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TEST REPORT

of

FCC Part 2 Subpart J and Part 27 Subpart C

FCC ID: BEJIA0R370TEJK

1. Equipment Under Test	:	Car Navigation System
2. Model Name	:	GEN6 JK EUR
3. Variant Model Name(s)	:	Refer to page 3
4. Applicant	:	LG Electronics USA
5. Manufacturer	:	LG Electronics Inc.
6. Date of Receipt	:	2020.06.15
7. Date of Test(s)	:	2020.08.05 ~ 2020.09.24
8. Date of Issue	:	2020.09.24

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.

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
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- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

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1.2. Details of Applicant

Applicant : LG Electronics USA
Address : 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632
Contact Person : Han, Kyung-su
Phone No. : +1 201 472 2623

1.3. Details of Manufacturer

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

1.4. Description of EUT

Kind of Product	Car Navigation System
Model Name	GEN6 JK EUR
Variant Model Name(s)	GEN6 JK BRZ, GEN6 JK CAN, GEN6 JK KOR, GEN6 JK MID, GEN6 JK ROC, GEN6 JK USA, IA0R370TEJK
Power Supply	DC 12 V
Rated Power	23 dBm
Frequency Range	2 500 ㎒ ~ 2 570 ㎒
Emission Designator	LTE Band 7 (5 ㎒): 4M53G7D (QPSK) / 4M53D7D (16QAM) LTE Band 7 (10 ㎒): 8M94G7D (QPSK) / 8M94D7D (16QAM) LTE Band 7 (15 ㎒): 13M5G7D (QPSK) / 13M5D7D (16QAM) LTE Band 7 (20 ㎒): 17M9G7D (QPSK) / 17M9D7D (16QAM)
Modulation Technique	QPSK, 16QAM
Antenna Type	C/PAD antenna
Antenna Gain	1.63 dBi

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMBV100A	255834	Jun. 03, 2020	Annual	Jun. 03, 2021
Signal Generator	R&S	SMR40	100272	Jun. 18, 2020	Annual	Jun. 18, 2021
Spectrum Analyzer	R&S	FSV30	103210	Dec. 05, 2019	Annual	Dec. 05, 2020
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 04, 2020	Annual	Sep. 04, 2021
Mobile Test Unit	R&S	CMW500	144034	Feb. 28, 2020	Annual	Feb. 28, 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	15000793	Jun. 02, 2020	Annual	Jun. 02, 2021
Low Pass Filter	Mini-Circuits	NLP-1200+	V9500401023-2	Jun. 01, 2020	Annual	Jun. 01, 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	WHNX7.5/26.5G-6SS	15	Jun. 05, 2020	Annual	Jun. 05, 2021
Directional Coupler	KRYTAR	152613	122660	Jun. 11, 2020	Annual	Jun. 11, 2021
DC Power Supply	Agilent	U8002A	MY50060028	Mar. 03, 2020	Annual	Mar. 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	Schwarzbeck Mess-Elektronik	BBHA9170	9170-540	Jul. 24, 2020	Annual	Jul. 24, 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	CO3000/963/3833 0516/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	SFX086-NMNM-5M (5m)	20200323001	Aug. 10, 2020	Semi-annual	Feb. 10, 2021
Coaxial Cable	RFONE	PL520-NMNM-10M (10 m)	20200324001	Aug. 10, 2020	Semi-annual	Feb. 10, 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 and 27		
Section	**Test Item(s)**	**Result**
§2.1046 §27.50(h)(2)	RF Radiated Output Power	Complied
§2.1053 §27.53(m)(4)	Spurious Radiated Emission	Complied
§2.1046	Conducted Output Power	Complied
§2.1049	Occupied Bandwidth	Complied
§27.50(d)(5)	Peak-Average Ratio	Complied
§2.1051 §27.53(m)(4)	Spurious Emission at Antenna Terminal	Complied
§27.53(m)(4)	Band Edge	Complied
§2.1055 §27.54	Frequency Stability	Complied

1.7. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL001202	2020.09.24	Initial

1.8. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.8.1. Conducted Test

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

1.8.2. Radiation test

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

1.9. Measurement Uncertainty

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

Parameter	Uncertainty
Radiated Emission, 9 ㎑ to 30 ㎒	± 3.59 ㏈
Radiated Emission, below 1 ㎓	± 5.88 ㏈
Radiated Emission, above 1 ㎓	± 5.94 ㏈

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

1.10. Information of Variant Models

Model Name	LG P/N	HMC P/N	LTE	Navigation	Tuner (Default : AM/FM)	Voice recognition	Market	Vehicle Category
GEN6 JK BRZ	IA0R160NSJK	96560-AR###	X	O	X	O	Brazil	ICE
	IA0S160NSJK	96560-AR###	X	O	X	O	Brazil	EV
GEN6 JK CAN	IA0R500TNJK	96560-AR###	O	O	SXM	O	Canada	ICE
	IA0S500TNJK	96560-AR###	O	O	SXM	O	Canada	EV
GEN6 JK EUR	ID0R140NEJK	96560-AR###	X	X	DAB	X	Turkmenistan	ICE
	ID0R350EEJK	96560-AR###	X	X	DAB	O	Europe	ICE
	IA0R360EEJK	96560-AR###	X	O	DAB	O	Europe	ICE
	IA0R370TEJK Note 1)	96560-AR###	O	O	DAB	O	Europe	ICE
	IA0R400NCJK	96560-AR###	X	O	DAB	X	Australia	ICE
	IA0R380EEJK	96560-AR###	X	O	DAB	O	Turkey	ICE
	IA0R810TRJK	96560-AR###	O	O	X	O	Russia	ICE
	IA0R820EEJK	96560-AR###	X	O	X	O	Belarus	ICE
	ID0R800EEJK	96560-AR###	X	X	X	O	Kazakhstan	ICE
	ID0R320NEJK	96560-AR###	X	X	X	O	Uzbekistan	ICE
	ID0S140NEJK	96560-AR###	X	X	DAB	X	Turkmenistan	EV
	ID0S350EEJK	96560-AS###	X	X	DAB	O	Europe	EV
	IA0S360EEJK	96560-AS###	X	O	DAB	O	Europe	EV
	IA0S370TEJK	96560-AS###	O	O	DAB	O	Europe	EV
	IA0S400NCJK	96560-AR###	X	O	DAB	X	Australia	EV
	IA0S380EEJK	96560-AR###	X	O	DAB	O	Turkey	EV
	IA0S810TRJK	96560-AR###	X	O	X	O	Russia	EV
	IA0S820TRJK	96560-AR###	X	O	X		Belarus	EV
	ID0S800EEJK	96560-AR###	X	X	X	O	Kazakhstan	EV
	ID0S320NEJK	96560-AR###	X	X	X	O	Uzbekistan	EV
GEN6 JK KOR	IA0R000TKJK	96560-AR###	O	O	DMB	O	Korea	ICE
	IA0S000TKJK	96560-DS###	O	O	DMB	O	Korea	EV
GEN6 JK MID	IA0R120NMJK	96560-AR###	X	O	RDS	X	Middle East	ICE
	ID0R200NMJK	96560-AR###	X	X	RDS	X	Middle East	ICE
	IA0R210EMJK	96560-AR###	X	O	RDS	X	UAE	ICE
	IA0S120NMJK	96560-AR###	X	O	RDS	X	Middle East	EV
	ID0S200NMJK	96560-AR###	X	X	RDS	X	Middle East	EV

Model Name	LG P/N	HMC P/N	LTE	Navigation	Tuner (Default : AM/FM)	Voice recognition	Market	Vehicle Category
GEN6 JK ROC	ID0R330NNJK	96560-AR###	X	X	RDS	X	Mexico	ICE
	ID0R100NGJK	96560-AR###	X	X	X	X	Global	ICE
	ID0R300NGJK	96560-AR###	X	X	X	X	Global	ICE
	ID0R110NIJK	96560-AR###	X	X	DRM	X	India	ICE
	ID0R130NGJK	96560-AR###	X	X	X	X	Global	ICE
	ID0R150NSJK	96560-AR###	X	X	X	X	Colombia	ICE
	ID0R310NMJK	96560-AR###	X	X	X	X	Iran	ICE
	ID0R340NAJK	96560-AR###	X	X	X	X	Global	ICE
	ID0S330NNJK	96560-AR###	X	X	RDS	X	Mexico	EV
	ID0S100NGJK	96560-AR###	X	X	X	X	Global	EV
	ID0S300NGJK	96560-AR###	X	X	X	X	Global	EV
	ID0S110NIJK	96560-AR###	X	X	DRM	X	India	EV
	ID0S130NGJK	96560-AR###	X	X	X	X	Global	EV
	ID0S150NSJK	96560-AR###	X	X	X	X	Colombia	EV
	ID0S310NMJK	96560-AR###	X	X	X	X	Iran	EV
	ID0S340NAJK	96560-AR###	X	X	X	X	Global	EV
GEN6 JK USA	IA0R600TNJK	96560-AR###	O	O	SXM	O	USA	ICE
	IA0R610TNJK	96560-AR###	O	O	SXM	O	Guam	ICE
	IA0S600TNJK	96560-AR###	O	O	SXM	O	UAE	EV
	IA0S610TNJK	96560-AR###	O	O	SXM	O	Guam	EV

Note;

- The tested model's LG P/N is IA0R370TEJK.
- The above table describes model differences by part numbers.

1) EUT Part Number

2) Applicant consigns only basic model to test, therefore this test report just guarantees the units which have been tested.

3) The applicant/manufacturer is responsible for the compliance of all variants.

4) HCM means Hyundai and P/N means part number.

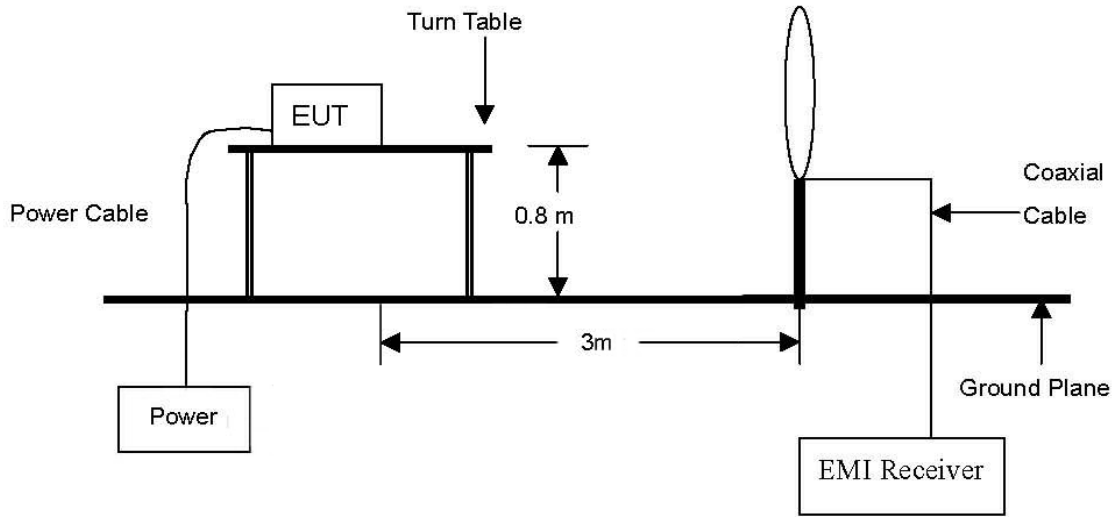
5) LG P/N can be changed according to different options, not related to safety.

6) The symbol "#" in the part number can be 0 to 9 or A to Z according to soft-ware update, colour of enclosure, front design, etc. not related to safety.

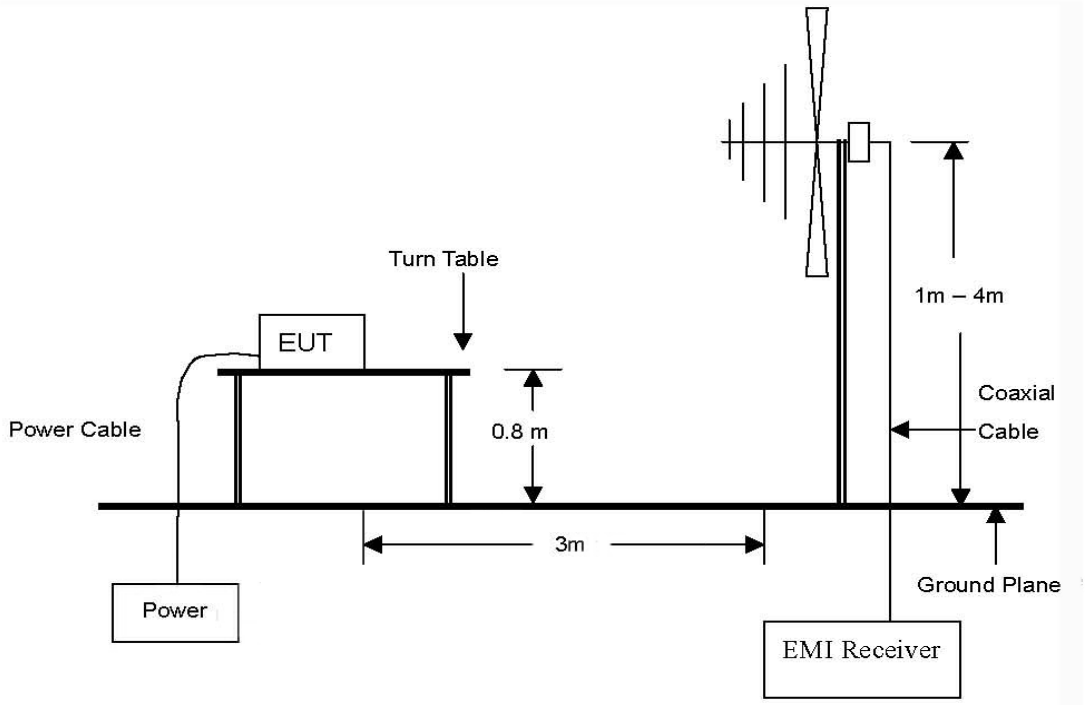
2. RF Radiated Output Power & Spurious Radiated Emission

2.1. Test setup

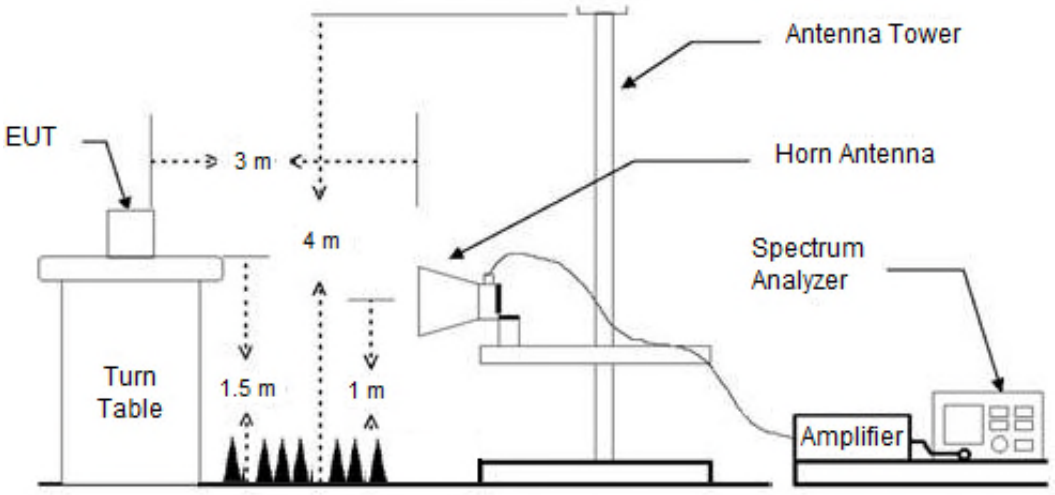
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



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 Radiated Output Power

- §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.

2.2.2. Limit of Spurious Radiated Emission

- §27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015

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 ANSI C63.26-2015 and 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 result for RF radiated output power

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

LTE band 7 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 502.50	81.69	H	28.30	6.35	116.34	-95.26	21.08	128.23
2 502.50	74.18	V	28.30	6.35	108.83	-95.26	13.57	22.75
2 535.00	80.81	H	28.30	6.36	115.47	-95.26	20.21	104.95
2 535.00	77.26	V	28.30	6.36	111.92	-95.26	16.66	46.34
2 567.50	82.38	H	28.41	6.36	117.15	-95.26	21.89	154.53
2 567.50	75.26	V	28.41	6.36	110.03	-95.26	14.77	29.99

* 5 BW 1 RB size / 0 Offset

LTE band 7 (5 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 502.50	80.47	H	28.30	6.35	115.12	-95.26	19.86	96.83
2 502.50	73.09	V	28.30	6.35	107.74	-95.26	12.48	17.70
2 535.00	80.87	H	28.30	6.36	115.53	-95.26	20.27	106.41
2 535.00	76.85	V	28.30	6.36	111.51	-95.26	16.25	42.17
2 567.50	81.18	H	28.41	6.36	115.95	-95.26	20.69	117.22
2 567.50	74.46	V	28.41	6.36	109.23	-95.26	13.97	24.95

* 5 BW 1 RB size / 0 Offset

LTE band 7 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 505.00	82.35	H	28.30	6.35	117.00	-95.26	21.74	149.28
2 505.00	74.50	V	28.30	6.35	109.15	-95.26	13.89	24.49
2 535.00	81.87	H	28.30	6.36	116.53	-95.26	21.27	133.97
2 535.00	77.77	V	28.30	6.36	112.43	-95.26	17.17	52.12
2 565.00	82.38	H	28.39	6.36	117.13	-95.26	21.87	153.82
2 565.00	75.92	V	28.39	6.36	110.67	-95.26	15.41	34.75

* 10 BW 1 RB size / 0 Offset

LTE band 7 (10 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 505.00	81.30	H	28.30	6.35	115.95	-95.26	20.69	117.22
2 505.00	73.56	V	28.30	6.35	108.21	-95.26	12.95	19.72
2 535.00	80.15	H	28.30	6.36	114.81	-95.26	19.55	90.16
2 535.00	76.78	V	28.30	6.36	111.44	-95.26	16.18	41.50
2 565.00	81.74	H	28.39	6.36	116.49	-95.26	21.23	132.74
2 565.00	75.02	V	28.39	6.36	109.77	-95.26	14.51	28.25

* 10 BW 1 RB size / 0 Offset

LTE band 7 (15 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 507.50	81.83	H	28.30	6.35	116.48	-95.26	21.22	132.43
2 507.50	74.56	V	28.30	6.35	109.21	-95.26	13.95	24.83
2 535.00	81.57	H	28.30	6.36	116.23	-95.26	20.97	125.03
2 535.00	77.65	V	28.30	6.36	112.31	-95.26	17.05	50.70
2 562.50	82.12	H	28.38	6.37	116.87	-95.26	21.61	144.88
2 562.50	77.02	V	28.38	6.37	111.77	-95.26	16.51	44.77

* 15 BW 1 RB size / 0 Offset

LTE band 7 (15 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 507.50	81.03	H	28.30	6.35	115.68	-95.26	20.42	110.15
2 507.50	73.50	V	28.30	6.35	108.15	-95.26	12.89	19.45
2 535.00	80.81	H	28.30	6.36	115.47	-95.26	20.21	104.95
2 535.00	76.65	V	28.30	6.36	111.31	-95.26	16.05	40.27
2 562.50	80.31	H	28.38	6.37	115.06	-95.26	19.80	95.50
2 562.50	75.02	V	28.38	6.37	109.77	-95.26	14.51	28.25

* 15 BW 1 RB size / 0 Offset

LTE band 7 (20 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 510.00	81.84	H	28.30	6.35	116.49	-95.26	21.23	132.74
2 510.00	74.48	V	28.30	6.35	109.13	-95.26	13.87	24.38
2 535.00	81.52	H	28.30	6.36	116.18	-95.26	20.92	123.59
2 535.00	77.27	V	28.30	6.36	111.93	-95.26	16.67	46.45
2 560.00	81.95	H	28.36	6.37	116.68	-95.26	21.42	138.68
2 560.00	77.18	V	28.36	6.37	111.91	-95.26	16.65	46.24

* 20 BW 1 RB size / 0 Offset

LTE band 7 (20 ㎒ - 16QAM)

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P.	
							(dB m)	(㎽)
2 510.00	81.15	H	28.30	6.35	115.80	-95.26	20.54	113.24
2 510.00	72.85	V	28.30	6.35	107.50	-95.26	12.24	16.75
2 535.00	81.07	H	28.30	6.36	115.73	-95.26	20.47	111.43
2 535.00	76.94	V	28.30	6.36	111.60	-95.26	16.34	43.05
2 560.00	80.06	H	28.36	6.37	114.79	-95.26	19.53	89.74
2 560.00	76.50	V	28.36	6.37	111.23	-95.26	15.97	39.54

* 20 BW 1 RB size / 0 Offset

Remark;

1. E (dB㎶/m) = Measured Level (dB㎶) + Antenna Factor (dB/m) + Cable Loss (dB).
2. E.I.R.P. (dB m) = E (dB㎶/m) + 20 log D - 104.8; where D is the measurement distance in meters.
3. CF (dB) (E.I.R.P.) = 20 log D - 104.8.
4. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.

2.5. Spurious radiated emission

LTE band 7 (5 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 502.5 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 567.5 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

* 5 BW 1 RB size / 0 Offset

LTE band 7 (10 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 505.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 565.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

* 10 BW 1 RB size / 0 Offset

LTE band 7 (15 ㎒ - QPSK)

Frequency (㎒)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 507.5 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 562.5 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

* 15 BW 1 RB size / 0 Offset

LTE band 7 (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 (2 510.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 560.0 ㎒)									
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

* 20 BW 1 RB size / 0 Offset

Remark;

1. E (dB㎶/m) = Measured Level (dB㎶) + Antenna Factor (dB/m) + Cable Loss (dB).
2. E.I.R.P. (dB m) = E (dB㎶/m) + 20 log D - 104.8; where D is the measurement distance in meters.
3. CF (dB) (E.I.R.P.) = 20 log D - 104.8.
4. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.

3. Conducted Output Power

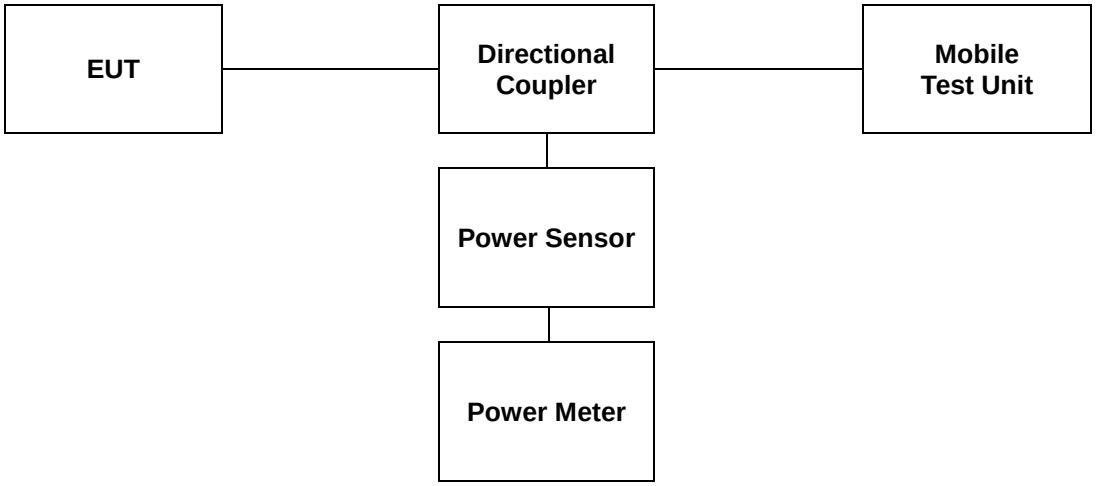
3.1. Limit

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.

LTE Band	Bandwidth (㎒)	RB Size	RB Offset	QPSK			16QAM		
				20775	21100	21425	20775	21100	21425
				2 502.5	2 535.0	2 567.5	2 502.5	2 535.0	2 567.5
7	5	1	0	22.76	22.61	22.67	21.63	21.31	21.64
		1	12	22.81	22.69	22.68	21.79	21.37	21.63
		1	24	22.77	22.68	22.66	21.57	21.43	21.56
		12	0	21.83	21.70	21.79	20.90	20.62	20.92
		12	7	21.82	21.75	21.80	20.83	20.70	20.84
		12	13	21.81	21.79	21.82	20.75	20.76	20.75
		25	0	21.92	21.80	21.76	20.93	21.05	20.87
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20800**	**21100**	**21400**	**20800**	**21100**	**21400**
				2 505.0	**2 535.0**	**2 565.0**	**2 505.0**	**2 535.0**	**2 565.0**
	10	1	0	23.13	22.71	23.06	22.23	22.09	21.71
		1	25	23.08	23.08	23.33	22.17	22.82	22.60
		1	49	22.70	22.80	22.86	21.89	22.13	21.82
		25	0	21.93	21.77	21.95	21.11	20.91	21.13
		25	12	21.91	21.80	21.96	20.95	20.94	21.18
		25	25	21.89	21.83	21.97	20.81	20.96	21.20
		50	0	21.81	21.79	21.92	20.81	20.97	20.98
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20825**	**21100**	**21375**	**20825**	**21100**	**21375**
				2 507.5	**2 535.0**	**2 562.5**	**2 507.5**	**2 535.0**	**2 562.5**
	15	1	0	23.13	22.73	22.84	22.09	22.13	21.80
		1	37	22.95	22.92	22.90	21.98	22.20	21.78
		1	74	22.87	22.96	22.71	21.92	22.24	21.60
		36	0	21.87	21.80	21.84	20.97	20.73	20.87
		36	20	21.84	21.83	21.90	20.87	20.84	20.94
		36	39	21.82	21.86	21.93	20.78	20.95	21.00
		75	0	21.93	21.81	21.84	20.81	20.80	21.02
	Bandwidth (㎒)	**RB Size**	**RB Offset**	**20850**	**21100**	**21350**	**20850**	**21100**	**21350**
				2 510.0	**2 535.0**	**2 560.0**	**2 510.0**	**2 535.0**	**2 560.0**
	20	1	0	23.24	22.60	23.10	21.98	21.82	22.12
		1	50	23.01	23.13	23.21	21.95	22.22	22.31
		1	99	23.01	22.77	22.86	21.92	22.00	21.94
		50	0	21.86	21.74	21.84	20.99	20.84	20.79
		50	25	21.89	21.81	21.86	20.95	20.93	20.80
		50	50	21.91	21.88	21.83	20.90	21.00	20.79
		100	0	21.97	21.72	21.76	20.88	20.78	20.98

4. Occupied Bandwidth

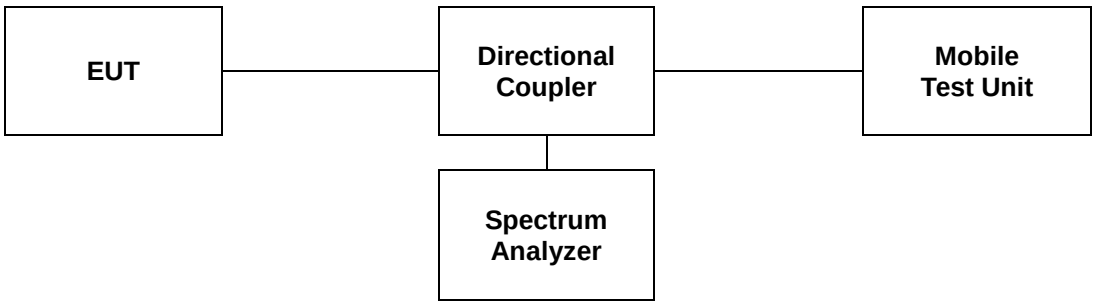
4.1. Limit

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

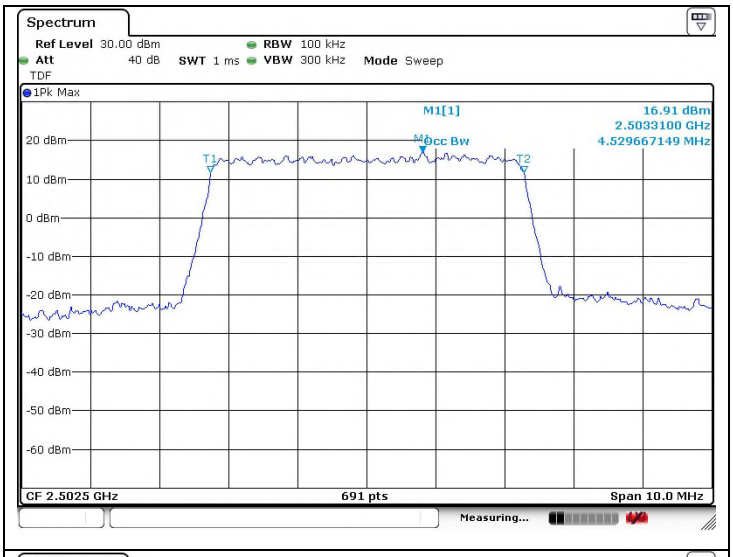
Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Band	Bandwidth (㎒)	Frequency (㎒)	Occupied Bandwidth (㎒)	
			QPSK	16QAM
7	5	2 502.5	4.530	4.501
		2 535.0	4.515	4.530
		2 567.5	4.501	4.515
	10	2 505.0	8.915	8.915
		2 535.0	8.944	8.944
		2 565.0	8.944	8.944
	15	2 507.5	13.415	13.415
		2 535.0	13.502	13.502
		2 562.5	13.459	13.459
	20	2 510.0	17.887	17.829
		2 535.0	17.887	17.945
		2 560.0	17.887	17.829

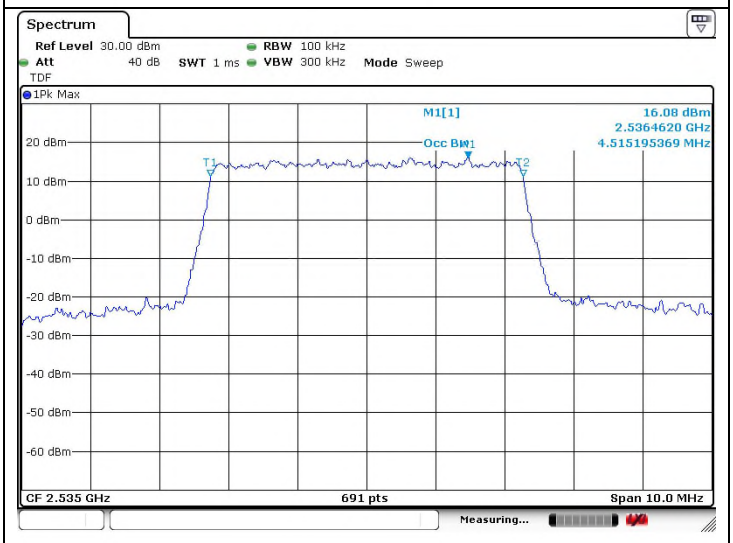
- Test plots

LTE band 7 (5 ㎒ - QPSK)

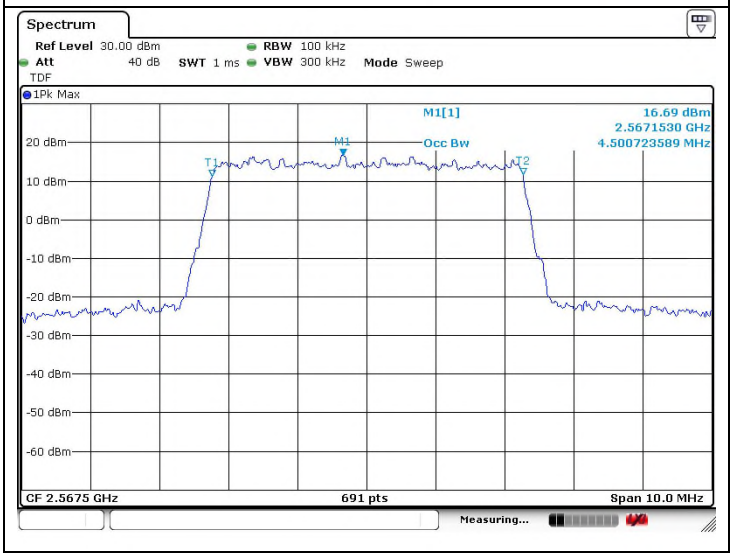
Low Channel



Middle Channel

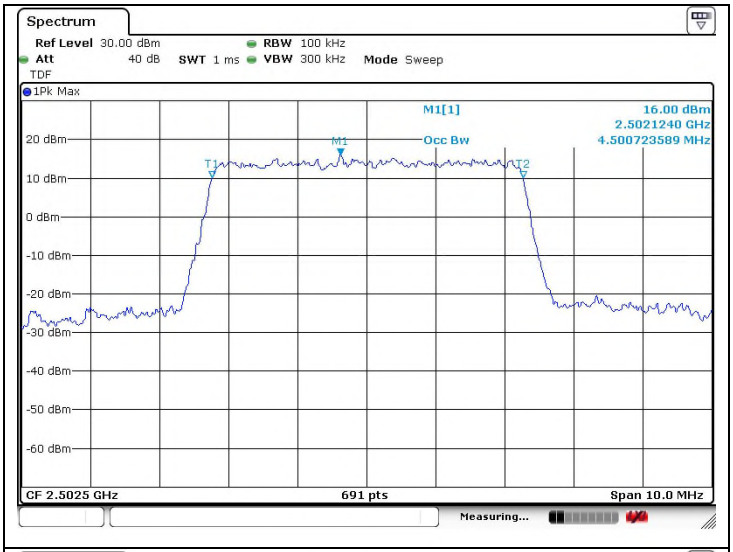


High Channel

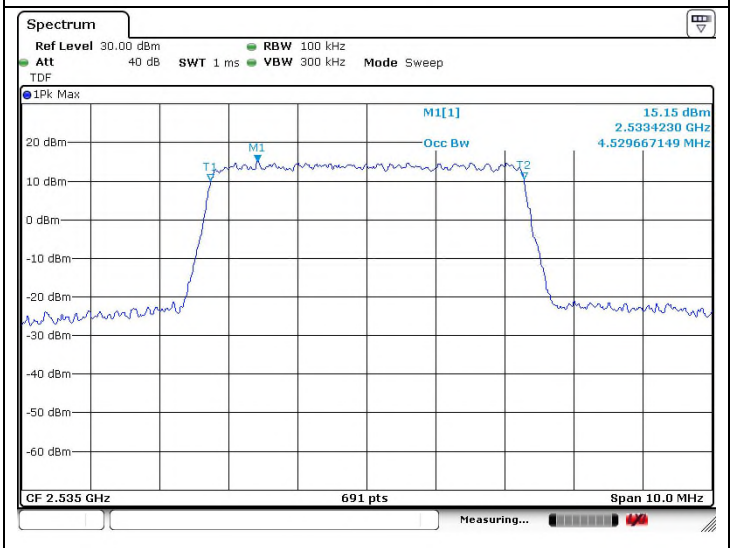


LTE band 7 (5 ㎒ - 16QAM)

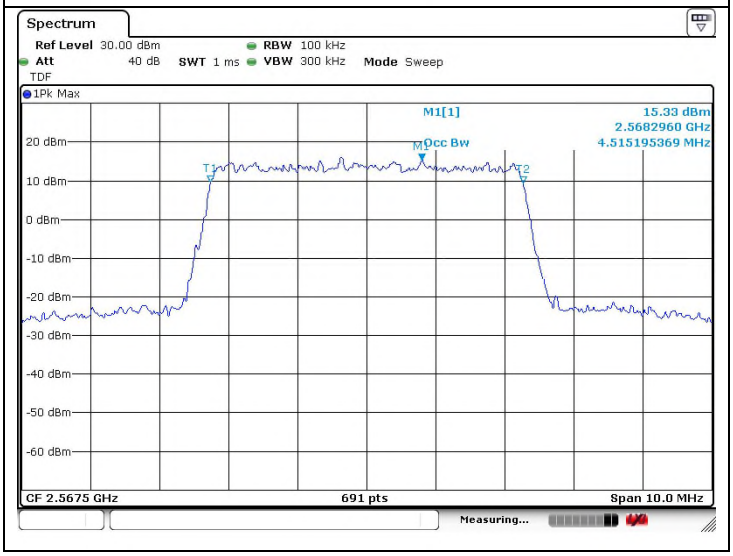
Low Channel



Middle Channel

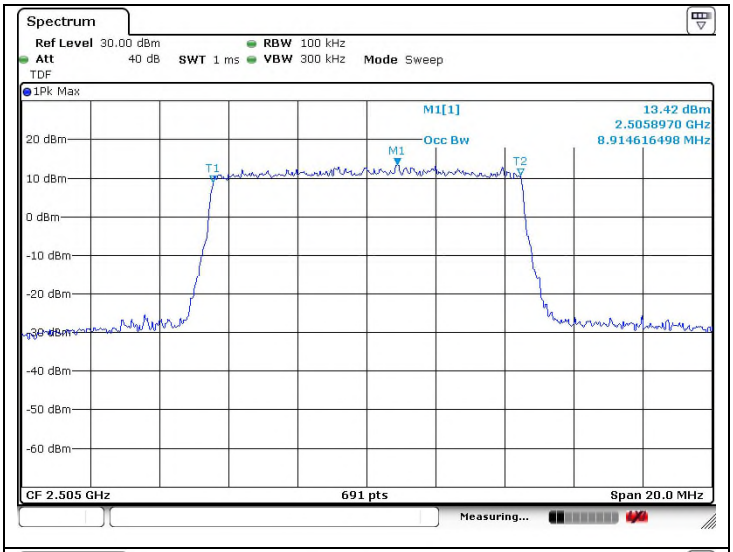


High Channel

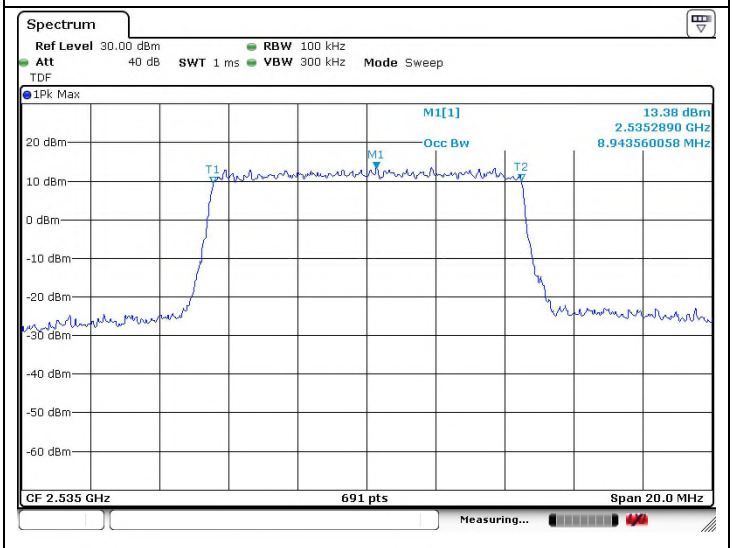


LTE band 7 (10 ㎒ - QPSK)

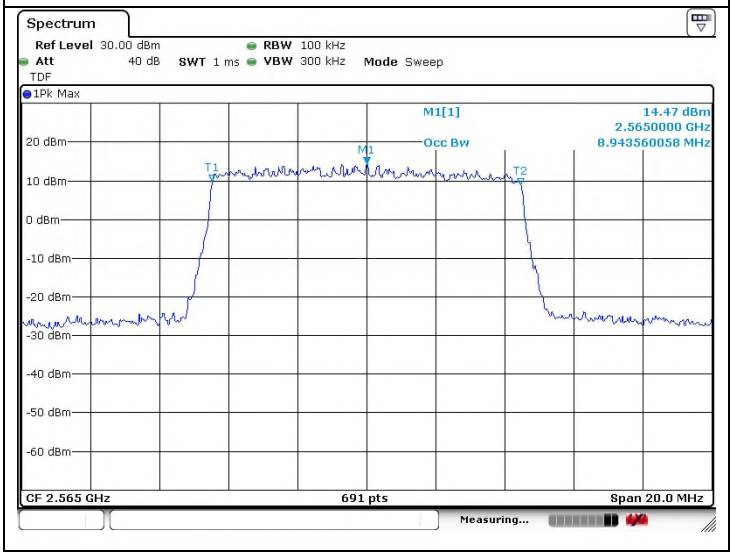
Low Channel



Middle Channel

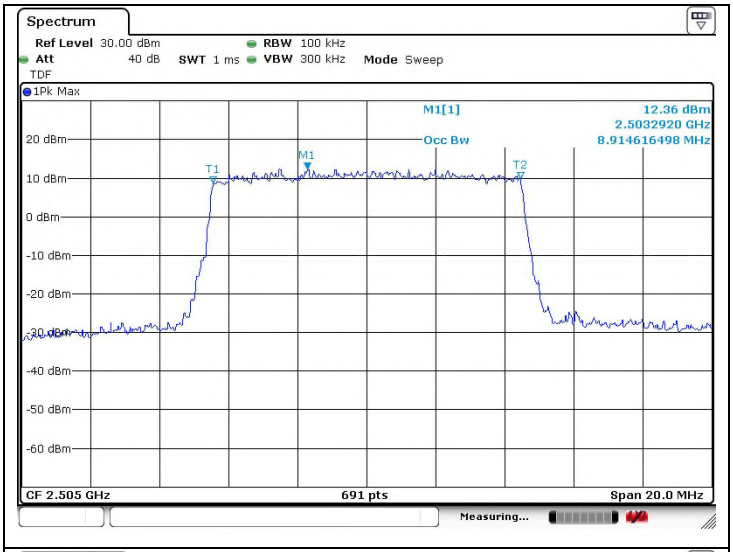


High Channel

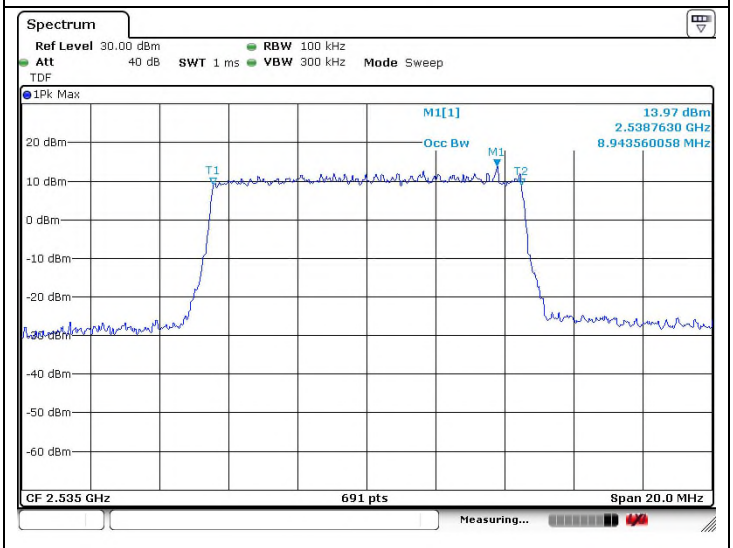


LTE band 7 (10 ㎒ - 16QAM)

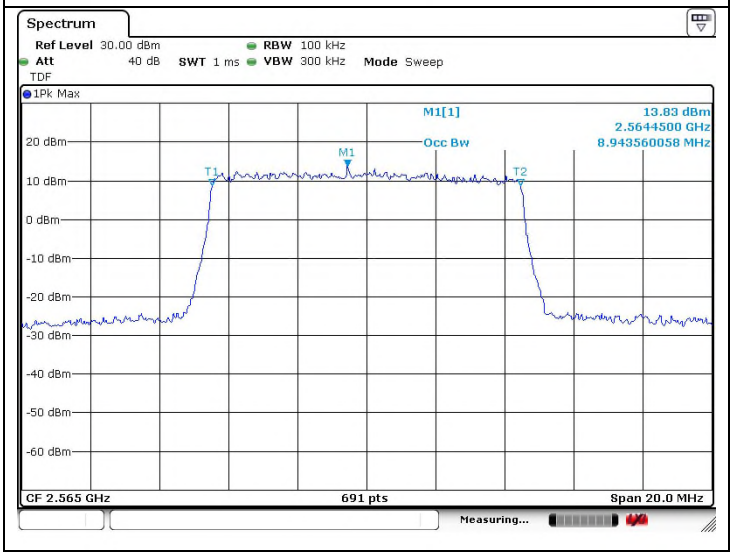
Low Channel



Middle Channel

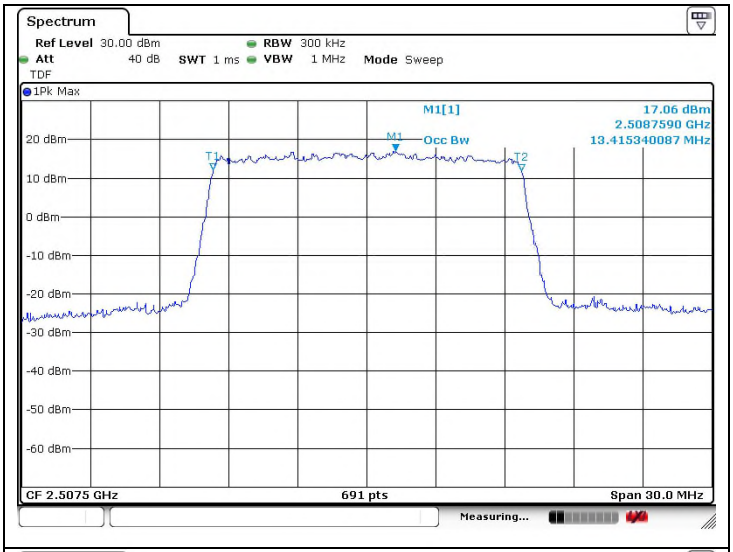


High Channel

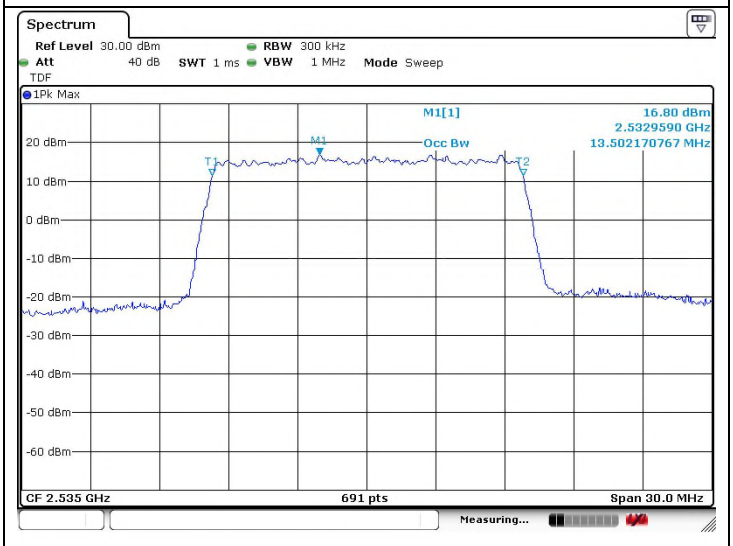


LTE band 7 (15 ㎒ - QPSK)

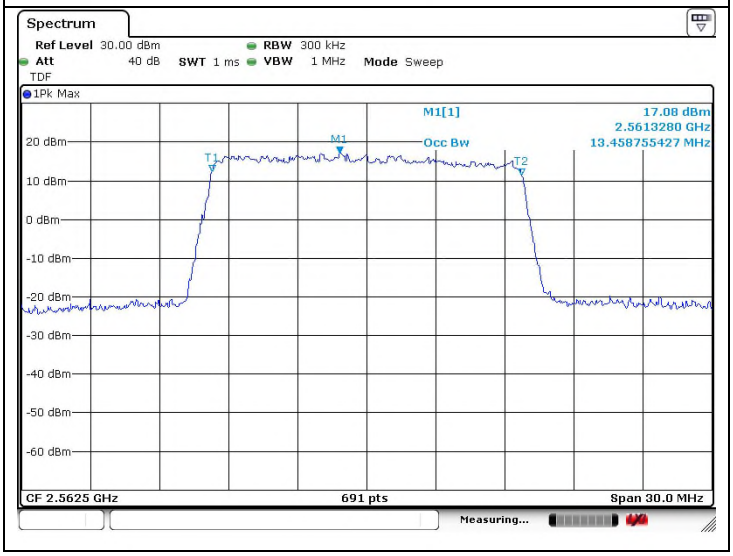
Low Channel



Middle Channel

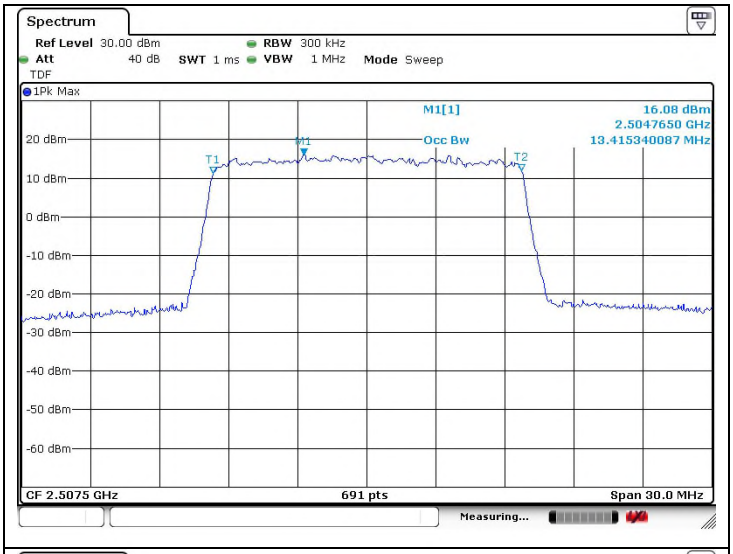


High Channel

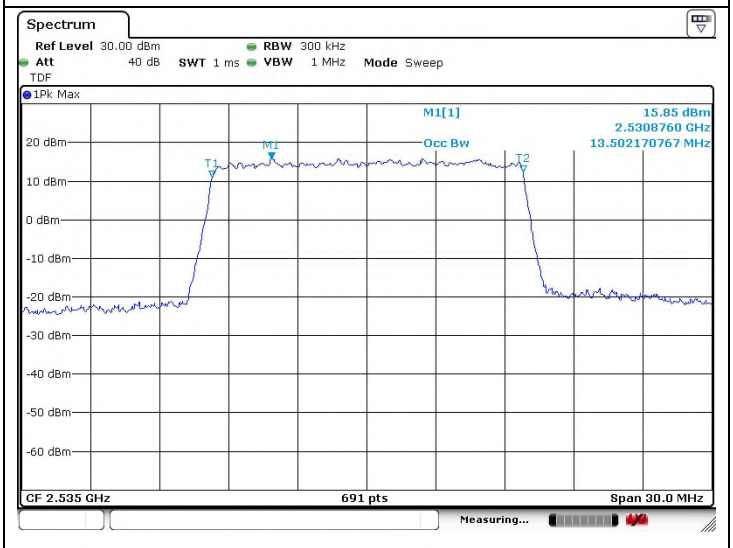


LTE band 7 (15 ㎒ - 16QAM)

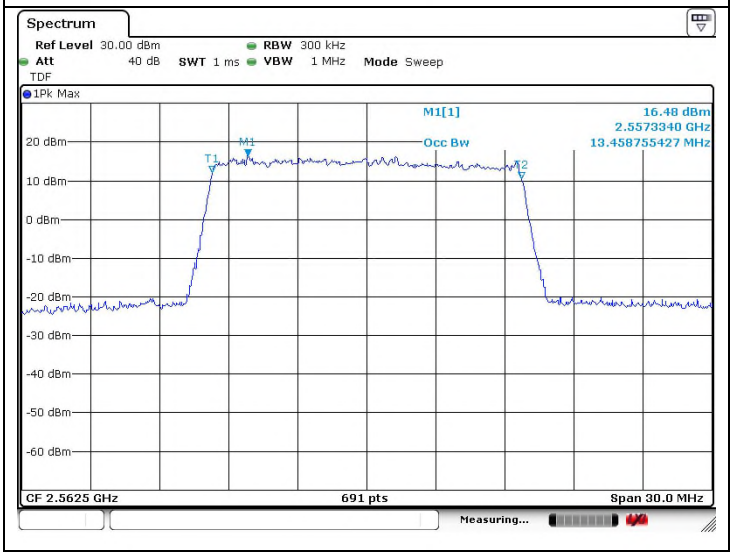
Low Channel



Middle Channel

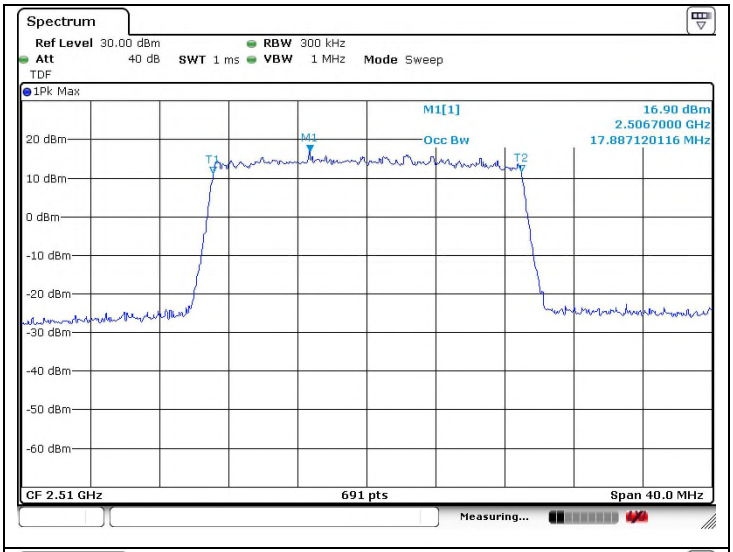


High Channel

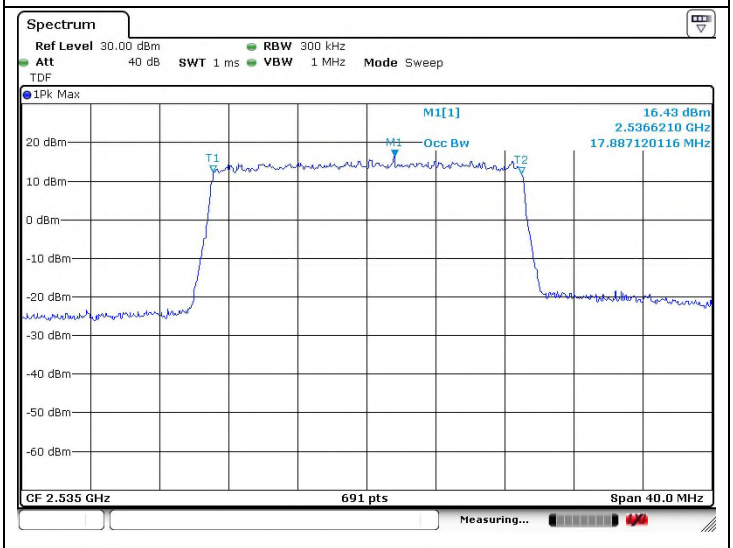


LTE band 7 (20 ㎒ - QPSK)

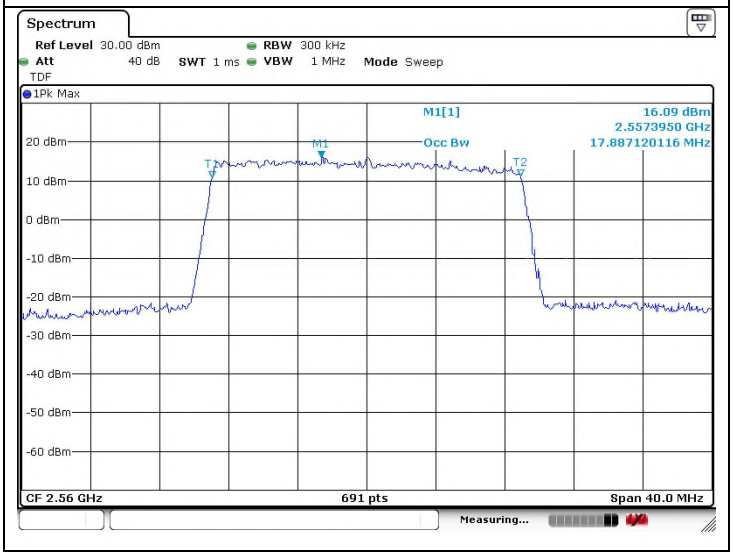
Low Channel



Middle Channel

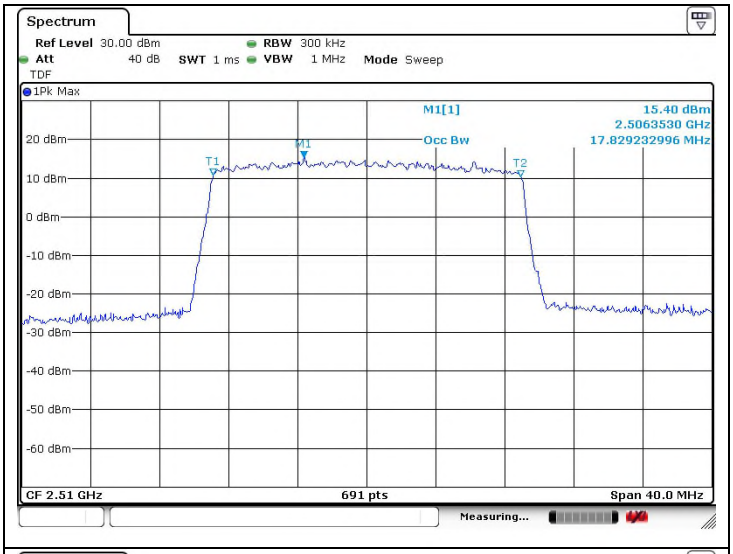


High Channel

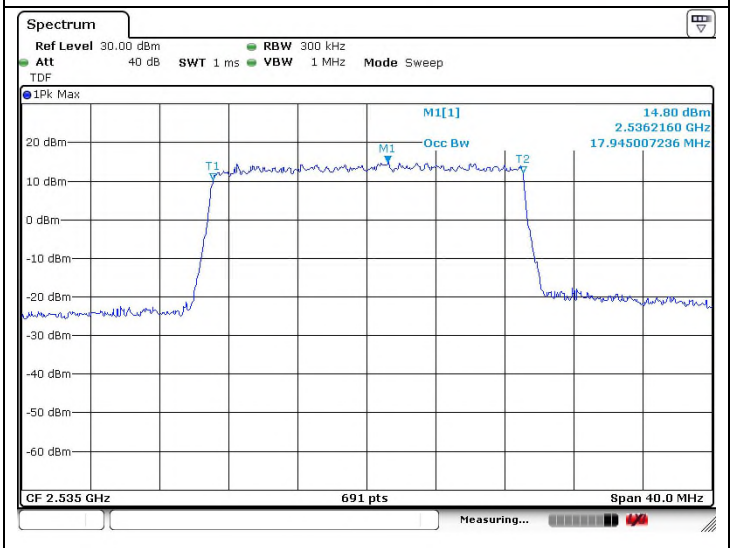


LTE band 7 (20 ㎒ - 16QAM)

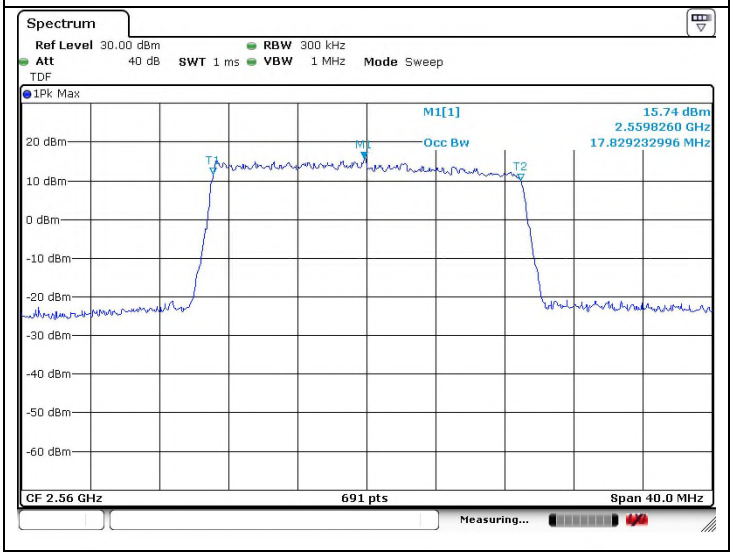
Low Channel



Middle Channel



High Channel



5. Peak-Average Ratio

5.1. Limit

- §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 ㏈.

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:

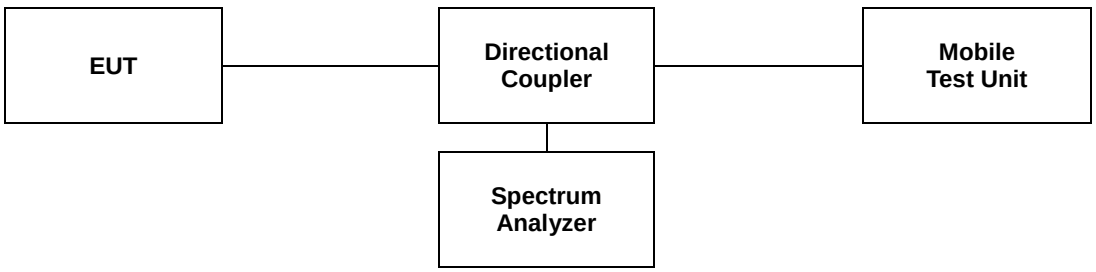
1) For continuous transmissions, set to greater of [10 x (number of points in sweep) x (transmission symbol period)] or 1 ㎳.

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

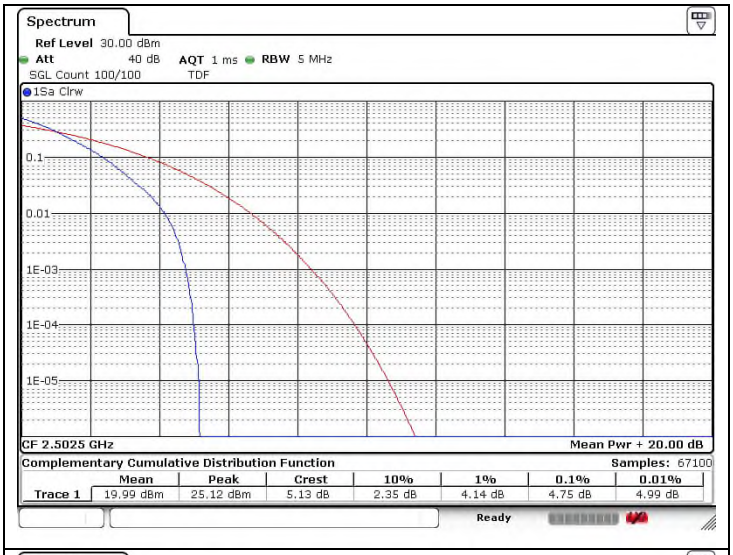
Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Band	Bandwidth (㎒)	Mode	Frequency (㎒)	PAR (dB)
7	5	QPSK	2 502.5	4.75
			2 535.0	4.70
			2 567.5	4.78
	10	QPSK	2 505.0	4.78
			2 535.0	4.72
			2 565.0	4.78
	15	QPSK	2 507.5	5.10
			2 535.0	5.01
			2 562.5	5.10
	20	QPSK	2 510.0	4.75
			2 535.0	4.75
			2 560.0	4.84

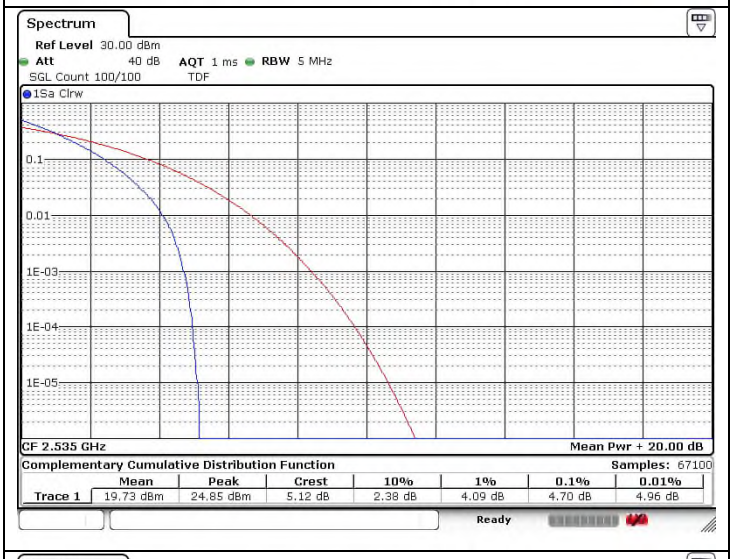
- Test plots

LTE band 7 (5 ㎒ - QPSK)

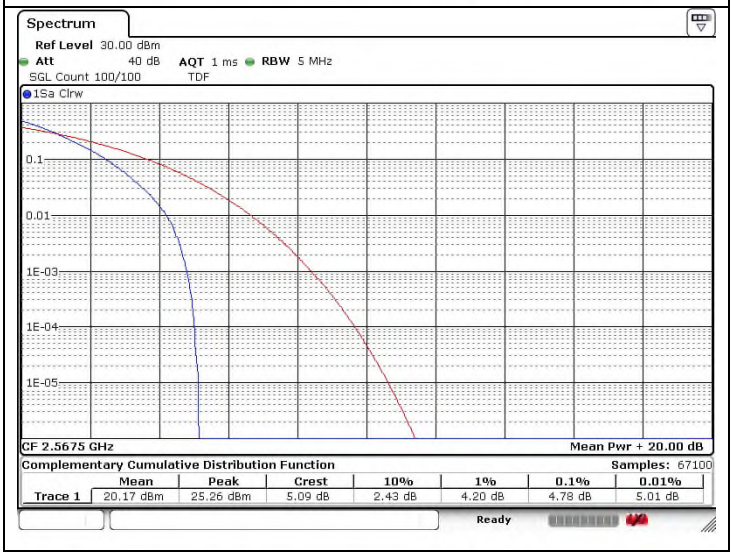
Low Channel



Middle Channel

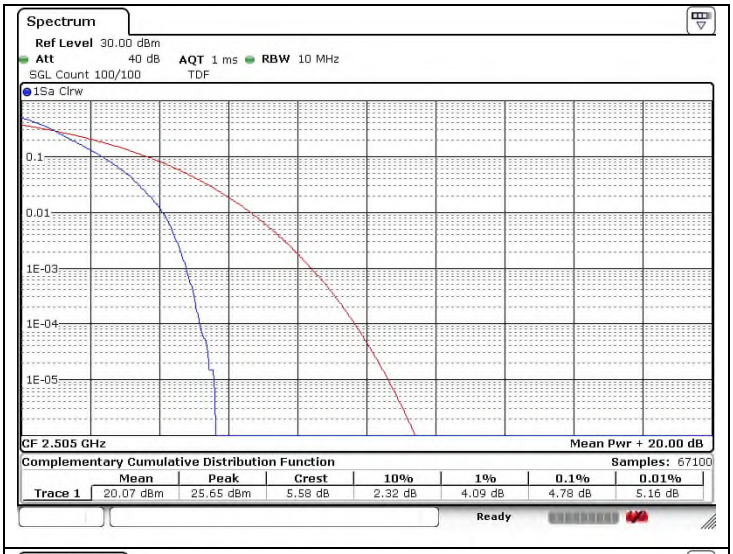


High Channel

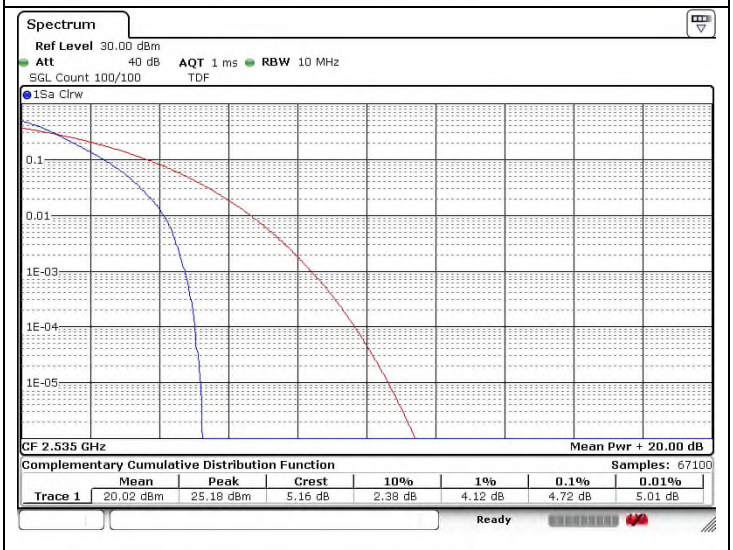


LTE band 7 (10 ㎒ - QPSK)

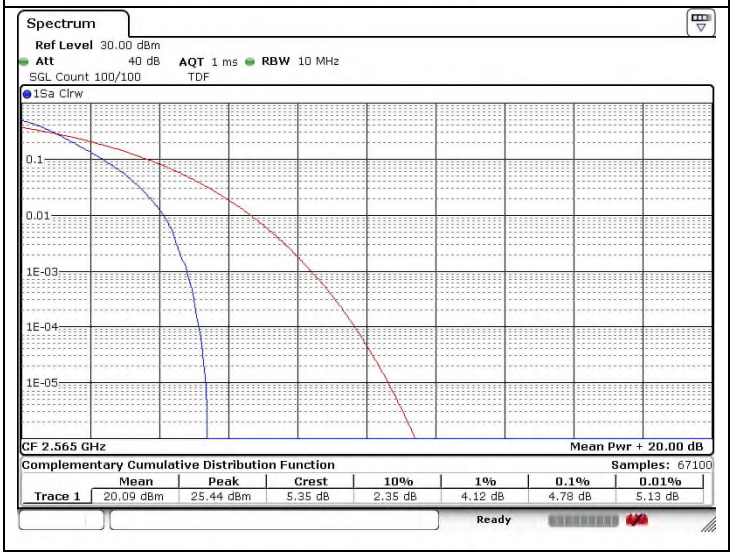
Low Channel



Middle Channel

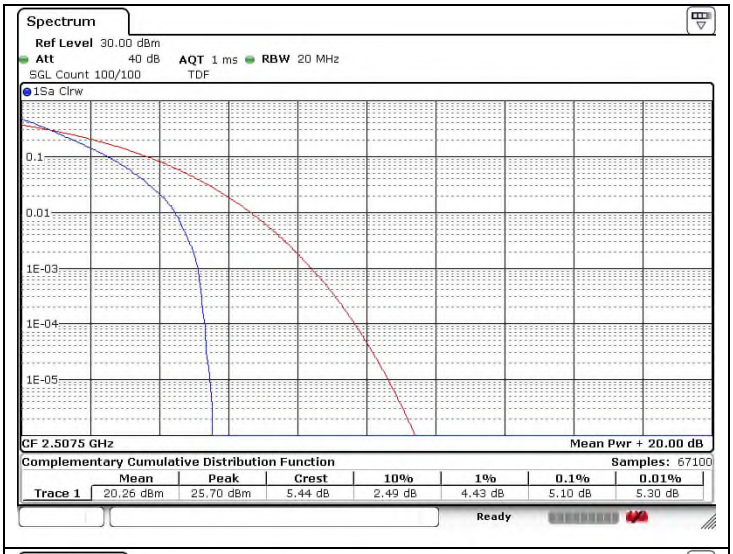


High Channel

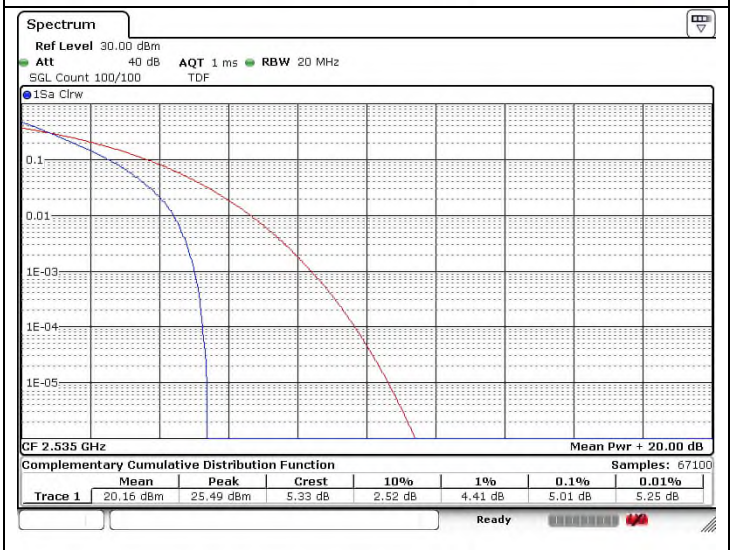


LTE band 7 (15 ㎒ - QPSK)

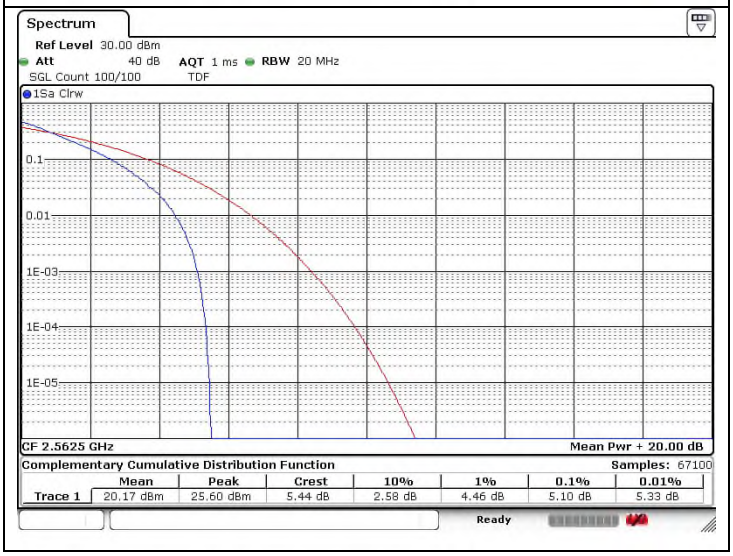
Low Channel



Middle Channel

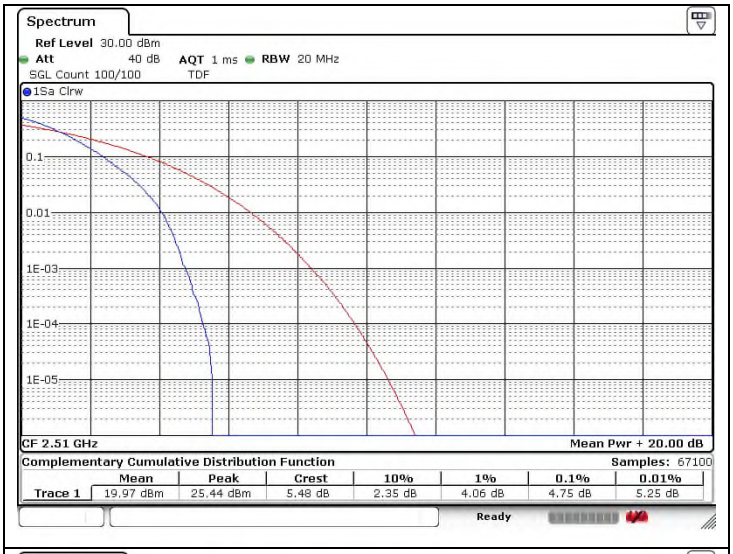


High Channel

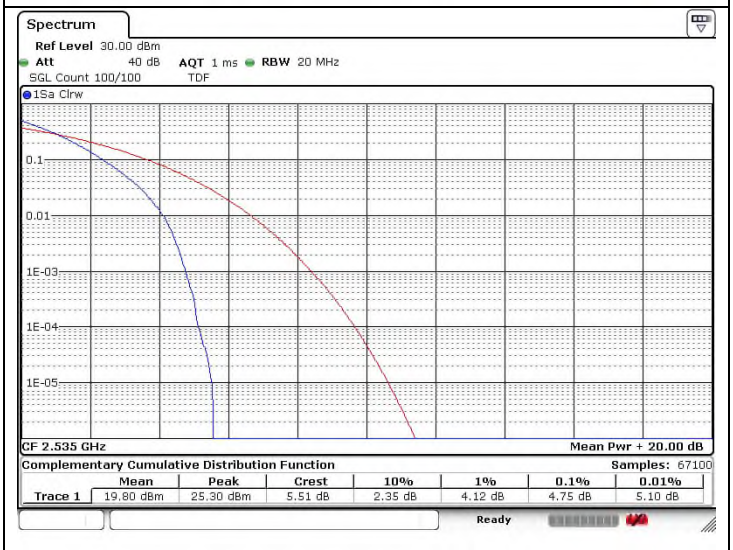


LTE band 7 (20 ㎒ - QPSK)

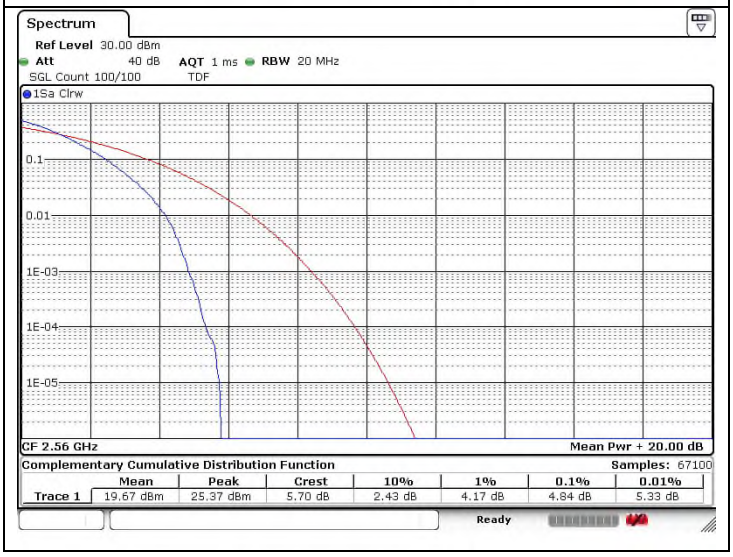
Low Channel



Middle Channel



High Channel



6. Spurious Emissions at Antenna Terminal

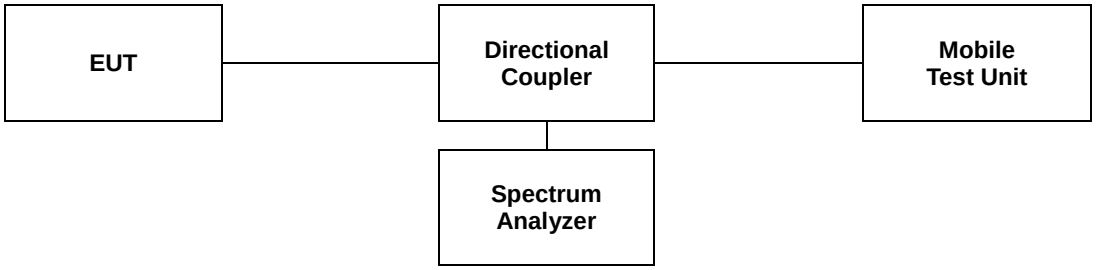
6.1. Limit

- §27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

6.2. Test Procedure

The test follows section 5.7 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 9 ㎑ to 26 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as correction factor.



Note;

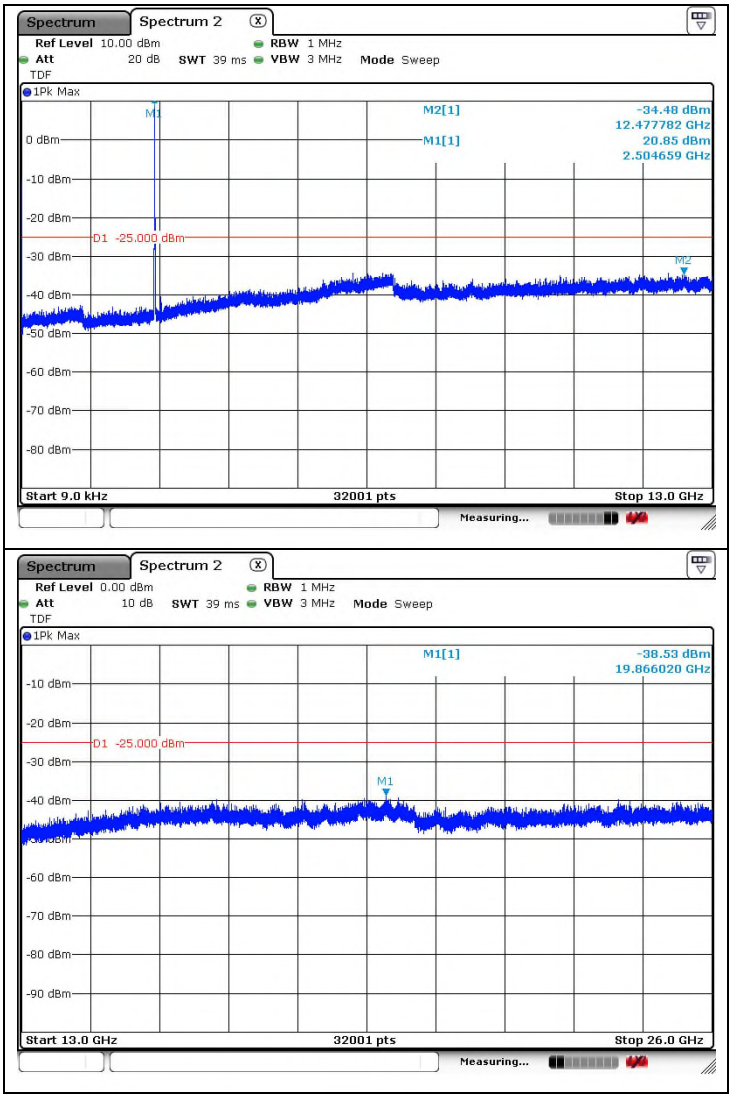
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 ㎑ or greater for frequencies less than 1 ㎓ and frequencies greater than 1 ㎓. However, in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution 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

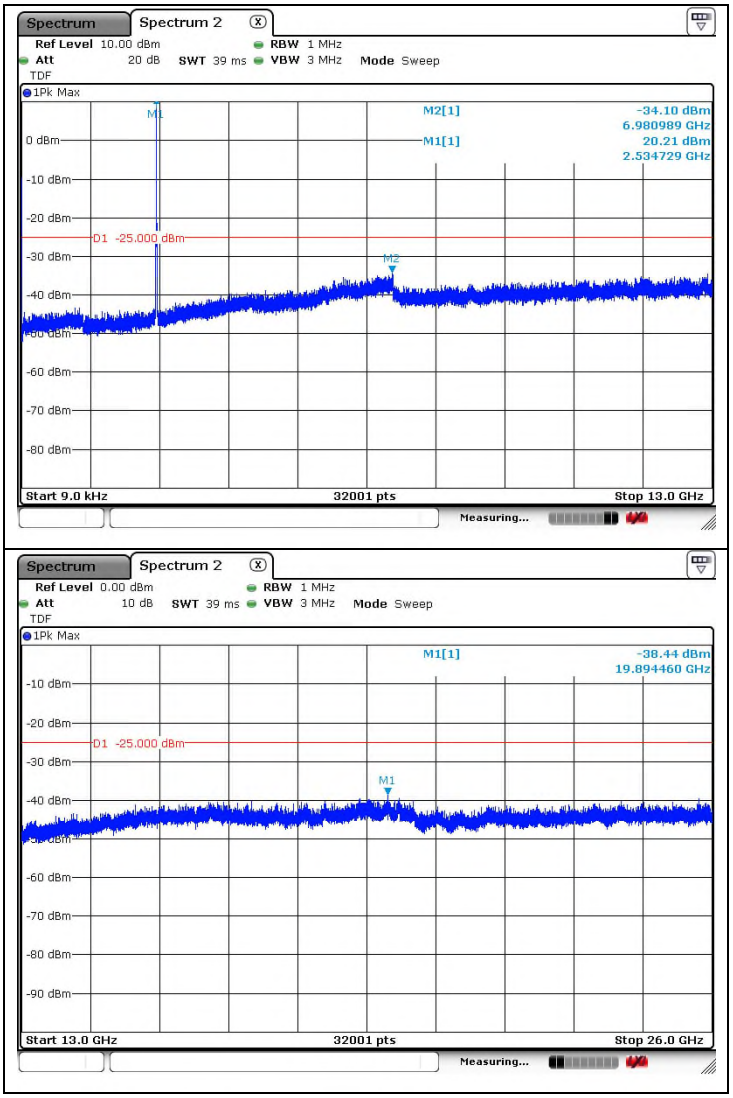
Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

- Test plots

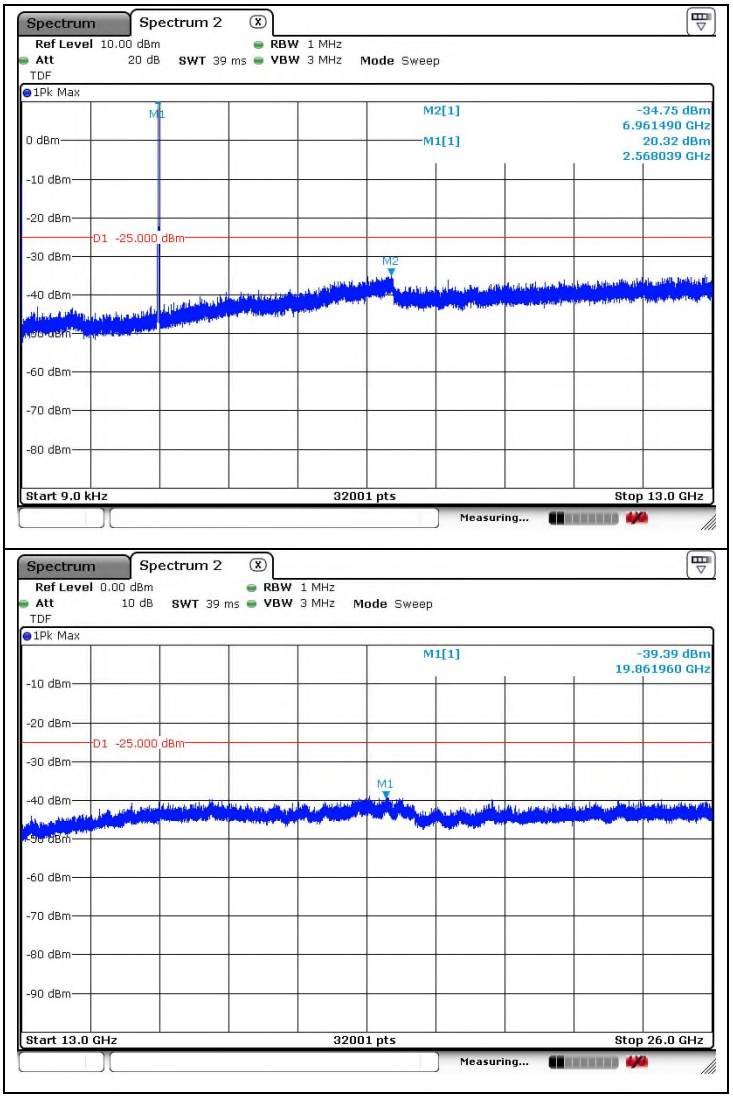
LTE band 7 (5 ㎒ - QPSK)
Low Channel



Middle Channel

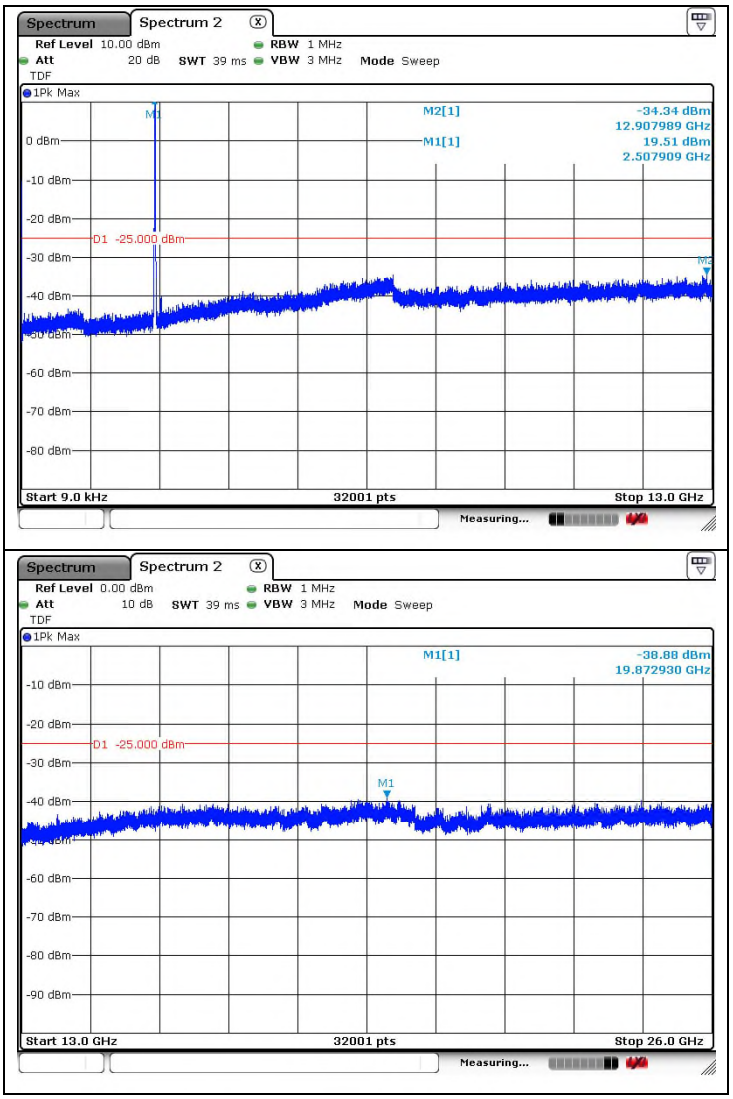


High Channel

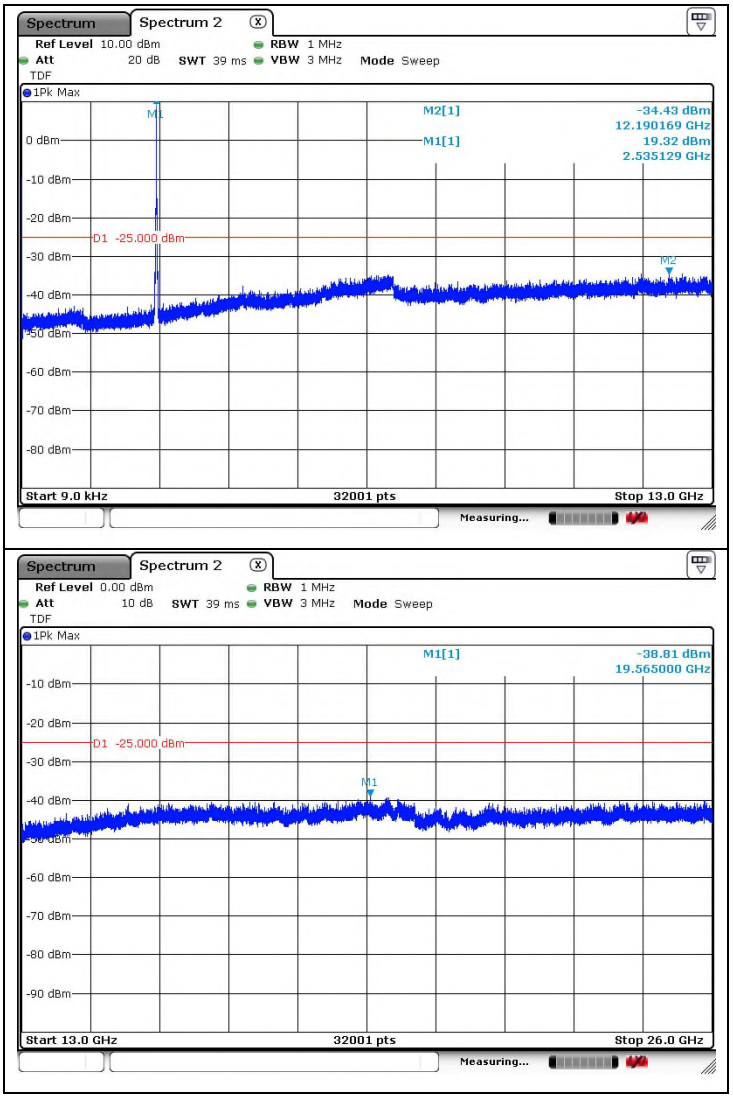


LTE band 7 (10 ㎒ - QPSK)

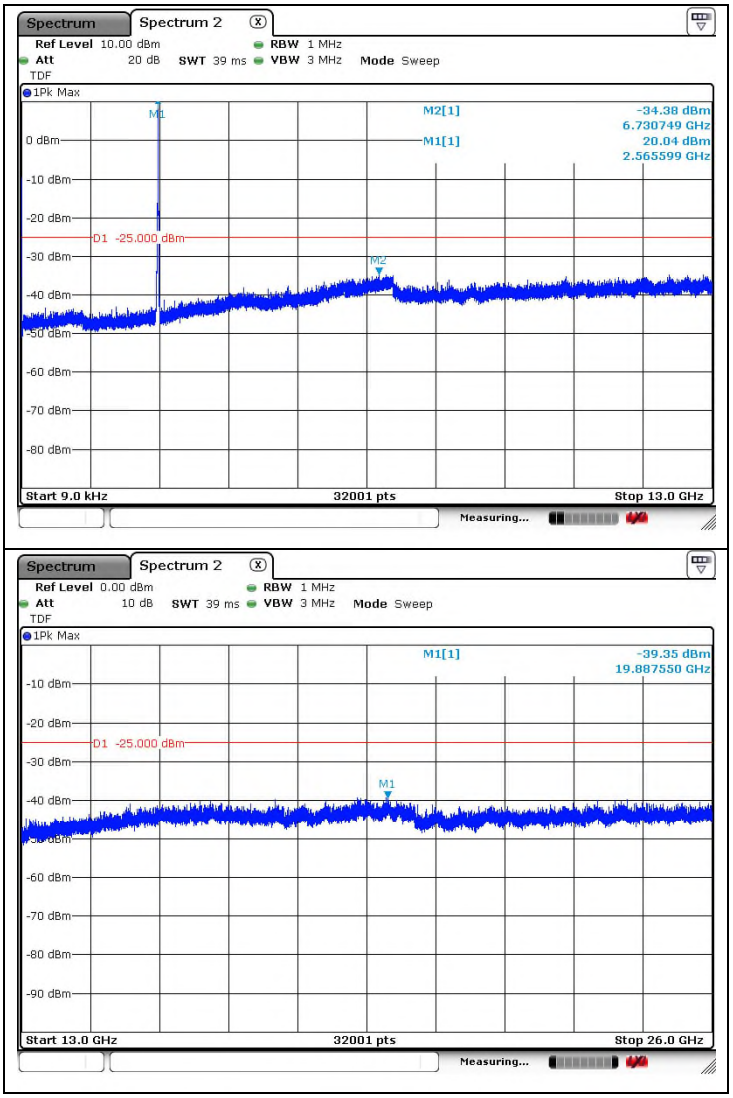
Low Channel



Middle Channel

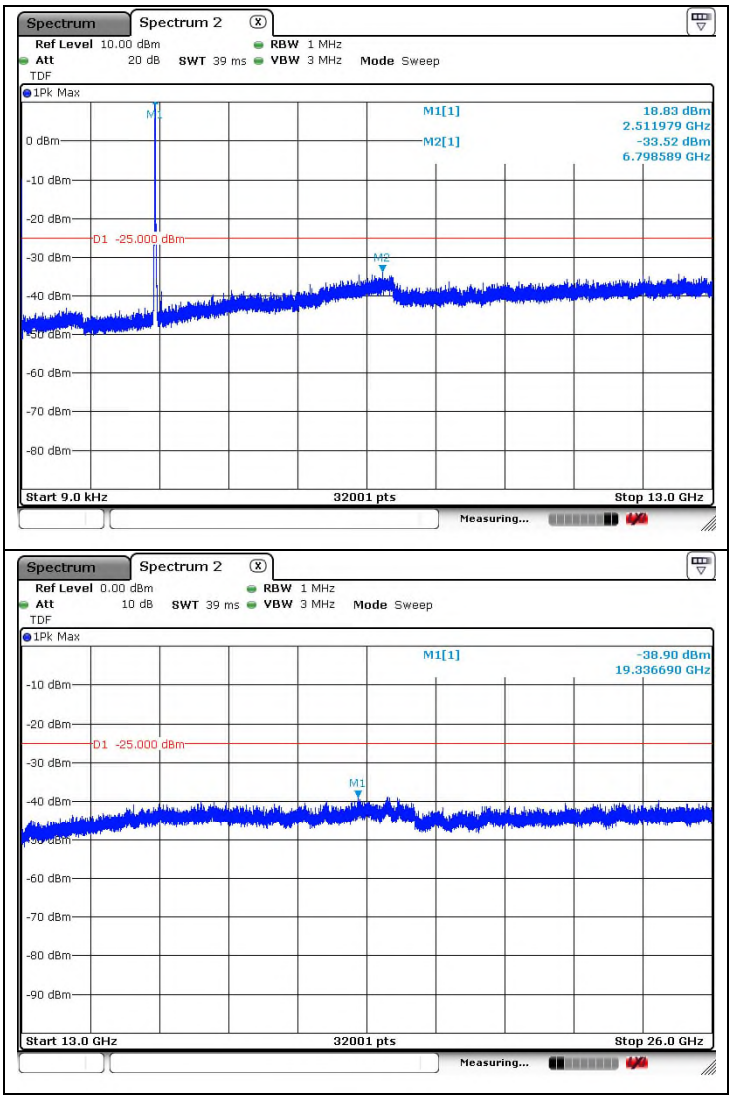


High Channel

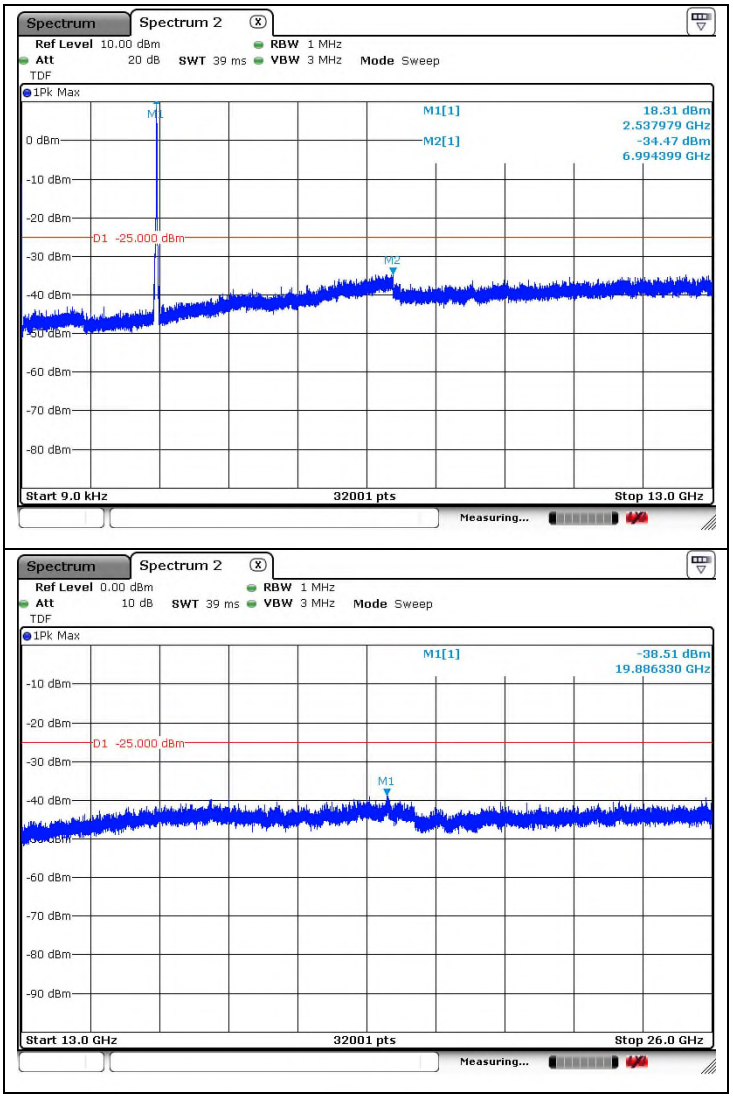


LTE band 7 (15 ㎒ - QPSK)

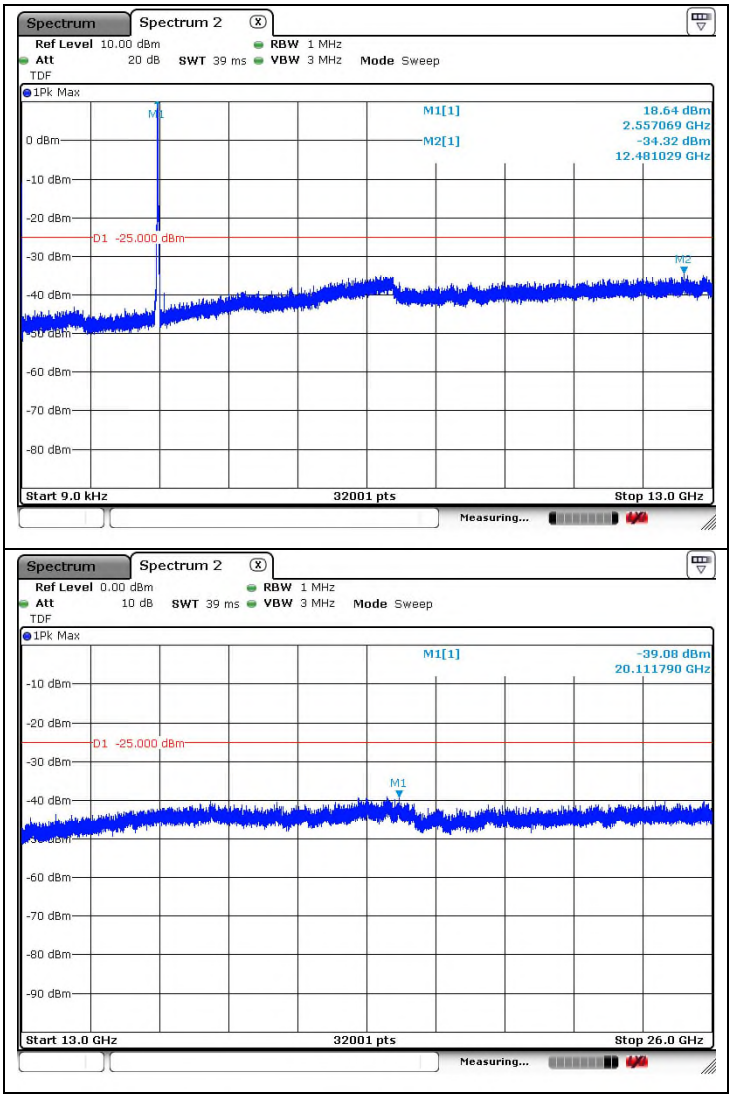
Low Channel



Middle Channel

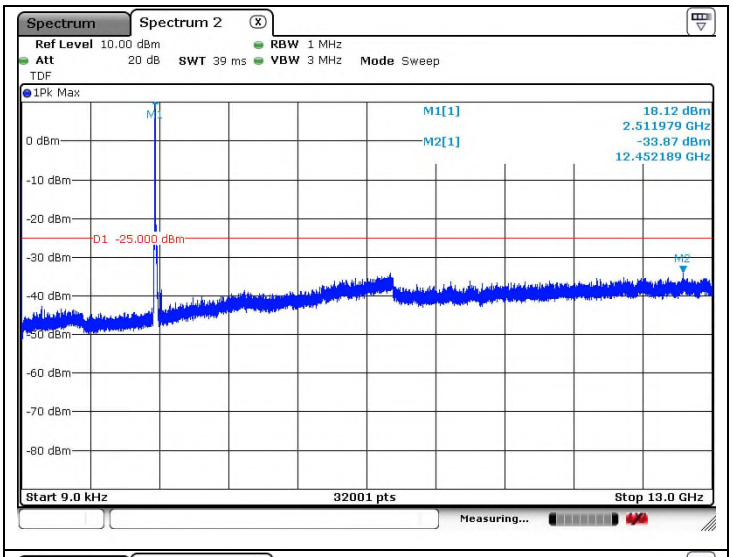


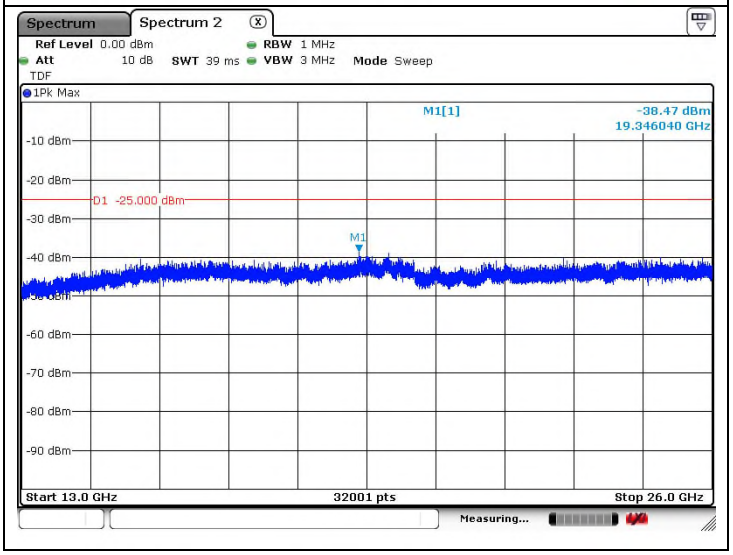
High Channel



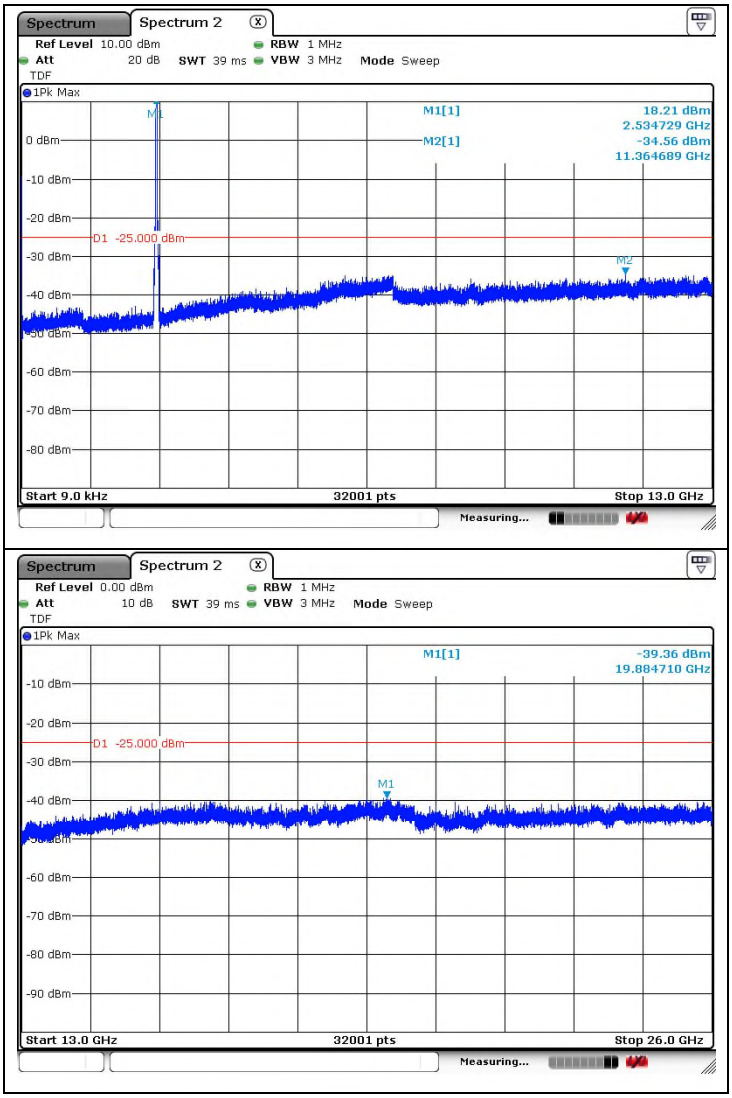
LTE band 7 (20 ㎒ - QPSK)

Low Channel

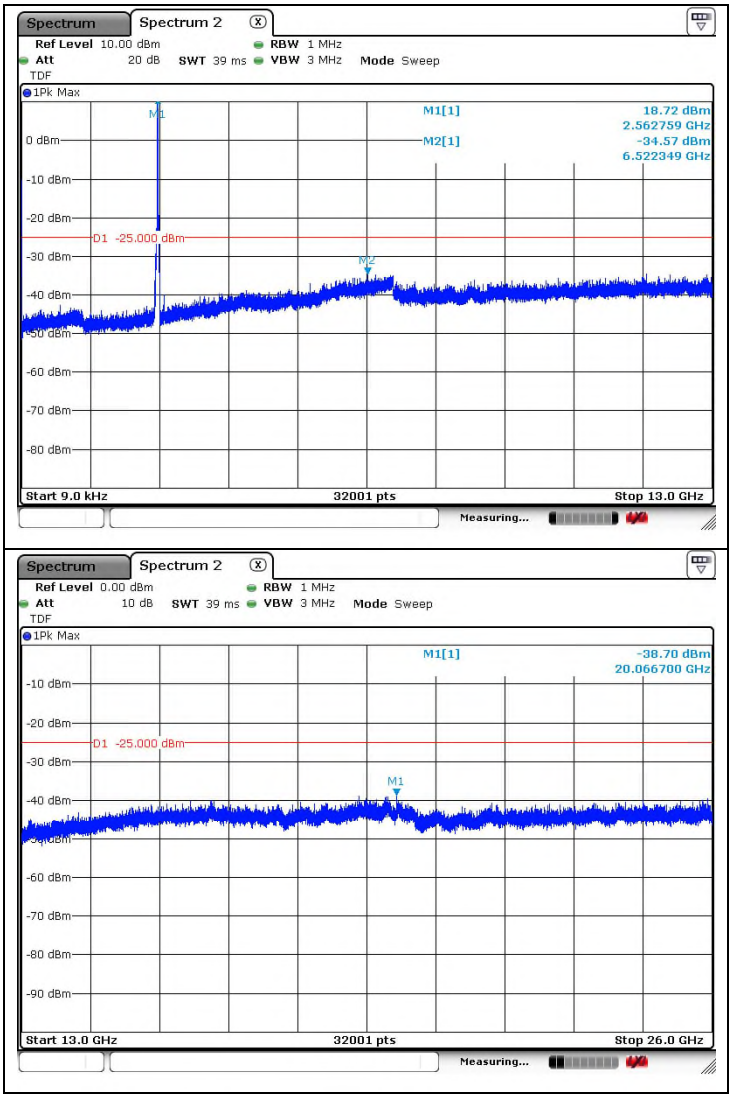




Middle Channel



High Channel



7. Band Edge

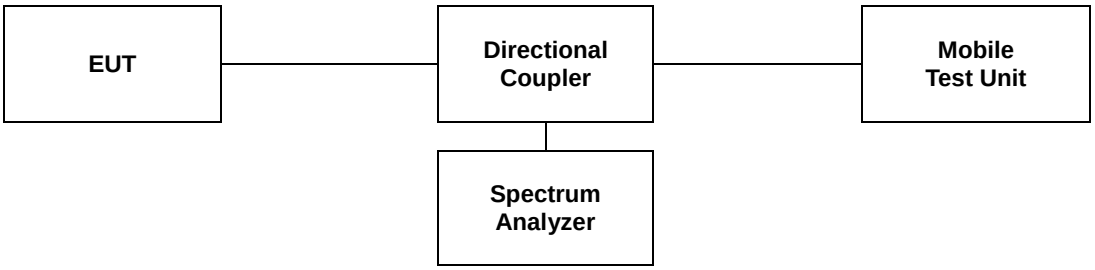
7.1. Limit

- §27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

7.2. Test Procedure

The test follows section 5.7.3 of ANSI C63.26-2015.

a. Span was set large enough so as to capture all out of band emissions near the band edge.
b. RBW ≥ 1 % of OBW.
c. VBW ≥ 3 x RBW.
d. Detector = RMS.
e. Trace mode = Average.
f. Sweep time = Auto.
g. The trace was allowed to stabilize.
h. All path loss of frequency range was investigated and compensated to spectrum analyzer as TDF function.

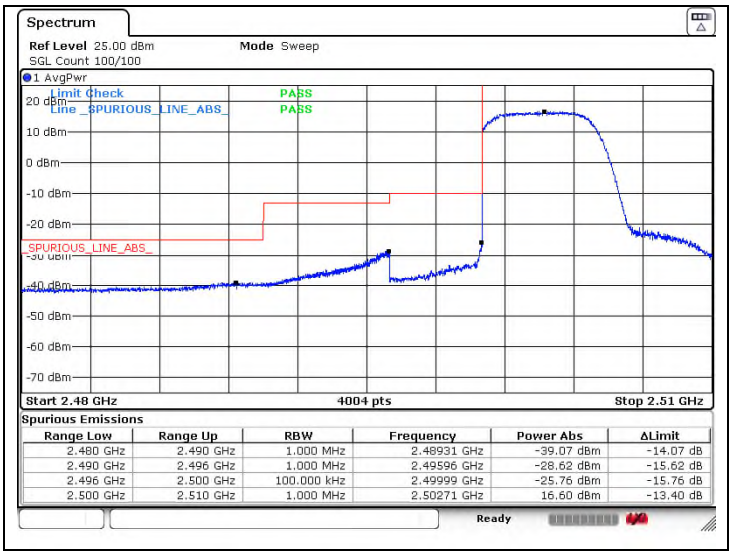


7.3. Test Results

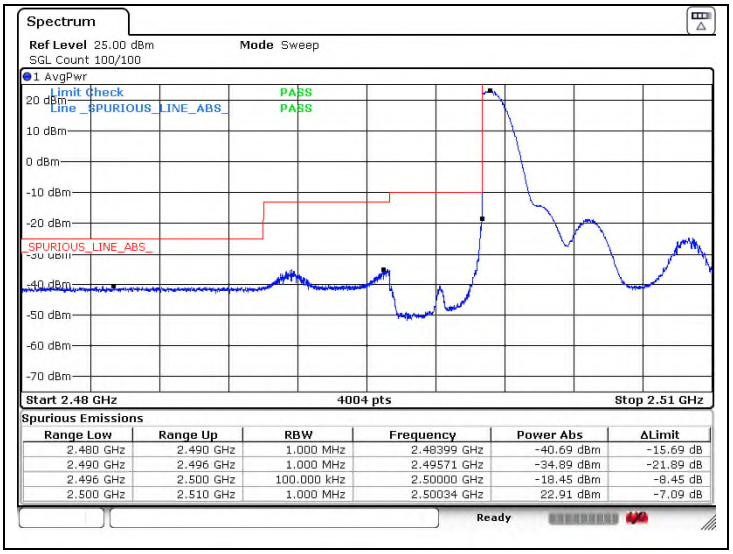
Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

- Test plots

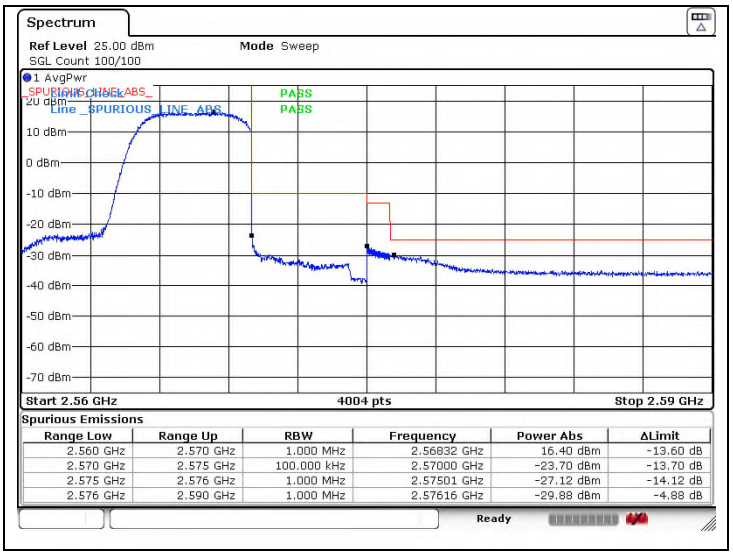
LTE band 7 (5 ㎒ - QPSK_Full RB)
Low Channel



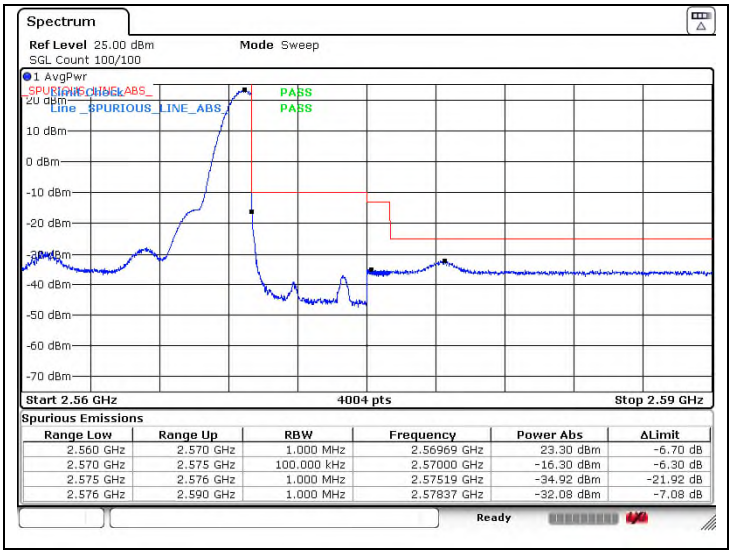
LTE band 7 (5 ㎒ - QPSK_1 RB)
Low Channel



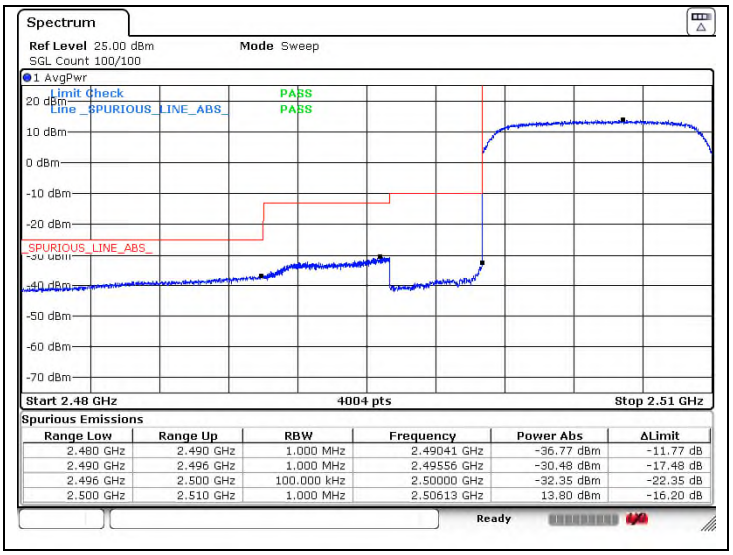
LTE band 7 (5 ㎒ - QPSK_Full RB)
High Channel



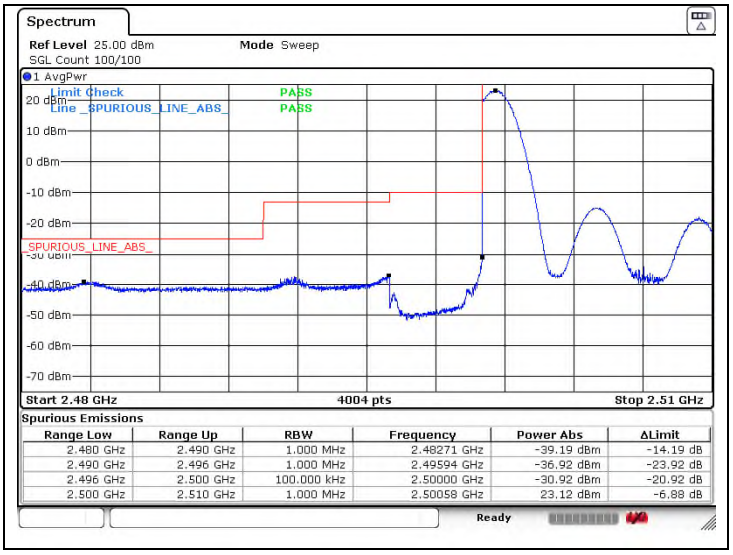
LTE band 7 (5 ㎒ - QPSK_1 RB)
High Channel



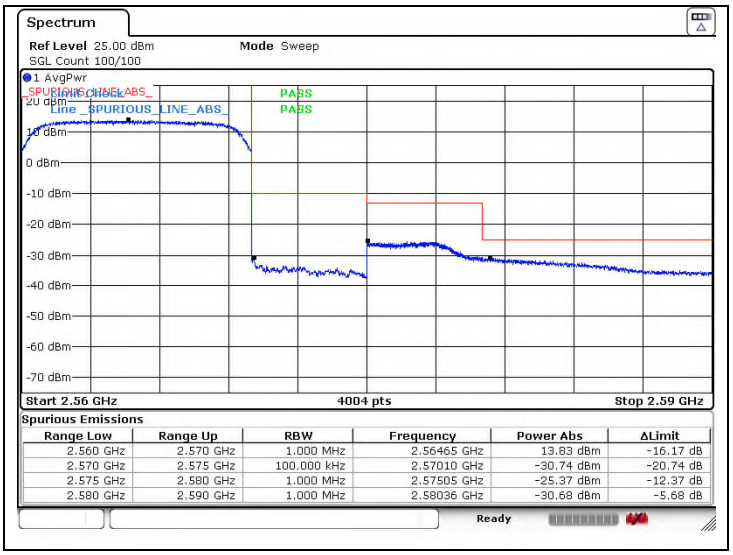
LTE band 7 (10 ㎒ - QPSK_Full RB)
Low Channel



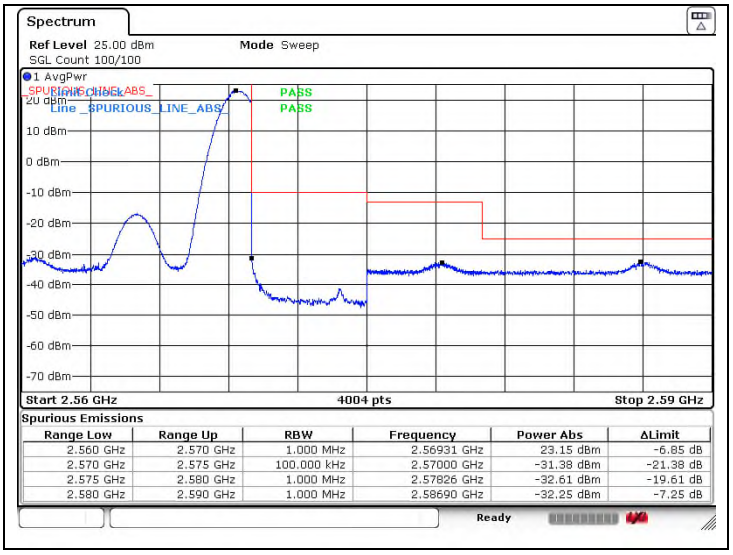
LTE band 7 (10 ㎒ - QPSK_1 RB)
Low Channel



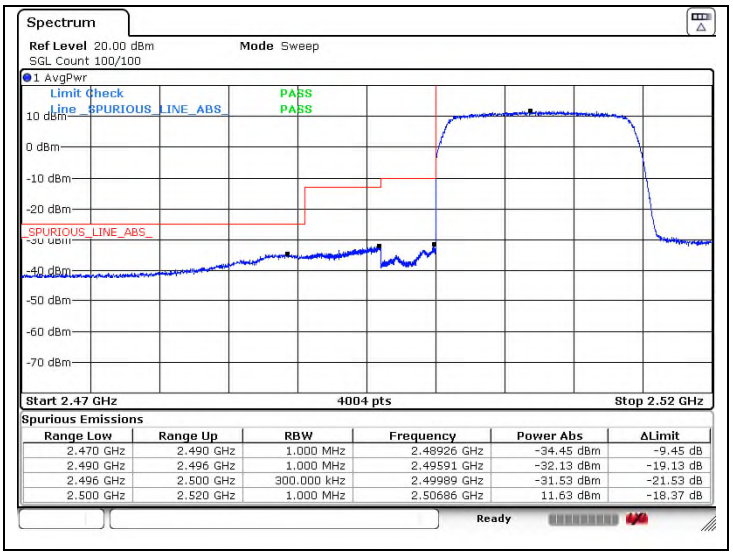
LTE band 7 (10 ㎒ - QPSK_Full RB)
High Channel



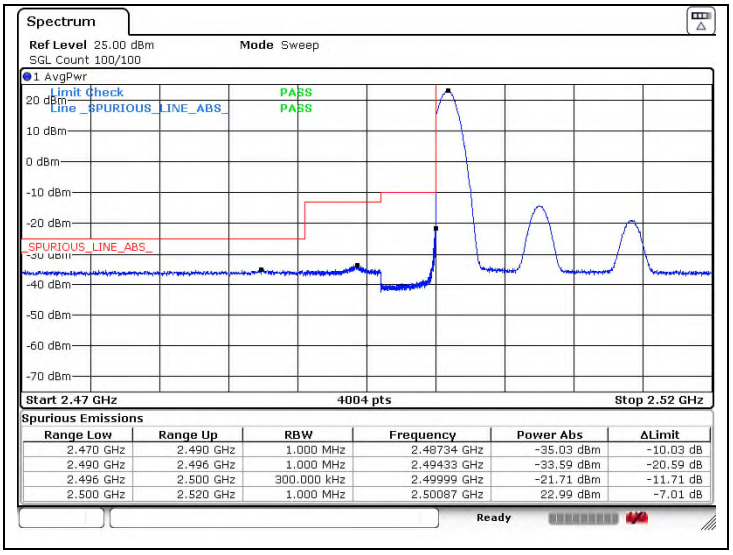
LTE band 7 (10 ㎒ - QPSK_1 RB)
High Channel



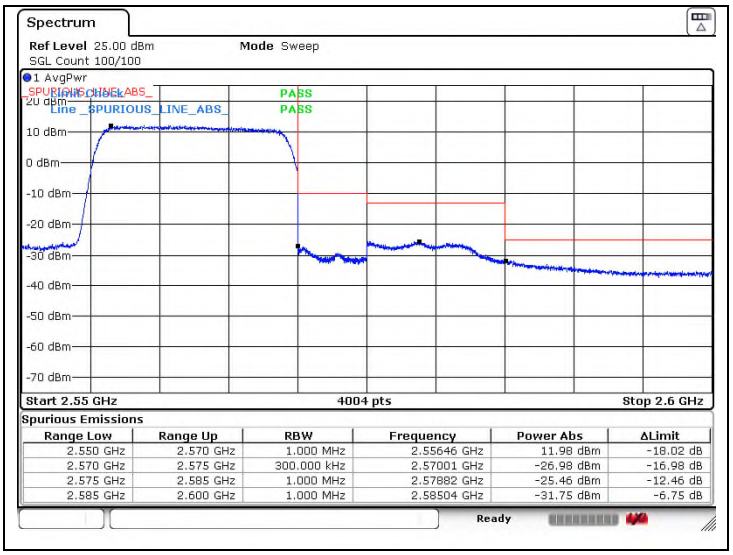
LTE band 7 (15 ㎒ - QPSK_Full RB)
Low Channel



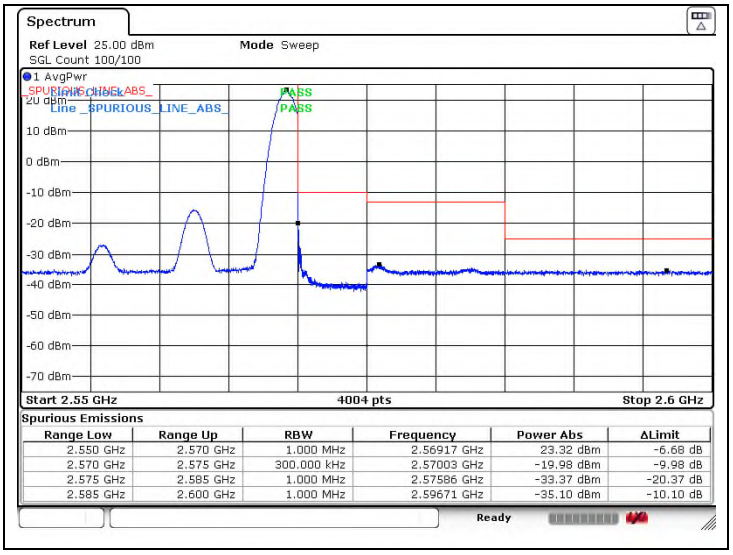
LTE band 7 (15 ㎒ - QPSK_1 RB)
Low Channel



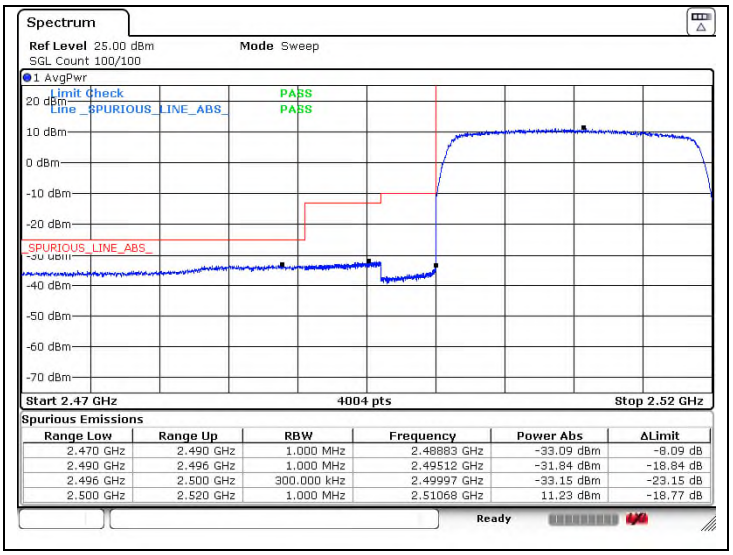
LTE band 7 (15 ㎒ - QPSK_Full RB)
High Channel



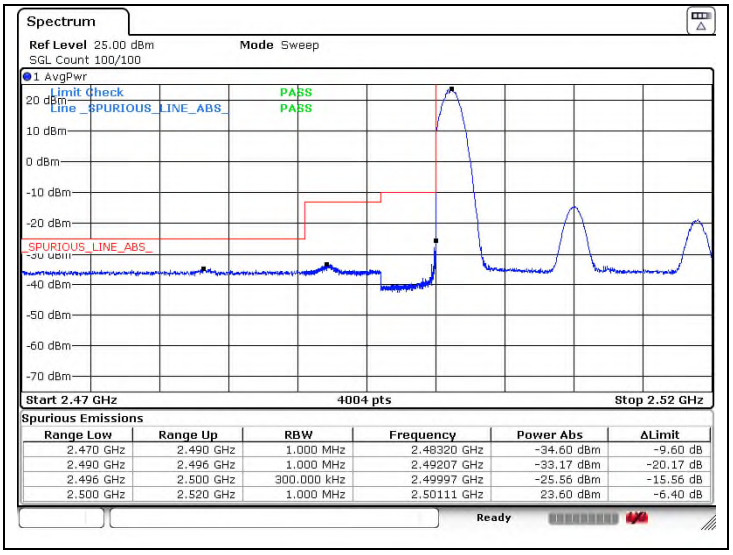
LTE band 7 (15 ㎒ - QPSK_1 RB)
High Channel



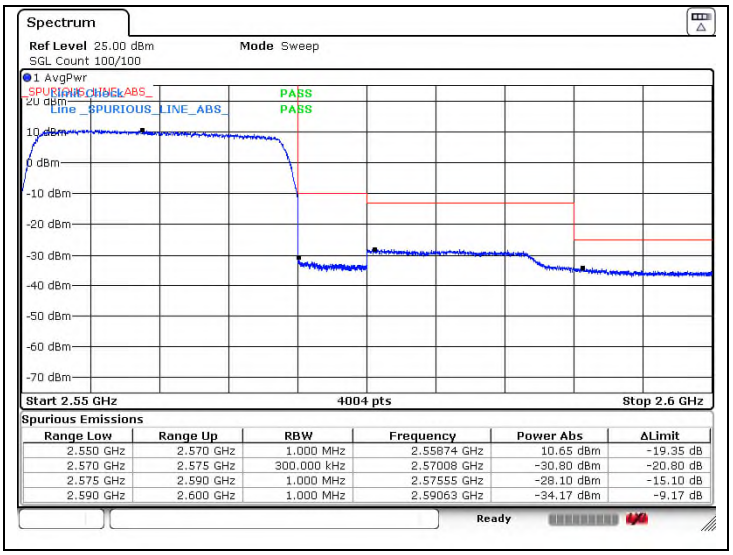
LTE band 7 (20 ㎒ - QPSK_Full RB)
Low Channel



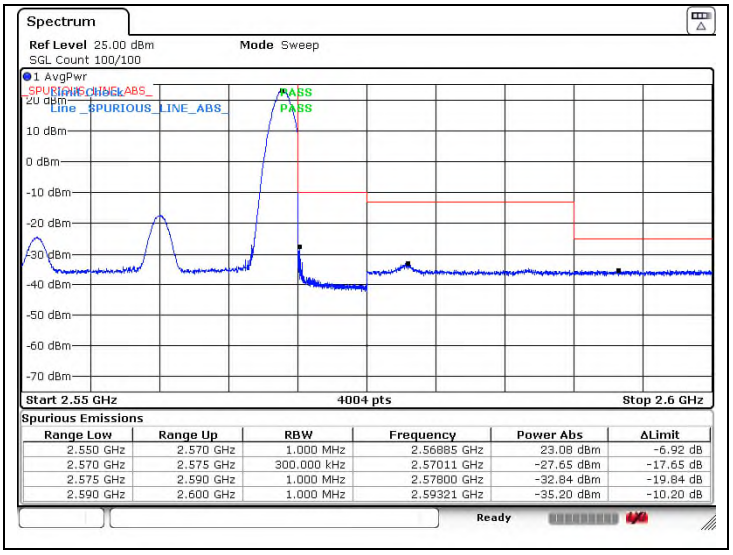
LTE band 7 (20 ㎒ - QPSK_1 RB)
Low Channel



LTE band 7 (20 ㎒ - QPSK_Full RB)
High Channel



LTE band 7 (20 ㎒ - QPSK_1 RB)
High Channel



8. Frequency Stability

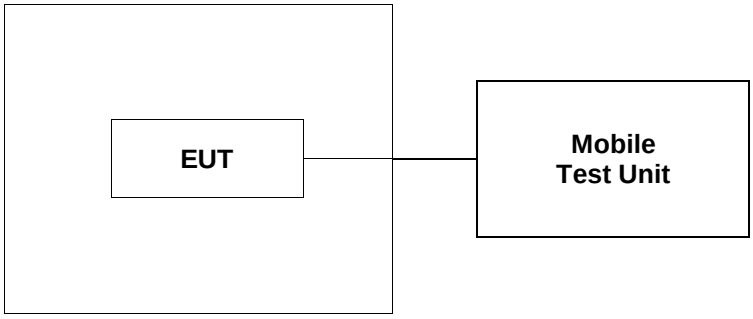
8.1. Limit

- § 2.1055 (a), § 2.1055 (d) & following:

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



8.3. Test Results

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

LTE band 7 at middle channel

Reference Frequency: 2 535.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	12.0	3.1	0.001 2
40		2.5	0.001 0
30		2.9	0.001 1
23		3.7	0.001 5
10		-1.5	-0.000 6
0		2.2	0.000 9
-10		-3.1	-0.001 2
-20		4.4	0.001 7
-30		1.9	0.000 7
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
23	13.8	2.2	0.000 9
	10.2	3.6	0.001 4

- End of the Test Report -