Spot Check Evaluation

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2437-3
FCC ID	:	IHDT56AS9
STANDARD	:	47 CFR Part 2, 22, 24, 27, 90S 47 CFR Part 15 Subpart C §15.225 47 CFR Part 15 Subpart C §15.247 47 CFR Part 15 Subpart E §15.407
TEST DATE(S)	:	Aug. 05, 2024 ~ Aug. 21, 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

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
FR471919-01F	Rev. 01	Initial issue of report	Sep. 03, 2024

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 Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2437-3
FCC ID	IHDT56AS9
IMEI Code	Conducted/DFS/CBP: 359867620008119/359867620008127 Radiation: 359867620006634 Conduction: 359867620006899/359867620006907
HW Version	DVT2
SW Version	U4UQ34.39
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 Modification of EUT

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

1.5 Specification of Accessory

Accessories Information				
AC Adapter 1(US)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-331L
AC Adapter 1(EU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-332L
AC Adapter 1(UK)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-333L
AC Adapter 1(AU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-335L
AC Adapter 1(AR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-336L
AC Adapter 1(BR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-337L
AC Adapter 1((CHILE))	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-339L
AC Adapter 1(KR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-330L
AC Adapter 2(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-331L
AC Adapter 2(EU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-332L
AC Adapter 2(UK)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-333L
AC Adapter 2(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-336L
AC Adapter 2(BR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-337L
Battery 1	**Brand Name**	Motorola(ATL)	**Model Name**	RW50
Earphone 1	**Brand Name**	Motorola(Lyand)	**Model Name**	SH38D62338
Earphone 2	**Brand Name**	Motorola(Juwei)	**Model Name**	S928E43096
USB Cable 1	**Brand Name**	Motorola(Washin)	**Model Name**	S928D92375
USB Cable 2	**Brand Name**	Motorola(Saibao)	**Model Name**	S928D95755
Wireless Earphones	**Brand Name**	Motorola	**Model Name**	XT2443-1

1.6 Testing Site

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 03CH03-KS 03CH02-KS 03CH06-KS TH01-KS DFS01-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.	03CH03-KS	AUDIX	E3	210616
3.	03CH02-KS	AUDIX	E3	6.2009-8-24al
4.	03CH06-KS	AUDIX	E3	210616
5.	DFS01-KS	Sporton	Test Tools	1.0
6.	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:

- FCC KDB 484596 D01 Referencing Test Data v02r03
- 47 CFR Part 2, 22, 24, 27, 90S, 90S
- 47 CFR Part 15 Subpart C §15.225
- 47 CFR Part 15 Subpart C §15.247
- 47 CFR Part 15 Subpart E §15.407
- ANSI C63.10-2013
- ANSI C63.26-2015

2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT2437-3, FCC ID: IHDT56AS9) is electrically identical to the reference device (Model: XT2437-1, XT2437-2, FCC ID: IHDT56AS8) for the portions of the circuitry corresponding to the data being re-used, following the FCC KDB 484596 D01 Referencing Test Data v02r03.

ECR Data Referencing Inquiry has been approved by FCC, and the data referencing and spot check test plan includes RF/EMC, the details are presented in section 2.3 of this report.
For Conducted items of 5G NR bands please refer to report number: TR-24ADRTCC7017.
For SAR Reference detail, please refer to FCC SAR report FA471919-01.

The criteria set in section 3 of KDB 484596 D01 v02r03 is followed to determine whether the data referencing is justified. For SAR, the higher between the referenced value and the spot check value is used to determine compliance in both standalone and simultaneous transimission conditions

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AS9 .

2.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AS8 and FCC ID: IHDT56AS9 is as below:

- Remove WCDMA IV and LTE B4/12/13/17/25/66 and 5G NR n2/n66.
- Add LTE B20/32 and 5G NR n8/n20/n38/n41/n77.

Other differences and all the details of similarity and difference can be found in the confidential documents (IHDT56AS9 Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Reference on test	Reference Title	FCC ID Filling (Variant)	Test on the variant	Data Referencing (Y/N)
15C	DSS (BR/EDR)	2400~2483.5	IHDT56AS8	Full test	FR471919A	IHDT56AS9	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	IHDT56AS8	Full test	FR471919B	IHDT56AS9	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	IHDT56AS8	Full test	FR471919C	IHDT56AS9	Spot check	Y, All test items
	DXX (NFC)	13.56	IHDT56AS8	Full test	FR471919D	IHDT56AS9	Spot check	Y, All test items
15E	U-NII	5180~5240	IHDT56AS8	Full test	FR471919E	IHDT56AS9	Spot check	Y, All test items
		5260~5320	IHDT56AS8	Full test	FR471919E	IHDT56AS9	Spot check	Y, All test items
		5500~5720	IHDT56AS8	Full test	FR471919E	IHDT56AS9	Spot check	Y, All test items
		5745~5825	IHDT56AS8	Full test	FR471919E	IHDT56AS9	Spot check	Y, All test items
		5260~5320 5500~5720	IHDT56AS8	Full test	FZ471919	IHDT56AS9	Spot check	Y, All test items
	6XD	5925~7125	IHDT56AS8	Full test	FR471919F	IHDT56AS9	Spot check	Y, All test items
22 24	PCE (GSM, WCDMA)	GSM 850/1900 WCDMA B2/B5	IHDT56AS8	Full test	FG471919A	IHDT56AS9	Spot check	Y, All test items
22 24 27 90	PCE (LTE)	LTE B2/B5/B7/B7C/ B26/B38/B38C/ B42/B42C	IHDT56AS8	Full test	FG471919B FG471919C FG471919D FG471919E FG471919F	IHDT56AS9	Spot check	Y, All test items
22 27	PCE (NR)	5G NR n5/n7/n26	IHDT56AS8	Full test	FG471919G	IHDT56AS9	Spot check	Y, RSE item.

Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit.

2.4 Spot Check Verification Data Section

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.
All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d_{dB} from the reference data no larger than 3 dB:

$$d_{dB} = | V_{dB} – R_{dB} | \leq 3 \text{ dB} \quad (1)$$

V_{dB}, the variant spot-check level
R_{dB}, the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} =|C_{dB} – R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation ddB from the reference data satisfies the following condition:

$$d_{dB} = | V_{dB} – R_{dB} | \leq (3 + M_{dB} /20) \text{ dB} \text{ , for } 0 \leq M_{dB} \leq 60 \text{ dB}$$

$$d_{dB} = | V_{dB} – R_{dB} | = 6 \text{ dB} \text{ , for } M_{dB} > 60 \text{ dB} \quad (2)$$

where “| |” is the absolute value of the measured quantity.
When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB.

Summary for spot check for each rule entry and technology is listed as below:

Mode	Test Item	IHDT56AS8 Parent Worst mode Test Result	IHDT56AS9 Variant Check Test Result	Deviation	Deviation Limit
BT 1Mbps (CH78)	Number of Channels (N)	79	79	0.00	3
	Hopping Channel Separation (MHz)	1.009	1.003	0.01	3
	Dwell Time of Each Channel(s)	0.31	0.31	0.00	3
	20dB Bandwidth(MHz)	0.95	0.94	0.01	3
	99% Bandwidth(MHz)	0.836	0.836	0.00	3
	Conducted Band Edges(dBm)	-52.28	-51.03	1.25	3
	Conducted Spurious Emission(dBm)	-43.36	-45.96	2.60	3
BT 1Mbps (CH78)	Radiated Band Edges and Radiated Spurious Emission (dBuV/m)	56.36	57.48	-1.12	3
BT	AC Conducted Emission (dBuV)	46.04	44.68	1.36	3
BLE 1Mbps (CH39)	6dB Bandwidth (MHz)	0.67	0.67	0.00	3
	99% Bandwidth (MHz)	1.02	1.02	0.00	3
	Power Spectral Density (dBm/3KHz)	-9.35	-9.50	0.15	3
	Conducted Band Edges and Spurious Emission (dBm)	-55.57	-52.79	2.78	3
	Conducted Spurious Emission (dBm)	-50.79	-49.64	1.15	3
BLE 2Mbps (CH39)	Radiated Band Edges and Spurious Emission (dBuV/m)	45.97	46.01	-0.04	3
BLE	AC Conducted Emission (dBuV)	46.04	44.68	1.36	3
WIFI 2.4G (802.11b CH11)	6dB Bandwidth (MHz)	8.06	8.02	0.04	3
	99% Bandwidth (MHz)	12.895	13.287	0.39	3
	Power Spectral Density (dBm/3KHz)	-0.08	-0.15	0.07	3
	Conducted Band Edges and Spurious Emission (dBm)	-34.75	-36.73	1.98	3
	Conducted Spurious Emission (dBm)	-50.78	-49.45	1.33	3
WIFI 2.4G (802.11ax HE40 CH03)	Radiated Band Edges and Spurious Emission (dBuV/m)	50.69	48.16	2.53	3
WIFI 2.4G	AC Conducted Emission (dBuV)	46.04	44.68	1.36	3
WIFI 5G (802.11a CH149)	26dB Emission Bandwidth (MHz)	20.91	20.45	0.46	3
	99% Occupied Bandwidth (MHz)	16.69	16.38	0.31	3
	Power Spectral Density (dBm/MHz)	8.39	7.80	0.59	3
	DFS (s)	0.763225	0.972832	0.209607	3
WIFI 5G (11ax HE40_Ch62)	Radiated Band Edges and Spurious Emission (dBuV/m)	50.80	50.41	0.39	3

WIFI 5G	AC Conducted Emission (dBuV)	36.87	36.45	0.42	3
WIFI 6G UNII-8 (802.11ax HE80 CH199)	26dB Emission Bandwidth (MHz)	81.18	80.99	0.19	3
	99% Occupied Bandwidth (MHz)	76.952	76.876	0.08	3
	Fundamental Maximum EIRP (dBm)	11.34	11.06	0.28	3
	Fundamental Power Spectral Density (dBm/MHz)	-2.05	-2.56	0.51	3
	In-Band Emissions (Channel Mask) (dB)	-37.39	-37.15	0.24	3
WIFI 6G UNII-7 (802.11ax HE160 CH199)	Contention Based Protocol (dBm)	-69.05	-68.09	0.96	3
WIFI 6G (11ax HE160_Ch15)	Radiated Band Edges and Spurious Emission (dBuV/m)	50.62	50.46	0.16	3
WLAN 6G	AC Conducted Emission (dBuV)	43.18	45.05	1.87	3
Part 15C NFC	20dB Emission Bandwidth (KHz)	2.49	2.49	0	3
	99% Occupied Bandwidth (KHz)	2.11	2.10	0.01	3
	Field Strength of Fundamental (dBuV/m @ 30m)	9.36	11.95	2.59	3
	Radiated Spurious Emissions (dBuV/m)	29.5	30.68	1.18	3
	AC Power Line Conducted Emissions(dBuV)	45.12	43.97	1.15	3
Part 22/24/27/90 (Worst LTE Band 7C)	Conducted Power(dBm)	23.01	22.85	0.16	3
	Equivalent Isotropic Radiated Power(dBm)	20.84	20.68	0.16	3
	Peak-to-Average Ratio (dB)	6.46	6.34	0.12	3
	Occupied Bandwidth(MHz)	37.80	38.12	0.32	3
	Conducted Band Edge (dBm)	-26.52	-28.49	1.97	3
	Conducted Spurious Emission(dBm)	-50.27	-51.26	0.99	3
	Frequency Stability (ppm)	0.0029	0.0026	0.00	3

Test Item	Mode	IHDT56AS8 Parent Worst mode Test Result	IHDT56AS9 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Conducted Power (dBm)	BT BR/EDR	14.05	13.76	0.29	3
	BLE 1Mbps	5.69	5.39	0.3	3
	BLE 2Mbps	5.94	5.49	0.45	3
	11b, 2.4GHz	24.78	24.42	0.36	3
	11g, 2.4GHz	27.79	27.65	0.14	3
	11n HT20, 2.4GHz	27.88	27.25	0.63	3
	11n HT40, 2.4GHz	26.14	25.2	0.94	3
	11ax 20, 2.4GHz	28.03	27.41	0.62	3
	11ax 40, 2.4GHz	26.19	25.29	0.9	3
	11a, 5.2GHz	19.36	19.01	0.35	3
	11a, 5.3GHz	20.05	19.86	0.19	3
	11a, 5.5GHz	19.69	19.12	0.57	3
	11a, 5.8GHz	21.09	20.81	0.28	3
	11n HT20, 5.2GHz	19.54	19.12	0.42	3
	11n HT20, 5.3GHz	19.66	19.25	0.41	3
	11n HT20, 5.5GHz	19.92	19.34	0.58	3
	11n HT20, 5.8GHz	20.91	20.53	0.38	3
	11ac VHT20, 5.2GHz	19.59	19.24	0.35	3
	11ac VHT20, 5.3GHz	19.72	19.34	0.38	3
	11ac VHT20, 5.5GHz	19.74	19.62	0.12	3
	11ac VHT20, 5.8GHz	20.92	20.63	0.29	3
	11ax HE20, 5.2GHz	19.67	19.08	0.59	3
	11ax HE20, 5.3GHz	19.80	19.71	0.09	3
	11ax HE20, 5.5GHz	20.02	19.27	0.75	3
	11ax HE20, 5.8GHz	21.05	20.75	0.3	3
	11n HT40, 5.2GHz	19.82	19.33	0.49	3
	11n HT40, 5.3GHz	19.60	19.17	0.43	3
	11n HT40, 5.5GHz	19.99	19.27	0.72	3
	11n HT40, 5.8GHz	19.74	19.31	0.43	3
	11ac VHT40, 5.2GHz	19.96	19.56	0.4	3
	11ac VHT40, 5.3GHz	19.71	19.22	0.49	3
	11ac VHT40, 5.5GHz	19.99	19.54	0.45	3
	11ac VHT40, 5.8GHz	19.83	19.32	0.51	3
	11ax HE40, 5.2GHz	20.37	20.02	0.35	3
	11ax HE40, 5.3GHz	20.06	19.54	0.52	3
	11ax HE40, 5.5GHz	20.39	19.98	0.41	3
	11ax HE40, 5.8GHz	20.31	19.98	0.33	3
	11ac VHT80, 5.2GHz	17.13	16.88	0.25	3
	11ac VHT80, 5.3GHz	17.56	17.11	0.45	3
	11ac VHT80, 5.5GHz	18.95	18.45	0.5	3
	11ac VHT80, 5.8GHz	18.69	18.19	0.5	3
	11ax HE80, 5.2GHz	17.19	16.84	0.35	3
	11ax HE80, 5.3GHz	17.63	17.38	0.25	3
	11ax HE80, 5.5GHz	19.63	19.31	0.32	3
	11ax HE80, 5.8GHz	19.21	18.96	0.25	3
	11ac VHT160, 5.2GHz	15.34	14.98	0.36	3
	11ac VHT160, 5.5GHz	14.75	14.32	0.43	3
	11ax HE160, 5.2GHz	15.36	15.13	0.23	3
	11ax HE160, 5.5GHz	14.76	14.35	0.41	3
	11ax HE20, U-NII-5	10.00	9.23	0.77	3

	11ax HE20, U-NII-6	9.31	8.7	0.61	3
	11ax HE20, U-NII-7	9.42	9.03	0.39	3
	11ax HE20, U-NII-8	10.04	9.82	0.22	3
	11ax HE40, U-NII-5	13.09	12.62	0.47	3
	11ax HE40, U-NII-6	12.27	12.04	0.23	3
	11ax HE40, U-NII-7	12.49	11.89	0.60	3
	11ax HE40, U-NII-8	13.39	13.13	0.26	3
	11ax HE80, U-NII-5	15.01	14.24	0.77	3
	11ax HE80, U-NII-6	14.70	14.22	0.48	3
	11ax HE80, U-NII-7	14.44	13.66	0.78	3
	11ax HE80, U-NII-8	15.64	15.36	0.28	3
	11ax HE160, U-NII-5	16.44	15.68	0.76	3
	11ax HE160, U-NII-6	16.22	15.78	0.44	3
	11ax HE160, U-NII-7	16.31	15.75	0.56	3
	11ax HE160, U-NII-8	15.37	15.17	0.2	3
	GSM 850	32.84	32.82	0.02	3
	GSM 1900	29.16	28.93	0.23	3
	WCDMA 850	23.03	22.93	0.1	3
	WCDMA1900	22.81	22.79	0.02	3
	LTE B2	22.92	22.61	0.31	3
	LTE B5	22.94	22.92	0.02	3
	LTE B26 (Part 22H)	23.06	23.05	0.01	3
	LTE B26 (Part 90S)	22.82	22.71	0.11	3
	LTE B7	23.03	23.01	0.02	3
	LTE B7C	23.01	22.85	0.16	3
	LTE B38	23.16	23.12	0.04	3
	LTE B38C	23.11	22.81	0.30	3
	LTE B42	23.15	23.02	0.13	3
	LTE B42C	23.04	22.96	0.08	3

Conclusion:
All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. All spot check test data are shown within expected level compliant to limit line.

We are using power and ERP/EIRP measurements from the original parent model reports to list on the grant.

The same detection mechanism/software/antenna gain is used in the variant of DFS/CBP. Hence, all test cases refer to parent report.

We confirm that the test data referencing policy of FCC KDB 484596 D01 Referencing Test Data v02r03 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

3 List of Measuring Equipment

For BT/WIFI:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Aug. 16, 2024~ Aug. 18, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Aug. 16, 2024~ Aug. 18, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Aug. 16, 2024~ Aug. 18, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 02, 2024	Aug. 15, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz-44GHz	Oct. 11, 2023	Aug. 15, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Aug. 15, 2024	Sep. 10, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz-1GHz	Aug. 19, 2023	Aug. 15, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Aug. 15, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Aug. 15, 2024	Jan. 05, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Aug. 15, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Aug. 15, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 02, 2024	Aug. 15, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 11, 2023	Aug. 15, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 15, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 15, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 15, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Aug. 08, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Aug. 08, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV7	101632	10Hz~7GHz	Jan. 03, 2024	Aug. 05, 2024	Jan. 02, 2025	DFS (DFS01-KS)
Signal Generator	KEYSIGHT	N5182B	MY53050604	9KHz~6GHz	Apr. 17, 2024	Aug. 05, 2024	Apr. 16, 2025	DFS (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Aug. 05, 2024	NCR	DFS (DFS01-KS)
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 02, 2024	Aug. 21, 2024	Jan. 01, 2025	CBP (DFS01-KS)
MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY56200417 /MY59360210	9kHz~7.2GHz	Apr. 17, 2024	Aug. 21, 2024	Apr. 16, 2025	CBP (DFS01-KS)

NCR: No Calibration Required.

For NFC:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	10Hz~30GHz	Jan. 05, 2024	Aug. 18, 2024	Jan. 04, 2025	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Aug. 18, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2024	Aug. 18, 2024	Jul. 03, 2025	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 11, 2023	Aug. 15, 2024	Oct. 10, 2024	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Aug. 15, 2024	Sep. 10, 2024	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 06, 2023	Aug. 15, 2024	Dec. 05, 2024	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 03, 2024	Aug. 15, 2024	Jan. 02, 2025	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Aug. 15, 2024	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 15, 2024	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Aug. 15, 2024	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Aug. 08, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Aug. 08, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Conduction (CO01-KS)

NCR: No Calibration Required

For WWAN Bands:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Aug. 16, 2024~ Aug. 18, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Aug. 16, 2024~ Aug. 18, 2024	NCR	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2024	Aug. 16, 2024~ Aug. 18, 2024	Jul. 03, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44GHz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Aug. 08, 2024	Sep. 10, 2024	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz-1GHz	Dec. 06, 2023	Aug. 08, 2024	Dec. 05, 2024	Radiation (03CH03-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 23, 2023	Aug. 08, 2024	Oct. 22, 2024	Radiation (03CH03-KS)
SHF-EHF Horn	com-power	AH-840	101115	18GHz~40GHz	Oct. 15, 2023	Aug. 08, 2024	Oct. 14, 2024	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	413740	30MHz ~1000MHz	Jan. 03, 2024	Aug. 08, 2024	Jan. 02, 2025	Radiation (03CH03-KS)
Amplifier	EM	EM18G40GA	060851	18~40GHz	Jan. 03, 2024	Aug. 08, 2024	Jan. 02, 2025	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082394	1Ghz-18Ghz	Jan. 03, 2024	Aug. 08, 2024	Jan. 02, 2025	Radiation (03CH03-KS)
Amplifier	Keysight	83017A	MY53270319	1GHz~26.5GHz	Oct. 11, 2023	Aug. 08, 2024	Oct. 10, 2024	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 08, 2024	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 08, 2024	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 08, 2024	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required.

4 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. 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 (BT/WIFI2.4G/5G)

Conducted Spurious Emission & Bandedge	**±2.22 dB**
Occupied Channel Bandwidth	**±0.1%**
Conducted Power	**±0.50 dB**
Conducted Power Spectral Density	**±0.90 dB**
Frequency	**±0.4 Hz**

Uncertainty of Conducted Measurement (WIFI 6G)

Conducted Spurious Emission & Bandedge	**±2.22 dB**
Occupied Channel Bandwidth	**±0.1%**
Conducted Power	**±0.50 dB**
Conducted Power Spectral Density	**±0.90 dB**
Frequency	**±0.4 Hz**
Conducted Generated signal Levels	**±0.56 dB**
Conducted Time	**0.54%**

Uncertainty of Conducted Measurement (NFC)

Test Item	Uncertainty
Occupied Channel Bandwidth	**±0.1%**
Frequency	**±0.4 Hz**

Uncertainty of Conducted Measurement (DFS)

Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.38%

Uncertainty of Conducted Measurement (WWAN)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Peak to Average Ratio	±0.46 dB
Frequency Stability	±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))	2.84 dB

03CH06-KS(BT/WIF):

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

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

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

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

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

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

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

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

03CH02-KS(NFC):

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))	6.04dB

03CH03-KS(WWAN):

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

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

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83dB

-THE END-

Appendix A. Radiated Spurious Emission Test Data

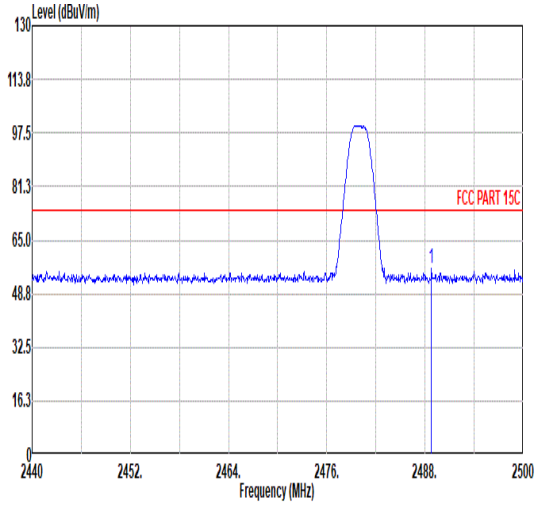
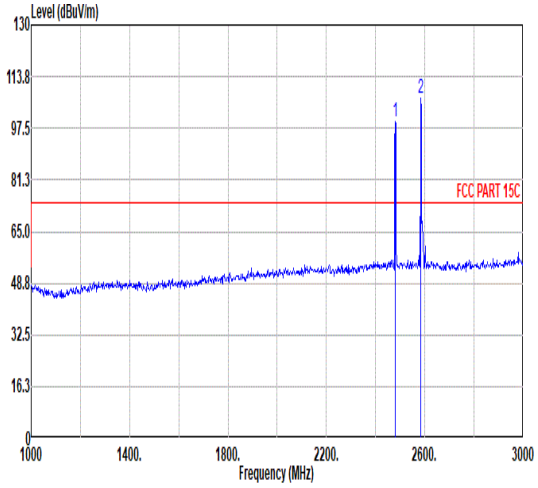
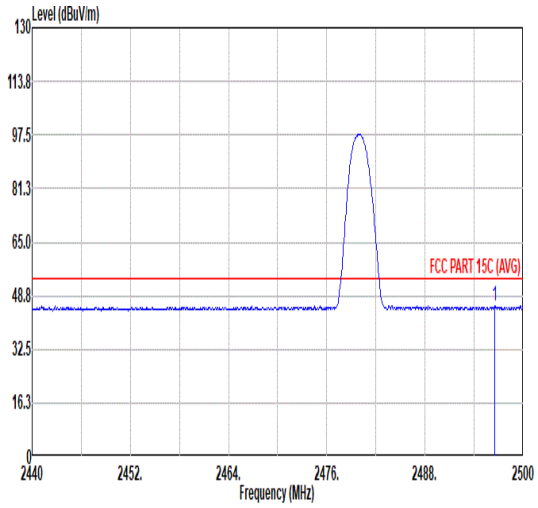
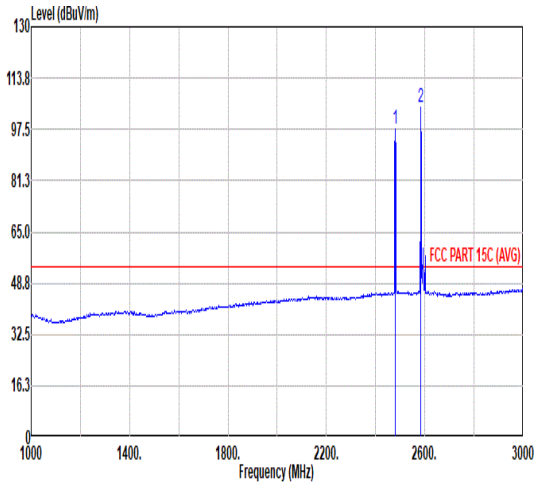
Test Engineer :	levi zhao	**Relative Humidity :**	22 ~ 23 ℃
		Temperature :	41 ~ 42 %

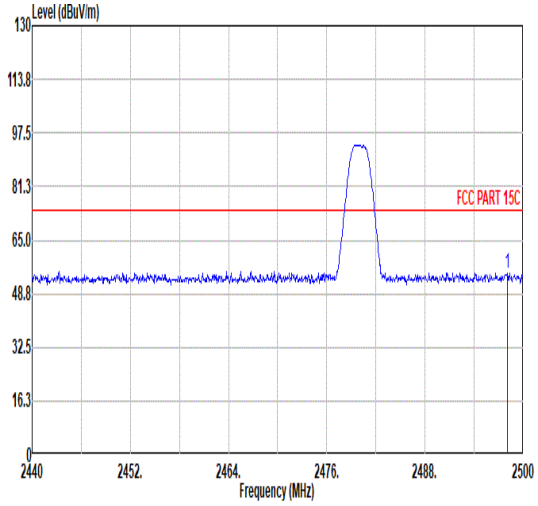
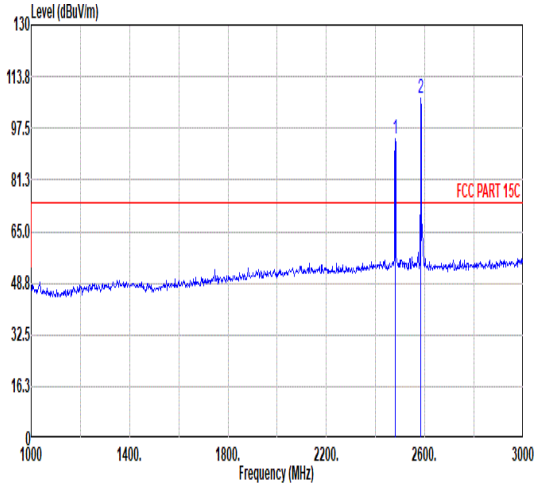
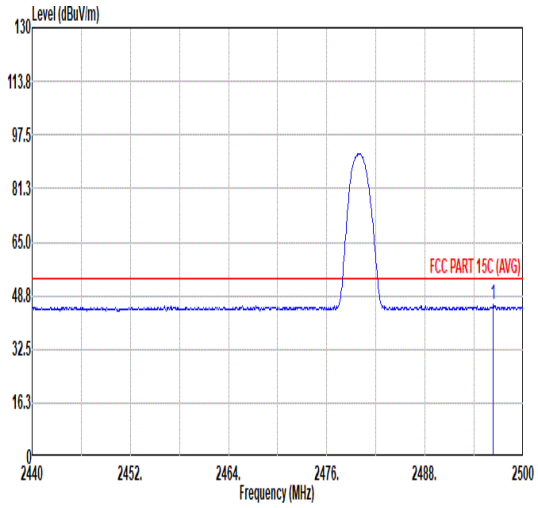
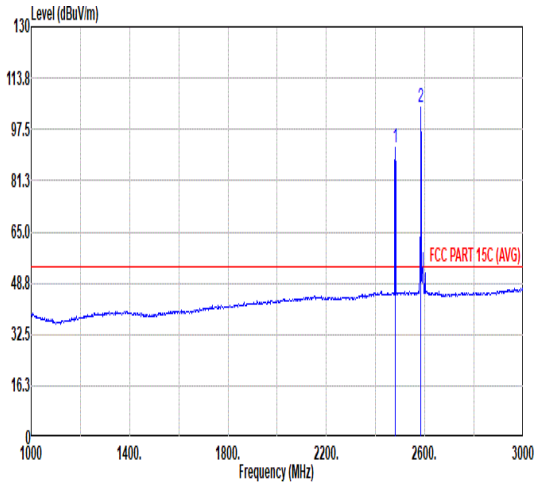
Radiated Spurious Emission Test Modes

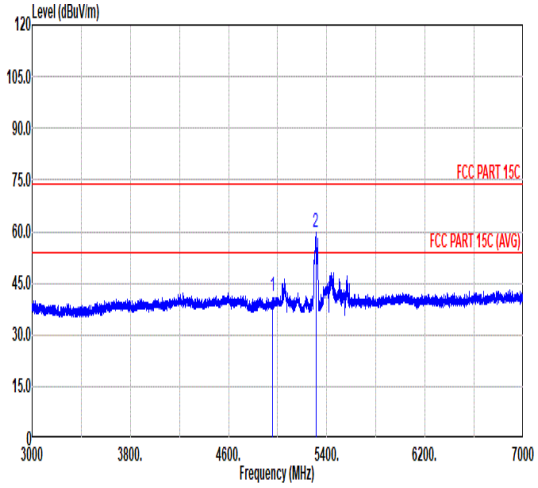
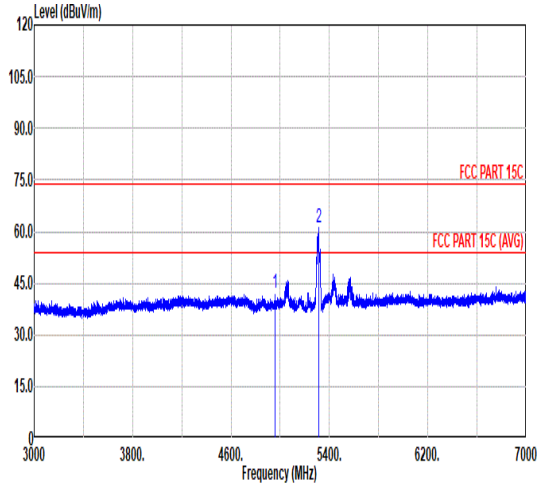
Mode	Band	Band (GHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	2400-2483.5	6	Bluetooth-LE_GSFK	39	2480	2Mbps	Full	-
	U-NII-2A	5.25-5.35	CDD 6+8	802.11ax HE40	62	5310	MCS0	Full	-
	Part 27M B41 BW=20M								
	NFC on								

Summary of each worse mode

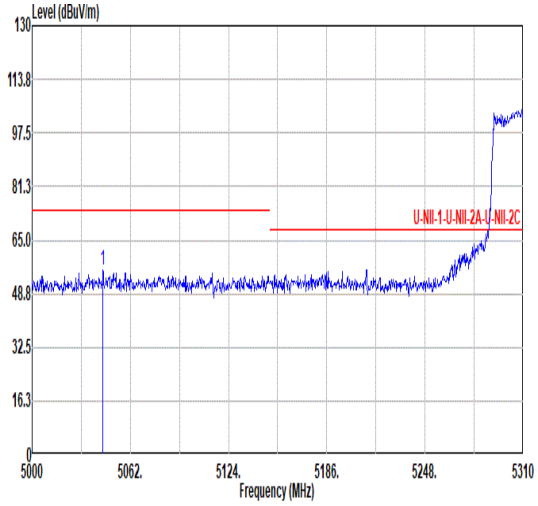
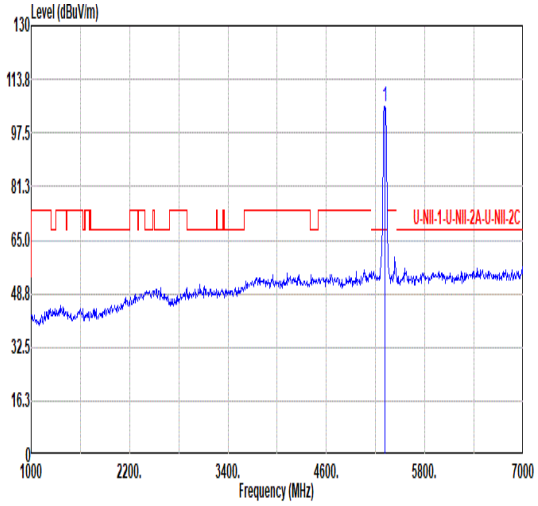
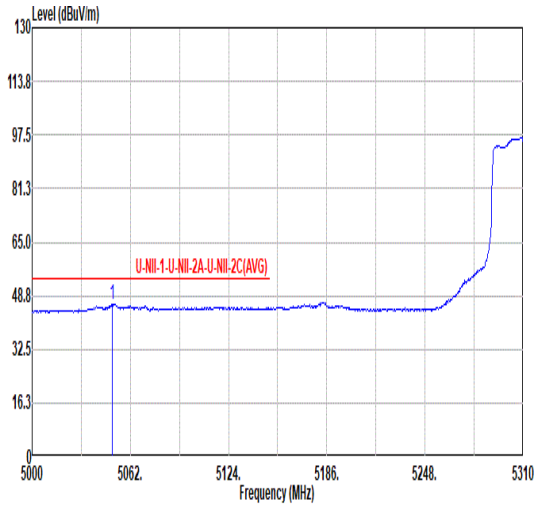
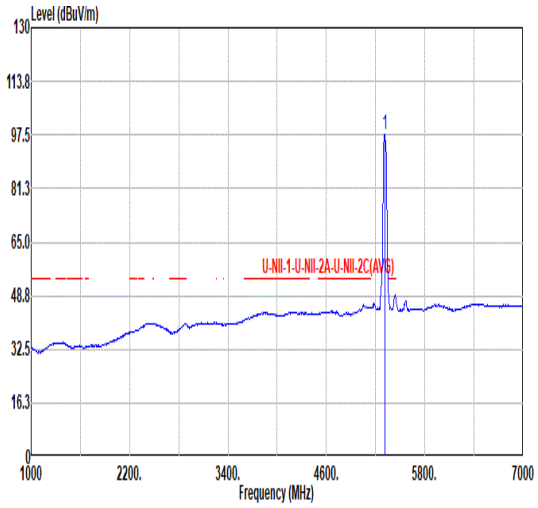
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	Bluetooth-LE_GSFK	39	2496.34	46.04	54.00	-7.96	V	AVERAGE	Pass	Band Edge
	Bluetooth-LE_GSFK	39	4960.00	41.94	74.00	-32.06	V	PEAK	Pass	Harmonic
	802.11ax HE40	62	5350.20	50.85	54.00	-3.15	H	Average	Pass	Band Edge
	802.11ax HE40	62	7752.40	62.37	70.20	-7.83	V	Peak	Pass	Harmonic

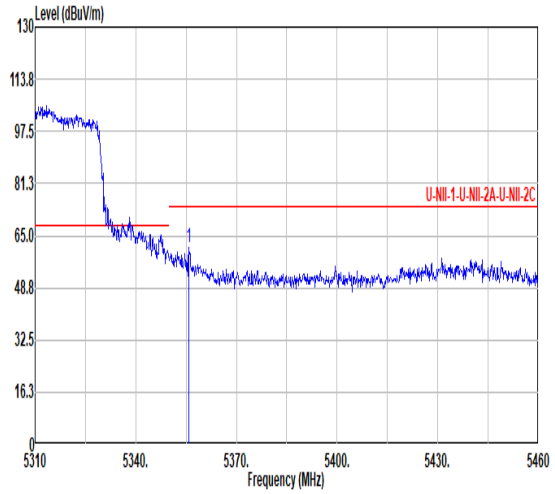
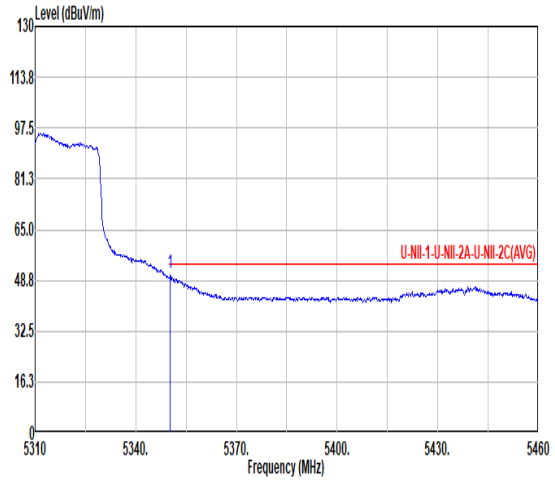
Mode	1	
	Co-location Band Edge	
	Bluetooth-LE_GSFK_CH39_2480MHz_Full	
ANT	6	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2488.78 56.44 74.00 -17.56 43.31 32.63 6.74 32.24 6.00 307 309 PEAK	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 99.82 ------ ------ 86.74 32.58 6.73 32.23 6.00 307 309 Peak 2 2584.00 106.92 ------ ------ 93.93 32.36 6.87 32.24 6.00 307 309 Peak
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2496.52 45.66 54.00 -8.34 32.47 32.68 6.75 32.24 6.00 307 309 AVERAGE	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 97.66 ------ ------ 84.58 32.58 6.73 32.23 6.00 307 309 Average 2 2584.00 104.57 ------ ------ 91.58 32.36 6.87 32.24 6.00 307 309 Average

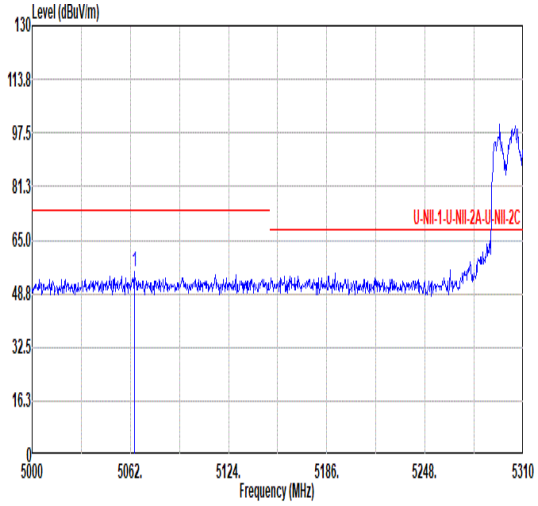
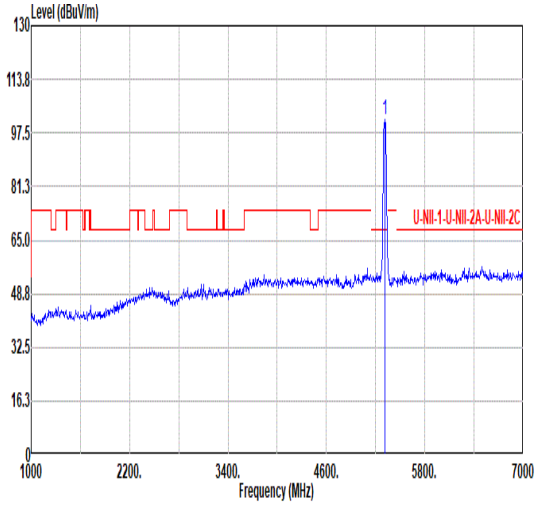
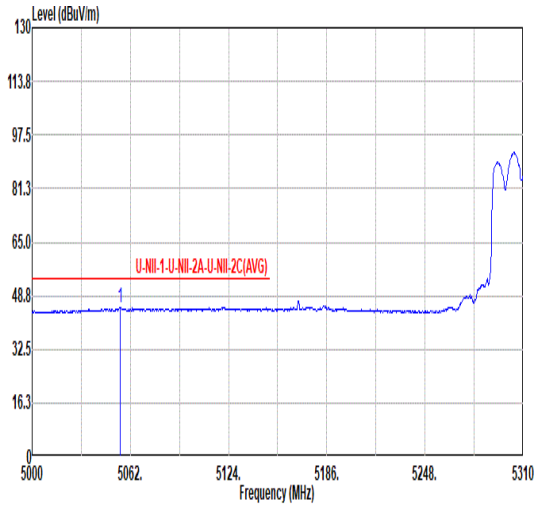
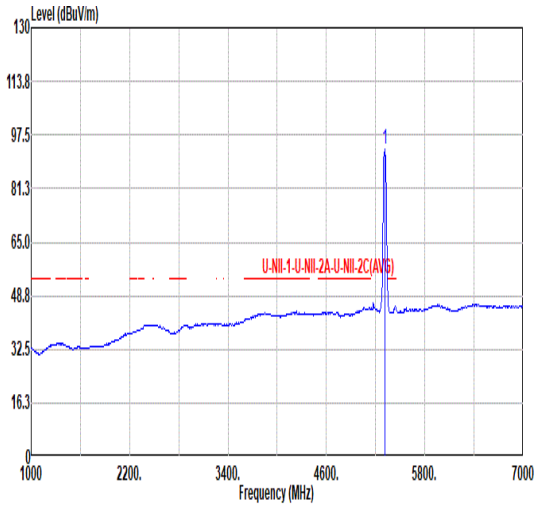
Mode	1	
	Co-location Band Edge	
	Bluetooth-LE_GSFK_CH39_2480MHz_Full	
ANT	6	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2498.02 55.14 74.00 -18.86 41.94 32.69 6.75 32.24 6.00 245 0 PEAK	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 94.01 ------ ------ 80.93 32.58 6.73 32.23 6.00 245 0 Peak 2 2584.00 106.81 ------ ------ 93.82 32.36 6.87 32.24 6.00 245 0 Peak
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2496.34 46.04 54.00 -7.96 32.85 32.68 6.75 32.24 6.00 245 0 AVERAGE	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 91.80 ------ ------ 78.72 32.58 6.73 32.23 6.00 245 0 Average 2 2584.00 104.50 ------ ------ 91.51 32.36 6.87 32.24 6.00 245 0 Average

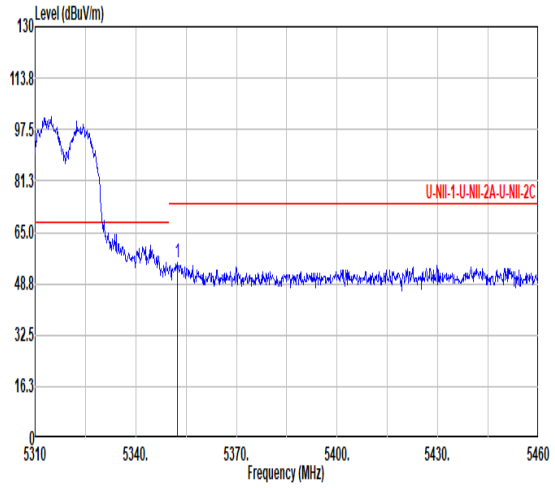
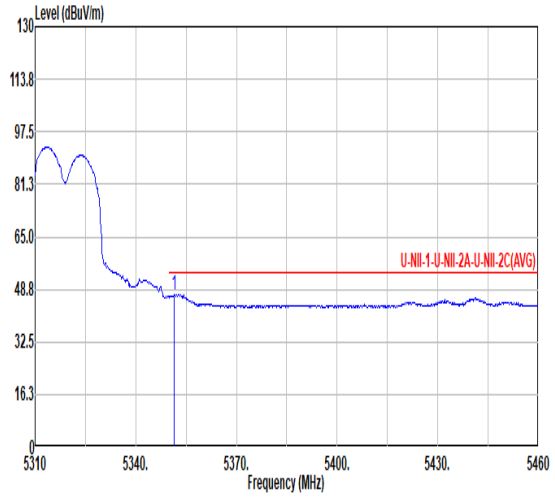
Mode	1	
	Co-location Harmonic	
	Bluetooth-LE_GSFK_CH39_2480MHz_Full	
ANT	6	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 41.34 74.00 -32.66 58.89 34.00 9.61 61.16 0.00 --- --- PEAK 2 5310.40 59.83 74.00 -14.17 76.23 34.52 9.89 60.81 0.00 --- --- Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 4960.00 41.94 74.00 -32.06 59.49 34.00 9.61 61.16 0.00 --- --- PEAK 2 5313.20 60.97 74.00 -13.03 77.36 34.53 9.89 60.81 0.00 --- --- Peak

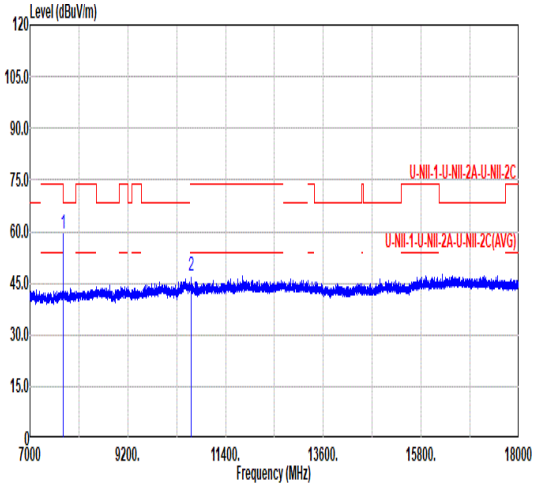
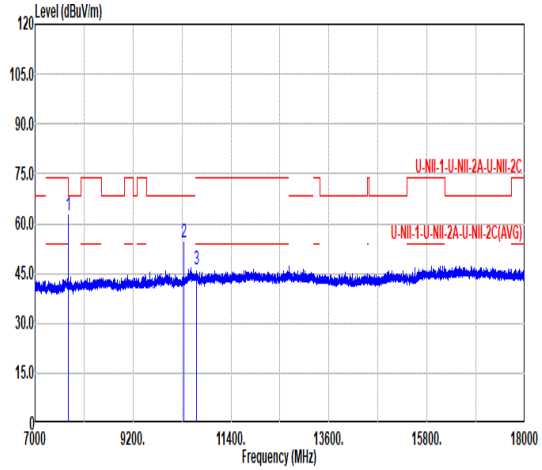
Note: #2 is co-location of WLAN 5G_CH62 TX fundamental signal.

Mode	1	
	Co-location Band Edge	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5044.64 55.88 74.00 -18.12 44.14 34.00 9.69 31.95 0.00 100 334 PEAK	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5310.00 105.68 ------ ------ 93.06 34.53 9.89 31.80 0.00 100 334 PEAK
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5050.53 46.27 54.00 -7.73 34.51 34.00 9.70 31.94 0.00 100 334 AVERAGE	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5310.00 97.53 ------ ------ 84.93 34.52 9.89 31.81 0.00 100 334 AVERAGE

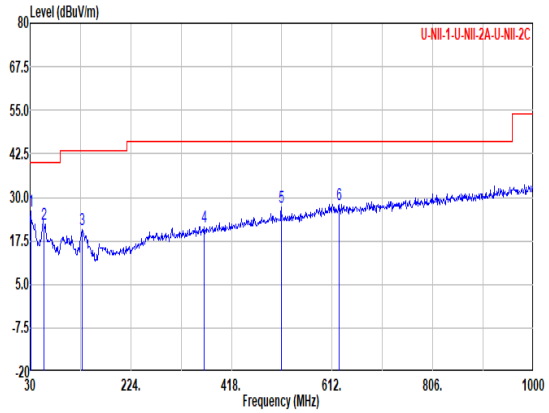
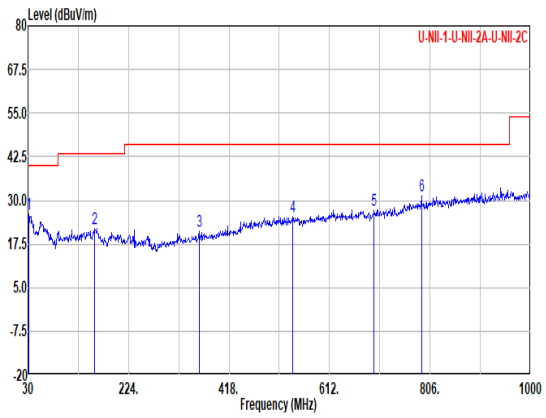
Mode	1	
	Co-location Band Edge	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5355.90 61.36 74.00 -12.64 48.62 34.61 9.91 31.78 0.00 100 334 PEAK	Blank
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5350.20 50.85 54.00 -3.15 38.12 34.60 9.91 31.78 0.00 100 334 Average	Blank

Mode	1	
	Co-location Band Edge	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5064.48 55.25 74.00 -18.75 43.45 34.03 9.71 31.94 0.00 300 311 PEAK	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5310.00 101.35 ------ ------ 88.73 34.53 9.89 31.80 0.00 300 311 PEAK
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5055.49 45.23 54.00 -8.77 33.46 34.01 9.70 31.94 0.00 300 311 AVERAGE	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5310.00 93.01 ------ ------ 80.39 34.53 9.89 31.80 0.00 300 311 AVERAGE

Mode	1	
	Co-location Band Edge	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5352.45 55.61 74.00 -18.39 42.88 34.60 9.91 31.78 0.00 300 311 PEAK	Blank
Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5351.55 47.26 54.00 -6.74 34.53 34.60 9.91 31.78 0.00 300 311 AVERAGE	Blank

Mode	1	
	Co-location Harmonic	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 7752.40 59.18 70.20 -11.02 71.84 35.90 12.10 60.66 0.00 100 262 Peak 2 10620.00 46.88 74.00 -27.12 55.95 37.88 14.31 61.26 0.00 --- --- PEAK	 Freq Level Limit Line Over Limit Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 7752.40 62.37 70.20 -7.83 75.03 35.90 12.10 60.66 0.00 100 265 Peak 2 10336.30 54.56 68.20 -13.64 64.36 37.37 14.11 61.28 0.00 100 91 Peak 3 10620.00 46.28 74.00 -27.72 55.35 37.88 14.31 61.26 0.00 --- --- PEAK

Note: #1 is the 3rd harmonic from LTE B41, the limit should be -25dBm and converted to field strength limit 70.2dBµV/m @3m distance, the test results is Pass.

Mode	1	
	30-1G	
	802.11ax HE40_CH62_5310MHz_Full	
ANT	CDD 6+8	
Pol.	Horizontal	Vertical
Peak		

	Freq	Level	Limit Line	Over Limit	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	30.97	25.90	40.00	-14.10	33.01	25.09	0.76	32.96	0.00	---	---	Peak
2	57.16	22.33	40.00	-17.67	41.19	12.85	1.04	32.75	0.00	---	---	Peak
3	130.88	20.91	43.50	-22.59	34.37	17.56	1.69	32.71	0.00	---	---	Peak
4	364.65	21.59	46.00	-24.41	30.88	20.98	2.83	33.10	0.00	---	---	Peak
5	514.03	27.10	46.00	-18.90	33.04	24.33	3.15	33.42	0.00	---	---	Peak
6	625.58	27.94	46.00	-18.06	31.46	26.32	3.69	33.53	0.00	---	---	Peak

	Freq	Level	Limit Line	Over Limit	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	31.94	25.95	40.00	-14.05	33.76	24.39	0.76	32.96	0.00	---	---	Peak
2	159.01	21.96	43.50	-21.54	36.23	16.57	1.84	32.68	0.00	---	---	Peak
3	360.77	20.98	46.00	-25.02	30.36	20.88	2.81	33.07	0.00	---	---	Peak
4	540.22	25.32	46.00	-20.68	30.76	24.90	3.18	33.52	0.00	---	---	Peak
5	698.33	27.11	46.00	-18.89	30.02	26.71	3.95	33.57	0.00	---	---	Peak
6	789.51	31.24	46.00	-14.76	32.30	28.04	4.19	33.29	0.00	---	---	Peak

Appendix C. Reference Report

FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2437-1, XT2437-2
FCC ID	:	IHDT56AS8
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	15E 6 GHz Low Power Indoor Client (6XD)
TEST DATE(S)	:	Jul. 26, 2024 ~ Aug. 20, 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

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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Appendix A. Conducted Test Results

Appendix B. AC Conducted Emission Test Result

Appendix C. Radiated Spurious Emission

Appendix D. Duty Cycle Plots

Appendix E. Setup Photographs

History of this test report

Report No.	Version	Description	Issued Date
FR471919F	01	Initial issue of report	Aug. 21, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(a)(11)	26dB Emission Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)(8)	Maximum Conducted Output Power	Reporting only	-
3.2	15.407(a)(8)	Fundamental Maximum EIRP	Pass	-
3.3	15.407(a)(8)	Fundamental Power Spectral Density	Pass	-
3.4	15.407(b)(7)	In-Band Emissions (Channel Mask)	Pass	-
3.5	15.407(d)(6)	Contention Based Protocol	Pass	
3.6	15.407(b)	Unwanted Emissions	Pass	Under limit 4.24 dB at 8029.00 MHz
3.7	15.207	AC Conducted Emission	Pass	Under limit 13.09 dB at 0.484 MHz
3.8	15.203 15.407(a)	Antenna Requirement	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 Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2437-1, XT2437-2
FCC ID	IHDT56AS8
IMEI Code	Conducted: 357931300017436/357931300017444 Conduction: 355709740016651/355709740016669 Radiation: 355709740016511/355709740016529 CBP: 357931300018111/357931300018129
HW Version	DVT2
SW Version	U4UQ34.39
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The two models XT2437-1, XT2437-2 is only for market segment purpose, no other difference.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	U-NII-5: 5925 MHz ~ 6425 MHz U-NII-6: 6425 MHz ~ 6525 MHz U-NII-7: 6525 MHz ~ 6875 MHz U-NII-8: 6875 MHz ~ 7125 MHz
Maximum EIRP	**<MIMO Ant.5+8>** **<5925 MHz ~ 7125 MHz >** 802.11ax HE20 : 5.74 dBm / 0.0037 W 802.11ax HE40 : 9.09 dBm / 0.0081 W 802.11ax HE80 : 11.34 dBm / 0.0136 W 802.11ax HE160 : 12.61 dBm / 0.0182 W
99% Occupied Bandwidth	802.11ax HE20 : 18.971 MHz 802.11ax HE40 : 39.790 MHz 802.11ax HE80 : 76.952 MHz 802.11ax HE160 : 156.648 MHz
Antenna Type / Gain	**<5925 MHz ~ 6425 MHz >** <Ant. 5> : monopole Antenna with gain -5.47 dBi <Ant. 8> : IFA Antenna with gain -4.68 dBi **<6425 MHz ~ 6525 MHz >** <Ant. 5> : monopole Antenna with gain -3.78 dBi <Ant. 8> : IFA Antenna with gain -4.40 dBi **<6525 MHz ~ 6875 MHz >** <Ant. 5> : monopole Antenna with gain -4.30 dBi <Ant. 8> : IFA Antenna with gain -3.70 dBi **<6875 MHz ~ 7125 MHz >** <Ant. 5> : monopole Antenna with gain -4.85 dBi <Ant. 8> : IFA Antenna with gain -4.30 dBi
Type of Modulation	802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)

Remark:

1. WIFI MIMO support CDD mode.
2. For WLAN SISO & MIMO mode, the whole testing has assessed only MIMO mode by referring to the higher output power.
3. 802.11ax support full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) are tested for conducted power/PSD/Channel Mask in appendix A, all the other test case were performed with full RU with its maximum power/PSD.
4. The EUT does not support 802.11ax channel puncturing mode.
5. The device does not support UNII-8 CH233 (BW=20M, Center Frequency = 7115 MHz).
6. CBP test with antenna path of minimum gain (Minimum gain= -5.47 dBi).

1.5 Modification of EUT

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

1.6 Specification of Accessory

Accessories Information				
AC Adapter 1(US)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-331L
AC Adapter 1(EU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-332L
AC Adapter 1(UK)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-333L
AC Adapter 1(AU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-335L
AC Adapter 1(AR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-336L
AC Adapter 1(BR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-337L
AC Adapter 1((CHILE))	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-339L
AC Adapter 1(KR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-330L
AC Adapter 2(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-331L
AC Adapter 2(EU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-332L
AC Adapter 2(UK)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-333L
AC Adapter 2(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-336L
AC Adapter 2(BR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-337L
Battery 1	**Brand Name**	Motorola(ATL)	**Model Name**	RW50
USB Cable 1	**Brand Name**	Motorola(Washin)	**Model Name**	S928D92375
USB Cable 2	**Brand Name**	Motorola(Saibao)	**Model Name**	S928D95755
Wireless Earphones	**Brand Name**	Motorola	**Model Name**	XT2443-1

1.7 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 DFS01-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacture	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:

- FCC Part 15 Subpart E
- FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output 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 (Y plane) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

<U-NII-5, 6, 7, 8>

BW 20M	**Channel**	1	5	9	13	17	21	25	29
	Freq. (MHz)	5955	5975	5995	6015	6035	6055	6075	6095
BW 40M	**Channel**	3		11		19		27	
	Freq. (MHz)	5965		6005		6045		6085	
BW 80M	**Channel**	7				23			
	Freq. (MHz)	5985				6065			
BW 160M	**Channel**	15							
	Freq. (MHz)	6025							

BW 20M	**Channel**	33	37	41	45	49	53	57	61
	Freq. (MHz)	6115	6135	6155	6175	6195	6215	6235	6255
BW 40M	**Channel**	35		43		51		59	
	Freq. (MHz)	6125		6165		6205		6245	
BW 80M	**Channel**	39				55			
	Freq. (MHz)	6145				6225			
BW 160M	**Channel**	47							
	Freq. (MHz)	6185							

BW 20M	**Channel**	65	69	73	77	81	85	89	93
	Freq. (MHz)	6275	6295	6315	6335	6355	6375	6395	6415
BW 40M	**Channel**	67		75		83		91	
	Freq. (MHz)	6285		6325		6365		6405	
BW 80M	**Channel**	71				87			
	Freq. (MHz)	6305				6385			
BW 160M	**Channel**	79							
	Freq. (MHz)	6345							

BW 20M	Channel	97	101	105	109	113	117	121	125
	Freq. (MHz)	6435	6455	6475	6495	6515	6535	6555	6575
BW 40M	Channel	99		107		115		123	
	Freq. (MHz)	6445		6485		6525		6565	
BW 80M	Channel	103				119			
	Freq. (MHz)	6465				6545			
BW 160M	Channel	111							
	Freq. (MHz)	6505							

BW 20M	Channel	129	133	137	141	145	149	153	157
	Freq. (MHz)	6595	6615	6635	6655	6675	6695	6715	6735
BW 40M	Channel	131		139		147		155	
	Freq. (MHz)	6605		6645		6685		6725	
BW 80M	Channel	135				151			
	Freq. (MHz)	6625				6705			
BW 160M	Channel	143							
	Freq. (MHz)	6665							

BW 20M	Channel	161	165	169	173	177	181	185	189
	Freq. (MHz)	6755	6775	6795	6815	6835	6855	6875	6895
BW 40M	Channel	163		171		179		187	
	Freq. (MHz)	6765		6805		6845		6885	
BW 80M	Channel	167				183			
	Freq. (MHz)	6785				6865			
BW 160M	Channel	175							
	Freq. (MHz)	6825							

BW 20M	Channel	193	197	201	205	209	213	217	221
	Freq. (MHz)	6915	6935	6955	6975	6995	7015	7035	7055
BW 40M	Channel	195		203		211		219	
	Freq. (MHz)	6925		6965		7005		7045	
BW 80M	Channel	199				215			
	Freq. (MHz)	6945				7025			
BW 160M	Channel	207							
	Freq. (MHz)	6985							

BW 20M	Channel	225	229
	Freq. (MHz)	7075	7095
BW 40M	Channel	227	
	Freq. (MHz)	7085	

2.2 Test Mode

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

Modulation	Data Rate
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : GSM 850 Idle + BT Link + WLAN(6G) Link + USB Cable(Charging From Adapter 1)
Remark: For Radiated Test Cases, the tests were performed with Adapter 1 and USB Cable.	

Co-location mode
WLAN 6G_802.11ax HE160_CH15 TX+ Part 27M 5G NR n7 Link

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE20	802.11ax HE20	802.11ax HE20	802.11ax HE20
L	Low	001	097	117	189
M	Middle	045	105	149	209
H	High	093	113	181	229
Straddle		-	-	-	185

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE40	802.11ax HE40	802.11ax HE40	802.11ax HE40
L	Low	003	099	123	195
M	Middle	043	-	147	203
H	High	091	107	179	227
Straddle		-	115	-	187

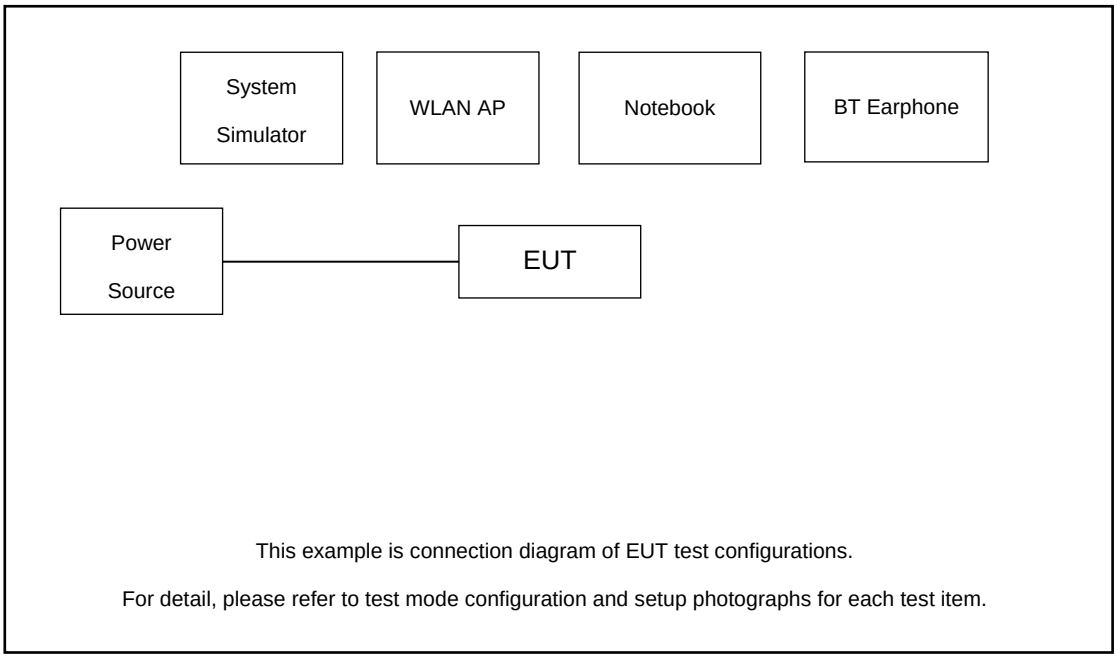
Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE80	802.11ax HE80	802.11ax HE80	802.11ax HE80
L	Low	007	103	135	199
M	Middle	039		151	-
H	High	087		167	215
Straddle		-	119	183	-

Ch. #		5925-6425 MHz UNII-5	6425-6525 MHz UNII-6	6525-6875 MHz UNII-7	6875-7125 MHz UNII-8
		802.11ax HE160	802.11ax HE160	802.11ax HE160	802.11ax HE160
L	Low	015	-	143	207
M	Middle	047			
H	High	079			
Straddle		-	111	175	-

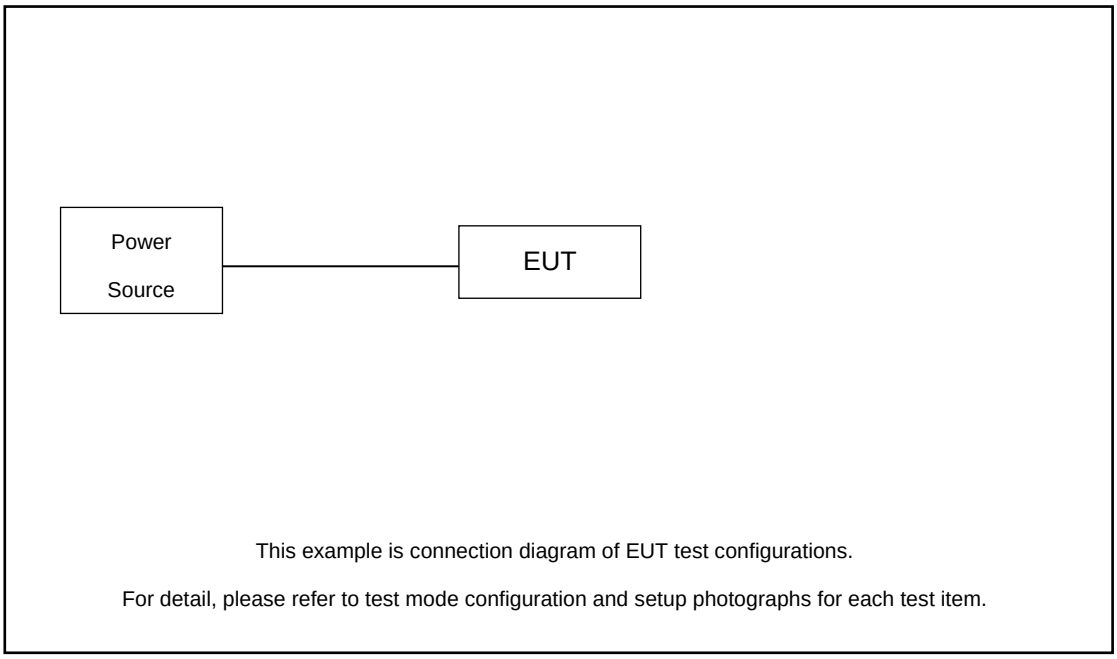
Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System

For AC Conducted Emission



For Radiated Emission



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
3.	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 (TX Tool) 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 5.18 dB and 20dB attenuator.

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

= 5.18 + 20 = 25.18(dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 CFR 15.407 (a)(11)

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

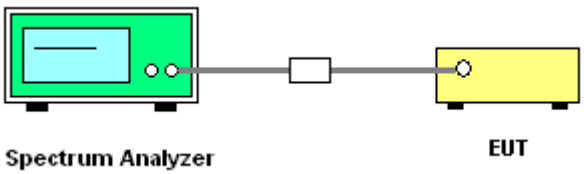
3.1.2 Measuring Instruments

See list of measuring equipment 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) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. 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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. 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 and Fundamental Maximum EIRP Measurement

3.2.1 Limit of Fundamental Maximum EIRP

<FCC 14-30 CFR 15.407>

(a)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

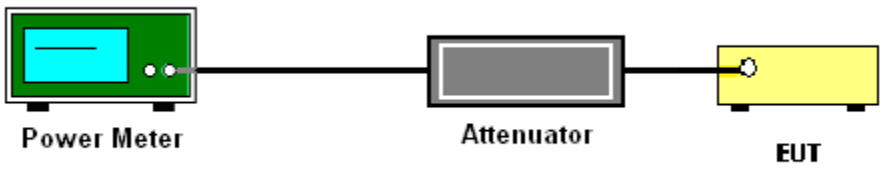
3.2.3 Test Procedures

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.
4. For MIMO mode, the measure-and-sum technique should be used for measuring the in-band transmit power of a device.

3.2.4 Test Setup



3.2.5 Test Result of Fundamental Maximum EIRP

Please refer to Appendix A.

3.3 Fundamental Power Spectral Density Measurement

3.3.1 Limit of Fundamental Power Spectral Density

<FCC 14-30 CFR 15.407>

(a)(8) For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed −1 dBm e.i.r.p. in any 1-megahertz band.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

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

Section F) Maximum power spectral density.

 # Method SA-2 #

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

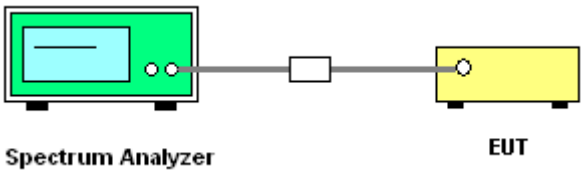
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), 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.

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, attenuator loss and duty factor. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (b): Measure and sum spectral maxima across the outputs.

The measurement on each individual output were performed with the same span and number on each individual output. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 In-Band Emissions (Channel Mask)

3.4.1 Limit of Unwanted Emissions

<FCC 14-30 CFR 15.407>

(b)(7) For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement.

Section J) In-Band Emissions.

1. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth
2. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:

   a) Set the span to encompass the entire 26 dB EBW of the signal.

   b) Set RBW = same RBW used for 26 dB EBW measurement.

   c) Set VBW ≥ 3 X RBW

   d) Number of points in sweep ≥ [2 X span / RBW].

   e) Sweep time = auto.

   f) Detector = RMS (i.e., power averaging)

   g) Trace average at least 100 traces in power averaging (rms) mode.

   h) Use the peak search function on the instrument to find the peak of the spectrum.
3. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:

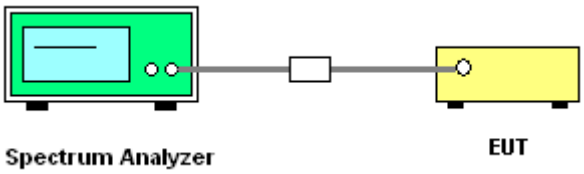
   a. Suppressed by 20 dB at 1 MHz outside of the channel edge.

   b. Suppressed by 28 dB at one channel bandwidth from the channel center.

c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.

4. Adjust the span to encompass the entire mask as necessary.
5. Clear trace.
6. Trace average at least 100 traces in power averaging (rms) mode.
7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

3.4.4 Test Setup



3.4.5 Test Result

Please refer to Appendix A.

3.5 Contention Based Protocol

3.5.1 Limit of Contention Based Protocol

<FCC 14-30 CFR 15.407>

(d)(6) Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band must employ a contention-based protocol.

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain. To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel. For example, an 802.11 device that plans to transmit a 40 MHz- wide signal (on a primary 20 MHz channel and a secondary 20 MHz channel) must detect energy throughout the entire 40 MHz channel. Additionally, low-power indoor devices must detect co-channel energy with 90% or greater certainty.

Table 1. Criteria to determine number of times detection threshold test may be performed

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Tune incumbent and EUT transmissions ($f_{c1} = f_{c2}$)
$BW_{Inc} < BW_{EUT} \leq 2BW_{Inc}$	Once	Incumbent transmission is contained within BW_{EUT}
$2BW_{Inc} < BW_{EUT} \leq 4BW_{Inc}$	Twice. Incumbent transmission is contained within BW_{EUT}	Incumbent transmission is located as closely as possible to the lower edge and upper edge, respectively, of the EUT channel
$BW_{EUT} > 4BW_{Inc}$	Three times	Incumbent transmission is located as closely as possible to the lower edge of the EUT channel, in the middle of EUT channel, and as closely as possible to the upper edge of the EUT channel

where:
$BWEUT$: Transmission bandwidth of EUT signal
$BWInc$: Transmission bandwidth of the simulated incumbent signal (10 MHz wide AWGN signal)
$fc1$: Center frequency of EUT transmission
$fc2$: Center frequency of simulated incumbent signal

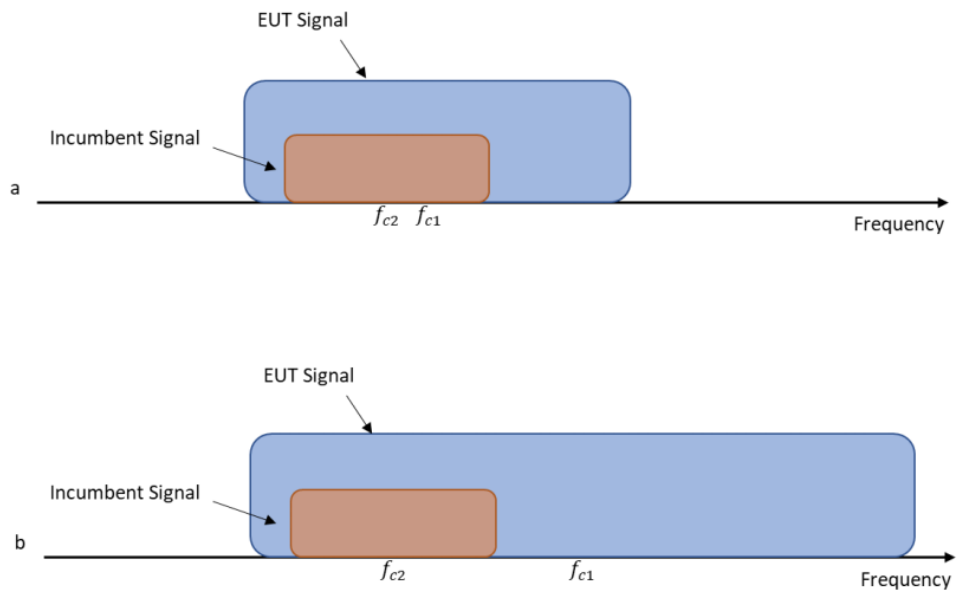


Figure 1. Two possible scenarios where a) center frequency of EUT transmission falls within incumbent's bandwidth, or b) outside of it

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

1. To ensure EUT reliably detects an incumbent signal in both scenarios shown in Figure 1, the detection threshold test may be repeated more than once with the incumbent signal (having center frequency $fc2$) tuned to different center frequencies within the UT transmission bandwidth. The criteria specified in Table 1 determines how many times the detection threshold test must be performed
2. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
3. Monitor the signal analyzer to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
4. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
5. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 2, choose a different center

frequency for the AWGN signal and repeat the process.

6. EUT was driven in MIMO mode, the interferer signal was injected to both chains to monitor the performance, while the interferer level is determined according to the lowest antenna gain among both antennas.

3.5.4 Test Setup

Conducted Setup

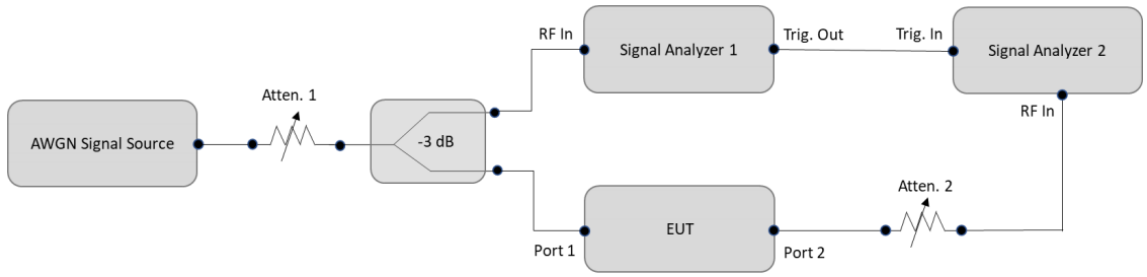


Figure 2. Contention-based protocol test setup, conducted method Step-by-Step Procedure, Conducted Setup

3.5.5 Support Unit used in test configuration and system

Instrument	Brand Name	Model No.	Characteristics
WLAN AP	ASUS	GT-AXE11000	Dual Band AP
Notebook	Acer	N15C1	LAN

3.5.6 Test Summary of Contention Based Protocol Test

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 5	6135	20	6135	-70.65	100	-62	-65.18	3.18
					Result: Stop Transmission			
				-71.65	< 90	-62	-66.18	4.18
					Result: Minimal Operation			
				-73.19	0	-62	-67.72	5.72
					Result: Normal Operation			
	6185	160	6110	-70.37	100	-62	-64.9	2.9
					Result: Stop Transmission			
				-71.37	< 90	-62	-65.9	3.9
					Result: Minimal Operation			
				-72.35	0	-62	-66.88	4.88
					Result: Normal Operation			
			6185	-71.85	100	-62	-66.38	4.38
					Result: Stop Transmission			
				-72.85	< 90	-62	-67.38	5.38
					Result: Minimal Operation			
				-73.73	0	-62	-68.26	6.26
					Result: Normal Operation			
			6260	-69.58	100	-62	-64.11	2.11
					Result: Stop Transmission			
				-70.58	< 90	-62	-65.11	3.11
					Result: Minimal Operation			
				-73.63	0	-62	-68.16	6.16
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (gain = -5.47dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 6	6455	20	6455	-70.30	100	-62	-64.83	2.83
					Result: Stop Transmission			
				-71.30	< 90	-62	-65.83	3.83
					Result: Minimal Operation			
				-72.43	0	-62	-66.96	4.96
					Result: Normal Operation			
	6505	160	6430	-70.22	100	-62	-64.75	2.75
					Result: Stop Transmission			
				-71.22	< 90	-62	-65.75	3.75
					Result: Minimal Operation			
				-72.45	0	-62	-66.98	4.98
					Result: Normal Operation			
			6505	-71.11	100	-62	-65.64	3.64
					Result: Stop Transmission			
				-72.11	< 90	-62	-66.64	4.64
					Result: Minimal Operation			
				-73.48	0	-62	-68.01	6.01
					Result: Normal Operation			
			6580	-69.51	100	-62	-64.04	2.04
					Result: Stop Transmission			
				-70.51	< 90	-62	-65.04	3.04
					Result: Minimal Operation			
				-73.36	0	-62	-67.89	5.89
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (gain = -5.47dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 7	6695	20	6695	-70.35	100	-62	-64.88	2.88
					Result: Stop Transmission			
				-71.35	< 90	-62	-65.88	3.88
					Result: Minimal Operation			
				-72.54	0	-62	-67.07	5.07
					Result: Normal Operation			
	6665	160	6590	-71.49	100	-62	-66.02	4.02
					Result: Stop Transmission			
				-72.49	< 90	-62	-67.02	5.02
					Result: Minimal Operation			
				-73.22	0	-62	-67.75	5.75
					Result: Normal Operation			
			6665	-71.79	100	-62	-66.32	4.32
					Result: Stop Transmission			
				-72.79	< 90	-62	-67.32	5.32
					Result: Minimal Operation			
				-73.40	0	-62	-67.93	5.93
					Result: Normal Operation			
			6740	**-69.05 (worst)**	100	-62	-63.58	1.58
					Result: Stop Transmission			
				-70.05	< 90	-62	-64.58	2.58
					Result: Minimal Operation			
				-73.26	0	-62	-67.79	5.79
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (gain = -5.47dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

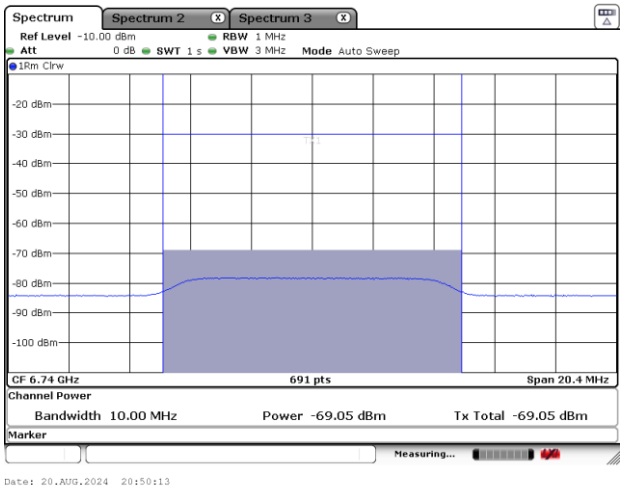
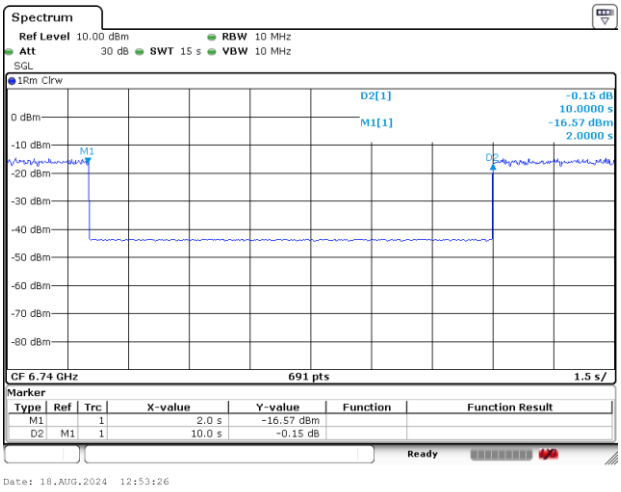
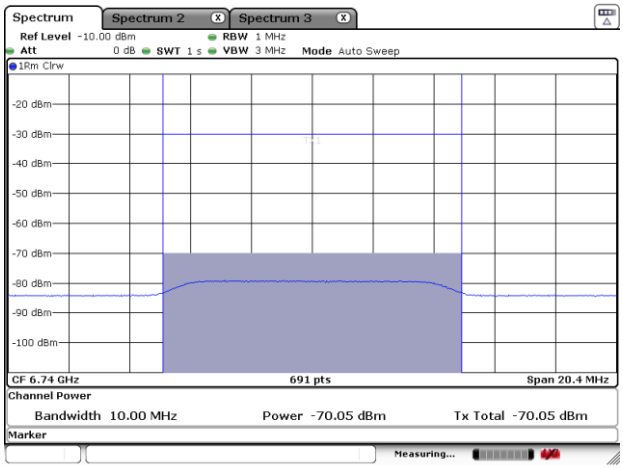
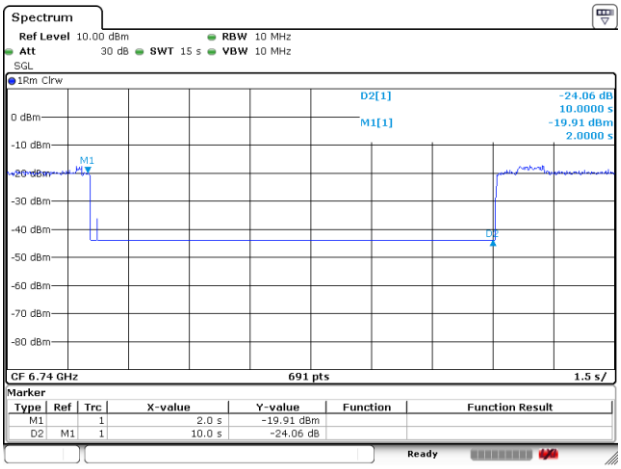
Band	Channel Freq. (MHz)	Channel BW (MHz)	Incumbent freq. (MHz)	Injected AWGN Level (dBm)	Detection Rate (%)	Regulated Threshold level (dBm)	Adjusted Power (dBm)	Margin (dB)
UNII Band 8	7015	20	7015	-71.76	100	-62	-66.29	4.29
					Result: Stop Transmission			
				-72.76	< 90	-62	-67.29	5.29
					Result: Minimal Operation			
				-75.39	0	-62	-69.92	7.92
					Result: Normal Operation			
	6985	160	6910	-71.25	100	-62	-65.78	3.78
					Result: Stop Transmission			
				-72.25	< 90	-62	-66.78	4.78
					Result: Minimal Operation			
				-72.69	0	-62	-67.22	5.22
					Result: Normal Operation			
			6985	-71.50	100	-62	-66.03	4.03
					Result: Stop Transmission			
				-72.50	< 90	-62	-67.03	5.03
					Result: Minimal Operation			
				-72.88	0	-62	-67.41	5.41
					Result: Normal Operation			
			7060	-70.87	100	-62	-65.4	3.4
					Result: Stop Transmission			
				-71.87	< 90	-62	-66.4	4.4
					Result: Minimal Operation			
				-76.68	0	-62	-71.21	9.21
					Result: Normal Operation			

Note 1: Adjusted Power = Injected AWGN Level - minimum antenna gain (gain = -5.47dBi)

Note 2: Path Loss between antenna and RF connector is negligible. (0 dB)

Note 3: Margin = Regulated Threshold level - Adjusted Power

3.5.7 Worst Case Plots of Contention Based Protocol

Contention Based Protocol Result Plots on U-NII 7 (AWGN Interference)	
802.11ax (HE160) / 6740MHz (Low) Threshold Level (TL) = -69.05 dBm	802.11ax (HE160) / 6740MHz (Low) Test result is pass due to no transmission occur.
	
802.11ax (HE160) / 6740MHz (Low) Threshold Level (TL) =-70.05dBm	802.11ax (HE160) / 6740MHz (Low) Transmit when the interferer is 1dB lower.
	

Remark: M1: Injection of AWGN signal, D2: Removal of AWGN signal

3.5.8 Verify Contention Based Protocol Transmission Bandwidth

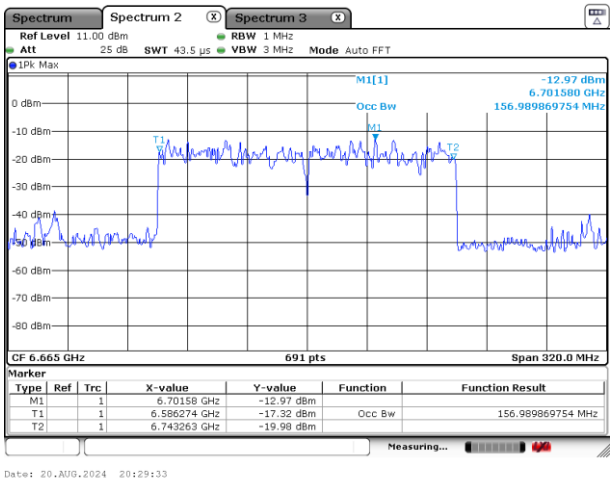
Verify transmission absence when Incumbent signal at different frequency (frequency domain plots).

This device does not support channel puncturing mode for incumbent avoidance, but bandwidth reduction mechanism is supported.

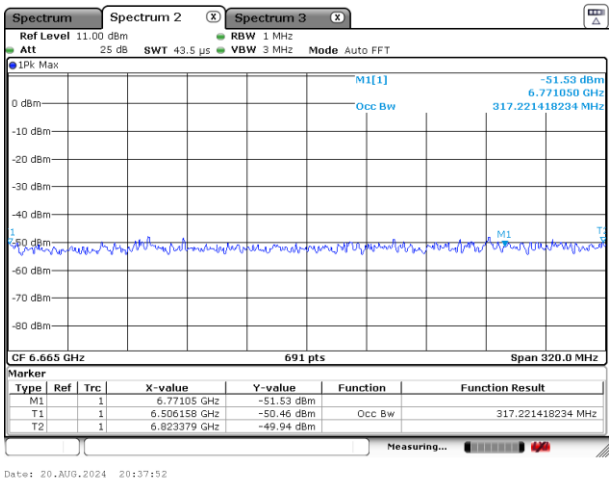
1. When Incumbent Signal inject at lowest frequency, the whole 160MHz bandwidth stop transmission;
2. When Incumbent Signal inject at middle frequency, the whole 160MHz bandwidth stop transmission;
3. When Incumbent Signal inject at highest frequency, the whole 160MHz bandwidth stop transmission;

UNII 7_CH143 (6665MHz / BW=160MHz)

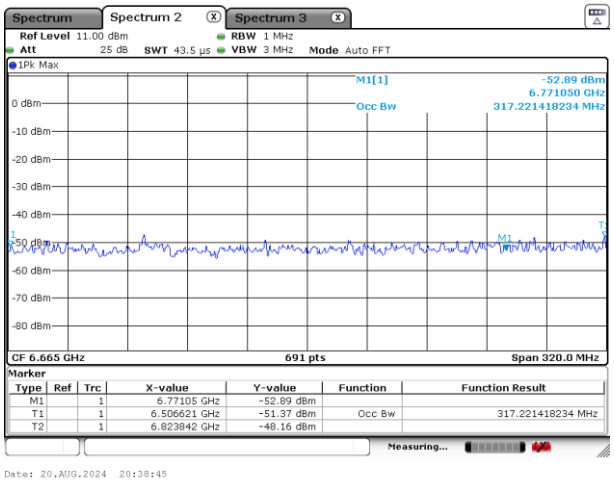
Non-Incumbent Signal



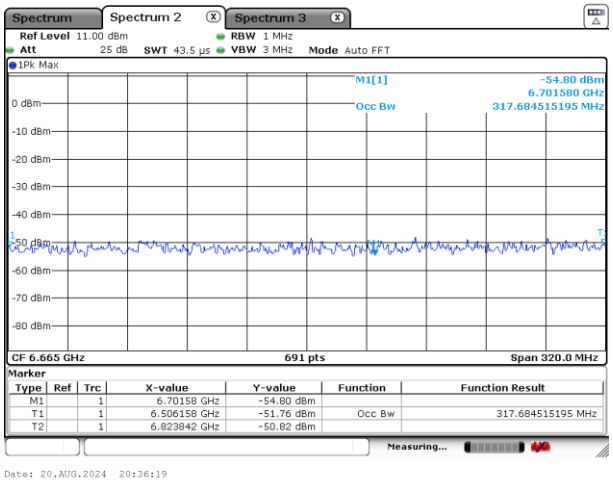
Incumbent freq @ 6665MHz



Incumbent freq @ 6590MHz



Incumbent freq @ 6740 MHz



3.6 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.6.1 Limit of Unwanted Emissions

(1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

EIRP (dBm)	Field Strength at 3m (dBµV/m)
- 27 (RMS)	68.3
- 7 (Peak)	88.3

Unwanted emissions outside of restricted bands are measured with a RMS detector.
In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit

(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

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

$$E=\frac{1000000\sqrt{30P}}{3}$$ µV/m, where P is the eirp (Watts)

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

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

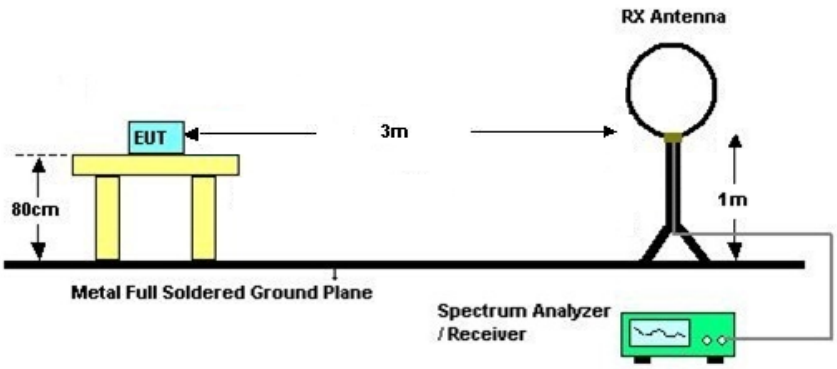
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - 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.

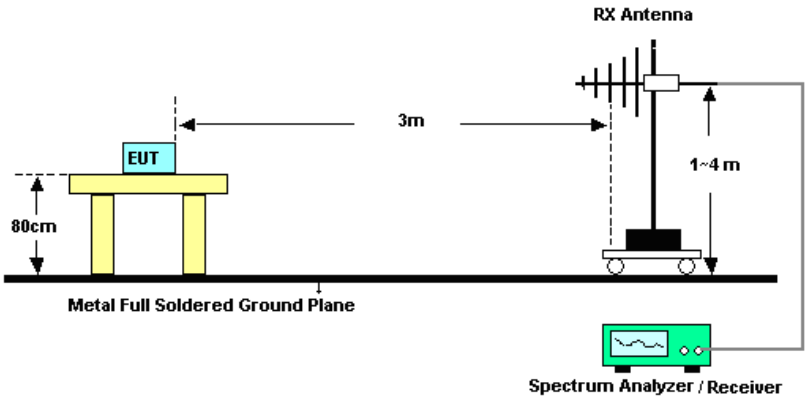
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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.

3.6.4 Test Setup

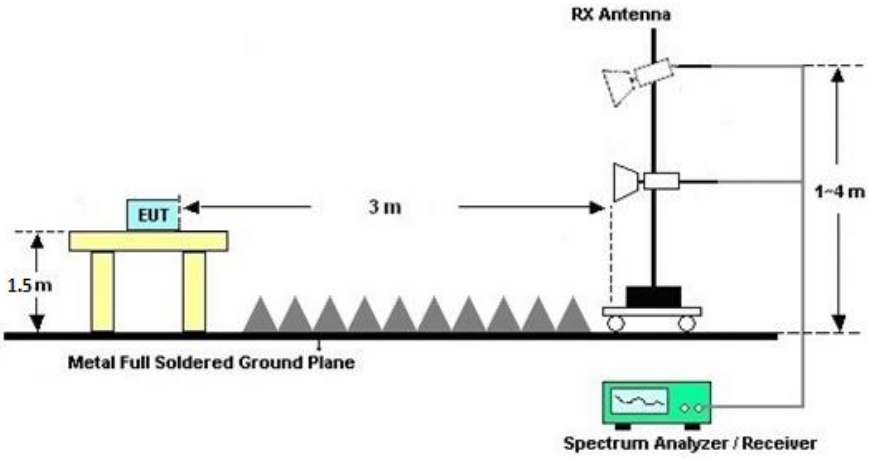
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.6.5 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 adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.6.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C

3.6.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.

The emission level above 18GHz is checked that the emission level is noise floor only, so it is not reflected in the report.

3.7 AC Conducted Emission Measurement

3.7.1 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.

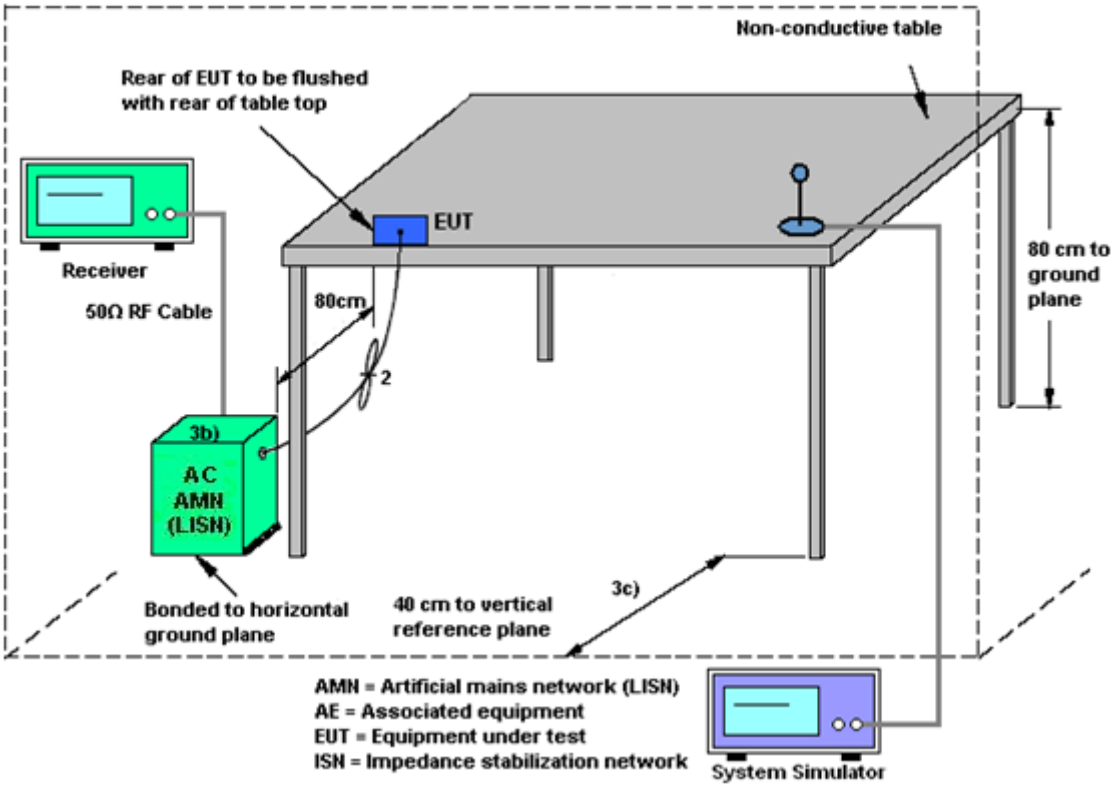
3.7.2 Measuring Instruments

See list of measuring equipment of this test report.

3.7.3 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.

3.7.4 Test Setup



3.7.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.8 Antenna Requirements

3.8.1 Standard Applicable

§15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used. The EUT complies with the requirement of 15.203.

3.8.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e.,

Directional gain = $G_{ANT\ MAX}$(Ant.1 Gain, Ant.2 Gain,…) + Array Gain, as following table for Power,

where Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

For PSD, the directional gain calculation is following,

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2 / N_{ANT}]$ dBi, as following table for PSD.

N_{ANT} = number of transmit antennas

N_{SS} = number of spatial streams. (The worst case directional gain will occur when NSS = 1)

<CDD Modes>

	Ant. 5 (dBi)	Ant. 8 (dBi)	DG for Power (dBi)	DG for PSD (dBi)
U-NII-5	-5.47	-4.68	-4.68	-2.06
U-NII-6	-3.78	-4.40	-3.78	-1.07
U-NII-7	-4.30	-3.70	-3.70	-0.98
U-NII-8	-4.85	-4.30	-4.30	-1.56

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Aug. 01, 2024~ Aug. 08, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Aug. 01, 2024~ Aug. 08, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Aug. 01, 2024~ Aug. 08, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 10, 2023	Aug. 14, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz-44GHz	Oct. 10, 2023	Aug. 14, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 10, 2023	Aug. 14, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2023	Aug. 14, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Aug. 14, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 05, 2024	Aug. 14, 2024	Jan. 04, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Aug. 14, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 04, 2024	Aug. 14, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 04, 2024	Aug. 14, 2024	Jan. 03, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 10, 2023	Aug. 14, 2024	Oct. 09, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 14, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 14, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 14, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Jul. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jul. 26, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Jul. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jul. 26, 2024	Oct. 10, 2024	Conduction (CO01-KS)
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 02, 2024	Aug. 18, 2024~ Aug. 20, 2024	Jan. 01, 2025	CBP (DFS01-KS)
MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY56200417 /MY59360210	9kHz~7.2GHz	Apr. 17, 2024	Aug. 18, 2024~ Aug. 20, 2024	Apr. 16, 2025	CBP (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7114-M	N/A	0.5GHz~18GHz	NCR	Aug. 18, 2024~ Aug. 20, 2024	NCR	CBP (DFS01-KS)

NCR: No Calibration Required

5 Measurement Uncertainty

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	±0.4 Hz
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.54%

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

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

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

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

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

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

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

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

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

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

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

Appendix A. Conducted Test Results

A1. Conducted Test Results

Test Engineer:	Jiang Jun	Temperature:	21~25	°C
Test Date:	2024.08.01~2024.08.08	Relative Humidity:	51~54	%

Report Number : FR461913F

TEST RESULTS DATA
EIRP Power Table

Band V MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 5	Ant 8	Ant 5	Ant 8	SUM	Ant 5	Ant 8	SUM			Ant 5	Ant 8
HE20	MCS0	2	001	5955	Full	0.66	0.62	6.80	6.60	9.71	-4.68		5.03	24.00	Pass	6.5	
HE20	MCS0	2	001	5955	26/0	0.60	0.60	-0.90	-1.22	1.95	-4.68		-2.73	24.00	Pass	-2.5	
HE20	MCS0	2	001	5955	52/37	0.60	0.60	2.07	1.22	4.68	-4.68		0.00	24.00	Pass	1.5	
HE20	MCS0	2	001	5955	106/53	0.64	0.64	5.38	4.45	7.95	-4.68		3.27	24.00	Pass	4.5	
HE20	MCS0	2	045	6175	Full	0.66	0.62	6.99	6.98	10.00	-4.68		5.32	24.00	Pass	6.5	
HE20	MCS0	2	045	6175	26/0	0.60	0.60	-0.90	-0.69	2.21	-4.68		-2.47	24.00	Pass	-2	
HE20	MCS0	2	045	6175	52/37	0.60	0.60	2.43	1.41	4.96	-4.68		0.28	24.00	Pass	1.5	
HE20	MCS0	2	045	6175	106/53	0.64	0.64	5.36	5.00	8.19	-4.68		3.51	24.00	Pass	4.5	
HE20	MCS0	2	093	6415	Full	0.66	0.62	6.73	7.23	10.00	-4.68		5.32	24.00	Pass	6.5	
HE20	MCS0	2	093	6415	26/8	0.60	0.60	-1.34	-0.59	2.06	-4.68		-2.62	24.00	Pass	-2	
HE20	MCS0	2	093	6415	52/40	0.60	0.60	1.51	1.13	4.34	-4.68		-0.34	24.00	Pass	1.5	
HE20	MCS0	2	093	6415	106/54	0.64	0.64	4.99	4.93	7.97	-4.68		3.29	24.00	Pass	4.5	
HE40	MCS0	2	003	5965	Full	0.68	0.68	9.69	9.82	12.77	-4.68		8.09	24.00	Pass	9	
HE40	MCS0	2	043	6165	Full	0.68	0.68	10.07	10.08	13.09	-4.68		8.41	24.00	Pass	9.5	
HE40	MCS0	2	091	6405	Full	0.68	0.68	9.54	9.65	12.61	-4.68		7.93	24.00	Pass	9	
HE80	MCS0	2	007	5985	Full	0.70	0.70	12.02	11.52	14.78	-4.68		10.10	24.00	Pass	11	
HE80	MCS0	2	039	6145	Full	0.70	0.70	12.43	11.54	15.01	-4.68		10.33	24.00	Pass	11	
HE80	MCS0	2	087	6385	Full	0.70	0.70	11.80	11.64	14.73	-4.68		10.05	24.00	Pass	11	
HE160	MCS0	2	015	6025	Full	0.67	0.67	13.50	12.71	16.13	-4.68		11.45	24.00	Pass	13	
HE160	MCS0	2	047	6185	Full	0.67	0.67	13.70	13.14	16.44	-4.68		11.76	24.00	Pass	13	
HE160	MCS0	2	079	6345	Full	0.67	0.67	12.96	13.15	16.07	-4.68		11.39	24.00	Pass	13	

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TEST RESULTS DATA
EIRP Power Table

Band VI MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 5	Ant 8	Ant 5	Ant 8	SUM	Ant 5	Ant 8	SUM			Ant 5	Ant 8
HE20	MCS0	2	097	6435	Full	0.66	0.62	6.37	6.22	9.31	-3.78		5.53	24.00	Pass	6	
HE20	MCS0	2	097	6435	26/0	0.60	0.60	-1.71	-1.54	1.38	-3.78		-2.40	24.00	Pass	-3	
HE20	MCS0	2	097	6435	52/37	0.60	0.60	1.59	0.66	4.16	-3.78		0.38	24.00	Pass	1	
HE20	MCS0	2	097	6435	106/53	0.64	0.64	4.53	4.07	7.31	-3.78		3.53	24.00	Pass	4	
HE20	MCS0	2	105	6475	Full	0.66	0.62	6.11	6.18	9.16	-3.78		5.38	24.00	Pass	6	
HE20	MCS0	2	105	6475	26/0	0.60	0.60	-2.19	-2.11	0.86	-3.78		-2.92	24.00	Pass	-3	
HE20	MCS0	2	105	6475	52/37	0.60	0.60	1.15	0.71	3.95	-3.78		0.17	24.00	Pass	1	
HE20	MCS0	2	105	6475	106/53	0.64	0.64	3.85	4.08	6.97	-3.78		3.19	24.00	Pass	4	
HE20	MCS0	2	113	6515	Full	0.66	0.62	6.08	6.04	9.07	-3.78		5.29	24.00	Pass	6	
HE20	MCS0	2	113	6515	26/8	0.60	0.60	-2.22	-2.13	0.83	-3.78		-2.95	24.00	Pass	-2.5	
HE20	MCS0	2	113	6515	52/40	0.60	0.60	0.73	0.61	3.68	-3.78		-0.10	24.00	Pass	1	
HE20	MCS0	2	113	6515	106/54	0.64	0.64	3.32	3.69	6.51	-3.78		2.73	24.00	Pass	4	
HE40	MCS0	2	099	6445	Full	0.68	0.68	9.22	8.87	12.06	-3.78		8.28	24.00	Pass	8.5	
HE40	MCS0	2	107	6485	Full	0.68	0.68	9.30	9.21	12.27	-3.78		8.49	24.00	Pass	9	
HE40	MCS0	2	115	6525	Full	0.68	0.68	8.57	8.67	11.63	-3.78		7.85	24.00	Pass	8.5	
HE80	MCS0	2	103	6465	Full	0.70	0.70	12.03	11.34	14.70	-3.78		10.92	24.00	Pass	11	
HE80	MCS0	2	119	6545	Full	0.70	0.70	11.59	10.10	13.91	-3.78		10.13	24.00	Pass	11	
HE160	MCS0	2	111	6505	Full	0.67	0.67	13.47	12.93	16.22	-3.78		12.44	24.00	Pass	13	

Report Number : FR461913F

TEST RESULTS DATA
EIRP Power Table

Band VII MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 5	Ant 8	Ant 5	Ant 8	SUM	Ant 5	Ant 8	SUM			Ant 5	Ant 8
HE20	MCS0	2	117	6535	Full	0.66	0.62	6.04	5.35	8.72	-3.70		5.02	24.00	Pass	6	
HE20	MCS0	2	117	6535	26/0	0.60	0.60	-2.23	-2.80	0.50	-3.70		-3.20	24.00	Pass	-2.5	
HE20	MCS0	2	117	6535	52/37	0.60	0.60	1.00	-0.60	3.28	-3.70		-0.42	24.00	Pass	1	
HE20	MCS0	2	117	6535	106/53	0.64	0.64	3.11	2.68	5.91	-3.70		2.21	24.00	Pass	4	
HE20	MCS0	2	149	6695	Full	0.66	0.62	5.95	6.41	9.20	-3.70		5.50	24.00	Pass	6	
HE20	MCS0	2	149	6695	26/0	0.60	0.60	-1.17	-0.84	2.01	-3.70		-1.69	24.00	Pass	-2	
HE20	MCS0	2	149	6695	52/37	0.60	0.60	1.37	1.73	4.57	-3.70		0.87	24.00	Pass	1	
HE20	MCS0	2	149	6695	106/53	0.64	0.64	3.87	3.61	6.75	-3.70		3.05	24.00	Pass	3.5	
HE20	MCS0	2	181	6855	Full	0.66	0.62	5.72	6.74	9.27	-3.70		5.57	24.00	Pass	7	
HE20	MCS0	2	181	6855	26/8	0.60	0.60	-2.47	-0.91	1.39	-3.70		-2.31	24.00	Pass	-1.5	
HE20	MCS0	2	181	6855	52/40	0.60	0.60	0.19	1.36	3.83	-3.70		0.13	24.00	Pass	2	
HE20	MCS0	2	181	6855	106/54	0.64	0.64	3.68	3.94	6.82	-3.70		3.12	24.00	Pass	4.5	
HE20	MCS0	2	185	6875	Full	0.66	0.62	5.82	6.92	9.42	-3.70		5.72	24.00	Pass	7	
HE20	MCS0	2	185	6875	26/8	0.60	0.60	-2.26	-0.54	1.69	-3.70		-2.01	24.00	Pass	-1	
HE20	MCS0	2	185	6875	52/40	0.60	0.60	0.89	2.06	4.53	-3.70		0.83	24.00	Pass	2.5	
HE20	MCS0	2	185	6875	106/54	0.64	0.64	4.04	4.70	7.39	-3.70		3.69	24.00	Pass	5	
HE40	MCS0	2	123	6565	Full	0.68	0.68	9.32	8.49	11.94	-3.70		8.24	24.00	Pass	9.5	
HE40	MCS0	2	147	6685	Full	0.68	0.68	9.49	8.98	12.26	-3.70		8.56	24.00	Pass	9	
HE40	MCS0	2	179	6845	Full	0.68	0.68	8.33	9.01	11.70	-3.70		8.00	24.00	Pass	9.5	
HE40	MCS0	2	187	6885	Full	0.68	0.68	8.91	9.98	12.49	-3.70		8.79	24.00	Pass	10	
HE80	MCS0	2	135	6625	Full	0.70	0.70	11.09	11.03	14.07	-3.70		10.37	24.00	Pass	11	
HE80	MCS0	2	151	6705	Full	0.70	0.70	11.45	11.41	14.44	-3.70		10.74	24.00	Pass	11	
HE80	MCS0	2	167	6785	Full	0.00	0.00	11.22	10.85	14.04	-3.70		10.34	24.00	Pass	11.5	
HE80	MCS0	2	183	6865	Full	0.70	0.70	10.66	11.59	14.16	-3.70		10.46	24.00	Pass	11.5	
HE160	MCS0	2	143	6665	Full	0.67	0.67	13.49	13.11	16.31	-3.70		12.61	24.00	Pass	13	
HE160	MCS0	2	175	6825	Full	0.67	0.67	12.42	12.01	15.23	-3.70		11.53	24.00	Pass	13	

Report Number : FR461913F

TEST RESULTS DATA
EIRP Power Table

Band VIII MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 5	Ant 8	Ant 5	Ant 8	SUM	Ant 5	Ant 8	SUM			Ant 5	Ant 8
HE20	MCS0	2	189	6895	Full	0.66	0.62	5.96	7.07	9.56	-4.30		5.26	24.00	Pass	7	
HE20	MCS0	2	189	6895	26/0	0.60	0.60	-1.63	-0.11	2.20	-4.30		-2.10	24.00	Pass	-1.5	
HE20	MCS0	2	189	6895	52/37	0.60	0.60	1.36	2.23	4.83	-4.30		0.53	24.00	Pass	2.5	
HE20	MCS0	2	189	6895	106/53	0.64	0.64	4.04	5.15	7.64	-4.30		3.34	24.00	Pass	5	
HE20	MCS0	2	209	6995	Full	0.66	0.62	6.61	7.42	10.04	-4.30		5.74	24.00	Pass	7.5	
HE20	MCS0	2	209	6995	26/0	0.60	0.60	-0.28	0.47	3.12	-4.30		-1.18	24.00	Pass	-0.5	
HE20	MCS0	2	209	6995	52/37	0.60	0.60	2.53	2.39	5.47	-4.30		1.17	24.00	Pass	3	
HE20	MCS0	2	209	6995	106/53	0.64	0.64	5.07	5.05	8.07	-4.30		3.77	24.00	Pass	5.5	
HE20	MCS0	2	229	7095	Full	0.66	0.62	5.78	6.90	9.39	-4.30		5.09	24.00	Pass	6.5	
HE20	MCS0	2	229	7095	26/8	0.60	0.60	-2.19	-0.44	1.78	-4.30		-2.52	24.00	Pass	-2	
HE20	MCS0	2	229	7095	52/40	0.60	0.60	0.16	1.28	3.77	-4.30		-0.53	24.00	Pass	1.5	
HE20	MCS0	2	229	7095	106/54	0.64	0.64	3.62	4.59	7.14	-4.30		2.84	24.00	Pass	4.5	
HE40	MCS0	2	195	6925	Full	0.00	0.00	9.30	10.21	12.79	-4.30		8.49	24.00	Pass	10	
HE40	MCS0	2	203	6965	Full	0.68	0.68	9.95	10.77	13.39	-4.30		9.09	24.00	Pass	10.5	
HE40	MCS0	2	227	7085	Full	0.68	0.68	8.97	9.78	12.41	-4.30		8.11	24.00	Pass	9.5	
HE80	MCS0	2	183	6865	Full	0.70	0.70	10.66	11.59	14.16	-4.30		9.86	24.00	Pass	11.5	
HE80	MCS0	2	199	6945	Full	0.70	0.70	12.39	12.86	15.64	-4.30		11.34	24.00	Pass	12.5	
HE80	MCS0	2	215	7025	Full	0.70	0.70	10.47	10.97	13.73	-4.30		9.43	24.00	Pass	10.5	
HE160	MCS0	2	175	6825	Full	0.70	0.70	12.42	12.01	15.23	-4.30		10.93	24.00	Pass	13	
HE160	MCS0	2	207	6985	Full	0.67	0.67	12.20	12.52	15.37	-4.30		11.07	24.00	Pass	13	

Emission Bandwidth

Test Result

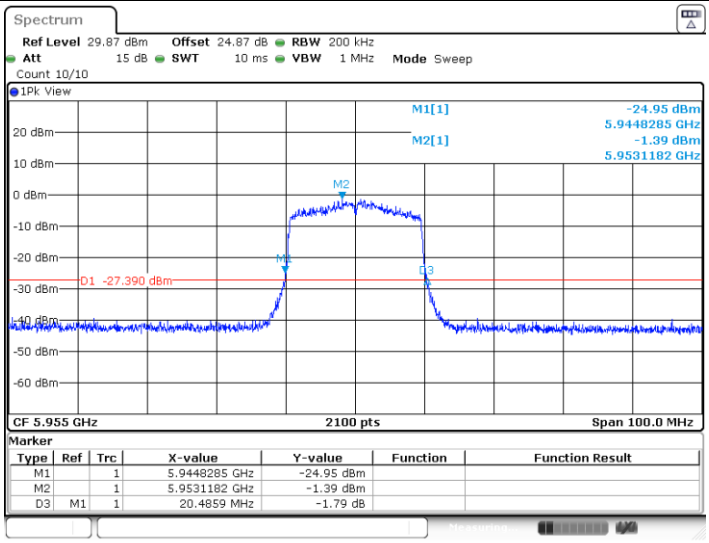
TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11AX20MIMO	Ant5	5955	20.49	5944.83	5965.31	≤320	PASS
	Ant8	5955	20.53	5944.73	5965.27	≤320	PASS
	Ant5	6175	20.77	6164.54	6185.31	≤320	PASS
	Ant8	6175	20.77	6164.64	6185.41	≤320	PASS
	Ant5	6415	20.87	6404.49	6425.36	≤320	PASS
	Ant8	6415	20.44	6404.78	6425.22	≤320	PASS
	Ant5	6435	20.77	6424.64	6445.41	≤320	PASS
	Ant8	6435	20.49	6424.78	6445.27	≤320	PASS
	Ant5	6475	20.58	6464.78	6485.36	≤320	PASS
	Ant8	6475	20.87	6464.45	6485.31	≤320	PASS
	Ant5	6515	20.72	6504.69	6525.41	≤320	PASS
	Ant8	6515	20.72	6504.59	6525.31	≤320	PASS
	Ant5	6535	20.34	6524.83	6545.17	≤320	PASS
	Ant8	6535	20.77	6524.64	6545.41	≤320	PASS
	Ant5	6695	20.63	6684.78	6705.41	≤320	PASS
	Ant8	6695	20.82	6684.64	6705.46	≤320	PASS
	Ant5	6855	20.30	6844.88	6865.17	≤320	PASS
	Ant8	6855	20.82	6844.54	6865.36	≤320	PASS
	Ant5	6875	20.53	6864.73	6885.27	≤320	PASS
	Ant8	6875	20.58	6864.64	6885.22	≤320	PASS
	Ant5	6895	20.72	6884.54	6905.27	≤320	PASS
	Ant8	6895	20.49	6884.78	6905.27	≤320	PASS
	Ant5	6995	20.63	6984.64	7005.27	≤320	PASS
	Ant8	6995	20.53	6984.69	7005.22	≤320	PASS
	Ant5	7095	20.63	7084.73	7105.36	≤320	PASS
	Ant8	7095	20.53	7084.73	7105.27	≤320	PASS
11AX40MIMO	Ant5	5965	40.02	5945.04	5985.06	≤320	PASS
	Ant8	5965	40.21	5944.94	5985.15	≤320	PASS
	Ant5	6165	40.11	6144.94	6185.06	≤320	PASS
	Ant8	6165	40.21	6144.94	6185.15	≤320	PASS
	Ant5	6405	40.21	6384.85	6425.06	≤320	PASS
	Ant8	6405	40.40	6384.75	6425.15	≤320	PASS
	Ant5	6445	40.59	6424.56	6465.15	≤320	PASS

	Ant8	6445	40.11	6424.85	6464.96	≤320	PASS
	Ant5	6485	40.21	6464.94	6505.15	≤320	PASS
	Ant8	6485	39.92	6465.04	6504.96	≤320	PASS
	Ant5	6525	40.21	6504.94	6545.15	≤320	PASS
	Ant8	6525	40.02	6505.04	6545.06	≤320	PASS
	Ant5	6565	40.02	6545.04	6585.06	≤320	PASS
	Ant8	6565	40.21	6544.85	6585.06	≤320	PASS
	Ant5	6685	40.11	6664.85	6704.96	≤320	PASS
	Ant8	6685	40.11	6664.94	6705.06	≤320	PASS
	Ant5	6845	40.21	6824.85	6865.06	≤320	PASS
	Ant8	6845	39.92	6825.04	6864.96	≤320	PASS
	Ant5	6885	40.21	6864.85	6905.06	≤320	PASS
	Ant8	6885	40.21	6864.94	6905.15	≤320	PASS
	Ant5	6925	40.11	6904.94	6945.06	≤320	PASS
	Ant8	6925	40.40	6904.66	6945.06	≤320	PASS
	Ant5	6965	40.02	6945.04	6985.06	≤320	PASS
	Ant8	6965	40.30	6944.85	6985.15	≤320	PASS
	Ant5	7085	40.11	7064.94	7105.06	≤320	PASS
	Ant8	7085	40.50	7064.56	7105.06	≤320	PASS
11AX80MIMO	Ant5	5985	81.94	5943.93	6025.88	≤320	PASS
	Ant8	5985	81.18	5944.50	6025.69	≤320	PASS
	Ant5	6145	81.37	6104.12	6185.50	≤320	PASS
	Ant8	6145	81.94	6104.31	6186.26	≤320	PASS
	Ant5	6385	81.56	6344.12	6425.69	≤320	PASS
	Ant8	6385	81.37	6344.12	6425.50	≤320	PASS
	Ant5	6465	81.56	6424.12	6505.69	≤320	PASS
	Ant8	6465	81.37	6424.31	6505.69	≤320	PASS
	Ant5	6545	81.18	6504.50	6585.69	≤320	PASS
	Ant8	6545	81.56	6504.12	6585.69	≤320	PASS
	Ant5	6625	81.18	6584.31	6665.50	≤320	PASS
	Ant8	6625	81.37	6584.12	6665.50	≤320	PASS
	Ant5	6705	81.56	6663.93	6745.50	≤320	PASS
	Ant8	6705	81.94	6663.55	6745.50	≤320	PASS
	Ant5	6785	81.75	6744.12	6825.88	≤320	PASS
	Ant8	6785	81.37	6744.12	6825.50	≤320	PASS
	Ant5	6865	80.99	6824.70	6905.69	≤320	PASS
	Ant8	6865	81.18	6824.31	6905.50	≤320	PASS
	Ant5	6945	80.99	6904.31	6985.30	≤320	PASS
	Ant8	6945	81.18	6904.12	6985.30	≤320	PASS

	Ant5	7025	80.61	6984.70	7065.30	≤320	PASS
	Ant8	7025	81.94	6984.12	7066.07	≤320	PASS
11AX160MIMO	Ant5	6025	164.27	5942.48	6106.75	≤320	PASS
	Ant8	6025	164.65	5942.48	6107.13	≤320	PASS
	Ant5	6185	164.27	6102.48	6266.75	≤320	PASS
	Ant8	6185	163.51	6102.87	6266.37	≤320	PASS
	Ant5	6345	163.89	6262.48	6426.37	≤320	PASS
	Ant8	6345	163.89	6262.87	6426.75	≤320	PASS
	Ant5	6505	163.13	6423.25	6586.37	≤320	PASS
	Ant8	6505	165.03	6422.10	6587.13	≤320	PASS
	Ant5	6665	165.03	6582.48	6747.52	≤320	PASS
	Ant8	6665	163.51	6583.25	6746.75	≤320	PASS
	Ant5	6825	163.13	6743.25	6906.37	≤320	PASS
	Ant8	6825	163.13	6743.25	6906.37	≤320	PASS
	Ant5	6985	163.89	6903.63	7067.52	≤320	PASS
	Ant8	6985	164.65	6902.87	7067.52	≤320	PASS

Test Graphs

11AX20MIMO_Ant5_5955



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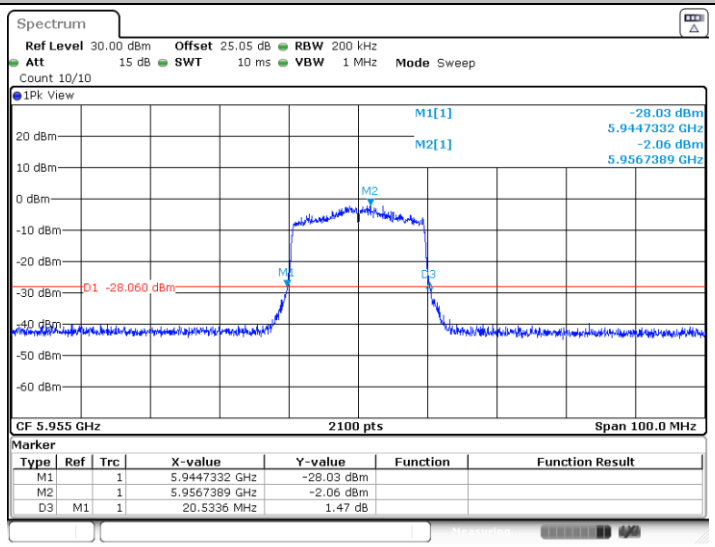

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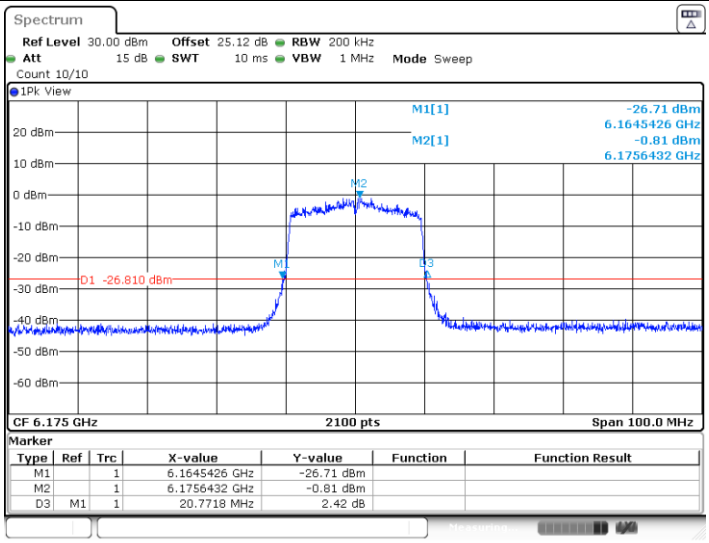

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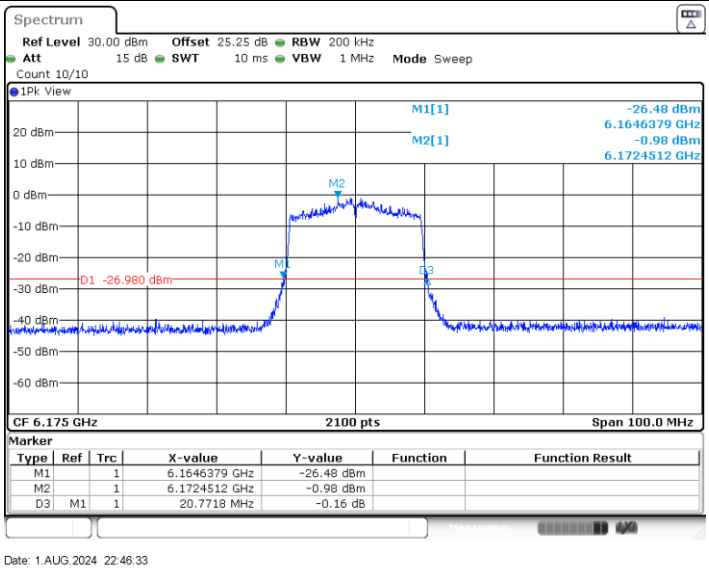

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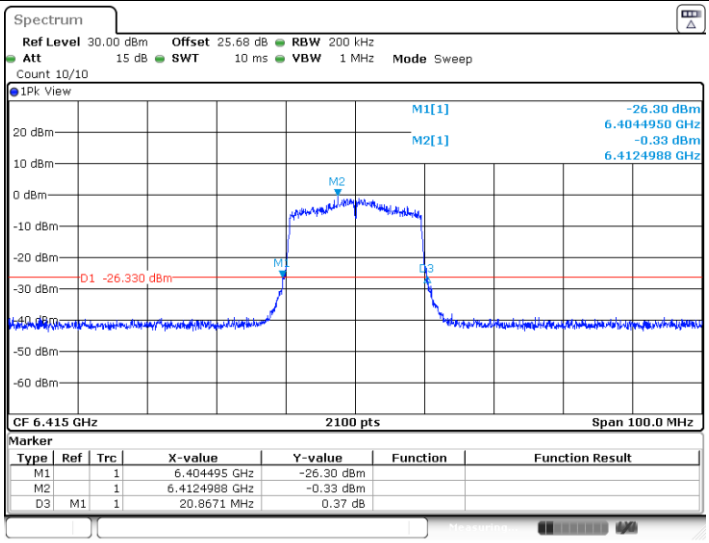

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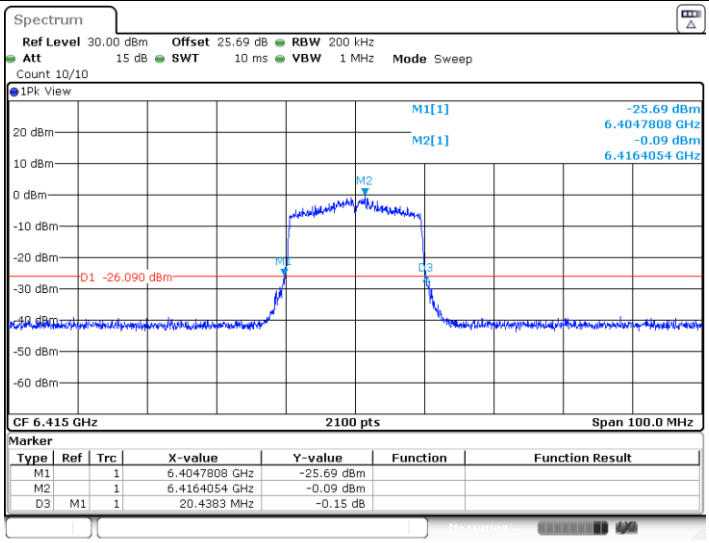

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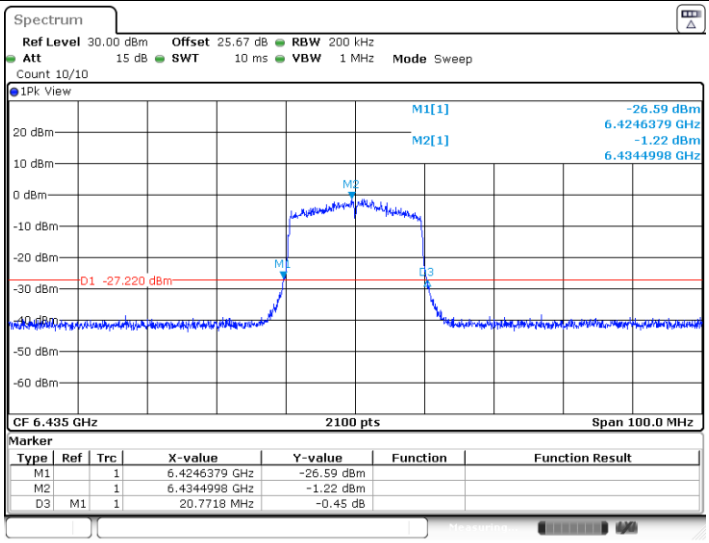

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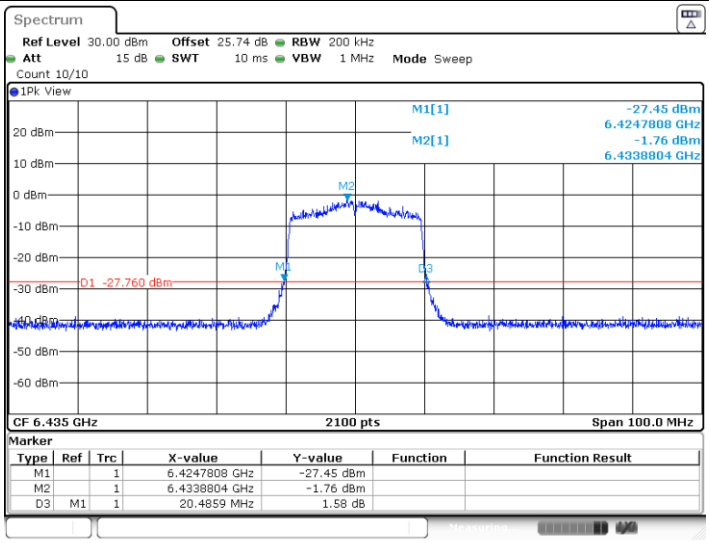

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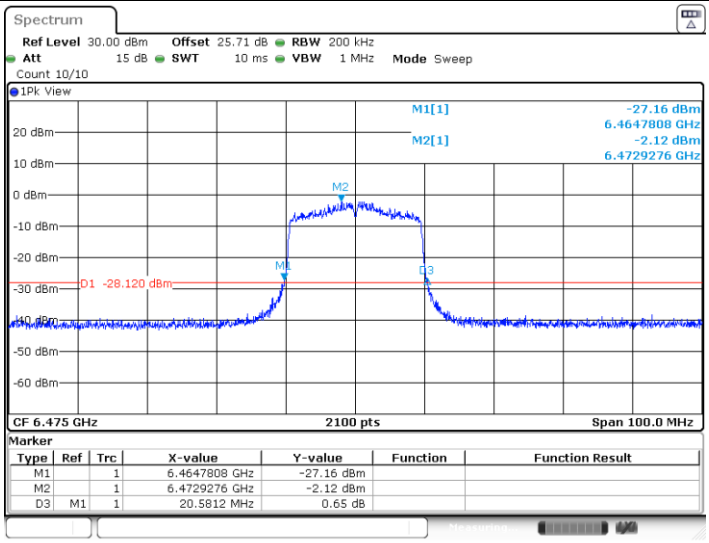

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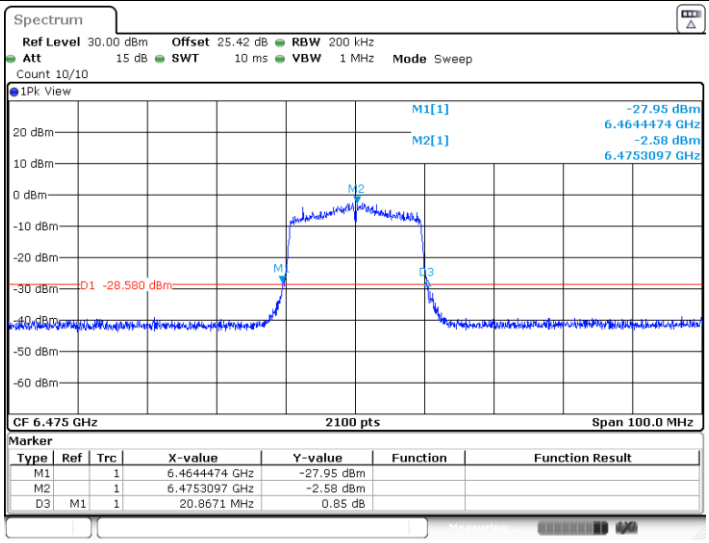

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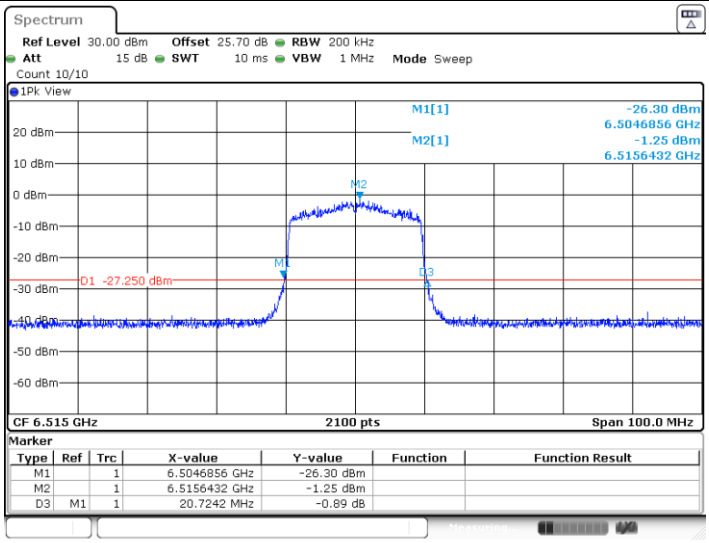

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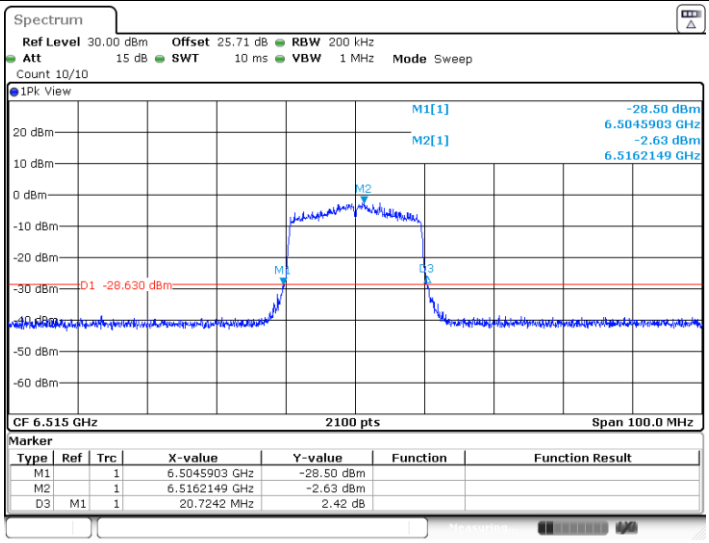

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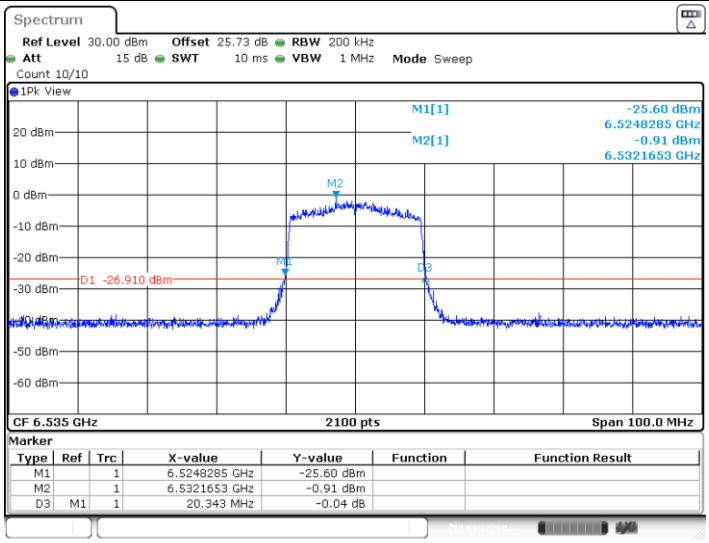

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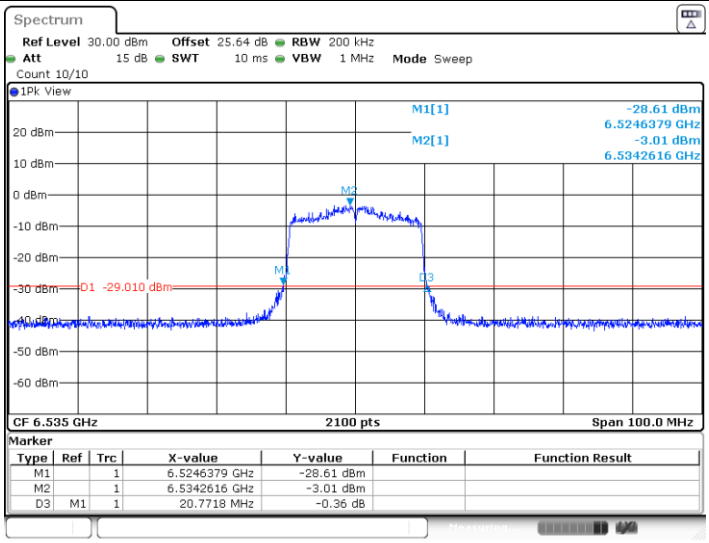

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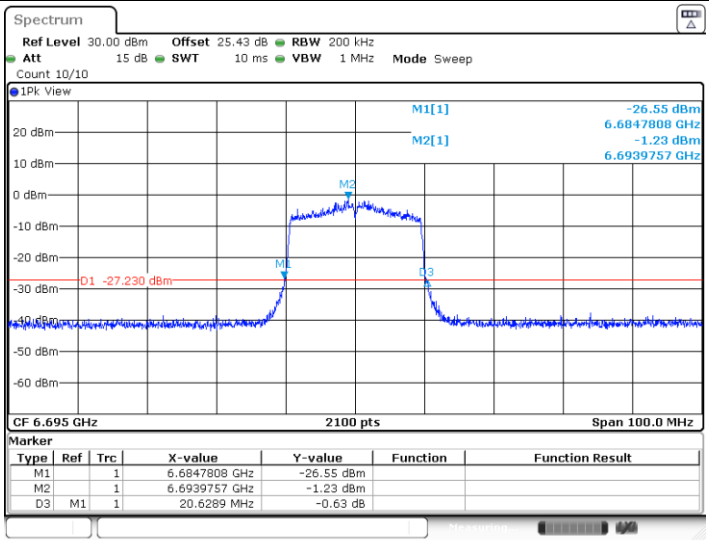

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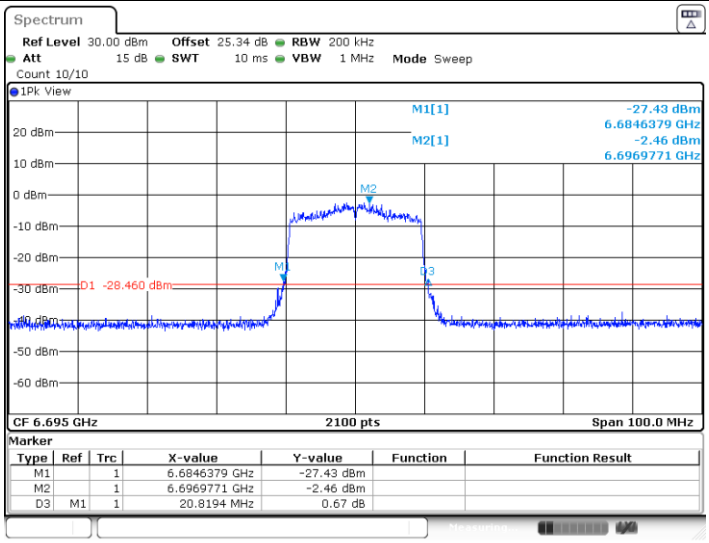

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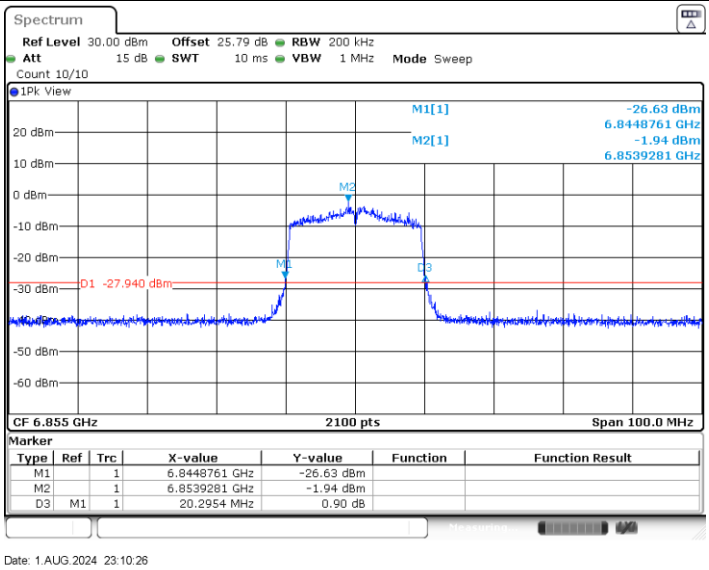

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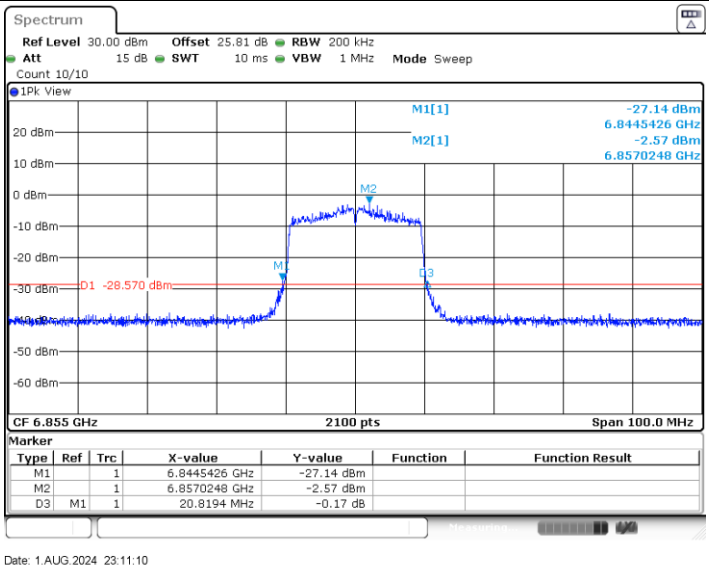

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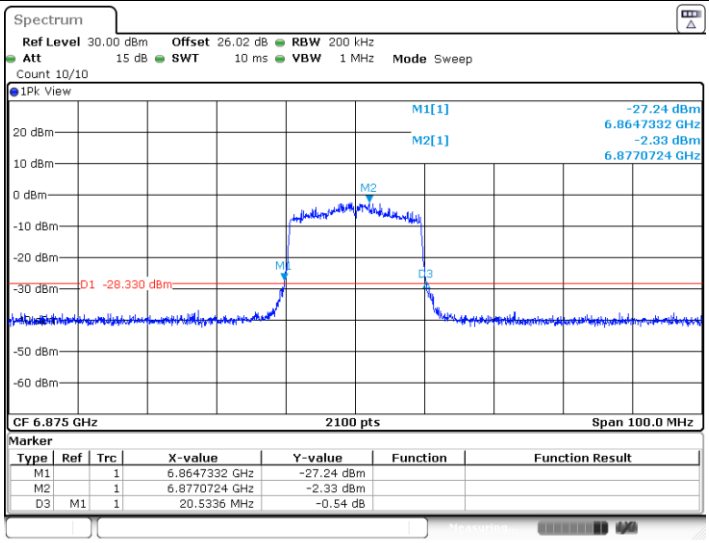

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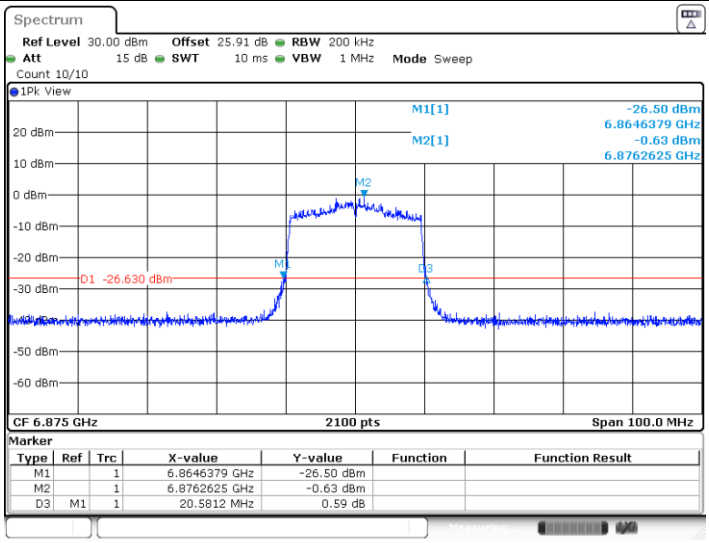

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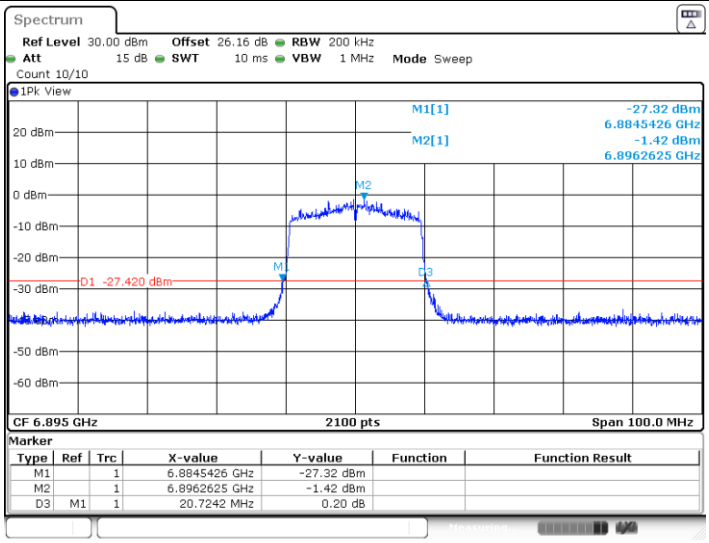
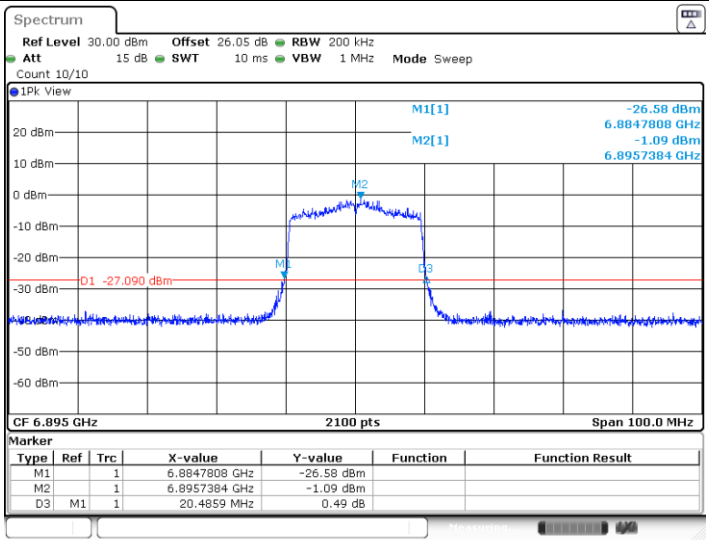
11AX20MIMO_Ant5_6895



Date: 2.AUG.2024 00:11:52

11AX20MIMO_Ant8_6895



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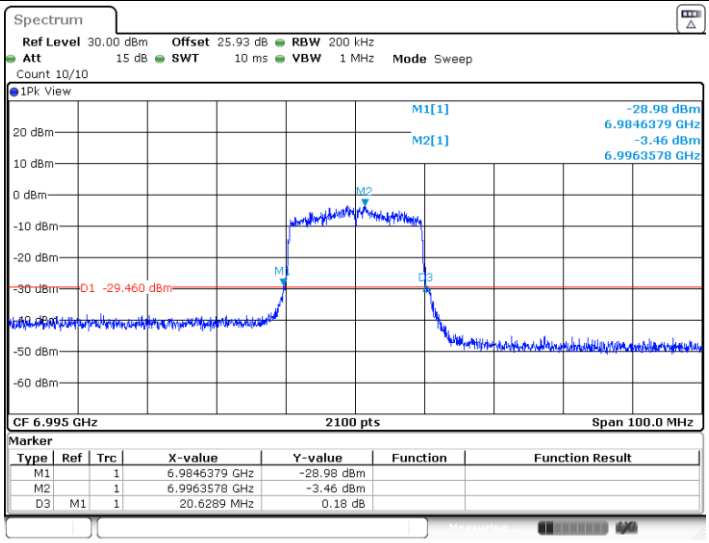
11AX20MIMO_Ant5_6995



Date: 2.AUG.2024 00:14:28

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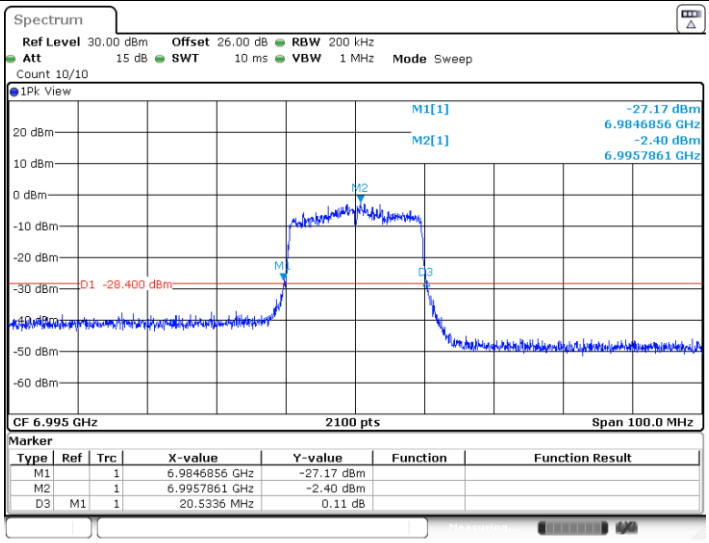

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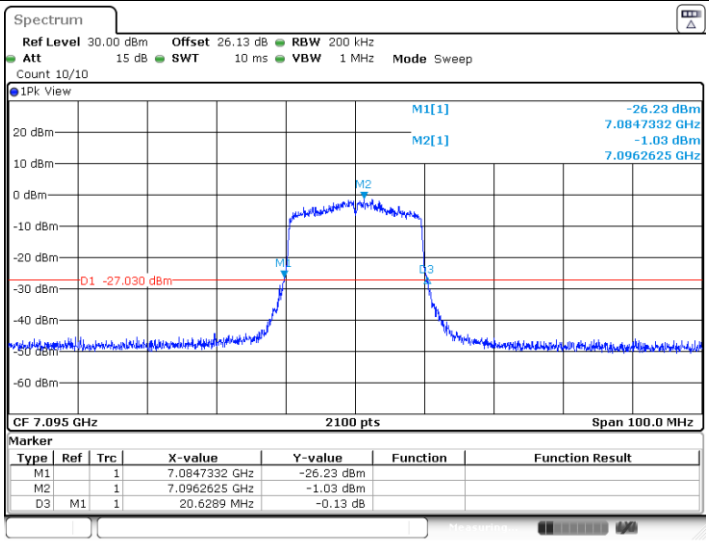

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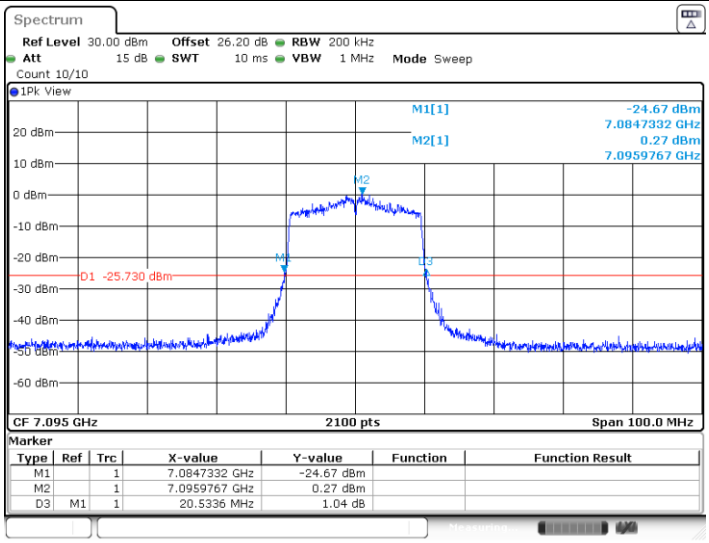

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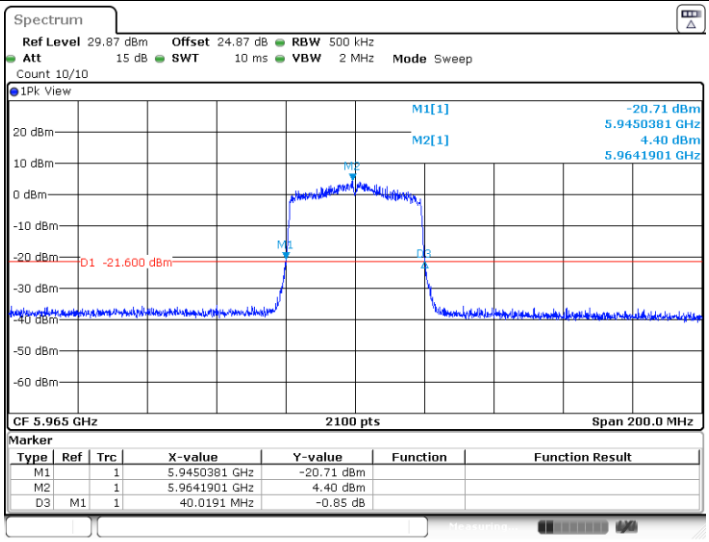
11AX40MIMO_Ant5_5965



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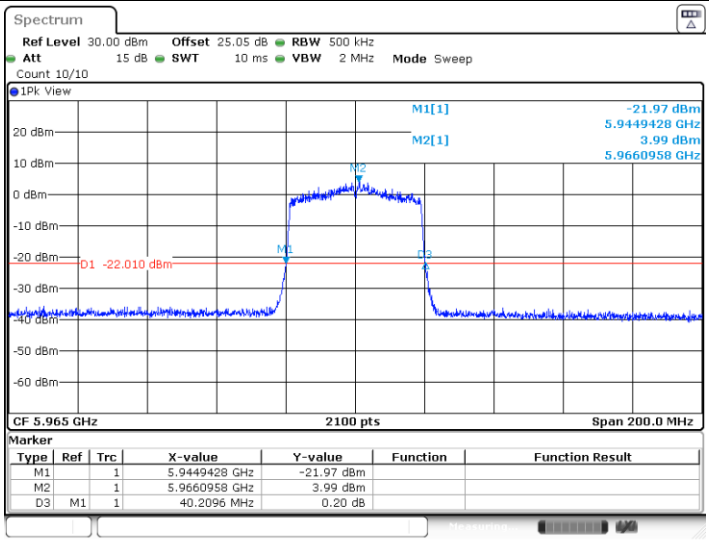

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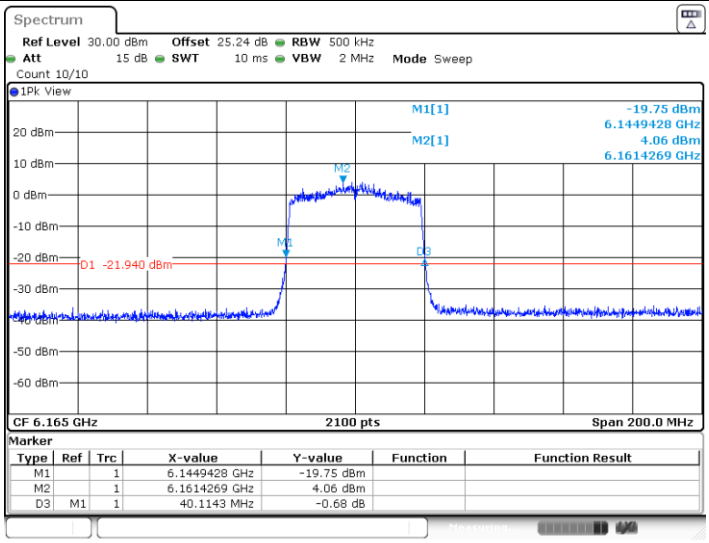

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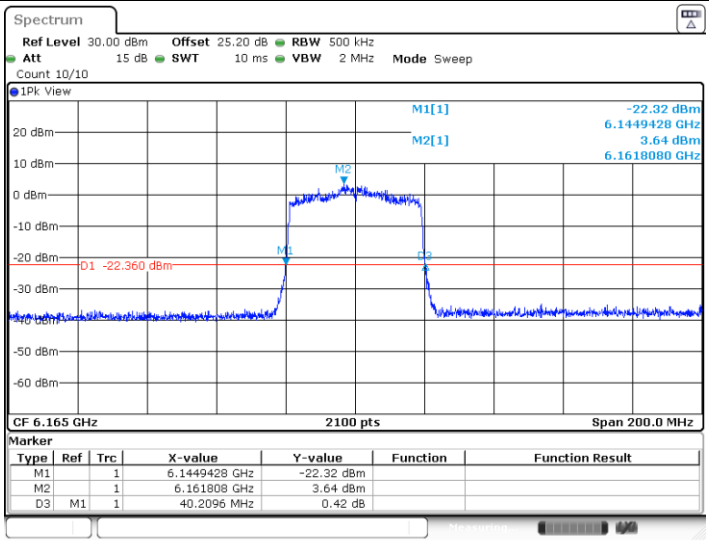

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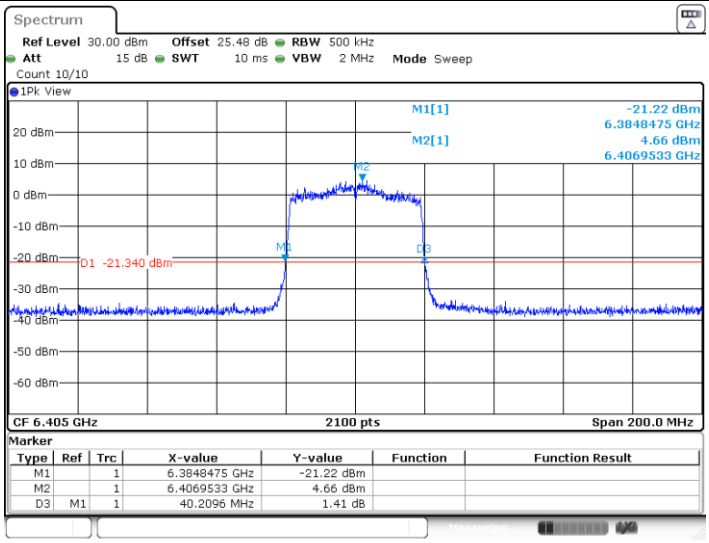

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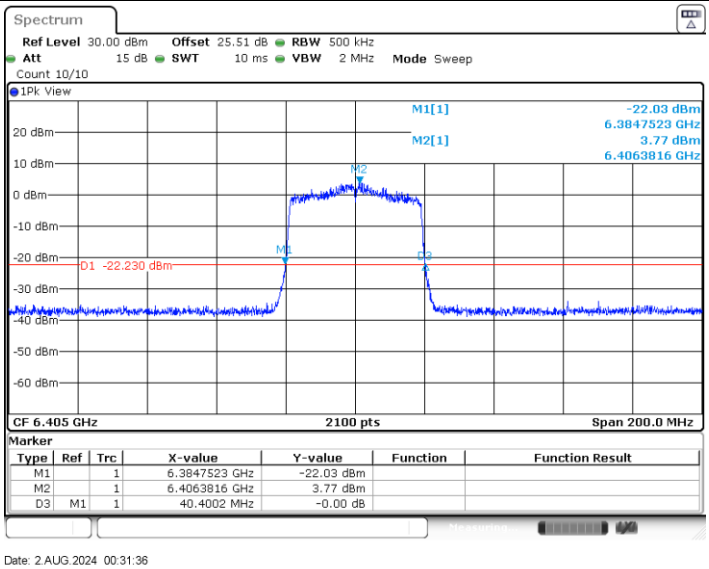

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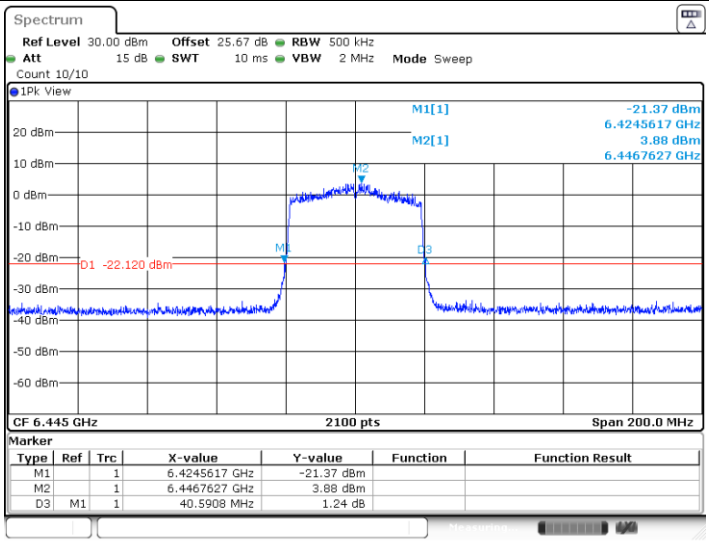

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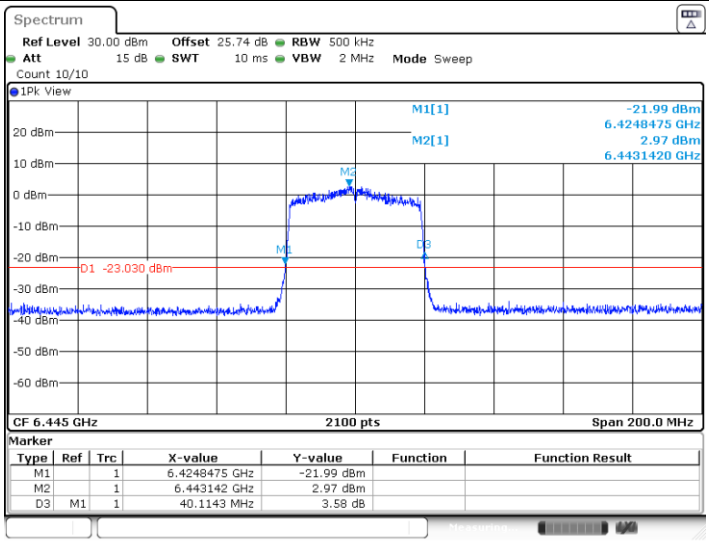

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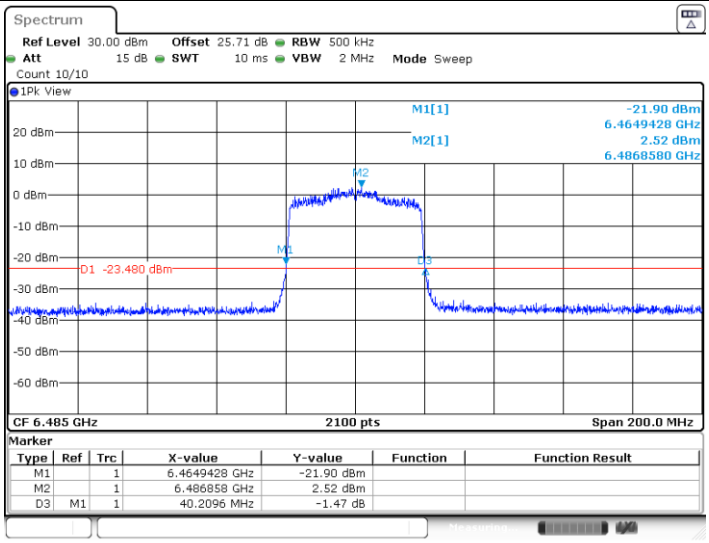

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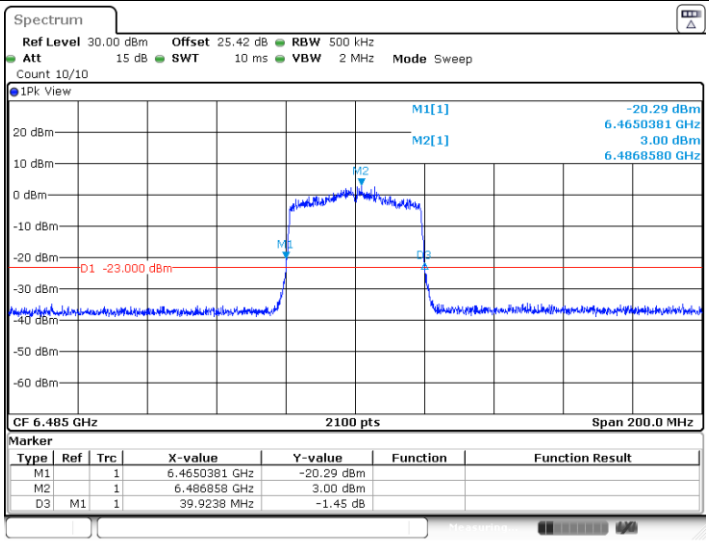

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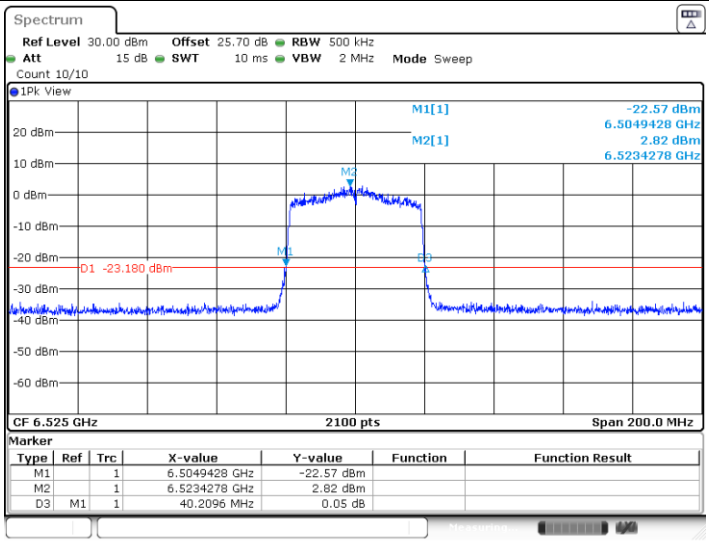

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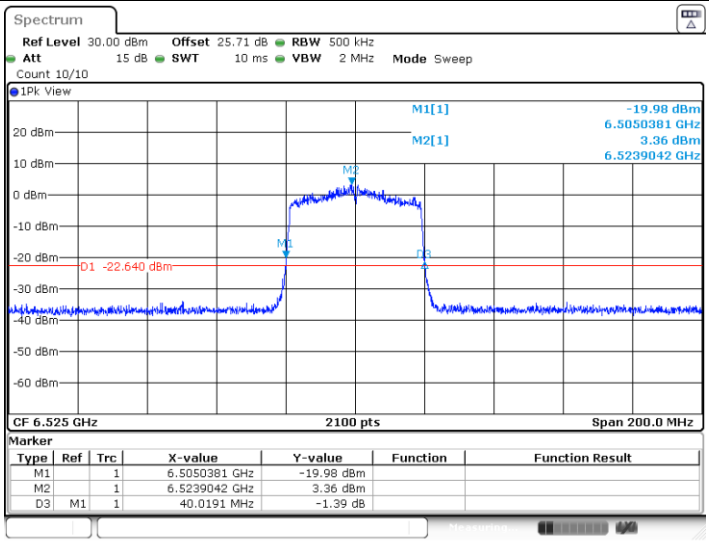

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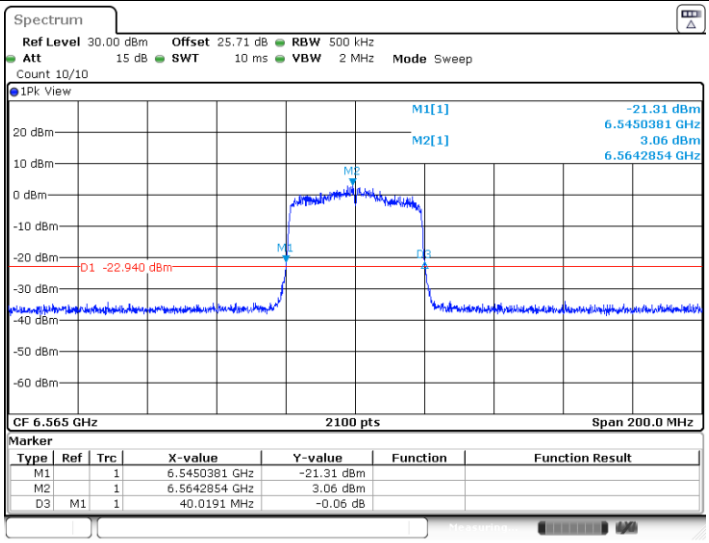

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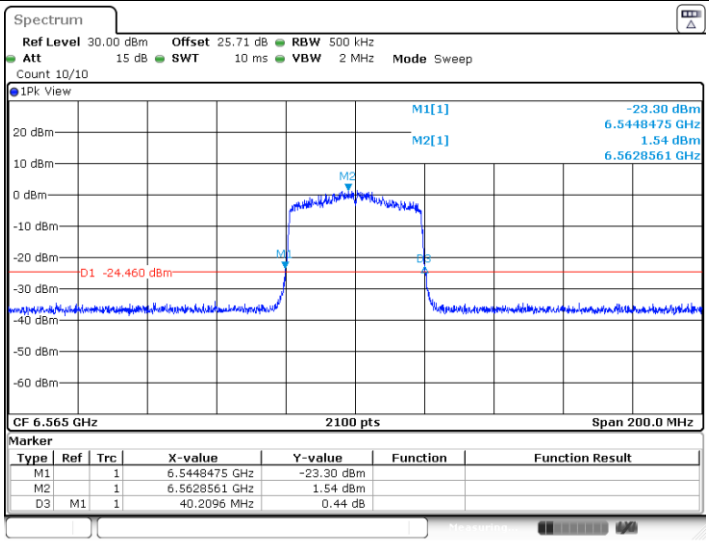

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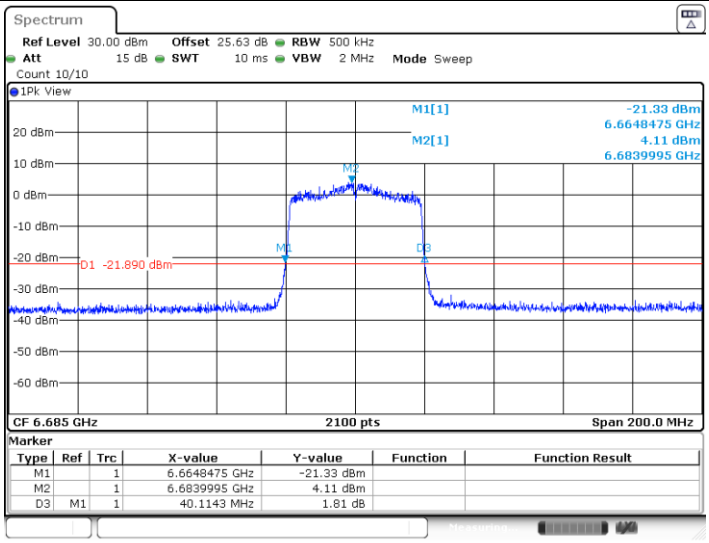

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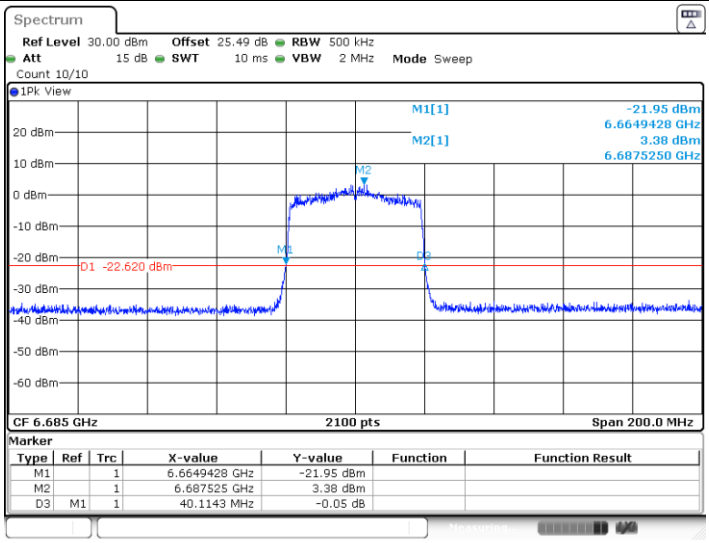

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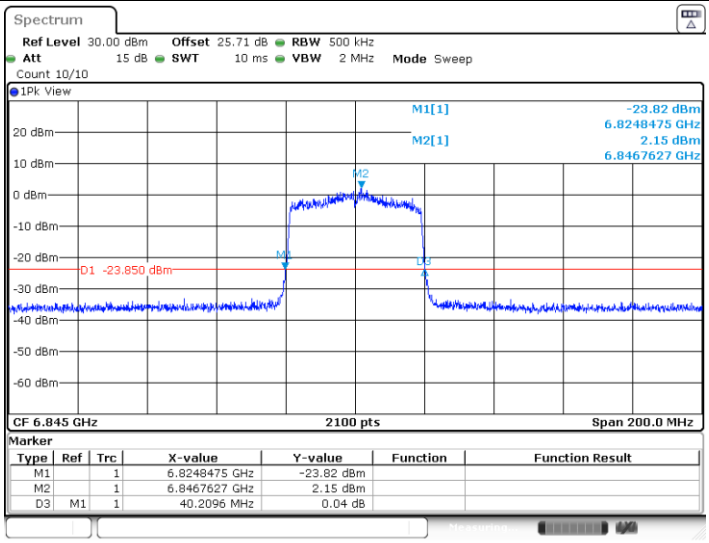

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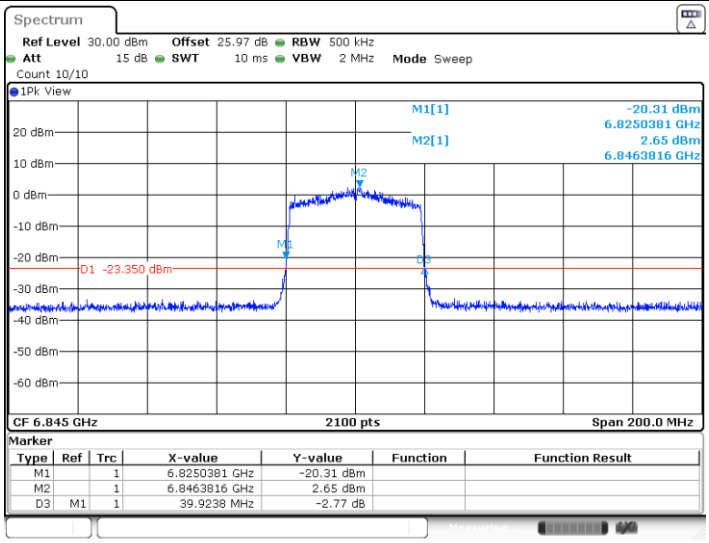

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