

FCC TEST REPORT

Product Name: Tablet with printer

Trade Mark:



Model No.: M10p

Add. Model No.: N/A

Report Number: 201218035RFM-2

Test Standards: FCC 47 CFR Part 22
FCC 47 CFR Part 24
FCC 47 CFR Part 27

FCC ID: 2AUOUM10P

Test Result: PASS

Date of Issue: April 9, 2021

Prepared for:

Rhino Mobility LLC

8 The Green, Suite A, Dover, Delaware, 19901, USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

**Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and
Technology Park, Longhua district, Shenzhen, China**

TEL: +86-755-2823 0888

FAX: +86-755-2823 0886

Prepared by: Ryan Zhou
Ryan Zhou
Senior Project Engineer

Reviewed by: Henry Lu
Henry Lu
Team Leader

Approved by: Kevin Liang
Kevin Liang
Assistant Manager



Date: April 9, 2021

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

Version

Version No.	Date	Description
V1.0	April 9, 2021	Original



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Tel: +86-755-28230888

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Fax: +86-755-28230886

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Rhino Mobility LLC
Address of Applicant:	8 The Green, Suite A, Dover, Delaware, 19901, USA
Manufacturer:	Rhino Mobility LLC
Address of Manufacturer:	8 The Green, Suite A, Dover, Delaware, 19901, USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Tablet with printer		
Model No.:	M10p		
Add. Model No.:	N/A		
Trade Mark:			
DUT Stage:	Identical Prototype		
EUT Supports Function:	GSM Bands:	GSM850/1900	
	UTRA Bands:	Band II/ Band IV/ Band V	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7/ Band 12/ Band 13/ Band 17/ Band 66/ Band 71	
		TDD Band 38/ Band 41	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
Software Version:	M10P(001)_ 20210318		
Hardware Version:	RC-PF312_U3.0		
Sample Received Date:	December 18, 2020		
Sample Tested Date:	December 23, 2020 to March 8, 2021		

1.2.2 Description of Accessories

Adapter	
Model No.:	FJ-SW202724004000
Input:	100-240 V~50/60 Hz 3.0 A Max
Output:	24.0 V $\equiv$ 4.0 A
AC Cable:	1.0 Meter, Unshielded without ferrite
DC Cable:	1.20 Meter, Unshielded with ferrite

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/7/12/13/17/38/41/66/71:	QPSK, 16QAM
Antenna Type:	FPCB Antenna	
Antenna Gain:	LTE Band 2:	1.2 dBi
	LTE Band 4:	1.3 dBi
	LTE Band 5:	0.8 dBi
	LTE Band 7:	0.9 dBi
	LTE Band 12:	-0.1 dBi
	LTE Band 13:	0.8 dBi
	LTE Band 17:	-0.1 dBi
	LTE Band 38:	0.9 dBi
	LTE Band 41:	0.9 dBi
	LTE Band 66:	1.3 dBi
	LTE Band 71:	-0.7 dBi
Normal Test Voltage:	120 Vac	
Extreme Test Voltage:	102 Vac to 138 Vac	
Extreme Test Temperature:	-30 °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	24.49	25.69	0.37068	1.1053	1M11G7W
		16QAM		23.46	24.66	0.29242	1.1067	1M10D7W
	3	QPSK	1851.5-1908.5	24.43	25.63	0.36559	2.7051	2M71G7W
		16QAM		23.85	25.05	0.31989	2.6991	2M70D7W
	5	QPSK	1852.5-1907.5	24.39	25.59	0.36224	4.5458	4M55G7W
		16QAM		23.65	24.85	0.30549	4.5524	4M55D7W
	10	QPSK	1855.0-1905.0	24.53	25.73	0.37411	9.0610	9M06G7W
		16QAM		24.00	25.20	0.33113	9.0374	9M04D7W
	15	QPSK	1857.5-1902.5	24.43	25.63	0.36559	13.559	13M6G7W
		16QAM		23.85	25.05	0.31989	13.562	13M6D7W
	20	QPSK	1860.0-1900.0	24.55	25.75	0.37584	18.027	18M0G7W
		16QAM		23.83	25.03	0.31842	18.080	18M1D7W

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

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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	23.60	24.90	0.30903	1.1057	1M11G7D
		16QAM		22.93	24.23	0.26485	1.1049	1M10W7D
	3	QPSK	1711.5-1753.5	23.63	24.93	0.31117	2.7044	2M70G7D
		16QAM		22.87	24.17	0.26122	2.6994	2M70W7D
	5	QPSK	1712.5-1752.5	23.61	24.91	0.30974	4.5415	4M54G7D
		16QAM		22.98	24.28	0.26792	4.5639	4M56W7D
	10	QPSK	1715-1750	23.52	24.82	0.30339	9.0427	9M04G7D
		16QAM		22.88	24.18	0.26182	9.0253	9M03W7D
	15	QPSK	1717.5-1747.5	23.46	24.76	0.29923	13.531	13M5G7D
		16QAM		22.84	24.14	0.25942	13.548	13M5W7D
	20	QPSK	1720-1745	23.63	24.93	0.31117	18.072	18M1G7D
		16QAM		22.98	24.28	0.26792	18.052	18M1W7D
5	1.4	QPSK	824.7-848.3	24.33	22.98	0.19861	1.1072	1M11G7D
		16QAM		23.51	22.16	0.16444	1.1057	1M11W7D
	3	QPSK	825.5-847.5	24.19	22.84	0.19231	2.7074	2M71G7D
		16QAM		23.29	21.94	0.15631	2.6997	2M70W7D
	5	QPSK	826.5-846.5	24.23	22.88	0.19409	4.5349	4M53G7D
		16QAM		23.34	21.99	0.15812	4.5620	4M56W7D
	10	QPSK	829-844	24.34	22.99	0.19907	9.0522	9M05G7D
		16QAM		23.39	22.04	0.15996	9.0474	9M05W7D
7	5	QPSK	2502.5-2567.5	24.54	25.44	0.34995	4.5480	4M55G7D
		16QAM		23.72	24.62	0.28973	4.5581	4M56D7W
	10	QPSK	2505-2565	24.53	25.43	0.34914	9.0364	9M04G7W
		16QAM		23.69	24.59	0.28774	9.0283	9M03W7D
	15	QPSK	2507.5-2562.5	24.56	25.46	0.35156	13.562	13M6G7D
		16QAM		23.79	24.69	0.29444	13.549	13M5W7D
	20	QPSK	2510-2560	24.62	25.52	0.35645	18.075	18M1G7D
		16QAM		23.82	24.72	0.29648	18.088	18M1W7D
12	1.4	QPSK	699.7-715.3	24.38	22.13	0.16331	1.1065	1M11G7D
		16QAM		23.78	21.53	0.14223	1.1019	1M10W7D
	3	QPSK	700.5-714.5	24.31	22.06	0.16069	2.7022	2M70G7D
		16QAM		23.80	21.55	0.14289	2.6950	2M70W7D
	5	QPSK	701.5-713.5	24.32	22.07	0.16106	4.5410	4M54G7D
		16QAM		23.80	21.55	0.14289	4.5557	4M56W7D
	10	QPSK	704-711	24.44	22.19	0.16558	9.0351	9M04G7D
		16QAM		23.84	21.59	0.14421	9.0504	9M05W7D

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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)	
13	5	QPSK	779.5-784.5	23.87	22.52	0.17865	4.5538	4M55G7D
		16QAM		23.51	22.16	0.16444	4.5427	4M54W7D
	10	QPSK	782-782	23.92	22.57	0.18072	8.9928	8M99G7D
		16QAM		23.51	22.16	0.16444	8.9732	8M97W7D
17	5	QPSK	706.5-713.5	24.21	21.96	0.15704	4.5403	4M54G7D
		16QAM		23.72	21.47	0.14028	4.5556	4M56W7D
	10	QPSK	709-711	24.29	22.04	0.15996	9.0668	9M07G7D
		16QAM		23.77	21.52	0.14191	9.0435	9M04W7D
38	5	QPSK	2572.5-2617.5	24.48	25.38	0.34514	4.5227	4M52G7D
		16QAM		23.77	24.67	0.29309	4.5061	4M51W7D
	10	QPSK	2575-2615	24.57	25.47	0.35237	9.0315	9M03G7D
		16QAM		23.73	24.63	0.29040	9.0160	9M02W7D
	15	QPSK	2577.5-2612.5	24.62	25.52	0.35645	13.512	13M5G7D
		16QAM		23.77	24.67	0.29309	13.544	13M5W7D
	20	QPSK	2580-2610	24.63	25.53	0.35727	18.015	18M0G7D
		16QAM		23.81	24.71	0.29580	17.992	18M0W7D
41	5	QPSK	2557.5-2662.5	24.42	25.32	0.34041	4.5150	4M52G7D
		16QAM		23.46	24.36	0.27290	4.5043	4M50W7D
	10	QPSK	2560-2650	24.42	25.32	0.34041	9.0022	9M00G7D
		16QAM		23.39	24.29	0.26853	9.0027	9M00W7D
	15	QPSK	2562.5-2647.5	24.38	25.28	0.33729	13.489	13M5G7D
		16QAM		23.53	24.43	0.27733	13.532	13M5W7D
	20	QPSK	2565-2645	24.43	25.33	0.34119	17.982	18M0G7D
		16QAM		23.58	24.48	0.28054	18.006	18M0W7D
66	1.4	QPSK	1710.7-1779.3	23.01	24.31	0.26977	1.1022	1M10G7D
		16QAM		22.37	23.67	0.23281	1.1101	1M11W7D
	3	QPSK	1711.5-1778.5	22.93	24.23	0.26485	2.6985	2M70G7D
		16QAM		22.43	23.73	0.23605	2.6882	2M69W7D
	5	QPSK	1712.5-1777.5	22.98	24.28	0.26792	4.5442	4M54G7D
		16QAM		22.47	23.77	0.23823	4.5681	4M57W7D
	10	QPSK	1715-1775	23.00	24.30	0.26915	9.0462	9M05G7D
		16QAM		22.36	23.66	0.23227	9.0326	9M03W7D
	15	QPSK	1717.5-1772.5	22.93	24.23	0.26485	13.543	13M5G7D
		16QAM		22.39	23.69	0.23388	13.568	13M6W7D
	20	QPSK	1720-1770	23.04	24.34	0.27164	18.058	18M1G7D
		16QAM		22.50	23.80	0.23988	18.042	18M0W7D

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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)	
71	5	QPSK	665.5-695.5	23.75	20.90	0.12303	4.5485	4M55G7D
		16QAM		23.23	20.38	0.10914	4.5591	4M56W7D
	10	QPSK	668-693	23.80	20.95	0.12445	9.0650	9M07G7D
		16QAM		23.08	20.23	0.10544	9.0554	9M06W7D
	15	QPSK	670.5-690.5	23.65	20.80	0.12023	13.604	13M6G7D
		16QAM		23.15	20.30	0.10715	13.602	13M6W7D
	20	QPSK	673-688	23.82	20.97	0.12503	18.084	18M1G7D
		16QAM		23.26	20.41	0.10990	18.056	18M1W7D

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
--	--	--	--	--

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.3 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China, 518109

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

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/EN 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: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

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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	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 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 & FCC 47 CFR Part 22.355	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 7 & Band 38 & Band 41)			
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 & 71 & 17)			
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

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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FCC 47 CFR Part 27 Test Cases (LTE Band 13)			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(b)(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(b)(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)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53	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	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	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

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	3m SAC	ETS-LINDGREN	3m	N/A	Jan. 22, 2021	Jan. 21, 2024
☒	Receiver	R&S	ESIB26	100114	Nov. 18, 2020	Nov. 17, 2021
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 14, 2020	Nov. 13, 2021
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 14, 2020	Nov.13, 2021
☒	Preamplifier	HP	8447F	2805A02960	Nov. 10, 2020	Nov. 9, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	May 30, 2020	May 29, 2021
☒	Pre-amplifier	ETS-LINDGREN	118385	00201874	Nov. 10, 2020	Nov. 9, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 17, 2020	Nov. 16, 2021
☒	Pre-amplifier	ETS-LINDGREN	00118384	00202652	Nov. 10, 2020	Nov. 9, 2021
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

RF Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Nov. 10, 2020	Nov. 9, 2021
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	Jul. 20, 2020	Jul. 19, 2021
☐	Wideband Radio Communication Tester	R&S	CMW500	119583	Jul. 20, 2020	Jul. 19, 2021
☒	Spectrum analyzer	R&S	FSV40-N	101653	Jun. 18, 2020	Jun. 17, 2021
☒	Temp & Humidity chamber	Espec	GL(U)04K A(W)	16921H201P3	Sep. 2, 2020	Sep. 1, 2021
☐	Temp & Humidity chamber	Votisch	VT4002	58566133290020	May 11, 2020	May 10, 2021

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

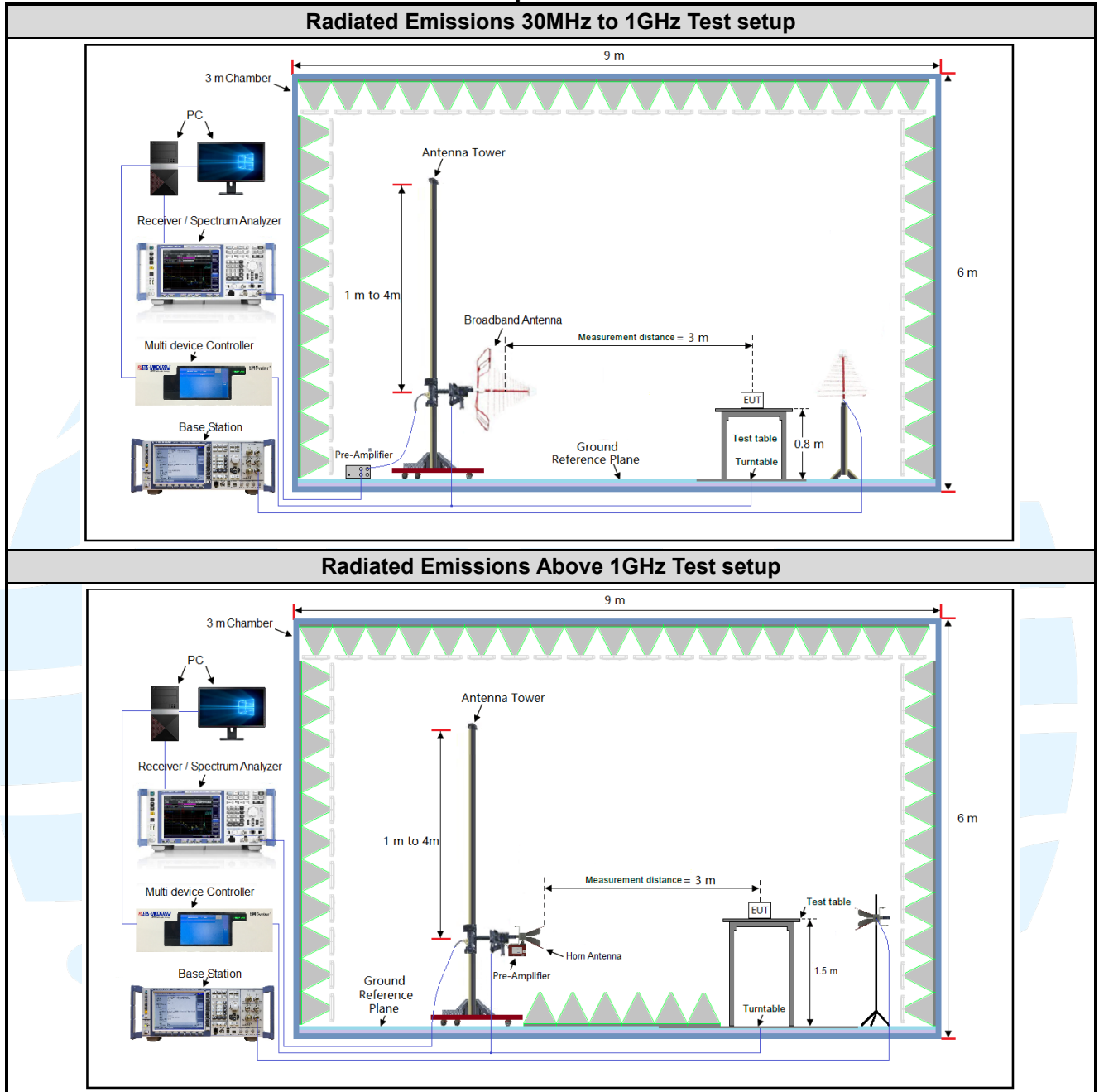
Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (Vac)	Relative Humidity (%)
TN/VN	+15 to +35	120	20 to 75
TL/VL	-30	102	20 to 75
TH/VL	+50	102	20 to 75
TL/VH	-30	138	20 to 75
TH/VH	+50	138	20 to 75

Remark:

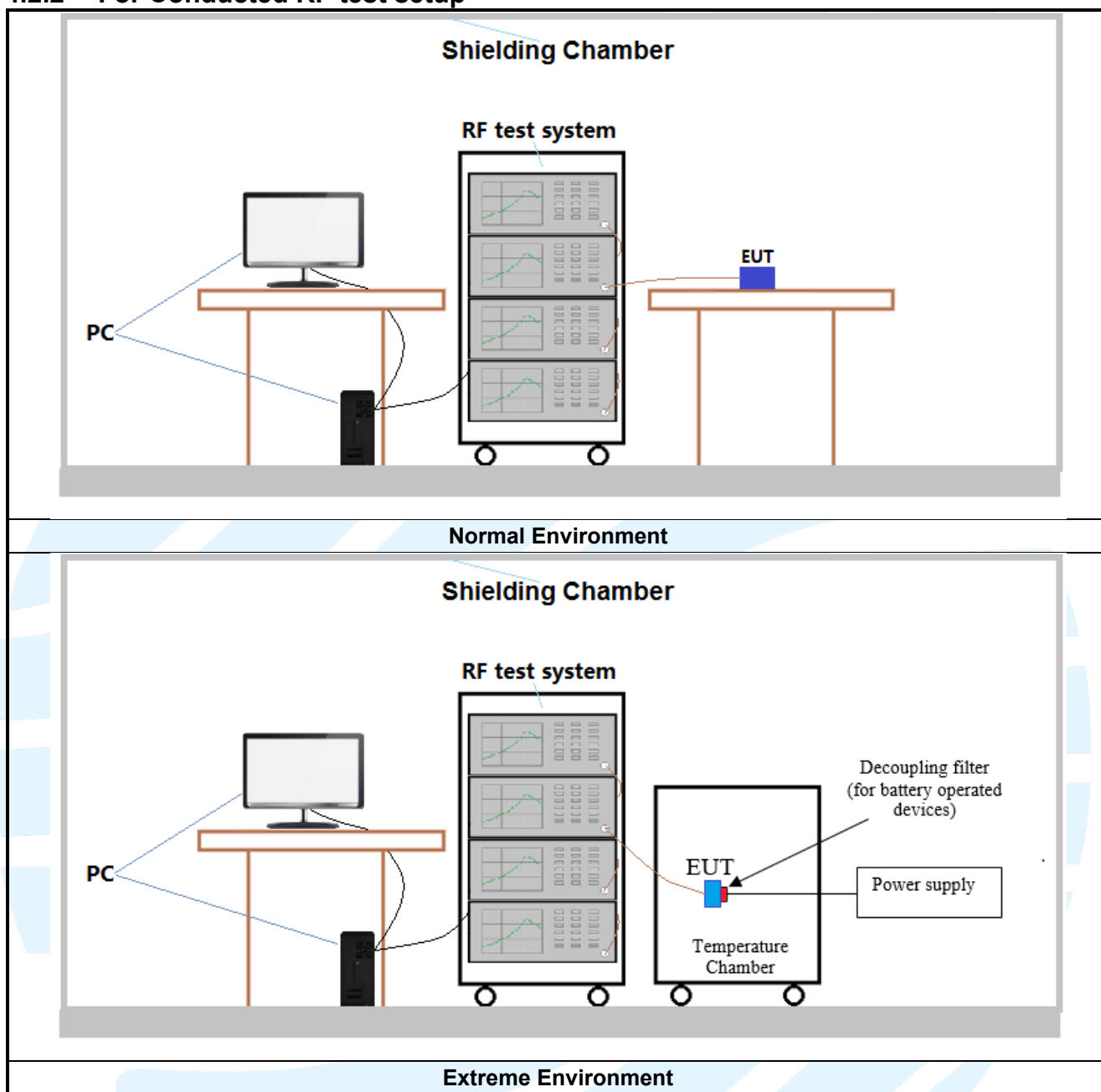
- 1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 102 Vac to 138 Vac, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 102 Vac to 138 Vac.
- 2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; 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

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
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
		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 13 TX: 777-787MHz	Low Range	5	23205	779.5
		10	23230	782
	Middle Range	5/10	23230	782
	High Range	5	23255	784.5
		10	23230	782
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 38 TX: 2570-2620MHz	Low Range	5	37775	2572.5
		10	37800	2575
		15	37825	2577.5
		20	37850	2580
	Middle Range	5/10/ 15/20	38000	2595
	High Range	5	38225	2617.5
		10	38200	2615
		15	38175	2612.5
		20	38150	2610

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 41 TX: 2496-2690MHz	Low Range	5	40265	2557.5
		10	40290	2560
		15	40315	2562.5
		20	40340	2565
	Middle Range	5/10/ 15/20	40745	2605
	High Range	5	41215	2652.5
		10	41191	2650
		15	41165	2647.5
		20	41490	2645
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
LTE Band 71 TX: 663-698MHz	Low Range	5	133147	665.5
		10	133172	668
		15	133197	670.5
		20	133222	673
	Middle Range	5/10/15	133297	680.5
		20	133322	683
	High Range	5	133447	695.5
		10	133422	693
		15	133397	690.5
		20	133372	688

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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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 120V~60Hz. 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 13	1TX	Chain 0	Y axis
LTE Band 17	1TX	Chain 0	Y axis
LTE Band 38	1TX	Chain 0	Y axis
LTE Band 41	1TX	Chain 0	Y axis
LTE Band 66	1TX	Chain 0	Y axis
LTE Band 71	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	24.10	24.18	24.28	1	0	24.14	24.27	24.43
	1	2	24.24	24.38	24.49	1	7	24.15	24.26	24.41
	1	5	24.07	24.16	24.33	1	14	24.04	24.20	24.41
	3	0	24.22	24.29	24.35	8	0	23.17	23.29	23.42
	3	1	24.31	24.43	24.48	8	3	23.15	23.26	23.41
	3	3	24.25	24.29	24.41	8	7	23.11	23.29	23.41
	6	0	23.13	23.27	23.41	15	0	23.15	23.30	23.42
16QAM	1	0	23.10	23.20	23.31	1	0	23.74	23.83	23.41
	1	2	23.24	23.44	23.46	1	7	23.73	23.85	23.43
	1	5	23.13	23.25	23.30	1	14	23.65	23.83	23.36
	3	0	23.35	23.41	23.39	8	0	22.40	22.49	22.53
	3	1	23.36	23.40	23.36	8	3	22.38	22.51	22.52
	3	3	23.23	23.38	23.42	8	7	22.37	22.51	22.45
	6	0	22.17	22.32	22.35	15	0	22.29	22.45	22.47
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	24.07	24.22	24.25	1	0	24.14	24.27	24.42
	1	12	24.18	24.36	24.39	1	24	24.23	24.48	24.53
	1	24	24.07	24.22	24.27	1	49	24.13	24.26	24.39
	12	0	23.17	23.36	23.43	25	0	23.15	23.40	23.53
	12	6	23.23	23.42	23.51	25	12	23.29	23.47	23.59
	12	13	23.21	23.35	23.40	25	25	23.26	23.38	23.40
	25	0	23.16	23.36	23.39	50	0	23.24	23.39	23.50
16QAM	1	0	23.00	23.52	23.35	1	0	23.75	23.85	23.41
	1	12	23.10	23.65	23.43	1	24	23.78	24.00	23.55
	1	24	22.99	23.55	23.30	1	49	23.74	23.85	23.33
	12	0	22.18	22.43	22.46	25	0	22.31	22.56	22.68
	12	6	22.25	22.51	22.48	25	12	22.38	22.62	22.71
	12	13	22.20	22.43	22.36	25	25	22.41	22.51	22.57
	25	0	22.28	22.41	22.51	50	0	22.33	22.46	22.57
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.11	24.17	24.43	1	0	24.05	24.19	24.26
	1	37	24.17	24.29	24.38	1	50	24.30	24.49	24.55
	1	74	24.09	24.14	24.31	1	99	24.04	24.20	24.22
	37	0	23.57	23.74	23.72	50	0	23.06	23.42	23.38
	37	19	23.60	23.83	23.70	50	25	23.28	23.55	23.47
	37	39	23.51	23.74	23.62	50	50	23.16	23.34	23.28
	75	0	23.22	23.41	23.54	100	0	23.11	23.38	23.37
16QAM	1	0	23.58	23.75	23.73	1	0	23.38	23.41	23.58
	1	37	23.59	23.85	23.79	1	50	23.60	23.72	23.83
	1	74	23.53	23.75	23.60	1	99	23.42	23.40	23.50
	37	0	23.56	23.73	23.73	50	0	22.12	22.48	22.46
	37	19	23.50	23.81	23.75	50	25	22.41	22.78	22.72
	37	39	23.48	23.75	23.60	50	50	22.21	22.41	22.35
	75	0	22.22	22.43	22.52	100	0	22.17	22.45	22.44

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	23.42	23.13	22.95	1	0	23.38	23.22	23.08
	1	2	23.51	23.30	23.23	1	7	23.63	23.24	23.24
	1	5	23.14	22.92	23.02	1	14	23.13	22.83	22.91
	3	0	23.35	23.27	23.32	8	0	22.43	22.29	22.26
	3	1	23.60	23.47	23.33	8	3	22.53	22.49	22.47
	3	3	23.39	22.99	23.19	8	7	22.29	22.01	22.14
16QAM	6	0	22.29	22.19	22.21	15	0	22.38	22.13	22.19
	1	0	22.59	22.78	22.62	1	0	22.66	22.87	22.64
	1	2	22.69	22.93	22.75	1	7	22.81	22.80	22.82
	1	5	22.33	22.59	22.59	1	14	22.29	22.60	22.58
	3	0	22.46	22.35	22.24	8	0	21.40	21.35	21.24
	3	1	22.57	22.39	22.42	8	3	21.58	21.36	21.53
16QAM	3	3	22.40	22.13	22.08	8	7	21.38	21.12	21.19
	6	0	21.34	21.25	21.28	15	0	21.50	21.28	21.31
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.42	23.10	23.00	1	0	23.42	23.10	22.97
	1	12	23.61	23.24	23.21	1	24	23.52	23.28	23.23
	1	24	23.18	22.99	23.01	1	49	23.18	22.82	22.93
	12	0	22.54	22.24	22.25	25	0	22.41	22.26	22.39
	12	6	22.48	22.43	22.44	25	12	22.48	22.38	22.45
	12	13	22.30	22.17	22.10	25	25	22.40	22.03	22.08
16QAM	25	0	22.34	22.13	22.26	50	0	22.29	22.05	22.22
	1	0	22.70	22.87	22.61	1	0	22.68	22.82	22.68
	1	12	22.65	22.98	22.76	1	24	22.68	22.83	22.88
	1	24	22.36	22.62	22.59	1	49	22.23	22.52	22.53
	12	0	21.42	21.42	21.39	25	0	21.46	21.40	21.38
	12	6	21.47	21.42	21.45	25	12	21.42	21.38	21.53
16QAM	12	13	21.38	21.17	21.22	25	25	21.38	21.17	21.17
	25	0	21.50	21.22	21.34	50	0	21.47	21.24	21.31
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	23.46	23.21	22.94	1	0	23.50	23.26	23.11
	1	37	23.46	23.35	23.30	1	50	23.63	23.40	23.34
	1	74	23.00	22.94	23.06	1	99	23.20	23.01	23.08
	37	0	22.36	22.20	22.36	50	0	22.54	22.38	22.39
	37	19	22.59	22.49	22.46	50	25	22.66	22.50	22.47
	37	39	22.27	22.08	22.17	50	50	22.41	22.18	22.20
16QAM	75	0	22.31	22.11	22.23	100	0	22.40	22.24	22.28
	1	0	22.58	22.84	22.64	1	0	22.75	22.88	22.74
	1	37	22.83	22.83	22.81	1	50	22.83	22.98	22.93
	1	74	22.32	22.51	22.68	1	99	22.40	22.65	22.71
	37	0	21.54	21.35	21.26	50	0	21.55	21.48	21.42
	37	19	21.47	21.35	21.53	50	25	21.62	21.53	21.58
16QAM	37	39	21.27	21.19	21.09	50	50	21.46	21.25	21.23
	75	0	21.32	21.33	21.18	100	0	21.51	21.34	21.34

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	23.97	23.88	23.90	1	0	23.98	23.91	23.95
	1	2	24.07	24.05	24.08	1	7	24.06	24.19	24.13
	1	5	23.84	23.91	24.07	1	14	24.01	24.00	23.93
	3	0	23.90	24.08	24.15	8	0	22.92	23.24	23.14
	3	1	24.33	24.26	24.23	8	3	23.27	23.27	23.26
	3	3	24.07	23.99	24.06	8	7	24.14	23.03	23.14
16QAM	6	0	22.85	23.02	23.10	15	0	22.89	23.09	23.10
	1	0	23.20	22.93	23.12	1	0	23.11	22.85	23.09
	1	2	23.18	23.21	23.35	1	7	23.29	23.13	23.27
	1	5	23.03	23.03	23.01	1	14	23.00	23.01	23.18
	3	0	23.03	23.35	23.11	8	0	22.00	22.36	22.16
	3	1	23.07	23.51	23.33	8	3	22.08	22.47	22.36
Channel Bandwidth: 5 MHz	3	3	23.08	23.19	23.06	8	7	22.08	22.18	22.15
	6	0	22.00	22.24	22.26	15	0	21.96	22.19	22.25
	Channel Bandwidth: 10 MHz									
	1	0	24.04	23.87	23.98	1	0	24.08	24.01	24.06
	1	12	24.05	24.23	24.21	1	24	24.24	24.27	24.34
	1	24	23.83	24.04	24.02	1	49	24.03	24.06	24.09
QPSK	12	0	22.80	23.13	23.14	25	0	22.94	23.24	23.15
	12	6	23.23	23.21	23.21	25	12	23.36	23.41	23.38
	12	13	24.13	22.99	23.10	25	25	24.24	23.08	23.14
	25	0	22.96	23.13	23.06	50	0	22.99	23.21	23.16
16QAM	1	0	23.11	22.99	23.04	1	0	23.23	23.02	23.22
	1	12	23.11	23.07	23.34	1	24	23.29	23.22	23.39
	1	24	23.10	23.00	23.14	1	49	23.16	23.06	23.21
	12	0	21.99	22.37	22.10	25	0	22.07	22.44	22.25
	12	6	21.99	22.40	22.28	25	12	22.12	22.54	22.41
	12	13	22.08	22.20	22.17	25	25	22.10	22.26	22.25
Channel Bandwidth: 10 MHz	25	0	21.92	22.25	22.13	50	0	22.07	22.32	22.28

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	24.12	24.18	24.19	1	0	24.22	24.34	24.26
	1	12	24.54	24.51	24.46	1	24	24.53	24.39	24.53
	1	24	24.10	24.03	24.18	1	49	23.99	24.13	24.10
	12	0	23.11	23.19	23.31	25	0	23.06	23.26	23.39
	12	6	23.35	23.38	23.46	25	12	23.38	23.38	23.55
	12	13	23.19	23.24	23.10	25	25	23.16	23.35	23.15
16QAM	25	0	23.16	23.26	23.26	50	0	23.23	23.23	23.35
	1	0	23.40	23.41	23.53	1	0	23.24	23.39	23.61
	1	12	23.58	23.72	23.69	1	24	23.55	23.69	23.65
	1	24	23.22	23.42	23.50	1	49	23.27	23.24	23.50
	12	0	22.05	22.28	22.27	25	0	22.13	22.19	22.24
	12	6	22.27	22.52	22.46	25	12	22.23	22.46	22.51
16QAM	12	13	22.04	22.16	22.19	25	25	22.08	22.30	22.11
	25	0	22.19	22.15	22.22	50	0	22.13	22.17	22.25
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.21	24.23	24.14	1	0	24.25	24.36	24.34
	1	37	24.40	24.56	24.51	1	50	24.58	24.57	24.62
	1	74	24.11	24.16	24.21	1	99	24.17	24.21	24.22
	37	0	23.17	23.26	23.24	50	0	23.24	23.39	23.43
	37	19	23.40	23.46	23.52	50	25	23.42	23.56	23.61
	37	39	23.14	23.30	23.22	50	50	23.26	23.38	23.27
16QAM	75	0	23.22	23.19	23.36	100	0	23.26	23.36	23.37
	1	0	23.31	23.54	23.53	1	0	23.43	23.54	23.69
	1	37	23.57	23.58	23.79	1	50	23.68	23.76	23.82
	1	74	23.19	23.31	23.45	1	99	23.31	23.43	23.51
	37	0	22.11	22.30	22.32	50	0	22.21	22.36	22.42
	37	19	22.28	22.44	22.45	50	25	22.42	22.54	22.61
16QAM	37	39	22.17	22.17	22.14	50	50	22.23	22.32	22.22
	75	0	22.24	22.22	22.30	100	0	22.24	22.35	22.35

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	24.28	24.10	24.06	1	0	24.26	24.04	23.95
	1	2	24.38	24.27	24.18	1	7	24.29	24.31	24.07
	1	5	24.12	23.90	23.94	1	14	24.15	23.96	24.04
	3	0	24.24	24.05	24.05	8	0	23.25	23.15	23.22
	3	1	24.38	24.21	24.15	8	3	23.34	23.22	23.29
	3	3	24.30	24.14	24.06	8	7	23.20	23.04	23.04
16QAM	6	0	23.22	23.12	23.13	15	0	23.27	23.17	23.16
	1	0	23.28	23.19	23.65	1	0	23.31	23.23	23.65
	1	2	23.52	23.23	23.78	1	7	23.55	23.32	23.80
	1	5	23.32	22.93	23.47	1	14	23.24	23.04	23.65
	3	0	23.23	23.25	23.28	8	0	22.29	22.16	22.18
	3	1	23.37	23.25	23.32	8	3	22.44	22.25	22.33
16QAM	3	3	23.17	23.32	23.09	8	7	22.19	22.24	22.16
	6	0	22.34	22.11	22.21	15	0	22.35	22.10	22.07
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	24.26	24.04	24.11	1	0	24.32	24.20	24.15
	1	12	24.32	24.32	24.16	1	24	24.44	24.37	24.24
	1	24	24.03	23.85	24.06	1	49	24.20	24.05	24.09
	12	0	23.35	23.11	23.07	25	0	23.37	23.17	23.23
	12	6	23.29	23.15	23.13	25	12	23.43	23.26	23.31
	12	13	23.14	23.19	22.92	25	25	23.34	23.23	23.06
16QAM	25	0	23.35	23.20	23.03	50	0	23.36	23.24	23.16
	1	0	23.38	23.14	23.65	1	0	23.45	23.26	23.74
	1	12	23.55	23.24	23.80	1	24	23.61	23.34	23.84
	1	24	23.18	22.91	23.50	1	49	23.32	23.07	23.66
	12	0	22.28	22.23	22.16	25	0	22.43	22.31	22.30
	12	6	22.41	22.32	22.40	25	12	22.50	22.39	22.41
16QAM	12	13	22.18	22.14	22.13	25	25	22.35	22.34	22.16
	25	0	22.25	22.08	22.14	50	0	22.37	22.26	22.23

4.5.6 LTE Band 13

LTE Band 13 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	23.63	23.74	23.72	1	0	/	23.77	/
	1	12	23.78	23.83	23.76	1	24	/	23.92	/
	1	24	23.69	23.87	23.78	1	49	/	23.88	/
	12	0	22.64	22.79	22.70	25	0	/	22.79	/
	12	6	22.79	22.80	22.65	25	12	/	22.92	/
	12	13	22.61	22.69	22.59	25	25	/	22.88	/
	25	0	22.53	22.70	22.63	50	0	/	22.85	/
16QAM	1	0	23.21	23.27	23.22	1	0	/	23.37	/
	1	12	23.35	23.51	23.45	1	24	/	23.51	/
	1	24	23.22	23.41	23.34	1	49	/	23.44	/
	12	0	21.55	21.71	21.65	25	0	/	21.83	/
	12	6	21.72	21.87	21.86	25	12	/	21.95	/
	12	13	21.79	21.82	21.63	25	25	/	21.91	/
	25	0	21.72	21.80	21.79	50	0	/	21.83	/

4.5.7 LTE Band 17

LTE Band 17 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	24.04	24.21	24.16	1	0	24.18	24.24	24.16
	1	12	24.15	24.14	24.17	1	24	24.29	24.29	24.24
	1	24	23.86	24.06	24.02	1	49	24.06	24.07	24.04
	12	0	23.07	23.20	22.97	25	0	23.16	23.20	23.15
	12	6	23.10	23.22	23.10	25	12	23.25	23.27	23.20
	12	13	23.04	23.02	23.03	25	25	23.13	23.10	23.06
	25	0	23.02	23.05	23.05	50	0	23.11	23.13	23.11
16QAM	1	0	23.22	23.23	23.58	1	0	23.31	23.24	23.72
	1	12	23.37	23.17	23.72	1	24	23.42	23.33	23.77
	1	24	23.09	22.91	23.56	1	49	23.18	23.09	23.56
	12	0	22.04	22.28	22.13	25	0	22.17	22.28	22.19
	12	6	22.20	22.33	22.06	25	12	22.24	22.35	22.23
	12	13	22.07	22.17	22.08	25	25	22.13	22.18	22.10
	25	0	22.03	22.11	22.05	50	0	22.13	22.18	22.09

4.5.8 LTE Band 38

LTE Band 38 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	24.25	24.33	24.18	1	0	24.24	24.20	24.24
	1	12	24.43	24.48	24.47	1	24	24.47	24.48	24.57
	1	24	24.00	24.01	23.94	1	49	24.09	23.98	23.93
	12	0	23.24	23.16	23.09	25	0	23.23	23.31	23.05
	12	6	23.51	23.40	23.34	25	12	23.47	23.28	23.31
	12	13	23.20	23.14	23.10	25	25	23.09	23.09	23.12
16QAM	25	0	23.25	23.09	23.09	50	0	23.19	23.25	23.18
	1	0	23.17	23.55	23.40	1	0	23.13	23.53	23.43
	1	12	23.44	23.77	23.61	1	24	23.46	23.73	23.66
	1	24	22.97	23.34	23.24	1	49	22.97	23.27	23.29
	12	0	22.32	22.19	22.17	25	0	22.32	22.25	22.16
	12	6	22.53	22.40	22.34	25	12	22.52	22.25	22.39
QPSK	12	13	22.38	22.17	22.08	25	25	22.41	22.14	21.98
	25	0	22.32	22.11	22.17	50	0	22.23	22.24	22.06
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.23	24.25	24.14	1	0	24.35	24.38	24.29
	1	37	24.54	24.62	24.45	1	50	24.61	24.63	24.58
	1	74	24.05	24.12	24.10	1	99	24.18	24.16	24.11
	37	0	23.26	23.14	23.09	50	0	23.36	23.32	23.22
	37	19	23.33	23.29	23.35	50	25	23.52	23.48	23.43
	37	39	23.17	23.16	23.12	50	50	23.29	23.19	23.19
16QAM	75	0	23.35	23.19	23.10	100	0	23.36	23.25	23.21
	1	0	23.14	23.40	23.31	1	0	23.32	23.56	23.48
	1	37	23.53	23.68	23.77	1	50	23.62	23.81	23.79
	1	74	22.97	23.21	23.30	1	99	23.14	23.38	23.31
	37	0	22.23	22.33	22.13	50	0	22.41	22.38	22.27
	37	19	22.35	22.24	22.28	50	25	22.53	22.42	22.41
QPSK	37	39	22.25	22.00	21.98	50	50	22.44	22.20	22.16
	75	0	22.23	22.14	22.21	100	0	22.37	22.27	22.22

4.5.9 LTE Band 41

LTE Band 41 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	24.01	24.01	23.81	1	0	24.02	24.00	23.88
	1	12	24.42	24.28	24.33	1	24	24.42	24.23	24.23
	1	24	24.07	23.93	24.01	1	49	23.92	23.96	24.02
	12	0	23.12	23.00	23.02	25	0	23.13	23.09	22.88
	12	6	23.30	23.31	23.25	25	12	22.20	22.19	22.40
	12	13	22.98	23.05	22.86	25	25	23.13	23.03	22.91
16QAM	25	0	23.12	23.07	22.91	50	0	22.98	23.08	22.94
	1	0	23.03	23.02	23.11	1	0	23.01	22.92	23.04
	1	12	23.36	23.28	23.46	1	24	23.36	23.24	23.39
	1	24	22.98	22.84	23.02	1	49	23.11	22.87	23.21
	12	0	22.17	22.12	21.92	25	0	22.00	22.15	22.04
	12	6	23.28	23.18	23.16	25	12	22.30	22.32	22.36
QPSK	12	13	22.02	22.02	21.90	25	25	22.03	22.08	21.93
	25	0	22.04	22.00	21.84	50	0	22.09	22.06	21.78
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.04	23.92	23.88	1	0	24.10	24.07	24.00
	1	37	24.32	24.38	24.16	1	50	24.43	24.40	24.35
	1	74	24.04	23.84	23.85	1	99	24.09	24.01	24.02
	37	0	23.01	23.10	23.00	50	0	23.19	23.10	23.02
	37	19	23.36	23.29	23.20	50	25	23.38	23.34	23.29
	37	39	22.96	23.03	22.86	50	50	23.13	23.08	22.97
16QAM	75	0	23.02	23.08	22.97	100	0	23.17	23.09	23.00
	1	0	22.86	22.89	23.02	1	0	23.03	23.04	23.20
	1	37	23.32	23.38	23.53	1	50	23.41	23.38	23.58
	1	74	22.93	22.84	23.02	1	99	23.12	22.98	23.21
	37	0	22.15	22.09	21.99	50	0	22.19	22.17	22.06
	37	19	22.35	22.21	22.35	50	25	22.38	22.34	22.43
QPSK	37	39	21.95	22.10	21.87	50	50	22.12	22.16	21.98
	75	0	22.02	22.04	21.81	100	0	22.15	22.17	21.95

4.5.10 LTE Band 66

LTE Band 66 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	22.68	22.53	22.62	1	0	22.54	22.43	22.54
	1	2	22.90	22.93	22.98	1	7	22.84	22.86	22.93
	1	5	22.63	22.52	22.74	1	14	22.47	22.53	22.61
	3	0	22.80	22.70	22.77	8	0	21.70	21.69	21.87
	3	1	23.01	22.86	22.94	8	3	21.97	22.01	22.02
	3	3	22.69	22.60	22.68	8	7	21.57	21.70	21.82
16QAM	6	0	21.63	21.79	21.90	15	0	21.62	21.65	21.85
	1	0	21.96	22.08	22.01	1	0	21.97	22.08	21.85
	1	2	22.17	22.37	22.27	1	7	22.09	22.43	22.25
	1	5	21.77	22.25	21.95	1	14	21.68	22.27	22.06
	3	0	21.82	21.74	21.91	8	0	20.71	20.85	20.90
	3	1	22.01	22.04	21.98	8	3	20.97	21.11	20.95
16QAM	3	3	21.71	21.73	21.85	8	7	20.77	20.75	20.85
	6	0	20.68	20.85	20.78	15	0	20.81	20.68	20.88
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.69	22.45	22.61	1	0	22.63	22.47	22.66
	1	12	22.95	22.76	22.98	1	24	23.00	22.79	22.94
	1	24	22.58	22.52	22.70	1	49	22.54	22.68	22.68
	12	0	21.63	21.65	21.88	25	0	21.78	21.62	21.80
	12	6	22.04	21.94	21.98	25	12	21.98	21.94	22.01
	12	13	21.74	21.64	21.71	25	25	21.63	21.61	21.76
16QAM	25	0	21.72	21.69	21.84	50	0	21.67	21.78	21.90
	1	0	21.90	22.01	21.86	1	0	21.85	22.10	22.03
	1	12	21.99	22.47	22.33	1	24	22.00	22.32	22.36
	1	24	21.70	22.11	22.09	1	49	21.68	22.10	22.06
	12	0	20.81	20.89	20.81	25	0	20.69	20.90	20.97
	12	6	20.89	21.09	21.07	25	12	20.98	21.13	20.91
16QAM	12	13	20.80	20.64	20.85	25	25	20.73	20.77	20.74
	25	0	20.78	20.73	20.90	50	0	20.64	20.75	20.90
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.62	22.52	22.61	1	0	22.70	22.58	22.73
	1	37	22.82	22.90	22.93	1	50	23.02	22.94	23.04
	1	74	22.65	22.68	22.67	1	99	22.66	22.70	22.80
	37	0	21.75	21.77	21.77	50	0	21.83	21.81	21.93
	37	19	21.96	21.96	22.08	50	25	22.07	22.03	22.13
	37	39	21.62	21.69	21.73	50	50	21.77	21.76	21.85
16QAM	75	0	21.59	21.77	21.79	100	0	21.78	21.81	21.91
	1	0	21.83	22.09	21.98	1	0	21.98	22.20	22.03
	1	37	22.16	22.39	22.36	1	50	22.18	22.50	22.40
	1	74	21.82	22.15	22.01	1	99	21.87	22.28	22.13
	37	0	20.77	20.87	20.95	50	0	20.87	20.94	21.01
	37	19	20.85	21.11	20.95	50	25	21.04	21.17	21.08
16QAM	37	39	20.79	20.81	20.83	50	50	20.82	20.84	20.89
	75	0	20.63	20.67	20.88	100	0	20.83	20.86	20.95

4.5.11 LTE Band 71

LTE Band 71 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	23.50	23.31	23.29	1	0	23.44	23.33	23.34
	1	12	23.75	23.51	23.70	1	24	23.80	23.54	23.66
	1	24	23.43	23.36	23.46	1	49	23.39	23.52	23.44
	12	0	22.41	22.30	22.59	25	0	22.56	22.27	22.51
	12	6	22.71	22.58	22.72	25	12	22.65	22.58	22.75
	12	13	22.66	22.37	22.52	25	25	22.55	22.34	22.57
	25	0	22.65	22.40	22.64	50	0	22.60	22.49	22.70
16QAM	1	0	22.52	22.78	22.56	1	0	22.47	22.87	22.73
	1	12	22.74	23.23	22.95	1	24	22.75	23.08	22.98
	1	24	22.53	22.90	22.72	1	49	22.51	22.89	22.69
	12	0	21.52	21.40	21.44	25	0	21.40	21.41	21.60
	12	6	21.74	21.55	21.91	25	12	21.83	21.59	21.75
	12	13	21.73	21.32	21.63	25	25	21.66	21.45	21.52
	25	0	21.64	21.35	21.65	50	0	21.50	21.37	21.65
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	23.43	23.38	23.29	1	0	23.51	23.44	23.41
	1	37	23.62	23.65	23.65	1	50	23.82	23.69	23.76
	1	74	23.50	23.52	23.43	1	99	23.51	23.54	23.56
	37	0	22.53	22.42	22.48	50	0	22.61	22.46	22.64
	37	19	22.63	22.60	22.82	50	25	22.74	22.67	22.87
	37	39	22.54	22.42	22.54	50	50	22.69	22.49	22.66
	75	0	22.52	22.48	22.59	100	0	22.71	22.52	22.71
16QAM	1	0	22.45	22.86	22.68	1	0	22.60	22.97	22.73
	1	37	22.91	23.15	22.98	1	50	22.93	23.26	23.02
	1	74	22.65	22.94	22.64	1	99	22.70	23.07	22.76
	37	0	21.48	21.38	21.58	50	0	21.58	21.45	21.64
	37	19	21.70	21.57	21.79	50	25	21.89	21.63	21.92
	37	39	21.72	21.49	21.61	50	50	21.75	21.52	21.67
	75	0	21.49	21.29	21.63	100	0	21.69	21.48	21.70

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the LTE worse case mode applicability and tested channel detail as below:

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
ERP/EIRP	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	17	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	17	-	-	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	17	-	-	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
peak-to-av erage ratio	2	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☐	☐	☐	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	7	-	-	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☐	☐	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	17	-	-	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	38	-	-	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	41	-	-	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	66	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	71	-	-	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Band Edge at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	17	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	17	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Field strength of spurious radiation	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	13	-	-	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	17	-	-	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	41	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	66	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	71	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	13	-	-	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	17	-	-	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	41	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	66	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	71	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
Remark: The mark "☒" means is chosen for testing; The mark "☐" means is not chosen for testing; The mark "-" means is not supported bandwidth																

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22	Public Mobile Services
3	FCC 47 CFR Part 27	Miscellaneous Wireless Communications Services
4	FCC 47 CFR Part 24	Personal Communications Services
5	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
6	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01

5.2 ERP OR EIRP

Test Requirement: FCC 47 CFR Part 2.1046(a)
LTE Band 2: FCC 47 CFR Part 24.232(c)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5: FCC 47 CFR Part 22.913(a)
LTE Band 7 & Band 38 & Band 41: FCC 47 CFR Part 27.50(h)(2)
LTE Band 12 & Band 17 & Band 71: FCC 47 CFR Part 27.50(c)(10)
LTE Band 13: FCC 47 CFR Part 27.50(b)(10)

Test Method: KDB 971168 D01v03r01 Section 5.6 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c):

Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(c)(10):

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC 47 CFR Part 27.50(h)(2):

Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC 47 CFR Part 27.50(b)(10):

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Test Procedure:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_c$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

1) L_c = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

Test Setup: Refer to section 4.2.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

Test Results: Pass
Test Data: See table below

5.2.1 LTE Band 2

LTE Band 2 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	25.45	24.55	/	33.01	Pass
Middle	25.58	24.64	/	33.01	Pass
Highest	25.69	24.66	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	25.35	24.94	/	33.01	Pass
Middle	25.47	25.05	/	33.01	Pass
Highest	25.63	24.63	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	25.38	24.30	/	33.01	Pass
Middle	25.56	24.85	/	33.01	Pass
Highest	25.59	24.63	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	25.43	24.98	/	33.01	Pass
Middle	25.68	25.20	/	33.01	Pass
Highest	25.73	24.75	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	25.37	24.79	/	33.01	Pass
Middle	25.49	25.05	/	33.01	Pass
Highest	25.63	24.99	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	25.50	24.80	/	33.01	Pass
Middle	25.69	24.92	/	33.01	Pass
Highest	25.75	25.03	/	33.01	Pass

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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5.2.2 LTE Band 4

LTE Band 4 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	24.90	23.99	/	30.00	Pass
Middle	24.77	24.23	/	30.00	Pass
Highest	24.63	24.05	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	24.93	23.96	/	30.00	Pass
Middle	24.54	24.17	/	30.00	Pass
Highest	24.54	23.94	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	24.91	23.95	/	30.00	Pass
Middle	24.54	24.28	/	30.00	Pass
Highest	24.51	24.06	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	24.82	23.98	/	30.00	Pass
Middle	24.58	24.13	/	30.00	Pass
Highest	24.53	24.18	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	24.76	23.88	/	30.00	Pass
Middle	24.65	24.14	/	30.00	Pass
Highest	24.60	23.94	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	24.93	24.13	/	30.00	Pass
Middle	24.70	24.28	/	30.00	Pass
Highest	24.64	24.23	/	30.00	Pass

5.2.3 LTE Band 5

LTE Band 5 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	22.98	21.72	/	38.45	Pass
Middle	22.91	22.16	/	38.45	Pass
Highest	22.88	21.98	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	22.71	21.94	/	38.45	Pass
Middle	22.84	21.78	/	38.45	Pass
Highest	22.78	21.92	/	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	22.70	21.76	/	38.45	Pass
Middle	22.88	21.72	/	38.45	Pass
Highest	22.86	21.99	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	22.89	21.94	/	38.45	Pass
Middle	22.92	21.87	/	38.45	Pass
Highest	22.99	22.04	/	38.45	Pass

5.2.4 LTE Band 7

LTE Band 7 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	25.44	24.48	/	33.01	Pass
Middle	25.41	24.62	/	33.01	Pass
Highest	25.36	24.59	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	25.43	24.45	/	33.01	Pass
Middle	25.29	24.59	/	33.01	Pass
Highest	25.43	24.55	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	25.30	24.47	/	33.01	Pass
Middle	25.46	24.48	/	33.01	Pass
Highest	25.41	24.69	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	25.48	24.58	/	33.01	Pass
Middle	25.47	24.66	/	33.01	Pass
Highest	25.52	24.72	/	33.01	Pass

5.2.5 LTE Band 12

LTE Band 12 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	22.13	21.27	/	34.77	Pass
Middle	22.02	20.98	/	34.77	Pass
Highest	21.93	21.53	/	34.77	Pass
Channel Bandwidth: 3MHz					
Lowest	22.04	21.30	/	34.77	Pass
Middle	22.06	21.07	/	34.77	Pass
Highest	21.82	21.55	/	34.77	Pass
Channel Bandwidth: 5MHz					
Lowest	22.07	21.30	/	34.77	Pass
Middle	22.07	20.99	/	34.77	Pass
Highest	21.91	21.55	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	22.19	21.36	/	34.77	Pass
Middle	22.12	21.09	/	34.77	Pass
Highest	21.99	21.59	/	34.77	Pass

5.2.6 LTE Band 13

LTE Band 13 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	22.34	22.00	/	34.77	Pass
Middle	22.52	22.16	/	34.77	Pass
Highest	22.43	22.10	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	/	/	/	34.77	Pass
Middle	22.57	22.16	/	34.77	Pass
Highest	/	/	/	34.77	Pass

5.2.7 LTE Band 17

LTE Band 17 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	21.79	21.12	/	34.77	Pass
Middle	21.96	20.92	/	34.77	Pass
Highest	21.91	21.47	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	22.04	21.17	/	34.77	Pass
Middle	22.04	21.08	/	34.77	Pass
Highest	21.99	21.52	/	34.77	Pass

5.2.8 LTE Band 38

LTE Band 38 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	25.33	24.34	/	33.01	Pass
Middle	25.38	24.67	/	33.01	Pass
Highest	25.37	24.51	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	25.37	24.36	/	33.01	Pass
Middle	25.38	24.63	/	33.01	Pass
Highest	25.47	24.56	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	25.44	24.43	/	33.01	Pass
Middle	25.52	24.58	/	33.01	Pass
Highest	25.35	24.67	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	25.51	24.52	/	33.01	Pass
Middle	25.53	24.71	/	33.01	Pass
Highest	25.48	24.69	/	33.01	Pass

5.2.9 LTE Band 41

LTE Band 41 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	25.32	24.26	/	33.01	Pass
Middle	25.18	24.18	/	33.01	Pass
Highest	25.23	24.36	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	25.32	24.26	/	33.01	Pass
Middle	25.13	24.14	/	33.01	Pass
Highest	25.13	24.29	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	25.22	24.22	/	33.01	Pass
Middle	25.28	24.28	/	33.01	Pass
Highest	25.06	24.43	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	25.33	24.31	/	33.01	Pass
Middle	25.30	24.28	/	33.01	Pass
Highest	25.25	24.48	/	33.01	Pass

5.2.10 LTE Band 66

LTE Band 66 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	24.31	23.47	/	30.00	Pass
Middle	24.16	23.67	/	30.00	Pass
Highest	24.24	23.57	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	24.14	23.39	/	30.00	Pass
Middle	24.16	23.73	/	30.00	Pass
Highest	24.23	23.55	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	24.25	23.29	/	30.00	Pass
Middle	24.06	23.77	/	30.00	Pass
Highest	24.28	23.63	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	24.30	23.30	/	30.00	Pass
Middle	24.09	23.62	/	30.00	Pass
Highest	24.24	23.66	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	24.12	23.46	/	30.00	Pass
Middle	24.20	23.69	/	30.00	Pass
Highest	24.23	23.66	/	30.00	Pass

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Channel Bandwidth: 20MHz					
Lowest	24.32	23.48	/	30.00	Pass
Middle	24.24	23.80	/	30.00	Pass
Highest	24.34	23.70	/	30.00	Pass

5.2.11 LTE Band 71

LTE Band 71 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	20.90	19.89	/	33.01	Pass
Middle	20.66	20.38	/	33.01	Pass
Highest	20.85	20.10	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	20.95	19.90	/	33.01	Pass
Middle	20.69	20.23	/	33.01	Pass
Highest	20.81	20.13	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	20.77	20.06	/	33.01	Pass
Middle	20.80	20.30	/	33.01	Pass
Highest	20.80	20.13	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	20.97	20.08	/	33.01	Pass
Middle	20.84	20.41	/	33.01	Pass
Highest	20.91	20.17	/	33.01	Pass

5.3 CONDUCTED OUTPUT POWER

FCC 47 CFR Part 2.1046(a)

LTE Band 2: FCC 47 CFR Part 24.232(c)

LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4)

Test Requirement: **LTE Band 5:** FCC 47 CFR Part 22.913(a)

LTE Band 7 & Band 38 & Band 41: FCC 47 CFR Part 27.50(h)(2)

LTE Band 12 & Band 17 & Band 71: FCC 47 CFR Part 27.50(c)(10)

LTE Band 13: FCC 47 CFR Part 27.50(b)(10)

Test Method: KDB 971168 D01v03r01 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c):

Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(c)(10):

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC 47 CFR Part 27.50(h)(2):

Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC 47 CFR Part 27.50(b)(10):

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Test Procedure:

The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

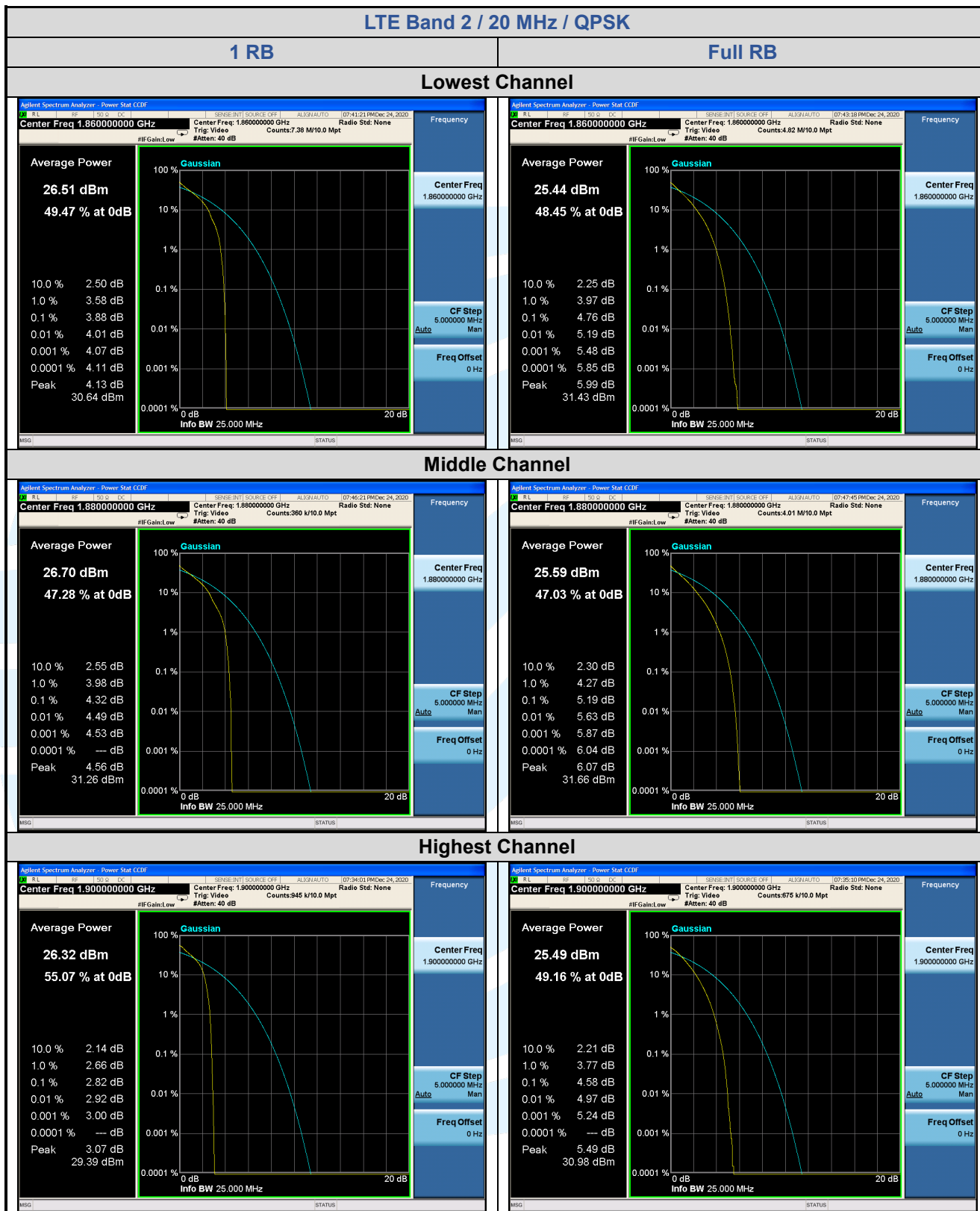
Test Data: [The full result refer to section 4.5 for details.](#)

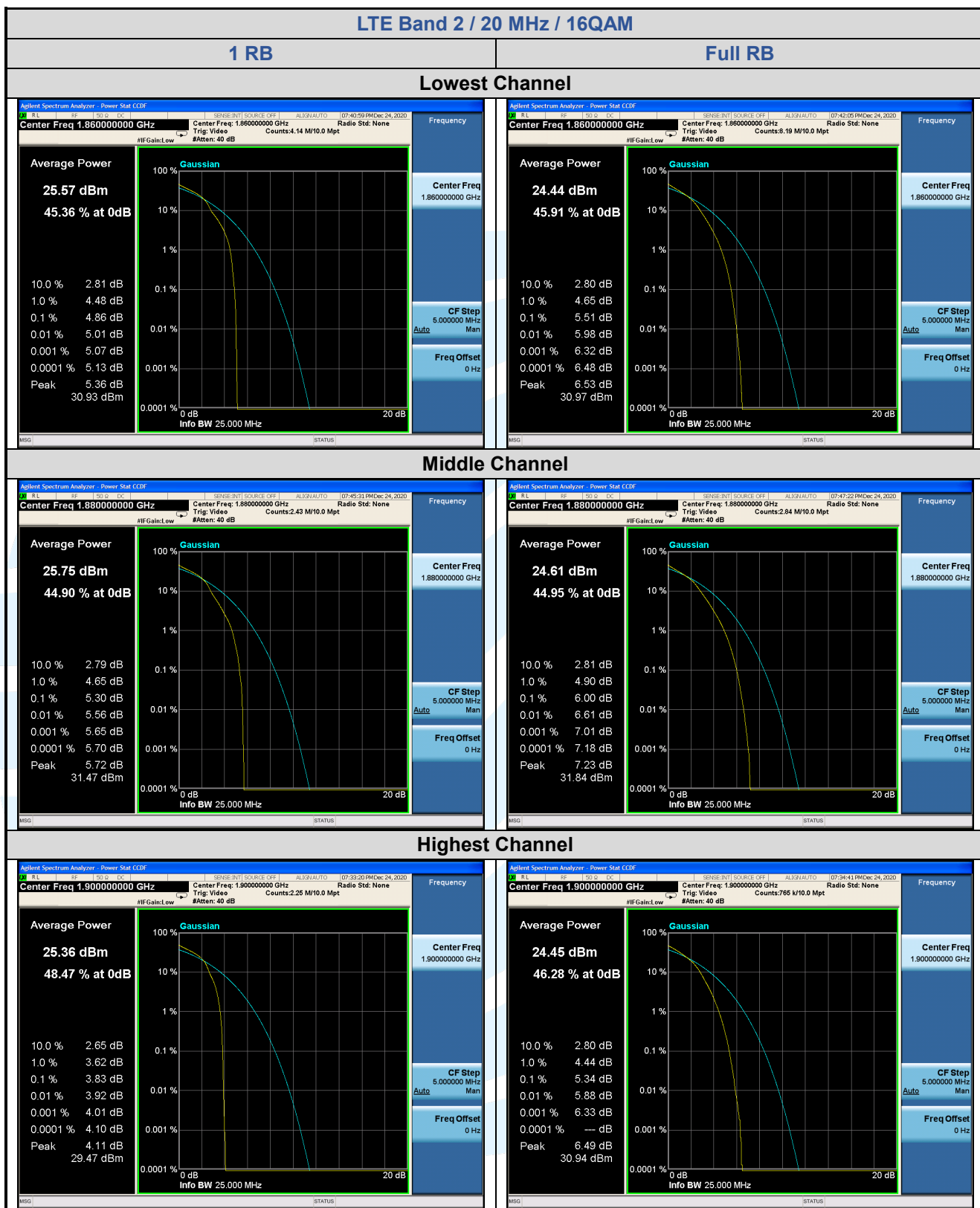
5.4 PEAK-TO-AVERAGE RATIO

Test Requirement:	LTE Band 2: FCC 47 CFR Part 24.232(d)
	LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(5)
	LTE Band 5: FCC 47 CFR Part 22.913(a)
	LTE Band 7 & Band 38 & Band 41: FCC 47 CFR Part 27.50(d)(5)
	LTE Band 12 & Band 17 & Band 71: FCC 47 CFR Part 27.50(d)(5)
Test Method:	LTE Band 13: FCC 47 CFR Part 27.50(d)(5)
Limit:	KDB 971168 D01v03r01 Section 5.7
Test Procedure:	In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.	
a) Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth	
b) Set the number of counts to a value that stabilizes the measured CCDF curve	
c) Record the maximum PAPR level associated with a probability of 0.1 %	
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.	
Test Setup:	Refer to section 4.2.2 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Pass
Test Data:	See table below

5.4.1 LTE Band 2

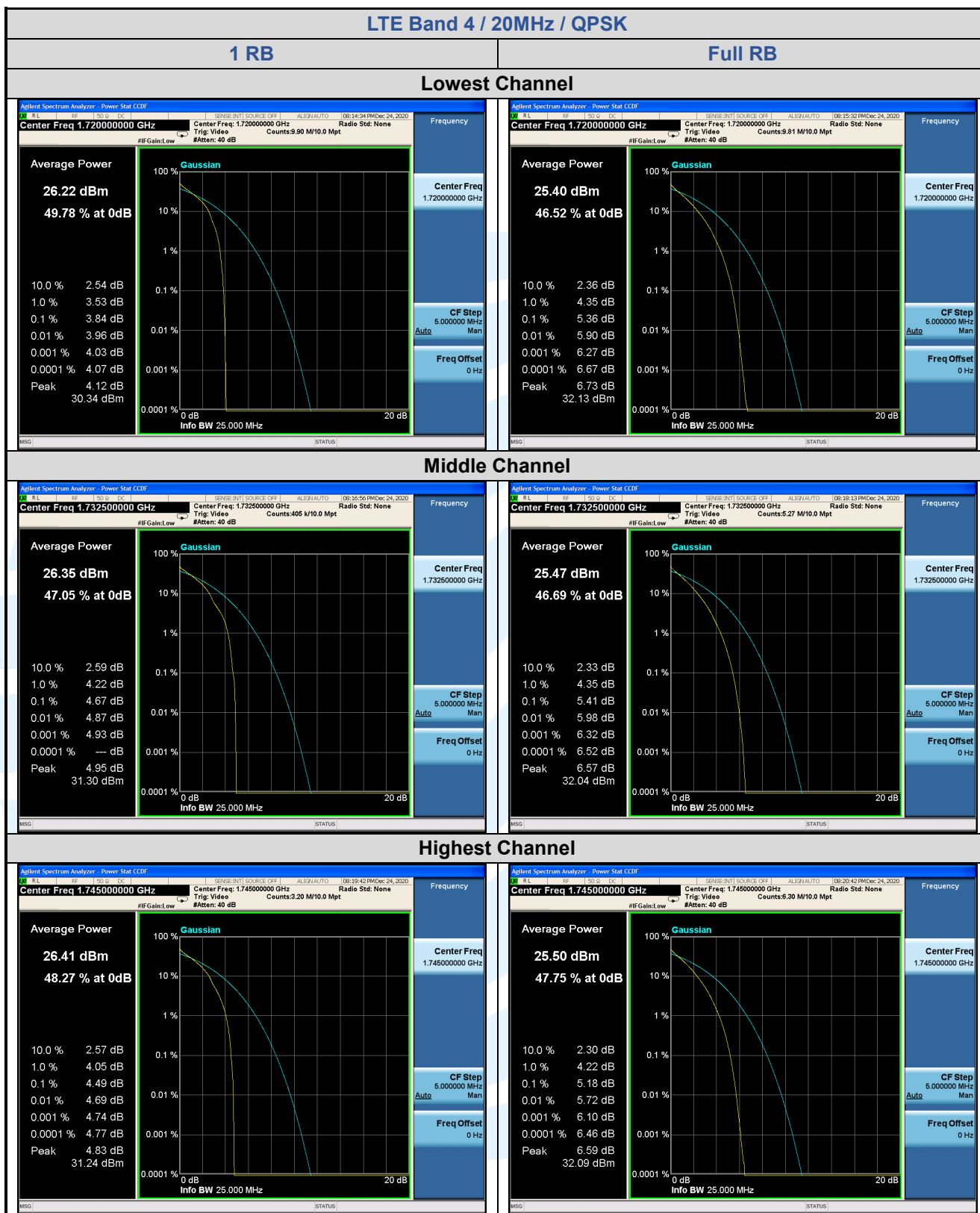
LTE Band 2 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.88	4.86	/	13	Pass
	Full RB	4.76	5.51	/	13	Pass
Middle	1 RB	4.32	5.30	/	13	Pass
	Full RB	5.19	6.00	/	13	Pass
Highest	1 RB	2.82	3.83	/	13	Pass
	Full RB	4.58	5.34	/	13	Pass





5.4.2 LTE Band 4

LTE Band 4 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.84	4.88	/	13	Pass
	Full RB	5.36	6.11	/	13	Pass
Middle	1 RB	4.67	5.55	/	13	Pass
	Full RB	5.41	6.20	/	13	Pass
Highest	1 RB	4.49	5.15	/	13	Pass
	Full RB	5.18	5.96	/	13	Pass





5.4.3 LTE Band 5

LTE Band 5 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.93	4.74	/	13	Pass
	Full RB	5.04	5.80	/	13	Pass
Middle	1 RB	4.69	5.35	/	13	Pass
	Full RB	5.07	5.90	/	13	Pass
Highest	1 RB	3.96	4.99	/	13	Pass
	Full RB	4.57	5.39	/	13	Pass

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

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