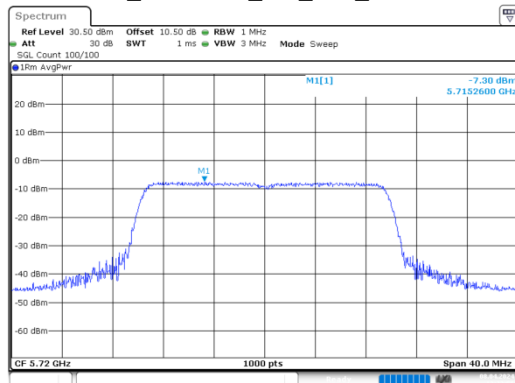
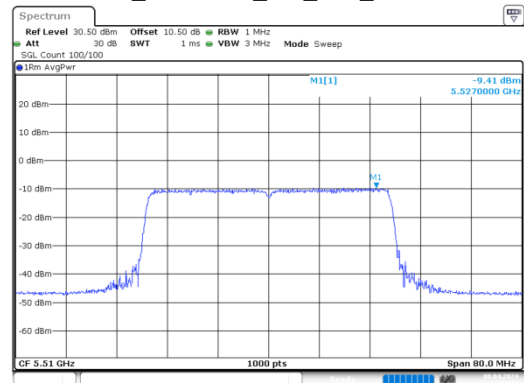


ax20_5720MHz_RU_Full_Chain 0



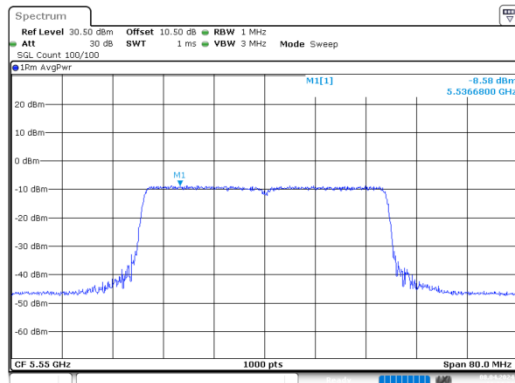
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:22:57

ax40_5510MHz_RU_Full_Chain 0



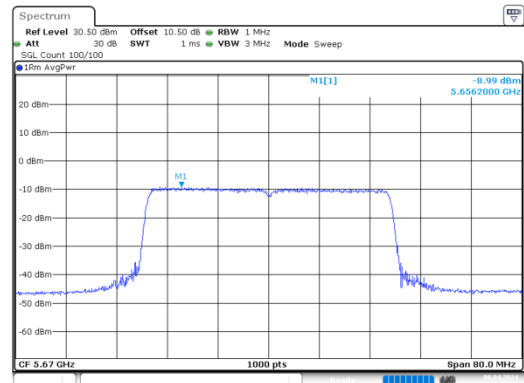
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:23:48

ax40_5550MHz_RU_Full_Chain 0



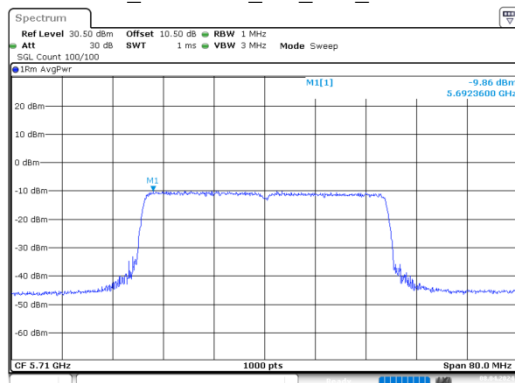
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:24:22

ax40_5670MHz_RU_Full_Chain 0



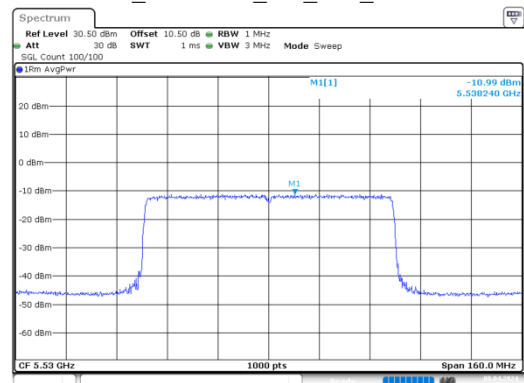
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:25:08

ax40_5710MHz_RU_Full_Chain 0



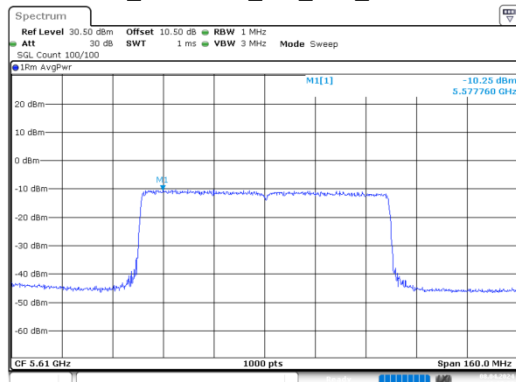
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:25:30

ax80_5530MHz_RU_Full_Chain 0



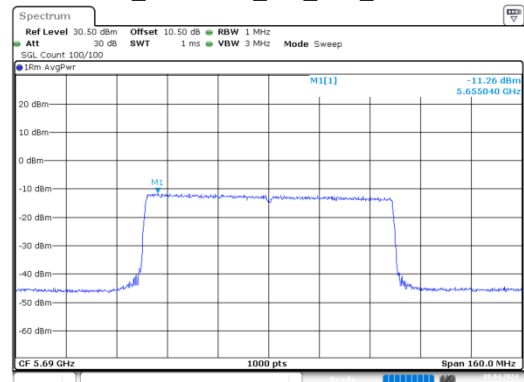
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:26:57

ax80_5610MHz_RU_Full_Chain 0



ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:27:21

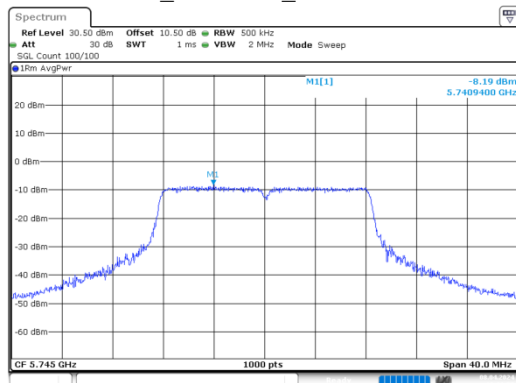
ax80_5690MHz_RU_Full_Chain 0



ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:27:43

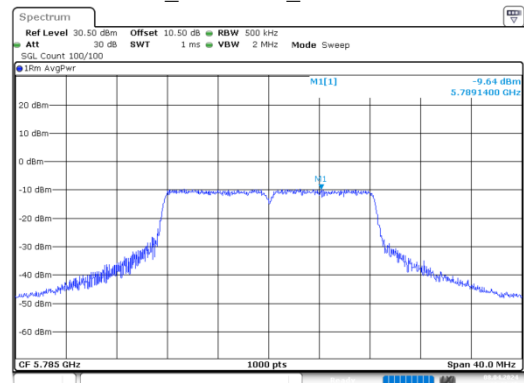
5725-5850 MHz

a_5745MHz_Chain 0



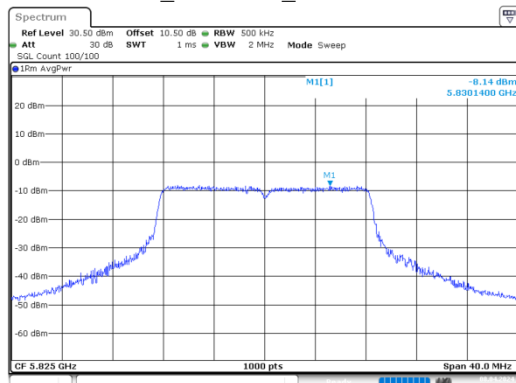
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Date: 8.APR.2024 13:31:51

a_5785MHz_Chain 0



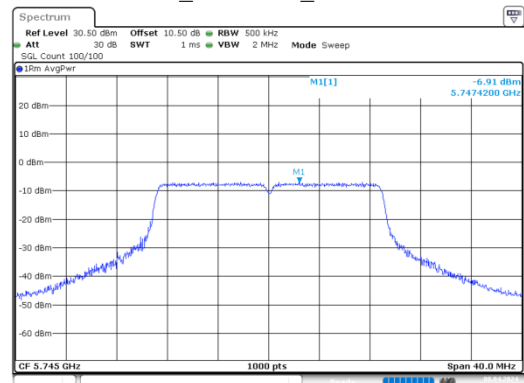
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:32:16

a_5825MHz_Chain 0



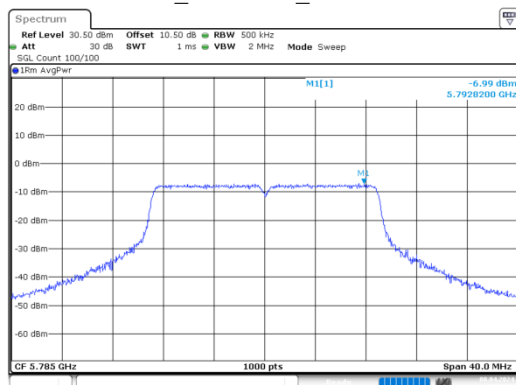
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Date: 8.APR.2024 13:32:44

n20_5745MHz_Chain 0



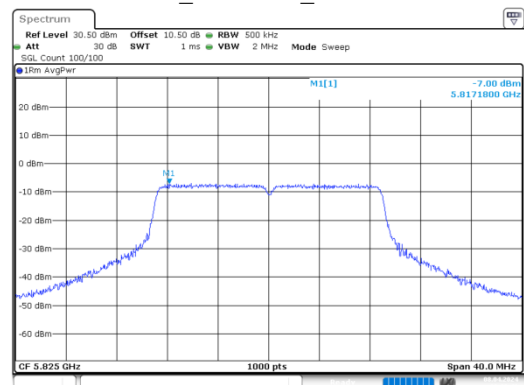
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Date: 8.APR.2024 13:33:06

n20_5785MHz_Chain 0



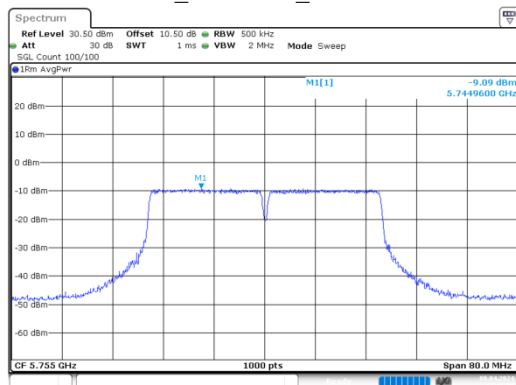
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Date: 8.APR.2024 13:33:27

n20_5825MHz_Chain 0



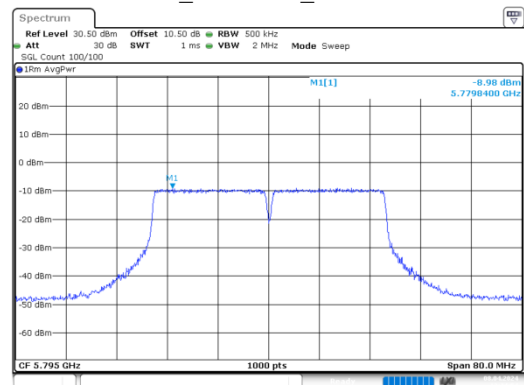
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Date: 8.APR.2024 13:33:47

n40_5755MHz_Chain 0



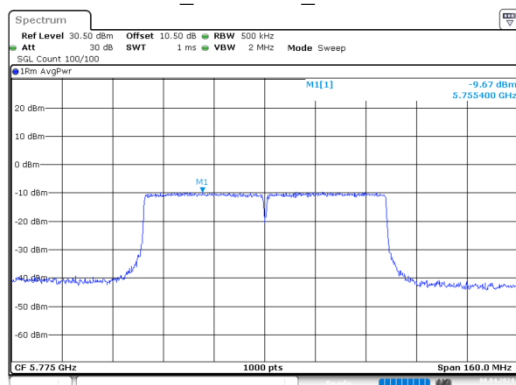
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Date: 8.APR.2024 13:41:08

n40_5795MHz_Chain 0



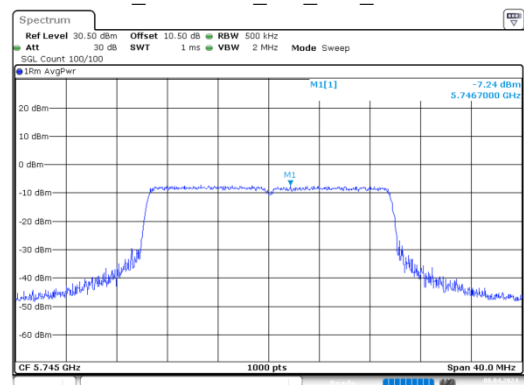
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Date: 8.APR.2024 13:34:55

ac80_5775MHz_Chain 0



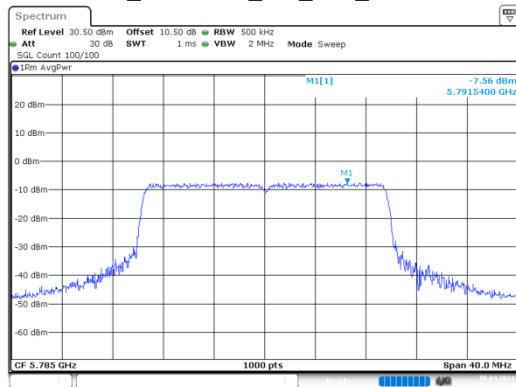
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Date: 8.APR.2024 13:36:09

ax20_5745MHz_RU_Full_Chain 0



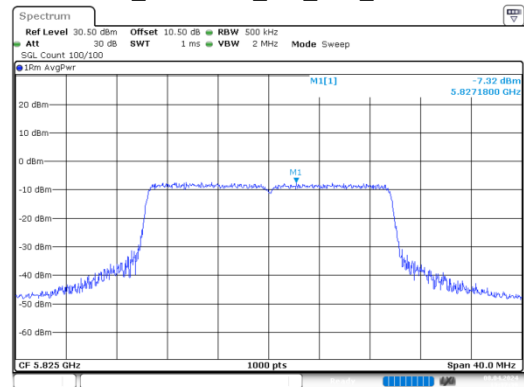
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Date: 8.APR.2024 13:36:52

ax20_5785MHz_RU_Full_Chain 0



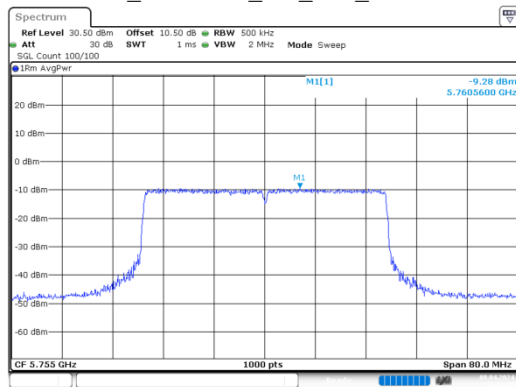
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Date: 8.APR.2024 13:37:17

ax20_5825MHz_RU_Full_Chain 0



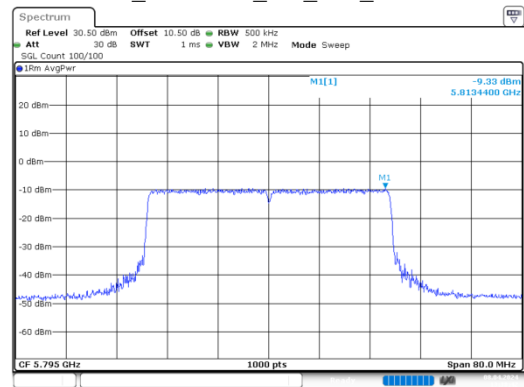
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:37:40

ax40_5755MHz_RU_Full_Chain 0



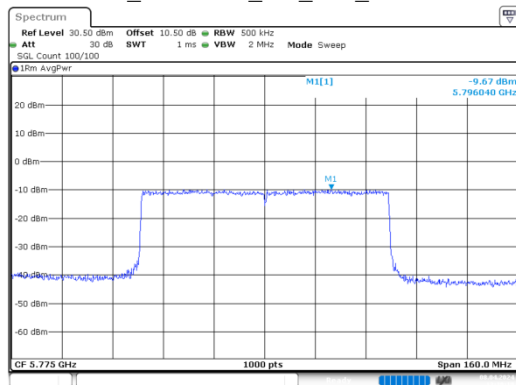
ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:38:09

ax40_5795MHz_RU_Full_Chain 0



ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:38:43

ax80_5775MHz_RU_Full_Chain 0



ProjectNo.:XMDN240206-08079E-RF Tester:Alice Tan
Date: 8.APR.2024 13:39:19

5.8 Duty Cycle

Serial No.:	2HP4-1	Test Date:	2024/04/08
Test Site:	RF	Test Mode:	Transmitting
Tester:	Alice Tan	Test Result:	/

Environmental Conditions:

Temperature: (°C)	25.9	Relative Humidity: (%)	52	ATM Pressure: (kPa)	100.4
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101589	2023/10/18	2024/10/17
Eastsheep	Coaxial Attenuator	5W-N-JK-6G-10dB	F-08-EM488	2023/09/10	2024/09/09

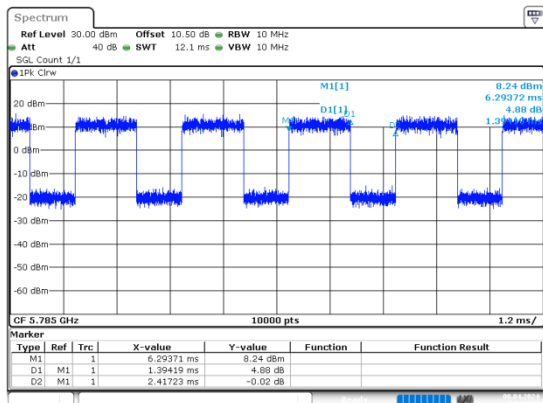
* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Mode	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/Ton (Hz)	VBW Setting (kHz)
a_Chain 0	1.394	2.417	57.67	2.39	717	1
n20_Chain 0	5.084	6.110	83.21	0.80	197	0.20
n40_Chain 0	4.891	5.919	82.63	0.83	204	0.30
ac80_Chain 0	4.520	5.547	81.49	0.89	221	0.30
ax20_Chain 0	3.870	4.897	79.03	1.02	258	0.30
ax40_Chain 0	3.866	4.888	79.09	1.02	259	0.30
ax80_Chain 0	3.693	4.718	78.27	1.06	271	0.30

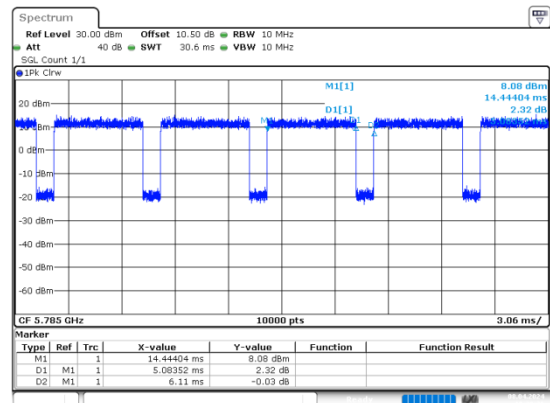
Duty Cycle = Ton/(Ton+Toff)*100%

a_5785MHz_Chain 0



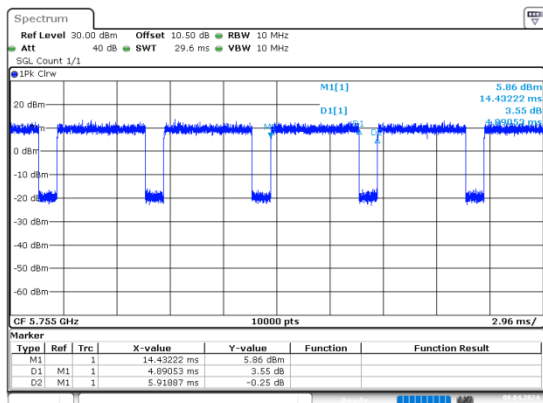
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Date: 8.APR.2024 10:28:32

n20_5785MHz_Chain 0



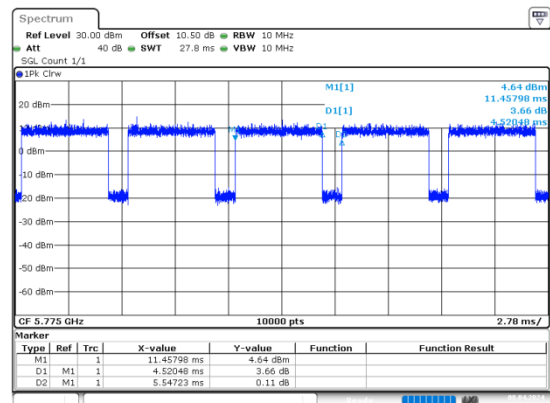
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Date: 8.APR.2024 10:29:26

n40_5755MHz_Chain 0



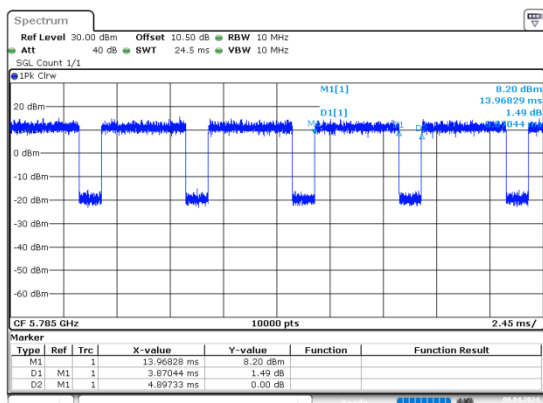
ProjectNo.:XMDN240206-08079E-RF Tester: Alice Tan
Date: 8.APR.2024 10:30:31

ac80_5775MHz_Chain 0



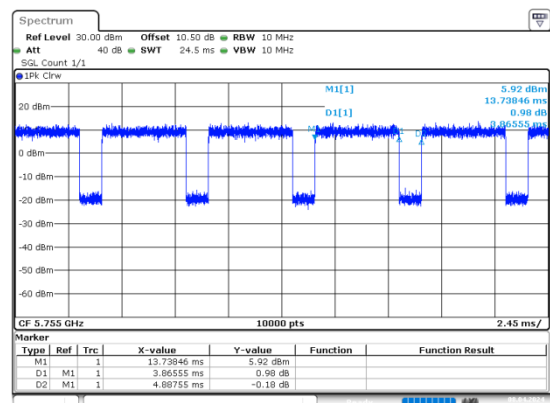
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Date: 8.APR.2024 10:31:31

ax20_5785MHz_RU_Full_Chain 0



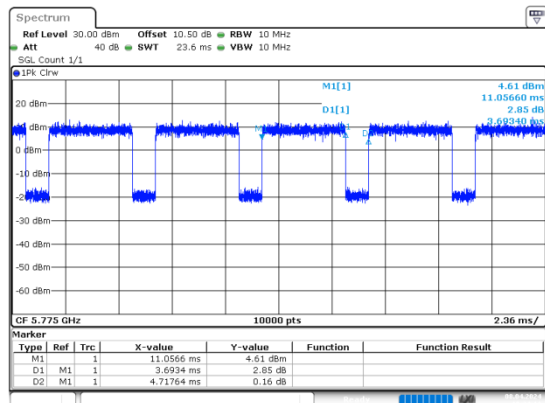
ProjectNo.:XMDN240206-08079E-RF Tester: Alice Tan
Date: 8.APR.2024 10:32:37

ax40_5755MHz_RU_Full_Chain 0



ProjectNo.:XMDN240206-08079E-RF Tester: Alice Tan
Date: 8.APR.2024 10:33:25

ax80_5775MHz_RU_Full_Chain 0



APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment XMDN240206-08079E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and XMDN240206-08079E-RF-INP EUT INTERNAL PHOTOGRAPHS.

APPENDIX B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment XMDN240206-08079E-RF-00F-TSP TEST SETUP PHOTOGRAPHS.

APPENDIX C - RF EXPOSURE EVALUATION

Maximum Permissible Exposure (MPE)

Applicable Standard

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

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

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

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

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

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

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

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

Calculated Data:

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
WiFi 2.4G	2412-2462	5.73	3.74	24	251.18864	20.00	0.1870	1.0
WiFi 5.2G	5150-5250	4.21	2.64	13	19.95	20.00	0.0105	1.0
WiFi 5.3G	5250-5350	4.21	2.64	12	15.85	20.00	0.0083	1.0
WiFi 5.6G	5470-5725	6.45	4.42	12	15.85	20.00	0.0139	1.0
WiFi 5.8G	5725-5850	5.65	3.67	13	19.95	20.00	0.0146	1.0
Bluetooth	2402-2480	5.73	3.74	9	7.94	20.00	0.0059	1.0
BLE	2402-2480	5.73	3.74	9	7.94	20.00	0.0059	1.0
NFC	13.56	/	/	-44.28	0.00004	20.00	<<0.0001	0.98
NFC field strength is 50.92BμV/m @ 3m = -44.28 dBm(0.00004mW) EIRP. That equal to antenna gain is 0dBi and used the EIRP value as conducted power.								

Note: The Conducted output power including Tune-up Tolerance provided by manufacturer

Simultaneous transmission:

BT, BLE, WiFi can't transmit simultaneously. WiFi/BLE/Bluetooth and NFC can transmit simultaneously:

$$S_{BLE}/S_{limit-BLE} + S_{NFC}/S_{limit-NFC}$$

$$= 0.187/1 + 0.0001/0.98$$

$$= 0.187$$

$$< 1.0$$

Result: The device meet FCC MPE at 20 cm distance

Exemption Limits For Routine Evaluation-RF Exposure Evaluation

Applicable Standard

According to RSS-102 § (2.5.2):

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain	Conducted output power including Tune-up Tolerance	EIRP		Exemption limits (mW)
		(dBi)	(dBm)	(dBm)	(mW)	
WiFi 2.4G	2412-2462	5.73	24	29.73	939.72	2684
WiFi 5.2G	5150-5250	4.21	13	17.21	52.60	4507
WiFi 5.3G	5250-5350	4.21	12	16.21	41.78	4567
WiFi 5.6G	5470-5725	6.45	12	18.45	69.98	4697
WiFi 5.8G	5725-5850	5.65	13	18.65	73.28	4845
Bluetooth	2402-2480	5.73	9	14.73	29.72	2676
BLE	2402-2480	5.73	9	14.73	29.72	2676
NFC	13.56	/	/	-44.28	0.00004	1000
NFC field strength is 50.92µV/m @ 3m = -44.28 dBm(0.00004mW) EIRP. That equal to antenna gain is 0dBi and used the EIRP value as conducted power.						

Note:

1. The Conducted output power including Tune-up Tolerance was provided by manufacturer.
2. BT, BLE, WiFi can't transmit simultaneously. WiFi/BLE/Bluetooth and NFC can transmit simultaneously.

Result: Compliant, the device is compliance exemption from Routine Evaluation Limits –RF exposure Evaluation.

***** END OF REPORT *****