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TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H,
Part 24 Subpart E and Part 27 Subpart C
IC RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6,
RSS-139 Issue 3 and RSS-Gen Issue 5

FCC ID: BEJTM03LNNAHD0
IC Certification: 2703H-TM03LNNAHD0

Equipment Under Test	:	Telematics Module
Model Name	:	TM03LNNAHD0
Variant Model Name(s)	:	-
Applicant	:	FCC: LG Electronics USA IC: LG ELECTRONICS INC.
Manufacturer	:	LG Electronics Inc.
Date of Receipt	:	2021.06.03
Date of Test(s)	:	2020.06.03 ~ 2021.06.29
Date of Issue	:	2021.06.29

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

1) The results of this test report are effective only to the items tested.
2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.
We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by: Nancy Park

Technical Manager: Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : LG Electronics USA
FCC Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632
IC Applicant : LG ELECTRONICS INC.
IC Address : 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea (Republic of), 451-713
Contact Person : Kim, Dae-woong
Phone No. : +1 201 266 2215

1.3. Details of Manufacturer

Company : LG Electronics Inc.
Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

1.4. Description of EUT

Kind of Product	Telematics Module
Model Name	TM03LNNAHD0
Serial Number	353342700000291, 353342700000309
Power Supply	DC 3.90 V
Rated Power	LTE Band 2, 4, 5, 12: 23 ㏈m
Frequency Range	LTE Band 2: 1 850 ㎒ ~ 1 910 ㎒ LTE Band 4: 1 710 ㎒ ~ 1 755 ㎒ LTE Band 5: 824 ㎒ ~ 849 ㎒ LTE Band 12: 699 ㎒ ~ 716 ㎒
Modulation Technique	QPSK, 16QAM
Antenna Type	Planar Inverted F Antenna
Antenna Gain※	699 ㎒ ~ 716 ㎒: -2.85 ㏈i 824 ㎒ ~ 849 ㎒: 0.32 ㏈i 1 710 ㎒ ~ 1 780 ㎒: 2.86 ㏈i 1 850 ㎒ ~ 1 910 ㎒: 2.83 ㏈i
H/W Version	Rev.C1
S/W Version	TN23XA01

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMR40	100272	Jun. 16, 2021	Annual	Jun. 16, 2022
Signal Generator	R&S	SMVB100A	255834	May 31, 2021	Annual	May 31, 2022
Spectrum Analyzer	R&S	FSV30	103453	Nov. 04, 2020	Annual	Nov. 04, 2021
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 04, 2020	Annual	Sep. 04, 2021
Mobile Test Unit	R&S	CMW500	144034	Feb. 22, 2021	Annual	Feb. 22, 2022
Power Meter	Anritsu	ML2495A	1223004	Jun. 01, 2021	Annual	Jun. 01, 2022
Power Sensor	Anritsu	MA2411B	1207272	Jun. 01, 2021	Annual	Jun. 01, 2022
Temperature Chamber	ESPEC CORP.	PL-2J	15004184	Jun. 02, 2021	Annual	Jun. 02, 2022
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 08, 2021	Annual	Feb. 08, 2022
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000-40SS	7	Mar. 08, 2021	Annual	Mar. 08, 2022
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 04, 2021	Annual	Mar. 04, 2022
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-10SS	21	Jun. 04, 2021	Annual	Jun. 04, 2022
High Pass Filter	Wainwright Instrument GmbH	WHK7.5/26.5G-6SS	11	May 17, 2021	Annual	May 17, 2022
Directional Coupler	KRYTAR	152613	122660	Jun. 15, 2021	Annual	Jun. 15, 2022
DC Power Supply	Agilent	U8002A	MY49030063	Feb. 02, 2021	Annual	Feb. 02, 2022
Preamplifier	H.P.	8447F	2944A03909	Aug. 06, 2020	Annual	Aug. 06, 2021
Preamplifier	R&S	SCU-18	10117	Jun. 09, 2021	Annual	Jun. 09, 2022
Preamplifier	TESTEK	TK-PA1840H	130016	Jan. 07, 2021	Annual	Jan. 07, 2022
Test Receiver	R&S	ESU26	100109	Feb. 19, 2021	Annual	Feb. 19, 2022
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 22, 2019	Biennial	Aug. 22, 2021
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	01126	Dec. 12, 2020	Biennial	Dec. 12, 2022
Horn Antenna	R&S	HF906	100326	Feb. 04, 2021	Annual	Feb. 04, 2022
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA9170	9170-540	Nov. 26, 2020	Annual	Nov. 26, 2021
Antenna Master	Innco systems GmbH	MA4640-XP-ET	MA4640/536/383 30516/L	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RFONE	MWX221-NMSNMS (4 m)	J1023142	May 27, 2021	Semi-annual	Nov. 27, 2021
Coaxial Cable	RFONE	PL520-NMNM-10M (10 m)	20200324001	May 27, 2021	Semi-annual	Nov. 27, 2021
Coaxial Cable	RADIALL	TESTPRO 3	182287	Feb. 19, 2021	Semi-annual	Aug. 19, 2021
Coaxial Cable	RADIALL	TESTPRO 3	182288	Feb. 19, 2021	Semi-annual	Aug. 19, 2021
Coaxial Cable	RADIALL	TESTPRO 3	182291	Feb. 19, 2021	Semi-annual	Aug. 19, 2021

► Support Equipment

Description	Manufacturer	Model	Serial Number
N/A	-	-	-

1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 2, 22, 24 and 27 / IC RSS-Gen Issue 5, RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6 and RSS-139 Issue 3			
Section(s) in FCC	**Section(s) in IC**	**Test Item**	**Result**
§22.913(a)(5) §24.232(c) §27.50(c)(10) §27.50(d)(4)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 3 6.5	RF Radiated Output Power	Complied
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Spurious Radiated Emission	Complied
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Complied
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Complied
§22.913(d) §24.232(d) §27.50(d)(5)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 3 6.5	Peak-Average Ratio	Complied
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Band Edge	Complied
§2.1055 §22.355 §24.235 §27.54	RSS-Gen Issue 5 6.11 RSS-130 Issue 2 4.5 RSS-132 Issue 3 5.3 RSS-133 Issue 6 6.3 RSS-139 Issue 3 6.4	Frequency Stability	Complied

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted Test

Offset value (㏈) = Directional Coupler (㏈) + Cable loss (㏈)

1.7.2. Radiation test

- E.I.R.P. (㏈ m) = Measured level (㏈㎶) + Antenna factor (㏈/m) + Cable loss (㏈) + 20 Log D - 104.5; where D is the measurement distance in meters.
- E.R.P. (㏈ m) = E.I.R.P. (㏈ m) - 2.15 (㏈)

1.8. Worst Case Configuration and Mode

The worst-case is based on the conducted output power measurement investigation results. All testing was performed using QPSK and 16QAM modulations. However, the spurious radiated emission and spurious at antenna terminal were only performed on bandwidth and RB offset(with RB size 1) with the highest conducted power in QPSK.

The peak to average ratio were tested only 16QAM modulation as worst case.

The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z, and the worst case data is reported.

1.9. Measurement Configuration

Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation		RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full
RF Radiated Output Power	2	V	V	V	V	V	V	V	V	V	V	V	V	-	-
	4	V	V	V	V	V	V	V	V	V	V	V	V	-	-
	5	V	V	V	V	V	V	V	-	-	V	V	V	-	-
	12	V	V	V	V	V	V	V	-	-	V	V	V	-	-
Conducted Output Power	2	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	4	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	5	V	V	V	V	V	V	V	-	-	V	V	V	V	V
	12	V	V	V	V	V	V	V	-	-	V	V	V	V	V
Frequency Stability	2	-	V	-	-	-	-	V	-	-	V	-	-	-	V
	4	-	V	-	-	-	-	V	-	-	V	-	-	-	V
	5	-	V	-	-	-	-	V	-	-	V	-	-	-	V
	12	-	V	-	-	-	-	V	-	-	V	-	-	-	V
Occupied Bandwidth	2	-	V	-	V	V	V	V	V	V	V	V	-	-	V
	4	-	V	-	V	V	V	V	V	V	V	V	-	-	V
	5	-	V	-	V	V	V	V	-	-	V	V	-	-	V
	12	-	V	-	V	V	V	V	-	-	V	V	-	-	V
Peak-to-Average Ratio	2	V	V	V	V	V	V	V	V	V	-	V	-	-	V
	4	V	V	V	V	V	V	V	V	V	-	V	-	-	V
	5	V	V	V	V	V	V	V	-	-	-	V	-	-	V
	12	V	V	V	V	V	V	V	-	-	-	V	-	-	V
Band edge	2	V	-	V	V	V	V	V	V	V	V	V	V	-	V
	4	V	-	V	V	V	V	V	V	V	V	V	V	-	V
	5	V	-	V	V	V	V	V	-	-	V	V	V	-	V
	12	V	-	V	V	V	V	V	-	-	V	V	V	-	V
Spurious at antenna terminal	2	V	V	V	-	-	V	-	-	-	V	-	V	-	-
	4	V	V	V	V	-	-	-	-	-	V	-	V	-	-
	5	V	V	V	V	-	-	-	-	-	V	-	V	-	-
	12	V	V	V	V	-	-	-	-	-	V	-	V	-	-
Spurious Radiated Emission	2	V	V	V	-	-	V	-	-	-	V	-	V	-	-
	4	V	V	V	V	-	-	-	-	-	V	-	V	-	-
	5	V	V	V	V	-	-	-	-	-	V	-	V	-	-
	12	V	V	V	V	-	-	-	-	-	V	-	V	-	-

1.10. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
RF Output Power	± 0.36 dB	
Occupied Bandwidth	± 13.12 kHz	
Conducted Spurious Emissions	± 0.63 dB	
Peak to Average Ratio	± 0.60 dB	
Frequency Stability	± 4.92 kHz	
Radiated Emission, 9 kHz to 30 MHz	H	± 3.66 dB
	V	± 3.66 dB
Radiated Emission, below 1 GHz	H	± 4.90 dB
	V	± 4.82 dB
Radiated Emission, above 1 GHz	H	± 3.62 dB
	V	± 3.64 dB

All measurement uncertainty values are shown with a coverage factor of *k*=2 to indicate a 95 % level of confidence.

1.11. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL002351	2021.06.29	Initial

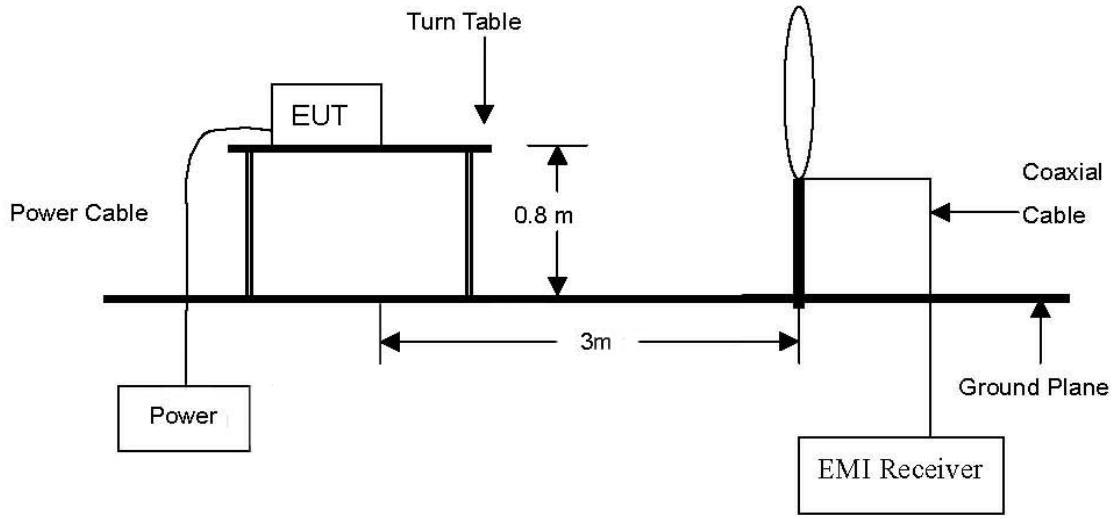
1.12. Emission Designator and Max Power

Band	Band width (㎒)	Modulation	Low Freq. (㎒)	Upper Freq. (㎒)	Conducted Average (㏈m)	Ant. Gain (㏈i)	E.R.P. / E.I.R.P. Average (㏈m)	E.R.P. / E.I.R.P. Average (W)	Emission Designator
2	1.4	QPSK	1 850.7	1 909.3	23.35	2.83	26.18	0.415	1M09G7D
		16QAM			22.22		25.05	0.320	1M11W7D
	3	QPSK	1 851.5	1 908.5	23.52		26.35	0.432	2M69G7D
		16QAM			22.29		25.12	0.325	2M69W7D
	5	QPSK	1 852.5	1 907.5	23.71		26.54	0.451	4M52G7D
		16QAM			22.36		25.19	0.330	4M53W7D
	10	QPSK	1 855.0	1 905.0	23.43		26.26	0.423	8M94G7D
		16QAM			22.42		25.25	0.335	8M97W7D
	15	QPSK	1 857.5	1 902.5	23.34		26.17	0.414	13M5G7D
		16QAM			22.26		25.09	0.323	13M5W7D
	20	QPSK	1 860.0	1 900.0	23.46		26.29	0.426	17M9G7D
		16QAM			22.49		25.32	0.340	17M9W7D
4	1.4	QPSK	1 710.7	1 754.3	23.57	2.86	26.43	0.440	1M11G7D
		16QAM			22.66		25.52	0.356	1M10W7D
	3	QPSK	1 711.5	1 753.5	23.46		26.32	0.429	2M68G7D
		16QAM			22.40		25.26	0.336	2M69W7D
	5	QPSK	1 712.5	1 752.5	23.44		26.30	0.427	4M52G7D
		16QAM			22.64		25.50	0.355	4M50W7D
	10	QPSK	1 715	1 750	23.54		26.40	0.437	8M97G7D
		16QAM			22.52		25.38	0.345	8M92W7D
	15	QPSK	1 717.5	1 747.5	23.54		26.40	0.437	13M5G7D
		16QAM			22.36		25.22	0.333	13M5W7D
	20	QPSK	1 720	1 745	23.53		26.39	0.436	17M9G7D
		16QAM			22.43		25.29	0.338	17M9W7D
5	1.4	QPSK	824.7	848.3	23.45	0.32	21.62	0.145	1M10G7D
		16QAM			22.40		20.57	0.114	1M10W7D
	3	QPSK	825.5	847.5	23.40		21.57	0.144	2M68G7D
		16QAM			22.52		20.69	0.117	2M68W7D
	5	QPSK	826.5	846.5	23.44		21.61	0.145	4M50G7D
		16QAM			22.52		20.69	0.117	4M50W7D
	10	QPSK	829	844	23.36		21.53	0.142	8M94G7D
		16QAM			22.38		20.55	0.114	8M92W7D
12	1.4	QPSK	699.7	715.3	23.48	-2.85	18.48	0.070	1M09G7D
		16QAM			22.48		17.48	0.056	1M10W7D
	3	QPSK	700.5	714.5	23.42		18.42	0.070	2M69G7D
		16QAM			22.44		17.44	0.055	2M68W7D
	5	QPSK	701.5	713.5	23.44		18.44	0.070	4M50G7D
		16QAM			22.55		17.55	0.057	4M50W7D
	10	QPSK	704	711	23.39		18.39	0.069	8M92G7D
		16QAM			22.39		17.39	0.055	8M92W7D

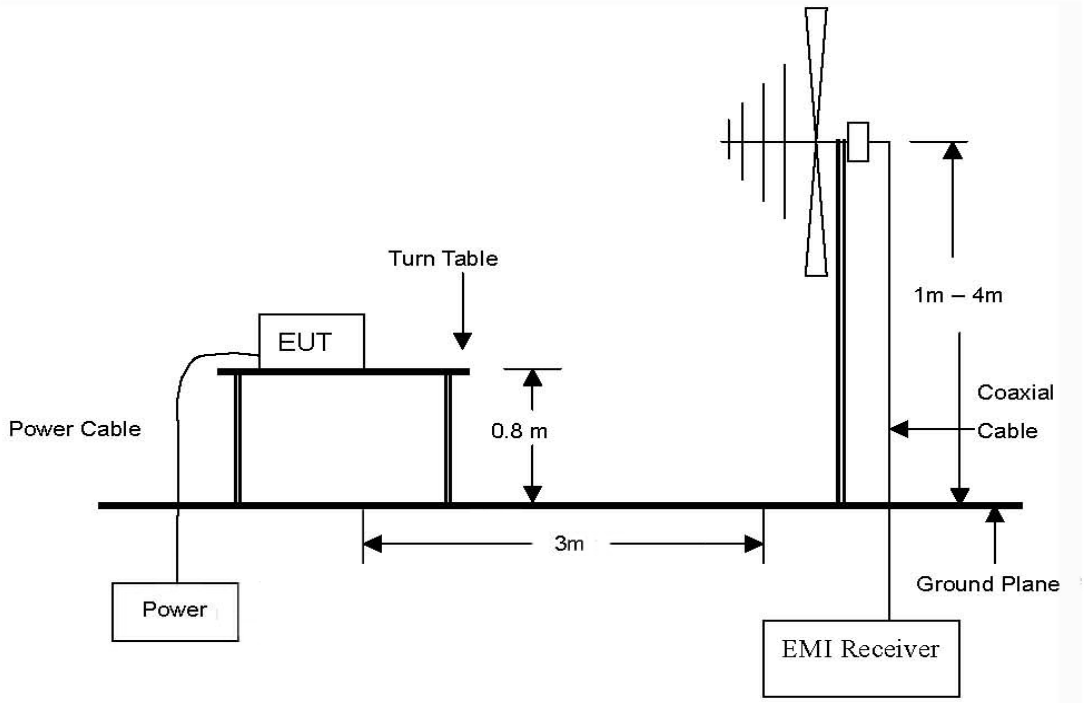
2. RF Radiated Output Power & Spurious Radiated Emission

2.1. Test setup

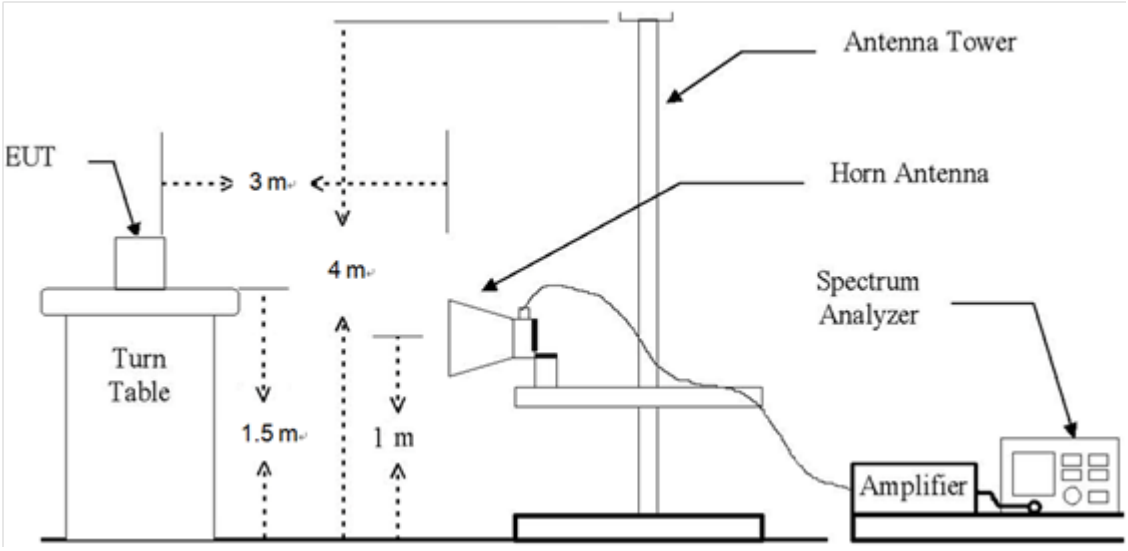
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to 26 ㎓ Emissions.



2.2. Limit

2.2.1. Limit of RF Radiated Output Power

FCC
- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

- §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

- §27.50(c)(10), portable stations (hand-held devices) in the 600 ㎒ uplink band and the 698-746 ㎒ band, and fixed and mobile stations in the 600 ㎒ uplink band are limited to 3 watts ERP.

- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 ㎒ band and mobile and portable stations operating in the 1 695-1 710 ㎒ and 1 755-1 780 ㎒ bands are limited to 1 watt EIRP.

- §27.50(h)(2), mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

IC
- RSS-130 Issue 2
4.6.3, 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.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

- RSS-132 Issue 3
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.
Refer to SRSP-503 for base station e.i.r.p. limits.

- RSS-133 Issue 6
6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

- RSS-139 Issue 3
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 1 710-1 780 ㎒ shall not exceed one watt.

2.2.2. Limit of Spurious Radiated Emission

FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) ㏈.

- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) ㏈.

- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) ㏈.

- §27.53(h)(1), for operations in the 1 695-1 710 ㎒, 1 710-1 755 ㎒, 1 755-1 780 ㎒, 1 915-1 920 ㎒, 1 995-2 000 ㎒, 2 000-2 020 ㎒, 2 110-2 155 ㎒, 2 155-2 180 ㎒, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) ㏈.

IC

- RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 ㎑ bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (㏈ W), by at least 43 + 10 $\log_{10}$ p (watts), ㏈. However, in the 100 ㎑ band immediately outside of the equipment’s frequency block range, a resolution bandwidth of 30 ㎑ may be employed.

- RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 ㎒ band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p (watts).

(ii) After the first 1.0 ㎒ immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 ㎑ bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p (watts). If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 ㎑ is required.

- RSS-133 Issue 6
6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 ㎒ bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p(watts).

(ii) After the first 1.0 ㎒, the emission power in any 1 ㎒ bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p(watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 ㎒ is required.

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6.6, (i) In the first 1.0 ㎒ bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1 % of the emission bandwidth shall be attenuated below the transmitter output power P (in ㏈ W) by at least 43 + 10 $\log_{10}$ p (watts) ㏈.

(ii) After the first 1.0 ㎒ outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 ㎒ bandwidth shall be attenuated below the transmitter output power P (in ㏈ W) by at least 43 + 10 $\log_{10}$ p (watts) ㏈.

2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015 and KDB 971168 D01 Power Meas License Digital Systems v03r01.

1. On a test site, the EUT shall be placed at 0.8 m or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. The maximized power level is recorded using the spectrum analyzer “Channel Power” function with the integration band set to the emissions occupied bandwidth, RBW = 1-5 % of the OBW (not to exceed 1 ㎒), VBW ≥ 3 x RBW, Detector = power averaging (rms), sweep time = auto, trace average at least 100 traces in power averaging (rms) mode, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
5. Radiated spurious emissions measurement method was set as follows:
   RBW = 100 ㎑ for emissions below 1 ㎓ and 1 ㎒ for emissions above 1 ㎓, VBW ≥ 3 x RBW,
   Detector = RMS, trace mode = max hold, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
6. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
7. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
8. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
9. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
10. The maximum signal level detected by the measuring receiver shall be noted.
11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
13. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

2.4. Test results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

2.4.1. RF Radiated Output Power

LTE band 2 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 850.70	88.09	H	27.60	5.59	121.28	-95.26	26.02	0.400
1 850.70	87.60	V	27.60	5.59	120.79	-95.26	25.53	0.357
1 880.00	88.01	H	27.54	5.57	121.12	-95.26	25.86	0.386
1 880.00	87.52	V	27.54	5.57	120.63	-95.26	25.37	0.345
1 909.30	87.68	H	27.50	5.41	120.59	-95.26	25.33	0.341
1 909.30	87.48	V	27.50	5.41	120.39	-95.26	25.13	0.326

* 1 RB Size / 3 Offset

LTE band 2 (1.4 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 850.70	87.02	H	27.60	5.59	120.21	-95.26	24.95	0.313
1 850.70	86.61	V	27.60	5.59	119.80	-95.26	24.54	0.285
1 880.00	86.94	H	27.54	5.57	120.05	-95.26	24.79	0.301
1 880.00	86.04	V	27.54	5.57	119.15	-95.26	23.89	0.245
1 909.30	86.70	H	27.50	5.41	119.61	-95.26	24.35	0.272
1 909.30	86.12	V	27.50	5.41	119.03	-95.26	23.77	0.238

* 1 RB Size / 3 Offset

LTE band 2 (3 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 851.50	88.21	H	27.60	5.59	121.40	-95.26	26.14	0.411
1 851.50	87.62	V	27.60	5.59	120.81	-95.26	25.55	0.359
1 880.00	87.92	H	27.54	5.57	121.03	-95.26	25.77	0.378
1 880.00	87.22	V	27.54	5.57	120.33	-95.26	25.07	0.322
1 908.50	87.59	H	27.50	5.41	120.50	-95.26	25.24	0.334
1 908.50	87.05	V	27.50	5.41	119.96	-95.26	24.70	0.295

* 1 RB Size / 8 Offset

LTE band 2 (3 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 851.50	87.08	H	27.60	5.59	120.27	-95.26	25.01	0.317
1 851.50	86.81	V	27.60	5.59	120.00	-95.26	24.74	0.298
1 880.00	86.54	H	27.54	5.57	119.65	-95.26	24.39	0.275
1 880.00	86.02	V	27.54	5.57	119.13	-95.26	23.87	0.244
1 908.50	86.16	H	27.50	5.41	119.07	-95.26	23.81	0.241
1 908.50	85.88	V	27.50	5.41	118.79	-95.26	23.53	0.226

* 1 RB Size / 8 Offset

LTE band 2 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 852.50	88.17	H	27.60	5.59	121.36	-95.26	26.10	0.408
1 852.50	87.59	V	27.60	5.59	120.78	-95.26	25.52	0.357
1 880.00	87.98	H	27.54	5.57	121.09	-95.26	25.83	0.383
1 880.00	87.36	V	27.54	5.57	120.47	-95.26	25.21	0.332
1 907.50	87.53	H	27.50	5.41	120.44	-95.26	25.18	0.330
1 907.50	86.94	V	27.50	5.41	119.85	-95.26	24.59	0.288

* 1 RB Size / 12 Offset

LTE band 2 (5 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 852.50	86.98	H	27.60	5.59	120.17	-95.26	24.91	0.310
1 852.50	86.59	V	27.60	5.59	119.78	-95.26	24.52	0.283
1 880.00	86.46	H	27.54	5.57	119.57	-95.26	24.31	0.270
1 880.00	85.98	V	27.54	5.57	119.09	-95.26	23.83	0.242
1 907.50	86.08	H	27.50	5.41	118.99	-95.26	23.73	0.236
1 907.50	85.78	V	27.50	5.41	118.69	-95.26	23.43	0.220

* 1 RB Size / 12 Offset

LTE band 2 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 855.00	88.26	H	27.59	5.59	121.44	-95.26	26.18	0.415
1 855.00	87.86	V	27.59	5.59	121.04	-95.26	25.78	0.379
1 880.00	87.96	H	27.54	5.57	121.07	-95.26	25.81	0.381
1 880.00	87.63	V	27.54	5.57	120.74	-95.26	25.48	0.353
1 905.00	87.83	H	27.50	5.40	120.73	-95.26	25.47	0.353
1 905.00	87.78	V	27.50	5.40	120.68	-95.26	25.42	0.349

* 1 RB Size / 0 Offset

LTE band 2 (10 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 855.00	87.12	H	27.59	5.59	120.30	-95.26	25.04	0.319
1 855.00	86.86	V	27.59	5.59	120.04	-95.26	24.78	0.301
1 880.00	86.68	H	27.54	5.57	119.79	-95.26	24.53	0.284
1 880.00	86.29	V	27.54	5.57	119.40	-95.26	24.14	0.260
1 905.00	86.29	H	27.50	5.40	119.19	-95.26	23.93	0.247
1 905.00	86.08	V	27.50	5.40	118.98	-95.26	23.72	0.236

* 1 RB Size / 25 Offset

LTE band 2 (15 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 857.50	88.13	H	27.59	5.60	121.32	-95.26	26.06	0.404
1 857.50	87.66	V	27.59	5.60	120.85	-95.26	25.59	0.362
1 880.00	87.89	H	27.54	5.57	121.00	-95.26	25.74	0.375
1 880.00	87.63	V	27.54	5.57	120.74	-95.26	25.48	0.353
1 902.50	87.69	H	27.50	5.40	120.59	-95.26	25.33	0.341
1 902.50	87.38	V	27.50	5.40	120.28	-95.26	25.02	0.318

* 1 RB Size / 0 Offset

LTE band 2 (15 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 857.50	87.10	H	27.59	5.60	120.29	-95.26	25.03	0.319
1 857.50	86.93	V	27.59	5.60	120.12	-95.26	24.86	0.306
1 880.00	86.87	H	27.54	5.57	119.98	-95.26	24.72	0.297
1 880.00	86.64	V	27.54	5.57	119.75	-95.26	24.49	0.281
1 902.50	86.46	H	27.50	5.40	119.36	-95.26	24.10	0.257
1 902.50	85.98	V	27.50	5.40	118.88	-95.26	23.62	0.230

* 1 RB Size / 74 Offset

LTE band 2 (20 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 860.00	88.08	H	27.58	5.60	121.26	-95.26	26.00	0.398
1 860.00	87.38	V	27.58	5.60	120.56	-95.26	25.30	0.339
1 880.00	87.74	H	27.54	5.57	120.85	-95.26	25.59	0.362
1 880.00	87.34	V	27.54	5.57	120.45	-95.26	25.19	0.331
1 900.00	87.69	H	27.50	5.40	120.59	-95.26	25.33	0.341
1 900.00	87.35	V	27.50	5.40	120.25	-95.26	24.99	0.316

* 1 RB Size / 50 Offset

LTE band 2 (20 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 860.00	87.12	H	27.58	5.60	120.30	-95.26	25.04	0.319
1 860.00	86.64	V	27.58	5.60	119.82	-95.26	24.56	0.286
1 880.00	86.64	H	27.54	5.57	119.75	-95.26	24.49	0.281
1 880.00	86.16	V	27.54	5.57	119.27	-95.26	24.01	0.252
1 900.00	86.32	H	27.50	5.40	119.22	-95.26	23.96	0.249
1 900.00	86.02	V	27.50	5.40	118.92	-95.26	23.66	0.232

* 1 RB Size / 50 Offset

LTE band 4 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 710.70	87.21	H	26.43	5.27	118.91	-95.26	23.65	0.232
1 710.70	88.42	V	26.43	5.27	120.12	-95.26	24.86	0.306
1 732.50	87.70	H	26.69	5.17	119.56	-95.26	24.30	0.269
1 732.50	89.97	V	26.69	5.17	121.83	-95.26	26.57	0.454
1 754.30	88.79	H	26.94	5.19	120.92	-95.26	25.66	0.368
1 754.30	89.34	V	26.94	5.19	121.47	-95.26	26.21	0.418

* 1 RB Size / 3 Offset

LTE band 4 (1.4 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 710.70	86.13	H	26.43	5.27	117.83	-95.26	22.57	0.181
1 710.70	87.03	V	26.43	5.27	118.73	-95.26	23.47	0.222
1 732.50	86.42	H	26.69	5.17	118.28	-95.26	23.02	0.201
1 732.50	87.61	V	26.69	5.17	119.47	-95.26	24.21	0.264
1 754.30	87.37	H	26.94	5.19	119.50	-95.26	24.24	0.266
1 754.30	88.16	V	26.94	5.19	120.29	-95.26	25.03	0.319

* 1 RB Size / 0 Offset

LTE band 4 (3 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 711.50	87.07	H	26.44	5.26	118.77	-95.26	23.51	0.225
1 711.50	88.26	V	26.44	5.26	119.96	-95.26	24.70	0.295
1 732.50	88.56	H	26.69	5.17	120.42	-95.26	25.16	0.328
1 732.50	89.60	V	26.69	5.17	121.46	-95.26	26.20	0.417
1 753.50	88.70	H	26.94	5.19	120.83	-95.26	25.57	0.361
1 753.50	89.40	V	26.94	5.19	121.53	-95.26	26.27	0.424

* 1 RB Size / 8 Offset

LTE band 4 (3 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 711.50	86.16	H	26.44	5.26	117.86	-95.26	22.60	0.182
1 711.50	87.36	V	26.44	5.26	119.06	-95.26	23.80	0.240
1 732.50	87.12	H	26.69	5.17	118.98	-95.26	23.72	0.236
1 732.50	88.35	V	26.69	5.17	120.21	-95.26	24.95	0.313
1 753.50	87.61	H	26.94	5.19	119.74	-95.26	24.48	0.281
1 753.50	88.40	V	26.94	5.19	120.53	-95.26	25.27	0.337

* 1 RB Size / 8 Offset

LTE band 4 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 712.50	87.13	H	26.45	5.26	118.84	-95.26	23.58	0.228
1 712.50	88.56	V	26.45	5.26	120.27	-95.26	25.01	0.317
1 732.50	88.25	H	26.69	5.17	120.11	-95.26	24.85	0.306
1 732.50	88.70	V	26.69	5.17	120.56	-95.26	25.30	0.339
1 752.50	88.39	H	26.93	5.19	120.51	-95.26	25.25	0.335
1 752.50	89.07	V	26.93	5.19	121.19	-95.26	25.93	0.392

* 1 RB Size / 12 Offset

LTE band 4 (5 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 712.50	86.02	H	26.45	5.26	117.73	-95.26	22.47	0.177
1 712.50	87.29	V	26.45	5.26	119.00	-95.26	23.74	0.237
1 732.50	87.08	H	26.69	5.17	118.94	-95.26	23.68	0.233
1 732.50	88.16	V	26.69	5.17	120.02	-95.26	24.76	0.299
1 752.50	87.59	H	26.93	5.19	119.71	-95.26	24.45	0.279
1 752.50	88.20	V	26.93	5.19	120.32	-95.26	25.06	0.321

* 1 RB Size / 12 Offset

LTE band 4 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 715.00	87.60	H	26.48	5.24	119.32	-95.26	24.06	0.255
1 715.00	88.32	V	26.48	5.24	120.04	-95.26	24.78	0.301
1 732.50	88.43	H	26.69	5.17	120.29	-95.26	25.03	0.319
1 732.50	89.20	V	26.69	5.17	121.06	-95.26	25.80	0.380
1 750.00	89.01	H	26.90	5.18	121.09	-95.26	25.83	0.383
1 750.00	89.42	V	26.90	5.18	121.50	-95.26	26.24	0.421

* 1 RB Size / 25 Offset

LTE band 4 (10 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 715.00	86.14	H	26.48	5.24	117.86	-95.26	22.60	0.182
1 715.00	87.23	V	26.48	5.24	118.95	-95.26	23.69	0.234
1 732.50	87.63	H	26.69	5.17	119.49	-95.26	24.23	0.265
1 732.50	88.13	V	26.69	5.17	119.99	-95.26	24.73	0.297
1 750.00	88.02	H	26.90	5.18	120.10	-95.26	24.84	0.305
1 750.00	88.23	V	26.90	5.18	120.31	-95.26	25.05	0.320

* 1 RB Size / 49 Offset

LTE band 4 (15 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 717.50	87.09	H	26.51	5.22	118.82	-95.26	23.56	0.227
1 717.50	88.41	V	26.51	5.22	120.14	-95.26	24.88	0.308
1 732.50	88.21	H	26.69	5.17	120.07	-95.26	24.81	0.303
1 732.50	89.22	V	26.69	5.17	121.08	-95.26	25.82	0.382
1 747.50	89.09	H	26.87	5.18	121.14	-95.26	25.88	0.387
1 747.50	90.16	V	26.87	5.18	122.21	-95.26	26.95	0.496

* 1 RB Size / 0 Offset

LTE band 4 (15 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 717.50	86.27	H	26.51	5.22	118.00	-95.26	22.74	0.188
1 717.50	87.08	V	26.51	5.22	118.81	-95.26	23.55	0.227
1 732.50	87.58	H	26.69	5.17	119.44	-95.26	24.18	0.262
1 732.50	88.09	V	26.69	5.17	119.95	-95.26	24.69	0.295
1 747.50	87.99	H	26.87	5.18	120.04	-95.26	24.78	0.301
1 747.50	88.11	V	26.87	5.18	120.16	-95.26	24.90	0.309

* 1 RB Size / 74 Offset

LTE band 4 (20 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 720.00	87.32	H	26.54	5.20	119.06	-95.26	23.80	0.240
1 720.00	88.29	V	26.54	5.20	120.03	-95.26	24.77	0.300
1 732.50	88.06	H	26.69	5.17	119.92	-95.26	24.66	0.293
1 732.50	89.19	V	26.69	5.17	121.05	-95.26	25.79	0.380
1 745.00	89.22	H	26.84	5.18	121.24	-95.26	25.98	0.396
1 745.00	89.99	V	26.84	5.18	122.01	-95.26	26.75	0.473

* 1 RB Size / 50 Offset

LTE band 4 (20 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(W)
1 720.00	86.19	H	26.54	5.20	117.93	-95.26	22.67	0.185
1 720.00	87.33	V	26.54	5.20	119.07	-95.26	23.81	0.241
1 732.50	87.59	H	26.69	5.17	119.45	-95.26	24.19	0.263
1 732.50	88.17	V	26.69	5.17	120.03	-95.26	24.77	0.300
1 745.00	88.12	H	26.84	5.18	120.14	-95.26	24.88	0.308
1 745.00	88.29	V	26.84	5.18	120.31	-95.26	25.05	0.320

* 1 RB Size / 50 Offset

LTE band 5 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
824.70	93.35	H	26.69	3.59	123.63	-97.41	26.22	0.419
824.70	88.49	V	26.69	3.59	118.77	-97.41	21.36	0.137
836.50	93.18	H	27.03	3.60	123.81	-97.41	26.40	0.437
836.50	88.31	V	27.03	3.60	118.94	-97.41	21.53	0.142
848.30	92.47	H	27.17	3.71	123.35	-97.41	25.94	0.393
848.30	87.98	V	27.17	3.71	118.86	-97.41	21.45	0.140

* 1 RB Size / 3 Offset

LTE band 5 (1.4 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
824.70	92.04	H	26.69	3.59	122.32	-97.41	24.91	0.310
824.70	87.32	V	26.69	3.59	117.60	-97.41	20.19	0.105
836.50	92.01	H	27.03	3.60	122.64	-97.41	25.23	0.334
836.50	87.20	V	27.03	3.60	117.83	-97.41	20.42	0.110
848.30	91.73	H	27.17	3.71	122.61	-97.41	25.20	0.331
848.30	86.79	V	27.17	3.71	117.67	-97.41	20.26	0.106

* 1 RB Size / 3 Offset

LTE band 5 (3 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
825.50	93.13	H	26.72	3.59	123.44	-97.41	26.03	0.401
825.50	88.18	V	26.72	3.59	118.49	-97.41	21.08	0.128
836.50	93.47	H	27.03	3.60	124.10	-97.41	26.69	0.467
836.50	88.21	V	27.03	3.60	118.84	-97.41	21.43	0.139
847.50	92.88	H	27.15	3.70	123.73	-97.41	26.32	0.429
847.50	87.89	V	27.15	3.70	118.74	-97.41	21.33	0.136

* 1 RB Size / 0 Offset

LTE band 5 (3 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
825.50	92.09	H	26.72	3.59	122.40	-97.41	24.99	0.316
825.50	87.21	V	26.72	3.59	117.52	-97.41	20.11	0.103
836.50	92.01	H	27.03	3.60	122.64	-97.41	25.23	0.334
836.50	87.30	V	27.03	3.60	117.93	-97.41	20.52	0.113
847.50	91.64	H	27.15	3.70	122.49	-97.41	25.08	0.322
847.50	87.09	V	27.15	3.70	117.94	-97.41	20.53	0.113

* 1 RB Size / 8 Offset

LTE band 5 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
826.50	93.31	H	26.76	3.59	123.66	-97.41	26.25	0.422
826.50	88.21	V	26.76	3.59	118.56	-97.41	21.15	0.130
836.50	93.11	H	27.03	3.60	123.74	-97.41	26.33	0.430
836.50	87.92	V	27.03	3.60	118.55	-97.41	21.14	0.130
846.50	92.77	H	27.13	3.69	123.59	-97.41	26.18	0.415
846.50	87.57	V	27.13	3.69	118.39	-97.41	20.98	0.125

* 1 RB Size / 12 Offset

LTE band 5 (5 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
826.50	92.82	H	26.76	3.59	123.17	-97.41	25.76	0.377
826.50	87.29	V	26.76	3.59	117.64	-97.41	20.23	0.105
836.50	92.18	H	27.03	3.60	122.81	-97.41	25.40	0.347
836.50	87.02	V	27.03	3.60	117.65	-97.41	20.24	0.106
846.50	91.41	H	27.13	3.69	122.23	-97.41	24.82	0.304
846.50	86.89	V	27.13	3.69	117.71	-97.41	20.30	0.107

* 1 RB Size / 12 Offset

LTE band 5 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
829.00	93.84	H	26.86	3.60	124.30	-97.41	26.89	0.489
829.00	88.44	V	26.86	3.60	118.90	-97.41	21.49	0.141
836.50	93.67	H	27.03	3.60	124.30	-97.41	26.89	0.489
836.50	88.16	V	27.03	3.60	118.79	-97.41	21.38	0.137
844.00	93.12	H	27.10	3.65	123.87	-97.41	26.46	0.443
844.00	87.64	V	27.10	3.65	118.39	-97.41	20.98	0.125

* 1 RB Size / 25 Offset

LTE band 5 (10 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
829.00	92.59	H	26.86	3.60	123.05	-97.41	25.64	0.367
829.00	87.41	V	26.86	3.60	117.87	-97.41	20.46	0.111
836.50	92.41	H	27.03	3.60	123.04	-97.41	25.63	0.366
836.50	87.09	V	27.03	3.60	117.72	-97.41	20.31	0.107
844.00	92.10	H	27.10	3.65	122.85	-97.41	25.44	0.350
844.00	86.23	V	27.10	3.65	116.98	-97.41	19.57	0.091

* 1 RB Size / 25 Offset

LTE band 12 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
699.70	92.53	H	25.29	3.30	121.12	-97.41	23.71	0.235
699.70	88.24	V	25.29	3.30	116.83	-97.41	19.42	0.088
707.50	92.90	H	25.35	3.32	121.57	-97.41	24.16	0.261
707.50	88.21	V	25.35	3.32	116.88	-97.41	19.47	0.089
715.30	92.22	H	25.51	3.33	121.06	-97.41	23.65	0.232
715.30	88.48	V	25.51	3.33	117.32	-97.41	19.91	0.098

* 1 RB Size / 3 Offset

LTE band 12 (1.4 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
699.70	91.48	H	25.29	3.30	120.07	-97.41	22.66	0.185
699.70	87.30	V	25.29	3.30	115.89	-97.41	18.48	0.071
707.50	91.60	H	25.35	3.32	120.27	-97.41	22.86	0.193
707.50	87.28	V	25.35	3.32	115.95	-97.41	18.54	0.071
715.30	91.12	H	25.51	3.33	119.96	-97.41	22.55	0.180
715.30	87.48	V	25.51	3.33	116.32	-97.41	18.91	0.078

* 1 RB Size / 3 Offset

LTE band 12 (3 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
700.50	92.80	H	25.30	3.31	121.41	-97.41	24.00	0.251
700.50	87.80	V	25.30	3.31	116.41	-97.41	19.00	0.079
707.50	92.49	H	25.35	3.32	121.16	-97.41	23.75	0.237
707.50	87.79	V	25.35	3.32	116.46	-97.41	19.05	0.080
714.50	92.33	H	25.49	3.32	121.14	-97.41	23.73	0.236
714.50	87.69	V	25.49	3.32	116.50	-97.41	19.09	0.081

* 1 RB Size / 8 Offset

LTE band 12 (3 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
700.50	91.79	H	25.30	3.31	120.40	-97.41	22.99	0.199
700.50	86.70	V	25.30	3.31	115.31	-97.41	17.90	0.062
707.50	91.34	H	25.35	3.32	120.01	-97.41	22.60	0.182
707.50	86.84	V	25.35	3.32	115.51	-97.41	18.10	0.065
714.50	91.28	H	25.49	3.32	120.09	-97.41	22.68	0.185
714.50	86.39	V	25.49	3.32	115.20	-97.41	17.79	0.060

* 1 RB Size / 8 Offset

LTE band 12 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
701.50	92.47	H	25.30	3.31	121.08	-97.41	23.67	0.233
701.50	87.40	V	25.30	3.31	116.01	-97.41	18.60	0.072
707.50	92.51	H	25.35	3.32	121.18	-97.41	23.77	0.238
707.50	87.96	V	25.35	3.32	116.63	-97.41	19.22	0.084
713.50	92.51	H	25.47	3.32	121.30	-97.41	23.89	0.245
713.50	87.62	V	25.47	3.32	116.41	-97.41	19.00	0.079

* 1 RB Size / 12 Offset

LTE band 12 (5 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
701.50	91.28	H	25.30	3.31	119.89	-97.41	22.48	0.177
701.50	86.19	V	25.30	3.31	114.80	-97.41	17.39	0.055
707.50	91.34	H	25.35	3.32	120.01	-97.41	22.60	0.182
707.50	86.67	V	25.35	3.32	115.34	-97.41	17.93	0.062
713.50	91.60	H	25.47	3.32	120.39	-97.41	22.98	0.199
713.50	86.39	V	25.47	3.32	115.18	-97.41	17.77	0.060

* 1 RB Size / 12 Offset

LTE band 12 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
704.00	92.72	H	25.50	3.11	121.33	-97.41	23.92	0.247
704.00	87.62	V	25.50	3.11	116.23	-97.41	18.82	0.076
707.50	92.63	H	25.50	3.10	121.23	-97.41	23.82	0.241
707.50	87.59	V	25.50	3.10	116.19	-97.41	18.78	0.076
711.00	92.66	H	25.52	3.09	121.27	-97.41	23.86	0.243
711.00	87.75	V	25.52	3.09	116.36	-97.41	18.95	0.079

* 1 RB Size / 25 Offset

LTE band 12 (10 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.R.P.	
							(dB m)	(W)
704.00	91.38	H	25.50	3.11	119.99	-97.41	22.58	0.181
704.00	86.70	V	25.50	3.11	115.31	-97.41	17.90	0.062
707.50	91.25	H	25.50	3.10	119.85	-97.41	22.44	0.175
707.50	86.64	V	25.50	3.10	115.24	-97.41	17.83	0.061
711.00	91.30	H	25.52	3.09	119.91	-97.41	22.50	0.178
711.00	86.61	V	25.52	3.09	115.22	-97.41	17.81	0.060

* 1 RB Size / 25 Offset

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. E (dBμV/m) = Measured Level (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dBμV/m) + CF (dB).
4. E.R.P. (dB m) = E (dBμV/m) + CF (dB) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.
5. CF (dB) = 20 log D - 104.8; where D is the measurement distance in meters, According to ANSI C63.26-2015 5.2.7 and KDB 971168 D01 v03r01 5.8.4

2.4.2. Spurious radiated emission

LTE band 2 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 852.5 ㎒)									
3 705.24	49.26	H	32.12	-36.05	45.33	-95.26	-49.93	-13	36.93
3 705.39	48.87	V	32.12	-36.05	44.94	-95.26	-50.32	-13	37.32
5 557.49	47.38	H	34.00	-32.37	49.01	-95.26	-46.25	-13	33.25
5 557.68	49.88	V	34.00	-32.37	51.51	-95.26	-43.75	-13	30.75
7 410.16	47.04	H	36.18	-31.40	51.82	-95.26	-43.44	-13	30.44
7 410.39	44.42	V	36.18	-31.40	49.20	-95.26	-46.06	-13	33.06
9 262.54	44.19	H	37.03	-29.95	51.27	-95.26	-43.99	-13	30.99
9 262.48	45.89	V	37.02	-29.95	52.96	-95.26	-42.30	-13	29.30
12 967.44	39.88	H	39.20	-27.83	51.25	-95.26	-44.01	-13	31.01
12 967.64	41.48	V	39.20	-27.83	52.85	-95.26	-42.41	-13	29.41
Middle Channel (1 880.0 ㎒)									
3 760.62	49.60	H	32.28	-35.86	46.02	-95.26	-49.24	-13	36.24
3 760.64	49.28	V	32.28	-35.86	45.70	-95.26	-49.56	-13	36.56
5 640.31	47.86	H	34.00	-32.36	49.50	-95.26	-45.76	-13	32.76
5 640.31	50.87	V	34.00	-32.36	52.51	-95.26	-42.75	-13	29.75
7 520.24	47.77	H	36.06	-31.29	52.54	-95.26	-42.72	-13	29.72
7 520.19	44.98	V	36.06	-31.29	49.75	-95.26	-45.51	-13	32.51
9 400.24	44.83	H	37.40	-29.74	52.49	-95.26	-42.77	-13	29.77
9 400.39	46.22	V	37.40	-29.74	53.88	-95.26	-41.38	-13	28.38
13 161.13	40.58	H	39.12	-27.70	52.00	-95.26	-43.26	-13	30.26
13 160.62	42.89	V	39.12	-27.70	54.31	-95.26	**-40.95**	-13	27.95

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (1 907.5 ㎒)									
3 815.11	50.12	H	32.17	-35.29	47.00	-95.26	-48.26	-13	35.26
3 815.20	48.24	V	32.17	-35.29	45.12	-95.26	-50.14	-13	37.14
5 722.34	46.86	H	34.00	-32.13	48.73	-95.26	-46.53	-13	33.53
5 722.69	49.28	V	34.00	-32.13	51.15	-95.26	-44.11	-13	31.11
7 630.04	46.89	H	35.94	-30.95	51.88	-95.26	-43.38	-13	30.38
7 630.37	45.32	V	35.94	-30.95	50.31	-95.26	-44.95	-13	31.95
9 537.46	45.33	H	37.50	-29.18	53.65	-95.26	-41.61	-13	28.61
9 537.22	45.48	V	37.50	-29.18	53.80	-95.26	-41.46	-13	28.46
13 352.27	40.27	H	39.60	-27.72	52.15	-95.26	-43.11	-13	30.11
13 352.39	42.30	V	39.60	-27.72	54.18	-95.26	-41.08	-13	28.08

* 1 RB Size / 12 Offset

LTE band 4 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 710.7 ㎒)									
3 421.34	51.89	H	30.84	-37.83	44.90	-95.26	-50.36	-13	37.36
3 421.42	50.98	V	30.84	-37.83	43.99	-95.26	-51.27	-13	38.27
5 132.13	50.58	H	33.46	-33.06	50.98	-95.26	-44.28	-13	31.28
5 132.07	51.64	V	33.46	-33.06	52.04	-95.26	-43.22	-13	30.22
6 842.66	51.12	H	35.60	-31.40	55.32	-95.26	-39.94	-13	26.94
6 843.01	47.69	V	35.60	-31.40	51.89	-95.26	-43.37	-13	30.37
8 553.65	48.11	H	36.41	-30.35	54.17	-95.26	-41.09	-13	28.09
8 553.41	45.08	V	36.41	-30.35	51.14	-95.26	-44.12	-13	31.12
13 685.31	39.60	H	40.27	-27.71	52.16	-95.26	-43.10	-13	30.10
13 685.59	40.69	V	40.27	-27.71	53.25	-95.26	-42.01	-13	29.01
Middle Channel (1 732.5 ㎒)									
3 465.13	52.36	H	30.96	-37.60	45.72	-95.26	-49.54	-13	36.54
3 465.21	51.64	V	30.96	-37.60	45.00	-95.26	-50.26	-13	37.26
5 197.38	51.47	H	33.59	-33.00	52.06	-95.26	-43.20	-13	30.20
5 197.69	51.79	V	33.60	-33.00	52.39	-95.26	-42.87	-13	29.87
6 929.76	51.71	H	35.60	-31.54	55.77	-95.26	-39.49	-13	26.49
6 930.12	48.57	V	35.60	-31.53	52.64	-95.26	-42.62	-13	29.62
8 662.29	48.67	H	36.65	-29.65	55.67	-95.26	-39.59	-13	26.59
8 662.68	44.16	V	36.65	-29.67	51.14	-95.26	-44.12	-13	31.12
13 860.12	38.50	H	40.52	-27.73	51.29	-95.26	-43.97	-13	30.97
13 859.68	41.57	V	40.52	-27.73	54.36	-95.26	-40.90	-13	27.90

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (1 754.3 ㎒)									
3 508.48	53.11	H	31.13	-37.21	47.03	-95.26	-48.23	-13	35.23
3 508.73	50.58	V	31.13	-37.21	44.50	-95.26	-50.76	-13	37.76
5 262.96	52.12	H	33.75	-32.14	53.73	-95.26	-41.53	-13	28.53
5 263.20	51.99	V	33.75	-32.14	53.60	-95.26	-41.66	-13	28.66
7 017.14	52.01	H	35.50	-31.37	56.14	-95.26	**-39.12**	-13	26.12
7 017.29	49.32	V	35.50	-31.37	53.45	-95.26	-41.81	-13	28.81
8 771.55	48.22	H	37.04	-30.04	55.22	-95.26	-40.04	-13	27.04
8 771.48	47.89	V	37.04	-30.04	54.89	-95.26	-40.37	-13	27.37
14 034.43	38.12	H	40.84	-27.71	51.25	-95.26	-44.01	-13	31.01
14 034.32	42.34	V	40.84	-27.71	55.47	-95.26	-39.79	-13	26.79

* 1 RB Size / 3 Offset

LTE band 5 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (824.7 ㎒)									
1 649.28	59.12	H	25.80	-40.28	44.64	-97.41	-52.77	-13	39.77
1 649.40	57.62	V	25.80	-40.28	43.14	-97.41	-54.27	-13	41.27
2 474.12	61.88	H	28.35	-38.69	51.54	-97.41	**-45.87**	-13	32.87
2 473.84	59.39	V	28.35	-38.69	49.05	-97.41	-48.36	-13	35.36
Middle Channel (836.5 ㎒)									
1 673.24	59.57	H	26.03	-40.15	45.45	-97.41	-51.96	-13	38.96
1 673.34	56.78	V	26.03	-40.15	42.66	-97.41	-54.75	-13	41.75
2 509.78	61.35	H	28.32	-38.54	51.13	-97.41	-46.28	-13	33.28
2 510.16	58.63	V	28.32	-38.54	48.41	-97.41	-49.00	-13	36.00
High Channel (848.3 ㎒)									
1 696.44	60.03	H	26.26	-39.89	46.40	-97.41	-51.01	-13	38.01
1 696.88	56.02	V	26.27	-39.88	42.41	-97.41	-55.00	-13	42.00
2 545.10	60.98	H	28.39	-38.46	50.91	-97.41	-46.50	-13	33.50
2 544.76	59.02	V	28.39	-38.46	48.95	-97.41	-48.46	-13	35.46

* 1 RB Size / 3 Offset

LTE band 12 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (699.7 ㎒)									
1 399.62	59.04	H	25.30	-40.66	51.14	-97.41	-46.27	-13	33.27
1 399.24	60.63	V	25.30	-40.65	50.87	-97.41	-46.54	-13	33.54
2 098.78	51.20	H	27.70	-39.45	52.79	-97.41	-44.62	-13	31.62
2 099.12	50.33	V	27.70	-39.45	50.68	-97.41	-46.73	-13	33.73
Middle Channel (707.5 ㎒)									
1 415.25	58.59	H	25.24	-40.65	54.02	-97.41	**-43.39**	-13	30.39
1 415.30	59.82	V	25.24	-40.65	47.48	-97.41	-49.93	-13	36.93
2 122.75	50.54	H	27.61	-39.27	51.71	-97.41	-45.70	-13	32.70
2 122.81	49.14	V	27.61	-39.27	48.66	-97.41	-48.75	-13	35.75
High Channel (715.3 ㎒)									
1 430.64	58.01	H	25.18	-40.58	52.19	-97.41	-45.22	-13	32.22
1 430.25	58.84	V	25.18	-40.59	43.43	-97.41	-53.98	-13	40.98
2 145.67	49.79	H	27.52	-39.09	38.22	-97.41	-59.19	-13	46.19
2 146.18	48.64	V	27.52	-39.09	37.07	-97.41	-60.34	-13	47.34

* 1 RB size / 3 Offset

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. E (dBμV/m) = Measured Level (dBμV) + Antenna Factor (dB/m) + AMP (dB) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dBμV/m) + CF (dB).
4. E.R.P. (dB m) = E (dBμV/m) + CF (dB) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.
5. CF (dB) = 20 log D - 104.8; where D is the measurement distance in meters, According to KDB 971168 D01 v03r01 5.8.4.
6. The frequency spectrum is examined from 9 ㎑ to the 10th harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

3. Conducted Output Power

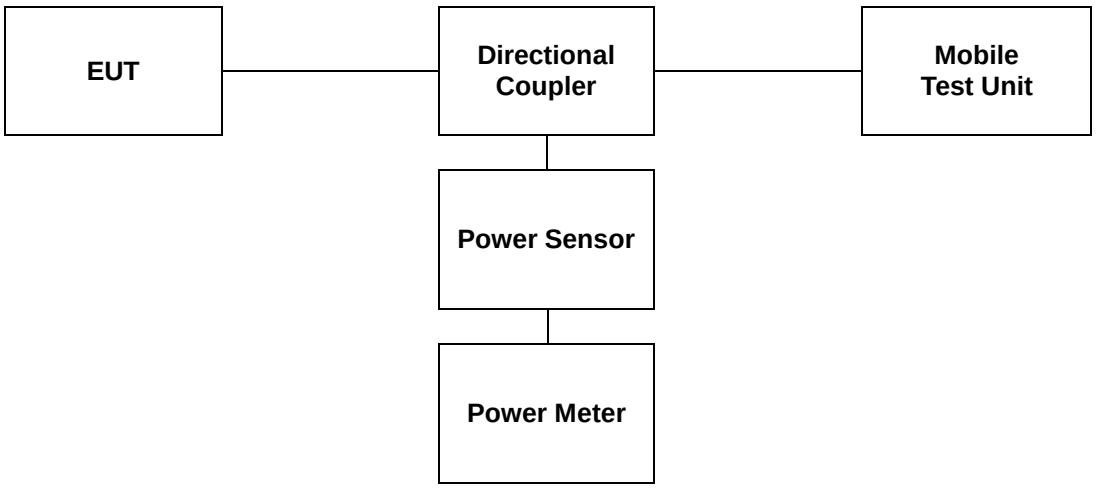
3.1. Limit

CFR 47, Section FCC §2.1046 and IC RSS-Gen Issue 5 6.12.

3.2. Test Procedure

Output power shall be measured at the RF output terminals for all configurations.

1. The RF output of the transmitter was connected to the input of the mobile test unit in order to establish communication with the EUT.
2. The EUT was set up for the max. output power with pseudo random data modulation by using mobile test unit parameters.
3. The measurement performed using a wideband RF power meter.
4. This EUT was tested under all configurations and the highest power was investigated and reported.



3.3. Test Result

Ambient temperature : (23 ± 1) ℃

Relative humidity : 47 % R.H.

LTE Band 2 1.4 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18607 (1 850.7 ㎒)		18900 (1 880.0 ㎒)		19193 (1 909.3 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.04	0.201	22.99	0.199	23.20	0.209
	1	3	23.26	0.212	23.07	0.203	**23.35**	**0.216**
	1	5	23.13	0.206	23.13	0.206	23.20	0.209
	3	0	23.14	0.206	23.00	0.200	23.07	0.203
	3	2	23.16	0.207	23.03	0.201	23.18	0.208
	3	3	23.17	0.207	22.98	0.199	23.12	0.205
	6	0	22.14	0.164	22.04	0.160	22.16	0.164
16QAM	1	0	22.06	0.161	21.83	0.152	21.95	0.157
	1	3	**22.22**	**0.167**	21.89	0.155	21.85	0.153
	1	5	21.78	0.151	21.95	0.157	22.01	0.159
	3	0	22.08	0.161	22.08	0.161	22.12	0.163
	3	2	22.11	0.163	22.17	0.165	22.21	0.166
	3	3	22.18	0.165	22.12	0.163	22.14	0.164
	6	0	21.10	0.129	21.03	0.127	21.13	0.130

LTE Band 2 3 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18615 (1 851.5 ㎒)		18900 (1 880.0 ㎒)		19185 (1 908.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.32	0.215	23.29	0.213	23.06	0.202
	1	8	**23.52**	**0.225**	23.24	0.211	23.15	0.207
	1	14	23.21	0.209	23.16	0.207	22.94	0.197
	8	0	22.17	0.165	22.11	0.163	22.02	0.159
	8	4	22.19	0.166	22.13	0.163	22.01	0.159
	8	7	22.28	0.169	22.17	0.165	21.93	0.156
	15	0	22.24	0.167	22.09	0.162	21.98	0.158
16QAM	1	0	22.03	0.160	22.11	0.163	21.73	0.149
	1	8	22.10	0.162	22.21	0.166	**22.29**	**0.169**
	1	14	22.07	0.161	22.03	0.160	21.84	0.153
	8	0	21.10	0.129	21.08	0.128	21.07	0.128
	8	4	21.15	0.130	21.11	0.129	21.07	0.128
	8	7	21.11	0.129	21.00	0.126	20.97	0.125
	15	0	21.15	0.130	21.07	0.128	20.96	0.125

LTE Band 2 5 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18625 (1 852.5 ㎒)		18900 (1 880.0 ㎒)		19175 (1907.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.15	0.207	23.22	0.210	22.98	0.199
	1	12	**23.71**	**0.235**	23.04	0.201	23.17	0.207
	1	24	23.13	0.206	22.96	0.198	22.97	0.198
	12	0	22.20	0.166	22.23	0.167	21.97	0.157
	12	7	22.25	0.168	22.07	0.161	21.94	0.156
	12	13	22.11	0.163	22.11	0.163	22.04	0.160
	25	0	22.24	0.167	22.12	0.163	21.99	0.158
16QAM	1	0	22.14	0.164	22.23	0.167	21.64	0.146
	1	12	22.23	0.167	**22.36**	**0.172**	22.32	0.171
	1	24	22.13	0.163	21.89	0.155	22.07	0.161
	12	0	21.06	0.128	21.05	0.127	20.96	0.125
	12	7	21.25	0.133	20.96	0.125	20.82	0.121
	12	13	21.09	0.129	21.14	0.130	20.88	0.122
	25	0	21.13	0.130	20.98	0.125	20.97	0.125

LTE Band 2 10 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18650 (1 855.0 ㎒)		18900 (1 880.0 ㎒)		19150 (1 905.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	**23.43**	**0.220**	23.39	0.218	23.16	0.207
	1	25	23.36	0.217	23.36	0.217	23.14	0.206
	1	49	23.14	0.206	23.16	0.207	23.08	0.203
	25	0	22.28	0.169	22.35	0.172	22.04	0.160
	25	12	22.17	0.165	22.14	0.164	22.01	0.159
	25	25	22.18	0.165	22.09	0.162	22.02	0.159
	50	0	22.16	0.164	22.10	0.162	21.98	0.158
16QAM	1	0	22.26	0.168	21.99	0.158	22.13	0.163
	1	25	**22.42**	**0.175**	22.11	0.163	22.32	0.171
	1	49	21.90	0.155	21.88	0.154	22.07	0.161
	25	0	21.28	0.134	21.38	0.137	20.99	0.126
	25	12	21.09	0.129	21.22	0.132	21.01	0.126
	25	25	21.09	0.129	20.99	0.126	20.95	0.124
	50	0	21.08	0.128	21.03	0.127	20.95	0.124

LTE Band 2 15 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18675 (1 857.5 ㎒)		18900 (1 880.0 ㎒)		19125 (1 902.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.28	0.213	**23.34**	**0.216**	23.26	0.212
	1	37	23.25	0.211	23.27	0.212	23.11	0.205
	1	74	23.34	0.216	23.15	0.207	23.17	0.207
	36	0	22.14	0.164	22.36	0.172	22.06	0.161
	36	20	22.14	0.164	22.12	0.163	22.02	0.159
	36	39	22.26	0.168	21.98	0.158	21.99	0.158
	75	0	22.23	0.167	22.06	0.161	21.97	0.157
16QAM	1	0	22.08	0.161	22.24	0.167	22.15	0.164
	1	37	22.07	0.161	22.02	0.159	21.93	0.156
	1	74	22.15	0.164	**22.26**	**0.168**	22.21	0.166
	36	0	21.06	0.128	21.33	0.136	21.00	0.126
	36	20	21.20	0.132	21.11	0.129	21.00	0.126
	36	39	21.23	0.133	21.05	0.127	21.03	0.127
	75	0	21.15	0.130	21.12	0.129	20.92	0.124

LTE Band 2 20 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			18700 (1 860.0 ㎒)		18900 (1 880.0 ㎒)		19100 (1 900.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.30	0.214	23.33	0.215	23.06	0.202
	1	50	23.35	0.216	23.39	0.218	**23.46**	**0.222**
	1	99	23.24	0.211	23.15	0.207	23.17	0.207
	50	0	22.16	0.164	22.33	0.171	22.04	0.160
	50	25	22.24	0.167	22.18	0.165	22.04	0.160
	50	50	22.32	0.171	22.02	0.159	22.04	0.160
	100	0	22.21	0.166	22.10	0.162	22.01	0.159
16QAM	1	0	22.05	0.160	21.98	0.158	21.87	0.154
	1	50	22.39	0.173	**22.49**	**0.177**	22.13	0.163
	1	99	22.32	0.171	21.71	0.148	21.92	0.156
	50	0	21.23	0.133	21.29	0.135	20.94	0.124
	50	25	21.17	0.131	21.13	0.130	20.99	0.126
	50	50	21.21	0.132	21.10	0.129	21.11	0.129
	100	0	21.16	0.131	21.14	0.130	21.06	0.128

LTE Band 4 1.4 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			19957 (1 710.7 ㎒)		20175 (1 732.5 ㎒)		20393 (1 754.3 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.20	0.209	23.36	0.217	23.33	0.215
	1	3	23.31	0.214	23.39	0.218	**23.57**	**0.228**
	1	5	23.31	0.214	23.30	0.214	23.35	0.216
	3	0	23.08	0.203	23.27	0.212	23.26	0.212
	3	2	23.18	0.208	23.22	0.210	23.36	0.217
	3	3	23.18	0.208	23.25	0.211	23.33	0.215
	6	0	22.27	0.169	22.39	0.173	22.36	0.172
16QAM	1	0	**22.66**	**0.185**	22.46	0.176	22.29	0.169
	1	3	22.10	0.162	22.54	0.179	22.23	0.167
	1	5	22.25	0.168	22.41	0.174	22.50	0.178
	3	0	22.23	0.167	22.22	0.167	22.22	0.167
	3	2	22.33	0.171	22.54	0.179	22.31	0.170
	3	3	22.22	0.167	22.15	0.164	22.38	0.173
	6	0	21.13	0.130	21.22	0.132	21.33	0.136

LTE Band 4 3 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			19965 (1 711.5 ㎒)		20175 (1 732.5 ㎒)		20385 (1 753.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.27	0.212	23.38	0.218	23.17	0.207
	1	8	23.23	0.210	23.38	0.218	**23.46**	**0.222**
	1	14	23.24	0.211	23.26	0.212	23.41	0.219
	8	0	22.23	0.167	22.34	0.171	22.25	0.168
	8	4	22.18	0.165	22.38	0.173	22.36	0.172
	8	7	22.22	0.167	22.42	0.175	22.29	0.169
	15	0	22.24	0.167	22.33	0.171	22.33	0.171
16QAM	1	0	21.96	0.157	22.14	0.164	21.89	0.155
	1	8	21.98	0.158	22.34	0.171	**22.40**	**0.174**
	1	14	22.21	0.166	22.27	0.169	22.25	0.168
	8	0	21.23	0.133	21.04	0.127	21.15	0.130
	8	4	21.11	0.129	21.38	0.137	21.23	0.133
	8	7	21.21	0.132	21.37	0.137	21.30	0.135
	15	0	21.25	0.133	21.37	0.137	21.28	0.134

LTE Band 4 5 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			19975 (1 712.5 ㎒)		20175 (1 732.5 ㎒)		20375 (1 752.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.20	0.209	23.20	0.209	23.04	0.201
	1	12	**23.44**	**0.221**	23.42	0.220	23.19	0.208
	1	24	23.34	0.216	23.29	0.213	23.10	0.204
	12	0	22.29	0.169	22.37	0.173	21.98	0.158
	12	7	22.20	0.166	22.31	0.170	22.08	0.161
	12	13	22.19	0.166	22.34	0.171	22.07	0.161
	25	0	22.15	0.164	22.36	0.172	22.04	0.160
16QAM	1	0	21.87	0.154	22.36	0.172	21.62	0.145
	1	12	22.39	0.173	**22.64**	**0.184**	22.09	0.162
	1	24	22.02	0.159	22.17	0.165	21.81	0.152
	12	0	21.18	0.131	21.26	0.134	20.91	0.123
	12	7	21.26	0.134	21.26	0.134	20.79	0.120
	12	13	21.13	0.130	21.24	0.133	20.98	0.125
	25	0	21.13	0.130	21.34	0.136	21.02	0.126

LTE Band 4 10 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20000 (1 715.0 ㎒)		20175 (1 732.5 ㎒)		20375 (1 750.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.24	0.211	23.20	0.209	23.44	0.221
	1	25	23.39	0.218	23.44	0.221	**23.54**	**0.226**
	1	49	23.34	0.216	23.38	0.218	23.52	0.225
	25	0	22.25	0.168	22.31	0.170	22.28	0.169
	25	12	22.37	0.173	22.34	0.171	22.29	0.169
	25	25	22.34	0.171	22.38	0.173	22.36	0.172
	50	0	22.31	0.170	22.30	0.170	22.36	0.172
16QAM	1	0	22.28	0.169	21.94	0.156	22.34	0.171
	1	25	22.08	0.161	22.29	0.169	22.21	0.166
	1	49	22.20	0.166	22.24	0.167	**22.52**	**0.179**
	25	0	21.20	0.132	21.24	0.133	21.36	0.137
	25	12	21.32	0.136	21.32	0.136	21.36	0.137
	25	25	21.40	0.138	21.32	0.136	21.32	0.136
	50	0	21.27	0.134	21.29	0.135	21.27	0.134

LTE Band 4 15 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20025 (1 717.5 ㎒)		20175 (1 732.5 ㎒)		20325 (1 747.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.31	0.214	23.36	0.217	**23.54**	**0.226**
	1	37	23.33	0.215	23.45	0.221	23.42	0.220
	1	74	23.39	0.218	23.34	0.216	23.44	0.221
	36	0	22.29	0.169	22.37	0.173	22.33	0.171
	36	20	22.35	0.172	22.41	0.174	22.38	0.173
	36	39	22.34	0.171	22.36	0.172	22.37	0.173
	75	0	22.32	0.171	22.36	0.172	22.26	0.168
16QAM	1	0	22.05	0.160	22.29	0.169	22.31	0.170
	1	37	22.04	0.160	22.15	0.164	22.30	0.170
	1	74	**22.36**	**0.172**	22.11	0.163	22.22	0.167
	36	0	21.35	0.136	21.33	0.136	21.31	0.135
	36	20	21.26	0.134	21.41	0.138	21.30	0.135
	36	39	21.32	0.136	21.33	0.136	21.29	0.135
	75	0	21.29	0.135	21.35	0.136	21.32	0.136

LTE Band 4 20 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20050 (1 720.0 ㎒)		20175 (1 732.5 ㎒)		20300 (1 745.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.32	0.215	23.46	0.222	23.51	0.224
	1	50	23.35	0.216	**23.53**	**0.225**	23.49	0.223
	1	99	23.37	0.217	23.36	0.217	23.48	0.223
	50	0	22.34	0.171	22.42	0.175	22.38	0.173
	50	25	22.41	0.174	22.36	0.172	22.24	0.167
	50	50	22.36	0.172	22.36	0.172	22.29	0.169
	100	0	22.34	0.171	22.30	0.170	22.18	0.165
16QAM	1	0	22.07	0.161	22.23	0.167	22.32	0.171
	1	50	22.09	0.162	**22.43**	**0.175**	22.22	0.167
	1	99	22.28	0.169	22.41	0.174	22.25	0.168
	50	0	21.44	0.139	21.38	0.137	21.41	0.138
	50	25	21.36	0.137	21.31	0.135	21.38	0.137
	50	50	21.32	0.136	21.36	0.137	21.37	0.137
	100	0	21.28	0.134	21.23	0.133	21.33	0.136

LTE Band 5 1.4 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20407 (824.7 ㎒)		20525 (836.5 ㎒)		20643 (848.3 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.24	0.211	23.25	0.211	23.20	0.209
	1	3	23.41	0.219	**23.45**	**0.221**	23.08	0.203
	1	5	23.25	0.211	23.26	0.212	23.27	0.212
	3	0	23.18	0.208	23.18	0.208	23.07	0.203
	3	2	23.34	0.216	23.20	0.209	23.04	0.201
	3	3	23.33	0.215	23.20	0.209	23.22	0.210
	6	0	22.37	0.173	22.26	0.168	22.15	0.164
16QAM	1	0	22.17	0.165	22.11	0.163	22.03	0.160
	1	3	22.26	0.168	**22.40**	**0.174**	22.01	0.159
	1	5	21.69	0.148	22.20	0.166	21.98	0.158
	3	0	22.33	0.171	22.15	0.164	22.15	0.164
	3	2	22.27	0.169	22.26	0.168	21.90	0.155
	3	3	22.39	0.173	22.20	0.166	22.06	0.161
	6	0	21.23	0.133	21.06	0.128	21.08	0.128

LTE Band 5 3 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20415 (825.5 ㎒)		20525 (836.5 ㎒)		20635 (847.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	**23.40**	**0.219**	23.25	0.211	23.24	0.211
	1	8	23.33	0.215	23.38	0.218	23.22	0.210
	1	14	23.20	0.209	23.31	0.214	23.17	0.207
	8	0	22.35	0.172	22.27	0.169	22.28	0.169
	8	4	22.18	0.165	22.25	0.168	22.17	0.165
	8	7	22.20	0.166	22.26	0.168	22.15	0.164
	15	0	22.26	0.168	22.29	0.169	22.12	0.163
16QAM	1	0	22.21	0.166	22.08	0.161	22.02	0.159
	1	8	22.44	0.175	**22.52**	**0.179**	22.14	0.164
	1	14	22.16	0.164	21.69	0.148	22.03	0.160
	8	0	21.29	0.135	21.16	0.131	21.02	0.126
	8	4	21.06	0.128	21.12	0.129	21.04	0.127
	8	7	21.18	0.131	21.21	0.132	21.09	0.129
	15	0	21.22	0.132	21.15	0.130	21.11	0.129

LTE Band 5 5 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20425 (826.5 ㎒)		20525 (836.5 ㎒)		20625 (846.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.25	0.211	23.23	0.210	23.14	0.206
	1	12	**23.44**	**0.221**	23.44	0.221	23.23	0.210
	1	24	23.09	0.204	23.20	0.209	23.07	0.203
	12	0	22.32	0.171	22.17	0.165	22.19	0.166
	12	7	22.27	0.169	22.25	0.168	22.32	0.171
	12	13	22.11	0.163	22.22	0.167	22.16	0.164
	25	0	22.18	0.165	22.20	0.166	22.19	0.166
16QAM	1	0	22.17	0.165	21.85	0.153	22.07	0.161
	1	12	22.23	0.167	22.27	0.169	**22.52**	**0.179**
	1	24	21.96	0.157	22.08	0.161	22.11	0.163
	12	0	21.14	0.130	21.07	0.128	21.18	0.131
	12	7	21.19	0.132	21.14	0.130	21.23	0.133
	12	13	21.04	0.127	20.99	0.126	21.16	0.131
	25	0	21.14	0.130	21.15	0.130	21.07	0.128

LTE Band 5 10 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			20450 (829.0 ㎒)		20525 (836.5 ㎒)		20600 (844.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.27	0.212	23.31	0.214	23.21	0.209
	1	25	23.31	0.214	**23.36**	**0.217**	23.22	0.210
	1	49	23.10	0.204	23.30	0.214	23.10	0.204
	25	0	22.34	0.171	22.29	0.169	22.18	0.165
	25	12	22.29	0.169	22.24	0.167	22.33	0.171
	25	25	22.24	0.167	22.20	0.166	22.25	0.168
	50	0	22.31	0.170	22.30	0.170	22.20	0.166
16QAM	1	0	22.28	0.169	21.83	0.152	22.11	0.163
	1	25	22.19	0.166	22.24	0.167	**22.38**	**0.173**
	1	49	22.05	0.160	21.88	0.154	22.01	0.159
	25	0	21.16	0.131	21.21	0.132	21.21	0.132
	25	12	21.20	0.132	21.22	0.132	21.23	0.133
	25	25	21.08	0.128	21.16	0.131	21.33	0.136
	50	0	21.14	0.130	21.23	0.133	21.19	0.132

LTE Band 12 1.4 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			23017 (699.7 ㎒)		23095 (707.5 ㎒)		23173 (715.3 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.26	0.212	23.22	0.210	23.38	0.218
	1	3	**23.48**	**0.223**	23.40	0.219	23.36	0.217
	1	5	23.27	0.212	23.28	0.213	23.32	0.215
	3	0	23.27	0.212	23.23	0.210	23.15	0.207
	3	2	23.22	0.210	23.25	0.211	23.22	0.210
	3	3	23.11	0.205	23.30	0.214	23.13	0.206
	6	0	22.19	0.166	22.25	0.168	22.32	0.171
16QAM	1	0	22.29	0.169	22.35	0.172	21.90	0.155
	1	3	**22.48**	**0.177**	22.27	0.169	22.16	0.164
	1	5	22.24	0.167	22.37	0.173	22.12	0.163
	3	0	22.04	0.160	22.42	0.175	22.21	0.166
	3	2	22.37	0.173	22.37	0.173	22.46	0.176
	3	3	22.30	0.170	22.47	0.177	22.40	0.174
	6	0	21.13	0.130	21.38	0.137	21.06	0.128

LTE Band 12 3 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			23025 (700.5 ㎒)		23095 (707.5 ㎒)		23165 (714.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.37	0.217	23.34	0.216	23.42	0.220
	1	8	**23.42**	**0.220**	23.37	0.217	23.39	0.218
	1	14	23.36	0.217	23.27	0.212	23.31	0.214
	8	0	22.26	0.168	22.16	0.164	22.37	0.173
	8	4	22.35	0.172	22.30	0.170	22.43	0.175
	8	7	22.41	0.174	22.35	0.172	22.39	0.173
	15	0	22.26	0.168	22.24	0.167	22.31	0.170
16QAM	1	0	22.40	0.174	22.28	0.169	22.34	0.171
	1	8	22.42	0.175	**22.44**	**0.175**	22.43	0.175
	1	14	22.26	0.168	22.12	0.163	22.30	0.170
	8	0	21.22	0.132	21.21	0.132	21.31	0.135
	8	4	21.34	0.136	21.26	0.134	21.35	0.136
	8	7	21.28	0.134	21.27	0.134	21.36	0.137
	15	0	21.22	0.132	21.27	0.134	21.26	0.134

LTE Band 12 5 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			23035 (701.5 ㎒)		23095 (707.5 ㎒)		23155 (713.5 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.17	0.207	23.13	0.206	23.04	0.201
	1	12	**23.44**	**0.221**	23.35	0.216	23.35	0.216
	1	24	23.03	0.201	23.07	0.203	23.03	0.201
	12	0	22.22	0.167	22.19	0.166	22.17	0.165
	12	7	22.30	0.170	22.17	0.165	22.15	0.164
	12	13	22.10	0.162	22.20	0.166	22.09	0.162
	25	0	22.14	0.164	22.16	0.164	22.18	0.165
16QAM	1	0	22.15	0.164	22.25	0.168	22.02	0.159
	1	12	**22.55**	**0.180**	22.25	0.168	22.25	0.168
	1	24	22.04	0.160	21.88	0.154	22.12	0.163
	12	0	21.12	0.129	21.02	0.126	21.12	0.129
	12	7	21.30	0.135	21.33	0.136	21.16	0.131
	12	13	21.12	0.129	21.17	0.131	21.00	0.126
	25	0	21.14	0.130	21.21	0.132	21.16	0.131

LTE Band 12 10 ㎒ Bandwidth								
Modulation	RB Size	RB Offset	Conducted Output Power					
			23060 (704.0 ㎒)		23095 (707.5 ㎒)		23130 (711.0 ㎒)	
			(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
QPSK	1	0	23.16	0.207	23.08	0.203	23.12	0.205
	1	25	23.28	0.213	**23.39**	**0.218**	23.28	0.213
	1	49	23.12	0.205	23.07	0.203	23.04	0.201
	25	0	22.33	0.171	22.11	0.163	22.22	0.167
	25	12	22.21	0.166	22.14	0.164	22.21	0.166
	25	25	22.16	0.164	22.18	0.165	22.11	0.163
	50	0	22.17	0.165	22.15	0.164	22.08	0.161
16QAM	1	0	22.18	0.165	21.63	0.146	21.98	0.158
	1	25	**22.39**	**0.173**	22.31	0.170	22.24	0.167
	1	49	22.08	0.161	22.05	0.160	22.19	0.166
	25	0	21.17	0.131	21.06	0.128	21.08	0.128
	25	12	21.28	0.134	21.16	0.131	21.21	0.132
	25	25	21.13	0.130	21.10	0.129	21.12	0.129
	50	0	21.15	0.130	21.16	0.131	21.13	0.130

4. Occupied Bandwidth

4.1. Limit

CFR 47, Section FCC §2.1049 and IC RSS-Gen Issue 5 6.7.

4.2. Test Procedure

FCC

The test follows section 5.4.4 of ANSI C63.26-2015.

a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation. products including the emission skirts (typically a span of 1.5 × OBW is sufficient).
b. The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1 % to 5 % of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c. Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
d. Set the detection mode to peak, and the trace mode to max-hold.
e. If the instrument does not have a 99 % OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5 % of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5 % of the total is reached and record that frequency as the upper OBW frequency. The 99 % power OBW can be determined by computing the difference these two frequencies.
f. The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

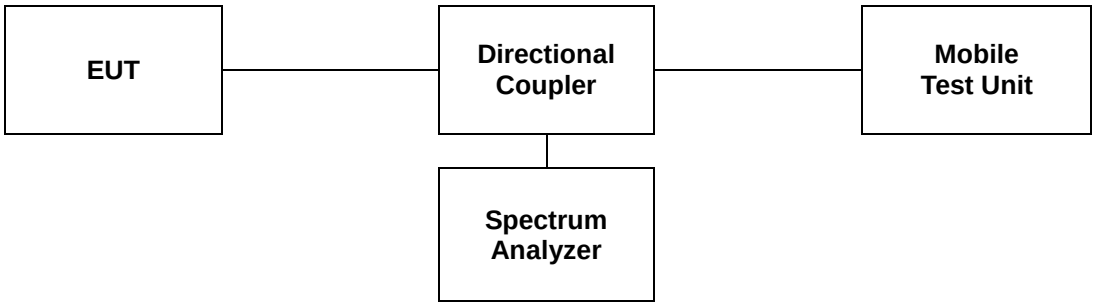
IC

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
• The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
• The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).



4.3 Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
2	1.4	1 880.0	1.094	1.106
	3		2.692	2.692
	5		4.515	4.530
	10		8.944	8.973
	15		13.502	13.502
	20		17.887	17.887

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
4	1.4	1 732.5	1.106	1.098
	3		2.683	2.692
	5		4.515	4.501
	10		8.973	8.915
	15		13.502	13.459
	20		17.887	17.887

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
5	1.4	836.5	1.102	1.102
	3		2.683	2.683
	5		4.501	4.501
	10		8.944	8.915

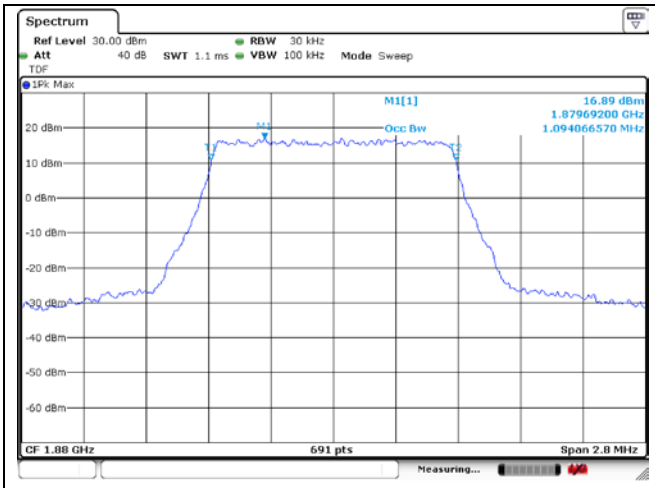
Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
12	1.4	707.5	1.094	1.102
	3		2.692	2.683
	5		4.501	4.501
	10		8.915	8.915

Note;

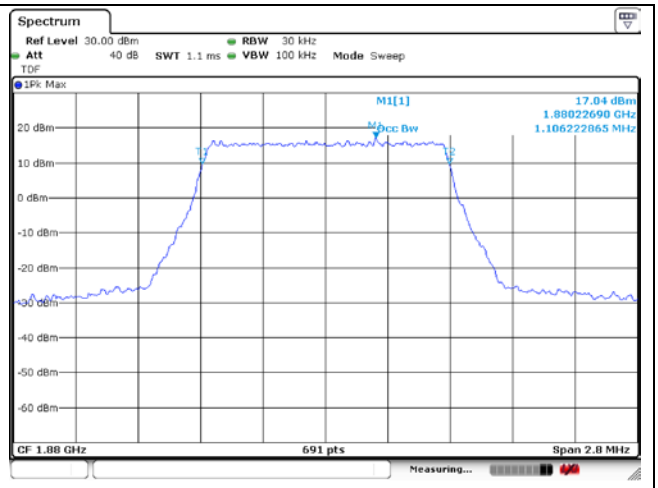
There is no limit required and power is the same for low, middle and high channel; therefore, All channels were tested but only middle was reported.

- Test plots

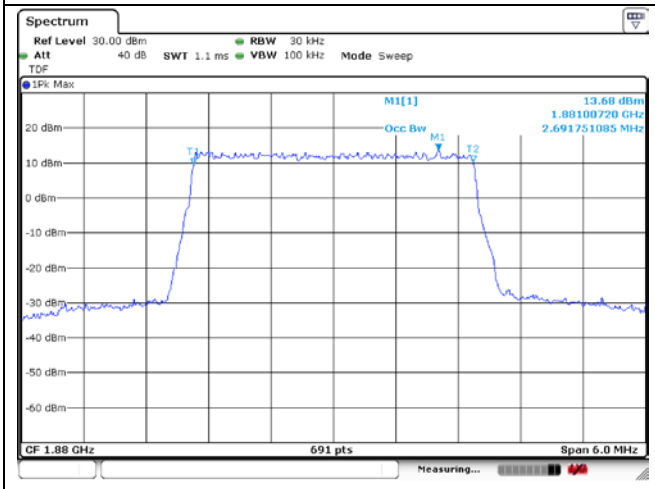
LTE band 2



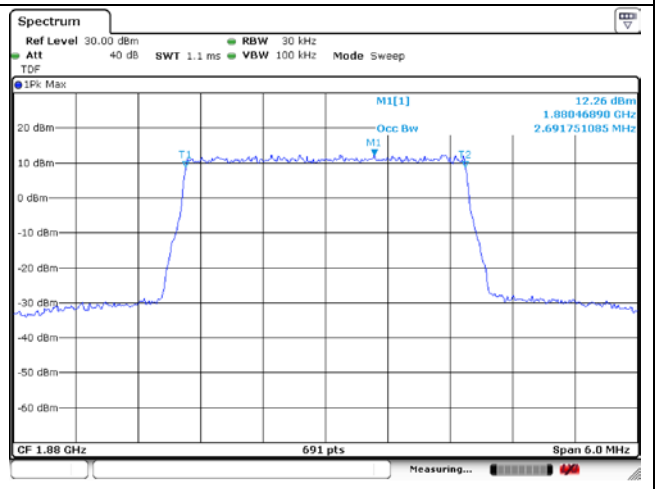
1.4 ㎒ QPSK Middle Channel - Full RB



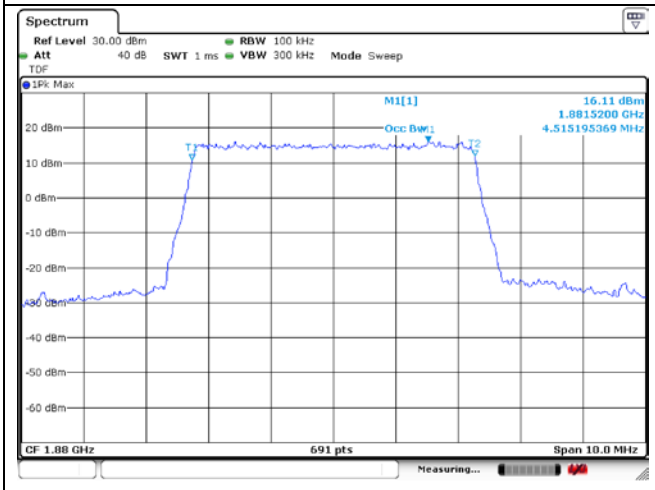
1.4 ㎒ 16QAM Middle Channel - Full RB



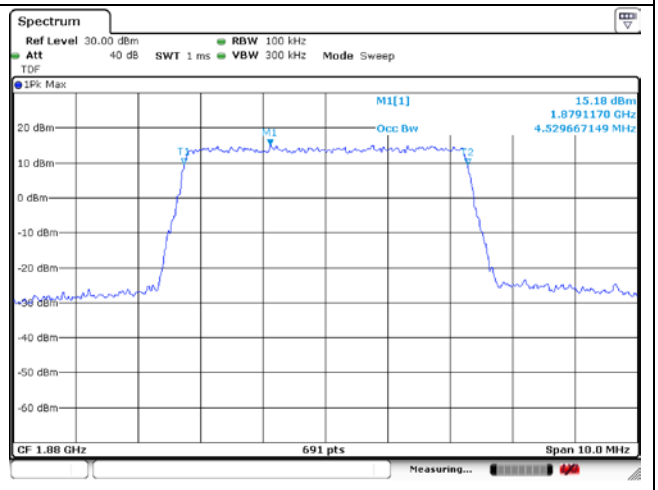
3 ㎒ QPSK Middle Channel - Full RB



3 ㎒ 16QAM Middle Channel - Full RB

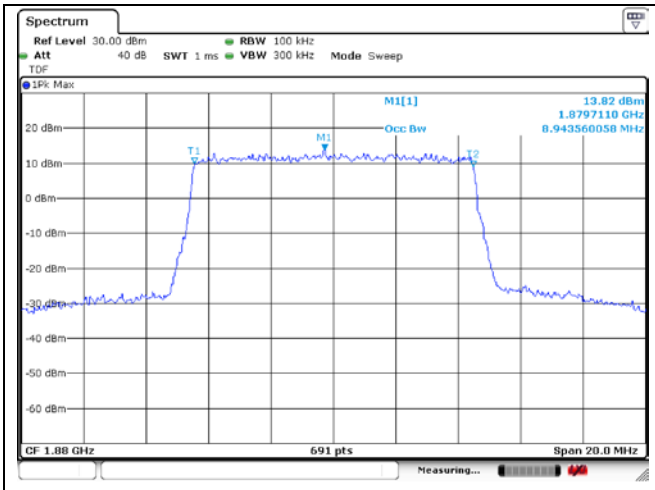


5 ㎒ QPSK Middle Channel - Full RB

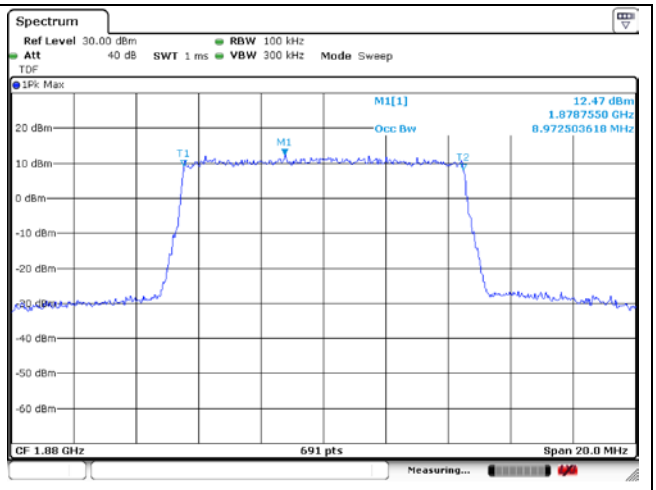


5 ㎒ 16QAM Middle Channel - Full RB

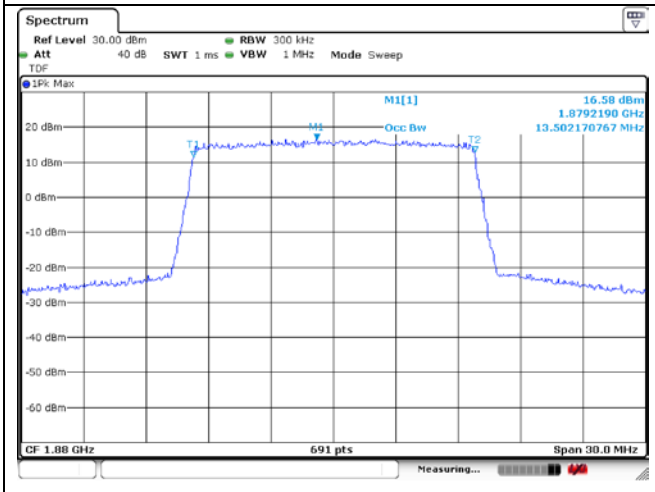
LTE band 2



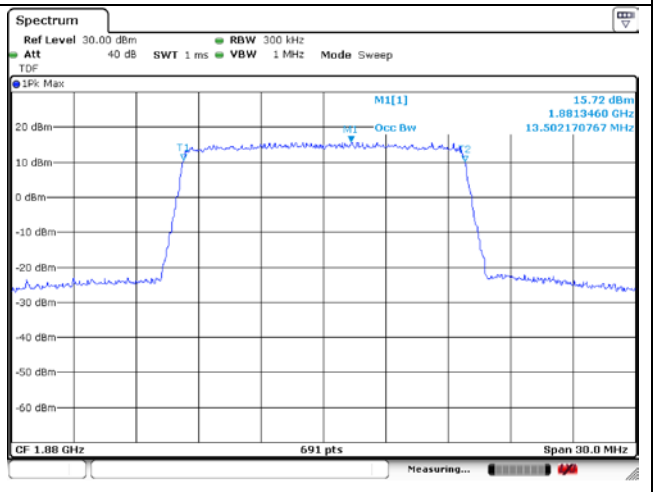
10 ㎒ QPSK Middle Channel - Full RB



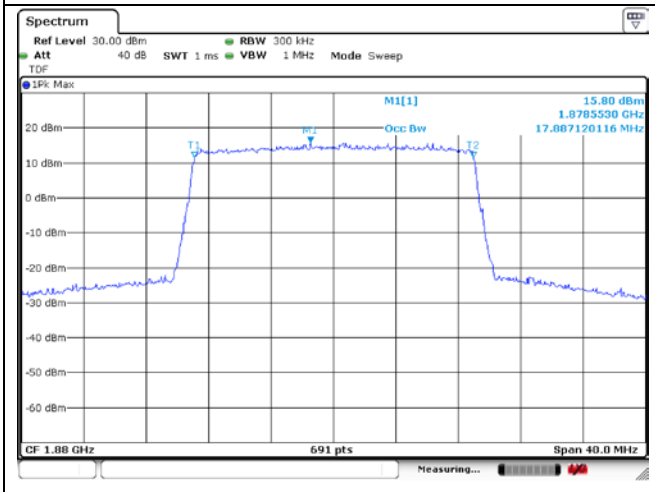
10 ㎒ 16QAM Middle Channel - Full RB



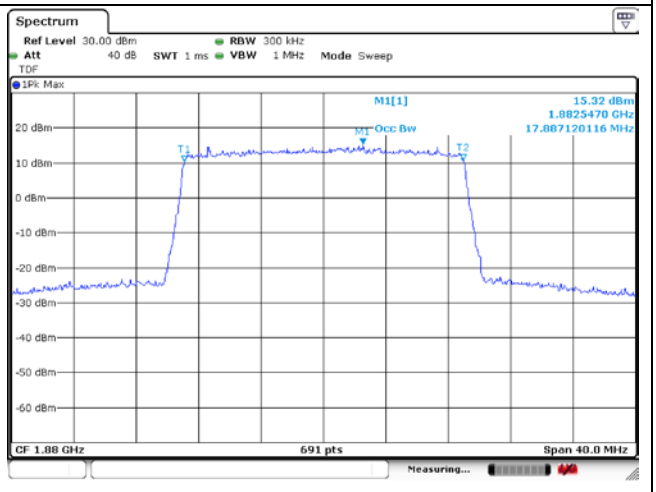
15 ㎒ QPSK Middle Channel - Full RB



15 ㎒ 16QAM Middle Channel - Full RB

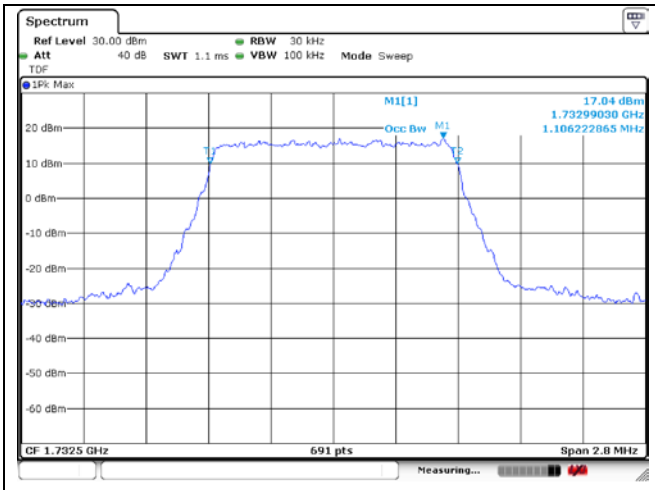


20 ㎒ QPSK Middle Channel - Full RB

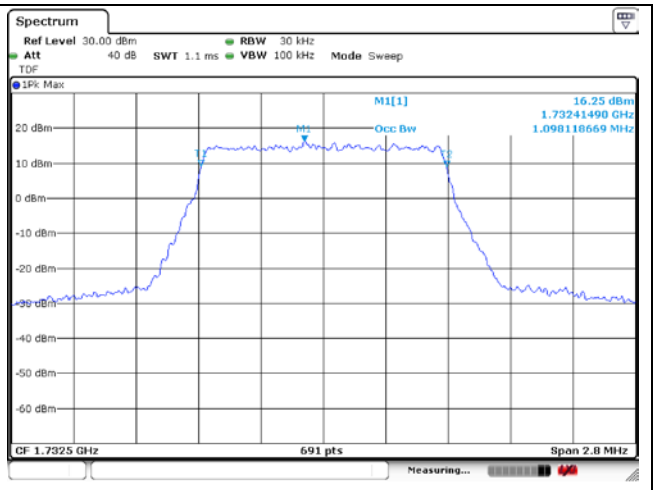


20 ㎒ 16QAM Middle Channel - Full RB

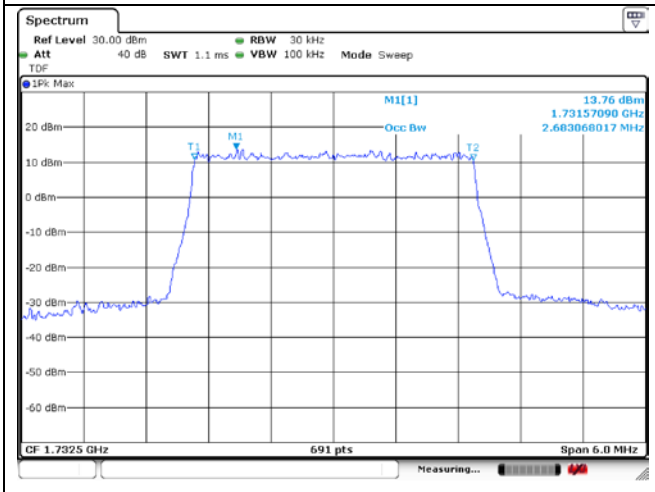
LTE band 4



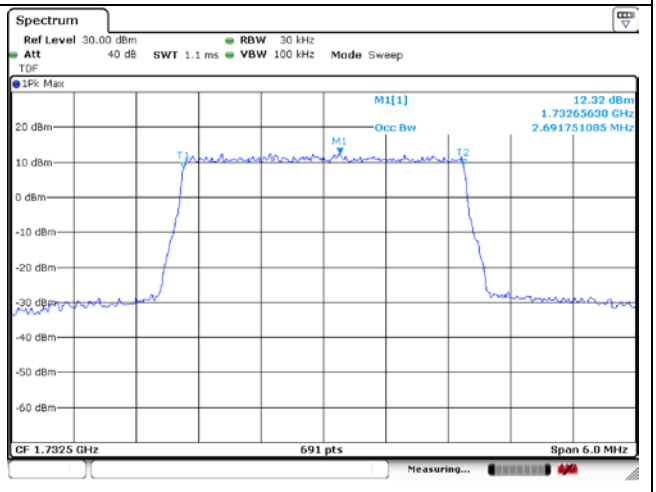
1.4 ㎒ QPSK Middle Channel - Full RB



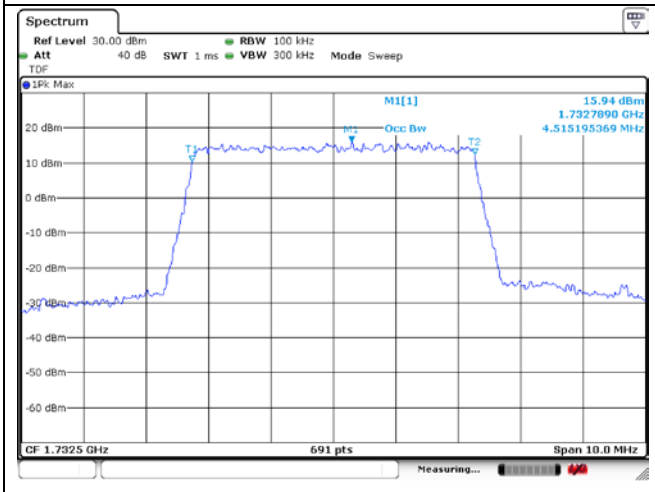
1.4 ㎒ 16QAM Middle Channel - Full RB



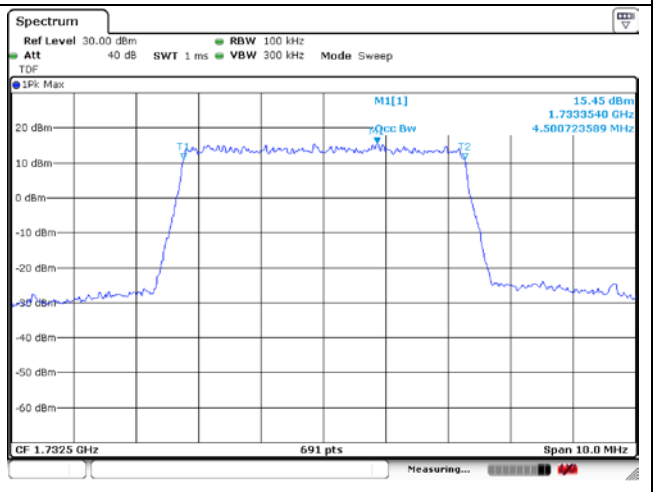
3 ㎒ QPSK Middle Channel - Full RB



3 ㎒ 16QAM Middle Channel - Full RB

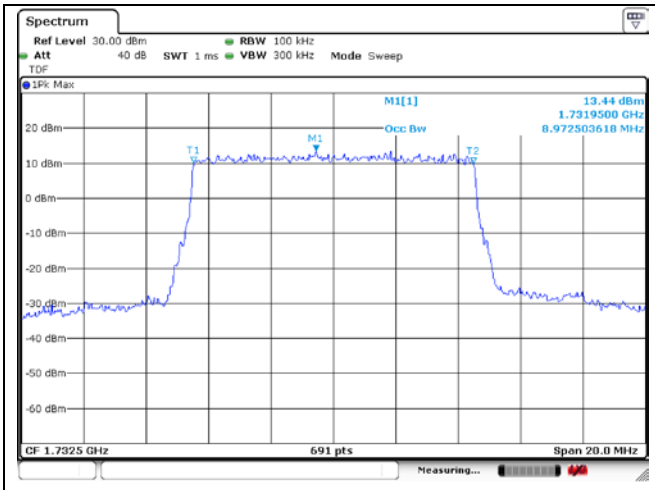


5 ㎒ QPSK Middle Channel - Full RB

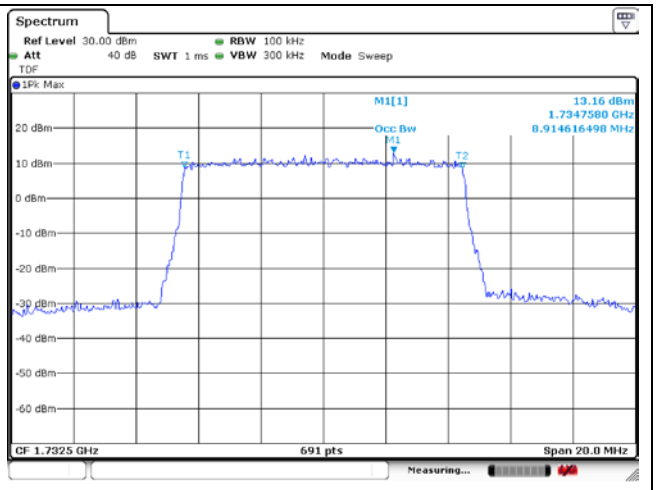


5 ㎒ 16QAM Middle Channel - Full RB

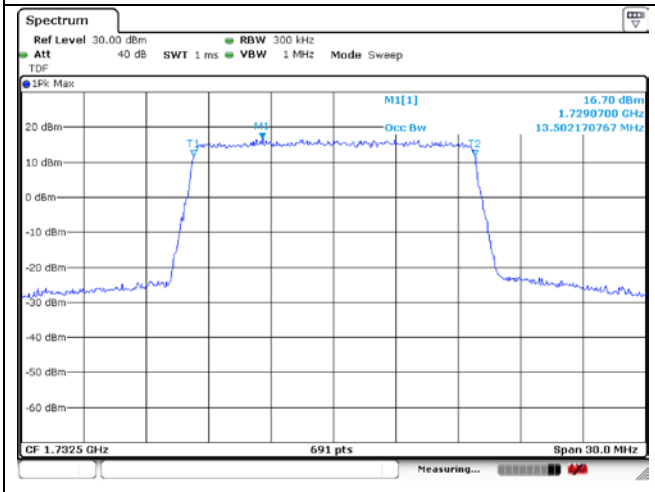
LTE band 4



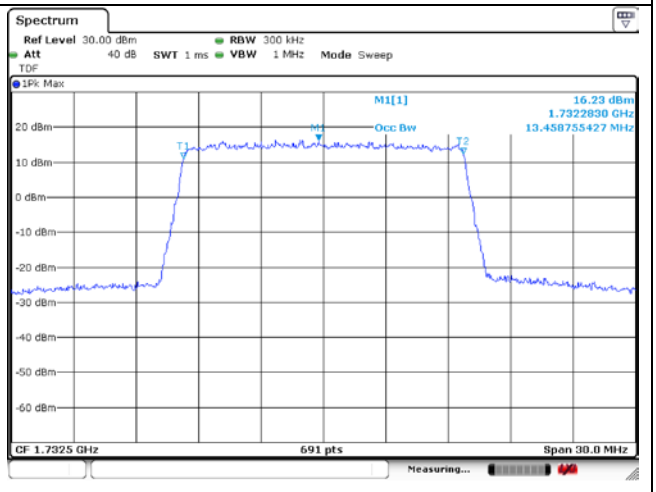
10 ㎒ QPSK Middle Channel - Full RB



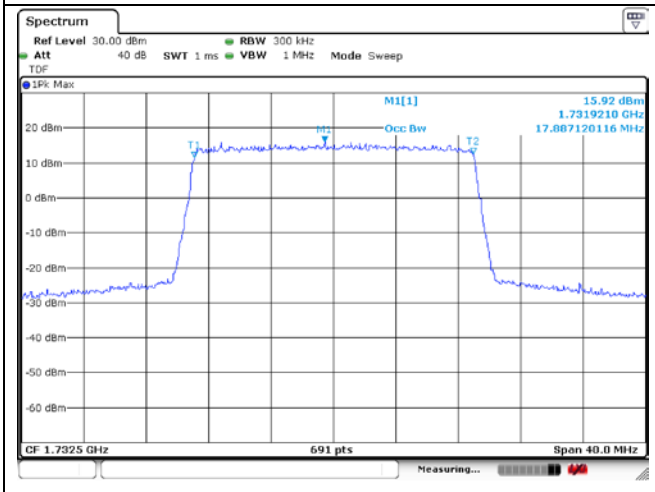
10 ㎒ 16QAM Middle Channel - Full RB



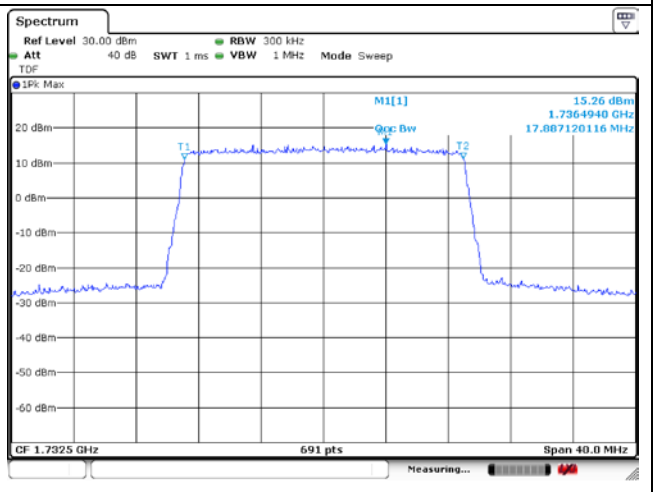
15 ㎒ QPSK Middle Channel - Full RB



15 ㎒ 16QAM Middle Channel - Full RB

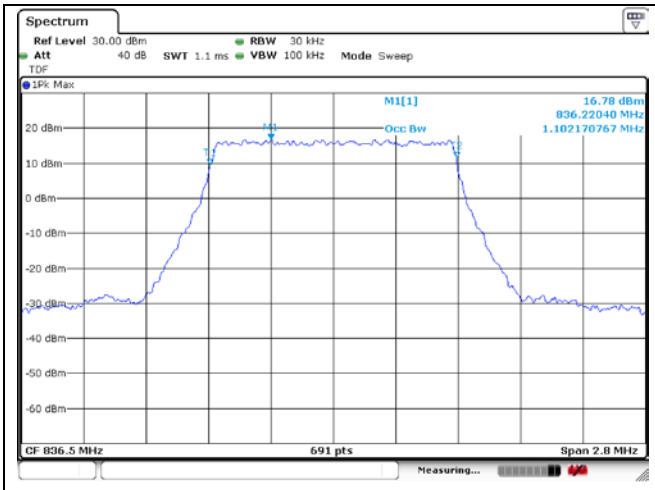


20 ㎒ QPSK Middle Channel - Full RB

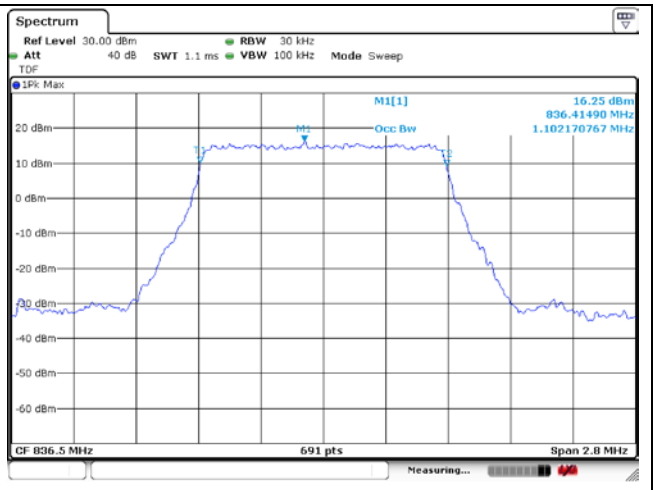


20 ㎒ 16QAM Middle Channel - Full RB

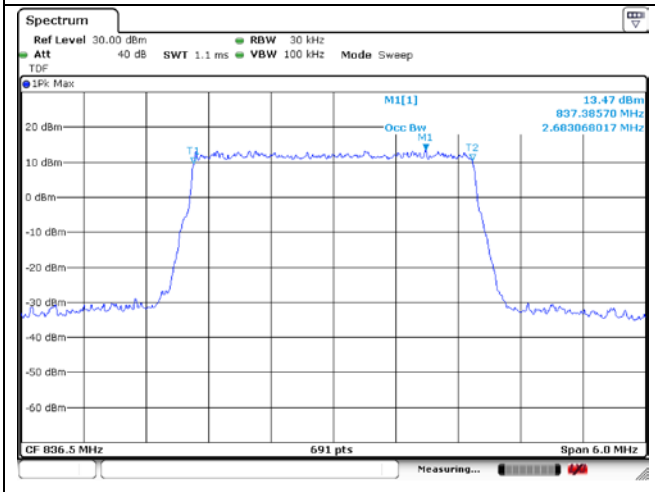
LTE band 5



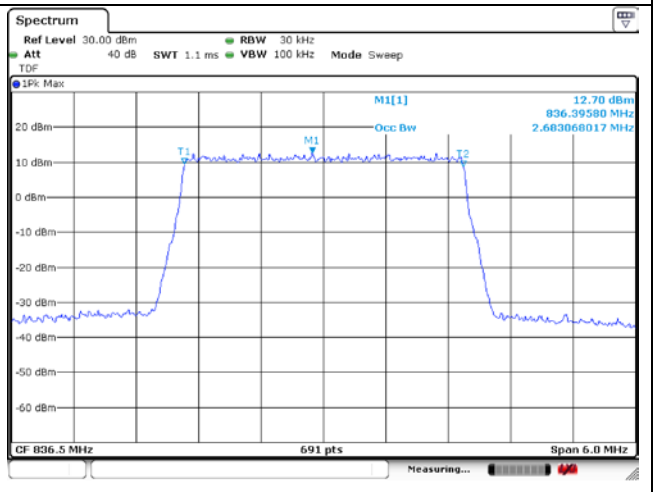
1.4 ㎒ QPSK Middle Channel - Full RB



1.4 ㎒ 16QAM Middle Channel - Full RB

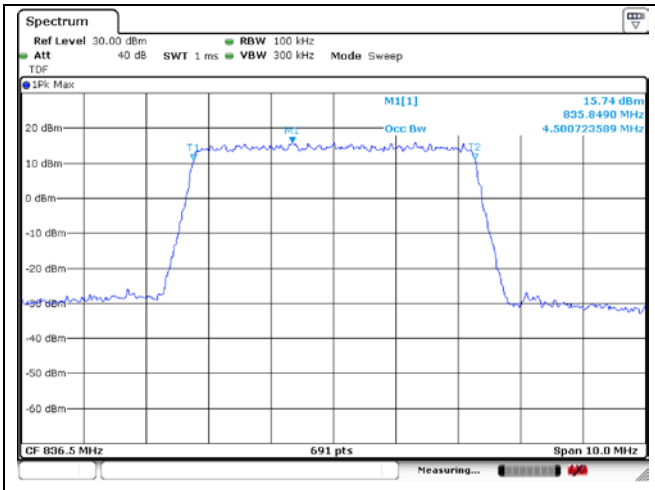


3 ㎒ QPSK Middle Channel - Full RB

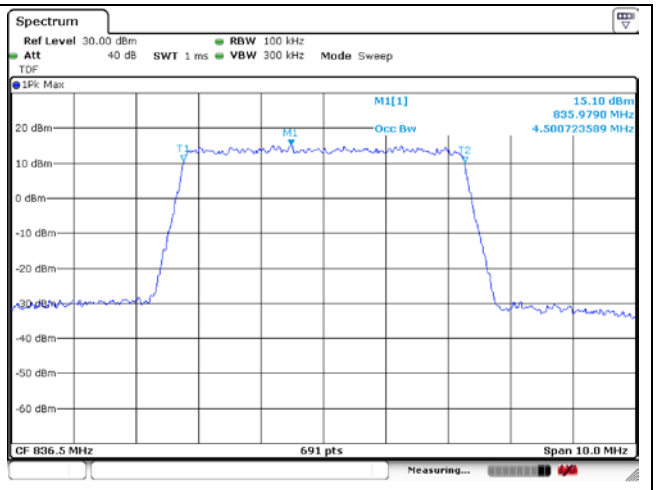


3 ㎒ 16QAM Middle Channel - Full RB

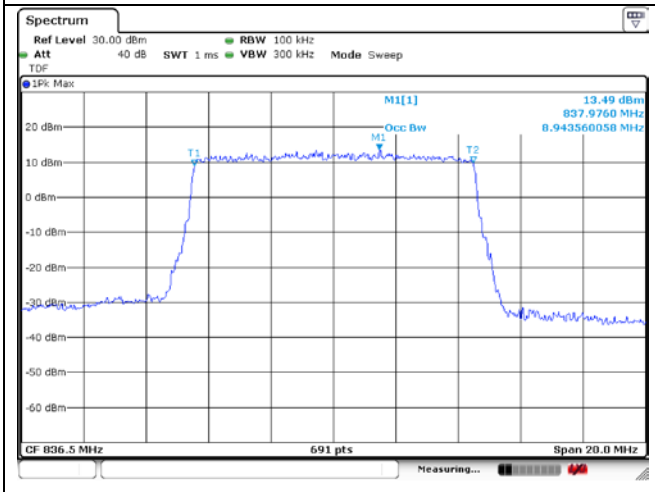
LTE band 5



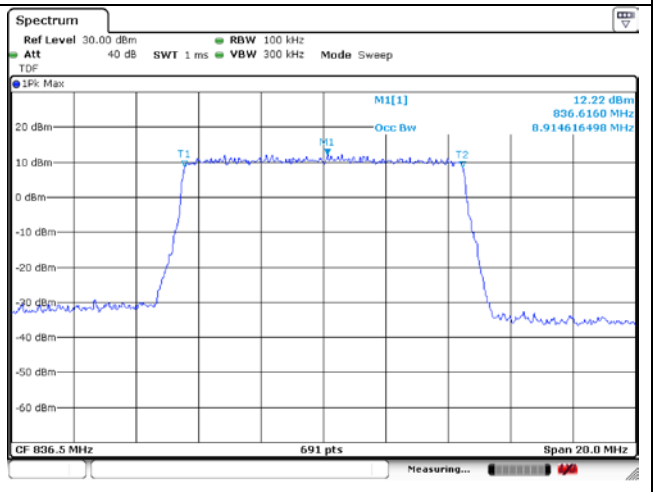
5 ㎒ QPSK Middle Channel - Full RB



5 ㎒ 16QAM Middle Channel - Full RB

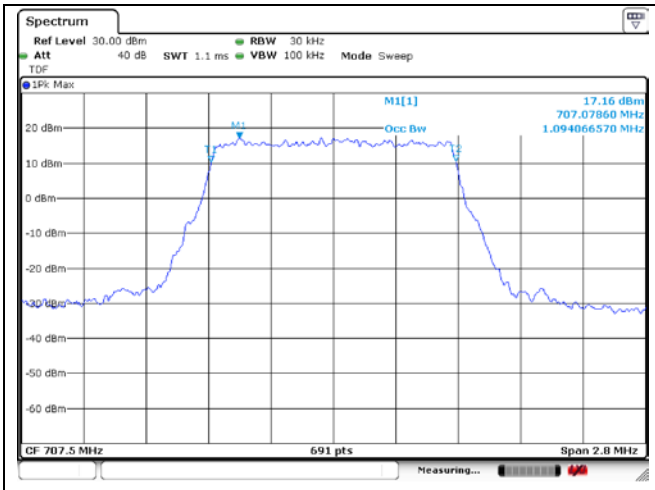


10 ㎒ QPSK Middle Channel - Full RB

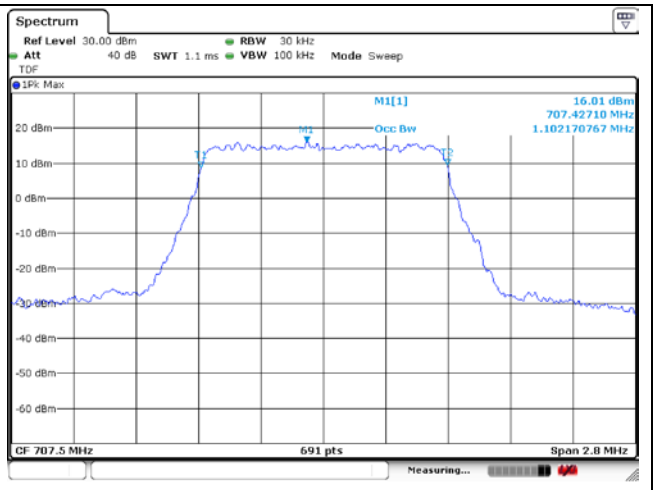


10 ㎒ 16QAM Middle Channel - Full RB

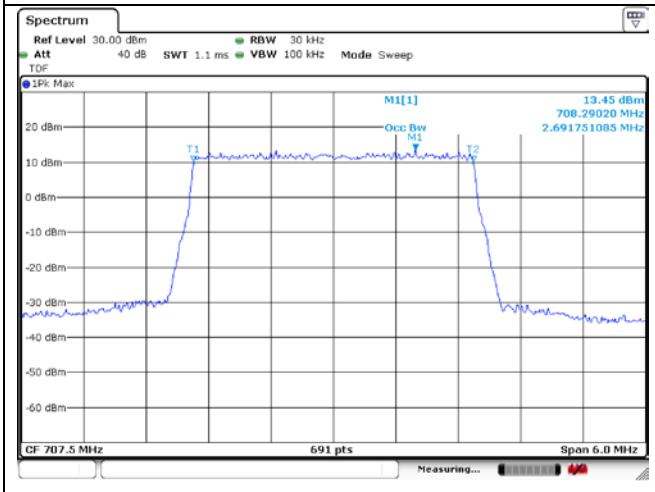
LTE band 12



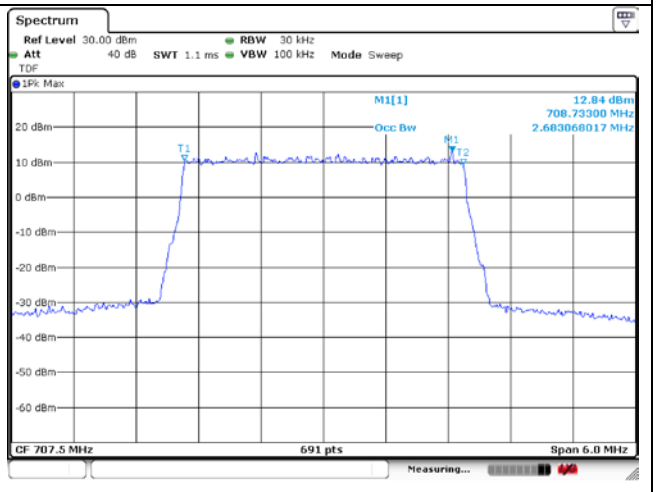
1.4 ㎒ QPSK Middle Channel - Full RB



1.4 ㎒ 16QAM Middle Channel - Full RB

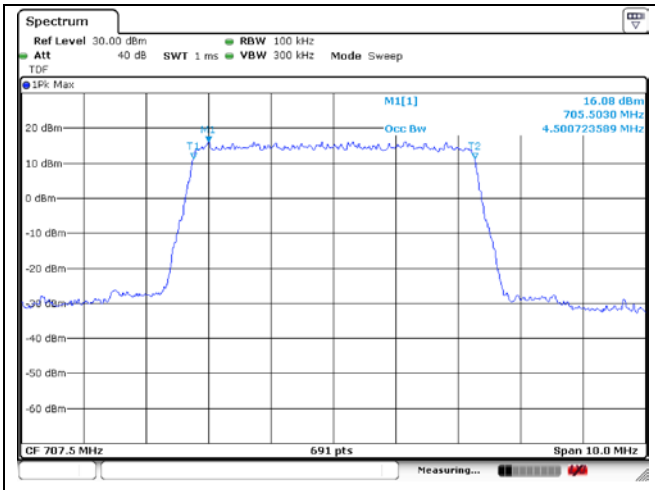


3 ㎒ QPSK Middle Channel - Full RB

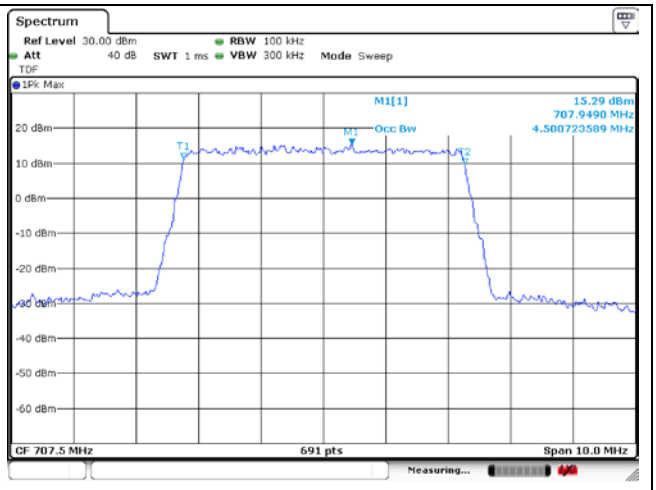


3 ㎒ 16QAM Middle Channel - Full RB

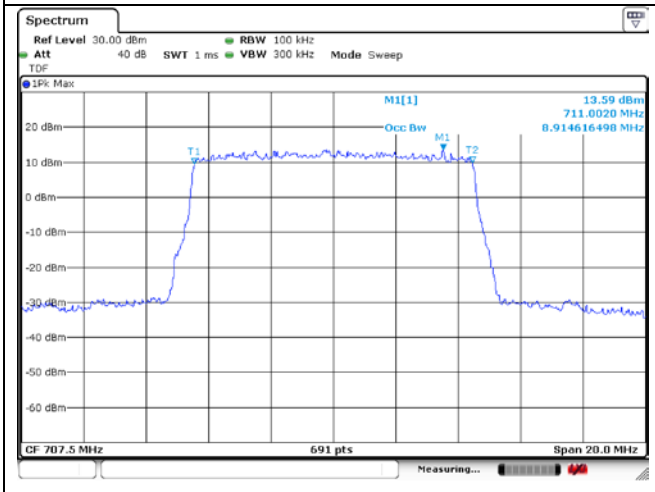
LTE band 12



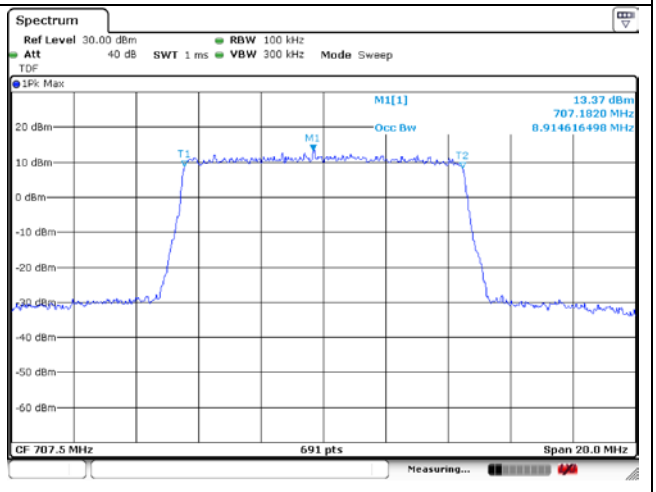
5 ㎒ QPSK Middle Channel - Full RB



5 ㎒ 16QAM Middle Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB



10 ㎒ 16QAM Middle Channel - Full RB

5. Peak-Average Ratio

5.1. Limit

FCC

- §22.913(d) Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 ㏈.

- §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 ㏈.

- §27.50(d)(5), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 ㏈.

IC

- RSS-130 Issue 2

4.6.1, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 ㏈ for more than 0.1 % of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-132 Issue 3

5.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 ㏈ for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-133 Issue 6

6.4, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 ㏈ for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-139 Issue 3

6.5, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 ㏈ for more than 0.1 % of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

5.2. Test Procedure

The test follows section 5.2.3.4 of ANSI C63.26-2015.

See instrumentation-specific application literature for further guidance regarding use of the CCDF capability. The following guidelines are offered for performing a CCDF measurement.

a. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.

b. Set the number of counts to a value that stabilizes the measured CCDF curve.

c. Set the measurement interval as follows:

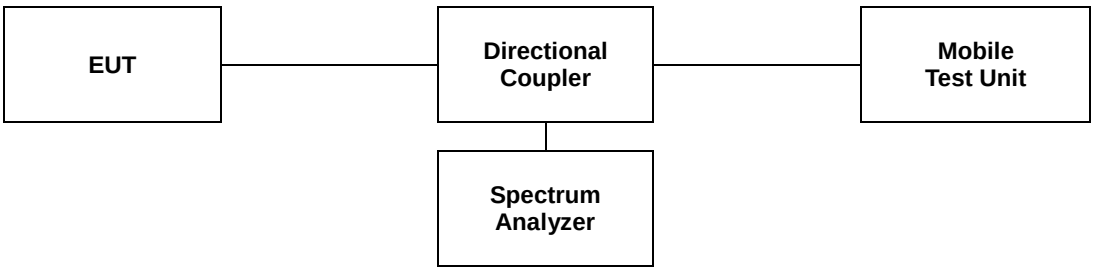
1) For continuous transmissions, set to greater of [10 x (number of points in sweep) x (transmission symbol period)] or 1 ㎳.

2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.

3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.

d. Record the maximum PAPR level associated with a probability of 0.1 %.

e. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.



5.3 Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
2	1.4	16QAM	1 850.7	6.14
			1 880.0	6.26
			1 909.3	5.94
	3	16QAM	1 851.5	6.06
			1 880.0	6.17
			1 908.5	5.91
	5	16QAM	1 852.5	5.88
			1 880.0	6.06
			1 907.5	5.83
	10	16QAM	1 855.0	5.97
			1 880.0	6.03
			1 905.0	5.88
	15	16QAM	1 857.5	6.06
			1 880.0	6.06
			1 902.5	5.91
	20	16QAM	1 860.0	5.91
			1 880.0	6.12
			1 900.0	5.91

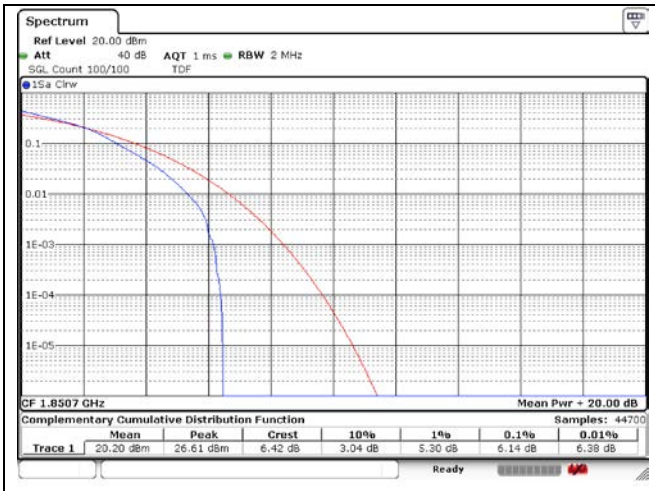
Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
4	1.4	16QAM	1 710.7	6.29
			1 732.5	6.23
			1 754.3	5.68
	3	16QAM	1 711.5	5.88
			1 732.5	6.00
			1 753.5	5.71
	5	16QAM	1 712.5	6.03
			1 732.5	5.97
			1 752.5	5.77
	10	16QAM	1 715.0	5.83
			1 732.5	6.03
			1 750.0	5.80
	15	16QAM	1 717.5	6.03
			1 732.5	6.09
			1 747.5	5.88
	20	16QAM	1 720.0	5.86
			1 732.5	5.94
			1 745.0	5.94

Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
5	1.4	16QAM	824.7	6.03
			836.5	5.91
			848.3	5.97
	3	16QAM	825.5	6.00
			836.5	5.83
			847.5	6.06
	5	16QAM	826.5	6.14
			836.5	5.71
			846.5	5.97
	10	16QAM	829.0	6.06
			836.5	5.88
			844.0	5.91

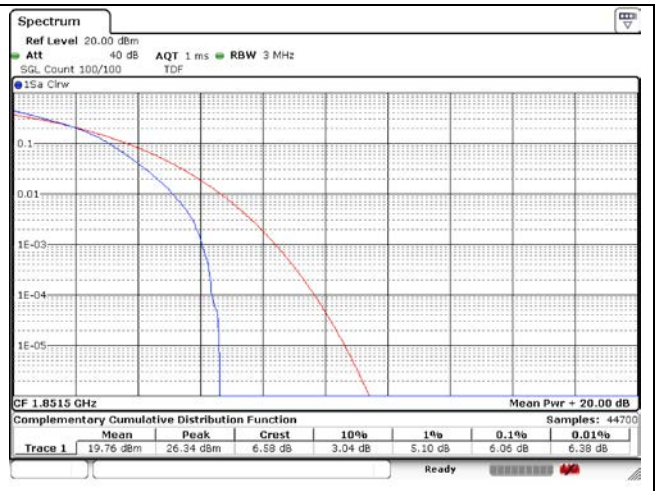
Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
12	1.4	16QAM	699.7	5.91
			707.5	5.88
			715.3	5.91
	3	16QAM	700.5	6.03
			707.5	5.91
			714.5	5.86
	5	16QAM	701.5	5.94
			707.5	5.91
			713.5	5.88
	10	16QAM	704.0	6.00
			707.5	6.06
			711.0	6.00

- Test plots

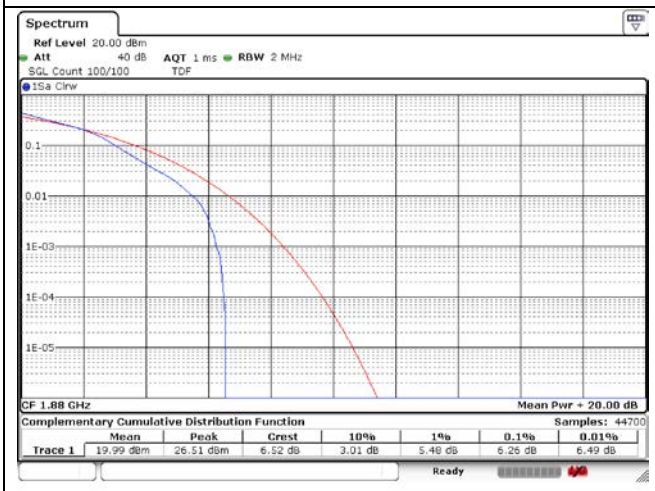
LTE band 2



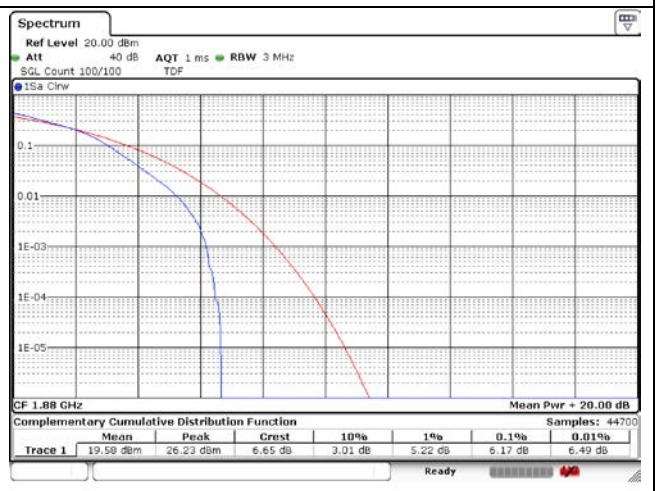
1.4 ㎒ Low Channel - Full RB



3 ㎒ Low Channel - Full RB

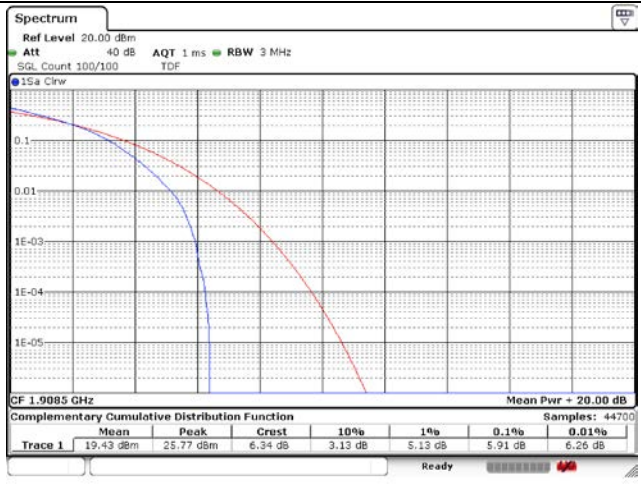


1.4 ㎒ Middle Channel - Full RB



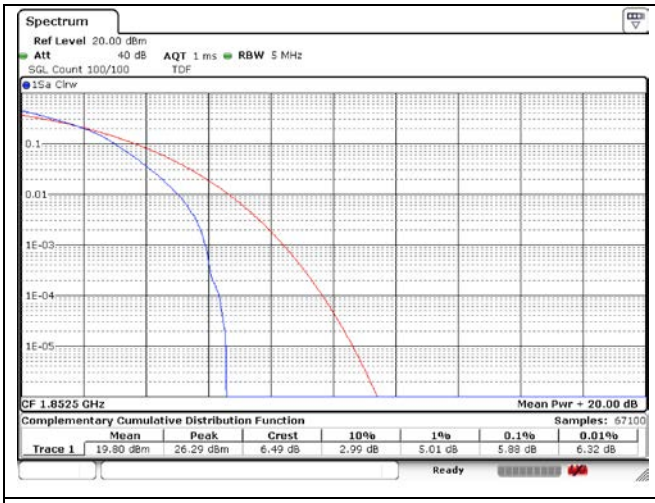
3 ㎒ Middle Channel - Full RB

1.4 ㎒ High Channel - Full RB

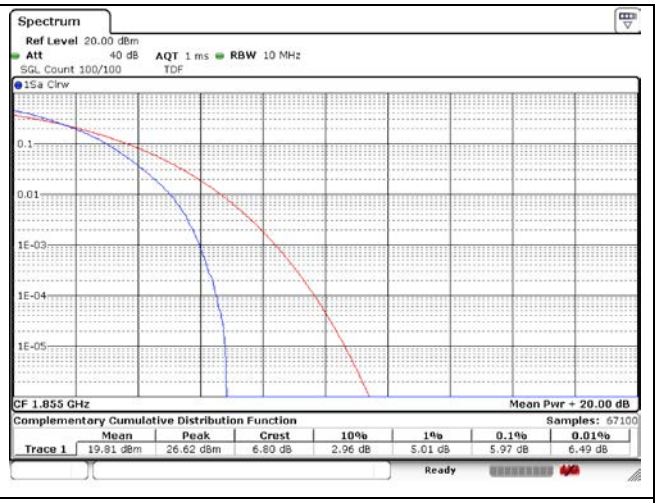


3 ㎒ High Channel - Full RB

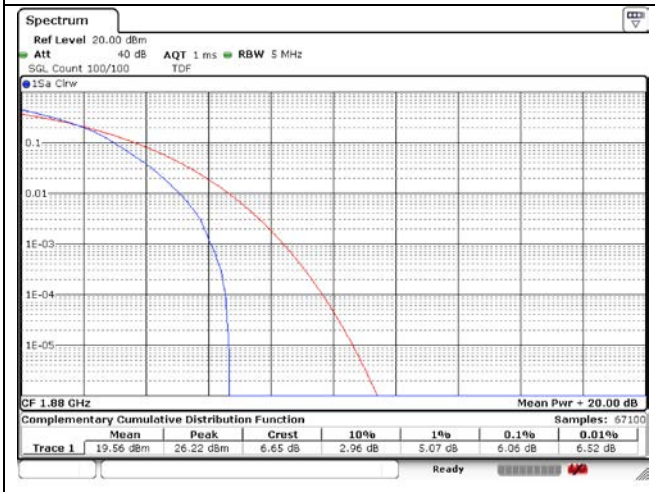
LTE band 2



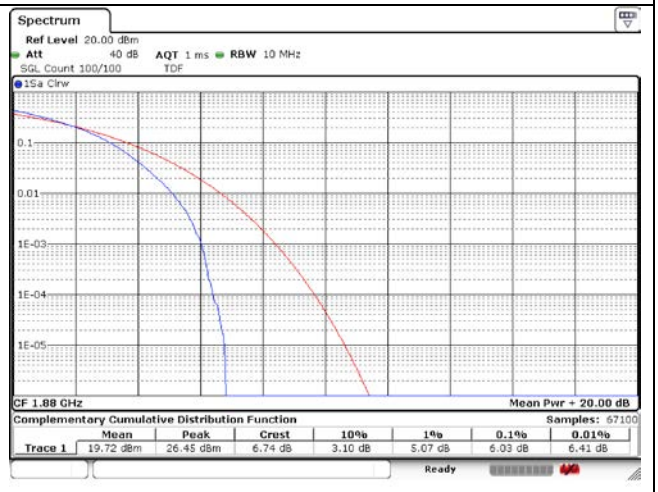
5 ㎒ Low Channel - Full RB



10 ㎒ Low Channel - Full RB

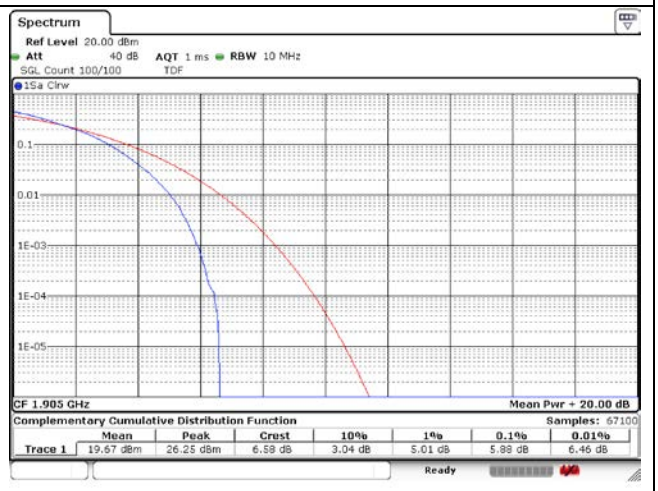


5 ㎒ Middle Channel - Full RB



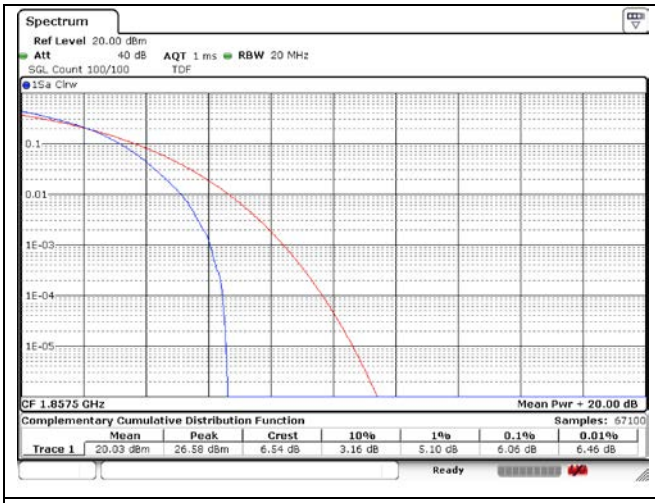
10 ㎒ Middle Channel - Full RB

5 ㎒ High Channel - Full RB

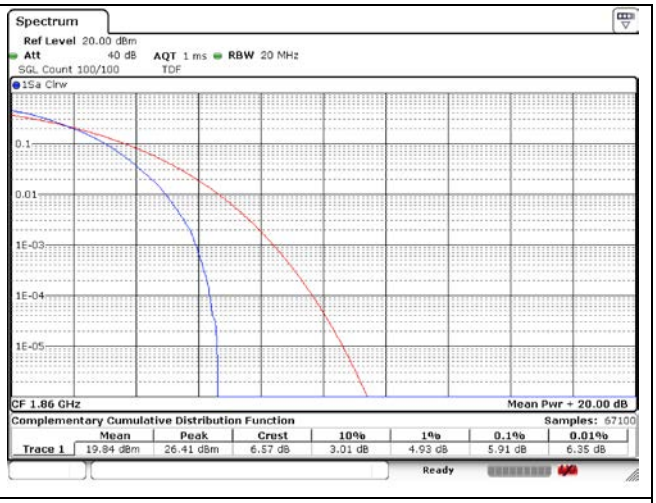


10 ㎒ High Channel - Full RB

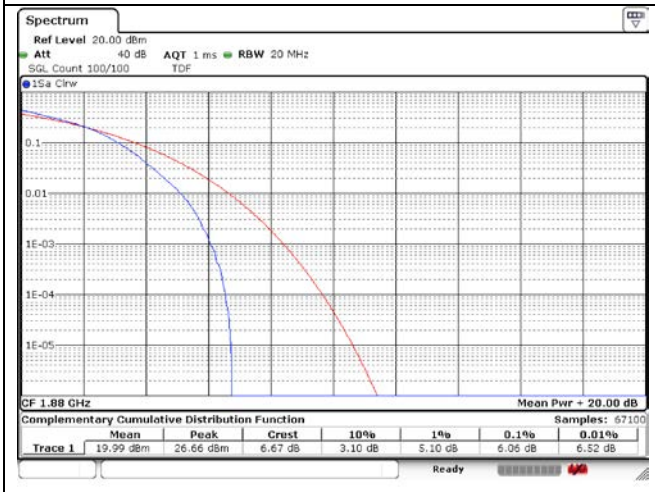
LTE band 2



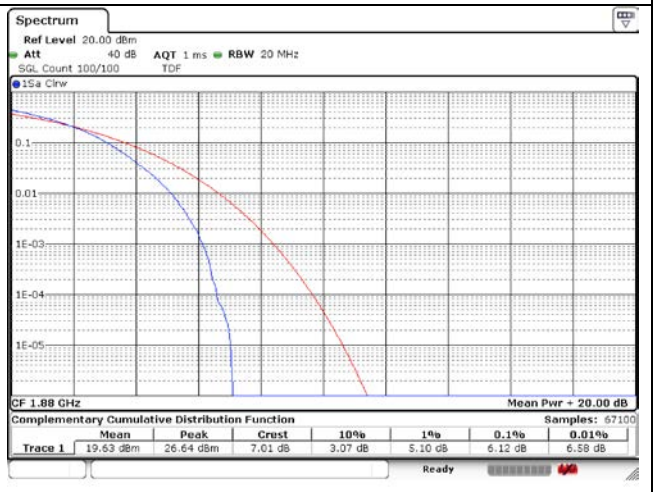
15 ㎒ Low Channel - Full RB



20 ㎒ Low Channel - Full RB

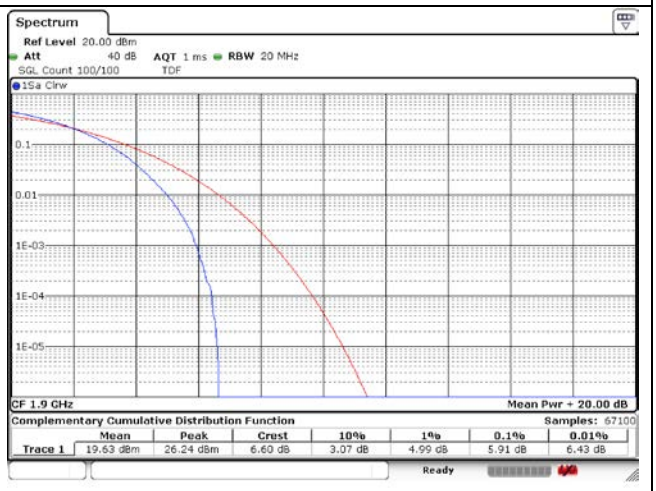


15 ㎒ Middle Channel - Full RB



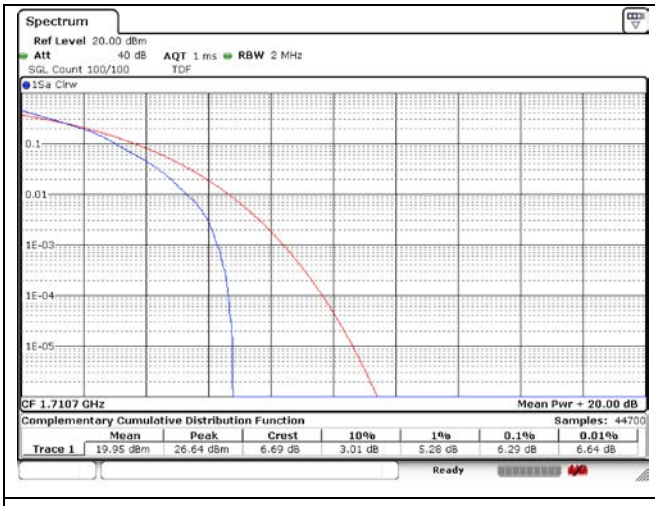
20 ㎒ Middle Channel - Full RB

15 ㎒ High Channel - Full RB

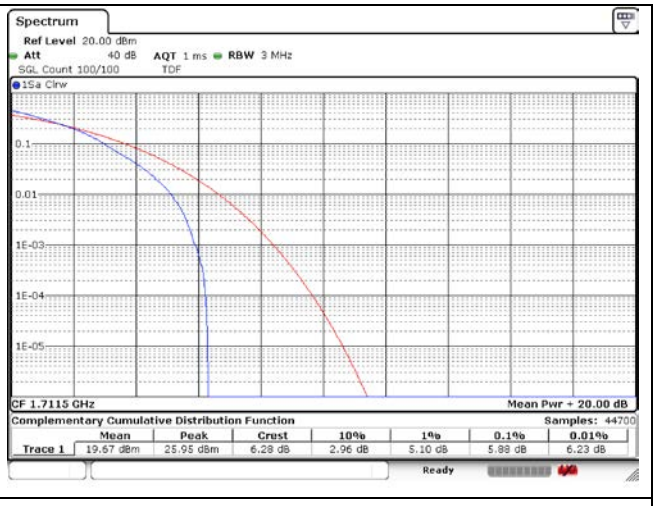


20 ㎒ High Channel - Full RB

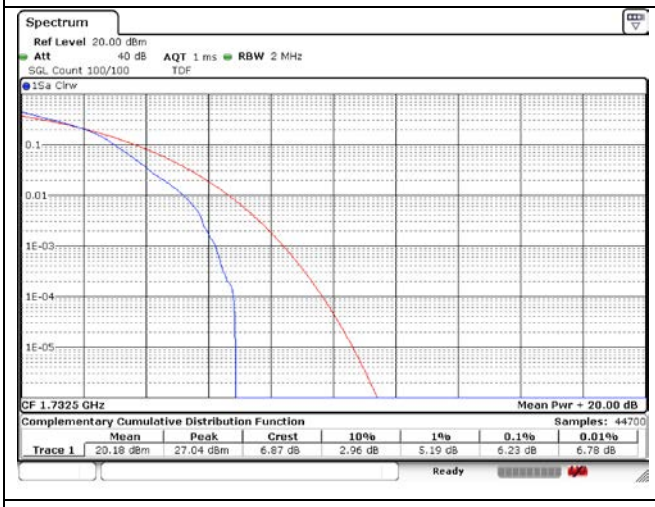
LTE band 4



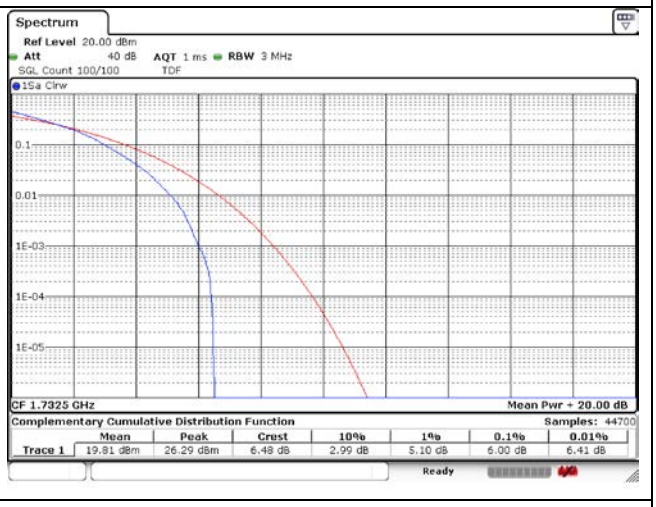
1.4 ㎒ Low Channel - Full RB



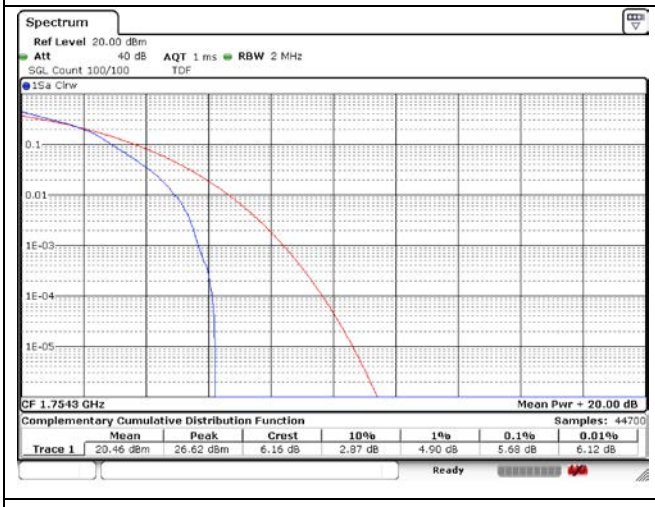
3 ㎒ Low Channel - Full RB



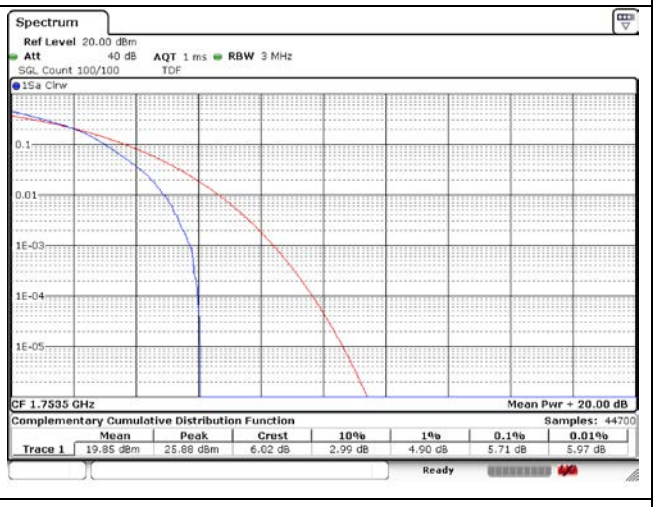
1.4 ㎒ Middle Channel - Full RB



3 ㎒ Middle Channel - Full RB

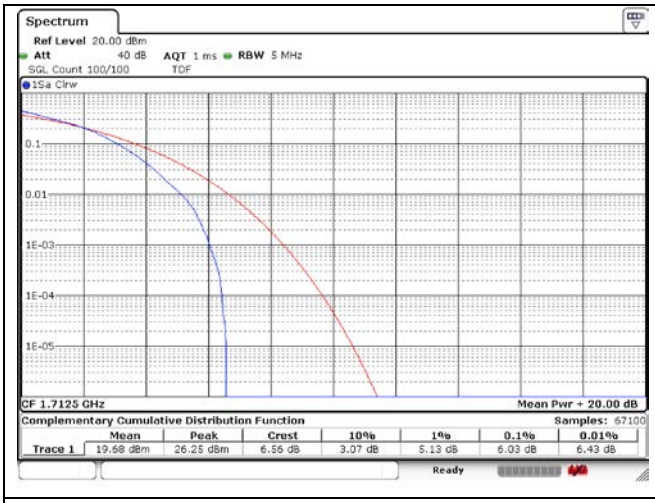


1.4 ㎒ High Channel - Full RB

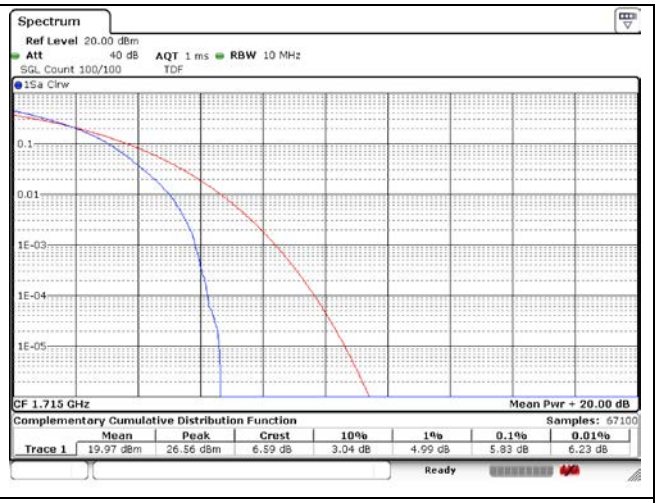


3 ㎒ High Channel - Full RB

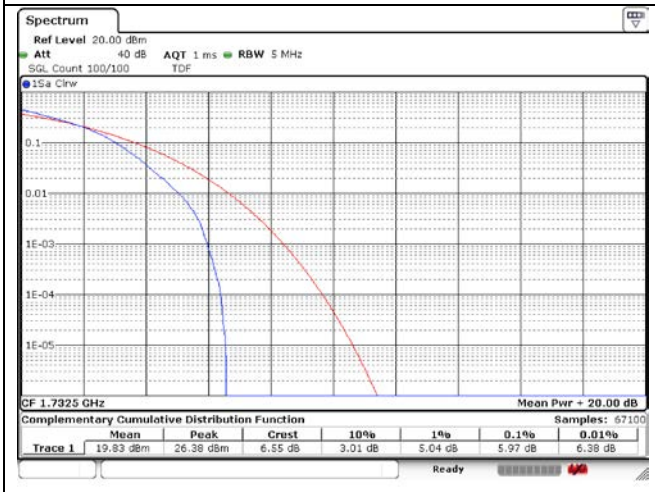
LTE band 4



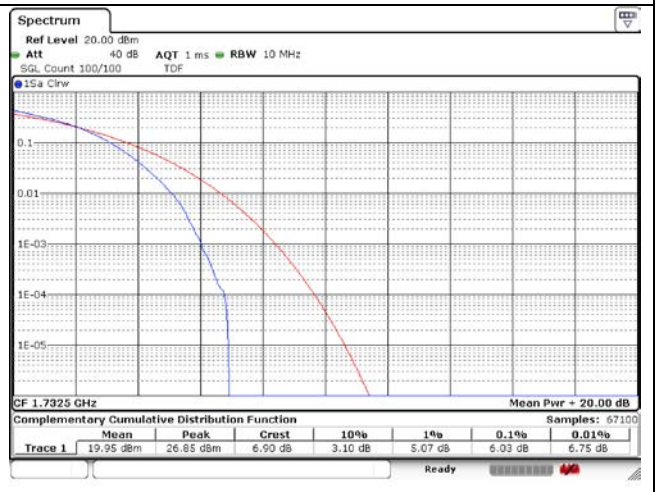
5 ㎒ Low Channel - Full RB



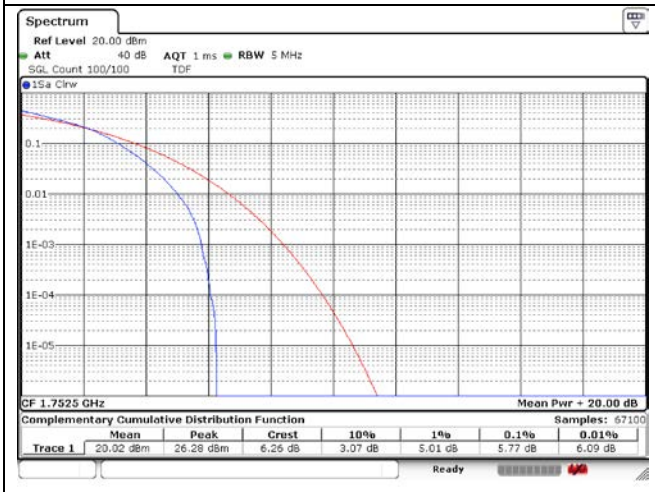
10 ㎒ Low Channel - Full RB



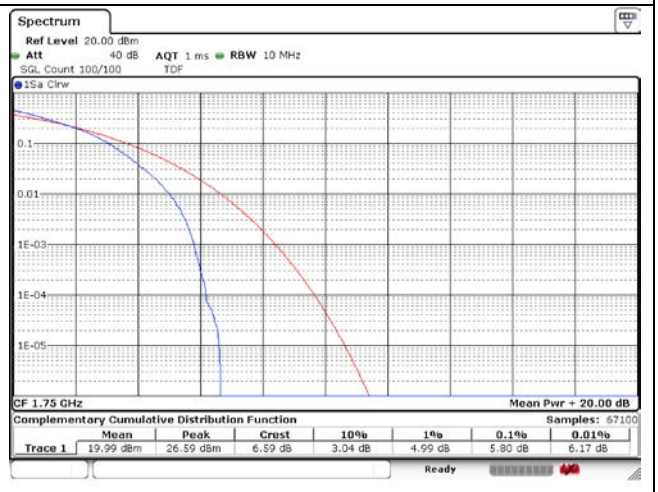
5 ㎒ Middle Channel - Full RB



10 ㎒ Middle Channel - Full RB

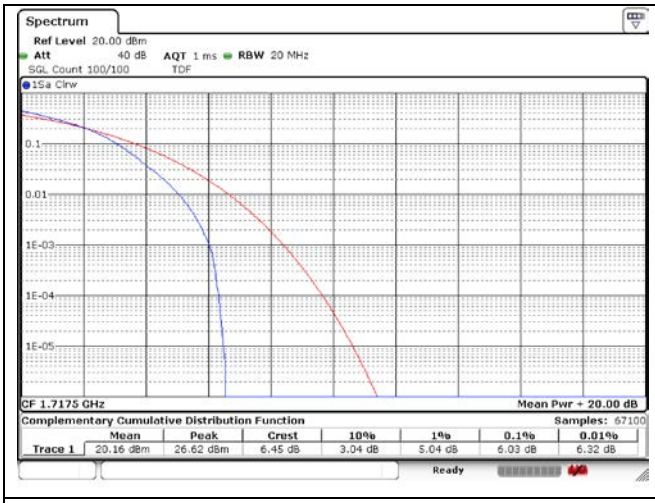


5 ㎒ High Channel - Full RB

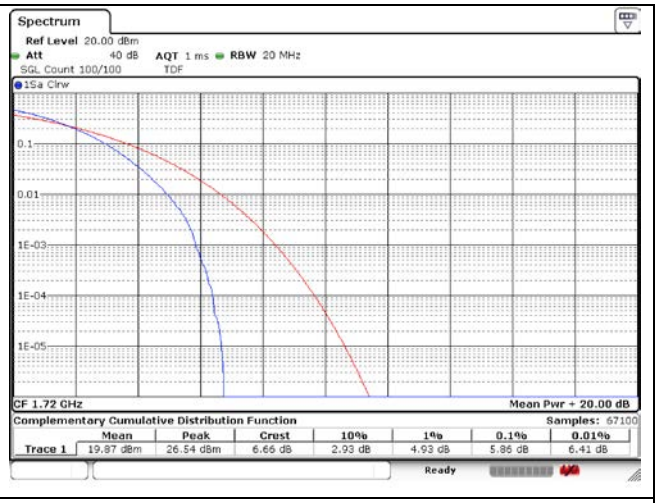


10 ㎒ High Channel - Full RB

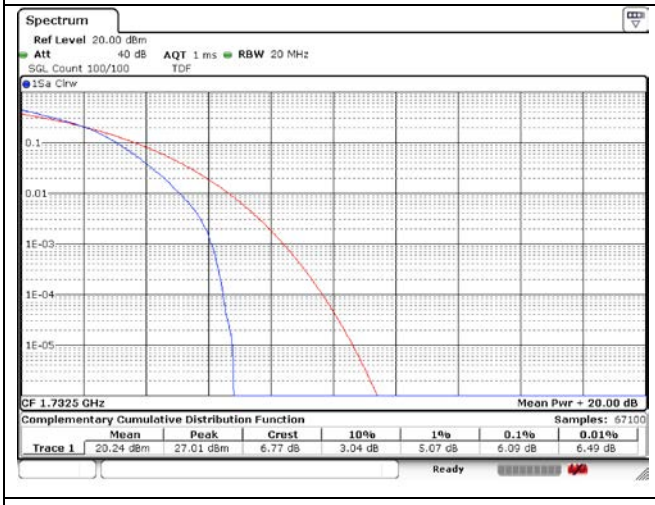
LTE band 4



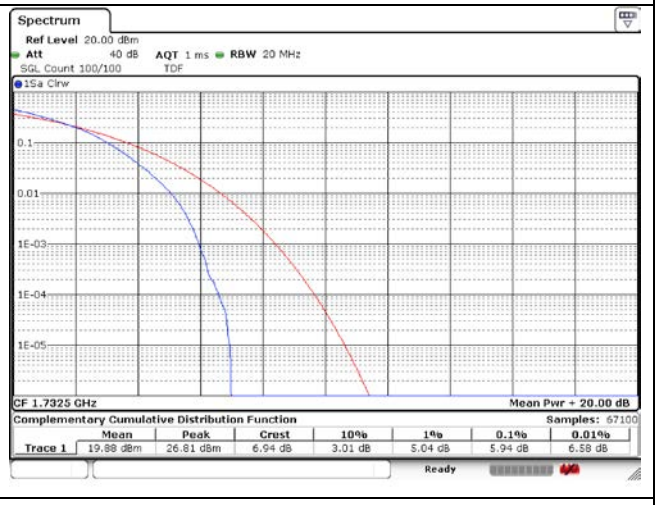
15 ㎒ Low Channel - Full RB



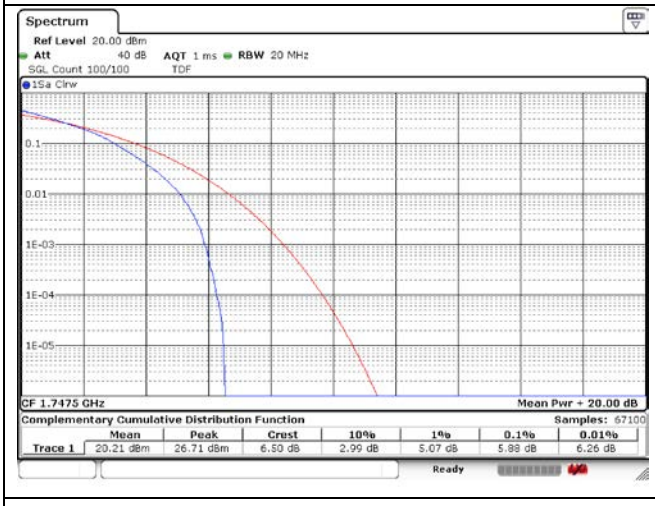
20 ㎒ Low Channel - Full RB



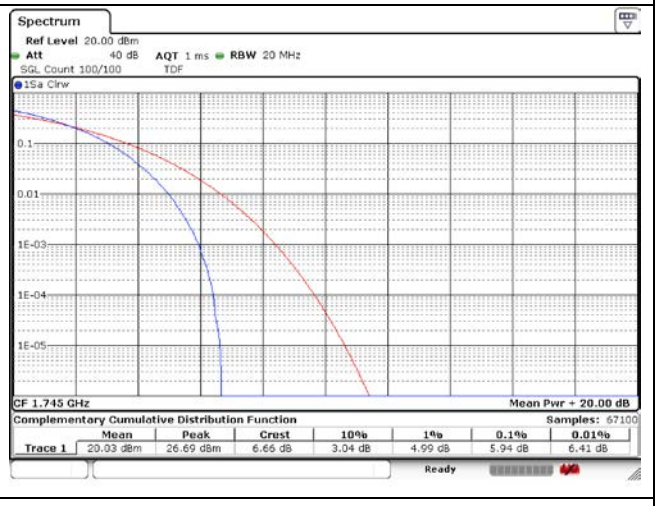
15 ㎒ Middle Channel - Full RB



20 ㎒ Middle Channel - Full RB

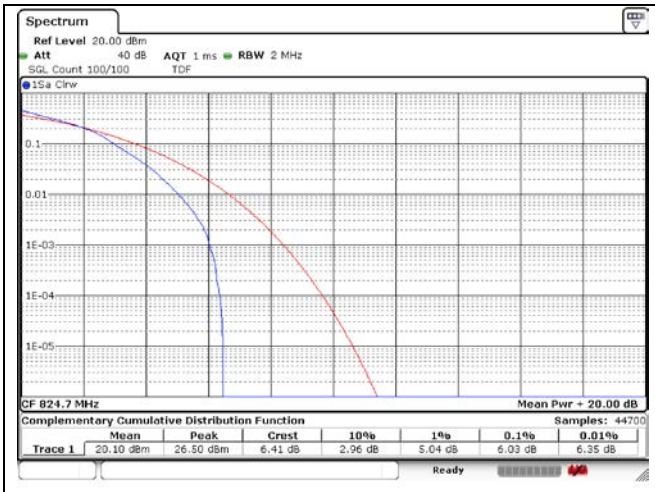


15 ㎒ High Channel - Full RB

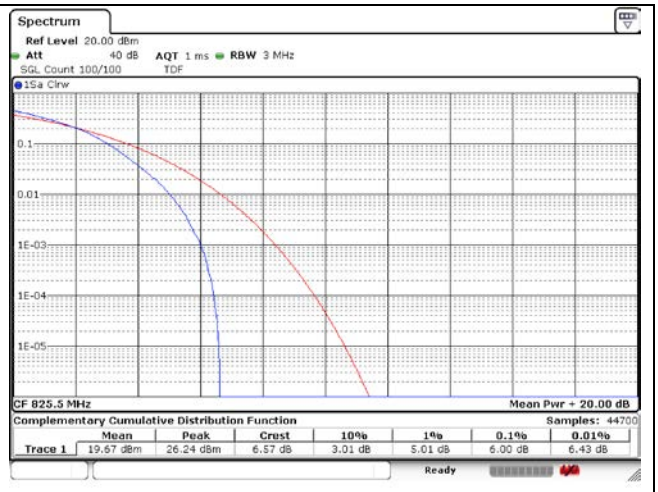


20 ㎒ High Channel - Full RB

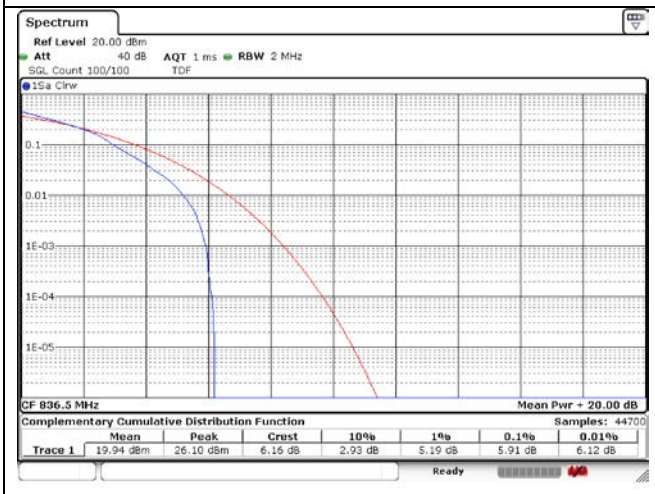
LTE band 5



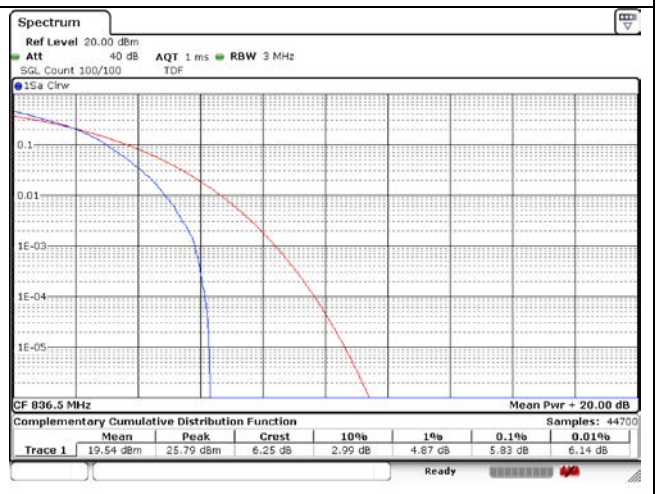
1.4 ㎒ Low Channel - Full RB



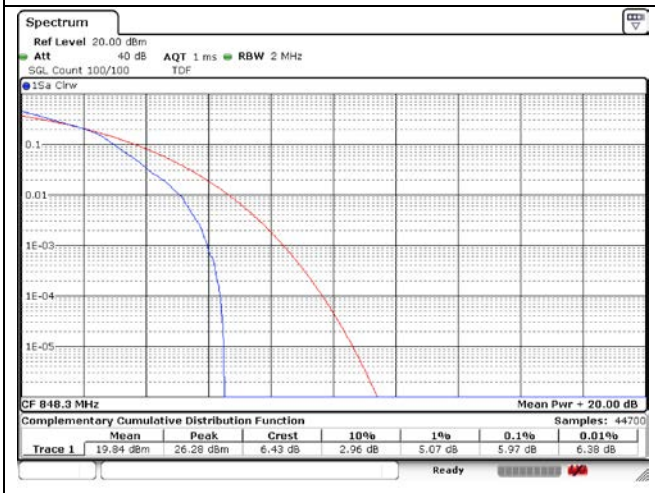
3 ㎒ Low Channel - Full RB



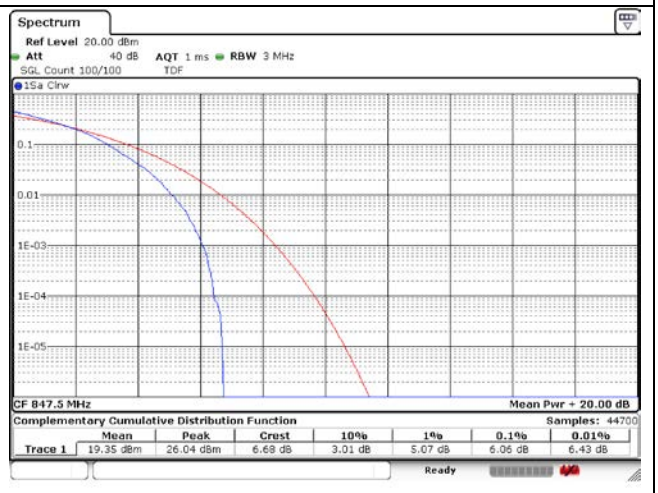
1.4 ㎒ Middle Channel - Full RB



3 ㎒ Middle Channel - Full RB

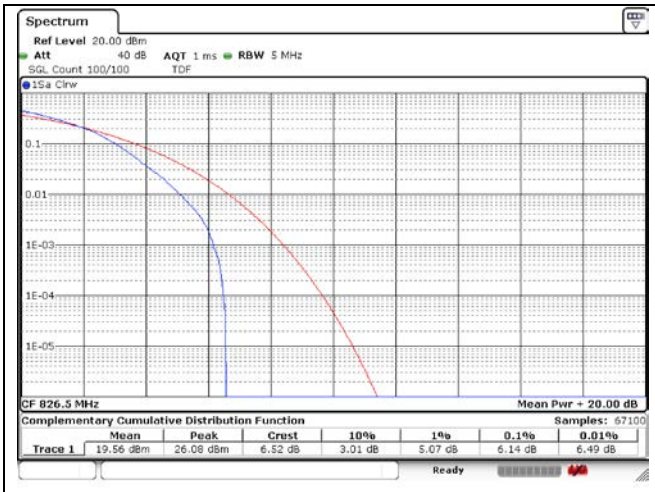


1.4 ㎒ High Channel - Full RB

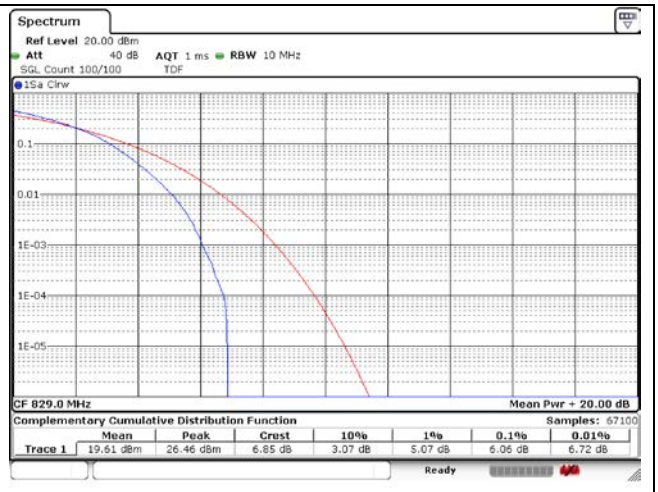


3 ㎒ High Channel - Full RB

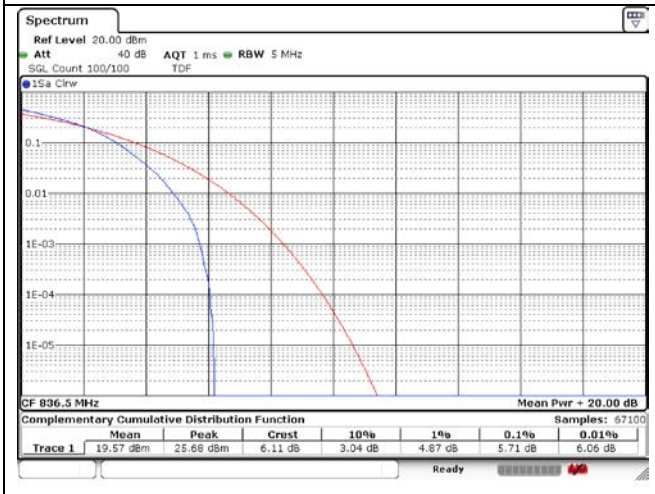
LTE band 5



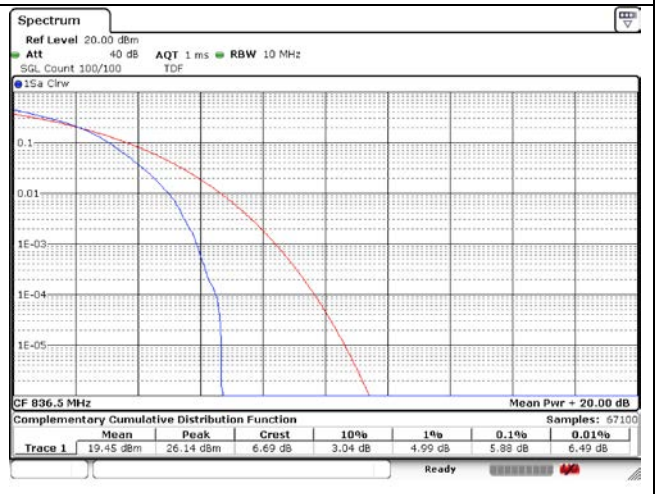
5 ㎒ Low Channel - Full RB



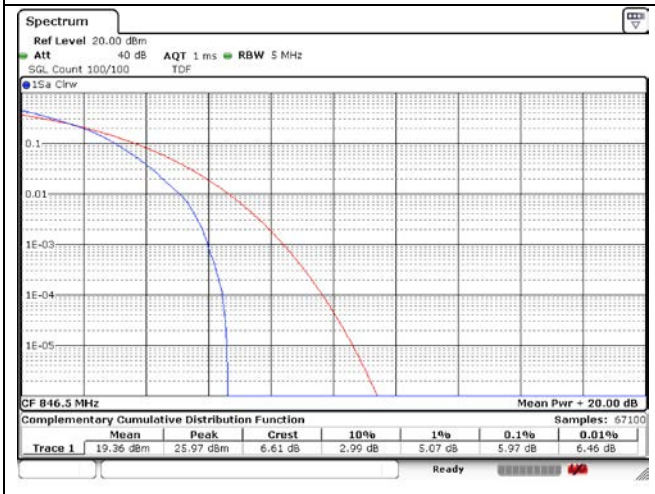
10 ㎒ Low Channel - Full RB



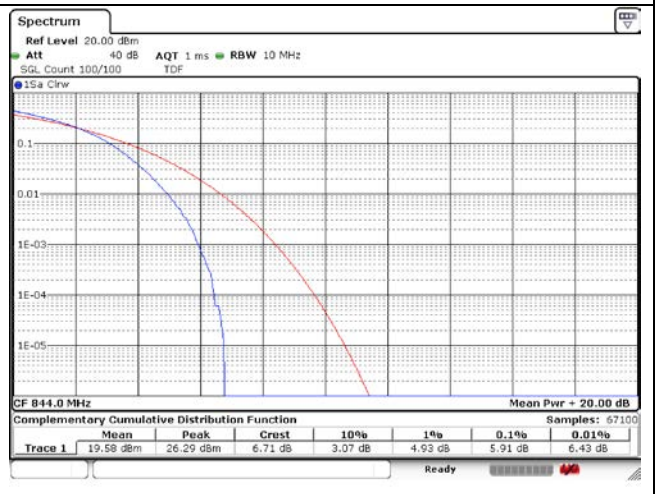
5 ㎒ Middle Channel - Full RB



10 ㎒ Middle Channel - Full RB

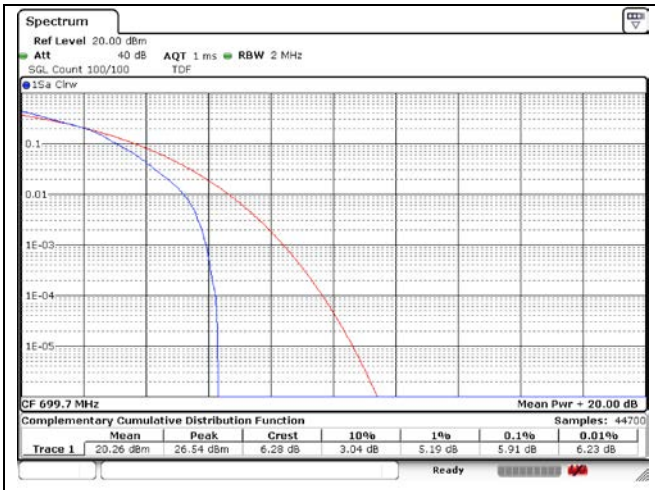


5 ㎒ High Channel - Full RB

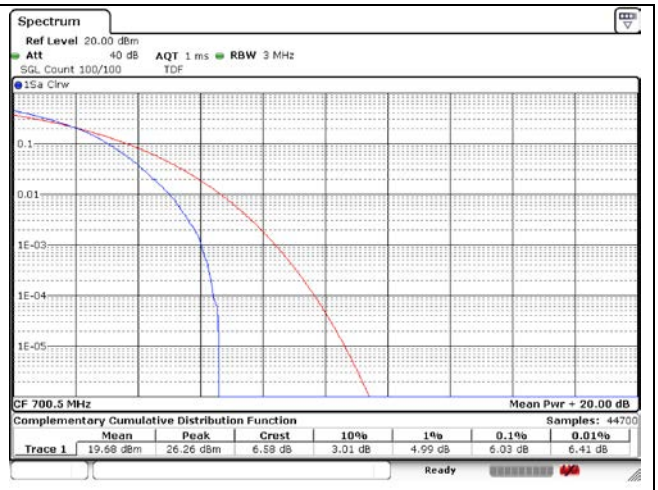


10 ㎒ High Channel - Full RB

LTE band 12

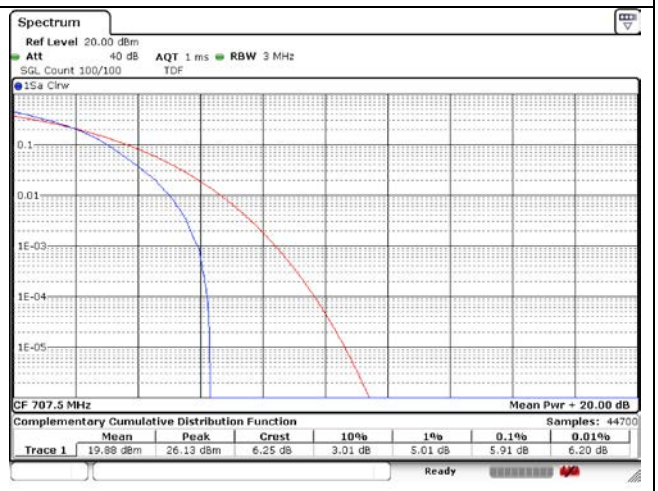


1.4 ㎒ Low Channel - Full RB

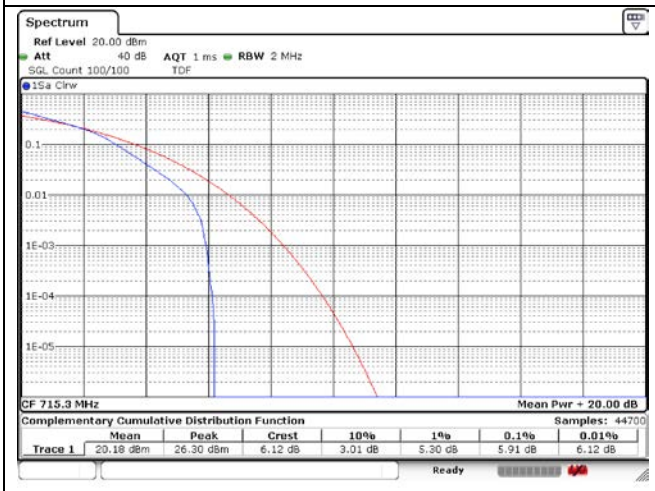


3 ㎒ Low Channel - Full RB

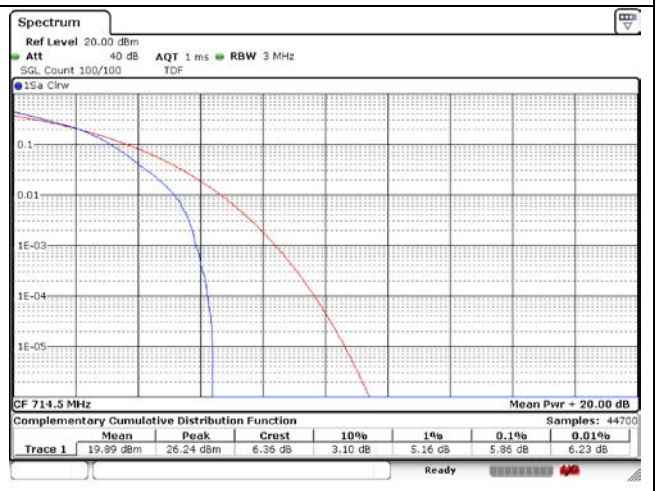
1.4 ㎒ Middle Channel - Full RB



3 ㎒ Middle Channel - Full RB

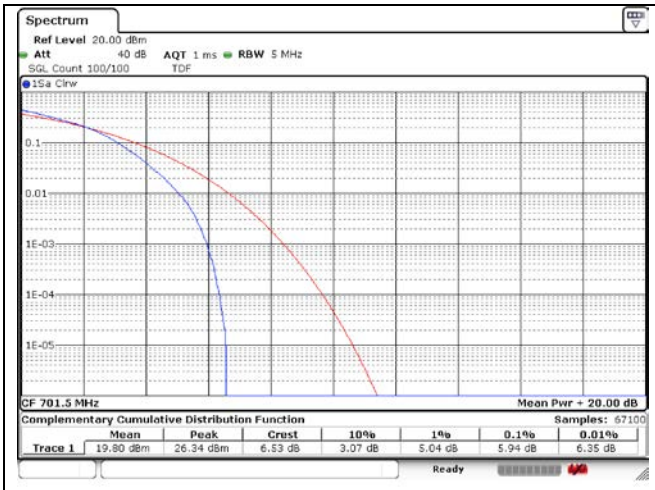


1.4 ㎒ High Channel - Full RB

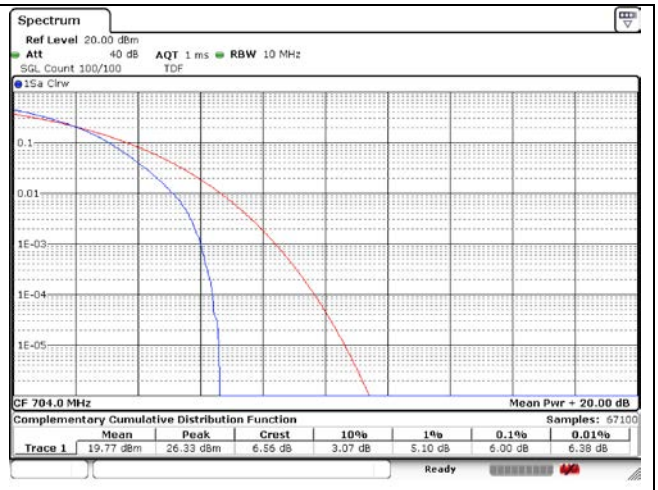


3 ㎒ High Channel - Full RB

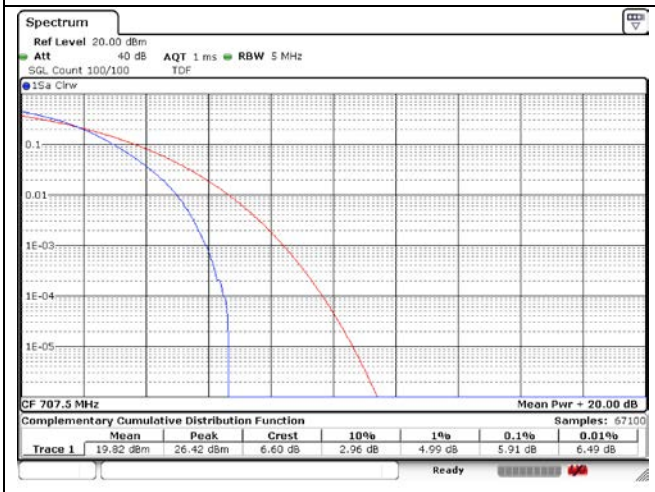
LTE band 12



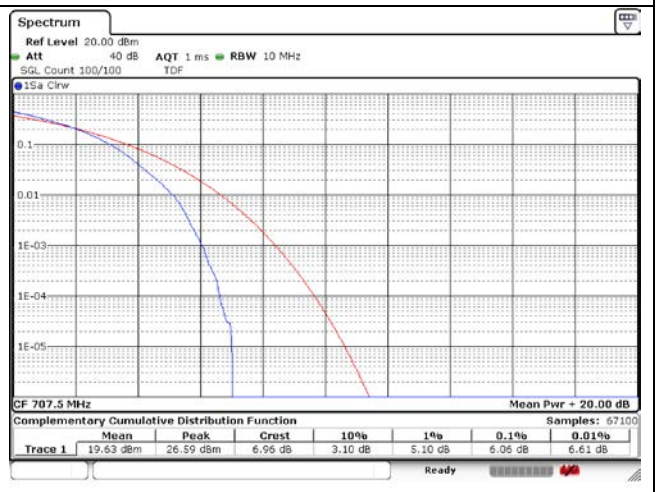
5 ㎒ Low Channel - Full RB



10 ㎒ Low Channel - Full RB

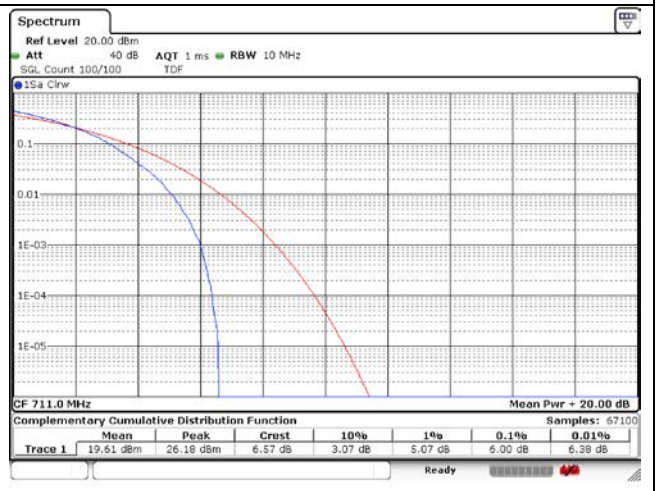


5 ㎒ Middle Channel - Full RB



10 ㎒ Middle Channel - Full RB

5 ㎒ High Channel - Full RB



10 ㎒ High Channel - Full RB