Partial FCC Test Report

(PART 27)

Report No.:	RF200319C26-3
FCC ID:	QYLEM7455Z
Test Model:	EM7455Z
Received Date:	Nov. 11, 2019
Test Date:	Jan. 06 ~ Jan. 09, 2020
Issued Date:	Mar. 25, 2020
Applicant:	Getac Technology Corporation.
Address:	5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan
FCC Registration / Designation Number:	427177 / TW0011

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF200319C26-3	Original Release	Mar. 25, 2020

1 Certificate of Conformity

Product:	Radio module
Brand:	Getac
Test Model:	EM7455Z
Sample Status:	Identical Prototype
Applicant:	Getac Technology Corporation.
Test Date:	Jan. 06 ~ Jan. 09, 2020
Standards:	FCC Part 27, Subpart C, M

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

Prepared by : Gina Liu , **Date:** Mar. 25, 2020

Gina Liu / Specialist

Approved by : , **Date:** Mar. 25, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(h)(2)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(m)(6)	Occupied Bandwidth	N/A	Refer to Note
--	Peak to Average Ratio	N/A	Refer to Note
27.53(m)(4)(6)	Out-of-Band Emissions Measurements	N/A	Refer to Note
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -8.24 dB at 200.91 MHz.

Note:

1. This report is a Class II change partial report and change WWAN main antenna. Therefore, only test item of Radiated Spurious Emissions tests and Effective Isotropic Radiated Power were performed for this report. Other testing data please refer to TTL report no.: B15W50341-FCC-RF and B15W50341-FCC-RF_Rev1 for module (Brand: Sierra wireless Inc., Model: EM7455).
2. 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

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. 26, 2019	Aug. 25, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 08, 2019	Oct. 07, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-616	Nov. 12, 2019	Nov. 11, 2020
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 24, 2019	Nov. 23, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
Preamplifier Agilent	310N	187226	Jun. 18, 2019	Jun. 17, 2020
Preamplifier Agilent	83017A	MY39501357	Jun. 18, 2019	Jun. 17, 2020
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 18, 2019	Jun. 17, 2020
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 18, 2019	Jun. 17, 2020
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
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 19, 2019	Aug. 18, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSW43	101582	Mar. 31, 2020	Mar. 30, 2021

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	Radio module	
Brand	Getac	
Test Model	EM7455Z	
Status of EUT	Identical Prototype	
Power Supply Rating	3.3 Vdc (Host equipment)	
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)	120.14 mW
	LTE Band 7 (Channel Bandwidth: 10 MHz)	121.26 mW
	LTE Band 7 (Channel Bandwidth: 15 MHz)	128.74 mW
	LTE Band 7 (Channel Bandwidth: 20 MHz)	135.43 mW
	LTE Band 41 (Channel Bandwidth: 5 MHz)	137.94 mW
	LTE Band 41 (Channel Bandwidth: 10 MHz)	139.22 mW
	LTE Band 41 (Channel Bandwidth: 15 MHz)	148.15 mW
	LTE Band 41 (Channel Bandwidth: 20 MHz)	159.85 mW
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 is authorized for use in specific End-product.

Product	Brand	Model
Tablet	Getac	ZX70

2. The antenna information is listed as below.

Antenna Type	Brand	Model	Antenna Gain	
			LTE B7	LTE B41
PIFA	Pulse	Main: 422144300001	1.84	1.84
	SINBON	Aux.: 340879100003 (Rx only)	1.29	1.29

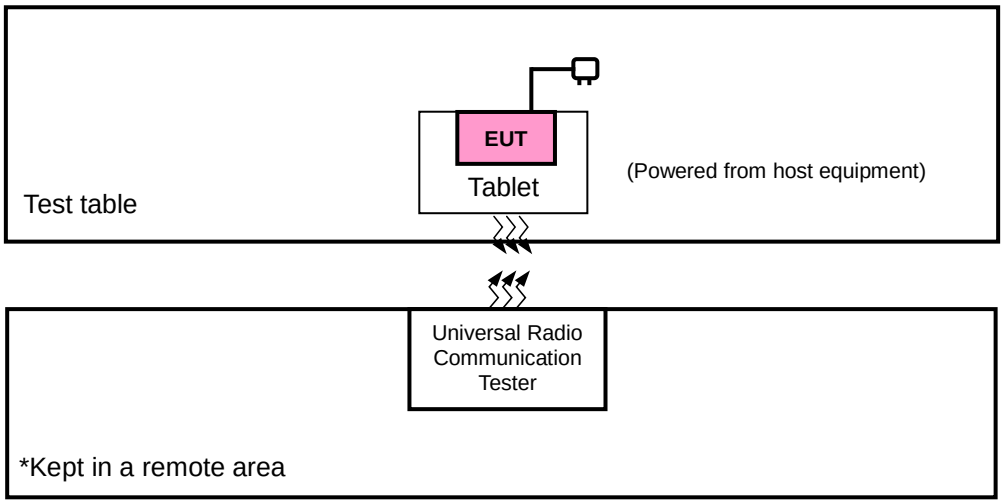
3. The End-product contains following accessory devices.

Part	Brand	Model	Specification
Adapter	FSP	FSP025-DHAN3	I/P: 100-240Vac, 1.0A, 50-60Hz O/P: 12Vdc, Max.25W
CPU	Qualcomm	SDA660	692 PIN
Storage	Samsung	KMDH6001DA-B422	64GB
WWAN Module	Getac	EM7455Z	ID: QYLEM7455Z
WiFi/BT Chip on board	Qualcomm	WCN3990	802.11 ac/ BT5.0 2x2 support ID: QYLWCN3990Z
Front Camera	Truly	COD865-B8BF-E	8 MP, Fix Focus
Rear Camera	Truly	COD898-B12BA-E	12 MP, Auto focus
GPS	Locosys	MC-1010G	--
LCD	Truly	TDO-HD0698K61701	7" HD 720 x 1280
Barcode Reader	Honeywell	N6603	--
HF RFID Module	NXP	NQ310	ID: QYLNQ310Z

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

<Radiated Emission Test>



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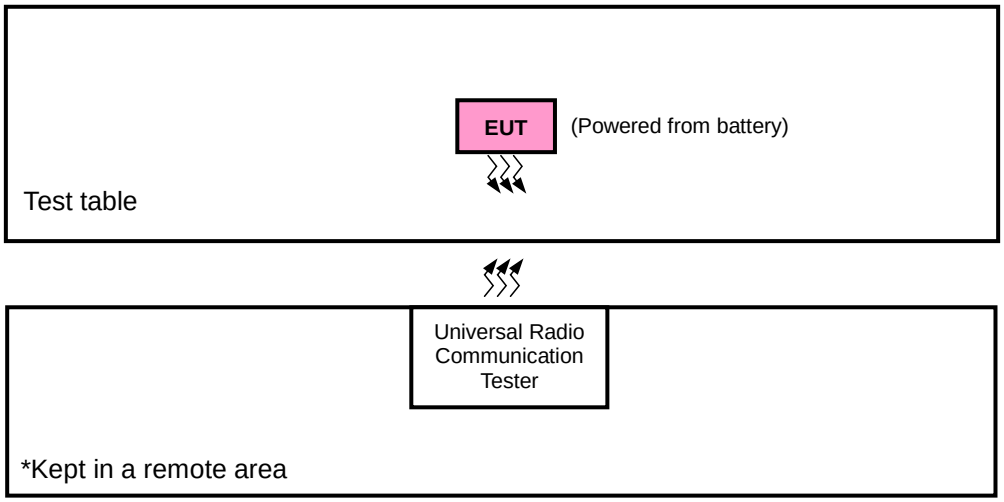


3.2.1 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Tablet	Getac	ZX70	N/A	N/A
2.	Universal Radio Communication Tester	Anritsu	MT8820C	6201300640	N/A

No.	Signal Cable Description Of The Above Support Units
1.	N/A

Note:

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

2. Item 1 was provided by client.

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	Z-plane	Z-plane
LTE Band 41	Z-plane	Z-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
-	Radiated Emission	20775 to 21425	20775, 21100, 21425	5 MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

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

LTE Band 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
-	Radiated Emission	39675 to 41565	39675, 40620, 41565	5 MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750, 40620, 41490	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

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

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25 deg. C, 65 % RH	3.3 Vdc	Charles Hsiao
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao

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 27
ANSI 63.26-2015

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

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

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

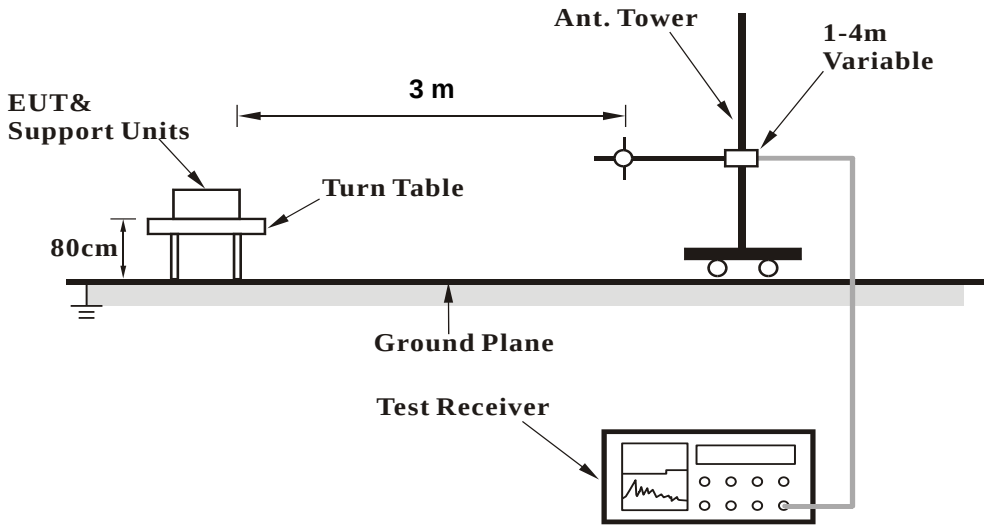
4.1.2 Test Procedures

EIRP Measurement:

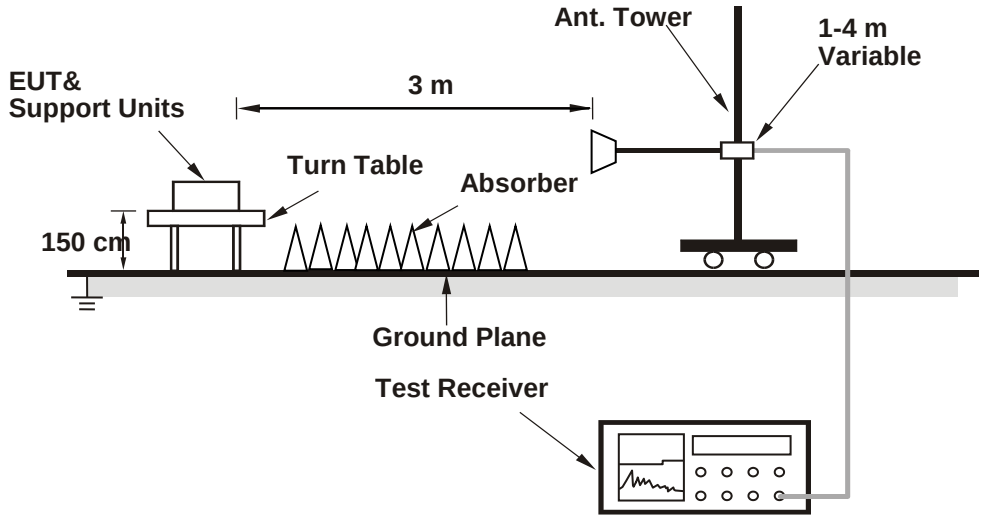
a. All measurements were done at low, middle and high operational frequency range. RBW is 5 MHz、10 MHz、15 MHz、20 MHz for LTE mode, VBW ≥ 3 × RBW.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 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. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value“ of step b. Record the power level of S.G.
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

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).

EIRP Power (dBm)

LTE Band 7							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	20775	2502.5	-23.49	44.24	20.75	118.80	H
	21100	2535.0	-23.40	44.20	20.80	120.14	
	21425	2567.5	-24.03	44.80	20.77	119.43	
	20775	2502.5	-26.49	44.19	17.70	58.90	V
	21100	2535.0	-26.36	44.09	17.73	59.27	
	21425	2567.5	-26.90	44.50	17.60	57.53	
Channel Bandwidth: 5 MHz / 16QAM							
Z	20775	2502.5	-24.50	44.24	19.74	94.15	H
	21100	2535.0	-24.41	44.20	19.79	95.21	
	21425	2567.5	-25.03	44.80	19.77	94.86	
	20775	2502.5	-27.49	44.19	16.70	46.78	V
	21100	2535.0	-27.36	44.09	16.73	47.08	
	21425	2567.5	-27.91	44.50	16.59	45.59	

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

LTE Band 7							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	20800	2505.0	-23.55	44.34	20.79	119.98	H
	21100	2535.0	-23.36	44.20	20.84	121.26	
	21400	2565.0	-23.99	44.72	20.73	118.39	
	20800	2505.0	-26.49	44.23	17.74	59.37	V
	21100	2535.0	-26.32	44.09	17.77	59.81	
	21400	2565.0	-26.77	44.41	17.64	58.02	
Channel Bandwidth: 10 MHz / 16QAM							
Z	20800	2505.0	-24.55	44.34	19.79	95.30	H
	21100	2535.0	-24.37	44.20	19.83	96.09	
	21400	2565.0	-25.00	44.72	19.72	93.82	
	20800	2505.0	-27.53	44.23	16.70	46.73	V
	21100	2535.0	-27.33	44.09	16.76	47.40	
	21400	2565.0	-27.78	44.41	16.63	45.98	

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

LTE Band 7							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	20825	2507.5	-23.23	44.32	21.09	128.47	H
	21100	2535.0	-23.10	44.20	21.10	128.74	
	21375	2562.5	-23.77	44.85	21.08	128.17	
	20825	2507.5	-25.89	43.99	18.10	64.60	V
	21100	2535.0	-26.02	44.09	18.07	64.09	
	21375	2562.5	-26.58	44.51	17.93	62.09	
Channel Bandwidth: 15 MHz / 16QAM							
Z	20825	2507.5	-24.16	44.32	20.16	103.71	H
	21100	2535.0	-24.05	44.20	20.15	103.44	
	21375	2562.5	-24.74	44.85	20.11	102.52	
	20825	2507.5	-26.98	43.99	17.01	50.26	V
	21100	2535.0	-26.97	44.09	17.12	51.50	
	21375	2562.5	-27.54	44.51	16.97	49.77	

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

LTE Band 7							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	20850	2510.0	-22.87	44.16	21.29	134.59	H
	21100	2535.0	-22.88	44.20	21.32	135.43	
	21350	2560.0	-23.67	44.81	21.14	129.93	
	20850	2510.0	-26.57	44.78	18.21	66.22	V
	21100	2535.0	-25.73	44.09	18.36	68.52	
	21350	2560.0	-26.53	44.72	18.19	65.92	
Channel Bandwidth: 20 MHz / 16QAM							
Z	20850	2510.0	-23.90	44.16	20.26	106.17	H
	21100	2535.0	-23.80	44.20	20.40	109.57	
	21350	2560.0	-24.70	44.81	20.11	102.49	
	20850	2510.0	-27.48	44.78	17.30	53.70	V
	21100	2535.0	-26.83	44.09	17.26	53.19	
	21350	2560.0	-27.64	44.72	17.08	51.05	

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

LTE Band 41							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Z	39675	2498.5	-22.89	44.24	21.35	136.40	H
	40620	2593.0	-22.80	44.20	21.40	137.94	
	41565	2687.5	-23.51	44.80	21.29	134.62	
	39675	2498.5	-25.82	44.19	18.37	68.72	V
	40620	2593.0	-25.68	44.09	18.41	69.31	
	41565	2687.5	-26.19	44.50	18.31	67.75	
Channel Bandwidth: 5 MHz / 16QAM							
Z	39675	2498.5	-23.89	44.24	20.35	108.34	H
	40620	2593.0	-23.80	44.20	20.40	109.57	
	41565	2687.5	-24.51	44.80	20.29	106.93	
	39675	2498.5	-26.82	44.19	17.37	54.59	V
	40620	2593.0	-26.69	44.09	17.40	54.93	
	41565	2687.5	-27.19	44.50	17.31	53.81	

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

LTE Band 41							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Z	39700	2501.0	-22.95	44.34	21.39	137.75	H
	40620	2593.0	-22.76	44.20	21.44	139.22	
	41540	2685.0	-23.39	44.72	21.33	135.93	
	39700	2501.0	-25.82	44.23	18.41	69.28	V
	40620	2593.0	-25.64	44.09	18.45	69.95	
	41540	2685.0	-26.06	44.41	18.35	68.33	
Channel Bandwidth: 10 MHz / 16QAM							
Z	39700	2501.0	-23.95	44.34	20.39	109.42	H
	40620	2593.0	-23.76	44.20	20.44	110.59	
	41540	2685.0	-24.39	44.72	20.33	107.97	
	39700	2501.0	-26.83	44.23	17.40	54.90	V
	40620	2593.0	-26.64	44.09	17.45	55.56	
	41540	2685.0	-27.06	44.41	17.35	54.28	

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

LTE Band 41							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	39725	2503.5	-22.72	44.32	21.60	144.48	H
	40620	2593.0	-22.49	44.20	21.71	148.15	
	41515	2682.5	-23.24	44.85	21.61	144.81	
	39725	2503.5	-25.35	43.99	18.64	73.15	V
	40620	2593.0	-25.27	44.09	18.82	76.17	
	41515	2682.5	-25.87	44.51	18.64	73.11	
Channel Bandwidth: 15 MHz / 16QAM							
Z	39725	2503.5	-23.70	44.32	20.62	115.29	H
	40620	2593.0	-23.47	44.20	20.73	118.22	
	41515	2682.5	-24.25	44.85	20.60	114.76	
	39725	2503.5	-26.32	43.99	17.67	58.51	V
	40620	2593.0	-26.29	44.09	17.80	60.23	
	41515	2682.5	-26.87	44.51	17.64	58.08	

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

LTE Band 41							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	39750	2506.0	-22.33	44.16	21.83	152.41	H
	40620	2593.0	-22.16	44.20	22.04	159.85	
	41490	2680.0	-23.09	44.81	21.72	148.49	
	39750	2506.0	-25.89	44.78	18.89	77.45	V
	40620	2593.0	-25.24	44.09	18.85	76.70	
	41490	2680.0	-25.91	44.72	18.81	76.03	
Channel Bandwidth: 20 MHz / 16QAM							
Z	39750	2506.0	-23.29	44.16	20.87	122.18	H
	40620	2593.0	-23.13	44.20	21.07	127.85	
	41490	2680.0	-24.01	44.81	20.80	120.14	
	39750	2506.0	-26.87	44.78	17.91	61.80	V
	40620	2593.0	-26.04	44.09	18.05	63.80	
	41490	2680.0	-26.76	44.72	17.96	62.52	

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

4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

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

4.2.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G.
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

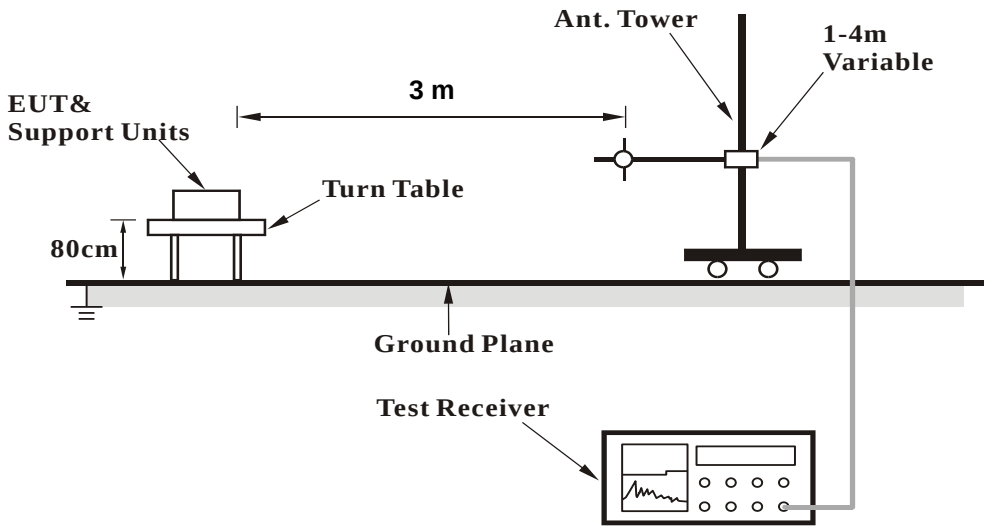
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.2.3 Deviation from Test Standard

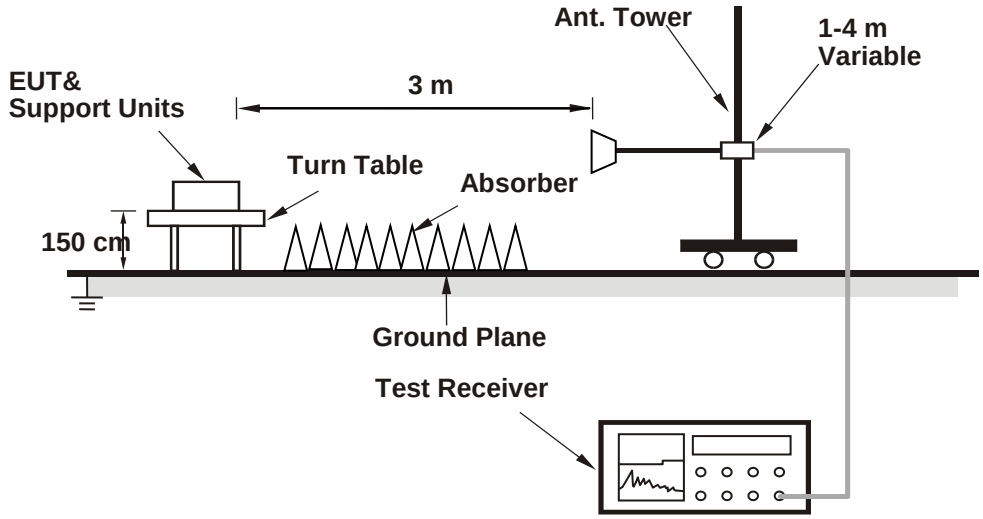
No deviation.

4.2.4 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).

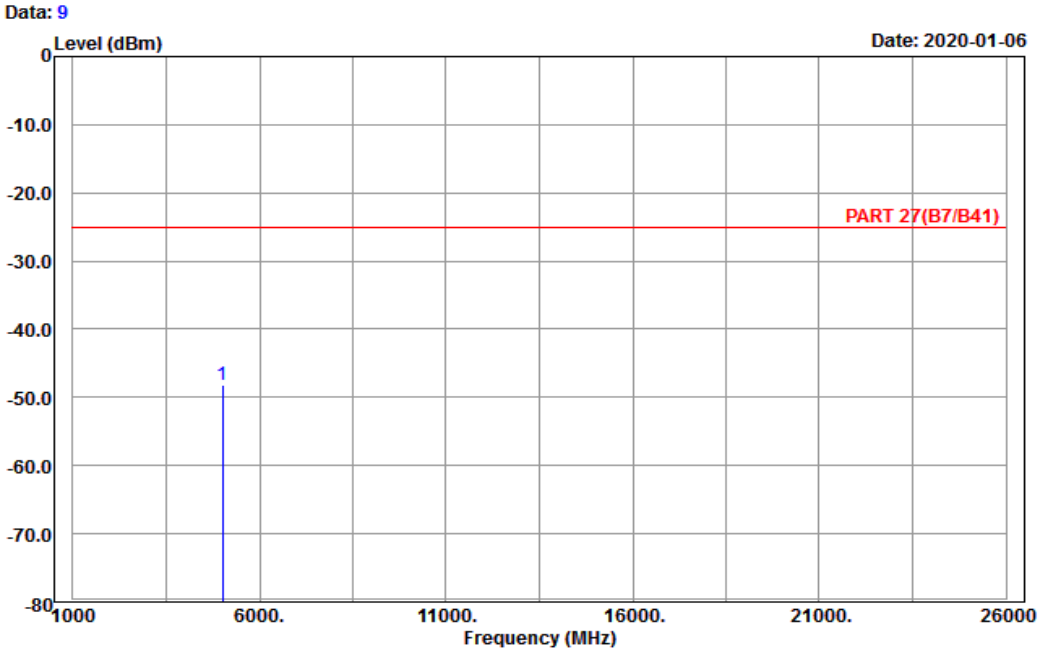
4.2.5 Test Results

LTE Band 7

Channel Bandwidth: 5 MHz / QPSK

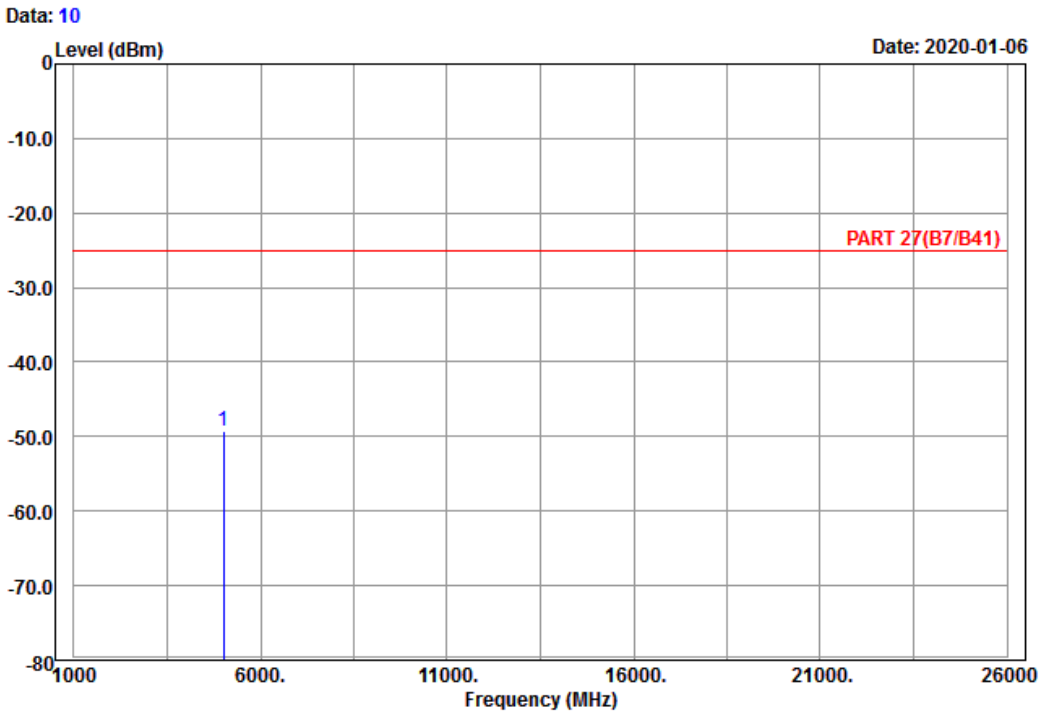
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark    : LTE_Band 7_Link_L-Ch
Tested by: Charles Hsiao
                        Read          Limit   Over
           Freq  Level  Level Factor   Line  Limit Remark
          _____ ______ ______ ______ ______ ______ _______
            MHz    dBm    dBm     dB    dBm     dB

  1 pp  5005.00 -48.10 -67.68  19.58 -25.00 -23.10 Peak
```

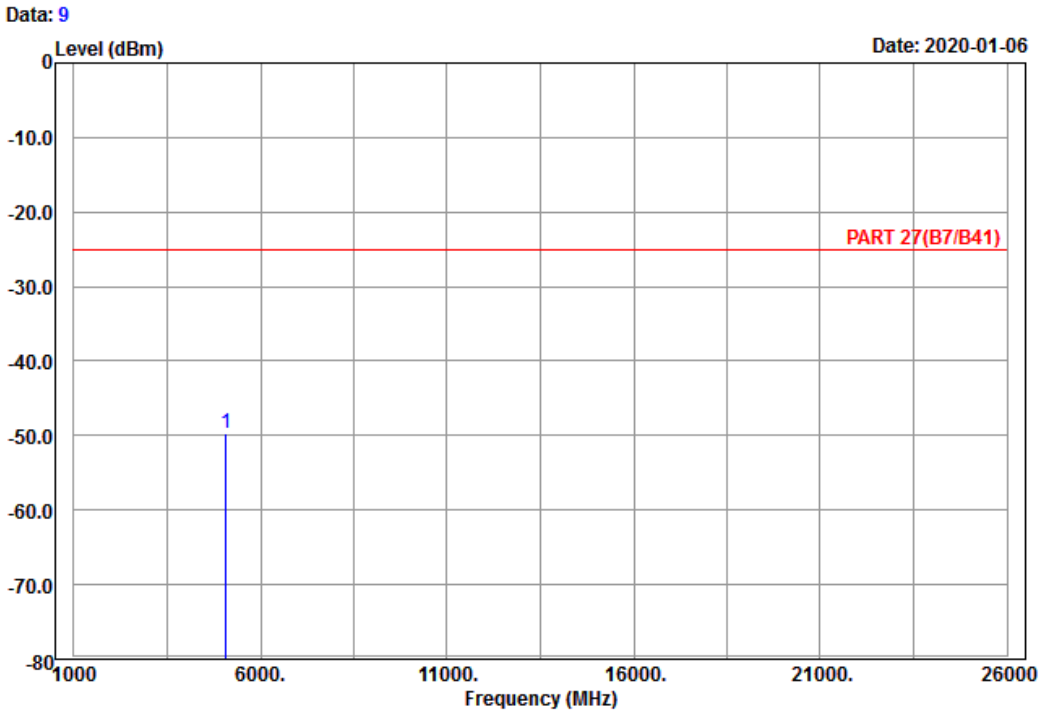


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_L-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5005.00	-49.23	-68.81	19.58	-25.00	-24.23	Peak

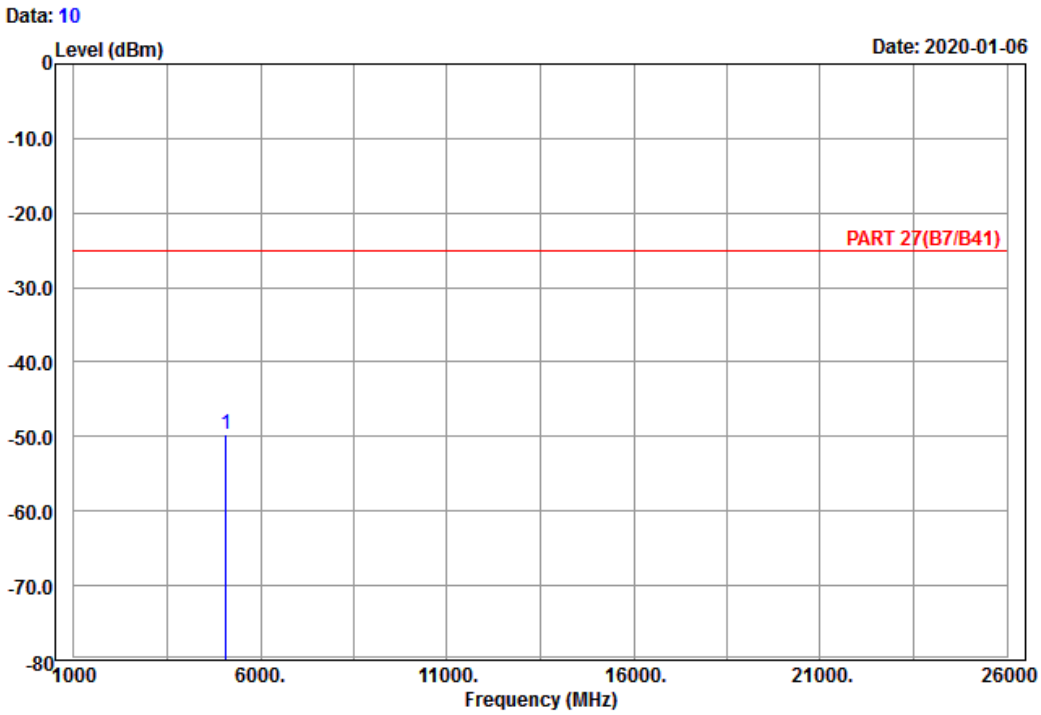
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5070.00	-49.78	-69.17	19.39	-25.00	-24.78	Peak

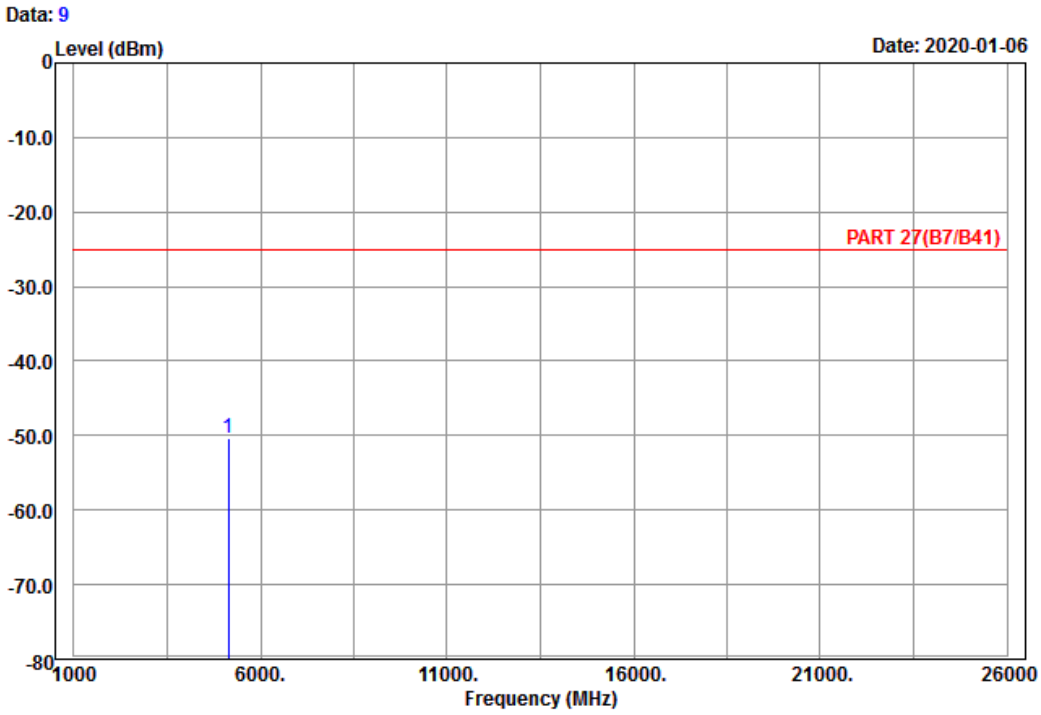


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7 _Link_M-Ch
Tested by: Harry Hsueh

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5070.00	-49.74	-69.13	19.39	-25.00	-24.74	Peak

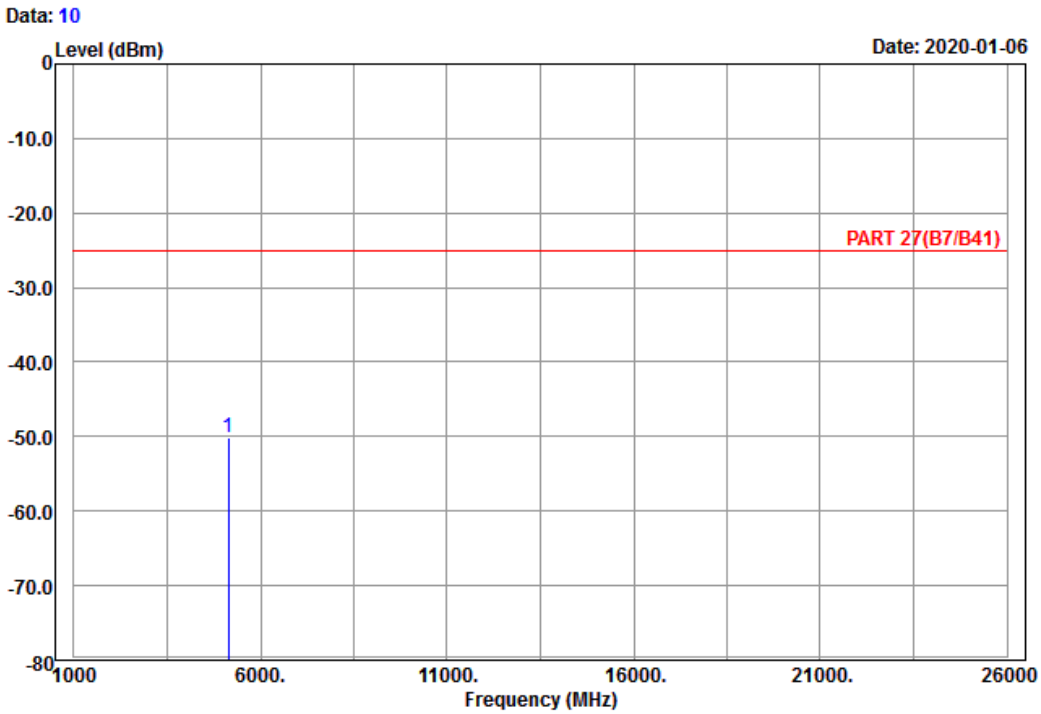
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band _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	5135.00	-50.46	-70.27	19.81	-25.00	-25.46	Peak

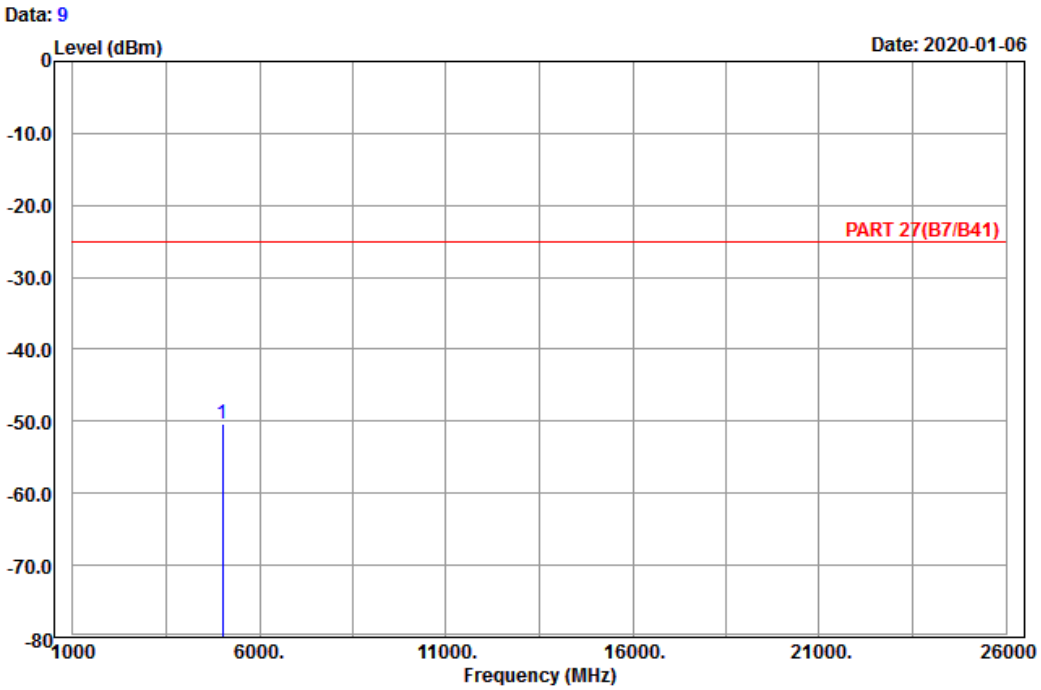


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band _Link_H-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5135.00	-50.24	-70.05	19.81	-25.00	-25.24	Peak

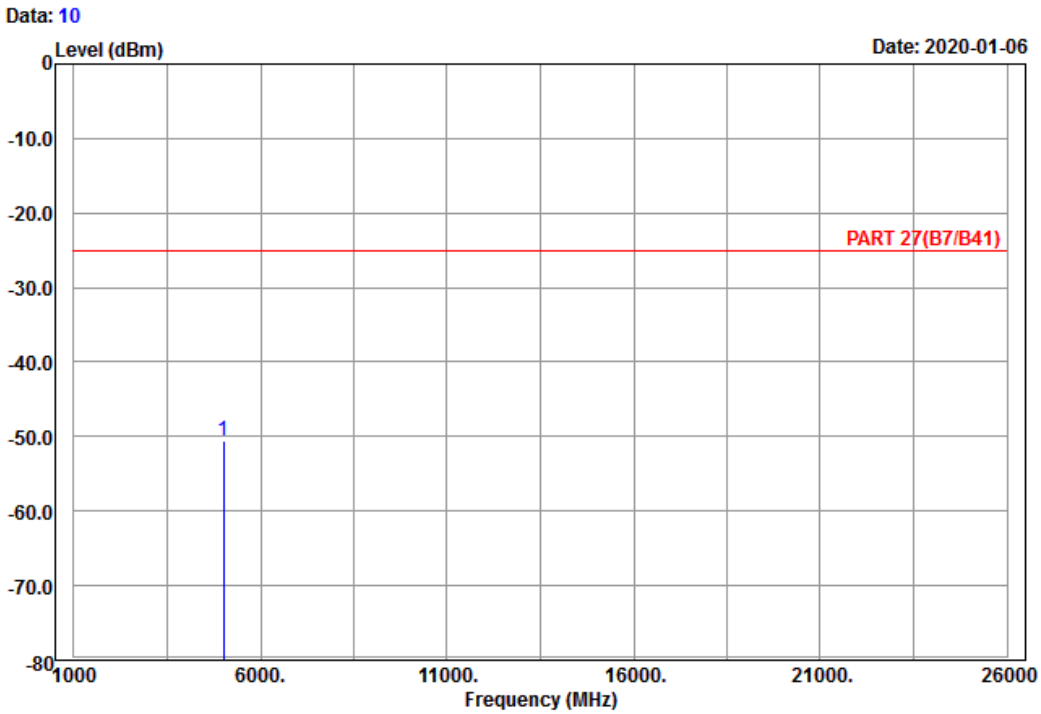
Channel Bandwidth: 20 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5020.00	-50.40	-69.48	19.08	-25.00	-25.40	Peak

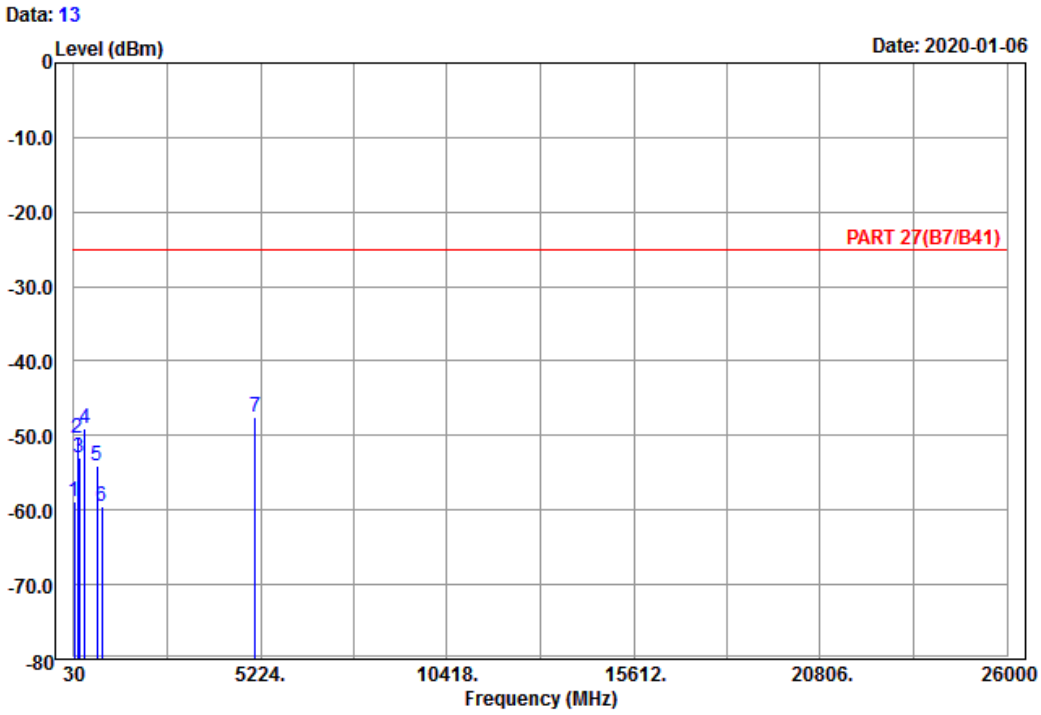


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_L-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5020.00	-50.56	-69.64	19.08	-25.00	-25.56	Peak

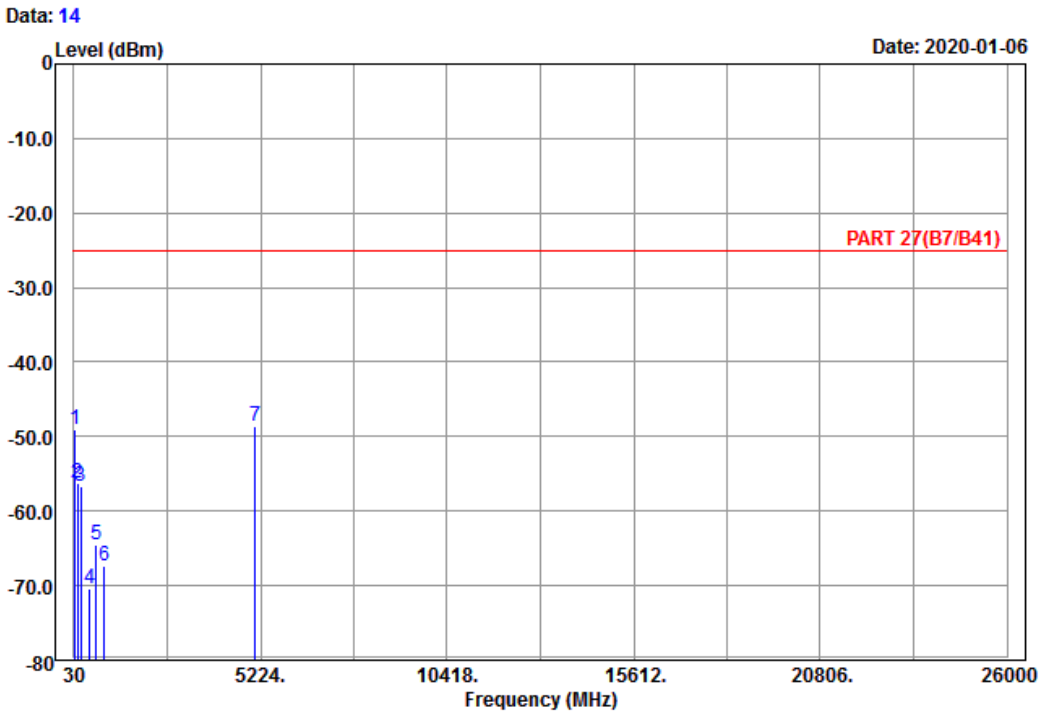
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	48.36	-58.89	-45.46	-13.43	-25.00	-33.89	Peak
2	142.05	-50.45	-42.69	-7.76	-25.00	-25.45	Peak
3	183.36	-53.07	-47.45	-5.62	-25.00	-28.07	Peak
4	328.70	-49.08	-43.46	-5.62	-25.00	-24.08	Peak
5	668.90	-54.13	-53.90	-0.23	-25.00	-29.13	Peak
6	811.70	-59.56	-61.44	1.88	-25.00	-34.56	Peak
7 pp	5070.00	-47.53	-66.92	19.39	-25.00	-22.53	Peak

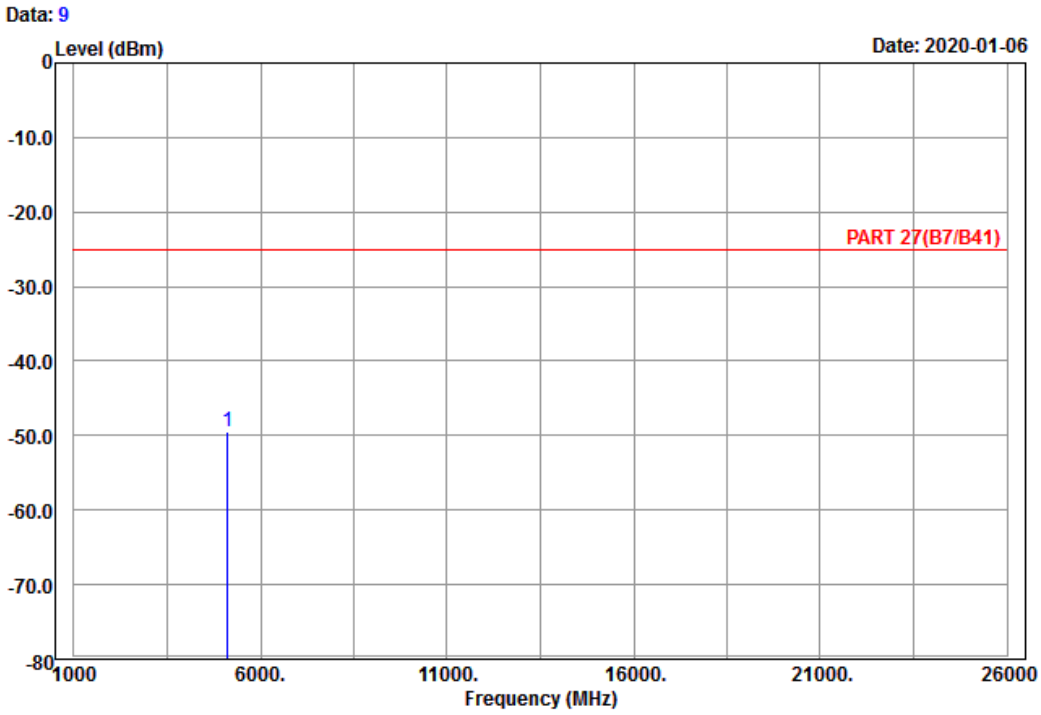


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7 _Link_M-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	52.68	-49.08	-35.02	-14.06	-25.00	-24.08	Peak
2	125.85	-56.19	-48.30	-7.89	-25.00	-31.19	Peak
3	227.91	-56.69	-50.88	-5.81	-25.00	-31.69	Peak
4	481.30	-70.33	-65.60	-4.73	-25.00	-45.33	Peak
5	647.20	-64.59	-64.49	-0.10	-25.00	-39.59	Peak
6	882.40	-67.36	-69.75	2.39	-25.00	-42.36	Peak
7 pp	5070.00	-48.69	-68.08	19.39	-25.00	-23.69	Peak

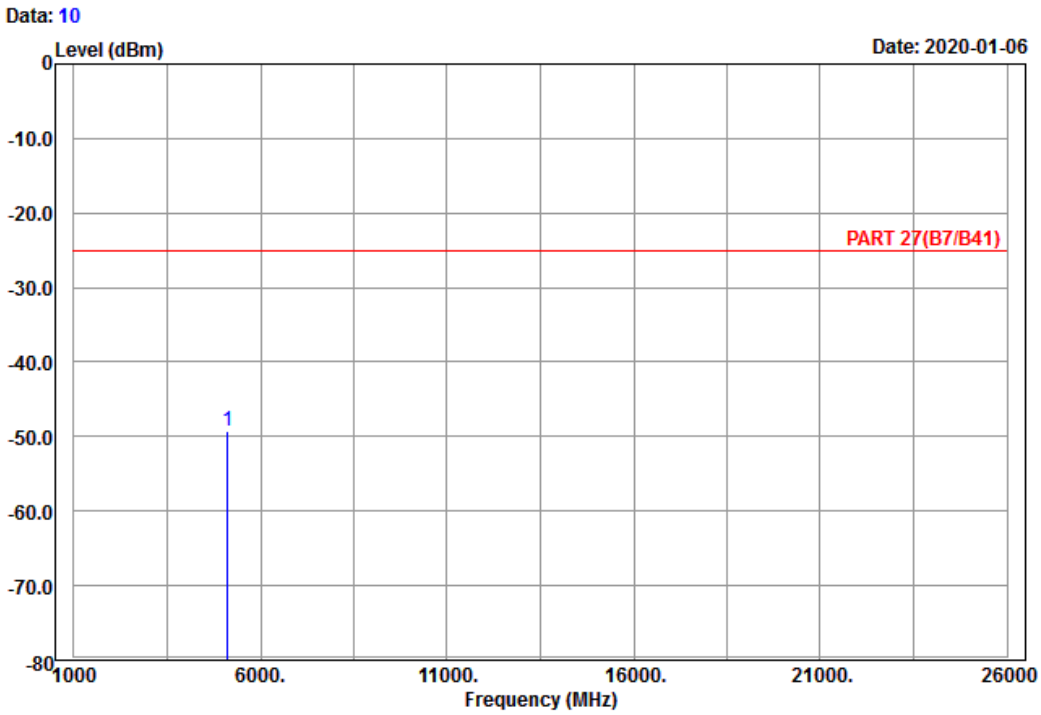
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band _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	5120.00	-49.59	-69.30	19.71	-25.00	-24.59	Peak

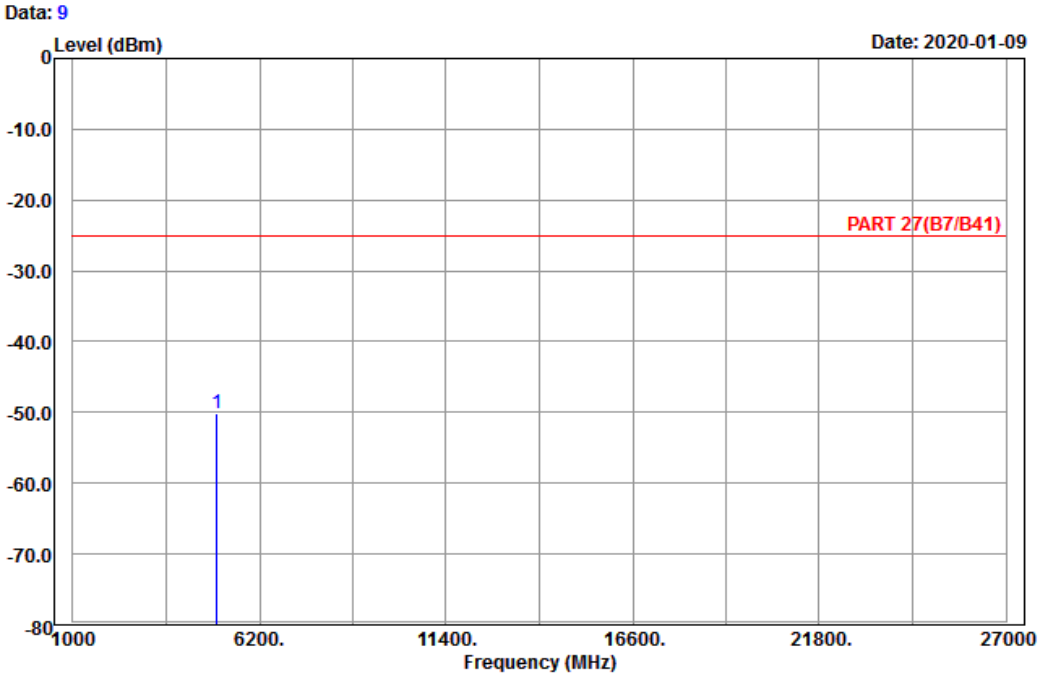


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band _Link_H-Ch
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5120.00	-49.27	-68.98	19.71	-25.00	-24.27	Peak

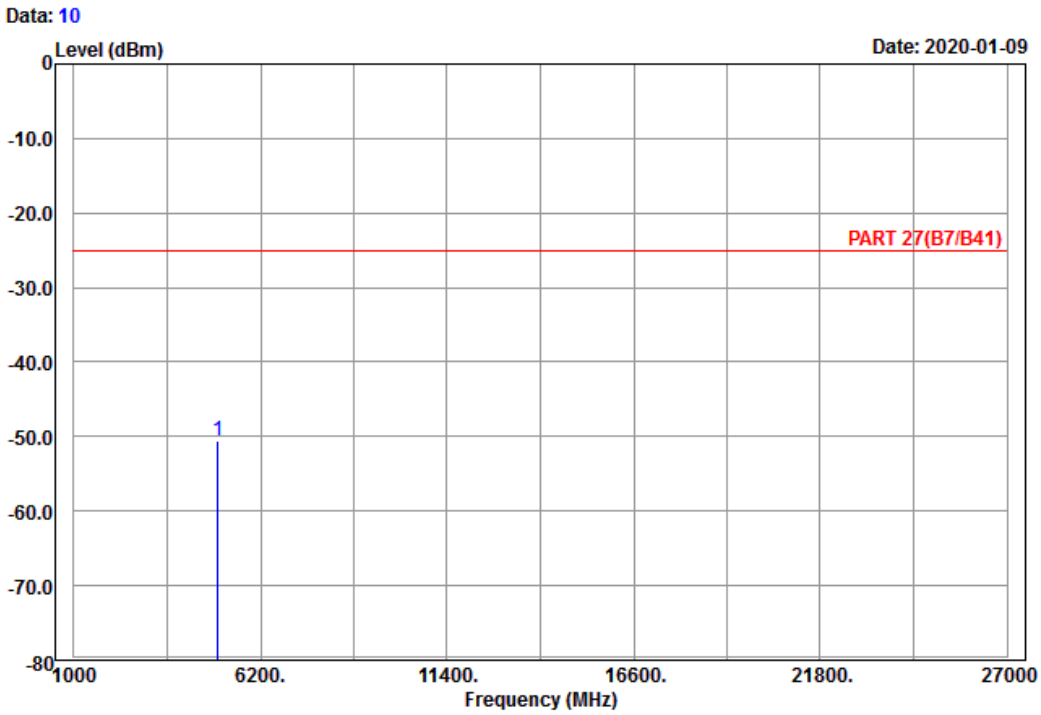
LTE Band 41
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark    : LTE_Band 41 _Link_L-Ch
Tested by: Karl Lee
                          Read          Limit   Over
           Freq   Level   Level Factor   Line   Limit Remark
          _____  _____  _____ _____  _____  _____ _________
            MHz    dBm    dBm     dB    dBm     dB

  1 pp  5005.00 -50.21 -69.79  19.58 -25.00 -25.21 Peak
```

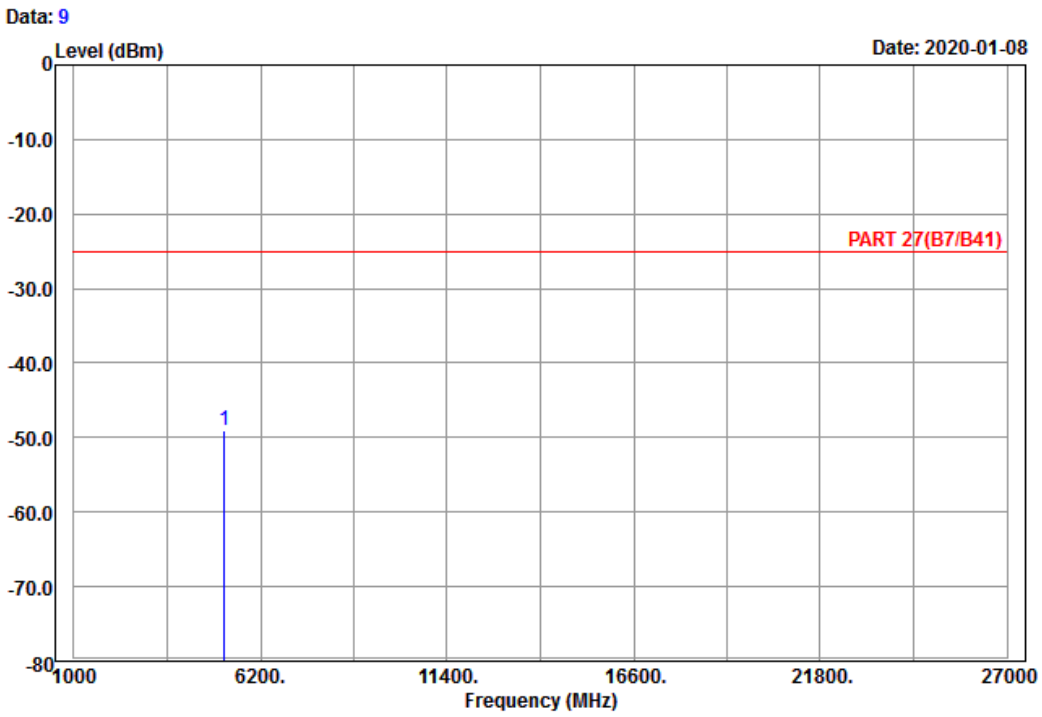


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41 _Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5005.00	-50.49	-70.07	19.58	-25.00	-25.49	Peak

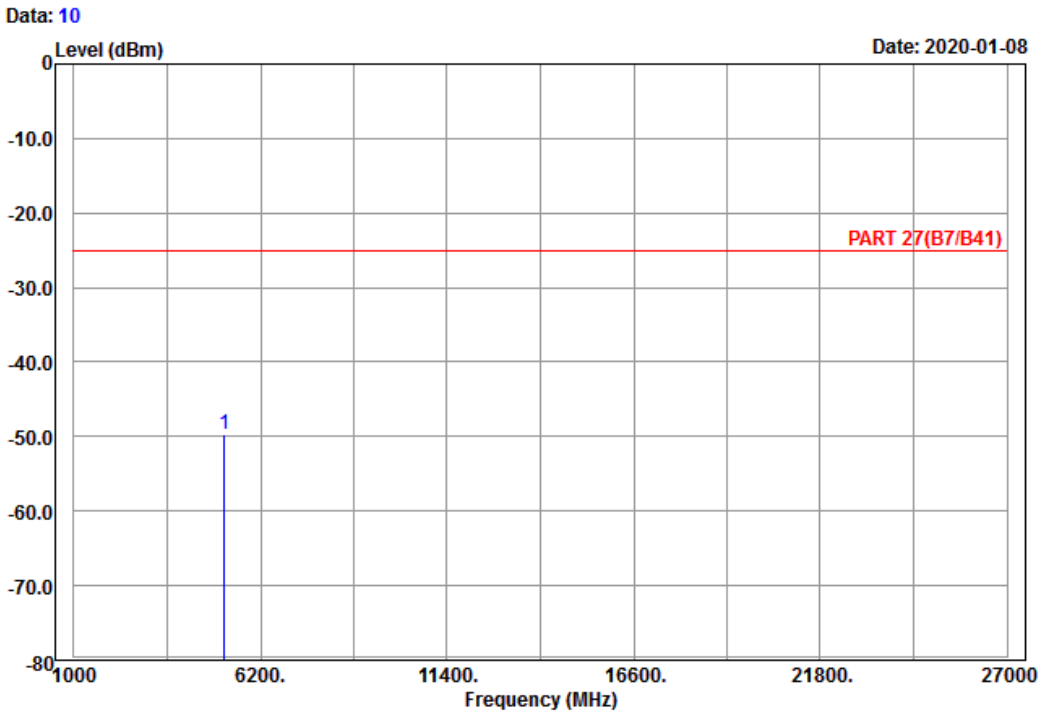
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5186.00	-49.04	-69.16	20.12	-25.00	-24.04	Peak

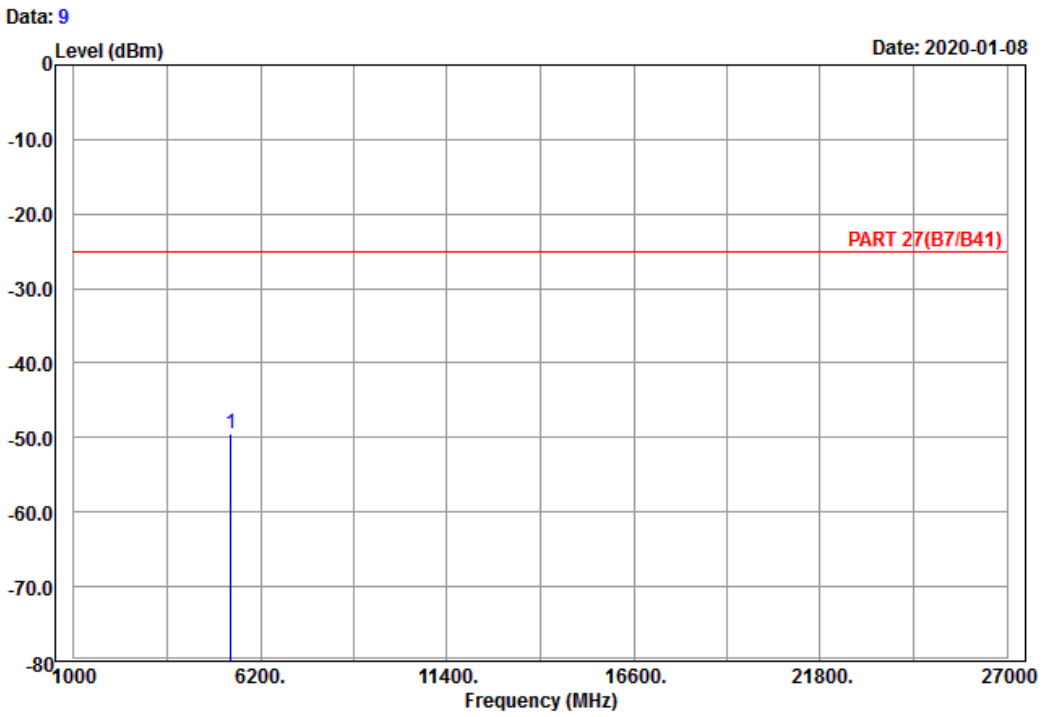


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41 _Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5186.00	-49.68	-69.80	20.12	-25.00	-24.68	Peak

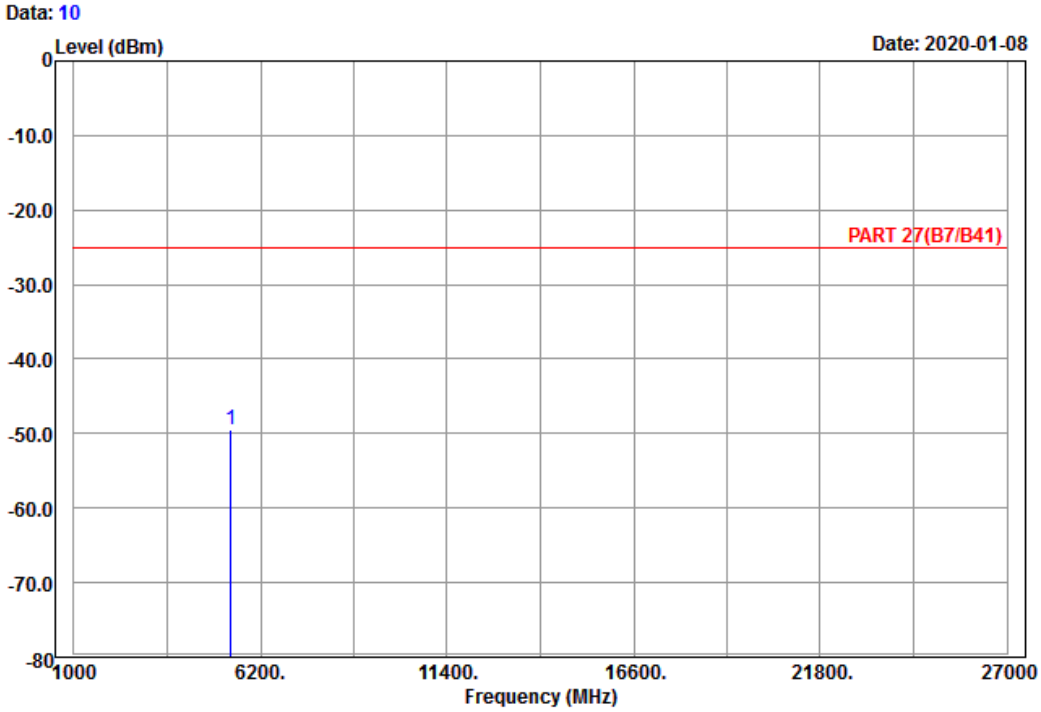
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5375.00	-49.40	-69.72	20.32	-25.00	-24.40	Peak

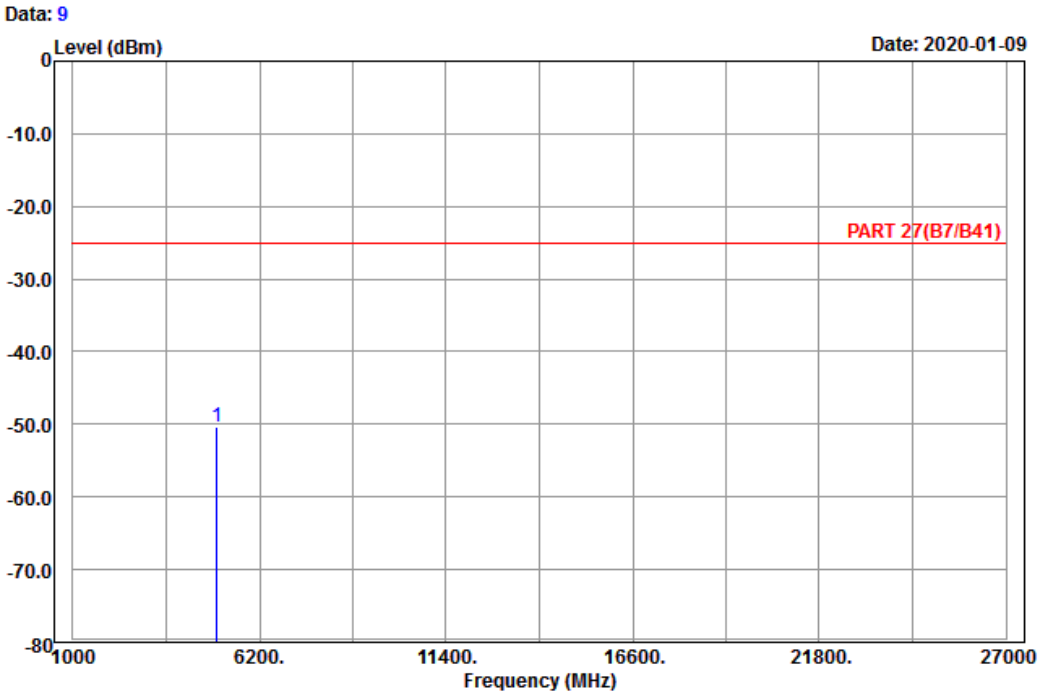


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41 _Link_H-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5375.00	-49.51	-69.83	20.32	-25.00	-24.51	Peak

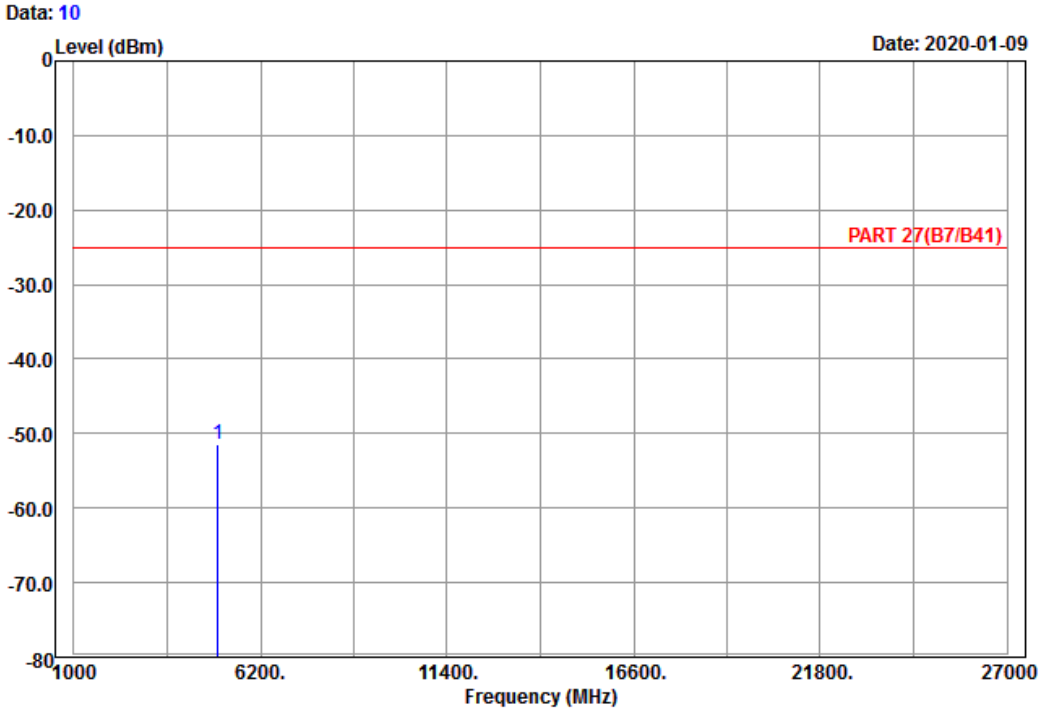
Channel Bandwidth: 20 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site     : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark   : LTE_Band 41 _Link_L-Ch
Tested by: Karl Lee
                      Read          Limit   Over
           Freq  Level  Level Factor   Line  Limit Remark
          _____ _____ _____ _____ _____ _____ _____
            MHz   dBm   dBm    dB    dBm    dB

  1 pp  5020.00 -50.32 -69.40  19.08 -25.00 -25.32 Peak
```

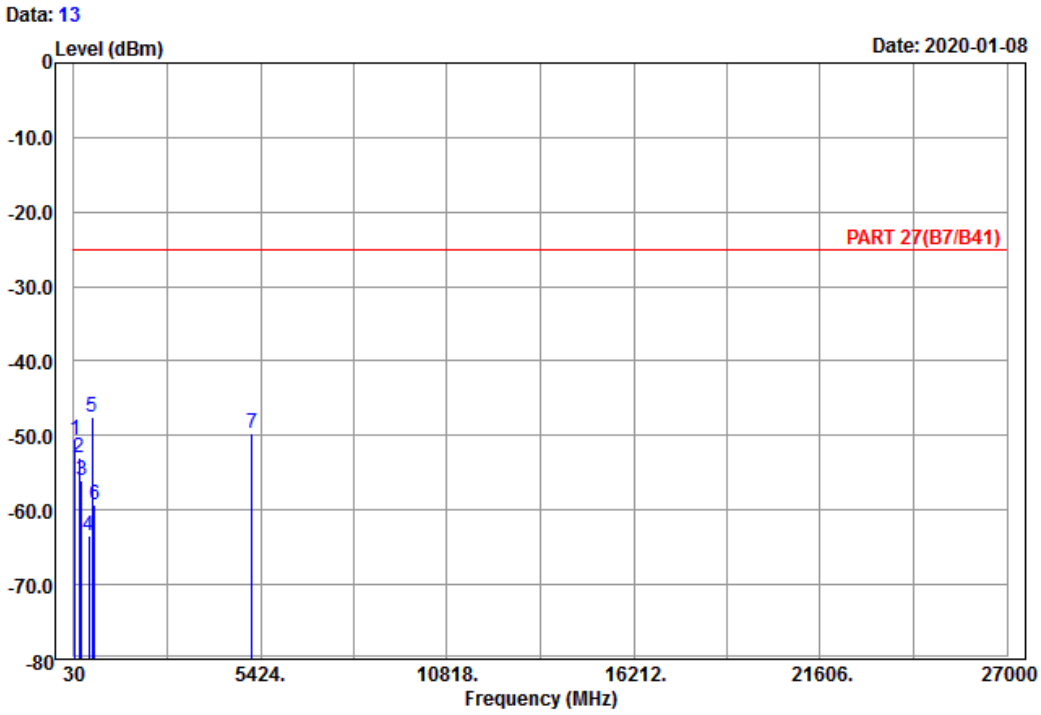


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41 _Link_L-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5020.00	-51.43	-70.51	19.08	-25.00	-26.43	Peak

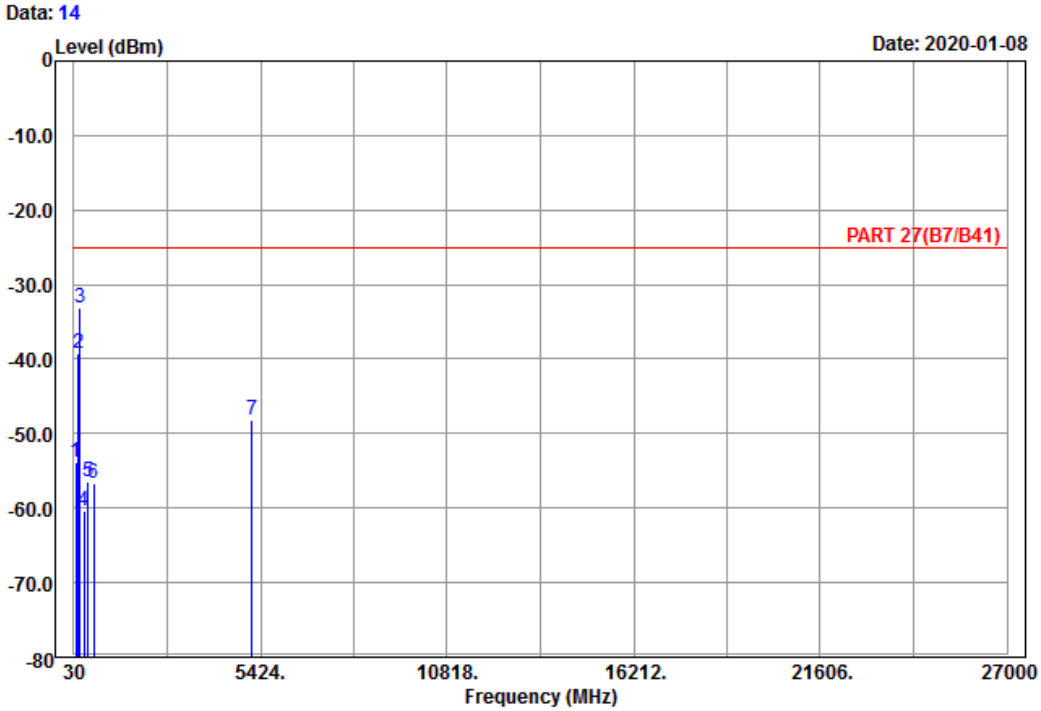
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	57.00	-50.63	-36.57	-14.06	-25.00	-25.63	Peak
2	183.36	-53.07	-47.45	-5.62	-25.00	-28.07	Peak
3	247.62	-56.02	-50.47	-5.55	-25.00	-31.02	Peak
4	463.80	-63.42	-59.19	-4.23	-25.00	-38.42	Peak
5 pp	547.80	-47.59	-45.79	-1.80	-25.00	-22.59	Peak
6	623.40	-59.26	-59.42	0.16	-25.00	-34.26	Peak
7	5186.00	-49.62	-69.74	20.12	-25.00	-24.62	Peak

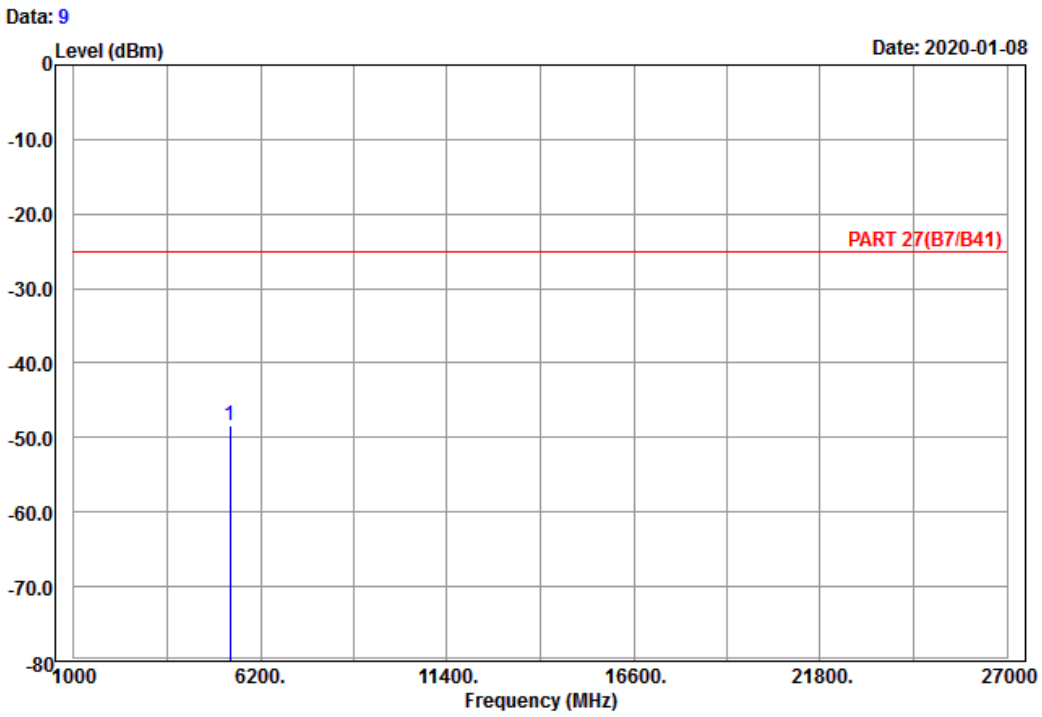


Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41 _Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	90.21	-53.75	-43.08	-10.67	-25.00	-28.75	Peak
2	154.74	-39.14	-31.33	-7.81	-25.00	-14.14	Peak
3 pp	200.91	-33.24	-27.07	-6.17	-25.00	-8.24	Peak
4	321.00	-60.33	-54.62	-5.71	-25.00	-35.33	Peak
5	433.00	-56.54	-53.08	-3.46	-25.00	-31.54	Peak
6	613.60	-56.71	-56.98	0.27	-25.00	-31.71	Peak
7	5186.00	-48.26	-68.38	20.12	-25.00	-23.26	Peak

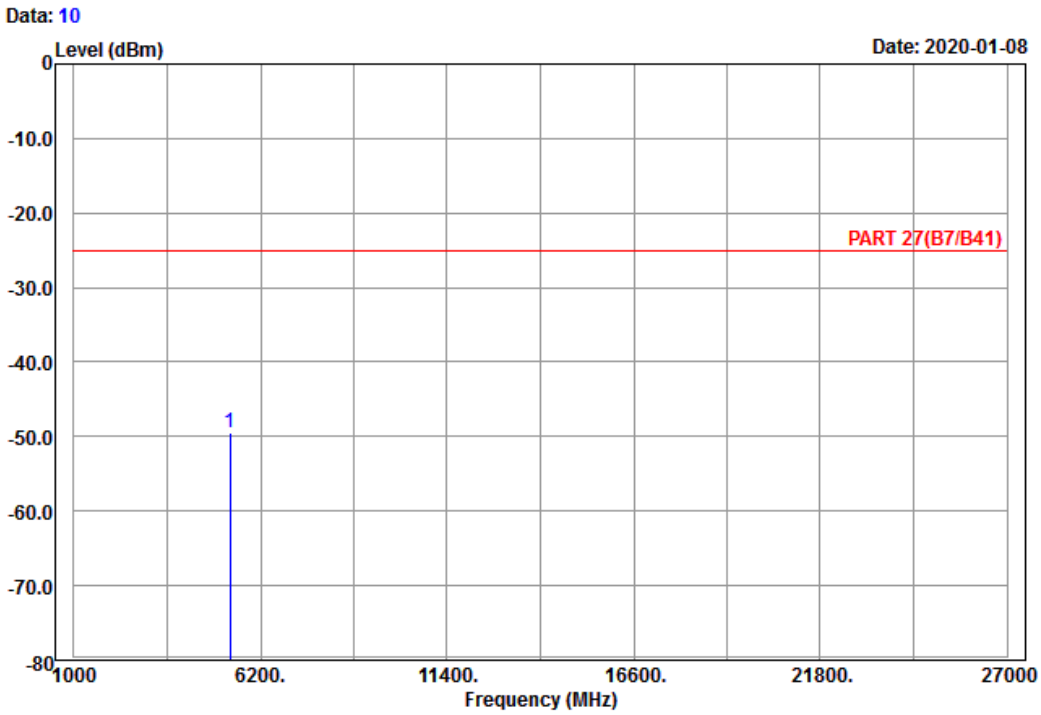
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5360.00	-48.40	-68.70	20.30	-25.00	-23.40	Peak



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

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	5360.00	-49.54	-69.84	20.30	-25.00	-24.54	Peak

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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

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