Spot Check Evaluation

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2453-7, XT2453-9
FCC ID	:	IHDT56AQ8
STANDARD	:	47 CFR Part 2, 22(H), 24(E), 27(L), 27(M) 47 CFR Part 15 Subpart C §15.247 47 CFR Part 15 Subpart E §15.407
TEST DATE(S)	:	Apr. 03, 2024 ~ Apr. 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.

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 Specification of Accessory 4
1.6 Testing Site 5
1.7 Test Software 5
1.8 Applicable Standards 5

2 RE-USE OF MEASURED DATA **6**

2.1 Introduction Section 6
2.2 Model Difference Information 6
2.3 Reference detail Section: 7
2.4 Spot Check Verification Data Section 8

3 LIST OF MEASURING EQUIPMENT **12**

4 MEASUREMENT UNCERTAINTY **14**

APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
422203-02	Rev. 01	Initial issue of report	Apr. 26, 2024
422203-02	Rev. 02	Added verify Conducted Power table	May 08, 2024
422203-02	Rev. 03	1. Modified the description in section 2.1 2. Updated report format about section 2.3	Jun. 14, 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	XT2453-7, XT2453-9
FCC ID	IHDT56AQ8
IMEI Code	Conducted: 356537710004418/356537710004426 Conduction: 356537710004558/356537710004566 Radiation: 356537710004558/356537710004566 DFS/CBP: 356537710004871/356537710004889
HW Version	DVT2
SW Version	U3UC34.16
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 model names are only for market segment.

1.4 Modification of EUT

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

1.5 Specification of Accessory

Specification of Accessory				
Battery 1	**Brand Name**	Motorola	**Model Name**	QR11
Battery 2	**Brand Name**	Motorola	**Model Name**	QR31

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.**
	03CH04-KS 03CH08-KS TH01-KS CO01-KS DFS01-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	SPORTON	FCC 15C-15E Test Tools Ver10.0_210607	10.0
2.	TH01-KS	SPORTON	Part2224_Ver5.0 200330	5.0
3.	CO01-KS	AUDIX	E3	6.2009-8-24
4.	03CH04-KS	AUDIX	E3	6.2009-8-24al
5.	03CH08-KS	AUDIX	E3	210616

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(H), 24(E), 27(L), 27(M)
- 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: XT2453-7,XT2453-9, FCC ID: IHDT56AQ8) is electrically identical to the reference device (Model: XT2453-3, XT2453-4, XT2453-5, XT2453V, FCC ID: IHDT56AR7) 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 Conduted items of 5GNR bands please refer to test report which No.: TR-24ADRTCC7007. For SAR Reference detail, please refer to FCC SAR report FA422203-02.

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: IHDT56AQ8 .

2.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AR7 and FCC ID: IHDT56AQ8 is as below:

- Remove LTE B13/14/25/30/48/71 and 5G NR n2/n7/n12/n14/n25/n26/n30/n38/n41C/n48/n70/n71.
- Add LTE B11/B42.

Other differences and all the details of similarity and difference can be found in the confidential documents (IHDT56AQ8_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	IHDT56AR7	Full test	FR422203A	IHDT56AQ8	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	IHDT56AR7	Full test	FR422203B	IHDT56AQ8	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	IHDT56AR7	Full test	FR422203C	IHDT56AQ8	Spot check	Y, All test items
15E	U-NII	5180~5240	IHDT56AR7	Full test	FR422203F	IHDT56AQ8	Spot check	Y, All test items
		5260~5320	IHDT56AR7	Full test	FR422203F	IHDT56AQ8	Spot check	Y, All test items
		5500~5720	IHDT56AR7	Full test	FR422203F	IHDT56AQ8	Spot check	Y, All test items
		5745~5825	IHDT56AR7	Full test	FR422203F	IHDT56AQ8	Spot check	Y, All test items
		5260~5320 5500~5720	IHDT56AR7	Full test	FZ422203	IHDT56AQ8	Spot check	Y, All test items
	6XD	5925~7125	IHDT56AR7	Full test	FR422203G	IHDT56AQ8	Spot check	Y, All test items
22, 24, 27,	PCE (GSM)	GSM 850/1900	IHDT56AR7	Full test	FG422203A	IHDT56AQ8	Spot check	Y, All test items
	PCE (WCDMA)	Band II, IV, V	IHDT56AR7	Full test	FG422203A	IHDT56AQ8	Spot check	Y, All test items
	PCE (LTE)	B2/4/7/38/41/66/ 41C/66B/66C	IHDT56AR7	Full test	FG422203B FG422203C	IHDT56AQ8	Spot check	Y, All test items
	PCE (5G NR)	n41/n66/n41 UL MIMO	IHDT56AR7	Full test	FG422203K FG422203L	IHDT56AQ8	Spot check, Full test on Conducted	Y, except for Conducted

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	IHDT56AR7 Parent Worst mode Test Result	IHDT56AQ8 Variant Check Test Result	Deviation (dB)	Limit (dB)
BT 1Mbps (CH78)	Number of Channels	79	79	0	3
	Hopping Channel Separation	0.999	0.974	0.025	3
	Dwell Time of Each Channel	0.31	0.31	0	3
	20dB Bandwidth	0.822	0.85	0.028	3
	99% Bandwidth	0.751	0.76	0.009	3
	Conducted Band Edges	-48.73	-45.76	2.97	3
	Conducted Spurious Emission	-47.08	-44.84	2.24	3
BT 1Mbps (CH78)	Radiated Band Edges and Radiated Spurious Emission	55.68	58.53	2.85	3
BT	AC Conducted Emission	13.05	15.28	2.23	3
BLE 1Mbps (CH00)	6dB Bandwidth	0.712	0.70	0.012	3
	99% Bandwidth	1.031	1.043	0.012	3
	Power Spectral Density	2.87	2.91	0.04	3
	Conducted Band Edges	-44.96	-42.66	2.3	3
	Conducted Spurious Emission	-46.89	-43.9	2.99	3
BLE 2Mbps (CH38)	Radiated Band Edges and Spurious Emission	47.08	45.24	1.84	3
BLE	AC Conducted Emission	13.05	15.28	2.23	3
WIFI 2.4G (802.11b CH11)	6dB Bandwidth	8.06	8.52	0.46	3
	99% Bandwidth	12.64	13.267	0.627	3

	Power Spectral Density	3.43	2.87	0.56	3
	Conducted Band Edges	-45.87	-43.01	2.86	3
	Conducted Spurious Emission	-47.50	-44.77	2.73	3
WIFI 2.4G (802.11ax HE40 CH03)	Radiated Band Edges and Spurious Emission	50.98	50.98	0	3
WIFI 2.4G	AC Conducted Emission	13.05	15.28	2.23	3
WIFI 5G (802.11a CH149)	26dB Bandwidth	38.16	35.52	2.64	3
WIFI 5G (802.11a CH157)	99% Bandwidth	19.63	20.579	0.949	3
WIFI 5G (802.11a CH149)	Power Spectral Density	11.04	11.21	0.17	3
WIFI 5G (802.11ax HE80 CH122)	Unwanted Emissions	50.66	50.61	0.05	3
WIFI 5G (802.11ax HE80 CH106)	DFS	8.4	10	1.6	3
WIFI 5G	AC Conducted Emission	15.62	16.16	0.54	3
WIFI 6G UNII-8 (802.11ax HE20 CH189 6895MHz)	26dB Emission Bandwidth	21.78	22.68	0.9	3
	99% Occupied Bandwidth	18.93	19.58	0.65	3
	Fundamental Maximum EIRP	6.07	5.88	0.19	3
	Fundamental Power Spectral Density	-2.31	-2.51	0.2	3
	In-Band Emissions	-33.23	-35.76	2.53	3
WIFI 6G UNII-8 (802.11ax HE80 CH215 7025MHz)	Contention Based Protocol	1.33	1.04	0.29	3
WIFI 6G UNII-8 (802.11ax HE80 CH215 7025MHz)	Unwanted Emissions	64.83	62.32	2.51	3
WIFI 6G	AC Conducted Emission	16.31	15.65	0.66	3
Part 22/24/27 (LTE Band CA_66B)	Equivalent Isotropic Radiated Power	21.16	20.9	0.26	3
	Peak-to-Average Ratio	6.38	6.11	0.27	3
	Occupied Bandwidth	13.91	13.94	0.03	3
	Conducted Band Edge	-14.01	-16.96	2.95	3
	Conducted Spurious Emission	-45.76	-43.75	2.01	3
	Frequency Stability	0.0029	0.0015	0.0014	3
Part 22/24/27 (5G NR n41 UL MIMO)	Radiated Spurious Emission	-45.20	-43.20	2.0	3

Test Item	Mode	IHDT56AR7 Parent Worst mode Test Result	IHDT56AQ8 Variant Check Test Result	Deviation (dB)	Limit (dB)
Conducted Power	BT BR/EDR	19.20	19.17	0.03	3
	BLE 1Mbps	19.09	18.92	0.17	3
	BLE 2Mbps	18.99	18.87	0.12	3
	11b, 2.4GHz	27.82	27.72	0.1	3
	11g, 2.4GHz	29.77	29.49	0.28	3
	11n HT20, 2.4GHz	29.58	29.33	0.25	3
	11n HT40, 2.4GHz	28.34	27.24	1.1	3
	11ax HE20, 2.4GHz	29.69	29.52	0.17	3
	11 ax HE 40, 2.4GHz	28.42	28.28	0.14	3
	11a, 5.2GHz	21.08	21.05	0.03	3
	11a, 5.3GHz	21.42	21.37	0.05	3
	11a, 5.5GHz	21.20	21.17	0.03	3
	11a, 5.8GHz	24.32	24.23	0.09	3
	11n HT20, 5.2GHz	21.34	21.27	0.07	3
	11n HT20, 5.3GHz	21.49	21.38	0.11	3
	11n HT20, 5.5GHz	21.43	21.40	0.03	3
	11n HT20, 5.8GHz	23.30	23.26	0.04	3
	11ac VHT20, 5.2GHz	21.46	21.41	0.05	3
	11ac VHT20, 5.3GHz	21.59	21.39	0.2	3
	11ac VHT20, 5.5GHz	21.55	21.51	0.04	3
	11ac VHT20, 5.8GHz	23.35	23.33	0.02	3
	11ax HE20, 5.2GHz	21.57	21.53	0.04	3
	11ax HE20, 5.3GHz	21.68	21.37	0.31	3
	11ax HE20, 5.5GHz	21.67	21.61	0.06	3
	11ax HE20, 5.8GHz	23.44	23.38	0.06	3
	11n HT40, 5.2GHz	21.41	21.30	0.11	3
	11n HT40, 5.3GHz	21.65	21.62	0.03	3
	11n HT40, 5.5GHz	21.99	21.83	0.16	3
	11n HT40, 5.8GHz	21.81	21.56	0.25	3
	11ac VHT40, 5.2GHz	21.43	21.20	0.23	3
	11ac VHT40, 5.3GHz	21.69	21.68	0.01	3
	11ac VHT40, 5.5GHz	22.02	21.91	0.11	3
	11ac VHT40, 5.8GHz	21.85	21.67	0.18	3
	11ax HE40, 5.2GHz	21.51	21.44	0.07	3
	11ax HE40, 5.3GHz	21.80	21.71	0.09	3
	11ax HE40, 5.5GHz	22.12	22.03	0.09	3
	11ax HE40, 5.8GHz	21.95	21.88	0.07	3
	11ac VHT80, 5.2GHz	14.30	14.27	0.03	3
	11ac VHT80, 5.3GHz	15.95	15.82	0.13	3
	11ac VHT80, 5.5GHz	22.00	21.96	0.04	3
	11ac VHT80, 5.8GHz	22.34	22.19	0.15	3
	11ax HE80, 5.2GHz	14.39	14.39	0	3
	11ax HE80, 5.3GHz	16.02	15.99	0.03	3
	11ax HE80, 5.5GHz	22.08	22.02	0.06	3
	11ax HE80, 5.8GHz	22.45	22.36	0.09	3
	11ax HE20, U-NII-5	12.67	12.63	0.04	3
	11ax HE20, U-NII-6	13.22	13.16	0.06	3
	11ax HE20, U-NII-7	12.54	12.53	0.01	3
	11ax HE20, U-NII-8	13.24	13.14	0.1	3
	11ax HE40, U-NII-5	13.77	13.60	0.17	3

	11ax HE40, U-NII-6	14.01	13.89	0.12	3
	11ax HE40, U-NII-7	13.78	13.59	0.19	3
	11ax HE40, U-NII-8	14.05	13.86	0.19	3
	11ax HE80, U-NII-5	13.71	13.68	0.03	3
	11ax HE80, U-NII-6	13.59	13.55	0.04	3
	11ax HE80, U-NII-7	13.39	13.25	0.14	3
	11ax HE80, U-NII-8	13.67	13.21	0.46	3
	GSM 850	31.77	31.55	0.22	3
	GSM 1900	29.44	29.26	0.18	3
	WCDMA 5	24.34	24.25	0.09	3
	WCDMA 2	23.26	23.17	0.09	3
	WCDMA 4	23.17	23.02	0.15	3
	LTE B2	23.41	22.95	0.46	3
	LTE B4	23.31	22.84	0.47	3
	LTE B66	23.41	22.88	0.53	3
	LTE B7	24.33	23.40	0.93	3
	LTE B38	24.35	23.54	0.81	3
	LTE B41	27.00	26.53	0.47	3
	LTE B41CA	26.03	25.81	0.22	3
	LTE B66B	23.04	22.78	0.26	3
	LTE B66CA	23.02	22.83	0.19	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	Apr. 17, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Apr. 17, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Apr. 17, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 04, 2024	Apr. 03, 2024	Jan. 03, 2025	Radiation (03CH08-KS)
Spectrum Analyzer	R&S	FSV40	101932	10kHz~40GHz; Max 30dBm	Oct. 10, 2023	Apr. 03, 2024	Oct. 09, 2024	Radiation (03CH08-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Oct. 10, 2023	Apr. 03, 2024	Oct. 09, 2024	Radiation (03CH08-KS)
Bilog Antenna	TESEQ& VGT	CBL 61110	59915	30MHz-1GHz	Aug. 12, 2023	Apr. 03, 2024	Aug. 11, 2024	Radiation (03CH08-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Mar. 01, 2024	Apr. 03, 2024	Feb. 28, 2025	Radiation (03CH08-KS)
high gain Amplifier	EM	EM01G18GA	060845	1Ghz-18Ghz	Jan. 05, 2024	Apr. 03, 2024	Jan. 04, 2025	Radiation (03CH08-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2024	Apr. 03, 2024	Jan. 04, 2025	Radiation (03CH08-KS)
Amplifier	SONOMA	310N	413741	9KHz-1GHz	Jan. 05, 2024	Apr. 03, 2024	Jan. 04, 2025	Radiation (03CH08-KS)
Amplifier	EM	EM01G18GA	060834	1Ghz-18Ghz	Oct. 10, 2023	Apr. 03, 2024	Oct. 09, 2024	Radiation (03CH08-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 04, 2024	Apr. 03, 2024	Jan. 03, 2025	Radiation (03CH08-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Apr. 03, 2024	NCR	Radiation (03CH08-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Apr. 03, 2024	NCR	Radiation (03CH08-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Apr. 03, 2024	NCR	Radiation (03CH08-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 16, 2023	Apr. 25, 2024	May 15, 2024	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Apr. 25, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	May 16, 2023	Apr. 25, 2024	May 15, 2024	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Apr. 25, 2024	Oct. 10, 2024	Conduction (CO01-KS)
Signal Analyzer	R&S	FSV7	101632	10Hz~7GHz	Jan. 02, 2024	Apr. 24, 2024	Jan. 01, 2025	CBP (DFS01-KS)
MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY56200417 /MY59360210	9kHz~7.2GHz	May 16, 2023	Apr. 24, 2024	May 15, 2024	CBP (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Apr. 24, 2024	NCR	CBP (DFS01-KS)
Spectrum Analyzer	R&S	FSV7	101632	10Hz~7GHz	Jan. 03, 2024	Apr. 17, 2024	Jan. 02, 2025	DFS (DFS01-KS)
Signal Generator	KEYSIGHT	N5182B	MY53050604	9KHz~6GHz	May 15, 2023	Apr. 17, 2024	May 14, 2024	DFS (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Apr. 17, 2024	NCR	DFS (DFS01-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	Apr. 16, 2024~ Apr. 19, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Apr. 16, 2024~ Apr. 19, 2024	NCR	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 06, 2023	Apr. 16, 2024~ Apr. 19, 2024	Jul. 05, 2024	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Apr. 03, 2024~ Apr. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Apr. 03, 2024~ Apr. 10, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Apr. 08, 2023	Apr. 03, 2024~ Apr. 10, 2024	Apr. 07, 2025	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00251694	1GHz~18GHz	Jul. 12, 2023	Apr. 03, 2024~ Apr. 10, 2024	Jul. 11, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2024	Apr. 03, 2024~ Apr. 10, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul. 06, 2023	Apr. 03, 2024~ Apr. 10, 2024	Jul. 05, 2024	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2024	Apr. 03, 2024~ Apr. 10, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18GA	060840	1Ghz-18Ghz	Oct. 10, 2023	Apr. 03, 2024~ Apr. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 10, 2023	Apr. 03, 2024~ Apr. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 03, 2024~ Apr. 10, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Apr. 03, 2024~ Apr. 10, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Apr. 03, 2024~ Apr. 10, 2024	NCR	Radiation (03CH04-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/WIFI 2.4G/5G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Conducted Power Spectral Density	±0.88 dB
Frequency	±0.4 ppm

Uncertainty of Conducted Measurement (WIFI 6G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Conducted Power Spectral Density	±0.88 dB
Frequency	±0.4 ppm
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.38%

Uncertainty of Conducted Measurement (WWAN Bands)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Peak to Average Ratio	±0.46 dB
Frequency Stability	±0.4 Hz

Uncertainty of Conducted Measurement (DFS)

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

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

03CH08-KS:

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.28dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.90dB

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

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

03CH04-KS:

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.82dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.56dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.54dB

-THE END-