FCC Test Report

(PART 27)

Report No.:	RF200615C06-8
FCC ID:	H8NTN502A1
Test Model:	TN502A1
Series Model:	TN502A1(WOS), access, access(WOS) (refer to item 3.1 for more details)
Received Date:	Mar. 13, 2020
Test Date:	Mar. 30 ~ Oct. 23, 2020
Issued Date:	Oct. 28, 2020
Applicant:	ASKEY COMPUTER CORP.
Address:	10F, NO.119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 23585, TAIWAN, R.O.C.
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 (1):	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
Test Location (2):	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan
FCC Registration / Designation Number:	788550 / TW0003 427177 / TW0011

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Release Control Record

Issue No.	Description	Date Issued
RF200615C06-8	Original Release	Oct. 28, 2020

1 Certificate of Conformity

Product:	TurboFon E4 / Handheld Device (refer to item 3.1 for more details)
Brand:	TURBONET / Coppernic (refer to item 3.1 for more details)
Test Model:	TN502A1
Series Model:	TN502A1(WOS), access, access(WOS) (refer to item 3.1 for more details)
Sample Status:	Engineering Sample
Applicant:	ASKEY COMPUTER CORP.
Test Date:	Mar. 30 ~ Oct. 23, 2020
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:** Oct. 28, 2020

Lena Wang / Specialist

Approved by : , **Date:** Oct. 28, 2020

Dylan Chiou / Senior 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.
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 -12.88 dB at 7605.00 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**	**Expanded Uncertainty (k=2) (±)**
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.0400 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

For other test
Test Date: Mar. 30 ~ Jul. 16, 2020

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 26, 2019	Aug. 25, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jul. 17, 2019	Jul. 16, 2020
			Apr. 16, 2020	Apr. 15, 2021
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 12, 2019	Nov. 11, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2019	Apr. 16, 2020
			Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
Preamplifier Agilent	310N	187226	Jun. 18, 2019	Jun. 19, 2020
			Jun. 17, 2020	Jun. 16, 2021
Preamplifier Agilent	83017A	MY39501357	Jun. 18, 2019	Jun. 19, 2020
			Jun. 17, 2020	Jun. 16, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020
Power Meter Anritsu	ML2495A	1012010	Sep. 04, 2019	Sep. 03, 2020
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2019	Sep. 03, 2020
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 18, 2019	Jun. 19, 2020
			Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 18, 2019	Jun. 19, 2020
			Jun. 17, 2020	Jun. 17, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA

Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jul. 01, 2019	Jun. 30, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 19, 2019	Aug. 18, 2020
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020
DC Power Supply Topward	33010D	807748	NA	NA

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 HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450I-1.

For Docking Mode
Test Date: Oct. 23, 2020

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 23, 2020	Mar. 22, 2021
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 01, 2020	May 31, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun 06, 2020	Jun 05, 2021
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jul. 01, 2019	Jun. 30, 2021
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 09, 2020	Sep. 08, 2021
DC Power Supply Topward	33010D	807748	NA	NA

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 3.

3 General Information

3.1 General Description of EUT

Product	TurboFon E4 / Handheld Device	
Brand	TURBONET / Coppernic	
Test Model	TN502A1	
Series Model	TN502A1(WOS), access, access(WOS)	
Model Difference	Refer to Note	
Status of EUT	Engineering Sample	
Power Supply Rating	3.85Vdc (from battery) 5.0Vdc / 9.0Vdc / 12.0Vdc (from adapter)	
Modulation Type	QPSK, 16QAM	
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)	240.82 mW
	LTE Band 7 (Channel Bandwidth: 10 MHz)	243.05 mW
	LTE Band 7 (Channel Bandwidth: 15 MHz)	244.74 mW
	LTE Band 7 (Channel Bandwidth: 20 MHz)	246.43 mW
	LTE Band 38 (Channel Bandwidth: 5 MHz)	250.61 mW
	LTE Band 38 (Channel Bandwidth: 10 MHz)	252.93 mW
	LTE Band 38 (Channel Bandwidth: 15 MHz)	254.57 mW
	LTE Band 38 (Channel Bandwidth: 20 MHz)	257.04 mW
	LTE Band 41 (Channel Bandwidth: 5 MHz)	257.10 mW
	LTE Band 41 (Channel Bandwidth: 10 MHz)	259.60 mW
	LTE Band 41 (Channel Bandwidth: 15 MHz)	261.70 mW

	LTE Band 41 (Channel Bandwidth: 20 MHz)	263.45 mW
Emission Designator	LTE Band 7 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE Band 7 (Channel Bandwidth: 10 MHz)	8M98D7W
	LTE Band 7 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 7 (Channel Bandwidth: 20 MHz)	17M9D7W
	LTE Band 38 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE Band 38 (Channel Bandwidth: 10 MHz)	8M98D7W
	LTE Band 38 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 38 (Channel Bandwidth: 20 MHz)	17M9G7D
	LTE Band 41 (Channel Bandwidth: 5 MHz)	4M49D7W
	LTE Band 41 (Channel Bandwidth: 10 MHz)	8M97D7W
	LTE Band 41 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 41 (Channel Bandwidth: 20 MHz)	17M9G7D
Antenna Type	Refer to Note as below	
Accessory Device	Refer to Note as below	
Data Cable Supplied	0.95m shielded USB cable without core	

Note:

1. All models are listed as below. Model TN502A1 is the representative for final test.

Brand	Product name	Model	Difference	
TURBONET	TurboFon E4	TN502A1	With scanner	-
		TN502A1(WOS)	Without scanner	-
Coppernic	Handheld Device	access	With scanner	Model: access is electrically identical to TN502A1, different brands and model names are for marketing purpose.
		access(WOS)	Without scanner	Model: access (WOS) is electrically identical to TN502A1(WOS), different brands and model names are for marketing purpose.

2. The antenna information is listed as below.

Antenna Type	PIFA							
Band	EDGE / WCDMA II / LTE 2	WCDMA IV / LTE 4	GSM / EDGE / WCDMA V / LTE5	LTE 7	LTE 17	LTE 26	LTE 38	LTE 41
Gain	2.25	1.93	-0.76	1.39	-2.74	-0.76	1.47	1.59

3. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. The EUT contains following accessory devices.

5. Battery	
Brand	ETI
Model	BP19-002710
Rating	3.85Vdc, 4000mAh. 15.4Wh

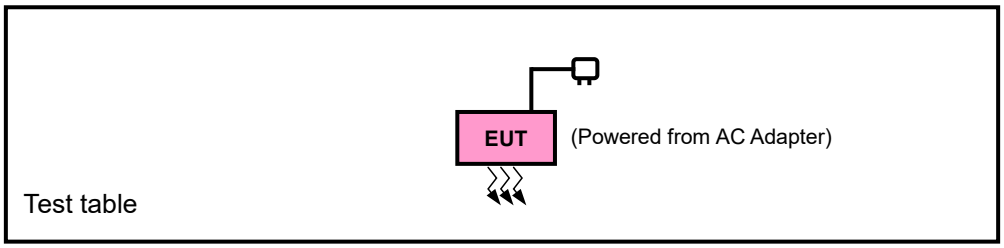
Adapter	
Brand	CHANNEL WELL TECHNOLOGY
Model	2ACP0183C
Input Power	100-240Vac~0.5A , 50/60Hz
Output Power	5.0Vdc, 3.0A, 15.0W / 9.0Vdc, 2.0A, 18.0W / 12.0Vdc, 1.5A, 18.0W

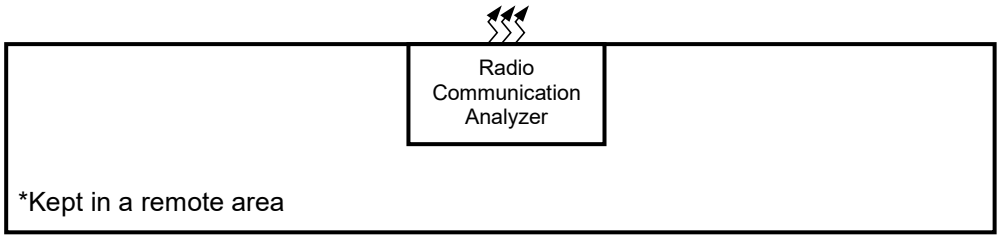
Item	Brand	Model	Description
Docking Station 1 (optional)	TURBONET	DS12310	The models and brand names of docking station are electrically identical, different models and brand names are for marketing purpose. The docking station 1 was chosen for final test.
Docking Station 2 (optional)	COPPERNIC	DS-ACCESS	
Data Cable Supplied	0.95m shielding USB cable without core		
Adapter (For docking use)			
Brand	Sunny ELECTRONICS CORP.		
Model	SYS1541-2412		
Input Power	100-240Vac, 1.0A, 50/60Hz		
Output Power	+12Vdc, 2A		
Power line	1.5m power cable without core		

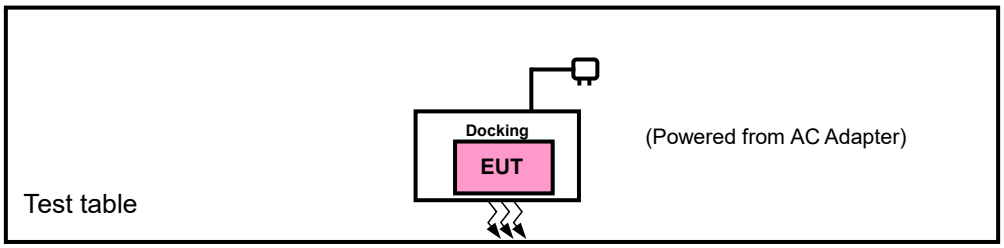
6. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

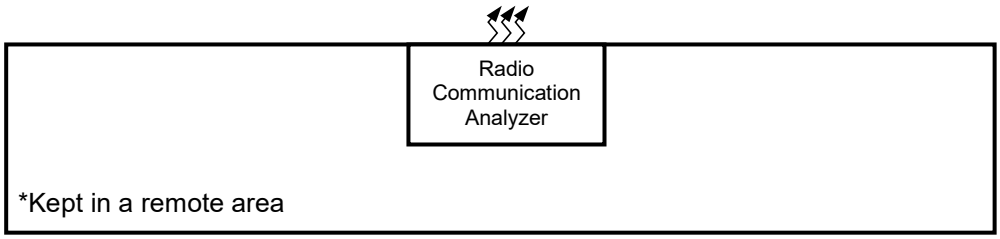
3.2 Configuration of System under Test

<Radiated Emission Test>









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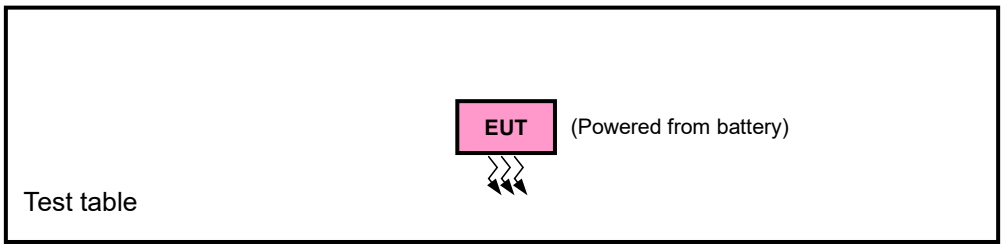
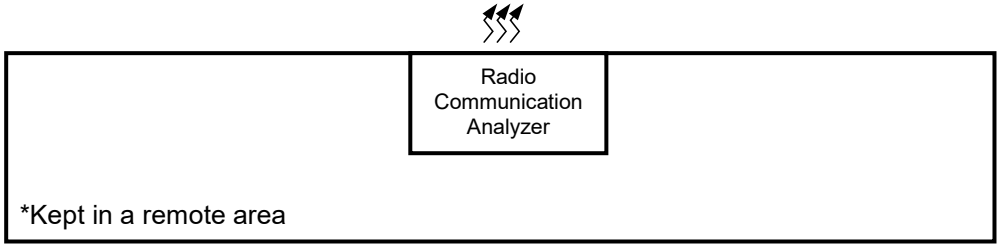




3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
A	Adapter	CHANNEL WELL TECHNOLOGY	2ACP0183C	N/A	N/A
B	Dock	TURBONET	DS12310	N/A	N/A

No.	Signal Cable Description Of The Above Support Units
1.	0.95m shielded USB cable without core provided by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

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	X-plane	X-plane
LTE Band 38	X-plane	Z-plane
LTE Band 41	Y-plane	Y-plane

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	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20850 to 21350	21100	20 MHz	QPSK, 16QAM	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	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	20775 to 21425	20775, 21425	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK, 16QAM	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
-	Radiated Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.

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	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	37850 to 38150	38000	20 MHz	QPSK, 16QAM	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	25 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	37775 to 38225	37775, 38225	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38175	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38150	20 MHz	QPSK, 16QAM	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	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.

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	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	39750 to 41490	41490	20 MHz	QPSK, 16QAM	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	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	39675 to 41565	39675, 41565	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20 MHz	QPSK, 16QAM	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	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
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	Karl Lee

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:

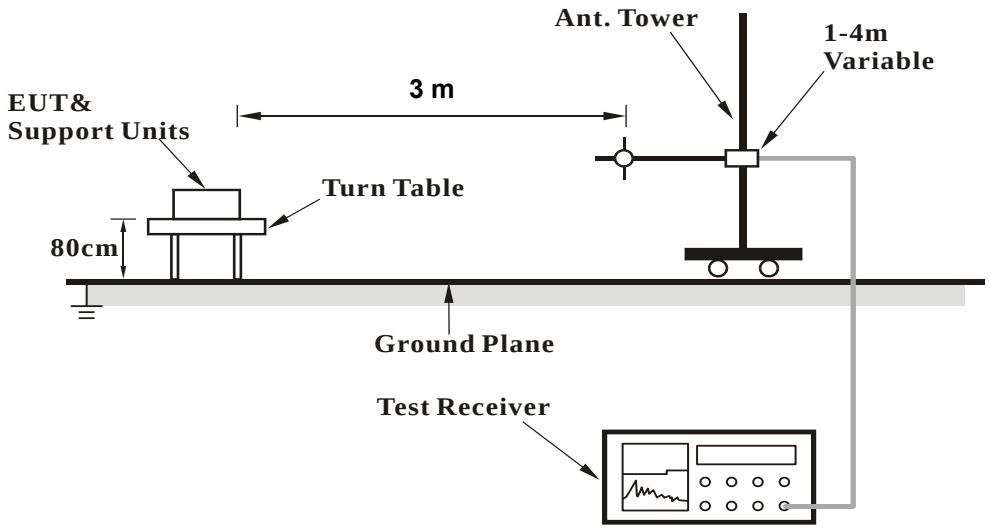
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, 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:

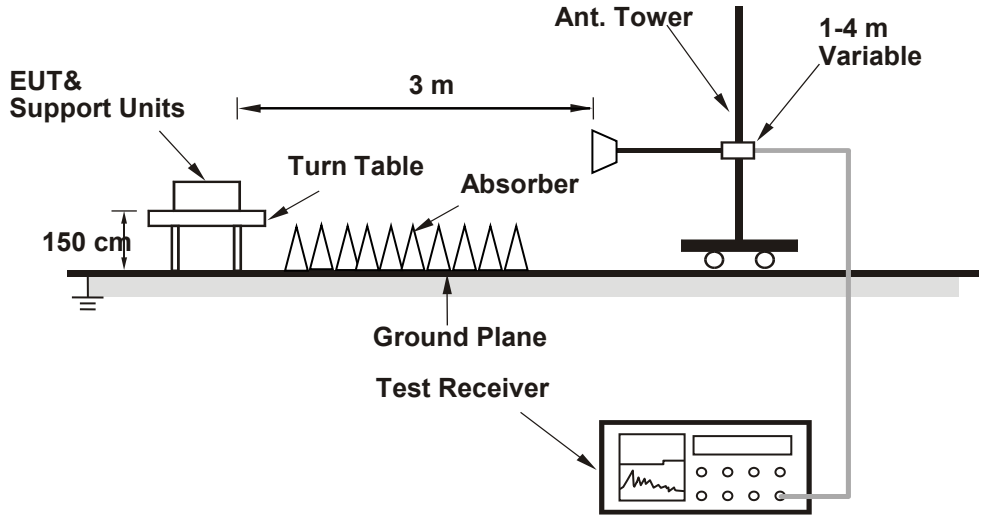
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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	22.41	22.49	22.36	0	15M	QPSK	1	0	22.40	22.42	22.33	0
		1	50	22.38	22.46	22.33	0			1	37	22.30	22.41	22.25	0
		1	99	22.31	22.39	22.26	0			1	74	22.26	22.35	22.20	0
		50	0	21.48	21.50	21.43	1			36	0	21.37	21.47	21.35	1
		50	25	21.42	21.48	21.37	1			36	19	21.39	21.48	21.34	1
		50	50	21.46	21.47	21.41	1			36	39	21.45	21.44	21.40	1
		100	0	21.45	21.45	21.40	1			75	0	21.38	21.47	21.37	1
	16QAM	1	0	21.35	21.42	21.28	1		16QAM	1	0	21.32	21.44	21.23	1
		1	50	21.33	21.44	21.27	1			1	37	21.27	21.38	21.28	1
		1	99	21.30	21.30	21.22	1			1	74	21.25	21.35	21.16	1
		50	0	20.42	20.44	20.36	2			36	0	20.33	20.47	20.25	2
		50	25	20.40	20.49	20.38	2			36	19	20.39	20.49	20.42	2
		50	50	20.44	20.50	20.37	2			36	39	20.34	20.44	20.40	2
		100	0	20.39	20.49	20.34	2			75	0	20.25	20.44	20.34	2
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	22.29	22.34	22.24	0	5M	QPSK	1	0	22.20	22.34	22.18	0
		1	24	22.17	22.27	22.17	0			1	12	22.21	22.37	21.97	0
		1	49	22.29	22.20	22.06	0			1	24	22.18	22.32	21.99	0
		25	0	21.30	21.33	21.31	1			12	0	21.33	21.40	21.19	1
		25	12	21.38	21.47	21.27	1			12	6	21.32	21.42	21.18	1
		25	25	21.33	21.41	21.37	1			12	13	21.42	21.43	21.18	1
		50	0	21.25	21.36	21.28	1			25	0	21.36	21.33	21.21	1
	16QAM	1	0	21.19	21.29	21.26	1		16QAM	1	0	21.23	21.36	21.09	1
		1	24	21.33	21.25	21.29	1			1	12	21.26	21.25	21.20	1
		1	49	21.13	21.24	21.08	1			1	24	21.08	21.25	21.01	1
		25	0	20.17	20.22	20.24	2			12	0	20.19	20.27	20.17	2
		25	12	20.33	20.40	20.11	2			12	6	20.30	20.46	20.20	2
		25	25	20.34	20.32	20.28	2			12	13	20.38	20.36	20.16	2
		50	0	20.27	20.34	20.09	2			25	0	20.28	20.29	20.25	2

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	22.73	22.78	22.85	0	15M	QPSK	1	0	22.69	22.77	22.84	0
		1	50	22.67	22.72	22.78	0			1	37	22.59	22.62	22.74	0
		1	99	22.61	22.66	22.72	0			1	74	22.58	22.62	22.66	0
		50	0	21.74	21.79	21.85	1			36	0	21.72	21.78	21.82	1
		50	25	21.71	21.76	21.82	1			36	19	21.71	21.73	21.77	1
		50	50	21.66	21.71	21.77	1			36	39	21.57	21.63	21.75	1
		100	0	21.76	21.81	21.87	1			75	0	21.71	21.73	21.83	1
	16QAM	1	0	21.79	21.84	21.90	1		16QAM	1	0	21.70	21.78	21.81	1
		1	50	21.77	21.82	21.88	1			1	37	21.70	21.75	21.79	1
		1	99	21.72	21.77	21.83	1			1	74	21.69	21.77	21.74	1
		50	0	20.71	20.76	20.82	2			36	0	20.71	20.67	20.73	2
		50	25	20.77	20.82	20.88	2			36	19	20.69	20.77	20.80	2
		50	50	20.79	20.84	20.90	2			36	39	20.69	20.83	20.80	2
		100	0	20.81	20.86	20.92	2			75	0	20.73	20.82	20.88	2
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	22.65	22.75	22.73	0	5M	QPSK	1	0	22.67	22.66	22.57	0
		1	24	22.53	22.63	22.72	0			1	12	22.46	22.71	22.66	0
		1	49	22.57	22.54	22.68	0			1	24	22.54	22.54	22.54	0
		25	0	21.60	21.61	21.69	1			12	0	21.70	21.65	21.65	1
		25	12	21.70	21.66	21.79	1			12	6	21.62	21.61	21.61	1
		25	25	21.55	21.57	21.65	1			12	13	21.57	21.54	21.54	1
		50	0	21.72	21.72	21.75	1			25	0	21.51	21.61	21.78	1
	16QAM	1	0	21.65	21.66	21.67	1		16QAM	1	0	21.71	21.62	21.68	1
		1	24	21.53	21.69	21.68	1			1	12	21.61	21.77	21.78	1
		1	49	21.65	21.71	21.64	1			1	24	21.64	21.72	21.67	1
		25	0	20.59	20.68	20.69	2			12	0	20.58	20.71	20.77	2
		25	12	20.69	20.60	20.66	2			12	6	20.64	20.77	20.79	2
		25	25	20.68	20.76	20.75	2			12	13	20.78	20.63	20.80	2
		50	0	20.70	20.77	20.87	2			25	0	20.68	20.78	20.75	2

LTE Band 41															
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	22.08	22.44	22.50	0	15M	QPSK	1	0	22.06	22.40	22.40	0
		1	50	22.06	22.42	22.48	0			1	37	21.97	22.40	22.44	0
		1	99	22.02	22.38	22.44	0			1	74	21.98	22.32	22.43	0
		50	0	21.08	21.44	21.50	1			36	0	20.99	21.41	21.50	1
		50	25	21.06	21.42	21.48	1			36	19	20.97	21.41	21.40	1
		50	50	21.03	21.39	21.45	1			36	39	21.00	21.32	21.43	1
		100	0	21.05	21.41	21.47	1			75	0	20.95	21.35	21.37	1
	16QAM	1	0	21.11	21.47	21.49	1		16QAM	1	0	21.03	21.35	21.45	1
		1	50	21.09	21.45	21.45	1			1	37	20.98	21.33	21.45	1
		1	99	21.06	21.42	21.48	1			1	74	21.02	21.28	21.36	1
		50	0	20.10	20.46	20.44	2			36	0	20.01	20.37	20.44	2
		50	25	20.08	20.44	20.50	2			36	19	19.99	20.36	20.44	2
		50	50	20.05	20.41	20.47	2			36	39	20.03	20.32	20.39	2
		100	0	20.07	20.43	20.49	2			75	0	20.04	20.39	20.41	2
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	22.08	22.28	22.42	0	5M	QPSK	1	0	21.95	22.31	22.42	0
		1	24	21.99	22.28	22.38	0			1	12	21.98	22.41	22.42	0
		1	49	21.92	22.31	22.32	0			1	24	21.95	22.29	22.39	0
		25	0	20.96	21.35	21.39	1			12	0	20.96	21.36	21.37	1
		25	12	20.94	21.33	21.37	1			12	6	21.01	21.28	21.39	1
		25	25	20.98	21.32	21.27	1			12	13	21.03	21.32	21.41	1
		50	0	20.94	21.32	21.47	1			25	0	20.90	21.36	21.37	1
	16QAM	1	0	21.04	21.27	21.41	1		16QAM	1	0	20.98	21.31	21.49	1
		1	24	21.04	21.30	21.45	1			1	12	21.00	21.33	21.39	1
		1	49	20.88	21.34	21.33	1			1	24	20.95	21.21	21.41	1
		25	0	20.02	20.41	20.35	2			12	0	19.95	20.40	20.41	2
		25	12	19.94	20.39	20.39	2			12	6	19.97	20.32	20.35	2
		25	25	19.93	20.26	20.29	2			12	13	19.96	20.36	20.32	2
		50	0	19.95	20.34	20.40	2			25	0	19.92	20.38	20.37	2

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)**
X	20775	2502.5	-20.48	44.24	23.76	237.57	H
	21100	2535.0	-20.38	44.20	23.82	240.82	
	21425	2567.5	-21.10	44.80	23.70	234.48	
	20775	2502.5	-26.03	44.19	18.16	65.48	V
	21100	2535.0	-25.85	44.09	18.24	66.65	
	21425	2567.5	-26.38	44.50	18.12	64.85	
Channel Bandwidth: 5 MHz / 16QAM							
X	20775	2502.5	-21.49	44.24	22.75	188.28	H
	21100	2535.0	-21.38	44.20	22.82	191.29	
	21425	2567.5	-22.11	44.80	22.69	185.82	
	20775	2502.5	-27.03	44.19	17.16	52.01	V
	21100	2535.0	-26.86	44.09	17.23	52.82	
	21425	2567.5	-27.38	44.50	17.12	51.51	

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)**
X	20800	2505.0	-20.54	44.34	23.80	239.94	H
	21100	2535.0	-20.34	44.20	23.86	243.05	
	21400	2565.0	-20.99	44.72	23.73	236.21	
	20800	2505.0	-26.03	44.23	18.20	66.01	V
	21100	2535.0	-25.81	44.09	18.28	67.27	
	21400	2565.0	-26.26	44.41	18.15	65.25	
Channel Bandwidth: 10 MHz / 16QAM							
X	20800	2505.0	-21.54	44.34	22.80	190.59	H
	21100	2535.0	-21.35	44.20	22.85	192.62	
	21400	2565.0	-22.01	44.72	22.71	186.77	
	20800	2505.0	-27.04	44.23	17.19	52.31	V
	21100	2535.0	-26.81	44.09	17.28	53.43	
	21400	2565.0	-27.26	44.41	17.15	51.83	

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)
X	20825	2507.5	-20.49	44.32	23.83	241.43	H
	21100	2535.0	-20.31	44.20	23.89	244.74	
	21375	2562.5	-21.08	44.85	23.77	238.12	
	20825	2507.5	-25.75	43.99	18.24	66.71	V
	21100	2535.0	-25.78	44.09	18.31	67.73	
	21375	2562.5	-26.32	44.51	18.19	65.92	
Channel Bandwidth: 15 MHz / 16QAM							
X	20825	2507.5	-21.49	44.32	22.83	191.78	H
	21100	2535.0	-21.32	44.20	22.88	193.95	
	21375	2562.5	-22.08	44.85	22.77	189.15	
	20825	2507.5	-26.75	43.99	17.24	52.99	V
	21100	2535.0	-26.79	44.09	17.30	53.68	
	21375	2562.5	-27.32	44.51	17.19	52.36	

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)
X	20850	2510.0	-20.29	44.16	23.87	243.78	H
	21100	2535.0	-20.28	44.20	23.92	246.43	
	21350	2560.0	-21.00	44.81	23.81	240.27	
	20850	2510.0	-26.50	44.78	18.28	67.30	V
	21100	2535.0	-25.74	44.09	18.35	68.36	
	21350	2560.0	-26.49	44.72	18.23	66.53	
Channel Bandwidth: 20 MHz / 16QAM							
X	20850	2510.0	-21.29	44.16	22.87	193.64	H
	21100	2535.0	-21.28	44.20	22.92	195.75	
	21350	2560.0	-22.01	44.81	22.80	190.41	
	20850	2510.0	-27.50	44.78	17.28	53.46	V
	21100	2535.0	-26.75	44.09	17.34	54.18	
	21350	2560.0	-27.49	44.72	17.23	52.84	

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)
X	37775	2572.5	-20.25	44.24	23.99	250.61	H
	38000	2595.0	-20.29	44.20	23.91	245.87	
	38225	2617.5	-20.94	44.80	23.86	243.28	
	37775	2572.5	-24.18	44.19	20.01	100.25	V
	38000	2595.0	-24.17	44.09	19.92	98.13	
	38225	2617.5	-24.68	44.50	19.82	95.92	
Channel Bandwidth: 5 MHz / 16QAM							
X	37775	2572.5	-21.25	44.24	22.99	198.98	H
	38000	2595.0	-21.30	44.20	22.90	194.85	
	38225	2617.5	-21.94	44.80	22.86	193.24	
	37775	2572.5	-25.18	44.19	19.01	79.63	V
	38000	2595.0	-25.17	44.09	18.92	77.95	
	38225	2617.5	-25.69	44.50	18.81	76.02	

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)
X	37800	2575.0	-20.31	44.34	24.03	252.93	H
	38000	2595.0	-20.25	44.20	23.95	248.14	
	38200	2615.0	-20.83	44.72	23.89	245.08	
	37800	2575.0	-24.18	44.23	20.05	101.06	V
	38000	2595.0	-24.13	44.09	19.96	99.04	
	38200	2615.0	-24.56	44.41	19.85	96.52	
Channel Bandwidth: 10 MHz / 16QAM							
X	37800	2575.0	-21.31	44.34	23.03	200.96	H
	38000	2595.0	-21.25	44.20	22.95	197.11	
	38200	2615.0	-21.83	44.72	22.89	194.67	
	37800	2575.0	-25.18	44.23	19.05	80.28	V
	38000	2595.0	-25.14	44.09	18.95	78.49	
	38200	2615.0	-25.56	44.41	18.85	76.67	

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)
X	37825	2577.5	-20.26	44.32	24.06	254.57	H
	38000	2595.0	-20.21	44.20	23.99	250.44	
	38175	2612.5	-20.92	44.85	23.93	247.06	
	37825	2577.5	-23.90	43.99	20.09	102.14	V
	38000	2595.0	-24.09	44.09	20.00	99.95	
	38175	2612.5	-24.62	44.51	19.89	97.50	
Channel Bandwidth: 15 MHz / 16QAM							
X	37825	2577.5	-21.26	44.32	23.06	202.21	H
	38000	2595.0	-21.21	44.20	22.99	198.93	
	38175	2612.5	-21.92	44.85	22.93	196.25	
	37825	2577.5	-24.91	43.99	19.08	80.95	V
	38000	2595.0	-25.10	44.09	18.99	79.21	
	38175	2612.5	-25.62	44.51	18.89	77.45	

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)
X	37850	2580.0	-20.06	44.16	24.10	257.04	H
	38000	2595.0	-20.17	44.20	24.03	252.76	
	38150	2610.0	-20.84	44.81	23.97	249.52	
	37850	2580.0	-24.65	44.78	20.13	103.04	V
	38000	2595.0	-24.05	44.09	20.04	100.88	
	38150	2610.0	-24.79	44.72	19.93	98.40	
Channel Bandwidth: 20 MHz / 16QAM							
X	37850	2580.0	-21.06	44.16	23.10	204.17	H
	38000	2595.0	-21.18	44.20	23.02	200.31	
	38150	2610.0	-21.84	44.81	22.97	198.02	
	37850	2580.0	-25.65	44.78	19.13	81.85	V
	38000	2595.0	-25.06	44.09	19.03	79.95	
	38150	2610.0	-25.80	44.72	18.92	77.98	

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	-20.32	44.24	23.92	246.49	H
	40620	2593.0	-20.18	44.20	24.02	252.17	
	41565	2687.5	-20.70	44.80	24.10	257.10	
	39675	2498.5	-23.85	44.19	20.34	108.17	V
	40620	2593.0	-23.68	44.09	20.41	109.85	
	41565	2687.5	-24.02	44.50	20.48	111.66	
Channel Bandwidth: 5 MHz / 16QAM							
Y	39675	2498.5	-21.32	44.24	22.92	195.79	H
	40620	2593.0	-21.19	44.20	23.01	199.85	
	41565	2687.5	-21.71	44.80	23.09	203.75	
	39675	2498.5	-24.86	44.19	19.33	85.72	V
	40620	2593.0	-24.68	44.09	19.41	87.26	
	41565	2687.5	-25.03	44.50	19.47	88.49	

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	-20.38	44.34	23.96	248.94	H
	40620	2593.0	-20.15	44.20	24.05	253.92	
	41540	2685.0	-20.58	44.72	24.14	259.60	
	39700	2501.0	-23.85	44.23	20.38	109.04	V
	40620	2593.0	-23.64	44.09	20.45	110.87	
	41540	2685.0	-23.89	44.41	20.52	112.62	
Channel Bandwidth: 10 MHz / 16QAM							
Y	39700	2501.0	-21.38	44.34	22.96	197.74	H
	40620	2593.0	-21.16	44.20	23.04	201.23	
	41540	2685.0	-21.59	44.72	23.13	205.73	
	39700	2501.0	-24.85	44.23	19.38	86.62	V
	40620	2593.0	-24.65	44.09	19.44	87.86	
	41540	2685.0	-24.90	44.41	19.51	89.25	

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	-20.32	44.32	24.00	251.07	H
	40620	2593.0	-20.12	44.20	24.08	255.68	
	41515	2682.5	-20.67	44.85	24.18	261.70	
	39725	2503.5	-23.57	43.99	20.42	110.20	V
	40620	2593.0	-23.60	44.09	20.49	111.89	
	41515	2682.5	-23.95	44.51	20.56	113.76	
Channel Bandwidth: 15 MHz / 16QAM							
Y	39725	2503.5	-21.32	44.32	23.00	199.43	H
	40620	2593.0	-21.13	44.20	23.07	202.63	
	41515	2682.5	-21.68	44.85	23.17	207.40	
	39725	2503.5	-24.57	43.99	19.42	87.54	V
	40620	2593.0	-24.61	44.09	19.48	88.67	
	41515	2682.5	-24.96	44.51	19.55	90.16	

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	-20.12	44.16	24.04	253.51	H
	40620	2593.0	-20.08	44.20	24.12	258.05	
	41490	2680.0	-20.60	44.81	24.21	263.45	
	39750	2506.0	-24.32	44.78	20.46	111.17	V
	40620	2593.0	-23.56	44.09	20.53	112.93	
	41490	2680.0	-24.12	44.72	20.60	114.82	
Channel Bandwidth: 20 MHz / 16QAM							
Y	39750	2506.0	-21.12	44.16	23.04	201.37	H
	40620	2593.0	-21.08	44.20	23.12	204.97	
	41490	2680.0	-21.60	44.81	23.21	209.27	
	39750	2506.0	-25.32	44.78	19.46	88.31	V
	40620	2593.0	-24.57	44.09	19.52	89.50	
	41490	2680.0	-25.13	44.72	19.59	90.99	

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

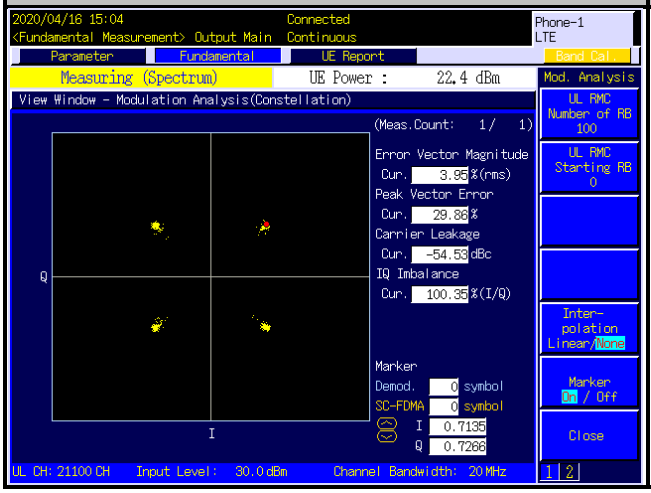
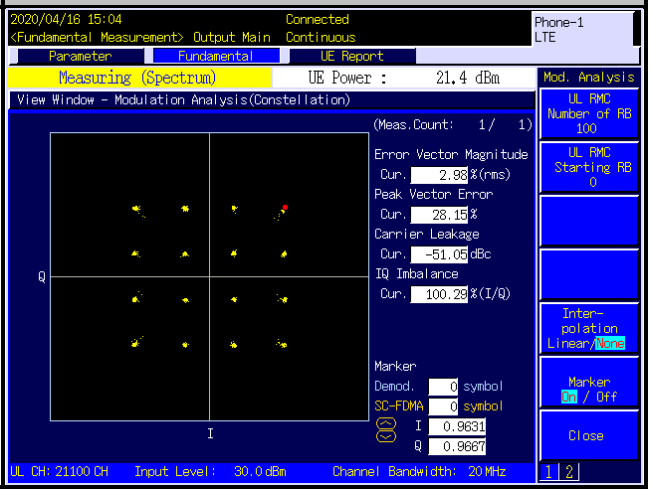
N/A

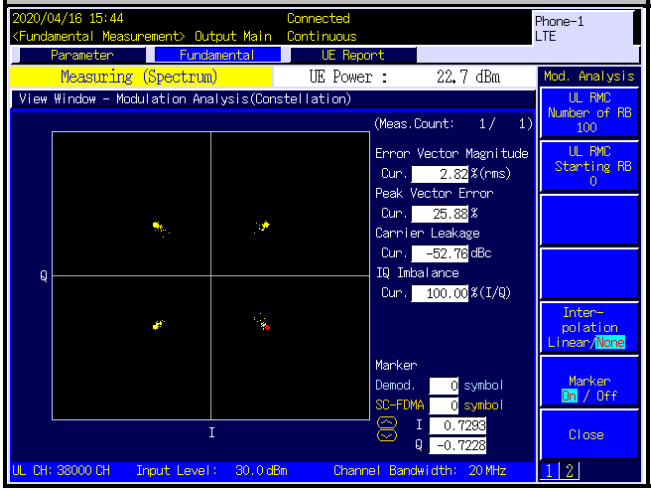
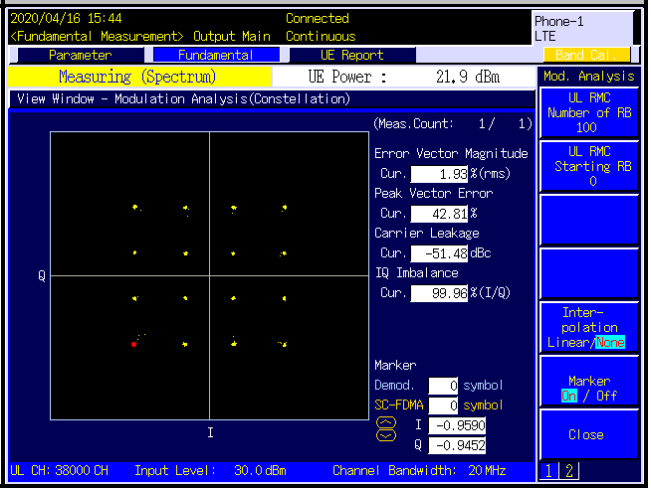
4.2.2 Test Setup

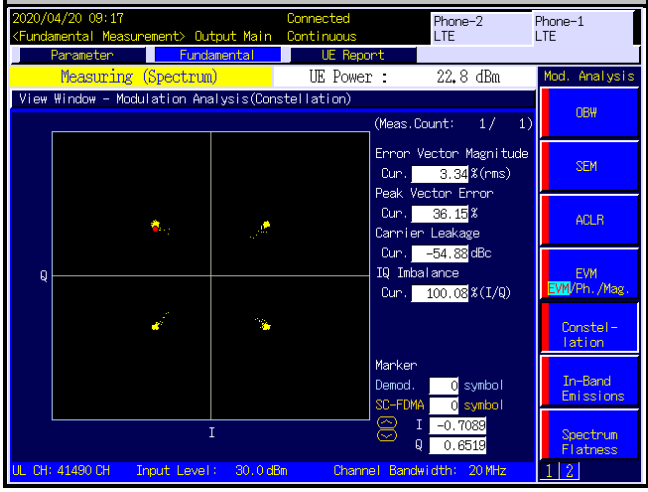
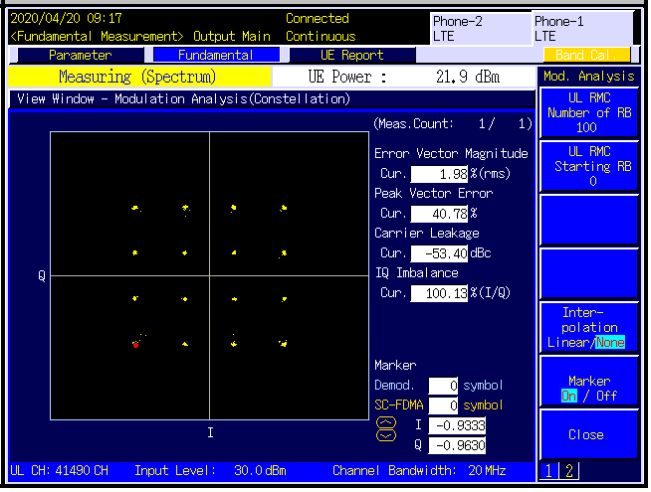
4.2.3 Test Procedure

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
	

Spectrum Plot of Measurement	
LTE Band 38	
Channel 38000	
QPSK	16QAM
	

Spectrum Plot of Measurement	
LTE Band 41	
Channel 41490	
QPSK	16QAM
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

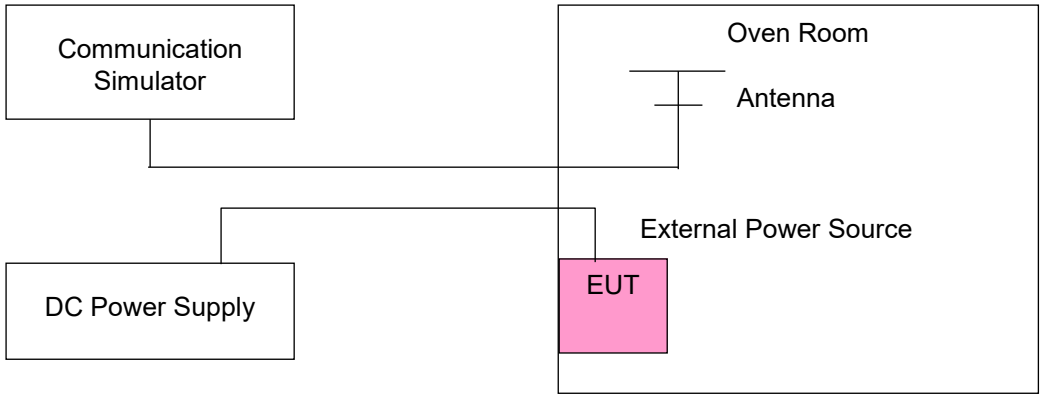
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary 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			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2502.500003	0.001	2567.500003	0.001
3.65	2502.500003	0.001	2567.500003	0.001
4.23	2502.500003	0.001	2567.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2502.500004	0.001	2567.500003	0.001
-20	2502.500004	0.002	2567.500003	0.001
-10	2502.500001	0.001	2567.500001	0.000
0	2502.500003	0.001	2567.500001	0.000
10	2502.500002	0.001	2567.500002	0.001
20	2502.499997	-0.001	2567.499998	-0.001
30	2502.499998	-0.001	2567.499998	-0.001
40	2502.499997	-0.001	2567.499998	-0.001
50	2502.499997	-0.001	2567.499999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2505.000002	0.001	2565.000001	0.000
3.65	2505.000004	0.002	2565.000003	0.001
4.23	2505.000003	0.001	2565.000004	0.002

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2505.000002	0.001	2565.000003	0.001
-20	2505.000002	0.001	2565.000004	0.002
-10	2505.000002	0.001	2565.000003	0.001
0	2505.000002	0.001	2565.000003	0.001
10	2505.000004	0.001	2565.000002	0.001
20	2504.999998	-0.001	2564.999998	-0.001
30	2504.999998	-0.001	2564.999997	-0.001
40	2504.999999	0.000	2564.999998	-0.001
50	2504.999997	-0.001	2564.999997	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2507.500004	0.002	2562.500002	0.001
3.65	2507.500002	0.001	2562.500003	0.001
4.23	2507.500002	0.001	2562.500004	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2507.500002	0.001	2562.500002	0.001
-20	2507.500002	0.001	2562.500002	0.001
-10	2507.500002	0.001	2562.500003	0.001
0	2507.500002	0.001	2562.500003	0.001
10	2507.500002	0.001	2562.500002	0.001
20	2507.499999	0.000	2562.499999	-0.001
30	2507.499999	0.000	2562.499998	-0.001
40	2507.499996	-0.001	2562.499998	-0.001
50	2507.499998	-0.001	2562.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 7			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2510.000003	0.001	2560.000002	0.001
3.65	2510.000001	0.001	2560.000002	0.001
4.23	2510.000004	0.001	2560.000004	0.002

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2510.000002	0.001	2560.000003	0.001
-20	2510.000002	0.001	2560.000003	0.001
-10	2510.000003	0.001	2560.000003	0.001
0	2510.000002	0.001	2560.000002	0.001
10	2510.000002	0.001	2560.000004	0.002
20	2509.999996	-0.002	2559.999997	-0.001
30	2509.999996	-0.002	2559.999998	-0.001
40	2509.999998	-0.001	2559.999999	0.000
50	2509.999997	-0.001	2559.999998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2572.500003	0.001	2617.500001	0.000
3.65	2572.500002	0.001	2617.500003	0.001
4.23	2572.500002	0.001	2617.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2572.500002	0.001	2617.500001	0.000
-20	2572.500002	0.001	2617.500001	0.001
-10	2572.500002	0.001	2617.500001	0.000
0	2572.500003	0.001	2617.500004	0.002
10	2572.500003	0.001	2617.500001	0.000
20	2572.499996	-0.001	2617.499997	-0.001
30	2572.499996	-0.001	2617.499997	-0.001
40	2572.499997	-0.001	2617.499997	-0.001
50	2572.499998	-0.001	2617.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2575.000003	0.001	2615.000002	0.001
3.65	2575.000003	0.001	2615.000002	0.001
4.23	2575.000002	0.001	2615.000003	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2575.000002	0.001	2615.000001	0.000
-20	2575.000003	0.001	2615.000002	0.001
-10	2575.000003	0.001	2615.000003	0.001
0	2575.000001	0.001	2615.000002	0.001
10	2575.000001	0.001	2615.000002	0.001
20	2574.999998	-0.001	2614.999999	-0.001
30	2574.999999	0.000	2614.999996	-0.002
40	2574.999996	-0.001	2614.999996	-0.001
50	2574.999998	-0.001	2614.999999	0.000

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2577.500002	0.001	2612.500004	0.001
3.65	2577.500001	0.001	2612.500001	0.000
4.23	2577.500002	0.001	2612.500004	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2577.500002	0.001	2612.500001	0.000
-20	2577.500002	0.001	2612.500001	0.000
-10	2577.500001	0.000	2612.500004	0.001
0	2577.500003	0.001	2612.500001	0.000
10	2577.500003	0.001	2612.500003	0.001
20	2577.499997	-0.001	2612.499998	-0.001
30	2577.499999	-0.001	2612.499997	-0.001
40	2577.499997	-0.001	2612.499997	-0.001
50	2577.499997	-0.001	2612.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 38			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2580.000002	0.001	2610.000003	0.001
3.65	2580.000002	0.001	2610.000004	0.001
4.23	2580.000001	0.000	2610.000000	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2580.000002	0.001	2610.000001	0.000
-20	2580.000002	0.001	2610.000001	0.000
-10	2580.000001	0.000	2610.000003	0.001
0	2580.000003	0.001	2610.000002	0.001
10	2580.000002	0.001	2610.000002	0.001
20	2579.999998	-0.001	2609.999999	-0.001
30	2579.999998	-0.001	2609.999998	-0.001
40	2579.999997	-0.001	2609.999998	-0.001
50	2579.999996	-0.001	2609.999998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2498.500004	0.002	2687.500003	0.001
3.65	2498.500003	0.001	2687.500002	0.001
4.23	2498.500002	0.001	2687.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2498.500002	0.001	2687.500001	0.001
-20	2498.500002	0.001	2687.500001	0.000
-10	2498.500002	0.001	2687.500002	0.001
0	2498.500004	0.002	2687.500002	0.001
10	2498.500002	0.001	2687.500004	0.001
20	2498.499999	0.000	2687.499996	-0.001
30	2498.499996	-0.001	2687.499997	-0.001
40	2498.499996	-0.002	2687.499998	-0.001
50	2498.499996	-0.002	2687.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2501.000002	0.001	2685.000002	0.001
3.65	2501.000004	0.002	2685.000003	0.001
4.23	2501.000001	0.000	2685.000004	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2501.000003	0.001	2685.000002	0.001
-20	2501.000003	0.001	2685.000002	0.001
-10	2501.000003	0.001	2685.000003	0.001
0	2501.000002	0.001	2685.000004	0.001
10	2501.000002	0.001	2685.000004	0.001
20	2500.999996	-0.001	2684.999997	-0.001
30	2500.999997	-0.001	2684.999997	-0.001
40	2500.999997	-0.001	2684.999998	-0.001
50	2500.999996	-0.002	2684.999997	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2503.500003	0.001	2682.500001	0.000
3.65	2503.500003	0.001	2682.500003	0.001
4.23	2503.500002	0.001	2682.500003	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2503.500002	0.001	2682.500002	0.001
-20	2503.500002	0.001	2682.500003	0.001
-10	2503.500002	0.001	2682.500002	0.001
0	2503.500003	0.001	2682.500003	0.001
10	2503.500002	0.001	2682.500002	0.001
20	2503.499997	-0.001	2682.499997	-0.001
30	2503.499996	-0.001	2682.499997	-0.001
40	2503.499998	-0.001	2682.499998	-0.001
50	2503.499999	0.000	2682.499997	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 41			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.85	2506.000003	0.001	2680.000002	0.001
3.65	2506.000002	0.001	2680.000003	0.001
4.23	2506.000003	0.001	2680.000002	0.001

Note: The applicant defined the normal working voltage of the battery is from 3.65 Vdc to 4.23 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2506.000003	0.001	2680.000003	0.001
-20	2506.000004	0.002	2680.000003	0.001
-10	2506.000001	0.000	2680.000001	0.000
0	2506.000004	0.002	2680.000003	0.001
10	2506.000003	0.001	2680.000003	0.001
20	2505.999999	0.000	2679.999997	-0.001
30	2505.999997	-0.001	2679.999998	-0.001
40	2505.999998	-0.001	2679.999997	-0.001
50	2505.999999	-0.001	2679.999997	-0.001

4.4 Occupied Bandwidth Measurement

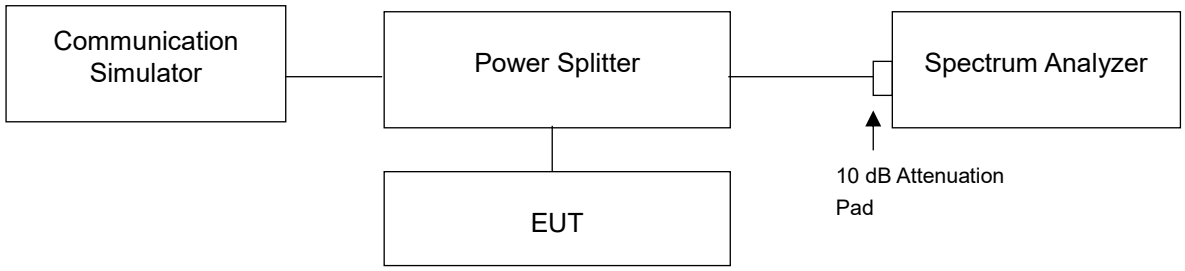
4.4.1 Limits of Occupied Bandwidth Measurement

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.

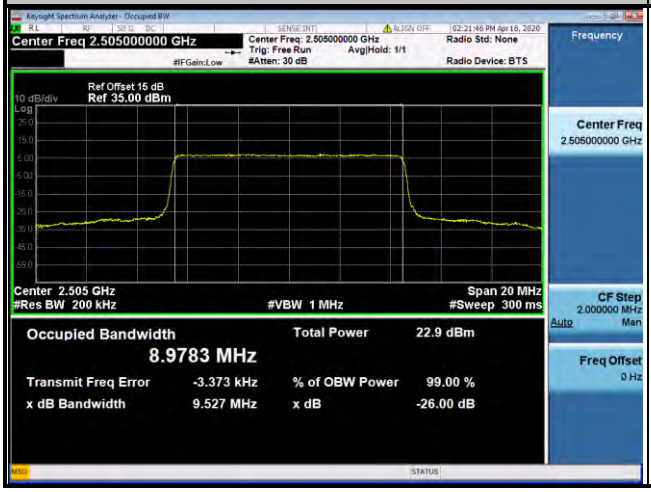
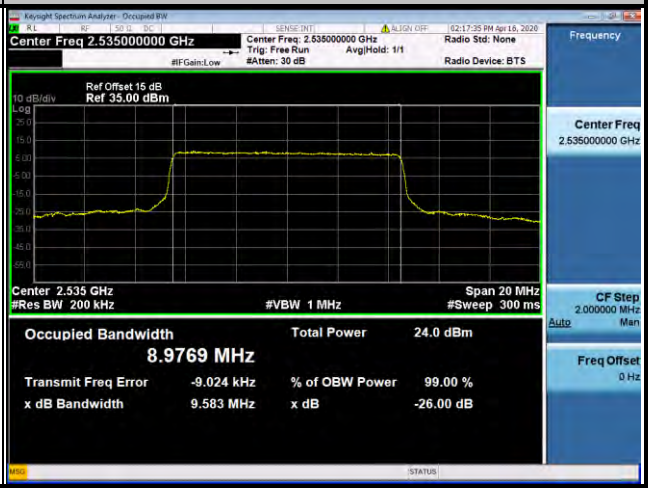
4.4.3 Test Setup



4.4.4 Test Results

LTE Band 7					
Channel Bandwidth: 5 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20775	2502.5	4.4946	4.4948	4.847	4.819
21100	2535.0	4.4950	4.4960	4.881	4.839
21425	2567.5	4.4920	4.4942	4.805	4.810
Channel Bandwidth: 10 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20800	2505.0	8.9726	8.9783	9.572	9.527
21100	2535.0	8.9769	8.9739	9.583	9.527
21400	2565.0	8.9633	8.9701	9.509	9.511

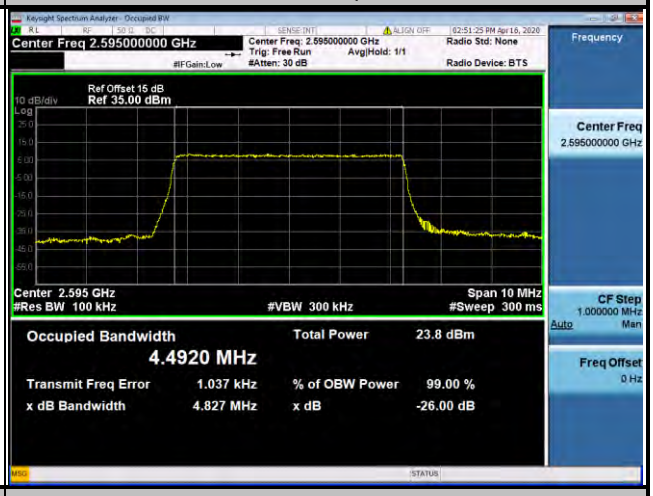
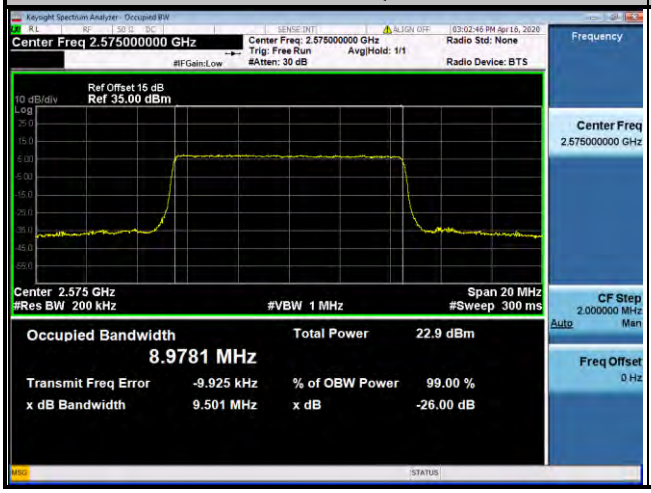
Spectrum Plot of Worst Value

99 % Occupied Bandwidth	**26 dB Bandwidth**
5 MHz / 16QAM	**5 MHz / QPSK**
	
10 MHz / 16QAM	**10 MHz / QPSK**
	

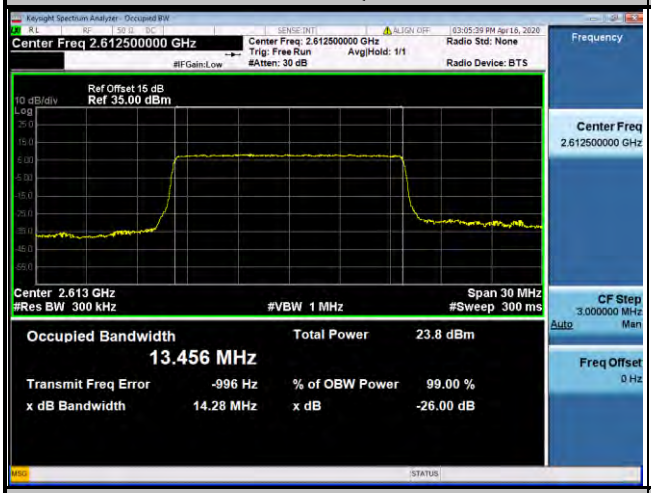
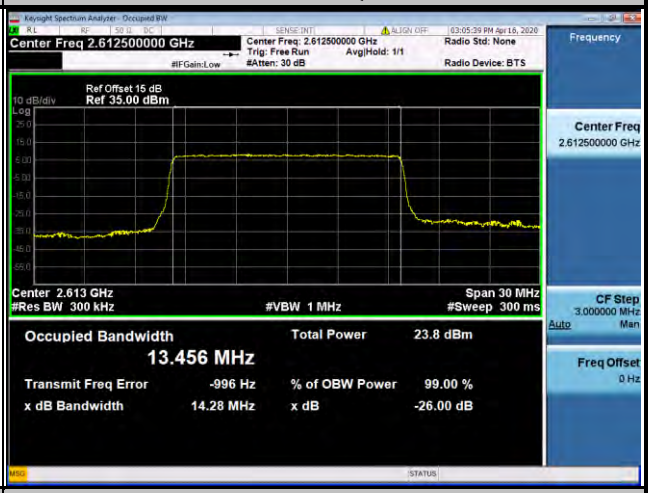
LTE Band 7					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20825	2507.5	13.456	13.448	14.33	14.27
21100	2535.0	13.458	13.445	14.35	14.25
21375	2562.5	13.435	13.430	14.24	14.23
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20850	2510.0	17.929	17.949	19.11	19.04
21100	2535.0	17.922	17.938	19.13	19.04
21350	2560.0	17.891	17.902	19.02	18.99

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / QPSK
	
20 MHz / 16QAM	20 MHz / QPSK
	

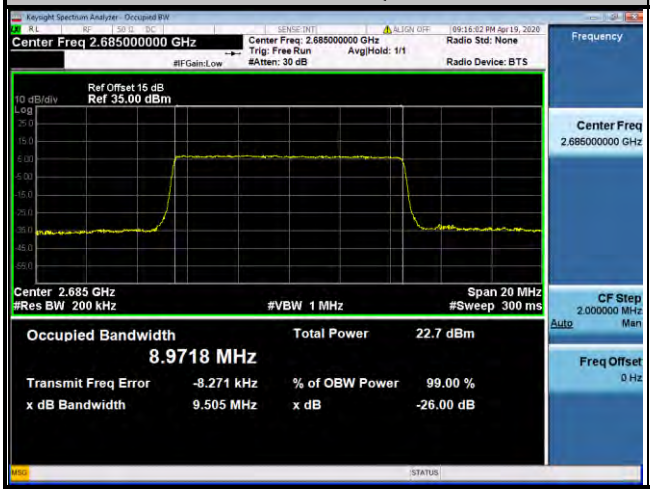
LTE Band 38					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
37775	2572.5	4.4935	4.4911	4.816	4.791
38000	2595.0	4.4920	4.4911	4.827	4.797
38225	2617.5	4.4914	4.4951	4.814	4.798
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
37800	2575.0	8.9604	8.9781	9.502	9.501
38000	2595.0	8.9609	8.9685	9.509	9.505
38200	2615.0	8.9593	8.9657	9.495	9.487

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 16QAM	5 MHz / QPSK
	
10 MHz / 16QAM	10 MHz / QPSK
	

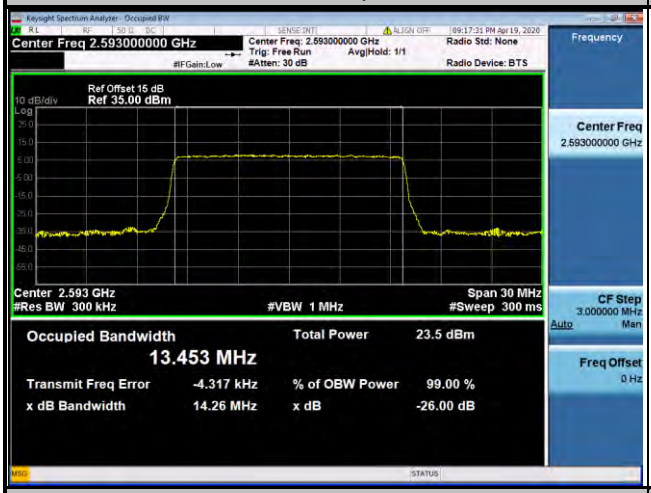
LTE Band 38					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
37825	2577.5	13.451	13.440	14.27	14.24
38000	2595.0	13.455	13.443	14.27	14.24
38175	2612.5	13.456	13.447	14.28	14.24
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
37850	2580.0	17.917	17.907	19.05	19.03
38000	2595.0	17.921	17.920	19.05	19.02
38150	2610.0	17.921	17.920	19.04	19.02

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / QPSK
	
20 MHz / QPSK	20 MHz / QPSK
	

LTE Band 41					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39675	2498.5	4.4930	4.4922	4.838	4.798
40620	2593.0	4.4930	4.4933	4.823	4.803
41565	2687.5	4.4927	4.4897	4.815	4.791
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39700	2501.0	8.9520	8.9699	9.502	9.504
40620	2593.0	8.9554	8.9706	9.501	9.500
41540	2685.0	8.9580	8.9718	9.505	9.505

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 16QAM	5 MHz / QPSK
	
10 MHz / 16QAM	10 MHz / QPSK
	

LTE Band 41					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39725	2503.5	13.436	13.435	14.27	14.25
40620	2593.0	13.453	13.440	14.26	14.22
41515	2682.5	13.436	13.428	14.28	14.24
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39750	2506.0	17.899	17.896	19.03	19.01
40620	2593.0	17.908	17.907	19.04	19.00
41490	2680.0	17.864	17.856	19.01	18.99

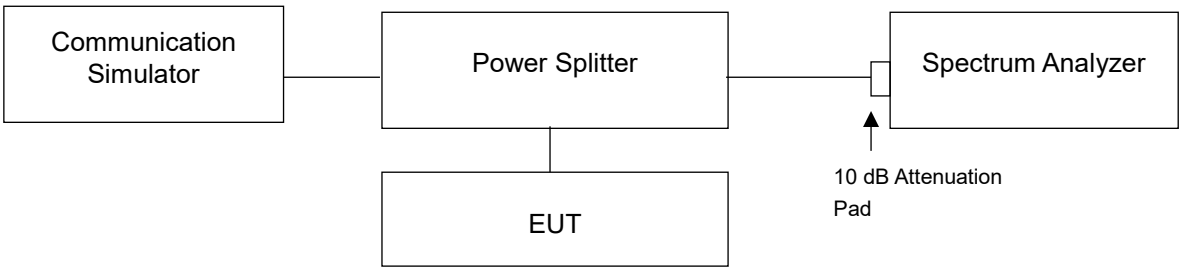
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / QPSK
	
20 MHz / QPSK	20 MHz / QPSK
	

4.5 Out-of-Band Emissions Measurement

4.5.1 Limits of Out-of-Band Emissions Measurement

According to FCC 27.53(m)(4)&(6) 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.

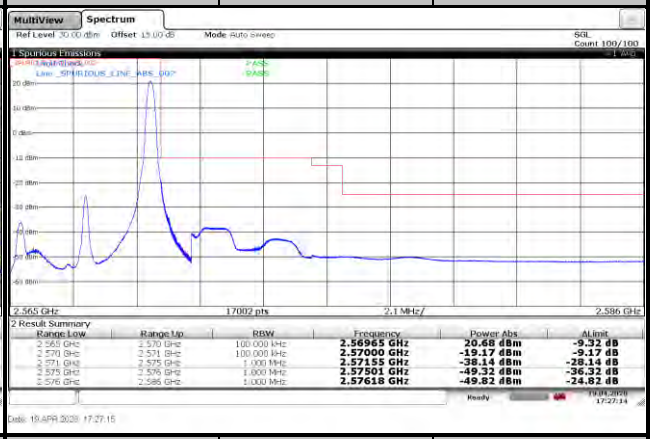
4.5.2 Test Setup

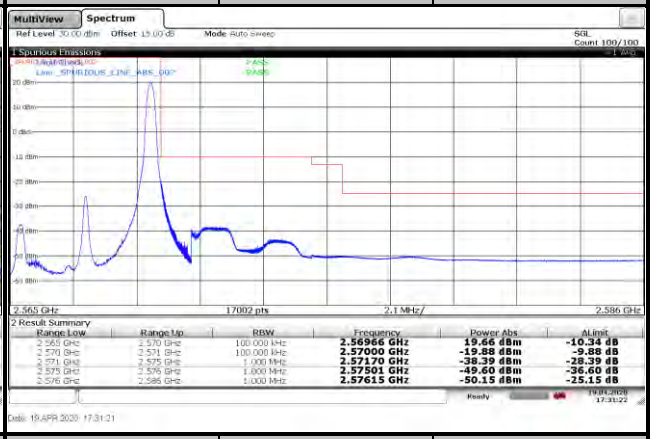
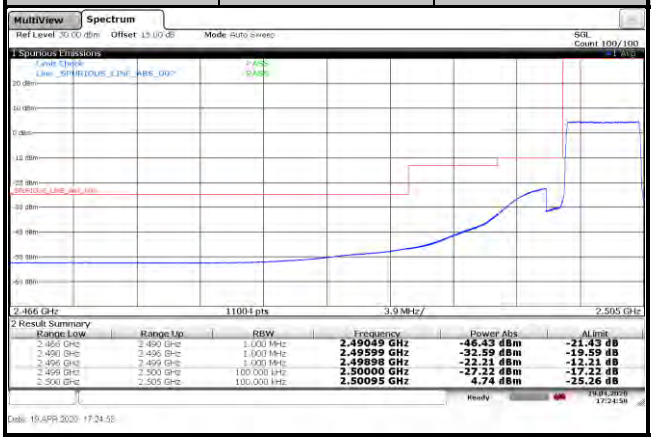


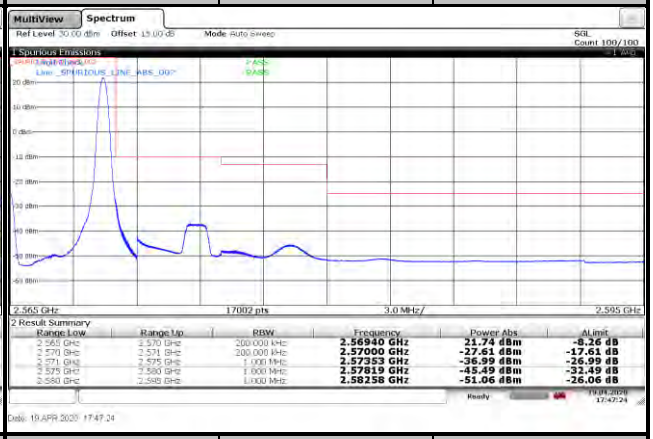
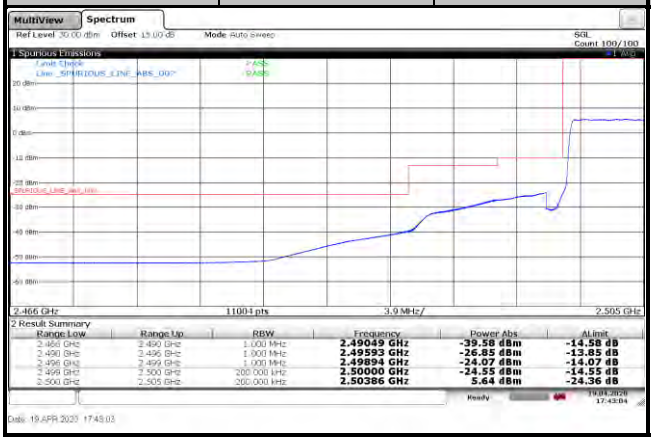
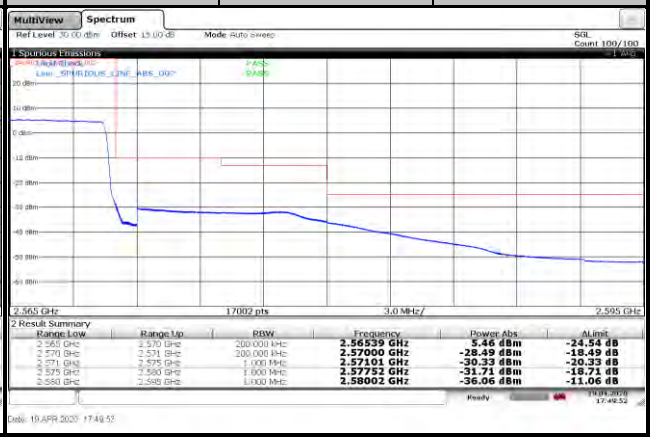
4.5.3 Test Procedures

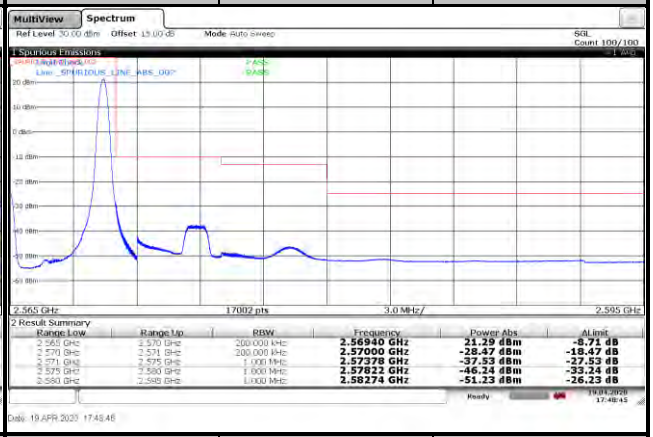
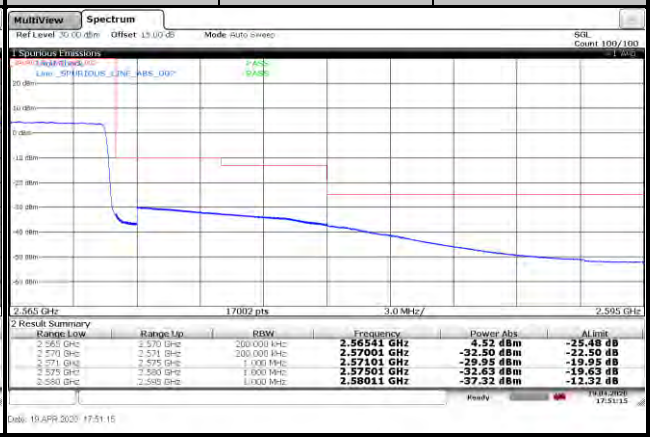
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
b. The out-of-band emissions measurement used the power splitter via EUT RF power connector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

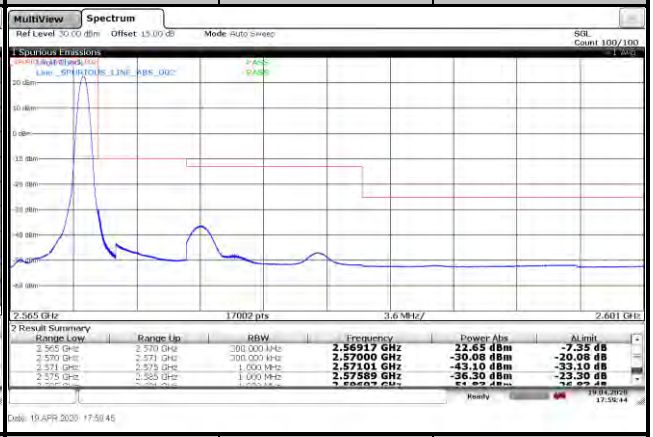
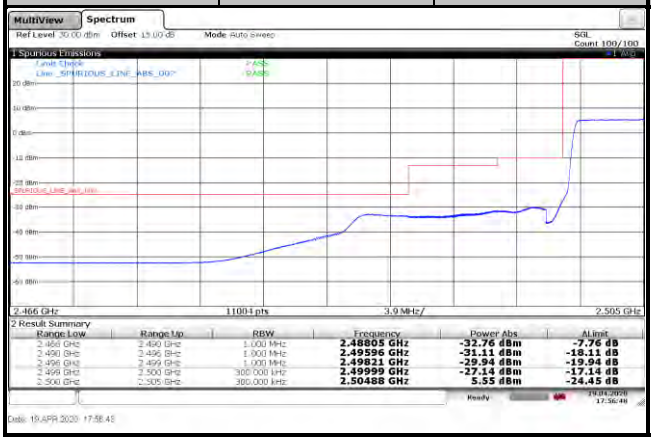
4.5.4 Test Results

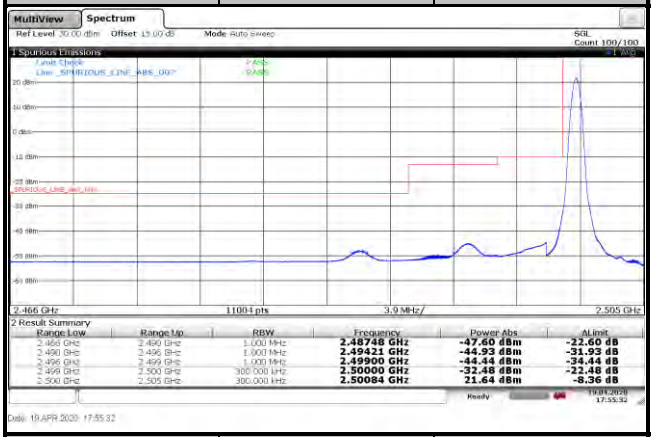
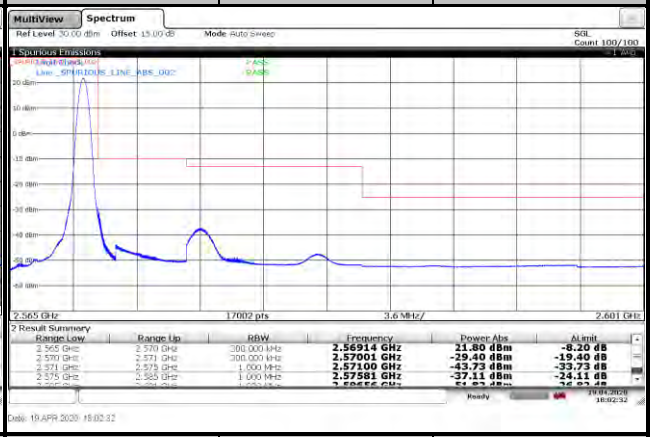
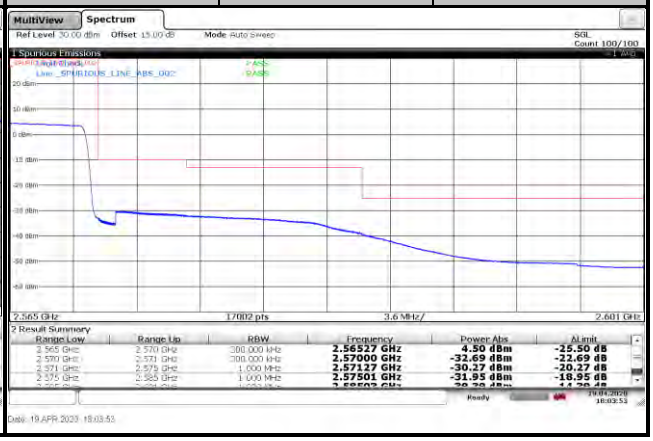
LTE Band 7					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20775	1 RB	Channel	21425	1 RB
					
Channel	20775	25 RB	Channel	21425	25 RB
					

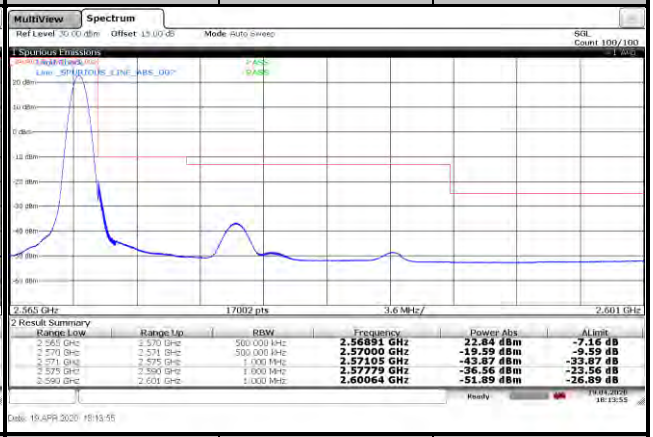
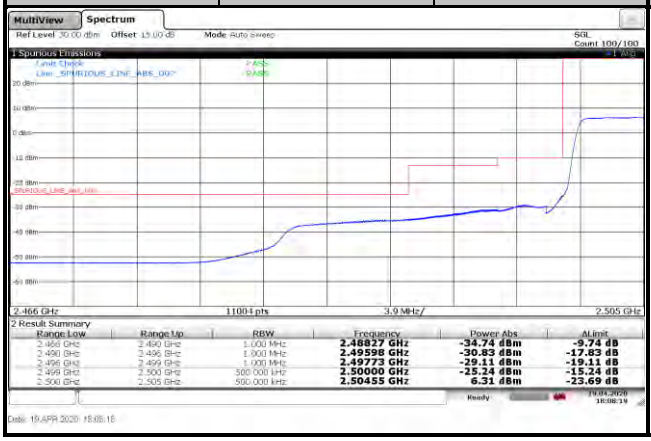
LTE Band 7					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20775	1 RB	Channel	21425	1 RB
					
Channel	20775	25 RB	Channel	21425	25 RB
					

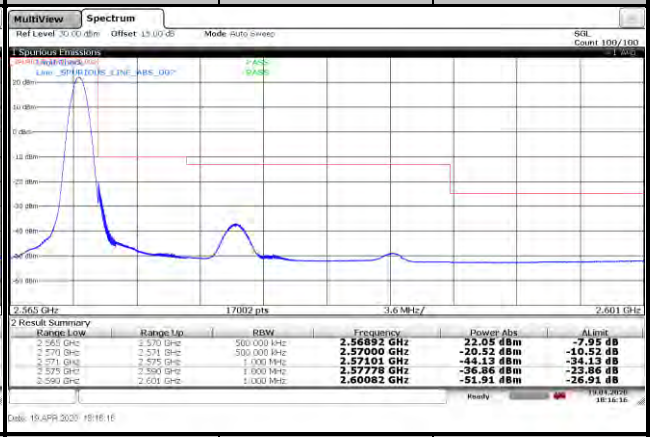
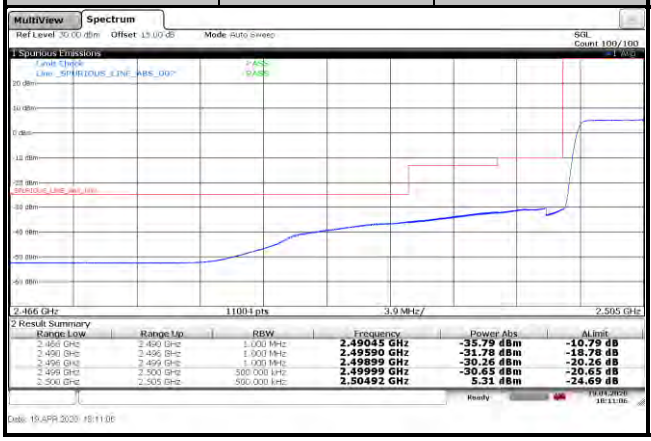
LTE Band 7					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20800	1 RB	Channel	21400	1 RB
					
Channel	20800	50 RB	Channel	21400	50 RB
					

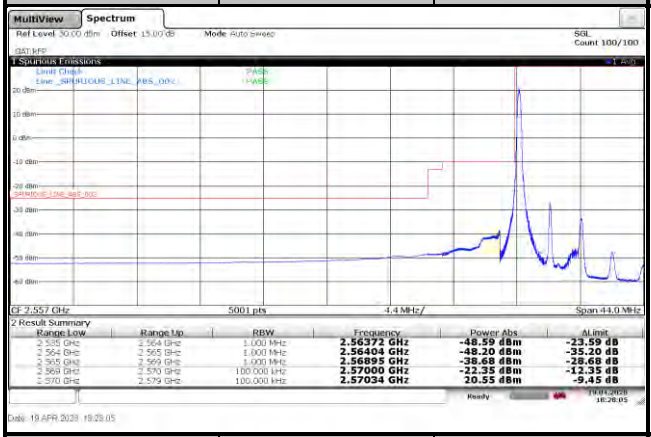
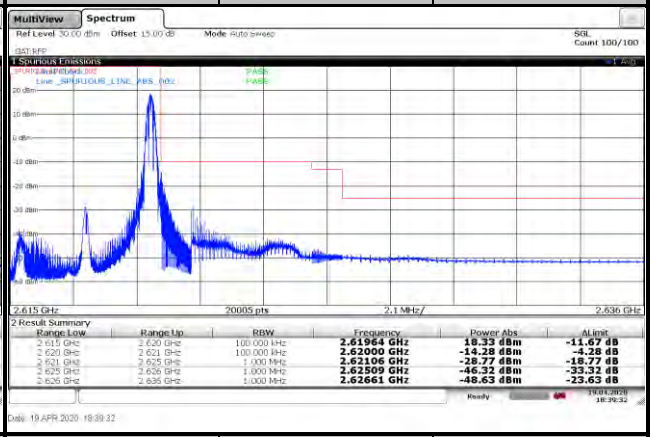
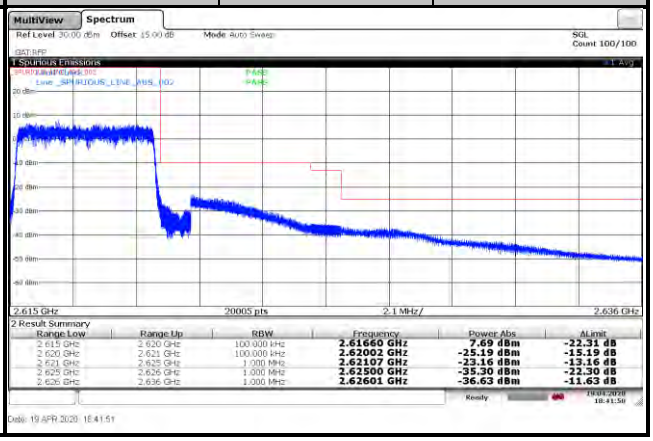
LTE Band 7					
Channel Bandwidth: 10 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20800	1 RB	Channel	21400	1 RB
					
Channel	20800	50 RB	Channel	21400	50 RB
					

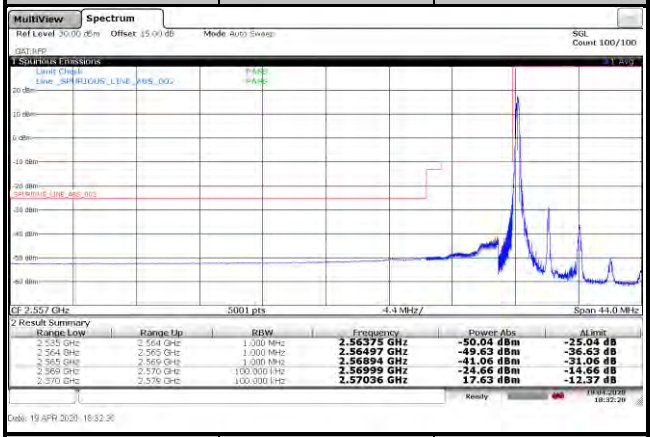
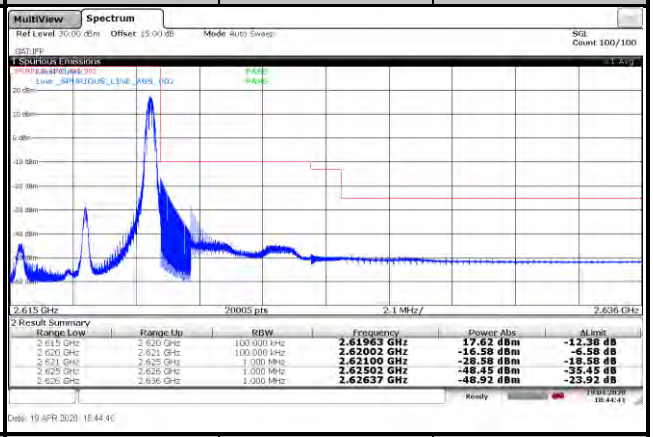
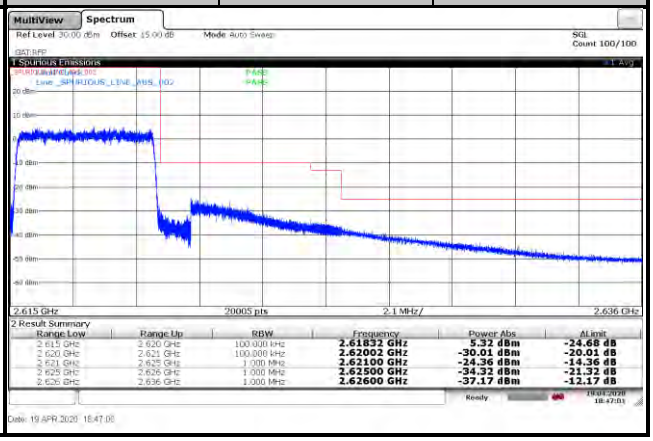
LTE Band 7					
Channel Bandwidth: 15 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20825	1 RB	Channel	21375	1 RB
					
Channel	20825	75 RB	Channel	21375	75 RB
					

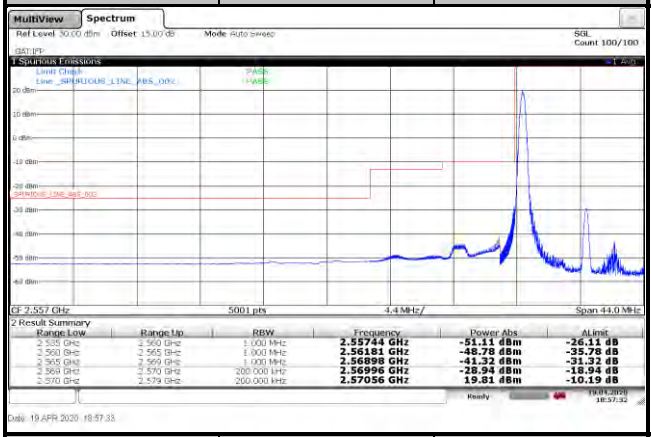
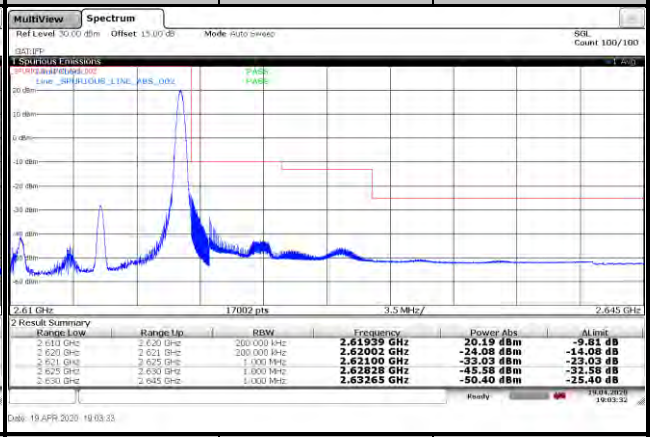
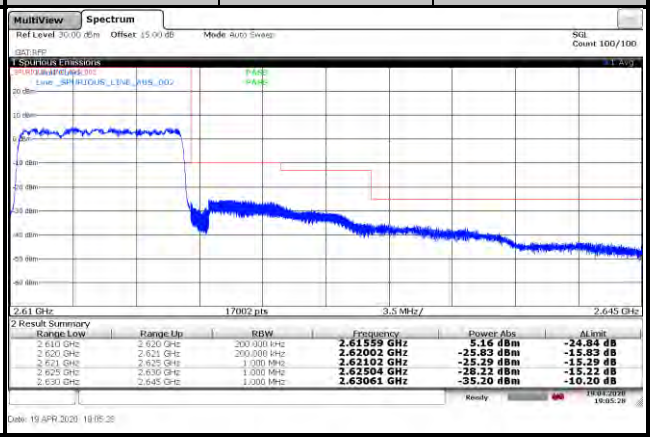
LTE Band 7					
Channel Bandwidth: 15 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20825	1 RB	Channel	21375	1 RB
					
Channel	20825	75 RB	Channel	21375	75 RB
					

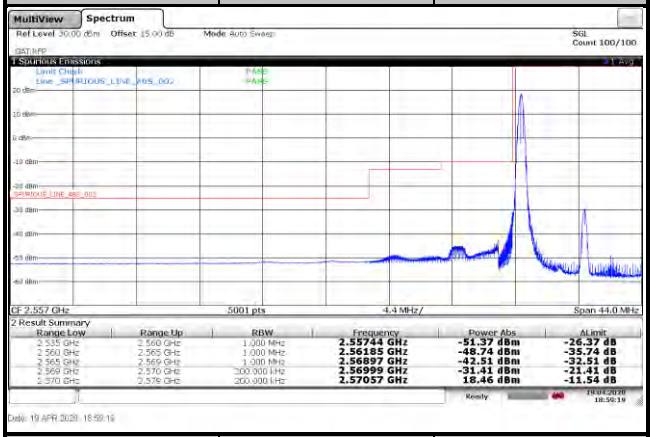
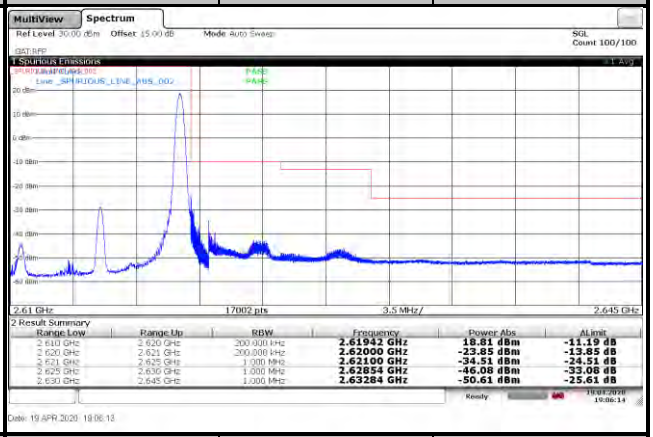
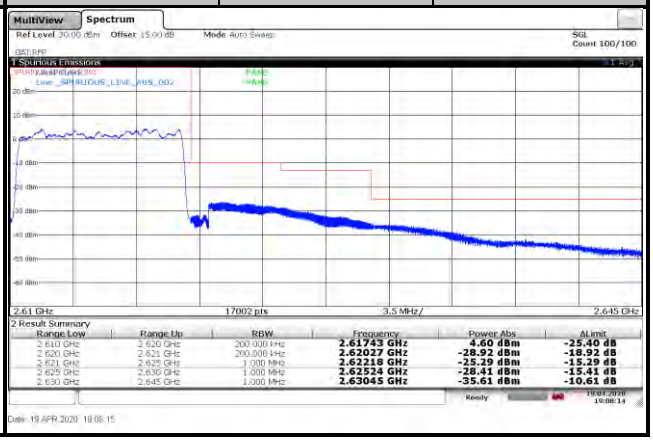
LTE Band 7					
Channel Bandwidth: 20 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	20850	1 RB	Channel	21350	1 RB
					
Channel	20850	100 RB	Channel	21350	100 RB
					

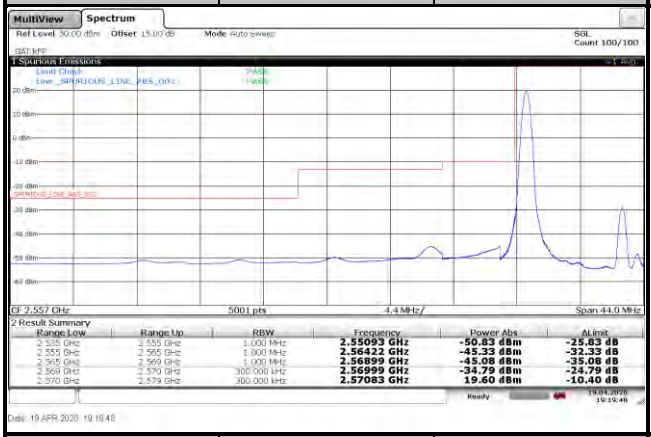
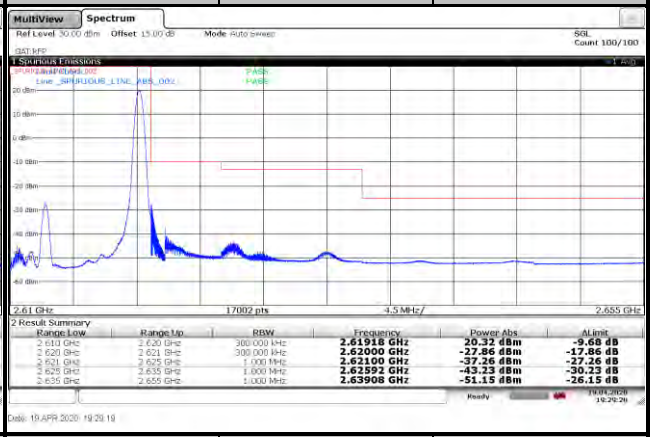
LTE Band 7					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	20850	1 RB	Channel	21350	1 RB
					
Channel	20850	100 RB	Channel	21350	100 RB
					

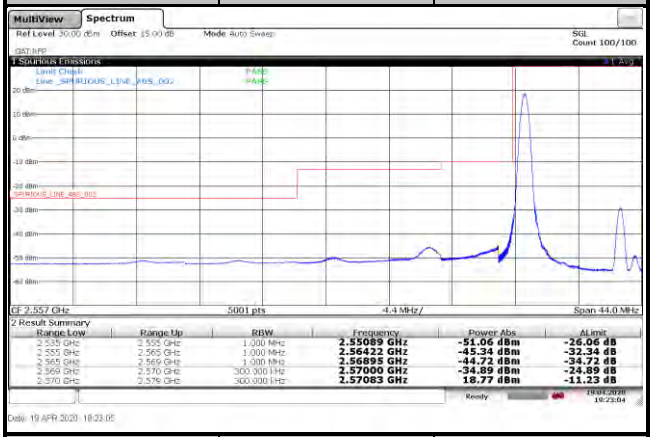
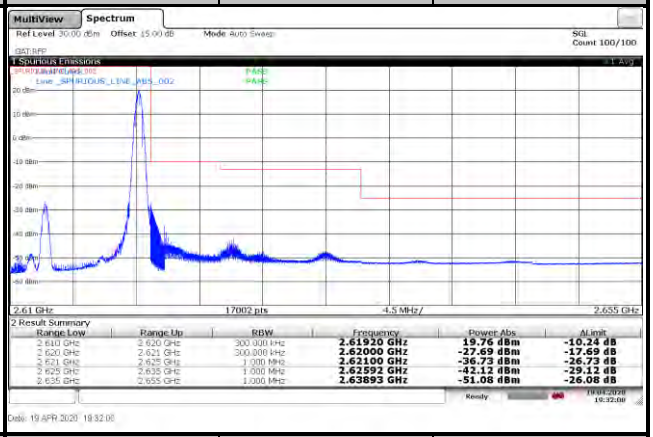
LTE Band 38					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37775	1 RB	Channel	38225	1 RB
					
Channel	37775	25 RB	Channel	38225	25 RB
					

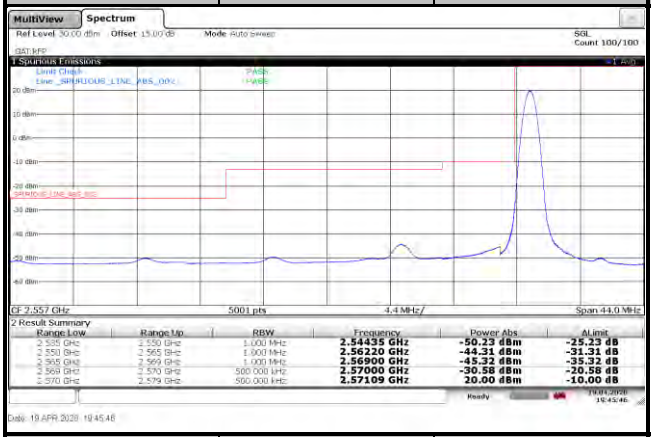
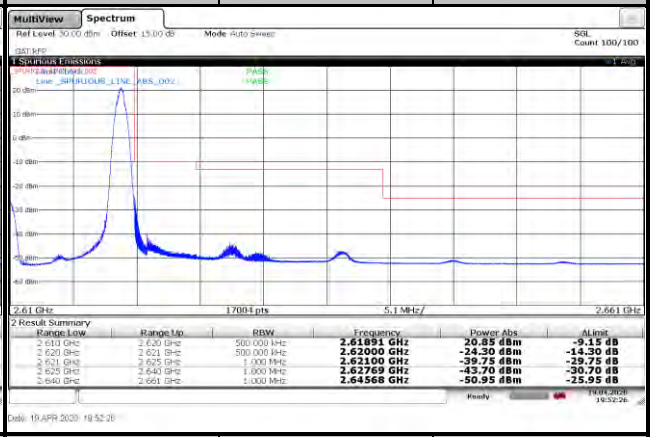
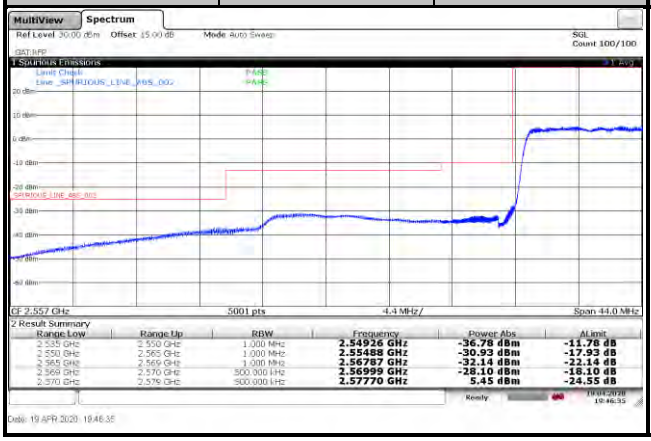
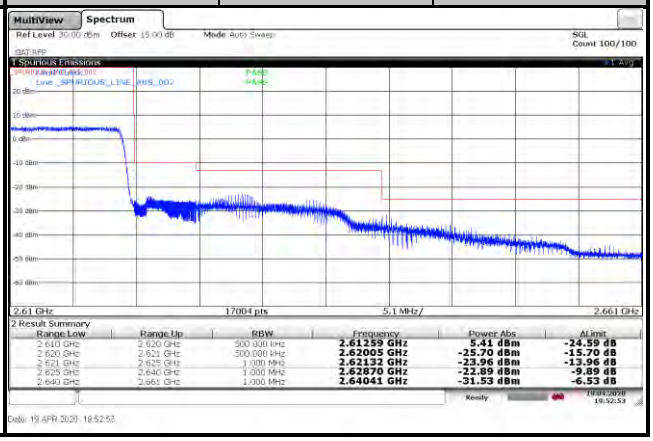
LTE Band 38					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37775	1 RB	Channel	38225	1 RB
					
Channel	37775	25 RB	Channel	38225	25 RB
					

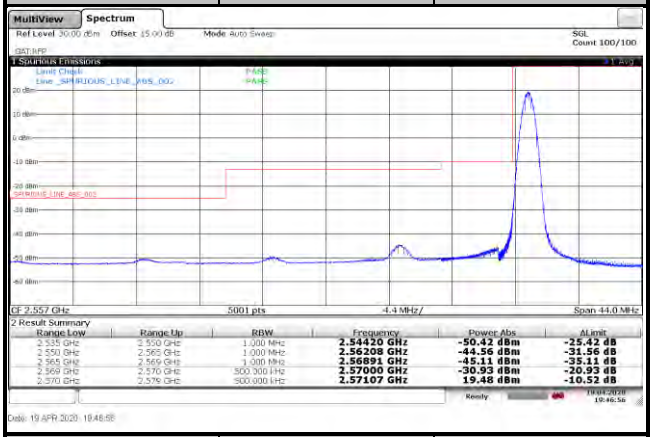
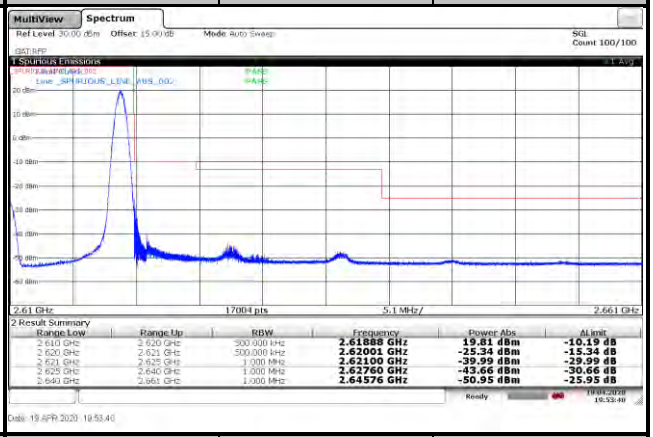
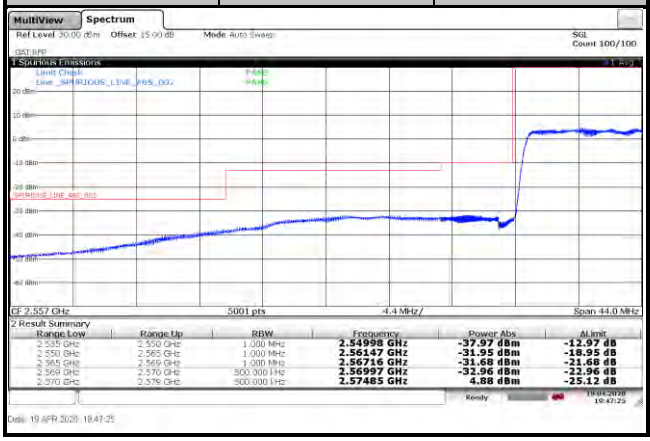
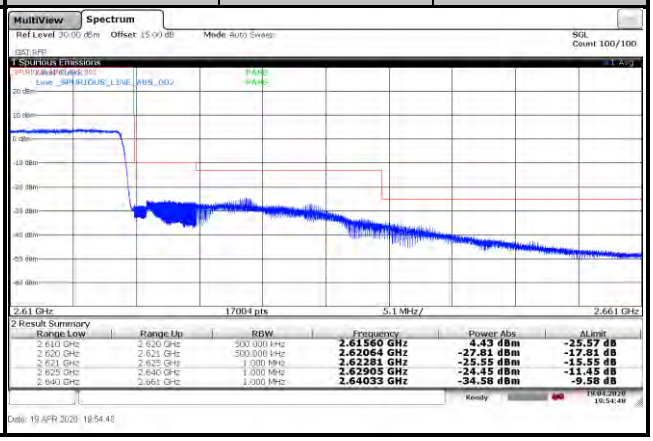
LTE Band 38					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37800	1 RB	Channel	38200	1 RB
					
Channel	37800	50 RB	Channel	38200	50 RB
					

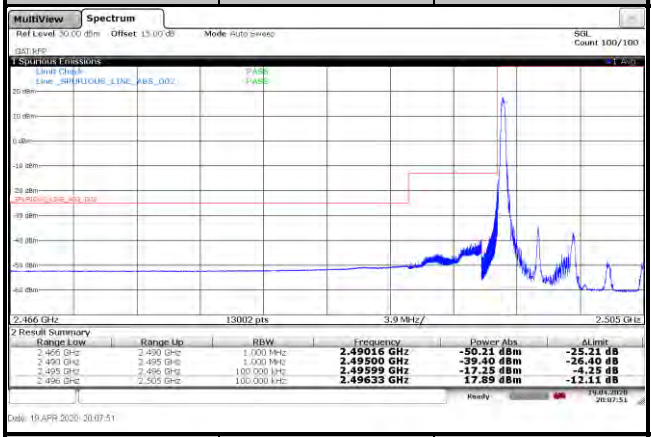
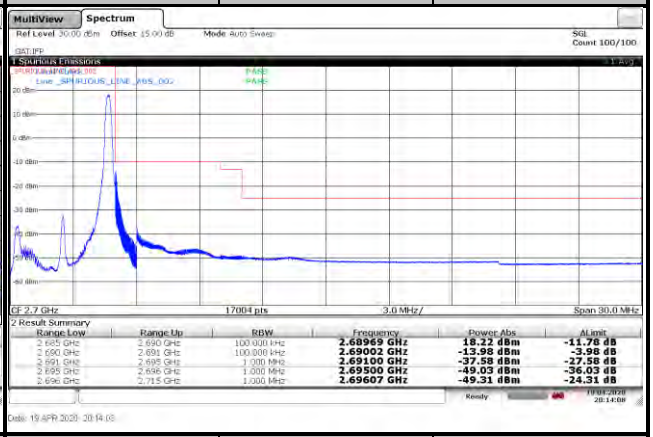
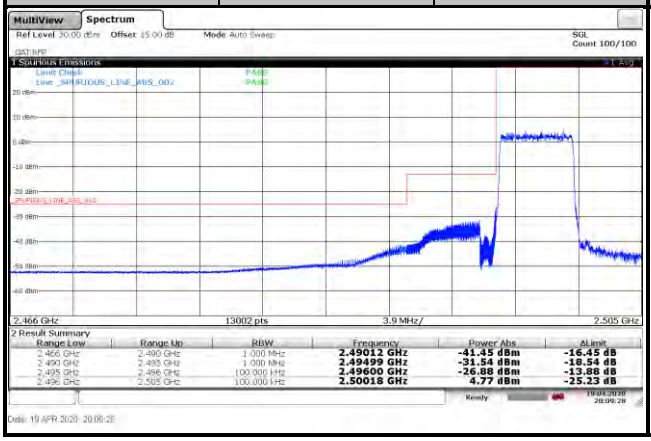
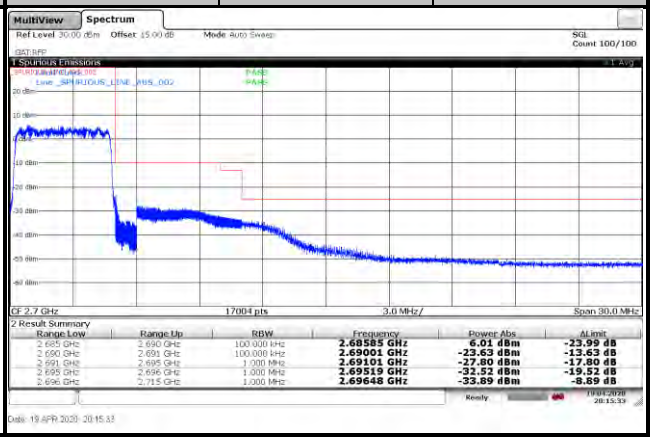
LTE Band 38					
Channel Bandwidth: 10 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37800	1 RB	Channel	38200	1 RB
					
Channel	37800	50 RB	Channel	38200	50 RB
					

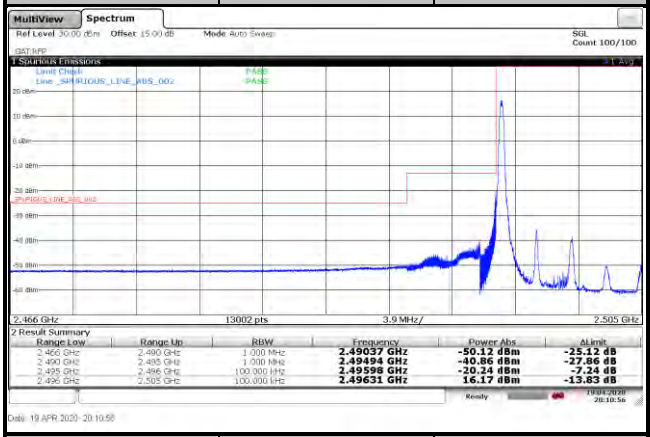
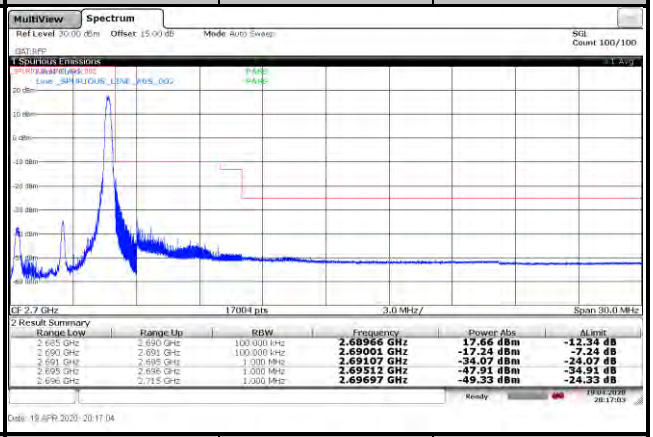
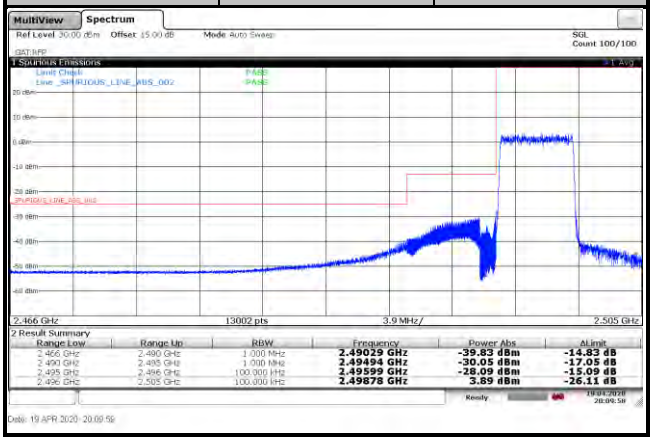
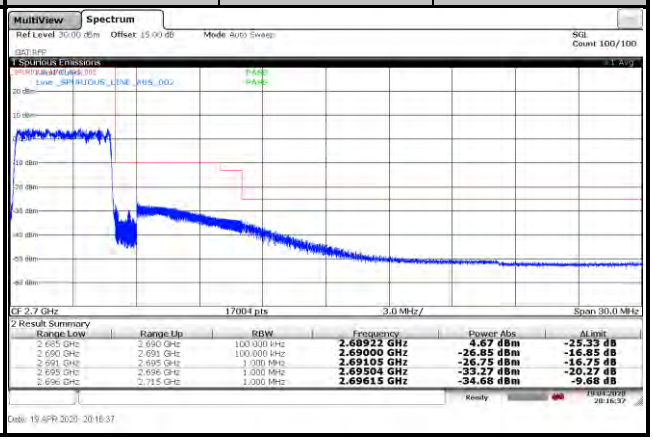
LTE Band 38					
Channel Bandwidth: 15 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37825	1 RB	Channel	38175	1 RB
					
Channel	37825	75 RB	Channel	38175	75 RB
					

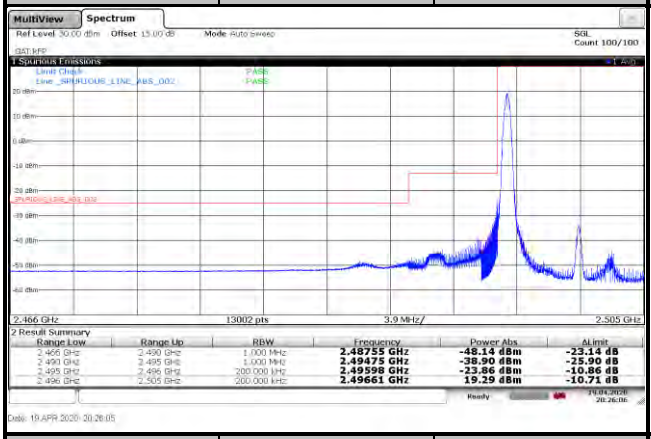
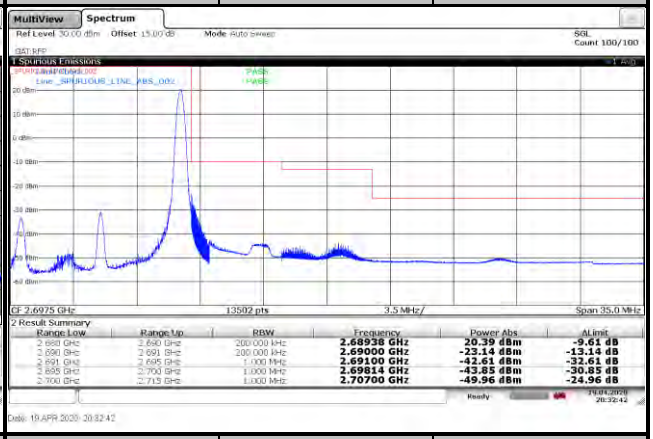
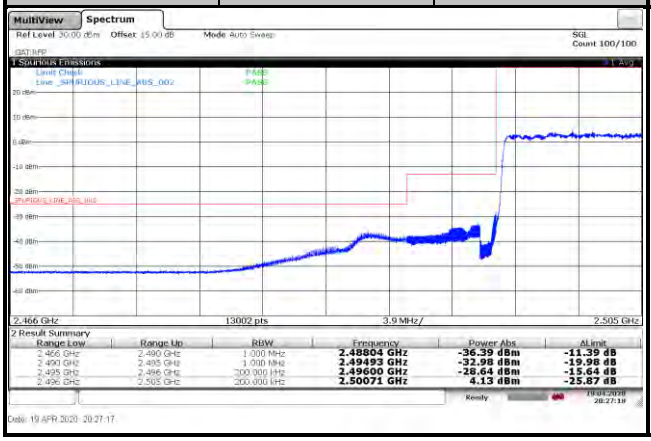
LTE Band 38					
Channel Bandwidth: 15 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37825	1 RB	Channel	38175	1 RB
					
Channel	37825	75 RB	Channel	38175	75 RB
					

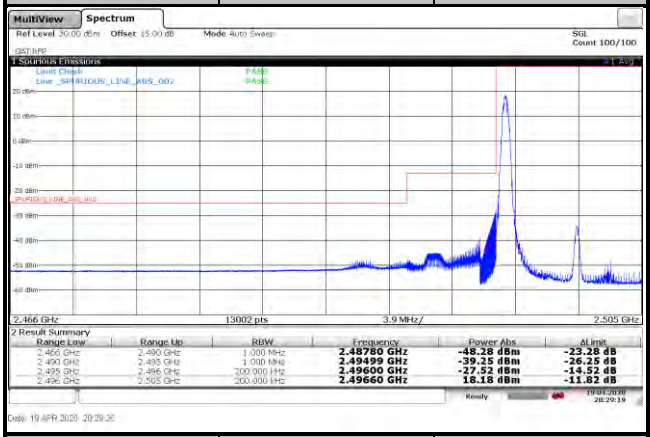
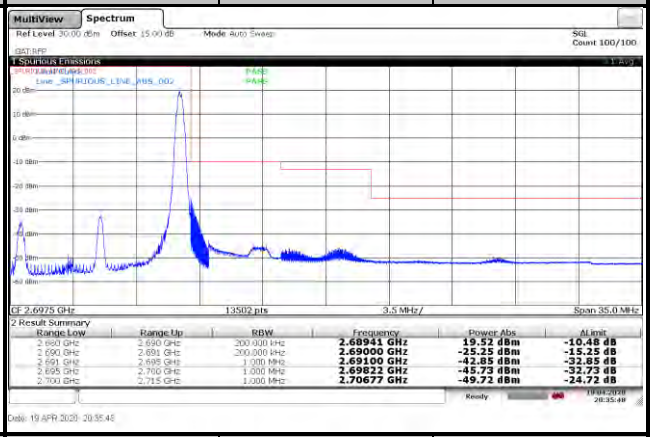
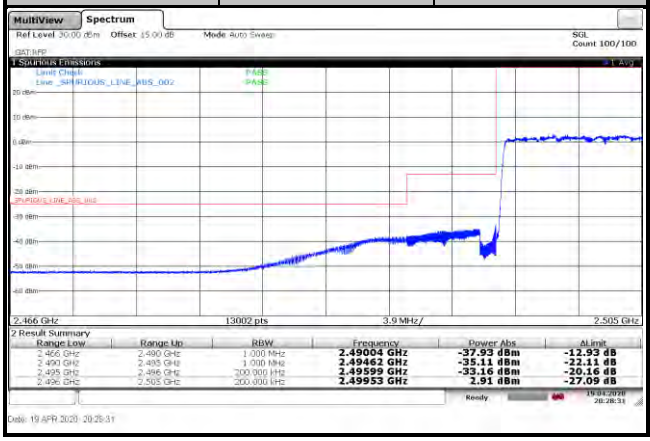
LTE Band 38					
Channel Bandwidth: 20 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	37850	1 RB	Channel	38150	1 RB
					
Channel	37850	100 RB	Channel	38150	100 RB
					

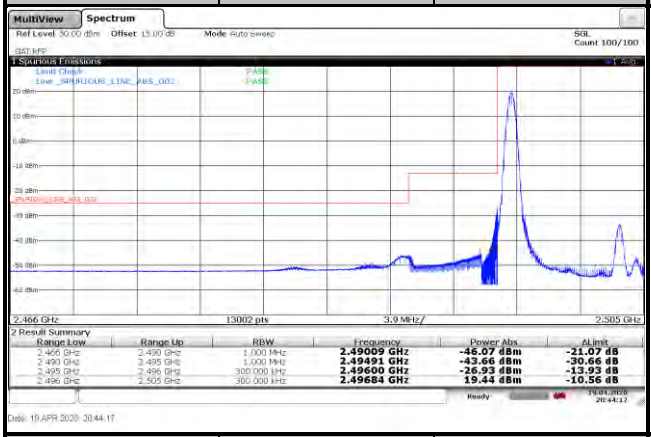
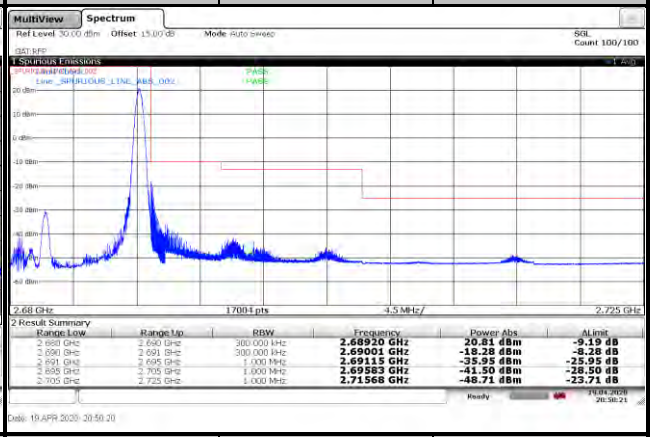
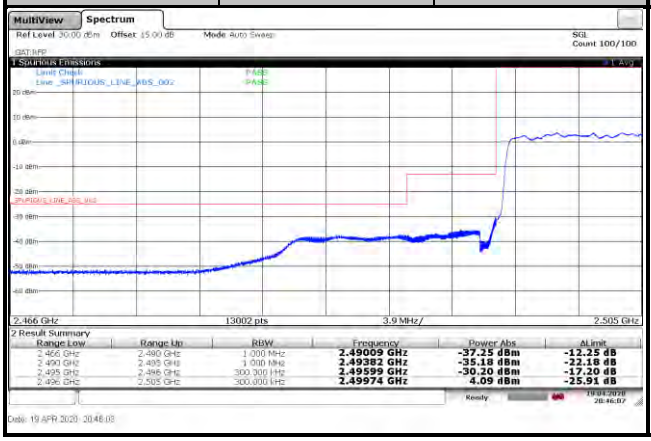
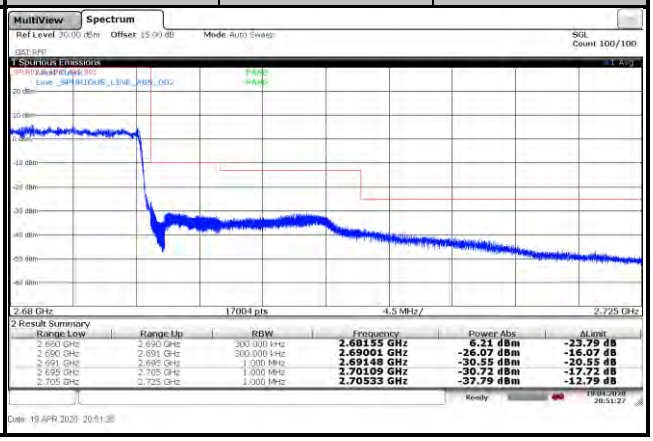
LTE Band 38					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	37850	1 RB	Channel	38150	1 RB
					
Channel	37850	100 RB	Channel	38150	100 RB
					

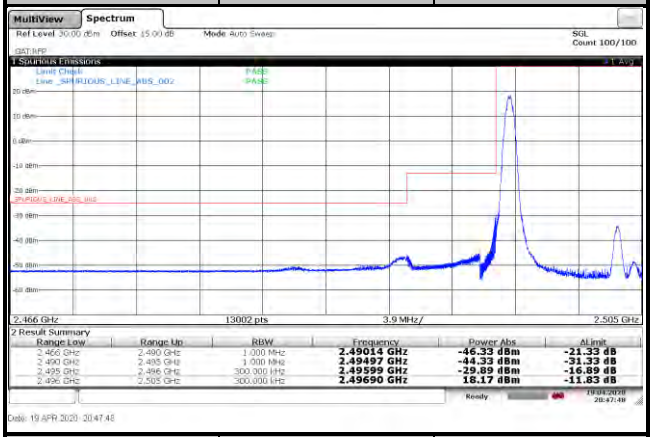
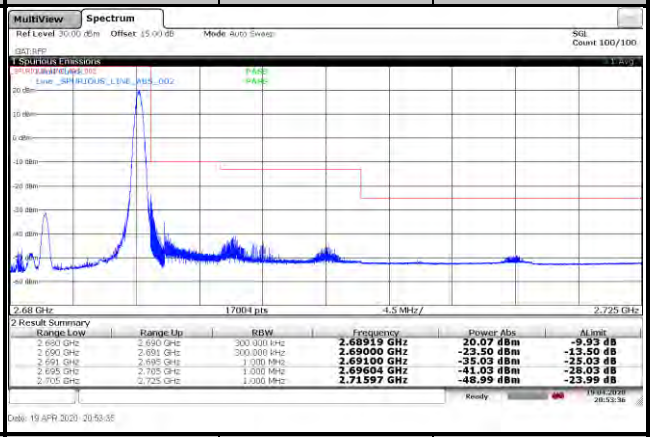
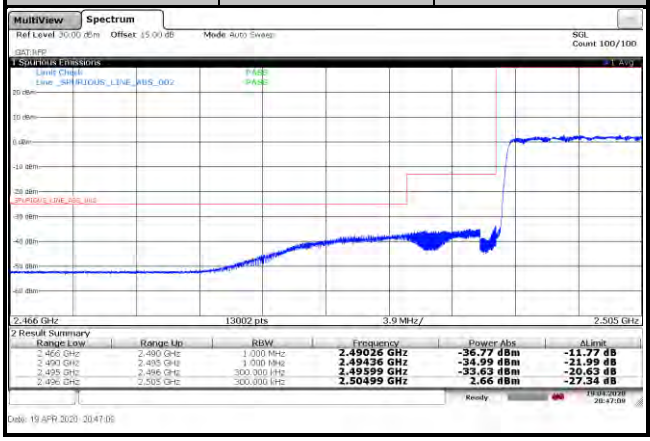
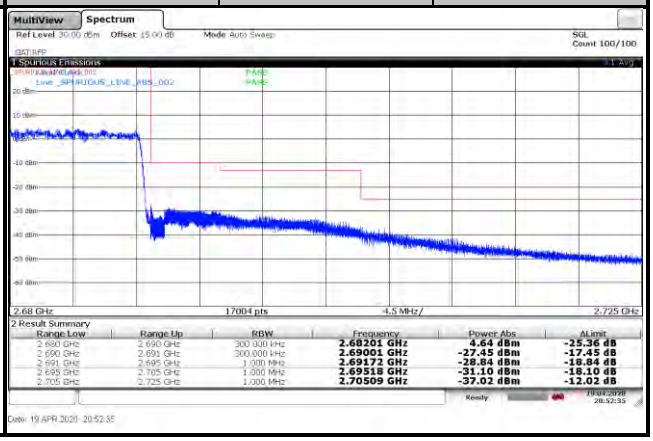
LTE Band 41					
Channel Bandwidth: 5 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39675	1 RB	Channel	41565	1 RB
					
Channel	39675	25 RB	Channel	41565	25 RB
					

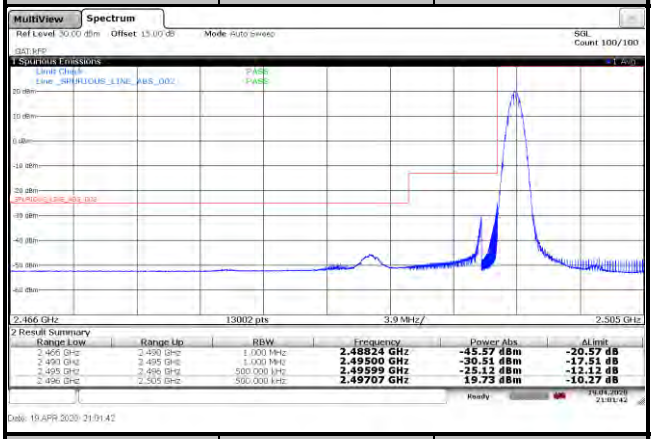
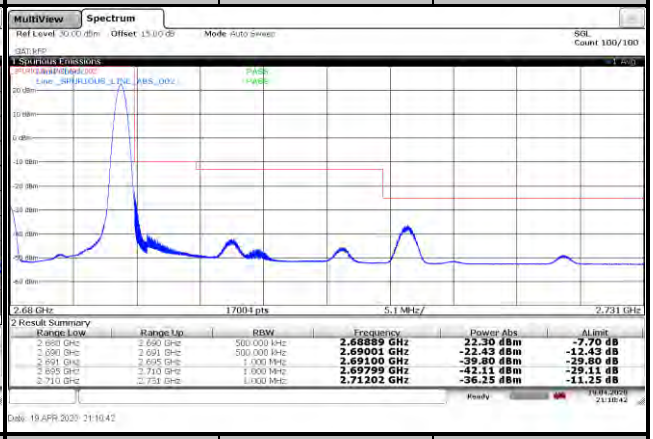
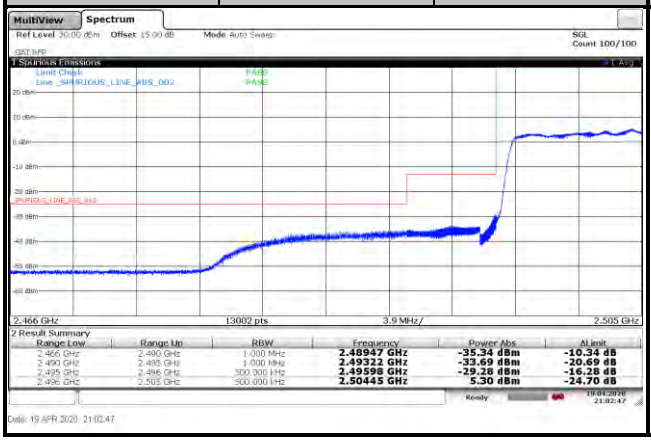
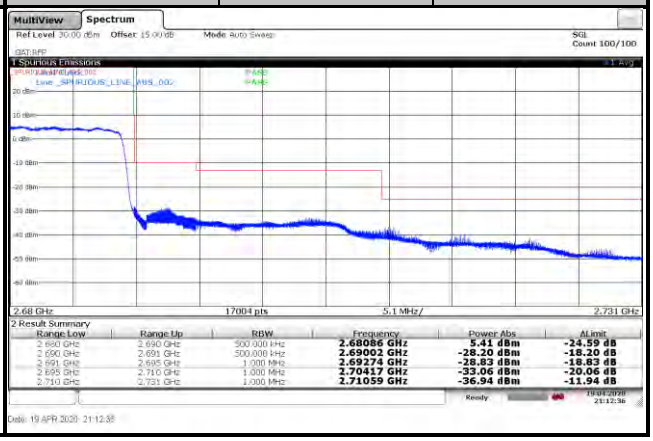
LTE Band 41					
Channel Bandwidth: 5 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39675	1 RB	Channel	41565	1 RB
					
Channel	39675	25 RB	Channel	41565	25 RB
					

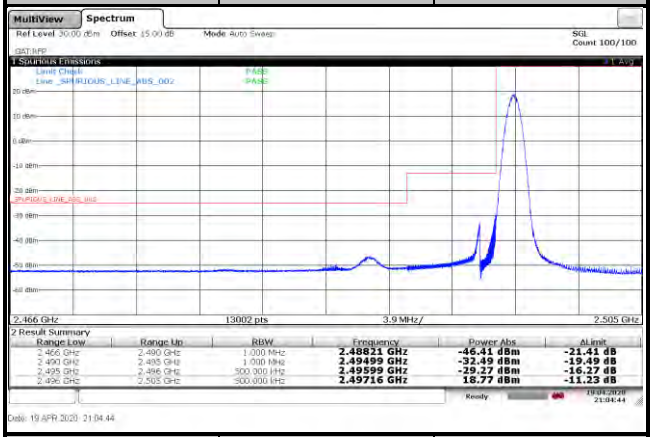
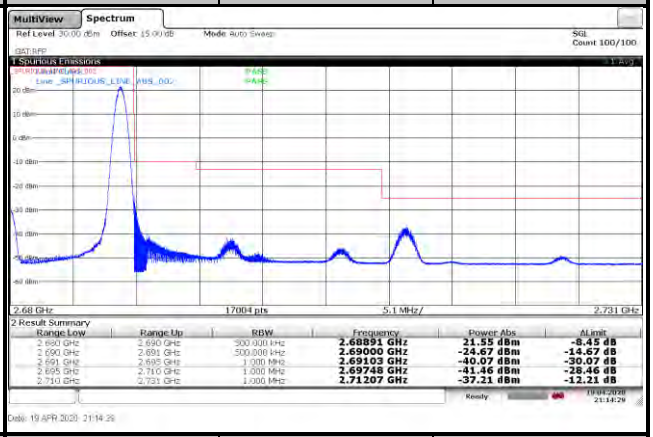
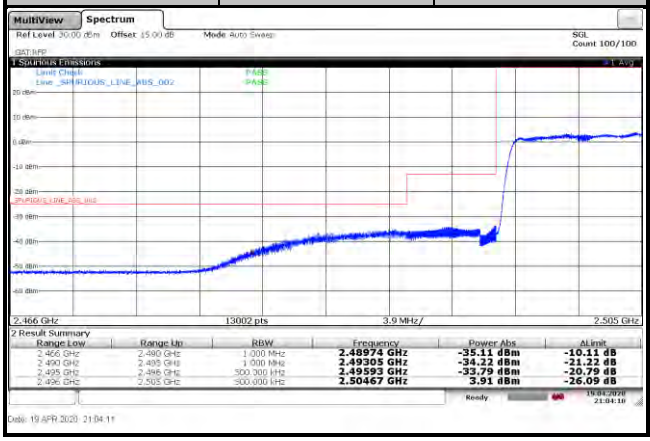
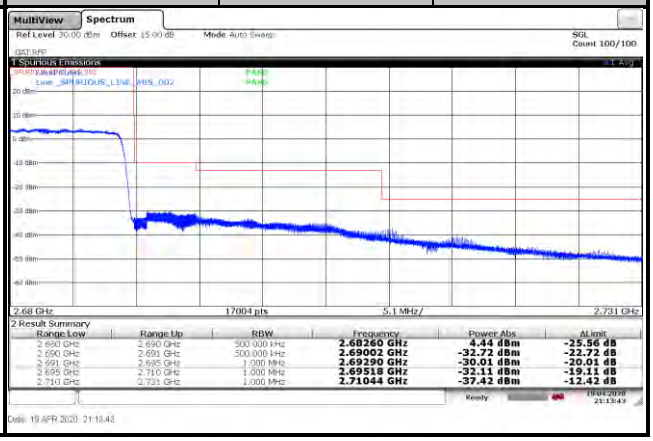
LTE Band 41					
Channel Bandwidth: 10 MHz / QPSK					
<Out-of-Band Emissions>					
Channel	39700	1 RB	Channel	41540	1 RB
					
Channel	39700	50 RB	Channel	41540	50 RB
					

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

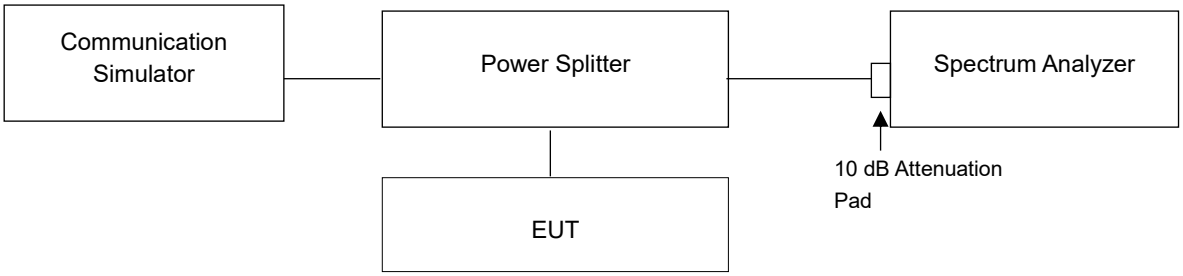
LTE Band 41					
Channel Bandwidth: 20 MHz / 16QAM					
<Out-of-Band Emissions>					
Channel	39750	1 RB	Channel	41490	1 RB
					
Channel	39750	100 RB	Channel	41490	100 RB
					

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

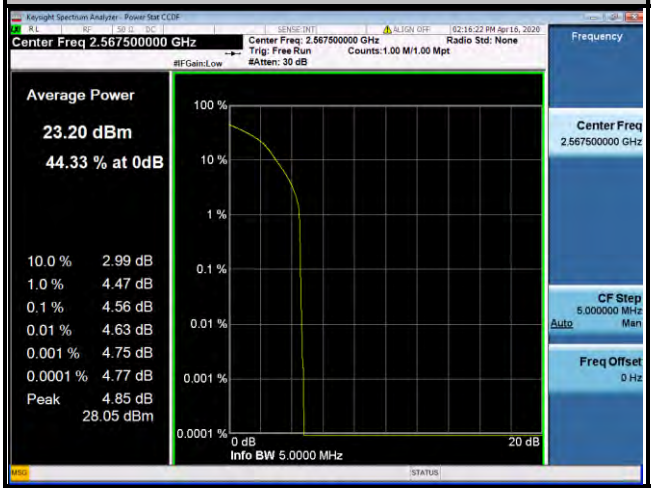


4.6.3 Test Procedures

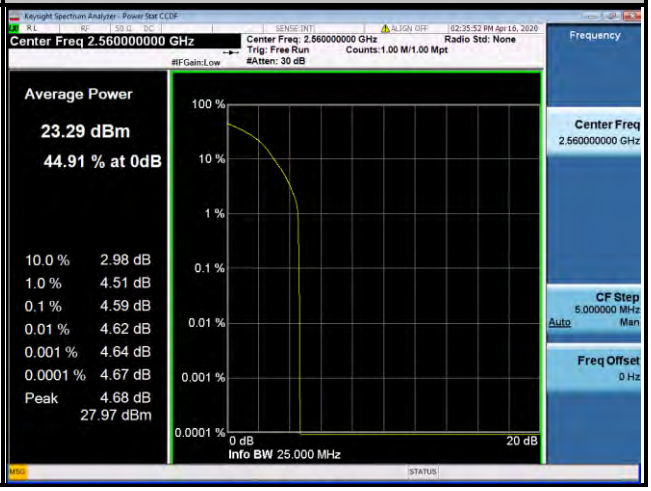
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.6.4 Test Results

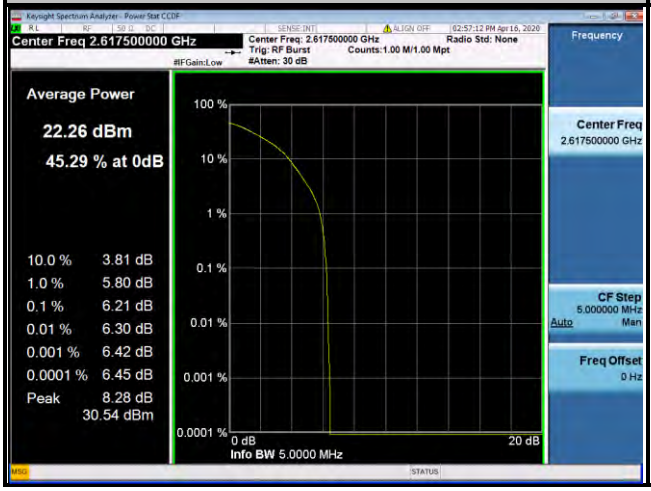
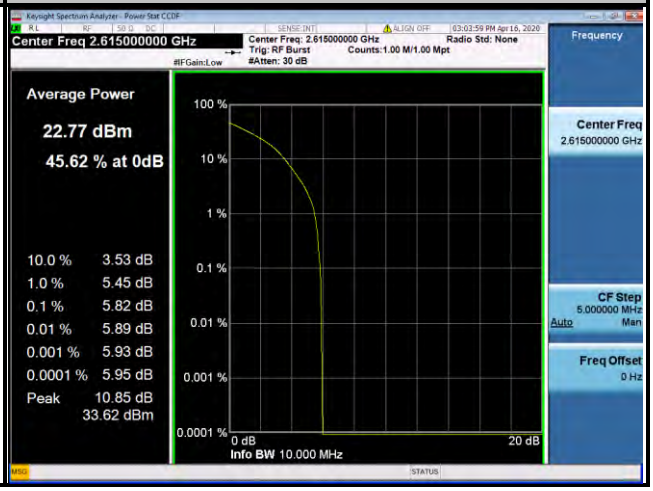
LTE Band 7							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	2.97	4.18	20800	2505.0	2.93	4.14
21100	2535.0	2.97	4.18	21100	2535.0	2.98	4.19
21425	2567.5	3.28	4.56	21400	2565.0	3.33	4.67

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			QPSK	16QAM
20825	2507.5	2.93	4.13	20850	2510.0	2.94	4.04
21100	2535.0	3.00	4.32	21100	2535.0	3.02	4.37
21375	2562.5	3.26	4.61	21350	2560.0	3.20	4.59

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

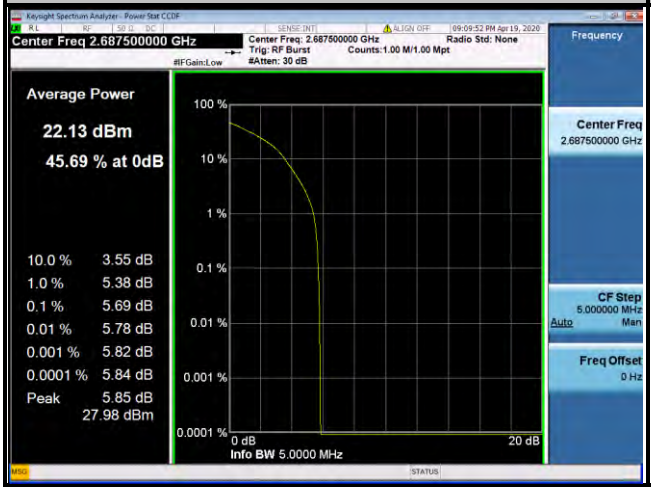
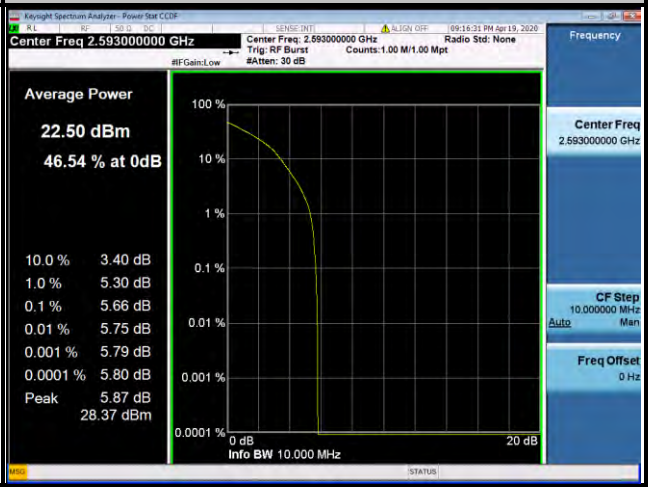
LTE Band 38							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
37775	2572.5	3.83	4.97	37800	2575.0	3.90	5.63
38000	2595.0	3.81	5.05	38000	2595.0	3.73	5.44
38225	2617.5	4.12	6.21	38200	2615.0	3.88	5.82

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

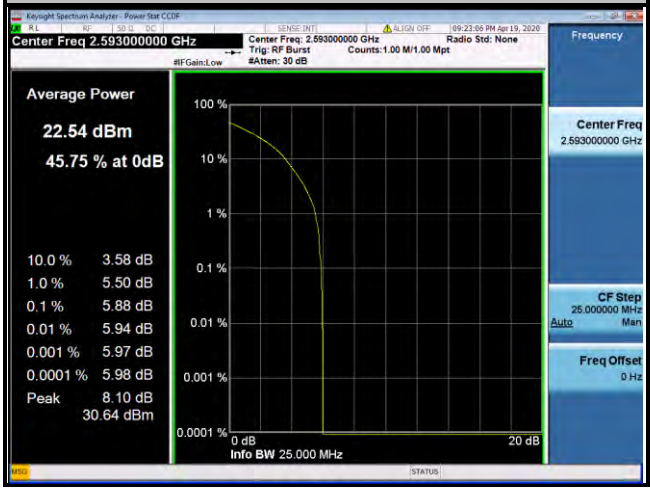
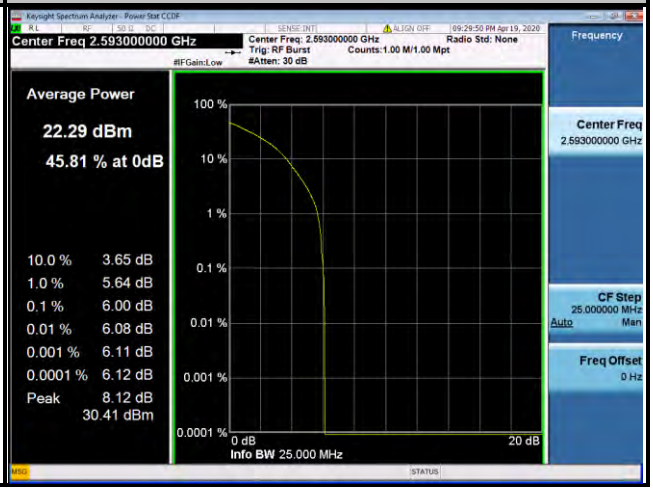
LTE Band 38							
Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
37825	2577.5	4.88	5.91	37850	2580.0	4.51	5.86
38000	2595.0	3.68	5.31	38000	2595.0	3.68	5.77
38175	2612.5	3.98	5.53	38150	2610.0	3.74	5.85

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

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			QPSK	16QAM
39675	2498.5	3.34	4.72	39700	2501.0	3.35	5.48
40620	2593.0	3.85	5.10	40620	2593.0	3.65	5.66
41565	2687.5	4.30	5.69	41540	2685.0	3.23	4.57

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			QPSK	16QAM
39725	2503.5	4.28	5.75	39750	2506.0	4.65	5.65
40620	2593.0	4.14	5.88	40620	2593.0	4.38	6.00
41515	2682.5	3.29	4.62	41490	2680.0	2.60	3.85

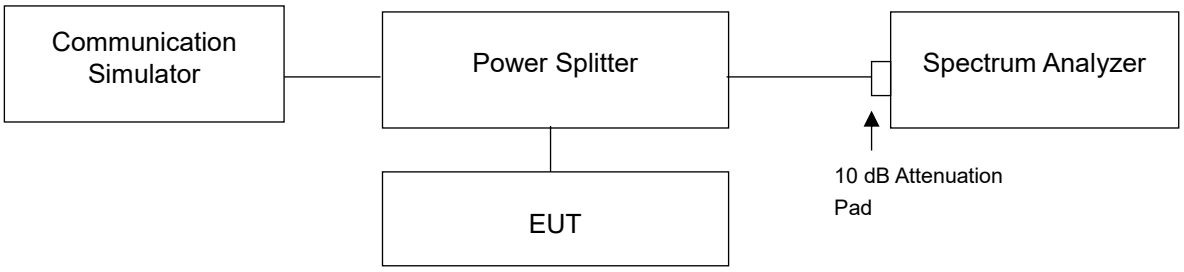
Spectrum Plot of Worst Value	
15 MHz / 16QAM	20 MHz / 16QAM
	

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.

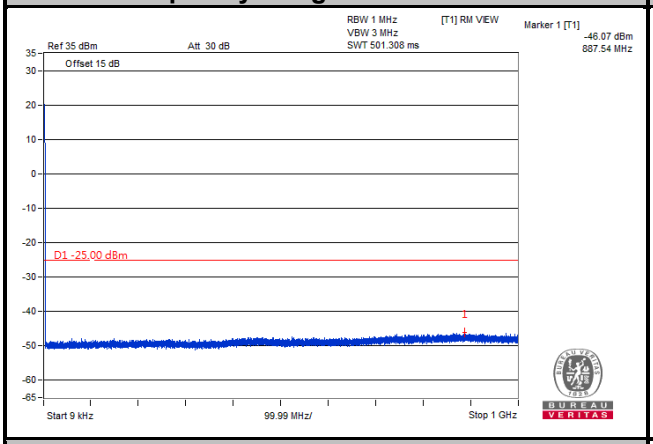
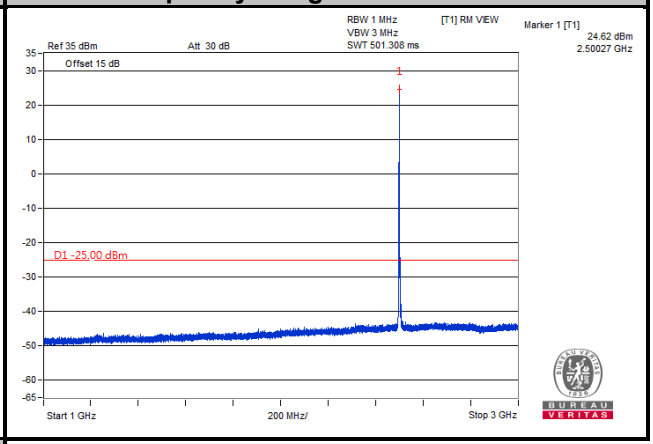
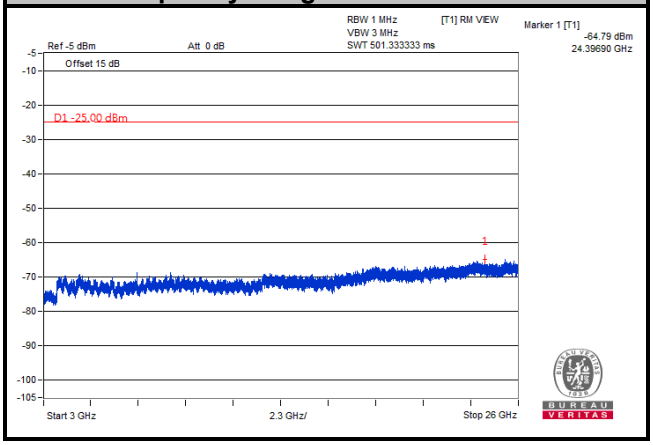
4.7.2 Test Setup



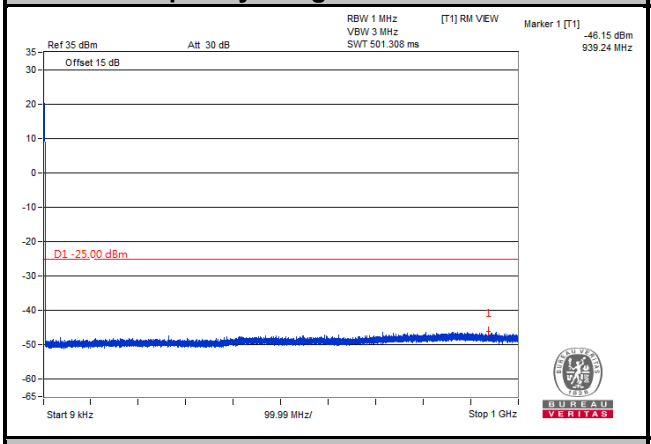
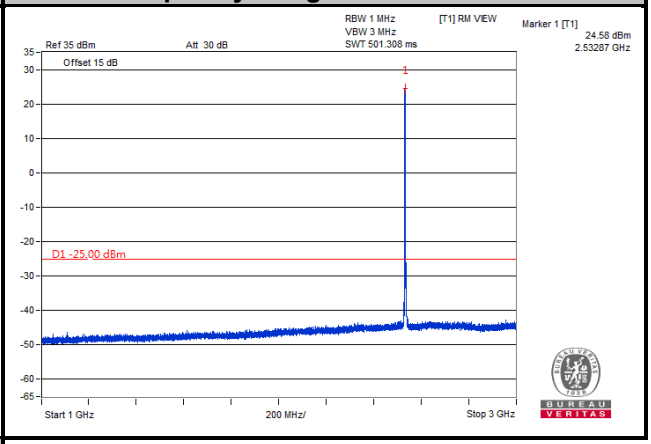
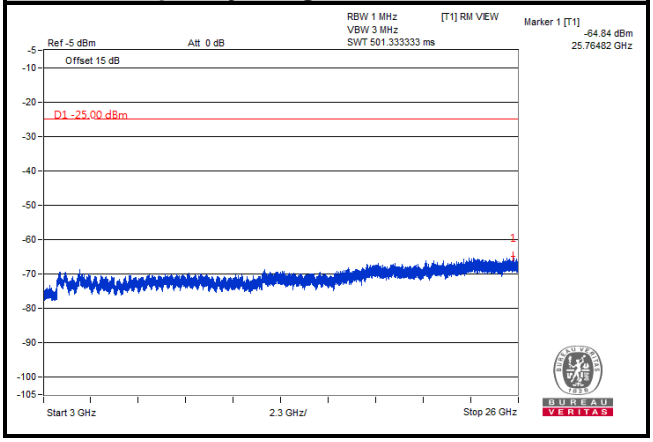
4.7.3 Test Procedure

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 = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 26/27 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement
d. Spectrum RBW settings are referenced to ANSI C63.26 section 5.7.2.

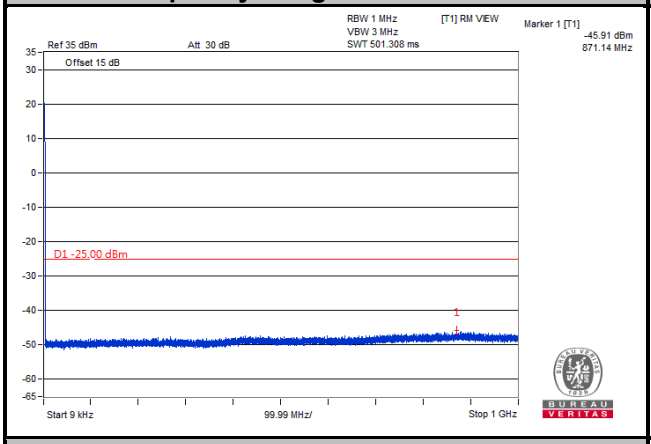
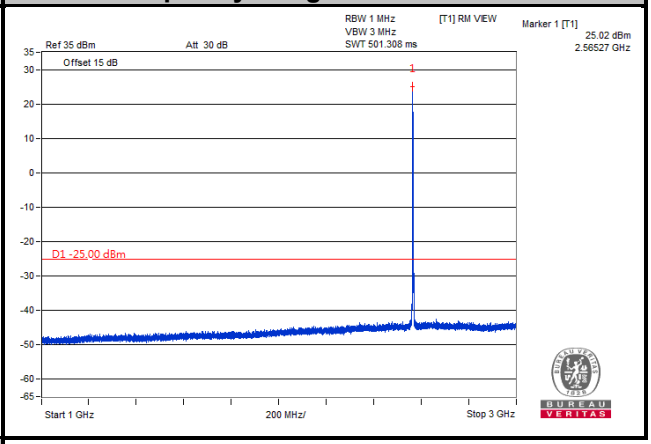
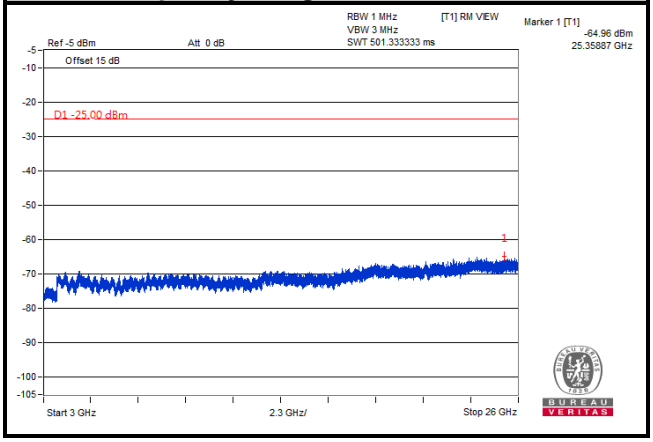
4.7.4 Test Results

LTE Band 7	
Channel Bandwidth: 5 MHz	
Channel 20775	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

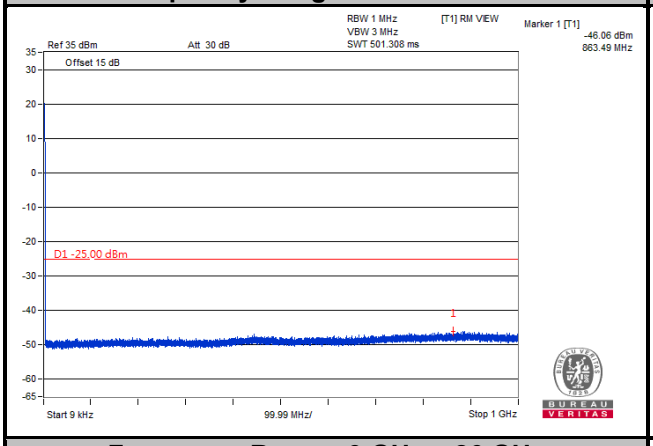
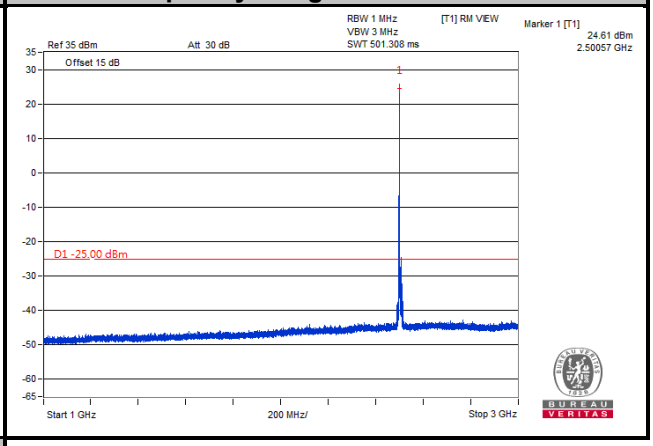
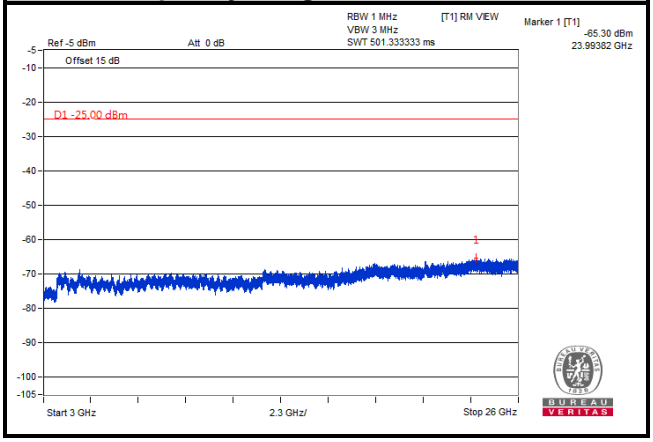
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 5 MHz	
Channel 21100	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

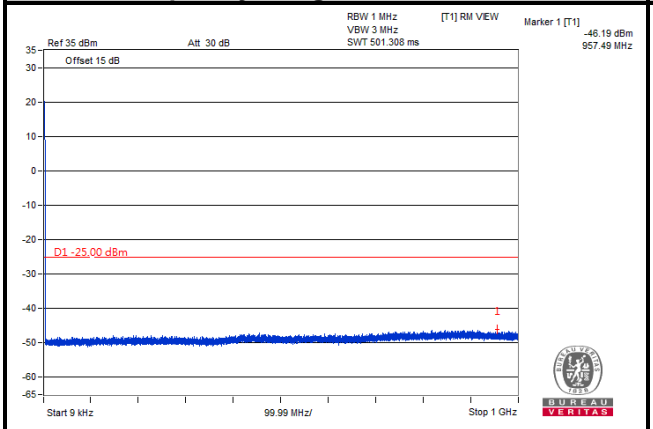
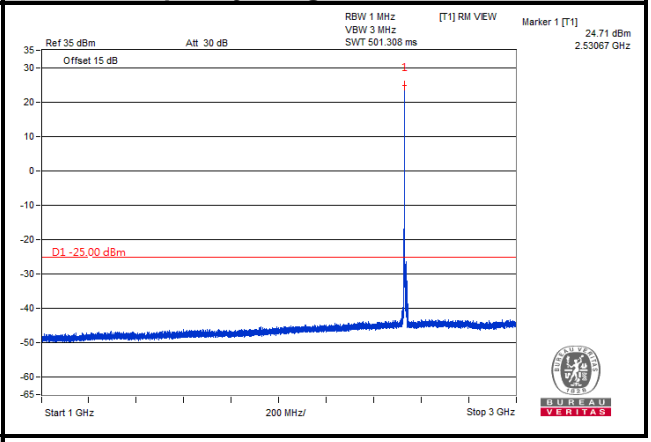
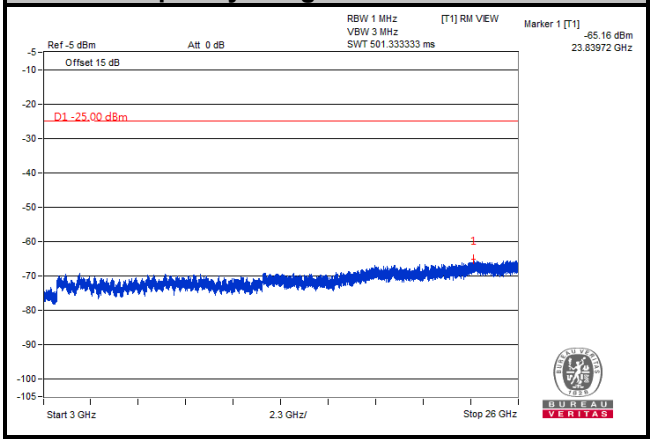
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 5 MHz	
Channel 21425	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

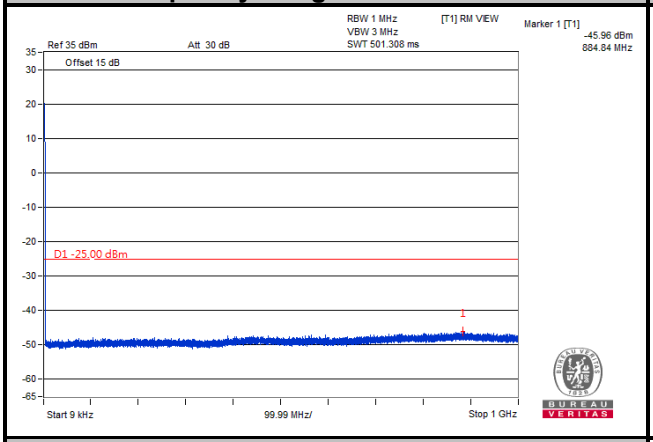
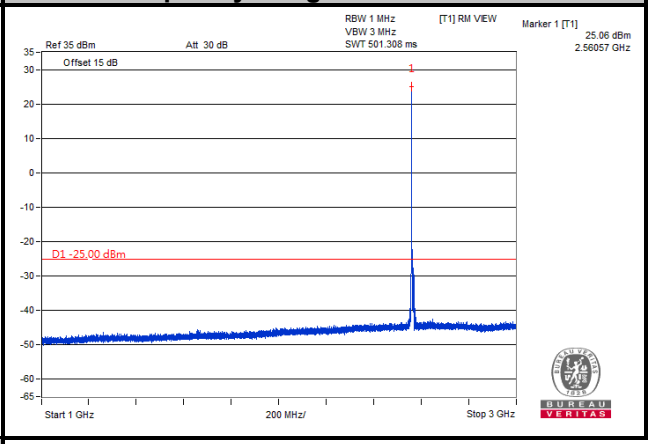
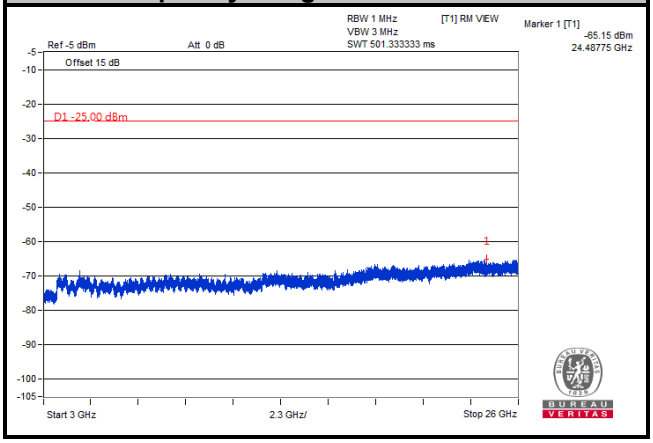
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 10 MHz	
Channel 20800	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

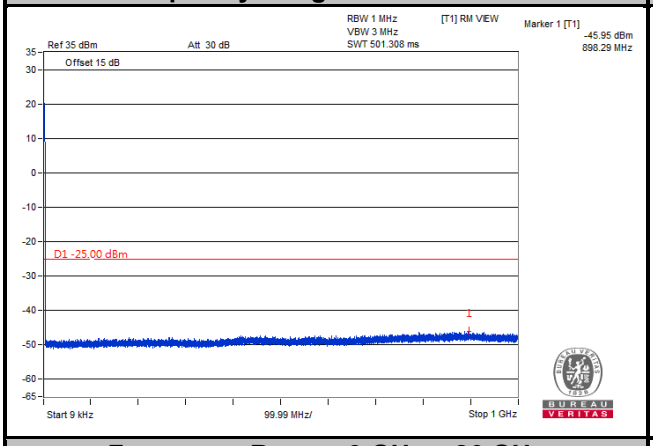
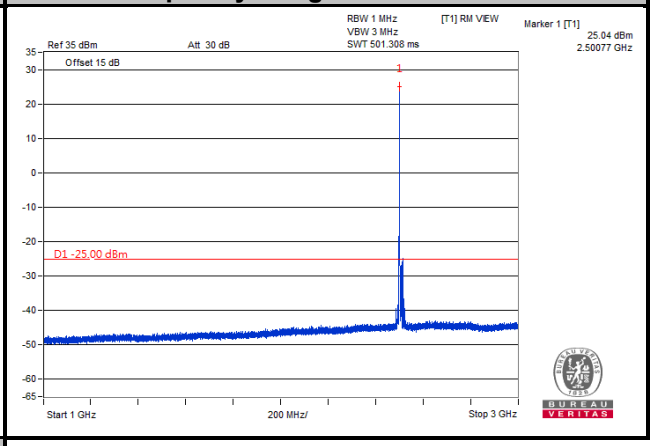
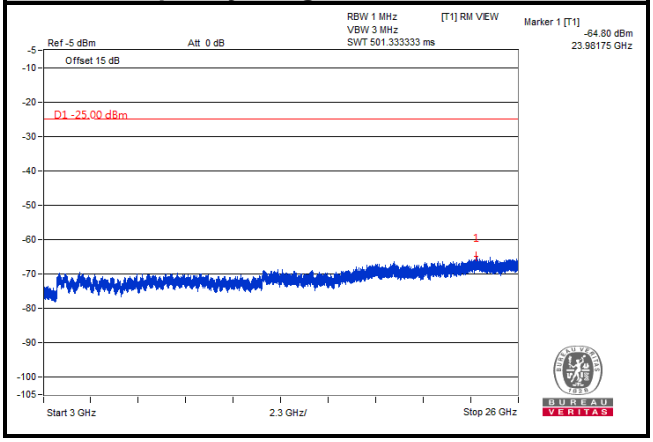
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 10 MHz	
Channel 21100	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

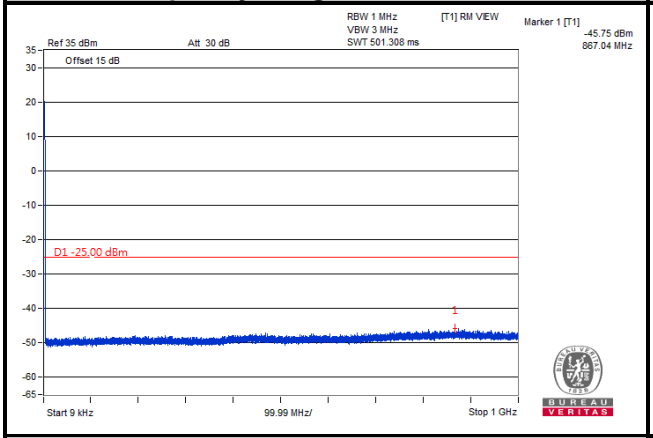
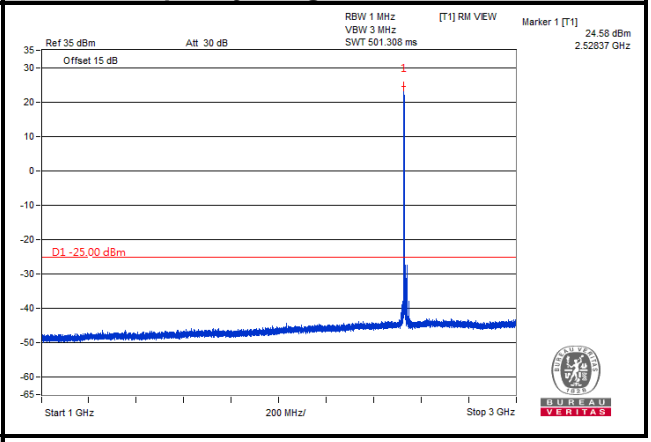
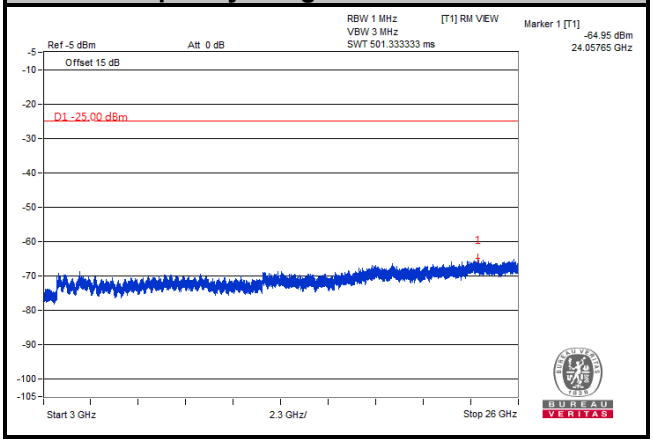
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 10 MHz	
Channel 21400	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

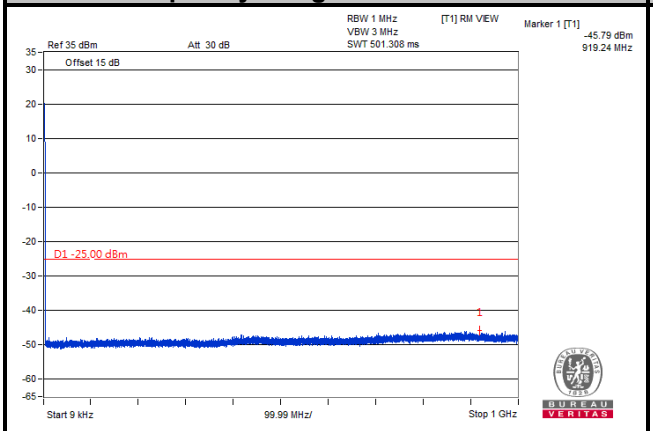
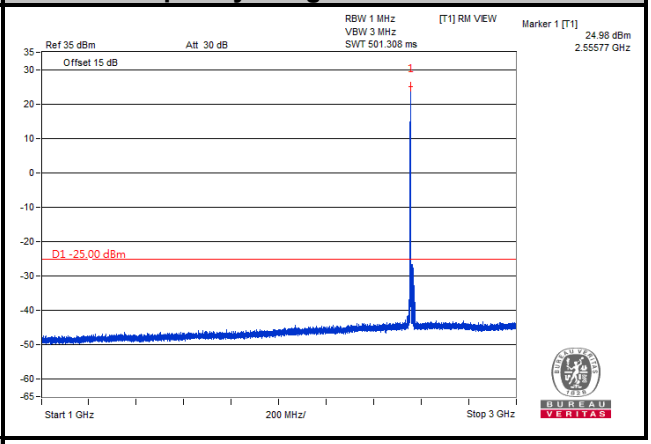
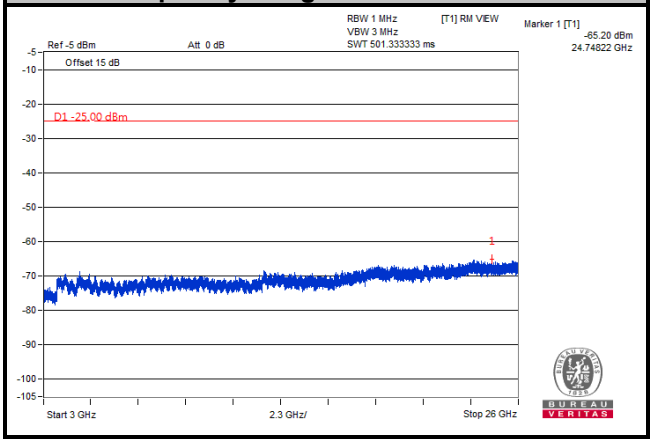
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 15 MHz	
Channel 20825	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

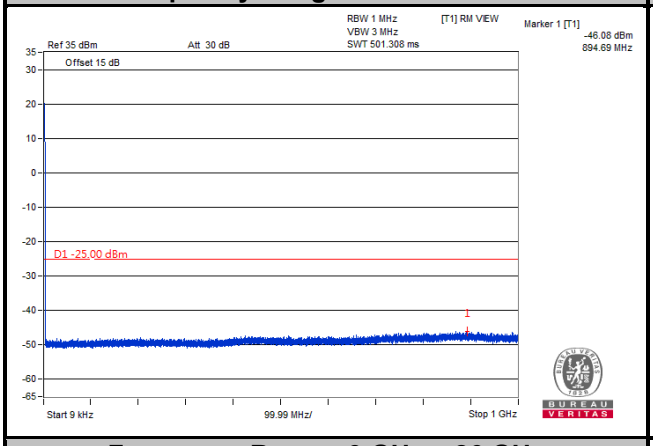
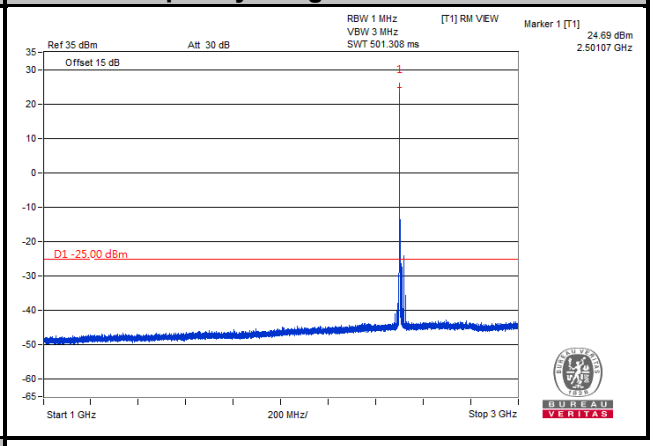
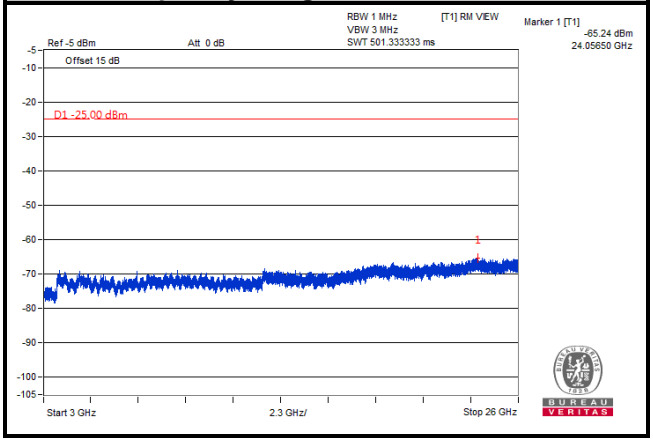
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 15 MHz	
Channel 21100	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

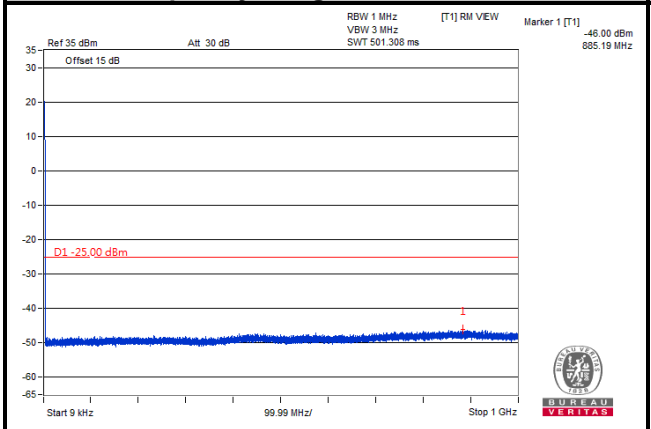
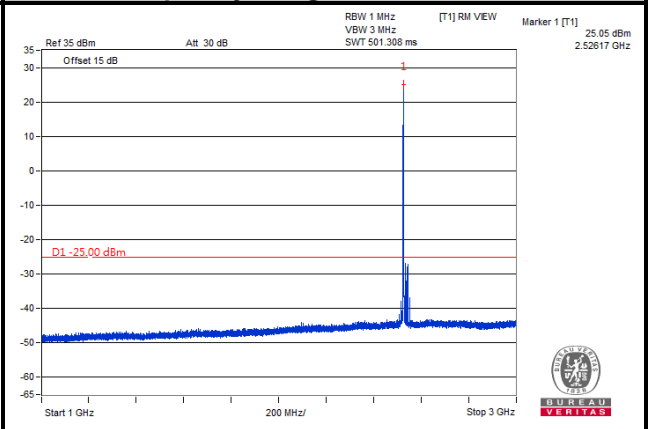
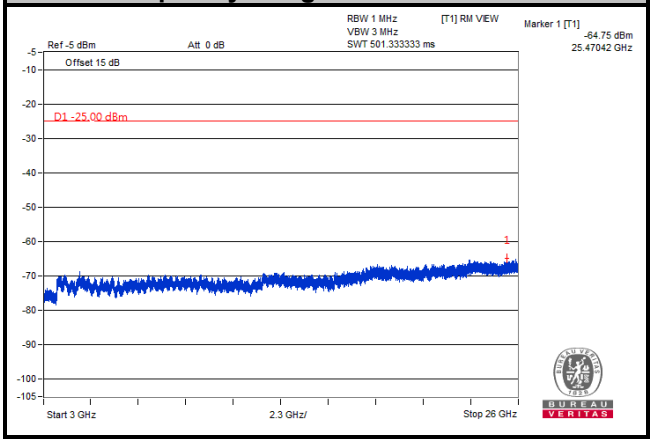
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 15 MHz	
Channel 21375	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

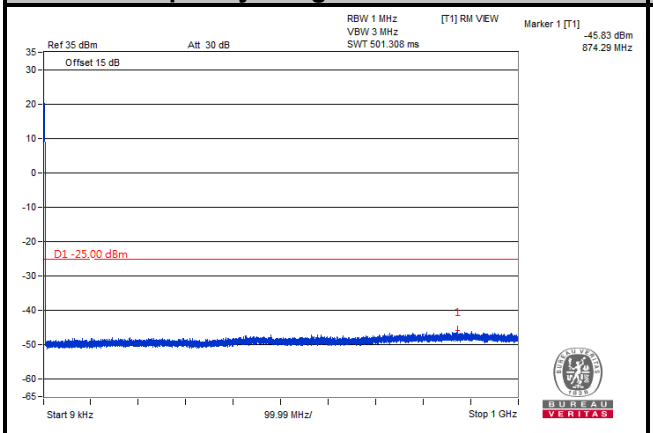
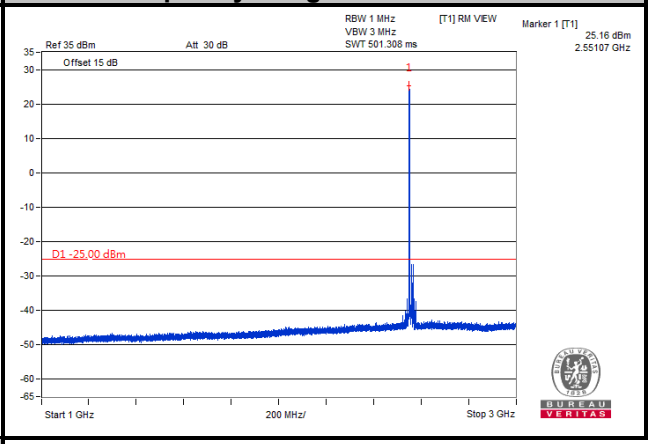
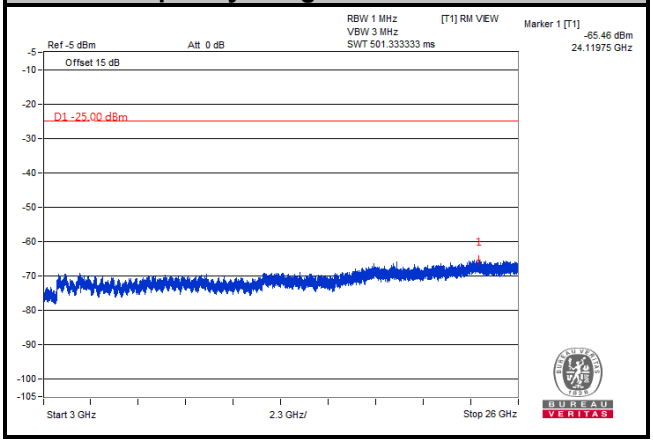
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 20 MHz	
Channel 20850	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

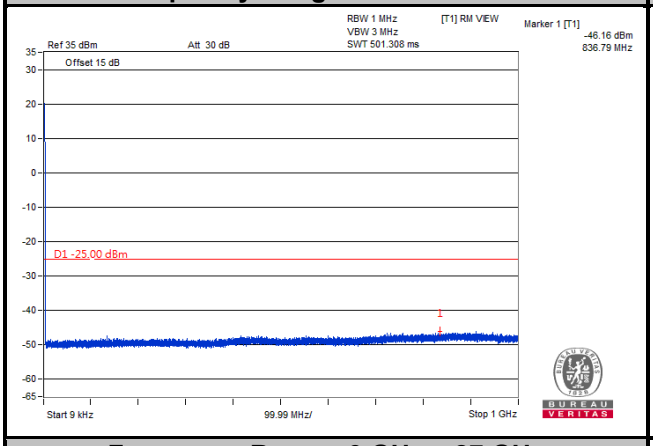
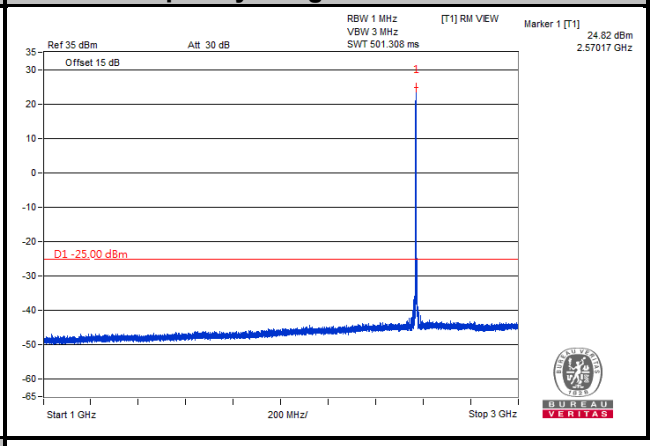
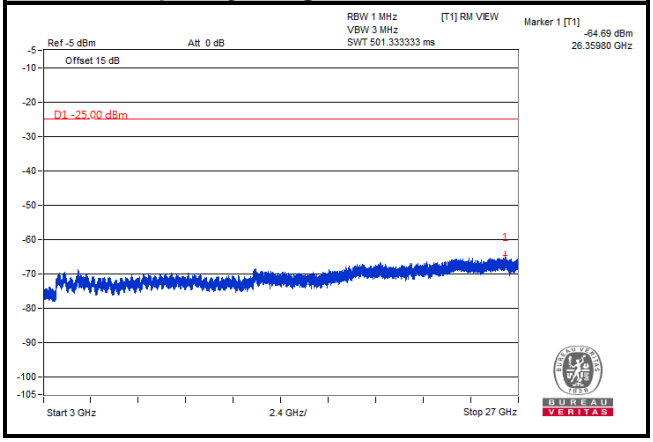
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 20 MHz	
Channel 21100	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

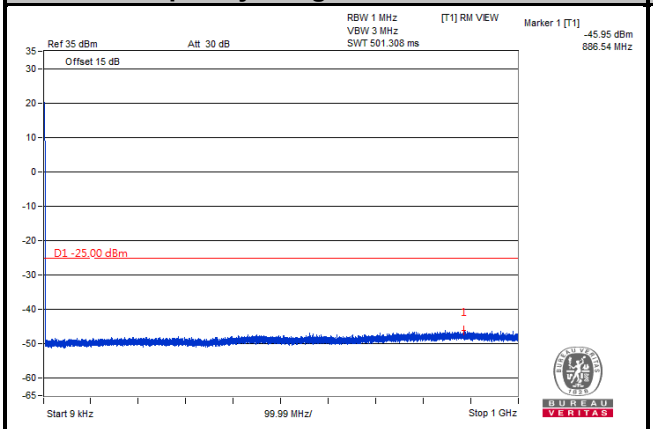
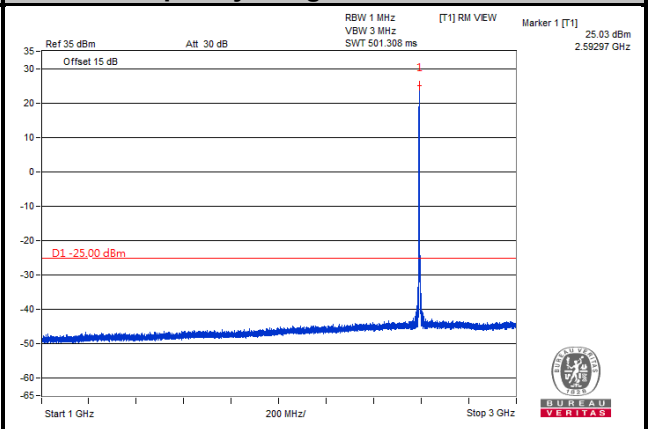
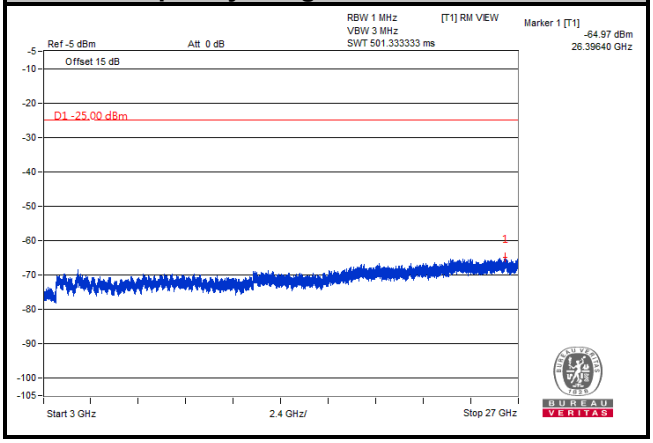
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7	
Channel Bandwidth: 20 MHz	
Channel 21350	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 26 GHz	
	

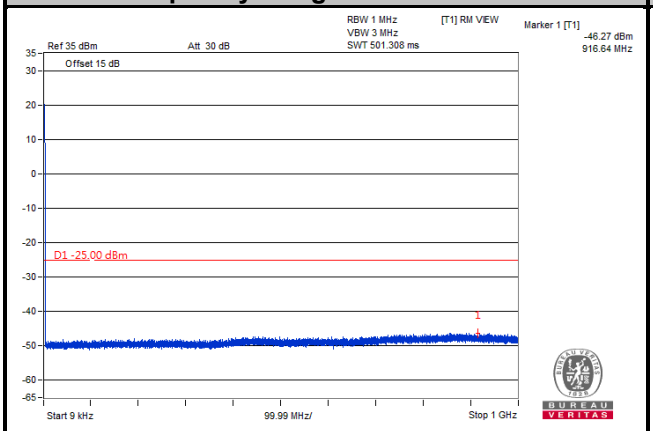
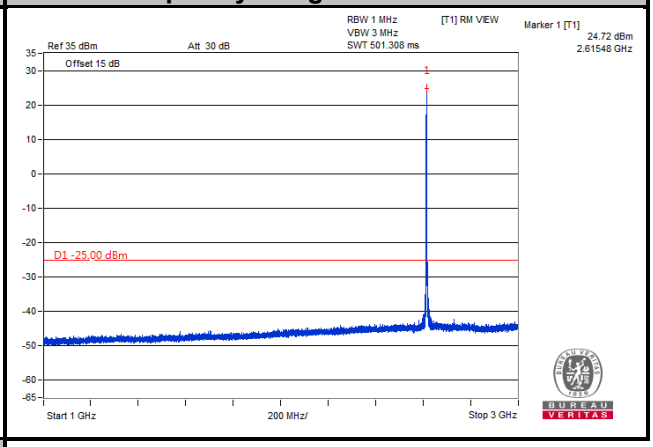
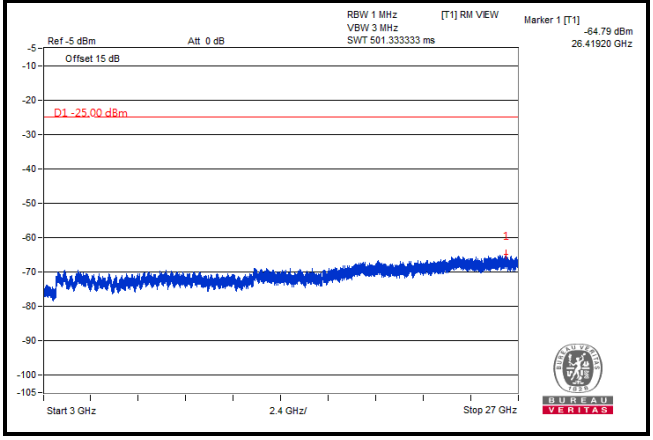
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 5 MHz	
Channel 37775	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

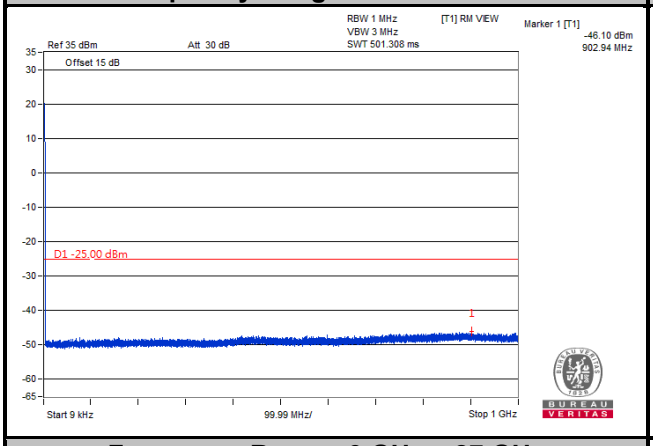
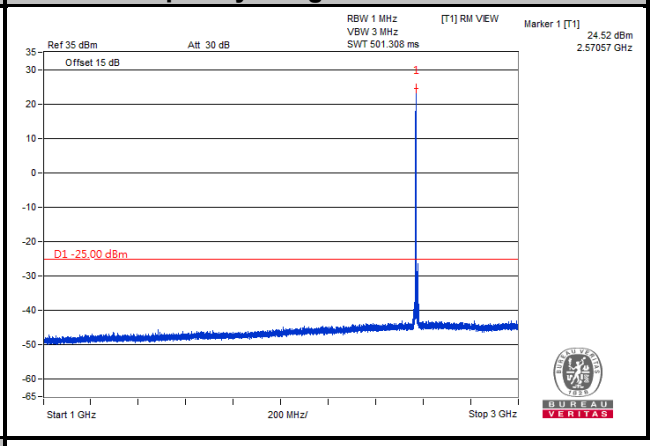
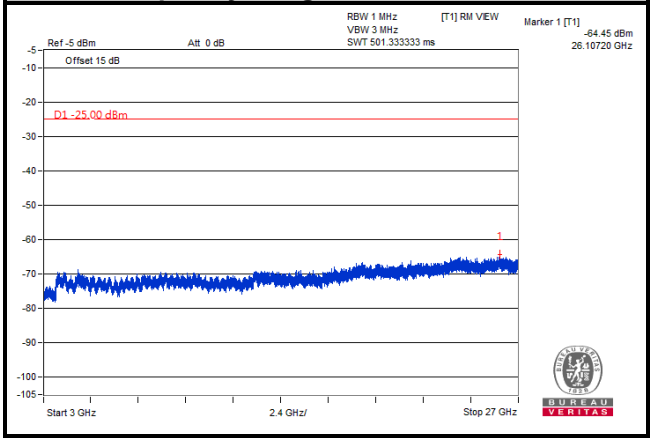
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 5 MHz	
Channel 38000	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

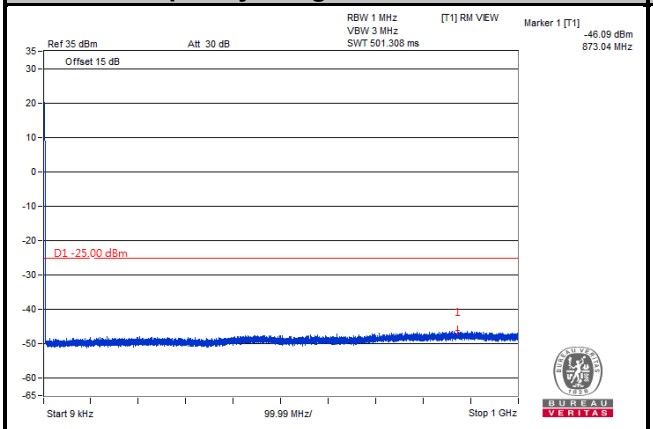
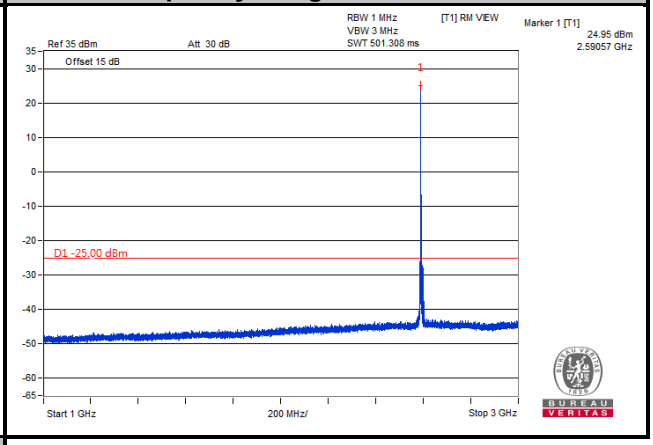
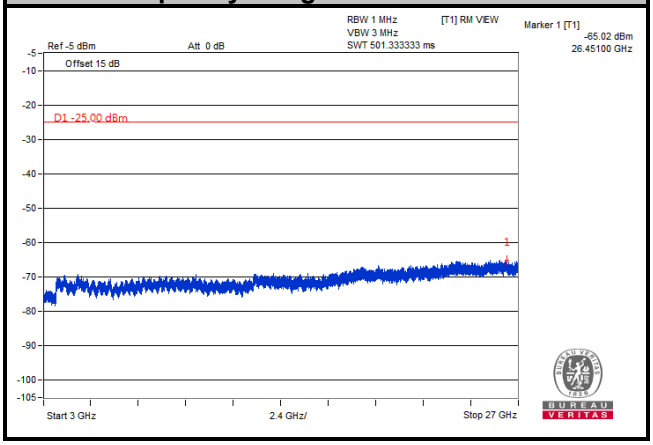
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 5 MHz	
Channel 38225	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

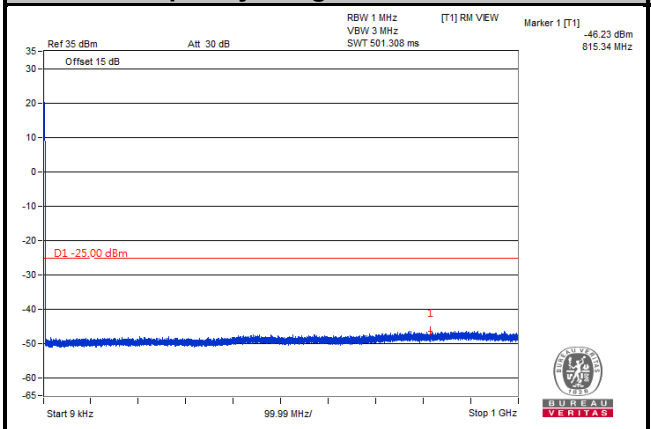
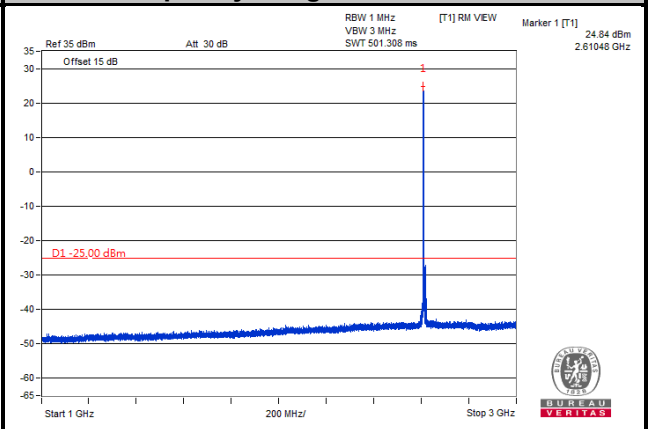
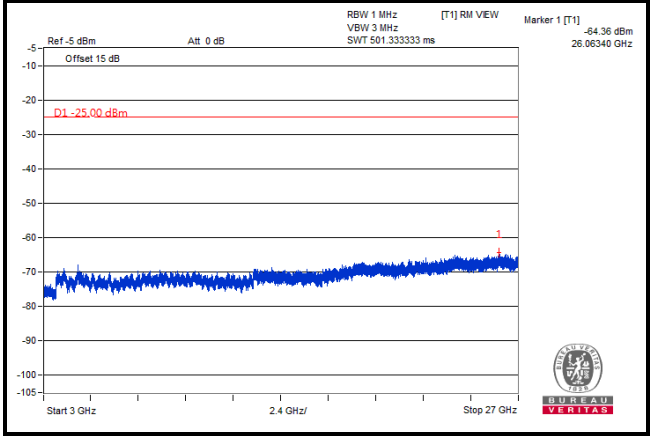
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 10 MHz	
Channel 37800	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

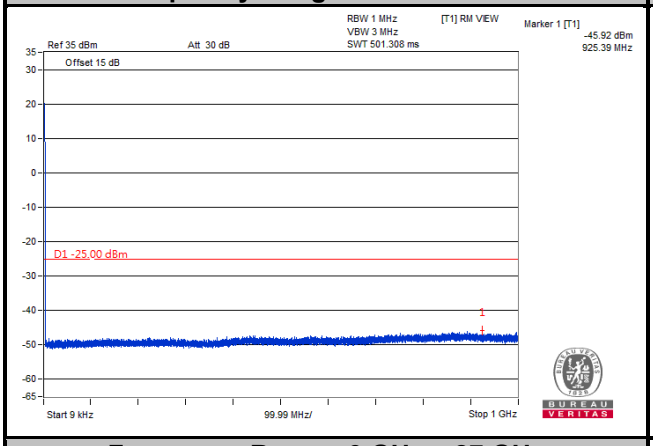
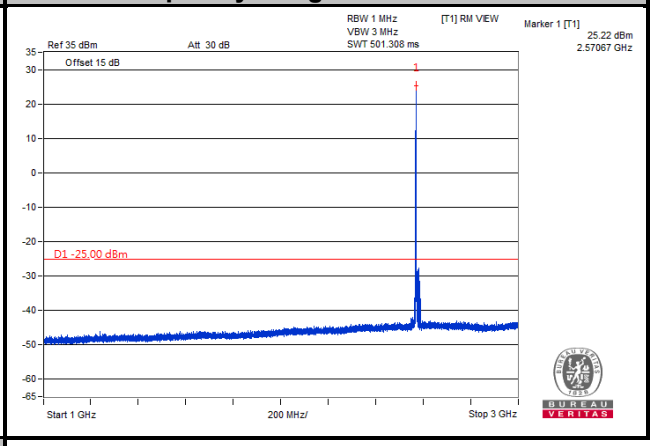
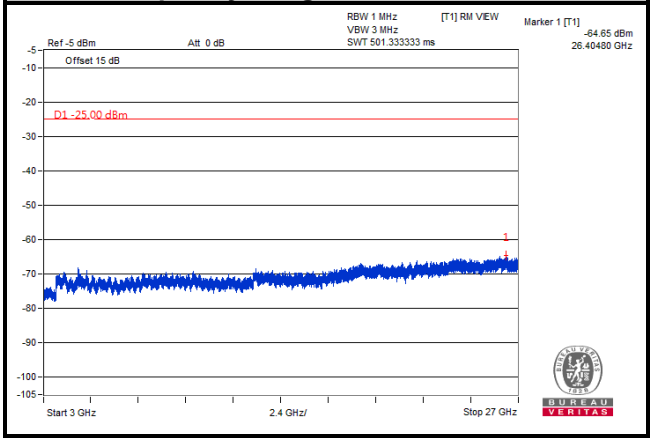
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 10 MHz	
Channel 38000	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

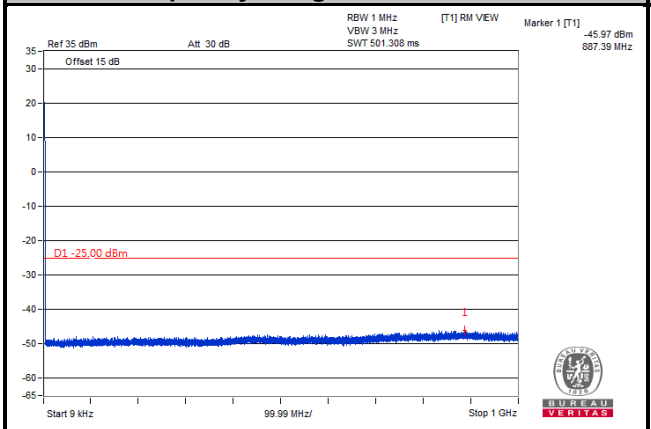
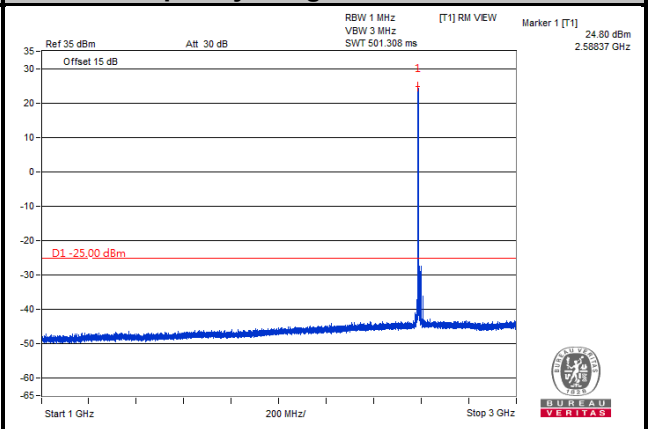
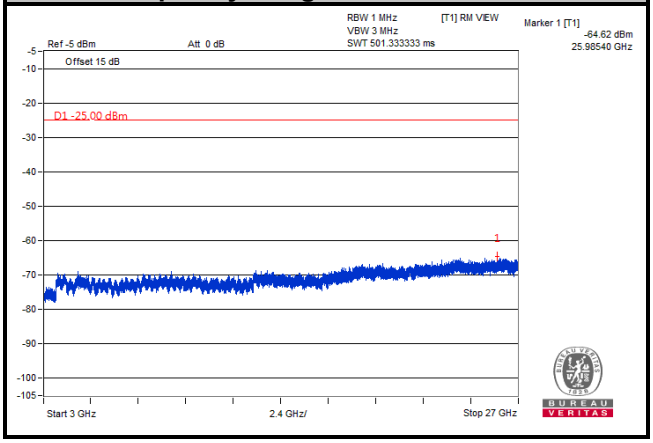
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 10 MHz	
Channel 38200	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

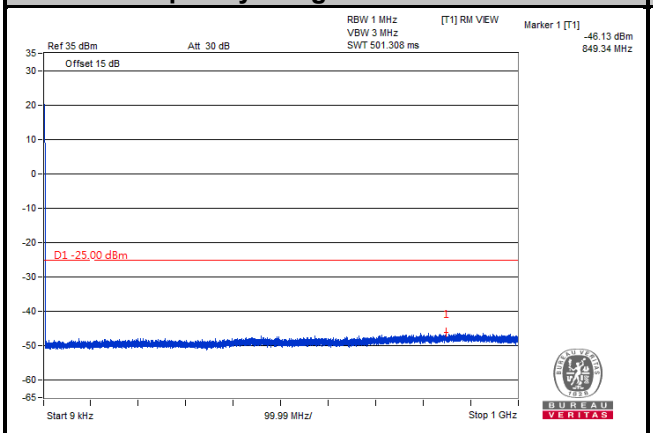
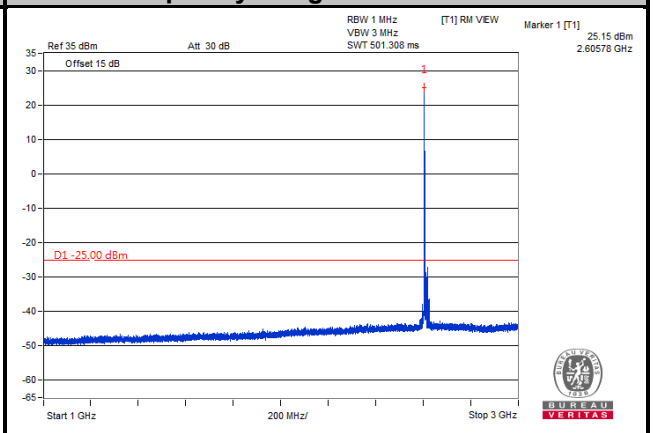
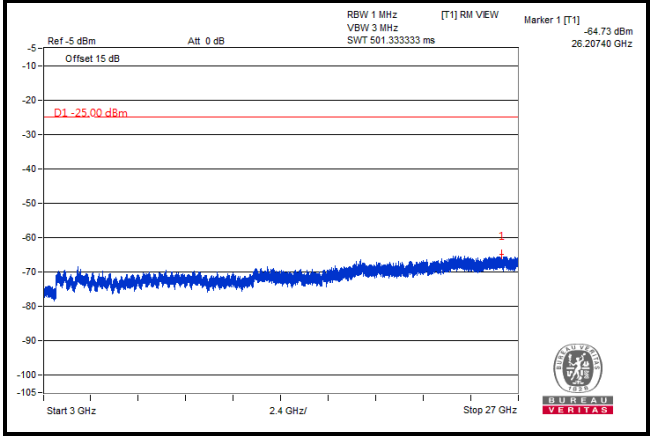
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 15 MHz	
Channel 37825	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

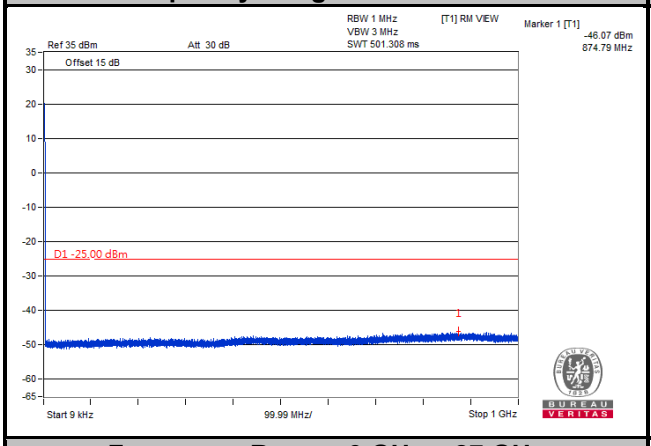
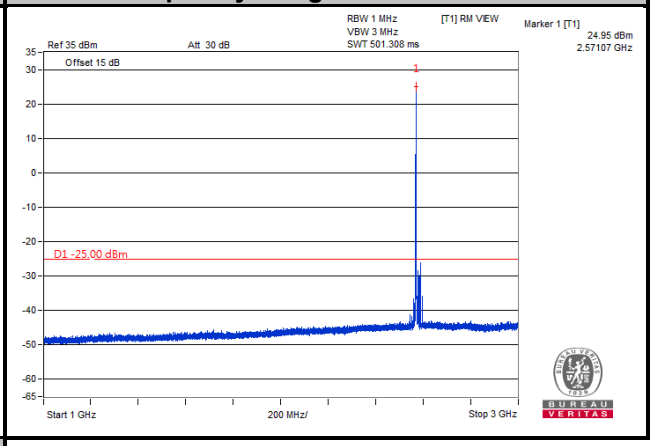
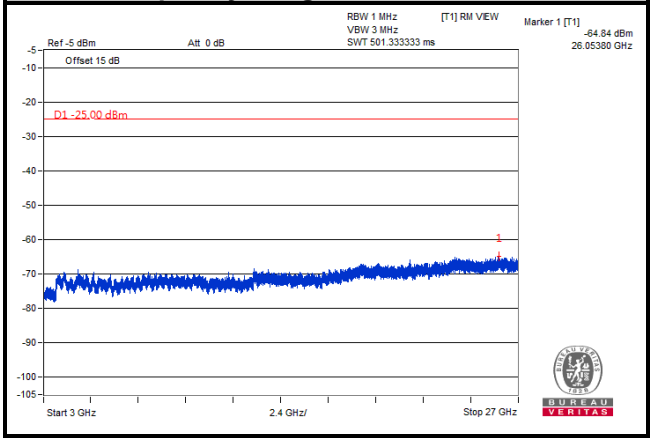
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 15 MHz	
Channel 38000	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

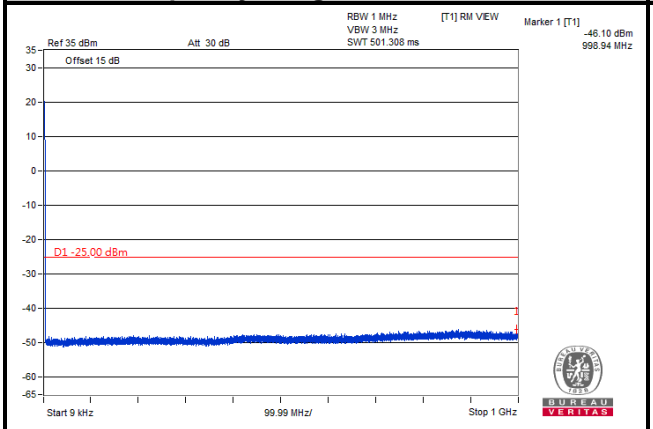
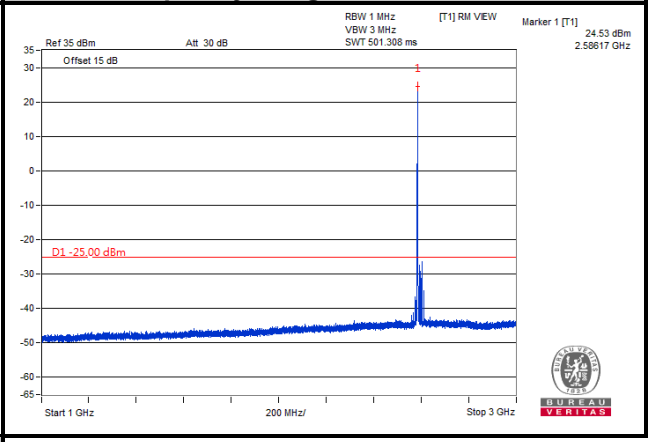
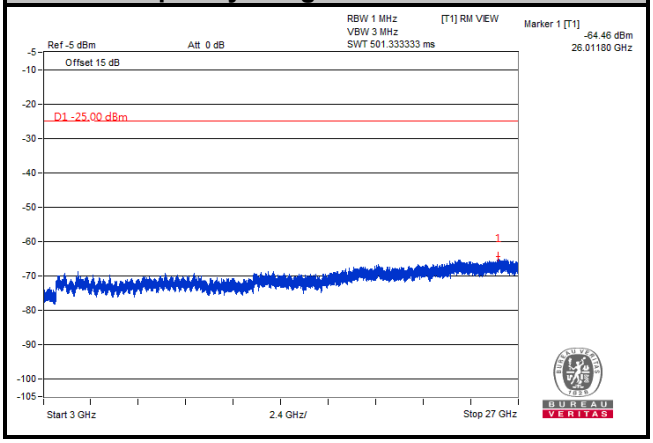
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 15 MHz	
Channel 38175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

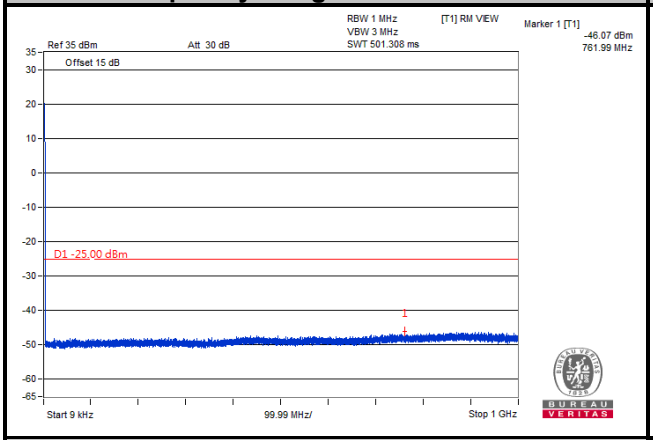
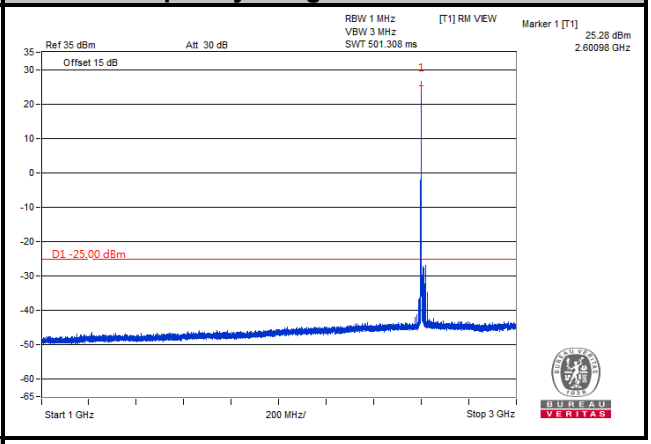
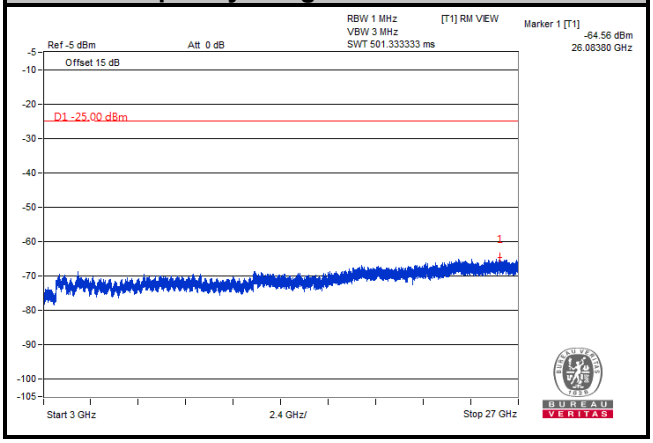
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 20 MHz	
Channel 37850	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

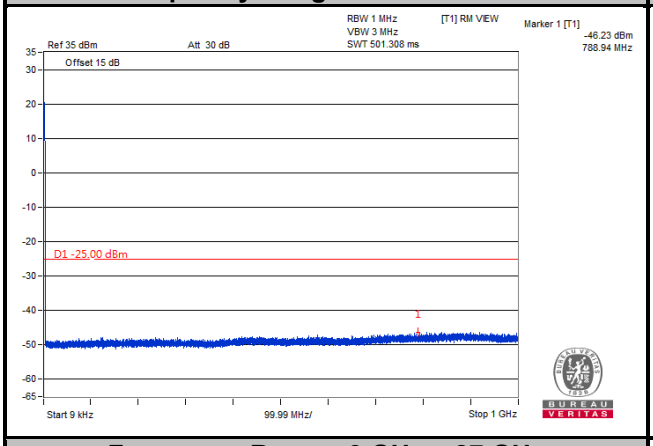
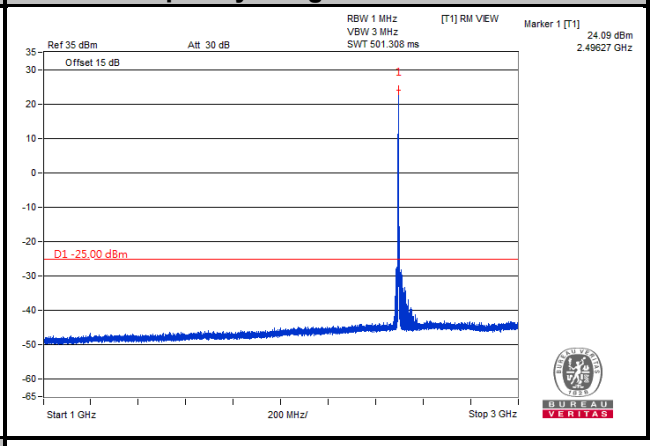
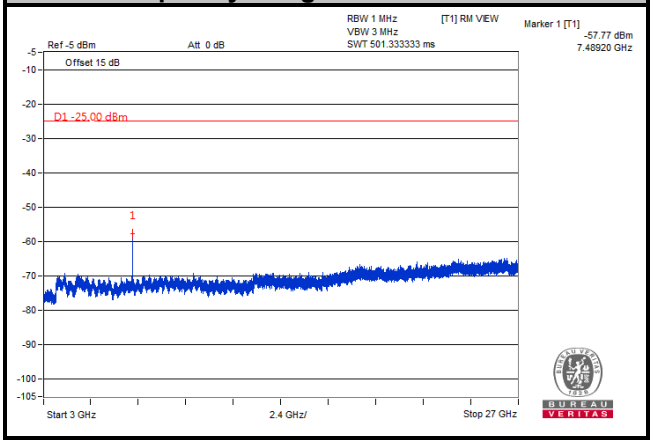
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 20 MHz	
Channel 38000	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

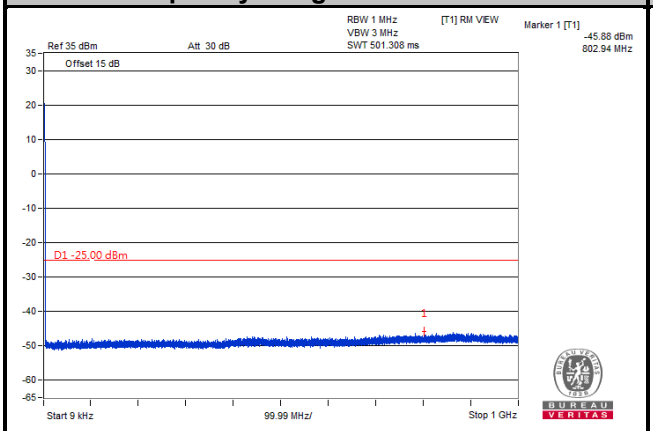
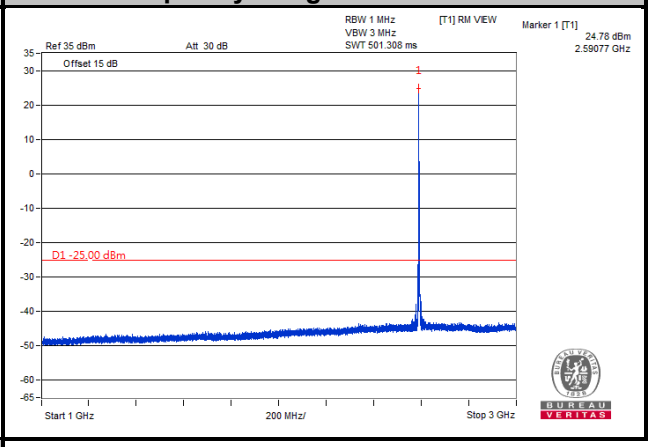
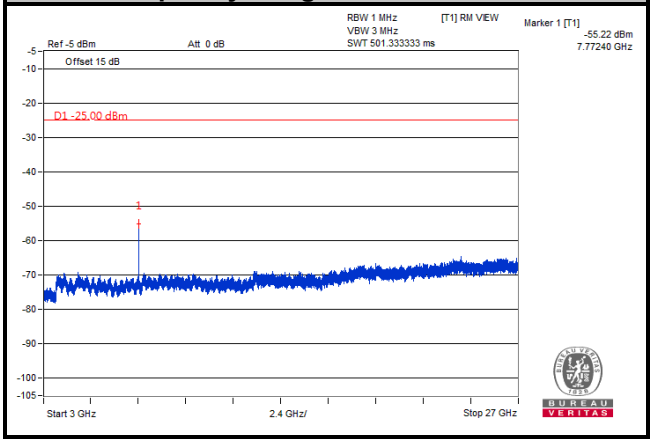
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38	
Channel Bandwidth: 20 MHz	
Channel 38150	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

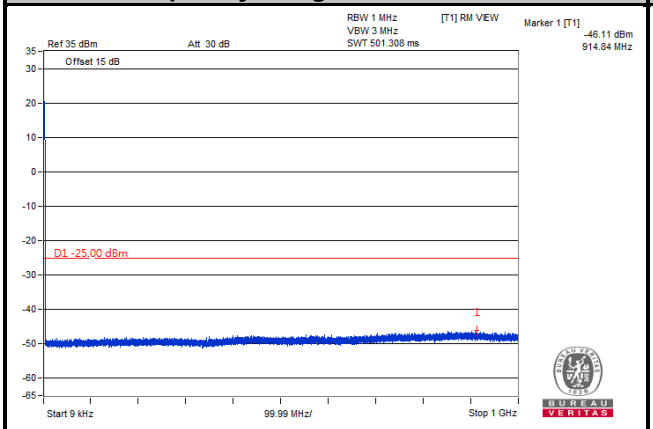
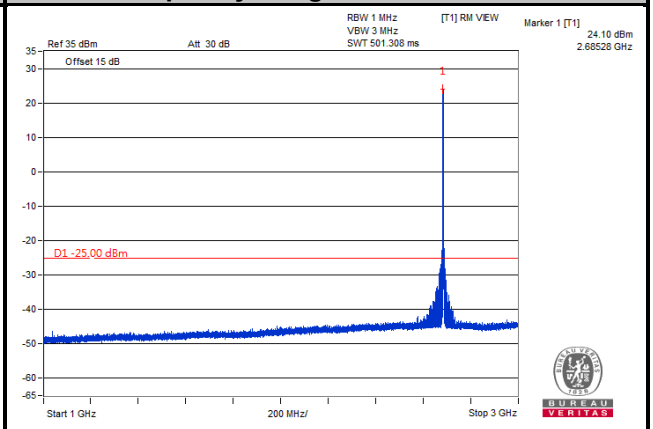
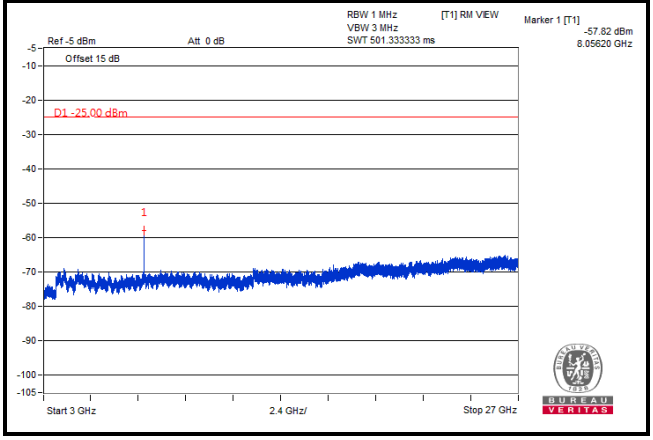
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 5 MHz	
Channel 39675	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

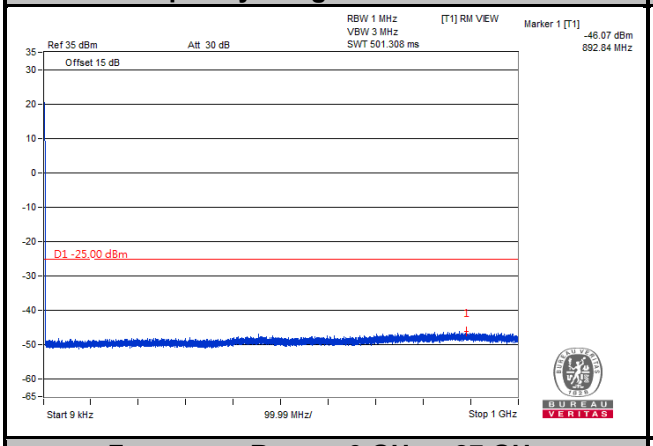
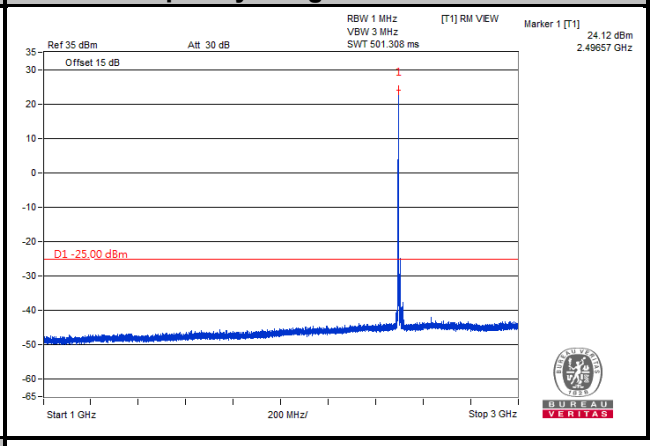
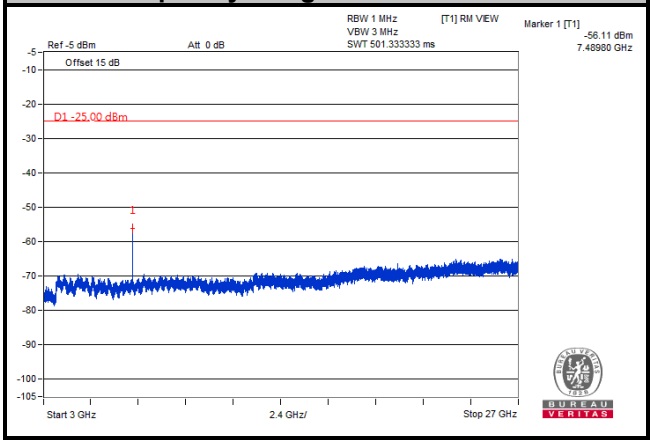
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 5 MHz	
Channel 40620	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

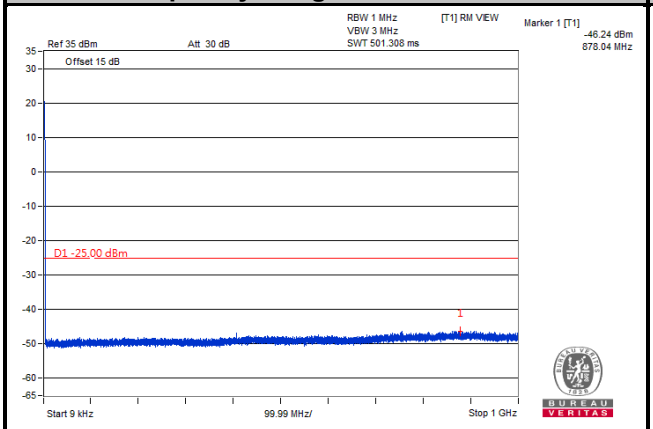
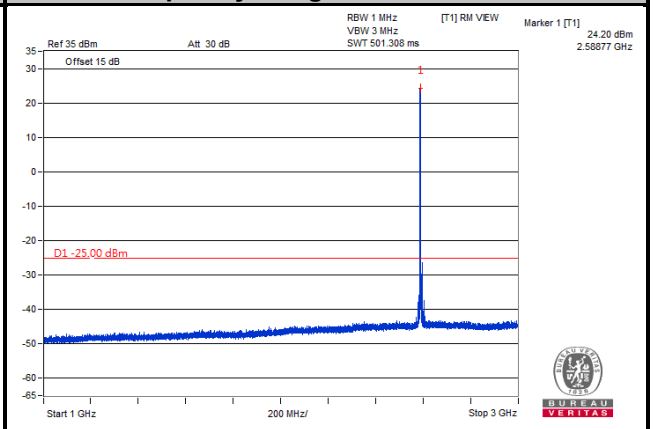
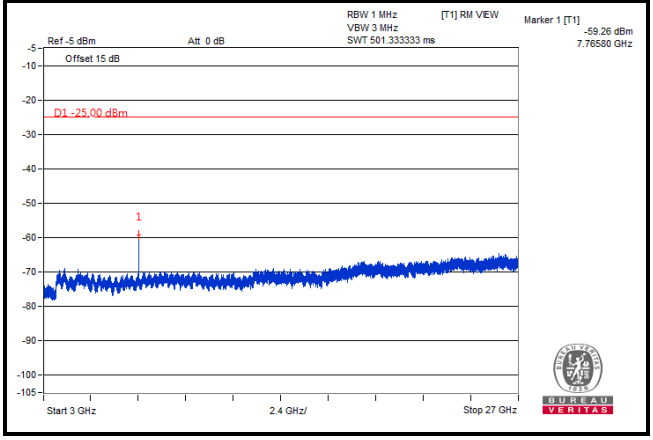
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 5 MHz	
Channel 41565	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

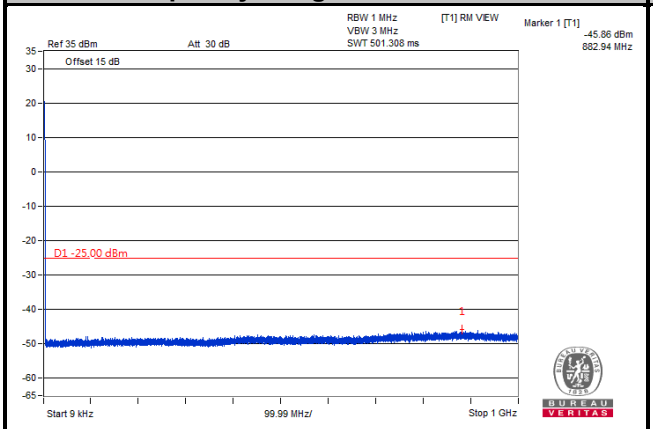
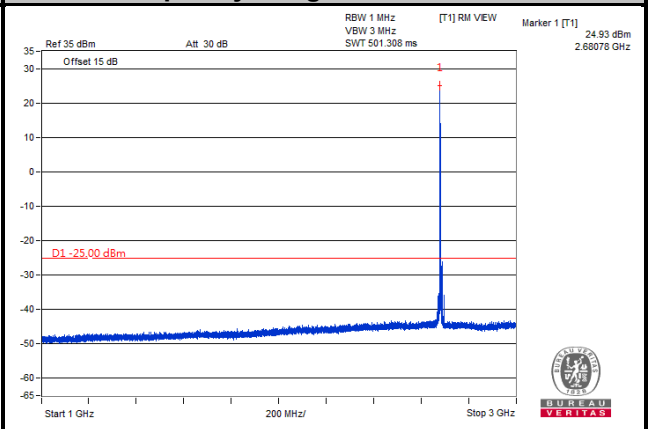
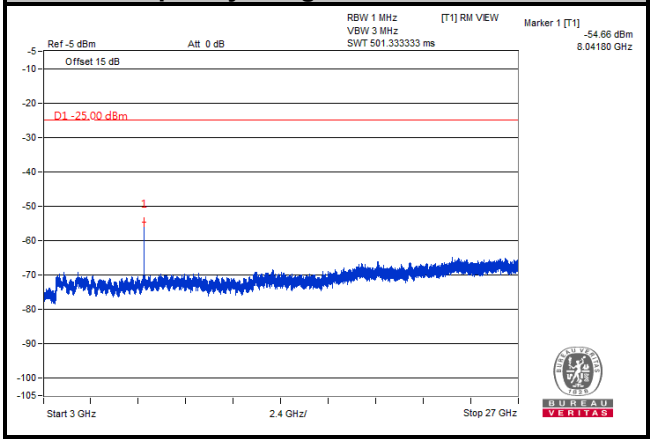
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 10 MHz	
Channel 39700	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

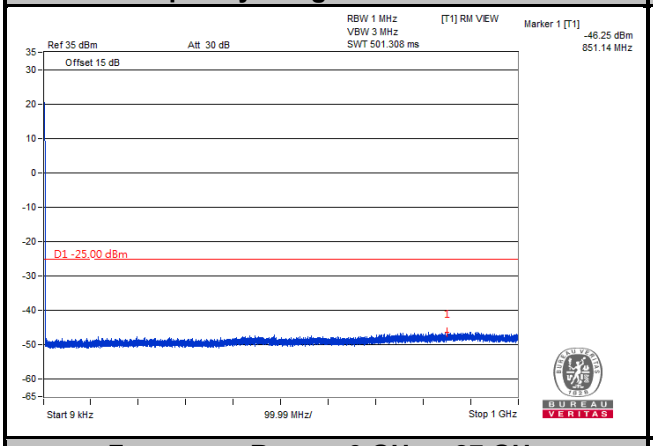
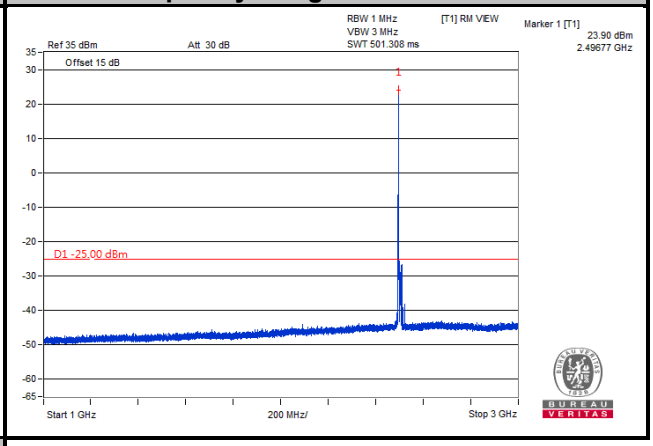
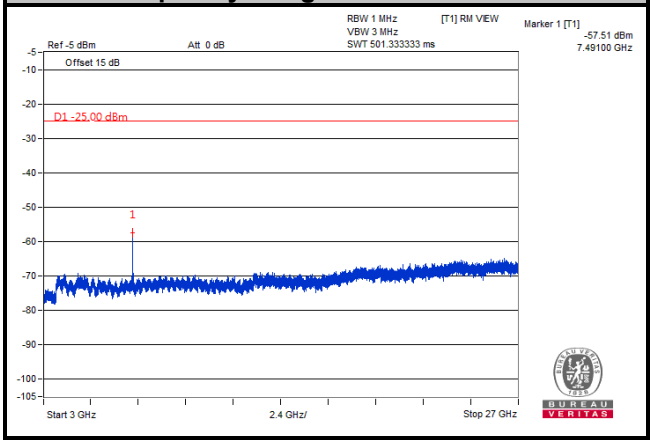
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 10 MHz	
Channel 40620	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

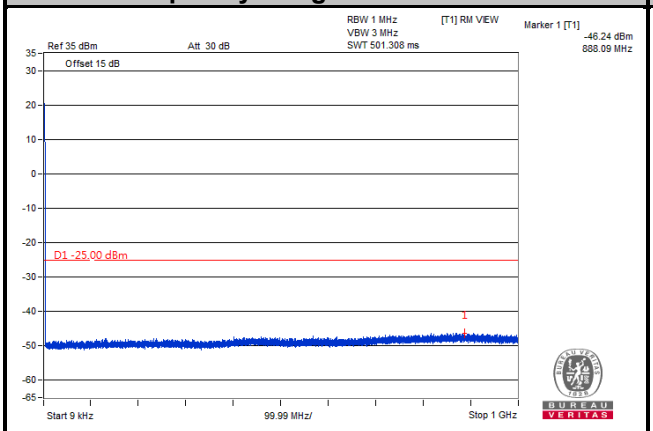
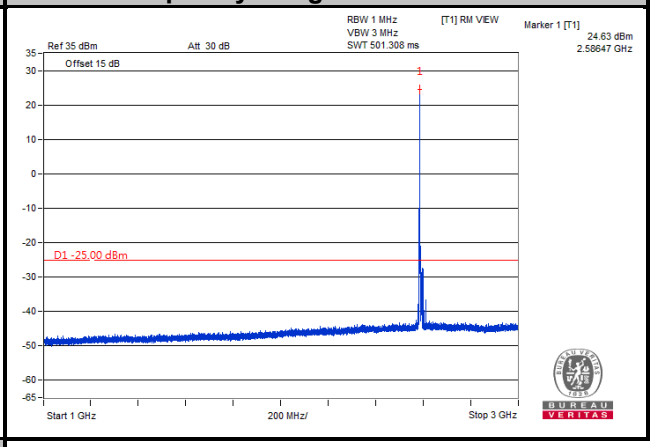
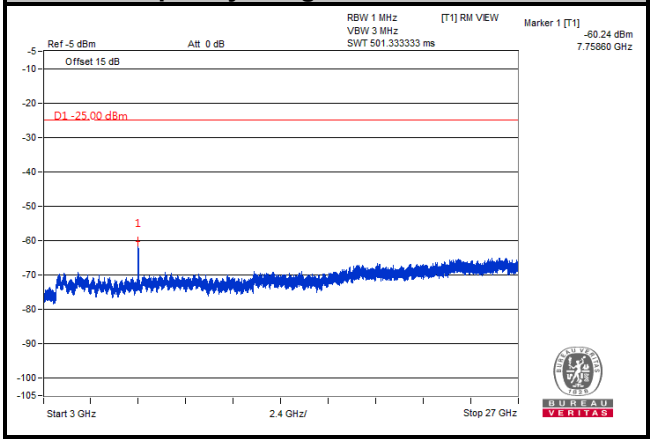
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 10 MHz	
Channel 41540	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

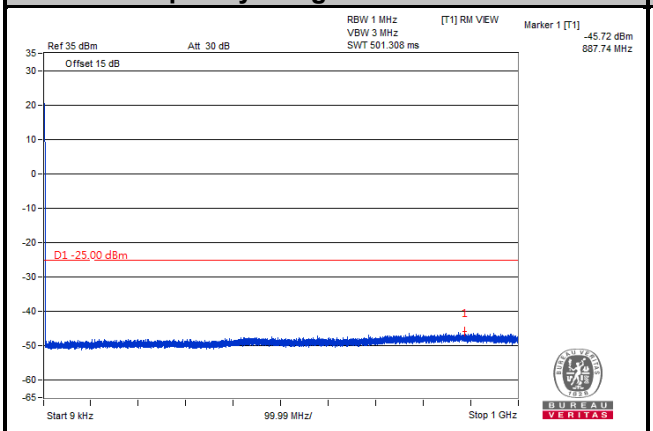
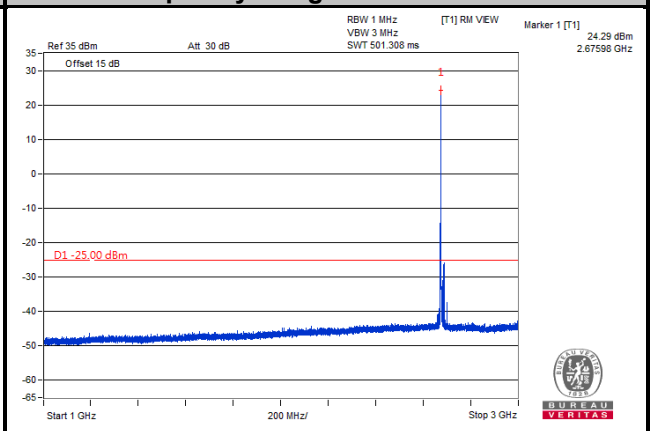
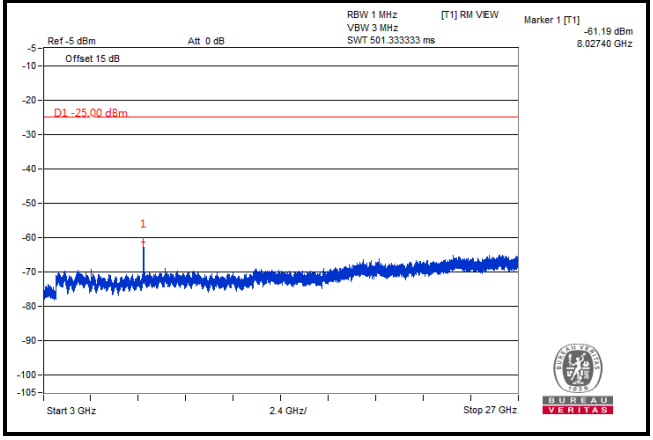
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 15 MHz	
Channel 39725	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

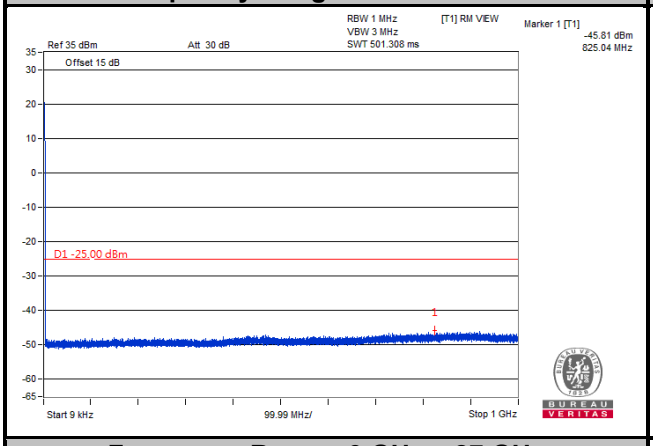
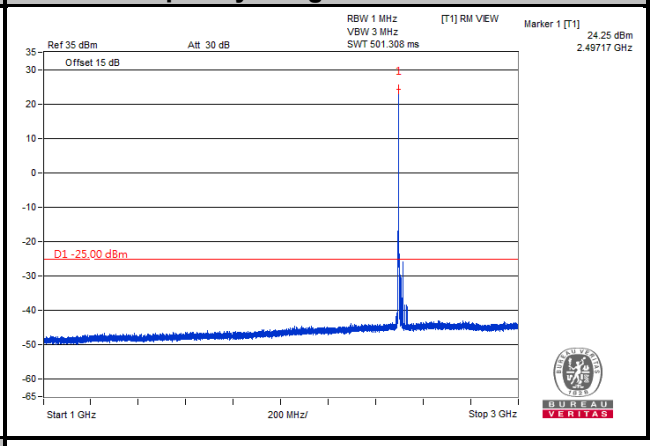
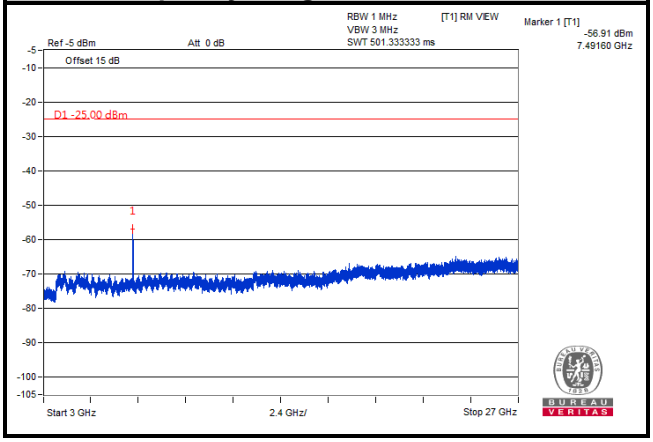
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 15 MHz	
Channel 40620	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

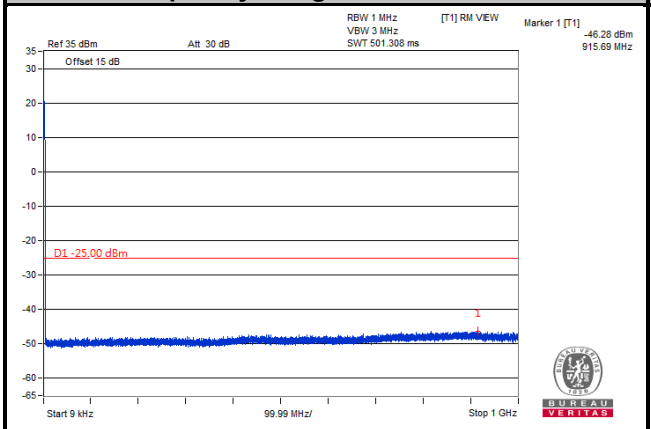
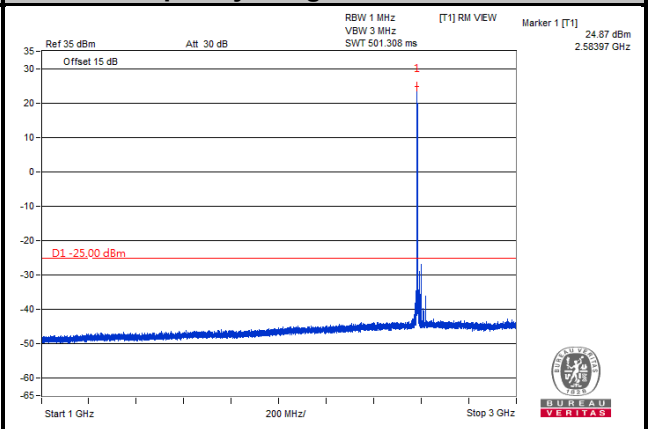
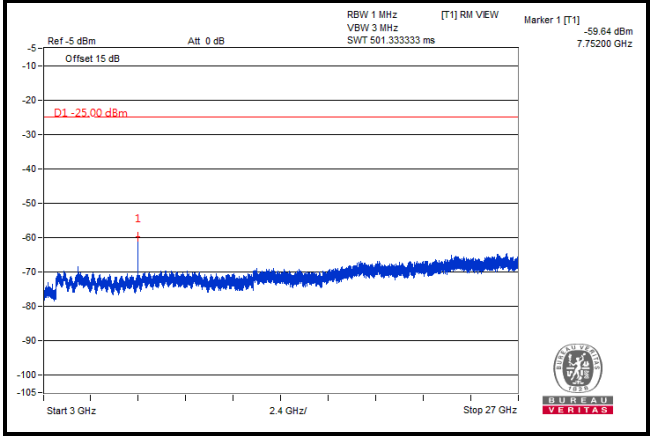
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 15 MHz	
Channel 41515	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

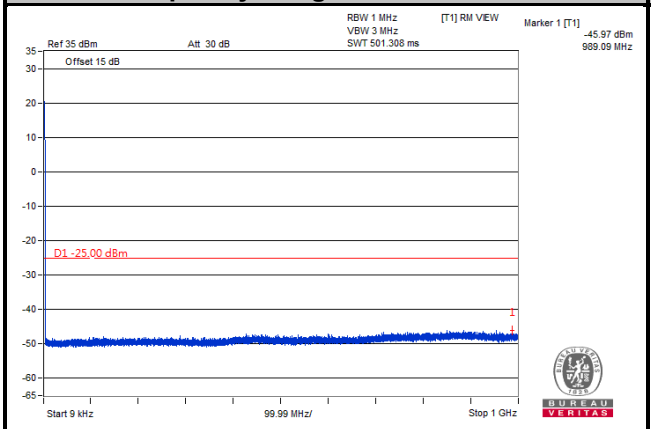
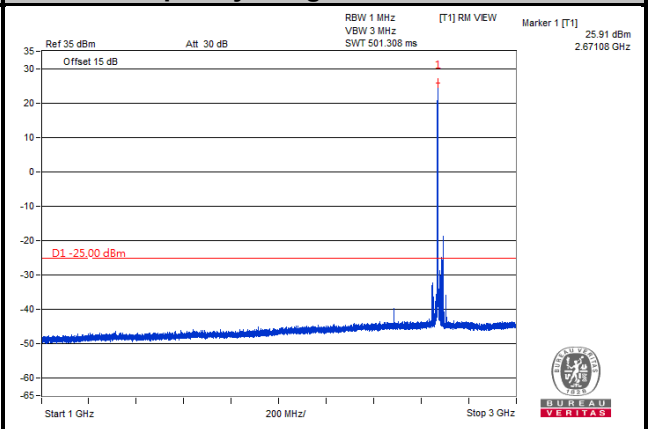
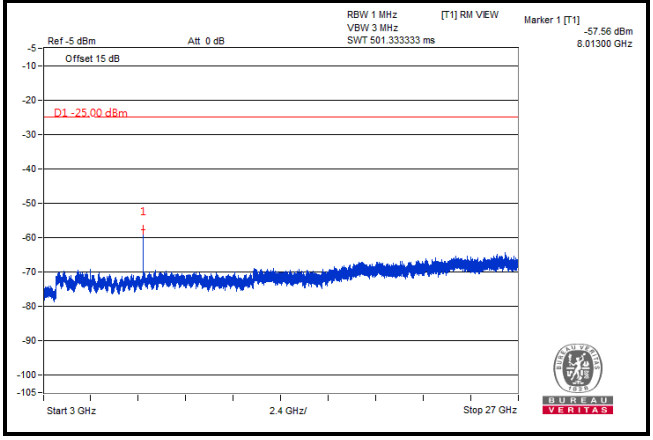
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 20 MHz	
Channel 39750	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 20 MHz	
Channel 40620	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41	
Channel Bandwidth: 20 MHz	
Channel 41490	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 3 GHz
	
Frequency Range: 3 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission 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.

4.8.2 Test Procedure

a. 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.
b. 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 a. Record the power level of S.G.
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

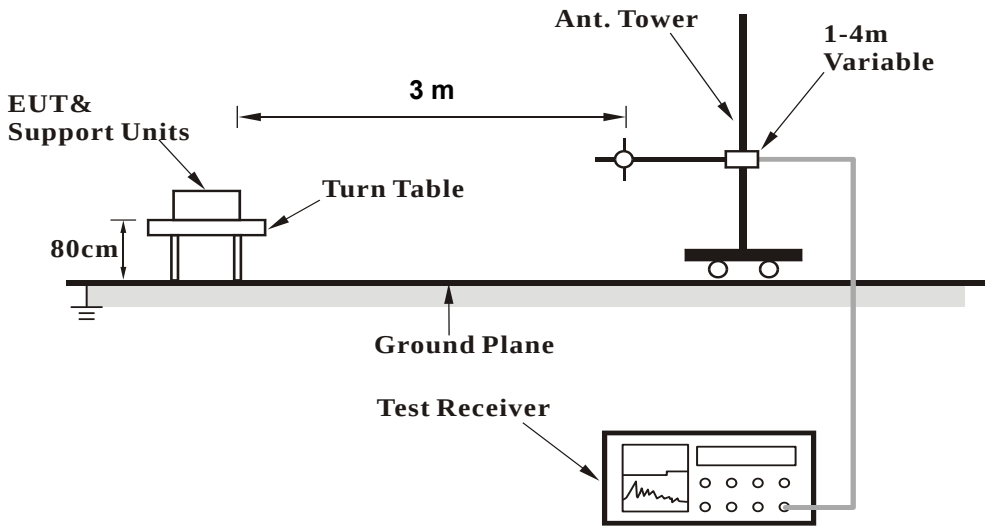
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.8.3 Deviation from Test Standard

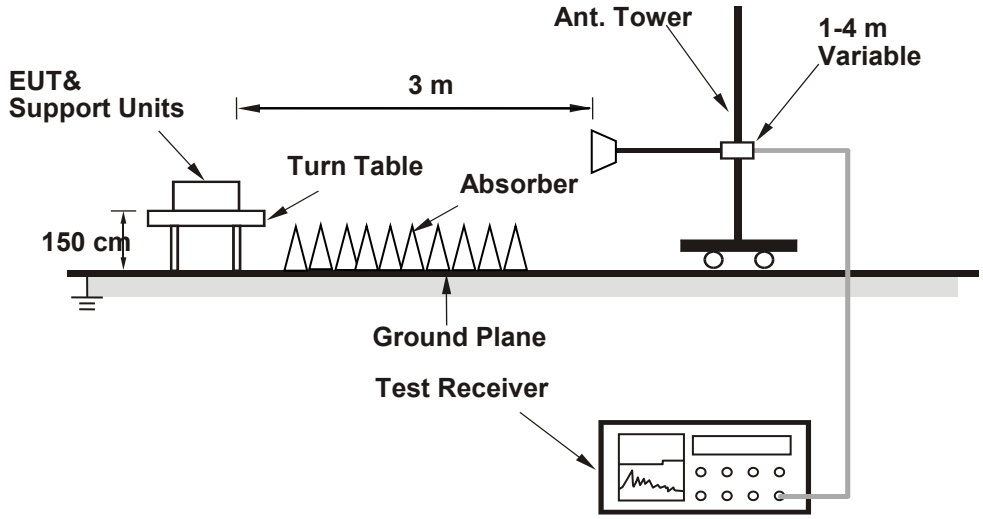
No deviation.

4.8.4 Test Setup

<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).

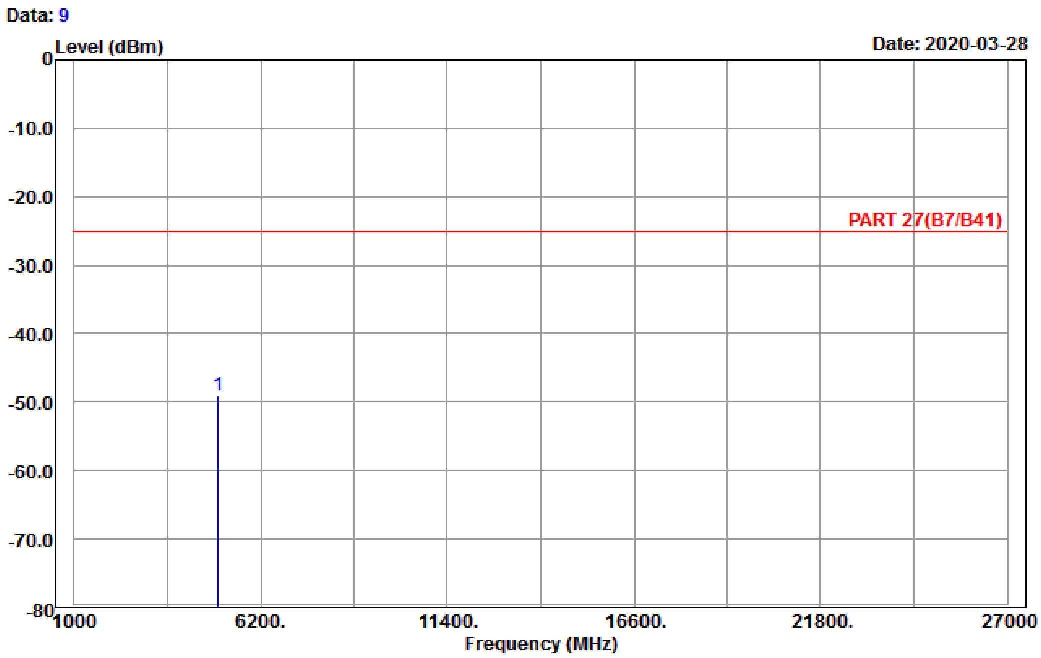
4.8.5 Test Results

LTE Band 7

Channel Bandwidth: 5 MHz / QPSK

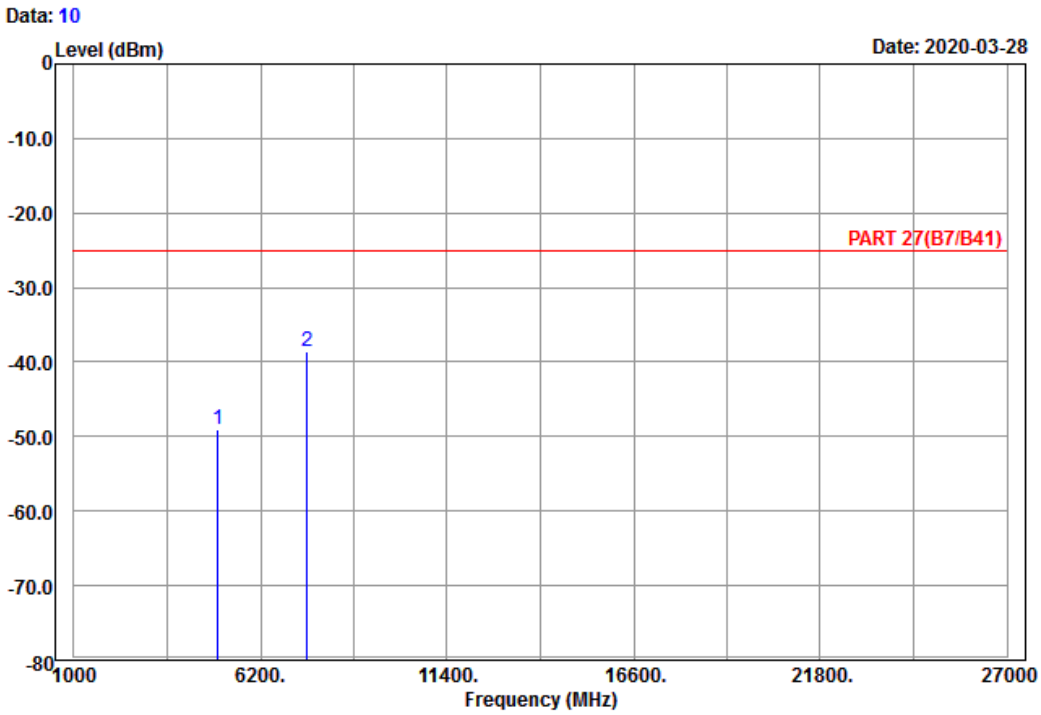
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5005.00	-49.09	-68.67	19.58	-25.00	-24.09	Peak

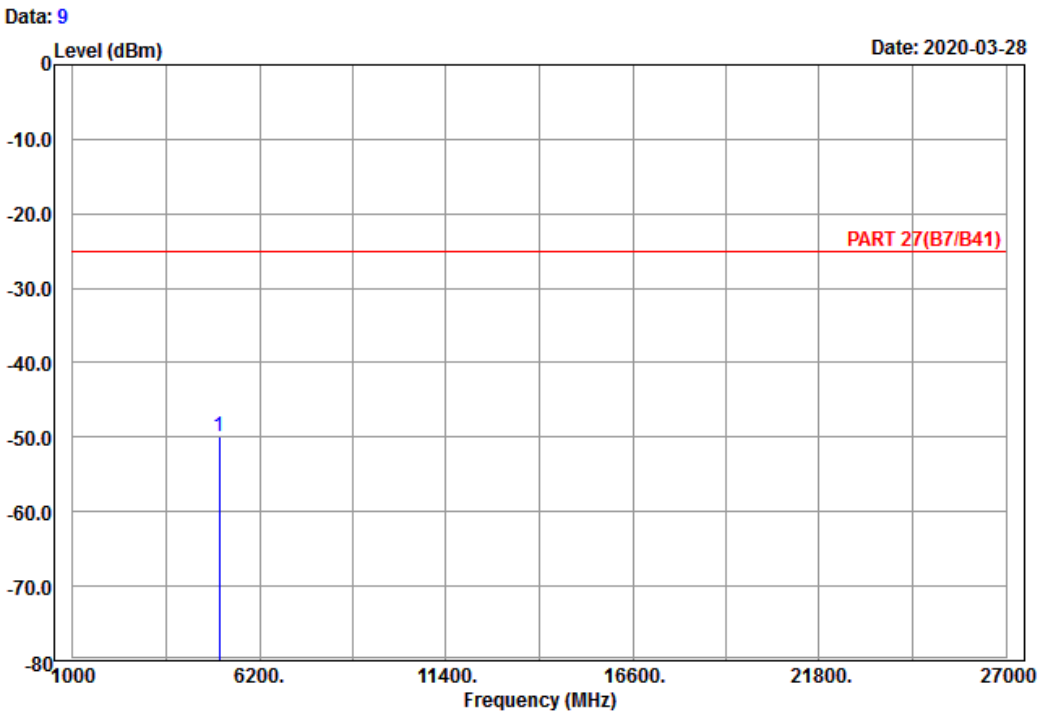


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	5005.00	-49.13	-68.71	19.58	-25.00	-24.13	Peak
2 pp	7507.50	-38.68	-61.36	22.68	-25.00	-13.68	Peak

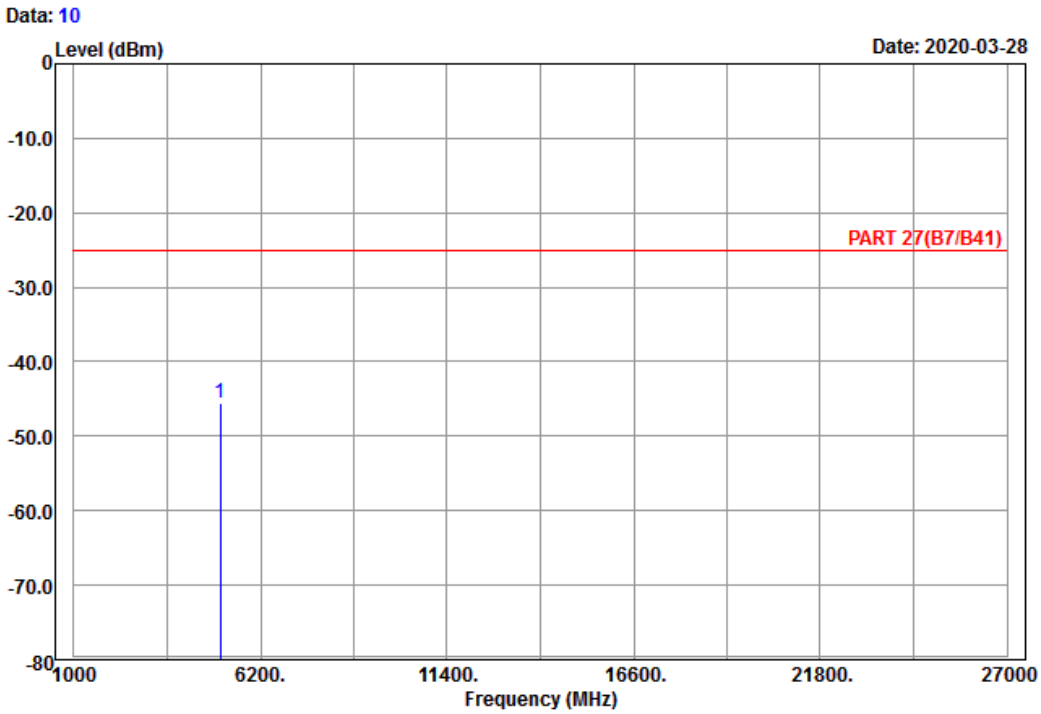
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5070.00	-49.99	-69.38	19.39	-25.00	-24.99	Peak

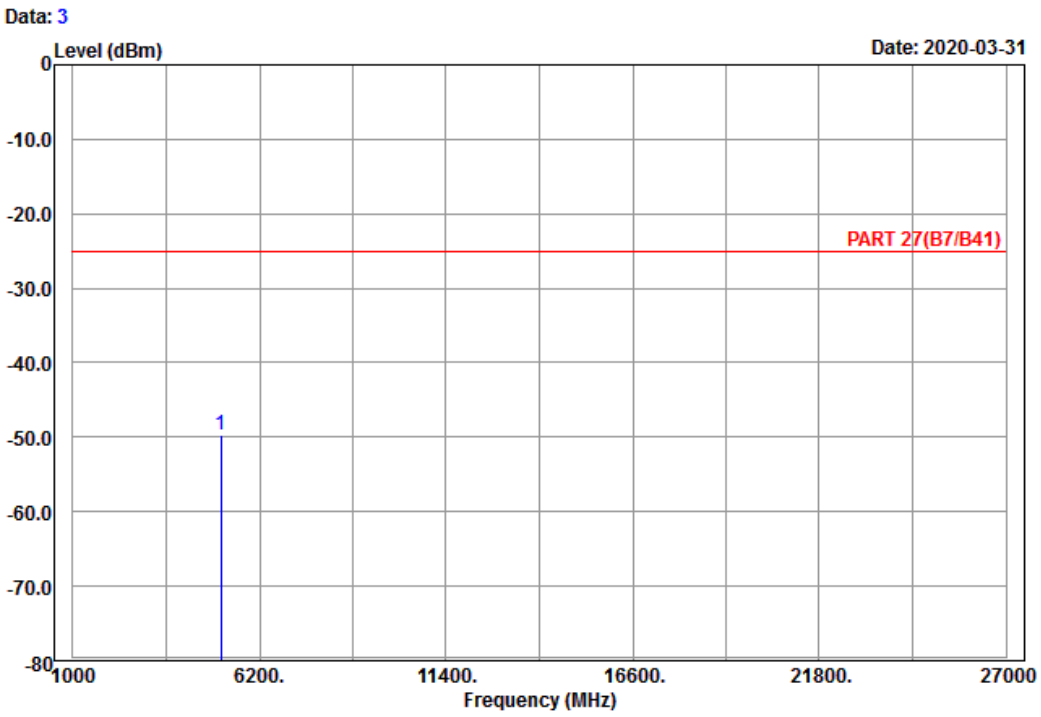


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5070.00	-45.63	-65.02	19.39	-25.00	-20.63	Peak

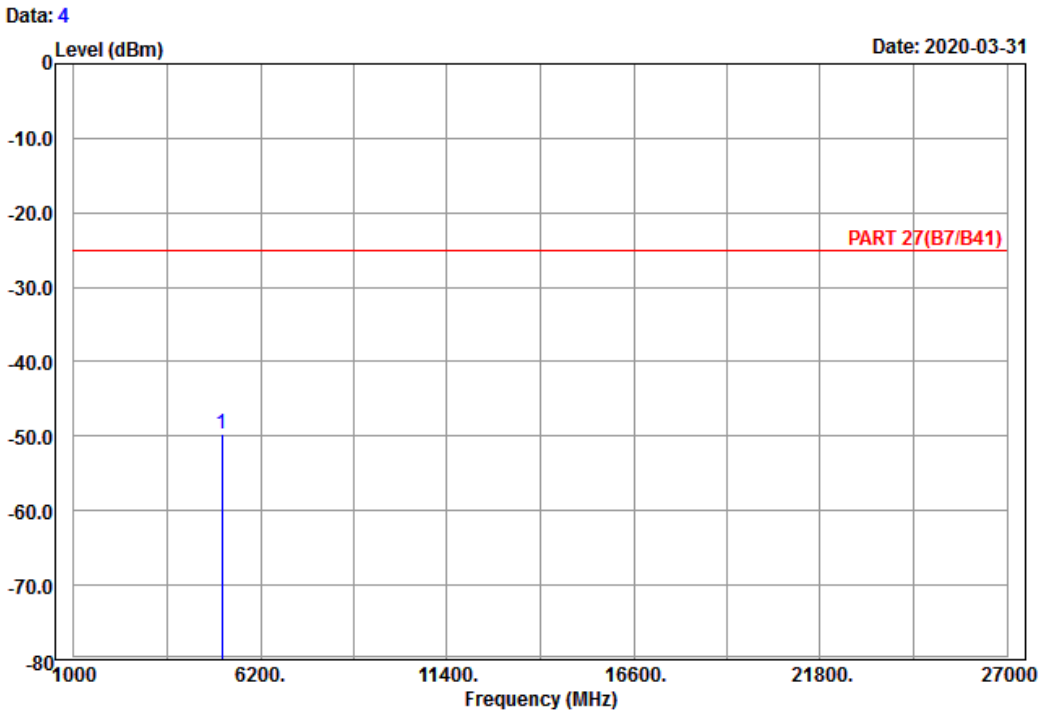
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5135.00	-49.66	-69.47	19.81	-25.00	-24.66	Peak

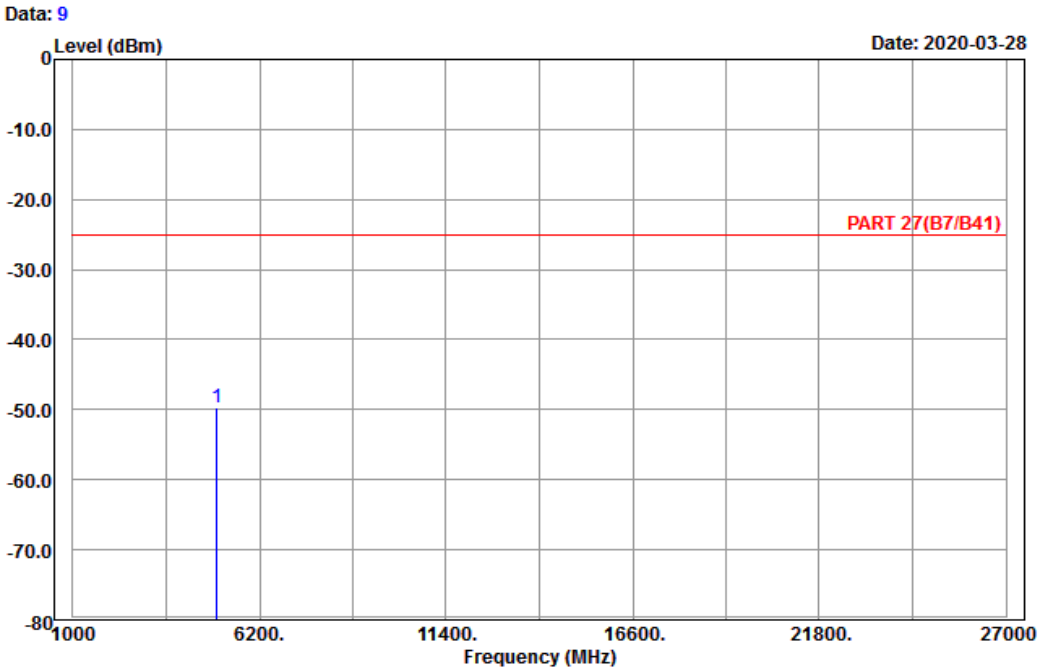


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5135.00	-49.78	-69.59	19.81	-25.00	-24.78	Peak

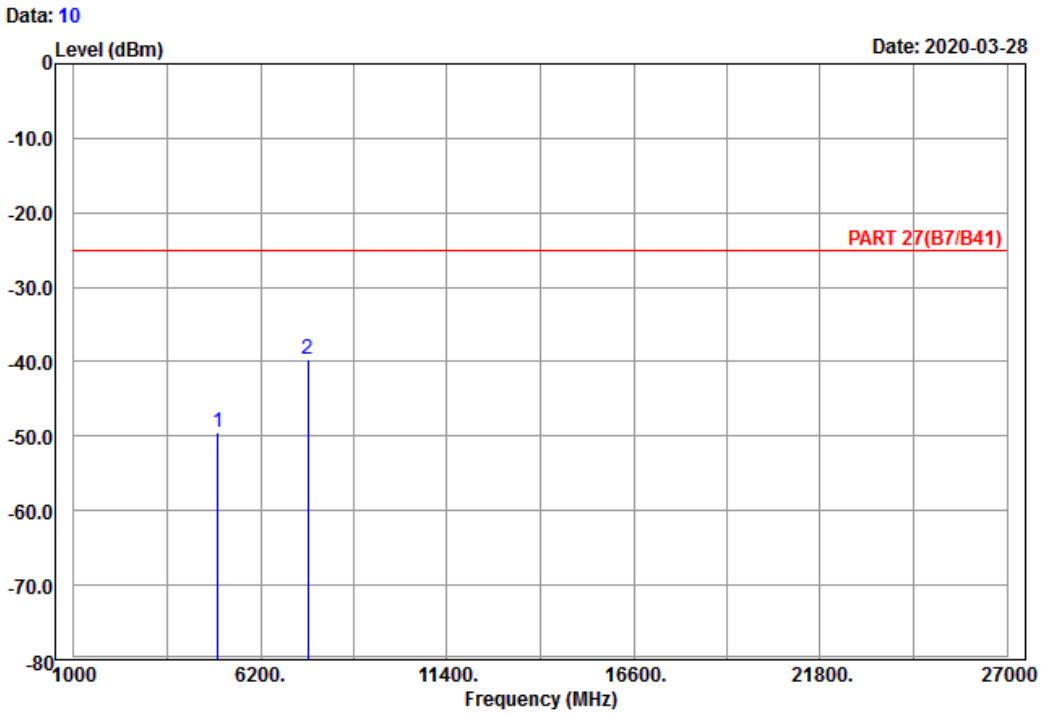
Channel Bandwidth: 20 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5020.00	-49.80	-68.88	19.08	-25.00	-24.80	Peak

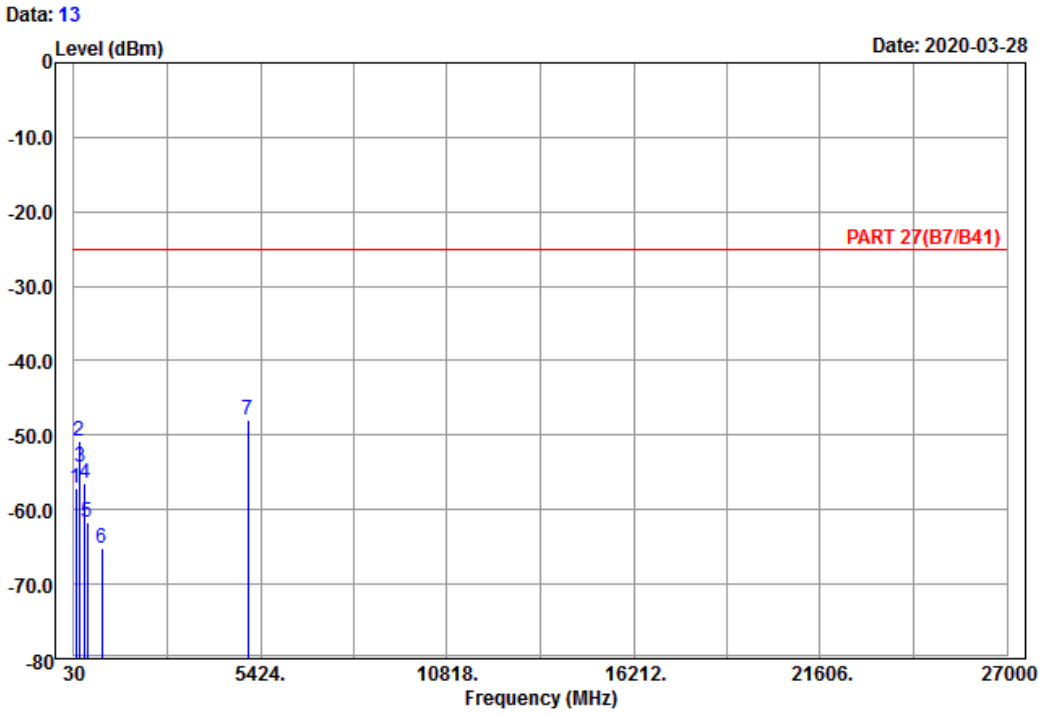


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	5020.00	-49.40	-68.48	19.08	-25.00	-24.40	Peak
2 pp	7530.00	-39.56	-62.41	22.85	-25.00	-14.56	Peak

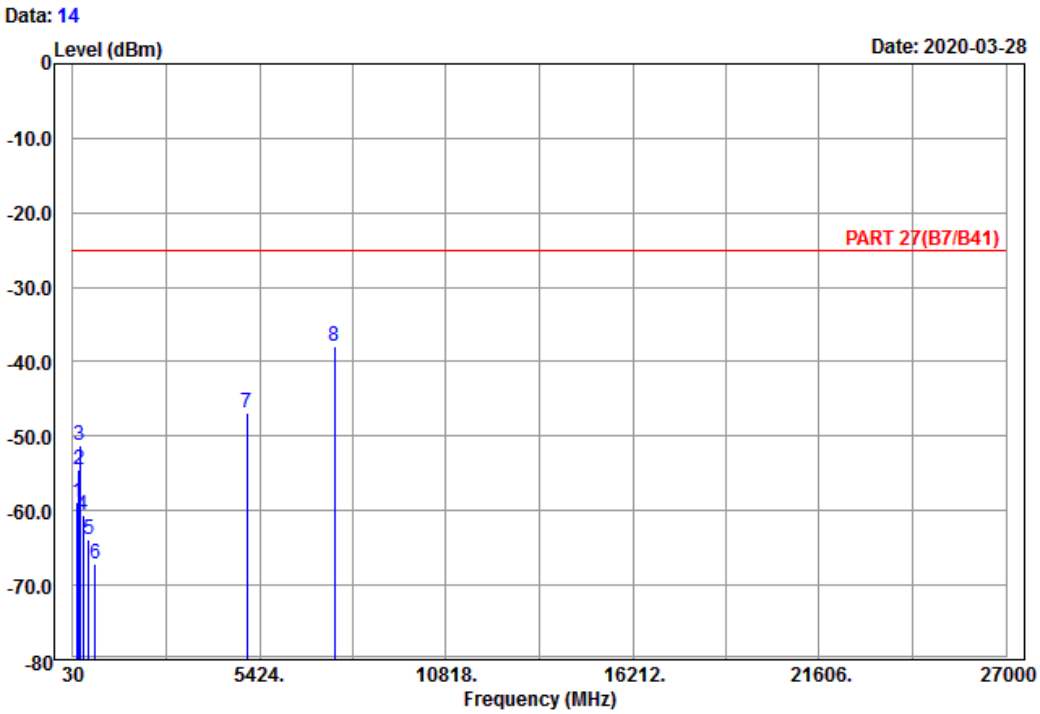
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	91.56	-57.09	-46.47	-10.62	-25.00	-32.09	Peak
2	172.02	-50.74	-44.24	-6.50	-25.00	-25.74	Peak
3	205.77	-54.23	-48.12	-6.11	-25.00	-29.23	Peak
4	351.10	-56.37	-51.04	-5.33	-25.00	-31.37	Peak
5	426.00	-61.66	-58.35	-3.31	-25.00	-36.66	Peak
6	829.90	-65.24	-66.91	1.67	-25.00	-40.24	Peak
7 pp	5070.00	-47.93	-67.32	19.39	-25.00	-22.93	Peak



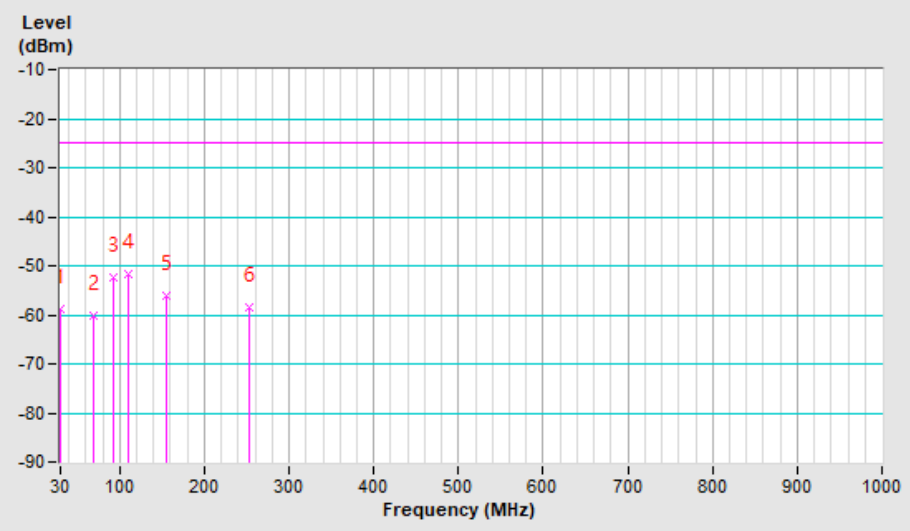
Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	168.24	-58.83	-52.03	-6.80	-25.00	-33.83	Peak
2	204.96	-54.56	-48.44	-6.12	-25.00	-29.56	Peak
3	240.60	-51.26	-45.62	-5.64	-25.00	-26.26	Peak
4	323.80	-60.55	-54.87	-5.68	-25.00	-35.55	Peak
5	481.30	-63.83	-59.10	-4.73	-25.00	-38.83	Peak
6	666.80	-67.07	-66.86	-0.21	-25.00	-42.07	Peak
7	5070.00	-46.88	-66.27	19.39	-25.00	-21.88	Peak
8 pp	7605.00	-37.88	-60.87	22.99	-25.00	-12.88	Peak

For Docking Mode

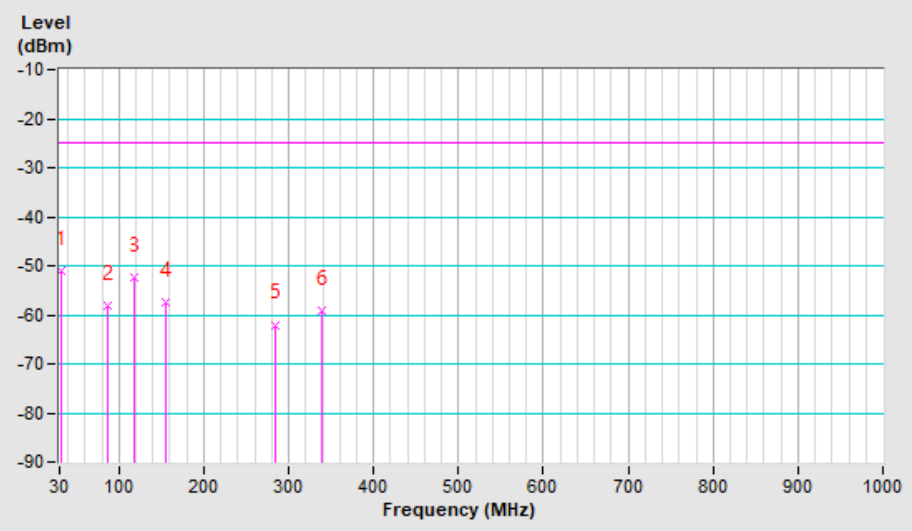
Mode	TX channel 21100 (2535.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-61.80	-46.60	-12.20	-58.80	-25.00	-33.80
2	69.36	-53.50	-54.90	-5.20	-60.10	-25.00	-35.10
3	93.26	-43.50	-53.50	1.10	-52.40	-25.00	-27.40
4	110.13	-43.10	-52.20	0.40	-51.80	-25.00	-26.80
5	155.12	-50.90	-56.10	0.10	-56.00	-25.00	-31.00
6	252.12	-52.10	-63.80	5.40	-58.40	-25.00	-33.40



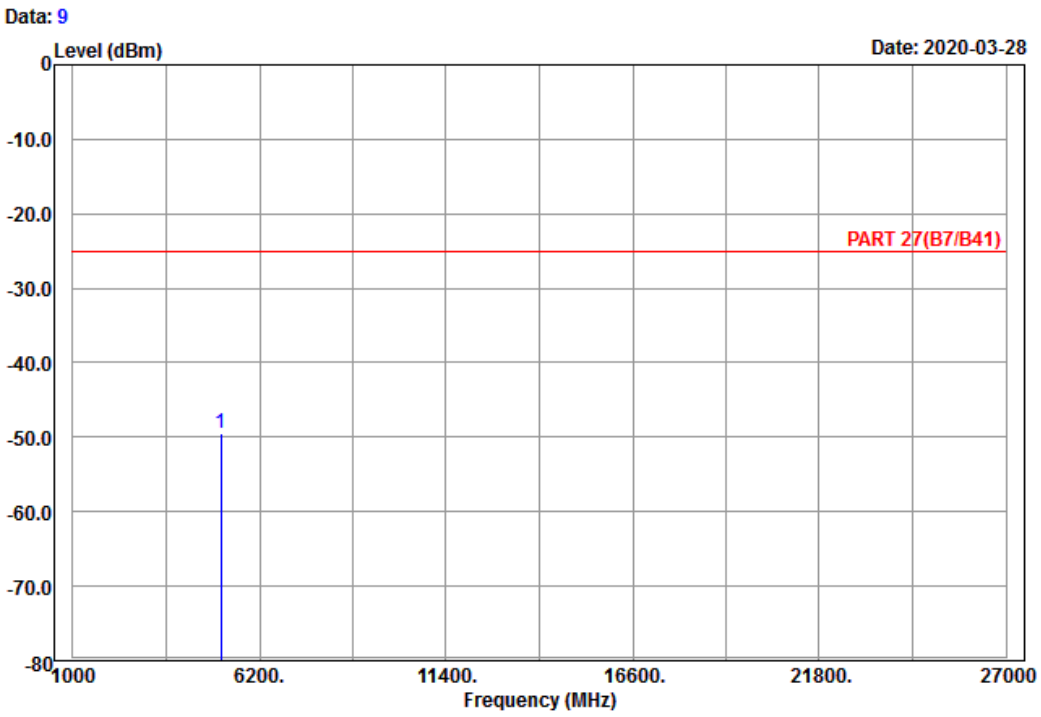
Mode	TX channel 21100 (2535.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.41	-43.40	-39.10	-12.00	-51.10	-25.00	-26.10
2	86.23	-52.20	-58.20	0.10	-58.10	-25.00	-33.10
3	117.16	-45.20	-52.60	0.20	-52.40	-25.00	-27.40
4	155.12	-55.00	-57.50	0.10	-57.40	-25.00	-32.40
5	284.45	-63.50	-67.20	5.20	-62.00	-25.00	-37.00
6	339.28	-58.90	-64.40	5.20	-59.20	-25.00	-34.20



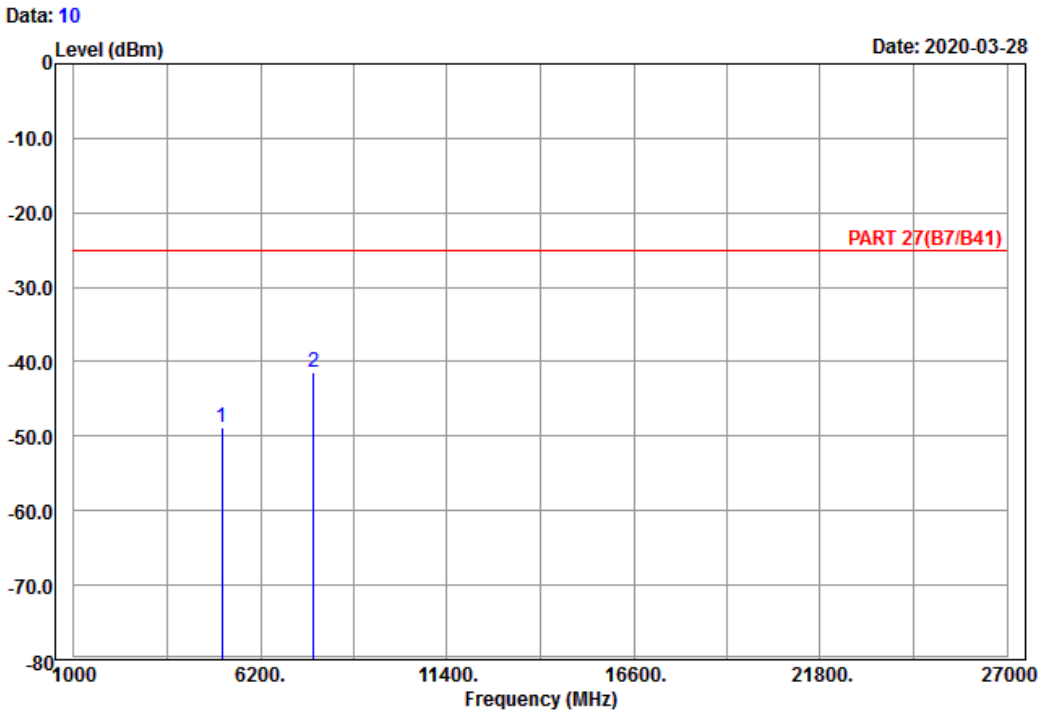
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5120.00	-49.43	-69.14	19.71	-25.00	-24.43	Peak

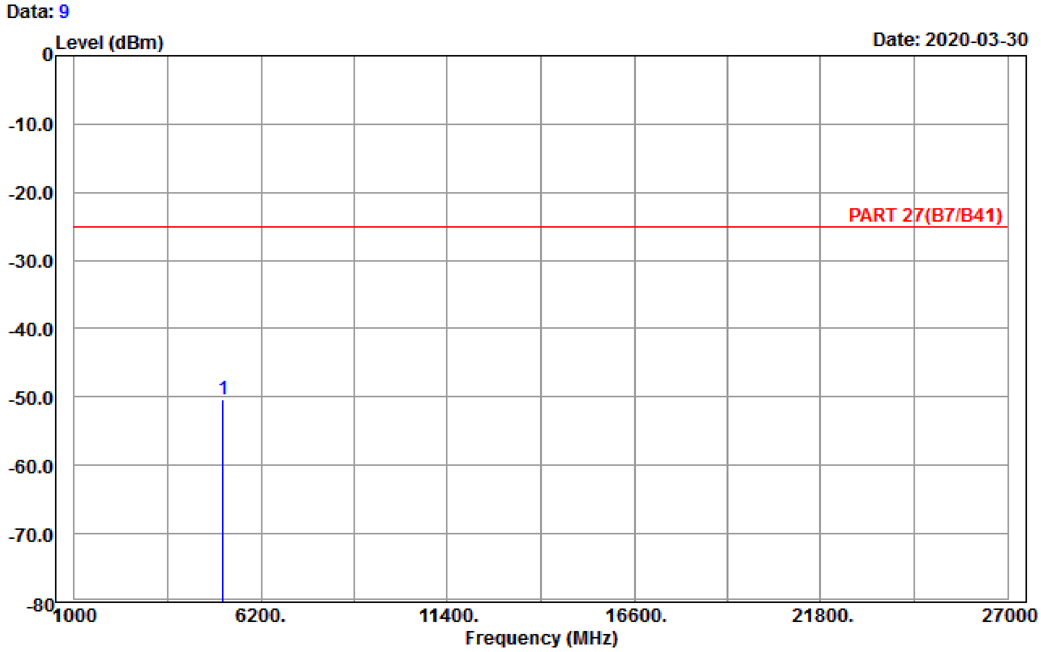


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	5120.00	-48.83	-68.54	19.71	-25.00	-23.83	Peak
2 pp	7680.00	-41.46	-64.58	23.12	-25.00	-16.46	Peak

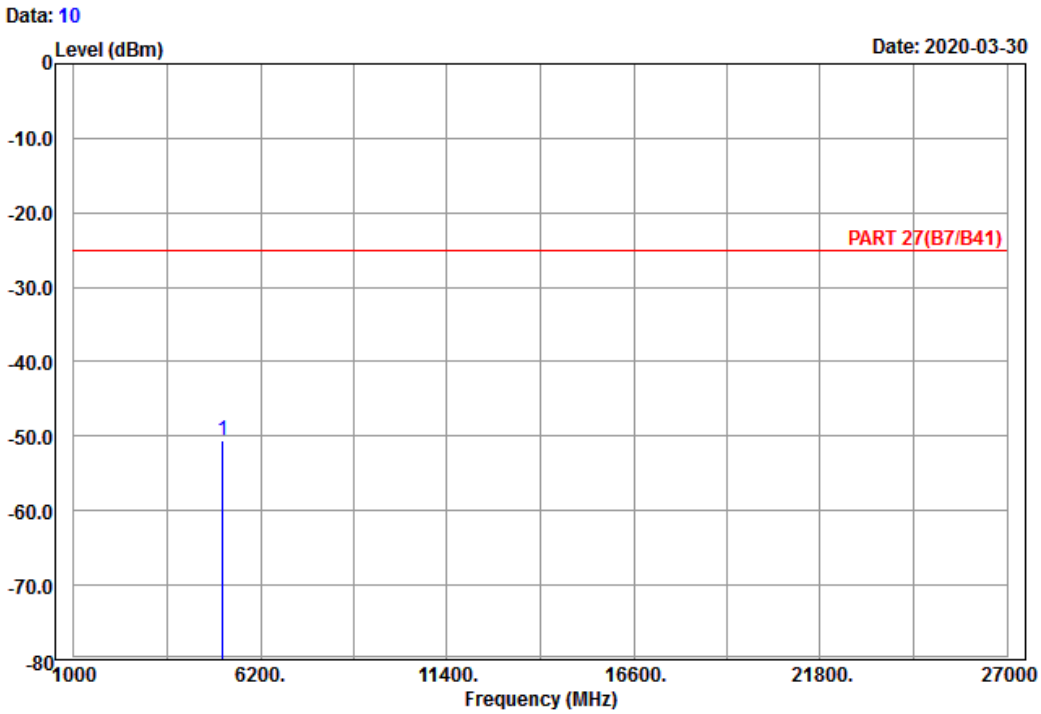
LTE Band 38
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5145.00	-50.45	-70.26	19.81	-25.00	-25.45	Peak

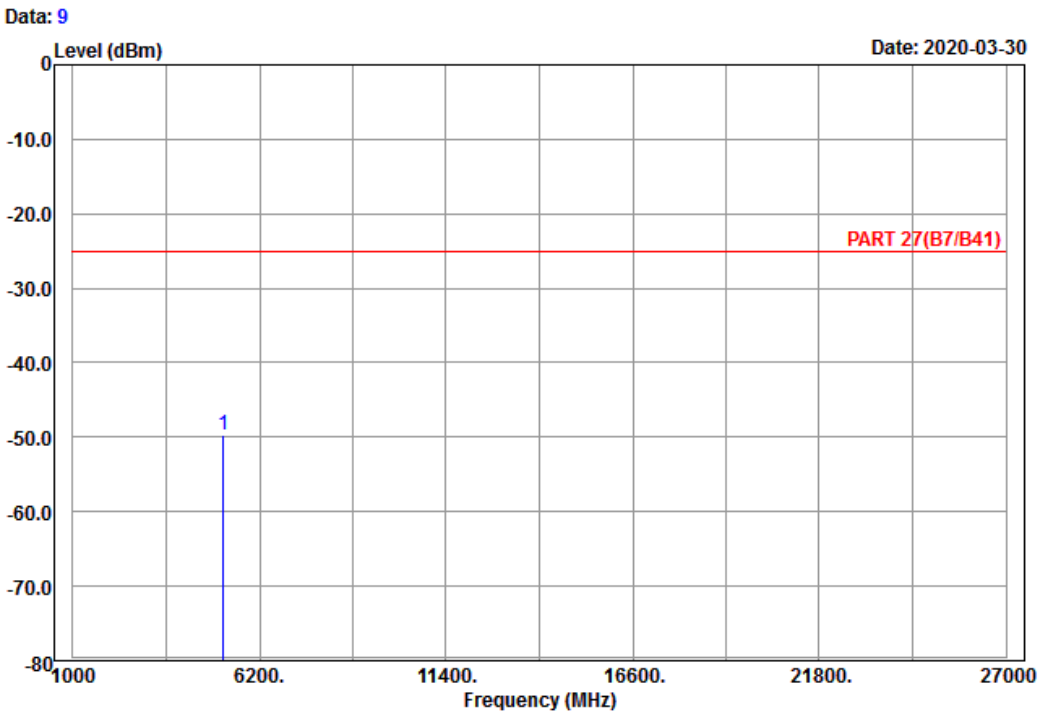


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5145.00	-50.48	-70.29	19.81	-25.00	-25.48	Peak

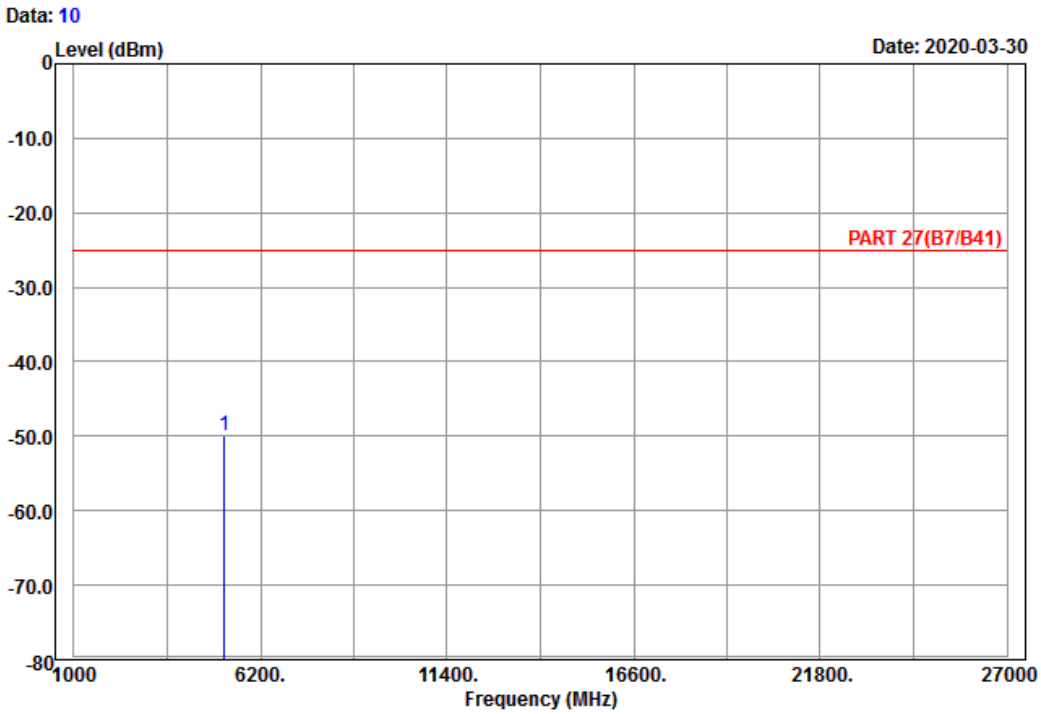
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5190.00	-49.75	-69.87	20.12	-25.00	-24.75	Peak

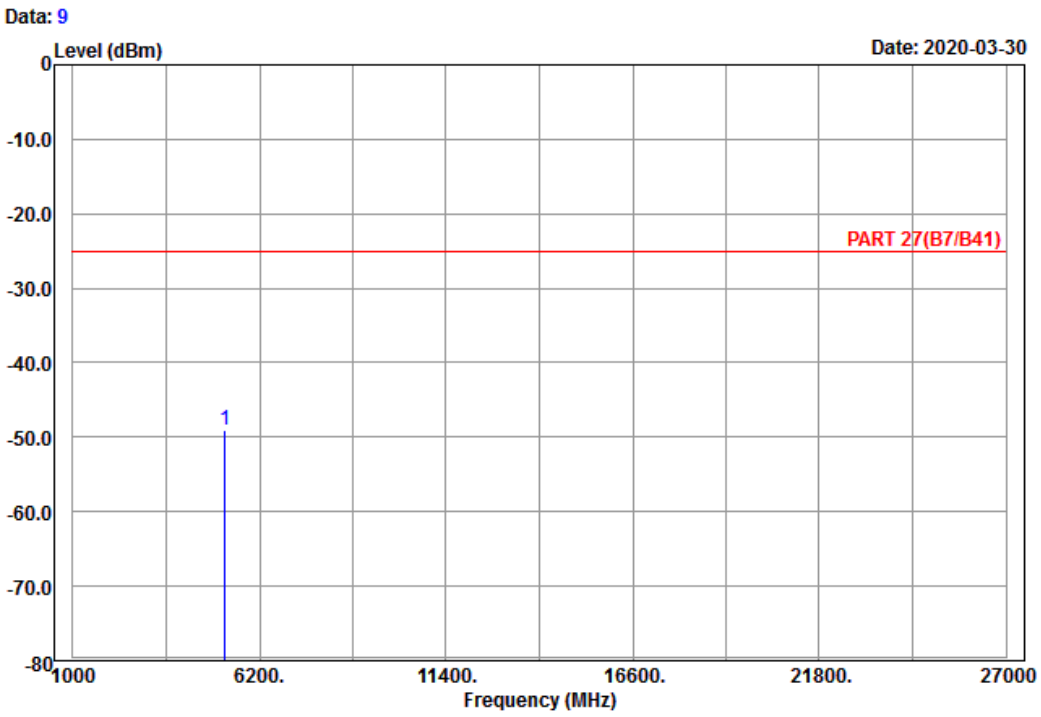


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5190.00	-49.91	-70.03	20.12	-25.00	-24.91	Peak

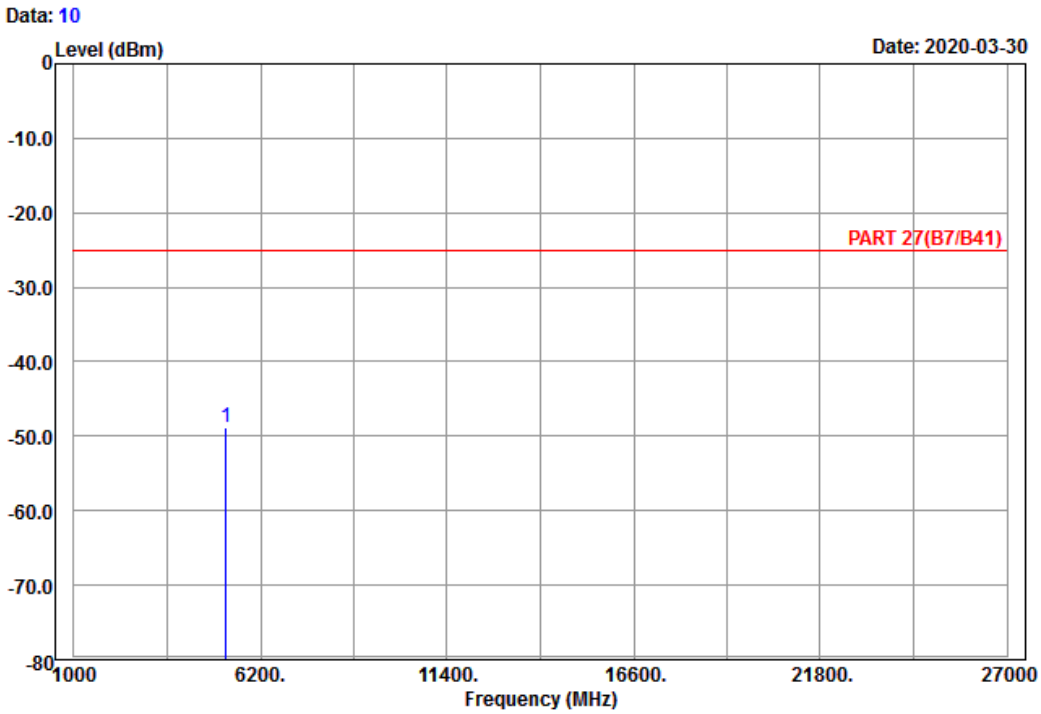
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5235.00	-49.11	-69.27	20.16	-25.00	-24.11	Peak

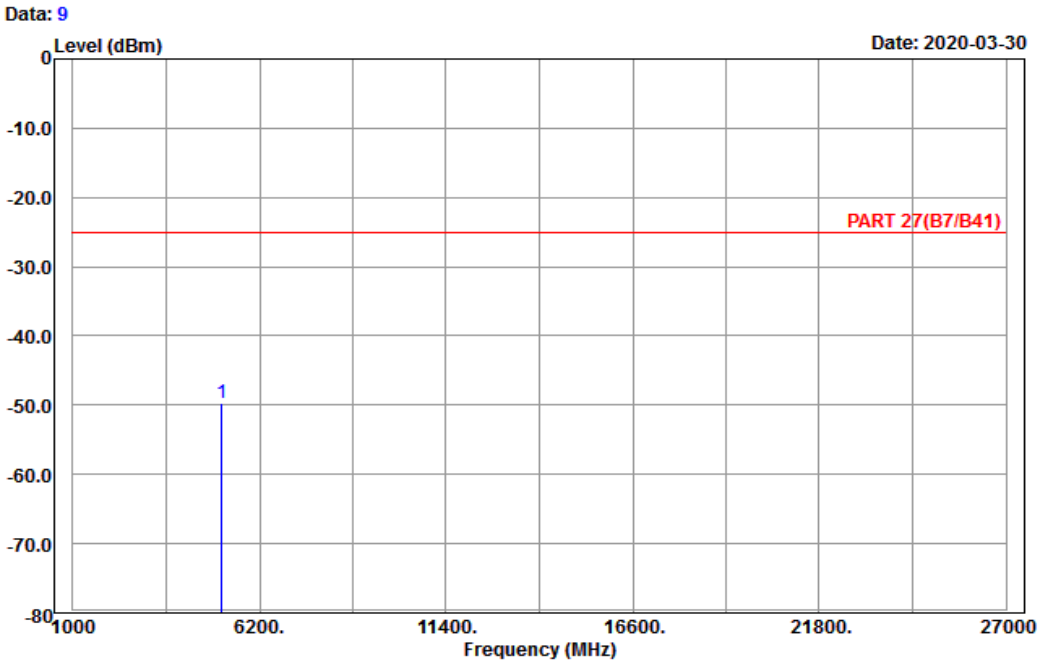


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5235.00	-48.83	-68.99	20.16	-25.00	-23.83	Peak

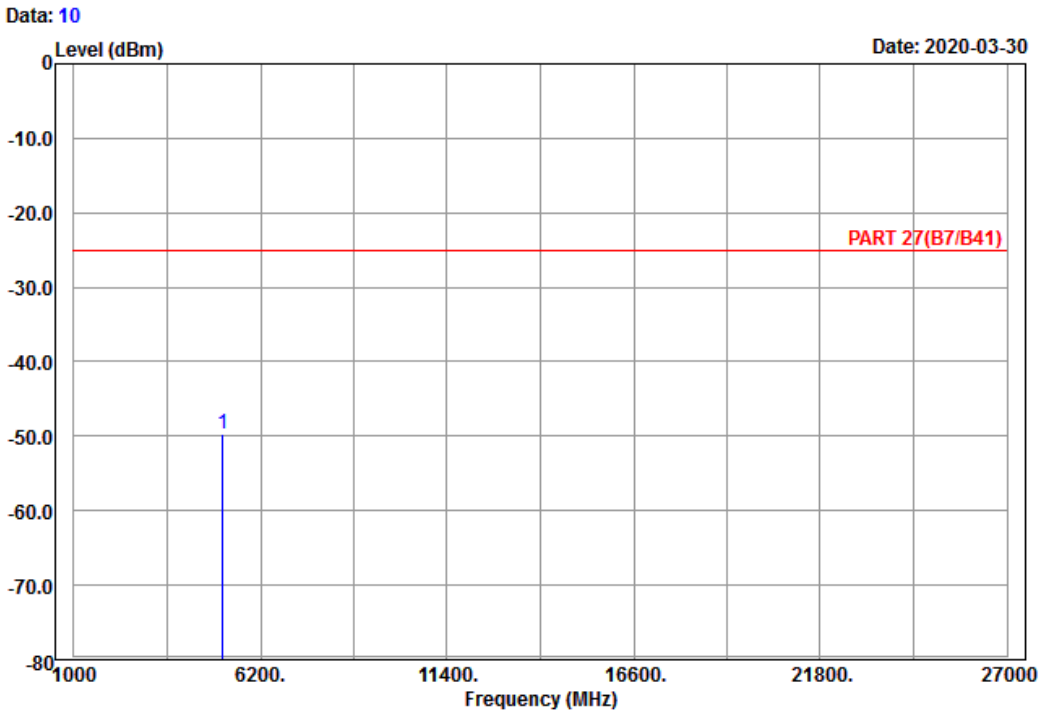
Channel Bandwidth: 20 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_L-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5160.00	-49.62	-69.54	19.92	-25.00	-24.62	Peak

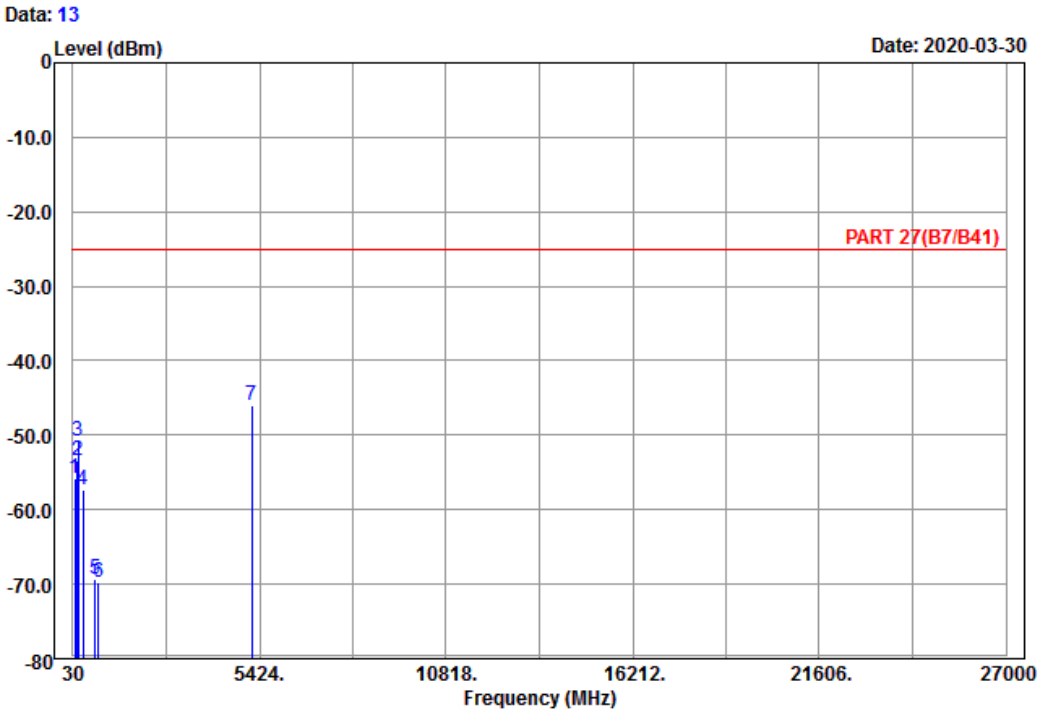


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_L-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5160.00	-49.65	-69.57	19.92	-25.00	-24.65	Peak

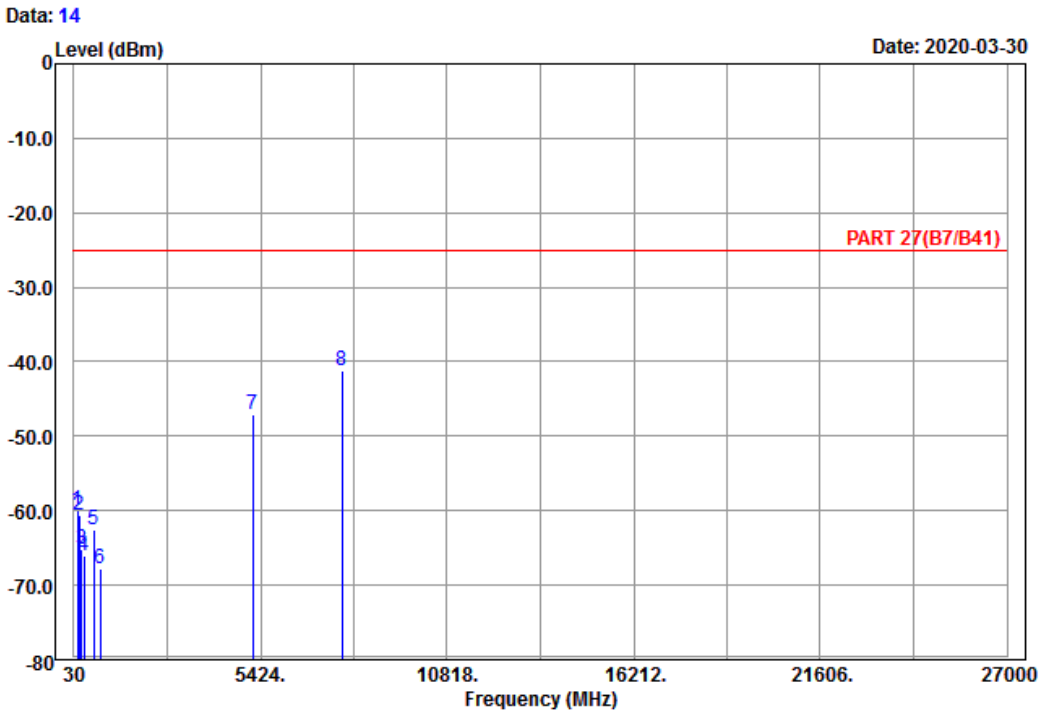
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_M-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	91.83	-55.82	-45.26	-10.56	-25.00	-30.82	Peak
2	152.85	-53.37	-45.51	-7.86	-25.00	-28.37	Peak
3	172.02	-50.77	-44.27	-6.50	-25.00	-25.77	Peak
4	321.70	-57.32	-51.62	-5.70	-25.00	-32.32	Peak
5	664.70	-69.39	-69.19	-0.20	-25.00	-44.39	Peak
6	766.20	-69.86	-69.64	-0.22	-25.00	-44.86	Peak
7 pp	5190.00	-45.91	-66.03	20.12	-25.00	-20.91	Peak

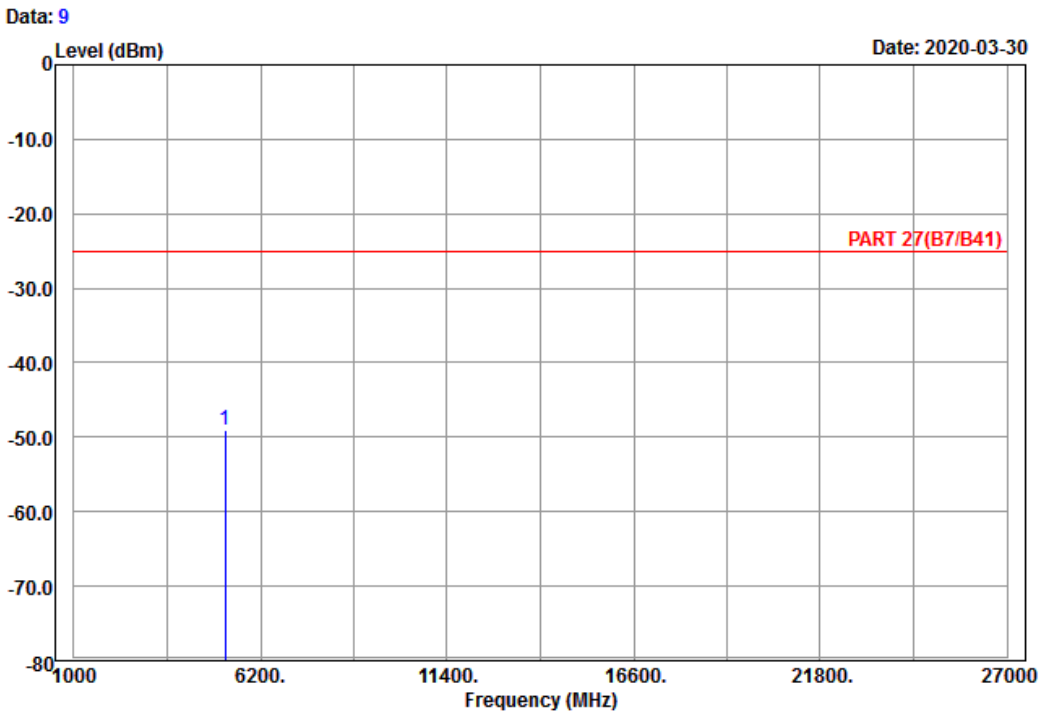


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_M-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	145.02	-59.99	-52.16	-7.83	-25.00	-34.99	Peak
2	187.68	-60.70	-55.00	-5.70	-25.00	-35.70	Peak
3	242.76	-65.13	-59.52	-5.61	-25.00	-40.13	Peak
4	312.60	-66.01	-60.20	-5.81	-25.00	-41.01	Peak
5	598.90	-62.46	-62.81	0.35	-25.00	-37.46	Peak
6	797.00	-67.83	-69.65	1.82	-25.00	-42.83	Peak
7	5190.00	-47.12	-67.24	20.12	-25.00	-22.12	Peak
8 pp	7785.00	-41.27	-64.60	23.33	-25.00	-16.27	Peak

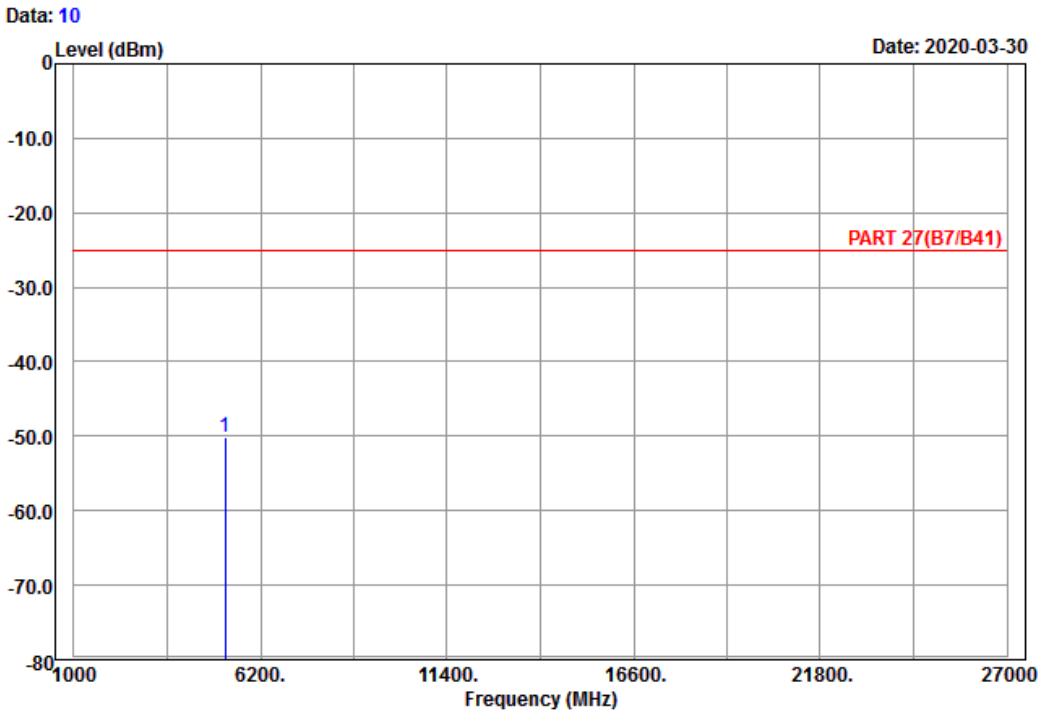
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 38_Link_H-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5220.00	-49.08	-69.22	20.14	-25.00	-24.08	Peak

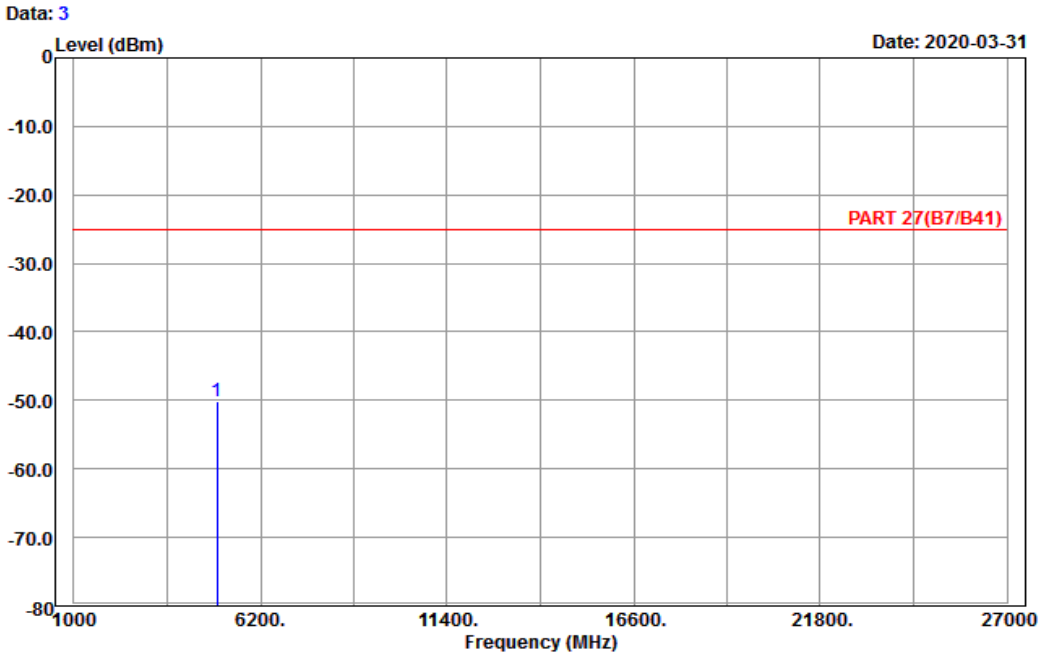


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 38_Link_H-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5220.00	-50.04	-70.18	20.14	-25.00	-25.04	Peak

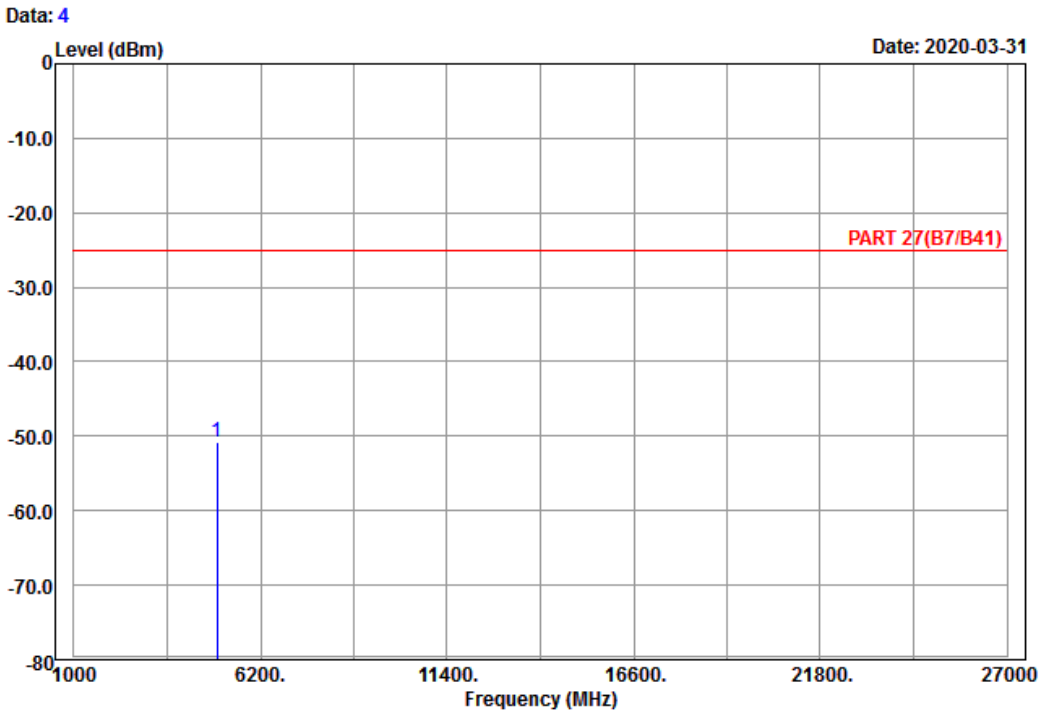
LTE Band 41
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark    : LTE_Band 41_Link_L-Ch
Tested by: Karl Lee
```

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	4997.00	-50.11	-69.69	19.58	-25.00	-25.11	Peak

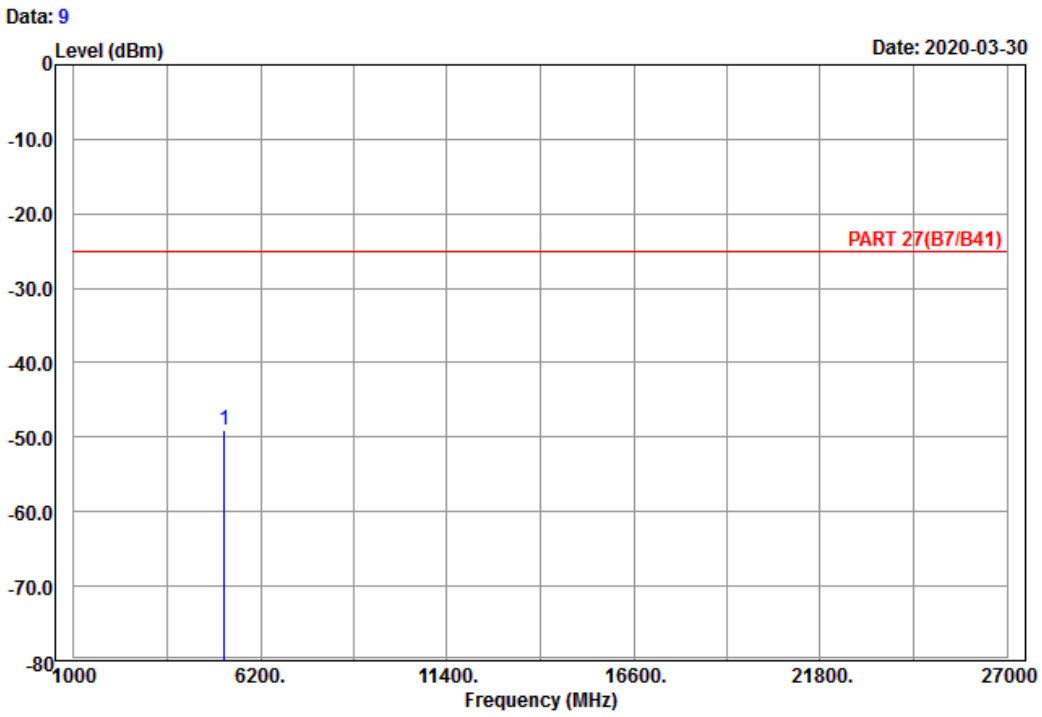


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	4997.00	-50.77	-70.35	19.58	-25.00	-25.77	Peak

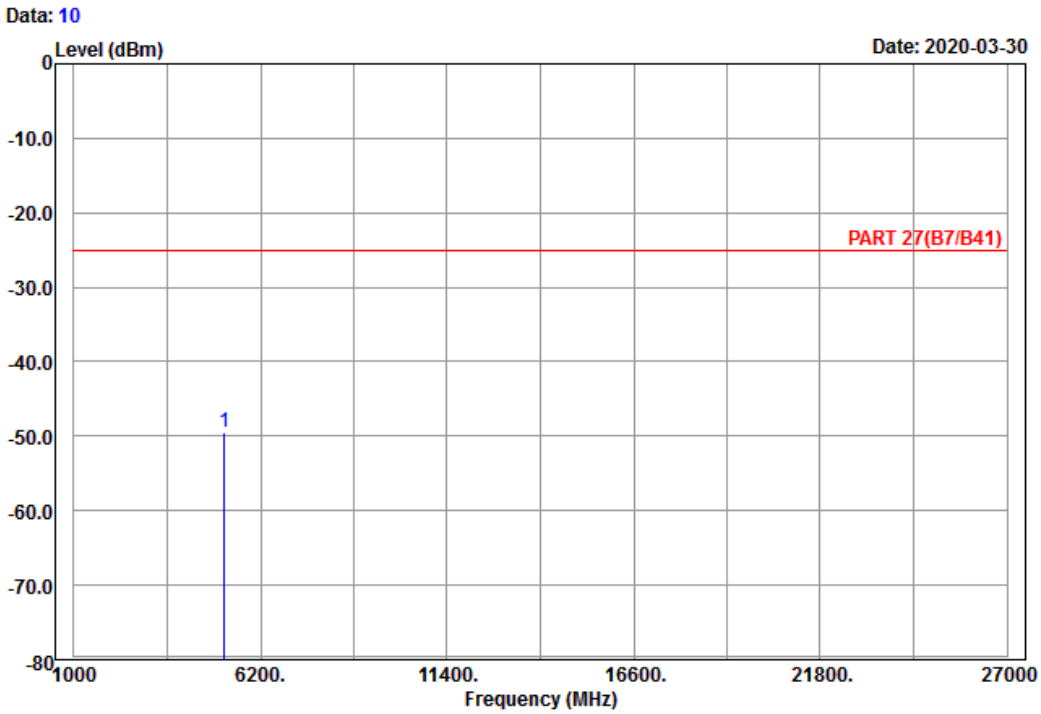
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5186.00	-49.10	-69.22	20.12	-25.00	-24.10	Peak

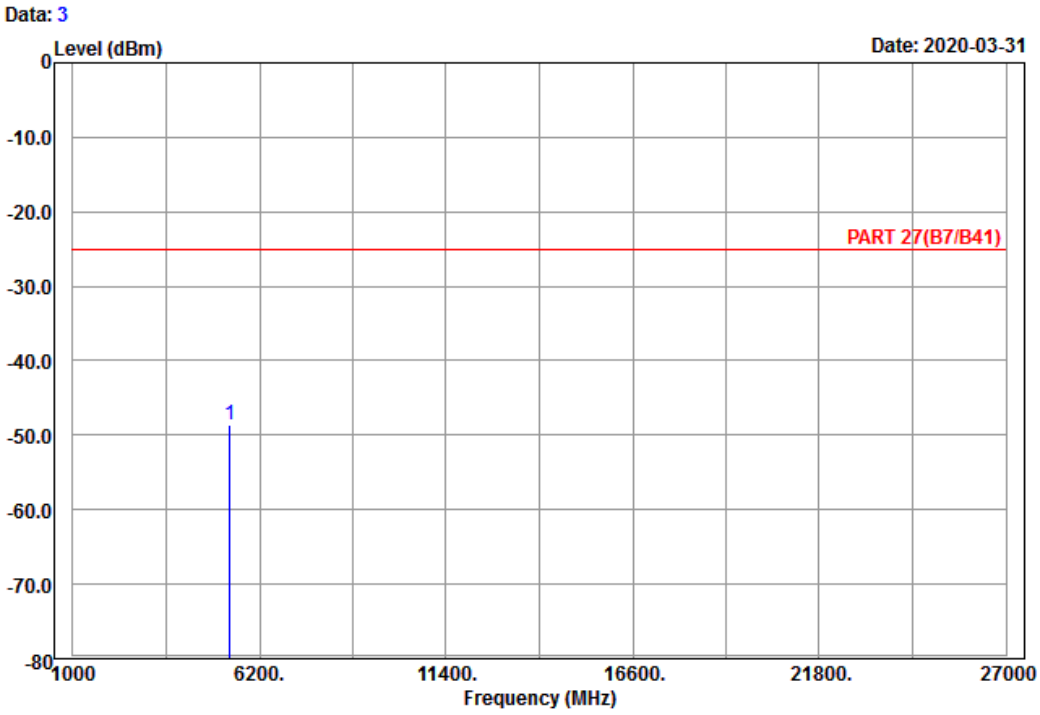


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5186.00	-49.50	-69.62	20.12	-25.00	-24.50	Peak

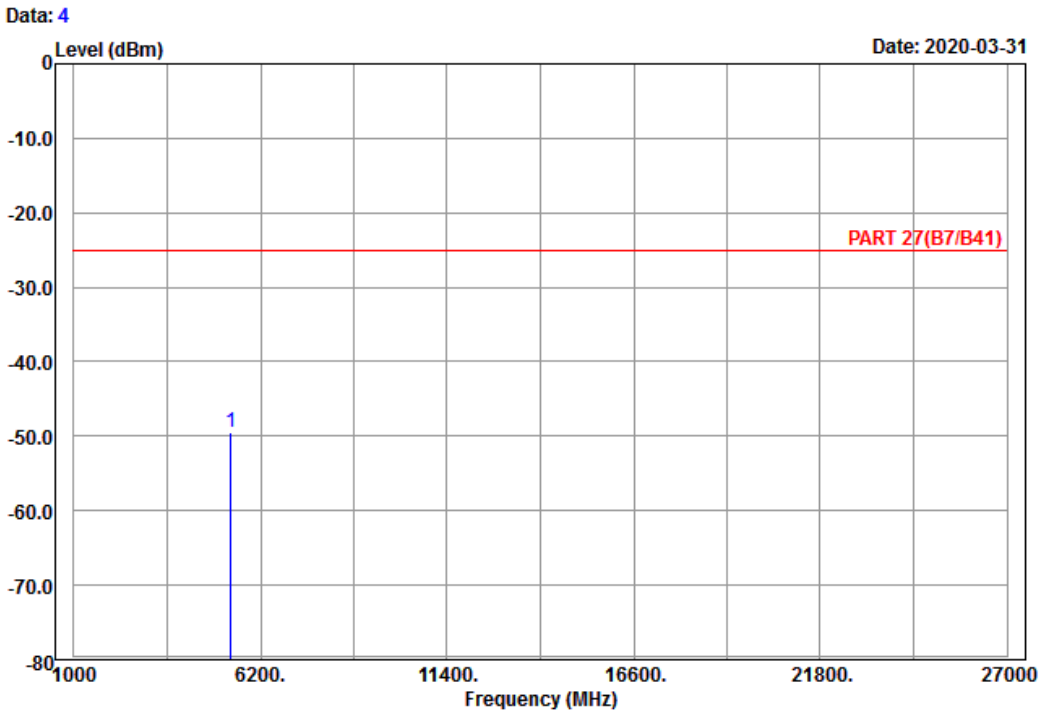
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5375.00	-48.67	-68.99	20.32	-25.00	-23.67	Peak



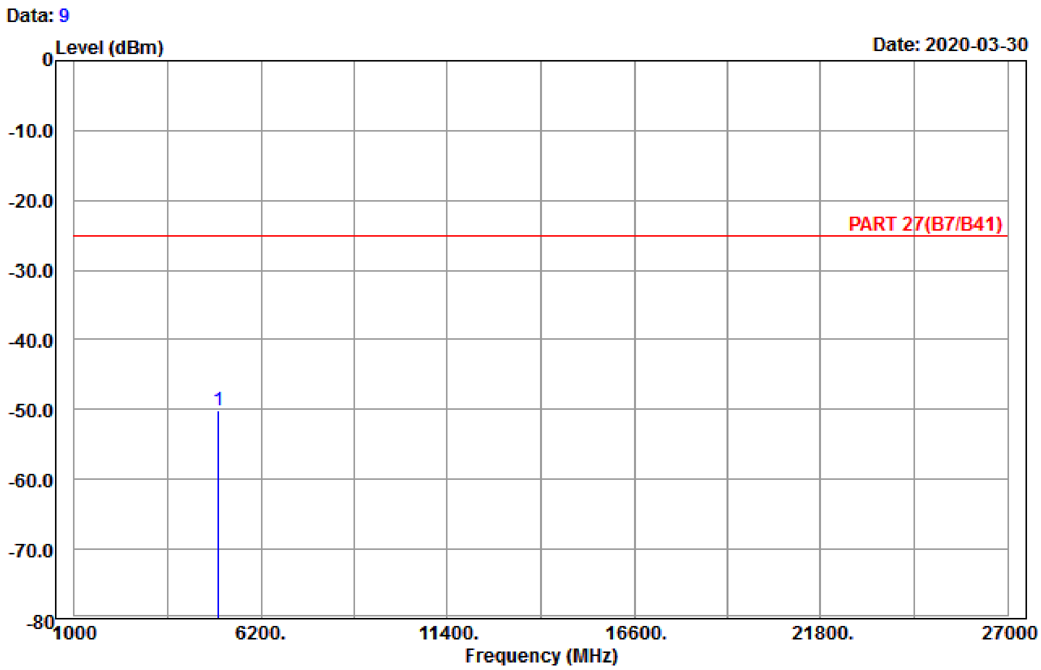
Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5375.00	-49.56	-69.88	20.32	-25.00	-24.56	Peak

Channel Bandwidth: 20 MHz / QPSK

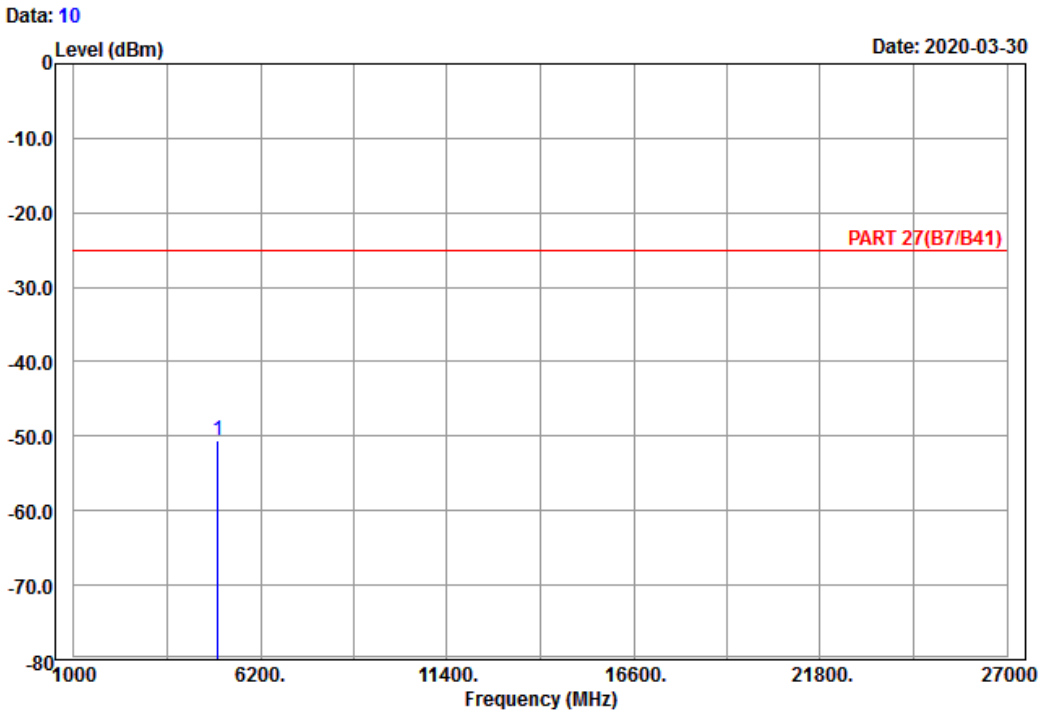
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5012.00	-50.08	-69.16	19.08	-25.00	-25.08	Peak

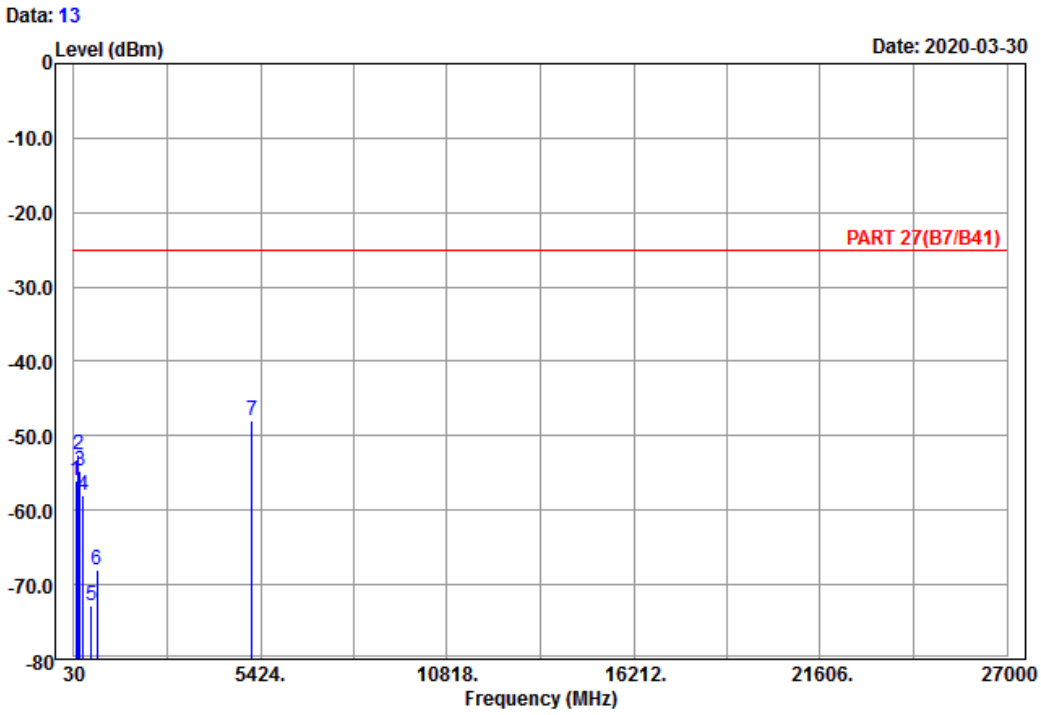


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5012.00	-50.47	-69.55	19.08	-25.00	-25.47	Peak

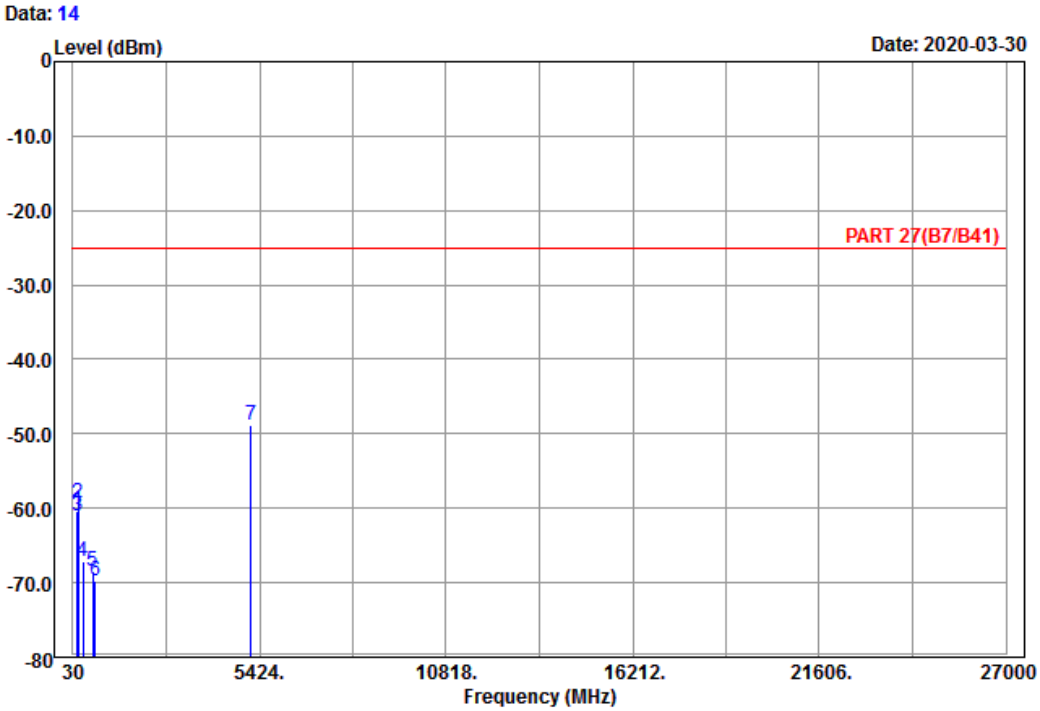
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	92.37	-56.09	-45.53	-10.56	-25.00	-31.09	Peak
2	158.79	-52.55	-44.85	-7.70	-25.00	-27.55	Peak
3	205.50	-54.75	-48.64	-6.11	-25.00	-29.75	Peak
4	304.90	-57.92	-52.02	-5.90	-25.00	-32.92	Peak
5	533.80	-72.70	-69.83	-2.87	-25.00	-47.70	Peak
6	708.10	-67.94	-67.42	-0.52	-25.00	-42.94	Peak
7 pp	5186.00	-47.88	-68.00	20.12	-25.00	-22.88	Peak

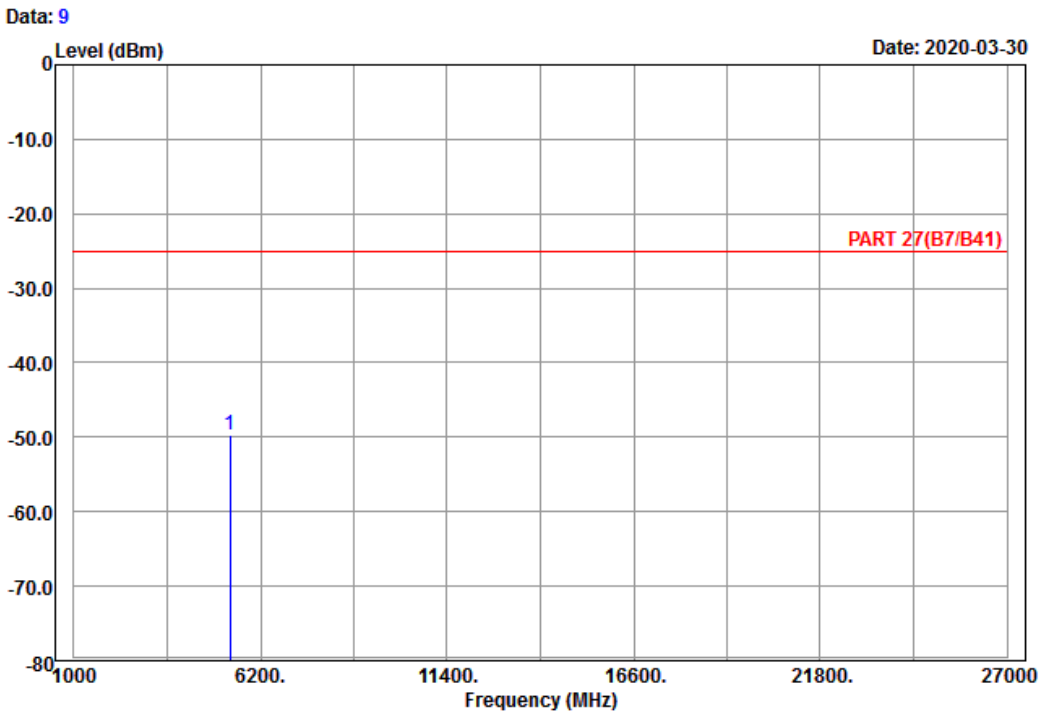


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	152.04	-60.33	-52.44	-7.89	-25.00	-35.33	Peak
2	177.42	-59.20	-53.32	-5.88	-25.00	-34.20	Peak
3	193.62	-61.04	-55.13	-5.91	-25.00	-36.04	Peak
4	321.00	-67.11	-61.40	-5.71	-25.00	-42.11	Peak
5	614.30	-68.34	-68.61	0.27	-25.00	-43.34	Peak
6	679.40	-69.68	-69.41	-0.27	-25.00	-44.68	Peak
7 pp	5186.00	-48.76	-68.88	20.12	-25.00	-23.76	Peak

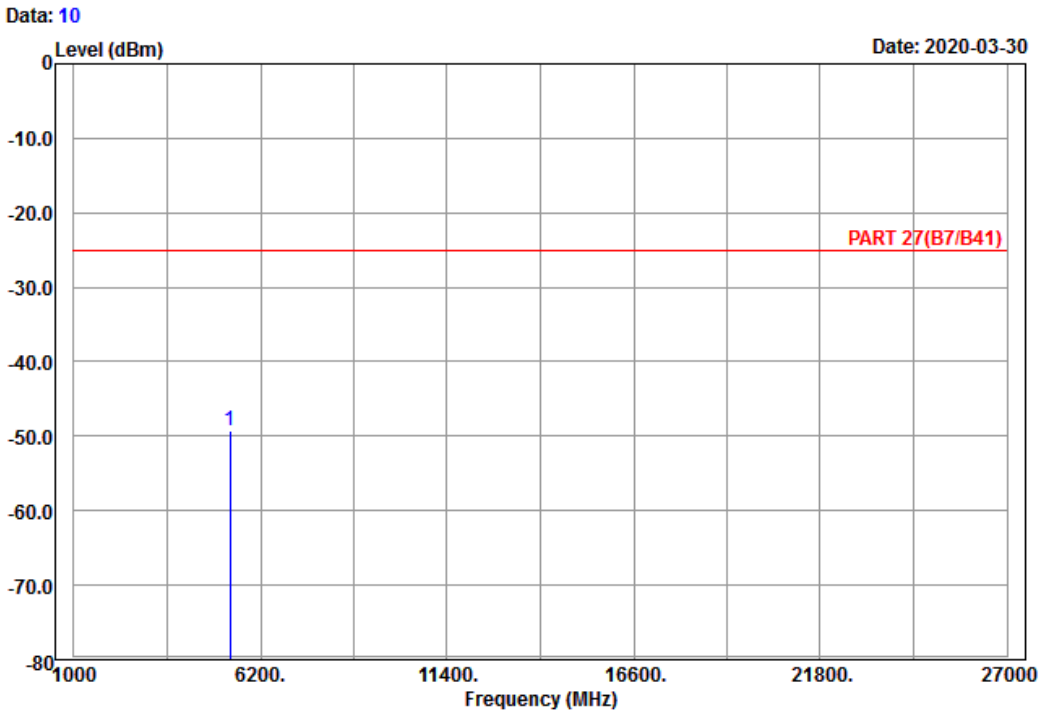
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5360.00	-49.62	-69.92	20.30	-25.00	-24.62	Peak



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5360.00	-49.17	-69.47	20.30	-25.00	-24.17	Peak

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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