

TEST REPORT

Applicant:	Sercomm Corporation
EUT Description:	G5SEM
Model:	G5SEM
Brand:	N/A
FCC ID:	P27-TMOG5SEM
Standards:	FCC CFR Title 47 Part 2
	FCC CFR Title 47 Part 22
	FCC CFR Title 47 Part 24
	FCC CFR Title 47 Part 27
	FCC CFR Title 47 Part 96
Date of Receipt:	2025/02/06
Date of Test:	2025/02/06 to 2025/04/24
Date of Issue:	2025/04/24

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.

Huang Kun

Approved By:

2 257

Chen Chengfu Reviewed By:



Revision History

Rev.	Issue Date	Description	Revised by
01	2025/04/24	Original	Chen Chengfu



Summary of Test Results

FCC Part	Test Band	Test Item	Test Result
§2.1046			
§22.913(a)(5)	LTE Band 5	Effective Radiated Power	Pass
§27.50(c)(10)	LTE Band 12/71		
§2.1046			
§24.232(c)	LTE Band 2/25/CA_2C	Effective Isotropic Radiated	Deee
§27.50(d)(4)	LTE Band 4/66/CA_66C/CA_66B	Power	Pass
§27.50(h)(2)	LTE Band 41		
§96.41	LTE Band 48	Maximum EIRP and Maximum PSD	Pass
§22.913(d)	LTE Band 5		
§24.232(d)	LTE Band 2/25/CA_2C	Dook Average Datio	Deee
§96.41	LTE Band 48	Peak-Average Ralio	Pass
§27.50(d)(5)	Others Band		
§2.1049	All Band	Occupied Bandwidth	Pass
§2.1051			
§22.917(a)	LTE Band 5		
§24.238(a)	LTE Band 2/25/CA_2C		
§27.53(g)	LTE Band 12	Dond Edge	Deee
§27.53(h)	LTE Band 4/66/CA_66C/CA_66B	Band Edge	Pass
§27.53(m)	LTE Band 41		
§27.53(g)	LTE Band 71		
§96.41	LTE Band 48		
§2.1051			
§22.917(a)	LTE Band 5		
§24.238(a)	LTE Band 2/25/CA_2C		
§27.53(g)	LTE Band 12	Spurious Emission at Antenna	Pass
§27.53(h)	LTE Band 4/66/CA_66C/CA_66B	Terminals	1 835
§27.53(m)	LTE Band 41		
§27.53(g)	LTE Band 71		
§96.41	LTE Band 48		
§2.1053			
§22.917(a)	LTE Band 5		
§24.238(a)	LTE Band 2/25/CA_2C		
§27.53(g)	LTE Band 12	Field Strength of Spurious	Pass
§27.53(h)	LTE Band 4/66/CA_66C/CA_66B	Radiation	1 000
§27.53(m)	LTE Band 41		
§27.53(g)	LTE Band 71		
§96.41	LTE Band 48		
§2.1055			
§22.355	LTE Band 5		
§24.235	LTE Band 2/25/CA_2C	Frequency Stability	Pass
§27.54	Others Band		
§96.41	LTE Band 48		

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd.

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FCC Part	Test Band	Test Item	Test Result					
§96.41	LTE Band 48	Adjacent Channel Leakage Ratio	Pass					
Remark: Pass: Meet the requirement.								



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1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 Tel.: +86-755-27212361

Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory. CAB identifier: CN0152 Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	Sercomm Corporation
Address:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

1.2.2 Manufacturer

Manufacturer:	Sercomm Corporation
Address:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.



1.3 Product Information

EUT Description:	G5SEM								
Model:	G5SEM	G5SEM							
Brand:	N/A								
Hardware Version:	V1.1								
Software Version:	0.00.02								
	RF Conducted	d	355660)7900	04917				
IMEI:	RSE		355660 355660)790()790(004669 005120				
Device Capabilities:									
Modulation Type:	LTE:	$\boxtimes C$	PSK, 🛛] 160	QAM, 🛛 64QAN	1, 🖂	256QAM		
	Band			ТΧ	Frequency		RX Free	quency	
	LTE Band 2			185	0 to 1910 MHz		1930 to	1990 MHz	
	LTE Band 4			171	0 to 1755 MHz		2110 to	2155 MHz	
Operation Frequency Range:	LTE Band 5			824	to 849 MHz		869 to 8	394 MHz	
	LTE Band 12			699	to 716 MHz		729 to 7	746 MHz	
	LTE Band 25			185	0 to 1915MHz		1930 to	1995 MHz	
	LTE Band 41			249	2496 to 2690MHz		2496 to	2690MHz	
	LTE Band 48			355	3550 to 3700 MHz		3550 to 3700 MHz		
	LTE Band 66			171	1710 to 1780 MHz		2110 to 2200 MHz		
	LTE Band 71			663	to 698 MHz		617 to 6	652 MHz	
	LTE UL CA: UL CA_2C; UL CA_66C; UL CA_66B; UL CA_2A-4A; UL CA_2A-5A; UL CA_2A-12A; UL CA_2A-66A; UL CA_2A-71A; UL CA_4A-5A; UL CA_4A-12A; UL CA_4A-71A; UL CA_5A-66A; UL CA_12A-66A; UL CA_66A-71A;								
Power Class:	Class 3: All				<u> </u>				
Antenna Type:	🛛 External, [] Inte	grated						
	Band		Ant1(dBi)	Ant2(dBi)	Ant	7(dBi)	Ant8(dBi)	
	LTE Band 2		4.5		/	4.5		/	
	LTE Band 4		1.5		/	1.5		/	
	LTE Band 5	,	/		5	/		5	
Antonno Coini	LTE Band 12	,	/		5	/		5	
Antenna Gain:	LTE Band 25		4.5		/	4.5		/	
	LTE Band 41	:	2.5		/	2.5		/	
	LTE Band 48	(0		/	0		/	
	LTE Band 66		1.5		/ 1			/	
	LTE Band 71	,	/		4.4	/		4.4	
Remark: The above EUT's info manual for more detailed desc	prmation was de	eclare	d by app	olican	t, please refer to	o the	specifica	tions or user	

2 Test Configuration

2.1 Test Channel

IJUE

Rand	Bondwidth		TX Frequen	су		RX Frequen	су
Danu	Danuwiuth	Range	Channel	Frequency	Range	Channel	Frequency
		Low	18607	1850.7 MHz	Low	607	1930.7 MHz
	1.4MHz	Middle	18900	1880 MHz	Middle	900	1960 MHz
		High	19193	1909.3 MHz	High	1193	1989.3 MHz
		Low	18615	1851.5 MHz	Low	615	1931.5 MHz
	3MHz	Middle	18900	1880 MHz	Middle	900	1960 MHz
		High	19185	1908.5 MHz	High	1185	1988.5 MHz
	5MHz	Low	18625	1852.5 MHz	Low	625	1932.5 MHz
		Middle	18900	1880 MHz	Middle	900	1960 MHz
LTE Band 2	-	High	19175	1907.5 MHz	High	1175	1987.5 MHz
LIE Band 2		Low	18650	1855 MHz	Low	650	1935 MHz
	10MHz	Middle	18900	1880 MHz	Middle	900	1960 MHz
	-	High	19150	1905 MHz	High	1150	1985 MHz
		Low	18675	1857.5 MHz	Low	675	1937.5 MHz
	15MHz	Middle	18900	1880 MHz	Middle	900	1960 MHz
	-	High	19125	1902.5 MHz	High	1125	1982.5 MHz
		Low	18700	1860 MHz	Low	700	1940 MHz
	20MHz	Middle	18900	1880 MHz	Middle	900	1960 MHz
	2011112	High	19100	1900 MHz	High	1100	1980 MHz
		Low	19957	1710 7 MHz	Low	1957	2110 7 MHz
	1 4MH 7	Middle	20175	1732 5 MHz	Middle	2175	2132 5MHz
	1.411112	High	20170	1754 3 MHz	High	2393	2154 3 MHz
		Low	10065	1734.5 MHz	Low	1965	2134.5 MHz
	3MHz	Middle	20175	1732.5 MHz	Middle	2175	2111.5 MHz
		High	20175	1752.5 MHz	High	2175	2152.5MHz
	5MU-7		20305	1755.5 MITZ	Low	2305	2133.5 MITZ
		Middlo	20175	1712.5 MILZ	Middlo	2175	2112.5 WHZ
	SIVILIZ	Ligh	20175	1752.5 MILZ		2175	2152.51VI112
LTE Band 4			20375			2375	
		LOW	20000		LOW	2115	
		lind	20175			2175	
			20350		ign	2350	
	15MHz	LOW	20025	1717.3 MITZ	LOW	2025	
		IVIIddle	20175	1732.5 MHZ	IVIIdale	2175	2132.5IVIHZ
		High	20325		High	2325	
		LOW	20050		LOW	2050	
	20IVIHZ	IVIIddie	20175	1732.5 MHZ	IVIIddie	2175	2132.5MHZ
		Hign	20300	1745 MHZ	High	2300	2145 MHZ
		LOW	20407	824.7 MHZ	LOW	2407	869.7 MHZ
	1.4MHZ	Middle	20525	836.5 MHZ	Middle	2525	881.5 MHZ
		Hign	20643	848.3 MHZ	Hign	2643	893.3 MHZ
		LOW	20415	825.5 MHZ	LOW	2415	870.5 MHZ
	3MHz	Middle	20525	836.5 MHz	Middle	2525	881.5 MHz
LTE Band 5		High	20635	847.5 MHz	High	2635	892.5 MHz
		Low	20425	826.5 MHz	Low	2425	8/1.5 MHz
	5MHz	Middle	20525	836.5 MHz	Middle	2525	881.5 MHz
		High	20625	846.5 MHz	High	2625	891.5 MHz
		Low	20450	829 MHz	Low	2450	874 MHz
	10MHz	Middle	20525	836.5 MHz	Middle	2525	881.5 MHz
		High	20600	844 MHz	High	2600	889 MHz
		Low	23017	699.7 MHz	Low	5017	729.7 MHz
=	1.4MHz	Middle	23095	707.5 MHz	Middle	5095	737.5 MHz
LTE Band 12		High	23173	715.3 MHz	High	5173	745.3 MHz
	3MH7	Low	23025	700.5 MHz	Low	5025	730.5 MHz
		Middle	23095	707.5 MHz	Middle	5095	737.5 MHz

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BandwidthRangeChannelFrequencyRangeChannelHigh23165714.5 MHzHigh5165Low23035701.5 MHzLow50355MHzMiddle23095707.5 MHzMiddle5095High23155740.5 MHzMiddle5095	Frequency 744.5 MHz 731.5 MHz 737.5 MHz 743.5 MHz 734 MHz
High 23165 714.5 MHz High 5165 Low 23035 701.5 MHz Low 5035 5MHz Middle 23095 707.5 MHz Middle 5095 High 23455 742.5 MHz Middle 5055	744.5 MHz 731.5 MHz 737.5 MHz 743.5 MHz 734 MHz
Low 23035 701.5 MHz Low 5035 5MHz Middle 23095 707.5 MHz Middle 5095	731.5 MHz 737.5 MHz 743.5 MHz 734 MHz
5MHz Middle 23095 707.5 MHz Middle 5095	737.5 MHz 743.5 MHz 734 MHz
	743.5 MHz 734 MHz
підп 23155 713.5 МНZ НІдп 5155	734 MHz
Low 23060 704 MHz Low 5060	
10MHz Middle 23095 707.5 MHz Middle 5095	737.5 MHz
High 23130 711 MHz High 5130	741 MHz
Low 26047 1850.7 MHz Low 8047	1930.7 MHz
1.4MHz Middle 26365 1882.5 MHz Middle 8365	1962.5 MHz
High 26683 1914 3 MHz High 8683	1994 3 MHz
Low 26055 1851.5 MHz Low 8055	1931 5 MHz
3MHz Middle 26365 1882.5 MHz Middle 8365	1962 5 MHz
High 26675 1913 5 MHz High 8675	1993 5 MHz
Low 26065 1852 5 MHz Low 8065	1932 5 MHz
5MHz Middle 26365 1882.5 MHz Middle 8365	1962.5 MHz
High 26665 1912 5 MHz High 8665	1992.5 MHz
LTE Band 25	1932.3 MH7
10MHz Middle 26365 1882.5 MHz Middle 8365	1962 5 MHz
High 26640 1910 MHz High 8640	1990 MH7
Low 26115 1857 5 MHz Low 8115	1937 5 MHz
15MHz Middle 26365 1882.5 MH Middle 8365	1962 5 MHz
High 26615 1907 5 MHz High 8615	1987 5 MHz
Low 26140 1860 MHz Low 8140	1940 MH7
20MHz Middle 26365 1882.5 MHz Middle 8365	1962 5 MHz
High 26590 1902.3 Mildle 8590	1985 MH7
Low 39675 2498 5 MHz Low 39675	2498 5 MHz
5MHz Middle 40620 2593 MHz Middle 40620	2503 MH7
High 41565 2687.5 MHz High 41565	2687 5 MHz
Low 39700 2501 MHz Low 39700	2501 MHz
10MHz Middle 40620 2593 MHz Middle 40620	2593 MHz
LTE Band 41 High 41540 2685 MHz High 41540	2685 MHz
(2496-2690) Low 39725 2503.5 MHz Low 39725	2503 5 MHz
(2.100 2000) 15MHz Middle 40620 2593 MHz Middle 40620	2593 MHz
High 41515 2682.5 MHz High 41515	2682 5 MHz
Low 39750 2506 MHz Low 39750	2506 MHz
20MHz Middle 40620 2593 MHz Middle 40620	2593 MHz
High 41490 2680 MHz High 41490	2680 MHz
Low 55265 3552.5 MHz Low 55265	3552 5 MHz
5MHz Middle 55990 3625.0 MHz Middle 55990	3625.0 MHz
High 56715 3697.5 MHz High 56715	3697 5 MHz
Low 55290 3555.0 MHz Low 55290	3555.0 MHz
10MHz Middle 55990 3625.0 MHz Middle 55990	3625.0 MHz
High 56690 3695.0 MHz High 56690	3695.0 MHz
LTE Band 48 Low 55315 3557.5 MHz Low 55315	3557 5 MHz
15MHz Middle 55990 3625.0 MHz Middle 55990	3625.0 MHz
High 56665 3692 5 MHz High 56665	3692 5 MHz
Low 55340 3560.0 MHz Low 55340	3560.0 MHz
20MHz Middle 55990 3625.0 MHz Middle 55990	3625.0 MHz
High 56640 3690.0 MHz High 56640	3690 0 MHz
Low 131979 1710 7 MHz Low 66443	2110 7 MH ₇
1.4MHz Middle 132322 1745 MHz Middle 66786	2145MH7
High 132665 1779.3 MHz High 67329	2199 3 MH7
Low 131087 1711 5 MHz Low 66451	2111 5 MH ₇
LTE Band 66 3MHz Middle 132322 1745 MHz Middle 66786	2145MH7
High 132657 1778 5MHz High 67321	2198 5MHz
Ingri 102007 1710.0MHz High 07021	2112 5 MH ₇
5MHz Middle 132322 1745 MHz Middle 66786	2145MHz

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Dand	Dono du vi déla		TX Frequen	су		RX Frequen	су
Band	Bandwidth	Range	Channel	Frequency	Range	Channel	Frequency
		High	132647	1777.5 MHz	High	67311	2197.5 MHz
		Low	132022	1715 MHz	Low	66486	2115 MHz
	10MHz	Middle	132322	1745 MHz	Middle	66786	2145MHz
		High	132622	1775 MHz	High	67286	2195 MHz
		Low	132047	1717.5 MHz	Low	66511	2117.5 MHz
	15MHz	Middle	132322	1745 MHz	Middle	66786	2145MHz
		High	132597	1772.5 MHz	High	67261	2192.5 MHz
		Low	132072	1720 MHz	Low	66536	2120 MHz
	20MHz	Middle	132322	1745 MHz	Middle	66786	2145MHz
		High	132572	1770 MHz	High	67236	2190 MHz
	5MHz	Low	133147	665.5 MHz	Low	68611	619.5 MHz
		Middle	133297	680.5 MHz	Middle	68761	634.5 MHz
		High	133447	695.5 MHz	High	68911	649.5 MHz
	10MHz	Low	133172	668 MHz	Low	68636	622 MHz
		Middle	133297	680.5 MHz	Middle	68761	634.5 MHz
I TE Bond 71		High	133422	693 MHz	High	68886	647 MHz
LIE Danu / I		Low	133197	670.5 MHz	Low	68661	624.5 MHz
	15MHz	Middle	133297	680.5 MHz	Middle	68761	634.5 MHz
		High	133397	690.5 MHz	High	68861	644.5 MHz
		Low	133222	673 MHz	Low	68686	627 MHz
	20MHz	Middle	133297	680.5 MHz	Middle	68761	634.5 MHz
		High	133372	688 MHz	High	68836	642 MHz

	CC-Combo /										
Range	NRB_agg [RB]			CC1 Note1					CC2 Note1		
		BW [RB]	NuL	fuL [MHz]	NDL	f _{DL} [MHz]	BW [RB]	NuL	f _{UL} [MHz]	NDL	f _{DL} [MHz]
Low	25+100	25	18633	1853.3	633	1933.3	100	18750	1865	750	1945
		100	18700	1860	700	1940	25	18817	1871.7	817	1951.7
	50+75	50	18653	1855.3	653	1935.3	75	18773	1867.3	773	1947.3
		75	18675	1857.5	675	1937.5	50	18795	1869.5	795	1949.5
	50+100	50	18655	1855.5	655	1935.5	100	18799	1869.9	799	1949.9
		100	18700	1860	700	1940	50	18844	1874.4	844	1954.4
	75+75	75	18675	1857.5	675	1937.5	75	18825	1872.5	825	1952.5
	75+100	75	18678	1857.8	678	1937.8	100	18849	1874.9	849	1954.9
		100	18700	1860	700	1940	75	18871	1877.1	871	1957.1
	100+100	100	18700	1860	700	1940	100	18898	1879.8	898	1959.8
Mid	25+100	25	18808	1870.8	808	1950.8	100	18925	1882.5	925	1962.5
		100	18875	1877.5	875	1957.5	25	18992	1889.2	992	1969.2
	50+75	50	18829	1872.9	829	1952.9	75	18949	1884.9	949	1964.9
		75	18851	1875.1	851	1955.1	50	18971	1887.1	971	1967.1
	50+100	50	18806	1870.6	806	1950.6	100	18950	1885	950	1965
		100	18851	1875.1	851	1955.1	50	18995	1889.5	995	1969.5
	75+75	75	18825	1872.5	825	1952.5	75	18975	1887.5	975	1967.5
	75+100	75	18803	1870.3	803	1950.3	100	18974	1887.4	974	1967.4
		100	18826	1872.6	826	1952.6	75	18997	1889.7	997	1969.7
	100+100	100	18801	1870.1	801	1950.1	100	18999	1889.9	999	1969.9
High	25+100	25	18983	1888.3	983	1968.3	100	19100	1900	1100	1980
		100	19050	1895	1050	1975	25	19167	1906.7	1167	1986.7
	50+75	50	19005	1890.5	1005	1970.5	75	19125	1902.5	1125	1982.5
		75	19027	1892.7	1027	1972.7	50	19147	1904.7	1147	1984.7
	50+100	50	18956	1885.6	956	1965.6	100	19100	1900	1100	1980
		100	19001	1890.1	1001	1970.1	50	19145	1904.5	1145	1984.5
	75+75	75	18975	1887.5	975	1967.5	75	19125	1902.5	1125	1982.5
	75+100	75	18929	1882.9	929	1962.9	100	19100	1900	1100	1980
		100	18951	1885.1	951	1965.1	75	19122	1902.2	1122	1982.2
	100+100	100	18902	1880.2	902	1960.2	100	19100	1900	1100	1980
Note 1:	Carriers in inc	creasing f	requency	order.							

Table 4.3.1.1.2A-2: Test frequencies for CA_2C



	CC-Combo /										
Range	NRB_agg			CC1 Note1					CC2 Note1		
	1	BW		fu		foi	BW		fu		fn
		[RB]	NUL	[MHz]	NDL	[MHz]	[RB]	NUL	[MHz]	NDL	[MHz]
	25+25	25	131997	1712.5	66461	2112.5	25	132045	1717.3	66509	2117.3
	25+50	25	132000	1712.8	66464	2112.8	50	132072	1720	66536	2120
Low		50	132022	1715	66486	2115	25	132094	1722.2	66558	2122.2
LOW	25+75	25	132002	1713	66466	2113	75	132095	1722.3	66559	2122.3
		75	132047	1717.5	66511	2117.5	25	132140	1726.8	66604	2126.8
	50+50	50	132022	1715	66486	2115	50	132121	1724.9	66585	2124.9
	25+25	25	132398	1752.6	66862	2152.6	25	132446	1757.4	66910	2157.4
	25+50	25	132375	1750.3	66839	2150.3	50	132447	1757.5	66911	2157.5
Mid		50	132397	1752.5	66861	2152.5	25	132469	1759.7	66933	2159.7
Mid	25+75	25	132353	1748.1	66817	2148.1	75	132446	1757.4	66910	2157.4
		75	132398	1752.6	66862	2152.6	25	132491	1761.9	66955	2161.9
	50+50	50	132373	1750.1	66837	2150.1	50	132472	1760	66936	2160
	25+25	25	132647	1777.5	67111	2177.5	25	NA	NA	67159	2182.3
	25+50	25	132647	1777.5	67111	2177.5	50	NA	NA	67183	2184.7
Lligh2		50	132622	1775	67086	2175	25	NA	NA	67158	2182.2
rigir-	25+75	25	132647	1777.5	67111	2177.5	75	NA	NA	67204	2186.8
		75	132597	1772.5	67061	2172.5	25	NA	NA	67154	2181.8
	50+50	50	132622	1775	67086	2175	50	NA	NA	67185	2184.9
	25+25	25	132599	1772.7	67063	2172.7	25	132647	1777.5	67111	2177.5
	25+50	25	132550	1767.8	67014	2167.8	50	132622	1775.	67086	2175
Lliah ³		50	132572	1770	67036	2170	25	132644	1777.2	67108	2177.2
rigii	25+75	25	132504	1763.2	66968	2163.2	75	132597	1772.5	67061	2172.5
		75	132549	1767.7	67013	2167.7	25	132642	1777	67106	2177
	50+50	50	132523	1765.1	66987	2165.1	50	132622	1775	67086	2175
Note 1:	Carriers in inc	creasing f	requency of	order.							
Note 2:	Applicable for	r intra-bar	nd contiguo	ous CA wi	thout UL	CA.					
Note 3:	Applicable for intra-band contiguous CA with UL CA.										

Table	4.3.1.1	1.66A-1:	Test	frequen	cies	for	CA	66B
							~	



Range Nns. age [RB] CC1 Note1 Note1 CC2 Note1 BW [RB] NuL [RB] FuL [MHz] FoL [MHz] BW [RB] FoL [MHz] BW [RB] FoL [MHz] FoL [MHz]
Range [RB] Note1 Note1 Note1 BW fuL Mu [MHz] NoL [MHz] BW fuL [RB] NuL [MHz] NuL [MHz] BW fuL [MHz] NuL [Muz] NuL [Muz] NuL [Muz] NuL
BW TuL
Image Image <thimagee< th=""> <thimagee< th=""> <th< th=""></th<></thimagee<></thimagee<>
Nick No N
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$
Low 100 132072 1720 66536 2120 50 132216 1734.4 66680 2134.4 Low 75+75 75 132047 1717.5 66511 2117.5 75 132197 1732.5 66661 2132.5 75+100 75 132050 1717.8 66536 2120 75 132197 1732.5 66661 2132.5 75+100 75 132050 1717.8 66536 2120 75 132243 1737.1 666707 2137.1 100+25 100 132072 1720 66536 2120 25 132189 1731.7 66653 2125.0 100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2169.9 75 132373 1750.1 66837 2161.1
Low 75+75 75 132047 1717.5 66511 2117.5 75 132197 1732.5 66661 2132.5 75+100 75 132050 1717.8 66514 2117.8 100 132221 1734.9 666865 2134.9 100 132072 1720 66536 2120 75 132243 1737.1 66707 2137.1 100+25 100 132072 1720 66536 2120 25 132189 1731.7 66653 2131.7 25 132005 1713.3 66469 2113.3 100 132122 1725.0 66586 2125.0 100+100 100 132072 1720 66536 2120 100 132270 173.8 66734 213.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 75 132373 1750.1 66837 2150.1 50 132493
Low 75+100 75 132050 1717.8 66514 2117.8 100 132221 1734.9 66685 2134.9 100+25 100 132072 1720 66536 2120 75 132243 1737.1 66707 2137.1 100+25 100 132072 1720 66536 2120 25 132189 1731.7 66653 2131.7 25 132005 1713.3 66469 2113.3 100 132122 1725.0 66586 2125.0 100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 75 132373 1750.1 66837 2150.1 50 132471 1760.5 66981 2162.1 50+100 50 132373 1750.1 66837 2150.1 50
Ind 132072 1720 66536 2120 75 132243 1737.1 66707 2137.1 100+25 100 132072 1720 66536 2120 25 132189 1737.1 66653 2131.7 25 132005 1713.3 66469 2113.3 100 132122 1725.0 66536 2120.0 132122 1725.0 66536 2120.0 132122 1725.0 66536 2120.0 100 132122 1725.0 66536 2125.0 100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160.1 100 132373 1750.1 66837 2150.1 50 <td< td=""></td<>
100+25 100 132072 1720 66536 2120 25 132189 1731.7 66653 2131.7 25 132005 1713.3 66469 2113.3 100 132122 1725.0 66586 2125.0 100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 50+75 50 132373 1750.1 66837 2150.1 50 132493 1762.1 66957 2162.1 50+100 50 132373 1750.1 66837 2150.1 50 132472 1760 66936 2160 Mid 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3
Mid 25 132005 1713.3 66469 2113.3 100 132122 1725.0 66586 2125.0 100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 75 132373 1750.1 66837 2150.1 50 132493 1762.1 66936 2160 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160 100 132373 1750.1 66837 2150.1 50 132471 1764.5 66981 2164.5 100 132373 1750.1 66811 2147.5 75 132497 1762.5 66961 2162.5 75+75 75 132325 1745.3 66789 2145.3 100 132497 1762.5 </td
100+100 100 132072 1720 66536 2120 100 132270 1739.8 66734 2139.8 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 75 132373 1750.1 66837 2150.1 50 132493 1762.1 66957 2162.1 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160 100 132373 1750.1 66837 2150.1 50 132472 1764.5 66981 2164.5 100 132373 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+75 75 132325 1745.3 66789 2145.3 100 132497 1762.5 66961 2162.4 75+100 75 132325 1745.3 66789 2145.3 100 132496 176
Mid 50+75 50 132351 1747.9 66815 2147.9 75 132471 1759.9 66935 2159.9 75 132373 1750.1 66837 2150.1 50 132493 1762.1 66957 2162.1 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160 100 132373 1750.1 66837 2150.1 50 132472 1760 66936 2160 100 132373 1750.1 66837 2150.1 50 132517 1764.5 66981 2164.5 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7
Mid 75 132373 1750.1 66837 2150.1 50 132493 1762.1 66957 2162.1 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160 100 132373 1750.1 66837 2150.1 50 132517 1764.5 66981 2164.5 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+75 75 132325 1745.3 66789 2145.3 100 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2164.7 100+25 100 132397 1752.5 66861 2152.5 25 1325
Mid 50+100 50 132328 1745.6 66792 2145.6 100 132472 1760 66936 2160. Mid 75+75 75 132347 1750.1 66837 2150.1 50 132517 1764.5 66981 2164.5 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2164.7 100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 132330 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.8 66794 2
Mid 100 132373 1750.1 66837 2150.1 50 132517 1764.5 66981 2164.5 Mid 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2164.7 100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 132307 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 132330 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100
Mid 75+75 75 132347 1747.5 66811 2147.5 75 132497 1762.5 66961 2162.5 75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2162.4 100+25 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2162.4 100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 132330 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132622 1775 6786 2175 <td< td=""></td<>
75+100 75 132325 1745.3 66789 2145.3 100 132496 1762.4 66960 2162.4 100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2164.7 100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 13230 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132632 1775 6786 2175 75 NA NA 67206 2187
100 132348 1747.6 66812 2147.6 75 132519 1764.7 66983 2164.7 100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 13230 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132622 1775 67086 2175 75 NA NA 67206 2187
100+25 100 132397 1752.5 66861 2152.5 25 132514 1764.2 66978 2164.2 25 132300 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132622 1775 67086 2175 75 NA NA 67206 2187
25 132330 1745.8 66794 2145.8 100 132447 1757.5 66911 2157.5 100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132622 1775 67086 2175 75 NA NA 67206 2187
100+100 100 132323 1745.1 66787 2145.1 100 132521 1764.9 66985 2164.9 50+75 50 132622 1775 67086 2175 75 NA NA 67206 2187
50+75 50 132622 1775 67086 2175 75 NA NA 67206 2187
75 132597 1772.5 67061 2172.5 50 NA NA 67181 2184.5
50+100 50 132622 1775 67086 2175 100 NA NA 67230 2189.4
100 132572 1770 67036 2170 50 NA NA 67180 2184.4
High ² 75+75 75 132597 1772.5 67061 2172.5 75 NA NA 67211 2187.5
75+100 75 132597 1772.5 67061 2172.5 100 NA NA 67232 2189.6
100 132572 1770 67036 2170 75 NA NA 67207 2187.1
100+25 100 132572 1770 67036 2170 25 NA NA 67153 2181.7
25 132647 1777.5 67111 2177.5 100 NA NA 67228 2189.2
100+100 100 132572 1770 67036 2170 100 NA NA 67234 2189.8
50+75 50 132477 1760.5 66941 2160.5 75 132597 1772.5 67061 2172.5
50+100 50 132428 1/55.6 66892 2155.6 100 1325/2 1//0 6/036 21/0
High ^o 100 132473 1760.1 66937 2160.1 50 132617 1774.5 67081 2174.5
75+75 75 132447 1757.5 66911 2157.5 75 132597 1772.5 67061 2172.5
75+100 75 132401 1752.9 66885 2152.9 100 132572 1770 67036 2170
100 132423 1755.1 66887 2155.1 75 132594 1772.2 67058 2172.2
100+25 100 132522 1765 66986 2165 25 132639 1776.7 67103 2176.7
25 132455 1758.3 66919 2158.3 100 132572 1770.0 67036 2170.0
100+100 100 132374 1750.2 66838 2150.2 100 132572 1770 67036 2170
Note 1: Carriers in increasing frequency order.
Note 2. Applicable for intra-band contiguous CA without OL CA.



2.2 Test Mode

Test Mode	Description
TM 1	EUT communication with simulated station in LTE/QPSK mode
TM 2	EUT communication with simulated station in LTE/16QAM mode
TM 3	EUT communication with simulated station in LTE/64QAM mode
TM 4	EUT communication with simulated station in LTE/256QAM mode

Note:

- 1. The maximum Conducted Power is calculated from max output power and max antenna gain, only the maximum Conducted Power is shown in the report.
- 2. ERP/EIRP of all antennas are tested, and only the worst data is presented.

2.3 Support Unit used in test

Description	Manufacturer	Model	Serial Number		
Development Board *	N/A	DBG-G5SEM	/		
Remark: * the information of table is provided by client.					

2.4 Test Environment

Temperature:	Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C
Relative Humidity	45 ~ 56 % RH Ambient
Voltage:	Nominal: 3.8 Vdc, Extreme: Low 3.3 Vdc, High 4.4 Vdc

2.5 Test RF Cable

For all conducted test items: The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

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

Offset = RF cable loss + attenuator factor.

2.6 Modifications

No modifications were made during testing.



2.7 Test Setup Diagram

2.7.1 Conducted Configuration









3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable recognized national standards.

3.1 Test Equipment List

RF05							
Description	Manufacturer	Model	SN	Last Due	Cal Due		
Radio Communication	Apritou	MT9924C	6262170426	2024/03/25	2025/03/24		
Analyzer	Annisu	WI 1002 IC	0202170430	2025/03/14	2026/03/13		
EXA Signal Analyzer, Multi- touch	Keysight	N9010B	MY63440541	2024/05/30	2025/05/29		
Wideband Radio	DIS		151064	2024/03/25	2025/03/24		
Communication Tester	R&S	CIVIV500	151004	2025/03/14	2026/03/13		
Signal Apolyzor	Keysight	N9020A	US46470468	2024/03/25	2025/03/24		
Signal Analyzei				2025/03/14	2026/03/13		
Cignal Concreter	Kavaiaht		MV/50444240	2024/03/25	2025/03/24		
Signal Generator	Keysigni	N201CM	IVE 50 1443 10	2025/03/11	2026/03/10		
Cignal Concreter	D 20	OMD 00	100621	2024/03/25	2025/03/24		
Signal Generator	Rad	SIVIR20	100621	2025/03/11	2026/03/10		
Hygrometer	BingYu	HTC-1	N/A	2023/06/01	2025/05/31		
Band Reject Filter Group	Tonscend	JS0806-F	23A806F0647	N/A	N/A		
RF Control Unit	Tonscend	JS0806-1	22L8060639	N/A	N/A		
Measurement Software	Tonscend	TS1120 V3.1.46	10636	N/A	N/A		



Radiated Emission							
Description	Manufacturer	Model	SN	Last Due	Cal Due		
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB9163	1643	2023/06/25	2025/06/24		
Double-Ridged Horn Antennas	Schwarzbeck	BBHA 9120D	2809	2023/06/25	2025/06/24		
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	1290	2023/06/25	2025/06/24		
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2025/06/28		
	Kausiaht	NOODA	MV(40400050	2024/03/25	2025/03/24		
Signal Analyzer	Keysight	N9020A	MY49100252	2025/03/11	2026/03/10		
EXA Signal Analyzer, Multi- touch	Keysight	N9010B	MY63440541	2024/05/30	2025/05/29		
Wideband Radio	DIC		150645	2024/03/25	2025/03/24		
Communication Tester	R&3	CIVIV500	150045	2025/03/11	2026/03/10		
Low Noise Amplifier	Tanaaand		A P23 A 8060273	2023/04/08	2025/04/07		
	Tonscend	TAF9K3G40	AF23A0000273	2025/03/11	2027/03/10		
Low Noise Amplifier	T	TA D04040050	A D 2 2 C 8 0 C 2 F 8	2023/04/08	2025/04/07		
	Tonscend	TAP01016050	AF22G600256	2025/03/11	2027/03/10		
Levy Maine Area liffing	Tenend	TA D40040040	4 000 0000 47	2023/04/08	2025/04/07		
Low Noise Ampliner	Tonscena	TAP18040048	AP22G806247	2025/03/11	2027/03/10		
Hygrometer	BINGYU	HTC-1	N/A	2023/06/01	2025/05/31		
Test Software	Tonscend	TS+ V5.0.0	N/A	N/A	N/A		



3.2 Measurement Uncertainty

Parameter	U _{lab}
Frequency error	50.30Hz
Output power	0.74dB
Conducted spurious emissions	2.22dB
Radiated Emissions(9kHz~30MHz)	2.40dB
Radiated Emissions(30MHz~1000MHz)	4.66dB
Radiated Emissions(1GHz~18GHHz)	5.42dB
Radiated Emissions(18GHz~40GHHz)	5.46dB

Uncertainty figures are valid to a confidence level of 95%



4 Test Results

4.1 Output Power (ERP / EIRP)

<u>Limits</u>

FCC Part	Test Band	Limit
§22.913(a)(5)	LTE Band 5	The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7watts.
§24.232(c)	LTE Band 2/25/CA_2C	Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.
§27.50(h)(2)	LTE Band 41	Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power
§27.50(d)(4)	LTE Band 4/66/CA_66C/CA_66B	Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780MHz bands are limited to 1watt EIRP. Fixed stations operating in the 1710- 1755MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.
§27.50(c)(10)	LTE Band 12/71	Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3watts ERP.

Test Procedure

KDB 971168 D01 V03r01 Section 5.2.1, for Conducted Output Power

KDB 971168 D01 V03r01 Section 5.2, for Effective (Isotropic) Radiated Power

Test Settings

Conducted Output Power:

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated base station. The simulated station was set to force the EUT to its maximum power setting, Transmitter output power was read off in dBm, read values have added cable loss and attenuation.

Radiated Power:

The formula for calculating ERP/EIRP based on conduction power is as follows: EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi) ERP=EIRP - 2.15dB

Test Setup

Refer to section 2.7.1 Setup 1

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Results

The detailed test data see: Appendix.

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Limits

FCC Part	Test Band			
		Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
§96.41	LIE Band 48	End User Device	23	n/a
		Category A CBSD	30	20
		Category B CBSD ¹	47	37

Test Procedure

KDB 971168 D01 V03r01 Section 5.4

Test Settings

- 1. Set span to $2 \times to 3 \times the OBW$.
- 2. Set $\overrightarrow{RBW} = 1\%$ to 5% of the OBW.
- 3. Set VBW \geq 3 × RBW.
- 4. Set number of measurement points in sweep $\ge 2 \times \text{span} / \text{RBW}$.
- 5. Sweep time:
 - a) Set = auto-couple, or
 - b) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.
- 6. Detector = power averaging (rms).
- 7. Set sweep trigger to "free run."
- 8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
- 9. Compute power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function with band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- 10. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

Test notes

- 1. When average PSD limits are specified, the same fundamental measurement condition applies as previously discussed (i.e., averaging is to be performed only over durations of active transmissions at maximum output power level). Thus, when performing this measurement, the EUT must either be configured to transmit continuously at full power while the compliance measurement is performed, or else the measurement instrumentation must be configured to acquire data only over durations when the EUT is actively transmitting at full power. In circumstances where neither of these conditions can be realized, then alternative procedures are provided for both constant duty cycle and non-constant duty cycle transmissions.
- 2. The PSD is measured following the same procedures described in 5.2.4.4 for measuring the total average power, but with the RBW set to the reference bandwidth specified by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW. If the fundamental measurement condition cannot be realized, then one of the alternative procedures in 5.2.4.4.2 or 5.2.4.4.3 should be selected.



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Test Setup

Refer to section 2.7.1 Setup 2

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result



<u>Limits</u>

§22.913(d): The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

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

§27.50(d)(5): The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

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

Test Procedure

KDB 971168 D01 V03r01 Section 5.7.1

Test Settings

The following guidelines are offered for performing a CCDF measurement.

- 11. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.
- 12. Set the number of counts to a value that stabilizes the measured CCDF curve.
- 13. Set the measurement interval as follows:
 - a) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms.
 - b) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
 - c) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
- 14. Record the maximum PAPR level associated with a probability of 0.1%.
- 15. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

Test Setup

Refer to section 2.7.1 Setup 2

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result



Limits

For Reporting Purposes only

Test Procedure

KDB 971168 D01 V03r01 Section 4.2 & 4.3

Test Settings

- 1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
- 2. The signal analyzer automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by ant intermediate power nulls in the fundamental emission.
- 3. The simulated base station was set to force the EUT to its maximum transmitting power.
- 4. RBW = 1 5% of the expected OBW
- 5. VBW \geq 3 times the RBW
- 6. Sweep = Auto
- 7. Detector = Peak
- 8. Trace = Max hold
- 9. The trace was allowed to stabilize

Test Setup

Refer to section 2.7.1 Setup 2

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

<u>Test Result</u>

4.5 Band Edge and Emission Mask

5 L J **6**

Limits

FCC part	Test Band	Limit
§22.917(a) §24.238(a) §27.53(g) §27.53(h)	LTE Band 5 LTE Band 2/25/CA_2C LTE Band 12/71 LTE Band 4/66/CA_66C/CA_66B	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.
§27.53(m)	LTE Band 41	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 MHz from the channel edge, $43 + 10 \log (P) dB$ on all frequencies between 5 MHz and X MHz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz 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.
§96.41	LTE Band 48	for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS- assigned channel edge.

Test Procedure

KDB 971168 D01 V03r01 Section 6.0

Test Settings

- 1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
- 2. The simulated base station was set to force the EUT to its maximum transmitting power.
- 3. Start and stop frequency were set such that the band edge would be placed in the center of the plot.
- 4. RBW ≥ 1% of the emission bandwidth
- 5. VBW \geq 3 times the RBW
- 6. Detector = RMS
- 7. Number of sweep point \geq 2 times Span/RBW
- 8. Sweep = Auto
- 9. Trace = Max hold
- 10. The trace was allowed to stabilize

Test Setup

Refer to section 2.7.1. Setup 2

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: Appendix.

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4.6 Spurious Emission at Antenna Terminals

Limits

FCC part	Test Band	Limit
§22.917(a)	LTE Band 5	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.
§24.238(a)	LTE Band 2/25/CA_2C	
§27.53(g)	LTE Band 12	
§27.53(h)	LTE Band 4/66/CA_66C/CA_66B	
§27.53(g)	LTE Band 71	
§27.53(m)	LTE Band 41	All frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
§96.41	LTE Band 48	for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

Test Procedure

KDB 971168 D01 V03r01 Section 6.0

Test Settings

- 1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
- 2. The simulated base station was set to force the EUT to its maximum transmitting power.
- 3. Start frequency was set to 9kHz and stop frequency was set to 10th harmonic.
- 4. RBW and VBW (see test notes)
- 5. Detector = RMS
- 6. Sweep = Auto
- 7. Sweep point = below 30MHz(1001pts); 30MHz 1GHz(2001pts); above 1GHz(40001pts)
- 8. Trace = trace average for continuous emissions, max hold for pulse emissions
- 9. Allow trace to fully stabilize

Test Notes

- 1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100kHz or greater for measurements below 1GHz. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission is attenuated at least 26dB below the transmitter power
- 2. 9kHz 150kHz: RBW=1kHz, VBW≥3 times the RBW
- 150kHz 30MHz: RBW=10kHz. VBW≥3 times the RBW



Test Setup

Refer to section 2.7.1. Setup 2

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result



4.7 Field Strength of Spurious Radiation

<u>Limits</u>

FCC part	Test Band	Limit
§2.1053		
§22.917(a)	LTE Band 5	The power of any emission outside of the
§24.238(a)	LTE Band 2/25/CA_2C	authorized operating frequency ranges must be
§27.53(g)	LTE Band 12	attenuated below the transmitting power (P) by a factor of at least $(2 + 10 \log (P)) dP$
§27.53(h)	LTE Band 4/66/CA_66C/CA_66B	factor of at least $43 \pm 10 \log(P)$ dB.
§27.53(g)	LTE Band 71	
§27.53(m)	LTE Band 41	All frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
§96.41	LTE Band 48	for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS- assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

Test Procedure

KDB 971168 D01 V03r01 Section 7

Test Settings

- 1. For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
- 2. For radiated emissions measurements performed at frequencies above 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 150cm above the ground plane.
- 3. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
- 4. For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
- 5. The simulated base station was set to force the EUT to its maximum transmitting power.
- 6. spectrum analyzer setting:
 - Measurements 9KHz~150KHz: RBW = 300Hz; VBW ≥ 3 kHz; Detector = RMS Measurements 150KHz~30MHz: RBW = 10KHz; VBW ≥ 30 kHz; Detector = RMS Measurements 30MHz~1000MHz: RBW = 100KHz or 1MHz; VBW ≥ 1MHz or 3MHz; Detector = RMS Measurements Above 1000MHz: RBW = 1 MHz; VBW ≥ 3 MHz; Detector = RMS
- 7. The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:

E(dBµV/m) = Measured amplitude level (dBµV) + Cable Loss (dB) + Antenna Factor (dB/m).



E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

E(dBuV/m) = EIRP(dBm) - 20log(D) + 104.8; where D is the measurement distance(in the far field region) in m. $EIRP(dBm) = E(dB\mu V/m) + 20log(D) - 104.8$; where D is the measurement distance(in the far field region) in m. *So, from d: The measuring distance is usually at 3m, then* 20*Log(3)=9.5424

- Then, EIRP (dBm)= E ($dB\mu V/m$) +9.5424-104.8=E ($dB\mu V/m$)-95.2576
- 8. Repeat above procedures until all frequencies measured was complete.
- **9.** Measure and record the results in the test report.

Test notes

- 1. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
- 3. Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the disturbance between 9KHz to 30MHz, 30MHz-1GHz and 18GHz to 40GHz was very low. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded, so only the harmonics had been displayed.
- 4. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Test Setup

Refer to section 2.7.2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result



4.8 Frequency Stability V.S. Temperature, Voltage

<u>Limits</u>

§22.355:

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations. §24.235 / §27.54 / §96.41:

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

Test Procedure

KDB 971168 D01 V03r01 Section 9

Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Notes

a.) Temperature:

The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber. b.) Primary Supply Voltage:

The primary supply voltage is varied from 85% to 115% of the nominal value for non-hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Setup

Refer to section 2.7.1 Setup 3

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result



The detailed test data see: Appendix-D WWAN Setup Photos



Appendix

Appendix List:

Appendix-A LTE Band 2	
Appendix-A LTE Band 4	
Appendix-A LTE Band 5	
Appendix-A LTE Band 12	
Appendix-A LTE Band 25	
Appendix-A LTE Band 41	
Appendix-A LTE Band 48	
Appendix-A LTE Band 66	
Appendix-A LTE Band 71	
Appendix-A LTE CA_2C	
Appendix-A LTE CA_66C	
Appendix-A LTE CA_66B	
Appendix-C Field Strength of Spurious Radiation-LTE	

~The End~