

**ELECTROMAGNETIC EMISSIONS
COMPLIANCE REPORT**

Applicant: Telit Communications S.p.A.
Via Stazione di Prosecco 5/b 34010 Sgonico - Trieste, Italy

Manufacturer: Telit Wireless Solutions. Co. Ltd.
13th Fl., Shinyoung Securities Bld, 6, Gukjegeumyung-ro 8-gil,
Yeongdeungpo-gu, Seoul, 07330, South Korea

Product Name: 5G Radio Module

Brand Name: Telit Cinterion or 

Model No.: FN920C04-WW

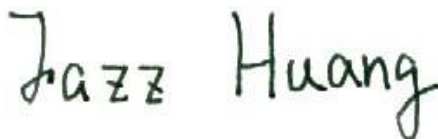
Report Number: TERF2410003183ER

FCC ID RI7FN920C04WW

Date of EUT Received: October 24, 2024

Date of Test: October 29, 2024 ~ April 16, 2025

Issue Date: April 17, 2025

**Approved By****Jazz Huang****We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT comply with FCC rule part 2, 22H & 24E & 25 & 27 C & 90S.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2410003183ER	00	Original	March 21, 2025	Karen Huang	
TERF2410003183ER	01	Update test result	April 14, 2025	Karen Huang	*
TERF2410003183ER	02	Update Band Edge measurement of Band 7	April 17, 2025	Karen Huang	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.

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1 GENERAL PRODUCT INFORMATION

1.1 Product Description

Product Name:	5G Radio Module
Brand Name:	Telit Cinterion or 
Model No.:	FN920C04-WW
Hardware Version:	1.10
Firmware Version:	M0V.060001
EUT Series No.:	355411761007558, 355411761006303
Power Supply:	3.3Vdc
Test Software (Name/Version)	Connect with Callbox

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1.2 Operation Frequency Range

NR Band 2			
BW (MHz)	Operation Frequency (MHz)		
5	1852.5	-	1907.5
10	1855.0	-	1905.0
15	1857.5	-	1902.5
20	1860.0	-	1900.0

NR Band 5			
BW (MHz)	Operation Frequency (MHz)		
5	826.5	-	846.5
10	829.0	-	844.0
15	831.5	-	841.5
20	834.0	-	839.0

NR Band 7			
BW (MHz)	Operation Frequency (MHz)		
5	2502.5	-	2567.5
10	2505.0	-	2565.0
15	2507.5	-	2562.5
20	2510.0	-	2560.0

NR Band 12			
BW (MHz)	Operation Frequency (MHz)		
5	701.5	-	713.5
10	704.0	-	711.0
15	706.5	-	708.5

NR Band 13			
BW (MHz)	Operation Frequency (MHz)		
5	779.5	-	784.5
10	782	-	782

NR Band 14			
BW (MHz)	Operation Frequency (MHz)		
5	790.5	-	795.5
10	793	-	793

NR Band 25			
BW (MHz)	Operation Frequency (MHz)		
5	1852.5	-	1912.5
10	1855.0	-	1910.0
15	1857.5	-	1907.5
20	1860.0	-	1905.0

NR Band 26 (Part 90)			
BW (MHz)	Operation Frequency (MHz)		
5	816.5	-	821.5
10	819.0	-	819.0

NR Band 26			
BW (MHz)	Operation Frequency (MHz)		
5	826.5	-	846.5
10	829.0	-	844.0
15	831.5	-	841.5
20	834.0	-	839.0

NR Band 30			
BW (MHz)	Operation Frequency (MHz)		
5	2307.5	-	2312.5
10	2310	-	2310

NR Band 38			
BW (MHz)	Operation Frequency (MHz)		
10	2575.0	-	2615.0
15	2577.5	-	2612.5
20	2580.0	-	2610.0

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NR Band 41			
BW (MHz)	Operation Frequency (MHz)		
10	2501.0	-	2685.0
15	2503.5	-	2682.5
20	2506.0	-	2680.0

NR Band 77 (upper)			
BW (MHz)	Operation Frequency (MHz)		
10	3705.0	-	3975.0
15	3707.5	-	3972.5
20	3710.0	-	3970.0

NR Band 53			
BW (MHz)	Operation Frequency (MHz)		
10	2488.5	-	2490.0

NR Band 78 (lower)			
BW (MHz)	Operation Frequency (MHz)		
10	3455.0	-	3545.0
15	3457.5	-	3542.5
20	3460.0	-	3540.0

NR Band 66			
BW (MHz)	Operation Frequency (MHz)		
5	1712.5	-	1777.5
10	1715.0	-	1775.0
15	1717.5	-	1772.5
20	1720.0	-	1770.0

NR Band 78 (upper)			
BW (MHz)	Operation Frequency (MHz)		
10	3705.0	-	3795.0
15	3707.5	-	3792.5
20	3710.0	-	3790.0

NR Band 70			
BW (MHz)	Operation Frequency (MHz)		
5	1697.5	-	1707.5
10	1700.0	-	1705.0
15	1702.5	-	1702.5

NR Band 71			
BW (MHz)	Operation Frequency (MHz)		
5	665.5	-	695.5
10	668.0	-	693.0
15	670.5	-	690.5
20	673.0	-	688.0

NR Band 77 (lower)			
BW (MHz)	Operation Frequency (MHz)		
10	3455.0	-	3545.0
15	3457.5	-	3542.5
20	3460.0	-	3540.0

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1.3 Antenna Designation

Antenna Type	Antenna Model No.
Monopole	TG.55.8113
Note: Transmission frequencies in this test report are only available by the above antenna(s).	

5G NR Band	Frequency (MHz)	Peak Gain (dBi)	Insertion Loss	Final Gain (dBi)
n2	1850 ~ 1910	3.09	0.3	2.79
n5	824 ~ 849	0.58	0.2	0.38
n7	2500 ~ 2570	1.69	0.5	1.19
n12	699 ~ 716	-1.88	0.2	-2.08
n13	777~787	-1.88	0.2	-2.08
n14	788~798	-1.88	0.2	-2.08
n25	1850 ~ 1915	3.09	0.3	2.79
n26 Part 90s	814 ~ 824	0.58	0.2	0.38
n26	824 ~ 849	0.58	0.2	0.38
n30	2305 ~ 2315	1.69	0.5	1.19
n38	2570 ~ 2620	1.69	0.5	1.19
n41	2496 ~ 2690	1.69	0.5	1.19
n53	2483.5 ~ 2495	1.69	0.5	1.19
n66	1710 ~ 1780	3.09	0.3	2.79
n70	1695 ~ 1710	3.09	0.3	2.79
n71	663 ~ 698	0.14	0.2	-0.06
n77 (lower)	3450 ~ 3550	1.51	0.6	0.91
n77 (upper)	3700 ~ 3980	1.51	0.6	0.91
n78 (lower)	3450 ~ 3550	1.51	0.6	0.91
n78 (upper)	3700 ~ 3800	1.51	0.6	0.91

Note: Antenna information is provided by the applicant.

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1.4 Type of Emission & Max ERP/EIRP Power Measurement Result:

5G NR Band n2 Uplink frequency band : 1850 to 1910 MHz									
Bandwidth (MHz)	Lower Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	1852.5	1907.5	DFT-s Pi/2 BPSK	23.91	26.70	0.468	4.4935	4493.5	4M49G7W
			DFT-s QPSK	23.87	26.66	0.463	4.5029	4502.9	4M50G7W
			DFT-s QAM	22.84	25.63	0.366	4.5215	4521.5	4M52D7W
			CP QPSK	22.85	25.64	0.366	4.5029	4502.9	4M50G7W
			CP QAM	22.53	25.32	0.340	4.5215	4521.5	4M52D7W
10	1855	1905	DFT-s Pi/2 BPSK	24.02	26.81	0.480	8.977	8977.0	8M98G7W
			DFT-s QPSK	23.92	26.71	0.469	8.9725	8972.5	8M97G7W
			DFT-s QAM	23.15	25.94	0.393	9.0099	9009.9	9M01D7W
			CP QPSK	22.79	25.58	0.361	8.9725	8972.5	8M97G7W
			CP QAM	22.25	25.04	0.319	9.0099	9009.9	9M01D7W
15	1857.5	1902.5	DFT-s Pi/2 BPSK	23.96	26.75	0.473	13.444	13444.0	13M4G7W
			DFT-s QPSK	23.92	26.71	0.469	13.453	13453.0	13M5G7W
			DFT-s QAM	23.27	26.06	0.404	13.49	13490.0	13M5D7W
			CP QPSK	22.10	24.89	0.308	13.453	13453.0	13M5G7W
			CP QAM	21.76	24.55	0.285	13.49	13490.0	13M5D7W
20	1860	1900	DFT-s Pi/2 BPSK	23.99	26.78	0.476	17.912	17912.0	17M9G7W
			DFT-s QPSK	23.95	26.74	0.472	17.935	17935.0	17M9G7W
			DFT-s QAM	23.22	26.01	0.399	17.916	17916.0	17M9D7W
			CP QPSK	22.59	25.38	0.345	17.935	17935.0	17M9G7W
			CP QAM	22.28	25.07	0.321	17.916	17916.0	17M9D7W
5G NR Band n5 Uplink frequency band : 824 to 849 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	826.5	846.5	DFT-s Pi/2 BPSK	23.99	22.22	0.167	4.5111	4511.1	4M51G7W
			DFT-s QPSK	23.91	22.14	0.164	4.4983	4498.3	4M50G7W
			DFT-s QAM	23.26	21.49	0.141	4.5232	4523.2	4M52D7W
			CP QPSK	22.64	20.87	0.122	4.4983	4498.3	4M50G7W
			CP QAM	22.43	20.66	0.116	4.5232	4523.2	4M52D7W
10	829	844	DFT-s Pi/2 BPSK	23.98	22.21	0.166	8.9616	8961.6	8M96G7W
			DFT-s QPSK	23.96	22.19	0.166	8.9798	8979.8	8M98G7W
			DFT-s QAM	23.25	21.48	0.141	9.003	9003.0	9M00D7W
			CP QPSK	22.79	21.02	0.126	8.9798	8979.8	8M98G7W
			CP QAM	22.20	20.43	0.110	9.003	9003.0	9M00D7W
15	831.5	841.5	DFT-s Pi/2 BPSK	24.03	22.26	0.168	13.474	13474.0	13M5G7W
			DFT-s QPSK	23.95	22.18	0.165	13.492	13492.0	13M5G7W
			DFT-s QAM	23.12	21.35	0.136	13.472	13472.0	13M5D7W
			CP QPSK	22.62	20.85	0.122	13.492	13492.0	13M5G7W
			CP QAM	22.15	20.38	0.109	13.472	13472.0	13M5D7W
20	834	839	DFT-s Pi/2 BPSK	23.99	22.22	0.167	17.925	17925.0	17M9G7W
			DFT-s QPSK	23.98	22.21	0.166	17.953	17953.0	18M0G7W
			DFT-s QAM	23.06	21.29	0.135	17.973	17973.0	18M0D7W
			CP QPSK	22.59	20.82	0.121	17.953	17953.0	18M0G7W
			CP QAM	22.14	20.37	0.109	17.973	17973.0	18M0D7W
5G NR Band n7 Uplink frequency band : 2500 to 2570 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	2502.5	2567.5	DFT-s Pi/2 BPSK	23.86	25.05	0.320	4.5108	4510.8	4M51G7W
			DFT-s QPSK	23.83	25.02	0.318	4.5193	4519.3	4M52G7W
			DFT-s QAM	22.87	24.06	0.255	4.5071	4507.1	4M51D7W
			CP QPSK	22.38	23.57	0.228	4.5193	4519.3	4M52G7W
			CP QAM	22.05	23.24	0.211	4.5071	4507.1	4M51D7W
10	2505	2565	DFT-s Pi/2 BPSK	23.97	25.16	0.328	8.9538	8953.8	8M95G7W
			DFT-s QPSK	23.81	25.00	0.316	8.9555	8955.5	9M00G7W
			DFT-s QAM	22.83	24.02	0.252	9.0006	9000.6	9M00D7W
			CP QPSK	22.67	23.86	0.243	8.9555	8955.5	9M00G7W
			CP QAM	22.14	23.33	0.215	9.0006	9000.6	9M00D7W
15	2507.5	2562.5	DFT-s Pi/2 BPSK	23.90	25.09	0.323	13.448	13448.0	13M4G7W
			DFT-s QPSK	23.87	25.06	0.321	13.481	13481.0	13M5G7W
			DFT-s QAM	22.97	24.16	0.261	13.445	13445.0	13M4D7W
			CP QPSK	22.59	23.78	0.239	13.481	13481.0	13M5G7W
			CP QAM	21.97	23.16	0.207	13.445	13445.0	13M4D7W
20	2510	2560	DFT-s Pi/2 BPSK	23.91	25.10	0.324	17.912	17912.0	17M9G7W
			DFT-s QPSK	23.82	25.01	0.317	17.929	17929.0	17M9G7W
			DFT-s QAM	23.02	24.21	0.264	17.965	17965.0	18M0D7W
			CP QPSK	22.34	23.53	0.225	17.929	17929.0	17M9G7W
			CP QAM	22.02	23.21	0.209	17.965	17965.0	18M0D7W
5G NR Band n12 Uplink frequency band : 699 to 716 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	701.5	713.5	DFT-s Pi/2 BPSK	23.30	19.07	0.081	4.5151	4515.1	4M52G7W
			DFT-s QPSK	23.23	19.00	0.079	4.4958	4495.8	4M50G7W
			DFT-s QAM	22.60	18.37	0.069	4.5251	4525.1	4M53D7W
			CP QPSK	22.15	17.92	0.062	4.4958	4495.8	4M50G7W
			CP QAM	21.76	17.53	0.057	4.5251	4525.1	4M53D7W
10	704	711	DFT-s Pi/2 BPSK	23.63	19.40	0.087	8.9943	8994.3	8M99G7W
			DFT-s QPSK	23.48	19.25	0.084	8.9881	8988.1	8M99G7W
			DFT-s QAM	22.67	18.44	0.070	9.0173	9017.3	9M02D7W
			CP QPSK	22.30	18.07	0.064	8.9881	8988.1	8M99G7W
			CP QAM	21.75	17.52	0.056	9.0173	9017.3	9M02D7W
15	706.5	708.5	DFT-s Pi/2 BPSK	23.28	19.05	0.080	13.49	13490.0	13M5G7W
			DFT-s QPSK	23.25	19.02	0.080	13.488	13488.0	13M5G7W
			DFT-s QAM	22.54	18.31	0.068	13.523	13523.0	13M5D7W
			CP QPSK	21.87	17.64	0.058	13.488	13488.0	13M5G7W
			CP QAM	21.29	17.06	0.051	13.523	13523.0	13M5D7W

5G NR Band n13 Uplink frequency band : 777 to 787 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	779.5	784.5	DFT-s Pi/2 BPSK	23.44	19.21	0.083	4.5025	4502.5	4M50G7W
			DFT-s QPSK	23.49	19.26	0.084	4.5121	4512.1	4M51G7W
			DFT-s QAM	22.57	18.34	0.068	4.5135	4513.5	4M51D7W
			CP QPSK	22.18	17.95	0.062	4.5121	4512.1	4M51G7W
			CP QAM	21.56	17.33	0.054	4.5135	4513.5	4M51D7W
10	782	782	DFT-s Pi/2 BPSK	23.37	19.14	0.082	8.9256	8925.6	8M93G7W
			DFT-s QPSK	23.26	19.03	0.080	8.9236	8923.6	8M92G7W
			DFT-s QAM	22.29	18.06	0.064	8.9612	8961.2	8M96D7W
			CP QPSK	22.12	17.89	0.062	8.9236	8923.6	8M92G7W
			CP QAM	21.43	17.20	0.052	8.9612	8961.2	8M96D7W
5G NR Band n14 Uplink frequency band : 788 to 798 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	790.5	795.5	DFT-s Pi/2 BPSK	23.35	19.12	0.082	4.5067	4506.7	4M51G7W
			DFT-s QPSK	23.28	19.05	0.080	4.5079	4507.9	4M51G7W
			DFT-s QAM	22.81	18.58	0.072	4.5126	4512.6	4M51D7W
			CP QPSK	22.15	17.92	0.062	4.5079	4507.9	4M51G7W
			CP QAM	21.60	17.37	0.055	4.5126	4512.6	4M51D7W
10	793	793	DFT-s Pi/2 BPSK	23.45	19.22	0.084	8.9268	8926.8	8M93G7W
			DFT-s QPSK	23.50	19.27	0.085	8.9728	8972.8	8M97G7W
			DFT-s QAM	22.82	18.59	0.072	8.9505	8950.5	8M95D7W
			CP QPSK	22.06	17.83	0.061	8.9728	8972.8	8M97G7W
			CP QAM	21.43	17.20	0.052	8.9505	8950.5	8M95D7W
5G NR Band n25 Uplink frequency band : 1850 to 1915 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	1852.5	1912.5	DFT-s Pi/2 BPSK	24.06	26.85	0.484	4.5173	4517.3	4M52G7W
			DFT-s QPSK	23.81	26.60	0.457	4.5079	4507.9	4M51G7W
			DFT-s QAM	23.04	25.83	0.383	4.5162	4516.2	4M52D7W
			CP QPSK	22.41	25.20	0.331	4.5079	4507.9	4M51G7W
			CP QAM	22.28	25.07	0.321	4.5162	4516.2	4M52D7W
10	1855	1910	DFT-s Pi/2 BPSK	23.24	26.73	0.471	8.9817	8981.7	8M98G7W
			DFT-s QPSK	23.95	26.74	0.478	8.9674	8967.4	8M97G7W
			DFT-s QAM	22.98	25.77	0.372	8.9972	8997.2	9M00D7W
			CP QPSK	22.50	25.29	0.338	8.9674	8967.4	8M97G7W
			CP QAM	22.20	24.99	0.316	8.9972	8997.2	9M00D7W
15	1857.5	1907.5	DFT-s Pi/2 BPSK	23.98	26.77	0.475	13.453	13453.0	13M5G7W
			DFT-s QPSK	23.96	26.75	0.473	13.453	13453.0	13M5G7W
			DFT-s QAM	23.25	25.94	0.393	13.473	13473.0	13M5D7W
			CP QPSK	22.62	25.41	0.348	13.453	13453.0	13M5G7W
			CP QAM	21.90	24.69	0.294	13.477	13477.0	13M5D7W
20	1860	1905	DFT-s Pi/2 BPSK	23.96	26.75	0.473	17.905	17905.0	17M9G7W
			DFT-s QPSK	23.89	26.68	0.466	17.922	17922.0	17M9G7W
			DFT-s QAM	23.12	25.91	0.390	17.959	17959.0	18M0D7W
			CP QPSK	22.67	25.46	0.352	17.922	17922.0	17M9G7W
			CP QAM	22.20	24.99	0.316	17.959	17959.0	18M0D7W
5G NR Band n26 Part90s Uplink frequency band : 814 to 824 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	816.5	821.5	DFT-s Pi/2 BPSK	23.77	22.00	0.158	4.5227	4522.7	4M52G7W
			DFT-s QPSK	23.74	21.97	0.157	4.5076	4507.6	4M51G7W
			DFT-s QAM	22.82	21.05	0.127	4.536	4536.0	4M54D7W
			CP QPSK	22.37	20.60	0.115	4.5076	4507.6	4M51G7W
			CP QAM	21.78	20.01	0.100	4.536	4536.0	4M54D7W
10	819	819	DFT-s Pi/2 BPSK	23.78	22.01	0.159	8.964	8964.0	8M96G7W
			DFT-s QPSK	23.63	21.88	0.150	8.900	8900.0	8M90D7W
			DFT-s QAM	22.34	20.57	0.114	8.9907	8990.7	9M00D7W
			CP QPSK	22.03	20.26	0.106	8.9001	8900.1	8M90D7W
			CP QAM	21.44	19.67	0.093	8.9907	8990.7	8M99D7W
5G NR Band n26 Uplink frequency band : 824 to 849 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	826.5	846.5	DFT-s Pi/2 BPSK	23.92	22.15	0.164	4.5101	4510.1	4M51G7W
			DFT-s QPSK	23.90	22.13	0.163	4.4985	4498.5	4M50S7W
			DFT-s QAM	22.90	21.13	0.130	4.5262	4522.6	4M52D7W
			CP QPSK	22.62	20.85	0.122	4.4985	4498.5	4M50S7W
			CP QAM	22.21	20.44	0.111	4.5262	4522.6	4M52D7W
10	829	844	DFT-s Pi/2 BPSK	23.86	22.09	0.162	8.951	8951.0	8M95G7W
			DFT-s QPSK	23.84	22.07	0.161	8.982	8982.0	8M98G7W
			DFT-s QAM	22.64	20.87	0.122	8.9969	8996.9	9M00D7W
			CP QPSK	22.63	20.86	0.122	8.982	8982.0	8M98G7W
			CP QAM	22.01	20.24	0.106	8.9969	8996.9	9M00D7W
15	831.5	841.5	DFT-s Pi/2 BPSK	23.94	22.17	0.165	13.471	13471.0	13M5G7W
			DFT-s QPSK	23.93	22.16	0.164	13.458	13458.0	13M5G7W
			DFT-s QAM	23.01	21.24	0.133	13.504	13504.0	13M5D7W
			CP QPSK	22.23	20.46	0.111	13.458	13458.0	13M5G7W
			CP QAM	21.70	19.93	0.098	13.504	13504.0	13M5D7W
20	834	839	DFT-s Pi/2 BPSK	23.93	22.16	0.164	17.932	17932.0	17M9G7W
			DFT-s QPSK	23.92	22.15	0.164	17.948	17948.0	17M9G7W
			DFT-s QAM	23.06	21.29	0.135	17.978	17978.0	18M0D7W
			CP QPSK	21.99	20.22	0.105	17.948	17948.0	17M9G7W
			CP QAM	21.63	19.86	0.097	17.978	17978.0	18M0D7W

5G NR Band n30 Uplink frequency band : 2305 to 2315 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	2307.5	2312.5	DFT-s PI/2 BPSK	22.48	23.67	0.233	4.5129	4512.9	4M51G7W
			DFT-s QPSK	22.45	23.64	0.231	4.4943	4494.3	4M49G7W
			DFT-s QAM	21.44	22.63	0.183	4.5123	4512.3	4M51D7W
			CP QPSK	21.22	22.41	0.174	4.4943	4494.3	4M49G7W
			CP QAM	20.52	21.71	0.148	4.5123	4512.3	4M51D7W
10	2310	DFT-s PI/2 BPSK	22.47	23.66	0.232	8.9508	8950.8	8M95G7W	
		DFT-s QPSK	22.38	23.57	0.228	8.9542	8954.2	8M95G7W	
		DFT-s QAM	21.46	22.65	0.184	8.9822	8982.2	8M98D7W	
		CP QPSK	21.37	22.56	0.180	8.9542	8954.2	8M95G7W	
		CP QAM	20.42	21.61	0.145	8.9822	8982.2	8M98D7W	
5G NR Band n38 Uplink frequency band : 2570 to 2620 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
10	2575	2615	DFT-s PI/2 BPSK	24.06	25.25	0.335	8.6405	8640.5	8M64G7W
			DFT-s QPSK	23.87	25.06	0.321	8.6355	8635.5	8M64G7W
			DFT-s QAM	23.31	24.50	0.282	8.6452	8645.2	8M65D7W
			CP QPSK	22.59	23.78	0.239	8.6355	8635.5	8M64G7W
			CP QAM	22.20	23.39	0.218	8.6452	8645.2	8M65D7W
15	2577.5	2612.5	DFT-s PI/2 BPSK	24.05	25.24	0.334	12.947	12947.0	12M9G7W
			DFT-s QPSK	23.94	25.13	0.326	12.951	12951.0	13M0G7W
			DFT-s QAM	23.05	24.24	0.265	12.96	12960.0	13M0D7W
			CP QPSK	22.84	24.03	0.253	12.951	12951.0	13M0G7W
			CP QAM	22.32	23.51	0.224	12.96	12960.0	13M0D7W
20	2580	2610	DFT-s PI/2 BPSK	23.95	25.14	0.327	17.94	17940.0	17M9G7W
			DFT-s QPSK	23.90	25.09	0.323	17.918	17918.0	17M9G7W
			DFT-s QAM	23.14	24.33	0.271	17.967	17967.0	18M0D7W
			CP QPSK	22.92	24.11	0.258	17.918	17918.0	17M9G7W
			CP QAM	22.39	23.58	0.228	17.967	17967.0	18M0D7W
FCC 5G NR Band n41 Uplink frequency band : 2496 to 2680 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
10	2501.01	2685	DFT-s PI/2 BPSK	23.86	25.05	0.320	8.6181	8618.1	8M62G7W
			DFT-s QPSK	23.82	25.01	0.317	8.6483	8648.3	8M65G7W
			DFT-s QAM	22.99	24.18	0.262	8.7379	8737.9	8M74D7W
			CP QPSK	22.52	23.71	0.235	8.6483	8648.3	8M65G7W
			CP QAM	22.00	23.19	0.208	8.7379	8737.9	8M74D7W
15	2503.5	2682.48	DFT-s PI/2 BPSK	23.90	25.09	0.323	12.944	12944.0	12M9G7W
			DFT-s QPSK	23.83	25.02	0.318	12.969	12969.0	13M0G7W
			DFT-s QAM	23.10	24.29	0.269	12.955	12955.0	13M0D7W
			CP QPSK	22.58	23.77	0.238	12.969	12969.0	13M0G7W
			CP QAM	21.85	23.04	0.201	12.955	12955.0	13M0D7W
20	2506.02	2679.99	DFT-s PI/2 BPSK	23.81	25.00	0.316	17.938	17938.0	17M9G7W
			DFT-s QPSK	23.77	24.96	0.313	17.979	17979.0	18M0G7W
			DFT-s QAM	23.00	24.19	0.262	17.944	17944.0	17M9D7W
			CP QPSK	22.48	23.67	0.233	17.979	17979.0	18M0G7W
			CP QAM	21.93	23.12	0.205	17.944	17944.0	17M9D7W
5G NR Band n53 Uplink frequency band : 2483.5 to 2495 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
10	2488.5	2490	DFT-s PI/2 BPSK	23.35	24.54	0.284	8.6558	8655.8	8M66G7W
			DFT-s QPSK	23.19	24.38	0.274	8.6151	8615.1	8M62G7W
			DFT-s QAM	22.48	23.67	0.233	8.6426	8642.6	8M64D7W
			CP QPSK	22.12	23.31	0.214	8.6151	8615.1	8M62G7W
			CP QAM	21.51	22.70	0.186	8.6426	8642.6	8M64D7W
5G NR Band n66 Uplink frequency band : 1710 to 1780 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	1712.5	1777.5	DFT-s PI/2 BPSK	23.96	25.75	0.473	4.511	4511.0	4M51G7W
			DFT-s QPSK	23.94	25.73	0.471	4.5115	4511.5	4M51G7W
			DFT-s QAM	22.90	25.69	0.371	4.505	4505.0	4M51D7W
			CP QPSK	22.62	25.41	0.348	4.5115	4511.5	4M51G7W
			CP QAM	21.87	24.66	0.292	4.505	4505.0	4M51D7W
10	1715	1775	DFT-s PI/2 BPSK	24.01	26.80	0.479	8.9569	8956.9	8M96G7W
			DFT-s QPSK	23.91	26.70	0.468	8.9972	8997.2	9M0G07W
			DFT-s QAM	22.73	25.52	0.356	8.9668	8966.8	9M0D07W
			CP QPSK	22.31	25.10	0.324	8.9972	8997.2	9M0G07W
			CP QAM	21.97	24.76	0.299	8.9668	8966.8	9M0D07W
15	1717.5	1772.5	DFT-s PI/2 BPSK	23.96	25.75	0.473	13.435	13435.0	13M4G7W
			DFT-s QPSK	23.93	25.72	0.470	13.467	13467.0	13M5G7W
			DFT-s QAM	23.06	25.85	0.385	13.507	13507.0	13M5D7W
			CP QPSK	22.21	25.00	0.316	13.467	13467.0	13M5G7W
			CP QAM	21.75	24.54	0.284	13.507	13507.0	13M5D7W
20	1720	1770	DFT-s PI/2 BPSK	23.88	25.67	0.465	17.909	17909.0	17M9G7W
			DFT-s QPSK	23.87	25.66	0.463	17.962	17962.0	18M0G7W
			DFT-s QAM	23.24	25.03	0.401	17.955	17955.0	18M0D7W
			CP QPSK	22.44	25.23	0.333	17.962	17962.0	18M0G7W
			CP QAM	22.12	24.91	0.310	17.955	17955.0	18M0D7W

5G NR Band n70 Uplink frequency band : 1695 to 1710 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	1697.5	1707.5	DFT-s Pi/2 BPSK	23.00	25.79	0.379	4.5262	4526.2	4M53G7W
			DFT-s QPSK	22.82	25.61	0.364	4.496	4496.0	4M50G7W
			DFT-s QAM	21.82	24.61	0.289	4.5105	4510.5	4M51D7W
			CP QPSK	21.10	23.89	0.245	4.496	4496.0	4M50G7W
			CP QAM	20.85	23.64	0.231	4.5105	4510.5	4M51D7W
10	1700	1705	DFT-s Pi/2 BPSK	22.86	25.65	0.367	8.9785	8978.5	8M98G7W
			DFT-s QPSK	22.85	25.64	0.366	8.9876	8987.6	8M99G7W
			DFT-s QAM	22.11	24.90	0.309	9.0039	9003.9	9M0D7W
			CP QPSK	21.76	24.55	0.285	8.9876	8987.6	8M99G7W
			CP QAM	21.19	23.98	0.250	9.0039	9003.9	9M0D7W
15	1702.5	1702.5	DFT-s Pi/2 BPSK	22.91	25.70	0.372	13.459	13459.0	13M5G7W
			DFT-s QPSK	22.66	25.45	0.351	13.496	13496.0	13M5G7W
			DFT-s QAM	21.97	24.76	0.299	13.458	13458.0	13M5D7W
			CP QPSK	21.31	24.10	0.257	13.496	13496.0	13M5G7W
			CP QAM	20.75	23.54	0.226	13.458	13458.0	13M5D7W
5G NR Band n71 Uplink frequency band : 663 to 698 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
5	665.5	695.5	DFT-s Pi/2 BPSK	23.35	21.14	0.130	4.5152	4515.2	4M52G7W
			DFT-s QPSK	23.49	21.28	0.134	4.5052	4505.2	4M51G7W
			DFT-s QAM	22.40	20.19	0.104	4.5064	4506.4	4M51D7W
			CP QPSK	22.74	20.53	0.113	4.5052	4505.2	4M51G7W
			CP QAM	21.88	19.67	0.093	4.5064	4506.4	4M51D7W
10	668	693	DFT-s Pi/2 BPSK	23.64	21.43	0.139	8.9383	8938.3	8M94G7W
			DFT-s QPSK	23.44	21.23	0.133	8.9697	8969.7	8M97G7W
			DFT-s QAM	22.68	20.47	0.111	8.9899	8989.9	8M9D7W
			CP QPSK	22.39	20.18	0.104	8.9697	8969.7	8M97G7W
			CP QAM	21.74	19.53	0.090	8.9899	8989.9	8M9D7W
15	670.5	690.5	DFT-s Pi/2 BPSK	23.49	21.28	0.134	13.438	13438.0	13M4G7W
			DFT-s QPSK	23.46	21.25	0.133	13.444	13444.0	13M4G7W
			DFT-s QAM	22.73	20.52	0.113	13.454	13454.0	13M5D7W
			CP QPSK	21.86	19.65	0.092	13.444	13444.0	13M4G7W
			CP QAM	21.53	19.32	0.086	13.454	13454.0	13M5D7W
20	673	688	DFT-s Pi/2 BPSK	23.42	21.21	0.132	17.917	17917.0	17M9G7W
			DFT-s QPSK	23.32	21.11	0.129	17.95	17950.0	18M0G7W
			DFT-s QAM	22.57	20.36	0.109	17.963	17963.0	18M0D7W
			CP QPSK	22.31	20.10	0.102	17.95	17950.0	18M0G7W
CP QAM	21.71	19.50	0.089	17.963	17963.0	18M0D7W			
5G NR Band n77 Part2 Uplink frequency band : 3700 to 3980 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
10	3705	3975	DFT-s Pi/2 BPSK	23.35	24.26	0.267	8.6476	8647.6	8M65G7W
			DFT-s QPSK	23.32	24.23	0.265	8.5532	8553.2	8M55G7W
			DFT-s QAM	22.28	23.19	0.208	8.6669	8666.9	8M67D7W
			CP QPSK	21.93	22.84	0.192	8.5532	8553.2	8M55G7W
			CP QAM	21.64	22.55	0.180	8.6669	8666.9	8M67D7W
15	3707.52	3972.48	DFT-s Pi/2 BPSK	23.43	24.34	0.272	12.939	12939.0	12M9G7W
			DFT-s QPSK	23.31	24.22	0.264	12.999	12999.0	13M0G7W
			DFT-s QAM	22.60	23.51	0.224	12.953	12953.0	13M0D7W
			CP QPSK	22.35	23.26	0.212	12.999	12999.0	13M0G7W
			CP QAM	21.91	22.82	0.191	12.953	12953.0	13M0D7W
20	3710.01	3969.99	DFT-s Pi/2 BPSK	23.20	24.01	0.258	17.873	17873.0	17M9G7W
			DFT-s QPSK	23.13	24.04	0.254	17.989	17989.0	18M0G7W
			DFT-s QAM	22.38	23.29	0.213	17.972	17972.0	18M0D7W
			CP QPSK	21.35	22.26	0.168	17.989	17989.0	18M0G7W
			CP QAM	21.48	22.39	0.173	17.972	17972.0	18M0D7W
5G NR Band n77 Part2 Uplink frequency band : 3450 to 3550 MHz									
Bandwidth (MHz)	Low Frequency (MHz)	Upper Frequency (MHz)	Modulation	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Type of Emission
10	3455.01	3544.98	DFT-s Pi/2 BPSK	23.56	24.46	0.280	8.6078	8607.8	8M61G7W
			DFT-s QPSK	23.51	24.42	0.277	8.6498	8649.8	8M65G7W
			DFT-s QAM	22.43	23.34	0.216	8.6762	8676.2	8M68D7W
			CP QPSK	22.50	23.41	0.219	8.6498	8649.8	8M65G7W
			CP QAM	21.80	22.71	0.187	8.6762	8676.2	8M68D7W
15	3457.5	3542.49	DFT-s Pi/2 BPSK	23.55	24.46	0.279	12.936	12936.0	12M9G7W
			DFT-s QPSK	23.46	24.37	0.274	12.938	12938.0	12M9G7W
			DFT-s QAM	22.59	23.50	0.224	12.932	12932.0	12M9D7W
			CP QPSK	22.03	22.94	0.197	12.938	12938.0	12M9G7W
			CP QAM	21.30	22.21	0.166	12.932	12932.0	12M9D7W
20	3460.02	3540	DFT-s Pi/2 BPSK	23.60	24.51	0.282	17.977	17977.0	17M9G7W
			DFT-s QPSK	23.51	24.42	0.277	17.944	17944.0	17M9G7W
			DFT-s QAM	22.99	23.90	0.245	17.958	17958.0	18M0D7W
			CP QPSK	21.74	22.65	0.184	17.944	17944.0	17M9G7W
			CP QAM	21.79	22.70	0.186	17.958	17958.0	18M0D7W

1.5 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22H, 24E, 25B, 27C, Part 90

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

KDB412172 D01 Determining ERP and EIRP v01r01

1.6 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 2		
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
Conducted G				
Note: Test site name is remarked on the equipment list in each section of this report as an indica- tion where measurements occurred in specific test site and address.				

1.7 Special Accessories

No special accessories were used during testing.

1.8 Equipment Modifications

There was no modifications incorporated into the EUT.

1.9 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Measurement at Antenna Port

The EUT is placed on a table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

The EUT is placed on a turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

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2.5 Final Amplifier Voltage and Current Information:

5G NR BAND n2		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	550
Bandwidth:10MHz Mod:256QAM	3.3	570
Bandwidth:15MHz Mod:256QAM	3.3	560
Bandwidth:20MHz Mod:256QAM	3.3	550
5G NR BAND n5		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	440
Bandwidth:10MHz Mod:256QAM	3.3	450
Bandwidth:15MHz Mod:256QAM	3.3	460
Bandwidth:20MHz Mod:256QAM	3.3	460
5G NR BAND n7		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	640
Bandwidth:10MHz Mod:256QAM	3.3	660
Bandwidth:15MHz Mod:256QAM	3.3	630
Bandwidth:20MHz Mod:256QAM	3.3	600
5G NR BAND n12		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	580
Bandwidth:10MHz Mod:256QAM	3.3	620
Bandwidth:15MHz Mod:256QAM	3.3	570
5G NR BAND n13		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	510
Bandwidth:10MHz Mod:256QAM	3.3	530
5G NR BAND n14		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	530
Bandwidth:10MHz Mod:256QAM	3.3	540

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5G NR BAND n25		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	570
Bandwidth:10MHz Mod:256QAM	3.3	570
Bandwidth:15MHz Mod:256QAM	3.3	550
Bandwidth:20MHz Mod:256QAM	3.3	540
5G NR BAND n26 Part90s		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	500
Bandwidth:10MHz Mod:256QAM	3.3	510
5G NR BAND n26		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	530
Bandwidth:10MHz Mod:256QAM	3.3	520
Bandwidth:15MHz Mod:256QAM	3.3	500
Bandwidth:20MHz Mod:256QAM	3.3	500
5G NR BAND n30		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	660
Bandwidth:10MHz Mod:256QAM	3.3	630
5G NR BAND n38		
CP-OFDM_SCS 30 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:10MHz Mod:256QAM	3.3	170
Bandwidth:15MHz Mod:256QAM	3.3	170
Bandwidth:20MHz Mod:256QAM	3.3	170
5G NR BAND n41		
CP-OFDM_SCS 30 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:10MHz Mod:256QAM	3.3	200
Bandwidth:15MHz Mod:256QAM	3.3	210
Bandwidth:20MHz Mod:256QAM	3.3	210
5G NR BAND n53		
CP-OFDM_SCS 30 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:10MHz Mod:256QAM	3.3	180

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5G NR BAND n66		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	550
Bandwidth:10MHz Mod:256QAM	3.3	560
Bandwidth:15MHz Mod:256QAM	3.3	570
Bandwidth:20MHz Mod:256QAM	3.3	580
5G NR BAND n70		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	760
Bandwidth:10MHz Mod:256QAM	3.3	760
Bandwidth:15MHz Mod:256QAM	3.3	730
5G NR BAND n71		
CP-OFDM_SCS 15 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:5MHz Mod:256QAM	3.3	510
Bandwidth:10MHz Mod:256QAM	3.3	550
Bandwidth:15MHz Mod:256QAM	3.3	550
Bandwidth:20MHz Mod:256QAM	3.3	530
5G NR BAND n77		
CP-OFDM_SCS 30 kHz		
Test mode	DC voltage (V)	DC current (mA)
Bandwidth:10MHz Mod:256QAM	3.3	210
Bandwidth:15MHz Mod:256QAM	3.3	210
Bandwidth:20MHz Mod:256QAM	3.3	170

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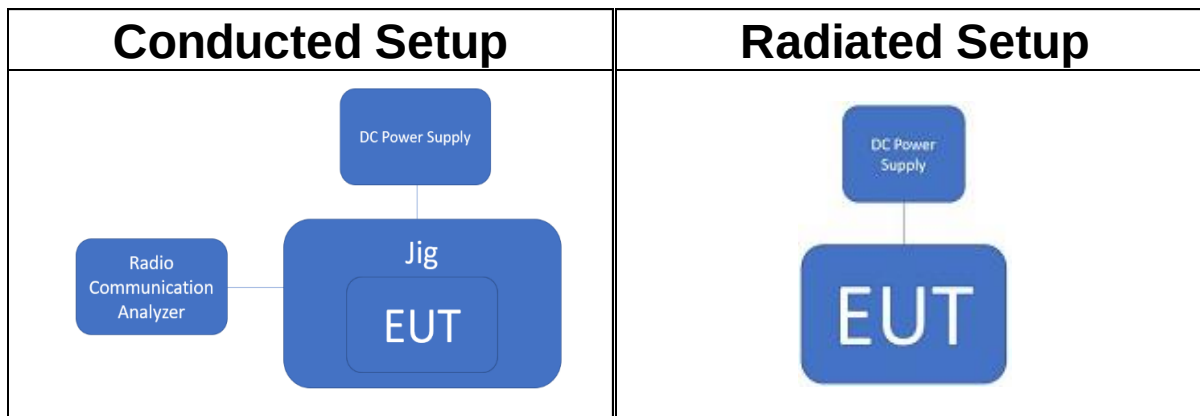
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2.6 Test Configuration



Note: Radio Communication Analyzer is placed in remote side for radiated test.

2.7 Control Unit(s)

N/A

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3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a) §25.149(c)(4)(iii)	RF Power Output	Compliant
§22.913(a)(5) §24.232(c) §25.149(c)(4)(iii) §27.50(h)(2) §27.50(c)(9) §27.50(d)(4) §27.50(j)(3) §27.50(k)(3) §90.542(a)(6) §90.635(b) §96.41(b)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§25.149(c)(4)(ii)	6 dB bandwidth	Compliant
§25.149(c)(4)(iv)	Maximum power spectral density	Compliant
§2.1051 §22.917(a)(b) §24.238(a)(b) §25.149(c)(4)(v)(vi) §27.53 (n)(2) §27.53(g) §27.53(h)(1)&(3) §27.53(l)(2) §27.53(m) §27.53(m)(4) §27.53(m)(4)(6) §90.691(a) §90.210(n) §90.543(e)(2)~(5) §96.41 (e)(2)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask require- ments	Compliant

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§2.1053 §22.917(a)(b) §24.238(a)(b) §25.149(c)(4)(v)(vi) §27.53(g) §27.53(h) §27.53(l)(2) §27.53(m)(4) §27.50(n)(2) §90.543(e)(2)~(5) §90.543 (f) §90.691(a) §96.41 (e)(2)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.50(a)(B) §27.50(j)(4) §27.50 (k)(4) §96.41(g)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §25.202(d) §27.54 §90.539 (e)	Frequency Stability	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Pre-Scan has been conducted to determine the worst-case scenario from all possible combinations among available modulations, data rates and antenna ports, the worst case configurations listed below for the final test.
3. The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.
4. The Power / Bandwidth / Channels of n78 is the same as n77, so the test items will be covered by n77.

4.2 Measurement Configuration

Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full			
Conducted Power	2	v	v	v	v	v	v	v	v												v	v	v	v	v	v	v	v						v	v		
Frequency Stability			v							v																										v	
Occupied Bandwidth			v	v	v	v	v	v	v	v												v	v	v	v	v										v	
Bandedge			v			v	v	v	v	v												v								v	v					v	
Mask																																					
Conducted Emission			v	v	v	v	v	v	v	v												v											v				
CCDF			v	v	v	v	v	v	v	v																v										v	
Radiated Emission		v	v	v			v														v																
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full			
Conducted Power	5	v	v	v	v	v	v	v	v												v	v	v	v	v	v	v	v							v	v	
Frequency Stability			v							v																										v	
Occupied Bandwidth			v	v	v	v	v	v	v	v												v	v	v	v	v										v	
Bandedge			v			v	v	v	v	v												v								v	v					v	
Mask																																					
Conducted Emission			v	v	v	v	v	v	v	v												v												v			
CCDF			v	v	v	v	v	v	v	v																v										v	
Radiated Emission		v	v	v				v													v																
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full			
Conducted Power	7	v	v	v	v	v	v	v	v												v	v	v	v	v	v	v	v							v	v	
Frequency Stability			v							v																										v	
Occupied Bandwidth			v	v	v	v	v	v	v	v												v	v	v	v	v										v	
Bandedge			v			v	v	v	v	v																											
Mask			v	v	v	v	v	v	v	v												v								v	v					v	
Conducted Emission			v	v	v	v	v	v	v	v												v															
CCDF			v	v	v	v	v	v	v	v																v										v	
Radiated Emission		v	v	v			v														v																
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full			
Conducted Power	12	v	v	v	v	v	v	v	v												v	v	v	v	v	v	v	v									
Frequency Stability			v							v																											
Occupied Bandwidth			v	v	v	v	v	v	v	v												v	v	v	v	v										v	
Bandedge			v			v	v	v	v	v																											
Mask																																					
Conducted Emission			v	v	v	v	v	v	v	v												v															
CCDF			v	v	v	v	v	v	v	v																v										v	
Radiated Emission		v	v	v			v														v																
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full			
Conducted Power	13	v	v	v	v	v															v	v	v	v	v	v	v	v									
Frequency Stability			v					v																												v	
Occupied Bandwidth			v	v	v	v	v															v	v	v	v											v	
Bandedge			v			v	v	v																													
Mask																																					
Conducted Emission			v	v	v	v	v															v															
CCDF			v	v	v	v	v	v																		v											
Radiated Emission		v	v	v	v																v																

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Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	14	v	v	v	v	v														v	v	v	v	v	v	v	v	v							v	
Frequency Stability			v			v																													v	
Occupied Bandwidth		v	v	v	v	v														v	v	v	v	v											v	
Bandedge		v		v	v	v	v													v									v	v					v	
Mask																																				
Conducted Emission		v	v	v	v	v	v													v												v				
CCDF		v	v	v	v	v	v																	v											v	
Radiated Emission		v			v														v												v					
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	25	v	v	v	v	v	v	v												v	v	v	v	v	v	v	v	v							v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v	v	v	v	v												v	v	v	v	v											v	
Bandedge		v		v	v	v	v	v												v									v	v					v	
Mask																																				
Conducted Emission		v	v	v	v	v	v	v												v												v				
CCDF		v	v	v	v	v	v	v																	v										v	
Radiated Emission		v	v	v	v														v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	26 Part90s	v	v	v	v	v														v	v	v	v	v	v	v	v	v							v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v	v	v														v	v	v	v	v											v	
Bandedge		v		v	v	v	v													v									v	v					v	
Mask																																				
Conducted Emission		v	v	v	v	v														v												v				
CCDF		v	v	v	v	v	v																		v										v	
Radiated Emission		v	v	v															v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	26	v	v	v	v	v	v													v	v	v	v	v	v	v	v								v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v	v	v	v													v	v	v	v	v											v	
Bandedge		v		v	v	v	v													v									v	v					v	
Mask																																				
Conducted Emission		v	v	v	v	v	v													v												v				
CCDF		v	v	v	v	v	v																												v	
Radiated Emission		v	v	v															v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	30	v	v	v	v	v														v	v	v	v	v	v	v	v								v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v	v	v														v	v	v	v	v											v	
Bandedge		v		v	v	v														v									v	v					v	
Mask																																				
Conducted Emission		v	v	v	v	v														v												v				
CCDF		v	v	v	v	v																													v	
Radiated Emission			v																v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	38	v	v	v		v	v	v												v	v	v	v	v	v	v	v								v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v		v	v	v												v	v	v	v	v											v	
Bandedge		v		v																									v	v						v
Mask																																				
Conducted Emission		v	v	v		v	v	v												v												v				
CCDF		v	v	v		v	v	v																											v	
Radiated Emission		v	v	v															v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM			RB #							
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full		
Conducted Power	41	v	v	v		v	v	v												v	v	v	v	v	v	v	v								v	
Frequency Stability			v					v																											v	
Occupied Bandwidth		v	v	v		v	v	v												v	v	v	v	v											v	
Bandedge		v		v																																
Mask																																				
Conducted Emission		v	v	v		v	v	v												v																
CCDF		v	v	v		v	v	v																												
Radiated Emission		v	v	v															v																	

Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM				RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full				
Conducted Power	53	v	v	v		v															v	v	v	v	v		v	v	v	v							v	
Frequency Stability				v			v															v	v	v	v											v		
Occupied Bandwidth			v	v	v		v														v	v	v	v	v											v		
Bandedge Mask			v		v		v														v						v			v							v	
Conducted Emission			v	v	v		v														v											v						
CCDF																																						
Radiated Emission			v	v	v		v														v											v						
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM				RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full				
Conducted Power	66	v	v	v	v	v	v	v													v	v	v	v	v	v	v	v	v								v	
Frequency Stability				v																																	v	
Occupied Bandwidth			v	v	v	v	v	v	v												v	v	v	v	v												v	
Bandedge Mask			v		v	v	v	v	v												v								v	v							v	
Conducted Emission			v	v	v	v	v	v	v												v												v					
CCDF			v	v	v	v	v	v	v												v																v	
Radiated Emission			v	v	v	v															v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM				RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full				
Conducted Power	70	v	v	v	v	v	v	v													v	v	v	v	v	v	v	v										
Frequency Stability				v																																	v	
Occupied Bandwidth			v	v	v	v	v	v													v	v	v	v	v												v	
Bandedge Mask			v		v	v	v	v													v									v	v						v	
Conducted Emission			v	v	v	v	v	v													v																	
CCDF			v	v	v	v	v	v													v																v	
Radiated Emission			v	v	v	v															v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM				RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full				
Conducted Power	71	v	v	v	v	v	v	v													v	v	v	v	v	v	v	v										
Frequency Stability				v																																	v	
Occupied Bandwidth			v	v	v	v	v	v													v	v	v	v	v												v	
Bandedge Mask			v		v	v	v	v													v									v	v						v	
Conducted Emission			v	v	v	v	v	v													v																	
CCDF			v	v	v	v	v	v																													v	
Radiated Emission			v	v	v																v																	
Test Items	Band	Test Channel			Bandwidth (MHz)																Modulation DFT-s-OFDM					Modulation CP-OFDM				RB #								
		L	M	H	5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	BPSK	QPSK	16 QAM	64 QAM	256 QAM	QPSK	16 QAM	64 QAM	256 QAM	Edge 1RB_Left	Edge 1RB_Right	Inner 1RB_Left	Inner 1RB_Right	Inner Full	Outer Full				
Conducted Power	77	v	v	v		v	v	v													v	v	v	v	v	v	v	v										
Frequency Stability				v																																	v	
Occupied Bandwidth			v	v	v		v	v	v												v	v	v	v	v												v	
Bandedge Mask																																						
Conducted Emission			v	v	v		v	v	v																													v
CCDF			v	v	v		v	v	v																													
Radiated Emission			v	v	v		v																															

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 0.97 dB
ERP/ EIRP measurement	+/- 2.15 dB
	+/- 2.15 dB
Emission Bandwidth	+/- 1.38 Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/- 0.77 dB
Peak to Average Ratio	+/- 0.97 dB
Frequency Stability vs. Temperature	+/- 1.48 Hz
Frequency Stability vs. Voltage	+/- 1.48 Hz
Temperature	+/- 0.6 °C
Humidity	+/- 3 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	1.89 dB	9kHz~30MHz
	+/-	4.15 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	1.89 dB	9kHz~30MHz
	+/-	4.02 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Radiated Spurious Emission	+/-	2 dB	33GHz-50GHz
	+/-	1.59 dB	50GHz-60GHz
	+/-	1.7 dB	60GHz-90GHz
	+/-	1.64 dB	90GHz-140GHz
	+/-	3.83 dB	140GHz-220GHz

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

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6 MEASUREMENT EQUIPMENT USED

6.1 Conducted Measurement

Conducted Emission Test Site: Conducted 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)
Attenuator	Mini-Circuits	BW-S10W2+	8	12/12/2023	12/11/2024
DC Block	Mini-Circuits	BLK-18-S+	4	12/12/2023	12/11/2024
Attenuator	Mini-Circuits	BW-S10W2+	8	12/11/2024	12/10/2025
DC Block	Mini-Circuits	BLK-18-S+	4	12/11/2024	12/10/2025
DC Power Supply	Gwinstek	SPS-3610	GEV856761	09/13/2024	09/12/2025
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	10/14/2024	10/13/2025
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60240503	12/18/2023	12/17/2024
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60240503	12/16/2024	12/15/2025
PXA Spectrum Analyzer	Keysight	N9030B	MY61330494	03/22/2024	03/21/2025
Radio Communication Analyzer	KEYSIGHT	E7515B	MY601922462	06/02/2024	06/01/2025
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-017	12/12/2023	12/11/2024
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-017	12/11/2024	12/10/2025
Temperature Chamber	Giant Force	GTH-150-40-CP-AR	MAA0512-018	06/05/2024	06/04/2025
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R

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6.2 Radiated Measurement

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL. (mm/dd/yyyy)	CAL DUE. (mm/dd/yyyy)
1G High Pass Filter	Micro-Tronics	HPM50108	32	12/12/2023	12/11/2024
2G High Pass Filter	Micro-Tronics	HPM50110	36	12/12/2023	12/11/2024
4G High Pass Filter	WI	WHKX4.0	22	12/12/2023	12/11/2024
Attenuator	Mini-Circuits	BW-S10W2+	16	12/12/2023	12/11/2024
Band Reject Filter 1700-2000	EWT	EWT-54-0038	M1	12/12/2023	12/11/2024
Band Reject Filter 2240-2700	WI	WRCJV2300/2700- 2240/2760-40/12SS	1	12/12/2023	12/11/2024
Band Reject Filter 3250-3750	Micro-Tronics	BRM15247	1	12/12/2023	12/11/2024
Band Reject Filter 800-1000	EWT	EWT-54-0037	M3R	12/12/2023	12/11/2024
Bi-log Antenna	SCHWARZBECK	VULB9168	1208	07/17/2024	07/16/2025
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/09/2024	08/08/2025
Coaxial Cables	EMCI+Huber Suhner	EMC107-SM-SM- 1000 +SUCOFLEX 104PEA +EMC107-SM-SM- 1500 +SUCOFLEX 106	RX Cable 9K-18G (221110+MY4251/4 PEA+221106+76096 /6)	08/30/2024	08/29/2025
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/ 2	08/30/2024	08/29/2025
Coaxial Cables	Huber Suhner	SUCOFLEX 102+SUCOFLEX 106	TX Cable 30M-40G 23051/2+76096/6+2 2962/2	08/30/2024	08/29/2025
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY63440386	02/06/2024	02/05/2025
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/10/2024	07/09/2025
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	09/23/2024	09/22/2025
Horn Antenna	SCHWARZBECK	BBHA9120D	603	05/15/2024	05/14/2025
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/28/2023	12/27/2024
Network Analyzer	R&S	ZNB 40	101842	05/16/2024	05/15/2025
Pre-Amplifier	EMCI	EMC118A45SEE	980868	08/30/2024	08/29/2025
Pre-Amplifier	EMCI	EMC184045SEE	9080939	08/30/2024	08/29/2025
Pre-Amplifier	HP	8447D	2944A07676	08/30/2024	08/29/2025
Radio Communication Analyzer	KEYSIGHT	E7515B	MY59321566	02/15/2024	02/14/2025
Site Cal	SGS	SAC 3	N/A	08/30/2024	08/29/2025
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R

Note: N.C.R refers to Not Calibrated Required.

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7 STANDARD APPLICABLE

7.1 Maximum Output Power

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.

FCC 25.149(c)

The maximum transmit power is no more than 1 W with a peak EIRP of no more than 6 dBW

7.1.1 ERP/EIRP LIMIT

According to FCC §2.1046

FCC 22.913(a)

(5) mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

FCC 24.232(c)

Mobile and portable stations are limited to 2 W EIRP.

FCC 25.149(c)

The maximum transmit power is no more than 1 W with a peak EIRP of no more than 6 dBW

FCC 27.50 (a)

(3) for mobile and portable stations compliant with 3GPP LTE standards transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band are limited to 250 mW/ 5MHz EIRP but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

FCC 27.50(c)

(9) Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

FCC 27.50(d)

(4) Mobile, and portable (hand-held) stations operating in the 1710-1755 MHz, 1695-1710 MHz and 1755-1780 MHz bands are limited to 1W EIRP.

FCC 27, 50(h)

(2) Mobile and other user stations transmitting in the BRS and EBS bands are limited to 2 W EIRP.

FCC 27, 50(j)

(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

FCC 27, 50(k)

(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

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FCC 90.542(a)

(6) Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

FCC 90.635(b)

Mobile station is limited to 100W ERP

7.2 Occupied Bandwidth Measurement

The occupied bandwidth 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.

FCC §25.149(c)(4)

(ii) The 6 dB bandwidth is at least 500 kHz;

7.3 Out Of Band Emission At Antenna Terminals

FCC §22.917(a), §24.238(a), §27.53(h), §90.543(e)(3)

Out of band emissions. 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 $43 + 10 \log(P)$ dB.

FCC §25.149(c)(4)

(v) Emissions below 2483.5 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least $40 + 10 \log(P)$ dB at the channel edge at 2483.5 MHz, $43 + 10 \log(P)$ dB at 5 MHz from the channel edge, and $55 + 10 \log(P)$ dB at X MHz from the channel edge where X is the greater of 6 MHz or the actual emission bandwidth.

(vi) Emissions above 2495 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least $43 + 10 \log(P)$ dB on all frequencies between the channel edge at 2495 MHz and X MHz from this channel edge and $55 + 10 \log(P)$ dB on all frequencies more than X MHz from this channel edge, where X is the greater of 6 MHz or the actual emission bandwidth;

FCC §27.53(a)

For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

- (i) 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;
- (ii) 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;
- (iii) 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.

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FCC §27.53(g)

Compliance for operations in the 600 MHz, 698-746 MHz, 746-758 MHz and the 776-788 MHz band with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(2) 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 $43 + 10 \log(P)$ dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

FCC §27.53(h)

(h) *AWS emission limits*—(1) *General protection levels*. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz 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; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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 emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

FCC §90.543 (e)

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

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- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

FCC §90.691 Emission mask requirements for EA-based systems

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

- (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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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 $43 + 10 \log_{10}(P)$ 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.

7.4 Field Strength Of Spurious Radiation Measurement

According to FCC §2.1053,

FCC §22.917(a), §24.238(a), §27.53(h), §90.543(e)(3)

Out of band emissions. 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 $43 + 10 \log (P)$ dB.

FCC §25.149(c)(4)

- (v) Emissions below 2483.5 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least $40 + 10 \log (P)$ dB at the channel edge at 2483.5 MHz, $43 + 10 \log (P)$ dB at 5 MHz from the channel edge, and $55 + 10 \log (P)$ dB at X MHz from the channel edge where X is the greater of 6 MHz or the actual emission bandwidth.
- (vi) Emissions above 2495 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least $43 + 10 \log (P)$ dB on all frequencies between the channel edge at 2495 MHz and X MHz from this channel edge and $55 + 10 \log (P)$ dB on all frequencies more than X MHz from this channel edge, where X is the greater of 6 MHz or the actual emission bandwidth;

FCC §27.53(a)

For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

- (4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:
 - (ii) By a factor of not less than $70 + 10 \log (P)$ dB below 2288 MHz;
 - (iii) By a factor of not less than $70 + 10 \log (P)$ dB above 2365 MHz.

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FCC §27.53(g)

Compliance for operations in the 600 MHz, 698-746 MHz, 746-758 MHz and the 776-788 MHz band with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(2) 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 $43 + 10 \log(P)$ dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

FCC §90.543 (f)

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(h)(1)

(h) *AWS emission limits*—(1) *General protection levels*. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz 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; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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 emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be

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made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

§90.691 Emission mask requirements for EA-based systems

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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 $43 + 10 \log_{10}(P)$ 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.

7.5 Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§25.202(d) Frequency tolerance, Earth stations. The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

7.6 Peak to Average Ratio

The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

7.7 Maximum Power Spectral Density

FCC §25.149(c)(4)

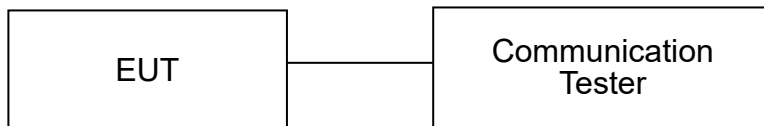
(iv) The maximum power spectral density conducted to the antenna is not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission;

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8 TEST SETUP

8.1 Maximum Output Power



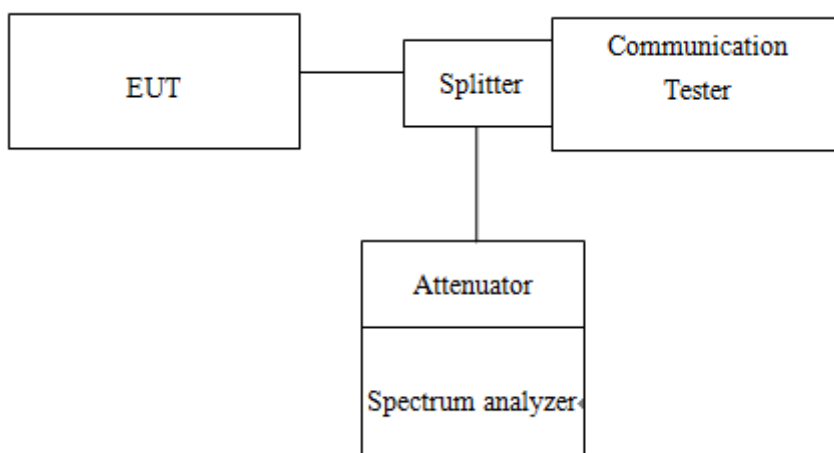
Note: Measurement setup for testing on Antenna connector

8.2 Occupied Bandwidth Measurement



Note: Measurement setup for testing on Antenna connector

8.3 Out of Band Emission At Antenna Terminals



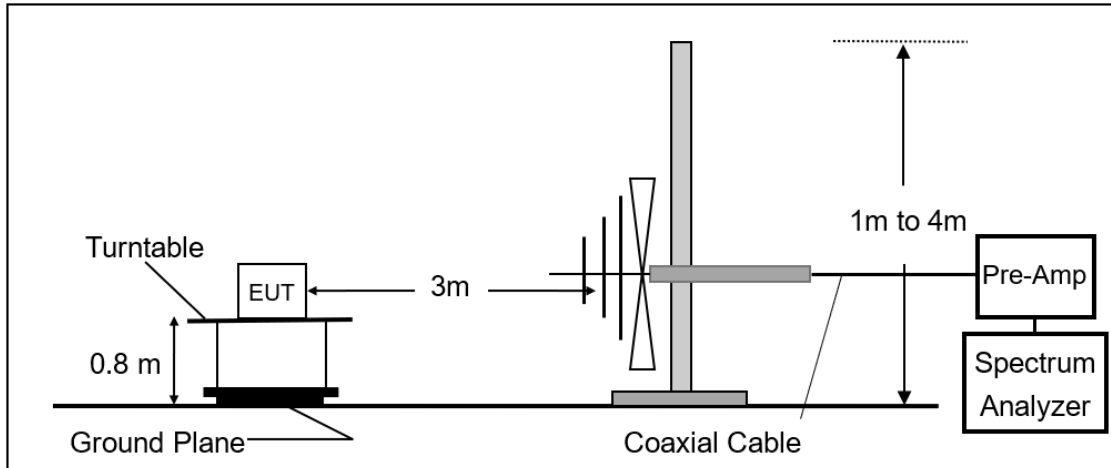
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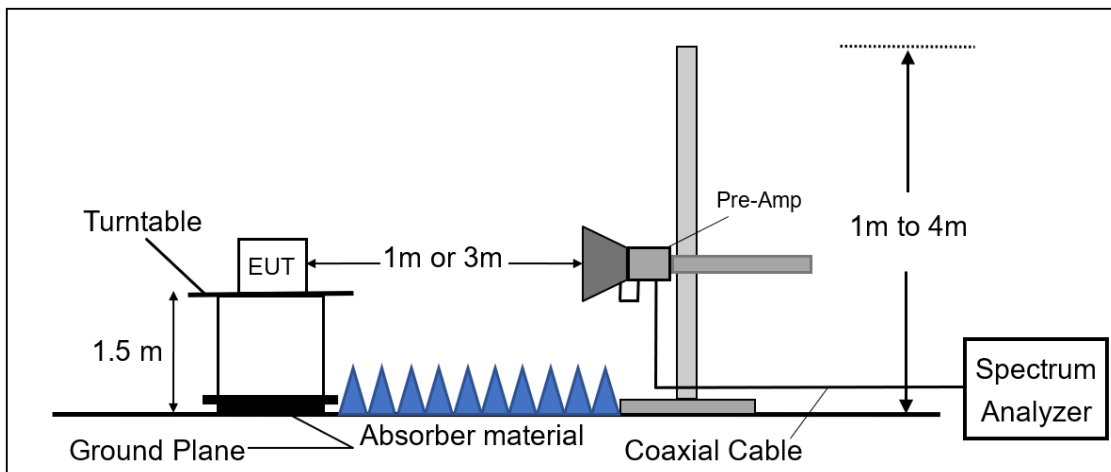
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8.4 Field Strength of Spurious Radiation Measurement

Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



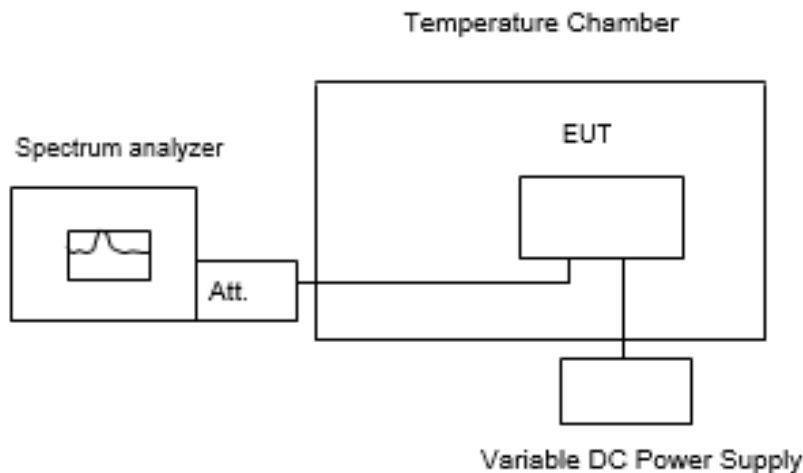
Radiated Emission Test Set-Up, Frequency Above 1GHz.



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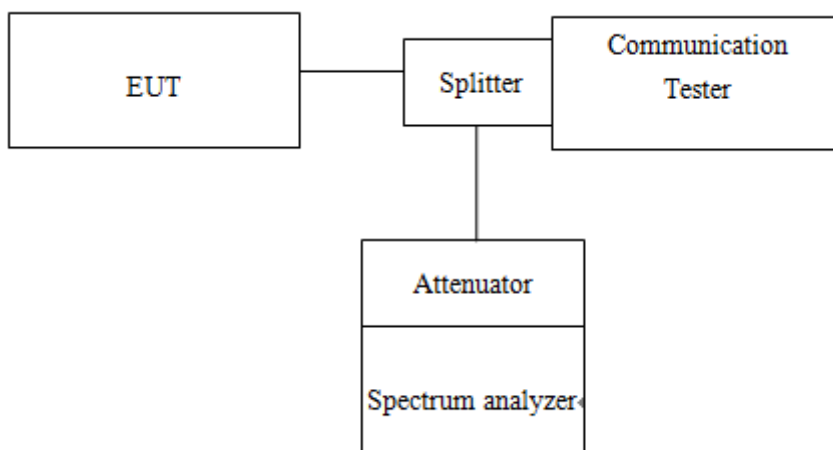
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8.5 Frequency Stability Measurement



Note: Measurement setup for testing on Antenna connector

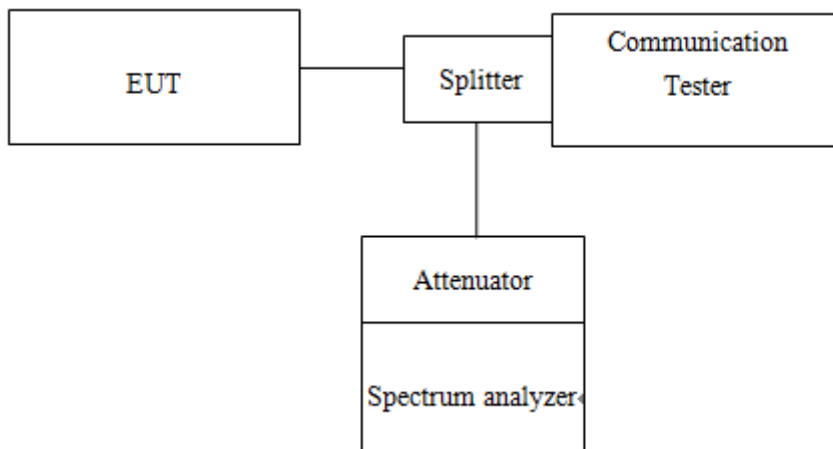
8.6 Peak To Average Ratio



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8.7 Maximum Power Spectral Density



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9 TEST PROCEDURE

9.1 Maximum Output Power

9.1.1 Output Power Measurement Applicable Guidance

The transmitter output was connected to a communication tester. Transmitter output was read off the communication tester in dBm. The power output at the transmitter antenna port was determined by the communication tester reading.

KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results.

All LTE bands conducted average power is obtained from the simulator telecommunication test set.

9.1.2 Determining ERP and/or EIRP from conducted RF output power measurements

According to KDB 412172 D01 Power Approach,

$$EIRP = P_T + G_T - L_C,$$

$$ERP = EIRP - 2.15,$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power (expressed in the same units as P_T , typically dBW, dBm, or power spectral density (PSD)²), relative to either a dipole antenna (ERP) or an isotropic antenna (EIRP);

P_T = transmitter output power, expressed in dBW, dBm, or PSD;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

9.2 Occupied Bandwidth Measurement

99% & 26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW = 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW = 1% ~ 5%, VBW ≥ 3 * RBW, with span > 2 * Signal BW, set % Power = 99%.

6dB Bandwidth

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW is 1%-5% of EBW, VBW ≥ 3 * RBW, Peak detector and max hold.

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9.3 Out of Band Emission at Antenna Terminals

9.3.1 Conducted Emission

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

1. To connect Antenna Port of EUT to Spectrum.
2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

9.3.2 Band Edge

1. To connect Antenna Port of EUT to Spectrum.
2. The band edge of low and high channels for the highest RF powers was measured. Setting RBW $\geq$ 1% EBW.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

9.4 Field Strength of Spurious Radiation Measurement

The EUT was placed on a non-conductive; the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$$\text{ERP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

$$\text{EIRP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBi)} + \text{Cable Loss(dB)}$$

9.5 Frequency Stability Measurement

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low

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enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

9.6 Peak to Average Ratio

1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
2. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth; & internal =1ms
3. Set the number of counts to a value that stabilizes the measured CCDF curve.

9.7 Maximum Power Spectral Density

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW=3kHz, VBW $\geq 3 * RBW$, detector= RMS (power averaging).

10 MEASUREMENT RESULTS

Please refer to the Annex A-Measurement Results.

11 PHOTOGRAPHS OF SET UP

Please refer to the attached file (Setup Photo)

12 PHOTOGRAPHS OF EUT

Please refer to the attached file(EUT Photo)

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