TEST REPORT

Product Name:	Global LTE Cat.M1/LTE Cat.NB2/2G Data-Only Module
Trade Mark:	CINTERION
Model No. / HVIN:	TX82-W
Report Number:	200529019RFM-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:	QIPTX82-W
IC:	7830A-TX82W
Test Result:	PASS
Date of Issue:	January 29, 2021

Prepared for:

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

Prepared by:

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Date: January 29, 2021

Version

Version No.	Date	Description
V1.0	January 29, 2021	Original

CONTENTS

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:	Global LTE Cat.M1/LTE Cat.NB2/2G Data-Only Module	
Model No.:	TX82-W(See Note)	
Trade Mark:	CINTERION	
DUT Stage:	Production Unit	
EUT Supports Function:	GSM Bands:	GSM 850/ PCS 1900
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 12/ Band 13/ Band 25/ Band 26/ Band 66/ Band 71
Sample Received Date:	April 21, 2020,	
Sample Tested Date:	April 22, 2020 to May 29, 2020	
New Sample Received Date:	May 28, 2020	
New Sample Tested Date:	May 28, 2020 to Jun 5, 2020	
Note: This product TX82-W include two SIM types: SIM and ESIM		

1.2.2 Description of Accessories

None.

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/12/13/25/26/66/71:	BPSK,QPSK
Category	NB1	
Deployment	stand-alone	
Sub-carrier spacing	3.75KHz, 15KHz	
Ntones	single, multi-tone	
Antenna Type:	External Antenna	
Antenna Gain:	LTE Band 2:	50 ohm terminal (0dBi)
	LTE Band 4:	50 ohm terminal (0dBi)
	LTE Band 5:	50 ohm terminal (0dBi)
	LTE Band 12:	50 ohm terminal (0dBi)
	LTE Band 13:	50 ohm terminal (0dBi)
	LTE Band 25:	50 ohm terminal (0dBi)
	LTE Band 26:	50 ohm terminal (0dBi)
	LTE Band 66:	50 ohm terminal (0dBi)
	LTE Band 71:	50 ohm terminal (0dBi)
Normal Test Voltage:	3.8 Vdc	
Extreme Test Voltage:	2.55 to 4.8Vdc	

Extreme Test Temperature:	-30 °C to +55 °C

Summary of Results:

Bands	Sub-carrier spacing	Modulation	Frequency Range	Max RF Output Power (dBm)		EIRP/ERP	99% BW	Emission Designator
	(KHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)	(W)	(kHz)	
2	3.75	BPSK	1850.7-1909.3	20.15	20.15	0.104	63.04	63K0G7D
		QPSK		20.06	20.06	0.101	71.13	71K2G7D
	15	BPSK	1851.5-1908.5	20.39	20.39	0.109	121.90	121KG7D
		QPSK		20.11	20.11	0.103	186.40	186KG7D
4	3.75	BPSK	1710.7-1754.3	19.96	19.96	0.099	62.44	62K4G7D
		QPSK		20.02	20.02	0.100	71.42	71K4G7D
	15	BPSK	1711.5-1753.5	19.78	19.78	0.095	126.26	126KG7D
		QPSK		20.03	20.03	0.101	190.14	190KG7D
5	3.75	BPSK	824.7-848.3	19.92	17.77	0.060	60.15	60K2G7D
		QPSK		19.98	17.83	0.061	67.36	67K4G7D
	15	BPSK	825.5-847.5	20.08	17.93	0.062	124.24	124KG7D
		QPSK		20.17	18.02	0.063	187.85	187KG7D
12	3.75	BPSK	699.7-715.3	20.97	18.82	0.076	59.29	59K3G7D
		QPSK		21.01	18.86	0.077	67.76	67K8G7D
	15	BPSK	700.5-714.5	21.03	18.88	0.077	128.08	128KG7D
		QPSK		21.25	19.10	0.081	188.90	189KG7D
13	3.75	BPSK	779.5-784.5	20.76	18.61	0.073	60.59	60K6G7D
		QPSK		20.78	18.63	0.073	67.68	67K7G7D
	15	BPSK	782-782	20.92	18.77	0.075	124.97	125KG7D
		QPSK		20.89	18.74	0.075	185.22	185KG7D
25	3.75	BPSK	1850.7-1914.3	20.62	20.62	0.115	62.19	62K2G7D
		QPSK		20.62	20.62	0.115	70.34	70K3G7D
	15	BPSK	1851.5-1913.5	20.70	20.70	0.117	122.34	122KG7D
		QPSK		20.62	20.62	0.115	186.99	187KG7D
26	3.75	BPSK	824.7-848.3	20.64	18.49	0.071	60.18	60K2G7D
		QPSK		20.66	18.51	0.071	68.50	68K5G7D
	15	BPSK	825.5-847.5	20.64	18.49	0.071	125.90	126KG7D
		QPSK		20.72	18.57	0.072	187.17	187KG7D
26 (Part 90S)	3.75	BPSK	814.7-823.3	20.61	18.46	0.070	60.29	60K3G7D
		QPSK		20.62	18.47	0.070	67.79	67K8G7D
	15	BPSK	815.5-822.5	20.59	18.44	0.070	122.24	122KG7D
		QPSK		20.76	18.61	0.073	187.85	188KG7D
66	3.75	BPSK	1710.7-1779.3	20.70	20.70	0.117	62.46	62K5G7D
		QPSK		20.72	20.72	0.118	70.12	70K1G7D
	15	BPSK	1711.5-1778.5	20.76	20.76	0.119	127.84	128KG7D

		QPSK		20.80	20.80	0.120	187.58	188KG7D
71	3.75	BPSK	665.5-695.5	21.34	19.19	0.083	60.15	60K2G7D
		QPSK		21.38	19.23	0.084	68.48	68K5G7D
	15	BPSK	668-693	21.38	19.23	0.084	119.70	120KG7D
		QPSK		21.34	19.19	0.083	186.94	187KG7D

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
Antenna	SMARTEQ	MiniMag	--	Applicant
Adapter	Lenovo	HKA02412020-3K	N/A	Applicant
PCB board	N/A	W30880-Q9812-X-2	N/A	Applicant
50 ohm terminal	N/A	N/A	N/A	UnionTrust
Notebook	Lenovo	B40-80	MP12NEQ6	UnionTrust
Mouse	DELL	MS111	CN-011D3V-738	UnionTrust

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: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New 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.

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)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
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	See Note
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	See Note
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	See Note

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	See Note
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	See Note
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
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	See Note
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	See Note
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

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)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
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	See Note
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	See Note
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	See Note
Frequency stability	FCC 47 CFR Part 2.1055 &	ANSI C63.26-2015 &	See Note

	FCC 47 CFR Part 22.355	KDB 971168 D01v03r01	

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)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
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	See Note
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(g)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
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	See Note
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	See Note
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

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	See Note
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	See Note
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	FCC 47 CFR Part 27.53	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

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	See Note
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 90.635	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	N/A	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	See Note
Emission Mask	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	See Note
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	See Note
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	See Note

Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 90.213	ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01	See Note

RSS-130 Issue 2 Test Cases (LTE Band 12 & 13&71)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Effective Radiated Power (ERP)	RSS-130 Issue 2, Section 4.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	RSS-130 Issue 2, Section 4.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	RSS-130 Issue 2, Section 4.6	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	RSS-130 Issue 2, Section 4.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Spurious emissions at antenna terminals	RSS-130 Issue 2, Section 4.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Field strength of spurious radiation	RSS-130 Issue 2, Section 4.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Frequency stability	RSS-130 Issue 2, Section 4.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

RSS-132 Issue 3 Test Cases (Band 5)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Effective Radiated Power (ERP)	RSS-132 Issue 3, Section 5.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	RSS-132 Issue 3, Section 5.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	RSS-132 Issue 3, Section 5.4	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	RSS-132 Issue 3, Section 5.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Spurious emissions at antenna terminals	RSS-132 Issue 3, Section 5.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Field strength of spurious radiation	RSS-132 Issue 3, Section 5.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Frequency stability	RSS-132 Issue 3, Section 5.3	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

RSS-133 Issue 6 Test Cases (Band 2 & Band 25)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	RSS-133 Issue 6, Section 6.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	RSS-133 Issue 6, Section 6.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	RSS-133 Issue 6, Section 6.4	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	RSS-133 Issue 6, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Spurious emissions at antenna terminals	RSS-133 Issue 6, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Field strength of	RSS-133 Issue 6, Section 6.5	ANSI C63.26-2015 &	PASS

spurious radiation		KDB 971168 D01v03r01	
Frequency stability	RSS-133 Issue 6, Section 6.3	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

RSS-139 Issue 3 Test Cases (LTE Band 4 & Band 66)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	RSS-139 Issue 3, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Conducted Output Power	RSS-139 Issue 3, Section 6.5	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Peak-to-average ratio	RSS-139 Issue 3, Section 6.5	KDB 971168 D01v03r01	See Note
99%&26dB Bandwidth	RSS-Gen Issue 5, Section 6.7	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Band Edge at antenna terminals	RSS-139 Issue 3, Section 6.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Spurious emissions at antenna terminals	RSS-139 Issue 3, Section 6.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Field strength of spurious radiation	RSS-139 Issue 3, Section 6.6	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note
Frequency stability	RSS-139 Issue 3, Section 6.4	ANSI C63.26-2015 & KDB 971168 D01v03r01	See Note

Note: The model TX82-W open GSM function by software base on model TX62-W, the NB-IOT& CAT M RF parameters have no any change, so the test data will copy from report No.200415017RFM-2.
Only performers the spurious radiation emission testing on worst band 2 in this report.

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. 24, 2019	Nov. 23, 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. 16, 2019	Nov. 15, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	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	120932	Jul. 19, 2019	Jul. 19, 2020
☒	DC Source	KIKUSUI	PWR400L	LK003024	Sep. 09, 2019	Sep. 08, 2020
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290 020	May. 11, 2020	May. 10, 2021

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	2.55	20 to 75
TH/VL	+55	2.55	20 to 75
TL/VH	-30	4.8	20 to 75
TH/VH	+55	4.8	20 to 75

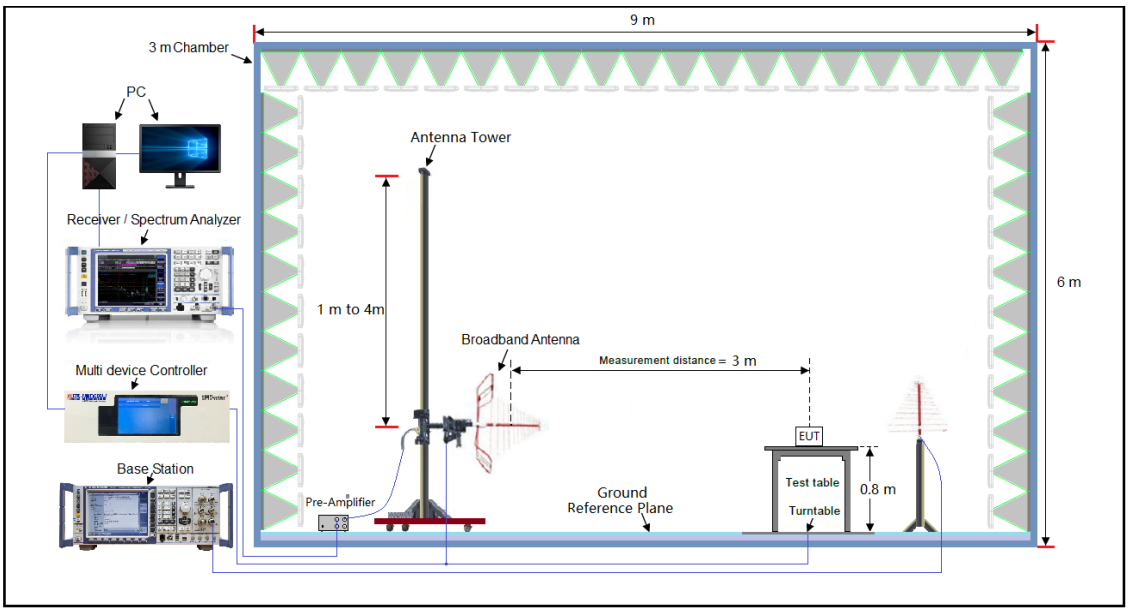
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +55 °C and the extreme voltage of 2.55 V to 4.8 V, so here the EUT is tested in the temperature of -30 °C to +55 °C and the voltage of 2.55 V to 4.8 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.

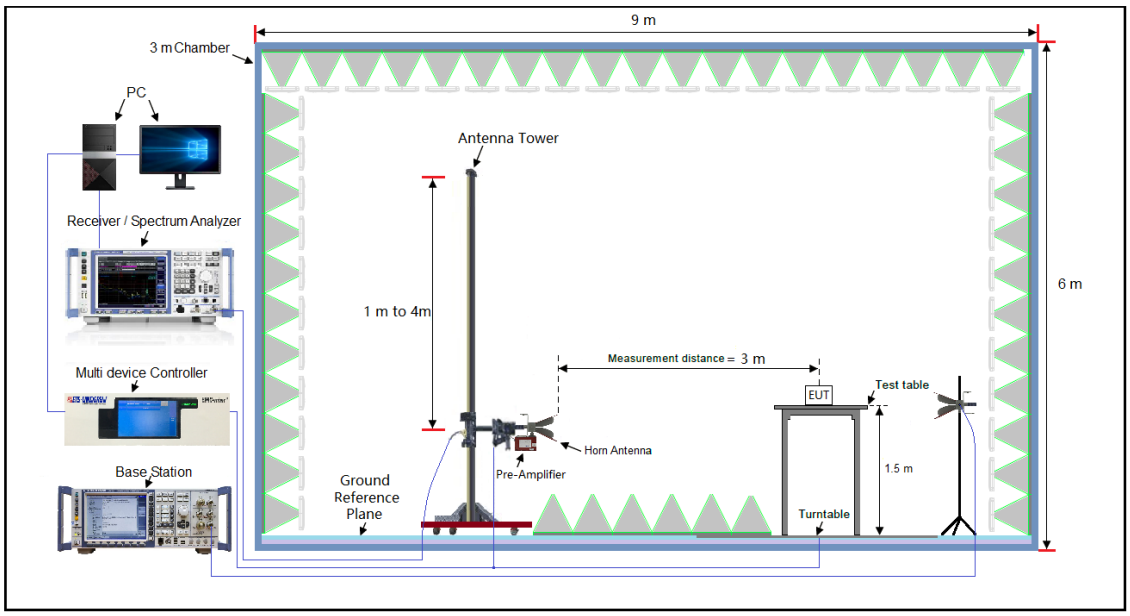
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

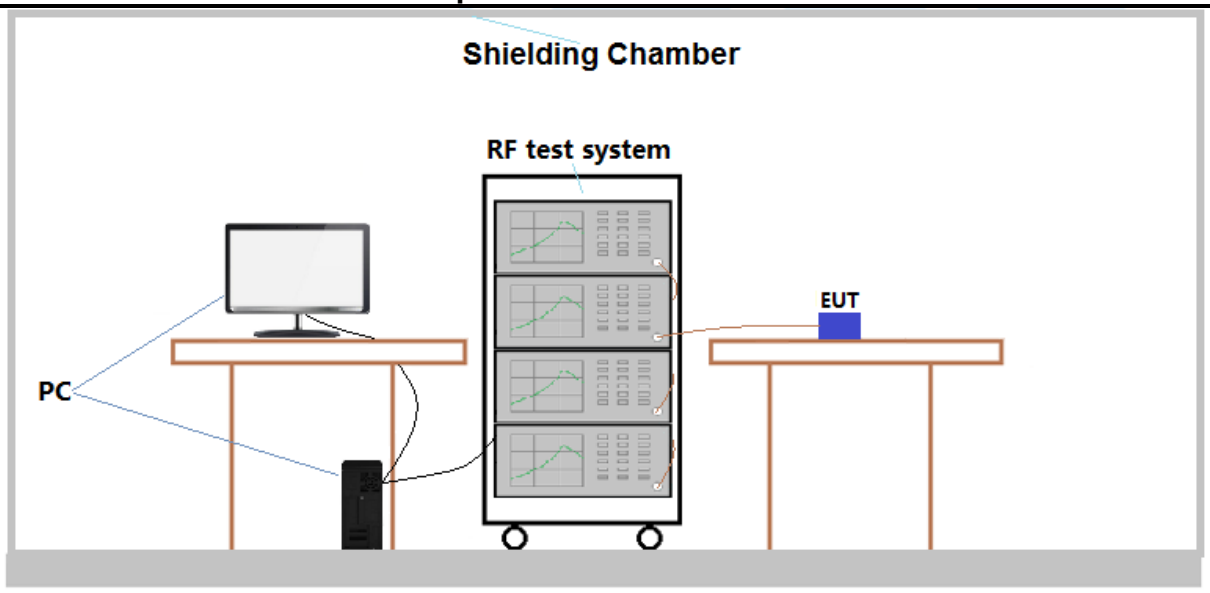
Radiated Emissions 30MHz to 1GHz Test setup



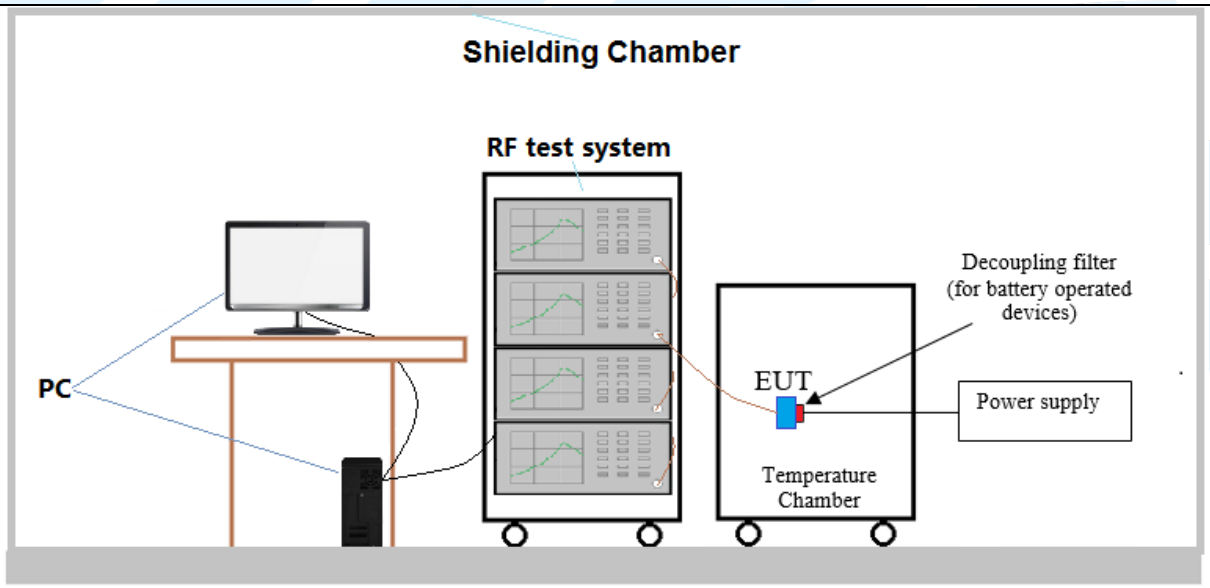
Radiated Emissions Above 1GHz Test setup



4.2.2 For Conducted RF test setup



Normal Environment



Extreme Environment

4.3 TEST CHANNELS

Band	Test Frequency ID	Sub-carrier spacing (KHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 2 TX: 1850-1910MHz	Low Range	3.75 or 15	18607	1850.1
	Middle Range	3.75 or 15	18900	1880
	High Range	3.75 or 15	19199	1909.9
LTE Band 4 TX: 1710-1755MHz	Low Range	3.75 or 15	19951	1710.1
	Middle Range	3.75 or 15	20175	1732.5
	High Range	3.75 or 15	20399	1754.9
LTE band 5 TX: 824–849MHz	Low Range	3.75 or 15	20401	824.1
	Middle Range	3.75 or 15	20525	836.5
	High Range	3.75 or 15	20649	848.9
LTE Band 12 TX: 699-716MHz	Low Range	3.75 or 15	23011	699.1
	Middle Range	3.75 or 15	23095	707.5
	High Range	3.75 or 15	23179	715.9
LTE Band 13 TX: 777-787MHz	Low Range	3.75 or 15	23181	777.1
	Middle Range	3.75 or 15	23230	782
	High Range	3.75 or 15	23279	786.9
LTE Band 25 TX: 1850-1915MHz	Low Range	3.75 or 15	26041	1850.1
	Middle Range	3.75 or 15	26365	1882.5
	High Range	3.75 or 15	26689	1914.9
LTE band 26 TX:824–849MHz	Low Range	3.75 or 15	26791	824.1
	Middle Range	3.75 or 15	26915	836.5
	High Range	3.75 or 15	27039	848.9
	Low Range	3.75 or 15	26691	814.1
	Middle Range	3.75 or 15	26740	819
	High Range	3.75 or 15	26789	823.9
LTE Band 66 TX: 1710-1780MHz	Low Range	3.75 or 15	131973	1710.1
	Middle Range	3.75 or 15	132322	1745
	High Range	3.75 or 15	132671	1779.9
LTE Band 71 TX: 663–698MHz	Low Range	3.75 or 15	133123	663.1
	Middle Range	3.75 or 15	133297	680.5
	High Range	3.75 or 15	133471	697.9

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	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			18601/1850.1	18900/1880.0	19199/1909.9
BPSK	3.75	1@0	20.15	20.05	19.61
		1@47	19.62	19.99	19.58
	15	1@0	20.32	20.39	19.88
		1@11	20.31	20.34	19.86
QPSK	3.75	1@0	19.60	20.02	19.57
		1@47	19.54	20.06	19.61
	15	1@0	19.65	20.11	19.62
		1@11	19.64	19.98	19.55
	15	12@0	17.61	18.15	17.66

4.5.2 LTE Band 4

LTE Band 4 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			19951/1710.1	20175/1732.5	20399/1754.9
BPSK	3.75	1@0	18.66	19.96	19.38
		1@47	18.57	19.94	19.29
	15	1@0	19.28	19.78	19.55
		1@11	19.23	19.76	19.51
QPSK	3.75	1@0	18.66	20.02	19.42
		1@47	18.61	19.93	19.37
	15	1@0	19.37	20.03	19.67
		1@11	19.32	19.96	19.61
	15	12@0	17.47	18.21	18.00

4.5.3 LTE Band 5

LTE Band 5 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			20401/824.1	20525/836.5	20649/848.9
BPSK	3.75	1@0	19.23	19.92	19.67
		1@47	19.21	19.90	19.60
	15	1@0	19.36	20.08	19.45
		1@11	19.29	19.99	19.47
QPSK	3.75	1@0	19.31	19.98	19.77
		1@47	19.25	19.91	19.68
	15	1@0	19.41	20.17	20.03
		1@11	19.35	20.11	19.95
	15	12@0	17.50	18.06	18.13

4.5.4 LTE Band 12

LTE Band 12 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			23011/699.1	23095/707.5	23179/715.9
BPSK	3.75	1@0	20.78	20.97	20.58
		1@47	20.71	20.95	20.49
	15	1@0	20.85	21.03	20.56
		1@11	20.70	21.02	20.52
QPSK	3.75	1@0	20.81	21.01	20.54
		1@47	20.78	20.98	20.49
	15	1@0	20.86	21.25	20.76
		1@11	20.79	21.19	20.68
	15	12@0	18.82	19.24	18.68

4.5.5 LTE Band 13

LTE Band 13 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			23181/777.1	23230/782	23279/786.9
BPSK	3.75	1@0	20.35	20.76	20.01
		1@47	20.33	20.72	20.03
	15	1@0	20.41	20.92	20.22
		1@11	20.34	20.81	20.14
QPSK	3.75	1@0	20.34	20.78	20.05
		1@47	20.29	20.67	19.99
	15	1@0	20.51	20.89	20.22
		1@11	20.43	20.83	20.16
	15	12@0	18.62	19.07	18.37

4.5.6 LTE Band 25

LTE Band 25 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			26041/1850.1	26365/1882.5	26689/1914
BPSK	3.75	1@0	20.28	20.62	20.11
		1@47	20.25	20.55	20.12
	15	1@0	20.42	20.70	20.23
		1@11	20.33	20.68	20.17
QPSK	3.75	1@0	20.47	20.58	20.13
		1@47	20.41	20.62	20.11
	15	1@0	20.49	20.62	20.25
		1@11	20.45	20.59	20.19
	15	12@0	18.62	18.77	20.14

4.5.7 LTE Band 26

LTE Band 26 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			26791/824.1	26915/836.5	27039/848.9
BPSK	3.75	1@0	20.64	20.47	19.44
		1@47	20.58	20.35	19.38
	15	1@0	20.64	20.52	19.81
		1@11	20.54	20.36	19.76
QPSK	3.75	1@0	20.66	20.52	19.52
		1@47	20.58	20.45	19.46
	15	1@0	20.72	20.39	19.76
		1@11	20.65	20.46	19.70
	15	12@0	18.63	18.52	17.92

4.5.8 LTE Band 26 (Part 90S)

LTE Band 26 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			26691/814.1	26740/819	26789/823.9
BPSK	3.75	1@0	19.96	20.42	20.61
		1@47	19.89	20.38	20.56
	15	1@0	19.93	20.59	20.57
		1@11	19.91	20.58	20.53
QPSK	3.75	1@0	20.16	20.59	20.62
		1@47	20.15	20.54	20.54
	15	1@0	20.04	20.76	20.70
		1@11	19.96	20.47	20.62
	15	12@0	18.12	18.73	18.70

4.5.9 LTE Band 66

LTE Band 66 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			131973/1710.1	132322/1745.0	132671/1779.9
BPSK	3.75	1@0	18.68	20.70	20.43
		1@47	18.61	20.65	20.38
	15	1@0	19.80	20.76	20.70
		1@11	19.81	20.73	20.62
QPSK	3.75	1@0	18.77	20.72	20.46
		1@47	18.72	20.68	20.47
	15	1@0	19.85	20.80	20.80
		1@11	19.76	20.65	20.72
	15	12@0	17.92	18.73	18.91

4.5.10 LTE Band 71

LTE Band 71 Maximum Average Power (dBm)					
Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/mid/high channel		
			133123/663.1	133297/680.5	133471/697.9
BPSK	3.75	1@0	20.15	21.34	20.79
		1@47	20.13	21.31	20.76
	15	1@0	19.97	21.23	21.05
		1@11	19.95	21.20	20.93
QPSK	3.75	1@0	20.17	21.33	20.83
		1@47	20.14	21.38	20.77
	15	1@0	20.09	21.34	21.14
		1@11	20.06	21.19	21.06
	15	12@0	18.00	19.31	19.14

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	Sub-carrier spacing (KHz)		Modulation		Channel		
		3.75	15	BPSK	QPSK	L	M	H
ERP/EIRP	2	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	☒	☒	☒
	17	☒	☒	☒	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒
	71	☒	☒	☒	☒	☒	☒	☒
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	☒	☒	☒
	17	☒	☒	☒	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒
	71	☒	☒	☒	☒	☒	☒	☒

Item	Band	Sub-carrier spacing (KHz)		Modulation		Channel		
		3.75	15	BPSK	QPSK	L	M	H
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	☒	☒	☒
	17	☒	☒	☒	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒
	71	☒	☒	☒	☒	☒	☒	☒
peak-to-average ratio	2	☒	☒	☒	☒	☐	☒	☐
	4	☒	☒	☒	☒	☐	☒	☐
	5	☒	☒	☒	☒	☐	☒	☐
	12	☒	☒	☒	☒	☐	☒	☐
	17	☒	☒	☒	☒	☐	☒	☐
	25	☒	☒	☒	☒	☐	☒	☐
	26	☒	☒	☒	☒	☐	☒	☐
	66	☒	☒	☒	☒	☐	☒	☐
	71	☒	☒	☒	☒	☐	☒	☐

Item	Band	Sub-carrier spacing (KHz)		Modulation		Channel		
		3.75	15	BPSK	QPSK	L	M	H
Band Edge at antenna terminals	2	☒	☒	☒	☒	☒	☐	☒
	4	☒	☒	☒	☒	☒	☐	☒
	5	☒	☒	☒	☒	☒	☐	☒
	12	☒	☒	☒	☒	☒	☐	☒
	17	☒	☒	☒	☒	☒	☐	☒
	25	☒	☒	☒	☒	☒	☐	☒
	26	☒	☒	☒	☒	☒	☐	☒
	66	☒	☒	☒	☒	☒	☐	☒
	71	☒	☒	☒	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☐	☒	☐	☒	☒	☒	☒
	4	☐	☒	☐	☒	☒	☒	☒
	5	☐	☒	☐	☒	☒	☒	☒
	12	☐	☒	☐	☒	☒	☒	☒
	17	☐	☒	☐	☒	☒	☒	☒
	25	☐	☒	☐	☒	☒	☒	☒
	26	☐	☒	☐	☒	☒	☒	☒
	66	☐	☒	☐	☒	☒	☒	☒
	71	☐	☒	☐	☒	☒	☒	☒

Item	Band	Sub-carrier spacing (KHz)		Modulation				
		3.75	15	BPSK	QPSK	L	M	H
Field strength of spurious radiation	2	☐	☒	☐	☒	☒	☒	☒
	4	☐	☒	☐	☒	☒	☒	☒
	5	☐	☒	☐	☒	☒	☒	☒
	12	☐	☒	☐	☒	☒	☒	☒
	17	☐	☒	☐	☒	☒	☒	☒
	25	☐	☒	☐	☒	☒	☒	☒
	26	☐	☒	☐	☒	☒	☒	☒
	66	☐	☒	☐	☒	☒	☒	☒
	71	☐	☒	☐	☒	☒	☒	☒
Frequency stability	2	☐	☒	☐	☒	☐	☒	☐
	4	☐	☒	☐	☒	☐	☒	☐
	5	☐	☒	☐	☒	☐	☒	☐
	12	☐	☒	☐	☒	☐	☒	☐
	17	☐	☒	☐	☒	☐	☒	☐
	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	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
7	RSS-130 Issue 2	Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
8	RSS-132 Issue 3	Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz
9	RSS-133 Issue 6	2 GHz Personal Communications Services Aussi disponible
10	RSS-139 Issue 3	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz
11	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
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)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a)
LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10)
LTE Band 13: FCC 47 CFR Part 27.50(b)(10)
LTE Band 26: FCC 47 CFR Part 90.635
LTE Band 2 & LTE Band 25: RSS-133 Issue 6, Section 6.4
LTE Band 4 & LTE Band 66: RSS-139 Issue 3, Section 6.5
LTE Band 5: RSS-132 Issue 3, Section 5.4
LTE Band 12 & LTE Band 13 & Band 71: RSS-130 Issue 2, Section 4.6

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.

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)	[3]1,000

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

Test Procedure:

$$\textbf{ERP or EIRP} = P_{Meas} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as PMeas, 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);

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) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	EIRP(dBm)	Limit(dBm)	Result
18601	1850.1	BPSK	3.75	1@0	20.15	33.01	Pass
		QPSK	3.75	1@0	19.6	33.01	Pass
		BPSK	15	1@0	20.32	33.01	Pass
		QPSK	15	1@0	19.65	33.01	Pass
18900	1880	BPSK	3.75	1@0	20.05	33.01	Pass
		QPSK	3.75	1@47	20.06	33.01	Pass
		BPSK	15	1@0	20.39	33.01	Pass
		QPSK	15	1@0	20.11	33.01	Pass
19199	1909.9	BPSK	3.75	1@0	19.61	33.01	Pass
		QPSK	3.75	1@47	19.61	33.01	Pass
		BPSK	15	1@0	19.88	33.01	Pass
		QPSK	15	1@0	19.62	33.01	Pass

5.2.2 LTE Band 4

LTE Band 4 Maximum EIRP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	EIRP(dBm)	Limit(dBm)	Result
19951	1710.1	BPSK	3.75	1@0	18.66	30.01	Pass
		QPSK	3.75	1@0	18.66	33.01	Pass
		BPSK	15	1@0	19.28	33.01	Pass
		QPSK	15	1@0	19.37	33.01	Pass
20175	1732.5	BPSK	3.75	1@0	19.96	33.01	Pass
		QPSK	3.75	1@0	20.02	33.01	Pass
		BPSK	15	1@0	19.78	33.01	Pass
		QPSK	15	1@0	20.03	33.01	Pass
20399	1754.9	BPSK	3.75	1@0	19.38	33.01	Pass
		QPSK	3.75	1@0	19.42	33.01	Pass
		BPSK	15	1@0	19.55	33.01	Pass
		QPSK	15	1@0	19.67	33.01	Pass

5.2.3 LTE Band 5

LTE Band 5 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	ERP(dBm)	Limit(dBm)	Result
20401	824.1	BPSK	3.75	1@0	17.08	38.45	Pass
		QPSK	3.75	1@0	17.16	38.45	Pass
		BPSK	15	1@0	17.21	38.45	Pass
		QPSK	15	1@0	17.26	38.45	Pass
20525	836.5	BPSK	3.75	1@0	17.77	38.45	Pass
		QPSK	3.75	1@0	17.83	38.45	Pass
		BPSK	15	1@0	17.93	38.45	Pass
		QPSK	15	1@0	18.02	38.45	Pass
20649	848.9	BPSK	3.75	1@0	17.52	38.45	Pass
		QPSK	3.75	1@0	17.62	38.45	Pass
		BPSK	15	1@11	17.32	38.45	Pass
		QPSK	15	1@0	17.88	38.45	Pass

5.2.4 LTE Band 12

LTE Band 12 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	ERP(dBm)	Limit(dBm)	Result
23011	699.1	BPSK	3.75	1@0	18.63	38.45	Pass
		QPSK	3.75	1@0	18.66	38.45	Pass
		BPSK	15	1@0	18.70	38.45	Pass
		QPSK	15	1@0	18.71	38.45	Pass
23095	707.5	BPSK	3.75	1@0	18.82	38.45	Pass
		QPSK	3.75	1@0	18.86	38.45	Pass
		BPSK	15	1@0	18.88	38.45	Pass
		QPSK	15	1@0	19.10	38.45	Pass
23179	715.9	BPSK	3.75	1@0	18.43	38.45	Pass
		QPSK	3.75	1@0	18.39	38.45	Pass
		BPSK	15	1@0	18.41	38.45	Pass
		QPSK	15	1@0	18.61	38.45	Pass

5.2.5 LTE Band 13

LTE Band 13 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	ERP(dBm)	Limit(dBm)	Result
23181	777.1	BPSK	3.75	1@0	18.20	38.45	Pass
		QPSK	3.75	1@0	18.19	38.45	Pass
		BPSK	15	1@0	18.26	38.45	Pass
		QPSK	15	1@0	18.36	38.45	Pass
23230	782	BPSK	3.75	1@0	18.61	38.45	Pass
		QPSK	3.75	1@0	18.63	38.45	Pass
		BPSK	15	1@0	18.77	38.45	Pass
		QPSK	15	1@0	18.74	38.45	Pass
23279	786.9	BPSK	3.75	1@47	17.88	38.45	Pass
		QPSK	3.75	1@0	17.90	38.45	Pass
		BPSK	15	1@0	18.07	38.45	Pass
		QPSK	15	1@0	18.07	38.45	Pass

5.2.6 LTE Band 25

LTE Band 25 Maximum EIRP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	EIRP(dBm)	Limit(dBm)	Result
26041	1850.1	BPSK	3.75	1@0	20.28	30.01	Pass
		QPSK	3.75	1@0	20.47	30.01	Pass
		BPSK	15	1@0	20.42	30.01	Pass
		QPSK	15	1@0	20.49	30.01	Pass
26365	1882.5	BPSK	3.75	1@0	20.62	30.01	Pass
		QPSK	3.75	1@47	20.62	30.01	Pass
		BPSK	15	1@0	20.7	30.01	Pass
		QPSK	15	1@0	20.62	30.01	Pass
26689	1914.9	BPSK	3.75	1@47	20.12	30.01	Pass
		QPSK	3.75	1@0	20.13	30.01	Pass
		BPSK	15	1@0	20.23	30.01	Pass
		QPSK	15	1@0	20.25	30.01	Pass

5.2.7 LTE Band 26

LTE Band 26 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	ERP(dBm)	Limit(dBm)	Result
26791	824.1	BPSK	3.75	1@0	18.49	30.01	Pass
		QPSK	3.75	1@0	18.51	30.01	Pass
		BPSK	15	1@0	18.49	30.01	Pass
		QPSK	15	1@0	18.57	30.01	Pass
26915	836.5	BPSK	3.75	1@0	18.32	30.01	Pass
		QPSK	3.75	1@0	18.37	30.01	Pass
		BPSK	15	1@0	18.37	30.01	Pass
		QPSK	15	1@11	18.31	30.01	Pass
27039	848.9	BPSK	3.75	1@0	17.29	30.01	Pass
		QPSK	3.75	1@0	17.37	30.01	Pass
		BPSK	15	1@0	17.66	30.01	Pass
		QPSK	15	1@0	17.61	30.01	Pass

5.2.8 LTE Band 26 (Part 90S)

LTE Band 26 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	EIRP(dBm)	Limit(dBm)	Result
26691	814.1	BPSK	3.75	1@0	17.81	30.01	Pass
		QPSK	3.75	1@0	18.01	30.01	Pass
		BPSK	15	1@0	17.78	30.01	Pass
		QPSK	15	1@0	17.89	30.01	Pass
26740	819	BPSK	3.75	1@0	18.27	30.01	Pass
		QPSK	3.75	1@0	18.44	30.01	Pass
		BPSK	15	1@0	18.44	30.01	Pass
		QPSK	15	1@0	18.61	30.01	Pass
26789	823.9	BPSK	3.75	1@0	18.46	30.01	Pass
		QPSK	3.75	1@0	18.47	30.01	Pass
		BPSK	15	1@0	18.42	30.01	Pass
		QPSK	15	1@0	18.55	30.01	Pass

5.2.9 LTE Band 66

LTE Band 66 Maximum EIRP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	EIRP(dBm)	Limit(dBm)	Result
131973	1710.1	BPSK	3.75	1@0	18.68	30.01	Pass
		QPSK	3.75	1@0	18.77	30.01	Pass
		BPSK	15	1@0	19.81	30.01	Pass
		QPSK	15	1@0	19.85	30.01	Pass
132322	1745	BPSK	3.75	1@0	20.70	30.01	Pass
		QPSK	3.75	1@0	20.72	30.01	Pass
		BPSK	15	1@0	20.76	30.01	Pass
		QPSK	15	1@0	20.80	30.01	Pass
132671	1779.9	BPSK	3.75	1@0	20.43	30.01	Pass
		QPSK	3.75	1@47	20.47	30.01	Pass
		BPSK	15	1@0	20.70	30.01	Pass
		QPSK	15	1@0	20.80	30.01	Pass

5.2.10 LTE Band 71

LTE Band 71 Maximum ERP (dBm) Standalone							
Channel	Frequency(MHz)	Modulation	Sub-carrier spacing (KHz)	Ntones	ERP(dBm)	Limit(dBm)	Result
133123	663.1	BPSK	3.75	1@0	18.00	38.45	Pass
		QPSK	3.75	1@0	18.02	38.45	Pass
		BPSK	15	1@0	17.82	38.45	Pass
		QPSK	15	1@0	17.94	38.45	Pass
133297	680.5	BPSK	3.75	1@0	19.19	38.45	Pass
		QPSK	3.75	1@47	19.23	38.45	Pass
		BPSK	15	1@0	19.08	38.45	Pass
		QPSK	15	1@0	19.19	38.45	Pass
133471	697.9	BPSK	3.75	1@0	18.64	38.45	Pass
		QPSK	3.75	1@0	18.68	38.45	Pass
		BPSK	15	1@0	18.90	38.45	Pass
		QPSK	15	1@0	18.99	38.45	Pass

5.3 CONDUCTED OUTPUT POWER

Test Requirement:
FCC 47 CFR Part 2.1046(a)
LTE Band 2 & LTE Band 25: FCC 47 CFR Part 24.232(c)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a)
LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10)
LTE Band 13: FCC 47 CFR Part 27.50(b)(10)
LTE Band 26: FCC 47 CFR Part 90.635
LTE Band 2 & LTE Band 25: RSS-133 Issue 6, Section 6.4
LTE Band 4 & LTE Band 66: RSS-139 Issue 3, Section 6.5
LTE Band 5: RSS-132 Issue 3, Section 5.4
LTE Band 12 & LTE Band 13 & Band 71: RSS-130 Issue 2, Section 4.6

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)	[3]1,000

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

错误!未找到引用源。**, Section 4.4,**

For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

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)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(5)
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a)
LTE Band 12 & Band 17: FCC 47 CFR Part 27.50(d)(5)
LTE Band 13: FCC 47 CFR Part 27.50(d)(5)

LTE Band 2 & LTE Band 25: RSS-133 Issue 6, Section 6.4
LTE Band 4 & LTE Band 66: RSS-139 Issue 3, Section 6.5
LTE Band 5: RSS-132 Issue 3, Section 5.4
LTE Band 12 & LTE Band 13 & Band 71: 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

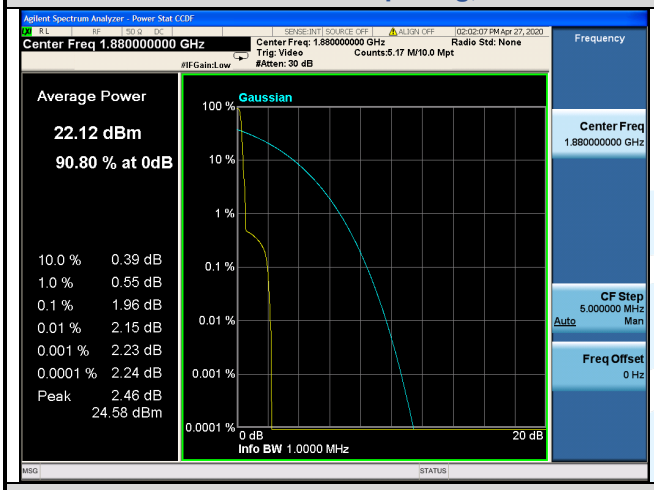
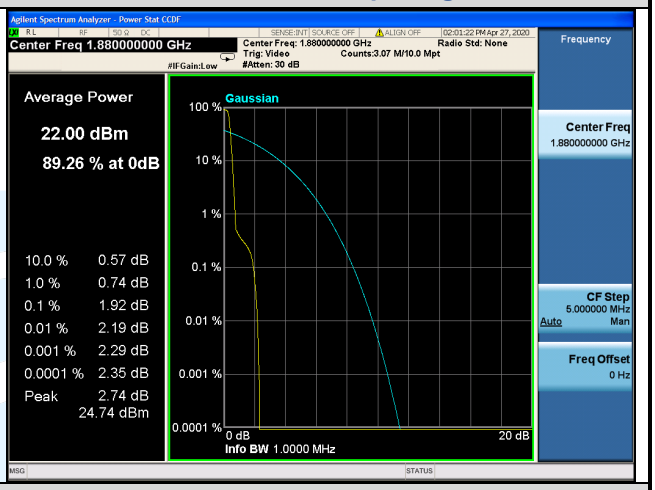
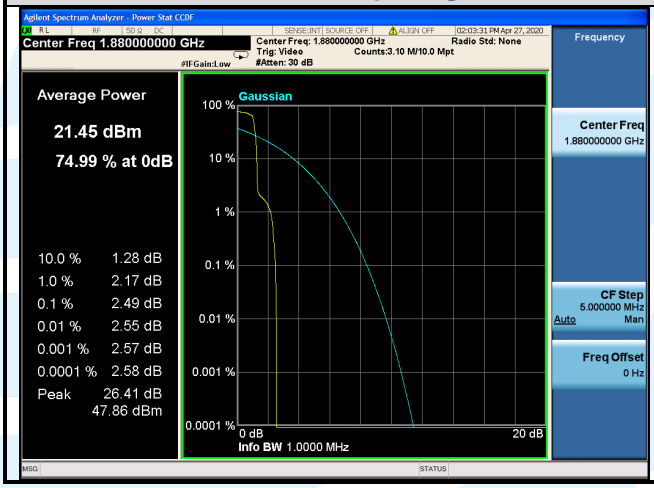
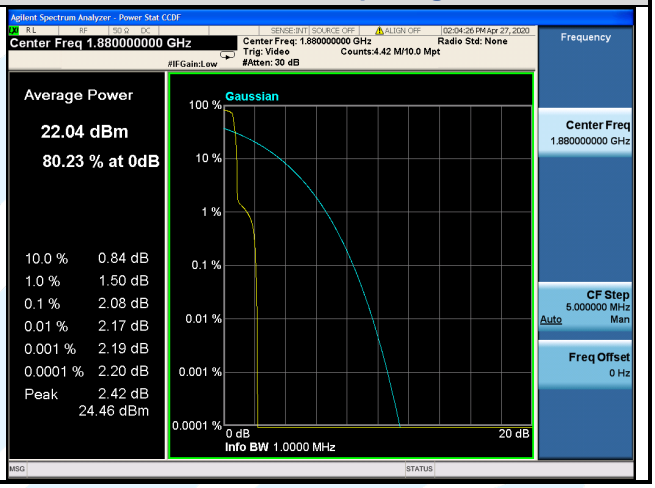
Test Procedure:
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.
a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
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)					
Modulation	**Sub-carrier spacing (KHz)**	**Channel/ Frequency(MHz)**	**PAPR(dB)**	**Limit (dB)**	**Result**
BPSK	3.75	18900/1880.0	2.15	13	Pass
QPSK	3.75	18900/1880.0	2.19	13	Pass
BPSK	15	18900/1880.0	2.55	13	Pass
QPSK	15	18900/1880.0	2.17	13	Pass

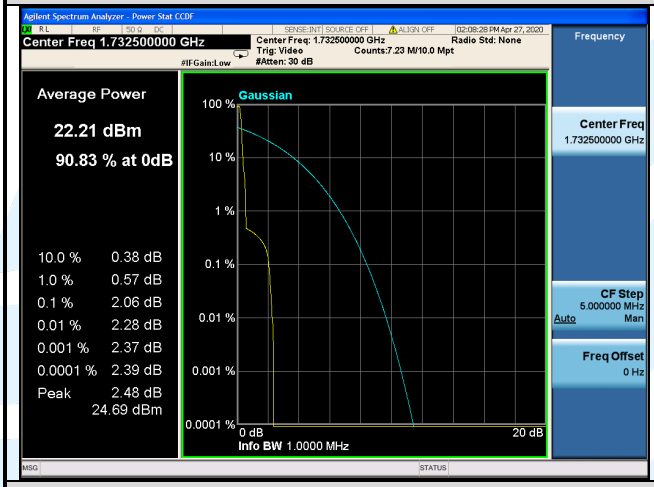
LTE Band 2_Middle channel	
3.75KHz Sub-carrier spacing, BPSK	3.75KHz Sub-carrier spacing, QPSK
	
15KHz Sub-carrier spacing, BPSK	15KHz Sub-carrier spacing, QPSK
	

5.4.2 LTE Band 4

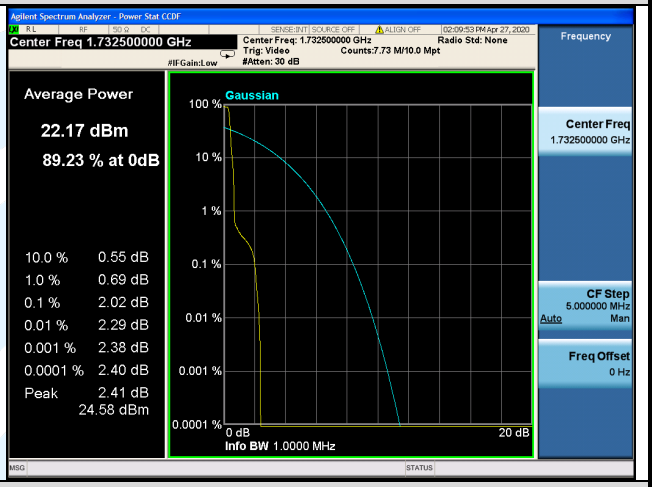
LTE Band 4 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	20175/1732.5	2.28	13	Pass
QPSK	3.75	20175/1732.5	2.29	13	Pass
BPSK	15	20175/1732.5	2.94	13	Pass
QPSK	15	20175/1732.5	2.72	13	Pass

LTE Band 4_Middle channel

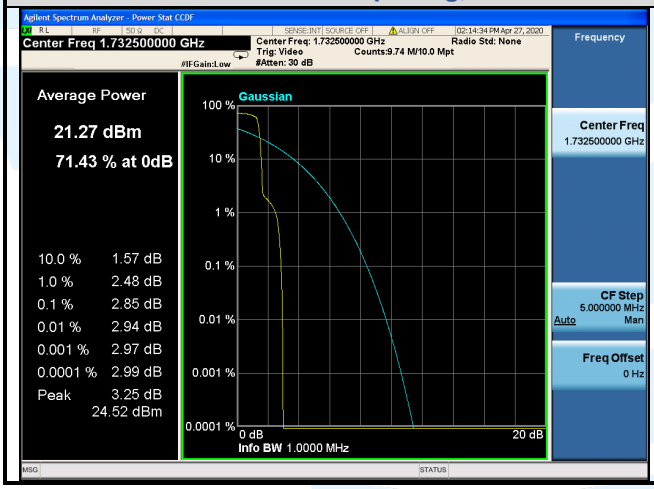
3.75KHz Sub-carrier spacing, BPSK



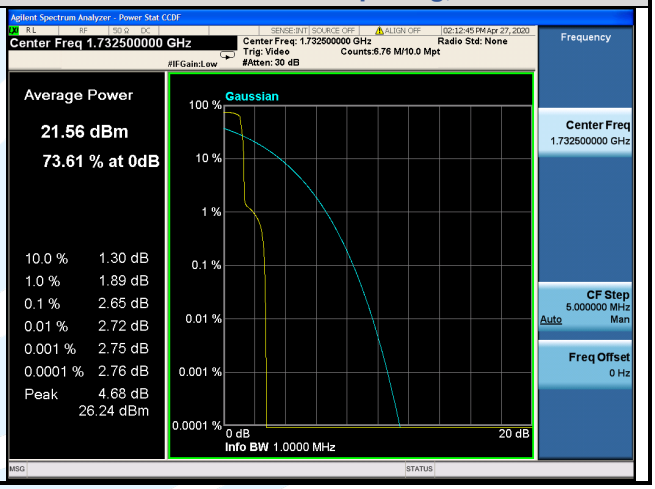
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

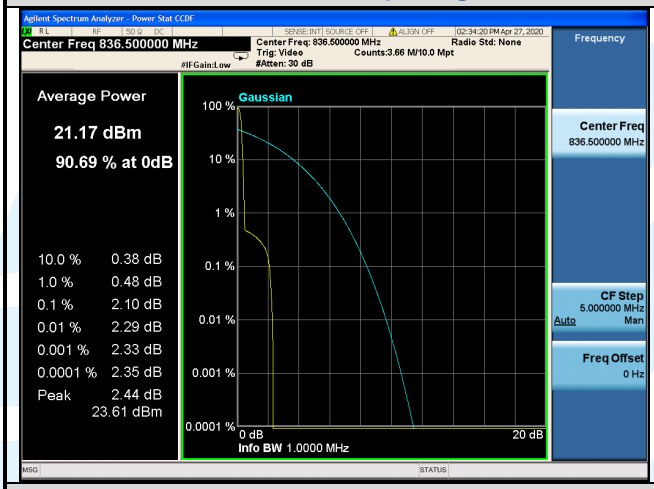


5.4.3 LTE Band 5

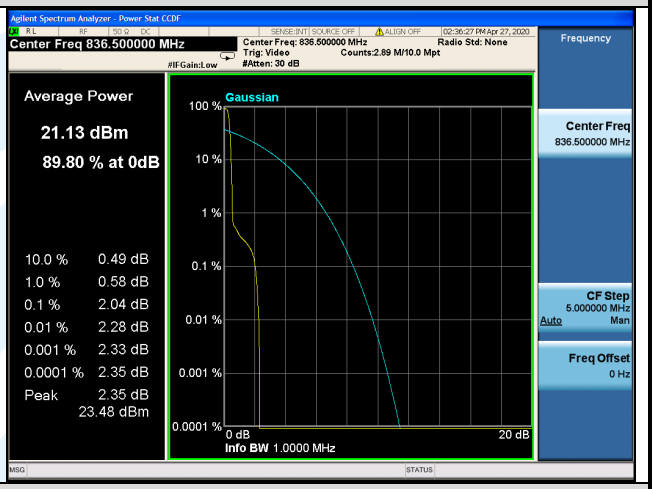
LTE Band 5 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	20525/836.5	2.29	13	Pass
QPSK	3.75	20525/836.5	2.28	13	Pass
BPSK	15	20525/836.5	1.63	13	Pass
QPSK	15	20525/836.5	3.09	13	Pass

LTE Band 5_Middle channel

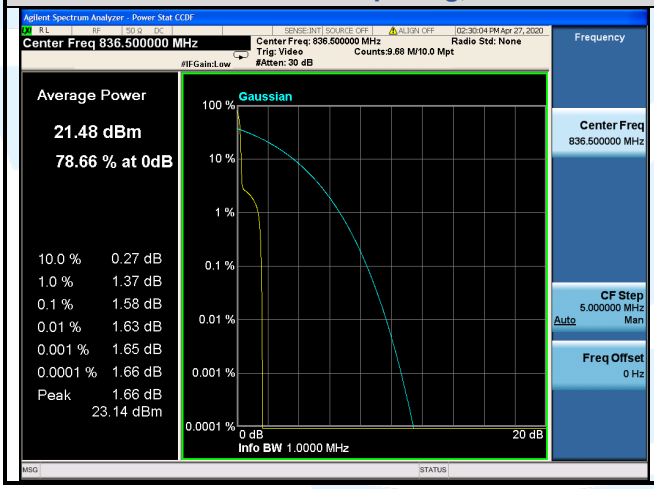
3.75KHz Sub-carrier spacing, BPSK



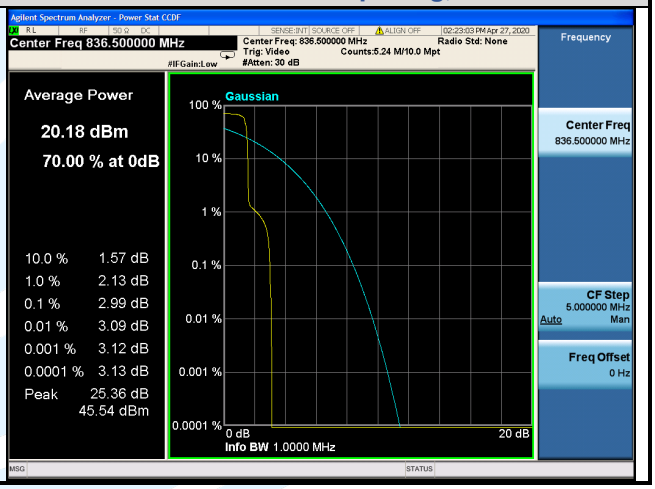
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

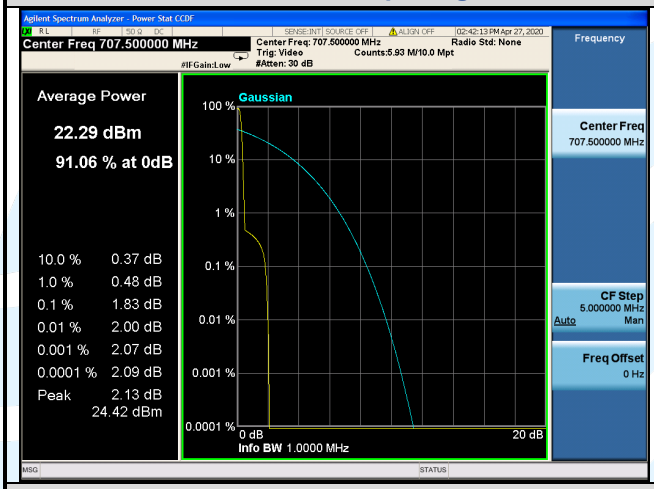


5.4.4 LTE Band 12

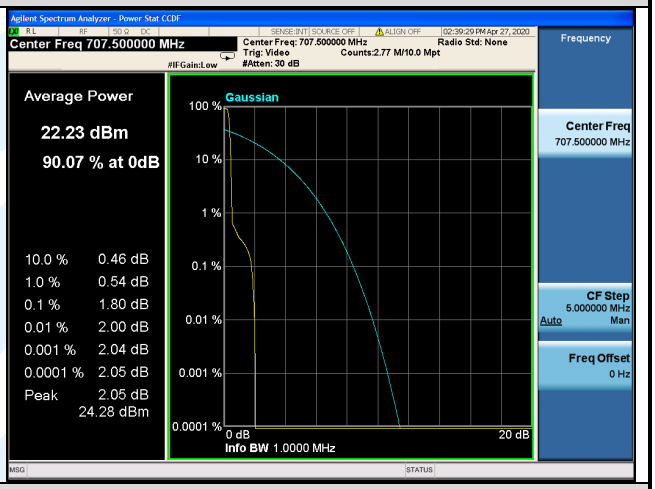
LTE Band 12 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	23095/707.5	2.00	13	Pass
QPSK	3.75	23095/707.5	2.00	13	Pass
BPSK	15	23095/707.5	1.43	13	Pass
QPSK	15	23095/707.5	1.56	13	Pass

LTE Band 12_Middle channel

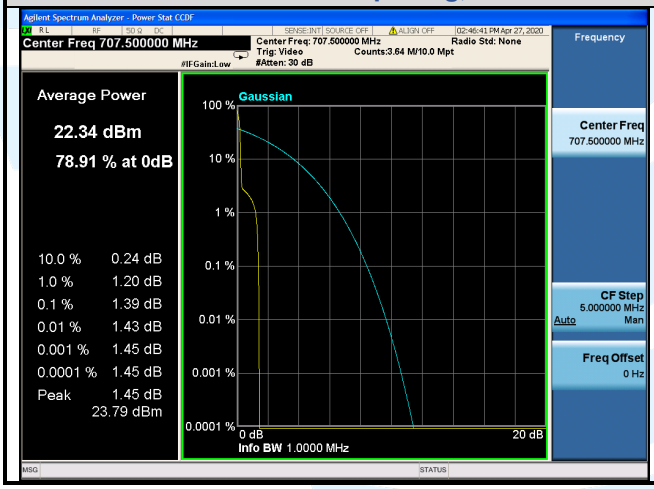
3.75KHz Sub-carrier spacing, BPSK



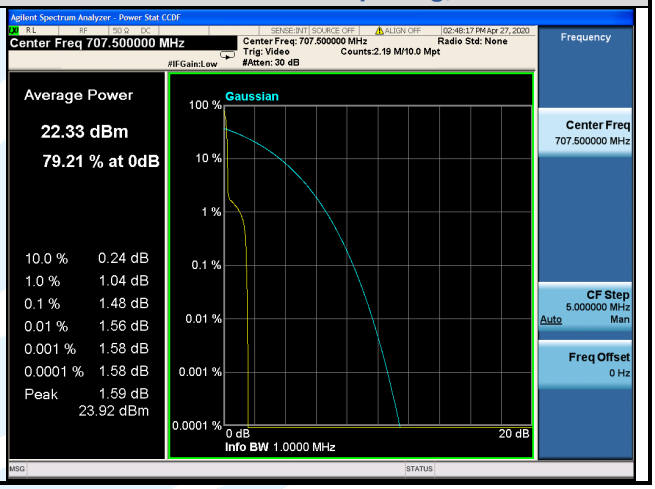
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

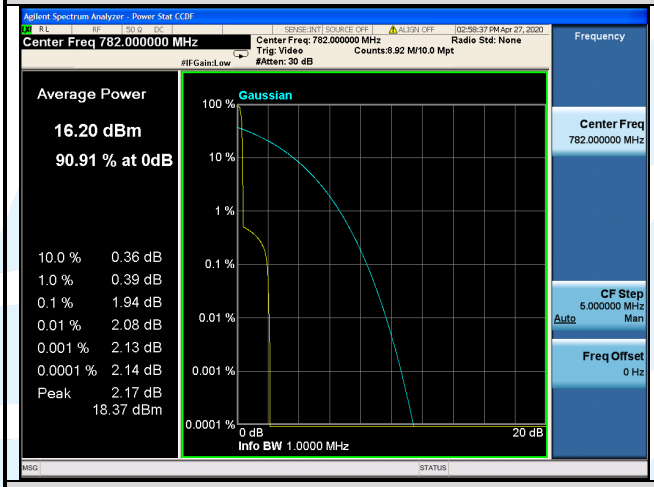


5.4.5 LTE Band 13

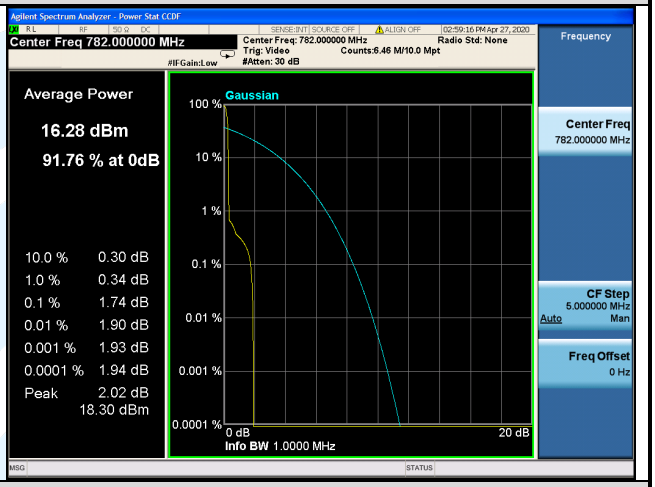
LTE Band 13 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	23230/782	2.08	13	Pass
QPSK	3.75	23230/782	1.90	13	Pass
BPSK	15	23230/782	1.51	13	Pass
QPSK	15	23230/782	1.63	13	Pass

LTE Band 13_Middle channel

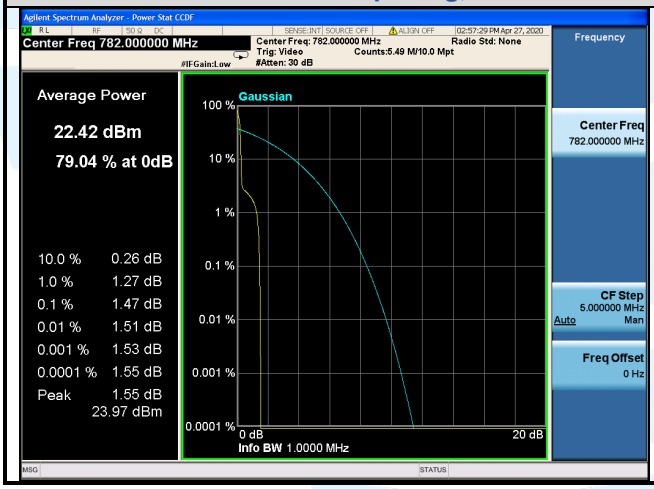
3.75KHz Sub-carrier spacing, BPSK



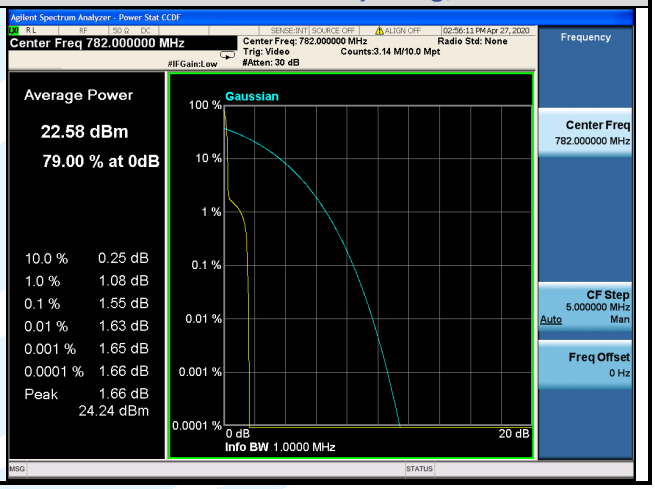
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

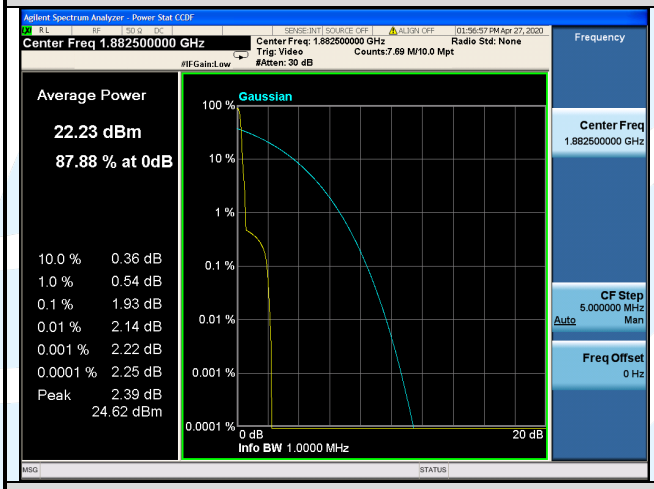


5.4.6 LTE Band 25

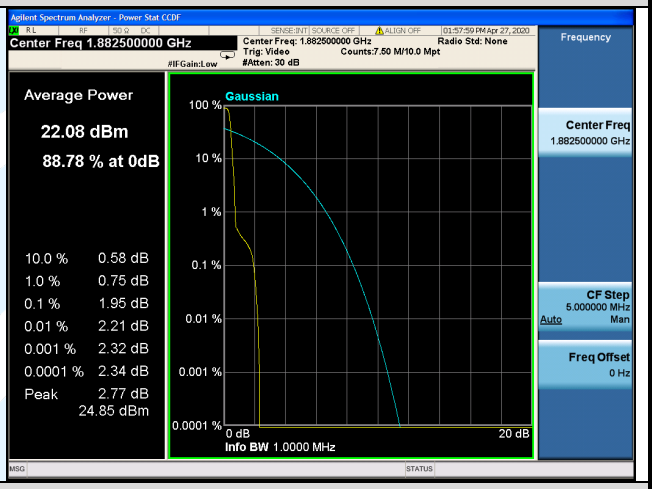
LTE Band 25 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	26365/1882.5	2.14	13	Pass
QPSK	3.75	26365/1882.5	2.21	13	Pass
BPSK	15	26365/1882.5	2.31	13	Pass
QPSK	15	26365/1882.5	2.61	13	Pass

LTE Band 25_Middle channel

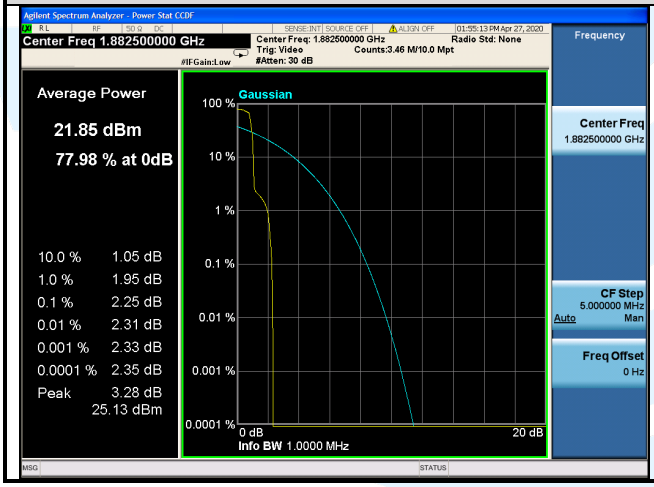
3.75KHz Sub-carrier spacing, BPSK



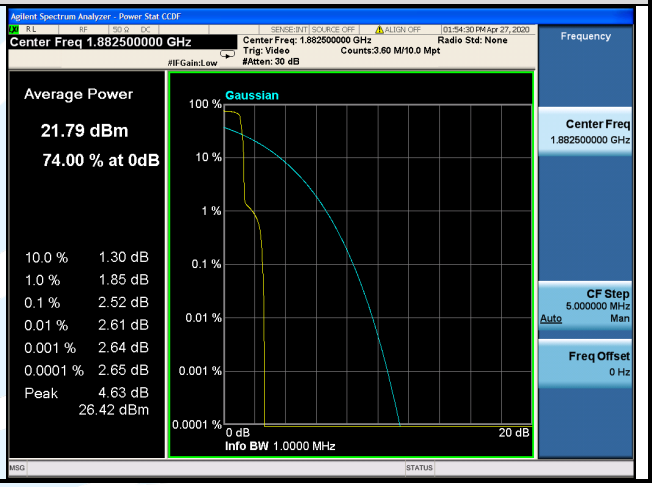
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

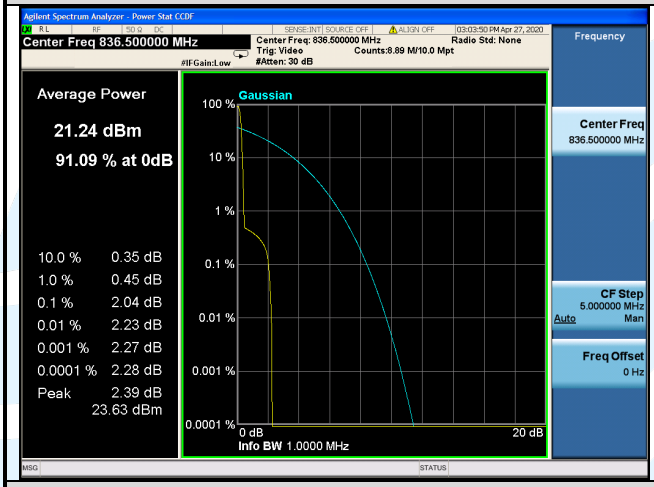


5.4.7 LTE Band 26

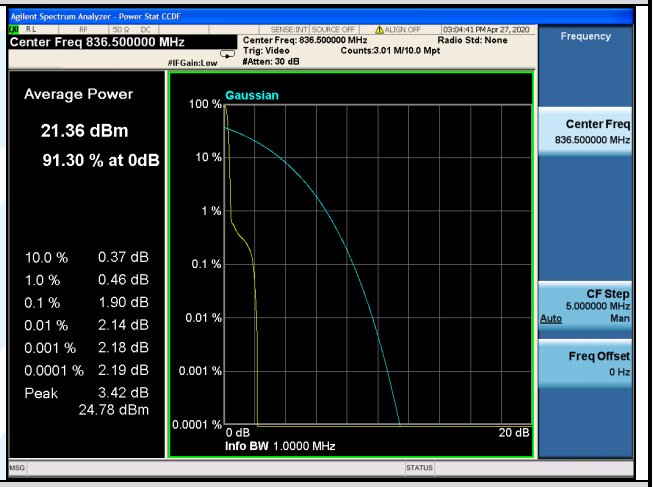
LTE Band 26 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	26915/836.5	2.23	13	Pass
QPSK	3.75	26915/836.5	2.14	13	Pass
BPSK	15	26915/836.5	1.89	13	Pass
QPSK	15	26915/836.5	3.03	13	Pass

LTE Band 26_Middle channel

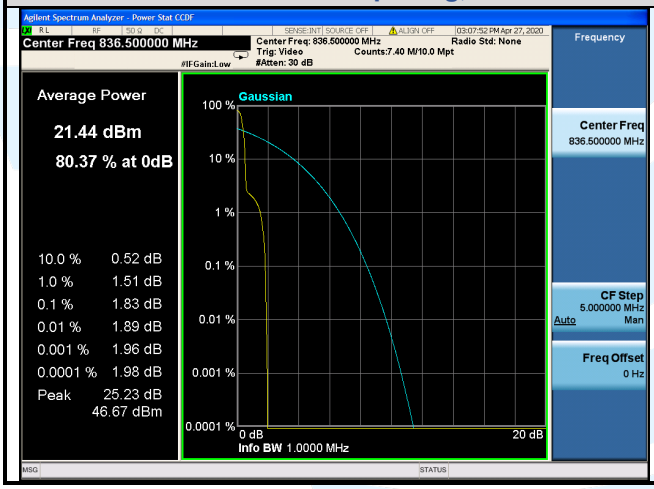
3.75KHz Sub-carrier spacing, BPSK



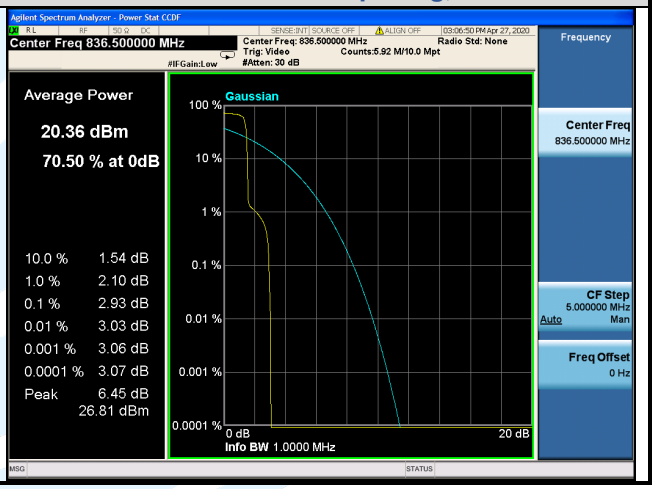
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

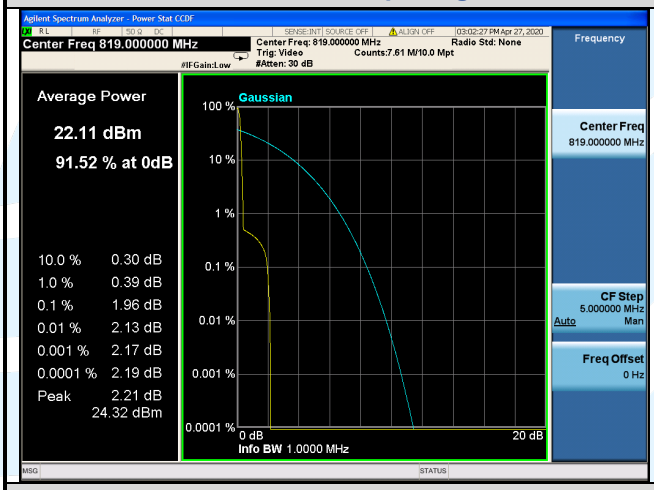


5.4.8 LTE Band 26 (Part 90S)

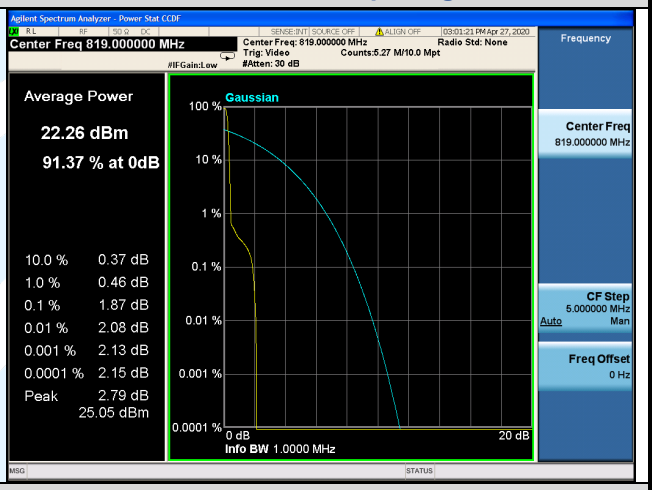
LTE Band 26 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	26740/819	2.13	13	Pass
QPSK	3.75	26740/819	2.08	13	Pass
BPSK	15	26740/819	1.67	13	Pass
QPSK	15	26740/819	2.44	13	Pass

LTE Band 26_Middle channel

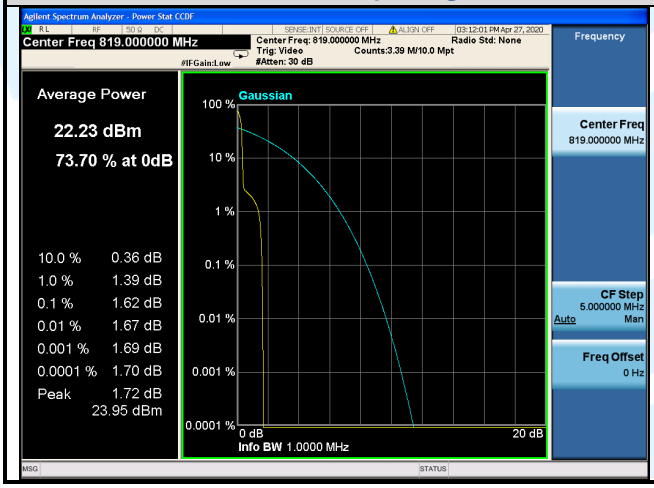
3.75KHz Sub-carrier spacing, BPSK



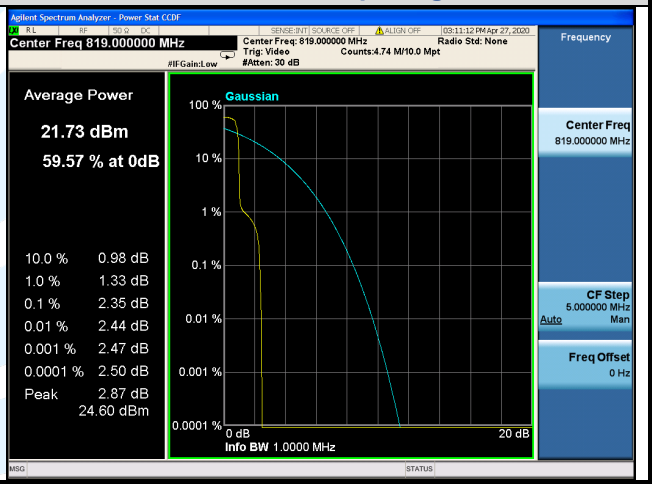
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

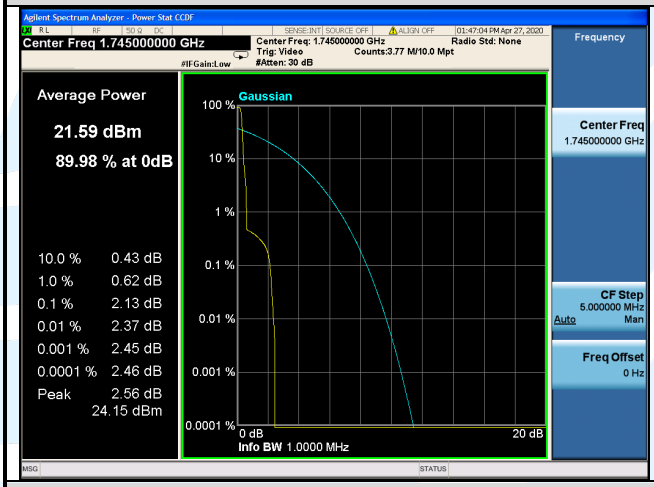


5.4.9 LTE Band 66

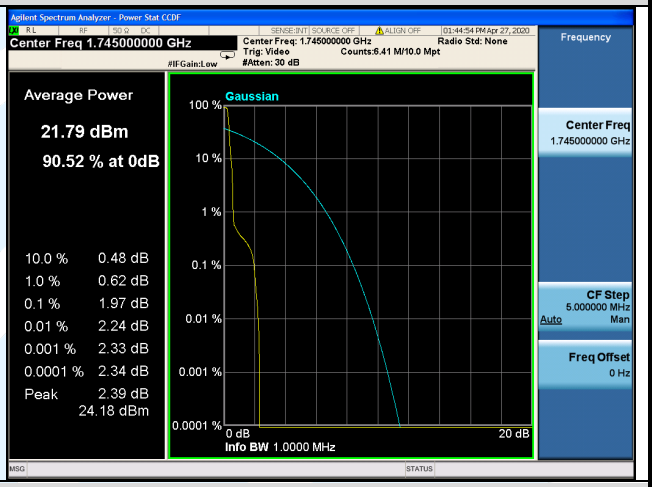
LTE Band 66 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	132322/1745.0	2.37	13	Pass
QPSK	3.75	132322/1745.0	2.24	13	Pass
BPSK	15	132322/1745.0	3.71	13	Pass
QPSK	15	132322/1745.0	2.79	13	Pass

LTE Band 66_Middle channel

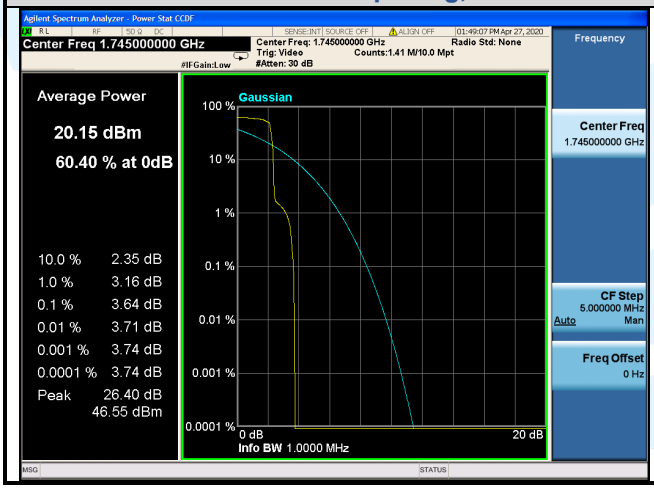
3.75KHz Sub-carrier spacing, BPSK



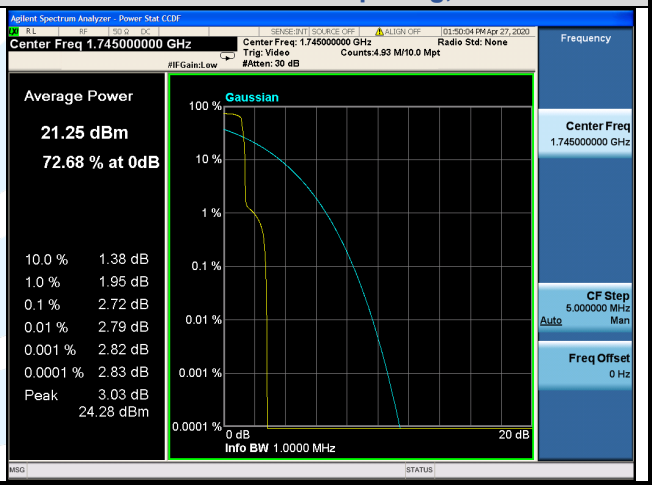
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK

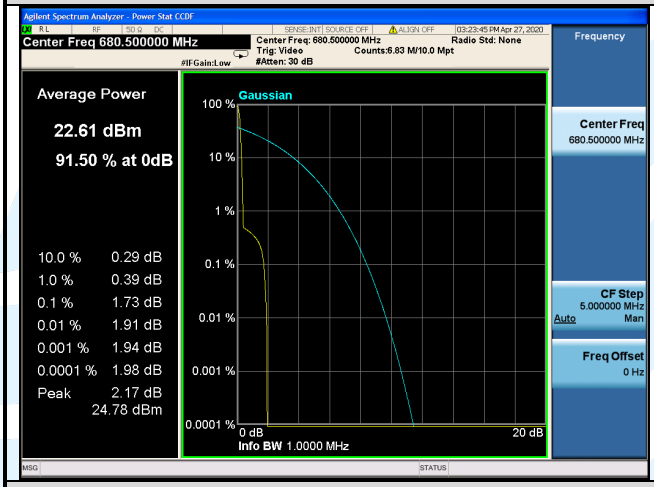


5.4.10 LTE Band 71

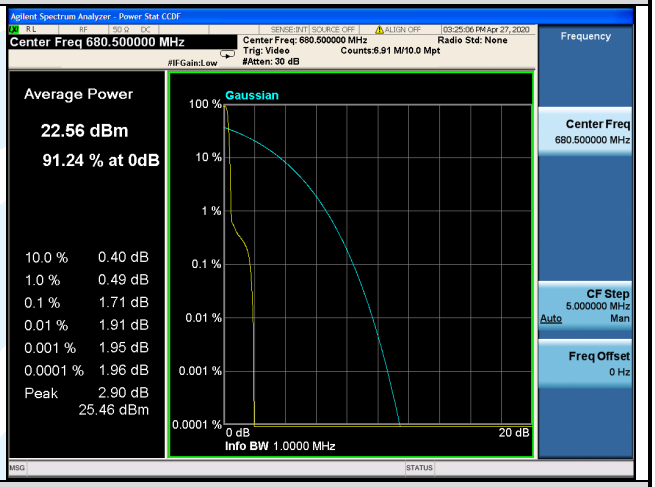
LTE Band 71 Peak-to-average ratio (dB)					
Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency(MHz)	PAPR(dB)	Limit (dB)	Result
BPSK	3.75	133297/680.5	1.91	13	Pass
QPSK	3.75	133297/680.5	1.91	13	Pass
BPSK	15	133297/680.5	1.46	13	Pass
QPSK	15	133297/680.5	1.57	13	Pass

LTE Band 71_Middle channel

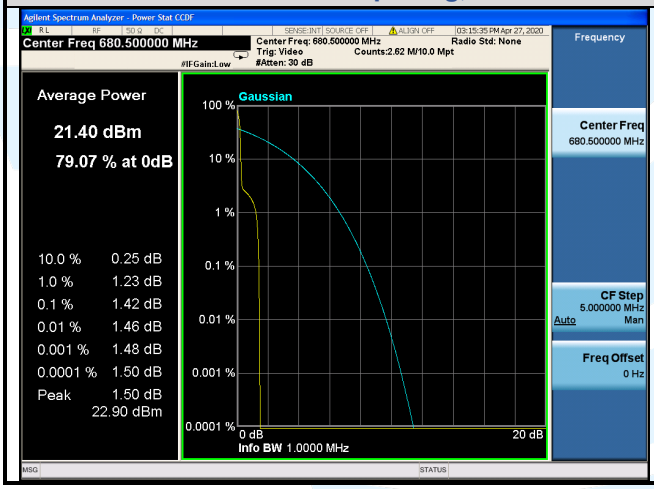
3.75KHz Sub-carrier spacing, BPSK



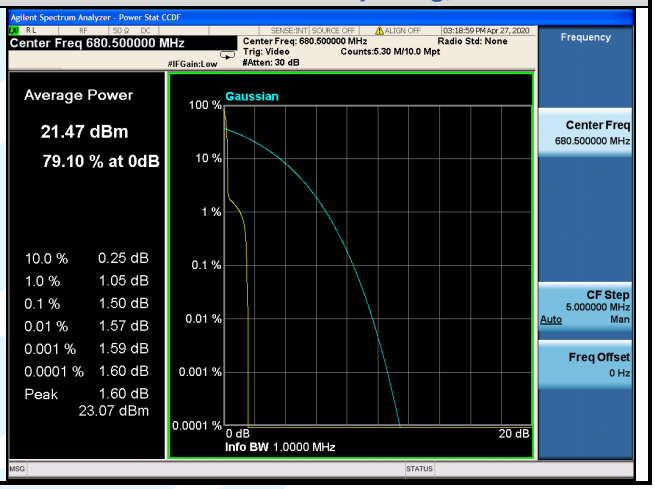
3.75KHz Sub-carrier spacing, QPSK



15KHz Sub-carrier spacing, BPSK



15KHz Sub-carrier spacing, QPSK



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

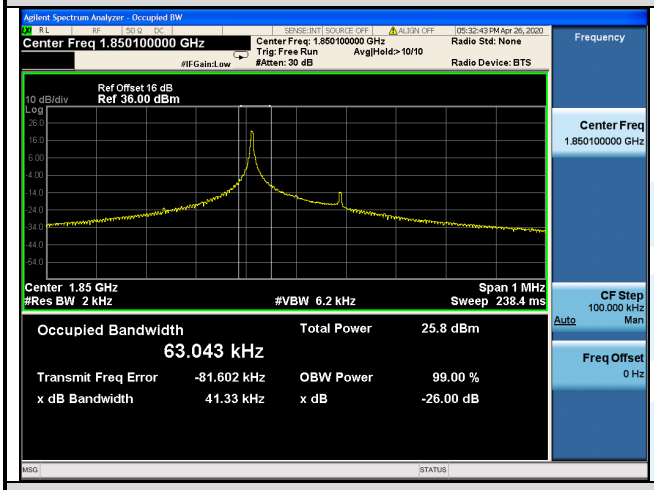
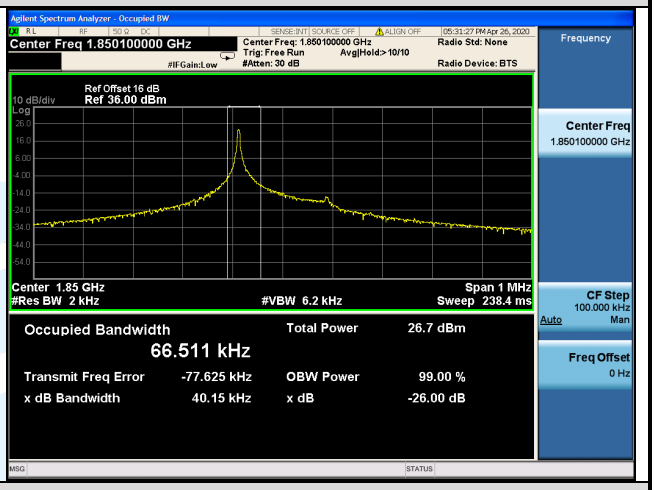
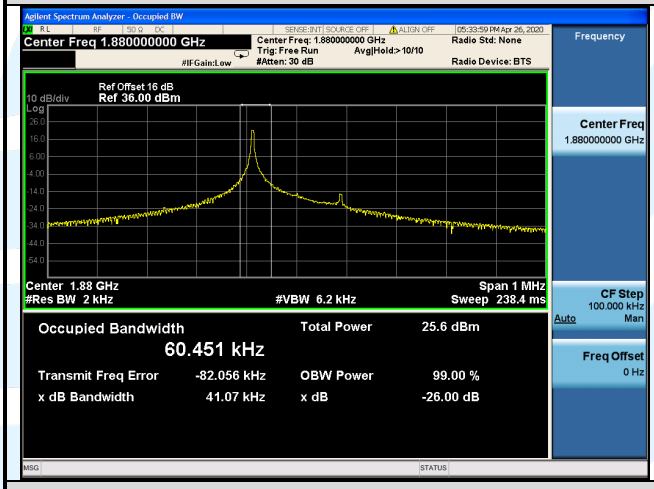
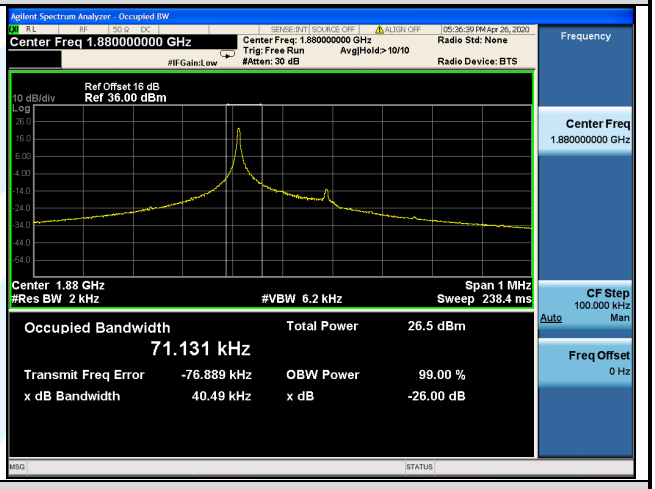
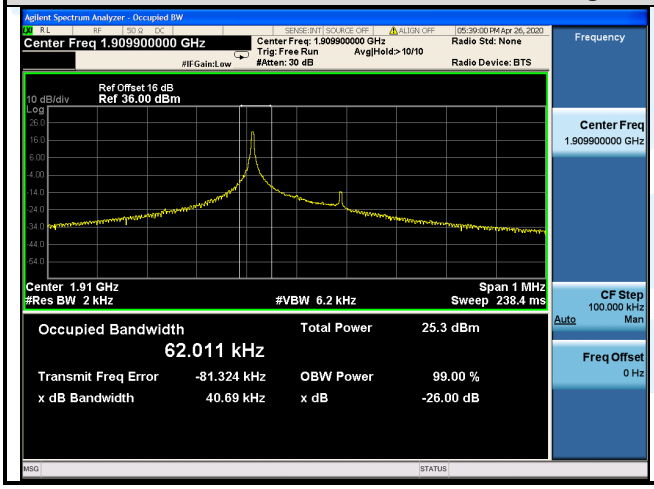
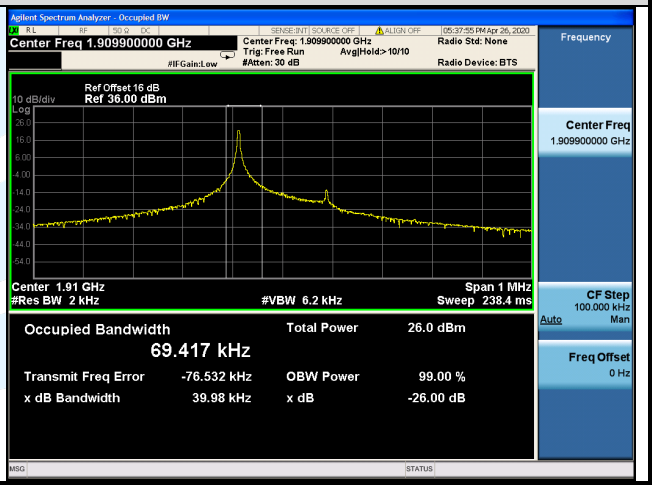
Test Mode: Link mode

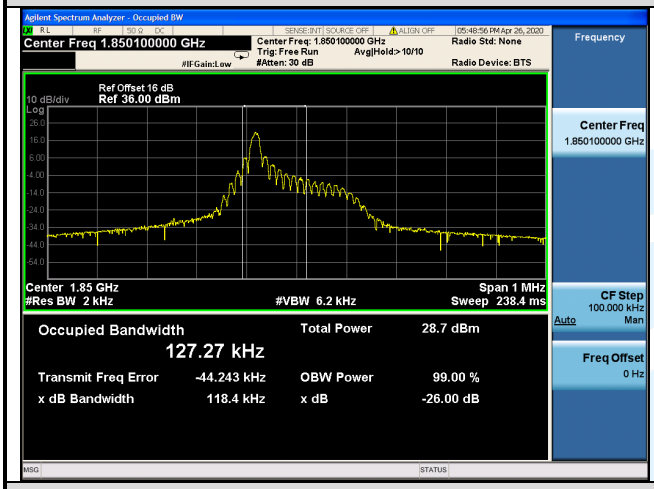
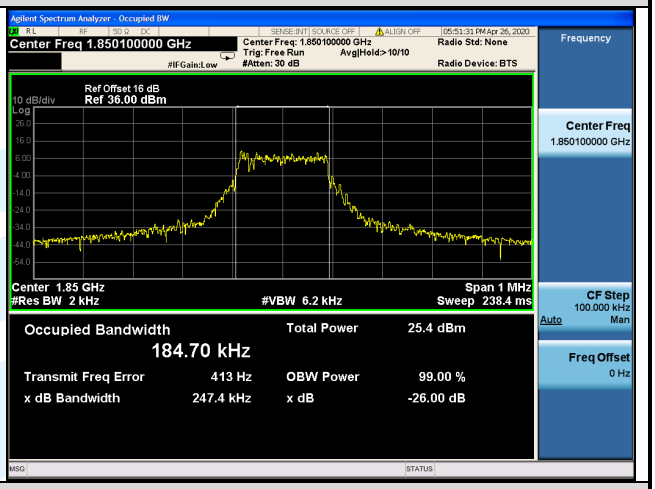
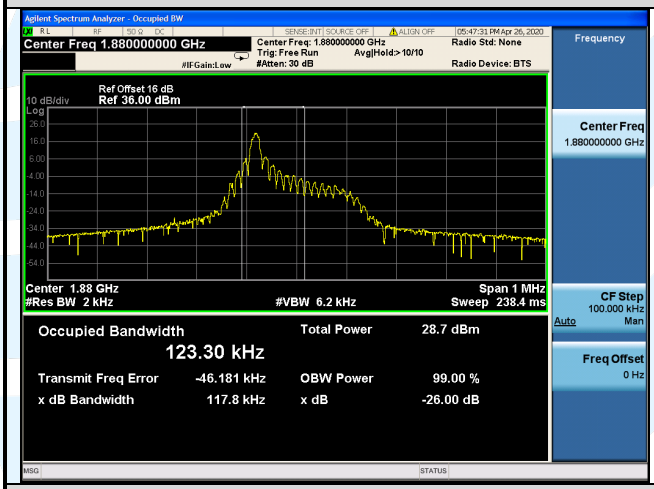
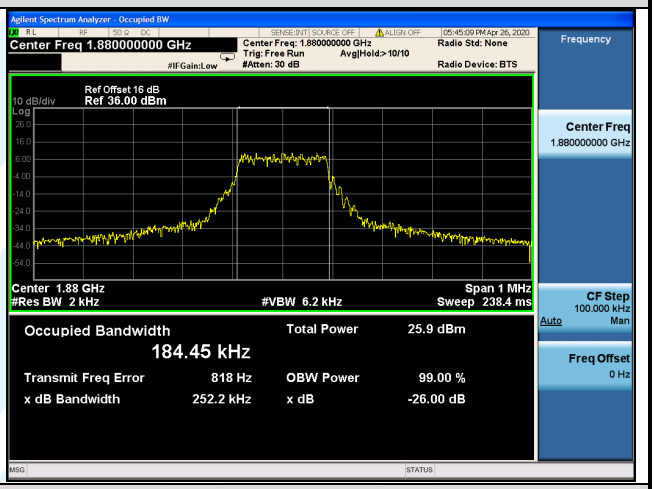
Test Results: Pass

Test Data: See table below

5.5.1 LTE Band 2

LTE Band 2								
Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
			18601/1850.1		18900/1880.0		19199/1909.9	
			99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)	99% (KHz)	-26dBc (KHz)
BPSK	3.75	1@0	63.04	41.33	60.45	41.07	62.01	40.69
QPSK	3.75	1@0	66.51	40.15	71.13	40.49	69.42	39.98
BPSK	15	1@0	121.23	105.90	120.32	105.80	121.90	104.90
QPSK	15	1@0	127.27	118.40	123.30	117.80	119.91	117.50
QPSK	15	12@0	184.70	247.40	184.45	252.20	186.40	250.20

LTE Band 2	
3.75KHz Sub-carrier spacing, Ntones1@0_BPSK	3.75KHz Sub-carrier spacing, Ntones1@0_QPSK
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 2	
15KHz Sub-carrier spacing, Ntones1@0_QPSK	15KHz Sub-carrier spacing, Ntones12@0_QPSK
Lowest Channel	
	
Middle Channel	
	
Highest Channel