

Partial FCC Test Report

(PART 24)

Report No.: RFBGSN-WTW-P20080589-10 R1

FCC ID: NKS-MA1BA1TE1

Test Model: Trimble Gateway-MA1, Trimble Gateway-BA1, Trimble Gateway-TE1
(refer to item 3.1 for more details)

Received Date: Aug. 29, 2020

Test Date: Oct. 23, 2020 ~ Nov. 05, 2020

Issued Date: Dec. 01, 2020

Applicant: PeopleNet Communications Corporation

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



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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	5
2.2 Test Site and Instruments	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Configuration of System under Test.....	9
3.2.1 Description of Support Units	10
3.3 Test Mode Applicability and Tested Channel Detail	11
3.4 EUT Operating Conditions	13
3.5 General Description of Applied Standards and references.....	13
4 Test Types and Results	14
4.1 Output Power Measurement.....	14
4.1.1 Limits of Output Power Measurement	14
4.1.2 Test Procedures.....	14
4.1.3 Test Setup.....	15
4.1.4 Test Results	16
4.2 Radiated Emission Measurement.....	22
4.2.1 Limits of Radiated Emission Measurement	22
4.2.2 Test Procedure	22
4.2.3 Deviation from Test Standard	22
4.2.4 Test Setup.....	23
4.2.5 Test Results	24
5 Pictures of Test Arrangements.....	60
Appendix – Information of the Testing Laboratories	61

Release Control Record

Issue No.	Description	Date Issued
RFBGSN-WTW-P20080589-10	Original Release	Nov. 13, 2020
RFBGSN-WTW-P20080589-10 R1	Revise model on section 3.1 Note 1 & 2	Dec. 01, 2020

1 Certificate of Conformity

Product: Trimble Gateway NA

Brand: Trimble

Test Model: Trimble Gateway-MA1, Trimble Gateway-BA1, Trimble Gateway-TE1
(refer to item 3.1 for more details)

Sample Status: Engineering Sample

Applicant: PeopleNet Communications Corporation

Test Date: Oct. 23, 2020 ~ Nov. 05, 2020

Standards: FCC Part 24, Subpart E

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 : Vera Huang , Date: Dec. 01, 2020
Vera Huang / Specialist

Approved by : Dylan Chiou , Date: Dec. 01, 2020
Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
24.232(d)	Peak to Average Ratio	N/A	Refer to Note
2.1055 24.235	Frequency Stability	N/A	Refer to Note
2.1049	Occupied Bandwidth	N/A	Refer to Note
24.238	Band Edge Measurements	N/A	Refer to Note
2.1051 24.238	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -17.75 dB at 5700.00 MHz.

Note:

1. Only EIRP and Radiated Spurious Emissions are performed for the addendum. Refer to BV CPS report no. RFBGSN-WTW-P20080589-1 for the other test data.
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	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2020	Mar. 17, 2021
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
HORN Antenna SCHWARZBECK	9120D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 25, 2019	Oct. 24, 2020
Preamplifier EMCI	EMC001340	980201	Oct. 21, 2020	Oct. 20, 2021
Preamplifier EMCI	EMC 012645	980115	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 330H	980112	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	180409	Jan. 18, 2020	Jan. 17, 2021
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
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
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 13, 2020	Feb. 12, 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 HwaYa Chamber 10.

3 General Information

3.1 General Description of EUT

Product	Trimble Gateway NA	
Brand	Trimble	
Test Model	Trimble Gateway-MA1, Trimble Gateway-BA1, Trimble Gateway-TE1	
Model Difference	Refer to note for more details	
Status of EUT	Engineering Sample	
Power Supply Rating	12 Vdc (adapter)	
Modulation Type	WCDMA II	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA II	1852.4 ~ 1907.6 MHz
	LTE Band 2 (Channel Bandwidth: 1.4 MHz)	1850.7 ~ 1909.3 MHz
	LTE Band 2 (Channel Bandwidth: 3 MHz)	1851.5 ~ 1908.5 MHz
	LTE Band 2 (Channel Bandwidth: 5 MHz)	1852.5 ~ 1907.5 MHz
	LTE Band 2 (Channel Bandwidth: 10 MHz)	1855.0 ~ 1905.0 MHz
	LTE Band 2 (Channel Bandwidth: 15 MHz)	1857.5 ~ 1902.5 MHz
	LTE Band 2 (Channel Bandwidth: 20 MHz)	1860.0 ~ 1900.0 MHz
Max. EIRP Power	WCDMA	372.39 mW
	LTE Band 2 (Channel Bandwidth: 1.4 MHz)	309.03 mW
	LTE Band 2 (Channel Bandwidth: 3 MHz)	311.17 mW
	LTE Band 2 (Channel Bandwidth: 5 MHz)	322.85 mW
	LTE Band 2 (Channel Bandwidth: 10 MHz)	334.20 mW
	LTE Band 2 (Channel Bandwidth: 15 MHz)	335.74 mW
	LTE Band 2 (Channel Bandwidth: 20 MHz)	351.56 mW
Antenna Type	Refer to Note as below	
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

1. The information of module collocated in the EUT is listed as below.

Module	Brand	Model	EUT Model		
			Trimble Gateway-MA1	Trimble Gateway-BA1	Trimble Gateway-TE1
BT/WLAN Module	msi	BM25	V	V	V
WWAN Module	Quectel	EC25-A	V	V	V

2. The difference between all models are listed as below.

Ant.	Brand	Model	Ant. Type	Remark	EUT Model		
					EUT 1	EUT 2	EUT 3
					Trimble Gateway-MA1	Trimble Gateway-BA1	Trimble Gateway-TE1
WWAN Antenna 1	TAOGLAS	PCS.06.A	SMD Antenna	Internal, Main Antenna	V		V
WWAN Antenna 2	TAOGLAS	PCS.06.B	SMD Antenna	Internal, Aux. Antenna	V	V	V
WWAN Antenna 3	TAOGLAS	MA240.LBI.001	Adhesive Mount Combination Antenna	External, Main Antenna	V		
WWAN Antenna 4	TAOGLAS	MA240.LBI.001	Adhesive Mount Combination Antenna	External, Aux. Antenna	V		
WWAN Antenna 5	PACCAR	PP407031	Exterior-mount Antenna	External, Main Antenna		V	
WLAN Antenna	TAOGLAS	FXP826.07.0120C	FPC Antenna	--	V	V	V

EUT Model	Connector
Trimble Gateway-MA1	a. 1 44-pin Sinbon connector b. 3 Fakra connectors for external antennas c. 1 M13 connector for ethernet
Trimble Gateway-BA1	a. 1 44-pin Sinbon connector b. 2 Fakra connectors for external antennas c. 1 M13 connector for ethernet
Trimble Gateway-TE1	1 44-pin Sinbon connector

3. The antenna gain is listed as below.

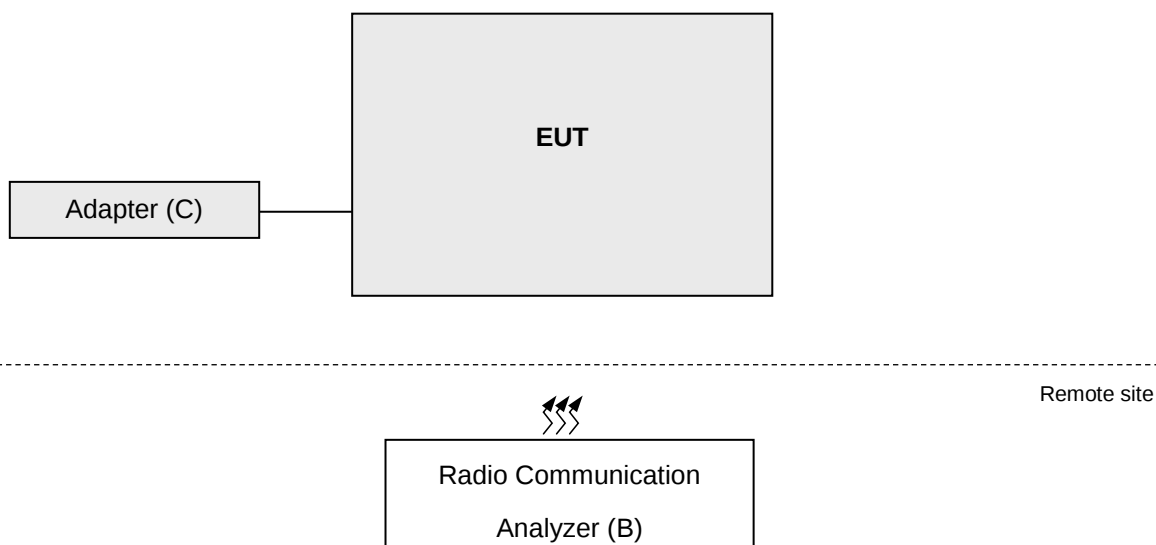
Band		WCDMA II / LTE 2
Gain (dBi)	Antenna 1	3.58
	Antenna 2	3.81
	Antenna 3	2.51
	Antenna 4	1.77
	Antenna 5	3

4. 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.

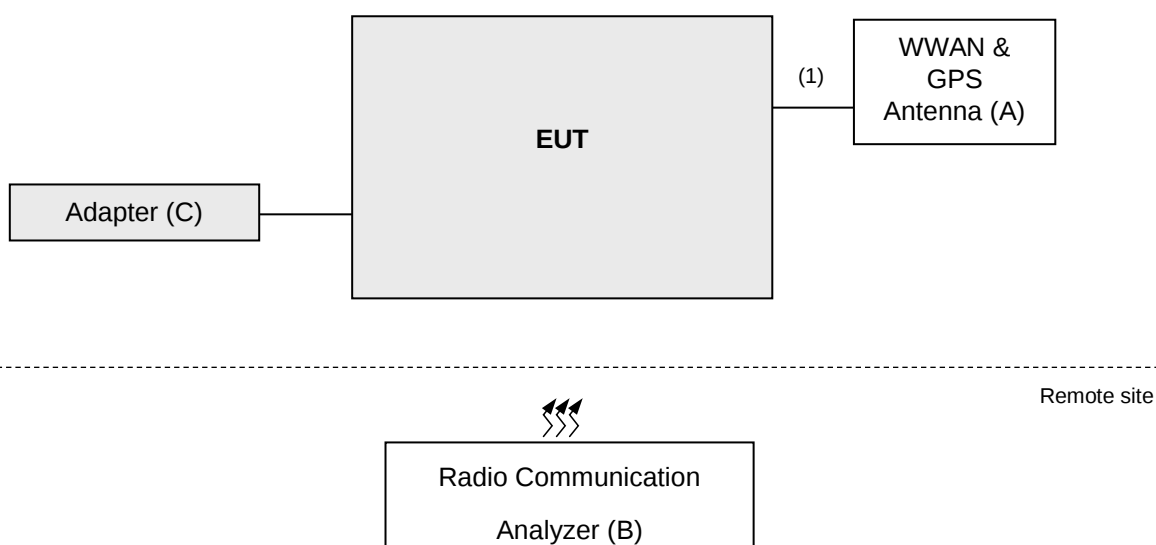
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

Mode A, D



Mode B, C



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	WWAN & GPS Antenna	TAOGLAS	MA240.LBI.001	NA	NA	For Mode B, Provided by client
		PACCAR	PP407031	NA	NA	For Mode C, Provided by client
B	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	NA	--
C	Adapter	TPT	PMW120300W8	NA	NA	Provided by client AC Input: 100-240V~, 50-60Hz, 1.1A MAX DC Output: 12V, 3.0A

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.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RF Cable	3	3	N	0	-

3.3 Test Mode Applicability and Tested Channel Detail

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

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

EUT Configure Mode	Description
A	EUT 1 + Antenna 1 & 2
B	EUT 1 + Antenna 3 & 4
C	EUT 2 + Antenna 2 & 5
D	EUT 3 + Antenna 1 & 2

Band	EUT Configure Mode	EIRP	Radiated Emission
WCDMA	A	-	Y-axis
	B	-	Z-axis
	C	X-plane	X-axis
	D	-	Y-axis
LTE	A	-	Y-axis
	B	-	X-axis
	C	X-plane	X-axis
	D	-	Y-axis

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
C	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
A, B, D	Radiated Emission	9262 to 9538	9538	WCDMA
C	Radiated Emission	9262 to 9538	9262, 9400, 9538	WCDMA

Note:

1. This device was tested under all modulations. The worst case of conducted output power was found in WCDMA modulation. Therefore, all test items were performed under WCDMA mode only.
2. For radiated emissions below 1 GHz, select the worst radiated emission channel (above 1GHz) for final testing.

LTE Band 2

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
C	EIRP	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A, B, D	Radiated Emission	18700 to 19100	19100	20 MHz	QPSK	1 RB / 0 RB Offset
C	Radiated Emission	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	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. Therefore, only EIRP item 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 (above 1GHz) for final testing.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	26 deg. C, 58 % RH	12 Vdc	Cyril Chen / Tim Chen
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cyril Chen / Tim Chen

3.4 EUT Operating Conditions

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

3.5 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 24

ANSI 63.26-2015

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

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA, and 1.4 MHz 、 3 MHz 、 5 MHz 、 10 MHz 、 15 MHz 、 20 MHz for LTE mode, and $VBW \geq 3 \times RBW$.
- 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}$.

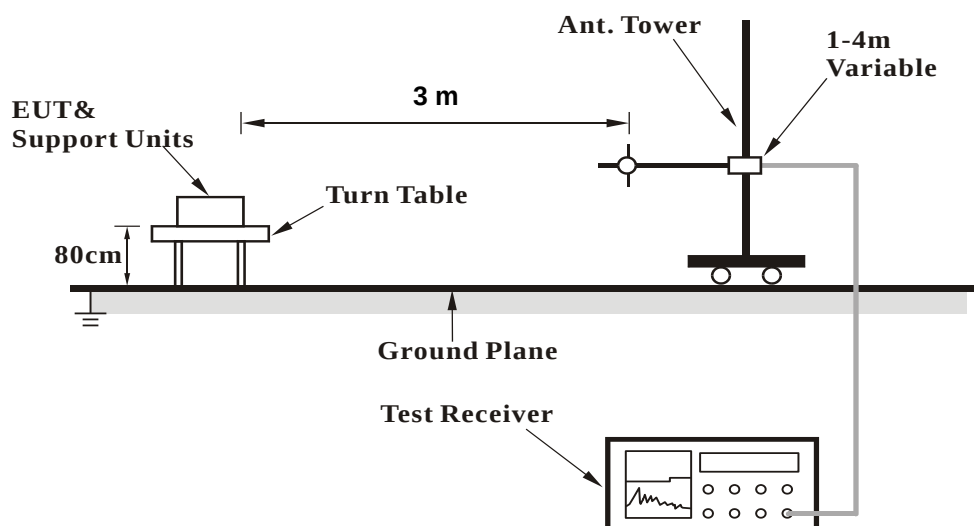
Conducted Power Measurement:

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.

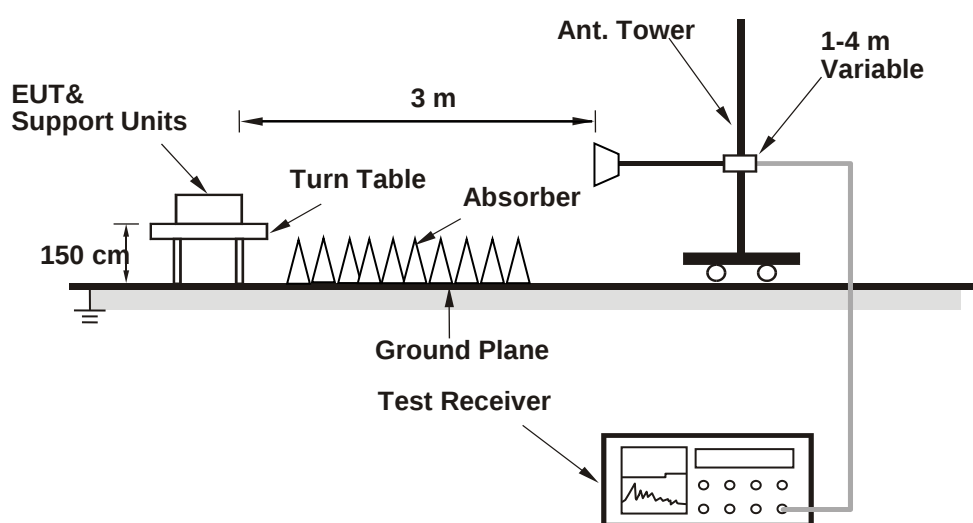
4.1.3 Test Setup

EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

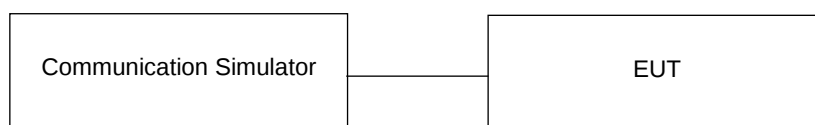


<Radiated Emission above 1 GHz>



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 II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	22.61	22.33	22.66
HSDPA Subtest-1	21.75	21.45	21.79
HSDPA Subtest-2	21.68	21.41	21.74
HSDPA Subtest-3	21.61	21.38	21.68
HSDPA Subtest-4	21.58	21.37	21.61
HSUPA Subtest-1	21.72	21.40	21.74
HSUPA Subtest-2	19.79	19.34	19.78
HSUPA Subtest-3	20.65	20.31	20.80
HSUPA Subtest-4	19.71	19.31	19.73
HSUPA Subtest-5	21.70	21.35	21.72

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18607	Mid Ch 18900	High Ch 19193		Low Ch 18607	Mid Ch 18900	High Ch 19193	
			1850.7 MHz	1880.0 MHz	1909.3 MHz		1850.7 MHz	1880.0 MHz	1909.3 MHz	
2 / 1.4M	1	0	21.81	21.65	21.64	0	20.69	20.75	20.47	1
	1	2	21.55	21.62	21.51	0	20.67	20.50	20.38	1
	1	5	21.44	21.44	21.35	0	20.35	20.31	20.13	1
	3	0	21.39	21.53	21.35	0	20.48	20.38	20.24	1
	3	1	21.28	21.33	21.23	0	20.24	20.19	19.96	1
	3	3	21.29	21.41	21.24	0	20.38	20.19	20.06	1
	6	0	20.64	20.59	20.51	1	19.51	19.57	19.32	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18615	Mid Ch 18900	High Ch 19185		Low Ch 18615	Mid Ch 18900	High Ch 19185	
			1851.5 MHz	1880.0 MHz	1908.5 MHz		1851.5 MHz	1880.0 MHz	1908.5 MHz	
2 / 3M	1	0	21.86	21.86	21.81	0	20.80	20.75	20.71	1
	1	7	21.80	21.74	21.62	0	20.67	20.69	20.55	1
	1	14	21.59	21.69	21.38	0	20.49	20.37	20.41	1
	8	0	20.76	20.72	20.68	1	19.64	19.62	19.61	2
	8	3	20.60	20.57	20.40	1	19.51	19.48	19.48	2
	8	7	20.47	20.47	20.31	1	19.41	19.40	19.40	2
	15	0	20.70	20.68	20.59	1	19.63	19.57	19.55	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18625	Mid Ch 18900	High Ch 19175		Low Ch 18625	Mid Ch 18900	High Ch 19175	
			1852.5 MHz	1880.0 MHz	1907.5 MHz		1852.5 MHz	1880.0 MHz	1907.5 MHz	
2 / 5M	1	0	21.98	21.91	21.80	0	21.00	20.94	20.88	1
	1	12	21.85	21.86	21.72	0	20.84	20.71	20.75	1
	1	24	21.65	21.56	21.51	0	20.66	20.71	20.57	1
	12	0	20.91	20.91	20.75	1	19.73	19.59	19.78	2
	12	6	20.64	20.70	20.60	1	19.62	19.61	19.54	2
	12	13	20.63	20.59	20.42	1	19.51	19.42	19.47	2
	25	0	20.92	20.79	20.76	1	19.75	19.76	19.56	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18650	Mid Ch 18900	High Ch 19150		Low Ch 18650	Mid Ch 18900	High Ch 19150	
			1855.0 MHz	1880.0 MHz	1905.0 MHz		1855.0 MHz	1880.0 MHz	1905.0 MHz	
2 / 10M	1	0	22.15	22.06	22.01	0	21.01	21.06	20.93	1
	1	24	22.05	21.98	21.82	0	20.98	20.89	20.82	1
	1	49	21.88	21.78	21.72	0	20.62	20.78	20.60	1
	25	0	21.01	20.96	20.92	1	19.97	19.88	19.80	2
	25	12	20.81	20.77	20.71	1	19.73	19.71	19.60	2
	25	25	20.73	20.69	20.60	1	19.61	19.69	19.45	2
	50	0	20.85	20.88	20.79	1	19.92	19.84	19.72	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18675	Mid Ch 18900	High Ch 19125		Low Ch 18675	Mid Ch 18900	High Ch 19125	
			1857.5 MHz	1880.0 MHz	1902.5 MHz		1857.5 MHz	1880.0 MHz	1902.5 MHz	
2 / 15M	1	0	22.26	22.20	22.12	0	21.15	21.13	21.06	1
	1	37	22.14	22.06	22.05	0	21.17	21.01	20.91	1
	1	74	22.01	21.94	21.90	0	20.86	20.86	20.68	1
	36	0	21.10	21.05	21.01	1	19.97	19.95	19.83	2
	36	19	20.95	20.88	20.82	1	19.84	19.79	19.81	2
	36	39	20.78	20.77	20.83	1	19.74	19.80	19.74	2
	75	0	21.15	21.09	20.94	1	20.03	20.07	19.81	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 18700	Mid Ch 18900	High Ch 19100		Low Ch 18700	Mid Ch 18900	High Ch 19100	
			1860.0 MHz	1880.0 MHz	1900.0 MHz		1860.0 MHz	1880.0 MHz	1900.0 MHz	
2 / 20M	1	0	22.37	22.34	22.25	0	21.29	21.28	21.24	1
	1	50	22.28	22.25	22.13	0	21.17	21.16	21.12	1
	1	99	22.11	21.96	21.90	0	21.02	21.01	20.80	1
	50	0	21.22	21.25	21.14	1	20.15	20.15	20.01	2
	50	25	21.01	21.07	20.96	1	19.99	20.00	19.90	2
	50	50	20.90	20.95	20.86	1	19.96	19.83	19.81	2
	100	0	21.21	21.20	21.09	1	20.17	20.11	20.09	2

Mode C

EIRP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	9262	1852.4	-17.47	36.57	19.10	81.28	H
	9400	1880.0	-18.01	37.22	19.21	83.37	
	9538	1907.6	-17.82	37.18	19.36	86.30	
	9262	1852.4	-12.21	37.65	25.44	349.95	V
	9400	1880.0	-12.01	37.58	25.57	360.58	
	9538	1907.6	-11.77	37.48	25.71	372.39	

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

LTE Band 2							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18607	1850.7	-19.73	36.57	16.84	48.31	H
	18900	1880.0	-19.91	37.22	17.31	53.83	
	19193	1909.3	-19.33	37.18	17.85	60.95	
	18607	1850.7	-13.78	37.65	23.87	243.78	V
	18900	1880.0	-13.21	37.58	24.37	273.53	
	19193	1909.3	-12.58	37.48	24.90	309.03	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	18607	1850.7	-20.84	36.57	15.73	37.41	H
	18900	1880.0	-21.01	37.22	16.21	41.78	
	19193	1909.3	-20.42	37.18	16.76	47.42	
	18607	1850.7	-14.82	37.65	22.83	191.87	V
	18900	1880.0	-14.26	37.58	23.32	214.78	
	19193	1909.3	-13.63	37.48	23.85	242.66	

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

LTE Band 2							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18615	1851.5	-19.72	36.57	16.85	48.42	H
	18900	1880.0	-19.93	37.22	17.29	53.58	
	19185	1908.5	-19.33	37.18	17.85	60.95	
	18615	1851.5	-13.72	37.65	23.93	247.17	V
	18900	1880.0	-13.16	37.58	24.42	276.69	
	19185	1908.5	-12.55	37.48	24.93	311.17	
Channel Bandwidth: 3 MHz / 16QAM							
X	18615	1851.5	-20.42	36.57	16.15	41.21	H
	18900	1880.0	-20.73	37.22	16.49	44.57	
	19185	1908.5	-20.19	37.18	16.99	50.00	
	18615	1851.5	-14.76	37.65	22.89	194.54	V
	18900	1880.0	-14.24	37.58	23.34	215.77	
	19185	1908.5	-13.60	37.48	23.88	244.34	

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

LTE Band 2							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18625	1852.5	-19.56	36.57	17.01	50.23	H
	18900	1880.0	-19.70	37.22	17.52	56.49	
	19175	1907.5	-19.16	37.18	18.02	63.39	
	18625	1852.5	-13.54	37.65	24.11	257.63	V
	18900	1880.0	-13.02	37.58	24.56	285.76	
	19175	1907.5	-12.39	37.48	25.09	322.85	
Channel Bandwidth: 5 MHz / 16QAM							
X	18625	1852.5	-20.66	36.57	15.91	38.99	H
	18900	1880.0	-20.87	37.22	16.35	43.15	
	19175	1907.5	-20.29	37.18	16.89	48.87	
	18625	1852.5	-14.62	37.65	23.03	200.91	V
	18900	1880.0	-14.04	37.58	23.54	225.94	
	19175	1907.5	-13.43	37.48	24.05	254.10	

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

LTE Band 2							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18650	1855.0	-19.37	36.57	17.20	52.48	H
	18900	1880.0	-19.53	37.22	17.69	58.75	
	19150	1905.0	-18.97	37.18	18.21	66.22	
	18650	1855.0	-13.42	37.65	24.23	264.85	V
	18900	1880.0	-12.87	37.58	24.71	295.80	
	19150	1905.0	-12.24	37.48	25.24	334.20	
Channel Bandwidth: 10 MHz / 16QAM							
X	18650	1855.0	-20.39	36.57	16.18	41.50	H
	18900	1880.0	-20.57	37.22	16.65	46.24	
	19150	1905.0	-20.00	37.18	17.18	52.24	
	18650	1855.0	-14.50	37.65	23.15	206.54	V
	18900	1880.0	-13.92	37.58	23.66	232.27	
	19150	1905.0	-13.34	37.48	24.14	259.42	

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

LTE Band 2							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18675	1857.5	-19.31	36.57	17.26	53.21	H
	18900	1880.0	-19.53	37.22	17.69	58.75	
	19125	1902.5	-18.98	37.18	18.20	66.07	
	18675	1857.5	-13.35	37.65	24.30	269.15	V
	18900	1880.0	-12.83	37.58	24.75	298.54	
	19125	1902.5	-12.22	37.48	25.26	335.74	
Channel Bandwidth: 15 MHz / 16QAM							
X	18675	1857.5	-20.44	36.57	16.13	41.02	H
	18900	1880.0	-20.57	37.22	16.65	46.24	
	19125	1902.5	-20.08	37.18	17.10	51.29	
	18675	1857.5	-14.40	37.65	23.25	211.35	V
	18900	1880.0	-13.85	37.58	23.73	236.05	
	19125	1902.5	-13.23	37.48	24.25	266.07	

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

LTE Band 2							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	18700	1860.0	-19.14	36.57	17.43	55.34	H
	18900	1880.0	-19.31	37.22	17.91	61.80	
	19100	1900.0	-18.75	37.18	18.43	69.66	
	18700	1860.0	-13.20	37.65	24.45	278.61	V
	18900	1880.0	-12.64	37.58	24.94	311.89	
	19100	1900.0	-12.02	37.48	25.46	351.56	
Channel Bandwidth: 20 MHz / 16QAM							
X	18700	1860.0	-20.18	36.57	16.39	43.55	H
	18900	1880.0	-20.34	37.22	16.88	48.75	
	19100	1900.0	-19.80	37.18	17.38	54.70	
	18700	1860.0	-14.26	37.65	23.39	218.27	V
	18900	1880.0	-13.76	37.58	23.82	240.99	
	19100	1900.0	-13.13	37.48	24.35	272.27	

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 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.

4.2.2 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. 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:

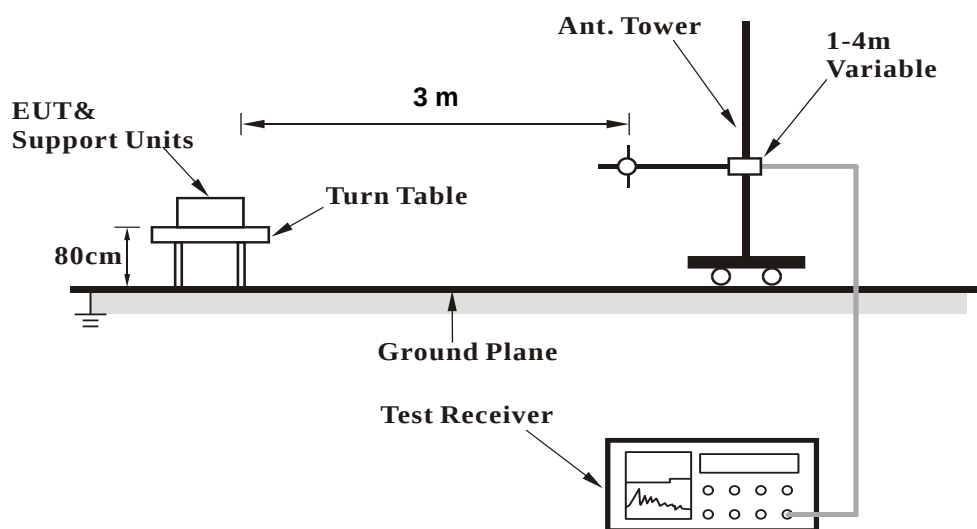
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report

4.2.3 Deviation from Test Standard

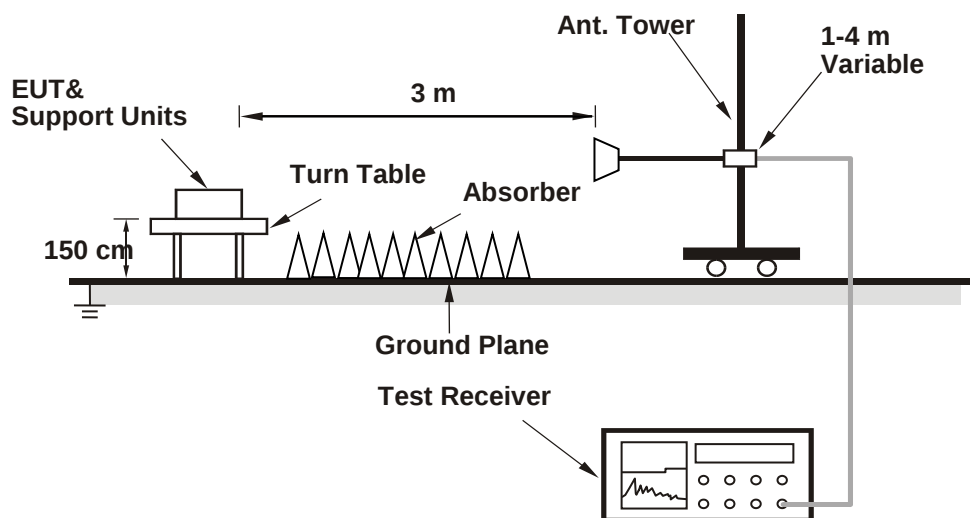
No deviation.

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

Mode A

WCDMA:

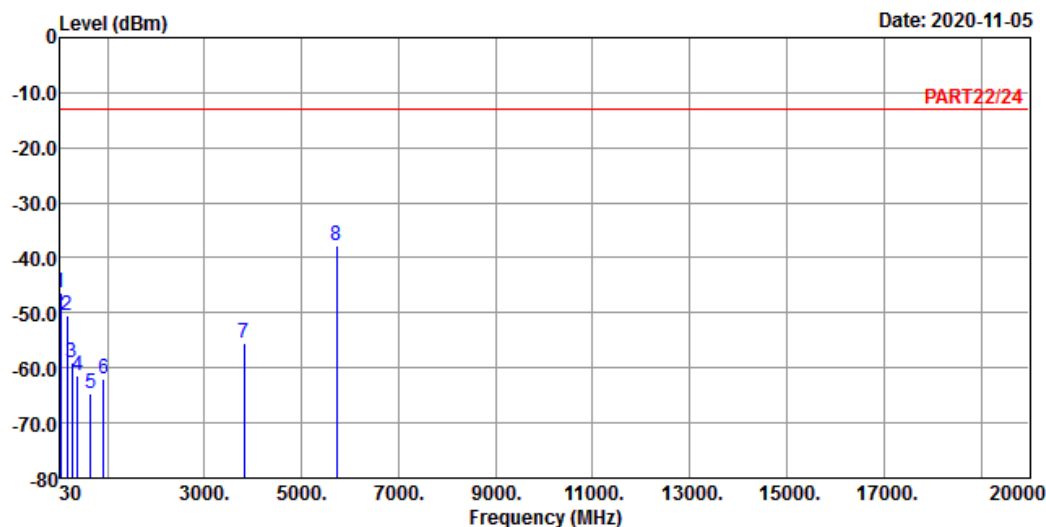
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: Cyril Chen

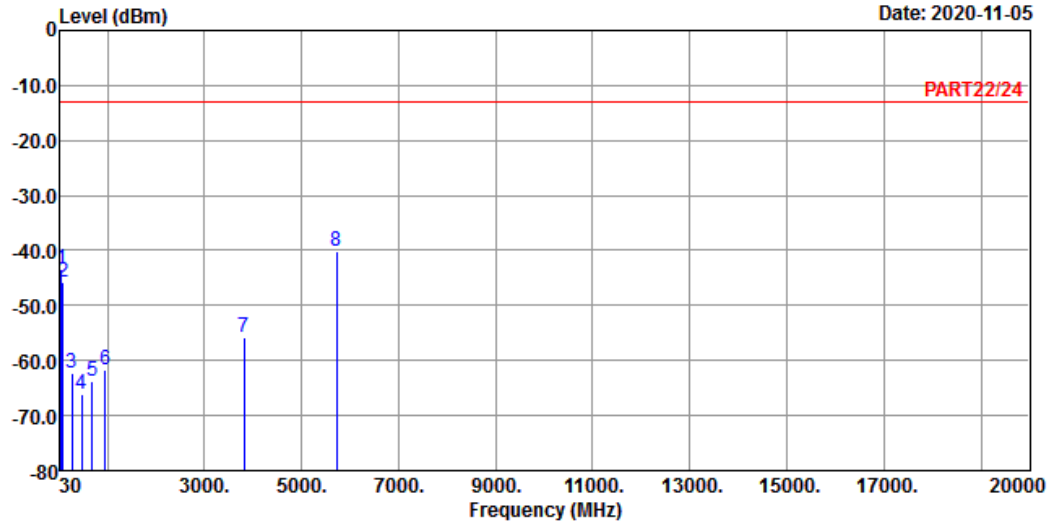
	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	30.00	-46.47	-46.85	-13.00	0.38	-33.47	Peak
2	162.89	-50.63	-45.58	-13.00	-5.05	-37.63	Peak
3	274.44	-59.06	-52.57	-13.00	-6.49	-46.06	Peak
4	392.78	-61.26	-55.27	-13.00	-5.99	-48.26	Peak
5	649.83	-64.51	-63.63	-13.00	-0.88	-51.51	Peak
6	916.58	-61.85	-62.83	-13.00	0.98	-48.85	Peak
7	3815.20	-55.46	-49.06	-13.00	-6.40	-42.46	Peak
8 pp	5722.80	-37.86	-36.17	-13.00	-1.69	-24.86	Peak



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A D T

Data: 6



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : WCDMA Band 2 Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-43.50	-42.03	-13.00	-1.47	-30.50	Peak
2	85.29	-45.90	-34.90	-13.00	-11.00	-32.90	Peak
3	273.47	-62.42	-55.95	-13.00	-6.47	-49.42	Peak
4	472.32	-66.18	-61.05	-13.00	-5.13	-53.18	Peak
5	688.63	-63.67	-63.39	-13.00	-0.28	-50.67	Peak
6	956.35	-61.76	-63.80	-13.00	2.04	-48.76	Peak
7	3815.20	-55.80	-49.40	-13.00	-6.40	-42.80	Peak
8 pp	5722.80	-40.16	-38.47	-13.00	-1.69	-27.16	Peak

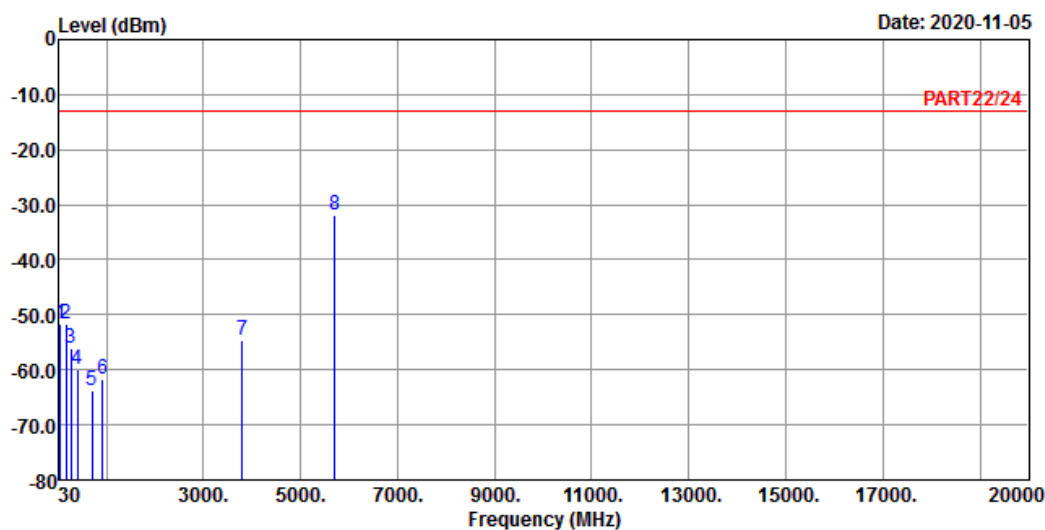
LTE Band 2
Channel Bandwidth: 20 MHz / QPSK
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 5



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 2 QPSK_20M Link_H-CH
 Tested by: Cyril Chen

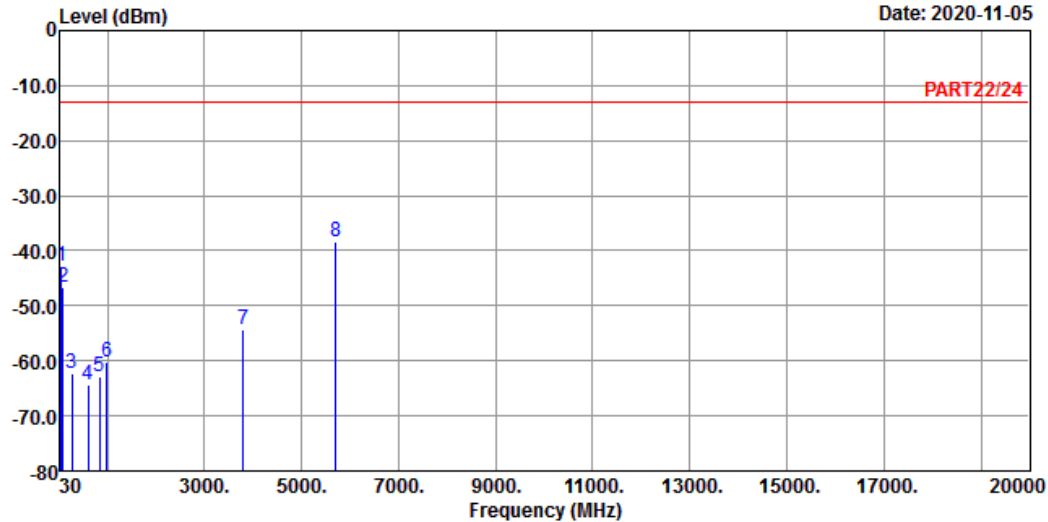
	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	Line Factor	Limit Remark
1	43.58	-51.56	-50.09	-13.00	-1.47	-38.56 Peak
2	163.86	-51.57	-46.45	-13.00	-5.12	-38.57 Peak
3	271.53	-56.21	-49.78	-13.00	-6.43	-43.21 Peak
4	400.54	-59.99	-54.05	-13.00	-5.94	-46.99 Peak
5	697.36	-63.78	-63.64	-13.00	-0.14	-50.78 Peak
6	930.16	-61.76	-63.08	-13.00	1.32	-48.76 Peak
7	3800.00	-54.74	-48.31	-13.00	-6.43	-41.74 Peak
8 pp	5700.00	-31.82	-30.09	-13.00	-1.73	-18.82 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 6



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-42.87	-41.40	-13.00	-1.47	-29.87	Peak
2	85.29	-46.63	-35.63	-13.00	-11.00	-33.63	Peak
3	274.44	-62.42	-55.93	-13.00	-6.49	-49.42	Peak
4	603.27	-64.31	-63.55	-13.00	-0.76	-51.31	Peak
5	830.25	-62.73	-63.20	-13.00	0.47	-49.73	Peak
6	981.57	-60.23	-63.16	-13.00	2.93	-47.23	Peak
7	3800.00	-54.35	-47.92	-13.00	-6.43	-41.35	Peak
8 pp	5700.00	-38.24	-36.51	-13.00	-1.73	-25.24	Peak

Mode B

WCDMA:

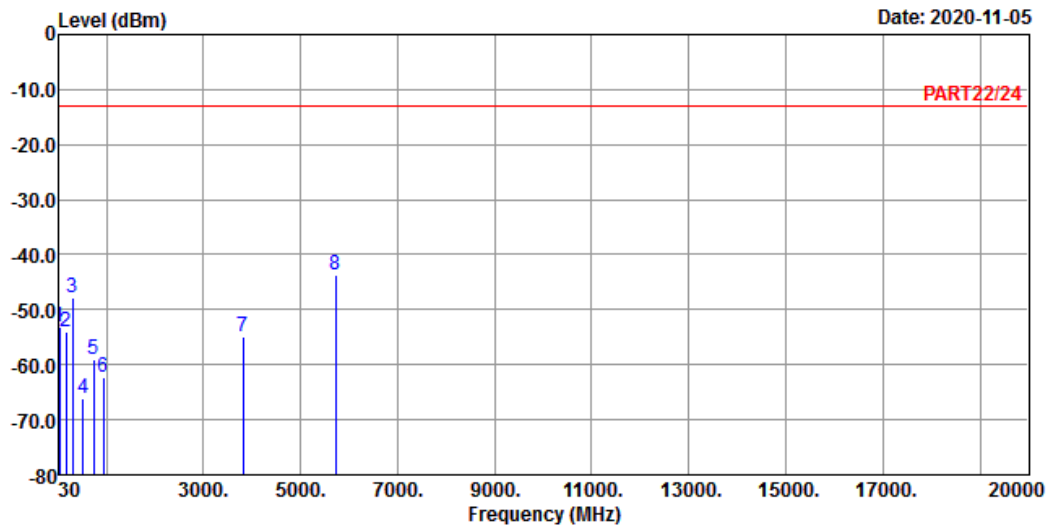
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: Cyril Chen

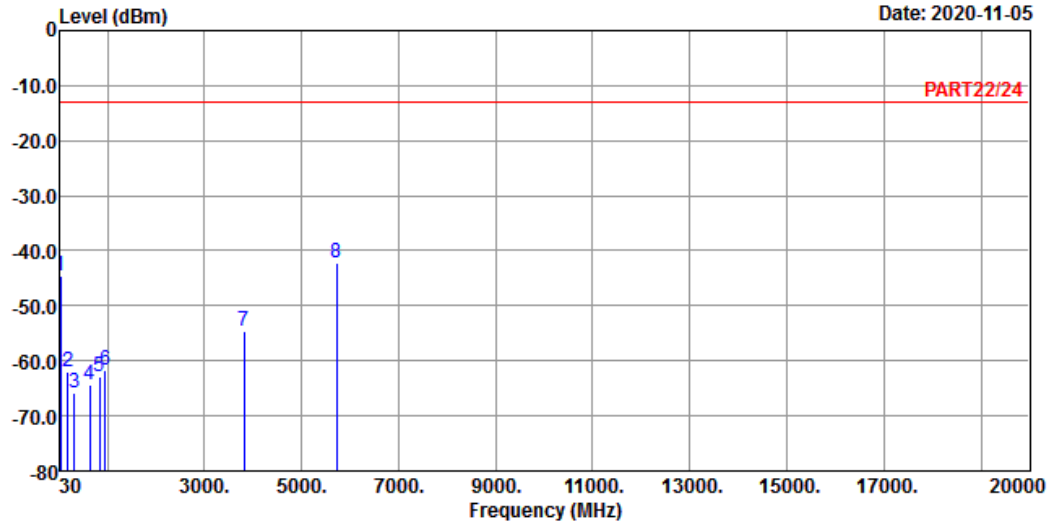
		Read	Limit		Over	
Freq	Level	Level	Line	Factor	Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1	42.61	-53.06	-52.12	-13.00	-0.94	-40.06 Peak
2	162.89	-54.13	-49.08	-13.00	-5.05	-41.13 Peak
3	299.66	-47.76	-40.75	-13.00	-7.01	-34.76 Peak
4	527.61	-66.02	-62.38	-13.00	-3.64	-53.02 Peak
5	745.86	-59.00	-59.80	-13.00	0.80	-46.00 Peak
6	941.80	-62.28	-63.89	-13.00	1.61	-49.28 Peak
7	3815.20	-54.77	-48.37	-13.00	-6.40	-41.77 Peak
8 pp	5722.80	-43.76	-42.07	-13.00	-1.69	-30.76 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : WCDMA Band 2 Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	42.61	-44.72	-43.78	-13.00	-0.94	-31.72	Peak
2	190.05	-61.85	-54.76	-13.00	-7.09	-48.85	Peak
3	322.94	-65.90	-59.24	-13.00	-6.66	-52.90	Peak
4	634.31	-64.40	-63.56	-13.00	-0.84	-51.40	Peak
5	833.16	-62.84	-63.28	-13.00	0.44	-49.84	Peak
6	957.32	-61.63	-63.70	-13.00	2.07	-48.63	Peak
7	3815.20	-54.71	-48.31	-13.00	-6.40	-41.71	Peak
8 pp	5722.80	-42.22	-40.53	-13.00	-1.69	-29.22	Peak

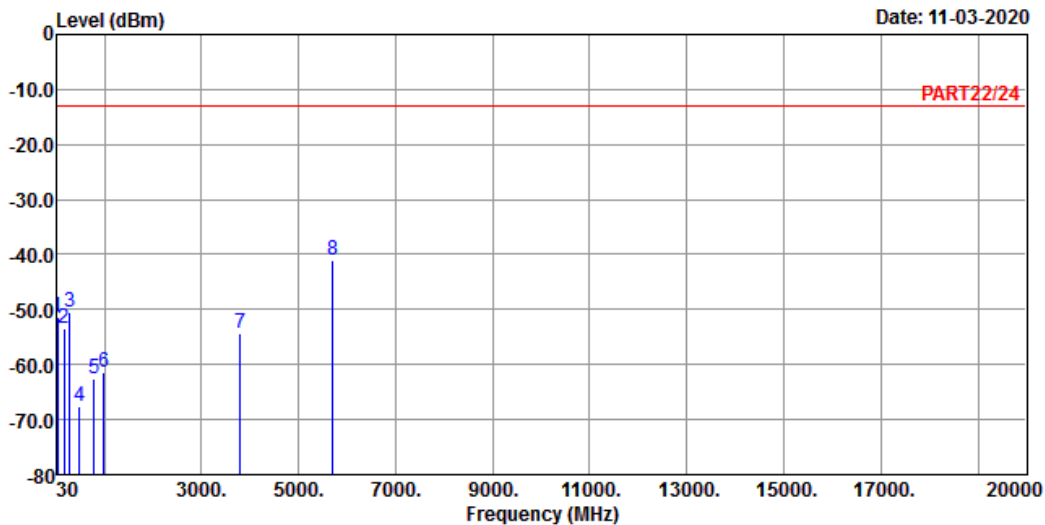
LTE Band 2
Channel Bandwidth: 20 MHz / QPSK
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 2 QPSK_20M Link_H-CH
 Tested by: Cyril Chen

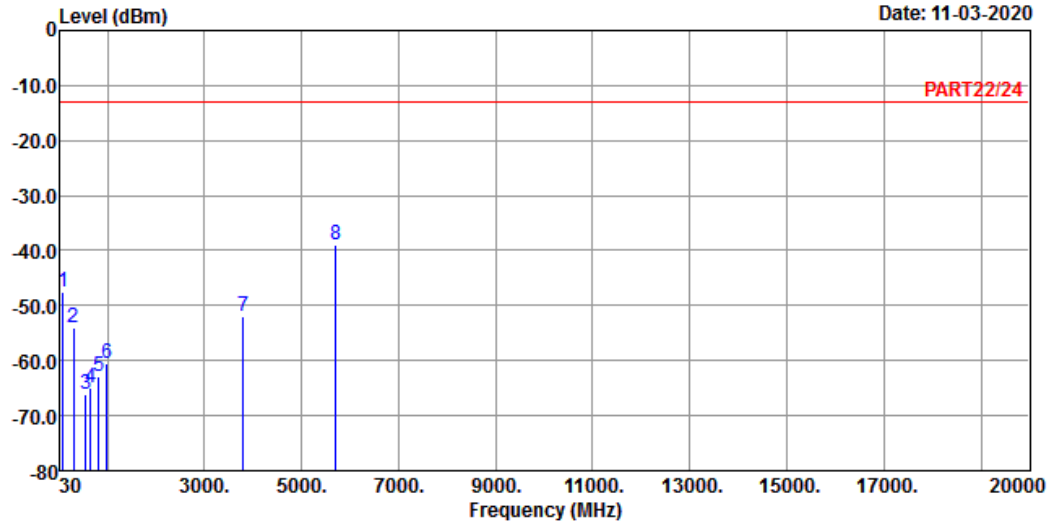
	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	42.61	-51.27	-50.33	-13.00	-0.94	-38.27 Peak
2	162.89	-53.32	-48.27	-13.00	-5.05	-40.32 Peak
3	292.87	-50.44	-43.57	-13.00	-6.87	-37.44 Peak
4	483.96	-67.67	-62.75	-13.00	-4.92	-54.67 Peak
5	781.75	-62.62	-63.41	-13.00	0.79	-49.62 Peak
6	992.24	-61.41	-64.71	-13.00	3.30	-48.41 Peak
7	3800.00	-54.26	-47.83	-13.00	-6.43	-41.26 Peak
8 pp	5700.00	-41.08	-39.35	-13.00	-1.73	-28.08 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	78.50	-47.56	-37.13	-13.00	-10.43	-34.56	Peak
2	298.69	-54.01	-47.02	-13.00	-6.99	-41.01	Peak
3	550.89	-66.21	-63.40	-13.00	-2.81	-53.21	Peak
4	647.89	-64.89	-64.01	-13.00	-0.88	-51.89	Peak
5	817.64	-63.01	-63.59	-13.00	0.58	-50.01	Peak
6	991.27	-60.64	-63.91	-13.00	3.27	-47.64	Peak
7	3800.00	-51.88	-45.45	-13.00	-6.43	-38.88	Peak
8 pp	5700.00	-39.11	-37.38	-13.00	-1.73	-26.11	Peak

Mode C

WCDMA:

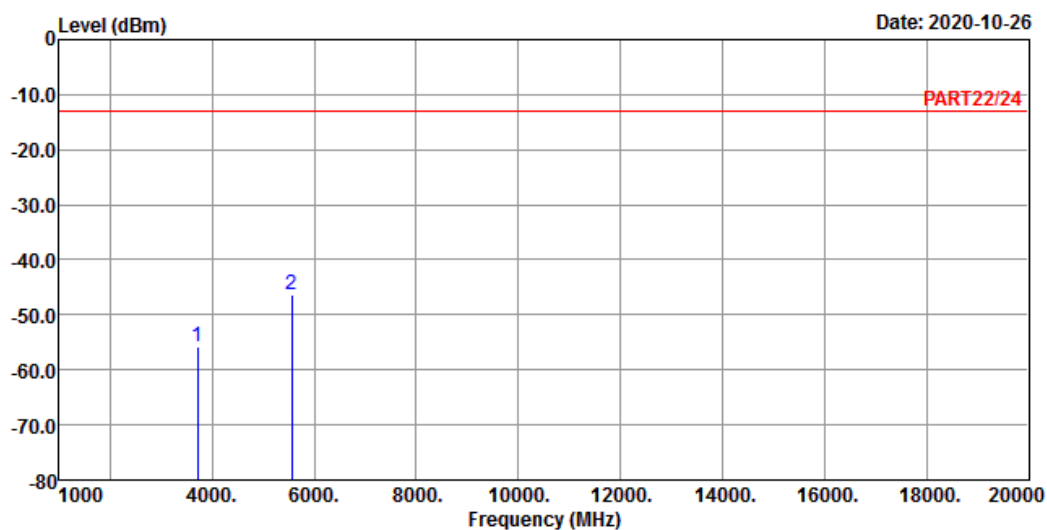
Low Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_L-CH

Tested by: tim-chen

		Read	Limit		Over	
Freq	Level	Level	Line	Factor	Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1	3704.80	-55.78	-48.85	-13.00	-6.93	-42.78 Peak
2 pp	5557.20	-46.31	-44.40	-13.00	-1.91	-33.31 Peak

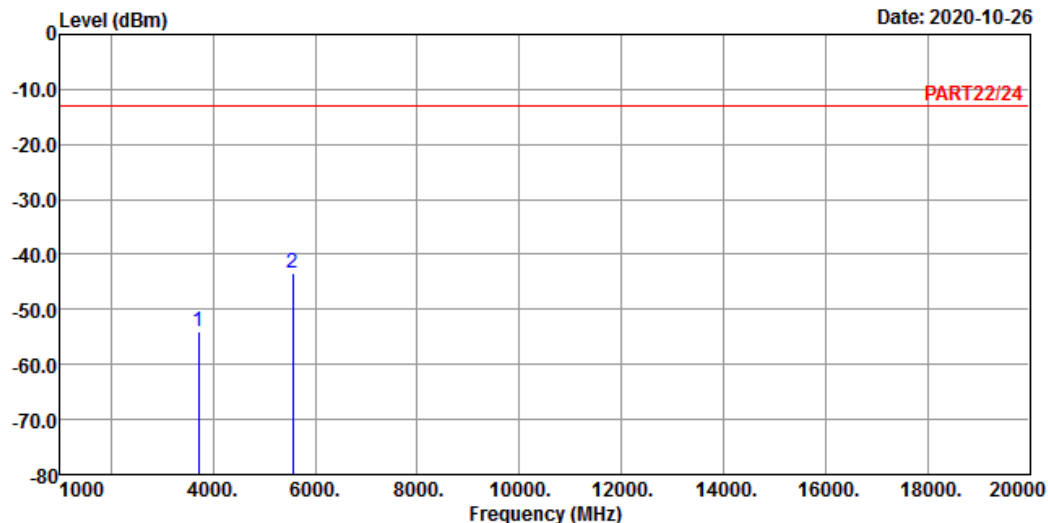


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2020-10-26



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : WCDMA Band 2 Link_L-CH

Tested by: tim-chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3704.80	-53.99	-47.06	-13.00	-6.93	-40.99	Peak
2 pp	5557.20	-43.41	-41.50	-13.00	-1.91	-30.41	Peak

Middle Channel

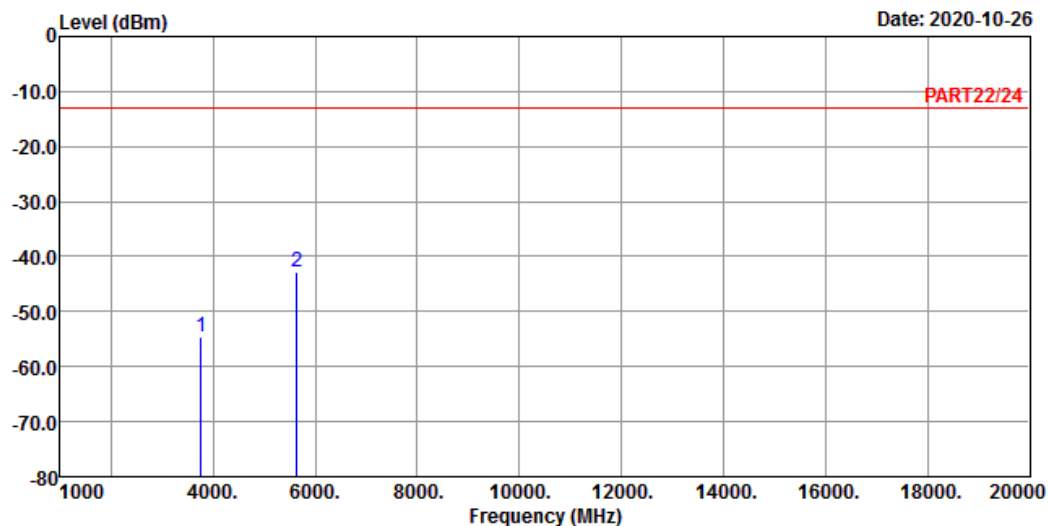


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 2020-10-26



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_M-CH

Tested by: tim-chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3765.00	-54.61	-48.01	-13.00	-6.60	-41.61	Peak
2 pp	5640.00	-42.83	-40.97	-13.00	-1.86	-29.83	Peak

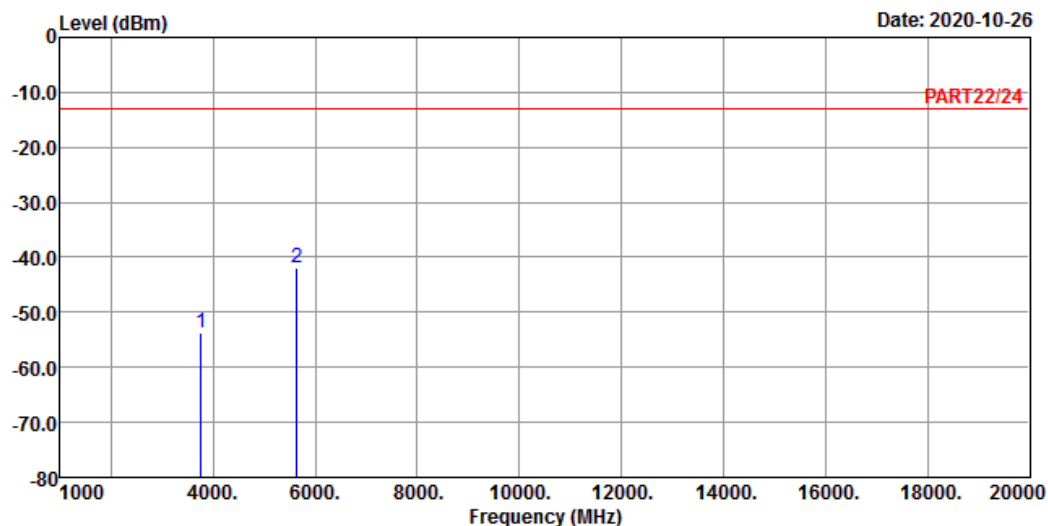


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2020-10-26



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : WCDMA Band 2 Link_M-CH

Tested by: tim-chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-53.72	-47.07	-13.00	-6.65	-40.72	Peak
2 pp	5640.00	-41.95	-40.09	-13.00	-1.86	-28.95	Peak

High Channel

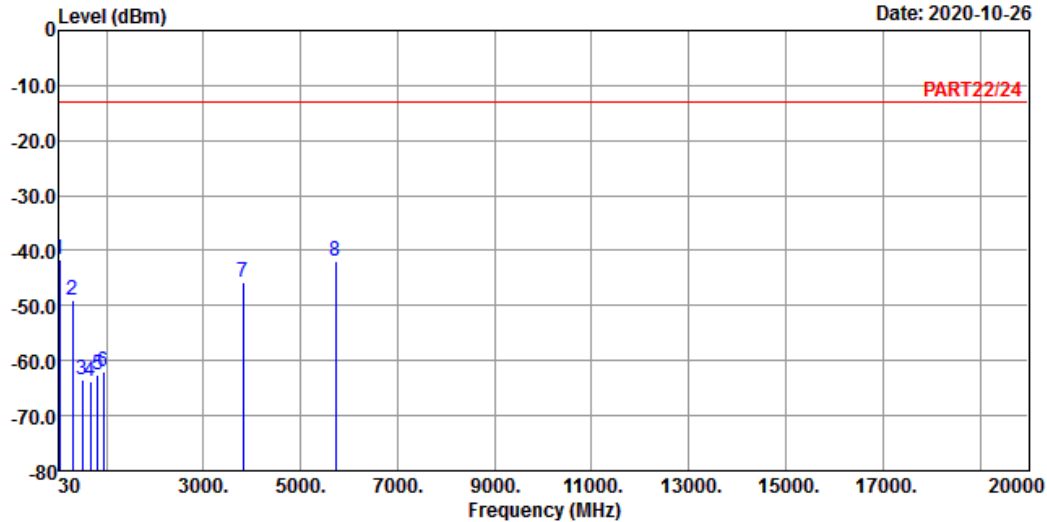


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2020-10-26



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: tim-chen

	Freq	Level	Read Level	Limit Level	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	40.67	-41.61	-41.73	-13.00	0.12	-28.61	Peak
2	299.66	-48.86	-41.85	-13.00	-7.01	-35.86	Peak
3	508.21	-63.34	-59.01	-13.00	-4.33	-50.34	Peak
4	673.11	-63.77	-63.25	-13.00	-0.52	-50.77	Peak
5	820.55	-62.64	-63.19	-13.00	0.55	-49.64	Peak
6	946.65	-61.92	-63.65	-13.00	1.73	-48.92	Peak
7	3815.20	-45.90	-39.50	-13.00	-6.40	-32.90	Peak
8	5722.80	-41.78	-40.09	-13.00	-1.69	-28.78	Peak

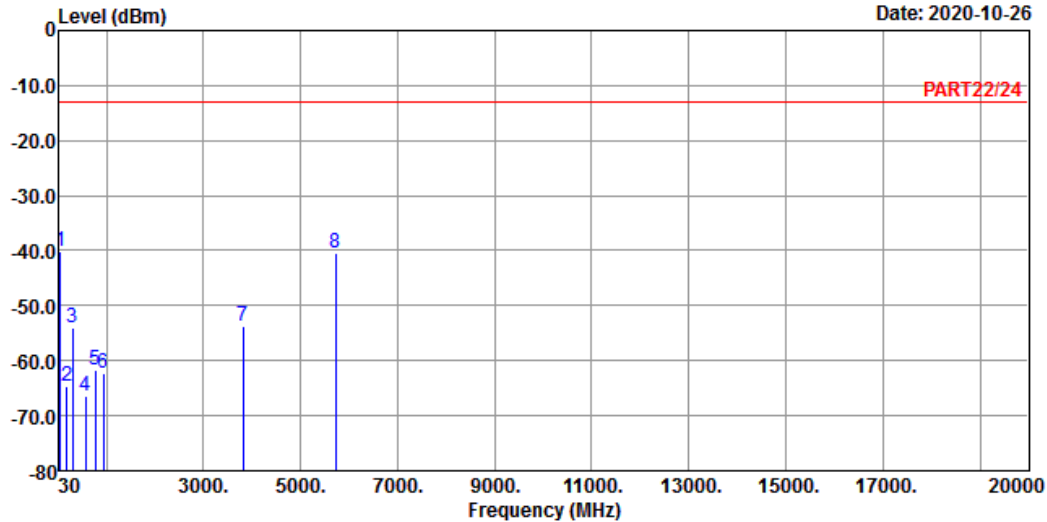


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2020-10-26



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: tim-chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1 pp	43.58	-40.01	-38.54	-13.00	-1.47	-27.01 Peak
2	191.99	-64.74	-57.46	-13.00	-7.28	-51.74 Peak
3	301.60	-54.09	-47.11	-13.00	-6.98	-41.09 Peak
4	570.29	-66.38	-64.38	-13.00	-2.00	-53.38 Peak
5	770.11	-61.84	-62.66	-13.00	0.82	-48.84 Peak
6	942.77	-62.41	-64.04	-13.00	1.63	-49.41 Peak
7	3815.20	-53.60	-47.20	-13.00	-6.40	-40.60 Peak
8	5722.80	-40.45	-38.76	-13.00	-1.69	-27.45 Peak

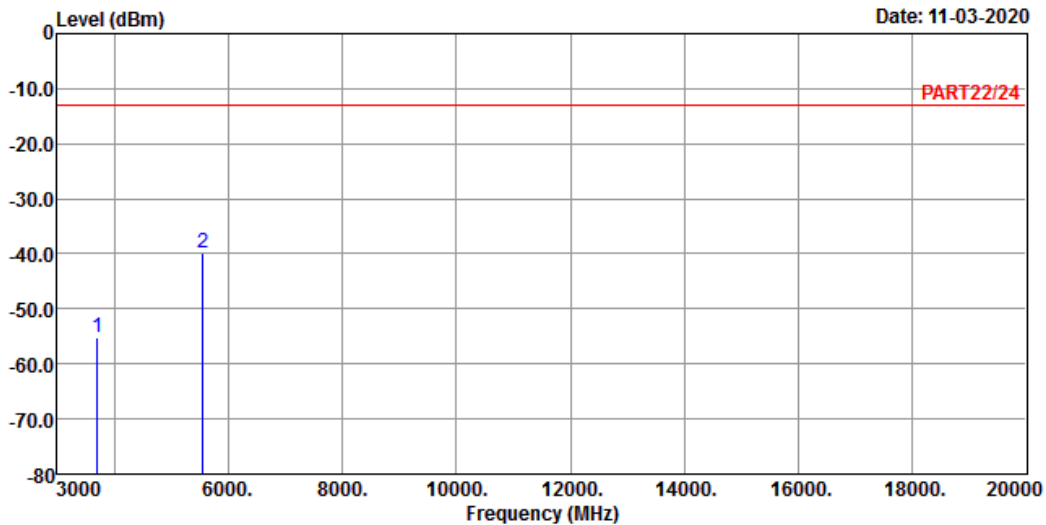
LTE Band 2
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_1.4M Link_L-CH
Tested by: Cyril Chen

		Read	Limit		Over	
Freq	Level	Level	Line	Factor	Limit	Remark
MHz	dBm	dBm	dBm	dB	dB	
1	3701.40	-55.27	-48.34	-13.00	-6.93	-42.27 Peak
2 pp	5552.10	-39.96	-38.06	-13.00	-1.90	-26.96 Peak

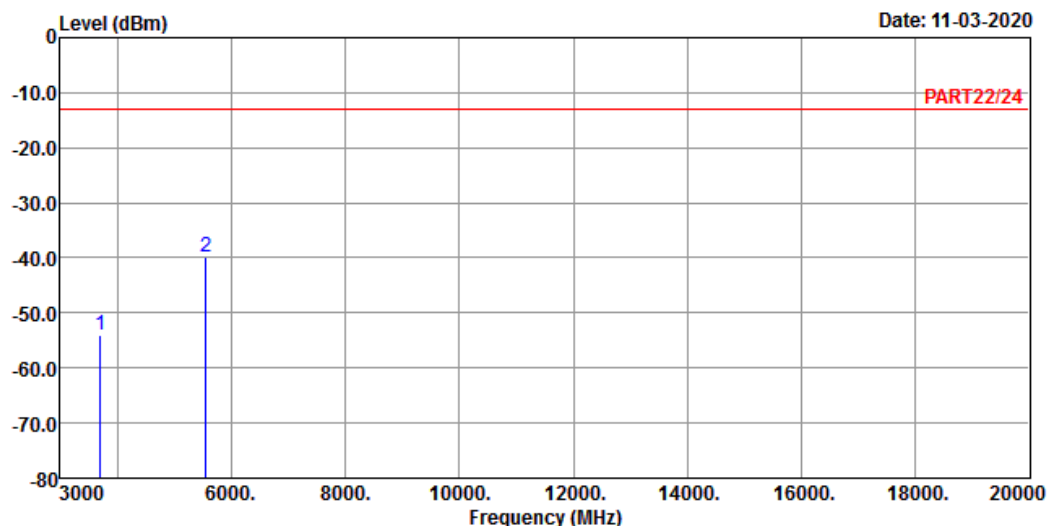


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_1.4M Link_L-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3701.40	-53.95	-47.02	-13.00	-6.93	-40.95	Peak
2 pp	5552.10	-39.88	-37.98	-13.00	-1.90	-26.88	Peak

Middle Channel

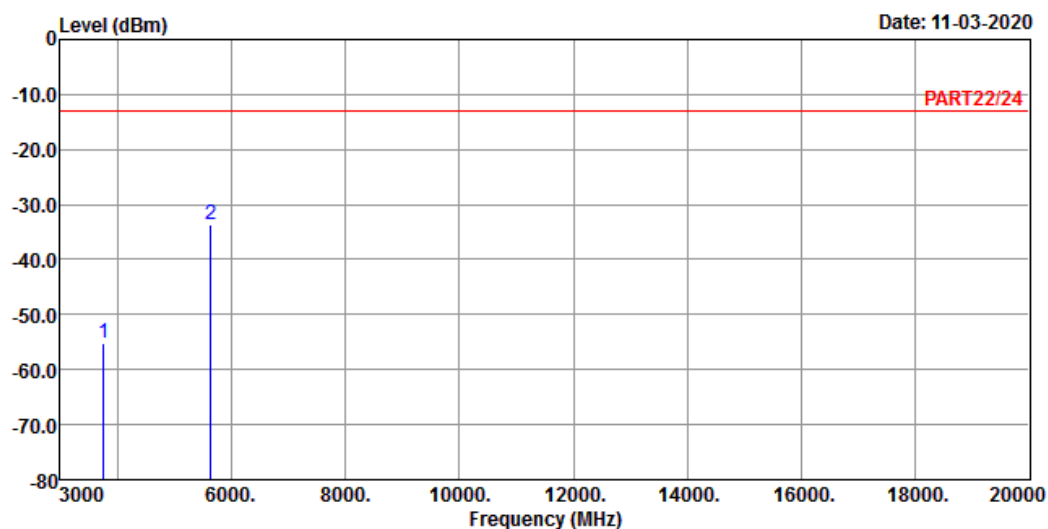


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_1.4M Link_M-CH

Tested by: Cyril Chen

			Read	Limit		Over	
	Freq	Level	Level	Line	Factor	Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-55.20	-48.55	-13.00	-6.65	-42.20	Peak
2 pp	5640.00	-33.79	-31.93	-13.00	-1.86	-20.79	Peak

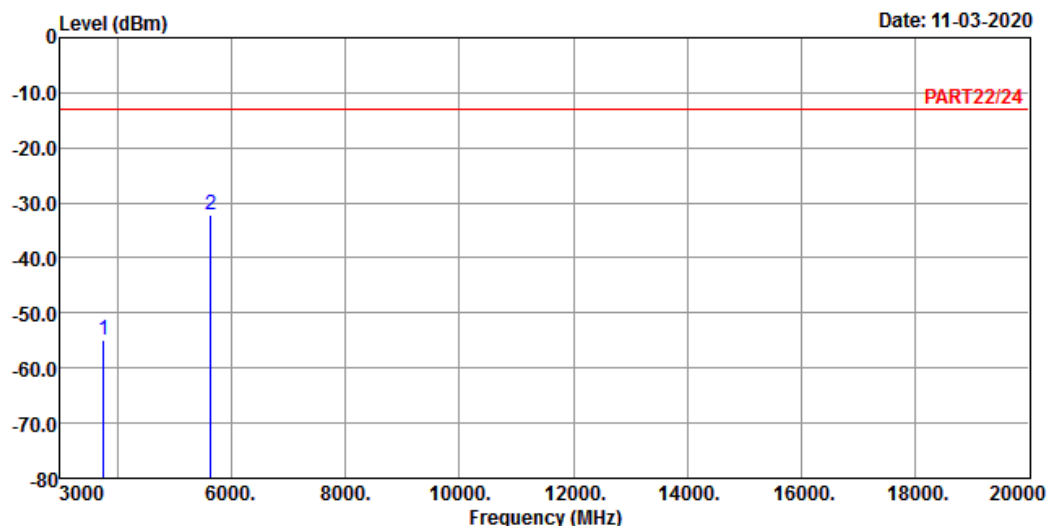


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_1.4M Link_M-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-55.05	-48.40	-13.00	-6.65	-42.05	Peak
2 pp	5640.00	-32.14	-30.28	-13.00	-1.86	-19.14	Peak

High Channel

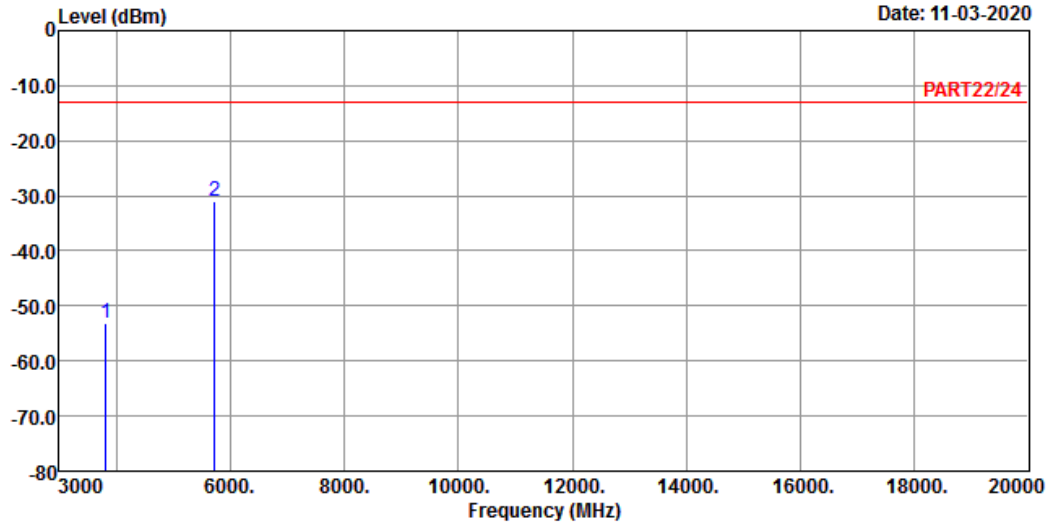


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_1.4M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	3818.60	-53.21	-46.81	-13.00	-6.40	-40.21 Peak
2 pp	5727.90	-30.88	-29.23	-13.00	-1.65	-17.88 Peak

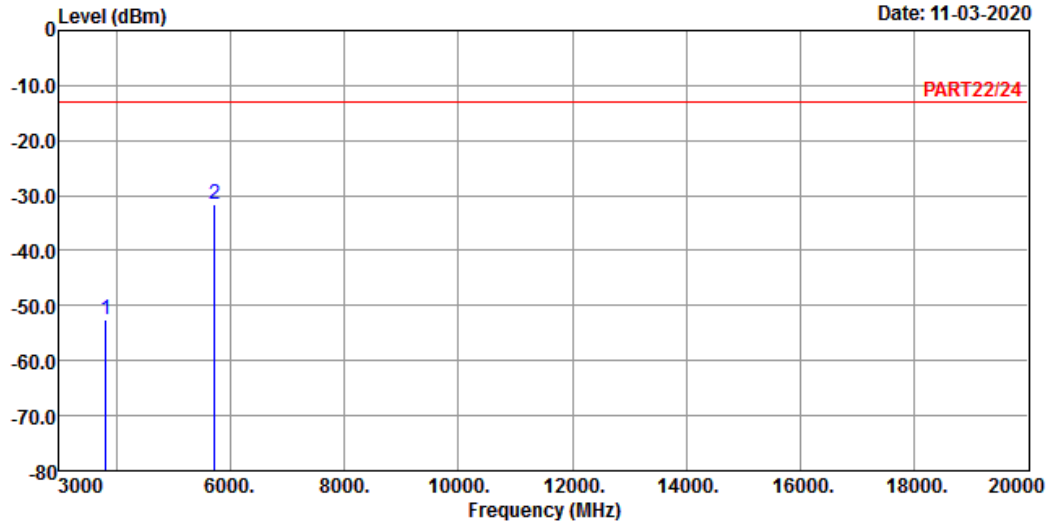


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_1.4M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	3818.60	-52.56	-46.16	-13.00	-6.40	-39.56 Peak
2 pp	5727.90	-31.67	-30.02	-13.00	-1.65	-18.67 Peak

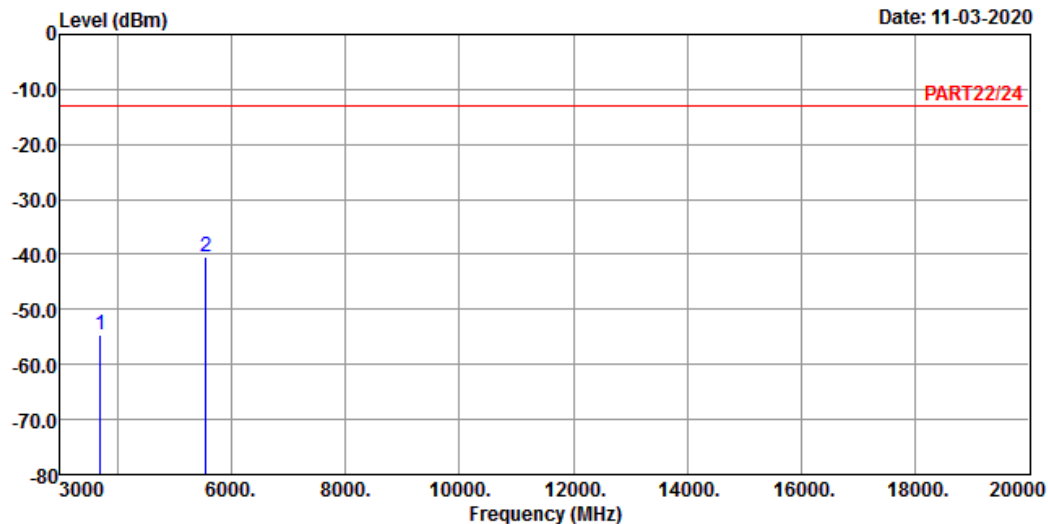
Channel Bandwidth: 5 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_5M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3705.00	-54.70	-47.77	-13.00	-6.93	-41.70	Peak
2 pp	5557.50	-40.36	-38.45	-13.00	-1.91	-27.36	Peak

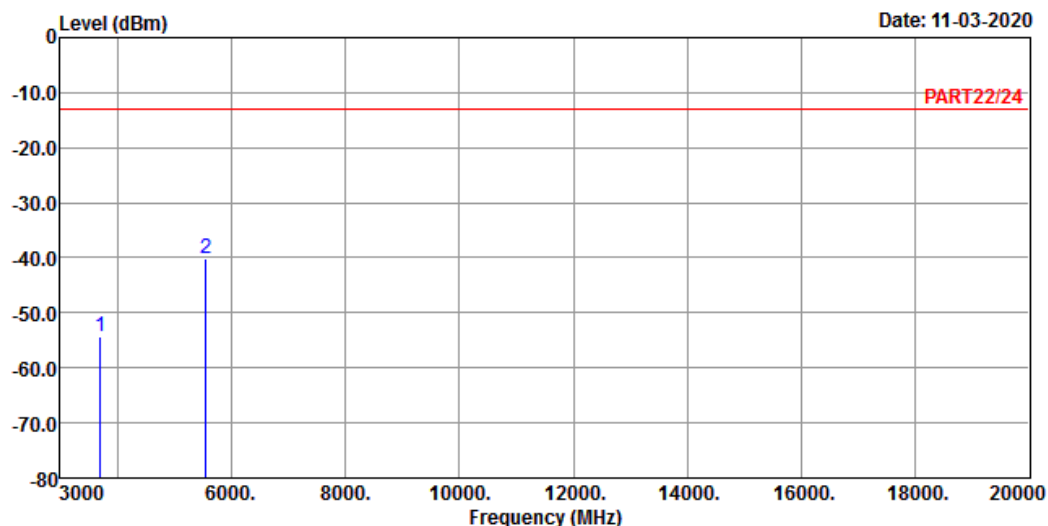


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_5M Link_L-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3705.00	-54.43	-47.50	-13.00	-6.93	-41.43	Peak
2 pp	5557.50	-40.23	-38.32	-13.00	-1.91	-27.23	Peak

Middle Channel

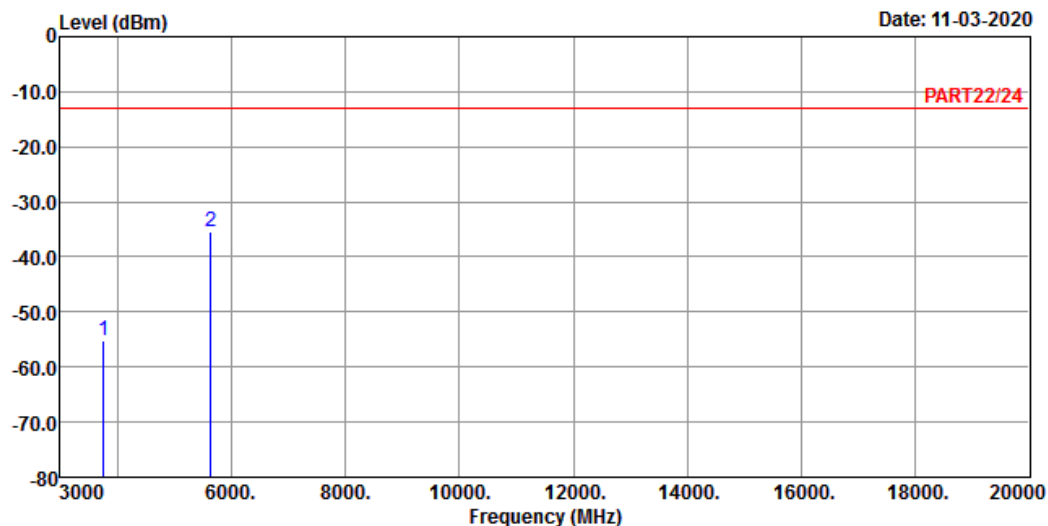


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_5M Link_M-CH

Tested by: Cyril Chen

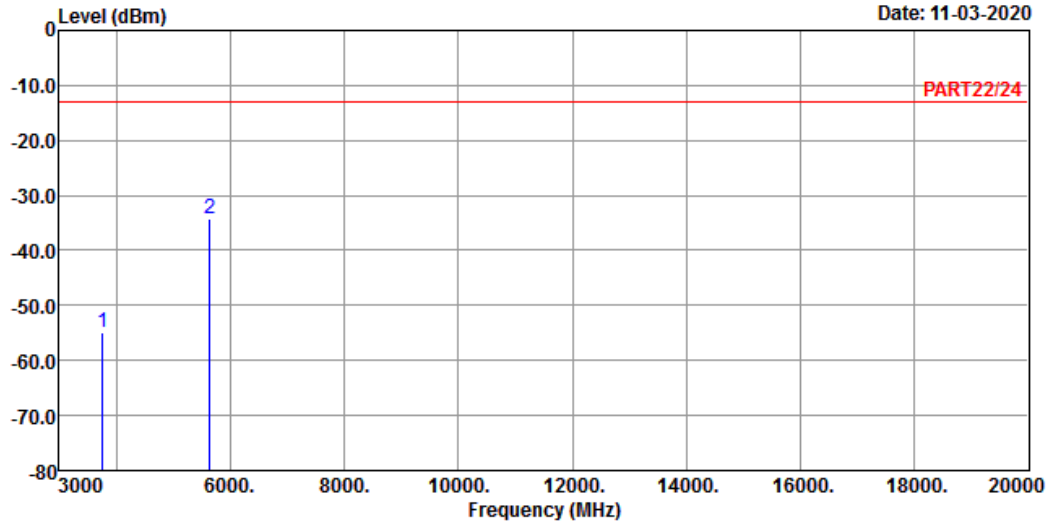
	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	3760.00	-55.30	-48.65	-13.00	-6.65	-42.30 Peak
2 pp	5640.00	-35.50	-33.64	-13.00	-1.86	-22.50 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 2 QPSK_5M Link_M-CH
 Tested by: Cyril Chen

			Read	Limit		Over	
	Freq	Level	Level	Line	Factor	Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-55.00	-48.35	-13.00	-6.65	-42.00	Peak
2	5640.00	-34.24	-32.38	-13.00	-1.86	-21.24	Peak

High Channel

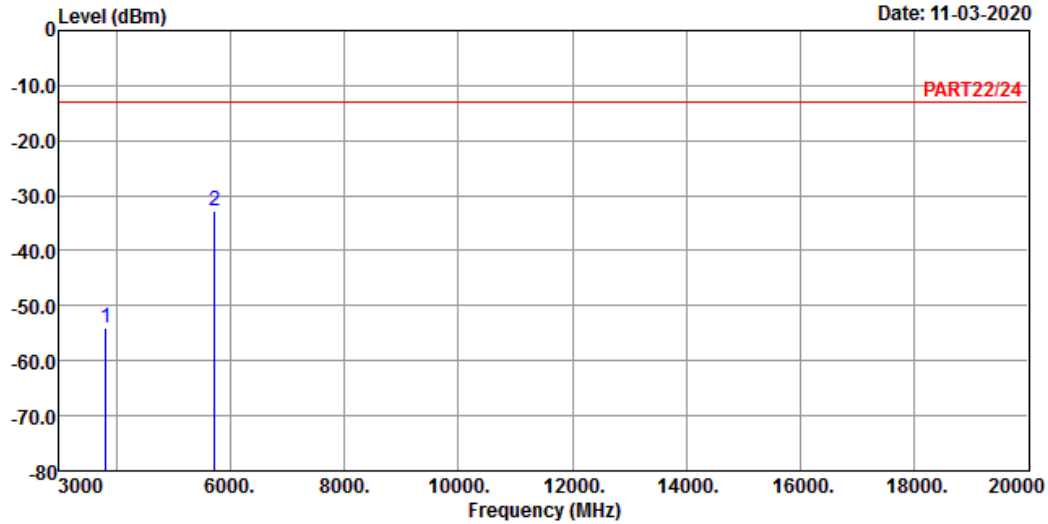


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_5M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3815.00	-54.01	-47.61	-13.00	-6.40	-41.01	Peak
2 pp	5722.50	-32.75	-31.06	-13.00	-1.69	-19.75	Peak

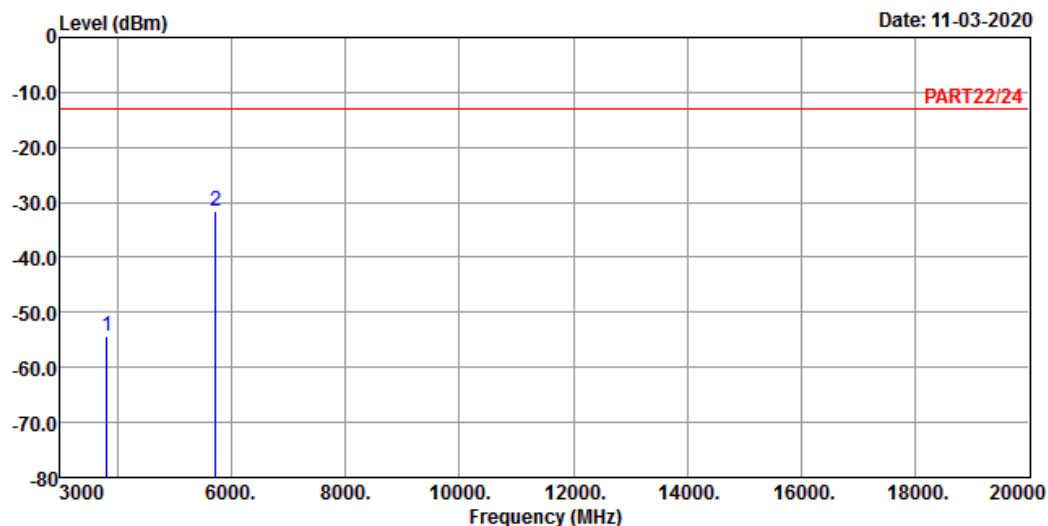


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_5M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	3815.00	-54.30	-47.90	-13.00	-6.40	-41.30 Peak
2 pp	5722.50	-31.54	-29.85	-13.00	-1.69	-18.54 Peak

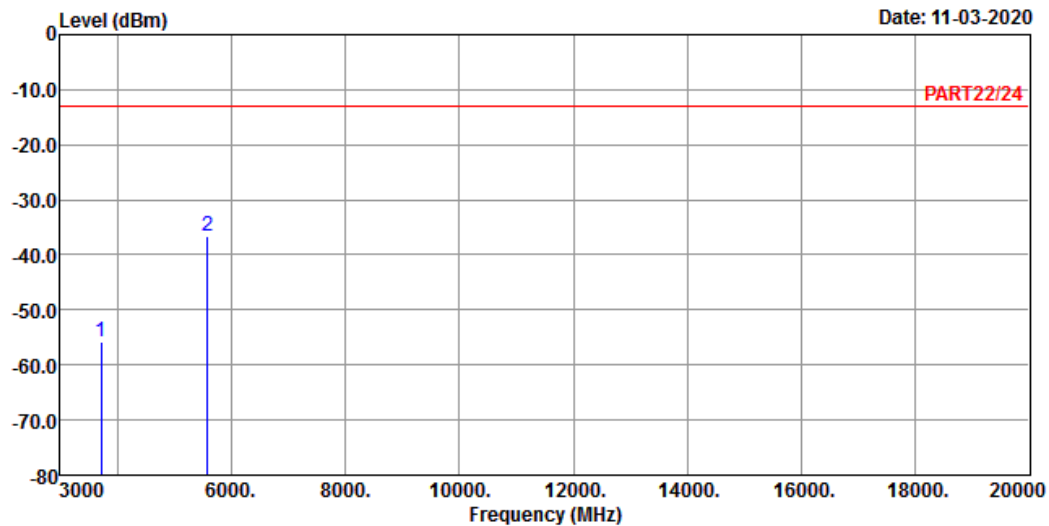
Channel Bandwidth: 20 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_20M Link_L-CH
Tested by: Cyril Chen

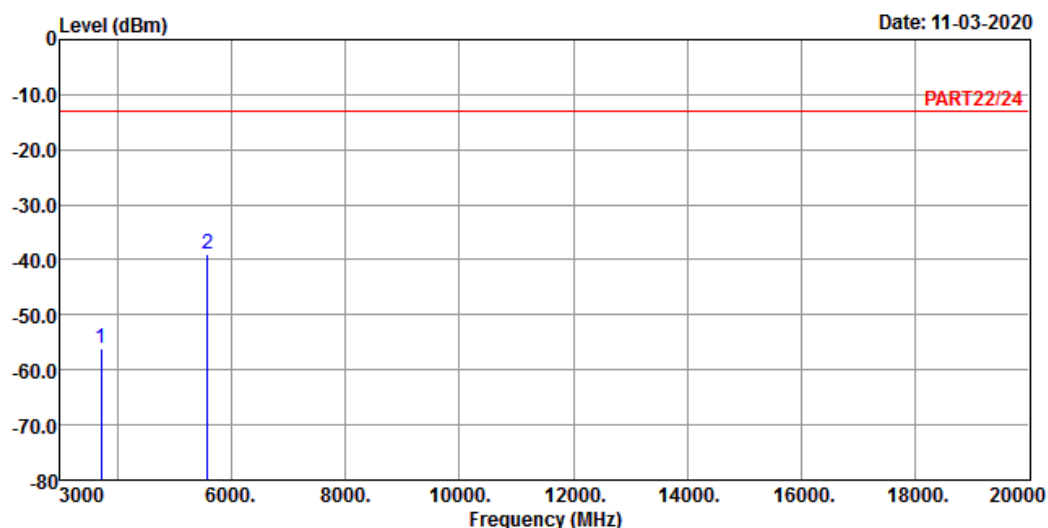
	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	dB
1	3720.00	-55.73	-48.91	-13.00	-6.82	-42.73 Peak
2 pp	5580.00	-36.71	-34.79	-13.00	-1.92	-23.71 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_L-CH

Tested by: Cyril Chen

			Read	Limit		Over	
	Freq	Level	Level	Line	Factor	Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3720.00	-56.00	-49.18	-13.00	-6.82	-43.00	Peak
2 pp	5580.00	-38.89	-36.97	-13.00	-1.92	-25.89	Peak

Middle Channel

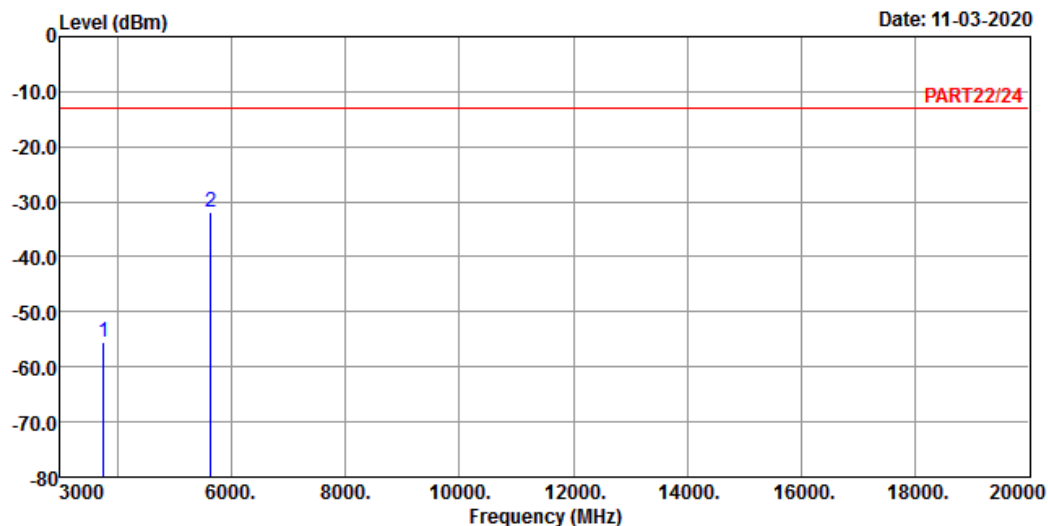


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_20M Link_M-CH.

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	3760.00	-55.58	-48.93	-13.00	-6.65	-42.58 Peak
2 pp	5640.00	-31.84	-29.98	-13.00	-1.86	-18.84 Peak

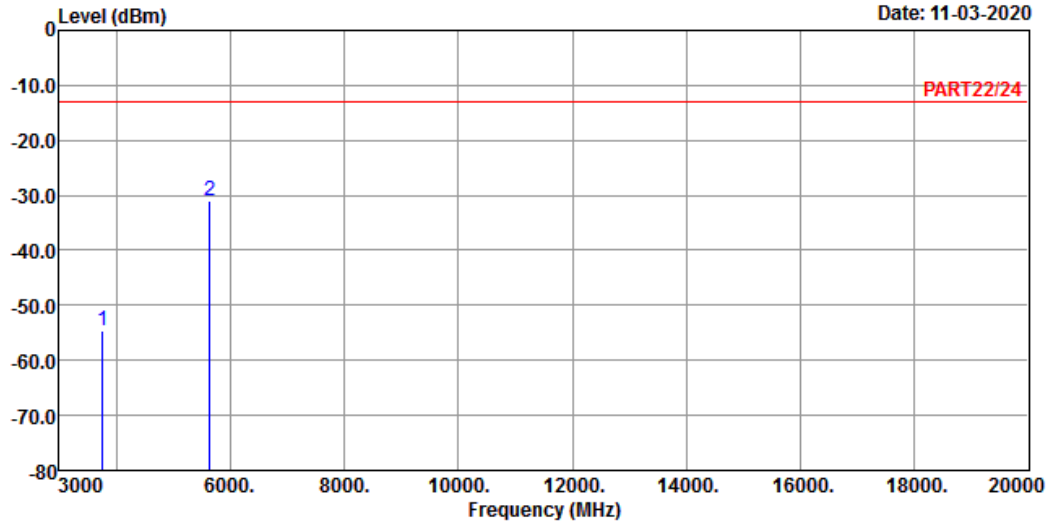


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 11-03-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_M-CH.

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-54.47	-47.82	-13.00	-6.65	-41.47	Peak
2 pp	5640.00	-31.08	-29.22	-13.00	-1.86	-18.08	Peak

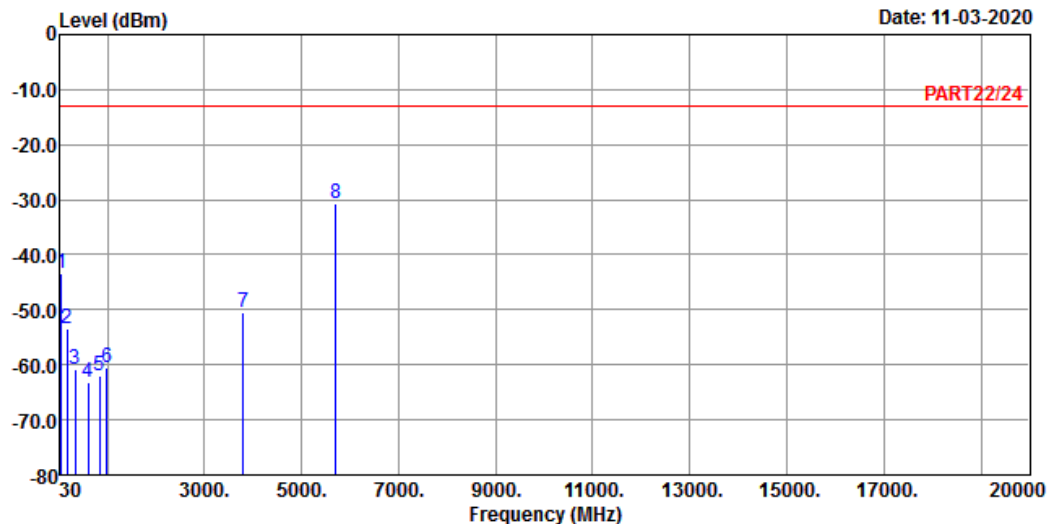
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_20M Link_H-CH
Tested by: Cyril Chen

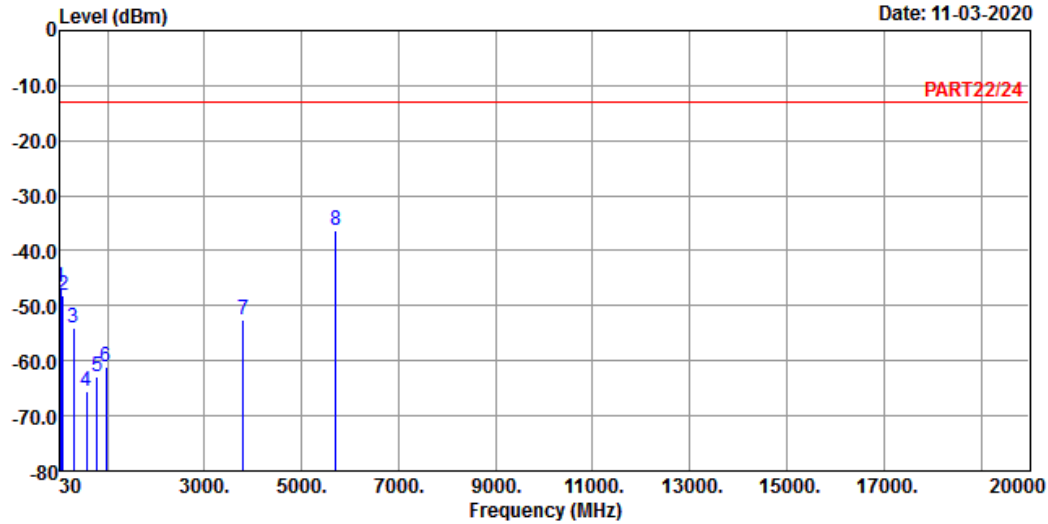
	Freq	Level	Read	Limit	Over	
	MHz	dBm	Level	Line	Factor	Limit Remark
	MHz	dBm	dBm	dBm	dB	dB
1	44.55	-43.49	-41.50	-13.00	-1.99	-30.49 Peak
2	162.89	-53.51	-48.46	-13.00	-5.05	-40.51 Peak
3	332.64	-60.95	-54.44	-13.00	-6.51	-47.95 Peak
4	602.30	-63.28	-62.52	-13.00	-0.76	-50.28 Peak
5	835.10	-61.90	-62.32	-13.00	0.42	-48.90 Peak
6	991.27	-60.46	-63.73	-13.00	3.27	-47.46 Peak
7	3800.00	-50.35	-43.92	-13.00	-6.43	-37.35 Peak
8 pp	5700.00	-30.75	-29.02	-13.00	-1.73	-17.75 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	Factor	Limit Remark
1	35.82	-46.50	-44.97	-13.00	-1.53	-33.50 Peak
2	85.29	-48.12	-37.12	-13.00	-11.00	-35.12 Peak
3	294.81	-53.91	-47.00	-13.00	-6.91	-40.91 Peak
4	568.35	-65.47	-63.39	-13.00	-2.08	-52.47 Peak
5	783.69	-62.96	-63.74	-13.00	0.78	-49.96 Peak
6	970.90	-60.97	-63.52	-13.00	2.55	-47.97 Peak
7	3800.00	-52.65	-46.22	-13.00	-6.43	-39.65 Peak
8 pp	5700.00	-36.37	-34.64	-13.00	-1.73	-23.37 Peak

Mode D

WCDMA:

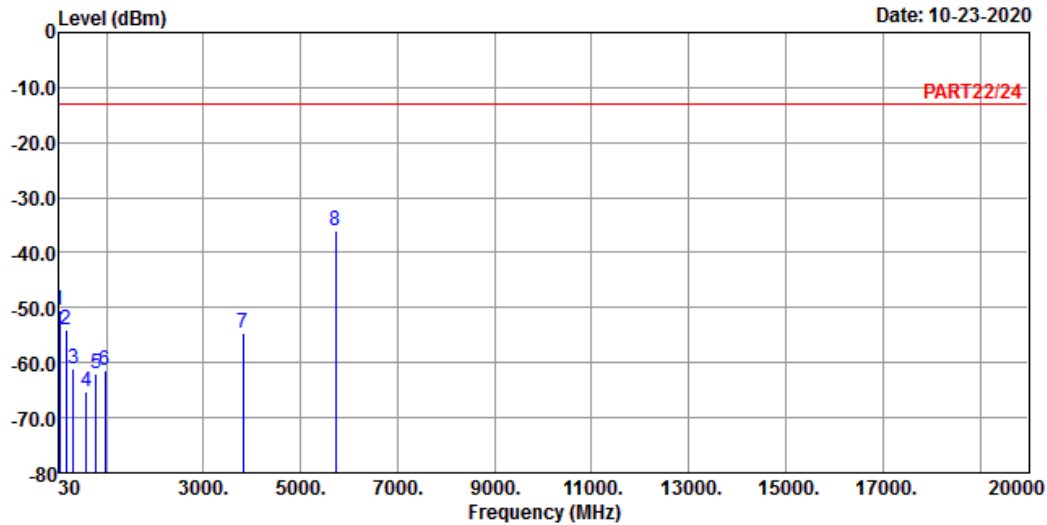
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over		
	MHz	dBm	dBm	dBm	Factor	Limit	Remark
1	41.64	-50.44	-50.03	-13.00	-0.41	-37.44	Peak
2	162.89	-54.14	-49.09	-13.00	-5.05	-41.14	Peak
3	325.85	-61.13	-54.52	-13.00	-6.61	-48.13	Peak
4	595.51	-65.21	-64.26	-13.00	-0.95	-52.21	Peak
5	781.75	-62.07	-62.86	-13.00	0.79	-49.07	Peak
6	973.81	-61.40	-64.05	-13.00	2.65	-48.40	Peak
7	3815.20	-54.49	-48.09	-13.00	-6.40	-41.49	Peak
8 pp	5722.80	-35.88	-34.19	-13.00	-1.69	-22.88	Peak

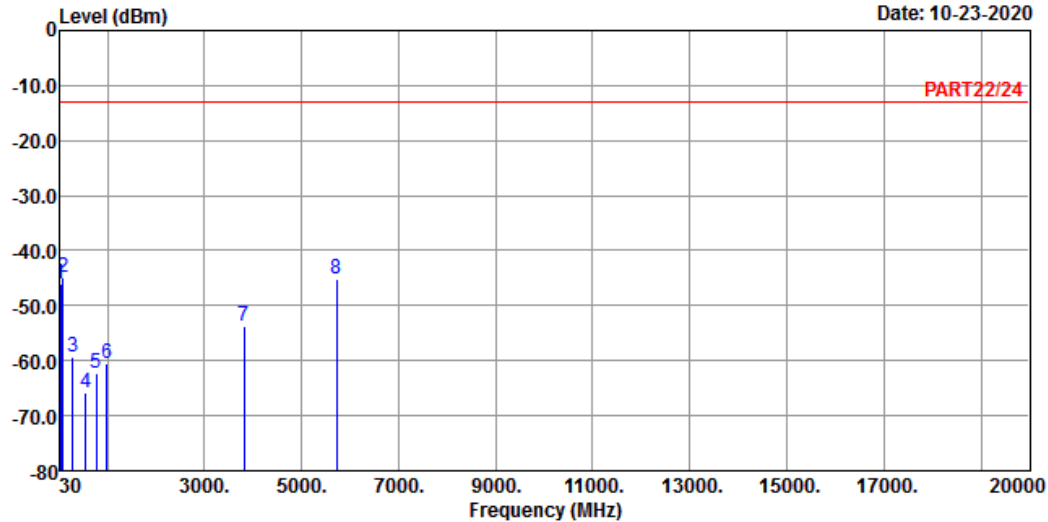


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-23-2020



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : WCDMA Band 2 Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Line Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	42.61	-46.05	-45.11	-13.00	-0.94	-33.05	Peak
2 pp	78.50	-44.96	-34.53	-13.00	-10.43	-31.96	Peak
3	287.05	-59.36	-52.61	-13.00	-6.75	-46.36	Peak
4	559.62	-65.77	-63.32	-13.00	-2.45	-52.77	Peak
5	777.87	-62.15	-62.95	-13.00	0.80	-49.15	Peak
6	984.48	-60.58	-63.61	-13.00	3.03	-47.58	Peak
7	3815.20	-53.71	-47.31	-13.00	-6.40	-40.71	Peak
8	5722.80	-45.22	-43.53	-13.00	-1.69	-32.22	Peak

LTE Band 2

Channel Bandwidth: 20 MHz / QPSK

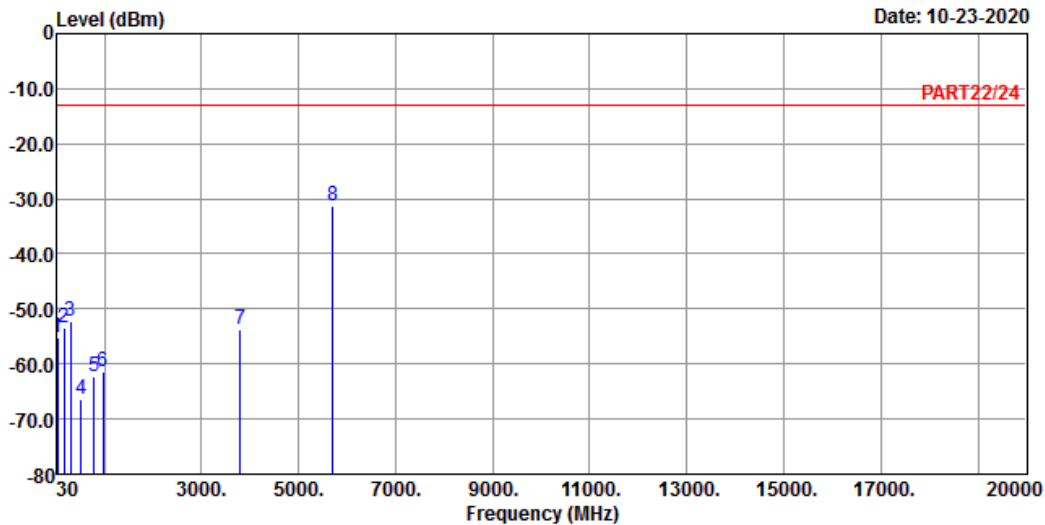
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band 2 QPSK_20M Link_H-CH

Tested by: Cyril Chen

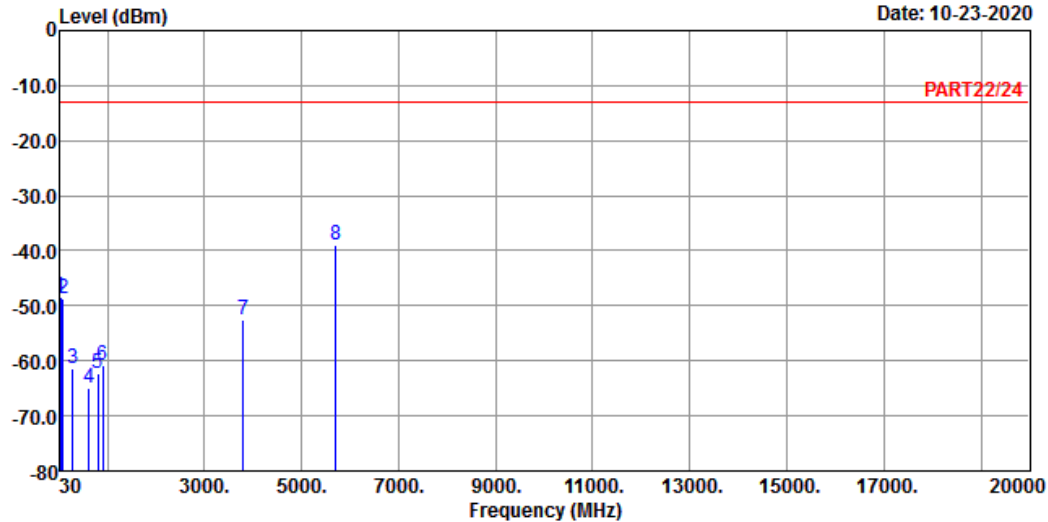
	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	dB	Limit Remark
1	35.82	-55.06	-53.53	-13.00	-1.53	-42.06 Peak
2	162.89	-53.53	-48.48	-13.00	-5.05	-40.53 Peak
3	294.81	-52.22	-45.31	-13.00	-6.91	-39.22 Peak
4	520.82	-66.38	-62.49	-13.00	-3.89	-53.38 Peak
5	782.72	-62.29	-63.08	-13.00	0.79	-49.29 Peak
6	965.08	-61.34	-63.69	-13.00	2.35	-48.34 Peak
7	3800.00	-53.70	-47.27	-13.00	-6.43	-40.70 Peak
8 pp	5700.00	-31.34	-29.61	-13.00	-1.73	-18.34 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 6



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band 2 QPSK_20M Link_H-CH

Tested by: Cyril Chen

	Freq	Level	Read Level	Limit	Over	
	MHz	dBm	dBm	dBm	Factor	Limit Remark
1	33.88	-48.48	-46.90	-13.00	-1.58	-35.48 Peak
2	84.32	-48.57	-37.60	-13.00	-10.97	-35.57 Peak
3	290.93	-61.34	-54.51	-13.00	-6.83	-48.34 Peak
4	621.70	-64.81	-64.00	-13.00	-0.81	-51.81 Peak
5	806.97	-62.29	-62.96	-13.00	0.67	-49.29 Peak
6	910.76	-60.95	-61.79	-13.00	0.84	-47.95 Peak
7	3800.00	-52.43	-46.00	-13.00	-6.43	-39.43 Peak
8 pp	5700.00	-38.93	-37.20	-13.00	-1.73	-25.93 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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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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