

Partial FCC Test Report (Part 96 – LTE B42/B48)

Report No.: RFBASM-WTW-P21060063-4

FCC ID: QYLEM9190K

Test Model: EM9190

Received Date: Jun. 02, 2021

Test Date: Jun. 30, 2021

Issued Date: Nov. 16, 2021

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FCC Registration / 427177 / TW0011

Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RFBASM-WTW-P21060063-4	Original release	Nov. 16, 2021

1 Certificate of Conformity

Product: Wireless Module

Brand: Getac

Test Model: EM9190

Sample Status: Identical Prototype

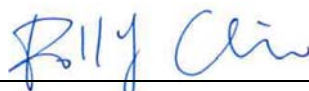
Applicant: Getac Technology Corporation.

Test Date: Jun. 30, 2021

Standards: 47 CFR FCC Part 96

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:

Nov. 16, 2021

Polly Chien / Specialist

Approved by :



Date:

Nov. 16, 2021

Bruce Chen / Senior Engineer

2 Summary of Test Results

47 CFR FCC Part 96			
FCC Clause	Test Item	Result	Remarks
2.1046 96.41(b)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1046 96.41(b)	Maximum Power Spectral Density	N/A	Refer to Note 1
96.41(a) 2.1047	Modulation Characteristics	N/A	Refer to Note 1
96.41(g)	Peak to Average Ration	N/A	Refer to Note 1
2.1049	Emission Bandwidth	N/A	Refer to Note 1
2.1055	Frequency Stability	N/A	Refer to Note 1
2.1051 96.41(e)	Conducted Spurious Emissions	N/A	Refer to Note 1
2.1053 96.41(e)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -4.44dB at 7250.00MHz.

Note:

1. This report is a Class II change partial report. Therefore, only test item of Radiated Spurious Emissions tests and Equivalent Isotropically Radiated Power were performed for this report. Other testing data please refer to Sporton International (Shenzhen) Inc. report no.: FG021429A_Rev. 01 for module (Brand: Airprime, Model: EM9190).
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) ($\pm$)
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	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Module	
Brand	Getac	
Test Model	EM9190	
Sample Status	Identical Prototype	
Power Supply Rating	3.3 Vdc (Host equipment)	
Modulation Type	QPSK, 16QAM, 64QAM, 256QAM	
Operating Frequency	LTE Band 42 (Channel Bandwidth 5MHz)	3552.5MHz ~ 3597.5MHz
	LTE Band 42 (Channel Bandwidth 10MHz)	3555.0MHz ~ 3595.0MHz
	LTE Band 42 (Channel Bandwidth 15MHz)	3557.5MHz ~ 3592.5MHz
	LTE Band 42 (Channel Bandwidth 20MHz)	3560.0MHz ~ 3590.0MHz
	LTE Band 48 (Channel Bandwidth 5MHz)	3552.5MHz ~ 3697.5MHz
	LTE Band 48 (Channel Bandwidth 10MHz)	3555.0MHz ~ 3695.0MHz
	LTE Band 48 (Channel Bandwidth 15MHz)	3557.5MHz ~ 3692.5MHz
	LTE Band 48 (Channel Bandwidth 20MHz)	3560.0MHz ~ 3690.0MHz
Max. EIRP Power (mW/channel bandwidth)	LTE Band 42 (Channel Bandwidth 5MHz)	139.54mW
	LTE Band 42 (Channel Bandwidth 10MHz)	141.68mW
	LTE Band 42 (Channel Bandwidth 15MHz)	144.48mW
	LTE Band 42 (Channel Bandwidth 20MHz)	147.81mW
	LTE Band 48 (Channel Bandwidth 5MHz)	139.54mW
	LTE Band 48 (Channel Bandwidth 10MHz)	141.68mW
	LTE Band 48 (Channel Bandwidth 15MHz)	144.48mW
	LTE Band 48 (Channel Bandwidth 20MHz)	147.81mW
Antenna Type	Refer to Note as below	
Antenna Connector	Refer to Note as below	
Accessory Device	N/A	
Cable Supplied	N/A	

Note:

1. LTE Band 42 covered by LTE band 48 with the same power level, so only chose LTE band 48 to perform test.
2. The EUT is authorized for use in specific End-product. The model of the K120 was chosen for final test.

Product	Brand	Model	Description
Tablet	Getac	K120	For marketing purpose
		K120G2	
		K120Y (Y= 10 , Y can be 0-9, a-z, A-Z, “-”, “_” or blank for marketing purpose)	

3. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	Getac	MTA190474W4	I/P: 100-240Vac, 1.6A, 50-60Hz O/P: 19.0Vdc, 4.74A (90.0W)
Adapter 2	Chicony	A15-090P1A	I/P: 100-240Vac, 1.2A, 50-60Hz O/P: 19.0Vdc, 4.74A (90.0W)
Battery 1	Getac	BP3S1P2100S-01	11.1Vdc , 2040mAh, 24Wh
Battery 2	Getac	BP4S1P3450P-01	14.4Vdc , 3300mAh, 48Wh
Touch Pen	Getac	340142000064	-
Dock	Getac	K120 Keyboard Dock	-

4. The following antennas were provided to the EUT.

Antenna Type	Brand	Model	Antenna Gain
			LTE B48
PIFA	Getac	K120 Main 5G	2.48
	Getac	K120 Aux 5G	3.57

* 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.

3.2 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
LTE Band 48	X-plane	X-axis

LTE Band 48

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
EIRP	55265 to 56715	55265, 55990, 56715	5MHz	QPSK / 16QAM / 64QAM / 256QAM
	55290 to 56690	55290, 55990, 56690	10MHz	QPSK / 16QAM / 64QAM / 256QAM
	55315 to 56665	55315, 55990, 56665	15MHz	QPSK / 16QAM / 64QAM / 256QAM
	55340 to 56640	55340, 55990, 56640	20MHz	QPSK / 16QAM / 64QAM / 256QAM
Radiated Emission	55265 to 56715	55265, 55990, 56715	5MHz	QPSK
	55340 to 56640	55340, 55990, 56640	20MHz	QPSK

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, 59 % RH	3.3 Vdc	Karl Lee
Radiated Emission	25 deg. C, 59 % RH	120 Vac, 60 Hz	Karl Lee

3.3 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.

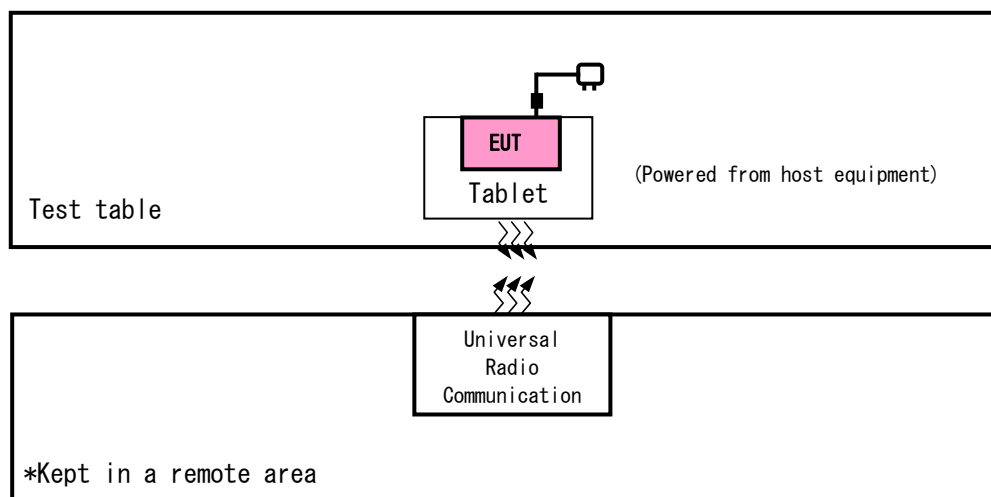
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Tablet	Getac	K120	NA	NA	-
B.	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	-

Note:

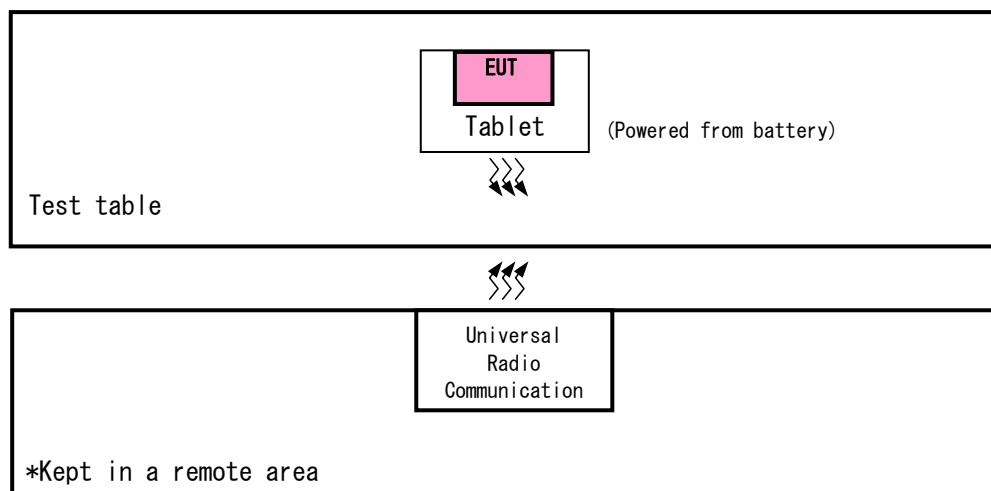
1. All power cords of the above support units are non-shielded (1.8m).
2. Item B acted as a communication partner to transfer data.

3.3.1 Configuration of System under Test

<Radiated Emission Test>



<E.I.R.P. Test>



3.4 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:

Test standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 96

ANSI/TIA/EIA-603-E-2016

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

KDB 940660 D01 Part 96 CBRS Eqpt v03

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

4 Test Types and Results

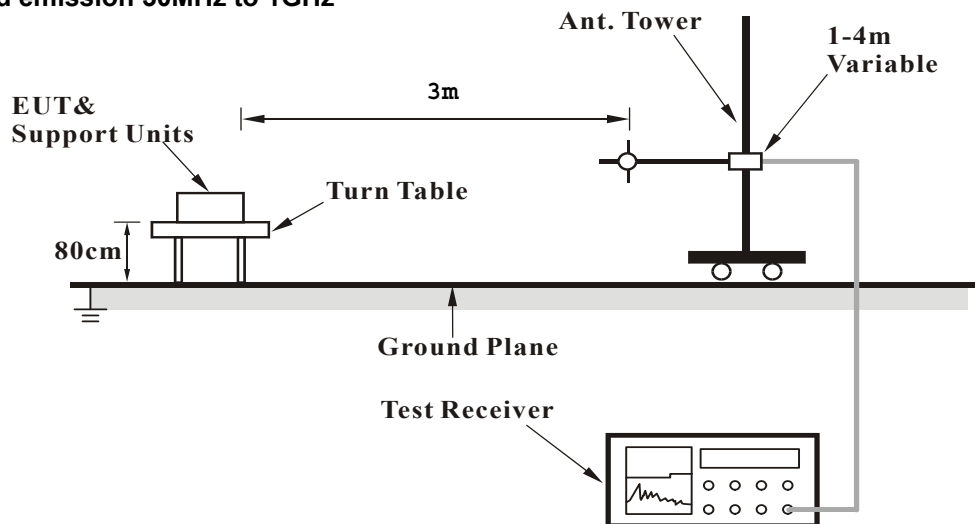
4.1 Maximum Output Power Measurement

4.1.1 Limits of Maximum Output Power Measurement

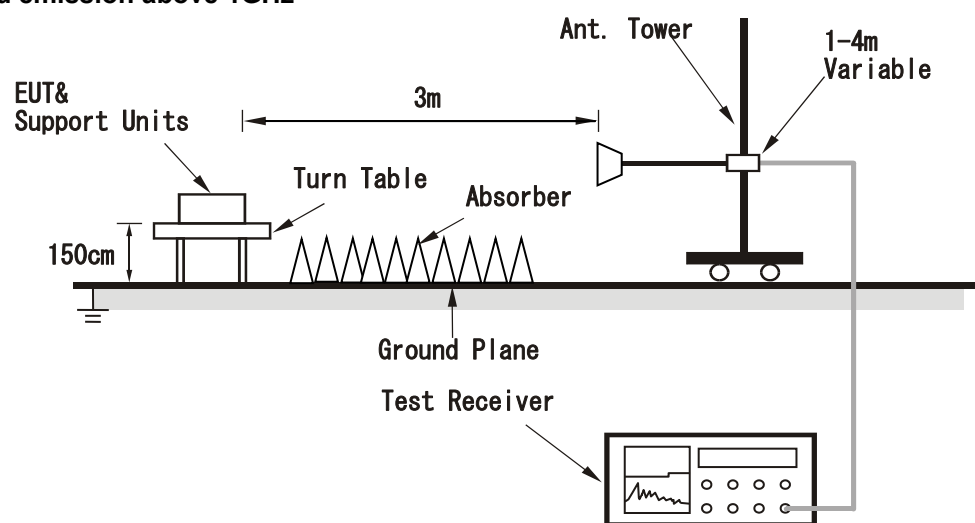
Device		Maximum EIRP (dBm/10 MHz)
☒	End User Device	23
☐	Category A CBSD	30
☐	Category B CBSD	47

4.1.2 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 12, 2021	Apr. 11, 2022
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 09, 2020	Nov. 08, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 22, 2020	Nov. 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2020	Nov. 24, 2021
Preamplifier Agilent	310N	187226	Jun. 17, 2021	Jun. 16, 2022
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2021	Jun. 16, 2022
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-S MS-100-SMS-120+RF C-SMS-100-SMS-400)	Jun. 17, 2021	Jun. 16, 2022
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-S MS-100-SMS-24)	Jun. 17, 2021	Jun. 16, 2022
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
Radio Communication Analyzer Anritsu	MT8821C	6261806803	Jan. 22, 2021	Jan. 21, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSW43	101582	Apr. 01, 2021	Mar. 31, 2022

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

4.1.4 Test Procedures

Radiated output power measurement

- a. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- b. Set span to at least 1.5 times the OBW.
- c. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- d. Set VBW $\geq 3 \times$ RBW.
- e. Set number of points in sweep $\geq 2 \times$ span / RBW.
- f. Sweep time = auto-couple.
- g. Detector = RMS (power averaging).
- h. If the EUT can be configured to transmit continuously (i.e., burst duty cycle $\geq 98\%$), then set the trigger to free run.
- i. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle $< 98\%$), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
- j. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- k. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- l. For per 10MHz method, channel power integrating bandwidth 10MHz is used for bandwidth 5M, 10M, 15M and 20M. For full power method, channel power integrating bandwidth 10MHz is used for bandwidth 5M, 10M, integrating bandwidth 15MHz is used for bandwidth 15M, integrating bandwidth 20MHz is used for bandwidth 20M.
- m. EIRP = Output power level – 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. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.2.7 & 5.2.4.

4.1.5 Deviation from Test Standard

No deviation.

4.1.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 Test Results

EIRP Full Power (dBm/channel bandwidth)

LTE Band 48							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	55265	3552.5	-22.98	44.24	21.26	133.60	H
	55990	3625.0	-22.75	44.20	21.45	139.54	
	56715	3697.5	-23.61	44.80	21.19	131.55	
	55265	3552.5	-26.56	44.19	17.63	57.96	V
	55990	3625.0	-26.11	44.09	17.98	62.78	
	56715	3697.5	-26.75	44.50	17.75	59.55	
Channel Bandwidth: 5 MHz / 16QAM							
X	55265	3552.5	-23.45	44.24	20.79	119.89	H
	55990	3625.0	-23.04	44.20	21.16	130.53	
	56715	3697.5	-23.85	44.80	20.95	124.48	
	55265	3552.5	-27.42	44.19	16.77	47.54	V
	55990	3625.0	-27.24	44.09	16.85	48.39	
	56715	3697.5	-27.62	44.50	16.88	48.74	
Channel Bandwidth: 5 MHz / 64QAM							
X	55265	3552.5	-24.62	44.24	19.62	91.58	H
	55990	3625.0	-24.99	44.20	19.21	83.31	
	56715	3697.5	-24.88	44.80	19.92	98.20	
	55265	3552.5	-28.99	44.19	15.20	33.12	V
	55990	3625.0	-28.14	44.09	15.95	39.34	
	56715	3697.5	-28.65	44.50	15.85	38.45	
Channel Bandwidth: 5 MHz / 256QAM							
X	55265	3552.5	-27.62	44.24	16.62	45.90	H
	55990	3625.0	-27.88	44.20	16.32	42.83	
	56715	3697.5	-27.93	44.80	16.87	48.65	
	55265	3552.5	-29.22	44.19	14.97	31.41	V
	55990	3625.0	-29.62	44.09	14.47	27.98	
	56715	3697.5	-29.74	44.50	14.76	29.92	

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

LTE Band 48							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	55290	3555.0	-22.91	44.34	21.43	139.03	H
	55990	3625.0	-22.73	44.20	21.47	140.18	
	56690	3695.0	-23.21	44.72	21.51	141.68	
	55290	3555.0	-26.45	44.23	17.78	59.92	V
	55990	3625.0	-26.85	44.09	17.24	52.94	
	56690	3695.0	-26.43	44.41	17.98	62.75	
Channel Bandwidth: 10 MHz / 16QAM							
X	55290	3555.0	-23.21	44.34	21.13	129.75	H
	55990	3625.0	-23.42	44.20	20.78	119.59	
	56690	3695.0	-23.85	44.72	20.87	122.26	
	55290	3555.0	-27.62	44.23	16.61	45.77	V
	55990	3625.0	-27.55	44.09	16.54	45.06	
	56690	3695.0	-27.84	44.41	16.57	45.35	
Channel Bandwidth: 10 MHz / 64QAM							
X	55290	3555.0	-24.65	44.34	19.69	93.13	H
	55990	3625.0	-24.71	44.20	19.49	88.86	
	56690	3695.0	-24.95	44.72	19.77	94.91	
	55290	3555.0	-28.45	44.23	15.78	37.81	V
	55990	3625.0	-28.61	44.09	15.48	35.30	
	56690	3695.0	-28.70	44.41	15.71	37.20	
Channel Bandwidth: 10 MHz / 256QAM							
X	55290	3555.0	-27.85	44.34	16.49	44.58	H
	55990	3625.0	-27.65	44.20	16.55	45.15	
	56690	3695.0	-27.96	44.72	16.76	47.46	
	55290	3555.0	-29.62	44.23	14.61	28.88	V
	55990	3625.0	-29.74	44.09	14.35	27.21	
	56690	3695.0	-29.56	44.41	14.85	30.52	

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

LTE Band 48							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	55315	3557.5	-22.85	44.32	21.47	140.22	H
	55990	3625.0	-22.71	44.20	21.49	140.83	
	56665	3692.5	-23.25	44.85	21.60	144.48	
	55315	3557.5	-26.85	43.99	17.14	51.78	V
	55990	3625.0	-26.43	44.09	17.66	58.32	
	56665	3692.5	-26.84	44.51	17.67	58.48	
Channel Bandwidth: 15 MHz / 16QAM							
X	55315	3557.5	-23.22	44.32	21.10	128.77	H
	55990	3625.0	-23.51	44.20	20.69	117.14	
	56665	3692.5	-23.95	44.85	20.90	122.97	
	55315	3557.5	-27.12	43.99	16.87	48.66	V
	55990	3625.0	-27.62	44.09	16.47	44.34	
	56665	3692.5	-27.55	44.51	16.96	49.66	
Channel Bandwidth: 15 MHz / 64QAM							
X	55315	3557.5	-24.95	44.32	19.37	86.46	H
	55990	3625.0	-24.71	44.20	19.49	88.86	
	56665	3692.5	-24.99	44.85	19.86	96.78	
	55315	3557.5	-28.62	43.99	15.37	34.45	V
	55990	3625.0	-28.41	44.09	15.68	36.97	
	56665	3692.5	-28.62	44.51	15.89	38.82	
Channel Bandwidth: 15 MHz / 256QAM							
X	55315	3557.5	-27.62	44.32	16.70	46.75	H
	55990	3625.0	-27.51	44.20	16.69	46.63	
	56665	3692.5	-27.95	44.85	16.90	48.96	
	55315	3557.5	-29.42	43.99	14.57	28.65	V
	55990	3625.0	-29.62	44.09	14.47	27.98	
	56665	3692.5	-29.68	44.51	14.83	30.41	

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

LTE Band 48							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	55340	3560.0	-22.84	44.16	21.32	135.52	H
	55990	3625.0	-22.50	44.20	21.70	147.81	
	56640	3690.0	-23.51	44.81	21.30	134.80	
	55340	3560.0	-27.62	44.78	17.16	52.00	V
	55990	3625.0	-26.56	44.09	17.53	56.60	
	56640	3690.0	-26.91	44.72	17.81	60.39	
Channel Bandwidth: 20 MHz / 16QAM							
X	55340	3560.0	-22.95	44.16	21.21	132.13	H
	55990	3625.0	-23.44	44.20	20.76	119.04	
	56640	3690.0	-23.94	44.81	20.87	122.10	
	55340	3560.0	-27.91	44.78	16.87	48.64	V
	55990	3625.0	-27.36	44.09	16.73	47.08	
	56640	3690.0	-27.81	44.72	16.91	49.09	
Channel Bandwidth: 20 MHz / 64QAM							
X	55340	3560.0	-24.20	44.16	19.96	99.08	H
	55990	3625.0	-24.62	44.20	19.58	90.72	
	56640	3690.0	-24.99	44.81	19.82	95.87	
	55340	3560.0	-28.95	44.78	15.83	38.28	V
	55990	3625.0	-28.64	44.09	15.45	35.06	
	56640	3690.0	-28.77	44.72	15.95	39.36	
Channel Bandwidth: 20 MHz / 256QAM							
X	55340	3560.0	-27.62	44.16	16.54	45.08	H
	55990	3625.0	-27.55	44.20	16.65	46.21	
	56640	3690.0	-27.81	44.81	17.00	50.08	
	55340	3560.0	-29.62	44.78	15.16	32.81	V
	55990	3625.0	-29.71	44.09	14.38	27.40	
	56640	3690.0	-29.85	44.72	14.87	30.69	

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

EIRP Power (dBm/10MHz)

LTE Band 48							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm/ 10MHz)	EIRP (mW/ 10MHz)	Polarization (H/V)
X	55265	3552.5	-23.28	44.24	20.96	124.68	H
	55990	3625.0	-23.56	44.20	20.64	115.80	
	56715	3697.5	-24.02	44.80	20.78	119.70	
	55265	3552.5	-28.00	44.19	16.19	41.60	V
	55990	3625.0	-28.33	44.09	15.76	37.65	
	56715	3697.5	-28.57	44.50	15.93	39.17	
Channel Bandwidth: 5 MHz / 16QAM							
X	55265	3552.5	-24.29	44.24	19.95	98.81	H
	55990	3625.0	-24.56	44.20	19.64	91.98	
	56715	3697.5	-25.03	44.80	19.77	94.86	
	55265	3552.5	-29.01	44.19	15.18	32.97	V
	55990	3625.0	-29.34	44.09	14.75	29.84	
	56715	3697.5	-29.58	44.50	14.92	31.04	
Channel Bandwidth: 5 MHz / 64QAM							
X	55265	3552.5	-25.30	44.24	18.94	78.31	H
	55990	3625.0	-25.56	44.20	18.64	73.06	
	56715	3697.5	-26.04	44.80	18.76	75.18	
	55265	3552.5	-30.02	44.19	14.17	26.13	V
	55990	3625.0	-30.34	44.09	13.75	23.70	
	56715	3697.5	-30.59	44.50	13.91	24.60	
Channel Bandwidth: 5 MHz / 256QAM							
X	55265	3552.5	-28.31	44.24	15.93	39.16	H
	55990	3625.0	-28.56	44.20	15.64	36.62	
	56715	3697.5	-29.04	44.80	15.76	37.68	
	55265	3552.5	-33.03	44.19	11.16	13.06	V
	55990	3625.0	-33.35	44.09	10.74	11.85	
	56715	3697.5	-33.59	44.50	10.91	12.33	

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

LTE Band 48							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm/ 10MHz)	EIRP (mW/ 10MHz)	Polarization (H/V)
X	55290	3555.0	-23.20	44.34	21.14	130.05	H
	55990	3625.0	-23.42	44.20	20.78	119.59	
	56690	3695.0	-23.78	44.72	20.94	124.25	
	55290	3555.0	-27.92	44.23	16.31	42.72	V
	55990	3625.0	-28.19	44.09	15.90	38.89	
	56690	3695.0	-28.30	44.41	16.11	40.79	
Channel Bandwidth: 10 MHz / 16QAM							
X	55290	3555.0	-24.20	44.34	20.14	103.30	H
	55990	3625.0	-24.43	44.20	19.77	94.78	
	56690	3695.0	-24.79	44.72	19.93	98.47	
	55290	3555.0	-28.92	44.23	15.31	33.93	V
	55990	3625.0	-29.20	44.09	14.89	30.82	
	56690	3695.0	-29.31	44.41	15.10	32.33	
Channel Bandwidth: 10 MHz / 64QAM							
X	55290	3555.0	-25.20	44.34	19.14	82.05	H
	55990	3625.0	-25.43	44.20	18.77	75.28	
	56690	3695.0	-25.80	44.72	18.92	78.04	
	55290	3555.0	-29.92	44.23	14.31	26.95	V
	55990	3625.0	-30.21	44.09	13.88	24.42	
	56690	3695.0	-30.32	44.41	14.09	25.62	
Channel Bandwidth: 10 MHz / 256QAM							
X	55290	3555.0	-28.21	44.34	16.13	41.03	H
	55990	3625.0	-28.44	44.20	15.76	37.64	
	56690	3695.0	-28.80	44.72	15.92	39.11	
	55290	3555.0	-32.92	44.23	11.31	13.51	V
	55990	3625.0	-33.22	44.09	10.87	12.21	
	56690	3695.0	-33.32	44.41	11.09	12.84	

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

LTE Band 48							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm/ 10MHz)	EIRP (mW/ 10MHz)	Polarization (H/V)
X	55315	3557.5	-23.04	44.32	21.28	134.21	H
	55990	3625.0	-23.32	44.20	20.88	122.38	
	56665	3692.5	-23.79	44.85	21.06	127.59	
	55315	3557.5	-27.55	43.99	16.44	44.08	V
	55990	3625.0	-28.06	44.09	16.03	40.07	
	56665	3692.5	-28.26	44.51	16.25	42.17	
Channel Bandwidth: 15 MHz / 16QAM							
X	55315	3557.5	-24.04	44.32	20.28	106.61	H
	55990	3625.0	-24.33	44.20	19.87	96.98	
	56665	3692.5	-24.79	44.85	20.06	101.34	
	55315	3557.5	-28.56	43.99	15.43	34.93	V
	55990	3625.0	-29.06	44.09	15.03	31.83	
	56665	3692.5	-29.27	44.51	15.24	33.42	
Channel Bandwidth: 15 MHz / 64QAM							
X	55315	3557.5	-25.05	44.32	19.27	84.49	H
	55990	3625.0	-25.34	44.20	18.86	76.86	
	56665	3692.5	-25.79	44.85	19.06	80.50	
	55315	3557.5	-29.56	43.99	14.43	27.75	V
	55990	3625.0	-30.07	44.09	14.02	25.22	
	56665	3692.5	-30.28	44.51	14.23	26.49	
Channel Bandwidth: 15 MHz / 256QAM							
X	55315	3557.5	-28.06	44.32	16.26	42.25	H
	55990	3625.0	-28.35	44.20	15.85	38.43	
	56665	3692.5	-28.80	44.85	16.05	40.25	
	55315	3557.5	-32.56	43.99	11.43	13.91	V
	55990	3625.0	-33.08	44.09	11.01	12.61	
	56665	3692.5	-33.29	44.51	11.22	13.24	

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

LTE Band 48							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm/ 10MHz)	EIRP (mW/ 10MHz)	Polarization (H/V)
X	55340	3560.0	-22.81	44.16	21.35	136.46	H
	55990	3625.0	-23.24	44.20	20.96	124.65	
	56640	3690.0	-23.64	44.81	21.17	130.83	
	55340	3560.0	-28.21	44.78	16.57	45.39	V
	55990	3625.0	-27.94	44.09	16.15	41.19	
	56640	3690.0	-28.36	44.72	16.36	43.25	
Channel Bandwidth: 20 MHz / 16QAM							
X	55340	3560.0	-23.81	44.16	20.35	108.39	H
	55990	3625.0	-24.25	44.20	19.95	98.79	
	56640	3690.0	-24.63	44.81	20.18	104.16	
	55340	3560.0	-29.22	44.78	15.56	35.97	V
	55990	3625.0	-28.94	44.09	15.15	32.72	
	56640	3690.0	-29.36	44.72	15.36	34.36	
Channel Bandwidth: 20 MHz / 64QAM							
X	55340	3560.0	-24.82	44.16	19.34	85.90	H
	55990	3625.0	-25.26	44.20	18.94	78.29	
	56640	3690.0	-25.63	44.81	19.18	82.74	
	55340	3560.0	-30.22	44.78	14.56	28.58	V
	55990	3625.0	-29.94	44.09	14.15	25.99	
	56640	3690.0	-30.36	44.72	14.36	27.29	
Channel Bandwidth: 20 MHz / 256QAM							
X	55340	3560.0	-27.83	44.16	16.33	42.95	H
	55990	3625.0	-28.26	44.20	15.94	39.24	
	56640	3690.0	-28.64	44.81	16.17	41.37	
	55340	3560.0	-33.23	44.78	11.55	14.29	V
	55990	3625.0	-32.94	44.09	11.15	13.03	
	56640	3690.0	-33.35	44.72	11.37	13.71	

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

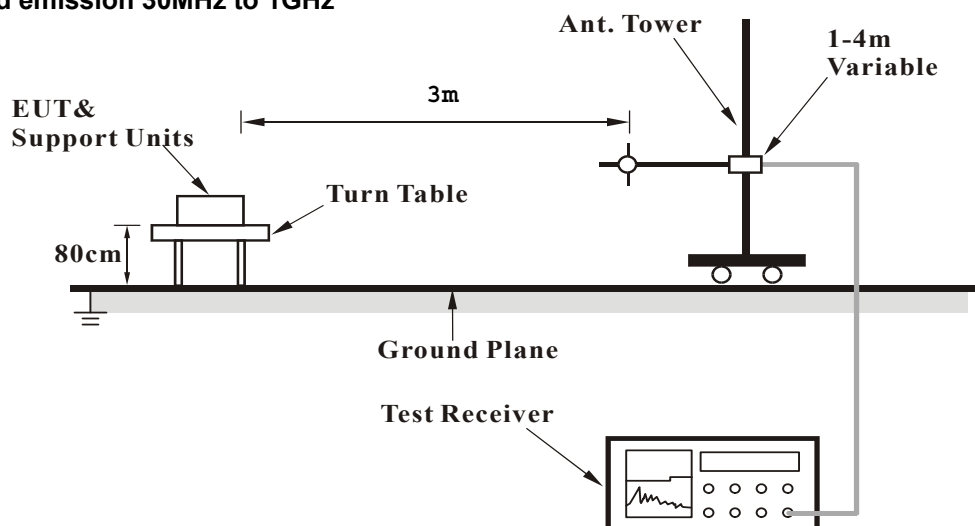
4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

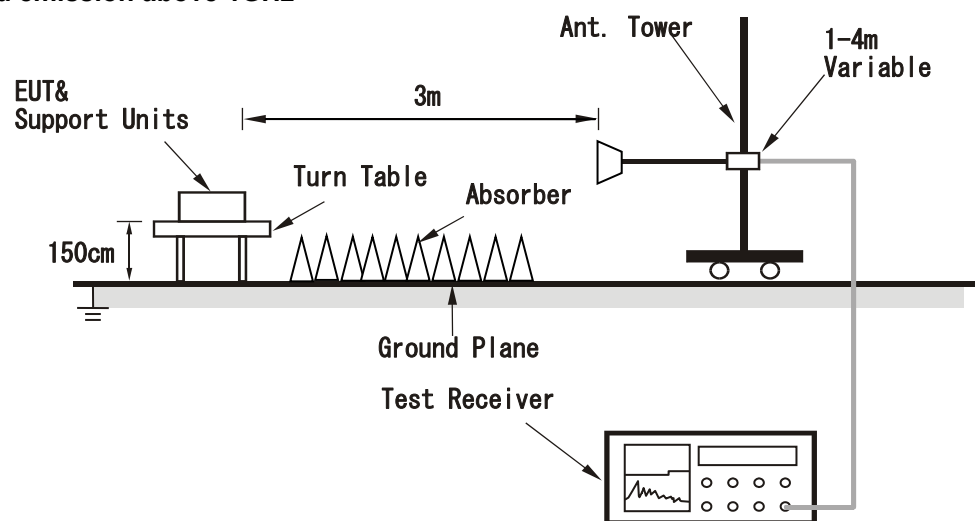
The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz .

4.2.2 Test Set Up

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.2.4 Test Procedures

- a. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following C63.26 section 5.5 and 5.2.7
$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8;$$
 where D is the measurement distance (in the far field region) in m.
$$\text{ERP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8 - 2.15;$$
 where D is the measurement distance (in the far field region) in m.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
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.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Results

LTE Band 48

Channel Bandwidth: 5 MHz / QPSK

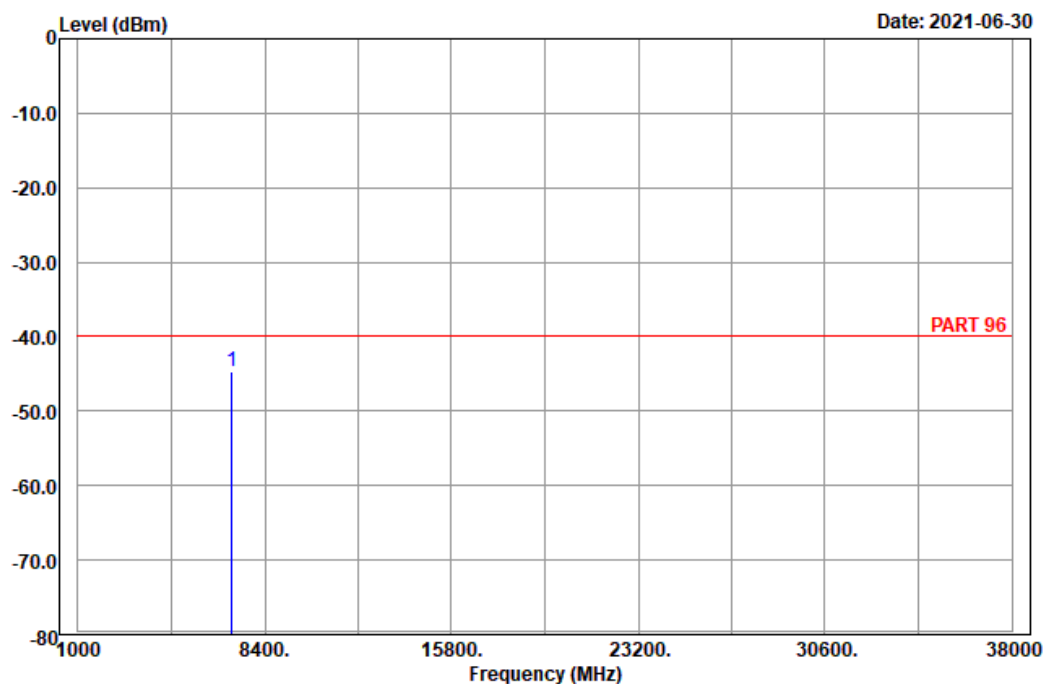
Low Channel



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A D T

Data: 3



Site : 966 chamber 1
 Condition: PART 96 Horizontal
 Remark : LTE_Band 48_Link_L-Ch
 Tested by: Karl Lee

	Read	Limit	Over	
Freq	Level	Level	Factor	Line
MHz	dBm	dBm	dB	dBm
1 pp 7105.00	-44.77	-67.30	22.53	-40.00
				-4.77
				Peak

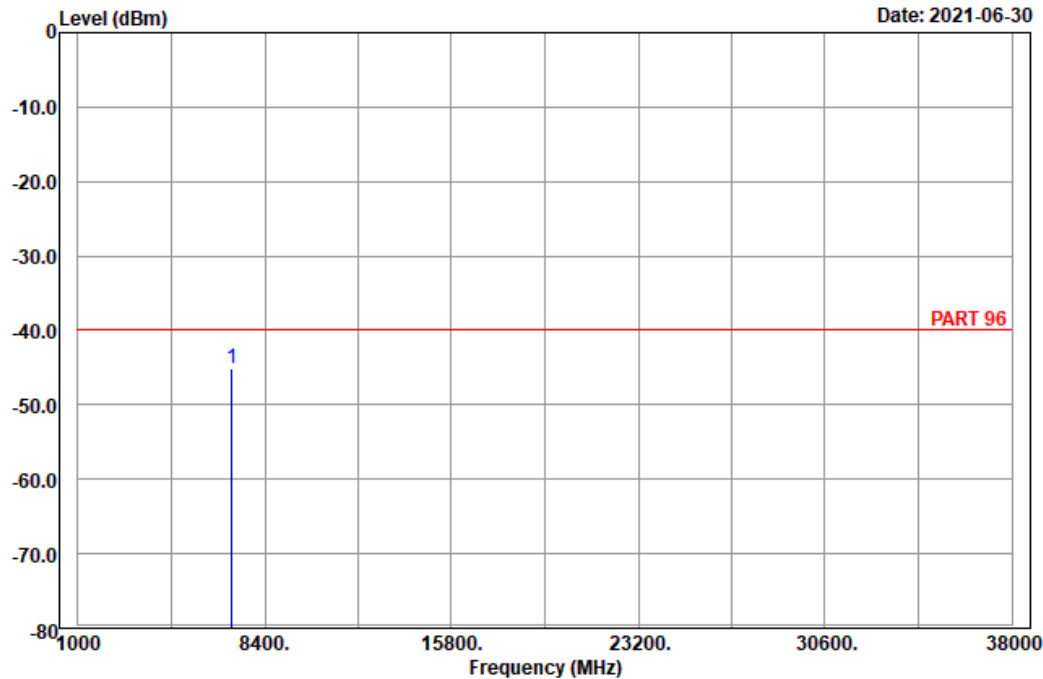


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A D T

Data: 4

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_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	7105.00	-45.07	-67.60	22.53	-40.00	-5.07	Peak

Middle Channel

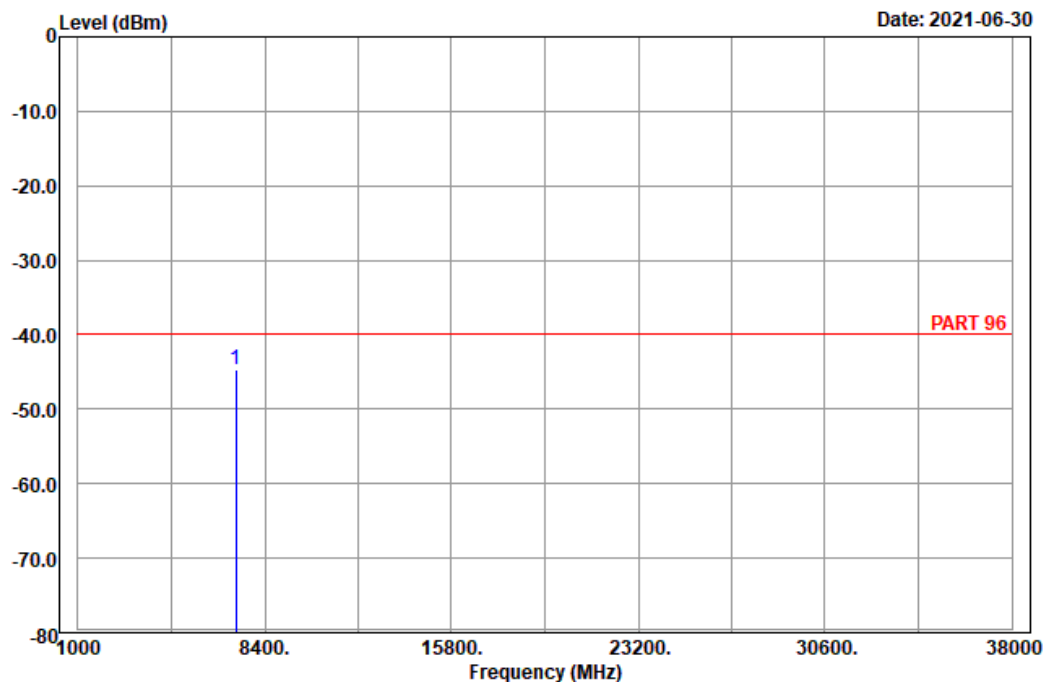


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A D T

Data: 3

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Horizontal
Remark : LTE_Band 48_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	7250.00	-44.60	-67.01	22.41	-40.00	-4.60	Peak

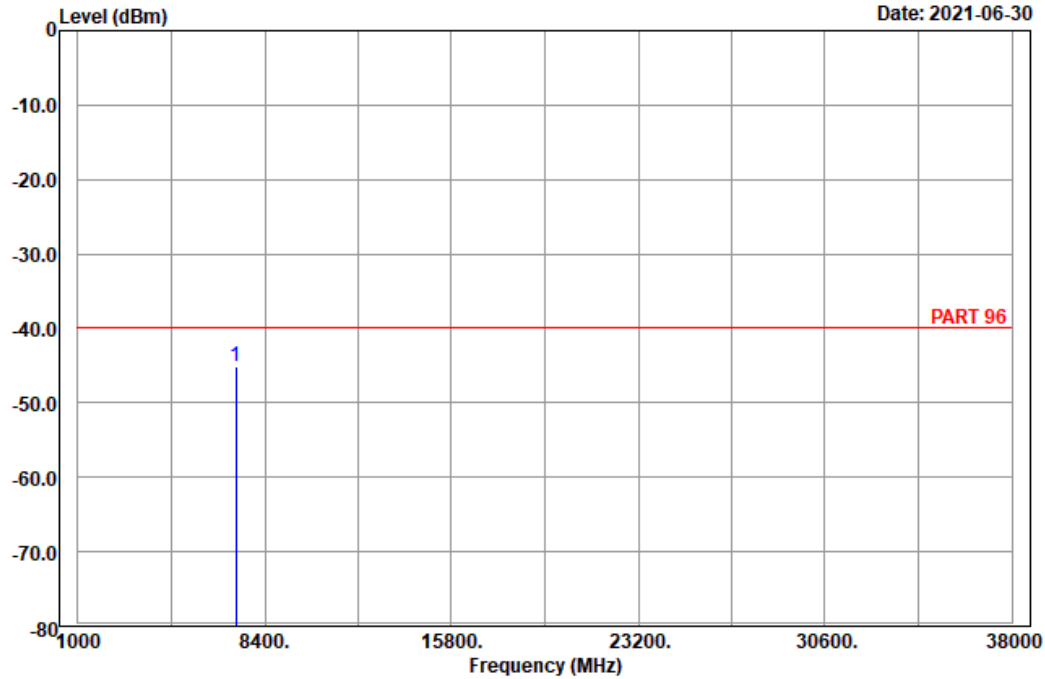


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A D T

Data: 4

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_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	7250.00	-45.06	-67.47	22.41	-40.00	-5.06	Peak

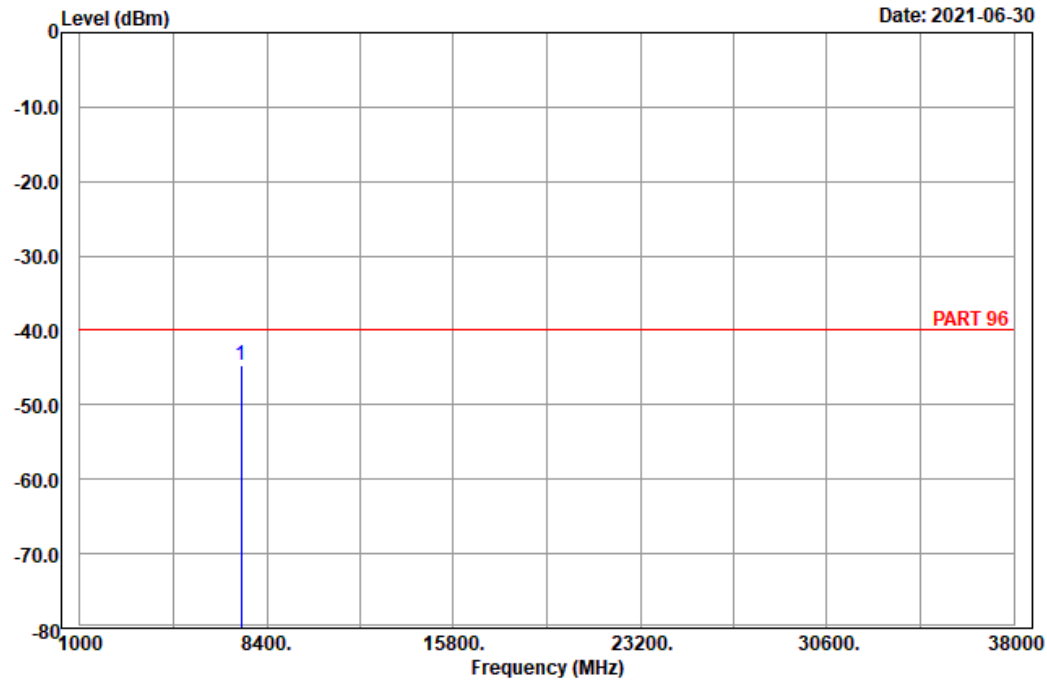
High Channel



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A D T

Data: 3



Site : 966 chamber 1
 Condition: PART 96 Horizontal
 Remark : LTE_Band 48_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 7395.00	-44.78	-67.07	22.29	-40.00	-4.78	Peak

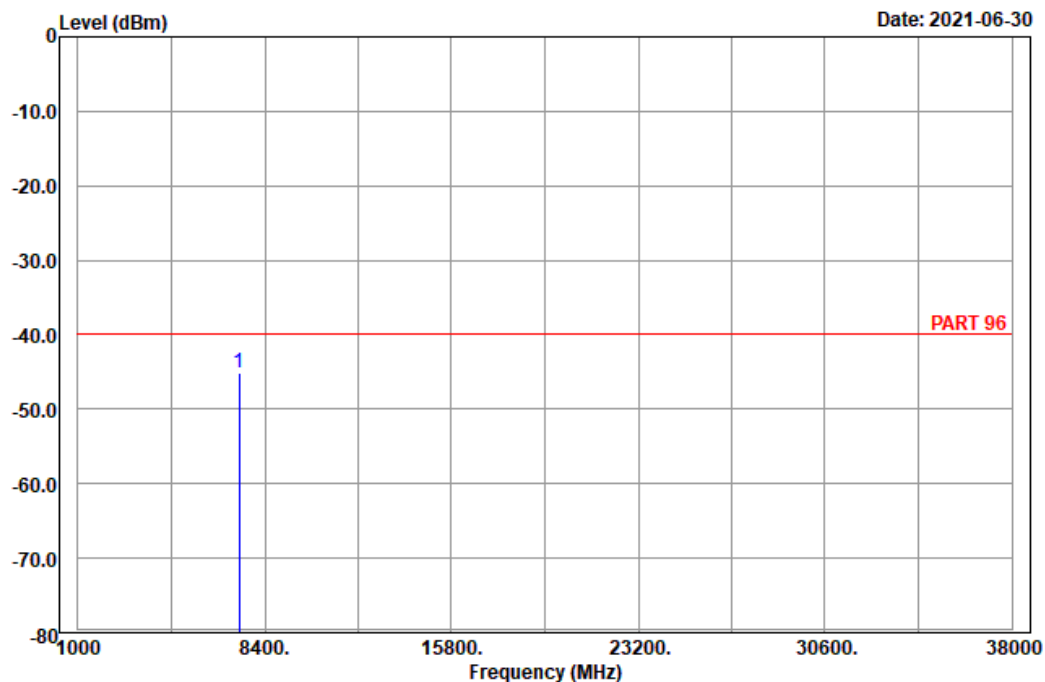


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A D T

Data: 4

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_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	7395.00	-45.22	-67.51	22.29	-40.00	-5.22	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

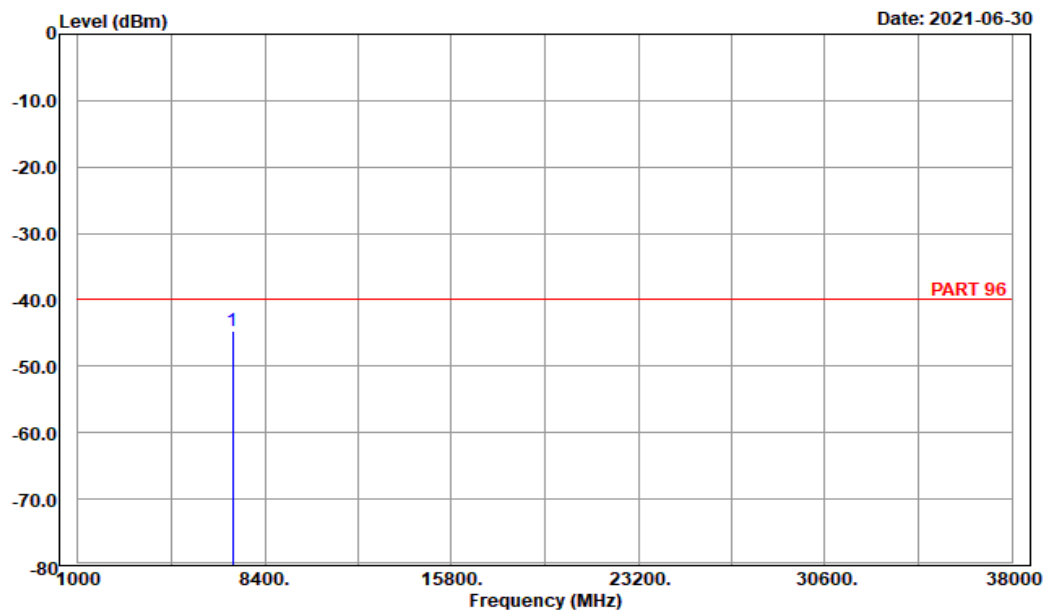


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Horizontal
Remark : LTE_Band 48_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	7120.00	-44.79	-67.30	22.51	-40.00	-4.79	Peak

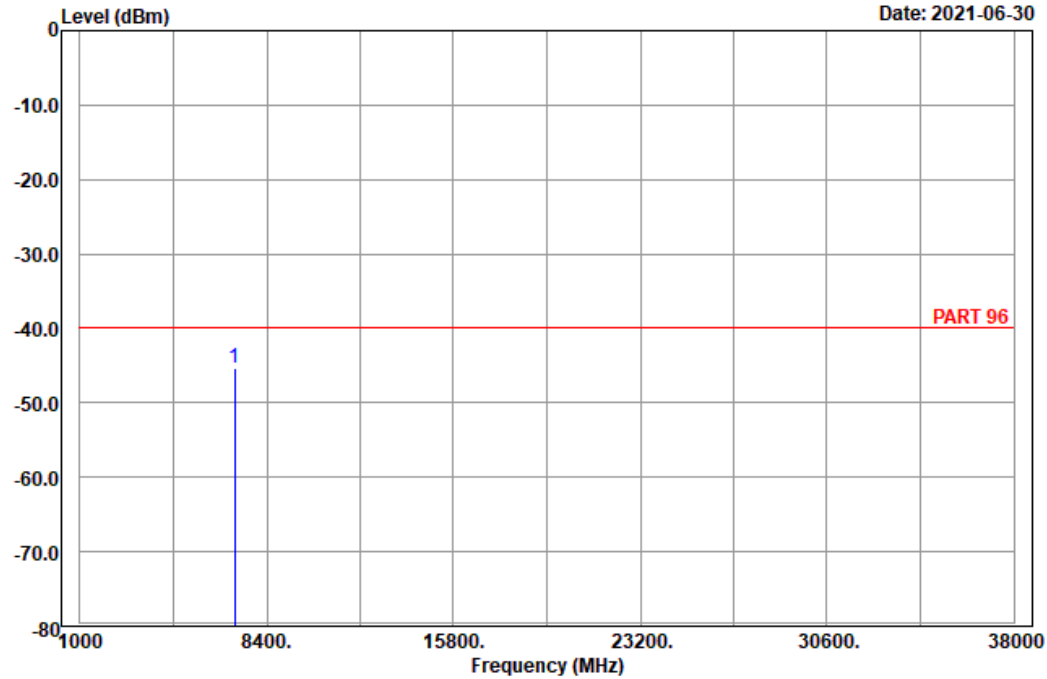


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_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	7120.00	-45.39	-67.90	22.51	-40.00	-5.39	Peak

Middle Channel

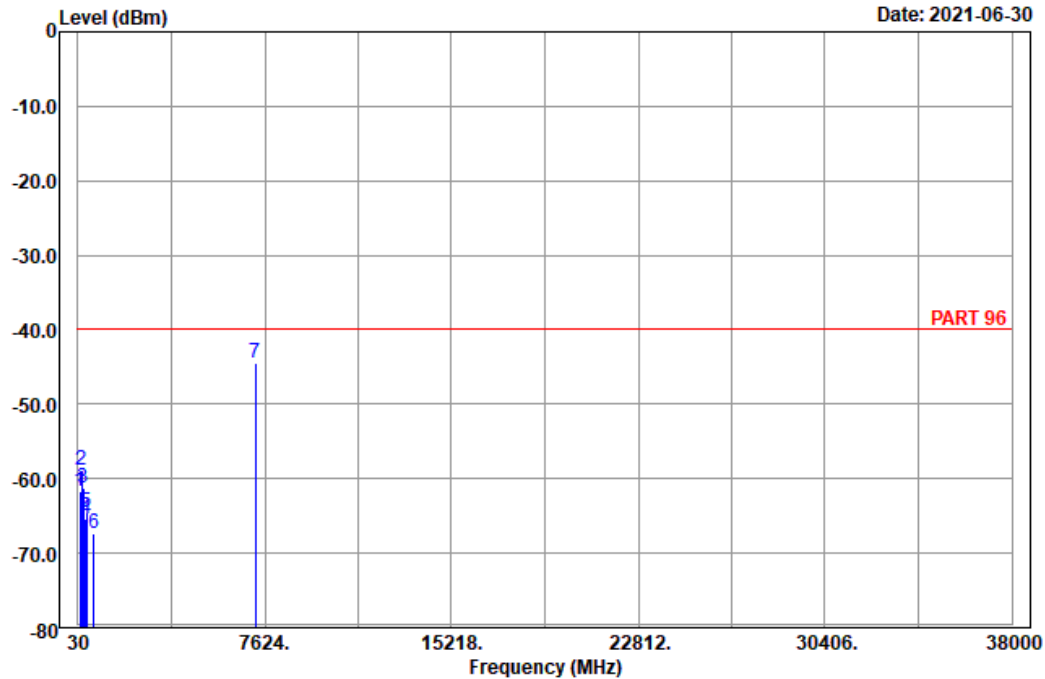


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A D T

Data: 7

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Horizontal
Remark : LTE_Band 48_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	99.12	-61.60	-51.42	-10.18	-40.00	-21.60	Peak
2	190.38	-58.80	-53.07	-5.73	-40.00	-18.80	Peak
3	237.90	-61.17	-55.49	-5.68	-40.00	-21.17	Peak
4	327.30	-65.48	-59.83	-5.65	-40.00	-25.48	Peak
5	393.10	-64.58	-61.48	-3.10	-40.00	-24.58	Peak
6	678.00	-67.45	-67.18	-0.27	-40.00	-27.45	Peak
7 pp	7250.00	-44.44	-66.85	22.41	-40.00	-4.44	Peak

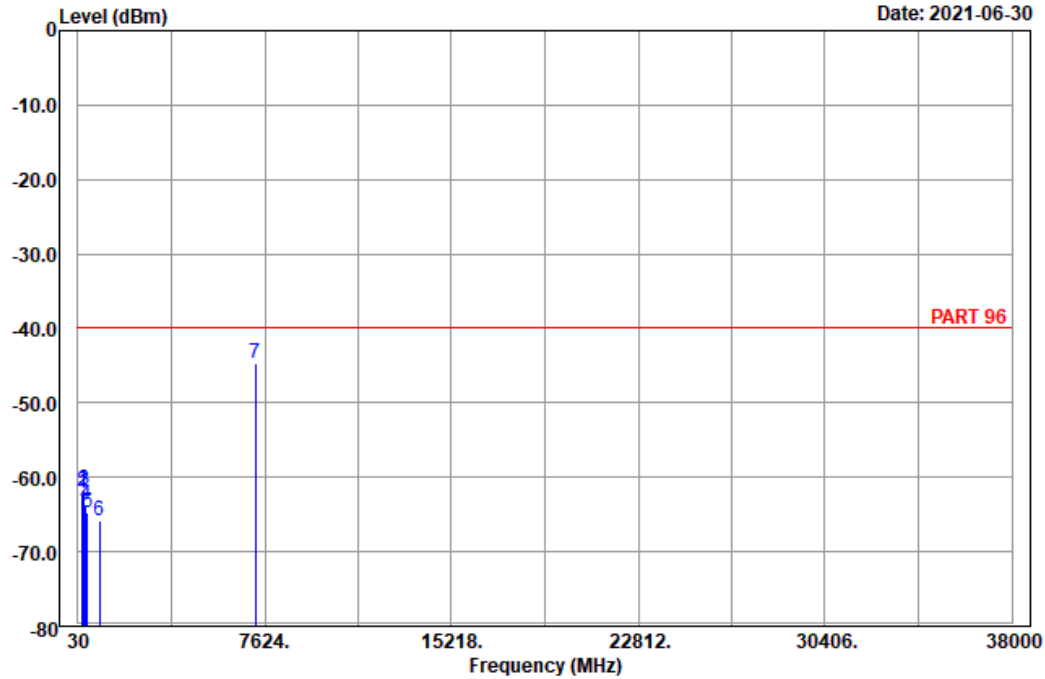


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_Link_M-Ch
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	202.26	-62.03	-55.89	-6.14	-40.00	-22.03	Peak
2	259.23	-61.85	-56.26	-5.59	-40.00	-21.85	Peak
3	270.57	-61.75	-56.06	-5.69	-40.00	-21.75	Peak
4	351.80	-63.69	-58.42	-5.27	-40.00	-23.69	Peak
5	407.80	-64.85	-61.94	-2.91	-40.00	-24.85	Peak
6	905.50	-65.80	-68.95	3.15	-40.00	-25.80	Peak
7 pp	7250.00	-44.76	-67.17	22.41	-40.00	-4.76	Peak

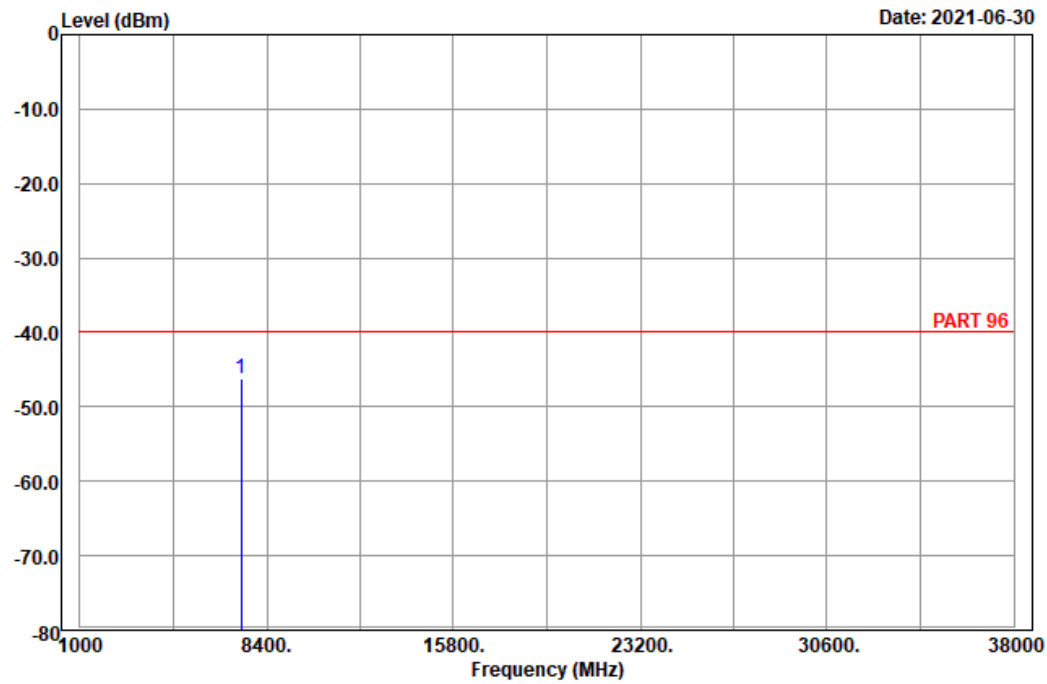
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
 Condition: PART 96 Horizontal
 Remark : LTE_Band 48_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 7380.00	-46.14	-68.45	22.31	-40.00	-6.14	Peak

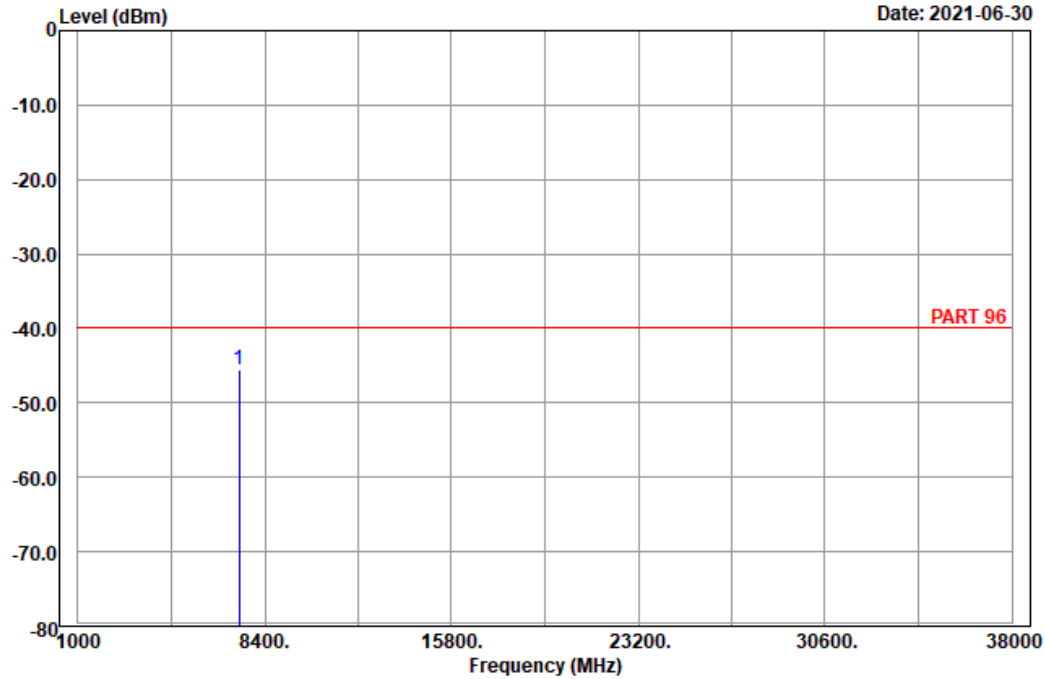


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2021-06-30



Site : 966 chamber 1
Condition: PART 96 Vertical
Remark : LTE_Band 48_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	7380.00	-45.58	-67.89	22.31	-40.00	-5.58	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 and approved according to ISO/IEC 17025.

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

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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