

FCC Test Report

(PART 27)

Report No.: RF190417C27-8

FCC ID: POTWA02

Test Model: WA02

Received Date: Apr. 17, 2019

Test Date: Jun. 03 ~ Sep. 18, 2019

Issued Date: Sep. 19, 2019

Applicant: Inventec Appliances Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF190417C27-8	Original Release	Sep. 19, 2019

1 Certificate of Conformity

Product: Notebook

Brand: Inventec Appliances Corp.

Test Model: WA02

Sample Status: Identical Prototype

Applicant: Inventec Appliances Corp.

Test Date: Jun. 03 ~ Sep. 18, 2019

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 : Gina Liu, **Date:** Sep. 19, 2019
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Sep. 19, 2019
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(h)(2)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(m)(6)	Occupied Bandwidth	Pass	Meet the requirement of limit.
--	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Out-of-Band Emissions Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.13 dB at 5120 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	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 13, 2018	Dec. 12, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 11, 2018	Oct. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 23, 2018	Nov. 22, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	148	Nov. 25, 2018	Nov. 24, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 19, 2018	Nov. 18, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-80 00&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1 000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Jan. 16, 2019	Jan. 15, 2020
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
			Aug. 19, 2019	Aug. 18, 2021
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
			Sep. 06, 2019	Sep. 05, 2020
AC Power Supply EEC	6905S	1991553	NA	NA

- Note:
- The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 - The test was performed in HwaYa Chamber 10.

3 General Information

3.1 General Description of EUT

Product	Notebook	
Brand	Inventec Appliances Corp.	
Test Model	WA02	
Status of EUT	Identical Prototype	
Power Supply Rating	5.0 Vdc / 12Vdc / 15Vdc / 20Vdc (adapter) 7.6 Vdc (Li-ion battery)	
Modulation Type	QPSK, 16QAM, 64QAM	
Frequency Range	LTE Band 7 (Channel Bandwidth: 5 MHz)	2502.5 ~ 2567.5 MHz
	LTE Band 7 (Channel Bandwidth: 10 MHz)	2505 ~ 2565 MHz
	LTE Band 7 (Channel Bandwidth: 15 MHz)	2507.5 ~ 2562.5 MHz
	LTE Band 7 (Channel Bandwidth: 20 MHz)	2510 ~ 2560 MHz
	LTE Band 38 (Channel Bandwidth: 5 MHz)	2572.5 ~ 2617.5 MHz
	LTE Band 38 (Channel Bandwidth: 10 MHz)	2575.0 ~ 2615.0 MHz
	LTE Band 38 (Channel Bandwidth: 15 MHz)	2577.5 ~ 2612.5 MHz
	LTE Band 38 (Channel Bandwidth: 20 MHz)	2580.0 ~ 2610.0 MHz
	LTE Band 41 (Channel Bandwidth: 5 MHz)	2498.5 ~ 2687.5 MHz
	LTE Band 41 (Channel Bandwidth: 10 MHz)	2501.0 ~ 2685.0 MHz
	LTE Band 41 (Channel Bandwidth: 15 MHz)	2503.5 ~ 2682.5 MHz
	LTE Band 41 (Channel Bandwidth: 20 MHz)	2506.0 ~ 2680.0 MHz
Max. EIRP Power	LTE Band 7 (Channel Bandwidth: 5 MHz)	160.32 mW
	LTE Band 7 (Channel Bandwidth: 10 MHz)	170.61 mW
	LTE Band 7 (Channel Bandwidth: 15 MHz)	179.89 mW
	LTE Band 7 (Channel Bandwidth: 20 MHz)	191.87 mW
	LTE Band 38 (Channel Bandwidth: 5 MHz)	148.59 mW
	LTE Band 38 (Channel Bandwidth: 10 MHz)	161.06 mW
	LTE Band 38 (Channel Bandwidth: 15 MHz)	171.79 mW
	LTE Band 38 (Channel Bandwidth: 20 MHz)	182.39 mW
	LTE Band 41 (Channel Bandwidth: 5 MHz)	147.57 mW
	LTE Band 41 (Channel Bandwidth: 10 MHz)	158.85 mW
	LTE Band 41 (Channel Bandwidth: 15 MHz)	166.34 mW
	LTE Band 41 (Channel Bandwidth: 20 MHz)	177.01 mW
Emission Designator	LTE Band 7 (Channel Bandwidth: 5 MHz)	4M52G7D
	LTE Band 7 (Channel Bandwidth: 10 MHz)	9M04G7D
	LTE Band 7 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 7 (Channel Bandwidth: 20 MHz)	18M0G7D
	LTE Band 38 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE Band 38 (Channel Bandwidth: 10 MHz)	8M97D7W
	LTE Band 38 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 38 (Channel Bandwidth: 20 MHz)	17M9D7W
	LTE Band 41 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE Band 41 (Channel Bandwidth: 10 MHz)	8M97D7W
	LTE Band 41 (Channel Bandwidth: 15 MHz)	13M5G7D

	LTE Band 41 (Channel Bandwidth: 20 MHz)	17M9D7W
Antenna Type	Monopole Antenna with 1 dBi gain (Main) / 0 dBi gain (Aux.)	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

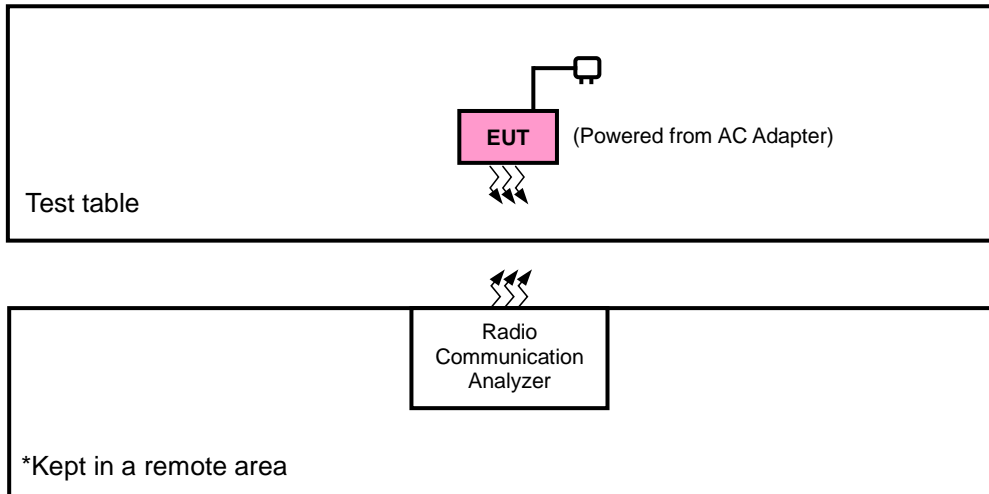
1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	DARFON	B230-201	I/P: 100-240 Vac, 50/60 Hz, 0.7 A Max. O/P: 5 Vdc, 3 A / 9 Vdc, 3 A / 12 Vdc, 2.5 A / 15 Vdc, 2 A / 20 Vdc, 1.5 A
Battery	GY	NA125S PL2983122	7.6 Vdc, 4200 mAh

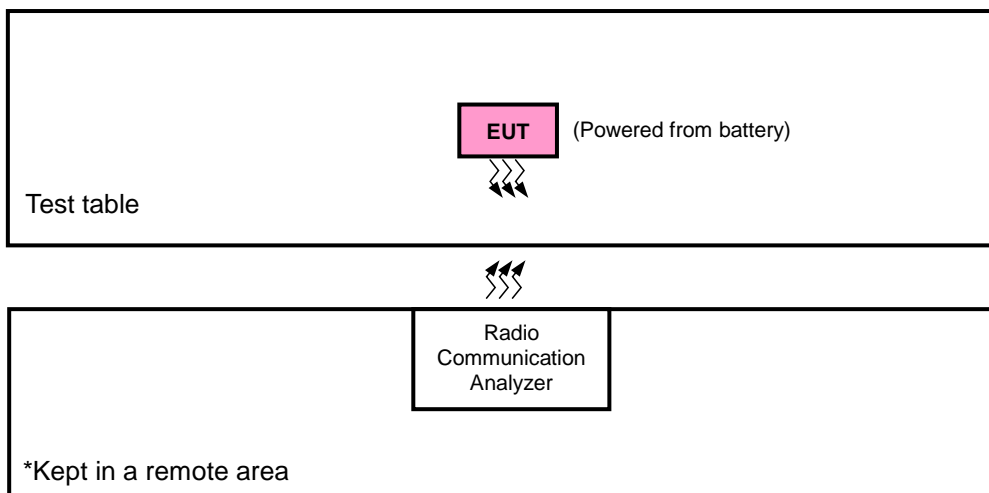
2. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<Radiated Emission Test>



<E.I.R.P. Test>



3.2.1 Description of Support Units

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

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports.

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	EIRP	Radiated Emission
LTE Band 7	NB Mode	NB Mode
LTE Band 38	NB Mode	NB Mode
LTE Band 41	NB Mode	NB Mode

LTE Band 7

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 12 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20850 to 21350	21110	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	20775 to 21425	20775, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 12 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	20775 to 21425	20775, 21425	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 12 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK	1 RB / 24 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 / 12 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, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	37850 to 38150	38000	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	37775 to 38225	37775, 38225	5 MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10 MHz	QPSK	1 RB / 0 RB Offset
		37825 to 38175	37825, 38175	15 MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850, 38150	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	37775 to 38225	37775, 38225	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800, 38200	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825, 38175	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		37850 to 38150	37850, 38150	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	37775 to 38225	37775, 38000, 38225	5 MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800, 38000, 38200	10 MHz	QPSK	1 RB / 0 RB Offset
		37825 to 38175	37825, 38000, 38175	15 MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850, 38000, 38150	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	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, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	39750 to 41490	40620	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	39675 to 41565	39675, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10 MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	39675 to 41565	39675, 41565	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700, 41540	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725, 41515	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750, 41490	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Conducted Emission	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700, 40620, 41540	10 MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725, 40620, 41515	15 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	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	7.6 Vdc	Getaz Yang
Modulation Characteristics	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Frequency Stability	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Occupied Bandwidth	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Out-of-Band Emissions	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Peak to Average Ratio	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Conducted Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

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:

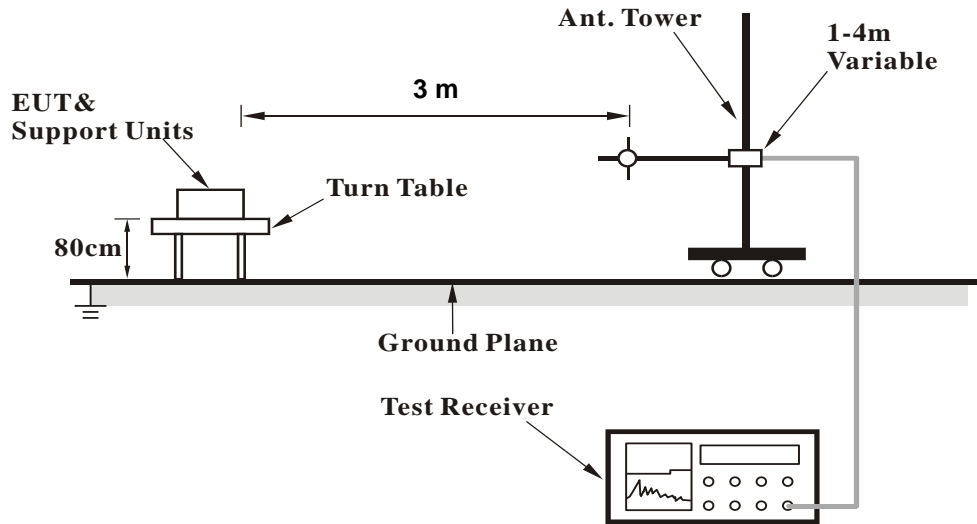
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

Conducted Power Measurement:

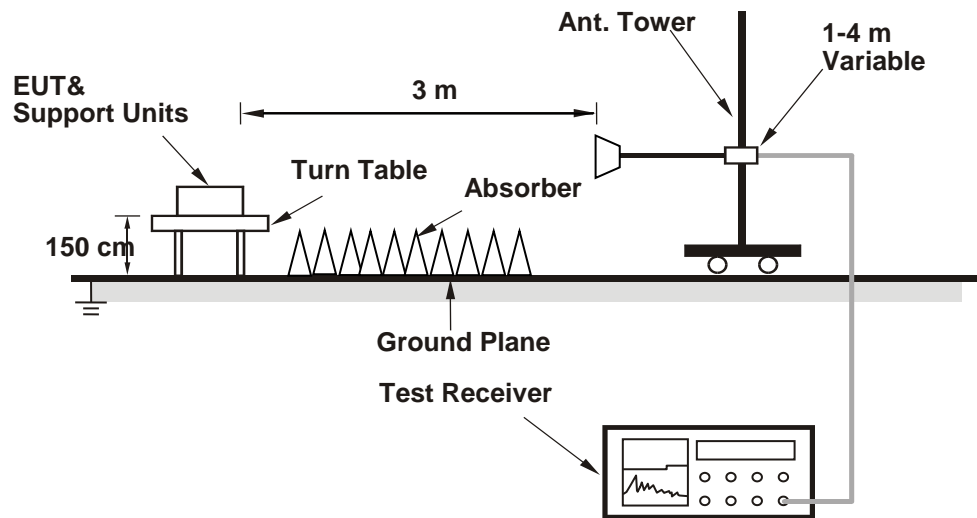
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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)
				20850	21100	21350						20825	21100	21375	
		Channel Frequency (MHz)	2510.0	2535.0	2560.0	Channel Frequency (MHz)	2507.5			2535.0	2562.5				
20M	QPSK	1	0	22.23	22.42	22.38	0	15M	QPSK	1	0	22.19	22.40	22.30	0
		1	50	22.21	22.40	22.36	0			1	37	22.17	22.31	22.26	0
		1	99	21.30	21.49	21.45	0			1	74	21.27	21.44	21.42	0
		50	0	21.43	21.62	21.58	1			36	0	21.41	21.57	21.58	1
		50	25	21.39	21.58	21.54	1			36	19	21.29	21.58	21.51	1
		50	50	21.32	21.51	21.47	1			36	39	21.32	21.43	21.44	1
	100	0	21.41	21.60	21.56	1	75		0	21.40	21.56	21.51	1		
	16QAM	1	0	20.74	20.93	20.89	1		16QAM	1	0	20.71	20.86	20.84	1
		1	50	21.47	21.66	21.62	1			1	37	21.44	21.59	21.52	1
		1	99	20.77	20.96	20.92	1			1	74	20.77	20.92	20.86	1
		50	0	20.43	20.62	20.58	2			36	0	20.42	20.61	20.48	2
		50	25	20.46	20.65	20.61	2			36	19	20.44	20.60	20.60	2
		50	50	20.40	20.59	20.55	2			36	39	20.34	20.59	20.50	2
	100	0	20.34	20.53	20.49	2	75		0	20.25	20.46	20.41	2		
	64QAM	1	0	20.22	20.41	20.37	2		64QAM	1	0	20.21	20.40	20.31	2
		1	50	20.47	20.66	20.62	2			1	37	20.42	20.61	20.60	2
		1	99	20.31	20.50	20.46	2			1	74	20.28	20.50	20.45	2
		50	0	19.39	19.58	19.54	3			36	0	19.33	19.54	19.44	3
		50	25	19.48	19.67	19.63	3			36	19	19.44	19.59	19.58	3
		50	50	19.41	19.60	19.56	3			36	39	19.39	19.51	19.48	3
	100	0	19.44	19.63	19.59	3	75		0	19.41	19.55	19.56	3		
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
				20800	21100	21400						20775	21100	21425	
		Channel Frequency (MHz)	2505.0	2535.0	2565.0	Channel Frequency (MHz)	2502.5			2535.0	2567.5				
10M	QPSK	1	0	22.03	22.23	22.19	0	5M	QPSK	1	0	22.21	22.25	22.17	0
		1	24	22.09	22.32	22.26	0			1	12	22.02	22.29	22.03	0
		1	49	21.14	21.32	21.29	0			1	24	21.13	21.43	21.34	0
		25	0	21.32	21.56	21.37	1			12	0	21.25	21.39	21.46	1
		25	12	21.21	21.48	21.50	1			12	6	21.37	21.47	21.39	1
		25	25	21.22	21.35	21.31	1			12	13	21.11	21.45	21.24	1
	50	0	21.35	21.43	21.32	1	25		0	21.31	21.57	21.23	1		
	16QAM	1	0	20.68	20.91	20.86	1		16QAM	1	0	20.64	20.75	20.75	1
		1	24	21.37	21.53	21.50	1			1	12	21.39	21.49	21.53	1
		1	49	20.58	20.82	20.69	1			1	24	20.65	20.87	20.77	1
		25	0	20.42	20.53	20.48	2			12	0	20.34	20.42	20.45	2
		25	12	20.27	20.51	20.45	2			12	6	20.38	20.50	20.55	2
		25	25	20.30	20.47	20.34	2			12	13	20.23	20.43	20.47	2
	50	0	20.25	20.38	20.28	2	25		0	20.23	20.43	20.28	2		
	64QAM	1	0	20.20	20.27	20.24	2		64QAM	1	0	20.22	20.30	20.29	2
		1	24	20.33	20.46	20.48	2			1	12	20.30	20.51	20.50	2
		1	49	20.23	20.36	20.33	2			1	24	20.18	20.36	20.34	2
		25	0	19.31	19.36	19.49	3			12	0	19.16	19.36	19.48	3
		25	12	19.36	19.57	19.38	3			12	6	19.32	19.60	19.51	3
		25	25	19.31	19.42	19.45	3			12	13	19.24	19.42	19.37	3
	50	0	19.41	19.52	19.39	3	25		0	19.28	19.43	19.58	3		

LTE Band 38																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				37850	38000	38150						37825	38000	38175			
				Channel Frequency (MHz)	2580.0	2595.0						2610.0	2577.5	2595.0		2612.5	
20M	QPSK	1	0	22.38	22.43	22.34	0	15M	QPSK	1	0	22.29	22.38	22.32	0		
		1	50	22.06	22.11	22.02	0			1	37	21.99	22.07	21.95	0		
		1	99	22.01	22.06	21.97	0			1	74	21.96	21.99	21.88	0		
		50	0	21.20	21.25	21.16	1			36	0	21.14	21.24	21.08	1		
		50	25	21.11	21.16	21.07	1			36	19	21.09	21.14	21.05	1		
		50	50	21.03	21.08	20.99	1			36	39	20.97	21.05	20.92	1		
		100	0	21.13	21.18	21.09	1			75	0	21.05	21.18	21.02	1		
	16QAM	1	0	21.48	21.53	21.44	1		16QAM	1	0	21.43	21.49	21.36	1		
		1	50	21.19	21.24	21.15	1			1	37	21.16	21.22	21.09	1		
		1	99	21.16	21.21	21.12	1			1	74	21.15	21.13	21.10	1		
		50	0	20.34	20.39	20.30	2			36	0	20.24	20.30	20.30	2		
		50	25	20.23	20.28	20.19	2			36	19	20.23	20.22	20.14	2		
		50	50	20.15	20.20	20.11	2			36	39	20.14	20.16	20.07	2		
		100	0	20.18	20.23	20.14	2			75	0	20.10	20.16	20.05	2		
	64QAM	1	0	20.08	20.13	20.04	2		64QAM	1	0	20.00	20.06	19.94	2		
		1	50	19.81	19.86	19.77	2			1	37	19.80	19.79	19.77	2		
		1	99	19.76	19.81	19.72	2			1	74	19.68	19.75	19.72	2		
		50	0	19.34	19.39	19.30	3			36	0	19.29	19.29	19.20	3		
		50	25	19.22	19.27	19.18	3			36	19	19.15	19.19	19.13	3		
		50	50	19.12	19.17	19.08	3			36	39	19.03	19.16	19.05	3		
		100	0	19.23	19.28	19.19	3			75	0	19.22	19.27	19.09	3		
	BW	MCS Index	RB Size	RB Offset	Low	Mid	High		3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
					37800	38000	38200							37775	38000	38225	
					Channel Frequency (MHz)	2575.0	2595.0							2615.0	2572.5	2595.0	
10M	QPSK	1	0	22.27	22.36	22.17	0	5M	QPSK	1	0	22.21	22.35	22.10	0		
		1	24	21.98	21.93	21.83	0			1	12	21.96	22.11	21.84	0		
		1	49	21.96	21.97	21.79	0			1	24	21.80	22.04	21.77	0		
		25	0	21.08	21.09	21.02	1			12	0	21.18	21.02	21.10	1		
		25	12	20.90	21.10	20.85	1			12	6	20.93	21.05	20.89	1		
		25	25	20.92	21.06	20.82	1			12	13	20.89	20.99	20.78	1		
		50	0	20.95	21.08	20.87	1			25	0	21.09	21.01	20.78	1		
	16QAM	1	0	21.37	21.34	21.39	1		16QAM	1	0	21.43	21.44	21.35	1		
		1	24	21.12	21.07	20.99	1			1	12	21.13	21.13	21.01	1		
		1	49	21.03	21.08	20.95	1			1	24	21.12	21.03	21.03	1		
		25	0	20.30	20.23	20.12	2			12	0	20.18	20.24	20.18	2		
		25	12	20.14	20.13	20.18	2			12	6	20.07	20.17	20.03	2		
		25	25	20.07	20.13	19.98	2			12	13	19.96	19.96	19.91	2		
		50	0	20.07	20.13	20.10	2			25	0	20.03	20.10	20.10	2		
	64QAM	1	0	20.04	20.08	19.90	2		64QAM	1	0	19.96	20.00	19.81	2		
		1	24	19.63	19.78	19.73	2			1	12	19.77	19.80	19.64	2		
		1	49	19.69	19.70	19.70	2			1	24	19.66	19.65	19.71	2		
		25	0	19.22	19.31	19.30	3			12	0	19.18	19.23	19.17	3		
		25	12	19.07	19.17	19.09	3			12	6	19.00	19.15	19.07	3		
		25	25	18.96	18.94	18.90	3			12	13	18.93	19.02	19.01	3		
		50	0	19.04	19.23	19.10	3			25	0	19.14	19.15	19.01	3		

LTE Band 41

BW	MCS Index	RB Size	RB Offset	Low	Mid	Mid	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	Mid	Mid	High	3GPP MPR (dB)		
		Channel	Channel	39750	40185	40620	41055	41490				39725	40173	40620	41068	41515					
		Frequency (MHz)	Frequency (MHz)	2506.0	2549.5	2593.0	2636.5	2680.0				2503.5	2548.3	2593.0	2637.8	2682.5					
20M	QPSK	1	0	22.28	22.12	22.29	22.19	21.69	0	15M	QPSK	1	0	22.21	22.06	22.24	22.11	21.59	0		
		1	50	21.99	21.84	22.01	21.90	21.42	0			1	37	21.91	21.77	21.96	21.90	21.37	0		
		1	99	21.93	21.78	21.95	21.84	21.36	0			1	74	21.84	21.68	21.91	21.82	21.32	0		
		50	0	21.16	21.01	21.18	21.07	20.59	1			36	0	21.09	20.98	21.17	21.00	20.56	1		
		50	25	21.01	20.86	21.03	20.92	20.44	1			36	19	20.97	20.76	21.03	20.82	20.42	1		
		50	50	20.89	20.74	20.91	20.80	20.32	1			36	39	20.85	20.69	20.89	20.77	20.23	1		
	16QAM	100	0	21.03	20.88	21.05	20.94	20.46	1		75	0	21.02	20.83	21.01	20.86	20.46	1			
		1	0	21.40	21.25	21.42	21.31	20.83	1		1	0	21.21	21.06	21.27	21.12	20.66	1			
		1	50	21.13	20.98	21.15	21.04	20.56	1		1	37	20.99	20.83	20.99	20.86	20.35	1			
		1	99	21.04	20.89	21.06	20.95	20.47	1		1	74	20.87	20.71	20.89	20.76	20.33	1			
		50	0	20.23	20.08	20.25	20.14	19.66	2		36	0	20.15	19.91	20.15	20.00	19.54	2			
		50	25	20.09	19.94	20.11	20.00	19.52	2		36	19	19.98	19.76	20.03	19.83	19.37	2			
	64QAM	50	50	19.99	19.84	20.01	19.90	19.42	2		36	39	19.81	19.70	19.87	19.72	19.30	2			
		100	0	20.11	19.96	20.13	20.02	19.54	2		75	0	19.98	19.81	19.96	19.90	19.41	2			
		1	0	19.97	19.82	19.99	19.88	19.40	2		1	0	20.22	20.06	20.19	20.09	19.67	2			
		1	50	19.70	19.55	19.72	19.61	19.13	2		1	37	19.96	19.80	19.94	19.89	19.42	2			
		1	99	19.62	19.47	19.64	19.53	19.05	2		1	74	19.91	19.69	19.94	19.74	19.31	2			
		50	0	19.20	19.05	19.22	19.11	18.63	3		36	0	19.14	18.92	19.16	18.98	18.59	3			
	10M Bandwidth	QPSK	50	25	19.12	18.97	19.14	19.03	18.55		3	36	19	19.00	18.86	18.96	18.85	18.42	3		
			50	50	19.02	18.87	19.04	18.93	18.45		3	36	39	18.85	18.73	18.88	18.80	18.23	3		
			100	0	19.08	18.93	19.10	18.99	18.51		3	75	0	19.01	18.86	18.99	18.93	18.38	3		
			1	0	22.21	22.03	22.22	22.12	21.59		0	5M	QPSK	1	0	22.22	22.08	22.13	22.09	21.60	0
			1	24	21.96	21.78	21.93	21.78	21.33		0			1	12	21.96	21.79	21.94	21.85	21.32	0
			1	49	21.77	21.66	21.88	21.66	21.29		0			1	24	21.86	21.64	21.90	21.66	21.31	0
25	0	21.04	20.97	21.04	20.93	20.42	1	12	0	21.03	20.88			21.01	21.05	20.56	1				
25	12	20.87	20.74	20.94	20.81	20.35	1	12	6	20.94	20.73			20.94	20.80	20.32	1				
25	25	20.78	20.61	20.89	20.67	20.16	1	12	13	20.79	20.70			20.80	20.75	20.24	1				
16QAM	50	0	20.92	20.79	21.01	20.87	20.34	1	25	0	20.92		20.79	20.89	20.83	20.32	1				
	1	0	21.17	20.95	21.21	21.06	20.67	1	16QAM	1	0		21.21	21.06	21.09	21.10	20.60	1			
	1	24	20.87	20.78	20.88	20.75	20.30	1		1	12		20.94	20.78	20.94	20.78	20.29	1			
	1	49	20.76	20.70	20.89	20.71	20.26	1		1	24		20.86	20.62	20.84	20.69	20.27	1			
	25	0	20.05	19.94	20.07	19.95	19.50	2		12	0		20.10	19.87	20.09	20.02	19.50	2			
	25	12	19.96	19.74	20.01	19.83	19.40	2		12	6		19.92	19.77	19.89	19.88	19.34	2			
25	25	19.80	19.64	19.88	19.70	19.19	2	12		13	19.82		19.64	19.77	19.71	19.22	2				
64QAM	50	0	19.91	19.73	19.97	19.80	19.36	2	25	0	19.88		19.84	19.87	19.86	19.34	2				
	1	0	20.14	19.97	20.17	20.06	19.58	2	64QAM	1	0		20.22	19.98	20.12	20.09	19.55	2			
	1	24	19.93	19.70	19.84	19.78	19.33	2		1	12		19.92	19.76	19.90	19.77	19.34	2			
	1	49	19.82	19.64	19.81	19.70	19.31	2		1	24		19.84	19.68	19.85	19.70	19.29	2			
	25	0	19.07	18.97	19.05	18.98	18.51	3		12	0		19.05	18.88	19.05	19.00	18.48	3			
	25	12	18.94	18.73	18.96	18.83	18.40	3		12	6		18.95	18.71	18.90	18.86	18.34	3			
25	25	18.85	18.54	18.79	18.68	18.23	3	12		13	18.85		18.74	18.80	18.71	18.21	3				
50	0	18.92	18.79	18.96	18.87	18.29	3	25	0	18.84	18.81		18.88	18.81	18.37	3					

EIRP Power (dBm)

LTE Band 7							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
NB	20775	2502.5	-16.60	38.52	21.92	155.60	H
	21100	2535.0	-16.31	38.36	22.05	160.32	
	21425	2567.5	-16.90	38.58	21.68	147.23	
	20775	2502.5	-22.87	38.92	16.05	40.27	V
	21100	2535.0	-23.10	39.26	16.16	41.30	
	21425	2567.5	-23.29	39.22	15.93	39.17	
Channel Bandwidth: 5 MHz / 16QAM							
NB	20775	2502.5	-17.62	38.52	20.90	123.03	H
	21100	2535.0	-17.43	38.36	20.93	123.88	
	21425	2567.5	-17.89	38.58	20.69	117.22	
	20775	2502.5	-23.73	38.92	15.19	33.04	V
	21100	2535.0	-23.92	39.26	15.34	34.20	
	21425	2567.5	-24.15	39.22	15.07	32.14	
Channel Bandwidth: 5 MHz / 64QAM							
NB	20775	2502.5	-18.60	38.52	19.92	98.17	H
	21100	2535.0	-18.35	38.36	20.01	100.23	
	21425	2567.5	-19.01	38.58	19.57	90.57	
	20775	2502.5	-24.84	38.92	14.08	25.59	V
	21100	2535.0	-25.03	39.26	14.23	26.49	
	21425	2567.5	-25.30	39.22	13.92	24.66	

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)
NB	20800	2505.0	-16.48	38.65	22.17	164.82	H
	21100	2535.0	-16.04	38.36	22.32	170.61	
	21400	2565.0	-16.47	38.49	22.02	159.22	
	20800	2505.0	-22.47	38.84	16.37	43.35	V
	21100	2535.0	-22.81	39.26	16.45	44.16	
	21400	2565.0	-22.93	39.10	16.17	41.40	
Channel Bandwidth: 10 MHz / 16QAM							
NB	20800	2505.0	-17.54	38.65	21.11	129.12	H
	21100	2535.0	-17.11	38.36	21.25	133.35	
	21400	2565.0	-17.54	38.49	20.95	124.45	
	20800	2505.0	-23.43	38.84	15.41	34.75	V
	21100	2535.0	-23.59	39.26	15.67	36.90	
	21400	2565.0	-23.75	39.10	15.35	34.28	
Channel Bandwidth: 10 MHz / 64QAM							
NB	20800	2505.0	-18.49	38.65	20.16	103.75	H
	21100	2535.0	-18.08	38.36	20.28	106.66	
	21400	2565.0	-18.64	38.49	19.85	96.61	
	20800	2505.0	-24.53	38.84	14.31	26.98	V
	21100	2535.0	-24.75	39.26	14.51	28.25	
	21400	2565.0	-24.97	39.10	14.13	25.88	

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)
NB	20825	2507.5	-16.15	38.52	22.37	172.58	H
	21100	2535.0	-15.81	38.36	22.55	179.89	
	21375	2562.5	-16.24	38.58	22.34	171.40	
	20825	2507.5	-22.26	38.92	16.66	46.34	V
	21100	2535.0	-22.47	39.26	16.79	47.75	
	21375	2562.5	-22.72	39.22	16.50	44.67	
Channel Bandwidth: 15 MHz / 16QAM							
NB	20825	2507.5	-17.10	38.52	21.42	138.68	H
	21100	2535.0	-16.84	38.36	21.52	141.91	
	21375	2562.5	-17.39	38.58	21.19	131.52	
	20825	2507.5	-23.28	38.92	15.64	36.64	V
	21100	2535.0	-23.37	39.26	15.89	38.82	
	21375	2562.5	-23.64	39.22	15.58	36.14	
Channel Bandwidth: 15 MHz / 64QAM							
NB	20825	2507.5	-18.09	38.52	20.43	110.41	H
	21100	2535.0	-17.87	38.36	20.49	111.94	
	21375	2562.5	-18.44	38.58	20.14	103.28	
	20825	2507.5	-24.35	38.92	14.57	28.64	V
	21100	2535.0	-24.49	39.26	14.77	29.99	
	21375	2562.5	-24.80	39.22	14.42	27.67	

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)
NB	20850	2510.0	-15.80	38.52	22.72	187.07	H
	21100	2535.0	-15.53	38.36	22.83	191.87	
	21350	2560.0	-15.93	38.58	22.65	184.08	
	20850	2510.0	-21.98	38.92	16.94	49.43	V
	21100	2535.0	-22.20	39.26	17.06	50.82	
	21350	2560.0	-22.37	39.22	16.85	48.42	
Channel Bandwidth: 20 MHz / 16QAM							
NB	20850	2510.0	-16.82	38.52	21.70	147.91	H
	21100	2535.0	-16.55	38.36	21.81	151.71	
	21350	2560.0	-17.14	38.58	21.44	139.32	
	20850	2510.0	-22.97	38.92	15.95	39.36	V
	21100	2535.0	-23.15	39.26	16.11	40.83	
	21350	2560.0	-23.36	39.22	15.86	38.55	
Channel Bandwidth: 20 MHz / 64QAM							
NB	20850	2510.0	-17.87	38.52	20.65	116.14	H
	21100	2535.0	-17.56	38.36	20.80	120.23	
	21350	2560.0	-18.20	38.58	20.38	109.14	
	20850	2510.0	-24.07	38.92	14.85	30.55	V
	21100	2535.0	-24.20	39.26	15.06	32.06	
	21350	2560.0	-24.50	39.22	14.72	29.65	

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)
NB	37775	2572.5	-17.27	38.99	21.72	148.59	H
	38000	2595.0	-16.49	38.17	21.68	147.23	
	38225	2617.5	-16.96	38.55	21.59	144.21	
	37775	2572.5	-23.66	39.27	15.61	36.39	V
	38000	2595.0	-23.10	38.68	15.58	36.14	
	38225	2617.5	-23.04	38.55	15.51	35.56	
Channel Bandwidth: 5 MHz / 16QAM							
NB	37775	2572.5	-18.12	38.99	20.87	122.18	H
	38000	2595.0	-17.45	38.17	20.72	118.03	
	38225	2617.5	-18.17	38.55	20.38	109.14	
	37775	2572.5	-24.58	39.27	14.69	29.44	V
	38000	2595.0	-24.01	38.68	14.67	29.31	
	38225	2617.5	-24.05	38.55	14.50	28.18	
Channel Bandwidth: 5 MHz / 64QAM							
NB	37775	2572.5	-19.07	38.99	19.92	98.17	H
	38000	2595.0	-18.50	38.17	19.67	92.68	
	38225	2617.5	-19.21	38.55	19.34	85.90	
	37775	2572.5	-25.57	39.27	13.70	23.44	V
	38000	2595.0	-25.10	38.68	13.58	22.80	
	38225	2617.5	-25.12	38.55	13.43	22.03	

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)
NB	37800	2575.0	-16.91	38.98	22.07	161.06	H
	38000	2595.0	-16.17	38.17	22.00	158.49	
	38200	2615.0	-16.56	38.45	21.89	154.53	
	37800	2575.0	-23.10	39.04	15.94	39.26	V
	38000	2595.0	-22.82	38.68	15.86	38.55	
	38200	2615.0	-22.79	38.60	15.81	38.11	
Channel Bandwidth: 10 MHz / 16QAM							
NB	37800	2575.0	-17.87	38.98	21.11	129.12	H
	38000	2595.0	-17.24	38.17	20.93	123.88	
	38200	2615.0	-17.78	38.45	20.67	116.68	
	37800	2575.0	-24.07	39.04	14.97	31.41	V
	38000	2595.0	-23.75	38.68	14.93	31.12	
	38200	2615.0	-23.85	38.60	14.75	29.85	
Channel Bandwidth: 10 MHz / 64QAM							
NB	37800	2575.0	-18.85	38.98	20.13	103.04	H
	38000	2595.0	-18.28	38.17	19.89	97.50	
	38200	2615.0	-18.85	38.45	19.60	91.20	
	37800	2575.0	-25.02	39.04	14.02	25.23	V
	38000	2595.0	-24.78	38.68	13.90	24.55	
	38200	2615.0	-24.88	38.60	13.72	23.55	

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)
NB	37825	2577.5	-16.74	39.09	22.35	171.79	H
	38000	2595.0	-15.86	38.17	22.31	170.22	
	38175	2612.5	-16.32	38.52	22.20	165.96	
	37825	2577.5	-22.82	39.04	16.22	41.88	V
	38000	2595.0	-22.53	38.68	16.15	41.21	
	38175	2612.5	-22.63	38.66	16.03	40.09	
Channel Bandwidth: 15 MHz / 16QAM							
NB	37825	2577.5	-17.70	39.09	21.39	137.72	H
	38000	2595.0	-16.96	38.17	21.21	132.13	
	38175	2612.5	-17.54	38.52	20.98	125.31	
	37825	2577.5	-23.77	39.04	15.27	33.65	V
	38000	2595.0	-23.50	38.68	15.18	32.96	
	38175	2612.5	-23.58	38.66	15.08	32.21	
Channel Bandwidth: 15 MHz / 64QAM							
NB	37825	2577.5	-18.74	39.09	20.35	108.39	H
	38000	2595.0	-17.96	38.17	20.21	104.95	
	38175	2612.5	-18.60	38.52	19.92	98.17	
	37825	2577.5	-24.79	39.04	14.25	26.61	V
	38000	2595.0	-24.58	38.68	14.10	25.70	
	38175	2612.5	-24.66	38.66	14.00	25.12	

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)
NB	37850	2580.0	-16.65	39.26	22.61	182.39	H
	38000	2595.0	-15.62	38.17	22.55	179.89	
	38150	2610.0	-16.24	38.71	22.47	176.60	
	37850	2580.0	-22.78	39.33	16.55	45.19	V
	38000	2595.0	-22.26	38.68	16.42	43.85	
	38150	2610.0	-22.46	38.76	16.30	42.66	
Channel Bandwidth: 20 MHz / 16QAM							
NB	37850	2580.0	-17.57	39.26	21.69	147.57	H
	38000	2595.0	-16.70	38.17	21.47	140.28	
	38150	2610.0	-17.46	38.71	21.25	133.35	
	37850	2580.0	-23.78	39.33	15.55	35.89	V
	38000	2595.0	-23.26	38.68	15.42	34.83	
	38150	2610.0	-23.48	38.76	15.28	33.73	
Channel Bandwidth: 20 MHz / 64QAM							
NB	37850	2580.0	-18.71	39.26	20.55	113.50	H
	38000	2595.0	-17.75	38.17	20.42	110.15	
	38150	2610.0	-18.51	38.71	20.20	104.71	
	37850	2580.0	-24.81	39.33	14.52	28.31	V
	38000	2595.0	-24.35	38.68	14.33	27.10	
	38150	2610.0	-24.56	38.76	14.20	26.30	

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)
NB	39675	2498.5	-17.39	38.99	21.60	144.54	H
	40620	2593.0	-16.48	38.17	21.69	147.57	
	41565	2687.5	-17.04	38.55	21.51	141.58	
	39675	2498.5	-23.26	39.27	16.01	39.90	V
	40620	2593.0	-22.63	38.68	16.05	40.27	
	41565	2687.5	-22.83	38.55	15.72	37.33	
Channel Bandwidth: 5 MHz / 16QAM							
NB	39675	2498.5	-18.45	38.99	20.54	113.24	H
	40620	2593.0	-17.50	38.17	20.67	116.68	
	41565	2687.5	-18.23	38.55	20.32	107.65	
	39675	2498.5	-24.59	39.27	14.68	29.38	V
	40620	2593.0	-23.79	38.68	14.89	30.83	
	41565	2687.5	-23.99	38.55	14.56	28.58	
Channel Bandwidth: 5 MHz / 64QAM							
NB	39675	2498.5	-19.40	38.99	19.59	90.99	H
	40620	2593.0	-18.47	38.17	19.70	93.33	
	41565	2687.5	-19.43	38.55	19.12	81.66	
	39675	2498.5	-25.49	39.27	13.78	23.88	V
	40620	2593.0	-24.74	38.68	13.94	24.77	
	41565	2687.5	-25.05	38.55	13.50	22.39	

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)
NB	39700	2501.0	-17.03	38.98	21.95	156.68	H
	40620	2593.0	-16.16	38.17	22.01	158.85	
	41540	2685.0	-16.60	38.45	21.85	153.11	
	39700	2501.0	-22.74	39.04	16.30	42.66	V
	40620	2593.0	-22.35	38.68	16.33	42.95	
	41540	2685.0	-22.50	38.60	16.10	40.74	
Channel Bandwidth: 10 MHz / 16QAM							
NB	39700	2501.0	-18.15	38.98	20.83	121.06	H
	40620	2593.0	-17.19	38.17	20.98	125.31	
	41540	2685.0	-17.80	38.45	20.65	116.14	
	39700	2501.0	-24.06	39.04	14.98	31.48	V
	40620	2593.0	-23.46	38.68	15.22	33.27	
	41540	2685.0	-23.73	38.60	14.87	30.69	
Channel Bandwidth: 10 MHz / 64QAM							
NB	39700	2501.0	-19.16	38.98	19.82	95.94	H
	40620	2593.0	-18.16	38.17	20.01	100.23	
	41540	2685.0	-19.01	38.45	19.44	87.90	
	39700	2501.0	-25.02	39.04	14.02	25.23	V
	40620	2593.0	-24.50	38.68	14.18	26.18	
	41540	2685.0	-24.78	38.60	13.82	24.10	

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)
NB	39725	2503.5	-16.90	39.09	22.19	165.58	H
	40620	2593.0	-15.96	38.17	22.21	166.34	
	41515	2682.5	-16.46	38.52	22.06	160.69	
	39725	2503.5	-22.51	39.04	16.53	44.98	V
	40620	2593.0	-22.03	38.68	16.65	46.24	
	41515	2682.5	-22.35	38.66	16.31	42.76	
Channel Bandwidth: 15 MHz / 16QAM							
NB	39725	2503.5	-18.02	39.09	21.07	127.94	H
	40620	2593.0	-16.92	38.17	21.25	133.35	
	41515	2682.5	-17.57	38.52	20.95	124.45	
	39725	2503.5	-23.73	39.04	15.31	33.96	V
	40620	2593.0	-23.16	38.68	15.52	35.65	
	41515	2682.5	-23.59	38.66	15.07	32.14	
Channel Bandwidth: 15 MHz / 64QAM							
NB	39725	2503.5	-19.07	39.09	20.02	100.46	H
	40620	2593.0	-17.93	38.17	20.24	105.68	
	41515	2682.5	-18.78	38.52	19.74	94.19	
	39725	2503.5	-24.79	39.04	14.25	26.61	V
	40620	2593.0	-24.26	38.68	14.42	27.67	
	41515	2682.5	-24.60	38.66	14.06	25.47	

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)
NB	39750	2506.0	-16.84	39.26	22.42	174.58	H
	40620	2593.0	-15.69	38.17	22.48	177.01	
	41490	2680.0	-16.37	38.71	22.34	171.40	
	39750	2506.0	-22.58	39.33	16.75	47.32	V
	40620	2593.0	-21.80	38.68	16.88	48.75	
	41490	2680.0	-22.13	38.76	16.63	46.03	
Channel Bandwidth: 20 MHz / 16QAM							
NB	39750	2506.0	-17.88	39.26	21.38	137.40	H
	40620	2593.0	-16.61	38.17	21.56	143.22	
	41490	2680.0	-17.52	38.71	21.19	131.52	
	39750	2506.0	-23.77	39.33	15.56	35.97	V
	40620	2593.0	-22.92	38.68	15.76	37.67	
	41490	2680.0	-23.38	38.76	15.38	34.51	
Channel Bandwidth: 20 MHz / 64QAM							
NB	39750	2506.0	-18.96	39.26	20.30	107.15	H
	40620	2593.0	-17.71	38.17	20.46	111.17	
	41490	2680.0	-18.67	38.71	20.04	100.93	
	39750	2506.0	-24.83	39.33	14.50	28.18	V
	40620	2593.0	-23.97	38.68	14.71	29.58	
	41490	2680.0	-24.42	38.76	14.34	27.16	

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

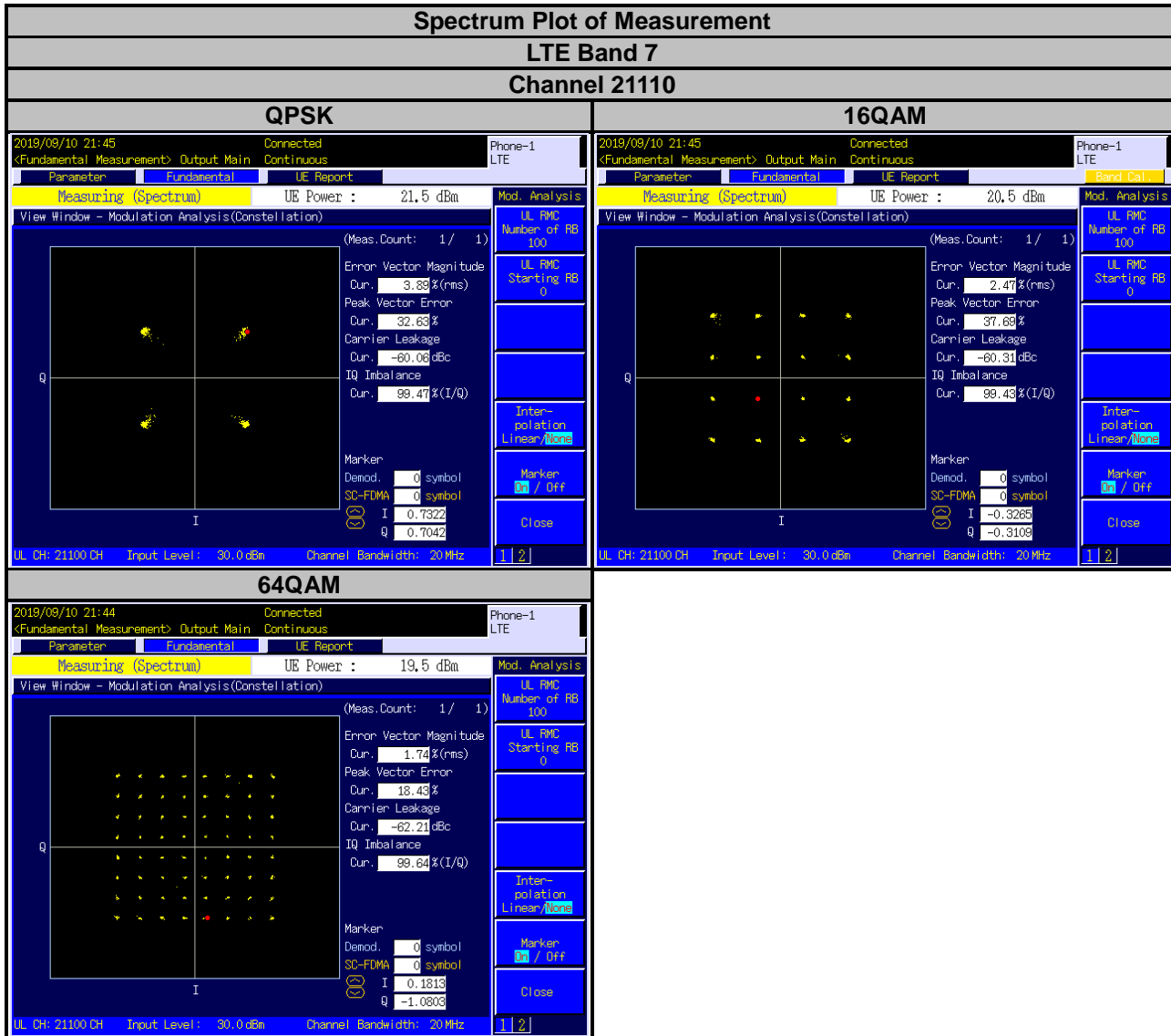
4.2.2 Test Setup



4.2.3 Test Procedure

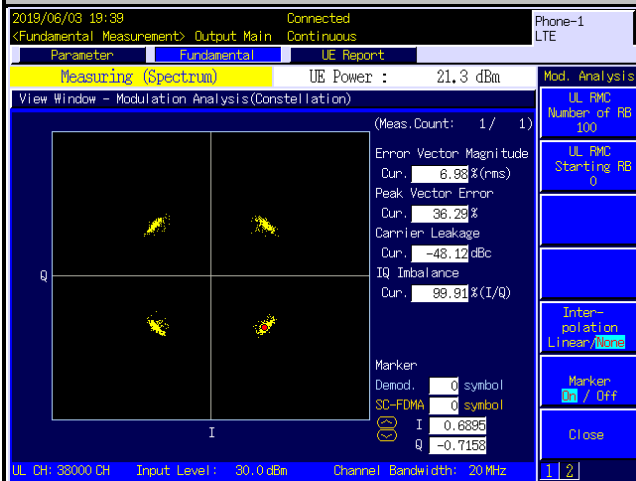
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.4 Test Results

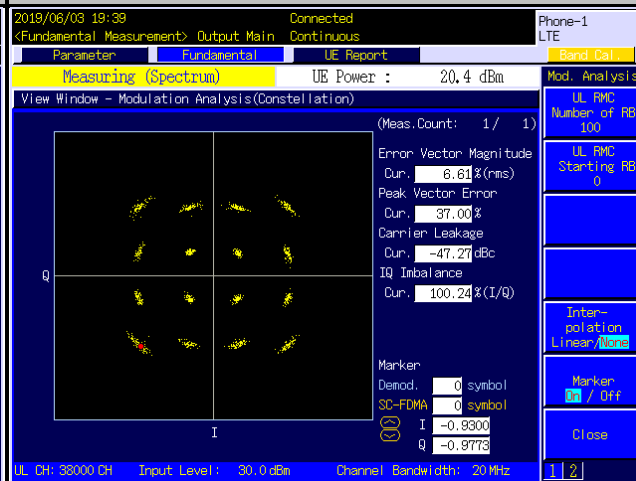


Spectrum Plot of Measurement
LTE Band 38
Channel 38000

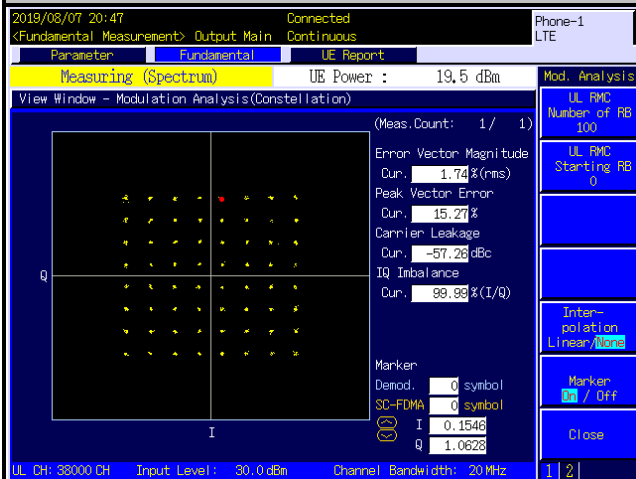
QPSK



16QAM

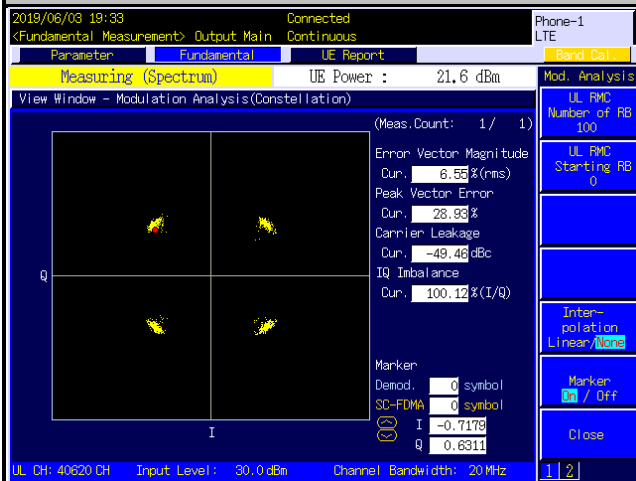


64QAM

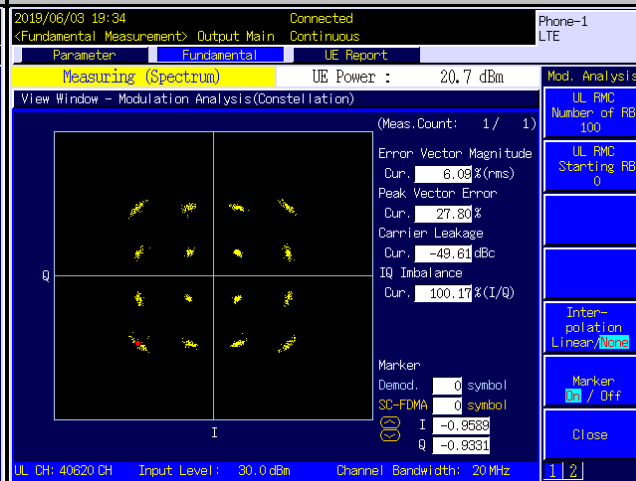


Spectrum Plot of Measurement
LTE Band 41
Channel 40620

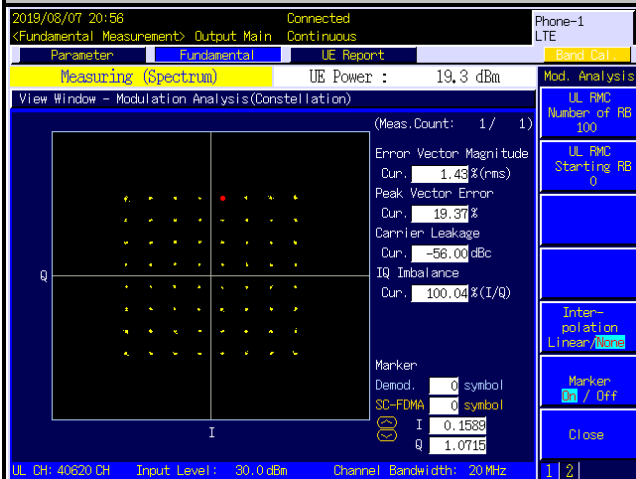
QPSK



16QAM



64QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

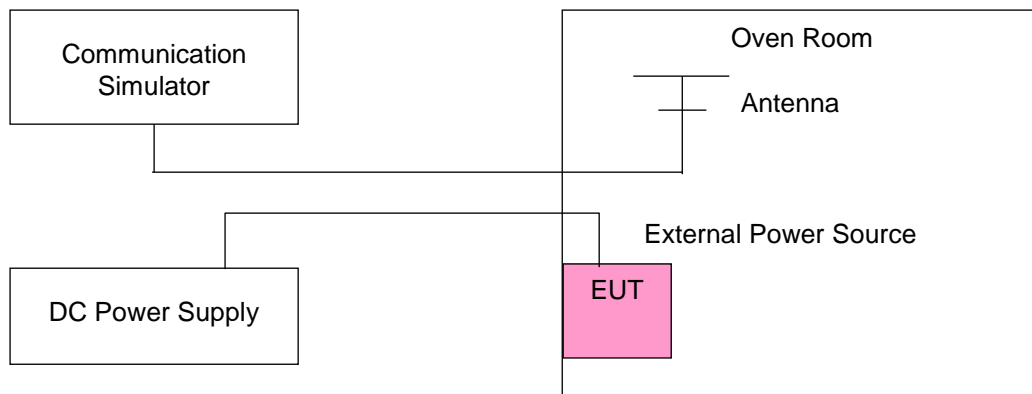
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary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

4.3.2 Test Procedure

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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)
120	2502.500003	0.001	2567.500002	0.001
102	2502.500002	0.001	2567.500002	0.001
138	2502.500001	0.000	2567.500004	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2502.500003	0.001	2567.500002	0.001
10	2502.500002	0.001	2567.500003	0.001
20	2502.499997	-0.001	2567.499998	-0.001
30	2502.499997	-0.001	2567.499998	-0.001
40	2502.499999	-0.001	2567.499999	0.000
50	2502.499996	-0.001	2567.499998	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2502.500003	0.001	2567.500003	0.001
102	2502.500002	0.001	2567.500004	0.001
138	2502.500004	0.002	2567.500002	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2502.500003	0.001	2567.500002	0.001
10	2502.500002	0.001	2567.500002	0.001
20	2502.499999	0.000	2567.499998	-0.001
30	2502.499997	-0.001	2567.499998	-0.001
40	2502.499996	-0.002	2567.499997	-0.001
50	2502.499999	-0.001	2567.499998	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2502.500001	0.000	2567.500002	0.001
102	2502.500002	0.001	2567.500004	0.001
138	2502.500002	0.001	2567.500001	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2502.500003	0.001	2567.500003	0.001
10	2502.500001	0.000	2567.500003	0.001
20	2502.499999	-0.001	2567.499998	-0.001
30	2502.499999	0.000	2567.499997	-0.001
40	2502.499999	-0.001	2567.499997	-0.001
50	2502.499999	0.000	2567.499997	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2502.500003	0.001	2567.500002	0.001
102	2502.500002	0.001	2567.500002	0.001
138	2502.500003	0.001	2567.500004	0.002

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2502.500003	0.001	2567.500004	0.001
10	2502.500002	0.001	2567.500002	0.001
20	2502.499998	-0.001	2567.499999	-0.001
30	2502.499998	-0.001	2567.499996	-0.002
40	2502.499997	-0.001	2567.499998	-0.001
50	2502.499998	-0.001	2567.499999	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2572.500002	0.001	2617.500001	0.001
102	2572.500003	0.001	2617.500004	0.001
138	2572.500002	0.001	2617.500003	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2572.500003	0.001	2617.500004	0.001
10	2572.500001	0.001	2617.500004	0.001
20	2572.499998	-0.001	2617.500002	0.001
30	2572.499997	-0.001	2617.499997	-0.001
40	2572.499998	-0.001	2617.499997	-0.001
50	2572.499997	-0.001	2617.499996	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2572.500002	0.001	2617.500004	0.001
102	2572.500002	0.001	2617.500002	0.001
138	2572.500002	0.001	2617.500003	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2572.500004	0.001	2617.500003	0.001
10	2572.500002	0.001	2617.500003	0.001
20	2572.499997	-0.001	2617.500001	0.001
30	2572.499997	-0.001	2617.499996	-0.001
40	2572.499998	-0.001	2617.499999	0.000
50	2572.499996	-0.001	2617.499999	0.000

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2572.500002	0.001	2617.500003	0.001
102	2572.500002	0.001	2617.500004	0.001
138	2572.500003	0.001	2617.500003	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2572.500002	0.001	2617.500003	0.001
10	2572.500002	0.001	2617.500001	0.000
20	2572.499997	-0.001	2617.500004	0.001
30	2572.499997	-0.001	2617.499998	-0.001
40	2572.499998	-0.001	2617.499996	-0.001
50	2572.499997	-0.001	2617.499997	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2572.500003	0.001	2617.500001	0.001
102	2572.500004	0.001	2617.500003	0.001
138	2572.500002	0.001	2617.500003	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2572.500001	0.000	2617.500003	0.001
10	2572.500002	0.001	2617.500002	0.001
20	2572.499996	-0.002	2617.500002	0.001
30	2572.499998	-0.001	2617.499998	-0.001
40	2572.499998	-0.001	2617.499997	-0.001
50	2572.499997	-0.001	2617.499998	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2498.500002	0.001	2687.500002	0.001
102	2498.500004	0.001	2687.500002	0.001
138	2498.500004	0.001	2687.500003	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2498.500003	0.001	2687.500003	0.001
10	2498.500001	0.000	2687.500004	0.001
20	2498.499999	-0.001	2687.500002	0.001
30	2498.499997	-0.001	2687.499998	-0.001
40	2498.499999	-0.001	2687.499997	-0.001
50	2498.499999	0.000	2687.499998	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2498.500001	0.001	2687.500001	0.000
102	2498.500003	0.001	2687.500003	0.001
138	2498.500004	0.001	2687.500002	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2498.500003	0.001	2687.500001	0.000
10	2498.500004	0.002	2687.500004	0.001
20	2498.499998	-0.001	2687.500003	0.001
30	2498.499998	-0.001	2687.499999	0.000
40	2498.499999	0.000	2687.499998	-0.001
50	2498.499997	-0.001	2687.499999	0.000

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2498.500003	0.001	2687.500002	0.001
102	2498.500002	0.001	2687.500002	0.001
138	2498.500003	0.001	2687.500004	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2498.500004	0.002	2687.500002	0.001
10	2498.500002	0.001	2687.500002	0.001
20	2498.499996	-0.001	2687.500002	0.001
30	2498.499998	-0.001	2687.499998	-0.001
40	2498.499997	-0.001	2687.499998	-0.001
50	2498.499996	-0.002	2687.499997	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

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)
120	2498.500001	0.001	2687.500002	0.001
102	2498.500002	0.001	2687.500001	0.000
138	2498.500001	0.001	2687.500004	0.001

Note: The applicant defined the normal working voltage is from 102 Vac to 138 Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	2498.500003	0.001	2687.500003	0.001
10	2498.500002	0.001	2687.500004	0.001
20	2498.499999	0.000	2687.500003	0.001
30	2498.499999	-0.001	2687.499999	-0.001
40	2498.499997	-0.001	2687.499998	-0.001
50	2498.499999	0.000	2687.499996	-0.001

Note: The applicant declared that the normal operating temperature of the EUT is from 0°C to 50°C.

4.4 Occupied Bandwidth Measurement

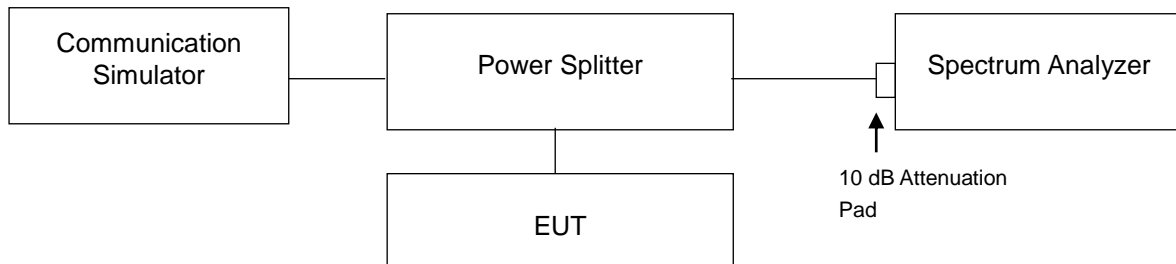
4.4.1 Limits of Occupied Bandwidth Measurement

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

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- 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	64QAM	QPSK	16QAM	64QAM
20775	2502.5	4.5211	4.5055	4.4920	7.0930	5.4660	4.8090
21100	2535.0	4.5110	4.5013	4.4969	6.2330	4.9440	4.8270
21425	2567.5	4.4955	4.4927	4.4945	4.9560	4.8470	4.8240

Channel Bandwidth: 10 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20800	2505.0	9.0275	9.0175	8.9781	15.219	14.300	9.5350
21100	2535.0	9.0431	8.9897	8.9717	16.089	9.7080	9.5180
21400	2565.0	8.9695	8.9603	8.9582	9.6640	9.5200	9.5030

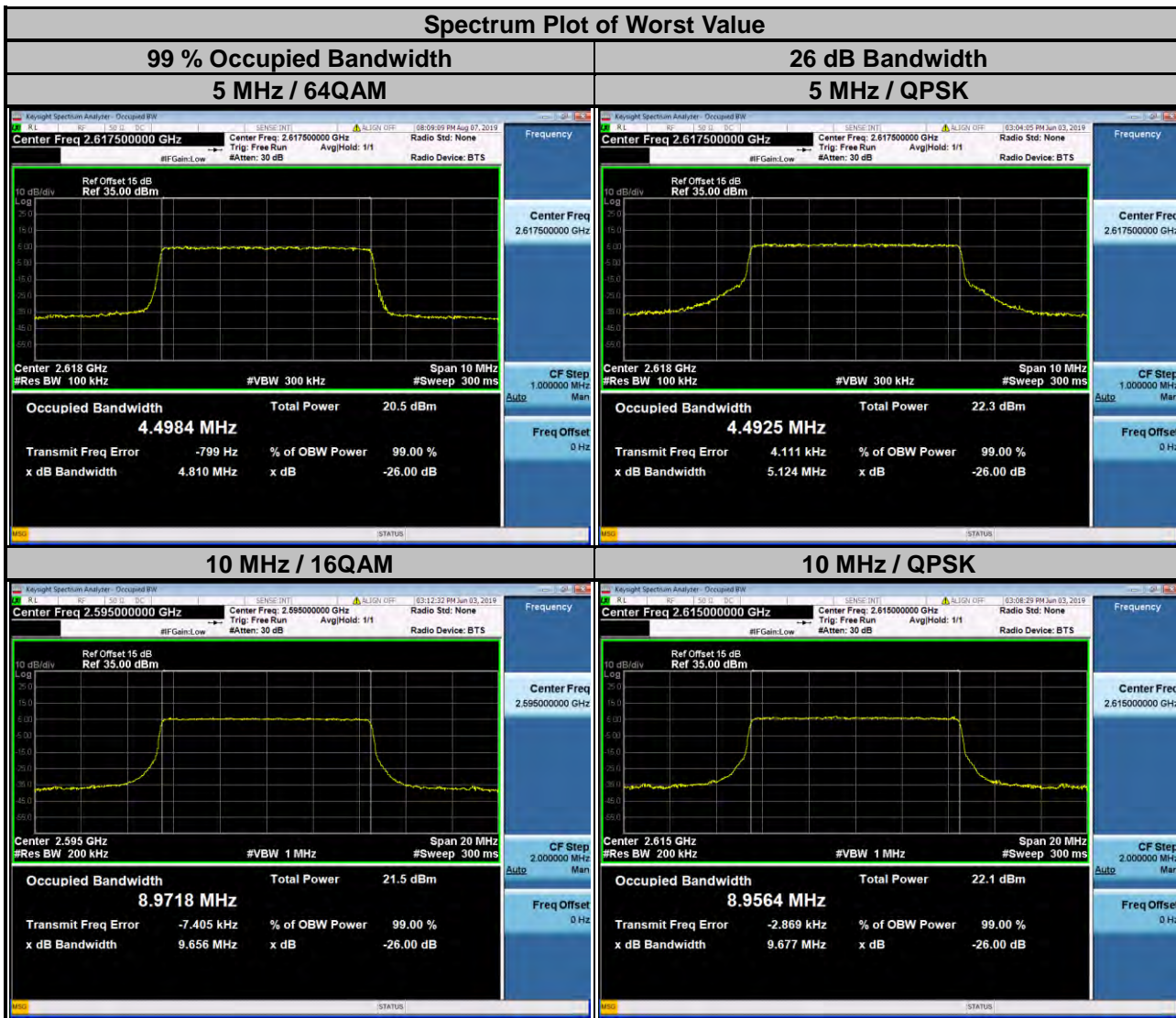


LTE Band 7							
Channel Bandwidth: 15 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20825	2507.5	13.549	13.493	13.461	23.442	14.474	14.241
21100	2535.0	13.529	13.469	13.435	19.658	14.384	14.220
21375	2562.5	13.425	13.411	13.399	14.295	14.219	14.219

Channel Bandwidth: 20 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20850	2510.0	17.966	17.964	17.964	20.178	19.047	19.000
21100	2535.0	17.978	17.947	17.927	23.012	19.039	18.977
21350	2560.0	17.840	17.867	17.850	19.034	18.988	18.965

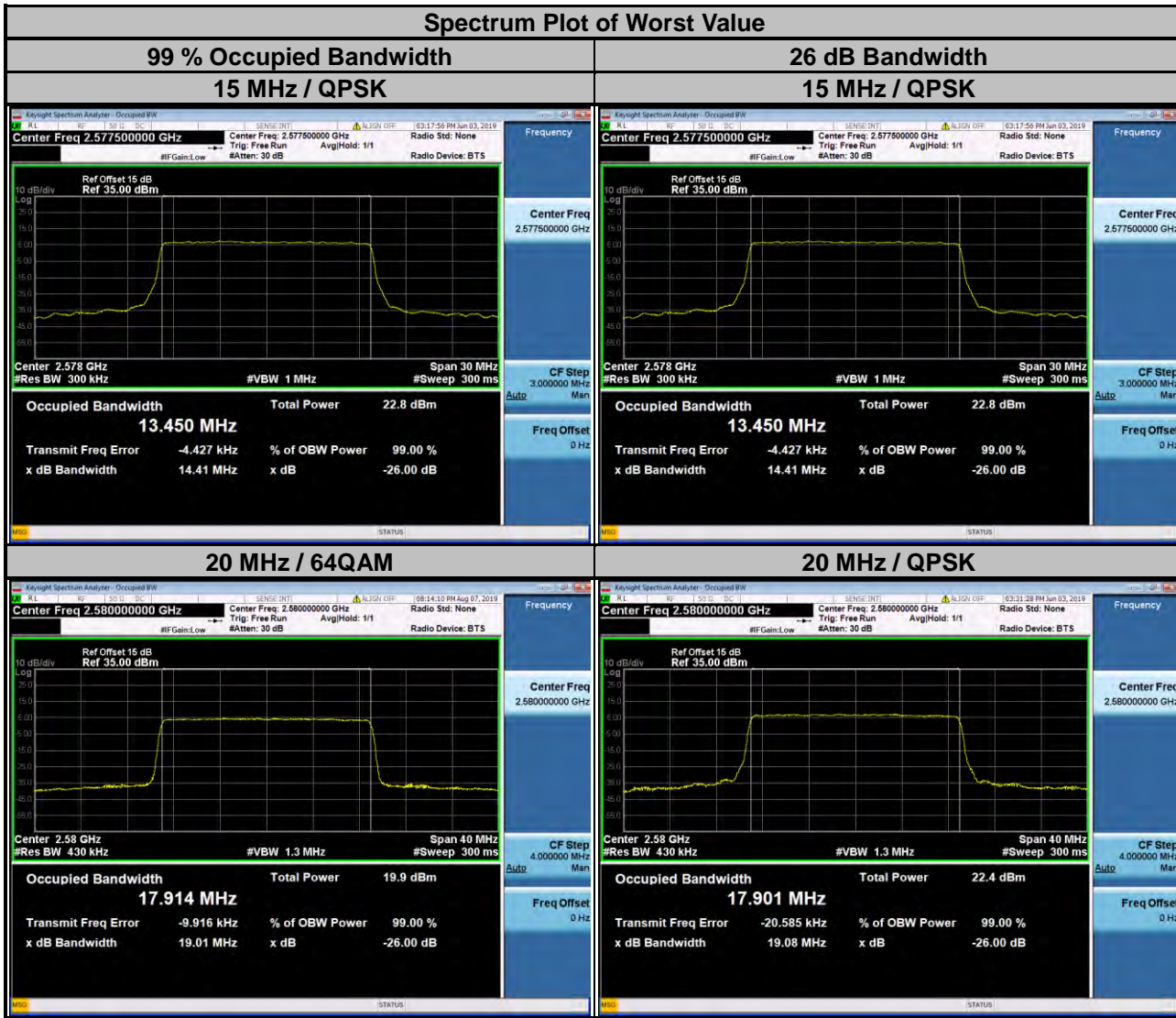


LTE Band 38							
Channel Bandwidth: 5 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
37775	2572.5	4.4890	4.4881	4.4968	4.8040	4.7950	4.7980
38000	2595.0	4.4939	4.4903	4.4961	5.0660	4.8410	4.7790
38225	2617.5	4.4925	4.4884	4.4984	5.1240	4.8770	4.8100
Channel Bandwidth: 10 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
37800	2575.0	8.9518	8.9624	8.9612	9.6710	9.6580	9.5090
38000	2595.0	8.9575	8.9718	8.9630	9.6410	9.6560	9.5080
38200	2615.0	8.9564	8.9643	8.9609	9.6770	9.6530	9.5130



LTE Band 38							
Channel Bandwidth: 15 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
37825	2577.5	13.450	13.433	13.436	14.412	14.268	14.241
38000	2595.0	13.449	13.435	13.430	14.409	14.274	14.242
38175	2612.5	13.446	13.433	13.433	14.388	14.264	14.241

Channel Bandwidth: 20 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
37850	2580.0	17.901	17.897	17.914	19.075	19.032	19.009
38000	2595.0	17.905	17.897	17.912	19.061	19.048	19.019
38150	2610.0	17.899	17.892	17.914	19.050	19.036	19.013



LTE Band 41							
Channel Bandwidth: 5 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
39675	2498.5	4.4929	4.4920	4.4995	4.9490	4.8750	4.8120
40620	2593.0	4.4875	4.4911	4.4964	4.9470	4.9230	4.7940
41565	2687.5	4.4926	4.4903	4.4963	4.9580	4.9340	4.8120

Channel Bandwidth: 10 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
39700	2501.0	8.9544	8.9689	8.9627	9.5590	9.5860	9.5020
40620	2593.0	8.9549	8.9717	8.9598	9.5550	9.6090	9.5090
41540	2685.0	8.9487	8.9626	8.9627	9.5650	9.5600	9.5080



LTE Band 41							
Channel Bandwidth: 15 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
39725	2503.5	13.450	13.442	13.436	14.312	14.302	14.236
40620	2593.0	13.444	13.429	13.436	14.310	14.281	14.217
41515	2682.5	13.426	13.419	13.428	14.315	14.286	14.235
Channel Bandwidth: 20 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
39750	2506.0	17.909	17.913	17.904	19.050	19.057	19.020
40620	2593.0	17.906	17.904	17.911	19.066	19.028	19.009
41490	2680.0	17.822	17.825	17.858	19.011	18.993	18.988

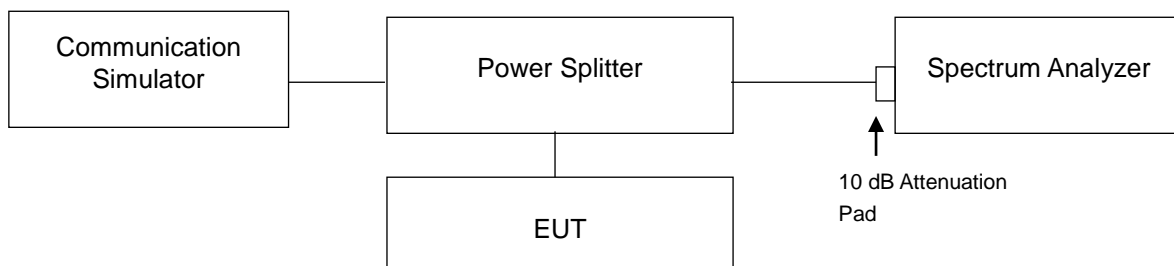


4.5 Out-of-Band Emissions Measurement

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.

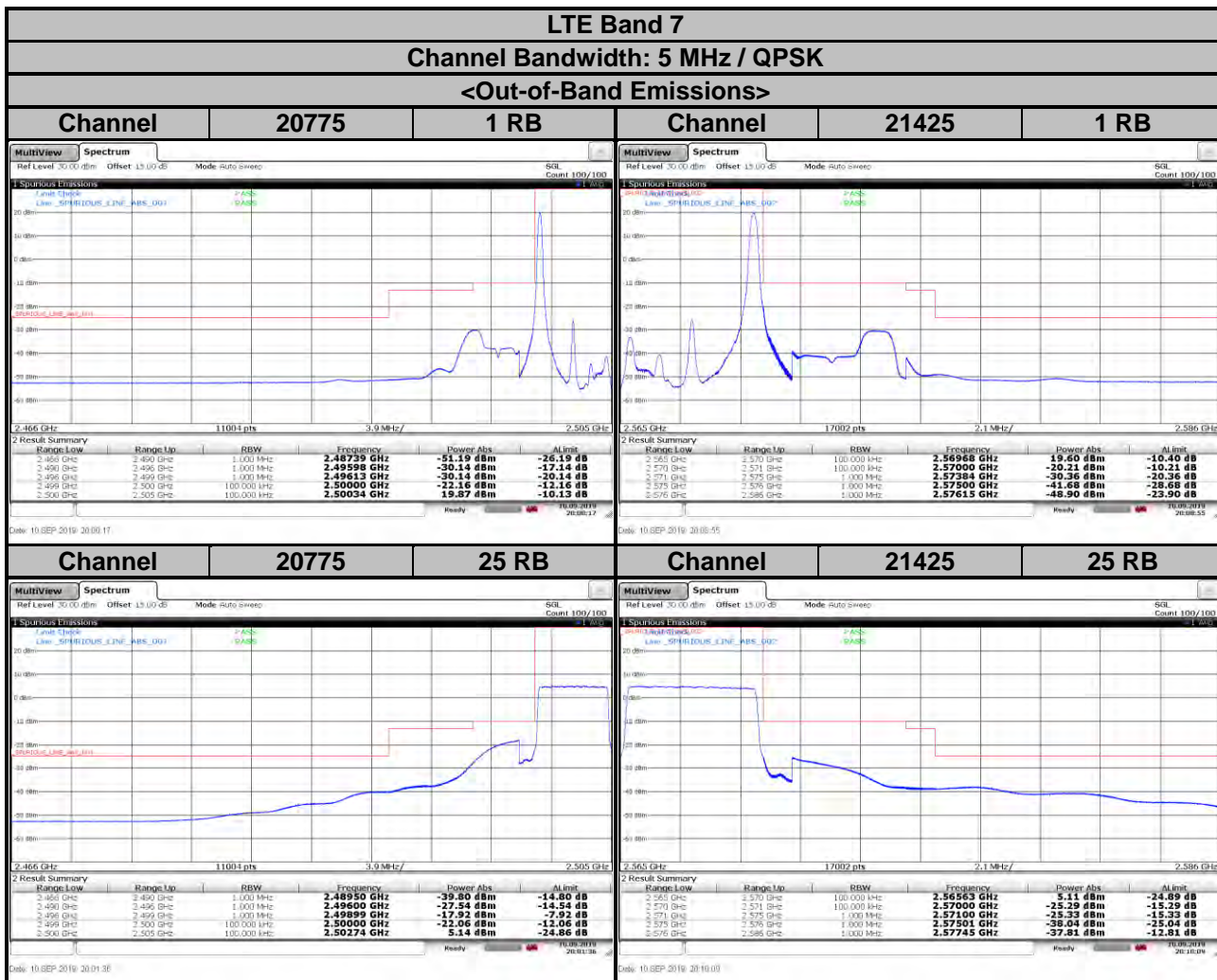
4.5.2 Test Setup



4.5.3 Test Procedures

- 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).
- The out-of-band emissions measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Record the max. trace plot into the test report.

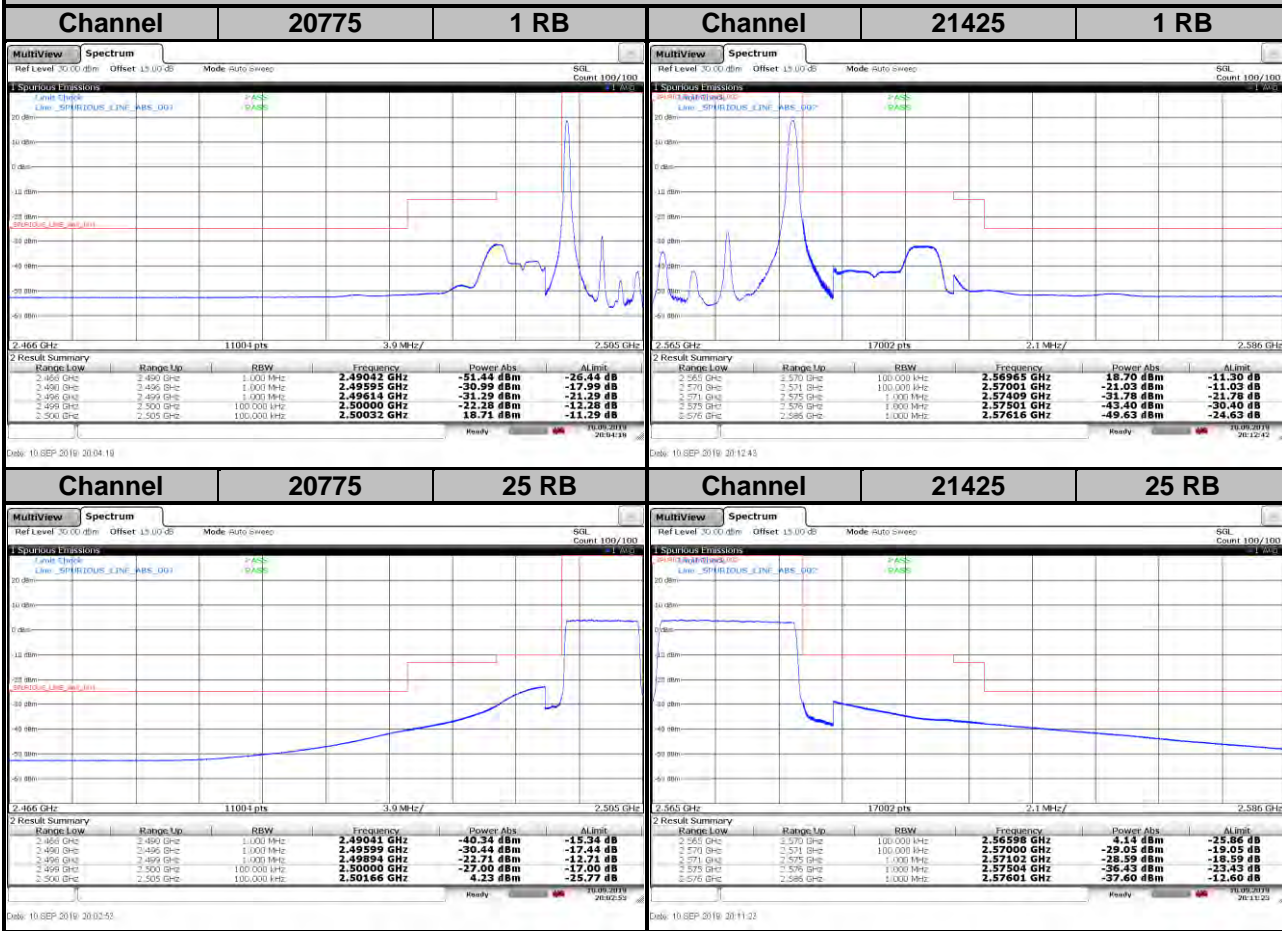
4.5.4 Test Results



LTE Band 7

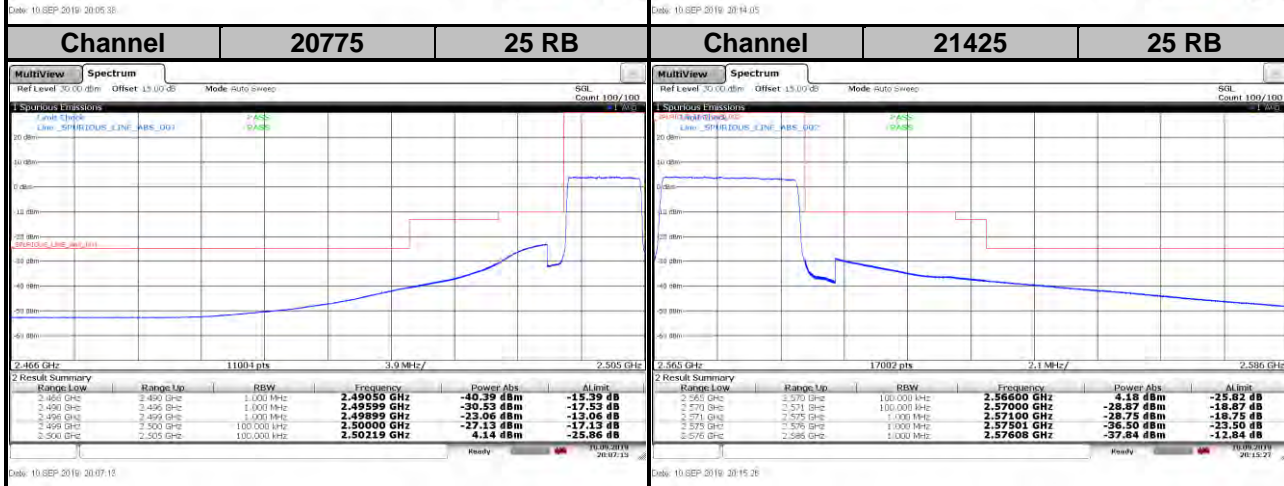
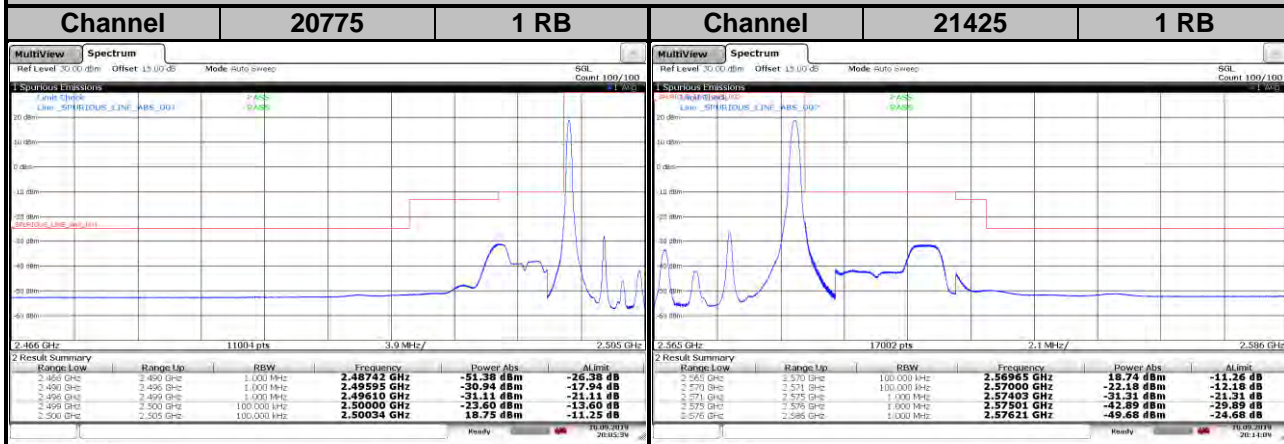
Channel Bandwidth: 5 MHz / 16QAM

<Out-of-Band Emissions>



LTE Band 7
Channel Bandwidth: 5 MHz / 64QAM

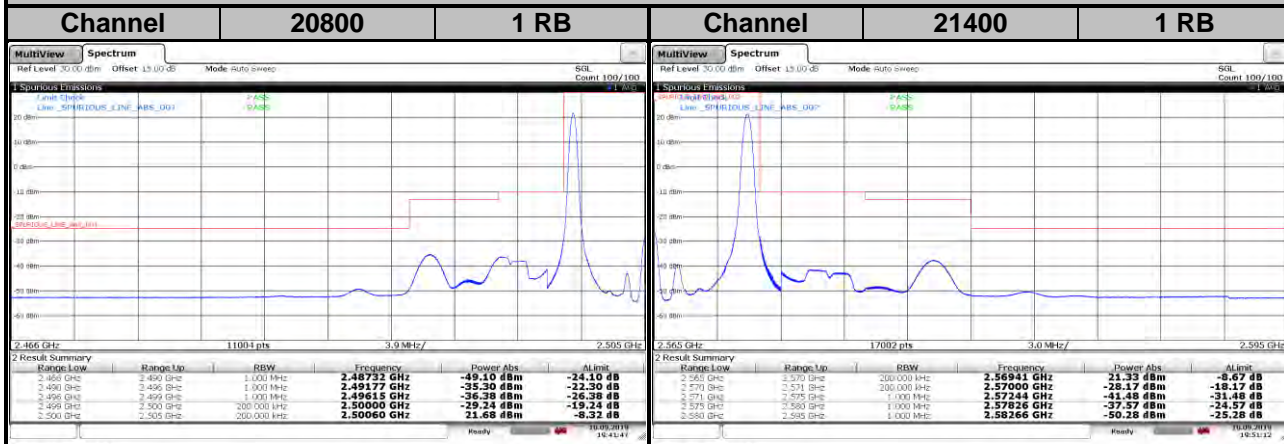
<Out-of-Band Emissions>



LTE Band 7

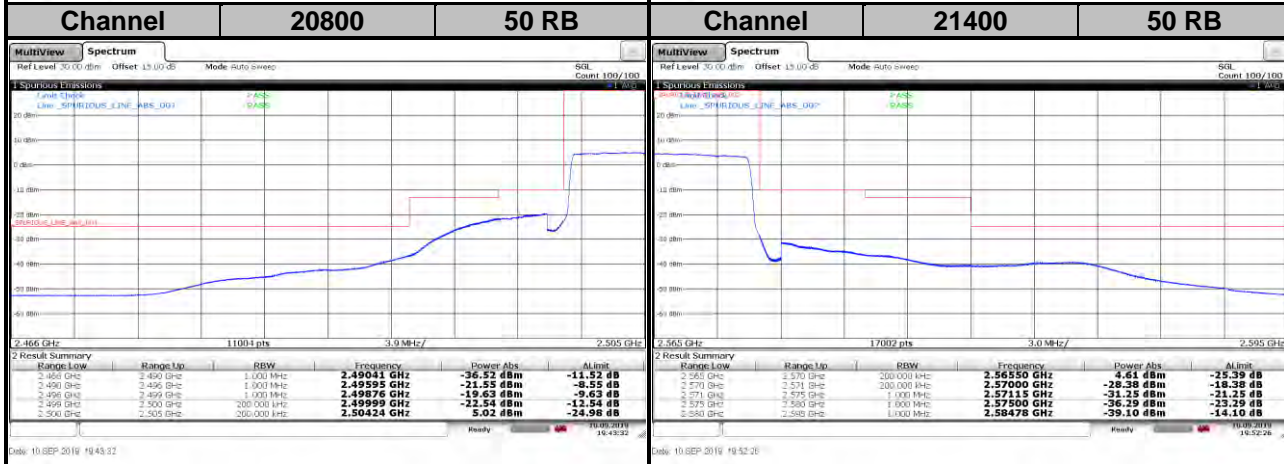
Channel Bandwidth: 10 MHz / QPSK

<Out-of-Band Emissions>



Date: 10.SEP.2019 19:41:48

Date: 10.SEP.2019 19:51:12



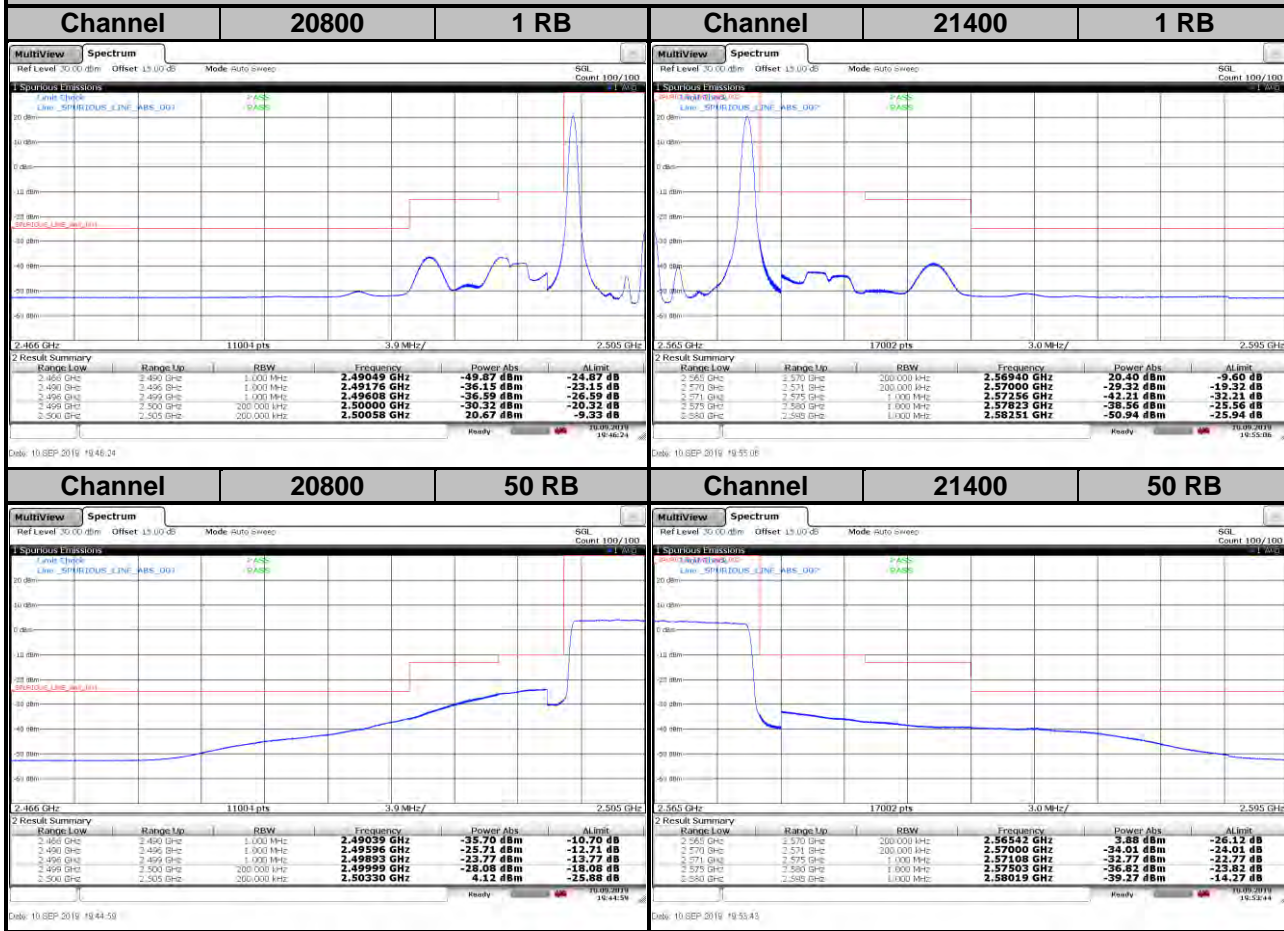
Date: 10.SEP.2019 19:43:32

Date: 10.SEP.2019 19:52:26

LTE Band 7

Channel Bandwidth: 10 MHz / 16QAM

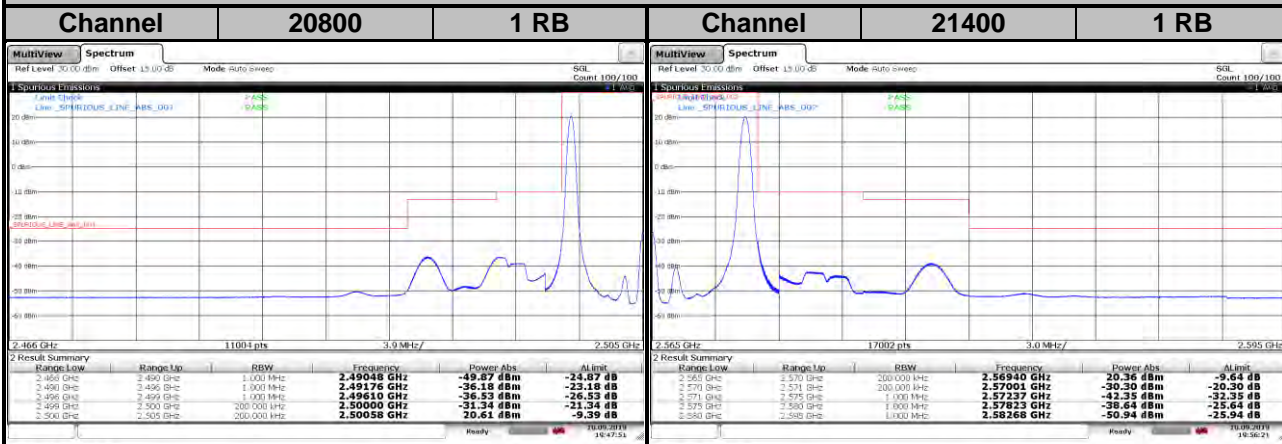
<Out-of-Band Emissions>



LTE Band 7

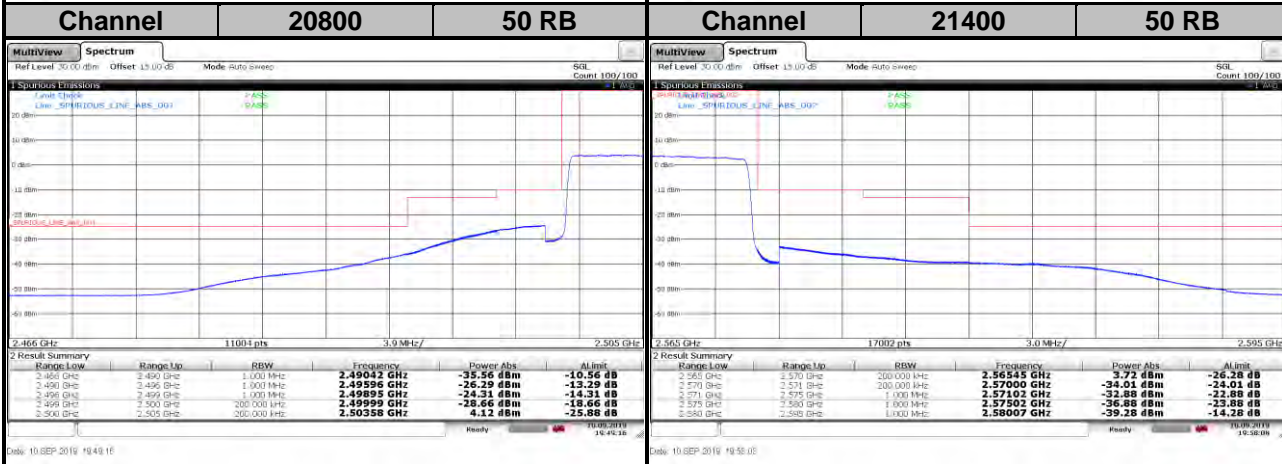
Channel Bandwidth: 10 MHz / 64QAM

<Out-of-Band Emissions>



Date: 10 SEP 2019 19:47:50

Date: 10 SEP 2019 19:50:21



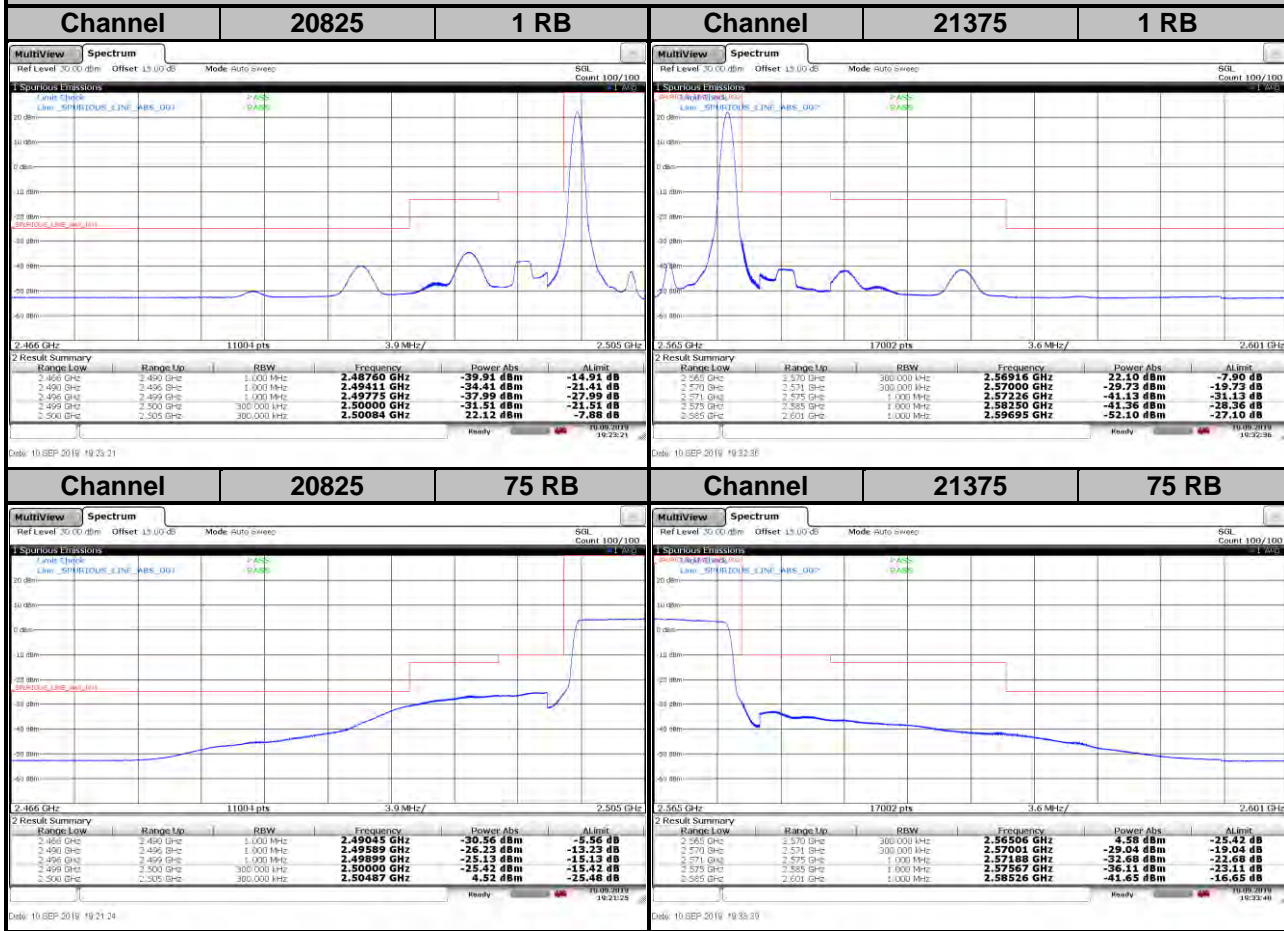
Date: 10 SEP 2019 19:48:16

Date: 10 SEP 2019 19:50:08

LTE Band 7

Channel Bandwidth: 15 MHz / QPSK

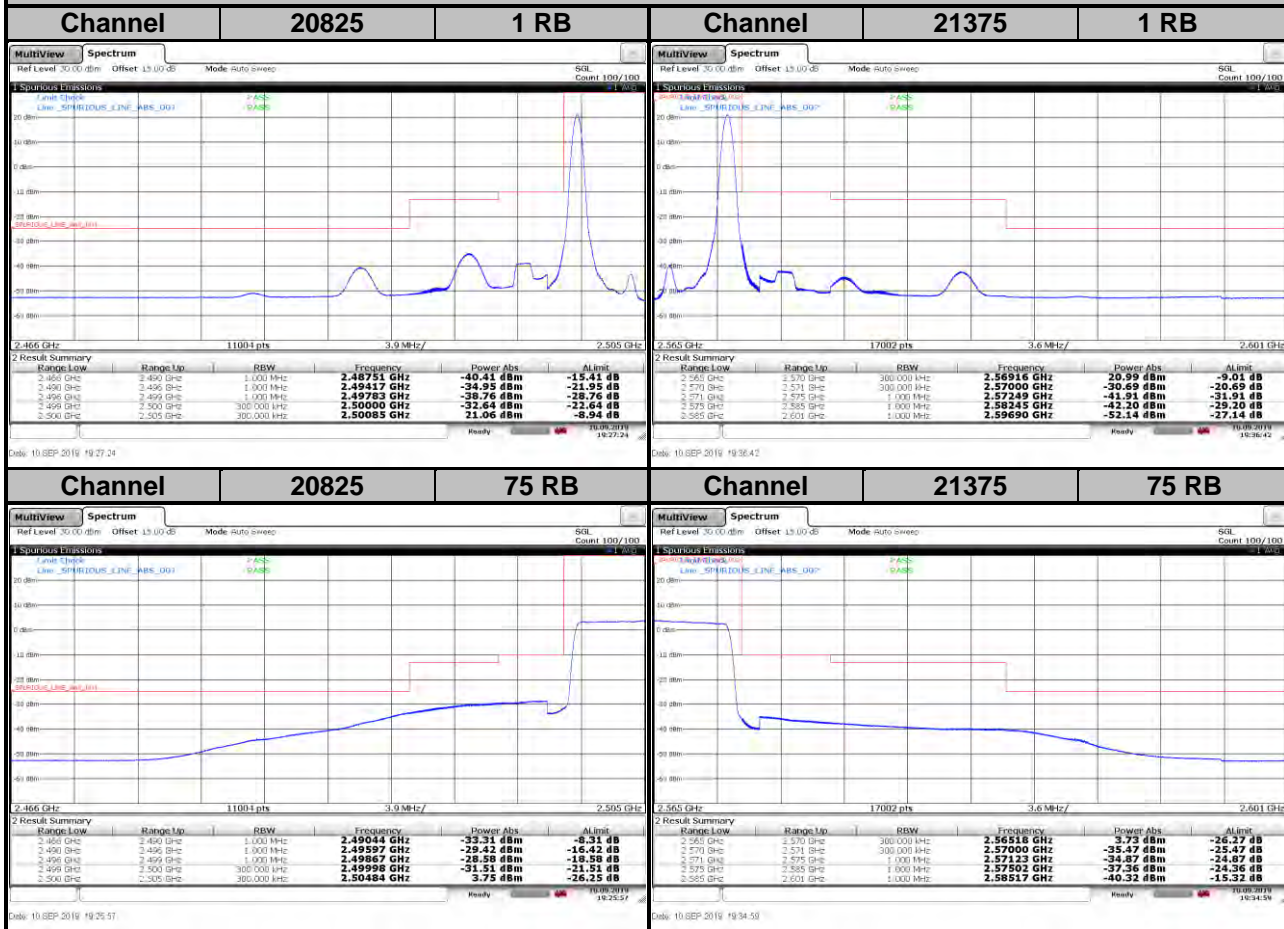
<Out-of-Band Emissions>



LTE Band 7

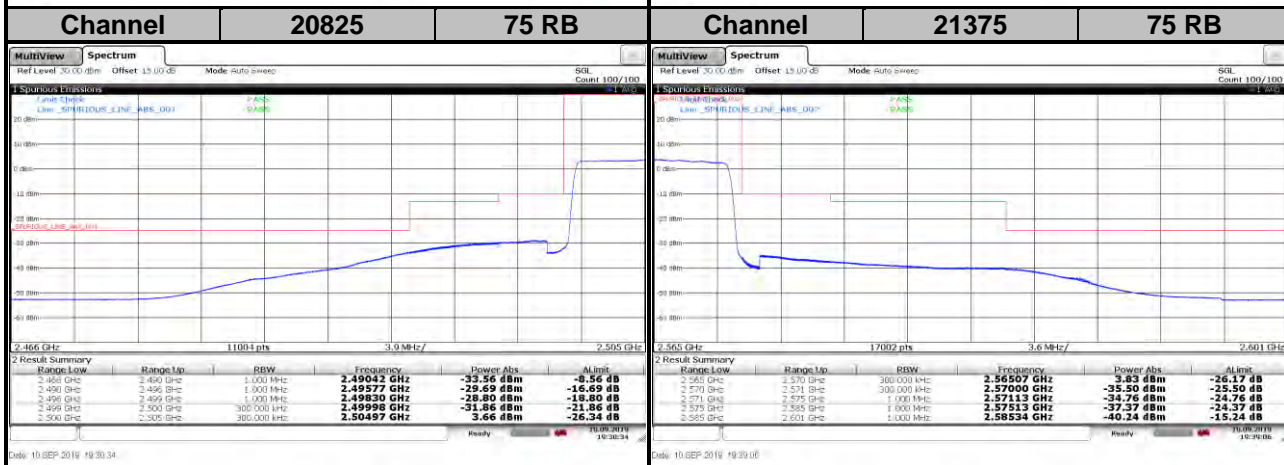
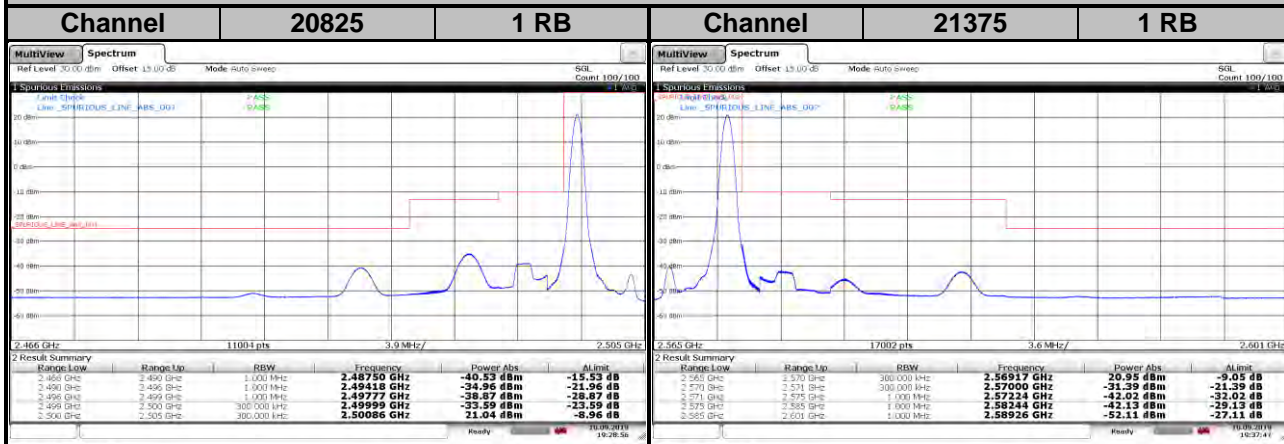
Channel Bandwidth: 15 MHz / 16QAM

<Out-of-Band Emissions>



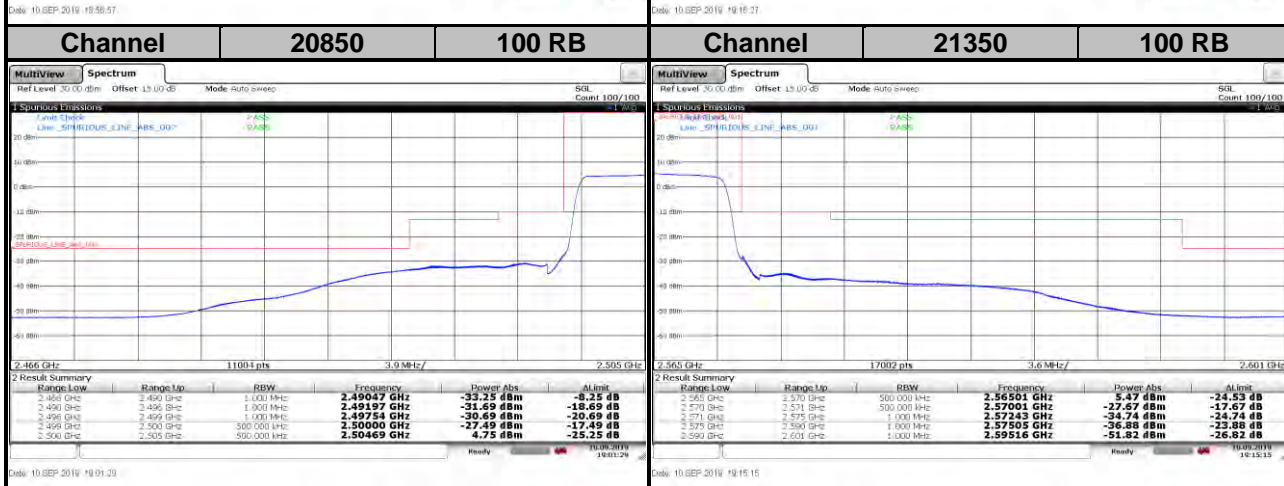
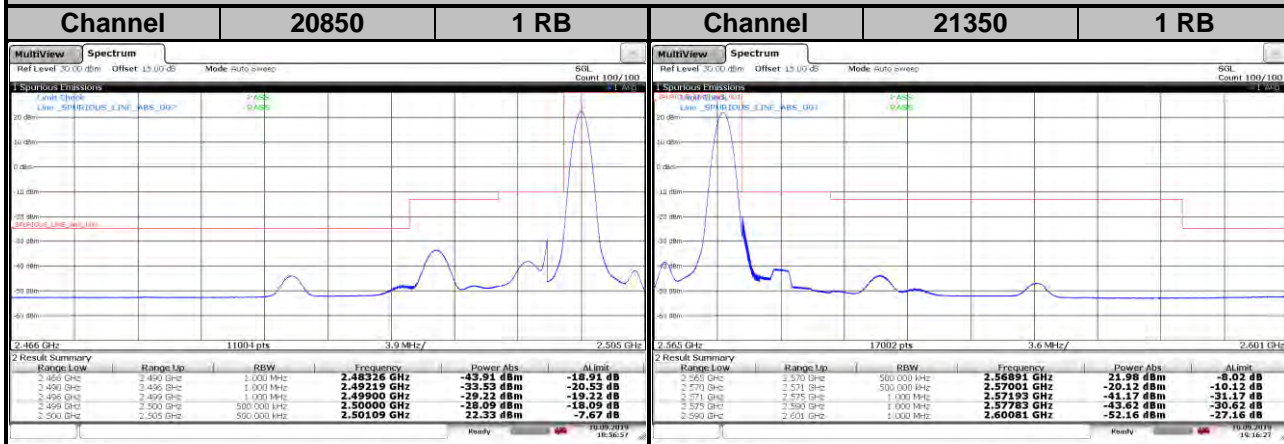
LTE Band 7
Channel Bandwidth: 15 MHz / 64QAM

<Out-of-Band Emissions>



LTE Band 7
Channel Bandwidth: 20 MHz / QPSK

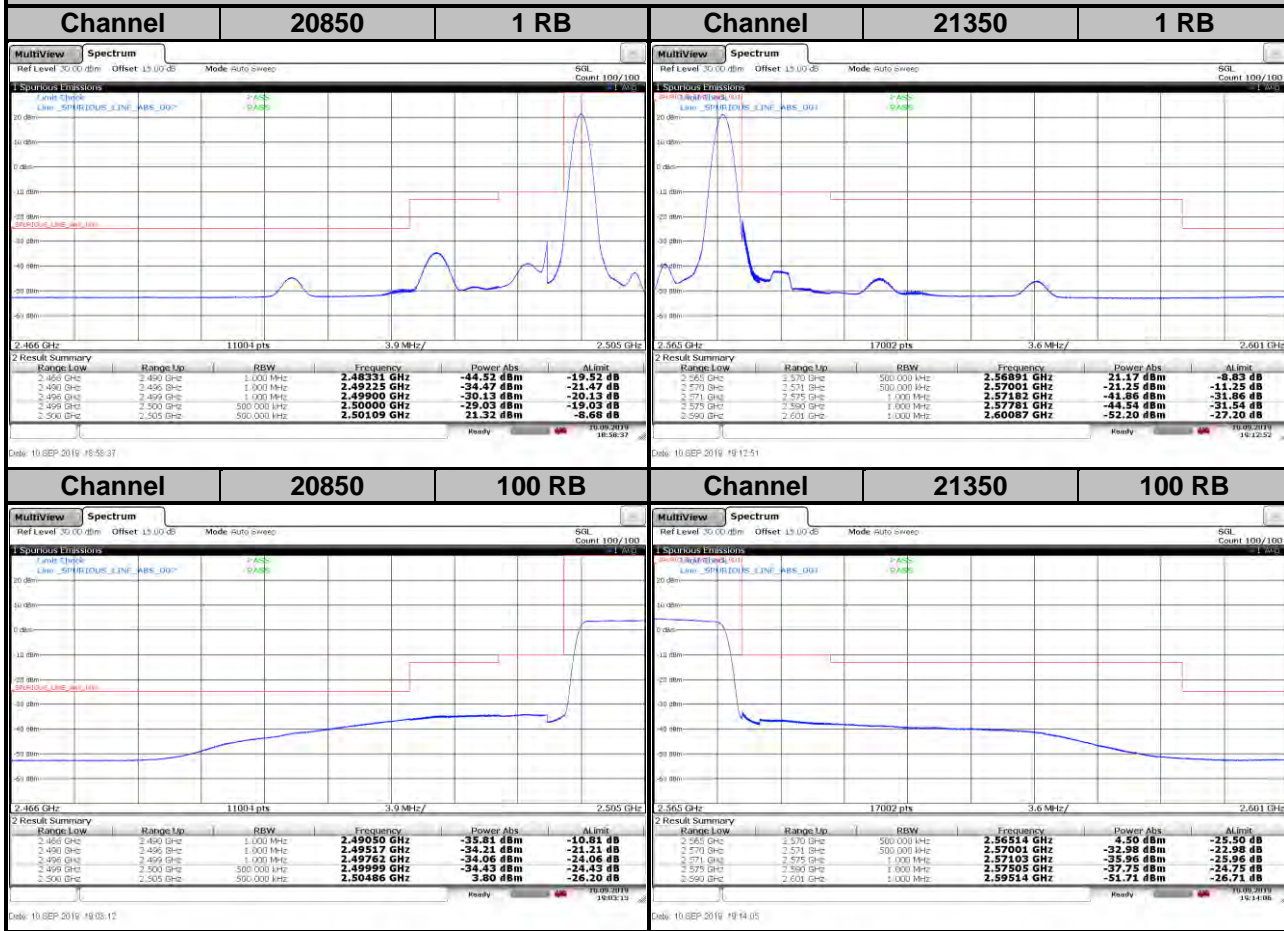
<Out-of-Band Emissions>



LTE Band 7

Channel Bandwidth: 20 MHz / 16QAM

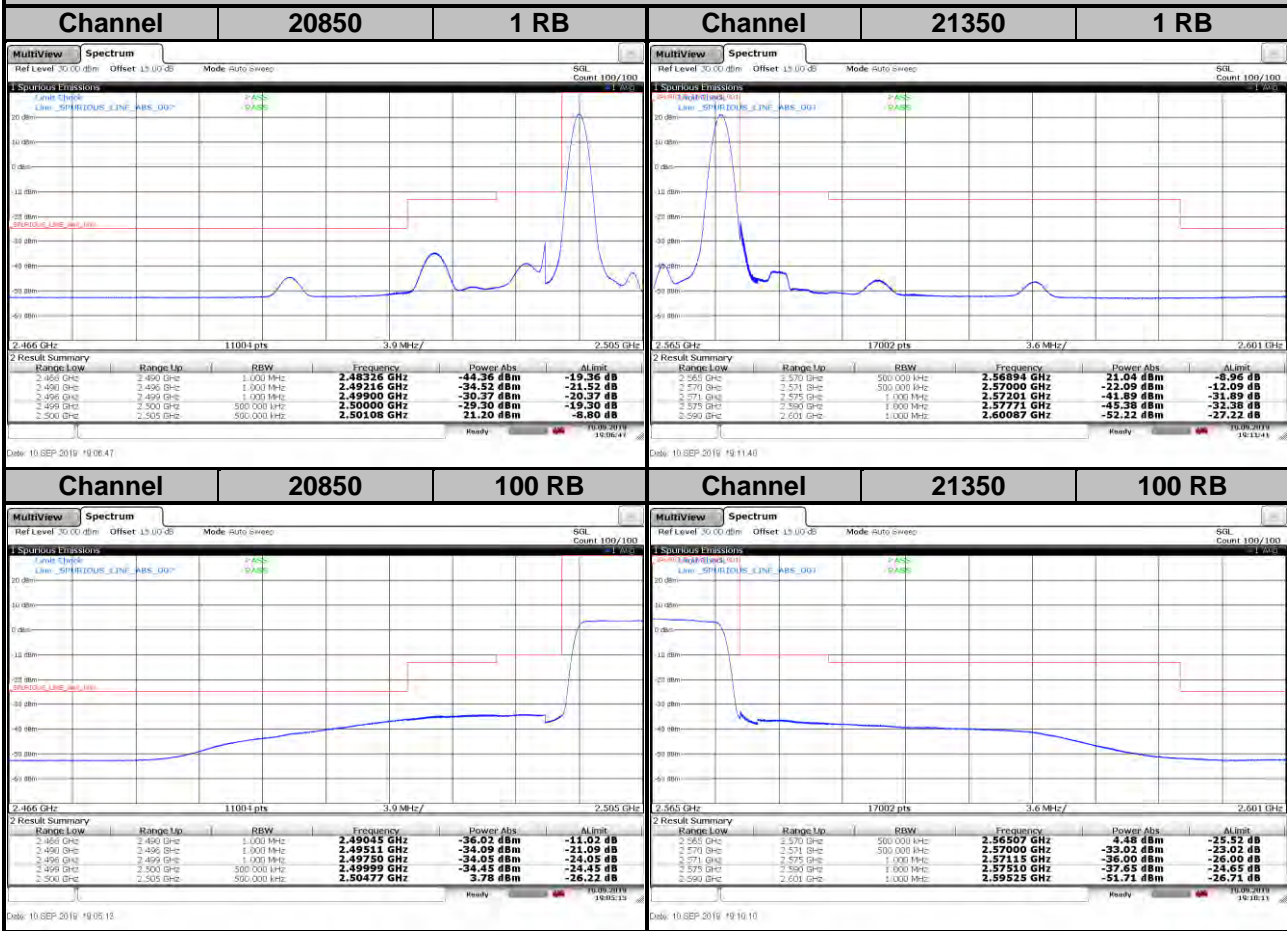
<Out-of-Band Emissions>



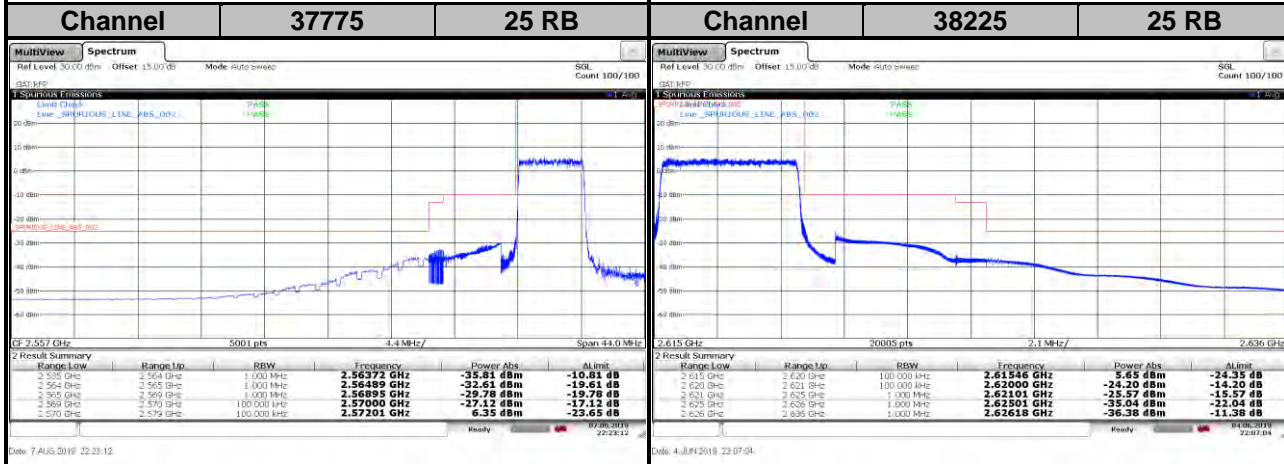
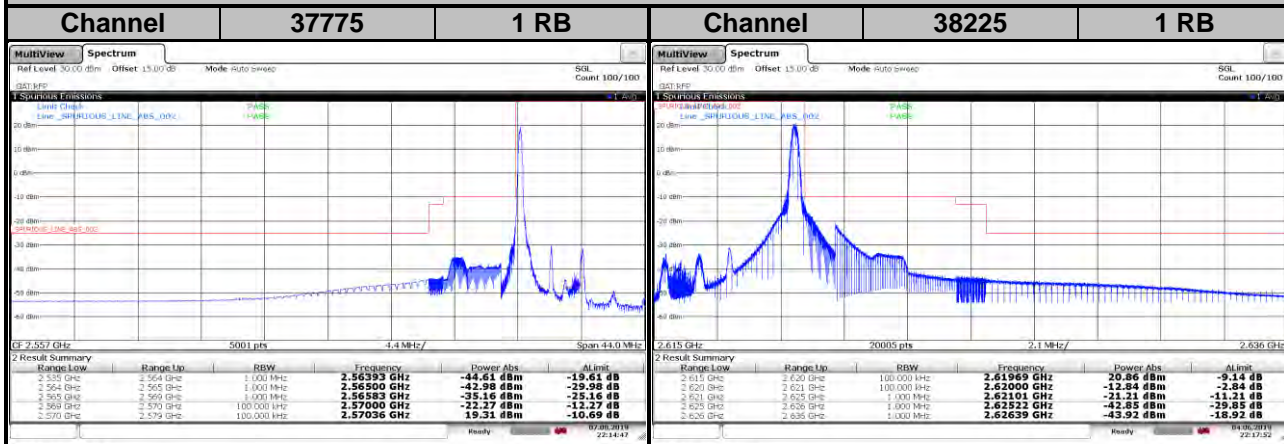
LTE Band 7

Channel Bandwidth: 20 MHz / 64QAM

<Out-of-Band Emissions>

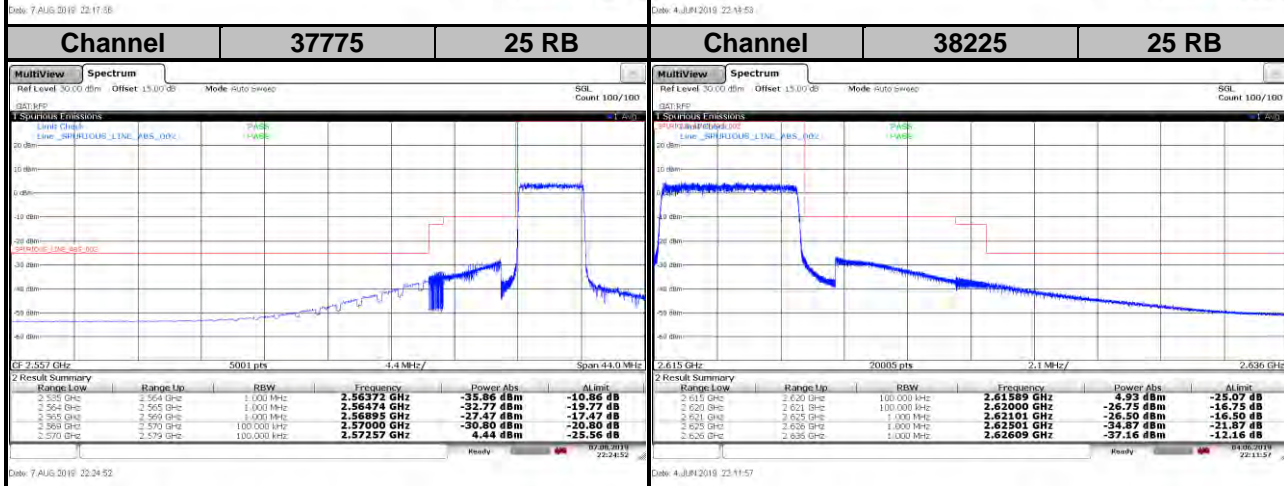
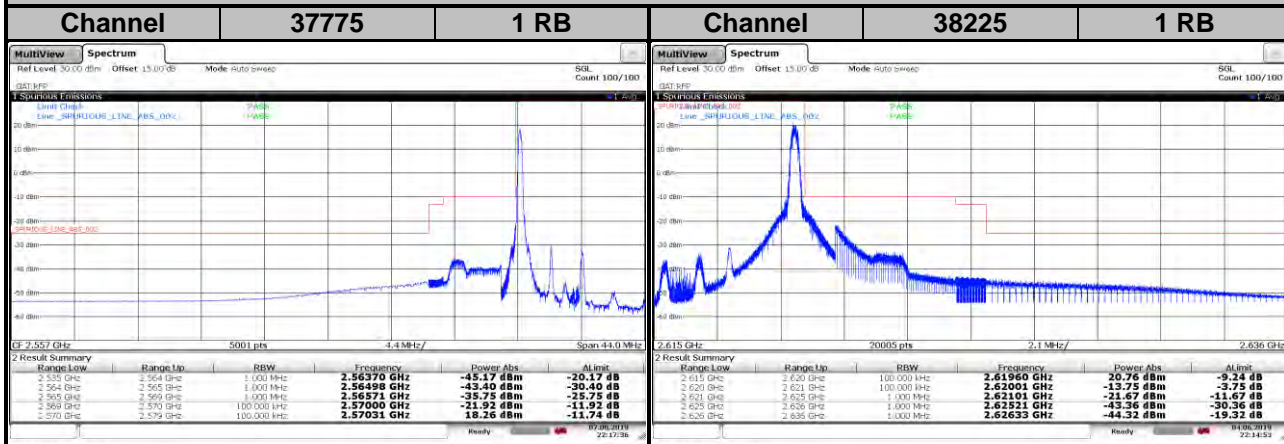


LTE Band 38
Channel Bandwidth: 5 MHz / QPSK
<Out-of-Band Emissions>



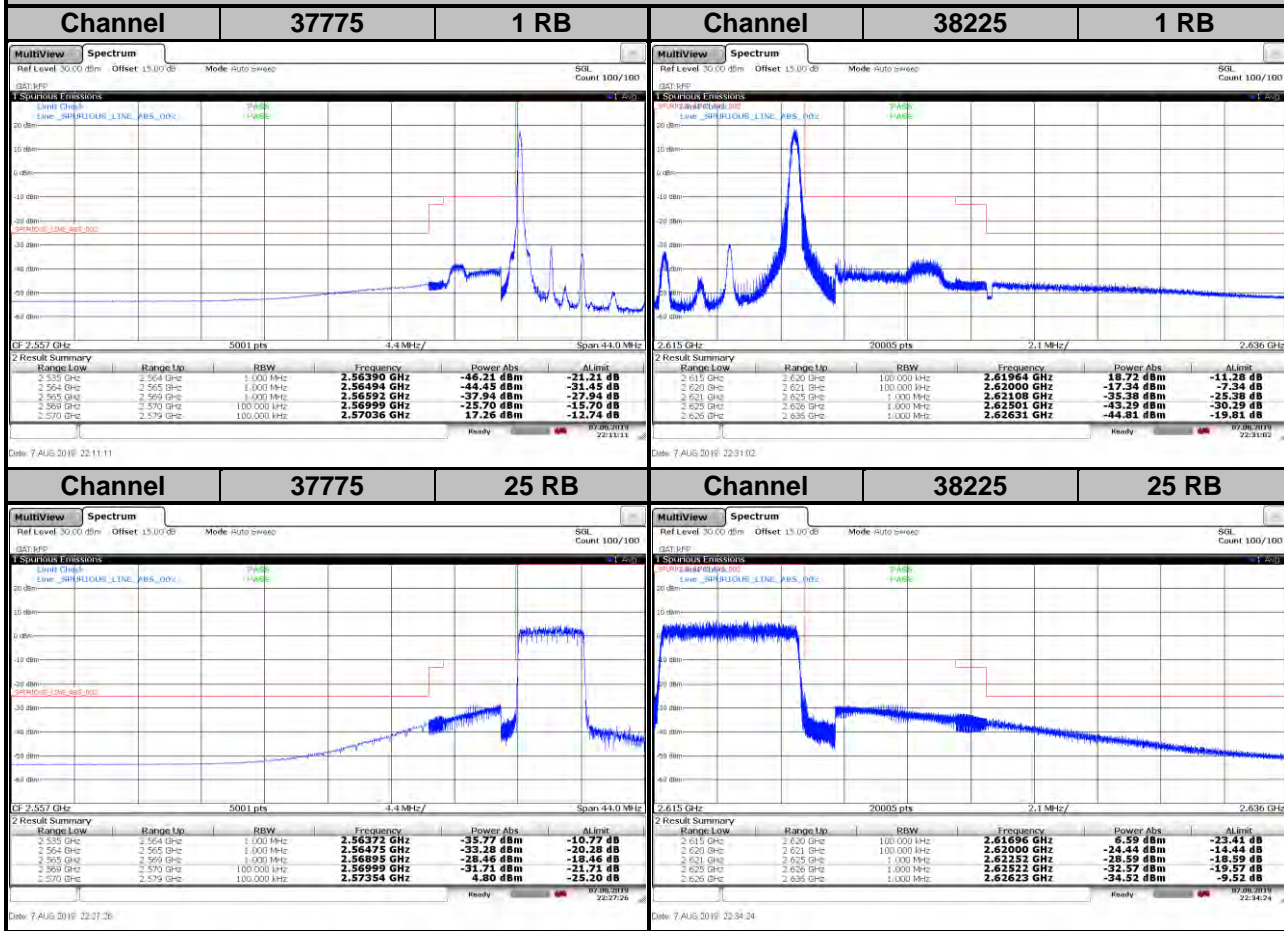
LTE Band 38
Channel Bandwidth: 5 MHz / 16QAM

<Out-of-Band Emissions>



LTE Band 38
Channel Bandwidth: 5 MHz / 64QAM

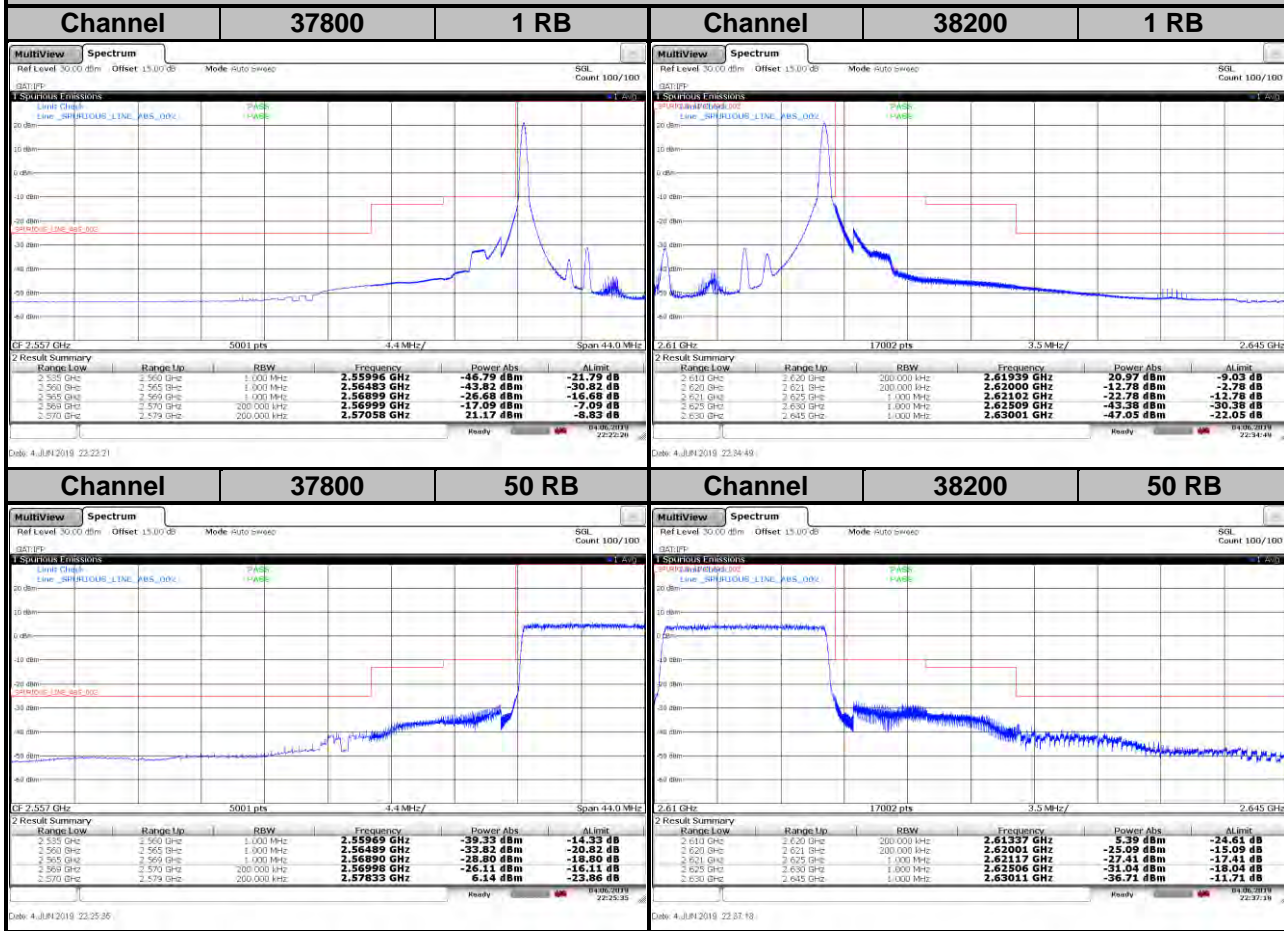
<Out-of-Band Emissions>



LTE Band 38

Channel Bandwidth: 10 MHz / QPSK

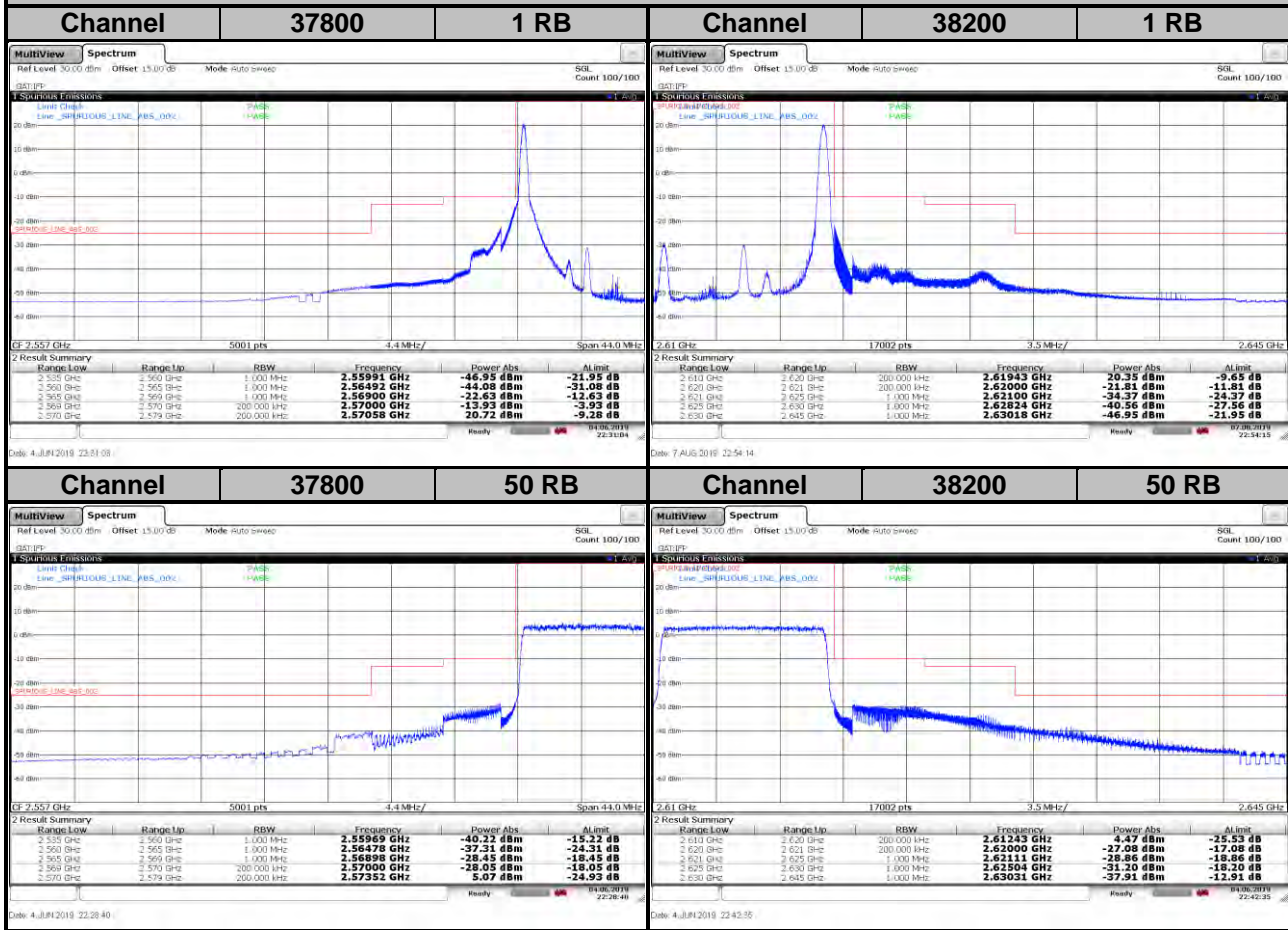
<Out-of-Band Emissions>



LTE Band 38

Channel Bandwidth: 10 MHz / 16QAM

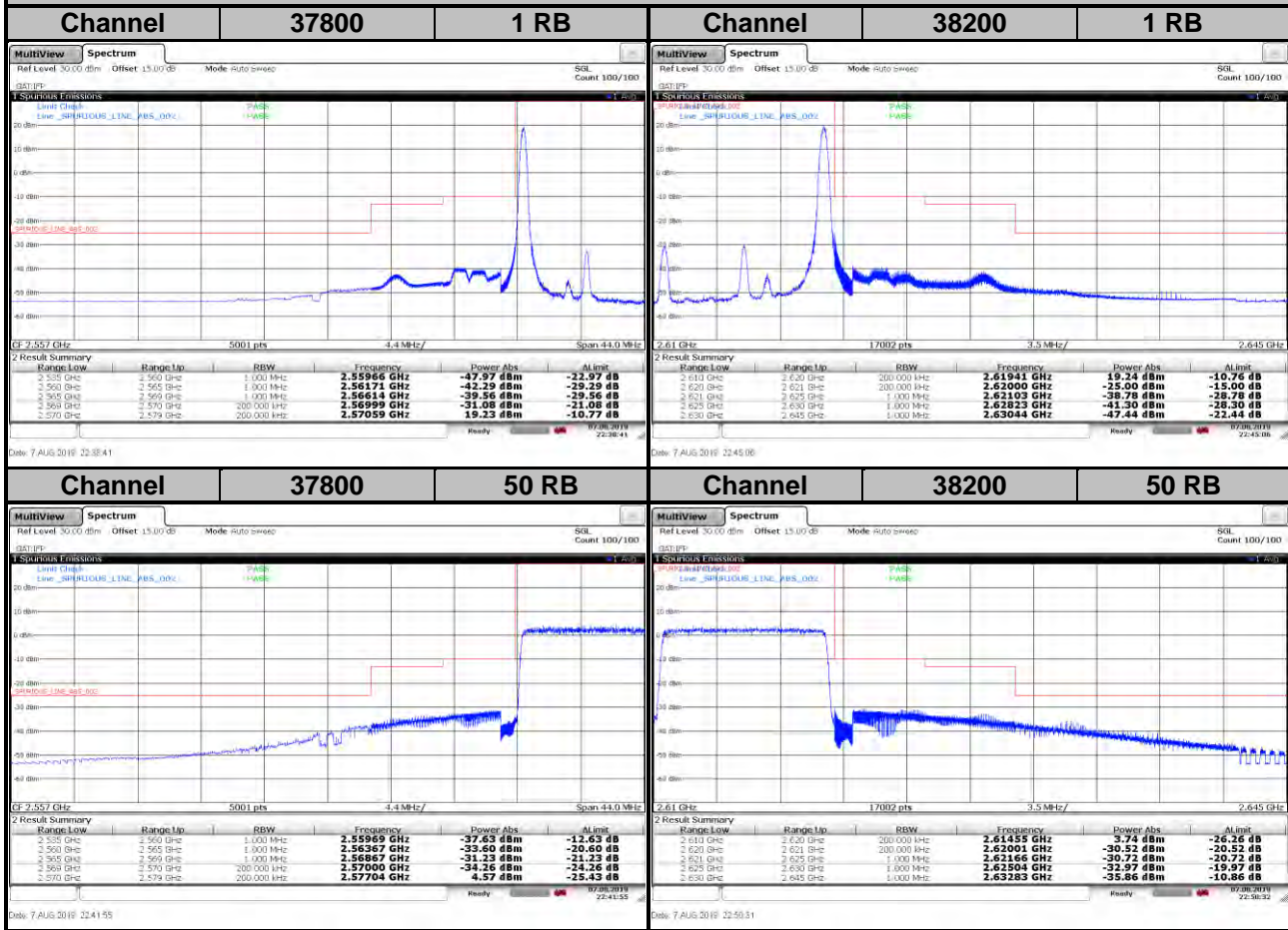
<Out-of-Band Emissions>



LTE Band 38

Channel Bandwidth: 10 MHz / 64QAM

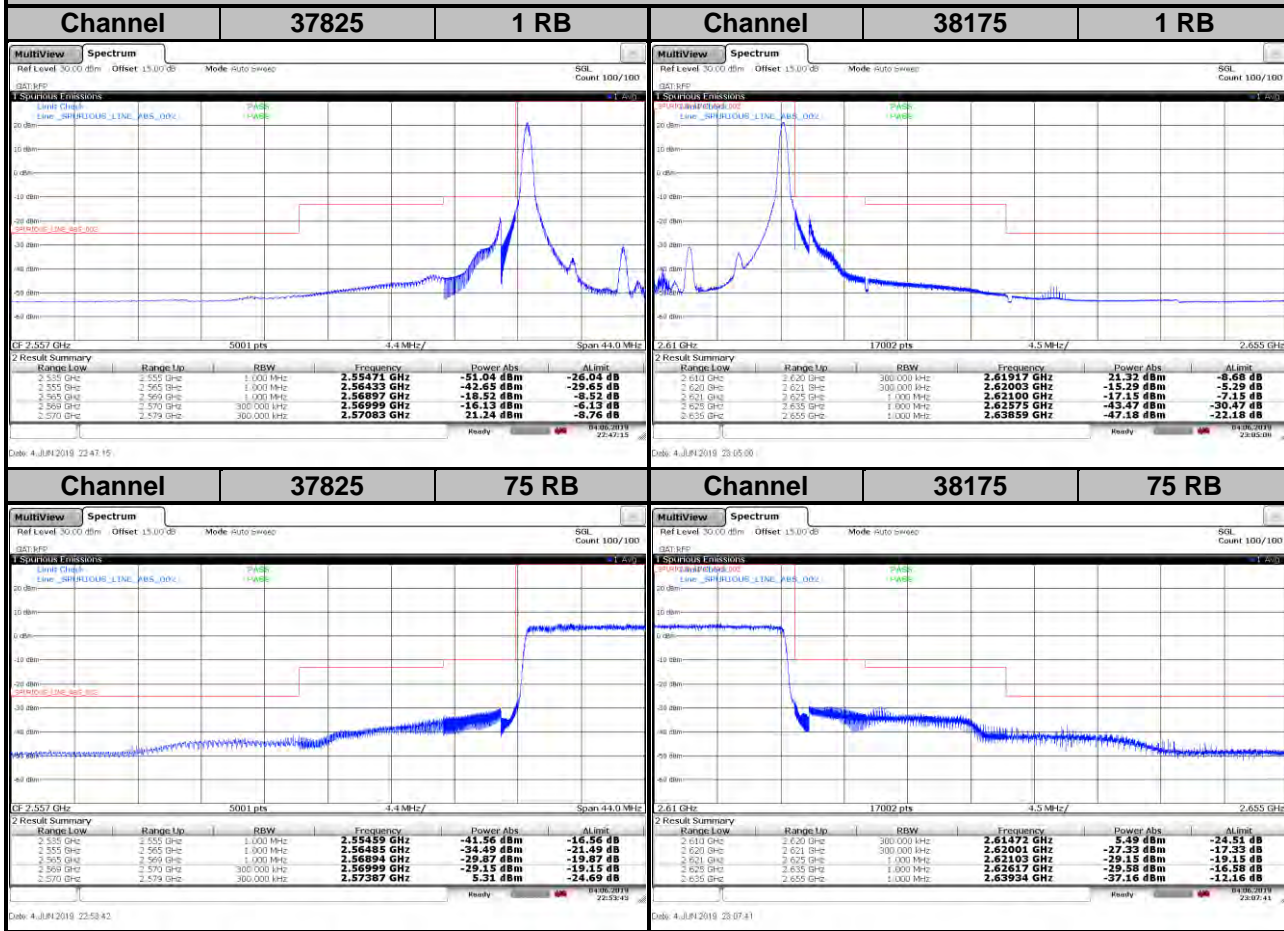
<Out-of-Band Emissions>



LTE Band 38

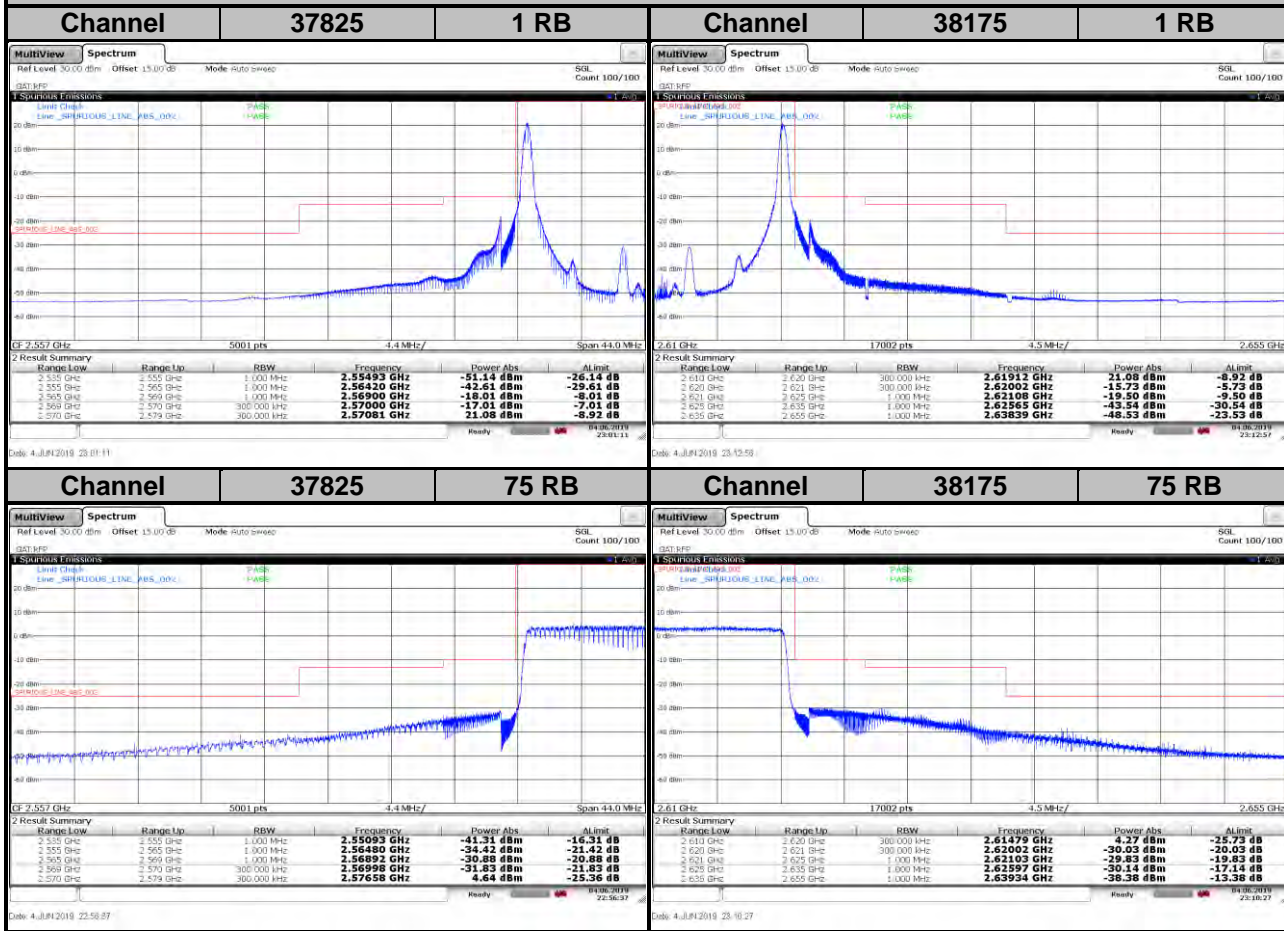
Channel Bandwidth: 15 MHz / QPSK

<Out-of-Band Emissions>



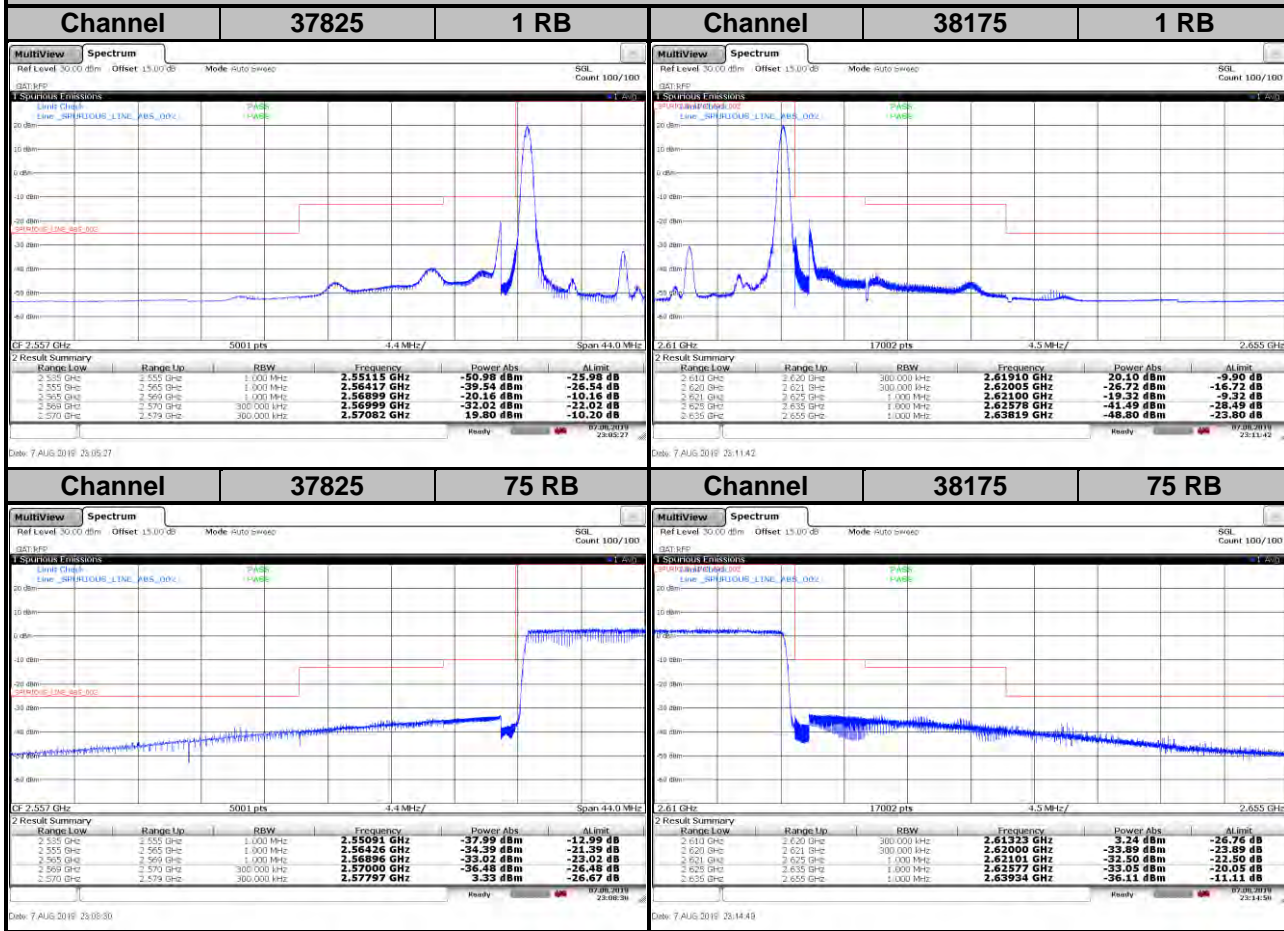
LTE Band 38
Channel Bandwidth: 15 MHz / 16QAM

<Out-of-Band Emissions>



LTE Band 38
Channel Bandwidth: 15 MHz / 64QAM

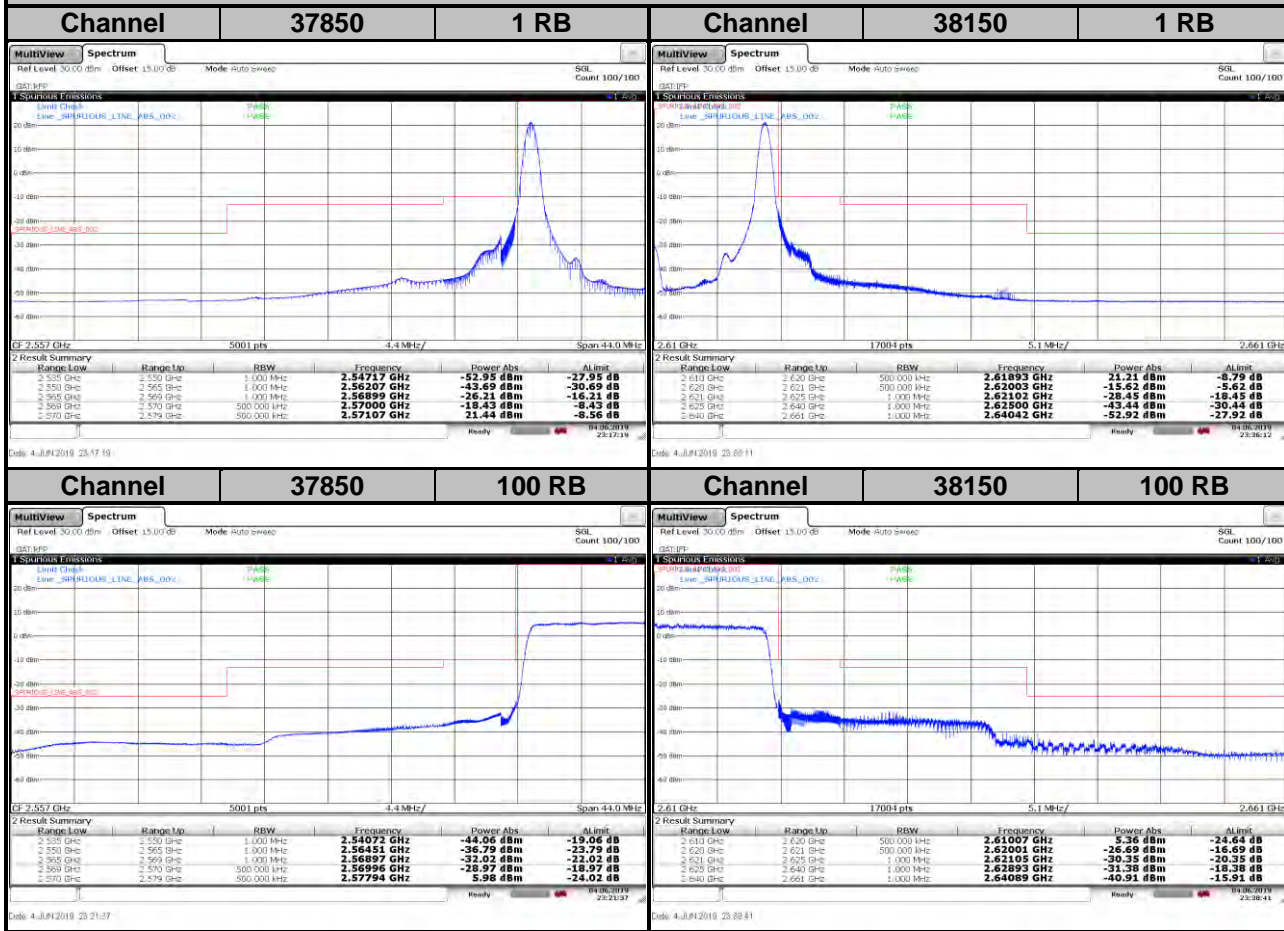
<Out-of-Band Emissions>



LTE Band 38

Channel Bandwidth: 20 MHz / QPSK

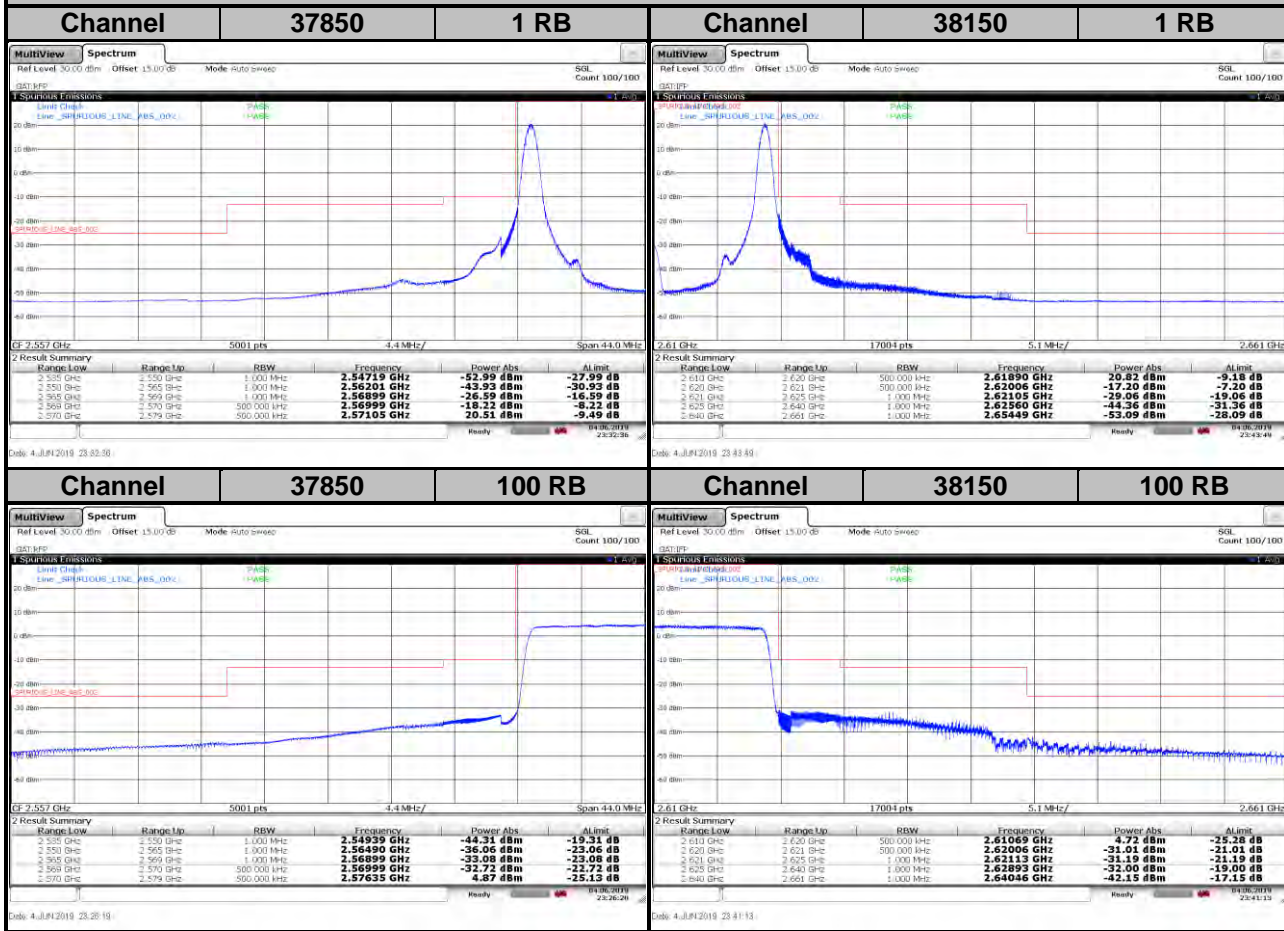
<Out-of-Band Emissions>



LTE Band 38

Channel Bandwidth: 20 MHz / 16QAM

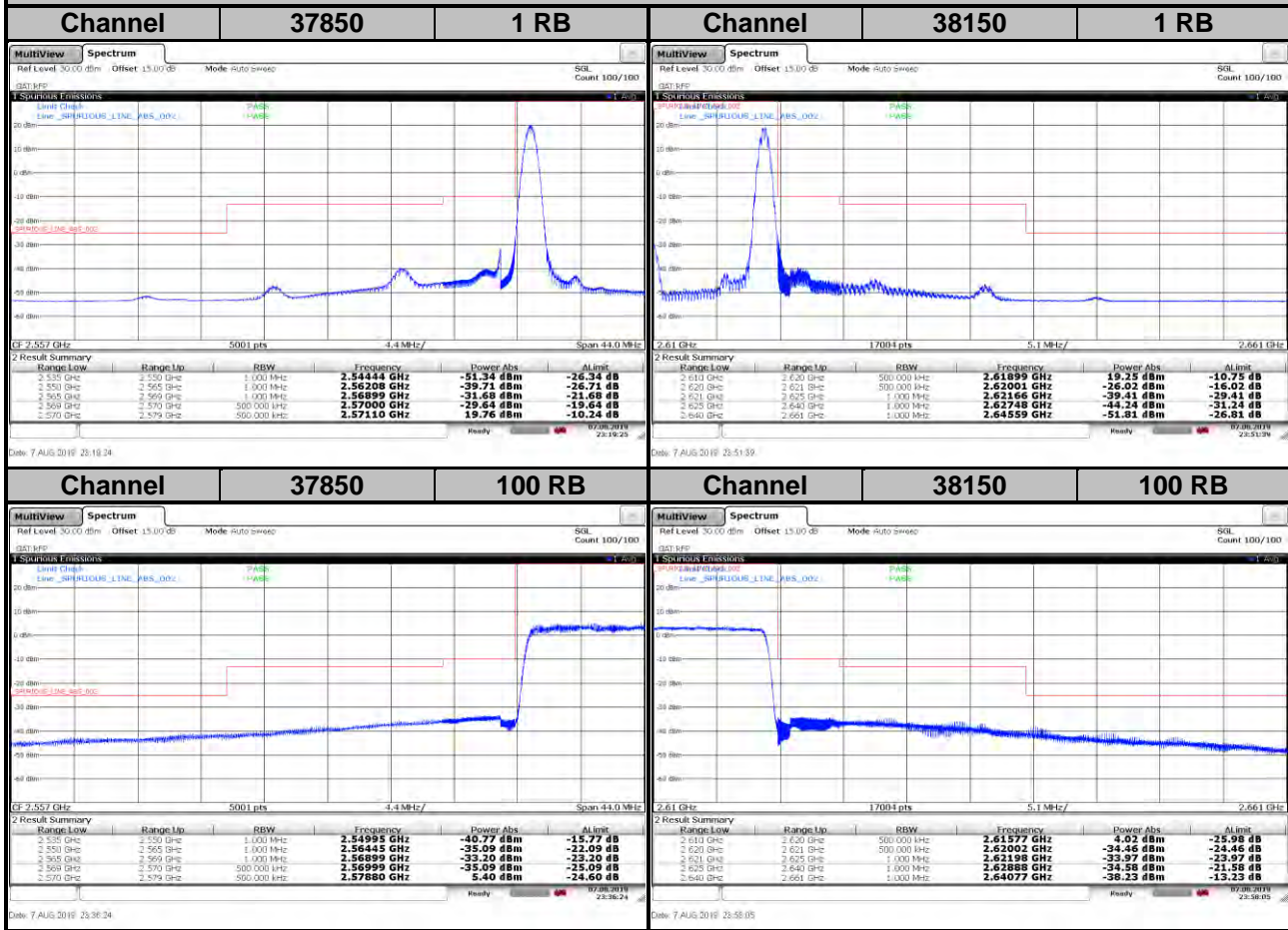
<Out-of-Band Emissions>



LTE Band 38

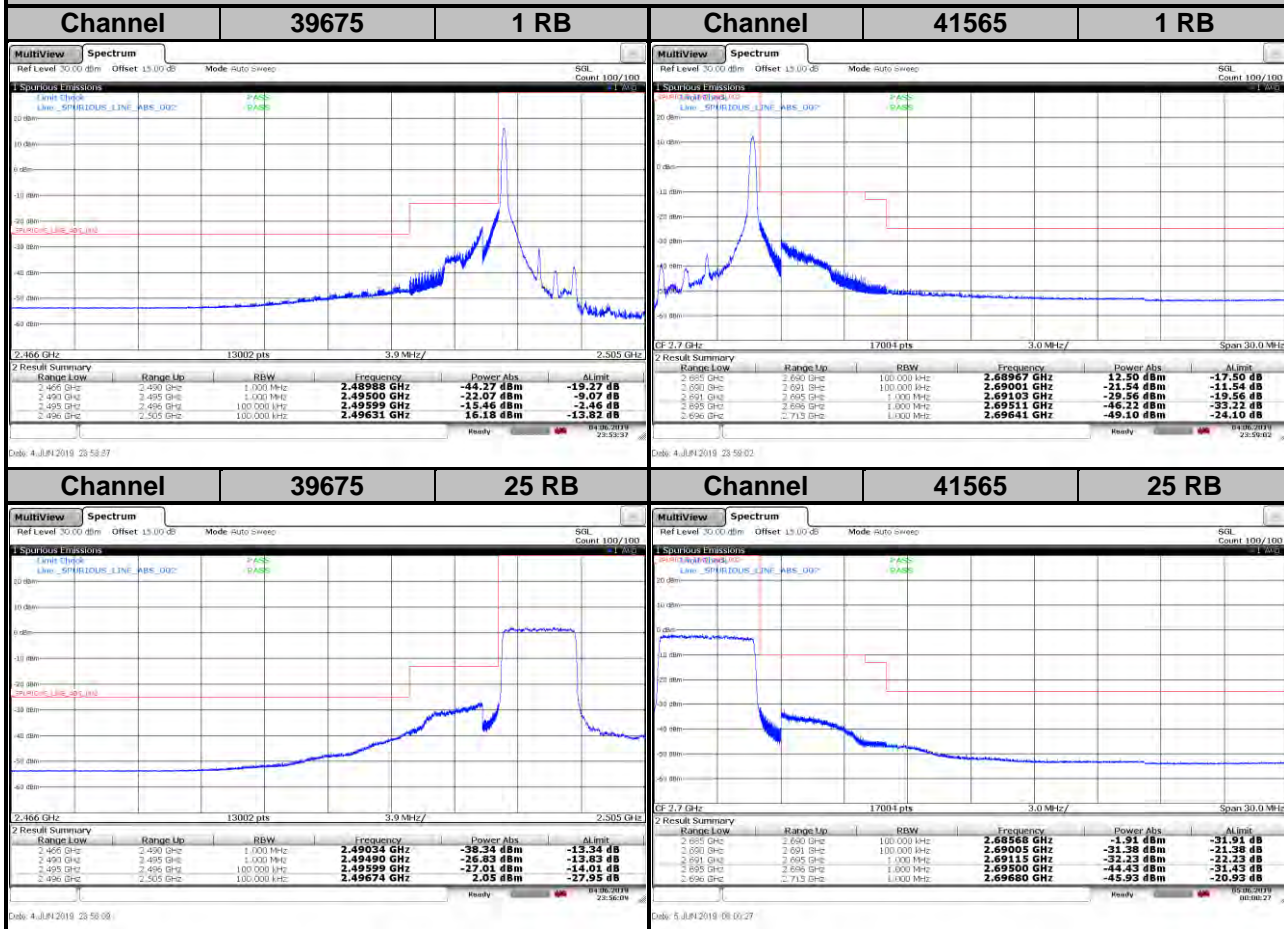
Channel Bandwidth: 20 MHz / 64QAM

<Out-of-Band Emissions>



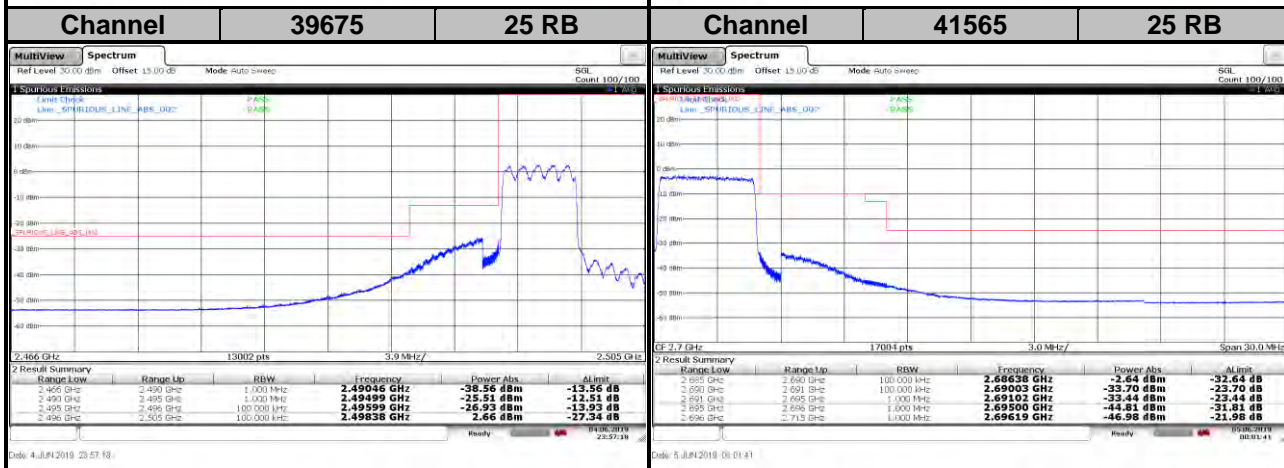
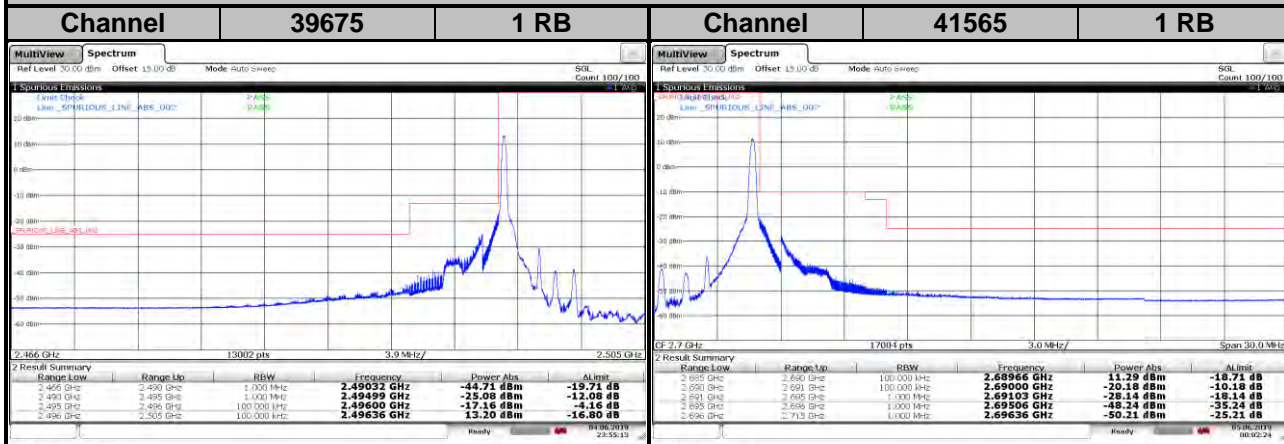
LTE Band 41
Channel Bandwidth: 5 MHz / QPSK

<Out-of-Band Emissions>



LTE Band 41
Channel Bandwidth: 5 MHz / 16QAM

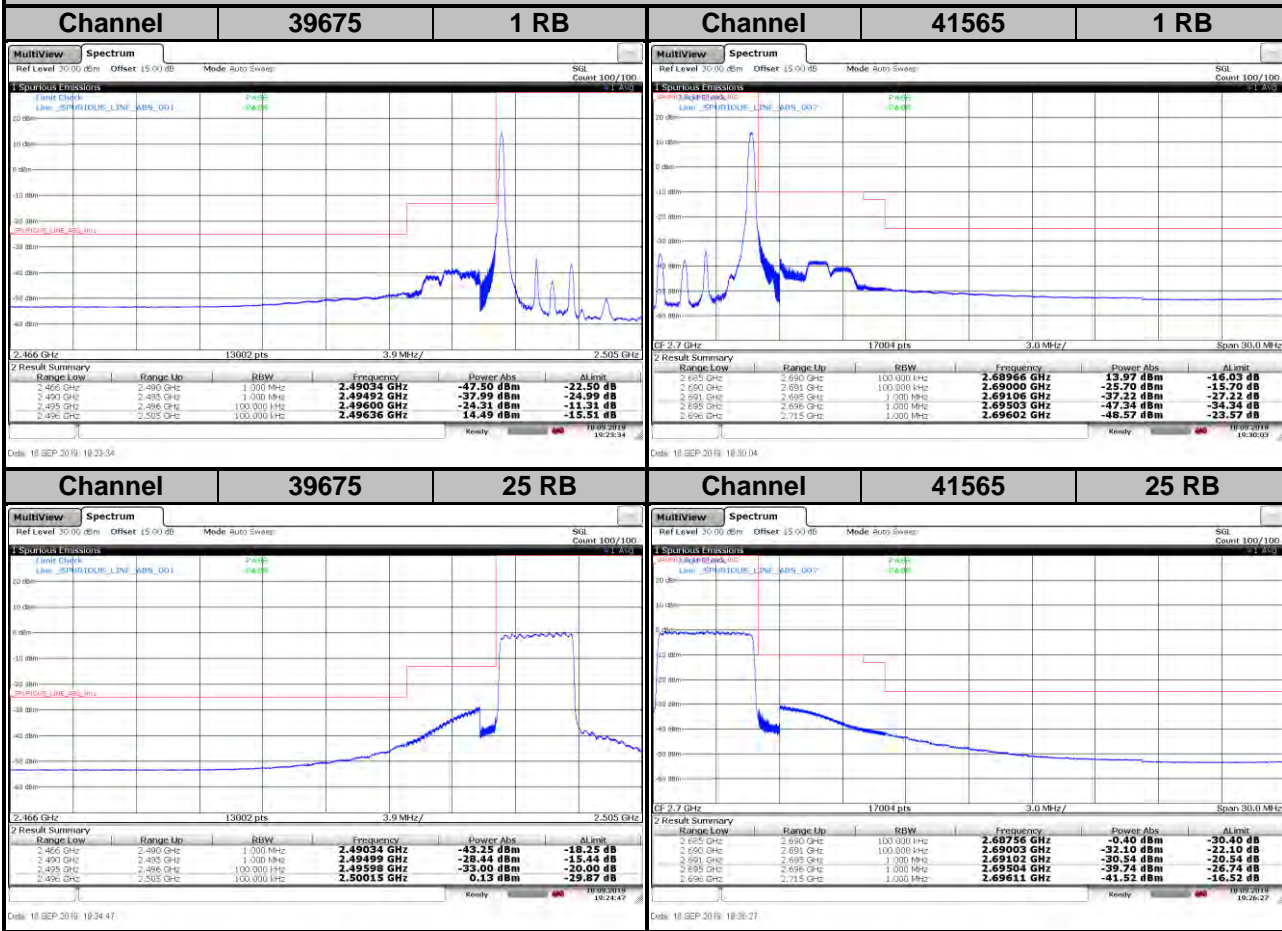
<Out-of-Band Emissions>



LTE Band 41

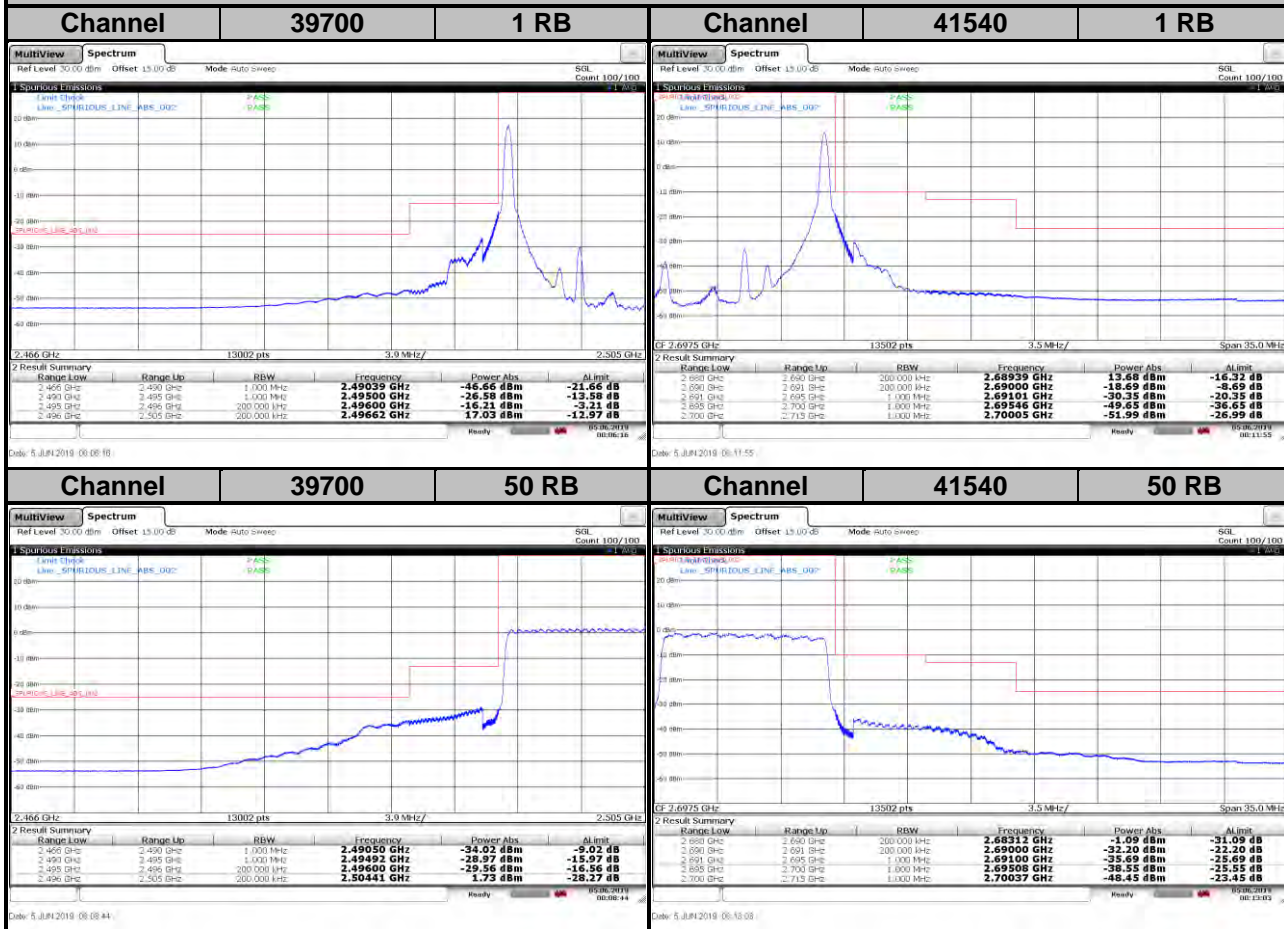
Channel Bandwidth: 5 MHz / 64QAM

<Out-of-Band Emissions>



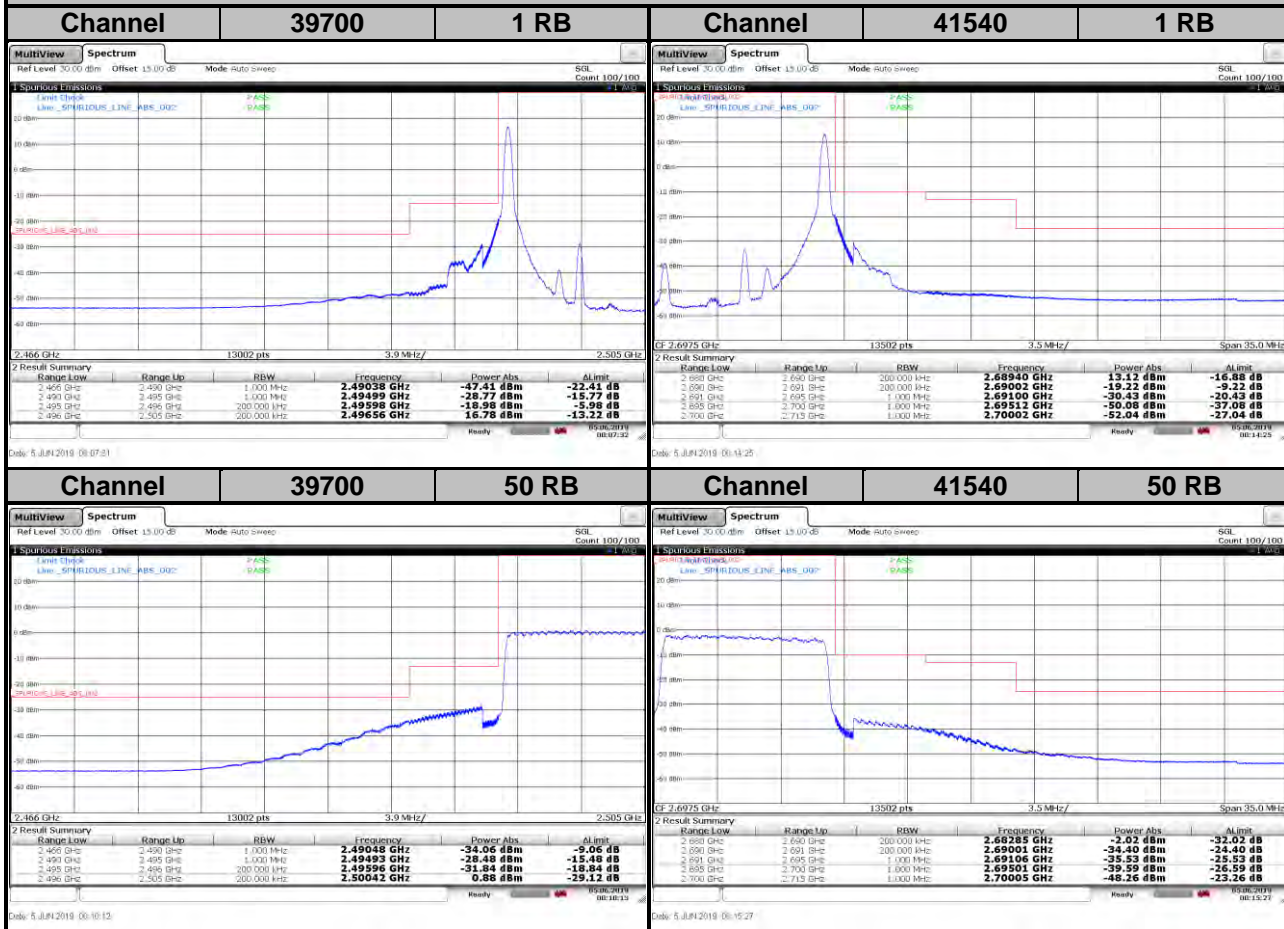
LTE Band 41
Channel Bandwidth: 10 MHz / QPSK

<Out-of-Band Emissions>



LTE Band 41
Channel Bandwidth: 10 MHz / 16QAM

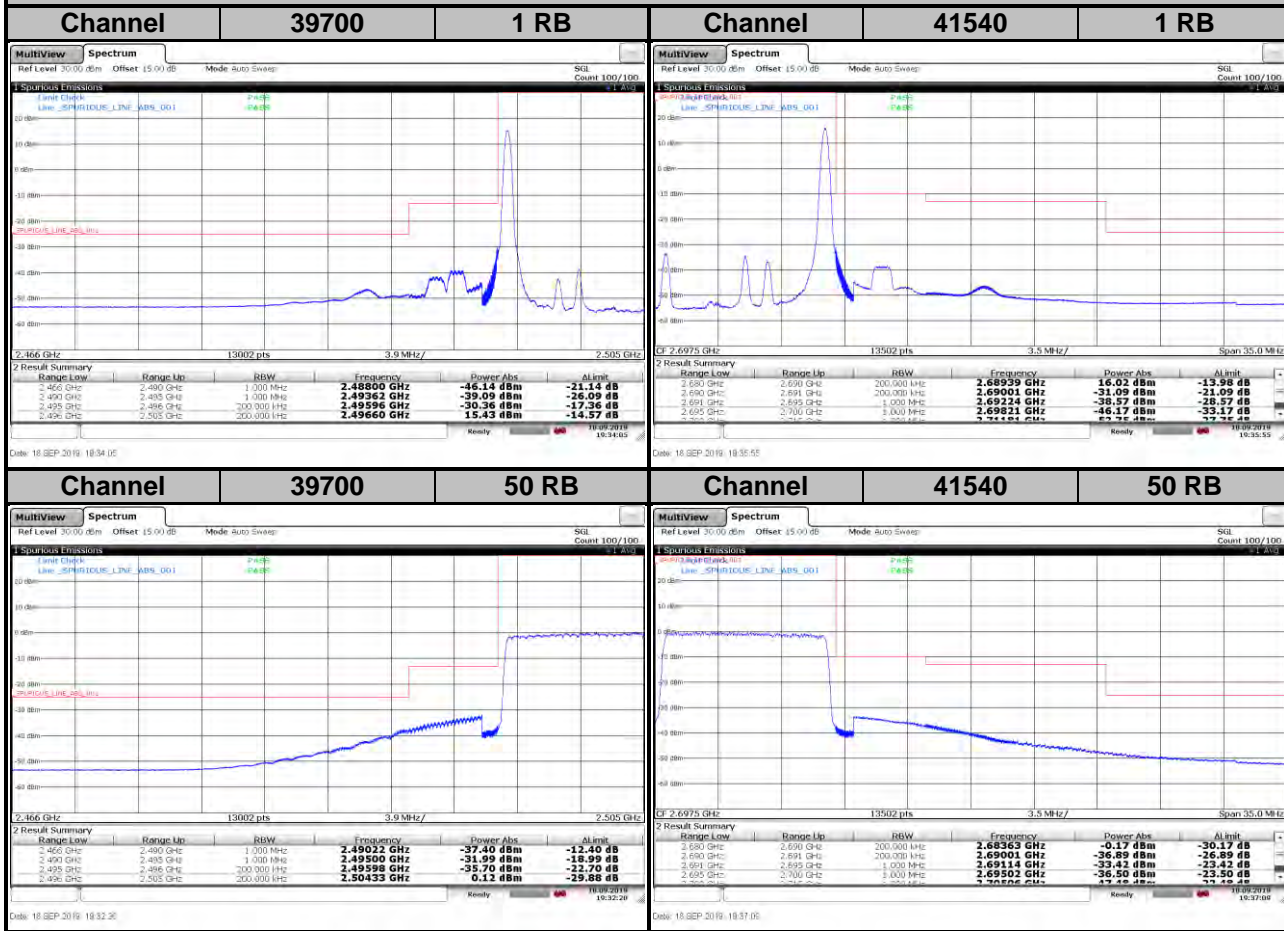
<Out-of-Band Emissions>



LTE Band 41

Channel Bandwidth: 10 MHz / 64QAM

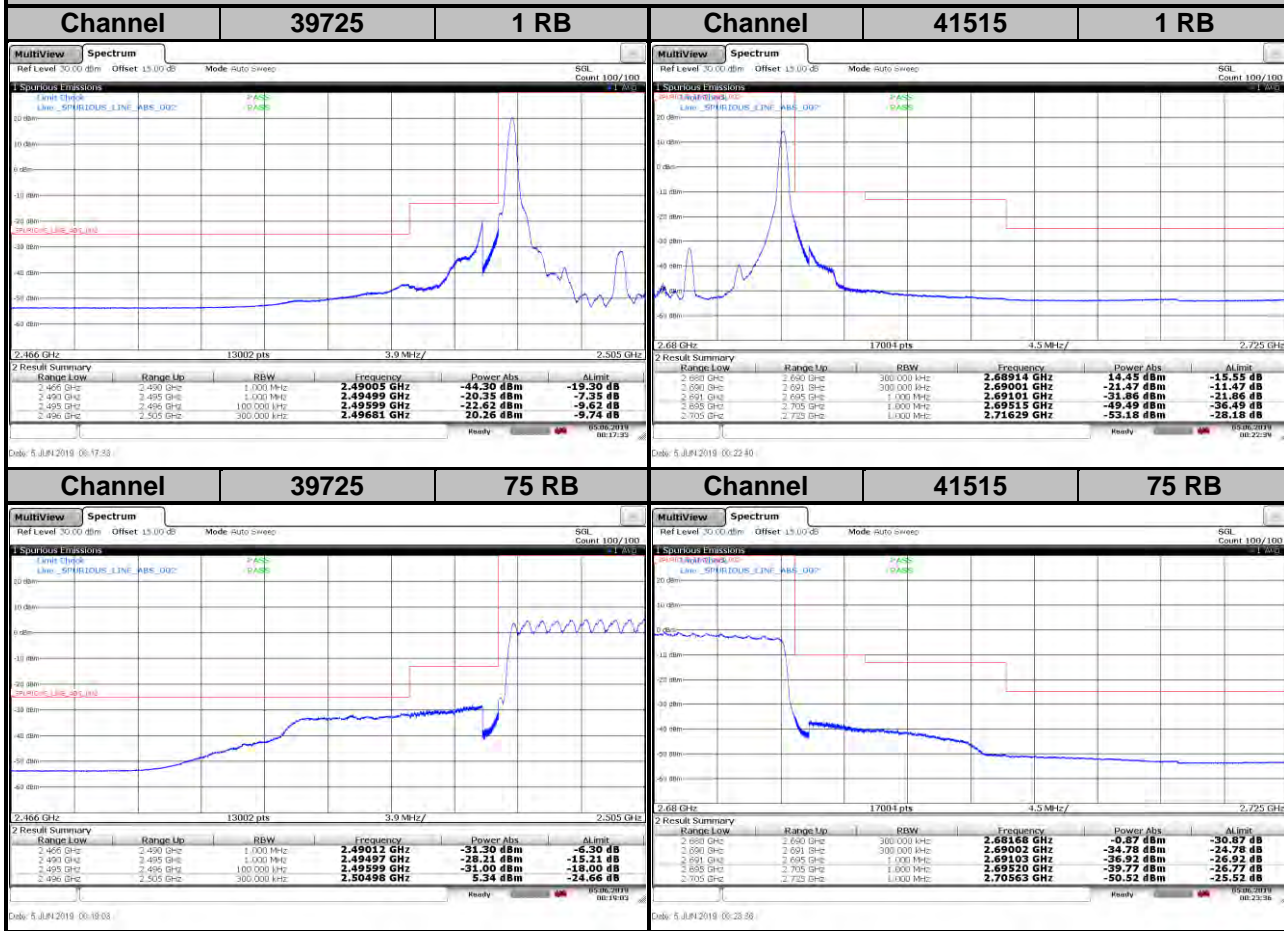
<Out-of-Band Emissions>



LTE Band 41

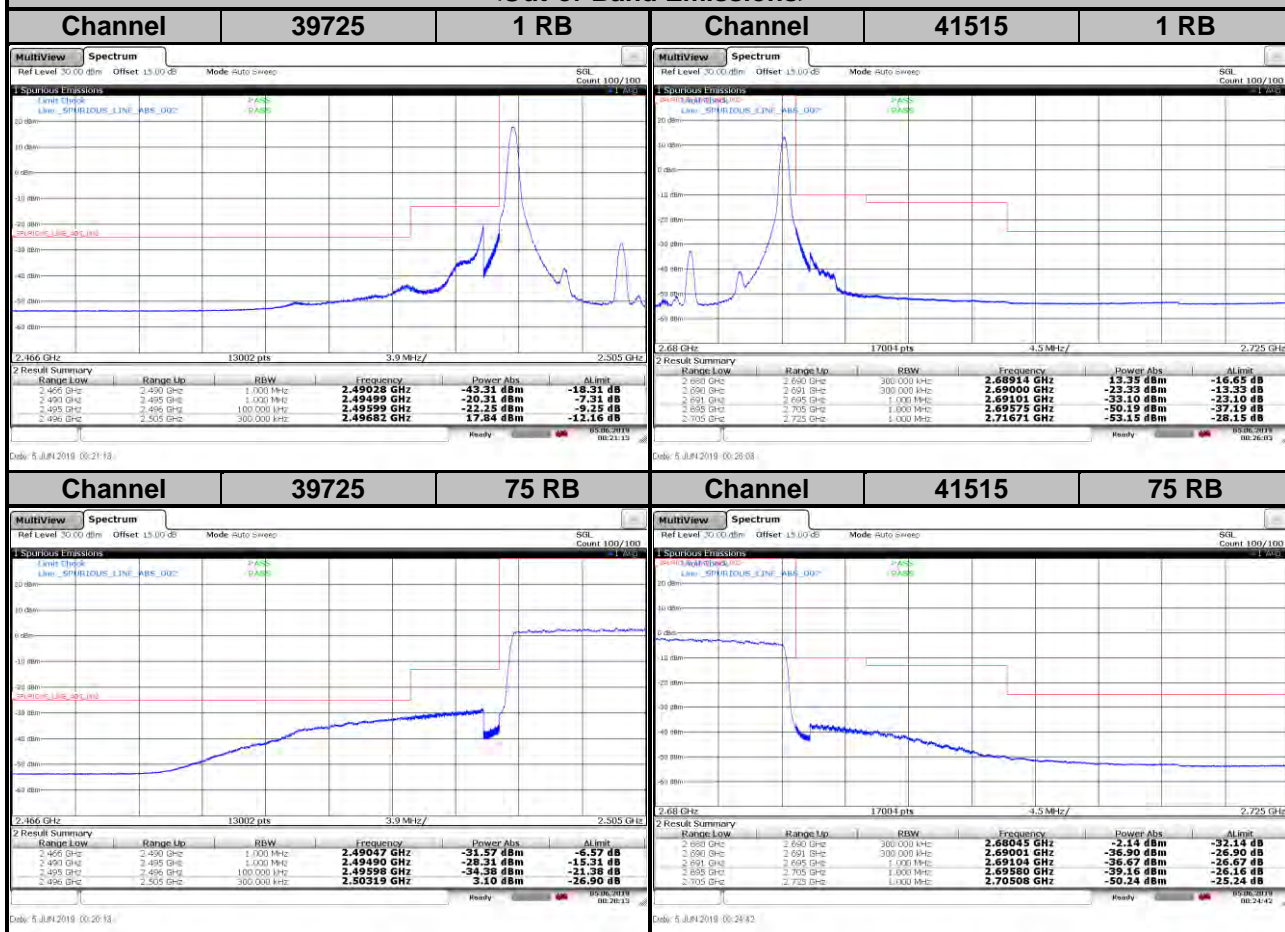
Channel Bandwidth: 15 MHz / QPSK

<Out-of-Band Emissions>



LTE Band 41
Channel Bandwidth: 15 MHz / 16QAM

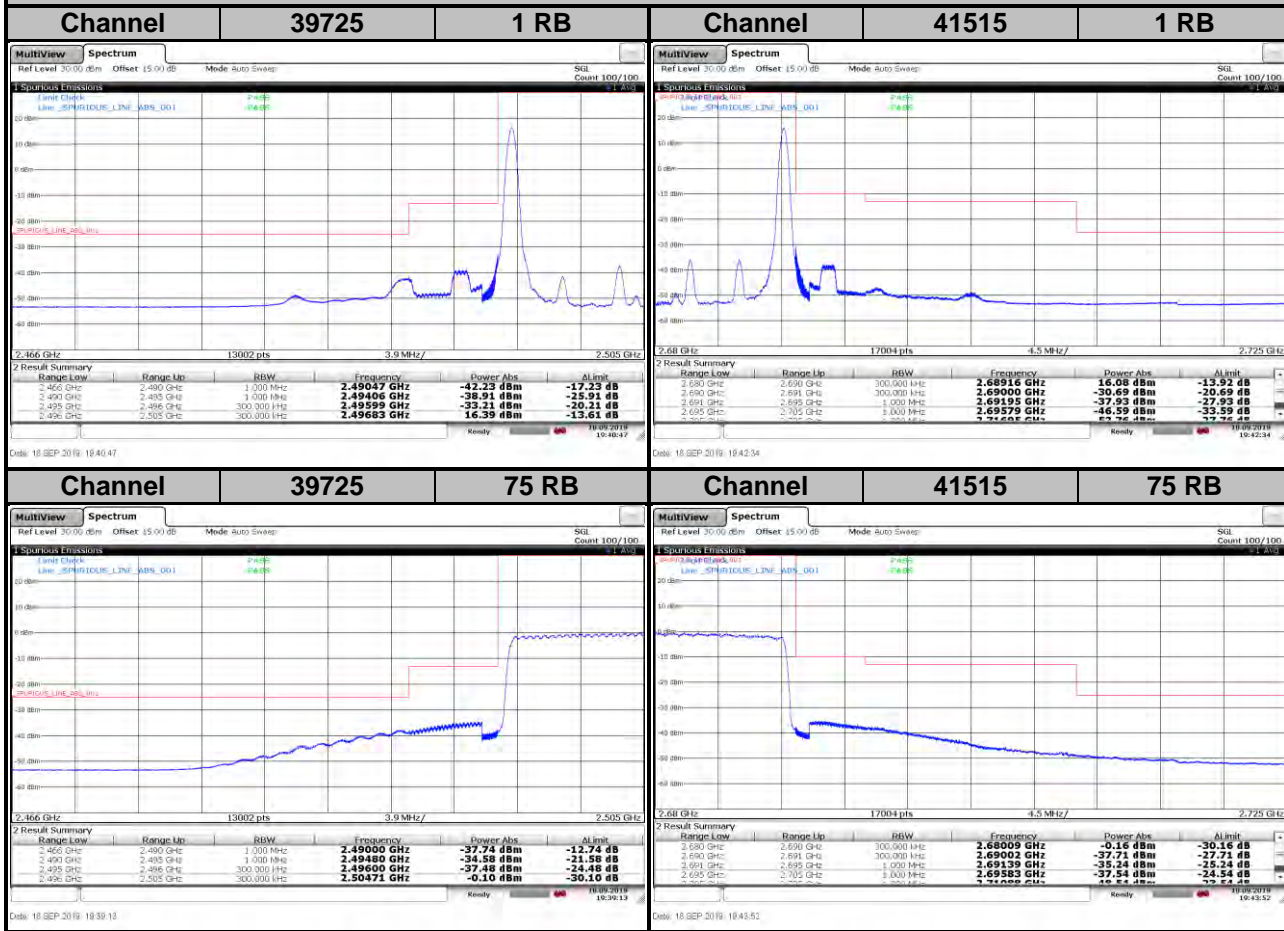
<Out-of-Band Emissions>



LTE Band 41

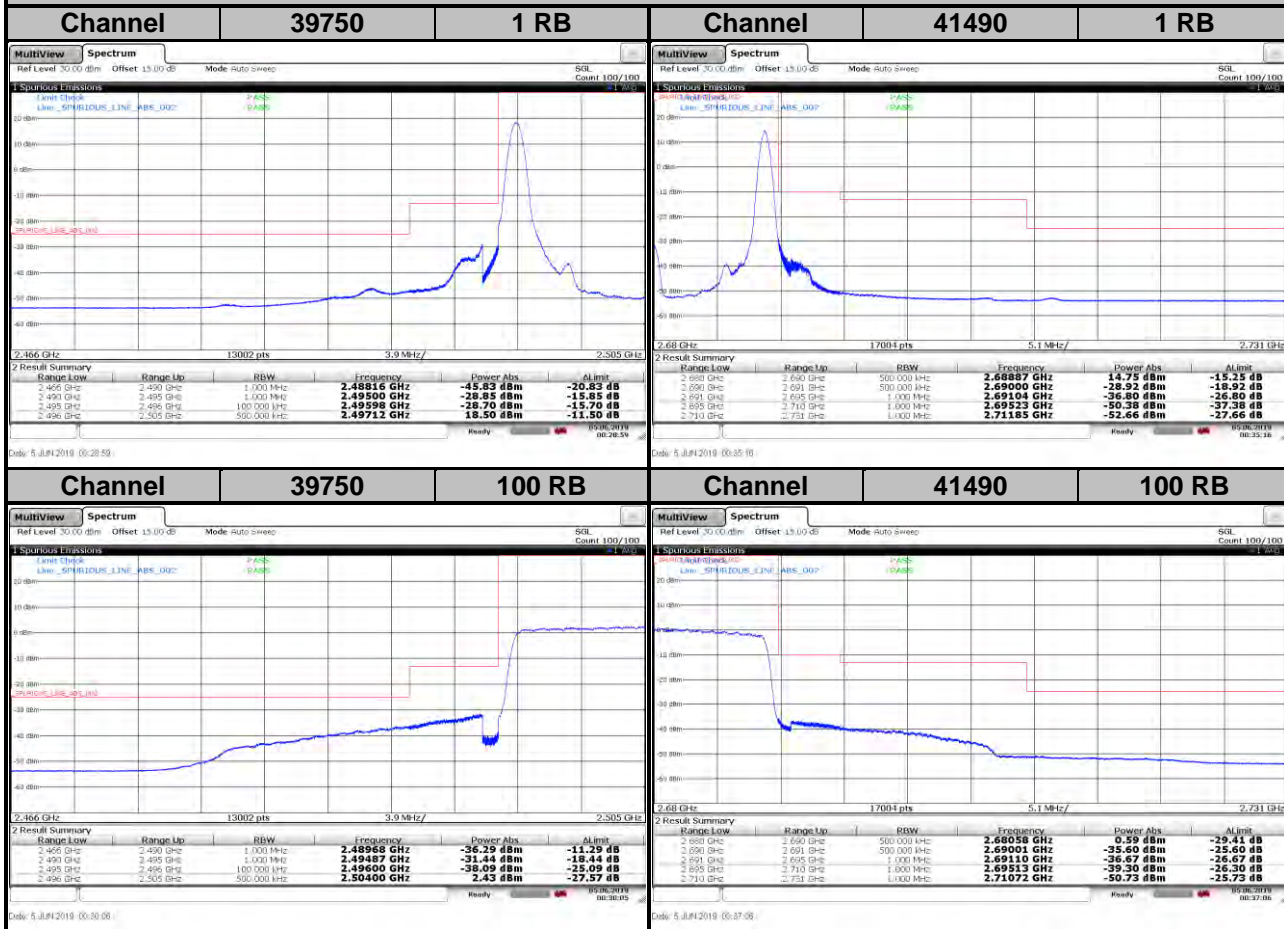
Channel Bandwidth: 15 MHz / 64QAM

<Out-of-Band Emissions>



LTE Band 41
Channel Bandwidth: 20 MHz / QPSK

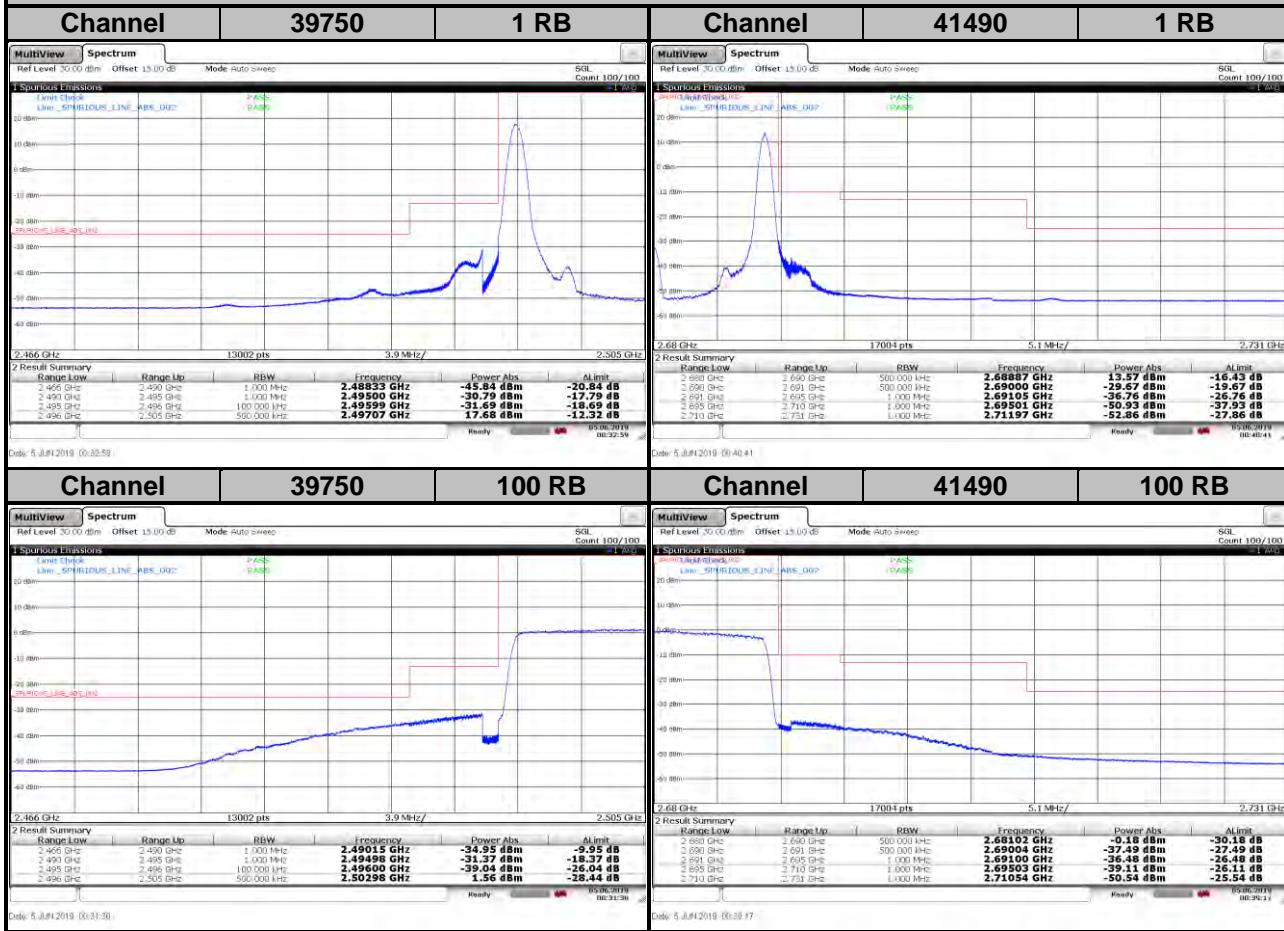
<Out-of-Band Emissions>



LTE Band 41

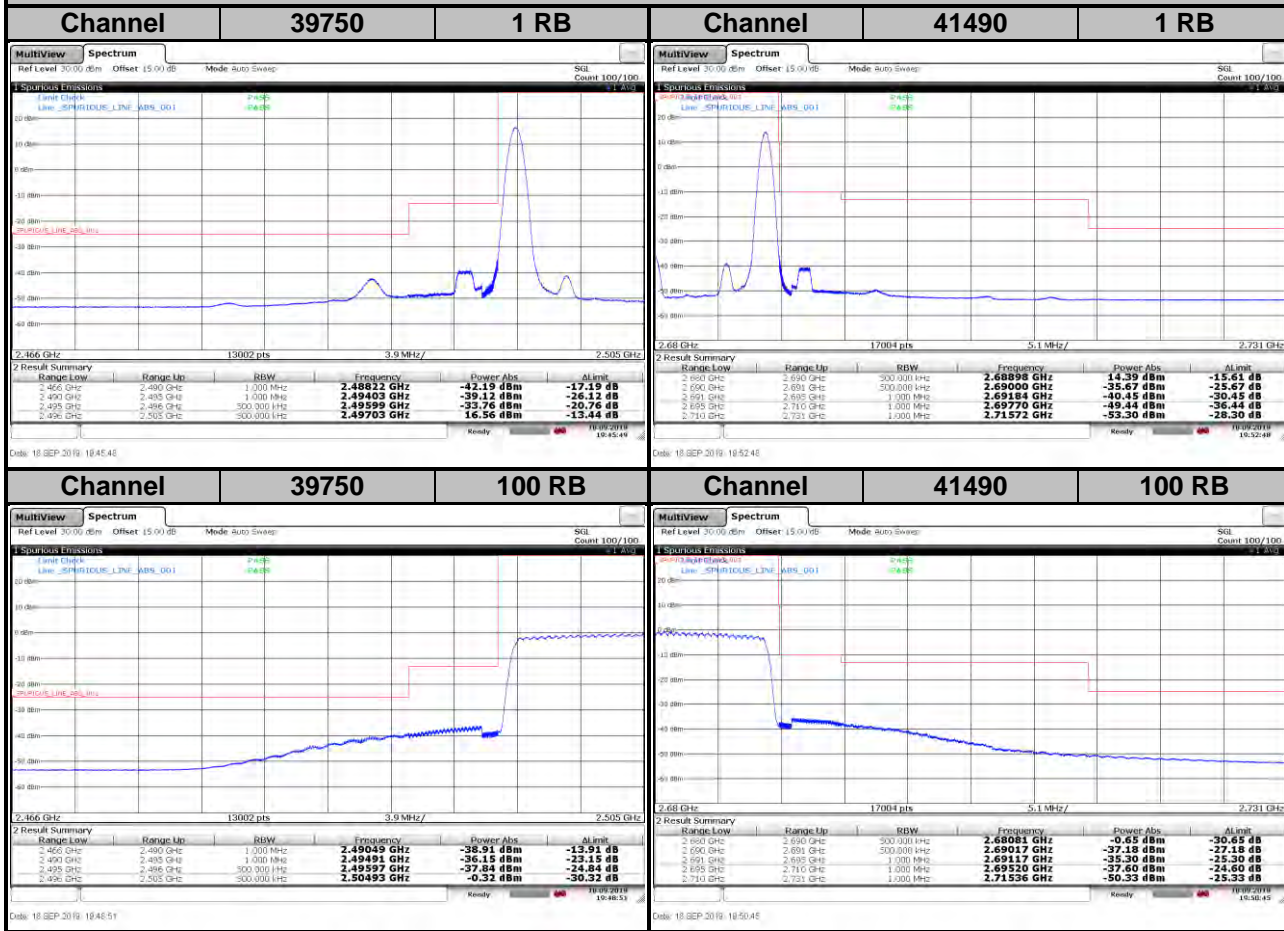
Channel Bandwidth: 20 MHz / 16QAM

<Out-of-Band Emissions>



LTE Band 41
Channel Bandwidth: 20 MHz / 64QAM

<Out-of-Band Emissions>

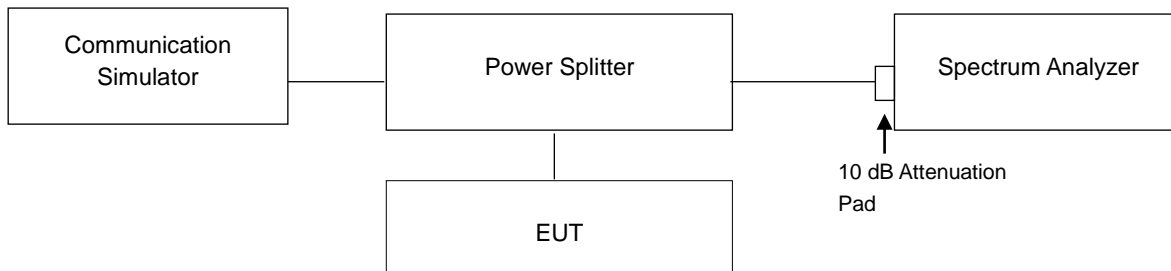


4.6 Peak to Average Ratio

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

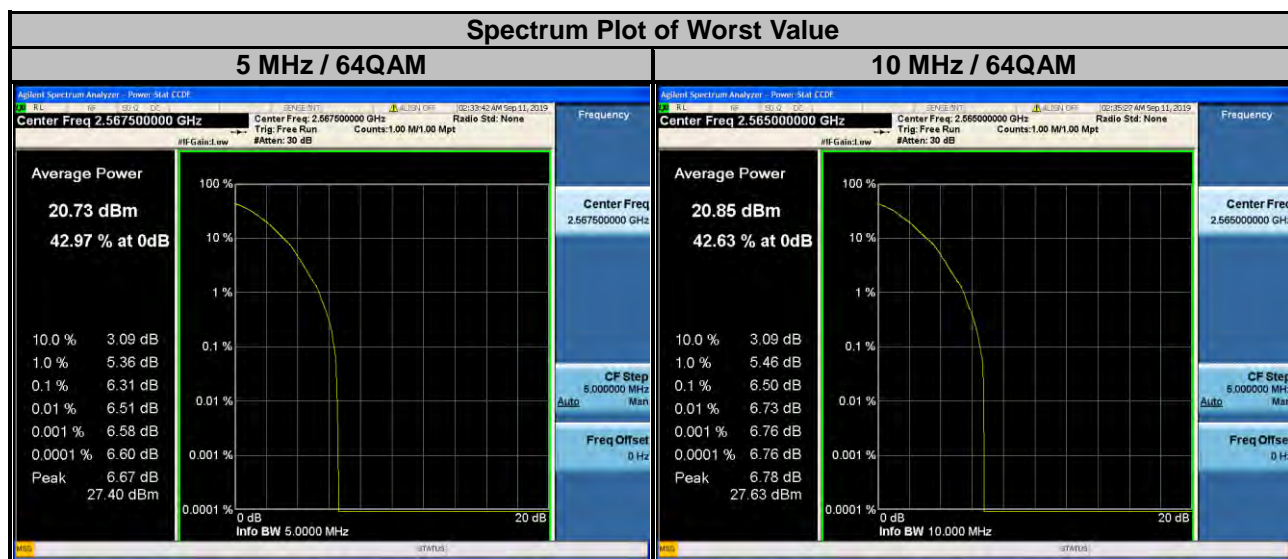


4.6.3 Test Procedures

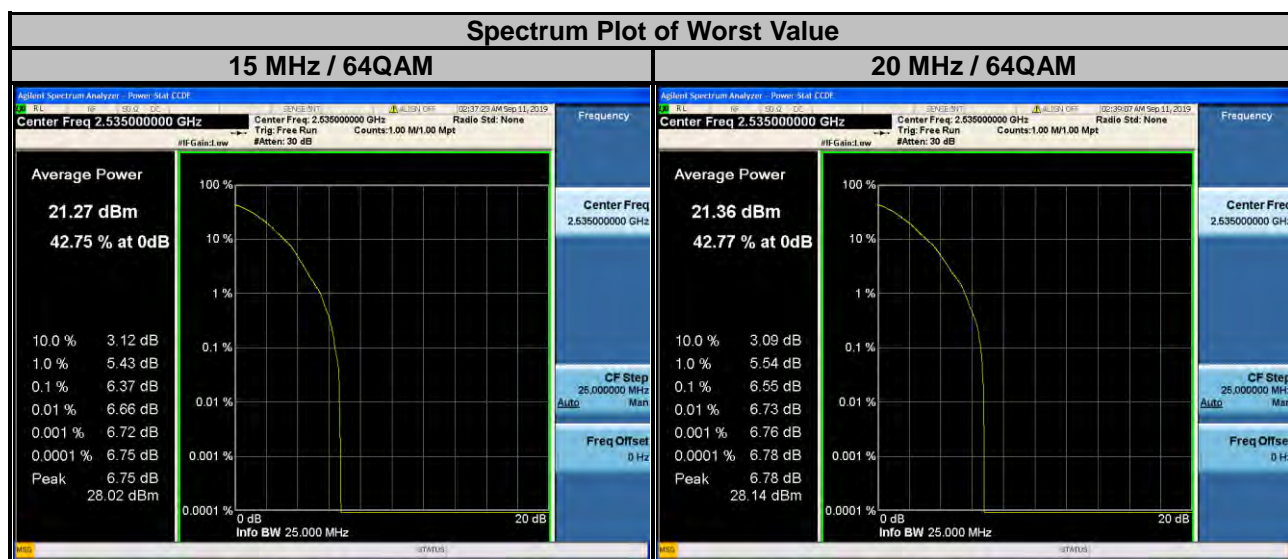
1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.6.4 Test Results

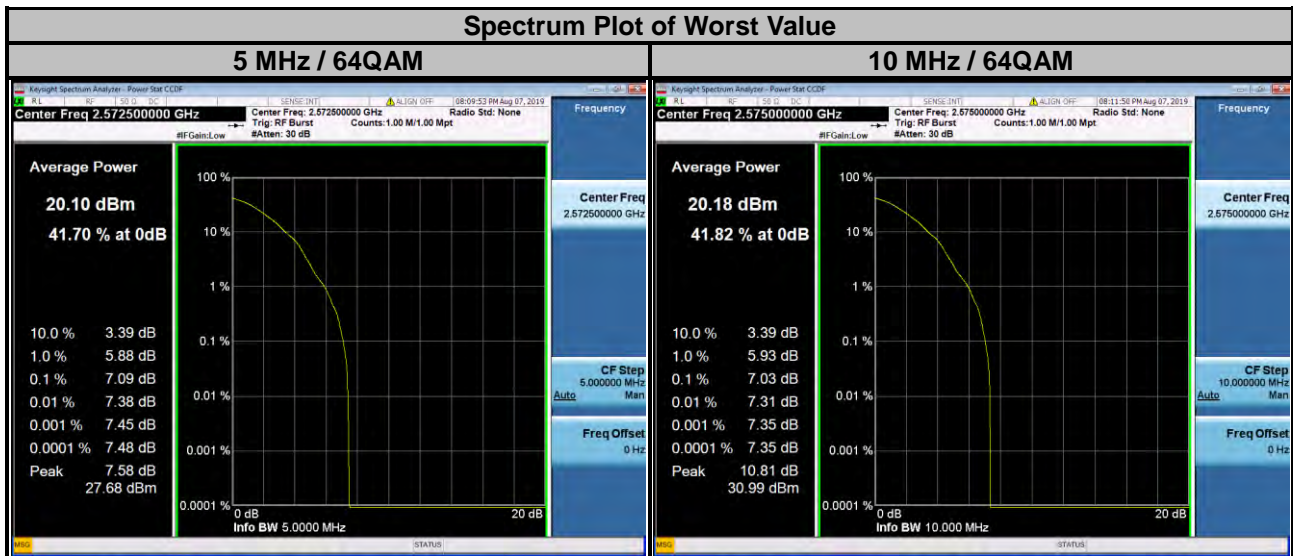
LTE Band 7									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20775	2502.5	2.25	3.31	5.47	20800	2505.0	2.35	3.35	5.37
21100	2535.0	2.11	3.25	5.99	21100	2535.0	2.21	3.74	6.33
21425	2567.5	2.42	3.75	6.31	21400	2565.0	2.73	4.11	6.50



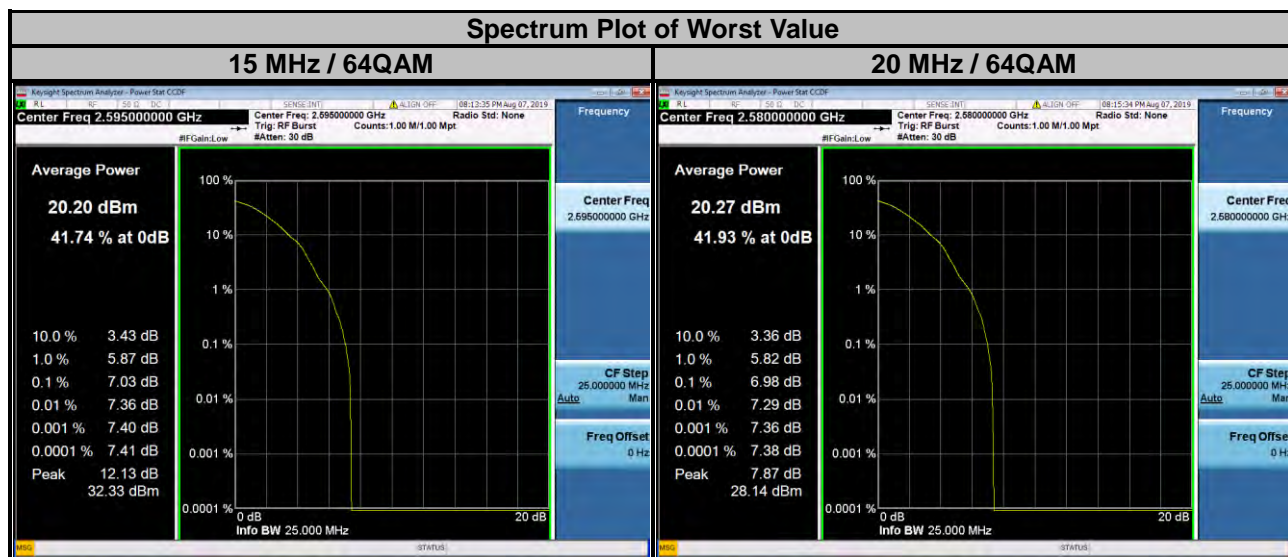
LTE Band 7									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20825	2507.5	2.36	3.38	5.19	20850	2510.0	2.43	3.46	5.23
21100	2535.0	2.56	3.90	6.37	21100	2535.0	2.80	4.31	6.55
21375	2562.5	2.55	3.82	6.12	21350	2560.0	2.40	3.47	5.60



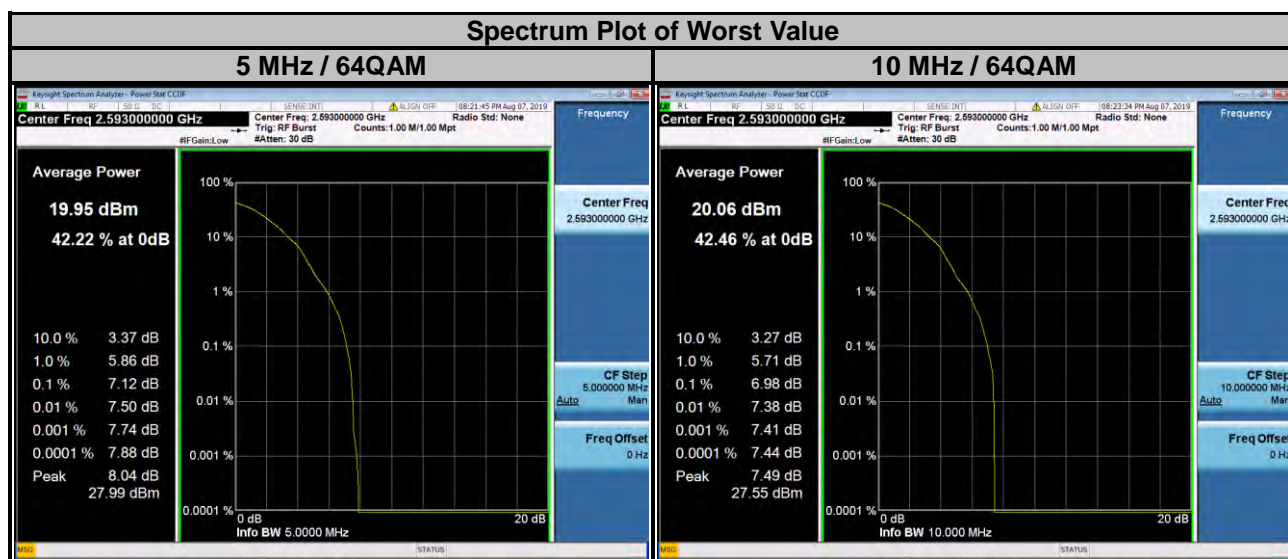
LTE Band 38									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37775	2572.5	4.89	5.98	7.09	37800	2575.0	3.67	6.01	7.03
38000	2595.0	3.88	6.29	6.99	38000	2595.0	3.66	6.18	6.93
38225	2617.5	4.11	6.28	6.93	38200	2615.0	3.69	6.33	6.68



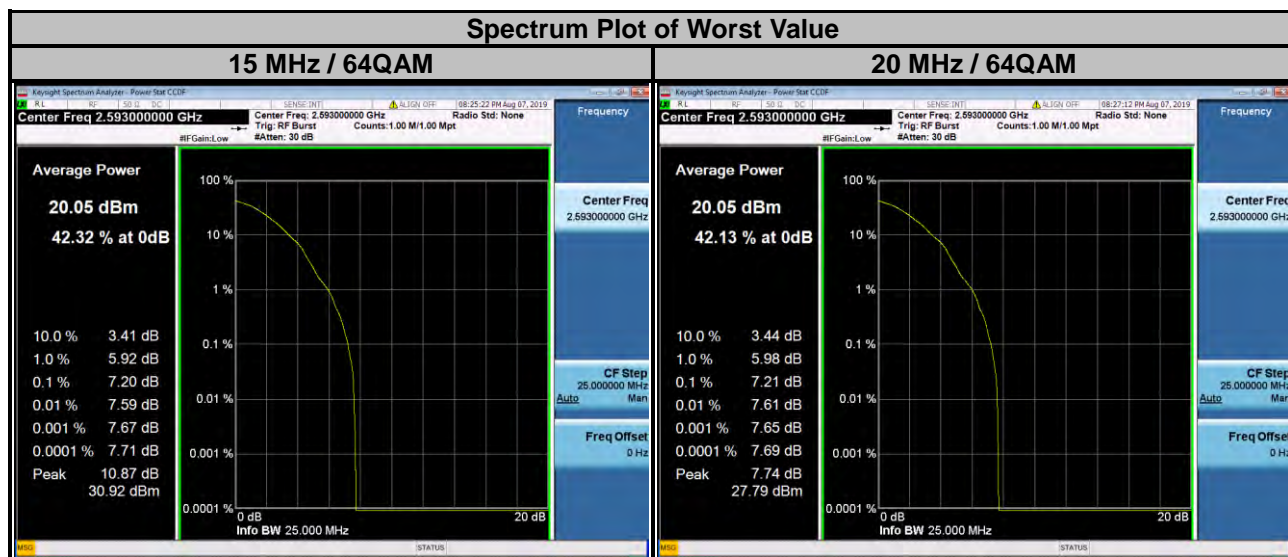
LTE Band 38									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
37825	2577.5	3.58	6.17	6.96	37850	2580.0	4.01	6.17	6.98
38000	2595.0	4.34	6.77	7.03	38000	2595.0	4.28	6.15	6.94
38175	2612.5	4.33	6.32	6.72	38150	2610.0	4.64	6.13	6.76



LTE Band 41									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39675	2498.5	3.48	4.90	6.56	39700	2501.0	3.36	4.95	6.56
40620	2593.0	4.03	6.41	7.12	40620	2593.0	3.66	6.26	6.98
41565	2687.5	3.88	6.03	6.72	41540	2685.0	4.63	6.00	6.85



LTE Band 41									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
39725	2503.5	3.28	5.15	7.11	39750	2506.0	3.35	5.35	6.62
40620	2593.0	3.99	5.90	7.20	40620	2593.0	4.56	6.15	7.21
41515	2682.5	4.28	5.95	6.75	41490	2680.0	4.48	6.05	7.11

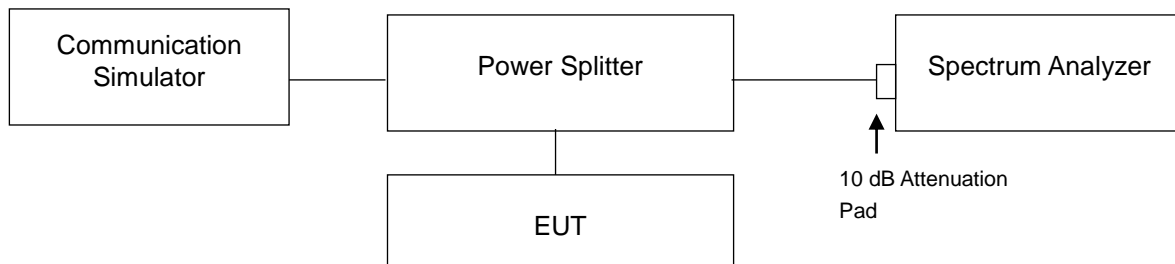


4.7 Conducted Spurious Emissions

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.

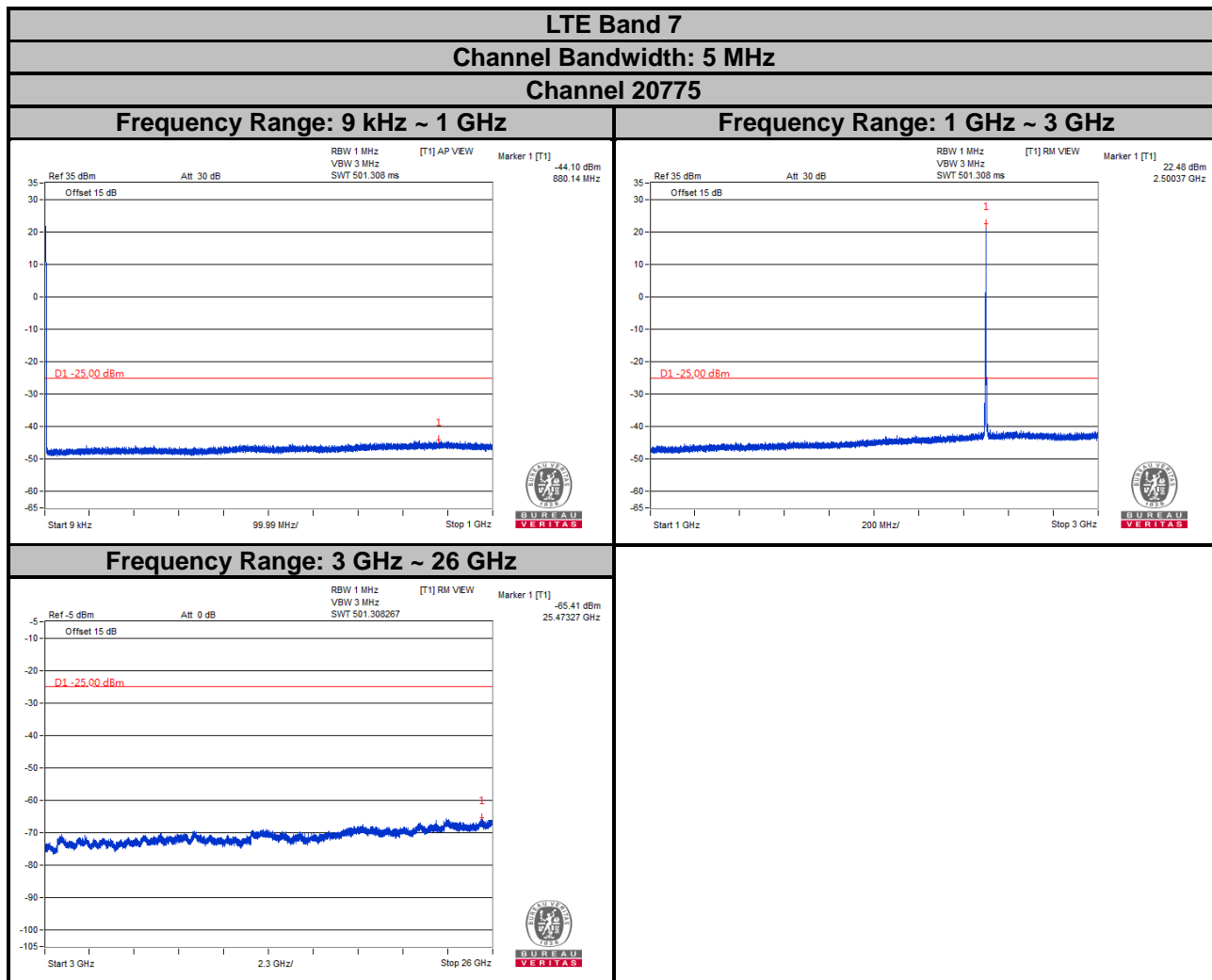
4.7.2 Test Setup



4.7.3 Test Procedure

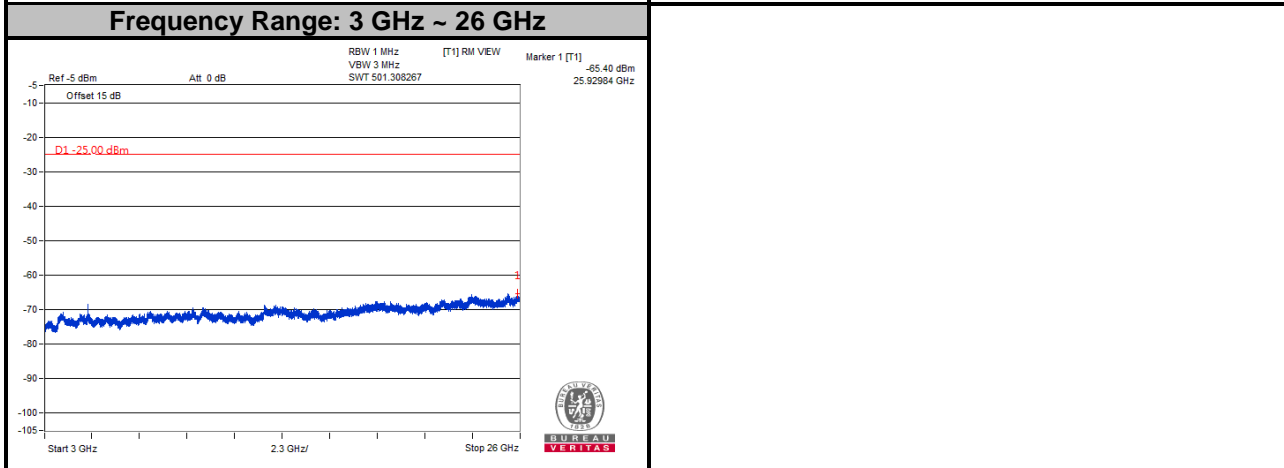
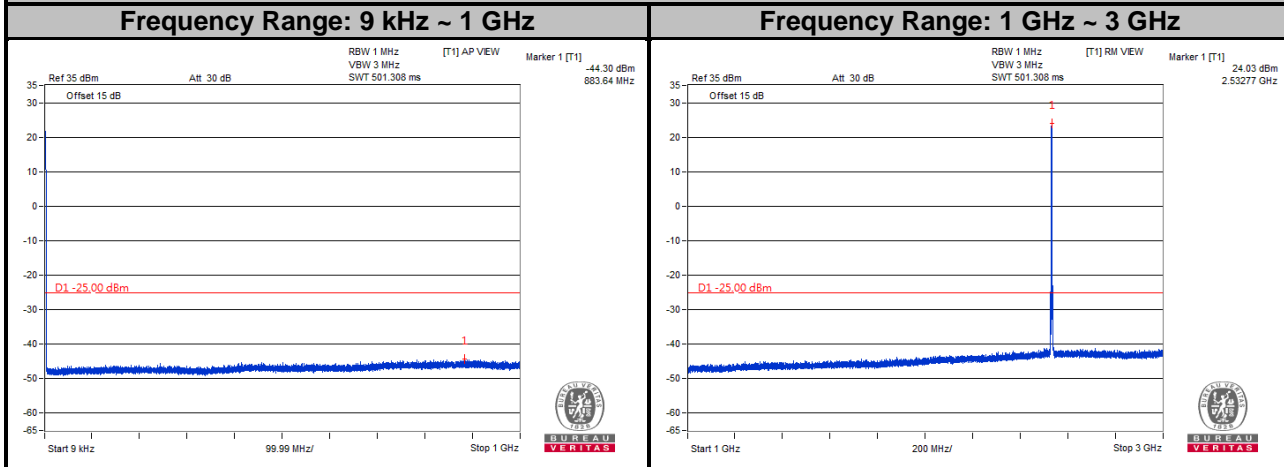
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 KHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 300 KHz or 1 MHz and VBW = 1 MHz or 3 MHz are used for conducted emission measurement.
- Measuring frequency range is from 1 GHz to 26 GHz or 27 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.
- Spectrum RBW settings are referenced to ANSI C63.26 section 5.7.2.

4.7.4 Test Results



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

LTE Band 7
Channel Bandwidth: 5 MHz
Channel 21100



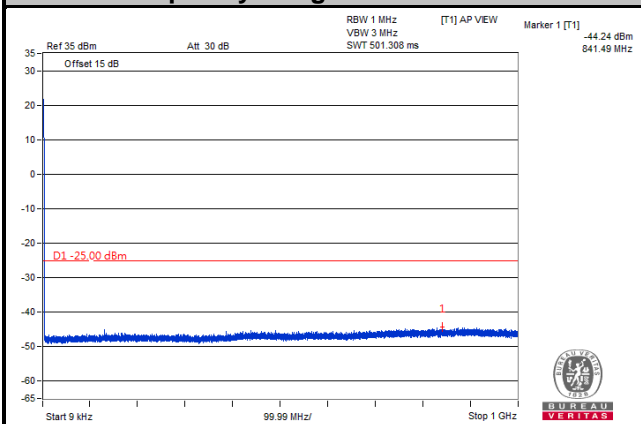
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7

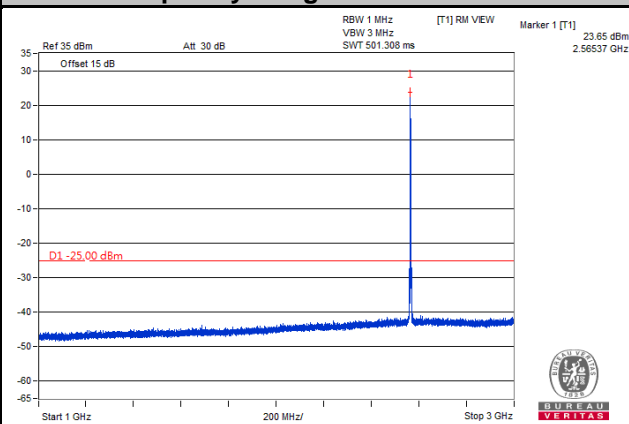
Channel Bandwidth: 5 MHz

Channel 21425

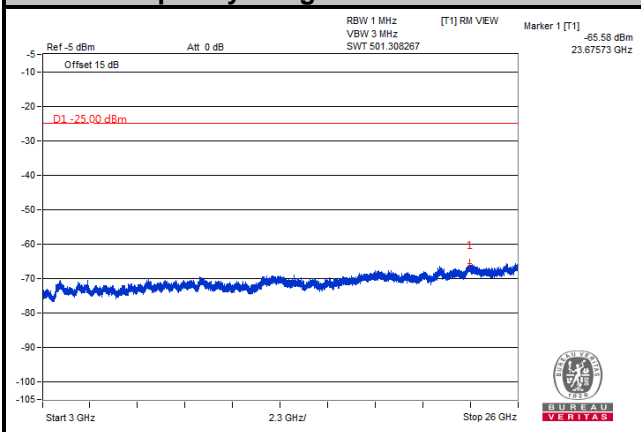
Frequency Range: 9 kHz ~ 1 GHz



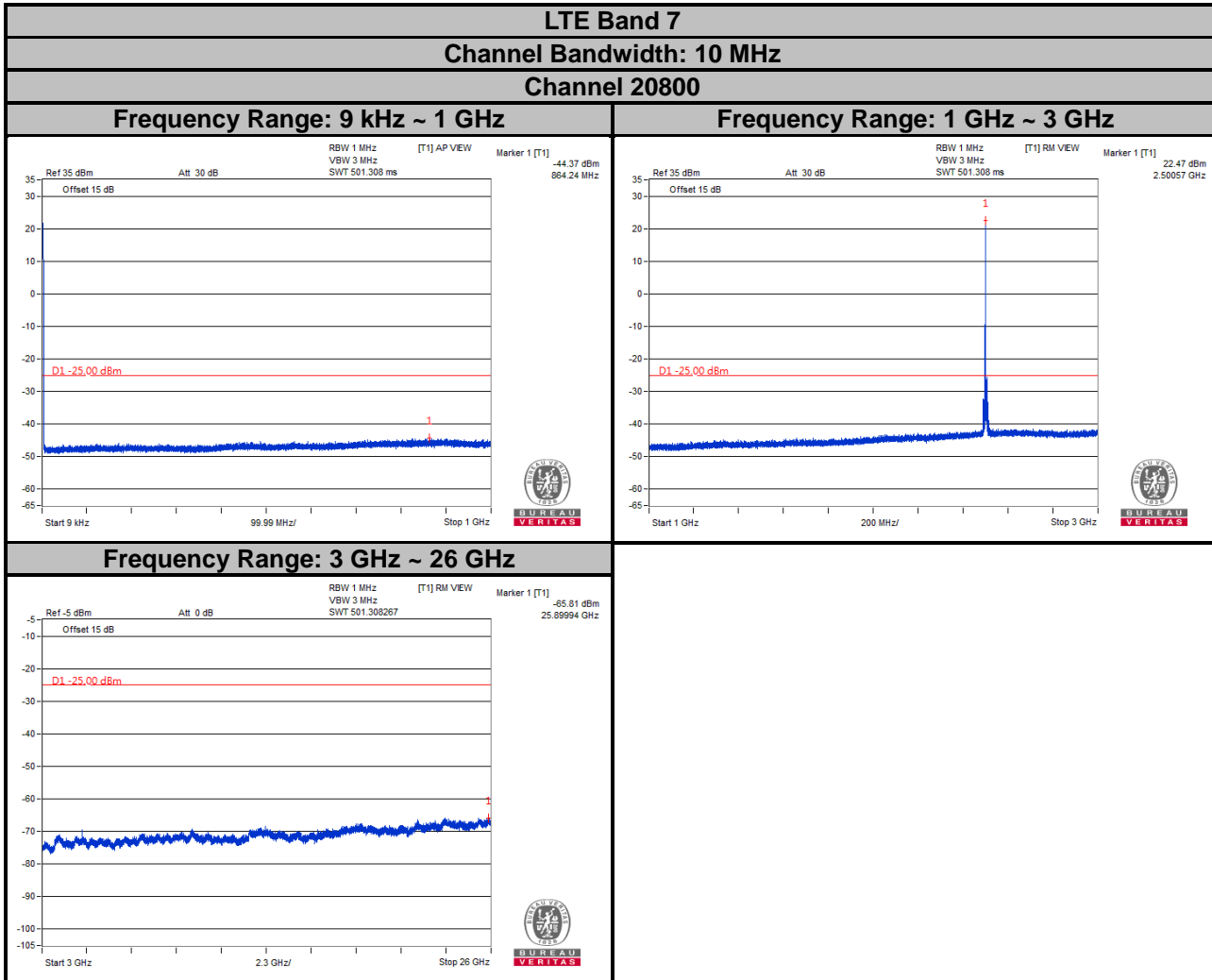
Frequency Range: 1 GHz ~ 3 GHz



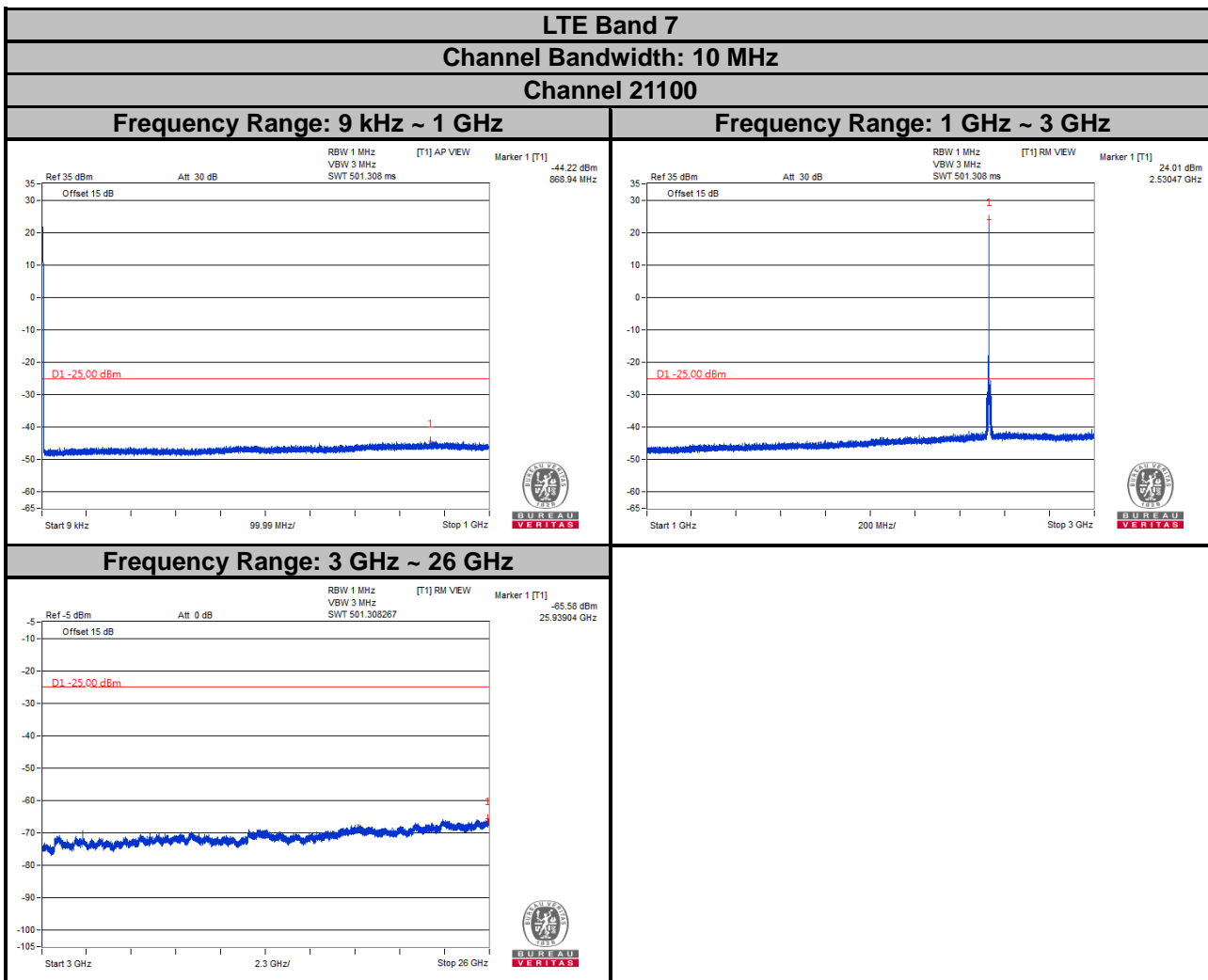
Frequency Range: 3 GHz ~ 26 GHz



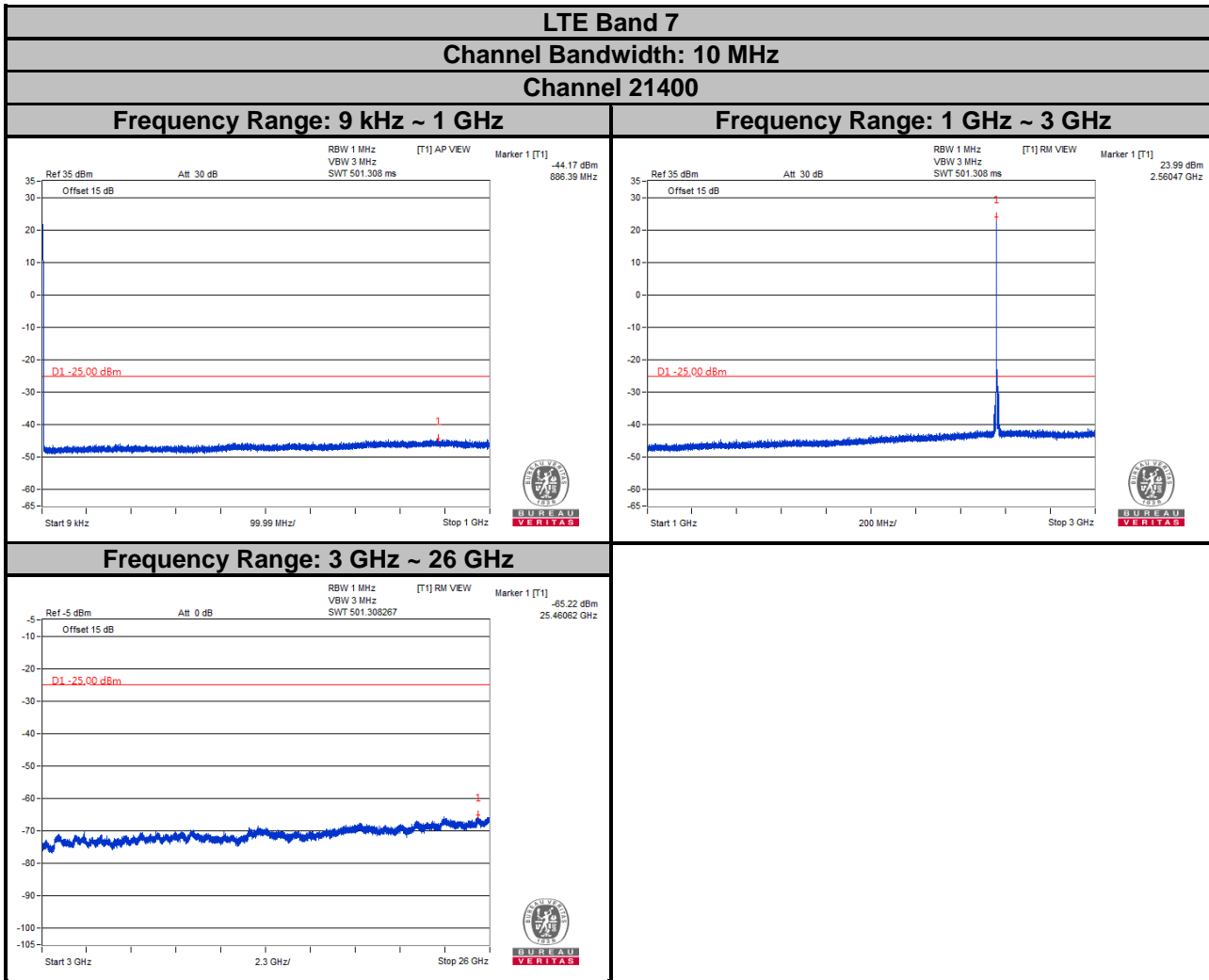
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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



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



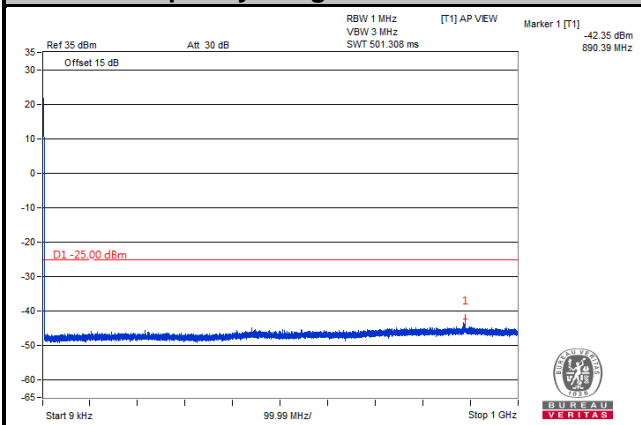
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 7

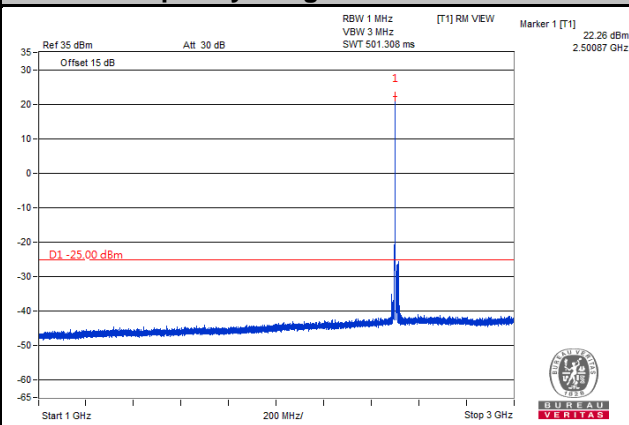
Channel Bandwidth: 15 MHz

Channel 20825

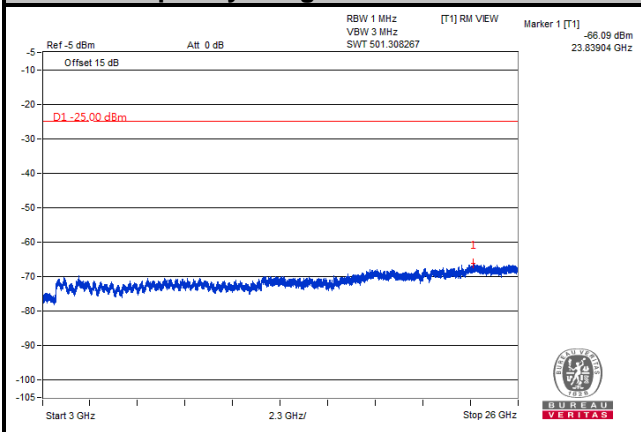
Frequency Range: 9 kHz ~ 1 GHz



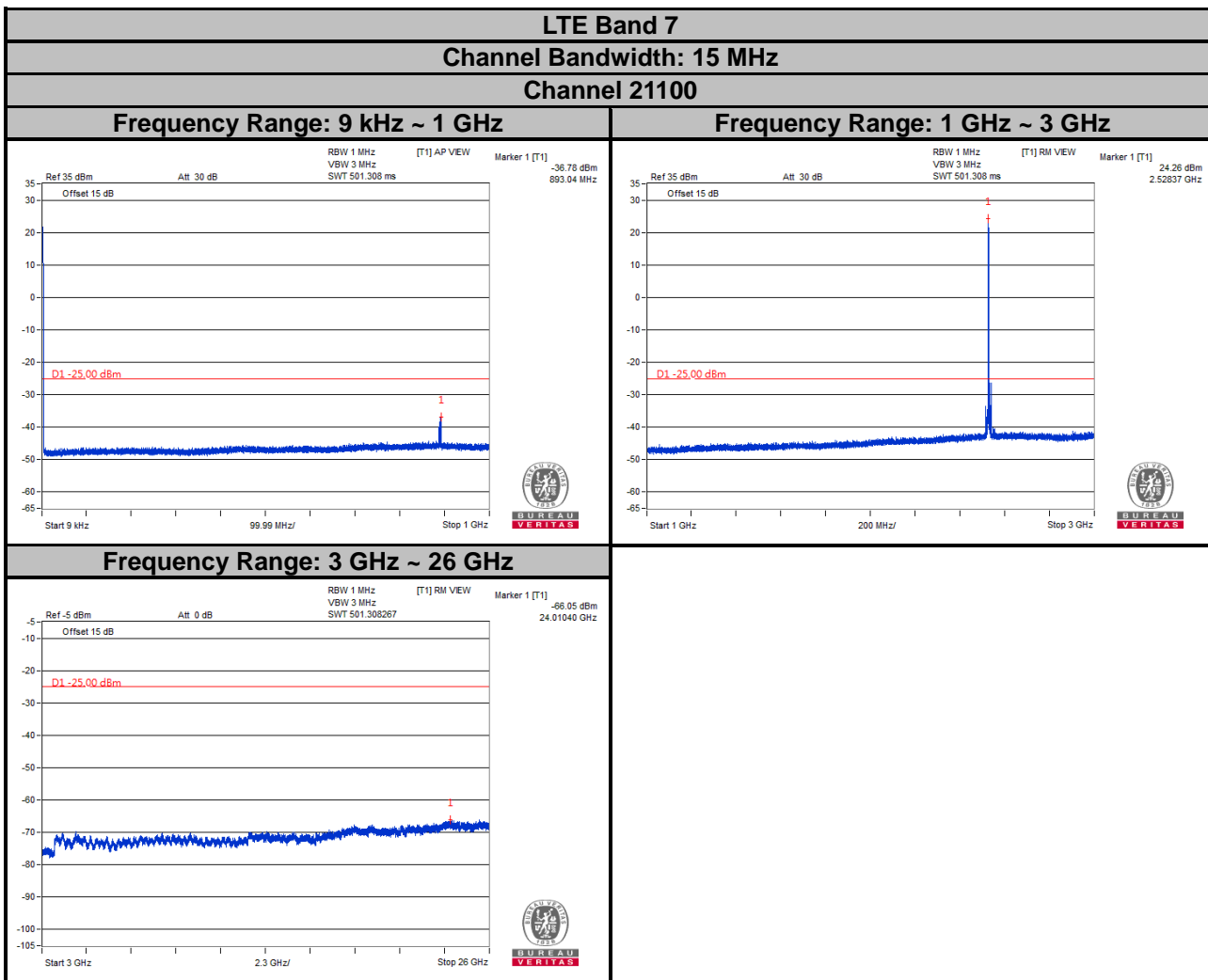
Frequency Range: 1 GHz ~ 3 GHz



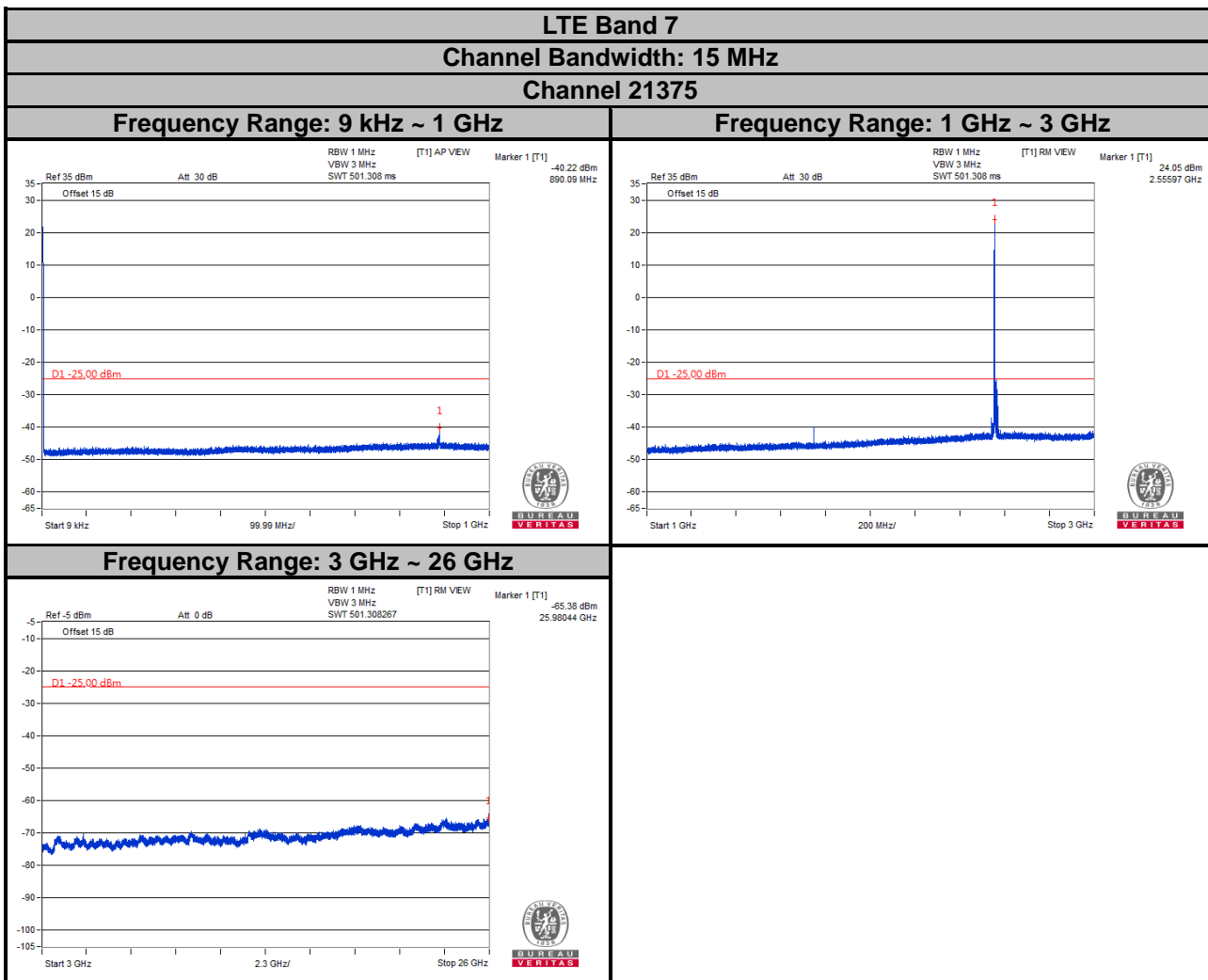
Frequency Range: 3 GHz ~ 26 GHz



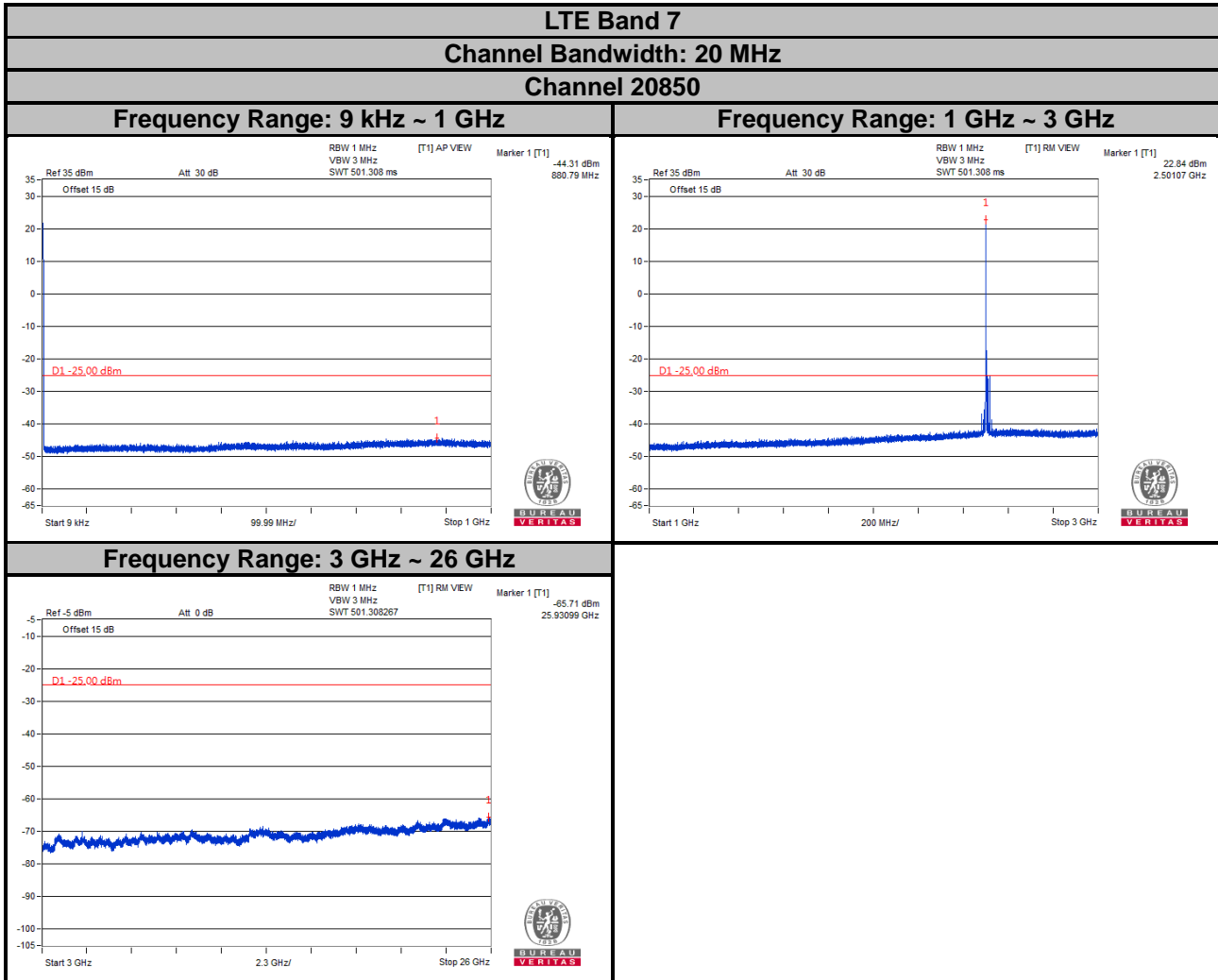
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



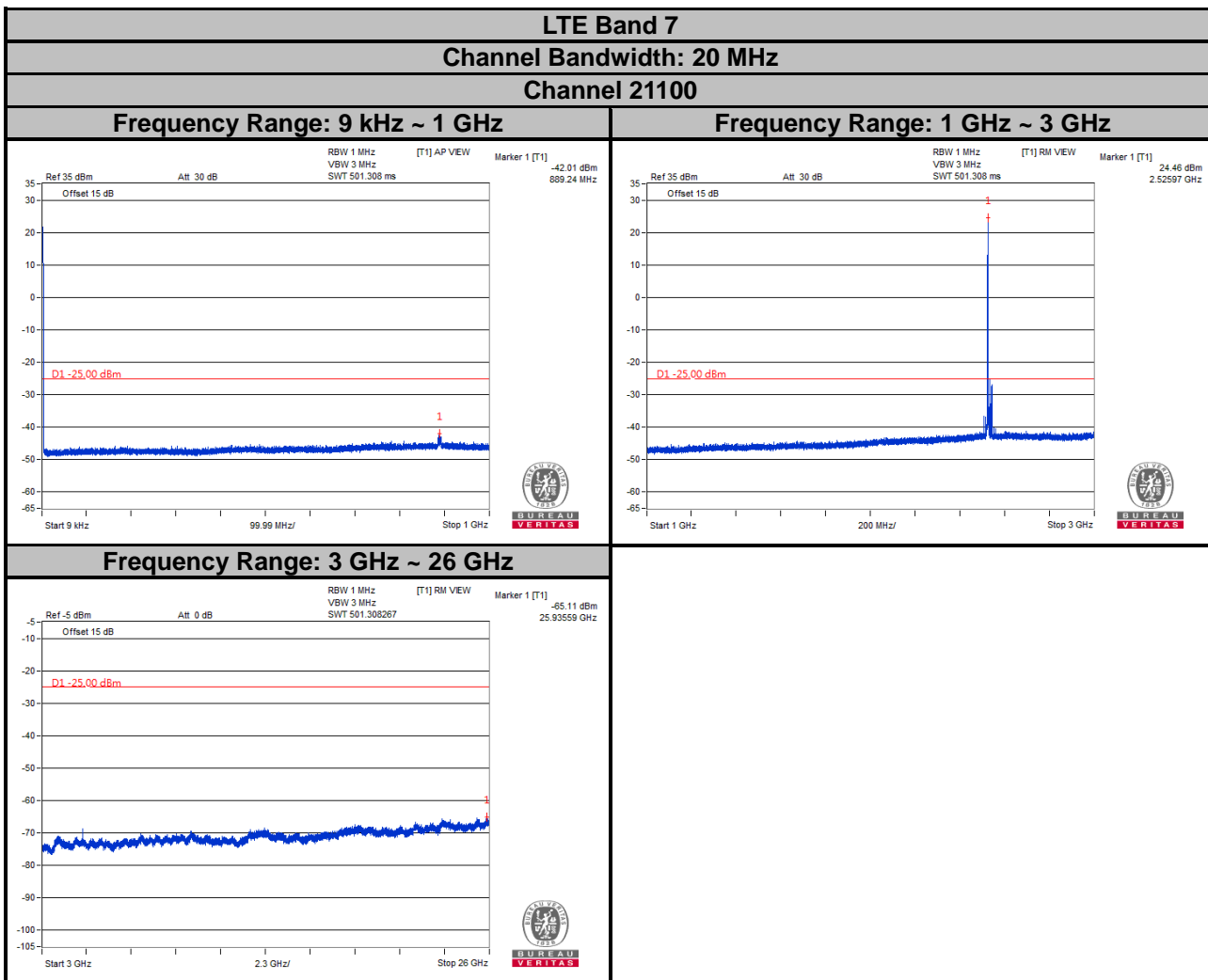
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



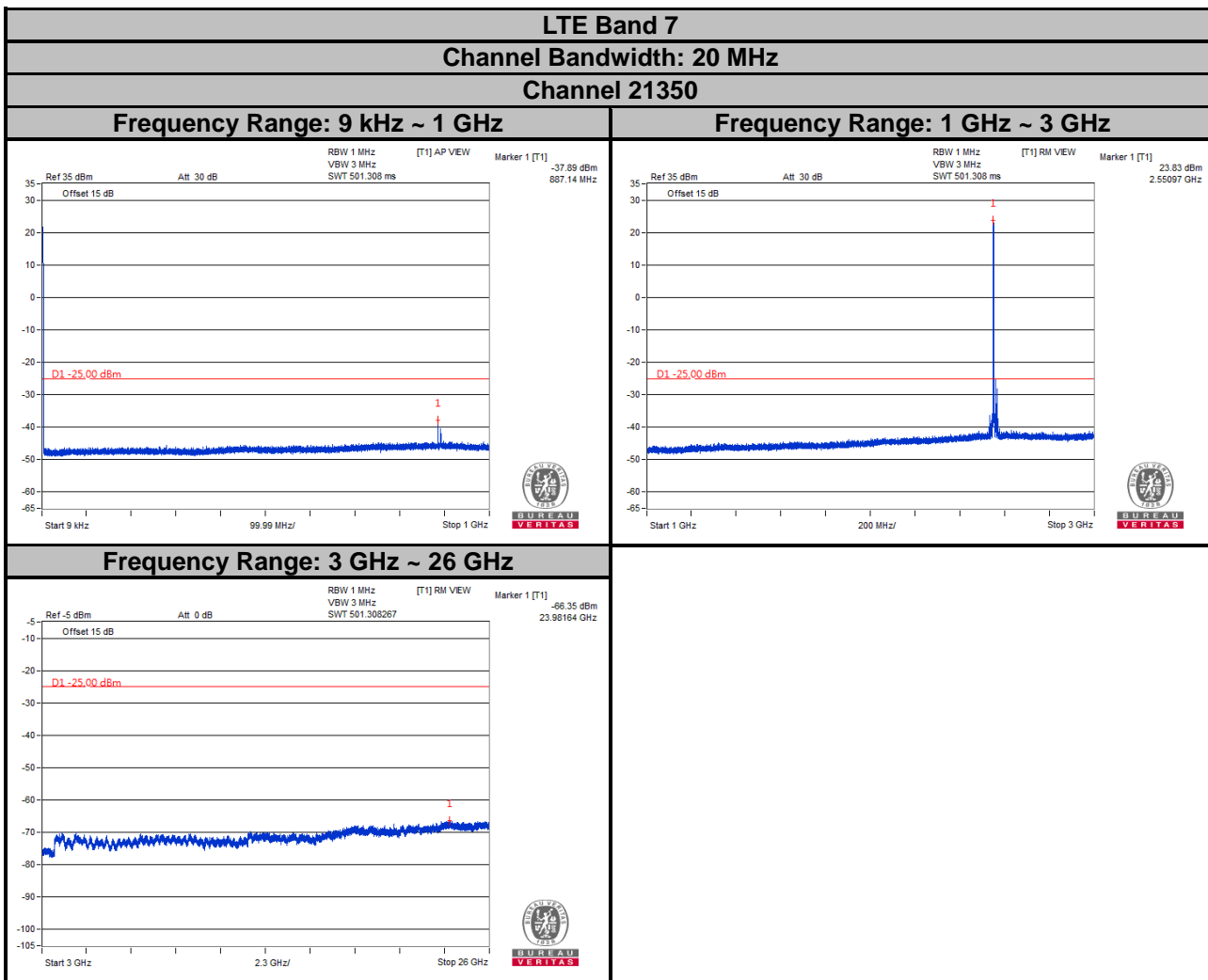
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



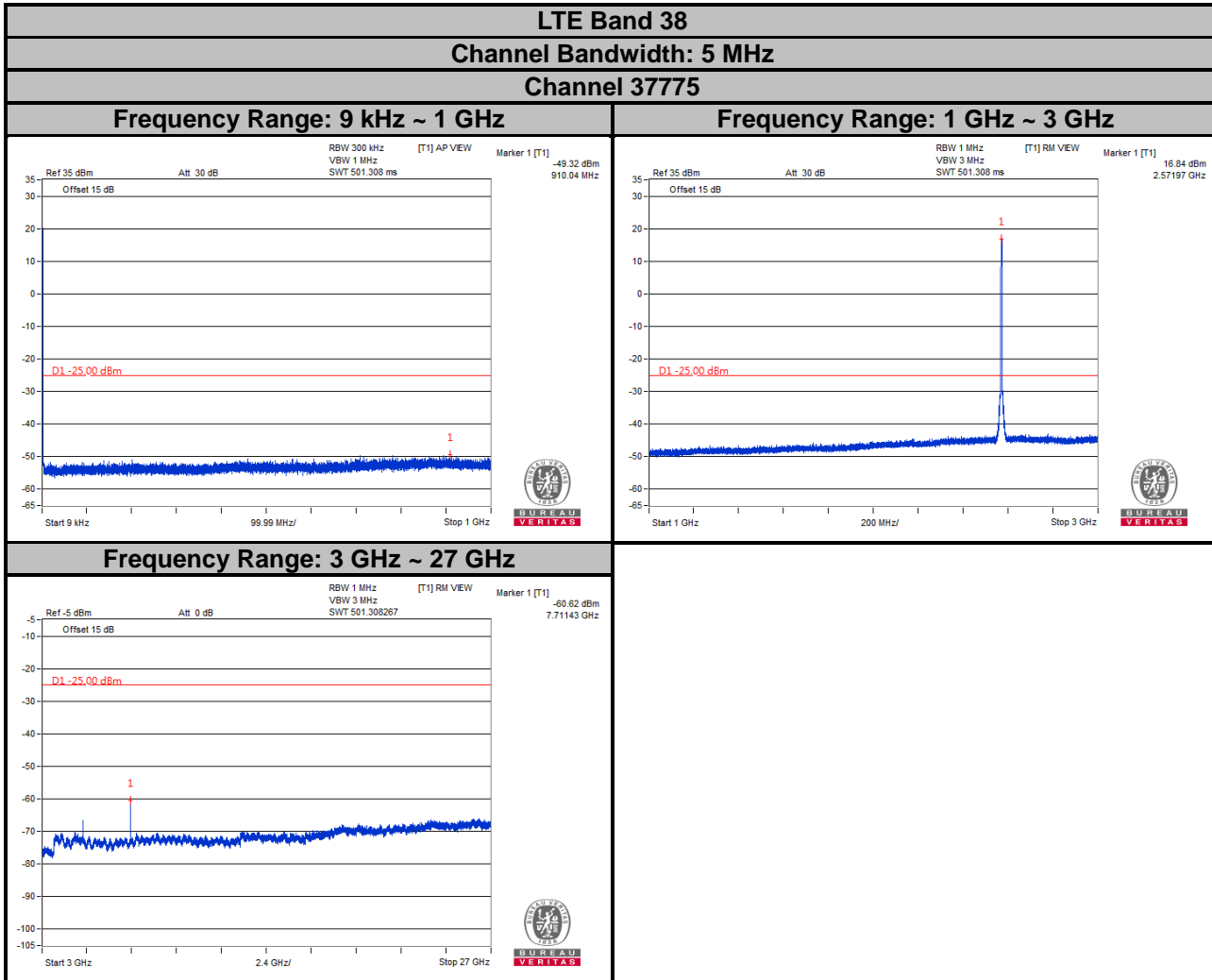
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



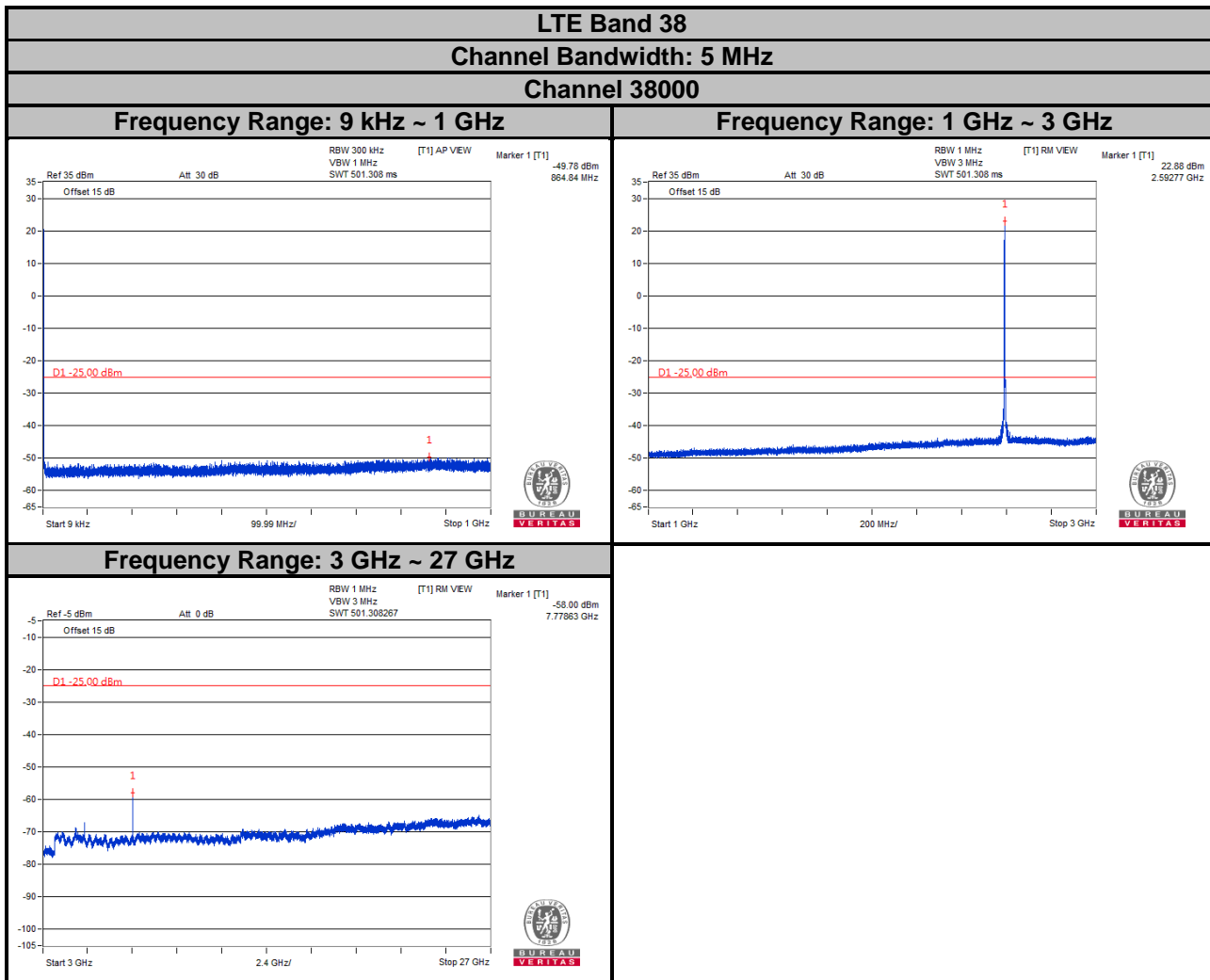
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



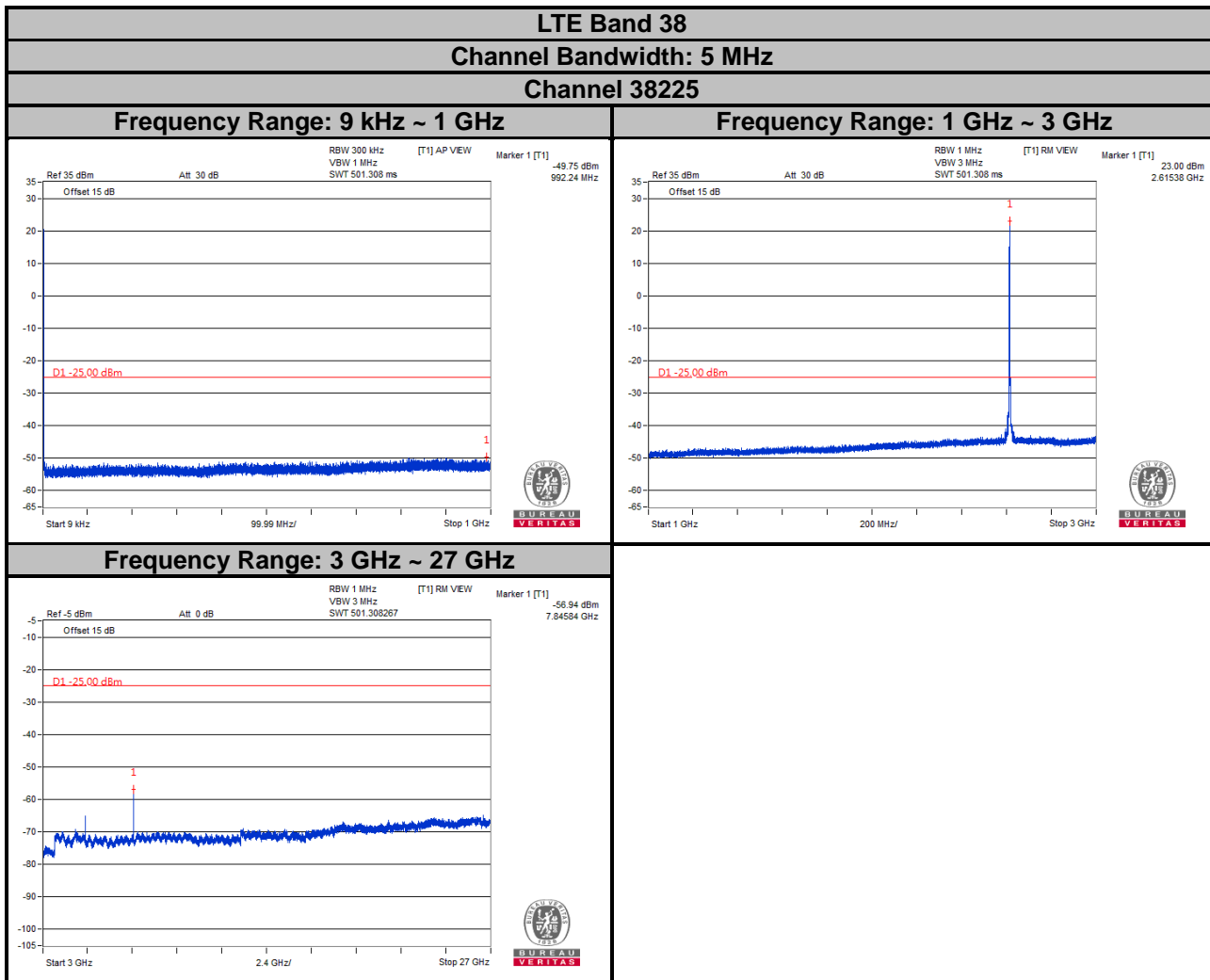
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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



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



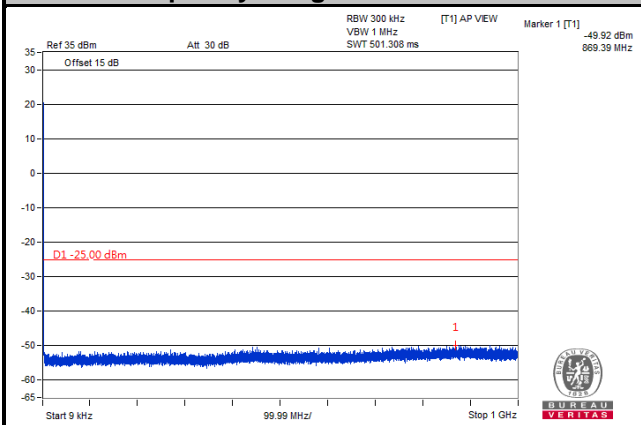
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38

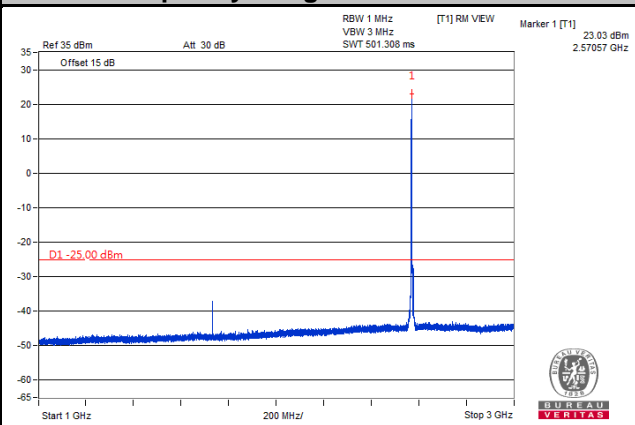
Channel Bandwidth: 10 MHz

Channel 37800

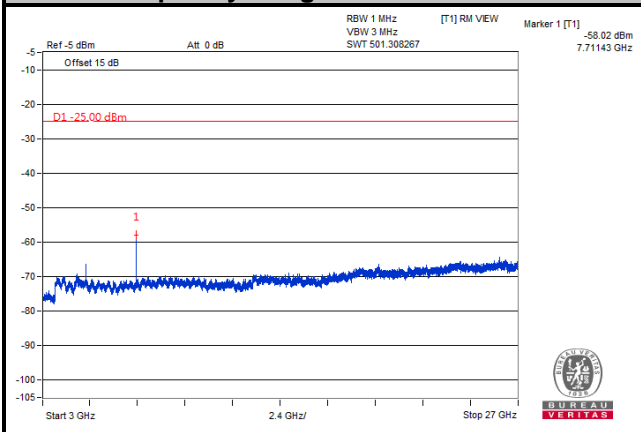
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 3 GHz



Frequency Range: 3 GHz ~ 27 GHz



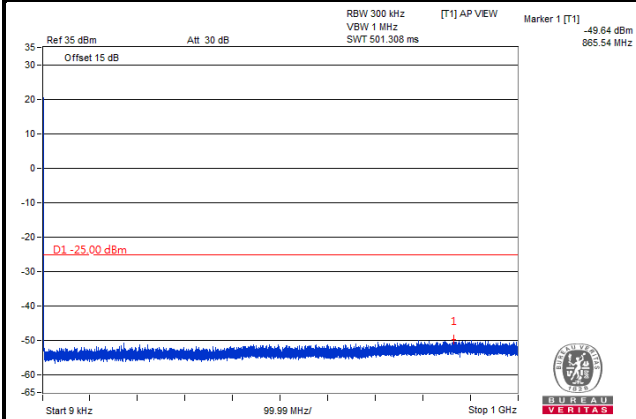
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38

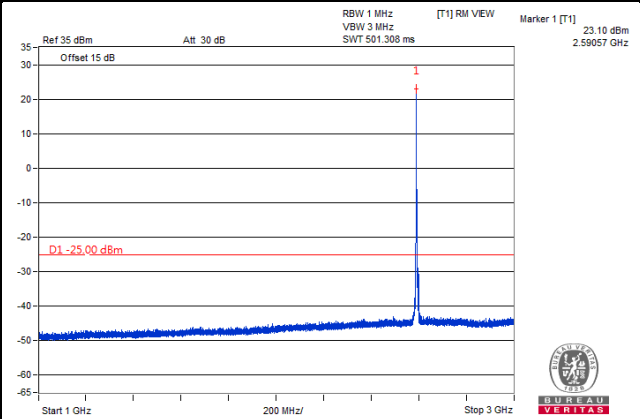
Channel Bandwidth: 10 MHz

Channel 38000

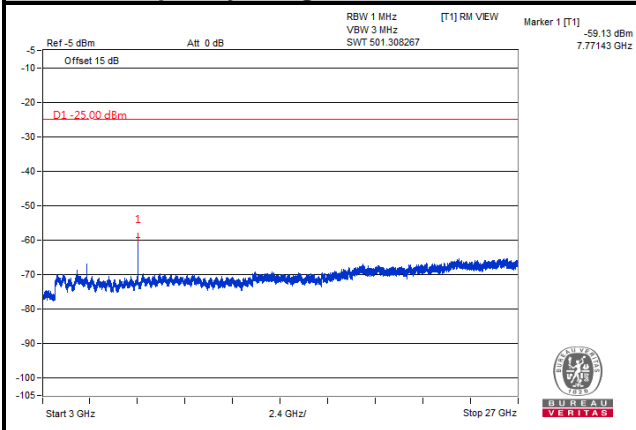
Frequency Range: 9 kHz ~ 1 GHz



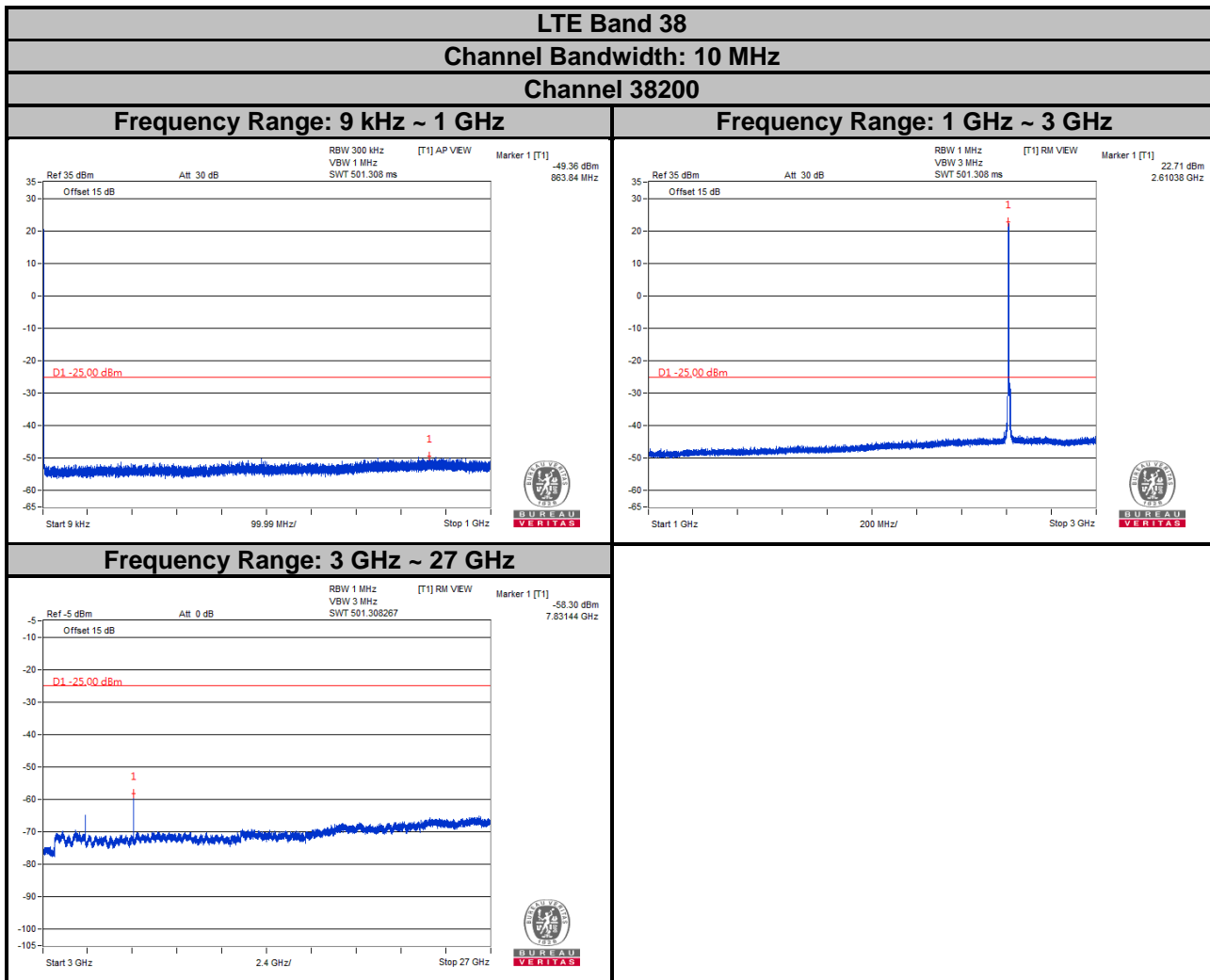
Frequency Range: 1 GHz ~ 3 GHz



Frequency Range: 3 GHz ~ 27 GHz



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



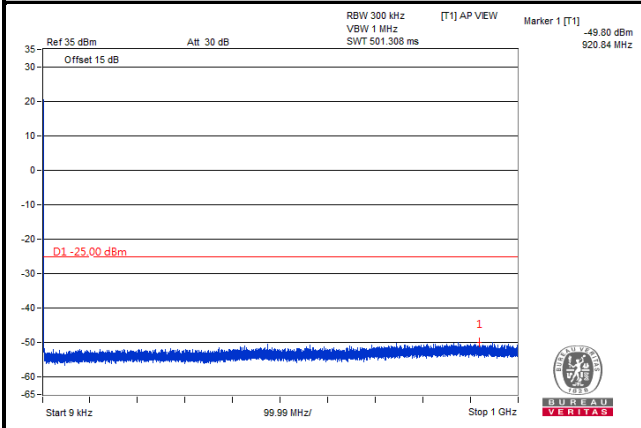
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38

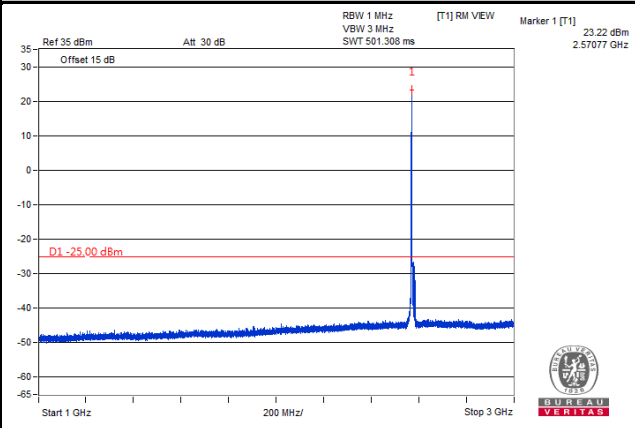
Channel Bandwidth: 15 MHz

Channel 37825

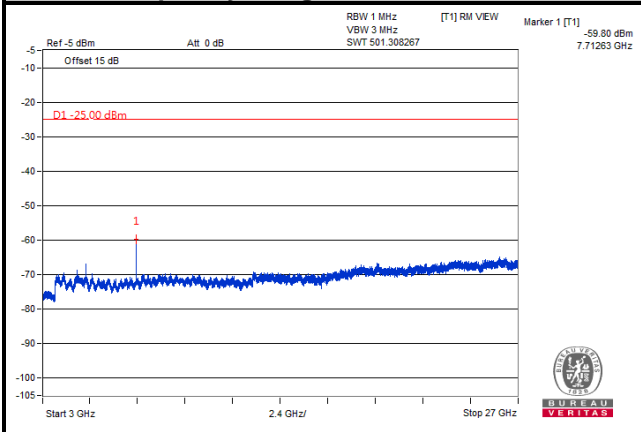
Frequency Range: 9 kHz ~ 1 GHz



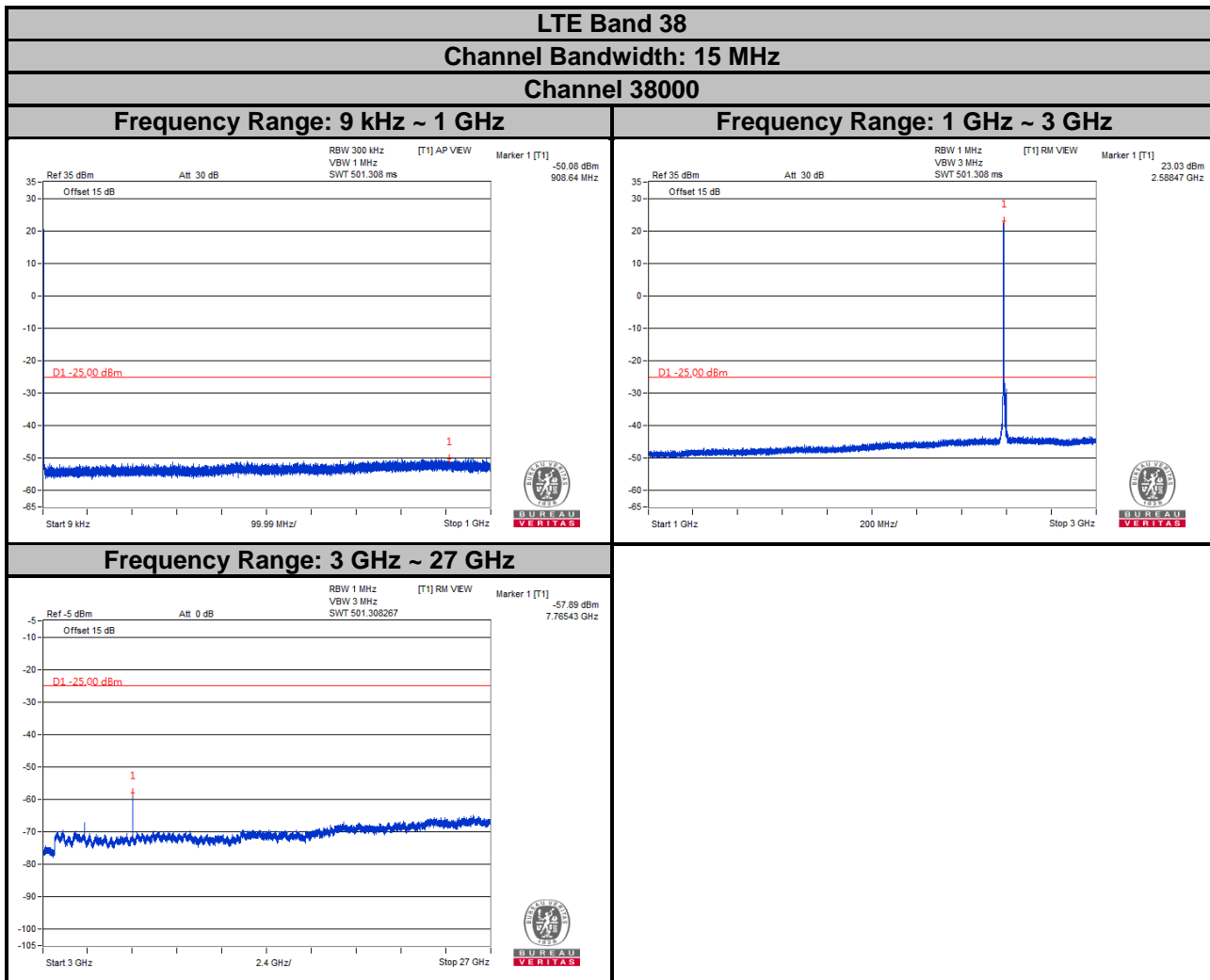
Frequency Range: 1 GHz ~ 3 GHz



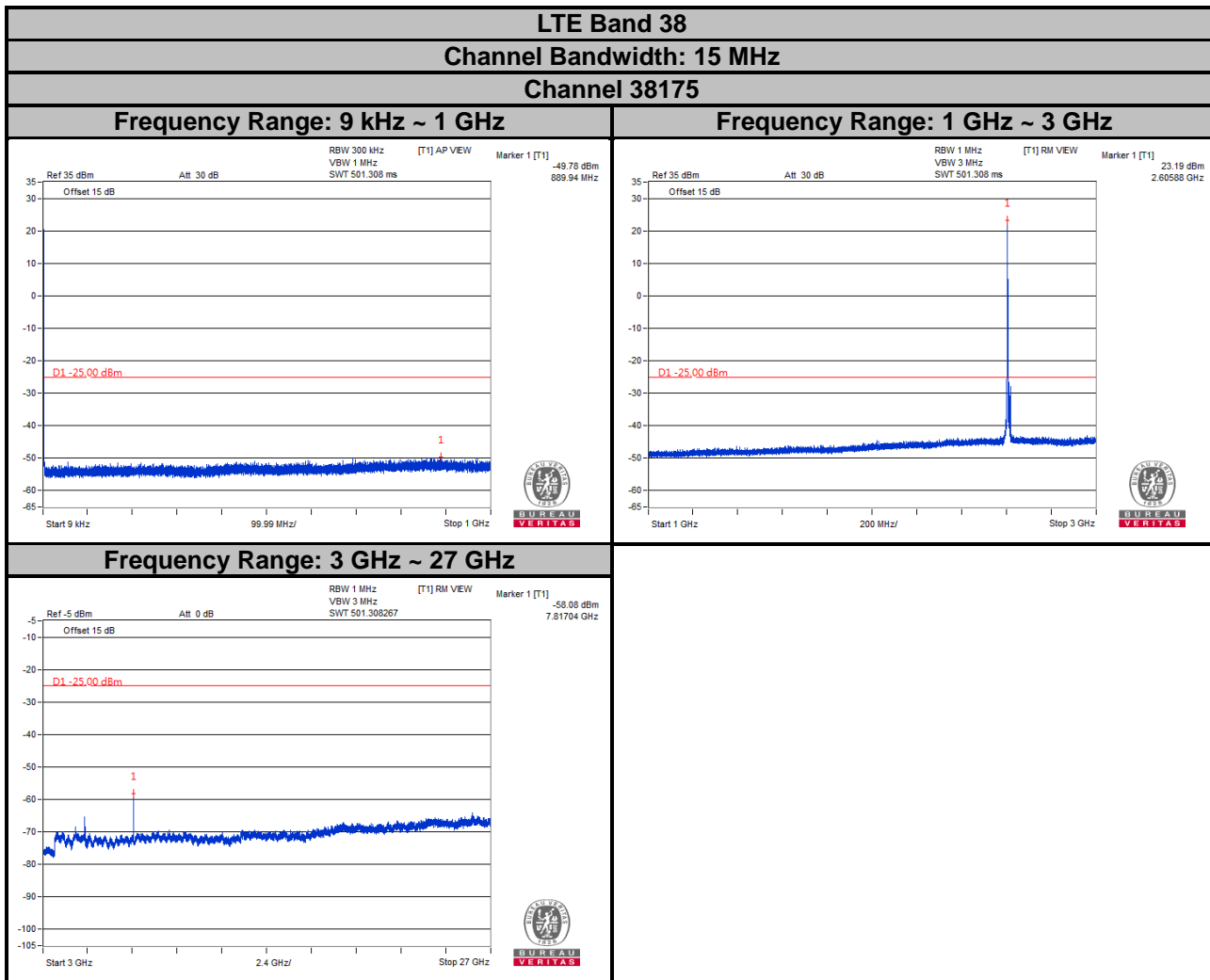
Frequency Range: 3 GHz ~ 27 GHz



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



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



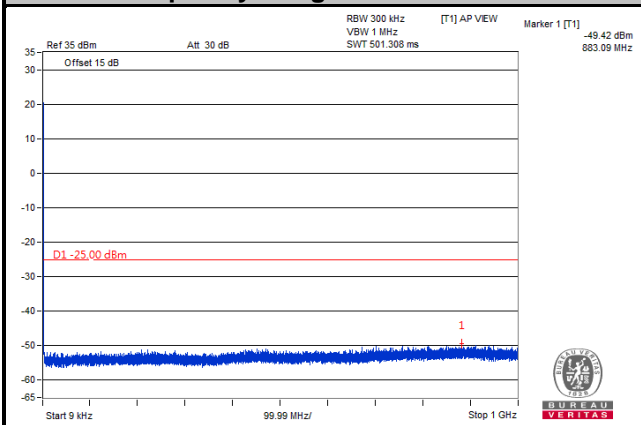
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 38

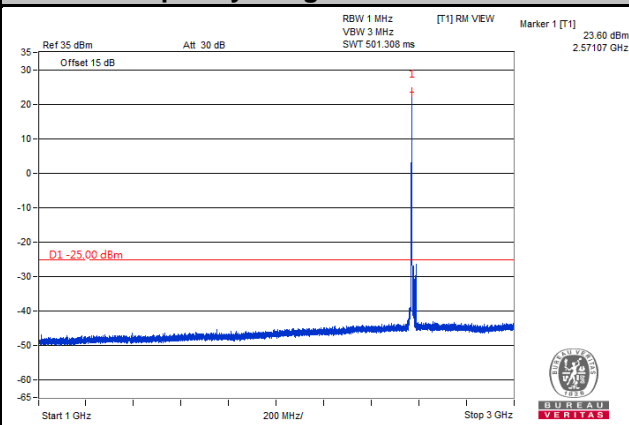
Channel Bandwidth: 20 MHz

Channel 37850

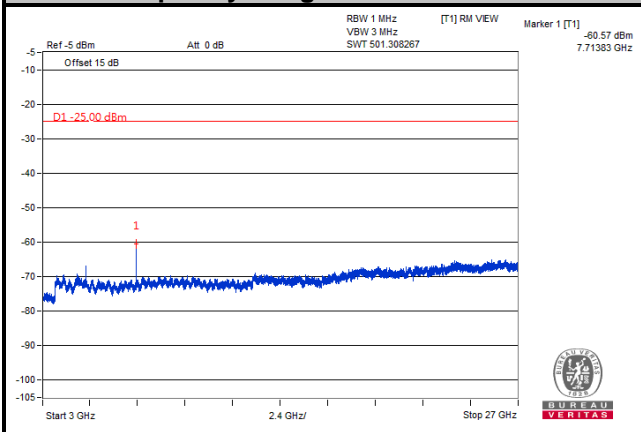
Frequency Range: 9 kHz ~ 1 GHz



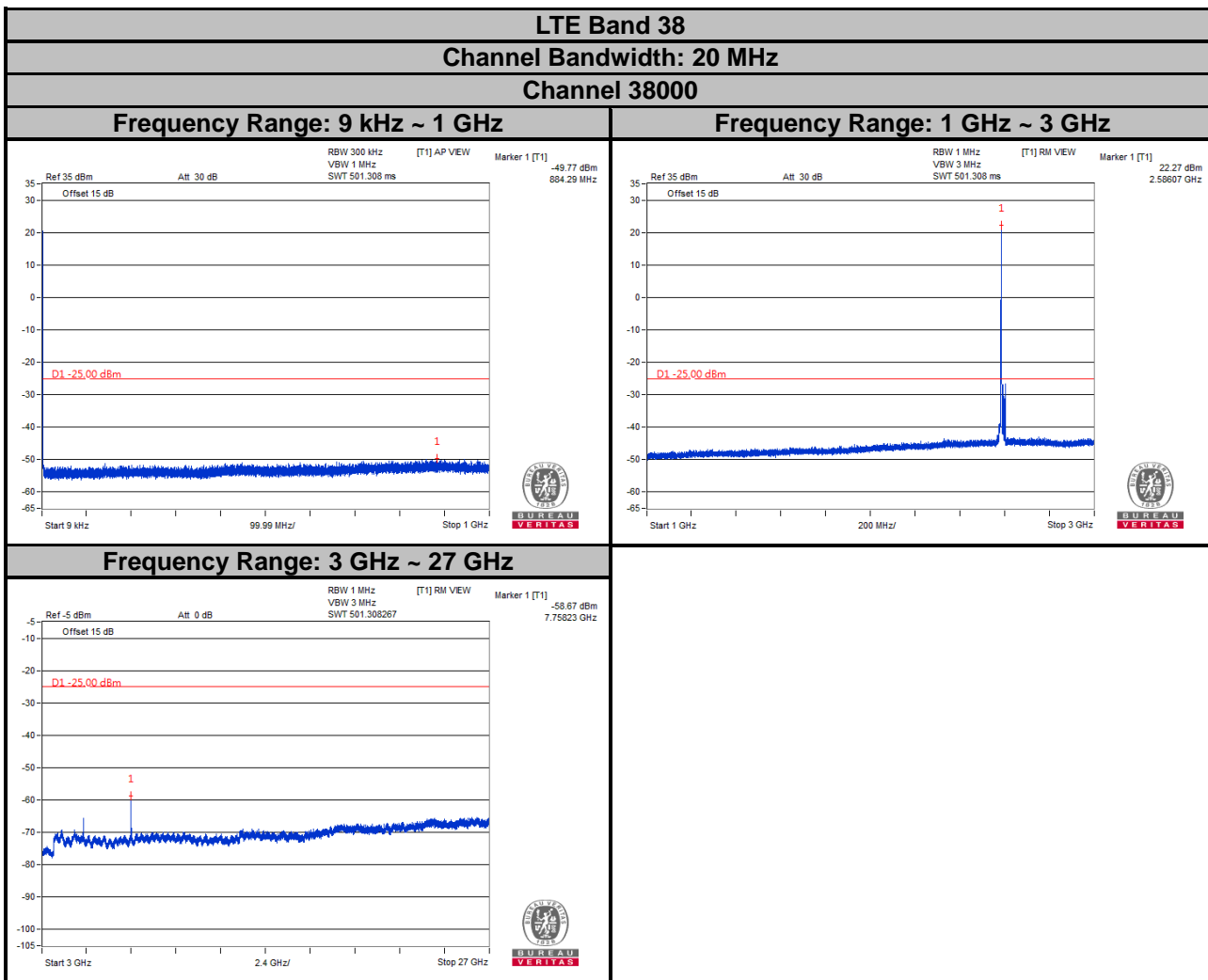
Frequency Range: 1 GHz ~ 3 GHz



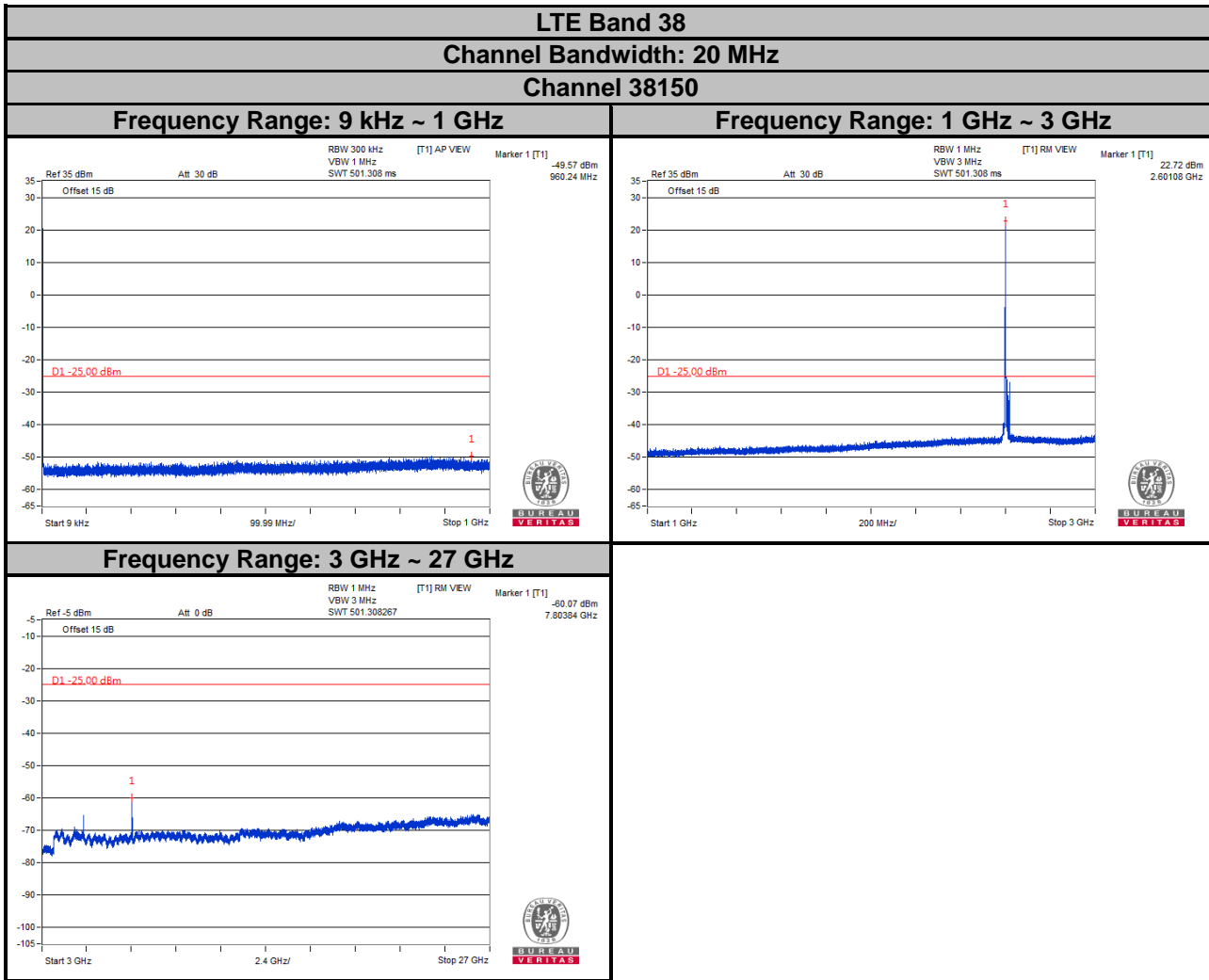
Frequency Range: 3 GHz ~ 27 GHz



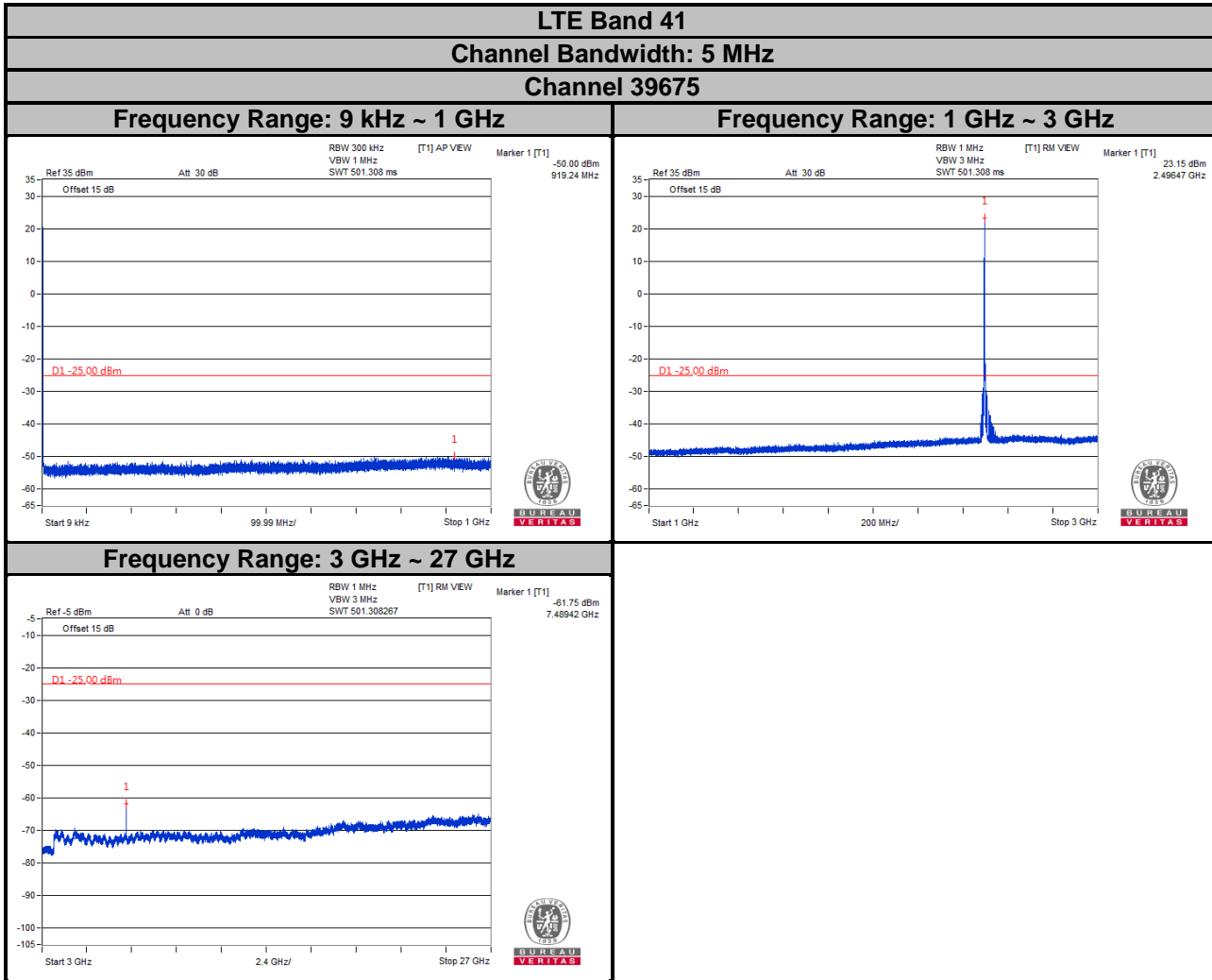
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



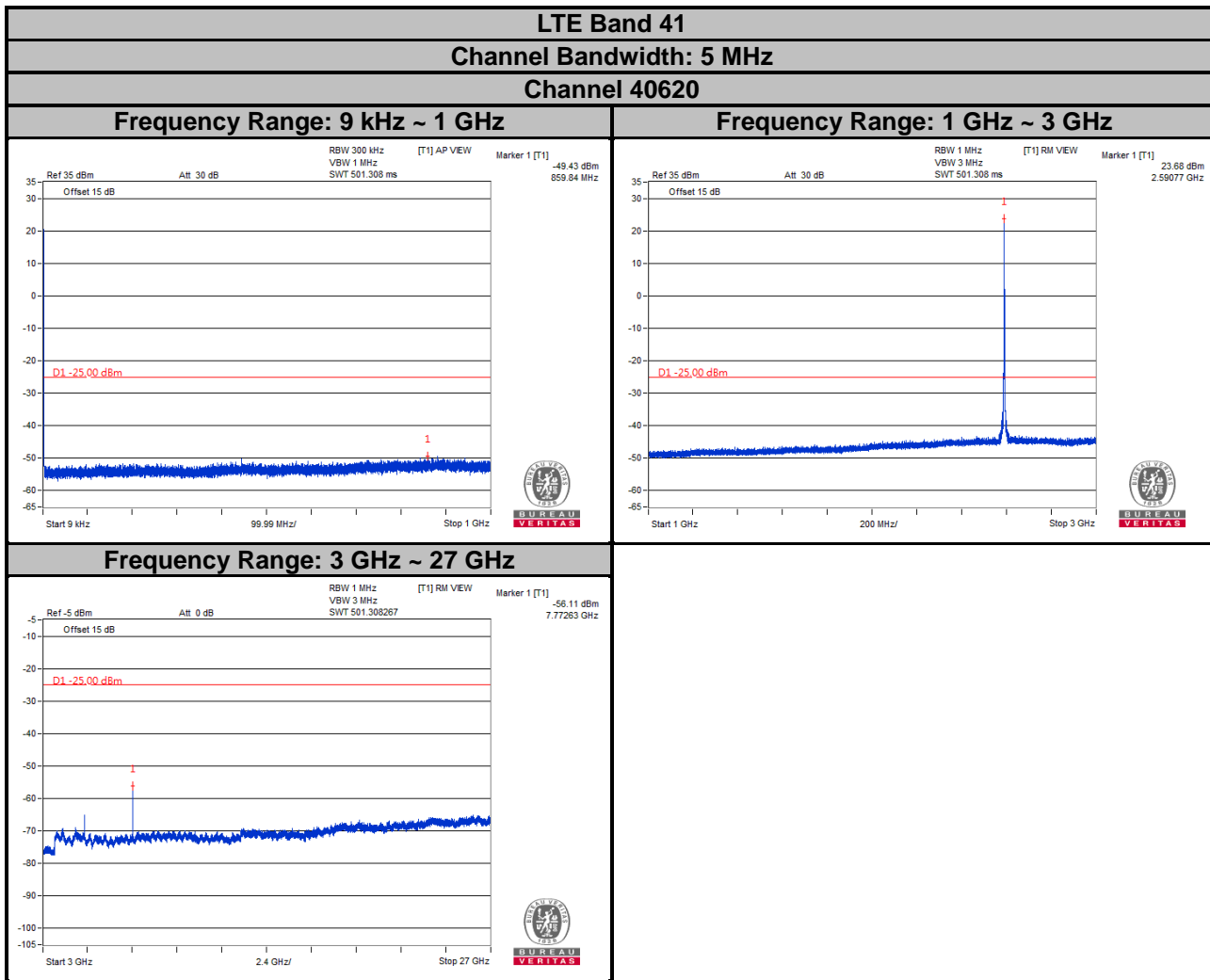
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



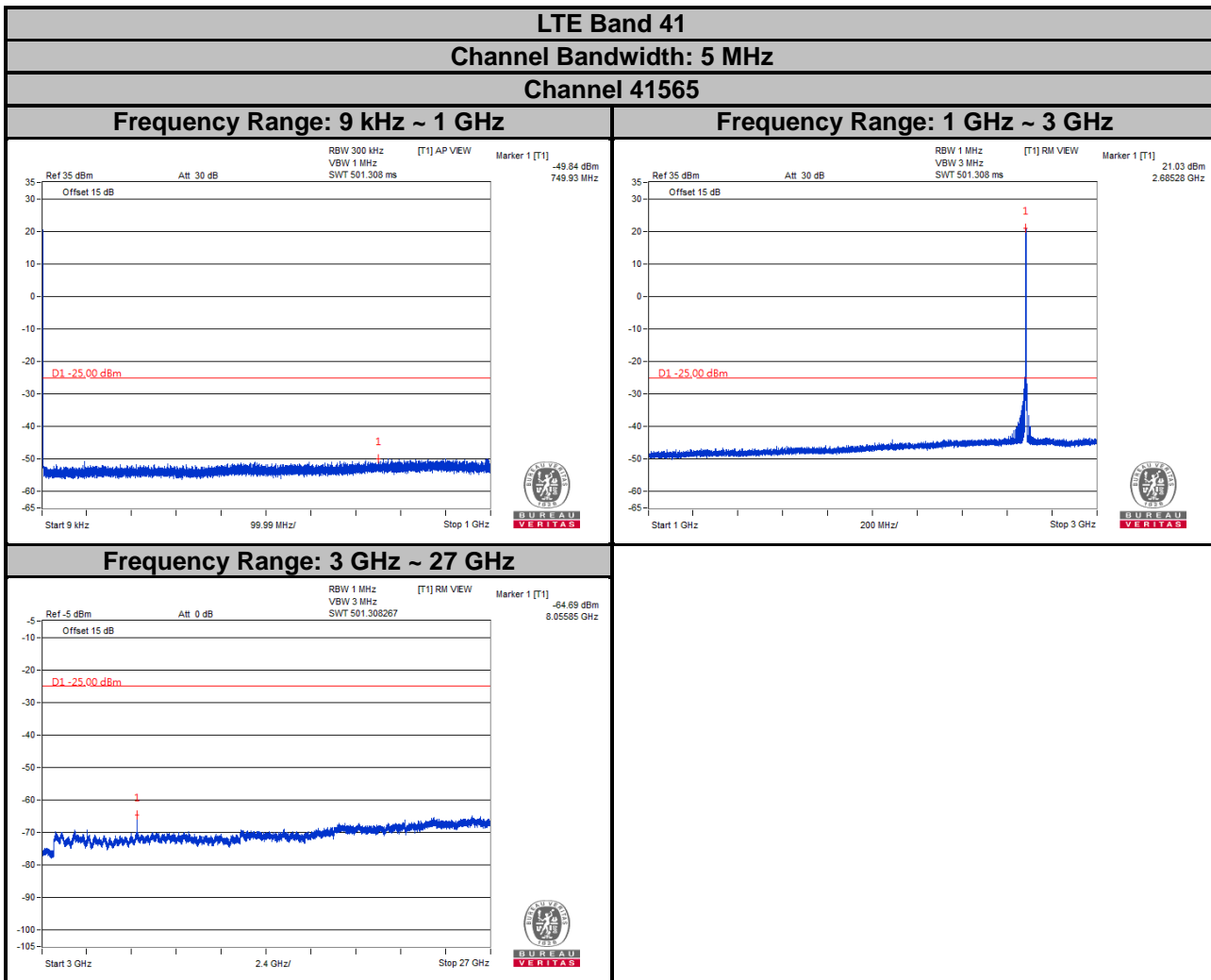
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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



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



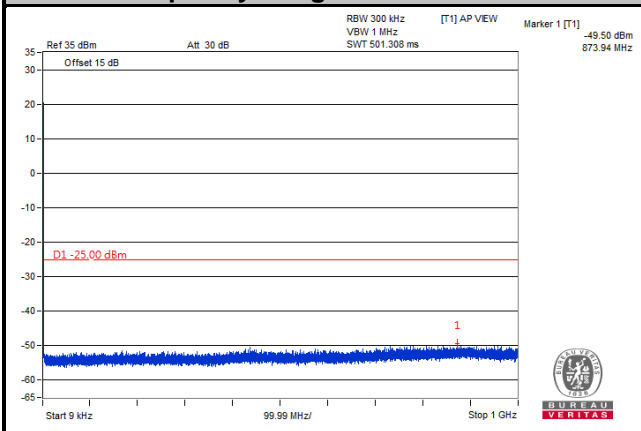
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41

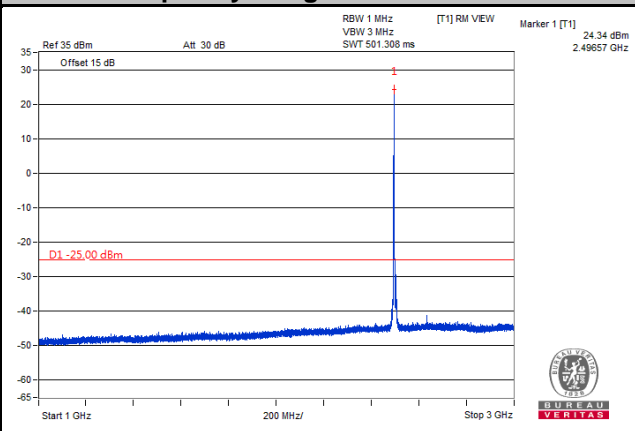
Channel Bandwidth: 10 MHz

Channel 39700

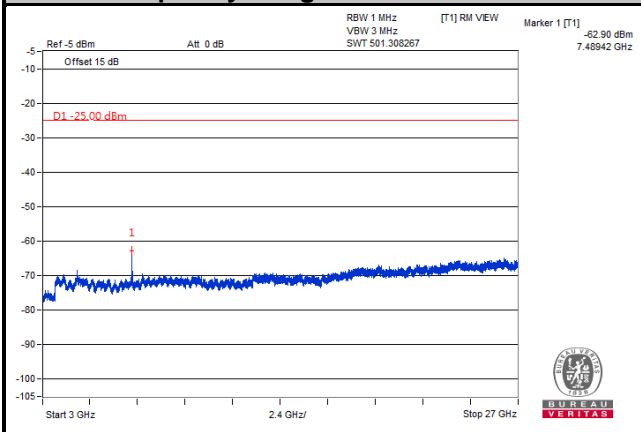
Frequency Range: 9 kHz ~ 1 GHz



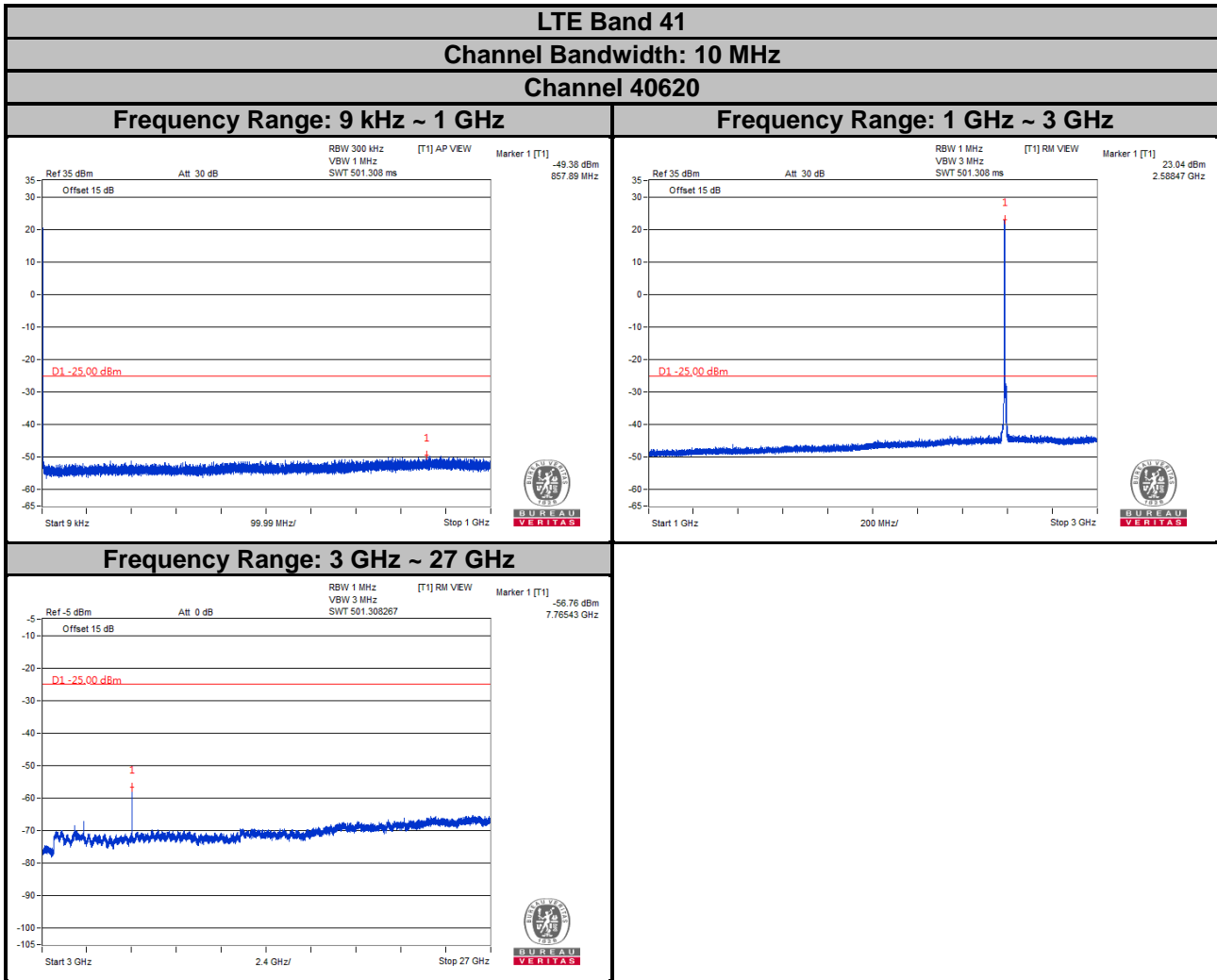
Frequency Range: 1 GHz ~ 3 GHz



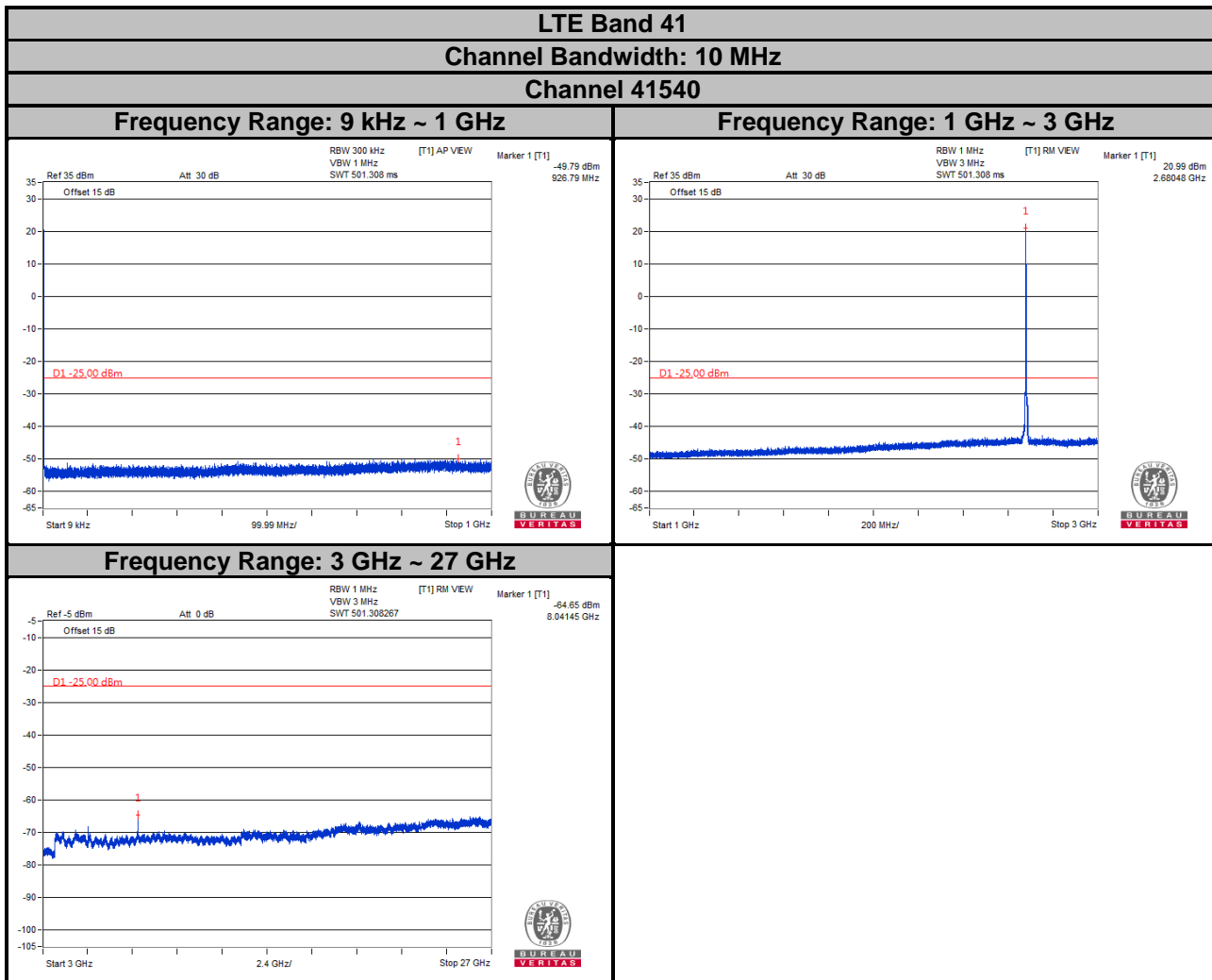
Frequency Range: 3 GHz ~ 27 GHz



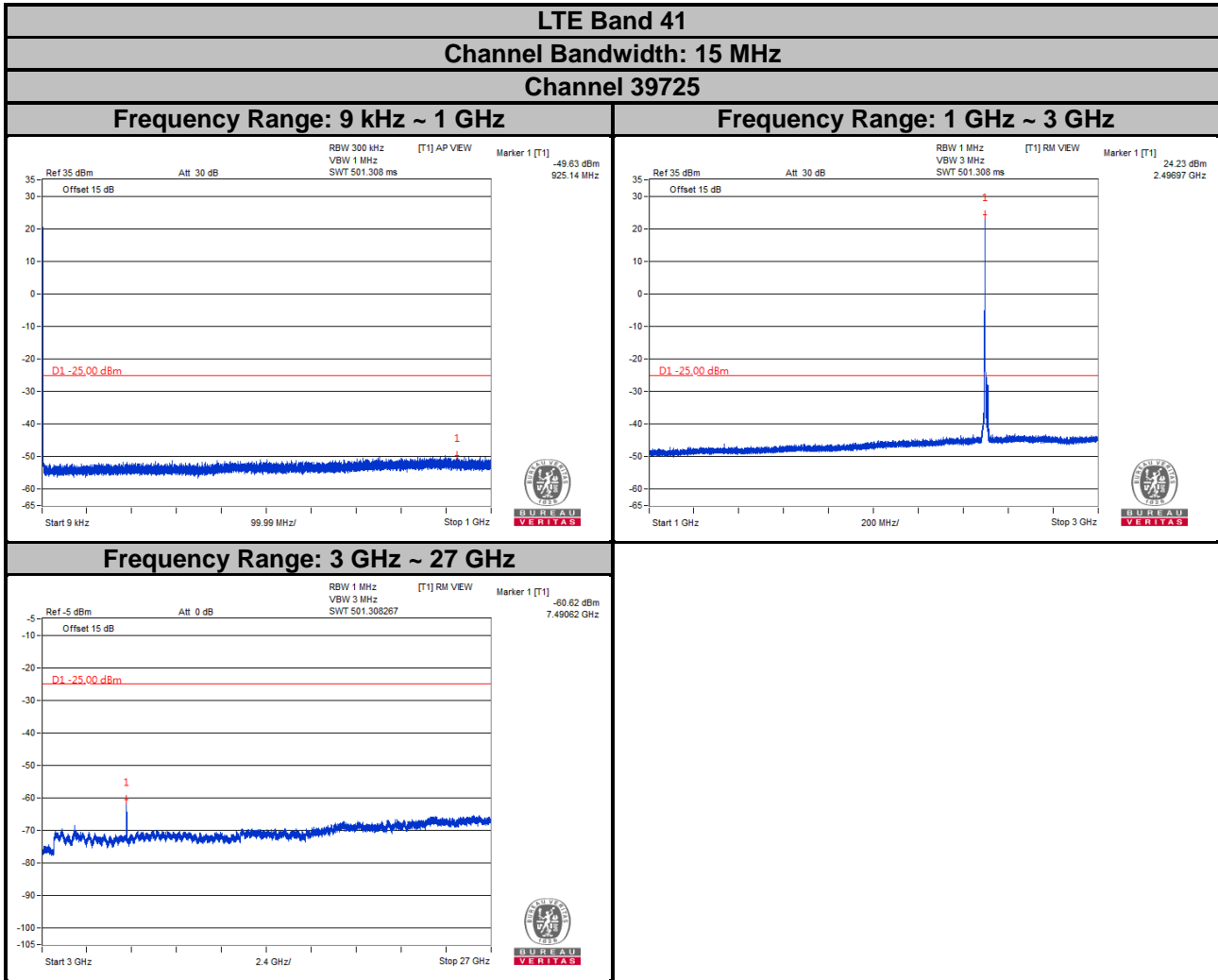
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



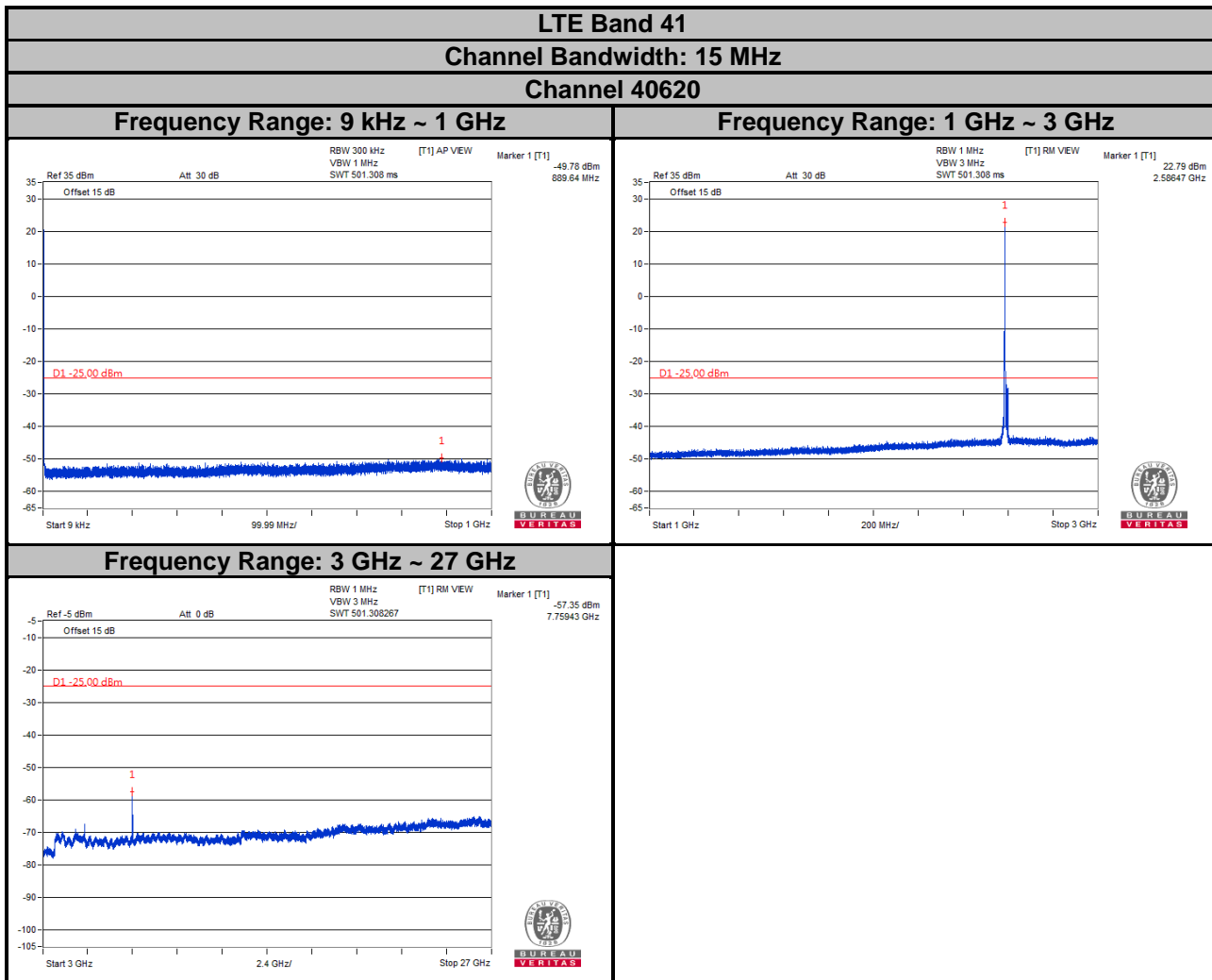
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



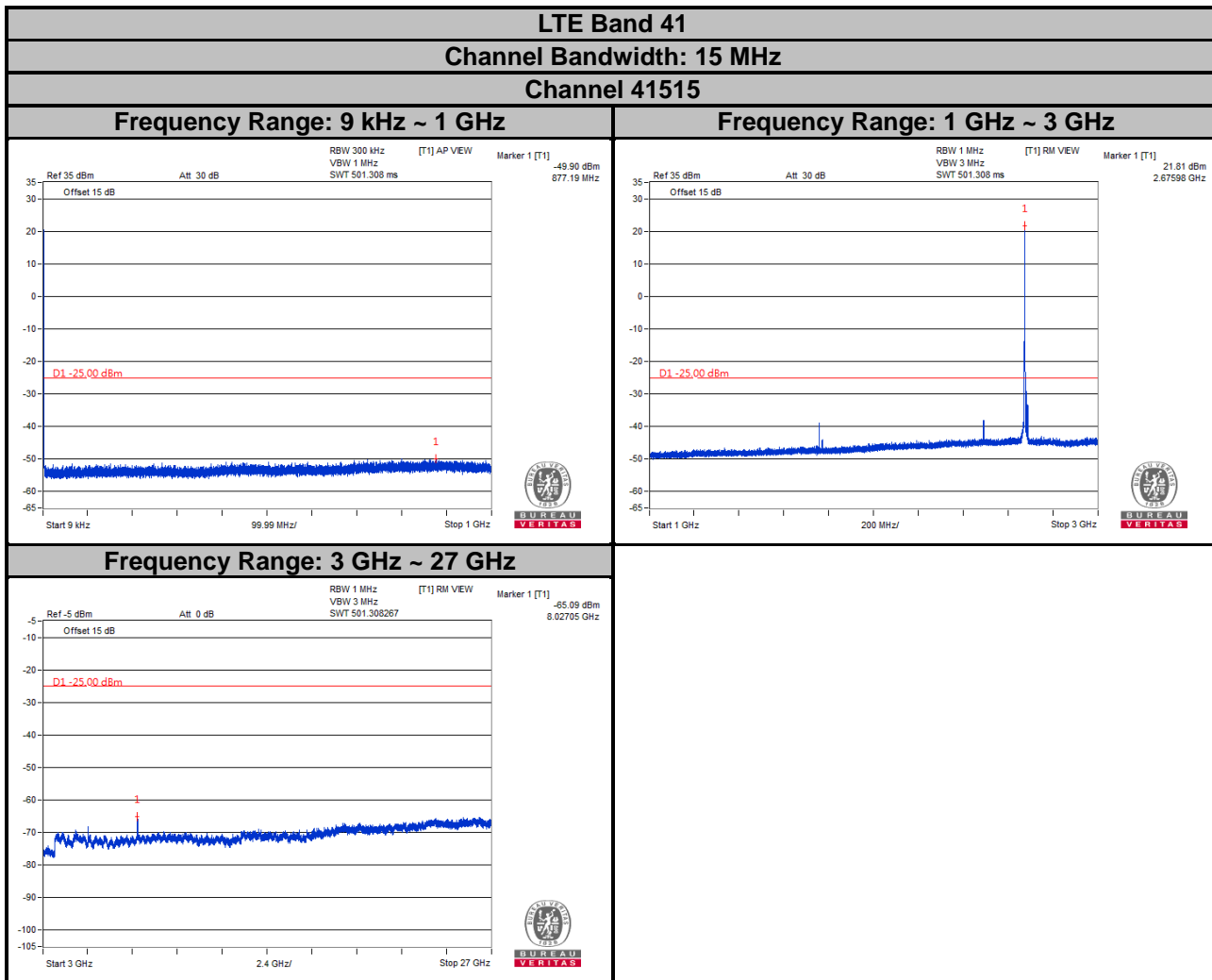
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



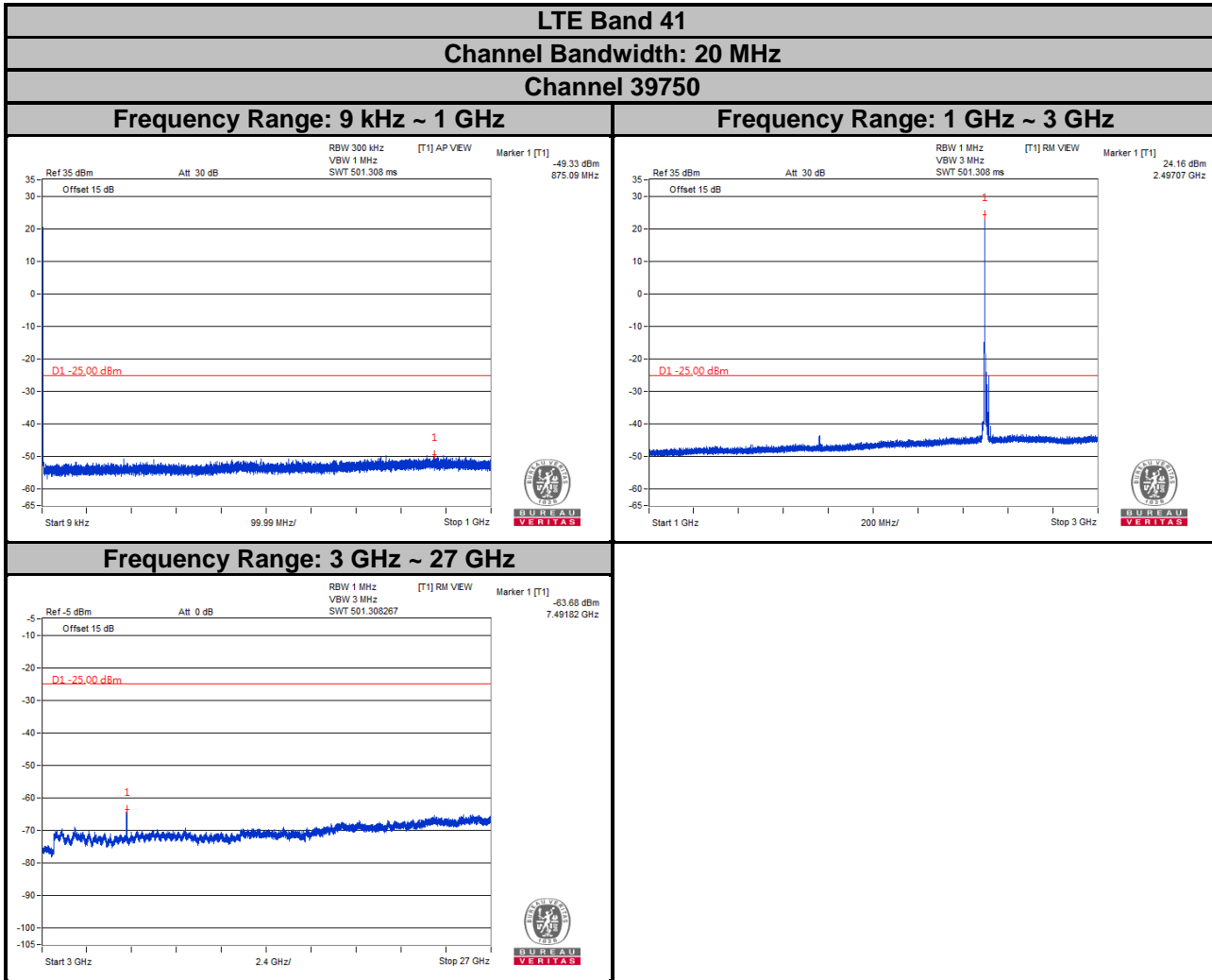
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



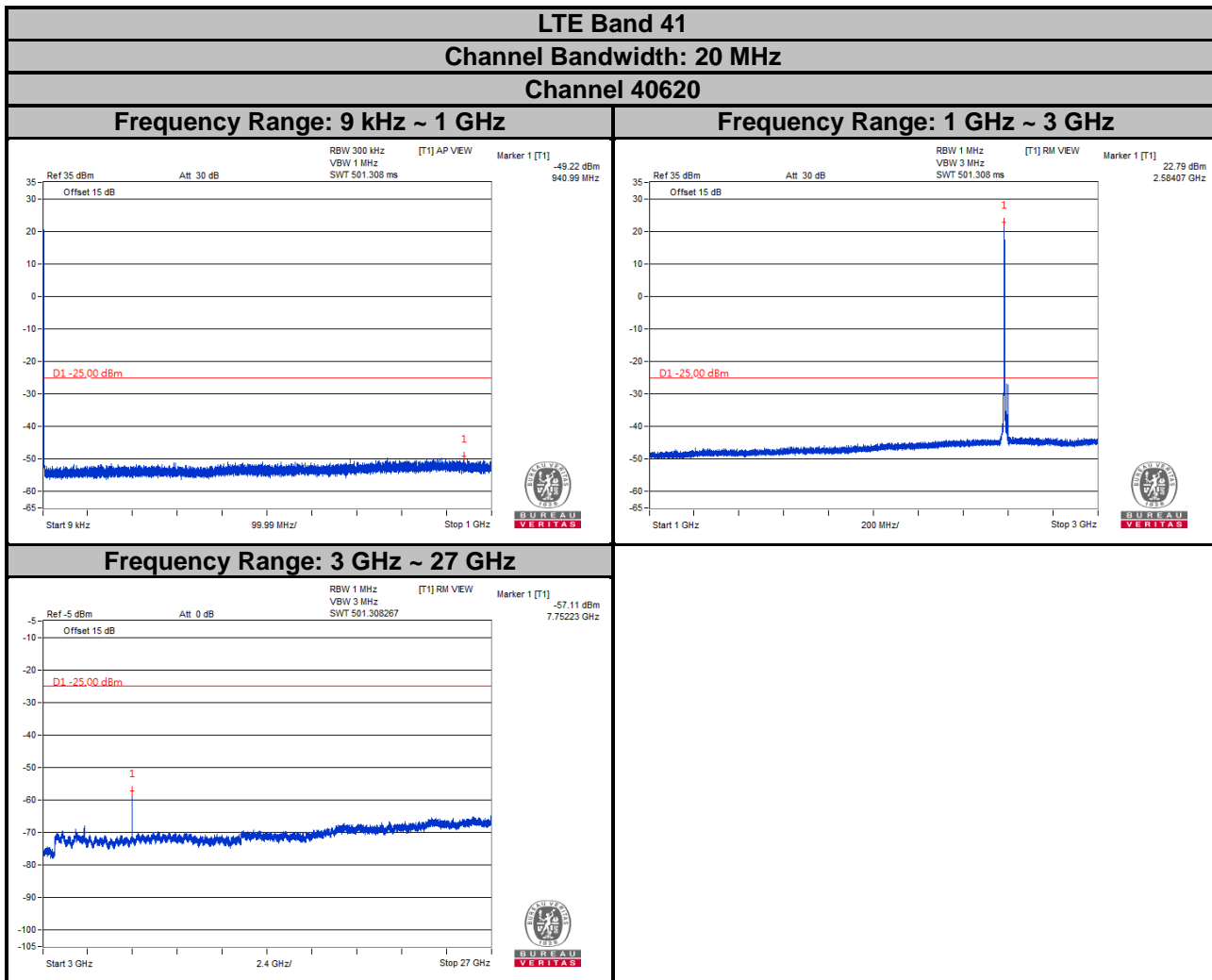
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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



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



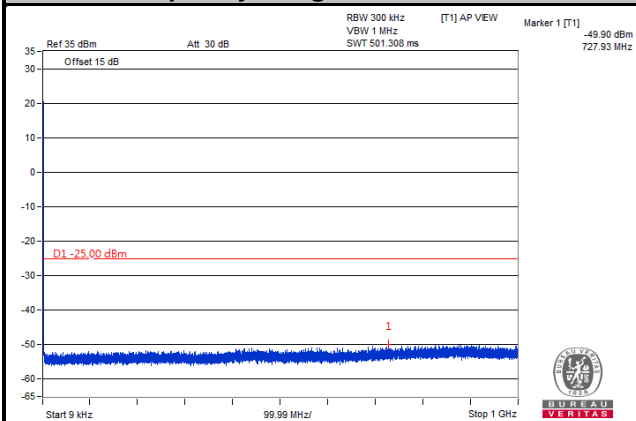
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41

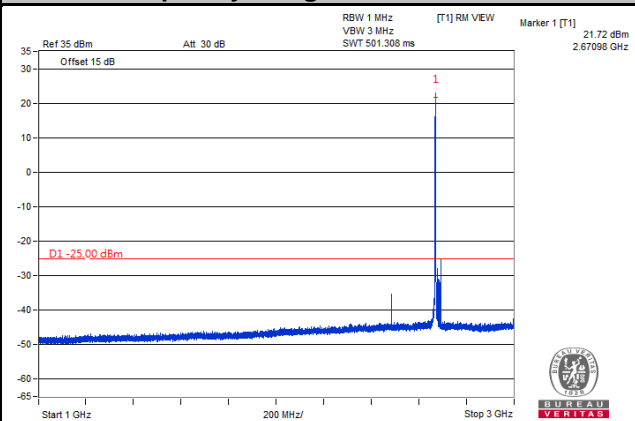
Channel Bandwidth: 20 MHz

Channel 41490

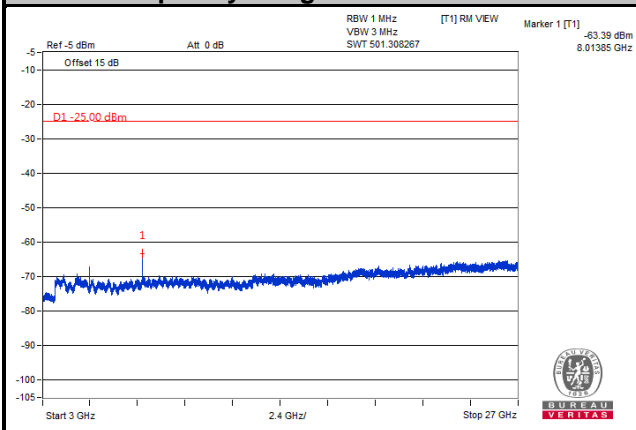
Frequency Range: 9 kHz ~ 1 GHz



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.

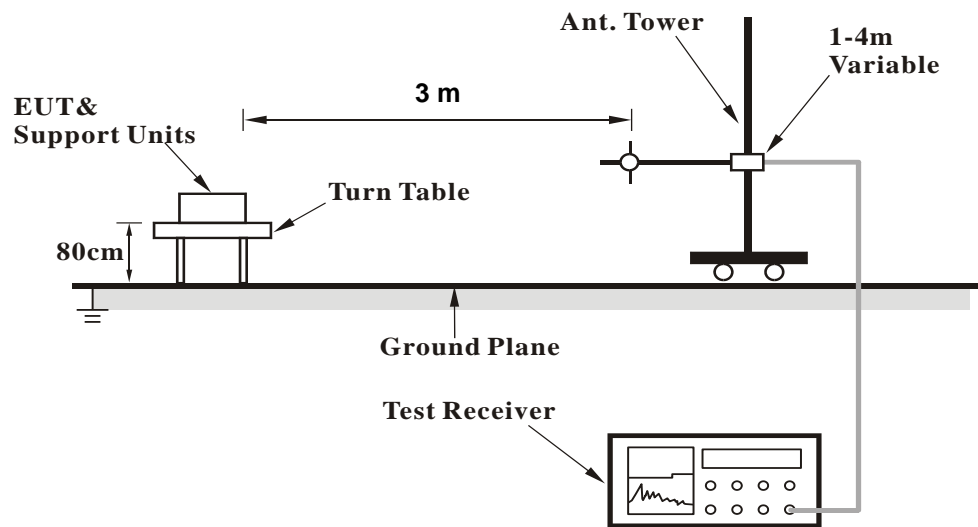
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.8.3 Deviation from Test Standard

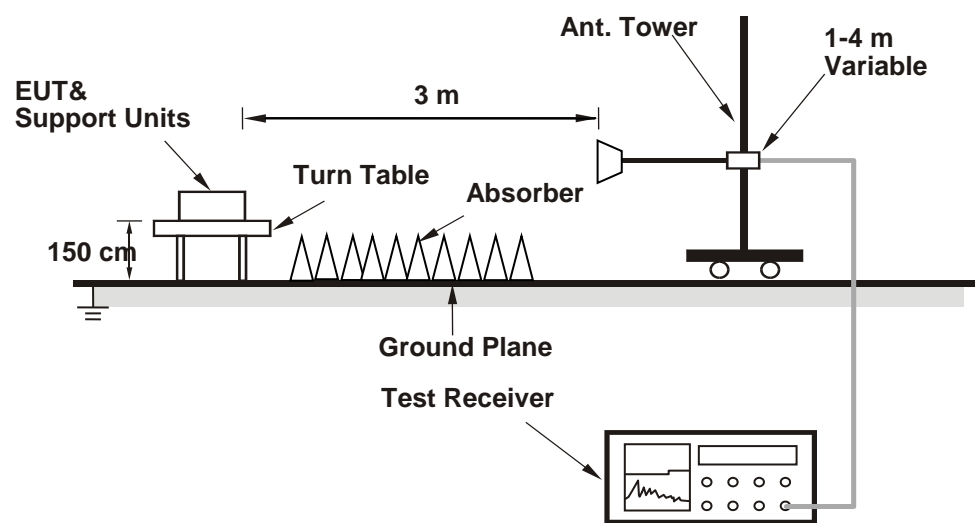
No deviation.

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

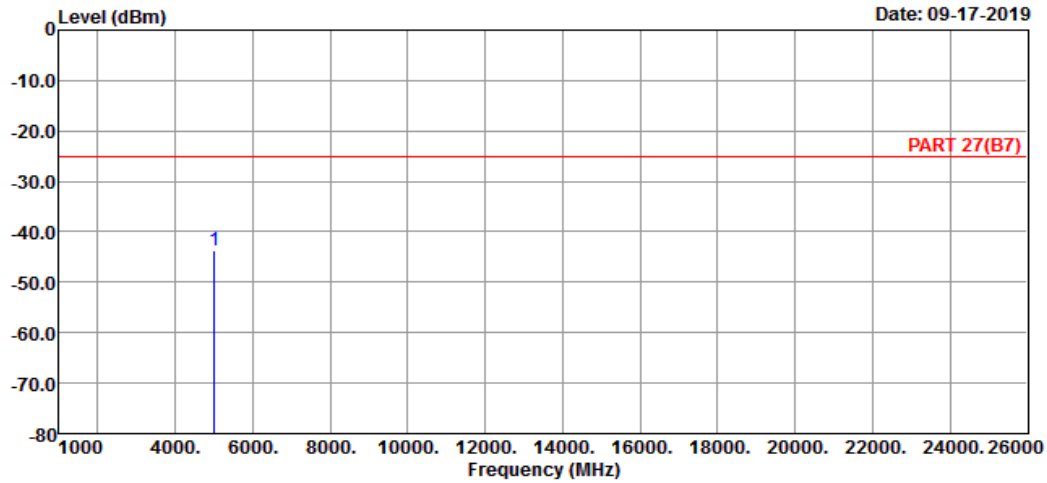


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) HORIZONTAL
 Remak : LTE Band 7 QPSK_5M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB

1 pp 5005.00 -43.78 -41.32 -25.00 -2.46 -18.78 Peak

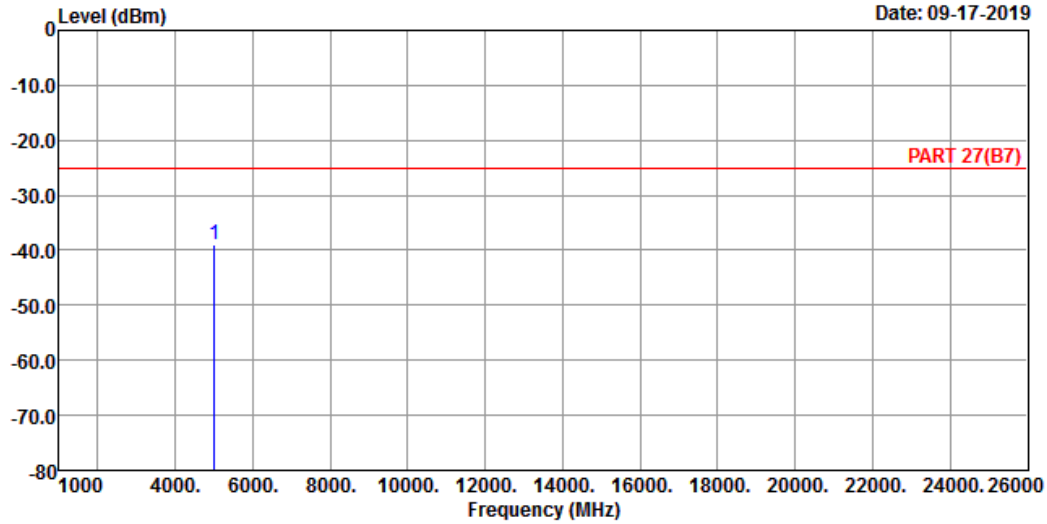


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Data: 4

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_5M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5005.00	-38.82	-36.36	-25.00	-2.46	-13.82	Peak

Middle Channel

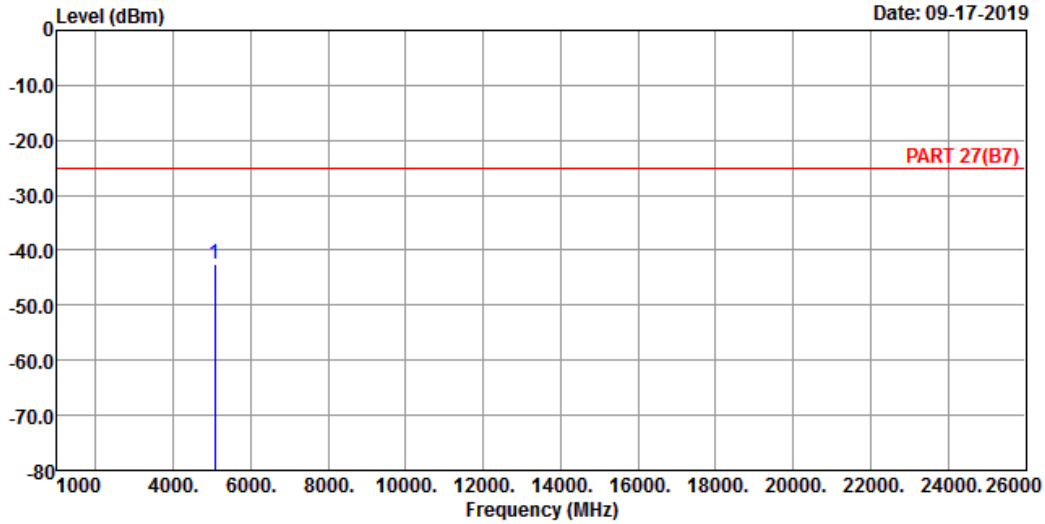


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) HORIZONTAL
 Remak : LTE Band 7 QPSK_5M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 5070.00 -42.63 -40.76 -25.00 -1.87 -17.63 Peak

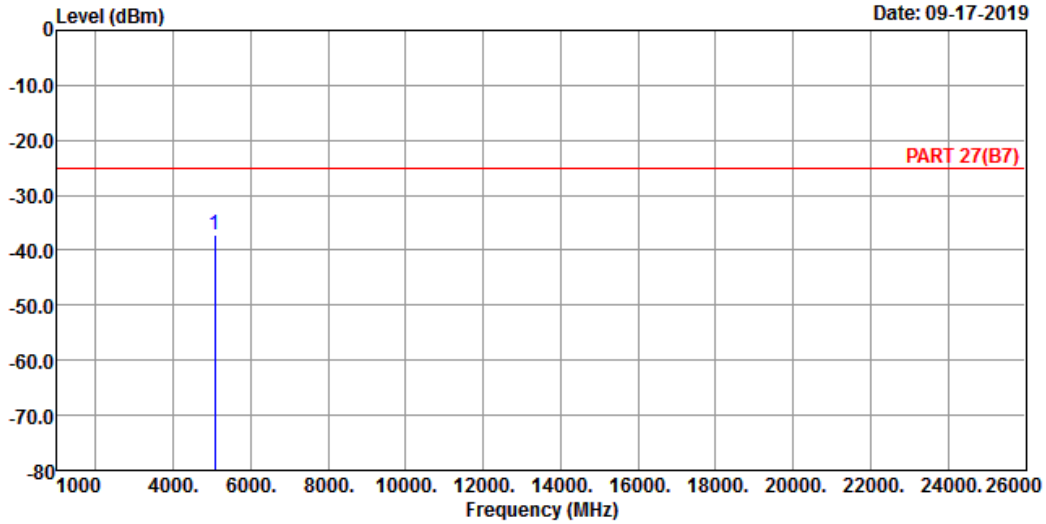


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_5M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 5070.00	-37.09	-35.22	-25.00	-1.87	-12.09 Peak

High Channel

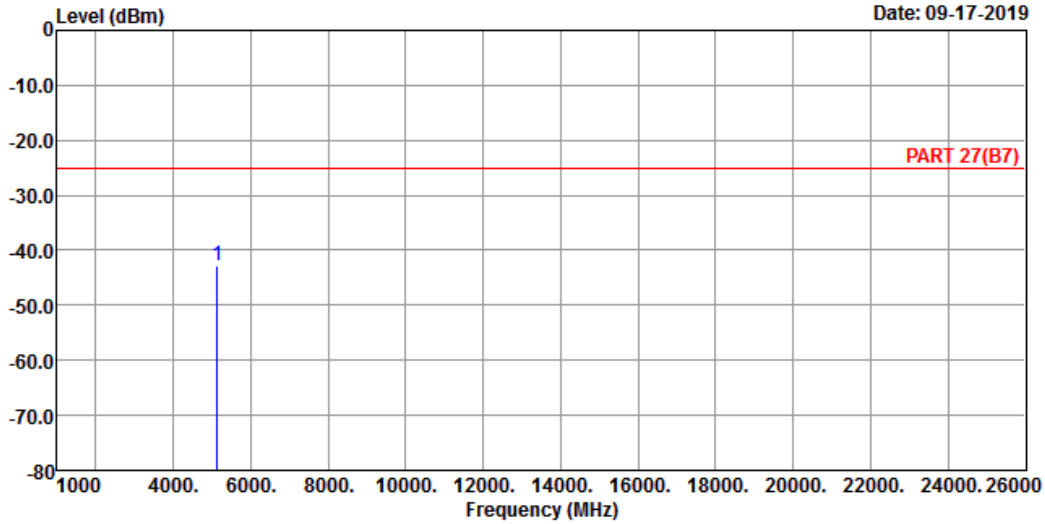


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A D T

Data: 3

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) HORIZONTAL
 Remak : LTE Band 7 QPSK_5M Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB

1 pp 5135.00 -42.78 -41.04 -25.00 -1.74 -17.78 Peak

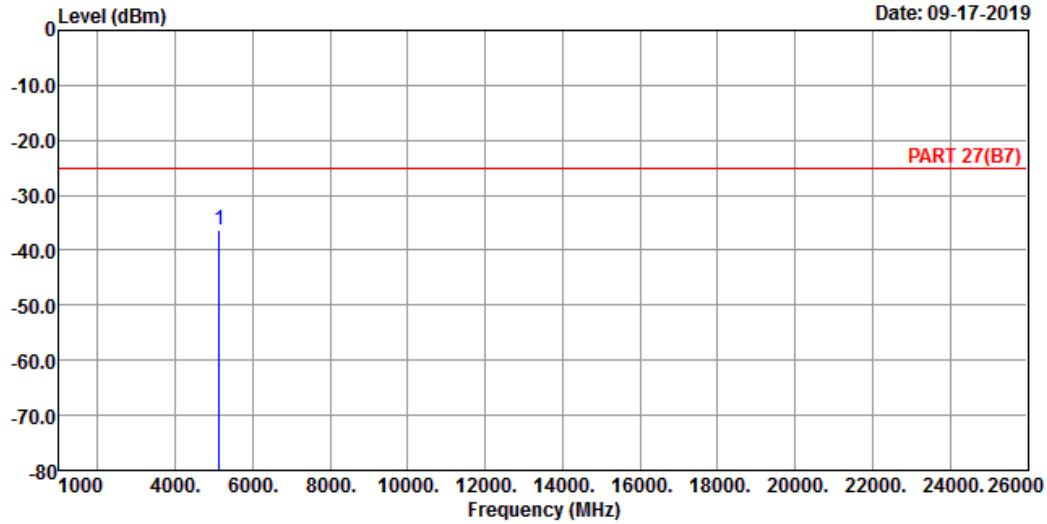


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 09-17-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_5M Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5135.00	-36.40	-34.66	-25.00	-1.74	-11.40	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

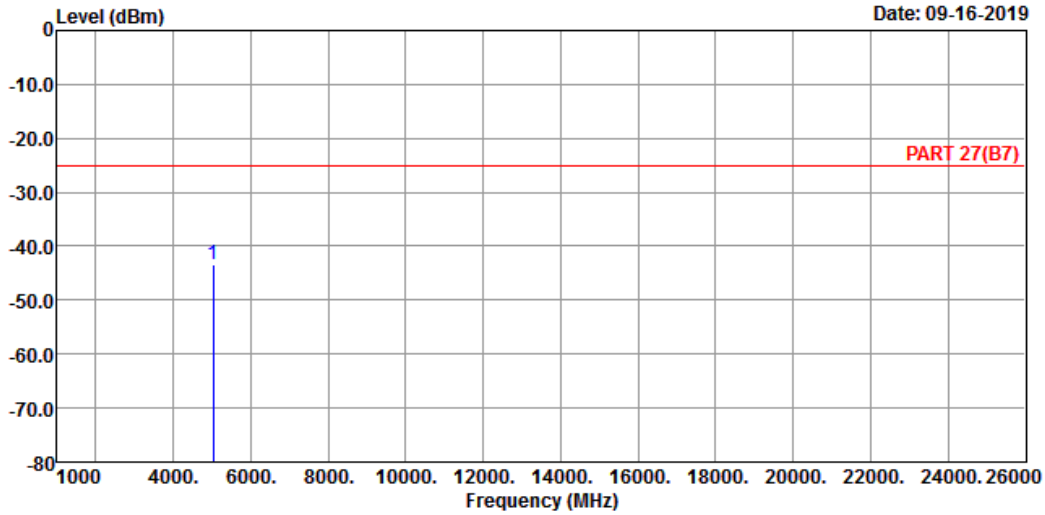


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 09-16-2019



Site : 966 Chamber 5
Condition: PART 27(B7) HORIZONTAL
Remak : LTE Band 7 QPSK_20M Link_L-CH
Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5020.00	-43.31	-40.99	-25.00	-2.32	-18.31	Peak

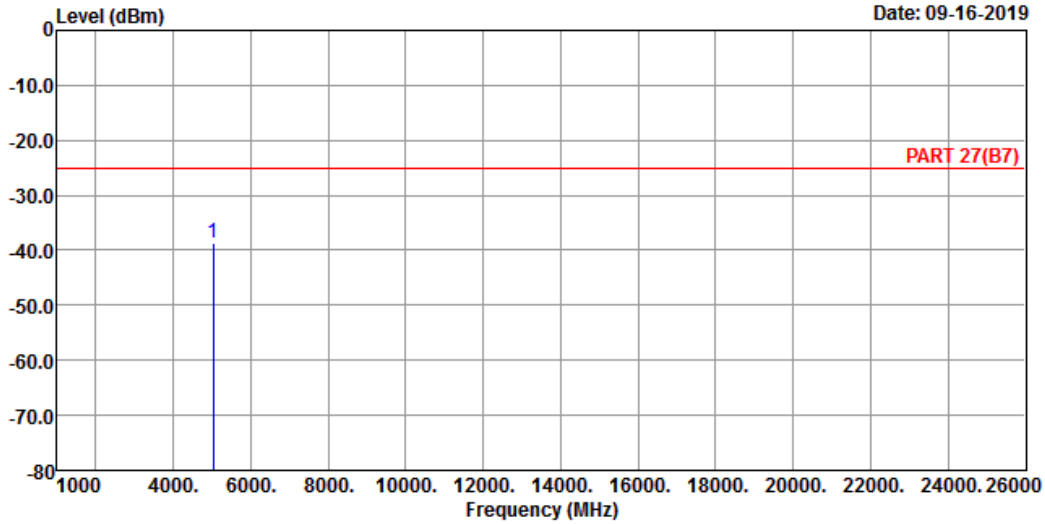


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 09-16-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_20M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5020.00	-38.56	-36.24	-25.00	-2.32	-13.56	Peak

Middle Channel

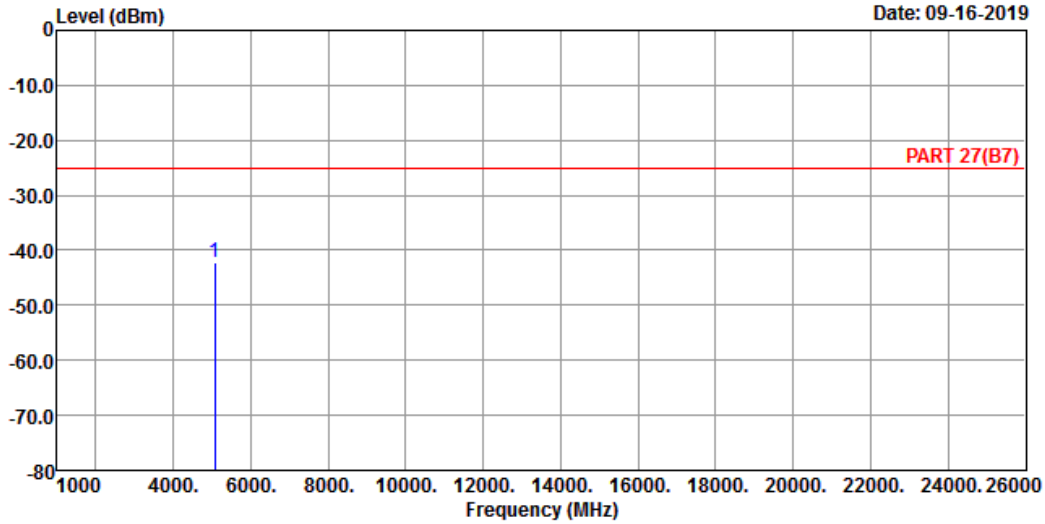


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 09-16-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) HORIZONTAL
 Remak : LTE Band 7 QPSK_20M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 5070.00 -42.34 -40.47 -25.00 -1.87 -17.34 Peak

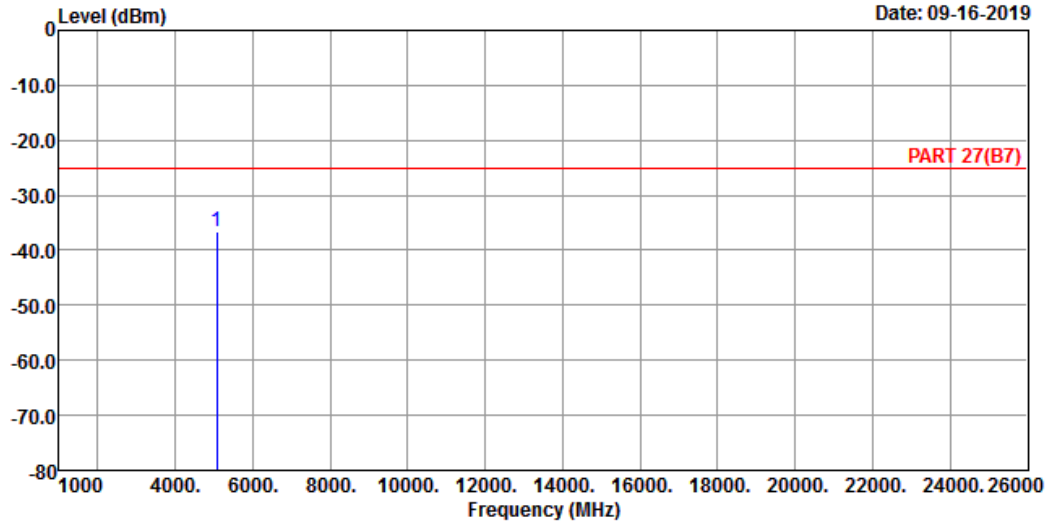


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A D T

Data: 4

Date: 09-16-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_20M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5070.00	-36.63	-34.76	-25.00	-1.87	-11.63	Peak

High Channel

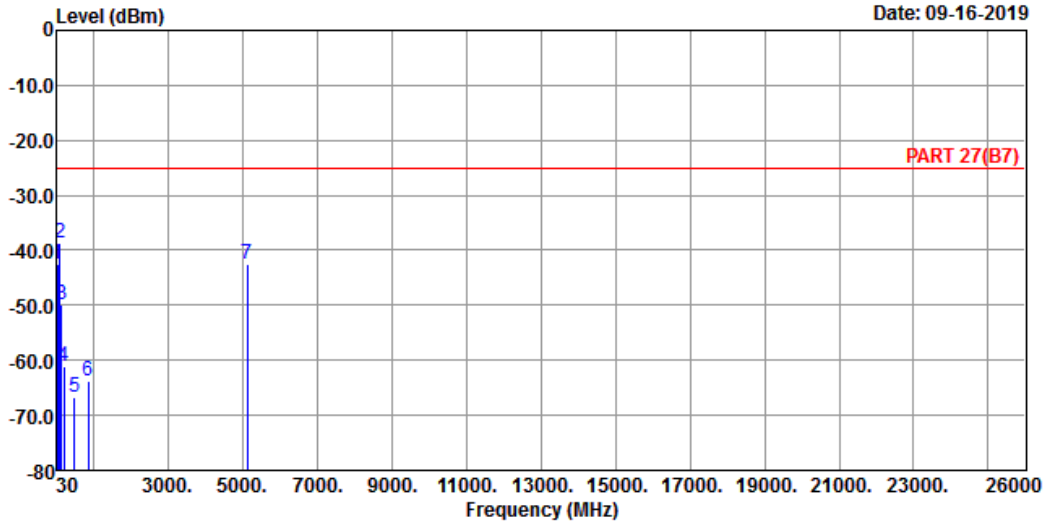


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A D T

Data: 5

Date: 09-16-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) HORIZONTAL
 Remak : LTE Band 7 QPSK_20M Link_H-CH
 Tested by: Thomas Wei

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	31.94	-42.38	-41.78	-25.00	-0.60	-17.38	Peak
2 pp	93.05	-38.73	-27.78	-25.00	-10.95	-13.73	Peak
3	136.70	-49.88	-41.22	-25.00	-8.66	-24.88	Peak
4	217.21	-61.25	-53.93	-25.00	-7.32	-36.25	Peak
5	487.84	-66.67	-61.82	-25.00	-4.85	-41.67	Peak
6	872.93	-63.87	-64.29	-25.00	0.42	-38.87	Peak
7	5120.00	-42.40	-40.74	-25.00	-1.66	-17.40	Peak

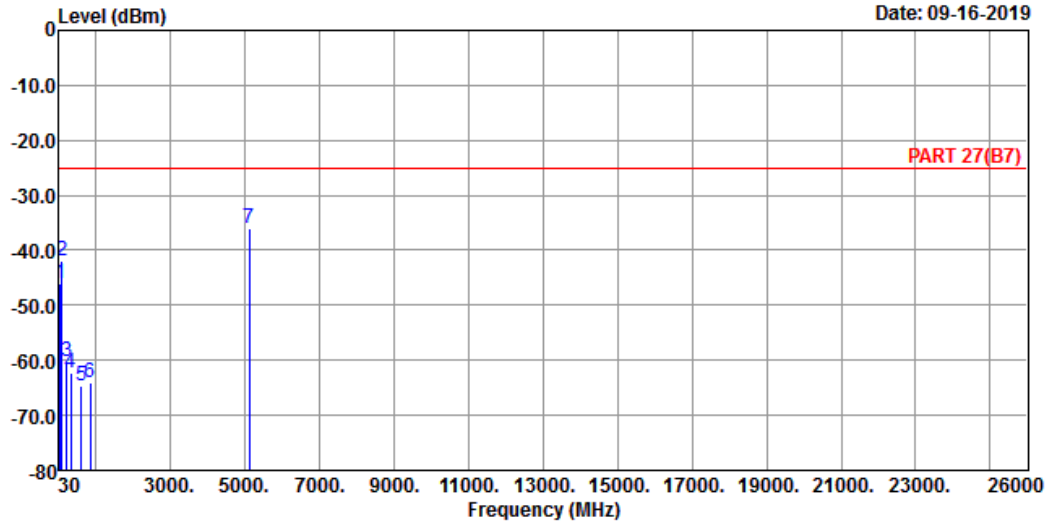


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A D T

Data: 6

Date: 09-16-2019



Site : 966 Chamber 5
 Condition: PART 27(B7) VERTICAL
 Remak : LTE Band 7 QPSK_20M Link_H-CH
 Tested by: Thomas Wei

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	53.28	-45.94	-40.13	-25.00	-5.81	-20.94	Peak
2	97.90	-41.77	-31.10	-25.00	-10.67	-16.77	Peak
3	227.88	-60.33	-53.44	-25.00	-6.89	-35.33	Peak
4	346.22	-62.18	-55.88	-25.00	-6.30	-37.18	Peak
5	618.79	-64.71	-63.91	-25.00	-0.80	-39.71	Peak
6	861.29	-63.93	-64.29	-25.00	0.36	-38.93	Peak
7 pp	5120.00	-36.13	-34.47	-25.00	-1.66	-11.13	Peak

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

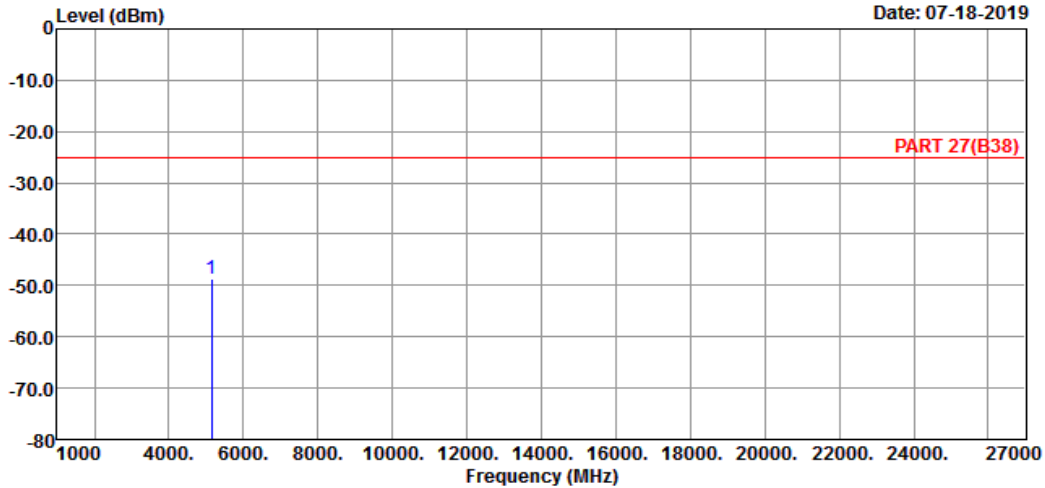


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A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_5M Link_L-CH
 Tested by: Getaz Yang

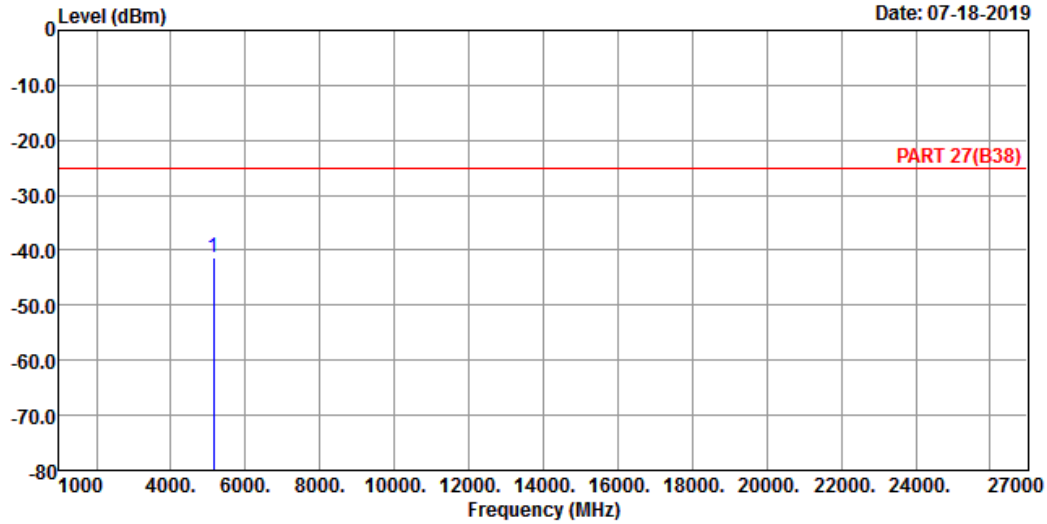
Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 5145.00	-48.69	-46.86	-25.00	-1.83	-23.69 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remark : LTE Band 38 QPSK_5M Link_L-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5145.00	-41.26	-39.43	-25.00	-1.83	-16.26	Peak

Middle Channel

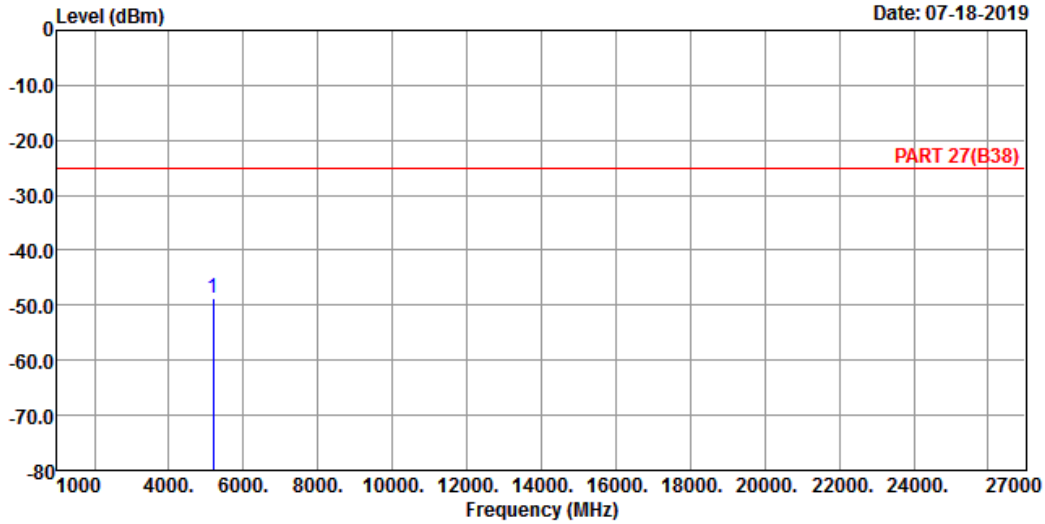


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_5M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

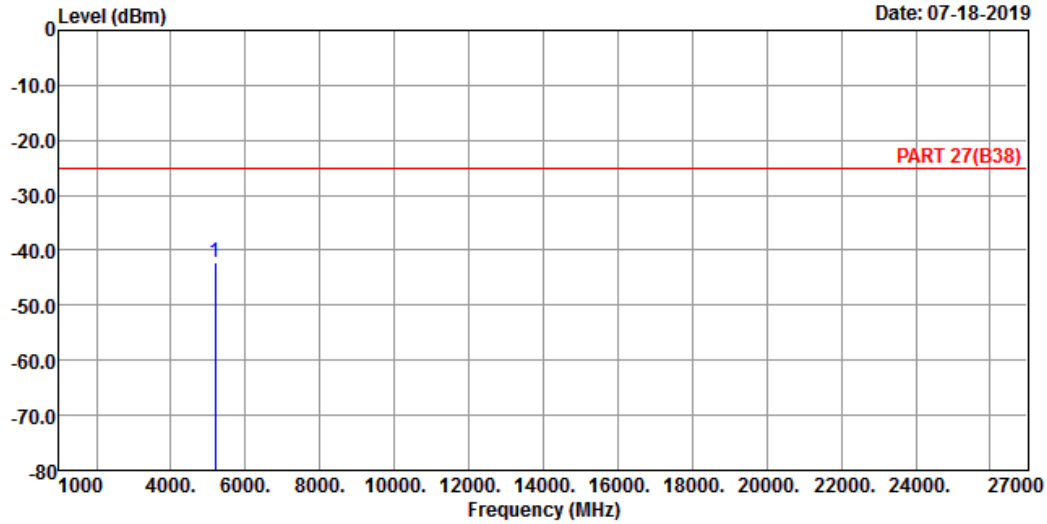
1 pp 5190.00 -48.81 -46.74 -25.00 -2.07 -23.81 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remak : LTE Band 38 QPSK_5M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5190.00	-42.16	-40.09	-25.00	-2.07	-17.16	Peak

High Channel

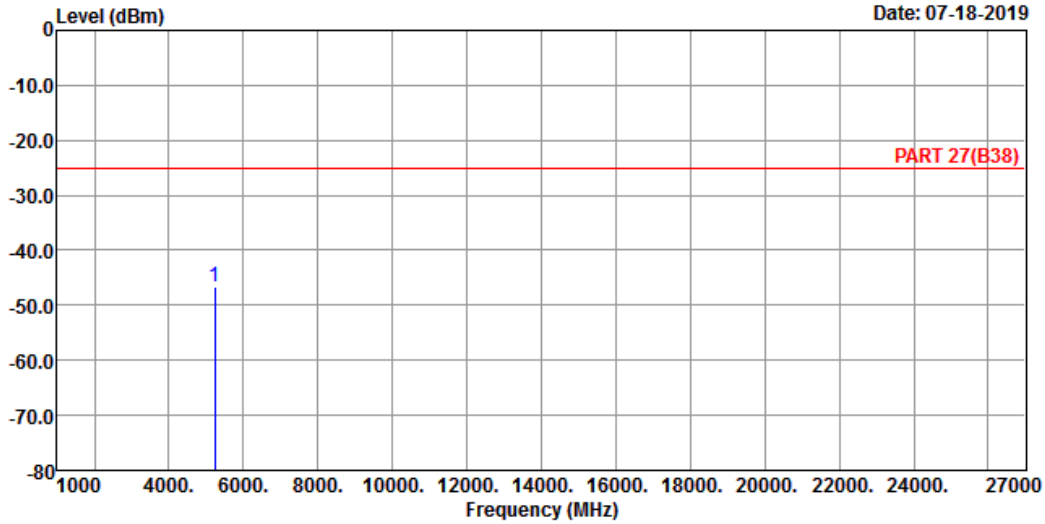


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_5M Link_H-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

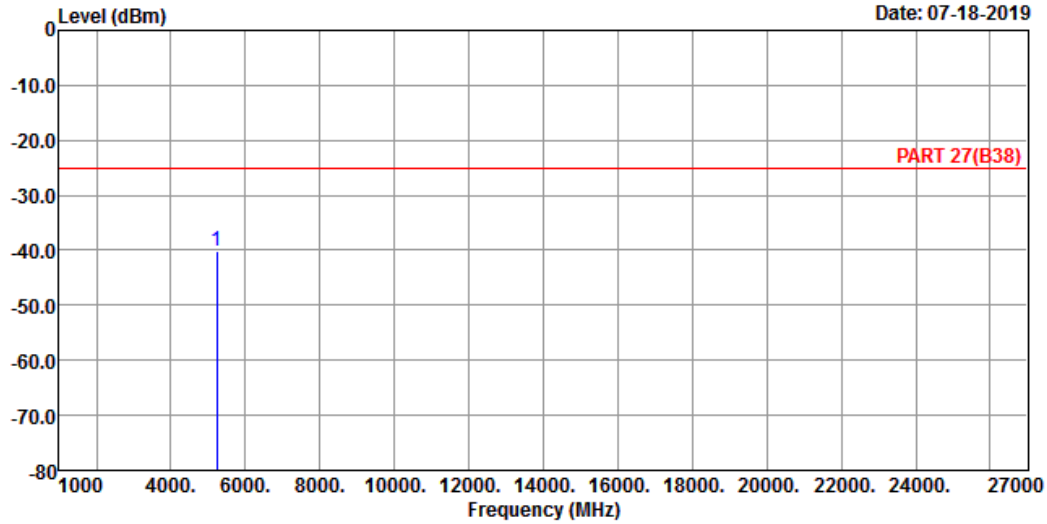
1 pp 5235.00 -46.52 -44.11 -25.00 -2.41 -21.52 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remak : LTE Band 38 QPSK_5M Link_H-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5235.00	-40.15	-37.74	-25.00	-2.41	-15.15	Peak

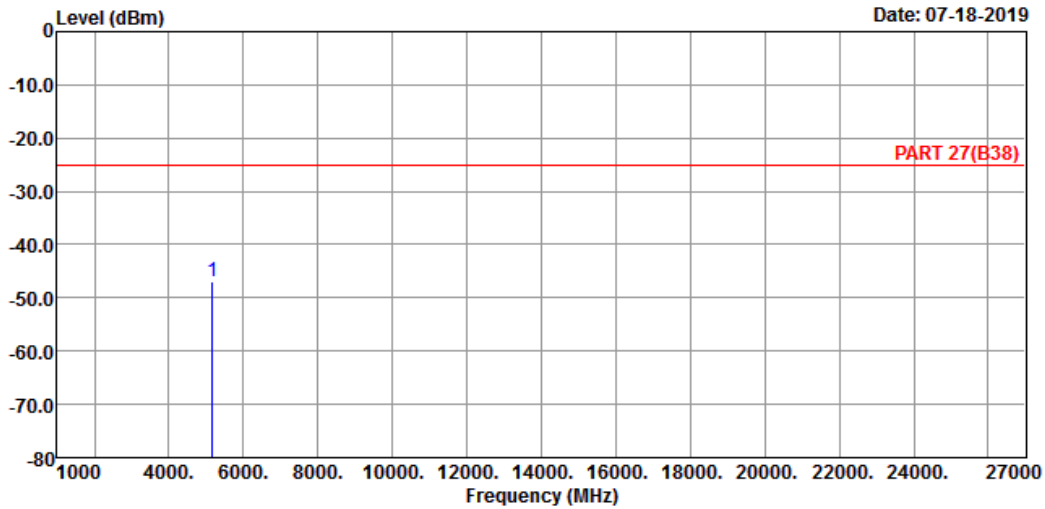
Channel Bandwidth: 20 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART 27(B38) HORIZONTAL
Remak : LTE Band 38 QPSK_20M Link_L-CH
Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

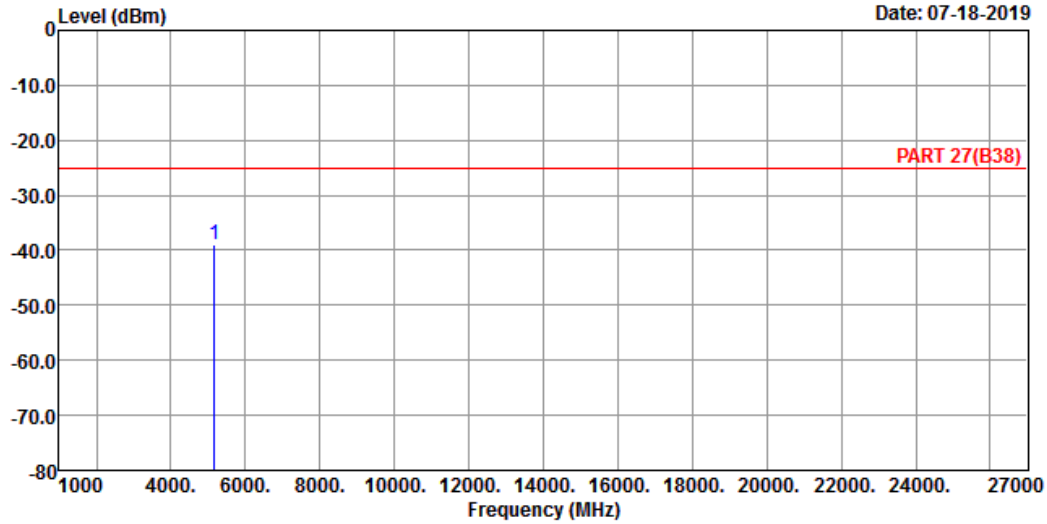
1 pp 5160.00 -47.06 -45.15 -25.00 -1.91 -22.06 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remak : LTE Band 38 QPSK_20M Link_L-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5160.00	-38.99	-37.08	-25.00	-1.91	-13.99	Peak

Middle Channel

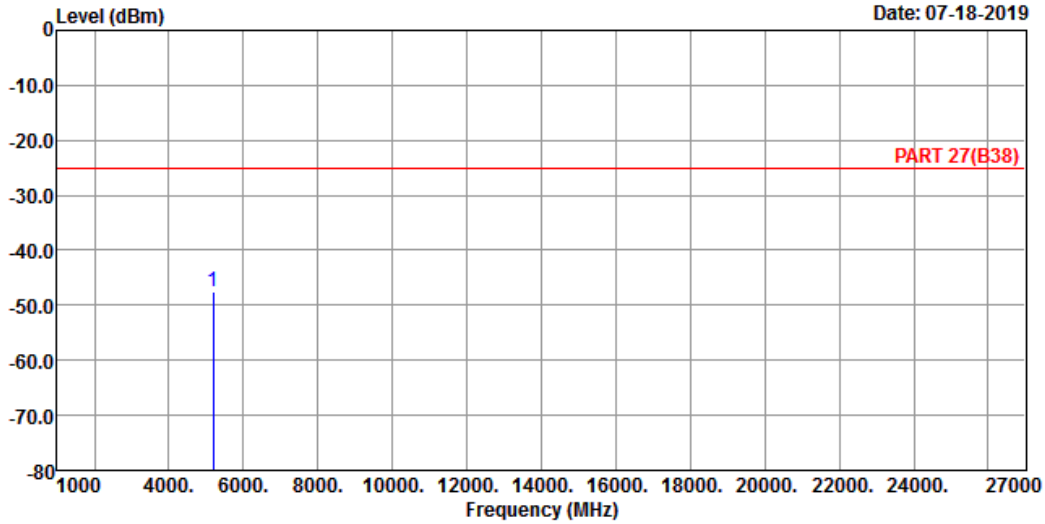


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_20M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

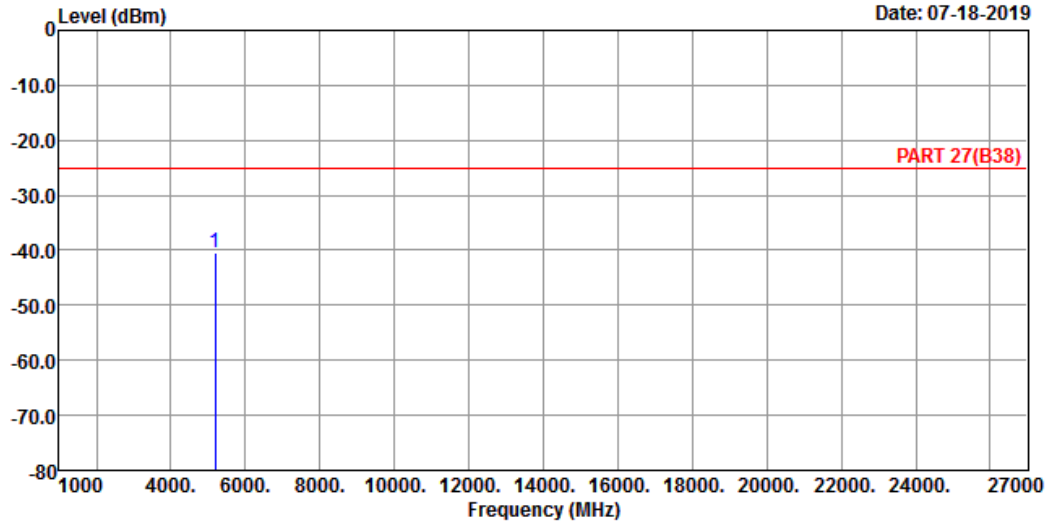
1 pp 5190.00 -47.48 -45.41 -25.00 -2.07 -22.48 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remark : LTE Band 38 QPSK_20M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5190.00	-40.46	-38.39	-25.00	-2.07	-15.46	Peak

High Channel

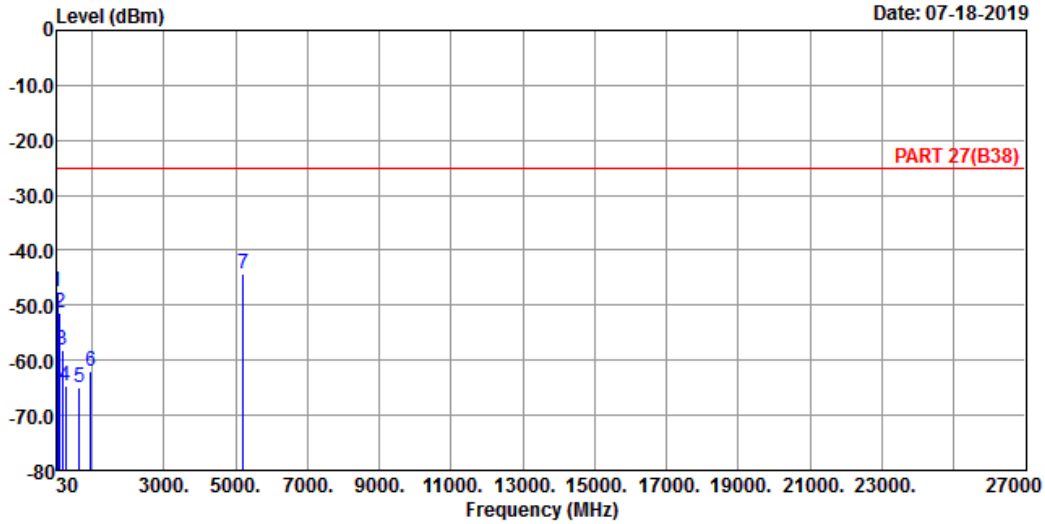


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) HORIZONTAL
 Remak : LTE Band 38 QPSK_20M Link_H-CH
 Tested by: Getaz Yang

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-47.53	-46.06	-25.00	-1.47	-22.53	Peak
2	104.69	-51.34	-40.90	-25.00	-10.44	-26.34	Peak
3	162.89	-58.17	-53.12	-25.00	-5.05	-33.17	Peak
4	272.50	-64.73	-58.28	-25.00	-6.45	-39.73	Peak
5	642.07	-64.80	-63.94	-25.00	-0.86	-39.80	Peak
6	952.47	-62.08	-63.98	-25.00	1.90	-37.08	Peak
7 pp	5220.00	-44.21	-41.91	-25.00	-2.30	-19.21	Peak

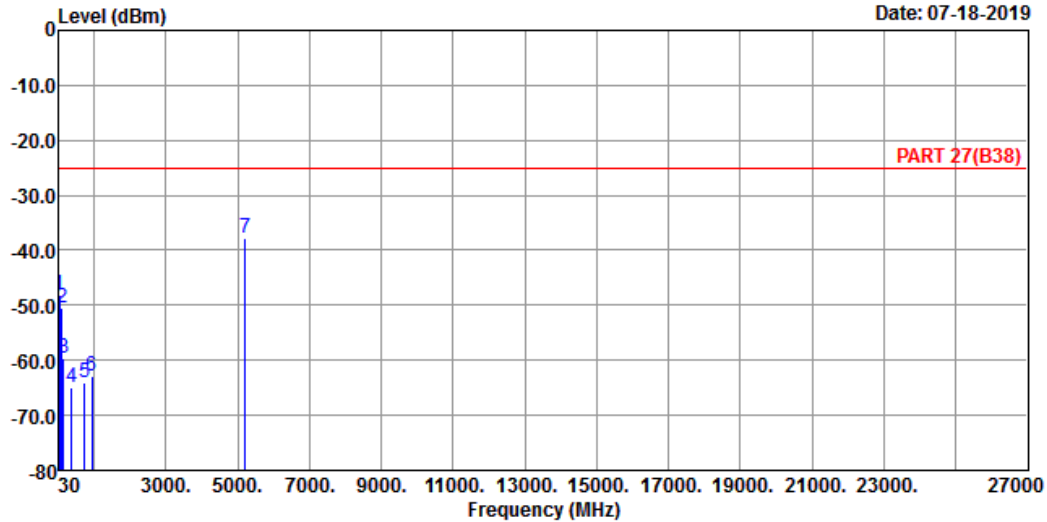


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B38) VERTICAL
 Remak : LTE Band 38 QPSK_20M Link_H-CH
 Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-48.00	-46.53	-25.00	-1.47	-23.00	Peak
2	105.66	-50.46	-40.04	-25.00	-10.42	-25.46	Peak
3	153.19	-59.65	-52.89	-25.00	-6.76	-34.65	Peak
4	385.99	-65.09	-59.06	-25.00	-6.03	-40.09	Peak
5	734.22	-64.05	-64.62	-25.00	0.57	-39.05	Peak
6	942.77	-63.01	-64.64	-25.00	1.63	-38.01	Peak
7 pp	5220.00	-37.83	-35.53	-25.00	-2.30	-12.83	Peak

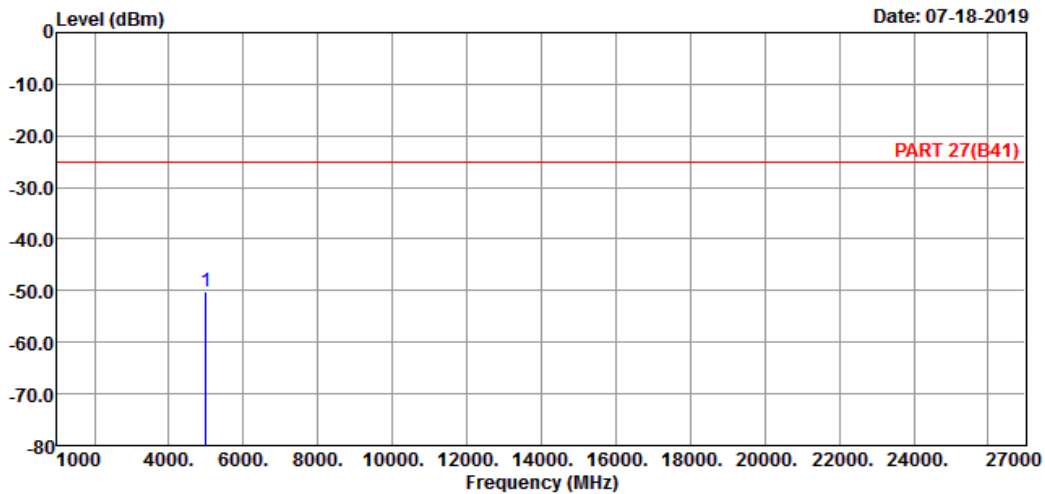
LTE Band 41
 Channel Bandwidth: 5 MHz / QPSK
 Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART 27(B41) HORIZONTAL
 Remak : LTE Band 41 QPSK_5M Link_L-CH
 Tested by: Getaz Yang

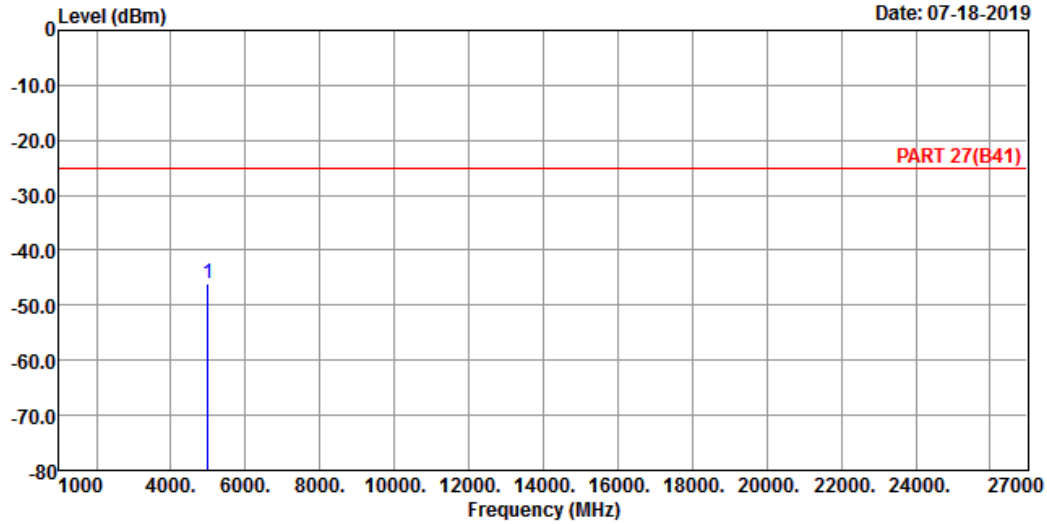
Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 4997.00	-50.10	-47.49	-25.00	-2.61	-25.10	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remark : LTE Band 41 QPSK_5M Link_L-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 4997.00	-46.13	-43.52	-25.00	-2.61	-21.13	Peak

Middle Channel

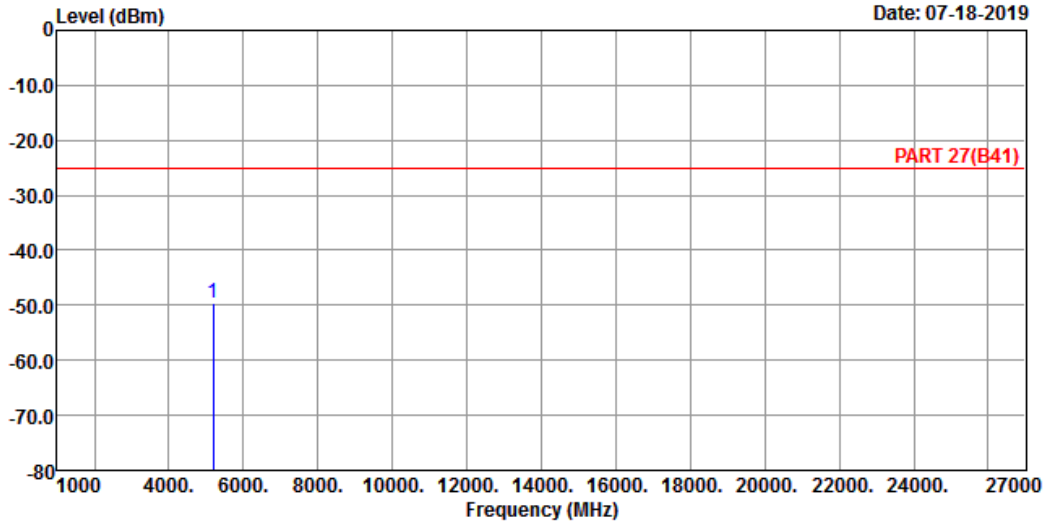


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B41) HORIZONTAL
 Remak : LTE Band 41 QPSK_5M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

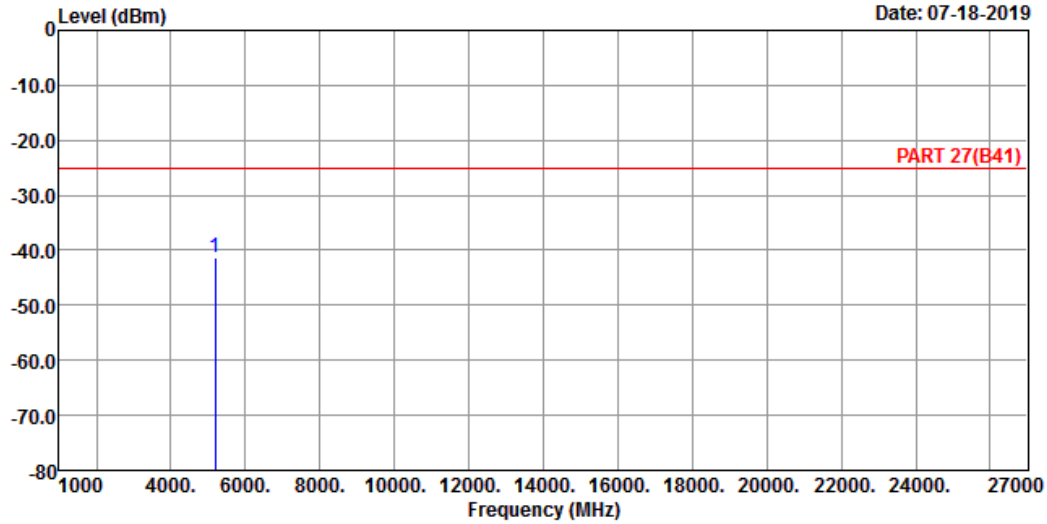
1 pp 5186.00 -49.66 -47.67 -25.00 -1.99 -24.66 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remark : LTE Band 41 QPSK_5M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 5186.00	-41.27	-39.28	-25.00	-1.99	-16.27 Peak

High Channel

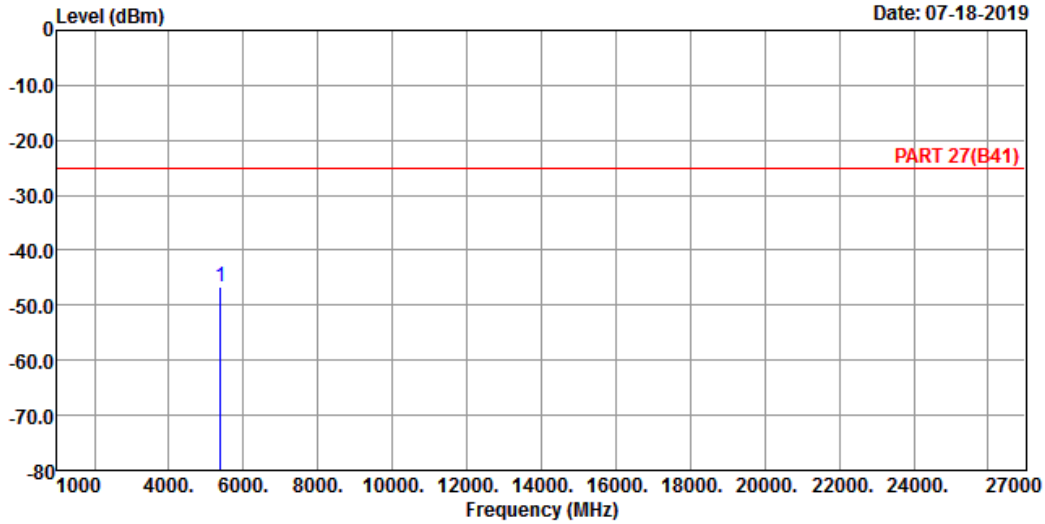


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B41) HORIZONTAL
 Remak : LTE Band 41 QPSK_5M Link_H-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

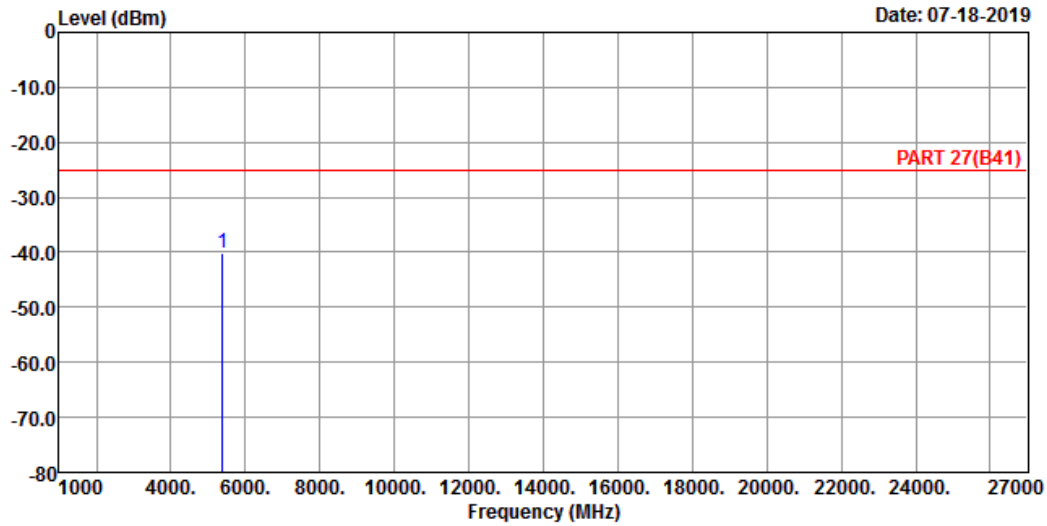
1 pp 5375.00 -46.73 -44.33 -25.00 -2.40 -21.73 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remark : LTE Band 41 QPSK_5M Link_H-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	
1 pp 5375.00	-40.21	-37.81	-25.00	-2.40	-15.21 Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

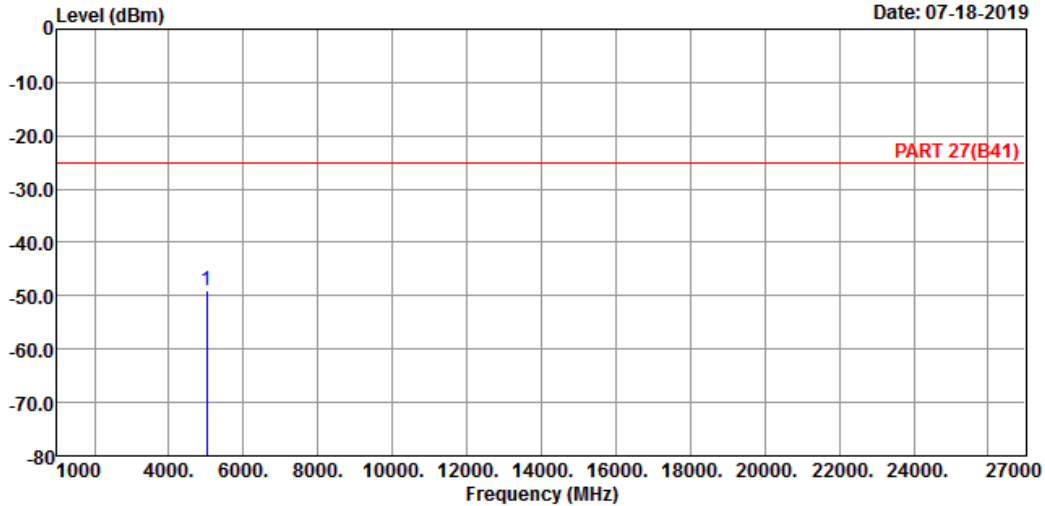


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
Condition: PART 27(B41) HORIZONTAL
Remak : LTE Band 41 QPSK_20M Link_L-CH
Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	

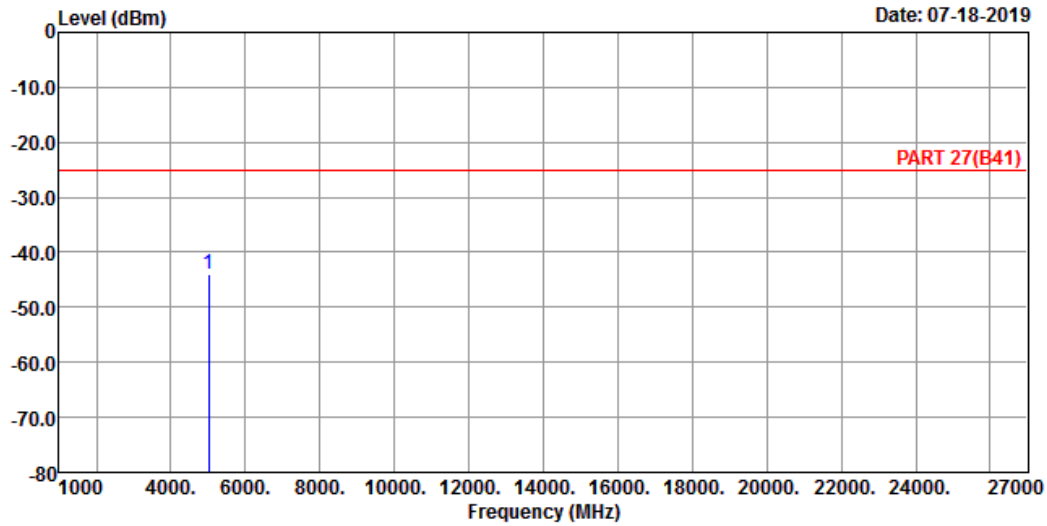
1 pp 5012.00 -49.02 -46.56 -25.00 -2.46 -24.02 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remark : LTE Band 41 QPSK_20M Link_L-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5012.00	-44.06	-41.60	-25.00	-2.46	-19.06	Peak

Middle Channel

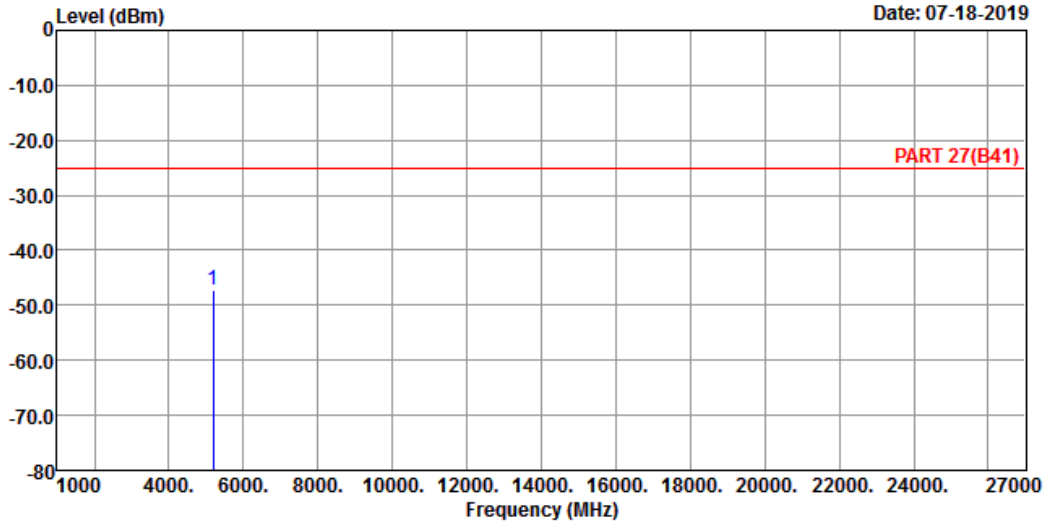


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B41) HORIZONTAL
 Remak : LTE Band 41 QPSK_20M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	

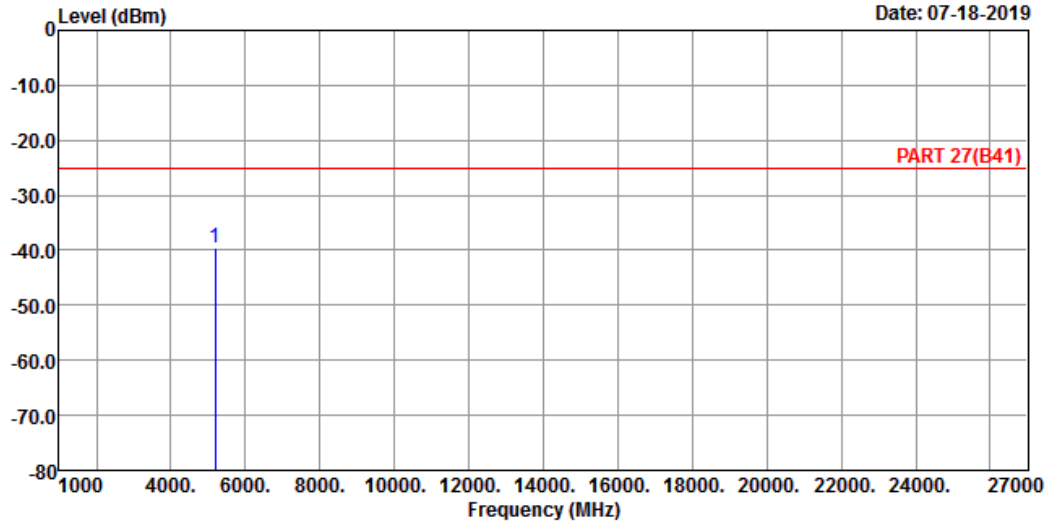
1 pp 5186.00 -47.10 -45.11 -25.00 -1.99 -22.10 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remak : LTE Band 41 QPSK_20M Link_M-CH
 Tested by: Getaz Yang

Freq	Level	Read Level	Limit	Over	Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 5186.00	-39.66	-37.67	-25.00	-1.99	-14.66 Peak

High Channel

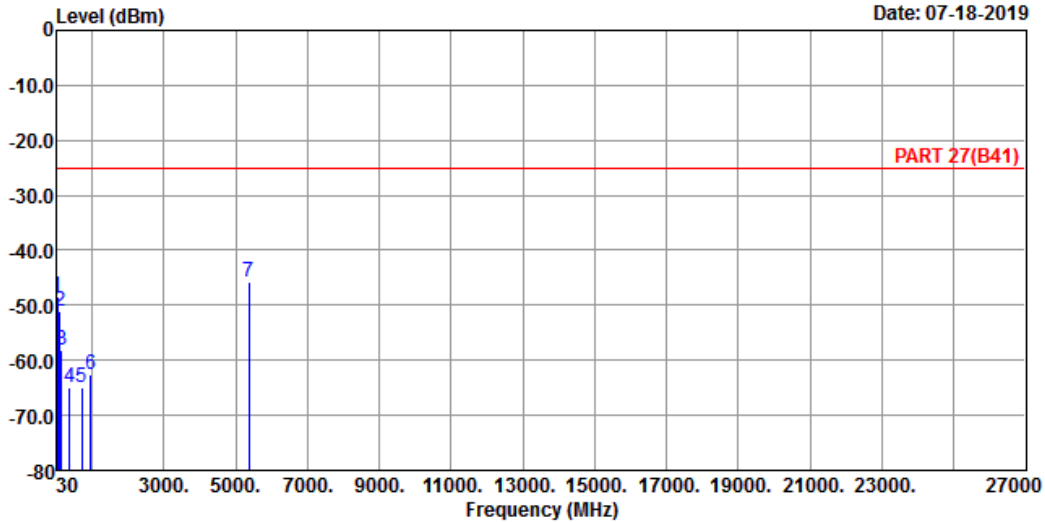


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B41) HORIZONTAL
 Remak : LTE Band 41 QPSK_20M Link_H-CH
 Tested by: Getaz Yang

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-48.28	-46.81	-25.00	-1.47	-23.28	Peak
2	105.66	-50.97	-40.55	-25.00	-10.42	-25.97	Peak
3	159.01	-58.19	-53.07	-25.00	-5.12	-33.19	Peak
4	386.96	-64.86	-58.84	-25.00	-6.02	-39.86	Peak
5	704.15	-64.91	-64.89	-25.00	-0.02	-39.91	Peak
6	969.93	-62.50	-65.02	-25.00	2.52	-37.50	Peak
7 pp	5360.00	-45.76	-43.25	-25.00	-2.51	-20.76	Peak

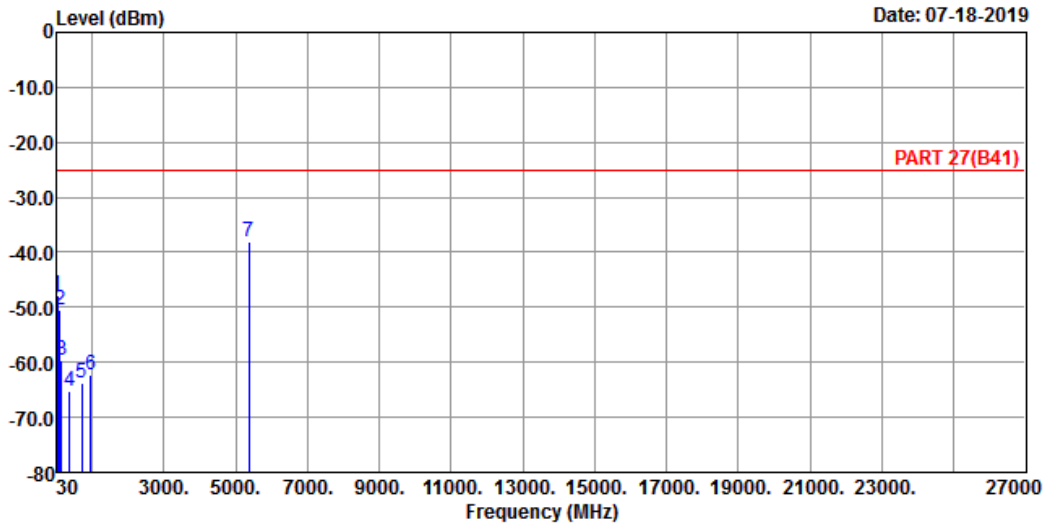


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 07-18-2019



Site : 966 Chamber 5
 Condition: PART 27(B41) VERTICAL
 Remak : LTE Band 41 QPSK_20M Link_H-CH
 Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-47.72	-46.25	-25.00	-1.47	-22.72	Peak
2	104.69	-50.47	-40.03	-25.00	-10.44	-25.47	Peak
3	153.19	-59.55	-52.79	-25.00	-6.76	-34.55	Peak
4	385.99	-65.15	-59.12	-25.00	-6.03	-40.15	Peak
5	714.82	-63.72	-63.91	-25.00	0.19	-38.72	Peak
6	967.02	-62.22	-64.63	-25.00	2.41	-37.22	Peak
7 pp	5360.00	-37.96	-35.45	-25.00	-2.51	-12.96	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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---