Spot Check Evaluation

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2433-5,XT2433-4
FCC ID	:	IHDT56AS5
STANDARD	:	47 CFR Part 22(H), 24(E), 27(M), 27(Q) 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)	:	May 14, 2024 ~ Jul. 25, 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.

This report contains data that were produced under subcontract by Sporton International Inc. (Shenzhen)

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

TABLE OF CONTENTS

REVISION HISTORY **3**

1 GENERAL DESCRIPTION **4**

1.1 Applicant 4
1.2 Manufacturer 4
1.3 Product Feature of Equipment Under Test 4
1.4 Modification of EUT 4
1.5 Testing Site 5
1.6 Test Software 5
1.7 Applicable Standards 6
1.8 Specification of Accessory 6

2 RE-USE OF MEASURED DATA **7**

2.1 Introduction Section 7
2.2 Model Difference Information 7
2.3 Reference detail Section: 8
2.4 Spot Check Verification Data Section 9

3 LIST OF MEASURING EQUIPMENT **14**

4 MEASUREMENT UNCERTAINTY **17**

APPENDIX A. RADIATED SPURIOUS EMISSION

APPENDIX B. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
422910	Rev. 01	Initial issue of report	Jul. 31, 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,IL60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza,Chicago,IL60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Motorola
Model Name	XT2433-5,XT2433-4
FCC ID	IHDT56AS5
IMEI Code	Conducted/DFS: 351333780011656/351333780011664 Radiation: 351333780065074/351333780095071 Conduction: 351333780014312/351333780014320
HW Version	DVT2
SW Version	UOA34.101
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 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 TH01-KS DFS01-KS 03CH07-KS	CN1257	314309

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH01-SZ 03CH03-SZ	CN1256	421272

1.6 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	DFS01-KS	Sporton	Test Tools	1.0
3.	CO01-KS	AUDIX	E3	6.2009-8-24
4.	03CH01-SZ	AUDIX	E3	6.2009-8-24
5.	03CH03-SZ	AUDIX	E3	6.2009-8-24

1.7 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 22(H), 24(E), 27(M), 27(Q)
- 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

1.8 Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-201L
AC Adapter 1(EU)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-202L
AC Adapter 1(UK)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-203L
AC Adapter 1(IN)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-204
AC Adapter 1(AU)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-205L
AC Adapter 1(AR)	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-206L
AC Adapter 2(US)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-201L
AC Adapter 2(EU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-202L
AC Adapter 2(UK)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-203L
AC Adapter 2(AU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-205L
AC Adapter 2(AR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-206L
AC Adapter 2(BR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-207L
AC Adapter 2(Chile)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-209L
AC Adapter 3(BR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-207L
AC Adapter 3(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-201L
AC Adapter 3(EU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-202L
AC Adapter 3(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-206L
AC Adapter 4(BR)	**Brand Name**	Motorola(Cliptech)	**Model Name**	MC-207L
AC Adapter 5(IN)	**Brand Name**	Motorola(XIHI)	**Model Name**	MC-204
Battery 1	**Brand Name**	Motorola(Sunwoda)	**Model Name**	QG50
Battery 2	**Brand Name**	Motorola(ATL)	**Model Name**	QG50
Battery 3	**Brand Name**	Motorola(JIADE)	**Model Name**	QG50
USB Cable 1	**Brand Name**	Saibao	**Model Name**	SZN-A026A
USB Cable 2	**Brand Name**	Juwei	**Model Name**	JWUB1606-ZN01H

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: XT2433-5;XT2433-4, FCC ID: IHDT56AS5) is electrically identical to the reference device (Model: XT2433-2, XT2433-1, FCC ID: IHDT56AS4) 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, and for SAR Reference detail, please refer to FCC SAR report FA422910.

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: IHDT56AS5 .

2.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AS4 and FCC ID: IHDT56AS5 is as below:

- Remove WCDMA IV, LTE B4/12/13/17/25/66 and 5G NR n2/n66.
- Add LTE B20/32/38C/41C/42C and 5G NR n8/n20/n77.

Other differences and all the details of similarity and difference can be found in the confidential documents (IHDT56AS5 Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

RF 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	IHDT56AS4	Full test	FR422904A	IHDT56AS5	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	IHDT56AS4	Full test	FR422904B	IHDT56AS5	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	IHDT56AS4	Full test	FR422904C	IHDT56AS5	Spot check	Y, All test items
	DXX (NFC)	13.56	IHDT56AS4	Full test	FR422904D	IHDT56AS5	Spot check	Y, All test items
15E	U-NII	5180~5240	IHDT56AS4	Full test	FR422904E	IHDT56AS5	Spot check	Y, All test items
		5260~5320	IHDT56AS4	Full test	FR422904E	IHDT56AS5	Spot check	Y, All test items
		5500~5720	IHDT56AS4	Full test	FR422904E	IHDT56AS5	Spot check	Y, All test items
		5745~5825	IHDT56AS4	Full test	FR422904E	IHDT56AS5	Spot check	Y, All test items
		5260~5320 5500~5720	IHDT56AS4	Full test	FZ422904	IHDT56AS5	Spot check	Y, All test items
22, 24, 27,	PCE (GSM)	GSM 850/1900	IHDT56AS4	Full test	FG422904A	IHDT56AS5	Spot check	Y, All test items
	PCE (WCDMA)	Band II, V	IHDT56AS4	Full test	FG422904A	IHDT56AS5	Spot check	Y, All test items
	PCE (LTE)	B2/5/7(SA)/7C/26/42	IHDT56AS4	Full test	FG422904B FG422904C FG422904E	IHDT56AS5	Spot check	Y, All test items
	PCE (NR)	n5(SA)/n7/n26	IHDT56AS4	Full test	FG422904F FG422904G	IHDT56AS5	Spot check	Y, All test items

1. Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit
2. 5G NR n7 support SA mode only.

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 (Unit)	IHDT56AS4 Parent Worst mode Test Result	IHDT56AS5 Variant Check Test Result	Deviation	Limit
BT 1Mbps (CH00)	Number of Channels (N)	79	79	0	3
	Hopping Channel Separation (MHz)	0.991	1.0029	0.0119	3
	Dwell Time of Each Channel(s)	0.31	0.31	0	3
	20dB Bandwidth(MHz)	0.94	0.96	0.02	3
	99% Bandwidth(MHz)	0.88	0.88	0	3
	Conducted Band Edges(dBm)	-46.41	-47.72	1.31	3
	Conducted Spurious Emission(dBm)	-46.14	-44.30	1.84	3
BT 1Mbps (CH78)	Radiated Band Edges and Radiated Spurious Emission (dBuV/m)	55.86	56.24	0.38	3
BT	AC Conducted Emission (dBuV)	49.66	49.26	0.4	3
BLE 2Mbps (CH39)	6dB Bandwidth (MHz)	1.13	1.168	0.038	3
	99% Bandwidth (MHz)	2.014	2.02	0.006	3
	Power Spectral Density (dBm/3KHz)	-6.6	-7.25	0.65	3
	Conducted Band Edges and Spurious Emission (dBm)	-45.9	-47.13	1.23	3
	Conducted Spurious Emission (dBm)	-44.33	-44.90	0.57	3
	Radiated Band Edges and Spurious Emission (dBuV/m)	45.45	46.02	0.57	3
BLE	AC Conducted Emission (dBuV)	49.66	49.26	0.4	3
WIFI 2.4G (802.11b CH11)	6dB Bandwidth (MHz)	8.08	8.08	0	3
	99% Bandwidth (MHz)	11.588	11.44	0.148	3
	Power Spectral Density (dBm/3KHz)	-0.4	-0.69	0.29	3
	Conducted Band Edges and Spurious Emission (dBm)	-45.51	-46.87	1.36	3
	Conducted Spurious Emission (dBm)	-44.53	-44.89	0.36	3
WIFI 2.4G (802.11g CH11)	Radiated Band Edges and Spurious Emission (dBuV/m)	50.62	48.11	2.51	3
WLAN 2.4G	AC Conducted Emission (dBuV)	49.66	49.26	0.4	3

Mode	Test Item (Unit)	IHDT56AS4 Parent Worst mode Test Result	IHDT56AS5 Variant Check Test Result	Deviation	Limit
NFC	20dB Emission Bandwidth (MHz)	2.48	2.48	0	3
	99% Occupied Bandwidth (MHz)	2.10	2.09	0.01	3
	Frequency Stability (ppm)	-0.5531	-0.5531	0	3
	Field Strength of Fundamental (dBuV/m)	57.01	55.54	1.47	3
	Radiated Spurious Emissions (dBuV/m)	34.83	32.39	2.44	3
	AC Conducted Emission (dBuV)	13.47	11.54	1.93	3
WIFI 5G (802.11a CH165)	26dB Emission Bandwidth (MHz)	31.10	29.89	1.21	3
	99% Occupied Bandwidth (MHz)	17.862	17.23	0.632	3
	Power Spectral Density (dBm/MHz)	3.52	2.47	1.05	3
WIFI 5G (802.11ac VHT40 CH102)	Radiated Band Edges and Spurious Emission (dBuV/m)	65.21	64.94	0.27	3
WLAN 5G	AC Conducted Emission (dBuV)	53.96	53.91	0.05	3
WLAN 5G	DFS (s)	0.872429	0.852828	0.019601	3

Mode	Test Item (Unit)	IHDT56AS4 Parent Worst mode Test Result	IHDT56AS5 Variant Check Test Result	Deviation	Limit
Part 22/24/27 (N26-H)	Peak-to-Average Ratio (dB)	5.44	5.85	0.41	3
	Occupied Bandwidth (MHz)	18.994	18.988	0.006	3
	Conducted Band Edge Measurement (dBm)	-14.89	-17.75	2.86	3
	Conducted Spurious Emission (dBm)	-40.40	-40.45	0.05	3
	Frequency Stability Temperature & Voltage (ppm)	-0.0030	-0.0024	0.0006	3
Part 22H GSM 850	Radiated Spurious Emission(dBm)	-50.60	-49.41	1.61	3
Part 24E WCDMA BII	Radiated Spurious Emission(dBm)	-56.92	-54.67	2.25	3
Part 27M LTE B7	Radiated Spurious Emission(dBm)	-51.69	-51.33	0.36	3
Part 27M N7	Radiated Spurious Emission(dBm)	-42.17	-45.02	2.85	3

Test Item(Unit)	Mode	IHDT56AS4 Parent Worst mode Test Result	IHDT56AS5 Variant Check Test Result	Deviation	Limit
Conducted Output Power (dBm)	BT BR/EDR	12.29	12.25	0.04	3
	BLE 1Mbps	11.99	11.65	0.34	3
	BLE 2Mbps	11.89	11.64	0.25	3
	11b, 2.4GHz	21.57	21.27	0.3	3
	11g, 2.4GHz	23.69	23.62	0.07	3
	11n HT20, 2.4GHz	23.32	23.11	0.21	3
	11n HT40, 2.4GHz	22.32	22.35	-0.03	3
	11a, 5.2GHz	17.79	17.72	0.07	3
	11a, 5.3GHz	18.28	18.26	0.02	3
	11a, 5.5GHz	18.14	18.1	0.04	3
	11a, 5.8GHz	18.48	18.25	0.23	3
	11n HT20, 5.2GHz	16.96	16.93	0.03	3
	11n HT20, 5.3GHz	17.49	17.42	0.07	3
	11n HT20, 5.5GHz	17.57	17.49	0.08	3
	11n HT20, 5.8GHz	17.65	17.61	0.04	3
	11n HT40, 5.2GHz	15.19	15.11	0.08	3
	11n HT40, 5.3GHz	14.96	14.9	0.06	3
	11n HT40, 5.5GHz	15.45	15.37	0.08	3
	11n HT40, 5.8GHz	15.61	15.45	0.16	3
	11ac VHT20, 5.2GHz	17.27	17.22	0.05	3
	11ac VHT20, 5.3GHz	17.67	17.59	0.08	3
	11ac VHT20, 5.5GHz	17.61	17.6	0.01	3
	11ac VHT20, 5.8GHz	17.69	17.66	0.03	3
	11ac VHT40, 5.2GHz	15.71	15.67	0.04	3
	11ac VHT40, 5.3GHz	15.62	15.5	0.12	3
	11ac VHT40, 5.5GHz	15.95	15.87	0.08	3
	11ac VHT40, 5.8GHz	15.96	15.74	0.22	3
	11ac VHT80, 5.2GHz	13.69	13.62	0.07	3
	11ac VHT80, 5.3GHz	14.87	14.78	0.09	3
	11ac VHT80, 5.5GHz	15.6	15.55	0.05	3
	11ac VHT80, 5.8GHz	15.62	15.51	0.11	3
	GSM850	32.41	32.29	0.12	3
	GSM1900	29.55	29.46	0.09	3
	WCDMA B5	22.88	22.71	0.17	3
	WCDMA B2	22.51	22.43	0.08	3
	LTE B2	23.05	22.91	0.14	3
	LTE B5	22.83	22.75	0.08	3
	LTE B26H	22.94	22.73	0.21	3
	LTE B26L	22.94	22.73	0.21	3
	LTE B7	23.21	23.18	0.03	3
	LTE B7C	23.17	23.05	0.12	3

	LTE B42	23.71	23.68	0.03	3
	N5	23.52	23.5	0.02	3
	N7	22.89	22.88	0.01	3
	N26H	23.57	23.55	0.02	3
	N26L	23.27	23.26	0.01	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. 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	Jul. 25, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Jul. 25, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Jul. 25, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 09, 2024	Jul. 23, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 09, 2024	Jul. 23, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Jul. 23, 2024	Jul. 27, 2024	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Aug. 20, 2023	Jul. 23, 2024	Aug. 19, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 09, 2024	Jul. 23, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Jul. 23, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2023	Jul. 23, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2023	Jul. 23, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2023	Jul. 23, 2024	Dec. 26, 2024	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 06, 2024	Jul. 23, 2024	Jul. 05, 2025	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	N/A	Oct. 18, 2023	Jul. 23, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 23, 2024	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 23, 2024	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Jun. 01, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jun. 01, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Jun. 01, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jun. 01, 2024	Oct. 10, 2024	Conduction (CO01-KS)
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 02, 2024	May 14, 2024	Jan. 01, 2025	DFS (DFS01-KS)
Signal Generator	KEYSIGHT	N5182B	MY53050604	9KHz~6GHz	Apr. 17, 2024	May 14, 2024	Apr. 16, 2025	DFS (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7114-M	N/A	0.5GHz~18GHz	NCR	May 14, 2024	NCR	DFS (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	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Jul. 25, 2024	Oct. 10, 2024	Conducted (TH01-KS)
DC Power Supply	GW INSTEK	PLR36-10	GET220683	Max 20A, 36V	Jan. 02, 2024	Jul. 25, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 05, 20204	Jul. 25, 2024	Jul. 04, 2025	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 11, 2023	Jul. 23, 2024	Oct. 10, 2024	Radiation (03CH07-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Jul. 23, 2024	Sep. 10, 2024	Radiation (03CH07-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2023	Jul. 23, 2024	Aug. 18, 2024	Radiation (03CH07-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 23, 2024	NCR	Radiation (03CH07-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Jul. 23, 2024	NCR	Radiation (03CH07-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Jul. 23, 2024	NCR	Radiation (03CH07-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 04, 2024	Jul. 23, 2024	Jan. 03, 2025	Radiation (03CH07-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Jun. 01, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jun. 01, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Jun. 01, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jun. 01, 2024	Oct. 10, 2024	Conduction (CO01-KS)

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	Jul. 25, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Jul. 25, 2024	NCR	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2024	Jul. 25, 2024	Jul. 03, 2025	Conducted (TH01-KS)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2023	Jul. 23, 2024	Dec. 26, 2024	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Jul. 23, 2024	Jul. 27, 2024	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 18,2023	Jul. 23, 2024	Oct. 17,2024	Radiation (03CH01-SZ
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Jul. 23, 2024	Oct. 23, 2025	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 04, 2024	Jul. 23, 2024	Jul. 03, 2025	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09,2024	Jul. 23, 2024	Apr. 08,2025	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 09, 2024	Jul. 23, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18,2023	Jul. 23, 2024	Oct. 17,2024	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 03, 2024	Jul. 23, 2024	Jul. 02, 2025	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Oct. 18,2023	Jul. 23, 2024	Oct. 17,2024	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 23, 2024	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 23, 2024	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required.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)

Test Item	Uncertainty
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	±0.04ppm

Uncertainty of Conducted Measurement (NFC)

Test Item	Uncertainty
Occupied Channel Bandwidth	±0.1%
Frequency	±0.04ppm

Uncertainty of Conducted Measurement (DFS)

Test Item	Uncertainty
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.38%

Uncertainty of Conducted Measurement (WWAN)

Conducted Spurious Emission & Bandedge	±2.26 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

03CH03-SZ(BT/WIF):

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.9 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0 dB

03CH07-KS(NFC):

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

03CH01-SZ(WWAN):

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.48 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.53 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.02 dB

-THE END-

Appendix A. Radiated Spurious Emission Test Data

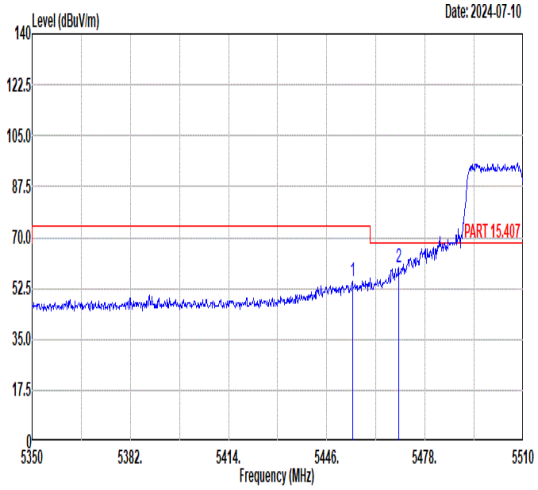
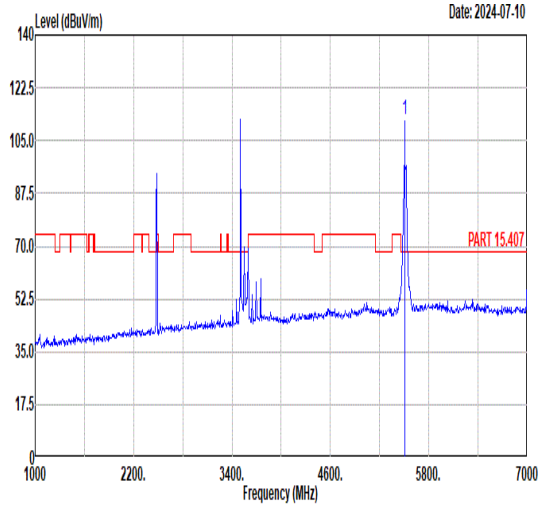
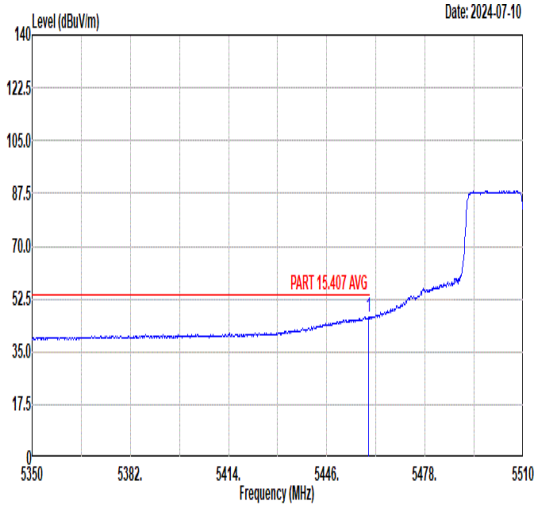
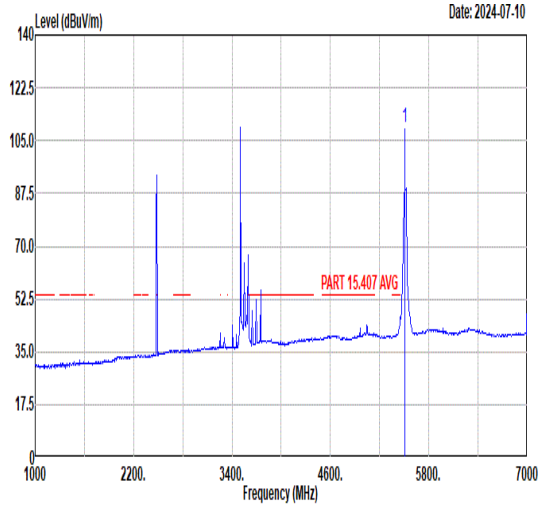
Test Engineer :	Jia Kuang	Relative Humidity :	50%
		Temperature :	20-24℃

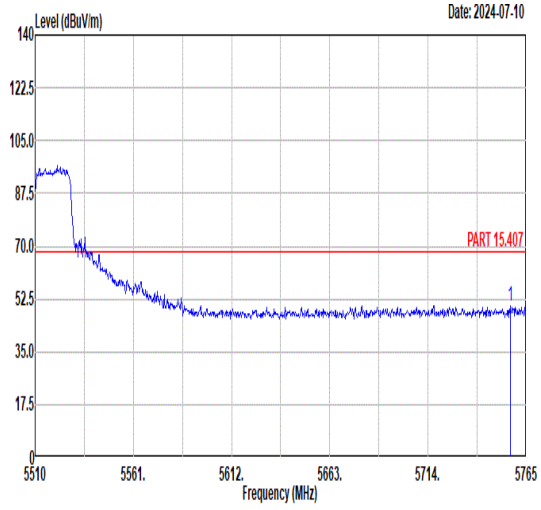
Radiated Spurious Emission Test Modes

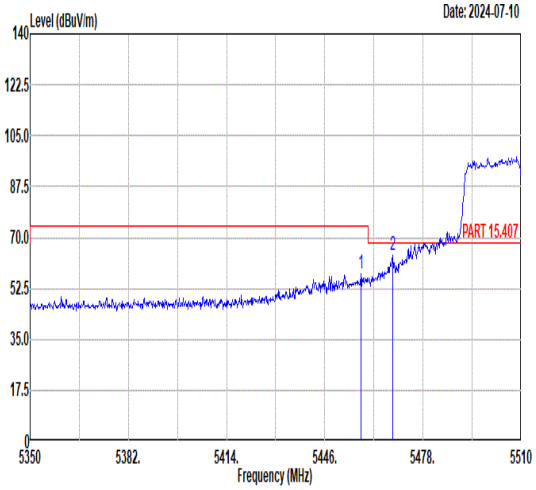
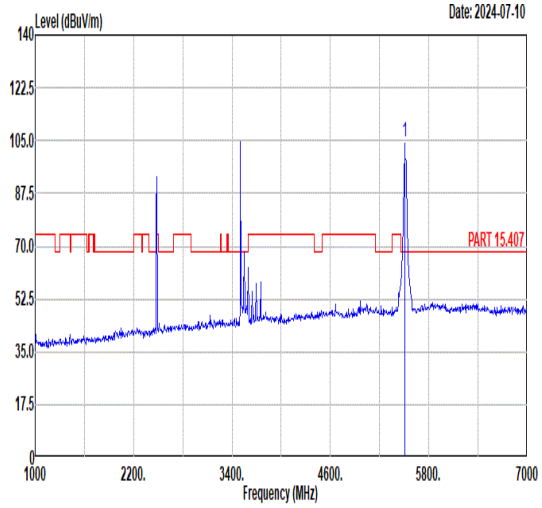
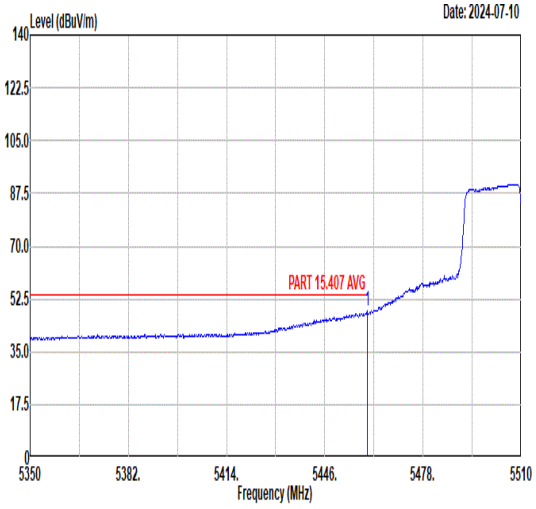
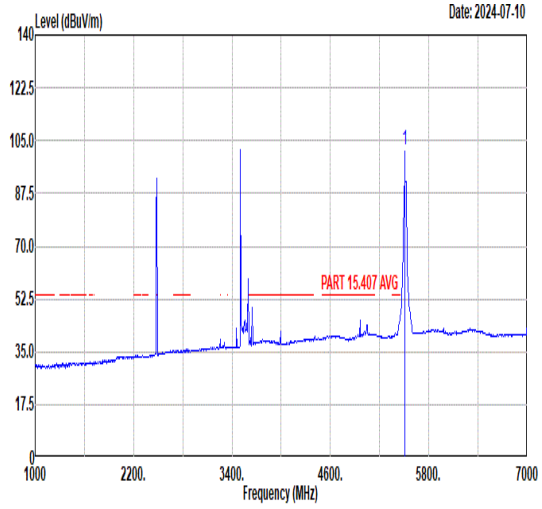
Mode	Band	Band (GHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	BLE	2400-2483.5	1	Bluetooth-LE_GSFK	39	2480	2Mbps	-	Co-location
			5	SA N77 Link	-	-	-	-	
	U-NII-2C	5.47-5.725	1	802.11ac VHT40	102	5510	MCS0	-	
		-	-	NFC ON	-	-	-	-	
Mode 2	CO-TX			LF					

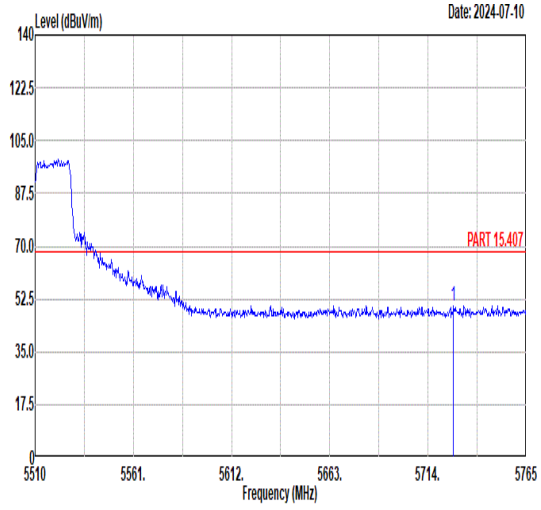
Summary of each worse mode

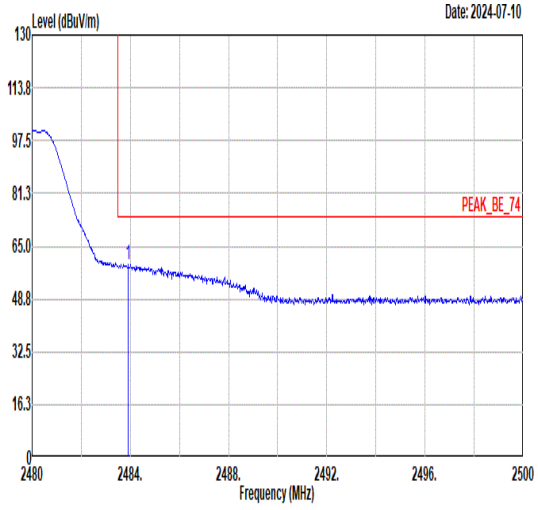
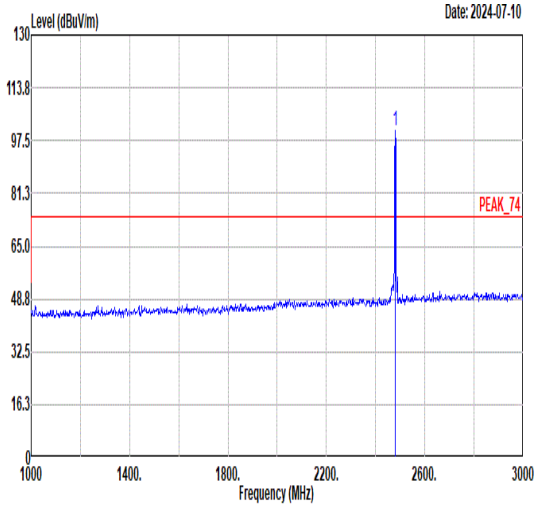
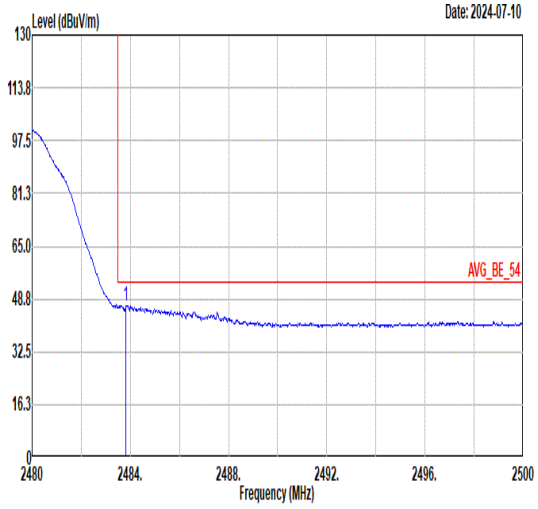
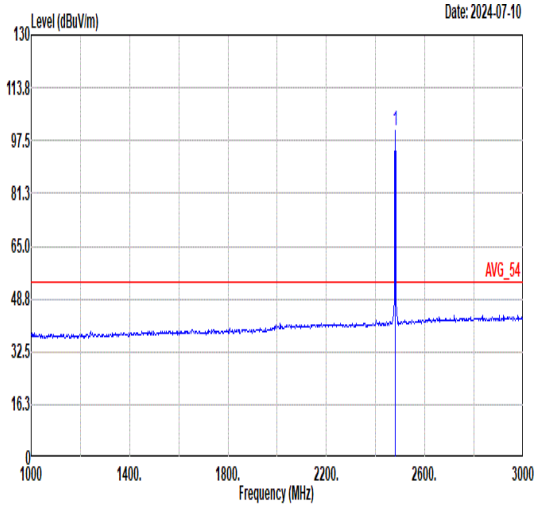
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (Db)	Pol.	Peak Avg.	Result	Remark
1	CO-TX	-	5468.24	63.98	68.30	-4.32	V	PEAK	Pass	Band Edge
1		-	16530.00	45.28	68.30	-23.02	V	Peak	Pass	Harmonic
2	CO-TX	-	37.76	26.22	40	-13.78	V	Peak	Pass	LF

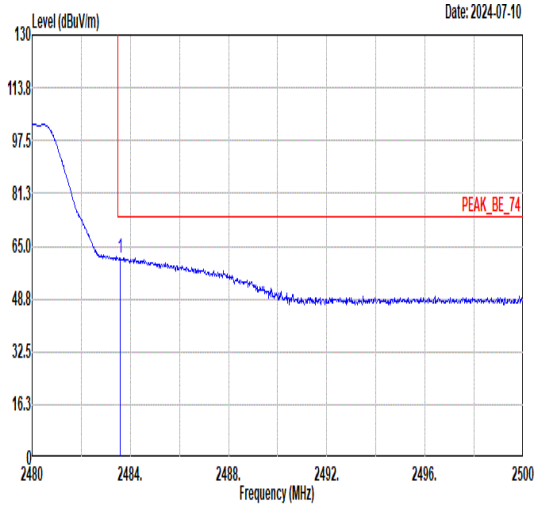
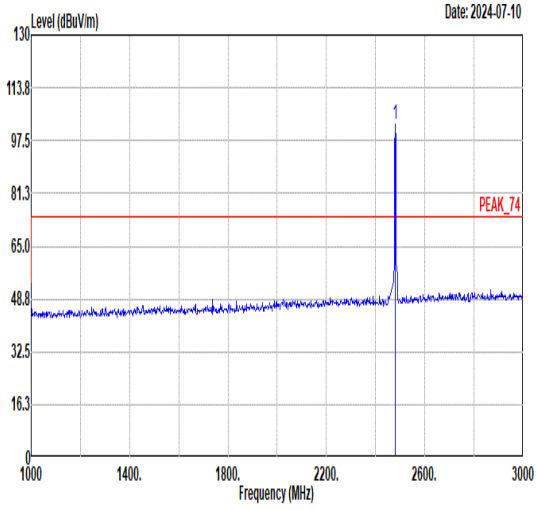
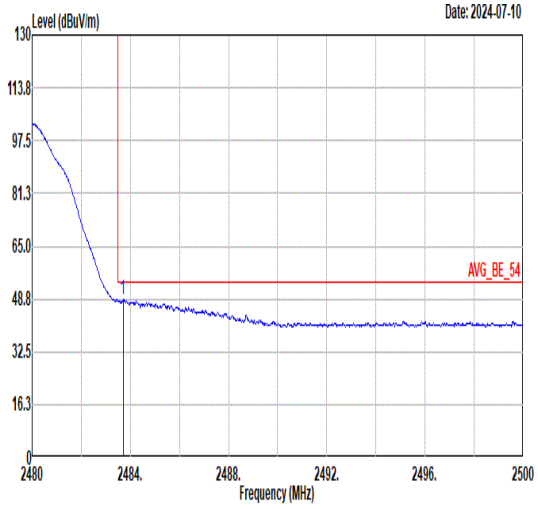
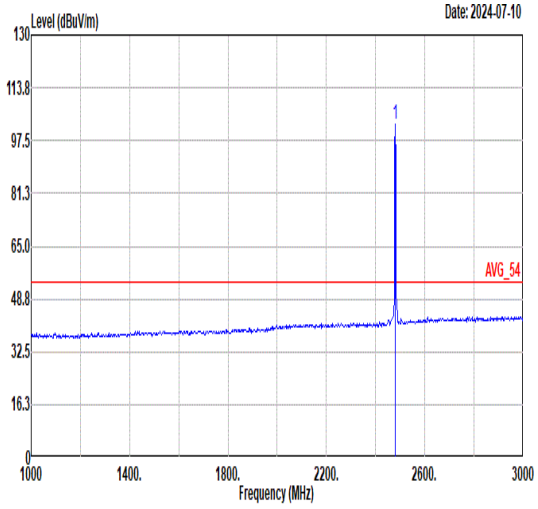
Mode	1	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5454.32 55.14 74.00 -18.86 44.37 34.86 8.42 32.51 230 292 PEAK 2 5469.36 59.56 68.30 -8.74 48.80 34.87 8.40 32.51 230 292 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5510.00 112.04 ------ ------ 106.46 32.60 6.08 33.10 230 292 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5459.60 46.32 54.00 -7.68 35.56 34.86 8.41 32.51 230 292 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5510.00 109.38 ------ ------ 103.80 32.60 6.08 33.10 230 292 AVERAGE

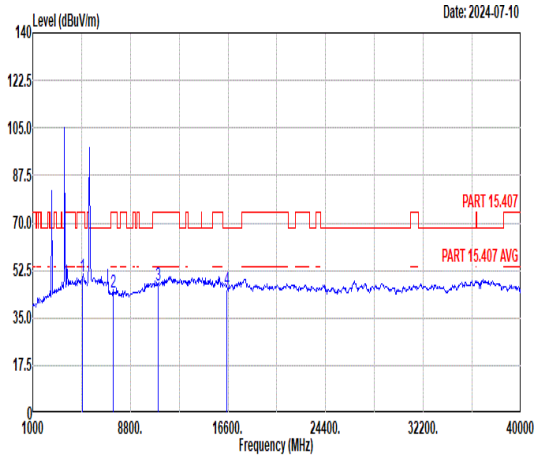
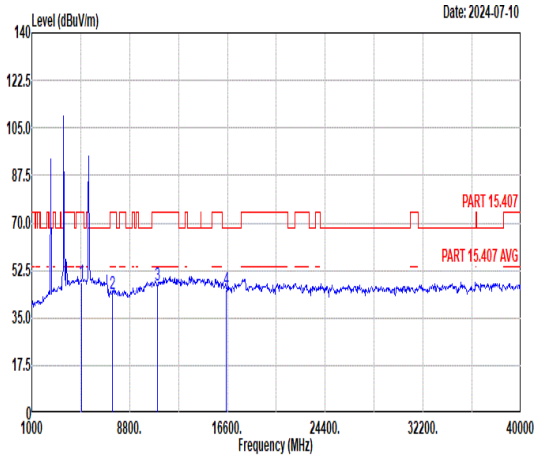
Mode	1	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5756.59 50.18 68.30 -18.12 38.84 35.05 8.79 32.50 230 292 PEAK	Blank

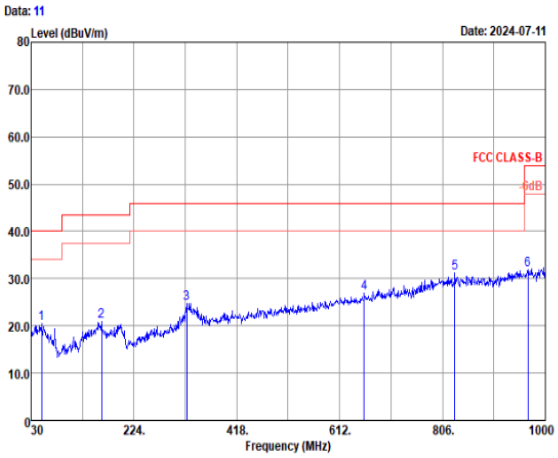
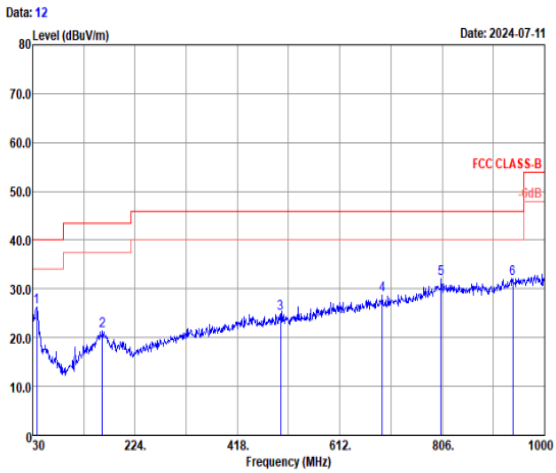
Mode	1	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5457.68 57.78 74.00 -16.22 47.02 34.86 8.41 32.51 300 91 PEAK 2 5468.24 63.98 68.30 -4.32 53.22 34.87 8.40 32.51 300 91 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5510.00 104.51 ------ ------ 98.93 32.60 6.08 33.10 300 91 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5459.76 48.41 54.00 -5.59 37.65 34.86 8.41 32.51 300 91 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5510.00 101.98 ------ ------ 96.40 32.60 6.08 33.10 300 91 AVERAGE

Mode	1	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 5727.26 50.33 68.30 -17.97 39.11 35.04 8.68 32.50 300 91 PEAK	Blank

Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GSFK _CH39_2480MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.92 59.33 74.00 -14.67 57.07 30.85 4.92 33.51 320 299 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2480.00 100.60 ------ ------ 98.35 30.84 4.92 33.51 320 299 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.82 46.72 54.00 -7.28 44.46 30.85 4.92 33.51 320 299 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2480.00 100.35 ------ ------ 98.10 30.84 4.92 33.51 320 299 AVERAGE

Mode	1	
	Band Edge	
	2400-2483.5_Bluetooth-LE_GSFK _CH39_2480MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.58 61.40 74.00 -12.60 59.14 30.85 4.92 33.51 200 254 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2480.00 102.75 ------ ------ 100.50 30.84 4.92 33.51 200 254 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.70 48.45 54.00 -5.55 46.19 30.85 4.92 33.51 200 254 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2480.00 102.33 ------ ------ 100.08 30.84 4.92 33.51 200 254 AVERAGE

Mode	1	
	Harmonic	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4960.00 49.97 74.00 -24.03 40.39 34.45 7.81 32.68 -- -- Peak 2 7440.00 44.59 74.00 -29.41 33.73 35.41 9.19 33.74 -- -- Peak 3 11020.00 47.24 74.00 -26.76 31.72 37.61 11.22 33.31 -- -- Peak 4 16530.00 45.22 68.30 -23.08 24.77 39.52 12.92 31.99 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4960.00 47.97 74.00 -26.03 38.39 34.45 7.81 32.68 -- -- Peak 2 7440.00 43.81 74.00 -30.19 32.95 35.41 9.19 33.74 -- -- Peak 3 11020.00 47.03 74.00 -26.97 31.51 37.61 11.22 33.31 -- -- Peak 4 16530.00 45.28 68.30 -23.02 24.83 39.52 12.92 31.99 -- -- Peak

Mode	2	
	LF	
	U-NII-2C_5.47-5.725_802.11ac VHT40_CH102_5510MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Over Limit Limit Line ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 50.37 20.59 -19.41 40.00 35.24 19.63 0.72 35.00 --- --- Peak 2 162.89 20.86 -22.64 43.50 36.01 18.22 1.33 34.70 --- --- Peak 3 323.91 24.84 -21.16 46.00 37.92 19.65 1.87 34.60 --- --- Peak 4 658.56 26.90 -19.10 46.00 32.26 26.40 2.72 34.48 --- --- Peak 5 829.28 31.09 -14.91 46.00 33.92 28.40 3.07 34.30 --- --- Peak 6 967.02 31.96 -22.04 54.00 33.07 29.86 3.29 34.26 --- --- Peak	 Freq Level Over Limit Limit Line ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 37.76 26.22 -13.78 40.00 41.47 19.04 0.61 34.90 --- --- Peak 2 161.92 21.40 -22.10 43.50 36.49 18.28 1.33 34.70 --- --- Peak 3 500.45 24.92 -21.08 46.00 33.70 23.36 2.36 34.50 --- --- Peak 4 692.51 28.79 -17.21 46.00 33.44 26.97 2.79 34.41 --- --- Peak 5 804.06 32.09 -13.91 46.00 35.43 27.92 3.04 34.30 --- --- Peak 6 939.86 32.15 -13.85 46.00 33.67 29.54 3.24 34.30 --- --- Peak