

Partial FCC Test Report

(PART 22)

Report No.: RF180817C04-4

FCC ID: NKS-DUO-LTE

Test Model: Trimble Duo

Received Date: Aug. 17, 2018

Test Date: Aug. 29, 2018 ~ Aug. 30, 2018

Issued Date: Sep. 12, 2018

Applicant: PeopleNet Communications Corporation

Address: 4400 Baker Road, Minnetonka, MN 55343, USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
(R.O.C)

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan, R.O.C.

**FCC Registration /
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies

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	8
3.2.1 Description of Support Units	8
3.3 Test Mode Applicability and Tested Channel Detail	9
3.4 EUT Operating Conditions	10
3.5 General Description of Applied Standards	10
4 Test Types and Results	11
4.1 Output Power Measurement	11
4.1.1 Limits of Output Power Measurement	11
4.1.2 Test Procedures	11
4.1.3 Test Setup	12
4.1.4 Test Results	13
4.2 Radiated Emission Measurement	16
4.2.1 Limits of Radiated Emission Measurement	16
4.2.2 Test Procedure	16
4.2.3 Deviation from Test Standard	16
4.2.4 Test Setup	17
4.2.5 Test Results	18
5 Pictures of Test Arrangements	42
Appendix – Information on the Testing Laboratories	43

Release Control Record

Issue No.	Description	Date Issued
RF180817C04-4	Original Release	Sep. 12, 2018

1 Certificate of Conformity

Product: Tablet
Brand: Trimble
Test Model: Trimble Duo
Sample Status: Mass product
Applicant: PeopleNet Communications Corporation
Test Date: Aug. 29, 2018 ~ Aug. 30, 2018
Standards: FCC Part 22, Subpart H

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

Prepared by : Rona Chen , **Date:** Sep. 12, 2018
Rona Chen / Specialist

Approved by : Dylan Chiou , **Date:** Sep. 12, 2018
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
---	Peak to Average Ratio	N/A	Refer to Note
2.1055 22.355	Frequency Stability	N/A	Refer to Note
2.1049	Occupied Bandwidth	N/A	Refer to Note
22.917	Band Edge Measurements	N/A	Refer to Note
2.1051 22.917	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -34.26 dB at 1673.00 MHz.

Note:

This report is a partial report. Therefore, only test item of Effective Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to CETECOM™ report no.: 20835060b/15-C1 and 1-9521/15-01-02-A for module (Brand: GEMALTO, Model: PLS8-X)

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	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. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
HORN Antenna Schwarzbeck	BBHA 9120D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Signal generator KEYSIGHT	N5173B	MY53270724	Apr. 05, 2018	Apr. 04, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-800 0&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019

- 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. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450F-10.

3 General Information

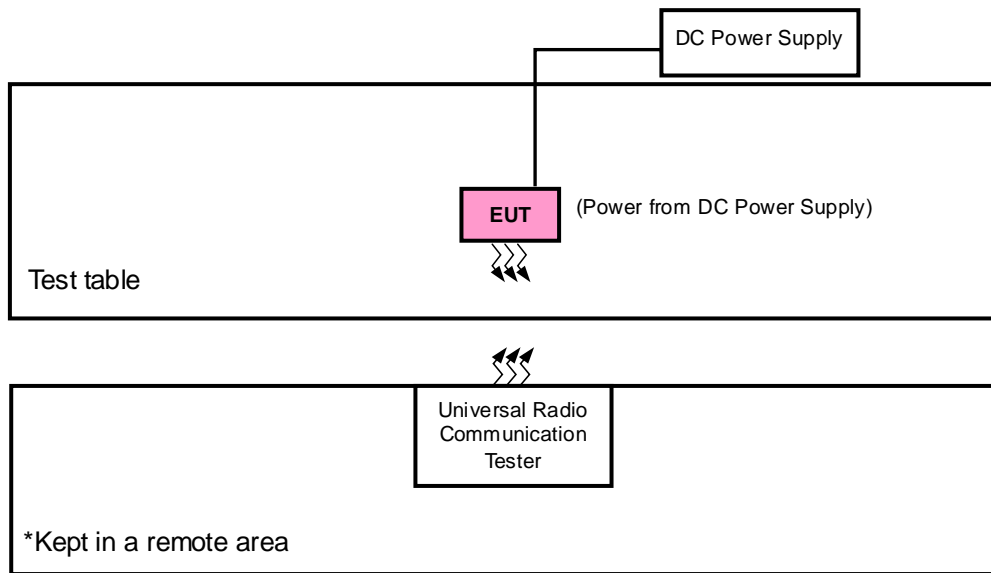
3.1 General Description of EUT

Product	Tablet	
Brand	Trimble	
Test Model	Trimble Duo	
Status of EUT	Mass product	
Power Supply Rating	12.0 Vdc (DC Power Supply)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	826.4 ~ 846.6 MHz
	LTE 5 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 5 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 5 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 5 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
Max. ERP Power	WCDMA	397.19 mW
	LTE 5 (Channel Bandwidth: 1.4 MHz)	19.68 mW
	LTE 5 (Channel Bandwidth: 3 MHz)	20.70 mW
	LTE 5 (Channel Bandwidth: 5 MHz)	21.73 mW
	LTE 5 (Channel Bandwidth: 10 MHz)	22.91 mW
Antenna Type	PIFA Antenna with 4.14 dBi gain	
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

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

3.2 Configuration of System under Test



3.2.1 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	DC Power Supply	Topward	33010D	807748	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).

3.3 Test Mode Applicability and Tested Channel Detail

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

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

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

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
-	Radiated Emission	4132 to 4233	4132, 4182, 4233	WCDMA

LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Radiated Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25 deg. C, 65 % RH	12 Vdc	Jisyong Wang
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang

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

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

FCC 47 CFR Part 2

FCC 47 CFR Part 22

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

4.1.2 Test Procedures

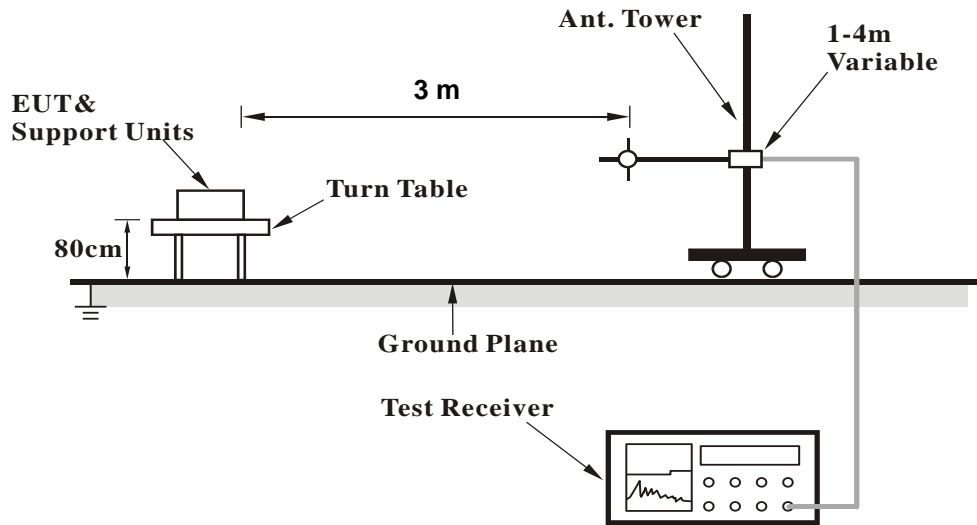
EIRP / ERP Measurement:

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

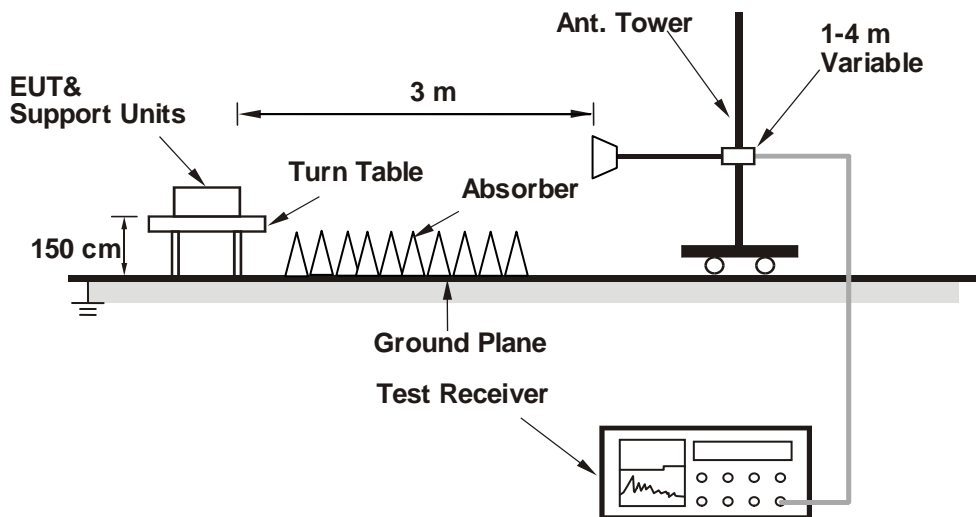
4.1.3 Test Setup

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).

4.1.4 Test Results
ERP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	4132	826.4	-4.48	32.62	25.99	397.19	H
	4182	836.4	-9.84	32.52	20.53	112.98	
	4233	846.6	-10.49	32.65	20.01	100.23	
	4132	826.4	-10.36	32.76	20.25	105.93	V
	4182	836.4	-14.61	32.39	15.63	36.56	
	4233	846.6	-15.41	32.54	14.98	31.48	

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

LTE Band 5							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Z	20407	824.7	-22.12	32.62	8.35	6.84	H
	20525	836.5	-23.55	32.52	6.82	4.81	
	20643	848.3	-20.64	32.65	9.86	9.68	
	20407	824.7	-19.26	32.76	11.35	13.65	V
	20525	836.5	-20.38	32.39	9.86	9.68	
	20643	848.3	-17.45	32.54	12.94	19.68	
Channel Bandwidth: 1.4 MHz / 16QAM							
Z	20407	824.7	-23.08	32.62	7.39	5.48	H
	20525	836.5	-24.51	32.52	5.86	3.85	
	20643	848.3	-21.60	32.65	8.90	7.76	
	20407	824.7	-20.22	32.76	10.39	10.94	V
	20525	836.5	-21.34	32.39	8.90	7.76	
	20643	848.3	-18.41	32.54	11.98	15.78	

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

LTE Band 5							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Z	20415	825.5	-21.90	32.62	8.57	7.19	H
	20525	836.5	-23.33	32.52	7.04	5.06	
	20635	847.5	-20.42	32.65	10.08	10.19	
	20415	825.5	-19.04	32.76	11.57	14.35	V
	20525	836.5	-20.16	32.39	10.08	10.19	
	20635	847.5	-17.23	32.54	13.16	20.70	
Channel Bandwidth: 3 MHz / 16QAM							
Z	20415	825.5	-22.83	32.62	7.64	5.81	H
	20525	836.5	-24.26	32.52	6.11	4.08	
	20635	847.5	-21.35	32.65	9.15	8.22	
	20415	825.5	-19.97	32.76	10.64	11.59	V
	20525	836.5	-21.09	32.39	9.15	8.22	
	20635	847.5	-18.16	32.54	12.23	16.71	

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

LTE Band 5							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Z	20425	826.5	-21.69	32.62	8.78	7.55	H
	20525	836.5	-23.12	32.52	7.25	5.31	
	20625	846.5	-20.21	32.65	10.29	10.69	
	20425	826.5	-18.83	32.76	11.78	15.07	V
	20525	836.5	-19.95	32.39	10.29	10.69	
	20625	846.5	-17.02	32.54	13.37	21.73	
Channel Bandwidth: 5 MHz / 16QAM							
Z	20425	826.5	-22.66	32.62	7.81	6.04	H
	20525	836.5	-24.09	32.52	6.28	4.25	
	20625	846.5	-21.18	32.65	9.32	8.55	
	20425	826.5	-19.80	32.76	10.81	12.05	V
	20525	836.5	-20.92	32.39	9.32	8.55	
	20625	846.5	-17.99	32.54	12.40	17.38	

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

LTE Band 5							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Z	20450	829.0	-21.46	32.62	9.01	7.96	H
	20525	836.5	-22.89	32.52	7.48	5.60	
	20600	844.0	-19.98	32.65	10.52	11.27	
	20450	829.0	-18.60	32.76	12.01	15.89	V
	20525	836.5	-19.72	32.39	10.52	11.27	
	20600	844.0	-16.79	32.54	13.60	22.91	
Channel Bandwidth: 10 MHz / 16QAM							
Z	20425	826.5	-22.48	32.62	7.99	6.30	H
	20525	836.5	-23.91	32.52	6.46	4.43	
	20625	846.5	-21.00	32.65	9.50	8.91	
	20425	826.5	-19.62	32.76	10.99	12.56	V
	20525	836.5	-20.74	32.39	9.50	8.91	
	20625	846.5	-17.81	32.54	12.58	18.11	

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

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. 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.

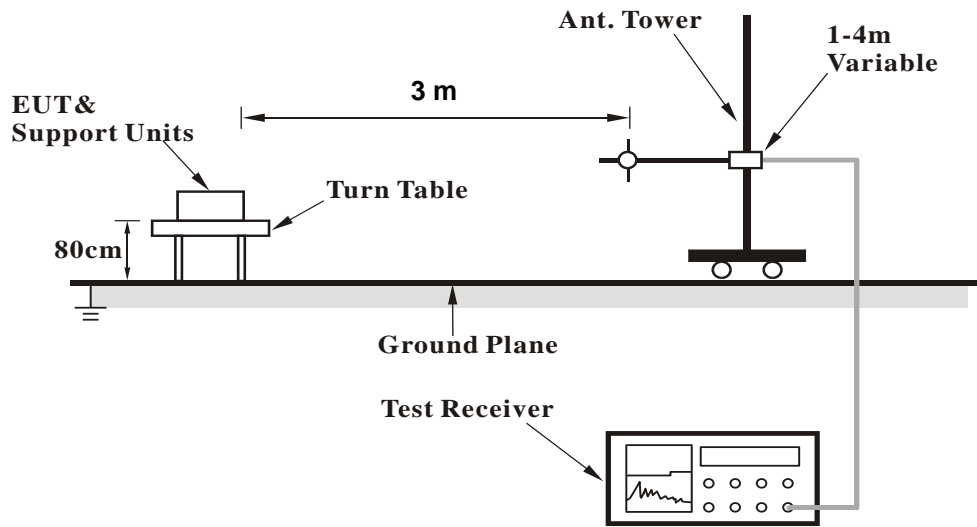
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.2.3 Deviation from Test Standard

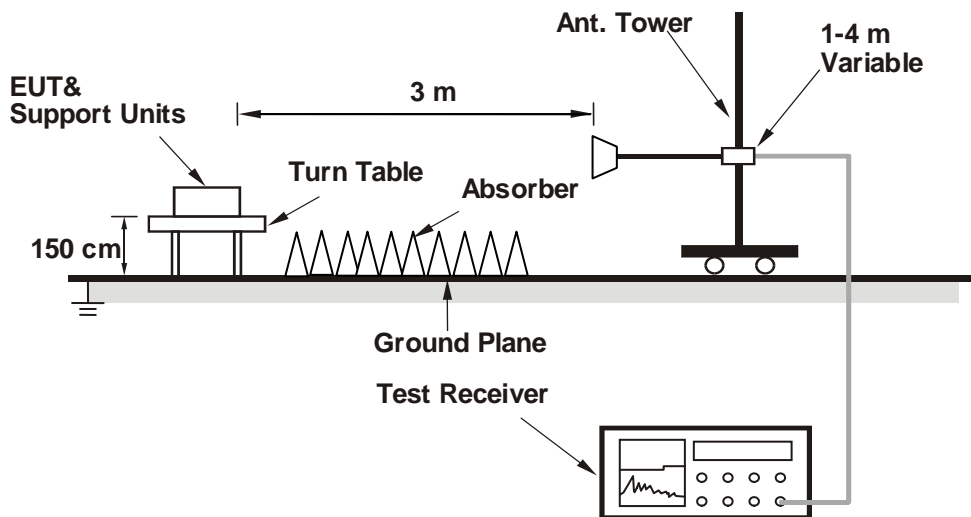
No deviation.

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

WCDMA:
Low Channel

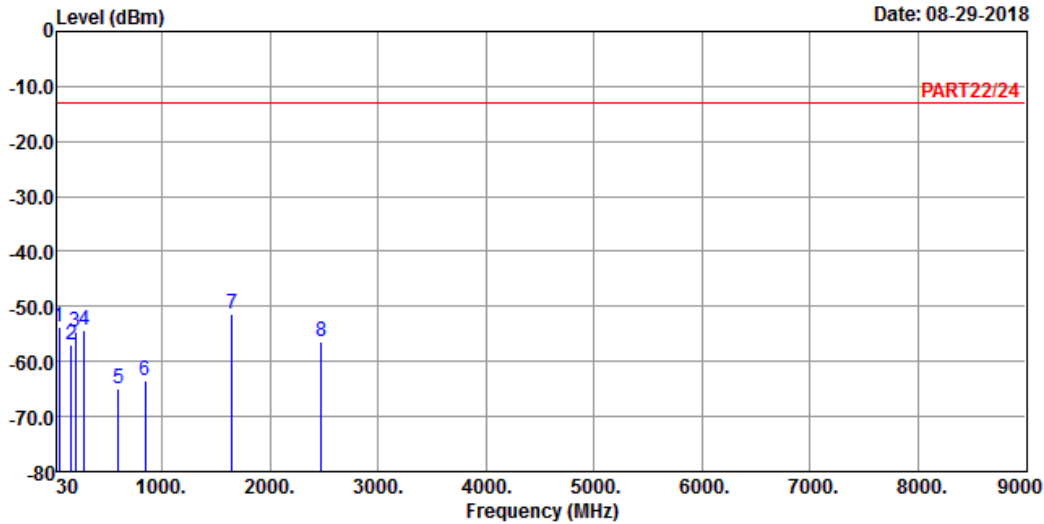


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 08-29-2018



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : WCDMA Band V Link_L-CH
Tested by: Jisyong Wang

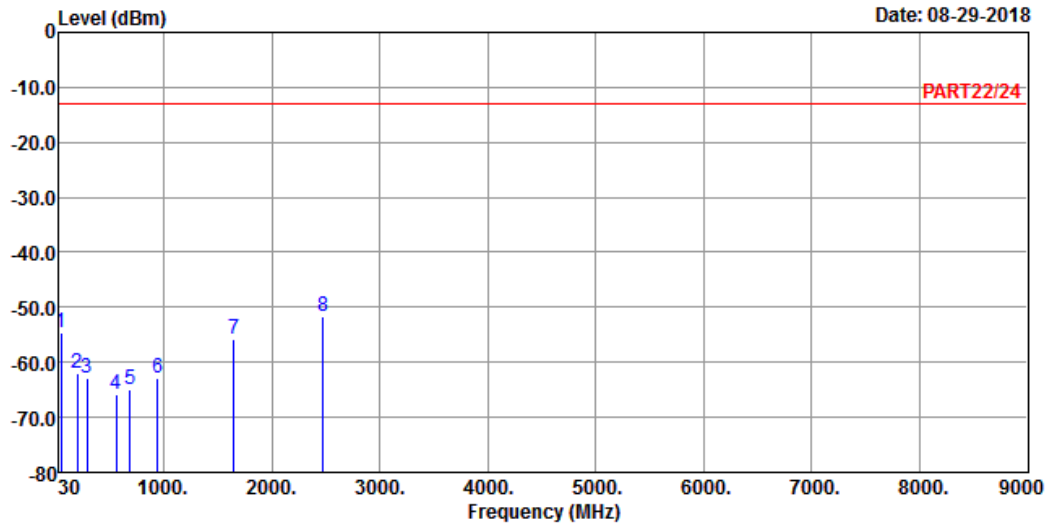
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	44.55	-53.64	-51.65	-13.00	-40.64	-1.99	Peak
2	161.92	-56.89	-51.91	-13.00	-43.89	-4.98	Peak
3	195.87	-54.68	-47.03	-13.00	-41.68	-7.65	Peak
4	280.26	-54.35	-47.74	-13.00	-41.35	-6.61	Peak
5	594.54	-64.96	-63.97	-13.00	-51.96	-0.99	Peak
6	842.86	-63.52	-63.87	-13.00	-50.52	0.35	Peak
7 pp	1649.40	-51.41	-37.67	-13.00	-38.41	-13.74	Peak
8	2474.10	-56.51	-46.49	-13.00	-43.51	-10.02	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 V Link_L-CH
 Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	44.55	-54.65	-52.66	-13.00	-41.65	-1.99	Peak
2	198.78	-61.94	-54.01	-13.00	-48.94	-7.93	Peak
3	284.14	-62.82	-56.13	-13.00	-49.82	-6.69	Peak
4	560.59	-65.91	-63.50	-13.00	-52.91	-2.41	Peak
5	688.63	-65.01	-64.73	-13.00	-52.01	-0.28	Peak
6	943.74	-62.78	-64.43	-13.00	-49.78	1.65	Peak
7	1649.40	-55.85	-42.11	-13.00	-42.85	-13.74	Peak
8 pp	2474.10	-51.73	-41.71	-13.00	-38.73	-10.02	Peak

Middle Channel

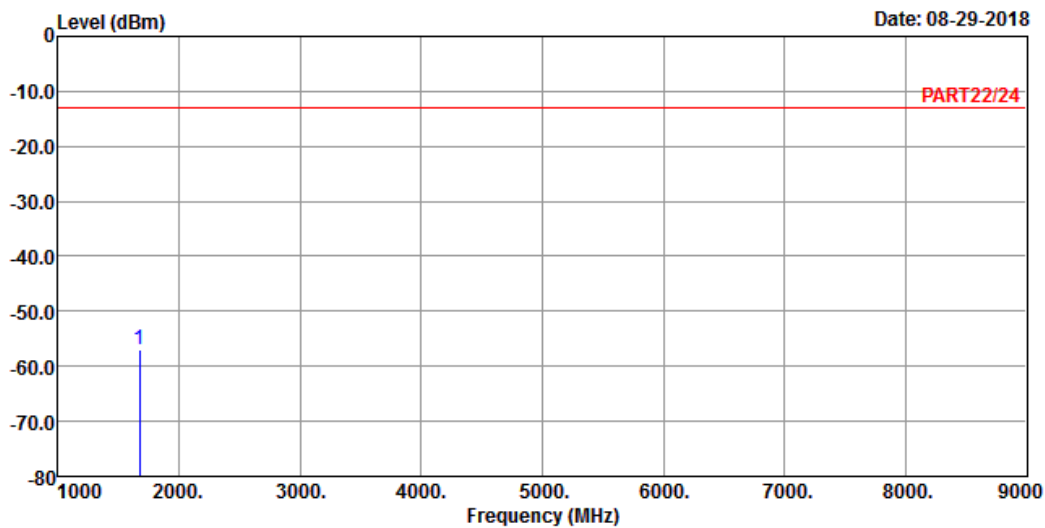


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 08-29-2018



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : WCDMA Band V Link_M-CH
 Tested by: Jisyong Wang

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

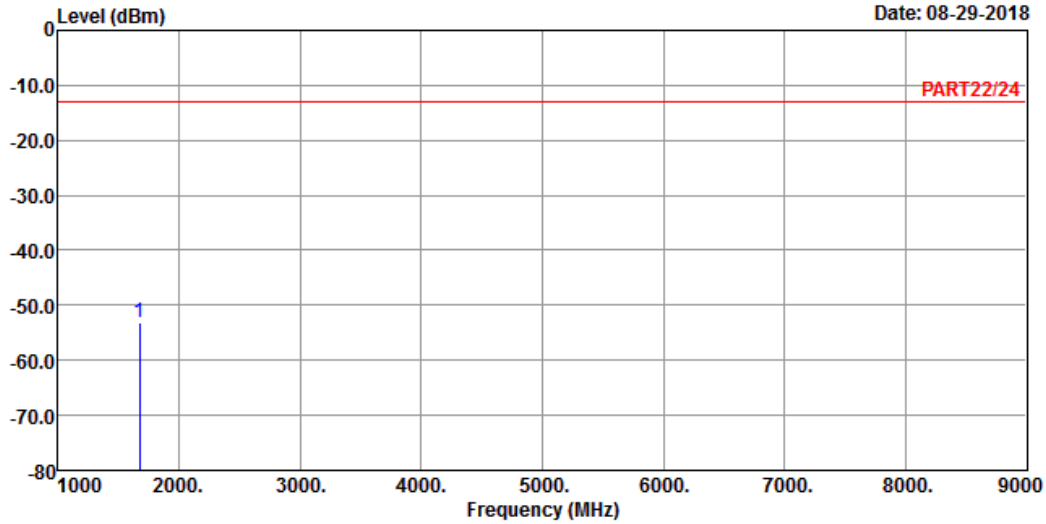
1 pp 1672.80 -56.91 -43.01 -13.00 -43.91 -13.90 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : WCDMA Band V Link_M-CH
 Tested by: Jisyong Wang

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1672.80	-52.99	-39.09	-13.00	-39.99	-13.90	Peak

High Channel

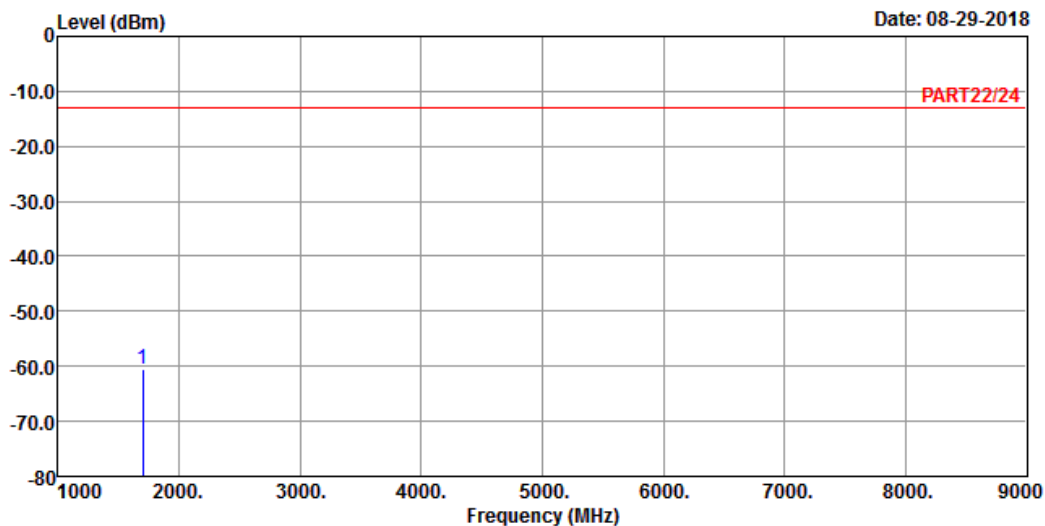


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 08-29-2018



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : WCDMA Band V Link_H-CH
 Tested by: Jisyong Wang

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

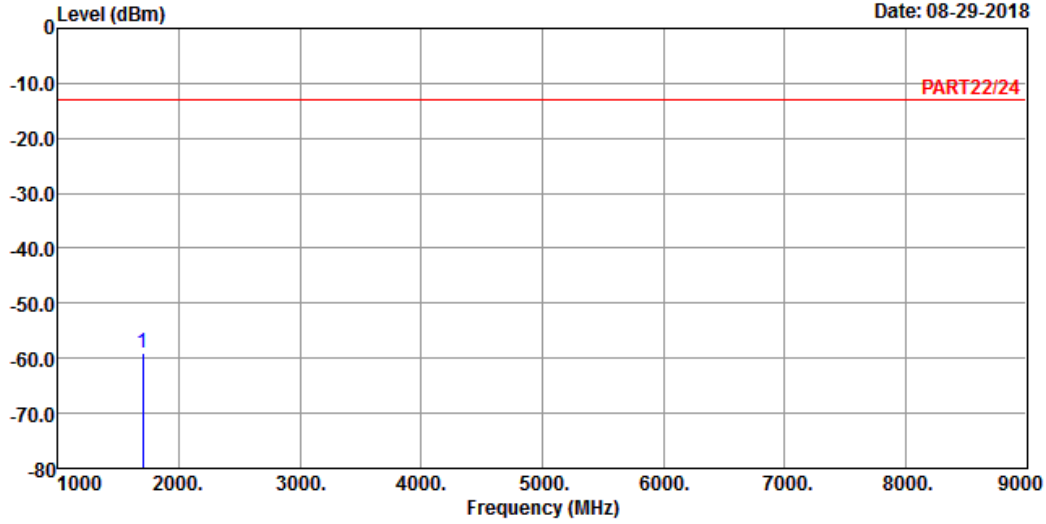
1 pp 1696.62 -60.47 -46.45 -13.00 -47.47 -14.02 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : WCDMA Band V Link_H-CH
 Tested by: Jisyong Wang

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1696.62	-59.18	-45.16	-13.00	-46.18	-14.02	Peak

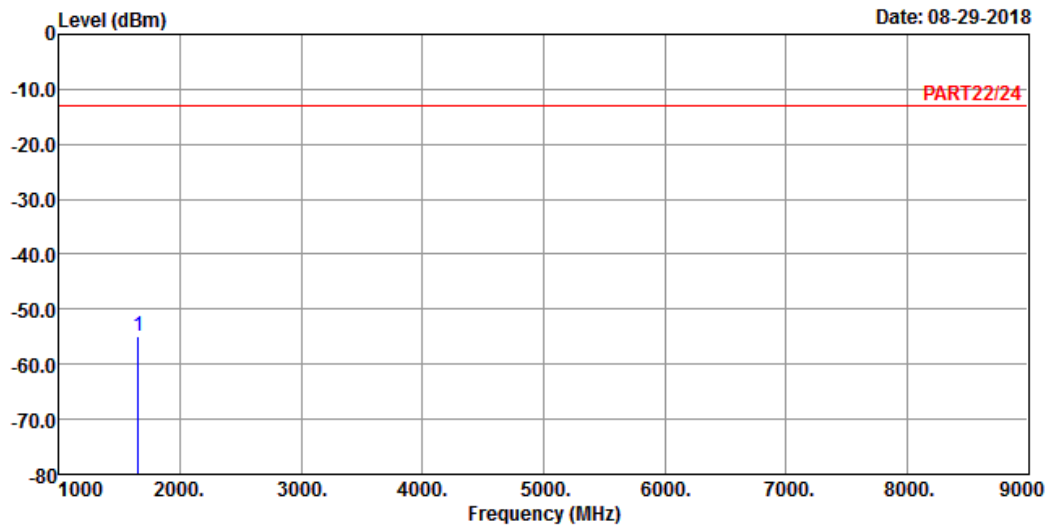
LTE Band 5
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



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

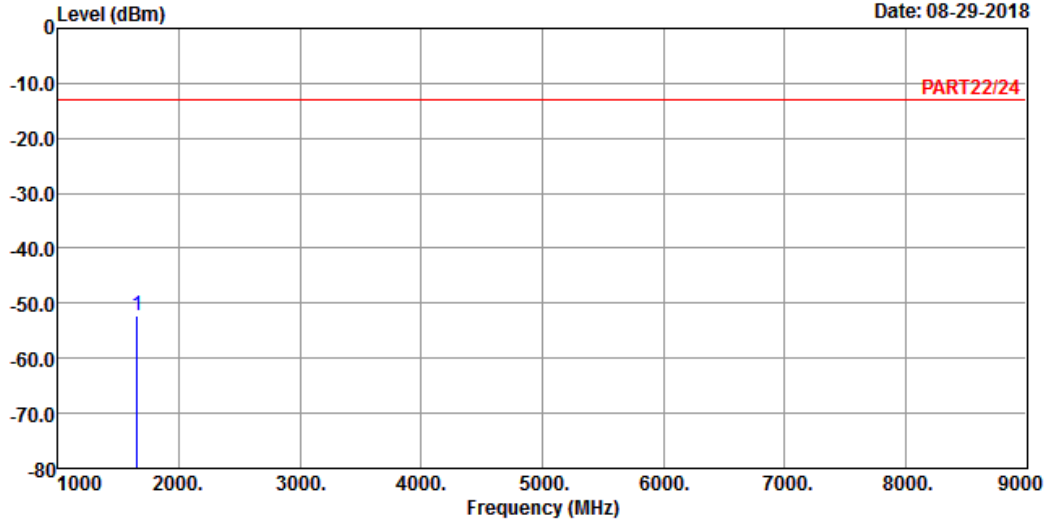
	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 1649.40	-54.87	-41.13	-13.00	-41.87	-13.74 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_1.4M Link_L-CH
 Tested by: Jisyong Wang

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

1 pp 1649.40 -52.18 -38.44 -13.00 -39.18 -13.74 Peak

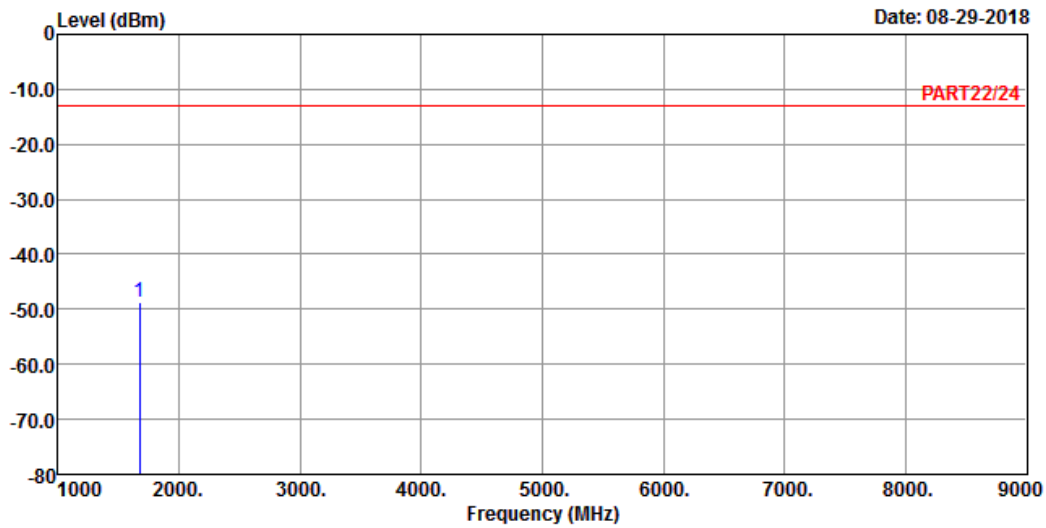
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_1.4M Link_M-CH
 Tested by: Jisyong Wang

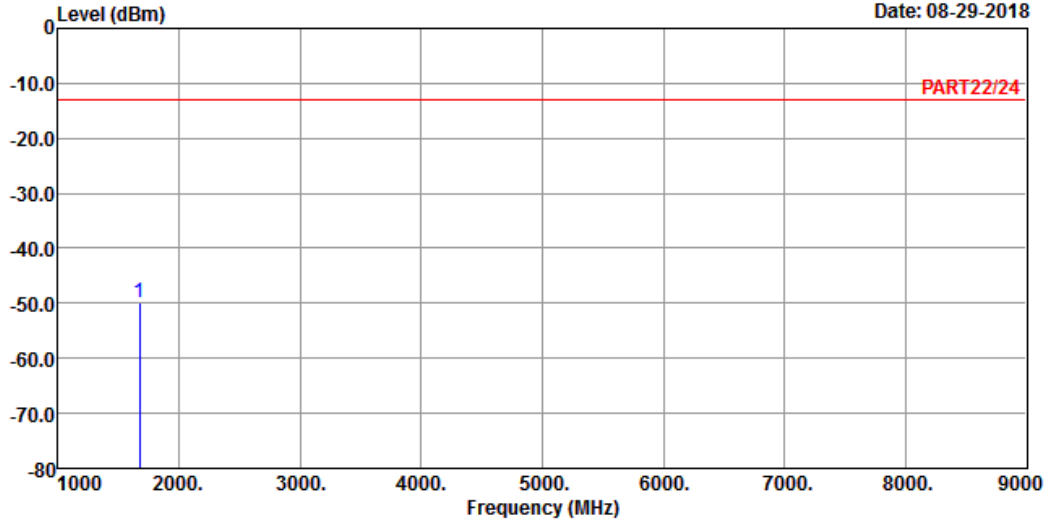
Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 1673.00 -48.65 -34.75 -13.00 -35.65 -13.90 Peak



A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_1.4M Link_M-CH
 Tested by: Jisyong Wang

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

1 pp 1673.00 -49.99 -36.09 -13.00 -36.99 -13.90 Peak

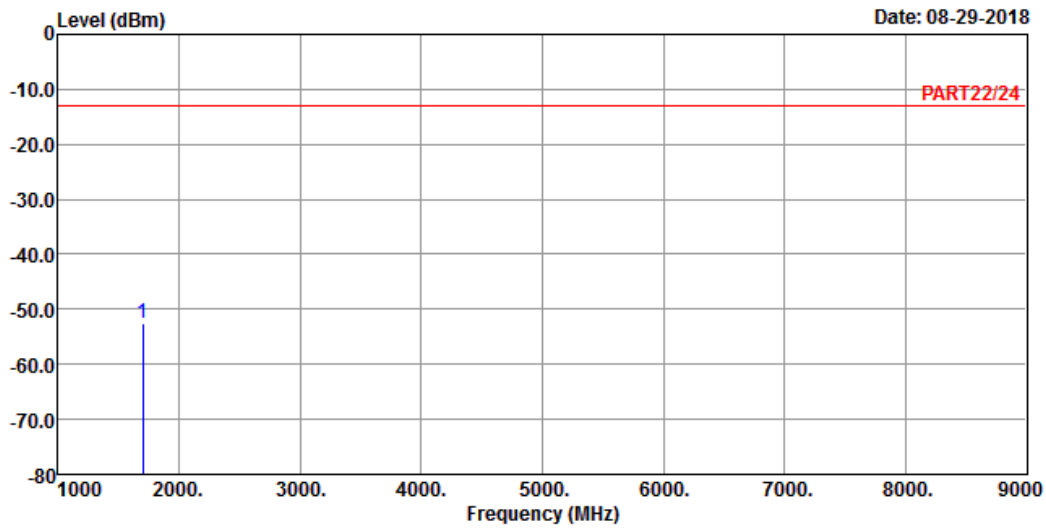
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_1.4M Link_H-CH
 Tested by: Jisyong Wang

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

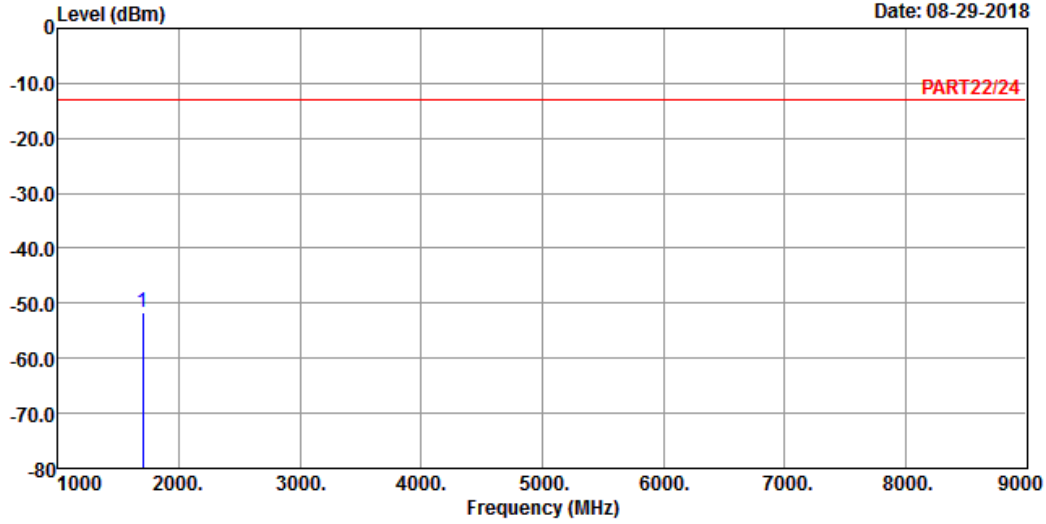
1 pp 1696.60 -52.58 -38.56 -13.00 -39.58 -14.02 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_1.4M Link_H-CH
 Tested by: Jisyong Wang

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

1 pp 1696.60 -51.63 -37.61 -13.00 -38.63 -14.02 Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

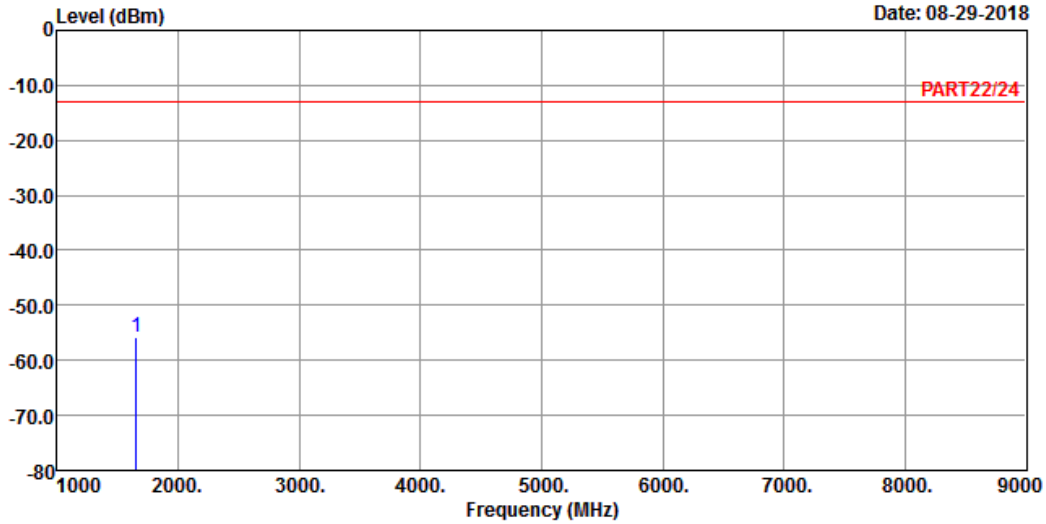


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 08-29-2018



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 5 QPSK_5M Link_L-CH
Tested by: Jisyong Wang

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

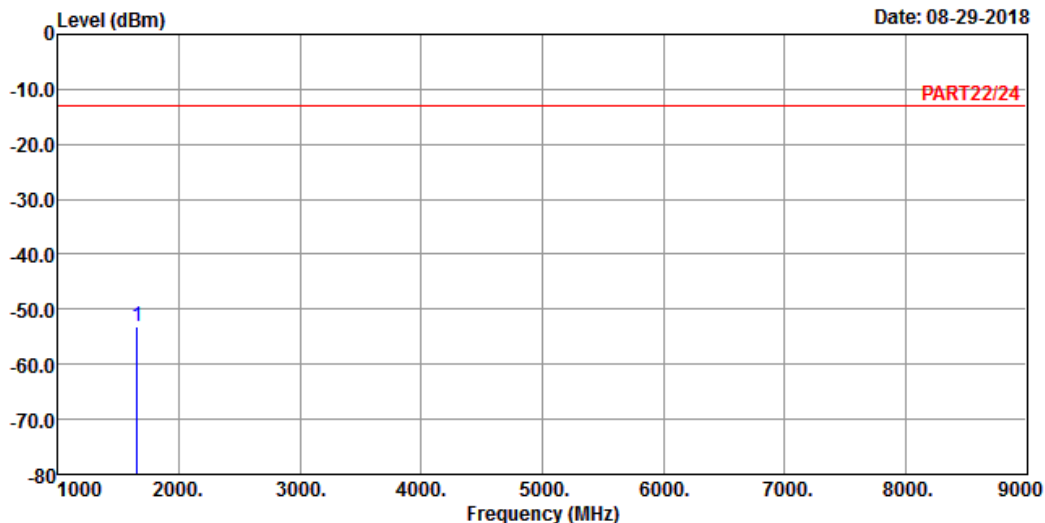
1 pp 1653.00 -55.69 -41.92 -13.00 -42.69 -13.77 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_5M Link_L-CH
 Tested by: Jisyong Wang

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1653.00	-53.25	-39.48	-13.00	-40.25	-13.77	Peak

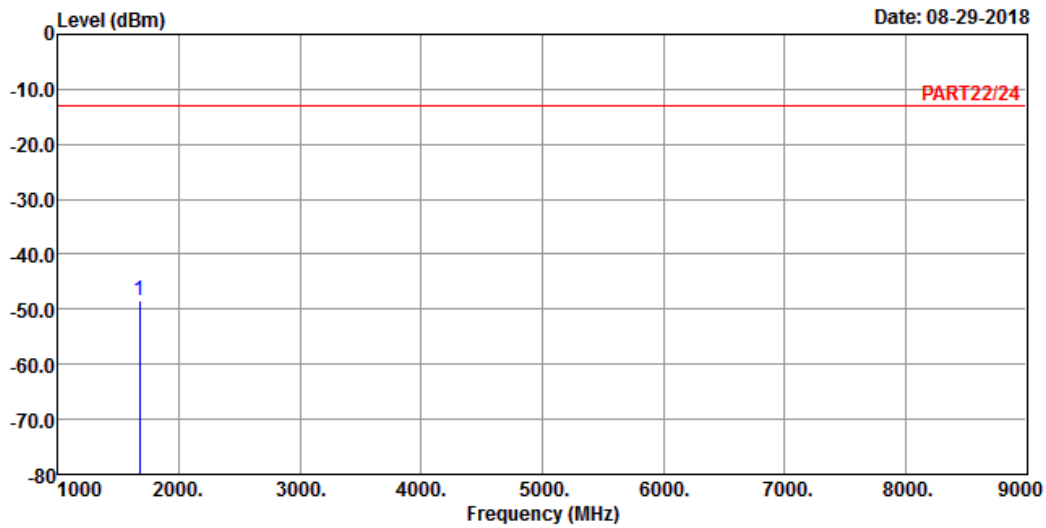
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_5M Link_M-CH
 Tested by: Jisyong Wang

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

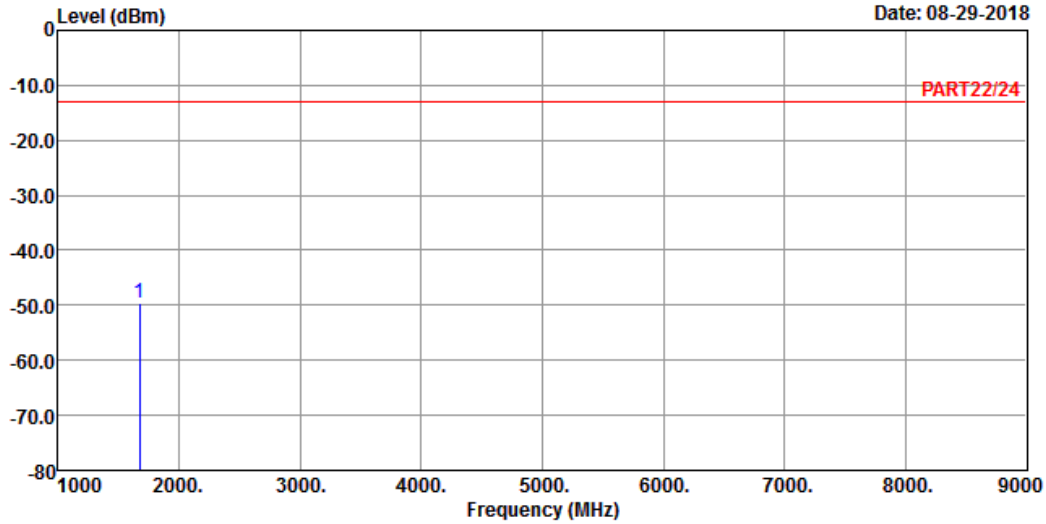
1 pp 1673.00 -48.52 -34.62 -13.00 -35.52 -13.90 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_5M Link_M-CH
 Tested by: Jisyong Wang

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

1 pp 1673.00 -49.69 -35.79 -13.00 -36.69 -13.90 Peak

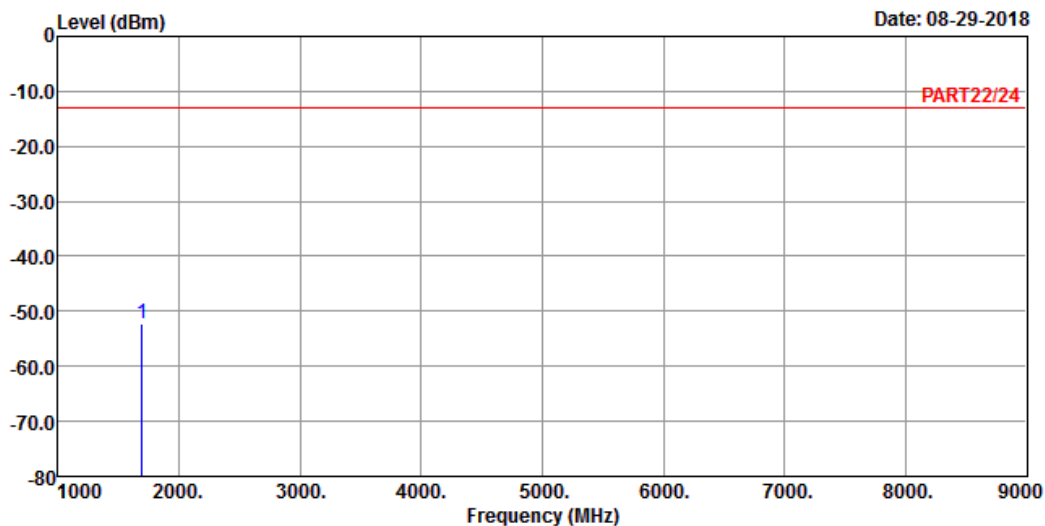
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_5M Link_H-CH
 Tested by: Jisyong Wang

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

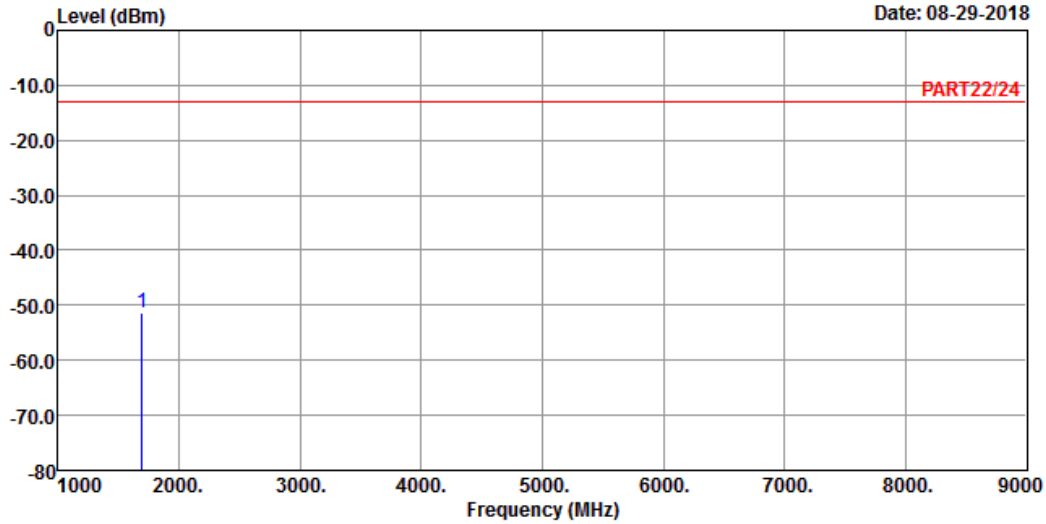
1 pp 1693.00 -52.36 -38.34 -13.00 -39.36 -14.02 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_5M Link_H-CH
 Tested by: Jisyong Wang

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1693.00	-51.26	-37.24	-13.00	-38.26	-14.02	Peak

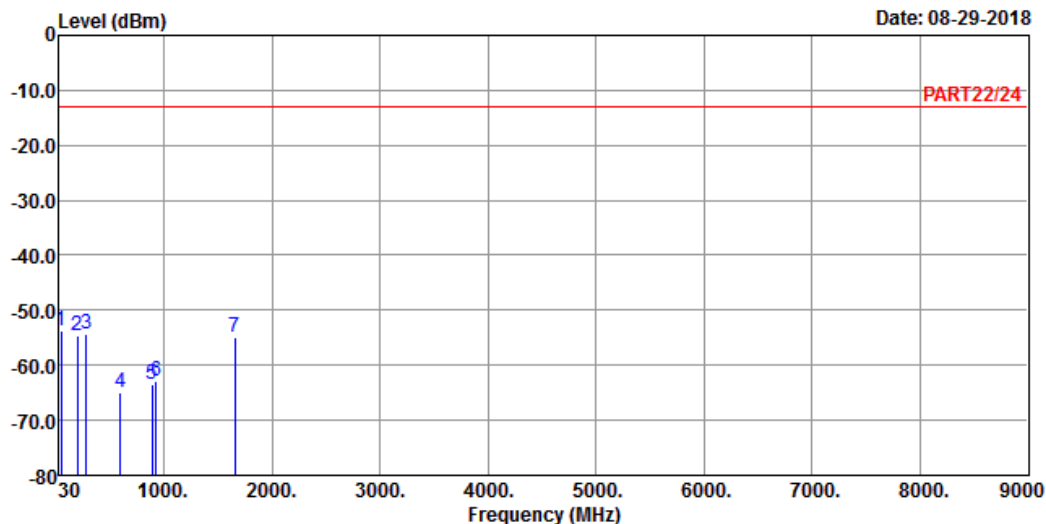
Channel Bandwidth: 10 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 5 QPSK_10M Link_L-CH
Tested by: Jisyong Wang

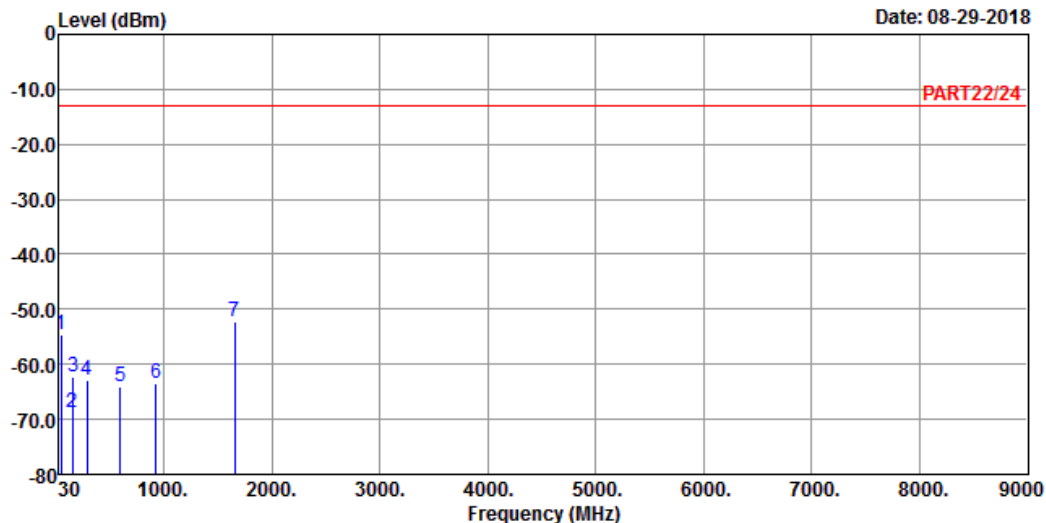
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	44.55	-53.64	-51.65	-13.00	-40.64	-1.99	Peak
2	195.87	-54.68	-47.03	-13.00	-41.68	-7.65	Peak
3	280.26	-54.35	-47.74	-13.00	-41.35	-6.61	Peak
4	594.54	-64.96	-63.97	-13.00	-51.96	-0.99	Peak
5	891.36	-63.39	-63.91	-13.00	-50.39	0.52	Peak
6	928.22	-62.98	-64.25	-13.00	-49.98	1.27	Peak
7	1658.00	-54.87	-41.07	-13.00	-41.87	-13.80	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 5 QPSK_10M Link_L-CH
 Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	44.55	-54.65	-52.66	-13.00	-41.65	-1.99	Peak
2	156.10	-68.85	-62.91	-13.00	-55.85	-5.94	Peak
3	161.92	-62.16	-57.18	-13.00	-49.16	-4.98	Peak
4	284.14	-62.82	-56.13	-13.00	-49.82	-6.69	Peak
5	594.54	-63.99	-63.00	-13.00	-50.99	-0.99	Peak
6	928.22	-63.61	-64.88	-13.00	-50.61	1.27	Peak
7 pp	1658.00	-52.18	-38.38	-13.00	-39.18	-13.80	Peak

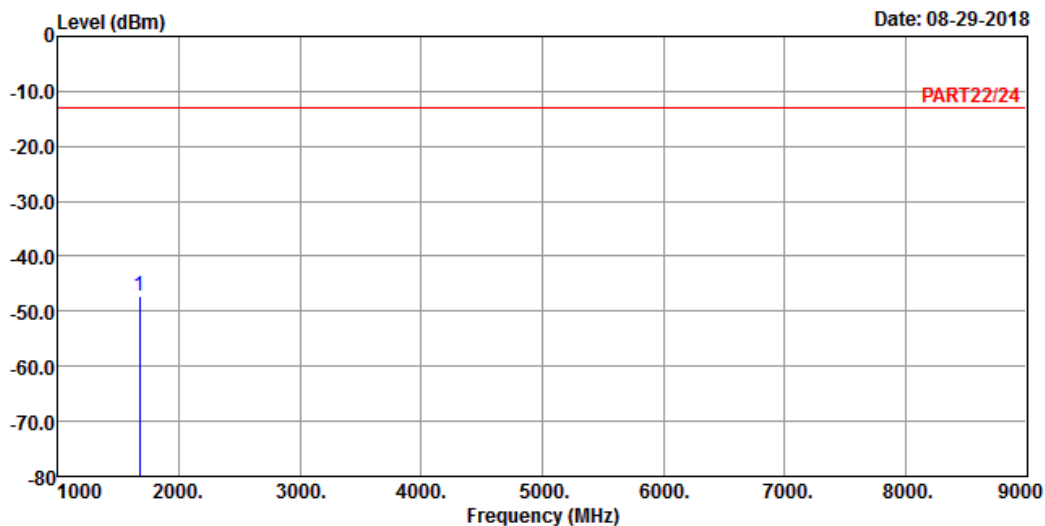
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_10M Link_M-CH
 Tested by: Jisyong Wang

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

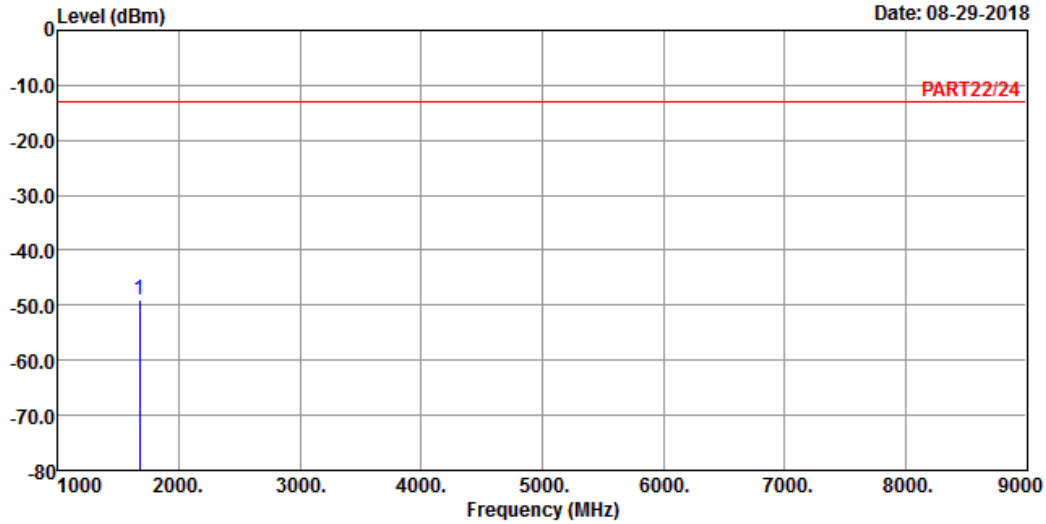
1 pp 1673.00 -47.26 -33.36 -13.00 -34.26 -13.90 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_10M Link_M-CH
 Tested by: Jisyong Wang

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

1 pp 1673.00 -48.91 -35.01 -13.00 -35.91 -13.90 Peak

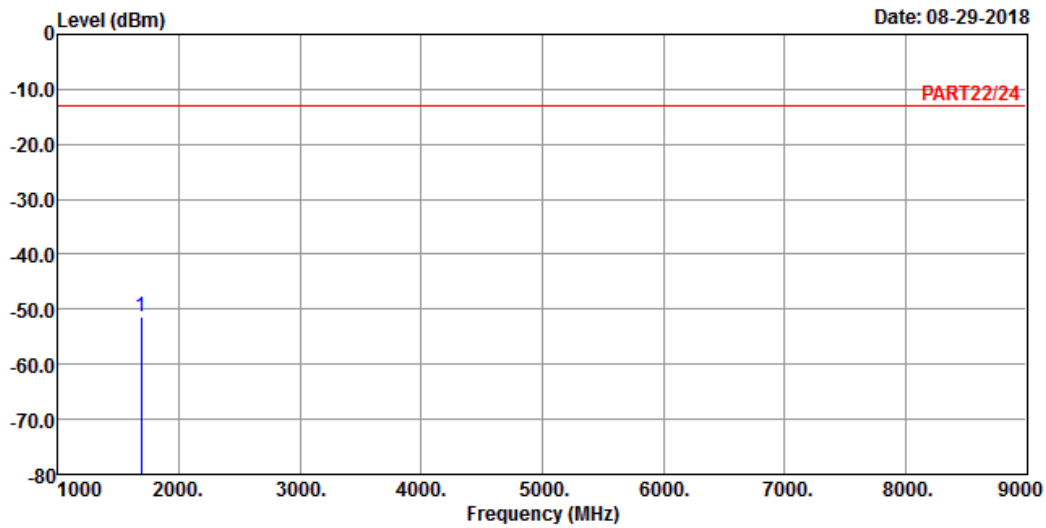
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART22/24 HORIZONTAL
 Remak : LTE Band 5 QPSK_10M Link_H-CH
 Tested by: Jisyong Wang

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

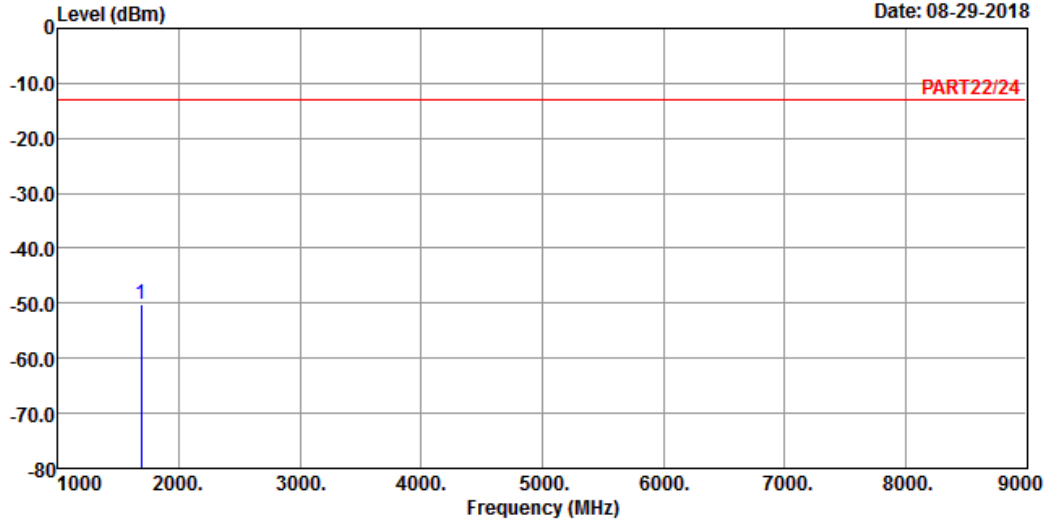
1 pp 1688.00 -51.30 -37.31 -13.00 -38.30 -13.99 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART22/24 VERTICAL
 Remak : LTE Band 5 QPSK_10M Link_H-CH
 Tested by: Jisyong Wang

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

1 pp 1688.00 -50.05 -36.06 -13.00 -37.05 -13.99 Peak

5 Pictures of Test Arrangements

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

Appendix – Information on 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:

Linko 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

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.

--- END ---