TEST REPORT

Application No.:	SZCR2406002201MO
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
EUT Description:	NTN Satellite Communication Module
Model No.:	BG95-S5
Trade Mark:	Quectel
FCC ID:	XMR202406BG95S5
Standards:	47 CFR Part 2 47 CFR Part 22 47 CFR Part 24 47 CFR Part 27 47 CFR Part 90
Date of Receipt:	2024-06-07
Date of Test:	2024-06-11 to 2024-07-11
Date of Issue:	2024-07-22
Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

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1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2024-07-22		Original

Authorized for issue by:		
		Kevin Lan **Kevin Lan/Project Engineer**
		Eric Fu **Eric Fu/Reviewer**

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2 Test Summary

2.1 GSM850/ LTE Cat M1 Band 5/ LTE Cat M1 Band 26(824~849 MHz)/ LTE Cat NB2 Band 5

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	ERP ≤ 7 W	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §22.917(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §22.355	±2.5ppm.	Pass

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2.2 GSM 1900/ LTE Cat M1 Band 2 / LTE Cat M1 Band 25/ LTE Cat NB2 Band 2/ LTE Cat NB2 Band 25

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	Pass
Peak-Average Ratio	§24.232(d)	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §24.238(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §24.235	Within authorized bands of operation/frequency block.	Pass

2.3 LTE Cat M1 Band 4 / LTE Cat M1 Band 66/ LTE Cat NB2 Band 4/ LTE Cat NB2 Band 66

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)(4)	EIRP ≤ 1 W	Pass
Peak-Average Ratio	§27.50(d)(5)	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Pass

2.4 LTE Cat M1 Band 12 / LTE Cat M1 Band 85/ LTE Cat NB2 Band 12/ LTE Cat NB2 Band 85

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W.	Pass
Peak-Average Ratio	---	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Pass

2.5 LTE Cat M1 Band 13/ LTE Cat NB2 Band 13

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)(10)	ERP ≤ 3 W.	Pass
Peak-Average Ratio	---	Limit≤13 dB	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §27.53(c)	≤ 43+10log10(P[Watts])	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c) §27.53(f)	≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges. 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. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(c) §27.53(f)	FCC: ≤ -13 dBm/100 kHz. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Pass

2.6 LTE Cat M1 Band 26(814~824 MHz)

Test Item	FCC Rule No.	Requirements	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635(b)	< 100 W.	Pass
Peak-Average Ratio	---	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Emission Mask	§2.1051 § 90.691(a)	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+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 12.5 kHz.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Pass
Field Strength of Spurious Radiation	§2.1053, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.	Pass

2.7 LTE Cat NB2 Band 71

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W	Pass
Peak-Average Ratio	---	Limit≤13 dB	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the authorized bands of operation.	Pass

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3 General Information

3.1 Details of Client

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China
Post code:	518057
Test engineer:	Jinhua Wei, Guo Xing

3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

3.4 General Description of EUT

EUT Description:	NTN Satellite Communication Module			
Model No.:	BG95-S5			
Trade Mark:	Quectel			
Hardware Version:	R2.1			
Software Version:	BG95S5LAR08A01			
Power Supply:	Power from the Mainboard: Mainboard Power by DC 5V 2A from DC Port. Adapter model: P12F050200 Input: 100-240V~50/60Hz, 0.3A Max Output: DC 5V2A			
IMEI:	862063070001057			
Antenna Type:	☒ External, ☐ Integrated			
Antenna Gain:	GSM850:	1.9dBi	GSM1900:	1.3dBi
	LTE Cat M1 Band 2:	1.3dBi	LTE Cat M1 Band 4:	1.3dBi
	LTE Cat M1 Band 5:	1.9dBi	LTE Cat M1 Band 12:	1.7dBi
	LTE Cat M1 Band 13:	1.7dBi	LTE Cat M1 Band 25:	1.3dBi
	LTE Cat M1 Band 26:	1.9dBi	LTE Cat M1 Band 66:	1.3dBi
	LTE Cat M1 Band 85:	1.7dBi		
	LTE Cat NB2 Band 2:	1.3dBi	LTE Cat NB2 Band 4:	1.3dBi
	LTE Cat NB2 Band 5:	1.9dBi	LTE Cat NB2 Band 12:	1.7dBi
	LTE Cat NB2 Band 13:	1.7dBi	LTE Cat NB2 Band 25:	1.3dBi
	LTE Cat NB2 Band 66:	1.3dBi	LTE Cat NB2 Band 71:	1.3dBi
	LTE Cat NB2 Band 85:	1.7dBi		
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
RF Cable:	9kHz ~ 30MHz (0.3dB)	30MHz ~ 1000MHz (0.6dB)	1000MHz ~ 2000MHz (0.8dB)	
	2000MHz ~ 4000MHz (1.1dB)	4000MHz ~ 6000MHz (1.8dB)	6000MHz ~ 12750MHz (2.6dB)	
	Above 12750MHz (3.5dB)			
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.				

3.5 Test Mode

Test Mode	Test Modes Description
GSM/TM1	GSM system, GSM/GPRS, GMSK modulation
GSM/TM2	GSM system, EGPRS, 8PSK modulation
LTE/TM1	LTE system, QPSK/BPSK modulation
LTE/TM2	LTE system, 16QAM modulation
Remark: The test mode(s) are selected according to relevant radio technology specifications.	

3.6 Test Environment

Environment Parameter	101 kPa Selected Values During Tests	
Relative Humidity	44-46 % RH Ambient	
Value	Temperature(℃)	Voltage(V)
NTNV	22~23	3.8
LTLV	-30	3.3
LTHV	-30	4.3
HTLV	50	3.3
HTHV	50	4.3
Remark:		
NV: Normal Voltage	LV: Low Extreme Test Voltage	HV: High Extreme Test Voltage
NT: Normal Temperature	LT: Low Extreme Test Temperature	HT: High Extreme Test Temperature

3.7 Description of Support Units

Description	Manufacturer	Model No.
UMTS&LTE-EVB	Quectel	Q1-A0770
Remark: all above the information of table are provided by client.		

3.8 Technical Specification

Characteristics	Description		
Radio System Type	☒ GSM ☒ LTE		
Supported Frequency Range	Band	TX	RX
	GSM850	824 to 849 MHz	869 to 894 MHz
	GSM1900	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Cat M1 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Cat M1 Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Cat M1 Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Cat M1 Band 12	699 to 716 MHz	729 to 746 MHz
	LTE Cat M1 Band 13	777 to 787 MHz	746 to 756 MHz
	LTE Cat M1 Band 25	1850 to 1915MHz	1930 to 1995 MHz
	LTE Cat M1 Band 26 (814 to 824 MHz)	814 to 824MHz	859 to 869 MHz
	LTE Cat M1 Band 26 (824 to 849 MHz)	824 to 849 MHz	869 to 894 MHz
	LTE Cat M1 Band 66	1710 to 1780 MHz	2110 to 2180 MHz
	LTE Cat M1 Band 85	698 to 716 MHz	728 to 746 MHz
	LTE Cat NB2 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Cat NB2 Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Cat NB2 Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Cat NB2 Band 12	699 to 716 MHz	729 to 746 MHz
	LTE Cat NB2 Band 13	777 to 787 MHz	746 to 756 MHz
	LTE Cat NB2 Band 25	1850 to 1915MHz	1930 to 1995 MHz
	LTE Cat NB2 Band 66	1710 to 1780 MHz	2110 to 2180 MHz
	LTE Cat NB2 Band 71	663 to 698 MHz	617 to 652 MHz
	LTE Cat NB2 Band 85	698 to 716 MHz	728 to 746 MHz
Supported Channel Bandwidth	GSM system:	☒0.2 MHz	
	LTE Cat M1 Band 2	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz ☒15 MHz ☒20 MHz	
	LTE Cat M1 Band 4	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz ☒15 MHz ☒20 MHz	
	LTE Cat M1 Band 5	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz	

	LTE Cat M1 Band 12	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz
	LTE Cat M1 Band 13	☒5 MHz ☒10 MHz
	LTE Cat M1 Band 25	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz ☒15 MHz ☒20 MHz
	LTE Cat M1 Band 26 (814-824)	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz
	LTE Cat M1 Band 26 (824-849)	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz ☒15 MHz
	LTE Cat M1 Band 66	☒1.4 MHz ☒3 MHz ☒5 MHz ☒10 MHz ☒15MHz ☒20MHz
	LTE Cat M1 Band 85	☒5MHz ☒10MHz
	LTE Cat NB2 Band 2	☒180KHz;
	LTE Cat NB2 Band 4	☒180KHz;
	LTE Cat NB2 Band 5	☒180KHz;
	LTE Cat NB2 Band 12	☒180KHz;
	LTE Cat NB2 Band 13	☒180KHz;
	LTE Cat NB2 Band 25	☒180KHz;
	LTE Cat NB2 Band 66	☒180KHz;
	LTE Cat NB2 Band 71	☒180KHz;
	LTE Cat NB2 Band 85	☒180KHz;

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3.9 Test Frequencies

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM850	TX	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6 MHz	848.8 MHz
	RX	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM1900	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0 MHz	1909.8 MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 2	1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
			1850.7 MHz	1880 MHz	1909.3 MHz
		RX	Channel 607	Channel 900	Channel 1193
			1930.7 MHz	1960 MHz	1989.3 MHz
	3MHz	TX	Channel 18615	Channel 18900	Channel 19185
			1851.5 MHz	1880 MHz	1908.5 MHz
		RX	Channel 615	Channel 900	Channel 1185
			1931.5 MHz	1960 MHz	1988.5 MHz
	5MHz	TX	Channel 18625	Channel 18900	Channel 19175
			1852.5 MHz	1880 MHz	1907.5 MHz
		RX	Channel 625	Channel 900	Channel1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
	20MHz	TX	Channel 18700	Channel 18900	Channel 19100
			1860 MHz	1880 MHz	1900 MHz
		RX	Channel 700	Channel 900	Channel 1100
			1940 MHz	1960 MHz	1980 MHz

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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 4	1.4MHz	TX	Channel 19957	Channel 20175	Channel 20393
			1710.7 MHz	1732.5 MHz	1754.3 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	3MHz	TX	Channel 19965	Channel 20175	Channel 20385
			1711.5 MHz	1732.5 MHz	1753.5 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
	5MHz	TX	Channel 19975	Channel 20175	Channel 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz
		RX	Channel 1975	Channel 2175	Channel 2375
			2112.5 MHz	2132.5MHz	2152.5 MHz
	10MHz	TX	Channel 20000	Channel 20175	Channel 20350
			1715 MHz	1732.5 MHz	1750 MHz
		RX	Channel 2000	Channel 2175	Channel 2350
			2115 MHz	2132.5MHz	2150 MHz
	15MHz	TX	Channel 20025	Channel 20175	Channel 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz
		RX	Channel 2025	Channel 2175	Channel 2325
			2117.5 MHz	2132.5MHz	2147.5 MHz
	20MHz	TX	Channel 20050	Channel 20175	Channel 20300
			1720 MHz	1732.5 MHz	1745 MHz
		RX	Channel 2050	Channel 2175	Channel 2300
			2120 MHz	2132.5MHz	2145 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 5	1.4MHz	TX	Channel 20407	Channel 20525	Channel 20643
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 2407	Channel 2525	Channel 2643
			869.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 20415	Channel 20525	Channel 20635
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 2415	Channel 2525	Channel 2635
			870.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 20425	Channel 20525	Channel 20625
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 2425	Channel 2525	Channel 2625
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 20450	Channel 20525	Channel 20600
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 2450	Channel 2525	Channel 2600
			874 MHz	881.5 MHz	889 MHz

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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 12	1.4MHz	TX	Channel 23017	Channel 23095	Channel 23173
			699.7 MHz	707.5 MHz	715.3 MHz
		RX	Channel 5017	Channel 5095	Channel 5173
			729.7 MHz	737.5 MHz	745.3 MHz
	3MHz	TX	Channel 23025	Channel 23095	Channel 23165
			700.5 MHz	707.5 MHz	714.5 MHz
		RX	Channel 5025	Channel 5095	Channel 5165
			730.5 MHz	737.5 MHz	744.5 MHz
	5MHz	TX	Channel 23035	Channel 23095	Channel 23155
			701.5 MHz	707.5 MHz	713.5 MHz
		RX	Channel 5035	Channel 5095	Channel 5155
			731.5 MHz	737.5 MHz	743.5 MHz
	10MHz	TX	Channel 23060	Channel 23095	Channel 23130
			704 MHz	707.5 MHz	711 MHz
		RX	Channel 5060	Channel 5095	Channel 5130
			734 MHz	737.5 MHz	741 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 13	5MHz	TX	Channel 23025	Channel 23230	Channel 23255
			779.5 MHz	782 MHz	784.5 MHz
		RX	Channel 5205	Channel 5230	Channel 5255
			748.5 MHz	751 MHz	753.5 MHz
	10MHz	TX	Channel 23230	Channel 23230	Channel 23230
			782 MHz	782 MHz	782 MHz
		RX	Channel 5230	Channel 5230	Channel 5230
			751 MHz	751 MHz	751 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 25	1.4MHz	TX	Channel 26047	Channel 26365	Channel 26683
			1850.7 MHz	1882.5 MHz	1914.3 MHz
		RX	Channel 8047	Channel 8365	Channel 8683
			1930.7 MHz	1962.5 MHz	1994.3 MHz
	3MHz	TX	Channel 26055	Channel 26365	Channel 26675
			1851.5 MHz	1882.5 MHz	1913.5 MHz
		RX	Channel 8055	Channel 8365	Channel 8675
			1931.5 MHz	1962.5 MHz	1993.5 MHz
	5MHz	TX	Channel 26065	Channel 26365	Channel 26665
			1852.5 MHz	1882.5 MHz	1912.5 MHz
		RX	Channel 8065	Channel 8365	Channel 8665
			1932.5 MHz	1962.5 MHz	1992.5 MHz
	10MHz	TX	Channel 26090	Channel 26365	Channel 26640
			1855 MHz	1882.5 MHz	1910 MHz
		RX	Channel 8090	Channel 8365	Channel 8640
			1935 MHz	1962.5 MHz	1990 MHz
	15MHz	TX	Channel 26115	Channel 26365	Channel 26615
			1857.5 MHz	1882.5 MHz	1907.5 MHz
		RX	Channel 8115	Channel 8365	Channel 8615
			1937.5 MHz	1962.5 MHz	1987.5 MHz
	20MHz	TX	Channel 26140	Channel 26365	Channel 26590
			1860 MHz	1882.5 MHz	1905 MHz
		RX	Channel 8140	Channel 8365	Channel 8590
			1940 MHz	1962.5 MHz	1985 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 26 (814-824)	1.4MHz	TX	Channel 26697	Channel 26740	Channel 26783
			814.7 MHz	819 MHz	823.3 MHz
		RX	Channel 8697	Channel 8740	Channel 8783
			859.7 MHz	864MHz	868.3 MHz
	3MHz	TX	Channel 26705	Channel 26740	Channel 26775
			815.5 MHz	819 MHz	822.5 MHz
		RX	Channel 8705	Channel 8740	Channel 8775
			860.5 MHz	864MHz	867.5 MHz
	5MHz	TX	Channel 26715	Channel 26740	Channel 26765
			816.5 MHz	819 MHz	821.5 MHz
		RX	Channel 8715	Channel 8740	Channel 8755
			861.5 MHz	864MHz	866.5 MHz
	10MHz	TX	Channel 26740	Channel 26740	Channel 26740
			819 MHz	819 MHz	819 MHz
		RX	Channel 8740	Channel 8740	Channel 8740
			864MHz	864MHz	864MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 26 (824-849)	1.4MHz	TX	Channel 26797	Channel 26915	Channel 27033
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 8697	Channel 8915	Channel 9033
			859.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 26805	Channel 26915	Channel 27025
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 8805	Channel 8915	Channel 9025
			860.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 26815	Channel 26915	Channel 27015
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 8815	Channel 8915	Channel 9015
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 26840	Channel 26915	Channel 26990
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 8840	Channel 8915	Channel 8990
			874 MHz	881.5 MHz	889 MHz
	15MHz	TX	Channel 26865	Channel 26915	Channel 26965
			831.5 MHz	836.5 MHz	841.5 MHz
		RX	Channel 8865	Channel 8915	Channel 8965
			876.5 MHz	881.5 MHz	886.5 MHz

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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 66	1.4MHz	TX	Channel 131979	Channel 132322	Channel 132665
			1710.7 MHz	1745 MHz	1779.3 MHz
		RX	Channel 66443	Channel 66786	Channel 67129
			2110.7 MHz	2145MHz	2179.3 MHz
	3MHz	TX	Channel 131987	Channel 132322	Channel 132657
			1711.5 MHz	1745 MHz	1778.5MHz
		RX	Channel 66451	Channel 66786	Channel 67121
			2111.5 MHz	2145MHz	2178.5MHz
	5MHz	TX	Channel 131997	Channel 132322	Channel 132647
			1712.5 MHz	1745 MHz	1777.5 MHz
		RX	Channel 66461	Channel 66786	Channel 67111
			2112.5 MHz	2145MHz	2177.5 MHz
	10MHz	TX	Channel 132022	Channel 132322	Channel 132622
			1715 MHz	1745 MHz	1775 MHz
		RX	Channel 66486	Channel 66786	Channel 67086
			2115 MHz	2145MHz	2175 MHz
	15MHz	TX	Channel 132047	Channel 132322	Channel 132597
			1717.5 MHz	1745 MHz	1772.5 MHz
		RX	Channel 66511	Channel 66786	Channel 67061
			2117.5 MHz	2145MHz	2172.5 MHz
	20MHz	TX	Channel 132072	Channel 132322	Channel 132572
			1720 MHz	1745 MHz	1770 MHz
		RX	Channel 66536	Channel 66786	Channel 67036
			2120 MHz	2145MHz	2170 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Cat M1 Band 85	5MHz	TX	Channel 23025	Channel 23090	Channel 23155
			700.5 MHz	707 MHz	713.5 MHz
		RX	Channel 5025	Channel 5090	Channel 5155
			730.5 MHz	737 MHz	743.5 MHz
	10MHz	TX	Channel 23050	Channel 23090	Channel 23130
			703 MHz	707 MHz	711 MHz
		RX	Channel 5050	Channel 5090	Channel 5130
			733 MHz	737 MHz	741 MHz

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Test mode:	Sub Carrier Spacing (KHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Cat NB2 Band 2	3.75	1850.2	1880.0	1909.8
	15	1850.2	1880.0	1909.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 4	3.75	1710.2	1732.5	1754.8
	15	1710.2	1732.5	1754.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 5	3.75	824.2	836.5	848.8
	15	824.2	836.5	848.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 12	3.75	699.2	707.5	715.8
	15	699.2	707.5	715.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 13	3.75	777.2	782.0	786.8
	15	777.2	782.0	786.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 25	3.75	1850.2	1882.5	1914.8
	15	1850.2	1882.5	1914.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 66	3.75	1710.2	1745.0	1779.8
	15	1710.2	1745.0	1779.8

Test mode:	Sub Carrier Spacing (KHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Cat NB2 Band 71	3.75	663.2	680.5	697.8
	15	663.2	680.5	697.8
Test mode:	**Sub Carrier Spacing (KHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE Cat NB2 Band 85	3.75	698.2	707.0	715.8
	15	698.2	707.0	715.8

4 Description of Tests

4.1 Conducted Output Power

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.2.1

The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

Remark: Reference test setup 1

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M RF power & LTE Cat NB RF power test data.

4.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8.4

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M RF power & LTE Cat NB RF power test data.

4.3 Occupied Bandwidth

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 4.2 & 4.3

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel).The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

Remark: Reference test setup 1

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M Bandwidth & LTE Cat NB Bandwidth test data.

4.4 Band Edge at Antenna Terminals

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to rms.

Remark: Reference test setup 1

Test Settings

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

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M Bandedge & LTE Cat NB Bandedge test data.

4.5 Spurious And Harmonic Emissions at Antenna Terminal

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

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

Remark: Reference test setup 1

Test Settings

1. Start frequency was set to 9kHz and stop frequency was set to at least 10* the fundamental frequency(Separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissinos, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M CSE & LTE Cat NB CSE test data.

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4.6 Peak-Average Ratio

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.2

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

Remark: Reference test setup 1

Test Settings

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

Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M PAR & LTE Cat NB PAR test data.

4.7 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). Test the EUT in the lowest channel, the middle channel ,the Highest channel.

5). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

6). Repeat above procedures until all frequencies measured was complete.

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

EIRP (dBm) = E (dBμV/m) + 20 log D − 104.8; where D is the measurement distance in meters

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber

2) Calculate power in dBm by the following formula:

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

EIRP (dBm) = E (dBμV/m) + 20 log D − 104.8; where D is the measurement distance in meters

3). Test the EUT in the lowest channel, the middle channel the Highest channel

4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

5). Repeat above procedures until all frequencies measured was complete

Remark1: Reference test setup 2

Remark2: The emission below 18G were measured at a 3m test distance, while emissions above 18GHz were measured at a 1m test distance. At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.

Remark: Reference test setup 2

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & AMP. The basic equation with a sample calculation is as follows:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier (dB)

Level = Reading Level + AF + Factor -95.26

Margin = Limit – Level

2) Scan from 9kHz to 40GHz, The disturbance between 9KHz to 30MHz and 18GHz to 40GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3) All modes have been tested, but only the worst case data displayed in this report.

Measurement Data:

For GSM:

GSM850-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1652.8	-58.04	-13	-45.04	-60.91	2.62	5.49	Horizontal	Pass
2479.2	-69.53	-13	-56.53	-72.23	3.07	5.77	Horizontal	Pass
3305.6	-67.55	-13	-54.55	-71.93	3.3	7.68	Horizontal	Pass
1652.8	-71.53	-13	-58.53	-74.4	2.62	5.49	Vertical	Pass
2479.2	-69.68	-13	-56.68	-72.38	3.07	5.77	Vertical	Pass
3305.6	-67.61	-13	-54.61	-71.99	3.3	7.68	Vertical	Pass

GSM850-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1672.8	-71.87	-13	-58.87	-74.68	2.63	5.44	Horizontal	Pass
2509.2	-69.52	-13	-56.52	-72.28	3.08	5.84	Horizontal	Pass
3345.6	-67.12	-13	-54.12	-71.58	3.32	7.78	Horizontal	Pass
1672.8	-71.67	-13	-58.67	-74.48	2.63	5.44	Vertical	Pass
2509.2	-69.3	-13	-56.3	-72.06	3.08	5.84	Vertical	Pass
3345.6	-67.04	-13	-54.04	-71.5	3.32	7.78	Vertical	Pass

GSM850-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1697.6	-56.15	-13	-43.15	-58.89	2.64	5.38	Horizontal	Pass
2546.4	-64.08	-13	-51.08	-66.91	3.09	5.92	Horizontal	Pass
3395.2	-67.0	-13	-54.0	-71.56	3.35	7.91	Horizontal	Pass
1697.6	-68.93	-13	-55.93	-71.67	2.64	5.38	Vertical	Pass
2546.4	-68.17	-13	-55.17	-71.0	3.09	5.92	Vertical	Pass
3395.2	-61.07	-13	-48.07	-65.63	3.35	7.91	Vertical	Pass

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GSM1900-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.4	-57.94	-13	-44.94	-62.8	3.58	8.44	Horizontal	Pass
5550.6	-63.18	-13	-50.18	-68.89	4.74	10.45	Horizontal	Pass
7400.8	-60.55	-13	-47.55	-67.23	4.94	11.62	Horizontal	Pass
3700.4	-63.02	-13	-50.02	-67.88	3.58	8.44	Vertical	Pass
5550.6	-63.08	-13	-50.08	-68.79	4.74	10.45	Vertical	Pass
7400.8	-60.73	-13	-47.73	-67.41	4.94	11.62	Vertical	Pass

GSM1900-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3760.0	-60.99	-13	-47.99	-65.88	3.63	8.52	Horizontal	Pass
5640.0	-62.58	-13	-49.58	-68.28	4.75	10.45	Horizontal	Pass
7520.0	-60.44	-13	-47.44	-67.26	4.94	11.76	Horizontal	Pass
3760.0	-65.0	-13	-52.0	-69.89	3.63	8.52	Vertical	Pass
5640.0	-62.41	-13	-49.41	-68.11	4.75	10.45	Vertical	Pass
7520.0	-61.05	-13	-48.05	-67.87	4.94	11.76	Vertical	Pass

GSM1900-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3819.6	-67.08	-13	-54.08	-72.0	3.68	8.6	Horizontal	Pass
5729.4	-62.65	-13	-49.65	-68.34	4.76	10.45	Horizontal	Pass
7639.2	-60.03	-13	-47.03	-66.98	4.95	11.9	Horizontal	Pass
3819.6	-66.56	-13	-53.56	-71.48	3.68	8.6	Vertical	Pass
5729.4	-62.85	-13	-49.85	-68.54	4.76	10.45	Vertical	Pass
7639.2	-60.77	-13	-47.77	-67.72	4.95	11.9	Vertical	Pass

For LTE CAT M1:

LTE CAT M1 Band 2-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.5	-58.93	-13	-45.93	-63.79	3.58	8.44	Horizontal	Pass
5550.75	-61.52	-13	-48.52	-67.23	4.74	10.45	Horizontal	Pass
7401.0	-57.51	-13	-44.51	-64.19	4.94	11.62	Horizontal	Pass
3700.5	-62.84	-13	-49.84	-67.7	3.58	8.44	Vertical	Pass
5550.75	-51.54	-13	-38.54	-57.25	4.74	10.45	Vertical	Pass
7401.0	-44.44	-13	-31.44	-51.12	4.94	11.62	Vertical	Pass

LTE CAT M1 Band 2-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3703.723	-52.11	-13	-39.11	-56.97	3.58	8.44	Horizontal	Pass
5551.069	-57.87	-13	-44.87	-63.58	4.74	10.45	Horizontal	Pass
7411.461	-55.01	-13	-42.01	-61.7	4.94	11.63	Horizontal	Pass
3703.723	-60.88	-13	-47.88	-65.74	3.58	8.44	Vertical	Pass
5551.069	-51.21	-13	-38.21	-56.92	4.74	10.45	Vertical	Pass
7411.461	-44.79	-13	-31.79	-51.48	4.94	11.63	Vertical	Pass

LTE CAT M1 Band 2-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3810.5	-63.45	-13	-50.45	-68.37	3.67	8.59	Horizontal	Pass
5715.75	-62.04	-13	-49.04	-67.73	4.76	10.45	Horizontal	Pass
7621.0	-57.58	-13	-44.58	-64.51	4.95	11.88	Horizontal	Pass
3810.5	-64.44	-13	-51.44	-69.36	3.67	8.59	Vertical	Pass
5715.75	-55.88	-13	-42.88	-61.57	4.76	10.45	Vertical	Pass
7621.0	-53.37	-13	-40.37	-60.3	4.95	11.88	Vertical	Pass

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LTE CAT M1 Band 4-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.5	-50.19	-13	-37.19	-54.8	3.36	7.97	Horizontal	Pass
5130.75	-63.2	-13	-50.2	-68.81	4.61	10.22	Horizontal	Pass
6841.0	-60.24	-13	-47.24	-66.28	4.89	10.93	Horizontal	Pass
3420.5	-62.85	-13	-49.85	-67.46	3.36	7.97	Vertical	Pass
5130.75	-62.36	-13	-49.36	-67.97	4.61	10.22	Vertical	Pass
6841.0	-55.05	-13	-42.05	-61.09	4.89	10.93	Vertical	Pass

LTE CAT M1 Band 4-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3460.5	-60.34	-13	-47.34	-65.03	3.38	8.07	Horizontal	Pass
5190.75	-64.03	-13	-51.03	-69.66	4.63	10.26	Horizontal	Pass
6921.0	-58.2	-13	-45.2	-64.32	4.91	11.03	Horizontal	Pass
3460.5	-65.95	-13	-52.95	-70.64	3.38	8.07	Vertical	Pass
5190.75	-63.4	-13	-50.4	-69.03	4.63	10.26	Vertical	Pass
6921.0	-60.83	-13	-47.83	-66.95	4.91	11.03	Vertical	Pass

LTE CAT M1 Band 4-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3500.5	-67.33	-13	-54.33	-72.1	3.4	8.17	Horizontal	Pass
5250.75	-63.84	-13	-50.84	-69.49	4.65	10.3	Horizontal	Pass
7001.0	-61.29	-13	-48.29	-67.5	4.92	11.13	Horizontal	Pass
3500.5	-67.23	-13	-54.23	-72.0	3.4	8.17	Vertical	Pass
5250.75	-63.44	-13	-50.44	-69.09	4.65	10.3	Vertical	Pass
7001.0	-61.86	-13	-48.86	-68.07	4.92	11.13	Vertical	Pass

LTE CAT M1 Band 5-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1668.044	-62.09	-13	-49.09	-64.92	2.63	5.46	Horizontal	Pass
2506.624	-54.54	-13	-41.54	-57.29	3.08	5.83	Horizontal	Pass
3342.042	-63.49	-13	-50.49	-67.95	3.32	7.78	Horizontal	Pass
1668.044	-66.14	-13	-53.14	-68.97	2.63	5.46	Vertical	Pass
2506.624	-65.45	-13	-52.45	-68.2	3.08	5.83	Vertical	Pass
3419.491	-67.2	-13	-54.2	-71.81	3.36	7.97	Vertical	Pass

LTE CAT M1 Band 5-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1668.5	-57.32	-13	-44.32	-60.15	2.63	5.46	Horizontal	Pass
2502.75	-51.74	-13	-38.74	-54.49	3.08	5.83	Horizontal	Pass
3337.0	-59.62	-13	-46.62	-64.06	3.32	7.76	Horizontal	Pass
1668.5	-66.72	-13	-53.72	-69.55	2.63	5.46	Vertical	Pass
2502.75	-65.62	-13	-52.62	-68.37	3.08	5.83	Vertical	Pass
3337.0	-66.11	-13	-53.11	-70.55	3.32	7.76	Vertical	Pass

LTE CAT M1 Band 5-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1688.5	-64.12	-13	-51.12	-66.89	2.63	5.4	Horizontal	Pass
2532.75	-50.37	-13	-37.37	-53.18	3.08	5.89	Horizontal	Pass
3377.0	-61.23	-13	-48.23	-65.75	3.34	7.86	Horizontal	Pass
1688.5	-67.07	-13	-54.07	-69.84	2.63	5.4	Vertical	Pass
2532.75	-62.42	-13	-49.42	-65.23	3.08	5.89	Vertical	Pass
3377.0	-63.63	-13	-50.63	-68.15	3.34	7.86	Vertical	Pass

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LTE CAT M1 Band 12-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1398.5	-39.85	-13	-26.85	-42.62	2.47	5.24	Horizontal	Pass
2097.75	-50.42	-13	-37.42	-52.48	2.79	4.85	Horizontal	Pass
2797.0	-67.88	-13	-54.88	-71.23	3.12	6.47	Horizontal	Pass
1398.5	-53.32	-13	-40.32	-56.09	2.47	5.24	Vertical	Pass
2097.75	-62.62	-13	-49.62	-64.68	2.79	4.85	Vertical	Pass
2797.0	-68.89	-13	-55.89	-72.24	3.12	6.47	Vertical	Pass

LTE CAT M1 Band 12-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1399.353	-39.62	-13	-26.62	-42.39	2.47	5.24	Horizontal	Pass
2097.507	-49.29	-13	-36.29	-51.35	2.79	4.85	Horizontal	Pass
2821.0	-68.88	-13	-55.88	-72.29	3.12	6.53	Horizontal	Pass
1399.353	-52.95	-13	-39.95	-55.72	2.47	5.24	Vertical	Pass
2097.507	-65.46	-13	-52.46	-67.52	2.79	4.85	Vertical	Pass
2821.0	-68.82	-13	-55.82	-72.23	3.12	6.53	Vertical	Pass

LTE CAT M1 Band 12-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1422.5	-45.9	-13	-32.9	-48.79	2.5	5.39	Horizontal	Pass
2133.75	-43.89	-13	-30.89	-46.01	2.82	4.94	Horizontal	Pass
2845.0	-61.24	-13	-48.24	-64.69	3.13	6.58	Horizontal	Pass
1422.5	-53.87	-13	-40.87	-56.76	2.5	5.39	Vertical	Pass
2133.75	-63.65	-13	-50.65	-65.77	2.82	4.94	Vertical	Pass
2845.0	-68.2	-13	-55.2	-71.65	3.13	6.58	Vertical	Pass

LTE CAT M1 Band 13_10M- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1555.0	-55.95	-13	-42.95	-59.09	2.6	5.74	Horizontal	Pass
2332.5	-47.24	-13	-34.24	-49.7	2.96	5.42	Horizontal	Pass
3110.0	-65.48	-13	-52.48	-69.48	3.2	7.2	Horizontal	Pass
1555.0	-68.46	-13	-55.46	-71.6	2.6	5.74	Vertical	Pass
2332.5	-64.29	-13	-51.29	-66.75	2.96	5.42	Vertical	Pass
3110.0	-67.39	-13	-54.39	-71.39	3.2	7.2	Vertical	Pass

LTE CAT M1 Band 13-LOW channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1554.5	-56.21	-13	-43.21	-59.35	2.6	5.74	Horizontal	Pass
2331.75	-45.24	-13	-32.24	-47.7	2.96	5.42	Horizontal	Pass
3109.0	-65.06	-13	-52.06	-69.05	3.2	7.19	Horizontal	Pass
1554.5	-68.31	-13	-55.31	-71.45	2.6	5.74	Vertical	Pass
2331.75	-64.39	-13	-51.39	-66.85	2.96	5.42	Vertical	Pass
3109.0	-67.39	-13	-54.39	-71.38	3.2	7.19	Vertical	Pass

LTE CAT M1 Band 13- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1559.5	-58.58	-13	-45.58	-61.71	2.6	5.73	Horizontal	Pass
2339.25	-48.44	-13	-35.44	-50.91	2.96	5.43	Horizontal	Pass
3119.0	-65.13	-13	-52.13	-69.14	3.21	7.22	Horizontal	Pass
1559.5	-68.82	-13	-55.82	-71.95	2.6	5.73	Vertical	Pass
2339.25	-63.65	-13	-50.65	-66.12	2.96	5.43	Vertical	Pass
3119.0	-67.81	-13	-54.81	-71.82	3.21	7.22	Vertical	Pass

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LTE CAT M1 Band 13- High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1564.5	-55.78	-13	-42.78	-58.9	2.6	5.72	Horizontal	Pass
2346.75	-47.59	-13	-34.59	-50.07	2.97	5.45	Horizontal	Pass
3129.0	-65.99	-13	-52.99	-70.02	3.21	7.24	Horizontal	Pass
1564.5	-68.74	-13	-55.74	-71.86	2.6	5.72	Vertical	Pass
2346.75	-67.19	-13	-54.19	-69.67	2.97	5.45	Vertical	Pass
3129.0	-67.3	-13	-54.3	-71.33	3.21	7.24	Vertical	Pass

LTE CAT M1 Band 25-LOW channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.5	-51.75	-13	-38.75	-56.61	3.58	8.44	Horizontal	Pass
5550.75	-62.62	-13	-49.62	-68.33	4.74	10.45	Horizontal	Pass
7401.0	-54.51	-13	-41.51	-61.19	4.94	11.62	Horizontal	Pass
3700.5	-63.8	-13	-50.8	-68.66	3.58	8.44	Vertical	Pass
5550.75	-56.88	-13	-43.88	-62.59	4.74	10.45	Vertical	Pass
7401.0	-44.38	-13	-31.38	-51.06	4.94	11.62	Vertical	Pass

LTE CAT M1 Band 25- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3760.5	-64.93	-13	-51.93	-69.82	3.63	8.52	Horizontal	Pass
5640.75	-62.38	-13	-49.38	-68.08	4.75	10.45	Horizontal	Pass
7521.0	-58.94	-13	-45.94	-65.76	4.94	11.76	Horizontal	Pass
3760.5	-66.43	-13	-53.43	-71.32	3.63	8.52	Vertical	Pass
5640.75	-57.69	-13	-44.69	-63.39	4.75	10.45	Vertical	Pass
7521.0	-47.88	-13	-34.88	-54.7	4.94	11.76	Vertical	Pass

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LTE CAT M1 Band 25- High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3820.5	-59.61	-13	-46.61	-64.53	3.68	8.6	Horizontal	Pass
5730.75	-62.09	-13	-49.09	-67.78	4.76	10.45	Horizontal	Pass
7641.0	-55.43	-13	-42.43	-62.39	4.95	11.91	Horizontal	Pass
3820.5	-66.37	-13	-53.37	-71.29	3.68	8.6	Vertical	Pass
5730.75	-56.75	-13	-43.75	-62.44	4.76	10.45	Vertical	Pass
7641.0	-52.98	-13	-39.98	-59.94	4.95	11.91	Vertical	Pass

LTE CAT M1 Band 26_90S-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1629.0	-56.57	-13	-43.57	-59.5	2.62	5.55	Horizontal	Pass
2443.5	-51.12	-13	-38.12	-53.76	3.04	5.68	Horizontal	Pass
3258.0	-63.22	-13	-50.22	-67.5	3.28	7.56	Horizontal	Pass
1629.0	-67.25	-13	-54.25	-70.18	2.62	5.55	Vertical	Pass
2443.5	-65.23	-13	-52.23	-67.87	3.04	5.68	Vertical	Pass
3258.0	-66.04	-13	-53.04	-70.32	3.28	7.56	Vertical	Pass

LTE CAT M1 Band 26_22H-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1648.5	-59.31	-13	-46.31	-62.2	2.62	5.51	Horizontal	Pass
2475.75	-53.59	-13	-40.59	-56.29	3.06	5.76	Horizontal	Pass
3297.0	-62.86	-13	-49.86	-67.22	3.3	7.66	Horizontal	Pass
1648.5	-63.87	-13	-50.87	-66.76	2.62	5.51	Vertical	Pass
2475.75	-68.05	-13	-55.05	-70.75	3.06	5.76	Vertical	Pass
3297.0	-67.2	-13	-54.2	-71.56	3.3	7.66	Vertical	Pass

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LTE CAT M1 Band 26_22H- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1668.5	-59.64	-13	-46.64	-62.47	2.63	5.46	Horizontal	Pass
2402.75	-46.51	-13	-33.51	-49.09	3.01	5.59	Horizontal	Pass
3337.0	-58.84	-13	-45.84	-63.28	3.32	7.76	Horizontal	Pass
1668.5	-66.51	-13	-53.51	-69.34	2.63	5.46	Vertical	Pass
2402.75	-68.83	-13	-55.83	-71.41	3.01	5.59	Vertical	Pass
3337.0	-64.43	-13	-51.43	-68.87	3.32	7.76	Vertical	Pass

LTE CAT M1 Band 26_22H- High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1693.0	-61.64	-13	-48.64	-64.4	2.63	5.39	Horizontal	Pass
2539.5	-45.81	-13	-32.81	-48.63	3.09	5.91	Horizontal	Pass
3386.0	-67.05	-13	-54.05	-71.59	3.34	7.88	Horizontal	Pass
1693.0	-66.48	-13	-53.48	-69.24	2.63	5.39	Vertical	Pass
2539.5	-66.83	-13	-53.83	-69.65	3.09	5.91	Vertical	Pass
3386.0	-67.29	-13	-54.29	-71.83	3.34	7.88	Vertical	Pass

LTE CAT M1 Band 66- Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.5	-48.76	-13	-35.76	-53.37	3.36	7.97	Horizontal	Pass
5130.75	-61.48	-13	-48.48	-67.09	4.61	10.22	Horizontal	Pass
6841.0	-59.2	-13	-46.2	-65.24	4.89	10.93	Horizontal	Pass
3420.5	-58.02	-13	-45.02	-62.63	3.36	7.97	Vertical	Pass
5130.75	-57.73	-13	-44.73	-63.34	4.61	10.22	Vertical	Pass
6841.0	-57.82	-13	-44.82	-63.86	4.89	10.93	Vertical	Pass

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LTE CAT M1 Band 66- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3485.5	-62.27	-13	-49.27	-67.01	3.39	8.13	Horizontal	Pass
5228.25	-60.86	-13	-47.86	-66.5	4.64	10.28	Horizontal	Pass
6971.0	-61.58	-13	-48.58	-67.75	4.92	11.09	Horizontal	Pass
3485.5	-62.52	-13	-49.52	-67.26	3.39	8.13	Vertical	Pass
5228.25	-61.91	-13	-48.91	-67.55	4.64	10.28	Vertical	Pass
6971.0	-60.52	-13	-47.52	-66.69	4.92	11.09	Vertical	Pass

LTE CAT M1 Band 66- High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3550.5	-53.37	-13	-40.37	-58.17	3.44	8.24	Horizontal	Pass
5325.75	-58.83	-13	-45.83	-64.5	4.67	10.34	Horizontal	Pass
7101.0	-60.81	-13	-47.81	-67.14	4.92	11.25	Horizontal	Pass
3550.5	-59.55	-13	-46.55	-64.35	3.44	8.24	Vertical	Pass
5325.75	-58.24	-13	-45.24	-63.91	4.67	10.34	Vertical	Pass
7101.0	-58.31	-13	-45.31	-64.64	4.92	11.25	Vertical	Pass

LTE CAT M1 Band 85-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1395.796	-39.53	-13	-26.53	-42.28	2.47	5.22	Horizontal	Pass
2087.25	-48.77	-13	-35.77	-50.82	2.78	4.83	Horizontal	Pass
2783.0	-68.8	-13	-55.8	-72.12	3.12	6.44	Horizontal	Pass
1391.5	-71.08	-13	-58.08	-73.81	2.46	5.19	Vertical	Pass
2087.25	-63.78	-13	-50.78	-65.83	2.78	4.83	Vertical	Pass
2783.0	-68.74	-13	-55.74	-72.06	3.12	6.44	Vertical	Pass

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LTE CAT M1 Band 85- Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1409.5	-54.08	-13	-41.08	-56.91	2.48	5.31	Horizontal	Pass
2114.25	-61.05	-13	-48.05	-63.14	2.8	4.89	Horizontal	Pass
2819.0	-68.61	-13	-55.61	-72.01	3.12	6.52	Horizontal	Pass
1409.5	-63.32	-13	-50.32	-66.15	2.48	5.31	Vertical	Pass
2114.25	-70.2	-13	-57.2	-72.29	2.8	4.89	Vertical	Pass
2819.0	-69.32	-13	-56.32	-72.72	3.12	6.52	Vertical	Pass

LTE CAT M1 Band 85- High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1427.5	-56.44	-13	-43.44	-59.36	2.5	5.42	Horizontal	Pass
2141.25	-69.6	-13	-56.6	-71.74	2.82	4.96	Horizontal	Pass
2855.0	-67.83	-13	-54.83	-71.3	3.13	6.6	Horizontal	Pass
1427.5	-71.13	-13	-58.13	-74.05	2.5	5.42	Vertical	Pass
2141.25	-69.33	-13	-56.33	-71.47	2.82	4.96	Vertical	Pass
2855.0	-67.77	-13	-54.77	-71.24	3.13	6.6	Vertical	Pass

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For LTE CAT NB2:

LTE CAT NB Band 2-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.5	-53.77	-13	-40.77	-58.63	3.58	8.44	Horizontal	Pass
5550.75	-56.03	-13	-43.03	-61.74	4.74	10.45	Horizontal	Pass
7401.0	-58.97	-13	-45.97	-65.65	4.94	11.62	Horizontal	Pass
3700.5	-58.42	-13	-45.42	-63.28	3.58	8.44	Vertical	Pass
5550.75	-54.79	-13	-41.79	-60.5	4.74	10.45	Vertical	Pass
7401.0	-52.86	-13	-39.86	-59.54	4.94	11.62	Vertical	Pass

LTE CAT NB Band 2-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3755.5	-59.94	-13	-46.94	-64.83	3.62	8.51	Horizontal	Pass
5633.25	-58.19	-13	-45.19	-63.89	4.75	10.45	Horizontal	Pass
7511.0	-58.9	-13	-45.9	-65.71	4.94	11.75	Horizontal	Pass
3755.5	-59.4	-13	-46.4	-64.29	3.62	8.51	Vertical	Pass
5633.25	-55.03	-13	-42.03	-60.73	4.75	10.45	Vertical	Pass
7511.0	-53.91	-13	-40.91	-60.72	4.94	11.75	Vertical	Pass

LTE CAT NB Band 2-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3810.5	-66.99	-13	-53.99	-71.91	3.67	8.59	Horizontal	Pass
5715.75	-60.17	-13	-47.17	-65.86	4.76	10.45	Horizontal	Pass
7621.0	-60.6	-13	-47.6	-67.53	4.95	11.88	Horizontal	Pass
3810.5	-63.61	-13	-50.61	-68.53	3.67	8.59	Vertical	Pass
5715.75	-59.93	-13	-46.93	-65.62	4.76	10.45	Vertical	Pass
7621.0	-57.79	-13	-44.79	-64.72	4.95	11.88	Vertical	Pass

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LTE CAT NB Band 4-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.5	-55.93	-13	-42.93	-60.54	3.36	7.97	Horizontal	Pass
5130.75	-60.79	-13	-47.79	-66.4	4.61	10.22	Horizontal	Pass
6841.0	-60.95	-13	-47.95	-66.99	4.89	10.93	Horizontal	Pass
3420.5	-56.6	-13	-43.6	-61.21	3.36	7.97	Vertical	Pass
5130.75	-56.82	-13	-43.82	-62.43	4.61	10.22	Vertical	Pass
6841.0	-57.17	-13	-44.17	-63.21	4.89	10.93	Vertical	Pass

LTE CAT NB Band 4-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3460.5	-65.75	-13	-52.75	-70.44	3.38	8.07	Horizontal	Pass
5190.75	-62.56	-13	-49.56	-68.19	4.63	10.26	Horizontal	Pass
6921.0	-61.04	-13	-48.04	-67.16	4.91	11.03	Horizontal	Pass
3460.5	-61.01	-13	-48.01	-65.7	3.38	8.07	Vertical	Pass
5190.75	-61.38	-13	-48.38	-67.01	4.63	10.26	Vertical	Pass
6921.0	-60.23	-13	-47.23	-66.35	4.91	11.03	Vertical	Pass

LTE CAT NB Band 4-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3500.5	-66.54	-13	-53.54	-71.31	3.4	8.17	Horizontal	Pass
5250.75	-60.9	-13	-47.9	-66.55	4.65	10.3	Horizontal	Pass
7001.0	-61.45	-13	-48.45	-67.66	4.92	11.13	Horizontal	Pass
3500.5	-62.71	-13	-49.71	-67.48	3.4	8.17	Vertical	Pass
5250.75	-60.12	-13	-47.12	-65.77	4.65	10.3	Vertical	Pass
7001.0	-60.72	-13	-47.72	-66.93	4.92	11.13	Vertical	Pass

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LTE CAT NB Band 5-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1648.5	-52.91	-13	-39.91	-55.8	2.62	5.51	Horizontal	Pass
2472.75	-50.51	-13	-37.51	-53.2	3.06	5.75	Horizontal	Pass
3297.0	-64.42	-13	-51.42	-68.78	3.3	7.66	Horizontal	Pass
1648.5	-62.86	-13	-49.86	-65.75	2.62	5.51	Vertical	Pass
2472.75	-65.04	-13	-52.04	-67.73	3.06	5.75	Vertical	Pass
3297.0	-67.15	-13	-54.15	-71.51	3.3	7.66	Vertical	Pass

LTE CAT NB Band 5-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1668.5	-62.15	-13	-49.15	-64.98	2.63	5.46	Horizontal	Pass
2502.75	-54.29	-13	-41.29	-57.04	3.08	5.83	Horizontal	Pass
3337.0	-67.43	-13	-54.43	-71.87	3.32	7.76	Horizontal	Pass
1668.5	-71.75	-13	-58.75	-74.58	2.63	5.46	Vertical	Pass
2502.75	-66.77	-13	-53.77	-69.52	3.08	5.83	Vertical	Pass
3337.0	-68.0	-13	-55.0	-72.44	3.32	7.76	Vertical	Pass

LTE CAT NB Band 5-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1688.5	-62.2	-13	-49.2	-64.97	2.63	5.4	Horizontal	Pass
2532.75	-54.93	-13	-41.93	-57.74	3.08	5.89	Horizontal	Pass
3377.0	-67.55	-13	-54.55	-72.07	3.34	7.86	Horizontal	Pass
1688.5	-69.47	-13	-56.47	-72.24	2.63	5.4	Vertical	Pass
2532.75	-66.37	-13	-53.37	-69.18	3.08	5.89	Vertical	Pass
3377.0	-67.78	-13	-54.78	-72.3	3.34	7.86	Vertical	Pass

LTE CAT NB Band 12-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1398.5	-43.5	-13	-30.5	-46.27	2.47	5.24	Horizontal	Pass
2097.75	-49.44	-13	-36.44	-51.5	2.79	4.85	Horizontal	Pass
2797.0	-65.25	-13	-52.25	-68.6	3.12	6.47	Horizontal	Pass
1398.5	-57.89	-13	-44.89	-60.66	2.47	5.24	Vertical	Pass
2097.75	-61.51	-13	-48.51	-63.57	2.79	4.85	Vertical	Pass
2797.0	-68.76	-13	-55.76	-72.11	3.12	6.47	Vertical	Pass

LTE CAT NB Band 12-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1410.5	-49.71	-13	-36.71	-52.53	2.49	5.31	Horizontal	Pass
2115.75	-56.51	-13	-43.51	-58.61	2.8	4.9	Horizontal	Pass
2821.0	-66.05	-13	-53.05	-69.46	3.12	6.53	Horizontal	Pass
1410.5	-58.06	-13	-45.06	-60.88	2.49	5.31	Vertical	Pass
2115.75	-65.27	-13	-52.27	-67.37	2.8	4.9	Vertical	Pass
2821.0	-69.54	-13	-56.54	-72.95	3.12	6.53	Vertical	Pass

LTE CAT NB Band 12-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1422.5	-55.22	-13	-42.22	-58.11	2.5	5.39	Horizontal	Pass
2133.75	-57.39	-13	-44.39	-59.51	2.82	4.94	Horizontal	Pass
2845.0	-67.95	-13	-54.95	-71.4	3.13	6.58	Horizontal	Pass
1422.5	-63.84	-13	-50.84	-66.73	2.5	5.39	Vertical	Pass
2133.75	-70.38	-13	-57.38	-72.5	2.82	4.94	Vertical	Pass
2845.0	-69.11	-13	-56.11	-72.56	3.13	6.58	Vertical	Pass

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LTE CAT NB Band 13-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1554.5	-57.41	-13	-44.41	-60.55	2.6	5.74	Horizontal	Pass
2331.75	-49.08	-13	-36.08	-51.54	2.96	5.42	Horizontal	Pass
3109.0	-66.59	-13	-53.59	-70.58	3.2	7.19	Horizontal	Pass
1554.5	-68.81	-13	-55.81	-71.95	2.6	5.74	Vertical	Pass
2331.75	-65.43	-13	-52.43	-67.89	2.96	5.42	Vertical	Pass
3109.0	-66.64	-13	-53.64	-70.63	3.2	7.19	Vertical	Pass

LTE CAT NB Band 13-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1559.5	-68.09	-13	-55.09	-71.22	2.6	5.73	Horizontal	Pass
2339.25	-59.43	-13	-46.43	-61.9	2.96	5.43	Horizontal	Pass
3119.0	-67.93	-13	-54.93	-71.94	3.21	7.22	Horizontal	Pass
1559.5	-71.95	-13	-58.95	-75.08	2.6	5.73	Vertical	Pass
2339.25	-68.78	-13	-55.78	-71.25	2.96	5.43	Vertical	Pass
3119.0	-67.89	-13	-54.89	-71.9	3.21	7.22	Vertical	Pass

LTE CAT NB Band 13-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1564.5	-68.24	-13	-55.24	-71.36	2.6	5.72	Horizontal	Pass
2346.75	-59.94	-13	-46.94	-62.42	2.97	5.45	Horizontal	Pass
3129.0	-66.81	-13	-53.81	-70.84	3.21	7.24	Horizontal	Pass
1564.5	-71.84	-13	-58.84	-74.96	2.6	5.72	Vertical	Pass
2346.75	-69.73	-13	-56.73	-72.21	2.97	5.45	Vertical	Pass
3129.0	-67.94	-13	-54.94	-71.97	3.21	7.24	Vertical	Pass

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LTE CAT NB Band 25-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.5	-55.87	-13	-42.87	-60.73	3.58	8.44	Horizontal	Pass
5550.75	-60.5	-13	-47.5	-66.21	4.74	10.45	Horizontal	Pass
7401.0	-59.78	-13	-46.78	-66.46	4.94	11.62	Horizontal	Pass
3700.5	-61.09	-13	-48.09	-65.95	3.58	8.44	Vertical	Pass
5550.75	-55.91	-13	-42.91	-61.62	4.74	10.45	Vertical	Pass
7401.0	-53.27	-13	-40.27	-59.95	4.94	11.62	Vertical	Pass

LTE CAT NB Band 25-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3760.5	-65.55	-13	-52.55	-70.44	3.63	8.52	Horizontal	Pass
5640.75	-60.52	-13	-47.52	-66.22	4.75	10.45	Horizontal	Pass
7521.0	-60.4	-13	-47.4	-67.22	4.94	11.76	Horizontal	Pass
3760.5	-63.38	-13	-50.38	-68.27	3.63	8.52	Vertical	Pass
5640.75	-59.05	-13	-46.05	-64.75	4.75	10.45	Vertical	Pass
7521.0	-55.03	-13	-42.03	-61.85	4.94	11.76	Vertical	Pass

LTE CAT NB Band 25-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3820.5	-66.68	-13	-53.68	-71.6	3.68	8.6	Horizontal	Pass
5730.75	-59.33	-13	-46.33	-65.02	4.76	10.45	Horizontal	Pass
7641.0	-60.67	-13	-47.67	-67.63	4.95	11.91	Horizontal	Pass
3820.5	-63.59	-13	-50.59	-68.51	3.68	8.6	Vertical	Pass
5730.75	-58.79	-13	-45.79	-64.48	4.76	10.45	Vertical	Pass
7641.0	-58.01	-13	-45.01	-64.97	4.95	11.91	Vertical	Pass

LTE CAT NB Band 66-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.5	-51.99	-13	-38.99	-56.6	3.36	7.97	Horizontal	Pass
5130.75	-60.89	-13	-47.89	-66.5	4.61	10.22	Horizontal	Pass
6841.0	-60.81	-13	-47.81	-66.85	4.89	10.93	Horizontal	Pass
3420.5	-56.27	-13	-43.27	-60.88	3.36	7.97	Vertical	Pass
5130.75	-57.28	-13	-44.28	-62.89	4.61	10.22	Vertical	Pass
6841.0	-56.46	-13	-43.46	-62.5	4.89	10.93	Vertical	Pass

LTE CAT NB Band 66-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3485.5	-49.91	-13	-36.91	-54.65	3.39	8.13	Horizontal	Pass
5228.25	-60.66	-13	-47.66	-66.3	4.64	10.28	Horizontal	Pass
6971.0	-61.13	-13	-48.13	-67.3	4.92	11.09	Horizontal	Pass
3485.5	-59.22	-13	-46.22	-63.96	3.39	8.13	Vertical	Pass
5228.25	-57.17	-13	-44.17	-62.81	4.64	10.28	Vertical	Pass
6971.0	-57.79	-13	-44.79	-63.96	4.92	11.09	Vertical	Pass

LTE CAT NB Band 66-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3550.5	-62.52	-13	-49.52	-67.32	3.44	8.24	Horizontal	Pass
5325.75	-58.1	-13	-45.1	-63.77	4.67	10.34	Horizontal	Pass
7101.0	-60.99	-13	-47.99	-67.32	4.92	11.25	Horizontal	Pass
3550.5	-58.03	-13	-45.03	-62.83	3.44	8.24	Vertical	Pass
5325.75	-57.74	-13	-44.74	-63.41	4.67	10.34	Vertical	Pass
7101.0	-60.71	-13	-47.71	-67.04	4.92	11.25	Vertical	Pass

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LTE CAT NB Band 71-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1326.5	-42.67	-13	-29.67	-45.05	2.4	4.78	Horizontal	Pass
1989.75	-51.82	-13	-38.82	-53.75	2.72	4.65	Horizontal	Pass
2653.0	-57.79	-13	-44.79	-60.85	3.1	6.16	Horizontal	Pass
1326.5	-58.99	-13	-45.99	-61.37	2.4	4.78	Vertical	Pass
1989.75	-65.87	-13	-52.87	-67.8	2.72	4.65	Vertical	Pass
2653.0	-68.21	-13	-55.21	-71.27	3.1	6.16	Vertical	Pass

LTE CAT NB Band 71-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1356.5	-71.82	-13	-58.82	-74.36	2.43	4.97	Horizontal	Pass
2034.75	-57.41	-13	-44.41	-59.36	2.75	4.7	Horizontal	Pass
2713.0	-65.67	-13	-52.67	-68.85	3.11	6.29	Horizontal	Pass
1356.5	-70.86	-13	-57.86	-73.4	2.43	4.97	Vertical	Pass
2034.75	-68.81	-13	-55.81	-70.76	2.75	4.7	Vertical	Pass
2713.0	-68.63	-13	-55.63	-71.81	3.11	6.29	Vertical	Pass

LTE CAT NB Band 71-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1386.5	-56.4	-13	-43.4	-59.1	2.46	5.16	Horizontal	Pass
2079.75	-62.44	-13	-49.44	-64.47	2.78	4.81	Horizontal	Pass
2773.0	-67.09	-13	-54.09	-70.39	3.12	6.42	Horizontal	Pass
1386.5	-68.64	-13	-55.64	-71.34	2.46	5.16	Vertical	Pass
2079.75	-67.81	-13	-54.81	-69.84	2.78	4.81	Vertical	Pass
2773.0	-67.96	-13	-54.96	-71.26	3.12	6.42	Vertical	Pass

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LTE CAT NB Band 85-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1396.5	-42.65	-13	-29.65	-45.4	2.47	5.22	Horizontal	Pass
2094.25	-62.53	-13	-49.53	-64.59	2.79	4.85	Horizontal	Pass
2793.0	-69.07	-13	-56.07	-72.41	3.12	6.46	Horizontal	Pass
1396.5	-57.28	-13	-44.28	-60.03	2.47	5.22	Vertical	Pass
2094.25	-69.32	-13	-56.32	-71.38	2.79	4.85	Vertical	Pass
2793.0	-69.12	-13	-56.12	-72.46	3.12	6.46	Vertical	Pass

LTE CAT NB Band 85-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1410.5	-49.95	-13	-36.95	-52.77	2.49	5.31	Horizontal	Pass
2115.75	-56.09	-13	-43.09	-58.19	2.8	4.9	Horizontal	Pass
2821.0	-66.01	-13	-53.01	-69.42	3.12	6.53	Horizontal	Pass
1410.5	-58.69	-13	-45.69	-61.51	2.49	5.31	Vertical	Pass
2115.75	-64.54	-13	-51.54	-66.64	2.8	4.9	Vertical	Pass
2821.0	-69.36	-13	-56.36	-72.77	3.12	6.53	Vertical	Pass

LTE CAT NB Band 85-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1427.5	-54.77	-13	-41.77	-57.69	2.5	5.42	Horizontal	Pass
2141.25	-69.57	-13	-56.57	-71.71	2.82	4.96	Horizontal	Pass
2855.0	-67.63	-13	-54.63	-71.1	3.13	6.6	Horizontal	Pass
1427.5	-62.86	-13	-49.86	-65.78	2.5	5.42	Vertical	Pass
2141.25	-69.87	-13	-56.87	-72.01	2.82	4.96	Vertical	Pass
2855.0	-67.92	-13	-54.92	-71.39	3.13	6.6	Vertical	Pass

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4.8 Frequency Stability / Temperature Variation

Measurement Procedure:

Frequency stability testing is performed in accordance with the guidelines of FCC KDB 971168 D01 V03r01; Section 9

. The frequency stability of the transmitter is measured by:

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.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Time Period and Procedure:

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.

Remark: Reference test setup 3

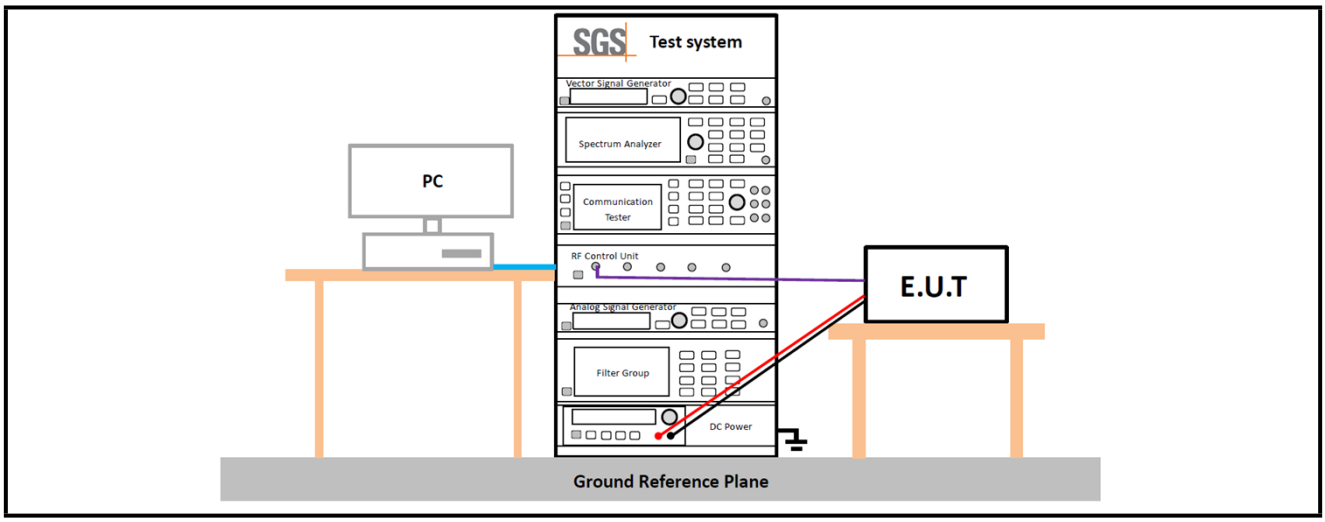
Measurement Data:

Please refer to Appendix for

FCC_GSM850 & FCC_PCS1900 & LTE Cat M FE & LTE Cat NB FE test data.

4.9 Test Setups

4.9.1 Test Setup 1



4.9.2 Test Setup 2

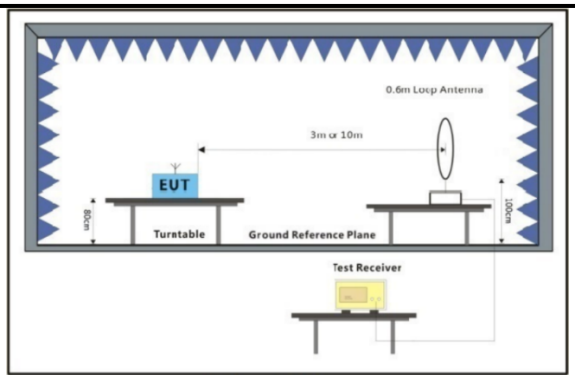


Figure 1. Below 30MHz

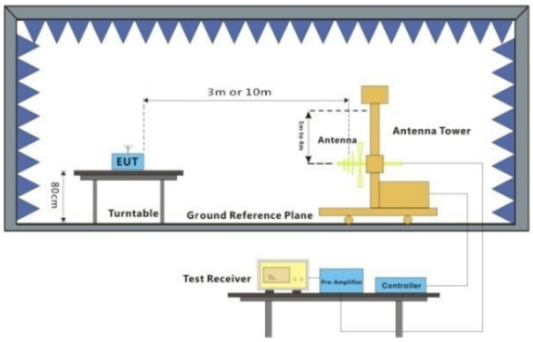


Figure 2. 30MHz to 1GHz

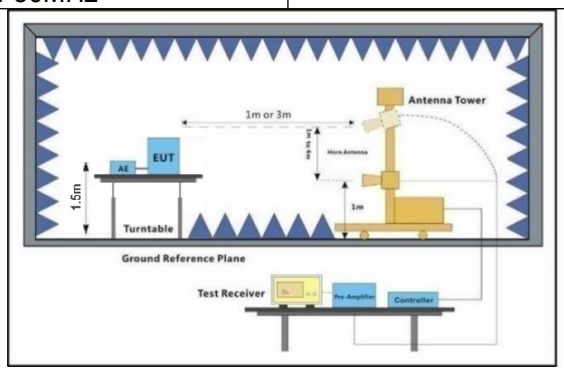
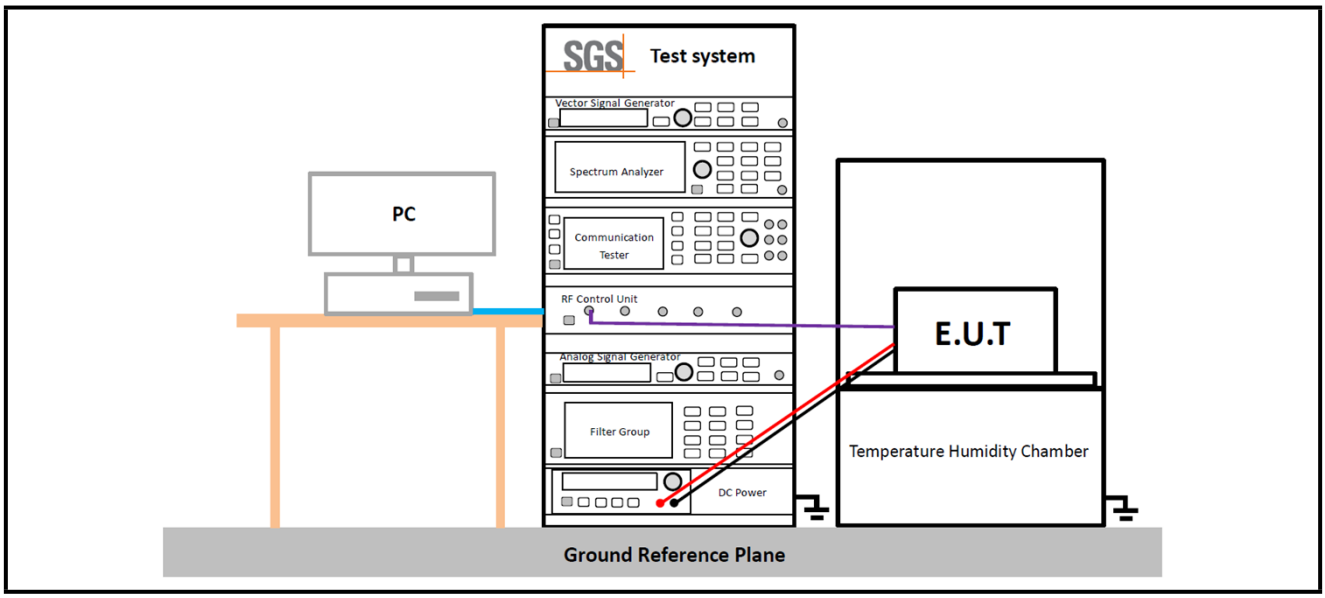


Figure 3. above 1GHz

4.9.3 Test Setup 3



4.10Test Conditions

Transmit Output Power Data - Average Power, Total	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Peak-to-Average Ratio	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Bandwidth - Occupied Bandwidth	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Bandwidth - Emission Bandwidth	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Band Edges Compliance	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, H (L= low channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Spurious Emission at Antenna Terminals	

Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2;
Field Strength of Spurious Radiation	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 2
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;LTE/TM1; Remark: All bandwidth and modulation of GSM/LTE have been pre tested, and only the worst results are reflected in the report.
Frequency Stability	
Test Case	**Test Conditions**
Test Environment	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage (2) VL, VN and VH of Rated Voltage at Ambient Climate.
Test Setup	Test Setup 3
RF Channels (TX)	M (M= middle channel)
Test Mode	GSM/TM1;GSM/TM2;LTE/TM1;LTE/TM2; The report only show the bandwidth with the worst case.

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5 Main Test Instruments

RF conducted test					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
DC power supply	HYELEC	HY3005B	SZ-WRG-M-024	2023-09-14	2024-09-13
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-20	2025-03-19
MXA Signal Analyzer	KEYSIGHT	N9020B	SEM004-24	2024-03-14	2025-03-13
Measurement Software	TST	TST PASS V2.0	N/A	N/A	N/A
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27	2025-03-26
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2024-03-27	2025-03-26
Universal Radio Communication Tester	Anritsu	MT8000A	SEM010-10	2024-03-14	2025-03-13
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19	2025-03-18
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2024-03-20	2025-03-19

Radiated spurious emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI TEST RECEIVER	Rohde & Schwarz	ESR	SZ-WRG-M-047	2024/01/30	2025/01/29
Signal &Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2024/01/30	2025/01/29
Low Noise Amplifier 9K-3GHz	Tonscend	TAP9K3G32	SEM005-23	2024/03/05	2025/03/04
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2024/01/30	2025/01/29
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2024/01/30	2025/01/29
Low Noise Amplifier 18G-40GHz	Tonscend	TAP18040048	SZ-WRG-M-052	2024/01/30	2025/01/29
Active Loop Antenna 9kHz-30MHz	SCHWARZBECK	FMZB 1519B	SZ-WRG-M-053	2023/12/25	2024/12/24
TRILOG Breitband Antenne 30MHz-1GHz	SCHWARZBECK	VULB 9168	SZ-WRG-M-054	2023/12/25	2024/12/24
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023/12/21	2024/12/20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023/12/25	2024/12/24
RSE Test Software	Tonscend	JS32-RSE V4.0.0	SZ-WRG-M-058	NCR	NCR
RE Test Software	Tonscend	JS32-RE V4.0.0	SZ-WRG-M-059	NCR	NCR
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2022/01/05	2025/01/04
Humidity/ Temperature Indicator	Deli	8838	SEM002-46	2023/07/28	2024/07/27
Spectrum Analyzer	Keysight	N9020A	SZ-WRG-M-002	2023/09/14	2024/09/13
Radio Communication Tester	Anriesu	MT8821C	SZ-WRG-M-014	2023/09/14	2024/09/13

General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity- Temperature Indicator	deli	8838	SEM002-32	2023-07-28	2024-07-27
Humidity- Temperature Indicator	deli	8838	SEM002-33	2023-07-28	2024-07-27
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024-03-18	2025-03-17

Remark: NCR=No Calibration Requirement

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6 Measurement Uncertainty

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 5.4 x 10^{-8}
2	Duty cycle	± 0.3%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.8dB
5	RF power density	± 0.4dB
6	Conducted Spurious emissions	± 2.7dB
7	Radiated Spurious emission test(UE)	±4.8dB (30MHz-1GHz)
		±4.68dB (1GHz-6GHz)
		±4.52dB (6GHz-18GHz)
		±5.26dB (18GHz-40GHz)

Remark:
The Ulab (lab Uncertainty) is less than Ucispr/ETSI (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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7 Test Setup Photo

Refer to Appendix A.1 - WWAN Setup Photos.

---End of Report---

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