

FCC Test Report

(PART 22)

Report No.: RF200902C02-5

FCC ID: V65E4830

Test Model: E4830

Series Model: E4830NC

Received Date: Sep. 09, 2020

Test Date: Sep. 12 ~ Sep. 26, 2020

Issued Date: Oct. 27, 2020

Applicant: Kyocera Corporation % Kyocera International, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration /
Designation Number: 427177 / TW0011



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Release Control Record

Issue No.	Description	Date Issued
RF200902C02-5	Original Release	Oct. 27, 2020

1 Certificate of Conformity

Product: Feature Phone

Brand: Kyocera

Test Model: E4830

Series Model: E4830NC

Sample Status: Identical Prototype

Applicant: Kyocera Corporation % Kyocera International, Inc.

Test Date: Sep. 12 ~ Sep. 26, 2020

Standards: FCC Part 22, Subpart H

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 :



Date: Oct. 27, 2020

Gina Liu / Specialist

Approved by :



Date: Oct. 27, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047 22.913 (d)	Modulation Characteristics Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -37.62 dB at 89.40 MHz.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.0400 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 12, 2019	Nov. 11, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 24, 2019	Nov. 23, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
Preamplifier Agilent	310N	187226	Jun. 17, 2020	Jun. 16, 2021
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC -SMS-100-SMS-12 0+RFC-SMS-100-S MS-400)	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC -SMS-100-SMS-24)	Jun. 17, 2020	Jun. 17, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jul. 01, 2019	Jun. 30, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 19, 2019	Aug. 18, 2021
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 09, 2020	Sep. 08, 2021
DC Power Supply Topward	33010D	807748	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.

3 General Information

3.1 General Description of EUT

Product	Feature Phone	
Brand	Kyocera	
Test Model	E4830	
Series Model	E4830NC	
Model Difference	Refer to Note as below	
Status of EUT	Identical Prototype	
Power Supply Rating	3.8 Vdc (Battery) 5.0 Vdc (adapter or host equipment)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	826.4 ~ 846.6 MHz
	LTE 5 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 5 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 5 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 5 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
Max. ERP Power	WCDMA	180.22 mW
	LTE 5 (Channel Bandwidth: 1.4 MHz)	156.60 mW
	LTE 5 (Channel Bandwidth: 3 MHz)	157.69 mW
	LTE 5 (Channel Bandwidth: 5 MHz)	159.15 mW
	LTE 5 (Channel Bandwidth: 10 MHz)	160.62 mW
Emission Designator	WCDMA	4M17F9W
	LTE 5 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE 5 (Channel Bandwidth: 3 MHz)	2M70D7W
	LTE 5 (Channel Bandwidth: 5 MHz)	4M49D7W
	LTE 5 (Channel Bandwidth: 10 MHz)	8M96D7W
Antenna Type	Monopole Antenna with -1.81 dBi gain	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. All models are listed as below. (Test Model: E4830)

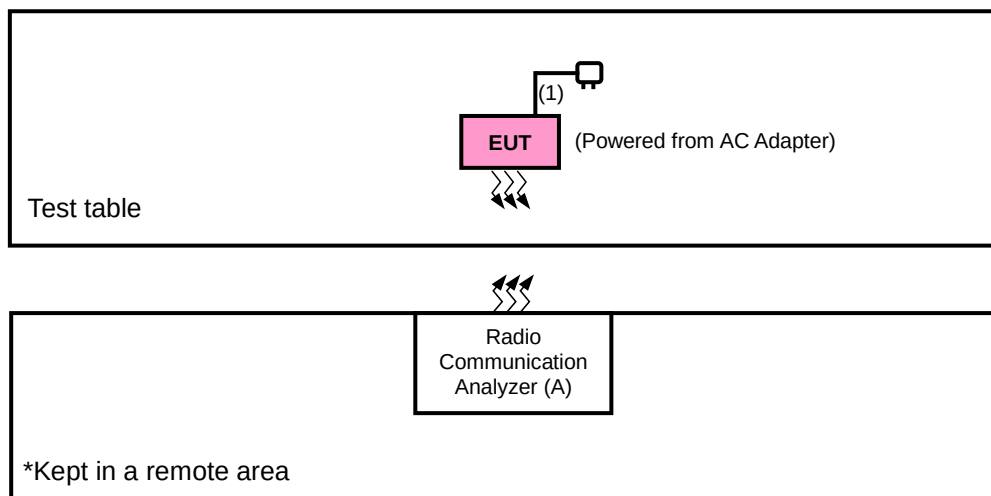
Brand	Model	Difference
Kyocera	E4830	with Camera
	E4830NC	without Camera

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Kyocera	SCP-47ADT	I/P: 100-240 Vac, 50/60 Hz, 200 mA O/P: 5 Vdc, 1000 mA
Battery	Kyocera	SCP-73LBPS	3.8 Vdc, Min/Typ 1720/1770 mAh
USB Cable	KYOCERA	SCP-26SDC	1.0 meter, Shielded, w/o core

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.	Radio Communication Analyzer	Anritsu	MT8820C	6201300640	N/A	--

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as communication partner to transfer data.

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Cable	1	1.0	Y	0	Accessory of the EUT

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	ERP	Radiated Emission
WCDMA	X-plane	X-axis
LTE Band 5	X-plane	X-axis

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
-	Modulation Characteristics	4132 to 4233	4182	WCDMA
-	Frequency Stability	4132 to 4233	4132, 4233	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
-	Band Edge	4132 to 4233	4132, 4233	WCDMA
-	Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
-	Conducted Emission	4132 to 4233	4132, 4182, 4233	WCDMA
-	Radiated Emission	4132 to 4233	4132, 4182, 4233	WCDMA

Note: For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20450 to 20600	20525	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Frequency Stability	20407 to 20643	20407, 20643	1.4 MHz	QPSK	6 RB / 0 RB Offset
		20415 to 20635	20415, 20635	3 MHz	QPSK	15 RB / 0 RB Offset
		20425 to 20625	20425, 20625	5 MHz	QPSK	25 RB / 0 RB Offset
		20450 to 20600	20450, 20600	10 MHz	QPSK	50 RB / 0 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Band Edge	20407 to 20643	20407	1.4MHz	QPSK	1 RB / 0 RB Offset
			20643	1.4MHz	QPSK	6 RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK	1 RB / 5 RB Offset
			20635	3 MHz	QPSK	6 RB / 0 RB Offset
		20425 to 20625	20425	5 MHz	QPSK	1 RB / 0 RB Offset
			20625	5 MHz	QPSK	15 RB / 0 RB Offset
		20450 to 20600	20450	10 MHz	QPSK	1 RB / 24 RB Offset
			20600	10 MHz	QPSK	25 RB / 0 RB Offset
		20407 to 20643	20407	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			20643	1.4 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
			20635	3 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
-	Peak to Average Ratio	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	3 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 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. Therefore, only ERP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM mode, the other items were performed under QPSK mode only.
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
ERP	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
Modulation Characteristics	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Frequency Stability	25 deg. C, 65 % RH	3.8Vdc	Wayne Lin
Occupied Bandwidth	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin
Band Edge	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	Karl Lee

3.4 EUT Operating Conditions

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

3.5 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 22

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

3GPP TS 36.521-1 V16.3.0 (2019-12)

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 / Portable station are limited to 7 watts e.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

- a. All measurements were done at low, middle and high operational frequency range. RBW is 5 MHz for WCDMA, and 5 MHz - 10 MHz for LTE mode, VBW $\geq 3 \times$ RBW.
- 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. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

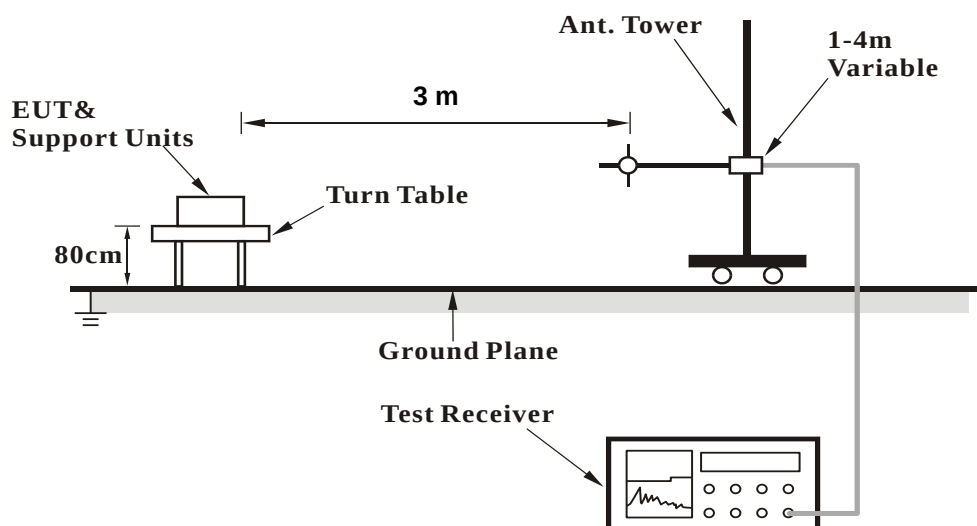
Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA, and 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.

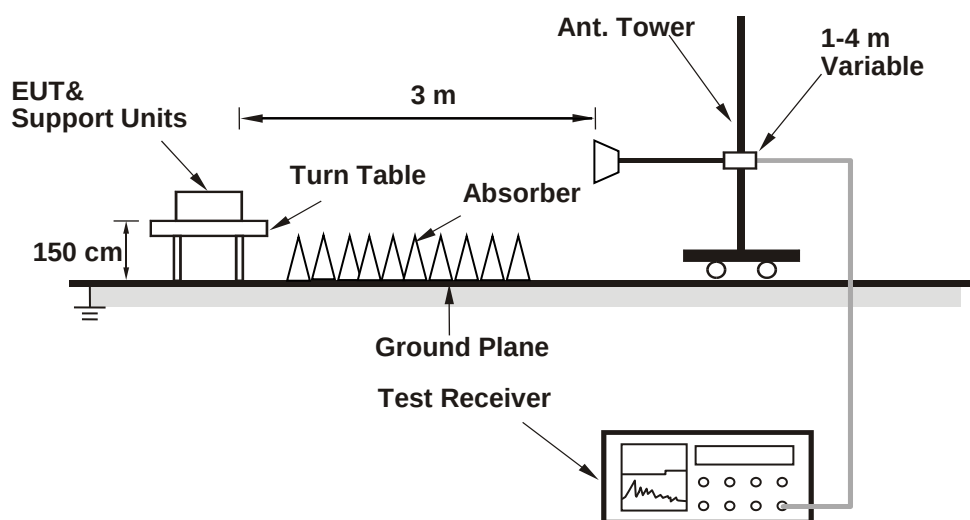
4.1.3 Test Setup

EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

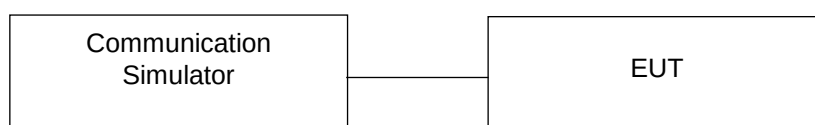


<Radiated Emission above 1 GHz>



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)

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.94	23.99	24.01
HSDPA Subtest-1	23.10	23.11	23.10
HSDPA Subtest-2	23.05	23.12	23.07
HSDPA Subtest-3	22.54	22.56	22.48
HSDPA Subtest-4	22.63	22.64	22.63
DC-HSDPA Subtest-1	22.94	23.02	23.02
DC-HSDPA Subtest-2	22.98	23.05	22.98
DC-HSDPA Subtest-3	22.56	22.58	22.51
DC-HSDPA Subtest-4	22.46	22.49	22.40
HSUPA Subtest-1	23.03	23.07	22.98
HSUPA Subtest-2	21.99	22.05	22.05
HSUPA Subtest-3	21.55	21.62	21.56
HSUPA Subtest-4	21.92	22.02	21.95
HSUPA Subtest-5	22.91	22.96	22.93

LTE Band 5																
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		20450	20525	20600				Channel		20425	20525	20625		
		Frequency (MHz)		829.0	836.5	844.0				Frequency (MHz)		826.5	836.5	846.5		
10M	QPSK	1	0	24.29	24.32	24.41	0	5M	QPSK	1	0	24.24	24.22	24.38	0	
		1	24	24.22	24.25	24.34	0			1	12	24.16	24.17	24.30	0	
		1	49	24.19	24.22	24.31	0			1	24	24.16	24.16	24.23	0	
		25	0	23.30	23.33	23.42	1			12	0	23.23	23.32	23.39	1	
		25	12	23.24	23.27	23.36	1			12	6	23.22	23.24	23.35	1	
		25	25	23.19	23.22	23.31	1			12	13	23.15	23.13	23.24	1	
	16QAM	50	0	23.25	23.28	23.37	1		25	0	23.20	23.20	23.31	1		
		16QAM	1	0	23.00	23.03	23.12		1	16QAM	1	0	22.97	22.93	23.12	1
			1	24	23.03	23.06	23.15		1		1	12	22.98	22.99	23.07	1
			1	49	23.10	23.13	23.22		1		1	24	23.03	23.07	23.14	1
			25	0	22.26	22.29	22.38		2		12	0	22.23	22.21	22.38	2
			25	12	22.12	22.15	22.24		2		12	6	22.04	22.13	22.17	2
25	25		22.14	22.17	22.26	2	12	13	22.10		22.10	22.26	2			
3M	QPSK	50	0	22.31	22.34	22.43	2	1.4M	QPSK	25	0	22.30	22.25	22.42	2	
		16QAM	1	0	20415	20525	20635			3GPP MPR (dB)	MCS Index	RB Size	RB Offset	Low	Mid	High
	Channel		20415	20525	20635	Channel			20407			20525	20643			
	Frequency (MHz)		825.5	836.5	847.5	Frequency (MHz)			824.7	836.5	848.3					
	QPSK	1	0	24.22	24.30	24.36	0		QPSK	1	0	24.14	24.19	24.24	0	
		1	7	24.18	24.16	24.24	0			1	2	24.09	24.02	24.11	0	
		1	14	24.13	24.22	24.23	0			1	5	23.98	24.11	24.25	0	
		8	0	23.26	23.30	23.36	1			3	0	24.13	24.29	24.36	0	
		8	3	23.17	23.27	23.32	1			3	1	24.13	24.06	24.25	0	
		8	7	23.11	23.16	23.27	1			3	3	24.05	24.16	24.17	0	
	16QAM	15	0	23.16	23.19	23.27	1		6	0	23.12	23.08	23.22	1		
		16QAM	1	0	22.95	22.94	23.06		1	16QAM	1	0	22.75	22.92	22.95	1
			1	7	23.01	23.05	23.09		1		1	2	22.94	22.92	23.02	1
			1	14	23.06	23.10	23.12		1		1	5	23.05	23.04	23.17	1
			8	0	22.18	22.26	22.35		2		3	0	23.19	23.18	23.22	1
			8	3	22.03	22.06	22.14		2		3	1	22.97	22.93	23.07	1
	8		7	22.08	22.17	22.25	2		3		3	23.01	23.03	23.14	1	
16QAM	15	0	22.27	22.28	22.42	2	6	0	22.14	22.18	22.20	2				

ERP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	4132	826.4	-6.50	31.208	22.56	180.22	H
	4182	836.4	-6.70	31.3	22.45	175.79	
	4233	846.6	-6.71	31.222	22.36	172.27	
	4132	826.4	-13.26	31.504	16.09	40.68	V
	4182	836.4	-12.94	31.117	16.03	40.06	
	4233	846.6	-13.78	31.922	15.99	39.74	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 5							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20407	824.7	-7.11	31.208	21.95	156.60	H
	20525	836.5	-7.24	31.3	21.91	155.24	
	20643	848.3	-7.20	31.222	21.87	153.89	
	20407	824.7	-13.41	31.504	15.94	39.30	V
	20525	836.5	-13.11	31.117	15.86	38.52	
	20643	848.3	-13.92	31.922	15.85	38.48	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	20407	824.7	-8.12	31.208	20.94	124.11	H
	20525	836.5	-8.25	31.3	20.90	123.03	
	20643	848.3	-8.20	31.222	20.87	122.24	
	20407	824.7	-14.42	31.504	14.93	31.15	V
	20525	836.5	-14.11	31.117	14.86	30.60	
	20643	848.3	-14.92	31.922	14.85	30.56	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 5							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20415	825.5	-7.08	31.208	21.98	157.69	H
	20525	836.5	-7.21	31.3	21.94	156.31	
	20635	847.5	-7.16	31.222	21.91	155.31	
	20415	825.5	-13.37	31.504	15.98	39.66	V
	20525	836.5	-13.06	31.117	15.91	38.97	
	20635	847.5	-13.87	31.922	15.90	38.92	
Channel Bandwidth: 3 MHz / 16QAM							
X	20415	825.5	-8.09	31.208	20.97	124.97	H
	20525	836.5	-8.21	31.3	20.94	124.17	
	20635	847.5	-8.17	31.222	20.90	123.08	
	20415	825.5	-14.37	31.504	14.98	31.51	V
	20525	836.5	-14.06	31.117	14.91	30.95	
	20635	847.5	-14.88	31.922	14.89	30.85	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 5							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20425	826.5	-7.04	31.208	22.02	159.15	H
	20525	836.5	-7.17	31.3	21.98	157.76	
	20625	846.5	-7.11	31.222	21.96	157.11	
	20425	826.5	-13.33	31.504	16.02	40.03	V
	20525	836.5	-13.02	31.117	15.95	39.33	
	20625	846.5	-13.84	31.922	15.93	39.19	
Channel Bandwidth: 5 MHz / 16QAM							
X	20425	826.5	-8.04	31.208	21.02	126.42	H
	20525	836.5	-8.17	31.3	20.98	125.31	
	20625	846.5	-8.12	31.222	20.95	124.51	
	20425	826.5	-14.34	31.504	15.01	31.72	V
	20525	836.5	-14.03	31.117	14.94	31.17	
	20625	846.5	-14.84	31.922	14.93	31.13	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 5							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20450	829.0	-7.00	31.208	22.06	160.62	H
	20525	836.5	-7.14	31.3	22.01	158.85	
	20600	844.0	-7.04	31.222	22.03	159.66	
	20450	829.0	-13.30	31.504	16.05	40.31	V
	20525	836.5	-12.98	31.117	15.99	39.69	
	20600	844.0	-13.79	31.922	15.98	39.65	
Channel Bandwidth: 10 MHz / 16QAM							
X	20450	829.0	-8.01	31.208	21.05	127.29	H
	20525	836.5	-8.14	31.3	21.01	126.18	
	20600	844.0	-8.05	31.222	21.02	126.53	
	20450	829.0	-14.31	31.504	15.04	31.94	V
	20525	836.5	-13.99	31.117	14.98	31.46	
	20600	844.0	-14.80	31.922	14.97	31.42	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

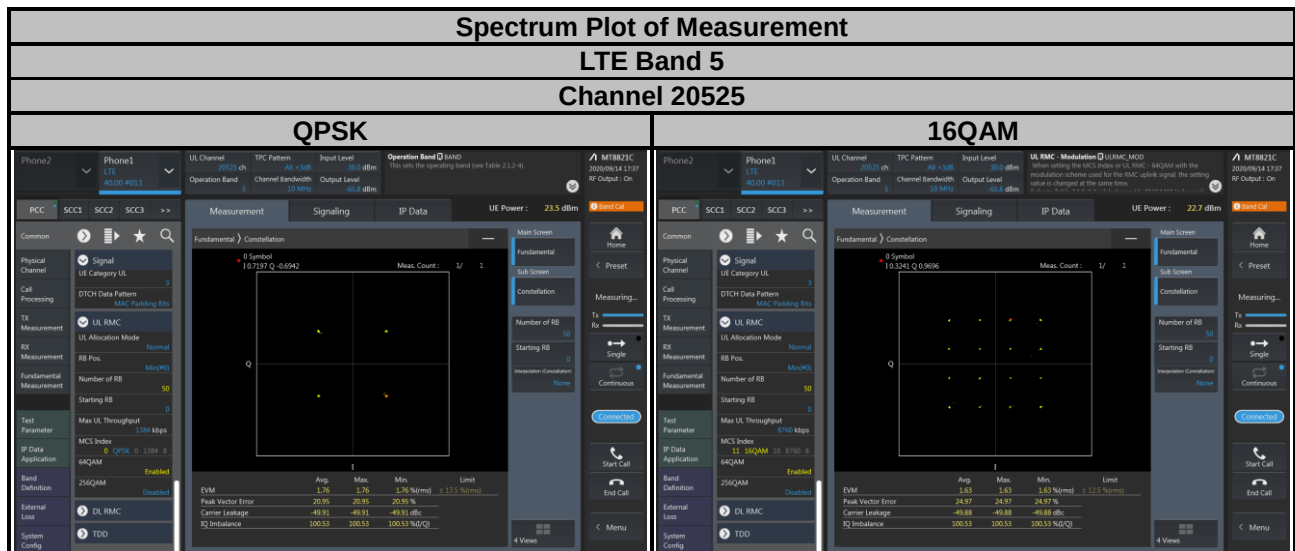
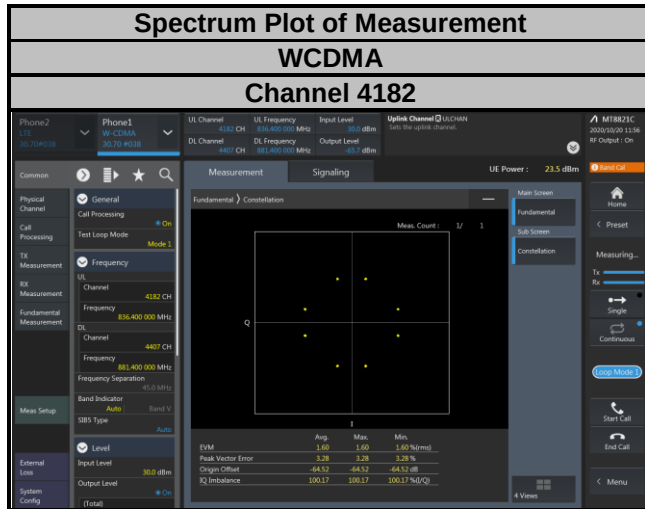
4.2.2 Test Setup



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

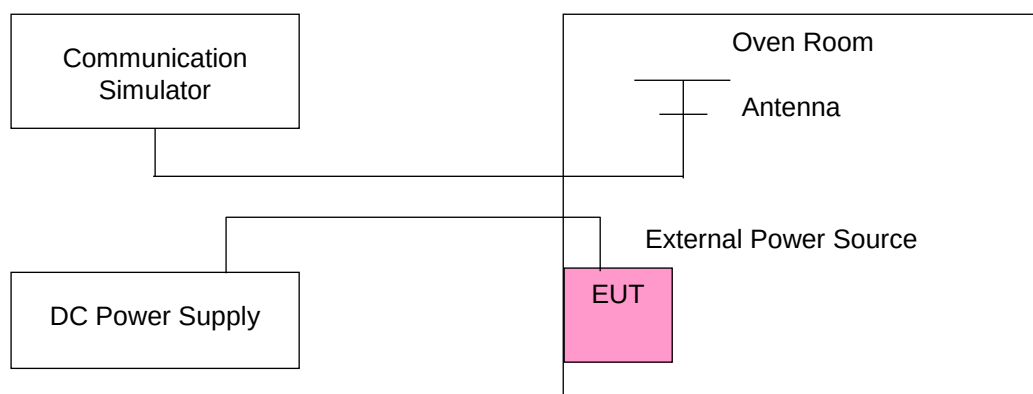
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 ± 0.5 °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)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.400002	0.002	846.600004	0.004	2.5
3.6	826.400001	0.001	846.600002	0.002	2.5
4.35	826.400002	0.002	846.600002	0.002	2.5

Note: The applicant defined the normal working voltage is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-20	826.400003	0.004	846.600004	0.004	2.5
-10	826.400004	0.005	846.600001	0.002	2.5
0	826.400002	0.003	846.600002	0.002	2.5
10	826.400003	0.003	846.600002	0.002	2.5
20	826.399997	-0.003	846.599997	-0.004	2.5
30	826.399999	-0.002	846.599996	-0.005	2.5
40	826.399997	-0.004	846.599997	-0.003	2.5
50	826.399997	-0.003	846.599998	-0.003	2.5
60	826.399996	-0.005	846.599997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	824.700001	0.002	848.300004	0.004	2.5
3.6	824.700003	0.004	848.300003	0.003	2.5
4.35	824.700004	0.005	848.300001	0.001	2.5

Note: The applicant defined the normal working voltage is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-20	824.700002	0.003	848.300003	0.003	2.5
-10	824.700003	0.004	848.300001	0.001	2.5
0	824.700003	0.004	848.300004	0.005	2.5
10	824.700003	0.004	848.300002	0.003	2.5
20	824.699999	-0.002	848.299998	-0.002	2.5
30	824.699996	-0.005	848.299997	-0.004	2.5
40	824.699998	-0.002	848.299999	-0.002	2.5
50	824.699999	-0.002	848.299998	-0.002	2.5
60	824.699997	-0.004	848.299997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	825.500002	0.002	847.500002	0.003	2.5
3.6	825.500002	0.003	847.500003	0.004	2.5
4.35	825.500001	0.001	847.500001	0.002	2.5

Note: The applicant defined the normal working voltage is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-20	825.500002	0.002	847.500003	0.004	2.5
-10	825.500004	0.004	847.500002	0.002	2.5
0	825.500003	0.003	847.500004	0.005	2.5
10	825.500004	0.004	847.500002	0.002	2.5
20	825.499998	-0.003	847.499996	-0.004	2.5
30	825.499996	-0.005	847.499997	-0.003	2.5
40	825.499998	-0.003	847.499998	-0.002	2.5
50	825.499999	-0.002	847.499998	-0.003	2.5
60	825.499999	-0.002	847.499997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.500003	0.004	846.500004	0.004	2.5
3.6	826.500004	0.004	846.500002	0.002	2.5
4.35	826.500003	0.004	846.500004	0.004	2.5

Note: The applicant defined the normal working voltage is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-20	826.500002	0.002	846.500004	0.004	2.5
-10	826.500002	0.002	846.500002	0.002	2.5
0	826.500002	0.002	846.500001	0.002	2.5
10	826.500002	0.003	846.500003	0.004	2.5
20	826.499997	-0.003	846.499999	-0.002	2.5
30	826.499996	-0.005	846.499998	-0.002	2.5
40	826.499998	-0.002	846.499997	-0.004	2.5
50	826.499997	-0.004	846.499996	-0.004	2.5
60	826.499996	-0.004	846.499996	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	829.000004	0.004	844.000003	0.004	2.5
3.6	829.000001	0.001	844.000003	0.003	2.5
4.35	829.000001	0.001	844.000003	0.004	2.5

Note: The applicant defined the normal working voltage is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

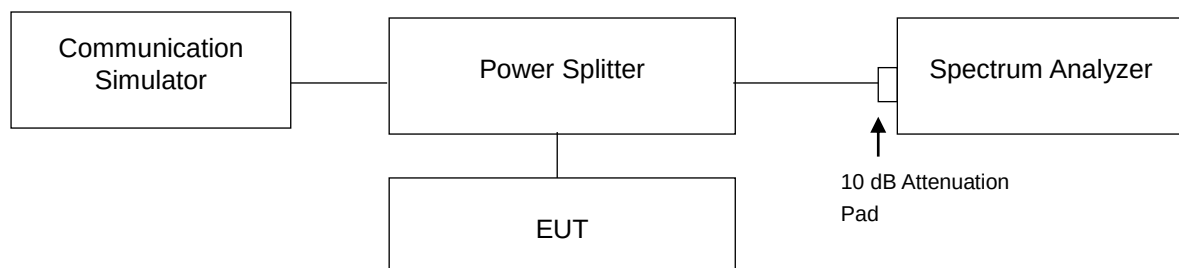
Temp. (°C)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-20	829.000002	0.002	844.000003	0.003	2.5
-10	829.000002	0.002	844.000002	0.002	2.5
0	829.000001	0.002	844.000001	0.002	2.5
10	829.000004	0.004	844.000002	0.003	2.5
20	828.999997	-0.004	843.999998	-0.003	2.5
30	828.999997	-0.004	843.999999	-0.002	2.5
40	828.999999	-0.002	843.999997	-0.003	2.5
50	828.999996	-0.004	843.999999	-0.001	2.5
60	828.999999	-0.002	843.999997	-0.004	2.5

4.4 Occupied Bandwidth Measurement

4.4.1 Test Procedure

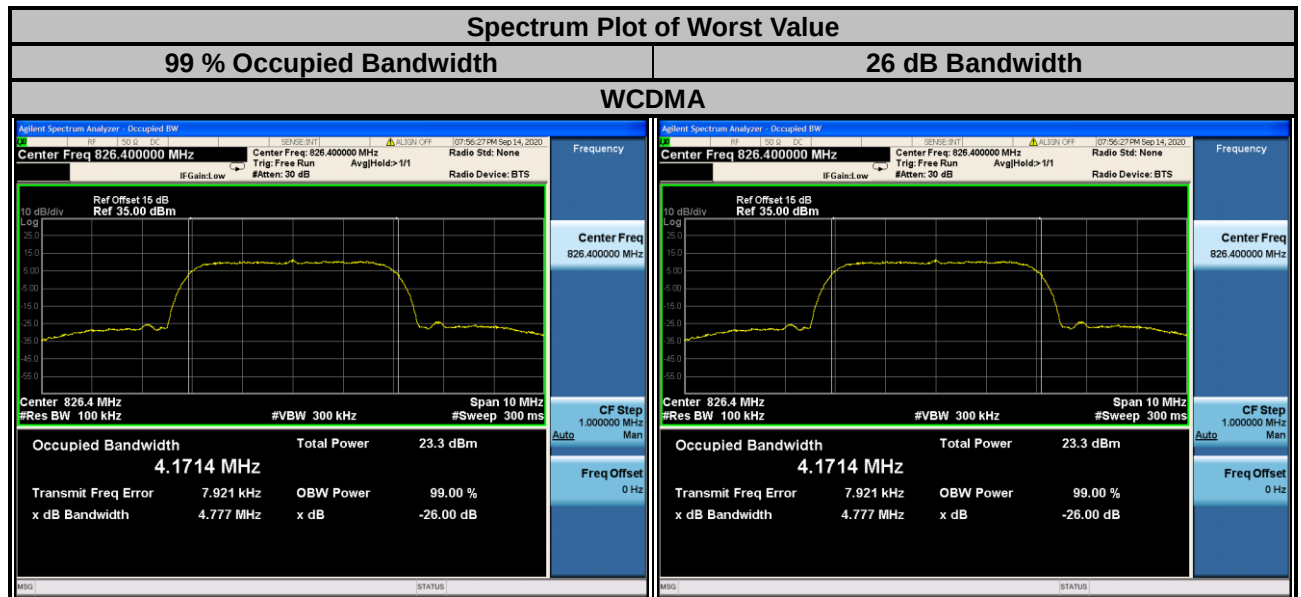
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.4.2 Test Setup

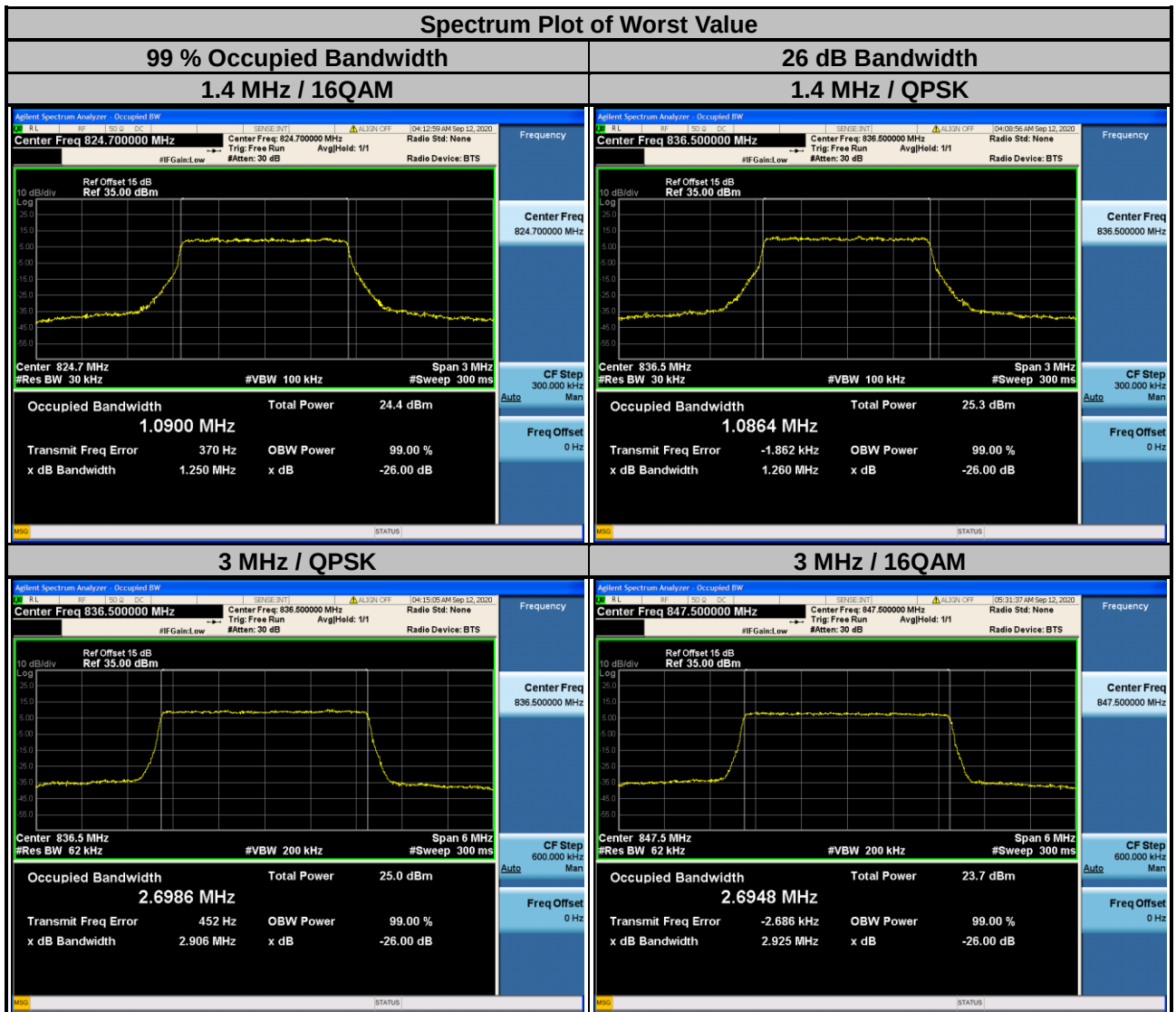


4.4.3 Test Result

WCDMA			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.4	4.1714	4.777
4182	836.4	4.1435	4.727
4233	846.6	4.1381	4.738



LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20407	824.7	1.0875	1.0900	1.244	1.250
20525	836.5	1.0864	1.0885	1.260	1.246
20643	848.3	1.0866	1.0885	1.258	1.249
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20415	825.5	2.6982	2.6949	2.908	2.924
20525	836.5	2.6986	2.6928	2.906	2.915
20635	847.5	2.6976	2.6948	2.913	2.925



LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20425	826.5	4.4850	4.4871	4.815	4.803
20525	836.5	4.4875	4.4897	4.787	4.813
20625	846.5	4.4844	4.4861	4.783	4.810
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20450	829.0	8.9456	8.9442	9.502	9.511
20525	836.5	8.9478	8.9574	9.488	9.508
20600	844.0	8.9456	8.9441	9.497	9.505

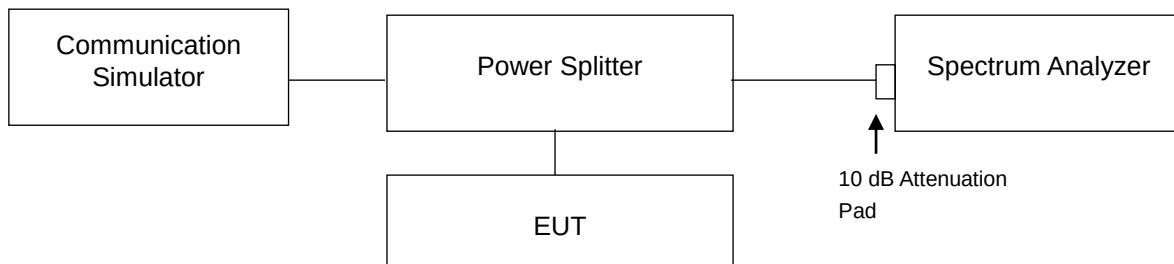


4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

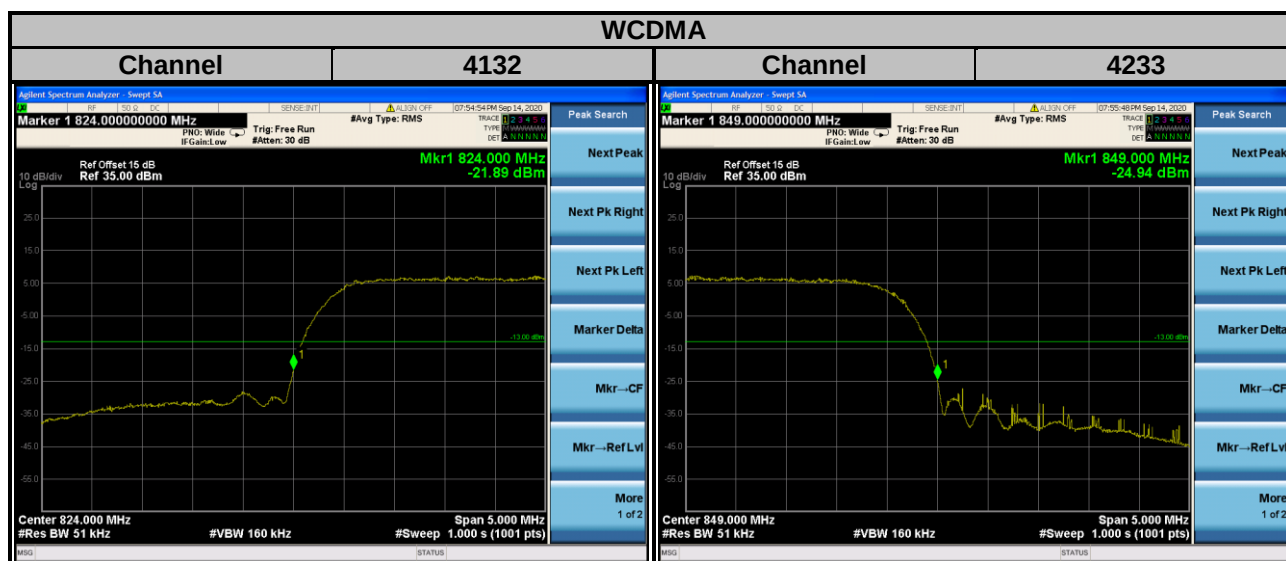
4.5.2 Test Setup

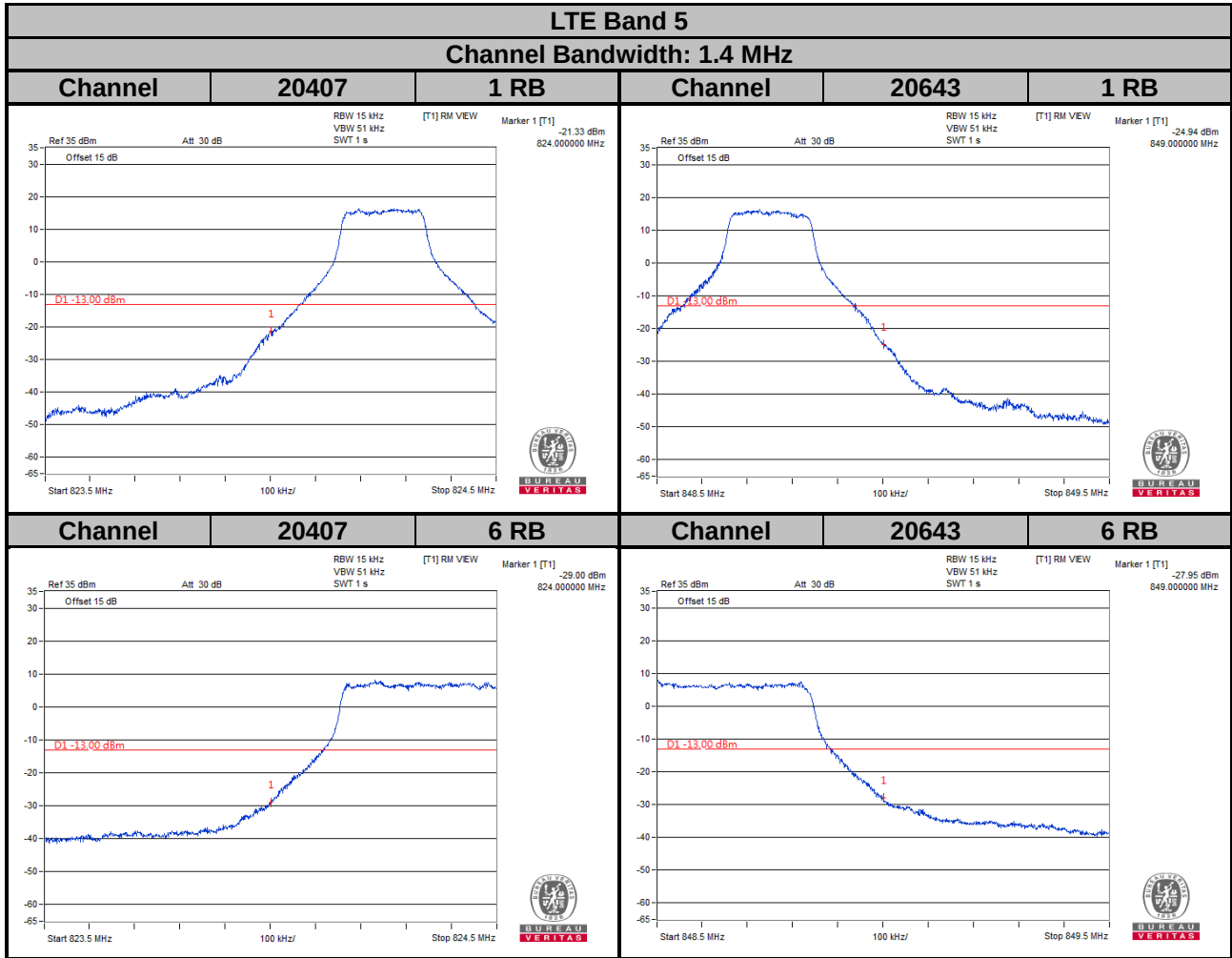


4.5.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 15 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (LTE Bandwidth 5 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 10 MHz).
- Record the max trace plot into the test report.

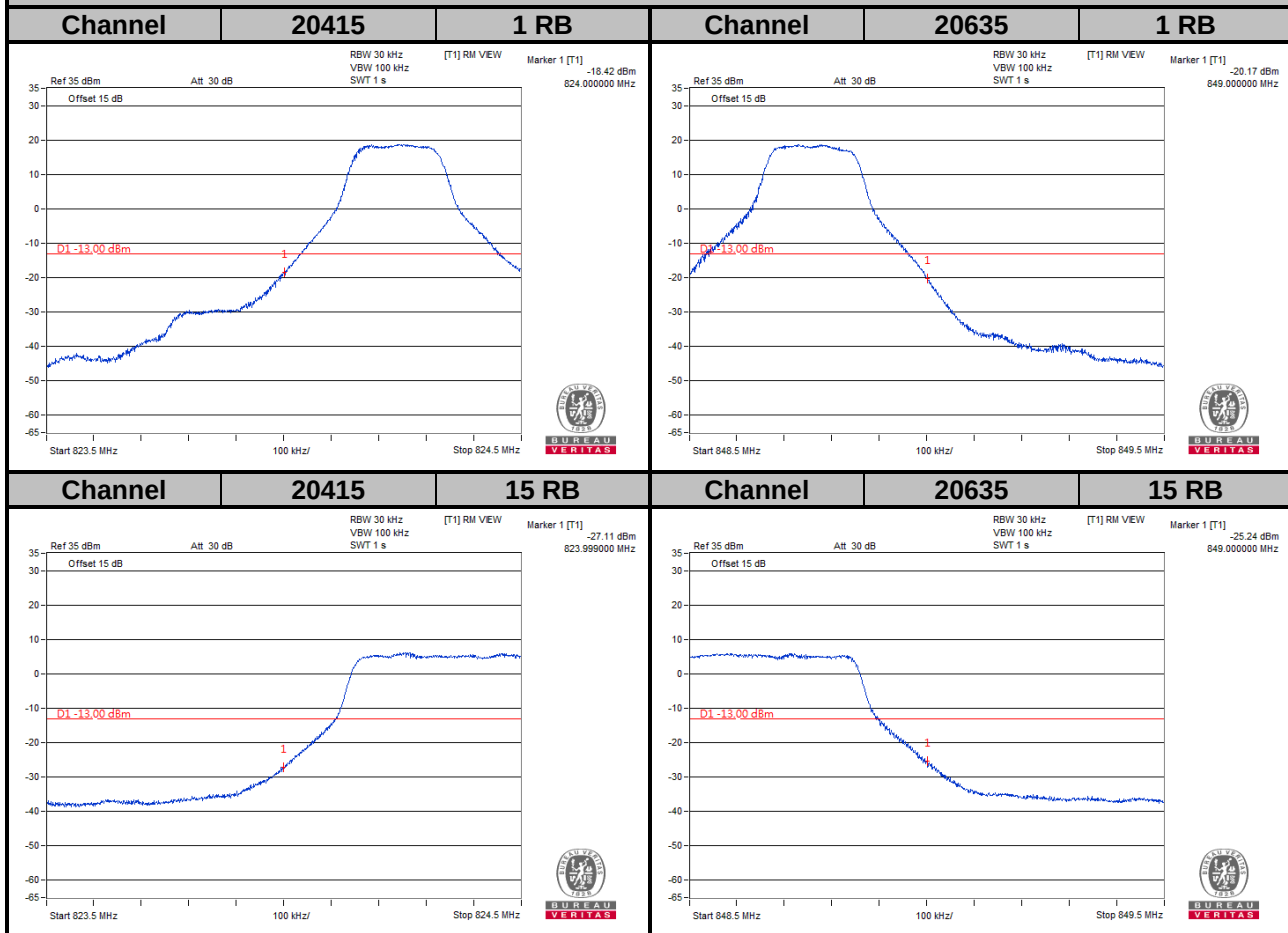
4.5.4 Test Results





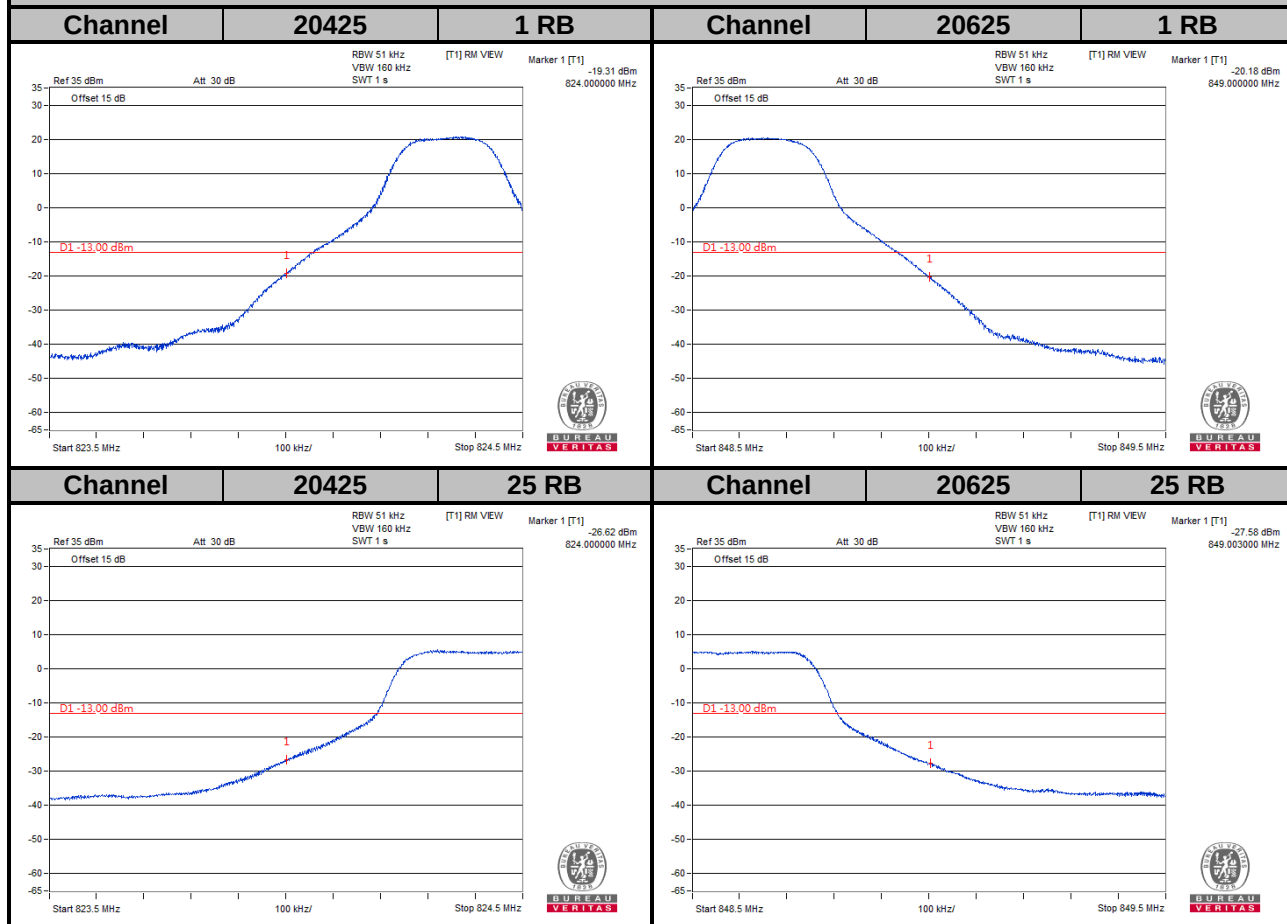
LTE Band 5

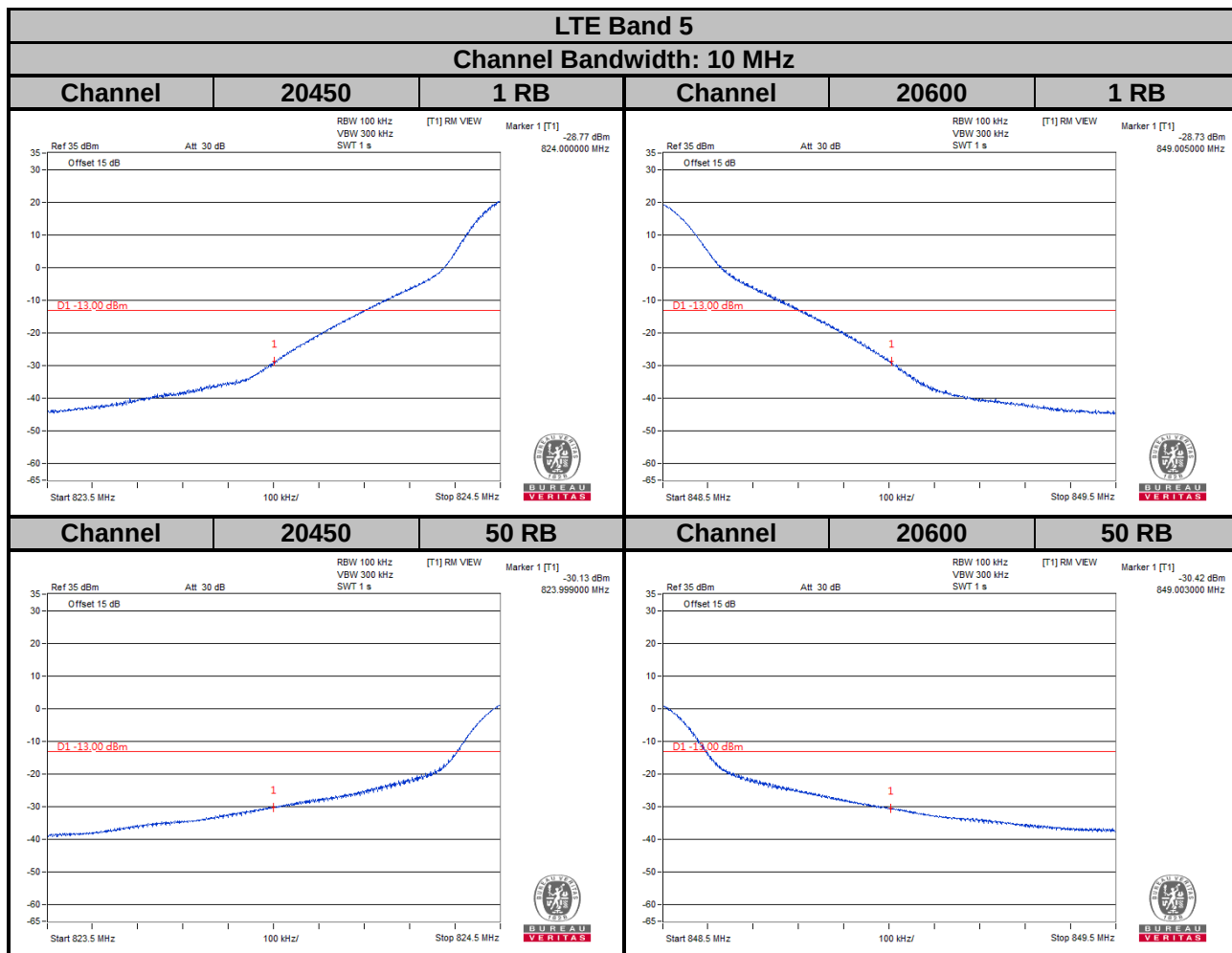
Channel Bandwidth: 3 MHz



LTE Band 5

Channel Bandwidth: 5 MHz



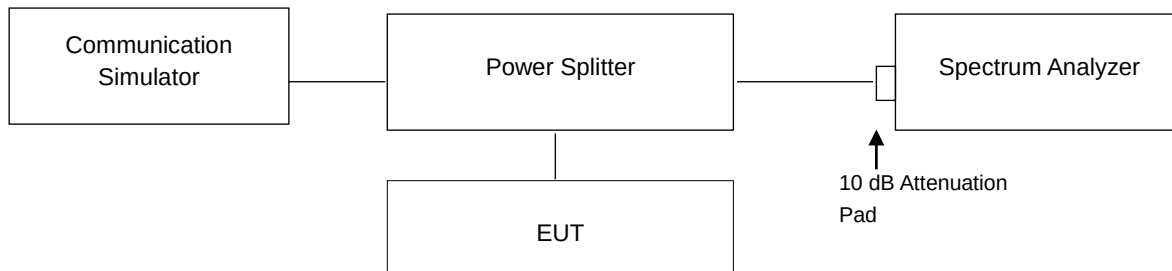


4.6 Peak to Average Ratio

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

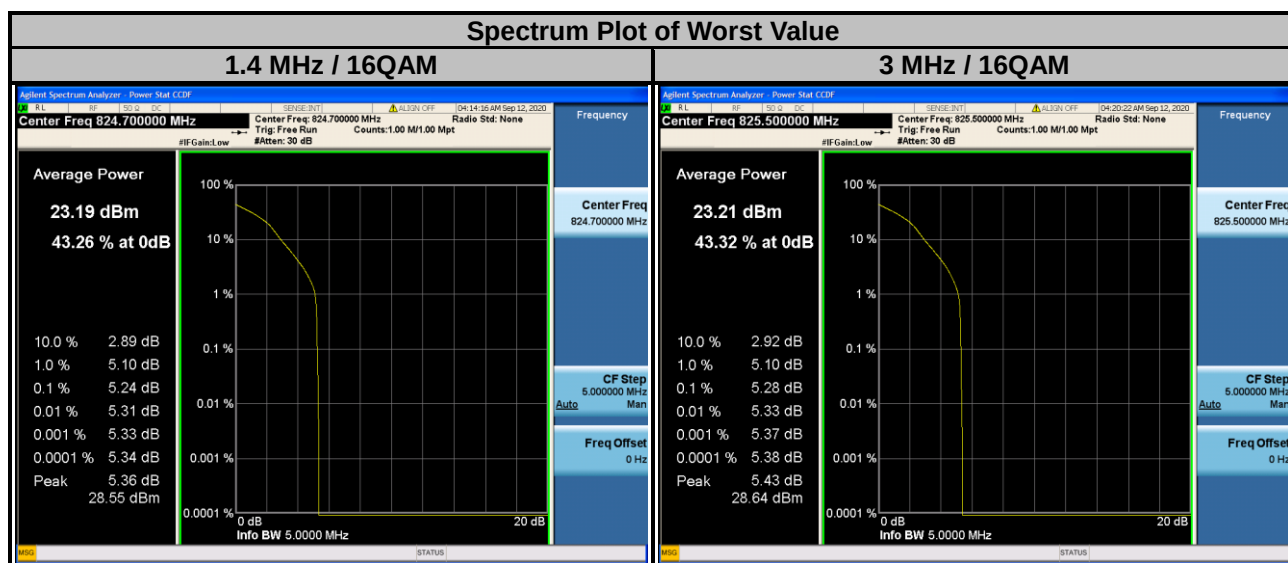


4.6.3 Test Procedures

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 %.

Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		WCDMA
4132	826.4	3.00
4182	836.4	2.97
4233	846.6	2.90

LTE Band 5							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	4.27	5.24	20415	825.5	4.33	5.28
20525	836.5	4.23	5.21	20525	836.5	4.29	5.25
20643	848.3	4.21	5.13	20635	847.5	4.23	5.25

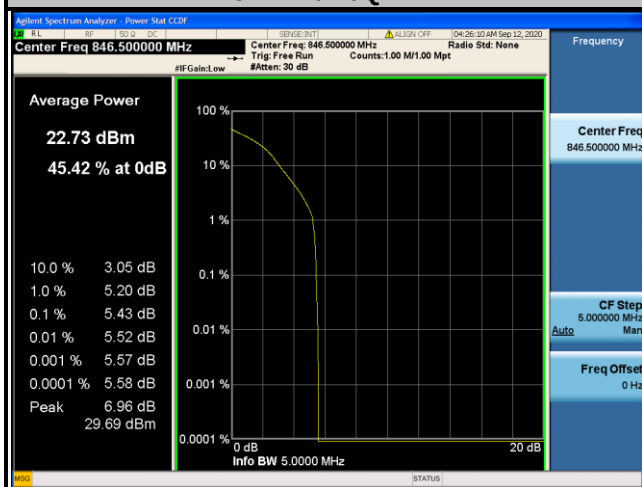


LTE Band 5

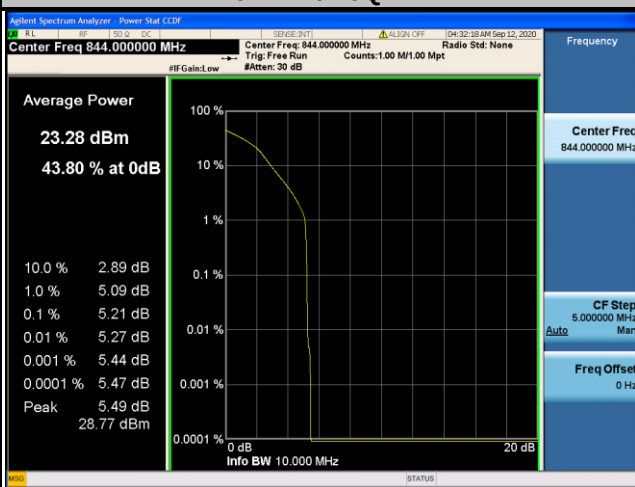
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.31	5.27	20450	829.0	4.27	5.17
20525	836.5	4.20	5.10	20525	836.5	4.23	5.10
20625	846.5	4.21	5.43	20600	844.0	4.37	5.21

Spectrum Plot of Worst Value

5 MHz / 16QAM



10 MHz / 16QAM

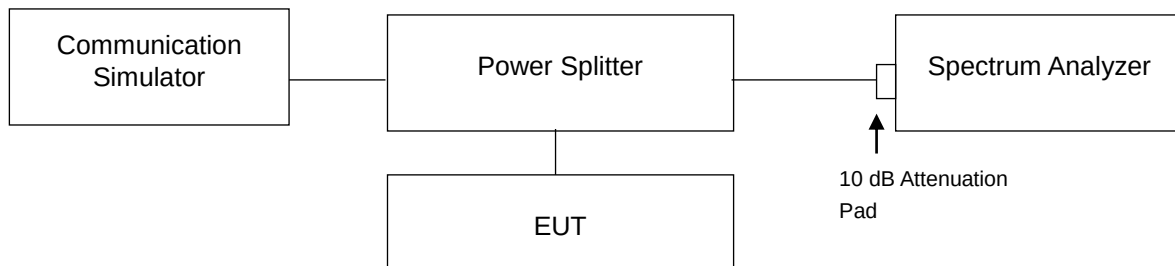


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

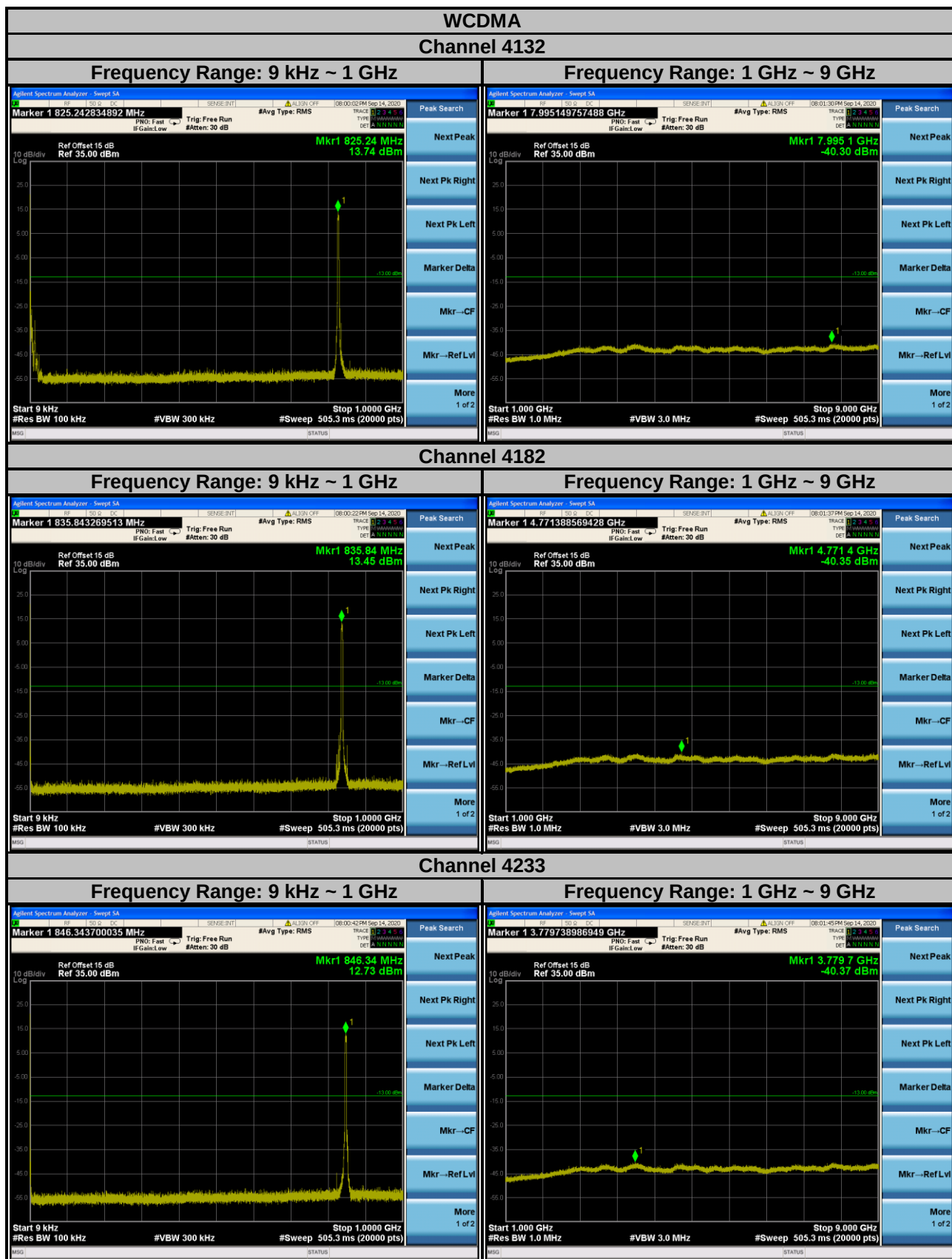
4.7.2 Test Setup



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 = 100 kHz and VBW = 300 kHz is used for conducted emission measurement.
- Measuring frequency range is from 1 GHz to 9 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

4.7.4 Test Results



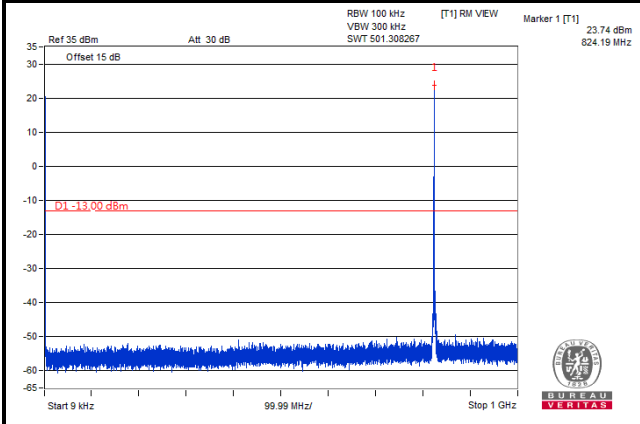
Note: The signal over the limit at 9 kHz is from the spectrum analyzer.

LTE Band 5

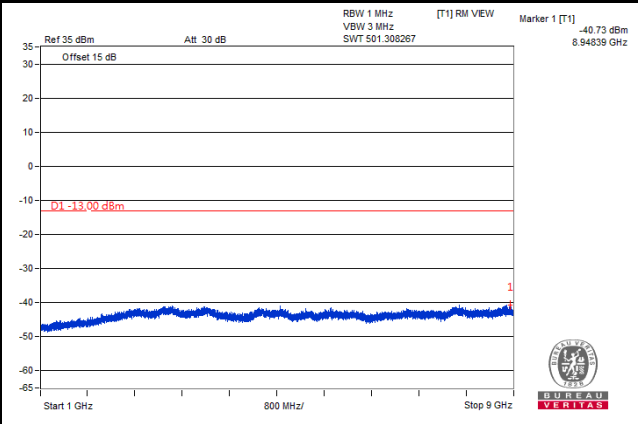
Channel Bandwidth: 1.4 MHz

Channel 20407

Frequency Range: 9 kHz ~ 1 GHz

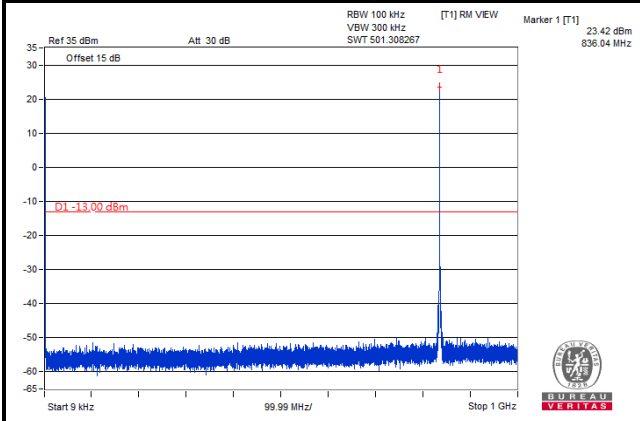


Frequency Range: 1 GHz ~ 9 GHz

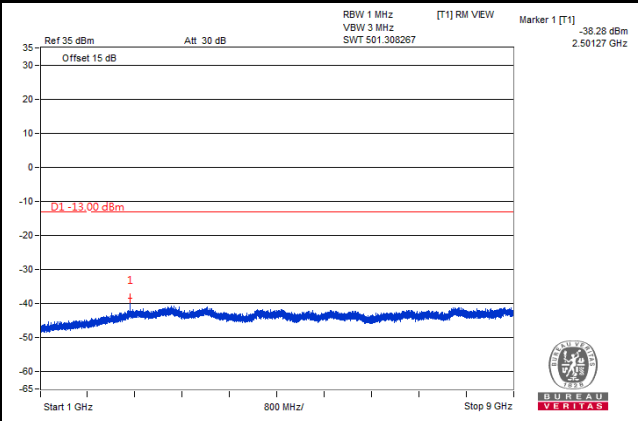


Channel 20525

Frequency Range: 9 kHz ~ 1 GHz

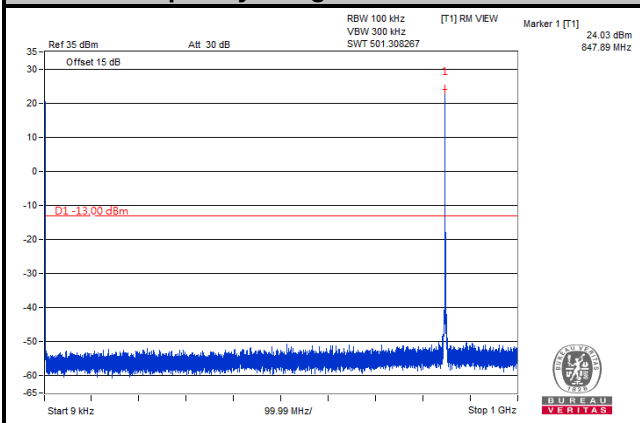


Frequency Range: 1 GHz ~ 9 GHz

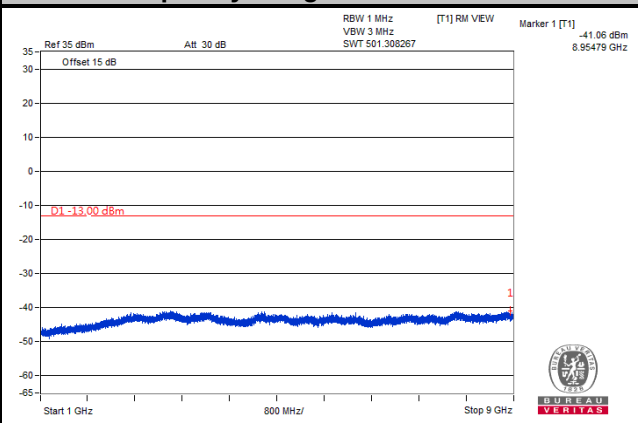


Channel 20643

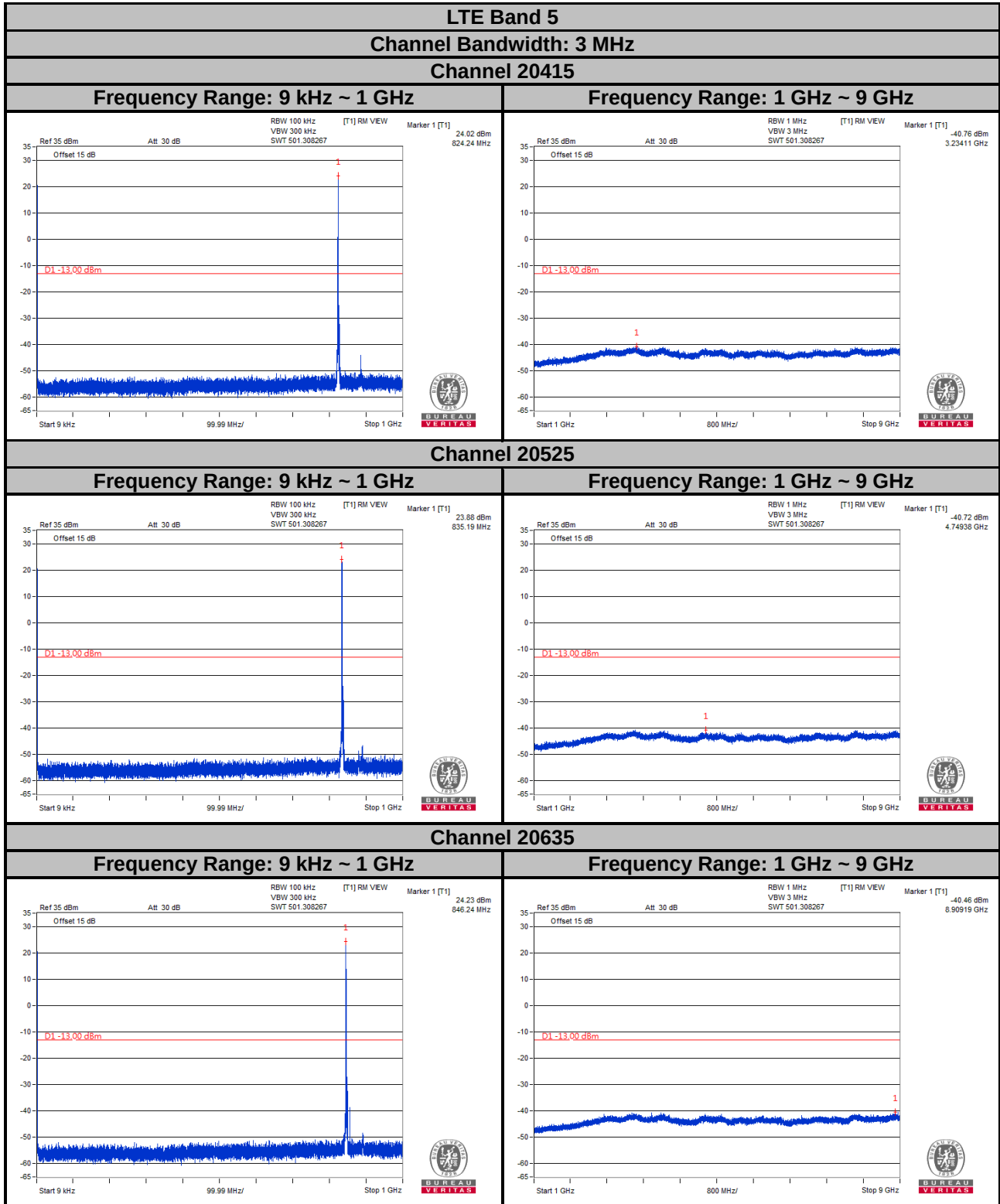
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 9 GHz



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



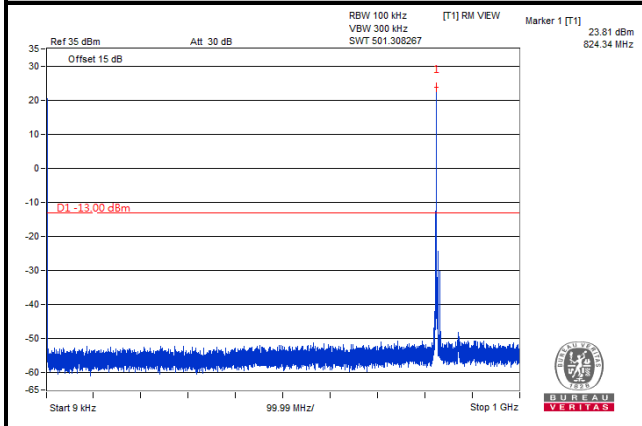
Note: The signal over the limit at 9 kHz is from the spectrum analyzer.

LTE Band 5

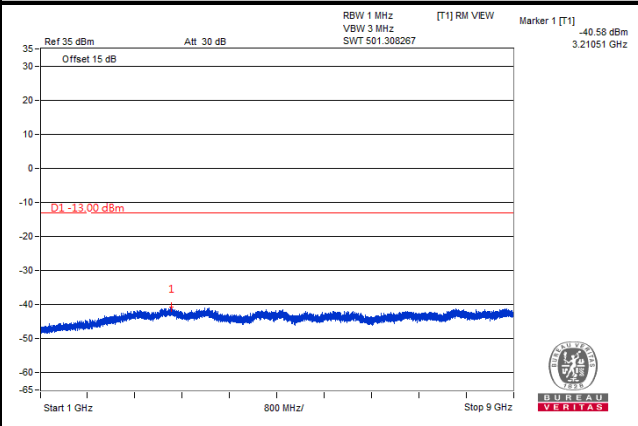
Channel Bandwidth: 5 MHz

Channel 20425

Frequency Range: 9 kHz ~ 1 GHz

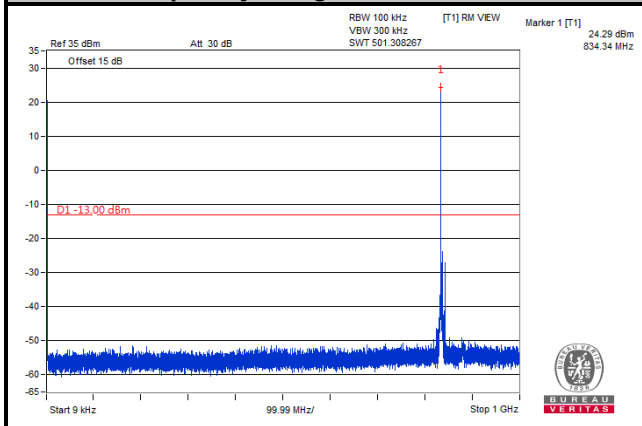


Frequency Range: 1 GHz ~ 9 GHz

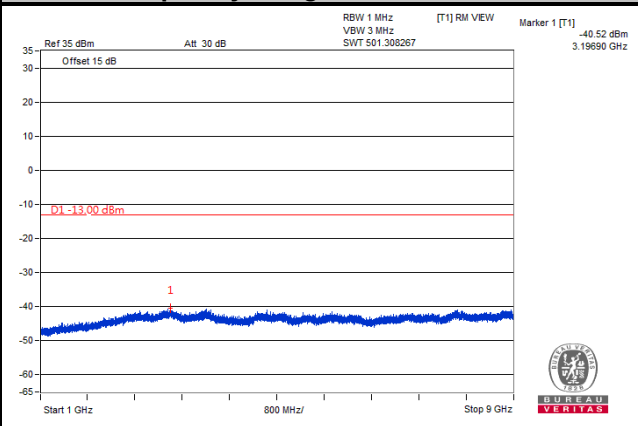


Channel 20525

Frequency Range: 9 kHz ~ 1 GHz

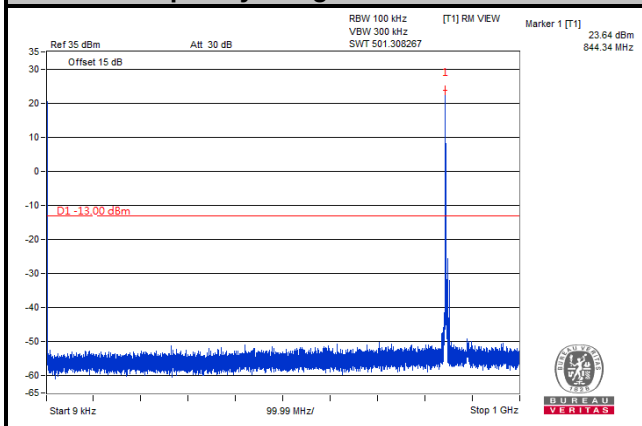


Frequency Range: 1 GHz ~ 9 GHz

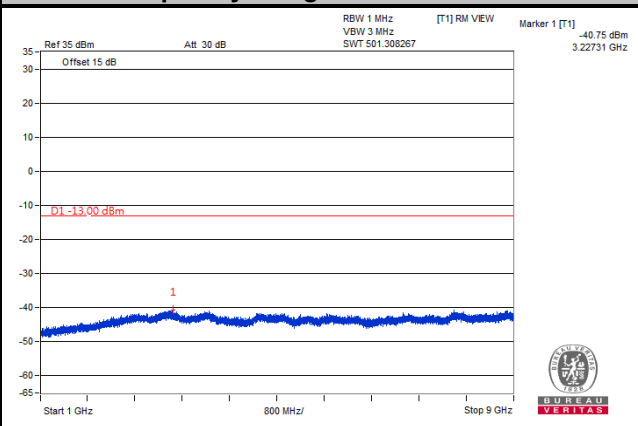


Channel 20625

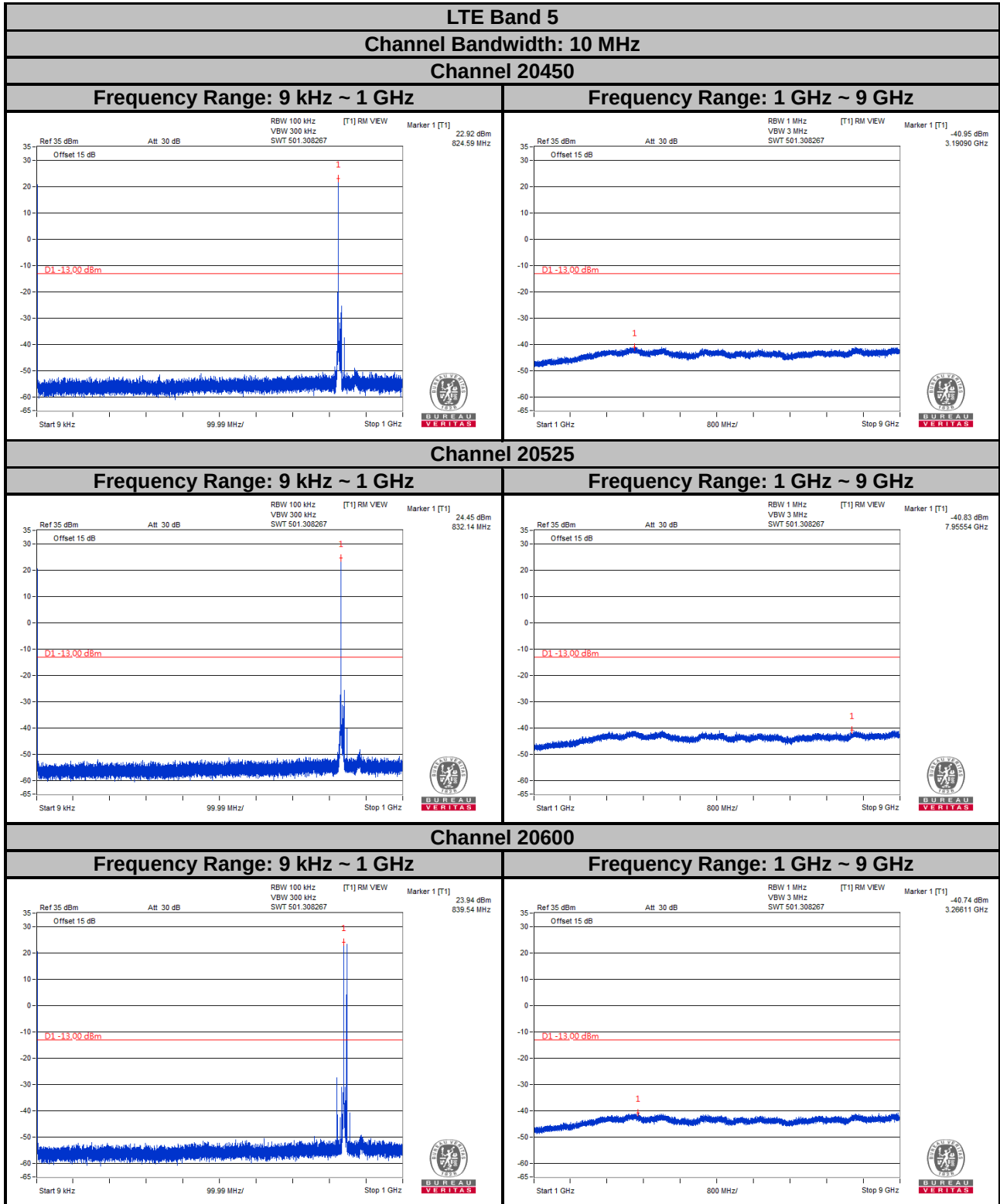
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 9 GHz



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



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

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit is equal to -13 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. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- c. 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:

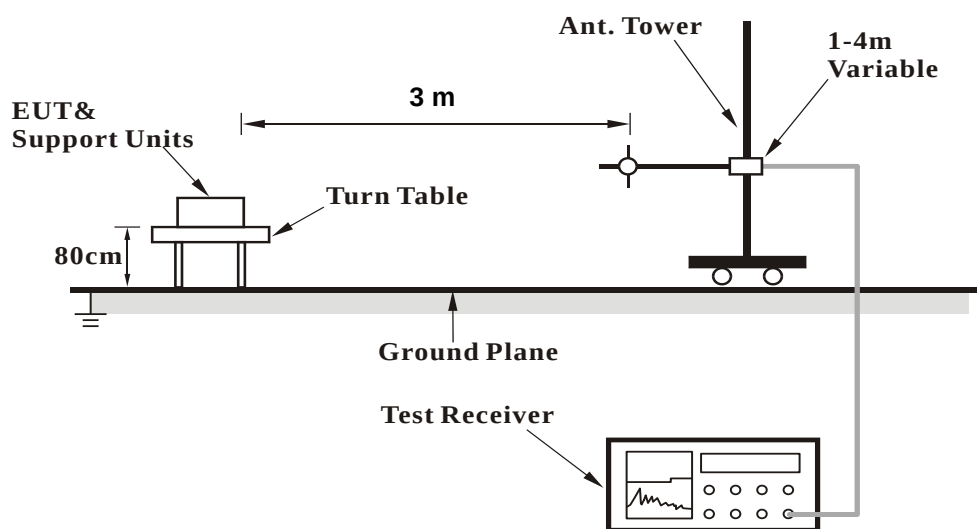
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

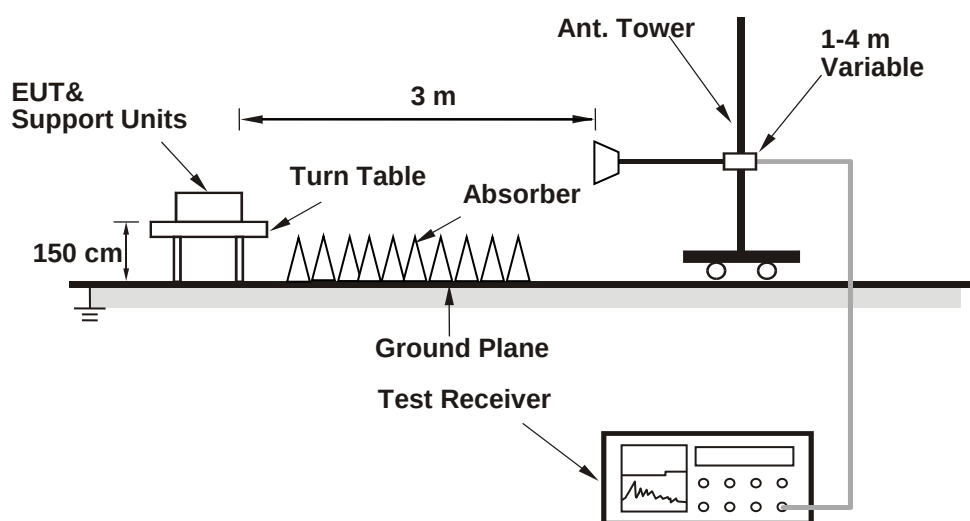
No deviation.

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

WCDMA:

Low Channel

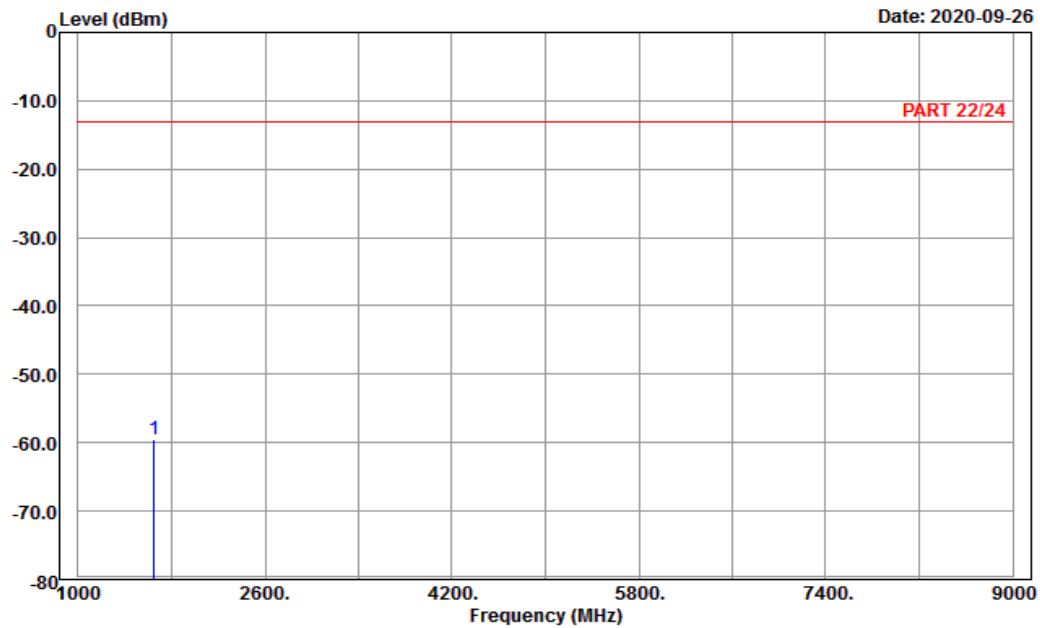


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 2020-09-26



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1652.80	-59.55	-67.28	7.73	-13.00	-46.55	Peak

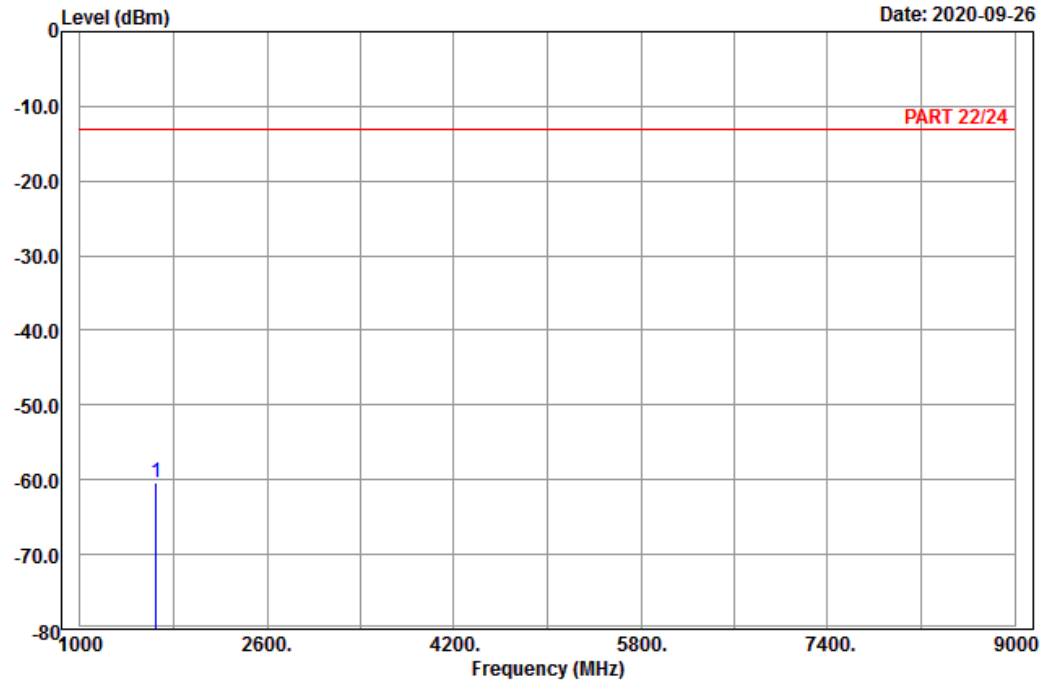


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : Band V_Link_L-Ch

Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1652.80	-60.42	-68.15	7.73	-13.00	-47.42	Peak

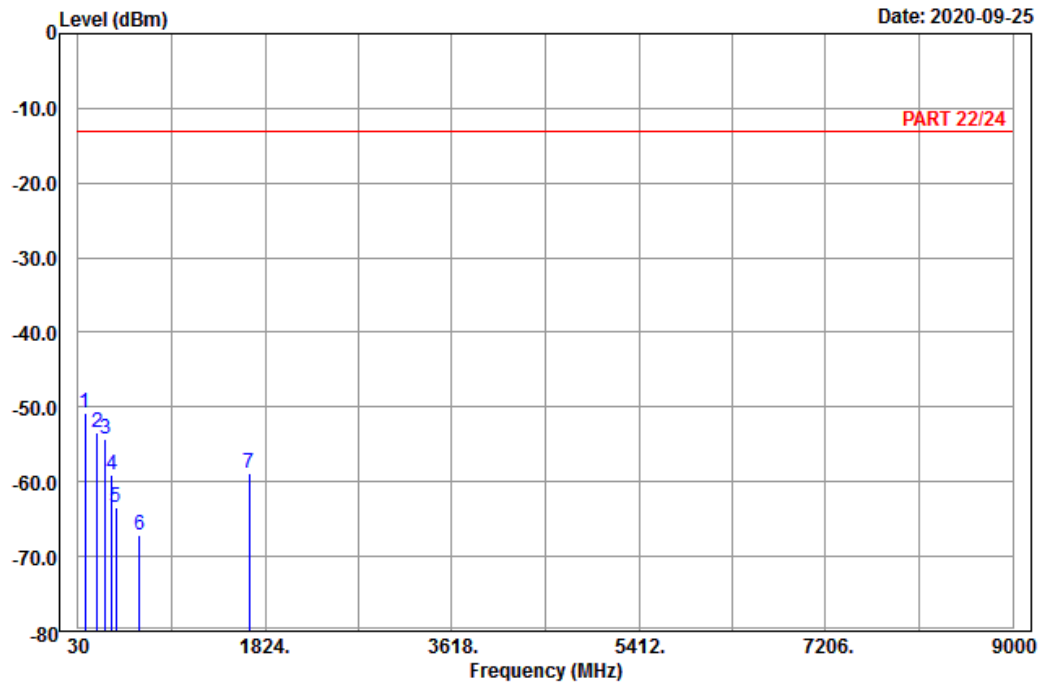
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_M-Ch
Tested by: Karl Lee

		Read	Limit	Over	
Freq	Level	Level	Factor	Line	Limit Remark
MHz	dBm	dBm	dB	dBm	dB
1 pp	93.45	-50.78	-40.27	-10.51	-13.00 -37.78 Peak
2	210.36	-53.38	-47.34	-6.04	-13.00 -40.38 Peak
3	288.66	-54.25	-48.39	-5.86	-13.00 -41.25 Peak
4	353.90	-59.17	-54.00	-5.17	-13.00 -46.17 Peak
5	395.90	-63.40	-60.45	-2.95	-13.00 -50.40 Peak
6	619.90	-67.14	-67.35	0.21	-13.00 -54.14 Peak
7	1672.80	-58.77	-66.68	7.91	-13.00 -45.77 Peak

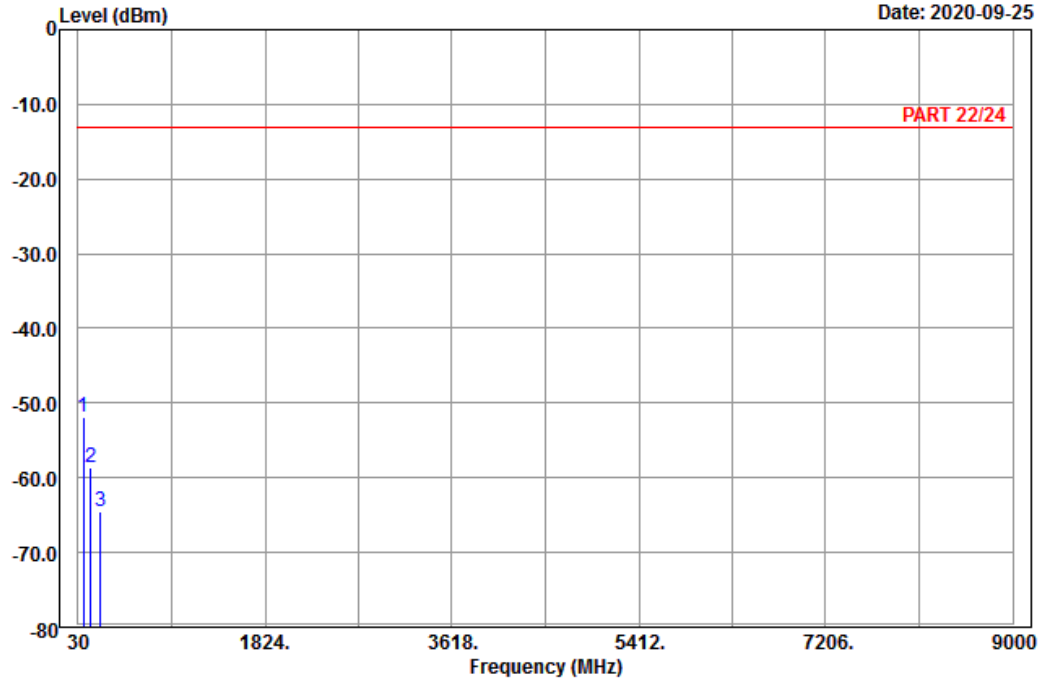


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A D T

Data: 10

Date: 2020-09-25



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	78.06	-51.90	-39.97	-11.93	-13.00	-38.90	Peak
2	152.04	-58.55	-50.66	-7.89	-13.00	-45.55	Peak
3	242.49	-64.48	-58.87	-5.61	-13.00	-51.48	Peak

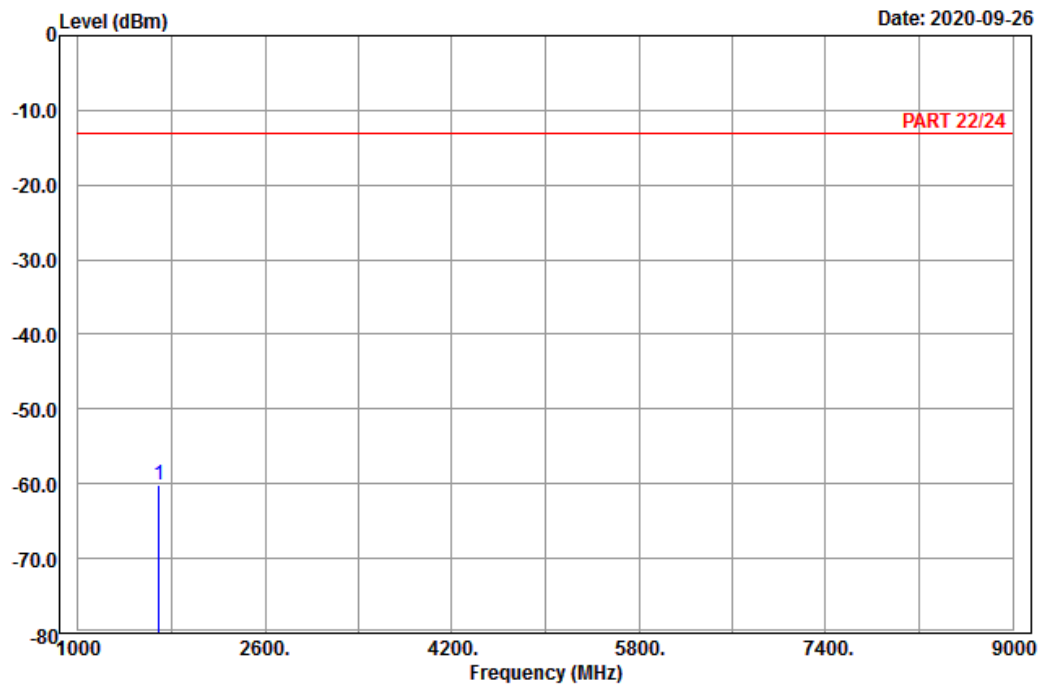
High Channel



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A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_H-Ch
Tested by: Karl Lee

		Read	Limit	Over	
Freq	Level	Level	Factor	Line	Limit Remark
MHz	dBm	dBm	dB	dBm	dB
1 pp 1693.20	-60.18	-68.32	8.14	-13.00	-47.18 Peak

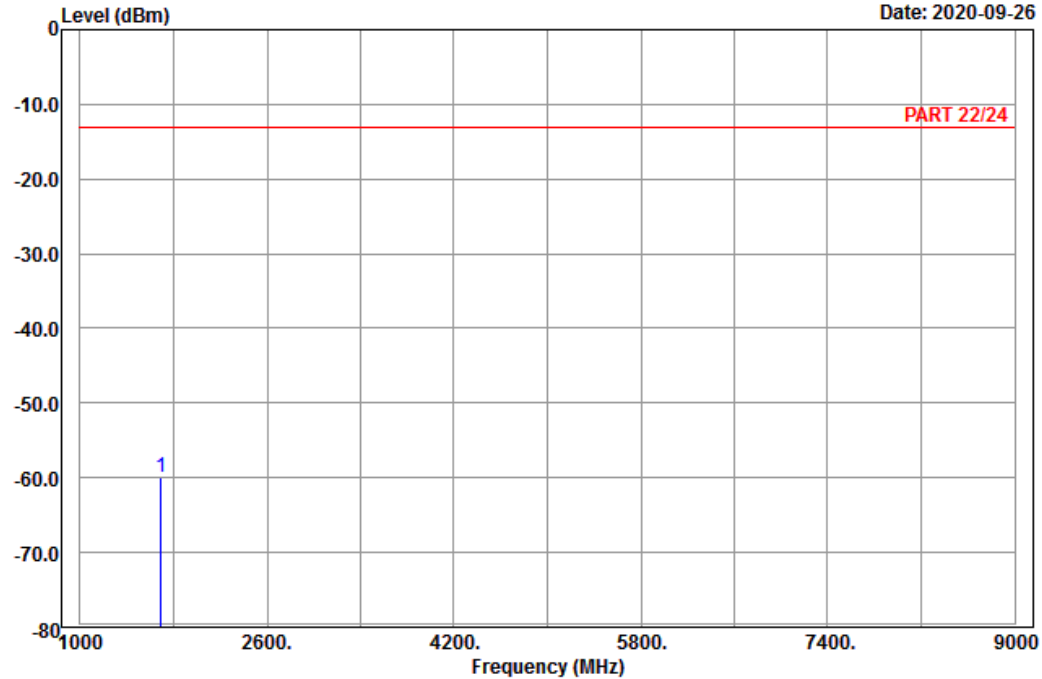


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A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : Band V_Link_H-Ch

Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1693.20	-59.92	-68.06	8.14	-13.00	-46.92	Peak

LTE Band 5
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

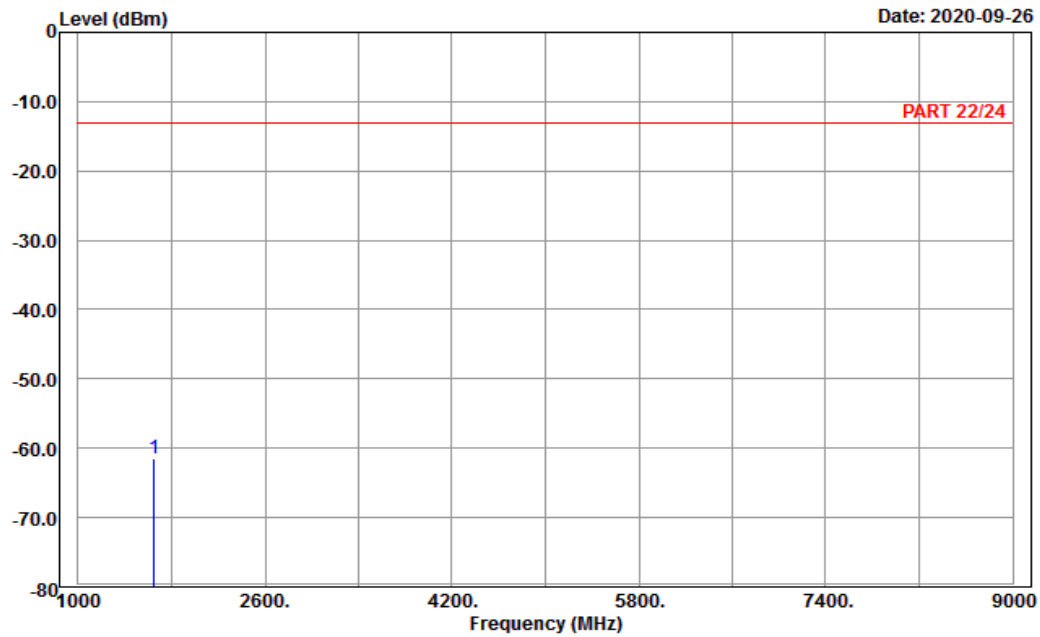


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A D T

Data: 3

Date: 2020-09-26



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_L-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1649.40	-61.44	-69.17	7.73	-13.00	-48.44	Peak

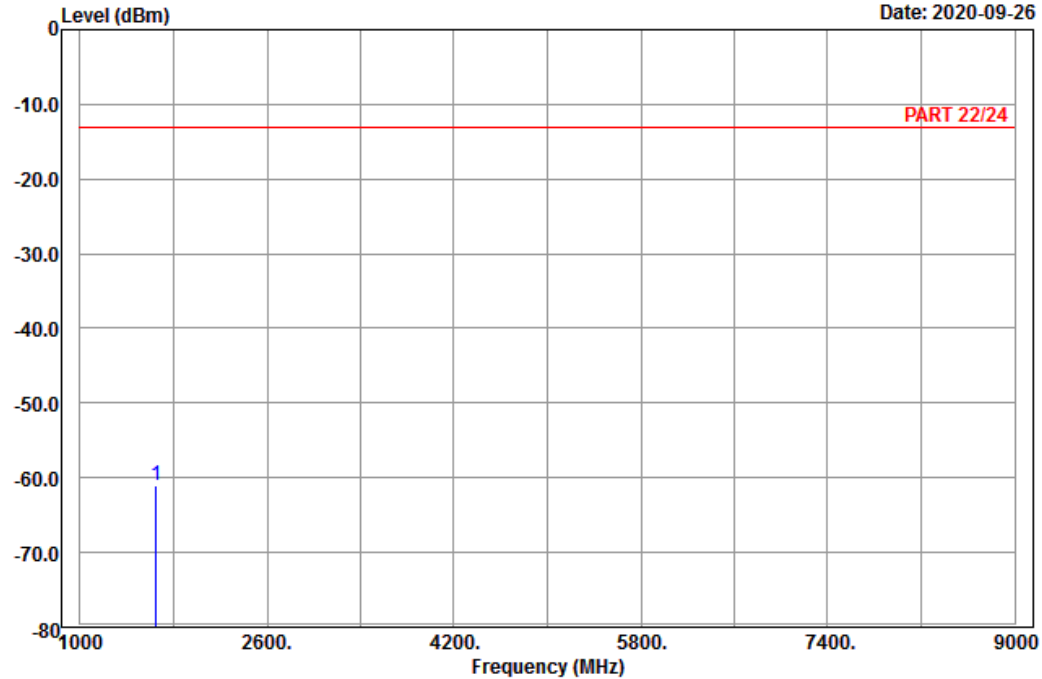


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A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_L-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1649.40	-61.00	-68.73	7.73	-13.00	-48.00	Peak

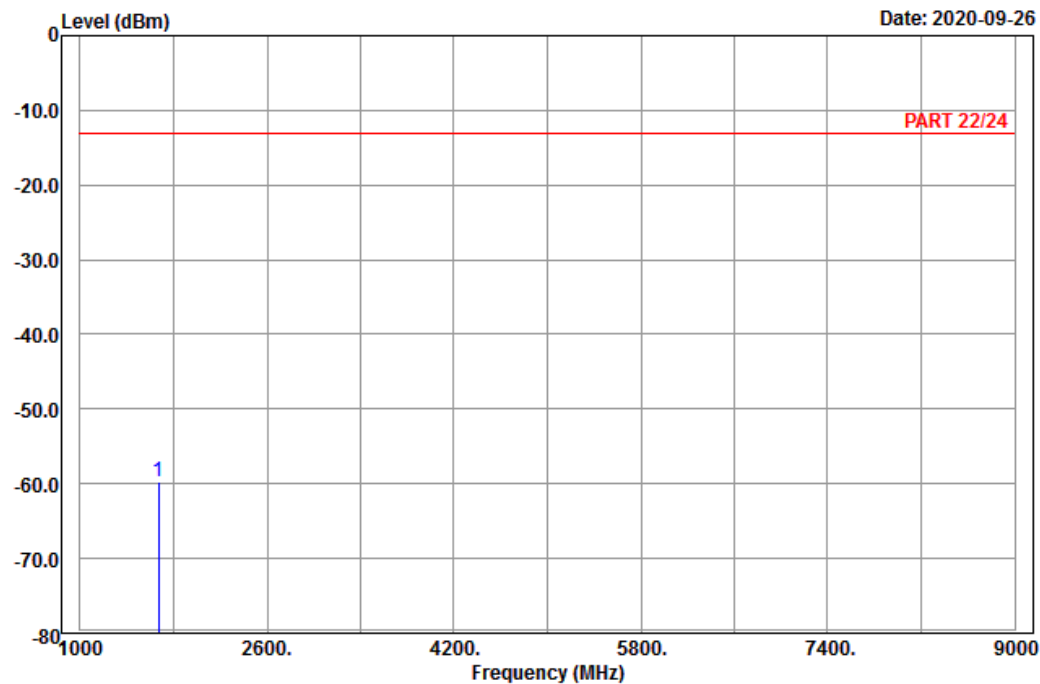
Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_M-Ch
Tested by: Charles Hsiao

Freq	Level	Read	Factor	Limit	Over	Remark
		Level		Line	Limit	
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1673.00	-59.66	-67.57	7.91	-13.00	-46.66	Peak

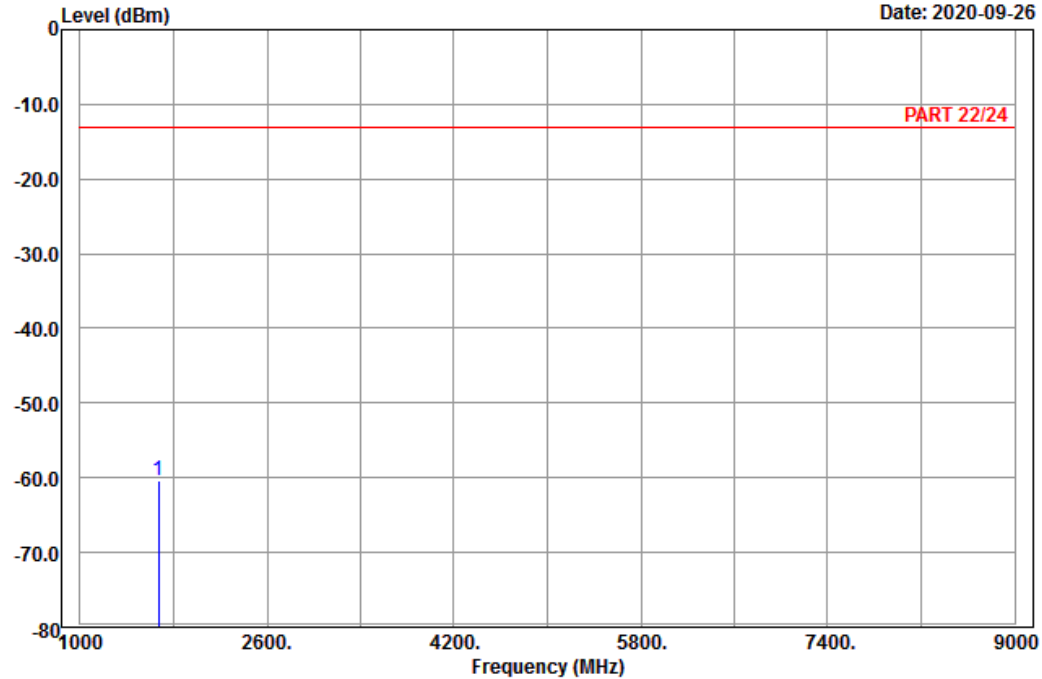


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_M-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1673.00	-60.30	-68.21	7.91	-13.00	-47.30	Peak

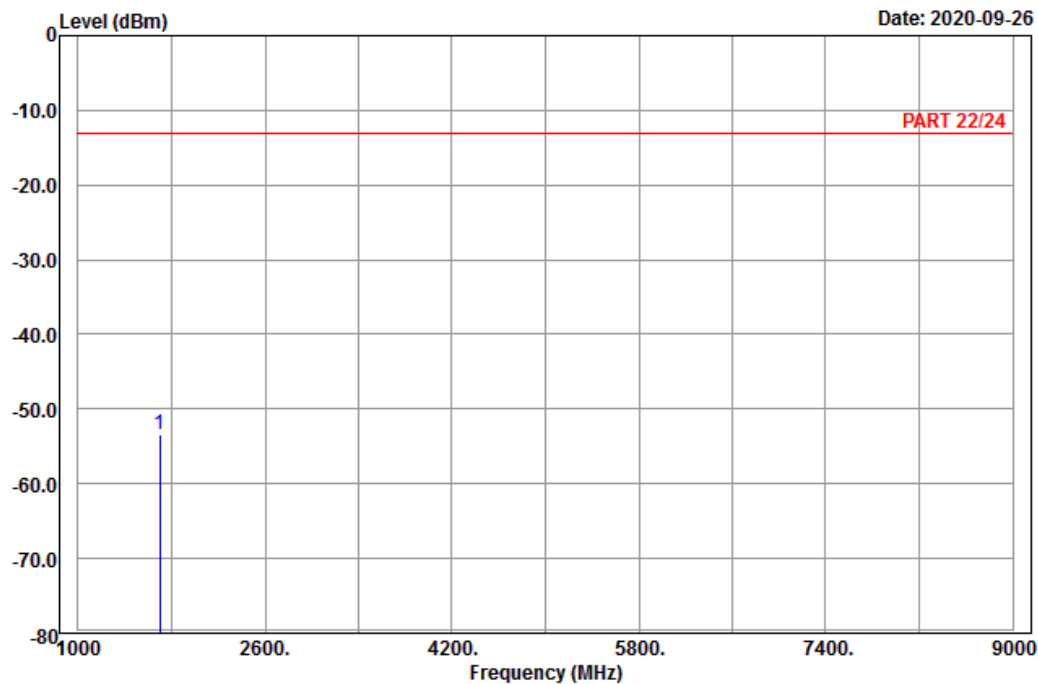
High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_H-Ch
Tested by: Charles Hsiao

		Read		Limit	Over	
Freq	Level	Level	Factor	Line	Limit	Remark
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1696.60	-53.33	-61.47	8.14	-13.00	-40.33	Peak

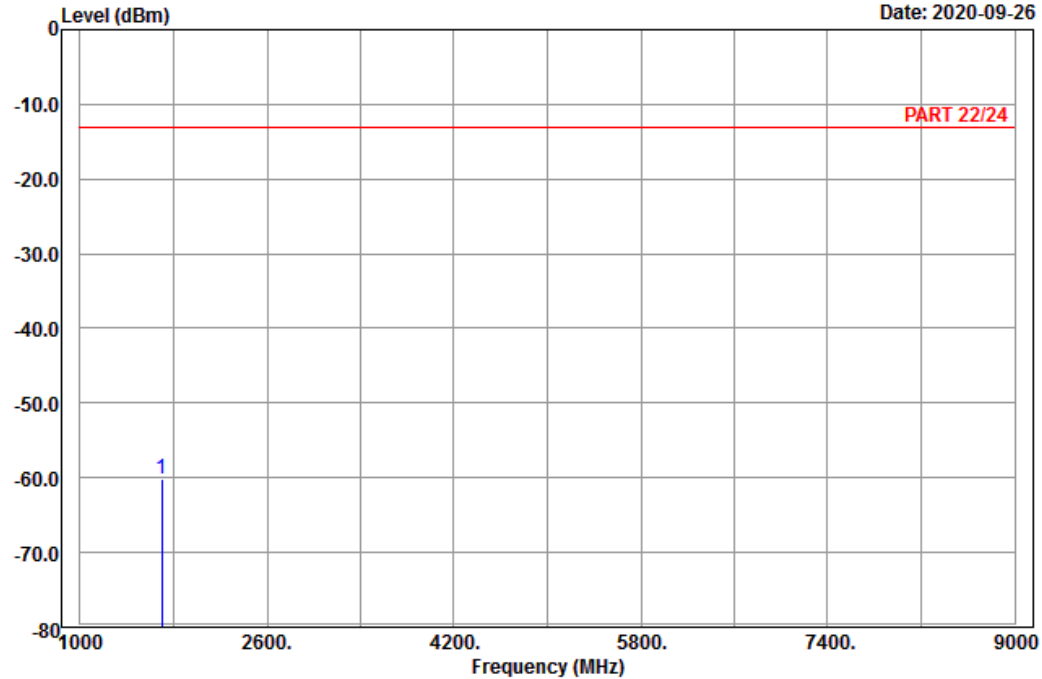


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_H-Ch

Tested by: Charles Hsiao

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

1 pp 1696.60 -60.18 -68.32 8.14 -13.00 -47.18 Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

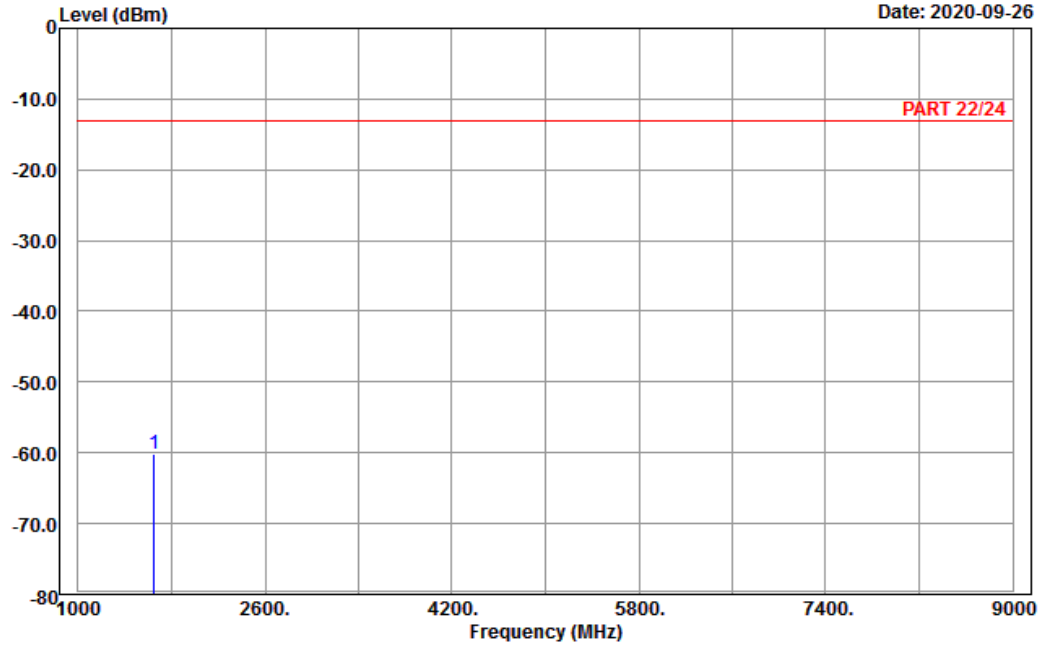


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 2020-09-26



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_L-Ch
Tested by: Charles Hsiao

		Read		Limit	Over	
Freq	Level	Level	Factor	Line	Limit	Remark
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1653.00	-60.15	-67.88	7.73	-13.00	-47.15	Peak

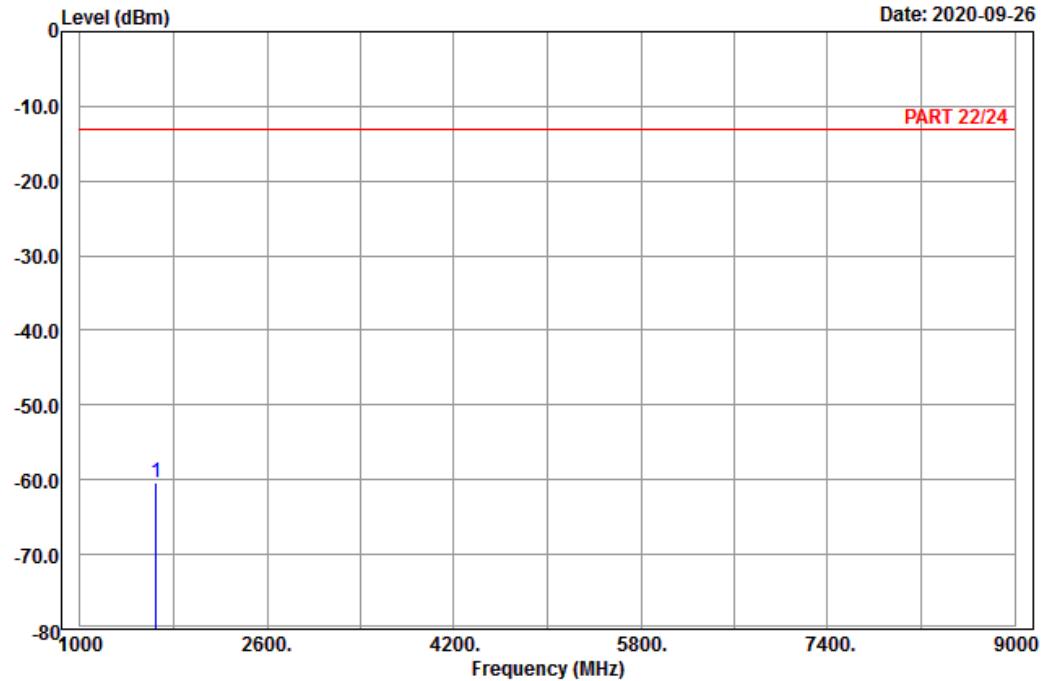


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_L-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1653.00	-60.32	-68.05	7.73	-13.00	-47.32	Peak

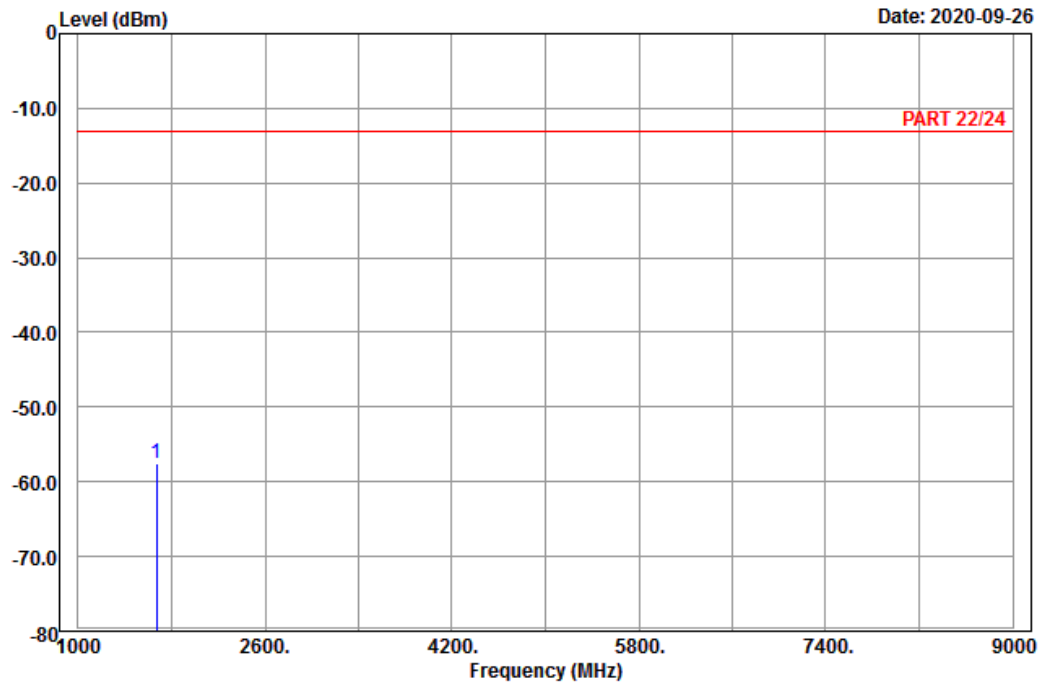
Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_M-Ch
Tested by: Charles Hsiao

		Read		Limit	Over	
Freq	Level	Level	Factor	Line	Limit	Remark
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1673.00	-57.50	-65.41	7.91	-13.00	-44.50	Peak

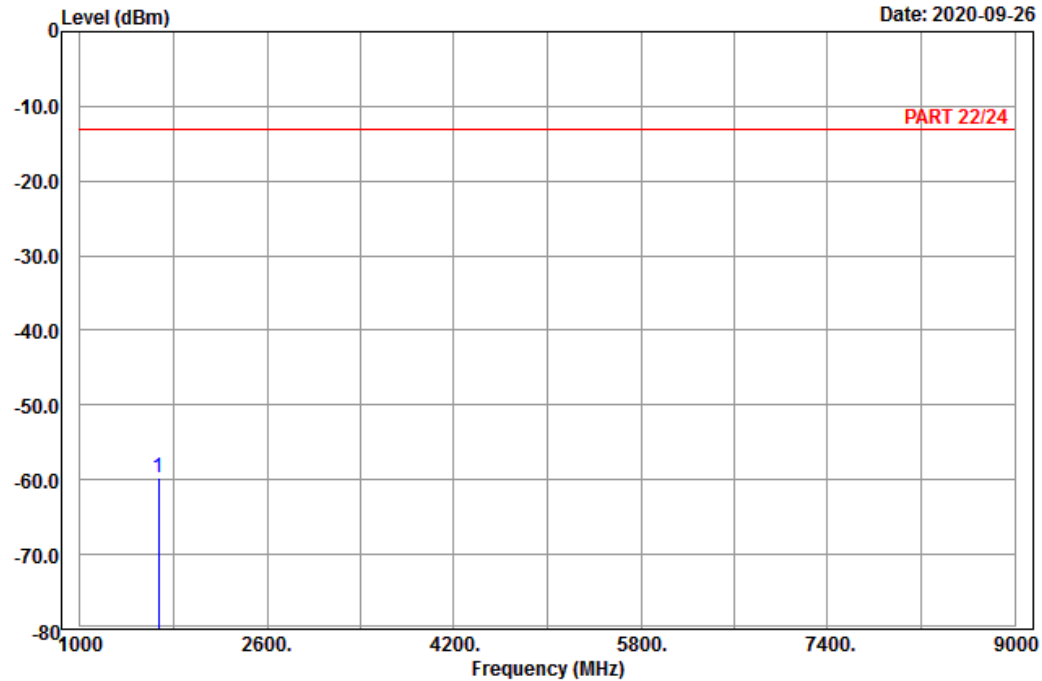


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_M-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1673.00	-59.68	-67.59	7.91	-13.00	-46.68	Peak

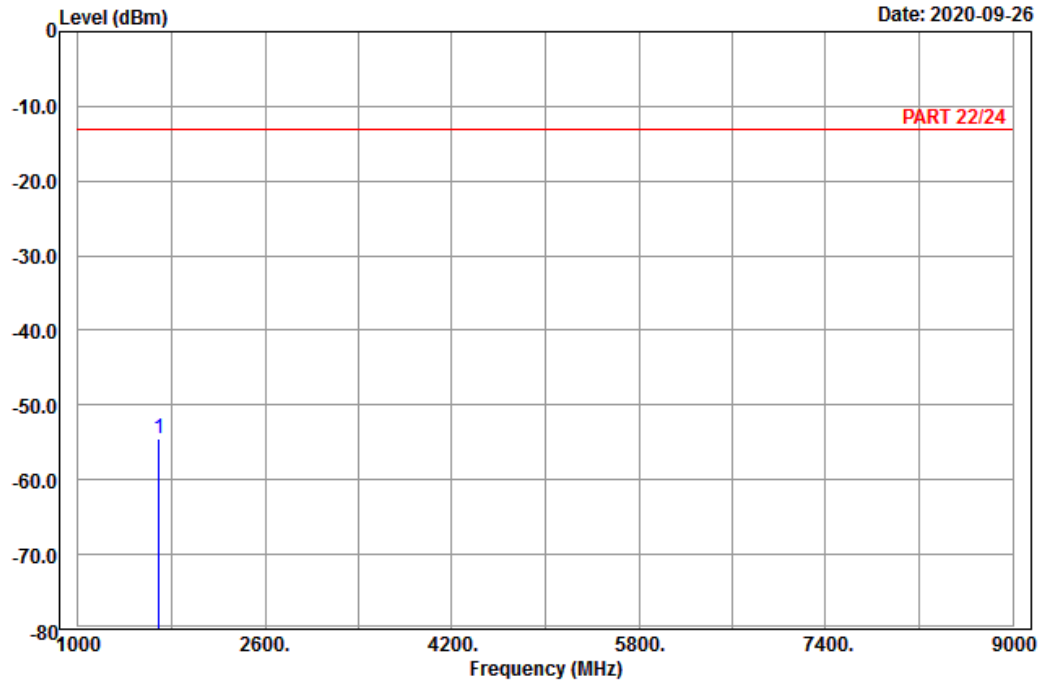
High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_H-Ch
Tested by: Charles Hsiao

		Read		Limit	Over	
Freq	Level	Level	Factor	Line	Limit	Remark
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1693.00	-54.39	-62.41	8.02	-13.00	-41.39	Peak

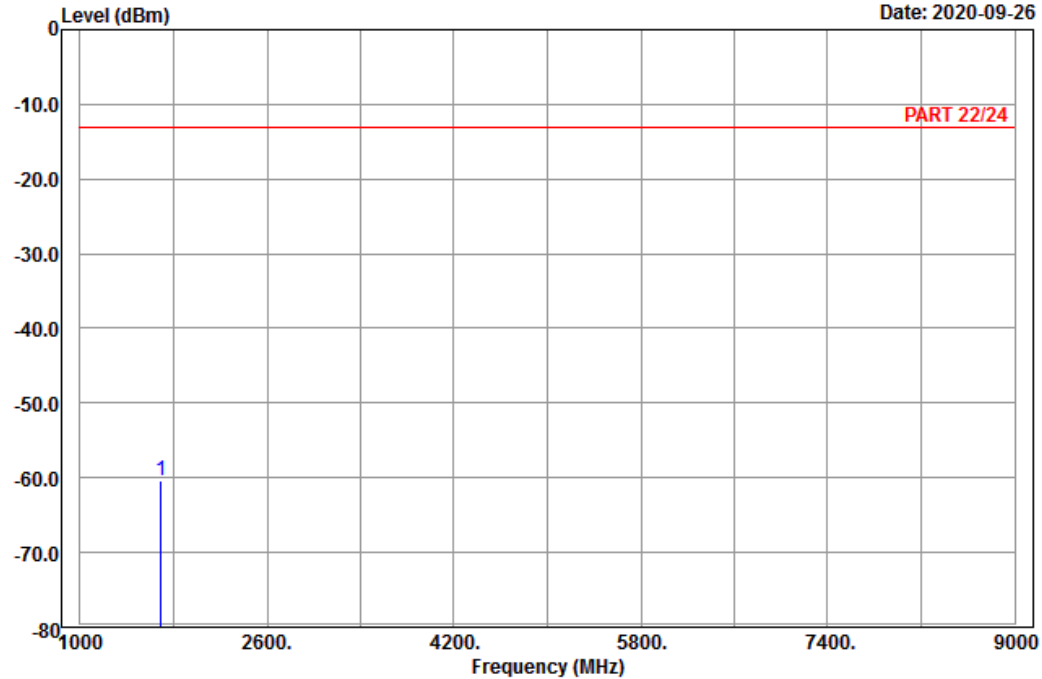


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_H-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1693.00	-60.38	-68.40	8.02	-13.00	-47.38	Peak

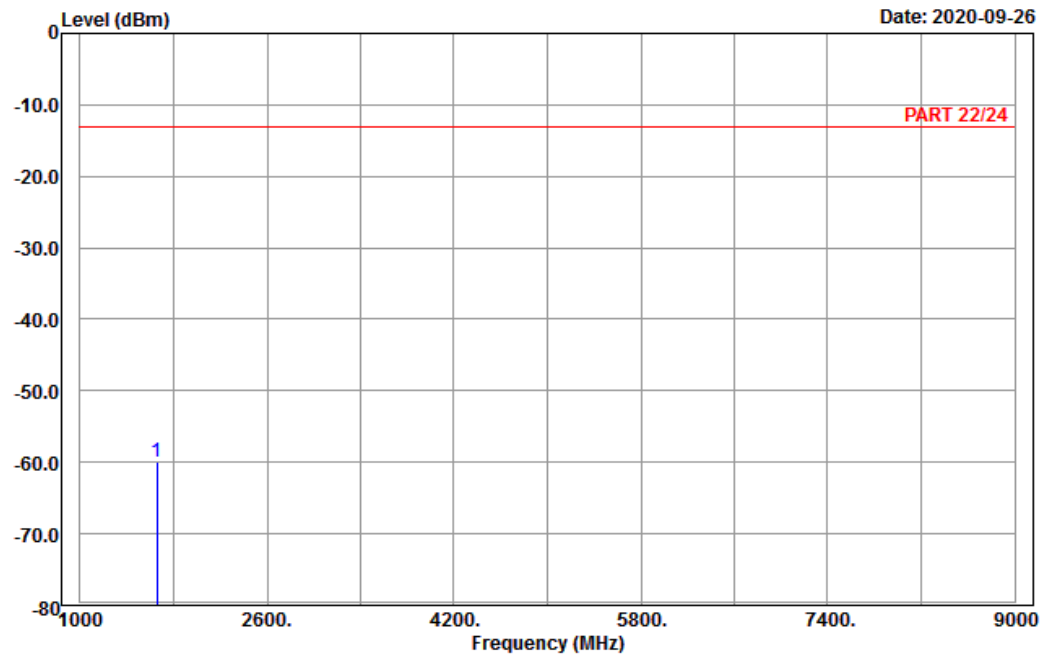
Channel Bandwidth: 10 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_L-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1658.00	-59.99	-67.90	7.91	-13.00	-46.99	Peak

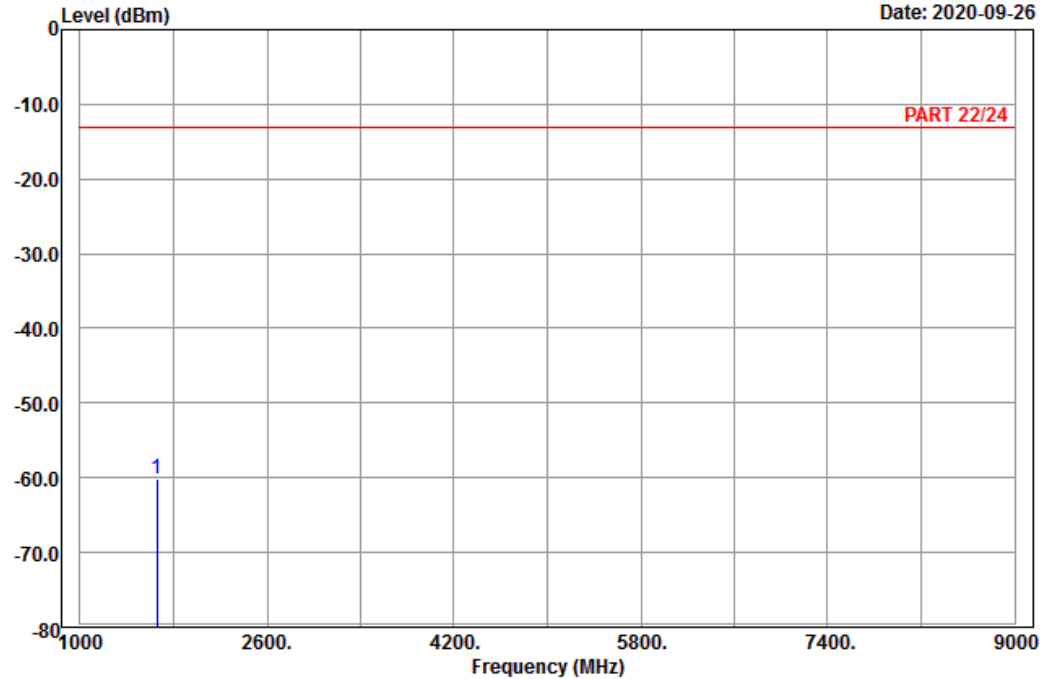


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_L-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1658.00	-60.22	-68.13	7.91	-13.00	-47.22	Peak

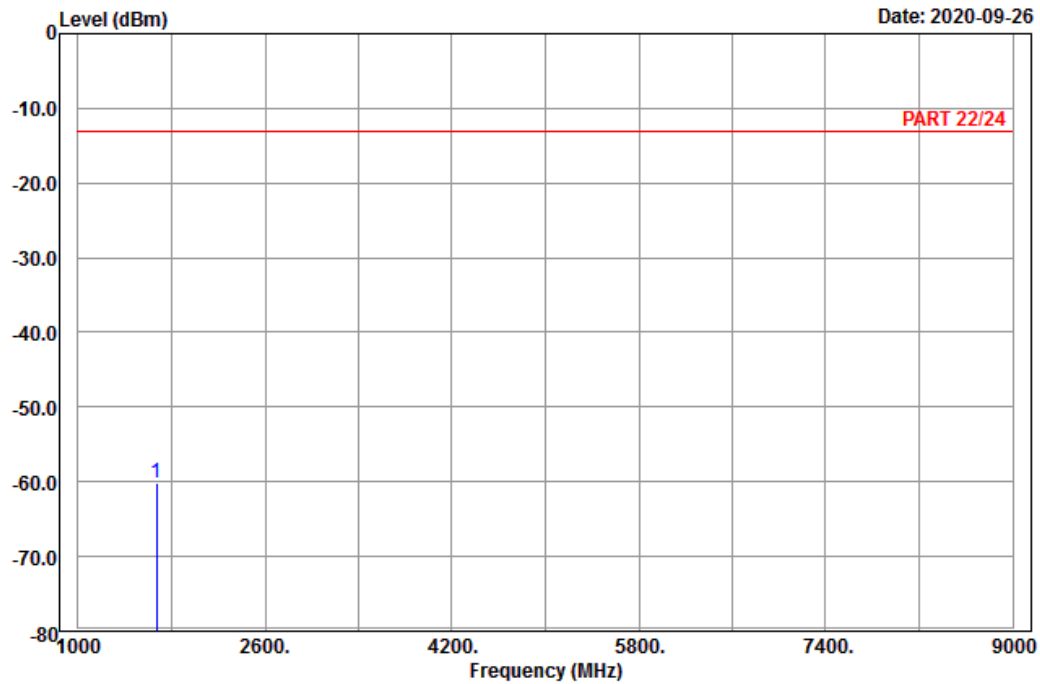
Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_M-Ch
Tested by: Charles Hsiao

		Read		Limit	Over	
Freq	Level	Level	Factor	Line	Limit	Remark
MHz	dBm	dBm	dB	dBm	dB	
1 pp 1673.00	-60.16	-68.07	7.91	-13.00	-47.16	Peak

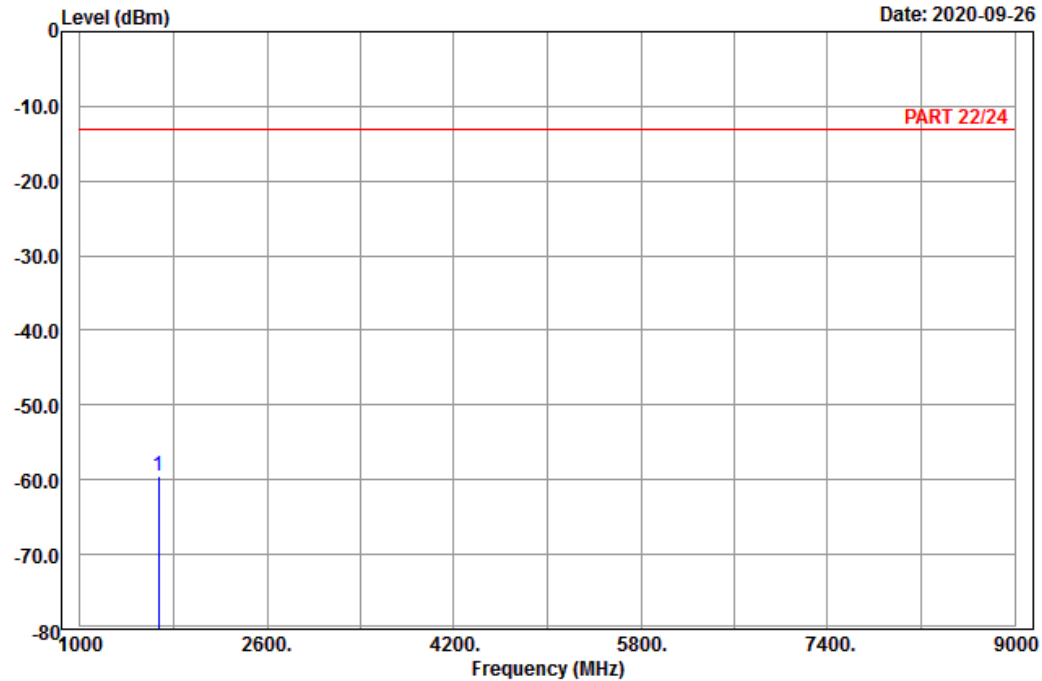


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_M-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	1673.00	-59.51	-67.42	7.91	-13.00	-46.51	Peak

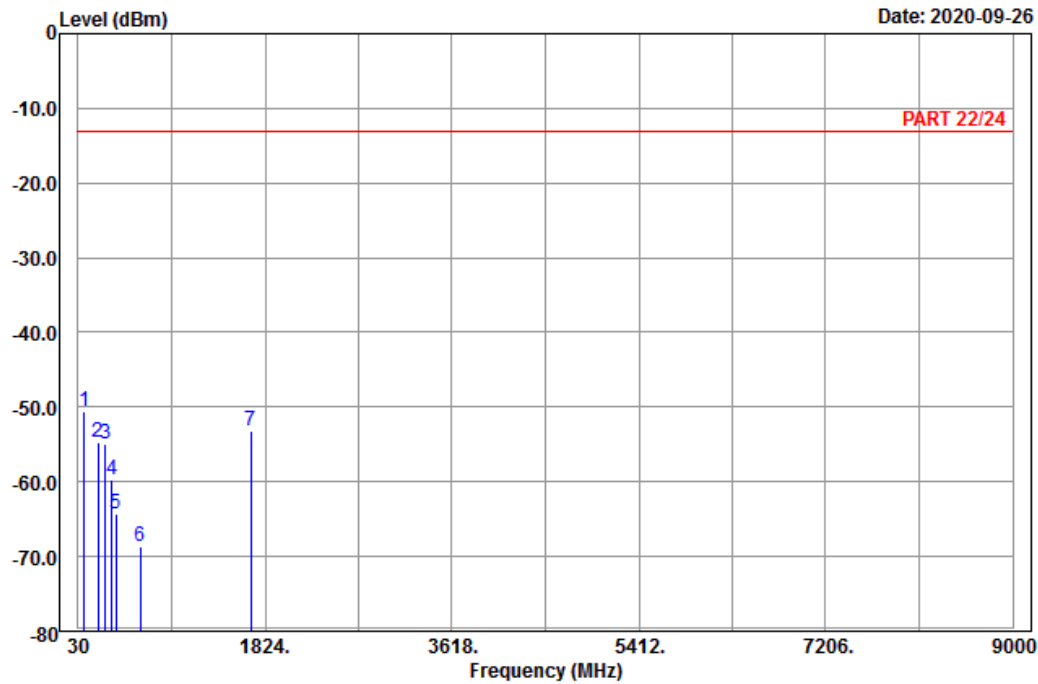
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 chamber 1
 Condition: PART 22/24 Horizontal
 Remark : LTE_Band 5_Link_H-Ch
 Tested by: Charles Hsiao

		Read	Limit	Over	
Freq	Level	Level	Factor	Line	Limit Remark
MHz	dBm	dBm	dB	dBm	dB
1 pp	89.40	-50.62	-39.84	-10.78	-13.00 -37.62 Peak
2	217.65	-54.74	-48.79	-5.95	-13.00 -41.74 Peak
3	287.85	-54.86	-49.01	-5.85	-13.00 -41.86 Peak
4	353.20	-59.78	-54.56	-5.22	-13.00 -46.78 Peak
5	391.70	-64.24	-61.09	-3.15	-13.00 -51.24 Peak
6	627.60	-68.69	-68.81	0.12	-13.00 -55.69 Peak
7	1688.00	-53.19	-61.21	8.02	-13.00 -40.19 Peak

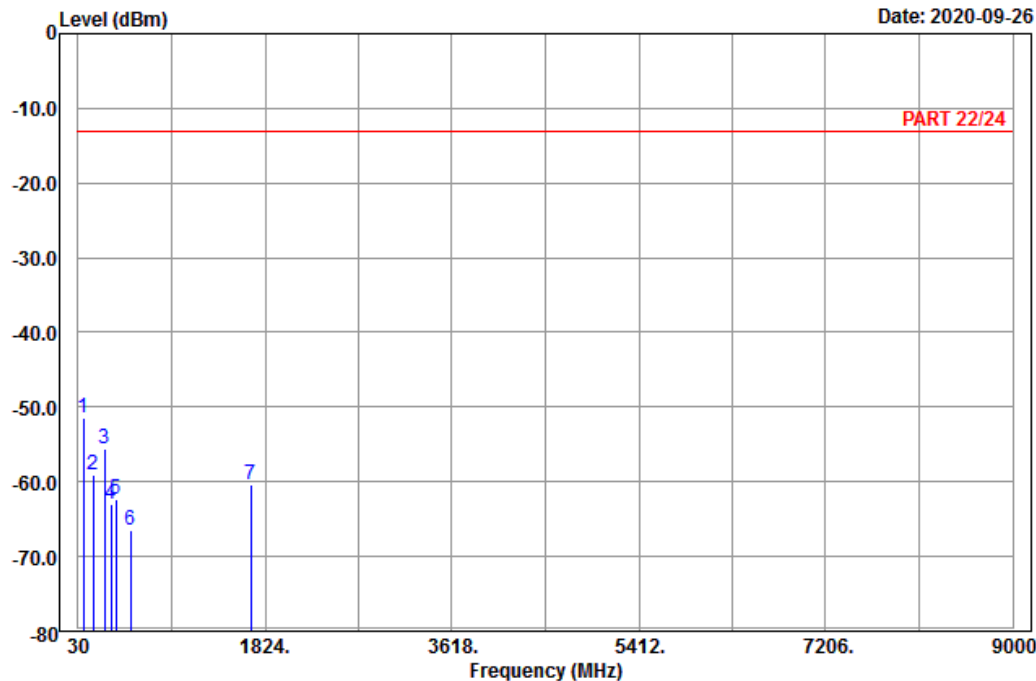


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8

Date: 2020-09-26



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : LTE_Band 5_Link_H-Ch

Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	78.06	-51.37	-39.44	-11.93	-13.00	-38.37	Peak
2	172.29	-59.05	-52.65	-6.40	-13.00	-46.05	Peak
3	281.91	-55.49	-49.69	-5.80	-13.00	-42.49	Peak
4	349.70	-62.98	-57.60	-5.38	-13.00	-49.98	Peak
5	389.60	-62.35	-59.09	-3.26	-13.00	-49.35	Peak
6	535.90	-66.48	-63.82	-2.66	-13.00	-53.48	Peak
7	1688.00	-60.32	-68.34	8.02	-13.00	-47.32	Peak

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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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.

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