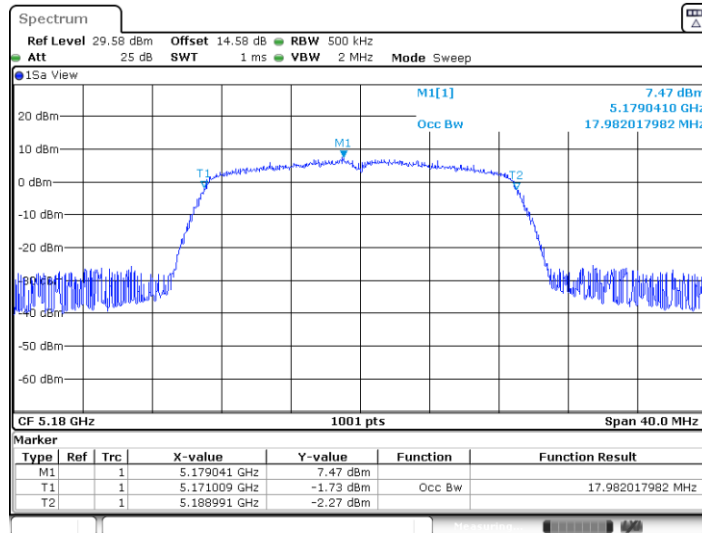


11A_Ant1_5700



Date: 25.MAY.2024 16:43:49

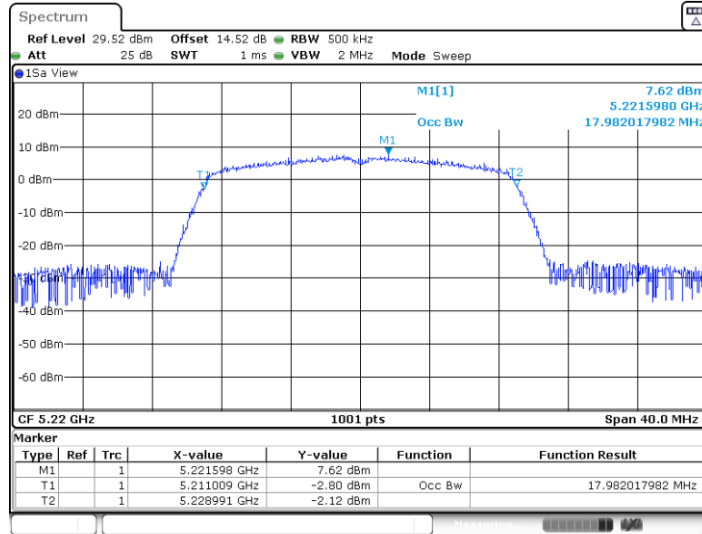
11N20SISO_Ant1_5180



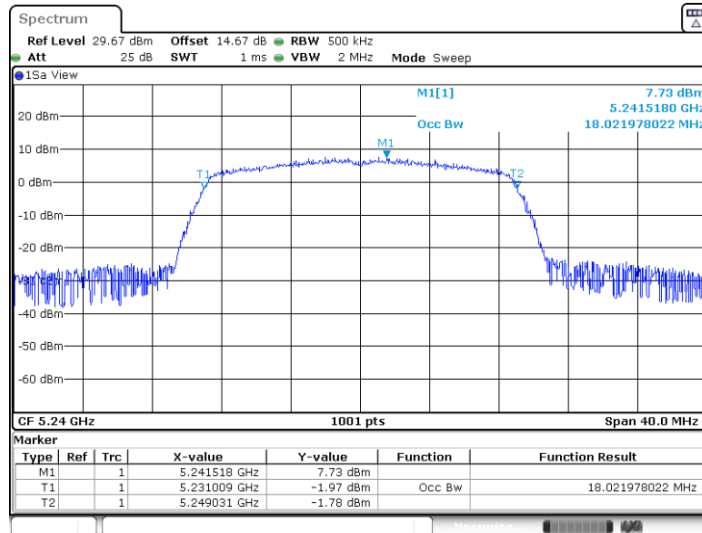
Date: 25.MAY.2024 16:44:45



11N20SISO_Ant1_5220

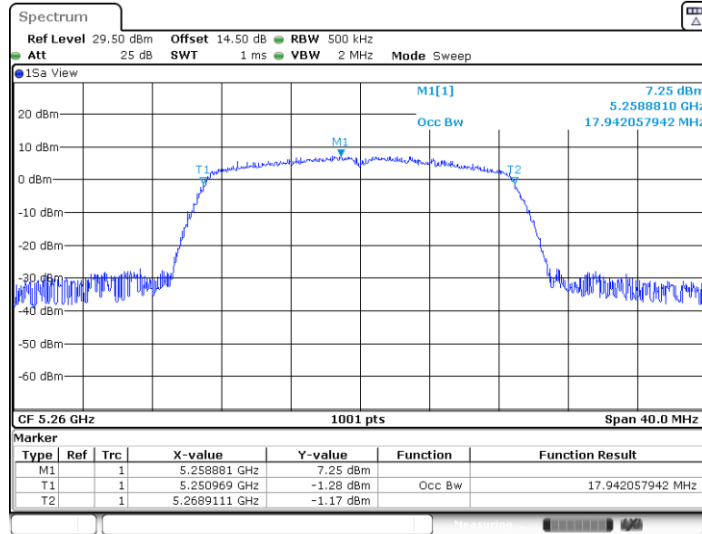


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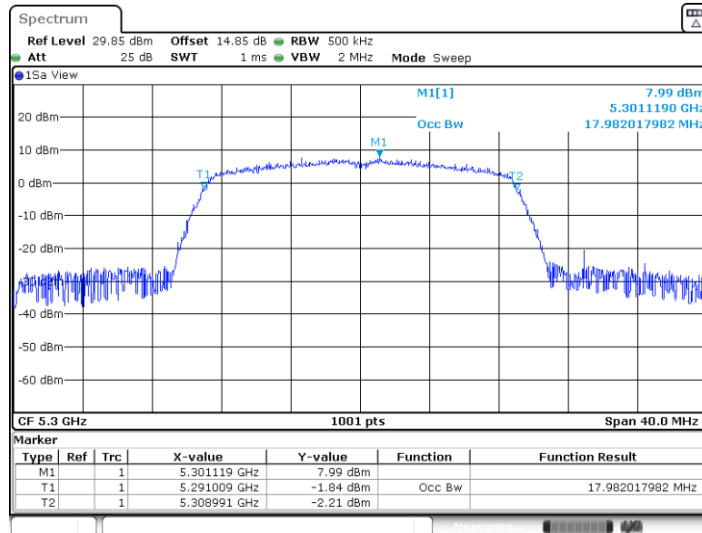




11N20SISO_Ant1_5260

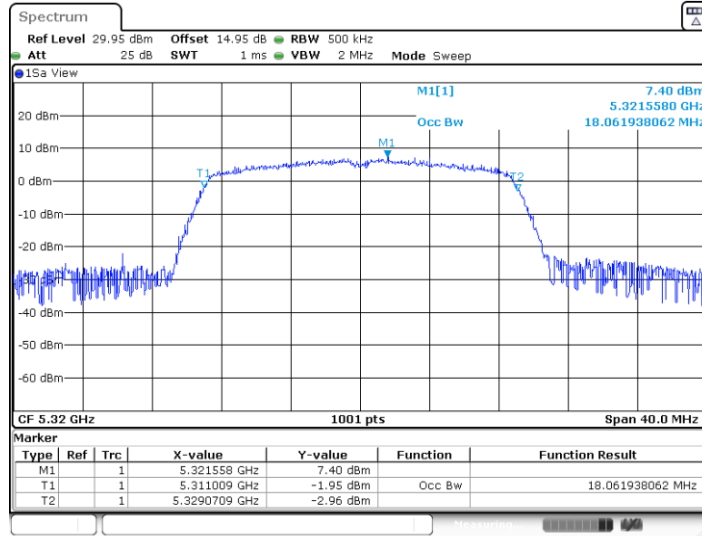


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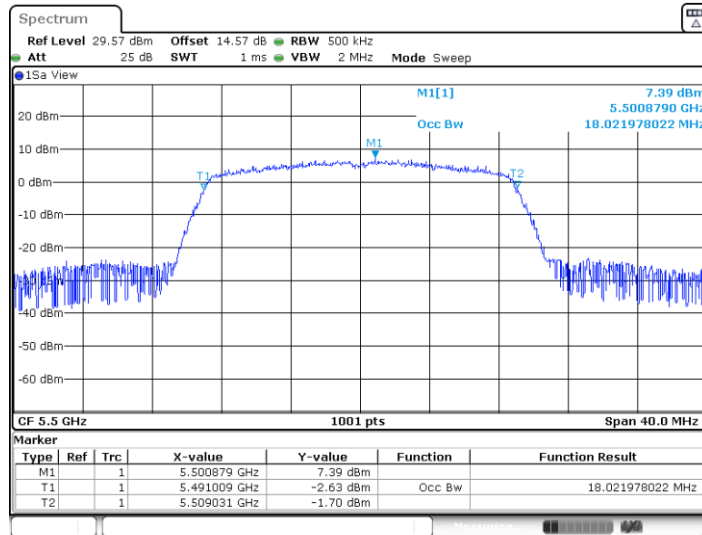




11N20SISO_Ant1_5320

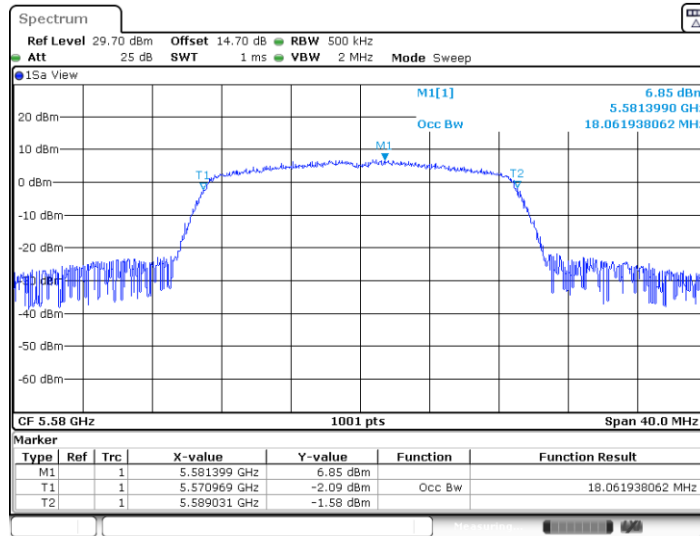


11N20SISO_Ant1_5500

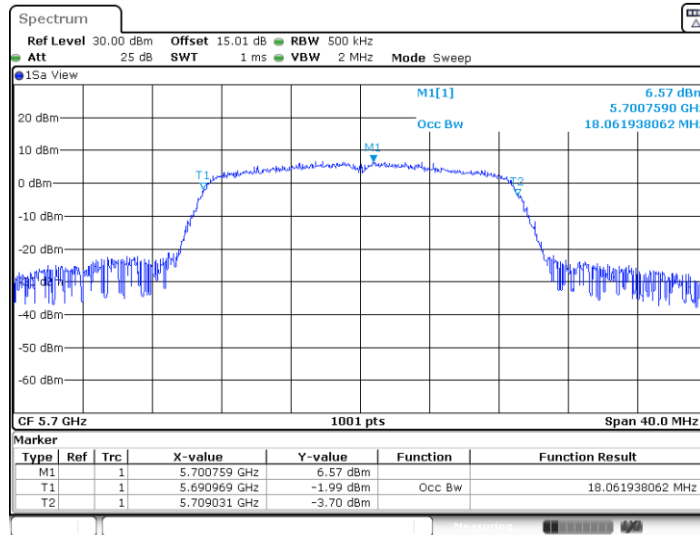




11N20SISO_Ant1_5580

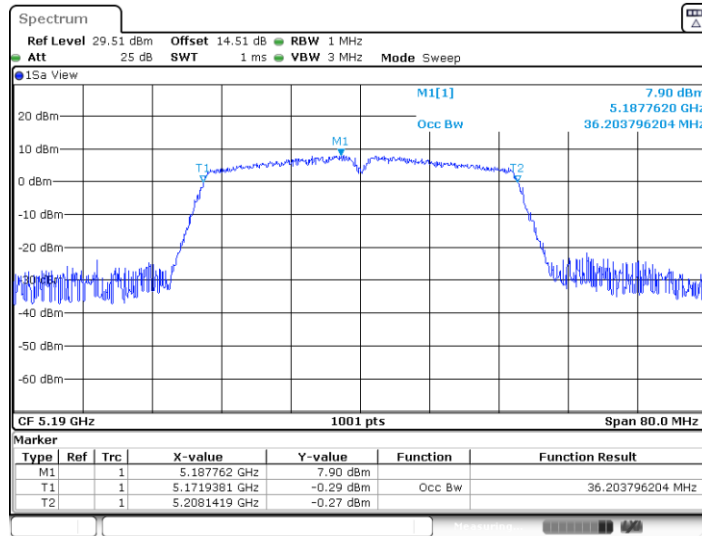


11N20SISO_Ant1_5700

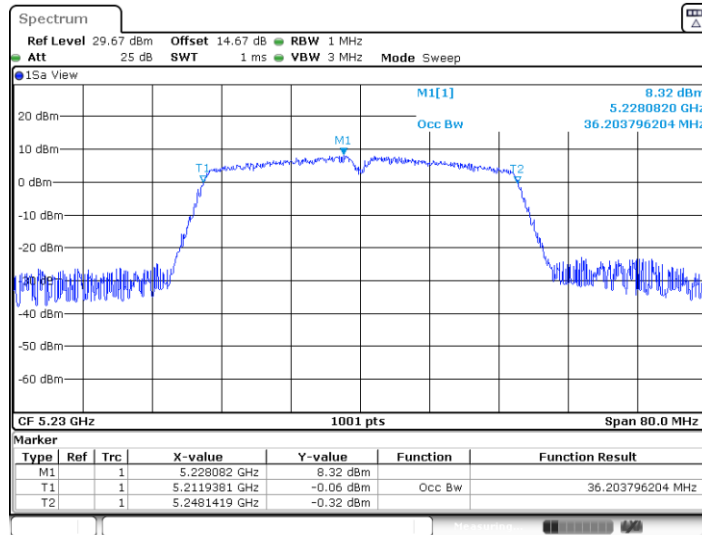




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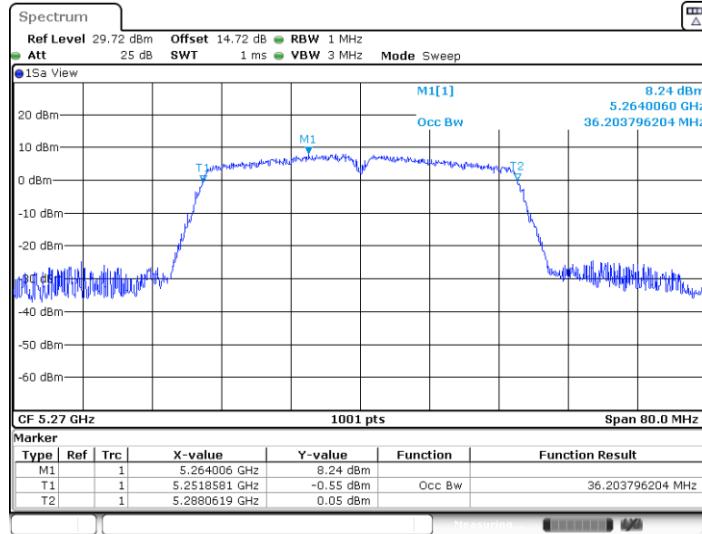


11N40SISO_Ant1_5230

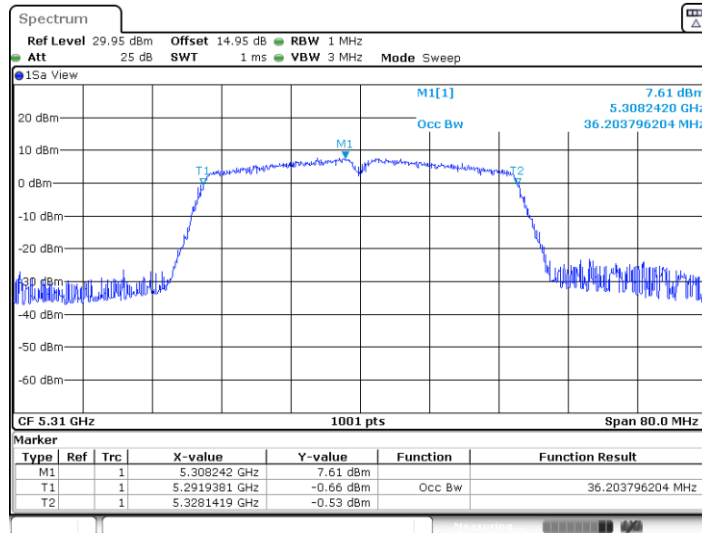




11N40SISO_Ant1_5270

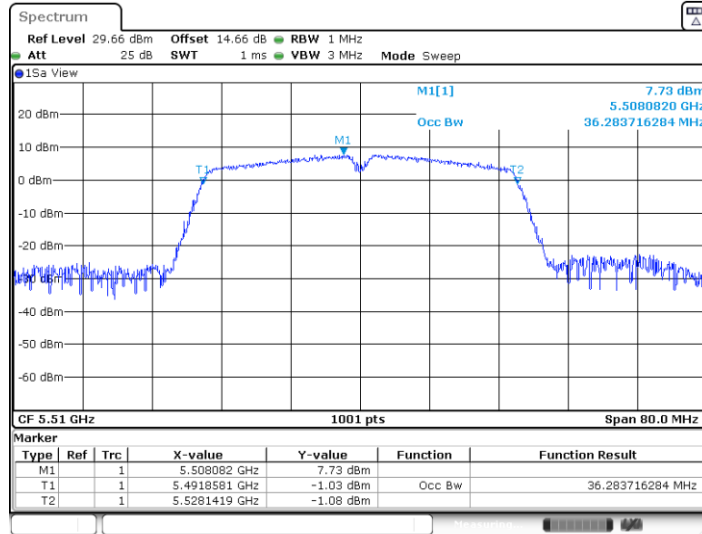


11N40SISO_Ant1_5310



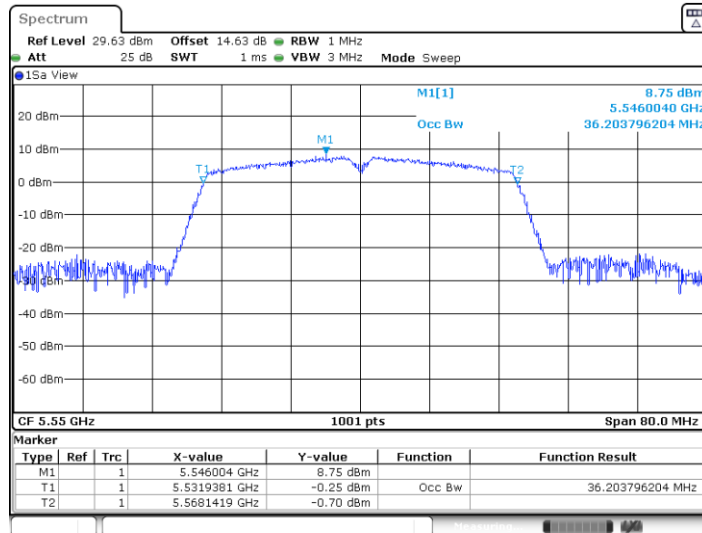


11N40SISO_Ant1_5510



Date: 25.MAY.2024 16:53:43

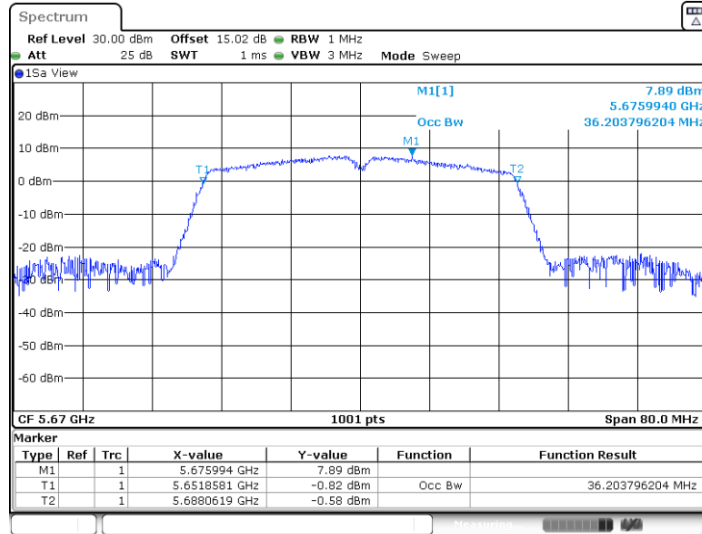
11N40SISO_Ant1_5550



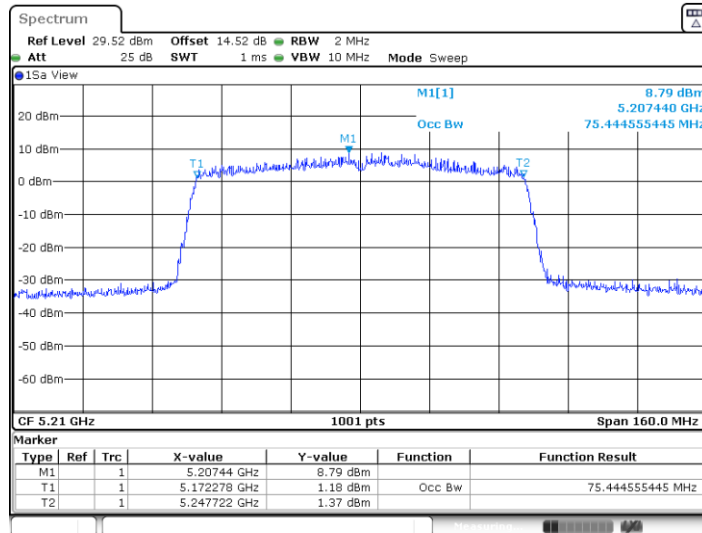
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11N40SISO_Ant1_5670

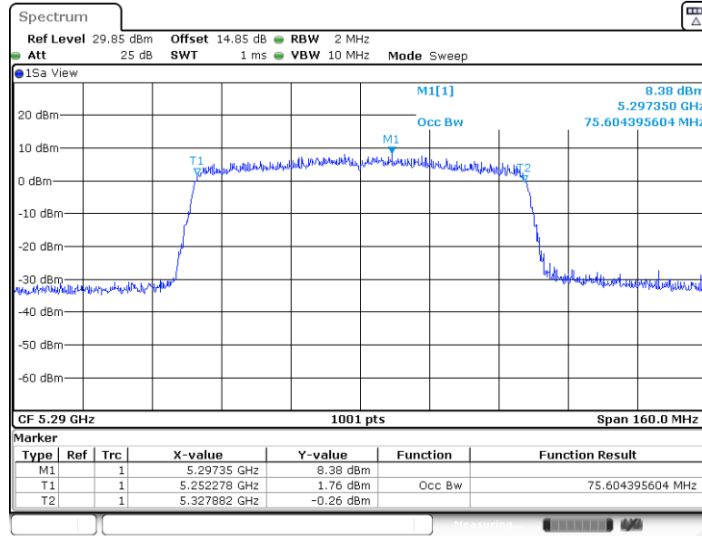


11AC80SISO_Ant1_5210

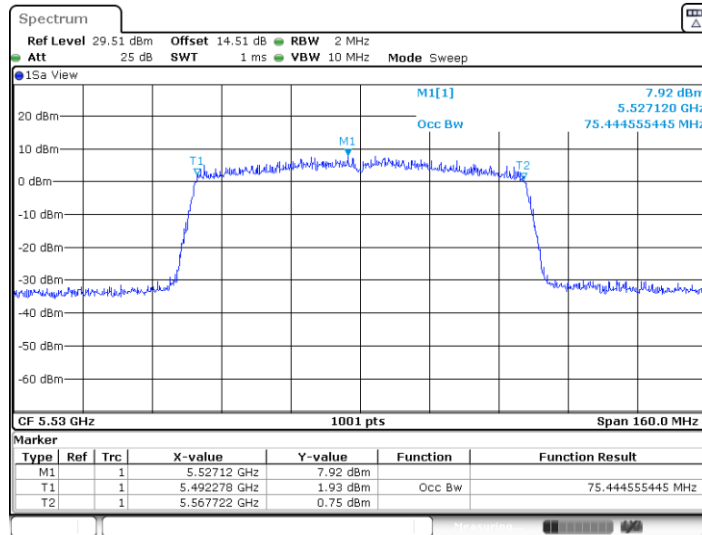




11AC80SISO_Ant1_5290



11AC80SISO_Ant1_5530



Maximum power spectral density

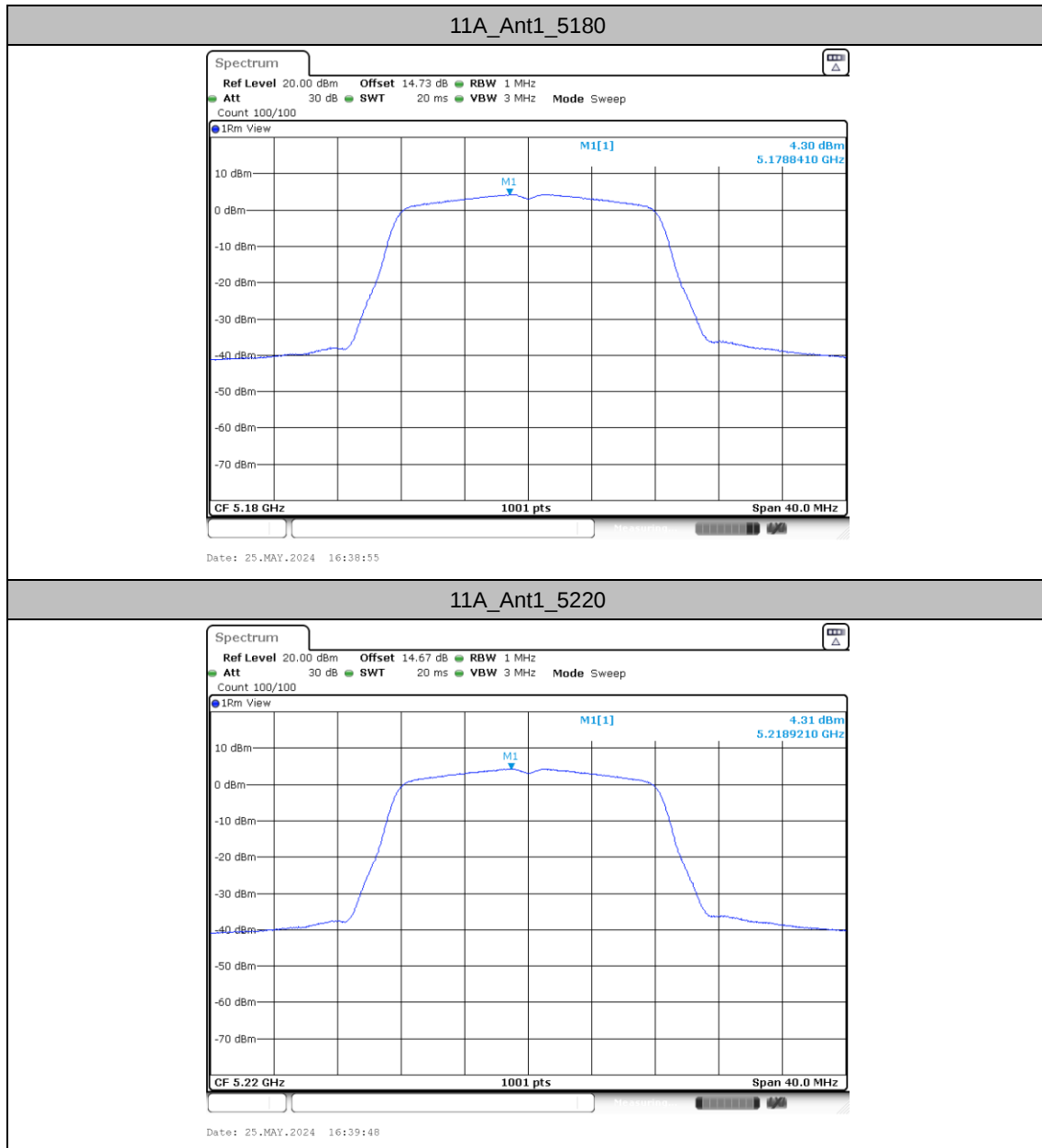
Test Result

TestMode	Antenna	Freq(MHz)	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	4.3	≤11.00	PASS
		5220	4.31	≤11.00	PASS
		5240	4.22	≤11.00	PASS
		5260	4.13	≤11.00	PASS
		5300	4.42	≤11.00	PASS
		5320	4.09	≤11.00	PASS
		5500	3.67	≤11.00	PASS
		5580	3.9	≤11.00	PASS
		5700	3.49	≤11.00	PASS
11N20SISO	Ant1	5180	2.72	≤11.00	PASS
		5220	2.75	≤11.00	PASS
		5240	2.76	≤11.00	PASS
		5260	2.76	≤11.00	PASS
		5300	2.93	≤11.00	PASS
		5320	2.67	≤11.00	PASS
		5500	2.34	≤11.00	PASS
		5580	2.43	≤11.00	PASS
		5700	2.3	≤11.00	PASS
11N40SISO	Ant1	5190	-0.03	≤11.00	PASS
		5230	0.02	≤11.00	PASS
		5270	-0.13	≤11.00	PASS
		5310	0.07	≤11.00	PASS
		5510	-0.27	≤11.00	PASS
		5550	-0.13	≤11.00	PASS
		5670	-0.39	≤11.00	PASS
11AC80SISO	Ant1	5210	-3.99	≤11.00	PASS
		5290	-4.19	≤11.00	PASS
		5530	-4.81	≤11.00	PASS

Note : The Duty Cycle Factor is compensated in the graph.

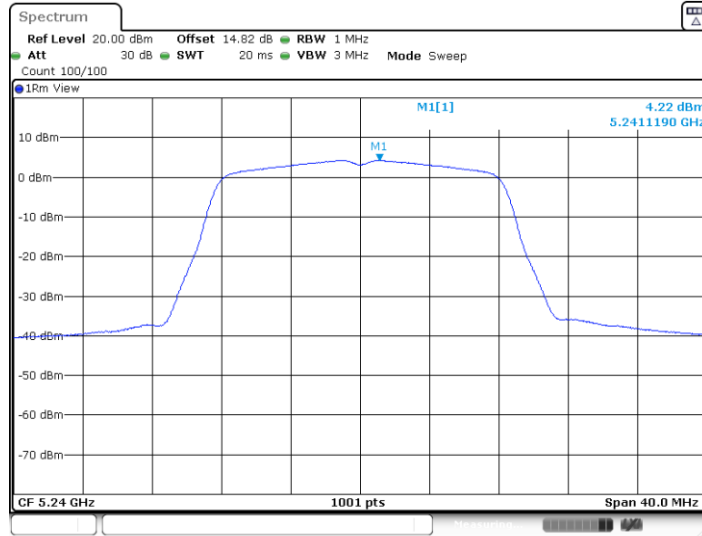


Test Graphs



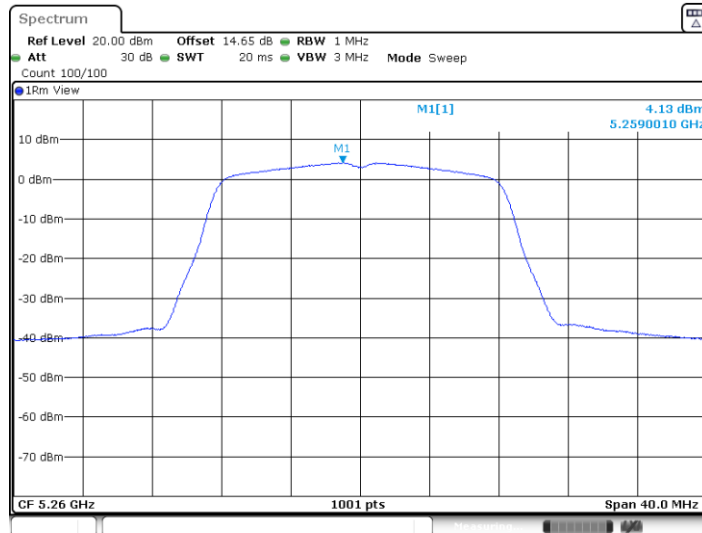


11A_Ant1_5240



Date: 25.MAY.2024 16:40:18

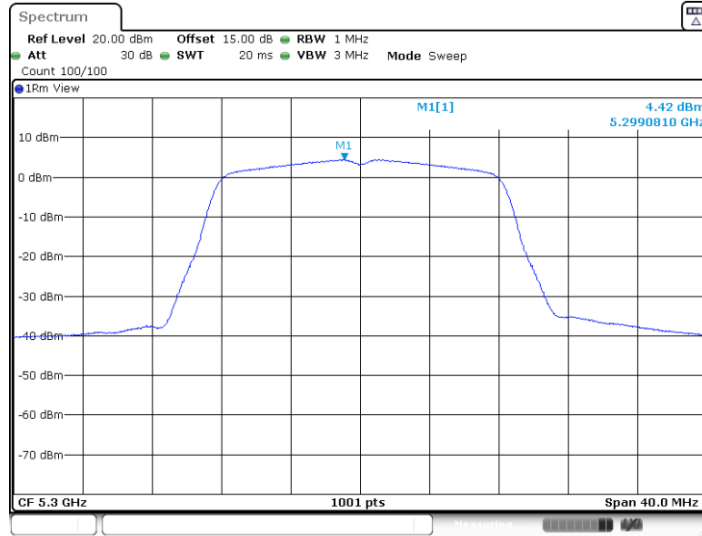
11A_Ant1_5260



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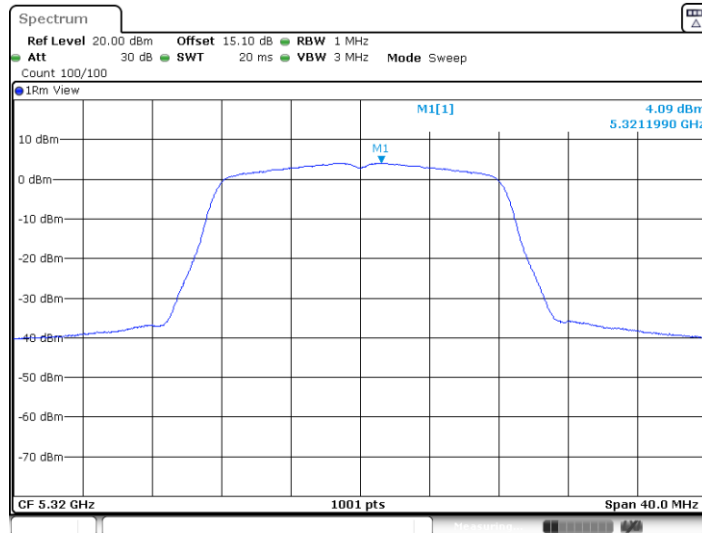


11A_Ant1_5300



Date: 25.MAY.2024 16:41:19

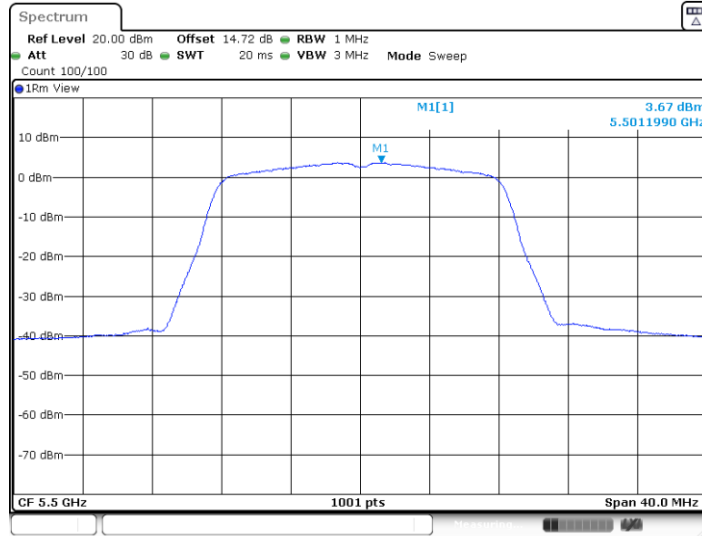
11A_Ant1_5320



Date: 25.MAY.2024 16:42:02

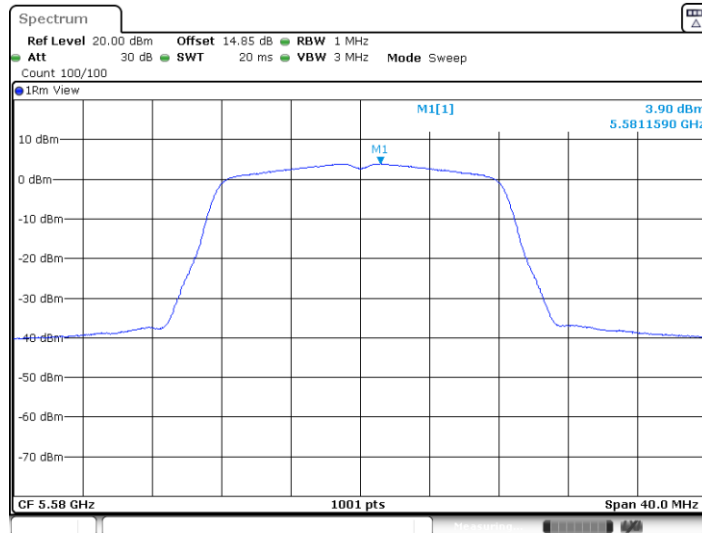


11A_Ant1_5500



Date: 25.MAY.2024 16:42:36

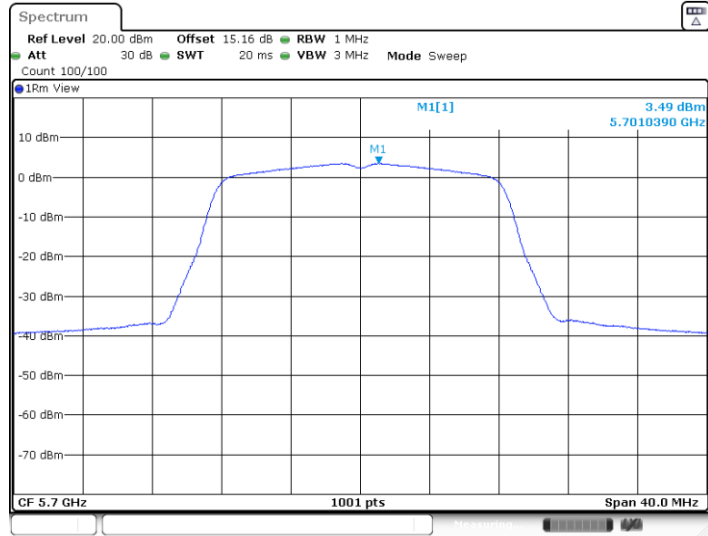
11A_Ant1_5580



Date: 25.MAY.2024 16:43:23

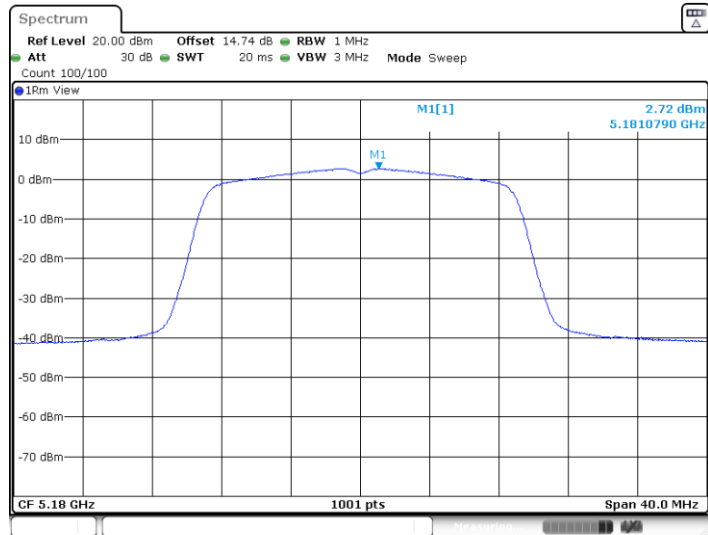


11A_Ant1_5700

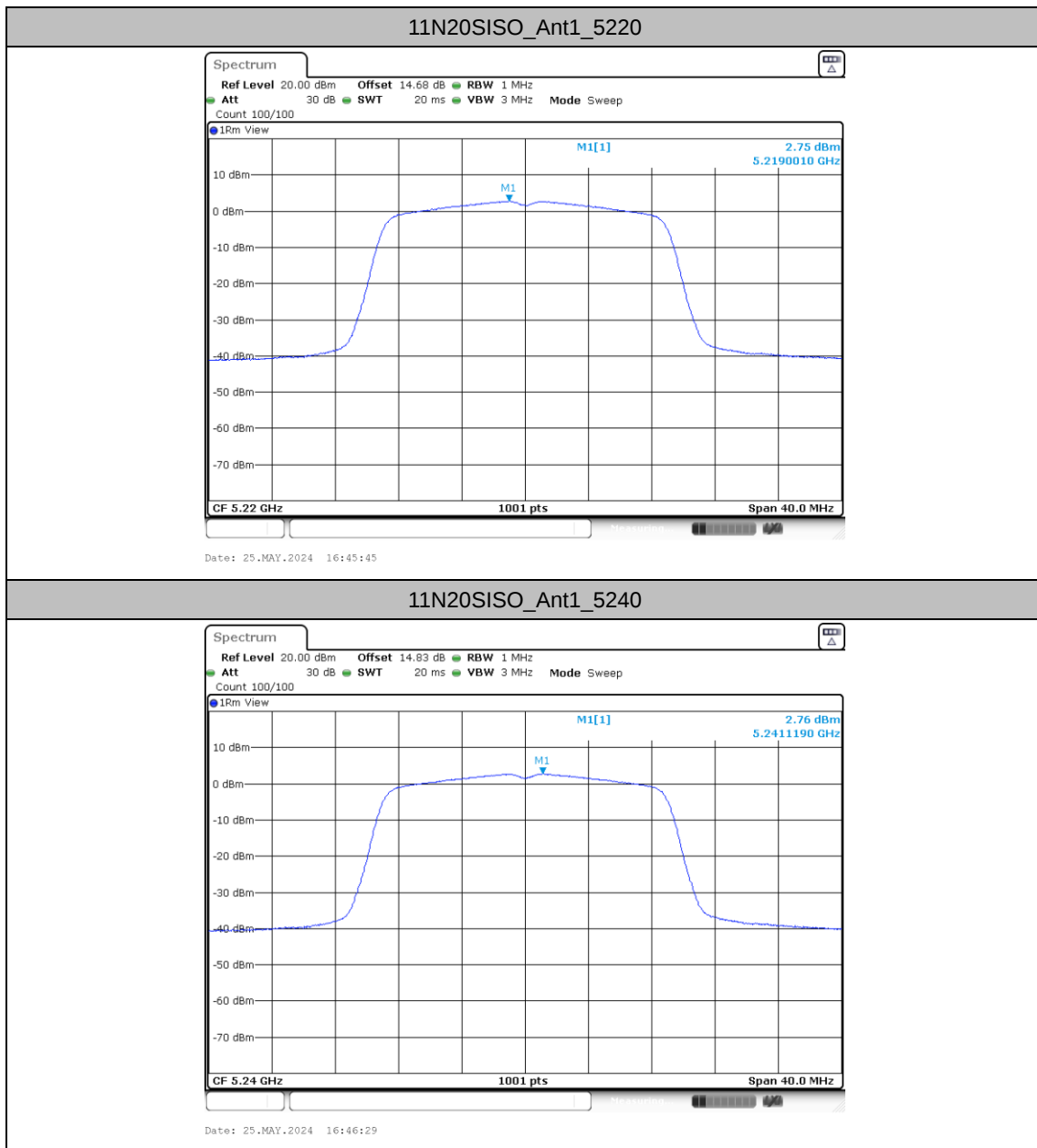


Date: 25.MAY.2024 16:43:58

11N20SISO_Ant1_5180

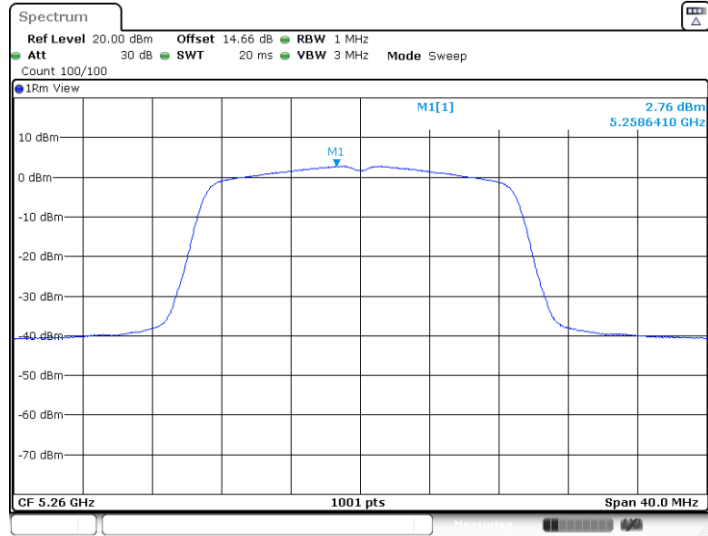


Date: 25.MAY.2024 16:45:06



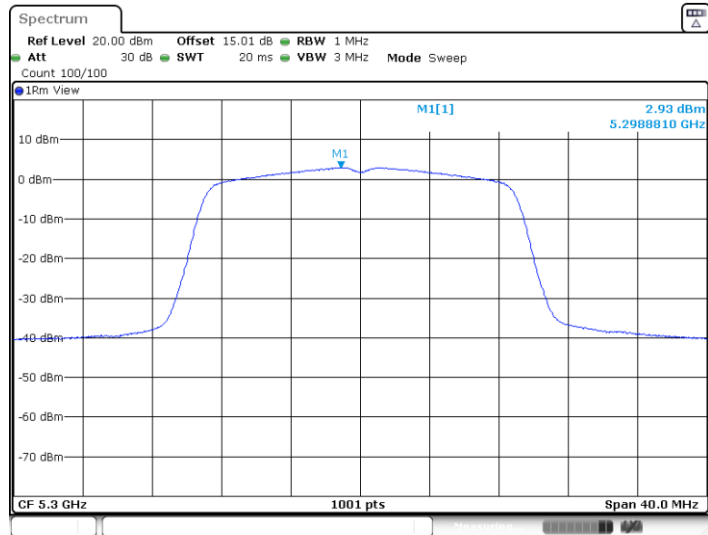


11N20SISO_Ant1_5260



Date: 25.MAY.2024 16:47:04

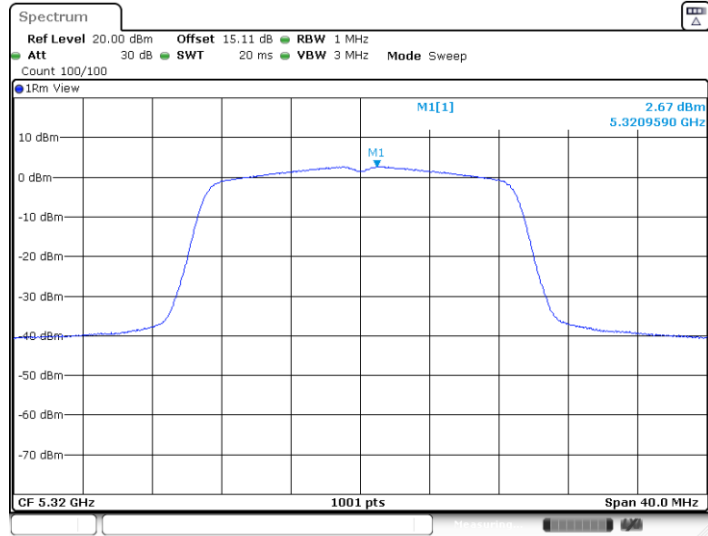
11N20SISO_Ant1_5300



Date: 25.MAY.2024 16:47:38

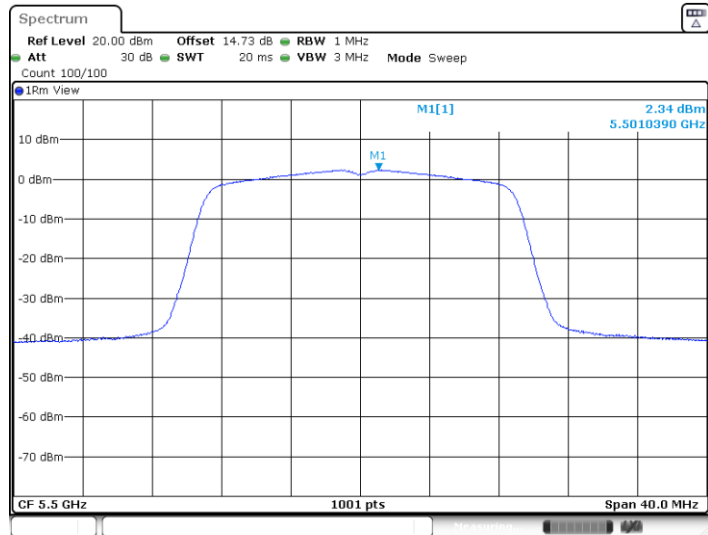


11N20SISO_Ant1_5320



Date: 25.MAY.2024 16:48:22

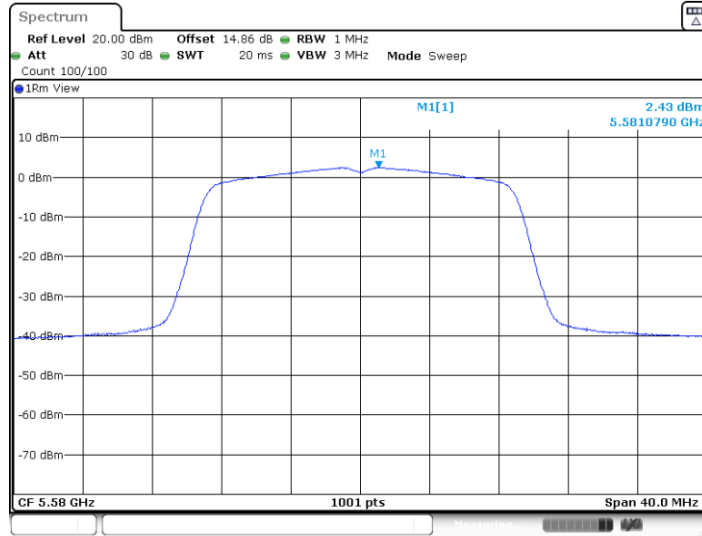
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Date: 25.MAY.2024 16:48:55

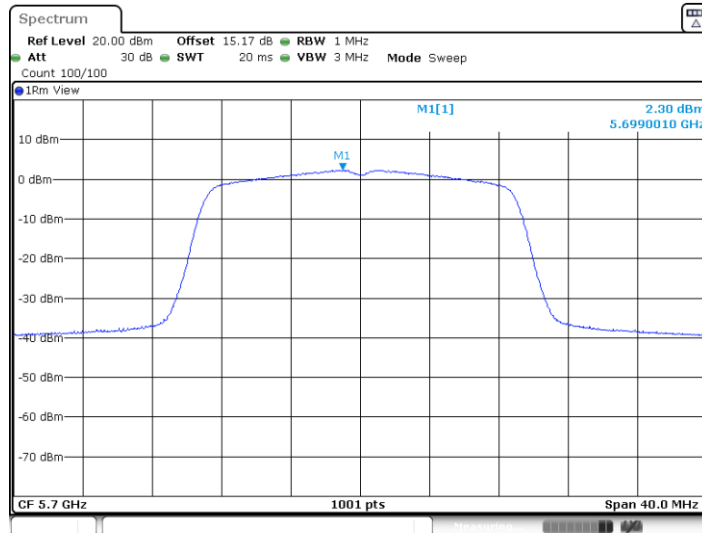


11N20SISO_Ant1_5580



Date: 25.MAY.2024 16:49:33

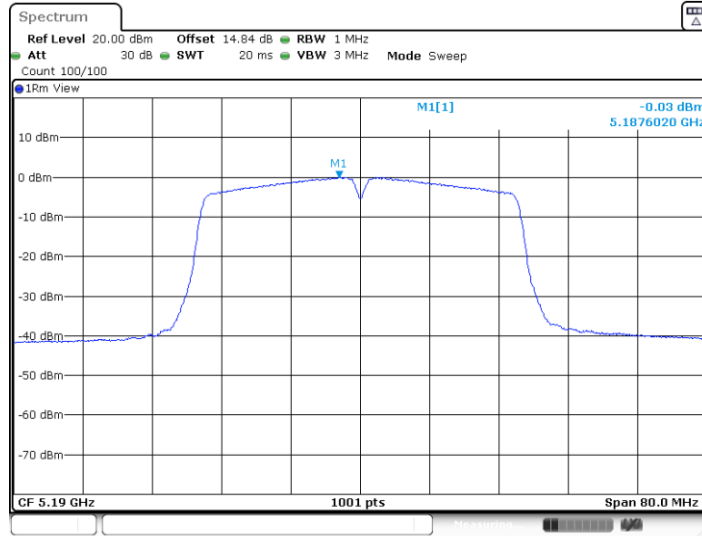
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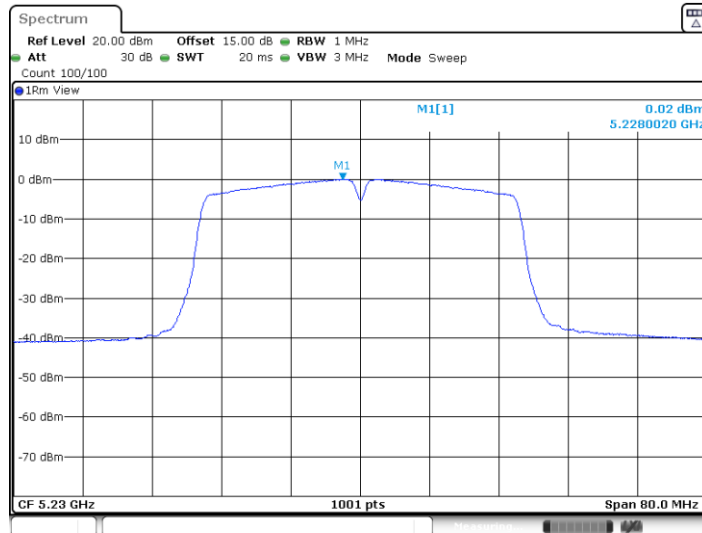


11N40SISO_Ant1_5190



Date: 25.MAY.2024 16:51:36

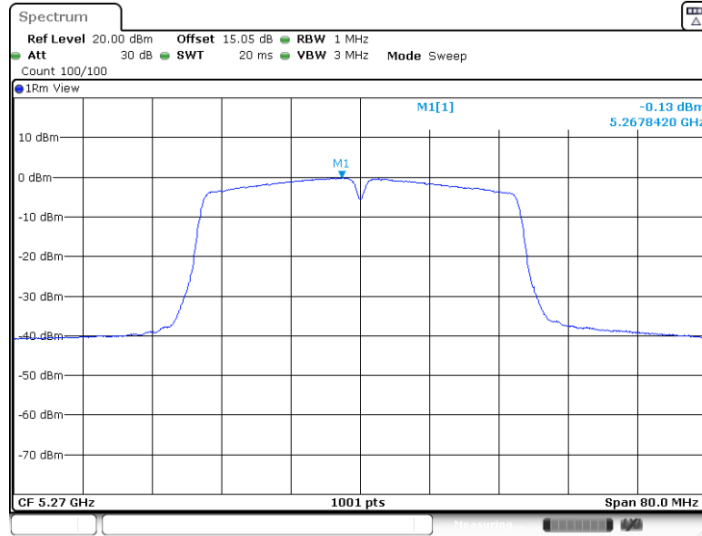
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Date: 25.MAY.2024 16:52:10

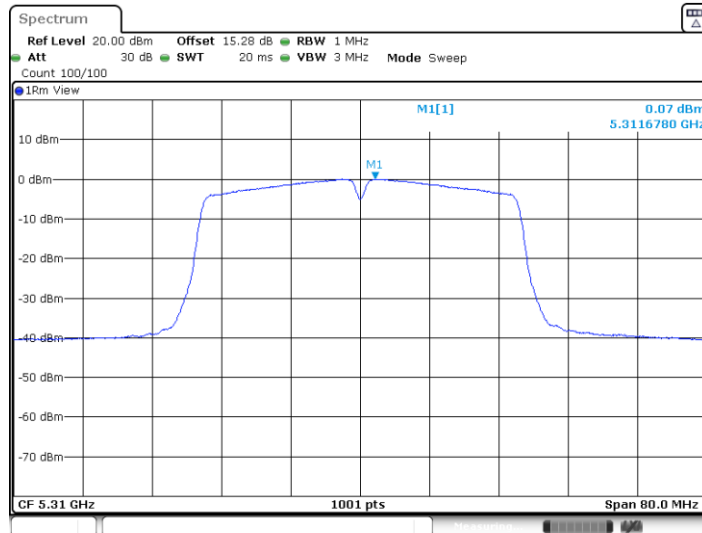


11N40SISO_Ant1_5270



Date: 25.MAY.2024 16:52:45

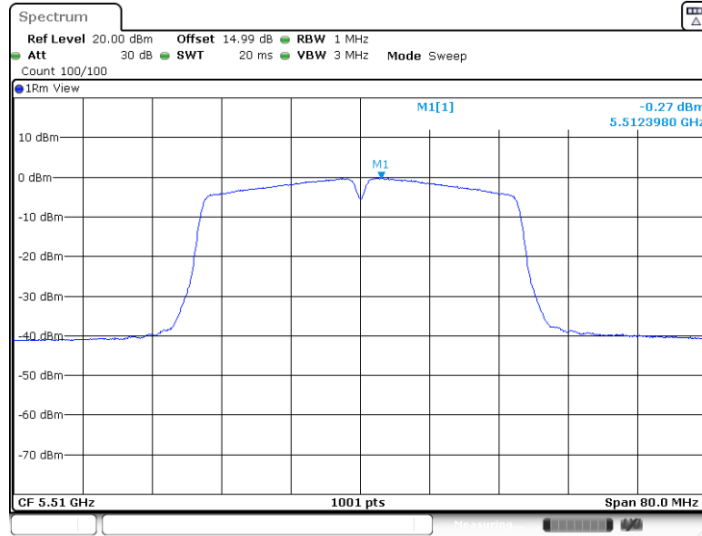
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Date: 25.MAY.2024 16:53:19

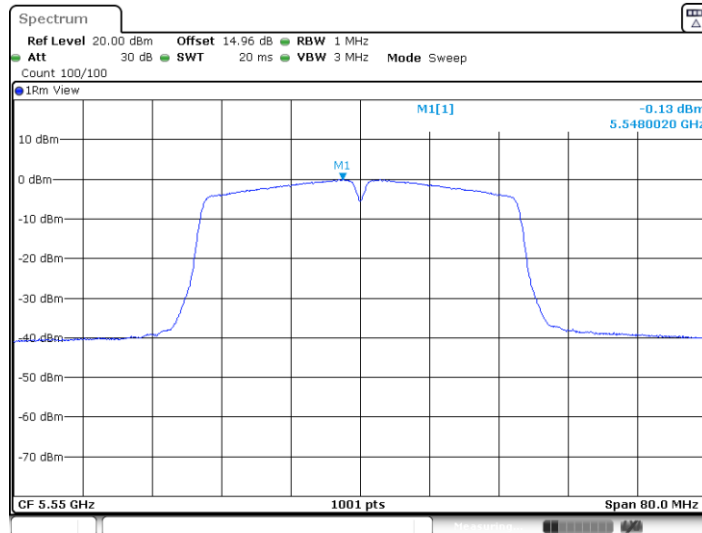


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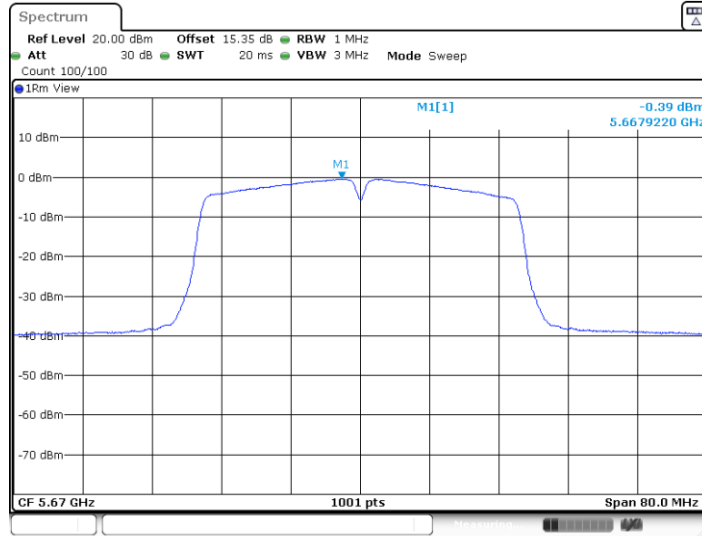
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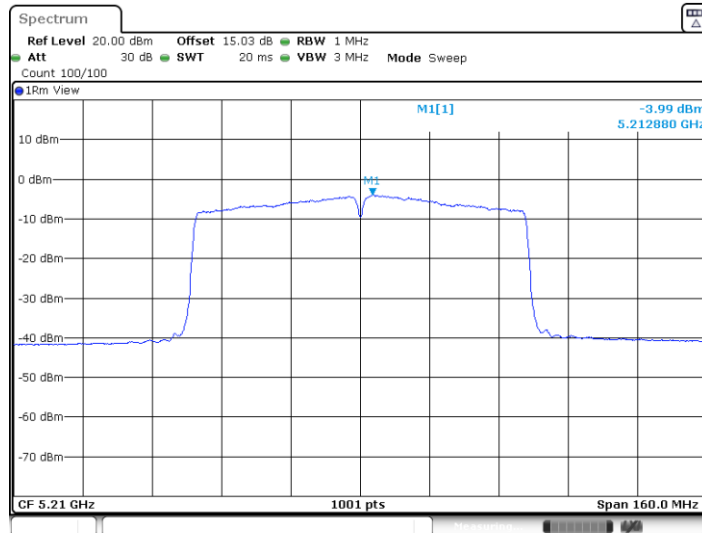


11N40SISO_Ant1_5670



Date: 25.MAY.2024 16:55:00

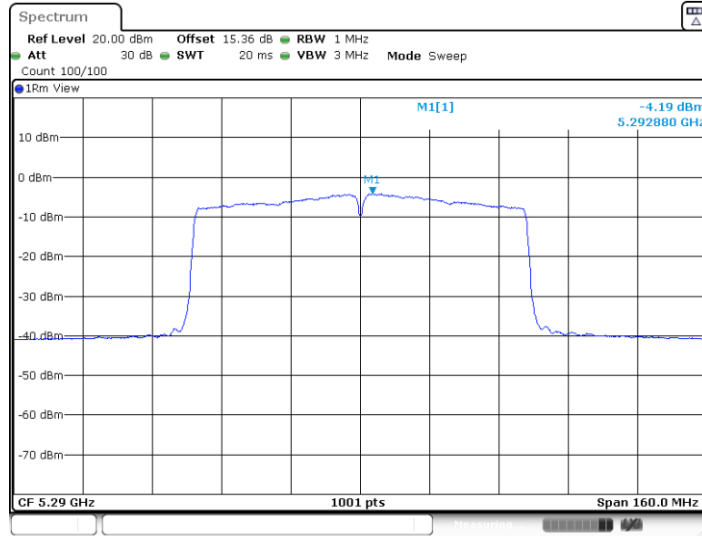
11AC80SISO_Ant1_5210



Date: 25.MAY.2024 16:55:53

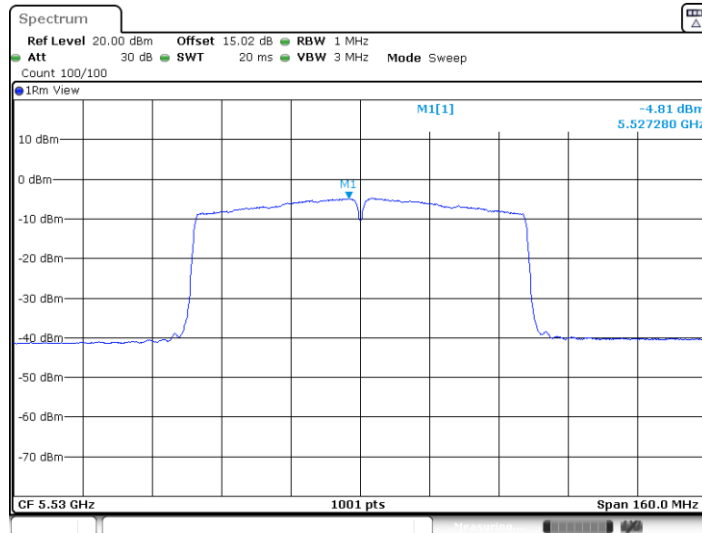


11AC80SISO_Ant1_5290



Date: 25.MAY.2024 16:56:27

11AC80SISO_Ant1_5530

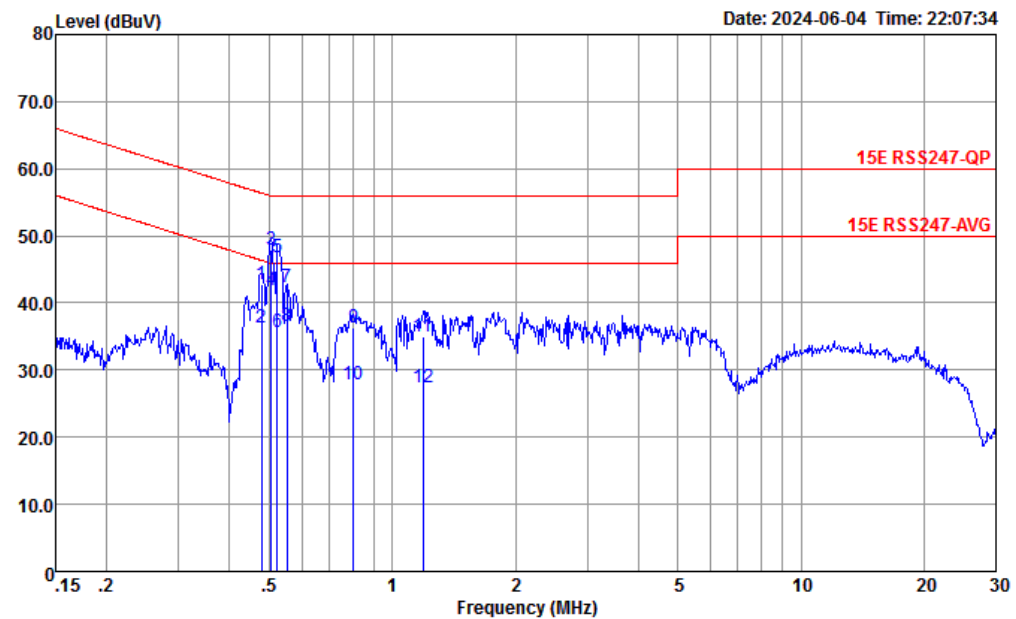


Date: 25.MAY.2024 16:57:02



Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

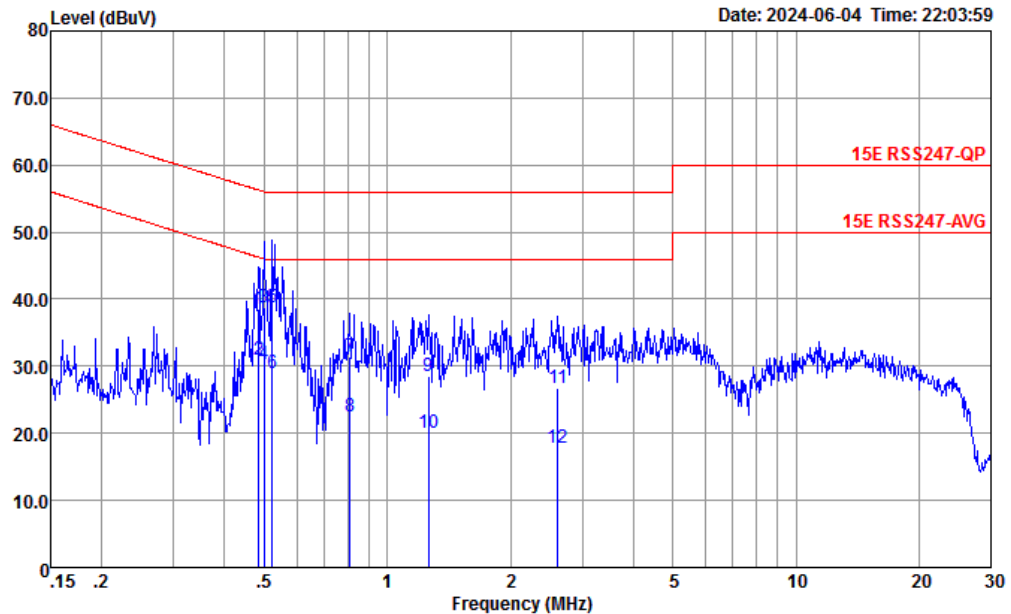


Site : CO01-KS
Condition : 15E RSS247-QP LISN-060105-L 2023 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.479	42.81	-13.55	56.36	32.60	-0.02	10.23	QP
2	0.479	36.31	-10.05	46.36	26.10	-0.02	10.23	Average
3	0.505	47.99	-8.01	56.00	37.80	-0.03	10.22	QP
4 *	0.505	41.89	-4.11	46.00	31.70	-0.03	10.22	Average
5	0.524	46.87	-9.13	56.00	36.70	-0.04	10.21	QP
6	0.524	35.67	-10.33	46.00	25.50	-0.04	10.21	Average
7	0.552	42.25	-13.75	56.00	32.09	-0.04	10.20	QP
8	0.552	36.45	-9.55	46.00	26.29	-0.04	10.20	Average
9	0.804	36.43	-19.57	56.00	26.40	-0.08	10.11	QP
10	0.804	27.83	-18.17	46.00	17.80	-0.08	10.11	Average
11	1.191	34.88	-21.12	56.00	24.90	-0.11	10.09	QP
12	1.191	27.48	-18.52	46.00	17.50	-0.11	10.09	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition : 15E RSS247-QP LISN-060105-N 2023 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.484	38.66	-17.61	56.27	28.50	-0.07	10.23	QP
2 *	0.484	30.96	-15.31	46.27	20.80	-0.07	10.23	Average
3	0.499	38.75	-17.26	56.01	28.60	-0.07	10.22	QP
4	0.499	30.25	-15.76	46.01	20.10	-0.07	10.22	Average
5	0.524	38.74	-17.26	56.00	28.60	-0.07	10.21	QP
6	0.524	29.04	-16.96	46.00	18.90	-0.07	10.21	Average
7	0.809	31.33	-24.67	56.00	21.30	-0.08	10.11	QP
8	0.809	22.63	-23.47	46.00	12.50	-0.08	10.11	Average
9	1.262	28.68	-27.42	56.00	18.60	-0.11	10.09	QP
10	1.262	20.08	-25.92	46.00	10.10	-0.11	10.09	Average
11	2.608	26.85	-29.15	56.00	16.91	-0.13	10.07	QP
12	2.608	17.85	-28.15	46.00	7.91	-0.13	10.07	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. Radiated Spurious Emission Test Data

Test Engineer:	Carl Ni	Relative Humidity:	41 ~ 42 %
		Temperature:	22 ~ 23 °C

Radiated Spurious Emission Test Modes

Mode	Band	Band (GHz)	Antenna	Modulation	Channel	Frequency	Data Rate	Remark
Mode 1	U-NII-1	5.15-5.25	1	802.11a	36	5180	6Mbps	-
Mode 2	U-NII-1	5.15-5.25	1	802.11a	44	5220	6Mbps	-
Mode 3	U-NII-1	5.15-5.25	1	802.11a	48	5240	6Mbps	-
Mode 4	U-NII-2A	5.25-5.35	1	802.11a	52	5260	6Mbps	-
Mode 5	U-NII-2A	5.25-5.35	1	802.11a	60	5300	6Mbps	-
Mode 6	U-NII-2A	5.25-5.35	1	802.11a	64	5320	6Mbps	-
Mode 7	U-NII-2C	5.47-5.725	1	802.11a	100	5500	6Mbps	-
Mode 8	U-NII-2C	5.47-5.725	1	802.11a	116	5580	6Mbps	-
Mode 9	U-NII-2C	5.47-5.725	1	802.11a	140	5700	6Mbps	-
Mode 10	U-NII-1	5.15-5.25	1	802.11n HT20	36	5180	MCS0	-
Mode 11	U-NII-1	5.15-5.25	1	802.11n HT20	44	5220	MCS0	-
Mode 12	U-NII-1	5.15-5.25	1	802.11n HT20	48	5240	MCS0	-
Mode 13	U-NII-2A	5.25-5.35	1	802.11n HT20	52	5260	MCS0	-
Mode 14	U-NII-2A	5.25-5.35	1	802.11n HT20	60	5300	MCS0	-
Mode 15	U-NII-2A	5.25-5.35	1	802.11n HT20	64	5320	MCS0	-
Mode 16	U-NII-2C	5.47-5.725	1	802.11n HT20	100	5500	MCS0	-
Mode 17	U-NII-2C	5.47-5.725	1	802.11n HT20	116	5580	MCS0	-
Mode 18	U-NII-2C	5.47-5.725	1	802.11n HT20	140	5700	MCS0	-
Mode 19	U-NII-1	5.15-5.25	1	802.11n HT40	38	5190	MCS0	-
Mode 20	U-NII-1	5.15-5.25	1	802.11n HT40	46	5230	MCS0	-
Mode 21	U-NII-2A	5.25-5.35	1	802.11n HT40	54	5270	MCS0	-
Mode 22	U-NII-2A	5.25-5.35	1	802.11n HT40	62	5310	MCS0	-
Mode 23	U-NII-2C	5.47-5.725	1	802.11n HT40	102	5510	MCS0	-
Mode 24	U-NII-2C	5.47-5.725	1	802.11n HT40	110	5550	MCS0	-
Mode 25	U-NII-2C	5.47-5.725	1	802.11n HT40	134	5670	MCS0	-
Mode 26	U-NII-1	5.15-5.25	1	802.11ac VHT80	42	5210	MCS0	-
Mode 27	U-NII-2A	5.25-5.35	1	802.11ac VHT80	58	5290	MCS0	-
Mode 28	U-NII-2C	5.47-5.725	1	802.11ac VHT80	106	5530	MCS0	-
Mode 30	U-NII-2C	5.47-5.725	1	802.11n HT20	140	5700	MCS0	-
	GSM 850 Link							-
Mode 31	U-NII-2C	5.47-5.725	1	802.11n HT20	140	5700	MCS0	-
	2.4G	2.4-2.4835	1	Bluetooth-LE	38	2478	2Mbps	-