



FCC TEST REPORT

Application No: ZR/2019/C0005
Applicant: ThingsMatrix Inc.
Address of Applicant: 9442 North Capital of Texas Hwy, Plaza One, Suite 500, Austin, TX 78759
Manufacturer: ThingsMatrix Inc.
Address of Manufacturer: 9442 North Capital of Texas Hwy, Plaza One, Suite 500, Austin, TX 78759
EUT Description: GPS Tracker
Model No.: TMY02
Trade Mark: ThingsMatrix
FCC ID: 2ATV9TMY02
Standards: 47 CFR Part 2
 47 CFR Part 22 subpart H
 47 CFR Part 24 subpart E
 47 CFR Part 27 subpart C
 47 CFR Part 90 subpart S
Test Method: FCC KDB 971168 D01 Power Meas License Digital Systems V03r01 C63.26 (2015)
Date of Receipt: 2019/12/7
Date of Test: 2019/12/7 to 2020/1/6
Date of Issue: 2020/1/6

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

Authorized Signature:

Derek Yang
Wireless Laboratory Manager



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2020/1/6		Original

Authorized for issue by:			
Tested By	 (Mike Hu) /Project Engineer	2020/1/6	
		Date	
Checked By	 (David Chen) /Reviewer	2020/1/6	
		Date	





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6 MEASUREMENT UNCERTAINTY49



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2 Test Summary

2.1 GSM 850/ NB1 Band 5/26/ CatM1 Band 5/26

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913	FCC: ERP ≤ 7 W	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	---	Limit ≤ 13 dB	See Remark	
Modulation Characteristics	§2.1047	Digital modulation	See Remark	
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	See Remark	
Band Edges Compliance	§2.1051, §22.917	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §22.917	≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	See Remark	
Field Strength of Spurious Radiation	§2.1053, §22.917	FCC: ≤ -13 dBm/100 kHz.	Clause 4.3	Pass
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	See Remark	

2.2 GSM 1900/ NB1 Band 2 / CatM1 Band 2

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232	EIRP ≤ 2 W	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	§2.1046, §24.232	Limit ≤ 13 dB	See Remark	
Modulation Characteristics	§2.1047	Digital modulation	See Remark	
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	See Remark	
Band Edges Compliance	§2.1051, §24.238	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §24.238	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	See Remark	
Field Strength of Spurious Radiation	§2.1053, §24.238	≤ -13 dBm/1 MHz.	Clause 4.3	Pass
Frequency Stability	§2.1055, §24.235	≤ ±2.5 ppm.	See Remark	

2.3 CatM1 Band 4

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)	EIRP ≤ 1 W	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	§2.1046, §27.50(d)	Limit ≤ 13 dB	See Remark	
Modulation Characteristics	§2.1047	Digital modulation	See Remark	
Bandwidth	§2.1049	OBW: No limit.	See Remark	



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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
		EBW: No limit.		
Band Edges Compliance	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	See Remark	
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	Clause 4.3	Pass
Frequency Stability	§2.1055, §27.54	$\leq \pm 2.5$ ppm.	See Remark	

2.4 NB1 Band 26(814-824)/ CatM1 Band 26(814-824)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635	< 100 W.	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	---	FCC: Limit ≤ 13 dB	See Remark	
Modulation Characteristics	§2.1047	Digital modulation	See Remark	
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	See Remark	
Band Edge	§2.1051 § 90.691	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50+10\log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §90.691	$< 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions	See Remark	
Field Strength of Spurious Radiation	§2.1053, §90.691	$< 43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions	Clause 4.3	Pass
Frequency Stability	§2.1055, §90.213	$< \pm 2.5$ ppm.	See Remark	

2.5 NB1 Band 12/ CatM1 Band 12

Test Item	FCC Rule No	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§27.50(c)	ERP ≤ 3 W.	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	§2.1046, §27.50(c)	Limit ≤ 13 dB	See Remark	
Modulation	§2.1047	Digital modulation	See Remark	



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Test Item	FCC Rule No	Requirements	Test Result	Verdict
Characteristics				
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	See Remark	
Band Edges Compliance	§2.1051, §27.53(g)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	See Remark	
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.	Clause 4.3	Pass
Frequency Stability	§2.1055, §27.54	≤ ±2.5ppm.	See Remark	

2.6 NB1 Band 13/ CatM1 Band 13

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)	ERP ≤ 3 W.	Clause 4.1 & 4.2	Pass
Peak-Average Ratio	§27.50	Limit ≤ 13 dB	See Remark	
Modulation Characteristics	§2.1047	Digital modulation	See Remark	
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	See Remark	
Band Edges Compliance	§2.1051, §27.53(c)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	See Remark	
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c) §27.53(f)	≤ -13 dBm/100 kHz, from 9 kHz to 10 th 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.	See Remark	
Field Strength of Spurious Radiation	§2.1053, §27.53(c) §27.53(f)	≤ -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.	Clause 4.3	Pass
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	See Remark	

Remark:

Only the Effective (Isotropic) Radiated Power and Radiated Spurious Emission were fully tested. These items please refer to the LTE Module report RXA1706-0199RF01R1~RXA1706-0199RF04R1 and RXA1706-0199RF05~RXA1706-0199RF08, The FCC ID is XMR201707BG96, and LTE Module has been certified by TA Technology(shanghai)Co.,Ltd on 09/12/2017.



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3 General Information

3.1 Client Information

Applicant:	ThingsMatrix Inc.
Address of Applicant:	9442 North Capital of Texas Hwy, Plaza One, Suite 500, Austin, TX 78759
Manufacturer:	ThingsMatrix Inc.
Address of Manufacturer:	9442 North Capital of Texas Hwy, Plaza One, Suite 500, Austin, TX 78759

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, Shenzhen, Guangdong, China
Post code:	518057
Telephone:	+86 (0) 755 2601 2053
Fax:	+86 (0) 755 2671 0594
E-mail:	ee.shenzhen@sgs.com

3.3 Test Facility

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

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **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**

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. 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: CN1178**

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

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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3.4 General Description of EUT

EUT Description:	GPS Tracker
Model No.:	TMV02
Trade Mark:	ThingsMatrix
Hardware Version:	TMV02V01
Software Version:	TMV02V01.191230
Antenna Type:	☐ External, ☒ Integrated
Antenna Gain:	GSM 850: -0.16dBi; GSM1900: 0.41dBi; NB1 Band 2: 0.41dBi; NB1 Band 5: -0.16dBi; NB1 Band 12: -0.25dBi; NB1 Band 13: -0.23dBi; NB1 Band 26: -0.22dBi; CatM1 Band 2: 0.41dBi; CatM1 Band 4: 0.45dBi; CatM1 Band 5: -0.16dBi; CatM1 Band 12: -0.25dBi; CatM1 Band 13: -0.23dBi; CatM1 Band 26: -0.22dBi;

3.5 Test Mode

Test Mode	Test Modes Description
GSM/TM1	GSM system, GSM/GPRS, GMSK modulation
GSM/TM2	GSM system, EGPRS, 8PSK modulation
NB1/TM1	system, QPSK modulation
NB1/TM2	system, BPSK modulation
CatM1/TM1	LTE system, QPSK modulation
CatM1/TM2	LTE system, 16QAM modulation

Remark: The test mode(s) are selected according to relevant radio technology specifications.



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3.6 Technical Specification

Characteristics	Description		
Radio System Type	☒ GSM		
	☒ NBIoT		
	☒ CatM1		
Supported Frequency Range	Band	TX	RX
	GSM 850	824 to 849 MHz	869 to 894 MHz
	GSM 1900	1850 to 1910 MHz	1930 to 1990 MHz
	NB1 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	NB1 Band 5	824 to 849 MHz	869 to 894 MHz
	NB1 Band 12	699 to 716 MHz	729 to 746 MHz
	NB1 Band 13	777 to 787 MHz	746 to 756 MHz
	NB1 Band 26(814-824)	814 to 824MHz	859 to 869 MHz
	NB1 Band 26(824-849)	824 to 849 MHz	869 to 894 MHz
	CatM1 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	CatM1 Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	CatM1 Band 5	824 to 849 MHz	869 to 894 MHz
	CatM1 Band 12	699 to 716 MHz	729 to 746 MHz
	CatM1 Band 13	777 to 787 MHz	746 to 756 MHz
	CatM1 Band 26(814-824)	814 to 824MHz	859 to 869 MHz
	CatM1 Band 26(824-849)	824 to 849 MHz	869 to 894 MHz
Target TX Max Output Power	GSM 850: 33.0dBm		
	GSM 1900: 30.0dBm		
	NB1 Band 2: 24.0dBm		
	NB1 Band 5: 24.0dBm		
	NB1 Band 12: 24.0dBm		
	NB1 Band 13: 24.0dBm		
	NB1 Band 26 (814-824): 24.0dBm		
	NB1 Band 26 (824-849): 24.0dBm		
	CatM1 Band 2: 24.0dBm		
	CatM1 Band 4: 23.0dBm		
	CatM1 Band 5: 24.0dBm		
	CatM1 Band 12: 24.0dBm		
	CatM1 Band 13: 24.0dBm		
	CatM1 Band 26 (814-824): 24.0dBm		
CatM1 Band 26 (824-849): 24.0dBm			
Supported Channel Bandwidth	GSM Band	☒ 200KHz;	
	NB1 Band 2	☒ 180KHz;	
	NB1 Band 5	☒ 180KHz;	
	NB1 Band 12	☒ 180KHz;	
	NB1 Band 13	☒ 180KHz;	
	NB1 Band 26 (814-824)	☒ 180KHz;	
	NB1 Band 26 (824-849)	☒ 180KHz;	
	CatM1 Band 2	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
	CatM1 Band 4	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz; ☒ 15 MHz, ☒ 20 MHz	
	CatM1 Band 5	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz	



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	CatM1 Band 12	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz
	CatM1 Band 13	☒ 5 MHz; ☒ 10 MHz
	CatM1 Band 26 (814-824)	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz
	CatM1 Band 26 (824-849)	☒ 1.4 MHz; ☒ 3 MHz; ☒ 5 MHz; ☒ 10 MHz ☒ 15 MHz

3.7 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
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)
NB1 Band 2	180KHz	TX	Channel 18601	Channel 18900	Channel 19199
			1850.1 MHz	1880 MHz	1909.9 MHz
		RX	Channel 601	Channel 900	Channel 1199
			1930.1 MHz	1960 MHz	1989.9 MHz
NB1 Band 5	180KHz	TX	Channel 20401	Channel 20525	Channel 20649
			824.1 MHz	836.5 MHz	848.9 MHz
		RX	Channel 2401	Channel 2525	Channel 2649
			869.1 MHz	881.5 MHz	893.9 MHz
NB1 Band 12	180KHz	TX	Channel 23011	Channel 23095	Channel 23179
			699.1 MHz	707.5 MHz	715.9 MHz
		RX	Channel 5011	Channel 5095	Channel 5179
			729.1 MHz	737.5 MHz	745.9 MHz
NB1 Band 13	180KHz	TX	Channel 23181	Channel 23230	Channel 23279
			777.1 MHz	782 MHz	786.9 MHz
		RX	Channel 5181	Channel 5230	Channel 5279
			746.1 MHz	752 MHz	755.9 MHz
NB1 Band 26 (814-824)	180KHz	TX	Channel 26692	Channel 26740	Channel 26788
			814.2 MHz	819 MHz	823.8 MHz
		RX	Channel 8692	Channel 8740	Channel 8788
			859.2MHz	864MHz	868.8MHz
NB1 Band 26 (824-849)	180KHz	TX	Channel 26791	Channel 26915	Channel 27039
			824.1 MHz	836.5 MHz	848.9 MHz
		RX	Channel 8791	Channel 8915	Channel 9039
			869.1 MHz	881.5 MHz	893.9 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
CatM1 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	Channel 1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
	20MHz	TX	Channel 18700	Channel 18900	Channel 19100
			1860 MHz	1880 MHz	1900 MHz
		RX	Channel 700	Channel 900	Channel 1100
			1940 MHz	1960 MHz	1980 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
CatM1 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



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	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)
CatM1 Band 5	1.4MHz	TX	Channel 20407	Channel 20525	Channel 20643
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 2407	Channel 2525	Channel 2643
			869.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 20415	Channel 20525	Channel 20635
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 2415	Channel 2525	Channel 2635
			870.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 20425	Channel 20525	Channel 20625
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 2425	Channel 2525	Channel 2625
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 20450	Channel 20525	Channel 20600
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 2450	Channel 2525	Channel 2600
			874 MHz	881.5 MHz	889 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
CatM1 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)
CatM1 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



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			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)
CatM1Band26 (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)
CatM1Band 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



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4 Description of Tests

4.1 Conducted Output Power

Measurement Procedure: FCC KDB 971168 D01 V03r01

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

4.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure: FCC KDB 971168 D01 V03r01 ; C63.26 (2015)

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

4.2.1 Test Result

4.2.1.1 Test Result for GSM 850

Band	Channel	Slot	Conducted Power (dBm)	ERP (dBm)	Limit(dBm)	Verdict
GSM850	128	---	32.34	30.03	38.45	PASS
GSM850	190	---	32.38	30.07	38.45	PASS
GSM850	251	---	32.39	30.08	38.45	PASS
EGPRS850	128	1	26.59	24.28	38.45	PASS
EGPRS850	128	2	26.32	24.01	38.45	PASS
EGPRS850	128	3	25.22	22.91	38.45	PASS
EGPRS850	128	4	23.94	21.63	38.45	PASS
EGPRS850	190	1	26.65	24.34	38.45	PASS
EGPRS850	190	2	26.17	23.86	38.45	PASS
EGPRS850	190	3	25.06	22.75	38.45	PASS
EGPRS850	190	4	24.16	21.85	38.45	PASS
EGPRS850	251	1	26.60	24.29	38.45	PASS
EGPRS850	251	2	26.28	23.97	38.45	PASS
EGPRS850	251	3	25.24	22.93	38.45	PASS
EGPRS850	251	4	24.22	21.91	38.45	PASS

4.2.1.2 Test Result for GSM 1900

Band	Channel	Slot	Conducted Power (dBm)	EIRP (dBm)	Limit(dBm)	Verdict
GSM1900	512	---	29.54	29.95	33.00	PASS
GSM1900	661	---	29.67	30.08	33.00	PASS
GSM1900	810	---	29.23	29.64	33.00	PASS
EGPRS1900	512	1	24.88	25.29	33.00	PASS
EGPRS1900	512	2	24.76	25.17	33.00	PASS
EGPRS1900	512	3	23.56	23.97	33.00	PASS
EGPRS1900	512	4	22.63	23.04	33.00	PASS
EGPRS1900	661	1	24.88	25.29	33.00	PASS
EGPRS1900	661	2	24.70	25.11	33.00	PASS
EGPRS1900	661	3	23.52	23.93	33.00	PASS
EGPRS1900	661	4	22.58	22.99	33.00	PASS



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EGPRS1900	810	1	24.67	25.08	33.00	PASS
EGPRS1900	810	2	24.69	25.10	33.00	PASS
EGPRS1900	810	3	23.66	24.07	33.00	PASS
EGPRS1900	810	4	22.65	23.06	33.00	PASS

4.2.1.3 Test Result for NB1 band 2

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	EIRP (dBm)	limit (dBm)	Verdict
NB1 Band 2	BPSK	3.75	18601	1T0	23.00	23.41	33.00	PASS
NB1 Band 2	BPSK	3.75	18900	1T0	22.84	23.25	33.00	PASS
NB1 Band 2	BPSK	3.75	19199	1T0	22.82	23.23	33.00	PASS
NB1 Band 2	QPSK	3.75	18601	1T0	23.00	23.41	33.00	PASS
NB1 Band 2	QPSK	3.75	18900	1T0	22.83	23.24	33.00	PASS
NB1 Band 2	QPSK	3.75	19199	1T0	22.78	23.19	33.00	PASS
NB1 Band 2	BPSK	15	18601	1T0	22.24	22.65	33.00	PASS
NB1 Band 2	BPSK	15	18900	1T0	22.56	22.97	33.00	PASS
NB1 Band 2	BPSK	15	19199	1T0	23.00	23.41	33.00	PASS
NB1 Band 2	QPSK	15	18601	1T0	22.23	22.64	33.00	PASS
NB1 Band 2	QPSK	15	18601	12T0	21.43	21.84	33.00	PASS
NB1 Band 2	QPSK	15	18900	1T0	22.66	23.07	33.00	PASS
NB1 Band 2	QPSK	15	18900	12T0	22.82	23.23	33.00	PASS
NB1 Band 2	QPSK	15	19199	1T0	23.07	23.48	33.00	PASS
NB1 Band 2	QPSK	15	19199	12T0	22.27	22.68	33.00	PASS

4.2.1.4 Test Result for NB1 Band 5

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 5	BPSK	3.75	20401	1T0	22.67	20.36	38.45	PASS
NB1 Band 5	BPSK	3.75	20525	1T0	22.86	20.55	38.45	PASS
NB1 Band 5	BPSK	3.75	20649	1T0	22.70	20.39	38.45	PASS
NB1 Band 5	QPSK	3.75	20401	1T0	22.69	20.38	38.45	PASS
NB1 Band 5	QPSK	3.75	20525	1T0	22.82	20.51	38.45	PASS
NB1 Band 5	QPSK	3.75	20649	1T0	22.71	20.40	38.45	PASS
NB1 Band 5	BPSK	15	20401	1T0	22.88	20.57	38.45	PASS
NB1 Band 5	BPSK	15	20525	1T0	22.91	20.60	38.45	PASS
NB1 Band 5	BPSK	15	20649	1T0	22.86	20.55	38.45	PASS
NB1 Band 5	QPSK	15	20401	1T0	22.93	20.62	38.45	PASS
NB1 Band 5	QPSK	15	20401	12T0	22.13	19.82	38.45	PASS
NB1 Band 5	QPSK	15	20525	1T0	22.88	20.57	38.45	PASS
NB1 Band 5	QPSK	15	20525	12T0	22.08	19.77	38.45	PASS
NB1 Band 5	QPSK	15	20649	1T0	22.91	20.60	38.45	PASS
NB1 Band 5	QPSK	15	20649	12T0	22.11	19.80	38.45	PASS



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4.2.1.5 Test Result for NB1 Band 12

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 12	BPSK	3.75	23011	1T0	22.85	20.45	34.77	PASS
NB1 Band 12	BPSK	3.75	23095	1T0	22.72	20.32	34.77	PASS
NB1 Band 12	BPSK	3.75	23179	1T0	22.72	20.32	34.77	PASS
NB1 Band 12	QPSK	3.75	23011	1T0	22.84	20.44	34.77	PASS
NB1 Band 12	QPSK	3.75	23095	1T0	22.75	20.35	34.77	PASS
NB1 Band 12	QPSK	3.75	23179	1T0	22.73	20.33	34.77	PASS
NB1 Band 12	BPSK	15	23011	1T0	22.64	20.24	34.77	PASS
NB1 Band 12	BPSK	15	23095	1T0	23.01	20.61	34.77	PASS
NB1 Band 12	BPSK	15	23179	1T0	22.36	19.96	34.77	PASS
NB1 Band 12	QPSK	15	23011	1T0	22.65	20.25	34.77	PASS
NB1 Band 12	QPSK	15	23011	12T0	21.85	19.45	34.77	PASS
NB1 Band 12	QPSK	15	23095	1T0	22.98	20.58	34.77	PASS
NB1 Band 12	QPSK	15	23095	12T0	22.18	19.78	34.77	PASS
NB1 Band 12	QPSK	15	23179	1T0	22.35	19.95	34.77	PASS
NB1 Band 12	QPSK	15	23179	12T0	21.55	19.15	34.77	PASS

4.2.1.6 Test Result for NB1 Band 13

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 13	BPSK	3.75	23181	1T0	22.76	20.38	34.77	PASS
NB1 Band 13	BPSK	3.75	23230	1T0	22.65	20.27	34.77	PASS
NB1 Band 13	BPSK	3.75	23279	1T0	22.52	20.14	34.77	PASS
NB1 Band 13	QPSK	3.75	23181	1T0	22.75	20.37	34.77	PASS
NB1 Band 13	QPSK	3.75	23230	1T0	22.67	20.29	34.77	PASS
NB1 Band 13	QPSK	3.75	23279	1T0	22.53	20.15	34.77	PASS
NB1 Band 13	BPSK	15	23181	1T0	22.97	20.59	34.77	PASS
NB1 Band 13	BPSK	15	23230	1T0	22.67	20.29	34.77	PASS
NB1 Band 13	BPSK	15	23279	1T0	22.70	20.32	34.77	PASS
NB1 Band 13	QPSK	15	23181	1T0	22.95	20.57	34.77	PASS
NB1 Band 13	QPSK	15	23181	12T0	22.15	19.77	34.77	PASS
NB1 Band 13	QPSK	15	23230	1T0	22.74	20.36	34.77	PASS
NB1 Band 13	QPSK	15	23230	12T0	21.94	19.56	34.77	PASS
NB1 Band 13	QPSK	15	23279	1T0	22.72	20.34	34.77	PASS
NB1 Band 13	QPSK	15	23279	12T0	21.92	19.54	34.77	PASS



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4.2.1.7 Test Result for NB1 Band 26 (814-824)

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	Verdict
NB1 Band 26	BPSK	3.75	26692	1T0	22.95	PASS
NB1 Band 26	BPSK	3.75	26740	1T0	23.18	PASS
NB1 Band 26	BPSK	3.75	26788	1T0	23.19	PASS
NB1 Band 26	QPSK	3.75	26692	1T0	22.93	PASS
NB1 Band 26	QPSK	3.75	26740	1T0	23.10	PASS
NB1 Band 26	QPSK	3.75	26788	1T0	23.09	PASS
NB1 Band 26	BPSK	15	26692	1T0	23.25	PASS
NB1 Band 26	BPSK	15	26740	1T0	23.14	PASS
NB1 Band 26	BPSK	15	26788	1T0	23.27	PASS
NB1 Band 26	QPSK	15	26692	1T0	23.43	PASS
NB1 Band 26	QPSK	15	26692	12T0	22.63	PASS
NB1 Band 26	QPSK	15	26740	1T0	23.21	PASS
NB1 Band 26	QPSK	15	26740	12T0	22.41	PASS
NB1 Band 26	QPSK	15	26788	1T0	23.14	PASS
NB1 Band 26	QPSK	15	26788	12T0	22.34	PASS

4.2.1.8 Test Result for NB1 Band 26 (824-849)

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 26	BPSK	3.75	26791	1T0	22.97	20.60	38.45	PASS
NB1 Band 26	BPSK	3.75	26915	1T0	23.02	20.65	38.45	PASS
NB1 Band 26	BPSK	3.75	27039	1T0	22.86	20.49	38.45	PASS
NB1 Band 26	QPSK	3.75	26791	1T0	22.77	20.40	38.45	PASS
NB1 Band 26	QPSK	3.75	26915	1T0	23.00	20.63	38.45	PASS
NB1 Band 26	QPSK	3.75	27039	1T0	22.99	20.62	38.45	PASS
NB1 Band 26	BPSK	15	26791	1T0	23.05	20.68	38.45	PASS
NB1 Band 26	BPSK	15	26915	1T0	23.12	20.75	38.45	PASS
NB1 Band 26	BPSK	15	27039	1T0	22.86	20.49	38.45	PASS
NB1 Band 26	QPSK	15	26791	1T0	23.09	20.72	38.45	PASS
NB1 Band 26	QPSK	15	26791	12T0	22.29	19.92	38.45	PASS
NB1 Band 26	QPSK	15	26915	1T0	23.10	20.73	38.45	PASS
NB1 Band 26	QPSK	15	26915	12T0	22.30	19.93	38.45	PASS
NB1 Band 26	QPSK	15	27039	1T0	22.97	20.60	38.45	PASS
NB1 Band 26	QPSK	15	27039	12T0	22.17	19.80	38.45	PASS



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4.2.1.9 Test Result for LTE-CatM1 Band 2

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	EIRP (dBm)	limit (dBm)	Verdict
CatM1 Band 2	QPSK	1.4M	LCH	1RB#0	22.85	23.26	33.00	PASS
CatM1 Band 2	QPSK	1.4M	LCH	5RB#0	21.78	22.19	33.00	PASS
CatM1 Band 2	QPSK	1.4M	LCH	6RB#0	20.76	21.17	33.00	PASS
CatM1 Band 2	QPSK	1.4M	MCH	1RB#0	22.76	23.17	33.00	PASS
CatM1 Band 2	QPSK	1.4M	MCH	5RB#0	21.71	22.12	33.00	PASS
CatM1 Band 2	QPSK	1.4M	MCH	6RB#0	20.72	21.13	33.00	PASS
CatM1 Band 2	QPSK	1.4M	HCH	1RB#0	22.85	23.26	33.00	PASS
CatM1 Band 2	QPSK	1.4M	HCH	5RB#0	21.66	22.07	33.00	PASS
CatM1 Band 2	QPSK	1.4M	HCH	6RB#0	20.75	21.16	33.00	PASS
CatM1 Band 2	16QAM	1.4M	LCH	1RB#0	21.89	22.30	33.00	PASS
CatM1 Band 2	16QAM	1.4M	LCH	5RB#0	20.88	21.29	33.00	PASS
CatM1 Band 2	16QAM	1.4M	MCH	1RB#0	21.57	21.98	33.00	PASS
CatM1 Band 2	16QAM	1.4M	MCH	5RB#0	20.74	21.15	33.00	PASS
CatM1 Band 2	16QAM	1.4M	HCH	1RB#0	21.64	22.05	33.00	PASS
CatM1 Band 2	16QAM	1.4M	HCH	5RB#0	20.74	21.15	33.00	PASS
CatM1 Band 2	QPSK	3M	LCH	1RB#0	22.88	23.29	33.00	PASS
CatM1 Band 2	QPSK	3M	LCH	5RB#0	21.69	22.10	33.00	PASS
CatM1 Band 2	QPSK	3M	LCH	6RB#0	20.78	21.19	33.00	PASS
CatM1 Band 2	QPSK	3M	MCH	1RB#0	22.84	23.25	33.00	PASS
CatM1 Band 2	QPSK	3M	MCH	5RB#0	21.66	22.07	33.00	PASS
CatM1 Band 2	QPSK	3M	MCH	6RB#0	20.66	21.07	33.00	PASS
CatM1 Band 2	QPSK	3M	HCH	1RB#0	22.82	23.23	33.00	PASS
CatM1 Band 2	QPSK	3M	HCH	5RB#0	21.69	22.10	33.00	PASS
CatM1 Band 2	QPSK	3M	HCH	6RB#0	20.59	21.00	33.00	PASS
CatM1 Band 2	16QAM	3M	LCH	1RB#0	21.63	22.04	33.00	PASS
CatM1 Band 2	16QAM	3M	LCH	5RB#0	20.79	21.20	33.00	PASS
CatM1 Band 2	16QAM	3M	MCH	1RB#0	21.57	21.98	33.00	PASS
CatM1 Band 2	16QAM	3M	MCH	5RB#0	20.58	20.99	33.00	PASS
CatM1 Band 2	16QAM	3M	HCH	1RB#0	21.40	21.81	33.00	PASS
CatM1 Band 2	16QAM	3M	HCH	5RB#0	20.67	21.08	33.00	PASS
CatM1 Band 2	QPSK	5M	LCH	1RB#0	22.83	23.24	33.00	PASS
CatM1 Band 2	QPSK	5M	LCH	5RB#0	21.80	22.21	33.00	PASS
CatM1 Band 2	QPSK	5M	LCH	6RB#0	21.85	22.26	33.00	PASS
CatM1 Band 2	QPSK	5M	MCH	1RB#0	22.65	23.06	33.00	PASS
CatM1 Band 2	QPSK	5M	MCH	5RB#0	21.54	21.95	33.00	PASS
CatM1 Band 2	QPSK	5M	MCH	6RB#0	21.61	22.02	33.00	PASS
CatM1 Band 2	QPSK	5M	HCH	1RB#0	22.82	23.23	33.00	PASS
CatM1 Band 2	QPSK	5M	HCH	5RB#0	21.59	22.00	33.00	PASS
CatM1 Band 2	QPSK	5M	HCH	6RB#0	21.64	22.05	33.00	PASS
CatM1 Band 2	16QAM	5M	LCH	1RB#0	22.54	22.95	33.00	PASS
CatM1 Band 2	16QAM	5M	LCH	5RB#0	21.78	22.19	33.00	PASS
CatM1 Band 2	16QAM	5M	MCH	1RB#0	22.51	22.92	33.00	PASS



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CatM1 Band 2	16QAM	5M	MCH	5RB#0	21.53	21.94	33.00	PASS
CatM1 Band 2	16QAM	5M	HCH	1RB#0	22.42	22.83	33.00	PASS
CatM1 Band 2	16QAM	5M	HCH	5RB#0	21.61	22.02	33.00	PASS
CatM1 Band 2	QPSK	10M	LCH	1RB#0	22.91	23.32	33.00	PASS
CatM1 Band 2	QPSK	10M	LCH	5RB#0	22.90	23.31	33.00	PASS
CatM1 Band 2	QPSK	10M	LCH	6RB#0	21.79	22.20	33.00	PASS
CatM1 Band 2	QPSK	10M	MCH	1RB#0	22.63	23.04	33.00	PASS
CatM1 Band 2	QPSK	10M	MCH	5RB#0	22.59	23.00	33.00	PASS
CatM1 Band 2	QPSK	10M	MCH	6RB#0	21.58	21.99	33.00	PASS
CatM1 Band 2	QPSK	10M	HCH	1RB#0	22.82	23.23	33.00	PASS
CatM1 Band 2	QPSK	10M	HCH	5RB#0	22.74	23.15	33.00	PASS
CatM1 Band 2	QPSK	10M	HCH	6RB#0	21.63	22.04	33.00	PASS
CatM1 Band 2	16QAM	10M	LCH	1RB#0	22.57	22.98	33.00	PASS
CatM1 Band 2	16QAM	10M	LCH	5RB#0	22.49	22.90	33.00	PASS
CatM1 Band 2	16QAM	10M	MCH	1RB#0	22.41	22.82	33.00	PASS
CatM1 Band 2	16QAM	10M	MCH	5RB#0	22.31	22.72	33.00	PASS
CatM1 Band 2	16QAM	10M	HCH	1RB#0	22.48	22.89	33.00	PASS
CatM1 Band 2	16QAM	10M	HCH	5RB#0	22.63	23.04	33.00	PASS
CatM1 Band 2	QPSK	15M	LCH	1RB#0	22.88	23.29	33.00	PASS
CatM1 Band 2	QPSK	15M	LCH	5RB#0	22.90	23.31	33.00	PASS
CatM1 Band 2	QPSK	15M	LCH	6RB#0	22.86	23.27	33.00	PASS
CatM1 Band 2	QPSK	15M	MCH	1RB#0	22.69	23.10	33.00	PASS
CatM1 Band 2	QPSK	15M	MCH	5RB#0	22.71	23.12	33.00	PASS
CatM1 Band 2	QPSK	15M	MCH	6RB#0	22.67	23.08	33.00	PASS
CatM1 Band 2	QPSK	15M	HCH	1RB#0	22.78	23.19	33.00	PASS
CatM1 Band 2	QPSK	15M	HCH	5RB#0	22.75	23.16	33.00	PASS
CatM1 Band 2	QPSK	15M	HCH	6RB#0	22.69	23.10	33.00	PASS
CatM1 Band 2	16QAM	15M	LCH	1RB#0	22.58	22.99	33.00	PASS
CatM1 Band 2	16QAM	15M	LCH	5RB#0	22.90	23.31	33.00	PASS
CatM1 Band 2	16QAM	15M	MCH	1RB#0	22.49	22.90	33.00	PASS
CatM1 Band 2	16QAM	15M	MCH	5RB#0	22.77	23.18	33.00	PASS
CatM1 Band 2	16QAM	15M	HCH	1RB#0	22.36	22.77	33.00	PASS
CatM1 Band 2	16QAM	15M	HCH	5RB#0	22.68	23.09	33.00	PASS
CatM1 Band 2	QPSK	20M	LCH	1RB#0	22.82	23.23	33.00	PASS
CatM1 Band 2	QPSK	20M	LCH	5RB#0	22.77	23.18	33.00	PASS
CatM1 Band 2	QPSK	20M	LCH	6RB#0	22.93	23.34	33.00	PASS
CatM1 Band 2	QPSK	20M	MCH	1RB#0	22.72	23.13	33.00	PASS
CatM1 Band 2	QPSK	20M	MCH	5RB#0	22.68	23.09	33.00	PASS
CatM1 Band 2	QPSK	20M	MCH	6RB#0	22.86	23.27	33.00	PASS
CatM1 Band 2	QPSK	20M	HCH	1RB#0	22.67	23.08	33.00	PASS
CatM1 Band 2	QPSK	20M	HCH	5RB#0	22.81	23.22	33.00	PASS
CatM1 Band 2	QPSK	20M	HCH	6RB#0	22.76	23.17	33.00	PASS
CatM1 Band 2	16QAM	20M	LCH	1RB#0	22.53	22.94	33.00	PASS
CatM1 Band 2	16QAM	20M	LCH	5RB#0	22.86	23.27	33.00	PASS
CatM1 Band 2	16QAM	20M	MCH	1RB#0	22.41	22.82	33.00	PASS
CatM1 Band 2	16QAM	20M	MCH	5RB#0	22.76	23.17	33.00	PASS



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CatM1 Band 2	16QAM	20M	HCH	1RB#0	22.47	22.88	33.00	PASS
CatM1 Band 2	16QAM	20M	HCH	5RB#0	22.73	23.14	33.00	PASS

4.2.1.10 Test Result for LTE-CatM1 Band 4

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	EIRP (dBm)	limit (dBm)	Verdict
CatM1 Band 4	QPSK	1.4M	LCH	1RB#0	22.35	22.80	33.00	PASS
CatM1 Band 4	QPSK	1.4M	LCH	5RB#0	21.27	21.72	33.00	PASS
CatM1 Band 4	QPSK	1.4M	LCH	6RB#0	20.24	20.69	33.00	PASS
CatM1 Band 4	QPSK	1.4M	MCH	1RB#0	22.45	22.90	33.00	PASS
CatM1 Band 4	QPSK	1.4M	MCH	5RB#0	21.36	21.81	33.00	PASS
CatM1 Band 4	QPSK	1.4M	MCH	6RB#0	20.34	20.79	33.00	PASS
CatM1 Band 4	QPSK	1.4M	HCH	1RB#0	22.41	22.86	33.00	PASS
CatM1 Band 4	QPSK	1.4M	HCH	5RB#0	21.29	21.74	33.00	PASS
CatM1 Band 4	QPSK	1.4M	HCH	6RB#0	20.26	20.71	33.00	PASS
CatM1 Band 4	16QAM	1.4M	LCH	1RB#0	21.11	21.56	33.00	PASS
CatM1 Band 4	16QAM	1.4M	LCH	5RB#0	20.34	20.79	33.00	PASS
CatM1 Band 4	16QAM	1.4M	MCH	1RB#0	21.58	22.03	33.00	PASS
CatM1 Band 4	16QAM	1.4M	MCH	5RB#0	20.37	20.82	33.00	PASS
CatM1 Band 4	16QAM	1.4M	HCH	1RB#0	21.39	21.84	33.00	PASS
CatM1 Band 4	16QAM	1.4M	HCH	5RB#0	20.42	20.87	33.00	PASS
CatM1 Band 4	QPSK	3M	LCH	1RB#0	22.42	22.87	33.00	PASS
CatM1 Band 4	QPSK	3M	LCH	5RB#0	21.25	21.70	33.00	PASS
CatM1 Band 4	QPSK	3M	LCH	6RB#0	20.40	20.85	33.00	PASS
CatM1 Band 4	QPSK	3M	MCH	1RB#0	22.45	22.90	33.00	PASS
CatM1 Band 4	QPSK	3M	MCH	5RB#0	21.33	21.78	33.00	PASS
CatM1 Band 4	QPSK	3M	MCH	6RB#0	20.42	20.87	33.00	PASS
CatM1 Band 4	QPSK	3M	HCH	1RB#0	22.43	22.88	33.00	PASS
CatM1 Band 4	QPSK	3M	HCH	5RB#0	21.27	21.72	33.00	PASS
CatM1 Band 4	QPSK	3M	HCH	6RB#0	20.45	20.90	33.00	PASS
CatM1 Band 4	16QAM	3M	LCH	1RB#0	21.09	21.54	33.00	PASS
CatM1 Band 4	16QAM	3M	LCH	5RB#0	20.54	20.99	33.00	PASS
CatM1 Band 4	16QAM	3M	MCH	1RB#0	21.19	21.64	33.00	PASS
CatM1 Band 4	16QAM	3M	MCH	5RB#0	19.99	20.44	33.00	PASS
CatM1 Band 4	16QAM	3M	HCH	1RB#0	21.21	21.66	33.00	PASS
CatM1 Band 4	16QAM	3M	HCH	5RB#0	20.26	20.71	33.00	PASS
CatM1 Band 4	QPSK	5M	LCH	1RB#0	22.41	22.86	33.00	PASS
CatM1 Band 4	QPSK	5M	LCH	5RB#0	21.29	21.74	33.00	PASS
CatM1 Band 4	QPSK	5M	LCH	6RB#0	21.37	21.82	33.00	PASS
CatM1 Band 4	QPSK	5M	MCH	1RB#0	22.46	22.91	33.00	PASS
CatM1 Band 4	QPSK	5M	MCH	5RB#0	21.34	21.79	33.00	PASS
CatM1 Band 4	QPSK	5M	MCH	6RB#0	21.49	21.94	33.00	PASS
CatM1 Band 4	QPSK	5M	HCH	1RB#0	22.46	22.91	33.00	PASS
CatM1 Band 4	QPSK	5M	HCH	5RB#0	21.37	21.82	33.00	PASS
CatM1 Band 4	QPSK	5M	HCH	6RB#0	21.56	22.01	33.00	PASS
CatM1 Band 4	16QAM	5M	LCH	1RB#0	22.06	22.51	33.00	PASS



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CatM1 Band 4	16QAM	5M	LCH	5RB#0	21.33	21.78	33.00	PASS
CatM1 Band 4	16QAM	5M	MCH	1RB#0	22.17	22.62	33.00	PASS
CatM1 Band 4	16QAM	5M	MCH	5RB#0	21.35	21.80	33.00	PASS
CatM1 Band 4	16QAM	5M	HCH	1RB#0	22.18	22.63	33.00	PASS
CatM1 Band 4	16QAM	5M	HCH	5RB#0	21.48	21.93	33.00	PASS
CatM1 Band 4	QPSK	10M	LCH	1RB#0	22.48	22.93	33.00	PASS
CatM1 Band 4	QPSK	10M	LCH	5RB#0	22.35	22.80	33.00	PASS
CatM1 Band 4	QPSK	10M	LCH	6RB#0	21.41	21.86	33.00	PASS
CatM1 Band 4	QPSK	10M	MCH	1RB#0	22.48	22.93	33.00	PASS
CatM1 Band 4	QPSK	10M	MCH	5RB#0	22.37	22.82	33.00	PASS
CatM1 Band 4	QPSK	10M	MCH	6RB#0	21.35	21.80	33.00	PASS
CatM1 Band 4	QPSK	10M	HCH	1RB#0	22.50	22.95	33.00	PASS
CatM1 Band 4	QPSK	10M	HCH	5RB#0	22.39	22.84	33.00	PASS
CatM1 Band 4	QPSK	10M	HCH	6RB#0	21.43	21.88	33.00	PASS
CatM1 Band 4	16QAM	10M	LCH	1RB#0	22.15	22.60	33.00	PASS
CatM1 Band 4	16QAM	10M	LCH	5RB#0	22.46	22.91	33.00	PASS
CatM1 Band 4	16QAM	10M	MCH	1RB#0	22.17	22.62	33.00	PASS
CatM1 Band 4	16QAM	10M	MCH	5RB#0	22.07	22.52	33.00	PASS
CatM1 Band 4	16QAM	10M	HCH	1RB#0	22.20	22.65	33.00	PASS
CatM1 Band 4	16QAM	10M	HCH	5RB#0	22.23	22.68	33.00	PASS
CatM1 Band 4	QPSK	15M	LCH	1RB#0	22.51	22.96	33.00	PASS
CatM1 Band 4	QPSK	15M	LCH	5RB#0	22.39	22.84	33.00	PASS
CatM1 Band 4	QPSK	15M	LCH	6RB#0	22.29	22.74	33.00	PASS
CatM1 Band 4	QPSK	15M	MCH	1RB#0	22.52	22.97	33.00	PASS
CatM1 Band 4	QPSK	15M	MCH	5RB#0	22.41	22.86	33.00	PASS
CatM1 Band 4	QPSK	15M	MCH	6RB#0	22.38	22.83	33.00	PASS
CatM1 Band 4	QPSK	15M	HCH	1RB#0	22.52	22.97	33.00	PASS
CatM1 Band 4	QPSK	15M	HCH	5RB#0	22.37	22.82	33.00	PASS
CatM1 Band 4	QPSK	15M	HCH	6RB#0	22.36	22.81	33.00	PASS
CatM1 Band 4	16QAM	15M	LCH	1RB#0	22.07	22.52	33.00	PASS
CatM1 Band 4	16QAM	15M	LCH	5RB#0	22.31	22.76	33.00	PASS
CatM1 Band 4	16QAM	15M	MCH	1RB#0	22.13	22.58	33.00	PASS
CatM1 Band 4	16QAM	15M	MCH	5RB#0	22.28	22.73	33.00	PASS
CatM1 Band 4	16QAM	15M	HCH	1RB#0	22.16	22.61	33.00	PASS
CatM1 Band 4	16QAM	15M	HCH	5RB#0	22.37	22.82	33.00	PASS
CatM1 Band 4	QPSK	20M	LCH	1RB#0	22.55	23.00	33.00	PASS
CatM1 Band 4	QPSK	20M	LCH	5RB#0	22.45	22.90	33.00	PASS
CatM1 Band 4	QPSK	20M	LCH	6RB#0	22.37	22.82	33.00	PASS
CatM1 Band 4	QPSK	20M	MCH	1RB#0	22.57	23.02	33.00	PASS
CatM1 Band 4	QPSK	20M	MCH	5RB#0	22.41	22.86	33.00	PASS
CatM1 Band 4	QPSK	20M	MCH	6RB#0	22.39	22.84	33.00	PASS
CatM1 Band 4	QPSK	20M	HCH	1RB#0	22.56	23.01	33.00	PASS
CatM1 Band 4	QPSK	20M	HCH	5RB#0	22.51	22.96	33.00	PASS
CatM1 Band 4	QPSK	20M	HCH	6RB#0	22.47	22.92	33.00	PASS
CatM1 Band 4	16QAM	20M	LCH	1RB#0	22.16	22.61	33.00	PASS
CatM1 Band 4	16QAM	20M	LCH	5RB#0	21.91	22.36	33.00	PASS



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CatM1 Band 4	16QAM	20M	MCH	1RB#0	22.17	22.62	33.00	PASS
CatM1 Band 4	16QAM	20M	MCH	5RB#0	21.80	22.25	33.00	PASS
CatM1 Band 4	16QAM	20M	HCH	1RB#0	22.13	22.58	33.00	PASS
CatM1 Band 4	16QAM	20M	HCH	5RB#0	22.38	22.83	33.00	PASS

4.2.1.11 Test Result for LTE-CatM1 Band 5

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 5	QPSK	1.4M	LCH	1RB#0	22.88	20.57	38.45	PASS
CatM1 Band 5	QPSK	1.4M	LCH	5RB#0	22.04	19.73	38.45	PASS
CatM1 Band 5	QPSK	1.4M	LCH	6RB#0	20.95	18.64	38.45	PASS
CatM1 Band 5	QPSK	1.4M	MCH	1RB#0	23.23	20.92	38.45	PASS
CatM1 Band 5	QPSK	1.4M	MCH	5RB#0	22.24	19.93	38.45	PASS
CatM1 Band 5	QPSK	1.4M	MCH	6RB#0	21.13	18.82	38.45	PASS
CatM1 Band 5	QPSK	1.4M	HCH	1RB#0	23.16	20.85	38.45	PASS
CatM1 Band 5	QPSK	1.4M	HCH	5RB#0	22.14	19.83	38.45	PASS
CatM1 Band 5	QPSK	1.4M	HCH	6RB#0	21.07	18.76	38.45	PASS
CatM1 Band 5	16QAM	1.4M	LCH	1RB#0	21.93	19.62	38.45	PASS
CatM1 Band 5	16QAM	1.4M	LCH	5RB#0	20.83	18.52	38.45	PASS
CatM1 Band 5	16QAM	1.4M	MCH	1RB#0	22.30	19.99	38.45	PASS
CatM1 Band 5	16QAM	1.4M	MCH	5RB#0	21.28	18.97	38.45	PASS
CatM1 Band 5	16QAM	1.4M	HCH	1RB#0	22.25	19.94	38.45	PASS
CatM1 Band 5	16QAM	1.4M	HCH	5RB#0	21.09	18.78	38.45	PASS
CatM1 Band 5	QPSK	3M	LCH	1RB#0	23.25	20.94	38.45	PASS
CatM1 Band 5	QPSK	3M	LCH	5RB#0	22.04	19.73	38.45	PASS
CatM1 Band 5	QPSK	3M	LCH	6RB#0	21.07	18.76	38.45	PASS
CatM1 Band 5	QPSK	3M	MCH	1RB#0	23.47	21.16	38.45	PASS
CatM1 Band 5	QPSK	3M	MCH	5RB#0	22.27	19.96	38.45	PASS
CatM1 Band 5	QPSK	3M	MCH	6RB#0	21.15	18.84	38.45	PASS
CatM1 Band 5	QPSK	3M	HCH	1RB#0	23.51	21.20	38.45	PASS
CatM1 Band 5	QPSK	3M	HCH	5RB#0	22.31	20.00	38.45	PASS
CatM1 Band 5	QPSK	3M	HCH	6RB#0	21.11	18.80	38.45	PASS
CatM1 Band 5	16QAM	3M	LCH	1RB#0	22.04	19.73	38.45	PASS
CatM1 Band 5	16QAM	3M	LCH	5RB#0	21.07	18.76	38.45	PASS
CatM1 Band 5	16QAM	3M	MCH	1RB#0	22.20	19.89	38.45	PASS
CatM1 Band 5	16QAM	3M	MCH	5RB#0	21.23	18.92	38.45	PASS
CatM1 Band 5	16QAM	3M	HCH	1RB#0	22.24	19.93	38.45	PASS
CatM1 Band 5	16QAM	3M	HCH	5RB#0	21.30	18.99	38.45	PASS
CatM1 Band 5	QPSK	5M	LCH	1RB#0	23.37	21.06	38.45	PASS
CatM1 Band 5	QPSK	5M	LCH	5RB#0	22.14	19.83	38.45	PASS
CatM1 Band 5	QPSK	5M	LCH	6RB#0	22.07	19.76	38.45	PASS
CatM1 Band 5	QPSK	5M	MCH	1RB#0	23.49	21.18	38.45	PASS
CatM1 Band 5	QPSK	5M	MCH	5RB#0	22.17	19.86	38.45	PASS
CatM1 Band 5	QPSK	5M	MCH	6RB#0	22.24	19.93	38.45	PASS
CatM1 Band 5	QPSK	5M	HCH	1RB#0	23.63	21.32	38.45	PASS
CatM1 Band 5	QPSK	5M	HCH	5RB#0	22.05	19.74	38.45	PASS



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CatM1 Band 5	QPSK	5M	HCH	6RB#0	22.05	19.74	38.45	PASS
CatM1 Band 5	16QAM	5M	LCH	1RB#0	22.81	20.50	38.45	PASS
CatM1 Band 5	16QAM	5M	LCH	5RB#0	22.14	19.83	38.45	PASS
CatM1 Band 5	16QAM	5M	MCH	1RB#0	22.89	20.58	38.45	PASS
CatM1 Band 5	16QAM	5M	MCH	5RB#0	22.19	19.88	38.45	PASS
CatM1 Band 5	16QAM	5M	HCH	1RB#0	23.05	20.74	38.45	PASS
CatM1 Band 5	16QAM	5M	HCH	5RB#0	22.05	19.74	38.45	PASS
CatM1 Band 5	QPSK	10M	LCH	1RB#0	23.34	21.03	38.45	PASS
CatM1 Band 5	QPSK	10M	LCH	5RB#0	23.02	20.71	38.45	PASS
CatM1 Band 5	QPSK	10M	LCH	6RB#0	21.94	19.63	38.45	PASS
CatM1 Band 5	QPSK	10M	MCH	1RB#0	23.54	21.23	38.45	PASS
CatM1 Band 5	QPSK	10M	MCH	5RB#0	23.24	20.93	38.45	PASS
CatM1 Band 5	QPSK	10M	MCH	6RB#0	22.17	19.86	38.45	PASS
CatM1 Band 5	QPSK	10M	HCH	1RB#0	23.47	21.16	38.45	PASS
CatM1 Band 5	QPSK	10M	HCH	5RB#0	23.13	20.82	38.45	PASS
CatM1 Band 5	QPSK	10M	HCH	6RB#0	22.14	19.83	38.45	PASS
CatM1 Band 5	16QAM	10M	LCH	1RB#0	22.75	20.44	38.45	PASS
CatM1 Band 5	16QAM	10M	LCH	5RB#0	23.04	20.73	38.45	PASS
CatM1 Band 5	16QAM	10M	MCH	1RB#0	22.95	20.64	38.45	PASS
CatM1 Band 5	16QAM	10M	MCH	5RB#0	23.17	20.86	38.45	PASS
CatM1 Band 5	16QAM	10M	HCH	1RB#0	22.84	20.53	38.45	PASS
CatM1 Band 5	16QAM	10M	HCH	5RB#0	23.14	20.83	38.45	PASS

4.2.1.12 Test Result for LTE-CatM1 Band 12

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 12	QPSK	1.4M	LCH	1RB#0	23.02	20.62	34.77	PASS
CatM1 Band 12	QPSK	1.4M	LCH	5RB#0	22.22	19.82	34.77	PASS
CatM1 Band 12	QPSK	1.4M	LCH	6RB#0	21.14	18.74	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	1RB#0	22.83	20.43	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	5RB#0	21.88	19.48	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	6RB#0	20.77	18.37	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	1RB#0	23.01	20.61	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	5RB#0	22.12	19.72	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	6RB#0	20.89	18.49	34.77	PASS
CatM1 Band 12	16QAM	1.4M	LCH	1RB#0	22.05	19.65	34.77	PASS
CatM1 Band 12	16QAM	1.4M	LCH	5RB#0	21.17	18.77	34.77	PASS
CatM1 Band 12	16QAM	1.4M	MCH	1RB#0	21.83	19.43	34.77	PASS
CatM1 Band 12	16QAM	1.4M	MCH	5RB#0	20.99	18.59	34.77	PASS
CatM1 Band 12	16QAM	1.4M	HCH	1RB#0	21.91	19.51	34.77	PASS
CatM1 Band 12	16QAM	1.4M	HCH	5RB#0	21.11	18.71	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	1RB#0	22.96	20.56	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	5RB#0	21.93	19.53	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	6RB#0	20.81	18.41	34.77	PASS
CatM1 Band 12	QPSK	3M	MCH	1RB#0	22.89	20.49	34.77	PASS
CatM1 Band 12	QPSK	3M	MCH	5RB#0	21.88	19.48	34.77	PASS



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CatM1 Band 12	QPSK	3M	MCH	6RB#0	20.78	18.38	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	1RB#0	22.91	20.51	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	5RB#0	21.87	19.47	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	6RB#0	20.83	18.43	34.77	PASS
CatM1 Band 12	16QAM	3M	LCH	1RB#0	21.78	19.38	34.77	PASS
CatM1 Band 12	16QAM	3M	LCH	5RB#0	20.74	18.34	34.77	PASS
CatM1 Band 12	16QAM	3M	MCH	1RB#0	21.79	19.39	34.77	PASS
CatM1 Band 12	16QAM	3M	MCH	5RB#0	20.78	18.38	34.77	PASS
CatM1 Band 12	16QAM	3M	HCH	1RB#0	21.85	19.45	34.77	PASS
CatM1 Band 12	16QAM	3M	HCH	5RB#0	20.82	18.42	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	1RB#0	23.21	20.81	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	5RB#0	22.09	19.69	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	6RB#0	22.03	19.63	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	1RB#0	23.14	20.74	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	5RB#0	22.01	19.61	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	6RB#0	21.99	19.59	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	1RB#0	23.05	20.65	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	5RB#0	21.97	19.57	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	6RB#0	21.95	19.55	34.77	PASS
CatM1 Band 12	16QAM	5M	LCH	1RB#0	22.83	20.43	34.77	PASS
CatM1 Band 12	16QAM	5M	LCH	5RB#0	21.97	19.57	34.77	PASS
CatM1 Band 12	16QAM	5M	MCH	1RB#0	22.74	20.34	34.77	PASS
CatM1 Band 12	16QAM	5M	MCH	5RB#0	21.82	19.42	34.77	PASS
CatM1 Band 12	16QAM	5M	HCH	1RB#0	22.71	20.31	34.77	PASS
CatM1 Band 12	16QAM	5M	HCH	5RB#0	21.97	19.57	34.77	PASS
CatM1 Band 12	QPSK	10M	LCH	1RB#0	23.09	20.69	34.77	PASS
CatM1 Band 12	QPSK	10M	LCH	5RB#0	23.04	20.64	34.77	PASS
CatM1 Band 12	QPSK	10M	LCH	6RB#0	21.92	19.52	34.77	PASS
CatM1 Band 12	QPSK	10M	MCH	1RB#0	22.96	20.56	34.77	PASS
CatM1 Band 12	QPSK	10M	MCH	5RB#0	23.12	20.72	34.77	PASS
CatM1 Band 12	QPSK	10M	MCH	6RB#0	22.09	19.69	34.77	PASS
CatM1 Band 12	QPSK	10M	HCH	1RB#0	23.12	20.72	34.77	PASS
CatM1 Band 12	QPSK	10M	HCH	5RB#0	23.02	20.62	34.77	PASS
CatM1 Band 12	QPSK	10M	HCH	6RB#0	21.88	19.48	34.77	PASS
CatM1 Band 12	16QAM	10M	LCH	1RB#0	22.86	20.46	34.77	PASS
CatM1 Band 12	16QAM	10M	LCH	5RB#0	22.83	20.43	34.77	PASS
CatM1 Band 12	16QAM	10M	MCH	1RB#0	22.93	20.53	34.77	PASS
CatM1 Band 12	16QAM	10M	MCH	5RB#0	22.91	20.51	34.77	PASS
CatM1 Band 12	16QAM	10M	HCH	1RB#0	22.71	20.31	34.77	PASS
CatM1 Band 12	16QAM	10M	HCH	5RB#0	22.79	20.39	34.77	PASS



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4.2.1.13 Test Result for LTE-CatM1 Band 13

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 13	QPSK	5M	LCH	1RB#0	22.80	20.42	34.77	PASS
CatM1 Band 13	QPSK	5M	LCH	5RB#0	21.40	19.02	34.77	PASS
CatM1 Band 13	QPSK	5M	LCH	6RB#0	21.38	19.00	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	1RB#0	22.90	20.52	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	5RB#0	21.49	19.11	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	6RB#0	21.48	19.10	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	1RB#0	22.91	20.53	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	5RB#0	21.44	19.06	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	6RB#0	21.42	19.04	34.77	PASS
CatM1 Band 13	16QAM	5M	LCH	1RB#0	22.68	20.30	34.77	PASS
CatM1 Band 13	16QAM	5M	LCH	5RB#0	21.46	19.08	34.77	PASS
CatM1 Band 13	16QAM	5M	MCH	1RB#0	22.47	20.09	34.77	PASS
CatM1 Band 13	16QAM	5M	MCH	5RB#0	21.51	19.13	34.77	PASS
CatM1 Band 13	16QAM	5M	HCH	1RB#0	22.51	20.13	34.77	PASS
CatM1 Band 13	16QAM	5M	HCH	5RB#0	21.54	19.16	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	1RB#0	23.12	20.74	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	5RB#0	22.82	20.44	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	6RB#0	21.59	19.21	34.77	PASS
CatM1 Band 13	16QAM	10M	MCH	1RB#0	22.64	20.26	34.77	PASS
CatM1 Band 13	16QAM	10M	MCH	5RB#0	22.79	20.41	34.77	PASS

4.2.1.14 Test Result for LTE-CatM1 Band 26 (814-824)

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	Verdict
CatM1 Band 26	QPSK	1.4M	LCH	1RB#0	22.92	PASS
CatM1 Band 26	QPSK	1.4M	LCH	5RB#0	22.10	PASS
CatM1 Band 26	QPSK	1.4M	LCH	6RB#0	21.13	PASS
CatM1 Band 26	QPSK	1.4M	MCH	1RB#0	22.89	PASS
CatM1 Band 26	QPSK	1.4M	MCH	5RB#0	22.14	PASS
CatM1 Band 26	QPSK	1.4M	MCH	6RB#0	20.96	PASS
CatM1 Band 26	QPSK	1.4M	HCH	1RB#0	22.96	PASS
CatM1 Band 26	QPSK	1.4M	HCH	5RB#0	22.19	PASS
CatM1 Band 26	QPSK	1.4M	HCH	6RB#0	21.17	PASS
CatM1 Band 26	16QAM	1.4M	LCH	1RB#0	22.25	PASS
CatM1 Band 26	16QAM	1.4M	LCH	5RB#0	21.16	PASS
CatM1 Band 26	16QAM	1.4M	MCH	1RB#0	22.13	PASS
CatM1 Band 26	16QAM	1.4M	MCH	5RB#0	21.43	PASS
CatM1 Band 26	16QAM	1.4M	HCH	1RB#0	22.23	PASS
CatM1 Band 26	16QAM	1.4M	HCH	5RB#0	21.29	PASS
CatM1 Band 26	QPSK	3M	LCH	1RB#0	23.15	PASS
CatM1 Band 26	QPSK	3M	LCH	5RB#0	22.21	PASS
CatM1 Band 26	QPSK	3M	LCH	6RB#0	21.24	PASS



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CatM1 Band 26	QPSK	3M	MCH	1RB#0	23.13	PASS
CatM1 Band 26	QPSK	3M	MCH	5RB#0	22.16	PASS
CatM1 Band 26	QPSK	3M	MCH	6RB#0	21.26	PASS
CatM1 Band 26	QPSK	3M	HCH	1RB#0	23.04	PASS
CatM1 Band 26	QPSK	3M	HCH	5RB#0	22.04	PASS
CatM1 Band 26	QPSK	3M	HCH	6RB#0	21.19	PASS
CatM1 Band 26	16QAM	3M	LCH	1RB#0	21.97	PASS
CatM1 Band 26	16QAM	3M	LCH	5RB#0	20.94	PASS
CatM1 Band 26	16QAM	3M	MCH	1RB#0	21.84	PASS
CatM1 Band 26	16QAM	3M	MCH	5RB#0	20.75	PASS
CatM1 Band 26	16QAM	3M	HCH	1RB#0	21.85	PASS
CatM1 Band 26	16QAM	3M	HCH	5RB#0	20.87	PASS
CatM1 Band 26	QPSK	5M	LCH	1RB#0	23.37	PASS
CatM1 Band 26	QPSK	5M	LCH	5RB#0	22.11	PASS
CatM1 Band 26	QPSK	5M	LCH	6RB#0	22.09	PASS
CatM1 Band 26	QPSK	5M	MCH	1RB#0	23.25	PASS
CatM1 Band 26	QPSK	5M	MCH	5RB#0	22.08	PASS
CatM1 Band 26	QPSK	5M	MCH	6RB#0	22.07	PASS
CatM1 Band 26	QPSK	5M	HCH	1RB#0	23.21	PASS
CatM1 Band 26	QPSK	5M	HCH	5RB#0	22.05	PASS
CatM1 Band 26	QPSK	5M	HCH	6RB#0	22.11	PASS
CatM1 Band 26	16QAM	5M	LCH	1RB#0	22.76	PASS
CatM1 Band 26	16QAM	5M	LCH	5RB#0	22.01	PASS
CatM1 Band 26	16QAM	5M	MCH	1RB#0	22.83	PASS
CatM1 Band 26	16QAM	5M	MCH	5RB#0	22.03	PASS
CatM1 Band 26	16QAM	5M	HCH	1RB#0	22.86	PASS
CatM1 Band 26	16QAM	5M	HCH	5RB#0	21.96	PASS
CatM1 Band 26	QPSK	10M	LCH	1RB#0	23.22	PASS
CatM1 Band 26	QPSK	10M	LCH	5RB#0	23.21	PASS
CatM1 Band 26	QPSK	10M	LCH	6RB#0	22.19	PASS
CatM1 Band 26	QPSK	10M	MCH	1RB#0	23.25	PASS
CatM1 Band 26	QPSK	10M	MCH	5RB#0	23.02	PASS
CatM1 Band 26	QPSK	10M	MCH	6RB#0	22.16	PASS
CatM1 Band 26	QPSK	10M	HCH	1RB#0	23.36	PASS
CatM1 Band 26	QPSK	10M	HCH	5RB#0	23.19	PASS
CatM1 Band 26	QPSK	10M	HCH	6RB#0	22.22	PASS
CatM1 Band 26	16QAM	10M	LCH	1RB#0	22.81	PASS
CatM1 Band 26	16QAM	10M	LCH	5RB#0	22.99	PASS
CatM1 Band 26	16QAM	10M	MCH	1RB#0	22.79	PASS
CatM1 Band 26	16QAM	10M	MCH	5RB#0	23.08	PASS
CatM1 Band 26	16QAM	10M	HCH	1RB#0	22.91	PASS
CatM1 Band 26	16QAM	10M	HCH	5RB#0	23.16	PASS



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4.2.1.15 Test Result for LTE-CatM1 Band 26 (824-849)

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 26	QPSK	1.4M	LCH	1RB#0	22.88	20.51	38.45	PASS
CatM1 Band 26	QPSK	1.4M	LCH	5RB#0	22.04	19.67	38.45	PASS
CatM1 Band 26	QPSK	1.4M	LCH	6RB#0	20.95	18.58	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	1RB#0	23.23	20.86	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	5RB#0	22.24	19.87	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	6RB#0	21.13	18.76	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	1RB#0	23.16	20.79	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	5RB#0	22.14	19.77	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	6RB#0	21.07	18.70	38.45	PASS
CatM1 Band 26	16QAM	1.4M	LCH	1RB#0	21.93	19.56	38.45	PASS
CatM1 Band 26	16QAM	1.4M	LCH	5RB#0	20.83	18.46	38.45	PASS
CatM1 Band 26	16QAM	1.4M	MCH	1RB#0	22.30	19.93	38.45	PASS
CatM1 Band 26	16QAM	1.4M	MCH	5RB#0	21.28	18.91	38.45	PASS
CatM1 Band 26	16QAM	1.4M	HCH	1RB#0	22.25	19.88	38.45	PASS
CatM1 Band 26	16QAM	1.4M	HCH	5RB#0	21.09	18.72	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	1RB#0	23.25	20.88	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	5RB#0	22.04	19.67	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	6RB#0	21.07	18.70	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	1RB#0	23.47	21.10	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	5RB#0	22.27	19.90	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	6RB#0	21.15	18.78	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	1RB#0	23.51	21.14	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	5RB#0	22.31	19.94	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	6RB#0	21.11	18.74	38.45	PASS
CatM1 Band 26	16QAM	3M	LCH	1RB#0	22.04	19.67	38.45	PASS
CatM1 Band 26	16QAM	3M	LCH	5RB#0	21.07	18.70	38.45	PASS
CatM1 Band 26	16QAM	3M	MCH	1RB#0	22.20	19.83	38.45	PASS
CatM1 Band 26	16QAM	3M	MCH	5RB#0	21.23	18.86	38.45	PASS
CatM1 Band 26	16QAM	3M	HCH	1RB#0	22.24	19.87	38.45	PASS
CatM1 Band 26	16QAM	3M	HCH	5RB#0	21.30	18.93	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	1RB#0	23.37	21.00	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	5RB#0	22.14	19.77	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	6RB#0	22.07	19.70	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	1RB#0	23.49	21.12	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	5RB#0	22.17	19.80	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	6RB#0	22.24	19.87	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	1RB#0	23.63	21.26	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	5RB#0	22.05	19.68	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	6RB#0	22.05	19.68	38.45	PASS
CatM1 Band 26	16QAM	5M	LCH	1RB#0	22.81	20.44	38.45	PASS
CatM1 Band 26	16QAM	5M	LCH	5RB#0	22.14	19.77	38.45	PASS
CatM1 Band 26	16QAM	5M	MCH	1RB#0	22.89	20.52	38.45	PASS



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CatM1 Band 26	16QAM	5M	MCH	5RB#0	22.19	19.82	38.45	PASS
CatM1 Band 26	16QAM	5M	HCH	1RB#0	23.05	20.68	38.45	PASS
CatM1 Band 26	16QAM	5M	HCH	5RB#0	22.05	19.68	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	1RB#0	23.34	20.97	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	5RB#0	23.02	20.65	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	6RB#0	21.94	19.57	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	1RB#0	23.54	21.17	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	5RB#0	23.24	20.87	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	6RB#0	22.17	19.80	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	1RB#0	23.47	21.10	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	5RB#0	23.13	20.76	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	6RB#0	22.14	19.77	38.45	PASS
CatM1 Band 26	16QAM	10M	LCH	1RB#0	22.75	20.38	38.45	PASS
CatM1 Band 26	16QAM	10M	LCH	5RB#0	23.04	20.67	38.45	PASS
CatM1 Band 26	16QAM	10M	MCH	1RB#0	22.95	20.58	38.45	PASS
CatM1 Band 26	16QAM	10M	MCH	5RB#0	23.17	20.80	38.45	PASS
CatM1 Band 26	16QAM	10M	HCH	1RB#0	22.84	20.47	38.45	PASS
CatM1 Band 26	16QAM	10M	HCH	5RB#0	23.14	20.77	38.45	PASS
CatM1 Band 26	QPSK	15M	LCH	1RB#0	23.36	20.99	38.45	PASS
CatM1 Band 26	QPSK	15M	LCH	5RB#0	23.02	20.65	38.45	PASS
CatM1 Band 26	QPSK	15M	LCH	6RB#0	21.95	19.58	38.45	PASS
CatM1 Band 26	QPSK	15M	MCH	1RB#0	23.56	21.19	38.45	PASS
CatM1 Band 26	QPSK	15M	MCH	5RB#0	23.30	20.93	38.45	PASS
CatM1 Band 26	QPSK	15M	MCH	6RB#0	22.28	19.91	38.45	PASS
CatM1 Band 26	QPSK	15M	HCH	1RB#0	23.59	21.22	38.45	PASS
CatM1 Band 26	QPSK	15M	HCH	5RB#0	23.20	20.83	38.45	PASS
CatM1 Band 26	QPSK	15M	HCH	6RB#0	22.17	19.80	38.45	PASS
CatM1 Band 26	16QAM	15M	LCH	1RB#0	22.78	20.41	38.45	PASS
CatM1 Band 26	16QAM	15M	LCH	5RB#0	23.06	20.69	38.45	PASS
CatM1 Band 26	16QAM	15M	MCH	1RB#0	23.00	20.63	38.45	PASS
CatM1 Band 26	16QAM	15M	MCH	5RB#0	23.20	20.83	38.45	PASS
CatM1 Band 26	16QAM	15M	HCH	1RB#0	22.86	20.49	38.45	PASS
CatM1 Band 26	16QAM	15M	HCH	5RB#0	23.24	20.87	38.45	PASS



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4.3 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01

Below 1GHz test procedure as below:

- 1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.
- 2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
- 5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.
- 6). The output power into the substitution antenna was then measured.
- 7). Steps 5) and 6) were repeated with both antennas polarized.
- 8) Calculate power in dBm by the following formula:

$$ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

Where:

P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g [dBm] - \text{cable loss [dB]}$. The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power [Watts]})$.

Above 1GHz test procedure as below:

- 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber
- 2) Calculate power in dBm by the following formula:

$$EIRP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$EIRP = ERP + 2.15dB$$

Where:

P_g is the generator output power into the substitution antenna.

3. Test the EUT in the lowest channel, the middle channel the Highest channel
4. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
5. Repeat above procedures until all frequencies measured was complete

Remark: Reference test setup 3

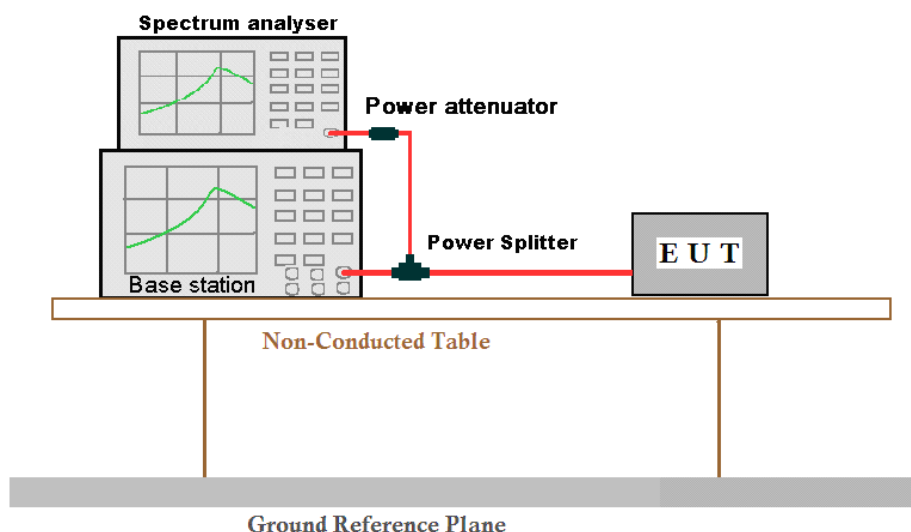


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4.4 Test Setups

4.4.1 Test Setup 1



4.4.2 Test Setup 2

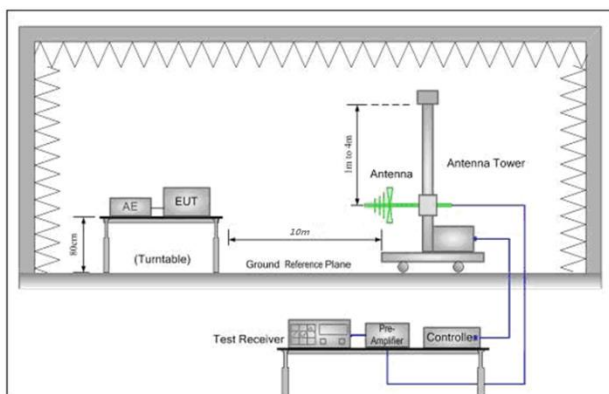


Figure 1. 30MHz to 1GHz

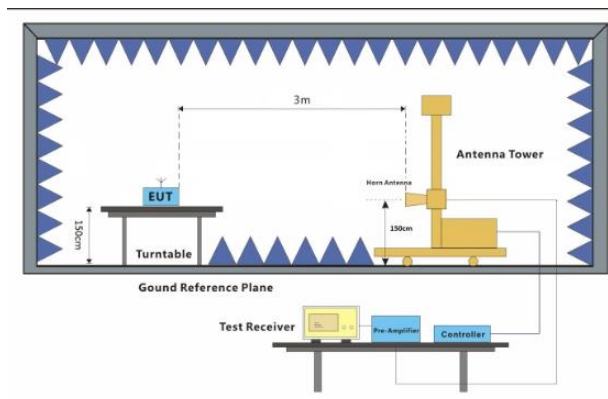
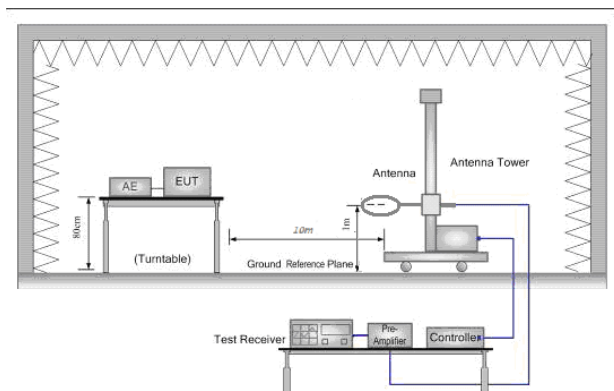


Figure 2. above 1GHz

4.4.3 Test Setup 3



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Figure 1. Below 30MHz

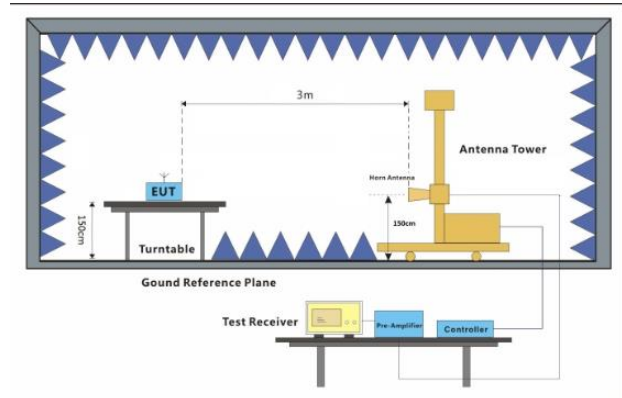
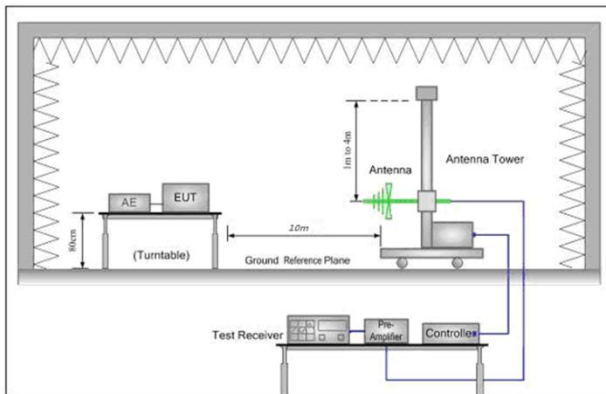
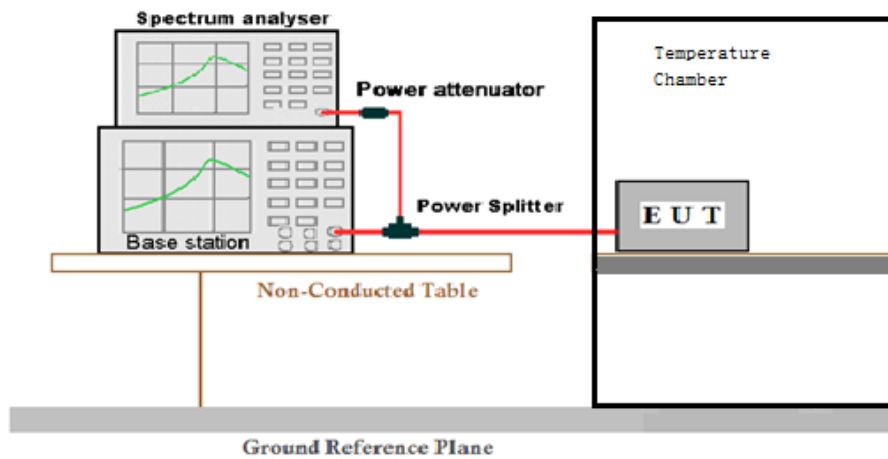


Figure 2. 30MHz to 1GHz

Figure 3. above 1GHz

4.4.4 Test Setup 4



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4.4.5 Test Result

4.4.5.1 Test Band = GSM 850

4.4.5.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
62.155500	-72.55	-13.00	59.55	Vertical
381.528000	-61.54	-13.00	48.54	Vertical
600.020500	-65.27	-13.00	52.27	Vertical
1648.200000	-43.74	-13.00	30.74	Vertical
2480.175000	-46.96	-13.00	33.96	Vertical
4262.100000	-55.13	-13.00	42.13	Vertical
62.155500	-67.41	-13.00	54.41	Horizontal
382.498000	-63.70	-13.00	50.70	Horizontal
600.020500	-65.48	-13.00	52.48	Horizontal
1648.275000	-39.13	-13.00	26.13	Horizontal
2474.025000	-47.71	-13.00	34.71	Horizontal
3519.050000	-56.61	-13.00	43.61	Horizontal

4.4.5.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.416500	-73.10	-13.00	60.10	Vertical
385.408000	-61.85	-13.00	48.85	Vertical
587.507500	-64.56	-13.00	51.56	Vertical
1673.175000	-44.14	-13.00	31.14	Vertical
2509.500000	-47.42	-13.00	34.42	Vertical
3345.800000	-56.48	-13.00	43.48	Vertical
61.185500	-67.46	-13.00	54.46	Horizontal
383.613500	-64.70	-13.00	51.70	Horizontal
599.972000	-64.02	-13.00	51.02	Horizontal
1672.875000	-38.67	-13.00	25.67	Horizontal
2529.825000	-47.28	-13.00	34.28	Horizontal
3719.600000	-55.99	-13.00	42.99	Horizontal

4.4.5.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
62.204000	-71.91	-13.00	58.91	Vertical
382.692000	-62.35	-13.00	49.35	Vertical
600.020500	-64.70	-13.00	51.70	Vertical
1697.700000	-46.98	-13.00	33.98	Vertical
3395.150000	-53.49	-13.00	40.49	Vertical
6472.350000	-53.84	-13.00	40.84	Vertical
62.155500	-66.56	-13.00	53.56	Horizontal
382.401000	-59.79	-13.00	46.79	Horizontal
587.507500	-66.30	-13.00	53.30	Horizontal
1697.700000	-38.55	-13.00	25.55	Horizontal
2529.525000	-48.08	-13.00	35.08	Horizontal
3507.150000	-57.14	-13.00	44.14	Horizontal



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4.4.5.2 Test Band = GSM 1900

4.4.5.2.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
61.913000	-71.12	-13.00	58.12	Vertical
381.091500	-59.12	-13.00	46.12	Vertical
587.507500	-65.14	-13.00	52.14	Vertical
3700.350000	-38.58	-13.00	25.58	Vertical
5550.450000	-51.43	-13.00	38.43	Vertical
7400.900000	-51.75	-13.00	38.75	Vertical
62.107000	-66.80	-13.00	53.80	Horizontal
379.297000	-63.80	-13.00	50.80	Horizontal
599.972000	-64.44	-13.00	51.44	Horizontal
3700.000000	-40.79	-13.00	27.79	Horizontal
5550.450000	-49.51	-13.00	36.51	Horizontal
7400.900000	-50.68	-13.00	37.68	Horizontal

4.4.5.2.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
62.398000	-71.64	-13.00	58.64	Vertical
382.013000	-58.88	-13.00	45.88	Vertical
600.020500	-63.29	-13.00	50.29	Vertical
3759.850000	-40.32	-13.00	27.32	Vertical
5639.700000	-50.13	-13.00	37.13	Vertical
10632.000000	-49.84	-13.00	36.84	Vertical
61.961500	-66.66	-13.00	53.66	Horizontal
381.673500	-63.22	-13.00	50.22	Horizontal
600.020500	-64.20	-13.00	51.20	Horizontal
3760.200000	-40.41	-13.00	27.41	Horizontal
5640.050000	-46.14	-13.00	33.14	Horizontal
7519.550000	-52.54	-13.00	39.54	Horizontal

4.4.5.2.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.610500	-71.52	-13.00	58.52	Vertical
380.752000	-59.90	-13.00	46.90	Vertical
587.507500	-65.78	-13.00	52.78	Vertical
3819.350000	-36.64	-13.00	23.64	Vertical
5729.300000	-44.06	-13.00	31.06	Vertical
7966.500000	-51.36	-13.00	38.36	Vertical
61.864500	-66.32	-13.00	53.32	Horizontal
382.498000	-62.89	-13.00	49.89	Horizontal
587.507500	-64.38	-13.00	51.38	Horizontal
3819.350000	-40.71	-13.00	27.71	Horizontal
5729.300000	-48.54	-13.00	35.54	Horizontal
7235.000000	-52.42	-13.00	39.42	Horizontal



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4.4.5.3 Test Band = LTE-NB1 Band 2

4.4.5.3.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.3.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.150000	-79.39	-13.00	66.39	Vertical
376.250000	-62.00	-13.00	49.00	Vertical
3704.925000	-47.56	-13.00	34.56	Vertical
5557.425000	-48.93	-13.00	35.93	Vertical
7409.600000	-57.30	-13.00	44.30	Vertical
9850.350000	-61.95	-13.00	48.95	Vertical
63.100000	-75.54	-13.00	62.54	Horizontal
377.600000	-68.81	-13.00	55.81	Horizontal
3704.600000	-45.83	-13.00	32.83	Horizontal
5557.100000	-51.84	-13.00	38.84	Horizontal
7410.250000	-59.66	-13.00	46.66	Horizontal
9273.475000	-61.58	-13.00	48.58	Horizontal

4.4.5.3.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.950000	-79.67	-13.00	66.67	Vertical
376.100000	-62.81	-13.00	49.81	Vertical
3759.525000	-46.40	-13.00	33.40	Vertical
5639.975000	-55.98	-13.00	42.98	Vertical
7519.450000	-59.29	-13.00	46.29	Vertical
10002.125000	-62.00	-13.00	49.00	Vertical
56.100000	-75.62	-13.00	62.62	Horizontal
376.550000	-68.98	-13.00	55.98	Horizontal
3759.525000	-43.41	-13.00	30.41	Horizontal
5639.650000	-45.80	-13.00	32.80	Horizontal
7519.775000	-59.00	-13.00	46.00	Horizontal
10667.725000	-60.82	-13.00	47.82	Horizontal

4.4.5.3.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.000000	-79.69	-13.00	66.69	Vertical
374.600000	-63.07	-13.00	50.07	Vertical
3814.775000	-43.86	-13.00	30.86	Vertical
5722.200000	-47.76	-13.00	34.76	Vertical
7629.625000	-55.12	-13.00	42.12	Vertical
10621.575000	-61.21	-13.00	48.21	Vertical
62.650000	-75.43	-13.00	62.43	Horizontal
375.900000	-67.82	-13.00	54.82	Horizontal
3815.100000	-41.46	-13.00	28.46	Horizontal
5722.200000	-57.69	-13.00	44.69	Horizontal
7630.275000	-55.90	-13.00	42.90	Horizontal
10636.200000	-61.22	-13.00	48.22	Horizontal



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4.4.5.4 Test Band = LTE-NB1 Band 5

4.4.5.4.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.4.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.373333	-80.04	-13.00	67.04	Vertical
376.406667	-64.71	-13.00	51.71	Vertical
661.200000	-74.65	-13.00	61.65	Vertical
1653.000000	-62.39	-13.00	49.39	Vertical
2479.500000	-53.76	-13.00	40.76	Vertical
4221.675000	-66.24	-13.00	53.24	Vertical
62.200000	-75.50	-13.00	62.50	Horizontal
376.873333	-71.29	-13.00	58.29	Horizontal
680.450000	-71.09	-13.00	58.09	Horizontal
1653.000000	-59.72	-13.00	46.72	Horizontal
2479.500000	-54.93	-13.00	41.93	Horizontal
4426.912500	-65.82	-13.00	52.82	Horizontal

4.4.5.4.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.206667	-79.85	-13.00	66.85	Vertical
374.680000	-65.12	-13.00	52.12	Vertical
1673.000000	-61.17	-13.00	48.17	Vertical
2509.000000	-50.41	-13.00	37.41	Vertical
3221.325000	-67.48	-13.00	54.48	Vertical
6058.575000	-64.19	-13.00	51.19	Vertical
62.386667	-75.78	-13.00	62.78	Horizontal
378.740000	-70.38	-13.00	57.38	Horizontal
669.220833	-59.20	-13.00	46.20	Horizontal
1673.000000	-58.61	-13.00	45.61	Horizontal
2509.000000	-52.11	-13.00	39.11	Horizontal
4345.012500	-65.43	-13.00	52.43	Horizontal

4.4.5.4.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.580000	-79.24	-13.00	66.24	Vertical
376.920000	-64.50	-13.00	51.50	Vertical
1693.000000	-57.69	-13.00	44.69	Vertical
2539.500000	-47.85	-13.00	34.85	Vertical
3844.350000	-67.09	-13.00	54.09	Vertical
7243.200000	-63.11	-13.00	50.11	Vertical
62.993333	-75.62	-13.00	62.62	Horizontal
376.593333	-71.17	-13.00	58.17	Horizontal
696.400000	-66.96	-13.00	53.96	Horizontal
1693.000000	-57.28	-13.00	44.28	Horizontal
2539.000000	-52.59	-13.00	39.59	Horizontal
6031.762500	-64.24	-13.00	51.24	Horizontal



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4.4.5.5 Test Band = LTE-NB1 Band 12

4.4.5.5.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.5.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.206667	-79.74	-13.00	66.74	Vertical
375.146667	-64.65	-13.00	51.65	Vertical
1403.000000	-56.88	-13.00	43.88	Vertical
2105.000000	-52.28	-13.00	39.28	Vertical
3573.300000	-67.92	-13.00	54.92	Vertical
6019.087500	-64.38	-13.00	51.38	Vertical
62.480000	-75.63	-13.00	62.63	Horizontal
373.746667	-72.17	-13.00	59.17	Horizontal
1403.500000	-57.18	-13.00	44.18	Horizontal
2105.000000	-52.80	-13.00	39.80	Horizontal
3480.675000	-67.46	-13.00	54.46	Horizontal
6053.700000	-64.26	-13.00	51.26	Horizontal

4.4.5.5.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.000000	-79.99	-13.00	66.99	Vertical
375.753333	-63.39	-13.00	50.39	Vertical
1415.000000	-57.00	-13.00	44.00	Vertical
2122.500000	-55.03	-13.00	42.03	Vertical
4310.400000	-65.87	-13.00	52.87	Vertical
7866.225000	-62.84	-13.00	49.84	Vertical
62.620000	-76.33	-13.00	63.33	Horizontal
375.940000	-70.93	-13.00	57.93	Horizontal
1415.000000	-55.56	-13.00	42.56	Horizontal
2123.000000	-50.87	-13.00	37.87	Horizontal
3563.062500	-67.46	-13.00	54.46	Horizontal
7240.762500	-63.19	-13.00	50.19	Horizontal

4.4.5.5.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.766667	-79.71	-13.00	66.71	Vertical
378.880000	-64.97	-13.00	51.97	Vertical
1426.500000	-59.58	-13.00	46.58	Vertical
2141.000000	-55.73	-13.00	42.73	Vertical
4014.975000	-67.03	-13.00	54.03	Vertical
6038.100000	-64.23	-13.00	51.23	Vertical
63.600000	-75.51	-13.00	62.51	Horizontal
377.293333	-71.16	-13.00	58.16	Horizontal
1427.000000	-55.54	-13.00	42.54	Horizontal
2141.000000	-58.19	-13.00	45.19	Horizontal
3592.312500	-66.89	-13.00	53.89	Horizontal
6175.087500	-64.62	-13.00	51.62	Horizontal



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4.4.5.6 Test Band = LTE-NB1 Band 13

4.4.5.6.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.6.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.720000	-79.87	-13.00	66.87	Vertical
374.400000	-65.82	-13.00	52.82	Vertical
1584.000000	-65.50	-40.00	25.50	Vertical
2338.500000	-53.88	-13.00	40.88	Vertical
3117.975000	-63.85	-13.00	50.85	Vertical
4420.087500	-65.87	-13.00	52.87	Vertical
63.413333	-76.45	-13.00	63.45	Horizontal
376.313333	-72.34	-13.00	59.34	Horizontal
1559.000000	-64.68	-40.00	24.68	Horizontal
2338.000000	-54.57	-13.00	41.57	Horizontal
3117.487500	-63.51	-13.00	50.51	Horizontal
4647.262500	-66.00	-13.00	53.00	Horizontal

4.4.5.6.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.626667	-80.07	-13.00	67.07	Vertical
373.653333	-64.74	-13.00	51.74	Vertical
1580.500000	-65.81	-40.00	25.81	Vertical
2346.000000	-53.93	-13.00	40.93	Vertical
3127.237500	-64.98	-13.00	51.98	Vertical
5863.087500	-65.44	-13.00	52.44	Vertical
62.806667	-74.84	-13.00	61.84	Horizontal
373.886667	-72.00	-13.00	59.00	Horizontal
1564.000000	-62.51	-40.00	22.51	Horizontal
2346.000000	-52.34	-13.00	39.34	Horizontal
3127.237500	-64.97	-13.00	51.97	Horizontal
6256.987500	-64.52	-13.00	51.52	Horizontal

4.4.5.6.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.280000	-80.13	-13.00	67.13	Vertical
375.053333	-66.50	-13.00	53.50	Vertical
1601.500000	-65.43	-40.00	25.43	Vertical
2353.000000	-55.25	-13.00	42.25	Vertical
3137.962500	-65.45	-13.00	52.45	Vertical
4824.225000	-65.66	-13.00	52.66	Vertical
62.666667	-75.68	-13.00	62.68	Horizontal
374.493333	-72.46	-13.00	59.46	Horizontal
1569.000000	-65.02	-40.00	25.02	Horizontal
2353.000000	-54.94	-13.00	41.94	Horizontal
3137.962500	-63.78	-13.00	50.78	Horizontal
4291.387500	-65.74	-13.00	52.74	Horizontal



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4.4.5.7 Test Band = LTE-NB1 Band 26 (814-824)

4.4.5.7.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.7.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.320000	-79.97	-13.00	66.97	Vertical
374.353333	-65.84	-13.00	52.84	Vertical
1633.000000	-61.94	-13.00	48.94	Vertical
2449.000000	-56.32	-13.00	43.32	Vertical
3826.312500	-66.98	-13.00	53.98	Vertical
7089.637500	-63.44	-13.00	50.44	Vertical
56.926667	-75.68	-13.00	62.68	Horizontal
374.913333	-71.91	-13.00	58.91	Horizontal
1633.000000	-60.01	-13.00	47.01	Horizontal
2449.500000	-57.99	-13.00	44.99	Horizontal
4197.787500	-66.18	-13.00	53.18	Horizontal
7099.387500	-63.41	-13.00	50.41	Horizontal

4.4.5.7.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.906667	-79.21	-13.00	66.21	Vertical
375.706667	-64.84	-13.00	51.84	Vertical
1638.000000	-61.91	-13.00	48.91	Vertical
2456.500000	-55.44	-13.00	42.44	Vertical
3813.150000	-67.43	-13.00	54.43	Vertical
6753.262500	-64.24	-13.00	51.24	Vertical
62.340000	-75.19	-13.00	62.19	Horizontal
375.566667	-71.53	-13.00	58.53	Horizontal
655.195833	-66.75	-13.00	53.75	Horizontal
1638.000000	-59.23	-13.00	46.23	Horizontal
2457.000000	-56.04	-13.00	43.04	Horizontal
5055.300000	-65.05	-13.00	52.05	Horizontal

4.4.5.7.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.140000	-80.57	-13.00	67.57	Vertical
376.733333	-64.69	-13.00	51.69	Vertical
1642.500000	-62.89	-13.00	49.89	Vertical
2464.500000	-54.05	-13.00	41.05	Vertical
3508.950000	-68.16	-13.00	55.16	Vertical
8006.625000	-62.61	-13.00	49.61	Vertical
62.013333	-75.91	-13.00	62.91	Horizontal
373.886667	-72.14	-13.00	59.14	Horizontal
1643.000000	-59.87	-13.00	46.87	Horizontal
2464.000000	-56.49	-13.00	43.49	Horizontal
3797.062500	-67.11	-13.00	54.11	Horizontal
6158.025000	-64.20	-13.00	51.20	Horizontal



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4.4.5.8 Test Band = LTE-NB1 Band 26 (824-849)

4.4.5.8.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

4.4.5.8.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.973333	-79.36	-13.00	66.36	Vertical
377.013333	-64.84	-13.00	51.84	Vertical
1653.000000	-62.00	-13.00	49.00	Vertical
2479.000000	-54.24	-13.00	41.24	Vertical
3476.287500	-68.30	-13.00	55.30	Vertical
7247.100000	-63.35	-13.00	50.35	Vertical
55.200000	-74.92	-13.00	61.92	Horizontal
373.653333	-72.23	-13.00	59.23	Horizontal
661.200000	-64.38	-13.00	51.38	Horizontal
1653.000000	-57.84	-13.00	44.84	Horizontal
2479.000000	-56.19	-13.00	43.19	Horizontal
3306.150000	-66.59	-13.00	53.59	Horizontal

4.4.5.8.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.926667	-79.66	-13.00	66.66	Vertical
375.613333	-65.43	-13.00	52.43	Vertical
1672.500000	-61.75	-13.00	48.75	Vertical
2509.000000	-54.96	-13.00	41.96	Vertical
3451.912500	-68.24	-13.00	55.24	Vertical
6052.237500	-64.11	-13.00	51.11	Vertical
63.553333	-76.10	-13.00	63.10	Horizontal
377.386667	-71.97	-13.00	58.97	Horizontal
669.220833	-61.04	-13.00	48.04	Horizontal
1673.000000	-55.85	-13.00	42.85	Horizontal
2509.500000	-54.88	-13.00	41.88	Horizontal
4313.812500	-65.05	-13.00	52.05	Horizontal

4.4.5.8.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.720000	-80.18	-13.00	67.18	Vertical
377.060000	-65.02	-13.00	52.02	Vertical
1693.000000	-60.82	-13.00	47.82	Vertical
2539.000000	-54.04	-13.00	41.04	Vertical
3356.850000	-68.25	-13.00	55.25	Vertical
6078.562500	-64.25	-13.00	51.25	Vertical
55.760000	-76.01	-13.00	63.01	Horizontal
375.846667	-71.13	-13.00	58.13	Horizontal
1693.000000	-54.77	-13.00	41.77	Horizontal
2539.000000	-56.24	-13.00	43.24	Horizontal
3269.587500	-67.86	-13.00	54.86	Horizontal
6049.312500	-64.13	-13.00	51.13	Horizontal



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4.4.5.9 Test Band = LTE-CatM1 Band 2

4.4.5.9.1 Test Mode =LTE-CatM1/QPSK

4.4.5.9.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.650000	-79.59	-13.00	66.59	Vertical
382.850000	-64.98	-13.00	51.98	Vertical
939.133333	-75.23	-13.00	62.23	Vertical
3736.125000	-46.78	-13.00	33.78	Vertical
5554.500000	-56.45	-13.00	43.45	Vertical
7472.975000	-62.55	-13.00	49.55	Vertical
62.150000	-75.52	-13.00	62.52	Horizontal
385.500000	-66.99	-13.00	53.99	Horizontal
936.291667	-75.26	-13.00	62.26	Horizontal
3703.625000	-47.28	-13.00	34.28	Horizontal
5554.500000	-53.26	-13.00	40.26	Horizontal
7405.700000	-60.94	-13.00	47.94	Horizontal

4.4.5.9.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.650000	-79.28	-13.00	66.28	Vertical
382.700000	-65.02	-13.00	52.02	Vertical
926.345833	-75.27	-13.00	62.27	Vertical
3742.950000	-45.32	-13.00	32.32	Vertical
5615.275000	-51.51	-13.00	38.51	Vertical
7485.975000	-61.13	-13.00	48.13	Vertical
62.500000	-75.47	-13.00	62.47	Horizontal
384.250000	-67.32	-13.00	54.32	Horizontal
956.045833	-74.60	-13.00	61.60	Horizontal
3776.100000	-44.67	-13.00	31.67	Horizontal
5664.675000	-55.07	-13.00	42.07	Horizontal
10648.225000	-60.97	-13.00	47.97	Horizontal

4.4.5.9.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.100000	-79.47	-13.00	66.47	Vertical
381.150000	-64.65	-13.00	51.65	Vertical
948.345833	-75.21	-13.00	62.21	Vertical
3736.125000	-46.01	-13.00	33.01	Vertical
5554.175000	-49.98	-13.00	36.98	Vertical
7406.025000	-57.28	-13.00	44.28	Vertical
62.400000	-75.83	-13.00	62.83	Horizontal
384.100000	-66.30	-13.00	53.30	Horizontal
944.816667	-75.30	-13.00	62.30	Horizontal
3702.975000	-45.63	-13.00	32.63	Horizontal
5554.500000	-53.20	-13.00	40.20	Horizontal
7406.025000	-62.37	-13.00	49.37	Horizontal



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4.4.5.10 Test Band = LTE-CatM1 Band 4

4.4.5.10.1 Test Mode = LTE-CatM1/QPSK

4.4.5.10.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.650000	-78.75	-13.00	65.75	Vertical
380.500000	-65.15	-13.00	52.15	Vertical
944.679167	-75.26	-13.00	62.26	Vertical
3422.825000	-46.29	-13.00	33.29	Vertical
5135.575000	-63.19	-13.00	50.19	Vertical
6846.050000	-62.62	-13.00	49.62	Vertical
62.800000	-75.81	-13.00	62.81	Horizontal
381.900000	-69.22	-13.00	56.22	Horizontal
938.720833	-74.99	-13.00	61.99	Horizontal
3456.300000	-48.59	-13.00	35.59	Horizontal
5134.275000	-60.44	-13.00	47.44	Horizontal
7139.200000	-62.05	-13.00	49.05	Horizontal

4.4.5.10.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.550000	-79.93	-13.00	66.93	Vertical
380.900000	-63.90	-13.00	50.90	Vertical
932.808333	-74.90	-13.00	61.90	Vertical
3447.850000	-48.31	-13.00	35.31	Vertical
5171.325000	-63.82	-13.00	50.82	Vertical
6897.400000	-62.12	-13.00	49.12	Vertical
63.450000	-75.03	-13.00	62.03	Horizontal
380.500000	-69.24	-13.00	56.24	Horizontal
960.079167	-74.67	-13.00	61.67	Horizontal
3448.500000	-47.40	-13.00	34.40	Horizontal
5171.975000	-61.77	-13.00	48.77	Horizontal
6895.450000	-62.31	-13.00	49.31	Horizontal

4.4.5.10.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.850000	-79.30	-13.00	66.30	Vertical
379.150000	-64.32	-13.00	51.32	Vertical
948.208333	-74.93	-13.00	61.93	Vertical
3473.525000	-46.91	-13.00	33.91	Vertical
5052.050000	-64.55	-13.00	51.55	Vertical
6945.500000	-60.82	-13.00	47.82	Vertical
62.850000	-75.51	-13.00	62.51	Horizontal
383.650000	-69.81	-13.00	56.81	Horizontal
947.383333	-74.85	-13.00	61.85	Horizontal
3472.550000	-46.44	-13.00	33.44	Horizontal
5251.925000	-64.86	-13.00	51.86	Horizontal
6945.825000	-60.35	-13.00	47.35	Horizontal



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4.4.5.11 Test Band = LTE-CatM1 Band 5

4.4.5.11.1 Test Mode = LTE-CatM1/QPSK

4.4.5.11.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.673333	-79.72	-13.00	66.72	Vertical
124.966667	-82.91	-13.00	69.91	Vertical
380.326667	-66.38	-13.00	53.38	Vertical
1649.500000	-63.50	-13.00	50.50	Vertical
2474.000000	-54.92	-13.00	41.92	Vertical
4136.850000	-65.90	-13.00	52.90	Vertical
62.666667	-75.55	-13.00	62.55	Horizontal
382.800000	-70.17	-13.00	57.17	Horizontal
660.145833	-62.36	-13.00	49.36	Horizontal
1666.000000	-60.07	-13.00	47.07	Horizontal
2499.000000	-56.73	-13.00	43.73	Horizontal
4088.100000	-65.90	-13.00	52.90	Horizontal

4.4.5.11.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.300000	-79.32	-13.00	66.32	Vertical
124.966667	-83.48	-13.00	70.48	Vertical
382.800000	-65.25	-13.00	52.25	Vertical
1664.500000	-61.90	-13.00	48.90	Vertical
2496.500000	-54.03	-13.00	41.03	Vertical
4294.312500	-65.31	-13.00	52.31	Vertical
63.273333	-75.58	-13.00	62.58	Horizontal
385.600000	-70.81	-13.00	57.81	Horizontal
666.150000	-61.75	-13.00	48.75	Horizontal
1664.500000	-57.31	-13.00	44.31	Horizontal
2496.500000	-56.87	-13.00	43.87	Horizontal
4302.600000	-64.73	-13.00	51.73	Horizontal

4.4.5.11.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.880000	-79.16	-13.00	66.16	Vertical
384.060000	-65.77	-13.00	52.77	Vertical
672.154167	-71.78	-13.00	58.78	Vertical
1679.500000	-61.62	-13.00	48.62	Vertical
2544.000000	-54.49	-13.00	41.49	Vertical
4303.087500	-65.51	-13.00	52.51	Vertical
62.106667	-75.14	-13.00	62.14	Horizontal
381.773333	-70.53	-13.00	57.53	Horizontal
672.154167	-63.06	-13.00	50.06	Horizontal
1696.000000	-55.24	-13.00	42.24	Horizontal
2410.500000	-54.61	-13.00	41.61	Horizontal
3358.800000	-65.11	-13.00	52.11	Horizontal



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4.4.5.12 Test Band = LTE-CatM1 Band 12

4.4.5.12.1 Test Mode = LTE-CatM1/QPSK

4.4.5.12.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.206667	-79.94	-13.00	66.94	Vertical
124.966667	-82.24	-13.00	69.24	Vertical
384.853333	-66.53	-13.00	53.53	Vertical
1399.500000	-57.98	-13.00	44.98	Vertical
2099.500000	-57.30	-13.00	44.30	Vertical
4027.162500	-66.30	-13.00	53.30	Vertical
62.386667	-75.29	-13.00	62.29	Horizontal
383.220000	-71.59	-13.00	58.59	Horizontal
933.633333	-66.48	-13.00	53.48	Horizontal
1399.500000	-54.72	-13.00	41.72	Horizontal
2100.000000	-54.63	-13.00	41.63	Horizontal
5418.975000	-64.66	-13.00	51.66	Horizontal

4.4.5.12.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.833333	-79.57	-13.00	66.57	Vertical
124.966667	-84.33	-13.00	71.33	Vertical
381.773333	-65.70	-13.00	52.70	Vertical
1406.500000	-57.24	-13.00	44.24	Vertical
2110.000000	-56.48	-13.00	43.48	Vertical
4033.500000	-66.28	-13.00	53.28	Vertical
56.180000	-74.28	-13.00	61.28	Horizontal
382.473333	-70.64	-13.00	57.64	Horizontal
938.308333	-66.37	-13.00	53.37	Horizontal
1406.500000	-55.64	-13.00	42.64	Horizontal
2135.000000	-54.09	-13.00	41.09	Horizontal
3508.462500	-67.12	-13.00	54.12	Horizontal

4.4.5.12.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.020000	-79.55	-13.00	66.55	Vertical
124.966667	-83.17	-13.00	70.17	Vertical
382.800000	-65.66	-13.00	52.66	Vertical
1413.000000	-58.38	-13.00	45.38	Vertical
2120.500000	-55.84	-13.00	42.84	Vertical
4112.475000	-65.91	-13.00	52.91	Vertical
62.200000	-75.66	-13.00	62.66	Horizontal
384.106667	-72.28	-13.00	59.28	Horizontal
594.512500	-76.91	-13.00	63.91	Horizontal
1413.500000	-56.34	-13.00	43.34	Horizontal
2120.500000	-52.19	-13.00	39.19	Horizontal
4385.475000	-65.29	-13.00	52.29	Horizontal



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4.4.5.13 Test Band = LTE-CatM1 Band 13

4.4.5.13.1 Test Mode =LTE-CatM1/QPSK

4.4.5.13.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.506667	-79.96	-13.00	66.96	Vertical
380.280000	-66.79	-13.00	53.79	Vertical
1555.500000	-64.13	-13.00	51.13	Vertical
1577.500000	-65.57	-40.00	25.57	Vertical
2333.000000	-50.15	-13.00	37.15	Vertical
3110.662500	-57.16	-13.00	44.16	Vertical
62.526667	-75.94	-13.00	62.94	Horizontal
380.653333	-72.11	-13.00	59.11	Horizontal
1556.000000	-60.17	-13.00	47.17	Horizontal
1572.000000	-62.61	-40.00	22.61	Horizontal
2333.000000	-49.63	-13.00	36.63	Horizontal
3144.300000	-56.82	-13.00	43.82	Horizontal

4.4.5.14 Test Band = LTE-CatM1 Band 26 (814-824)

4.4.5.14.1 Test Mode =LTE-CatM1/QPSK

4.4.5.14.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.140000	-80.05	-13.00	67.05	Vertical
125.013333	-82.94	-13.00	69.94	Vertical
382.893333	-66.16	-13.00	53.16	Vertical
1629.500000	-64.31	-13.00	51.31	Vertical
2444.000000	-52.91	-13.00	39.91	Vertical
4345.500000	-65.08	-13.00	52.08	Vertical
56.646667	-74.97	-13.00	61.97	Horizontal
380.746667	-71.88	-13.00	58.88	Horizontal
652.125000	-68.81	-13.00	55.81	Horizontal
1646.500000	-61.96	-13.00	48.96	Horizontal
2445.000000	-56.90	-13.00	43.90	Horizontal
4302.600000	-64.96	-13.00	51.96	Horizontal



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4.4.5.15 Test Band = LTE-CatM1 Band 26 (824-849)

4.4.5.15.1 Test Mode = LTE-CatM1/QPSK

4.4.5.15.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.000000	-79.99	-13.00	66.99	Vertical
380.186667	-67.40	-13.00	54.40	Vertical
660.375000	-71.86	-13.00	58.86	Vertical
1650.000000	-63.36	-13.00	50.36	Vertical
2474.500000	-57.21	-13.00	44.21	Vertical
4360.612500	-65.30	-13.00	52.30	Vertical
62.526667	-75.95	-13.00	62.95	Horizontal
381.960000	-74.36	-13.00	61.36	Horizontal
679.579167	-67.57	-13.00	54.57	Horizontal
1675.500000	-57.53	-13.00	44.53	Horizontal
2513.000000	-55.38	-13.00	42.38	Horizontal
4193.887500	-65.63	-13.00	52.63	Horizontal

4.4.5.15.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
65.046667	-78.48	-13.00	65.48	Vertical
380.700000	-68.62	-13.00	55.62	Vertical
664.362500	-72.96	-13.00	59.96	Vertical
1685.000000	-63.06	-13.00	50.06	Vertical
2527.500000	-55.16	-13.00	42.16	Vertical
4237.275000	-65.64	-13.00	52.64	Vertical
62.433333	-75.96	-13.00	62.96	Horizontal
380.793333	-72.93	-13.00	59.93	Horizontal
664.362500	-58.35	-13.00	45.35	Horizontal
1685.000000	-56.55	-13.00	43.55	Horizontal
2490.000000	-56.79	-13.00	43.79	Horizontal
3320.287500	-66.44	-13.00	53.44	Horizontal

4.4.5.15.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.066667	-79.16	-13.00	66.16	Vertical
376.546667	-64.33	-13.00	51.33	Vertical
664.362500	-69.79	-13.00	56.79	Vertical
1660.000000	-63.57	-13.00	50.57	Vertical
2490.000000	-54.00	-13.00	41.00	Vertical
4244.100000	-65.43	-13.00	52.43	Vertical
61.873333	-75.70	-13.00	62.70	Horizontal
377.153333	-68.64	-13.00	55.64	Horizontal
664.362500	-58.78	-13.00	45.78	Horizontal
1660.000000	-57.81	-13.00	44.81	Horizontal
2491.000000	-56.69	-13.00	43.69	Horizontal
3319.800000	-67.03	-13.00	54.03	Horizontal

NOTE:

- 1) The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) only the worst case data presented in this report.



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4.5 Test Conditions

Test Case		Test Conditions	
Transmit Output Power Data	Average Power, Total	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; NB1/TM1; NB1/TM2; CatM1/TM1; CatM1/TM2
Field Strength of Spurious Radiation		Test Environment	Ambient Climate & Rated Voltage
		Test Setup	Test Setup 2
		Test Mode	GSM/TM1; GSM/TM2; NB1/TM1; NB1/TM2; CatM1/TM1; CatM1/TM2 Remark: If applicable, the EUT conf. that has maximum power density (based on the equivalent power level) is selected.
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)



5 Main Test Instruments

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018/3/13	2021/3/12
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2019/3/2	2020/3/1
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017/6/27	2020/6/26
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018/4/13	2021/4/12
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017/10/17	2020/10/16
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2019/7/14	2020/7/14
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2019/7/14	2020/7/14
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	EMC2063	2019/9/20	2020/9/19
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2019/3/2	2020/3/1
Band filter	N/A	N/A	N/A	N/A	N/A
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019/6/12	2020/6/11
Wideband Radio Communication Tester	Anristu	MT8821C	6201462742	2019/4/3	2020/4/3
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	W005-02	2020/1/13	2021/1/2
RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
Dual Output Mobile Communication DC Source	Agilent Technologies Inc	66311B	W009-09	2019/10/22	2020/10/21
Signal Analyzer	Rohde & Schwarz	FSV	W005-02	2019/3/2	2020/3/1
Coaxial Cable	SGS	N/A	SEM031-01	2019/6/12	2020/6/11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019/10/22	2020/10/21
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	HTC-1	W006-17	2019/10/22	2020/10/21
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2019/10/22	2020/10/21
Wideband Radio Communication Tester	Anristu	MT8821C	6201462742	2019/3/2	2020/3/1
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	W005-02	2019/10/22	2020/10/21



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Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018/3/13	2021/3/12
Wideband Radio Communication Tester	Anristu	MT8821C	6201462742	2019/4/3	2020/4/3
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	W005-02	2020/1/3	2021/1/2
EXA Signal Analyzer (10Hz-26.5GHz)	Agilent Technologies Inc	N9010A	SEM004-09	2019/3/13	2020/3/12
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2019/3/2	2020/3/1
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017/6/27	2020/6/26
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018/4/13	2021/4/12
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017/10/17	2020/10/16
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2019/7/25	2020/7/24
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019/7/25	2020/7/24
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2019/3/2	2020/3/1
Band filter	N/A	N/A	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019/6/12	2020/6/11
Tunable Notch Filter WRCD1700/2000-0.2/40-10EEK	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
Tunable Notch Filter WRCD800/960-0.2/40-10EEK	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
HighPass Filter WHK1.2/15G-10SS	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
HighPass Filter WHKX10-2700-3000-18000-40SS	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
HighPass Filter WHKX7.0/26.5G-6SS	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
Band Reject Filter WRCG 824/849-814/859-40/8SS	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
Band Reject Filter WRCG 1850/1910-1835/1925-40/8SS	WAINRIGHT Instruments GMBH	N/A	N/A	N/A	N/A
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A

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:

Test Item	Extended Uncertainty	Data
Transmit Output Power Data	Power [dBm]	$U = \pm 0.37 \text{ dB}$
Field Strength of Spurious Radiation	ERP[dBm]/EIRP [dBm]	For 3 m Chamber: $U = \pm 4.5 \text{ dB}$ (30 MHz to 1GHz) $U = \pm 3.3 \text{ dB}$ (above 1 GHz) For 10 m Chamber: $U = \pm 4.5 \text{ dB}$ (30 MHz to 1GHz) $U = \pm 3.2 \text{ dB}$ (above 1 GHz)

The End

