Variant FCC Test Report

(PART 27)

Report No.:	RFBERD-WTW-P22060603-3
FCC ID:	HD5-CN85L1N
Test Model:	CN85L1N
Received Date:	Sep. 04, 2018
Test Date:	Sep. 14, 2018 ~ Oct. 17, 2018
Issued Date:	Jul. 04, 2022
Applicant:	Honeywell International Inc.
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFBERD-WTW-P22060603-3	Original Release	Jul. 04, 2022

1 Certificate of Conformity

Product:	Mobile computer
Brand:	Honeywell
Test Model:	CN85L1N
Sample Status:	Engineering Sample
Applicant:	Honeywell International Inc.
Test Date:	Sep. 14, 2018 ~ Oct. 17, 2018
Standards:	FCC Part 27, Subpart C, M

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Lena Wang , **Date:** Jul. 04, 2022

Lena Wang / Specialist

Approved by : Jeremy Lin , **Date:** Jul. 04, 2022

Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(h)(2)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(m)(6)	Occupied Bandwidth	Pass	Meet the requirement of limit.
--	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Out-of-Band Emissions Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -17.82 dB at 5012.00 MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	**Frequency**	**Expended Uncertainty (k=2) (±)**
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Horn Antenna SCHWARZBECK	BBHA 9170	148	Dec. 13, 2017	Dec. 12, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 24, 2017	Oct. 23, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jun. 28, 2017	Jun. 27, 2019
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.

3 General Information

3.1 General Description of EUT

Product	Mobile computer	
Brand	Honeywell	
Test Model	CN85L1N	
Status of EUT	Engineering Sample	
Power Supply Rating	3.85 Vdc (battery)	
Modulation Type	QPSK, 16QAM, 64QAM	
Frequency Range	LTE Band 7 (Channel Bandwidth: 5 MHz)	2502.5 ~ 2567.5 MHz
	LTE Band 7 (Channel Bandwidth: 10 MHz)	2505 ~ 2565 MHz
	LTE Band 7 (Channel Bandwidth: 15 MHz)	2507.5 ~ 2562.5 MHz
	LTE Band 7 (Channel Bandwidth: 20 MHz)	2510 ~ 2560 MHz
	LTE Band 38 (Channel Bandwidth: 5 MHz)	2572.5 ~ 2617.5 MHz
	LTE Band 38 (Channel Bandwidth: 10 MHz)	2575.0 ~ 2615.0 MHz
	LTE Band 38 (Channel Bandwidth: 15 MHz)	2577.5 ~ 2612.5 MHz
	LTE Band 38 (Channel Bandwidth: 20 MHz)	2580.0 ~ 2610.0 MHz
	LTE Band 41 (Channel Bandwidth: 5 MHz)	2498.5 ~ 2687.5 MHz
	LTE Band 41 (Channel Bandwidth: 10 MHz)	2501.0 ~ 2685.0 MHz
	LTE Band 41 (Channel Bandwidth: 15 MHz)	2503.5 ~ 2682.5 MHz
	LTE Band 41 (Channel Bandwidth: 20 MHz)	2506.0 ~ 2680.0 MHz
Max. EIRP Power	LTE Band 7 (Channel Bandwidth: 5 MHz)	214.78 mW
	LTE Band 7 (Channel Bandwidth: 10 MHz)	228.56 mW
	LTE Band 7 (Channel Bandwidth: 15 MHz)	245.47 mW
	LTE Band 7 (Channel Bandwidth: 20 MHz)	261.82 mW
	LTE Band 38 (Channel Bandwidth: 5 MHz)	208.45 mW
	LTE Band 38 (Channel Bandwidth: 10 MHz)	225.42 mW
	LTE Band 38 (Channel Bandwidth: 15 MHz)	239.88 mW
	LTE Band 38 (Channel Bandwidth: 20 MHz)	258.23 mW
	LTE Band 41 (Channel Bandwidth: 5 MHz)	183.23 mW
	LTE Band 41 (Channel Bandwidth: 10 MHz)	194.98 mW
	LTE Band 41 (Channel Bandwidth: 15 MHz)	210.86 mW
	LTE Band 41 (Channel Bandwidth: 20 MHz)	224.39 mW
Emission Designator	LTE Band 7 (Channel Bandwidth: 5 MHz)	4M50W7D

	LTE Band 7 (Channel Bandwidth: 10 MHz)	8M98W7D
	LTE Band 7 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 7 (Channel Bandwidth: 20 MHz)	18M0W7D
	LTE Band 38 (Channel Bandwidth: 5 MHz)	4M50G7D
	LTE Band 38 (Channel Bandwidth: 10 MHz)	8M97W7D
	LTE Band 38 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 38 (Channel Bandwidth: 20 MHz)	17M9W7D
	LTE Band 41 (Channel Bandwidth: 5 MHz)	4M50G7D
	LTE Band 41 (Channel Bandwidth: 10 MHz)	8M98W7D
	LTE Band 41 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 41 (Channel Bandwidth: 20 MHz)	17M9W7D
Antenna Type	PIFA Antenna with 0.6 dBi gain (Main) / 1.6 dBi (Aux.)	
HW Version	V1.0	
HW P/N	V2.0 (DVT)	
SW Version	OS.02.001-HON01.102	
SW P/N	86.00.35-(0206)	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. This report is issued as a supplementary report to BV CPS report no. RF180904C09-3. The difference compared with original report is disable radio 2 by software, after the evaluation, it does not affect the original data, so the original test data is quoted.
2. The host devices are list as below table for difference of SKU.

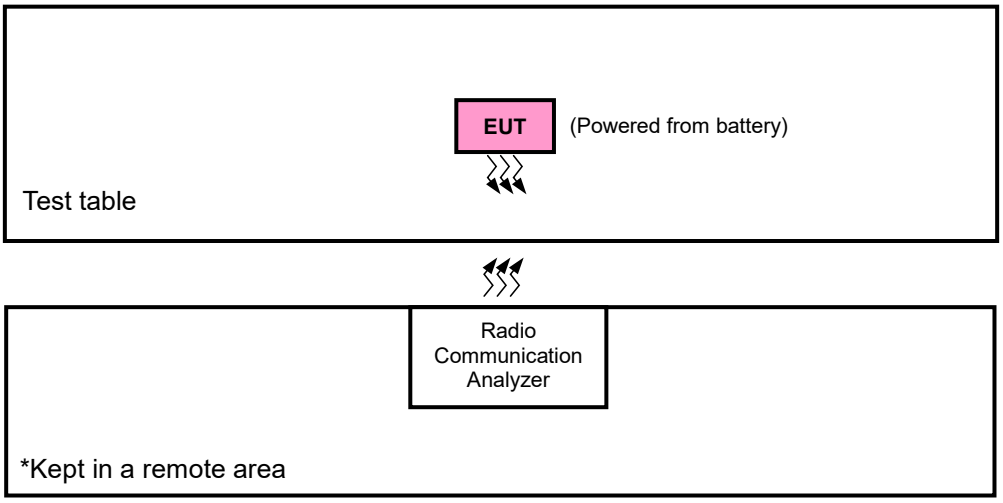
Brand	Model	Product Name	USI FG P/N	Description
Honeywell	CN85L1N	Mobile computer	5487-273335-01	CN85G4/UPS/6703SR/CAM/WAN/GMS/FCC
Honeywell	CN85L1N	Mobile computer	5487-275335-01	CN85G4/UPS/6703SR/CAM/WAN/GMS/FCC/ No 2nd BT/No Zigbee

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Battery	Inventus Power, Inc. / Honeywell	CW-BAT	3.85 Vdc, 5800 mAh, 22.3 Wh

4. The above Antenna information refers to the manufacturer's antenna specifications, the laboratory shall not be held responsible.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports.
The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	EIRP	Radiated Emission
LTE Band 7	Y-plane	Y-axis
LTE Band 38	Y-plane	Y-axis
LTE Band 41	Y-plane	Y-axis

LTE Band 7

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100 21350	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20850 to 21350	21100	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Frequency Stability	20775 to 21425	20775, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100 21350	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100 21350	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	20775 to 21425	20775, 21425	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100 21350	20 MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission	20850 to 21350	20850, 21100 21350	20 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 38

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	37850 to 38150	38000	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Frequency Stability	37775 to 38225	37775, 38225	5 MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10 MHz	QPSK	1 RB / 0 RB Offset
		37825 to 38175	37825, 38175	15 MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850, 38150	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	37775 to 38225	37775, 38225	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38175	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38150	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	37850 to 38150	37850, 38000, 38150	20 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 41

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	39750 to 41490	40620	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Frequency Stability	39675 to 41565	39675, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10 MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	39675 to 41565	39675, 41565	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	39750 to 41490	39750, 40620, 41490	20 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25 deg. C, 65 % RH	3.85 Vdc	Thomas Wei
Modulation Characteristics	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Out-of-Band Emissions	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Conducted Emission	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.1 General Description of Applied Standards and references

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test Standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 27
ANSI 63.26-2015

Note: All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016

Note: All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2 watts transmitter output power” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

4.1.2 Test Procedures

EIRP Measurement:

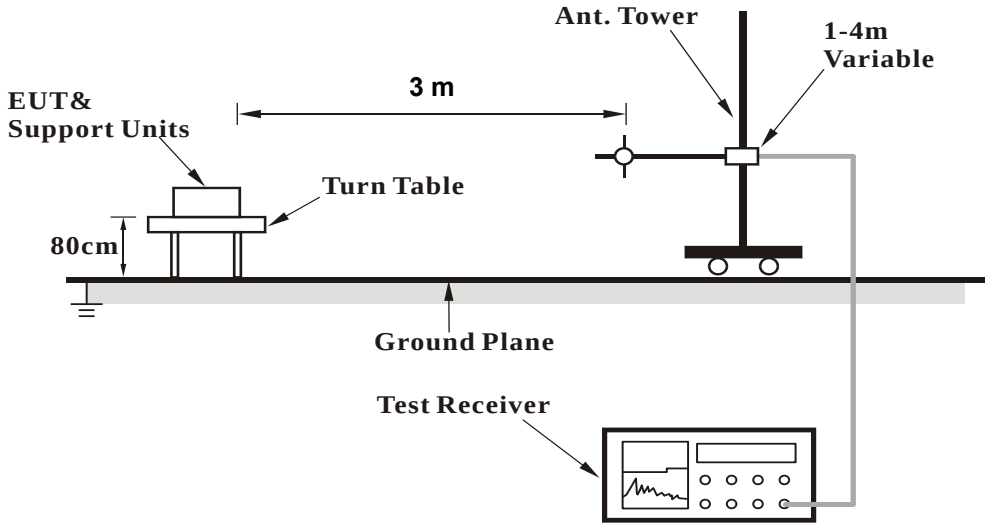
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value“ of step b. Record the power level of S.G.
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

Conducted Power Measurement:

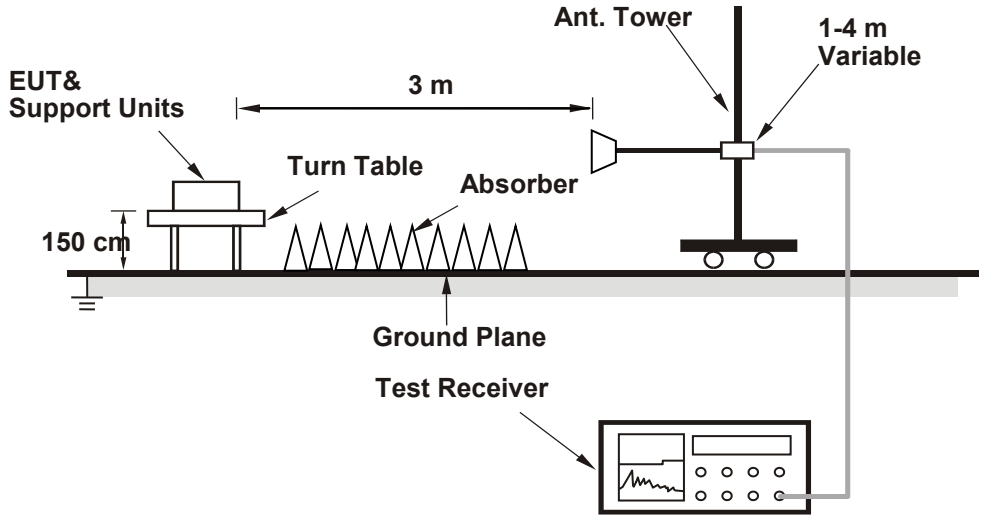
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

EIRP / ERP Measurement:
<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 7															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20850	21100	21350				Channel		20825	21100	21375	
		Frequency (MHz)		2510.0	2535.0	2560.0				Frequency (MHz)		2507.5	2535.0	2562.5	
20M	QPSK	1	0	23.36	23.16	22.78	0	15M	QPSK	1	0	23.33	23.13	22.76	0
		1	50	23.39	23.19	22.99	0			1	37	23.36	23.17	22.99	0
		1	99	23.62	23.42	23.22	0			1	74	23.53	23.38	23.15	0
		50	0	22.39	22.20	22.00	1			36	0	22.40	22.14	21.91	1
		50	25	22.40	22.18	22.00	1			36	19	22.30	22.11	22.00	1
		50	50	22.36	22.16	21.96	1			36	39	22.32	22.11	21.88	1
		100	0	22.39	22.20	22.11	1			75	0	22.33	22.12	21.98	1
	16QAM	1	0	22.33	22.13	21.93	1		16QAM	1	0	22.26	22.04	21.87	1
		1	50	22.22	22.02	21.82	1			1	37	22.18	21.93	21.73	1
		1	99	22.32	22.12	21.92	1			1	74	22.23	22.04	21.89	1
		50	0	21.33	21.13	20.93	2			36	0	21.27	21.03	20.93	2
		50	25	21.60	21.40	21.20	2			36	19	21.51	21.32	21.17	2
		50	50	21.38	21.18	20.98	2			36	39	21.36	21.16	20.90	2
		100	0	21.50	21.30	21.10	2			75	0	21.48	21.25	21.08	2
	64QAM	1	0	21.29	21.06	20.70	2		64QAM	1	0	21.28	21.04	20.68	2
		1	50	21.31	21.15	20.99	2			1	37	21.28	21.08	20.90	2
		1	99	21.57	21.40	21.22	2			1	74	21.48	21.29	21.17	2
		50	0	20.40	20.19	19.90	3			36	0	20.34	20.11	19.89	3
		50	25	20.30	20.20	19.93	3			36	19	20.32	20.11	19.94	3
		50	50	20.32	20.14	19.87	3			36	39	20.26	20.12	19.85	3
		100	0	20.37	20.15	19.96	3			75	0	20.27	20.11	19.89	3
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20800	21100	21400				Channel		20775	21100	21425	
		Frequency (MHz)		2505.0	2535.0	2565.0				Frequency (MHz)		2502.5	2535.0	2567.5	
10M	QPSK	1	0	23.31	23.04	22.64	0	5M	QPSK	1	0	23.28	23.07	22.52	0
		1	24	23.26	23.13	22.87	0			1	12	23.31	23.04	22.81	0
		1	49	23.42	23.42	23.12	0			1	24	23.48	23.26	23.10	0
		25	0	22.16	22.07	21.93	1			12	0	22.21	22.07	21.80	1
		25	12	22.36	22.02	21.82	1			12	6	22.21	22.02	21.93	1
		25	25	22.22	22.08	21.84	1			12	13	22.29	22.06	21.73	1
		50	0	22.34	22.04	21.97	1			25	0	22.25	22.09	21.78	1
	16QAM	1	0	22.26	21.97	21.78	1		16QAM	1	0	22.15	21.93	21.70	1
		1	24	22.10	21.93	21.63	1			1	12	22.07	21.88	21.66	1
		1	49	22.17	21.99	21.77	1			1	24	22.17	22.06	21.84	1
		25	0	21.20	20.98	20.87	2			12	0	21.29	21.11	20.81	2
		25	12	21.47	21.29	21.08	2			12	6	21.55	21.32	21.06	2
		25	25	21.18	21.02	20.84	2			12	13	21.27	21.16	20.82	2
		50	0	21.43	21.08	20.95	2			25	0	21.35	21.20	20.92	2
	64QAM	1	0	21.23	21.03	20.70	2		64QAM	1	0	21.15	20.98	20.49	2
		1	24	21.20	20.92	20.72	2			1	12	21.18	21.11	20.85	2
		1	49	21.35	21.20	20.95	2			1	24	21.58	21.18	20.90	2
		25	0	20.12	19.94	19.94	3			12	0	20.27	20.05	19.81	3
		25	12	20.20	20.16	19.85	3			12	6	20.09	19.97	19.77	3
		25	25	20.11	20.12	19.67	3			12	13	20.13	19.95	19.82	3
		50	0	20.29	20.07	19.89	3			25	0	20.19	19.95	19.90	3

LTE Band 38

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		37850	38000	38150				Channel		37825	38000	38175	
		Frequency (MHz)		2580.0	2595.0	2610.0				Frequency (MHz)		2577.5	2595.0	2612.5	
20M	QPSK	1	0	22.95	22.89	22.88	0	15M	QPSK	1	0	22.86	22.89	22.80	0
		1	50	23.00	22.94	22.93	0			1	37	22.98	22.93	22.90	0
		1	99	23.15	23.09	23.08	0			1	74	23.10	23.02	23.06	0
		50	0	22.12	22.06	22.05	1			36	0	22.06	22.06	22.00	1
		50	25	22.15	22.09	22.08	1			36	19	22.06	22.07	22.01	1
		50	50	22.22	22.16	22.15	1			36	39	22.16	22.07	22.15	1
		100	0	22.13	22.07	22.06	1			75	0	22.12	22.04	21.98	1
	16QAM	1	0	21.92	21.83	21.80	1		16QAM	1	0	21.85	21.84	21.71	1
		1	50	21.94	21.87	21.88	1			1	37	21.91	21.87	21.88	1
		1	99	22.14	22.01	22.01	1			1	74	21.99	21.97	21.95	1
		50	0	21.09	20.96	21.05	2			36	0	21.00	20.89	20.93	2
		50	25	21.08	21.03	21.06	2			36	19	21.02	21.07	20.94	2
		50	50	21.19	21.16	21.07	2			36	39	21.18	21.06	21.00	2
		100	0	21.12	20.97	21.04	2			75	0	21.00	21.04	20.98	2
	64QAM	1	0	20.91	20.82	20.78	2		64QAM	1	0	20.94	20.87	20.79	2
		1	50	20.95	20.92	20.85	2			1	37	20.92	20.78	20.81	2
		1	99	21.12	21.02	21.01	2			1	74	21.04	21.00	21.06	2
		50	0	20.11	19.99	20.00	3			36	0	20.06	19.99	20.00	3
		50	25	20.11	20.06	19.98	3			36	19	20.08	19.98	19.94	3
		50	50	20.17	20.14	20.10	3			36	39	20.17	20.08	20.03	3
		100	0	20.03	20.05	19.98	3			75	0	20.01	19.92	19.96	3
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		37800	38000	38200				Channel		37775	38000	38225	
		Frequency (MHz)		2575.0	2595.0	2615.0				Frequency (MHz)		2572.5	2595.0	2617.5	
10M	QPSK	1	0	22.81	22.74	22.72	0	5M	QPSK	1	0	22.88	22.70	22.64	0
		1	24	22.90	22.82	22.74	0			1	12	22.98	22.89	22.64	0
		1	49	22.97	22.99	23.02	0			1	24	23.05	22.88	22.77	0
		25	0	22.04	21.90	21.99	1			12	0	22.05	21.90	21.82	1
		25	12	22.05	21.87	22.01	1			12	6	22.09	21.91	21.91	1
		25	25	22.05	22.09	22.08	1			12	13	22.09	22.07	21.91	1
		50	0	22.04	21.94	21.96	1			25	0	21.97	21.85	21.95	1
	16QAM	1	0	21.76	21.63	21.66	1		16QAM	1	0	21.67	21.70	21.80	1
		1	24	21.90	21.83	21.72	1			1	12	21.90	21.67	21.71	1
		1	49	22.05	21.99	21.97	1			1	24	22.06	21.92	21.96	1
		25	0	21.04	20.91	20.94	2			12	0	21.05	20.86	20.85	2
		25	12	20.98	20.91	20.95	2			12	6	20.98	20.94	20.95	2
		25	25	21.07	21.09	21.09	2			12	13	21.10	21.03	20.98	2
		50	0	20.80	20.97	20.79	2			25	0	21.02	20.88	20.88	2
	64QAM	1	0	20.71	20.82	20.66	2		64QAM	1	0	20.68	20.80	20.72	2
		1	24	20.90	20.68	20.74	2			1	12	20.81	20.91	20.75	2
		1	49	20.96	20.82	21.06	2			1	24	21.01	20.89	20.90	2
		25	0	19.94	19.87	19.74	3			12	0	19.91	19.82	19.96	3
		25	12	19.98	19.96	19.96	3			12	6	19.99	20.02	19.99	3
		25	25	19.97	19.94	20.00	3			12	13	20.00	20.08	19.83	3
		50	0	19.89	19.94	19.93	3			25	0	19.83	19.77	19.95	3

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BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		39750	40620	41490				Channel		39725	40620	41515	
		Frequency (MHz)		2506.0	2593.0	2680.0				Frequency (MHz)		2503.5	2593.0	2682.5	
20M	QPSK	1	0	23.38	23.58	23.38	0	15M	QPSK	1	0	23.38	23.54	23.28	0
		1	50	23.46	23.66	23.46	0			1	37	23.38	23.64	23.38	0
		1	99	23.32	23.52	23.32	0			1	74	23.22	23.51	23.28	0
		50	0	22.31	22.51	22.31	1			36	0	22.21	22.49	22.21	1
		50	25	22.38	22.58	22.38	1			36	19	22.35	22.55	22.33	1
		50	50	22.39	22.59	22.39	1			36	39	22.38	22.49	22.34	1
		100	0	22.26	22.46	22.26	1			75	0	22.25	22.37	22.25	1
	16QAM	1	0	22.32	22.49	22.29	1		16QAM	1	0	22.32	22.53	22.36	1
		1	50	22.36	22.56	22.38	1			1	37	22.38	22.56	22.43	1
		1	99	22.26	22.51	22.25	1			1	74	22.27	22.43	22.27	1
		50	0	21.29	21.47	21.25	2			36	0	21.25	21.48	21.24	2
		50	25	21.35	21.58	21.29	2			36	19	21.35	21.56	21.32	2
		50	50	21.34	21.50	21.30	2			36	39	21.30	21.51	21.30	2
		100	0	21.16	21.46	21.16	2			75	0	21.23	21.46	21.23	2
	64QAM	1	0	21.29	21.55	21.31	2		64QAM	1	0	21.34	21.52	21.31	2
		1	50	21.38	21.64	21.36	2			1	37	21.46	21.62	21.44	2
		1	99	21.23	21.50	21.29	2			1	74	21.27	21.45	21.29	2
		50	0	20.27	20.44	20.30	3			36	0	20.22	20.49	20.22	3
		50	25	20.29	20.58	20.29	3			36	19	20.30	20.53	20.34	3
		50	50	20.29	20.55	20.39	3			36	39	20.30	20.54	20.31	3
		100	0	20.25	20.39	20.20	3			75	0	20.24	20.36	20.23	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		39700	40620	41540				Channel		39675	40620	41565	
		Frequency (MHz)		2501.0	2593.0	2685.0				Frequency (MHz)		2498.5	2593.0	2687.5	
10M	QPSK	1	0	23.33	23.48	23.20	0	5M	QPSK	1	0	23.34	23.42	23.29	0
		1	24	23.36	23.46	23.35	0			1	12	23.39	23.59	23.34	0
		1	49	23.20	23.46	23.23	0			1	24	23.29	23.35	23.24	0
		25	0	22.20	22.40	22.24	1			12	0	22.25	22.40	22.20	1
		25	12	22.28	22.49	22.30	1			12	6	22.27	22.43	22.29	1
		25	25	22.28	22.47	22.28	1			12	13	22.23	22.51	22.36	1
		50	0	22.22	22.35	22.19	1			25	0	22.09	22.28	22.15	1
	16QAM	1	0	22.35	22.54	22.27	1		16QAM	1	0	22.37	22.46	22.28	1
		1	24	22.34	22.54	22.37	1			1	12	22.33	22.56	22.34	1
		1	49	22.21	22.43	22.26	1			1	24	22.20	22.42	22.25	1
		25	0	21.28	21.39	21.26	2			12	0	21.27	21.47	21.14	2
		25	12	21.30	21.49	21.24	2			12	6	21.29	21.48	21.19	2
		25	25	21.25	21.47	21.22	2			12	13	21.25	21.46	21.36	2
		50	0	21.20	21.34	21.14	2			25	0	21.09	21.29	21.20	2
	64QAM	1	0	21.35	21.45	21.18	2		64QAM	1	0	21.29	21.47	21.32	2
		1	24	21.40	21.52	21.40	2			1	12	21.33	21.61	21.37	2
		1	49	21.19	21.48	21.28	2			1	24	21.20	21.42	21.27	2
		25	0	20.23	20.39	20.27	3			12	0	20.21	20.47	20.17	3
		25	12	20.30	20.56	20.29	3			12	6	20.31	20.45	20.27	3
		25	25	20.33	20.43	20.22	3			12	13	20.30	20.45	20.31	3
		50	0	20.19	20.39	20.21	3			25	0	20.12	20.32	20.20	3

EIRP Power (dBm)

LTE Band 7							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	20775	2502.5	-20.47	38.52	18.05	63.83	H
	21100	2535.0	-20.57	38.36	17.79	60.12	
	21425	2567.5	-21.17	38.58	17.41	55.08	
	20775	2502.5	-15.60	38.92	23.32	214.78	V
	21100	2535.0	-16.21	39.26	23.05	201.84	
	21425	2567.5	-16.54	39.22	22.68	185.35	
Channel Bandwidth: 5 MHz / 16QAM							
Y	20775	2502.5	-21.44	38.52	17.08	51.05	H
	21100	2535.0	-21.54	38.36	16.82	48.08	
	21425	2567.5	-22.14	38.58	16.44	44.06	
	20775	2502.5	-16.57	38.92	22.35	171.79	V
	21100	2535.0	-17.18	39.26	22.08	161.44	
	21425	2567.5	-17.51	39.22	21.71	148.25	
Channel Bandwidth: 5 MHz / 64QAM							
Y	20775	2502.5	-22.40	38.52	16.12	40.93	H
	21100	2535.0	-22.50	38.36	15.86	38.55	
	21425	2567.5	-23.10	38.58	15.48	35.32	
	20775	2502.5	-17.53	38.92	21.39	137.72	V
	21100	2535.0	-18.14	39.26	21.12	129.42	
	21425	2567.5	-18.47	39.22	20.75	118.85	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 7							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	20800	2505.0	-20.33	38.65	18.32	67.92	H
	21100	2535.0	-20.30	38.36	18.06	63.97	
	21400	2565.0	-20.81	38.49	17.68	58.61	
	20800	2505.0	-15.25	38.84	23.59	228.56	V
	21100	2535.0	-15.94	39.26	23.32	214.78	
	21400	2565.0	-16.15	39.10	22.95	197.24	
Channel Bandwidth: 10 MHz / 16QAM							
Y	20800	2505.0	-21.29	38.65	17.36	54.45	H
	21100	2535.0	-21.26	38.36	17.10	51.29	
	21400	2565.0	-21.77	38.49	16.72	46.99	
	20800	2505.0	-16.21	38.84	22.63	183.23	V
	21100	2535.0	-16.90	39.26	22.36	172.19	
	21400	2565.0	-17.11	39.10	21.99	158.12	
Channel Bandwidth: 10 MHz / 64QAM							
Y	20800	2505.0	-22.41	38.65	16.24	42.07	H
	21100	2535.0	-22.38	38.36	15.98	39.63	
	21400	2565.0	-22.89	38.49	15.60	36.31	
	20800	2505.0	-17.33	38.84	21.51	141.58	V
	21100	2535.0	-18.02	39.26	21.24	133.05	
	21400	2565.0	-18.23	39.10	20.87	122.18	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 7							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	20825	2507.5	-19.89	38.52	18.63	72.95	H
	21100	2535.0	-19.99	38.36	18.37	68.71	
	21375	2562.5	-20.59	38.58	17.99	62.95	
	20825	2507.5	-15.02	38.92	23.90	245.47	V
	21100	2535.0	-15.63	39.26	23.63	230.67	
	21375	2562.5	-15.96	39.22	23.26	211.84	
Channel Bandwidth: 15 MHz / 16QAM							
Y	20825	2507.5	-20.92	38.52	17.60	57.54	H
	21100	2535.0	-21.02	38.36	17.34	54.20	
	21375	2562.5	-21.62	38.58	16.96	49.66	
	20825	2507.5	-16.05	38.92	22.87	193.64	V
	21100	2535.0	-16.66	39.26	22.60	181.97	
	21375	2562.5	-16.99	39.22	22.23	167.11	
Channel Bandwidth: 15 MHz / 64QAM							
Y	20825	2507.5	-22.03	38.52	16.49	44.57	H
	21100	2535.0	-22.13	38.36	16.23	41.98	
	21375	2562.5	-22.73	38.58	15.85	38.46	
	20825	2507.5	-17.16	38.92	21.76	149.97	V
	21100	2535.0	-17.77	39.26	21.49	140.93	
	21375	2562.5	-18.10	39.22	21.12	129.42	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 7							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	20850.0	2510.0	-19.61	38.52	18.91	77.80	H
	21100.0	2535.0	-19.71	38.36	18.65	73.28	
	21350.0	2560.0	-20.31	38.58	18.27	67.14	
	20850.0	2510.0	-14.74	38.92	24.18	261.82	V
	21100.0	2535.0	-15.35	39.26	23.91	246.04	
	21350.0	2560.0	-15.68	39.22	23.54	225.94	
Channel Bandwidth: 20 MHz / 16QAM							
Y	20850.0	2510.0	-20.63	38.52	17.89	61.52	H
	21100.0	2535.0	-20.73	38.36	17.63	57.94	
	21350.0	2560.0	-21.33	38.58	17.25	53.09	
	20850.0	2510.0	-15.76	38.92	23.16	207.01	V
	21100.0	2535.0	-16.37	39.26	22.89	194.54	
	21350.0	2560.0	-16.70	39.22	22.52	178.65	
Channel Bandwidth: 20 MHz / 64QAM							
Y	20850.0	2510.0	-21.62	38.52	16.90	48.98	H
	21100.0	2535.0	-21.72	38.36	16.64	46.13	
	21350.0	2560.0	-22.32	38.58	16.26	42.27	
	20850.0	2510.0	-16.75	38.92	22.17	164.82	V
	21100.0	2535.0	-17.36	39.26	21.90	154.88	
	21350.0	2560.0	-17.69	39.22	21.53	142.23	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 38							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	37775	2572.5	-22.03	38.99	16.96	49.66	H
	38000	2595.0	-21.48	38.17	16.69	46.67	
	38225	2617.5	-21.97	38.55	16.58	45.50	
	37775	2572.5	-16.08	39.27	23.19	208.45	V
	38000	2595.0	-15.76	38.68	22.92	195.88	
	38225	2617.5	-15.74	38.55	22.81	190.99	
Channel Bandwidth: 5 MHz / 16QAM							
Y	37775	2572.5	-23.08	38.99	15.91	38.99	H
	38000	2595.0	-22.53	38.17	15.64	36.64	
	38225	2617.5	-23.02	38.55	15.53	35.73	
	37775	2572.5	-17.13	39.27	22.14	163.68	V
	38000	2595.0	-16.81	38.68	21.87	153.82	
	38225	2617.5	-16.79	38.55	21.76	149.97	
Channel Bandwidth: 5 MHz / 64QAM							
Y	37775	2572.5	-24.07	38.99	14.92	31.05	H
	38000	2595.0	-23.52	38.17	14.65	29.17	
	38225	2617.5	-24.01	38.55	14.54	28.44	
	37775	2572.5	-18.12	39.27	21.15	130.32	V
	38000	2595.0	-17.80	38.68	20.88	122.46	
	38225	2617.5	-17.78	38.55	20.77	119.40	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 38							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	37800	2575.0	-21.68	38.98	17.30	53.70	H
	38000	2595.0	-21.14	38.17	17.03	50.47	
	38200	2615.0	-21.53	38.45	16.92	49.20	
	37800	2575.0	-15.51	39.04	23.53	225.42	V
	38000	2595.0	-15.42	38.68	23.26	211.84	
	38200	2615.0	-15.45	38.60	23.15	206.54	
Channel Bandwidth: 10 MHz / 16QAM							
Y	37800	2575.0	-22.66	38.98	16.32	42.85	H
	38000	2595.0	-22.12	38.17	16.05	40.27	
	38200	2615.0	-22.51	38.45	15.94	39.26	
	37800	2575.0	-16.49	39.04	22.55	179.89	V
	38000	2595.0	-16.40	38.68	22.28	169.04	
	38200	2615.0	-16.43	38.60	22.17	164.82	
Channel Bandwidth: 10 MHz / 64QAM							
Y	37800	2575.0	-23.64	38.98	15.34	34.20	H
	38000	2595.0	-23.10	38.17	15.07	32.14	
	38200	2615.0	-23.49	38.45	14.96	31.33	
	37800	2575.0	-17.47	39.04	21.57	143.55	V
	38000	2595.0	-17.38	38.68	21.30	134.90	
	38200	2615.0	-17.41	38.60	21.19	131.52	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 38							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	37825	2577.5	-21.52	39.09	17.57	57.15	H
	38000	2595.0	-20.87	38.17	17.30	53.70	
	38175	2612.5	-21.33	38.52	17.19	52.36	
	37825	2577.5	-15.24	39.04	23.80	239.88	V
	38000	2595.0	-15.15	38.68	23.53	225.42	
	38175	2612.5	-15.24	38.66	23.42	219.79	
Channel Bandwidth: 15 MHz / 16QAM							
Y	37825	2577.5	-22.54	39.09	16.55	45.19	H
	38000	2595.0	-21.89	38.17	16.28	42.46	
	38175	2612.5	-22.35	38.52	16.17	41.40	
	37825	2577.5	-16.26	39.04	22.78	189.67	V
	38000	2595.0	-16.17	38.68	22.51	178.24	
	38175	2612.5	-16.26	38.66	22.40	173.78	
Channel Bandwidth: 15 MHz / 64QAM							
Y	37825	2577.5	-23.65	39.09	15.44	34.99	H
	38000	2595.0	-23.00	38.17	15.17	32.89	
	38175	2612.5	-23.46	38.52	15.06	32.06	
	37825	2577.5	-17.37	39.04	21.67	146.89	V
	38000	2595.0	-17.28	38.68	21.40	138.04	
	38175	2612.5	-17.37	38.66	21.29	134.59	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 38							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	37850	2580.0	-21.37	39.26	17.89	61.52	H
	38000	2595.0	-20.55	38.17	17.62	57.81	
	38150	2610.0	-21.20	38.71	17.51	56.36	
	37850	2580.0	-15.21	39.33	24.12	258.23	V
	38000	2595.0	-14.83	38.68	23.85	242.66	
	38150	2610.0	-15.02	38.76	23.74	236.59	
Channel Bandwidth: 20 MHz / 16QAM							
Y	37850	2580.0	-22.62	39.26	16.64	46.13	H
	38000	2595.0	-21.80	38.17	16.37	43.35	
	38150	2610.0	-22.45	38.71	16.26	42.27	
	37850	2580.0	-16.46	39.33	22.87	193.64	V
	38000	2595.0	-16.08	38.68	22.60	181.97	
	38150	2610.0	-16.27	38.76	22.49	177.42	
Channel Bandwidth: 20 MHz / 64QAM							
Y	37850	2580.0	-23.60	39.26	15.66	36.81	H
	38000	2595.0	-22.78	38.17	15.39	34.59	
	38150	2610.0	-23.43	38.71	15.28	33.73	
	37850	2580.0	-17.44	39.33	21.89	154.53	V
	38000	2595.0	-17.06	38.68	21.62	145.21	
	38150	2610.0	-17.25	38.76	21.51	141.58	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 41							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	39675	2498.5	-22.25	38.99	16.74	47.21	H
	40620	2593.0	-21.55	38.17	16.62	45.92	
	41565	2687.5	-22.25	38.55	16.30	42.66	
	39675	2498.5	-16.64	39.27	22.63	183.23	V
	40620	2593.0	-16.17	38.68	22.51	178.24	
	41565	2687.5	-16.36	38.55	22.19	165.58	
Channel Bandwidth: 5 MHz / 16QAM							
Y	39675	2498.5	-23.27	38.99	15.72	37.33	H
	40620	2593.0	-22.57	38.17	15.60	36.31	
	41565	2687.5	-23.27	38.55	15.28	33.73	
	39675	2498.5	-17.66	39.27	21.61	144.88	V
	40620	2593.0	-17.19	38.68	21.49	140.93	
	41565	2687.5	-17.38	38.55	21.17	130.92	
Channel Bandwidth: 5 MHz / 64QAM							
Y	39675	2498.5	-24.25	38.99	14.74	29.79	H
	40620	2593.0	-23.55	38.17	14.62	28.97	
	41565	2687.5	-24.25	38.55	14.30	26.92	
	39675	2498.5	-18.64	39.27	20.63	115.61	V
	40620	2593.0	-18.17	38.68	20.51	112.46	
	41565	2687.5	-18.36	38.55	20.19	104.47	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 41							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	39700	2501.0	-21.97	38.98	17.01	50.23	H
	40620	2593.0	-21.28	38.17	16.89	48.87	
	41540	2685.0	-21.88	38.45	16.57	45.39	
	39700	2501.0	-16.14	39.04	22.90	194.98	V
	40620	2593.0	-15.90	38.68	22.78	189.67	
	41540	2685.0	-16.14	38.60	22.46	176.20	
Channel Bandwidth: 10 MHz / 16QAM							
Y	39700	2501.0	-22.96	38.98	16.02	39.99	H
	40620	2593.0	-22.27	38.17	15.90	38.90	
	41540	2685.0	-22.87	38.45	15.58	36.14	
	39700	2501.0	-17.13	39.04	21.91	155.24	V
	40620	2593.0	-16.89	38.68	21.79	151.01	
	41540	2685.0	-17.13	38.60	21.47	140.28	
Channel Bandwidth: 10 MHz / 64QAM							
Y	39700	2501.0	-23.95	38.98	15.03	31.84	H
	40620	2593.0	-23.26	38.17	14.91	30.97	
	41540	2685.0	-23.86	38.45	14.59	28.77	
	39700	2501.0	-18.12	39.04	20.92	123.59	V
	40620	2593.0	-17.88	38.68	20.80	120.23	
	41540	2685.0	-18.12	38.60	20.48	111.69	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 41							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	39725	2503.5	-21.74	39.09	17.35	54.33	H
	40620	2593.0	-20.94	38.17	17.23	52.84	
	41515	2682.5	-21.61	38.52	16.91	49.09	
	39725	2503.5	-15.80	39.04	23.24	210.86	V
	40620	2593.0	-15.56	38.68	23.12	205.12	
	41515	2682.5	-15.86	38.66	22.80	190.55	
Channel Bandwidth: 15 MHz / 16QAM							
Y	39725	2503.5	-22.71	39.09	16.38	43.45	H
	40620	2593.0	-21.91	38.17	16.26	42.27	
	41515	2682.5	-22.58	38.52	15.94	39.26	
	39725	2503.5	-16.77	39.04	22.27	168.66	V
	40620	2593.0	-16.53	38.68	22.15	164.06	
	41515	2682.5	-16.83	38.66	21.83	152.41	
Channel Bandwidth: 15 MHz / 64QAM							
Y	39725	2503.5	-23.83	39.09	15.26	33.57	H
	40620	2593.0	-23.03	38.17	15.14	32.66	
	41515	2682.5	-23.70	38.52	14.82	30.34	
	39725	2503.5	-17.89	39.04	21.15	130.32	V
	40620	2593.0	-17.65	38.68	21.03	126.77	
	41515	2682.5	-17.95	38.66	20.71	117.76	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 41							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Y	39750	2506.0	-21.64	39.26	17.62	57.81	H
	40620	2593.0	-20.67	38.17	17.50	56.23	
	41490	2680.0	-21.53	38.71	17.18	52.24	
	39750	2506.0	-15.82	39.33	23.51	224.39	V
	40620	2593.0	-15.29	38.68	23.39	218.27	
	41490	2680.0	-15.69	38.76	23.07	202.77	
Channel Bandwidth: 20 MHz / 16QAM							
Y	39750	2506.0	-22.85	39.26	16.41	43.75	H
	40620	2593.0	-21.88	38.17	16.29	42.56	
	41490	2680.0	-22.74	38.71	15.97	39.54	
	39750	2506.0	-17.03	39.33	22.30	169.82	V
	40620	2593.0	-16.50	38.68	22.18	165.20	
	41490	2680.0	-16.90	38.76	21.86	153.46	
Channel Bandwidth: 20 MHz / 64QAM							
Y	39750	2506.0	-23.86	39.26	15.40	34.67	H
	40620	2593.0	-22.89	38.17	15.28	33.73	
	41490	2680.0	-23.75	38.71	14.96	31.33	
	39750	2506.0	-18.04	39.33	21.29	134.59	V
	40620	2593.0	-17.51	38.68	21.17	130.92	
	41490	2680.0	-17.91	38.76	20.85	121.62	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

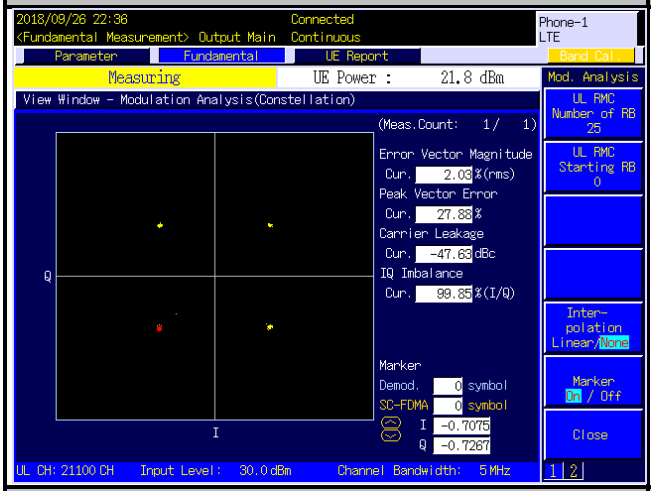
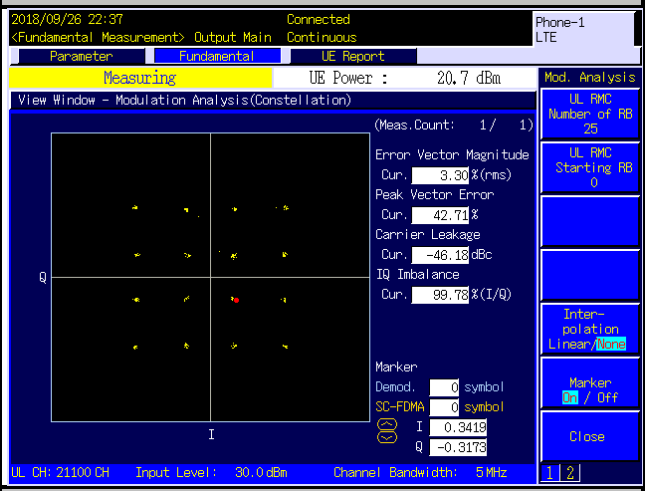
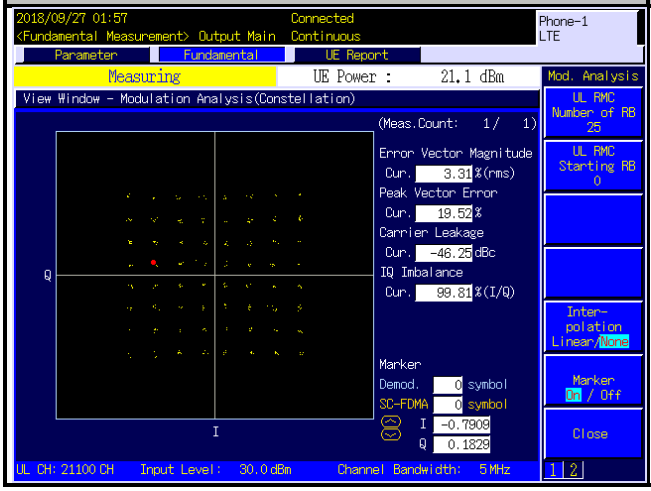
N/A

4.2.2 Test Setup

4.2.3 Test Procedure

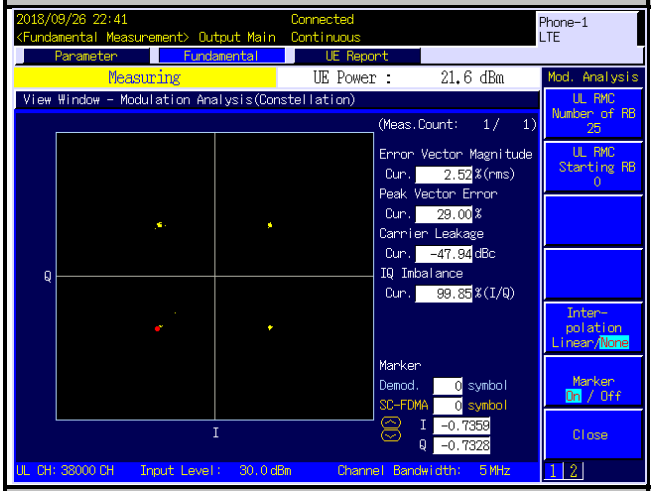
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.4 Test Results

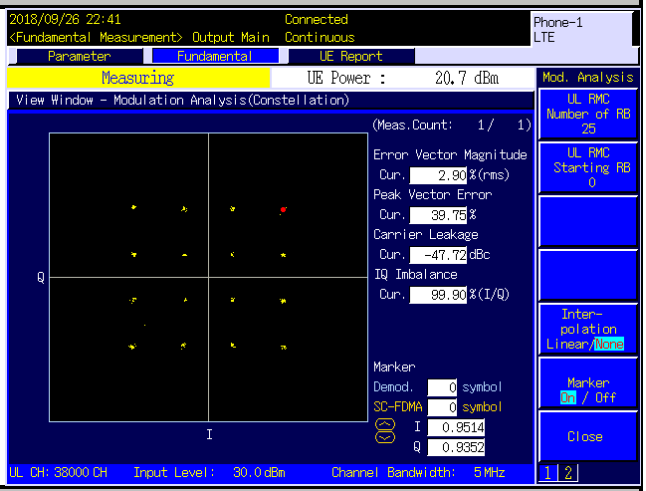
Spectrum Plot of Measurement	
LTE Band 7	
Channel 21100	
QPSK	16QAM
	
64QAM	
	

Spectrum Plot of Measurement
LTE Band 38
Channel 38000

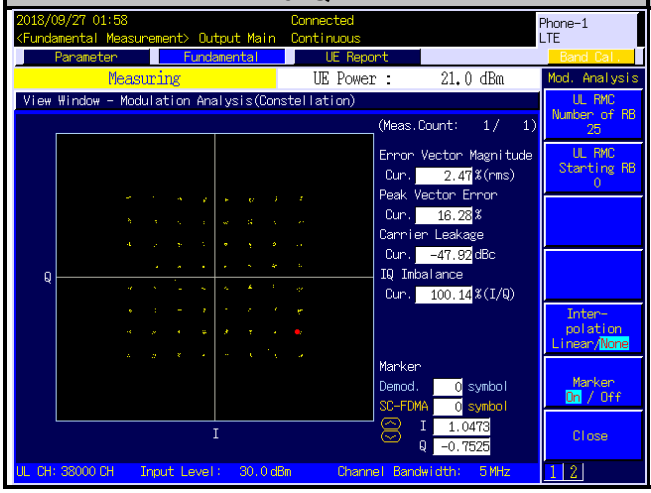
QPSK



16QAM

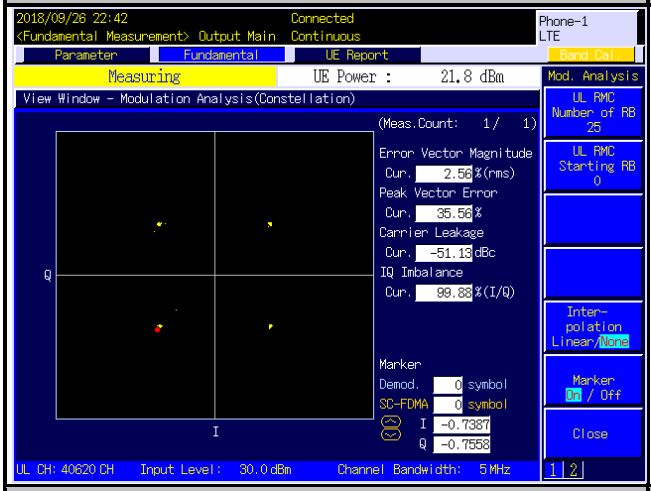


64QAM

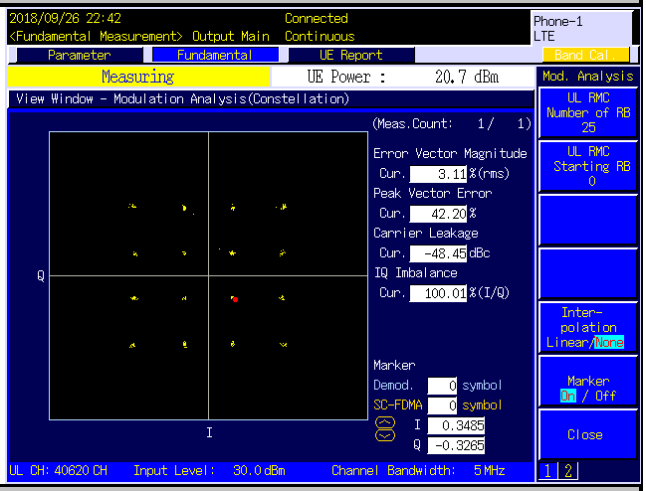


Spectrum Plot of Measurement
LTE Band 41
Channel 40620

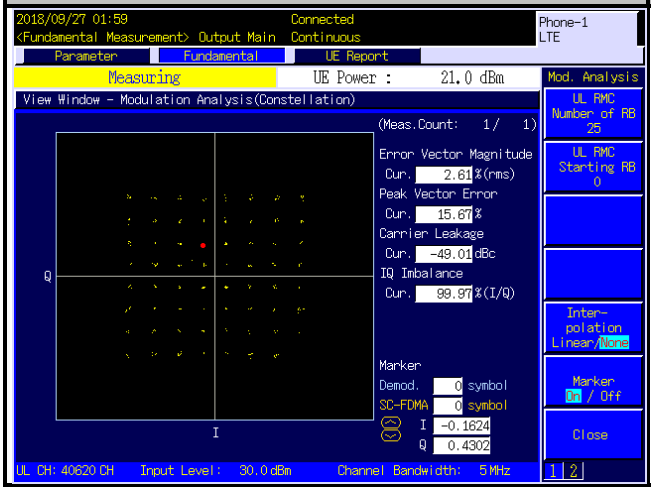
QPSK



16QAM



64QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

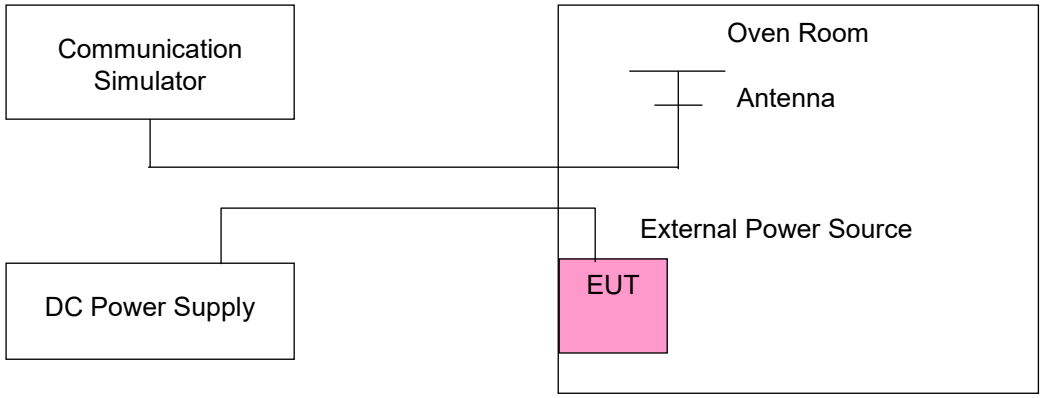
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30℃~ 50℃.

4.3.2 Test Procedure

a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2502.500003	0.0013	2567.500004	0.0016	2.5
3.27	2502.500001	0.0005	2567.500003	0.0013	2.5
4.43	2502.500002	0.0007	2567.500003	0.0012	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2502.500003	0.0011	2567.500004	0.0015	2.5
-20	2502.500001	0.0004	2567.500002	0.0009	2.5
-10	2502.500002	0.0007	2567.500001	0.0005	2.5
0	2502.500002	0.0010	2567.500003	0.0010	2.5
10	2502.500002	0.0006	2567.500001	0.0005	2.5
20	2502.499997	-0.0014	2567.499996	-0.0014	2.5
30	2502.499996	-0.0016	2567.499997	-0.0014	2.5
40	2502.499996	-0.0016	2567.499999	-0.0005	2.5
50	2502.499998	-0.0007	2567.499997	-0.0011	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2505.000004	0.0016	2565.000004	0.0014	2.5
3.27	2505.000002	0.0008	2565.000003	0.0011	2.5
4.43	2505.000001	0.0005	2565.000002	0.0007	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2505.000004	0.0014	2565.000002	0.0006	2.5
-20	2505.000004	0.0014	2565.000003	0.0013	2.5
-10	2505.000004	0.0014	2565.000004	0.0015	2.5
0	2505.000002	0.0007	2565.000001	0.0004	2.5
10	2505.000004	0.0015	2565.000003	0.0011	2.5
20	2504.999996	-0.0015	2564.999998	-0.0010	2.5
30	2504.999996	-0.0016	2564.999997	-0.0011	2.5
40	2504.999997	-0.0013	2564.999996	-0.0015	2.5
50	2504.999996	-0.0015	2564.999999	-0.0005	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2507.500001	0.0004	2562.500004	0.0015	2.5
3.27	2507.500004	0.0015	2562.500004	0.0015	2.5
4.43	2507.500002	0.0010	2562.500004	0.0014	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2507.500001	0.0004	2562.500001	0.0005	2.5
-20	2507.500001	0.0006	2562.500003	0.0012	2.5
-10	2507.500001	0.0005	2562.500002	0.0008	2.5
0	2507.500002	0.0008	2562.500002	0.0007	2.5
10	2507.500002	0.0010	2562.500002	0.0007	2.5
20	2507.499999	-0.0004	2562.499999	-0.0005	2.5
30	2507.499998	-0.0006	2562.499997	-0.0011	2.5
40	2507.499999	-0.0005	2562.499997	-0.0012	2.5
50	2507.499999	-0.0005	2562.499998	-0.0009	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2510.000002	0.0008	2560.000002	0.0009	2.5
3.27	2510.000002	0.0009	2560.000001	0.0005	2.5
4.43	2510.000002	0.0008	2560.000004	0.0014	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2510.000003	0.0012	2560.000003	0.0011	2.5
-20	2510.000004	0.0015	2560.000002	0.0008	2.5
-10	2510.000001	0.0006	2560.000004	0.0014	2.5
0	2510.000003	0.0013	2560.000004	0.0014	2.5
10	2510.000004	0.0016	2560.000001	0.0005	2.5
20	2509.999998	-0.0010	2559.999999	-0.0005	2.5
30	2509.999998	-0.0006	2559.999998	-0.0007	2.5
40	2509.999997	-0.0014	2559.999997	-0.0012	2.5
50	2509.999999	-0.0006	2559.999996	-0.0014	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2572.500002	0.0007	2617.500003	0.0011	2.5
3.27	2572.500003	0.0013	2617.500002	0.0006	2.5
4.43	2572.500004	0.0015	2617.500003	0.0011	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2572.500003	0.0010	2617.500003	0.0010	2.5
-20	2572.500002	0.0007	2617.500001	0.0005	2.5
-10	2572.500001	0.0005	2617.500002	0.0009	2.5
0	2572.500002	0.0009	2617.500004	0.0015	2.5
10	2572.500003	0.0012	2617.500003	0.0012	2.5
20	2572.499998	-0.0008	2617.499998	-0.0006	2.5
30	2572.499999	-0.0005	2617.499998	-0.0008	2.5
40	2572.499998	-0.0007	2617.499997	-0.0012	2.5
50	2572.499998	-0.0007	2617.499998	-0.0009	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2575.000004	0.0015	2615.000002	0.0008	2.5
3.27	2575.000002	0.0009	2615.000002	0.0007	2.5
4.43	2575.000003	0.0013	2615.000002	0.0009	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2575.000002	0.0008	2615.000002	0.0007	2.5
-20	2575.000002	0.0009	2615.000003	0.0012	2.5
-10	2575.000003	0.0011	2615.000002	0.0007	2.5
0	2575.000003	0.0011	2615.000003	0.0012	2.5
10	2575.000001	0.0004	2615.000002	0.0007	2.5
20	2574.999998	-0.0009	2614.999999	-0.0005	2.5
30	2574.999998	-0.0006	2614.999997	-0.0010	2.5
40	2574.999997	-0.0012	2614.999996	-0.0015	2.5
50	2574.999997	-0.0010	2614.999998	-0.0007	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2577.500002	0.0009	2612.500002	0.0008	2.5
3.27	2577.500002	0.0007	2612.500003	0.0010	2.5
4.43	2577.500003	0.0012	2612.500004	0.0013	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2577.500002	0.0007	2612.500003	0.0012	2.5
-20	2577.500003	0.0011	2612.500003	0.0010	2.5
-10	2577.500004	0.0014	2612.500001	0.0005	2.5
0	2577.500004	0.0015	2612.500004	0.0013	2.5
10	2577.500001	0.0005	2612.500002	0.0009	2.5
20	2577.499997	-0.0013	2612.499997	-0.0013	2.5
30	2577.499997	-0.0010	2612.499999	-0.0005	2.5
40	2577.499998	-0.0008	2612.499997	-0.0011	2.5
50	2577.499996	-0.0014	2612.499996	-0.0014	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2580.000002	0.0007	2610.000002	0.0009	2.5
3.27	2580.000004	0.0015	2610.000004	0.0015	2.5
4.43	2580.000001	0.0004	2610.000000	0.0013	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2580.000002	0.0006	2610.000003	0.0012	2.5
-20	2580.000003	0.0012	2610.000004	0.0015	2.5
-10	2580.000004	0.0016	2610.000002	0.0006	2.5
0	2580.000001	0.0005	2610.000001	0.0004	2.5
10	2580.000001	0.0005	2610.000001	0.0005	2.5
20	2579.999998	-0.0009	2609.999997	-0.0011	2.5
30	2579.999996	-0.0014	2609.999997	-0.0012	2.5
40	2579.999998	-0.0006	2609.999998	-0.0008	2.5
50	2579.999998	-0.0008	2609.999998	-0.0009	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2498.500002	0.0006	2687.500001	0.0005	2.5
3.27	2498.500004	0.0014	2687.500004	0.0014	2.5
4.43	2498.500004	0.0015	2687.500002	0.0009	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2498.500004	0.0014	2687.500003	0.0009	2.5
-20	2498.500001	0.0004	2687.500002	0.0007	2.5
-10	2498.500003	0.0012	2687.500003	0.0010	2.5
0	2498.500001	0.0005	2687.500003	0.0010	2.5
10	2498.500001	0.0004	2687.500002	0.0009	2.5
20	2498.499997	-0.0011	2687.499997	-0.0011	2.5
30	2498.499997	-0.0013	2687.499997	-0.0010	2.5
40	2498.499998	-0.0009	2687.499997	-0.0010	2.5
50	2498.499998	-0.0009	2687.499997	-0.0011	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2501.000004	0.0014	2685.000003	0.0012	2.5
3.27	2501.000002	0.0009	2685.000004	0.0013	2.5
4.43	2501.000002	0.0008	2685.000004	0.0014	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2501.000001	0.0006	2685.000004	0.0013	2.5
-20	2501.000001	0.0005	2685.000004	0.0015	2.5
-10	2501.000002	0.0007	2685.000001	0.0004	2.5
0	2501.000003	0.0012	2685.000002	0.0008	2.5
10	2501.000002	0.0008	2685.000001	0.0004	2.5
20	2500.999998	-0.0008	2684.999997	-0.0013	2.5
30	2500.999996	-0.0014	2684.999998	-0.0006	2.5
40	2500.999998	-0.0008	2684.999996	-0.0013	2.5
50	2500.999998	-0.0008	2684.999997	-0.0013	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2503.500002	0.0009	2682.500004	0.0014	2.5
3.27	2503.500004	0.0014	2682.500002	0.0006	2.5
4.43	2503.500004	0.0016	2682.500002	0.0008	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2503.500001	0.0005	2682.500004	0.0015	2.5
-20	2503.500001	0.0006	2682.500004	0.0015	2.5
-10	2503.500002	0.0006	2682.500001	0.0004	2.5
0	2503.500002	0.0008	2682.500001	0.0004	2.5
10	2503.500001	0.0005	2682.500002	0.0007	2.5
20	2503.499998	-0.0007	2682.499998	-0.0008	2.5
30	2503.499999	-0.0006	2682.499998	-0.0007	2.5
40	2503.499996	-0.0014	2682.499998	-0.0006	2.5
50	2503.499998	-0.0008	2682.499998	-0.0006	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	2506.000002	0.0007	2680.000004	0.0013	2.5
3.27	2506.000001	0.0005	2680.000001	0.0004	2.5
4.43	2506.000002	0.0008	2680.000004	0.0015	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.27 Vdc to 4.43 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	2506.000004	0.0016	2680.000001	0.0005	2.5
-20	2506.000002	0.0007	2680.000001	0.0005	2.5
-10	2506.000002	0.0009	2680.000004	0.0015	2.5
0	2506.000004	0.0014	2680.000002	0.0009	2.5
10	2506.000003	0.0012	2680.000003	0.0011	2.5
20	2505.999997	-0.0013	2679.999999	-0.0004	2.5
30	2505.999997	-0.0012	2679.999998	-0.0007	2.5
40	2505.999997	-0.0011	2679.999997	-0.0012	2.5
50	2505.999997	-0.0012	2679.999996	-0.0014	2.5

4.4 Occupied Bandwidth Measurement

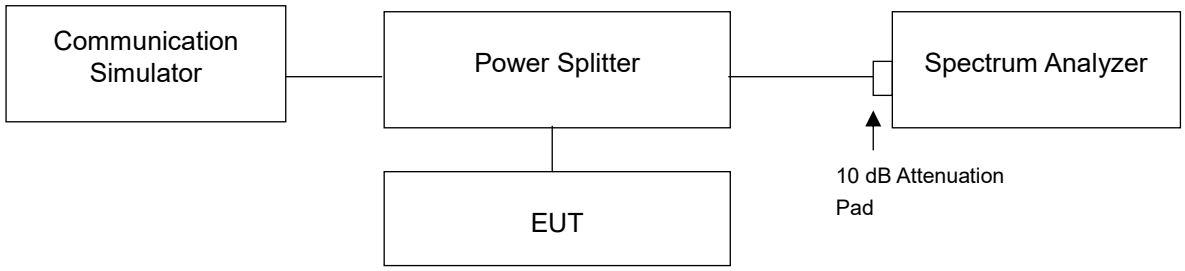
4.4.1 Limits of Occupied Bandwidth Measurement

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.2 Test Procedure

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.4.3 Test Setup



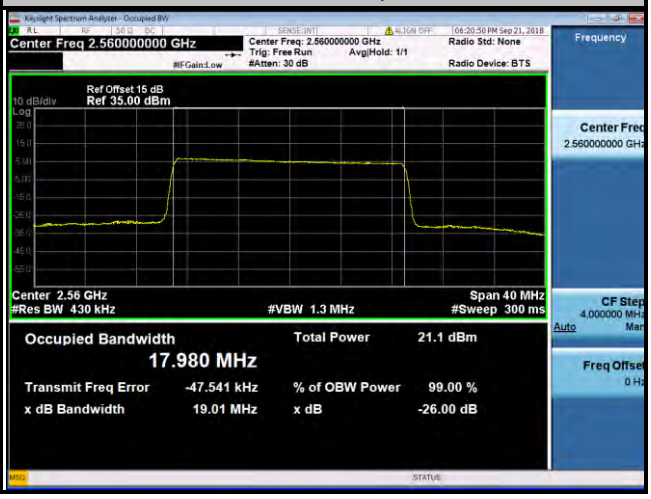
4.4.4 Test Results

LTE Band 7									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20775	2502.5	4.4918	4.4978	4.4933	20800	2505.0	8.9583	8.9629	8.9564
21100	2535.0	4.4946	4.4968	4.4987	21100	2535.0	8.9660	8.9771	8.9683
21425	2567.5	4.4920	4.4950	4.4938	21400	2565.0	8.9781	8.9808	8.9762

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 16QAM
	

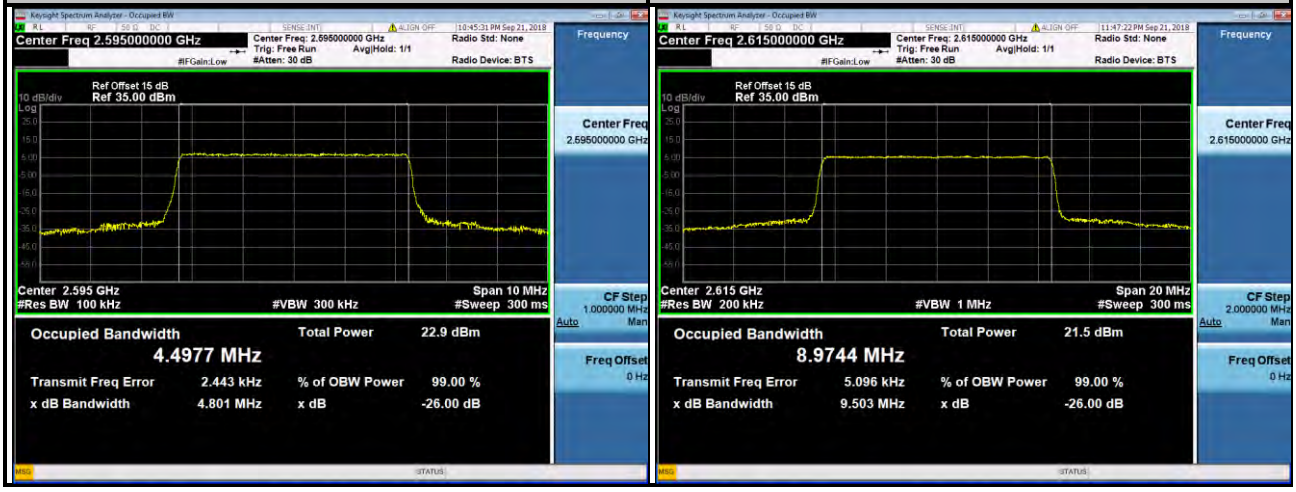
LTE Band 7									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20825	2507.5	13.442	13.432	13.421	20850	2510.0	17.901	17.926	17.913
21100	2535.0	13.453	13.445	13.437	21100	2535.0	17.905	17.937	17.923
21375	2562.5	13.481	13.470	13.462	21350	2560.0	17.957	17.980	17.974

Spectrum Plot of Worst Value	
15 MHz / QPSK	20 MHz / 16QAM



LTE Band 38									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37775	2572.5	4.4949	4.4921	4.4904	37800	2575.0	8.9551	8.9735	8.9711
38000	2595.0	4.4977	4.4942	4.4871	38000	2595.0	8.9556	8.9685	8.9719
38225	2617.5	4.4945	4.4949	4.4874	38200	2615.0	8.9560	8.9704	8.9744

Spectrum Plot of Worst Value	
5 MHz / QPSK	10 MHz / 64QAM



LTE Band 38									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37825	2577.5	13.449	13.443	13.438	37850	2580.0	17.915	17.912	17.922
38000	2595.0	13.451	13.442	13.439	38000	2595.0	17.919	17.909	17.924
38175	2612.5	13.454	13.436	13.433	38150	2610.0	17.917	17.918	17.923

Spectrum Plot of Worst Value	
15 MHz / QPSK	20 MHz / 64QAM
	

LTE Band 41									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39675	2498.5	4.4954	4.4907	4.4900	39700	2501.0	8.9537	8.9704	8.9604
40620	2593.0	4.4975	4.4953	4.4915	40620	2593.0	8.9627	8.9750	8.9730
41565	2687.5	4.4979	4.4958	4.4900	41540	2685.0	8.9631	8.9663	8.9760

Spectrum Plot of Worst Value	
5 MHz / QPSK	10 MHz / 64QAM
	

LTE Band 41									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39725	2503.5	13.439	13.434	13.428	39750	2506.0	17.896	17.903	17.898
40620	2593.0	13.451	13.439	13.441	40620	2593.0	17.916	17.912	17.918
41515	2682.5	13.452	13.430	13.438	41490	2680.0	17.907	17.893	17.916

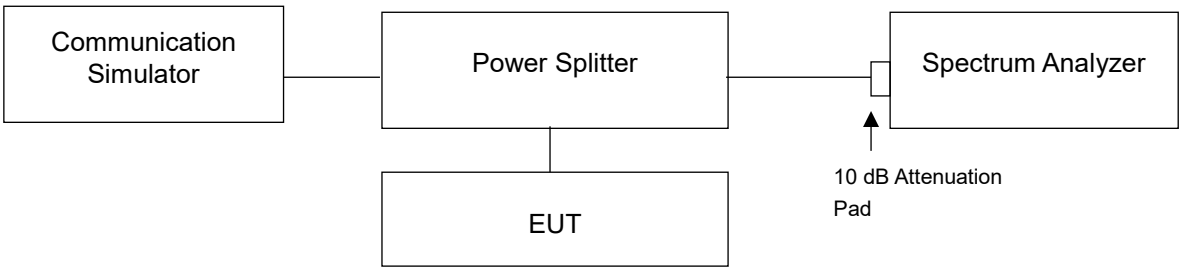
Spectrum Plot of Worst Value	
15 MHz / QPSK	20 MHz / 64QAM
	

4.5 Out-of-Band Emissions Measurement

4.5.1 Limits of Out-of-Band Emissions Measurement

According to FCC 27.53(l)(4) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (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. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

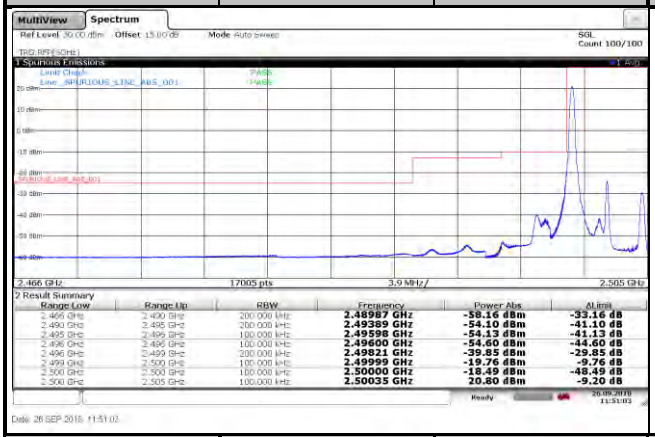
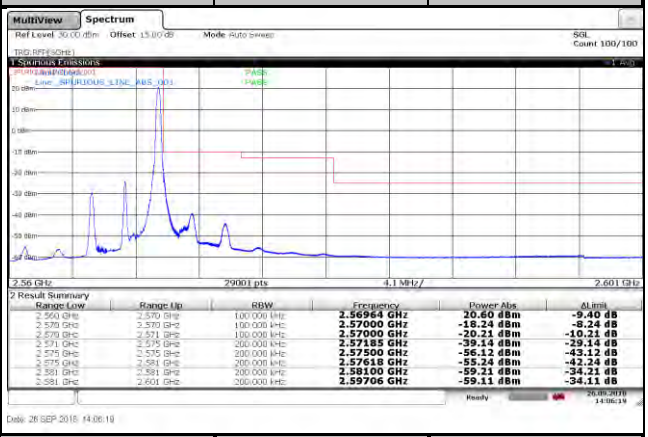
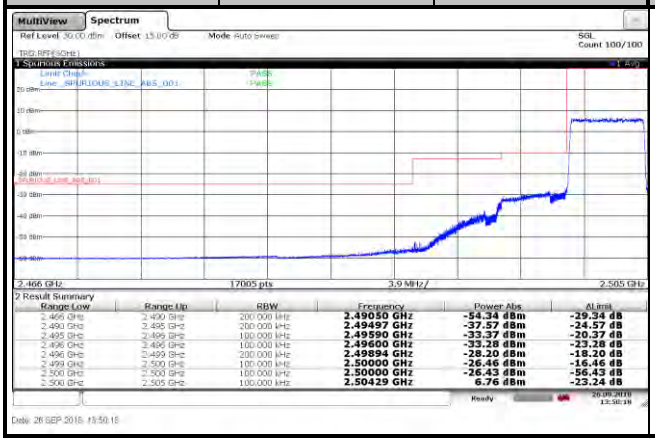
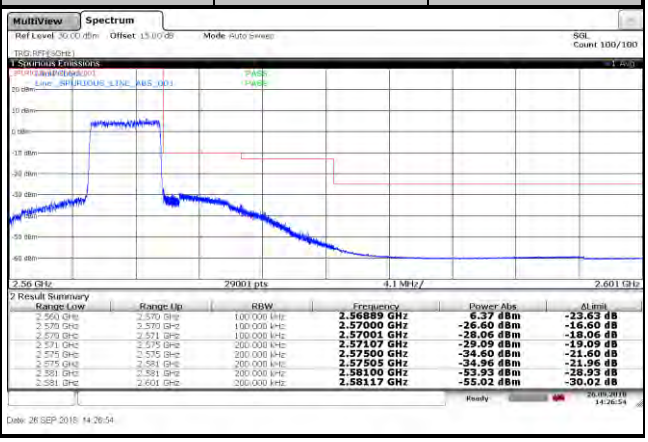
4.5.2 Test Setup

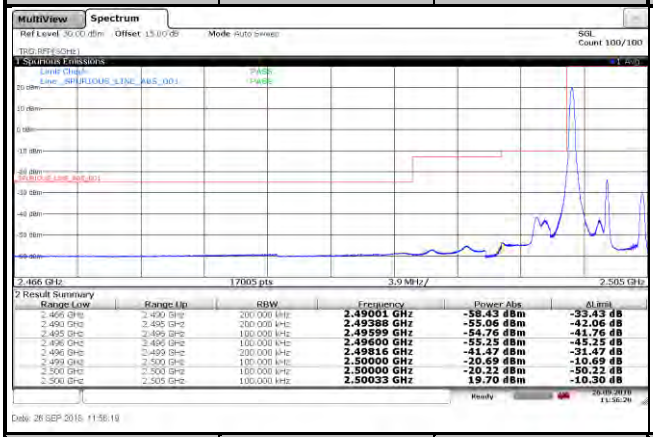
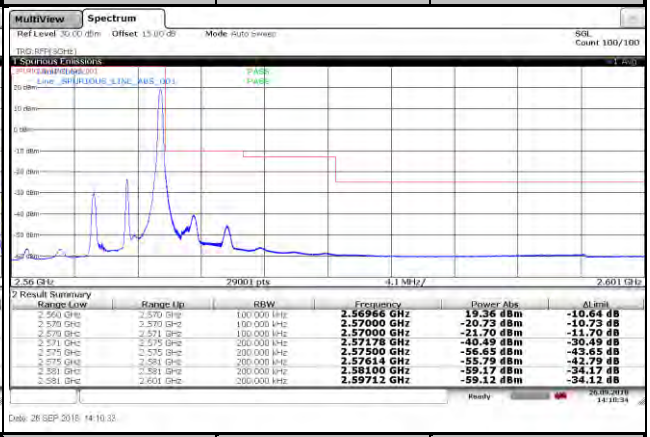
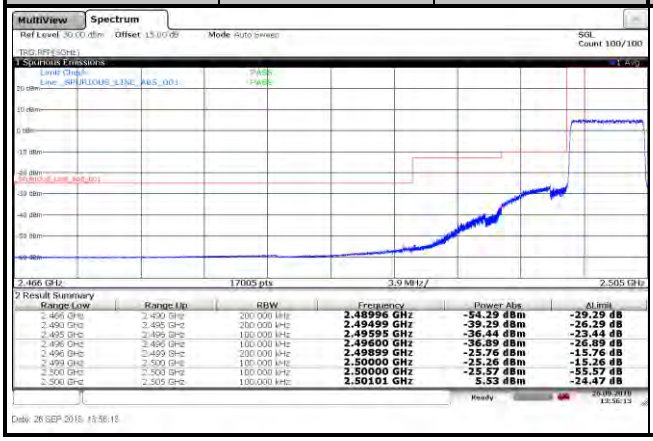
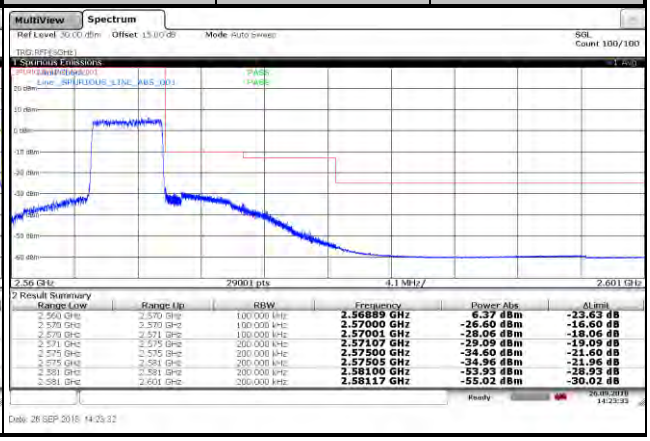


4.5.3 Test Procedures

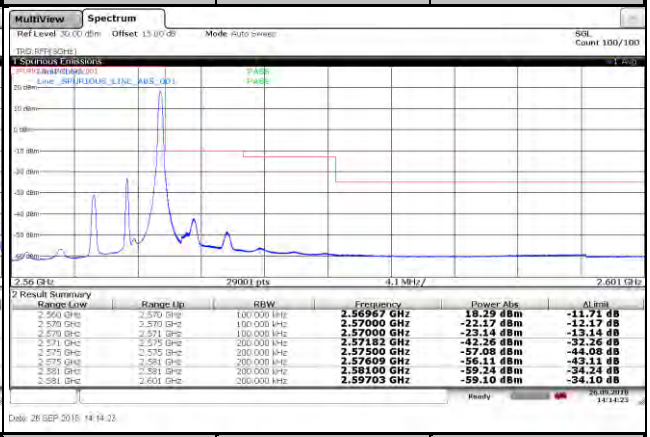
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
b. The out-of-band emissions measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
c. Record the max. trace plot into the test report.

4.5.4 Test Results

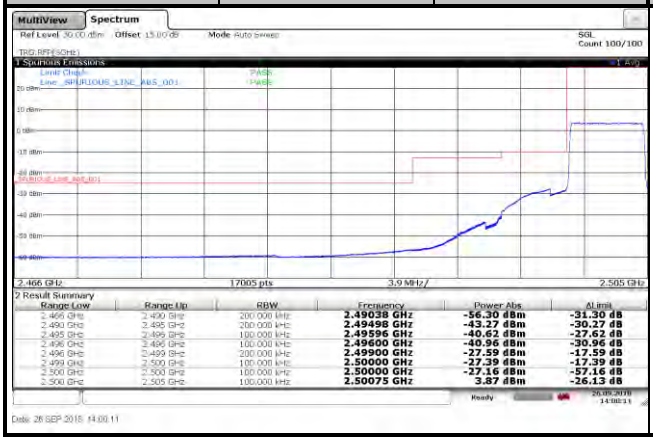
LTE Band 7					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20775	1 RB	Channel	21425	1 RB
					
Channel	20775	25 RB	Channel	21425	25 RB
					

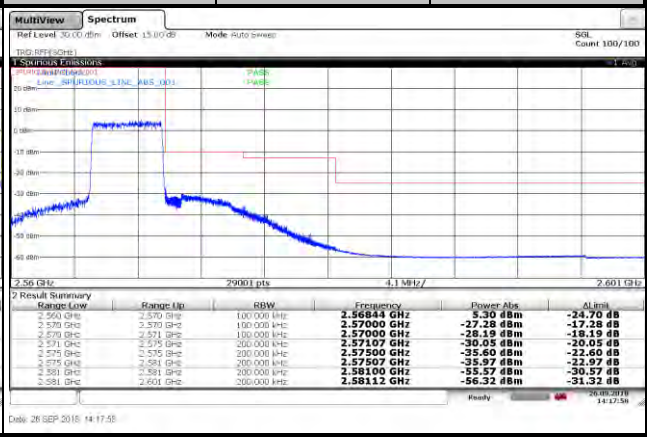
LTE Band 7					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20775	1 RB	Channel	21425	1 RB
					
Channel	20775	25 RB	Channel	21425	25 RB
					

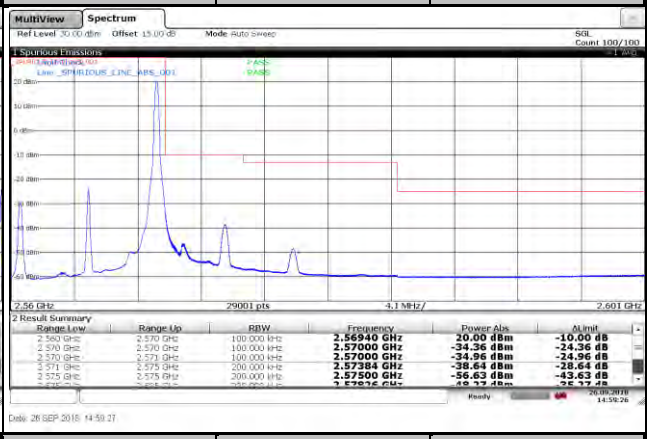
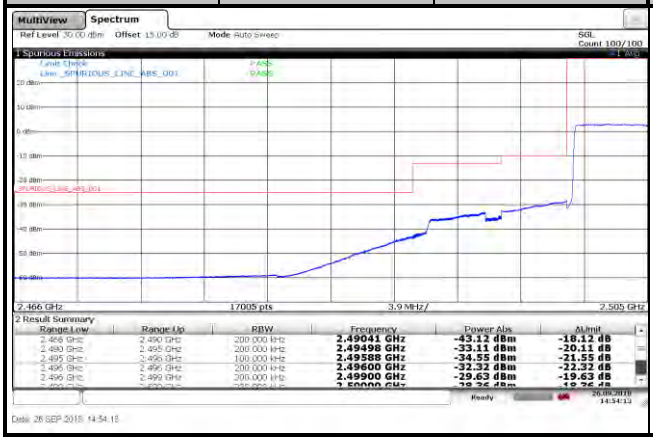
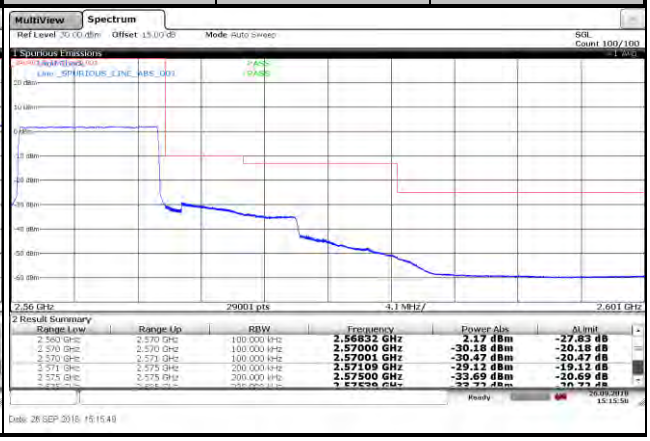
LTE Band 7					
Channel Bandwidth: 5 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	20775	1 RB	Channel	21425	1 RB

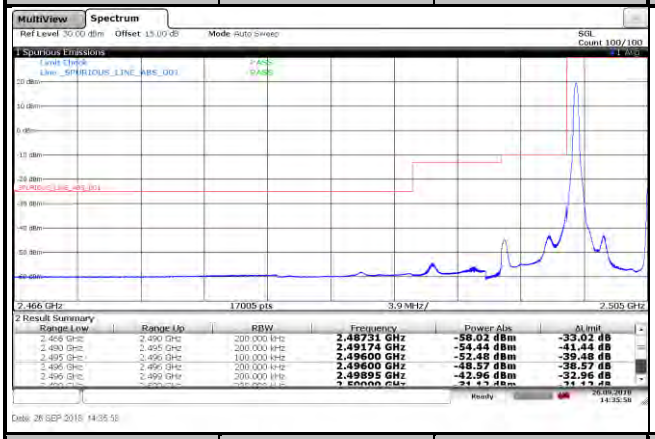
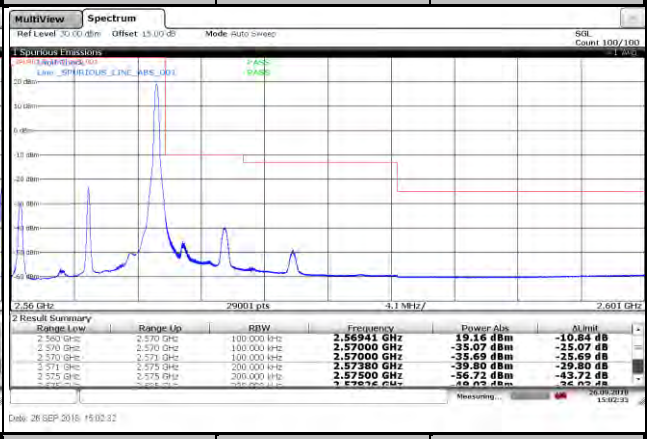
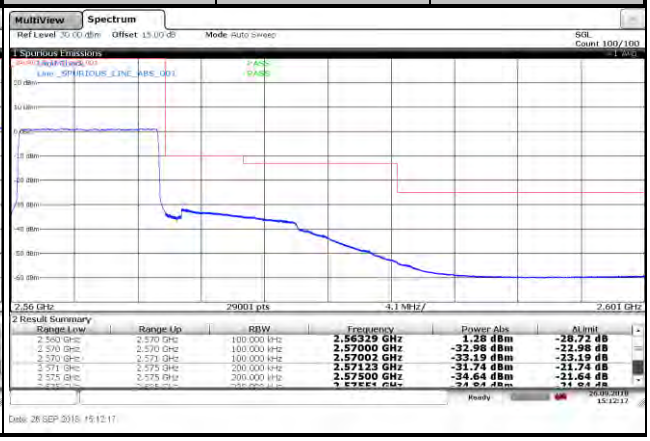


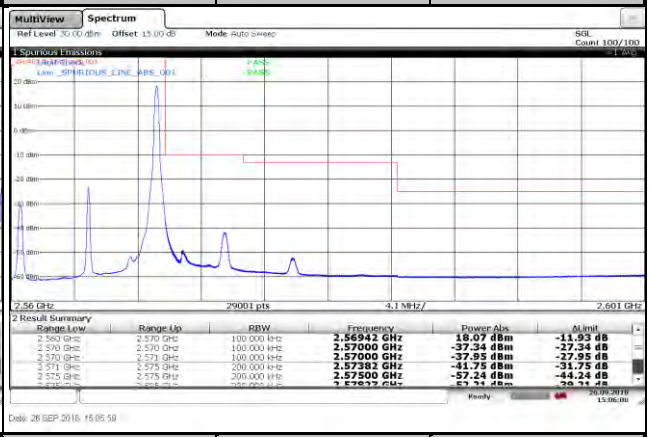
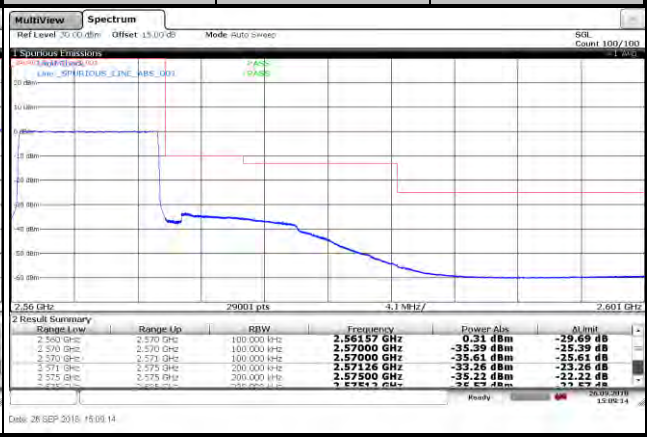
Channel	20775	25 RB	Channel	21425	25 RB

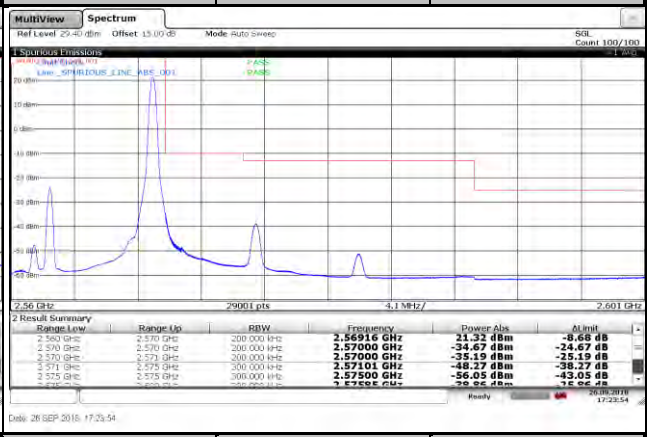
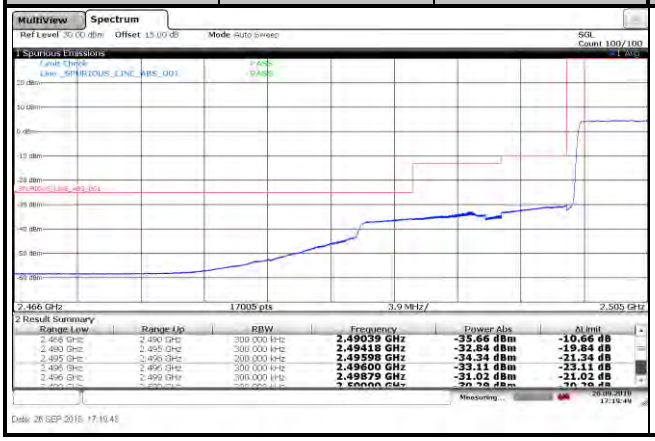
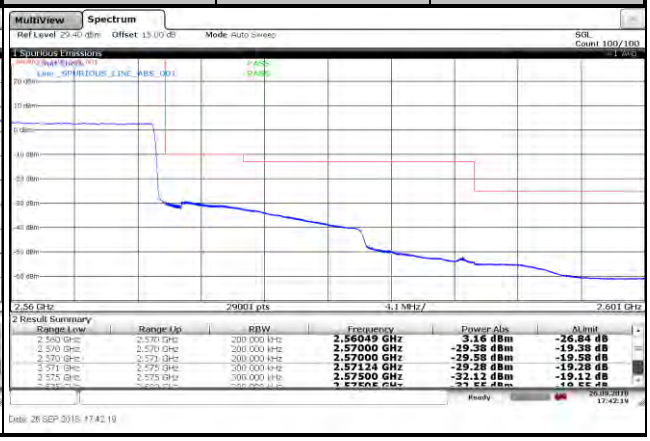


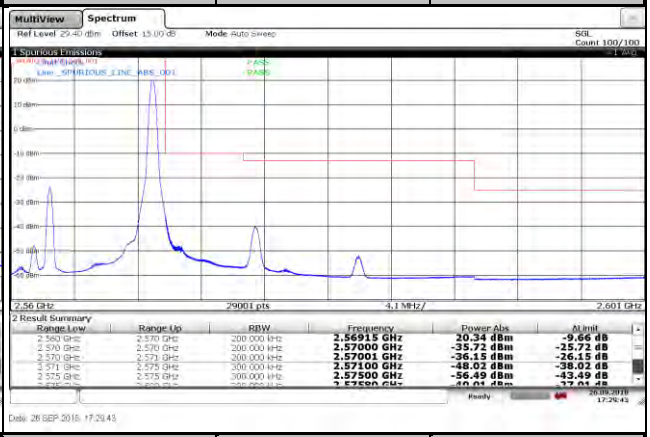


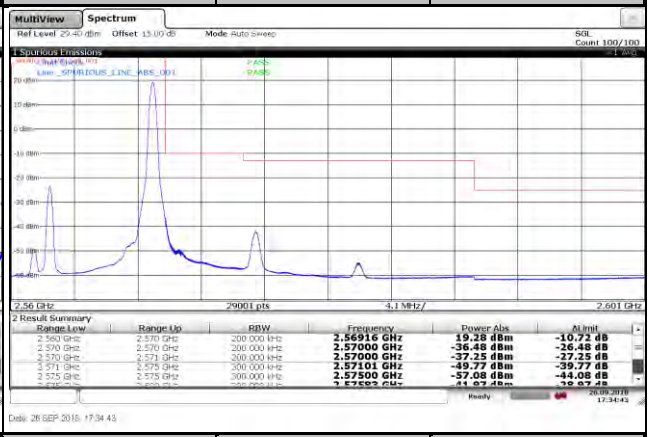
LTE Band 7					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20800	1 RB	Channel	21400	1 RB
					
Channel	20800	50 RB	Channel	21400	50 RB
					

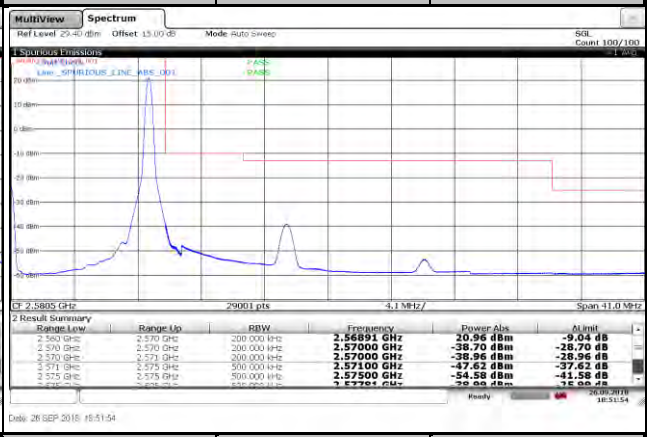
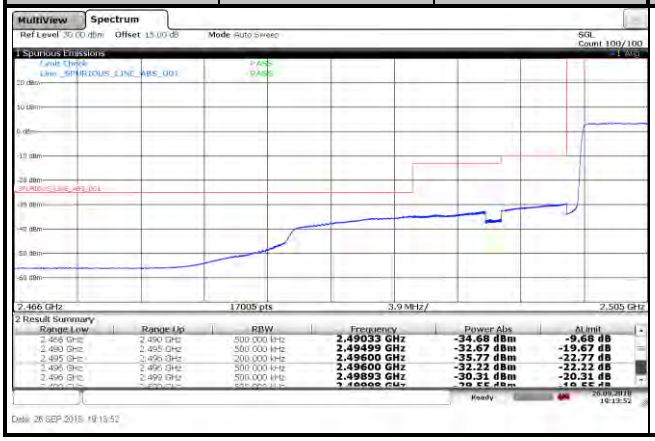
LTE Band 7					
Channel Bandwidth: 10 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20800	1 RB	Channel	21400	1 RB
					
Channel	20800	50 RB	Channel	21400	50 RB
					

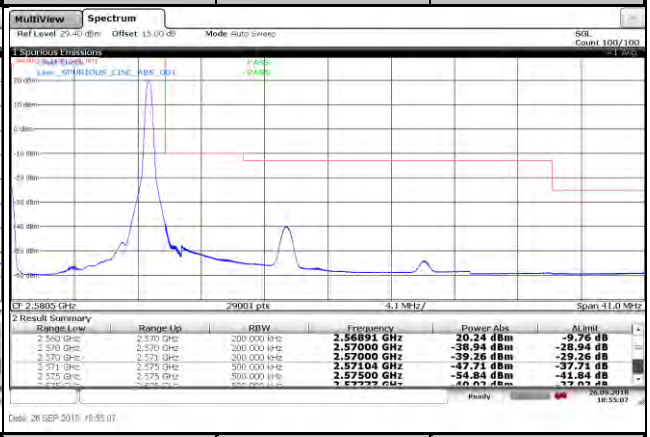
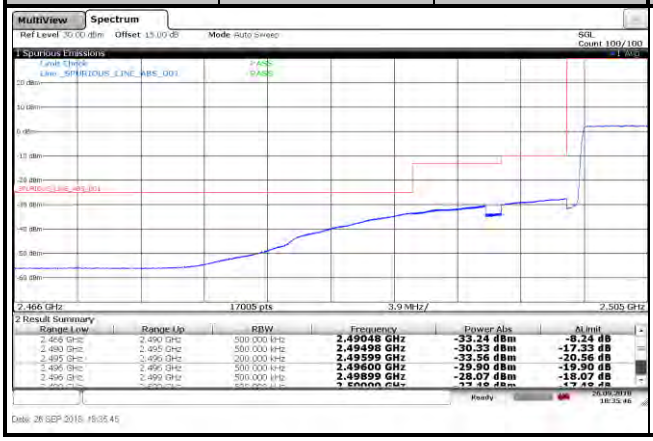
LTE Band 7					
Channel Bandwidth: 10 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	20800	1 RB	Channel	21400	1 RB
					
Channel	20800	50 RB	Channel	21400	50 RB
					

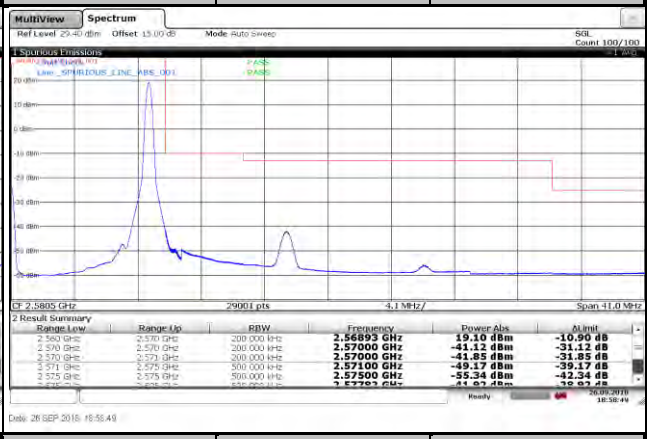
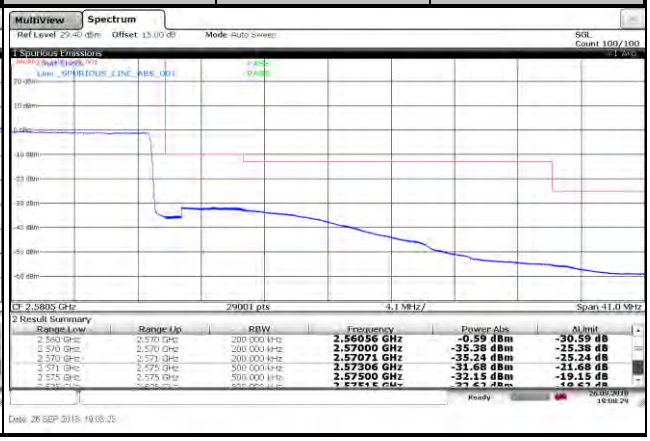
LTE Band 7					
Channel Bandwidth: 15 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20825	1 RB	Channel	21375	1 RB
					
Channel	20825	75 RB	Channel	21375	75 RB
					

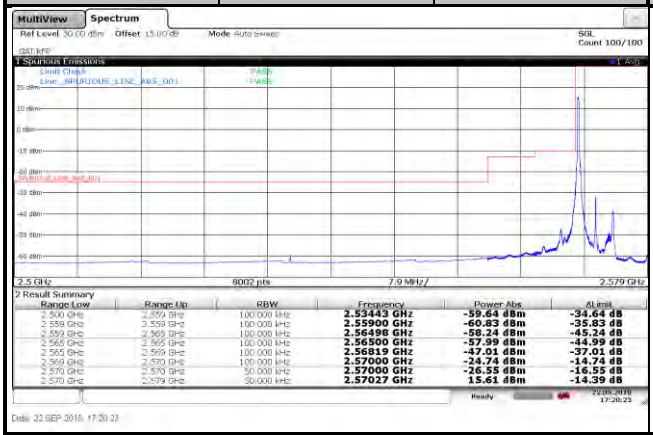
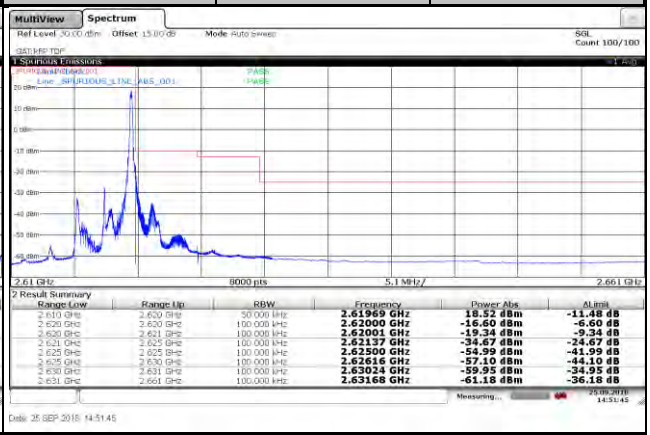
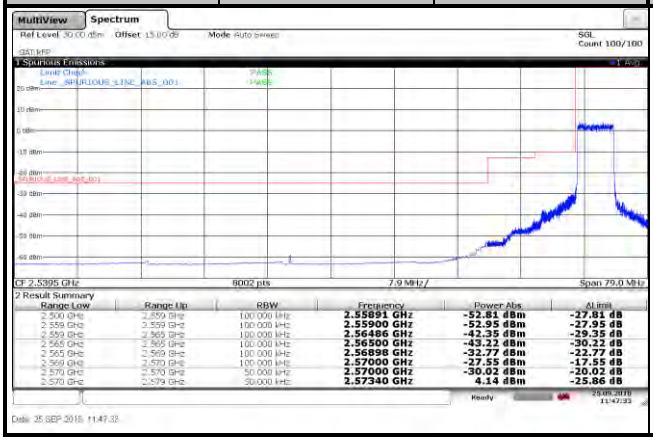
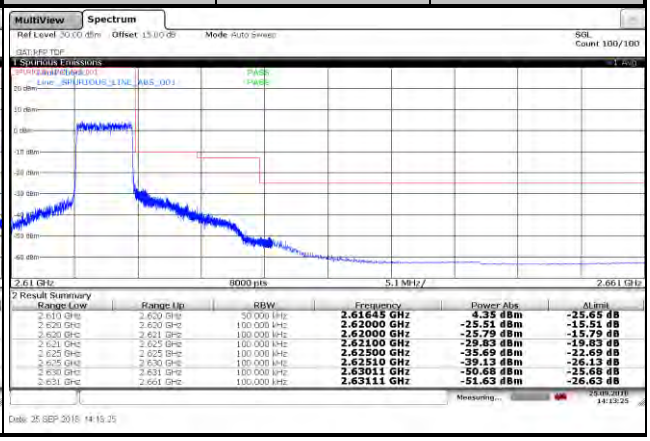
LTE Band 7					
Channel Bandwidth: 15 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20825	1 RB	Channel	21375	1 RB
					
Channel	20825	75 RB	Channel	21375	75 RB
					

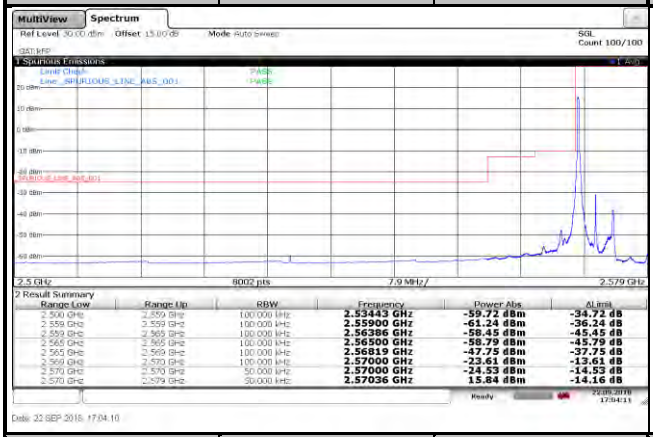
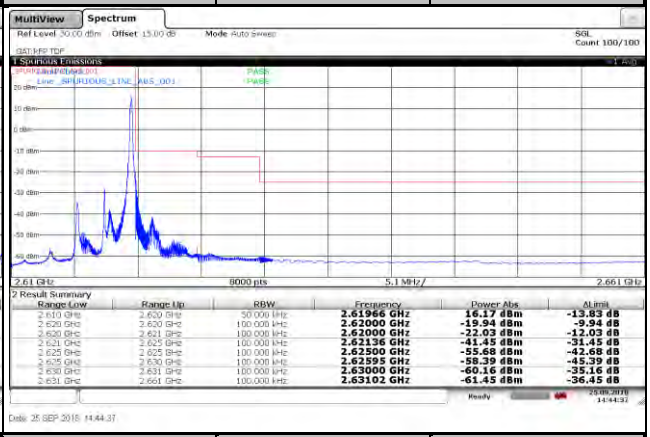
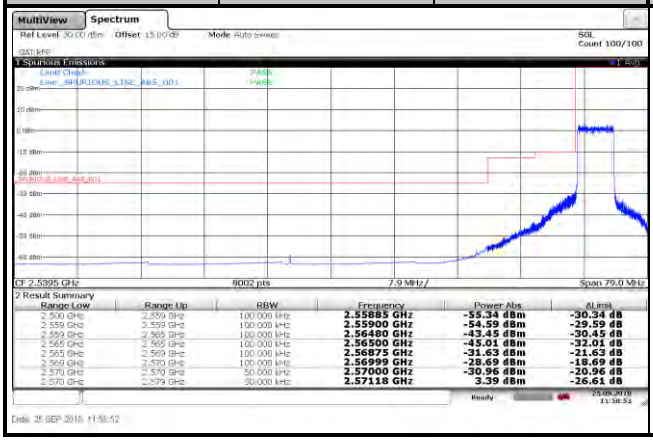
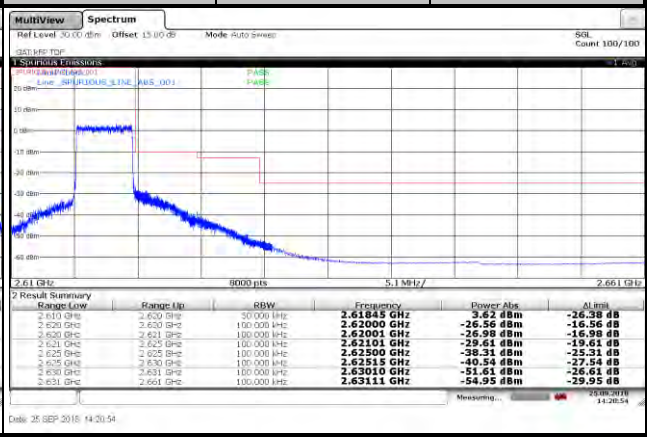
LTE Band 7					
Channel Bandwidth: 15 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	20825	1 RB	Channel	21375	1 RB
					
Channel	20825	75 RB	Channel	21375	75 RB
					

LTE Band 7					
Channel Bandwidth: 20 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20850	1 RB	Channel	21350	1 RB
					
Channel	20850	100 RB	Channel	21350	100 RB
					

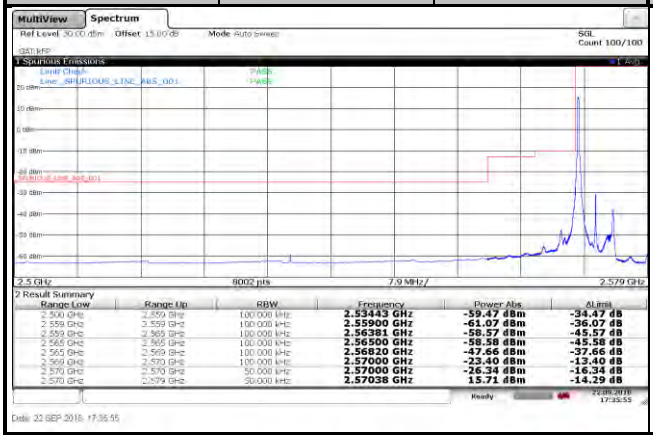
LTE Band 7					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20850	1 RB	Channel	21350	1 RB
					
Channel	20850	100 RB	Channel	21350	100 RB
					

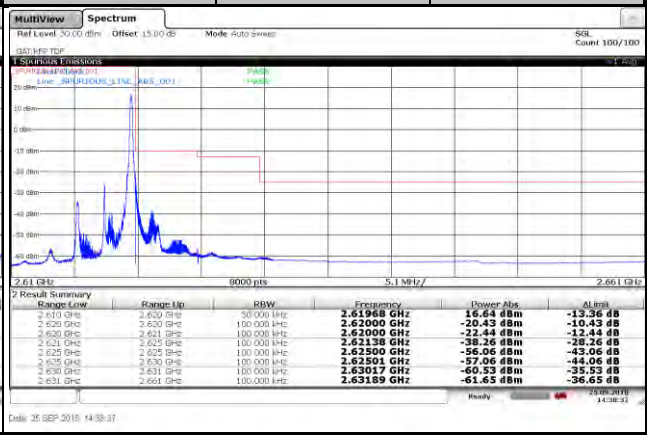
LTE Band 7					
Channel Bandwidth: 20 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	20850	1 RB	Channel	21350	1 RB
					
Channel	20850	100 RB	Channel	21350	100 RB
					

LTE Band 38					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37775	1 RB	Channel	38225	1 RB
					
Channel	37775	25 RB	Channel	38225	25 RB
					

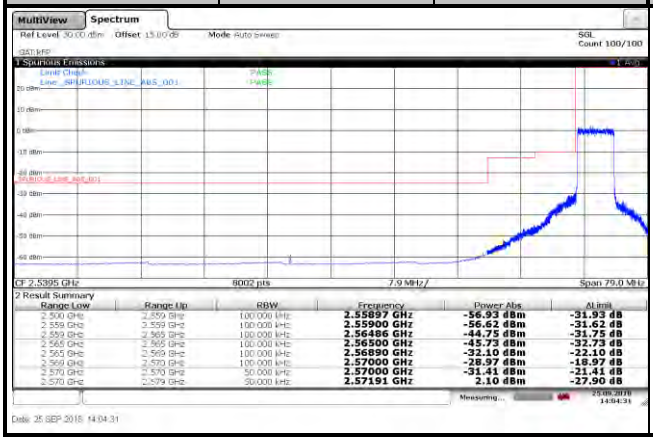
LTE Band 38					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37775	1 RB	Channel	38225	1 RB
					
Channel	37775	25 RB	Channel	38225	25 RB
					

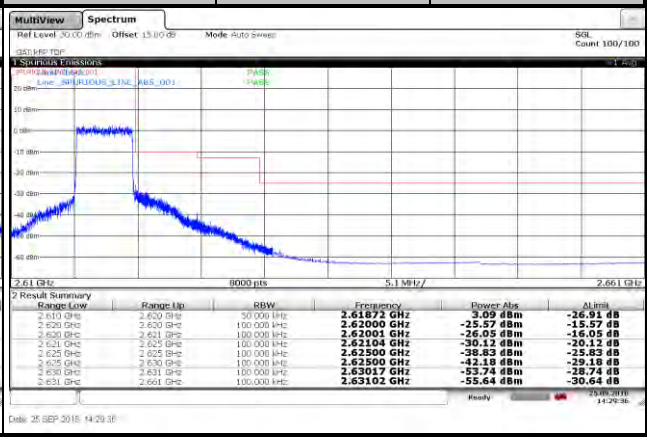
LTE Band 38					
Channel Bandwidth: 5 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	37775	1 RB	Channel	38225	1 RB

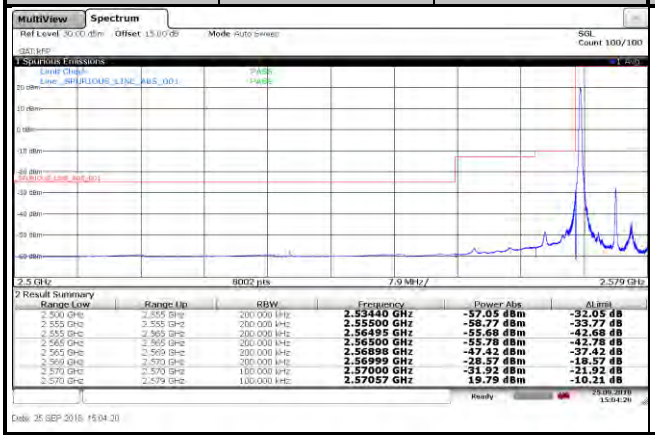
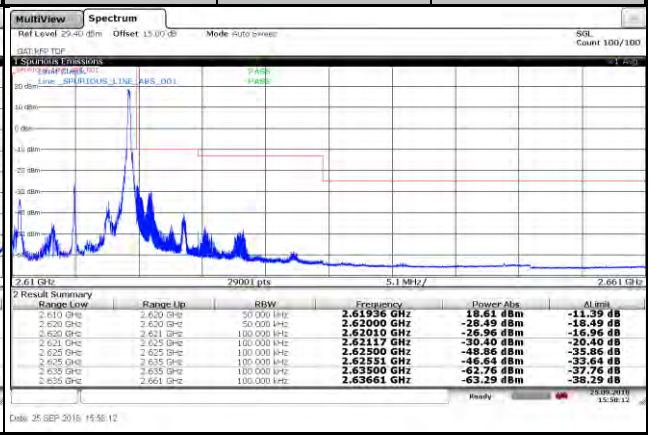
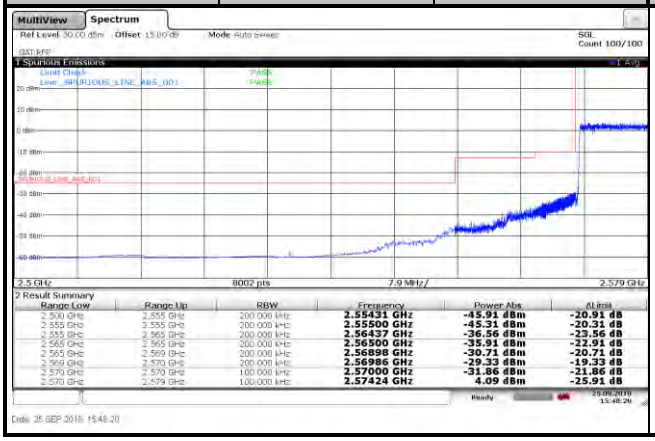
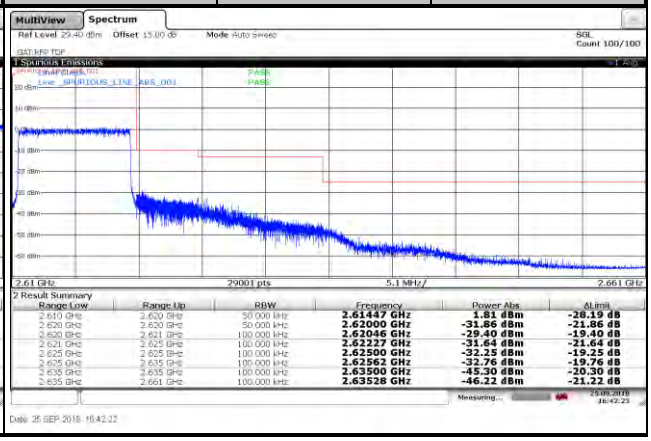


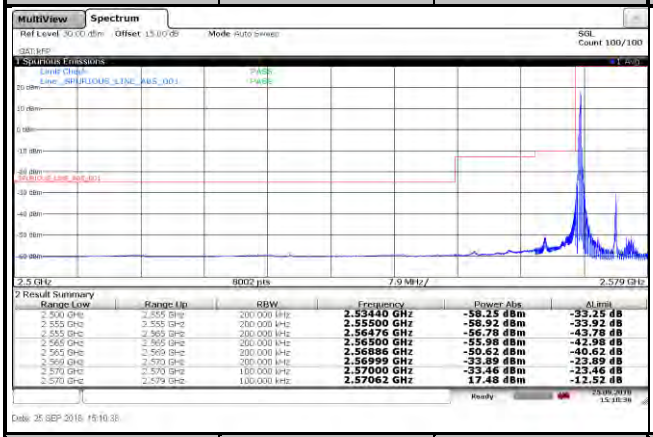
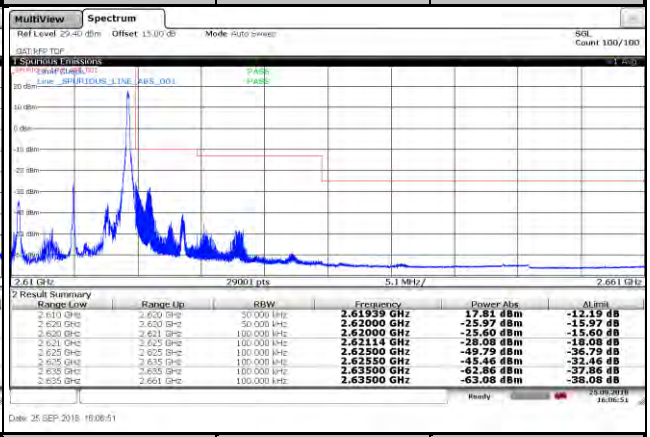
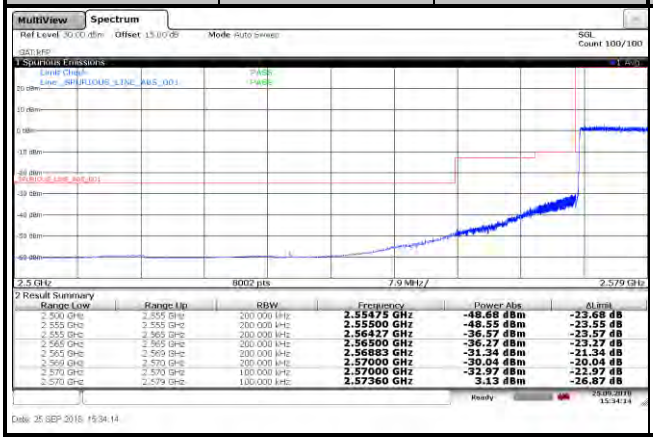
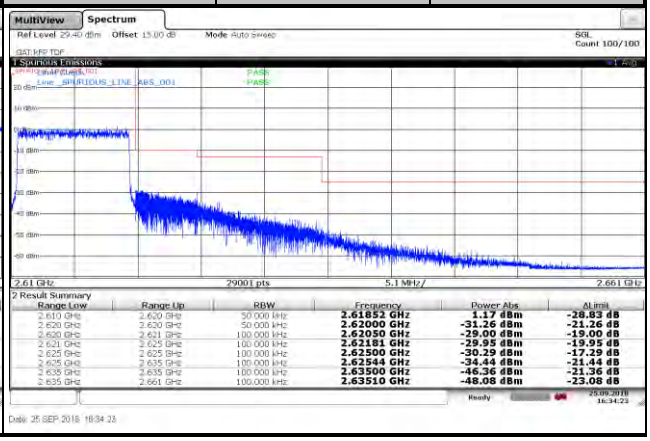


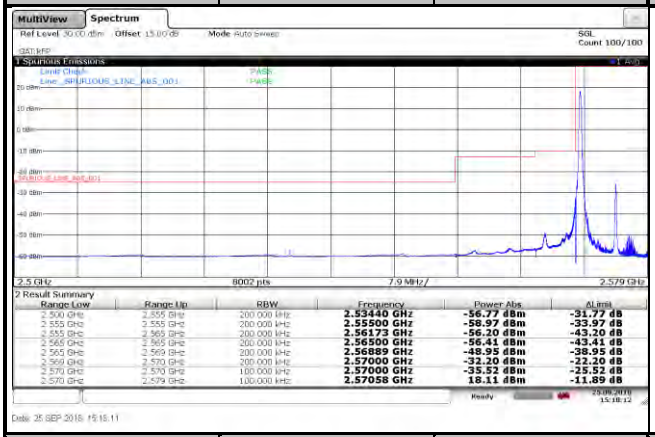
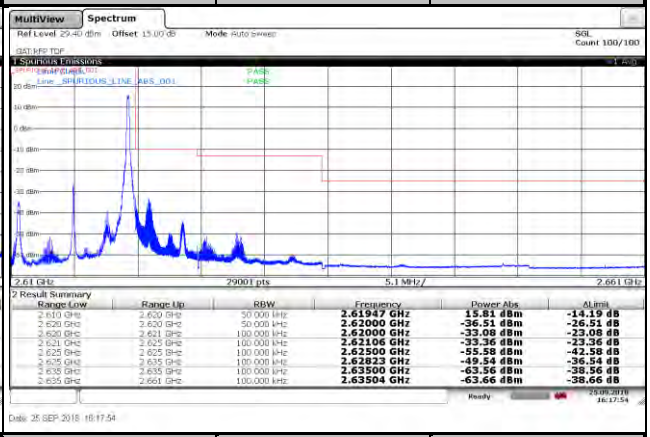
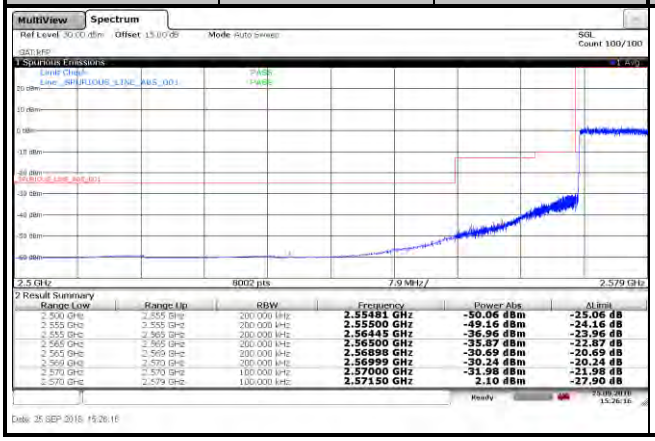
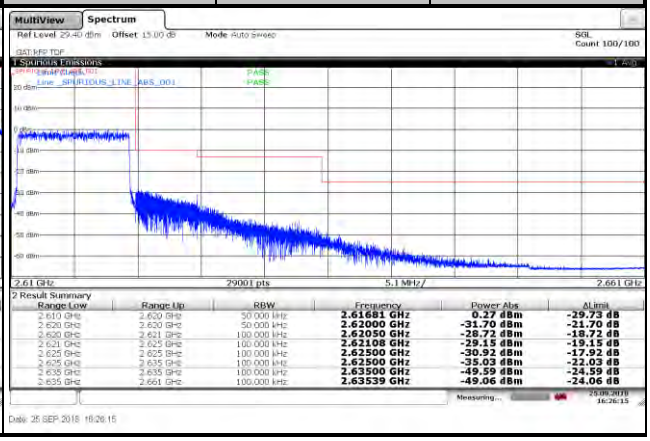
Channel	37775	25 RB	Channel	38225	25 RB

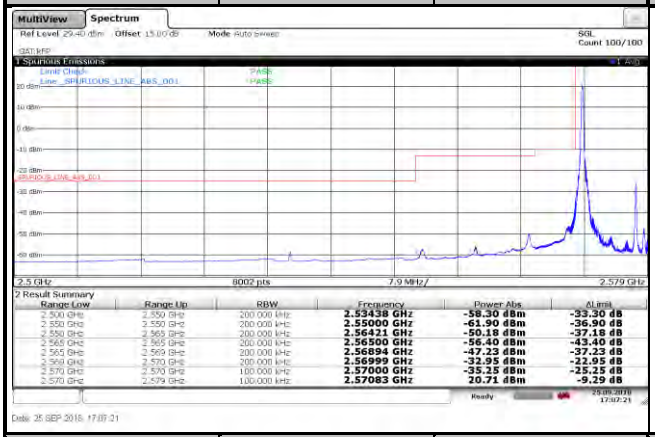
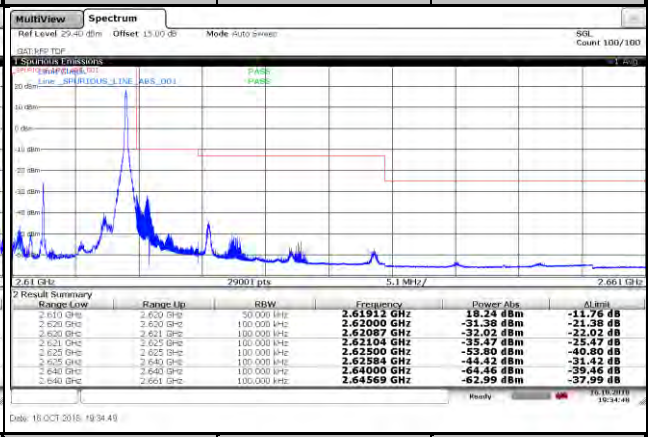
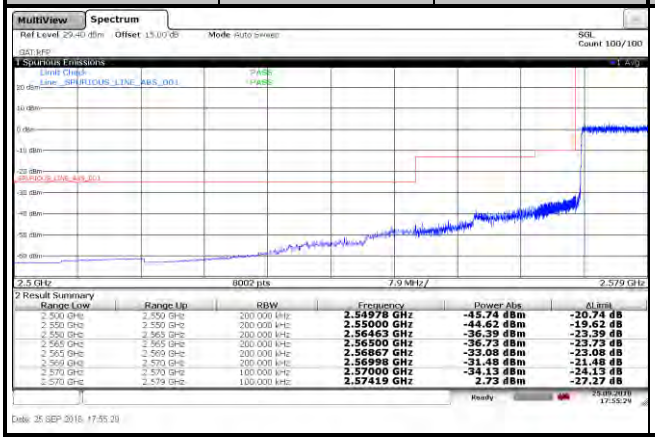
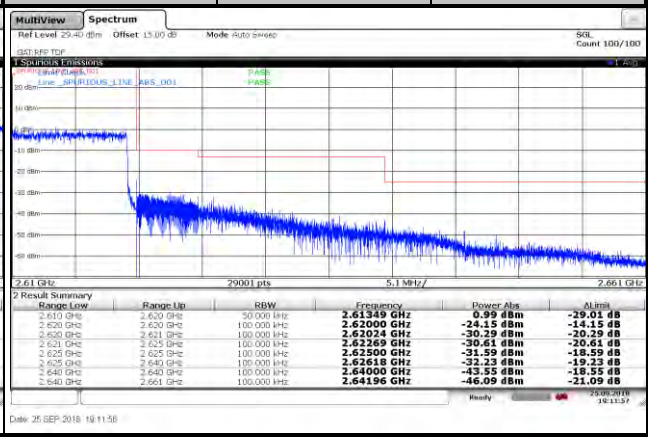


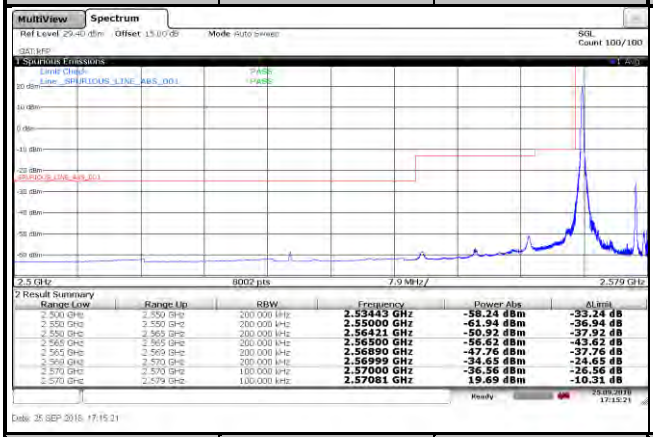
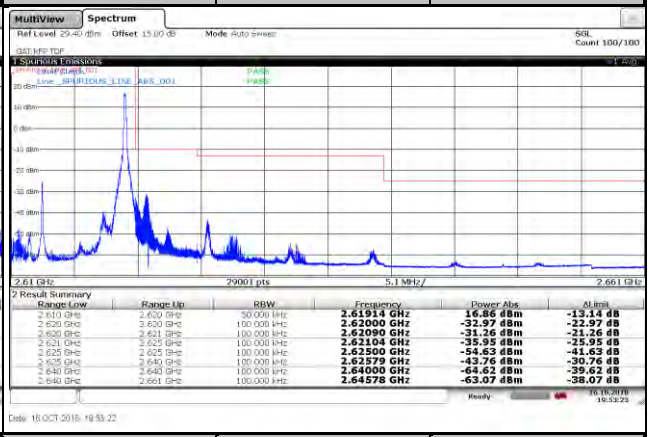
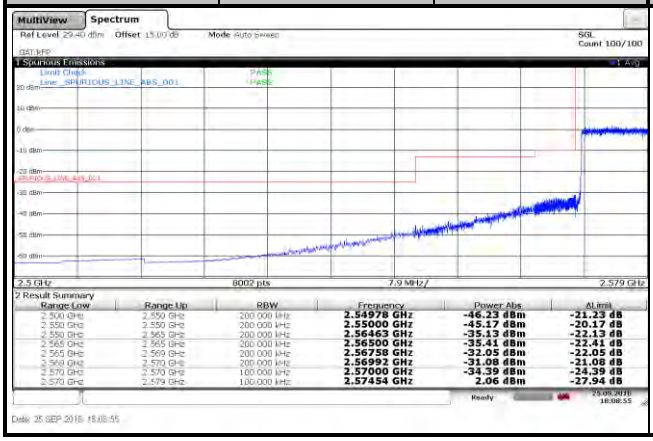
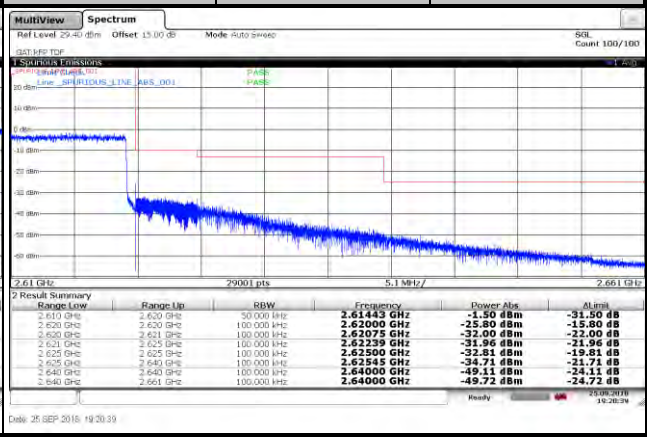


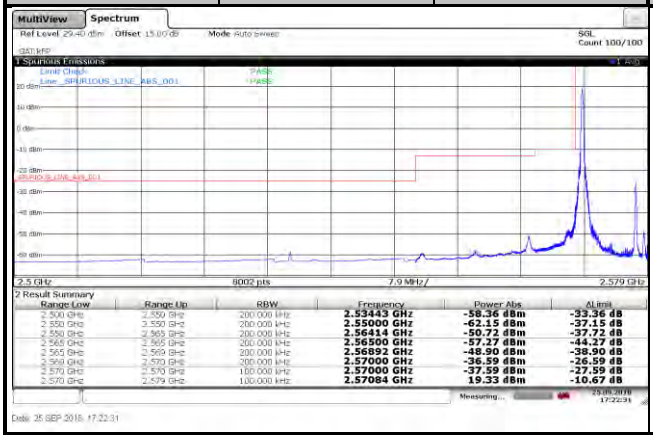
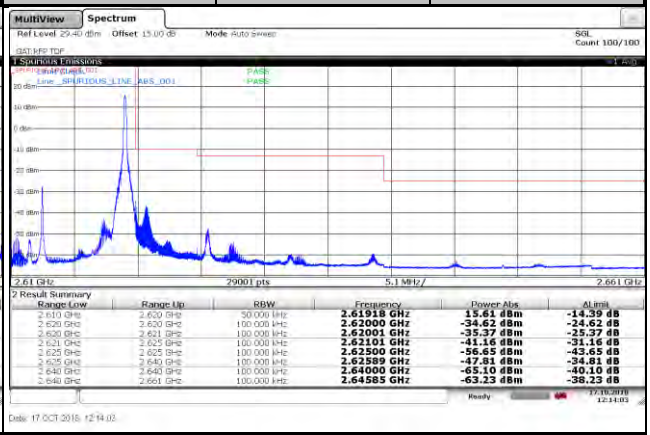
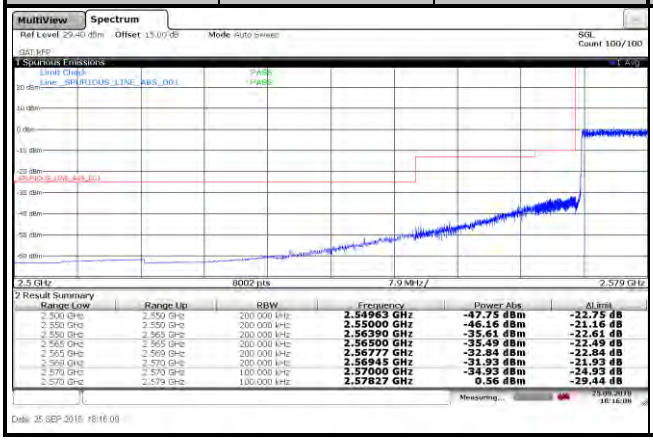
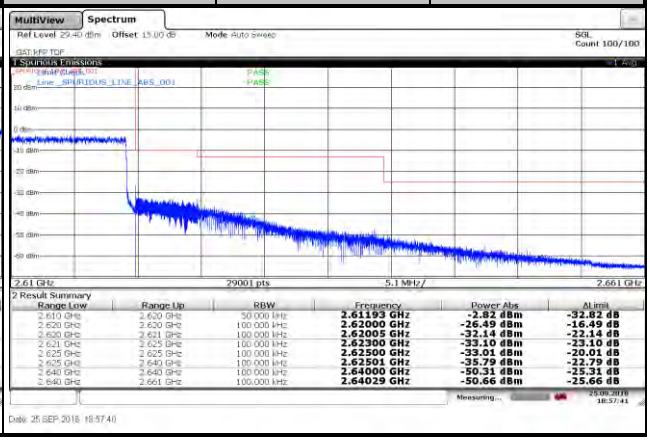
LTE Band 38					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37800	1 RB	Channel	38200	1 RB
					
Channel	37800	50 RB	Channel	38200	50 RB
					

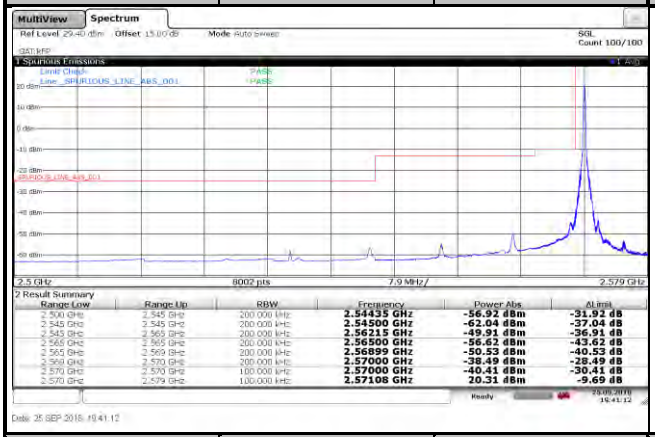
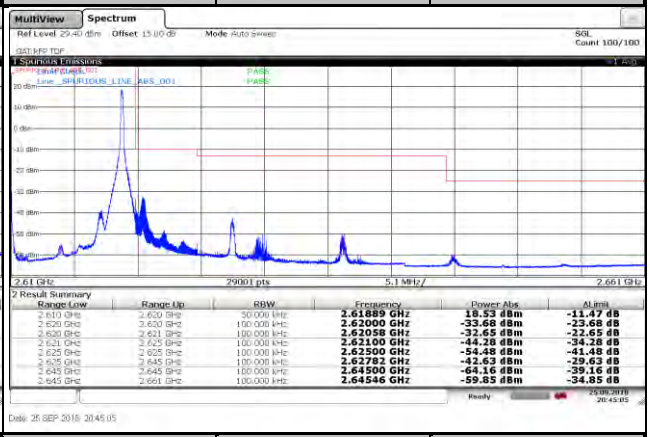
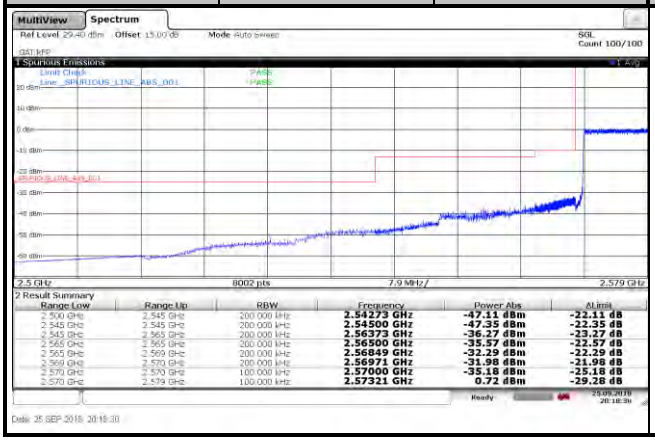
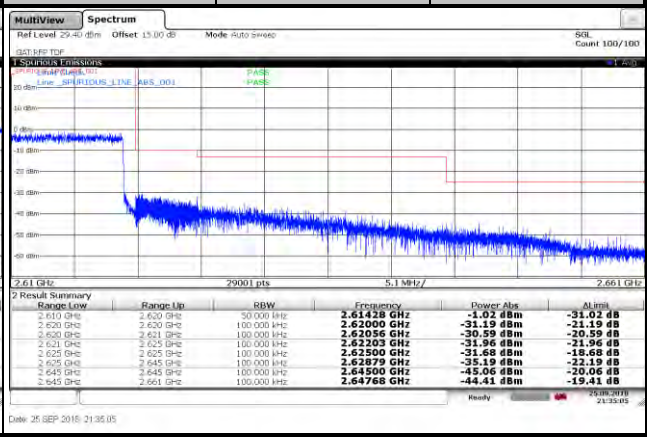
LTE Band 38					
Channel Bandwidth: 10 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37800	1 RB	Channel	38200	1 RB
					
Channel	37800	50 RB	Channel	38200	50 RB
					

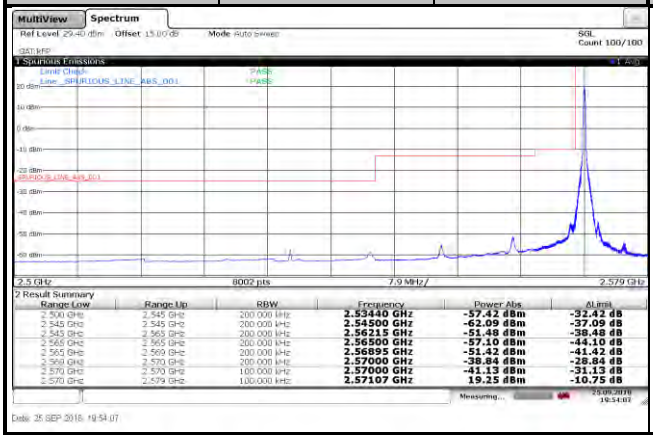
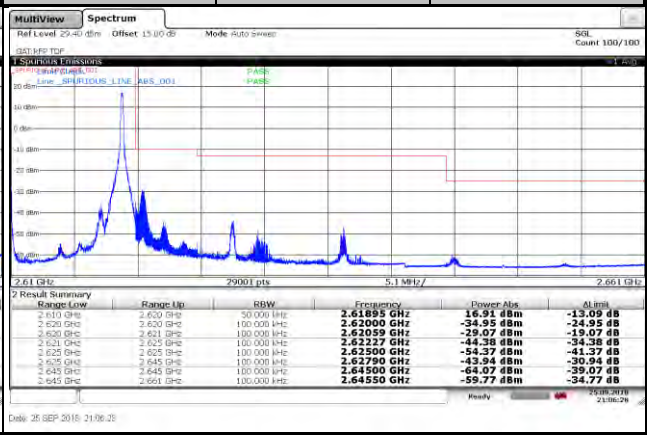
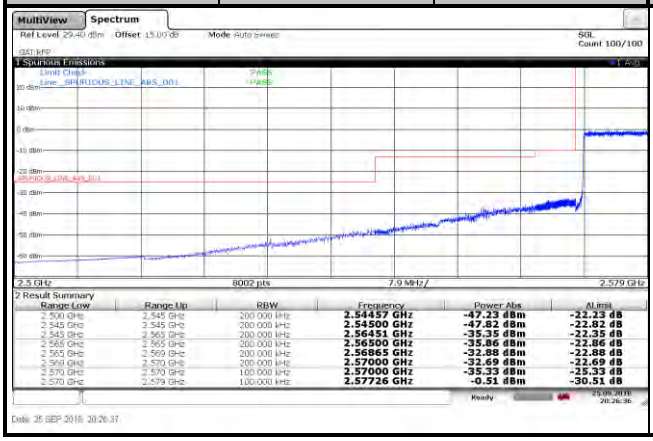
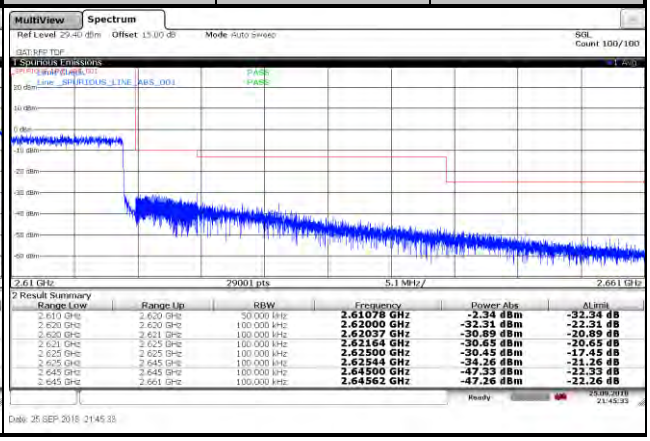
LTE Band 38					
Channel Bandwidth: 10 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	37800	1 RB	Channel	38200	1 RB
					
Channel	37800	50 RB	Channel	38200	50 RB
					

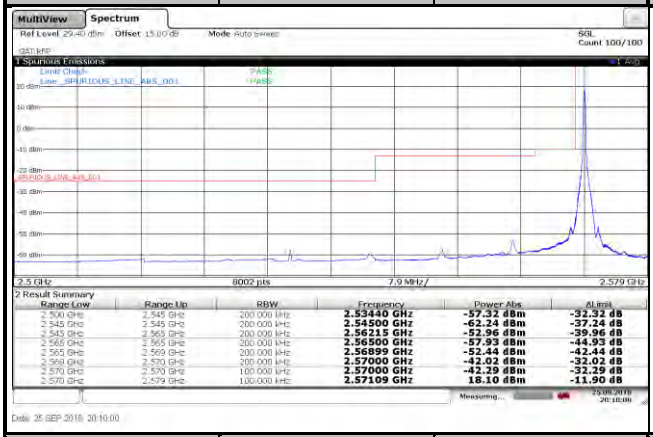
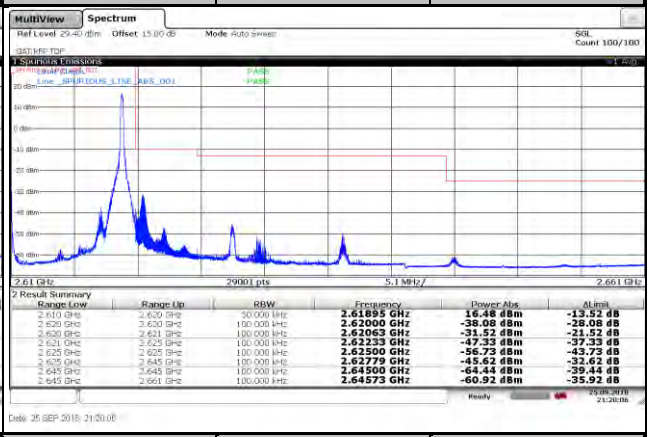
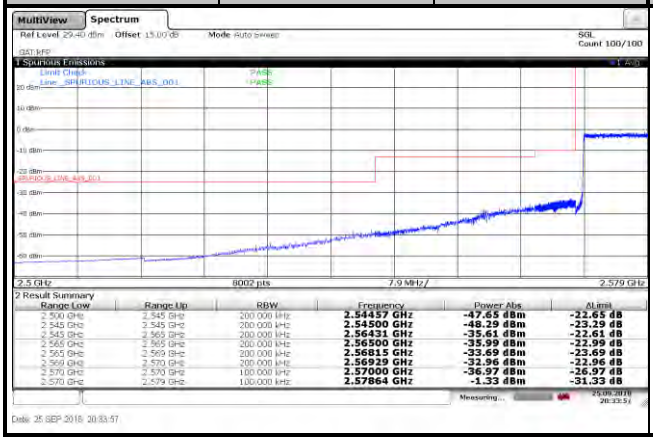
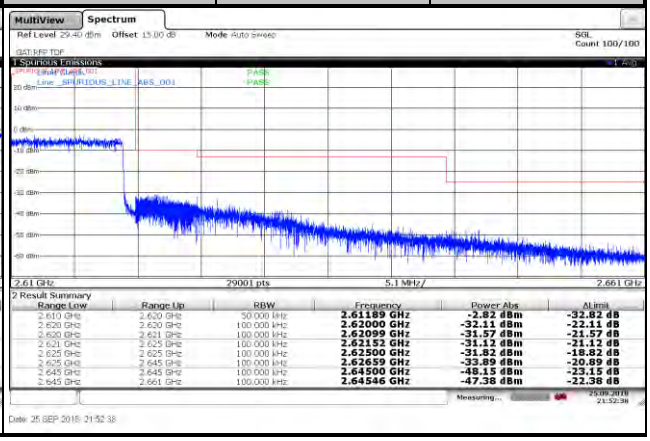
LTE Band 38					
Channel Bandwidth: 15 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37825	1 RB	Channel	38175	1 RB
					
Channel	37825	75 RB	Channel	38175	75 RB
					

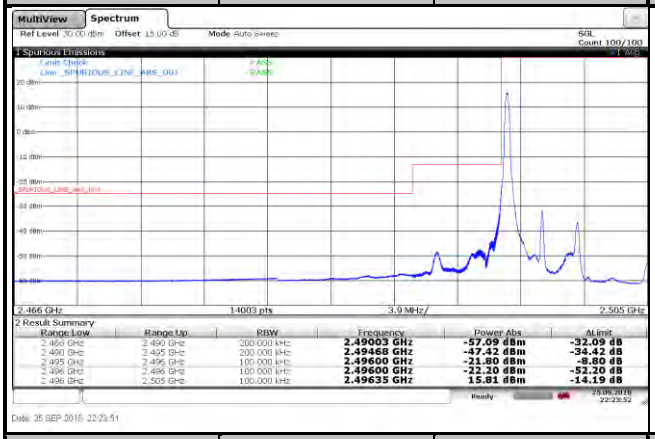
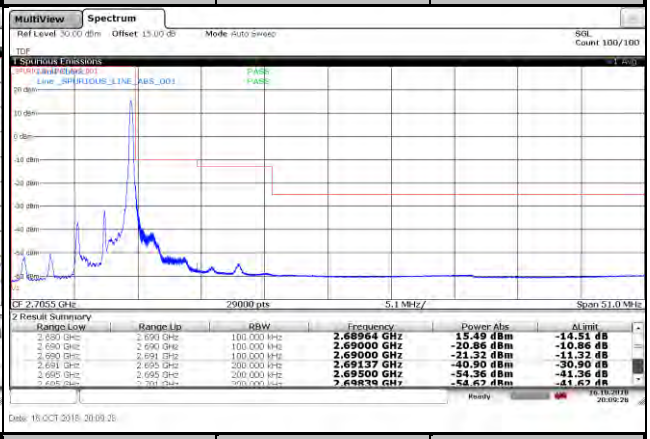
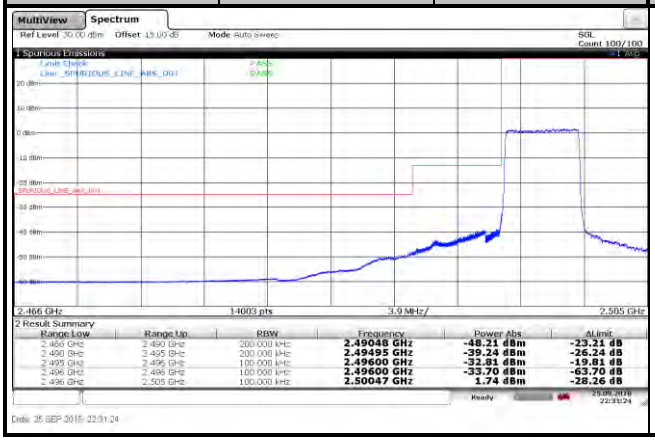
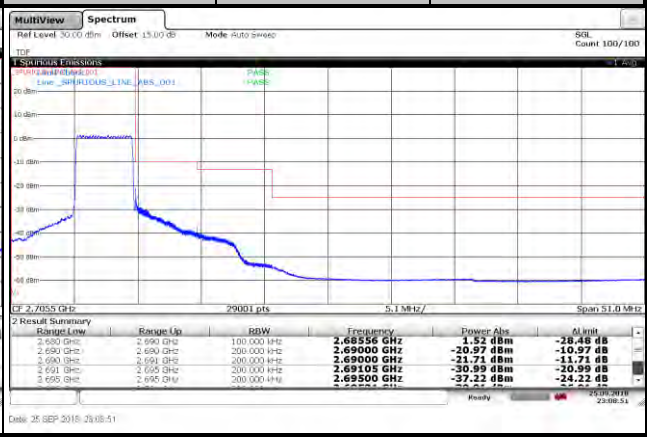
LTE Band 38					
Channel Bandwidth: 15 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37825	1 RB	Channel	38175	1 RB
					
Channel	37825	75 RB	Channel	38175	75 RB
					

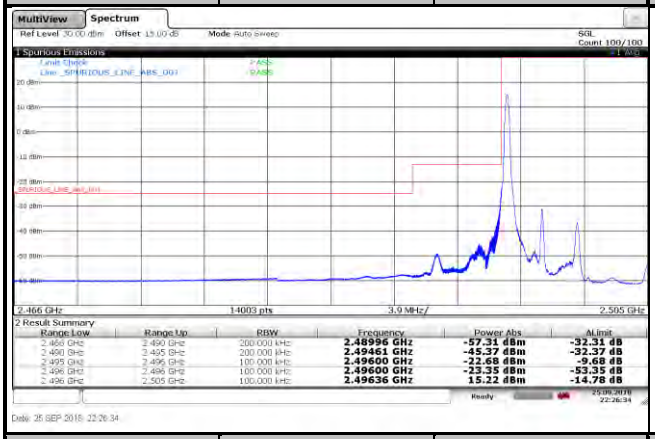
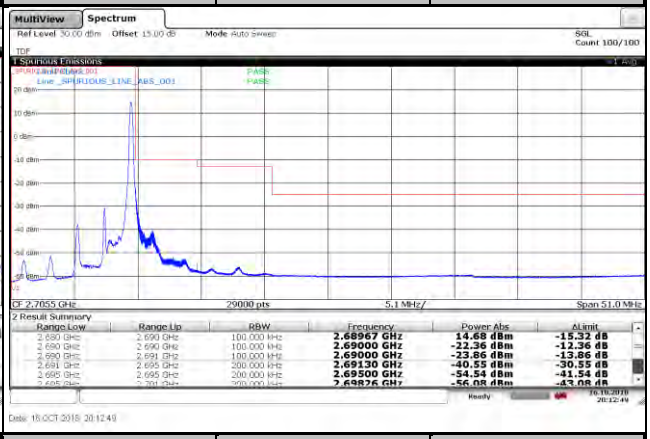
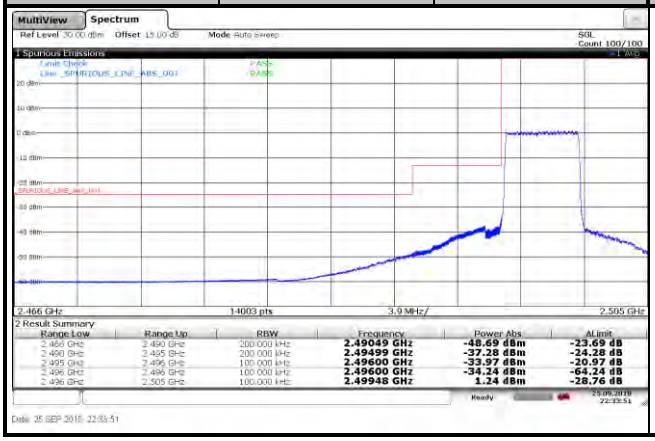
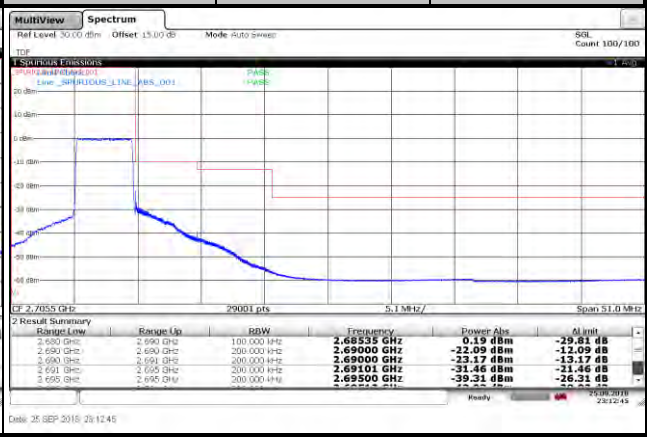
LTE Band 38					
Channel Bandwidth: 15 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	37825	1 RB	Channel	38175	1 RB
					
Channel	37825	75 RB	Channel	38175	75 RB
					

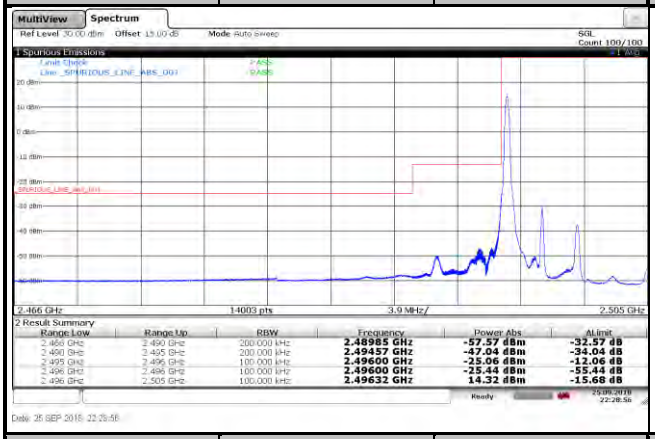
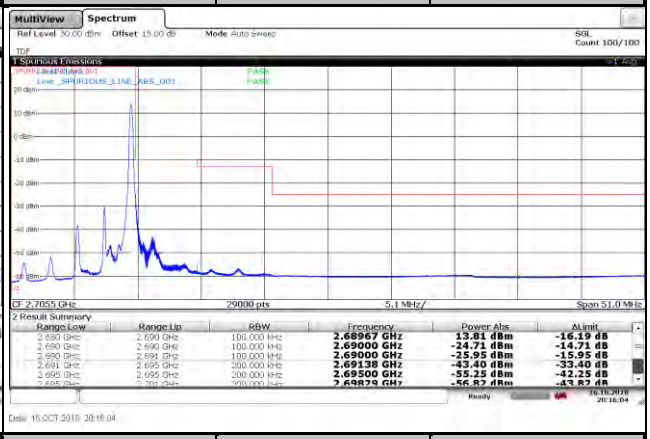
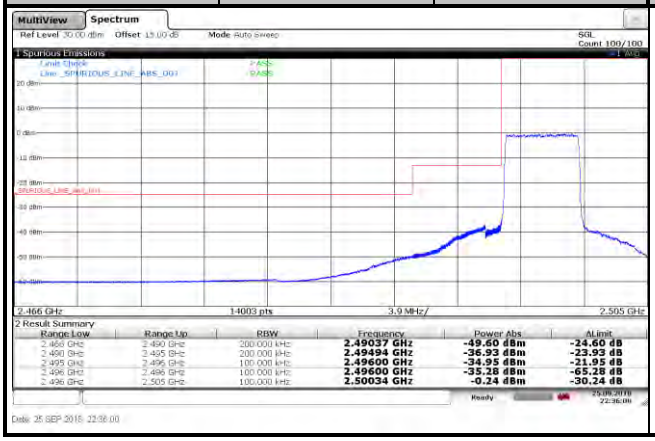
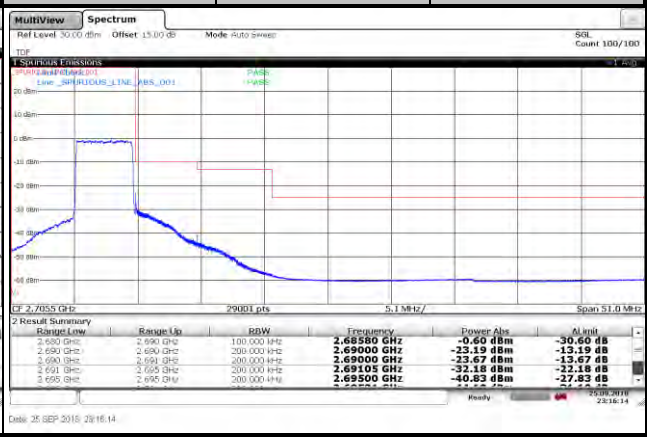
LTE Band 38					
Channel Bandwidth: 20 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37850	1 RB	Channel	38150	1 RB
					
Channel	37850	100 RB	Channel	38150	100 RB
					

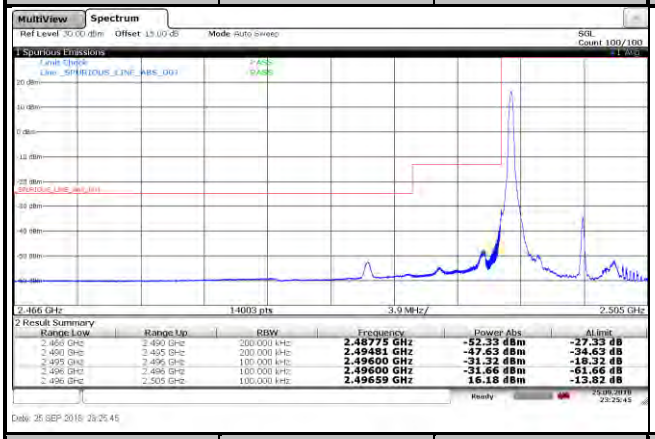
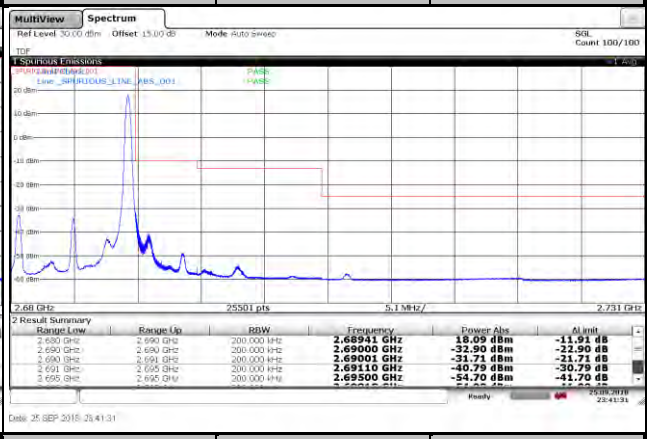
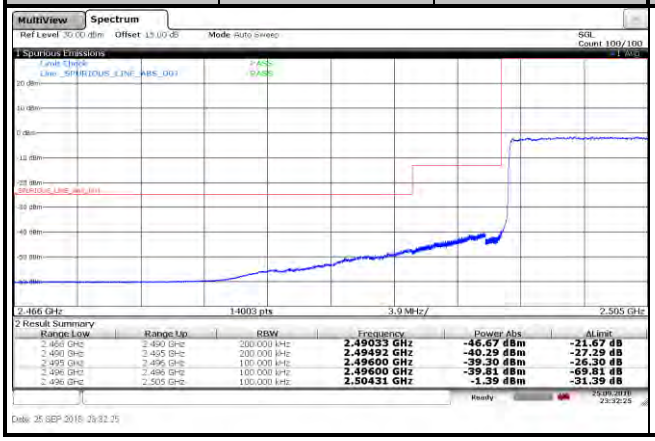
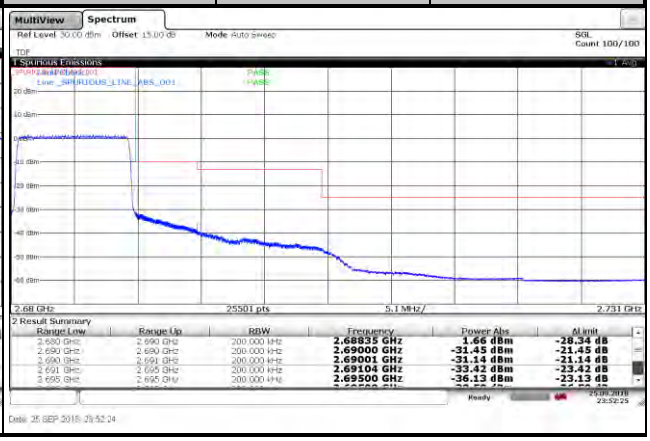
LTE Band 38					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37850	1 RB	Channel	38150	1 RB
					
Channel	37850	100 RB	Channel	38150	100 RB
					

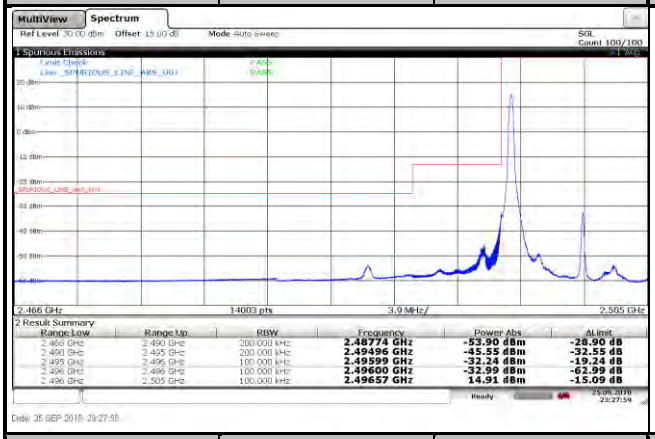
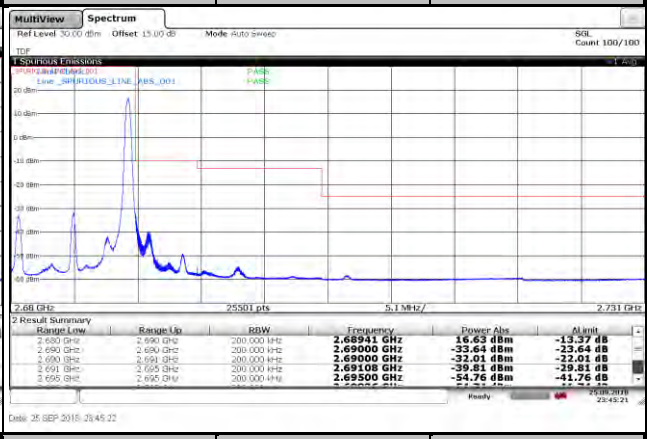
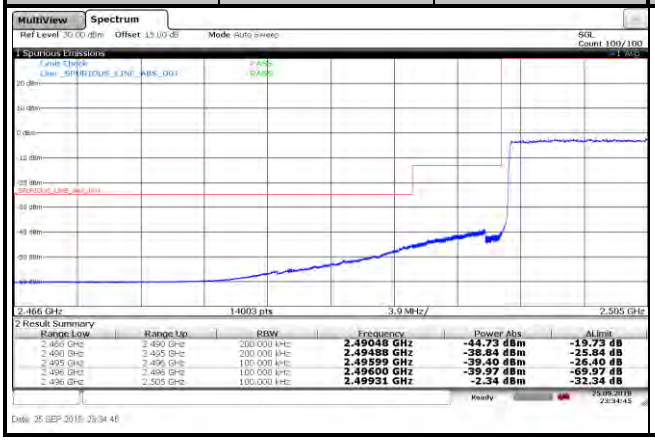
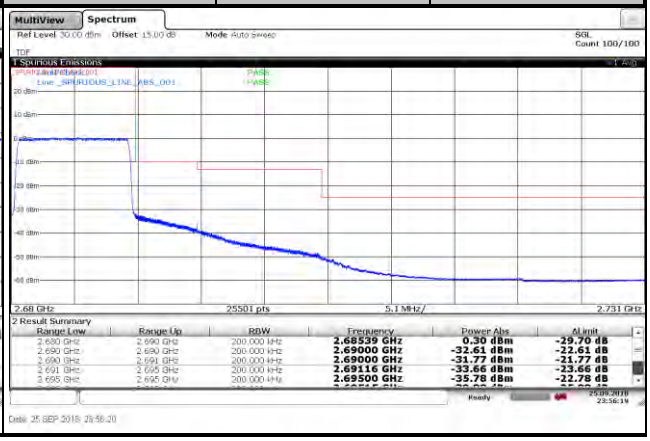
LTE Band 38					
Channel Bandwidth: 20 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	37850	1 RB	Channel	38150	1 RB
					
Channel	37850	100 RB	Channel	38150	100 RB
					

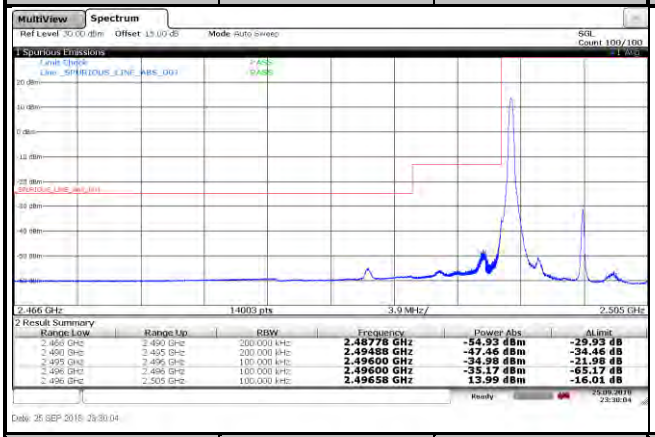
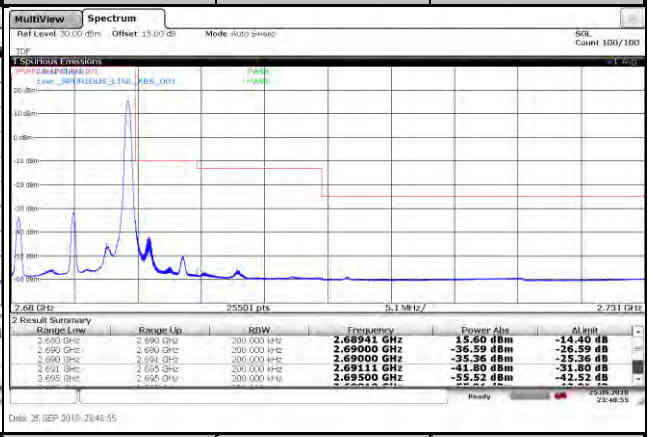
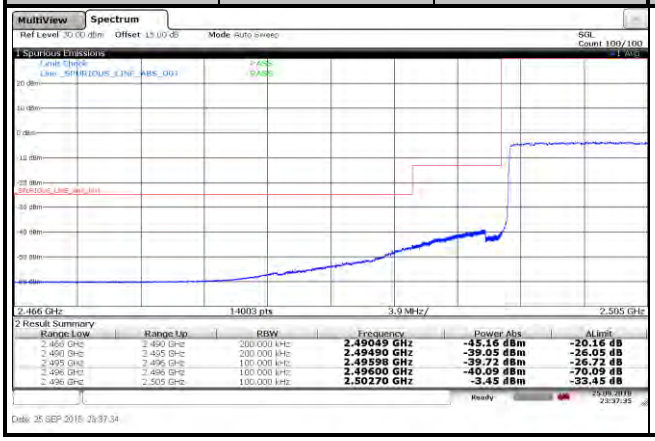
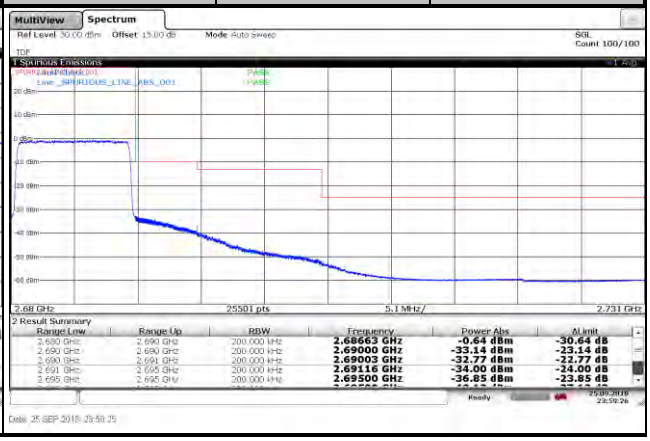
LTE Band 41					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39675	1 RB	Channel	41565	1 RB
					
Channel	39675	25 RB	Channel	41565	25 RB
					

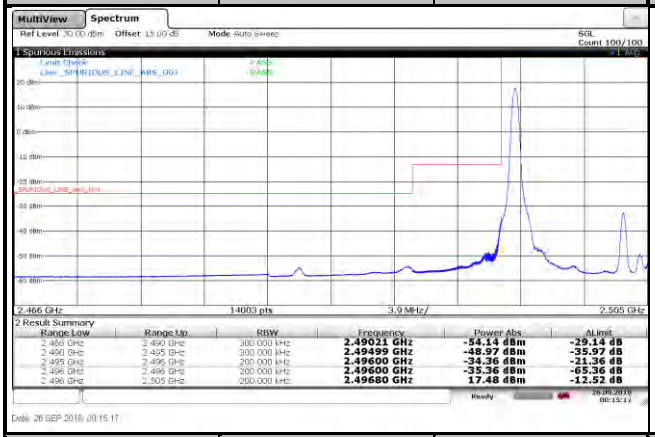
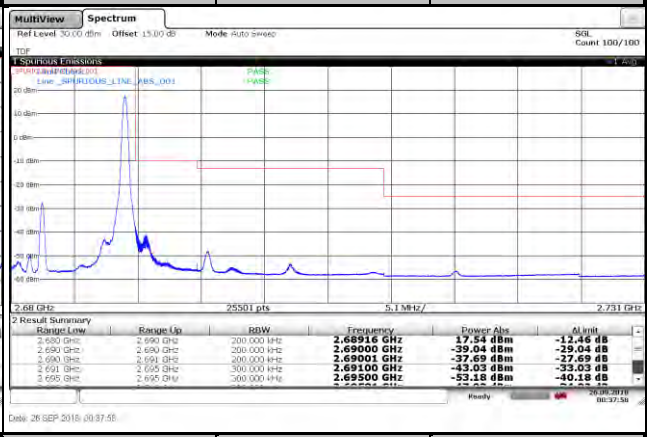
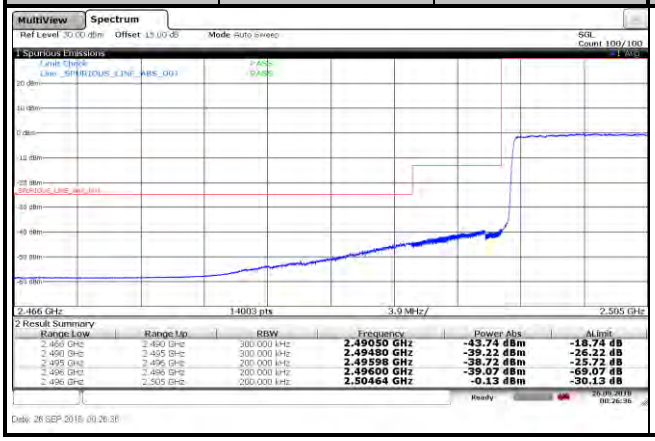
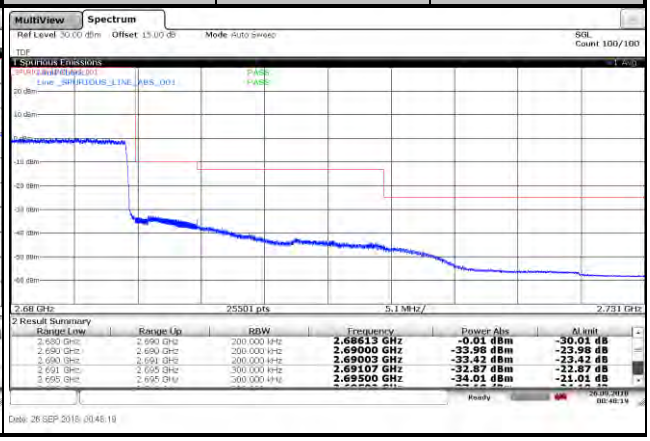
LTE Band 41					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39675	1 RB	Channel	41565	1 RB
					
Channel	39675	25 RB	Channel	41565	25 RB
					

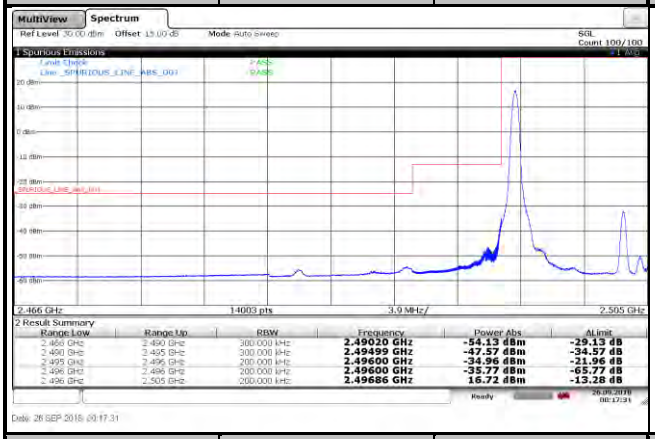
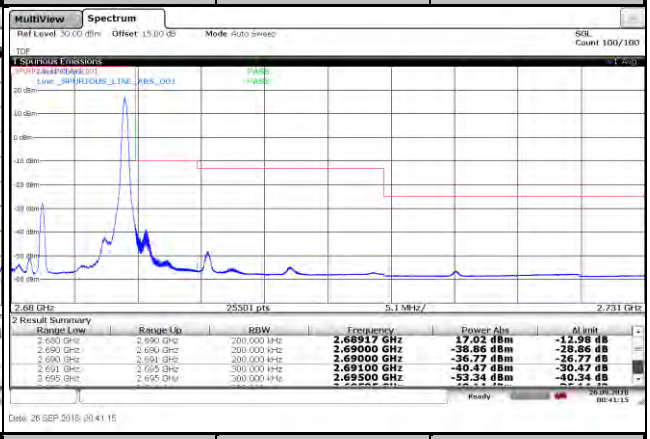
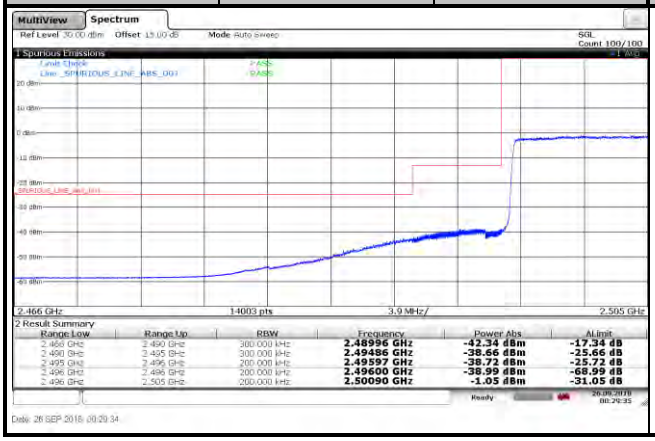
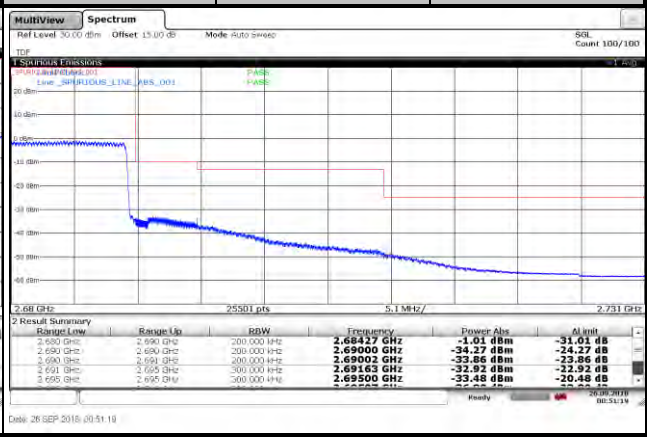
LTE Band 41					
Channel Bandwidth: 5 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	39675	1 RB	Channel	41565	1 RB
					
Channel	39675	25 RB	Channel	41565	25 RB
					

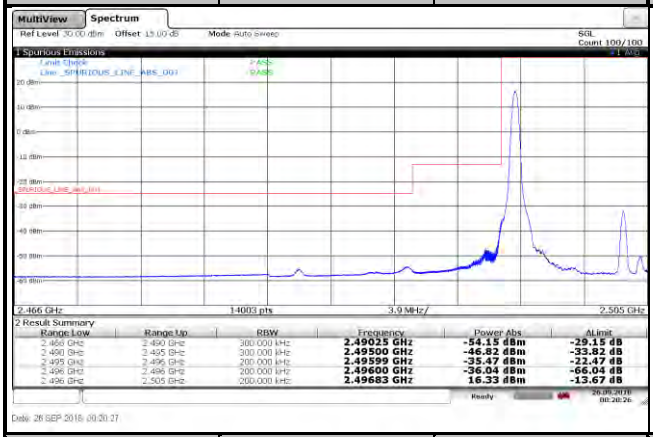
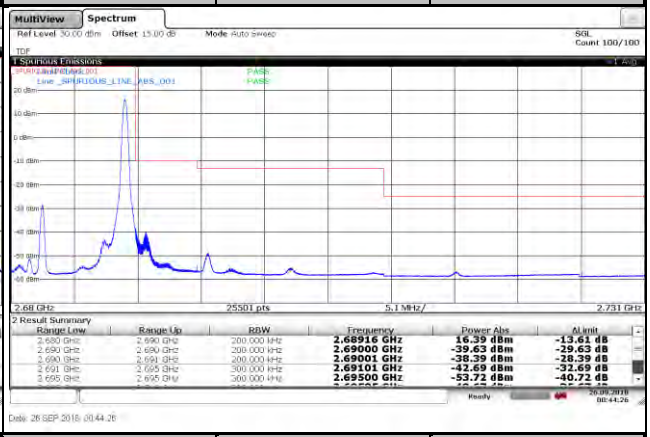
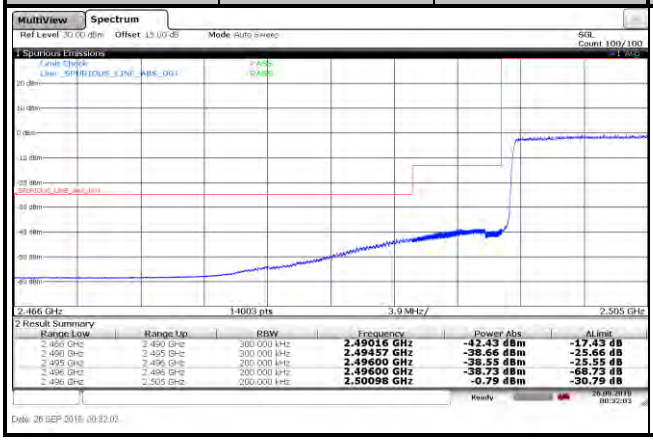
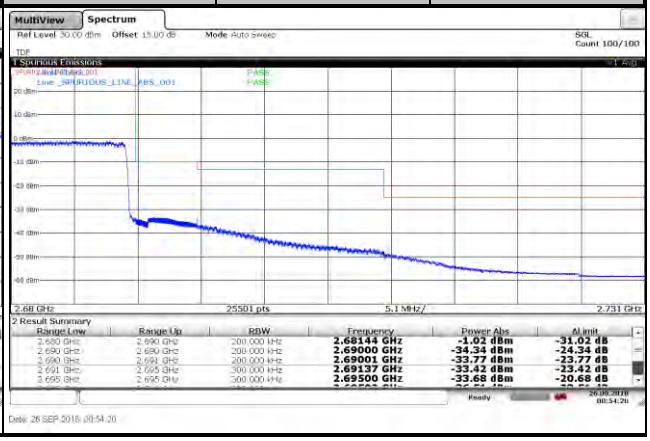
LTE Band 41					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39700	1 RB	Channel	41540	1 RB
					
Channel	39700	50 RB	Channel	41540	50 RB
					

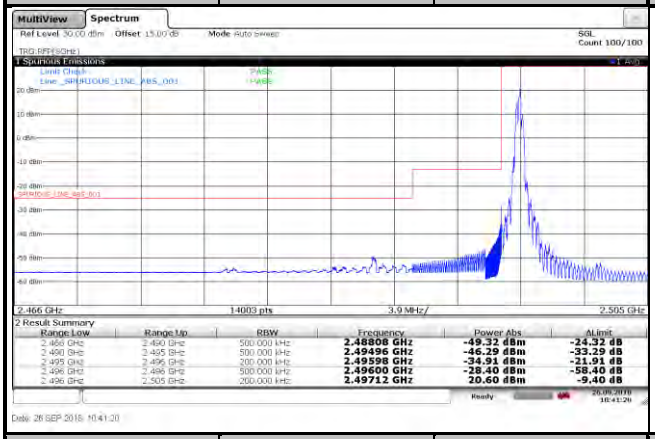
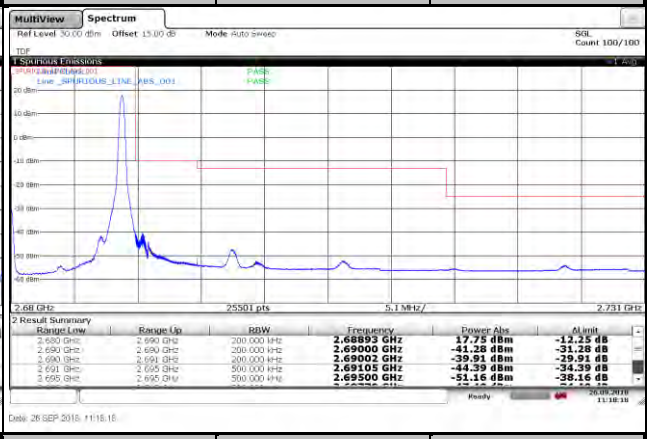
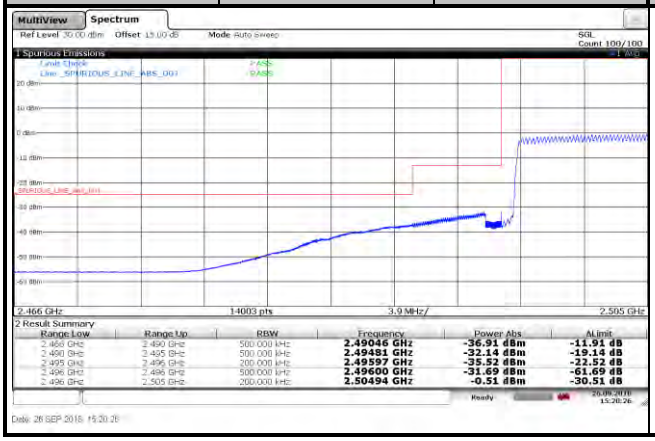
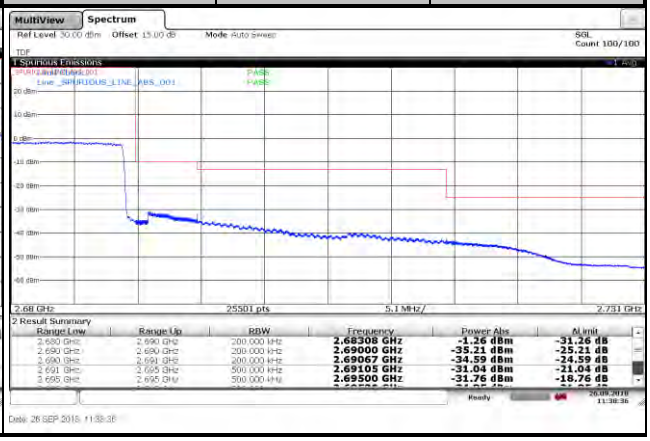
LTE Band 41					
Channel Bandwidth: 10 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39700	1 RB	Channel	41540	1 RB
					
Channel	39700	50 RB	Channel	41540	50 RB
					

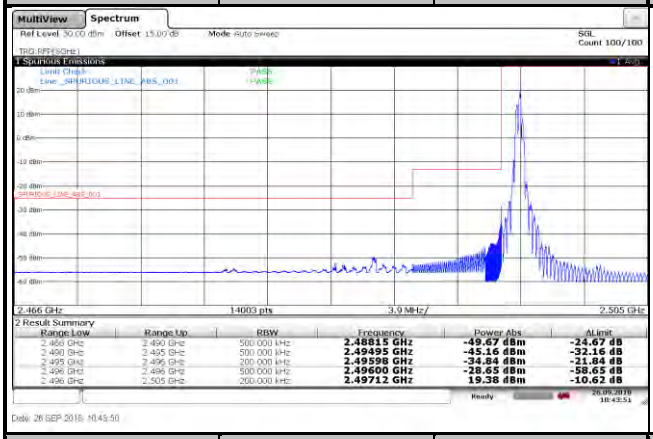
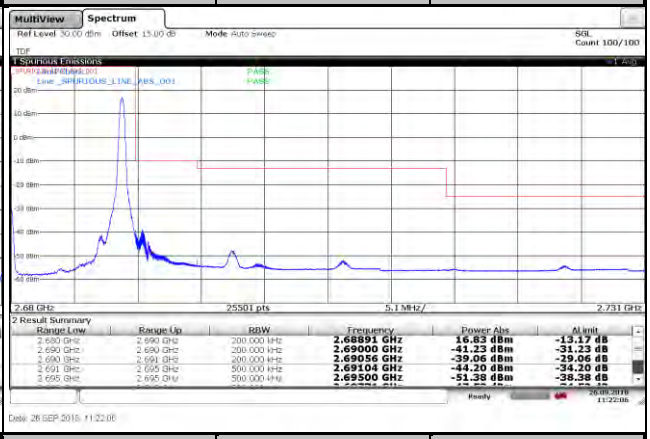
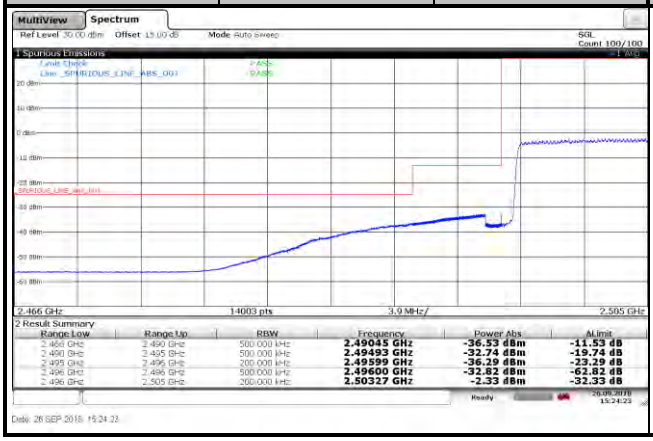
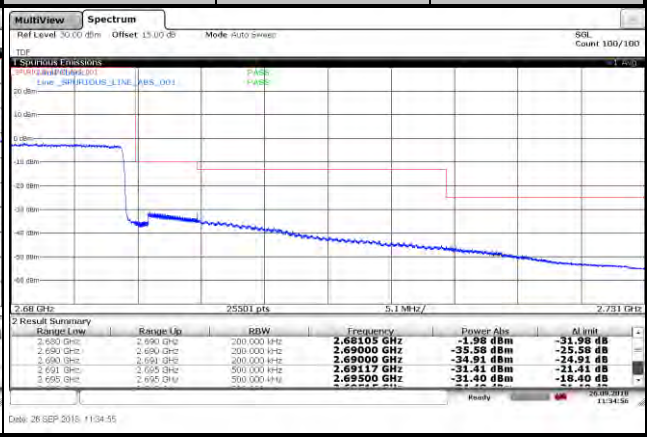
LTE Band 41					
Channel Bandwidth: 10 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	39700	1 RB	Channel	41540	1 RB
					
Channel	39700	50 RB	Channel	41540	50 RB
					

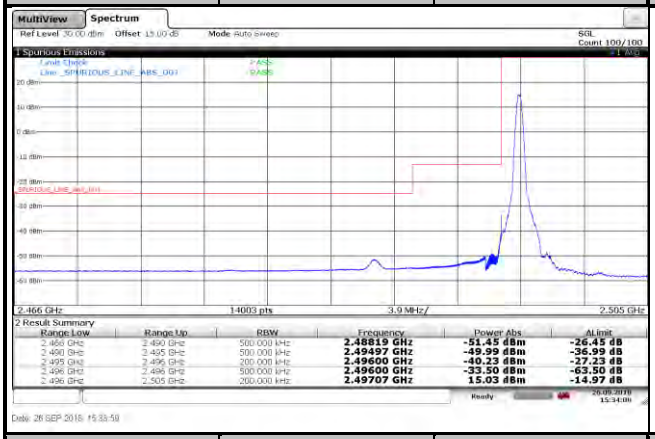
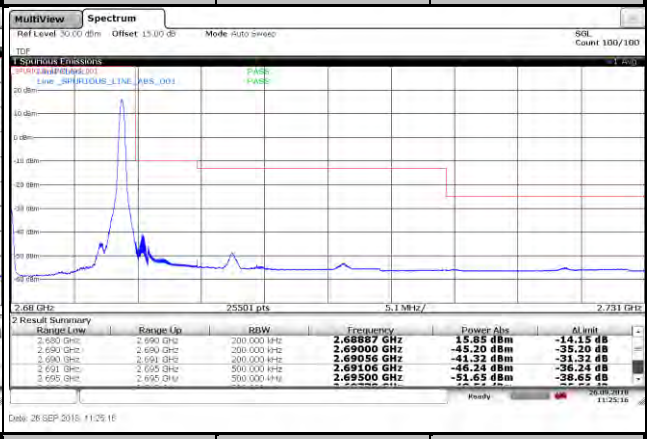
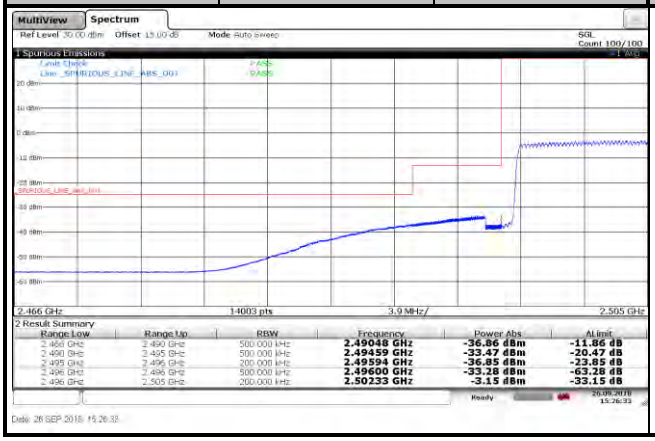
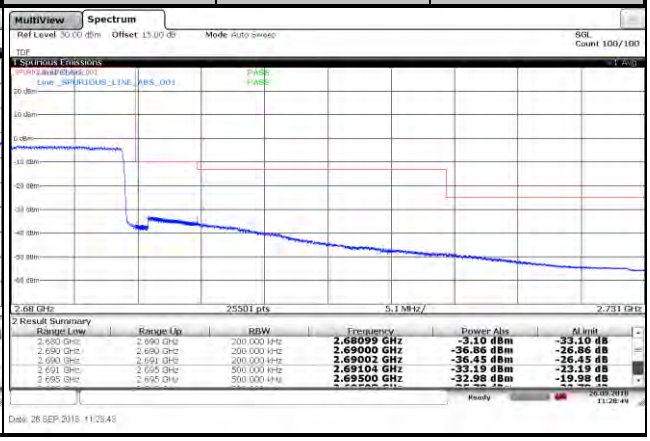
LTE Band 41					
Channel Bandwidth: 15 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39725	1 RB	Channel	41515	1 RB
					
Channel	39725	75 RB	Channel	41515	75 RB
					

LTE Band 41					
Channel Bandwidth: 15 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39725	1 RB	Channel	41515	1 RB
					
Channel	39725	75 RB	Channel	41515	75 RB
					

LTE Band 41					
Channel Bandwidth: 15 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	39725	1 RB	Channel	41515	1 RB
					
Channel	39725	75 RB	Channel	41515	75 RB
					

LTE Band 41					
Channel Bandwidth: 20 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39750	1 RB	Channel	41490	1 RB
					
Channel	39750	100 RB	Channel	41490	100 RB
					

LTE Band 41					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39750	1 RB	Channel	41490	1 RB
					
Channel	39750	100 RB	Channel	41490	100 RB
					

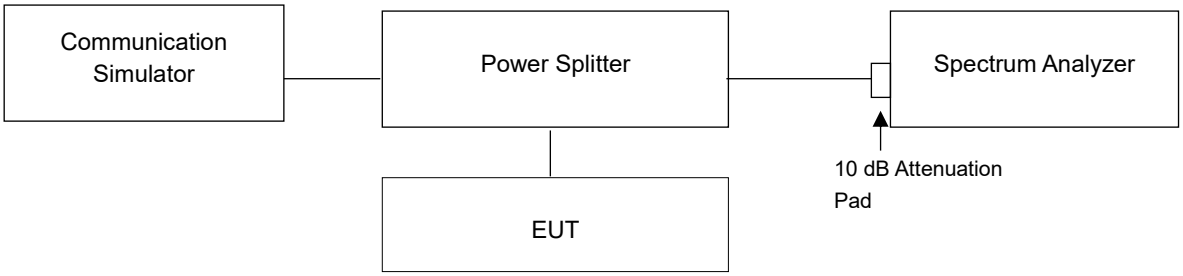
LTE Band 41					
Channel Bandwidth: 20 MHz / 64QAM					
<Out-of-Band Emissions>					
Channel	39750	1 RB	Channel	41490	1 RB
					
Channel	39750	100 RB	Channel	41490	100 RB
					

4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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.

4.6.2 Test Setup

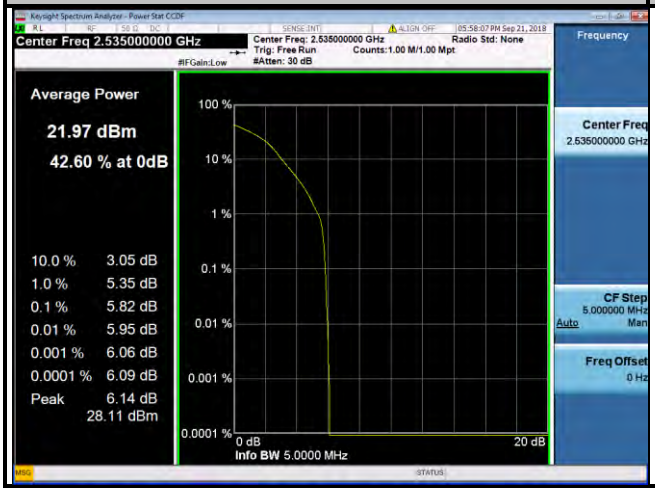
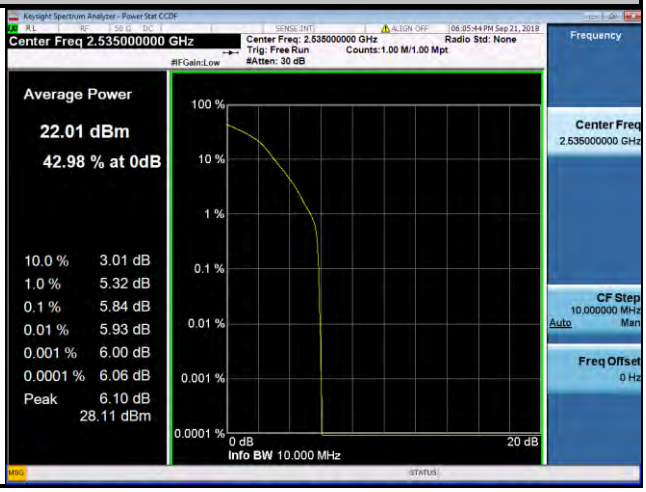


4.6.3 Test Procedures

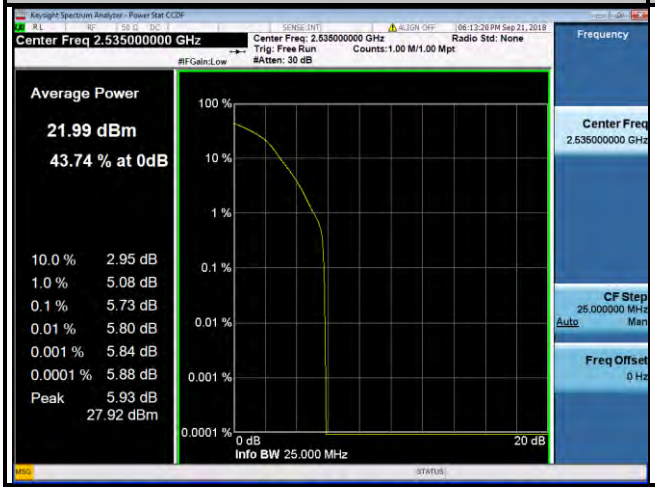
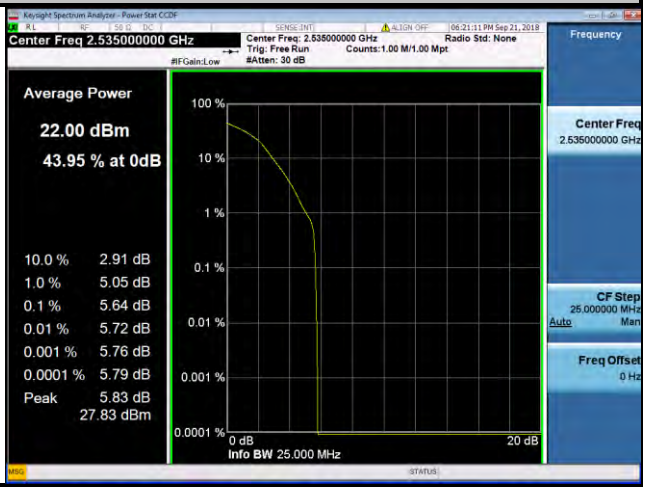
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.6.4 Test Results

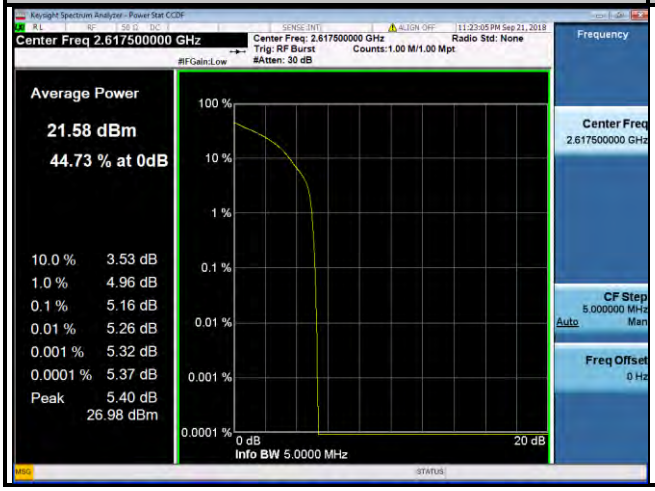
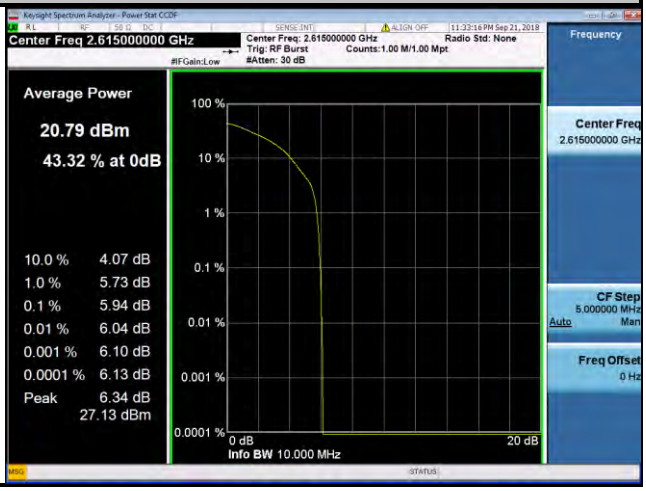
LTE Band 7									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20775	2502.5	4.47	5.19	5.11	20800	2505.0	4.44	5.22	5.15
21100	2535.0	5.01	5.82	5.70	21100	2535.0	5.03	5.84	5.78
21425	2567.5	4.11	4.88	4.81	21400	2565.0	4.18	4.96	4.95

Spectrum Plot of Worst Value	
5 MHz / 16QAM	10 MHz / 16QAM
	

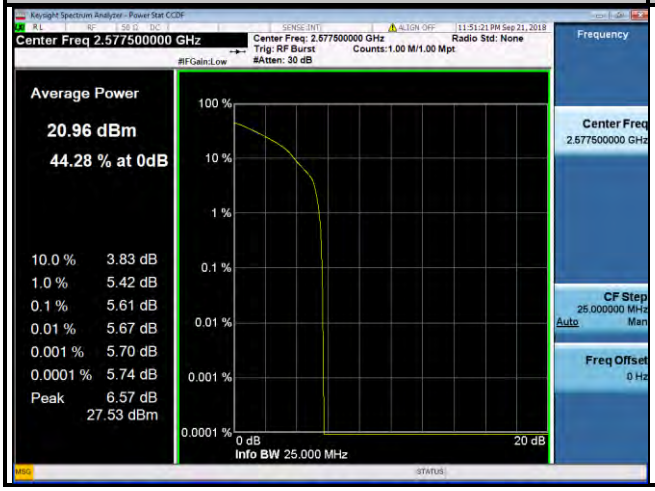
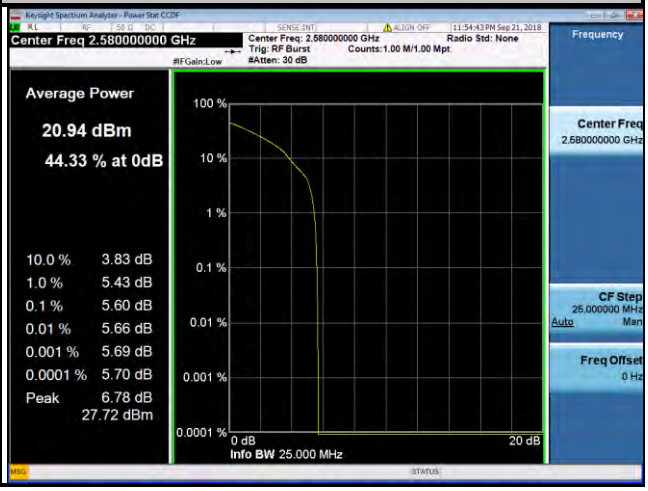
LTE Band 7									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20825	2507.5	4.50	5.30	5.12	20850	2510.0	4.53	5.34	5.12
21100	2535.0	4.91	5.73	5.59	21100	2535.0	4.83	5.64	5.60
21375	2562.5	4.38	5.20	5.14	21350	2560.0	4.79	5.57	5.46

Spectrum Plot of Worst Value	
15 MHz / 16QAM	20 MHz / 16QAM
	

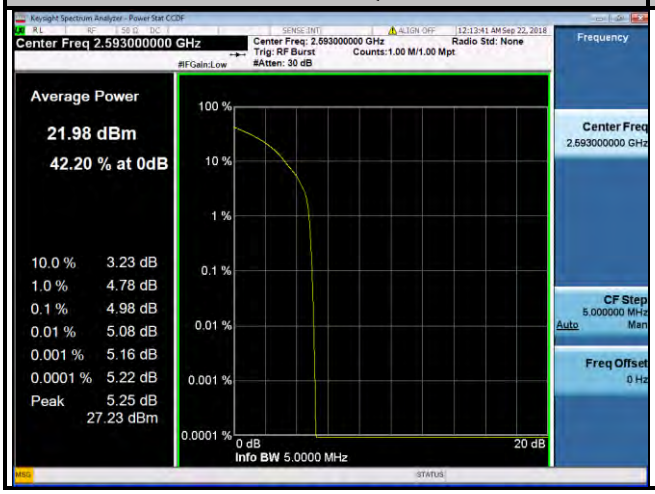
LTE Band 38									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37775	2572.5	3.76	4.71	4.69	37800	2575.0	3.67	4.63	5.04
38000	2595.0	3.89	4.81	4.67	38000	2595.0	3.69	5.19	4.52
38225	2617.5	3.84	5.16	4.78	38200	2615.0	3.62	5.94	5.41

Spectrum Plot of Worst Value	
5 MHz / 16QAM	10 MHz / 16QAM
	

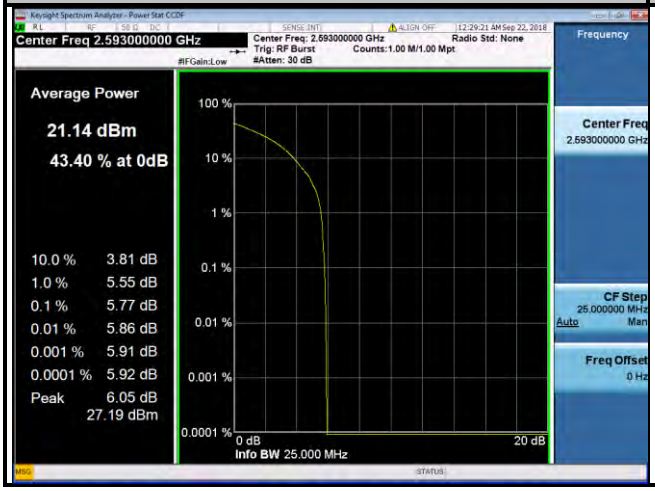
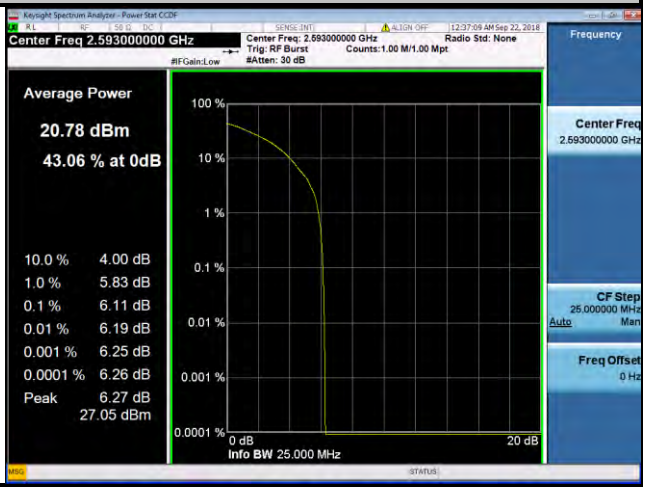
LTE Band 38									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37825	2577.5	4.15	5.33	5.61	37850	2580.0	5.01	5.39	5.60
38000	2595.0	4.34	5.44	5.03	38000	2595.0	4.78	5.34	5.33
38175	2612.5	4.49	5.33	5.45	38150	2610.0	4.87	5.52	5.37

Spectrum Plot of Worst Value	
15 MHz / 64QAM	20 MHz / 64QAM
	

LTE Band 41									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39675	2498.5	3.97	4.78	4.76	39700	2501.0	3.70	4.80	5.17
40620	2593.0	4.08	4.98	4.73	40620	2593.0	3.91	5.22	5.28
41565	2687.5	3.76	4.70	4.56	41540	2685.0	3.75	5.29	4.68

Spectrum Plot of Worst Value	
5 MHz / 16QAM	10 MHz / 16QAM
	

LTE Band 41									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39725	2503.5	4.25	5.39	5.31	39750	2506.0	4.32	5.74	4.55
40620	2593.0	4.70	5.77	5.41	40620	2593.0	5.30	6.11	5.74
41515	2682.5	4.74	5.25	5.21	41490	2680.0	4.30	5.30	4.25

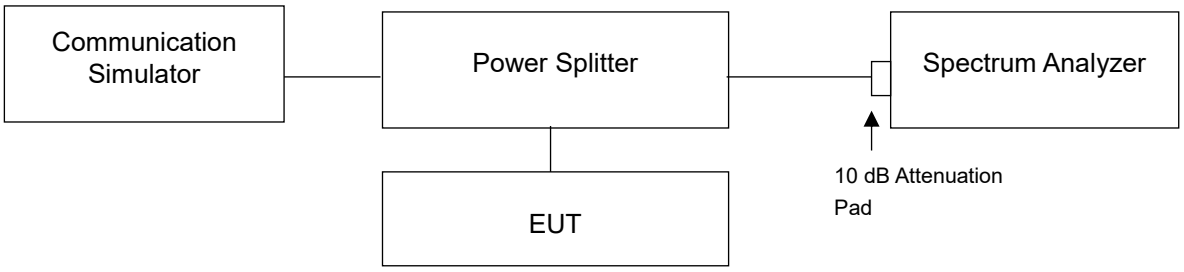
Spectrum Plot of Worst Value	
15 MHz / 16QAM	20 MHz / 16QAM
	

4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log(P) dB. The limit of emission is equal to -25 dBm.

4.7.2 Test Setup



4.7.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz are used for conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 27 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.