

# FCC TEST REPORT

**Name of Sample:** Mobile Cellular Phone  
**Model of Sample:** XT2453-1  
**Applicant:** Motorola Mobility LLC  
**Issue Date:** 2024-06-26



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<b>Applicant No.</b>	RF175500	<b>Sample No.</b>	1#: NZ4R250001 2#: NZ4R250006
<b>Delivering Date</b>	2024-03-10	<b>Test Date</b>	2024-03-11 to 2024-05-08
<b>Sample Illustration</b>	None		
<b>Standard</b>	47 CFR Part 2; 47 CFR Part 22; 47 CFR Part 24; 47 CFR Part 27; 47 CFR Part 90;		
<b>Conclusion</b>	Pass		
<b>Remarks</b>	N/A		

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### Revision History

Report No.	Version	Description	Issued Date
TR-24ADRTCC7008	Rev.01	Initial issue of report	2024-04-23
TR-24ADRTCC7008	Rev.02	Add n41 UL MIMO Add two PA worked with the same RF components description	2024-05-08
TR-24ADRTCC7008	Rev.03	Remove n71	2024-06-26

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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 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

### 1.3. 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

**1.4. 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 + 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	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 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 Log <sub>10</sub> (f/6.1) decibels or 50+10Log <sub>10</sub> (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 + 10Log <sub>10</sub> (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

**1.6. 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	Pass

Test Item	Rule No.	Requirements	Test Result	Verdict
26dB Emission Bandwidth		No limit	Appendix B	
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 (422203-01).
- 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.
- 3, 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.
- 4, The ENDC combination could be referred to the product specification.
- 5, 5G NR n77/n78 supports HPUE mode.
- 6, 5G NR n41 UL MIMO supports CP-OFDM Mode only.
- 7, There are two paths one path for SA and the other path for NSA, the two paths are same RF components, thus RF only verify the power for two paths, and full test the path with maximum power.

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

### 2.1. NR System

#### 2.1.1. NR Band n2 (1850-1910)

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	0.112460	4M49G7D	0.097275	4M48W7D
10MHz	1855.0-1905.0	0.116681	9M29G7D	0.103992	9M29W7D
15MHz	1857.5-1902.5	0.114815	14M1G7D	0.100000	14M2W7D
20MHz	1860.0-1900.0	0.115080	18M9G7D	0.101158	18M9W7D
25MHz	1862.5-1897.5	0.113240	23M7G7D	0.099541	23M7W7D
30MHz	1865.0-1895.0	0.116145	28M5G7D	0.101391	28M5W7D
35MHz	1867.5-1892.5	0.115878	33M6G7D	0.100000	33M5W7D
40MHz	1870.0-1890.0	0.115080	38M5G7D	0.099312	38M5W7D

#### 2.1.2. NR Band n5 (824-849)

5G NR NSA (DC_66A_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	0.052000	4M49G7D	0.043152	4M48W7D
10MHz	829.0-844.0	0.054075	9M27G7D	0.045814	9M29W7D
15MHz	831.5-841.5	0.052845	14M1G7D	0.043652	14M2W7D
20MHz	834.0-839.0	0.052360	18M9G7D	0.043954	18M9W7D

#### 2.1.3. NR Band n7 (2500-2570)

5G NR NSA (DC_4A_n7A)		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	2502.5-2567.5	0.094406	4M49G7D	0.078705	4M48W7D
10MHz	2505.0-2565.0	0.101859	9M27G7D	0.080724	9M29W7D
15MHz	2507.5-2562.5	0.101859	14M1G7D	0.081658	14M2W7D
20MHz	2510.0-2560.0	0.103039	18M9G7D	0.081470	18M9W7D
25MHz	2512.5-2557.5	0.100231	23M8G7D	0.079799	23M8W7D
30MHz	2515.0-2555.0	0.100693	28M6G7D	0.080353	28M6W7D
35MHz	2517.5-2552.5	0.101625	33M6G7D	0.080353	33M6W7D
40MHz	2520.0-2550.0	0.097275	38M6G7D	0.082985	38M5W7D
50MHz	2525.0-2545.0	0.096828	48M5G7D	0.082224	48M2W7D



**2.1.4. NR Band n26 (814-824)**

5G NR NSA (DC_7A_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	0.221820	4M49G7D	0.180717	4M49W7D
10MHz	819.0	0.223357	9M25G7D	0.183654	9M29W7D
15MHz	821.5	0.221820	14M1G7D	0.181552	14M1W7D
20MHz	824.0	0.215774	18M9G7D	0.177419	18M9W7D

**2.1.5. NR Band n26 (824-849)**

5G NR NSA (DC_7A_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	0.051404	4M48G7D	0.042462	4M48W7D
10MHz	829.0-844.0	0.052845	9M29G7D	0.044055	9M29W7D
15MHz	831.5-841.5	0.052966	14M1G7D	0.043152	14M2W7D
20MHz	834.0-839.0	0.052966	18M9G7D	0.043152	18M9W7D

**2.1.6. NR Band n38 (2570-2620)**

5G NR NSA (DC_4A_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)
5MHz	2572.5-2617.5	0.101158	4M49G7D	0.080724	4M48W7D
10MHz	2575.0-2615.0	0.101391	9M25G7D	0.080910	9M29W7D
15MHz	2577.5-2612.5	0.102329	14M1G7D	0.081283	14M1W7D
20MHz	2580.0-2610.0	0.101859	18M9G7D	0.081096	18M9W7D
25MHz	2582.5-2607.5	0.100693	23M7G7D	0.080168	23M8W7D
30MHz	2585.0-2605.0	0.102329	28M5G7D	0.080353	28M5W7D
40MHz	2590.0-2600.0	0.103039	38M5G7D	0.082224	38M5W7D

**2.1.7. NR Band n41 (2496-2690)**

5G NR SA (n41A UL MIMO)		QPSK		16QAM/64QAM/256QAM	
Bandwidth	Frequency Range (MHz)	Maximum EIRP (W)	Emission Designator (99% OBW)	Maximum EIRP (W)	Emission Designator (99% OBW)
5MHz	2498.51-2687.50	0.076913	4M47G7D	0.067298	4M48W7D
10MHz	2501.01-2685.00	0.075509	9M27G7D	0.069984	9M29W7D
15MHz	2503.50-2682.48	0.078163	14M1G7D	0.068549	14M2W7D
20MHz	2506.02-2679.99	0.076208	18M9G7D	0.068707	18M9W7D
25MHz	2508.51-2677.50	0.075162	23M7G7D	0.069024	23M8W7D
30MHz	2511.00-2674.98	0.074989	28M5G7D	0.068707	28M6W7D

35MHz	2513.50-2672.48	0.076560	33M6G7D	0.066374	33M6W7D
40MHz	2516.01-2670.00	0.075858	38M5G7D	0.067608	38M6W7D
45MHz	2518.51-2667.50	0.075858	43M2G7D	0.069663	43M2W7D
50MHz	2521.02-2664.99	0.076384	48M2G7D	0.067143	48M2W7D
60MHz	2526.00-2659.98	0.075509	57M8G7D	0.067608	57M8W7D
70MHz	2531.01-2655.00	0.078163	67M4G7D	0.068549	67M4W7D
80MHz	2536.02-2649.99	0.075683	77M4G7D	0.068707	77M4W7D
90MHz	2541.00-2644.98	0.076736	87M4G7D	0.067764	87M6W7D
100MHz	2546.01-2640.00	0.076208	97M3G7D	0.069663	97M5W7D

5G NR NSA (DC_66A_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)
5MHz	2498.51-2687.50	0.105925	4M48G7D	0.085507	4M47W7D
10MHz	2501.01-2685.00	0.105439	9M25G7D	0.086896	9M27W7D
15MHz	2503.50-2682.48	0.105682	14M1G7D	0.081846	14M1W7D
20MHz	2506.02-2679.99	0.105925	18M9G7D	0.083946	18M9W7D
25MHz	2508.51-2677.50	0.104232	23M7G7D	0.081283	23M8W7D
30MHz	2511.00-2674.98	0.104713	28M5G7D	0.082604	28M5W7D
35MHz	2513.50-2672.48	0.103039	33M5G7D	0.085114	33M6W7D
40MHz	2516.01-2670.00	0.103992	38M5G7D	0.082985	38M5W7D
45MHz	2518.51-2667.50	0.103753	43M2G7D	0.082414	43M2W7D
50MHz	2521.02-2664.99	0.104713	48M2G7D	0.080910	48M2W7D
60MHz	2526.00-2659.98	0.104954	57M8G7D	0.082604	57M8W7D
70MHz	2531.01-2655.00	0.107647	67M4G7D	0.082604	67M3W7D
80MHz	2536.02-2649.99	0.112460	77M4G7D	0.083560	77M4W7D
90MHz	2541.00-2644.98	0.109144	87M4G7D	0.084333	87M2W7D
100MHz	2546.01-2640.00	0.109396	97M3G7D	0.083368	97M3W7D

2.1.8. NR Band n66 (1710-1780)

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	0.098175	4M49G7D	0.083176	4M48W7D
10MHz	1715.0-1775.0	0.097724	9M29G7D	0.083176	9M29W7D
15MHz	1717.5-1772.5	0.097275	14M1G7D	0.082794	14M2W7D
20MHz	1720.0-1770.0	0.096828	18M9G7D	0.085704	18M9W7D
25MHz	1722.5-1767.5	0.096828	23M8G7D	0.083176	23M8W7D
30MHz	1725.0-1765.0	0.097051	28M6G7D	0.083753	28M5W7D
35MHz	1727.5-1762.5	0.095499	33M6G7D	0.082604	33M5W7D
40MHz	1730.0-1760.0	0.095940	38M6G7D	0.083176	38M5W7D

**2.1.9. NR Band n77 (3700-3980)**

5G NR NSA (DC_7A_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	9M27G7D	0.252930	9M27W7D
15MHz	3707.52-3972.48	0.312608	14M1G7D	0.248313	14M1W7D
20MHz	3710.01-3969.99	0.315500	18M9G7D	0.246604	18M9W7D
25MHz	3712.50-3967.50	0.314775	23M8G7D	0.248886	23M8W7D
30MHz	3715.02-3964.98	0.317687	28M5G7D	0.250611	28M5W7D
40MHz	3720.00-3960.00	0.323594	38M5G7D	0.248886	38M5W7D
50MHz	3725.01-3954.99	0.319890	48M2G7D	0.247742	48M2W7D
60MHz	3730.02-3949.98	0.321366	57M9G7D	0.248313	57M9W7D
70MHz	3735.00-3945.00	0.316957	67M4G7D	0.248886	67M4W7D
80MHz	3740.01-3939.99	0.317687	77M5G7D	0.252930	77M5W7D
90MHz	3745.02-3934.98	0.320627	87M4G7D	0.251189	87M4W7D
100MHz	3750.00-3930.00	0.322107	97M5G7D	0.251189	97M5W7D

**2.1.10. NR Band n78 (3700-3800)**

5G NR NSA (DC_2A_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	0.307610	9M25G7D	0.248886	9M27W7D
15MHz	3707.52-3792.48	0.303389	14M1G7D	0.241546	14M1W7D
20MHz	3710.01-3789.99	0.308319	18M9G7D	0.243220	18M9W7D
25MHz	3712.50-3787.50	0.309030	23M7G7D	0.243781	23M8W7D
30MHz	3715.02-3784.98	0.308319	28M5G7D	0.244343	28M5W7D
40MHz	3720.00-3780.00	0.316957	38M6G7D	0.242661	38M5W7D
50MHz	3725.01-3774.99	0.316228	48M2G7D	0.245471	48M2W7D
60MHz	3730.02-3769.98	0.317687	57M9G7D	0.240991	57M9W7D
70MHz	3735.00-3765.00	0.322107	67M4G7D	0.245471	67M4W7D
80MHz	3740.01-3759.99	0.323594	77M5G7D	0.244343	77M5W7D
90MHz	3745.02-3754.98	0.322107	87M4G7D	0.242661	87M6W7D
100MHz	3750.00	0.319154	97M5G7D	0.239883	97M5W7D

### 3. General Information

#### 3.1. General Description of EUT

EUT Description:	Mobile Cellular Phone
Brand Name:	Motorola
Model Name:	XT2453-1
FCC ID:	IHDT56AR8
IMEI Code:	1#: 354373470016612/354373470016620 (Conducted); 2#: 354373470016059/354373470016067 (Conducted);
Hardware Version:	DVT2
Software Version:	U3UC34.23
NR Modulation:	DFT-s-OFDM: <input checked="" type="checkbox"/> Pi/2BPSK; <input checked="" type="checkbox"/> QPSK; <input checked="" type="checkbox"/> 16QAM; <input checked="" type="checkbox"/> 64QAM; <input checked="" type="checkbox"/> 256QAM; CP-OFDM: <input checked="" type="checkbox"/> QPSK; <input checked="" type="checkbox"/> 16QAM; <input checked="" type="checkbox"/> 64QAM; <input checked="" type="checkbox"/> 256QAM;
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated
Antenna Gain:	n2: -2.41dBi (Ant0); -3.16dBi (Ant1); -2.28dBi (Ant2); -2.73dBi (Ant3); n5: -3.82dBi (Ant0); -4.93dBi (Ant1); n7: -1.33dBi (Ant0); -1.33dBi (Ant1); -3.56dBi (Ant2); -3.48dBi (Ant3); n26: -3.82dBi (Ant0); -4.93dBi (Ant1); n38: 0.01dBi (Ant0); -0.66dBi (Ant1); -3.13dBi (Ant2); -3.30dBi (Ant3); n41: 0.01dBi (Ant0); -0.66dBi (Ant1); -3.13dBi (Ant2); -3.30dBi (Ant3); n66: -2.18dBi (Ant0); -1.88dBi (Ant1); -2.18dBi (Ant2); -3.41 dBi (Ant3); n77: -5.82dBi (Ant3); -1.89dBi (Ant4); -2.96dBi (Ant6); -3.00dBi (Ant8); n78: -5.82dBi (Ant3); -1.89dBi (Ant4); -2.96dBi (Ant6); -3.00dBi (Ant8);

Remark

- 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)	3.88V
	HV (High voltage)	4.48V

**3.3. Specification of Accessories**

Accessory	Brand Name	Model Name
AC Adapter 1	Motorola (Chenyang)	MC-331
AC Adapter 2	Motorola (Chenyang)	MC-332
AC Adapter 3	Motorola (Chenyang)	MC-335
AC Adapter 4	Motorola (Chenyang)	MC-336
AC Adapter 5	Motorola (Chenyang)	MC-337
AC Adapter 6	Motorola (Chenyang)	MC-338
AC Adapter 7	Motorola (AOHAI)	MC-331
AC Adapter 8	Motorola (AOHAI)	MC-332
AC Adapter 9	Motorola (AOHAI)	MC-333
AC Adapter 10	Motorola (AOHAI)	MC-334
AC Adapter 11	Motorola (Salcomp)	MC-331
AC Adapter 12	Motorola (Salcomp)	MC-332
AC Adapter 13	Motorola (Salcomp)	MC-333
AC Adapter 14	Motorola (Salcomp)	MC-334
AC Adapter 15	Motorola (Salcomp)	MC-335
AC Adapter 16	Motorola (Salcomp)	MC-336
AC Adapter 17	Motorola (Salcomp)	MC-337
AC Adapter 18	Motorola (Salcomp)	MC-338
AC Adapter 19	Motorola (Salcomp)	MC-339
AC Adapter 20	Motorola (Salcomp)	MC-330
AC Adapter 21	Motorola (XIH)	MC-334
AC Adapter 22	Motorola (Cliptech)	MC-337
Battery 1	Motorola	QR11
Battery 2	Motorola	QR31
USB Cable 1	Motorola (Saibao)	SC18D22297
USB Cable 2	Motorola (Cabletech)	SC18D22298
Wireless Earphones	Motorola	XT2441-1

**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	●	●	●	●	●	●	●	●	●	●
	N38 (2570-2620)	●	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N41 (2496-2690)	●	●	All Supported BW	●	●	●	●	●	●	●	●	●	●
	N66 (1710-1780)	●	●	All Supported BW	●	●	●	●	●	●	●	●	●	●

	N77 (3700-3980)	●	●	All Supported BW	●	●	●	●	●	●	●	●	●
	N78(3700-3800)	●	●	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	●	●	○	○	○	●	●	●	○
	N38 (2570-2620)	●	●	Highest BW	●	●	○	○	○	●	●	●	○
	N41 (2496-2690)	●	●	Highest BW	●	●	○	○	○	●	●	●	○
	N66 (1710-1780)	●	●	Highest BW	●	●	○	○	○	●	●	●	○
	N77 (3700-3980)	●	●	Highest BW	●	●	○	○	○	●	●	●	○
	N78(3700-3800)	●	●	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	●	●	●	●	●	○	●	○	○
	N38 (2570-2620)	●	●	Highest BW	●	●	●	●	●	○	●	○	○
	N41 (2496-2690)	●	●	Highest BW	●	●	●	●	●	○	●	○	○
	N66 (1710-1780)	●	●	Highest BW	●	●	●	●	●	○	●	○	○
	N77 (3700-3980)	●	●	Highest BW	●	●	●	●	●	○	●	○	○
N78(3700-3800)	●	●	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	●	●	●	●	●	○	●	○	○
	N38 (2570-2620)	●	●	All Supported BW	●	●	●	●	●	○	●	○	○
	N41 (2496-2690)	●	●	All Supported BW	●	●	●	●	●	○	●	○	○
	N66 (1710-1780)	●	●	All Supported BW	●	●	●	●	●	○	●	○	○
	N77 (3700-3980)	●	●	All Supported BW	●	●	●	●	●	○	●	○	○
N78(3700-3800)	●	●	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	●	●	○	○	○	●	○	●	●
	N38 (2570-2620)	●	●	All Supported BW	●	●	○	○	○	●	○	●	●
	N41 (2496-2690)	●	●	All Supported BW	●	●	○	○	○	●	○	●	●
	N66 (1710-1780)	●	●	All Supported BW	●	●	○	○	○	●	○	●	●
	N77 (3700-3980)	●	●	All Supported BW	●	●	○	○	○	●	○	●	●
N78(3700-3800)	●	●	All Supported BW	●	●	○	○	○	●	○	●	●	
Conducted Spurious	N2 (1850-1910)	●	●	All Supported BW	●	●	○	○	○	●	●	●	○
	N5 (824-849)	●	●	All Supported BW	●	●	○	○	○	●	●	●	○

Emission	N7 (2500-2570)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N26 (814-824)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N26 (824-849)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N38 (2570-2620)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N41 (2496-2690)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N66 (1710-1780)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N77 (3700-3980)	●	●	All Supported BW	●	●	○	○	○	●	●	●	●	○
	N78(3700-3800)	●	●	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	○	●	○	○	○	○	●	○	○	●
	N38 (2570-2620)	●	●	Highest BW	○	●	○	○	○	○	●	○	○	●
	N41 (2496-2690)	●	●	Highest BW	○	●	○	○	○	○	●	○	○	●
	N66 (1710-1780)	●	●	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.

**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
25MHz	372500	1862.5	376000	1880.0	379500	1897.5
30MHz	373000	1865.0	376000	1880.0	379000	1895.0
35MHz	373500	1867.5	376000	1880.0	378500	1892.5
40MHz	374000	1870.0	376000	1880.0	378000	1890.0

**4.2.1.1.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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
25MHz	372500	1862.5	376000	1880.0	379500	1897.5

30MHz	373000	1865.0	376000	1880.0	379000	1895.0
35MHz	373500	1867.5	376000	1880.0	378500	1892.5
40MHz	374000	1870.0	376000	1880.0	378000	1890.0

**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

**4.2.1.2.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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
35MHz	503500	2517.5	507000	2535.0	510500	2552.5
40MHz	504000	2520.0	507000	2535.0	510000	2550.0
50MHz	505000	2525.0	507000	2535.0	509000	2545.0



**4.2.1.3.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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
35MHz	503500	2517.5	507000	2535.0	510500	2552.5
40MHz	504000	2520.0	507000	2535.0	510000	2550.0
50MHz	505000	2525.0	507000	2535.0	509000	2545.0

**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

**4.2.1.4.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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

**4.2.1.5.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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 n38 (2570-2620)**

**4.2.1.6.1. SCS=15KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	514500	2572.5	519000	2595.0	523500	2617.5
10MHz	515000	2575.0	519000	2595.0	523000	2615.0
15MHz	515500	2577.5	519000	2595.0	522500	2612.5
20MHz	516000	2580.0	519000	2595.0	522000	2610.0
25MHz	516500	2582.5	519000	2595.0	521500	2607.5
30MHz	517000	2585.0	519000	2595.0	521000	2605.0
40MHz	518000	2590.0	519000	2595.0	520000	2600.0

**4.2.1.6.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	515000	2575.0	519000	2595.0	523000	2615.0
15MHz	515500	2577.5	519000	2595.0	522500	2612.5
20MHz	516000	2580.0	519000	2595.0	522000	2610.0
25MHz	516500	2582.5	519000	2595.0	521500	2607.5
30MHz	517000	2585.0	519000	2595.0	521000	2605.0
40MHz	518000	2590.0	519000	2595.0	520000	2600.0

**4.2.1.7. NR Band n41 (2496-2690)**

**4.2.1.7.1. SCS=15KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
5MHz	499701	2498.505	518601	2593.005	537500	2687.50
10MHz	500202	2501.01	518601	2593.005	537000	2685.00
15MHz	500700	2503.50	518601	2593.005	536496	2682.48
20MHz	501204	2506.02	518601	2593.005	535998	2679.99
25MHz	501702	2508.51	518601	2593.005	535500	2677.50
30MHz	502200	2511.00	518601	2593.005	534996	2674.98
35MHz	502701	2513.505	518601	2593.005	534500	2672.50
40MHz	503202	2516.01	518601	2593.005	534000	2670.00
45MHz	503700	2518.50	518601	2593.005	533500	2667.50
50MHz	504202	2521.005	518601	2593.005	532998	2664.99

**4.2.1.7.2. 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
25MHz	501702	2508.01	518598	2592.99	535500	2677.50
30MHz	502200	2511.00	518598	2592.99	534996	2674.98

35MHz	502701	2513.505	518598	2592.99	534500	2672.50
40MHz	503202	2516.01	518598	2592.99	534000	2670.00
45MHz	503700	2518.50	518598	2592.99	533500	2667.50
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

**4.2.1.8. NR Band n66 (1710-1780)**

**4.2.1.8.1. 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

**4.2.1.8.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
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

**4.2.1.9. NR Band N77 (3700-3980)**

**4.2.1.9.1. SCS=15KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	647000	3705.00	656000	3840.00	665000	3975.00
15MHz	647168	3707.52	656000	3840.00	664832	3972.48
20MHz	647334	3710.01	656000	3840.00	664666	3969.99
25MHz	647500	3712.50	656000	3840.00	664500	3967.50
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

**4.2.1.9.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	647000	3705.00	656000	3840.00	665000	3975.00
15MHz	647168	3707.52	656000	3840.00	664832	3972.48
20MHz	647334	3710.01	656000	3840.00	664666	3969.99
25MHz	647500	3712.50	656000	3840.00	664500	3967.50
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

**4.2.1.10. NR Band N78 (3700-3800)**

**4.2.1.10.1. SCS=15KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	647000	3705.00	650000	3750.00	653000	3795.00
15MHz	647168	3707.52	650000	3750.00	652832	3792.48
20MHz	647334	3710.01	650000	3750.00	652666	3789.99
25MHz	647500	3712.50	650000	3750.00	652500	3787.50
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

**4.2.1.10.2. SCS=30KHz**

Bandwidth	LCH		MCH		HCH	
	Arfcn	Freq	Arfcn	Freq	Arfcn	Freq
10MHz	647000	3705.00	650000	3750.00	653000	3795.00
15MHz	647168	3707.52	650000	3750.00	652832	3792.48
20MHz	647334	3710.01	650000	3750.00	652666	3789.99
25MHz	647500	3712.50	650000	3750.00	652500	3787.50
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

## 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  $\geq$  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.

$$\text{PAR (dB)} = P_{\text{Pk}} (\text{dBm or dBW}) - P_{\text{Avg}} (\text{dBm or dBW})$$

where

PAR peak-to-average power ratio, in dB

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

$P_{\text{Avg}}$  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,  $\text{RBW} \geq 1\% - 5\%$  of the expected OBW.
- 4,  $\text{VBW} \geq 3 * \text{RBW}$
- 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  $\geq$ 1% of the emission bandwidth (2% of the emission bandwidth for n7/n38/n41 except when 1MHz band is 2495-2496MHz);
- 5, VBW  $\geq$ 3 \* RBW
- 6, Detector=RMS
- 7, Trace Mode=Trace Average for continuous emissions, Max Hold for pulse emissions.
- 8, Sweep Points  $\geq$ 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  $\geq$ 100KHz for emissions below 1GHz,1MHz for emissions above 1GHz.
- 3, VBW  $\geq$ 3 \* RBW
- 4, Detector = RMS
- 5, Trace Mode = Average.
- 6, Sweep Points  $\geq$ 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	MT8000A	Anritsu	6272478367	2023-12-07	2024-12-06
	MT8821C	Anritsu	6272498303	2023-12-07	2024-12-06
Spectrum Analyzer (50Hz-40GHz)	FSV	R&S	101046	2023-12-07	2024-12-06
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	0120A02056002D	NCR	

Remark:

- 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.
- “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 DC_66A_n2A (1850-1910)
Appendix B.2	NR Band DC_66A_n5A (824-849)
Appendix B.3	NR Band DC_4A_n7A (2500-2570)
Appendix B.4	NR Band DC_7A_n26A (814-824)
Appendix B.5	NR Band DC_7A_n26A (824-849)
Appendix B.6	NR Band DC_4A_n38A (2570-2620)
Appendix B.7	NR Band DC_66A_n41A (2496-2690)
Appendix B.8	NR Band DC_7A_n66A (1710-1780)
Appendix B.9	NR Band DC_7A_n77A (3700-3980)
Appendix B.10	NR Band DC_2A_n78A (3700-3800)
Appendix B.11	NR Band n41A (2496-2690)_2x2MIMO

The End