

FCC Test Report

(PART 27)

Report No.: RFBGSN-WTW-P21120080-8

FCC ID: 2AX8C-3545

Test Model: FL44TE

Received Date: Dec. 09, 2021

Test Date: Dec. 29, 2021 ~ Jan. 10, 2022

Issued Date: Jan. 24, 2022

Applicant: Amazon.com Services LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RFBGSN-WTW-P21120080-8	Original Release	Jan. 24, 2022

1 Certificate of Conformity

Product: Fleet Edge

Brand: N/A

Test Model: FL44TE

Sample Status: Engineering Sample

Applicant: Amazon.com Services LLC

Test Date: Dec. 29, 2021 ~ Jan. 10, 2022

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:** Jan. 24, 2022
Gina Liu / Specialist

Approved by : Jeremy Lin, **Date:** Jan. 24, 2022
Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(h)(2)	Equivalent Isotropically 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	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Channel Edge / Out of Band Emission Measurements	Pass	Meet the requirement of limit.
--	Peak To Average Ratio	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 -24.12 dB at 90.14 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	Sep. 22, 2021	Sep. 21, 2022
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 03, 2021	Dec. 02, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 12, 2021	Apr. 11, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 14, 2021	Nov. 13, 2022
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	209	Nov. 14, 2021	Nov. 13, 2022
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
Loop Antenna	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC 012645	980115	Oct. 05, 2021	Oct. 04, 2022
Preamplifier EMCI	EMC 184045	980116	Oct. 05, 2021	Oct. 04, 2022
Preamplifier EMCI	EMC 330H	980112	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	171005	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-100 0(140807)	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 05, 2021	Oct. 04, 2022
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	MT8820C	6201300640	Aug. 26, 2021	Aug. 25, 2022
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 07, 2021	Feb. 06, 2022
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2021	Sep. 09, 2022
DC power supply Keysight	U8002A	MY56330015	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 24, 2021	Jun. 23, 2022

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 10.

3 General Information

3.1 General Description of EUT

Product	Fleet Edge	
Brand	N/A	
Test Model	FL44TE	
Status of EUT	Engineering Sample	
Power Supply Rating	12 Vdc (Power Supply)	
Modulation Type	QPSK, 16QAM	
Frequency Range	LTE Band 7 (Channel Bandwidth: 5 MHz)	2502.5 ~ 2567.5 MHz
	LTE Band 7 (Channel Bandwidth: 10 MHz)	2505 ~ 2565 MHz
	LTE Band 7 (Channel Bandwidth: 15 MHz)	2507.5 ~ 2562.5 MHz
	LTE Band 7 (Channel Bandwidth: 20 MHz)	2510 ~ 2560 MHz
	LTE Band 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)	557.186 mW (27.46dBm)
	LTE Band 7 (Channel Bandwidth: 10 MHz)	615.177 mW (27.89dBm)
	LTE Band 7 (Channel Bandwidth: 15 MHz)	598.412 mW (27.77dBm)
	LTE Band 7 (Channel Bandwidth: 20 MHz)	647.143 mW (28.11dBm)
	LTE Band 41 (Channel Bandwidth: 5 MHz)	570.164 mW (27.56dBm)
	LTE Band 41 (Channel Bandwidth: 10 MHz)	608.135 mW (27.84dBm)
	LTE Band 41 (Channel Bandwidth: 15 MHz)	619.441 mW (27.92dBm)
	LTE Band 41 (Channel Bandwidth: 20 MHz)	653.131 mW (28.15dBm)
Emission Designator	LTE Band 7 (Channel Bandwidth: 5 MHz)	4M50G7D
	LTE Band 7 (Channel Bandwidth: 10 MHz)	8M97D7W
	LTE Band 7 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 7 (Channel Bandwidth: 20 MHz)	18M0D7W
	LTE Band 41 (Channel Bandwidth: 5 MHz)	4M50G7D
	LTE Band 41 (Channel Bandwidth: 10 MHz)	8M97G7D
	LTE Band 41 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 41 (Channel Bandwidth: 20 MHz)	17M9G7D
Antenna Type	Refer to Note as below	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. The EUT contains following accessory devices.

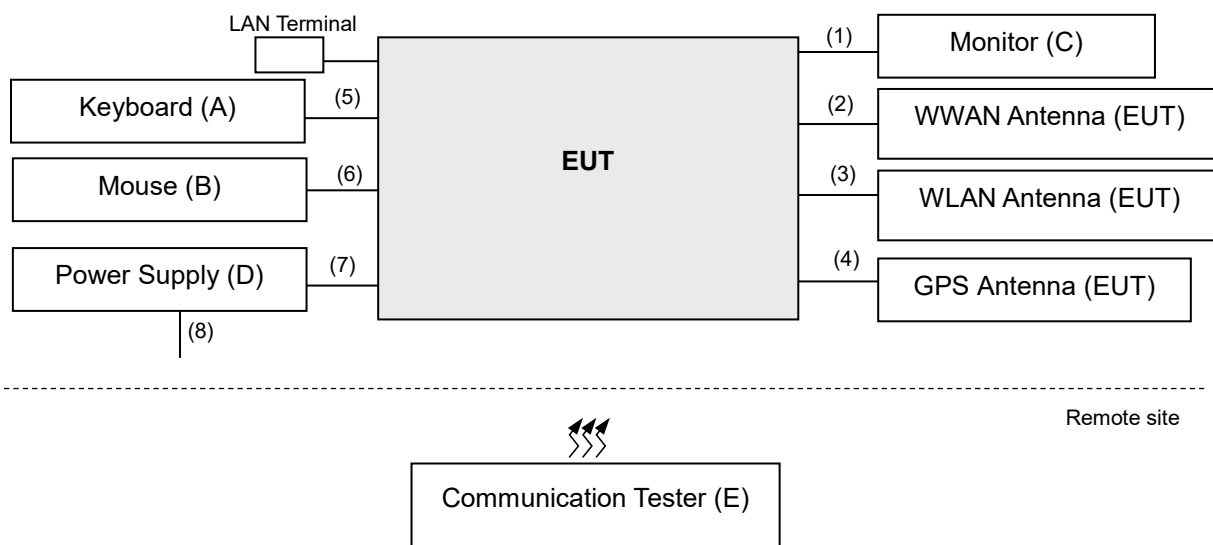
Product	Brand	Model	Description
BT/WLAN Module	Intel	9560NGW	802.11 a/b/g/n/ac Wireless LAN + Bluetooth 5
WWAN Module	Quectel	EM06-A	WCDMA, LTE
CPU	Intel	i5-9500TE	CFL-S, 6C 35W
SO-DIMM	Innodisk	--	2667MHz, 8G&16G
LTE Main Antenna	Rivian	N/A	Cable length: 2445mm P/N: J7-1
LTE Aux Antenna	Rivian	N/A	Cable length: 3520mm P/N: J6-1
WiFi Main Antenna	Rivian	PT00206181-A	Cable length: 3550mm P/N: J5-1
WiFi Aux Antenna	Rivian	PT00207642-A	Cable length: 2475mm P/N: J4-1

2. The antenna information is listed as below.

Antenna information		Antenna gain (dBi)	
Type	Ant.	LTE 7	LTE 41
Multiband Antennas	Main	4.4	4.4
	Aux	3.47	3.47

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

3.2 Configuration of System under Test



3.2.1 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Keyboard	Lenovo	KB1021	N/A	N/A	--
B	Mouse	DELL	MS111-P	CN-011D3V-71581-1CJ-092E	N/A	--
C	Monitor	HP	HP Z24s	6CM5172L56	N/A	--
D	Power Supply	NA	NA	NA	N/A	--
E	Communication Tester	R&S	CMU200	123295	N/A	For WCDMA
		ANRITSU	MT8821C	6201462755	N/A	For LTE

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

ID	Descriptions	Qty.	Length	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	HDMI Cable	1	2 m	N	0	-
2.	RF Cable	1	2445 mm	N	0	Accessory of the EUT
		1	3520 mm	N	0	Accessory of the EUT
3.	RF Cable	1	3550 mm	N	0	Accessory of the EUT
		1	2475 mm	N	0	Accessory of the EUT
4.	RF Cable	1	0.5 m	N	0	Accessory of the EUT
5.	USB Cable	1	2.4 m	N	0	-
6.	USB Cable	1	2.2 m	N	0	-
7.	DC power Cable	1	1.2 m	N	0	-
8.	AC power Cable	1	1.8 m	N	0	-

3.3 Test Mode Applicability and Tested Channel Detail

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

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

Band	EIRP	Radiated Emission
LTE Band 7	X-plane	X-plane
LTE Band 41	X-plane	X-plane

LTE Band 7

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20850 to 21350	21110	20 MHz	QPSK, 16QAM	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	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Out-of-Band Emissions	20775 to 21425	20775, 21425	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21400	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21375	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21350	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Conducted Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10 MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

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

LTE Band 41

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

Note:

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

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Modulation Characteristics	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Frequency Stability	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Occupied Bandwidth	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Out-of-Band Emissions	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Peak to Average Ratio	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Conducted Emission	25 deg. C, 65 % RH	12 Vdc	Rui Chan
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Tim Chen, Vincent Chen

3.4 EUT Operating Conditions

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

3.1 General Description of Applied Standards and references

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

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

ANSI 63.26-2015

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

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

4.1.2 Test Procedures

Conducted Power Measurement:

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

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{EIRP} = P_{\text{Meas}} + G_T$$

$$\text{ERP} = P_{\text{Meas}} + G_T - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

4.1.3 Test Setup

EIRP / ERP Measurement:

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 7															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20850	21100	21350				Channel		20825	21100	21375	
		Frequency (MHz)		2510.0	2535.0	2560.0				Frequency (MHz)		2507.5	2535.0	2562.5	
20M	QPSK	1	0	23.64	23.71	23.45	0	15M	QPSK	1	0	23.37	23.26	23.18	0
		1	50	22.69	22.78	22.60	0			1	37	22.79	22.74	22.68	0
		1	99	22.74	22.81	22.65	0			1	74	22.84	22.79	22.64	0
		50	0	22.09	22.20	22.00	1			36	0	21.98	21.96	21.88	1
		50	25	21.84	21.93	21.79	1			36	19	21.85	21.88	21.80	1
		50	50	21.74	21.89	21.75	1			36	39	21.76	21.78	21.61	1
	16QAM	100	0	22.01	22.17	22.07	1			75	0	21.96	21.91	21.81	1
		1	0	22.87	22.79	22.81	1		16QAM	1	0	22.77	22.63	22.39	1
		1	50	22.44	22.31	22.39	1			1	37	21.91	21.73	21.48	1
		1	99	22.51	22.37	22.50	1			1	74	21.89	21.79	21.62	1
		50	0	21.29	21.16	21.21	2			36	0	21.06	21.01	20.83	2
		50	25	21.07	20.94	20.94	2			36	19	20.92	20.83	20.75	2
10M	QPSK	50	50	20.96	20.83	20.78	2			36	39	20.84	20.72	20.64	2
		100	0	21.13	21.06	20.94	2			75	0	20.95	20.87	20.82	2
	16QAM	1	0	22.57	22.63	22.30	1	5M	QPSK	1	0	23.06	22.93	22.79	0
		1	24	22.06	22.22	21.91	1			1	12	23.00	22.79	22.64	0
		1	49	21.97	22.05	21.75	1			1	24	22.89	22.74	22.58	0
		25	0	20.96	21.06	20.83	2			12	0	22.06	21.93	21.86	1
		25	12	20.79	20.89	20.72	2			12	6	21.94	21.87	21.72	1
		25	25	20.79	20.84	20.76	2			12	13	21.92	21.84	21.63	1
	16QAM	50	0	20.82	20.81	20.64	2			25	0	21.82	21.82	21.52	1
		1	0	22.57	22.63	22.30	1		16QAM	1	0	22.41	22.45	22.42	1
		1	24	22.06	22.22	21.91	1			1	12	22.12	22.19	22.10	1
		1	49	21.97	22.05	21.75	1			1	24	21.93	22.05	21.86	1
		25	0	20.96	21.06	20.83	2			12	0	20.77	20.85	20.73	2
		25	12	20.79	20.89	20.72	2			12	6	20.80	20.86	20.65	2

LTE Band 41															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		39750	40620	41490				Channel		39725	40620	41515	
		Frequency (MHz)		2506.0	2593.0	2680.0				Frequency (MHz)		2503.5	2593.0	2682.5	
20M	QPSK	1	0	23.75	23.53	23.67	0	15M	QPSK	1	0	23.52	23.44	23.48	0
		1	50	22.79	22.63	22.67	0			1	37	22.94	22.85	22.93	0
		1	99	23.17	23.01	22.98	0			1	74	23.09	23.03	23.09	0
		50	0	22.31	22.25	22.28	1			36	0	22.06	21.95	21.94	1
		50	25	21.99	21.88	21.83	1			36	19	21.89	21.83	21.74	1
		50	50	22.11	22.02	21.89	1			36	39	21.74	21.74	21.66	1
	16QAM	100	0	22.35	22.22	22.04	1			75	0	21.86	21.82	21.66	1
		1	0	22.97	22.81	22.83	1		16QAM	1	0	22.74	22.63	22.57	1
		1	50	22.23	22.02	21.99	1			1	37	22.27	22.11	22.13	1
		1	99	22.40	22.27	22.17	1			1	74	22.29	22.09	22.04	1
		50	0	21.29	21.24	21.04	2			36	0	21.28	21.18	21.18	2
		50	25	21.11	21.05	20.95	2			36	19	20.97	20.97	21.06	2
10M	QPSK	50	50	20.91	20.93	20.90	2			36	39	20.74	20.77	20.86	2
		100	0	20.98	21.02	21.08	2			75	0	21.03	21.12	21.30	2
	16QAM	1	0	22.57	22.30	22.31	1	5M	QPSK	1	0	23.14	22.92	22.85	0
		1	24	22.36	22.11	22.08	1			1	12	23.16	22.86	22.86	0
		1	49	22.90	22.53	22.49	0			1	24	22.97	22.73	22.68	0
		25	0	22.53	22.09	22.11	1			12	0	22.11	21.97	22.01	1
		25	12	22.41	22.01	21.99	1			12	6	21.71	21.65	21.79	1
		25	25	22.19	21.83	21.85	1			12	13	21.74	21.76	21.82	1
	16QAM	50	0	22.34	21.91	21.91	1			25	0	21.81	21.83	21.92	1
		1	0	22.57	22.30	22.31	1		16QAM	1	0	22.32	22.13	22.00	1
		1	24	22.36	22.11	22.08	1			1	12	22.08	21.94	21.76	1
		1	49	22.14	21.97	21.88	1			1	24	22.23	22.04	21.88	1
		25	0	21.22	21.09	21.03	2			12	0	21.17	20.98	20.88	2
		25	12	20.95	20.88	20.91	2			12	6	20.96	20.76	20.70	2

EIRP Power (dBm)

LTE Band 7															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20850	21100	21350				Channel		20825	21100	21375	
		Frequency (MHz)		2510.0	2535.0	2560.0				Frequency (MHz)		2507.5	2535.0	2562.5	
20M	QPSK	1	0	28.04	28.11	27.85	0	15M	QPSK	1	0	27.77	27.66	27.58	0
		1	50	27.09	27.18	27.00	0			1	37	27.19	27.14	27.08	0
		1	99	27.14	27.21	27.05	0			1	74	27.24	27.19	27.04	0
		50	0	26.49	26.60	26.40	1			36	0	26.38	26.36	26.28	1
		50	25	26.24	26.33	26.19	1			36	19	26.25	26.28	26.20	1
		50	50	26.14	26.29	26.15	1			36	39	26.16	26.18	26.01	1
	16QAM	100	0	26.41	26.57	26.47	1			75	0	26.36	26.31	26.21	1
		1	0	27.27	27.19	27.21	1		16QAM	1	0	27.17	27.03	26.79	1
		1	50	26.84	26.71	26.79	1			1	37	26.31	26.13	25.88	1
		1	99	26.91	26.77	26.90	1			1	74	26.29	26.19	26.02	1
		50	0	25.69	25.56	25.61	2			36	0	25.46	25.41	25.23	2
		50	25	25.47	25.34	25.34	2			36	19	25.32	25.23	25.15	2
10M	QPSK	50	50	25.36	25.23	25.18	2			36	39	25.24	25.12	25.04	2
		100	0	25.53	25.46	25.34	2			75	0	25.35	25.27	25.22	2
	16QAM	1	0	27.89	27.52	27.37	0		QPSK	1	0	27.46	27.33	27.19	0
		1	24	27.43	27.15	27.02	0			1	12	27.40	27.19	27.04	0
		1	49	27.35	27.07	26.97	0			1	24	27.29	27.14	26.98	0
		25	0	26.67	26.44	26.35	1			12	0	26.46	26.33	26.26	1
		25	12	26.44	26.25	26.10	1			12	6	26.34	26.27	26.12	1
		25	25	26.38	26.28	26.13	1			12	13	26.32	26.24	26.03	1
5M	QPSK	50	0	26.36	26.32	26.13	1	5M	QPSK	25	0	26.22	26.22	25.92	1
		1	0	26.97	27.03	26.70	1			1	0	26.81	26.85	26.82	1
		1	24	26.46	26.62	26.31	1			1	12	26.52	26.59	26.50	1
		1	49	26.37	26.45	26.15	1			1	24	26.33	26.45	26.26	1
		25	0	25.36	25.46	25.23	2			12	0	25.17	25.25	25.13	2
		25	12	25.19	25.29	25.12	2			12	6	25.20	25.26	25.05	2
	16QAM	25	25	25.19	25.24	25.16	2		16QAM	12	13	25.12	25.24	24.93	2
		50	0	25.22	25.21	25.04	2			25	0	25.17	25.33	25.02	2

LTE Band 41															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		39750	40620	41490				Channel		39725	40620	41515	
		Frequency (MHz)		2506.0	2593.0	2680.0				Frequency (MHz)		2503.5	2593.0	2682.5	
20M	QPSK	1	0	28.15	27.93	28.07	0	15M	QPSK	1	0	27.92	27.84	27.88	0
		1	50	27.19	27.03	27.07	0			1	37	27.34	27.25	27.33	0
		1	99	27.57	27.41	27.38	0			1	74	27.49	27.43	27.49	0
		50	0	26.71	26.65	26.68	1			36	0	26.46	26.35	26.34	1
		50	25	26.39	26.28	26.23	1			36	19	26.29	26.23	26.14	1
		50	50	26.51	26.42	26.29	1			36	39	26.14	26.14	26.06	1
	16QAM	100	0	26.75	26.62	26.44	1			75	0	26.26	26.22	26.06	1
		1	0	27.37	27.21	27.23	1		16QAM	1	0	27.14	27.03	26.97	1
		1	50	26.63	26.42	26.39	1			1	37	26.67	26.51	26.53	1
		1	99	26.80	26.67	26.57	1			1	74	26.69	26.49	26.44	1
		50	0	25.69	25.64	25.44	2			36	0	25.68	25.58	25.58	2
		50	25	25.51	25.45	25.35	2			36	19	25.37	25.37	25.46	2
10M	QPSK	50	50	25.31	25.33	25.30	2			36	39	25.14	25.17	25.26	2
		100	0	25.38	25.42	25.48	2			75	0	25.43	25.52	25.70	2
	16QAM	1	0	27.84	27.44	27.46	0	5M	QPSK	1	0	27.54	27.32	27.25	0
		1	24	27.52	27.18	27.20	0			1	12	27.56	27.26	27.26	0
		1	49	27.30	26.93	26.89	0			1	24	27.37	27.13	27.08	0
		25	0	26.93	26.49	26.51	1			12	0	26.51	26.37	26.41	1
		25	12	26.81	26.41	26.39	1			12	6	26.11	26.05	26.19	1
		25	25	26.59	26.23	26.25	1			12	13	26.14	26.16	26.22	1
5M	QPSK	50	0	26.74	26.31	26.31	1			25	0	26.21	26.23	26.32	1
		1	0	26.97	26.70	26.71	1		16QAM	1	0	26.72	26.53	26.40	1
		1	24	26.76	26.51	26.48	1			1	12	26.48	26.34	26.16	1
		1	49	26.54	26.37	26.28	1			1	24	26.63	26.44	26.28	1
		25	0	25.62	25.49	25.43	2			12	0	25.57	25.38	25.28	2
		25	12	25.35	25.28	25.31	2			12	6	25.36	25.16	25.10	2
5M	16QAM	25	25	25.31	25.31	25.31	2			12	13	25.39	25.26	25.12	2
		50	0	25.41	25.43	25.45	2			25	0	25.34	25.24	25.09	2

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

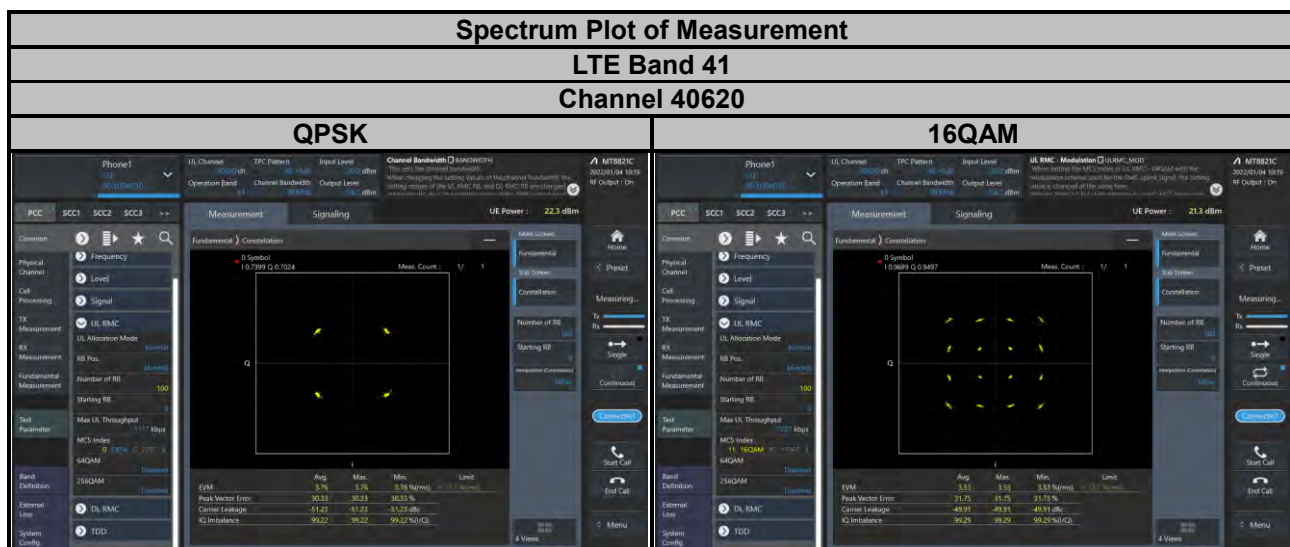
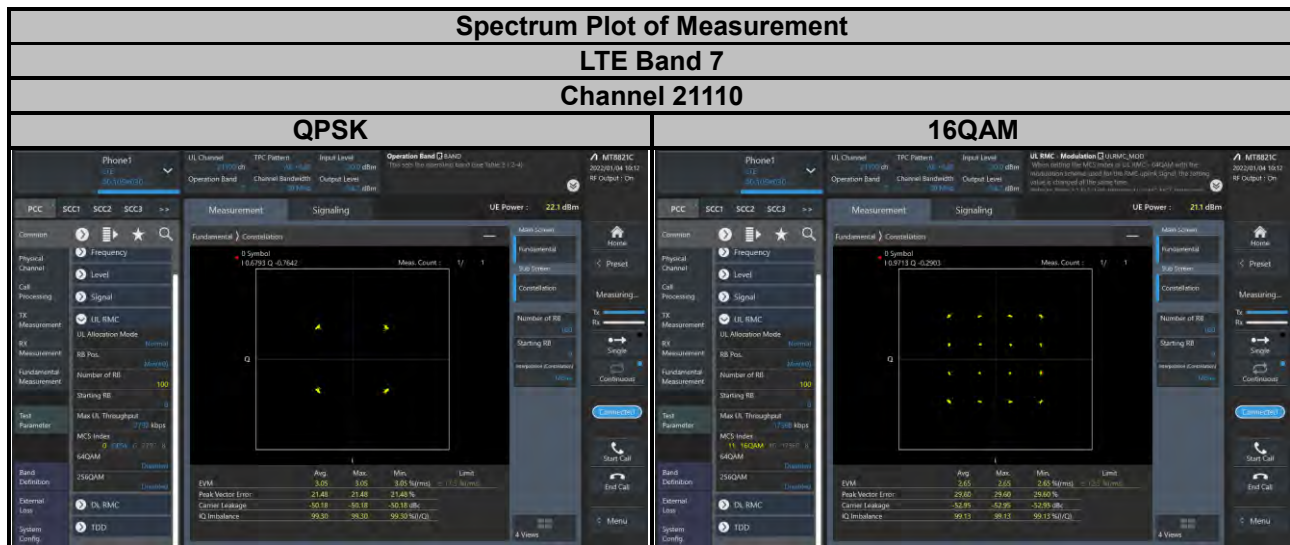
4.2.2 Test Setup



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



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

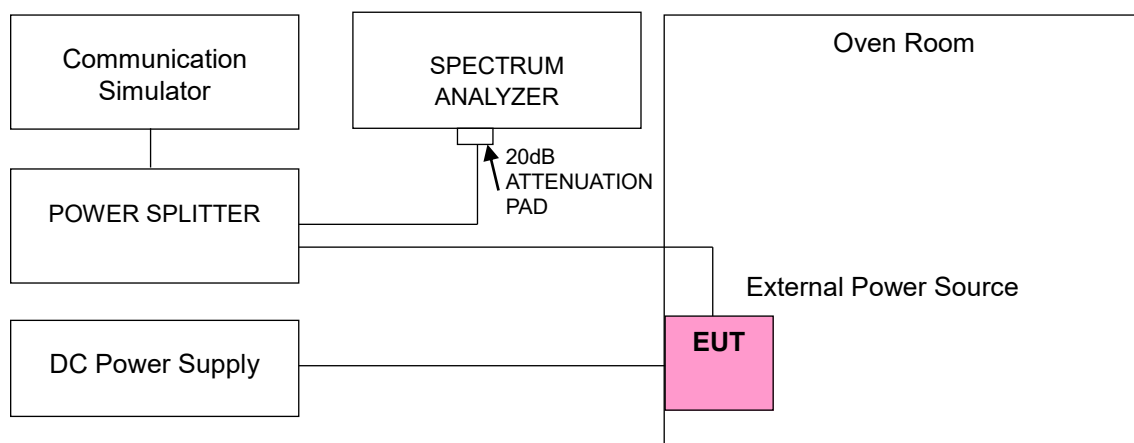
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary 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)
12	2502.500003	0.001	2567.500002	0.001
10.2	2502.500004	0.002	2567.500001	0.000
13.8	2502.500003	0.001	2567.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2502.500001	0.000	2567.500003	0.001
-20	2502.500004	0.002	2567.500003	0.001
-10	2502.500002	0.001	2567.500004	0.002
0	2502.500004	0.002	2567.500002	0.001
10	2502.500002	0.001	2567.500002	0.001
20	2502.499998	-0.001	2567.499996	-0.002
30	2502.499996	-0.002	2567.499998	-0.001
40	2502.499998	-0.001	2567.499997	-0.001
50	2502.499997	-0.001	2567.499996	-0.002
60	2502.499998	-0.001	2567.499997	-0.001
70	2502.499998	-0.001	2567.499999	0.000
80	2502.499997	-0.001	2567.499997	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2505.000004	0.002	2565.000004	0.002
10.2	2505.000001	0.000	2565.000003	0.001
13.8	2505.000004	0.002	2565.000001	0.000

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2505.000004	0.002	2565.000001	0.000
-20	2505.000001	0.000	2565.000001	0.000
-10	2505.000004	0.002	2565.000002	0.001
0	2505.000001	0.000	2565.000002	0.001
10	2505.000002	0.001	2565.000004	0.002
20	2504.999997	-0.001	2564.999998	-0.001
30	2504.999996	-0.002	2564.999996	-0.002
40	2504.999997	-0.001	2564.999999	0.000
50	2504.999996	-0.002	2564.999997	-0.001
60	2504.999997	-0.001	2564.999997	-0.001
70	2504.999997	-0.001	2564.999999	0.000
80	2504.999998	-0.001	2564.999997	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2507.500004	0.002	2562.500003	0.001
10.2	2507.500002	0.001	2562.500004	0.002
13.8	2507.500002	0.001	2562.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2507.500002	0.001	2562.500004	0.002
-20	2507.500001	0.000	2562.500003	0.001
-10	2507.500001	0.000	2562.500002	0.001
0	2507.500001	0.000	2562.500002	0.001
10	2507.500003	0.001	2562.500002	0.001
20	2507.499998	-0.001	2562.499997	-0.001
30	2507.499996	-0.002	2562.499997	-0.001
40	2507.499998	-0.001	2562.499997	-0.001
50	2507.499999	0.000	2562.499997	-0.001
60	2507.499998	-0.001	2562.499996	-0.002
70	2507.499998	-0.001	2562.499997	-0.001
80	2507.499997	-0.001	2562.499997	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2510.000003	0.001	2560.000002	0.001
10.2	2510.000002	0.001	2560.000003	0.001
13.8	2510.000001	0.000	2560.000001	0.000

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2510.000002	0.001	2560.000001	0.000
-20	2510.000001	0.000	2560.000002	0.001
-10	2510.000004	0.002	2560.000002	0.001
0	2510.000002	0.001	2560.000002	0.001
10	2510.000002	0.001	2560.000003	0.001
20	2509.999996	-0.002	2559.999998	-0.001
30	2509.999998	-0.001	2559.999997	-0.001
40	2509.999998	-0.001	2559.999999	0.000
50	2509.999998	-0.001	2559.999997	-0.001
60	2509.999996	-0.002	2559.999996	-0.002
70	2509.999998	-0.001	2559.999999	0.000
80	2509.999997	-0.001	2559.999998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2498.500002	0.001	2687.500004	0.001
10.2	2498.500004	0.002	2687.500002	0.001
13.8	2498.500001	0.000	2687.500003	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2498.500004	0.002	2687.500001	0.000
-20	2498.500002	0.001	2687.500003	0.001
-10	2498.500004	0.002	2687.500003	0.001
0	2498.500003	0.001	2687.500001	0.000
10	2498.500003	0.001	2687.500004	0.001
20	2498.499996	-0.002	2687.499996	-0.001
30	2498.499996	-0.002	2687.499998	-0.001
40	2498.499998	-0.001	2687.499999	0.000
50	2498.499997	-0.001	2687.499998	-0.001
60	2498.499996	-0.002	2687.499998	-0.001
70	2498.499996	-0.002	2687.499997	-0.001
80	2498.499998	-0.001	2687.499998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2501.000004	0.002	2685.000004	0.001
10.2	2501.000002	0.001	2685.000001	0.000
13.8	2501.000001	0.001	2685.000002	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2501.000002	0.001	2685.000003	0.001
-20	2501.000003	0.001	2685.000004	0.001
-10	2501.000004	0.002	2685.000003	0.001
0	2501.000004	0.002	2685.000003	0.001
10	2501.000003	0.001	2685.000004	0.001
20	2500.999997	-0.001	2684.999996	-0.001
30	2500.999996	-0.002	2684.999998	-0.001
40	2500.999997	-0.001	2684.999998	-0.001
50	2500.999998	-0.001	2684.999998	-0.001
60	2500.999999	0.000	2684.999996	-0.001
70	2500.999997	-0.001	2684.999998	-0.001
80	2500.999998	-0.001	2684.999996	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2503.500001	0.000	2682.500003	0.001
10.2	2503.500002	0.001	2682.500003	0.001
13.8	2503.500002	0.001	2682.500002	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2503.500004	0.002	2682.500003	0.001
-20	2503.500002	0.001	2682.500003	0.001
-10	2503.500003	0.001	2682.500002	0.001
0	2503.500003	0.001	2682.500002	0.001
10	2503.500002	0.001	2682.500003	0.001
20	2503.499997	-0.001	2682.499997	-0.001
30	2503.499997	-0.001	2682.499998	-0.001
40	2503.499996	-0.002	2682.499999	0.000
50	2503.499999	0.000	2682.499997	-0.001
60	2503.499998	-0.001	2682.499996	-0.001
70	2503.499999	0.000	2682.499996	-0.001
80	2503.499998	-0.001	2682.499998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°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)
12	2506.000003	0.001	2680.000004	0.001
10.2	2506.000002	0.001	2680.000004	0.001
13.8	2506.000001	0.000	2680.000004	0.001

Note: The applicant defined the normal working voltage of the battery is from 10.2 Vdc to 13.8 Vdc.

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)
-30	2506.000002	0.001	2680.000002	0.001
-20	2506.000003	0.001	2680.000002	0.001
-10	2506.000001	0.000	2680.000001	0.000
0	2506.000001	0.000	2680.000002	0.001
10	2506.000004	0.002	2680.000002	0.001
20	2505.999997	-0.001	2679.999997	-0.001
30	2505.999998	-0.001	2679.999998	-0.001
40	2505.999997	-0.001	2679.999996	-0.001
50	2505.999996	-0.002	2679.999997	-0.001
60	2505.999998	-0.001	2679.999996	-0.001
70	2505.999998	-0.001	2679.999999	0.000
80	2505.999998	-0.001	2679.999999	0.000

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30°C to 80°C.
2. The EUT would shut down automatically as below -30°C.

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

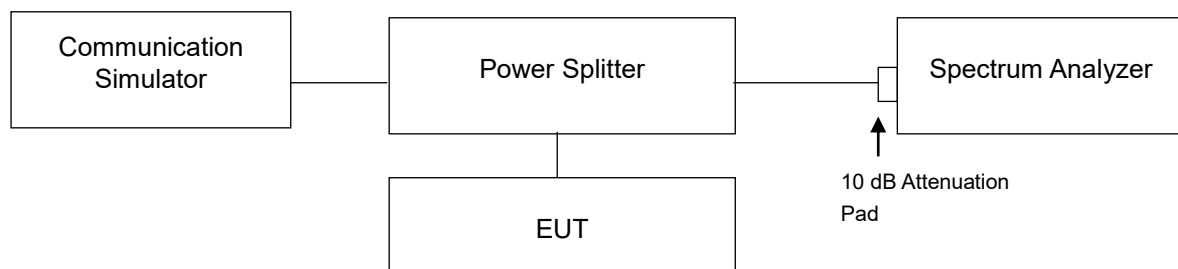
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

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.
- Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

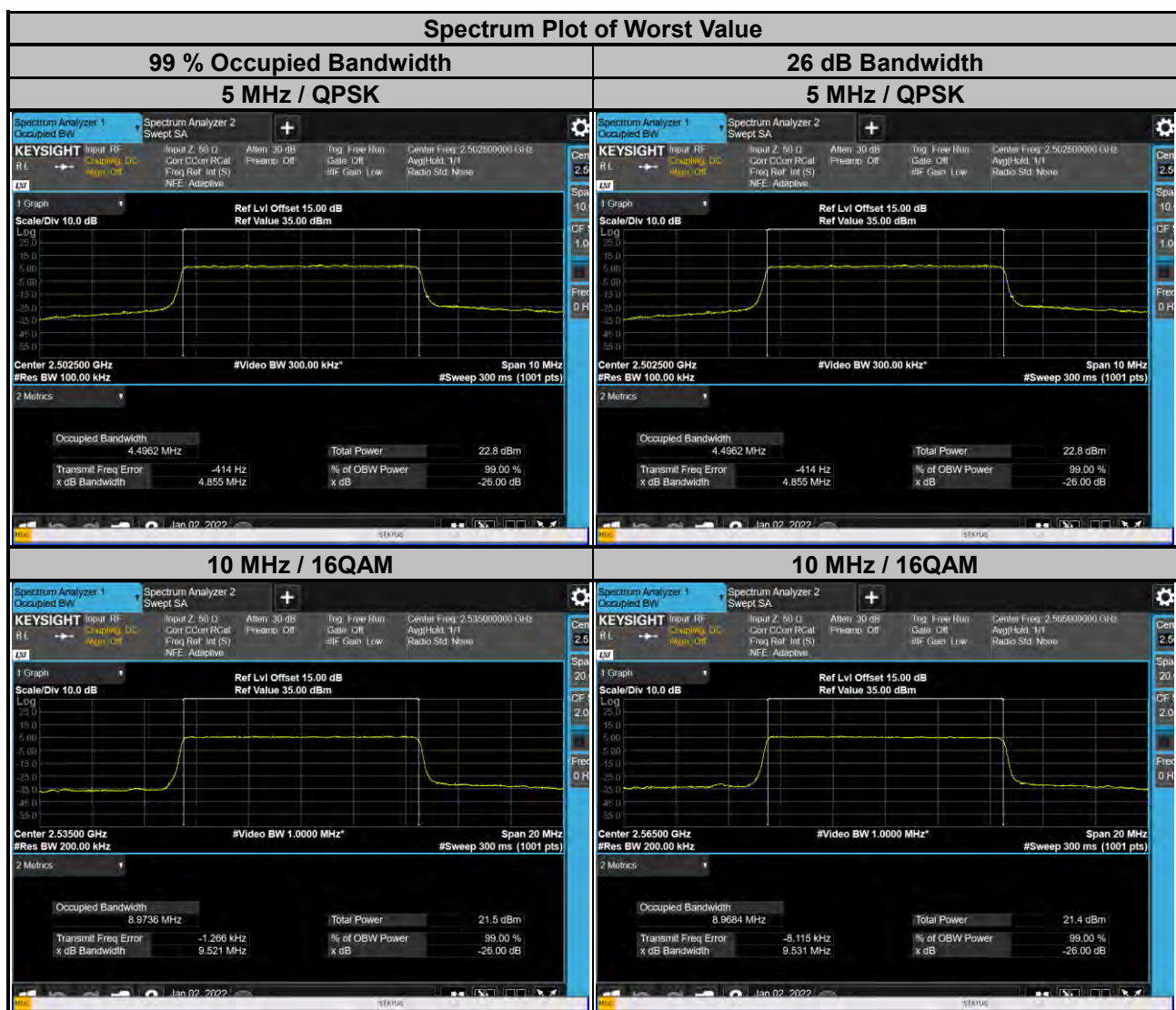
For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.3 Test Setup

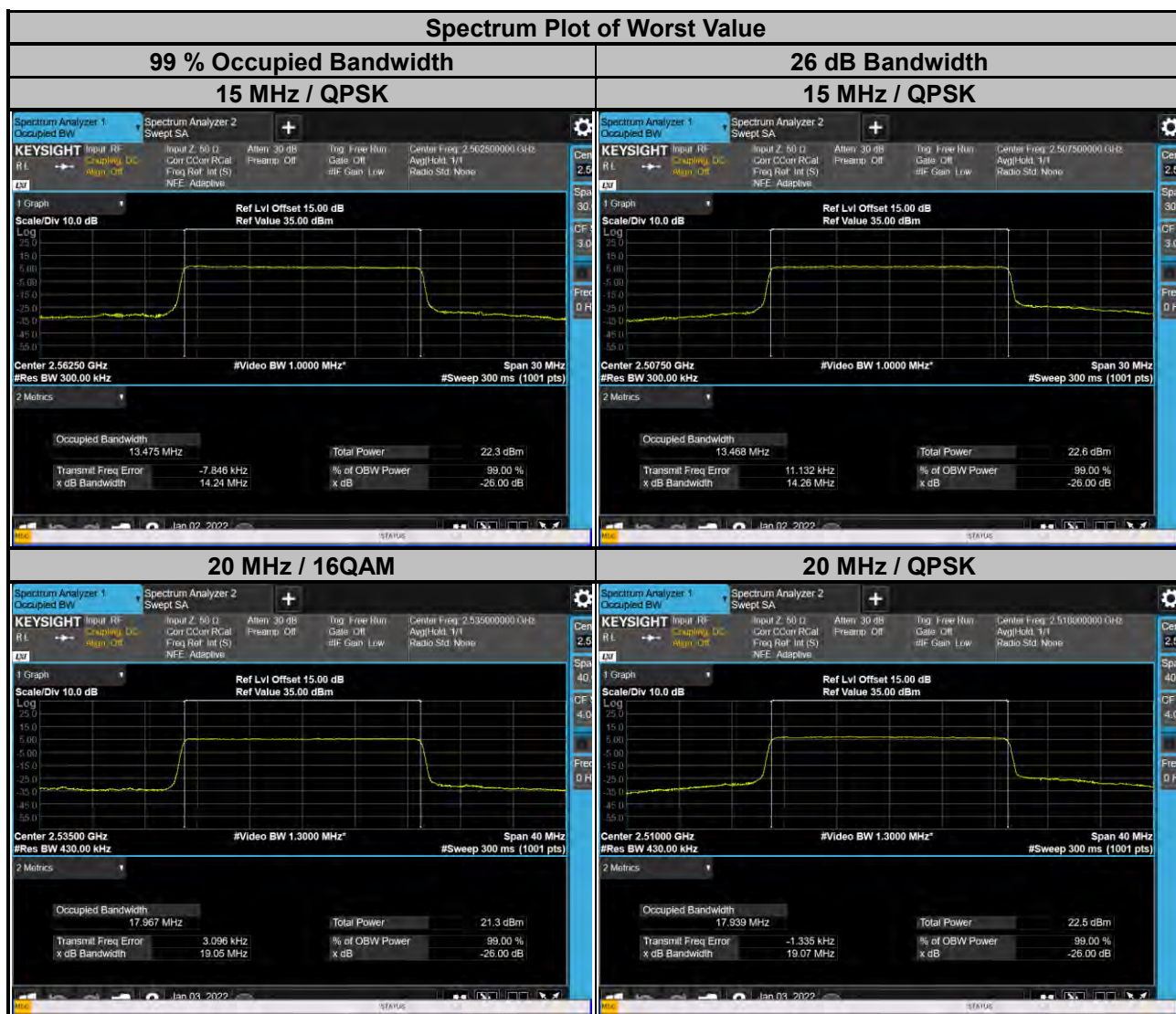


4.4.4 Test Results

LTE Band 7					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20775	2502.5	4.50	4.49	4.86	4.81
21100	2535.0	4.49	4.49	4.83	4.82
21425	2567.5	4.49	4.49	4.82	4.80
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20800	2505.0	8.97	8.97	9.52	9.52
21100	2535.0	8.97	8.97	9.50	9.52
21400	2565.0	8.97	8.97	9.52	9.53



LTE Band 7					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20825	2507.5	13.47	13.45	14.26	14.26
21100	2535.0	13.47	13.46	14.26	14.25
21375	2562.5	13.47	13.46	14.24	14.26
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20850	2510.0	17.94	17.94	19.07	19.05
21100	2535.0	17.96	17.97	19.07	19.05
21350	2560.0	17.95	17.96	19.03	19.04



LTE Band 41

Channel Bandwidth: 5 MHz

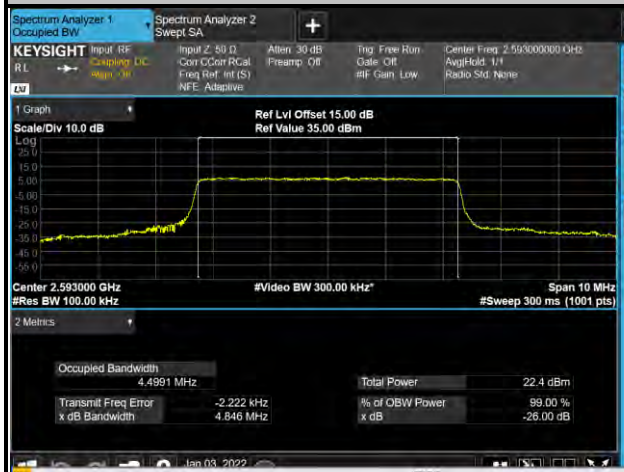
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39675	2498.5	4.50	4.50	4.84	4.84
40620	2593.0	4.50	4.49	4.85	4.81
41565	2687.5	4.50	4.49	4.84	4.82

Channel Bandwidth: 10 MHz

Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39700	2501.0	8.97	8.97	9.50	9.51
40620	2593.0	8.96	8.96	9.50	9.51
41540	2685.0	8.97	8.97	9.51	9.51

Spectrum Plot of Worst Value

99 % Occupied Bandwidth 5 MHz / QPSK



26 dB Bandwidth 5 MHz / QPSK



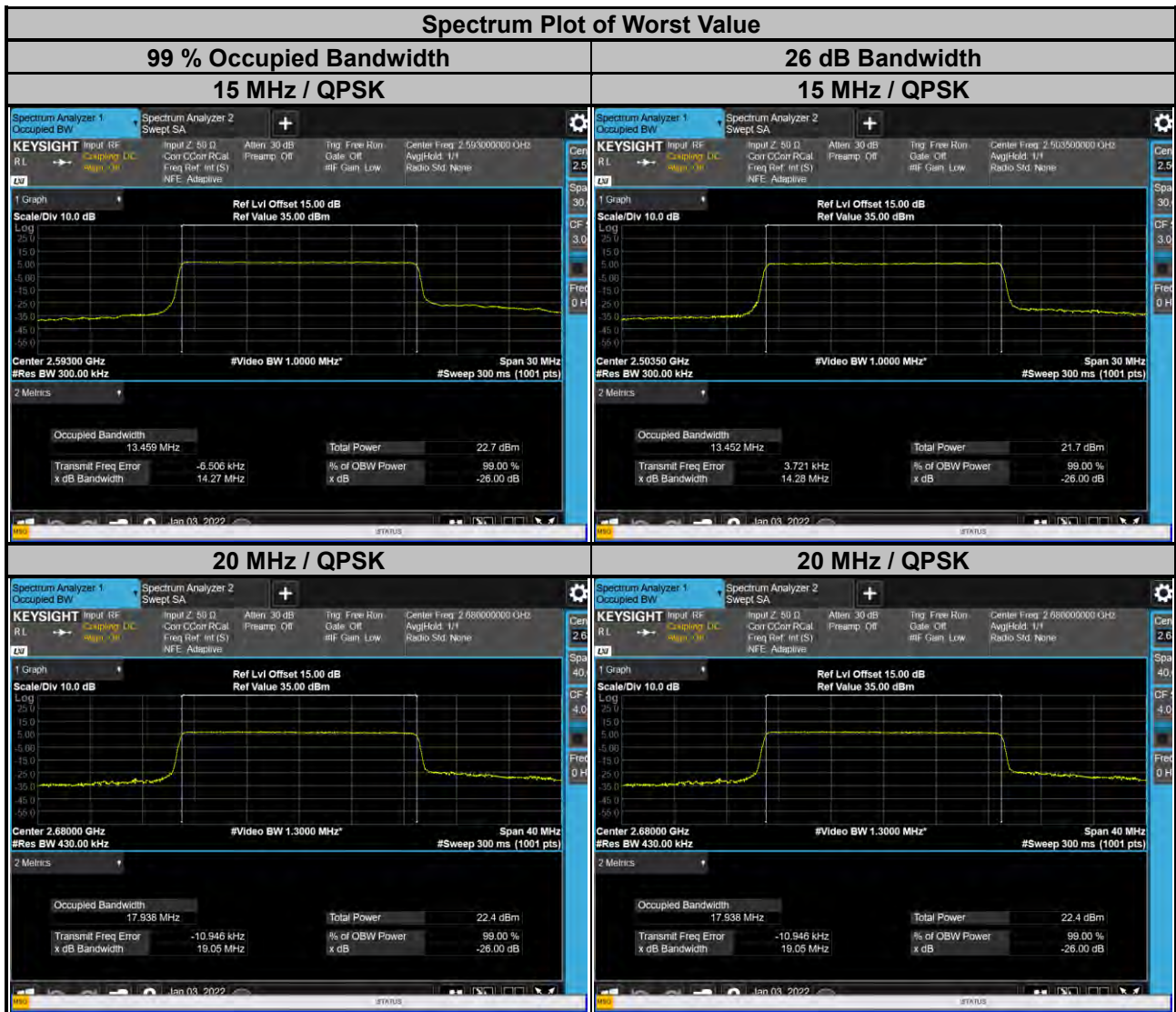
10 MHz / QPSK



10 MHz / QPSK



LTE Band 41					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39725	2503.5	13.45	13.45	14.28	14.26
40620	2593.0	13.46	13.45	14.27	14.25
41515	2682.5	13.46	13.45	14.26	14.25
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
39750	2506.0	17.93	17.92	19.03	19.04
40620	2593.0	17.94	17.93	19.05	19.03
41490	2680.0	17.94	17.94	19.05	19.03

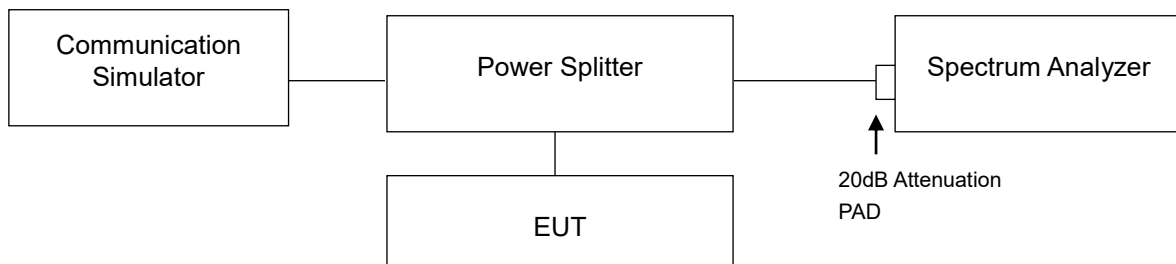


4.5 Out-of-Band Emissions Measurement

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 than $43 + 10 \log (P)$ 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.

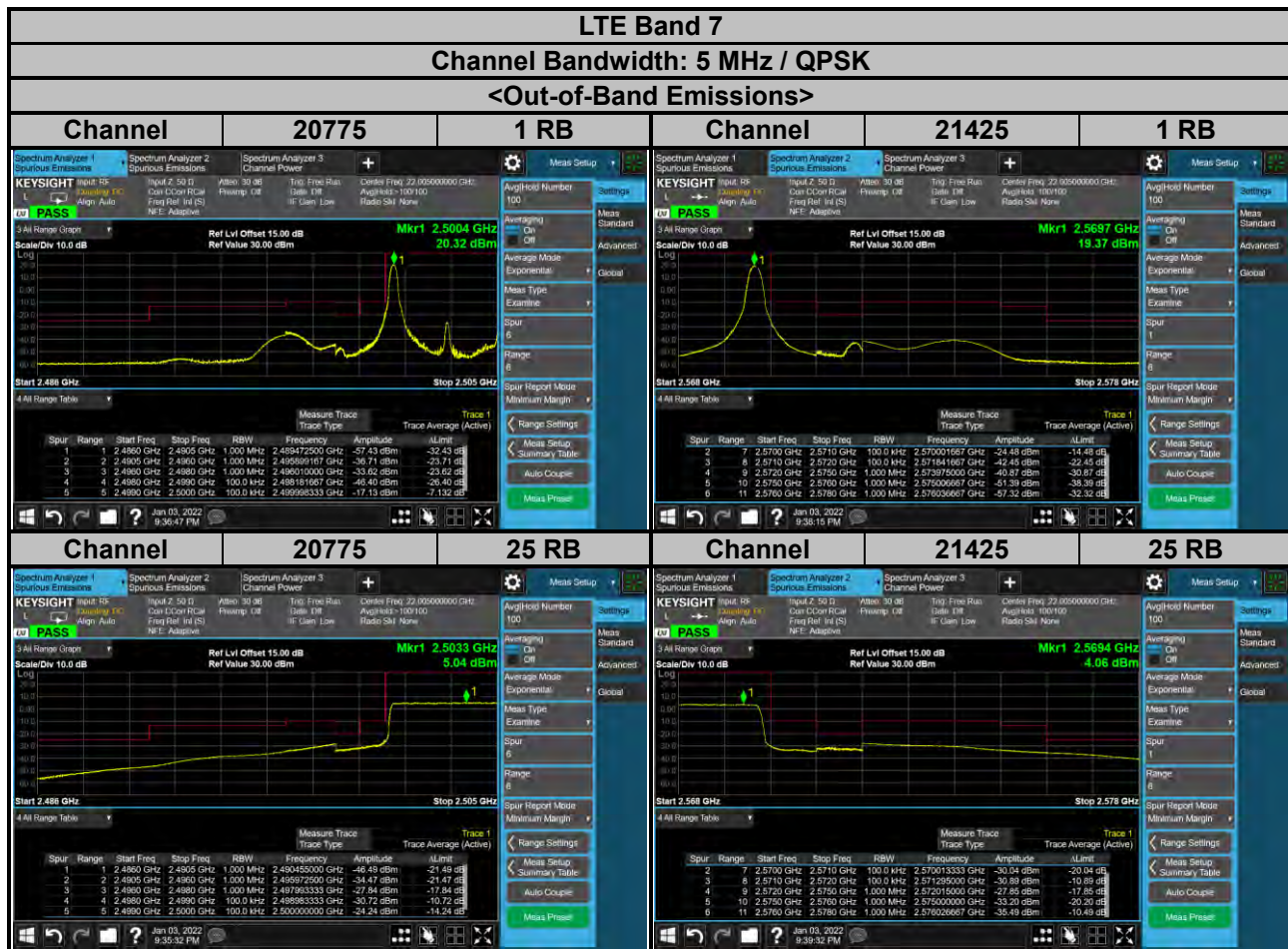
4.5.2 Test Setup

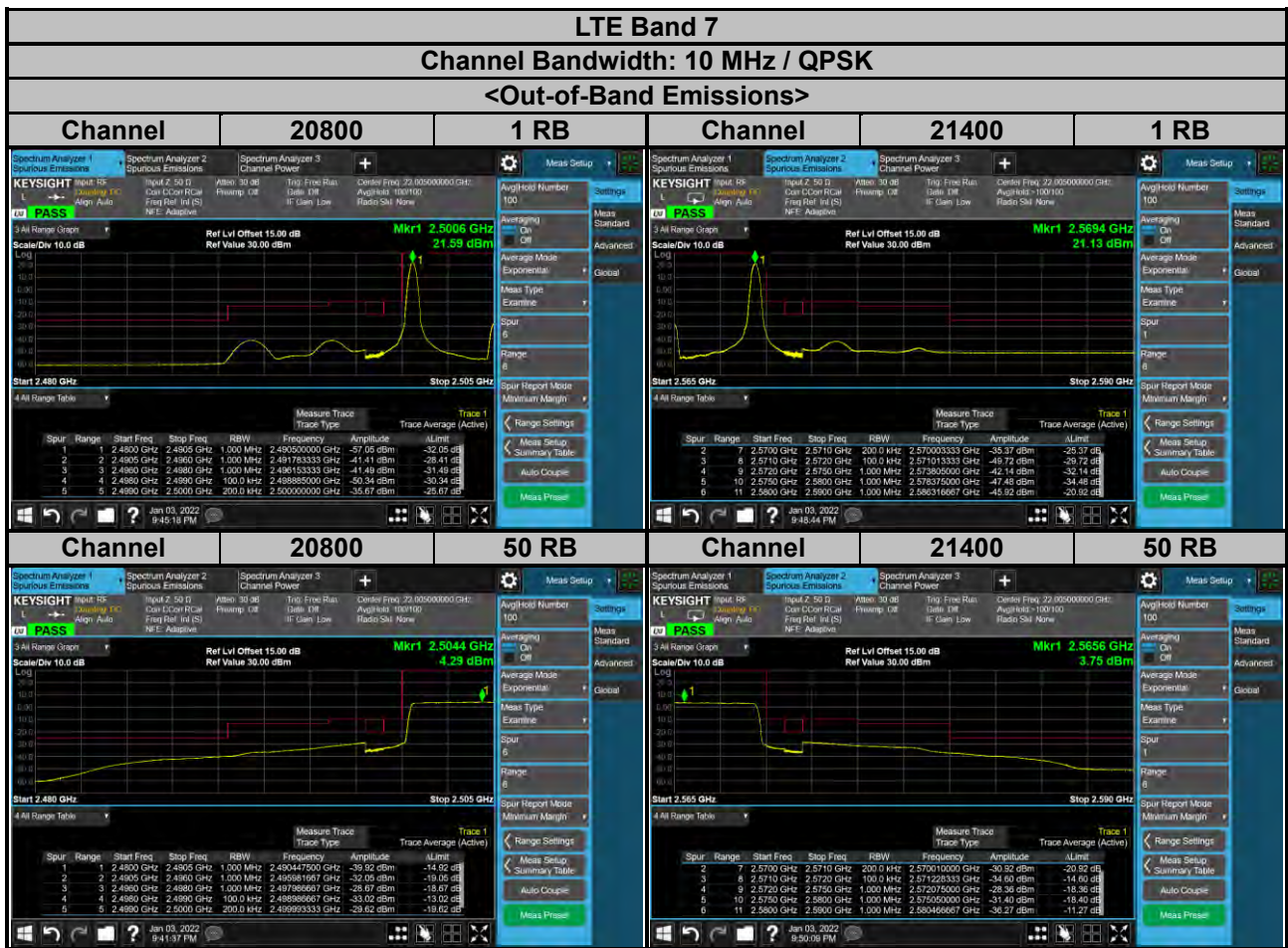


4.5.3 Test Procedures

- 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

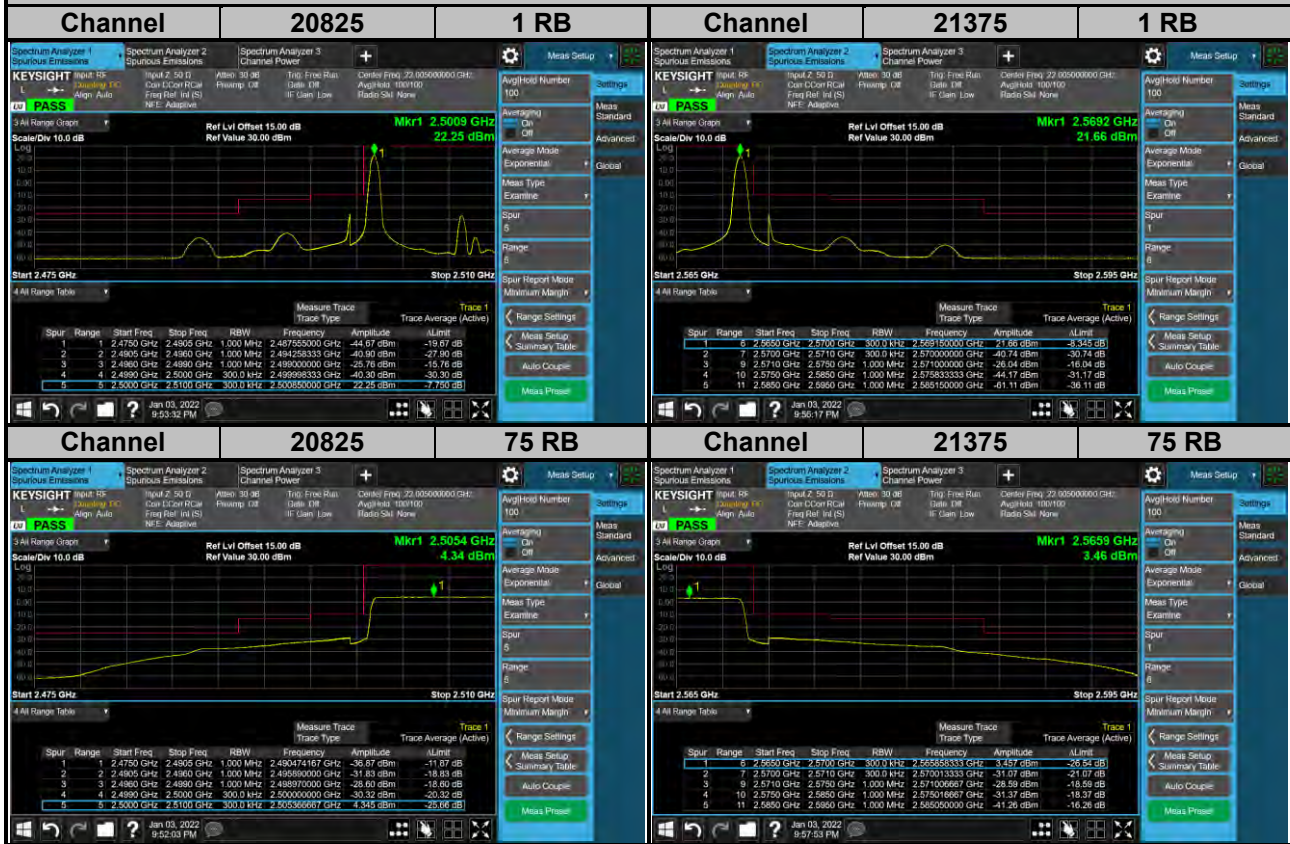


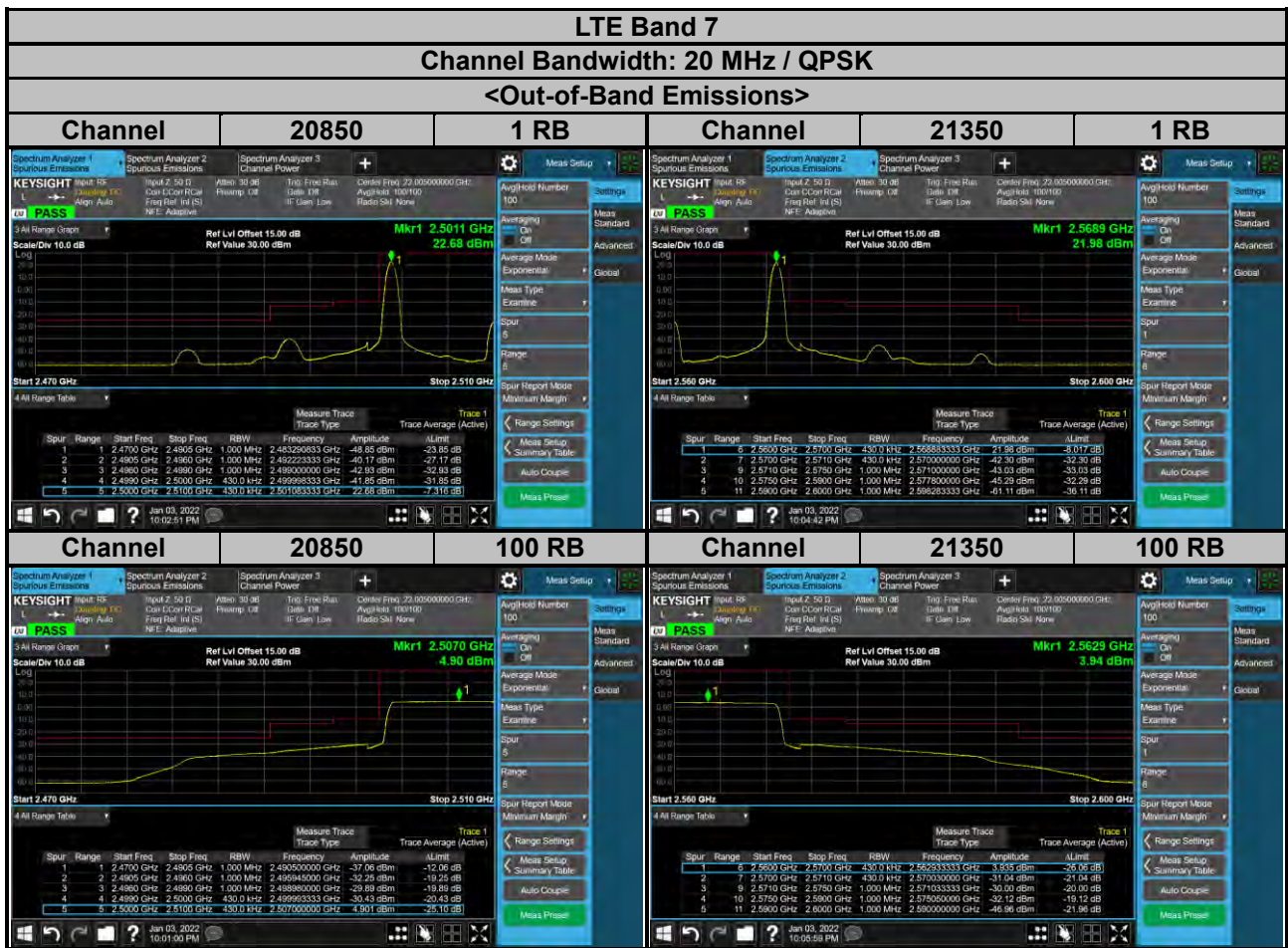


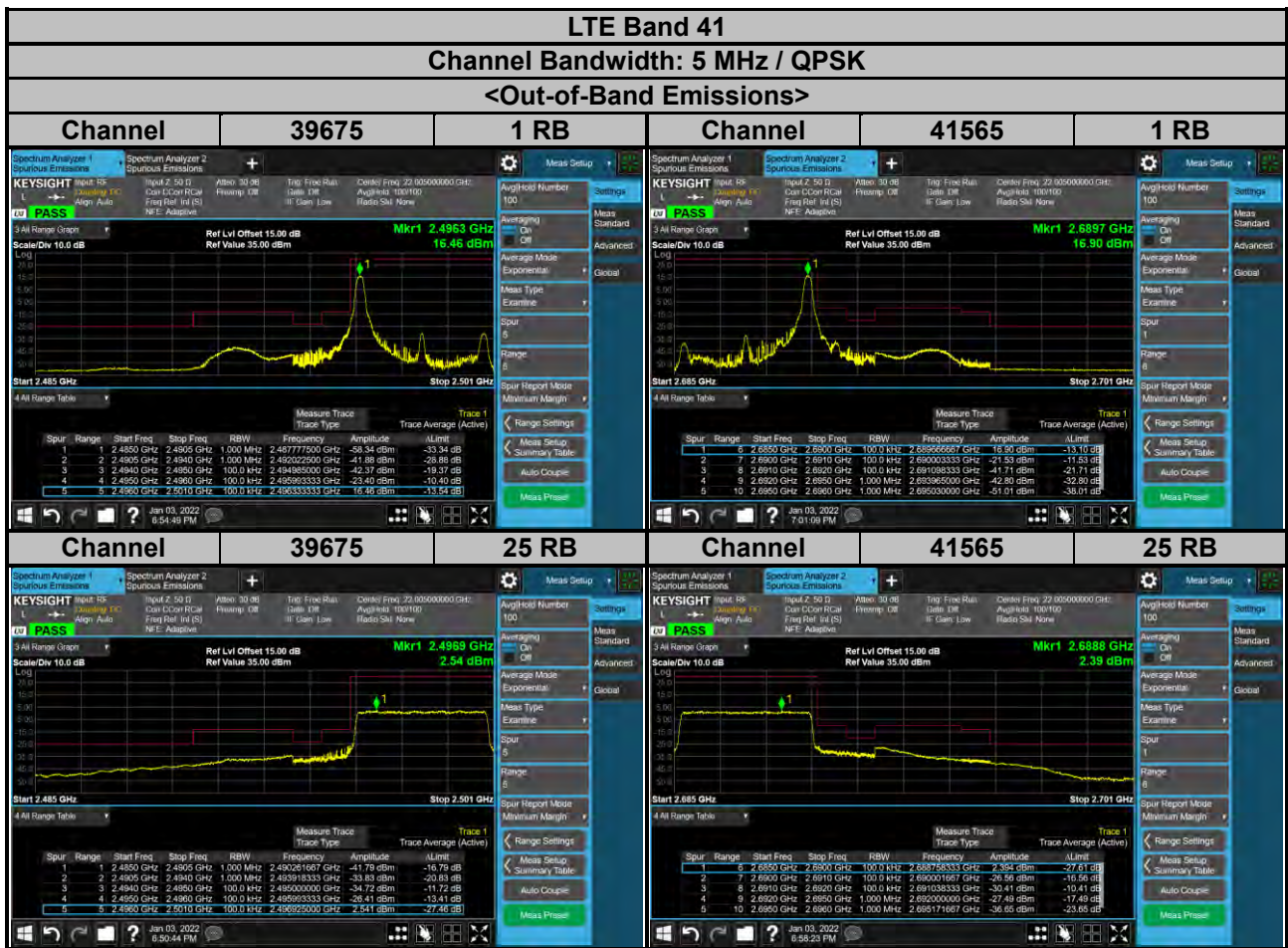
LTE Band 7

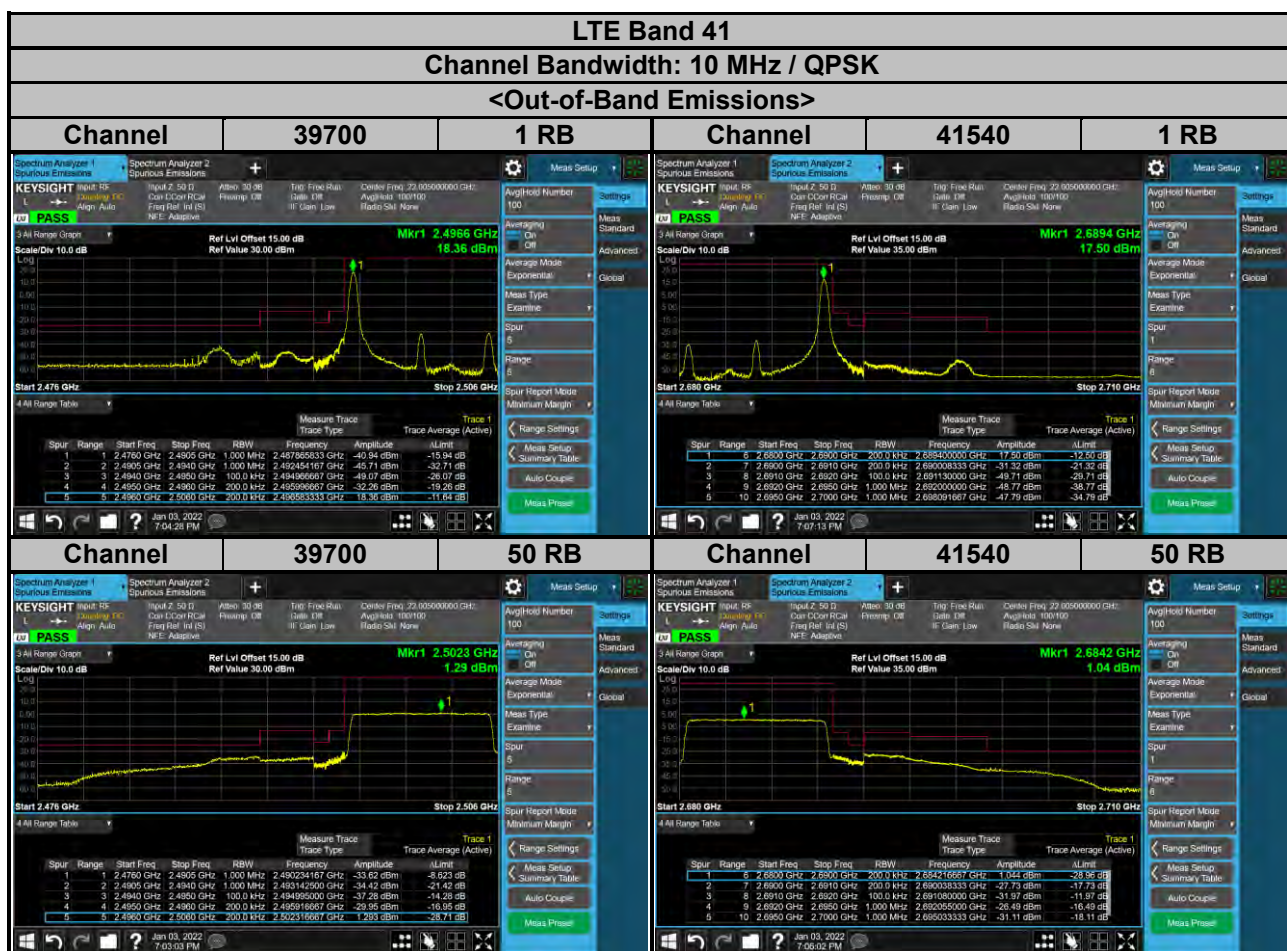
Channel Bandwidth: 15 MHz / QPSK

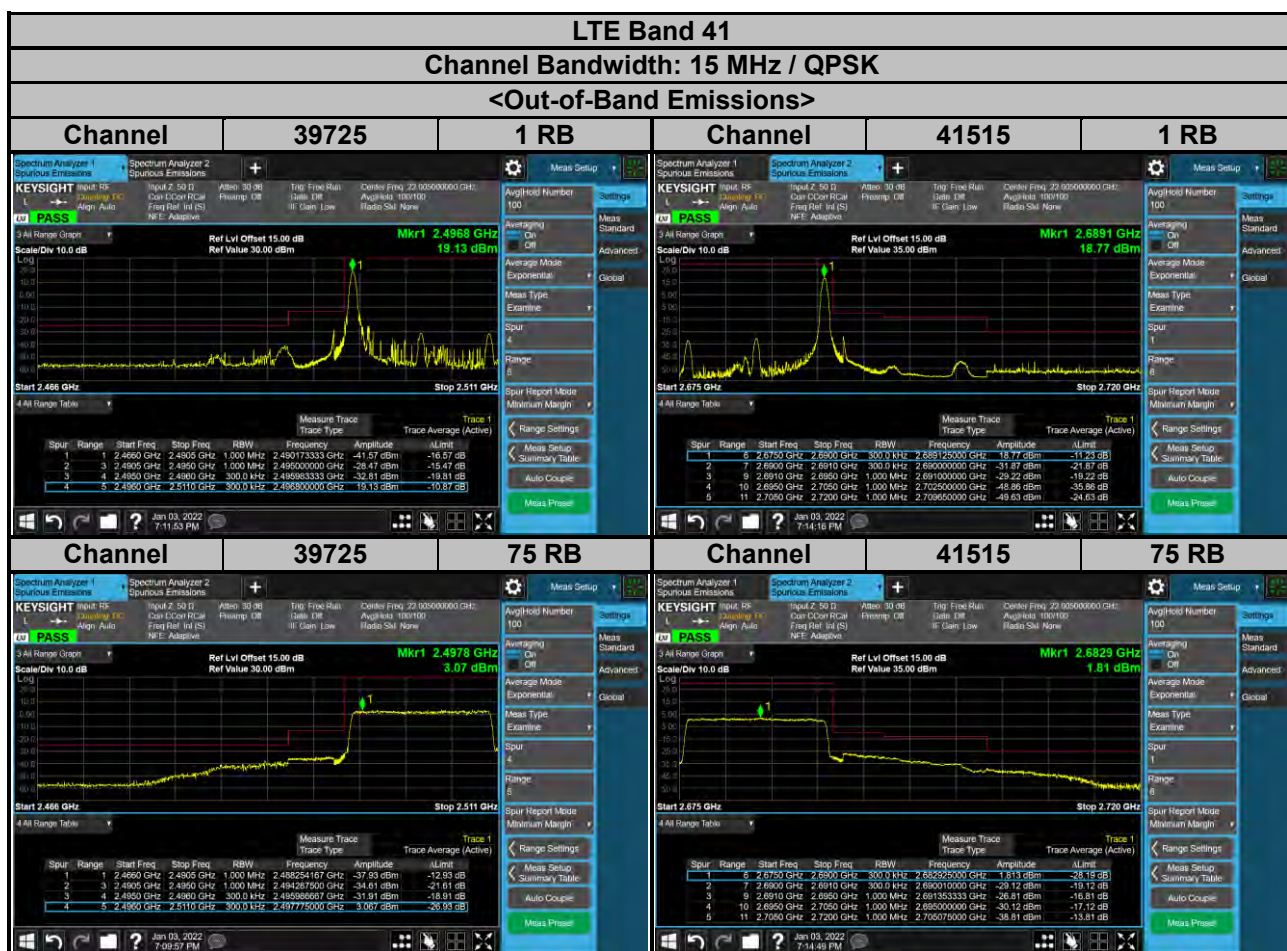
<Out-of-Band Emissions>

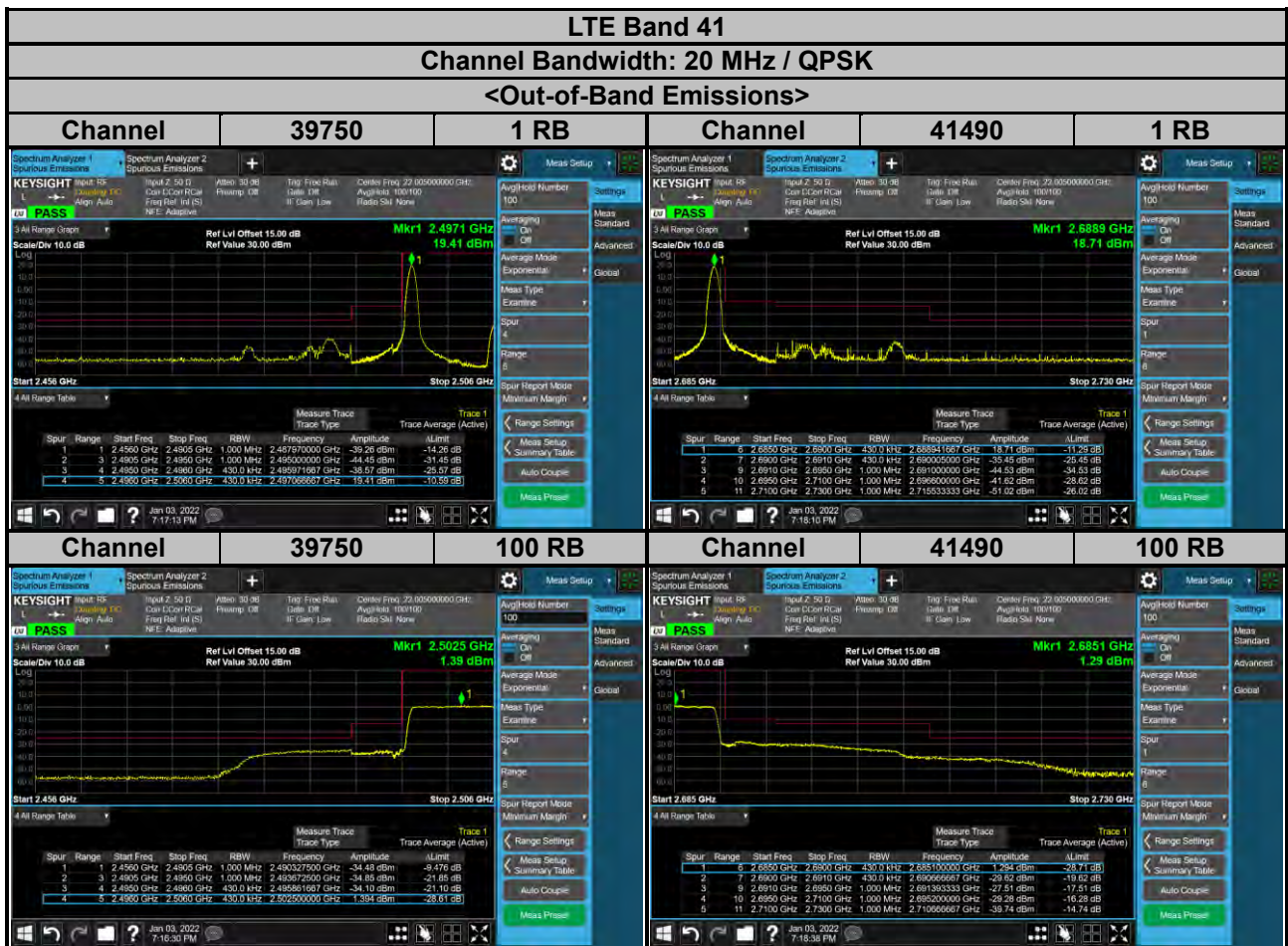










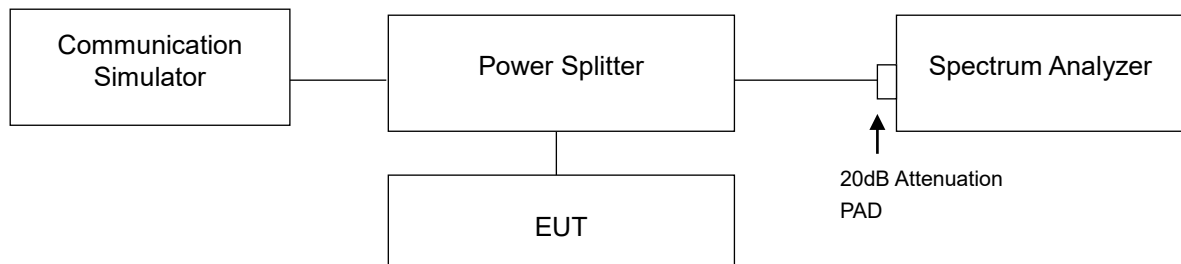


4.6 Peak to Average Ratio

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

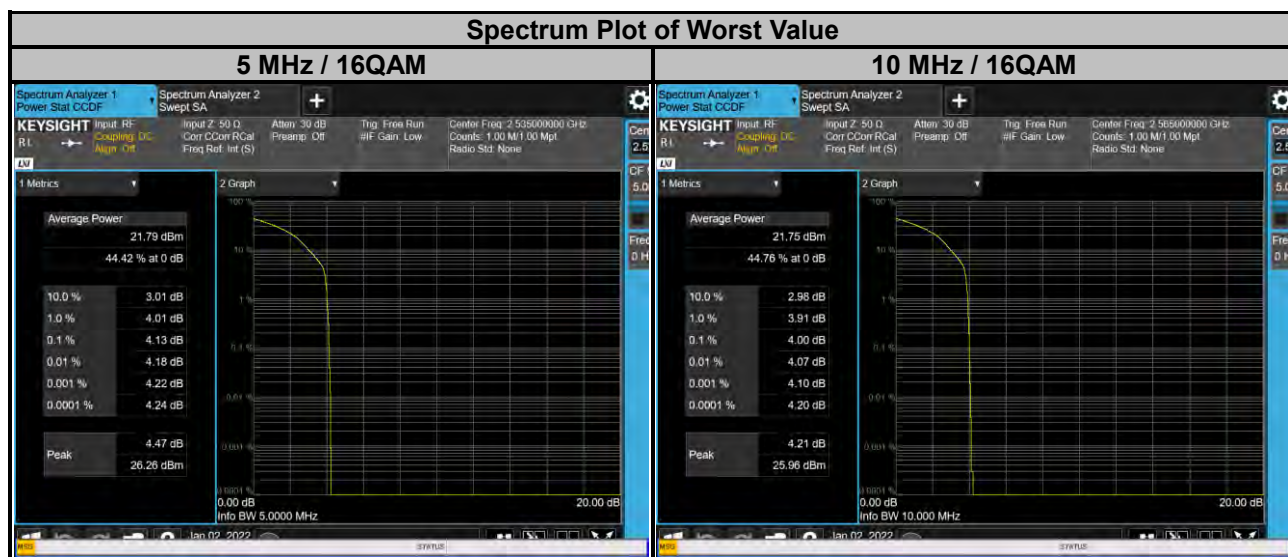


4.6.3 Test Procedures

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

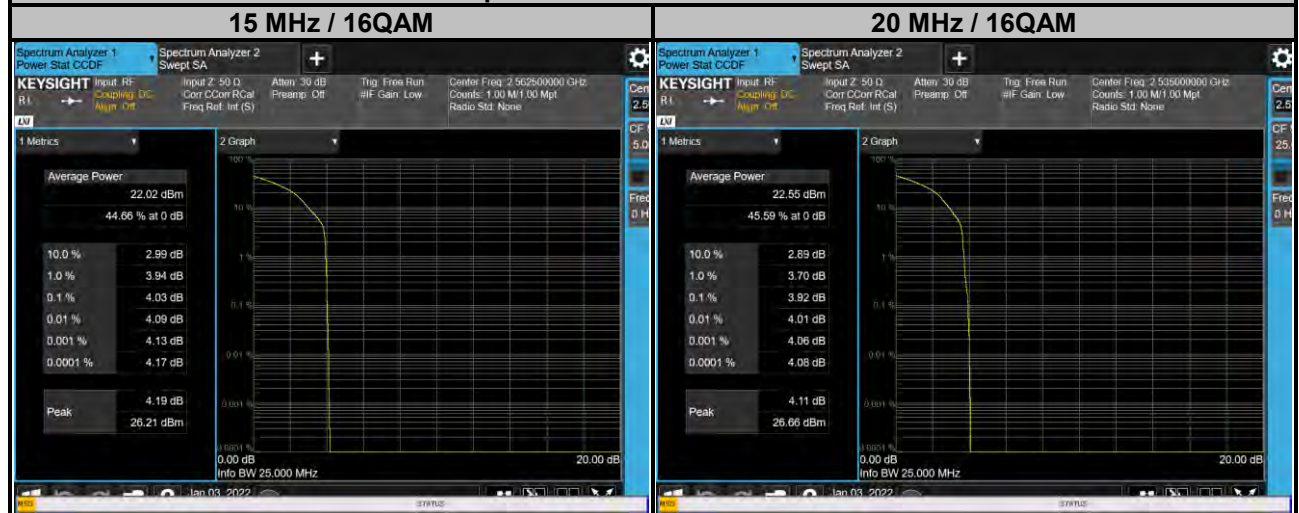
LTE Band 7							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	3.09	3.87	20800	2505.0	3.01	3.75
21100	2535.0	3.35	4.13	21100	2535.0	3.24	3.99
21425	2567.5	3.19	4.00	21400	2565.0	3.23	4.00



LTE Band 7

Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20825	2507.5	2.94	3.69	20850	2510.0	2.89	3.58
21100	2535.0	3.14	3.95	21100	2535.0	3.09	3.92
21375	2562.5	3.22	4.03	21350	2560.0	3.16	3.90

Spectrum Plot of Worst Value



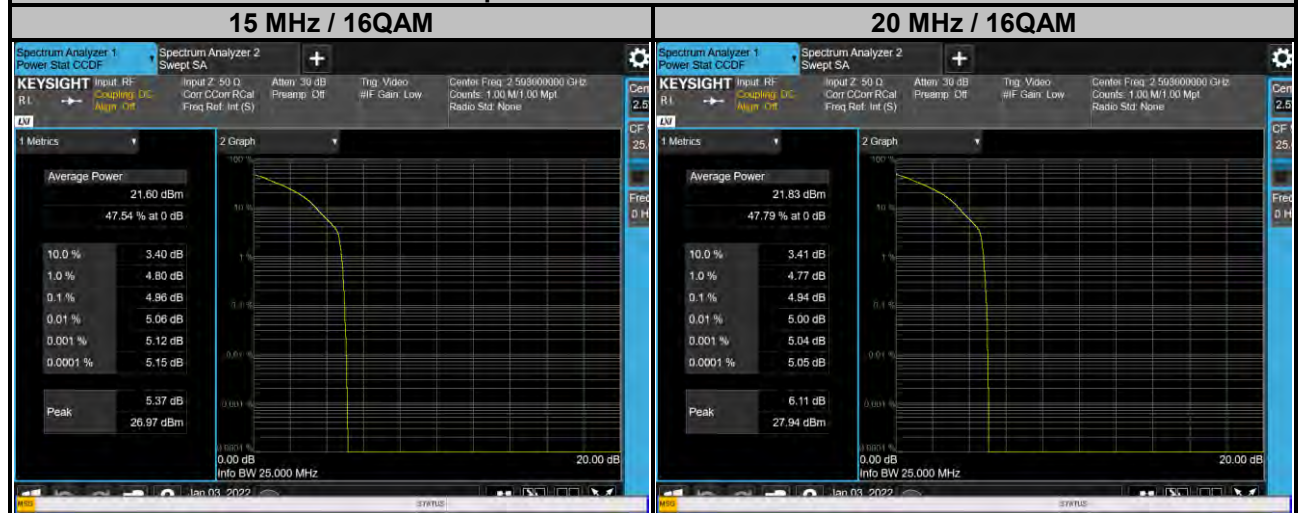
LTE Band 41							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
39675	2498.5	3.20	4.07	39700	2501.0	3.07	4.40
40620	2593.0	3.68	4.57	40620	2593.0	3.57	4.86
41565	2687.5	3.37	4.36	41540	2685.0	3.29	4.33



LTE Band 41

Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
39725	2503.5	4.16	4.67	39750	2506.0	3.64	4.41
40620	2593.0	4.48	4.96	40620	2593.0	4.25	4.94
41515	2682.5	4.45	4.75	41490	2680.0	4.19	4.78

Spectrum Plot of Worst Value

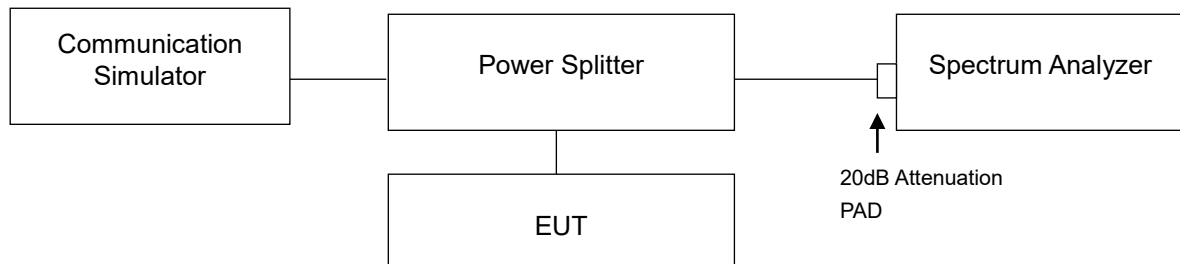


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

According to FCC 27.53(m)(4), on any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least $55 + 10 \log (P)$ dB. The emission limit equal to -25dBm .

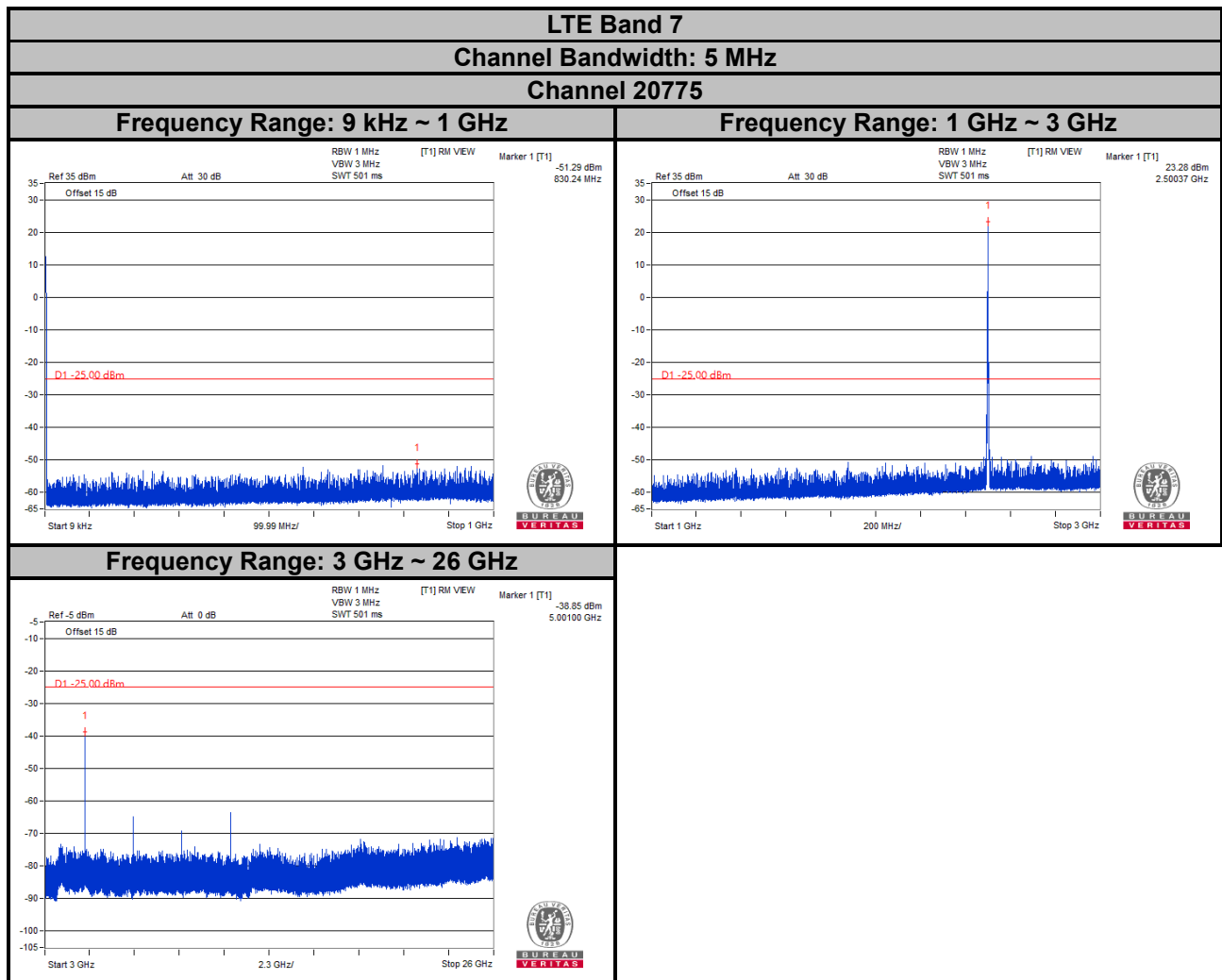
4.7.2 Test Setup



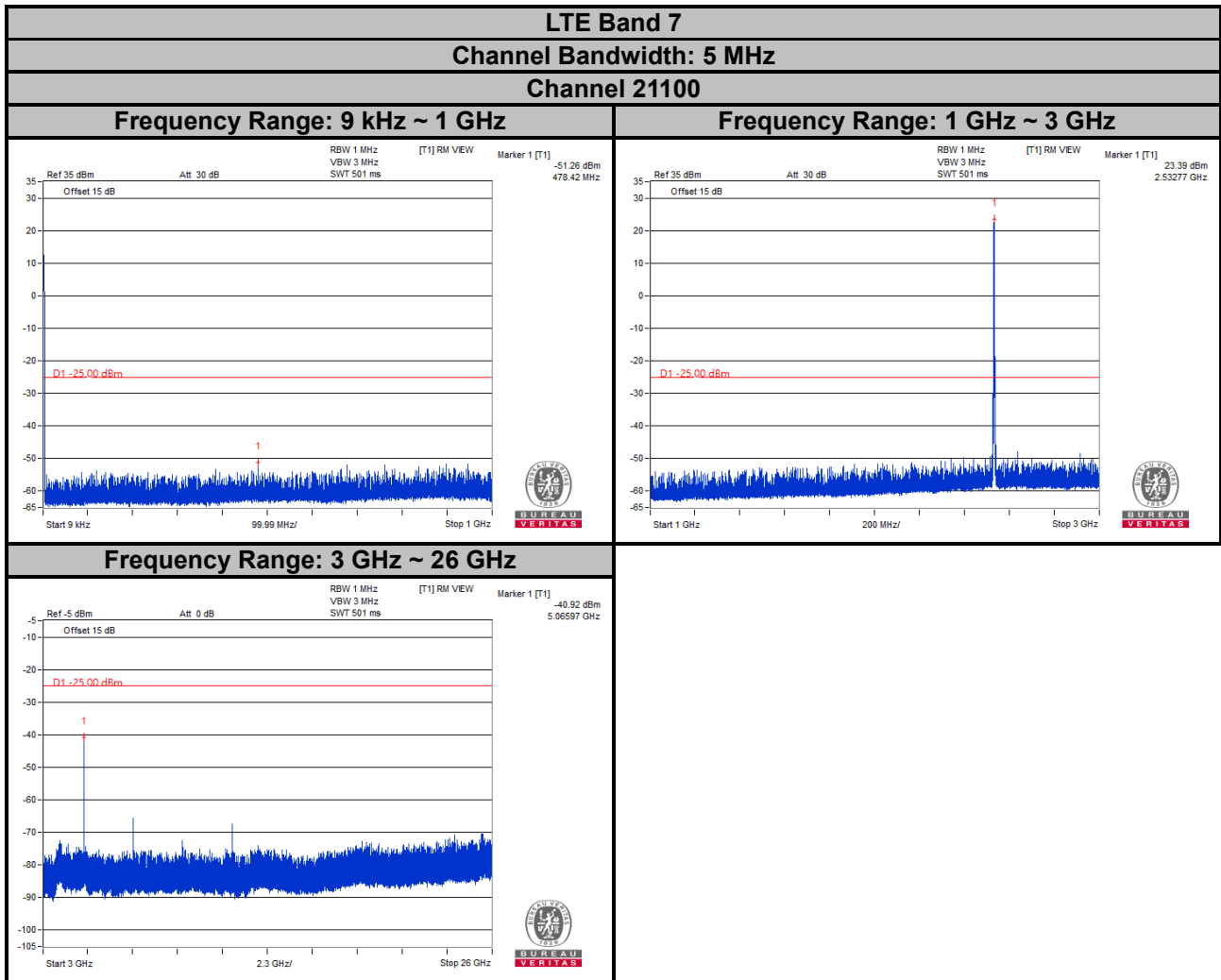
4.7.3 Test Procedure

- 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 = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.
- Measuring frequency range is from 1 GHz to 26 GHz / 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 and 5.7.3.

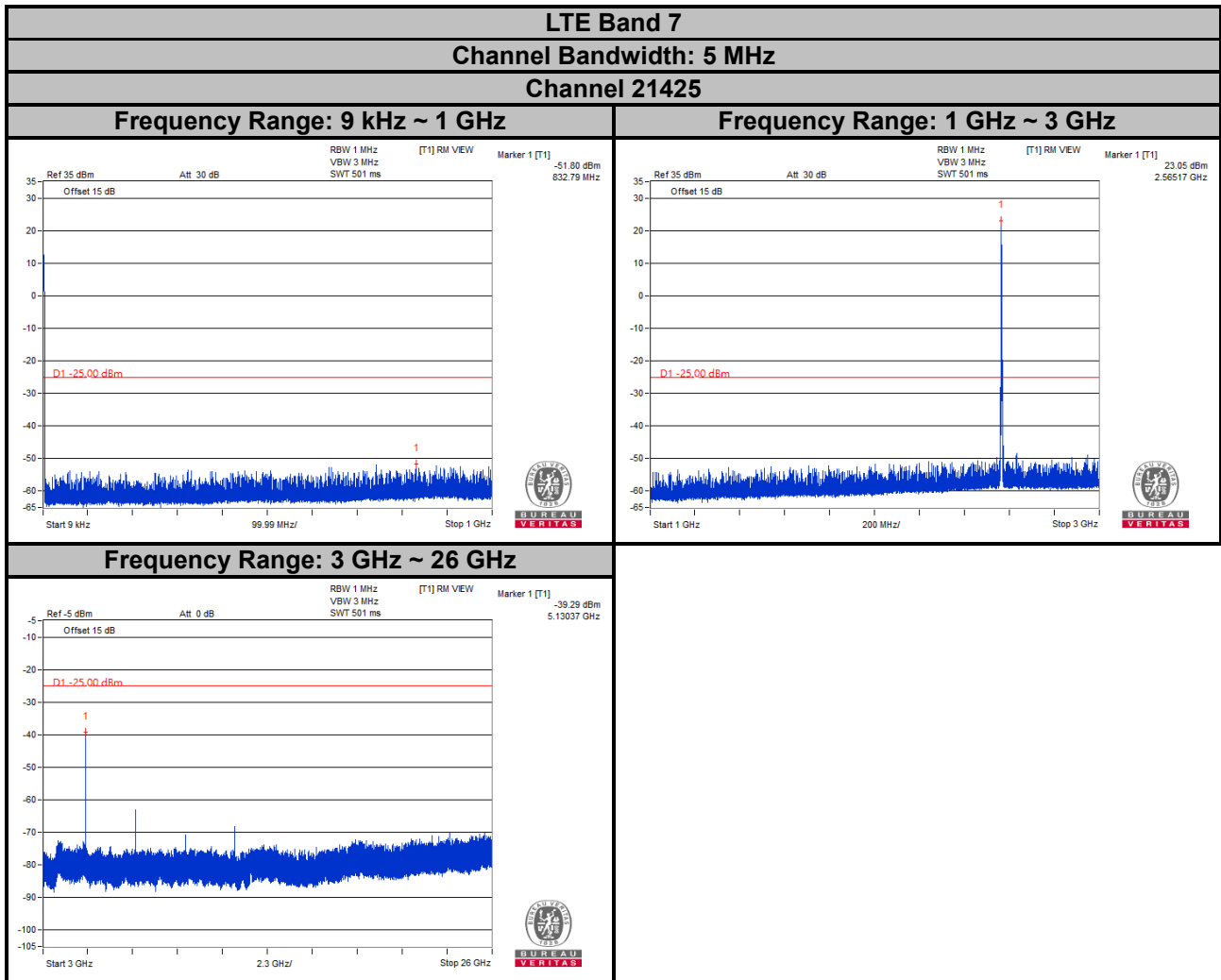
4.7.4 Test Results



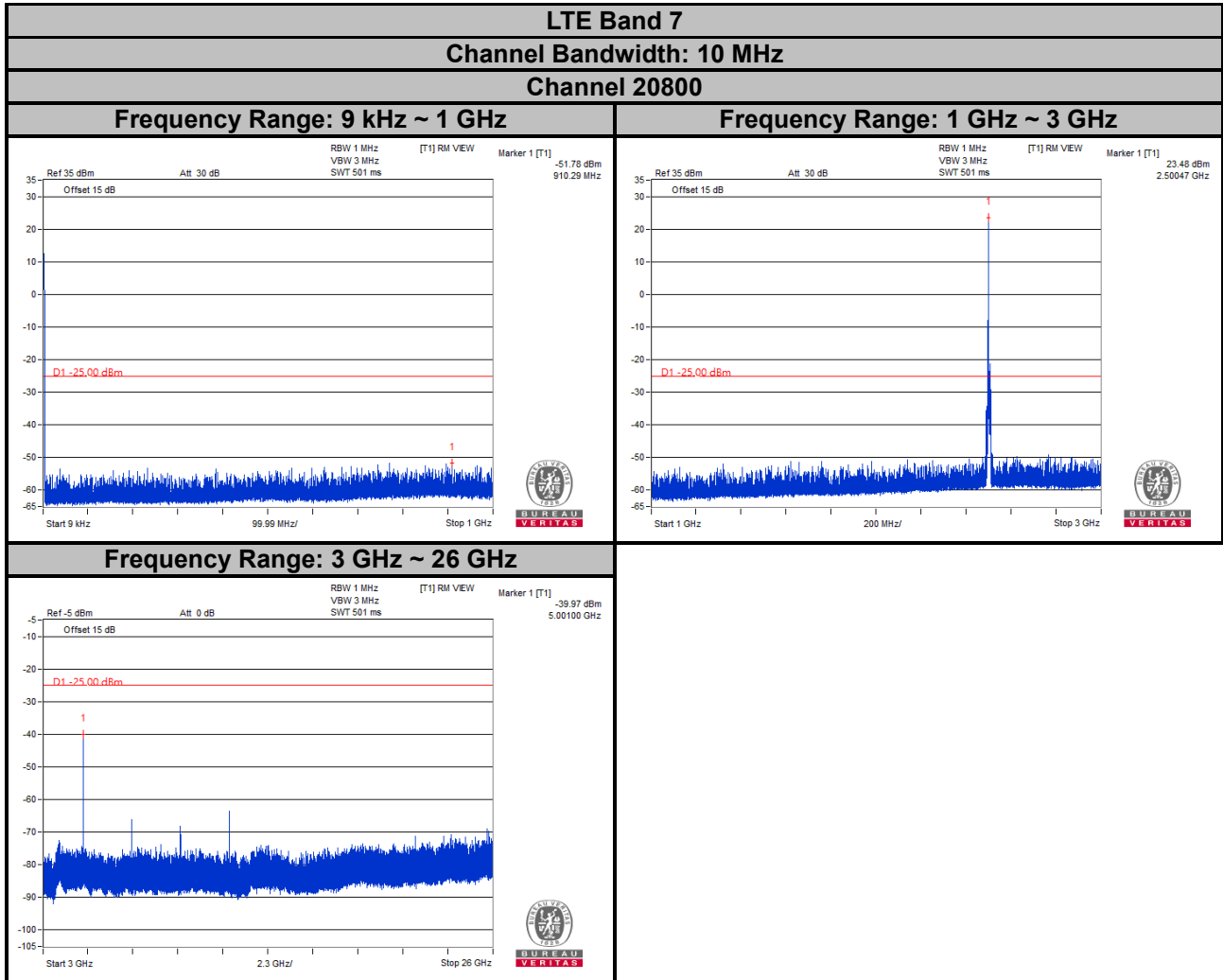
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



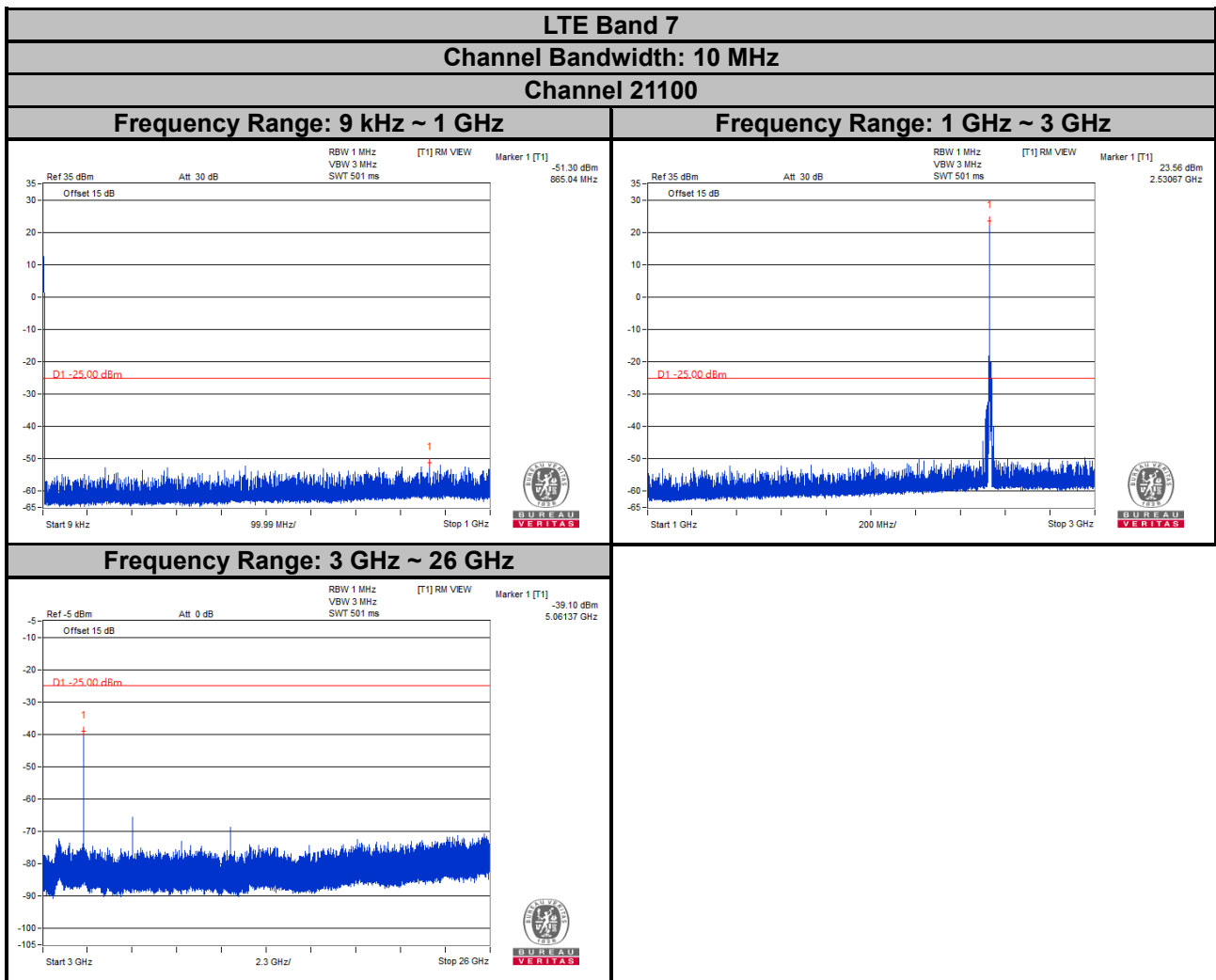
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



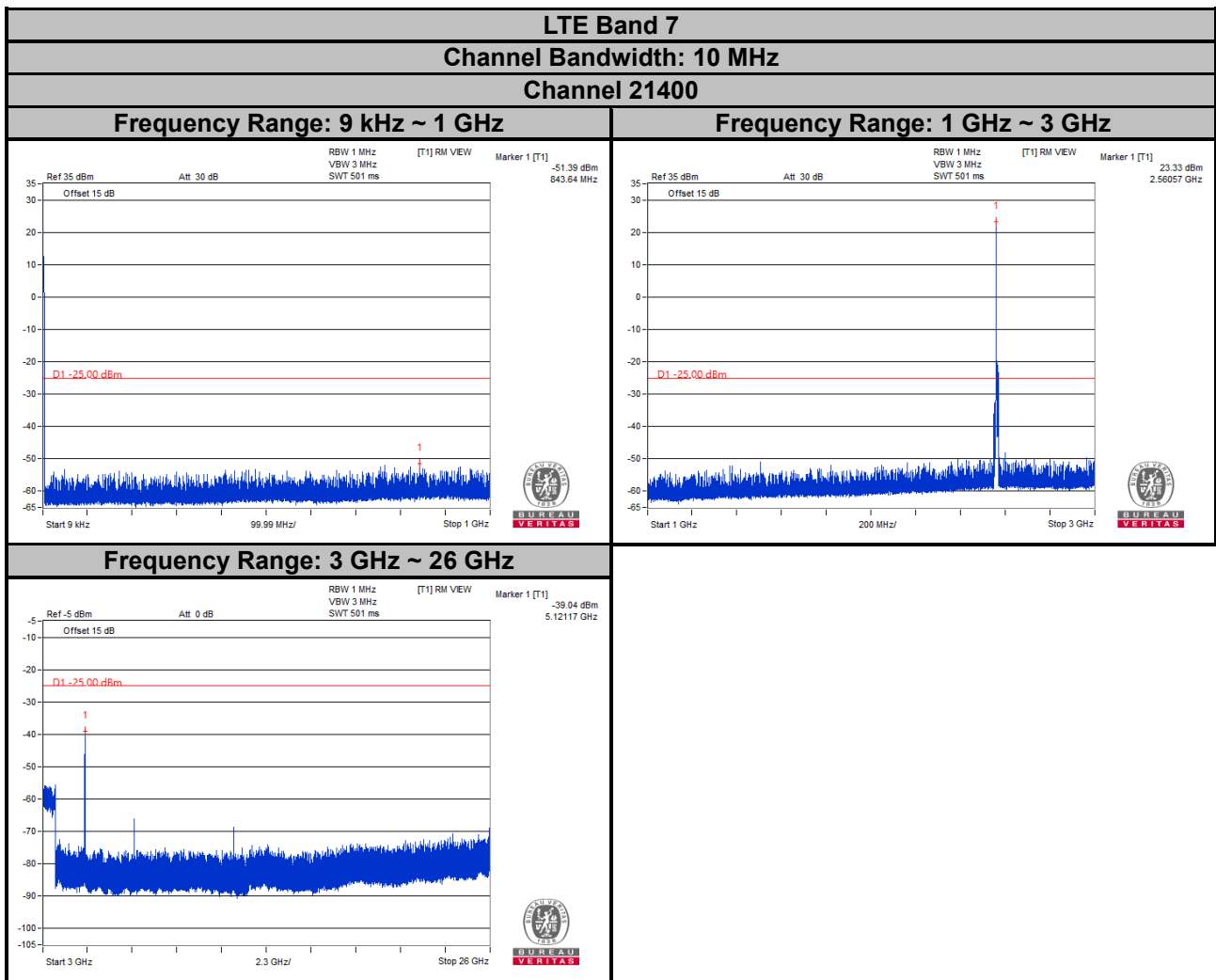
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



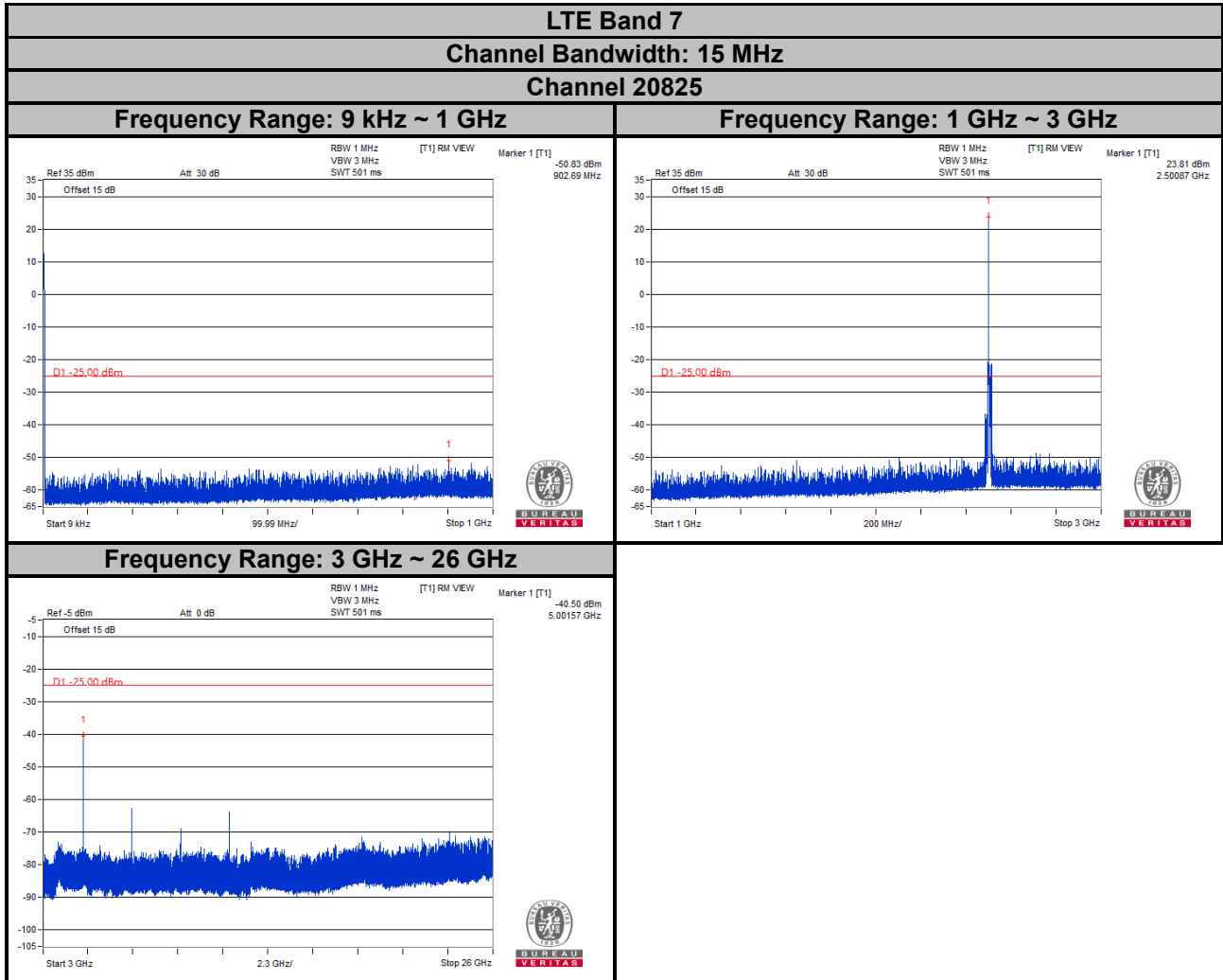
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



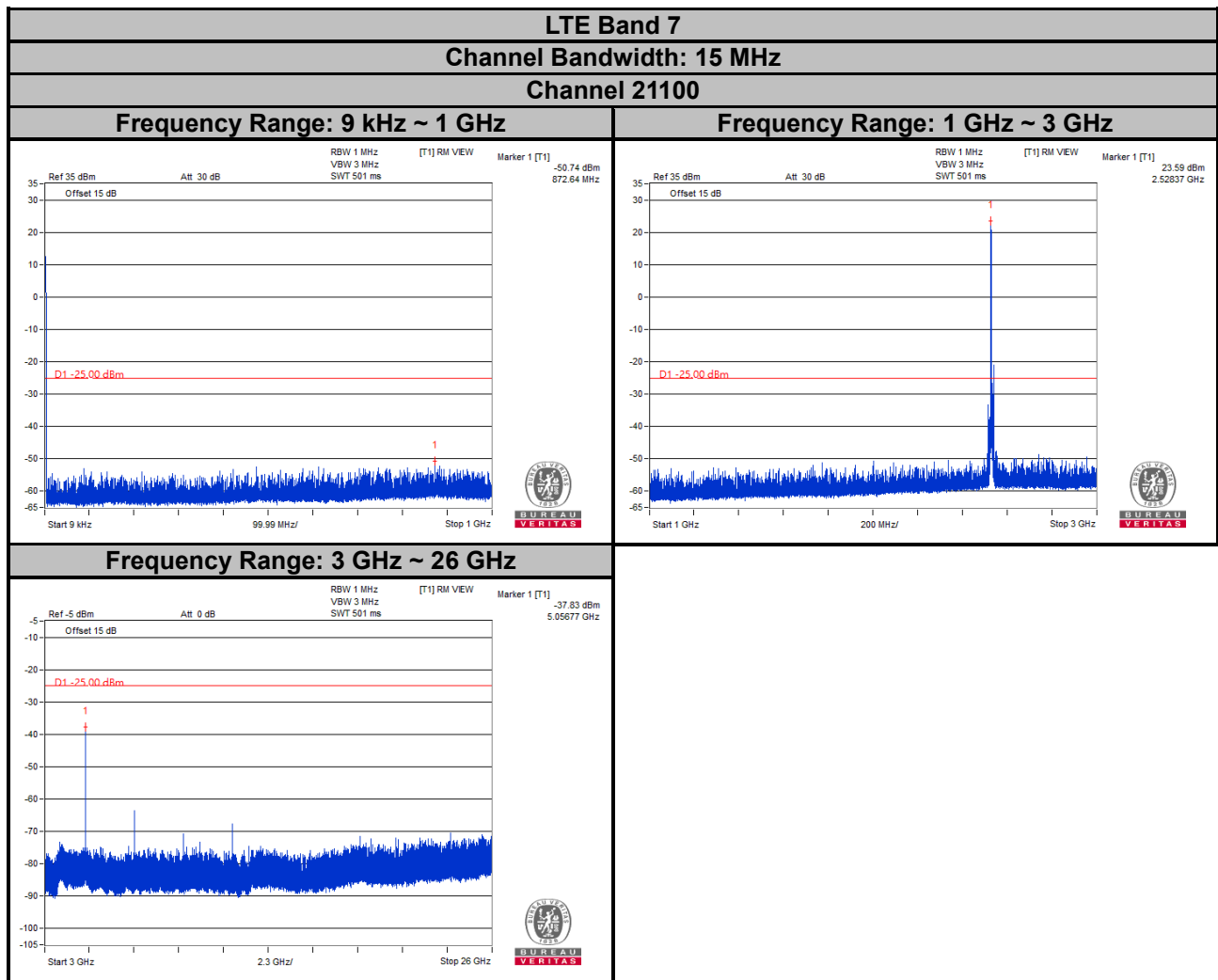
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



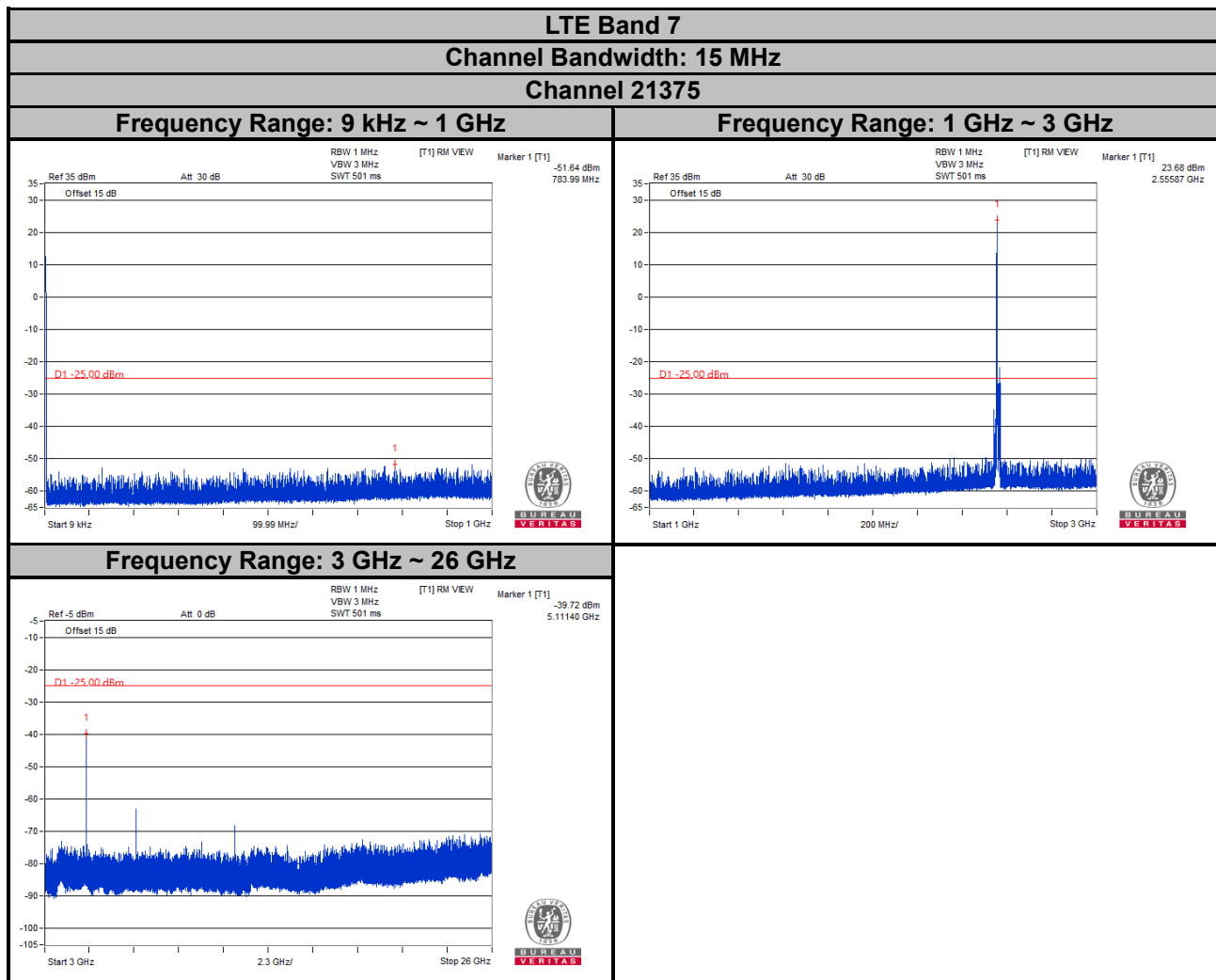
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



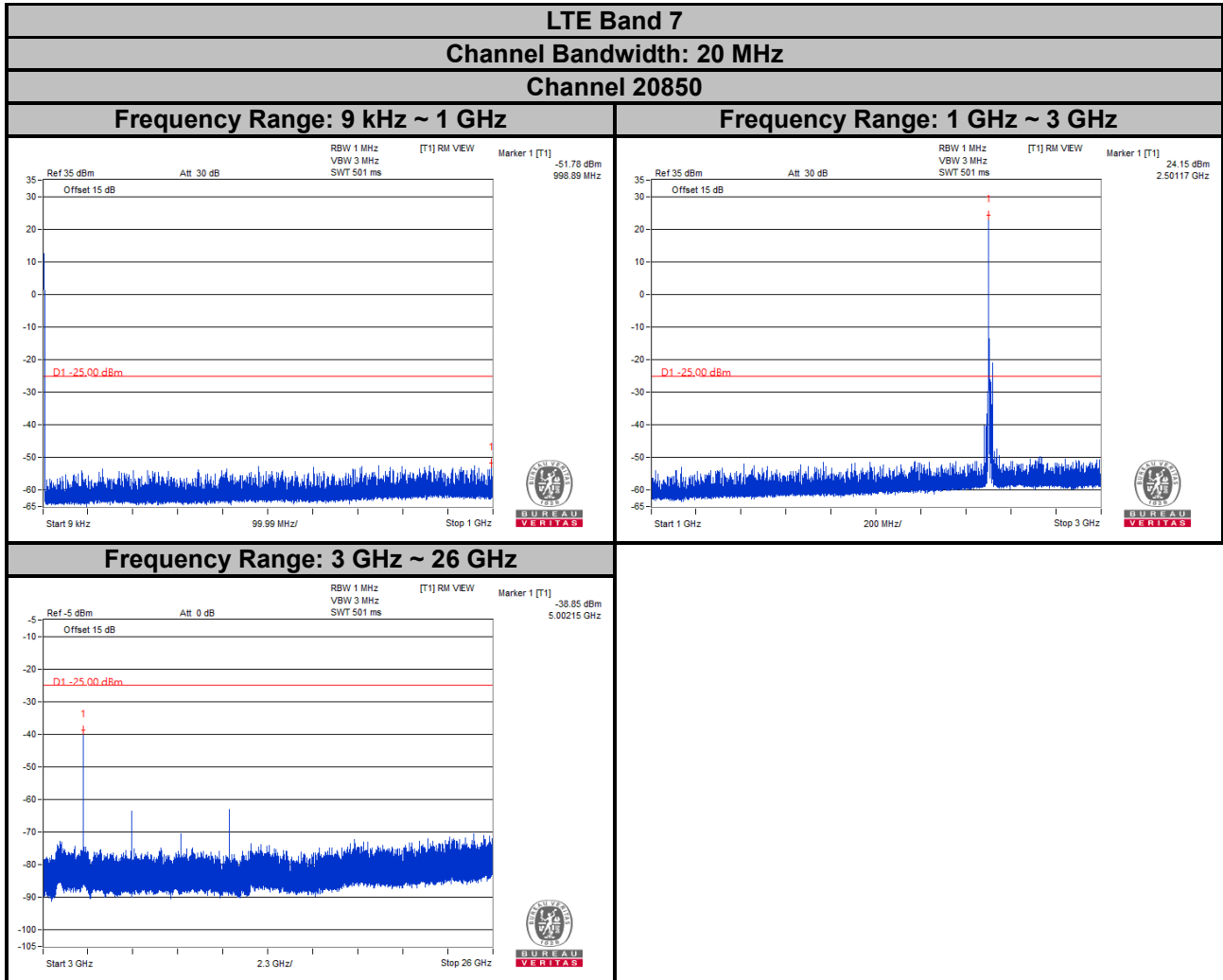
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



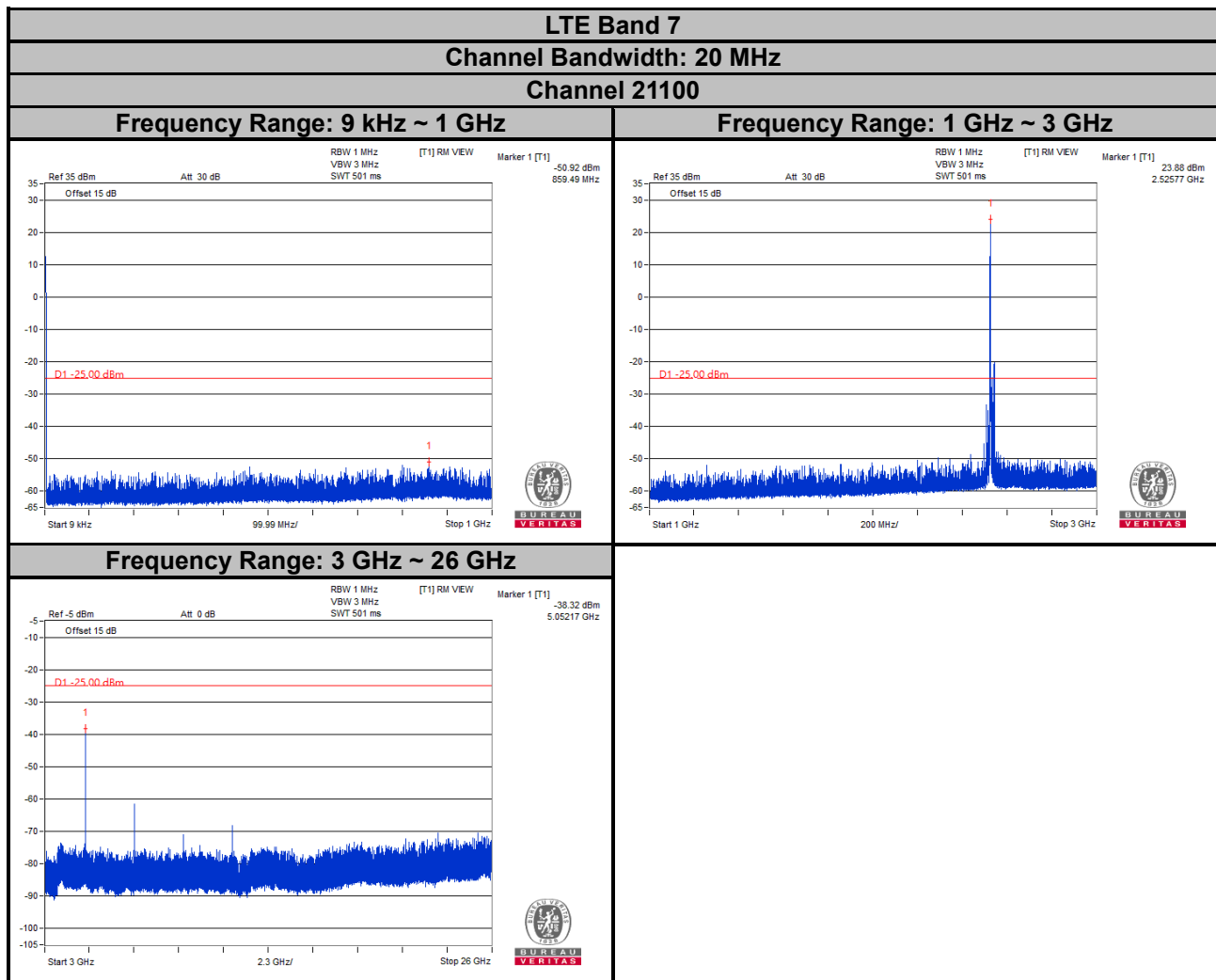
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



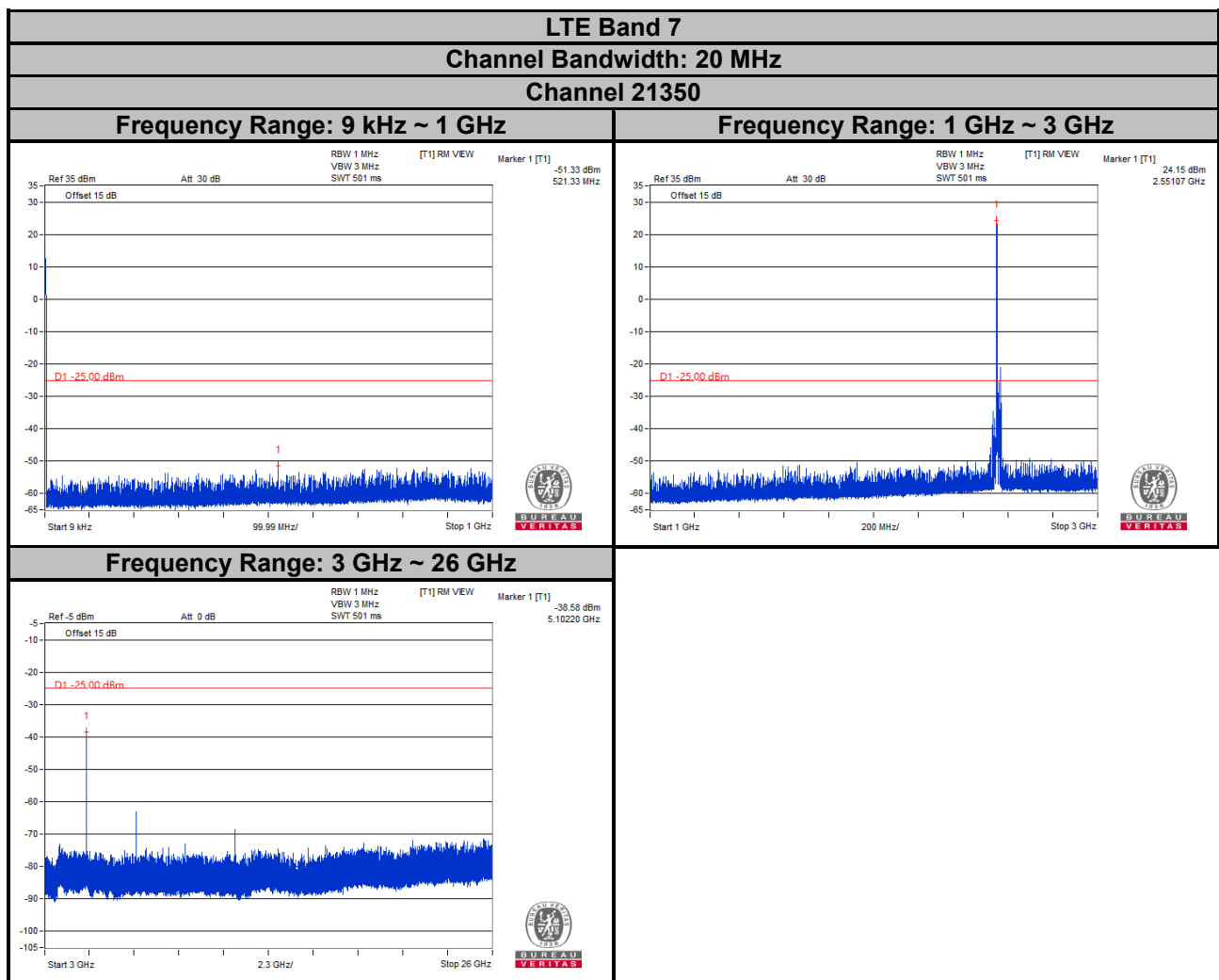
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



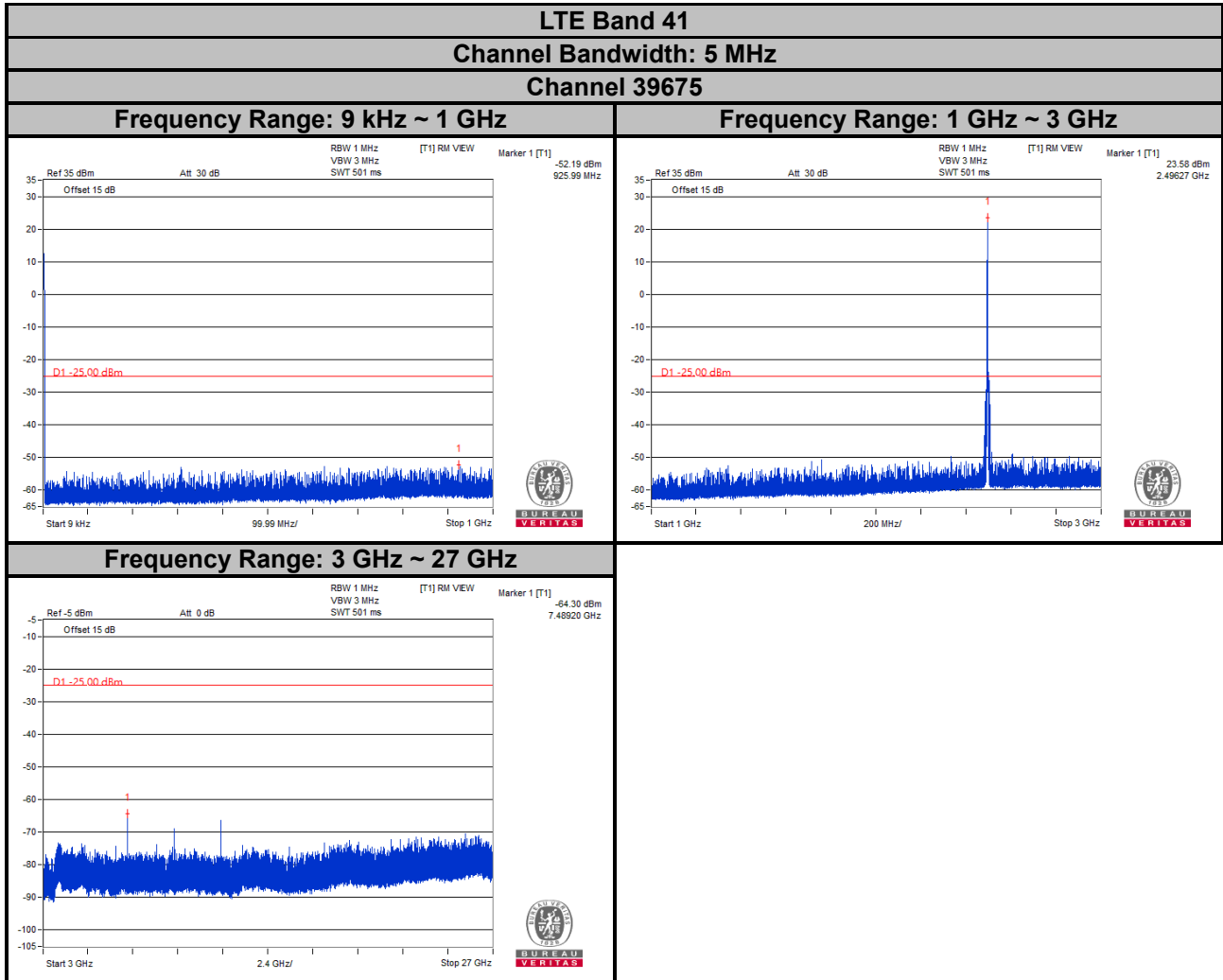
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



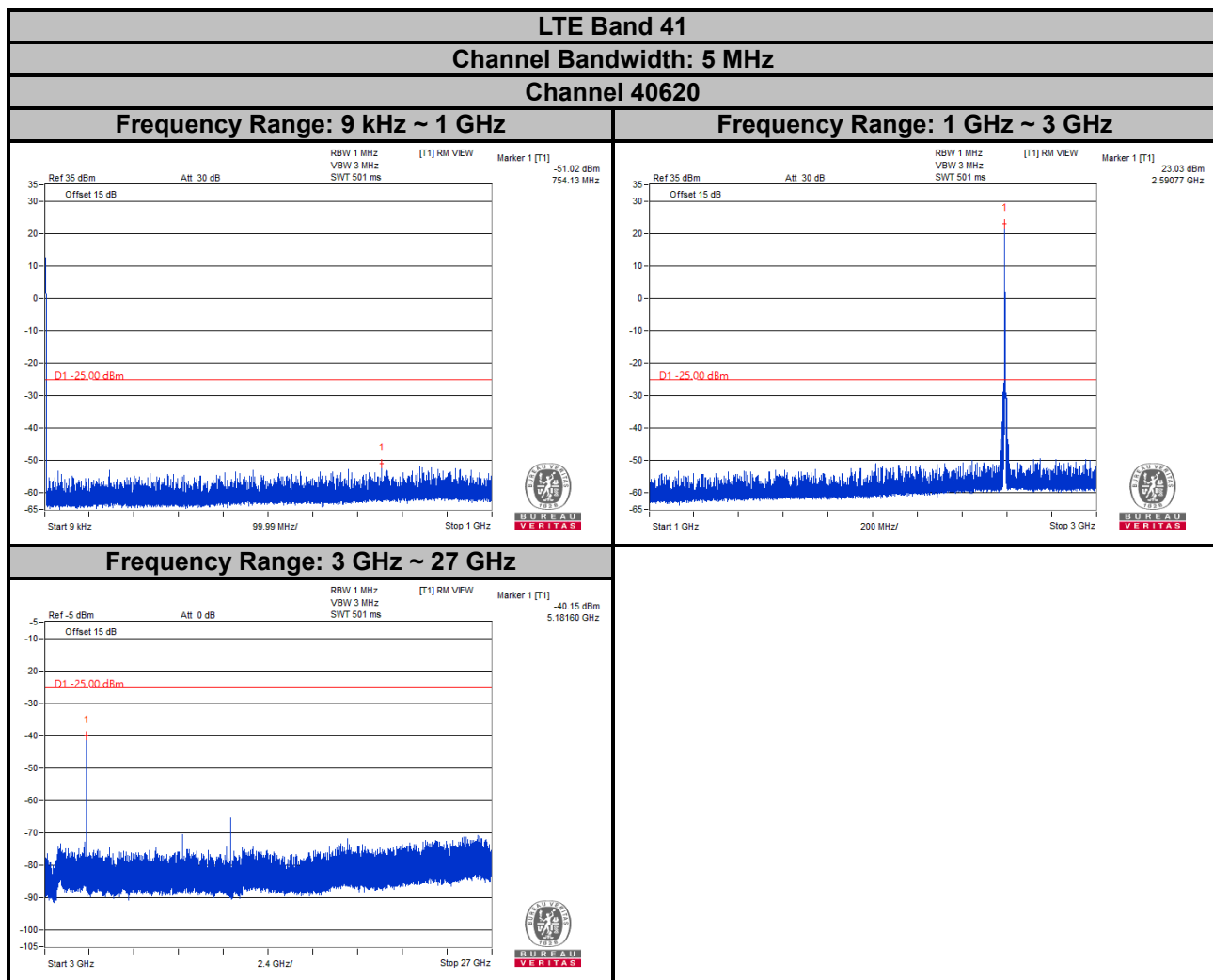
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



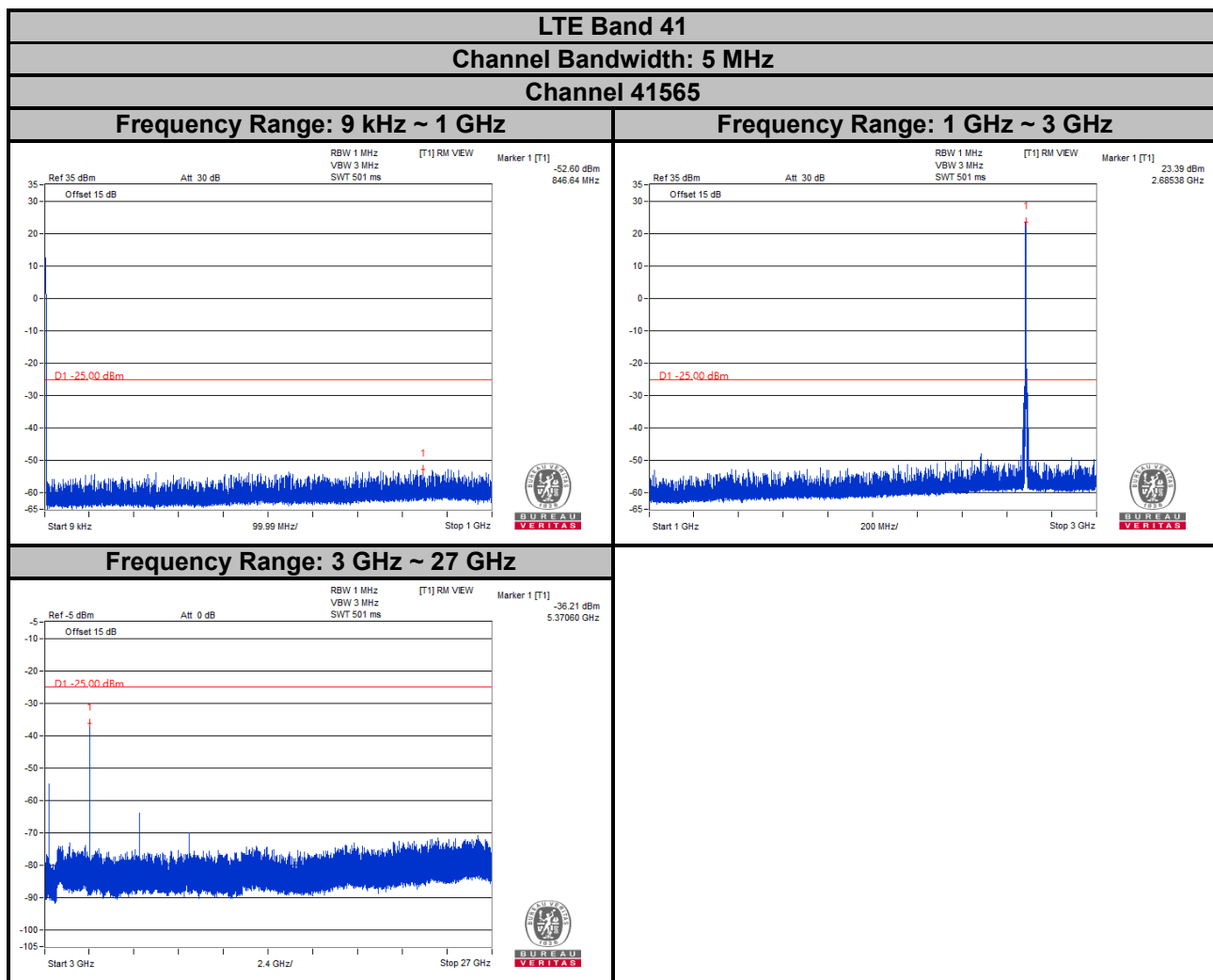
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



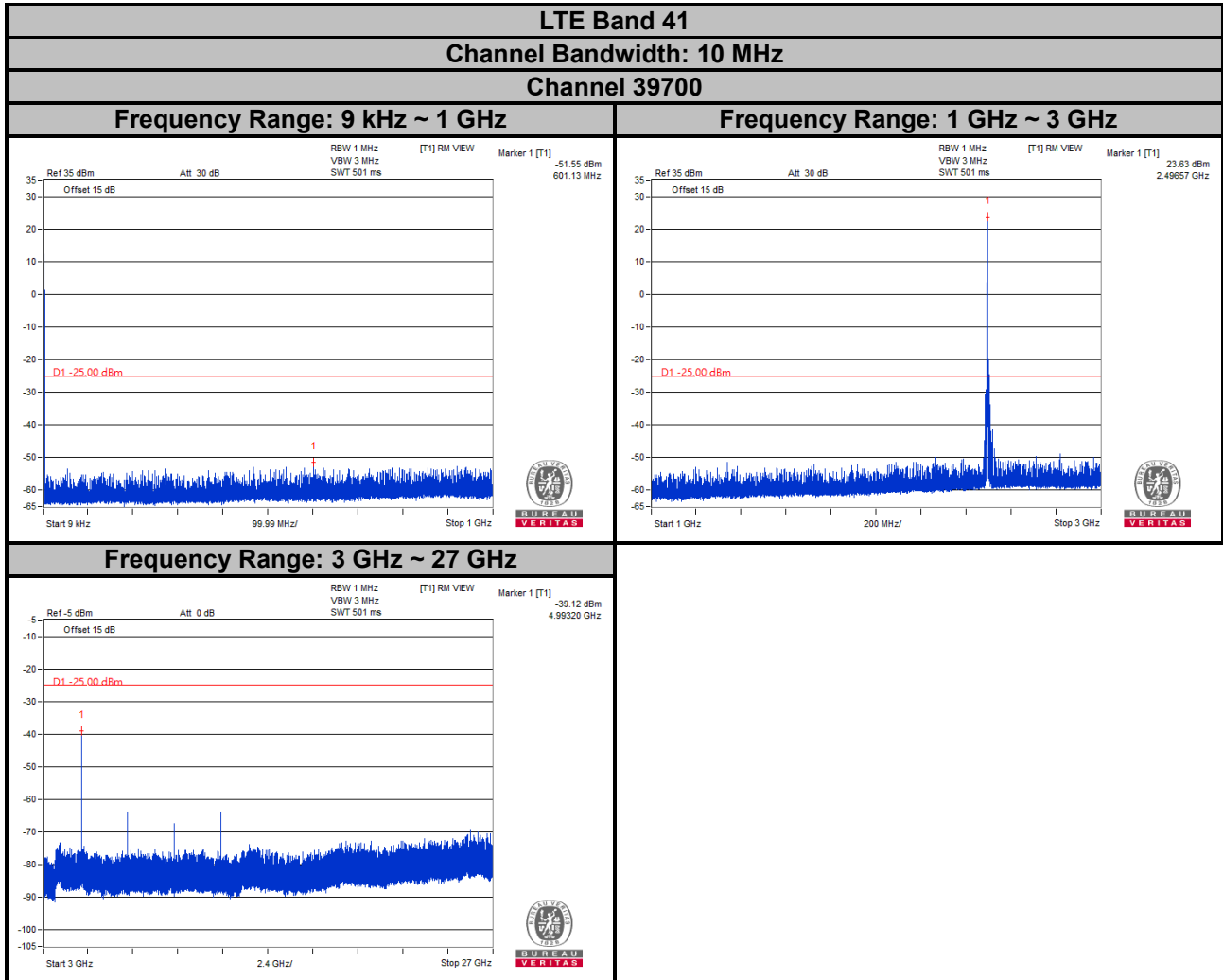
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



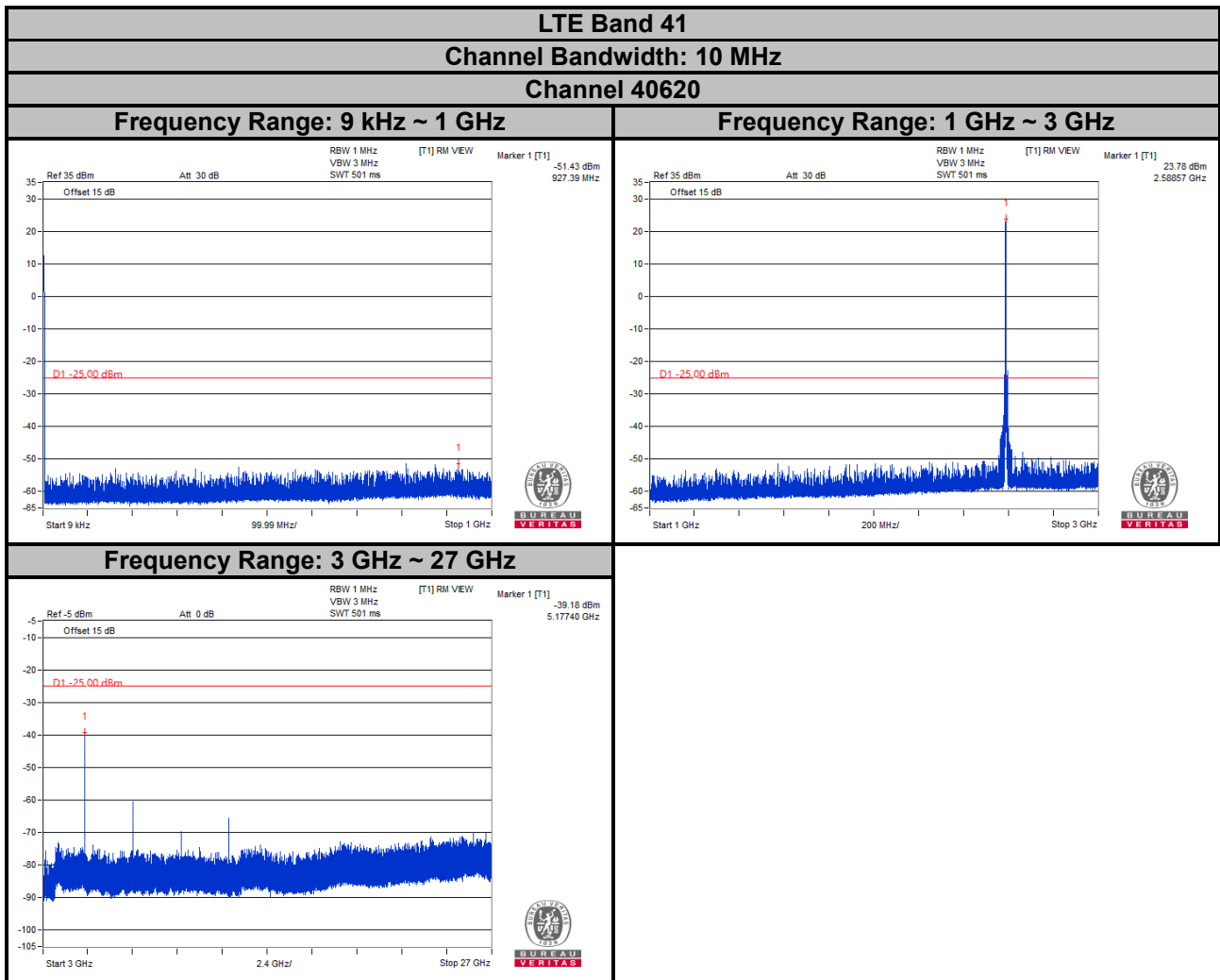
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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.



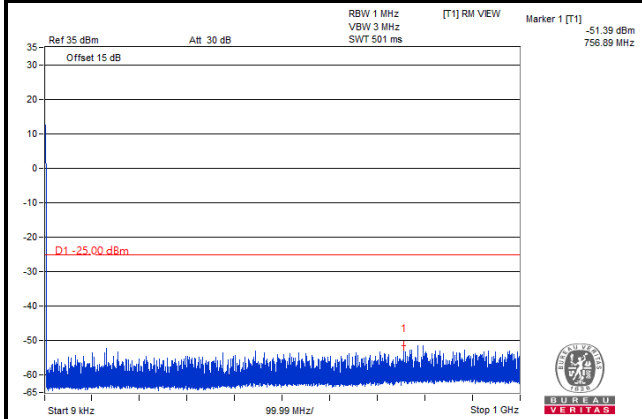
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41

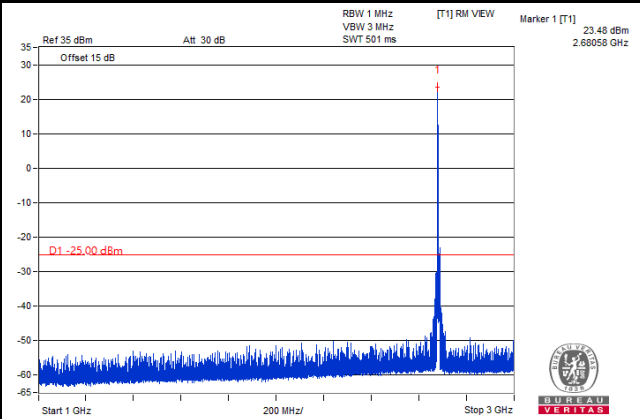
Channel Bandwidth: 10 MHz

Channel 41540

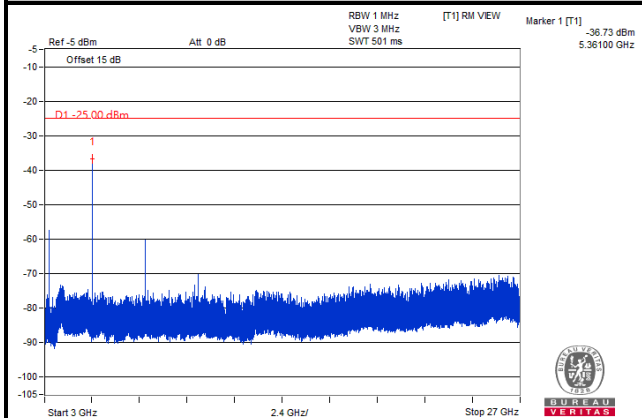
Frequency Range: 9 kHz ~ 1 GHz



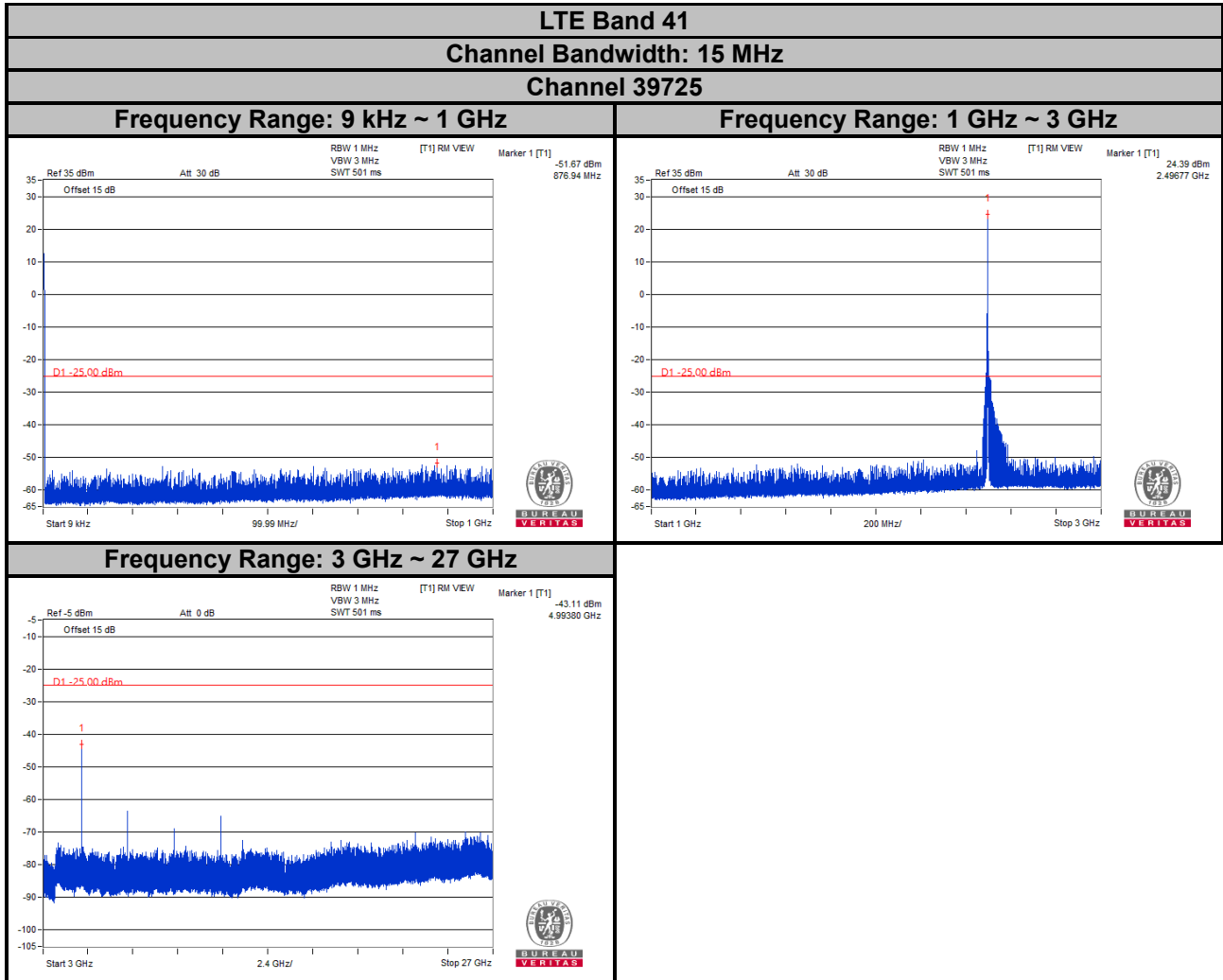
Frequency Range: 1 GHz ~ 3 GHz



Frequency Range: 3 GHz ~ 27 GHz



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



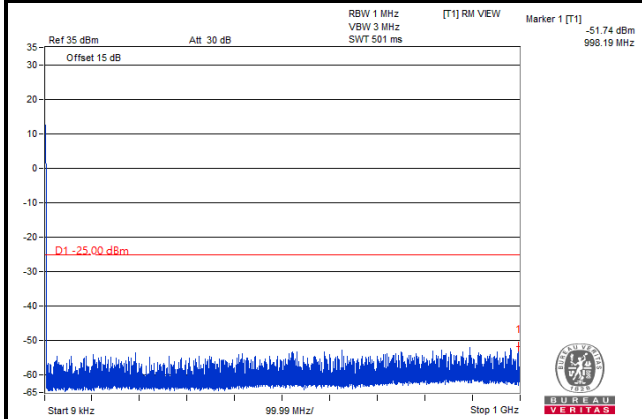
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 41

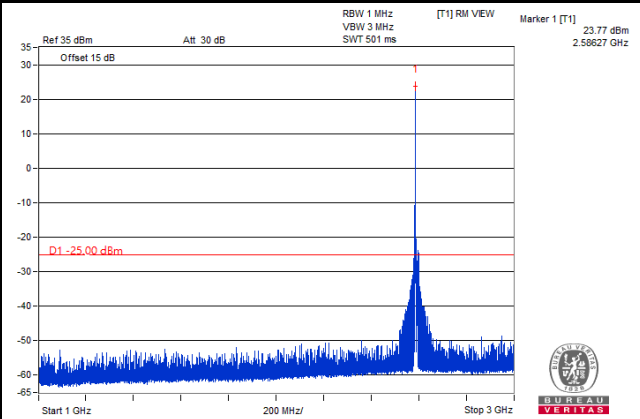
Channel Bandwidth: 15 MHz

Channel 40620

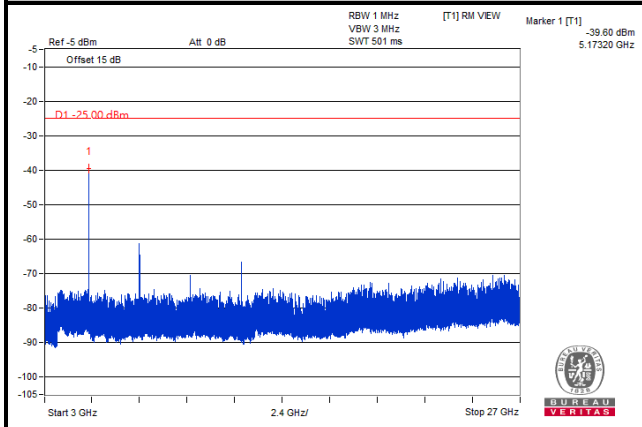
Frequency Range: 9 kHz ~ 1 GHz



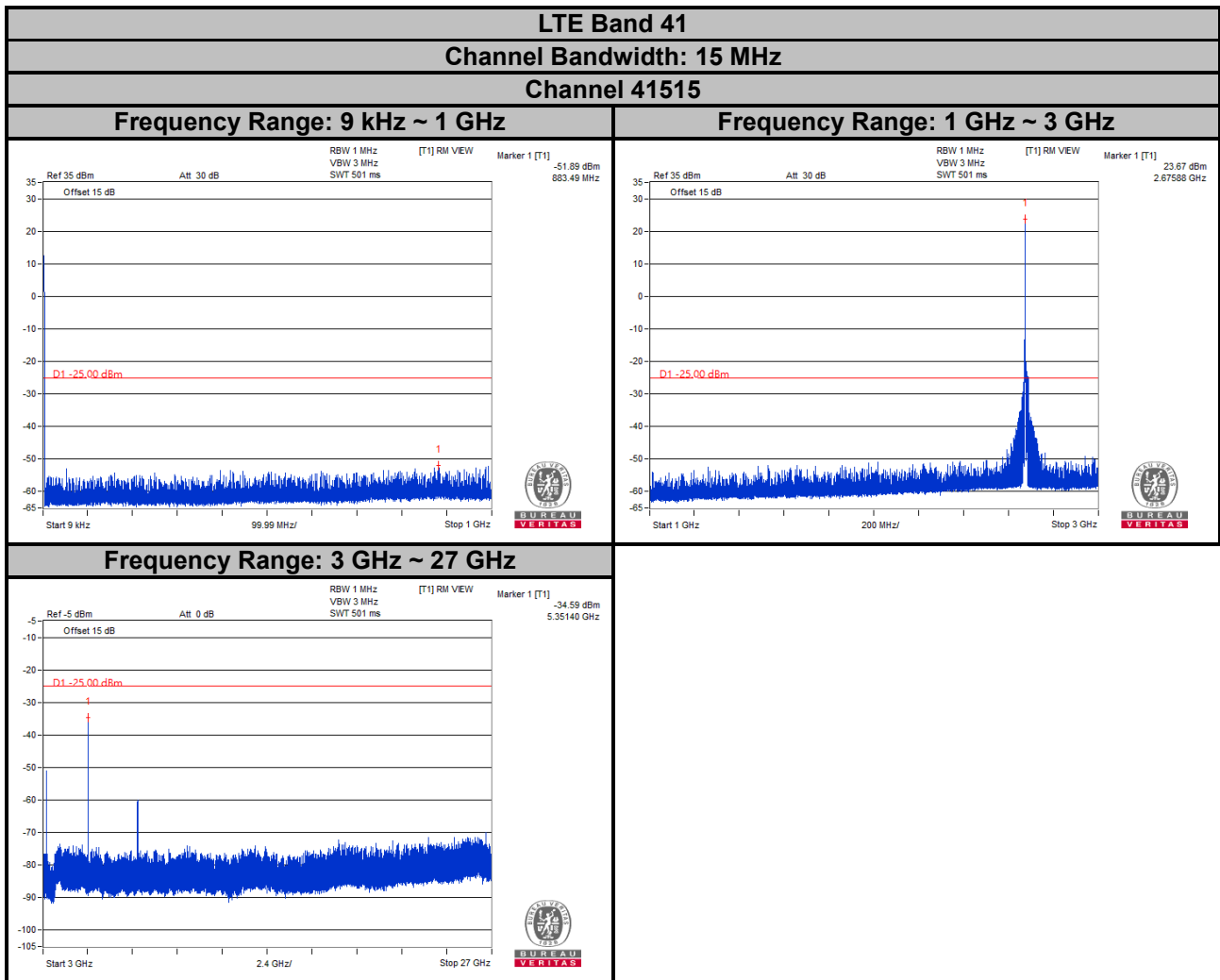
Frequency Range: 1 GHz ~ 3 GHz



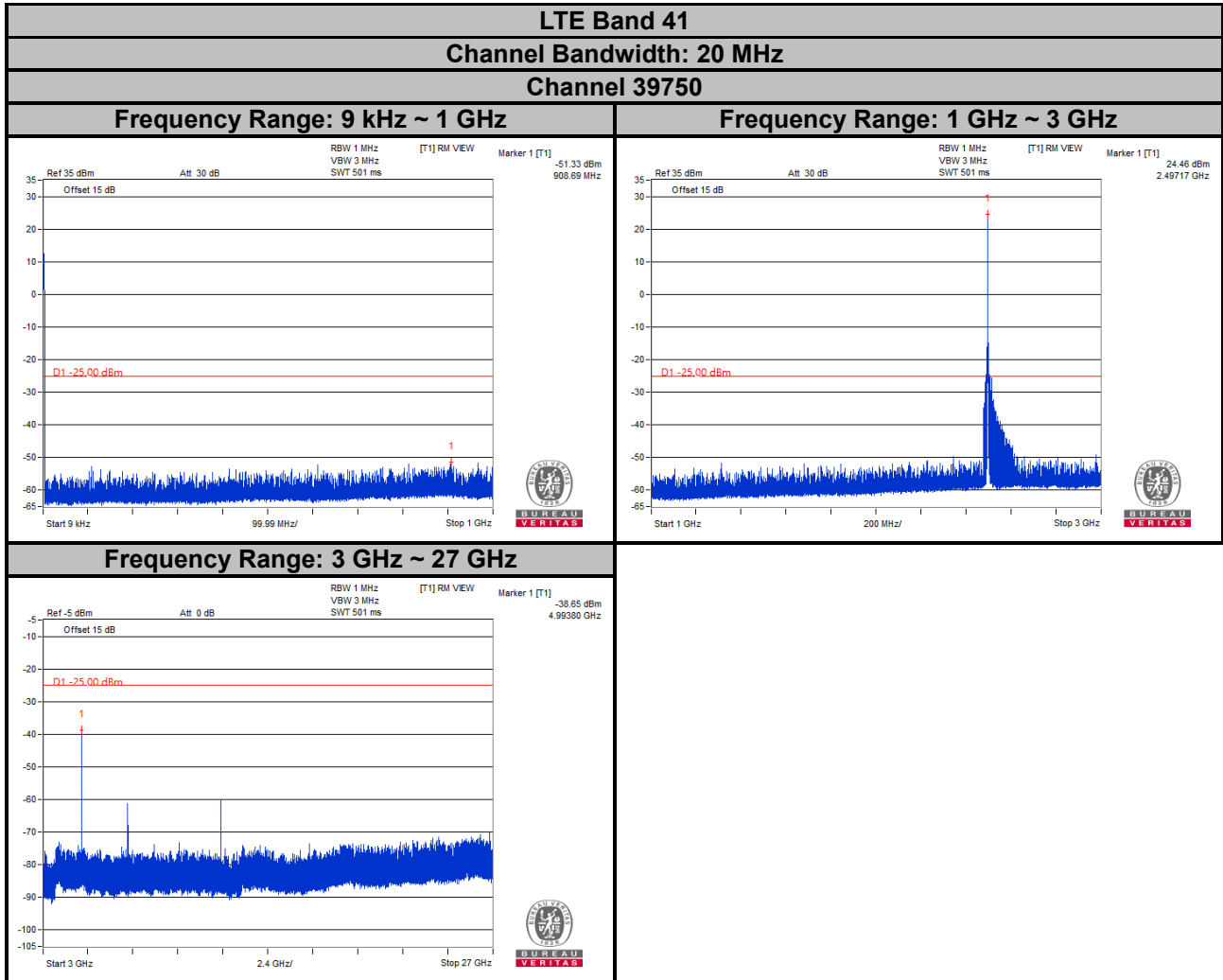
Frequency Range: 3 GHz ~ 27 GHz



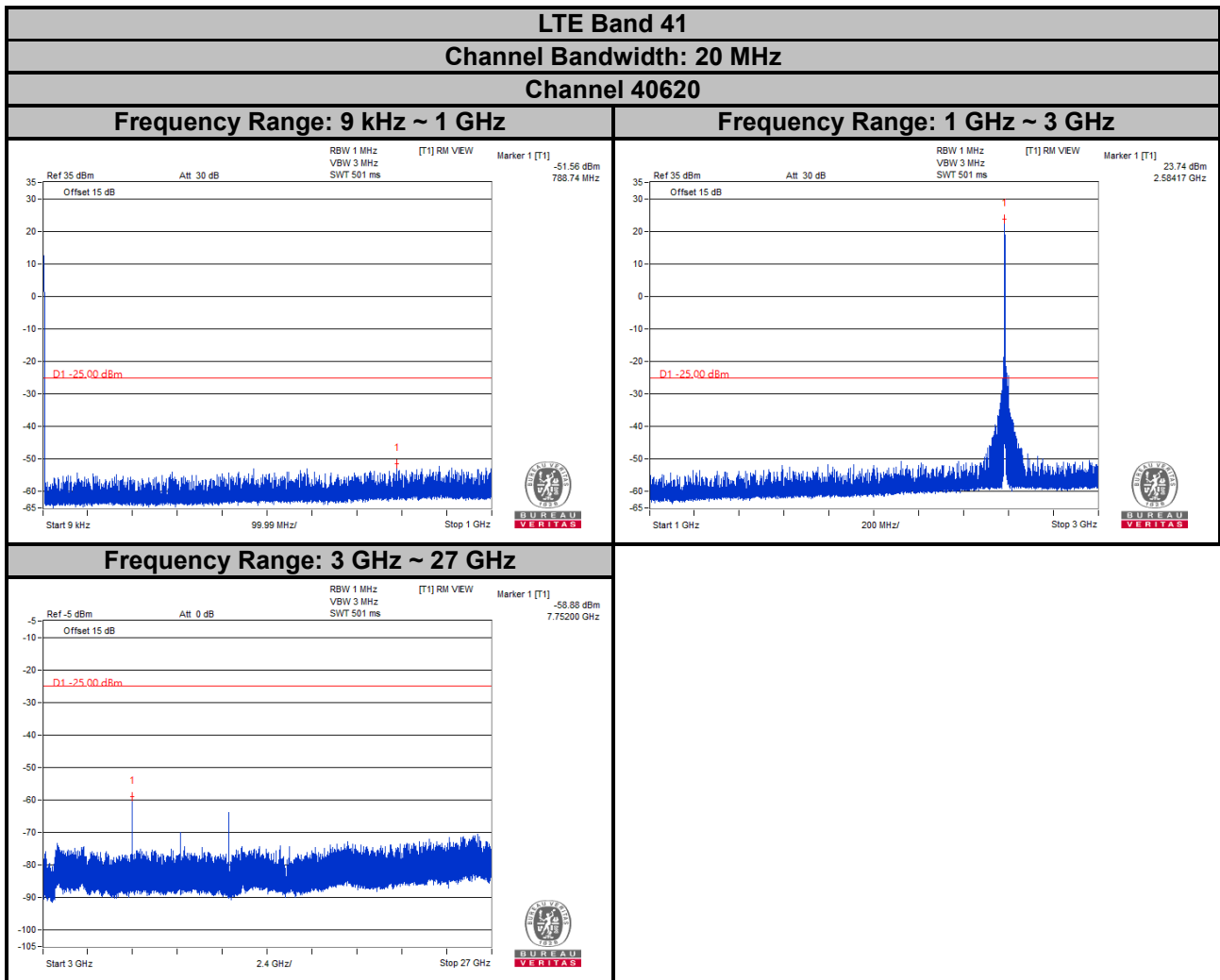
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



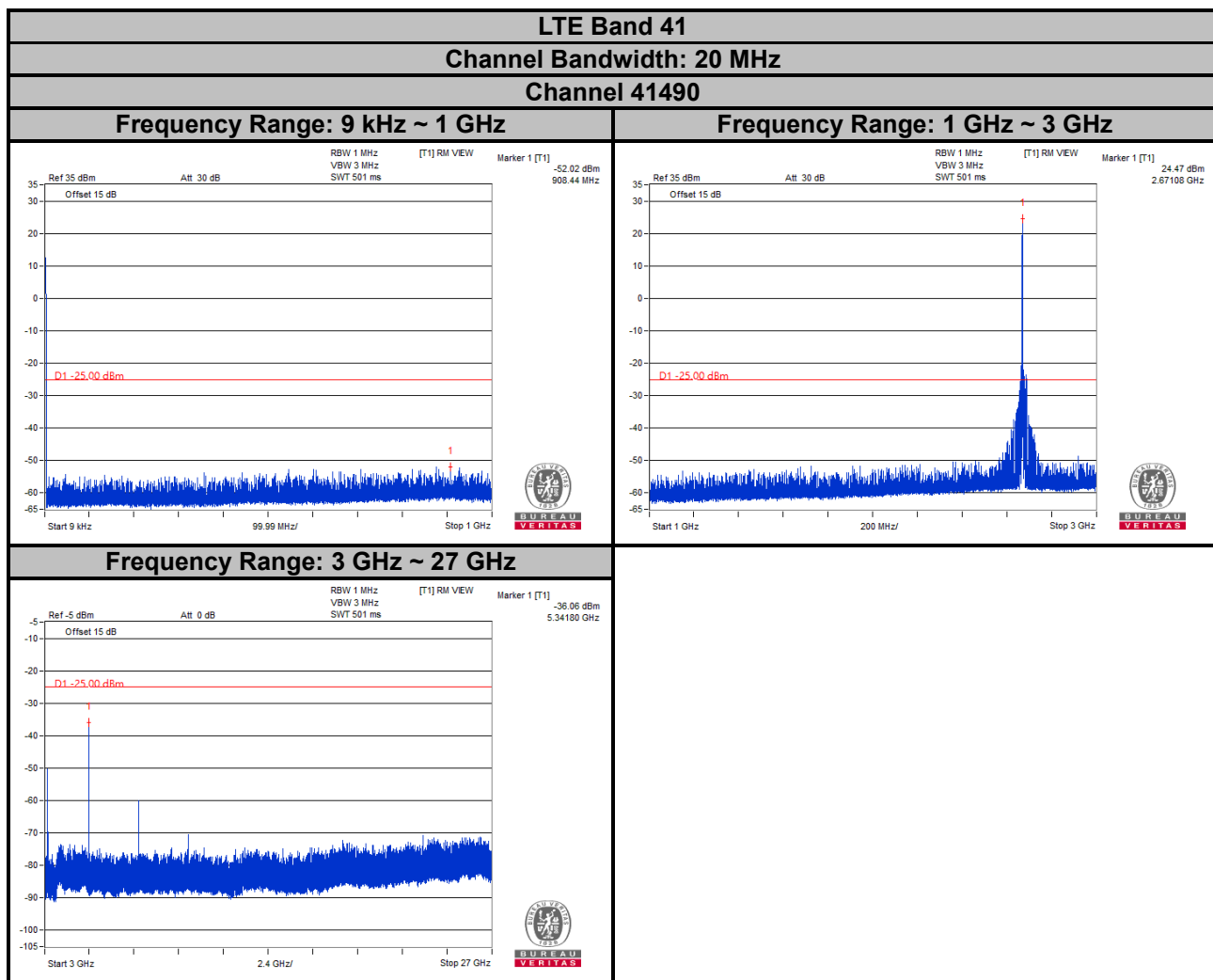
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

According to FCC 27.53(m)(4), on any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least $55 + 10 \log (P)$ dB. The emission limit equal to -25dBm .

4.8.2 Test Procedure

- a. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) 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 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following C63.26 section 5.5 and 5.2.7
 $\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
 $\text{ERP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:

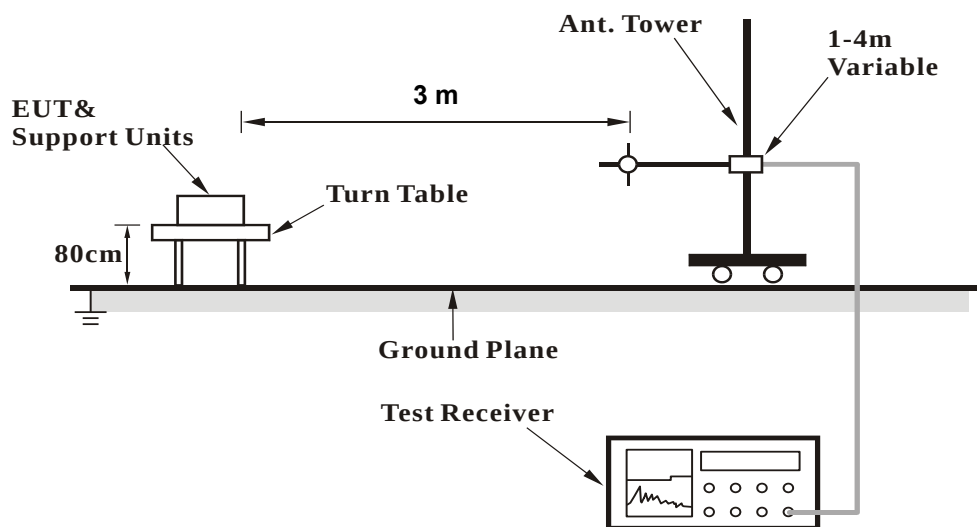
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

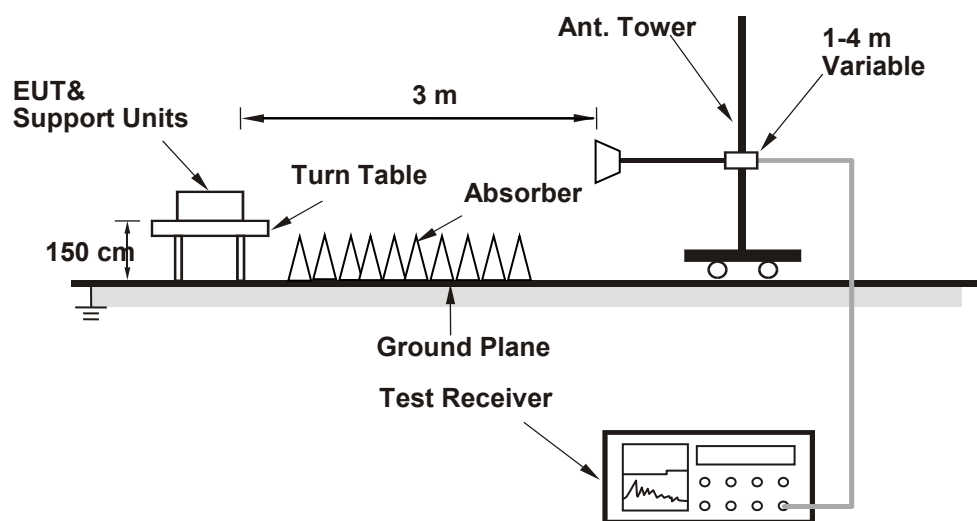
No deviation.

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

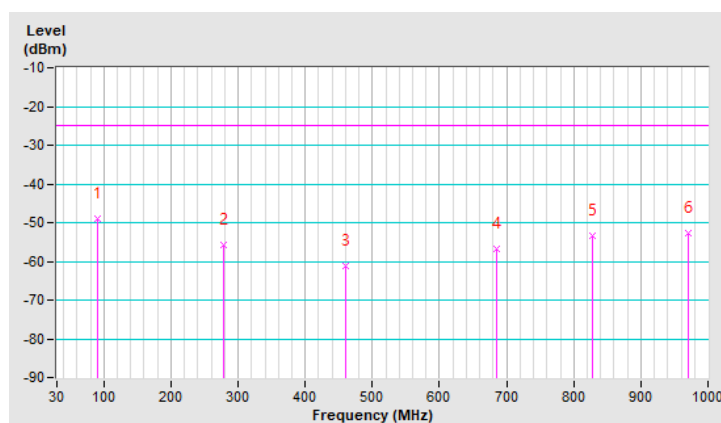
Below 1 GHz

RF Mode	TX LTE Band VII-20MHz	Channel	CH 21100 : 2535 MHz
Frequency Range	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	90.14	-49.12	-25.00	-24.12	1.03 H	51	64.50	-113.62
2	279.29	-55.76	-25.00	-30.76	1.14 H	165	52.62	-108.38
3	460.68	-61.27	-25.00	-36.27	1.07 H	142	41.06	-102.33
4	685.72	-56.92	-25.00	-31.92	1.21 H	328	40.32	-97.24
5	827.34	-53.44	-25.00	-28.44	1.31 H	5	40.94	-94.38
6	969.93	-52.88	-25.00	-27.88	1.16 H	37	39.40	-92.28

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

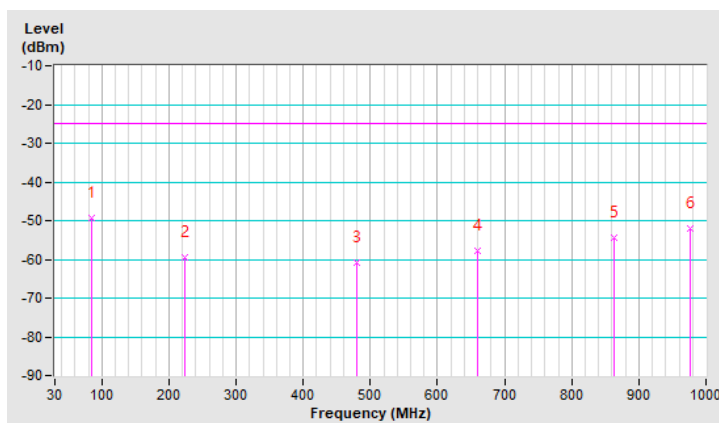


RF Mode	TX LTE Band VII-20MHz	Channel	CH 21100 : 2535 MHz
Frequency Range	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	84.32	-49.49	-25.00	-24.49	1.10 V	61	64.04	-113.53
2	223.03	-59.63	-25.00	-34.63	1.21 V	136	52.08	-111.71
3	480.08	-60.73	-25.00	-35.73	1.10 V	221	41.35	-102.08
4	660.50	-57.83	-25.00	-32.83	1.35 V	326	39.86	-97.69
5	862.26	-54.33	-25.00	-29.33	1.10 V	86	39.79	-94.12
6	976.72	-52.15	-25.00	-27.15	1.30 V	35	40.06	-92.21

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

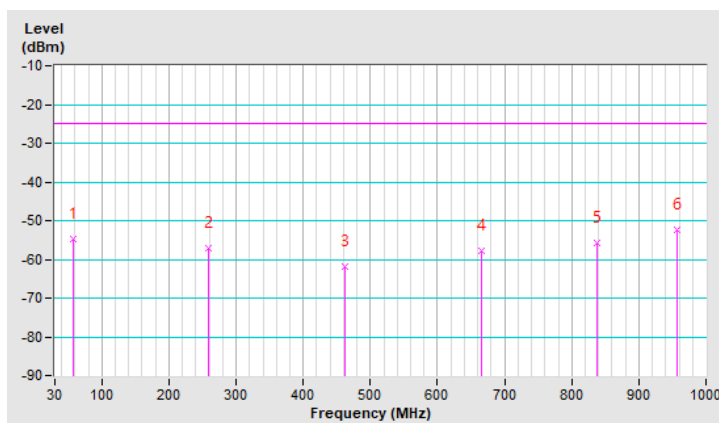


RF Mode	TX LTE Band 41-20MHz	Channel	CH 41490 : 2680.0 MHz
Frequency Range	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	57.16	-54.80	-25.00	-29.80	1.09 H	126	53.66	-108.46
2	258.92	-57.22	-25.00	-32.22	1.04 H	193	52.28	-109.50
3	462.62	-61.83	-25.00	-36.83	1.04 H	32	40.49	-102.32
4	666.32	-57.64	-25.00	-32.64	1.28 H	319	39.86	-97.50
5	838.01	-55.81	-25.00	-30.81	1.30 H	105	38.33	-94.14
6	957.32	-52.49	-25.00	-27.49	1.36 H	127	39.99	-92.48

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

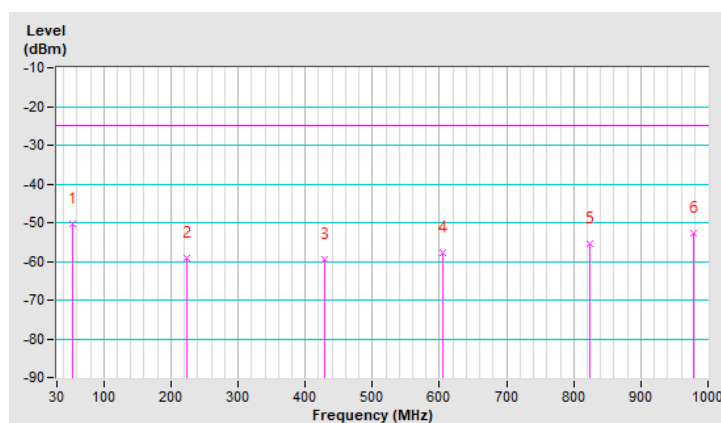


RF Mode	TX LTE Band 41-20MHz	Channel	CH 41490 : 2680.0 MHz
Frequency Range	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.25	-50.30	-25.00	-25.30	1.40 V	123	57.82	-108.12
2	223.03	-59.09	-25.00	-34.09	1.11 V	164	52.62	-111.71
3	428.67	-59.63	-25.00	-34.63	1.09 V	349	43.81	-103.44
4	605.21	-57.76	-25.00	-32.76	1.06 V	266	40.91	-98.67
5	824.43	-55.51	-25.00	-30.51	1.22 V	201	38.90	-94.41
6	978.66	-52.67	-25.00	-27.67	1.20 V	307	39.57	-92.24

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.



Above 1GHz

RF Mode	TX LTE Band VII-5MHz	Channel	CH 20775 : 2502.5 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5005.00	-56.29	-25.00	-31.29	1.23 H	287	55.86	-112.15
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5005.00	-54.63	-25.00	-29.63	1.98 V	33	57.52	-112.15

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band VII-5MHz	Channel	CH 21100 : 2535 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5070.00	-55.49	-25.00	-30.49	1.87 H	111	56.24	-111.73
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5070.00	-53.60	-25.00	-28.60	1.75 V	225	58.13	-111.73

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band VII-5MHz	Channel	CH 21425 : 2567.5 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBUV)	Correction Factor (dB/m)
1	5135.00	-56.09	-25.00	-31.09	1.45 H	105	55.82	-111.91
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBUV)	Correction Factor (dB/m)
1	5135.00	-54.49	-25.00	-29.49	2.06 V	33	57.42	-111.91

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band VII-20MHz	Channel	CH 20850 : 2510 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBUV)	Correction Factor (dB/m)
1	5020.00	-55.75	-25.00	-30.75	2.74 H	41	56.23	-111.98
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBUV)	Correction Factor (dB/m)
1	5020.00	-54.11	-25.00	-29.11	2.55 V	343	57.87	-111.98

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band VII-20MHz	Channel	CH 21100 : 2535 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5070.00	-55.19	-25.00	-30.19	1.87 H	126	56.54	-111.73
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5070.00	-53.31	-25.00	-28.31	2.41 V	130	58.42	-111.73

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band VII-20MHz	Channel	CH 21350 : 2560 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5120.00	-55.75	-25.00	-30.75	1.79 H	99	56.12	-111.87
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5120.00	-54.12	-25.00	-29.12	2.01 V	111	57.75	-111.87

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-5MHz	Channel	CH 39675 : 2498.5 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4997.00	-53.88	-25.00	-28.88	2.13 H	228	58.34	-112.22
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4997.00	-53.61	-25.00	-28.61	1.93 V	314	58.61	-112.22

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-5MHz	Channel	CH 40620 : 2593 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5186.00	-53.29	-25.00	-28.29	1.04 H	222	58.62	-111.91
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5186.00	-52.95	-25.00	-27.95	2.03 V	187	58.96	-111.91

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-5MHz	Channel	CH 41565 : 2687.5 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5375.00	-52.04	-25.00	-27.04	1.89 H	333	59.62	-111.66
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5375.00	-51.80	-25.00	-26.80	1.75 V	205	59.86	-111.66

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-20MHz	Channel	CH 39750 : 2506 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5012.00	-53.46	-25.00	-28.46	1.15 H	236	58.60	-112.06
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5012.00	-53.16	-25.00	-28.16	1.68 V	312	58.90	-112.06

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-20MHz	Channel	CH 40620 : 2593 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5186.00	-53.00	-25.00	-28.00	1.12 H	207	58.91	-111.91
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5186.00	-52.68	-25.00	-27.68	1.47 V	222	59.23	-111.91

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 41-20MHz	Channel	CH 41490 : 2680 MHz
Frequency Range	1GMHz ~ 27GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5360.00	-51.86	-25.00	-26.86	2.44 H	161	59.88	-111.74
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5360.00	-51.63	-25.00	-26.63	2.32 V	147	60.11	-111.74

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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

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