

TEST REPORT

Product Name: Cinterion PLS83-X
Trade Mark: CINTERION
Model No. / HVIN: PLS83-X
Report Number: 200722022RFM-2
Test Standards: FCC 47 CFR Part 22, FCC 47 CFR Part 24
FCC 47 CFR Part 27, FCC 47 CFR Part 90
RSS-130 Issue 2, RSS-132 Issue 3
RSS-133 Issue 6, RSS-139 Issue 3
RSS-Gen Issue 5
FCC ID: QIPPLS83-X
IC: 7830A-PLS83X
Test Result: PASS
Date of Issue: February 3, 2021

Prepared for:

Thales DIS AIS Deutschland GmbH
Siemensdamm 50, 13629 Berlin, Germany

Prepared by:

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UTTR-RF-FCC4G-V1.1

Version

Version No.	Date	Description
V1.0	February 3, 2021	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Thales DIS AIS Deutschland GmbH
Address of Applicant:	Siemensdamm 50, 13629 Berlin, Germany
Manufacturer:	Thales DIS AIS Deutschland GmbH
Address of Manufacturer:	Werinherstr.81, 81541 Munich, Germany

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Module	
Model No.:	PLS83-X	
Trade Mark:	CINTERION	
DUT Stage:	Production Unit	
EUT Supports Function:	UTRA Bands:	Band II/ Band IV/ Band V
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 12/ Band 13/ Band 14/ Band 25/ Band 26/ Band 66/ Band 71
Sample Received Date:	August 25, 2020	
Sample Tested Date:	September 1, 2020 to September 24, 2020	
EUT identification	200722022-A01/2	
Firmware number	MDM9607.TX.1.0-00097-STD.PROD-1.366947.1.367976.1	

1.2.2 Description of Accessories

None

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/12/13/14/25/26/66/71:	QPSK, 16QAM
Antenna Type:	External Antenna	
Antenna Gain:	LTE Band 2:	50 ohm terminal (0 dBi)
	LTE Band 4:	50 ohm terminal (0 dBi)
	LTE Band 5:	50 ohm terminal (0 dBi)
	LTE Band 12:	50 ohm terminal (0 dBi)
	LTE Band 13:	50 ohm terminal (0 dBi)
	LTE Band 25:	50 ohm terminal (0 dBi)
	LTE Band 26:	50 ohm terminal (0 dBi)
	LTE Band 66:	50 ohm terminal (0 dBi)
	LTE Band 71:	50 ohm terminal (0 dBi)
Normal Test Voltage:	3.8 Vdc	
Extreme Test Voltage:	3.2 to 4.5Vdc	
Extreme Test Temperature:	-30 °C to +65 °C	

Summary of Results:								
Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		ERP/EIRP	99% BW	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)	(W)	(MHz)	
2	1.4	QPSK	1850.7-1909.3	23.36	23.36	0.21677	1.1084	1M11G7D
		16QAM		23.03	23.03	0.20091	1.1033	1M10W7D
	3	QPSK	1851.5-1908.5	23.44	23.44	0.22080	2.7071	2M71G7D
		16QAM		22.73	22.73	0.18750	2.7119	2M71W7D
	5	QPSK	1852.5-1907.5	23.29	23.29	0.21330	4.5338	4M53G7D
		16QAM		22.89	22.89	0.19454	4.5258	4M53W7D
	10	QPSK	1855.0-1905.0	23.40	23.40	0.21878	8.9839	8M98G7D
		16QAM		22.80	22.80	0.19055	8.9949	8M99W7D
	15	QPSK	1857.5-1902.5	23.30	23.30	0.21380	13.457	13M5G7D
		16QAM		22.88	22.88	0.19409	13.476	13M5W7D
	20	QPSK	1860.0-1900.0	23.46	23.46	0.22182	17.946	17M9G7D
		16QAM		22.89	22.89	0.19454	17.969	18M0W7D
4	1.4	QPSK	1710.7-1754.3	22.95	22.95	0.19724	1.1050	1M11G7D
		16QAM		21.99	21.99	0.15812	1.0997	1M10W7D
	3	QPSK	1711.5-1753.5	23.00	23.00	0.19953	2.7036	2M70G7D
		16QAM		21.85	21.85	0.15311	2.7054	2M71W7D
	5	QPSK	1712.5-1752.5	23.01	23.01	0.19999	4.5246	4M52G7D
		16QAM		21.87	21.87	0.15382	4.5368	4M54W7D
	10	QPSK	1715-1750	22.90	22.90	0.19498	8.9776	8M98G7D
		16QAM		21.75	21.75	0.14962	9.0049	9M00W7D
	15	QPSK	1717.5-1747.5	23.08	23.08	0.20324	13.479	13M5G7D
		16QAM		21.80	21.80	0.15136	13.471	13M5W7D
	20	QPSK	1720-1745	23.38	23.38	0.21777	17.961	18M0G7D
		16QAM		22.20	22.20	0.16596	17.965	18M0W7D
5	1.4	QPSK	824.7-848.3	23.08	20.93	0.12388	1.0984	1M10G7D
		16QAM		22.21	20.06	0.10139	1.1044	1M10W7D
	3	QPSK	825.5-847.5	23.07	20.92	0.12359	2.7030	2M70G7D
		16QAM		22.13	19.98	0.09954	2.7060	2M71W7D
	5	QPSK	826.5-846.5	23.06	20.91	0.12331	4.5109	4M51G7D
		16QAM		22.20	20.05	0.10116	4.5260	4M53W7D
	10	QPSK	829-844	23.25	21.10	0.12882	9.0106	9M01G7D
		16QAM		22.25	20.10	0.10233	9.0245	9M02W7D
12	1.4	QPSK	699.7-715.3	23.34	21.19	0.13152	1.0993	1M10G7D
		16QAM		22.82	20.67	0.11668	1.0974	1M10W7D
	3	QPSK	700.5-714.5	23.32	21.17	0.13092	2.7036	2M70G7D
		16QAM		22.91	20.76	0.11912	2.7073	2M71W7D
	5	QPSK	701.5-713.5	23.33	21.18	0.13122	4.5217	4M52G7D
		16QAM		22.83	20.68	0.11695	4.5218	4M52W7D

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13	10	QPSK	704-711	23.40	21.25	0.13335	9.0164	9M02G7D
		16QAM		22.93	20.78	0.11967	8.9957	9M00W7D
	5	QPSK	779.5-784.5	23.33	21.18	0.13122	4.5279	4M53G7D
		16QAM		22.54	20.39	0.10940	4.5336	4M53W7D
	10	QPSK	782-782	23.35	21.20	0.13183	8.9627	8M96G7D
		16QAM		22.54	20.39	0.10940	8.9468	8M95W7D

Summary of Results:								
Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		ERP/EIRP (W)	99% BW (MHz)	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)			
25	1.4	QPSK	1850.7-1914.3	22.95	22.95	0.19724	1.1024	1M10G7D
		16QAM		21.99	21.99	0.15812	1.0997	1M10W7D
	3	QPSK	1851.5-1913.5	23.00	23.00	0.19953	2.7080	2M71G7D
		16QAM		21.85	21.85	0.15311	2.7060	2M71W7D
	5	QPSK	1852.5-1912.5	23.01	23.01	0.19999	4.5339	4M53G7D
		16QAM		21.87	21.87	0.15382	4.5324	4M53W7D
	10	QPSK	1855.0-1910.0	23.02	23.02	0.20045	8.9931	8M99G7D
		16QAM		21.75	21.75	0.14962	8.9822	8M98W7D
	15	QPSK	1857.5-1907.5	23.08	23.08	0.20324	13.452	13M5G7D
		16QAM		21.80	21.80	0.15136	13.480	13M5W7D
	20	QPSK	1860.0-1905.0	23.11	23.11	0.20464	17.938	17M9G7D
		16QAM		21.89	21.89	0.15453	17.954	18M0W7D
26	1.4	QPSK	824.7-848.3	23.09	20.94	0.12417	1.0989	1M10G7D
		16QAM		21.80	19.65	0.09226	1.1034	1M10W7D
	3	QPSK	825.5-847.5	23.09	20.94	0.12417	2.7080	2M71G7D
		16QAM		21.74	19.59	0.09099	2.6970	2M70W7D
	5	QPSK	826.5-846.5	22.96	20.81	0.12050	4.5379	4M54G7D
		16QAM		21.81	19.66	0.09247	4.5231	4M52W7D
	10	QPSK	829-844	23.10	20.95	0.12445	9.0080	9M01G7D
		16QAM		21.75	19.60	0.09120	8.9894	8M99W7D
	15	QPSK	831.5-841.5	23.13	20.98	0.12531	13.538	13M5G7D
		16QAM		21.83	19.68	0.09290	13.523	13M5W7D
26 (Part 90S)	1.4	QPSK	814.7-823.3	23.06	20.91	0.12331	1.1035	1M10G7D
		16QAM		21.77	19.62	0.09162	1.1010	1M10W7D
	3	QPSK	815.5-822.5	23.06	20.91	0.12331	2.7068	2M71G7D
		16QAM		21.71	19.56	0.09036	2.7107	2M71W7D
	5	QPSK	816.5-821.5	22.93	20.78	0.11967	4.5270	4M53G7D
		16QAM		21.78	19.63	0.09183	4.5279	4M53W7D
	10	QPSK	819	22.89	20.74	0.11858	9.0023	9M00G7D
		16QAM		21.41	19.26	0.08433	9.0312	9M03W7D

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66	1.4	QPSK	1710.7-1779.3	23.45	23.45	0.22131	1.1026	1M10G7D
		16QAM		22.71	22.71	0.18664	1.1052	1M11W7D
	3	QPSK	1711.5-1778.5	23.58	23.58	0.22803	2.7109	2M72G7D
		16QAM		22.47	22.47	0.17660	2.7058	2M71W7D
	5	QPSK	1712.5-1777.5	23.50	23.50	0.22387	4.5332	4M53G7D
		16QAM		22.65	22.65	0.18408	4.5309	4M53W7D
	10	QPSK	1715-1775	23.47	23.47	0.22233	8.9935	8M99G7D
		16QAM		22.50	22.50	0.17783	8.9875	8M99W7D
	15	QPSK	1717.5-1772.5	23.44	23.44	0.22080	13.480	13M5G7D
		16QAM		22.50	22.50	0.17783	13.448	13M4W7D
	20	QPSK	1720-1770	23.61	23.61	0.22961	17.933	17M9G7D
		16QAM		22.65	22.65	0.18408	17.959	18M0W7D
71	5	QPSK	665.5-695.5	23.23	21.08	0.12823	4.5339	4M53G7D
		16QAM		22.44	20.29	0.10691	4.5270	4M53W7D
	10	QPSK	668-693	23.19	21.04	0.12706	8.9898	8M99G7D
		16QAM		22.29	20.14	0.10328	8.9849	8M98W7D
	15	QPSK	670.5-690.5	23.18	21.03	0.12677	13.451	13M5G7D
		16QAM		22.36	20.21	0.10495	13.457	13M5W7D
	20	QPSK	673-688	23.29	21.14	0.13002	17.886	17M9G7D
		16QAM		22.47	20.32	0.10765	17.916	17M9W7D

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
Adaptor	N/A	CD139	20359	Applicant
PCB board	N/A	DSB75	--	Applicant
PCB board	N/A	AH8	--	Applicant
50 ohm terminal	N/A	N/A	N/A	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
--	--	--	--	--

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/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.

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 & Band 25)			
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) RSS-133 Issue 6, Section 6.4	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) RSS-133 Issue 6, Section 6.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 24.232(d) RSS-133 Issue 6, Section 6.4	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b) RSS-Gen Issue 5, Section 6.7	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) RSS-133 Issue 6, Section 6.5	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) RSS-133 Issue 6, Section 6.5	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) RSS-133 Issue 6, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235 RSS-133 Issue 6, Section 6.3	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) RSS-139 Issue 3, Section 6.5	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) RSS-139 Issue 3, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5) RSS-139 Issue 3, Section 6.5	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(h) RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1) RSS-139 Issue 3, Section 6.6	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) RSS-139 Issue 3, Section 6.6	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) RSS-139 Issue 3, Section 6.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54 RSS-139 Issue 3, Section 6.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

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FCC 47 CFR Part 22 Test Cases (Band 5 & Band 26)			
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) RSS-132 Issue 3, Section 5.4	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) RSS-132 Issue 3, Section 5.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(a) RSS-132 Issue 3, Section 5.4	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) RSS-Gen Issue 5, Section 6.7	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) RSS-132 Issue 3, Section 5.5	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) RSS-132 Issue 3, Section 5.5	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) RSS-132 Issue 3, Section 5.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355 RSS-132 Issue 3, Section 5.3	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 12 & 71)			
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) RSS-130 Issue 2, Section 4.6	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) RSS-130 Issue 2, Section 4.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5) RSS-130 Issue 2, Section 4.6	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(g) RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(g) RSS-130 Issue 2, Section 4.7	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) RSS-130 Issue 2, Section 4.7	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) RSS-130 Issue 2, Section 4.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54 RSS-130 Issue 2, Section 4.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

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) RSS-130 Issue 2, Section 4.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output	FCC 47 CFR Part 2.1046(a) &	ANSI C63.26-2015 &	PASS

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Power	FCC 47 CFR Part 27.50(b)(10) RSS-130 Issue 2, Section 4.6	KDB 971168 D01v03r01	
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5) RSS-130 Issue 2, Section 4.6	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53 RSS-130 Issue 2, Section 4.7	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 RSS-130 Issue 2, Section 4.7	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 RSS-130 Issue 2, Section 4.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54 RSS-130 Issue 2, Section 4.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 90 Test Cases (LTE Band 26)			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046 & FCC 47 CFR Part 90.635	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 90.635	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	N/A	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Emission Mask	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 90.691	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 90.213	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	PASS

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 Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 03, 2018	Dec. 03, 2021
☒	Receiver	R&S	ESIB26	100114	Nov. 24, 2019	Nov. 23, 2020
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 16, 2019	Nov. 15, 2020
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 16, 2019	Nov. 15, 2020
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 16, 2019	Nov. 15, 2020
☒	Preamplifier	HP	8447F	2805A02960	Nov. 24, 2019	Nov. 23, 2020
☐	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	May. 30, 2020	May. 29, 2021
☐	6dB Attenuator	Talent	RA6A5-N-18	18103002	Nov. 24, 2019	Nov. 23, 2020
☐	Horn Antenna	ETS-LINDGREN	3117	00164202	Nov. 16, 2019	Nov. 15, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	May. 30, 2020	May. 29, 2021
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	Jun. 19, 2020	Jun. 18, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 16, 2019	Nov. 15, 2020
☒	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)
☒	Receiver	R&S	ESR7	1316.3003K07-101181-K3	Nov. 24, 2019	Nov. 23, 2020
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Nov. 24, 2019	Nov. 23, 2020
☒	Wideband Radio Communication Tester	R&S	CMW500	119583	Jul. 20, 2020	Jul. 19, 2021
☐	Universal Radio Communication Tester	R&S	CMU200	114713	Nov. 24, 2019	Nov. 23, 2020
☒	DC Source	KIKUSUI	PWR400L	LK003024	N/A	N/A
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	May. 11, 2020	May. 10, 2021

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4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

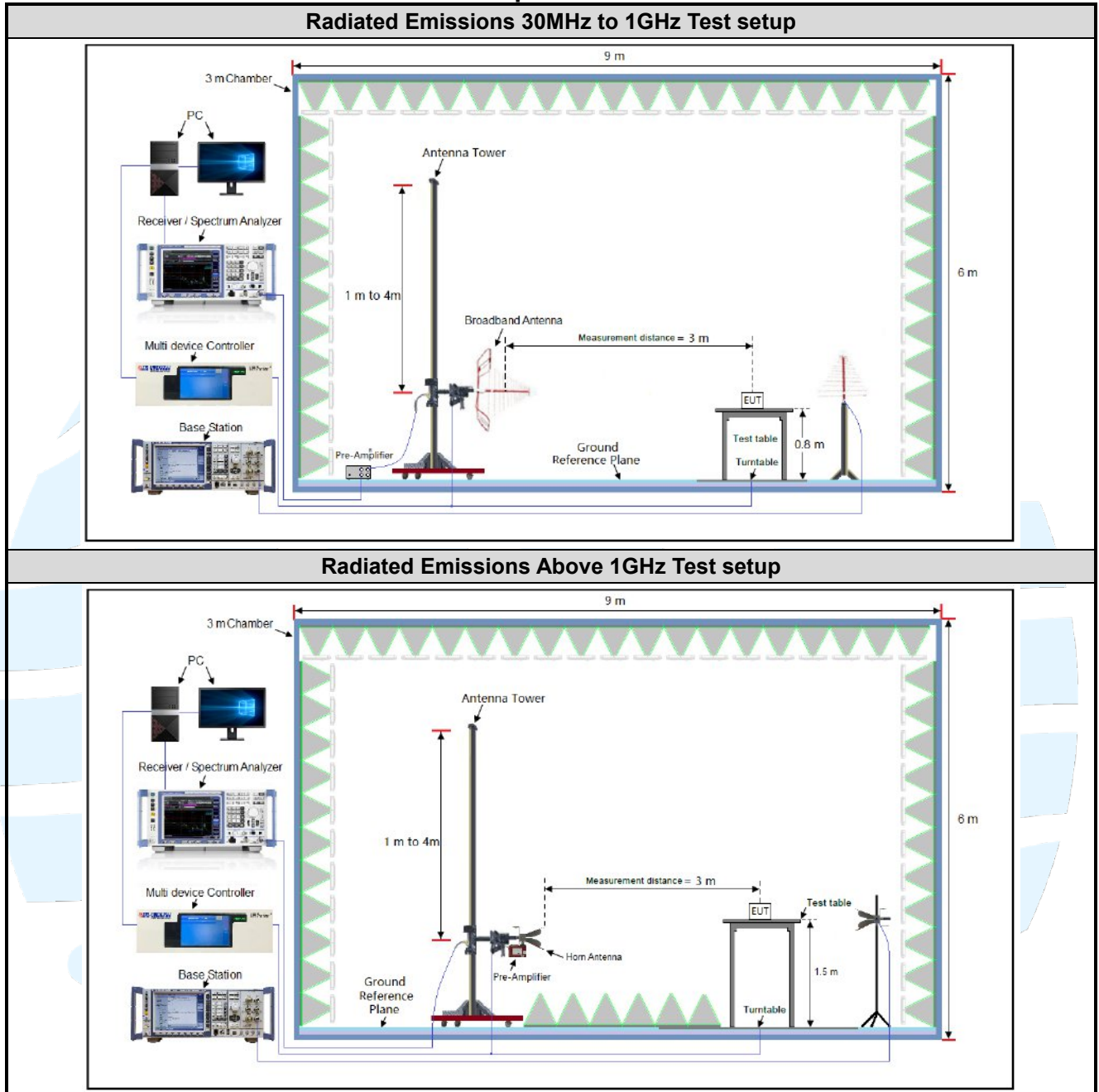
Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.8	20 to 75
TL/VL	-30	3.2	20 to 75
TH/VL	+65	3.2	20 to 75
TL/VH	-30	4.5	20 to 75
TH/VH	+65	4.5	20 to 75

Remark:

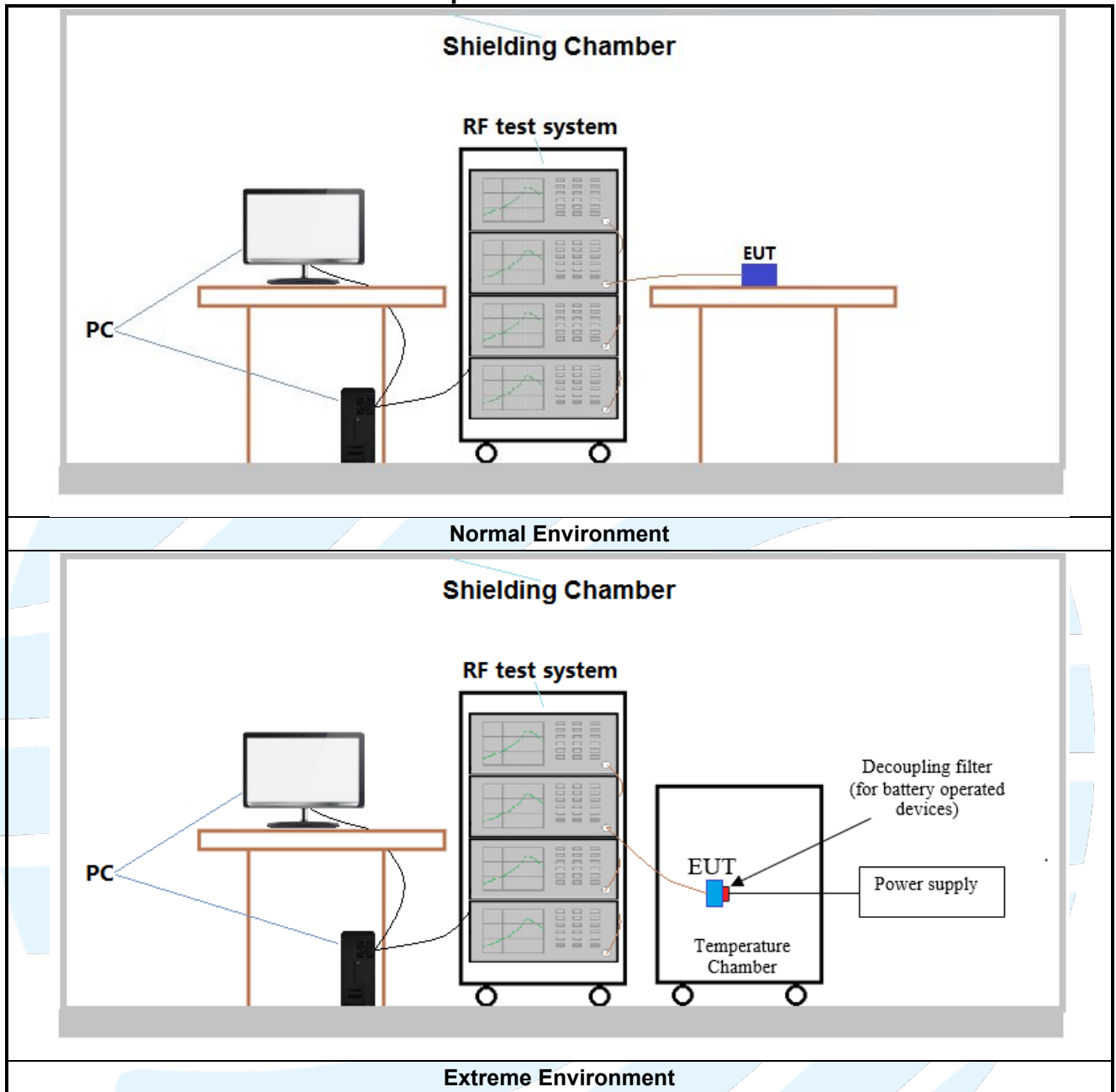
- 1) The EUT just work in such extreme temperature of -30 °C to +65 °C and the extreme voltage of 3.2 V to 4.5V, so here the EUT is tested in the temperature of -30 °C to +65 °C and the voltage of 3.2 V to 4.5 V.
- 2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High 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 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

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		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 25 TX: 1850-1915MHz	Low Range	1.4	26047	1850.7
		3	26055	1851.5
		5	26065	1852.5
		10	26090	1855
		15	26115	1857.5
		20	26140	1860
	Middle Range	1.4/3/5/10/15/20	26340	1880
	High Range	1.4	26683	1914.3
		3	26675	1913.5
		5	26665	1912.5
		10	26640	1910
		15	26615	1907.5
		20	26590	1905
LTE band 26 TX:824-849MHz	Low Range	1.4	26797	824.7
		3	26805	825.5
		5	26815	826.5
		10	26840	829
		15	26865	831.5
	Middle Range	1.4/3/5/10/15	26915	836.5
	High Range	1.4	27033	848.3
		3	27025	847.5
		5	27015	846.5
		10	26990	844
		15	26965	841.5
LTE band 26 TX: 814-824MHz	Low Range	1.4	26697	814.7
		3	26705	815.5
		5	26715	816.5
		10	/	/
		15	26765	821.5
	Middle Range	1.4/3/5/10	26740	819
	High Range	1.4	26783	823.3
		3	26775	822.5
		5	26765	821.5
		10	/	/
		15	/	/

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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

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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. 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	Z axis
LTE Band 4	1TX	Chain 0	Z axis
LTE Band 5	1TX	Chain 0	Z axis
LTE Band 12	1TX	Chain 0	Z axis
LTE Band 13	1TX	Chain 0	Z axis
LTE Band 25	1TX	Chain 0	Z axis
LTE Band 26	1TX	Chain 0	Z axis
LTE Band 66	1TX	Chain 0	Z axis
LTE Band 71	1TX	Chain 0	Z 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	22.41	22.84	22.76	1	0	22.39	22.82	22.83
	1	2	23.36	23.24	23.03	1	7	23.44	23.17	22.95
	1	5	22.94	22.78	22.79	1	14	22.97	22.67	22.86
	3	0	22.93	23.08	23.06	8	0	21.92	22.08	22.02
	3	1	22.88	22.99	22.88	8	3	21.93	22.02	21.89
	3	3	22.85	23.04	22.92	8	7	21.84	22.04	22.01
	6	0	21.87	21.95	21.78	15	0	21.94	22.03	21.79
16QAM	1	0	21.98	22.14	21.84	1	0	22.03	22.14	21.96
	1	2	22.84	22.49	22.23	1	7	22.73	22.39	22.14
	1	5	21.69	22.06	21.27	1	14	21.55	22.23	21.26
	3	0	22.15	22.04	21.95	8	0	21.02	20.89	21.06
	3	1	23.03	22.91	22.94	8	3	22.06	21.84	22.08
	3	3	21.94	21.79	21.95	8	7	21.03	20.79	20.93
	6	0	20.93	20.79	20.95	15	0	20.86	20.84	20.89
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.45	22.85	22.85	1	0	22.51	22.73	22.83
	1	12	23.29	23.23	22.96	1	24	23.40	23.34	23.04
	1	24	23.04	22.75	22.91	1	49	22.96	22.79	22.86
	12	0	21.87	22.17	21.98	25	0	21.91	22.18	22.14
	12	6	21.80	22.00	22.03	25	12	21.93	21.99	21.95
	12	13	21.96	22.06	22.00	25	25	21.82	21.90	21.87
	25	0	21.95	21.98	21.92	50	0	21.94	21.96	21.91
16QAM	1	0	22.12	22.07	21.79	1	0	22.13	22.11	21.96
	1	12	22.89	22.56	22.16	1	24	22.80	22.37	22.11
	1	24	21.59	22.17	21.18	1	49	21.69	22.17	21.16
	12	0	21.03	21.01	21.02	25	0	21.03	20.88	21.05
	12	6	21.93	21.99	22.10	25	12	21.92	21.83	22.05
	12	13	20.90	20.87	21.06	25	25	20.95	20.81	20.90
	25	0	20.84	20.96	20.98	50	0	20.90	20.82	20.86
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.53	22.71	22.85	1	0	22.56	22.85	22.90
	1	37	23.26	23.30	22.87	1	50	23.46	23.35	23.06
	1	74	23.03	22.70	22.88	1	99	23.10	22.85	22.95
	37	0	21.93	22.15	22.03	50	0	21.97	22.23	22.16
	37	19	21.92	22.00	22.01	50	25	21.98	22.16	22.07
	37	39	21.92	22.02	21.97	50	50	21.99	22.07	22.02
	75	0	21.91	21.94	21.80	100	0	22.01	22.05	21.96
16QAM	1	0	22.08	22.09	21.88	1	0	22.15	22.18	21.98
	1	37	22.88	22.56	22.17	1	50	22.89	22.57	22.29
	1	74	21.66	22.12	21.30	1	99	21.74	22.26	21.35
	37	0	20.98	21.01	21.03	50	0	21.16	21.06	21.11
	37	19	22.05	21.94	22.04	50	25	22.07	22.03	22.11
	37	39	21.01	20.83	21.05	50	50	21.05	20.90	21.07
	75	0	20.79	20.89	20.85	100	0	20.95	20.97	20.99

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	22.73	22.63	22.35	1	0	22.72	22.62	22.39
	1	2	22.85	22.91	22.79	1	7	23.00	22.99	22.90
	1	5	22.59	22.95	22.60	1	14	22.76	22.94	22.71
	3	0	22.70	22.70	22.68	8	0	21.71	21.78	21.65
	3	1	22.62	22.81	22.87	8	3	21.61	21.75	21.92
	3	3	22.74	22.68	22.78	8	7	21.76	21.75	21.95
16QAM	6	0	21.64	21.66	21.71	15	0	21.54	21.80	21.77
	1	0	21.05	21.51	21.64	1	0	20.96	21.40	21.64
	1	2	21.43	21.56	21.73	1	7	21.47	21.54	21.85
	1	5	21.43	21.59	21.82	1	14	21.37	21.58	21.83
	3	0	21.67	21.82	21.96	8	0	20.64	20.73	20.89
	3	1	21.85	21.68	21.96	8	3	20.78	20.69	21.01
16QAM	3	3	21.75	21.80	21.99	8	7	20.83	20.85	20.99
	6	0	20.77	20.66	20.84	15	0	20.73	20.68	20.93
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.77	22.67	22.41	1	0	22.82	22.66	22.32
	1	12	23.01	22.92	22.82	1	24	22.86	23.02	22.87
	1	24	22.61	22.95	22.59	1	49	22.66	22.90	22.57
	12	0	21.76	21.78	21.56	25	0	21.79	21.81	21.77
	12	6	21.70	21.69	22.04	25	12	21.73	21.69	21.96
	12	13	21.60	21.81	21.94	25	25	21.70	21.78	21.96
16QAM	25	0	21.56	21.80	21.77	50	0	21.54	21.69	21.66
	1	0	21.10	21.57	21.63	1	0	21.11	21.45	21.63
	1	12	21.47	21.63	21.87	1	24	21.38	21.48	21.75
	1	24	21.47	21.69	21.64	1	49	21.50	21.56	21.74
	12	0	20.65	20.64	21.01	25	0	20.69	20.73	20.95
	12	6	20.74	20.60	20.93	25	12	20.84	20.69	21.01
16QAM	12	13	20.80	20.73	21.01	25	25	20.72	20.71	20.92
	25	0	20.63	20.75	20.91	50	0	20.71	20.70	20.83
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.72	22.55	22.34	1	0	22.83	23.01	22.92
	1	37	22.90	23.08	22.91	1	50	23.18	23.38	23.32
	1	74	22.69	22.85	22.58	1	99	22.68	22.97	22.90
	37	0	21.68	21.69	21.58	50	0	21.95	21.85	22.06
	37	19	21.65	21.72	22.04	50	25	21.90	22.00	22.01
	37	39	21.70	21.67	21.82	50	50	21.87	21.96	21.91
16QAM	75	0	21.68	21.72	21.68	100	0	22.06	21.76	21.94
	1	0	20.98	21.49	21.66	1	0	21.56	21.68	21.40
	1	37	21.45	21.58	21.74	1	50	21.96	21.92	22.18
	1	74	21.48	21.63	21.80	1	99	22.20	22.14	21.45
	37	0	20.75	20.79	20.94	50	0	21.36	21.10	21.18
	37	19	20.79	20.66	20.96	50	25	21.04	21.10	21.02
16QAM	37	39	20.81	20.84	20.87	50	50	21.12	21.09	20.99
	75	0	20.75	20.67	20.88	100	0	21.09	20.89	21.04

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	22.99	22.47	22.35	1	0	23.00	22.50	22.40
	1	2	23.08	22.65	22.86	1	7	23.07	22.79	22.91
	1	5	22.85	22.34	22.49	1	14	23.02	22.43	22.35
	3	0	22.86	22.50	22.81	8	0	21.88	21.66	21.80
	3	1	22.94	22.66	22.79	8	3	21.88	21.67	21.82
	3	3	22.63	22.66	22.81	8	7	21.70	21.70	21.89
	6	0	21.76	21.54	21.81	15	0	21.80	21.61	21.81
16QAM	1	0	21.65	21.31	21.43	1	0	21.56	21.23	21.40
	1	2	21.90	21.79	22.21	1	7	22.01	21.71	22.13
	1	5	21.47	21.57	21.16	1	14	21.44	21.55	21.33
	3	0	21.93	21.71	21.79	8	0	20.90	20.72	20.84
	3	1	22.00	21.79	21.85	8	3	21.01	20.75	20.88
	3	3	21.88	21.85	21.66	8	7	20.88	20.84	20.75
	6	0	20.81	20.62	20.86	15	0	20.77	20.57	20.85
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.06	22.46	22.43	1	0	23.10	22.60	22.51
	1	12	23.06	22.83	22.99	1	24	23.25	22.84	23.02
	1	24	22.84	22.47	22.44	1	49	23.04	22.49	22.51
	12	0	21.76	21.55	21.80	25	0	21.90	21.66	21.81
	12	6	21.84	21.61	21.77	25	12	21.97	21.81	21.94
	12	13	21.69	21.66	21.85	25	25	21.80	21.75	21.89
	25	0	21.87	21.65	21.77	50	0	21.90	21.73	21.87
16QAM	1	0	21.56	21.37	21.35	1	0	21.68	21.40	21.53
	1	12	21.83	21.65	22.20	1	24	22.01	21.80	22.25
	1	24	21.54	21.54	21.29	1	49	21.60	21.60	21.36
	12	0	20.89	20.73	20.78	25	0	20.97	20.80	20.93
	12	6	20.92	20.68	20.80	25	12	21.05	20.82	20.93
	12	13	20.88	20.86	20.77	25	25	20.90	20.92	20.85
	25	0	20.73	20.63	20.73	50	0	20.88	20.70	20.88

4.5.4 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	23.10	23.05	23.24	1	0	23.08	22.99	23.13
	1	2	23.34	23.28	23.16	1	7	23.25	23.32	23.05
	1	5	23.16	22.81	22.95	1	14	23.19	22.87	23.05
	3	0	23.08	23.13	23.05	8	0	22.09	22.23	22.22
	3	1	23.20	23.18	23.08	8	3	22.16	22.19	22.22
	3	3	23.23	23.11	23.15	8	7	22.13	22.01	22.13
16QAM	6	0	22.10	22.13	22.20	15	0	22.15	22.18	22.23
	1	0	21.93	22.10	22.08	1	0	21.96	22.14	22.08
	1	2	22.24	22.82	22.14	1	7	22.27	22.91	22.16
	1	5	21.65	21.94	21.95	1	14	21.57	22.05	22.13
	3	0	22.13	22.08	22.14	8	0	21.19	20.99	21.04
	3	1	22.00	22.02	22.04	8	3	21.07	21.02	21.05
QPSK	3	3	22.10	22.09	22.82	8	7	21.12	21.01	21.89
	6	0	21.81	21.68	21.83	15	0	21.82	21.67	21.69
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.08	22.99	23.29	1	0	23.14	23.15	23.33
	1	12	23.28	23.33	23.14	1	24	23.40	23.38	23.22
	1	24	23.07	22.76	23.07	1	49	23.24	22.96	23.10
	12	0	22.19	22.19	22.07	25	0	22.21	22.25	22.23
	12	6	22.11	22.12	22.06	25	12	22.25	22.23	22.24
	12	13	22.07	22.16	22.01	25	25	22.27	22.20	22.15
	25	0	22.23	22.21	22.10	50	0	22.24	22.25	22.23
16QAM	1	0	22.03	22.05	22.08	1	0	22.10	22.17	22.17
	1	12	22.27	22.83	22.16	1	24	22.33	22.93	22.20
	1	24	21.51	21.92	21.98	1	49	21.65	22.08	22.14
	12	0	21.18	21.06	21.02	25	0	21.33	21.14	21.16
	12	6	21.04	21.09	21.12	25	12	21.13	21.16	21.13
	12	13	21.11	20.91	21.86	25	25	21.28	21.11	21.89
	25	0	21.72	21.65	21.76	50	0	21.84	21.83	21.85

4.5.5 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	23.25	23.32	23.33	1	0	/	23.35	/
	1	12	23.19	23.15	23.17	1	24	/	23.24	/
	1	24	22.97	23.14	23.06	1	49	/	23.15	/
	12	0	22.07	22.22	22.13	25	0	/	22.22	/
	12	6	22.18	22.07	22.05	25	12	/	22.19	/
	12	13	22.06	21.94	22.03	25	25	/	22.13	/
	25	0	21.97	21.99	22.07	50	0	/	22.14	/
16QAM	1	0	22.12	22.08	22.13	1	0	/	22.18	/
	1	12	22.38	22.54	22.49	1	24	/	22.54	/
	1	24	21.98	22.13	22.09	1	49	/	22.16	/
	12	0	21.00	21.04	21.10	25	0	/	21.16	/
	12	6	21.04	21.11	21.18	25	12	/	21.19	/
	12	13	21.17	21.11	21.01	25	25	/	21.20	/
	25	0	21.10	21.15	21.17	50	0	/	21.18	/

4.5.6 LTE Band 25

LTE Band 25 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	22.73	22.63	22.35	1	0	22.72	22.62	22.39
	1	2	22.85	22.91	22.79	1	7	23.00	22.99	22.90
	1	5	22.59	22.95	22.60	1	14	22.76	22.94	22.71
	3	0	22.70	22.70	22.40	8	0	21.71	21.78	22.40
	3	1	22.62	22.81	22.87	8	3	21.61	21.75	21.92
	3	3	22.74	22.68	22.78	8	7	21.76	21.75	21.95
	6	0	21.64	21.66	21.22	15	0	21.54	21.80	21.50
16QAM	1	0	21.05	21.51	21.64	1	0	20.96	21.40	21.64
	1	2	21.43	21.56	21.73	1	7	21.47	21.54	21.85
	1	5	21.43	21.59	21.82	1	14	21.37	21.58	21.83
	3	0	21.67	21.82	21.96	8	0	20.64	20.73	20.89
	3	1	21.85	21.68	21.96	8	3	20.78	20.69	21.01
	3	3	21.75	21.80	21.99	8	7	20.83	20.85	20.99
	6	0	20.77	20.66	20.84	15	0	20.73	20.68	20.93

LTE Band 25 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	22.77	22.67	22.41	1	0	22.82	22.66	22.32
	1	12	23.01	22.92	22.82	1	24	22.86	23.02	22.87
	1	24	22.61	22.95	22.59	1	49	22.66	22.90	22.57
	12	0	21.76	21.78	22.40	25	0	21.79	21.81	22.40
	12	6	21.70	21.69	22.04	25	12	21.73	21.69	21.96
	12	13	21.60	21.81	21.94	25	25	21.70	21.78	21.96
	25	0	21.56	21.80	21.97	50	0	21.54	21.69	21.95
16QAM	1	0	21.10	21.57	21.63	1	0	21.11	21.45	21.63
	1	12	21.47	21.63	21.87	1	24	21.38	21.48	21.75
	1	24	21.47	21.69	21.64	1	49	21.50	21.56	21.74
	12	0	20.65	20.64	21.01	25	0	20.69	20.73	20.95
	12	6	20.74	20.60	20.93	25	12	20.84	20.69	21.01
	12	13	20.80	20.73	21.01	25	25	20.72	20.71	20.92
	25	0	20.63	20.75	20.91	50	0	20.71	20.70	20.83
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.72	22.55	22.34	1	0	22.88	22.70	22.51
	1	37	22.90	23.08	22.91	1	50	23.01	23.11	22.96
	1	74	22.69	22.85	22.58	1	99	22.79	23.03	22.75
	37	0	21.68	21.69	21.72	50	0	21.80	21.86	22.08
	37	19	21.65	21.72	22.04	50	25	21.76	21.83	22.05
	37	39	21.70	21.67	21.82	50	50	21.77	21.82	21.98
	75	0	21.68	21.72	21.66	100	0	21.70	21.84	21.60
16QAM	1	0	20.98	21.49	21.66	1	0	21.14	21.60	21.70
	1	37	21.45	21.58	21.74	1	50	21.55	21.63	21.89
	1	74	21.48	21.63	21.80	1	99	21.54	21.71	21.84
	37	0	20.75	20.79	20.94	50	0	20.80	20.84	21.03
	37	19	20.79	20.66	20.96	50	25	20.88	20.78	21.04
	37	39	20.81	20.84	20.87	50	50	20.87	20.88	21.06
	75	0	20.75	20.67	20.88	100	0	20.78	20.84	21.01

4.5.7 LTE Band 26

LTE Band 26 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	22.66	22.53	22.29	1	0	22.63	22.67	22.28
	1	2	23.09	22.96	22.55	1	7	23.03	23.09	22.48
	1	5	22.60	22.83	22.26	1	14	22.54	22.70	22.28
	3	0	22.72	22.41	22.48	8	0	21.66	21.47	21.36
	3	1	22.54	22.44	22.44	8	3	21.65	21.41	21.54
	3	3	22.60	22.41	22.57	8	7	21.65	21.46	21.41
16QAM	6	0	21.57	21.38	21.50	15	0	21.53	21.50	21.36
	1	0	21.41	21.45	21.54	1	0	21.52	21.49	21.55
	1	2	21.61	21.37	21.80	1	7	21.63	21.47	21.74
	1	5	21.23	21.45	21.46	1	14	21.08	21.43	21.56
	3	0	21.34	21.55	21.50	8	0	20.37	20.41	20.42
	3	1	21.57	21.52	21.41	8	3	20.60	20.45	20.55
16QAM	3	3	21.58	21.35	21.47	8	7	20.45	20.38	20.48
	6	0	20.54	20.39	20.43	15	0	20.64	20.31	20.36
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.57	22.70	22.20	1	0	22.67	22.63	22.26
	1	12	22.96	22.94	22.55	1	24	23.10	22.92	22.44
	1	24	22.69	22.71	22.37	1	49	22.54	22.79	22.25
	12	0	21.56	21.41	21.36	25	0	21.60	21.48	21.41
	12	6	21.67	21.57	21.37	25	12	21.61	21.47	21.38
	12	13	21.52	21.36	21.57	25	25	21.61	21.52	21.57
16QAM	25	0	21.64	21.52	21.48	50	0	21.50	21.51	21.38
	1	0	21.54	21.45	21.61	1	0	21.36	21.44	21.60
	1	12	21.51	21.43	21.81	1	24	21.45	21.38	21.75
	1	24	21.11	21.50	21.64	1	49	21.17	21.42	21.48
	12	0	20.28	20.56	20.40	25	0	20.37	20.41	20.39
	12	6	20.55	20.37	20.48	25	12	20.59	20.42	20.45
16QAM	12	13	20.47	20.36	20.52	25	25	20.50	20.50	20.49
	25	0	20.60	20.34	20.44	50	0	20.49	20.44	20.48

LTE Band 26					
Modulation	RB		Test Channel		
	Size	Offset	Low	Mid	High
Channel Bandwidth: 15 MHz					
QPSK	1	0	22.76	22.72	22.40
	1	12	23.13	23.10	22.64
	1	24	22.71	22.88	22.45
	12	0	21.75	21.57	21.52
	12	6	21.74	21.60	21.55
	12	13	21.68	21.54	21.59
16QAM	25	0	21.65	21.54	21.56
	1	0	21.55	21.57	21.62
	1	12	21.64	21.53	21.83
	1	24	21.25	21.51	21.64
	12	0	20.45	20.60	20.52
	12	6	20.60	20.54	20.55
16QAM	12	13	20.62	20.52	20.59
	25	0	20.69	20.47	20.54

4.5.8 LTE Band 26 (Part 90S)

LTE Band 26 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	22.63	22.50	22.26	1	0	22.60	22.64	22.25
	1	2	23.06	22.93	22.52	1	7	23.00	23.06	22.45
	1	5	22.57	22.80	22.23	1	14	22.51	22.67	22.25
	3	0	22.69	22.38	22.45	8	0	21.63	21.44	21.33
	3	1	22.51	22.41	22.41	8	3	21.62	21.38	21.51
	3	3	22.57	22.38	22.54	8	7	21.62	21.43	21.38
16QAM	6	0	21.54	21.35	21.47	15	0	21.50	21.47	21.33
	1	0	21.38	21.42	21.51	1	0	21.49	21.46	21.52
	1	2	21.58	21.34	21.77	1	7	21.60	21.44	21.71
	1	5	21.20	21.42	21.43	1	14	21.05	21.40	21.53
	3	0	21.31	21.52	21.47	8	0	20.34	20.38	20.39
	3	1	21.54	21.49	21.38	8	3	20.57	20.42	20.52
16QAM	3	3	21.55	21.32	21.44	8	7	20.42	20.35	20.45
	6	0	20.51	20.36	20.40	15	0	20.61	20.28	20.33
LTE Band 26 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	22.54	22.67	22.17	1	0	/	22.60	/
	1	12	22.93	22.91	22.52	1	24	/	22.89	/
	1	24	22.66	22.68	22.34	1	49	/	22.76	/
	12	0	21.53	21.38	21.33	25	0	/	21.45	/
	12	6	21.64	21.54	21.34	25	12	/	21.44	/
	12	13	21.49	21.33	21.54	25	25	/	21.49	/
	25	0	21.61	21.49	21.45	50	0	/	21.48	/
16QAM	1	0	21.51	21.42	21.58	1	0	/	21.41	/
	1	12	21.48	21.40	21.78	1	24	/	21.35	/
	1	24	21.08	21.47	21.61	1	49	/	21.39	/
	12	0	20.25	20.53	20.37	25	0	/	20.38	/
	12	6	20.52	20.34	20.45	25	12	/	20.39	/
	12	13	20.44	20.33	20.49	25	25	/	20.47	/
	25	0	20.57	20.31	20.41	50	0	/	20.41	/

4.5.9 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	23.24	23.40	23.45	1	0	23.20	23.49	23.58
	1	2	23.35	23.40	23.37	1	7	23.47	23.34	23.38
	1	5	23.06	23.20	23.36	1	14	23.05	23.11	23.25
	3	0	23.14	23.14	23.17	8	0	22.22	22.16	22.11
	3	1	23.25	23.25	23.11	8	3	22.18	22.27	22.25
	3	3	23.10	23.10	23.26	8	7	22.00	22.12	22.21
	6	0	22.21	22.19	22.23	15	0	22.30	22.13	22.21
16QAM	1	0	22.10	22.38	22.10	1	0	22.17	22.47	22.12
	1	2	22.35	22.60	22.24	1	7	22.47	22.47	22.31
	1	5	22.36	22.25	22.02	1	14	22.32	22.26	22.01
	3	0	22.61	22.58	22.50	8	0	21.55	21.58	21.50
	3	1	22.63	22.33	22.11	8	3	21.64	21.30	21.22
	3	3	22.51	22.71	22.14	8	7	21.49	21.70	21.25
	6	0	21.38	21.50	21.21	15	0	21.54	21.53	21.24
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.24	23.37	23.50	1	0	23.24	23.37	23.47
	1	12	23.45	23.34	23.35	1	24	23.36	23.38	23.37
	1	24	23.10	23.27	23.35	1	49	23.10	23.10	23.27
	12	0	22.33	22.11	22.10	25	0	22.20	22.13	22.24
	12	6	22.13	22.21	22.22	25	12	22.13	22.16	22.23
	12	13	22.01	22.28	22.17	25	25	22.11	22.14	22.15
	25	0	22.26	22.13	22.28	50	0	22.21	22.05	22.24
16QAM	1	0	22.21	22.47	22.09	1	0	22.19	22.42	22.16
	1	12	22.31	22.65	22.25	1	24	22.34	22.50	22.37
	1	24	22.39	22.28	22.02	1	49	22.26	22.18	21.96
	12	0	21.57	21.65	21.65	25	0	21.61	21.63	21.64
	12	6	21.53	21.36	21.14	25	12	21.48	21.32	21.22
	12	13	21.49	21.75	21.28	25	25	21.49	21.75	21.23
	25	0	21.54	21.47	21.27	50	0	21.51	21.49	21.24
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	23.28	23.48	23.44	1	0	23.32	23.53	23.61
	1	37	23.30	23.45	23.44	1	50	23.47	23.50	23.48
	1	74	22.92	23.22	23.40	1	99	23.12	23.29	23.42
	37	0	22.15	22.07	22.21	50	0	22.33	22.25	22.24
	37	19	22.24	22.27	22.24	50	25	22.31	22.28	22.25
	37	39	21.98	22.19	22.24	50	50	22.12	22.29	22.27
	75	0	22.23	22.11	22.25	100	0	22.32	22.24	22.30
16QAM	1	0	22.09	22.44	22.12	1	0	22.26	22.48	22.22
	1	37	22.49	22.50	22.30	1	50	22.49	22.65	22.42
	1	74	22.35	22.17	22.11	1	99	22.43	22.31	22.14
	37	0	21.69	21.58	21.52	50	0	21.70	21.71	21.68
	37	19	21.53	21.29	21.22	50	25	21.68	21.47	21.27
	37	39	21.38	21.77	21.15	50	50	21.57	21.83	21.29
	75	0	21.36	21.58	21.11	100	0	21.55	21.59	21.27

4.5.10 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	22.92	22.54	22.77	1	0	22.86	22.56	22.82
	1	12	23.03	22.71	23.23	1	24	23.08	22.74	23.19
	1	24	23.04	22.65	22.81	1	49	23.00	22.81	22.79
	12	0	21.90	21.91	21.96	25	0	22.05	21.88	21.88
	12	6	22.15	22.01	21.92	25	12	22.09	22.01	21.95
	12	13	22.13	21.92	22.02	25	25	22.02	21.89	22.07
16QAM	25	0	22.13	21.93	21.99	50	0	22.08	22.02	22.05
	1	0	21.46	21.59	21.73	1	0	21.41	21.68	21.90
	1	12	22.12	22.44	21.95	1	24	22.13	22.29	21.98
	1	24	21.52	21.55	21.69	1	49	21.50	21.54	21.66
	12	0	20.95	21.16	20.87	25	0	20.83	21.17	21.03
	12	6	21.00	21.19	21.11	25	12	21.09	21.23	20.95
QPSK	12	13	21.18	20.91	21.13	25	25	21.11	21.04	21.02
	25	0	21.10	21.04	21.06	50	0	20.96	21.06	21.06
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.85	22.61	22.77	1	0	22.93	22.67	22.89
	1	37	22.90	22.85	23.18	1	50	23.10	22.89	23.29
	1	74	23.11	22.81	22.78	1	99	23.12	22.83	22.91
	37	0	22.02	22.03	21.85	50	0	22.10	22.07	22.01
	37	19	22.07	22.03	22.02	50	25	22.18	22.10	22.07
	37	39	22.01	21.97	22.04	50	50	22.16	22.04	22.16
	75	0	22.00	22.01	21.94	100	0	22.19	22.05	22.06
16QAM	1	0	21.39	21.67	21.85	1	0	21.54	21.78	21.90
	1	37	22.29	22.36	21.98	1	50	22.31	22.47	22.02
	1	74	21.64	21.59	21.61	1	99	21.69	21.72	21.73
	37	0	20.91	21.14	21.01	50	0	21.01	21.21	21.07
	37	19	20.96	21.21	20.99	50	25	21.15	21.27	21.12
	37	39	21.17	21.08	21.11	50	50	21.20	21.11	21.17
	75	0	20.95	20.98	21.04	100	0	21.15	21.17	21.11

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	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	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	☒	☒	☒	☒	--	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
peak-to-av erage ratio	2	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☐	☐	☐	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☐	☐	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	25	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	26	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	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	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	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	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	13	-	-	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	25	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	26	☐	☐	☐	☐	☒	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	66	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	71	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	13	-	-	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	25	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	26	☐	☐	☐	☐	☒	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	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	FCC 47 CFR Part 90	Private Land Mobile Radio Services
6	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
7	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
8	RSS-130 Issue 2	Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
9	RSS-132 Issue 3	Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz
10	RSS-133 Issue 6	2 GHz Personal Communications Services Aussi disponible
11	RSS-139 Issue 3	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz
12	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 & LTE Band 25: FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 3, Section 6.5
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a), RSS-132 Issue 3, Section 5.4
LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6
LTE Band 13: FCC 47 CFR Part 27.50(b)(10), RSS-130 Issue 2, Section 4.6
LTE Band 26: FCC 47 CFR Part 90.635

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(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.

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bands are limited to 3 watts ERP.

FCC 47 CFR Part 90.635:

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts) ^{1 2 4}
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	31,000

1. Power is given in terms of effective radiated power (ERP).
2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.
3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).
4. Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

RSS-130 Issue 2, Section 4.6,

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

RSS-132 Issue 3, Section 5.4,

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133 Issue 6, Section 6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

RSS-139 Issue 3, Section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one

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watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

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

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	23.36	23.03	/	33.01	Pass
Middle	23.24	22.91	/	33.01	Pass
Highest	23.03	22.94	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	23.44	22.73	/	33.01	Pass
Middle	23.17	22.39	/	33.01	Pass
Highest	22.95	22.14	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	23.29	22.89	/	33.01	Pass
Middle	23.23	22.56	/	33.01	Pass
Highest	22.96	22.16	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	23.40	22.80	/	33.01	Pass
Middle	23.34	22.37	/	33.01	Pass
Highest	23.04	22.11	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	23.26	22.88	/	33.01	Pass
Middle	23.30	22.56	/	33.01	Pass
Highest	22.87	22.17	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.46	22.89	/	33.01	Pass
Middle	23.35	22.57	/	33.01	Pass
Highest	23.06	22.29	/	33.01	Pass

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	22.59	21.75	/	30.00	Pass
Middle	22.95	21.80	/	30.00	Pass
Highest	22.60	21.99	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	23.00	21.47	/	30.00	Pass
Middle	22.99	21.54	/	30.00	Pass
Highest	22.90	21.85	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	23.01	21.47	/	30.00	Pass
Middle	22.92	21.63	/	30.00	Pass
Highest	22.82	21.87	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	22.66	21.38	/	30.00	Pass
Middle	22.90	21.48	/	30.00	Pass
Highest	22.57	21.75	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	22.90	21.48	/	30.00	Pass
Middle	23.08	21.63	/	30.00	Pass
Highest	22.91	21.80	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	23.18	22.20	/	30.00	Pass
Middle	23.38	22.14	/	30.00	Pass
Highest	23.32	21.45	/	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	20.93	19.75	/	38.45	Pass
Middle	20.50	19.64	/	38.45	Pass
Highest	20.71	20.06	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.92	19.86	/	38.45	Pass
Middle	20.64	19.56	/	38.45	Pass
Highest	20.76	19.98	/	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.91	19.68	/	38.45	Pass
Middle	20.68	19.50	/	38.45	Pass
Highest	20.84	20.05	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	21.10	19.86	/	38.45	Pass
Middle	20.69	19.65	/	38.45	Pass
Highest	20.87	20.10	/	38.45	Pass

5.2.4 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	21.19	20.09	/	34.77	Pass
Middle	21.13	20.67	/	34.77	Pass
Highest	21.01	19.99	/	34.77	Pass
Channel Bandwidth: 3MHz					
Lowest	21.10	20.12	/	34.77	Pass
Middle	21.17	20.76	/	34.77	Pass
Highest	20.90	20.01	/	34.77	Pass
Channel Bandwidth: 5MHz					
Lowest	21.13	20.12	/	34.77	Pass
Middle	21.18	20.68	/	34.77	Pass
Highest	20.99	20.01	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	21.25	20.18	/	34.77	Pass
Middle	21.23	20.78	/	34.77	Pass
Highest	21.07	20.05	/	34.77	Pass

5.2.5 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	21.10	20.23	/	34.77	Pass
Middle	21.17	20.39	/	34.77	Pass
Highest	21.18	20.34	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	/	/	/	34.77	Pass
Middle	21.20	20.39	/	34.77	Pass
Highest	/	/	/	34.77	Pass

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5.2.6 LTE Band 25

LTE Band 25 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	22.59	21.75	/	33.01	Pass
Middle	22.95	21.80	/	33.01	Pass
Highest	22.60	21.99	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	23.00	21.47	/	33.01	Pass
Middle	22.99	21.54	/	33.01	Pass
Highest	22.90	21.85	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	23.01	21.47	/	33.01	Pass
Middle	22.92	21.63	/	33.01	Pass
Highest	22.82	21.87	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	22.86	21.38	/	33.01	Pass
Middle	23.02	21.48	/	33.01	Pass
Highest	22.87	21.75	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	22.90	21.48	/	33.01	Pass
Middle	23.08	21.63	/	33.01	Pass
Highest	22.91	21.80	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.01	21.55	/	33.01	Pass
Middle	23.11	21.63	/	33.01	Pass
Highest	22.96	21.89	/	33.01	Pass

5.2.7 LTE Band 26

LTE Band 26 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	20.94	19.46	/	38.45	Pass
Middle	20.81	19.22	/	38.45	Pass
Highest	20.40	19.65	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.88	19.48	/	38.45	Pass
Middle	20.94	19.32	/	38.45	Pass
Highest	20.33	19.59	/	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.81	19.36	/	38.45	Pass
Middle	20.79	19.28	/	38.45	Pass
Highest	20.40	19.66	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	20.95	19.30	/	38.45	Pass
Middle	20.77	19.23	/	38.45	Pass
Highest	20.29	19.60	/	38.45	Pass
Channel Bandwidth: 15MHz					
Lowest	20.98	19.49	/	38.45	Pass
Middle	20.95	19.38	/	38.45	Pass
Highest	20.49	19.68	/	38.45	Pass

5.2.8 LTE Band 26 (Part 90S)

LTE Band 26 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	20.91	19.43	/	50	Pass
Middle	20.78	19.19	/	50	Pass
Highest	20.37	19.62	/	50	Pass
Channel Bandwidth: 3MHz					
Lowest	20.85	19.45	/	50	Pass
Middle	20.91	19.29	/	50	Pass
Highest	20.30	19.56	/	50	Pass
Channel Bandwidth: 5MHz					
Lowest	20.78	19.33	/	50	Pass
Middle	20.76	19.25	/	50	Pass
Highest	20.37	19.63	/	50	Pass
Channel Bandwidth: 10MHz					
Middle	20.74	19.26	/	50	Pass

5.2.9 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	23.24	22.51	/	30.00	Pass
Middle	23.40	22.71	/	30.00	Pass
Highest	23.45	22.14	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	23.20	22.47	/	30.00	Pass
Middle	23.49	22.47	/	30.00	Pass
Highest	23.58	22.31	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	23.24	22.31	/	30.00	Pass
Middle	23.37	22.65	/	30.00	Pass
Highest	23.50	22.25	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	23.24	22.34	/	30.00	Pass
Middle	23.37	22.50	/	30.00	Pass
Highest	23.47	22.37	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	23.28	22.49	/	30.00	Pass
Middle	23.48	22.50	/	30.00	Pass
Highest	23.44	22.30	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	23.32	22.49	/	30.00	Pass
Middle	23.53	22.65	/	30.00	Pass
Highest	23.61	22.42	/	30.00	Pass

5.2.10 LTE 71

LTE Band 71 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	20.88	19.97	/	33.01	Pass
Middle	20.56	20.29	/	33.01	Pass
Highest	21.08	19.80	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	20.93	19.98	/	33.01	Pass
Middle	20.59	20.14	/	33.01	Pass
Highest	21.04	19.83	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	20.75	20.14	/	33.01	Pass
Middle	20.70	20.21	/	33.01	Pass
Highest	21.03	19.83	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	20.95	20.16	/	33.01	Pass
Middle	20.74	20.32	/	33.01	Pass
Highest	21.14	19.87	/	33.01	Pass

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5.3 CONDUCTED OUTPUT POWER

FCC 47 CFR Part 2.1046(a),

LTE Band 2 & LTE Band 25: FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4

LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 3, Section 6.5

Test Requirement: **LTE Band 5 & LTE Band 26:** FCC 47 CFR Part 22.913(a), RSS-132 Issue 3, Section 5.4

LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6

LTE Band 13: FCC 47 CFR Part 27.50(b)(10), RSS-130 Issue 2, Section 4.6

LTE Band 26: FCC 47 CFR Part 90.635

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(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.

FCC 47 CFR Part 90.635:

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts) ^{1 2 4}
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	31,000

1. Power is given in terms of effective radiated power (ERP).

2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra

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Peak, Mount Lukens, and Mount Wilson.

3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).
4. Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

RSS-130 Issue 2, Section 4.6,

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

RSS-132 Issue 3, Section 5.4,

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133 Issue 6, Section 6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

RSS-139 Issue 3, Section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

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 & LTE Band 25: FCC 47 CFR Part 24.232(d), RSS-133 Issue 6, Section 6.4
 LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(5), RSS-139 Issue 3, Section 6.5
 LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a), RSS-132 Issue 3, Section 5.4
 LTE Band 12: FCC 47 CFR Part 27.50(d)(5), RSS-130 Issue 2, Section 4.6
 LTE Band 13: FCC 47 CFR Part 27.50(d)(5), RSS-130 Issue 2, Section 4.6

Test Method: KDB 971168 D01v03r01 Section 5.7

Limit: 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

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

- Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth
- Set the number of counts to a value that stabilizes the measured CCDF curve
- 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

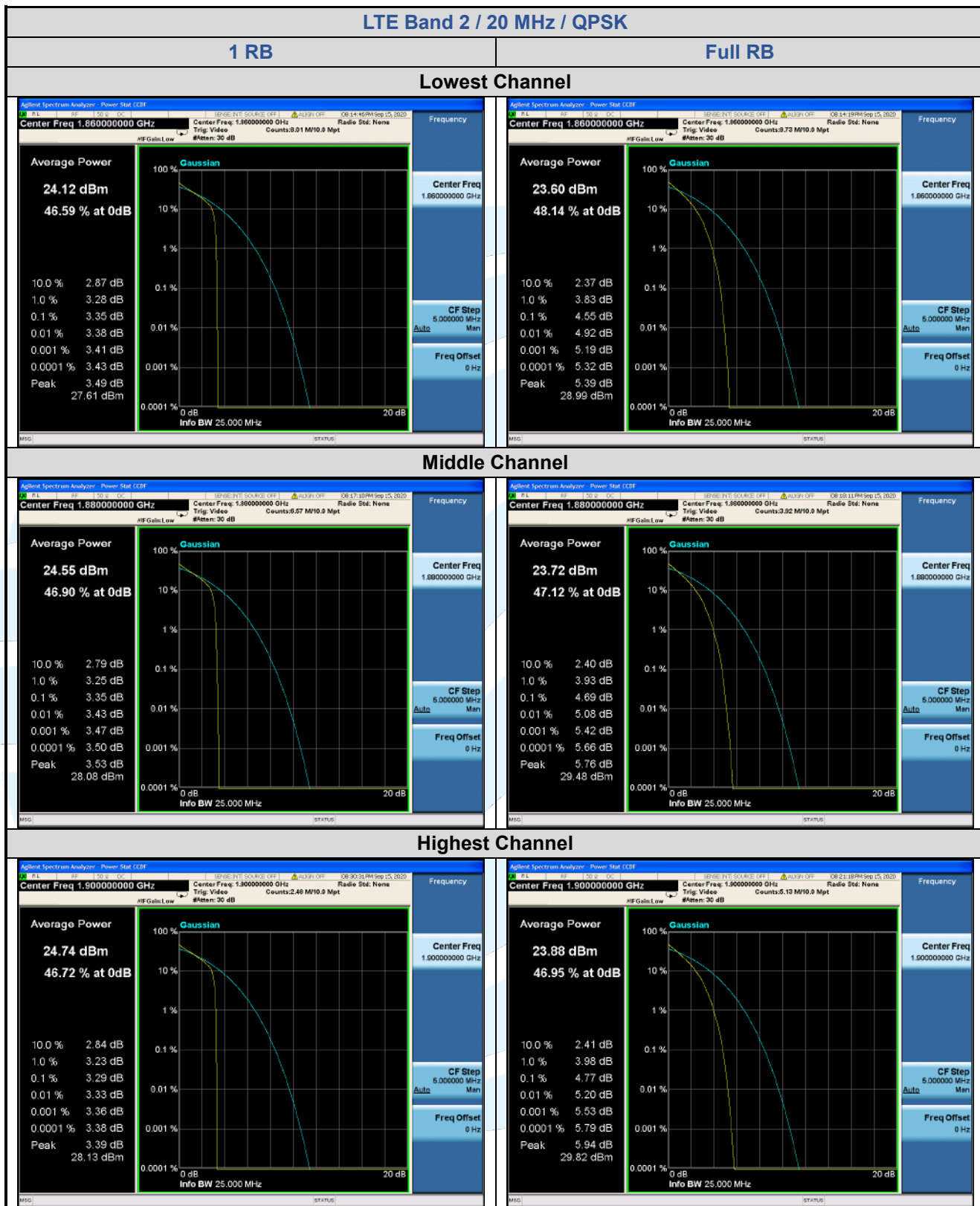
Test Mode: Link mode

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	3.35	4.34	/	13	Pass
	Full RB	4.55	5.34	/	13	Pass
Middle	1 RB	3.35	4.29	/	13	Pass
	Full RB	4.69	5.48	/	13	Pass
Highest	1 RB	3.29	4.34	/	13	Pass
	Full RB	4.77	5.53	/	13	Pass





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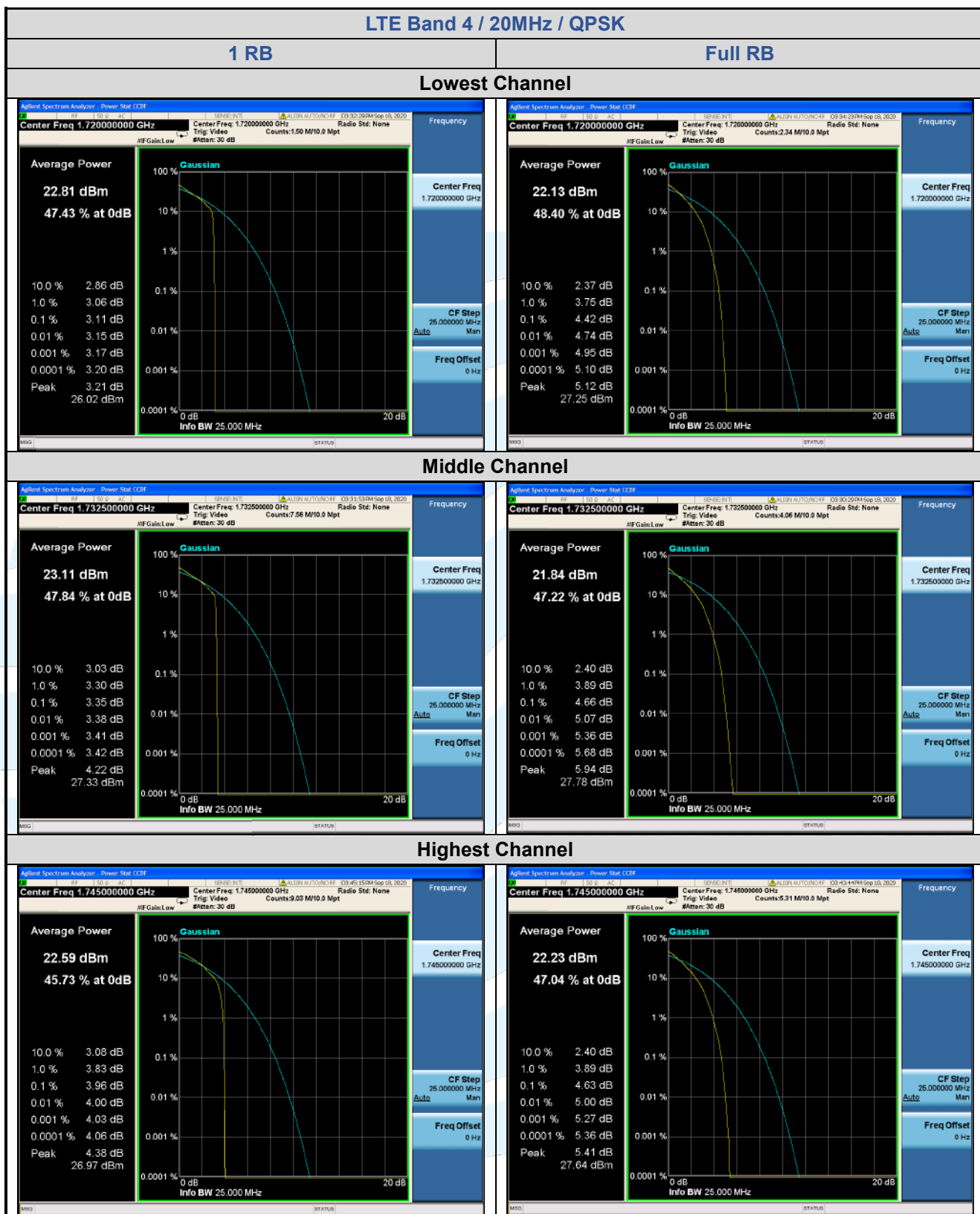
E-mail: info@uttlab.com

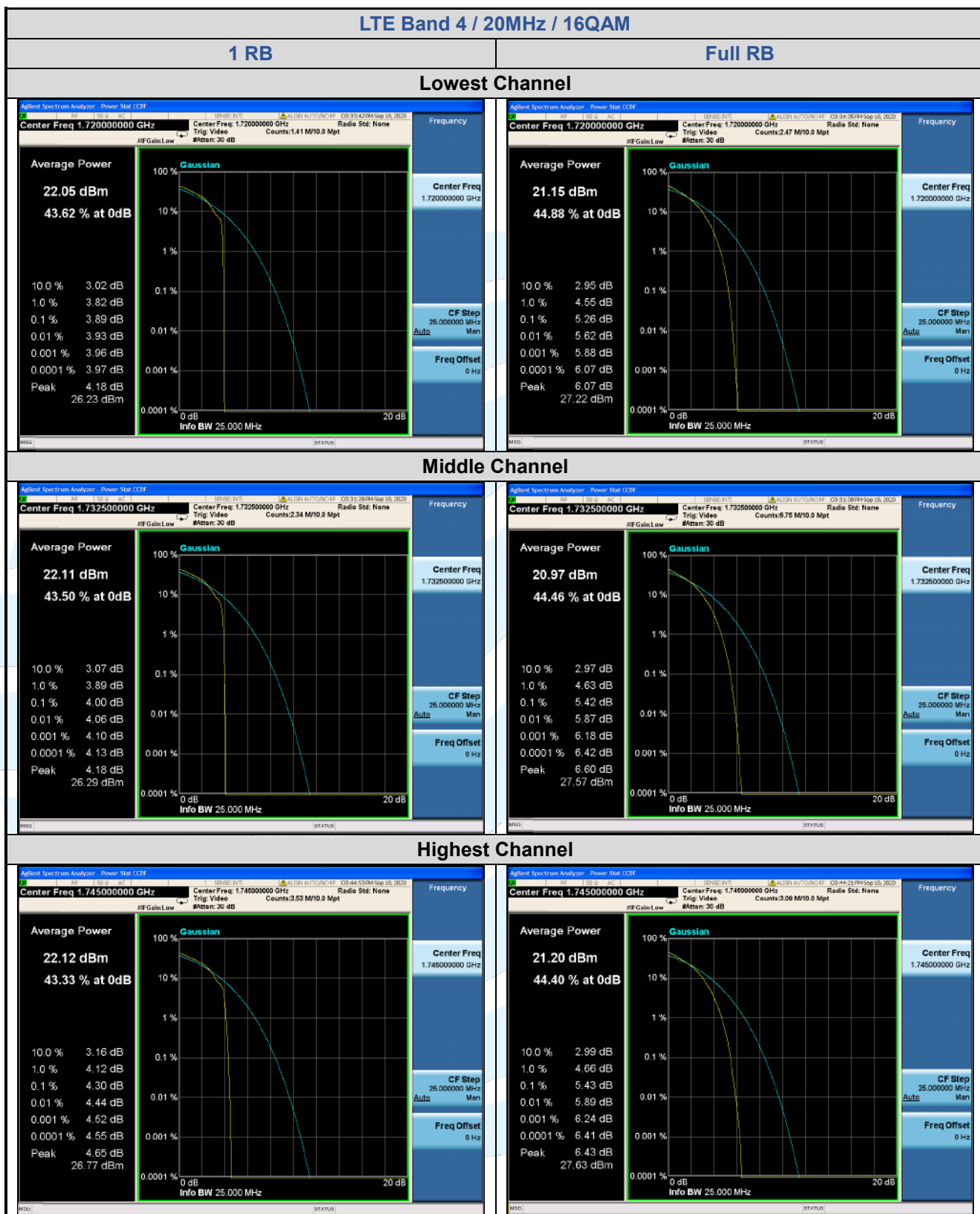
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5.4.2 LTE Band 4

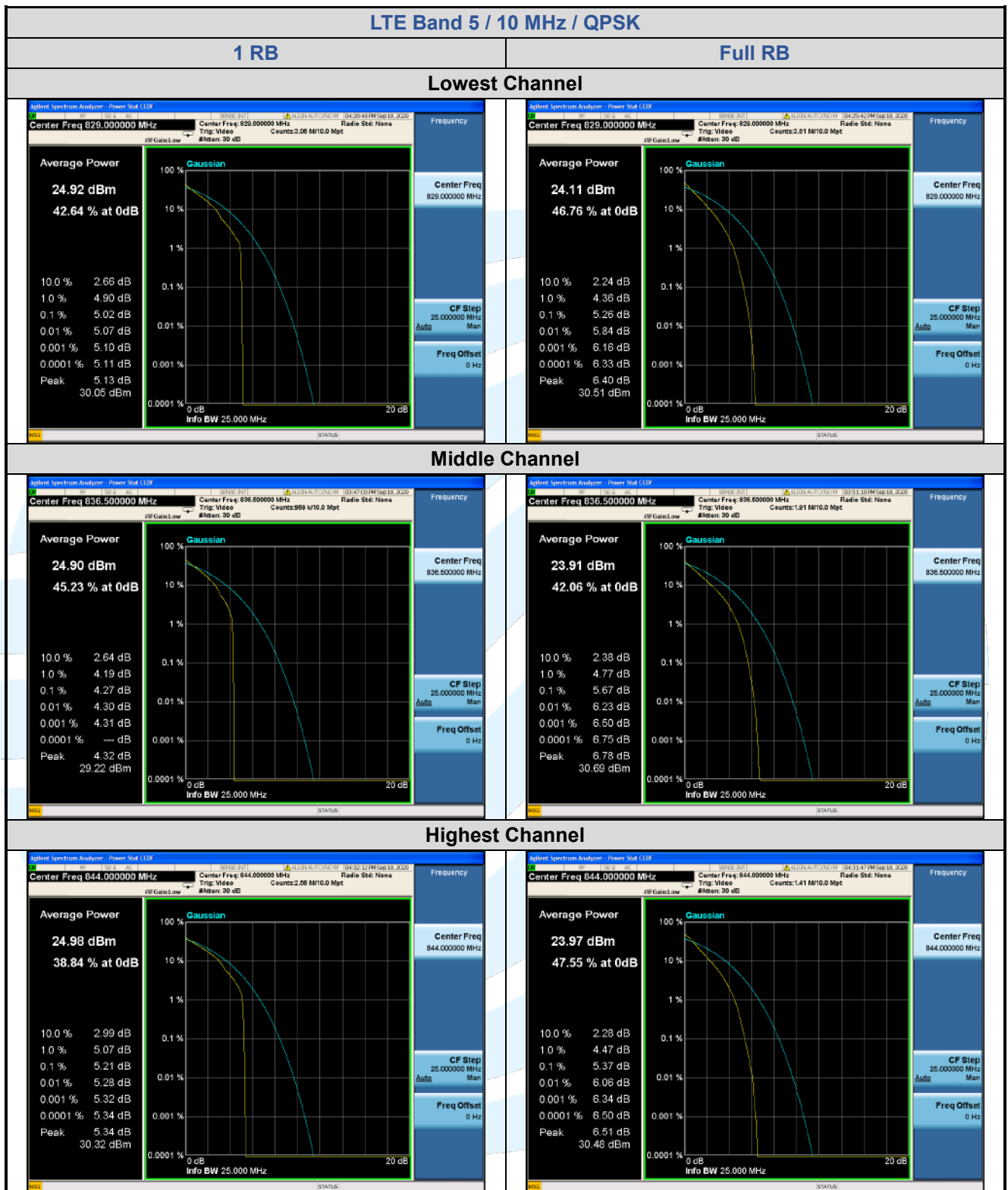
LTE Band 4 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.11	3.89	/	13	Pass
	Full RB	4.42	5.26	/	13	Pass
Middle	1 RB	3.35	4.00	/	13	Pass
	Full RB	4.66	5.42	/	13	Pass
Highest	1 RB	3.96	4.30	/	13	Pass
	Full RB	4.63	5.43	/	13	Pass

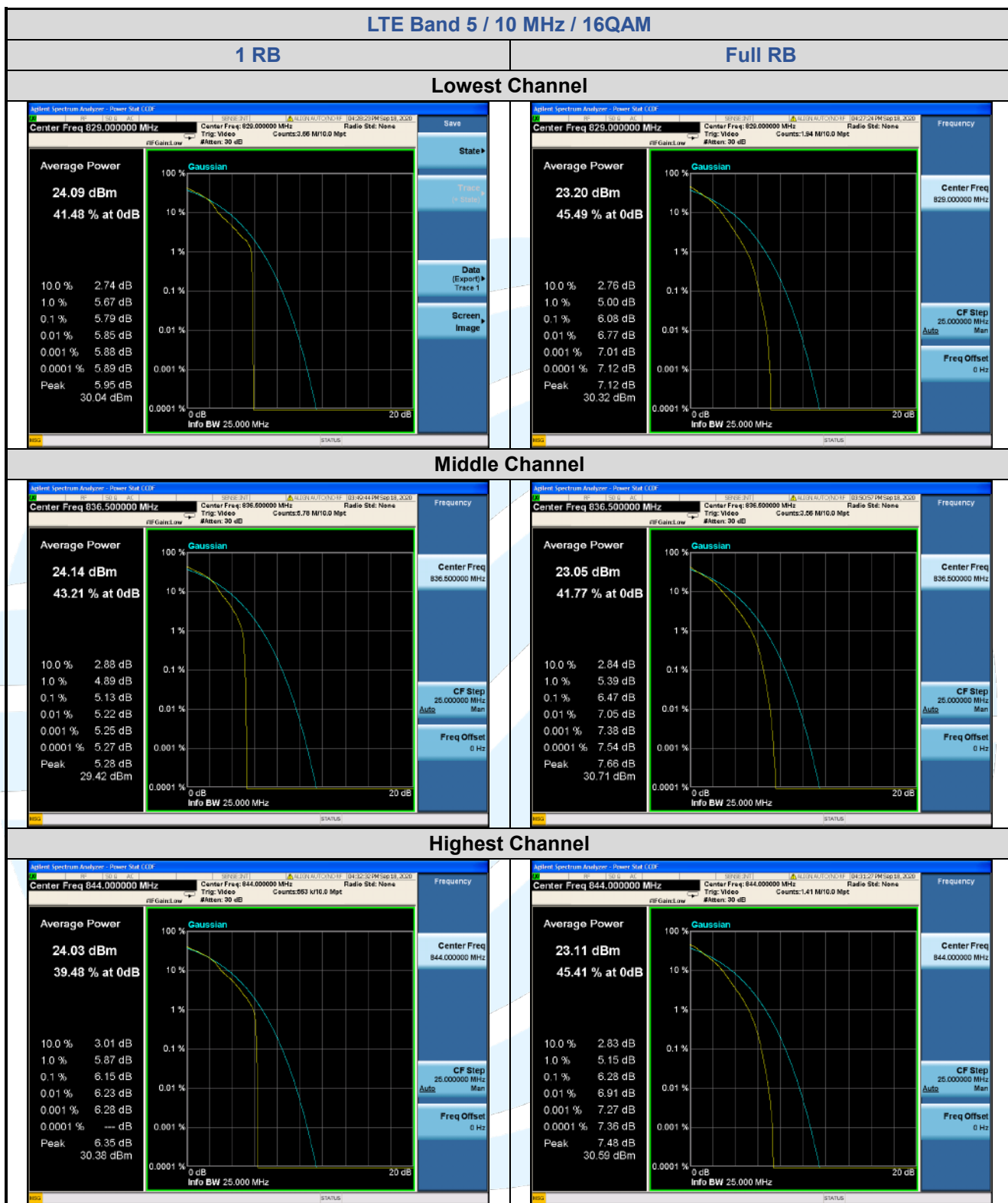




5.4.3 LTE Band 5

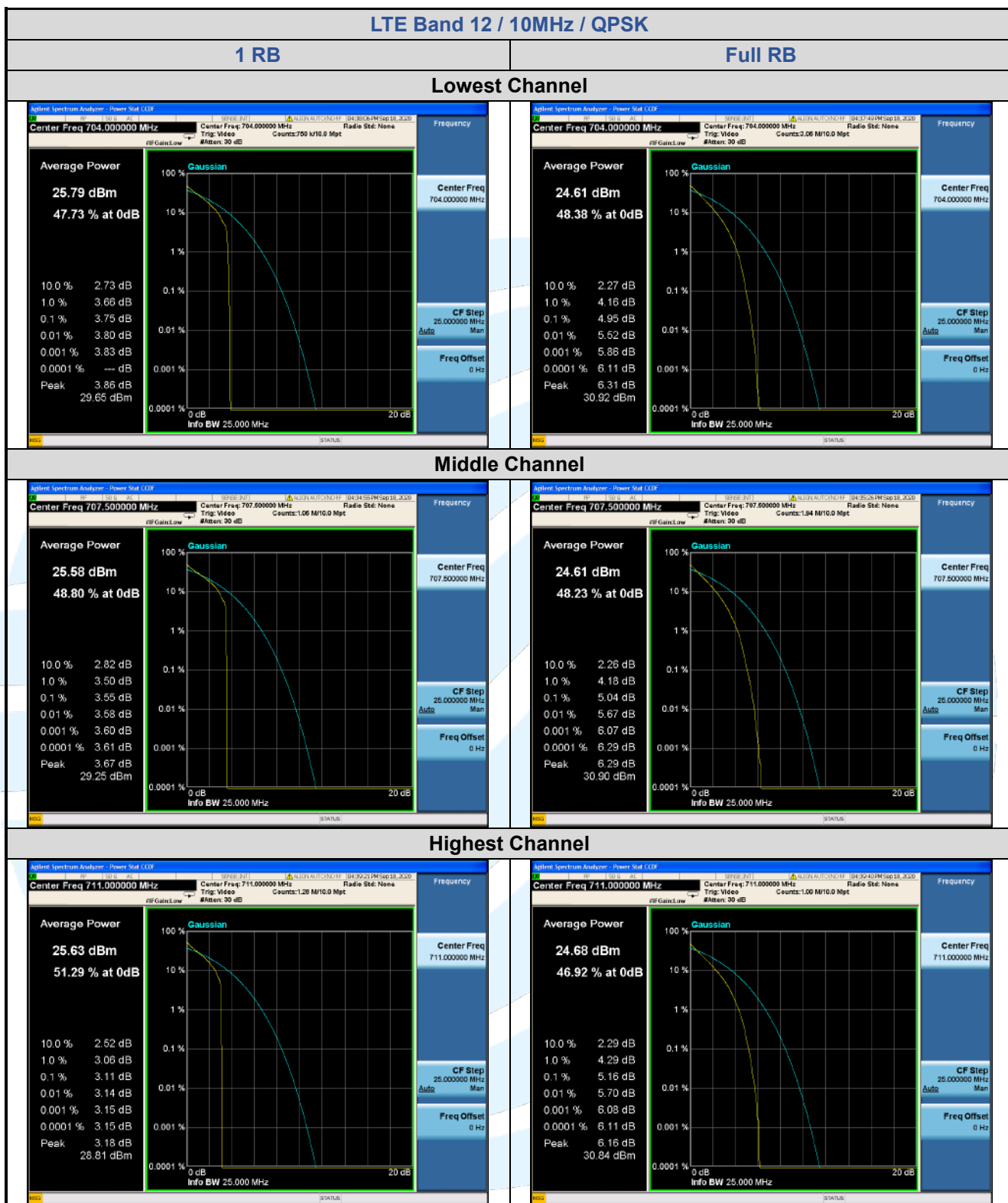
LTE Band 5 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	5.02	5.79	/	13	Pass
	Full RB	5.26	6.08	/	13	Pass
Middle	1 RB	4.27	5.13	/	13	Pass
	Full RB	5.67	6.47	/	13	Pass
Highest	1 RB	5.21	6.15	/	13	Pass
	Full RB	5.37	6.28	/	13	Pass

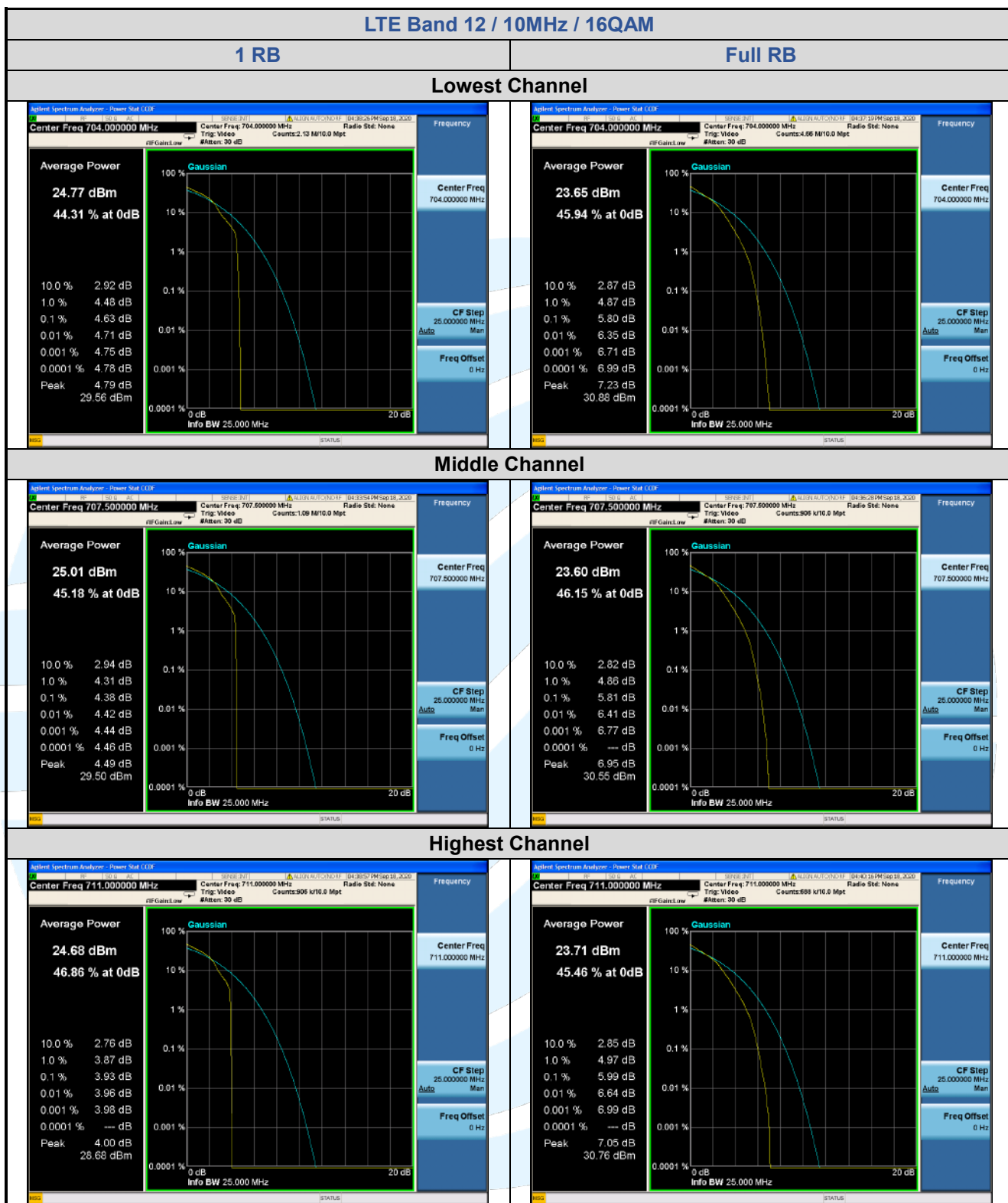




5.4.4 LTE Band 12

LTE Band 12 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.75	4.63	/	13	Pass
	Full RB	4.95	5.80	/	13	Pass
Middle	1 RB	3.55	4.38	/	13	Pass
	Full RB	5.04	5.81	/	13	Pass
Highest	1 RB	3.11	3.93	/	13	Pass
	Full RB	5.16	5.99	/	13	Pass

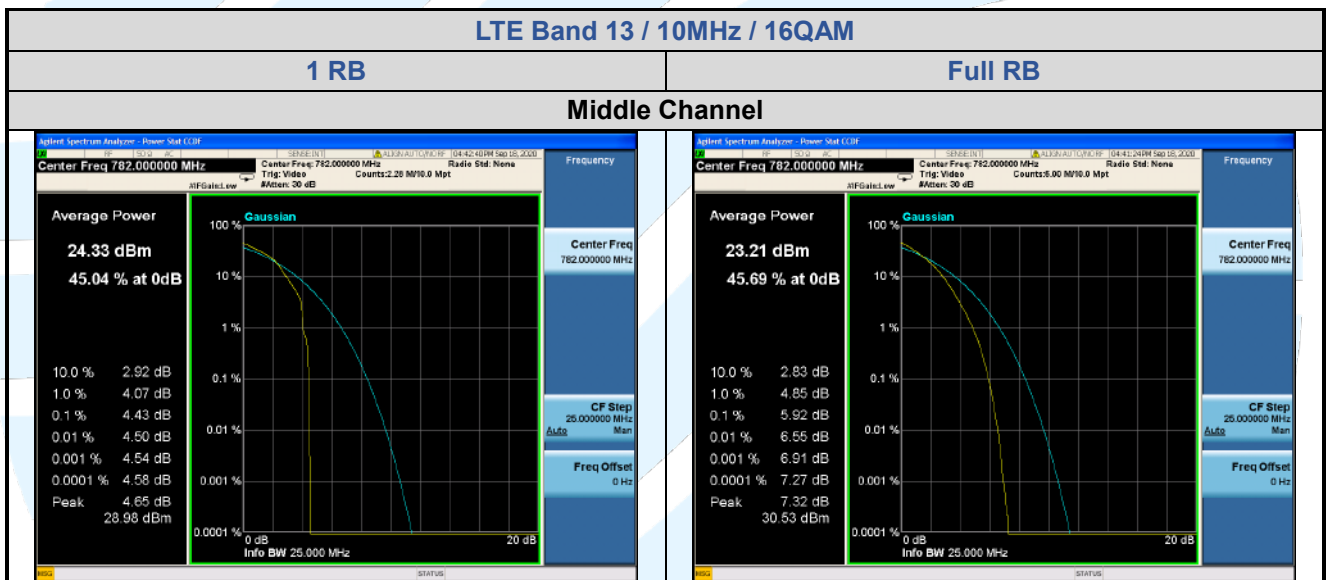
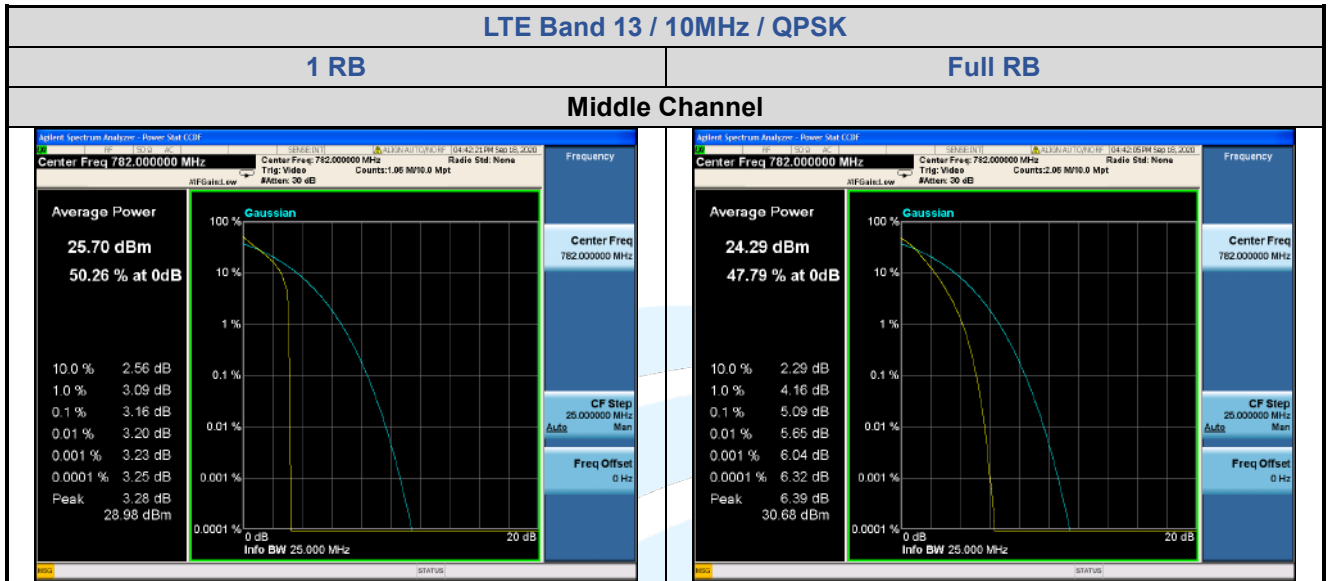




5.4.5 LTE Band 13

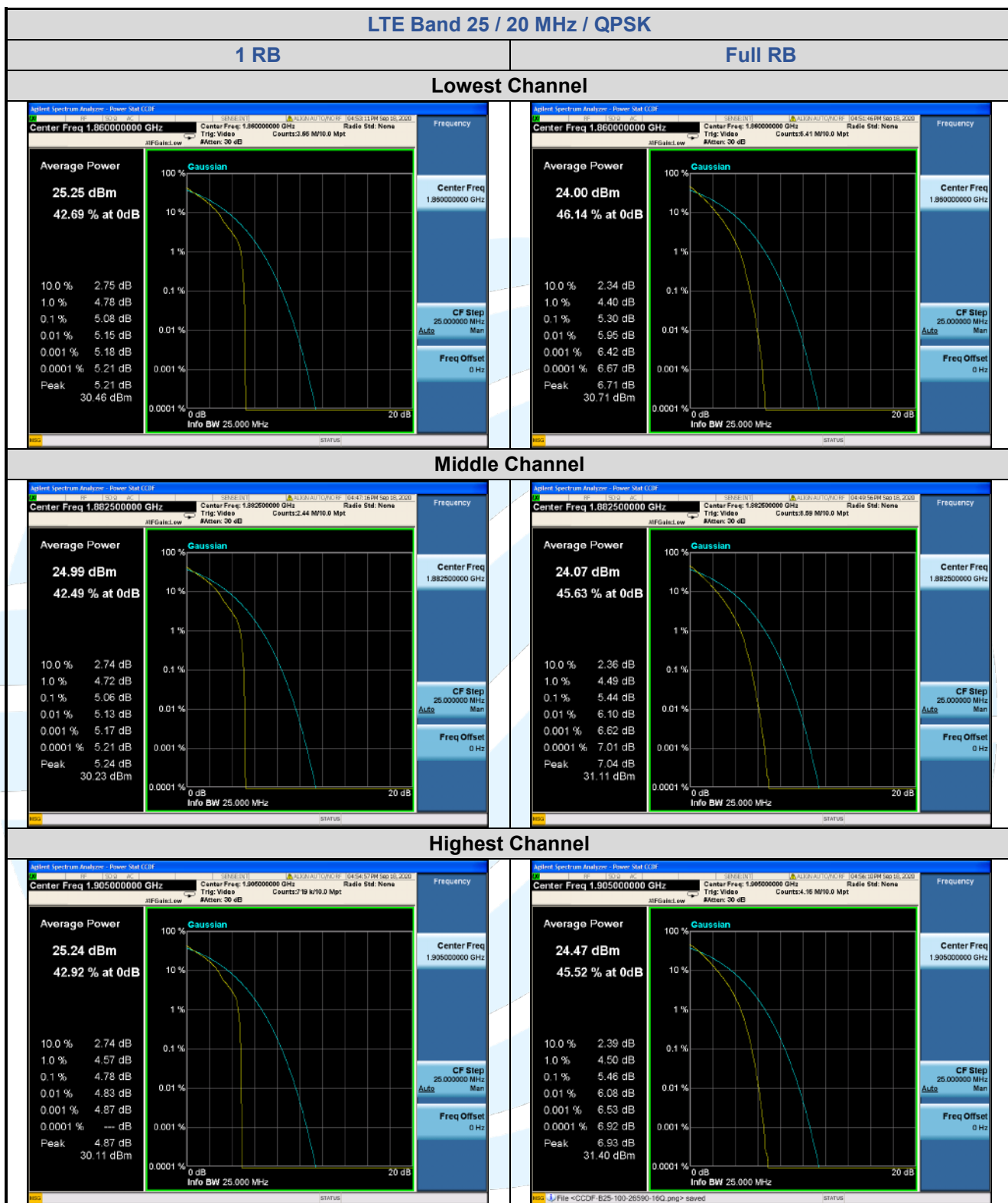
LTE Band 13 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Middle	1 RB	3.16	4.43	/	13	Pass
	Full RB	5.09	5.92	/	13	Pass

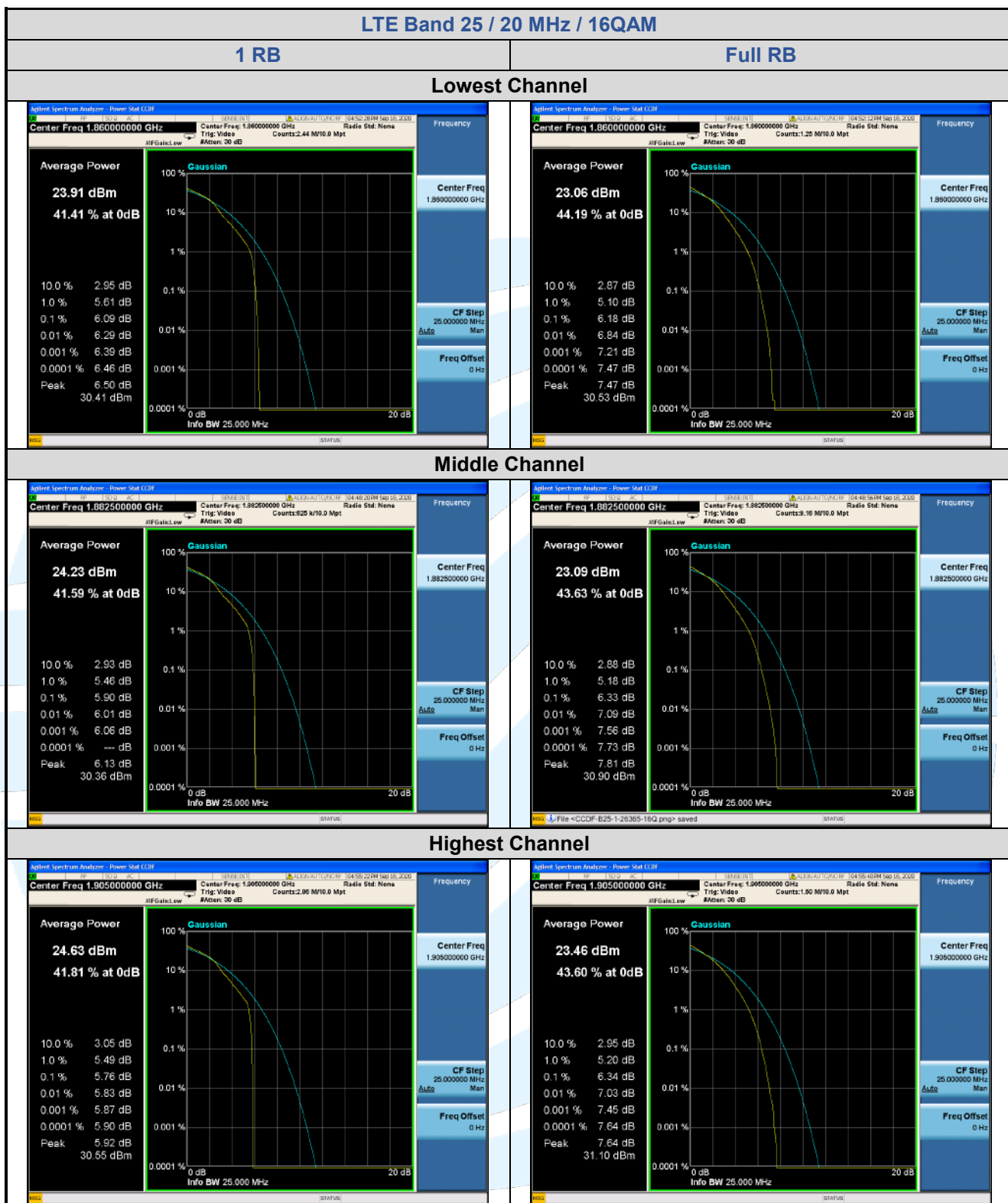




5.4.6 LTE Band 25

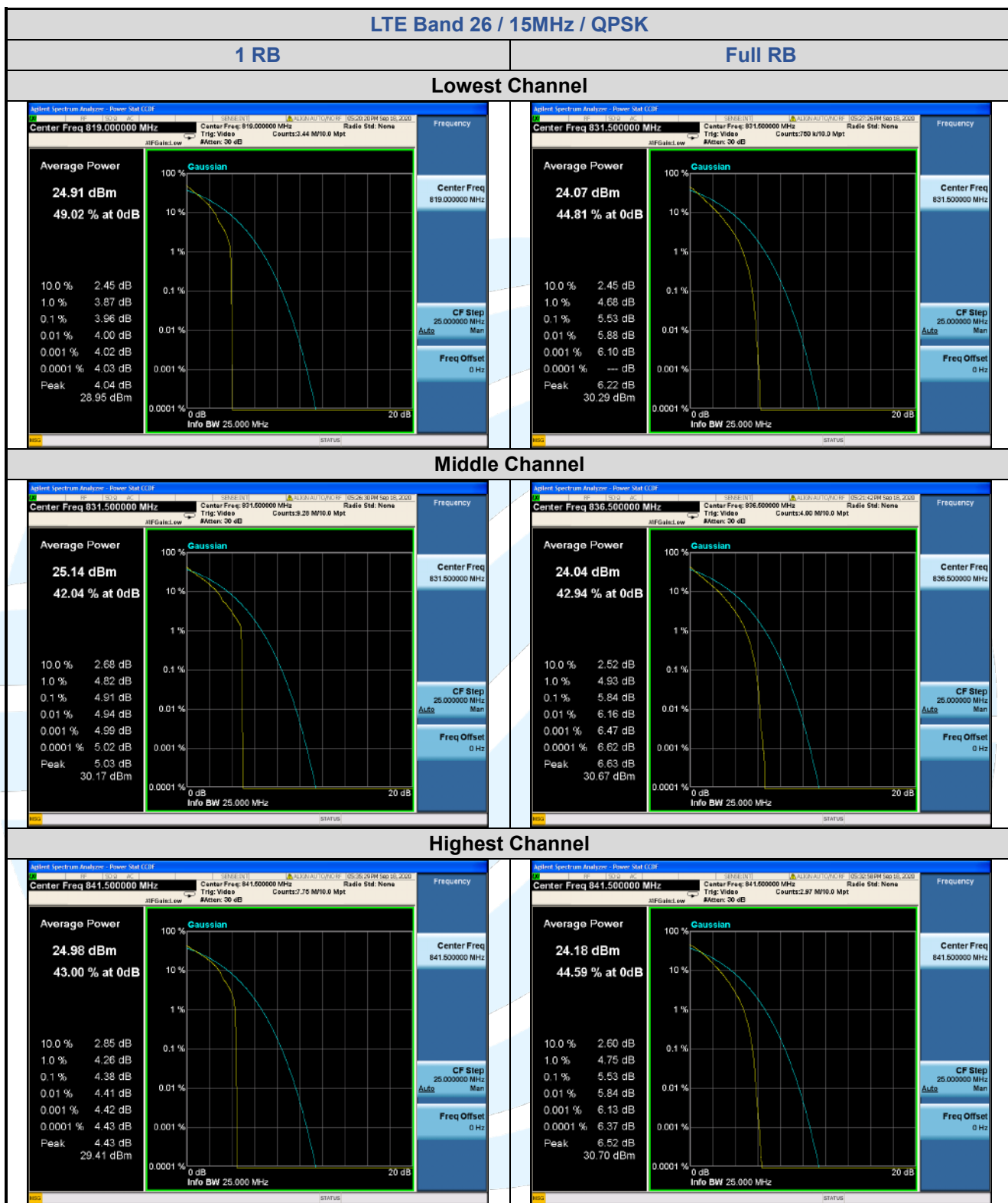
LTE Band 25 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	5.08	6.09	/	13	Pass
	Full RB	5.30	6.18	/	13	Pass
Middle	1 RB	5.06	5.90	/	13	Pass
	Full RB	5.44	6.33	/	13	Pass
Highest	1 RB	4.78	5.76	/	13	Pass
	Full RB	5.46	6.34	/	13	Pass

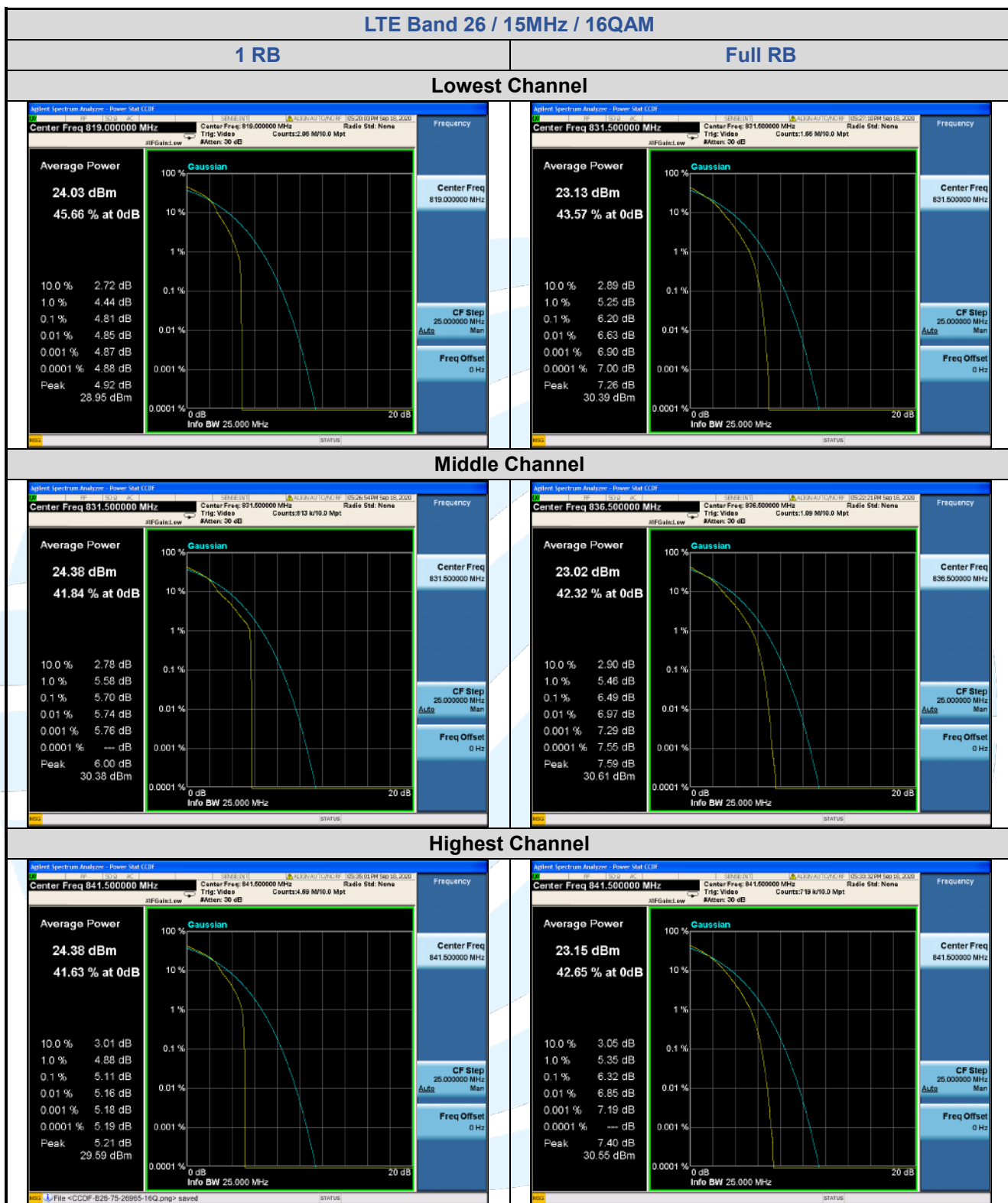




5.4.7 LTE Band 26

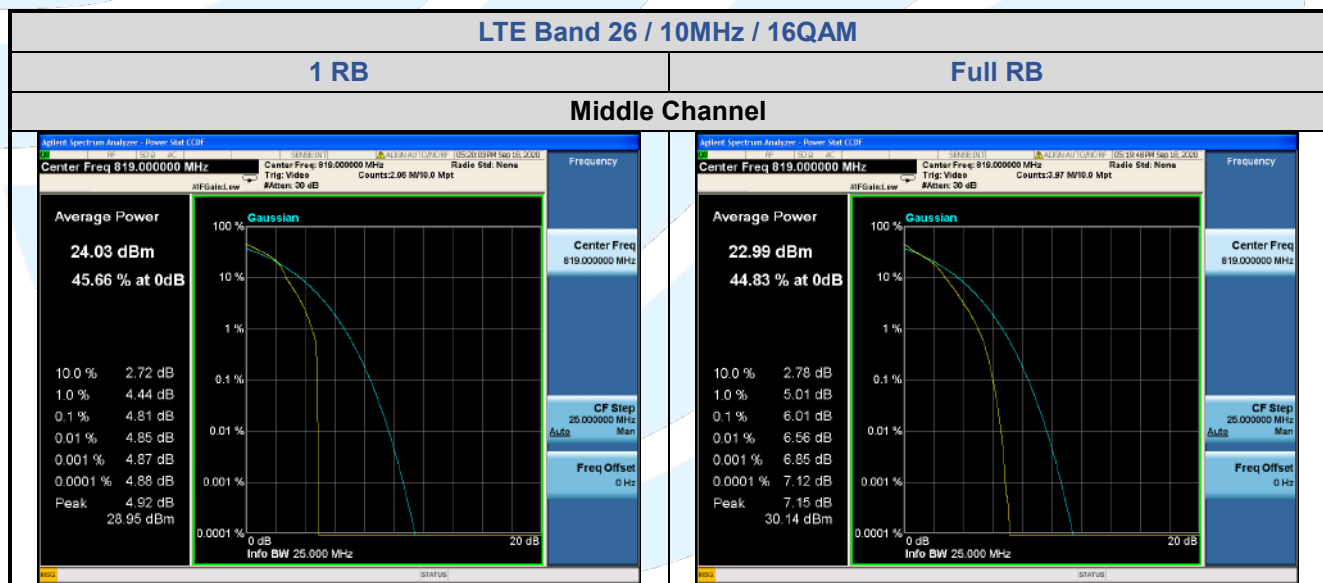
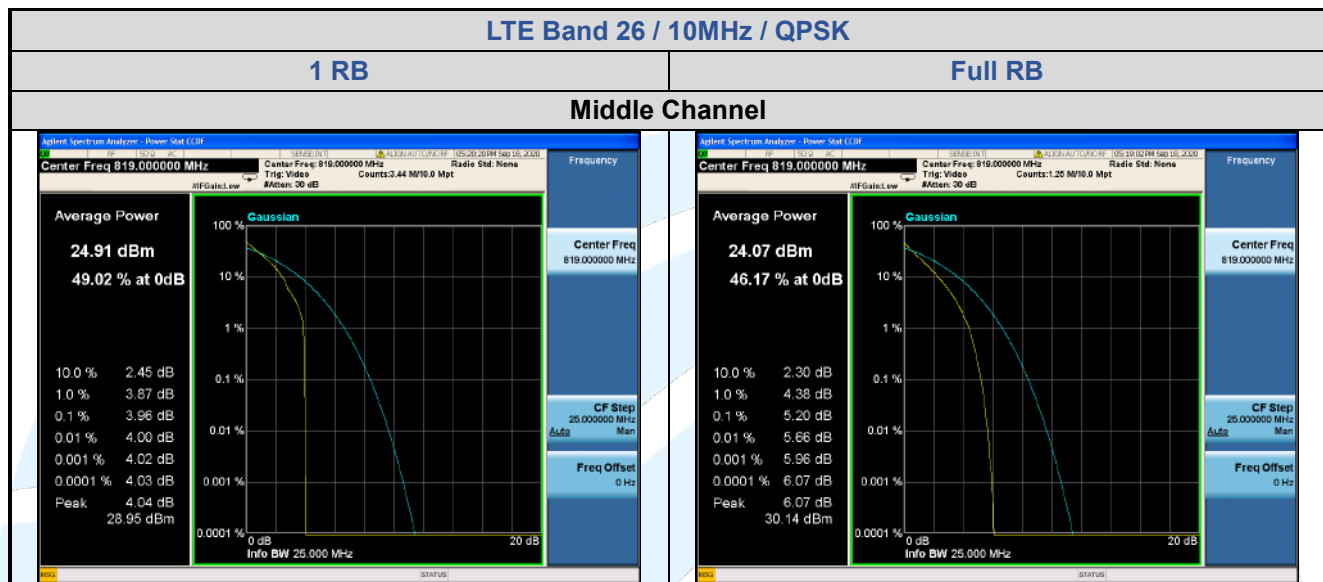
LTE Band 26 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 15 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	4.91	5.70	/	13	Pass
	Full RB	5.53	6.20	/	13	Pass
Middle	1 RB	4.40	5.25	/	13	Pass
	Full RB	5.84	6.49	/	13	Pass
Highest	1 RB	4.38	5.11	/	13	Pass
	Full RB	5.53	6.32	/	13	Pass





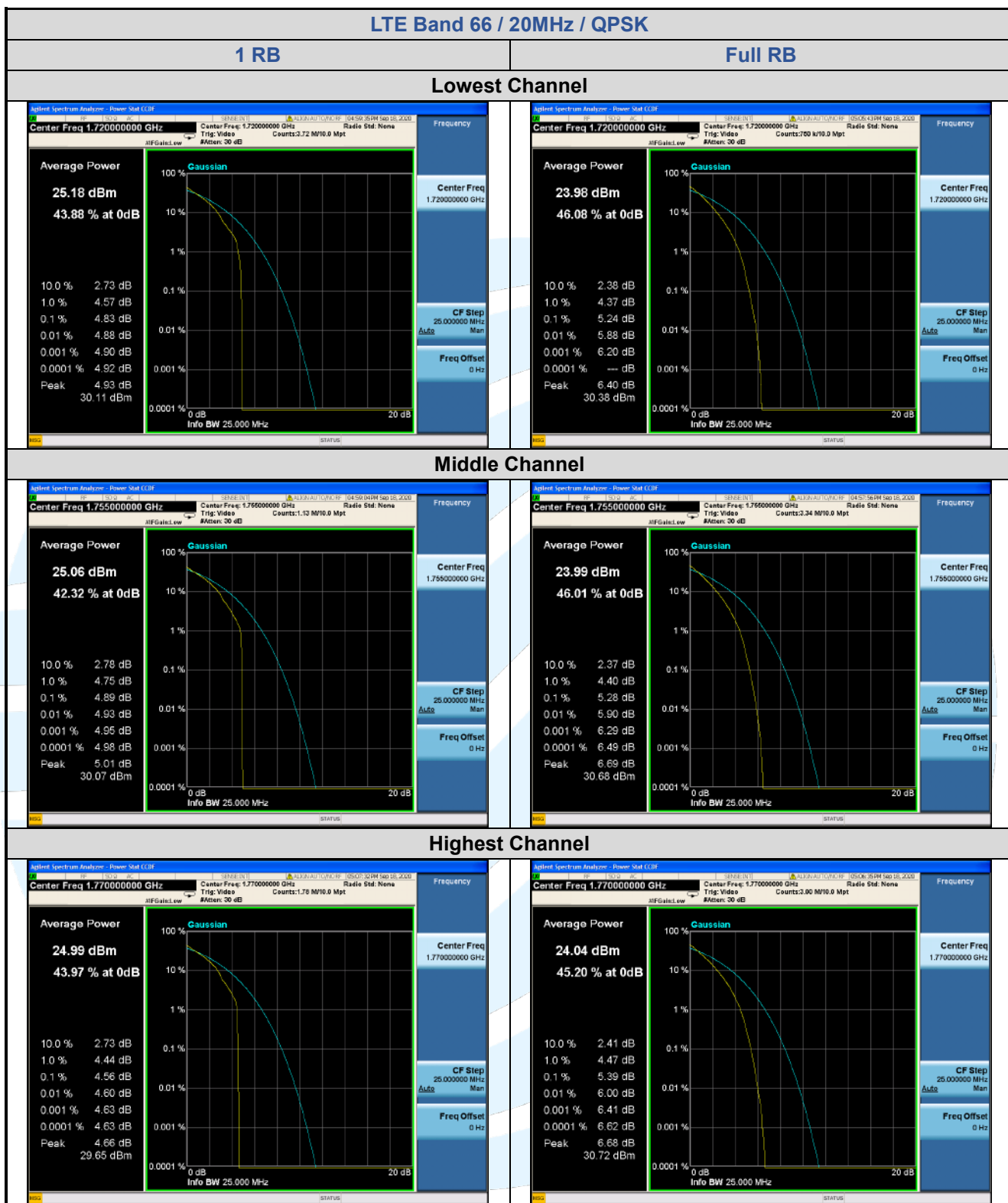
5.4.8 LTE Band 26 (Part 90S)

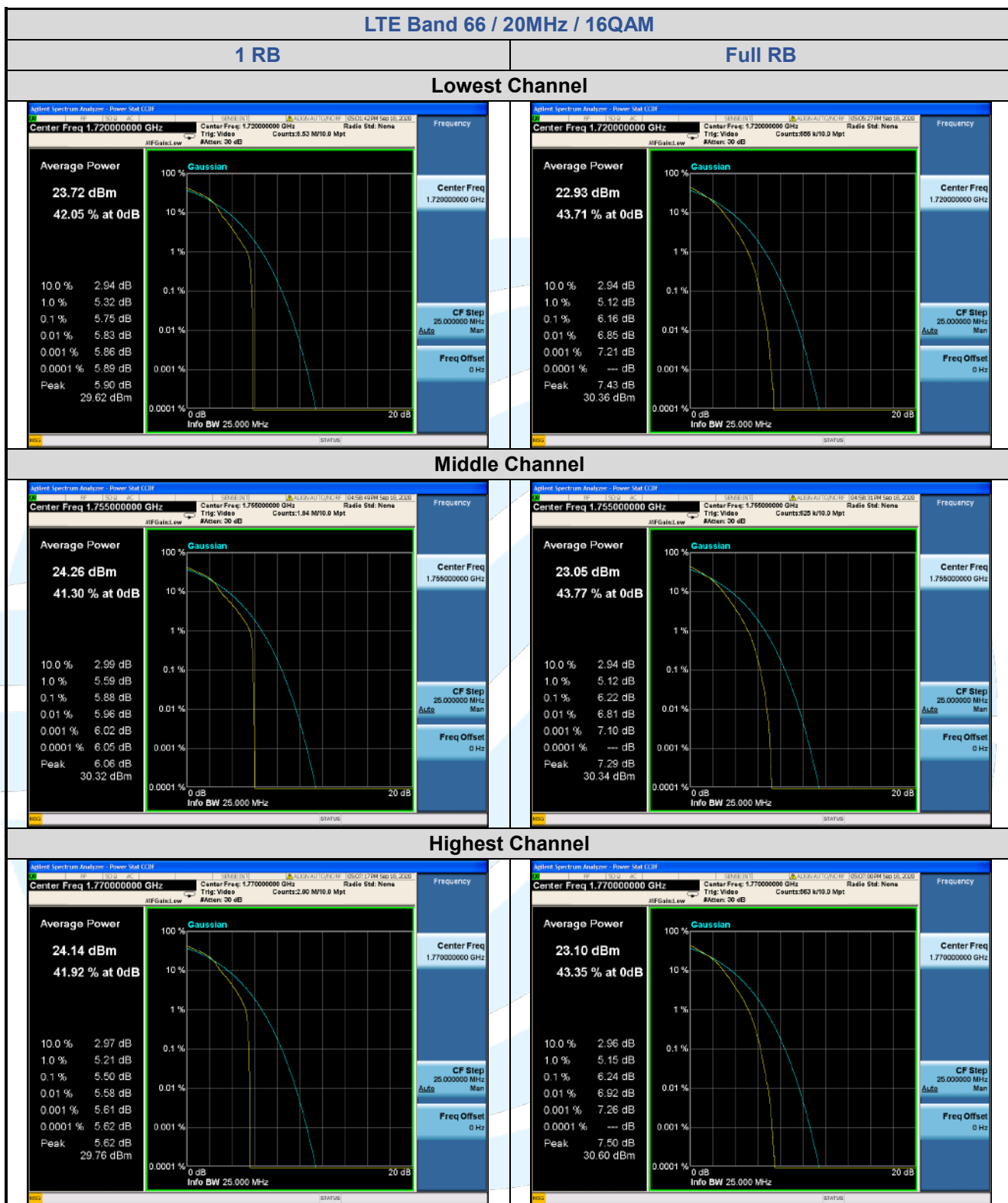
LTE Band 26 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Middle	1 RB	3.96	4.81	/	13	Pass
	Full RB	5.20	6.01	/	13	Pass



5.4.9 LTE Band 66

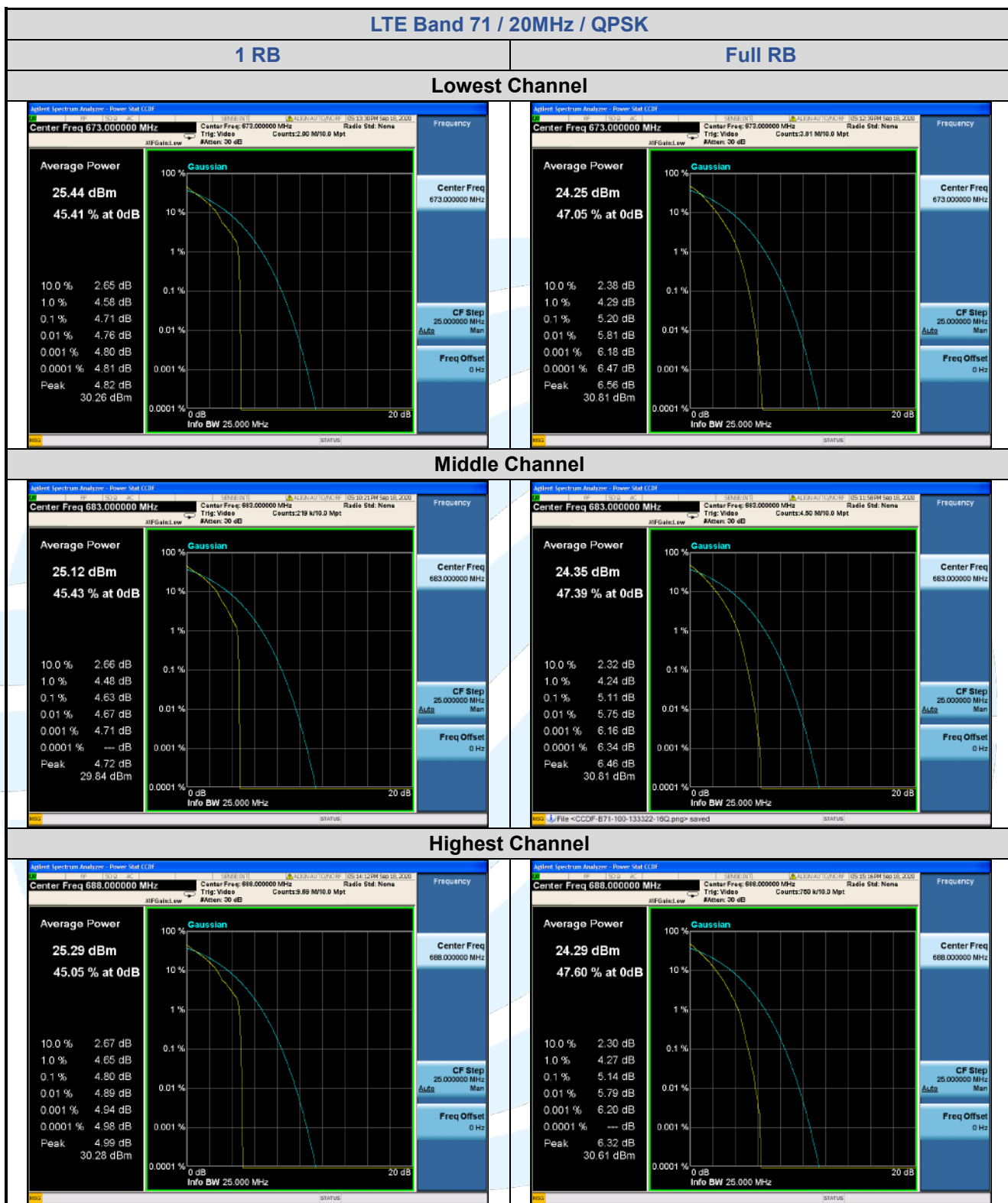
LTE Band 66 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	4.83	5.75	/	13	Pass
	Full RB	5.24	6.16	/	13	Pass
Middle	1 RB	4.89	5.88	/	13	Pass
	Full RB	5.28	6.22	/	13	Pass
Highest	1 RB	4.56	5.50	/	13	Pass
	Full RB	5.39	6.24	/	13	Pass

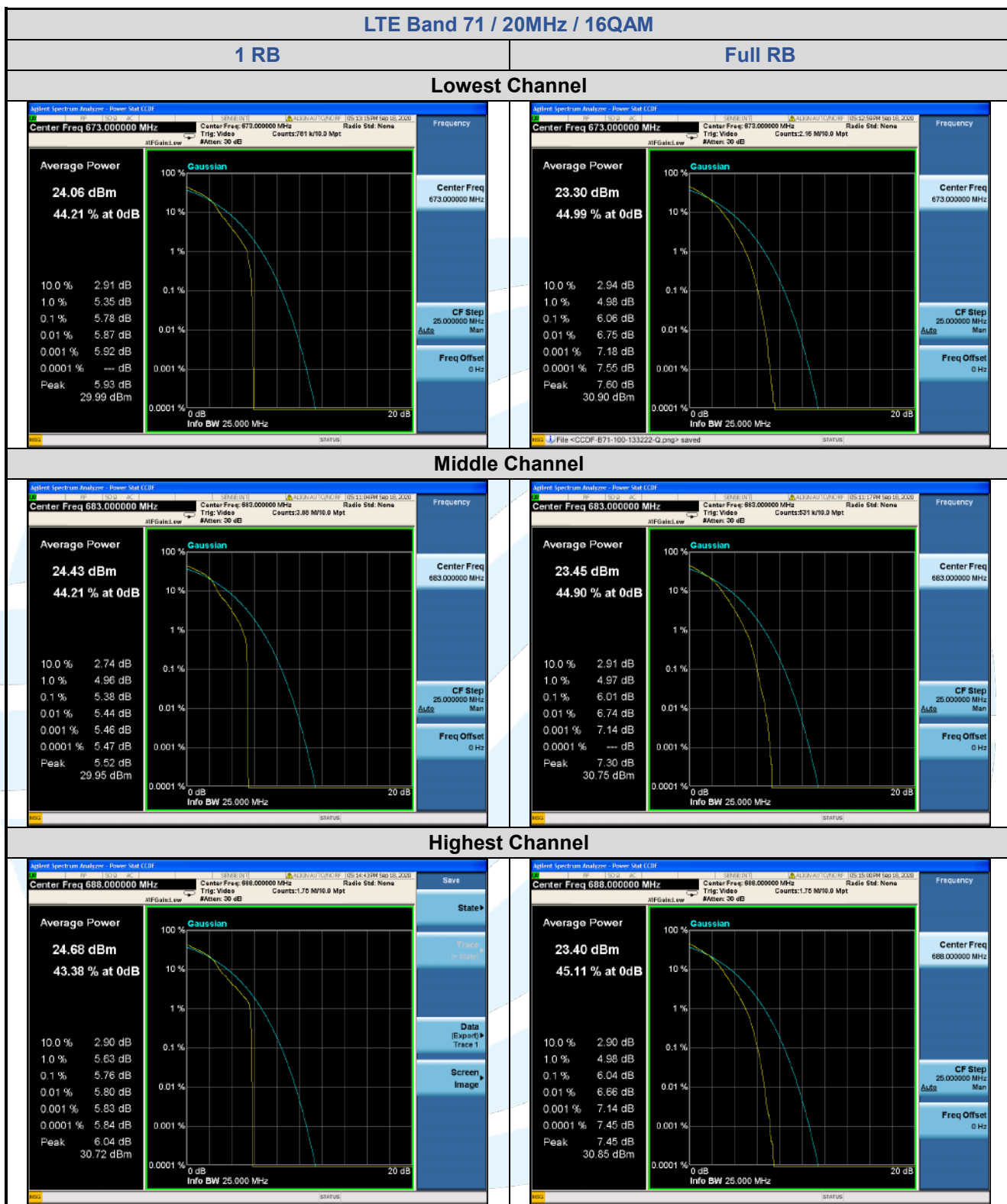




5.4.10 LTE Band 71

LTE Band 71 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	4.71	5.78	/	13	Pass
	Full RB	5.20	6.06	/	13	Pass
Middle	1 RB	4.63	5.38	/	13	Pass
	Full RB	5.11	6.01	/	13	Pass
Highest	1 RB	4.80	5.76	/	13	Pass
	Full RB	5.14	6.04	/	13	Pass





5.599%&26DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 2.1049(h), RSS-Gen Issue 5, Section 6.7

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01 Section 4

Limit: No Limit, for reporting purposes only.

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

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

5.5.1 LTE Band 2

LTE Band 2								
Channel	RB Configuration		26 dB BW (MHz)			99% BW (MHz)		
	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Channel Bandwidth: 1.4 MHz								
Lowest	6	0	1.310	1.312	/	1.1038	1.1033	/
Middle	6	0	1.314	1.301	/	1.1001	1.1021	/
Highest	6	0	1.292	1.311	/	1.1084	1.0982	/
Channel Bandwidth: 3 MHz								
Lowest	15	0	3.001	3.000	/	2.7071	2.7047	/
Middle	15	0	2.998	2.982	/	2.7050	2.7032	/
Highest	15	0	2.963	2.995	/	2.6999	2.7119	/
Channel Bandwidth: 5 MHz								
Lowest	25	0	5.032	4.996	/	4.5338	4.5140	/
Middle	25	0	5.056	5.024	/	4.5187	4.5234	/
Highest	25	0	5.008	5.016	/	4.5324	4.5258	/
Channel Bandwidth: 10 MHz								
Lowest	50	0	9.896	9.945	/	8.9768	8.9680	/
Middle	50	0	9.926	9.989	/	8.9809	8.9949	/
Highest	50	0	10.02	9.851	/	8.9839	8.9855	/
Channel Bandwidth: 15 MHz								
Lowest	75	0	14.77	14.78	/	13.446	13.455	/
Middle	75	0	14.73	14.80	/	13.407	13.471	/
Highest	75	0	14.75	14.83	/	13.457	13.476	/
Channel Bandwidth: 20 MHz								
Lowest	100	0	19.43	19.55	/	17.920	17.914	/
Middle	100	0	19.65	19.61	/	17.931	17.934	/
Highest	100	0	19.48	19.52	/	17.946	17.969	/

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