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TEST REPORT

of

FCC Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C/ L

FCC ID: YZP-VL3020

Equipment Under Test	:	Telematics Module
Model Name	:	LTD-VL3020
Variant Model Name(s)	:	-
Applicant	:	LG Innotek Co., Ltd.
Manufacturer	:	LG Innotek Co., Ltd.
Date of Receipt	:	2020.12.07
Date of Test(s)	:	2020.12.07 ~ 2021.01.22
Date of Issue	:	2021.02.22

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.

Tested by: Murphy Kim

Technical Manager: Jungmin Yang

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

Applicant : LG Innotek Co., Ltd.
Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, 62229, Korea
Contact Person : Jeong, In-Chang
Phone No. : +82 62 950 0332

1.3. Details of Manufacturer

Company : Same as applicant
Address : Same as applicant

1.4. Description of EUT

Kind of Product	Telematics Module
Model Name	LTD-VL3020
Serial Number	ATML4VZH02.KM00
Power Supply	DC 4.0 V
Rated Power	LTE Band 2, 4, 5, 13: 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 13: 777 ㎒ ~ 787 ㎒
Modulation Technique	QPSK, 16QAM
Antenna Type	Dipole antenna
Antenna Gain	777 ㎒ ~ 787 ㎒: 4.50 ㏈i 824 ㎒ ~ 849 ㎒: 4.50 ㏈i 1 710 ㎒ ~ 1 780 ㎒: 2.00 ㏈i 1 850 ㎒ ~ 1 910 ㎒: 2.00 ㏈i
H/W Version	Rev A.2
S/W Version	01C_DCUSKU1

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMR40	100272	Jun. 18, 2020	Annual	Jun. 18, 2021
Signal Generator	R&S	SMBV100A	255834	Jun. 03, 2020	Annual	Jun. 03, 2021
Spectrum Analyzer	R&S	FSV30	100768	Mar. 04, 2020	Annual	Mar. 04, 2021
Mobile Test Unit	R&S	CMW500	144035	Feb. 17, 2020	Annual	Feb. 17, 2021
Power Meter	Anritsu	ML2495A	1223004	Jun. 01, 2020	Annual	Jun. 01, 2021
Power Sensor	Anritsu	MA2411B	1207272	Jun. 01, 2020	Annual	Jun. 01, 2021
Temperature Chamber	ESPEC CORP.	PL-1J	15000796	Nov. 06, 2020	Annual	Nov. 06, 2021
Low Pass Filter	Mini-Circuits	NLP-1200+	V9500401023-2	Jun. 01, 2020	Annual	Jun. 01, 2021
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000 -40SS	7	Mar. 04, 2020	Annual	Mar. 04, 2021
High Pass Filter	Wainwright Instrument GmbH	WHKX1.5/15G-6SS	4	Jun. 11, 2020	Annual	Jun. 11, 2021
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 04, 2020	Annual	Mar. 04, 2021
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-10SS	344	May 18, 2020	Annual	May 18, 2021
High Pass Filter	Wainwright Instrument GmbH	WHK7.5/26.5G-6SS	15	Jun. 05, 2020	Annual	Jun. 05, 2021
Directional Coupler	KRYTAR	152613	122660	Jun. 11, 2020	Annual	Jun. 11, 2021
DC Power Supply	R&S	HMP2020	019258024	Nov. 03, 2020	Annual	Nov. 03, 2021
Preamplifier	H.P.	8447F	2944A03909	Aug. 06, 2020	Annual	Aug. 06, 2021
Preamplifier	R&S	SCU 18	10117	Jun. 10, 2020	Annual	Jun. 10, 2021
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	May 08, 2020	Annual	May 08, 2021
Test Receiver	R&S	ESU26	100109	Feb. 18, 2020	Annual	Feb. 18, 2021
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 22, 2019	Biennial	Aug. 22, 2021
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	396	Mar. 21, 2019	Biennial	Mar. 21, 2021
Horn Antenna	R&S	HF906	100326	Feb. 14, 2020	Annual	Feb. 14, 2021
Horn Antenna	R&S	HF907	102270	Feb. 14, 2020	Annual	Feb. 14, 2021
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA9170	BBHA9170223	Sep. 16, 2020	Annual	Sep. 16, 2021
Antenna Master	Innco systems GmbH	MM4000	N/A	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 × 6.4 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RFONE	MWX221-NMSNMS (4 m)	J1023142	Dec. 01, 2020	Semi-annual	Jun. 01, 2021
Coaxial Cable	RFONE	PL520-NMNM-10M (10 m)	20200324001	Dec. 01, 2020	Semi-annual	Jun. 01, 2021
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 01/20	Aug. 21, 2020	Semi-annual	Feb. 21, 2021
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 05/20	Aug. 21, 2020	Semi-annual	Feb. 21, 2021
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 10/20	Aug. 21, 2020	Semi-annual	Feb. 21, 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		
Section(s)	**Test Item**	**Result**
§2.1046 §22.913(a)(5) §24.232(c) §27.50(b)(9) §27.50(d)(4)	RF Radiated Output Power	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(h)(1)	Spurious Radiated Emission	Complied
§2.1046	Conducted Output Power	Complied
§2.1049	Occupied Bandwidth	Complied
§22.913(d) §24.232(d) §27.50(d)(5)	Peak-Average Ratio	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(h)(1)	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(h)(1)	Band Edge	Complied
§2.1055 §22.355 §24.235 §27.54	Frequency Stability	Complied

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted Test

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

1.7.2. Radiation test

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

1.8. Measurement Uncertainty

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

Parameter	Uncertainty	
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

Uncertainty figures are valid to a confidence level of 95 %.

1.9. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL001668	2020.02.09	Initial
1	F690501-RF-RTL001668-1	2020.02.18	Removed the B7 of the Conducted Output Power and modified the units to dBm and W.

1.10. Worst Case Configuration and Mode

All testing was performed using QPSK and 16QAM modulations, except radiated spurious emissions, peak-average ratio, conducted spurious emissions and band-edge were tested only QPSK modulation as worst case. The worst-case is based on the conducted output power measurement investigation results.

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

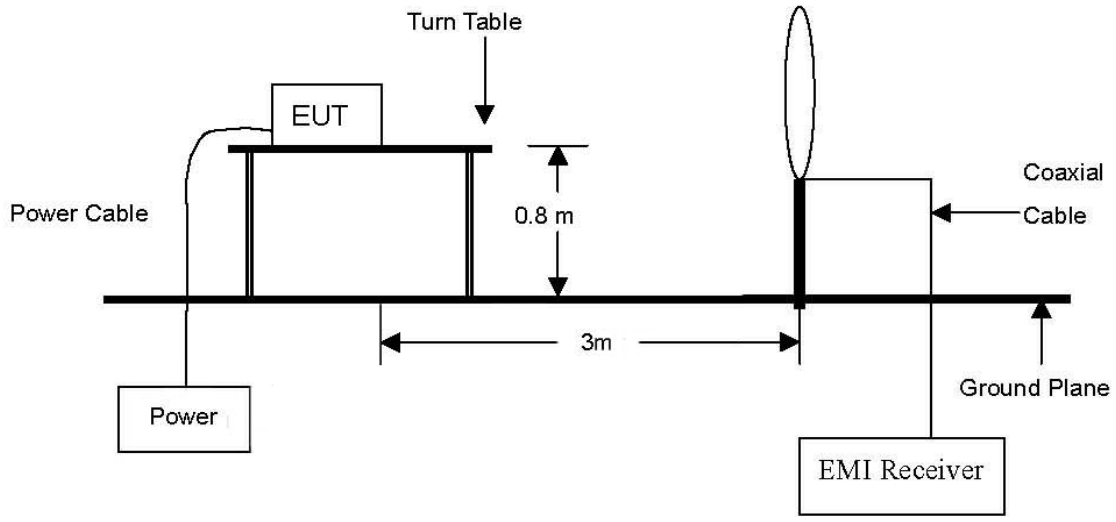
1.11. Emission Designator and Max Power

Mode	Frequency Range (㎒)	Modulation	Emission Designator	E.R.P. / E.I.R.P.	
				Max power (dB m)	Max power (W)
LTE Band 2	1 850.7 ~ 1 909.3	QPSK	1M10G7D	27.70	0.589
		16QAM	1M09D7D		
	1 851.5 ~ 1 908.5	QPSK	2M69G7D		
		16QAM	2M68D7D		
	1 852.5 ~ 1 907.5	QPSK	4M53G7D		
		16QAM	4M52D7D		
	1 855 ~ 1 905	QPSK	8M94G7D		
		16QAM	8M92D7D		
	1 857.5 ~ 1 902.5	QPSK	13M5G7D		
		16QAM	13M4D7D		
	1 860 ~ 1900	QPSK	17M9G7D		
		16QAM	17M9D7D		
LTE Band 4	1 710.7 ~ 1 754.3	QPSK	1M09G7D	27.70	0.589
		16QAM	1M10D7D		
	1 711.5 ~ 1 753.5	QPSK	2M69G7D		
		16QAM	2M69D7D		
	1 712.5 ~ 1 752.5	QPSK	4M52G7D		
		16QAM	4M50D7D		
	1 715 ~ 1 750	QPSK	8M94G7D		
		16QAM	8M94D7D		
	1 717.5 ~ 1 747.5	QPSK	13M5G7D		
		16QAM	13M4D7D		
	1 720 ~ 1 745	QPSK	17M8G7D		
		16QAM	17M9D7D		
LTE Band 5	824.7 ~ 848.3	QPSK	1M11G7D	28.05	0.638
		16QAM	1M10D7D		
	825.5 ~ 847.5	QPSK	2M68G7D		
		16QAM	2M68D7D		
	826.5 ~ 846.5	QPSK	4M53G7D		
		16QAM	4M52D7D		
	829 ~ 844	QPSK	8M97G7D		
		16QAM	8M92D7D		
LTE Band 13	779.5 ~ 784.5	QPSK	4M52G7D	28.05	0.638
		16QAM	4M52D7D		
	782	QPSK	8M92G7D		
		16QAM	8M89D7D		

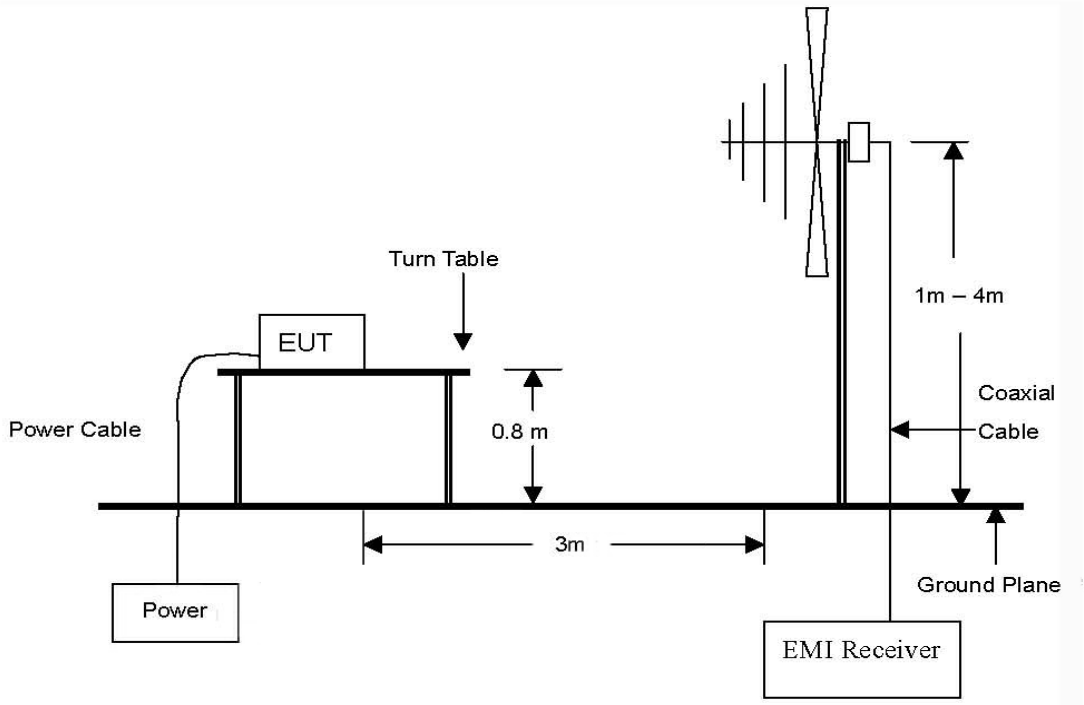
2. RF Radiated Output Power & Spurious Radiated Emission

2.1. Test setup

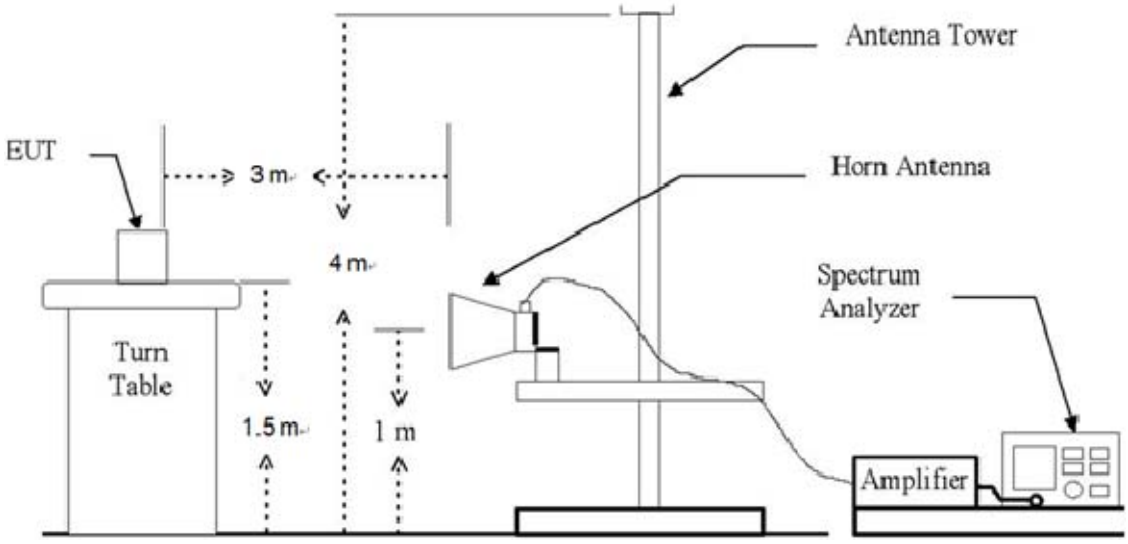
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



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 20 ㎓ Emissions.



2.2. Limit

2.2.1. Limit of RF Radiated Output Power

- §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 to limiting power to the minimum necessary for successful communications.

- §27.50(b)(9), Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 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.

2.2.2. Limit of Spurious Radiated Emission

- §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(c)(2), On any frequency outside the 776-788 band, the power of any emission shall be attenuated outside the band below the transmitter power (P) 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) ㏈.

2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015, 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. 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.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. 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.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. 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.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
11. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
12. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

2.4. Test Result for E.I.R.P.

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

LTE

Band	Frequency (㎒)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Output Power Limit
2	1 850 ~ 1 910	25.70	0.372	2.0	27.70	0.589	-	-	2 W E.I.R.P.
4	1 710 ~ 1 755	25.70	0.372	2.0	27.70	0.589	-	-	1 W E.I.R.P.
5	824 ~ 849	25.70	0.372	4.5	30.20	1.047	28.05	0.638	7 W E.R.P.
13	777 ~ 787	25.70	0.372	4.5	30.20	1.047	28.05	0.638	30 W E.R.P.

Remark;

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Maximum Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.

2.5. Spurious radiated emission

LTE band 2 (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 (1 850.7 ㎒)									
3 700.24	52.54	H	32.30	-36.68	48.16	-95.26	-47.10	-13	34.10
3 700.31	51.29	V	32.30	-36.68	46.91	-95.26	-48.35	-13	35.35
5 550.52	59.85	H	34.00	-34.89	58.96	-95.26	-36.30	-13	23.30
5 550.63	55.47	V	34.00	-34.89	54.58	-95.26	-40.68	-13	27.68
Middle Channel (1 880.0 ㎒)									
3 757.41	56.14	H	32.21	-36.79	51.56	-95.26	-43.70	-13	30.70
3 757.16	54.84	V	32.21	-36.79	50.26	-95.26	-45.00	-13	32.00
5 636.12	59.87	H	34.00	-34.99	58.88	-95.26	-36.38	-13	23.38
5 636.11	62.03	V	34.00	-34.99	61.04	-95.26	-34.22	-13	21.22
High Channel (1 909.3 ㎒)									
3 814.24	52.94	H	32.30	-36.57	48.67	-95.26	-46.59	-13	33.59
3 814.28	52.45	V	32.30	-36.57	48.18	-95.26	-47.08	-13	34.08
5 721.46	51.41	H	34.06	-34.83	50.64	-95.26	-44.62	-13	31.62
5 721.42	55.06	V	34.06	-34.83	54.29	-95.26	-40.97	-13	27.97

* 1 RB size / 0 Offset

LTE band 2 (3 ㎒ - 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 (1 851.5 ㎒)									
3 700.56	52.97	H	32.30	-36.68	48.59	-95.26	-46.67	-13	33.67
3 700.46	51.89	V	32.30	-36.68	47.51	-95.26	-47.75	-13	34.75
5 550.70	60.15	H	34.00	-34.89	59.26	-95.26	-36.00	-13	23.00
5 550.79	55.55	V	34.00	-34.89	54.66	-95.26	-40.60	-13	27.60
Middle Channel (1 880.0 ㎒)									
3 757.43	56.87	H	32.21	-36.79	52.29	-95.26	-42.97	-13	29.97
3 757.64	54.81	V	32.22	-36.79	50.24	-95.26	-45.02	-13	32.02
5 636.40	59.31	H	34.00	-34.99	58.32	-95.26	-36.94	-13	23.94
5 636.25	62.30	V	34.00	-34.99	61.31	-95.26	-33.95	-13	20.95
High Channel (1 908.5 ㎒)									
3 814.80	53.19	H	32.30	-36.57	48.92	-95.26	-46.34	-13	33.34
3 814.38	52.33	V	32.30	-36.57	48.06	-95.26	-47.20	-13	34.20
5 721.85	52.57	H	34.06	-34.82	51.81	-95.26	-43.45	-13	30.45
5 721.89	56.21	V	34.06	-34.82	55.45	-95.26	-39.81	-13	26.81

* 1 RB size / 0 Offset

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 ㎒)									
3 700.74	52.67	H	32.30	-36.68	48.29	-95.26	-46.97	-13	33.97
3 700.56	51.74	V	32.30	-36.68	47.36	-95.26	-47.90	-13	34.90
5 551.20	59.43	H	34.00	-34.90	58.53	-95.26	-36.73	-13	23.73
5 551.14	55.46	V	34.00	-34.90	54.56	-95.26	-40.70	-13	27.70
Middle Channel (1 880.0 ㎒)									
3 755.50	56.33	H	32.21	-36.78	51.76	-95.26	-43.50	-13	30.50
3 755.70	54.98	V	32.21	-36.78	50.41	-95.26	-44.85	-13	31.85
5 633.55	60.16	H	34.00	-34.98	59.18	-95.26	-36.08	-13	23.08
5 633.61	61.78	V	34.00	-34.98	60.80	-95.26	-34.46	-13	21.46
High Channel (1 907.5 ㎒)									
3 810.60	52.42	H	32.30	-36.59	48.13	-95.26	-47.13	-13	34.13
3 810.74	53.09	V	32.30	-36.59	48.80	-95.26	-46.46	-13	33.46
5 716.26	49.25	H	34.07	-34.87	48.45	-95.26	-46.81	-13	33.81
5 716.00	53.44	V	34.07	-34.87	52.64	-95.26	-42.62	-13	29.62

* 1 RB size / 0 Offset

LTE band 2 (10 ㎒ - 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 (1 855.0 ㎒)									
3 701.40	52.02	H	32.30	-36.67	47.65	-95.26	-47.61	-13	34.61
3 701.34	52.05	V	32.30	-36.67	47.68	-95.26	-47.58	-13	34.58
5 551.80	60.00	H	34.00	-34.91	59.09	-95.26	-36.17	-13	23.17
5 551.79	56.02	V	34.00	-34.91	55.11	-95.26	-40.15	-13	27.15
Middle Channel (1 880.0 ㎒)									
3 751.24	55.60	H	32.20	-36.77	51.03	-95.26	-44.23	-13	31.23
3 751.28	54.33	V	32.20	-36.77	49.76	-95.26	-45.50	-13	32.50
5 626.86	61.25	H	34.00	-34.95	60.30	-95.26	-34.96	-13	21.96
5 626.86	63.74	V	34.00	-34.95	62.79	-95.26	-32.47	-13	19.47
High Channel (1 905.0 ㎒)									
3 801.26	51.29	H	32.30	-36.61	46.98	-95.26	-48.28	-13	35.28
3 801.10	52.07	V	32.30	-36.61	47.76	-95.26	-47.50	-13	34.50
5 701.62	56.11	H	34.10	-34.97	55.24	-95.26	-40.02	-13	27.02
5 701.91	60.48	V	34.10	-34.97	59.61	-95.26	-35.65	-13	22.65

* 1 RB size / 0 Offset

LTE band 2 (15 ㎒ - 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 (1 857.5 ㎒)									
3 701.64	52.19	H	32.30	-36.67	47.82	-95.26	-47.44	-13	34.44
3 701.74	52.02	V	32.30	-36.67	47.65	-95.26	-47.61	-13	34.61
5 552.45	59.39	H	34.00	-34.92	58.47	-95.26	-36.79	-13	23.79
5 552.69	55.93	V	34.00	-34.92	55.01	-95.26	-40.25	-13	27.25
Middle Channel (1 880.0 ㎒)									
3 746.67	51.66	H	32.21	-36.72	47.15	-95.26	-48.11	-13	35.11
3 746.68	53.91	V	32.21	-36.72	49.40	-95.26	-45.86	-13	32.86
5 620.99	59.21	H	34.00	-34.98	58.23	-95.26	-37.03	-13	24.03
5 620.10	63.63	V	34.00	-34.99	62.64	-95.26	-32.62	-13	19.62
High Channel (1 902.5 ㎒)									
3 791.85	50.34	H	32.28	-36.69	45.93	-95.26	-49.33	-13	36.33
3 791.61	51.35	V	32.28	-36.70	46.93	-95.26	-48.33	-13	35.33
5 687.54	55.54	H	34.08	-34.90	54.72	-95.26	-40.54	-13	27.54
5 687.43	63.85	V	34.07	-34.89	63.03	-95.26	-32.23	-13	19.23

* 1 RB size / 0 Offset

LTE band 2 (20 ㎒ - 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 (1 860.0 ㎒)									
3 702.14	51.97	H	32.30	-36.67	47.60	-95.26	-47.66	-13	34.66
3 702.10	52.45	V	32.30	-36.67	48.08	-95.26	-47.18	-13	34.18
5 553.32	59.06	H	34.00	-34.93	58.13	-95.26	-37.13	-13	24.13
5 553.09	55.79	V	34.00	-34.93	54.86	-95.26	-40.40	-13	27.40
Middle Channel (1 880.0 ㎒)									
3 742.23	50.72	H	32.22	-36.67	46.27	-95.26	-48.99	-13	35.99
3 742.22	53.00	V	32.22	-36.67	48.55	-95.26	-46.71	-13	33.71
5 613.45	56.11	H	34.00	-35.05	55.06	-95.26	-40.20	-13	27.20
5 613.26	62.99	V	34.00	-35.05	61.94	-95.26	-33.32	-13	20.32
High Channel (1 900.0 ㎒)									
3 781.86	49.71	H	32.26	-36.78	45.19	-95.26	-50.07	-13	37.07
3 782.36	51.48	V	32.26	-36.77	46.97	-95.26	-48.29	-13	35.29
5 673.30	53.70	H	34.05	-34.83	52.92	-95.26	-42.34	-13	29.34
5 673.38	62.99	V	34.05	-34.83	62.21	-95.26	-33.05	-13	20.05

* 1 RB size / 0 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 ㎒)									
3 420.42	46.44	H	31.02	-37.27	40.19	-95.26	-55.07	-13	42.07
3 420.40	45.95	V	31.02	-37.27	39.70	-95.26	-55.56	-13	42.56
5 130.30	49.33	H	33.46	-35.60	47.19	-95.26	-48.07	-13	35.07
5 130.22	50.10	V	33.46	-35.60	47.96	-95.26	-47.30	-13	34.30
6 840.19	39.30	H	35.38	-34.31	40.37	-95.26	-54.89	-13	41.89
8 550.70	49.10	V	36.50	-33.14	52.46	-95.26	-42.80	-13	29.80
Middle Channel (1 732.5 ㎒)									
3 463.63	47.94	H	31.20	-37.18	41.96	-95.26	-53.30	-13	40.30
3 463.58	46.99	V	31.20	-37.18	41.01	-95.26	-54.25	-13	41.25
5 195.52	50.12	H	33.59	-35.51	48.20	-95.26	-47.06	-13	34.06
5 195.47	49.34	V	33.59	-35.51	47.42	-95.26	-47.84	-13	34.84
6 927.40	41.17	H	35.50	-34.45	42.22	-95.26	-53.04	-13	40.04
6 927.32	40.27	V	35.50	-34.45	41.32	-95.26	-53.94	-13	40.94
8 659.58	48.48	H	36.62	-32.40	52.70	-95.26	-42.56	-13	29.56
8 659.49	47.82	V	36.62	-32.40	52.04	-95.26	-43.22	-13	30.22
High Channel (1 754.3 ㎒)									
3 507.20	41.70	H	31.19	-36.90	35.99	-95.26	-59.27	-13	46.27
3 507.18	41.94	V	31.19	-36.90	36.23	-95.26	-59.03	-13	46.03
5 260.94	49.79	H	33.72	-34.73	48.78	-95.26	-46.48	-13	33.48
5 260.90	48.28	V	33.72	-34.73	47.27	-95.26	-47.99	-13	34.99
7 014.74	44.23	H	35.50	-34.28	45.45	-95.26	-49.81	-13	36.81
7 014.65	42.80	V	35.50	-34.28	44.02	-95.26	-51.24	-13	38.24
8 768.44	41.53	H	36.94	-32.82	45.65	-95.26	-49.61	-13	36.61
8 768.29	39.54	V	36.94	-32.82	43.66	-95.26	-51.60	-13	38.60

* 1 RB size / 0 Offset

LTE band 4 (3 ㎒ - 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 (1 711.5 ㎒)									
3 420.21	46.87	H	31.02	-37.27	40.62	-95.26	-54.64	-13	41.64
3 420.22	46.20	V	31.02	-37.27	39.95	-95.26	-55.31	-13	42.31
5 130.44	48.90	H	33.46	-35.60	46.76	-95.26	-48.50	-13	35.50
5 130.40	50.45	V	33.46	-35.60	48.31	-95.26	-46.95	-13	33.95
6 841.22	39.45	H	35.38	-34.31	40.52	-95.26	-54.74	-13	41.74
8 551.66	49.13	V	36.50	-33.14	52.49	-95.26	-42.77	-13	29.77
Middle Channel (1 732.5 ㎒)									
3 462.31	47.50	H	31.20	-37.18	41.52	-95.26	-53.74	-13	40.74
3 462.24	46.40	V	31.20	-37.19	40.41	-95.26	-54.85	-13	41.85
5 193.62	50.24	H	33.59	-35.48	48.35	-95.26	-46.91	-13	33.91
5 193.56	49.42	V	33.59	-35.48	47.53	-95.26	-47.73	-13	34.73
6 925.43	41.02	H	35.50	-34.46	42.06	-95.26	-53.20	-13	40.20
6 925.33	40.20	V	35.50	-34.46	41.24	-95.26	-54.02	-13	41.02
8 652.65	47.49	H	36.61	-32.34	51.76	-95.26	-43.50	-13	30.50
8 652.55	46.48	V	36.61	-32.34	50.75	-95.26	-44.51	-13	31.51
High Channel (1 753.5 ㎒)									
3 504.40	41.87	H	31.19	-36.94	36.12	-95.26	-59.14	-13	46.14
3 504.32	42.42	V	31.19	-36.94	36.67	-95.26	-58.59	-13	45.59
5 256.30	50.04	H	33.71	-34.82	48.93	-95.26	-46.33	-13	33.33
5 256.38	49.44	V	33.71	-34.82	48.33	-95.26	-46.93	-13	33.93
7 009.41	44.78	H	35.50	-34.25	46.03	-95.26	-49.23	-13	36.23
7 009.33	43.24	V	35.50	-34.25	44.49	-95.26	-50.77	-13	37.77
8 761.12	41.98	H	36.92	-32.91	45.99	-95.26	-49.27	-13	36.27
8 761.21	40.04	V	36.92	-32.91	44.05	-95.26	-51.21	-13	38.21

* 1 RB size / 0 Offset

LTE band 4 (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 (1 712.5 ㎒)									
3 420.90	47.14	H	31.03	-37.28	40.89	-95.26	-54.37	-13	41.37
3 420.90	45.95	V	31.03	-37.28	39.70	-95.26	-55.56	-13	42.56
5 130.70	49.33	H	33.46	-35.60	47.19	-95.26	-48.07	-13	35.07
5 130.70	50.60	V	33.46	-35.60	48.46	-95.26	-46.80	-13	33.80
6 842.30	39.60	H	35.38	-34.31	40.67	-95.26	-54.59	-13	41.59
8 552.10	49.14	V	36.50	-33.14	52.50	-95.26	-42.76	-13	29.76
Middle Channel (1 732.5 ㎒)									
3 460.30	47.94	H	31.20	-37.19	41.95	-95.26	-53.31	-13	40.31
3 460.30	46.99	V	31.20	-37.19	41.00	-95.26	-54.26	-13	41.26
5 190.70	50.12	H	33.58	-35.44	48.26	-95.26	-47.00	-13	34.00
5 190.70	49.34	V	33.58	-35.44	47.48	-95.26	-47.78	-13	34.78
6 921.10	41.17	H	35.50	-34.47	42.20	-95.26	-53.06	-13	40.06
6 921.10	40.27	V	35.50	-34.47	41.30	-95.26	-53.96	-13	40.96
8 651.50	48.48	H	36.60	-32.33	52.75	-95.26	-42.51	-13	29.51
8 651.48	47.82	V	36.60	-32.33	52.09	-95.26	-43.17	-13	30.17
High Channel (1 752.5 ㎒)									
3 501.50	41.90	H	31.20	-36.97	36.13	-95.26	-59.13	-13	46.13
3 501.50	42.08	V	31.20	-36.97	36.31	-95.26	-58.95	-13	45.95
5 250.70	51.03	H	33.70	-34.93	49.80	-95.26	-45.46	-13	32.46
5 250.70	50.28	V	33.70	-34.93	49.05	-95.26	-46.21	-13	33.21
7 001.70	45.00	H	35.50	-34.23	46.27	-95.26	-48.99	-13	35.99
7 001.70	43.20	V	35.50	-34.23	44.47	-95.26	-50.79	-13	37.79
8 752.72	42.53	H	36.91	-33.01	46.43	-95.26	-48.83	-13	35.83
8 751.72	40.54	V	36.90	-33.02	44.42	-95.26	-50.84	-13	37.84

* 1 RB size / 0 Offset

LTE band 4 (10 ㎒ - 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 (1 715.0 ㎒)									
3 420.23	47.60	H	31.02	-37.27	41.35	-95.26	-53.91	-13	40.91
3 420.35	46.32	V	31.02	-37.27	40.07	-95.26	-55.19	-13	42.19
5 132.20	50.02	H	33.46	-35.59	47.89	-95.26	-47.37	-13	34.37
5 132.22	50.80	V	33.46	-35.59	48.67	-95.26	-46.59	-13	33.59
6 844.40	40.20	H	35.39	-34.31	41.28	-95.26	-53.98	-13	40.98
8 555.12	49.30	V	36.50	-33.14	52.66	-95.26	-42.60	-13	29.60
Middle Channel (1 732.5 ㎒)									
3 455.21	48.02	H	31.20	-37.21	42.01	-95.26	-53.25	-13	40.25
3 455.14	47.03	V	31.20	-37.21	41.02	-95.26	-54.24	-13	41.24
5 184.52	50.20	H	33.57	-35.34	48.43	-95.26	-46.83	-13	33.83
5 184.46	49.34	V	33.57	-35.34	47.57	-95.26	-47.69	-13	34.69
6 914.22	41.32	H	35.50	-34.51	42.31	-95.26	-52.95	-13	39.95
6 914.30	40.51	V	35.50	-34.51	41.50	-95.26	-53.76	-13	40.76
8 642.50	48.60	H	36.59	-32.44	52.75	-95.26	-42.51	-13	29.51
8 642.44	48.12	V	36.58	-32.44	52.26	-95.26	-43.00	-13	30.00
High Channel (1 750.0 ㎒)									
3 490.40	42.40	H	31.20	-37.04	36.56	-95.26	-58.70	-13	45.70
3 490.38	42.12	V	31.20	-37.04	36.28	-95.26	-58.98	-13	45.98
5 237.12	50.87	H	33.67	-35.11	49.43	-95.26	-45.83	-13	32.83
5 237.12	50.41	V	33.67	-35.11	48.97	-95.26	-46.29	-13	33.29
6 984.32	45.12	H	35.50	-34.27	46.35	-95.26	-48.91	-13	35.91
6 984.29	43.22	V	35.50	-34.27	44.45	-95.26	-50.81	-13	37.81
8 730.11	42.69	H	36.82	-32.94	46.57	-95.26	-48.69	-13	35.69
8 730.08	40.70	V	36.82	-32.94	44.58	-95.26	-50.68	-13	37.68

* 1 RB size / 0 Offset

LTE band 4 (15 ㎒ - 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 (1 717.5 ㎒)									
3 420.10	47.90	H	31.02	-37.27	41.65	-95.26	-53.61	-13	40.61
3 420.12	46.50	V	31.02	-37.27	40.25	-95.26	-55.01	-13	42.01
5 132.30	50.32	H	33.46	-35.59	48.19	-95.26	-47.07	-13	34.07
5 132.34	50.91	V	33.46	-35.59	48.78	-95.26	-46.48	-13	33.48
6 845.10	40.40	H	35.39	-34.31	41.48	-95.26	-53.78	-13	40.78
8 557.50	49.60	V	36.50	-33.14	52.96	-95.26	-42.30	-13	29.30
Middle Channel (1 732.5 ㎒)									
3 450.00	48.30	H	31.20	-37.24	42.26	-95.26	-53.00	-13	40.00
3 450.02	47.34	V	31.20	-37.24	41.30	-95.26	-53.96	-13	40.96
5 177.50	50.34	H	33.56	-35.24	48.66	-95.26	-46.60	-13	33.60
5 177.49	49.60	V	33.55	-35.24	47.91	-95.26	-47.35	-13	34.35
6 905.07	41.60	H	35.50	-34.56	42.54	-95.26	-52.72	-13	39.72
6 905.12	40.67	V	35.50	-34.56	41.61	-95.26	-53.65	-13	40.65
8 632.50	49.12	H	36.57	-32.62	53.07	-95.26	-42.19	-13	29.19
8 632.49	48.60	V	36.56	-32.62	52.54	-95.26	-42.72	-13	29.72
High Channel (1 747.5 ㎒)									
3 480.82	42.80	H	31.20	-37.09	36.91	-95.26	-58.35	-13	45.35
3 480.84	42.20	V	31.20	-37.09	36.31	-95.26	-58.95	-13	45.95
5 222.50	51.21	H	33.65	-35.28	49.58	-95.26	-45.68	-13	32.68
5 222.49	50.51	V	33.64	-35.28	48.87	-95.26	-46.39	-13	33.39
6 965.12	45.23	H	35.50	-34.30	46.43	-95.26	-48.83	-13	35.83
6 965.20	43.30	V	35.50	-34.30	44.50	-95.26	-50.76	-13	37.76
8 707.48	42.88	H	36.73	-32.82	46.79	-95.26	-48.47	-13	35.47
8 707.44	40.89	V	36.73	-32.82	44.80	-95.26	-50.46	-13	37.46

* 1 RB size / 0 Offset

LTE band 4 (20 ㎒ - 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 (1 720 ㎒)									
3 420.27	48.02	H	31.02	-37.27	41.77	-95.26	-53.49	-13	40.49
3 420.32	46.39	V	31.02	-37.27	40.14	-95.26	-55.12	-13	42.12
5 133.42	50.52	H	33.47	-35.59	48.40	-95.26	-46.86	-13	33.86
5 133.40	51.01	V	33.47	-35.59	48.89	-95.26	-46.37	-13	33.37
6 846.10	40.43	H	35.39	-34.30	41.52	-95.26	-53.74	-13	40.74
8 560.00	50.00	V	36.50	-33.14	53.36	-95.26	-41.90	-13	28.90
Middle Channel (1 732.5 ㎒)									
3 445.12	48.39	H	31.17	-37.25	42.31	-95.26	-52.95	-13	39.95
3 445.32	47.53	V	31.17	-37.25	41.45	-95.26	-53.81	-13	40.81
5 170.39	50.40	H	33.54	-35.25	48.69	-95.26	-46.57	-13	33.57
5 170.36	50.12	V	33.54	-35.26	48.40	-95.26	-46.86	-13	33.86
6 896.23	41.94	H	35.49	-34.56	42.87	-95.26	-52.39	-13	39.39
6 896.30	40.97	V	35.49	-34.56	41.90	-95.26	-53.36	-13	40.36
8 622.52	49.30	H	36.55	-32.78	53.07	-95.26	-42.19	-13	29.19
8 622.49	48.88	V	36.54	-32.78	52.64	-95.26	-42.62	-13	29.62
High Channel (1 745 ㎒)									
3 470.21	43.42	H	31.20	-37.14	37.48	-95.26	-57.78	-13	44.78
3 470.17	42.40	V	31.20	-37.14	36.46	-95.26	-58.80	-13	45.80
5 208.12	51.36	H	33.62	-35.47	49.51	-95.26	-45.75	-13	32.75
5 208.20	50.76	V	33.62	-35.47	48.91	-95.26	-46.35	-13	33.35
6 946.55	45.38	H	35.50	-34.35	46.53	-95.26	-48.73	-13	35.73
6 946.49	43.50	V	35.50	-34.35	44.65	-95.26	-50.61	-13	37.61
8 685.72	43.02	H	36.67	-32.65	47.04	-95.26	-48.22	-13	35.22
8 685.63	41.02	V	36.67	-32.65	45.04	-95.26	-50.22	-13	37.22

* 1 RB size / 0 Offset

LTE band 5 (1.4 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (824.7 ㎒)									
1 648.51	56.21	H	25.78	-40.61	41.38	-97.41	-56.03	-13	43.03
1 648.47	55.18	V	25.78	-40.61	40.35	-97.41	-57.06	-13	44.06
2 472.54	54.12	H	28.41	-39.13	43.40	-97.41	-54.01	-13	41.01
2 472.68	53.54	V	28.41	-39.13	42.82	-97.41	-54.59	-13	41.59
Middle Channel (836.5 ㎒)									
1 670.54	56.13	H	26.29	-40.49	41.93	-97.41	-55.48	-13	42.48
1 670.48	55.75	V	26.29	-40.49	41.55	-97.41	-55.86	-13	42.86
2 505.42	57.41	H	28.30	-39.02	46.69	-97.41	-50.72	-13	37.72
2 505.53	59.61	V	28.30	-39.02	48.89	-97.41	-48.52	-13	35.52
High Channel (848.3 ㎒)									
1 692.46	55.28	H	26.82	-40.28	41.82	-97.41	-55.59	-13	42.59
1 692.37	56.32	V	26.82	-40.28	42.86	-97.41	-54.55	-13	41.55
2 538.29	59.54	H	28.30	-38.92	48.92	-97.41	-48.49	-13	35.49
2 538.37	58.25	V	28.30	-38.92	47.63	-97.41	-49.78	-13	36.78

* 1 RB size / 0 Offset

LTE band 5 (3 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (825.5 ㎒)									
1 648.27	56.35	H	25.77	-40.61	41.51	-97.41	-55.90	-13	42.90
1 648.85	55.79	V	25.78	-40.61	40.96	-97.41	-56.45	-13	43.45
2 472.68	53.11	H	28.41	-39.13	42.39	-97.41	-55.02	-13	42.02
2 472.98	52.22	V	28.41	-39.13	41.50	-97.41	-55.91	-13	42.91
Middle Channel (836.5 ㎒)									
1 670.50	57.33	H	26.29	-40.49	43.13	-97.41	-54.28	-13	41.28
1 670.55	56.87	V	26.29	-40.49	42.67	-97.41	-54.74	-13	41.74
2 505.53	58.73	H	28.30	-39.02	48.01	-97.41	-49.40	-13	36.40
2 505.75	60.02	V	28.30	-39.02	49.30	-97.41	-48.11	-13	35.11
High Channel (847.5 ㎒)									
1 688.60	53.53	H	26.73	-40.33	39.93	-97.41	-57.48	-13	44.48
1 688.60	54.82	V	26.73	-40.33	41.22	-97.41	-56.19	-13	43.19
2 533.30	59.65	H	28.30	-38.92	49.03	-97.41	-48.38	-13	35.38
2 533.34	58.09	V	28.30	-38.92	47.47	-97.41	-49.94	-13	36.94

* 1 RB size / 0 Offset

LTE band 5 (5 ㎒ - 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 (826.5 ㎒)									
1 648.73	56.47	H	25.78	-40.61	41.64	-97.41	-55.77	-13	42.77
1 648.78	54.38	V	25.78	-40.61	39.55	-97.41	-57.86	-13	44.86
2 473.17	56.44	H	28.41	-39.13	45.72	-97.41	-51.69	-13	38.69
2 473.29	55.81	V	28.41	-39.13	45.09	-97.41	-52.32	-13	39.32
Middle Channel (836.5 ㎒)									
1 668.67	54.76	H	26.25	-40.51	40.50	-97.41	-56.91	-13	43.91
1 668.84	54.89	V	26.25	-40.51	40.63	-97.41	-56.78	-13	43.78
2 502.91	56.68	H	28.30	-39.04	45.94	-97.41	-51.47	-13	38.47
2 503.00	58.66	V	28.30	-39.04	47.92	-97.41	-49.49	-13	36.49
High Channel (846.5 ㎒)									
1 688.60	53.53	H	26.73	-40.33	39.93	-97.41	-57.48	-13	44.48
1 688.60	54.82	V	26.73	-40.33	41.22	-97.41	-56.19	-13	43.19
2 533.30	59.65	H	28.30	-38.92	49.03	-97.41	-48.38	-13	35.38
2 533.34	58.09	V	28.30	-38.92	47.47	-97.41	-49.94	-13	36.94

* 1 RB size / 0 Offset

LTE band 5 (10 ㎒ - 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 (829.0 ㎒)									
1 649.02	47.69	H	25.78	-40.61	32.86	-97.41	-64.55	-13	51.55
1 648.90	51.13	V	25.78	-40.61	36.30	-97.41	-61.11	-13	48.11
2 473.73	47.69	H	28.41	-39.13	36.97	-97.41	-60.44	-13	47.44
2 473.81	50.30	V	28.40	-39.13	39.57	-97.41	-57.84	-13	44.84
Middle Channel (836.5 ㎒)									
1 664.51	50.04	H	26.15	-40.53	35.66	-97.41	-61.75	-13	48.75
1 664.11	54.35	V	26.14	-40.53	39.96	-97.41	-57.45	-13	44.45
2 496.65	55.31	H	28.31	-39.07	44.55	-97.41	-52.86	-13	39.86
2 496.56	54.02	V	28.31	-39.07	43.26	-97.41	-54.15	-13	41.15
High Channel (844.0 ㎒)									
1 679.29	49.76	H	26.50	-40.42	35.84	-97.41	-61.57	-13	48.57
1 679.12	50.49	V	26.50	-40.42	36.57	-97.41	-60.84	-13	47.84
2 518.96	56.53	H	28.30	-38.94	45.89	-97.41	-51.52	-13	38.52
2 518.79	53.80	V	28.30	-38.94	43.16	-97.41	-54.25	-13	41.25

* 1 RB size / 0 Offset

LTE band 13 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (779.5 ㎒)									
1554.75	64.89	H	25.09	-40.65	49.33	-97.41	-48.08	-13	35.08
1554.94	58.18	V	25.09	-40.65	42.62	-97.41	-54.79	-13	41.79
2332.14	65.28	H	27.87	-39.19	53.96	-97.41	-43.45	-13	30.45
2332.02	66.76	V	27.87	-39.19	55.44	-97.41	-41.97	-13	28.97
Middle Channel (782.0 ㎒)									
1559.67	66.44	H	25.08	-40.66	50.86	-97.41	-46.55	-13	33.55
1559.75	60.77	V	25.08	-40.66	45.19	-97.41	-52.22	-13	39.22
2339.15	62.30	H	27.84	-39.16	50.98	-97.41	-46.43	-13	33.43
2339.51	63.70	V	27.84	-39.16	52.38	-97.41	-45.03	-13	32.03
High Channel (784.5 ㎒)									
1564.76	64.72	H	25.07	-40.66	49.13	-97.41	-48.28	-13	35.28
1564.64	57.90	V	25.07	-40.66	42.31	-97.41	-55.10	-13	42.10
2347.12	57.77	H	27.81	-39.12	46.46	-97.41	-50.95	-13	37.95
2347.05	64.52	V	27.81	-39.12	53.21	-97.41	-44.20	-13	31.20

* 1 RB size / 0 Offset

LTE band 13 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Middle Channel (782.0 ㎒)									
1550.07	65.42	H	25.10	-40.64	49.88	-97.41	-47.53	-13	34.53
1555.37	54.73	V	25.09	-40.65	39.17	-97.41	-58.24	-13	45.24
2332.77	65.64	H	27.87	-39.19	54.32	-97.41	-43.09	-13	30.09
2332.77	67.58	V	27.87	-39.19	56.26	-97.41	-41.15	-13	28.15

* 1 RB size / 0 Offset

Remark;

1. AF = Antenna Factor, AMP= Amplifier Gain, CL = Cable Loss, CF = Conversion Factor.
2. E (dB㎶/m) = Measured Level (dB㎶) + Antenna Factor (dB/m) + AMP (dB) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dB㎶/m) + CF (dB).
4. E.R.P. (dB m) = E (dB㎶/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.

3. Conducted Output Power

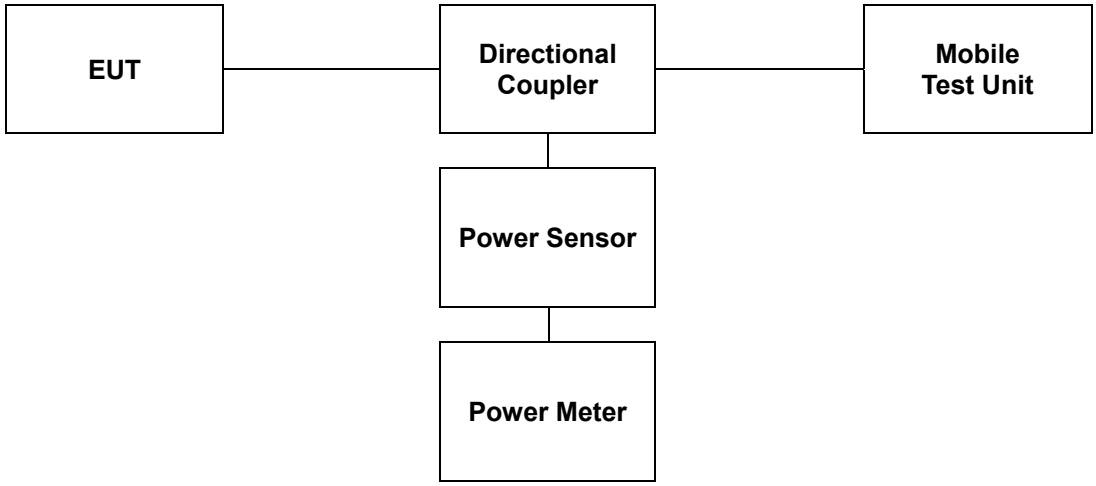
3.1. Limit

CFR 47, Section FCC §2.1046

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.

Band	Bandwidth (㎒)	RB Size	RB Offset	QPSK					
				18607		18900		19193	
				1 850.7		1 880.0		1 909.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
2	1.4	1	0	23.21	0.209	23.18	0.208	23.17	0.207
		1	3	23.25	0.211	23.09	0.204	**23.47**	**0.222**
		1	5	23.21	0.209	23.16	0.207	23.38	0.218
		3	0	23.32	0.215	23.01	0.200	23.05	0.202
		3	2	23.13	0.206	22.94	0.197	23.11	0.205
		3	3	23.11	0.205	23.10	0.204	23.19	0.208
		6	0	22.28	0.169	21.97	0.157	22.22	0.167
	Bandwidth (㎒)	RB Size	RB Offset	18615		18900		19185	
				1 851.5		1 880.0		1 908.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	**23.43**	**0.220**	23.25	0.211	22.89	0.195
		1	8	23.42	0.220	23.20	0.209	23.11	0.205
		1	14	23.31	0.214	23.03	0.201	22.94	0.197
		8	0	22.34	0.171	22.02	0.159	21.93	0.156
		8	4	22.17	0.165	21.90	0.155	22.00	0.158
		8	7	22.31	0.170	21.99	0.158	21.98	0.158
		15	0	22.24	0.167	21.89	0.155	21.93	0.156
	Bandwidth (㎒)	RB Size	RB Offset	18625		18900		19175	
				1 852.5		1 880.0		1 907.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	23.30	0.214	23.24	0.211	23.19	0.208
		1	12	**23.34**	**0.216**	23.23	0.210	23.17	0.207
		1	24	23.27	0.212	23.28	0.213	23.02	0.200
		12	0	22.20	0.166	21.99	0.158	22.15	0.164
		12	7	22.26	0.168	21.98	0.158	21.93	0.156
		12	13	22.26	0.168	21.97	0.157	21.97	0.157
		25	0	22.24	0.167	22.03	0.160	21.84	0.153
	Bandwidth (㎒)	RB Size	RB Offset	18650		18900		19150	
				1 855.0		1 880.0		1 905.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	23.44	0.221	23.38	0.218	**23.67**	**0.233**
		1	25	23.47	0.222	23.27	0.212	23.30	0.214
		1	49	23.37	0.217	23.15	0.207	23.06	0.202
		25	0	22.15	0.164	22.02	0.159	22.10	0.162
		25	12	22.31	0.170	21.94	0.156	22.26	0.168
		25	25	22.12	0.163	21.84	0.153	21.94	0.156
		50	0	22.14	0.164	21.98	0.158	22.07	0.161
	Bandwidth (㎒)	RB Size	RB Offset	18675		18900		19125	
				1 857.5		1 880.0		1 902.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	15	1	0	23.40	0.219	23.17	0.207	23.12	0.205
		1	37	23.28	0.213	23.16	0.207	**23.47**	**0.222**
		1	74	23.17	0.207	23.31	0.214	23.01	0.200
		36	0	22.12	0.163	22.22	0.167	22.30	0.170
		36	20	22.18	0.165	22.00	0.158	22.32	0.171
		36	39	22.09	0.162	21.96	0.157	22.00	0.158
		75	0	21.99	0.158	22.08	0.161	22.06	0.161
	Bandwidth (㎒)	RB Size	RB Offset	18700		18900		19100	
				1 860.0		1 880.0		1 900.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	20	1	0	23.20	0.209	22.94	0.197	23.41	0.219
		1	50	23.60	0.229	23.36	0.217	**23.84**	**0.242**
		1	99	23.03	0.201	23.37	0.217	22.97	0.198
		50	0	22.17	0.165	22.16	0.164	22.11	0.163
		50	25	22.11	0.163	21.93	0.156	22.30	0.170
		50	50	21.84	0.153	21.86	0.153	22.04	0.160
		100	0	22.13	0.163	22.06	0.161	22.07	0.161

Band	Bandwidth (㎒)	RB Size	RB Offset	16QAM					
				18607		18900		19193	
				1 850.7		1 880.0		1 909.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
2	1.4	1	0	22.04	0.160	22.07	0.161	21.88	0.154
		1	3	**22.30**	**0.170**	21.86	0.153	21.98	0.158
		1	5	22.12	0.163	21.77	0.150	22.05	0.160
		3	0	22.28	0.169	21.97	0.157	22.17	0.165
		3	2	22.11	0.163	22.02	0.159	22.07	0.161
		3	3	22.16	0.164	21.29	0.135	22.18	0.165
		6	0	21.02	0.126	20.57	0.114	21.35	0.136
	Bandwidth (㎒)	RB Size	RB Offset	18615		18900		19185	
				1 851.5		1 880.0		1 908.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	21.84	0.153	21.80	0.151	21.93	0.156
		1	8	21.95	0.157	21.91	0.155	22.05	0.160
		1	14	**22.14**	**0.164**	21.85	0.153	21.60	0.145
		8	0	20.91	0.123	20.91	0.123	20.93	0.124
		8	4	21.29	0.135	20.92	0.124	21.13	0.130
		8	7	21.30	0.135	20.92	0.124	20.96	0.125
		15	0	21.04	0.127	21.09	0.129	20.96	0.125
	Bandwidth (㎒)	RB Size	RB Offset	18625		18900		19175	
				1 852.5		1 880.0		1 907.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	21.79	0.151	21.91	0.155	21.97	0.157
		1	12	22.05	0.160	21.44	0.139	22.05	0.160
		1	24	**22.12**	**0.163**	21.14	0.130	21.76	0.150
		12	0	21.19	0.132	21.01	0.126	20.95	0.124
		12	7	21.18	0.131	20.97	0.125	20.98	0.125
		12	13	21.32	0.136	20.99	0.126	21.01	0.126
		25	0	21.03	0.127	21.08	0.128	20.78	0.120
	Bandwidth (㎒)	RB Size	RB Offset	18650		18900		19150	
				1 855.0		1 880.0		1 905.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	22.04	0.160	**22.57**	**0.181**	21.69	0.148
		1	25	22.44	0.175	21.50	0.141	22.39	0.173
		1	49	22.17	0.165	22.12	0.163	21.87	0.154
		25	0	21.29	0.135	21.41	0.138	21.25	0.133
		25	12	21.26	0.134	21.04	0.127	21.20	0.132
		25	25	21.14	0.130	20.83	0.121	20.99	0.126
		50	0	21.26	0.134	20.94	0.124	21.17	0.131
	Bandwidth (㎒)	RB Size	RB Offset	18675		18900		19125	
				1 857.5		1 880.0		1 902.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	15	1	0	22.04	0.160	22.17	0.165	22.27	0.169
		1	37	22.08	0.161	21.80	0.151	**22.29**	**0.169**
		1	74	21.88	0.154	21.91	0.155	21.80	0.151
		36	0	21.02	0.126	21.05	0.127	21.28	0.134
		36	20	21.26	0.134	20.98	0.125	21.26	0.134
		36	39	21.07	0.128	20.97	0.125	21.04	0.127
		75	0	21.06	0.128	21.10	0.129	21.11	0.129
	Bandwidth (㎒)	RB Size	RB Offset	18700		18900		19100	
				1 860.0		1 880.0		1 900.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	20	1	0	21.48	0.141	21.78	0.151	21.96	0.157
		1	50	**22.24**	**0.167**	22.07	0.161	22.18	0.165
		1	99	21.84	0.153	22.00	0.158	21.59	0.144
		50	0	21.10	0.129	21.21	0.132	21.23	0.133
		50	25	21.19	0.132	20.98	0.125	21.22	0.132
		50	50	20.92	0.124	21.20	0.132	21.00	0.126
		100	0	21.01	0.126	21.04	0.127	20.97	0.125

Band	Bandwidth (㎒)	RB Size	RB Offset	QPSK					
				19957		20175		20393	
				1 710.7		1 732.5		1 754.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
4	1.4	1	0	22.81	0.191	22.93	0.196	22.69	0.186
		1	3	22.93	0.196	23.06	0.202	22.89	0.195
		1	5	22.84	0.192	**23.10**	**0.204**	22.80	0.191
		3	0	22.85	0.193	22.83	0.192	22.70	0.186
		3	2	22.61	0.182	22.87	0.194	22.65	0.184
		3	3	22.59	0.182	22.85	0.193	22.63	0.183
		6	0	21.59	0.144	21.89	0.155	21.66	0.147
	Bandwidth (㎒)	RB Size	RB Offset	19965		20175		20385	
				1 711.5		1 732.5		1 753.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	22.69	0.186	23.17	0.207	22.74	0.188
		1	8	22.72	0.187	**23.18**	**0.208**	22.85	0.193
		1	14	22.74	0.188	23.18	0.208	22.76	0.189
		8	0	21.68	0.147	22.05	0.160	21.70	0.148
		8	4	21.54	0.143	22.01	0.159	21.68	0.147
		8	7	21.60	0.145	22.01	0.159	21.68	0.147
		15	0	21.50	0.141	21.94	0.156	21.66	0.147
	Bandwidth (㎒)	RB Size	RB Offset	19975		20175		20375	
				1 712.5		1 732.5		1 752.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	22.89	0.195	22.87	0.194	23.17	0.207
		1	12	22.82	0.191	23.04	0.201	**23.18**	**0.208**
		1	24	22.73	0.187	23.05	0.202	22.77	0.189
		12	0	21.54	0.143	21.93	0.156	21.85	0.153
		12	7	21.53	0.142	21.98	0.158	21.90	0.155
		12	13	21.58	0.144	21.93	0.156	21.83	0.152
		25	0	21.55	0.143	21.82	0.152	21.85	0.153
	Bandwidth (㎒)	RB Size	RB Offset	20000		20175		20350	
				1 715.0		1 732.5		1 750.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	23.08	0.203	23.06	0.202	23.05	0.202
		1	25	23.13	0.206	**23.32**	**0.215**	23.12	0.205
		1	49	22.86	0.193	23.09	0.204	22.98	0.199
		25	0	21.60	0.145	21.97	0.157	21.83	0.152
		25	12	21.70	0.148	21.98	0.158	21.88	0.154
		25	25	21.58	0.144	22.02	0.159	21.82	0.152
		50	0	21.58	0.144	21.82	0.152	21.75	0.150
	Bandwidth (㎒)	RB Size	RB Offset	20025		20175		20325	
				1 717.5		1 732.5		1 747.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	15	1	0	22.79	0.190	23.26	0.212	23.24	0.211
		1	37	22.98	0.199	23.02	0.200	23.01	0.200
		1	74	23.11	0.205	**23.30**	**0.214**	22.86	0.193
		36	0	21.56	0.143	21.99	0.158	21.96	0.157
		36	20	21.56	0.143	22.10	0.162	21.91	0.155
		36	39	21.66	0.147	22.01	0.159	21.75	0.150
		75	0	21.56	0.143	21.92	0.156	21.91	0.155
	Bandwidth (㎒)	RB Size	RB Offset	20050		20175		20300	
				1 720.0		1 732.5		1 745.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	20	1	0	22.96	0.198	23.15	0.207	**23.31**	**0.214**
		1	50	23.06	0.202	23.14	0.206	23.06	0.202
		1	99	23.02	0.200	23.06	0.202	22.75	0.188
		50	0	21.54	0.143	21.95	0.157	21.97	0.157
		50	25	21.62	0.145	21.99	0.158	21.90	0.155
		50	50	21.75	0.150	22.00	0.158	21.77	0.150
		100	0	21.64	0.146	21.87	0.154	21.99	0.158

Band	Bandwidth (㎒)	RB Size	RB Offset	16QAM					
				19957		20175		20393	
				1 710.7		1 732.5		1 754.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
4	1.4	1	0	21.62	0.145	21.86	0.153	21.52	0.142
		1	3	21.62	0.145	21.79	0.151	21.51	0.142
		1	5	21.46	0.140	**22.12**	**0.163**	21.35	0.136
		3	0	21.62	0.145	21.81	0.152	21.61	0.145
		3	2	21.84	0.153	22.07	0.161	21.78	0.151
		3	3	21.43	0.139	21.92	0.156	21.73	0.149
		6	0	20.74	0.119	20.64	0.116	20.74	0.119
	Bandwidth (㎒)	RB Size	RB Offset	19965		20175		20385	
				1 711.5		1 732.5		1 753.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	21.52	0.142	21.90	0.155	21.40	0.138
		1	8	21.14	0.130	21.99	0.158	21.58	0.144
		1	14	21.49	0.141	**22.04**	**0.160**	21.40	0.138
		8	0	20.73	0.118	20.69	0.117	20.74	0.119
		8	4	20.67	0.117	20.90	0.123	20.70	0.117
		8	7	20.66	0.116	20.77	0.119	20.78	0.120
		15	0	20.55	0.114	20.65	0.116	20.71	0.118
	Bandwidth (㎒)	RB Size	RB Offset	19975		20175		20375	
				1 712.5		1 732.5		1 752.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	21.64	0.146	21.55	0.143	21.82	0.152
		1	12	21.46	0.140	22.01	0.159	21.51	0.142
		1	24	21.58	0.144	**22.05**	**0.160**	21.65	0.146
		12	0	20.49	0.112	20.95	0.124	20.87	0.122
		12	7	20.50	0.112	20.87	0.122	20.74	0.119
		12	13	20.45	0.111	20.95	0.124	20.99	0.126
		25	0	20.41	0.110	20.83	0.121	21.03	0.127
	Bandwidth (㎒)	RB Size	RB Offset	20000		20175		20350	
				1 715.0		1 732.5		1 750.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	21.62	0.145	21.56	0.143	21.62	0.145
		1	25	**21.95**	**0.157**	21.82	0.152	21.88	0.154
		1	49	21.43	0.139	21.76	0.150	21.58	0.144
		25	0	20.57	0.114	21.01	0.126	20.88	0.122
		25	12	20.67	0.117	20.83	0.121	20.85	0.122
		25	25	20.58	0.114	21.00	0.126	20.78	0.120
		50	0	20.68	0.117	20.91	0.123	20.82	0.121
	Bandwidth (㎒)	RB Size	RB Offset	20025		20175		20325	
				1 717.5		1 732.5		1 747.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	15	1	0	21.37	0.137	**21.78**	**0.151**	21.51	0.142
		1	37	21.47	0.140	21.72	0.149	21.66	0.147
		1	74	21.52	0.142	21.72	0.149	21.48	0.141
		36	0	20.67	0.117	20.95	0.124	21.00	0.126
		36	20	20.57	0.114	20.98	0.125	20.76	0.119
		36	39	20.58	0.114	20.93	0.124	20.71	0.118
		75	0	20.78	0.120	21.05	0.127	20.96	0.125
	Bandwidth (㎒)	RB Size	RB Offset	20050		20175		20300	
				1 720.0		1 732.5		1 745.0	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	20	1	0	21.38	0.137	21.84	0.153	21.68	0.147
		1	50	21.52	0.142	21.76	0.150	21.70	0.148
		1	99	21.69	0.148	**21.91**	**0.155**	21.64	0.146
		50	0	20.66	0.116	20.95	0.124	21.04	0.127
		50	25	20.57	0.114	21.09	0.129	20.86	0.122
		50	50	20.53	0.113	21.12	0.129	20.87	0.122
		100	0	20.62	0.115	20.98	0.125	21.02	0.126

Band	Bandwidth (㎒)	RB Size	RB Offset	QPSK					
				20407		20525		20643	
				824.7		836.6		848.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	1.4	1	0	23.29	0.213	23.24	0.211	23.32	0.215
		1	3	**23.38**	**0.218**	23.31	0.214	23.38	0.218
		1	5	23.16	0.207	23.19	0.208	23.22	0.210
		3	0	23.09	0.204	23.11	0.205	23.17	0.207
		3	2	23.26	0.212	23.15	0.207	23.25	0.211
		3	3	23.14	0.206	23.23	0.210	23.13	0.206
		6	0	22.13	0.163	22.12	0.163	22.18	0.165
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20415**		**20525**		**20635**	
				825.5		**836.5**		**847.5**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	23.34	0.216	**23.45**	**0.221**	23.16	0.207
		1	8	23.31	0.214	23.26	0.212	23.42	0.220
		1	14	23.21	0.209	23.07	0.203	23.28	0.213
		8	0	22.15	0.164	22.25	0.168	22.17	0.165
		8	4	22.14	0.164	22.22	0.167	22.33	0.171
		8	7	22.22	0.167	22.21	0.166	22.25	0.168
		15	0	22.17	0.165	22.18	0.165	22.28	0.169
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20425**		**20525**		**20625**	
				826.5		**836.5**		**846.5**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	23.19	0.208	23.05	0.202	23.18	0.208
		1	12	23.05	0.202	23.22	0.210	**23.23**	**0.210**
		1	24	22.99	0.199	22.99	0.199	23.15	0.207
		12	0	22.08	0.161	22.15	0.164	22.23	0.167
		12	7	22.11	0.163	22.26	0.168	22.22	0.167
		12	13	22.11	0.163	22.05	0.160	22.21	0.166
		25	0	22.08	0.161	22.10	0.162	22.12	0.163
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20450**		**20525**		**20600**	
				829.0		**836.5**		**844.0**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	23.21	0.209	23.05	0.202	23.20	0.209
		1	25	23.13	0.206	23.46	0.222	**23.50**	**0.224**
		1	49	23.12	0.205	23.34	0.216	23.21	0.209
		25	0	22.01	0.159	22.05	0.160	22.24	0.167
		25	12	22.09	0.162	22.14	0.164	22.20	0.166
		25	25	22.23	0.167	22.10	0.162	22.24	0.167
		50	0	22.19	0.166	22.11	0.163	22.14	0.164

Band	Bandwidth (㎒)	RB Size	RB Offset	16QAM					
				20407		20525		20643	
				824.7		836.6		848.3	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	1.4	1	0	**22.33**	**0.171**	22.12	0.163	22.08	0.161
		1	3	22.24	0.167	22.14	0.164	21.98	0.158
		1	5	22.23	0.167	22.10	0.162	22.13	0.163
		3	0	22.19	0.166	22.03	0.160	22.29	0.169
		3	2	22.26	0.168	22.04	0.160	22.33	0.170
		3	3	22.36	0.164	22.36	0.165	22.51	0.170
		6	0	21.19	0.132	21.18	0.131	21.26	0.134
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20415**		**20525**		**20635**	
				825.5		**836.5**		**847.5**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	3	1	0	22.12	0.163	**22.20**	**0.166**	22.12	0.163
		1	8	22.01	0.159	22.02	0.159	22.09	0.162
		1	14	21.99	0.158	22.10	0.162	22.14	0.164
		8	0	21.23	0.133	20.91	0.123	20.99	0.126
		8	4	21.19	0.132	20.95	0.124	21.42	0.139
		8	7	21.21	0.132	20.97	0.125	21.34	0.136
		15	0	21.43	0.139	21.19	0.132	21.32	0.136
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20425**		**20525**		**20625**	
				826.5		**836.5**		**846.5**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	5	1	0	22.04	0.160	22.06	0.161	21.97	0.157
		1	12	22.01	0.159	**22.14**	**0.164**	22.05	0.160
		1	24	22.04	0.160	21.94	0.156	22.06	0.161
		12	0	21.04	0.127	21.17	0.131	21.11	0.129
		12	7	21.19	0.132	21.16	0.131	21.21	0.132
		12	13	21.20	0.132	21.15	0.130	21.22	0.132
		25	0	21.08	0.128	21.13	0.130	21.03	0.127
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20450**		**20525**		**20600**	
				829.0		**836.5**		**844.0**	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
	10	1	0	21.65	0.146	21.70	0.148	21.69	0.148
		1	25	22.11	0.163	**22.22**	**0.167**	22.14	0.164
		1	49	22.08	0.161	22.12	0.163	22.20	0.166
		25	0	21.09	0.129	21.18	0.131	21.04	0.127
		25	12	21.20	0.132	21.24	0.133	21.19	0.132
		25	25	21.19	0.132	21.11	0.129	21.15	0.130
		50	0	21.09	0.129	21.13	0.130	21.09	0.129

Band	Bandwidth (㎒)	RB Size	RB Offset	QPSK					
				23205		23230		23255	
				779.5		782.0		784.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
13	5	1	0	23.71	0.235	24.02	0.252	23.99	0.251
		1	12	23.90	0.245	23.98	0.250	23.67	0.233
		1	24	**24.14**	**0.259**	23.50	0.224	23.58	0.228
		12	0	23.11	0.205	22.99	0.199	22.90	0.195
		12	7	23.08	0.203	22.95	0.197	22.82	0.191
		12	13	23.06	0.202	22.94	0.197	22.77	0.189
		25	0	23.18	0.208	23.04	0.201	22.93	0.196
	Bandwidth (㎒)	RB Size	RB Offset	-	-	23230		-	-
				-	-	782.0		-	-
				-	-	(dB m)	(W)	-	-
	10	1	0	-	-	23.72	0.236	-	-
		1	25	-	-	**24.23**	**0.265**	-	-
		1	49	-	-	23.80	0.240	-	-
		25	0	-	-	23.09	0.204	-	-
		25	12	-	-	23.02	0.200	-	-
		25	25	-	-	22.97	0.198	-	-
		50	0	-	-	23.07	0.203	-	-

Band	Bandwidth (㎒)	RB Size	RB Offset	16QAM					
				23205		23230		23255	
				779.5		782.0		784.5	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
13	5	1	0	23.18	0.208	22.40	0.174	23.17	0.207
		1	12	23.07	0.203	22.63	0.183	22.65	0.184
		1	24	**23.23**	**0.210**	22.06	0.161	22.98	0.199
		12	0	21.68	0.147	21.96	0.157	21.95	0.157
		12	7	21.71	0.148	21.92	0.156	21.96	0.157
		12	13	21.92	0.156	21.88	0.154	21.94	0.156
		25	0	22.01	0.159	22.22	0.167	22.08	0.161
	Bandwidth (㎒)	RB Size	RB Offset	-	-	23230		-	-
				-	-	782.0		-	-
				-	-	(dB m)	(W)	-	-
	10	1	0	-	-	23.11	0.205	-	-
		1	25	-	-	**23.45**	**0.221**	-	-
		1	49	-	-	22.68	0.185	-	-
		25	0	-	-	21.96	0.157	-	-
		25	12	-	-	21.94	0.156	-	-
		25	25	-	-	21.87	0.154	-	-
		50	0	-	-	21.93	0.156	-	-

4. Occupied Bandwidth

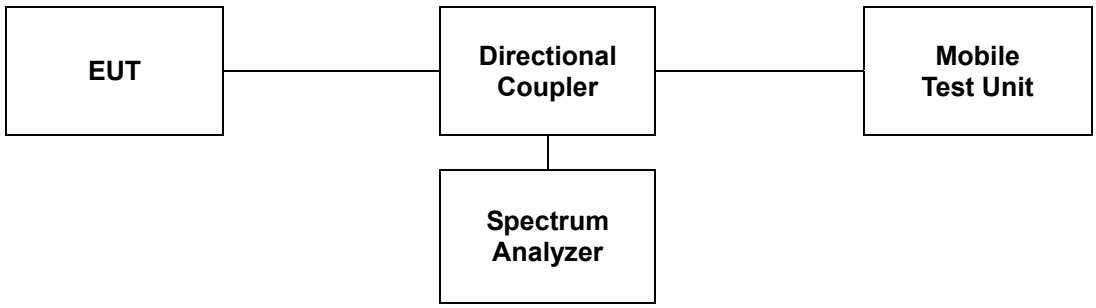
4.1. Limit

CFR 47, Section FCC §2.1049

4.2. Test Procedure

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).



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	1.103	1.094
	3		2.692	2.683
	5		4.530	4.515
	10		8.944	8.915
	15		13.459	13.415
	20		17.887	17.945

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
4	1.4	1 732.5	1.094	1.103
	3		2.692	2.692
	5		4.515	4.501
	10		8.944	8.944
	15		13.459	13.415
	20		17.829	17.945

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
5	1.4	836.5	1.107	1.098
	3		2.683	2.683
	5		4.530	4.515
	10		8.973	8.915

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
13	5	782.0	4.515	4.515
	10		8.915	8.886

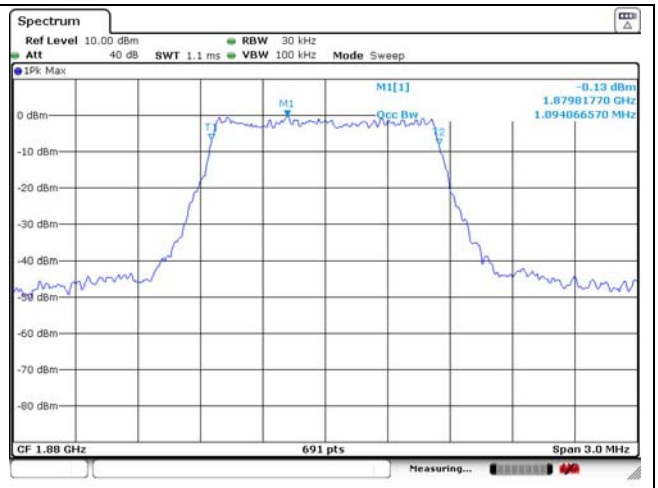
Note;

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

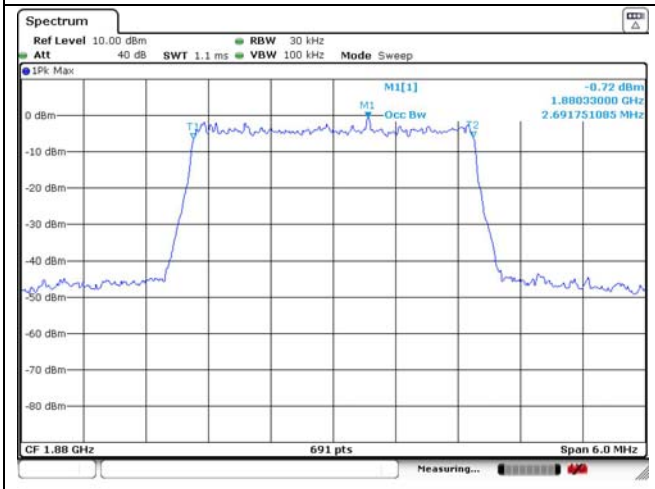
- Test plots

LTE band 2

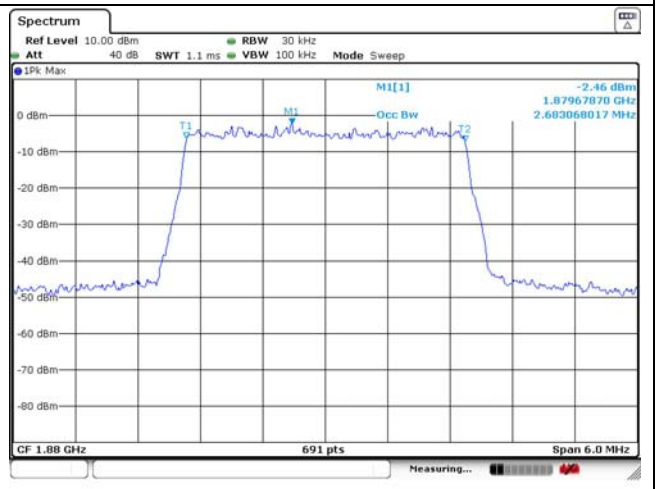
1.4 ㎒ QPSK Middle Channel - Full RB



1.4 ㎒ 16QAM Middle Channel - Full RB



3 ㎒ QPSK Middle Channel - Full RB

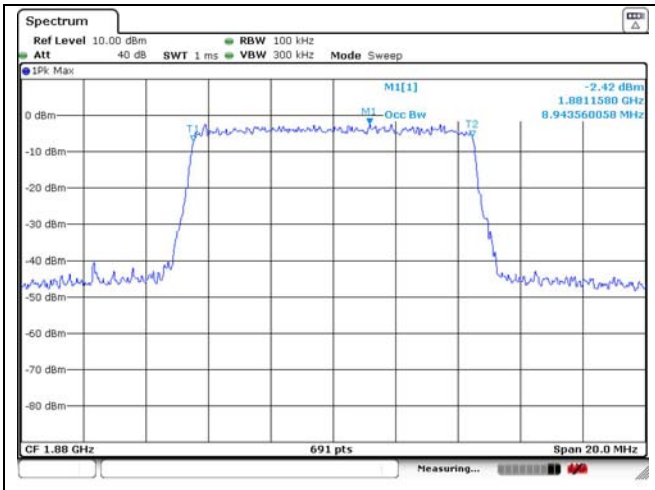


3 ㎒ 16QAM Middle Channel - Full RB

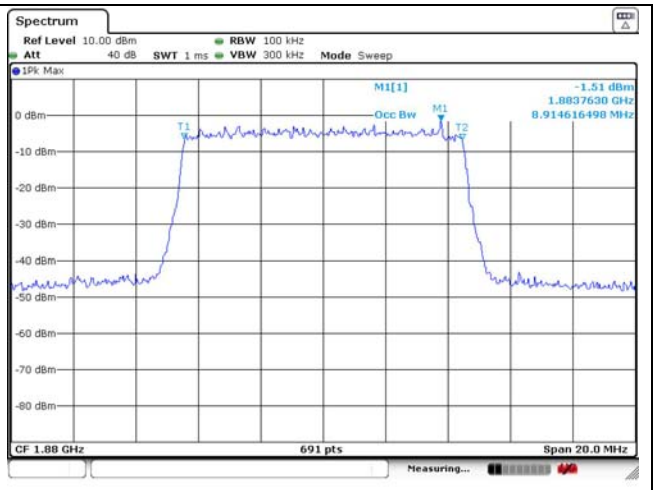
5 ㎒ QPSK Middle Channel - Full RB

5 ㎒ 16QAM Middle Channel - Full RB

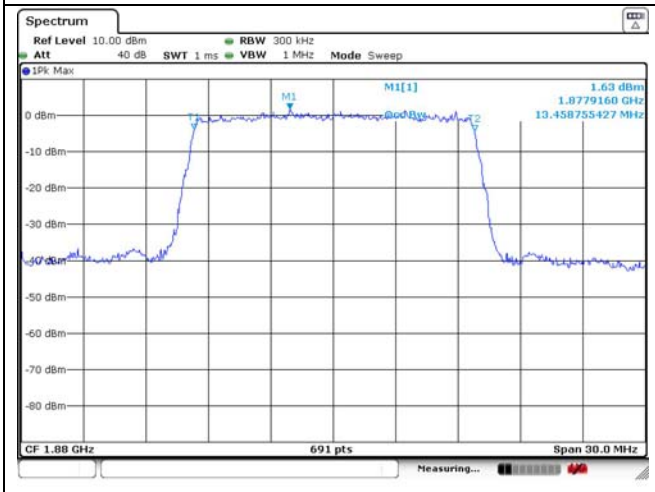
LTE band 2



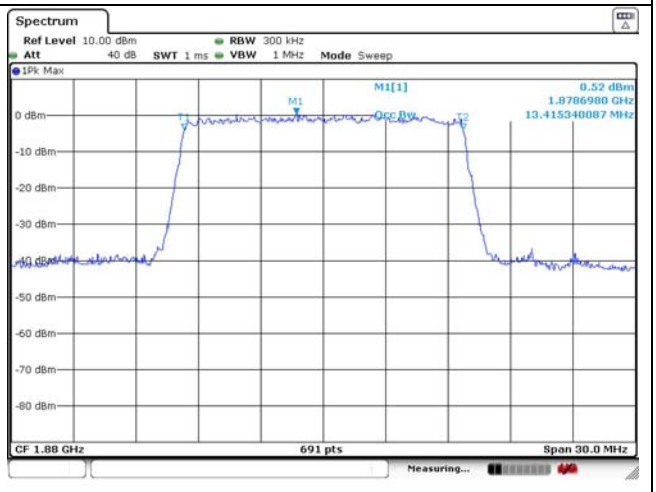
10 ㎒ QPSK Middle Channel - Full RB



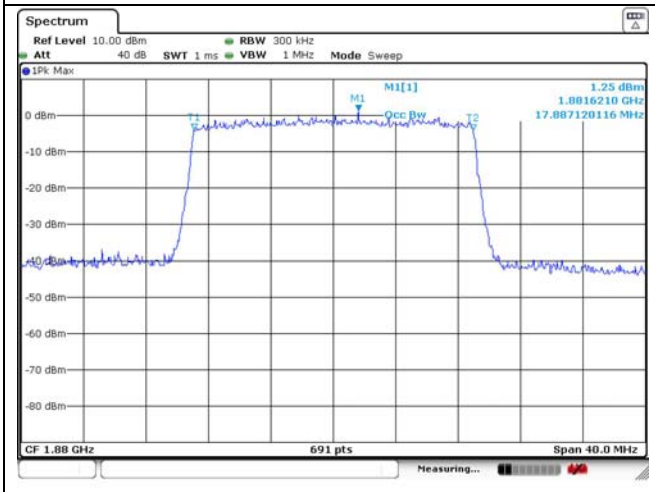
10 ㎒ 16QAM Middle Channel - Full RB



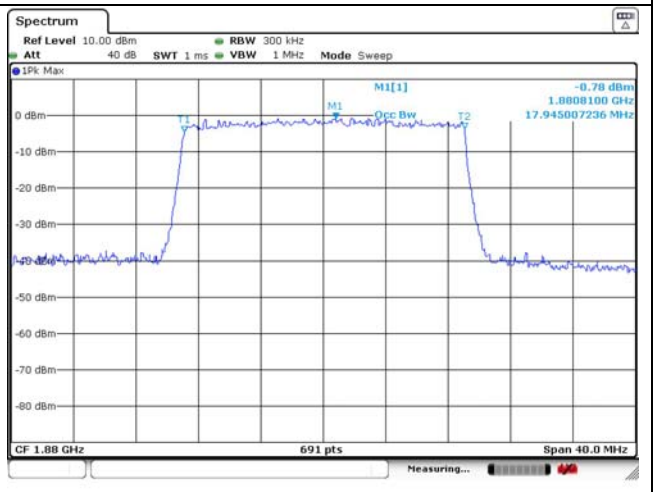
15 ㎒ QPSK Middle Channel - Full RB



15 ㎒ 16QAM Middle Channel - Full RB



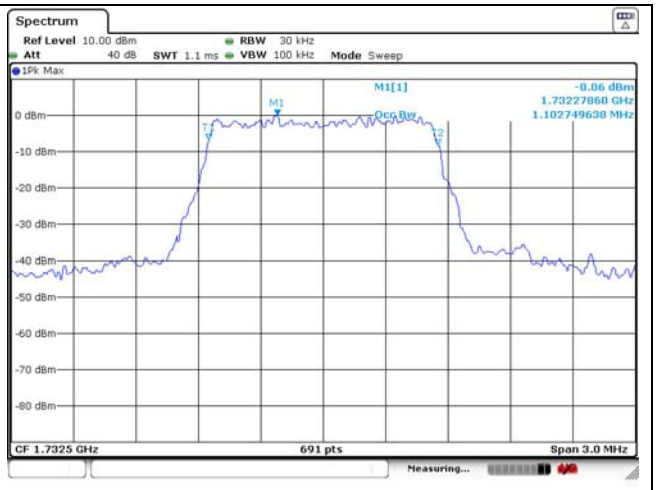
20 ㎒ QPSK Middle Channel - Full RB



20 ㎒ 16QAM Middle Channel - Full RB

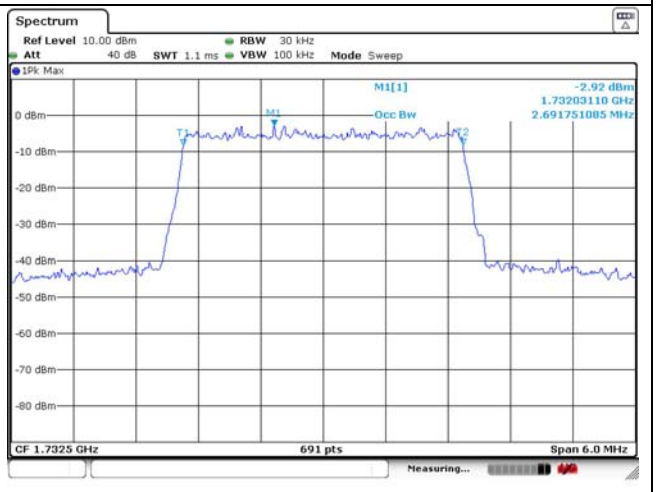
LTE band 4

1.4 ㎒ QPSK Middle Channel - Full RB

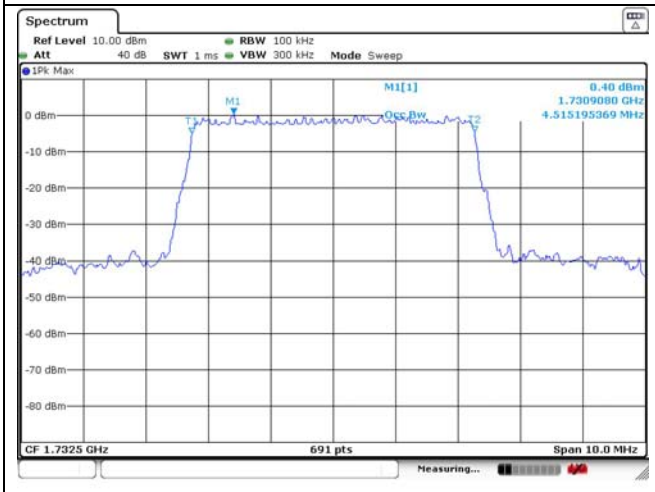


1.4 ㎒ 16QAM Middle Channel - Full RB

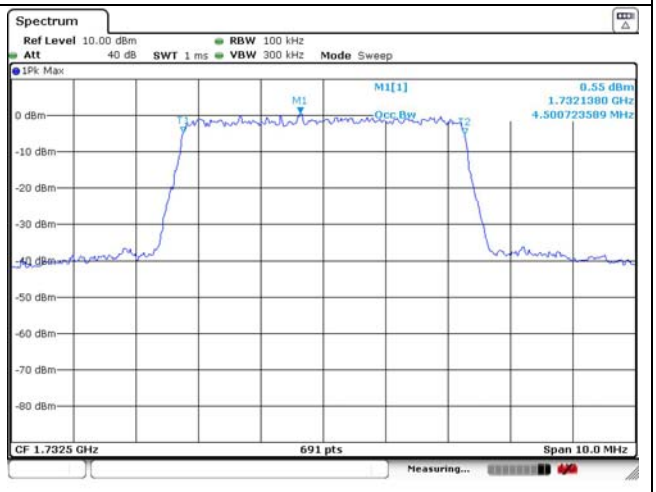
3 ㎒ QPSK Middle Channel - Full RB



3 ㎒ 16QAM Middle Channel - Full RB

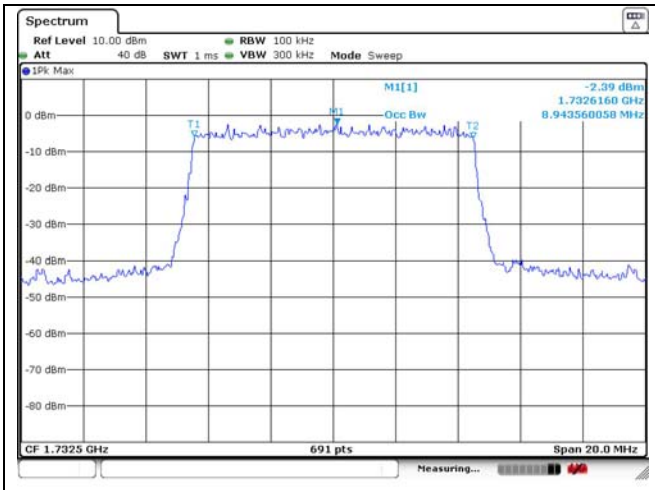


5 ㎒ QPSK Middle Channel - Full RB

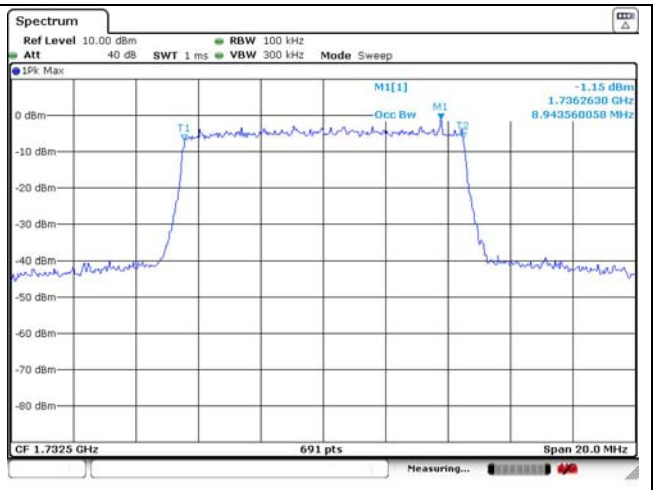


5 ㎒ 16QAM Middle Channel - Full RB

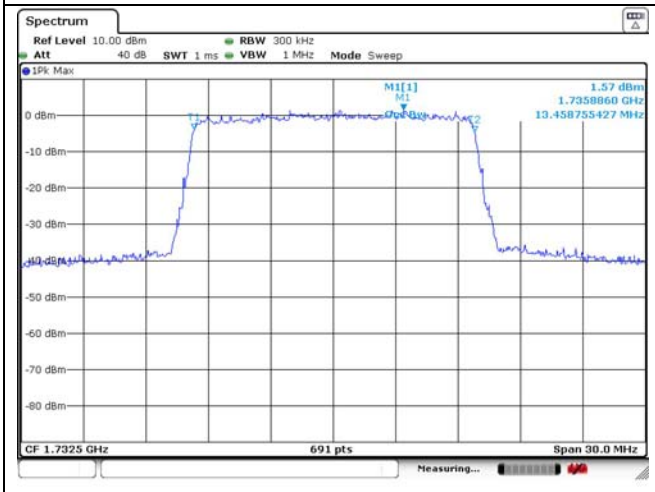
LTE band 4



10 ㎒ QPSK Middle Channel - Full RB

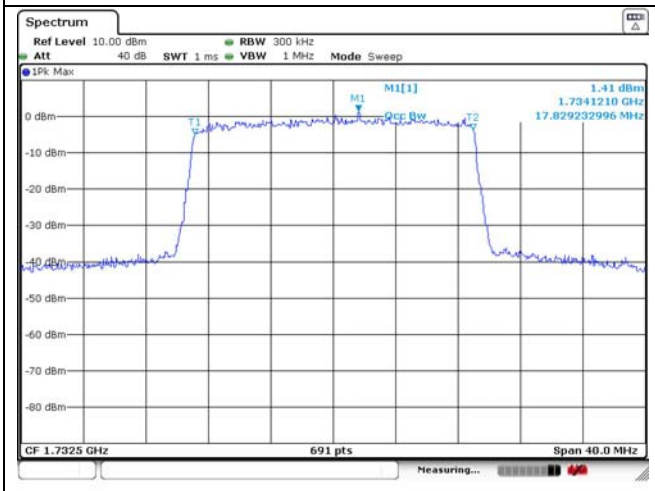


10 ㎒ 16QAM Middle Channel - Full RB



15 ㎒ QPSK Middle Channel - Full RB

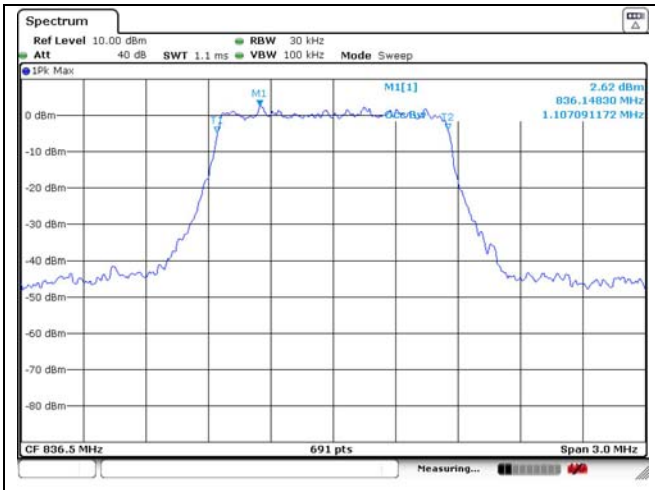
15 ㎒ 16QAM Middle Channel - Full RB



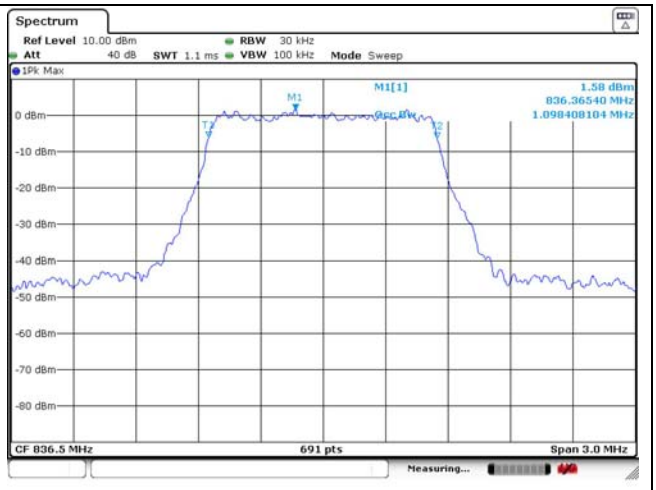
20 ㎒ QPSK Middle Channel - Full RB

20 ㎒ 16QAM Middle Channel - Full RB

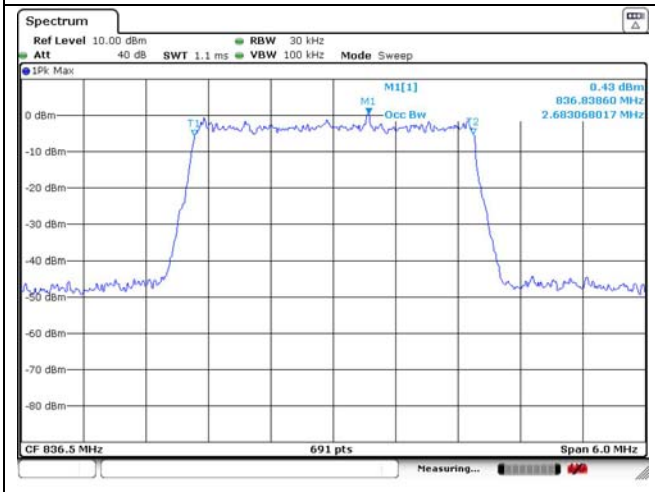
LTE band 5



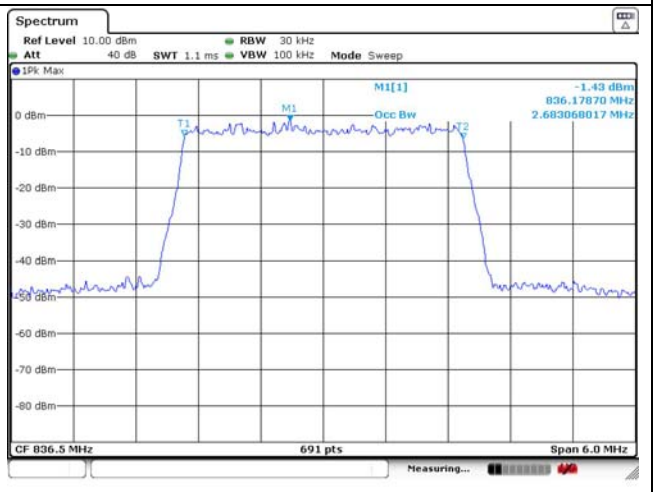
1.4 ㎒ QPSK Middle Channel - Full RB



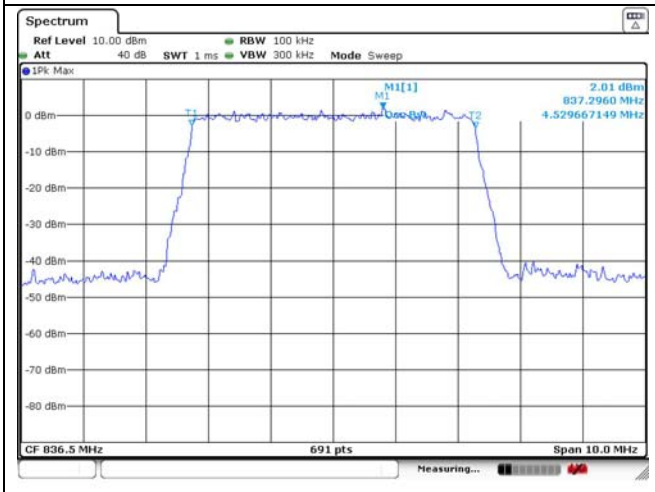
1.4 ㎒ 16QAM Middle Channel - Full RB



3 ㎒ QPSK Middle Channel - Full RB



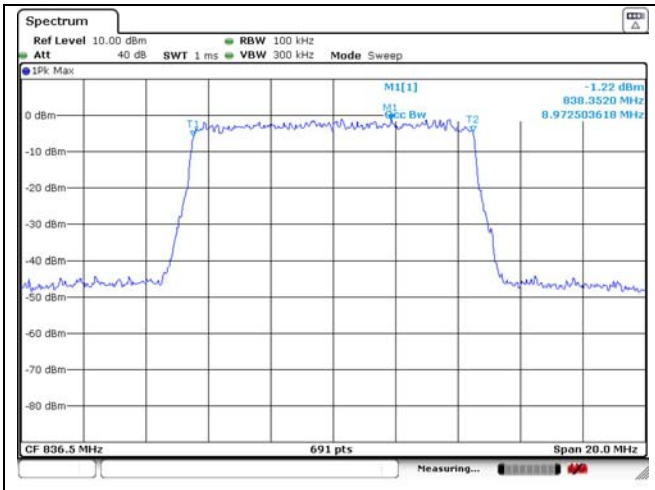
3 ㎒ 16QAM Middle Channel - Full RB



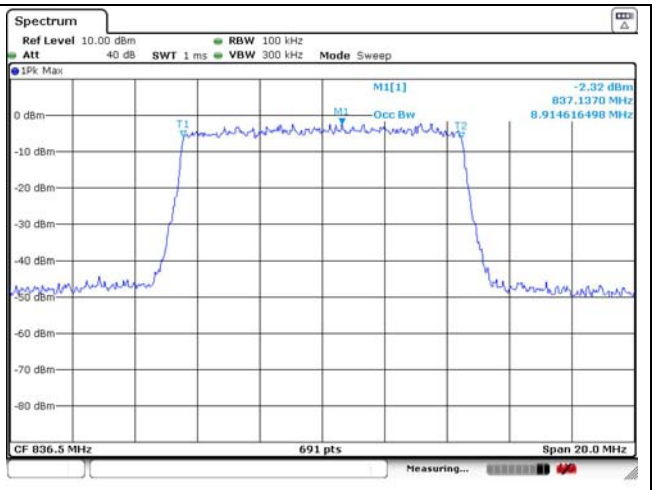
5 ㎒ QPSK Middle Channel - Full RB

5 ㎒ 16QAM Middle Channel - Full RB

LTE band 5

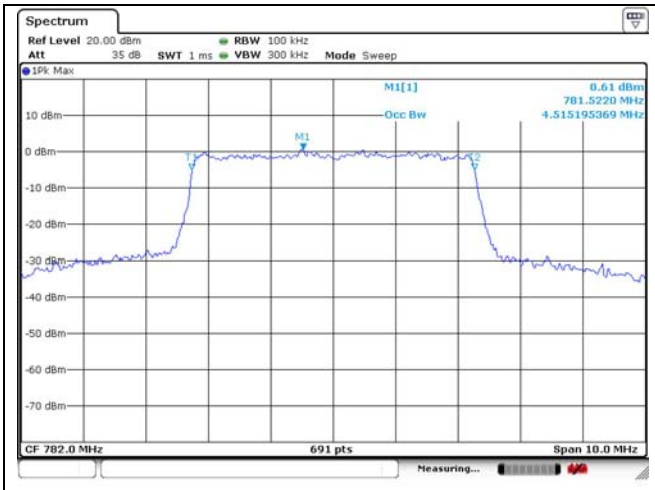


10 ㎒ QPSK Middle Channel - Full RB

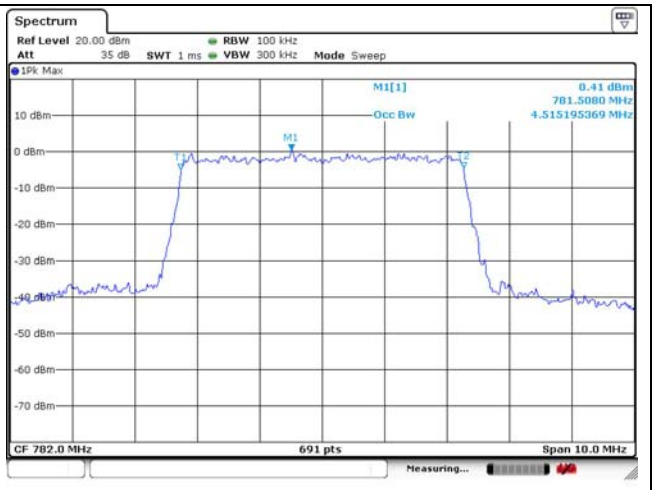


10 ㎒ 16QAM Middle Channel - Full RB

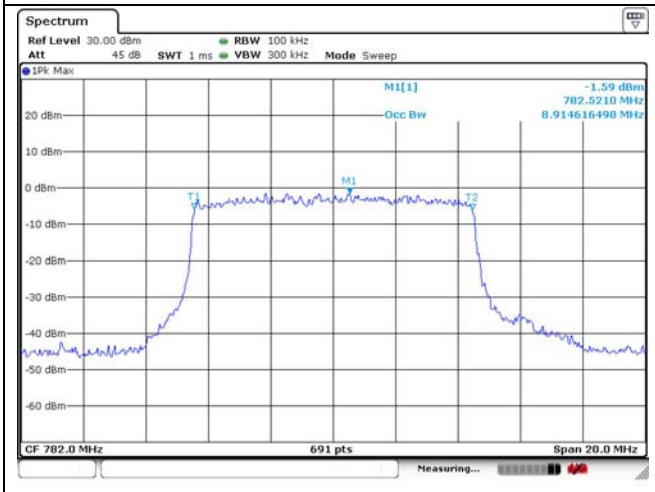
LTE band 13



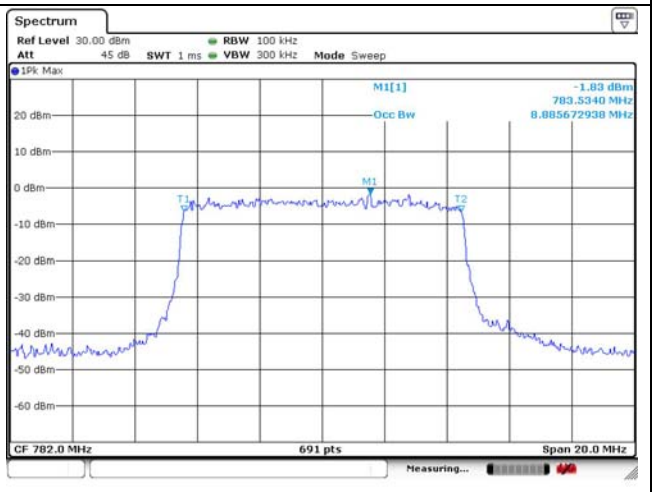
5 ㎒ QPSK Low Channel - Full RB



5 ㎒ 16QAM Low Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB



10 ㎒ 16QAM Middle Channel - Full RB

5. Peak-Average Ratio

5.1. Limit

- §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 dB.

- §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 dB.

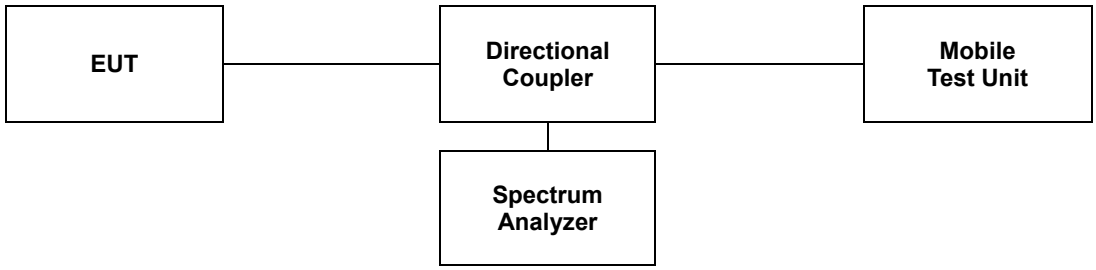
- §27.50(d)(5), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique,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

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 ms.
  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	QPSK	1 850.7	5.04
			1 880.0	5.16
			1 909.3	4.70
	3	QPSK	1 851.5	4.87
			1 880.0	4.93
			1 908.5	4.78
	5	QPSK	1 852.5	4.90
			1 880.0	4.99
			1 907.5	4.75
	10	QPSK	1 855.0	4.78
			1 880.0	4.90
			1 905.0	4.78
	15	QPSK	1 857.5	6.23
			1 880.0	4.96
			1 902.5	4.84
	20	QPSK	1 860.0	4.58
			1 880.0	4.72
			1 900.0	4.84

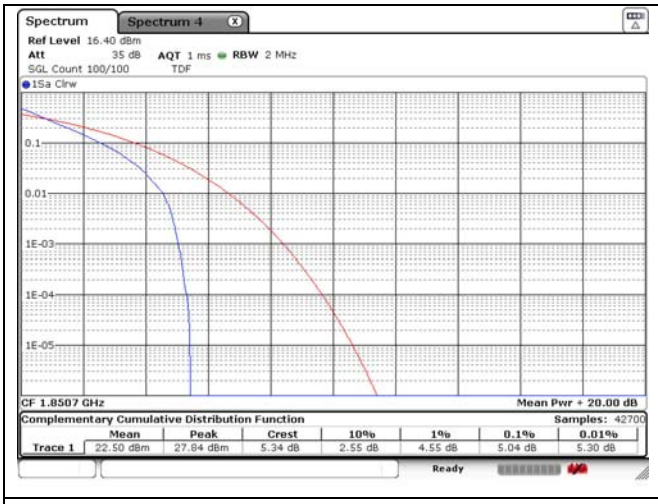
Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
4	1.4	QPSK	1 710.7	4.96
			1 732.5	5.22
			1 754.3	4.81
	3	QPSK	1 711.5	4.72
			1 732.5	5.07
			1 753.5	4.70
	5	QPSK	1 712.5	4.75
			1 732.5	5.04
			1 752.5	4.61
	10	QPSK	1 715.0	4.78
			1 732.5	5.07
			1 750.0	4.58
	15	QPSK	1 717.5	4.96
			1 732.5	5.10
			1 747.5	4.72
	20	QPSK	1 720.0	4.84
			1 732.5	4.87
			1 745.0	4.58

Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (㏈)
5	1.4	QPSK	824.7	4.90
			836.5	4.96
			848.3	5.16
	3	QPSK	825.5	4.72
			836.5	4.67
			847.5	5.01
	5	QPSK	826.5	4.87
			836.5	4.78
			846.5	4.96
	10	QPSK	829.0	4.90
			836.5	4.87
			844.0	4.84

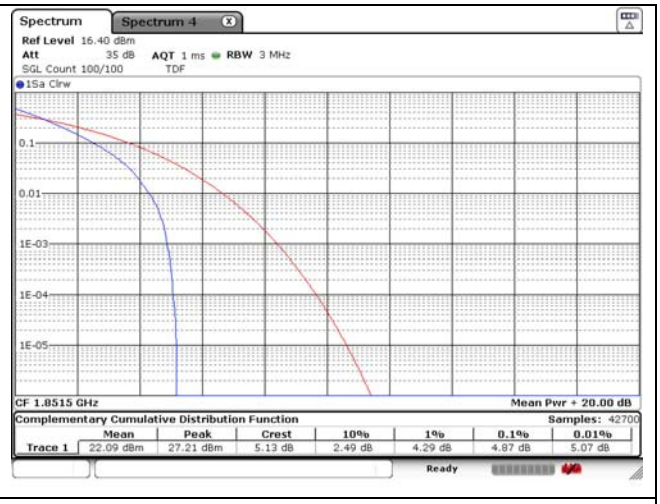
Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (㏈)
13	**5**	QPSK	779.5	4.12
			782.0	4.06
			784.5	4.23
	10	QPSK	782.0	4.26

- Test plots

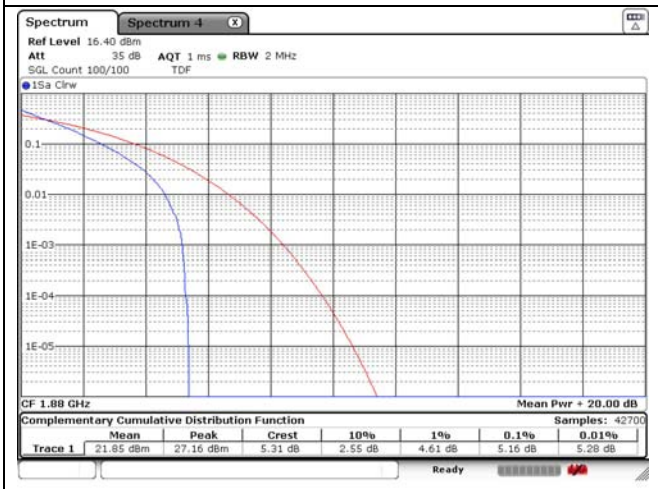
LTE band 2



1.4 ㎒ QPSK Low Channel - Full RB

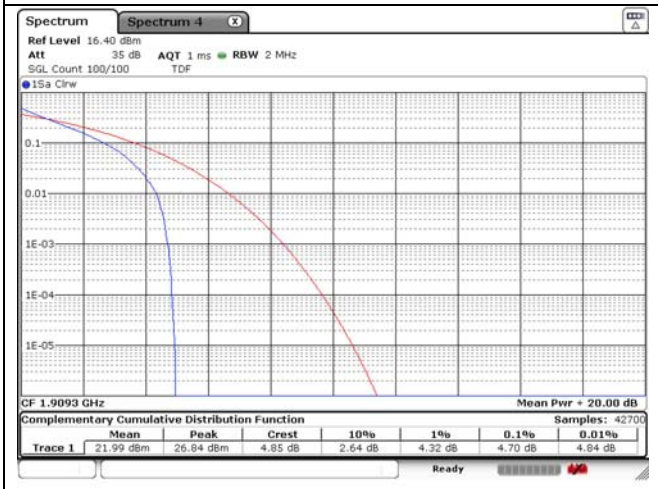


3 ㎒ QPSK Low Channel - Full RB

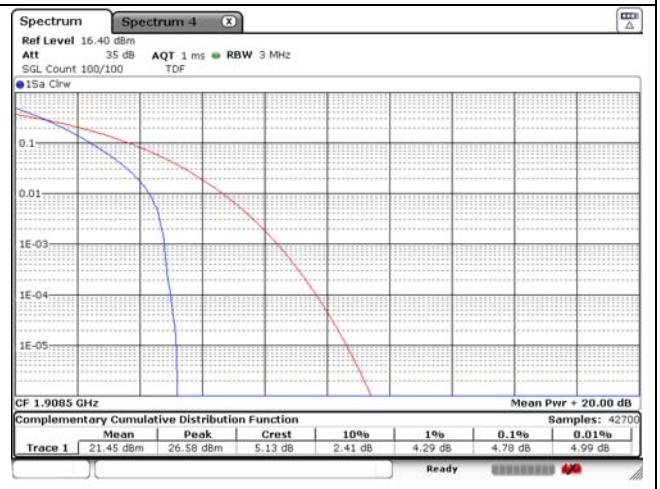


1.4 ㎒ QPSK Middle Channel - Full RB

3 ㎒ QPSK Middle Channel - Full RB

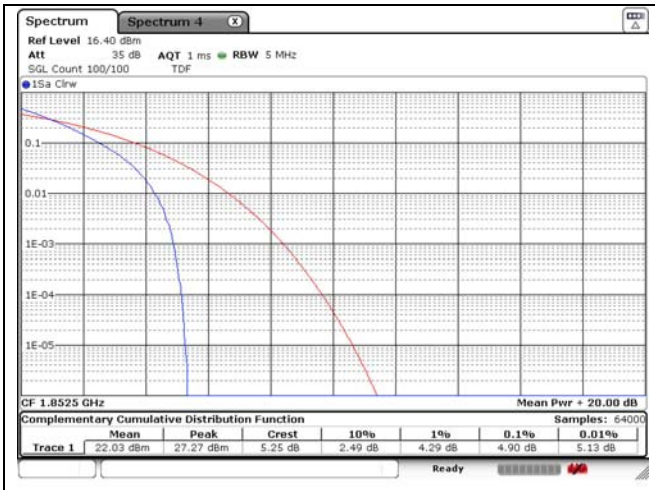


1.4 ㎒ QPSK High Channel - Full RB

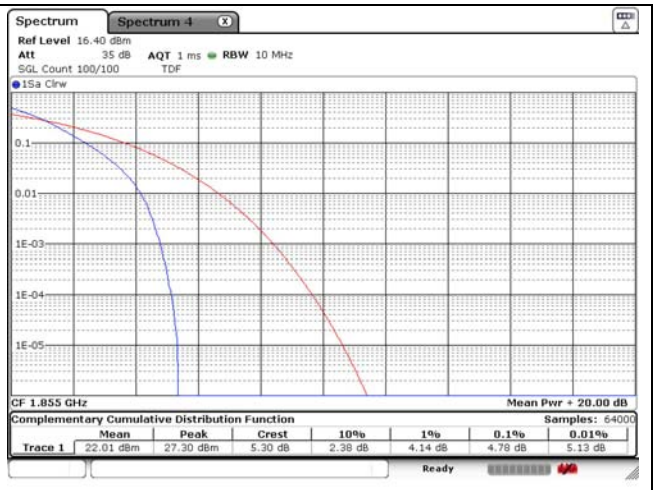


3 ㎒ QPSK High Channel - Full RB

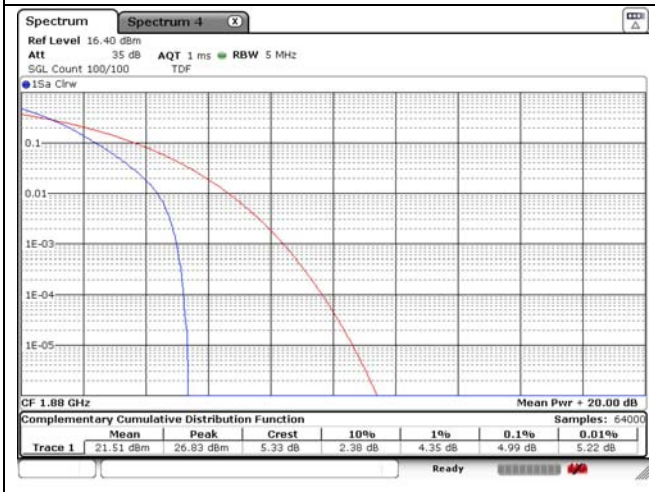
LTE band 2



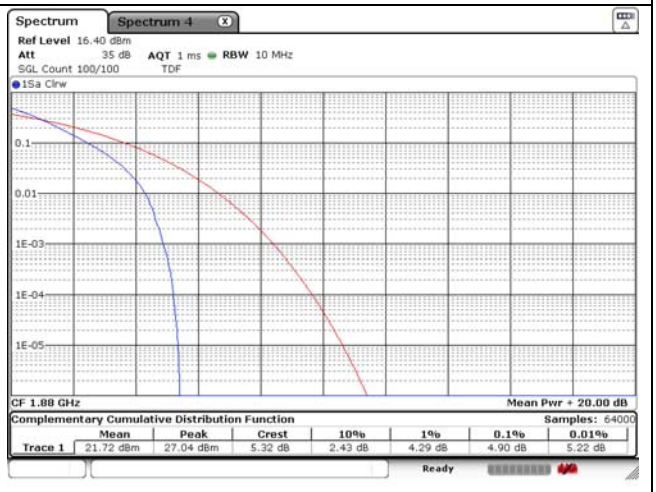
5 ㎒ QPSK Low Channel - Full RB



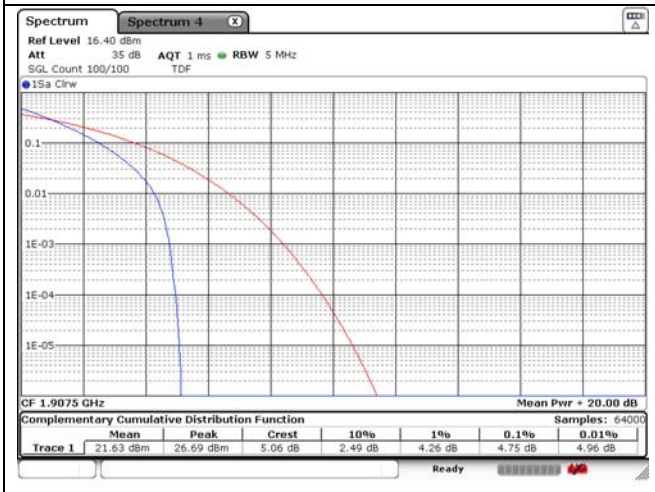
10 ㎒ QPSK Low Channel - Full RB



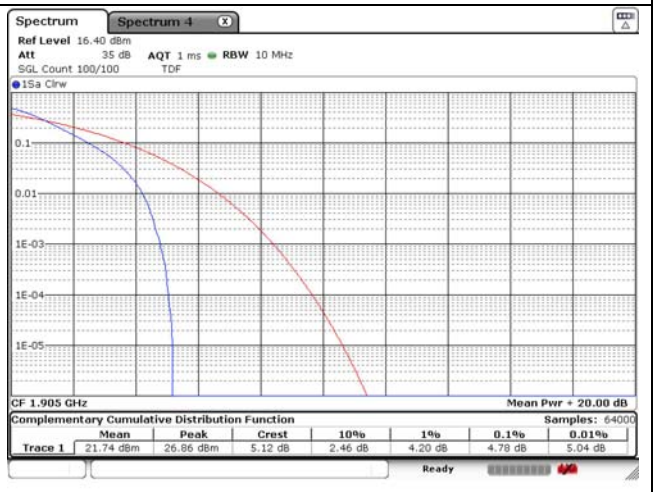
5 ㎒ QPSK Middle Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB

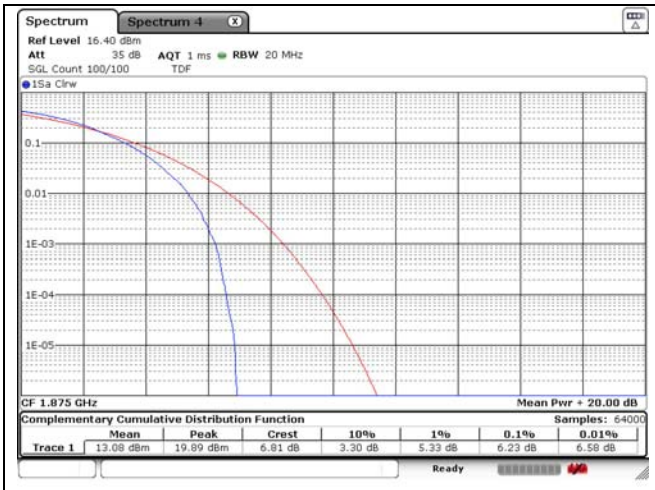


5 ㎒ QPSK High Channel - Full RB

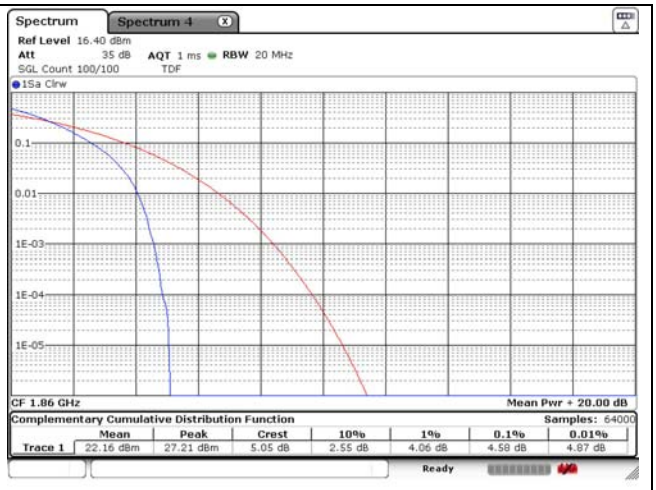


10 ㎒ QPSK High Channel - Full RB

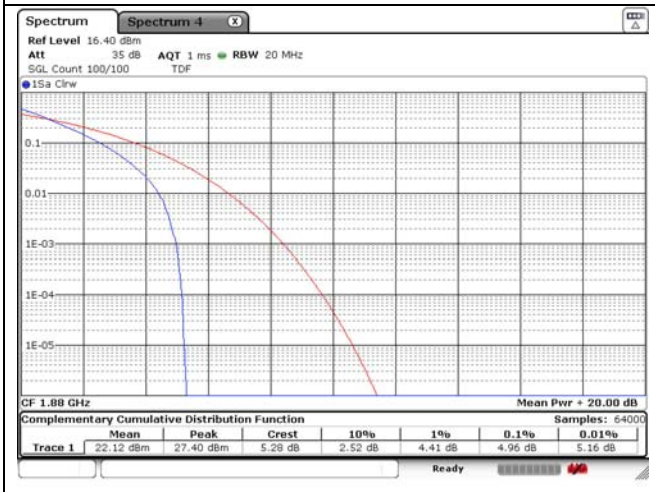
LTE band 2



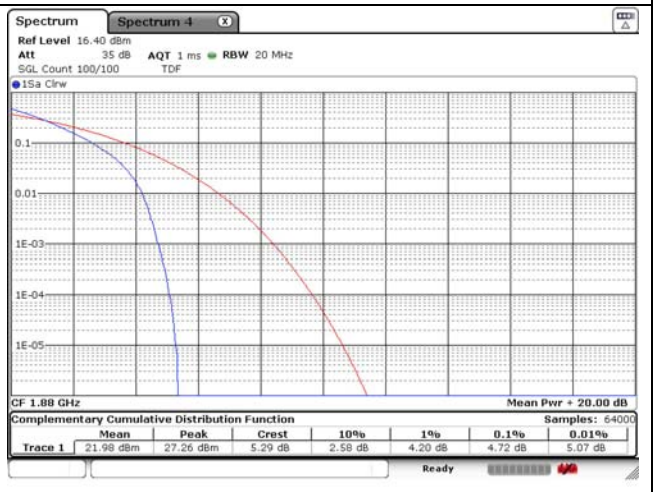
15 ㎒ QPSK Low Channel - Full RB



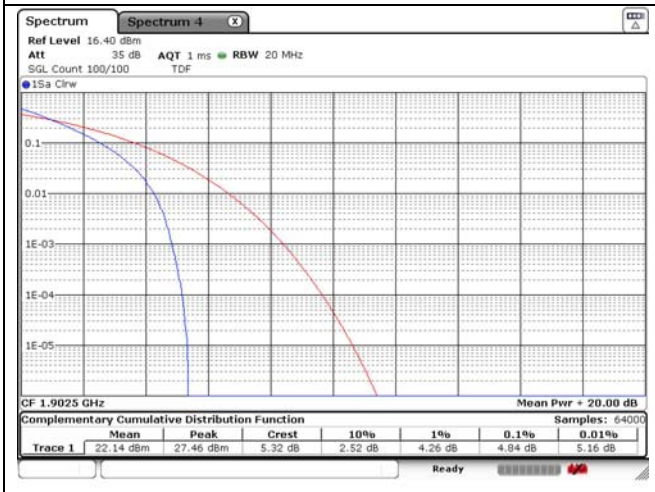
20 ㎒ QPSK Low Channel - Full RB



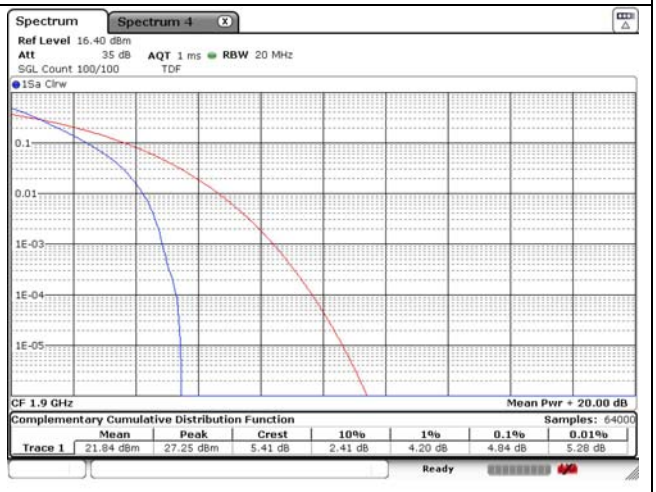
15 ㎒ QPSK Middle Channel - Full RB



20 ㎒ QPSK Middle Channel - Full RB

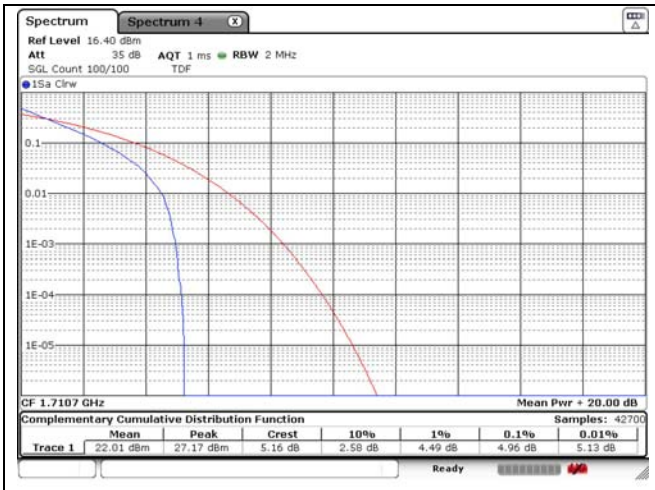


15 ㎒ QPSK High Channel - Full RB

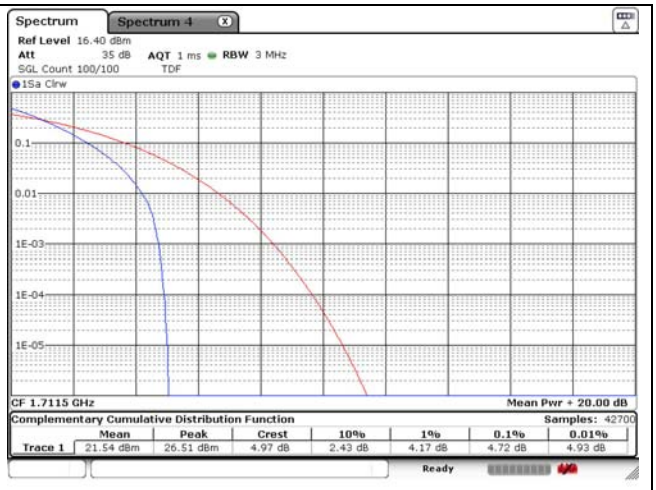


20 ㎒ QPSK High Channel - Full RB

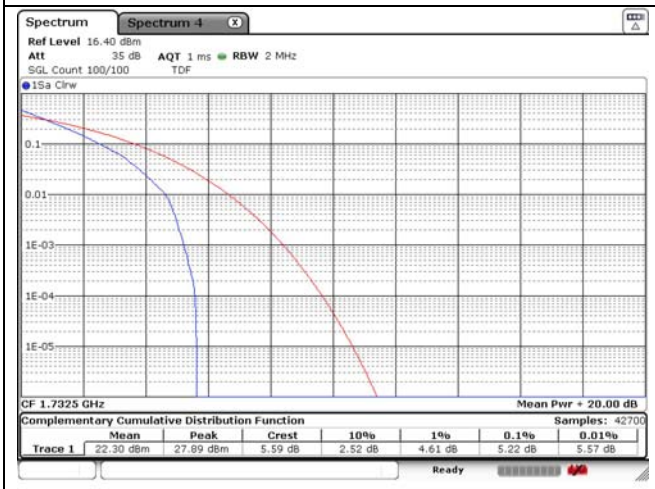
LTE band 4



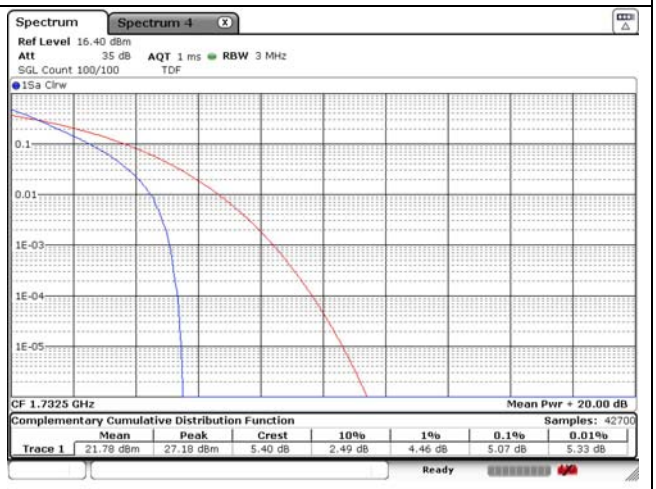
1.4 ㎒ QPSK Low Channel - Full RB



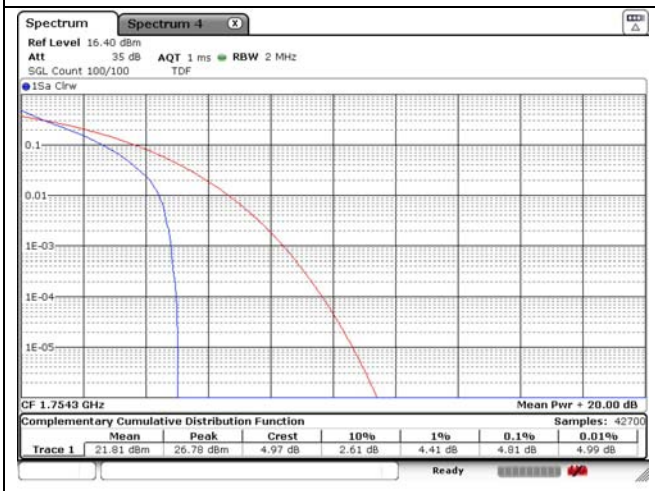
3 ㎒ QPSK Low Channel - Full RB



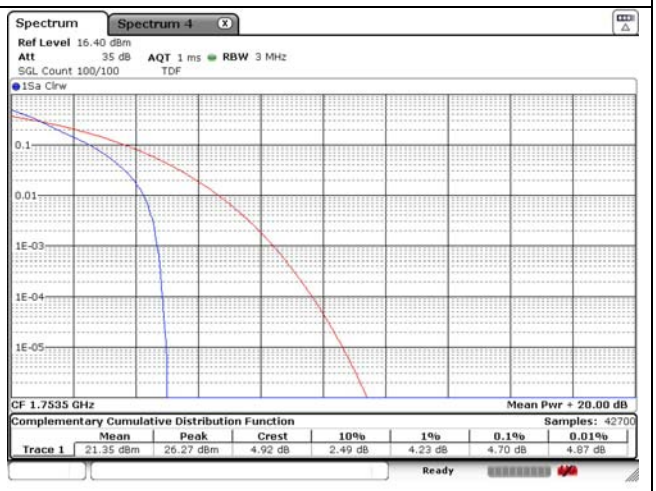
1.4 ㎒ QPSK Middle Channel - Full RB



3 ㎒ QPSK Middle Channel - Full RB

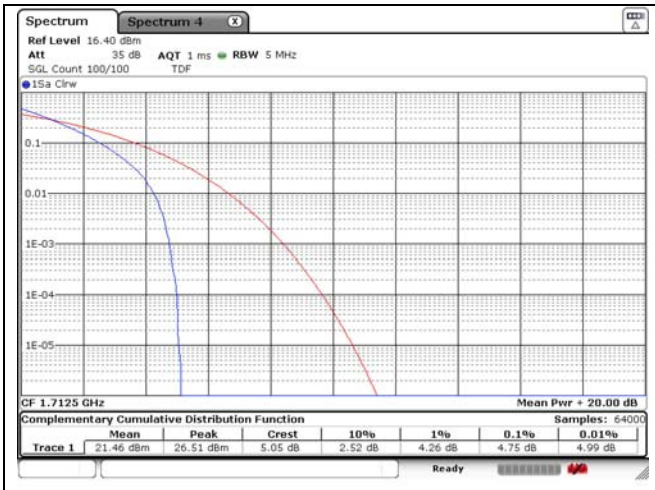


1.4 ㎒ QPSK High Channel - Full RB

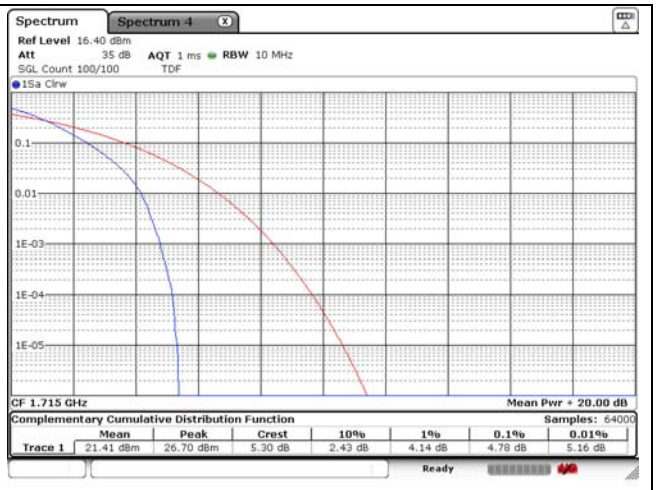


3 ㎒ QPSK High Channel - Full RB

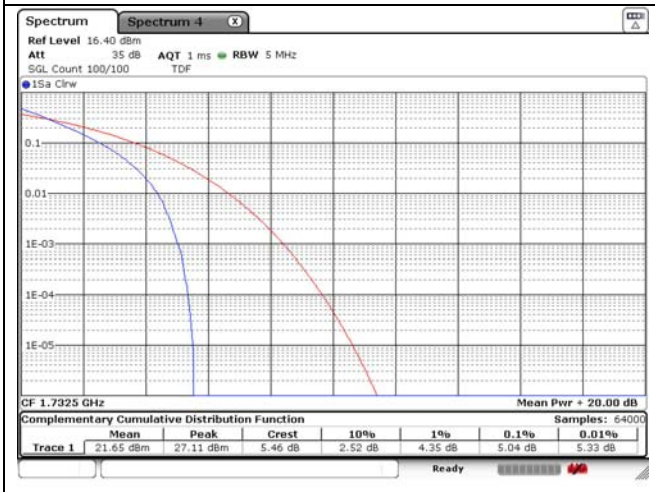
LTE band 4



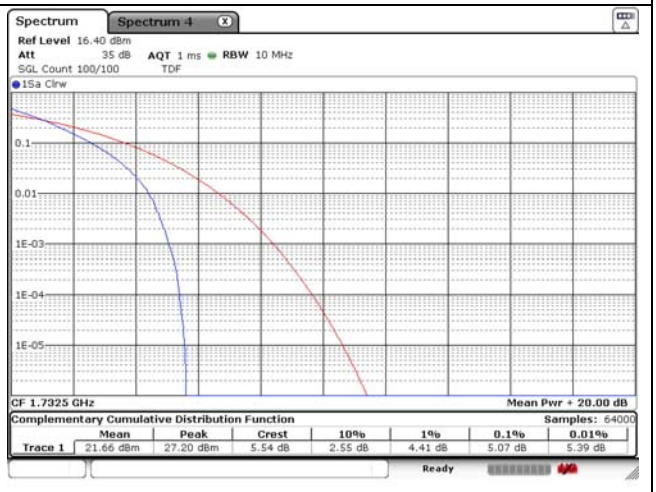
5 ㎒ QPSK Low Channel - Full RB



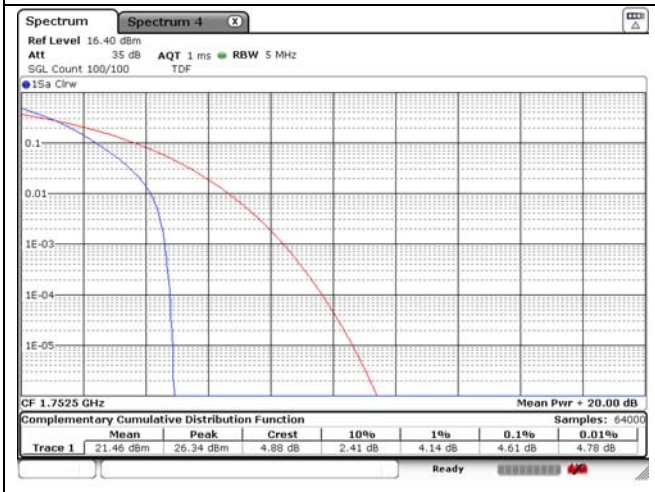
10 ㎒ QPSK Low Channel - Full RB



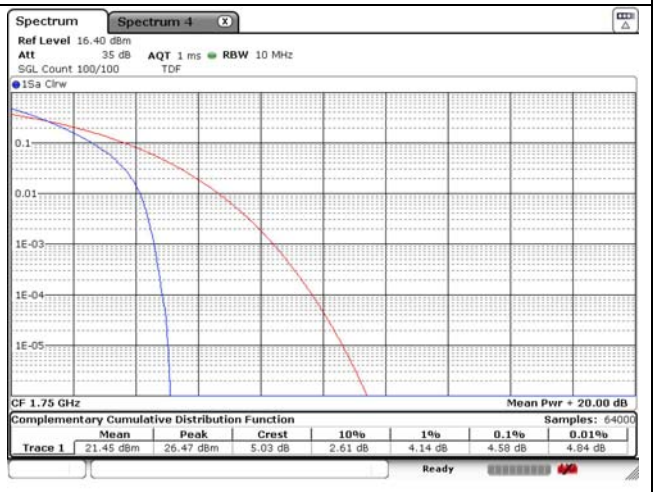
5 ㎒ QPSK Middle Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB

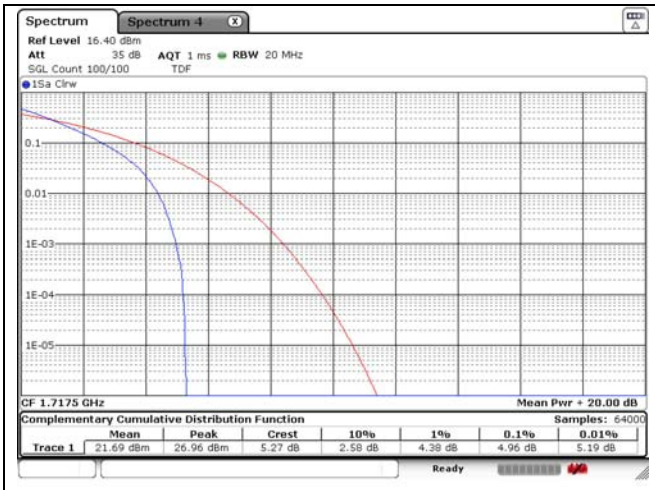


5 ㎒ QPSK High Channel - Full RB

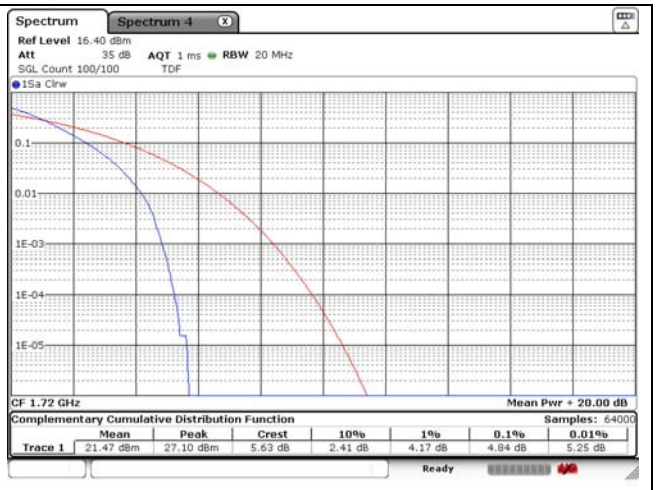


10 ㎒ QPSK High Channel - Full RB

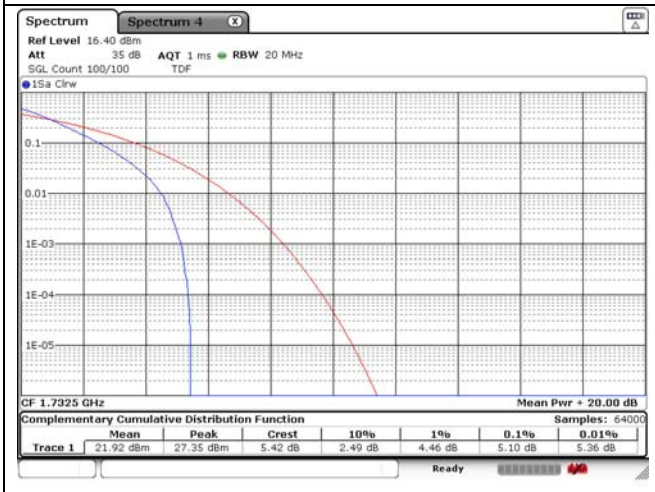
LTE band 4



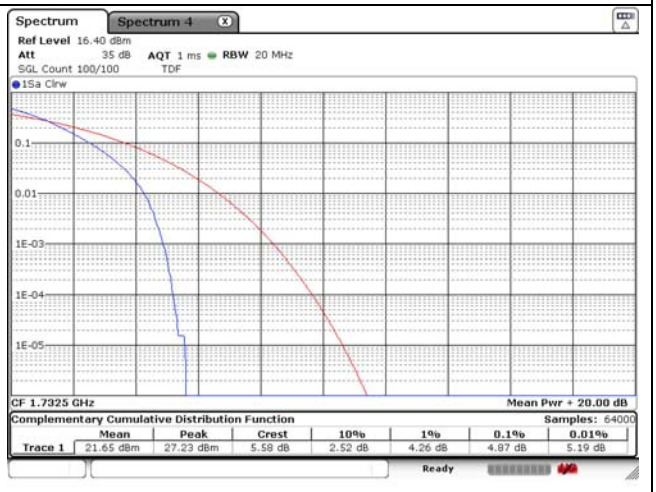
15 ㎒ QPSK Low Channel - Full RB



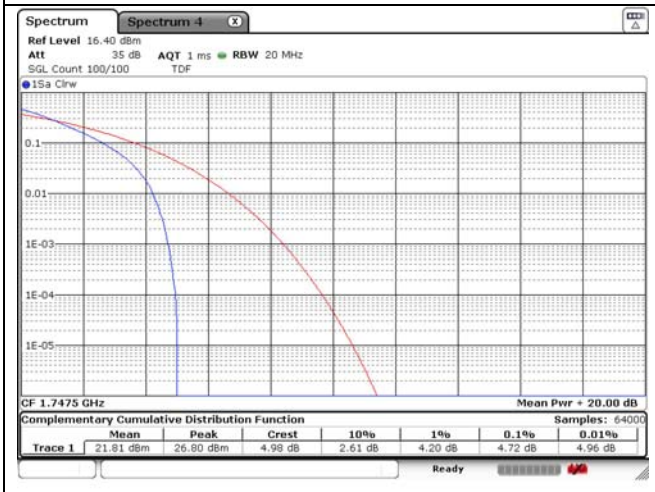
20 ㎒ QPSK Low Channel - Full RB



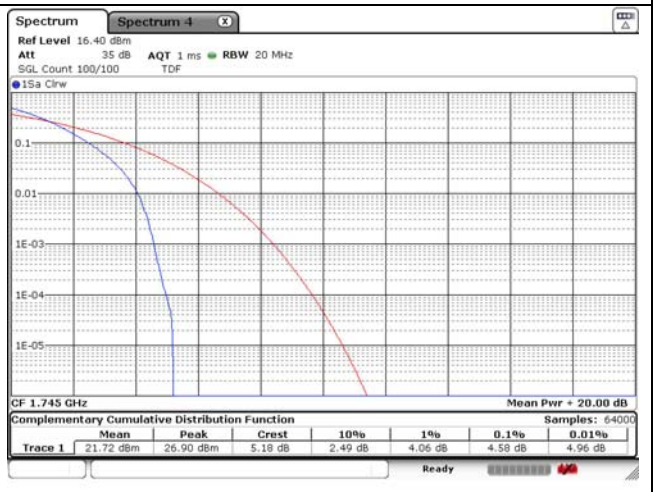
15 ㎒ QPSK Middle Channel - Full RB



20 ㎒ QPSK Middle Channel - Full RB

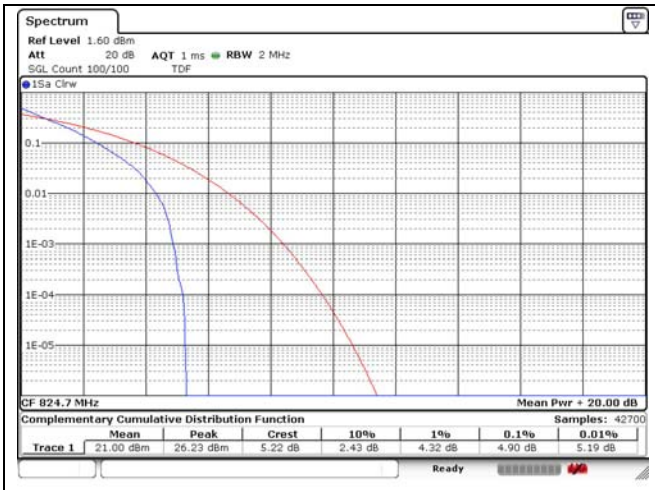


15 ㎒ QPSK High Channel - Full RB

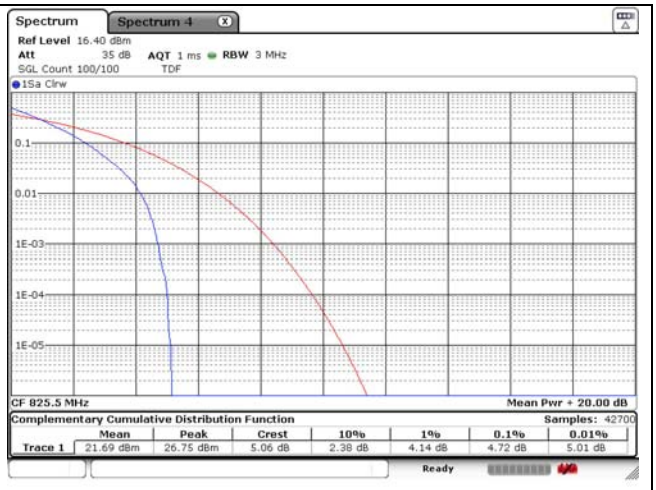


20 ㎒ QPSK High Channel - Full RB

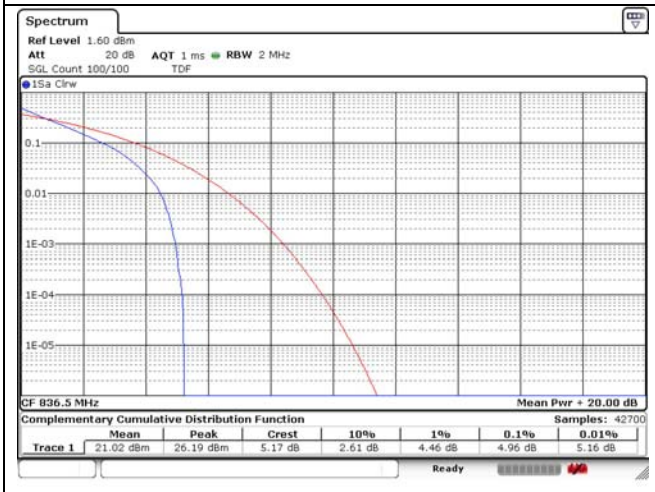
LTE band 5



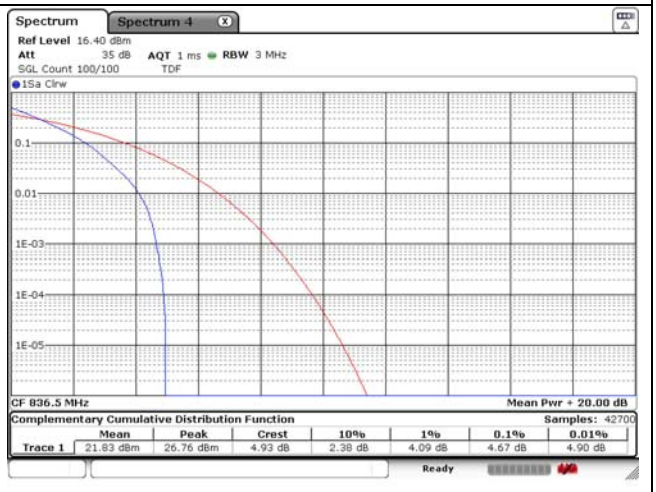
1.4 ㎒ QPSK Low Channel - Full RB



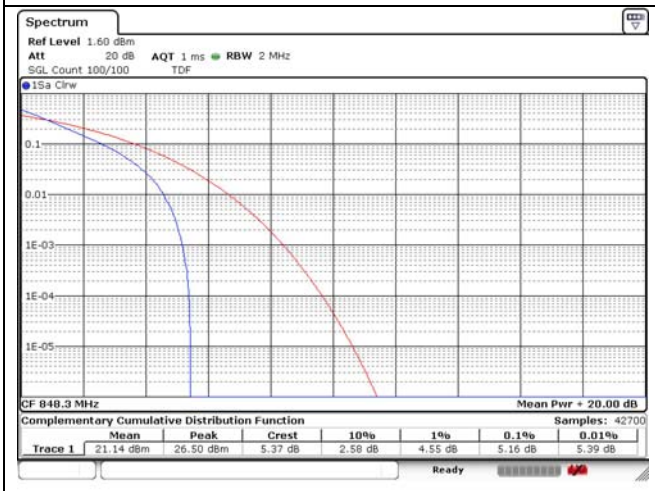
3 ㎒ QPSK Low Channel - Full RB



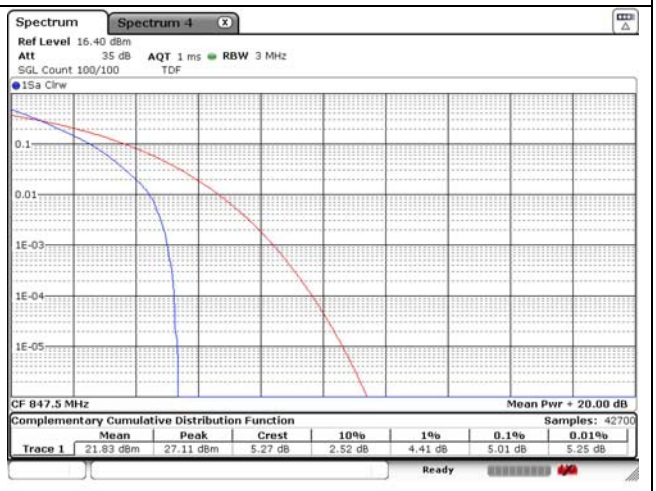
1.4 ㎒ QPSK Middle Channel - Full RB



3 ㎒ QPSK Middle Channel - Full RB

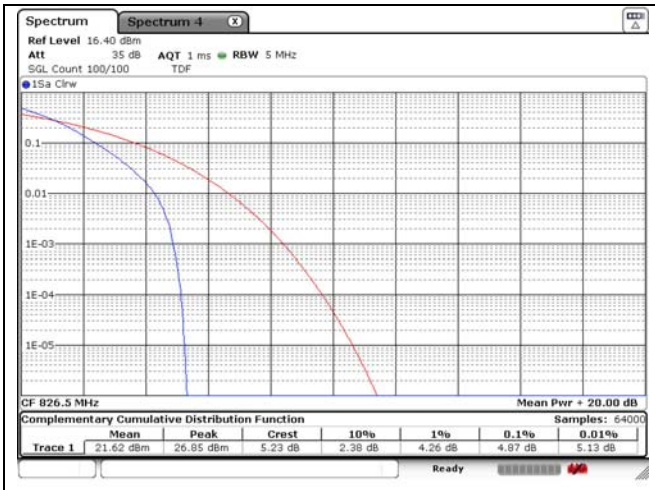


1.4 ㎒ QPSK High Channel - Full RB

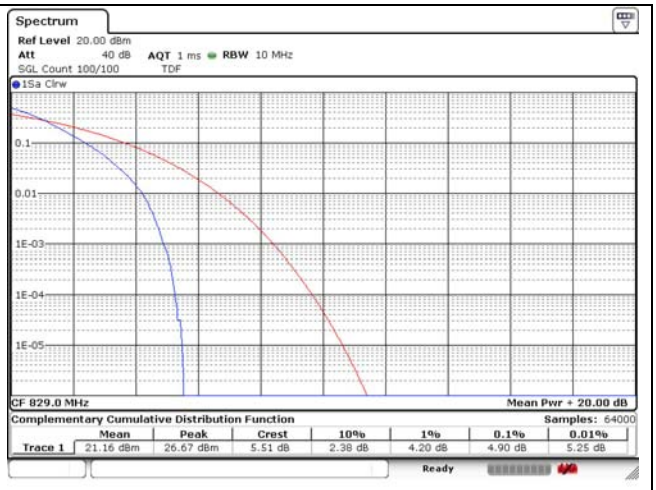


3 ㎒ QPSK High Channel - Full RB

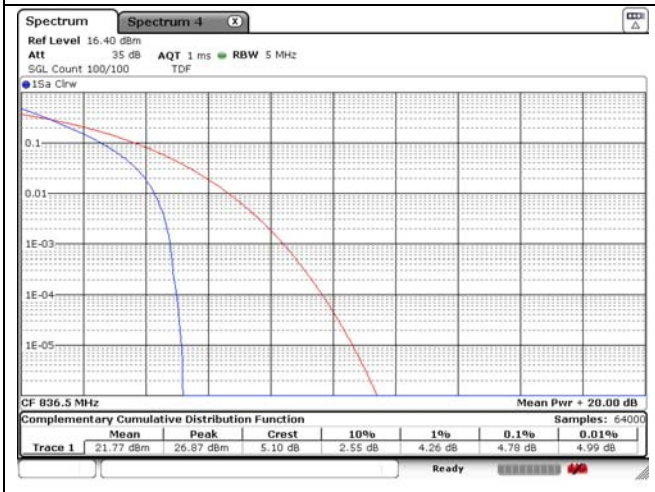
LTE band 5



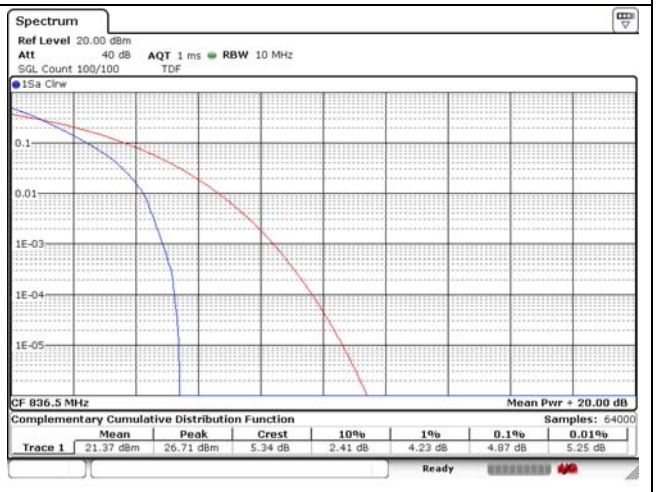
5 ㎒ QPSK Low Channel - Full RB



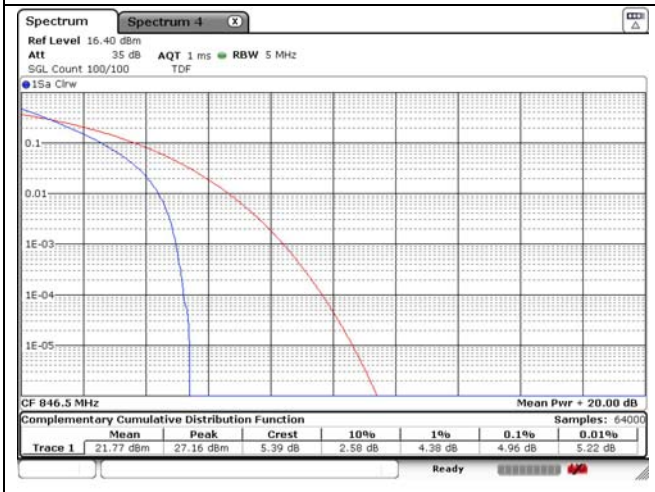
10 ㎒ QPSK Low Channel - Full RB



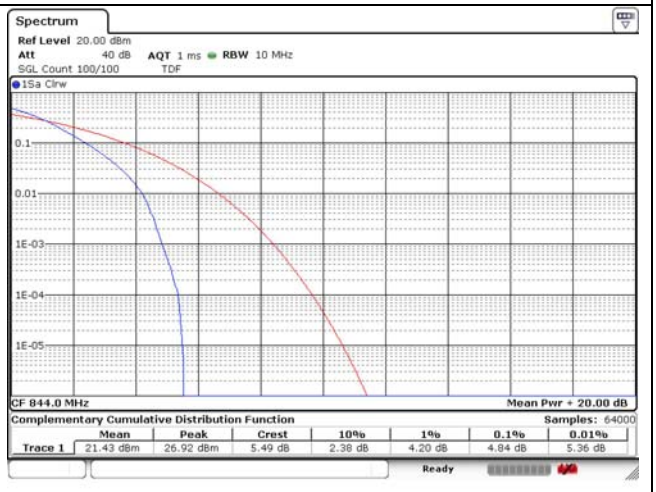
5 ㎒ QPSK Middle Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB

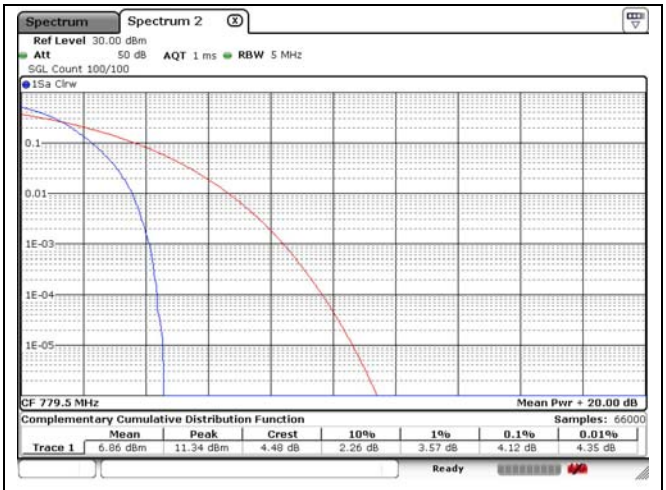


5 ㎒ QPSK High Channel - Full RB

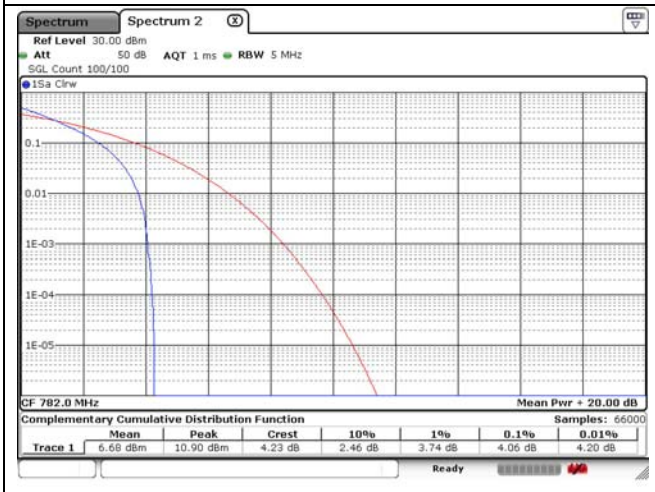


10 ㎒ QPSK High Channel - Full RB

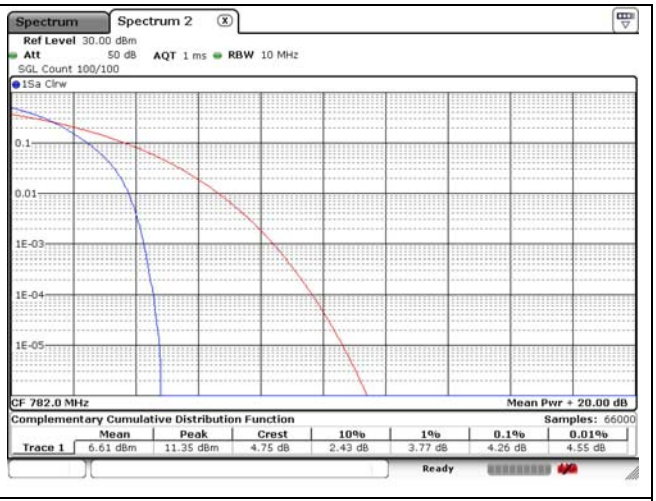
LTE band 13



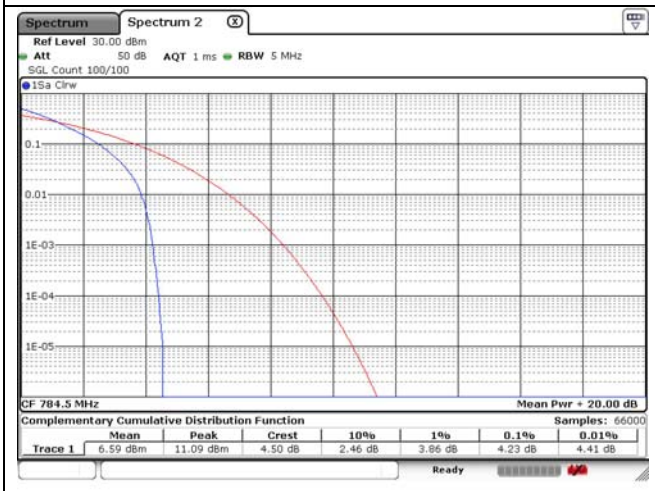
5 ㎒ QPSK Low Channel - Full RB



5 ㎒ QPSK Middle Channel - Full RB



10 ㎒ QPSK Middle Channel - Full RB



5 ㎒ QPSK High Channel - Full RB

6. Spurious Emissions at Antenna Terminal

6.1. Limit

- §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) ㏈.

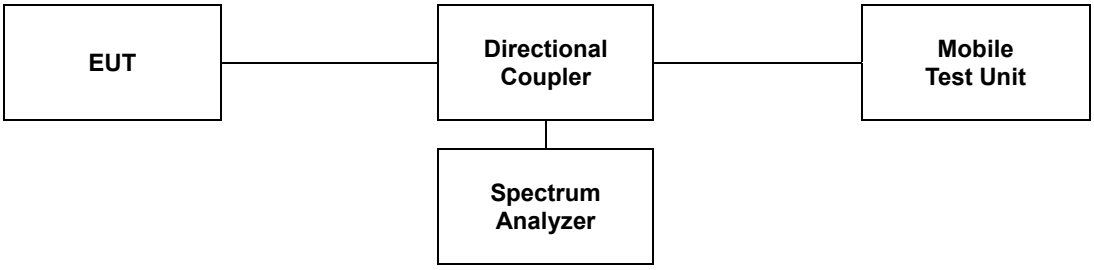
- §27.53(c)(2), On any frequency outside the 776-788 band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log(P) ㏈.

- §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) ㏈.

6.2. Test Procedure

The test follows section 5.7.4 of ANSI C63.26-2015

1. Start frequency was set to 9 ㎑ and stop frequency was set to at least 10* the fundamental frequency.
2. Detector = Peak.
3. Trace mode = Max hold.
4. Sweep time = Auto couple.
5. The trace was allowed to stabilize.
6. Please see notes below for RBW and VBW settings.
7. For plots showing conducted spurious emissions from 30 ㎒ to 26 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as correction factor.



Note;

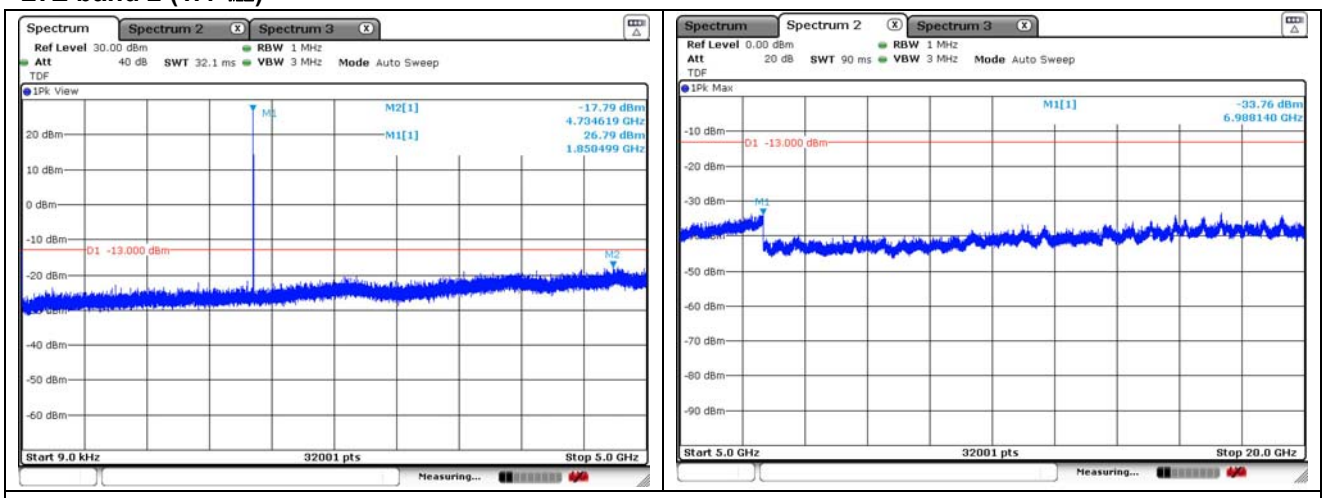
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 ㎑ or greater for frequencies less than 1 ㎓ and frequencies greater than 1 ㎓. However, in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two point, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 ㏈ below the transmitter power.

6.3. Test Results

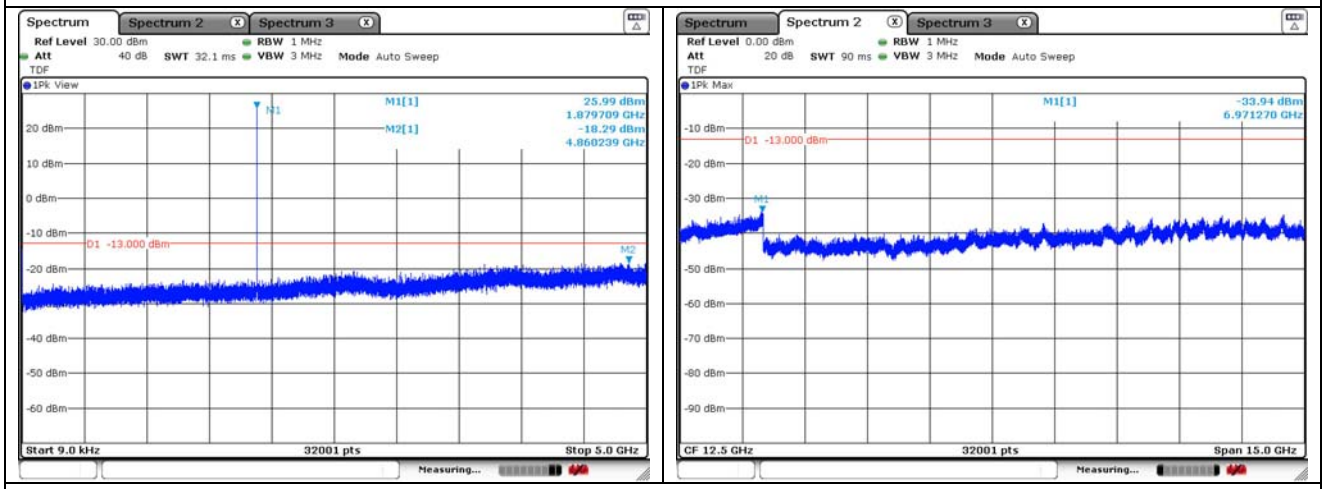
Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

- Test plots

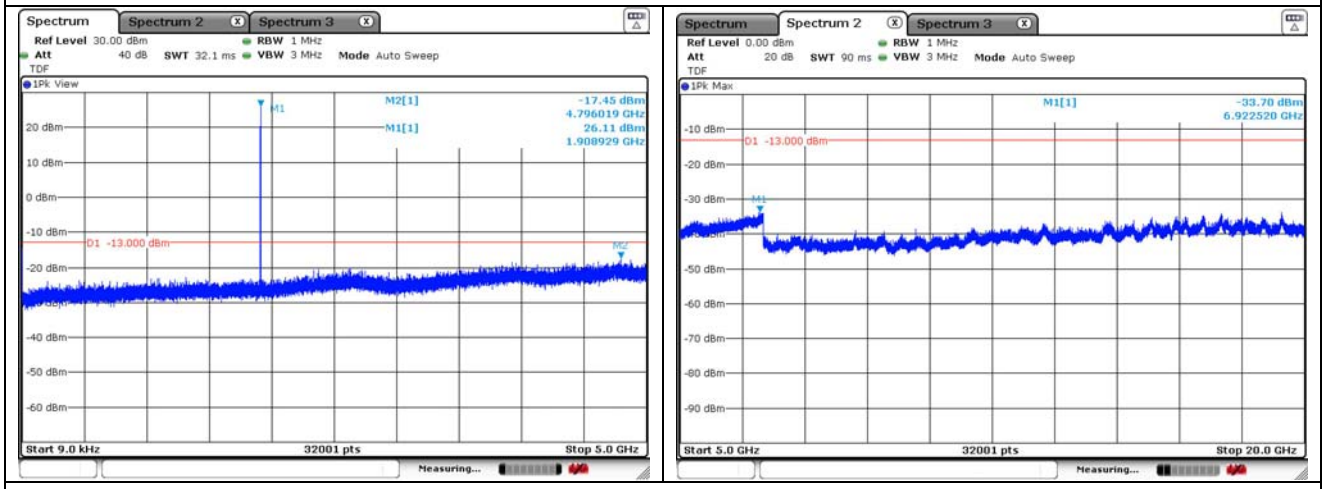
LTE band 2 (1.4 ㎒)



QPSK Low Channel - 1 RB

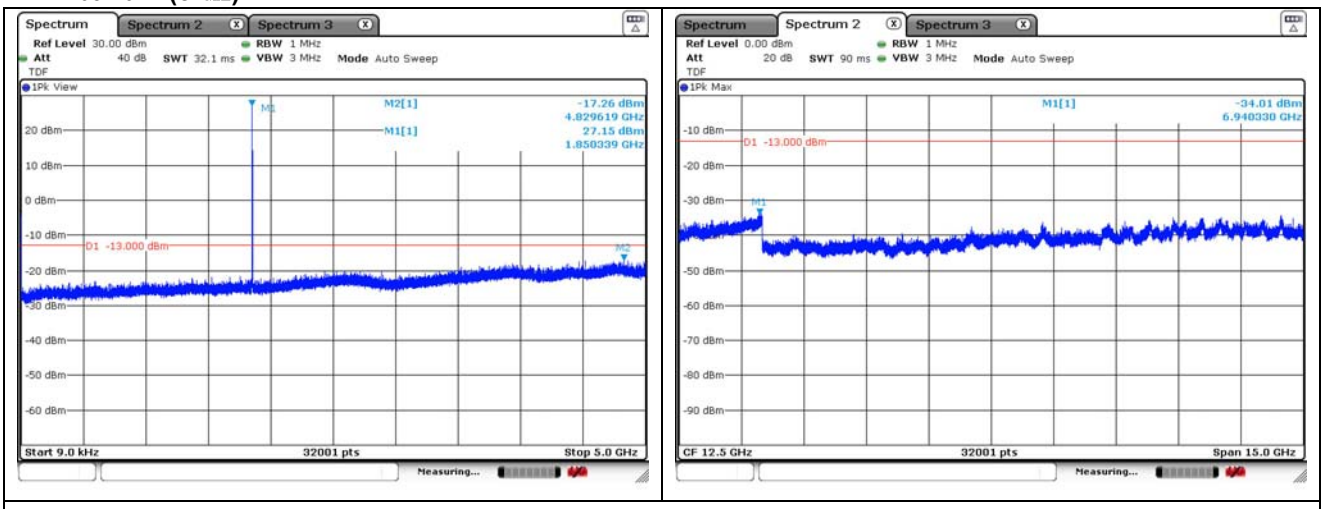


QPSK Middle Channel - 1 RB

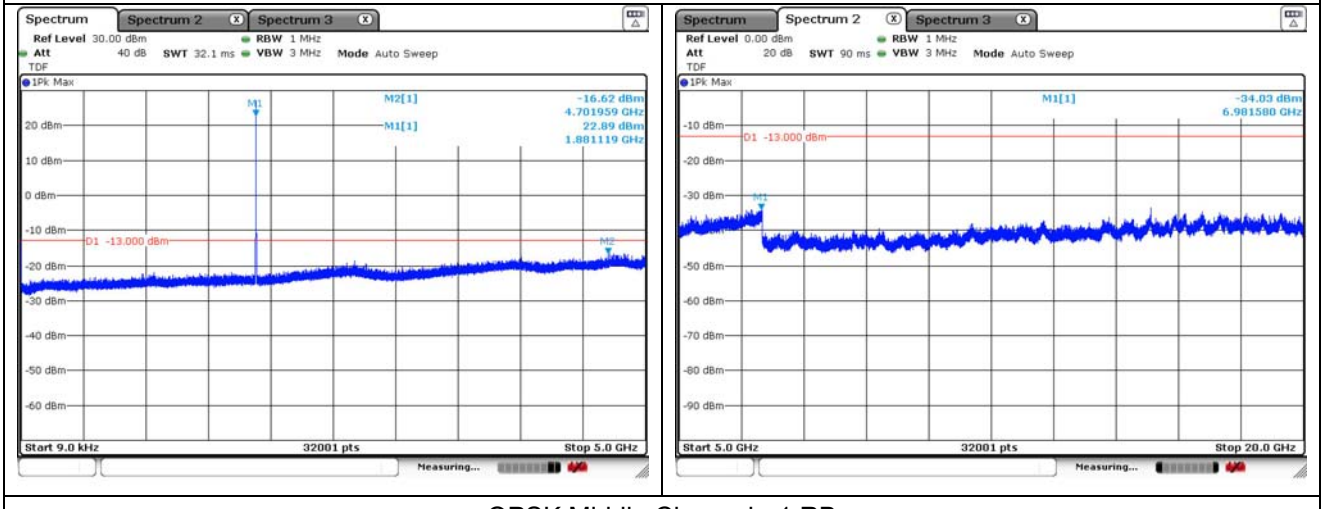


QPSK High Channel - 1 RB

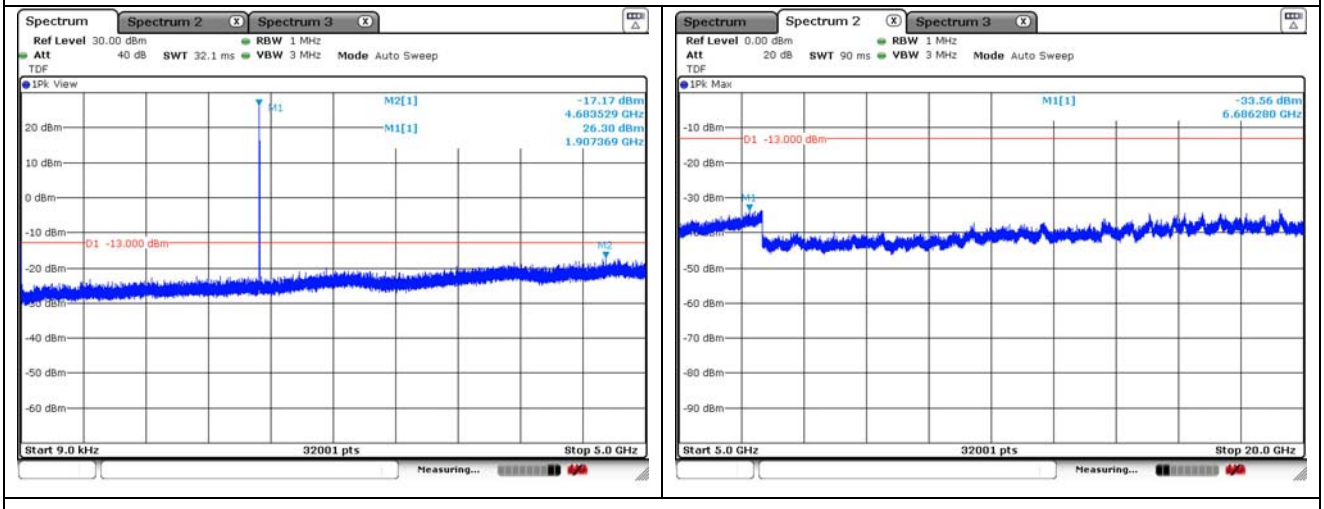
LTE band 2 (3 ㎒)



QPSK Low Channel - 1 RB

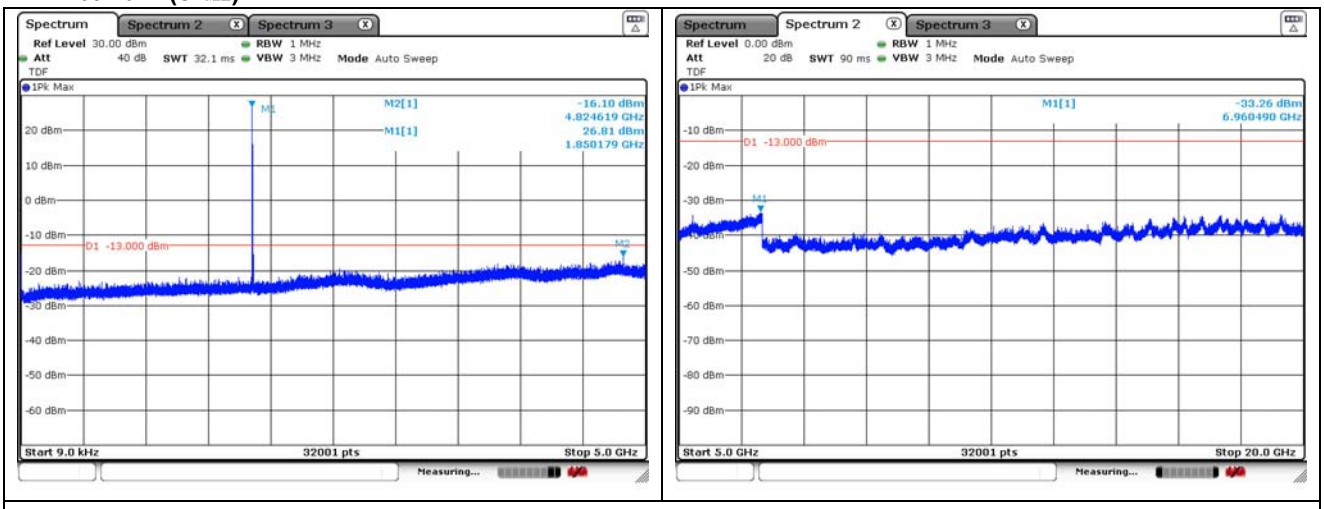


QPSK Middle Channel - 1 RB

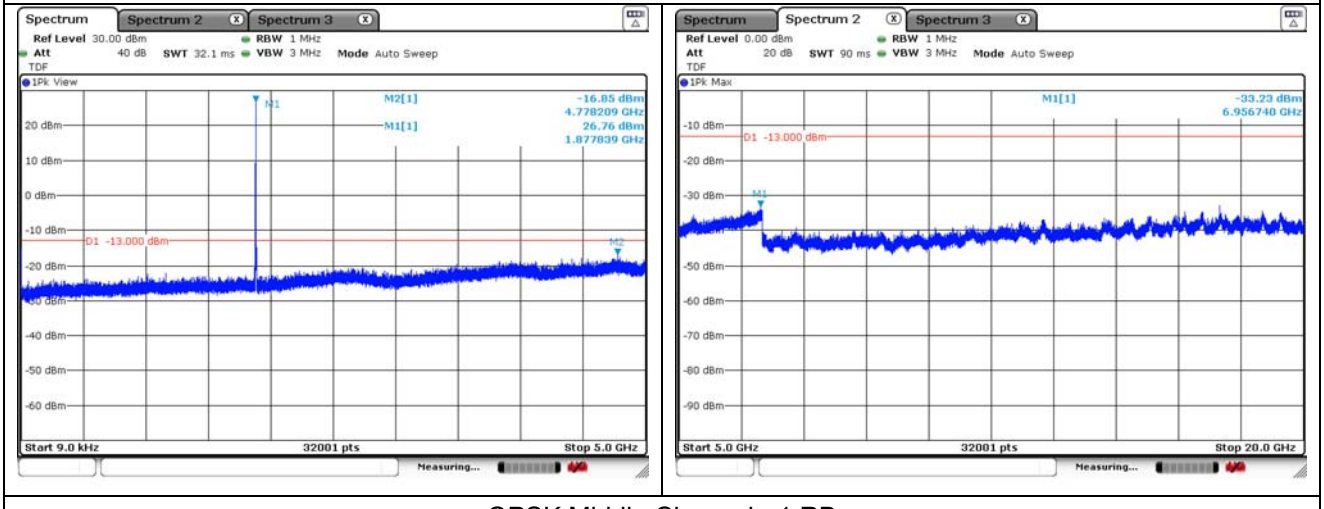


QPSK High Channel - 1 RB

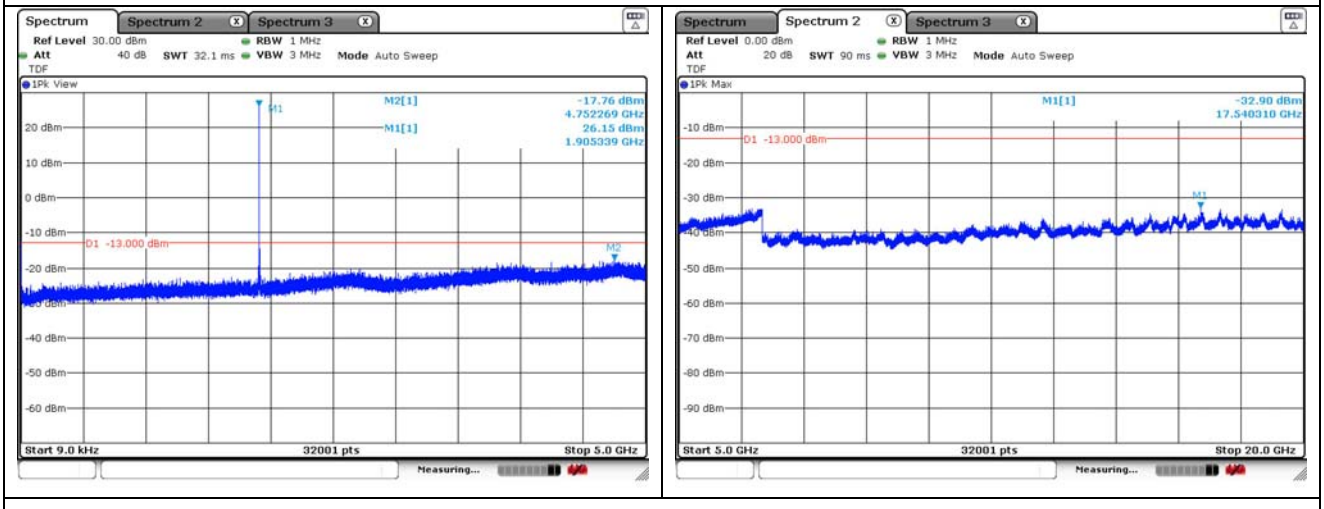
LTE band 2 (5 ㎒)



QPSK Low Channel - 1 RB

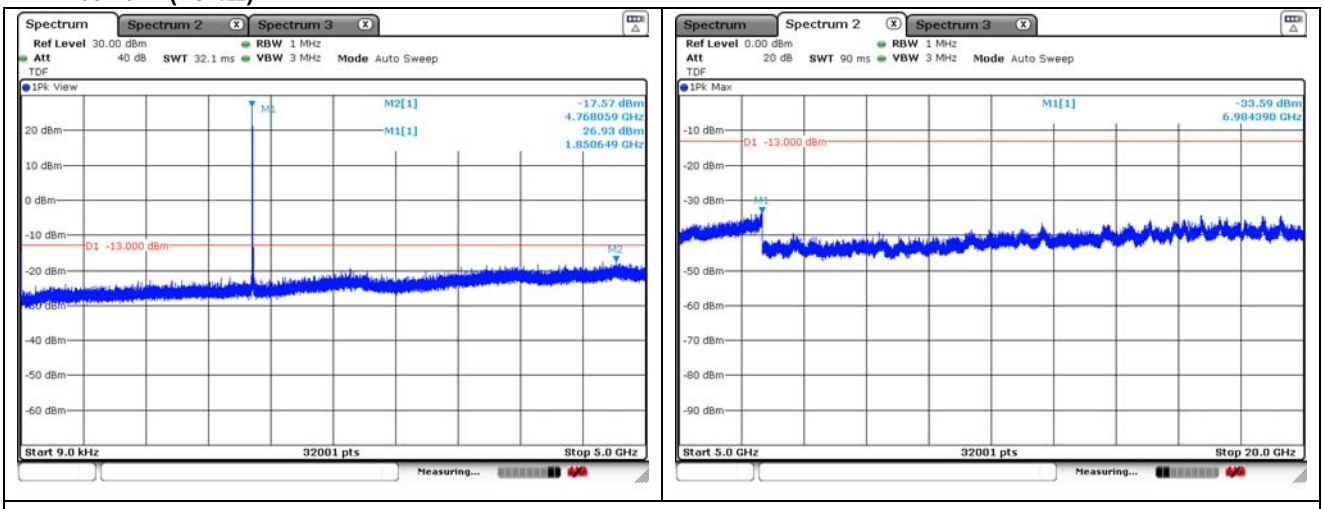


QPSK Middle Channel - 1 RB

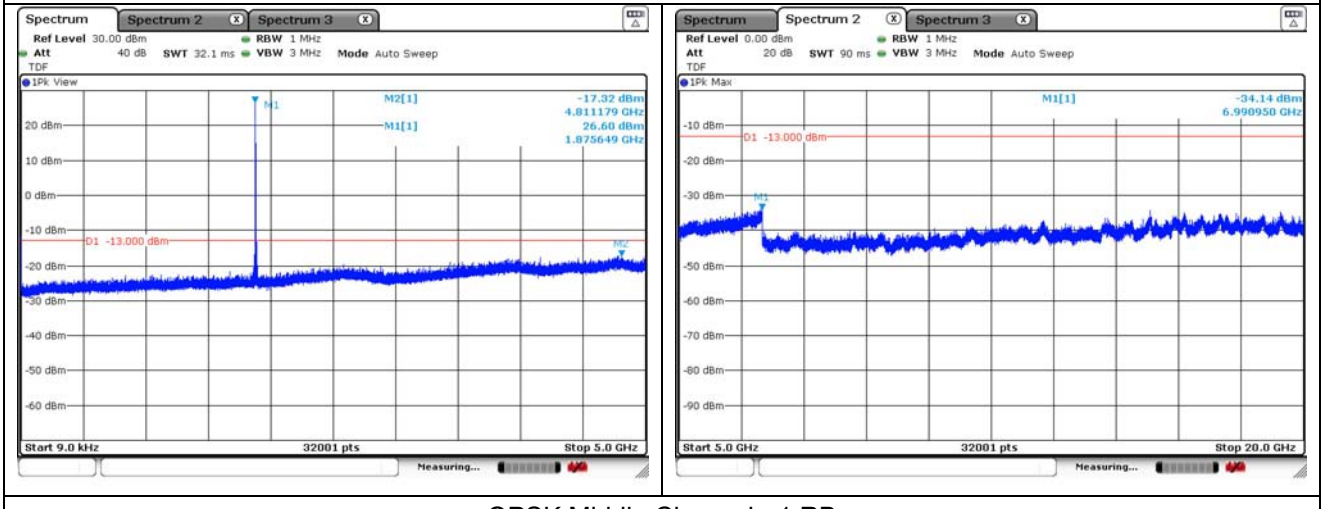


QPSK High Channel - 1 RB

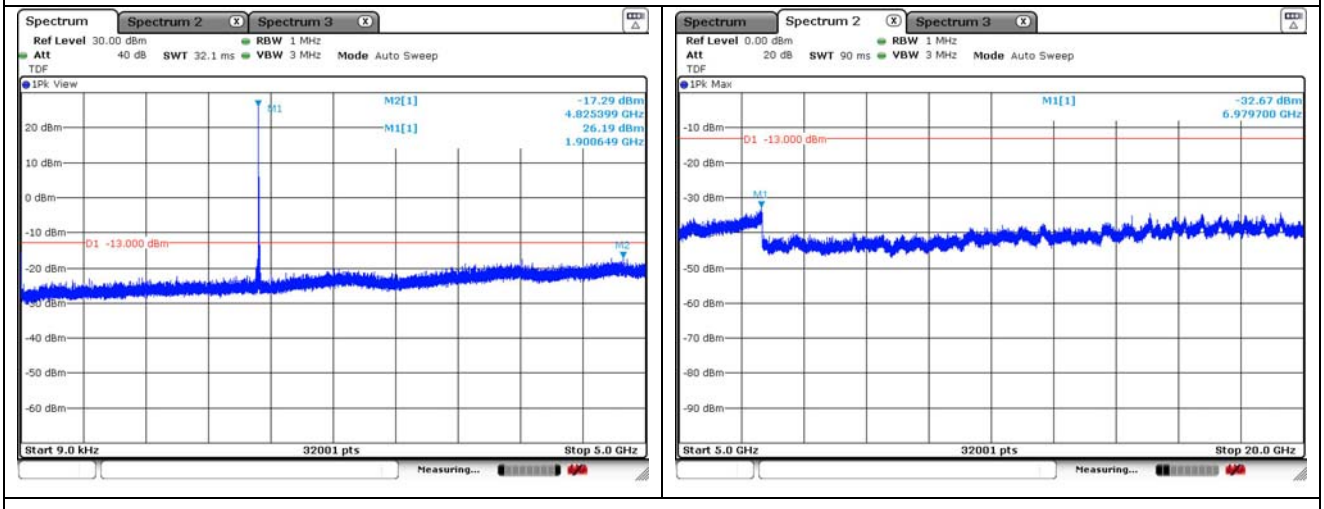
LTE band 2 (10 ㎒)



QPSK Low Channel - 1 RB

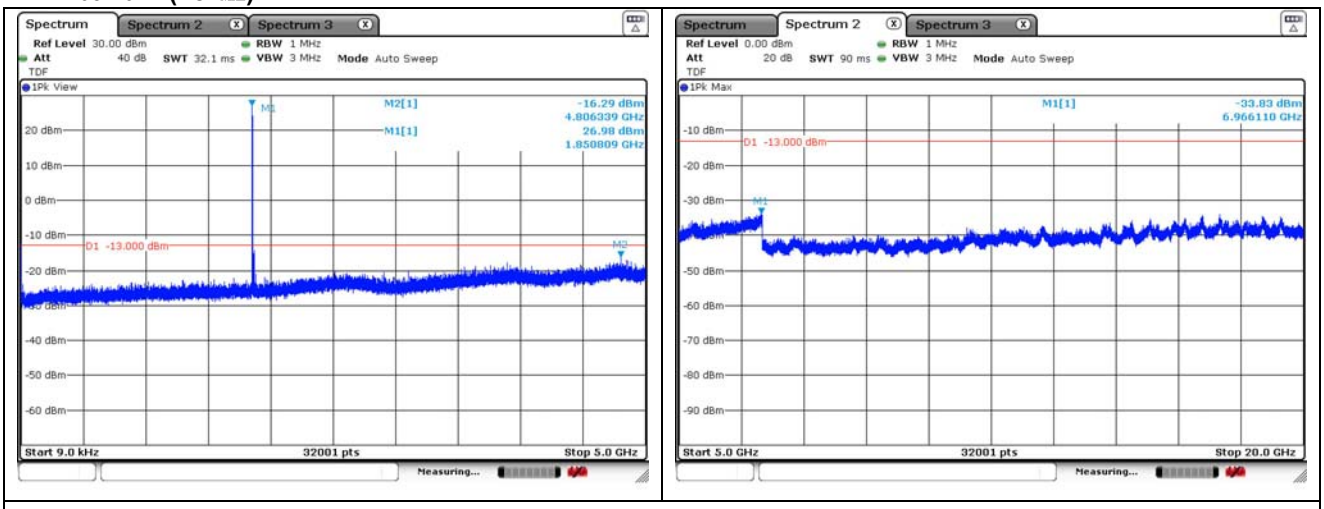


QPSK Middle Channel - 1 RB

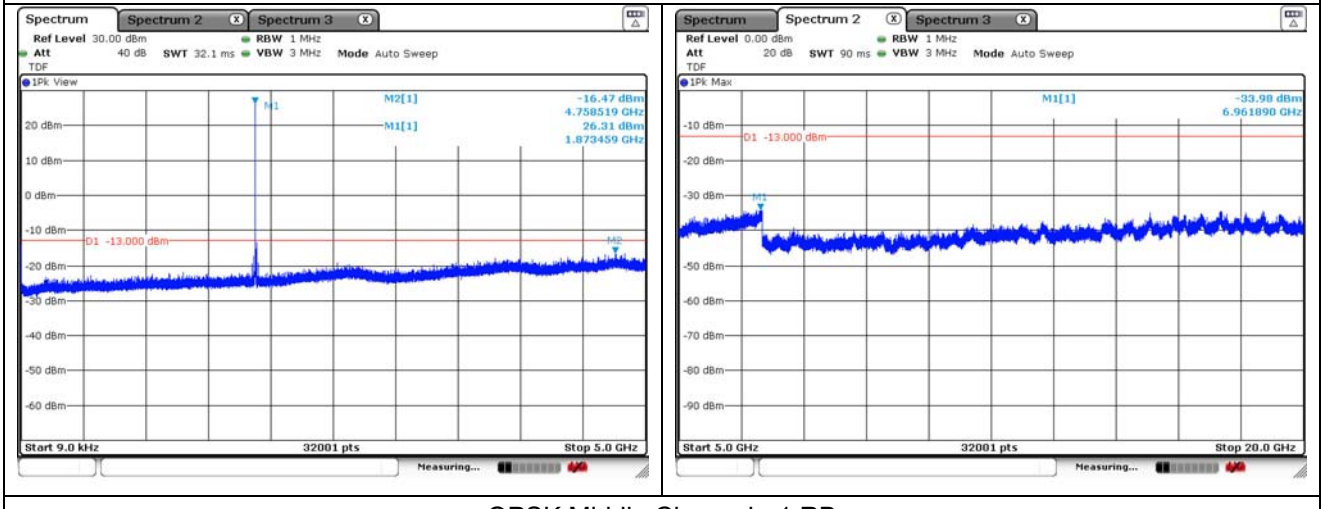


QPSK High Channel - 1 RB

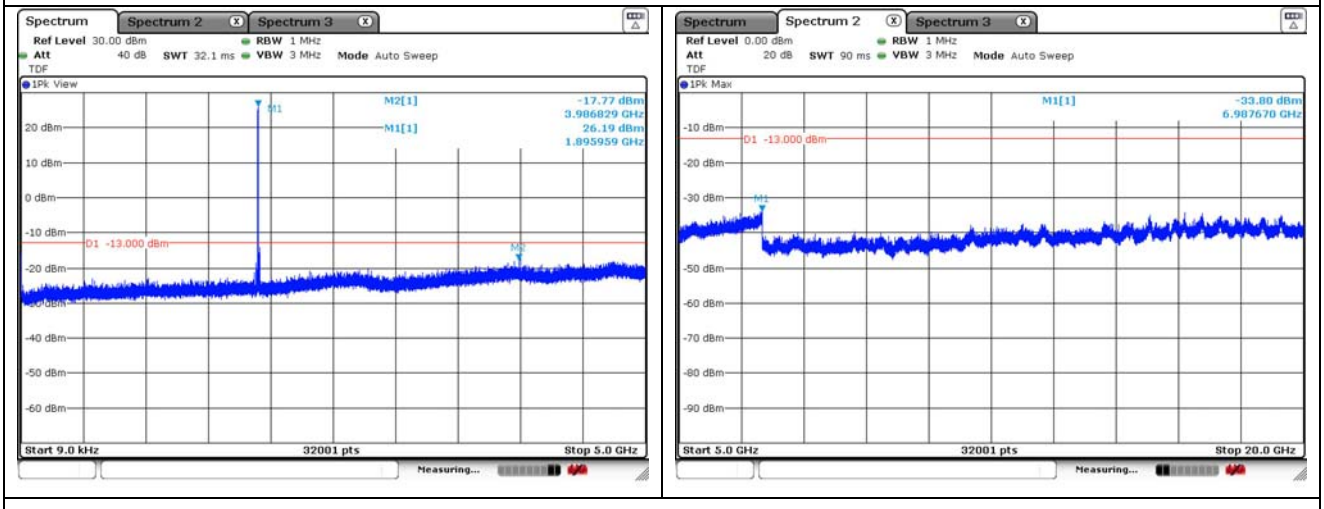
LTE band 2 (15 ㎒)



QPSK Low Channel - 1 RB

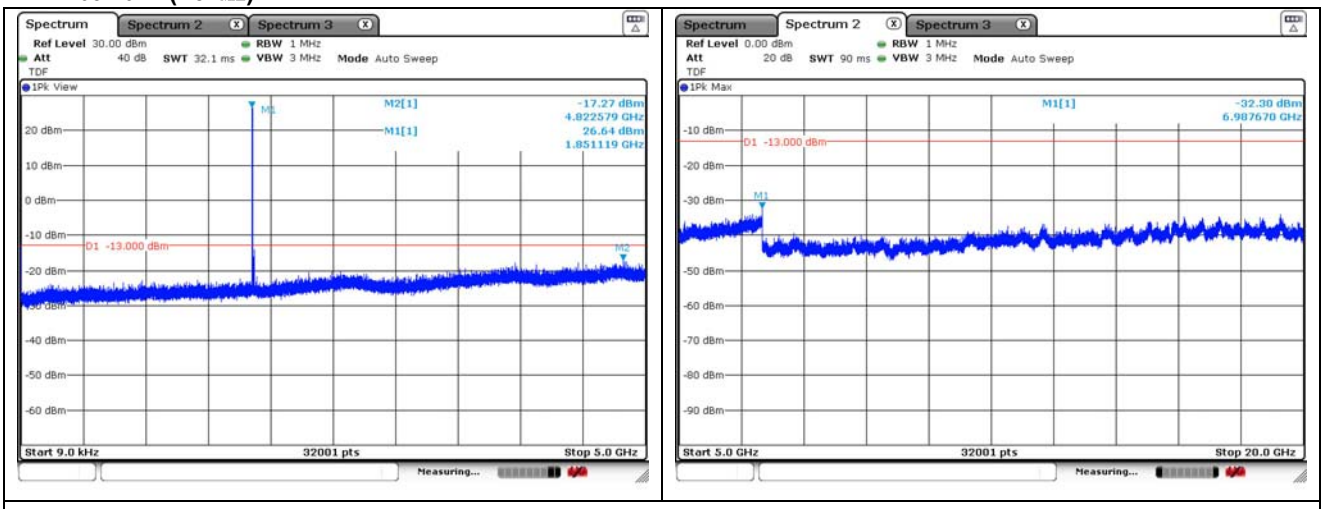


QPSK Middle Channel - 1 RB

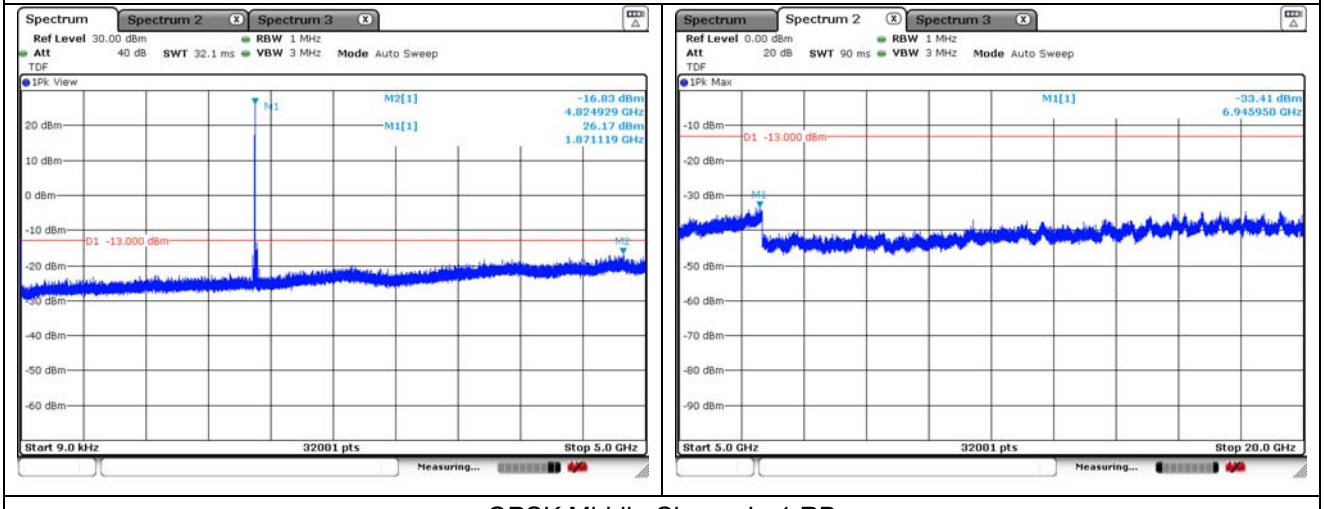


QPSK High Channel - 1 RB

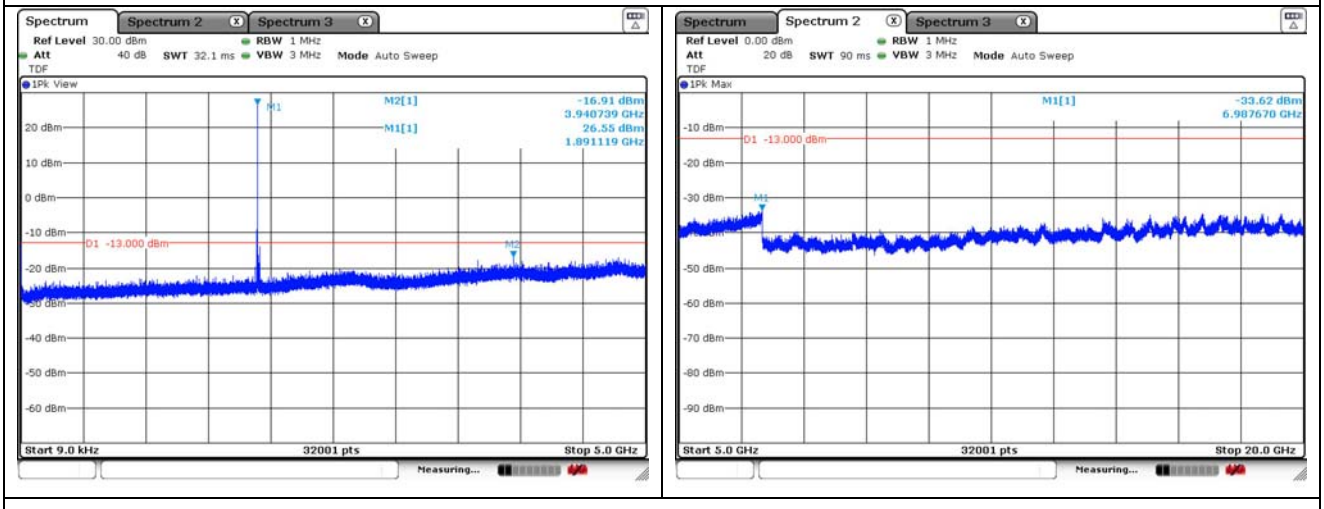
LTE band 2 (20 ㎒)



QPSK Low Channel - 1 RB

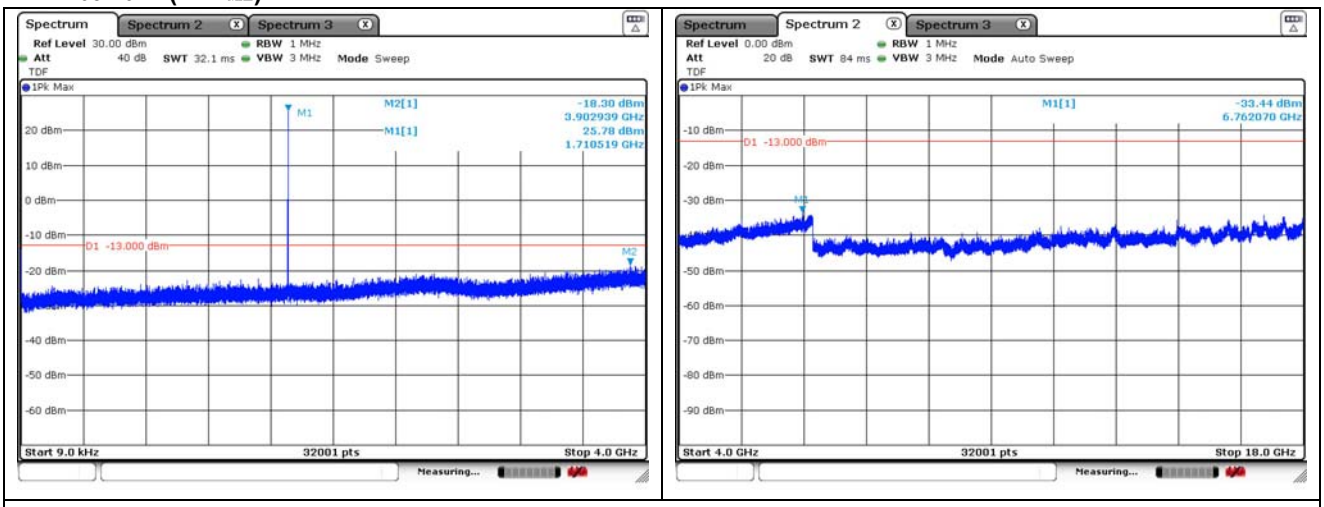


QPSK Middle Channel - 1 RB

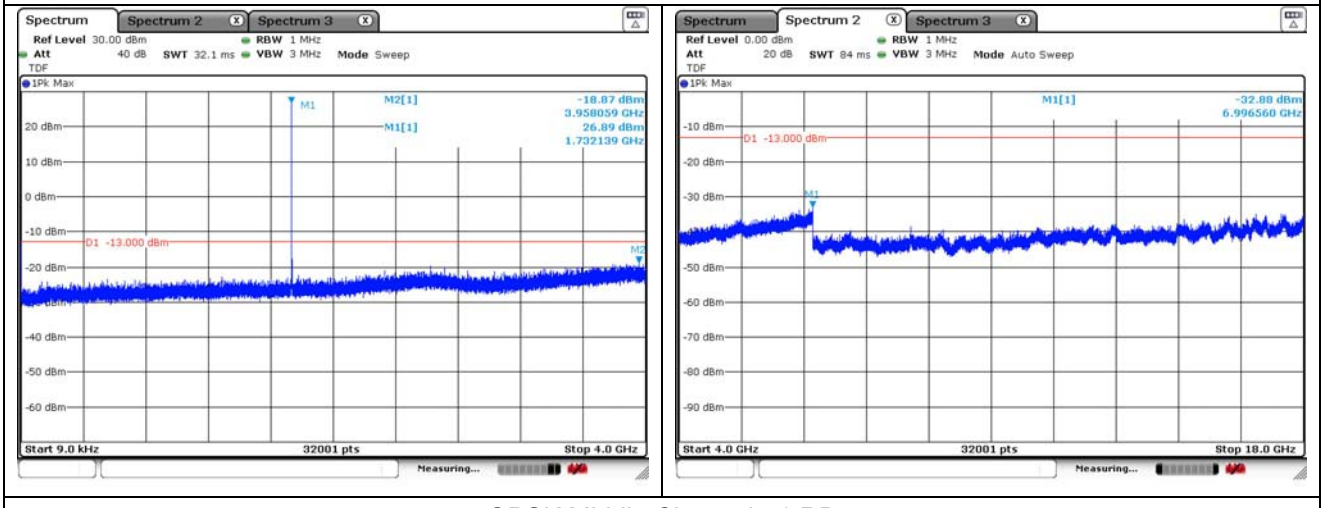


QPSK High Channel - 1 RB

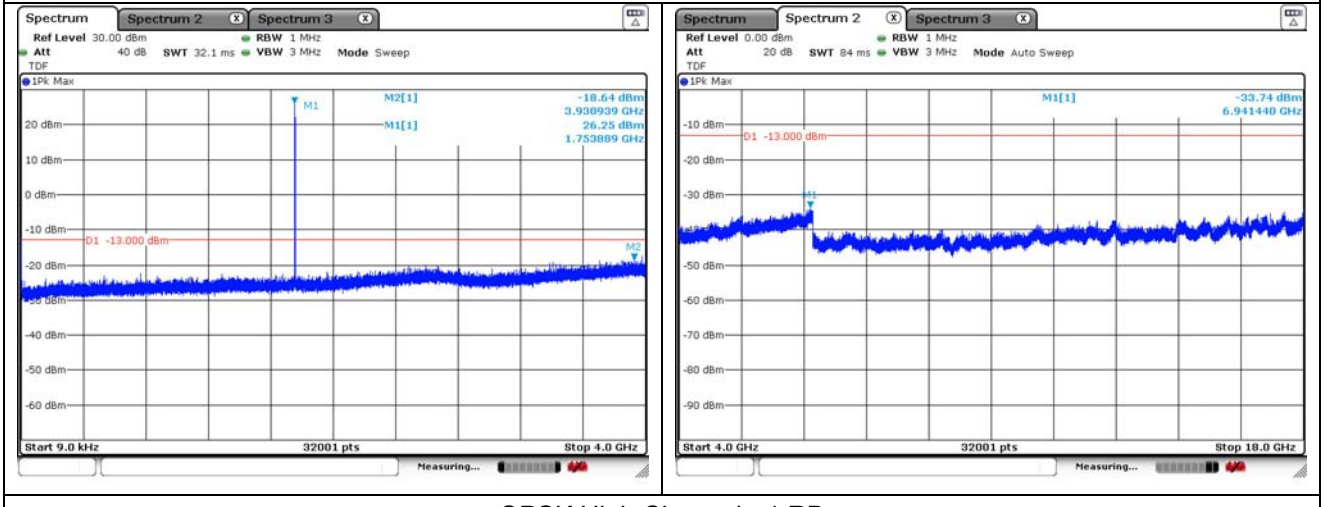
LTE band 4 (1.4 ㎒)



QPSK Low Channel - 1 RB



QPSK Middle Channel - 1 RB



QPSK High Channel - 1 RB