FCC TEST REPORT

Name of Sample:	**Mobile Cellular Phone**
Model of Sample:	**XT2437-3**
Applicant:	**Motorola Mobility LLC**
Issue Date:	**2024-08-26**

ADR TEST AND CERTIFICATION CENTER

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Name of Client	Motorola Mobility LLC		
Address of Client	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA		
Trademark	Motorola	**Type Name or ID**	FCC ID: IHDT56AS9
Applicant No.	RF180634	**Sample No.**	1#: N1PE240111 2#: N1PE240113 3#: N1PE240105
Delivering Date	2024-07-26	**Test Date**	2024-07-26 to 2024-08-26
Sample Illustration	None		
Standard	47 CFR Part 2; 47 CFR Part 22; 47 CFR Part 24; 47 CFR Part 27; 47 CFR Part 90;		
Conclusion	Pass		
Remarks	N/A		

Editor: Wangzhenyu **Auditor:** Hexiaolin **Approver:** HuangshengLin

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Revision History

Report No.	Version	Description	Issued Date
TR-24ADRTCC7017	Rev.01	Initial issue of report	2024-08-19
TR-24ADRTCC7017	Rev.02	Update model difference description on page 7. Update accessories information on page 11. Update VBW setting in OBW/EBW test and related data.	2024-08-26
TR-24ADRTCC7017	Rev.03	Update model difference description on page 7.	2024-08-27
TR-24ADRTCC7017	Rev.04	Add Reference report on Page20	2024-09-03

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1. Test Summary

1.1. 5G NR Band n5/n26

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Radiated Power	§22.913(a)(5)	ERP < 7W		
Peak-Average Ratio	§22.913(d)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §22.917(a)	< -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §22.917(a)	< -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges	Section 6 of Appendix B	Pass
Frequency Stability	§2.1055 §22.355	< ±2.5ppm	Section 7 of Appendix B	Pass

1.2. 5G NR Band n26 (814-824)

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046 §90.635	Report Only	Section 1 of Appendix B	PASS
Peak-Average Ratio	---	<13 dB	Section 2 of Appendix B	PASS
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	PASS
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	PASS
26dB Emission Bandwidth		No limit		
Emission Mask	§2.1051 § 90.691	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.	Section 5 of Appendix B	PASS
Conducted Spurious Emission	§2.1051 §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Section 6 of Appendix B	PASS
Frequency Stability	§90.213	< ±2.5ppm	Section 7 of Appendix B	PASS

1.3. 5G NR Band n7/n38/n41

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§27.50(h) (2)	EIRP < 2W		
Peak-Average Ratio	§27.50(a)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §27.53(m) (4)	For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 +	Section 5 of Appendix B	Pass

Test Item	Rule No.	Requirements	Test Result	Verdict
		10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5MHz.		
Conducted Spurious Emission	§2.1051 §27.53(m) (4)	< -25 dBm/MHz for outside Band Edge Range	Section 6 of Appendix B	Pass
Frequency Stability	§27.54	Within authorized bands	Section 7 of Appendix B	Pass

1.4. 5G NR Band n77 (3700-3980)/n78 (3700-3800)

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§27.50(j) (3)	EIRP < 1W		
Peak-Average Ratio	§27.50(j) (4)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §27.53(l) (2)	< -13 dBm/MHz	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §27.53(l) (2)	< -13 dBm/MHz	Section 6 of Appendix B	Pass
Frequency Stability	§27.54	Within authorized bands	Section 7 of Appendix B	Pass

Remark:

1, Only 5G NR Bands conducted test performed and the data displayed in this report, the radiated spurious emission refer to the report (FG471919-01).

2, The maximum E(I)RP is calculated from max output power and max antenna gain, only the max E(I)RP data displayed in this report, n5/n26 for Antenna 0; n7/n38/n41 for Antenna 1; n77/n78 for antenna 5.

3, 5G NR Bands support SA mode for n5/n7/n26/n38/n41//n77/n78 and NSA mode for n5/n7/n38/n41/n77/n78.

4, The test has been assessed on SA and NSA mode, but only the worst mode performed the whole conducted test items by referring to the max conducted power.

5, The ENDC combination could be referred to the product specification

6, 5G NR n77/n78 supports HPUE mode.

2. Summary of 5G NR Spot Check

2.1. Reference Detail Section

Rule Part	Equipment Class	Frequency Band	Reference FCC ID (Parent)	Reference on test	Reference Title	FCC ID (Variant)	Test on the variant	Data Reference (Y/N)
22, 27, 90	PCE (NR)	n7	IHDT56AS8	Full Test	24ADRTCC7016	IHDT56AS9	Spot Check	Y All test items
		n26	IHDT56AS8	Full Test	24ADRTCC7016	IHDT56AS9	Spot Check	Y All test items

2.2. Spot Check Verification Data Section

Test Item	Mode	Worst Mode Test Result		Deviation (dB)	Limit (dB)
		IHDT56AS8	IHDT56AS9		
Conducted Power	n7	23.53	22.95	- 0.58	3
	n26	23.08	23.19	0.11	3

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, Report No.:24ADRTCC7016) for the portions of the circuitry corresponding to the data being re-used. Based on their similarity. The FCC Part 2, 22, 24, 27(equipment class: PCE) ,90 referencing the original model's result and do spot check, following the FCC KDB484596 D01 Referencing Test Data v02r03.

Compared the device (Model: XT2437-3, FCC ID: IHDT56AS9) with the reference device (Model: XT2437-1, XT2437-2, FCC ID: IHDT56AS8), according to the maximum conducted output power comparison result, therefor, band n5 was defined as the worst band and full test the conducted item to demonstrate the compliance, and the data displayed in appendix B.1.

Model difference information

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

- Remove WCDMA IV, LTE Band 4/12/13/17/25/66 and 5G NR n2/n66.
- Add LTE Band 20/32 and 5G NR n8/n20/n38/n41/n77.

Other difference and all the details of similarity and difference can be found in the confidential documents (XT2437-3_Operational Description of Product Equality Declaration).

3. Maximum Effective Radiated (Isotropic) Power and Emission Designator

3.1. NR System

3.1.1. NR Band n5 (824-849)

5G NR NSA (DC_7A_n5A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum ERP (W)	Emission Designator (99% OBW)	Maximum ERP (W)	Emission Designator (99% OBW)
5MHz	826.5-846.5	0.034514	4M49G7D	0.026607	4M50W7D
10MHz	829.0-844.0	0.033574	9M29G7D	0.026977	9M29W7D
15MHz	831.5-841.5	0.034914	14M1G7D	0.027164	14M1W7D
20MHz	834.0-839.0	0.034674	18M9G7D	0.027606	18M9W7D

3.1.2. NR Band n38 (2570-2620)

5G NR SA (n38A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
10MHz	2575.0-2615.0	0.109901	8M61G7D	0.087700	8M59W7D
15MHz	2577.5-2612.5	0.115080	13M6G7D	0.092470	13M7W7D
20MHz	2580.0-2610.0	0.115080	18M2G7D	0.091622	18M2W7D
30MHz	2585.0-2605.0	0.116145	27M9G7D	0.092897	27M9W7D
40MHz	2590.0-2600.0	0.116681	37M9G7D	0.093756	37M9W7D

3.1.3. NR Band n41 (2496-2690)

5G NR SA (n41A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
10MHz	2501.01-2685.00	0.115878	8M61G7D	0.091833	8M61W7D
15MHz	2503.50-2682.48	0.118850	13M6G7D	0.096161	13M6W7D
20MHz	2506.02-2679.99	0.118304	18M2G7D	0.094624	18M2W7D
30MHz	2511.00-2674.98	0.121339	27M8G7D	0.095499	27M9W7D
40MHz	2516.01-2670.00	0.124451	37M9G7D	0.101158	37M9W7D
50MHz	2521.02-2664.99	0.120781	47M4G7D	0.093756	47M6W7D
60MHz	2526.00-2659.98	0.117220	57M9G7D	0.093756	57M8W7D
70MHz	2531.01-2655.00	0.116145	67M4G7D	0.093325	67M6W7D
80MHz	2536.02-2649.99	0.119950	77M4G7D	0.095060	77M5W7D
90MHz	2541.00-2644.98	0.122462	87M2G7D	0.098175	87M6W7D
100MHz	2546.01-2640.00	0.121060	97M5G7D	0.098401	97M7W7D

3.1.4. NR Band n77 (3700-3980)

5G NR SA (n77A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
10MHz	3705.00-3975.00	0.311889	8M61G7D	0.274157	8M61W7D
15MHz	3707.52-3972.48	0.319890	13M6G7D	0.281838	13M7W7D
20MHz	3710.01-3969.99	0.316957	18M2G7D	0.283792	18M3W7D
30MHz	3715.02-3964.98	0.331894	27M9G7D	0.289068	27M9W7D
40MHz	3720.00-3960.00	0.340408	38M0G7D	0.293089	37M9W7D
50MHz	3725.01-3954.99	0.391742	47M5G7D	0.278612	47M6W7D
60MHz	3730.02-3949.98	0.319154	57M8G7D	0.283139	57M9W7D
70MHz	3735.00-3945.00	0.309742	67M4G7D	0.286418	67M6W7D
80MHz	3740.01-3939.99	0.314051	77M4G7D	0.286418	77M5W7D
90MHz	3745.02-3934.98	0.316957	87M4G7D	0.283139	87M6W7D
100MHz	3750.00-3930.00	0.322849	97M3G7D	0.293089	97M5W7D

3.1.5. NR Band n78 (3700-3800)

5G NR SA (n78A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
10MHz	3705.00-3795.00	0.319154	8M61G7D	0.251189	8M61W7D
15MHz	3707.52-3792.48	0.333426	13M6G7D	0.264850	13M7W7D
20MHz	3710.01-3789.99	0.331894	18M2G7D	0.269153	18M3W7D
30MHz	3715.02-3784.98	0.335738	27M9G7D	0.264241	27M9W7D
40MHz	3720.00-3780.00	0.351560	37M9G7D	0.276694	37M9W7D
50MHz	3725.01-3774.99	0.320627	47M5G7D	0.254683	47M6W7D
60MHz	3730.02-3769.98	0.325837	57M9G7D	0.263027	57M9W7D
70MHz	3735.00-3765.00	0.314051	67M6G7D	0.251189	67M6W7D
80MHz	3740.01-3759.99	0.319890	77M4G7D	0.259418	77M5W7D
90MHz	3745.02-3754.98	0.325087	87M4G7D	0.259418	87M6W7D
100MHz	3750.00	0.327341	97M5G7D	0.261216	97M5W7D

4. General Information

4.1. General Description of EUT

EUT Description:	Mobile Cellular Phone
Brand Name:	Motorola
Model Name:	XT2437-3
FCC ID:	IHDT56AS9
IMEI Code:	1#: 359867620008291/359867620008309 (Conducted); 2#: 359867620008150/359867620008168 (Conducted); 3#: 359867620008051/359867620008069 (Conducted);
Hardware Version:	DVT2
Software Version:	U4UQ34.39
NR Modulation:	DFT-s-OFDM: ☒Pi/2BPSK; ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM; CP-OFDM: ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM;
Sample Type:	☒ Portable Device, ☐Module
Antenna Type:	☐External, ☒ Integrated
Antenna Gain:	n5 (824-849): -5.16dBi (Ant0); -5.70dBi (Ant4); n7 (2500-2570): -2.17dBi (Ant1); -2.00dBi (Ant4); n26 (814-849): -5.16dBi (Ant0); -4.30dBi (Ant4); n38 (2570-2620): -2.17dBi (Ant1); -1.80dBi (Ant4); n41 (2496-2690): -2.17dBi (Ant1); -1.60dBi (Ant4); n77 (3700-3980): -1.15dBi (Ant3); -1.15dBi (Ant5); -4.90dBi (Ant7); -3.26dBi (Ant9); n78 (3700-3800): -1.57dBi (Ant3); -1.15dBi (Ant5); -4.90dBi (Ant7); -3.26dBi (Ant9);

Remark

1, The information above was declared by manufacture. Please refer to the specifications or user manual for more detailed description.

4.2. Test Environment

Relative Humidity:	52.0% - 62.0%	
Atmospheric Pressure:	101.32 KPa	
Temperature:	NT (normal temperature)	25.0 °C – 27.5 °C
Voltage:	LV (Low voltage)	3.40V
	NV (Nominal voltage)	3.91V
	HV (High voltage)	4.50V

4.3. Specification of Accessories

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

5. Test Configuration of Equipment Under Test

5.1. Test Mode for NR Configuration

Test Case	5G NR	SCS		Bandwidth	Modulation					Channel			RB	
		15KHz	30KHz		Pi/2BPSK	QPSK	16QAM	64QAM	256QAM	LCH	MCH	HCH	1	Full
Effective Isotropic Radiated Power	N5 (824-849)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N38 (2570-2620)	○	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N41 (2496-2690)	○	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N77 (3700-3980)	○	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N78 (3700-3800)	○	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
Peak-Average Ratio	N5 (824-849)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N38 (2570-2620)	○	●	Highest BW	●	●	○	○	○	●	●	●	○	●
	N41 (2496-2690)	○	●	Highest BW	●	●	○	○	○	●	●	●	○	●
	N77 (3700-3980)	○	●	Highest BW	●	●	○	○	○	●	●	●	○	●
	N78 (3700-3800)	○	●	Highest BW	●	●	○	○	○	●	●	●	○	●
Modulation Characteristics	N5 (824-849)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N38 (2570-2620)	○	●	Highest BW	●	●	●	●	●	○	●	○	○	●
	N41 (2496-2690)	○	●	Highest BW	●	●	●	●	●	○	●	○	○	●
	N77 (3700-3980)	○	●	Highest BW	●	●	●	●	●	○	●	○	○	●
	N78 (3700-3800)	○	●	Highest BW	●	●	●	●	●	○	●	○	○	●
Occupied Bandwidth & 26dB Emission Bandwidth	N5 (824-849)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N38 (2570-2620)	○	●	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N41 (2496-2690)	○	●	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N77 (3700-3980)	○	●	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N78 (3700-3800)	○	●	All Supported BW	●	●	●	●	●	○	●	○	○	●
Conducted Band Edges	N5 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N38 (2570-2620)	○	●	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N41 (2496-2690)	○	●	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N77 (3700-3980)	○	●	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N78 (3700-3800)	○	●	All Supported BW	●	●	○	○	○	●	○	●	●	●
Conducted Spurious Emission	N5 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N38 (2570-2620)	○	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N41 (2496-2690)	○	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N77 (3700-3980)	○	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N78 (3700-3800)	○	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
Frequency Stability	N5 (824-849)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N38 (2570-2620)	○	●	Highest BW	○	●	○	○	○	○	●	○	○	●
	N41 (2496-2690)	○	●	Highest BW	○	●	○	○	○	○	●	○	○	●
	N77 (3700-3980)	○	●	Highest BW	○	●	○	○	○	○	●	○	○	●
	N78 (3700-3800)	○	●	Highest BW	○	●	○	○	○	○	●	○	○	●

Remark:

1, the mark "●" means this configuration was chosen for testing, mark "○" means not selected, and the mark "✘" means not applicable.

2, All Supported BW means all supported bandwidth for selected SCS configuration.

5.2. Test Frequencies

4.2.1 5G NR System

5.2.1.1. NR Band n5 (824-849)

5.2.1.1.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	165300	826.5	167300	836.5	169300	846.5
10MHz	165800	829.0	167300	836.5	168800	844.0
15MHZ	166300	831.5	167300	836.5	168300	841.5
20MHz	166800	834.0	167300	836.5	167800	839.0

5.2.1.2. NR Band n7 (2500-2570)

5.2.1.2.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	500500	2502.5	507000	2535.0	513500	2567.5
10MHz	501000	2505.0	507000	2535.0	513000	2565.0
15MHZ	501500	2507.5	507000	2535.0	512500	2562.5
20MHz	502000	2510.0	507000	2535.0	512000	2560.0
25MHz	502500	2512.5	507000	2535.0	511500	2557.5
30MHz	503000	2515.0	507000	2535.0	511000	2555.0
40MHz	504000	2520.0	507000	2535.0	510000	2550.0

5.2.1.3. NR Band n26 (814-824)

5.2.1.3.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	163300	816.5	163800	819.0	164300	821.5
10MHz	163800	819.0	163800	819.0	163800	819.0
15MHz	164300	821.5	164300	821.5	164300	821.5
20MHz	164800	824.0	164800	824.0	164800	824.0

5.2.1.4. NR Band n26 (824-849)

5.2.1.4.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	165300	826.5	167300	836.5	169300	846.5
10MHz	165800	829.0	167300	836.5	168800	844.0
15MHZ	166300	831.5	167300	836.5	168300	841.5
20MHz	166800	834.0	167300	836.5	167800	839.0

5.2.1.5. NR Band n38 (2570-2620)

5.2.1.5.1. SCS=30KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	515000	2575.0	519000	2595.0	525000	2625.0
15MHz	515500	2577.5	519000	2595.0	524500	2622.5
20MHz	516000	2580.0	519000	2595.0	522000	2610.0
30MHz	517000	2585.0	519000	2595.0	521000	2605.0
40MHz	518000	2590.0	519000	2595.0	520000	2600.0

5.2.1.6. NR Band n41 (2496-2690)

5.2.1.6.1. SCS=30KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	500202	2501.01	518598	2592.99	537000	2685.00
15MHz	500700	2503.50	518598	2592.99	536496	2682.48
20MHz	501204	2506.02	518598	2592.99	535998	2679.99
30MHz	502200	2511.00	518598	2592.99	534996	2674.98
40MHz	503202	2516.01	518598	2592.99	534000	2670.00
50MHz	504204	2521.02	518598	2592.99	532998	2664.99
60MHz	505200	2526.00	518598	2592.99	531996	2659.98
70MHz	506202	2531.01	518598	2592.99	531000	2655.00
80MHz	507204	2536.02	518598	2592.99	529998	2649.99
90MHz	508200	2541.00	518598	2592.99	528996	2644.98
100MHz	509202	2546.01	518598	2592.99	528000	2640.00

5.2.1.7. NR Band n77 (3700-3980)

5.2.1.7.1. SCS=30KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	741000	3705.00	656000	3840.00	665000	3975.00
15MHz	741504	3707.52	656000	3840.00	664832	3972.48
20MHz	647334	3710.01	656000	3840.00	664666	3969.99
30MHz	647668	3715.02	656000	3840.00	664332	3964.98
40MHz	648000	3720.00	656000	3840.00	664000	3960.00
50MHz	648334	3725.01	656000	3840.00	663666	3954.99
60MHz	648668	3730.02	656000	3840.00	663332	3949.98
70MHz	649000	3735.00	656000	3840.00	663000	3945.00
80MHz	649334	3740.01	656000	3840.00	662666	3939.99
90MHz	649668	3745.02	656000	3840.00	662332	3934.98
100MHz	650000	3750.00	656000	3840.00	662000	3930.00

5.2.1.8. NR Band N78 (3700-3800)

5.2.1.8.1. SCS=30KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	741000	3705.00	650000	3750.00	653000	3795.00
15MHz	741504	3707.52	650000	3750.00	652832	3792.48
20MHz	647334	3710.01	650000	3750.00	652666	3789.99
30MHz	647668	3715.02	650000	3750.00	652332	3784.98
40MHz	648000	3720.00	650000	3750.00	652000	3780.00
50MHz	648334	3725.01	650000	3750.00	651666	3774.99
60MHz	648668	3730.02	650000	3750.00	651332	3769.98
70MHz	649000	3735.00	650000	3750.00	651000	3765.00
80MHz	649334	3740.01	650000	3750.00	650666	3759.99
90MHz	649668	3745.02	650000	3750.00	650332	3754.98
100MHz	650000	3750.00	650000	3750.00	650000	3750.00

6. Description of Tests

6.1. Conducted Output Power Measurement

6.1.1. Description of Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT, Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

6.1.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.2.
2， The transmitter output port was connected to the system simulator.
3， Set EUT at maximum power through the system simulator.
4， Select lowest, Middle, Highest channels for each band and each modulation.
5， Record the reading power from the system simulator.

6.2. Effective (Isotropic) Radiated Power

Measurement Procedure: ANSI C63.26

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

6.3. Peak-to-Average Ratio Measurement

6.3.1. Description of PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis, A CCDF curve depicts the probability of peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument’s resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

6.3.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.2.3.4(CCDF)
2， Refer to instrument's analyser instruction manual for details on how to use the power statistics/CCDF function.
3， Centre Frequency = Carrier centre frequency.
4， Set resolution bandwidth ≥ signal's occupied bandwidth.
5， Set the number of counts to a value that stabilizes the measured CCDF curve.
6， Set the measurement interval as follows:
1) for continuous transmissions (>98% duty cycle), set to 1ms.
2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
7， Record the maximum PAR level associated with a probability of 0.1%.

6.3.3. Alternate procedure for PAR

Measurement Procedure: 5.2.6 of ANSI C63.26

Some regulatory requirements specify a PAR limit when the output power limits are specified in terms of average power. If it becomes necessary to provide measurement data to demonstrate compliance to a PAR limit, then the appropriate procedure from those provided in 5.2.3 shall be utilized to determine the peak power (or peak PSD) and the appropriate procedure from those provided in 5.2.4 shall be used to determine the average power (or average PSD). The data from these measurements is then used in Equation (2) to determine the PAR of a narrowband CW-like signal. See 5.2.3.4 for guidance on determining the PAR of a broadband noise-like signal.

PAR (dB) = P_{Pk} (dBm or dBW) − P_{Avg} (dBm or dBW)

where

PAR peak-to-average power ratio, in dB

P_{Pk} measured peak power or peak PSD level, in dBm or dBW

P_{Avg} measured average power or average PSD level, in dBm or dBW

6.4. 99% Occupied Bandwidth & 26dB Emission Bandwidth

6.4.1. Description of 99% Occupied Bandwidth & 26dB Emission Bandwidth Measurement

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel). The span of the analyser shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

6.4.2. Test Procedures

1, The testing follows ANSI C63.26 Section 5.4
2, The signal analyzer's automatic measurement capability was used to perform the 99% occupied bandwidth and the 26dB emission bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
3, RBW ⩾1% - 5% of the expected OBW.
4, VBW ⩾3 * RBW
5, Detector=Peak
6, Trace Mode= Max Hold.
7, Sweep Time=Auto
8, The trace was allowed to stabilize.
9, If necessary, steps 2-7 were repeated after changing the RBW such that it would be within 1%-5% of the 99% occupied bandwidth observed in step 7.

6.5. Conducted Band Edge Measurement

6.5.1. Description of Conducted Band Edge Measurement

The transmitter output was connected to a calibrated coaxial cable, attenuator and spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emissions are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyser was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.

6.5.2. Test Procedures

1, The testing follows ANSI C63.26 Section 5.7
2, Start and stop frequency were set such that the band edge would be placed in the centre of the spectrum analyzer screen.
3, Span was set large enough to capture all out of band emissions near the band edge.
4, RBW ⩾1% of the emission bandwidth (2% of the emission bandwidth for n7/n38/n41 except when 1MHz band is 2495-2496MHz);
5, VBW ⩾3 * RBW
6, Detector=RMS
7, Trace Mode=Trace Average for continuous emissions, Max Hold for pulse emissions.
8, Sweep Points ⩾2 x Span/RBW
9, Sweep Time = Auto
10, The trace was allowed to stabilize.

6.6. Conducted Spurious Emission Measurement

6.6.1. Description of Conducted Spurious Emission Measurement

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel). The level of the carrier and the various conducted spurious and harmonic frequencies is

measured by means of a calibrated spectrum analyser. The spectrum is scanned from 9KHz up to a frequency including its 10th harmonic or 40GHz, which is lower.

6.6.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.7
2， RBW ≥100KHz for emissions below 1GHz,1MHz for emissions above 1GHz.
3， VBW ≥3 * RBW
4， Detector = RMS
5， Trace Mode = Average.
6， Sweep Points ≥2 * Span/RBW
7， Sweep Time = Auto
8， The trace was allowed to stabilize.

6.7. Frequency Stability Measurement

6.7.1. Description of Frequency Stability Measurement

The Frequency Stability should be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emissions stays within the authorized frequency block.

6.7.2. Measurement Procedure for Temperature Variation

1, The testing follows ANSI C63.26 section 5.6.4.
2, The EUT was set up in the thermal chamber and connected with the system simulator.
3, With power off, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4， With power off, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum change in frequency was recorded within one minute.

6.7.3. Measurement Procedure for Voltage Variation

1, The testing follows ANSI C63.26 section 5.6.5.
2, The EUT was placed in a thermal chamber at 20±5°C and connected with the system simulator.
3, The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4， For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5， The variation in frequency was measured for the worst case.

7. List of Measuring Equipment

Equipment	Model	Manufacture	Device No.	Cal Date	Cal Due
Radio Communication Analyzer	SP9500	Starpoint	20703	2024-07-04	2025-07-03
	E7515E	Keysight	MY59296045	2023-12-07	2024-12-06
	MT8000A	Anritsu	6272478367	2024-07-03	2025-07-02
	MT8000A	Anritsu	6272427164	2023-12-07	2024-12-06
	MT8821C	Anritsu	6272374630	2023-12-06	2024-12-05
Spectrum Analyzer (50Hz-40GHz)	FSV	R&S	101046	2023-12-07	2024-12-06
	FSV	R&S	101334	2024-01-30	2025-01-29
Power Supply	2036	Keithley	4058748	2023-12-07	2024-12-06
Temperature Chamber	C/64/40/3	Weiss	56246017780020	2024-04-01	2025-03-31
Power Divider	-	WOKEN	0120A04051801O	NCR	
Power Divider	-	WOKEN	0120A02051801M	NCR	

Remark:

1, For equipment listed above that has a calibration date or calibration due date that falls within the test date range, and the equipment was used after calibrate date and before calibrate due date.

2, “NCR” means no calibration required.

8. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26. All the measurement uncertainties 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 directly to specified limit to determine compliance.

8.1. Uncertainty of Conducted Measurement

Contribution	Expanded Uncertainty
Conducted Power	± 0.77
Conducted Emission	± 0.76
Channel Bandwidth	± 0.08%

9. Appendixes

Appendix B.1	NR Band DC_7A_n5A (824-849)
Appendix B.2	NR Band n38A (2570-2620)
Appendix B.3	NR Band n41A (2496-2690)
Appendix B.4	NR Band n77A (3700-3980)
Appendix B.5	NR Band n78A (3700-3800)

10. Reference Report

FCC TEST REPORT

Name of Sample:	**Mobile Cellular Phone**
Model of Sample:	**XT2437-1, XT2437-2**
Applicant:	**Motorola Mobility LLC**
Issue Date:	**2024-08-26**

ADR TEST AND CERTIFICATION CENTER

Motorola Mobility LLC, a Lenovo Company

Add: No. 19, Gao Xin 4th Road Wuhan, People's Republic of China 430205
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Name of Client	Motorola Mobility LLC		
Address of Client	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA		
Trademark	Motorola	**Type Name or ID**	FCC ID: IHDT56AS8
Applicant No.	RF180631	**Sample No.**	1#: N1PR2G0104 2#: N1PR2G0114 3#: N1PR2G0115
Delivering Date	2024-07-23	**Test Date**	2024-07-23 to 2024-08-26
Sample Illustration	None		
Standard	47 CFR Part 2; 47 CFR Part 22; 47 CFR Part 24; 47 CFR Part 27; 47 CFR Part 90;		
Conclusion	Pass		
Remarks	N/A		

Editor: Wangzhenyu **Auditor:** Hexiaolin **Approver:** HuangshengLin

Wangzhenyu Hexiaolin Huangsheng Lin

Matters Needing Attention

a) The electronic report shall be valid after encryption.

b) The paper report shall be valid after being stamped with the official seal of the company.

c) The report is invalid without the signature of the Editor, Auditor and Approver.

d) The test report is invalid if there is any evidence of erasure and/or falsification.

e) If there is any dissidence for the test report, please file objection to the lab within 15 days from the date of receiving the test report.

f) The test report is only responsible for the tested model/sample. The sample(s) presented in this report are provided by client.

g) Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the lab.

Revision History

Report No.	Version	Description	Issued Date
TR-24ADRTCC7016	Rev.01	Initial issue of report	2024-08-13
TR-24ADRTCC7016	Rev.02	Update accessories information on page 12. Update VBW setting in OBW/EBW test and related data.	2024-08-26

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1. Test Summary

1.1. 5G NR Band n2

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§24.232(c)	EIRP < 2W		
Peak-Average Ratio	§24.232(d)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §24.238(a)	< -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §24.238(a)	< -13 dBm/MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Section 6 of Appendix B	Pass
Frequency Stability	§24.235	< ±2.5 ppm	Section 7 of Appendix B	Pass

1.2. 5G NR Band n5/n26

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Radiated Power	§22.913(a)(5)	ERP < 7W		
Peak-Average Ratio	§22.913(d)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §22.917(a)	< -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §22.917(a)	< -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges	Section 6 of Appendix B	Pass
Frequency Stability	§2.1055 §22.355	< ±2.5ppm	Section 7 of Appendix B	Pass

1.3. 5G NR Band n26 (814-824)

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046 §90.635	Report Only	Section 1 of Appendix B	PASS
Peak-Average Ratio	---	<13 dB	Section 2 of Appendix B	PASS
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	PASS
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	PASS
26dB Emission Bandwidth		No limit		
Emission Mask	§2.1051 § 90.691	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.	Section 5 of Appendix B	PASS
Conducted Spurious	§2.1051	< 43 + 10Log10(P[Watts]) for all out-of-band	Section 6 of	PASS

Test Item	Rule No.	Requirements	Test Result	Verdict
Emission	§90.691	emissions	Appendix B	
Frequency Stability	§90.213	< ±2.5ppm	Section 7 of Appendix B	PASS

1.4. 5G NR Band n7

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§27.50(h) (2)	EIRP < 2W		
Peak-Average Ratio	§27.50(a)	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §27.53(m) (4)	For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5MHz.	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §27.53(m) (4)	< -25 dBm/MHz for outside Band Edge Range	Section 6 of Appendix B	Pass
Frequency Stability	§27.54	Within authorized bands	Section 7 of Appendix B	Pass

1.5. 5G NR Band n66

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§27.50(d)	EIRP < 1W		
Peak-Average Ratio	---	<13 dB	Section 2 of Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §27.53(h)	< -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §27.53(h)	< -13 dBm/MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges	Section 6 of Appendix B	Pass
Frequency Stability	§27.54	Within authorized bands	Section 7 of Appendix B	Pass

1.6. 5G NR Band n78 (3450-3550)

Test Item	Rule No.	Requirements	Test Result	Verdict
Conducted Power	§2.1046	Report Only	Section 1 of Appendix B	Pass
Effective Isotropic Radiated Power	§27.50(k) (3)	EIRP < 1W		
Peak-Average Ratio	§27.50(k) (4)	<13 dB	Section 2 of	Pass

Test Item	Rule No.	Requirements	Test Result	Verdict
			Appendix B	
Modulation Characteristics	§2.1047	Digital modulation	Section 3 of Appendix B	Pass
Occupied Bandwidth	§2.1049	No limit	Section 4 of Appendix B	Pass
26dB Emission Bandwidth		No limit		
Conducted Band Edges	§2.1051 §27.53(n) (2)	< -13 dBm/MHz	Section 5 of Appendix B	Pass
Conducted Spurious Emission	§2.1051 §27.53(n) (2)	< -13 dBm/MHz	Section 6 of Appendix B	Pass
Frequency Stability	§27.54	Within authorized bands	Section 7 of Appendix B	Pass

Remark:

1, Only 5G NR Bands conducted test performed and the data displayed in this report, the radiated spurious emission refer to the report (FG471919).

2, The maximum E(I)RP is calculated from max output power and max antenna gain, only the max E(I)RP data displayed in this report, n5/n26 for Antenna 0; n2/n7/n66 for Antenna 1; n78 for antenna 5.

3, 5G NR Bands support SA mode for n2/n5/n7/n26/n66/n78 and NSA mode for n2/n7/n66/n78.

4, The test has been assessed on SA and NSA mode, but only the worst mode performed the whole conducted test items by referring to the max conducted power.

5, The ENDC combination could be referred to the product specification.

2. Maximum Effective Radiated (Isotropic) Power and Emission Designator

2.1. NR System

2.1.1. NR Band n2 (1850-1910)

5G SA (n2A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
5MHz	1852.5-1907.5	0.119674	4M50G7D	0.096383	4M51W7D
10MHz	1855.0-1905.0	0.118577	9M29G7D	0.095719	9M31W7D
15MHz	1857.5-1902.5	0.126474	14M1G7D	0.098855	14M2W7D
20MHz	1860.0-1900.0	0.127938	18M9G7D	0.099083	19M0W7D

5G NR NSA (DC_66A_n2A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
5MHz	1852.5-1907.5	0.112980	4M50G7D	0.088920	4M50W7D
10MHz	1855.0-1905.0	0.112720	9M30G7D	0.088920	9M31W7D
15MHz	1857.5-1902.5	0.115878	14M1G7D	0.093111	14M1W7D
20MHz	1860.0-1900.0	0.116950	18M9G7D	0.092257	19M0W7D

2.1.2. NR Band n5 (824-849)

5G NR SA (n5A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum ERP (W)	Emission Designator (99% OBW)	Maximum ERP (W)	Emission Designator (99% OBW)
5MHz	826.5-846.5	0.034674	4M48G7D	0.027353	4M50W7D
10MHz	829.0-844.0	0.033806	9M29G7D	0.026669	9M29W7D
15MHz	831.5-841.5	0.035563	14M1G7D	0.027416	14M2W7D
20MHz	834.0-839.0	0.035892	18M9G7D	0.027542	18M9W7D

2.1.3. NR Band n7 (2500-2570)

5G NR NSA (DC_2A_n7A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum ERP (W)	Emission Designator (99% OBW)	Maximum ERP (W)	Emission Designator (99% OBW)
5MHz	2502.5-2567.5	0.128825	4M50G7D	0.104954	4M51W7D
10MHz	2505.0-2565.0	0.138038	9M31G7D	0.109144	9M31W7D
15MHz	2507.5-2562.5	0.141579	14M1G7D	0.114551	14M2W7D
20MHz	2510.0-2560.0	0.142233	18M9G7D	0.115611	19M0W7D
25MHz	2512.5-2557.5	0.140281	23M8G7D	0.113240	23M8W7D
30MHz	2515.0-2555.0	0.138357	28M6G7D	0.110408	28M6W7D
40MHz	2520.0-2550.0	0.133968	38M7G7D	0.107399	38M6W7D

2.1.4. NR Band n26 (814-824)

5G NR SA (n26A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99% OBW)	Maximum Conducted Power (W)	Emission Designator (99% OBW)
5MHz	816.5-821.5	0.201372	4M50G7D	0.162930	4M49W7D
10MHz	819.0	0.197697	9M29G7D	0.157761	9M31W7D
15MHz	821.5	0.203236	14M1G7D	0.158489	14M2W7D
20MHz	824.0	0.202302	18M9G7D	0.160694	19M0W7D

2.1.5. NR Band n26 (824-849)

5G NR SA (n26A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum ERP (W)	Emission Designator (99% OBW)	Maximum ERP (W)	Emission Designator (99% OBW)
5MHz	826.5-846.5	0.036813	4M48G7D	0.029174	4M50W7D
10MHz	829.0-844.0	0.036559	9M29G7D	0.028708	9M31W7D
15MHz	831.5-841.5	0.037497	14M1G7D	0.029580	14M2W7D
20MHz	834.0-839.0	0.037670	18M9G7D	0.029444	18M9W7D

2.1.6. NR Band n66 (1710-1780)

5G NR SA (n66A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
5MHz	1712.5-1777.5	0.141254	4M50G7D	0.115080	4M49W7D
10MHz	1715.0-1775.0	0.140929	9M29G7D	0.112720	9M31W7D
15MHz	1717.5-1772.5	0.148252	14M1G7D	0.118032	14M1W7D
20MHz	1720.0-1770.0	0.147571	18M9G7D	0.116950	19M0W7D
25MHz	1722.5-1767.5	0.154170	23M8G7D	0.124451	23M8W7D
30MHz	1725.0-1765.0	0.149279	28M6G7D	0.117761	28M7W7D
35MHz	1727.5-1762.5	0.152757	33M6G7D	0.120781	33M6W7D
40MHz	1730.0-1760.0	0.147911	38M7G7D	0.116950	38M6W7D

5G NR NSA (DC_7A_n66A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
5MHz	1712.5-1777.5	0.092683	4M49G7D	0.115080	4M49W7D
10MHz	1715.0-1775.0	0.092045	9M28G7D	0.112720	9M31W7D
15MHz	1717.5-1772.5	0.093972	14M1G7D	0.118032	14M1W7D
20MHz	1720.0-1770.0	0.093756	18M9G7D	0.116950	19M0W7D
25MHz	1722.5-1767.5	0.094624	23M8G7D	0.124451	23M8W7D
30MHz	1725.0-1765.0	0.093111	28M6G7D	0.117761	28M6W7D
35MHz	1727.5-1762.5	0.094189	33M7G7D	0.120781	33M7W7D
40MHz	1730.0-1760.0	0.093111	38M7G7D	0.116950	38M6W7D

2.1.7. NR Band n78 (3450-3550)

5G NR NSA (DC_41A_n78A)		Pi/2 BPSK / QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
10MHz	3455.01-3544.98	0.161808	8M60G7D	0.130617	8M62W7D
15MHz	3457.50-3542.49	0.170216	13M6G7D	0.132434	13M6W7D
20MHz	3460.02-3540.00	0.173380	18M2G7D	0.140281	18M2W7D
30MHz	3465.00-3534.99	0.178238	27M9G7D	0.137721	27M9W7D
40MHz	3470.01-3529.98	0.174582	37M8G7D	0.138676	37M9W7D
50MHz	3475.02-3525.00	0.167494	47M4G7D	0.133045	47M5W7D
60MHz	3480.00-3519.99	0.167880	58M0G7D	0.137404	57M9W7D
70MHz	3485.01-3514.98	0.168655	67M6G7D	0.138357	67M6W7D
80MHz	3490.02-3510.00	0.160325	77M5G7D	0.131522	77M4W7D
90MHz	3495.00-3504.99	0.162181	87M3G7D	0.126183	87M5W7D
100MHz	3500.01	0.160694	97M3G7D	0.130617	97M5W7D

3. General Information

3.1. General Description of EUT

EUT Description:	Mobile Cellular Phone
Brand Name:	Motorola
Model Name:	XT2437-1, XT2437-2
FCC ID:	IHDT56AS8
IMEI Code:	1#: 355709740017758/355709740017766 (Conducted); 2#: 355709740017873/355709740017881 (Conducted); 3#: 355709740017733/355709740017741 (Conducted);
Hardware Version:	DVT2
Software Version:	U4UQ34.39
NR Modulation:	DFT-s-OFDM: ☒Pi/2BPSK; ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM; CP-OFDM: ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM;
Sample Type:	☒ Portable Device, ☐Module
Antenna Type:	☐External, ☒ Integrated
Antenna Gain:	n2 (1850-1910): -2.18dBi (Ant1); -3.00dBi (Ant4); n5 (824-849): -5.16dBi (Ant0); -5.70dBi (Ant4); n7 (2500-2570): -2.17dBi (Ant1); -2.00dBi (Ant4); n26 (814-849): -5.16dBi (Ant0); -4.30dBi (Ant4); n66 (1710-1780): -1.25dBi (Ant1); -3.80dBi (Ant4); n78 (3450-3550): -1.57dBi (Ant3); -1.15dBi (Ant5); -4.90dBi (Ant7); -3.26dBi (Ant9);

Remark

1, The information above was declared by manufacture. Please refer to the specifications or user manual for more detailed description.

3.2. Test Environment

Relative Humidity:	52.0% - 62.0%	
Atmospheric Pressure:	101.32 KPa	
Temperature:	NT (normal temperature)	25.0 °C – 27.5 °C
Voltage:	LV (Low voltage)	3.40V
	NV (Nominal voltage)	3.91V
	HV (High voltage)	4.50V

3.3. Specification of Accessories

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

4. Test Configuration of Equipment Under Test

4.1. Test Mode for NR Configuration

Test Case	5G NR	SCS		Bandwidth	Modulation					Channel			RB	
		15KHz	30KHz		Pi/2BPSK	QPSK	16QAM	64QAM	256QAM	LCH	MCH	HCH	1	Full
Effective Isotropic Radiated Power	N2 (1850-1910)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N5 (824-849)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N7 (2500-2570)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N26 (814-824)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N26 (824-849)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N66 (1710-1780)	●	○	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N78 (3450-3550)	○	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
Peak-Average Ratio	N2 (1850-1910)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N5 (824-849)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N7 (2500-2570)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N26 (814-824)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N26 (824-849)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N66 (1710-1780)	●	○	Highest BW	●	●	○	○	○	●	●	●	○	●
	N78 (3450-3550)	○	●	Highest BW	●	●	○	○	○	●	●	●	○	●
Modulation Characteristics	N2 (1850-1910)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N5 (824-849)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N7 (2500-2570)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N26 (814-824)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N26 (824-849)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N66 (1710-1780)	●	○	Highest BW	●	●	●	●	●	○	●	○	○	●
	N78 (3450-3550)	○	●	Highest BW	●	●	●	●	●	○	●	○	○	●
Occupied Bandwidth & 26dB Emission Bandwidth	N2 (1850-1910)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N5 (824-849)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N7 (2500-2570)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N26 (814-824)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N26 (824-849)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N66 (1710-1780)	●	○	All Supported BW	●	●	●	●	●	○	●	○	○	●
	N78 (3450-3550)	○	●	All Supported BW	●	●	●	●	●	○	●	○	○	●
Conducted Band Edges	N2 (1850-1910)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N5 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N7 (2500-2570)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N26 (814-824)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N26 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N66 (1710-1780)	●	○	All Supported BW	●	●	○	○	○	●	○	●	●	●
	N78 (3450-3550)	○	●	All Supported BW	●	●	○	○	○	●	○	●	●	●
Conducted Spurious Emission	N2 (1850-1910)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N5 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N7 (2500-2570)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N26 (814-824)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○

	N26 (824-849)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N66 (1710-1780)	●	○	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N78 (3450-3550)	○	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
Frequency Stability	N2 (1850-1910)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N5 (824-849)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N7 (2500-2570)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N26 (814-824)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N26 (824-849)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N66 (1710-1780)	●	○	Highest BW	○	●	○	○	○	○	●	○	○	●
	N78 (3450-3550)	○	●	Highest BW	○	●	○	○	○	○	●	○	○	●

Remark:

1, the mark "●" means this configuration was chosen for testing, mark "○" means not selected, and the mark "✘" means not applicable.

2, All Supported BW means all supported bandwidth for selected SCS configuration.

4.2. Test Frequencies

4.2.1 5G NR System

4.2.1.1. NR Band n2 (1850-1910)

4.2.1.1.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	370500	1852.5	376000	1880.0	381500	1907.5
10MHz	371000	1855.0	376000	1880.0	381000	1905.0
15MHZ	371500	1857.5	376000	1880.0	380500	1902.5
20MHz	372000	1860.0	376000	1880.0	380000	1900.0

4.2.1.2. NR Band n5 (824-849)

4.2.1.2.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	165300	826.5	167300	836.5	169300	846.5
10MHz	165800	829.0	167300	836.5	168800	844.0
15MHZ	166300	831.5	167300	836.5	168300	841.5
20MHz	166800	834.0	167300	836.5	167800	839.0

4.2.1.3. NR Band n7 (2500-2570)

4.2.1.3.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	500500	2502.5	507000	2535.0	513500	2567.5
10MHz	501000	2505.0	507000	2535.0	513000	2565.0
15MHZ	501500	2507.5	507000	2535.0	512500	2562.5
20MHz	502000	2510.0	507000	2535.0	512000	2560.0
25MHz	502500	2512.5	507000	2535.0	511500	2557.5
30MHz	503000	2515.0	507000	2535.0	511000	2555.0
40MHz	504000	2520.0	507000	2535.0	510000	2550.0

4.2.1.4. NR Band n26 (814-824)

4.2.1.4.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	163300	816.5	163800	819.0	164300	821.5
10MHz	163800	819.0	163800	819.0	163800	819.0
15MHz	164300	821.5	164300	821.5	164300	821.5
20MHz	164800	824.0	164800	824.0	164800	824.0

4.2.1.5. NR Band n26 (824-849)

4.2.1.5.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	165300	826.5	167300	836.5	169300	846.5
10MHz	165800	829.0	167300	836.5	168800	844.0
15MHZ	166300	831.5	167300	836.5	168300	841.5
20MHz	166800	834.0	167300	836.5	167800	839.0

4.2.1.6. NR Band n66 (1710-1780)

4.2.1.6.1. SCS=15KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	342500	1712.5	349000	1745.0	355500	1777.5
10MHz	343000	1715.0	349000	1745.0	355000	1775.0
15MHz	343500	1717.5	349000	1745.0	354500	1772.5
20MHz	344000	1720.0	349000	1745.0	354000	1770.0
25MHz	344500	1722.5	349000	1745.0	353500	1767.5
30MHz	345000	1725.0	349000	1745.0	353000	1765.0
35MHz	345500	1727.5	349000	1745.0	352500	1762.5
40MHz	346000	1730.0	349000	1745.0	352000	1760.0

4.2.1.7. NR Band N78 (3450-3550)

4.2.1.7.1. SCS=30KHz

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	630334	3455.01	633334	3500.01	636332	3544.98
15MHz	630500	3457.50	633334	3500.01	636166	3542.49
20MHz	630668	3460.02	633334	3500.01	636000	3540.00
30MHz	631000	3465.00	633334	3500.01	635666	3534.99
40MHz	631334	3470.01	633334	3500.01	635332	3529.98
50MHz	631668	3475.02	633334	3500.01	635000	3525.00
60MHz	632000	3480.00	633334	3500.01	634666	3519.99
70MHz	632334	3485.01	633334	3500.01	634332	3514.98
80MHz	632668	3490.02	633334	3500.01	634000	3510.00
90MHz	633000	3495.00	633334	3500.01	633666	3504.99
100MHz	633334	3500.01	633334	3500.01	633334	3500.01

5. Description of Tests

5.1. Conducted Output Power Measurement

5.1.1. Description of Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT, Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

5.1.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.2.
2， The transmitter output port was connected to the system simulator.
3， Set EUT at maximum power through the system simulator.
4， Select lowest, Middle, Highest channels for each band and each modulation.
5， Record the reading power from the system simulator.

5.2. Effective (Isotropic) Radiated Power

Measurement Procedure: ANSI C63.26

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

5.3. Peak-to-Average Ratio Measurement

5.3.1. Description of PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis, A CCDF curve depicts the probability of peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument’s resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.3.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.2.3.4(CCDF)
2， Refer to instrument’s analyser instruction manual for details on how to use the power statistics/CCDF function.
3， Centre Frequency = Carrier centre frequency.
4， Set resolution bandwidth ≥ signal’s occupied bandwidth.
5， Set the number of counts to a value that stabilizes the measured CCDF curve.
6， Set the measurement interval as follows:
   1) for continuous transmissions (>98% duty cycle), set to 1ms.
   2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
7， Record the maximum PAR level associated with a probability of 0.1%.

5.3.3. Alternate procedure for PAR

Measurement Procedure: 5.2.6 of ANSI C63.26

Some regulatory requirements specify a PAR limit when the output power limits are specified in terms of average power. If it becomes necessary to provide measurement data to demonstrate compliance to a PAR

limit, then the appropriate procedure from those provided in 5.2.3 shall be utilized to determine the peak power (or peak PSD) and the appropriate procedure from those provided in 5.2.4 shall be used to determine the average power (or average PSD). The data from these measurements is then used in Equation (2) to determine the PAR of a narrowband CW-like signal. See 5.2.3.4 for guidance on determining the PAR of a broadband noise-like signal.

PAR (dB) = P_{Pk} (dBm or dBW) − P_{Avg} (dBm or dBW)

where

PAR peak-to-average power ratio, in dB

P_{Pk} measured peak power or peak PSD level, in dBm or dBW

P_{Avg} measured average power or average PSD level, in dBm or dBW

5.4. 99% Occupied Bandwidth & 26dB Emission Bandwidth

5.4.1. Description of 99% Occupied Bandwidth & 26dB Emission Bandwidth Measurement

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel). The span of the analyser shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

5.4.2. Test Procedures

1, The testing follows ANSI C63.26 Section 5.4
2, The signal analyzer's automatic measurement capability was used to perform the 99% occupied bandwidth and the 26dB emission bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
3, RBW ⩾1% - 5% of the expected OBW.
4, VBW ⩾3 * RBW
5, Detector=Peak
6, Trace Mode= Max Hold.
7, Sweep Time=Auto
8, The trace was allowed to stabilize.
9, If necessary, steps 2-7 were repeated after changing the RBW such that it would be within 1%-5% of the 99% occupied bandwidth observed in step 7.

5.5. Conducted Band Edge Measurement

5.5.1. Description of Conducted Band Edge Measurement

The transmitter output was connected to a calibrated coaxial cable, attenuator and spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to

force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emissions are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyser was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.

5.5.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.7
2， Start and stop frequency were set such that the band edge would be placed in the centre of the spectrum analyzer screen.
3， Span was set large enough to capture all out of band emissions near the band edge.
4， RBW ⩾1% of the emission bandwidth (2% of the emission bandwidth for n7/n38/n41 except when 1MHz band is 2495-2496MHz);
5， VBW ⩾3 * RBW
6， Detector=RMS
7， Trace Mode=Trace Average for continuous emissions, Max Hold for pulse emissions.
8， Sweep Points ⩾2 x Span/RBW
9， Sweep Time = Auto
10， The trace was allowed to stabilize.

5.6. Conducted Spurious Emission Measurement

5.6.1. Description of Conducted Spurious Emission Measurement

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel). The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyser. The spectrum is scanned from 9KHz up to a frequency including its 10th harmonic or 40GHz, which is lower.

5.6.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.7
2， RBW ⩾100KHz for emissions below 1GHz,1MHz for emissions above 1GHz.
3， VBW ⩾3 * RBW
4， Detector = RMS
5， Trace Mode = Average.
6， Sweep Points ⩾2 * Span/RBW
7， Sweep Time = Auto
8， The trace was allowed to stabilize.

5.7. Frequency Stability Measurement

5.7.1. Description of Frequency Stability Measurement

The Frequency Stability should be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emissions stays within the authorized frequency block.

5.7.2. Measurement Procedure for Temperature Variation

1, The testing follows ANSI C63.26 section 5.6.4.
2, The EUT was set up in the thermal chamber and connected with the system simulator.
3, With power off, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4, With power off, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum change in frequency was recorded within one minute.

5.7.3. Measurement Procedure for Voltage Variation

1, The testing follows ANSI C63.26 section 5.6.5.
2, The EUT was placed in a thermal chamber at 20±5°C and connected with the system simulator.
3, The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4, For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5, The variation in frequency was measured for the worst case.

6. List of Measuring Equipment

Equipment	Model	Manufacture	Device No.	Cal Date	Cal Due
Radio Communication Analyzer	SP9500	Starpoint	20703	2024-07-04	2025-07-03
	E7515E	Keysight	MY59296045	2023-12-07	2024-12-06
	MT8000A	Anritsu	6272478367	2024-07-03	2025-07-02
	MT8000A	Anritsu	6272427164	2023-12-07	2024-12-06
	MT8821C	Anritsu	6272374630	2023-12-06	2024-12-05
Spectrum Analyzer (50Hz-40GHz)	FSV	R&S	101046	2023-12-07	2024-12-06
	FSV	R&S	101334	2024-01-30	2025-01-29
Power Supply	2036	Keithley	4058748	2023-12-07	2024-12-06
Temperature Chamber	C/64/40/3	Weiss	56246017780020	2024-04-01	2025-03-31
Power Divider	-	WOKEN	0120A04051801O	NCR	
Power Divider	-	WOKEN	0120A02051801M	NCR	

Remark:

1, For equipment listed above that has a calibration date or calibration due date that falls within the test date range, and the equipment was used after calibrate date and before calibrate due date.
2, “NCR” means no calibration required.

7. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26. All the measurement uncertainties 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 directly to specified limit to determine compliance.

7.1. Uncertainty of Conducted Measurement

Contribution	Expanded Uncertainty
Conducted Power	± 0.77
Conducted Emission	± 0.76
Channel Bandwidth	± 0.08%

8. Appendixes

Appendix B.1	NR Band n2A (1850-1910)
Appendix B.2	NR Band n5A (824-849)
Appendix B.3	NR Band DC_2A_n7A (2500-2570)
Appendix B.4	NR Band n26A (814-824)
Appendix B.5	NR Band n26A (824-849)
Appendix B.6	NR Band n66A (1710-1780)
Appendix B.7	NR Band DC_41A_n78A (3450-3550)
Appendix B.8	NR Band DC_66A_n2A (1850-1910)
Appendix B.9	NR Band DC_7A_n66A (1710-1780)

The End