Test Report

Verified code: 675979

Report No.: E202304116396-7

Customer:	Flaircomm Microelectronics, Inc.
Address:	7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin East Avenue, Mawei District, Fuzhou, Fujian, China
Sample Name:	Remote Monitor System
Sample Model:	FLC-WNP019
Receive Sample Date:	Apr.14,2023
Test Date:	Apr.17,2023 ~ May.15,2023
Reference Document:	CFR 47, FCC Part 22 Subpart H, CFR 47, FCC Part 24 Subpart E, CFR 47, FCC Part 27 Subpart C, CFR 47, FCC Part 90 Subpart S CFR 47, FCC Part 2
Test Result:	Pass

Prepared by: Wen Wenbin Reviewed by: Zhao Zetian Approved by: Xiao Liang

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2023-06-01

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Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.

2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.

5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

6. The test report without CMA approval mark is only used for scientific research, teaching, internal quality control and other purposes.

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202304116396-7	Original Issue	2023-05-25

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1. TEST RESULT SUMMARY

1.1 TEST STANDARDS

No.	Identity	Document Title
1	CFR 47, FCC Part 2	Frequency Allocations And Radio Treaty Mattres; General Rules And Regulations
2	CFR 47, FCC Part 22 Subpart H	Cellular Radiotelephone Service
3	CFR 47, FCC Part 24 Subpart E	Broadband PCS
4	CFR 47, FCC Part 27 Subpart C	Technical Standards
5	CFR 47, FCC Part 90 Subpart S	Regulations Governing Licensing and Use of Frequencies in the 806-824, 851-869, 896-901, and 935-940 MHz Bands

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1.2 TEST RESULT

LTE Band 2/25			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	PASS
Peak-Average Ratio	§24.232(d)	Limit≤13 dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §24.238(a)(b)	Refer to section 10.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)(b)	≤ -13 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §24.235	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 4			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)(4)	EIRP ≤1 W	PASS
Peak-Average Ratio	§22.913(d)(5)	Limit≤13 dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §27.53(h)(1) §27.53(h)(3)(i)	Refer to section 10.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)(1)	≤ -13 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §27.53(h)(1)	≤ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §27.54	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 5/26(824-849)			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	EIRP ≤ 11.5W (ERP ≤ 7W)	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §22.917(b)(1)	Refer to section 10.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	≤ -13 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	≤ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 7/38/41			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)(2)	EIRP ≤2W	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §27.53(m)(4)	Refer to section 10.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)(4)	≤ -25 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053, §27.53(m)(4)	≤ -25 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §27.54	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 12/17			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(c)(10)	ERP ≤3W	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §27.53(g)	Refer to section 10.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ -13 dBm/1MHz.	PASS
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055, §27.54	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 13			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)(10)	ERP ≤3W	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §27.53(c)(2), §27.53(c)(5)	Refer to section 9.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c)(2)	≤ -13 dBm/1MHz.	PASS
Field Strength of Spurious Radiation	§2.1053, §27.53(c)(2), §27.53(f)	≤ -13 dBm/1MHz. Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz	PASS
Frequency Stability	§2.1055, §27.54	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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LTE Band 26(814-824)			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046 §90.635	ERP ≤100W	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049 §90.209	Report Only	PASS
Band Edges Compliance	§2.1051 §90.691	(1) 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 + 10 Log10(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. (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 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 37.5 kHz.	PASS
Spurious Emission at Antenna Terminals	§2.1051 §90.691		PASS
Field Strength of Spurious Radiation	§2.1053 §90.691	≤ -13 dBm/1MHz.	PASS
Frequency Stability	§2.1055 §90.213	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".

LTE Band 40(2305-2315 MHz &2350-2360 MHz)			
Item	**FCC Rule No.**	**Requirements**	**Result**
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(a)(3)	EIRP ≤250mW	PASS
Peak-Average Ratio	N/A	N/A	N/A
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	PASS
Band Edges Compliance	§2.1051, §27.53(a)(4)	Refer to section 9.1	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(a)(4)	≤ -40 dBm/1MHz	PASS
Field Strength of Spurious Radiation	§2.1053 §27.53(a)(4)	≤ -40 dBm/1MHz	PASS
Frequency Stability	§2.1055 §27.54	≤ ±2.5ppm.	PASS

Note 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name:	Flaircomm Microelectronics, Inc.
Address:	7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin East Avenue, Mawei District, Fuzhou, Fujian, China

2.2 MANUFACTURER

Name:	Flaircomm Microelectronics, Inc.
Address:	7F,Guomai Building, Guomai Science and Technology Park, 116 JiangBin East Avenue, Mawei District, Fuzhou, Fujian, China

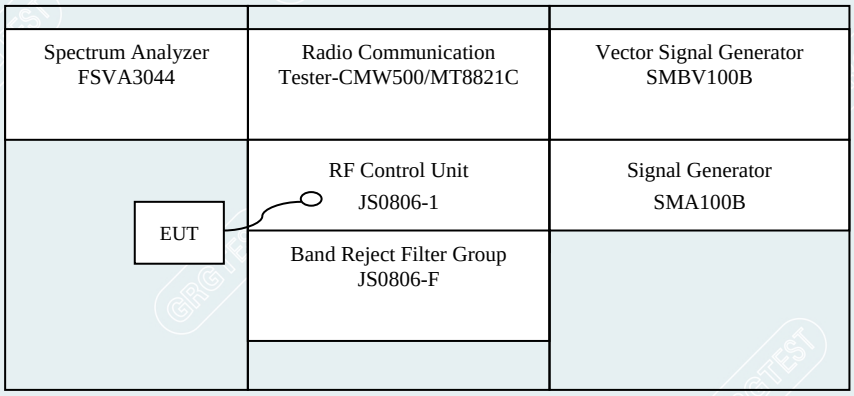
2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Remote Monitor System
Model No.:	FLC-WNP019
Trade Name:	/
Adding Model	FLC-WNP019-RMS20
Model difference:	They have the same technical construction including circuit diagram, PCB LAYOUT, hardware version and software version identical, except the model name different.
FCC ID:	2BBDN-WNP019
Power supply:	DC 3.6V by battery
Hardware Version:	RS20 1 1 03 00
Software Version:	RMS01.01#007.006
Frequency range:	Band 2: Tx 1850MHz~1910MHz, Rx 1930MHz ~ 1990MHz Band 4: Tx 1710MHz~1755MHz, Rx 2110MHz ~ 2155MHz Band 5: Tx 824MHz~849MHz, Rx 869MHz ~ 894MHz Band 7: Tx 2500MHz~2570MHz, Rx 2620MHz ~ 2690MHz Band 12: Tx 699MHz~716MHz, Rx 729MHz ~ 746MHz Band 13: Tx 777MHz~787MHz, Rx 746MHz ~ 756MHz Band 17: Tx 704MHz~716MHz, Rx 734MHz ~ 746MHz Band 25: Tx 1850MHz~1915MHz, Rx 1930MHz ~ 1995MHz Band 26(814-824MHz): Tx 814MHz~824MHz, Rx 859MHz ~ 869MHz Band 26(824-849MHz): Tx 824MHz~849MHz, Rx 869MHz ~ 894MHz Band 38: Tx 2570MHz~2620MHz, Rx 2570MHz~2620MHz Band 40(2305-2315MHz): Tx 2305~2315MHz, Rx 2305~2315MHz Band 40(2350-2360MHz): Tx 2350~2360MHz, Rx 2350~2360MHz Band 41: Tx 2496MHz~2690MHz, Rx 2496MHz ~ 2690MHz
Antenna Type:	Internal antenna
Antenna Gain:	Band 2: 3.5dBi Band 4: 2.8dBi Band 5: -0.2dBi Band 7: 2.2dBi Band 12: -1.3dBi Band 13: -1.4dBi Band 17: -1.3dBi Band 25: 3.5dBi

	Band 26(814-824MHz): -0.8dBi Band 26(824-849MHz): -0.2dBi Band 38: 2.4dBi Band 40(2305-2315MHz): 0.3dBi Band 40(2350-2360MHz): 0.3dBi Band 41: 2.9dBi
Power Class:	3
Bandwidth:	Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz Band 7: 5MHz, 10MHz, 15MHz, 20MHz Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz Band 13: 5MHz, 10MHz Band 17: 5MHz, 10MHz Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 26 (814-824MHz): 1.4MHz, 3MHz, 5MHz, 10MHz Band 26 (824-849MHz): 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz Band 38: 5MHz, 10MHz, 15MHz, 20MHz Band 40(2305-2315MHz): 5MHz, 10MHz Band 40(2350-2360MHz): 5MHz, 10MHz Band 41: 5MHz, 10MHz, 15MHz, 20MHz
ERP/EIRP	Band 2: 28.43dBm Band 4: 28.64dBm Band 5: 23.14dBm Band 7: 25.90dBm Band 12: 21.63dBm Band 13: 23.02dBm Band 17: 21.91dBm Band 25: 28.78dBm Band 26 (814-824MHz): 21.23dBm Band 26 (824-849MHz): 21.83dBm Band 38: 27.51dBm Band 40(2305-2315MHz): 23.16dBm Band 40(2350-2360MHz): 22.86dBm Band 41: 25.95dBm
Category:	Cat 1
Modulation:	QPSK, 16QAM
Sample No.:	E202304116396-0002, E202304116396-0004
IMEI:	E202304116396-0002:86546405240018 E202304116396-0004:86546405240087
Temperature Range:	-20℃~70℃
Sample Submitting Way :	■Provided by customer □Sampling
Note:	The EUT antenna gain is provided by the applicant.

2.4 CONFIGURATION OF SYSTEM UNDER TEST

Conduct System Setup



2.5 DESIGNATION OF EMISSION

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 2	1.4	1M10G7D	1M10W7D
	3	2M70G7D	2M69W7D
	5	4M52G7D	4M51W7D
	10	8M98G7D	/
	15	13M44G7D	/
	20	17M96G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 4	1.4	1M10G7D	1M10W7D
	3	2M70G7D	2M69W7D
	5	4M52G7D	4M51W7D
	10	8M98G7D	/
	15	13M48G7D	/
	20	17M98G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 5	1.4	1M10G7D	1M10W7D
	3	2M70G7D	2M70W7D
	5	4M52G7D	4M50W7D
	10	8M96G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 7	5	4M52G7D	4M51W7D
	10	8M98G7D	/
	15	13M45G7D	/
	20	17M97G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 12	1.4	1M10G7D	1M09W7D
	3	2M70G7D	2M70W7D
	5	4M50G7D	4M52W7D
	10	9M00G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 13	5	4M49G7D	4M49W7D
	10	8M91G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 17	5	4M52G7D	4M51W7D
	10	8M92G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 25	1.4	1M09G7D	1M09W7D
	3	2M70G7D	2M70W7D
	5	4M50G7D	4M50W7D
	10	9M00G7D	/
	15	13M49G7D	/
	20	17M95G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 26 (814-824MHz)	1.4	1M10G7D	1M09W7D
	3	2M70G7D	2M70W7D
	5	4M50G7D	4M50W7D
	10	9M00G7D	/
	15	13M47G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 26 (824-849 MHz)	1.4	1M10G7D	1M09W7D
	3	2M70G7D	2M70W7D
	5	4M51G7D	4M51W7D
	10	8M97G7D	/
	15	13M47G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 38	5	4M50G7D	4M50W7D
	10	8M98G7D	/
	15	13M47G7D	/
	20	17M94G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 40 (2305-2315 MHz)	5	4M50G7D	4M54W7D
	10	8M98G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 40 (2305-2315 MHz)	5	4M51G7D	4M50W7D
	10	8M94G7D	/

Designation Of Emission			
Band	Bandwidth(MHz)	QPSK	16QAM
Band 41	5	4M50G7D	4M49W7D
	10	8M97G7D	/
	15	13M48G7D	/
	20	17M97G7D	/

2.6 TEST FREQUENCIES

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 2	1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
			1850.7 MHz	1880 MHz	1909.3 MHz
		RX	Channel 607	Channel 900	Channel 1193
			1930.7 MHz	1960 MHz	1989.3 MHz
	3MHz	TX	Channel 18615	Channel 18900	Channel 19185
			1851.5 MHz	1880 MHz	1908.5 MHz
		RX	Channel 615	Channel 900	Channel 1185
			1931.5 MHz	1880 MHz	1988.5 MHz
	5MHz	TX	Channel 18625	Channel 18900	Channel 19175
			1852.5 MHz	1880 MHz	1907.5 MHz
		RX	Channel 625	Channel 900	Channel1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
	20MHz	TX	Channel 18700	Channel 18900	Channel 19100
			1860 MHz	1880 MHz	1900 MHz
		RX	Channel 700	Channel 900	Channel 1100
			1940 MHz	1960 MHz	1980 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 4	1.4MHz	TX	Channel 19957	Channel 20175	Channel 20393
			1710.7 MHz	1732.5 MHz	1754.3 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	3MHz	TX	Channel 19965	Channel 20175	Channel 20385
			1711.5 MHz	1732.5 MHz	1753.5 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
	5MHz	TX	Channel 19975	Channel 20175	Channel 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	10MHz	TX	Channel 20000	Channel 20175	Channel 20350

			1715 MHz	1732.5 MHz	1750 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
	15MHz	TX	Channel 20025	Channel 20175	Channel 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz
		RX	Channel 2025	Channel 2175	Channel 2325
			2117.5 MHz	2132.5MHz	2147.5 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 5	1.4MHz	TX	Channel 20407	Channel 20525	Channel 20643
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 2407	Channel 2525	Channel 2643
			869.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 20415	Channel 20525	Channel 20635
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 2415	Channel 2525	Channel 2635
			870.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 20425	Channel 20525	Channel 20625
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 2425	Channel 2525	Channel 2625
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 20450	Channel 20525	Channel 20600
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 2450	Channel 2525	Channel 2600
			874 MHz	881.5 MHz	889 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 7	5MHz	TX	Channel 20775	Channel 21100	Channel 21425
			2502.5 MHz	2535 MHz	2567.5 MHz
		RX	Channel 2775	Channel 3100	Channel 5825
			2622.5 MHz	2655 MHz	2687.5 MHz
	10MHz	TX	Channel 20800	Channel 21100	Channel 21400
			2505 MHz	2535 MHz	2565 MHz
		RX	Channel 2800	Channel 3100	Channel 3400
			2625 MHz	2655 MHz	2685 MHz
	15MHz	TX	Channel 20825	Channel 21100	Channel 21375
			2507.5 MHz	2535 MHz	2562.5 MHz
		RX	Channel 2825	Channel 3100	Channel 3375
			2627.5 MHz	2655 MHz	2682.5 MHz
	20MHz	TX	Channel 20850	Channel 21100	Channel 21350
			2510 MHz	2535 MHz	2560 MHz
		RX	Channel 2850	Channel 3100	Channel 3350
			2630 MHz	2655 MHz	2680 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 12	1.4MHz	TX	Channel 23017	Channel 23095	Channel 23173
			699.7 MHz	707.5 MHz	715.3 MHz
		RX	Channel 5017	Channel 5095	Channel 5173
			729.7 MHz	737.5 MHz	745.3 MHz
	3MHz	TX	Channel 23025	Channel 23095	Channel 23165
			700.5 MHz	707.5 MHz	714.5 MHz
		RX	Channel 5025	Channel 5095	Channel 5165
			730.5 MHz	737.5 MHz	744.5 MHz
	5MHz	TX	Channel 23035	Channel 23095	Channel 23155

			701.5 MHz	707.5 MHz	713.5 MHz
		RX	Channel 5035	Channel 5095	Channel 5155
			731.5 MHz	737.5 MHz	743.5 MHz
	10MHz	TX	Channel 23060	Channel 23095	Channel 23130
			704 MHz	707.5 MHz	711 MHz
		RX	Channel 5060	Channel 5095	Channel 5130
			734 MHz	737.5 MHz	741 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 13	5MHz	TX	Channel 23025	Channel 23230	Channel 23255
			779.5 MHz	782 MHz	784.5 MHz
		RX	Channel 5205	Channel 5230	Channel 5255
			748.5 MHz	751 MHz	753.5 MHz
	10MHz	TX	Channel 23230	Channel 23230	Channel 23230
			782 MHz	782 MHz	782 MHz
		RX	Channel 5230	Channel 5230	Channel 5230
			751 MHz	751 MHz	751 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 17	5MHz	TX	Channel 23755	Channel 23790	Channel 23825
			706.5 MHz	710 MHz	713.5 MHz
		RX	Channel 5755	Channel 5790	Channel 5825
			736.5 MHz	740 MHz	743.5 MHz
	10MHz	TX	Channel 23780	Channel 23790	Channel 23800
			709 MHz	710 MHz	711 MHz
		RX	Channel 5780	Channel 5790	Channel 5800
			739 MHz	740 MHz	741 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 25	1.4MHz	TX	Channel 26047	Channel 26365	Channel 26683
			1850.7 MHz	1882.5 MHz	1914.3 MHz
		RX	Channel 8047	Channel 8365	Channel 8683
			1930.7 MHz	1962.5 MHz	1994.3 MHz
	3MHz	TX	Channel 26055	Channel 26365	Channel 26675
			1851.5 MHz	1882.5 MHz	1913.5 MHz
		RX	Channel 8055	Channel 8365	Channel 8675
			1931.5 MHz	1962.5 MHz	1993.5 MHz
	5MHz	TX	Channel 26065	Channel 26365	Channel 26665
			1852.5 MHz	1882.5 MHz	1912.5 MHz
		RX	Channel 8065	Channel 8365	Channel 8665
			1932.5 MHz	1962.5 MHz	1987.5 MHz
	10MHz	TX	Channel 26090	Channel 26365	Channel 26640
			1855 MHz	1882.5 MHz	1910 MHz
		RX	Channel 8090	Channel 8365	Channel 8640
			1935 MHz	1962.5 MHz	1990 MHz
	15MHz	TX	Channel 26115	Channel 26365	Channel 26615
			1857.5 MHz	1882.5 MHz	1907.5 MHz
		RX	Channel 8115	Channel 8365	Channel 8615
			1937.5 MHz	1962.5 MHz	1987.5 MHz
	20MHz	TX	Channel 26140	Channel 26365	Channel 26590
			1860 MHz	1882.5 MHz	1905 MHz
		RX	Channel 8140	Channel 8365	Channel 8590
			1940 MHz	1962.5 MHz	1985 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 26 (814-824 MHz)	1.4MHz	TX	Channel 26697	Channel 26740	Channel 26783
			814.7 MHz	819 MHz	823.3 MHz
		RX	Channel 8697	Channel 8740	Channel 8783
			859.7 MHz	864MHz	868.3 MHz
	3MHz	TX	Channel 26705	Channel 26740	Channel 26775
			815.5 MHz	819 MHz	822.5 MHz
		RX	Channel 8705	Channel 8740	Channel 8775
			860.5 MHz	864MHz	867.5 MHz
	5MHz	TX	Channel 26715	Channel 26740	Channel 26765
			816.5 MHz	819 MHz	821.5 MHz
		RX	Channel 8715	Channel 8740	Channel 8755
			861.5 MHz	864MHz	866.5 MHz
	10MHz	TX	Channel 26740	Channel 26740	Channel 26740
			819 MHz	819 MHz	819 MHz
		RX	Channel 8740	Channel 8740	Channel 8740
			864MHz	864MHz	864MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 26 (824-849 MHz)	1.4MHz	TX	Channel 26797	Channel 26915	Channel 27033
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 8697	Channel 8915	Channel 9033
			859.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 26805	Channel 26915	Channel 27025
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 8805	Channel 8915	Channel 9025
			860.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 26815	Channel 26915	Channel 27015
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 8815	Channel 8915	Channel 9015
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 26840	Channel 26915	Channel 26990
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 8840	Channel 8915	Channel 8990
			874 MHz	881.5 MHz	889 MHz
	15MHz	TX	Channel 26865	Channel 26915	Channel 26965
			831.5 MHz	836.5 MHz	841.5 MHz
		RX	Channel 8865	Channel 8915	Channel 8965
			876.5 MHz	881.5 MHz	886.5 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 38	5MHz	TX/RX	Channel 37775	Channel 38000	Channel 38225
			2572.5 MHz	2595 MHz	2617.5 MHz
	10MHz	TX/RX	Channel 37800	Channel 38000	Channel 38200
			2575 MHz	2595 MHz	2615 MHz
	15MHz	TX/RX	Channel 37825	Channel38000	Channel 38175
			2577.5 MHz	2595 MHz	2612.5 MHz
	20MHz	TX/RX	Channel 37850	Channel 38000	Channel 38150
			2580 MHz	2595 MHz	2610 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 40 (2305-2315MHz)	5MHz	TX/RX	Channel 38725	Channel 38750	Channel 38775
			2307.5 MHz	2310 MHz	2312.5 MHz
	10MHz	TX/RX	Channel 38750	Channel 38750	Channel 38750
			2310 MHz	2310 MHz	2310 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 40 (2350-2360MHz)	5MHz	TX/RX	Channel 39175	Channel 39200	Channel 39225
			2352.5 MHz	2355 MHz	2357.5 MHz
	10MHz	TX/RX	Channel 38750	Channel 39200	Channel 38750
			2310 MHz	2355 MHz	2310 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 41	5MHz	TX/RX	Channel 39675	Channel40620	Channel 41565
			2498.5 MHz	2593 MHz	2687.5 MHz
	10MHz	TX/RX	Channel 39700	Channel40620	Channel 41540
			2501 MHz	2593 MHz	2685 MHz
	15MHz	TX/RX	Channel 39725	Channel40620	Channel 41515
			2503.5 MHz	2593 MHz	2682.5 MHz
	20MHz	TX/RX	Channel 39750	Channel40620	Channel 41490
			2506 MHz	2593 MHz	2680 MHz

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3. LABORATORY AND ACCREDITATIONS AND MEASUREMENT UNCERTAINTY

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG Metrology & Test group Co., Ltd.

Add.: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China.

P.C.: 518110

Tel : 0755-61180008

Fax: 0755-61180008

3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	ISED (Company Number: 24897, CAB identifier:CN0069)
USA	FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site, http://www.grgtest.com

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3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		Frequency	Uncertainty
Radiated Emission	Horizontal	30MHz～1000MHz	3.7dB
		1GHz～18GHz	4.5dB
		18GHz~40GHz	4.3dB
	Vertical	30MHz～1000MHz	3.7dB
		1GHz～18GHz	4.5dB
		18GHz~40GHz	4.3dB
	Coaxial	9kHz～30MHz	4.5dB
	Coplanar	9kHz～30MHz	4.5dB

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.8dB
Occupied channel bandwidth	0.4dB
Unwanted emission, conducted	0.7dB
Humidity	6%
Temperature	2℃

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of *k*=2.

---------- The following blanks ----------

4. LIST OF USED TEST EQUIPMENT AT GRGT

Conduted System :

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Keysight	N9010B	MY60680122	2024-03-19
Wideband radio Communication Tester	R&S	CMW500	144611-nc	2024-04-16
Wideband radio Communication Tester	Anritsu	MT8821C	6202155047	2024-03-27
Temperature chamber	HOSON	HS01060SDF	201013401	2024-02-02
RF switch box	Tonscend	JS0806-1	20D8060250	/
Test SW	Tonscend	JS1120	/	/
Dc Source	LW	PS-305DM	180704488	2024-02-16

RSE system:

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Keysight	N9010B	MY60680122	2024-03-19
Loop Antenna	TESEQ	HLA6121	52599	2024-02-03
Bi-log Antenna	Schwarzbeck	VULB9163	01279	2024-03-05
Horn Antenna	Schwarzbeck	BBHA9120D (1201)	02143	2023-10-15
Horn Antenna	Schwarzbeck	BBHA9170	BBHA 9170-497	2023-10-14
Amplifier	tonscend	TAP9E6343	AP20E806065	2024-04-16
Amplifier	tonscend	TAP01018048	AP20E8060075	2024-04-11
Amplifier	tonscend	TAP184050	AP20E806070	2024-04-11
Wideband radio Communication Tester	R&S	CMW500	144611-nc	2024-04-16
Wideband radio Communication Tester	Anritsu	MT8821C	6202155047	2024-03-27
Test S/W	tonscend	JS36-RSE/2.5.1.5		

5. EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA

5.1 LIMIT

According to FCC section22.913 (a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
According to FCC section24.232 (c) the mobile and portable stations are limited to 2 watts EIRP.
According to FCC section27.50 (a)(3),for mobile and portable stations transmitting in the 2305–2315 MHz band or the 2350–2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, *except that* for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305–2315 MHz and 2350–2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305–2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.
According to FCC section27.50 (d)(4), mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.
According to FCC section27.50 (h)(2), Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
According to FCC section27.50 (c)(10), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
According to FCC section27.50 (b)(10), Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

5.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01
1. Connect the test system to the UE antenna connector.
2. A call is set up according to the Generic call setup procedure.
3. Set and send continuously up power control commands to the UE, until the UE output power shall be maximum level.
4. Read the conducted power in the base station.

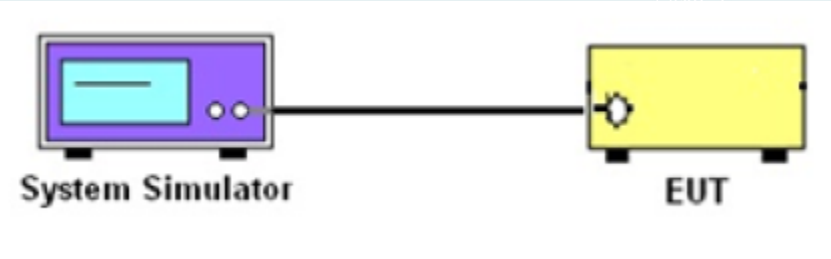
Remark:
a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = Conducted output power [dBm] + Gain [dBi]

ERP [dBm] = Conducted output power [dBm] +Gain [dBi]-2.15dB

P [dBm]=10lg(P/1mw)

5.3 TEST SETUP



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5.4 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-A EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA.

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6. PEAK-TO-AVERAGE RATIO

6.1 LIMIT

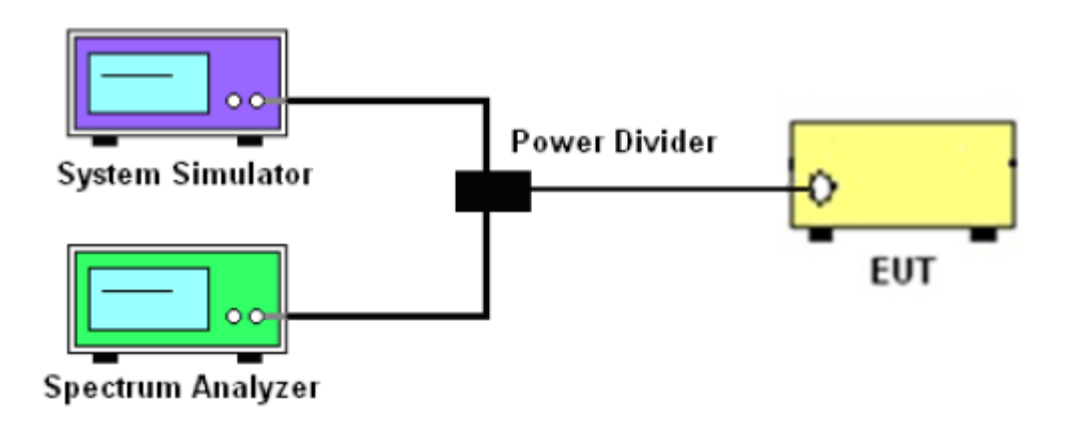
According to FCC section 24.232(d), 27.50 (d)(5), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

6.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.1
A peak to average ratio measurement is performed at the conducted port of the EUT. For WWAN signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Settings
1.The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW>Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

6.3 TEST SETUP



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6.4 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-B PEAK-TO-AVERAGE RATIO.

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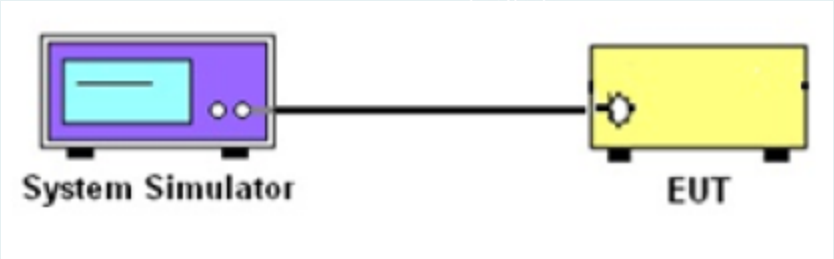
7. MODULATION CHARACTERISTICS

7.1 TEST PROCEDURES

The devices may employ any type of modulation techniques. The type of modulation used must be reported.

7.2 TEST SETUP



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7.3 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-C MODULATION CHARACTERISTICS.

---------- **The following blanks** ----------

8. BANDWIDTH

8.1 LIMIT

According to FCC section 2.1049, OBW and EBW no limit.

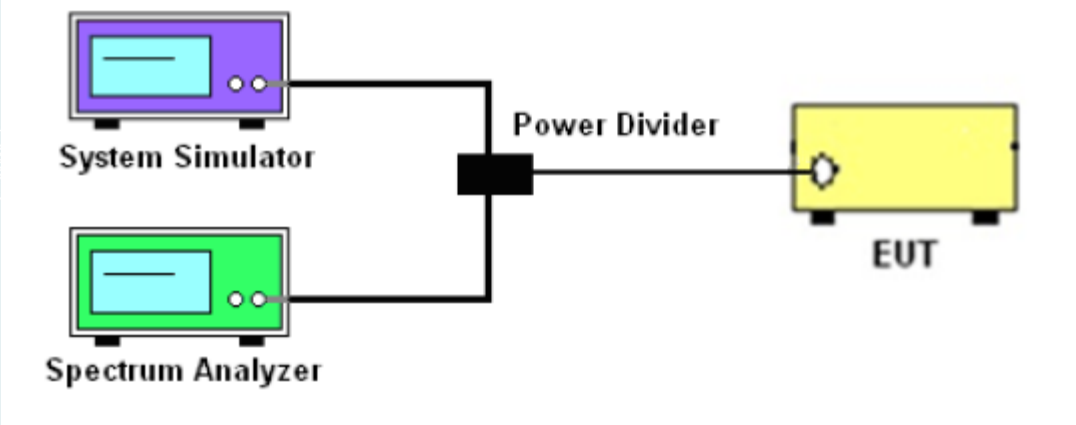
8.2 TEST PROCEDURES

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 analyzer 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.

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW=1-5% of the expected OBW
3. VBW≥3×RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. 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

8.3 TEST SETUP



8.4 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-D BANDWIDTH.

---------- **The following blanks** ----------

9. BAND EDGES COMPLIANCE

9.1 LIMIT

According to FCC section 22.917(a), 24.238(a)(b), 27.53(h)(1)(3)(i), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB. B2/4/5

According to FCC section 27.53(a)(4)For mobile and portable stations operating in the 2305–2315 MHz and 2350–2360 MHz bands: By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz; By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

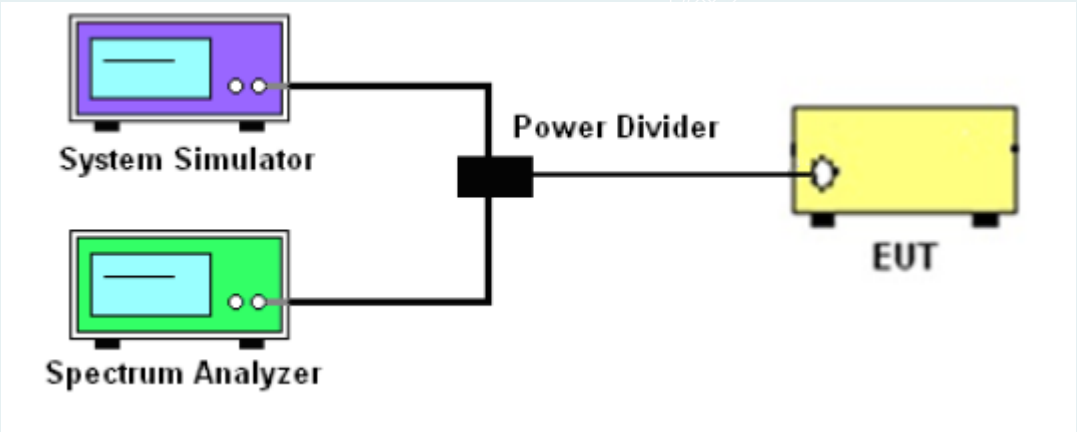
According to FCC section 27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than 40+10log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43+10log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55+10log (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+10log(P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55+10log(P) dB at or below 2490.5 MHz.
According to FCC section 27.53(9), For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10log(P) dB.
According to FCC section 27.53(c)(3), On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43+10log(P) dB.

9.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6
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 emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.

Test Settings
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1% of the emission bandwidth
4. VBW ≥ 3 ×RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 ×Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

9.3 TEST SETUP



9.4 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-E BAND EDGES COMPLIANCE.

---------- **The following blanks** ----------

10. SPURIOUS EMISSION AT ANTENNA TERMINAL

10.1 LIMIT

According to FCC section 22.917(a), 24.238(a)(b),27.53(h)(1), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB.

According to FCC section 27.53(A)(4), 70 + 10 log (P) dB below 2288 MHz and above 2365 MHz.
According to FCC section 27.53(m)(4), 55+10log(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. and 55+10 log (P) dB at or below 2490.5 MHz.
According to FCC section 27.53(9), For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10log(P) dB.
According to FCC section 27.53(c)(3), On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43+10log(P) dB.

10.2 TEST PROCEDURES

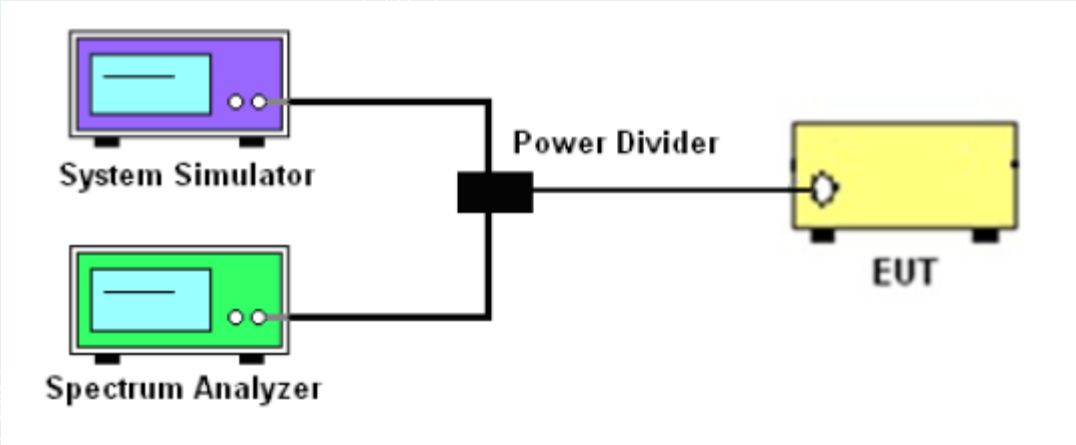
Measurement Procedure: FCC KDB 971168 D01 V03r01
The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The 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 analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee’s frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10*the fundamental frequency (separated into at least two plots per channel)
2. Detector=RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Remark:
The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the worst case data had been displayed.

10.3 TEST SETUP



10.4 TEST RESULTS

Please refer to the attached document E202304116396-7 ANNEX-F SPURIOUS EMISSION AT ANTENNA TERMINAL.

---------- **The following blanks** ----------

11. FREQUENCY STABILITY

11.1 LIMIT

According to FCC section 22.355, frequency stability of the transmission may not exceed ±2.5ppm.

11.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 9

Frequency stability over variations in temperature

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power off, temperature was decreased to -30 ℃ and EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power off, the temperature was rised in -30 ℃ step up to 50 ℃. The EUT was stabilizes at each step for at least half an hour at. Power was applied the maximum frequency change was recorded within one minute.

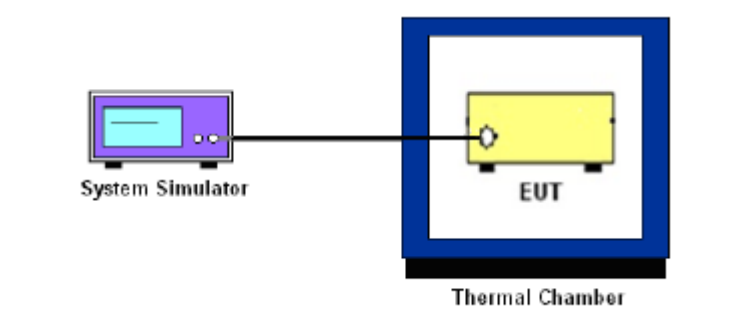
Frequency stability when varying supply voltage

1. The EUT was placed in a temperature chamber at 20±5 ℃ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment..
3. 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.
4. In the worst case, frequency changes are measured.

Test Settings

N/A

11.3 TEST SETUP



11.4 TEST RESULTS

Please refer to the attached document E202304116396-15 ANNEX-G FREQUENCY STABILITY.

---------- **The following blanks** ----------

12. FIELD STRENGTH OF SPURIOUS RADIATION

12.1 LIMIT

According to FCC section 22.917(a), 24.238(a),27.53(h)(1), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB.
According to FCC section 27.53(m)(4), 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. and 55+10log(P) dB at or below 2490.5 MHz.
According to FCC section 27.53(g), For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10log(P) dB.
According to FCC section 27.53(c)(3), On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43+10log(P) dB.
According to FCC section 27.53(a)(4), 70+10log(P) dB below 2288 MHz and not less than 70+10log(P) dB above 2365 MHz.
According to FCC section 27.53(f),For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. −70 dBW/MHz=-40dBm/ MHz

12.2 TEST PROCEDURES

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 7
Below 1GHz test procedure as below:
1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.
2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360 °the turntable. After the fundamental emission was maximized, a field strength measurement was made.
3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.
6). The output power into the substitution antenna was then measured.
7). Steps 5) and 6) were repeated with both antennas polarized.
8) Calculate power in dBm by the following formula:
ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)
Where:
Pd is the dipole equivalent power, Pg is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to Pg [dBm] – cable loss [dB]. The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log10(Power [Watts]).
Above 1GHz test procedure as below:
1.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber
2.Calculate power in dBm by the following formula:
EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)
EIRP=ERP+2.15dB
Where:
Pg is the generator output power into the substitution antenna.
3. Test the EUT in the lowest channel, the middle channel the Highest channel
4. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

5. Repeat above procedures until all frequencies measured was complete

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10*the fundamental frequency (separated into at least two plots per channel)
2.RBW=100kHz for emission below 1GHz and 1MHz for emission above 1GHz.
3.Number of sweep point≥2*span/RBW
4. Detector=RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

12.3 TEST SETUP

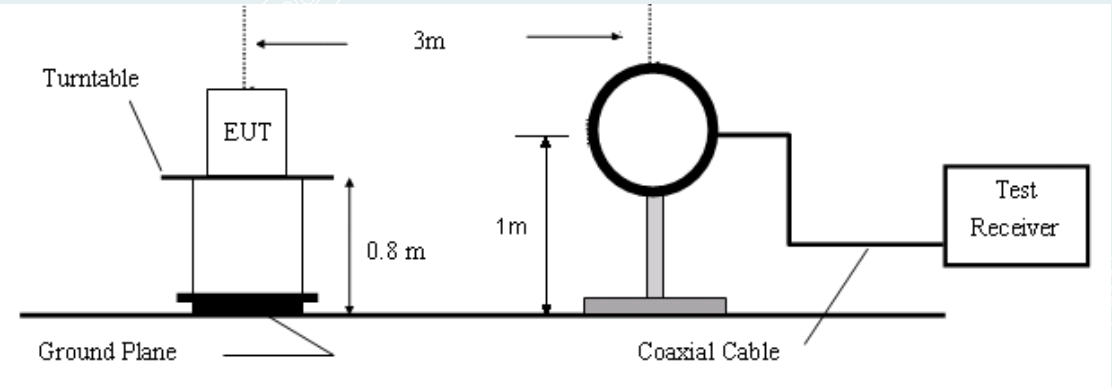


Figure 1. 9kHz to 30MHz radiated emissions test configuration

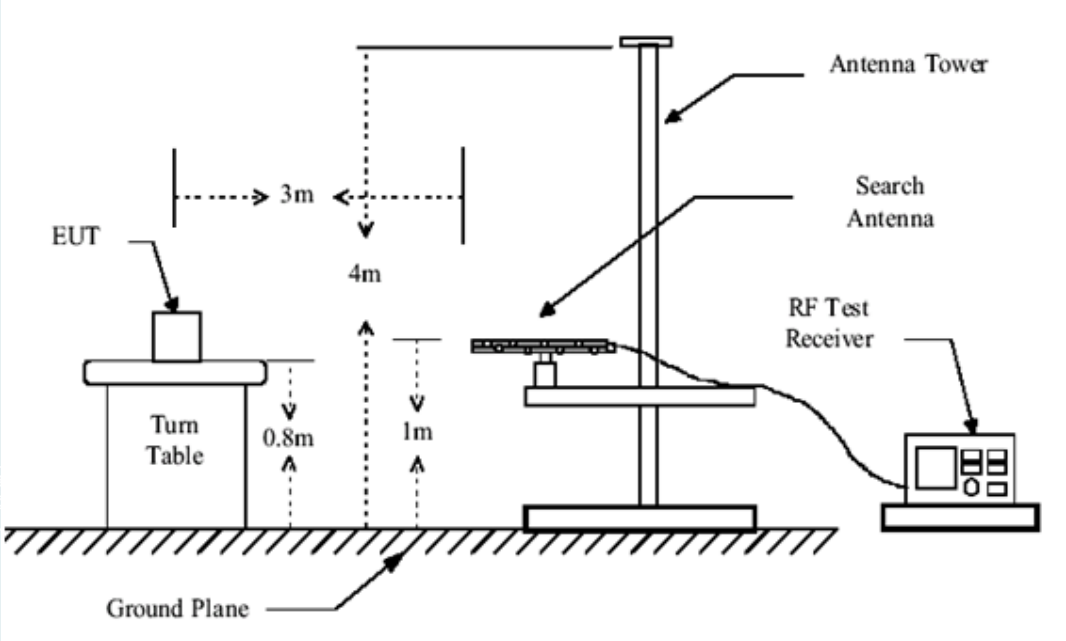


Figure 2. 30MHz to 1GHz radiated emissions test configuration

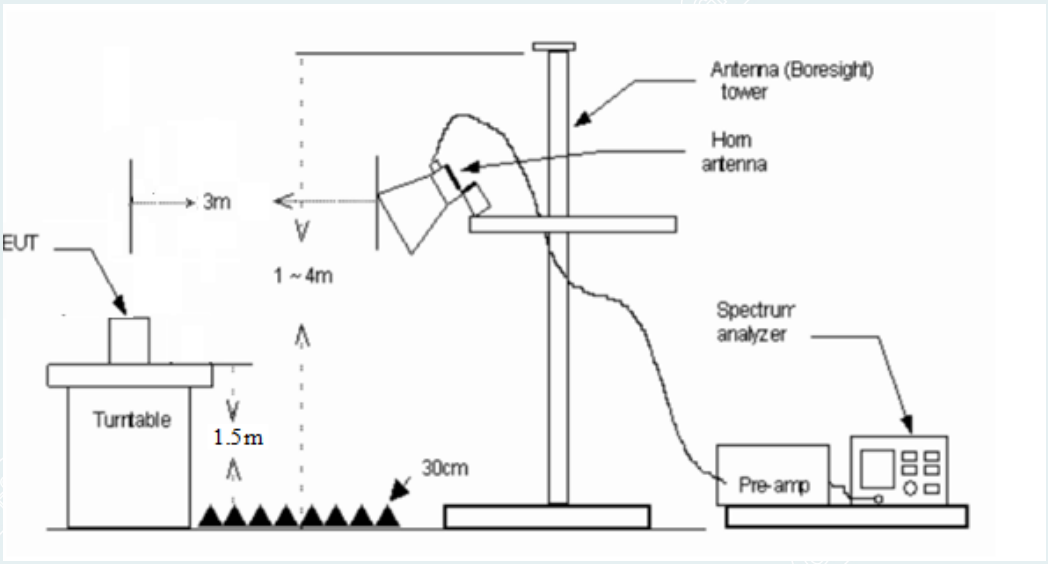


Figure 3. 1GHz-18GHz radiated emissions test configuration

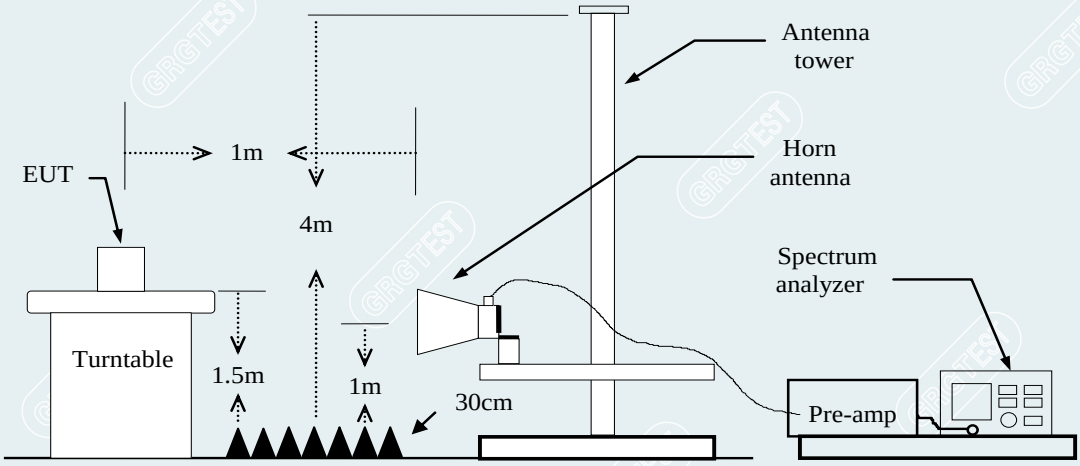


Figure 4. Above 18GHz radiated emissions test configuration

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12.4 DATA SAMPLE

NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Detector	Polarity
x	xxxx	-66.69	-77.73	-25.00	52.73	-11.04	RMS	Horizontal

Frequency (MHz) = Emission frequency in MHz

Ant.Pol. (H/V) = Antenna polarization

Reading (dBm) = Uncorrected Analyzer / Receiver reading

Result (dBm) = Reading (dBm) + Factor (dB)

Limit (dBm) = Limit stated in standard

Margin (dB) = Remark Result (dBm) – Limit (dBm)

Peak = Peak Reading

RMS = RMS Reading

AVG = Average Reading

12.5 TEST RESULTS

Please refer to the attached document E202304116396-16 ANNEX-H FIELD STRENGTH OF SPURIOUS RADIATION.

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13. TEST PHOTO

Please refer to the attached document E202304116396-Test Photo-FCC.

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14. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202304116396-EUT Photo-FCC.

---------- End of Report ----------