

FCC TEST REPORT

Product Name: Mobile Phone
Trade Mark: BLU
Model No.: G50 MEGA 2022
Add. Model No.: N/A
Report Number: 220222014RFM-1
Test Standards: FCC 47 CFR Part 22 Subpart H
FCC 47 CFR Part 24 Subpart E
FCC 47 CFR Part 27 Subpart L
FCC ID: YHLBLUG50MA22
Test Result: PASS
Date of Issue: April 13, 2022

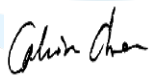
Prepared for:

BLU Products, Inc.
10814 NW 33rd St # 100 Doral, FL 33172 ,USA

Prepared by:

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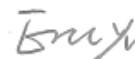
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April 13, 2022

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UTTR-RF-FCC23G-V1.1

Version

Version No.	Date	Description
V1.0	April 13, 2022	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	BLU Products, Inc.
Address of Applicant:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA
Manufacturer:	BLU Products, Inc.
Address of Manufacturer:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	G50 MEGA 2022		
Add. Model No.:	N/A		
Trade Mark:	BLU		
DUT Stage:	Production Unit		
EUT Supports Function: (Provided by the customer)	GSM Bands:	GSM850/1900	
	UTRA Bands:	Band II/ Band IV/ Band VI	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7/ Band 12/ Band 17/ Band 66	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	RNSS Bands:	1164 MHz to 1300 MHz	GPS/ GLONASS/ BDS
		1559 MHz to 1610 MHz	GPS/ GLONASS/ BDS
	BSR:	VHF Band II	FM
Software Version:	FS176-MB-V5.0 (Provided by the customer)		
Hardware Version:	BLU_G0670WW_V11.0.02.00_GENERIC_18-01-2022_0101 (Provided by the customer)		
Sample Received Date:	February 22, 2022		
Sample Tested Date:	March 4, 2022 to April 8, 2022		

1.2.2 Description of Accessories

Adapter	
Model No.:	US-JY-2000
Input:	100-240 V~50/60 Hz 0.4 A
Output:	5.0 V $\pm$ 2000 mA

Battery	
Model No.:	C926404400P
Battery Type:	Lithium-ion Polymer Rechargeable Battery
Rated Voltage:	3.85 Vdc
Limited Charge Voltage:	4.45 Vdc
Rated Capacity:	4000 mAh

Cable	
Description:	USB Type-C Plug Cable
Cable Type:	Unshielded without ferrite
Length:	1.20 Meter

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1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/7/12/17/66	QPSK, 16QAM
Antenna Type:	PIFA Antenna	
Antenna Gain: (Provided by the customer)	LTE Band 2:	-1.9 dBi
	LTE Band 4:	-1.8 dBi
	LTE Band 5:	-1.6 dBi
	LTE Band 7:	-1.2 dBi
	LTE Band 12:	-2.0 dBi
	LTE Band 17:	-2.0 dBi
	LTE Band 66:	-1.7 dBi
IEMI:	Radiation: 358713970406167; 358713970406175	
	Conducted: 358713970406142; 358713970406159	
Normal Test Voltage:	3.85 Vdc	
Extreme Test Voltage:	3.5 to 4.45Vdc	
Extreme Test Temperature:	-20 °C to +50 °C	

Summary of Results:								
Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		EIRP (W)	99% BW (MHz)	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)			
2	1.4	QPSK	1850.7-1909.3	22.10	20.20	0.10471	1.09	1M09G7W
		16QAM		21.16	19.26	0.08433	1.10	1M10D7W
	3	QPSK	1851.5-1908.5	21.93	20.03	0.10069	2.72	2M72G7W
		16QAM		21.05	19.15	0.08222	2.71	2M71D7W
	5	QPSK	1852.5-1907.5	22.06	20.16	0.10375	4.51	4M51G7W
		16QAM		21.08	19.18	0.08279	4.52	4M52D7W
	10	QPSK	1855.0-1905.0	22.08	20.18	0.10423	9.00	9M00G7W
		16QAM		21.18	19.28	0.08472	9.00	9M00D7W
	15	QPSK	1857.5-1902.5	22.12	20.22	0.10520	13.47	13M5G7W
		16QAM		21.13	19.23	0.08375	13.51	13M5D7W
	20	QPSK	1860.0-1900.0	22.13	20.23	0.10544	18.00	18M0G7W
		16QAM		21.18	19.28	0.08472	18.00	18M0D7W

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Summary of Results:								
Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		EIRP	99% BW	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)	(W)	(MHz)	
4	1.4	QPSK	1710.7-1754.3	22.75	20.95	0.12445	1.09	1M09G7D
		16QAM		21.78	19.98	0.09954	1.10	1M10W7D
	3	QPSK	1711.5-1753.5	22.59	20.79	0.11995	2.72	2M72G7D
		16QAM		21.79	19.99	0.09977	2.71	2M71W7D
	5	QPSK	1712.5-1752.5	22.76	20.96	0.12474	4.51	4M51G7D
		16QAM		21.72	19.92	0.09817	4.52	4M52W7D
	10	QPSK	1715-1750	22.70	20.90	0.12303	9.00	9M00G7D
		16QAM		21.68	19.88	0.09727	9.00	9M00W7D
	15	QPSK	1717.5-1747.5	22.70	20.90	0.12303	13.49	13M5G7D
		16QAM		21.82	20.02	0.10046	13.46	13M5W7D
	20	QPSK	1720-1745	22.77	20.97	0.12503	18.00	18M0G7D
		16QAM		21.87	20.07	0.10162	17.99	17M9W7D
5	1.4	QPSK	824.7-848.3	22.25	18.50	0.07079	1.09	1M09G7D
		16QAM		21.66	17.91	0.06180	1.09	1M09W7D
	3	QPSK	825.5-847.5	22.09	18.34	0.06823	2.72	2M72G7D
		16QAM		21.47	17.72	0.05916	2.71	2M71W7D
	5	QPSK	826.5-846.5	22.20	18.45	0.06998	4.51	4M51G7D
		16QAM		21.48	17.73	0.05929	4.51	4M51W7D
	10	QPSK	829-844	22.27	18.52	0.07112	9.00	9M00G7D
		16QAM		21.53	17.78	0.05998	8.98	8M98W7D
7	5	QPSK	2502.5-2567.5	22.41	21.21	0.13213	4.51	4M51G7D
		16QAM		21.65	20.45	0.11092	4.53	4M53W7D
	10	QPSK	2505-2565	22.33	21.13	0.12972	9.00	9M00G7D
		16QAM		21.66	20.46	0.11117	9.00	9M00W7D
	15	QPSK	2507.5-2562.5	22.45	21.25	0.13335	13.49	13M5G7D
		16QAM		21.70	20.50	0.11220	13.48	13M5W7D
	20	QPSK	2510-2560	22.45	21.25	0.13335	17.98	18M0G7D
		16QAM		21.76	20.56	0.11376	18.00	18M0W7D
12	1.4	QPSK	699.7-715.3	22.53	18.38	0.06887	1.09	1M09G7D
		16QAM		21.61	17.46	0.05572	1.10	1M10W7D
	3	QPSK	700.5-714.5	22.08	17.93	0.06209	2.72	2M72G7D
		16QAM		21.58	17.43	0.05534	2.71	2M71W7D
	5	QPSK	701.5-713.5	22.15	18.00	0.06310	4.51	4M51G7D
		16QAM		21.47	17.32	0.05395	4.51	4M51W7D
	10	QPSK	704-711	22.18	18.03	0.06353	9.01	9M01G7D
		16QAM		21.63	17.48	0.05598	9.00	9M00W7D

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Summary of Results:								
Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		EIRP	99% BW	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)	(W)	(MHz)	
17	5	QPSK	706.5-713.5	22.06	17.91	0.06180	4.52	4M52G7D
		16QAM		21.73	17.58	0.05728	4.52	4M52W7D
	10	QPSK	709-711	22.22	18.07	0.06412	8.97	8M97G7D
		16QAM		21.83	17.68	0.05861	8.97	8M97W7D
66	1.4	QPSK	1710.7-1779.3	22.71	21.01	0.12618	1.09	1M09G7D
		16QAM		21.72	20.02	0.10046	1.10	1M10W7D
	3	QPSK	1711.5-1778.5	22.61	20.91	0.12331	2.72	2M72G7D
		16QAM		21.68	19.98	0.09954	2.71	2M71W7D
	5	QPSK	1712.5-1777.5	22.69	20.99	0.12560	4.51	4M51G7D
		16QAM		21.61	19.91	0.09795	4.53	4M53W7D
	10	QPSK	1715-1775	22.65	20.95	0.12445	8.99	8M99G7D
		16QAM		21.66	19.96	0.09908	9.01	9M01W7D
	15	QPSK	1717.5-1772.5	22.73	21.03	0.12677	13.49	13M5G7D
		16QAM		21.69	19.99	0.09977	13.47	13M5W7D
	20	QPSK	1720-1770	22.76	21.06	0.12764	17.97	17M9G7D
		16QAM		21.71	20.01	0.10023	17.99	17M9W7D

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.30 Meter	UnionTrust

1.5 TEST LOCATION

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1.6 TEST FACILITY

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

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9kHz-150kHz	±3.2 dB
2	Conducted emission 150kHz-30MHz	±2.7 dB
3	Radiated spurious emissions 30MHz-1GHz	± 4.9 dB
4	Radiated spurious emissions 1GHz-18GHz	± 4.8 dB
5	Radiated spurious emissions 18GHz-40GHz	± 5.1 dB
6	Occupied Bandwidth	± 1.86 %
7	DC Supply Voltages	± 0.68 %
8	Temperature	± 0.62 °C
9	Humidity	± 3.9 %
10	Conducted spurious emissions	± 2.7 dB
11	DC Supply Voltages	± 0.68 %
12	AC Supply Voltages	± 1.2 %
13	Radio Frequency	± 6.5 x 10 ⁻⁸
14	RF Power, Conducted	± 0.9 dB

2. TEST SUMMARY

FCC 47 CFR Part 24 Test Cases (Band 2)			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 4 & Band 66)			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 22 Test Cases (Band 5)			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 &	ANSI C63.26-2015 &	PASS

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	FCC 47 CFR Part 22.355	KDB 971168 D01v03r01	
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FCC 47 CFR Part 27 Test Cases (LTE Band 7)			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 12)			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	22-Jan-2021	21-Jan-2024
☒	Receiver	R&S	ESIB26	100114	5-Nov-2021	4-Nov-2022
☐	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	22-Apr-2021	21-Apr-2022
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	11-Nov-2021	10-Nov-2023
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	11-Nov-2021	10-Nov-2023
☐	6dB Attenuator	Talent	RA6A5-N-18	18103001	11-Nov-2021	10-Nov-2023
☒	Preamplifier	HP	8447F	2805A02960	5-Nov-2021	4-Nov-2022
☐	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	30-Apr-2021	29-Apr-2023
☐	6dB Attenuator	Talent	RA6A5-N-18	18103002	5-Nov-2021	4-Nov-2022
☐	Horn Antenna	ETS-LINDGREN	3117	00164202	11-Nov-2021	10-Nov-2023
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	6-Nov-2021	5-Nov-2022
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	19-Jun-2020	18-Jun-2022
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	14-Nov-2020	13-Nov-2022
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted RF test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	22-Apr-2021	21-Apr-2022
☒	Receiver	R&S	ESR7	101181	5-Nov-2021	4-Nov-2022
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	5-Nov-2021	4-Nov-2022
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	5-Nov-2021	4-Nov-2022
☐	EXG-B RF Analog Signal Generator	KEYSIGHT	N5171B	MY53051777	5-Nov-2021	4-Nov-2022
☒	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	5-Nov-2021	4-Nov-2022
☒	Analog Signal Generator	R&S	SMF 100A	100691	22-Apr-2021	21-Apr-2022
☒	DC Source	KIKUSUI	PWR400L	LK003024	20-Aug-2021	19-Aug-2022
☒	Digital multimeter	FLUKE	15B+	30701460WS15	12-Nov-2021	11-Nov-2022
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	21-Apr-2021	20-Apr-2022
☐	Wideband Radio Communication Tester	R&S	CMW500	120932	22-Apr-2021	21-Apr-2022
☐	Wideband Radio Communication Tester	R&S	CMW500	119583	22-Apr-2021	21-Apr-2022

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4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

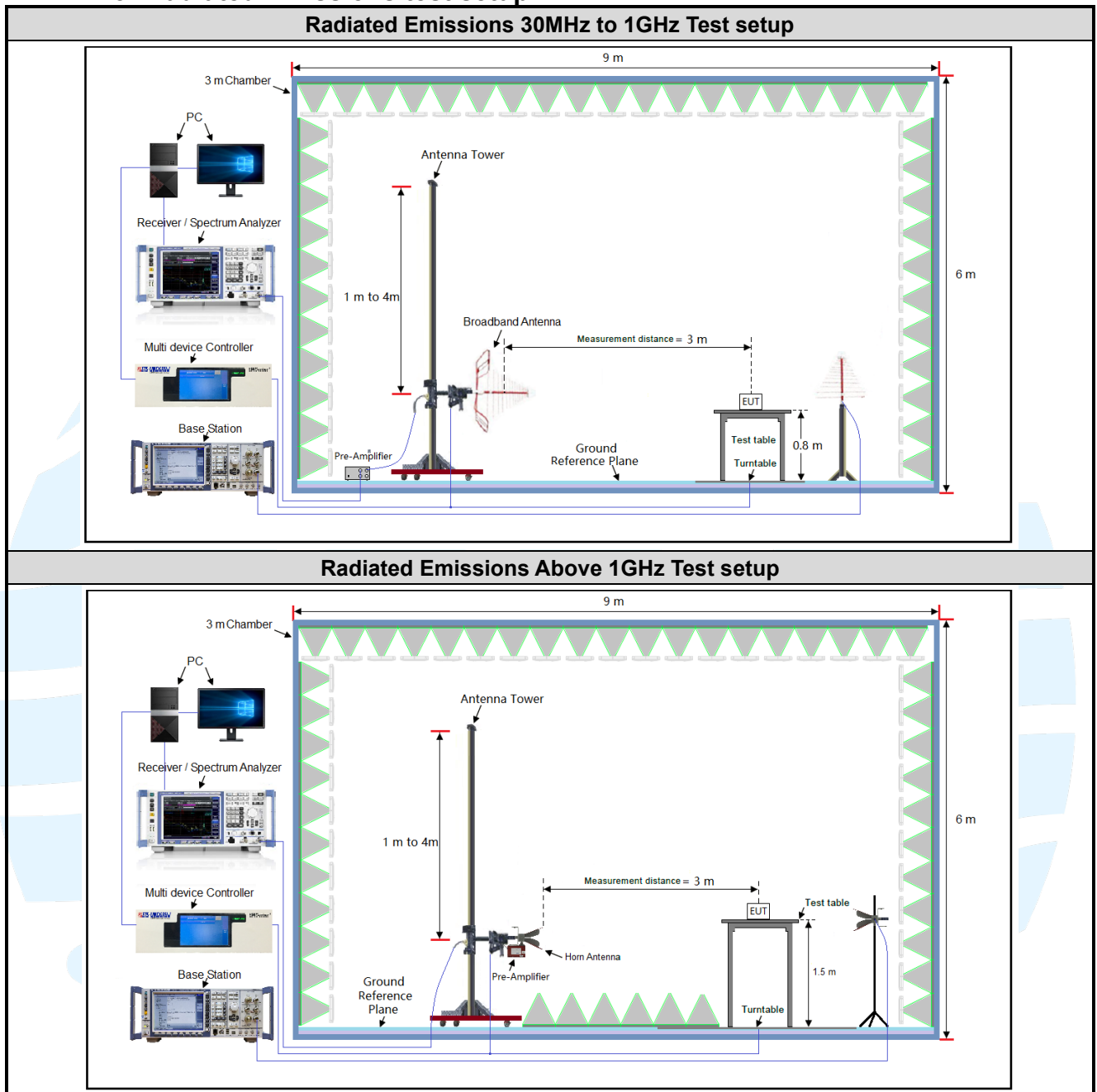
Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.85	20 to 75
TL/VL	-20	3.5	20 to 75
TH/VL	+50	3.5	20 to 75
TL/VH	-20	4.45	20 to 75
TH/VH	+50	4.45	20 to 75

Remark:

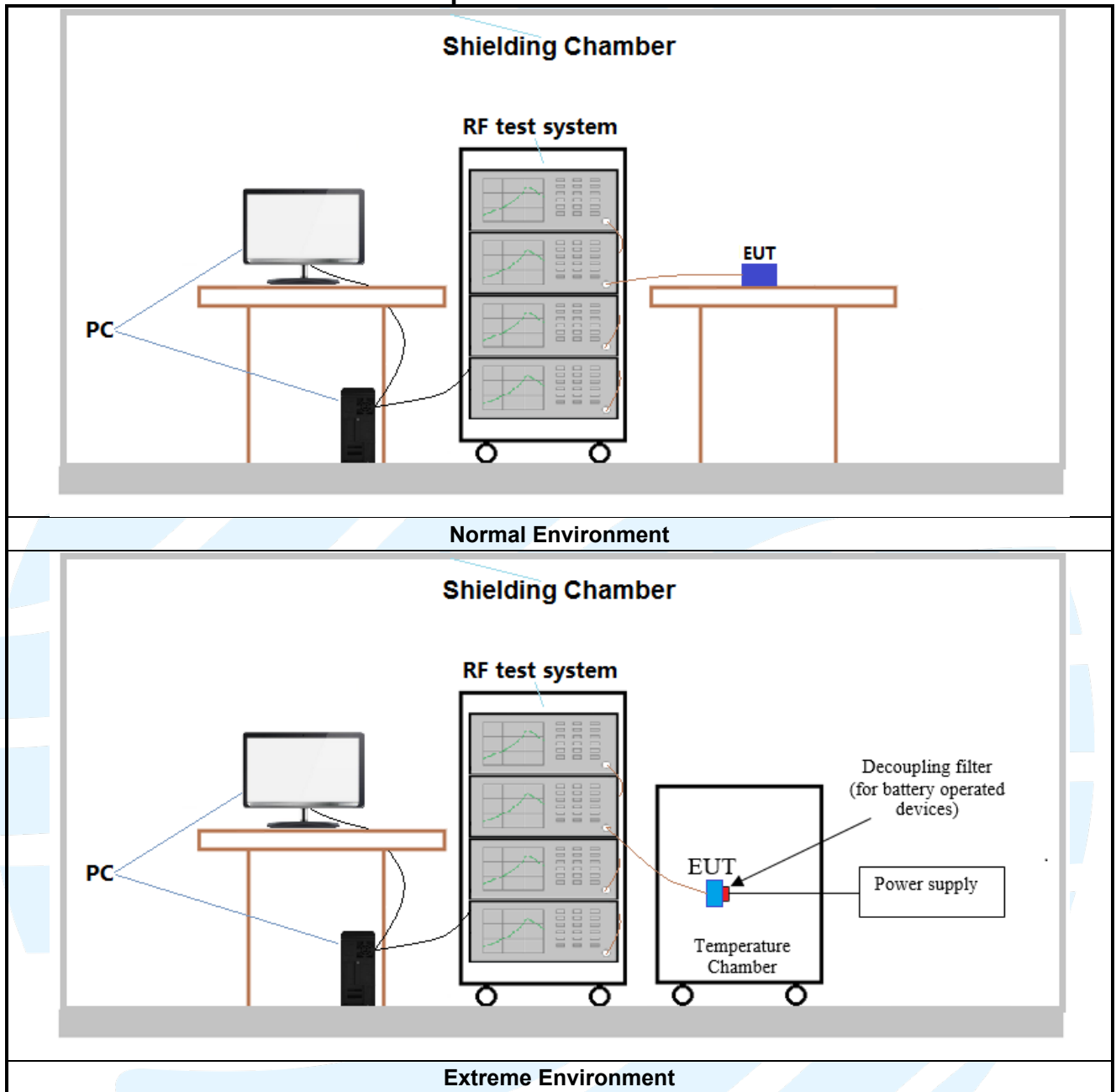
- 1) The EUT just work in such extreme temperature of -20 °C to +50 °C and the extreme voltage of 3.5 V to 4.45 V, so here the EUT is tested in the temperature of -20 °C to +50 °C and the voltage of 3.5 V to 4.45 V.
- 2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup



4.2.2 For Conducted RF test setup



4.3 TEST CHANNELS

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 2 TX: 1850-1910MHz	Low Range	1.4	18607	1850.7
		3	18615	1851.5
		5	18625	1852.5
		10	18650	1855
		15	18675	1857.5
		20	18700	1860
	Middle Range	1.4/3/5/10/15/20	18900	1880
	High Range	1.4	19193	1909.3
		3	19185	1908.5
		5	19175	1907.5
		10	19150	1905
		15	19125	1902.5
		20	19100	1900
LTE Band 4 TX: 1710-1755MHz	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19975	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Middle Range	1.4/3/5/10/ 15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745
LTE band 5 TX: 824-849MHz	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Middle Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844
LTE Band 7 TX: 2500-2570MHz	Low Range	5	20775	2502.5
		10	20800	2505
		15	20825	2507.5
		20	20850	2510
	Middle Range	5/10/15/20	21100	2535
	High Range	5	21425	2567.5
		10	21400	2565
		15	21375	2562.5

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		20	21350	2560
LTE Band 12 TX: 699-716MHz	Low Range	1.4	23017	699.7
		3	23025	700.5
		5	23035	701.5
		10	23060	704
	Middle Range	1.4/3/5/10	23095	707.5
	High Range	1.4	23173	715.3
		3	23165	714.5
		5	23155	713.5
		10	23130	711
LTE Band 17 TX: 704-716MHz	Low Range	5	23755	706.5
		10	23780	709
	Middle Range	5/10	23790	710
	High Range	5	23825	713.5
		10	23800	711
LTE Band 66 TX: 1710-1780MHz	Low Range	1.4	131979	1710.7
		3	131987	1711.5
		5	131997	1712.5
		10	132022	1715
		15	132047	1717.5
		20	132072	1720
	Middle Range	1.4/3/5/10/ 15/20	132322	1745
	High Range	1.4	132665	1779.3
		3	132657	1778.5
		5	132647	1777.5
		10	132622	1775
		15	132597	1772.5
		20	132572	1770

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4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85V battery. Only the worst-case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

The worst case was found when positioned as the table below.

Band	Mode	Antenna Port	Worst-case axis positioning
LTE Band 2	1TX	Chain 0	Y axis
LTE Band 4	1TX	Chain 0	Y axis
LTE Band 5	1TX	Chain 0	Y axis
LTE Band 7	1TX	Chain 0	Y axis
LTE Band 12	1TX	Chain 0	Y axis
LTE Band 17	1TX	Chain 0	Y axis
LTE Band 66	1TX	Chain 0	Y axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below.

4.5.1 LTE Band 2

LTE Band 2 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.05	21.93	21.82	1	0	21.91	21.83	21.74
	1	2	21.96	21.93	21.95	1	7	21.90	21.86	21.90
	1	5	22.10	21.92	21.84	1	14	21.94	21.93	21.71
	3	0	21.90	21.95	21.79	8	0	20.80	20.94	20.89
	3	1	21.95	21.71	21.85	8	3	20.91	20.86	20.79
	3	3	21.94	21.89	21.77	8	7	20.82	20.99	20.91
	6	0	20.71	21.01	20.86	15	0	20.70	20.87	20.81
16QAM	1	0	20.93	20.81	21.16	1	0	20.94	20.81	21.00
	1	2	20.97	20.90	20.86	1	7	20.89	20.96	20.84
	1	5	20.97	21.01	20.94	1	14	20.88	21.03	21.05
	3	0	20.97	20.84	20.96	8	0	19.86	19.95	19.95
	3	1	21.07	20.92	20.96	8	3	20.03	19.99	19.93
	3	3	20.98	20.90	21.04	8	7	20.04	19.92	20.04
	6	0	19.87	20.11	19.89	15	0	20.00	19.94	19.99
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.06	21.85	21.81	1	0	22.00	21.87	21.86
	1	12	22.01	21.76	21.95	1	24	22.06	21.79	21.91
	1	24	22.05	21.92	21.80	1	49	22.01	22.08	21.78
	12	0	20.73	20.90	20.90	25	0	20.88	20.87	20.82
	12	6	20.98	20.79	20.75	25	12	20.92	20.79	20.78
	12	13	20.99	20.93	20.80	25	25	20.88	20.90	20.85
	25	0	20.80	20.91	20.80	50	0	20.75	21.00	20.86
16QAM	1	0	20.87	20.74	21.01	1	0	20.82	20.83	21.18
	1	12	20.79	21.00	20.92	1	24	20.80	20.85	20.95
	1	24	20.90	20.87	21.08	1	49	20.88	20.86	21.05
	12	0	19.96	19.99	19.86	25	0	19.84	20.00	20.02
	12	6	19.95	19.97	20.05	25	12	20.04	20.01	19.89
	12	13	20.07	19.81	20.04	25	25	20.00	19.94	19.93
	25	0	19.97	19.99	20.01	50	0	19.83	20.01	20.01
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	21.99	21.92	21.81	1	0	22.07	21.98	21.93
	1	37	21.88	21.90	21.90	1	50	22.08	21.94	22.01
	1	74	22.12	22.08	21.77	1	99	22.13	22.10	21.90
	37	0	20.85	21.02	20.79	50	0	20.93	21.06	20.95
	37	19	20.90	20.81	20.85	50	25	21.01	20.88	20.90
	37	39	20.87	20.98	20.82	50	50	21.02	21.05	20.94
	75	0	20.67	20.99	20.75	100	0	20.86	21.03	20.87
16QAM	1	0	20.80	20.82	21.13	1	0	20.95	20.93	21.18
	1	37	20.96	20.92	20.95	1	50	20.98	21.03	20.99
	1	74	21.02	20.91	21.00	1	99	21.07	21.04	21.12
	37	0	19.92	19.97	20.00	50	0	20.02	20.04	20.06
	37	19	19.91	19.99	19.93	50	25	20.10	20.05	20.06
	37	39	20.06	19.98	20.02	50	50	20.09	20.01	20.08
	75	0	19.82	19.93	19.99	100	0	20.02	20.12	20.06

4.5.2 LTE Band 4

LTE Band 4 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.75	22.62	22.47	1	0	22.61	22.52	22.39
	1	2	22.55	22.58	22.64	1	7	22.49	22.51	22.59
	1	5	22.68	22.40	22.62	1	14	22.52	22.41	22.49
	3	0	22.55	22.36	22.37	8	0	21.45	21.35	21.47
	3	1	22.56	22.34	22.40	8	3	21.52	21.49	21.34
	3	3	22.43	22.33	22.33	8	7	21.31	21.43	21.47
16QAM	6	0	21.41	21.46	21.45	15	0	21.40	21.32	21.40
	1	0	21.78	21.52	21.46	1	0	21.79	21.52	21.30
	1	2	21.60	21.61	21.33	1	7	21.52	21.67	21.31
	1	5	21.77	21.60	21.33	1	14	21.68	21.62	21.44
	3	0	21.75	21.52	21.54	8	0	20.64	20.63	20.53
	3	1	21.74	21.54	21.52	8	3	20.70	20.61	20.49
16QAM	3	3	21.65	21.51	21.57	8	7	20.71	20.53	20.57
	6	0	20.58	20.59	20.50	15	0	20.71	20.42	20.60
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.76	22.54	22.46	1	0	22.70	22.56	22.51
	1	12	22.60	22.41	22.64	1	24	22.65	22.44	22.60
	1	24	22.63	22.40	22.58	1	49	22.59	22.56	22.56
	12	0	21.38	21.31	21.48	25	0	21.53	21.28	21.40
	12	6	21.59	21.42	21.30	25	12	21.53	21.42	21.33
	12	13	21.48	21.37	21.36	25	25	21.37	21.34	21.41
16QAM	25	0	21.50	21.36	21.39	50	0	21.45	21.45	21.45
	1	0	21.72	21.45	21.31	1	0	21.67	21.54	21.48
	1	12	21.42	21.71	21.39	1	24	21.43	21.56	21.42
	1	24	21.70	21.46	21.47	1	49	21.68	21.45	21.44
	12	0	20.74	20.67	20.44	25	0	20.62	20.68	20.60
	12	6	20.62	20.59	20.61	25	12	20.71	20.63	20.45
16QAM	12	13	20.74	20.42	20.57	25	25	20.67	20.55	20.46
	25	0	20.68	20.47	20.62	50	0	20.54	20.49	20.62
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.69	22.61	22.46	1	0	22.77	22.67	22.58
	1	37	22.47	22.55	22.59	1	50	22.67	22.59	22.70
	1	74	22.70	22.56	22.55	1	99	22.71	22.58	22.68
	37	0	21.50	21.43	21.37	50	0	21.58	21.47	21.53
	37	19	21.51	21.44	21.40	50	25	21.62	21.51	21.45
	37	39	21.36	21.42	21.38	50	50	21.51	21.49	21.50
16QAM	75	0	21.37	21.44	21.34	100	0	21.56	21.48	21.46
	1	0	21.65	21.53	21.43	1	0	21.80	21.64	21.48
	1	37	21.59	21.63	21.42	1	50	21.61	21.74	21.46
	1	74	21.82	21.50	21.39	1	99	21.87	21.63	21.51
	37	0	20.70	20.65	20.58	50	0	20.80	20.72	20.64
	37	19	20.58	20.61	20.49	50	25	20.77	20.67	20.62
16QAM	37	39	20.73	20.59	20.55	50	50	20.76	20.62	20.61
	75	0	20.53	20.41	20.60	100	0	20.73	20.60	20.67

4.5.3 LTE Band 5

LTE Band 5 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.03	22.00	21.76	1	0	22.10	22.02	21.85
	1	2	22.25	22.07	22.08	1	7	22.12	22.09	21.98
	1	5	22.13	21.87	21.85	1	14	22.22	21.81	21.83
	3	0	21.83	22.05	21.96	8	0	20.91	20.91	20.94
	3	1	22.04	21.97	21.77	8	3	21.01	20.86	20.87
	3	3	22.04	21.86	21.96	8	7	20.96	20.87	20.80
	6	0	21.13	20.88	20.94	15	0	21.08	20.89	20.88
16QAM	1	0	21.24	21.14	20.96	1	0	21.08	21.02	20.92
	1	2	21.37	20.91	20.89	1	7	21.47	21.08	21.07
	1	5	21.19	21.03	20.88	1	14	21.22	21.04	20.91
	3	0	21.16	21.05	21.63	8	0	20.04	20.02	20.72
	3	1	21.66	21.09	21.55	8	3	20.59	20.08	20.50
	3	3	21.11	21.51	20.97	8	7	20.08	20.56	19.99
	6	0	20.51	19.96	20.48	15	0	20.58	19.99	20.60
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.00	21.90	21.93	1	0	22.18	22.05	21.93
	1	12	22.19	22.15	22.08	1	24	22.27	22.24	22.18
	1	24	22.20	21.86	21.91	1	49	22.24	21.91	21.96
	12	0	20.97	21.00	20.87	25	0	21.00	21.05	21.04
	12	6	20.94	21.00	20.81	25	12	21.10	21.04	20.97
	12	13	21.02	20.95	20.82	25	25	21.08	21.03	20.96
	25	0	20.98	20.90	20.99	50	0	21.18	21.02	21.01
16QAM	1	0	21.18	21.08	20.89	1	0	21.25	21.22	21.08
	1	12	21.48	20.94	21.06	1	24	21.53	21.11	21.08
	1	24	21.20	21.07	20.99	1	49	21.23	21.13	21.06
	12	0	20.12	20.03	20.69	25	0	20.22	20.11	20.78
	12	6	20.69	20.02	20.61	25	12	20.74	20.21	20.70
	12	13	20.14	20.46	20.04	25	25	20.18	20.57	20.12
	25	0	20.41	20.00	20.61	50	0	20.60	20.07	20.64

4.5.4 LTE Band 7

LTE Band 7 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.25	22.16	22.21	1	0	22.27	22.06	22.27
	1	12	22.14	22.13	22.07	1	24	22.25	22.12	22.11
	1	24	22.41	22.26	22.18	1	49	22.40	22.33	22.31
	12	0	21.08	21.21	21.17	25	0	21.16	21.23	21.11
	12	6	21.11	21.36	21.30	25	12	21.12	21.27	21.23
	12	13	21.11	21.12	21.30	25	25	21.10	21.11	21.34
16QAM	25	0	21.30	21.25	21.09	50	0	21.34	21.11	21.22
	1	0	21.31	21.58	21.44	1	0	21.35	21.48	21.49
	1	12	21.48	21.46	21.48	1	24	21.37	21.46	21.36
	1	24	21.48	21.65	21.59	1	49	21.45	21.66	21.43
	12	0	20.21	20.37	20.33	25	0	20.19	20.28	20.43
	12	6	20.34	20.43	20.43	25	12	20.44	20.39	20.27
16QAM	12	13	20.36	20.20	20.50	25	25	20.35	20.28	20.50
	25	0	20.28	20.43	20.30	50	0	20.22	20.56	20.24
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.21	22.10	22.25	1	0	22.40	22.22	22.28
	1	37	22.14	22.23	22.18	1	50	22.32	22.24	22.27
	1	74	22.45	22.20	22.28	1	99	22.45	22.34	22.37
	37	0	21.15	21.15	21.23	50	0	21.26	21.23	21.25
	37	19	21.24	21.30	21.23	50	25	21.25	21.36	21.35
	37	39	21.25	21.13	21.37	50	50	21.28	21.30	21.37
16QAM	75	0	21.24	21.13	21.06	100	0	21.35	21.31	21.24
	1	0	21.46	21.52	21.48	1	0	21.47	21.62	21.59
	1	37	21.47	21.62	21.53	1	50	21.51	21.63	21.54
	1	74	21.41	21.70	21.48	1	99	21.52	21.76	21.61
	37	0	20.18	20.37	20.48	50	0	20.34	20.41	20.52
	37	19	20.48	20.39	20.38	50	25	20.48	20.45	20.46
16QAM	37	39	20.38	20.22	20.32	50	50	20.41	20.38	20.51
	75	0	20.21	20.43	20.27	100	0	20.29	20.58	20.35

4.5.5 LTE Band 12

LTE Band 12 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	22.00	21.96	21.64	1	0	21.92	22.01	21.78
	1	2	22.04	22.09	21.94	1	7	21.96	22.08	21.89
	1	5	21.79	21.94	21.88	1	14	21.95	21.88	21.74
	3	0	21.72	21.76	21.81	8	0	20.84	20.78	20.72
	3	1	21.82	21.78	22.47	8	3	20.81	20.62	21.55
	3	3	21.83	22.53	21.91	8	7	20.76	21.53	20.90
	6	0	20.83	21.03	21.34	15	0	20.90	21.08	21.44
16QAM	1	0	20.71	20.73	20.42	1	0	20.78	20.86	20.44
	1	2	21.13	21.10	21.59	1	7	21.13	21.14	21.58
	1	5	20.90	20.83	20.39	1	14	20.87	20.77	20.49
	3	0	21.47	21.58	21.61	8	0	20.50	20.65	20.53
	3	1	20.92	21.52	21.31	8	3	19.83	20.66	20.24
	3	3	21.48	21.61	20.84	8	7	20.48	20.63	19.98
	6	0	19.86	20.65	20.46	15	0	19.87	20.52	20.47
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	21.93	21.83	21.62	1	0	22.01	22.02	21.82
	1	12	21.95	22.15	22.03	1	24	22.14	22.18	22.07
	1	24	21.98	21.81	21.72	1	49	21.99	21.96	21.89
	12	0	20.90	20.85	20.68	25	0	20.91	20.86	20.85
	12	6	20.80	20.71	21.47	25	12	20.88	20.79	21.56
	12	13	20.73	21.55	21.03	25	25	20.89	21.55	21.07
	25	0	20.91	21.02	21.40	50	0	21.00	21.13	21.48
16QAM	1	0	20.68	20.83	20.30	1	0	20.81	20.91	20.45
	1	12	21.14	21.17	21.47	1	24	21.26	21.19	21.63
	1	24	20.81	20.82	20.31	1	49	20.95	20.92	20.51
	12	0	20.56	20.67	20.68	25	0	20.63	20.74	20.70
	12	6	19.81	20.63	20.41	25	12	19.94	20.68	20.42
	12	13	20.55	20.56	19.83	25	25	20.66	20.64	20.00
	25	0	19.84	20.57	20.42	50	0	19.89	20.66	20.58