

# TEST REPORT

of

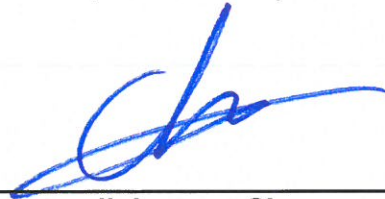
FCC Part 2 Subpart J and Part 27 Subpart C

FCC ID: BEJIA91270TERG

Equipment Under Test : Car Navigation System  
Model Name : IA91270TERG  
Applicant : LG Electronics USA  
Manufacturer : LG Electronics Inc.  
Date of Receipt : 2019.06.03  
Date of Test(s) : 2019.06.05 ~ 2019.06.14  
Date of Issue : 2019.07.23

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Jinhyoung Cho

Date:

2019.07.23

Technical  
Manager:



Jungmin Yang

Date:

2019.07.23

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-19(2019.04.24)(1)

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A4(210 mm x 297 mm)

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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 Electronics USA

Address : 1000 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632

Contact Person : Han, Kyung-su

Phone No. : +2 201 472 2623

### 1.3. Details of Manufacturer

Company : LG Electronics Inc.

Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

### 1.4. Description of EUT

<b>Kind of Product</b>	Car Navigation System
<b>Model Name</b>	IA91270TERG
<b>Power Supply</b>	DC 12 V
<b>Rated Power</b>	LTE Band 7: 23 dB m
<b>Frequency Range</b>	LTE Band 7: 2 500 MHz ~ 2 570 MHz
<b>Emission Designator</b>	LTE Band 7 (5 MHz): 4M53G7D (QPSK) / 4M53W7D (16QAM) LTE Band 7 (10 MHz): 8M94G7D (QPSK) / 8M94W7D (16QAM) LTE Band 7 (15 MHz): 13M5G7D (QPSK) / 13M5W7D (16QAM) LTE Band 7 (20 MHz): 17M9G7D (QPSK) / 17M9W7D (16QAM)
<b>Modulation Technique</b>	QPSK, 16QAM
<b>Antenna Type</b>	External antenna
<b>Antenna Gain</b>	-1.67 dBi

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## 1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMBV100A	255834	Jun. 10, 2019	Annual	Jun. 10, 2020
Signal Generator	R&S	SMR40	100272	Jun. 07, 2019	Annual	Jun. 07, 2020
Spectrum Analyzer	R&S	FSV30	103454	Dec. 27, 2018	Annual	Dec. 27, 2019
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 21, 2018	Annual	Sep. 21, 2019
Mobile Test Unit	R&S	CMW500	144035	Feb. 19, 2019	Annual	Feb. 19, 2020
Power Meter	Anritsu	ML2495A	1223004	Jun. 05, 2019	Annual	Jun. 05, 2020
Power Sensor	Anritsu	MA2411B	1207272	Jun. 05, 2019	Annual	Jun. 05, 2020
Directional Coupler	KRYTAR	152613	122661	Feb. 19, 2019	Annual	Feb. 19, 2020
Temperature Chamber	ESPEC CORP.	PL-1J	15000793	Jun. 10, 2019	Annual	Jun. 10, 2020
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 19, 2019	Annual	Feb. 19, 2020
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-6SS	4	Jun. 12, 2019	Annual	Jun. 12, 2020
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	11	May 21, 2019	Annual	May 21, 2020
DC Power Supply	R&S	HMP2020	019258024	Nov. 06, 2018	Annual	Nov. 06, 2019
Preamplifier	H.P.	8447F	2944A03909	Aug. 07, 2018	Annual	Aug. 07, 2019
Preamplifier	Agilent	8449B	3008A01932	Feb. 22, 2019	Annual	Feb. 22, 2020
Test Receiver	R&S	ESU26	100109	Jan. 31, 2019	Annual	Jan. 31, 2020
Loop Antenna	SCHWARZBECK MESSELEKTRONIK	FMZB 1519	1519-039	Aug. 23, 2017	Biennial	Aug. 23, 2019
Bilog Antenna	SCHWARZBECK MESSELEKTRONIK	VULB9163	01126	Mar. 26, 2018	Biennial	Mar. 26, 2020
Horn Antenna	R&S	HF907	100145	Mar. 21, 2019	Biennial	Mar. 21, 2021
Horn Antenna	SCHWARZBECK MESSELEKTRONIK	BBHA9170	BBHA9170223	Sep. 10, 2018	Biennial	Sep. 10, 2020
Antenna Master	Innco systems GmbH	MA4640-XP-ET	MA4640/536/38 330516/L	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/38 330516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.4 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	SUCOFLEX	104 (3 m)	MY3258414	Jul. 04, 2019	Semi-annual	Jan. 04, 2020
Coaxial Cable	SUCOFLEX	104 (10 m)	MY3145814	Jul. 04, 2019	Semi-annual	Jan. 04, 2020
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 03/20	Feb. 28, 2019	Semi-annual	Aug. 28, 2019
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 06/20	Feb. 28, 2019	Semi-annual	Aug. 28, 2019
Coaxial Cable	Rosenberger	LA1-C006-1500	131014 10/20	Feb. 28, 2019	Semi-annual	Aug. 28, 2019

### ► Support Equipment

Description	Manufacturer	Model	Serial Number
N/A	-	-	-

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## 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	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-RTL014104	2019.07.23	Initial

## 1.8. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

### 1.8.1. Conducted Test

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

### 1.8.2. Radiation Test

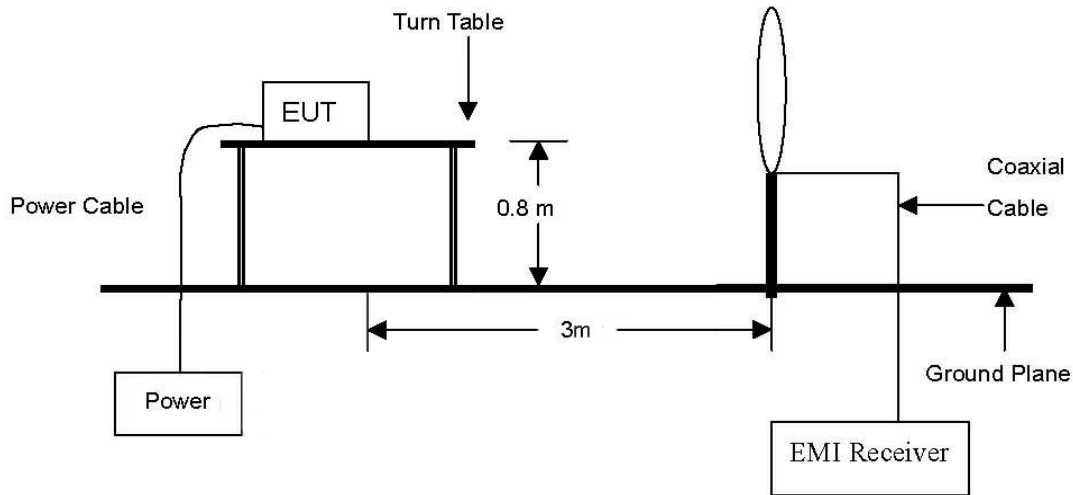
E.I.R.P. = [S.G level + Amp.] (dB m) - Cable loss (dB) + Ant. gain (dB i)

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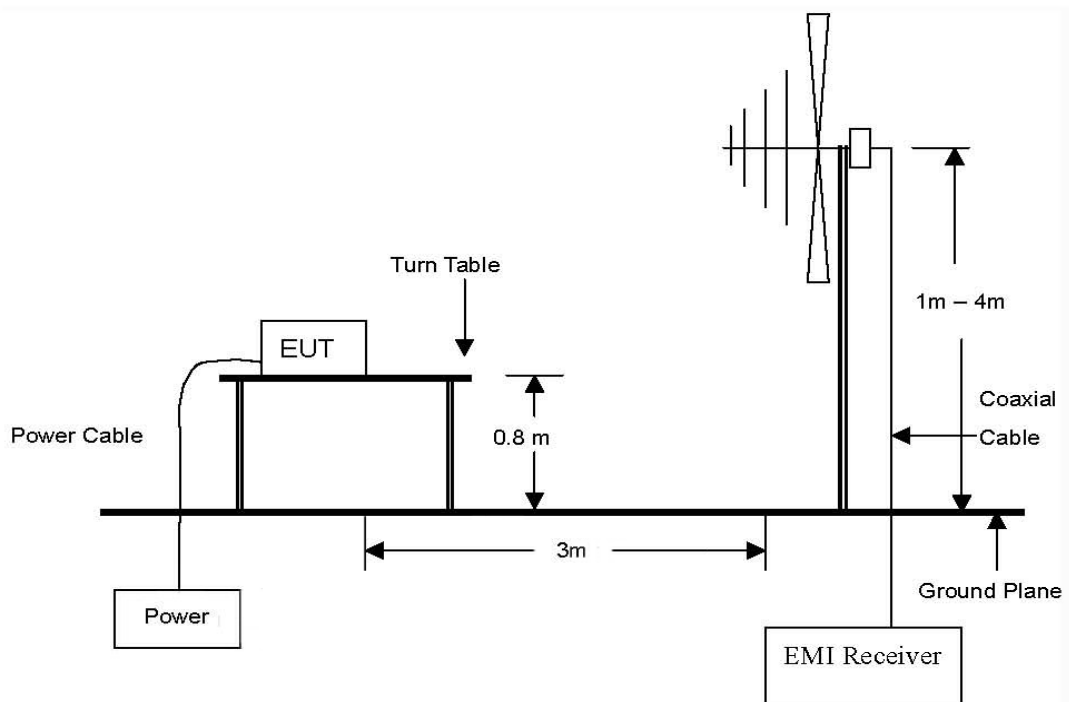
## 2. RF Radiated Output Power & Spurious Radiated Emission

### 2.1. Test Setup

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

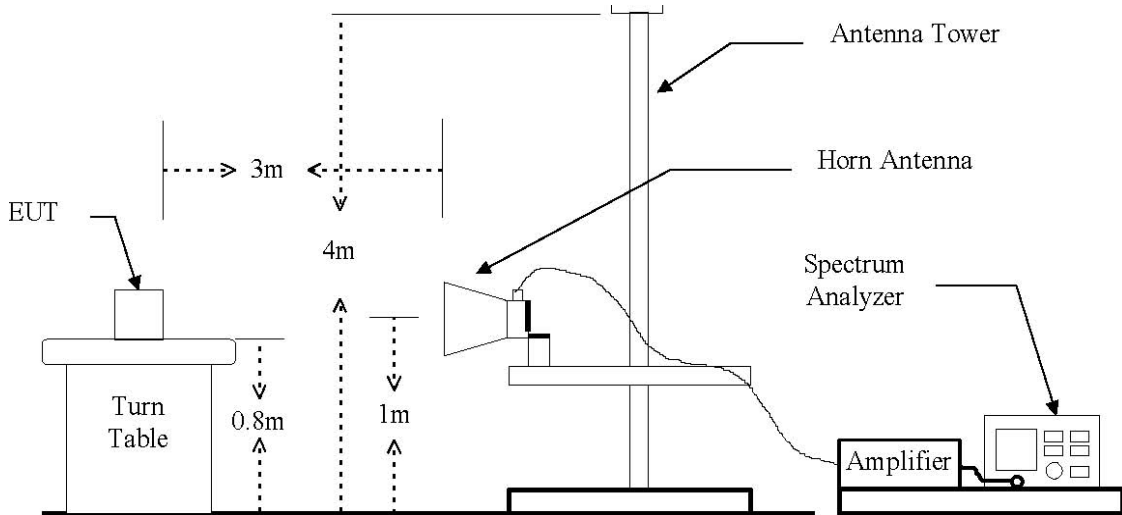


The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz.

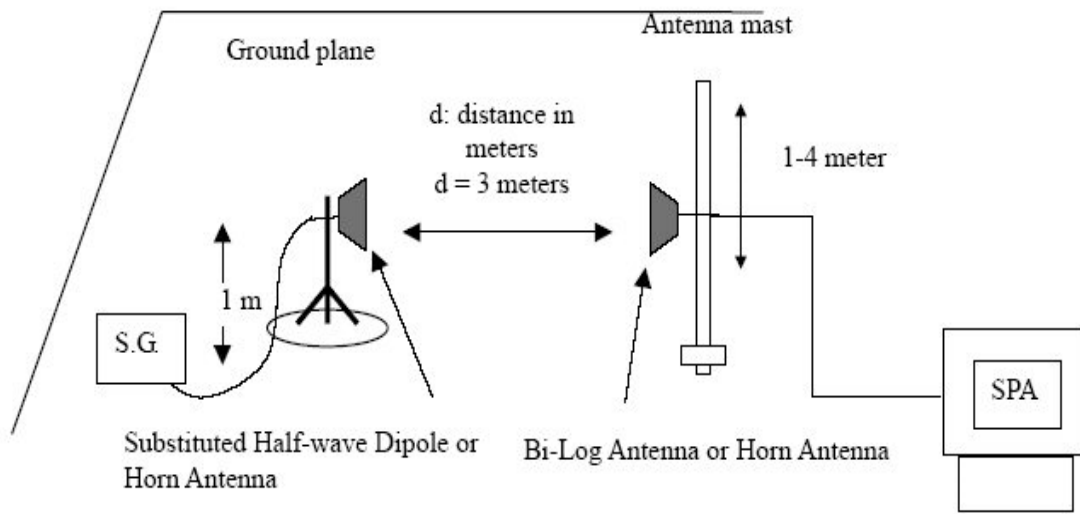


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The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 26 GHz.



The diagram below shows the test setup for substituted method.



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## 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  $40 + 10 \log_{10}(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log_{10}(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log_{10}(P)$  dB 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 than  $43 + 10 \log_{10}(P)$  dB on all frequencies between 2 490.5 MHz and 2 496 MHz and  $55 + 10 \log_{10}(P)$  dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 MHz 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.

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### 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 80 cm 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 MHz), VBW  $\geq 3 \times$  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 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, VBW  $\geq 3 \times$  RBW, Detector = Peak, trace mode = max hold, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
6. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
7. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
8. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
9. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
10. The maximum signal level detected by the measuring receiver shall be noted.
11. The EUT was replaced by half-wave dipole (1 GHz below) or horn antenna (1 GHz above) connected to a signal generator.
12. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

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## 2.4. Test Result for RF Radiated Output Power

Ambient temperature : (23 ± 1) °C

Relative humidity : 47 % R.H.

### LTE band 7 (5 MHz - QPSK)

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 502.5	H	22.12	4.81	9.13	26.44	440.55
2 502.5	V	21.94	4.81	9.13	26.26	422.67
2 535.0	H	21.96	4.86	9.06	26.16	413.05
2 535.0	V	22.02	4.86	9.06	26.22	418.79
2 567.5	H	22.19	4.90	8.98	26.27	423.64
2 567.5	V	20.21	4.90	8.98	24.29	268.53

\* 5 BW 1 RB size / 0 Offset

### LTE band 7 (5 MHz - 16QAM)

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 502.5	H	20.76	4.81	9.13	25.08	322.11
2 502.5	V	20.64	4.81	9.13	24.96	313.33
2 535.0	H	21.51	4.86	9.06	25.71	372.39
2 535.0	V	21.12	4.86	9.06	25.32	340.41
2 567.5	H	21.05	4.90	8.98	25.13	325.84
2 567.5	V	18.45	4.90	8.98	22.53	179.06

\* 5 BW 1 RB size / 0 Offset

### LTE band 7 (10 MHz - QPSK)

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 505.0	H	21.88	4.82	9.13	26.19	415.91
2 505.0	V	22.02	4.82	9.13	26.33	429.54
2 535.0	H	21.76	4.86	9.06	25.96	394.46
2 535.0	V	21.61	4.86	9.06	25.81	381.07
2 565.0	H	22.04	4.90	8.99	26.13	410.20
2 565.0	V	20.60	4.90	8.99	24.69	294.44

\* 10 BW 1 RB size / 0 Offset

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**LTE band 7 (10 MHz - 16QAM)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 505.0	H	20.54	4.82	9.13	24.85	305.49
2 505.0	V	20.76	4.82	9.13	25.07	321.37
2 535.0	H	21.60	4.86	9.06	25.80	380.19
2 535.0	V	21.13	4.86	9.06	25.33	341.19
2 565.0	H	21.21	4.90	8.99	25.30	338.84
2 565.0	V	19.15	4.90	8.99	23.24	210.86

\* 10 BW 1 RB size / 0 Offset

**LTE band 7 (15 MHz - QPSK)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 507.5	H	22.30	4.82	9.12	26.60	457.09
2 507.5	V	22.07	4.82	9.12	26.37	433.51
2 535.0	H	22.12	4.86	9.06	26.32	428.55
2 535.0	V	21.47	4.86	9.06	25.67	368.98
2 562.5	H	21.79	4.90	9.00	25.89	388.15
2 562.5	V	20.76	4.90	9.00	24.86	306.20

\* 15 BW 1 RB size / 0 Offset

**LTE band 7 (15 MHz - 16QAM)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 507.5	H	20.88	4.82	9.12	25.18	329.61
2 507.5	V	21.02	4.82	9.12	25.32	340.41
2 535.0	H	21.30	4.86	9.06	25.50	354.81
2 535.0	V	20.82	4.86	9.06	25.02	317.69
2 562.5	H	20.92	4.90	9.00	25.02	317.69
2 562.5	V	19.46	4.90	9.00	23.56	226.99

\* 15 BW 1 RB size / 0 Offset

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**LTE band 7 (20 MHz - QPSK)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 510.0	H	21.78	4.82	9.12	26.08	405.51
2 510.0	V	20.01	4.82	9.12	24.31	269.77
2 535.0	H	22.53	4.86	9.06	26.73	470.98
2 535.0	V	21.54	4.86	9.06	25.74	374.97
2 560.0	H	22.27	4.89	9.00	26.38	434.51
2 560.0	V	22.98	4.89	9.00	27.09	511.68

\* 20 BW 1 RB size / 0 Offset

**LTE band 7 (20 MHz - 16QAM)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
2 510.0	H	21.29	4.82	9.12	25.59	362.24
2 510.0	V	21.72	4.82	9.12	26.02	399.94
2 535.0	H	20.15	4.86	9.06	24.35	272.27
2 535.0	V	19.60	4.86	9.06	23.80	239.88
2 560.0	H	21.78	4.89	9.00	25.89	388.15
2 560.0	V	20.17	4.89	9.00	24.28	267.92

\* 20 BW 1 RB size / 0 Offset

**Remark;**

1. E.I.R.P. = [S.G level + Amp.] (dB m) - Cable loss (dB) + Ant. gain (dB i)
2. This device was tested under all bandwidths, RB configurations and modulations.
3. The data reported in the table above was measured in worst case.

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## 2.5. Spurious radiated emission

### LTE band 7 (5 MHz - QPSK)

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 502.5 MHz)							
3 192.90	V	-54.20	5.34	8.63	-50.91	-25	25.91
5 000.38	H	-48.43	7.44	9.86	-46.01	-25	21.01
5 000.80	V	-54.42	7.44	9.86	-52.00	-25	27.00
7 501.24	H	-50.81	9.04	11.84	-48.01	-25	23.01
7 500.96	V	-49.45	9.04	11.84	-46.65	-25	21.65
Middle Channel (2 535.0 MHz)							
3 190.60	V	-53.52	5.34	8.62	-50.24	-25	25.24
5 065.50	H	-52.93	7.51	10.19	-50.25	-25	25.25
5 065.58	V	-57.76	7.51	10.20	-55.07	-25	30.07
7 598.62	H	-54.12	9.12	11.80	-51.44	-25	26.44
7 598.28	V	-55.67	9.12	11.80	-52.99	-25	27.99
High Channel (2 567.5 MHz)							
3 195.55	V	-53.18	5.34	8.63	-49.89	-25	24.89
5 130.82	H	-54.50	7.61	10.44	-51.67	-25	26.67
5 130.56	V	-60.67	7.61	10.44	-57.84	-25	32.84
7 696.17	H	-54.03	8.85	11.64	-51.24	-25	26.24
7 695.96	V	-56.41	8.85	11.64	-53.62	-25	28.62

\* 5 BW 1 RB size / 0 Offset

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A4(210 mm x 297 mm)

**LTE band 7 (10 MHz - QPSK)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 505.0 MHz)							
3 199.28	V	-53.41	5.34	8.64	-50.11	-25	25.11
5 001.34	H	-48.99	7.44	9.87	-46.56	-25	21.56
5 001.36	V	-55.88	7.44	9.87	-53.45	-25	28.45
7 501.75	H	-48.57	9.04	11.84	-45.77	-25	20.77
7 501.74	V	-49.23	9.04	11.84	-46.43	-25	21.43
Middle Channel (2 535.0 MHz)							
3 192.35	V	-53.96	5.34	8.63	-50.67	-25	25.67
5 061.02	H	-51.58	7.50	10.17	-48.91	-25	23.91
5 061.46	V	-57.52	7.50	10.17	-54.85	-25	29.85
7 591.56	H	-54.55	9.11	11.80	-51.86	-25	26.86
7 591.64	V	-53.54	9.11	11.80	-50.85	-25	25.85
High Channel (2 565.0 MHz)							
3 194.50	V	-54.38	5.34	8.63	-51.09	-25	26.09
5 121.02	H	-54.14	7.59	10.42	-51.31	-25	26.31
5 121.36	V	-61.04	7.59	10.42	-58.21	-25	33.21
7 681.74	H	-55.07	8.89	11.66	-52.30	-25	27.30
7 681.91	V	-56.94	8.89	11.66	-54.17	-25	29.17

\* 10 BW 1 RB size / 0 Offset

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**LTE band 7 (15 MHz - QPSK)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 507.5 MHz)							
3 191.37	V	-54.11	5.34	8.62	-50.83	-25	25.83
5 001.90	H	-49.22	7.44	9.87	-46.79	-25	21.79
5 001.60	V	-55.78	7.44	9.87	-53.35	-25	28.35
7 502.60	H	-48.39	9.04	11.84	-45.59	-25	20.59
7 502.58	V	-48.49	9.04	11.84	-45.69	-25	20.69
Middle Channel (2 535.0 MHz)							
3 195.35	V	-54.05	5.34	8.63	-50.76	-25	25.76
5 056.70	H	-51.53	7.50	10.15	-48.88	-25	23.88
5 056.60	V	-56.63	7.50	10.15	-53.98	-25	28.98
7 585.08	H	-53.86	9.11	11.80	-51.17	-25	26.17
7 584.90	V	-53.35	9.11	11.80	-50.66	-25	25.66
High Channel (2 562.5 MHz)							
3 196.01	V	-54.03	5.34	8.63	-50.74	-25	25.74
5 111.50	H	-52.50	7.57	10.40	-49.67	-25	24.67
5 109.58	V	-61.10	7.56	10.39	-58.27	-25	33.27
7 668.14	H	-54.02	8.93	11.68	-51.27	-25	26.27
7 667.70	V	-56.13	8.93	11.68	-53.38	-25	28.38

\* 15 BW 1 RB size / 0 Offset

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**LTE band 7 (20 MHz - QPSK)**

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 510.0 MHz)							
3 197.07	V	-53.54	5.34	8.64	-50.24	-25	25.24
5 002.28	H	-49.48	7.44	9.87	-47.05	-25	22.05
5 002.22	V	-55.93	7.44	9.87	-53.50	-25	28.50
7 502.98	H	-49.66	9.04	11.84	-46.86	-25	21.86
7 503.36	V	-47.79	9.04	11.84	-44.99	-25	19.99
Middle Channel (2 535.0 MHz)							
3 197.92	V	-53.12	5.34	8.64	-49.82	-25	24.82
5 052.22	H	-50.11	7.49	10.13	-47.47	-25	22.47
5 052.10	V	-55.15	7.49	10.13	-52.51	-25	27.51
7 578.06	H	-55.12	9.10	11.81	-52.41	-25	27.41
7 578.50	V	-52.19	9.10	11.81	-49.48	-25	24.48
High Channel (2 560.0 MHz)							
3 196.06	V	-54.92	5.34	8.63	-51.63	-25	26.63
5 102.32	H	-53.23	7.55	10.38	-50.40	-25	25.40
5 101.34	V	-60.96	7.54	10.37	-58.13	-25	33.13
7 653.54	H	-54.91	8.97	11.71	-52.17	-25	27.17
7 653.07	V	-53.84	8.97	11.71	-51.10	-25	26.10

\* 20 BW 1 RB size / 0 Offset

**Remark;**

1. E.I.R.P. = S.G level (dB m) - Cable loss (dB) + Ant. gain (dB i)
2. This device was tested under all bandwidths, RB configurations, and modulations.
3. The data reported in the table above was measured in worst case.

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### 3. Conducted Output Power

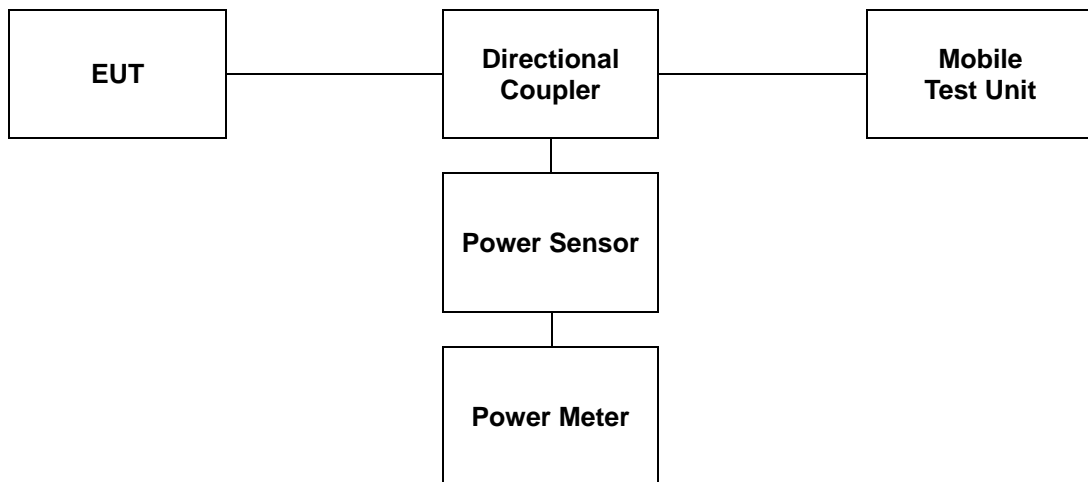
#### 3.1. Limit

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.



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### 3.3. Test Result

Ambient temperature : (23 ± 1) °C

Relative humidity : 47 % R.H.

LTE Band	Bandwidth (MHz)	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	24.11	24.34	24.22	23.55	23.08	23.02	
		1	12	24.31	24.30	24.33	23.59	23.03	23.24	
		1	24	24.20	24.26	24.36	23.50	23.05	23.00	
		12	0	23.27	23.43	23.34	22.03	22.36	22.33	
		12	7	23.21	23.36	23.32	22.15	22.38	22.31	
		12	13	23.26	23.46	23.37	22.12	22.41	22.32	
		25	0	23.14	23.44	23.43	22.29	22.59	22.43	
		<b>Bandwidth (MHz)</b>	<b>RB Size</b>	<b>RB Offset</b>	<b>20800</b>	<b>21100</b>	<b>21400</b>	<b>20800</b>	<b>21100</b>	<b>21400</b>
					<b>2 505.0</b>	<b>2 535.0</b>	<b>2 565.0</b>	<b>2 505.0</b>	<b>2 535.0</b>	<b>2 565.0</b>
	10	1	0	24.32	24.26	24.51	23.67	23.61	23.44	
		1	25	24.34	24.29	24.45	23.58	23.65	23.50	
		1	49	24.14	24.45	24.19	23.63	23.52	23.11	
		25	0	23.21	23.34	23.49	22.37	22.40	22.46	
		25	12	23.26	23.41	23.38	22.46	22.35	22.44	
		25	25	23.39	23.45	23.43	22.54	22.31	22.49	
		50	0	23.36	23.38	23.46	22.40	22.35	22.40	
		<b>Bandwidth (MHz)</b>	<b>RB Size</b>	<b>RB Offset</b>	<b>20825</b>	<b>21100</b>	<b>21375</b>	<b>20825</b>	<b>21100</b>	<b>21375</b>
					<b>2 507.5</b>	<b>2 535.0</b>	<b>2 562.0</b>	<b>2 507.5</b>	<b>2 535.0</b>	<b>2 562.0</b>
	15	1	0	24.20	24.31	24.07	23.27	23.58	23.01	
		1	37	24.18	24.19	24.22	23.47	23.51	23.27	
		1	74	24.37	24.27	24.17	23.42	23.47	23.07	
		36	0	23.18	23.36	23.26	22.45	22.33	22.30	
		36	20	23.22	23.33	23.30	22.41	22.41	22.25	
		36	39	23.31	23.37	23.34	22.50	22.47	22.29	
		75	0	23.28	23.39	23.30	22.32	22.33	22.33	
		<b>Bandwidth (MHz)</b>	<b>RB Size</b>	<b>RB Offset</b>	<b>20850</b>	<b>21100</b>	<b>21350</b>	<b>20850</b>	<b>21100</b>	<b>21350</b>
					<b>2 510.0</b>	<b>2 535.0</b>	<b>2 560.0</b>	<b>2 510.0</b>	<b>2 535.0</b>	<b>2 560.0</b>
	20	1	0	24.25	24.22	24.34	23.18	23.75	23.55	
		1	50	24.32	24.28	24.24	23.27	23.72	23.47	
		1	99	24.40	24.32	24.19	23.08	23.65	23.55	
50		0	23.15	23.45	23.29	22.15	22.40	22.24		
50		25	23.20	23.36	23.36	22.26	22.43	22.36		
50		50	23.27	23.32	23.45	22.34	22.48	22.40		
100		0	23.22	23.48	23.44	22.31	22.53	22.35		

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## 4. Occupied Bandwidth

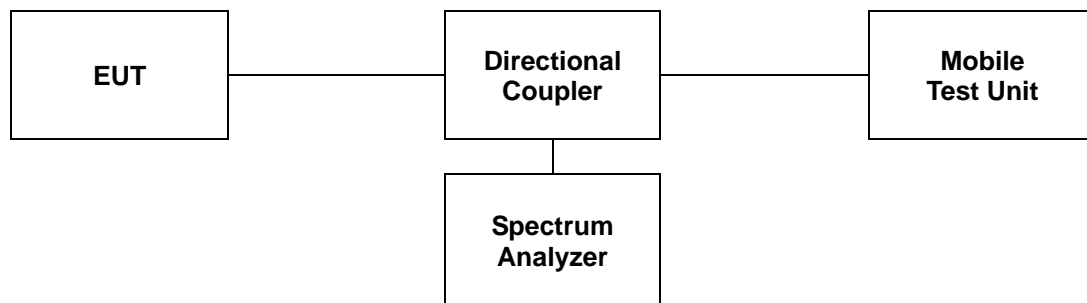
### 4.1. Limit

CFR 47, Section FCC §2.1049.

### 4.2. Test Procedure

The test follows section 4.2 of KDB 971168 D01 Power Meas License Digital Systems v03r01.

- 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  $1.5 \times \text{OBW}$  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  $\geq 3 \times \text{RBW}$ .
- 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).



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### 4.3 Test Results

Ambient temperature : (23 ± 1) °C

Relative humidity : 47 % R.H.

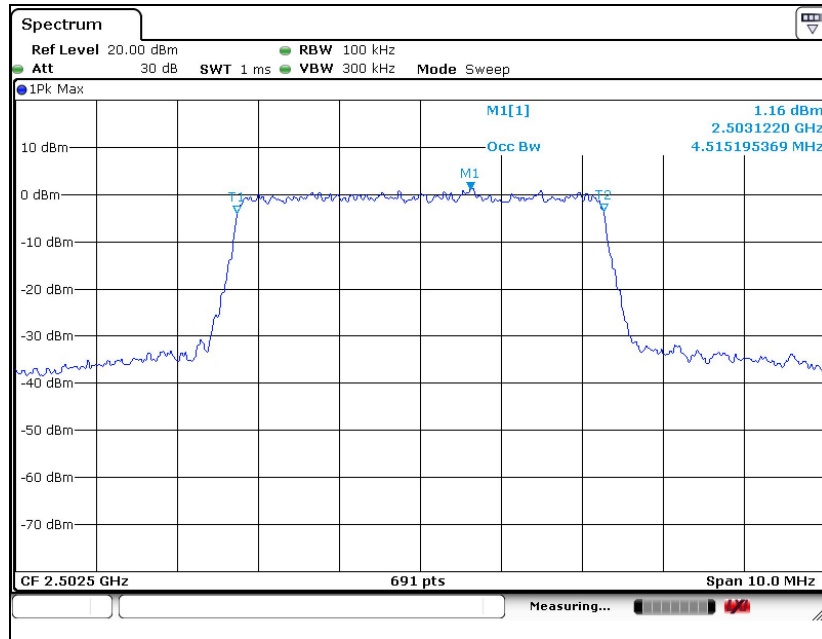
Band	Bandwidth (MHz)	Frequency (MHz)	Occupied Bandwidth (MHz)	
			QPSK	16QAM
7	5	2 502.5	4.515	4.530
		2 535.0	4.530	4.515
		2 567.5	4.501	4.530
	10	2 505.0	8.944	8.915
		2 535.0	8.915	8.944
		2 565.0	8.944	8.915
	15	2 507.5	13.415	13.459
		2 535.0	13.502	13.502
		2 562.5	13.459	13.459
	20	2 510.0	17.887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

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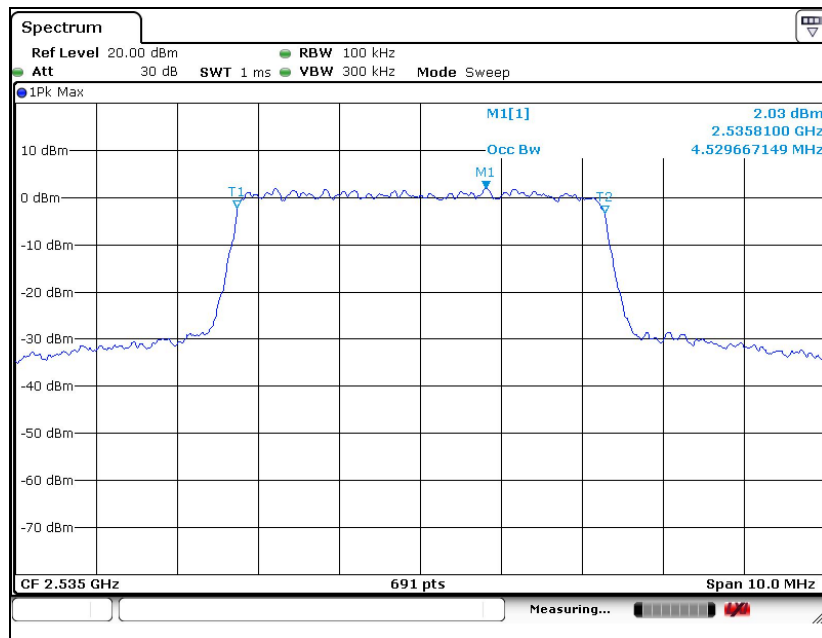
**- Test plots**

**LTE band 7 (5 MHz - QPSK)**

Low Channel

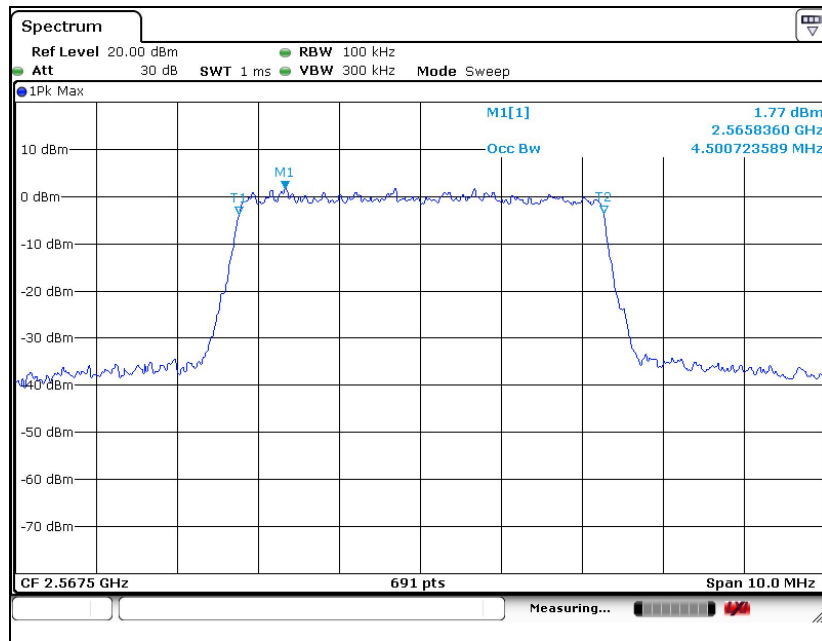


Middle Channel



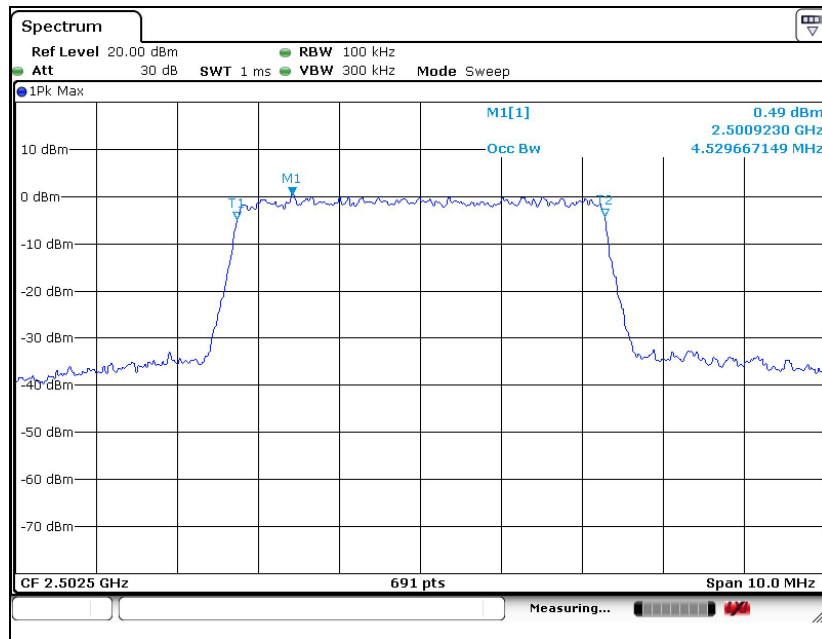
The results of this test report are effective only to the items tested. The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

High Channel



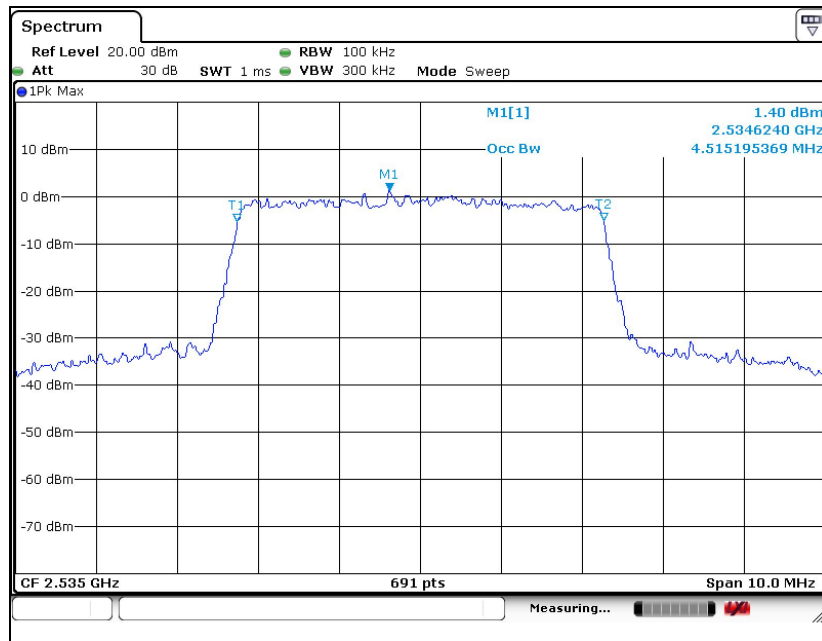
LTE band 7 (5 MHz - 16QAM)

Low Channel

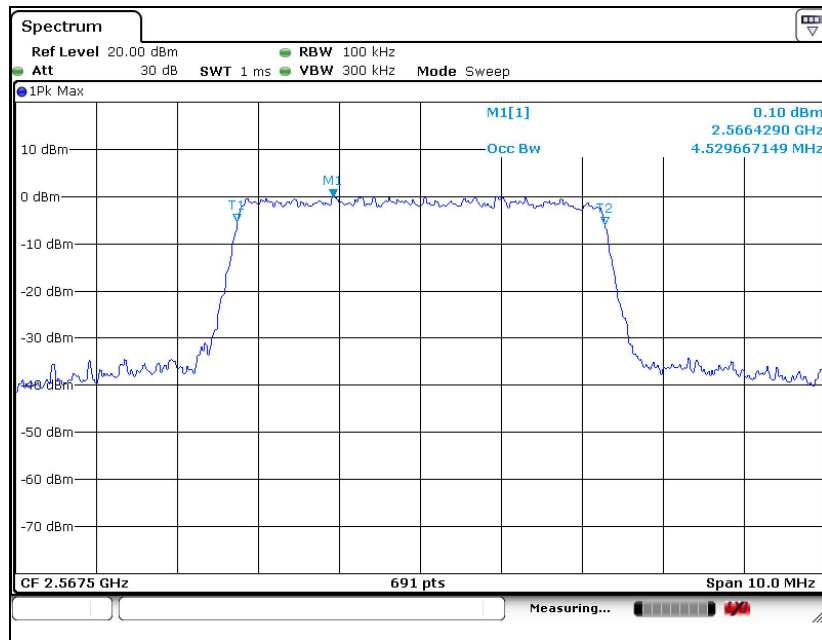


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Middle Channel



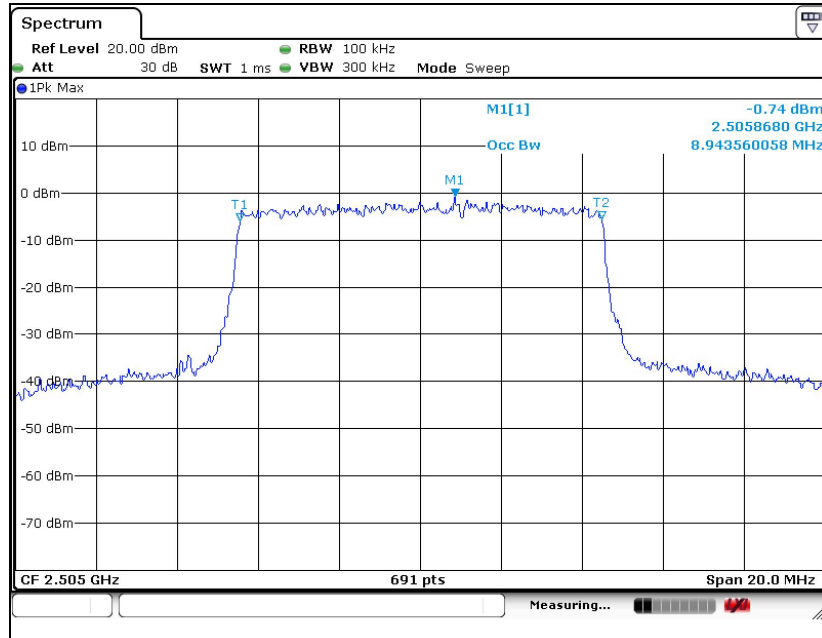
High Channel



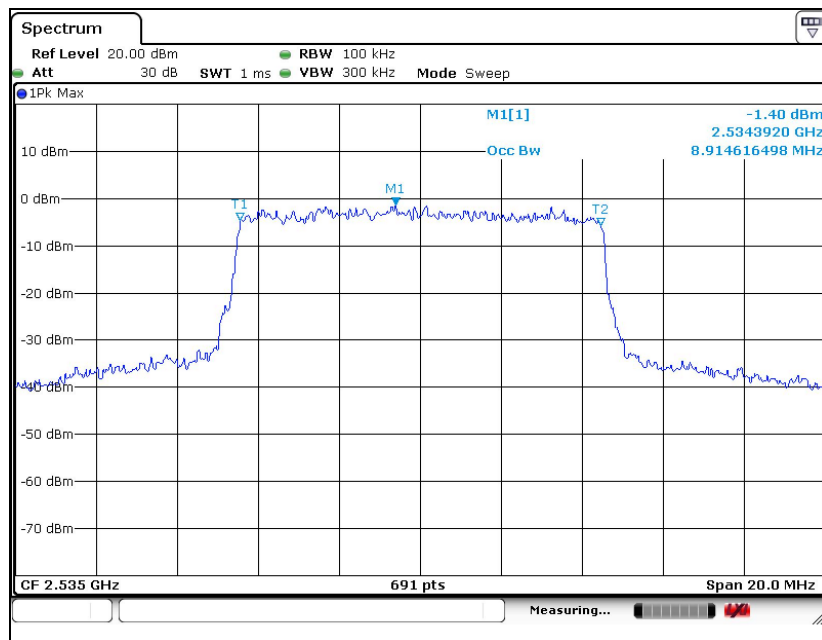
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## LTE band 7 (10 MHz - QPSK)

### Low Channel



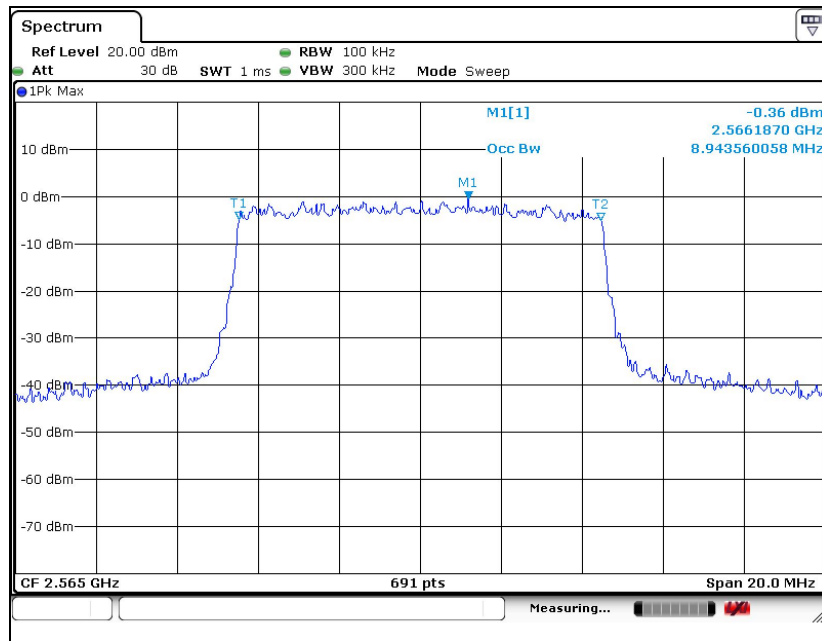
### Middle Channel



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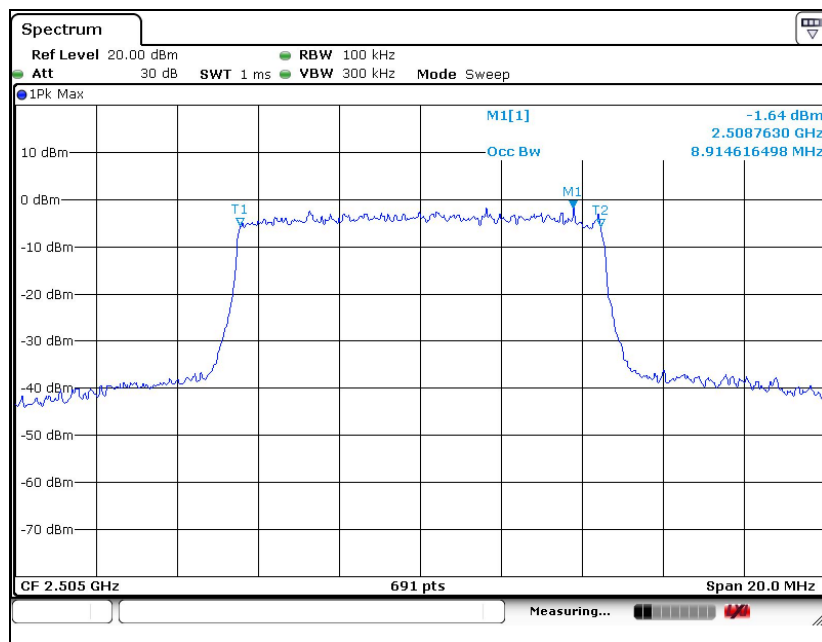


High Channel



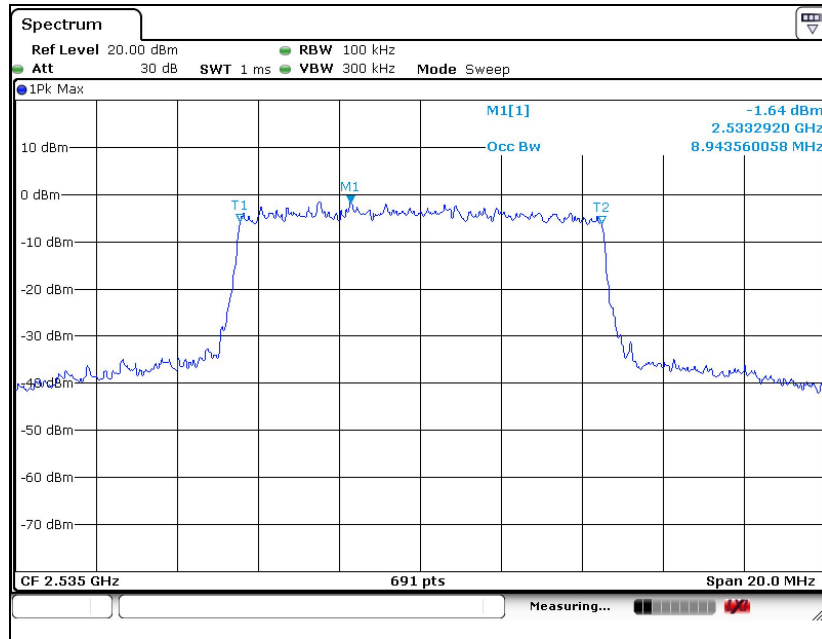
LTE band 7 (10 MHz - 16QAM)

Low Channel

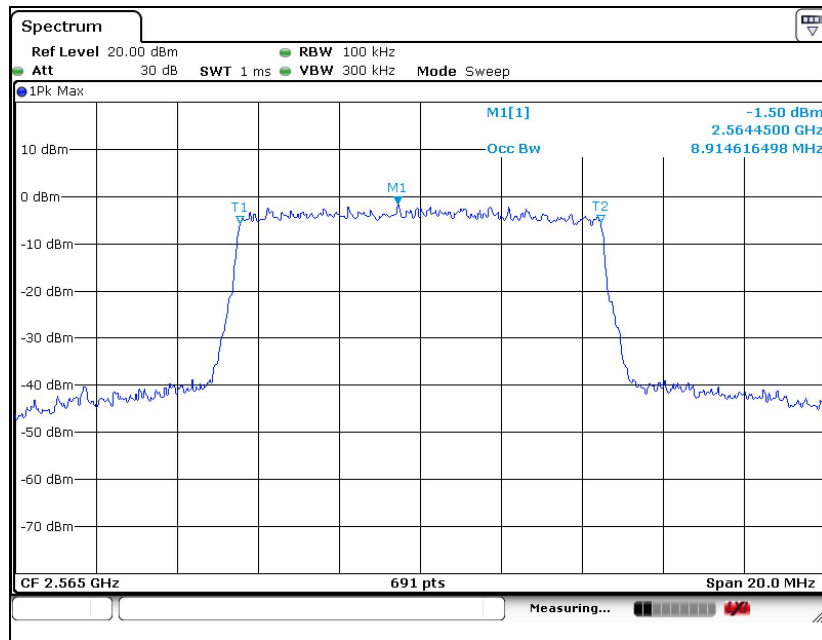


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Middle Channel



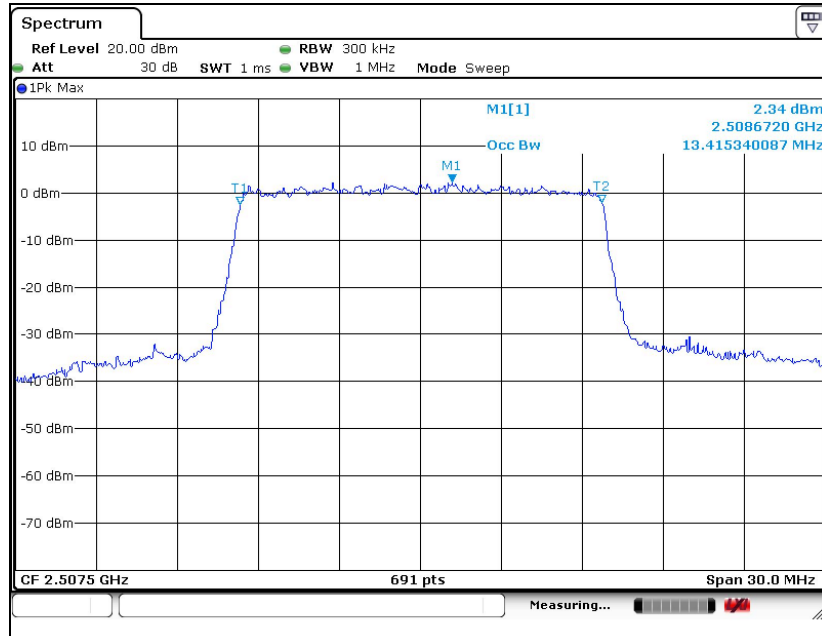
High Channel



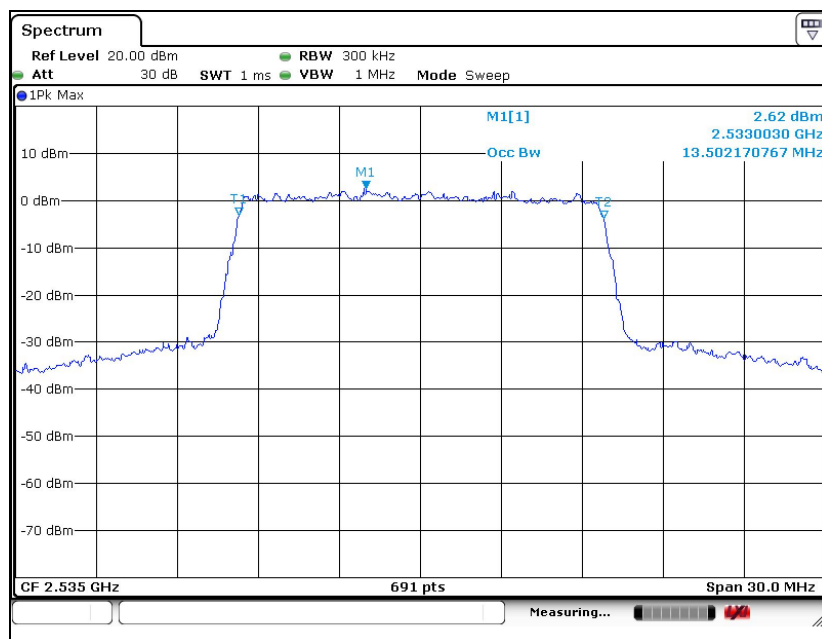
The results of this test report are effective only to the items tested. The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

## LTE band 7 (15 MHz - QPSK)

### Low Channel

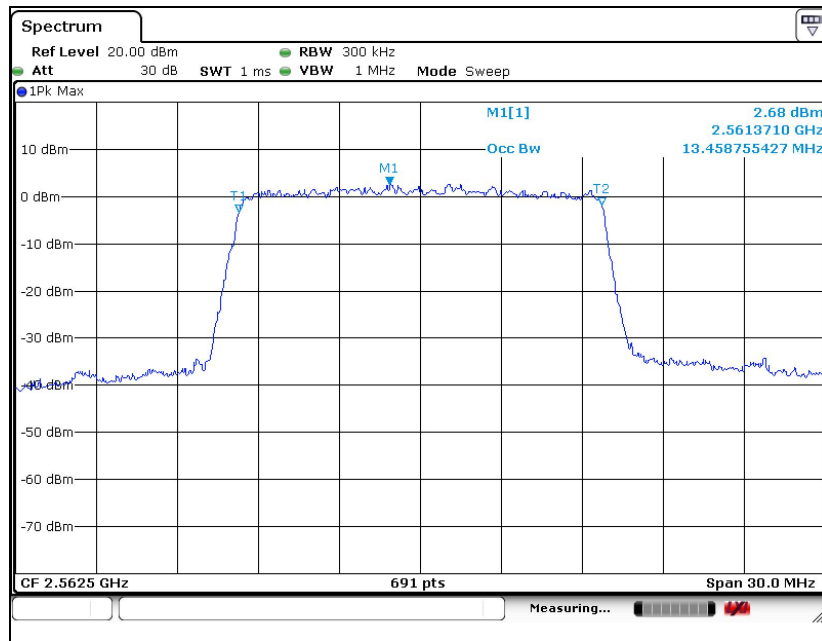


### Middle Channel



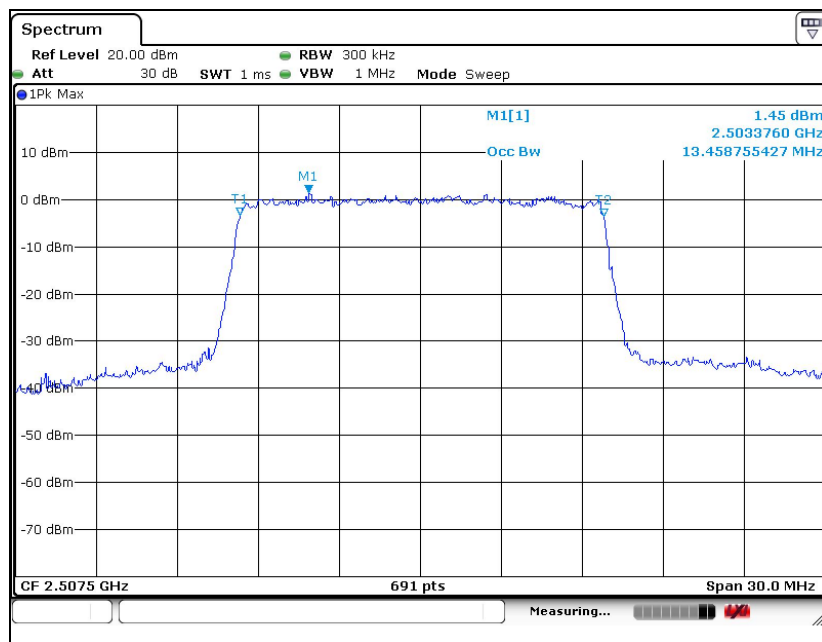
The results of this test report are effective only to the items tested. The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

## High Channel



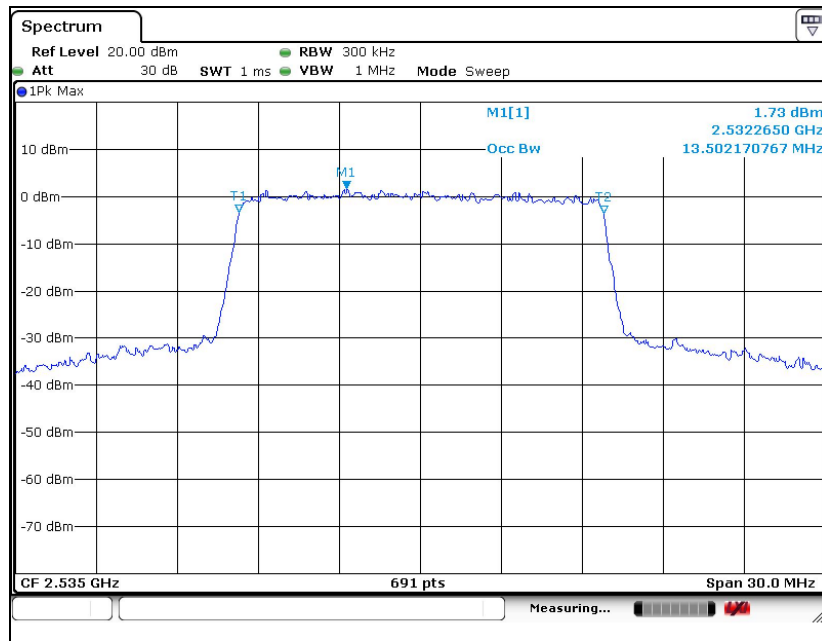
## LTE band 7 (15 MHz - 16QAM)

### Low Channel

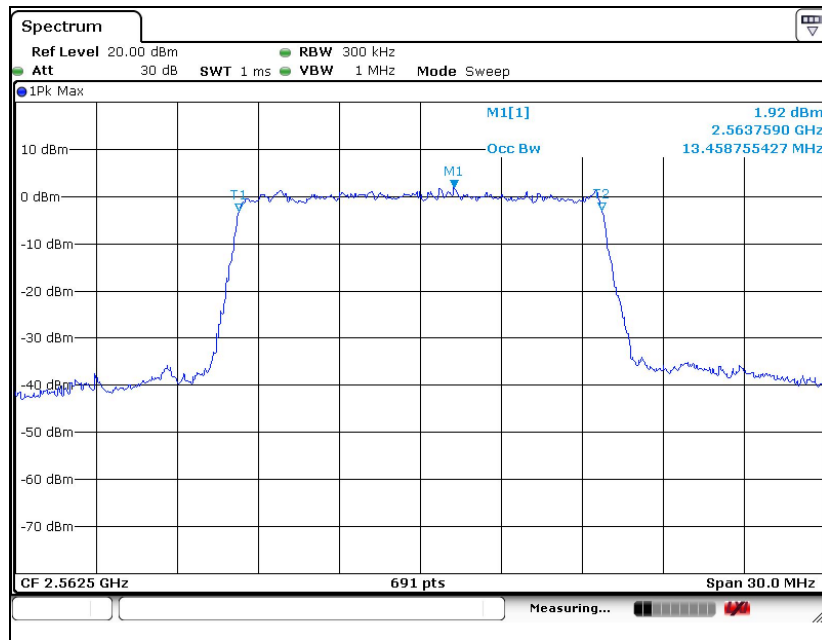


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### Middle Channel



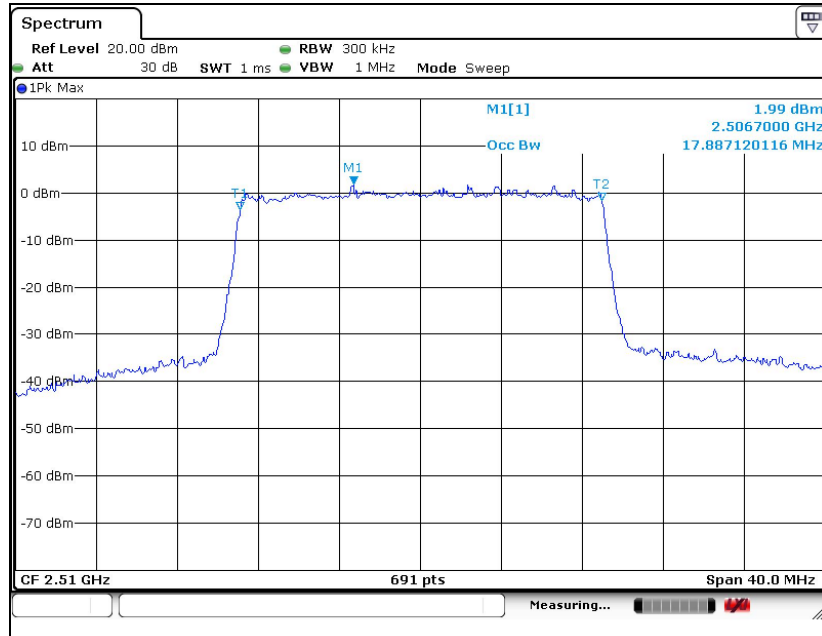
### High Channel



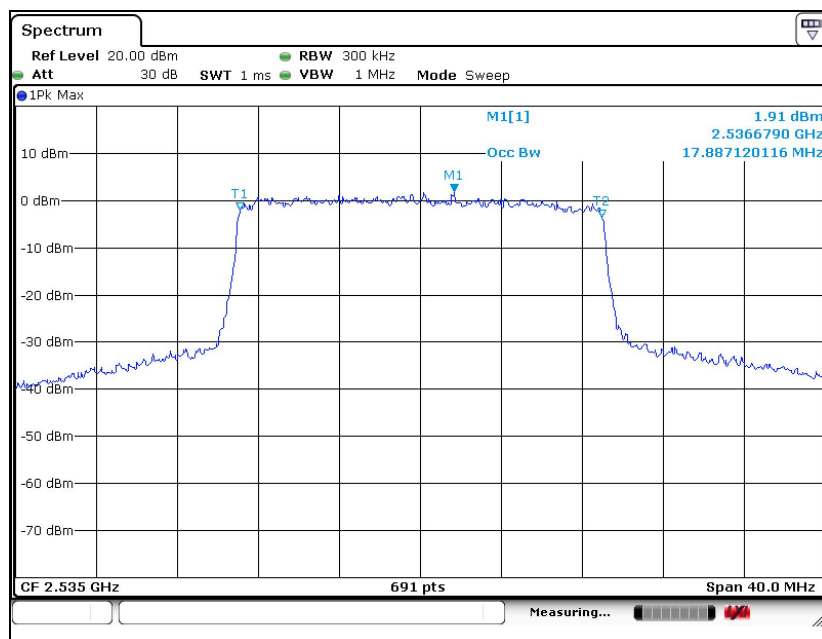
The results of this test report are effective only to the items tested. The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

## LTE band 7 (20 MHz - QPSK)

### Low Channel

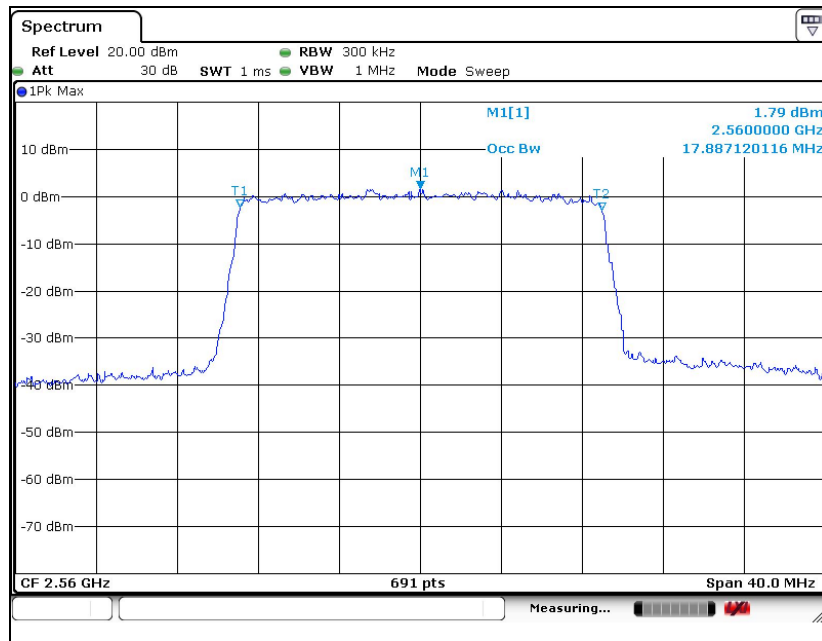


### Middle Channel



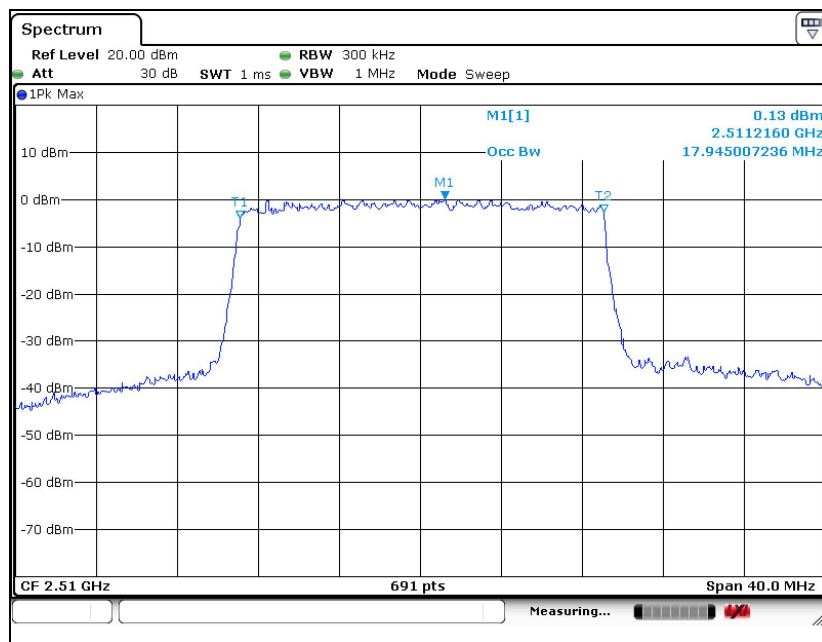
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## High Channel



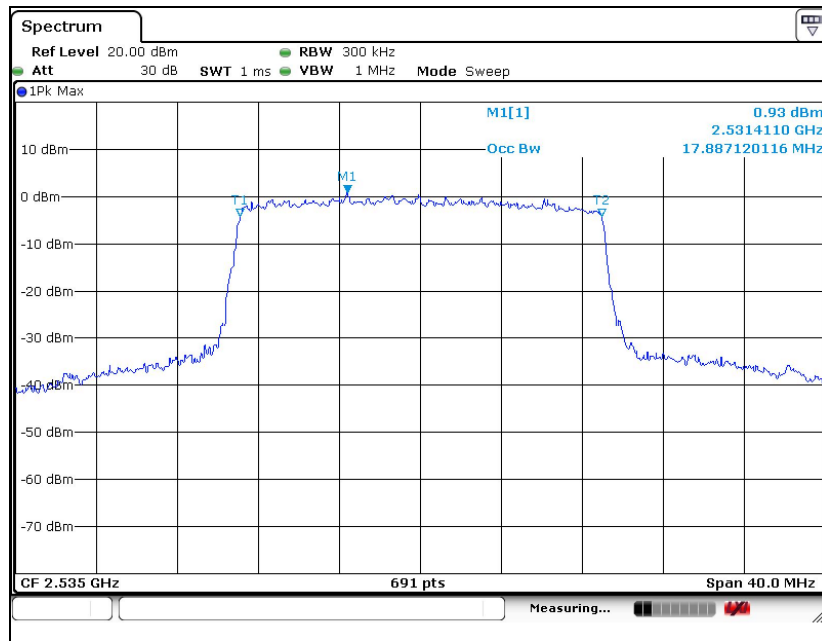
## LTE band 7 (20 MHz - 16QAM)

### Low Channel

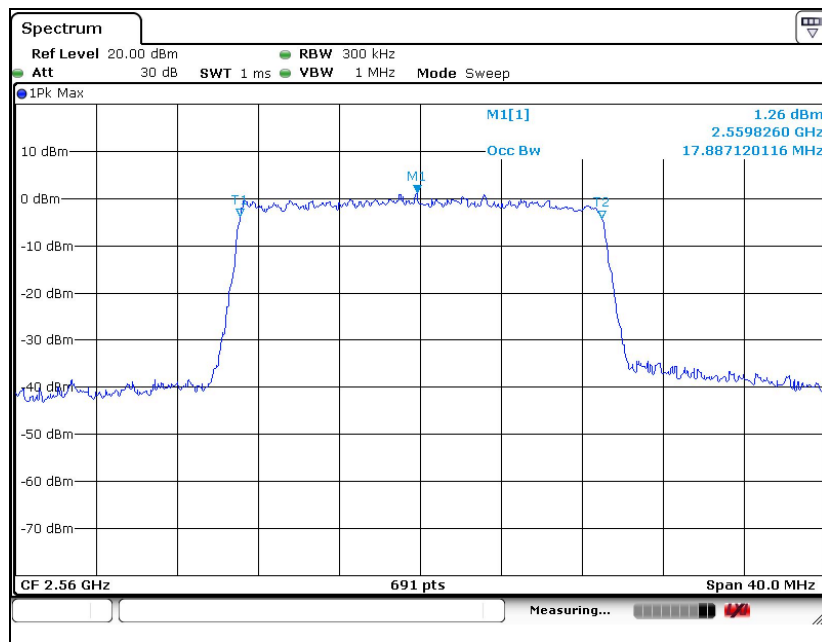


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Middle Channel



High Channel



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