ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

FCC Applicant:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
FCC Manufacturer:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Product Name:	ASUS Phone(Mobile Phone)
Brand Name:	ASUS
Model No.:	ASUSAI2501E
Family Model No.:	ASUSAI2501D
Model Difference:	Refer to section1.2
Report Number:	TERF2407002102ER
FCC ID	MSQAI2501
Date of EUT Received:	July 01, 2024
Date of Test:	July 17, 2024 ~ November 04, 2024
Issue Date:	November 13, 2024

Approved By Marcus Tseng

Marcus Tseng

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 ANSI C63.26-2015 and the energy emitted by the sample EUT comply with FCC rule part 2, 22H & 24E & 27 C & 90S.

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

Revision History					
Report Number	**Revision**	**Description**	**Issue Date**	**Revised By**	**Remark**
TERF2407002102ER	00	Original	November 13, 2024	Yuri Tsai	

Note:

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

2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.
And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

Contents

1 GENERAL PRODUCT INFORMATION

1.1 Product Description

Product Name:	ASUS Phone(Mobile Phone)
Brand Name:	ASUS
Model No.:	ASUSAI2501E
Family Model No.:	ASUSAI2501D
Hardware Version:	R2.0C
Firmware Version:	35.1400.1400.10
EUT Series No.:	S7AIOCN13282W8P & S7AIOCN13359SCN
Power Supply:	7.8 Vdc from Battery
Test Software (Name/Version)	Connect with Callbox

1.2 Model Difference

Model Name	ASUSAI2501D	ASUSAI2501E
3rd Camera	5MP Macro	32 MP Tele
LED Light	mini LED (85 pcs)	mini LED (648 pcs)
Memory	12/256, 12/512, 16/512	16/512, 24/1TB
Side USB port	Y	
Air trigger	Y	
Power	5800mAh, 65W	
Refresh Rate	185Hz	

1.3 Operation Frequency Range

LTE Band 2			
BW (MHz)	Operation Frequency (MHz)		
1.4	1850.7	-	1909.3
3	1851.5	-	1908.5
5	1852.5	-	1907.5
10	1855.0	-	1905.0
15	1857.5	-	1902.5
20	1860.0	-	1900.0

LTE Band 4			
BW (MHz)	Operation Frequency (MHz)		
1.4	1710.7	-	1754.3
3	1711.5	-	1753.5
5	1712.5	-	1752.5
10	1715.0	-	1750.0
15	1717.5	-	1747.5
20	1720.0	-	1745.0

LTE Band 5			
BW (MHz)	Operation Frequency (MHz)		
1.4	824.7	-	848.3
3	825.5	-	847.5
5	826.5	-	846.5
10	829.0	-	844.0

LTE 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

LTE Band 12			
BW (MHz)	Operation Frequency (MHz)		
1.4	699.7	-	715.3
3	700.5	-	714.5
5	701.5	-	713.5
10	704.0	-	711.0

LTE Band 17			
BW (MHz)	Operation Frequency (MHz)		
5	706.5	-	713.5
10	709.0	-	711.0

LTE Band 25			
BW (MHz)	Operation Frequency (MHz)		
1.4	1850.7	-	1914.3
3	1851.5	-	1913.5
5	1852.5	-	1912.5
10	1855.0	-	1910.0
15	1857.5	-	1907.5
20	1860.0	-	1905.0

LTE Band 26 Part 90			
BW (MHz)	Operation Frequency (MHz)		
1.4	814.7	-	823.3
3	815.5	-	822.5
5	816.5	-	821.5
10	819.0		

LTE Band 26			
BW (MHz)	Operation Frequency (MHz)		
1.4	824.7	-	848.3
3	825.5	-	847.5
5	826.5	-	846.5
10	829.0	-	844.0
15	831.5	-	841.5

LTE Band 30			
BW (MHz)	Operation Frequency (MHz)		
5	2307.5	-	2312.5
10	2310.0		

LTE Band 38			
BW (MHz)	Operation Frequency (MHz)		
5	2572.5	-	2617.5
10	2575.0	-	2615.0
15	2577.5	-	2612.5
20	2580.0	-	2610.0

LTE Band 41			
BW (MHz)	Operation Frequency (MHz)		
5	2498.5	-	2687.5
10	2501.0	-	2685.0
15	2503.5	-	2682.5
20	2506.0	-	2680.0

LTE Band 66			
BW (MHz)	Operation Frequency (MHz)		
1.4	1710.7	-	1779.3
3	1711.5	-	1778.5
5	1712.5	-	1777.5
10	1715.0	-	1775.0
15	1717.5	-	1772.5
20	1720.0	-	1770.0

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

1.4 Antenna Designation

Antenna Type	Antenna Model No.
PIFA	Ant0
	Ant1
	Ant2
	Ant6
	Ant7
	Ant8
	Ant9
Note: Transmission frequencies in this test report are only available by the above antenna(s).	

Type	Modulation	Frequency (MHz)			Peak Antenna Gain (dBi)						
					Ant0	Ant1	Ant2	Ant6	Ant7	Ant8	Ant9
PIFA	LTE-Band 2	1850	~	1910		-0.2	-1.9		-5.1		
	LTE-Band 4	1710	~	1755		-1.5	-1.9		-6.6		
	LTE-Band 5	824	~	849	-2.4		-3.3				
	LTE-Band 7	2500	~	2570		-2.5	-1.1		-5.5		
	LTE-Band 12	699	~	716	-1.6		-4.8				
	LTE-Band 17	704	~	716	-1.6		-4.8				
	LTE-Band 25	1850	~	1915		-0.2	-1.9		-5.1		
	LTE-Band 26	824	~	849	-2.4		-3.3				
	LTE-Band 26 Part 90	814	~	824	-2.4		-3.3				
	LTE-Band 30	2305	~	2315		-1.5	-0.7				
	LTE-Band 38	2570	~	2620		-2.5	-1.1				
	LTE-Band 41	2496	~	2690		-2.5	-1.1			-1.8	-8.1
	LTE-Band 66	1710	~	1780		-0.2	-1.9		-6.6		
	LTE-Band 71	663	~	698	-3.4		-9.9				

Note: Antenna information is provided by the applicant.

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

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
2	1.4	1850.7	1909.3	QPSK	23.91	EIRP	0.246	1.0934	1M09G7D
				16QAM	22.78	EIRP	0.190	1.0955	1M10D7W
				64QAM	21.81	EIRP	0.152	1.0916	1M09D7W
				256QAM	19.20	EIRP	0.083	1.0937	1M09D7W
2	3	1851.5	1908.5	QPSK	23.94	EIRP	0.248	2.7122	2M71G7D
				16QAM	22.81	EIRP	0.191	2.6971	2M70D7W
				64QAM	21.75	EIRP	0.150	2.7092	2M71D7W
				256QAM	19.20	EIRP	0.083	2.7032	2M70D7W
2	5	1852.5	1907.5	QPSK	24.02	EIRP	0.252	4.5156	4M52G7D
				16QAM	22.86	EIRP	0.193	4.5048	4M50D7W
				64QAM	21.89	EIRP	0.155	4.4948	4M49D7W
				256QAM	19.73	EIRP	**0.094**	4.4978	4M50D7W
2	10	1855.0	1905.0	QPSK	24.10	EIRP	0.257	8.9932	8M99G7D
				16QAM	22.99	EIRP	0.199	9.0033	9M00D7W
				64QAM	21.96	EIRP	0.157	8.9849	8M98D7W
				256QAM	19.20	EIRP	0.083	8.9726	8M97D7W
2	15	1857.5	1902.5	QPSK	24.18	EIRP	0.262	13.505	13M5G7D
				16QAM	23.11	EIRP	0.205	13.468	13M5D7W
				64QAM	21.99	EIRP	0.158	13.472	13M5D7W
				256QAM	19.20	EIRP	0.083	13.461	13M5D7W
2	20	1860.0	1900.0	QPSK	24.30	EIRP	**0.269**	17.978	18M0G7D
				16QAM	23.16	EIRP	**0.207**	18.000	18M0D7W
				64QAM	22.20	EIRP	**0.166**	17.989	18M0D7W
				256QAM	19.20	EIRP	0.083	17.956	18M0D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
4	1.4	1710.7	1754.3	QPSK	22.59	EIRP	0.182	1.0928	1M09G7D
				16QAM	21.48	EIRP	0.141	1.0956	1M10D7W
				64QAM	20.42	EIRP	0.110	1.0990	1M10D7W
				256QAM	17.82	EIRP	0.061	1.0931	1M09D7W
4	3	1711.5	1753.5	QPSK	22.64	EIRP	0.184	2.7013	2M70G7D
				16QAM	21.54	EIRP	0.143	2.7038	2M70D7W
				64QAM	20.55	EIRP	0.114	2.6995	2M70D7W
				256QAM	17.85	EIRP	0.061	2.6990	2M70D7W
4	5	1712.5	1752.5	QPSK	22.68	EIRP	0.185	4.4959	4M50G7D
				16QAM	21.66	EIRP	0.147	4.4944	4M49D7W
				64QAM	20.63	EIRP	0.116	4.4964	4M50D7W
				256QAM	18.39	EIRP	**0.069**	4.4896	4M49D7W
4	10	1715.0	1750.0	QPSK	22.65	EIRP	0.184	8.9934	8M99G7D
				16QAM	21.61	EIRP	0.145	9.0048	9M00D7W
				64QAM	20.55	EIRP	0.114	8.9914	8M99D7W
				256QAM	17.71	EIRP	0.059	9.0115	9M01D7W
4	15	1717.5	1747.5	QPSK	22.73	EIRP	0.187	13.4680	13M5G7D
				16QAM	21.65	EIRP	0.146	13.4740	13M5D7W
				64QAM	20.61	EIRP	0.115	13.4670	13M5D7W
				256QAM	17.88	EIRP	0.061	13.4700	13M5D7W
4	20	1720.0	1745.0	QPSK	22.91	EIRP	**0.195**	17.9510	18M0G7D
				16QAM	21.84	EIRP	**0.153**	17.9580	18M0D7W
				64QAM	20.83	EIRP	**0.121**	17.9470	17M9D7W
				256QAM	17.95	EIRP	0.062	17.9620	18M0D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
5	1.4	824.7	848.3	QPSK	20.07	ERP	0.102	1.0904	1M09G7D
				16QAM	19.10	ERP	0.081	1.0938	1M09D7W
				64QAM	18.02	ERP	0.063	1.0943	1M09D7W
				256QAM	15.39	ERP	0.035	1.0917	1M09D7W
5	3	825.5	847.5	QPSK	20.22	ERP	0.105	2.6984	2M70G7D
				16QAM	19.30	ERP	0.085	2.6979	2M70D7W
				64QAM	18.22	ERP	0.066	2.6954	2M70D7W
				256QAM	15.40	ERP	**0.035**	2.6961	2M70D7W
5	5	826.5	846.5	QPSK	20.34	ERP	0.108	4.4882	4M49G7D
				16QAM	19.22	ERP	0.084	4.4921	4M49D7W
				64QAM	18.27	ERP	0.067	4.4976	4M50D7W
				256QAM	15.38	ERP	0.035	4.4921	4M49D7W
5	10	829.0	844.0	QPSK	20.47	ERP	**0.111**	8.9890	8M99G7D
				16QAM	19.35	ERP	**0.086**	9.0009	9M00D7W
				64QAM	18.41	ERP	**0.069**	8.9921	8M99D7W
				256QAM	15.37	ERP	0.034	8.9877	8M99D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
7	5	2502.5	2567.5	QPSK	23.32	EIRP	0.215	4.5024	4M50G7D
				16QAM	22.21	EIRP	0.166	4.5006	4M50D7W
				64QAM	21.25	EIRP	0.133	4.5034	4M50D7W
				256QAM	18.39	EIRP	0.069	4.4904	4M49D7W
7	10	2505.0	2565.0	QPSK	23.36	EIRP	0.217	8.9785	8M98G7D
				16QAM	22.28	EIRP	0.169	8.9848	8M98D7W
				64QAM	21.20	EIRP	0.132	8.9996	9M00D7W
				256QAM	18.31	EIRP	0.068	8.9983	9M00D7W
7	15	2507.5	2562.5	QPSK	23.45	EIRP	0.221	13.4670	13M5G7D
				16QAM	22.38	EIRP	0.173	13.4650	13M5D7W
				64QAM	21.34	EIRP	0.136	13.4400	13M4D7W
				256QAM	18.32	EIRP	0.068	13.4620	13M5D7W
7	20	2510.0	2560.0	QPSK	23.51	EIRP	**0.224**	17.9570	18M0G7D
				16QAM	22.39	EIRP	**0.173**	17.9420	17M9D7W
				64QAM	21.44	EIRP	**0.139**	17.9370	17M9D7W
				256QAM	18.40	EIRP	**0.069**	17.9370	17M9D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
12	1.4	699.7	715.3	QPSK	20.84	ERP	0.121	1.0894	1M09G7D
				16QAM	19.81	ERP	0.096	1.0954	1M10D7W
				64QAM	18.80	ERP	0.076	1.0947	1M09D7W
				256QAM	16.13	ERP	**0.041**	1.0916	1M09D7W
12	3	700.5	714.5	QPSK	20.96	ERP	0.125	2.6979	2M70G7D
				16QAM	19.96	ERP	0.099	2.7009	2M70D7W
				64QAM	19.05	ERP	0.080	2.6948	2M69D7W
				256QAM	16.09	ERP	0.041	2.7011	2M70D7W
12	5	701.5	713.5	QPSK	21.18	ERP	0.131	4.4914	4M49G7D
				16QAM	20.11	ERP	0.103	4.4924	4M49D7W
				64QAM	19.15	ERP	0.082	4.4872	4M49D7W
				256QAM	16.10	ERP	0.041	4.4954	4M50D7W
12	10	704.0	711.0	QPSK	21.24	ERP	**0.133**	9.0050	9M01G7D
				16QAM	20.17	ERP	**0.104**	9.0049	9M00D7W
				64QAM	19.21	ERP	**0.083**	8.9807	8M98D7W
				256QAM	16.10	ERP	0.041	8.9789	8M98D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
17	5	706.5	713.5	QPSK	21.14	ERP	0.130	4.4889	4M49G7D
				16QAM	20.09	ERP	0.102	4.4941	4M49D7W
				64QAM	19.13	ERP	**0.082**	4.4903	4M49D7W
				256QAM	16.11	ERP	**0.041**	4.4950	4M50D7W
17	10	709.0	711.0	QPSK	21.21	ERP	**0.132**	8.9771	8M98G7D
				16QAM	20.16	ERP	**0.104**	8.9823	8M98D7W
				64QAM	19.03	ERP	0.080	8.9816	8M98D7W
				256QAM	16.08	ERP	0.041	8.9798	8M98D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
25	1.4	1850.7	1914.3	QPSK	24.12	EIRP	0.258	1.0948	1M09G7D
				16QAM	23.08	EIRP	0.203	1.0965	1M10D7W
				64QAM	21.99	EIRP	0.158	1.0965	1M10D7W
				256QAM	19.19	EIRP	0.083	1.0919	1M09D7W
25	3	1851.5	1913.5	QPSK	24.19	EIRP	0.262	2.7009	2M70G7D
				16QAM	23.10	EIRP	0.204	2.6998	2M70D7W
				64QAM	22.16	EIRP	**0.164**	2.7030	2M70D7W
				256QAM	19.24	EIRP	**0.084**	2.6959	2M70D7W
25	5	1852.5	1912.5	QPSK	24.17	EIRP	0.261	4.4937	4M49G7D
				16QAM	23.08	EIRP	0.203	4.4947	4M49D7W
				64QAM	21.94	EIRP	0.156	4.5042	4M50D7W
				256QAM	19.15	EIRP	0.082	4.5061	4M51D7W
25	10	1855.0	1910.0	QPSK	24.22	EIRP	0.264	8.9777	8M98G7D
				16QAM	23.08	EIRP	0.203	8.9751	8M98D7W
				64QAM	22.07	EIRP	0.161	8.9790	8M98D7W
				256QAM	19.23	EIRP	0.084	8.9649	8M96D7W
25	15	1857.5	1907.5	QPSK	24.23	EIRP	0.265	13.4700	13M5G7D
				16QAM	23.13	EIRP	0.206	13.4580	13M5D7W
				64QAM	22.07	EIRP	0.161	13.4580	13M5D7W
				256QAM	19.20	EIRP	0.083	13.4430	13M4D7W
25	20	1860.0	1905.0	QPSK	24.31	EIRP	**0.270**	17.9200	17M9G7D
				16QAM	23.16	EIRP	**0.207**	17.9270	17M9D7W
				64QAM	22.16	EIRP	**0.164**	17.9430	17M9D7W
				256QAM	19.18	EIRP	0.083	17.9140	17M9D7W
LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
26 Part 90	1.4	814.7	823.3	QPSK	19.71	ERP	0.094	1.0903	1M09G7D
				16QAM	18.86	ERP	0.077	1.0936	1M09D7W
				64QAM	17.96	ERP	0.063	1.0940	1M09D7W
				256QAM	14.98	ERP	0.031	1.0888	1M09D7W
26 Part 90	3	815.5	822.5	QPSK	19.71	ERP	0.094	2.7011	2M70G7D
				16QAM	19.07	ERP	0.081	2.6969	2M70D7W
				64QAM	17.70	ERP	0.059	2.6938	2M69D7W
				256QAM	14.92	ERP	0.031	2.7000	2M70D7W
26 Part 90	5	816.5	821.5	QPSK	19.92	ERP	0.098	4.4939	4M49G7D
				16QAM	19.25	ERP	0.084	4.4952	4M50D7W
				64QAM	18.23	ERP	**0.067**	4.4921	4M49D7W
				256QAM	15.13	ERP	0.033	4.4874	4M49D7W
26 Part 90	10	819.0	819.0	QPSK	20.00	ERP	**0.100**	9.0062	9M01G7D
				16QAM	19.44	ERP	**0.088**	8.9931	8M99D7W
				64QAM	17.70	ERP	0.059	8.9787	8M98D7W
				256QAM	15.21	ERP	**0.033**	8.9784	8M98D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
26	1.4	824.7	848.3	QPSK	19.73	ERP	0.094	1.0891	1M09G7D
				16QAM	18.85	ERP	0.077	1.0941	1M09D7W
				64QAM	18.01	ERP	**0.063**	1.0907	1M09D7W
				256QAM	15.01	ERP	0.032	1.0950	1M10D7W
26	3	825.5	847.5	QPSK	19.78	ERP	0.095	2.6985	2M70G7D
				16QAM	18.89	ERP	0.077	2.6926	2M69D7W
				64QAM	17.91	ERP	0.062	2.7014	2M70D7W
				256QAM	15.12	ERP	0.033	2.7013	2M70D7W
26	5	826.5	846.5	QPSK	19.76	ERP	0.095	4.4898	4M49G7D
				16QAM	19.20	ERP	**0.083**	4.4915	4M49D7W
				64QAM	17.95	ERP	0.062	4.4892	4M49D7W
				256QAM	15.00	ERP	0.032	4.4916	4M49D7W
26	10	829.0	844.0	QPSK	19.78	ERP	0.095	8.9923	8M99G7D
				16QAM	19.00	ERP	0.079	8.9997	9M00D7W
				64QAM	17.85	ERP	0.061	8.9955	9M00D7W
				256QAM	15.31	ERP	**0.034**	8.9960	9M00D7W
26	15	831.5	841.5	QPSK	19.93	ERP	**0.098**	13.4690	13M5G7D
				16QAM	18.76	ERP	0.075	13.4620	13M5D7W
				64QAM	17.88	ERP	0.061	13.4680	13M5D7W
				256QAM	15.18	ERP	0.033	13.4740	13M5D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm/5MHz)		(W)	99%	Type of Emission
30	5	2307.5	2312.5	QPSK	23.39	EIRP	**0.218**	4.4919	4M49G7D
				16QAM	22.78	EIRP	**0.190**	4.4918	4M49D7W
				64QAM	23.09	EIRP	**0.204**	4.4911	4M49D7W
				256QAM	18.54	EIRP	0.071	4.4850	4M49D7W
30	10	2310.0	2310.0	QPSK	23.18	EIRP	0.208	8.9919	8M99G7D
				16QAM	22.31	EIRP	0.170	8.9748	8M97D7W
				64QAM	22.21	EIRP	0.166	8.9807	8M98D7W
				256QAM	18.58	EIRP	**0.072**	8.9816	8M98D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
38	5	2572.5	2617.5	QPSK	23.39	EIRP	0.218	4.5020	4M50G7D
				16QAM	22.59	EIRP	**0.182**	4.5066	4M51D7W
				64QAM	21.54	EIRP	0.143	4.4982	4M50D7W
				256QAM	18.62	EIRP	0.073	4.4895	4M49D7W
38	10	2575.0	2615.0	QPSK	23.37	EIRP	0.217	9.0124	9M01G7D
				16QAM	22.59	EIRP	**0.182**	8.9786	8M98D7W
				64QAM	21.41	EIRP	0.138	8.9992	9M00D7W
				256QAM	18.57	EIRP	0.072	8.9803	8M98D7W
38	15	2577.5	2612.5	QPSK	23.49	EIRP	**0.223**	13.4650	13M5G7D
				16QAM	22.56	EIRP	0.180	13.4790	13M5D7W
				64QAM	21.46	EIRP	0.140	13.4580	13M5D7W
				256QAM	18.57	EIRP	0.072	13.4770	13M5D7W
38	20	2580.0	2610.0	QPSK	23.42	EIRP	0.220	17.9140	17M9G7D
				16QAM	22.58	EIRP	0.181	17.9660	18M0D7W
				64QAM	21.58	EIRP	**0.144**	17.9390	17M9D7W
				256QAM	18.78	EIRP	**0.076**	17.9120	17M9D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
41	5	2498.5	2687.5	QPSK	24.62	EIRP	**0.290**	4.4955	4M50G7D
				16QAM	23.92	EIRP	0.247	4.4942	4M49D7W
				64QAM	23.42	EIRP	**0.220**	4.4958	4M50D7W
				256QAM	20.56	EIRP	**0.114**	4.5056	4M51D7W
41	10	2501.0	2685.0	QPSK	24.49	EIRP	0.281	8.9920	8M99G7D
				16QAM	24.11	EIRP	**0.258**	8.9911	8M99D7W
				64QAM	23.38	EIRP	0.218	9.0023	9M00D7W
				256QAM	20.52	EIRP	0.113	9.0072	9M01D7W
41	15	2503.5	2682.0	QPSK	24.60	EIRP	0.288	13.4750	13M5G7D
				16QAM	24.01	EIRP	0.252	13.4770	13M5D7W
				64QAM	23.16	EIRP	0.207	13.4850	13M5D7W
				256QAM	20.30	EIRP	0.107	13.4760	13M5D7W
41	20	2506.0	2680.0	QPSK	24.46	EIRP	0.279	17.9210	17M9G7D
				16QAM	24.01	EIRP	0.252	17.9560	18M0D7W
				64QAM	23.36	EIRP	0.217	17.9520	18M0D7W
				256QAM	20.09	EIRP	0.102	17.9640	18M0D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
66	1.4	1710.7	1779.3	QPSK	24.05	EIRP	0.254	1.0932	1M09G7D
				16QAM	22.97	EIRP	0.198	1.0992	1M10D7W
				64QAM	21.96	EIRP	0.157	1.0946	1M09D7W
				256QAM	19.13	EIRP	**0.082**	1.0932	1M09D7W
66	3	1711.5	1778.5	QPSK	24.06	EIRP	0.255	2.7018	2M70G7D
				16QAM	22.89	EIRP	0.195	2.7021	2M70D7W
				64QAM	21.90	EIRP	0.155	2.6984	2M70D7W
				256QAM	19.09	EIRP	0.081	2.7055	2M71D7W
66	5	1712.5	1777.5	QPSK	24.09	EIRP	0.256	4.5017	4M50G7D
				16QAM	22.99	EIRP	0.199	4.5057	4M51D7W
				64QAM	21.93	EIRP	0.156	4.4977	4M50D7W
				256QAM	19.12	EIRP	0.082	4.5071	4M51D7W
66	10	1715.0	1775.0	QPSK	24.11	EIRP	0.258	9.0019	9M00G7D
				16QAM	23.01	EIRP	0.200	8.9947	8M99D7W
				64QAM	21.95	EIRP	0.157	8.9842	8M98D7W
				256QAM	19.06	EIRP	0.081	8.9851	8M99D7W
66	15	1717.5	1772.5	QPSK	24.16	EIRP	0.261	13.4690	13M5G7D
				16QAM	23.02	EIRP	0.200	13.4790	13M5D7W
				64QAM	21.99	EIRP	0.158	13.4620	13M5D7W
				256QAM	19.12	EIRP	0.082	13.4600	13M5D7W
66	20	1720.0	1770.0	QPSK	24.21	EIRP	**0.264**	17.9600	18M0G7D
				16QAM	23.07	EIRP	**0.203**	17.9300	17M9D7W
				64QAM	22.10	EIRP	**0.162**	17.9410	17M9D7W
				256QAM	19.08	EIRP	0.081	17.9170	17M9D7W

LTE Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
71	5	665.5	695.5	QPSK	19.03	ERP	0.080	4.4884	4M49G7D
				16QAM	17.95	ERP	0.062	4.4940	4M49D7W
				64QAM	16.98	ERP	0.050	4.4869	4M49D7W
				256QAM	14.19	ERP	0.026	4.4874	4M49D7W
71	10	688.0	693.0	QPSK	19.21	ERP	0.083	8.9814	8M98G7D
				16QAM	18.13	ERP	0.065	8.9915	8M99D7W
				64QAM	17.13	ERP	0.052	8.9877	8M99D7W
				256QAM	14.16	ERP	0.026	8.9667	8M97D7W
71	15	670.5	690.5	QPSK	19.23	ERP	0.084	13.4880	13M5G7D
				16QAM	18.09	ERP	0.064	13.4870	13M5D7W
				64QAM	17.18	ERP	0.052	13.4620	13M5D7W
				256QAM	14.22	ERP	**0.026**	13.4580	13M5D7W
71	20	673.0	688.0	QPSK	19.31	ERP	**0.085**	17.9600	18M0G7D
				16QAM	18.21	ERP	**0.066**	17.9760	18M0D7W
				64QAM	17.23	ERP	**0.053**	17.9390	17M9D7W
				256QAM	14.22	ERP	**0.026**	17.9240	17M9D7W

1.6 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22H, 24E, 27C, Part 90.
ANSI C63.26-2015
KDB971168 D01 Power Meas license Digital System v03r01
KDB412172 D01 Determining ERP and EIRP v01r01

1.7 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation 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 indication where measurements occurred in specific test site and address.

1.8 Special Accessories

No special accessories were used during testing.

1.9 Equipment Modifications

There was no modifications incorporated into the EUT.

1.10 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.

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.

2.5 Final Amplifier Voltage and Current Information:

LTE Band 2

Test mode	DC voltage (V)	DC current (mA)
LTE Band 2_20M QPSK	7.8	426

LTE Band 4

Test mode	DC voltage (V)	DC current (mA)
LTE Band 4_20M QPSK	7.8	433

LTE Band 5

Test mode	DC voltage (V)	DC current (mA)
LTE Band 5_10M QPSK	7.8	415

LTE Band 7

Test mode	DC voltage (V)	DC current (mA)
LTE Band 7_20M QPSK	7.8	408

LTE Band 12

Test mode	DC voltage (V)	DC current (mA)
LTE Band 12_10M QPSK	7.8	419

LTE Band 17

Test mode	DC voltage (V)	DC current (mA)
LTE Band 17_10M QPSK	7.8	416

LTE Band 25

Test mode	DC voltage (V)	DC current (mA)
LTE Band 25_20M QPSK	7.8	426

LTE Band 26 for Part 90S

Test Mode	DC voltage (V)	DC current (mA)
LTE Band 26_10M QPSK	7.8	417

LTE Band 26

Test mode	DC voltage (V)	DC current (mA)
LTE Band 26_15M QPSK	7.8	422

LTE Band 30

Test mode	DC voltage (V)	DC current (mA)
LTE Band 30_10M QPSK	7.8	409

LTE Band 38

Test mode	DC voltage (V)	DC current (mA)
LTE Band 38_20M QPSK	7.8	418

LTE Band 41

Test Mode	DC voltage (V)	DC current (mA)
LTE Band 41_20M QPSK	7.8	421

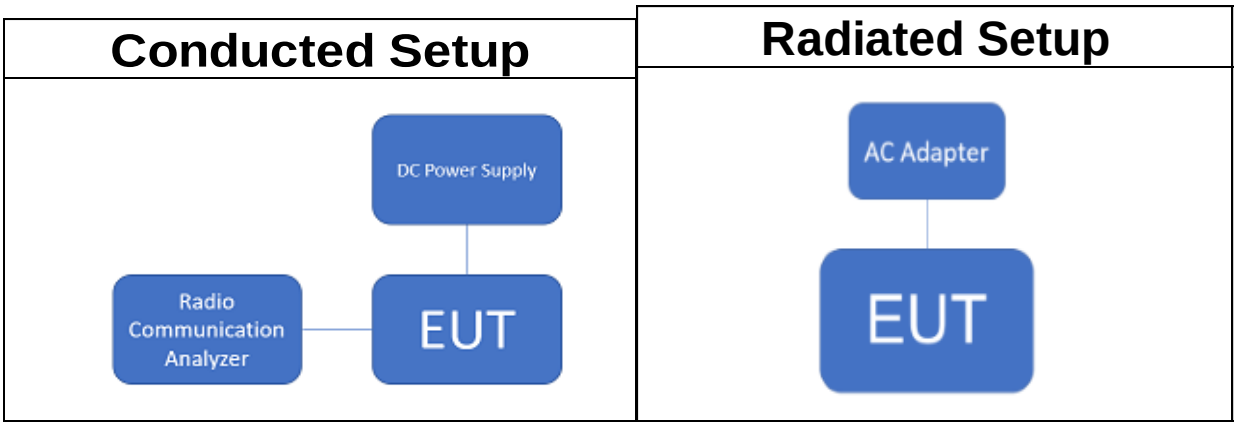
LTE Band 66

Test mode	DC voltage (V)	DC current (mA)
LTE Band 66_20M QPSK	7.8	425

LTE Band 71

Test mode	DC voltage (V)	DC current (mA)
LTE Band 71_20M QPSK	7.8	434

2.6 Test Configuration



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

2.7 Control Unit(s)

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
AC Adapter	Shenzhen JingQuanHua & Everrise Intelligent Electric Co., Ltd	NSA65EU-20032500	N/A	N/A	N/A
USB Cable	ASAP	LA9U2030-CS-H	N/A	N/A	N/A

3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§22.913(a)(5) §24.232(c) §27.50(a)(3) §27.50(c)(9) §27.50(c)(10) §27.50(d)(4) §27.50(h)(2) §90.635(b)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Band-width	Compliant
§2.1051 §22.917(a)(b) §24.238(a)(b) §27.53(a)(4) §27.53(g) §27.53(h)(1)(3) §27.53(m)(4)(6) §90.691(a)	Out of Band Emissions at An-tenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(a)(4) §27.53(g) §27.53(h)(1)(3) §27.53(m)(4) §90.691(a)	Field Strength of Spurious Radiation	Compliant
§22.913(d) §24.232(d) §27.50(a)(1)(B) §27.50(d)(5)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54 §90.213	Frequency Stability	Compliant

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.

4.2 Measurement Configuration

Test Items				Max. Output Power												
Band	Test Channel			Bandwidth (MHz)						Modulation				RB #		
	L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full
2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
5	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v
7	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
12	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v
17	v	v	v	-	-	v	v	-	-	v	v	v	v	v	v	v
25	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
26	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v	v
26 P90	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v	v
30	v	v	v	-	-	v	v	-	-	v	v	v	v	v	v	v
38	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
41	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
71	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
Test Items				Freqency Stability												
2	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
4	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
5	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
7	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
12	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
17	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
25	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
26	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
26 P90	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
30	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
38	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
41	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
66	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v
71	-	v	-	-	-	-	v	-	-	v	-	-	-	-	-	v

Test Items				26dB and 99% Bandwidth												
Band	Test Channel			Bandwidth (MHz)						Modulation				RB #		
	L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full
2	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	v
4	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	v
5	v	v	v	v	v	v	v	-	-	v	v	v	v	-	-	v
7	v	v	v	-	-	v	v	v	v	v	v	v	v	-	-	v
12	v	v	v	v	v	v	v	-	-	v	v	v	v	-	-	v
17	v	v	v	-	-	v	v	-	-	v	v	v	v	-	-	v
25	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	v
26	v	v	v	v	v	v	v	v	-	v	v	v	v	-	-	v
26 P90	v	v	v	v	v	v	v	-	-	v	v	v	v	-	-	v
30	v	v	v	-	-	v	v	-	-	v	v	v	v	-	-	v
38	v	v	v	-	-	v	v	v	v	v	v	v	v	-	-	v
41	v	v	v	-	-	v	v	v	v	v	v	v	v	-	-	v
66	v	v	v	v	v	v	v	v	v	v	v	v	v	-	-	v
71	v	v	v	-	-	v	v	v	v	v	v	v	v	-	-	v
Test Items				Peak-to-Av erage Ratio												
2	v	v	v	v	v	v	v	v	v	-	-	-	v	-	-	v
4	v	v	v	v	v	v	v	v	v	-	-	-	v	-	-	v
5	v	v	v	v	v	v	v	-	-	-	-	-	v	-	-	v
7	v	v	v	-	-	v	v	v	v	-	-	-	v	-	-	v
12	v	v	v	v	v	v	v	-	-	-	-	-	v	-	-	v
17	v	v	v	-	-	v	v	-	-	-	-	-	v	-	-	v
25	v	v	v	v	v	v	v	v	v	-	-	-	v	-	-	v
26	v	v	v	v	v	v	v	v	-	-	-	-	v	-	-	v
26 P90	v	v	v	v	v	v	v	-	-	-	-	-	v	-	-	v
30	v	v	v	-	-	v	v	-	-	-	-	-	v	-	-	v
38	v	v	v	-	-	v	v	v	v	-	-	-	v	-	-	v
41	v	v	v	-	-	v	v	v	v	-	-	-	v	-	-	v
66	v	v	v	v	v	v	v	v	v	-	-	-	v	-	-	v
71	v	v	v	-	-	v	v	v	v	-	-	-	v	-	-	v

Test Items	Band Edge															
Band	Test Channel			Bandwidth (MHz)						Modulation				RB #		
	L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	64QAM	1	Half	Full
2	v	-	v	v	v	v	v	v	v	v	-	-	-	v	v	v
4	v	-	v	v	v	v	v	v	v	v	-	-	-	v	v	v
5	v	-	v	v	v	v	v	-	-	v	-	-	-	v	v	v
7	v	-	v	-	-	v	v	v	v	v	-	-	-	v	v	v
12	v	-	v	v	v	v	v	-	-	v	-	-	-	v	v	v
17	v	-	v	-	-	v	v	-	-	v	-	-	-	v	v	v
25	v	-	v	v	v	v	v	v	v	v	-	-	-	v	v	v
26	v	-	v	v	v	v	v	v	-	v	-	-	-	v	v	v
26 P90	v	-	v	v	v	v	v	-	-	v	-	-	-	v	v	v
30	v	-	v	-	-	v	v	-	-	v	-	-	-	v	v	v
38	v	-	v	-	-	v	v	v	v	v	-	-	-	v	v	v
41	v	-	v	-	-	v	v	v	v	v	-	-	-	v	v	v
66	v	-	v	v	v	v	v	v	v	v	-	-	-	v	v	v
71	v	-	v	-	-	v	v	v	v	v	-	-	-	v	v	v
Test Items	Conducted Emission															
2	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
4	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
5	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
7	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
12	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
17	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
25	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
26	v	v	v	-	-	-	-	v	-	v	-	-	-	v	-	-
26 P90	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
30	v	v	v	-	-	v	v	-	-	v	-	-	-	v	-	-
38	v	v	v	-	-	-	-	v	v	v	-	-	-	v	-	-
41	v	v	v	-	-	v	-	-	v	v	-	-	-	v	-	-
66	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
71	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-

Test Items	Radiated Emission															
Band	Test Channel			Bandwidth (MHz)						Modulation				RB #		
	L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full
2	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
4	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
5	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
7	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
12	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
17	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
25	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
26	v	v	v	-	-	-	-	v	-	v	-	-	-	v	-	-
26 P90	v	v	v	-	-	-	v	-	-	v	-	-	-	v	-	-
30	v	v	v	-	-	v	-	-	-	v	-	-	-	v	-	-
38	v	v	v	-	-	-	-	v	-	v	-	-	-	v	-	-
41	v	v	v	-	-	v	-	-	-	v	-	-	-	v	-	-
66	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-
71	v	v	v	-	-	-	-	-	v	v	-	-	-	v	-	-

E-UTRA Band	Test Channel	Channel Bandwidth (MHz)	Modulation	Resource Block Allocation	
				RBs allocated	RB Offset
2	18700	20	QPSK	1	0
2	18900	20	QPSK	1	0
2	19100	20	QPSK	1	0
4	20050	20	QPSK	1	0
4	20175	20	QPSK	1	0
4	20300	20	QPSK	1	0
5	20450	10	QPSK	1	0
5	20525	10	QPSK	1	0
5	20600	10	QPSK	1	0
7	20850	20	QPSK	1	0
7	21100	20	QPSK	1	0
7	21350	20	QPSK	1	0
12	23060	10	QPSK	1	0
12	23095	10	QPSK	1	0
12	23130	10	QPSK	1	0
17	23780	10	QPSK	1	0
17	23790	10	QPSK	1	0
17	23800	10	QPSK	1	0
25	26140	20	QPSK	1	0
25	26365	20	QPSK	1	0
25	26590	20	QPSK	1	0
26	26865	15	QPSK	1	74
26	26915	15	QPSK	1	74
26	26965	15	QPSK	1	74
26(part90)	26740	10	QPSK	1	49
30	27685	5	QPSK	1	0
30	27710	5	QPSK	1	0
30	27735	5	QPSK	1	0
38	37825	15	QPSK	1	0
38	38000	15	QPSK	1	0
38	38175	15	QPSK	1	0
41	39675	5	QPSK	1	0
41	40620	5	QPSK	1	0
41	41565	5	QPSK	1	0
66	132072	20	QPSK	1	0
66	132322	20	QPSK	1	0
66	132572	20	QPSK	1	0
71	133222	20	QPSK	1	0
71	133297	20	QPSK	1	0
71	133372	20	QPSK	1	0

5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty		
Power Density	+/-	0.61	dB
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.

6 MEASUREMENT EQUIPMENT USED

6.1 Conducted Measurement

Conducted Emission Test Site: Conducted 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
4G High Pass Filter	WI	WHKX4.0	21	12/12/2023	12/11/2024
Attenuator	Mini-Circuits	BW-S10W2+	16	12/12/2023	12/11/2024
DC Block	Mini-Circuits	BLK-18-S+	11	12/12/2023	12/11/2024
DC Power Supply	Gwinstek	SPS-3610	GEV856733	12/04/2023	12/03/2024
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60240503	12/18/2023	12/17/2024
PXA Spectrum Analyzer	Keysight	N9030B	MY61330494	03/22/2024	03/21/2025
Radio Communication Analyzer	Anritsu	MT8821C	6261786084	01/16/2024	01/15/2025
Splitter	Titan	T0510E2W118Q	22015158	12/12/2023	12/11/2024
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

6.2 Radiated Measurement

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Attenuator	Mini-Circuits	BW-S10W2+	16	12/12/2023	12/11/2024
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
Band Reject Filter 800-1000	EWT	EWT-54-0037	M3R	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
Coaxial Cables	Huber Suhner	SUCOFLEX 102+SUCOFLEX 106	TX Cable 30M-40G 23051/2+76096/6+22962/2	08/30/2024	08/29/2025
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
Radio Communication Analyzer	Anritsu	MT8821C	6262044670	08/23/2024	08/22/2025
EMI Test Receiver	R&S	ESCI 7	100759	08/28/2024	08/27/2025
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY63440386	02/06/2024	02/05/2025
Network Analyzer	R&S	ZNB 40	101842	05/16/2024	05/15/2025
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/09/2024	08/08/2025
Bi-log Antenna	SCHWARZBECK	VULB9168	1208	07/17/2024	07/16/2025
Horn Antenna	SCHWARZBECK	BBHA9120D	603	05/15/2024	05/14/2025
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/28/2023	12/27/2024
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/10/2024	07/09/2025
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	09/23/2024	09/22/2025
Pre-Amplifier	EMCI	EMC184045SEE	9080939	08/30/2024	08/29/2025
Pre-Amplifier	EMCI	EMC118A45SEE	980868	08/30/2024	08/29/2025
Pre-Amplifier	HP	8447D	2944A07676	08/30/2024	08/29/2025
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.*

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.

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 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)

(10) Portable stations (hand-held devices) are limited to 3 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 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.

7.3 Out Of Band Emission At Antenna Terminals

FCC §22.917(a), §24.238(a), §27.53(h)

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 §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.

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)(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 that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 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 nstrumentation 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 §90.691 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 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.

7.4 Field Strength Of Spurious Radiation Measurement

According to FCC §2.1053,

FCC §22.917(a), §24.238(a), §27.53(h)

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 §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.

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)(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 that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 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 nstrumentation 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.

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(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.

7.5 Frequency Stability Measurement

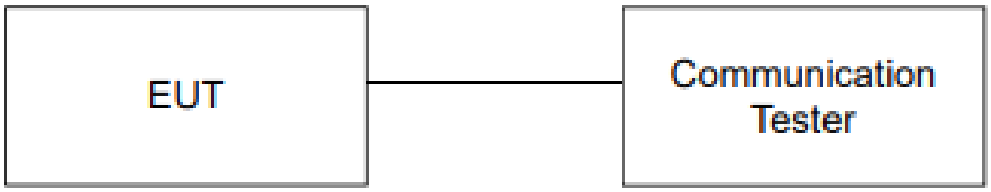
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

7.6 Peak to Average Ratio

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

8 TEST SETUP

8.1 Maximum Output Power

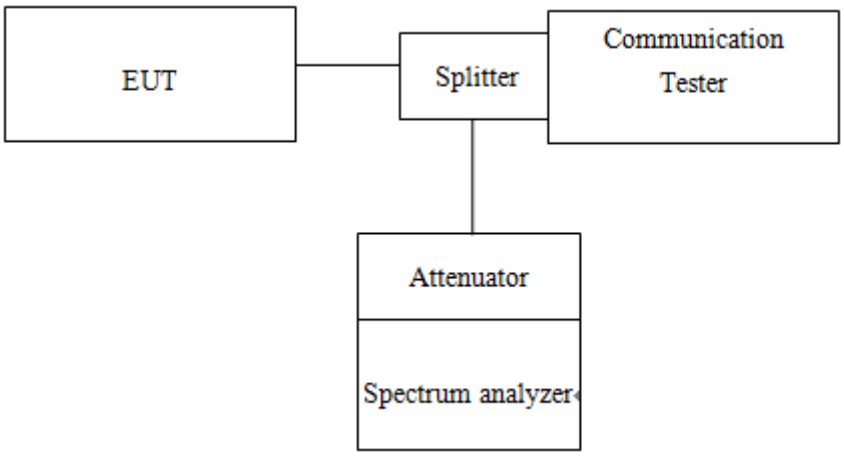


Note: *Measurement setup for testing on Antenna connector*

8.2 Occupied Bandwidth Measurement

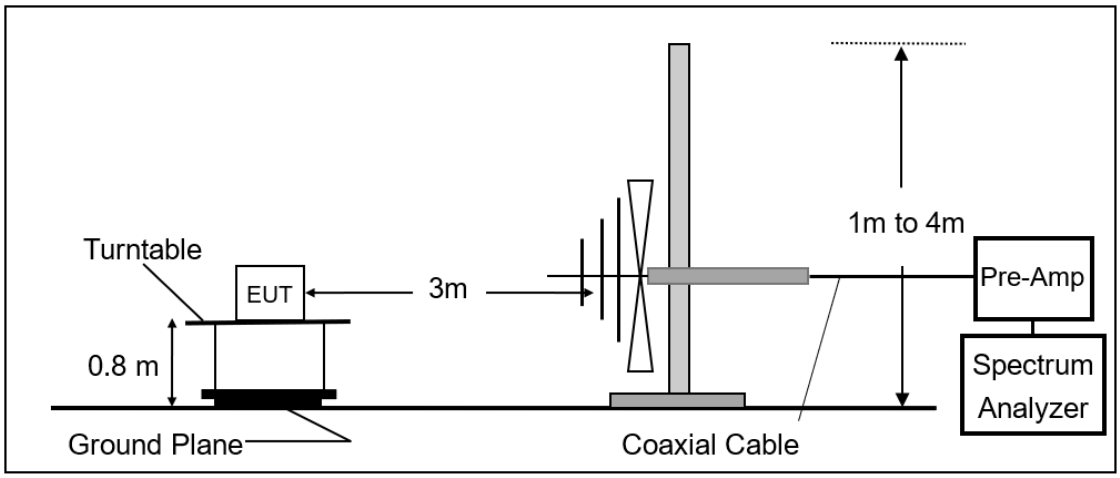
Note: *Measurement setup for testing on Antenna connector*

8.3 Out of Band Emission At Antenna Terminals

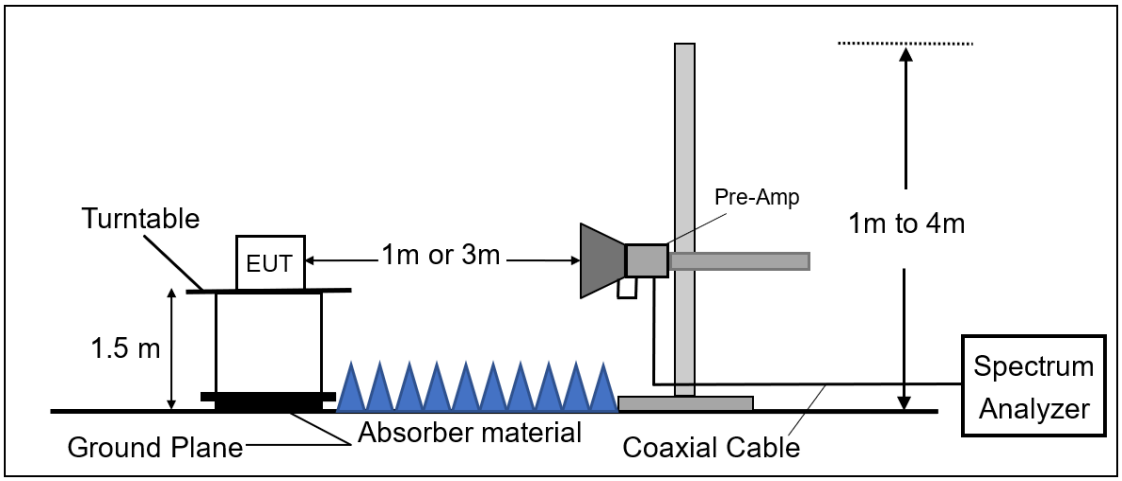


8.4 Field Strength of Spurious Radiation Measurement

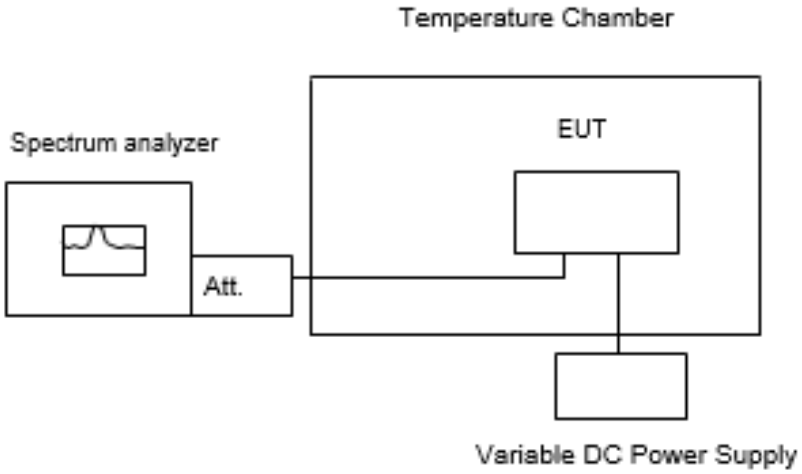
Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



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

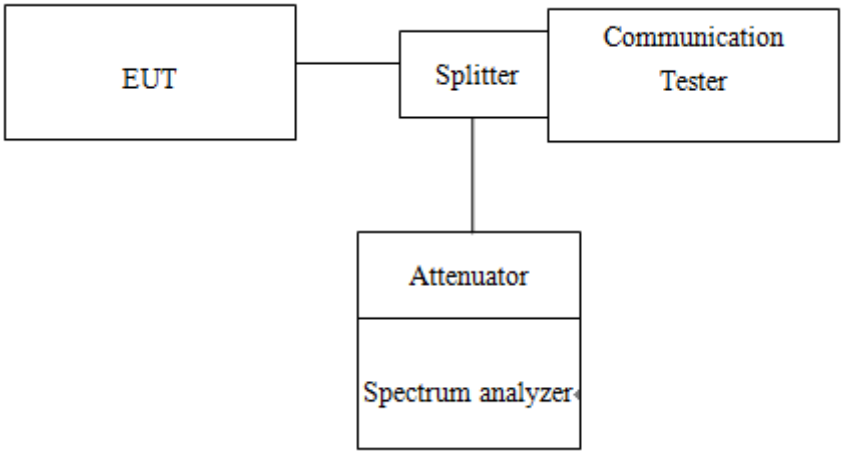


8.5 Frequency Stability Measurement



Note: *Measurement setup for testing on Antenna connector*

8.6 Peak To Average Ratio



9 TEST PROCEDURE

9.1 Maximum Output Power

9.1.1 Output Power Measurement Applicable Guideance

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 PT, 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%, VBW= 3 * RBW, with span > 2 * Signal BW, set % Power = 99%.

99% Bandwidth with detector sample

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW.
Set RBW= 1% ~ 5%, VBW= 3 * RBW, with span > 2 * Signal BW, set % Power = 99%.

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 ≥ 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.

ERP (dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

EIRP (dBm) = SG Level(dBm) + Antenna Gain(dBi) + 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℃. 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

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 ≥ signal's occupied bandwidth; & internal =1ms
3. Set the number of counts to a value that stabilizes the measured CCDF curve.

10 MEASUREMENT RESULTS

Please refer to the Annex A-Measurement Results.

~ End of Report ~