FCC/ISED RF Test Report

APPLICANT	:	Motorola Solutions Inc.
EQUIPMENT	:	WAVE PTX TWO-WAY RADIO
BRAND NAME	:	MOTOROLA
FCC MODEL NAME	:	TLK 25 Wi-Fi
FCC MODEL NUMBER	:	HK2198A
HVIN	:	HK2206A
IC MODEL NUMBER	:	HK2206A
PMN	:	TLK 25 Wi-Fi
FCC ID	:	AZ499FT7172
IC	:	109U-99FT7172
STANDARD	:	FCC Part 15 Subpart E §15.407 ISED RSS-247 Issue 2
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure
TEST DATE(S)	:	Jun. 16, 2023 ~ Jul. 03, 2023

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

ACCREDITED Cert #5145.02

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
FR341404-01D	Rev. 01	Initial issue of report	Jul. 12, 2023
FR341404-01D	Rev. 02	Update Emission Designator on Page 4	Aug. 02, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	ISED Rule	Description	Limit for U-NII-1/2A/2C	Limit for U-NII-3	Result	Remark
3.1	2.1049 & 15.403(i)	RSS-247 Section 6	6dB, 26dB Bandwidth	-	6dB Bandwidth > 500kHz	Pass	-
3.1	2.1049 & 15.403(i)	RSS-247 Section 6	Emission Designator	-	Report Only	Pass	802.11a : 17M9D1D 802.11n HT20 : 18M6D1D 802.11n HT40 : 36M8D1D 802.11ac VHT40 : 36M8D1D 802.11ac VHT80 : 76M6D1D
3.2	15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	≤ 24 dBm / RSS-247 Section 6 Limit	≤ 30 dBm	Pass	802.11a: 17.48dBm/0.0560W 802.11n HT20: 16.89dBm/0.0489W 802.11n HT40: 16.36dBm/0.0433W 802.11ac VHT20: 16.31dBm/0.0428W 802.11ac VHT40: 16.83 dBm/0.0482W 802.11ac VHT80: 15.71dBm/0.0372W
3.3	15.407(a)	RSS-247 Section 6	Power Spectral Density	≤ 11 dBm/MHz / RSS-247 Section 6 Limit	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	RSS-247 Section 6	Unwanted Emissions	15.407(b) & 15.209(a) / RSS-247 [6.2] & RSS-Gen [8.9 Table 5, Table 6 and Table 7]	15.407(b)(4)(i) &15.209(a) / RSS-247 [6.2] & RSS-Gen [8.9 Table 5, Table 6 and Table 7]	Pass	Under limit 5.03 dB at 5350.20 MHz for Band Edge, Under limit 17.25 dB at 11650.00 MHz for Harmonic, Under limit 7.46 dB at 34.85 MHz (Quasi-peak) for LF
3.5	15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a) / RSS-Gen [8.8 Table 4]	15.207(a) / RSS-Gen [8.8 Table 4]	Pass	Under limit 18.85 dB at 4.822 MHz
3.6	15.203 & 15.407(a)	N/A	Antenna Requirement	N/A	N/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/manufacturer 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

Motorola Solutions Inc.
8000 West Sunrise Boulevard, Fort Lauderdale, Florida

1.2 Manufacturer

Motorola Solutions Inc.
8000 West Sunrise Boulevard, Fort Lauderdale, Florida

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	WAVE PTX TWO-WAY RADIO
Brand Name	MOTOROLA
FCC Model Name	TLK 25 Wi-Fi
FCC Model Number	HK2198A
HVIN	HK2206A
IC Model Number	HK2206A
PMN	TLK 25 Wi-Fi
FCC ID	AZ499FT7172
IC	109U-99FT7172
SN	Conducted: 64222ZJ0072 Conduction: 64222ZJ0083 Radiation: 64222ZJ0090
HW Version	P2B
SW Version/FVIN	VANGOGH_BASE_ENG_D00.00.09_AP_D00.00.40_WNA
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 5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	**<5180 MHz ~ 5240 MHz>** 802.11a : 17.48 dBm / 0.0560 W 802.11n HT20 : 16.51 dBm / 0.0448 W 802.11n HT40 : 15.33 dBm / 0.0341 W 802.11ac VHT20: 15.48 dBm / 0.0353 W 802.11ac VHT40: 14.36 dBm / 0.0273 W 802.11ac VHT80: 10.68 dBm / 0.0117 W **<5260 MHz ~ 5320 MHz>** 802.11a : 17.23 dBm / 0.0528 W 802.11n HT20 : 16.49 dBm / 0.0446 W 802.11n HT40 : 14.53 dBm / 0.0284 W 802.11ac VHT20: 15.20 dBm / 0.0331 W 802.11ac VHT40: 13.87 dBm / 0.0244 W 802.11ac VHT80: 10.90 dBm / 0.0123 W **<5500 MHz ~ 5700 MHz >** 802.11a : 16.85 dBm / 0.0484 W 802.11n HT20 : 16.06 dBm / 0.0404 W 802.11n HT40 : 16.36 dBm / 0.0433 W 802.11ac VHT20: 15.61 dBm / 0.0364 W 802.11ac VHT40: 14.74 dBm / 0.0298 W 802.11ac VHT80: 15.67 dBm / 0.0369 W **<5745 MHz ~ 5825 MHz>** 802.11a : 17.33 dBm / 0.0541 W 802.11n HT20 : 16.89 dBm / 0.0489 W 802.11n HT40 : 15.90 dBm / 0.0389 W 802.11ac VHT20: 16.31 dBm / 0.0428 W 802.11ac VHT40: 16.83 dBm / 0.0482 W 802.11ac VHT80: 15.71 dBm / 0.0372 W

99% Occupied Bandwidth	**<5180 MHz ~ 5240 MHz>** 802.11a : 17.742 MHz 802.11n HT20 : 18.501 MHz 802.11n HT40 : 36.763 MHz 802.11ac VHT80 : 76.563 MHz **<5260 MHz ~ 5320 MHz>** 802.11a : 17.502 MHz 802.11n HT20 : 18.382 MHz 802.11n HT40 : 36.683 MHz 802.11ac VHT80 : 76.244 MHz **<5500 MHz ~ 5700 MHz>** 802.11a : 17.582 MHz 802.11n HT20 : 18.382 MHz 802.11n HT40 : 36.683 MHz 802.11ac VHT80 : 76.404 MHz **<5745 MHz ~ 5825 MHz>** 802.11a : 17.862 MHz 802.11n HT20 : 18.621 MHz 802.11n HT40 : 36.763 MHz 802.11ac VHT40 : 36.843 MHz 802.11ac VHT80 : 76.404 MHz
Antenna Type / Gain	**<5180 MHz ~ 5240 MHz>** PIFA Antenna with gain 0.9 dBi **<5260 MHz ~ 5320 MHz>** PIFA Antenna with gain 1.3 dBi **<5500 MHz ~ 5700 MHz>** PIFA Antenna with gain 1.1 dBi **<5745 MHz ~ 5825 MHz>** PIFA Antenna with gain 1.1 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:

1. For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode of Band UNII-1/2A/2C, the whole testing has assessed only 802.11n HT20/ HT40 by referring to their higher conducted power.
2. For 802.11n HT20 / ac VHT20 mode of Band UNII-3, the whole testing has assessed only 802.11n HT20 by referring to their higher conducted power.

1.5 Specification of Accessory

Accessories Information				
AC Adapter	**Brand Name**	MOTOROLA	**Model Name**	PS000150A31
Battery	**Brand Name**	MOTOROLA	**Model Name**	PMNN4602A
Earphone 1	**Brand Name**	MOTOROLA	**Model Name**	PMLN8536A
USB Cable	**Brand Name**	MOTOROLA	**Model Name**	PMKN4294A
Badge Clip	**Brand Name**	MOTOROLA	**Model Name**	PMLN8538A

1.6 Modification of EUT

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

1.7 Testing Location

<FCC>

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

<IC>

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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.**	**Company Number**	**CAB identifier**
	CO01-KS 03CH06-KS TH01-KS	4086E	CN0050

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH06-KS	AUDIX	E3	6.2009-8-24al
2.	CO01-KS	AUDIX	E3	6.2009-8-24

1.9 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
- ISED RSS-247 Issue 2
- ISED RSS-Gen Issue 5

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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 (Z 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

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5745-5825 MHz U-NII-3	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122#	5610	128	5640

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

2.2 Test Mode

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

Modulation	Data Rate
802.11a	**6 Mbps**
802.11n HT20	**MCS0**
802.11n HT40	**MCS0**
802.11ac VHT40	**MCS0**
802.11ac VHT80	**MCS0**

AC Conducted Emission	Mode 1 : WLAN Link(5G) + USB Cable (Charging from Adapter)
Remark: For Radiated Test Cases, The tests were performed with Adapter, USB Cable and Earphone 1.	

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11a	802.11a	802.11a	802.11a
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

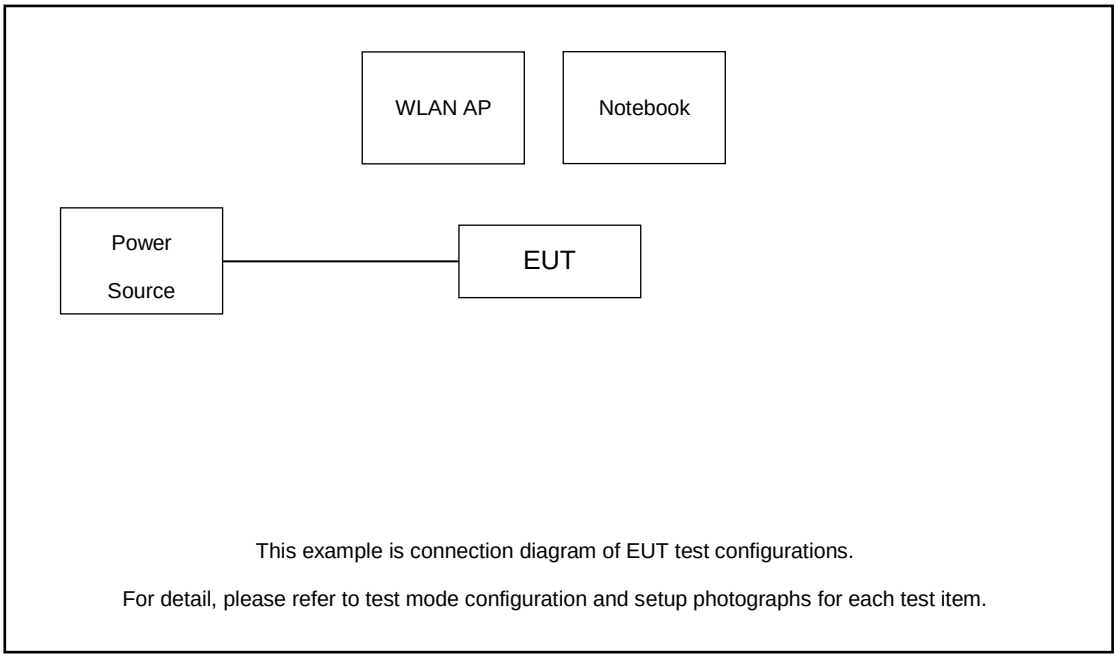
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11n HT20	802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11n HT40	802.11n HT40	802.11n HT40	802.11n HT40 / 802.11ac VHT40
L	Low	38	54	102	151
M	Middle	-	-	110	-
H	High	46	62	134	159

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106	-
M	Middle	42	58	-	155
H	High	-	-	122	-

2.3 Connection Diagram of Test System

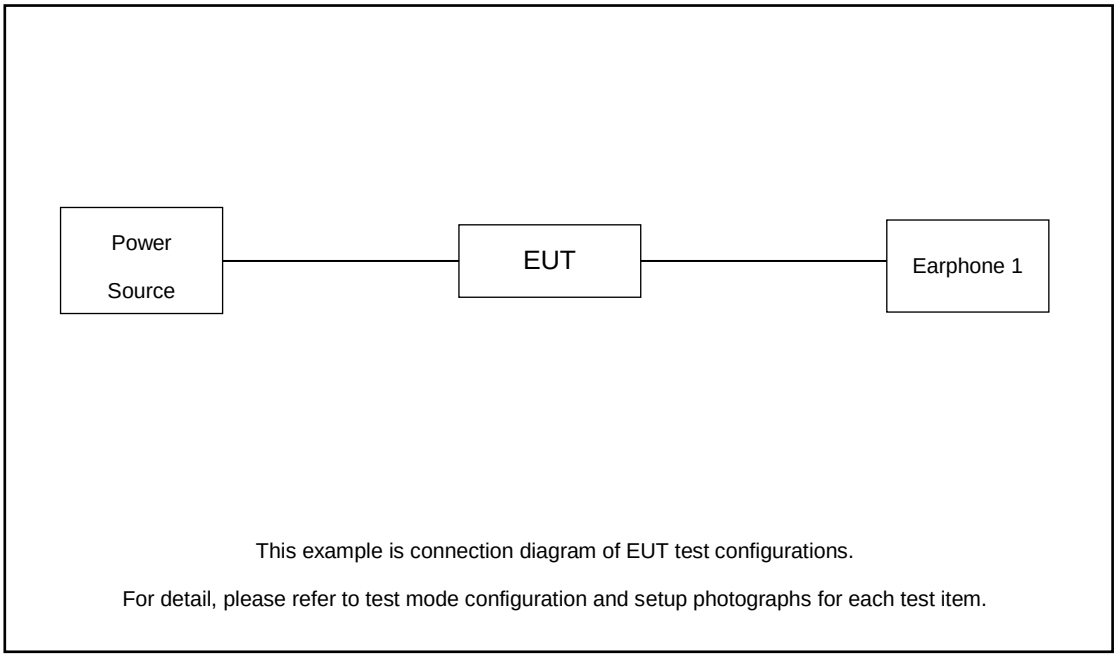
For Conducted Emission:



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

For Radiated Emission:



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded, 1.8m
2.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

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

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 6.25 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 6.25 + 10 = 16.25 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

3.1.2 Measuring Instruments

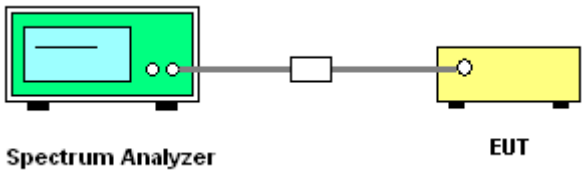
The measuring equipment is listed in the section 4 of this test report.

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) ≥ 3 * RBW. **7.** Measure and record the results in the test report.
☒	Section C) Bandwidth Measurement 2. Minimum Emission Bandwidth for the band 5.725 - 5.85 GHz
	1. Set RBW = 100kHz. **2.** Set the VBW ≥ 3 x RBW. **3.** Detector = Peak. **4.** Trace mode = max hold **5.** Measure the maximum width of the emission that is 6 dB down from the peak of the emission. **6.** Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 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 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

<IC RSS-247 Section 6>

For the 5.15–5.25 GHz band,

☐	For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less stringent. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
☒	For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.25–5.35 GHz band,

☐	For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
☒	Other than devices installed in vehicles, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

For the 5.47–5.6 GHz and 5.65–5.725 GHz band, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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.

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3.2.2 Measuring Instruments

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

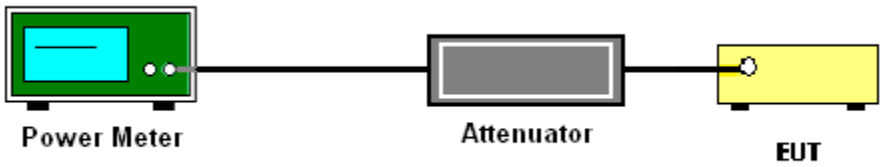
3.2.3 Test Procedures

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									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail	Power Setting
					Ant 1	Ant 1	Ant 1		Ant 1
11a	6Mbps	1	36	5180	16.72	24.00	0.90	Pass	15.5
11a	6Mbps	1	44	5220	17.48	24.00	0.90	Pass	17
11a	6Mbps	1	48	5240	17.38	24.00	0.90	Pass	17
HT20	MCS0	1	36	5180	15.17	24.00	0.90	Pass	14
HT20	MCS0	1	44	5220	16.51	24.00	0.90	Pass	16
HT20	MCS0	1	48	5240	16.36	24.00	0.90	Pass	16
HT40	MCS0	1	38	5190	11.11	24.00	0.90	Pass	8
HT40	MCS0	1	46	5230	15.33	24.00	0.90	Pass	14
VHT20	MCS0	1	36	5180	14.85	24.00	0.90	Pass	14
VHT20	MCS0	1	44	5220	15.47	24.00	0.90	Pass	15
VHT20	MCS0	1	48	5240	15.48	24.00	0.90	Pass	15
VHT40	MCS0	1	38	5190	10.92	24.00	0.90	Pass	8
VHT40	MCS0	1	46	5230	14.36	24.00	0.90	Pass	13
VHT80	MCS0	1	42	5210	10.68	24.00	0.90	Pass	8

IC U-NII-1											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	IC EIRP Power (dBm)	IC EIRP Power Limit (dBm)	Pass /Fail	Power Setting
					Ant 1	Ant 1	Ant 1	Ant 1	Ant 1		Ant 1
11a	6Mbps	1	36	5180	16.72	21.51	0.90	17.62	22.41	Pass	15.5
11a	6Mbps	1	44	5220	17.48	21.56	0.90	18.38	22.46	Pass	17
11a	6Mbps	1	48	5240	17.38	21.54	0.90	18.28	22.44	Pass	17
HT20	MCS0	1	36	5180	15.17	21.77	0.90	16.07	22.67	Pass	14
HT20	MCS0	1	44	5220	16.51	21.76	0.90	17.41	22.66	Pass	16
HT20	MCS0	1	48	5240	16.36	21.74	0.90	17.26	22.64	Pass	16
HT40	MCS0	1	38	5190	11.11	22.11	0.90	12.01	23.01	Pass	8
HT40	MCS0	1	46	5230	15.33	22.11	0.90	16.23	23.01	Pass	14
VHT20	MCS0	1	36	5180	14.85	21.77	0.90	15.75	22.67	Pass	14
VHT20	MCS0	1	44	5220	15.47	21.76	0.90	16.37	22.66	Pass	15
VHT20	MCS0	1	48	5240	15.48	21.74	0.90	16.38	22.64	Pass	15
VHT40	MCS0	1	38	5190	10.92	22.11	0.90	11.82	23.01	Pass	8
VHT40	MCS0	1	46	5230	14.36	22.11	0.90	15.26	23.01	Pass	13
VHT80	MCS0	1	42	5210	10.68	22.11	0.90	11.58	23.01	Pass	8

FCC/IC U-NII-2A										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
					Ant 1	Ant 1	Ant 1			Ant 1
11a	6Mbps	1	52	5260	17.03	23.98	1.30	26.99	Pass	16.5
11a	6Mbps	1	60	5300	17.01	23.98	1.30	26.99	Pass	16.5
11a	6Mbps	1	64	5320	17.23	23.98	1.30	26.99	Pass	17
HT20	MCS0	1	52	5260	16.49	23.98	1.30	26.99	Pass	16
HT20	MCS0	1	60	5300	16.42	23.98	1.30	26.99	Pass	16
HT20	MCS0	1	64	5320	16.13	23.98	1.30	26.99	Pass	16
HT40	MCS0	1	54	5270	14.53	23.98	1.30	26.99	Pass	13
HT40	MCS0	1	62	5310	12.03	23.98	1.30	26.99	Pass	10
VHT20	MCS0	1	52	5260	14.63	23.98	1.30	26.99	Pass	14
VHT20	MCS0	1	60	5300	14.57	23.98	1.30	26.99	Pass	14
VHT20	MCS0	1	64	5320	15.20	23.98	1.30	26.99	Pass	15
VHT40	MCS0	1	54	5270	13.87	23.98	1.30	26.99	Pass	12
VHT40	MCS0	1	62	5310	11.63	23.98	1.30	26.99	Pass	10
VHT80	MCS0	1	58	5290	10.90	23.98	1.30	26.99	Pass	9

FCC/IC U-NII-2C											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
					Ant 1	Ant 1	Ant 1	Ant 1			Ant 1
11a	6Mbps	1	100	5500	0.08	16.76	23.98	1.10	26.99	Pass	17
11a	6Mbps	1	116	5580	0.08	16.65	23.98	1.10	26.99	Pass	16
11a	6Mbps	1	140	5700	0.08	16.85	23.98	1.10	26.99	Pass	17
HT20	MCS0	1	100	5500	0.09	16.06	23.98	1.10	26.99	Pass	16
HT20	MCS0	1	116	5580	0.09	14.68	23.98	1.10	26.99	Pass	14
HT20	MCS0	1	140	5700	0.09	13.87	23.98	1.10	26.99	Pass	14
HT40	MCS0	1	102	5510	0.18	14.13	23.98	1.10	26.99	Pass	12.5
HT40	MCS0	1	110	5550	0.18	14.63	23.98	1.10	26.99	Pass	13.5
HT40	MCS0	1	134	5670	0.18	16.36	23.98	1.10	26.99	Pass	15.5
VHT20	MCS0	1	100	5500	0.09	15.61	23.98	1.10	26.99	Pass	16
VHT20	MCS0	1	116	5580	0.09	13.99	23.98	1.10	26.99	Pass	13
VHT20	MCS0	1	140	5700	0.09	13.84	23.98	1.10	26.99	Pass	14
VHT40	MCS0	1	102	5510	0.17	13.42	23.98	1.10	26.99	Pass	12.5
VHT40	MCS0	1	110	5550	0.17	14.27	23.98	1.10	26.99	Pass	13
VHT40	MCS0	1	134	5670	0.17	14.74	23.98	1.10	26.99	Pass	13
VHT80	MCS0	1	106	5530	0.38	11.75	23.98	1.10	26.99	Pass	10
VHT80	MCS0	1	122	5610	0.38	15.67	23.98	1.10	26.99	Pass	15

FCC/IC U-NII-3									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail	Power Setting
					Ant 1	Ant 1	Ant 1		Ant 1
11a	6Mbps	1	149	5745	15.11	30.00	1.10	Pass	15
11a	6Mbps	1	157	5785	15.89	30.00	1.10	Pass	15
11a	6Mbps	1	165	5825	17.33	30.00	1.10	Pass	16
HT20	MCS0	1	149	5745	15.62	30.00	1.10	Pass	15.5
HT20	MCS0	1	157	5785	14.80	30.00	1.10	Pass	14
HT20	MCS0	1	165	5825	16.89	30.00	1.10	Pass	16
HT40	MCS0	1	151	5755	15.01	30.00	1.10	Pass	14
HT40	MCS0	1	159	5795	15.90	30.00	1.10	Pass	14
VHT20	MCS0	1	149	5745	13.75	30.00	1.10	Pass	13
VHT20	MCS0	1	157	5785	13.10	30.00	1.10	Pass	12
VHT20	MCS0	1	165	5825	16.31	30.00	1.10	Pass	15
VHT40	MCS0	1	151	5755	13.92	30.00	1.10	Pass	12
VHT40	MCS0	1	159	5795	16.83	30.00	1.10	Pass	15
VHT80	MCS0	1	155	5775	15.71	30.00	1.10	Pass	14.5

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.

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

<IC RSS-247 Section 6>

For the 5.15–5.25 GHz band, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the 5.25–5.35 GHz band, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

For the 5.47–5.6 GHz and 5.65–5.725 GHz band, the power spectral density shall not exceed 11 dBm in any 1.0 MHz 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 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, and 5.47 - 5.725 GHz

 # 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 ≥ 3 MHz.
- Number of points in sweep ≥ 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.

For devices operating in the band 5.725 - 5.85 GHz

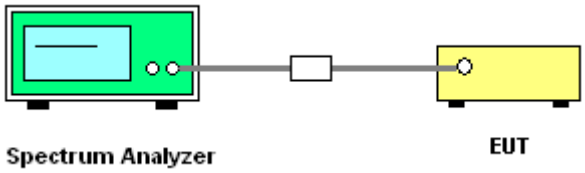
 # Method SA-2 #

(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 = 500KHz (or 300 kHz if the SA can’t set RBW=500KHz).
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- If the SA can’t set RBW=500KHz, then add 10 log(500kHz/RBW) to the test result.
- 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 Part15.205.

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) For transmitters operating in the 5.725-5.85 GHz band:
15.407(b)(4)(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.

(3) 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

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

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

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

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

(4) ANSI C63.10-2013 clause 12.7.3 note 97

As specified by regulatory requirements, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit. However, an out-of-band emission that complies with both the average and peak general regulatory limits is not required to satisfy the peak emission limit.

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 ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

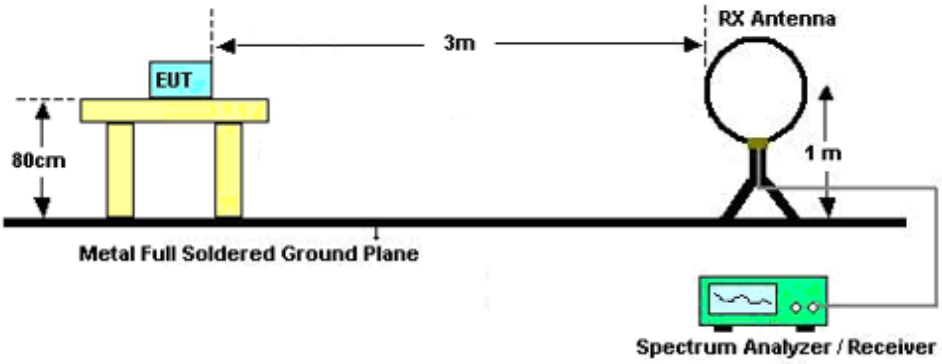
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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.

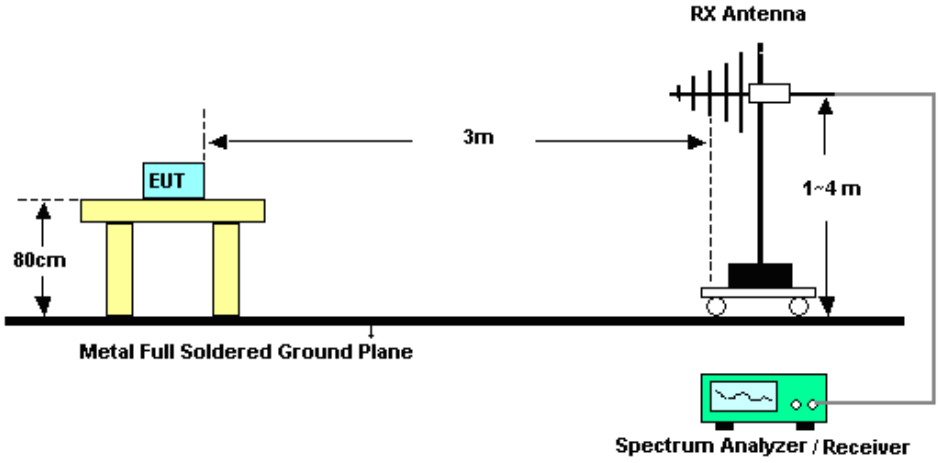
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

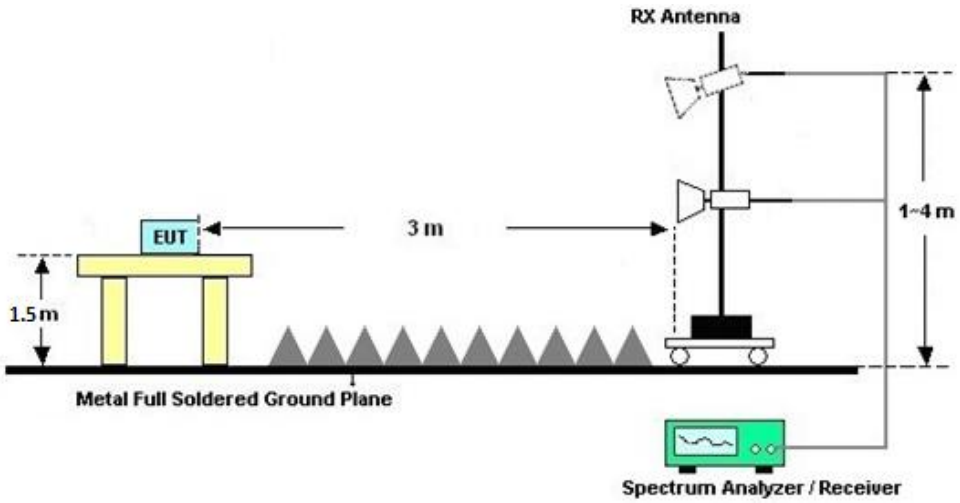
For radiated emissions below 30MHz



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 (dBμV)	
	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.

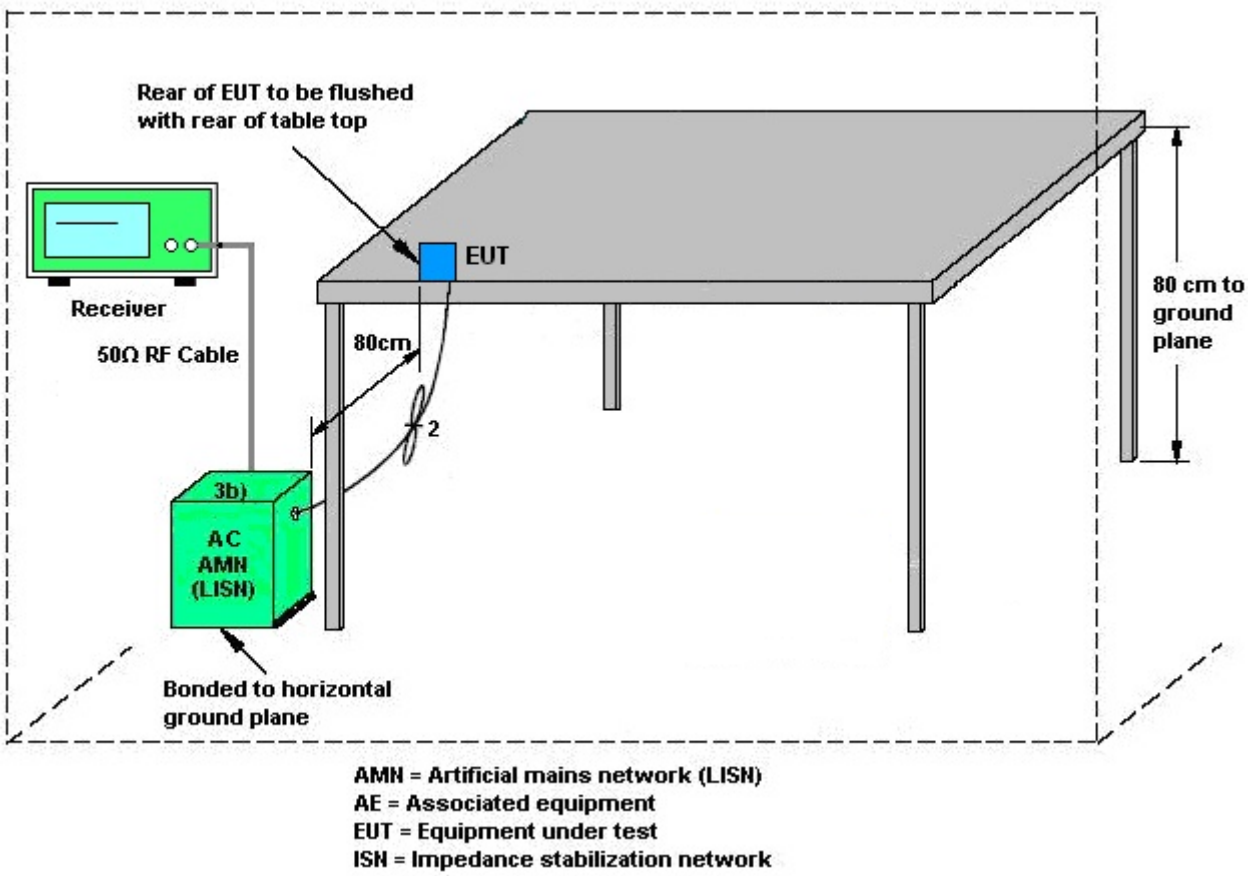
3.5.2 Measuring Instruments

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
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 12, 2022	Jun. 16, 2023~ Jun. 30, 2023	Oct. 11, 2023	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 05, 2023	Jun. 16, 2023~ Jun. 30, 2023	Jan. 04, 2024	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 05, 2023	Jun. 16, 2023~ Jun. 30, 2023	Jan. 04, 2024	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS001	30MHz~40GHz	Jun. 18, 2022	Jun. 16, 2023~ Jun. 30, 2023	Jun. 17, 2023	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS001	30MHz~40GHz	Jun. 17, 2023		Jun. 16, 2024	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS002	30MHz~40GHz	Jun. 18, 2022	Jun. 16, 2023~ Jun. 30, 2023	Jun. 17, 2023	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS002	30MHz~40GHz	Jun. 17, 2023		Jun. 16, 2024	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS003	30MHz~40GHz	Jun. 18, 2022	Jun. 16, 2023~ Jun. 30, 2023	Jun. 17, 2023	Conducted (TH01-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX 104	TH01KS003	30MHz~40GHz	Jun. 17, 2023		Jun. 16, 2024	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 13, 2022	Jun. 16, 2023~ Jul. 03, 2023	Oct. 12, 2023	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz-44GHz	Oct. 13, 2022	Jun. 16, 2023~ Jul. 03, 2023	Oct. 12, 2023	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 16, 2022	Jun. 16, 2023~ Jul. 03, 2023	Oct. 15, 2023	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz-1GHz	Apr. 09, 2023	Jun. 16, 2023~ Jul. 03, 2023	Apr. 08, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 06, 2023	Jun. 16, 2023~ Jul. 03, 2023	Apr. 05, 2024	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 08, 2023	Jun. 16, 2023~ Jul. 03, 2023	Jan. 07, 2024	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	380827	9KHz ~1GHZ	Jul. 11, 2022	Jun. 16, 2023~ Jul. 03, 2023	Jul. 10, 2023	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2023	Jun. 16, 2023~ Jul. 03, 2023	Jan. 04, 2024	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 05, 2023	Jun. 16, 2023~ Jul. 03, 2023	Jan. 04, 2024	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 12, 2022	Jun. 16, 2023~ Jul. 03, 2023	Oct. 11, 2023	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jun. 16, 2023~ Jul. 03, 2023	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jun. 16, 2023~ Jul. 03, 2023	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jun. 16, 2023~ Jul. 03, 2023	NCR	Radiation (03CH06-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX126E	03CH06KS001	30Mhz-18Ghz	Jul. 01, 2022	Jun. 16, 2023~ Jul. 03, 2023	Jun. 30, 2023	Radiation (03CH06-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX126E	03CH06KS001	30Mhz-18Ghz	Jun. 30, 2023		Jun. 29, 2024	Radiation (03CH06-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX126E	03CH06KS002	30Mhz-18Ghz	Jul. 01, 2022	Jun. 16, 2023~ Jul. 03, 2023	Jun. 30, 2023	Radiation (03CH06-KS)
RF Cable	HUBER+SUHNER	SUCOFLEX126E	03CH06KS002	30Mhz-18Ghz	Jun. 30, 2023		Jun. 29, 2024	Radiation (03CH06-KS)
High Pass Filter	Wainwright Instruments Gmbh	WHKX10-5850-6500-18000-40ST	1	6.5G High Pass	Jan. 07, 2023	Jun. 16, 2023~ Jul. 03, 2023	Jan. 06, 2024	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 16, 2023	Jun. 19, 2023	May 15, 2024	Conduction (CO01-KS)

AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2022	Jun. 19, 2023	Oct. 12, 2023	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 16, 2023	Jun. 19, 2023	May 15, 2024	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2022	Jun. 19, 2023	Oct. 11, 2023	Conduction (CO01-KS)
RF Cable	WOKEN	Y5T	00100N1Q 3N1	9kHz~30MHz	Sep. 15, 2022	Jun. 19, 2023	Sep. 14, 2023	Conduction (CO01-KS)
Transient limiter	COM-POWER	LIT-153	531040	150kHz~30MHz	Sep. 15, 2022	Jun. 19, 2023	Sep. 14, 2023	Conduction (CO01-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

Test Item	Uncertainty
Conducted Power	±0.46 dB
Conducted Emissions	±2.26 dB
Occupied Channel Bandwidth	±0.1 %
Conducted Power Spectral Density	±0.88 dB

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.94 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.26 dB

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.02 dB

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.26 dB

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

Appendix A. Conducted Test Results

Ambient Condition: 25 ℃, 45 %RH	
According Standard: ■Part15E	
Test Date: 2023.6.16~6.30	**Test Engineer:** Jiang Jun

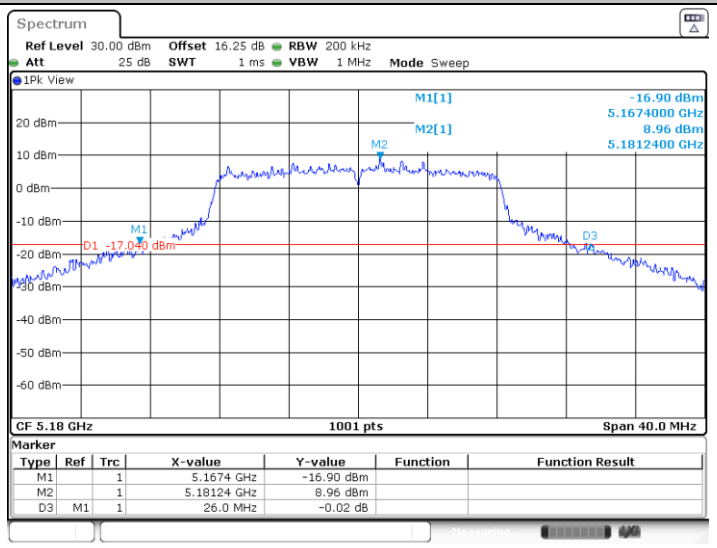
26dB Emission Bandwidth

Test Result

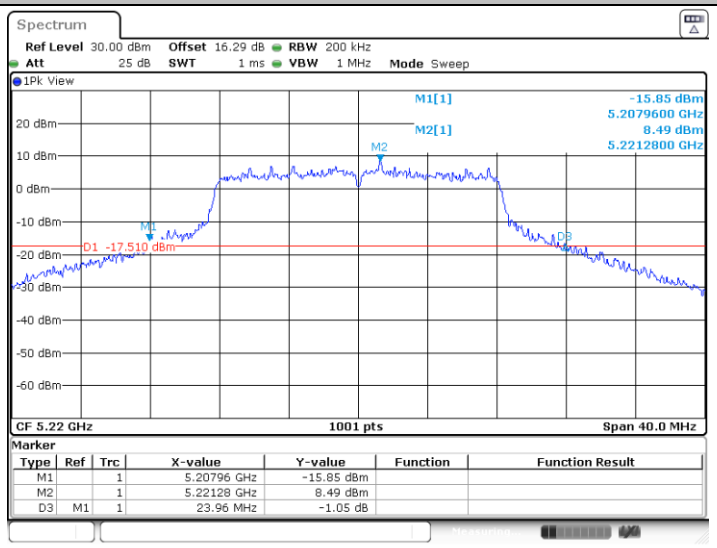
TestMode	Antenna	Freq (MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]	---	---
11A	Ant1	5180	26.00	5167.40	5193.40	---	---
		5220	23.96	5207.96	5231.92	---	---
		5240	24.64	5227.64	5252.28	---	---
		5260	24.48	5247.64	5272.12	---	---
		5300	23.88	5288.04	5311.92	---	---
		5320	25.72	5307.44	5333.16	---	---
		5500	24.48	5487.68	5512.16	---	---
		5580	25.04	5567.68	5592.72	---	---
		5700	25.92	5687.56	5713.48	---	---
		5745	23.60	5733.92	5757.52	---	---
		5785	25.96	5771.88	5797.84	---	---
		5825	26.56	5812.80	5839.36	---	---
11N20	Ant1	5180	24.20	5168.28	5192.48	---	---
		5220	24.56	5207.40	5231.96	---	---
		5240	24.40	5227.48	5251.88	---	---
		5260	25.28	5247.68	5272.96	---	---
		5300	23.92	5288.20	5312.12	---	---
		5320	24.24	5307.40	5331.64	---	---
		5500	22.92	5488.32	5511.24	---	---
		5580	22.76	5568.52	5591.28	---	---
		5700	24.68	5688.20	5712.88	---	---
		5745	24.80	5732.72	5757.52	---	---
		5785	24.68	5772.44	5797.12	---	---
		5825	27.16	5811.92	5839.08	---	---
11N40	Ant1	5190	41.92	5169.20	5211.12	---	---
		5230	42.32	5208.88	5251.20	---	---
		5270	41.44	5249.28	5290.72	---	---
		5310	41.60	5289.28	5330.88	---	---
		5510	40.88	5489.36	5530.24	---	---
		5550	41.44	5529.20	5570.64	---	---
		5670	41.44	5649.28	5690.72	---	---
		5755	41.76	5734.20	5775.96	---	---
		5795	41.76	5774.20	5815.96	---	---
11AC40	Ant1	5755	41.36	5734.28	5775.64	---	---
		5795	42.08	5773.96	5816.04	---	---
11AC80	Ant1	5210	90.56	5163.12	5253.68	---	---
		5290	85.92	5246.64	5332.56	---	---
		5530	89.28	5483.92	5573.20	---	---
		5610	97.76	5567.60	5665.36	---	---
		5775	92.80	5730.68	5823.48	---	---

Test Graphs

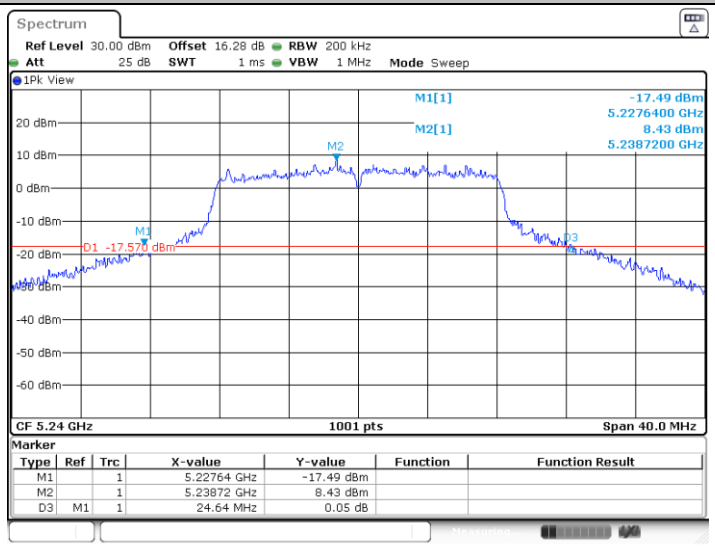
11A_Ant1_5180



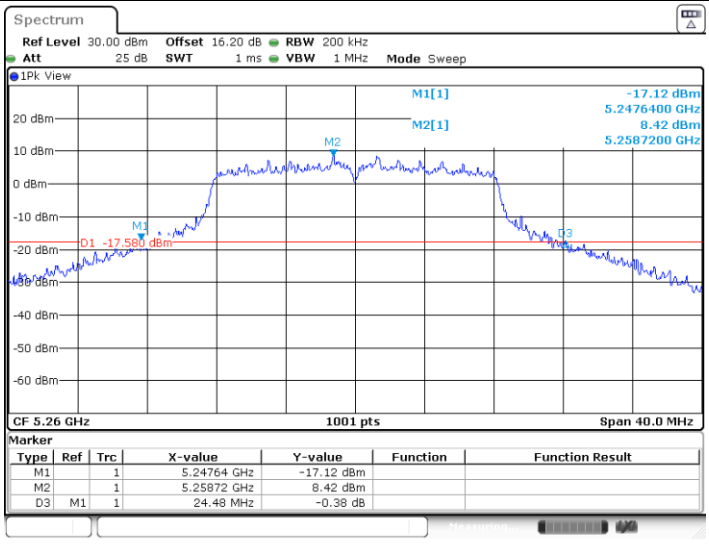
11A_Ant1_5220



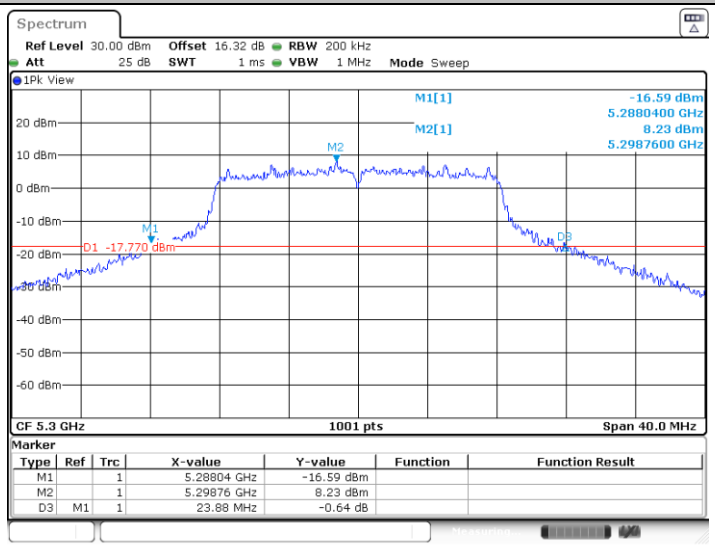
11A_Ant1_5240



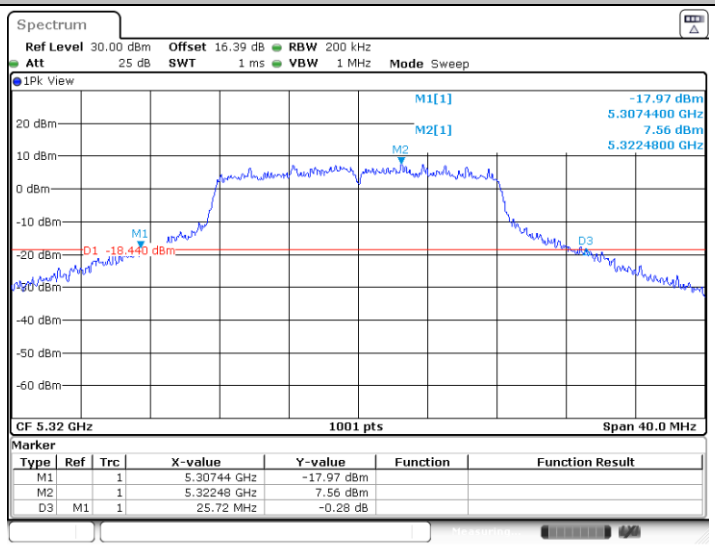
11A_Ant1_5260



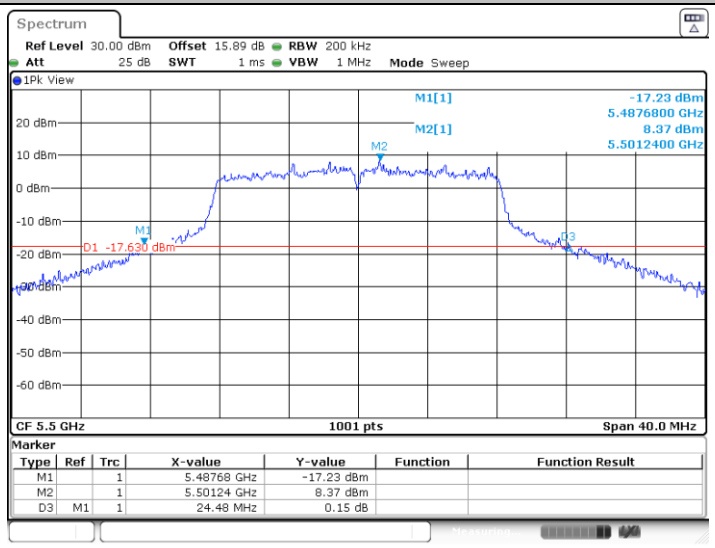
11A_Ant1_5300



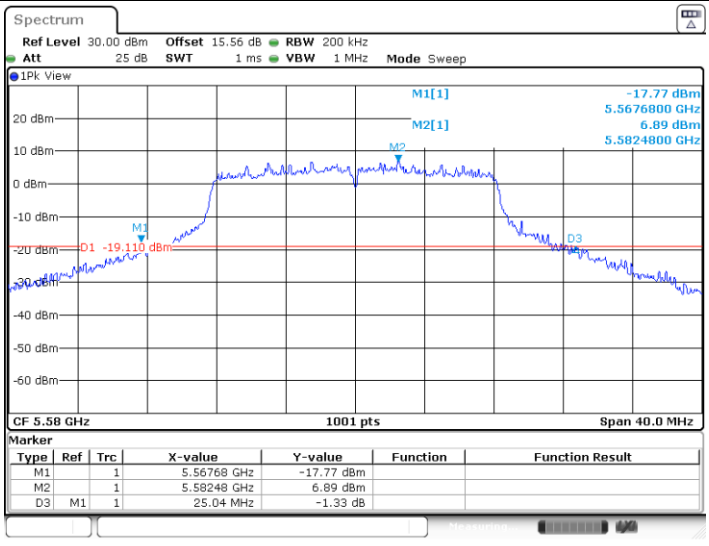
11A_Ant1_5320

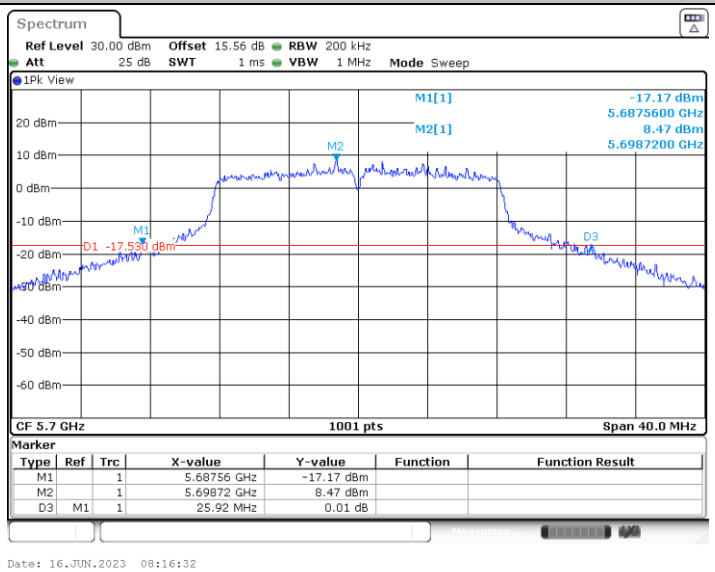


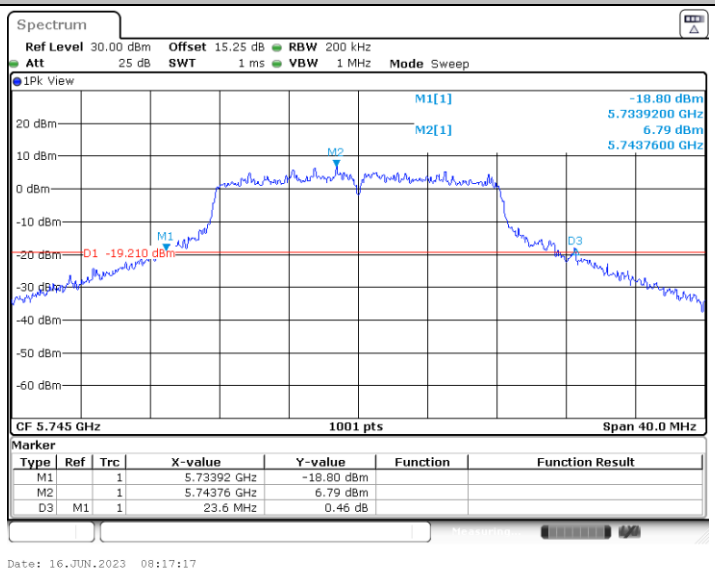
11A_Ant1_5500



11A_Ant1_5580



11A_Ant1_5700


11A_Ant1_5745


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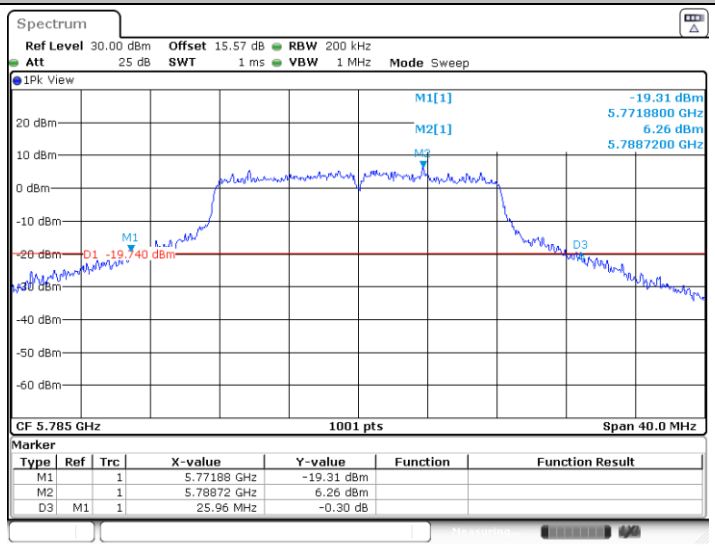
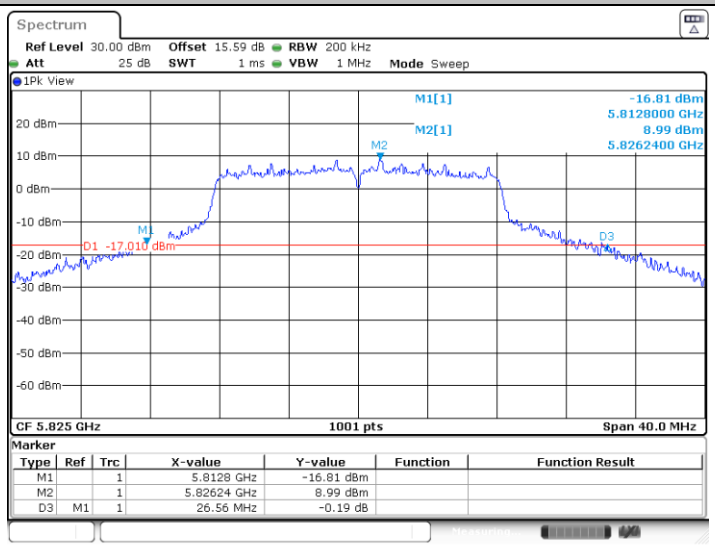
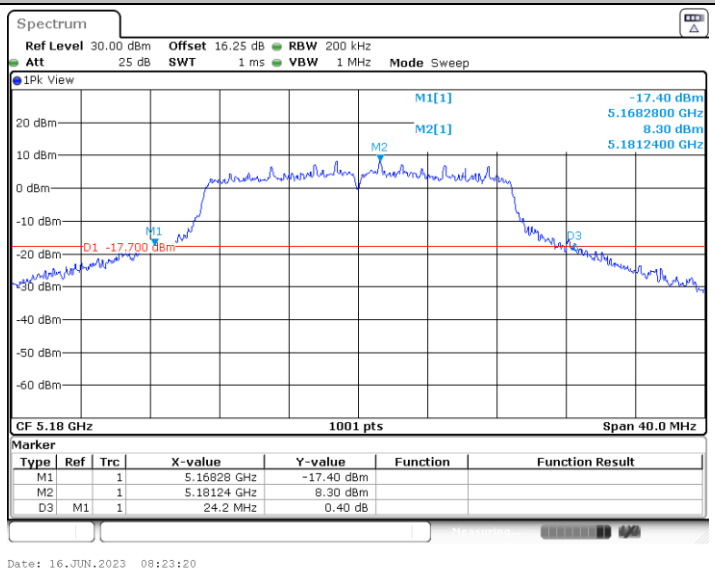


11A_Ant1_5825


11N20_Ant1_5180


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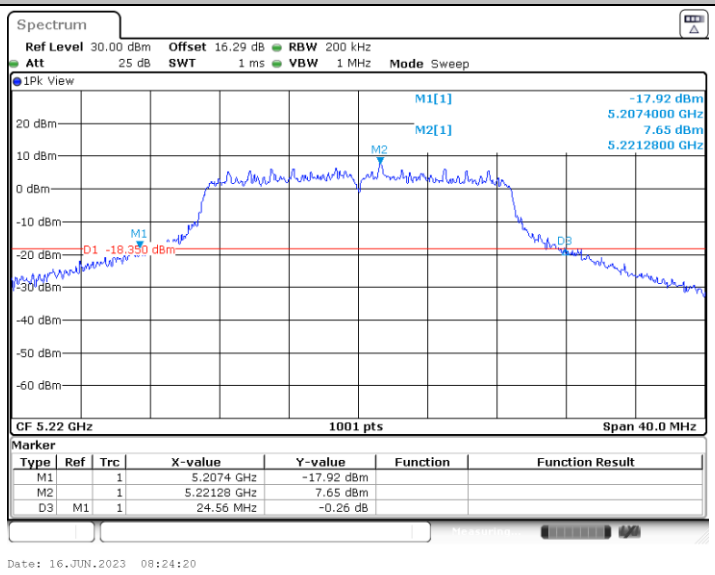
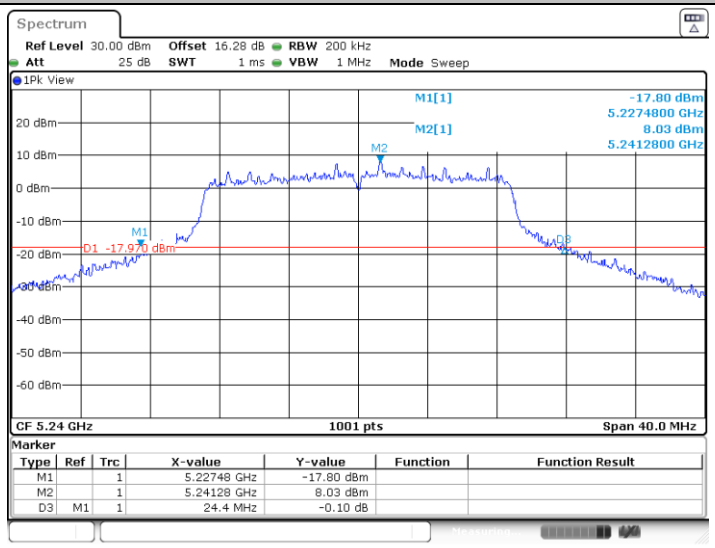
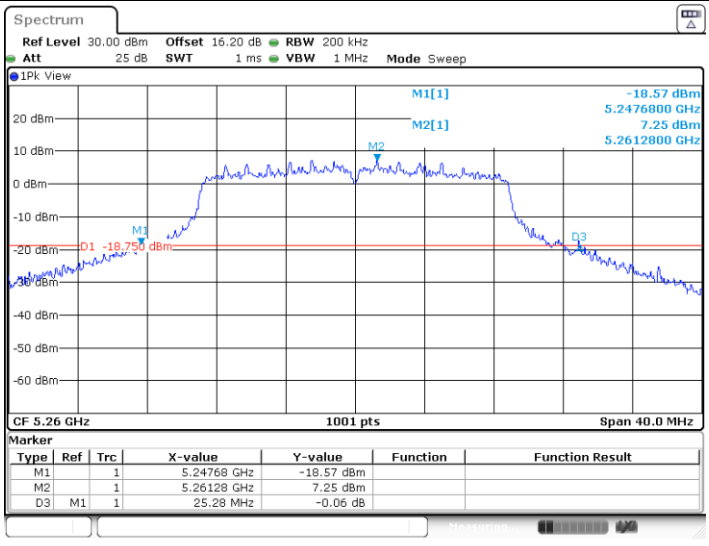


11N20_Ant1_5240



11N20_Ant1_5260



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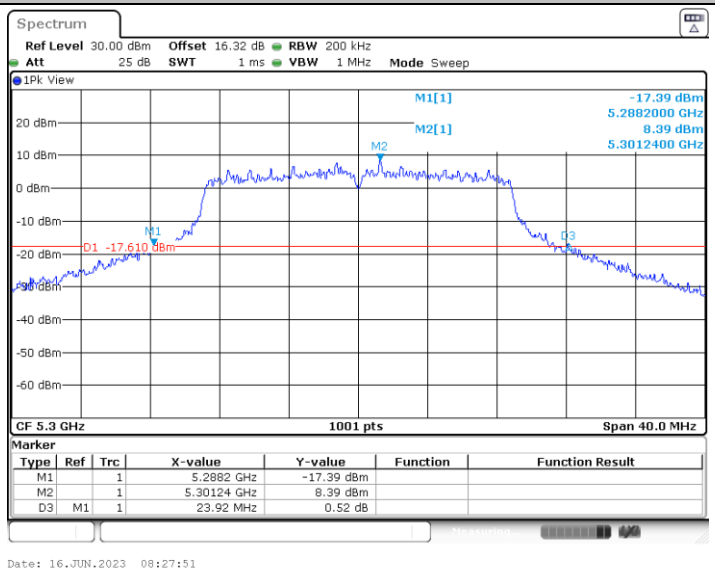
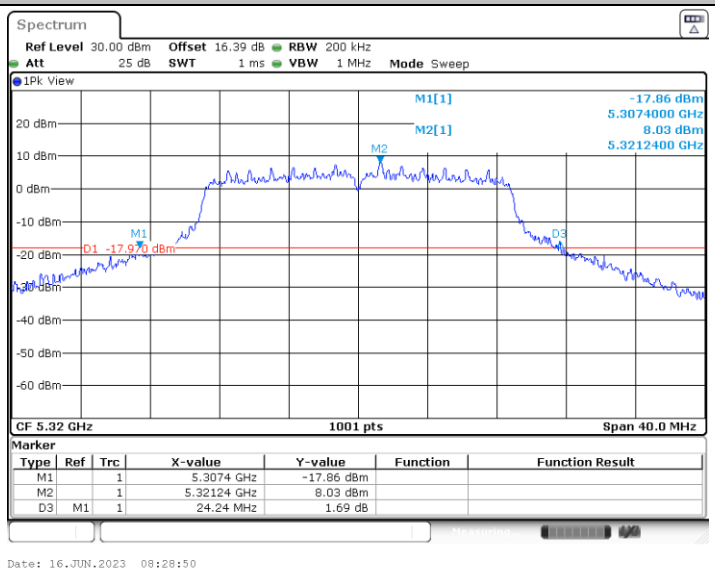
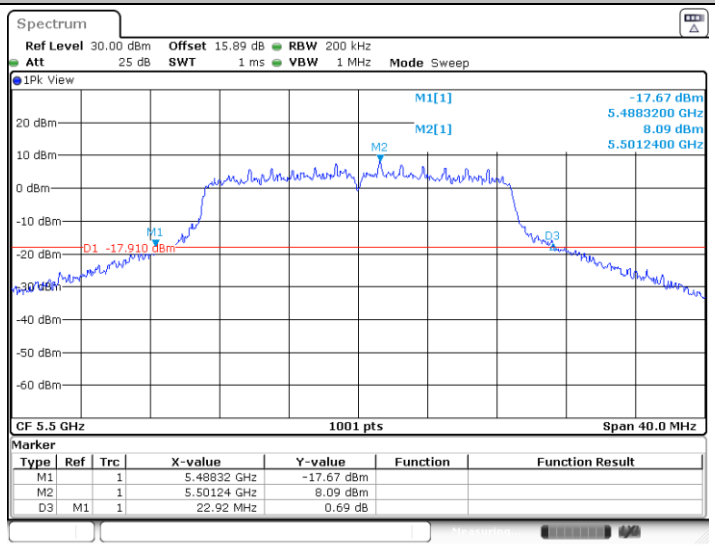
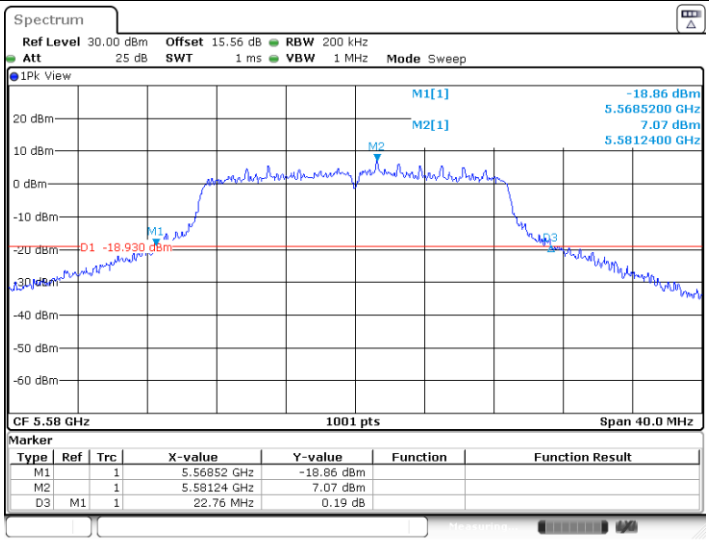


11N20_Ant1_5320


11N20_Ant1_5500



11N20_Ant1_5580



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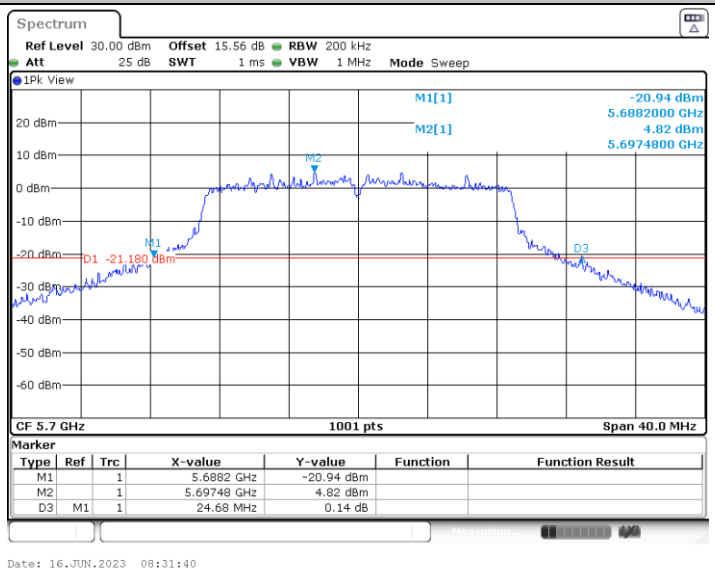
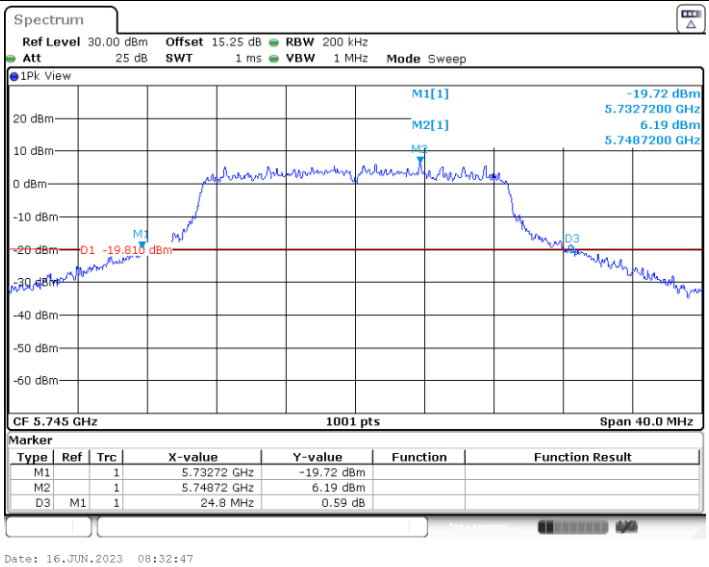
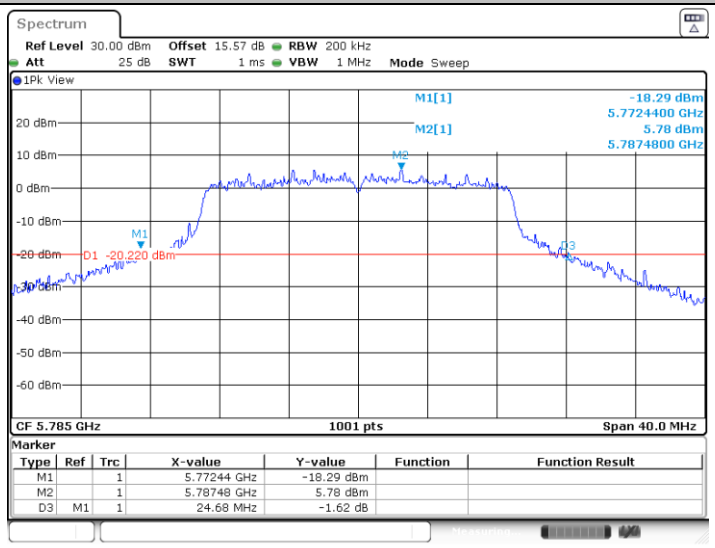
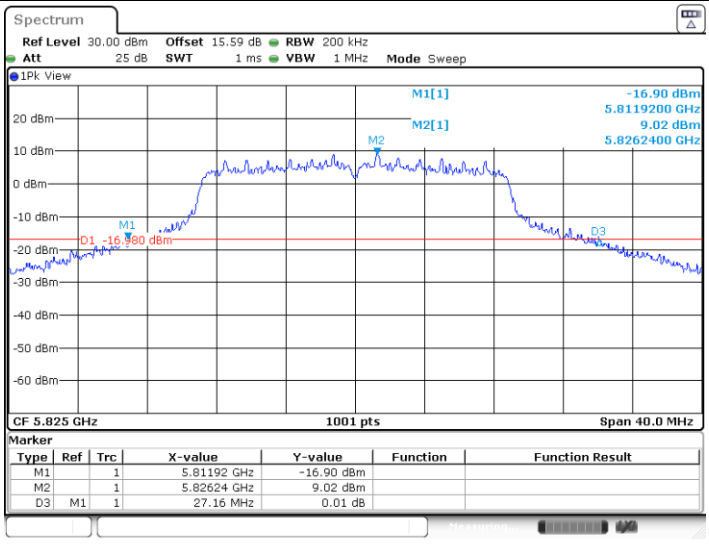


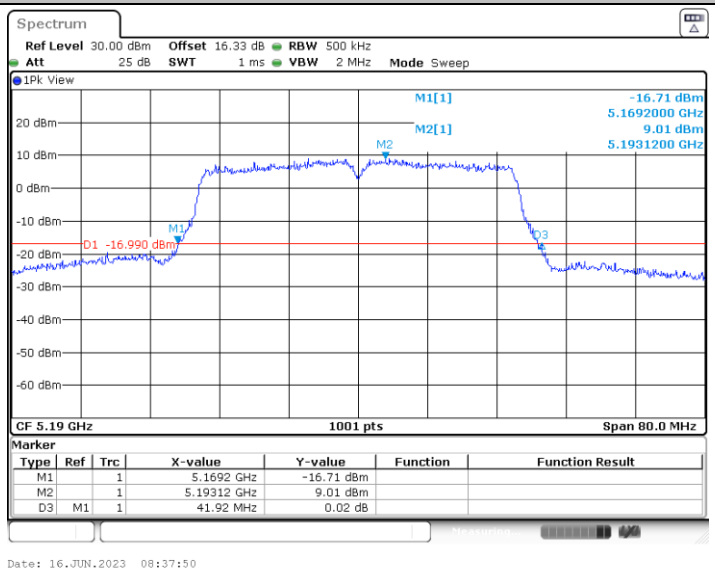
11N20_Ant1_5745


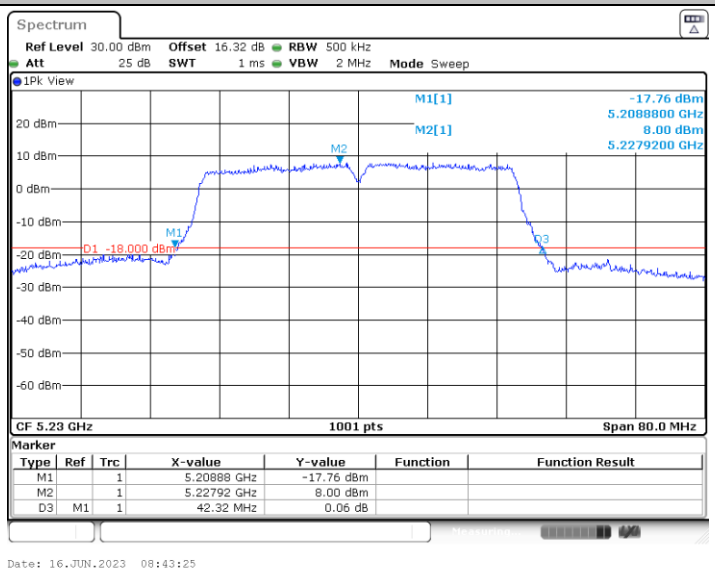
11N20_Ant1_5785



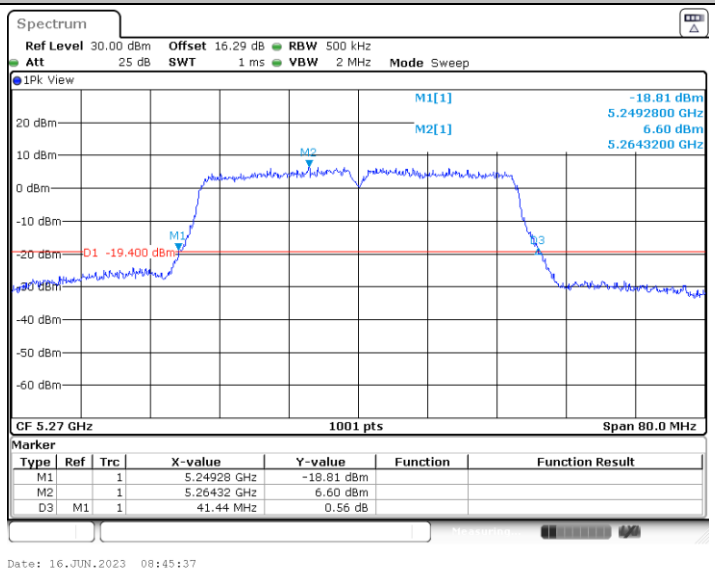
11N20_Ant1_5825



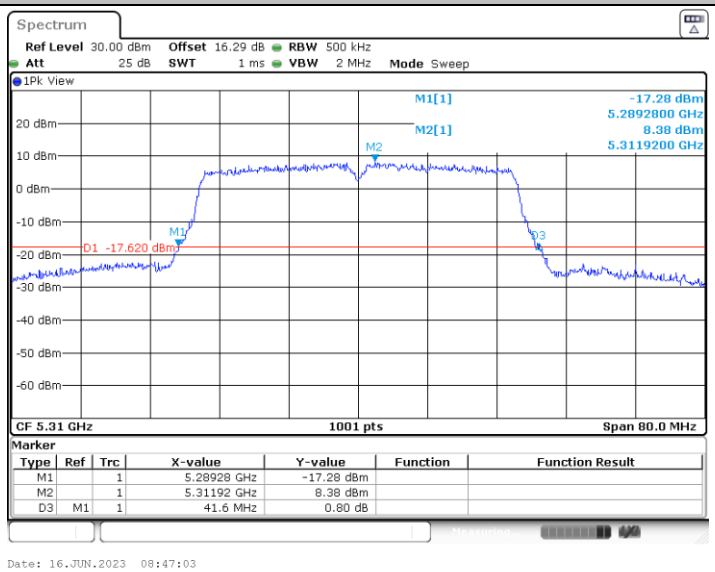
11N40_Ant1_5190


11N40_Ant1_5230


11N40_Ant1_5270



11N40_Ant1_5310



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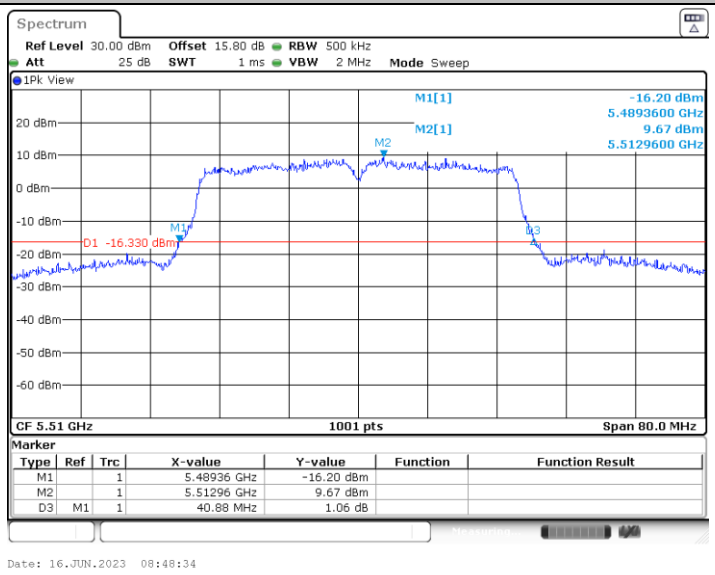
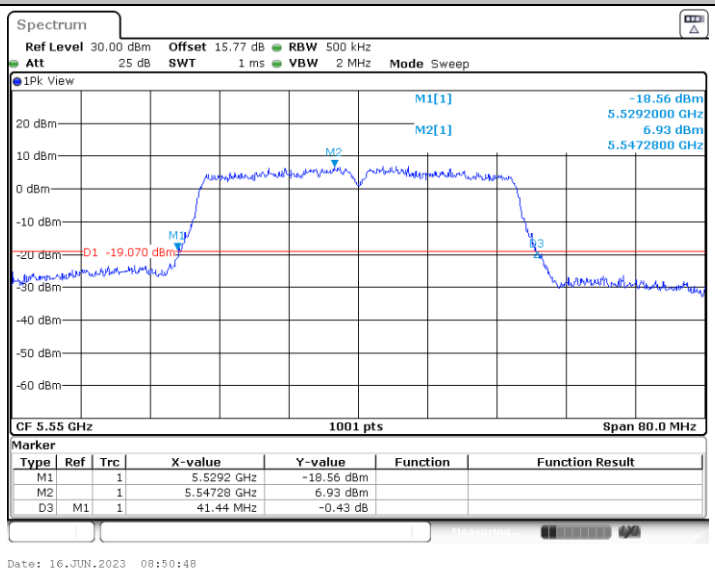
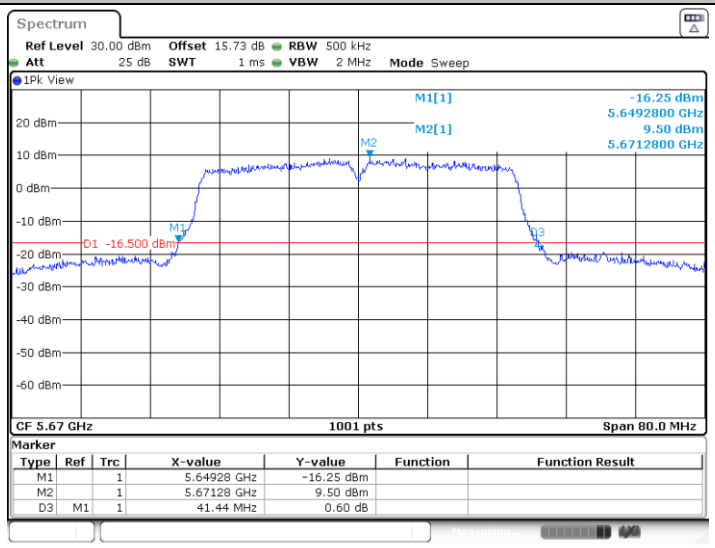
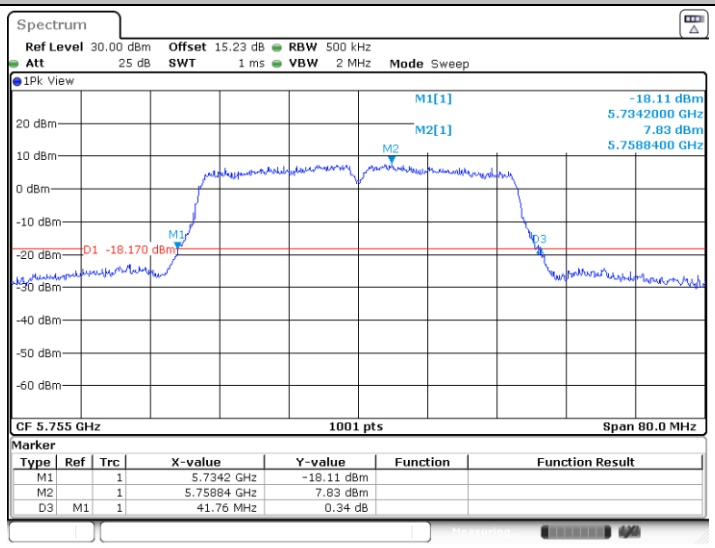
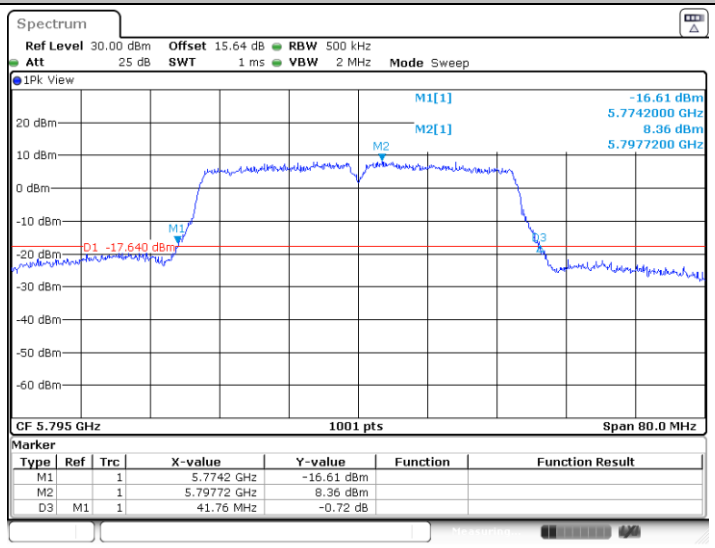
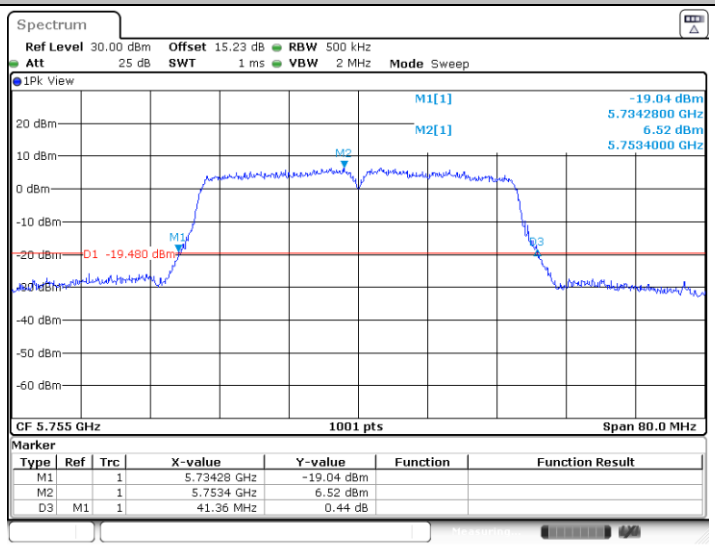


11N40_Ant1_5550


11N40_Ant1_5670


11N40_Ant1_5755


11N40_Ant1_5795


11AC40_Ant1_5755


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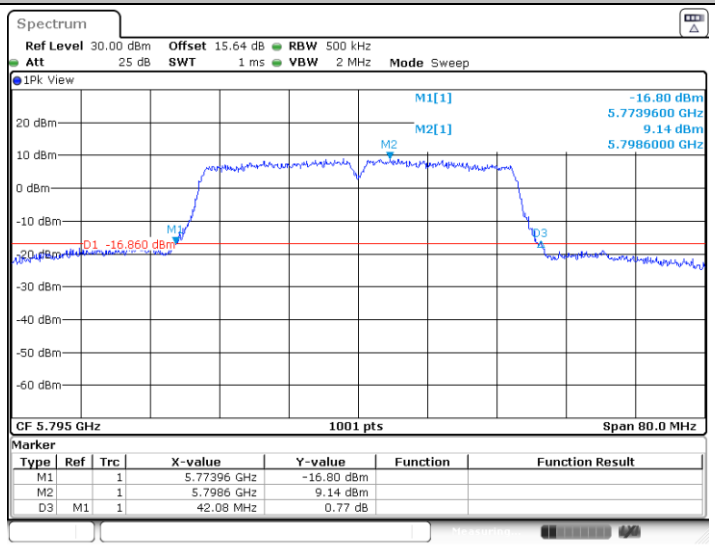
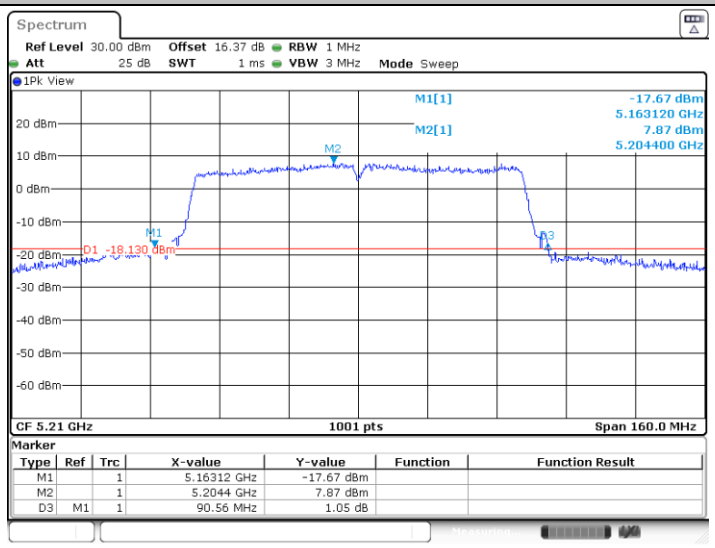
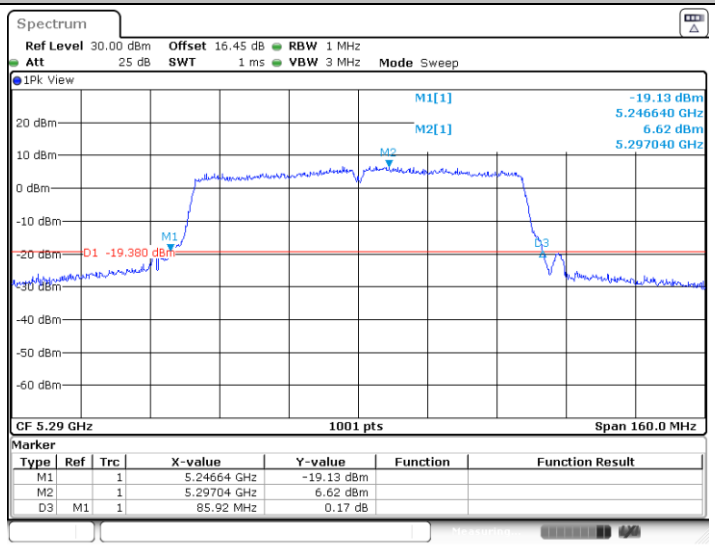
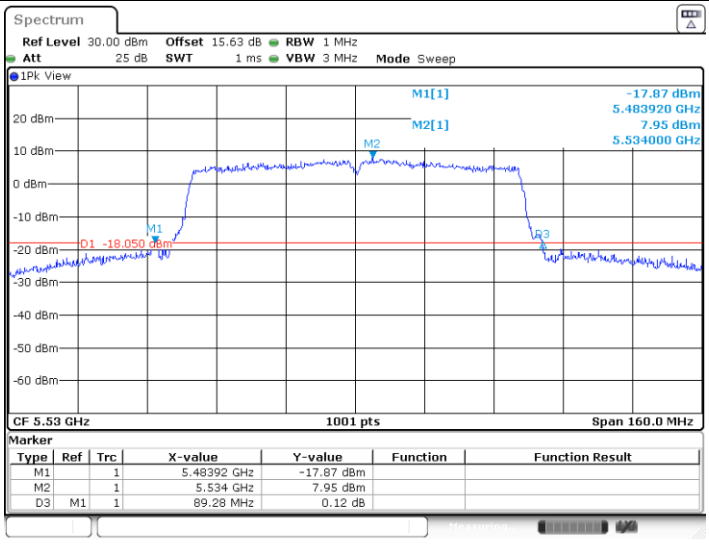


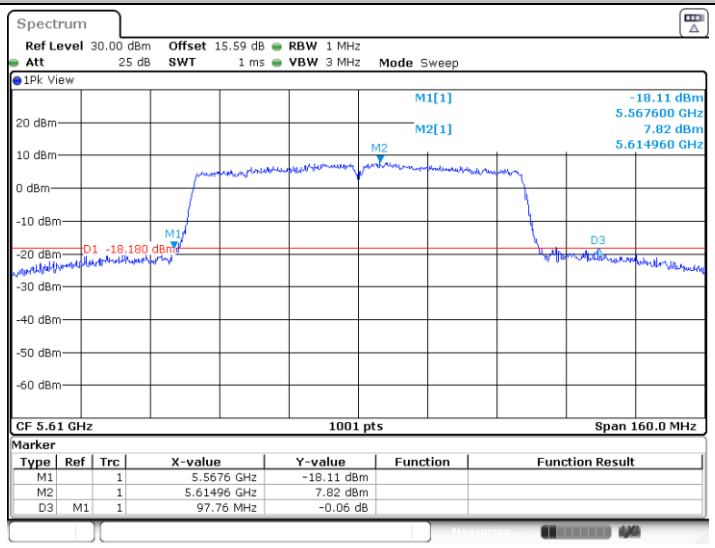
11AC80_Ant1_5210


11AC80_Ant1_5290



11AC80_Ant1_5530



11AC80_Ant1_5610


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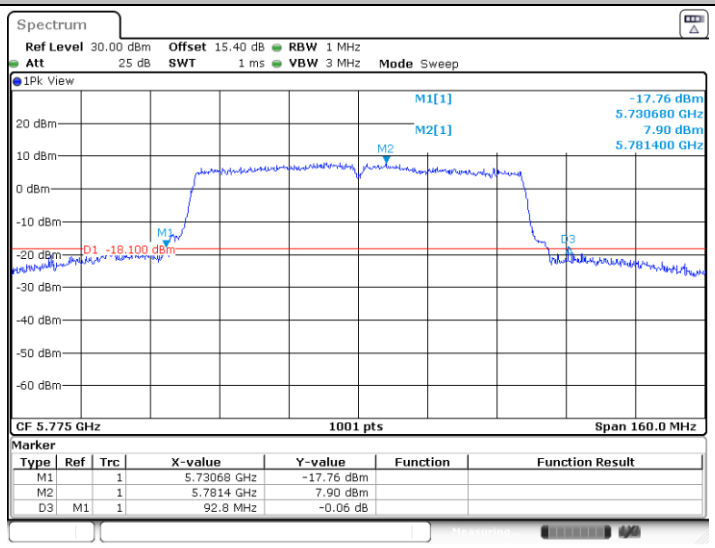


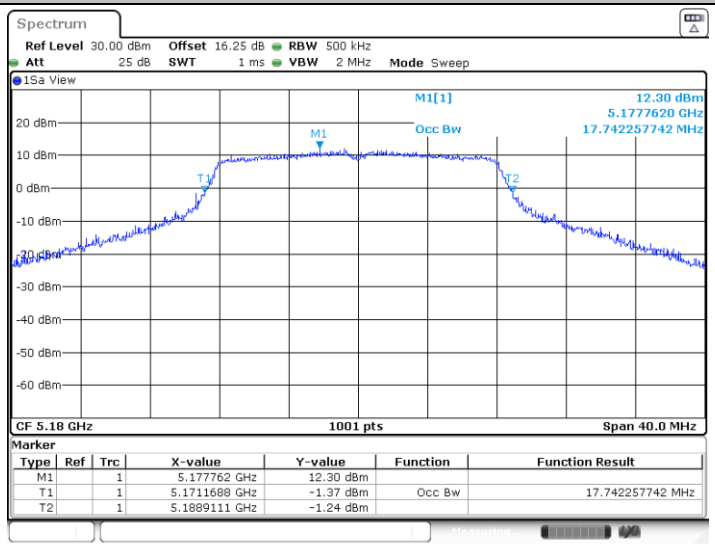
Occupied channel bandwidth

Test Result

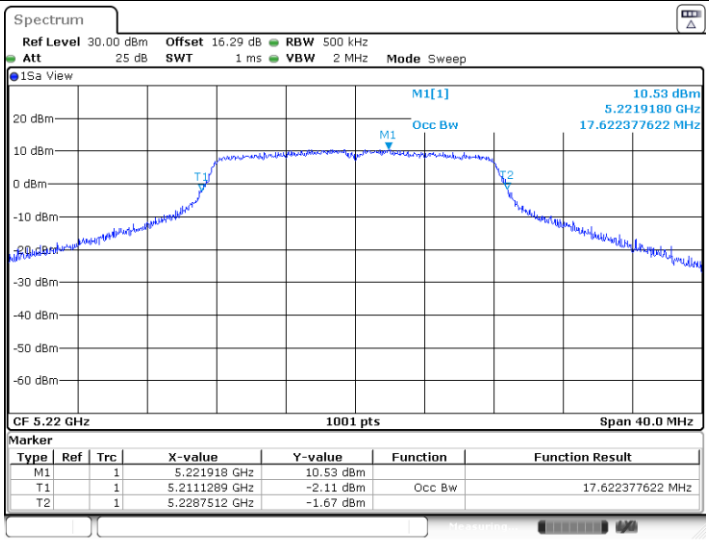
TestMode	Antenna	Freq (MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.742	5171.1688	5188.9111	---	---
		5220	17.622	5211.1289	5228.7512	---	---
		5240	17.542	5231.3287	5248.8711	---	---
		5260	17.423	5251.2887	5268.7113	---	---
		5300	17.423	5291.2887	5308.7113	---	---
		5320	17.502	5311.2488	5328.7512	---	---
		5500	17.423	5491.3287	5508.7512	---	---
		5580	17.383	5571.3287	5588.7113	---	---
		5700	17.582	5691.2488	5708.8312	---	---
		5745	17.383	5736.2887	5753.6713	---	---
		5785	17.463	5776.2088	5793.6713	---	---
		5825	17.862	5816.1289	5833.9910	---	---
11N20	Ant1	5180	18.501	5170.7692	5189.2707	---	---
		5220	18.462	5210.7293	5229.1908	---	---
		5240	18.382	5230.8891	5249.2707	---	---
		5260	18.382	5250.8092	5269.1908	---	---
		5300	18.382	5290.8092	5309.1908	---	---
		5320	18.382	5310.8092	5329.1908	---	---
		5500	18.382	5490.8092	5509.1908	---	---
		5580	18.302	5570.8492	5589.1508	---	---
		5700	18.342	5690.8092	5709.1508	---	---
		5745	18.382	5735.8092	5754.1908	---	---
		5785	18.382	5775.7293	5794.1109	---	---
		5825	18.621	5815.6893	5834.3107	---	---
11N40	Ant1	5190	36.603	5171.6983	5208.3017	---	---
		5230	36.763	5211.6983	5248.4615	---	---
		5270	36.683	5251.6983	5288.3816	---	---
		5310	36.683	5291.6184	5328.3017	---	---
		5510	36.683	5491.6983	5528.3816	---	---
		5550	36.603	5531.6184	5568.2218	---	---
		5670	36.603	5651.6983	5688.3017	---	---
		5755	36.683	5736.6184	5773.3017	---	---
		5795	36.763	5776.5385	5813.3017	---	---
11AC40	Ant1	5755	36.523	5736.6983	5773.2218	---	---
		5795	36.843	5776.5385	5813.3816	---	---
11AC80	Ant1	5210	76.563	5171.7982	5248.3616	---	---
		5290	76.244	5251.9580	5328.2018	---	---
		5530	76.404	5491.7982	5568.2018	---	---
		5610	76.244	5571.9580	5648.2018	---	---
		5775	76.404	5736.6384	5813.0420	---	---

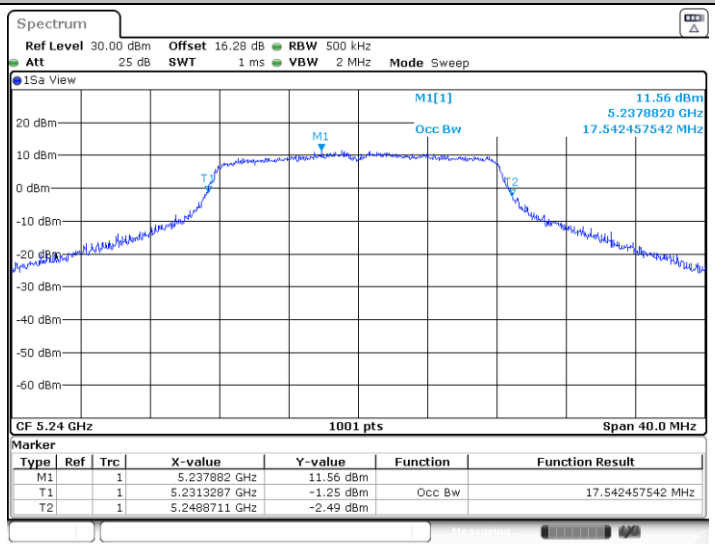
Test Graphs

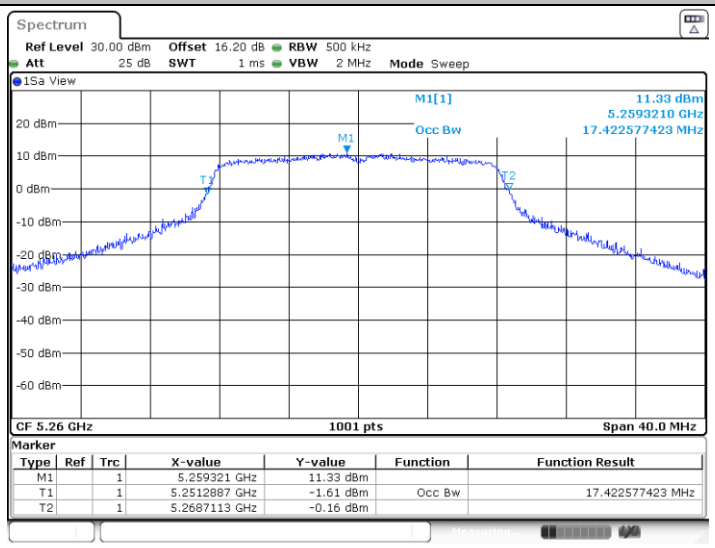
11A_Ant1_5180

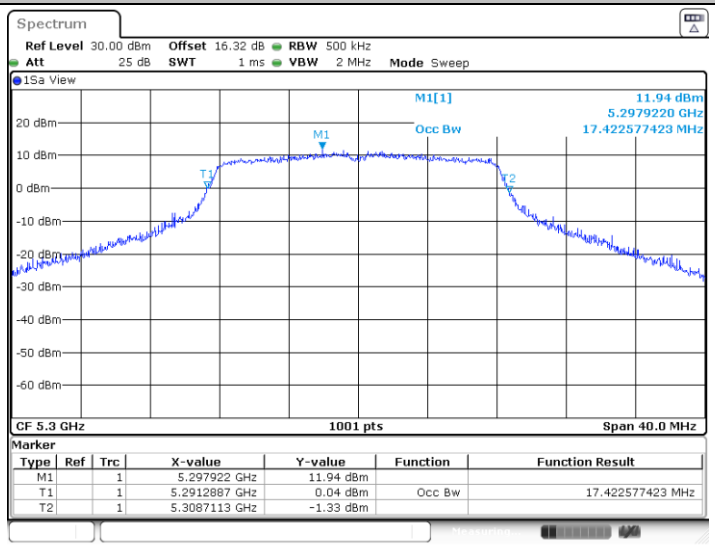


11A_Ant1_5220



11A_Ant1_5240


11A_Ant1_5260


11A_Ant1_5300


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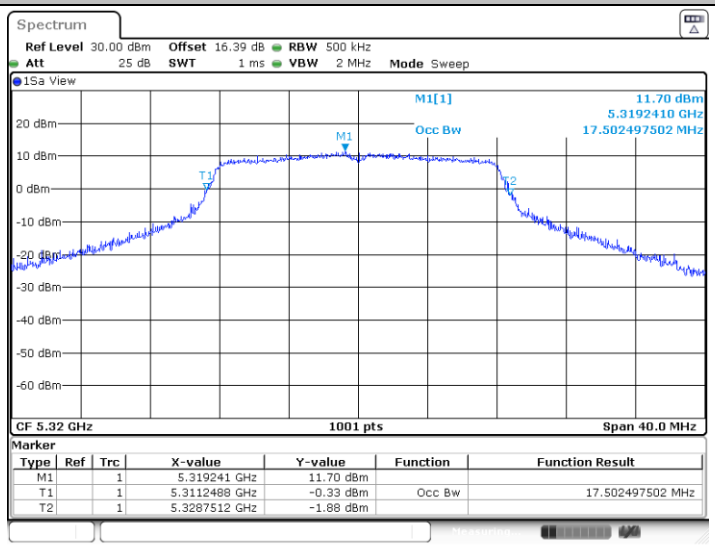

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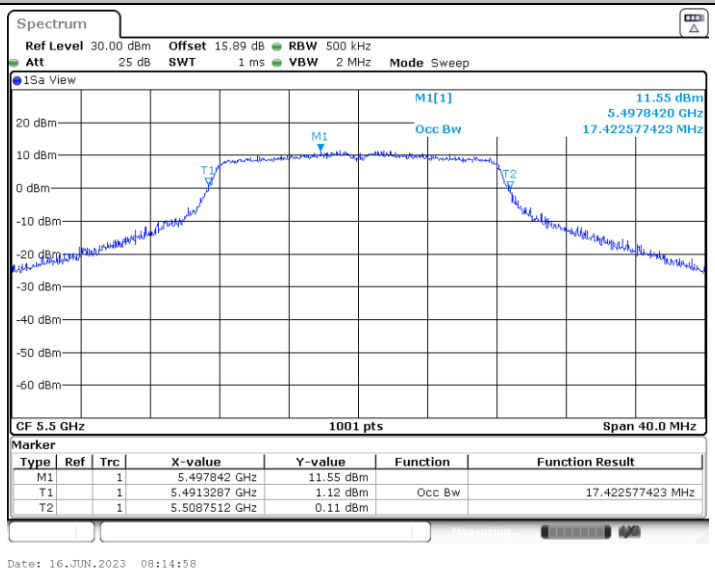

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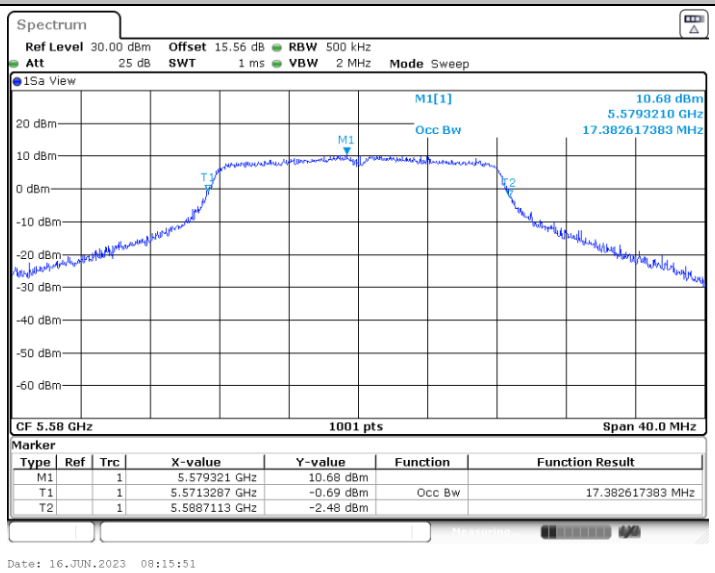

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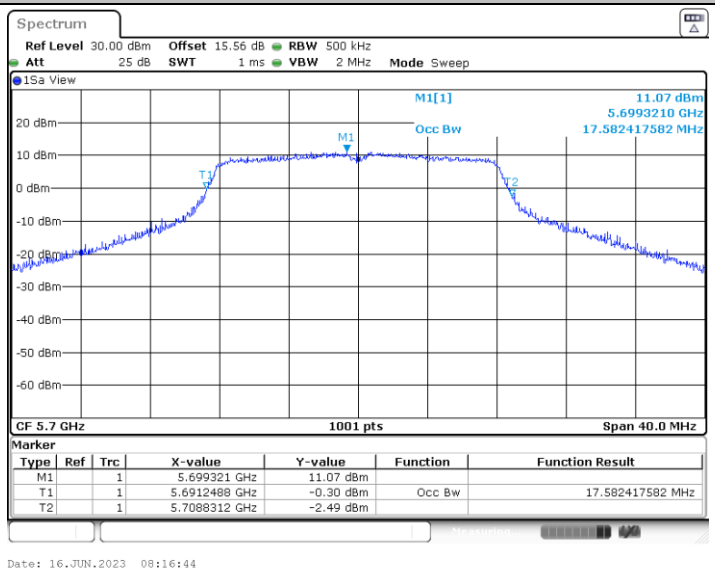

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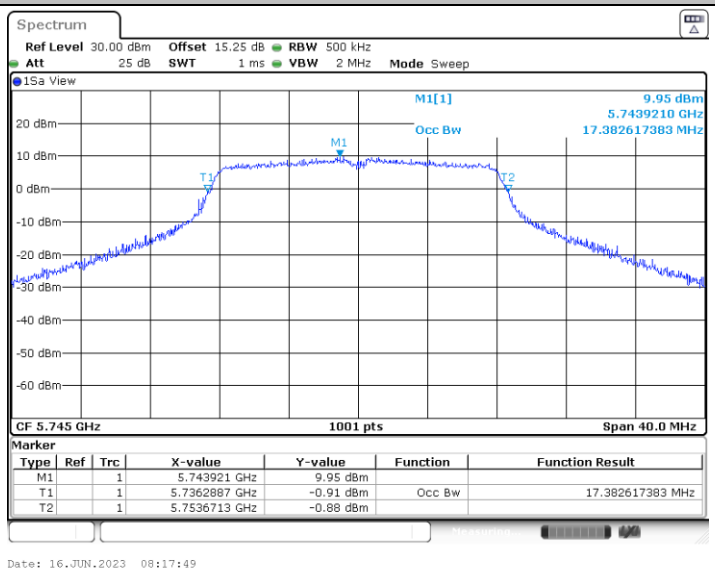

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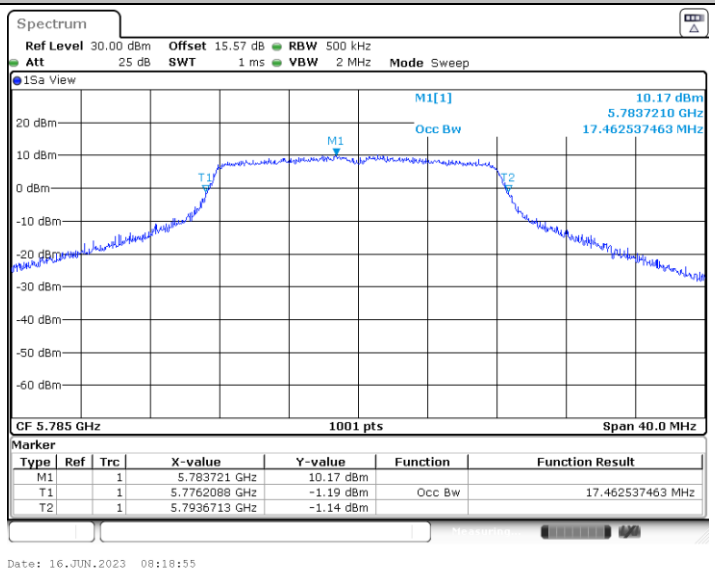

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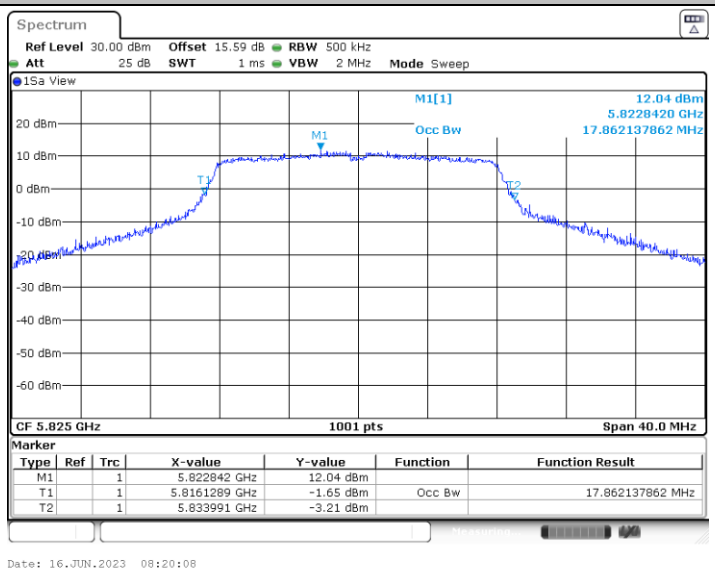

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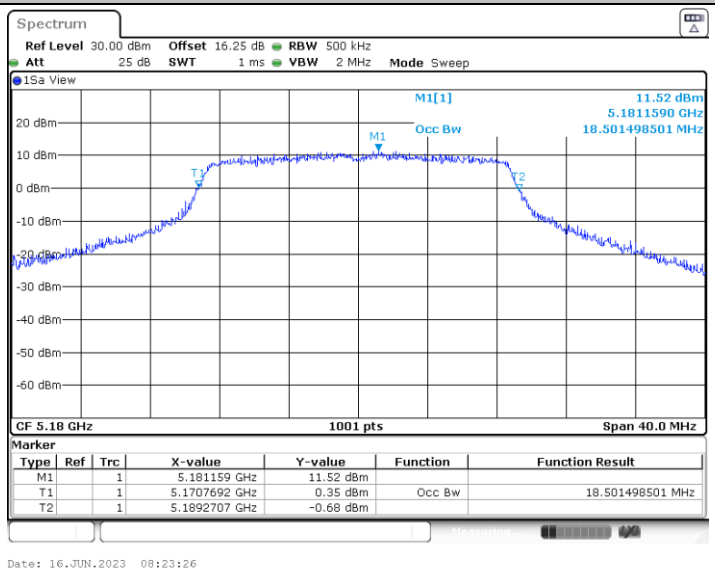

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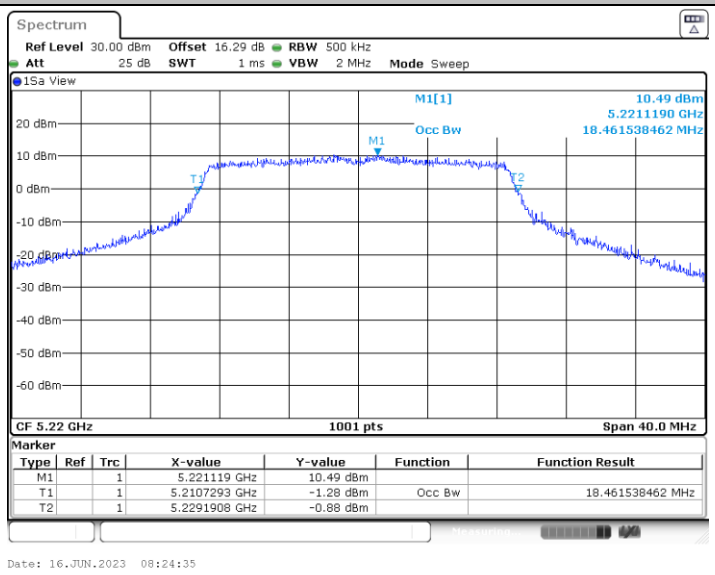

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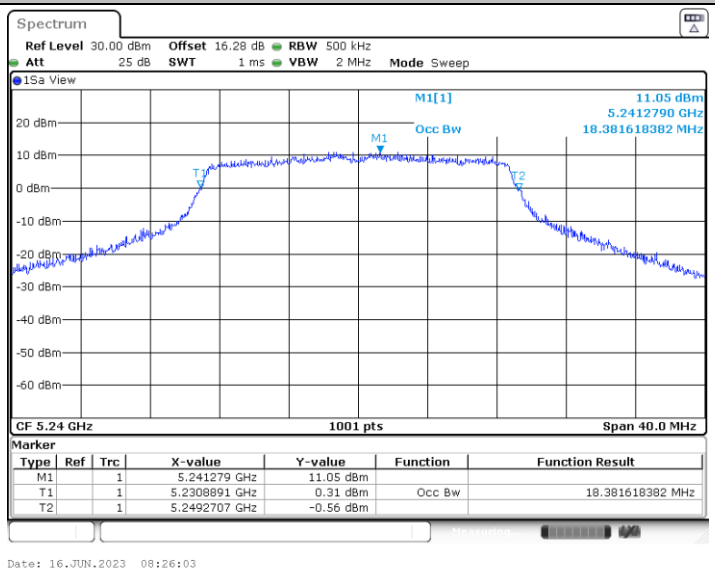

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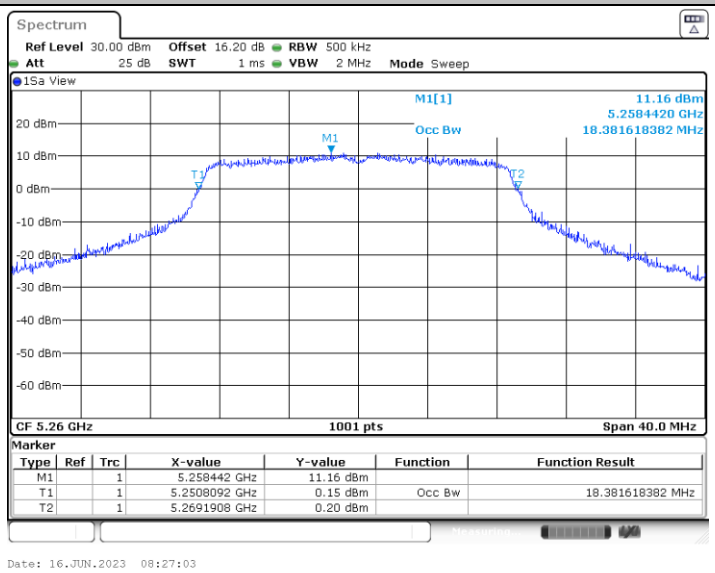

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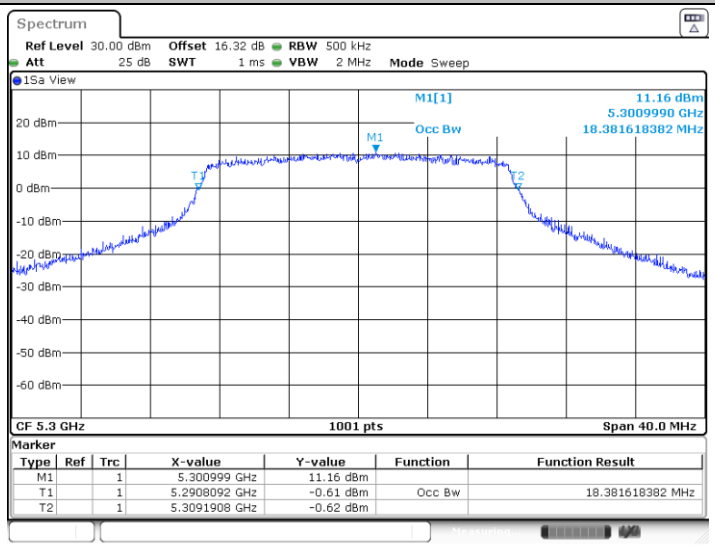

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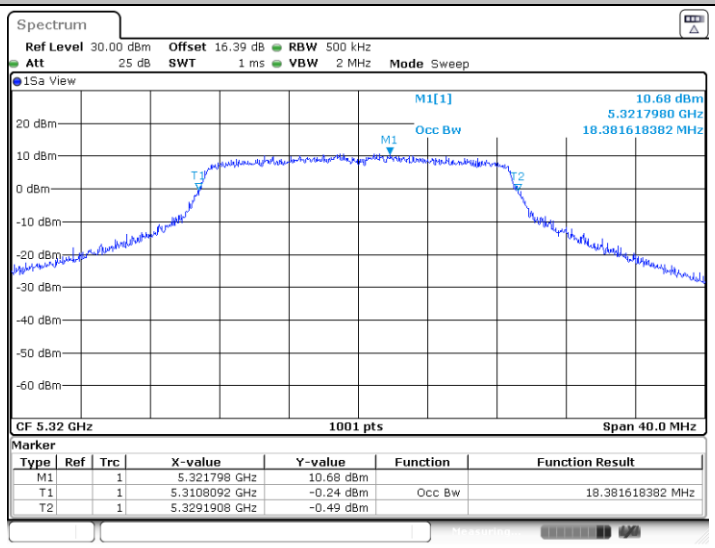

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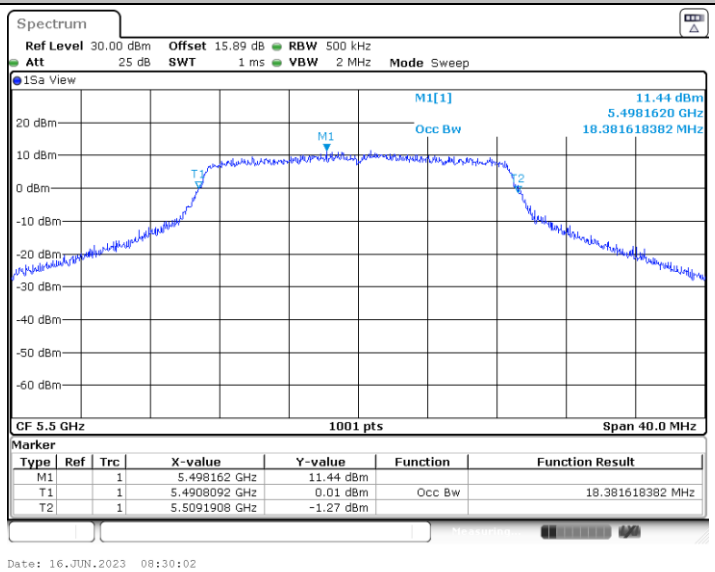

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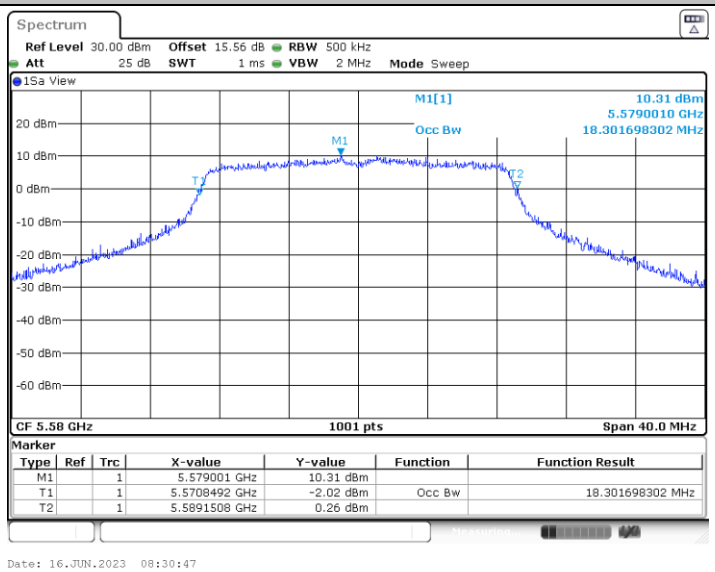

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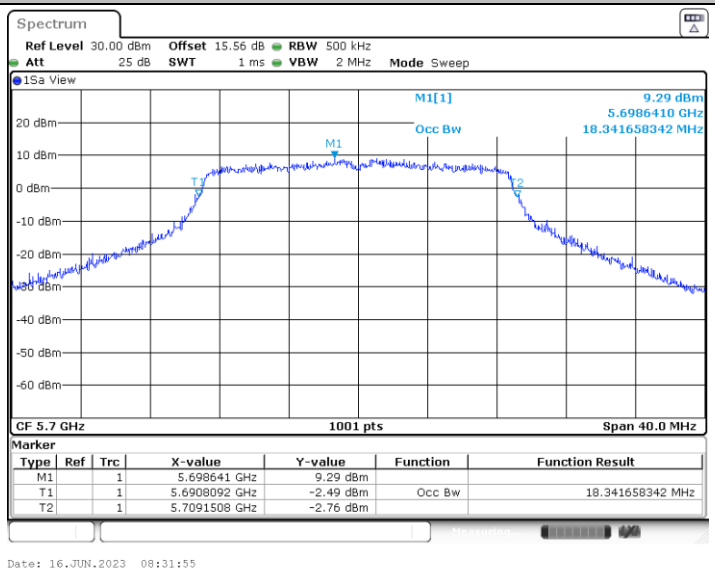

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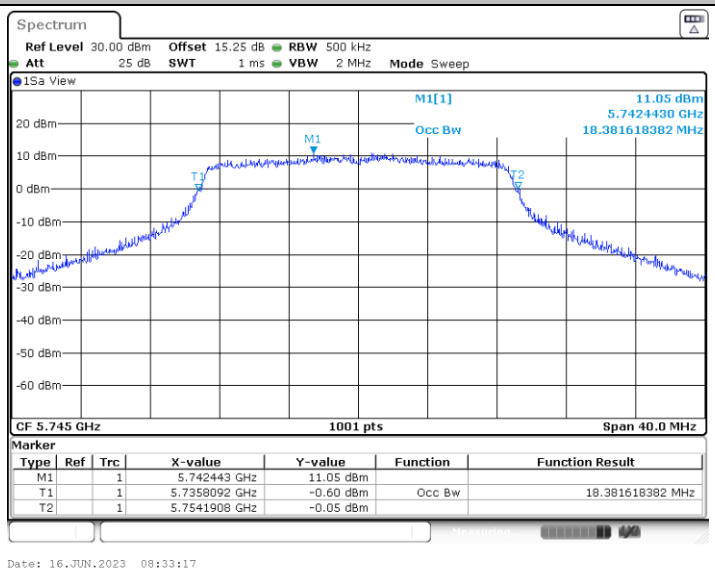

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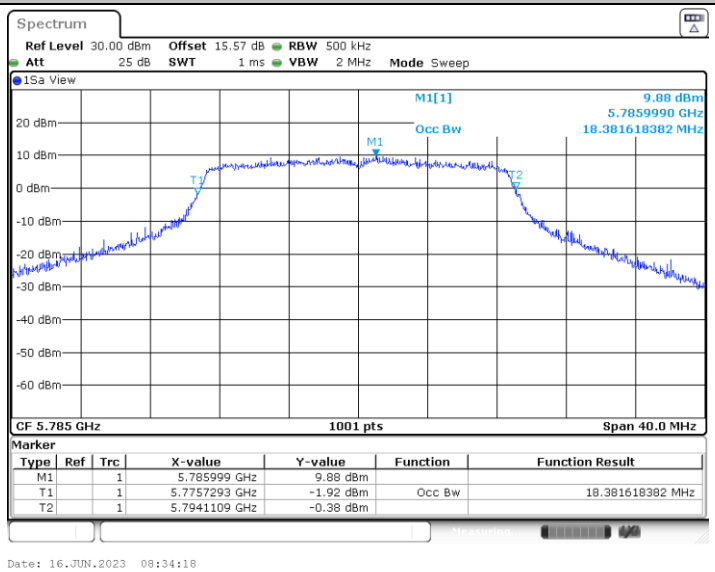

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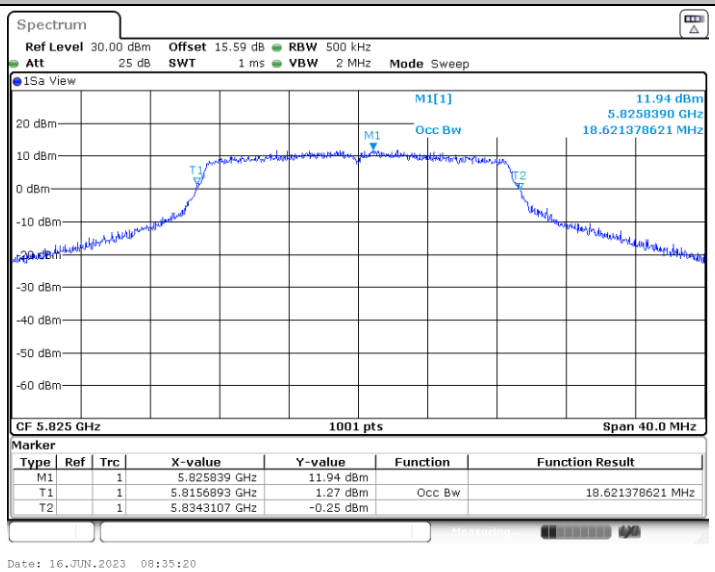

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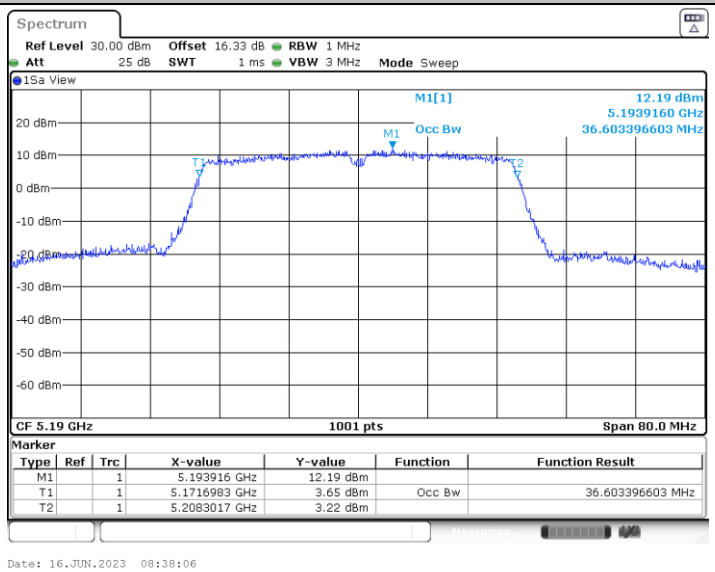

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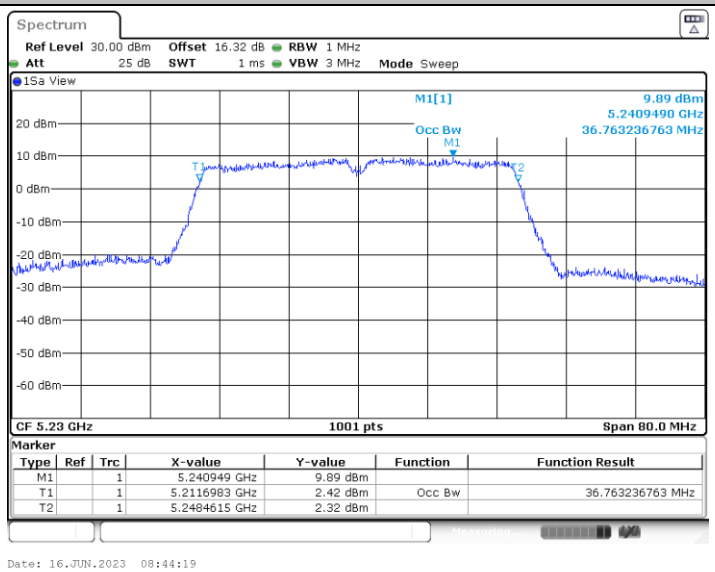

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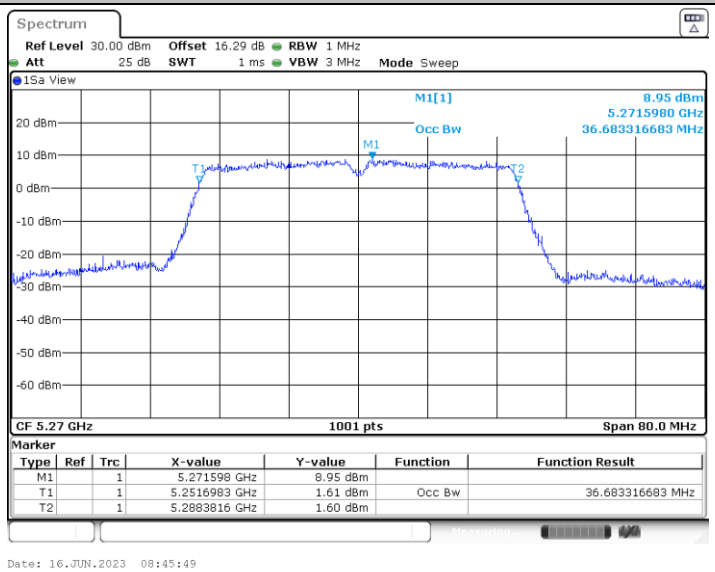

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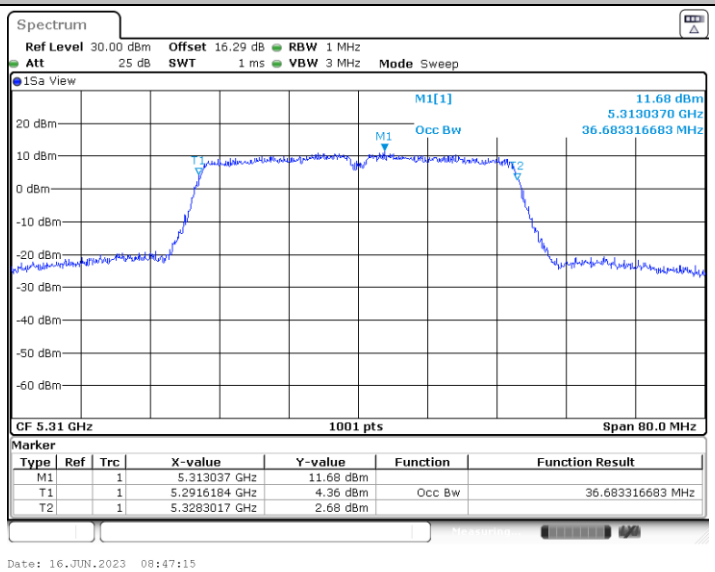

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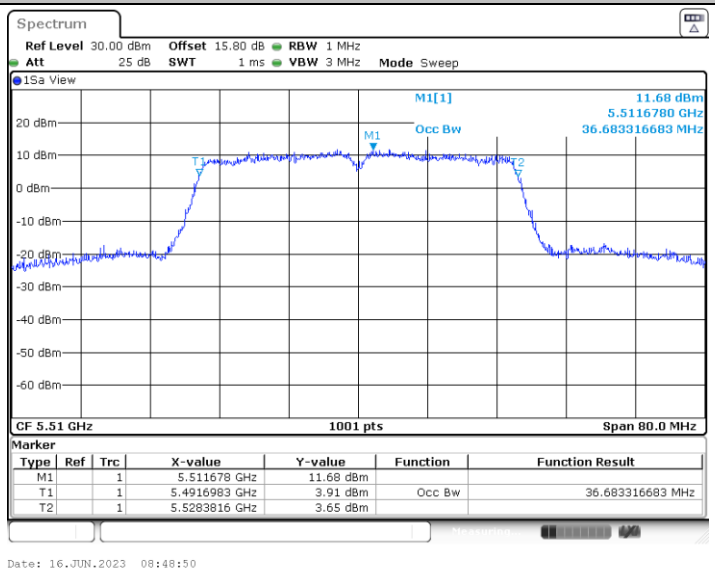

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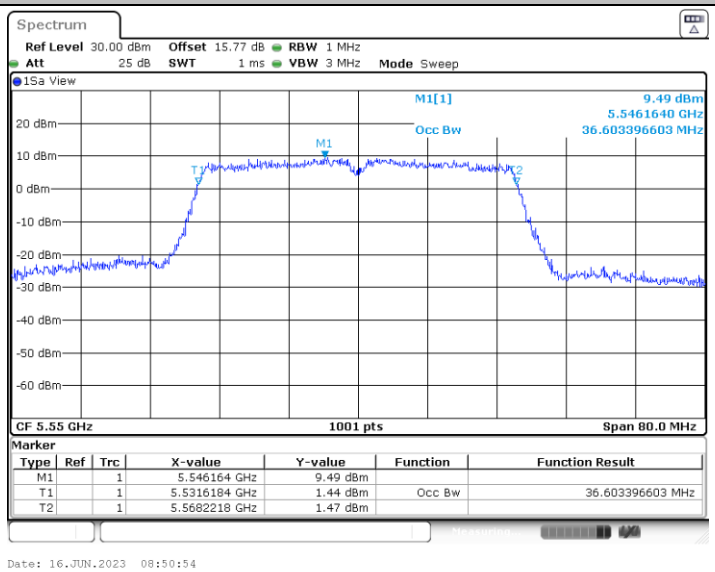

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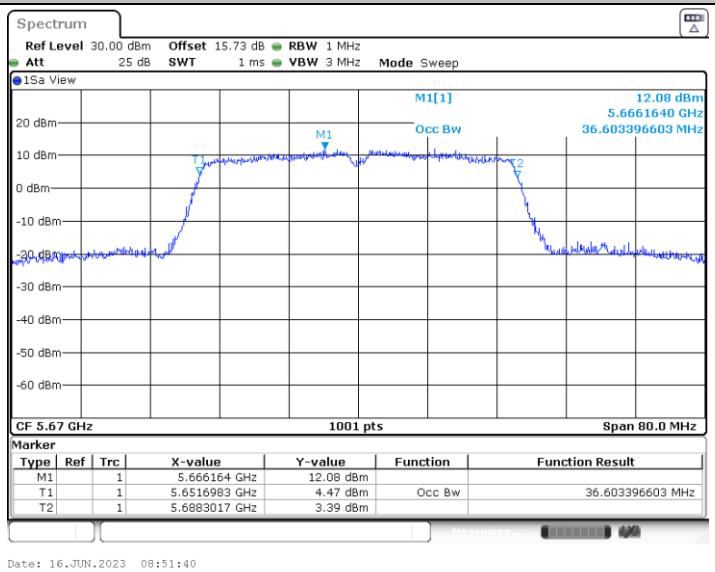

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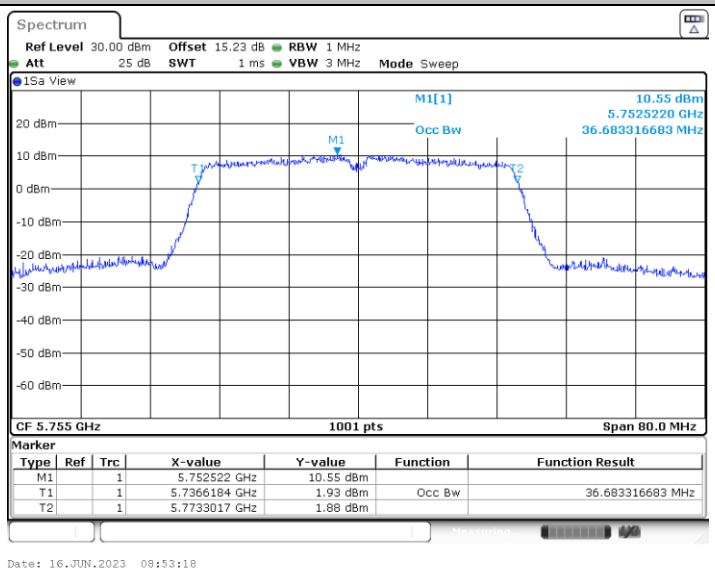

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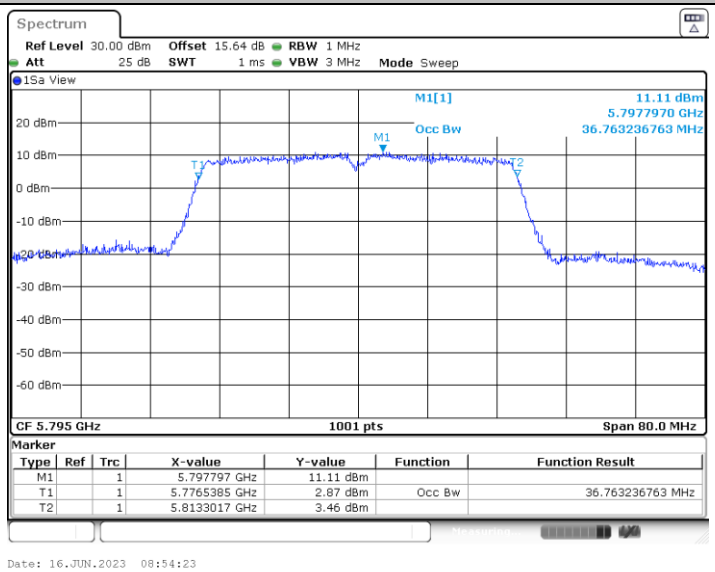

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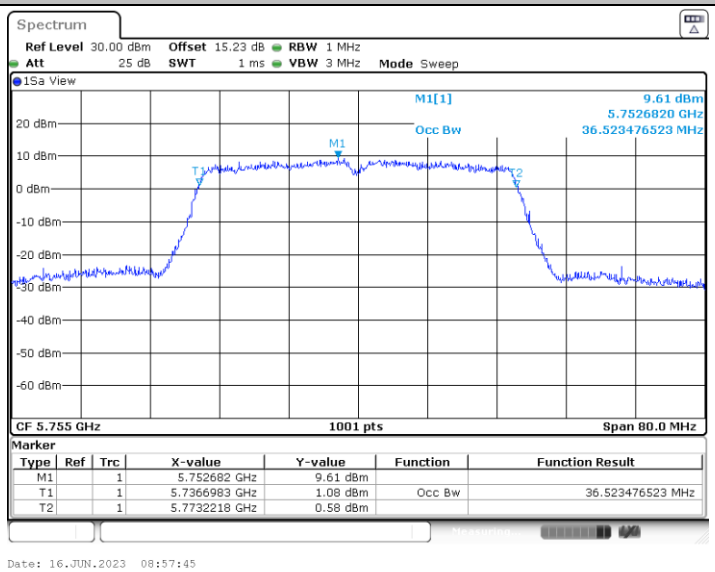

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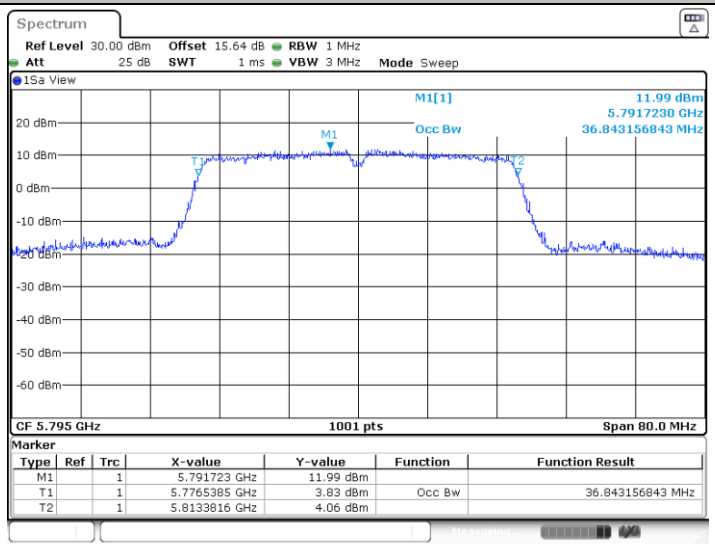

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