

FCC Test Report

(PART 27)

Report No.: RF181115C24-2

FCC ID: XMR201605EC25A

Test Model: EC25-A

Received Date: Nov. 15, 2018

Test Date: Nov. 29, 2018 ~ Dec. 01, 2018

Issued Date: Feb. 27, 2019

Applicant: Quectel Wireless Solutions Co., Ltd

Address: 7th Floor, Hongye Building, No. 1801 Hongmei Road, Xuhui District,
Shanghai 200233, China

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: B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231,
Taiwan, R.O.C

FCC Registration /
Designation Number: 427177 / TW0011



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.....	6
2.2 Test Site and Instruments	7
3 General Information	8
3.1 General Description of EUT	8
3.2 Configuration of System under Test.....	9
3.2.1 Description of Support Units.....	9
3.3 Test Mode Applicability and Tested Channel Detail	10
3.4 EUT Operating Conditions	11
3.5 General Description of Applied Standards.....	11
4 Test Types and Results	12
4.1 Output Power Measurement.....	12
4.1.1 Limits of Output Power Measurement	12
4.1.2 Test Procedures.....	12
4.1.3 Test Setup.....	13
4.1.4 Test Results	14
4.2 Radiated Emission Measurement.....	20
4.2.1 Limits of Radiated Emission Measurement	20
4.2.2 Test Procedure	20
4.2.3 Deviation from Test Standard	20
4.2.4 Test Setup.....	21
4.2.5 Test Results	22
5 Pictures of Test Arrangements.....	64
Appendix – Information of the Testing Laboratories	65

Release Control Record

Issue No.	Description	Date Issued
RF181115C24-2	Original Release	Feb. 27, 2019

1 Certificate of Conformity

Product: LTE Module

Brand: Quectel

Test Model: EC25-A

Sample Status: Production Unit

Applicant: Quectel Wireless Solutions Co., Ltd

Test Date: Nov. 29, 2018 ~ Dec. 01, 2018

Standards: FCC Part 27, Subpart C, H, L

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:** Feb. 27, 2019
Rona Chen / Specialist

Approved by : Dylan Chiou, **Date:** Feb. 27, 2019
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (WCDMA)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(h)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(h)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(h)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.71 dB at 59.43 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 4)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(h)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(h)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(h)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -29.39 dB at 55.38 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 12)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(c)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(g)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(g)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(g)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -22.88 dB at 2112.00 MHz.

Note:

1. 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 Bay Area Compliance Laboratories Corp.(Taiwan) report no.: RTWK160705001-00 and RKS160908001-00A for module (Brand: Quectel, Model: EC25-A)
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	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-616	Nov. 27, 2018	Nov. 26, 2019
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 19, 2018	Nov. 18, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RF C-SMS-100-SMS- 120+RFC-SMS-1 00-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RF C-SMS-100-SMS- 24)	Jun. 19, 2018	Jun. 18, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jun. 28, 2017	Jun. 27, 2019
Radio Communication Analyzer Anritsu	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 HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450I-1.

3 General Information

3.1 General Description of EUT

Product	LTE Module	
Brand	Quectel	
Test Model	EC25-A	
Status of EUT	Production Unit	
Power Supply Rating	3.8 Vdc (Host equipment)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	1712.4 ~ 1752.6 MHz
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1754.3 MHz
	LTE Band 4 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1753.5 MHz
	LTE Band 4 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1752.5 MHz
	LTE Band 4 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1750.0 MHz
	LTE Band 4 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1747.5 MHz
	LTE Band 4 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1745.0 MHz
	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	699.7 ~ 715.3 MHz
	LTE Band 12 (Channel Bandwidth: 3 MHz)	700.5 ~ 714.5 MHz
	LTE Band 12 (Channel Bandwidth: 5 MHz)	701.5 ~ 713.5 MHz
	LTE Band 12 (Channel Bandwidth: 10 MHz)	704.0 ~ 711.0 MHz
Max. ERP Power	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	98.31 mW
	LTE Band 12 (Channel Bandwidth: 3 MHz)	98.99 mW
	LTE Band 12 (Channel Bandwidth: 5 MHz)	99.91 mW
	LTE Band 12 (Channel Bandwidth: 10 MHz)	100.90 mW
Max. EIRP Power	WCDMA	150.90 mW
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	159.77 mW
	LTE Band 4 (Channel Bandwidth: 3 MHz)	161.25 mW
	LTE Band 4 (Channel Bandwidth: 5 MHz)	162.74 mW
	LTE Band 4 (Channel Bandwidth: 10 MHz)	164.25 mW
	LTE Band 4 (Channel Bandwidth: 15 MHz)	165.77 mW
	LTE Band 4 (Channel Bandwidth: 20 MHz)	166.92 mW
Antenna Type	Dipole Antenna	
Antenna Gain	WCDMA	1.5 dBi
	LTE Band 4	1.5 dBi
	LTE Band 12	1.6 dBi
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

1. The EUT was installed in a specific End-product.

Product	Brand	Model	FCC ID
veeaHub	veeaHub	VHE09XXX (X=A-Z,0-9, blank or "-")	2ARXKVHE09

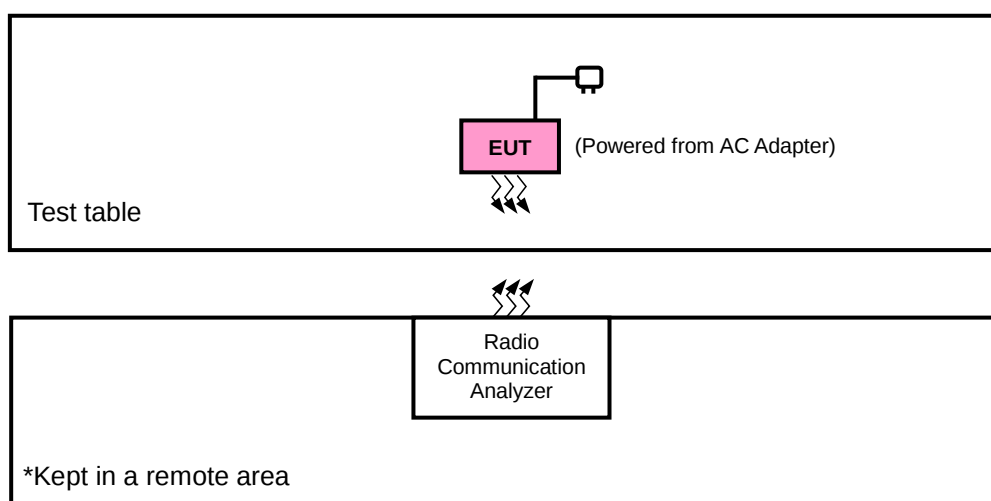
2. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter	EDACPOWER ELEC.	EA1062SGR-480	I/P: 100-240 Vac, 50-60 Hz, 0.5 A O/P: 48 Vdc, 1.35 A 1.2m cable with 1 core

3. 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

< E.R.P. / E.I.R.P. / Radiated Emission 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.

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, antenna degree 90° and 180°, 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 / EIRP	Radiated Emission
WCDMA	90°	90°
LTE Band 4	90°	90°
LTE Band 12	90°	90°

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
-	Radiated Emission	1312 to 1513	1312, 1413, 1513	WCDMA

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Radiated Emission	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 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.

LTE Band 12

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Radiated Emission	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	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 / EIRP	25 deg. C, 65 % RH	3.8 Vdc	Karl Lee
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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 27

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

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 746-757 MHz, 776-788 MHz and 805-806 MHz band are limited to 3 watts ERP

Portable stations (hand-held device) operating in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

4.1.2 Test Procedures

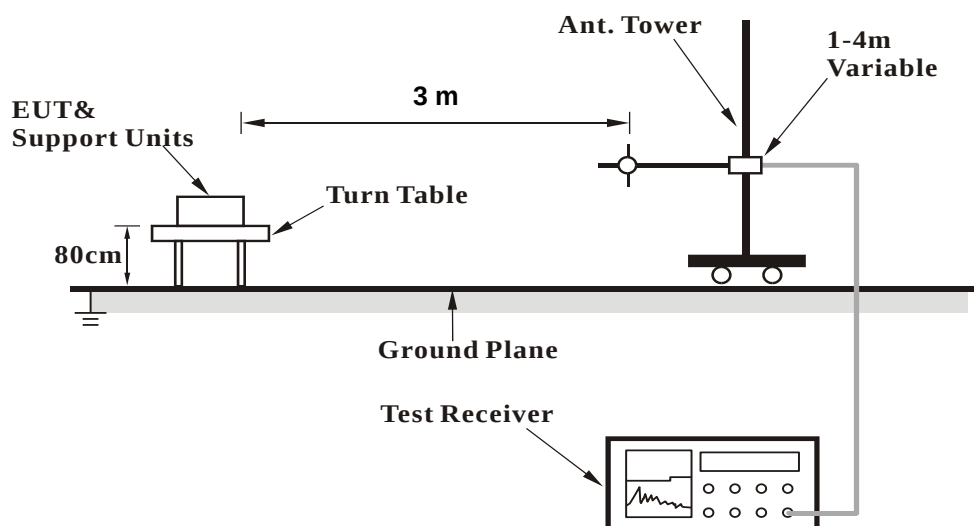
EIRP / ERP Measurement:

- 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, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}$.

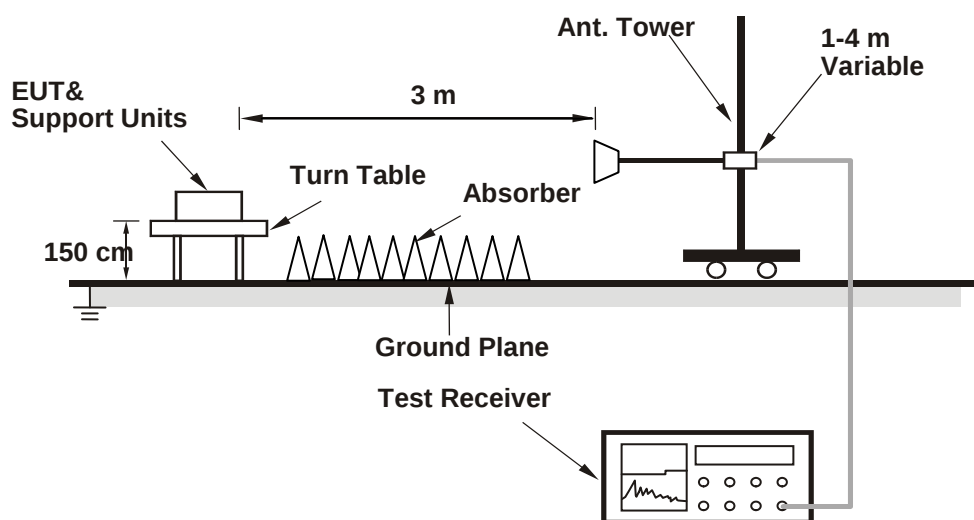
4.1.3 Test Setup

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)

LTE Band 12							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
90°	23017	699.7	-10.82	32.719	19.75	94.38	H
	23095	707.5	-10.66	32.736	19.93	98.31	
	23173	715.3	-10.87	32.591	19.57	90.59	
	23017	699.7	-17.85	32.69	12.69	18.58	V
	23095	707.5	-17.72	32.81	12.94	19.68	
	23173	715.3	-18.01	32.74	12.58	18.11	
Channel Bandwidth: 1.4 MHz / 16QAM							
90°	23017	699.7	-11.82	32.719	18.75	74.97	H
	23095	707.5	-11.67	32.736	18.92	77.91	
	23173	715.3	-11.87	32.591	18.57	71.96	
	23017	699.7	-18.86	32.69	11.68	14.72	V
	23095	707.5	-18.72	32.81	11.94	15.63	
	23173	715.3	-19.02	32.74	11.57	14.35	

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

LTE Band 12							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
90°	23025	700.5	-10.78	32.719	19.79	95.26	H
	23095	707.5	-10.63	32.736	19.96	98.99	
	23165	714.5	-10.84	32.591	19.60	91.22	
	23025	700.5	-17.81	32.69	12.73	18.75	V
	23095	707.5	-17.68	32.81	12.98	19.86	
	23165	714.5	-17.97	32.74	12.62	18.28	
Channel Bandwidth: 3 MHz / 16QAM							
90°	23025	700.5	-11.79	32.719	18.78	75.49	H
	23095	707.5	-11.63	32.736	18.96	78.63	
	23165	714.5	-11.84	32.591	18.60	72.46	
	23025	700.5	-18.82	32.69	11.72	14.86	V
	23095	707.5	-18.68	32.81	11.98	15.78	
	23165	714.5	-18.97	32.74	11.62	14.52	

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

LTE Band 12							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
90°	23035	701.5	-10.73	32.719	19.84	96.36	H
	23095	707.5	-10.59	32.736	20.00	99.91	
	23155	713.5	-10.80	32.591	19.64	92.07	
	23035	701.5	-17.77	32.69	12.77	18.92	V
	23095	707.5	-17.64	32.81	13.02	20.04	
	23155	713.5	-17.93	32.74	12.66	18.45	
Channel Bandwidth: 5 MHz / 16QAM							
90°	23035	701.5	-11.73	32.719	18.84	76.54	H
	23095	707.5	-11.60	32.736	18.99	79.18	
	23155	713.5	-11.81	32.591	18.63	72.96	
	23035	701.5	-18.77	32.69	11.77	15.03	V
	23095	707.5	-18.65	32.81	12.01	15.89	
	23155	713.5	-18.94	32.74	11.65	14.62	

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

LTE Band 12							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
90°	23060	704.0	-10.69	32.727	19.89	97.43	H
	23095	707.5	-10.55	32.739	20.04	100.90	
	23130	711.0	-10.76	32.728	19.82	95.90	
	23060	704.0	-17.74	32.75	12.86	19.32	V
	23095	707.5	-17.60	32.81	13.06	20.23	
	23130	711.0	-17.89	32.84	12.80	19.05	
Channel Bandwidth: 10 MHz / 16QAM							
90°	23060	704.0	-11.70	32.727	18.88	77.21	H
	23095	707.5	-11.56	32.739	19.03	79.97	
	23130	711.0	-11.76	32.728	18.82	76.17	
	23060	704.0	-18.74	32.75	11.86	15.35	V
	23095	707.5	-18.61	32.81	12.05	16.03	
	23130	711.0	-18.90	32.84	11.79	15.10	

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

EIRP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	1312	1712.4	-20.75	42.49	21.74	149.11	H
	1413	1732.6	-20.54	42.33	21.79	150.90	
	1513	1752.6	-20.39	42.10	21.71	148.25	
	1312	1712.4	-24.22	42.99	18.77	75.34	V
	1413	1732.6	-23.90	42.74	18.84	76.56	
	1513	1752.6	-23.52	42.21	18.69	73.96	

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

LTE Band 4							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	19957	1710.7	-20.45	42.49	22.04	159.77	H
	20175	1732.5	-20.53	42.33	21.80	151.25	
	20393	1754.3	-20.17	42.10	21.93	155.96	
	19957	1710.7	-23.97	42.99	19.02	79.80	V
	20175	1732.5	-23.94	42.74	18.80	75.86	
	20393	1754.3	-23.29	42.21	18.92	77.98	
Channel Bandwidth: 1.4 MHz / 16QAM							
90°	19957	1710.7	-21.46	42.49	21.03	126.62	H
	20175	1732.5	-21.54	42.33	20.79	119.87	
	20393	1754.3	-21.18	42.10	20.92	123.59	
	19957	1710.7	-24.98	42.99	18.01	63.24	V
	20175	1732.5	-24.95	42.74	17.79	60.12	
	20393	1754.3	-24.30	42.21	17.91	61.80	

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

LTE Band 4							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	19965	1711.5	-20.41	42.49	22.08	161.25	H
	20175	1732.5	-20.49	42.33	21.84	152.65	
	20385	1753.5	-20.14	42.10	21.96	157.04	
	19965	1711.5	-23.93	42.99	19.06	80.54	V
	20175	1732.5	-23.91	42.74	18.83	76.38	
	20385	1753.5	-23.25	42.21	18.96	78.70	
Channel Bandwidth: 3 MHz / 16QAM							
90°	19965	1711.5	-21.42	42.49	21.07	127.79	H
	20175	1732.5	-21.50	42.33	20.83	120.98	
	20385	1753.5	-21.15	42.10	20.95	124.45	
	19965	1711.5	-24.94	42.99	18.05	63.83	V
	20175	1732.5	-24.91	42.74	17.83	60.67	
	20385	1753.5	-24.26	42.21	17.95	62.37	

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

LTE Band 4							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	19975	1712.5	-20.37	42.49	22.12	162.74	H
	20175	1732.5	-20.45	42.33	21.88	154.06	
	20375	1752.5	-20.10	42.10	22.00	158.49	
	19975	1712.5	-23.89	42.99	19.10	81.28	V
	20175	1732.5	-23.87	42.74	18.87	77.09	
	20375	1752.5	-23.21	42.21	19.00	79.43	
Channel Bandwidth: 5 MHz / 16QAM							
90°	19975	1712.5	-21.37	42.49	21.12	129.27	H
	20175	1732.5	-21.46	42.33	20.87	122.10	
	20375	1752.5	-21.11	42.10	20.99	125.60	
	19975	1712.5	-24.90	42.99	18.09	64.42	V
	20175	1732.5	-24.87	42.74	17.87	61.24	
	20375	1752.5	-24.22	42.21	17.99	62.95	

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

LTE Band 4							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	20000	1715.0	-20.33	42.49	22.16	164.25	H
	20175	1732.5	-20.41	42.33	21.92	155.49	
	20350	1750.0	-20.06	42.10	22.04	159.96	
	20000	1715.0	-23.85	42.99	19.14	82.04	V
	20175	1732.5	-23.84	42.74	18.90	77.62	
	20350	1750.0	-23.17	42.21	19.04	80.17	
Channel Bandwidth: 10 MHz / 16QAM							
90°	20000	1715.0	-21.34	42.49	21.15	130.17	H
	20175	1732.5	-21.41	42.33	20.92	123.51	
	20350	1750.0	-21.06	42.10	21.04	127.06	
	20000	1715.0	-24.85	42.99	18.14	65.16	V
	20175	1732.5	-24.84	42.74	17.90	61.66	
	20350	1750.0	-24.18	42.21	18.03	63.53	

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

LTE Band 4							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	20025	1717.5	-20.29	42.49	22.20	165.77	H
	20175	1732.5	-20.38	42.33	21.95	156.57	
	20325	1747.5	-20.02	42.10	22.08	161.44	
	20025	1717.5	-23.81	42.99	19.18	82.79	V
	20175	1732.5	-23.81	42.74	18.93	78.16	
	20325	1747.5	-23.13	42.21	19.08	80.91	
Channel Bandwidth: 15 MHz / 16QAM							
90°	20025	1717.5	-21.29	42.49	21.20	131.67	H
	20175	1732.5	-21.39	42.33	20.94	124.08	
	20325	1747.5	-21.02	42.10	21.08	128.23	
	20025	1717.5	-24.81	42.99	18.18	65.77	V
	20175	1732.5	-24.82	42.74	17.92	61.94	
	20325	1747.5	-24.14	42.21	18.07	64.12	

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

LTE Band 4							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
90°	20050	1720.0	-20.26	42.49	22.23	166.92	H
	20175	1732.5	-20.34	42.33	21.99	158.02	
	20300	1745.0	-19.98	42.10	22.12	162.93	
	20050	1720.0	-23.77	42.99	19.22	83.56	V
	20175	1732.5	-23.77	42.74	18.97	78.89	
	20300	1745.0	-23.10	42.21	19.11	81.47	
Channel Bandwidth: 20 MHz / 16QAM							
90°	20050	1720.0	-21.26	42.49	21.23	132.59	H
	20175	1732.5	-21.35	42.33	20.98	125.23	
	20300	1745.0	-20.98	42.10	21.12	129.42	
	20050	1720.0	-24.78	42.99	18.21	66.22	V
	20175	1732.5	-24.77	42.74	17.97	62.66	
	20300	1745.0	-24.11	42.21	18.10	64.57	

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

4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

- a. The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. The limit of emission 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}.$

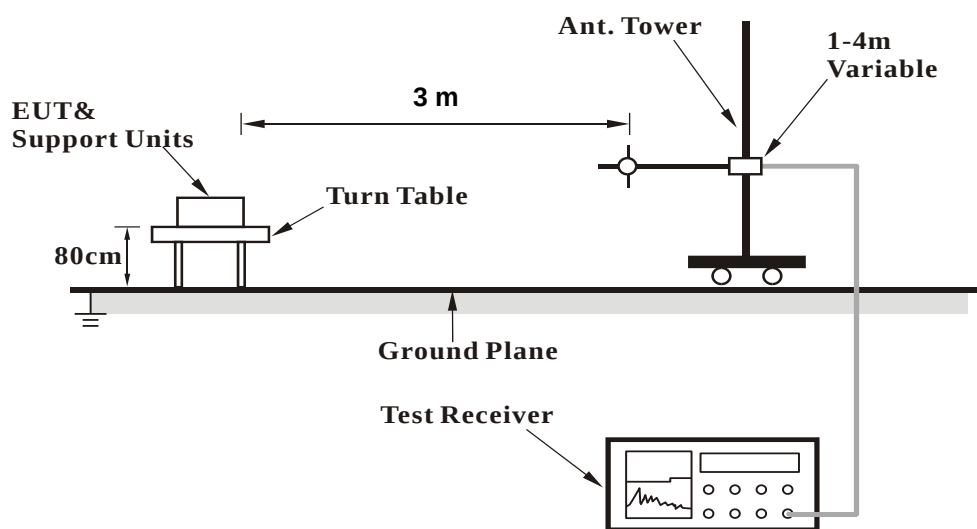
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.2.3 Deviation from Test Standard

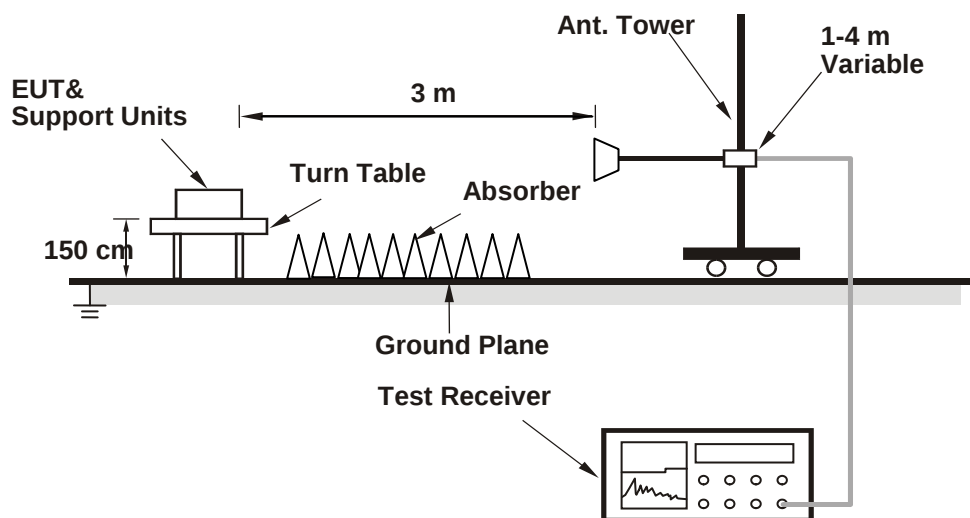
No deviation.

4.2.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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

4.2.5 Test Results

WCDMA:

Low Channel

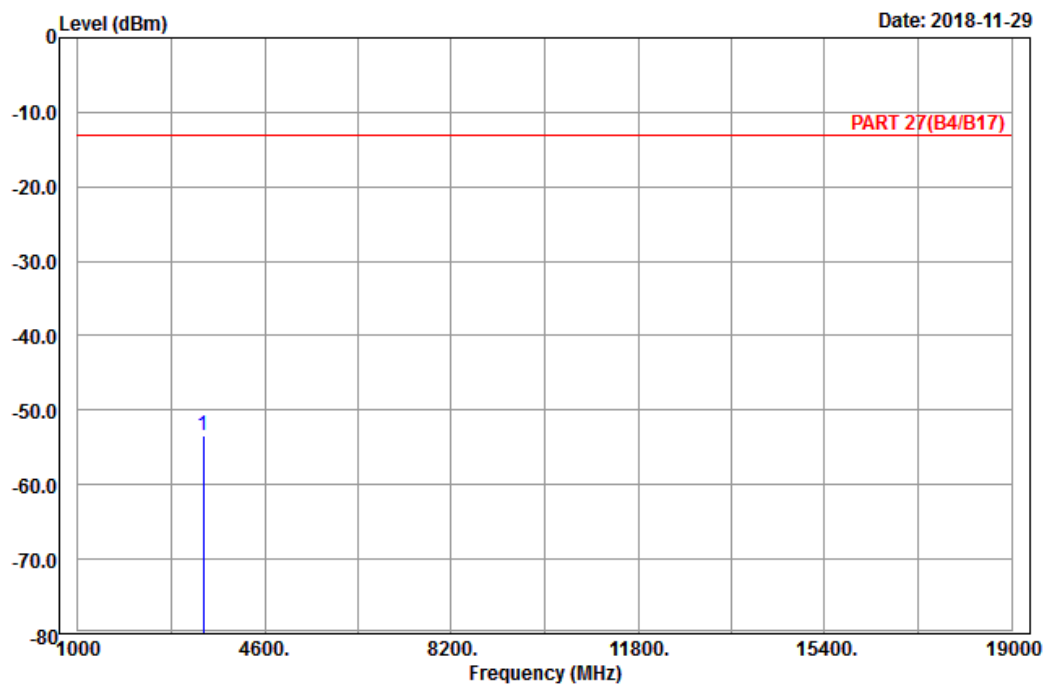


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9

Date: 2018-11-29



Site : 966 chamber 1

Condition: PART 27(B4/B17) Horizontal

Remark : Band IV_Link_CH1312

Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3424.80	-53.38	-67.75	-13.00	-40.38	14.37	Peak

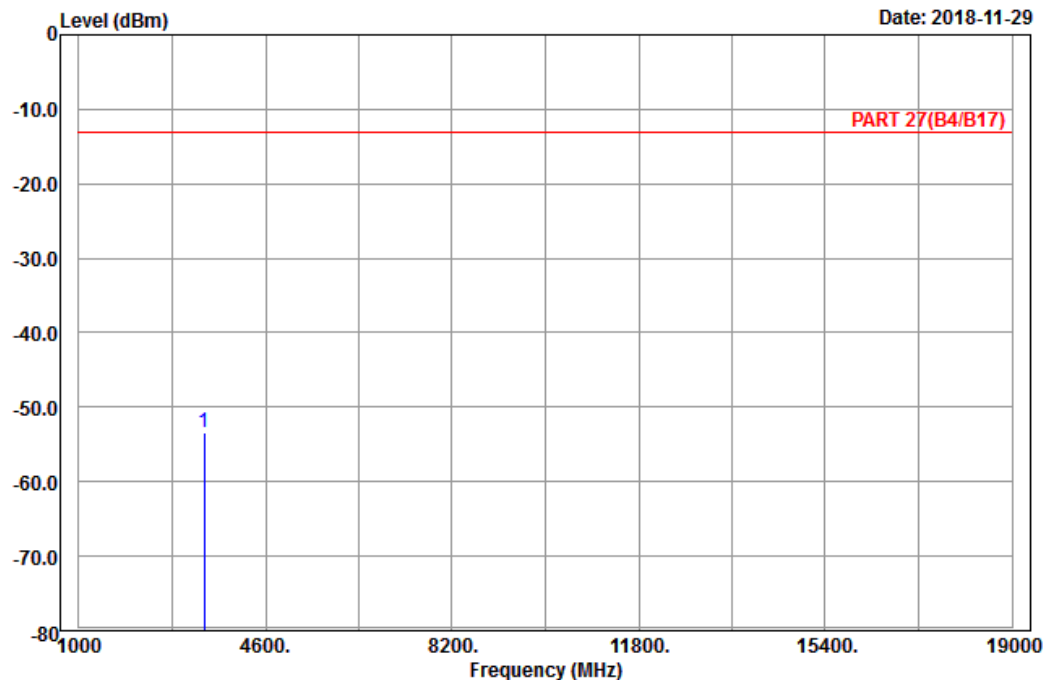


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2018-11-29



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : Band IV_Link_CH1312
 Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3424.80	-53.34	-67.71	-13.00	-40.34	14.37	Peak

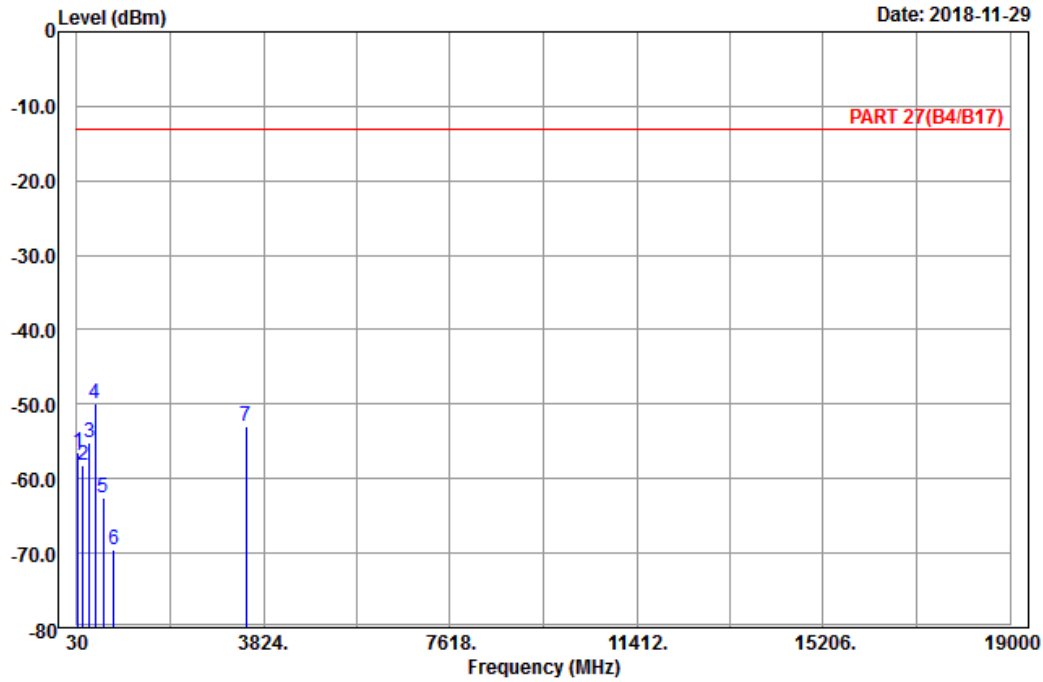
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : Band IV_Link_CH1413
Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	47.28	-56.38	-43.27	-13.00	-43.38	-13.11	Peak
2	152.58	-58.11	-50.22	-13.00	-45.11	-7.89	Peak
3	281.37	-55.22	-49.43	-13.00	-42.22	-5.79	Peak
4 pp	396.60	-50.01	-47.11	-13.00	-37.01	-2.90	Peak
5	572.30	-62.54	-61.80	-13.00	-49.54	-0.74	Peak
6	778.10	-69.61	-70.15	-13.00	-56.61	0.54	Peak
7	3465.20	-52.97	-67.31	-13.00	-39.97	14.34	Peak

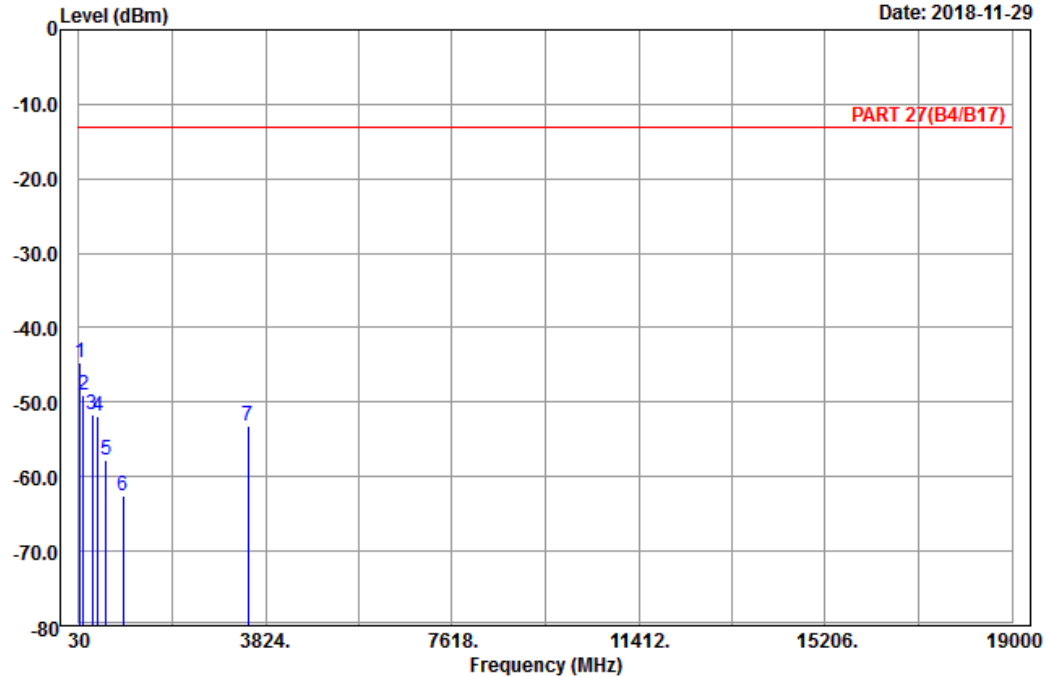


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Vertical
Remark : Band IV_Link_CH1413
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	59.43	-44.71	-30.65	-13.00	-31.71	-14.06	Peak
2	124.50	-48.99	-40.98	-13.00	-35.99	-8.01	Peak
3	298.65	-51.67	-45.72	-13.00	-38.67	-5.95	Peak
4	415.50	-51.95	-48.87	-13.00	-38.95	-3.08	Peak
5	582.80	-57.84	-57.54	-13.00	-44.84	-0.30	Peak
6	937.00	-62.57	-67.11	-13.00	-49.57	4.54	Peak
7	3465.20	-53.14	-67.48	-13.00	-40.14	14.34	Peak

High Channel

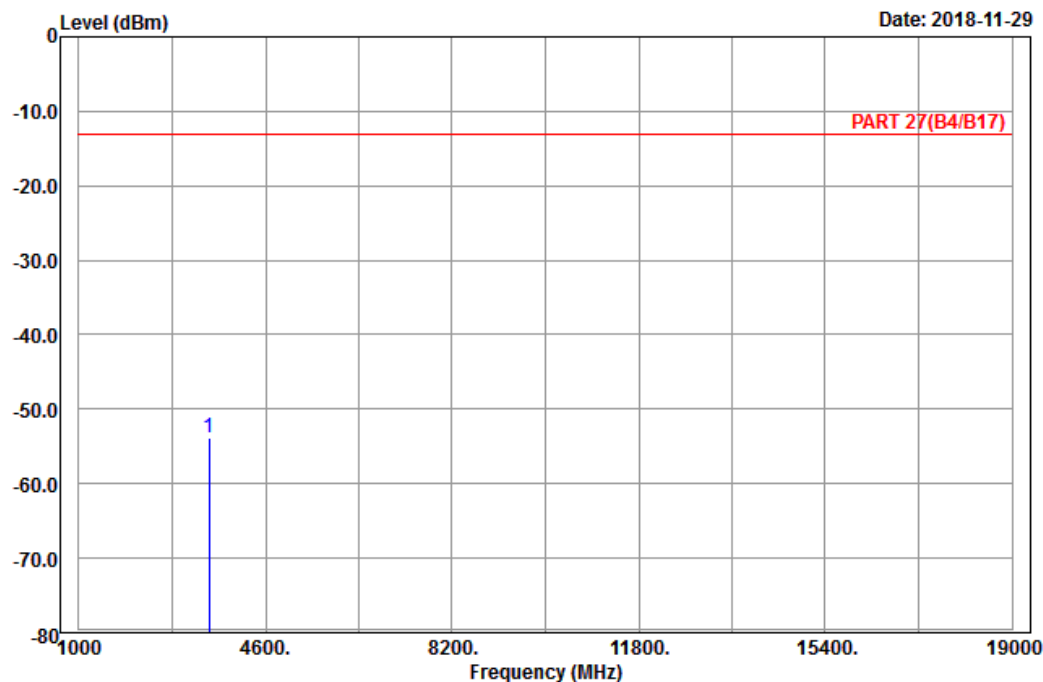


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : Band IV_Link_CH1513
Tested by: Karl Lee

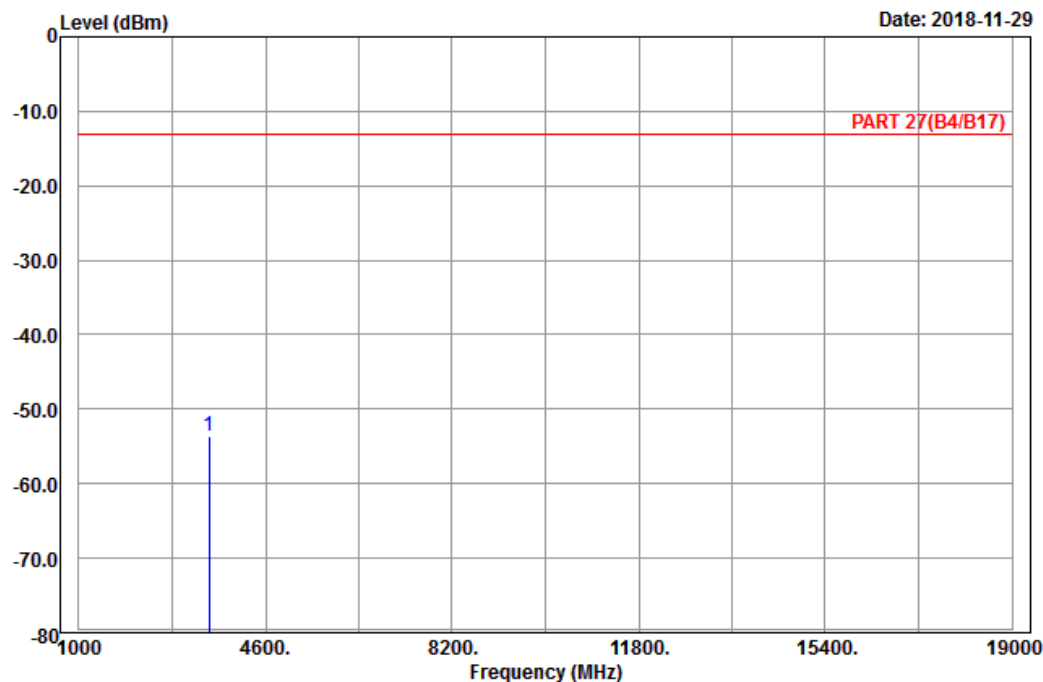
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3505.20	-53.92	-68.20	-13.00	-40.92	14.28	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : Band IV_Link_CH1513
 Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3505.20	-53.70	-67.98	-13.00	-40.70	14.28	Peak

LTE Band 4
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

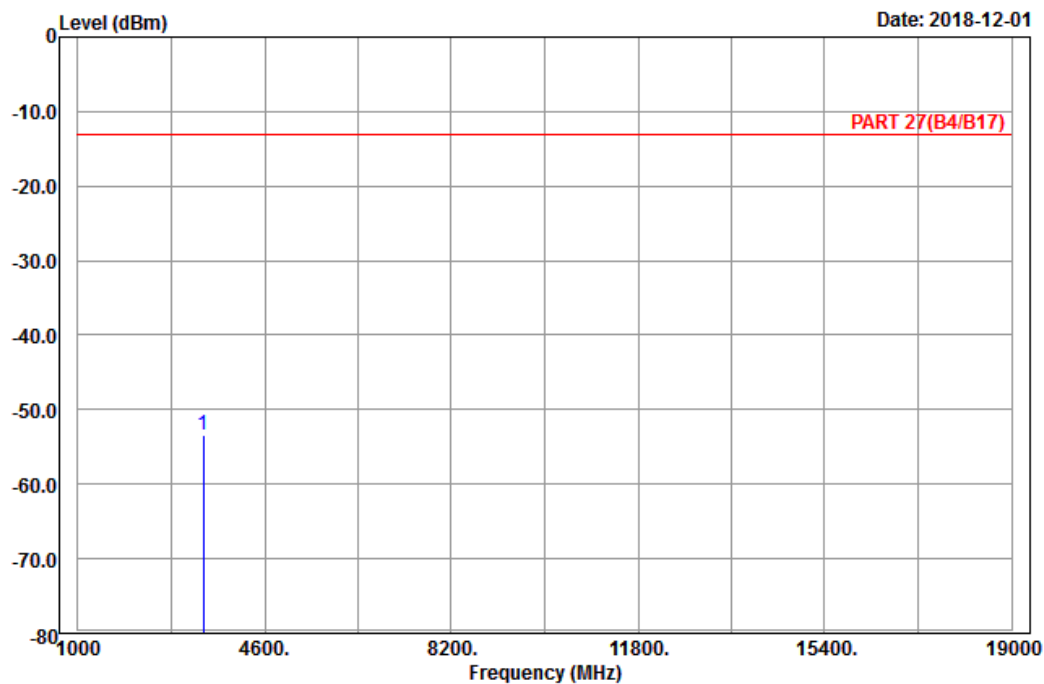


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3

Date: 2018-12-01



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH19957
Tested by: Karl Lee

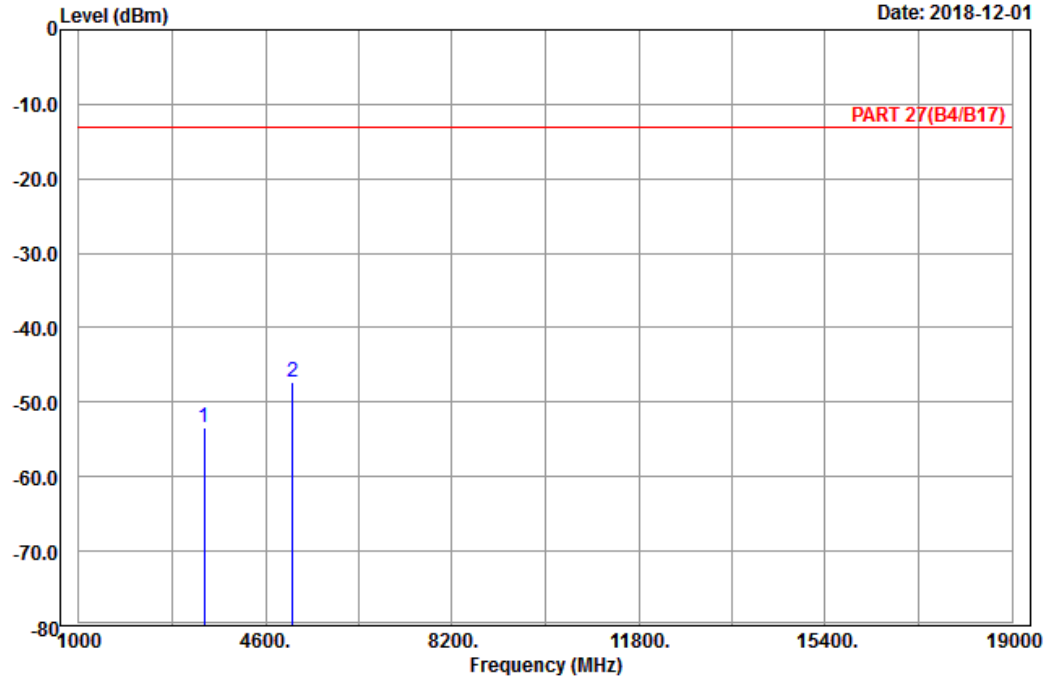
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3421.40	-53.37	-67.74	-13.00	-40.37	14.37	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : LTE_Band 4_Link_CH19957
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3421.40	-53.34	-67.71	-13.00	-40.34	14.37	Peak
2 pp	5132.10	-47.31	-67.12	-13.00	-34.31	19.81	Peak

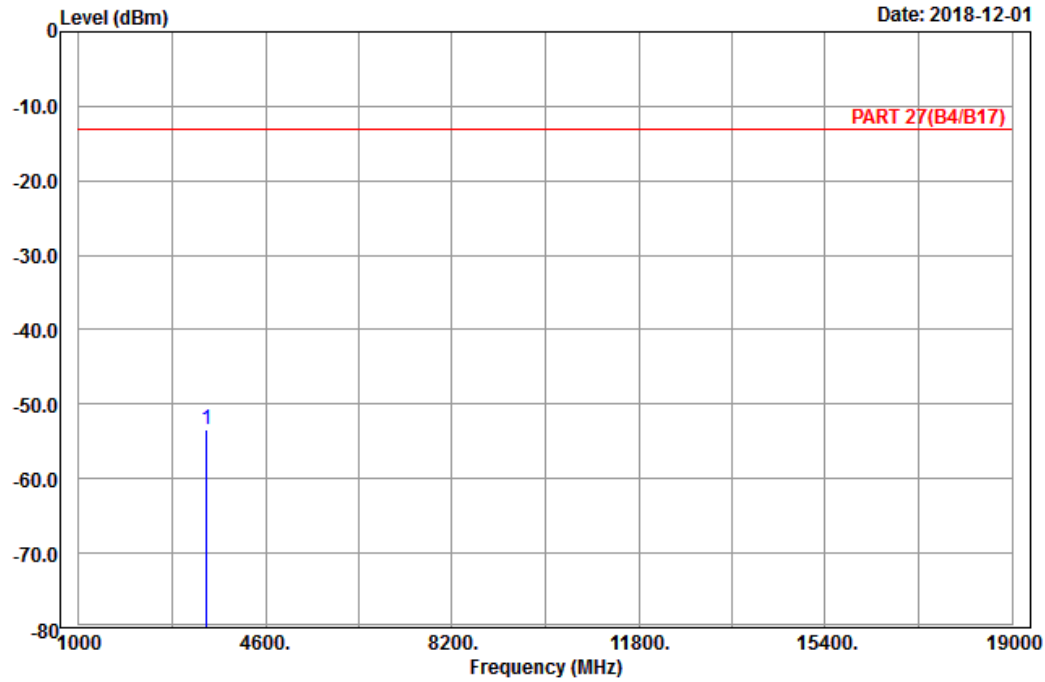
Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20175
Tested by: Karl Lee

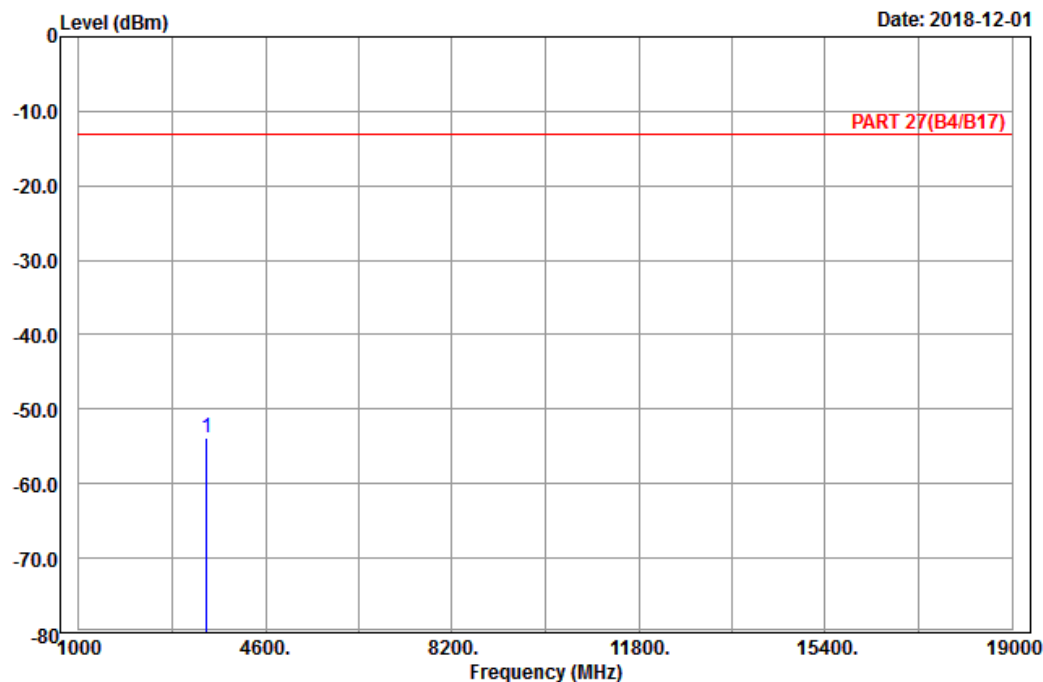
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3465.00	-53.34	-67.68	-13.00	-40.34	14.34	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : LTE_Band 4_Link_CH20175
 Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3465.00	-53.84	-68.18	-13.00	-40.84	14.34	Peak

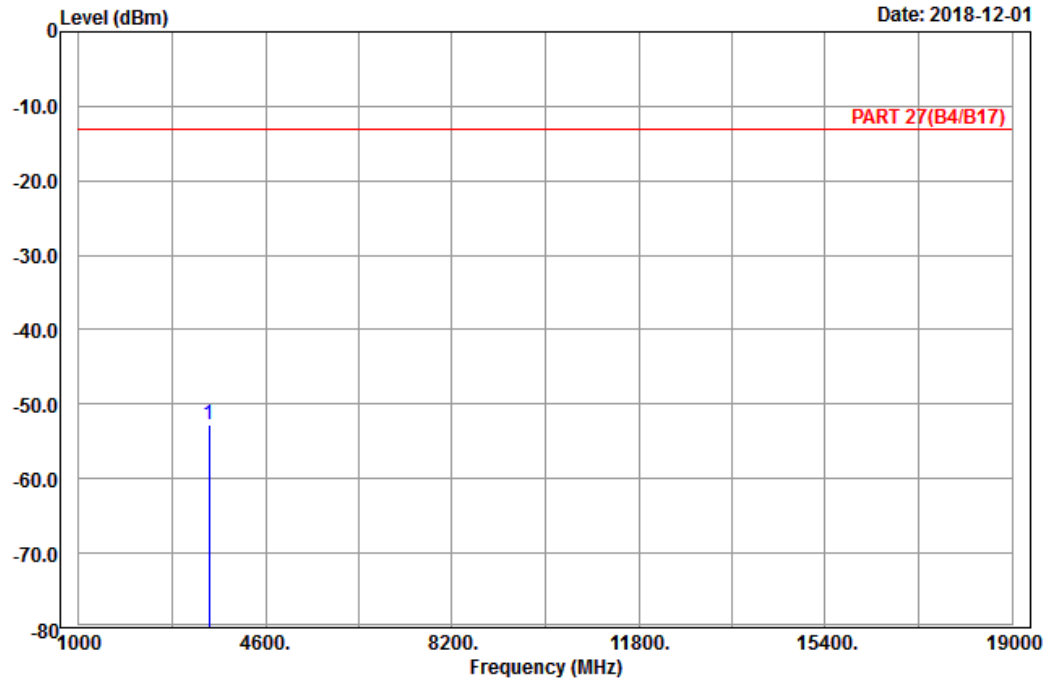
High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20393
Tested by: Karl Lee

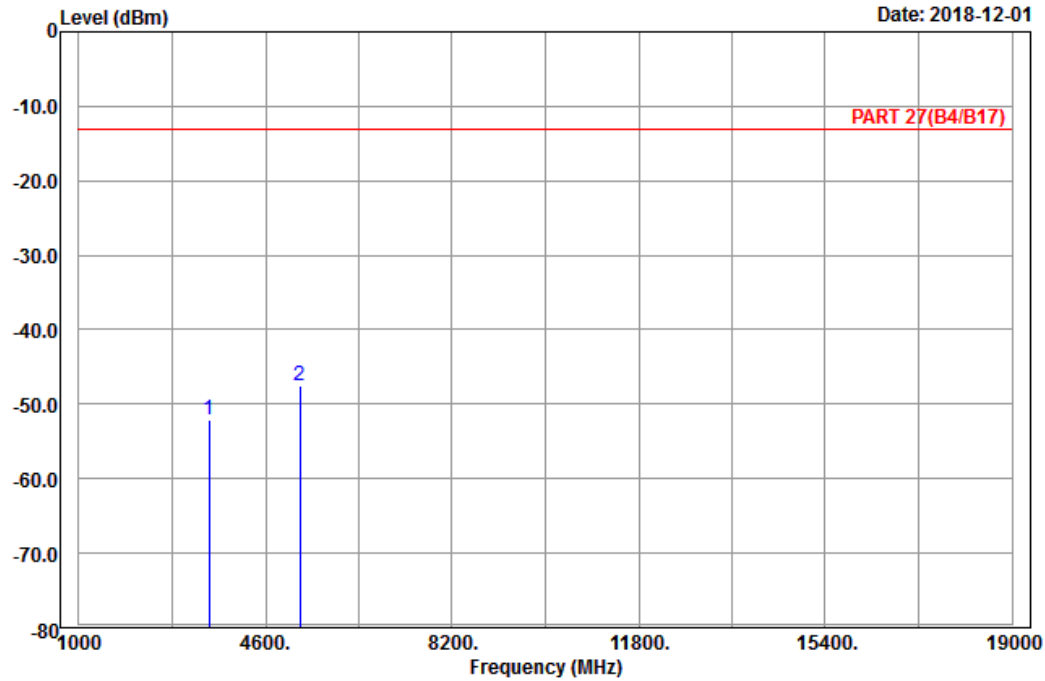
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3508.60	-52.85	-67.13	-13.00	-39.85	14.28	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : LTE_Band 4_Link_CH20393
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3508.60	-52.19	-66.47	-13.00	-39.19	14.28	Peak
2 pp	5262.90	-47.52	-67.72	-13.00	-34.52	20.20	Peak

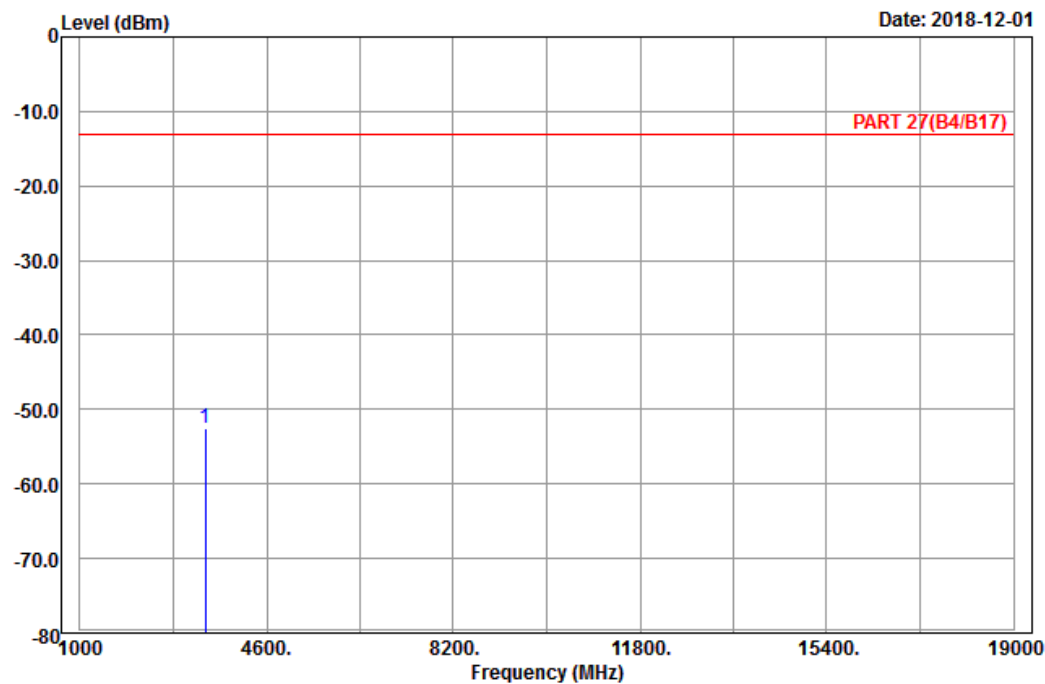
Channel Bandwidth: 5 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH19975
Tested by: Karl Lee

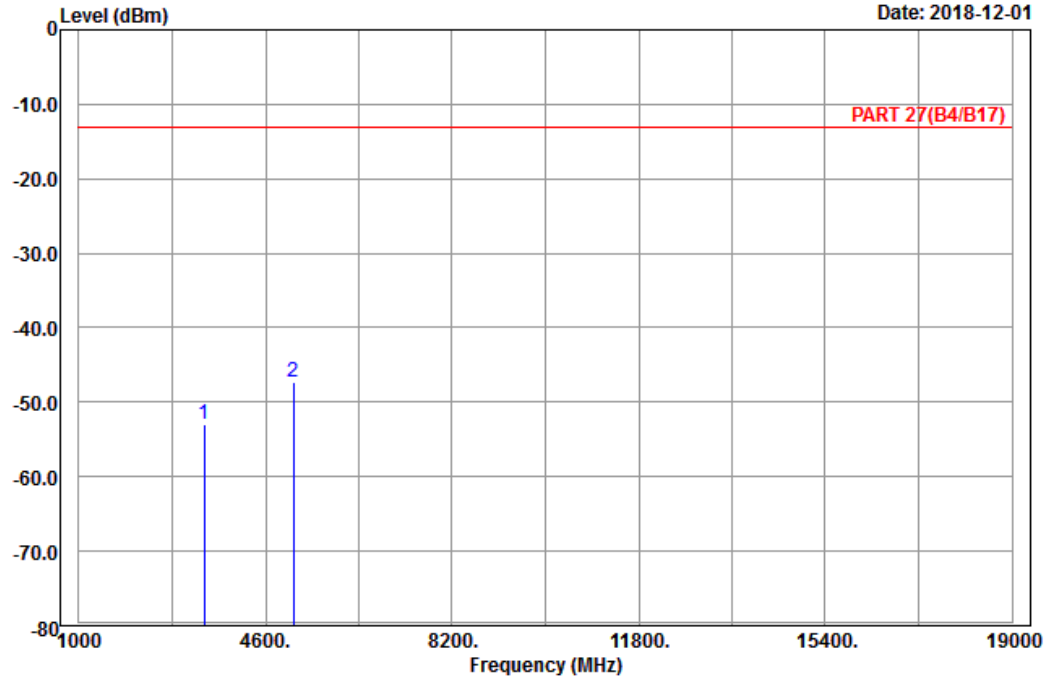
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3425.00	-52.45	-66.82	-13.00	-39.45	14.37	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : LTE_Band 4_Link_CH19975
 Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3425.00	-52.90	-67.27	-13.00	-39.90	14.37	Peak
2 pp	5137.50	-47.38	-67.19	-13.00	-34.38	19.81	Peak

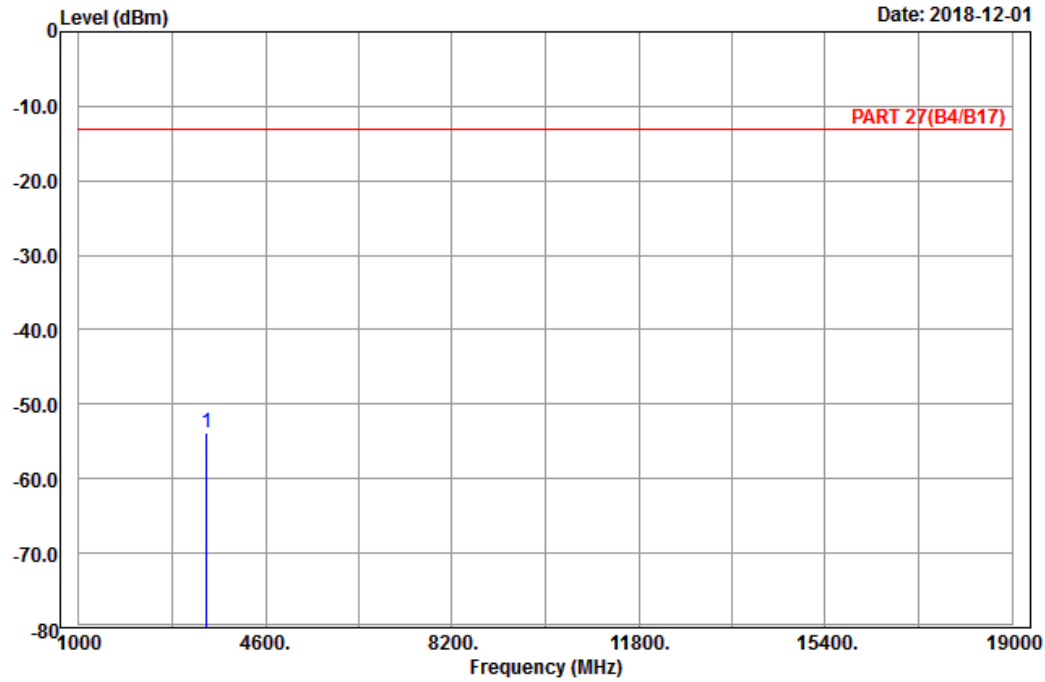
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20175
Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3465.00	-53.77	-68.11	-13.00	-40.77	14.34	Peak

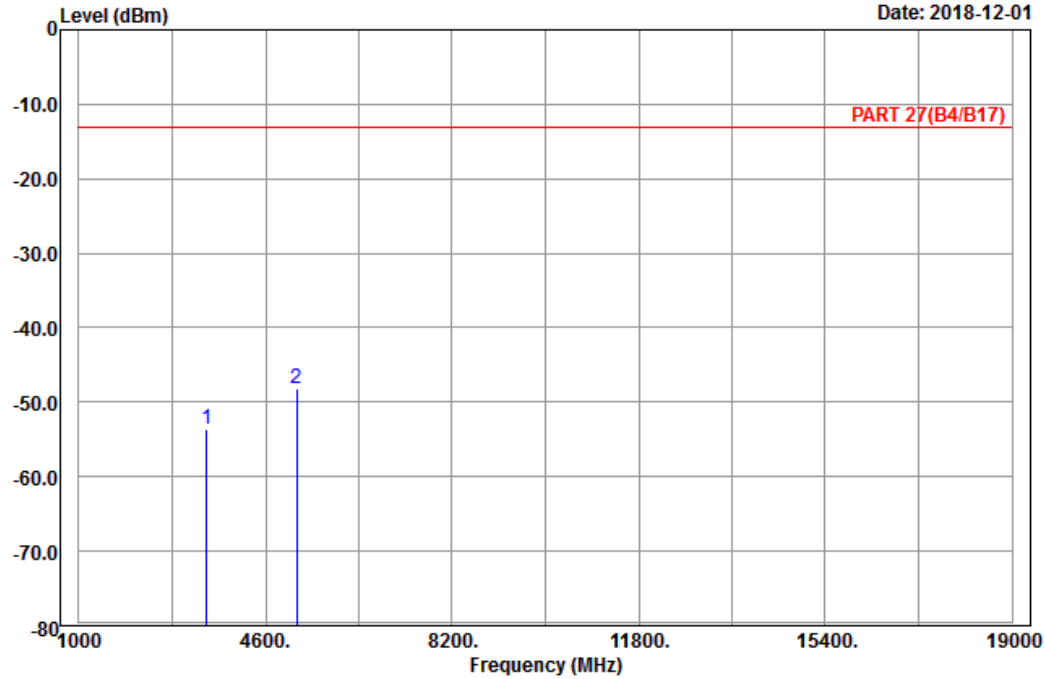


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4

Date: 2018-12-01



Site : 966 chamber 1
Condition: PART 27(B4/B17) Vertical
Remark : LTE_Band 4_Link_CH20175
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3465.00	-53.54	-67.88	-13.00	-40.54	14.34	Peak
2 pp	5197.50	-48.27	-68.39	-13.00	-35.27	20.12	Peak

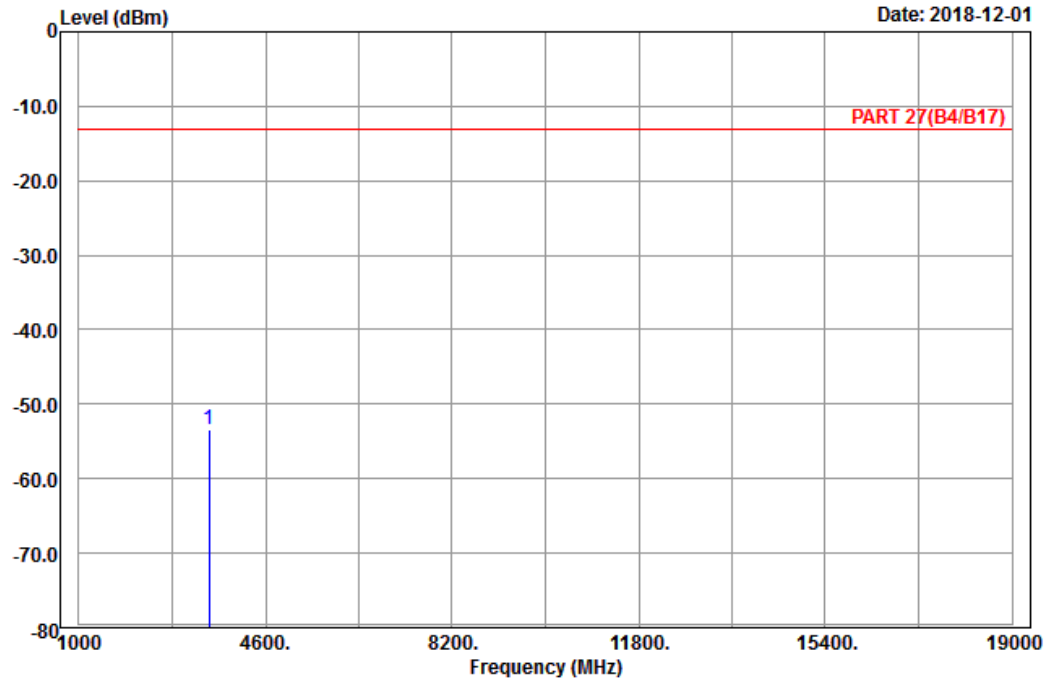
High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20375
Tested by: Karl Lee

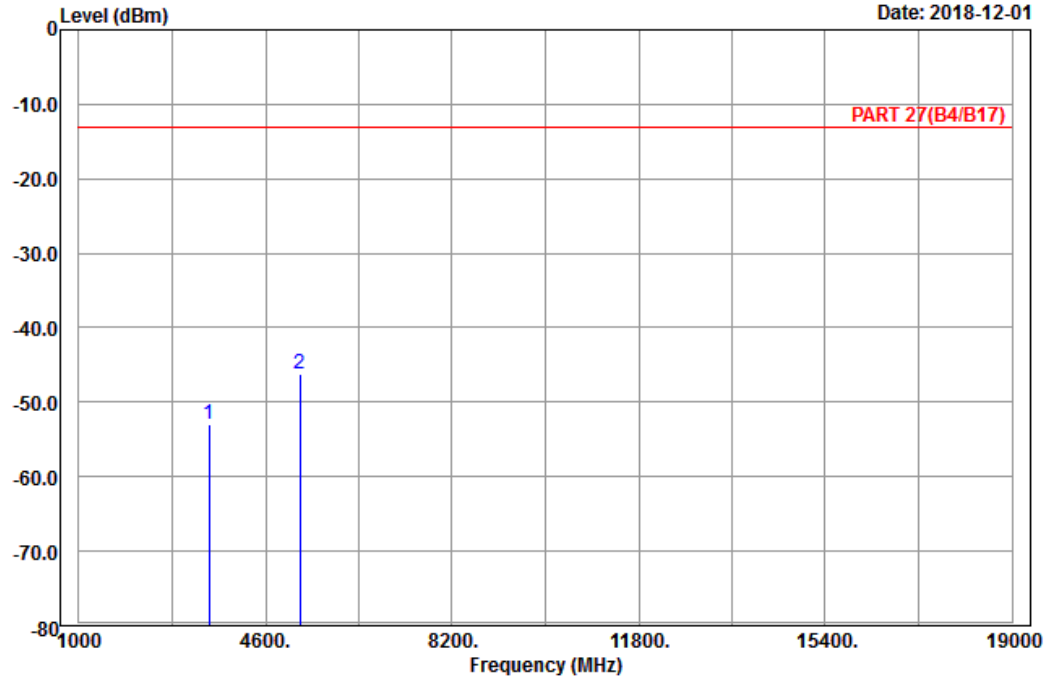
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3505.00	-53.36	-67.64	-13.00	-40.36	14.28	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 chamber 1
 Condition: PART 27(B4/B17) Vertical
 Remark : LTE_Band 4_Link_CH20375
 Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3505.00	-52.95	-67.23	-13.00	-39.95	14.28	Peak
2 pp	5257.50	-46.13	-66.33	-13.00	-33.13	20.20	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

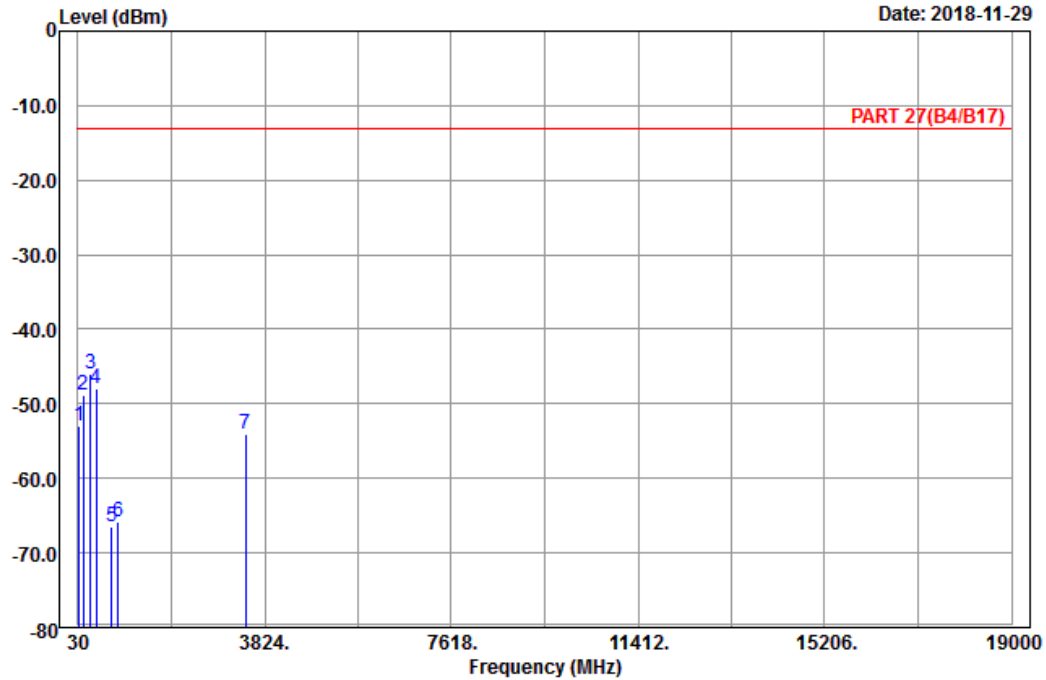


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20050
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	54.30	-52.96	-38.90	-13.00	-39.96	-14.06	Peak
2	141.78	-48.92	-41.18	-13.00	-35.92	-7.74	Peak
3	291.09	-46.04	-40.16	-13.00	-33.04	-5.88	Peak
4	405.00	-47.89	-45.02	-13.00	-34.89	-2.87	Peak
5	708.10	-66.53	-66.01	-13.00	-53.53	-0.52	Peak
6	853.70	-65.83	-67.39	-13.00	-52.83	1.56	Peak
7	3440.00	-53.96	-68.31	-13.00	-40.96	14.35	Peak

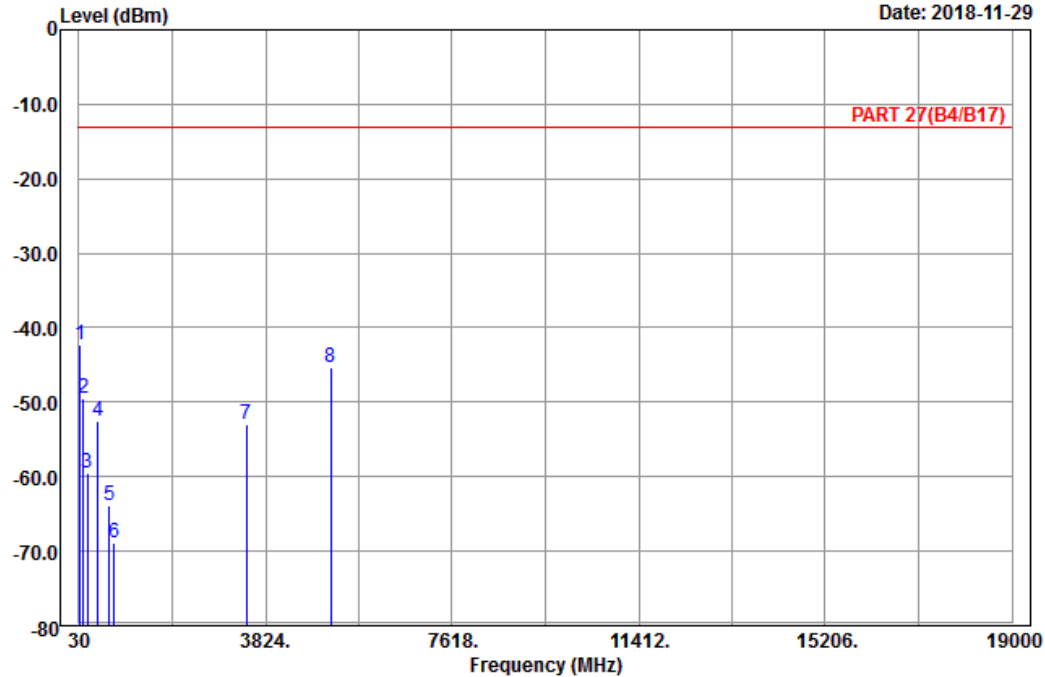


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Vertical
Remark : LTE_Band 4_Link_CH20050
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	55.38	-42.39	-28.33	-13.00	-29.39	-14.06	Peak
2	125.04	-49.48	-41.53	-13.00	-36.48	-7.95	Peak
3	206.04	-59.47	-53.36	-13.00	-46.47	-6.11	Peak
4	416.90	-52.57	-49.45	-13.00	-39.57	-3.12	Peak
5	650.70	-63.78	-63.64	-13.00	-50.78	-0.14	Peak
6	750.10	-68.96	-67.65	-13.00	-55.96	-1.31	Peak
7	3440.00	-52.88	-67.23	-13.00	-39.88	14.35	Peak
8	5160.00	-45.37	-65.29	-13.00	-32.37	19.92	Peak

Middle Channel

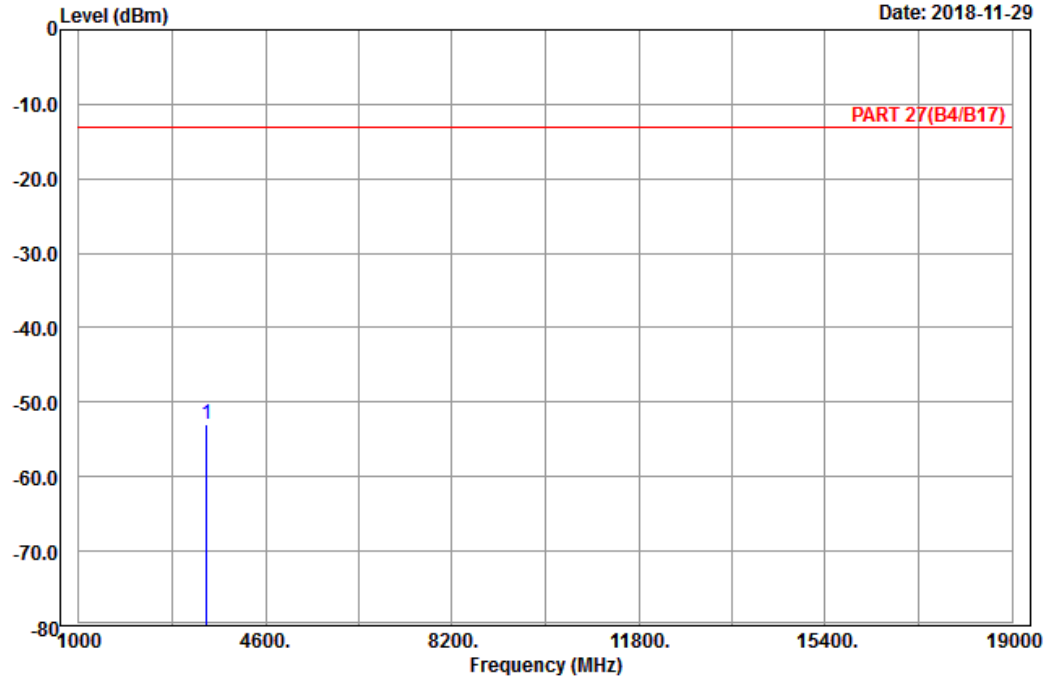


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 9

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20175
Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3465.00	-52.90	-67.24	-13.00	-39.90	14.34	Peak

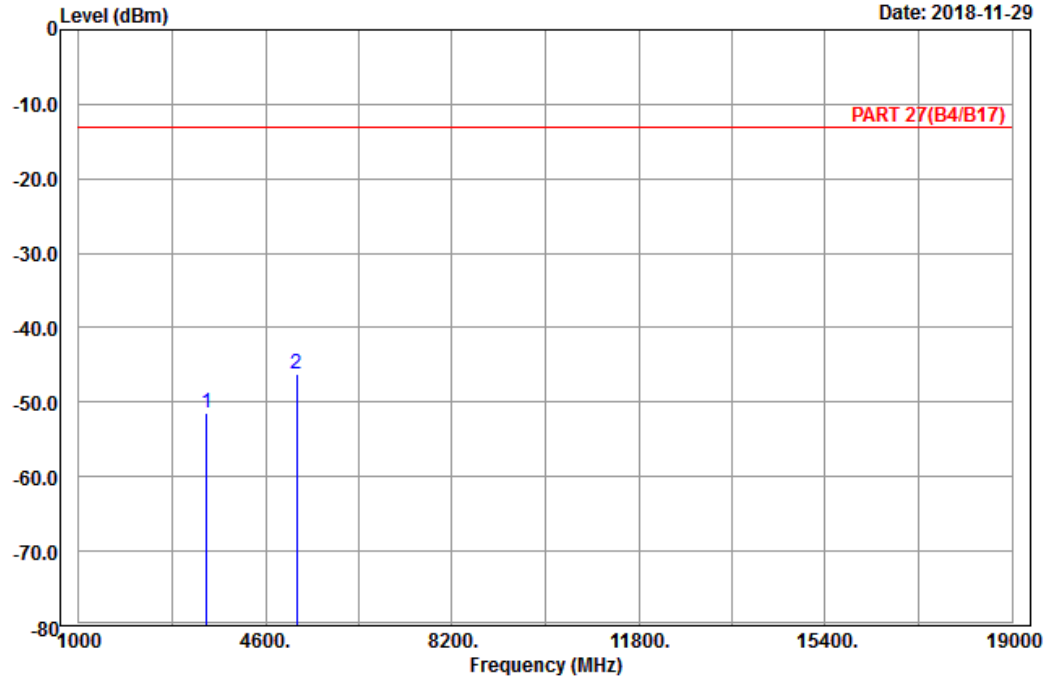


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Vertical
Remark : LTE_Band 4_Link_CH20175
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3465.00	-51.52	-65.86	-13.00	-38.52	14.34	Peak
2	5197.50	-46.14	-66.26	-13.00	-33.14	20.12	Peak

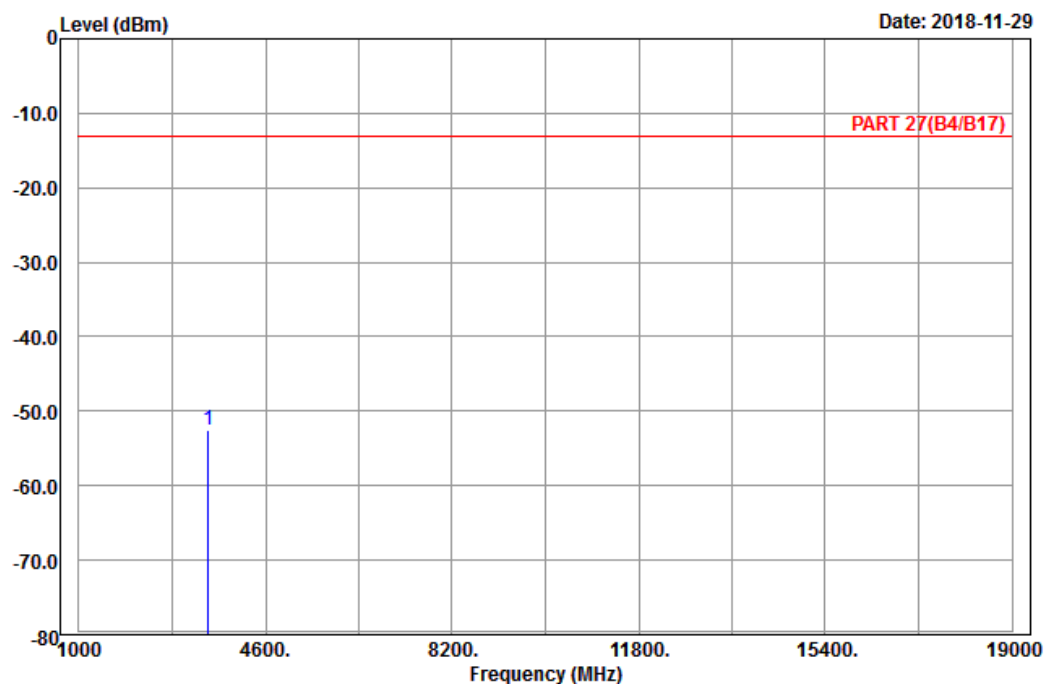
High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 9



Site : 966 chamber 1
Condition: PART 27(B4/B17) Horizontal
Remark : LTE_Band 4_Link_CH20300
Tested by: Karl Lee

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3490.00	-52.47	-66.78	-13.00	-39.47	14.31	Peak

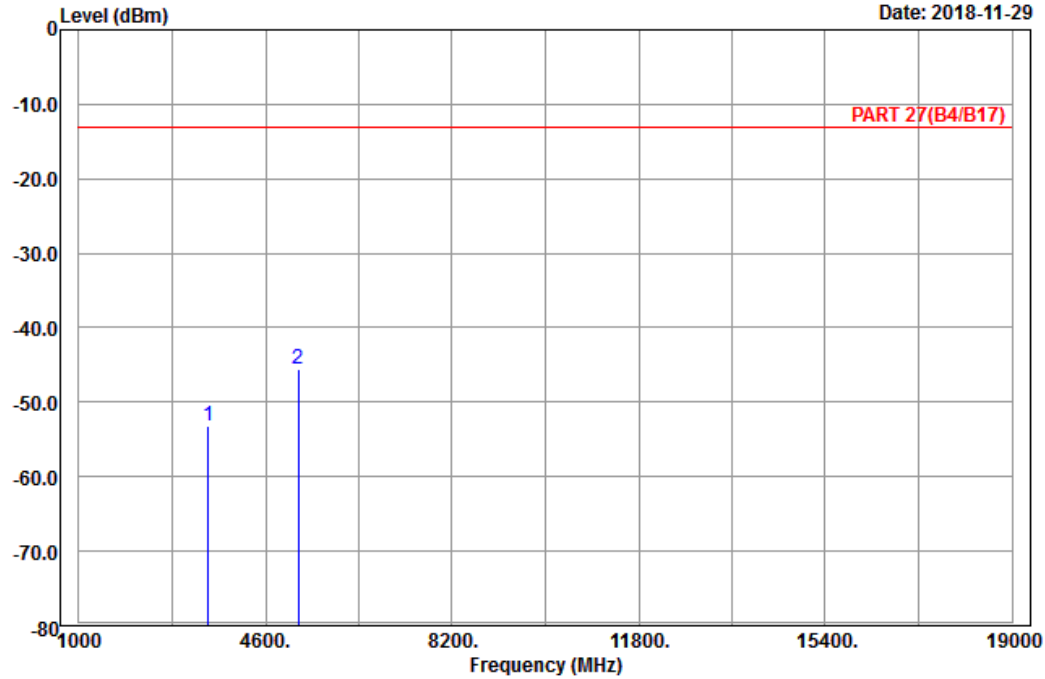


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B4/B17) Vertical
Remark : LTE_Band 4_Link_CH20300
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3490.00	-53.23	-67.54	-13.00	-40.23	14.31	Peak
2 pp	5235.00	-45.61	-65.77	-13.00	-32.61	20.16	Peak

LTE Band 12
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

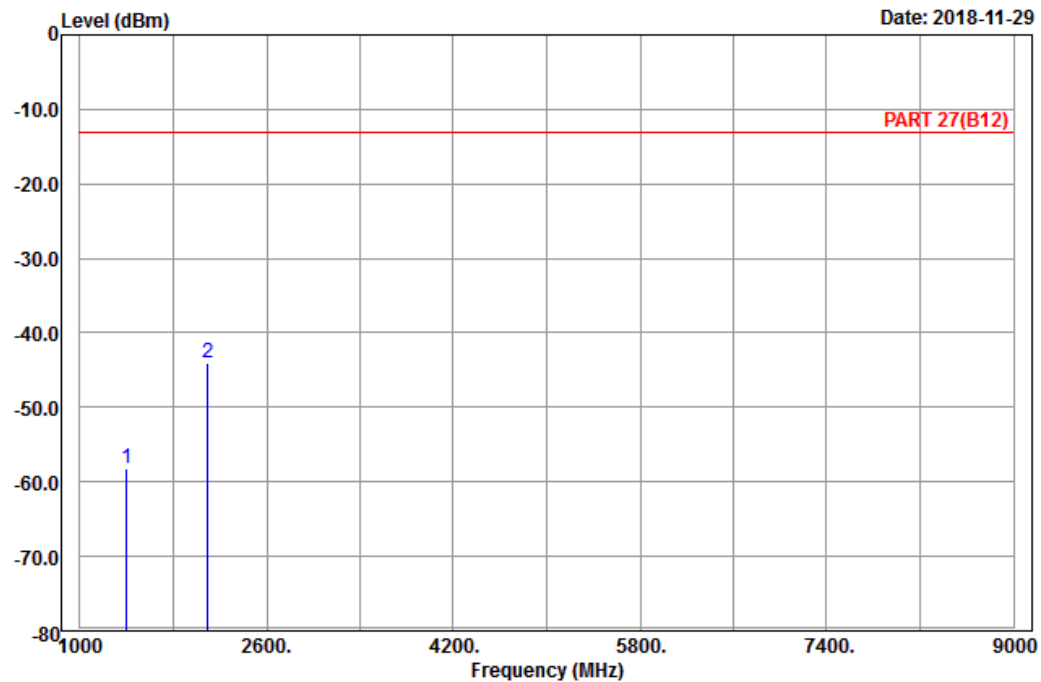


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23017
Tested by: Karl Lee

		Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor Remark
	MHz	dBm	dBm	dBm	dB	dB
1	1399.40	-58.19	-64.29	-13.00	-45.19	6.10 Peak
2 pp	2099.10	-44.05	-54.98	-13.00	-31.05	10.93 Peak

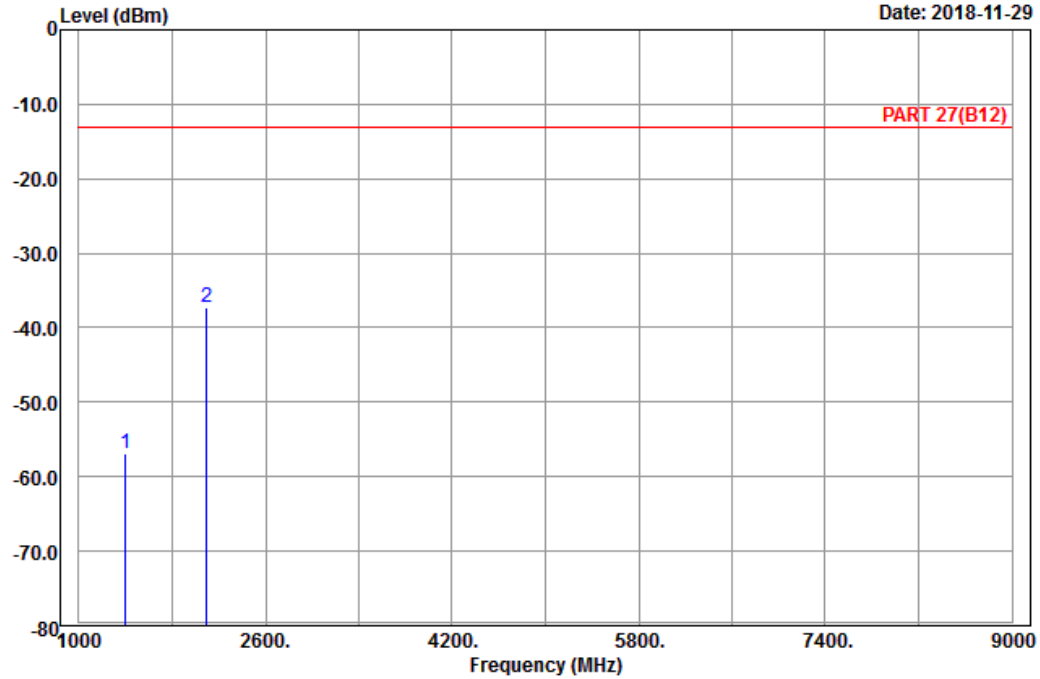


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23017
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1399.40	-56.86	-62.96	-13.00	-43.86	6.10	Peak
2 pp	2099.10	-37.17	-48.10	-13.00	-24.17	10.93	Peak

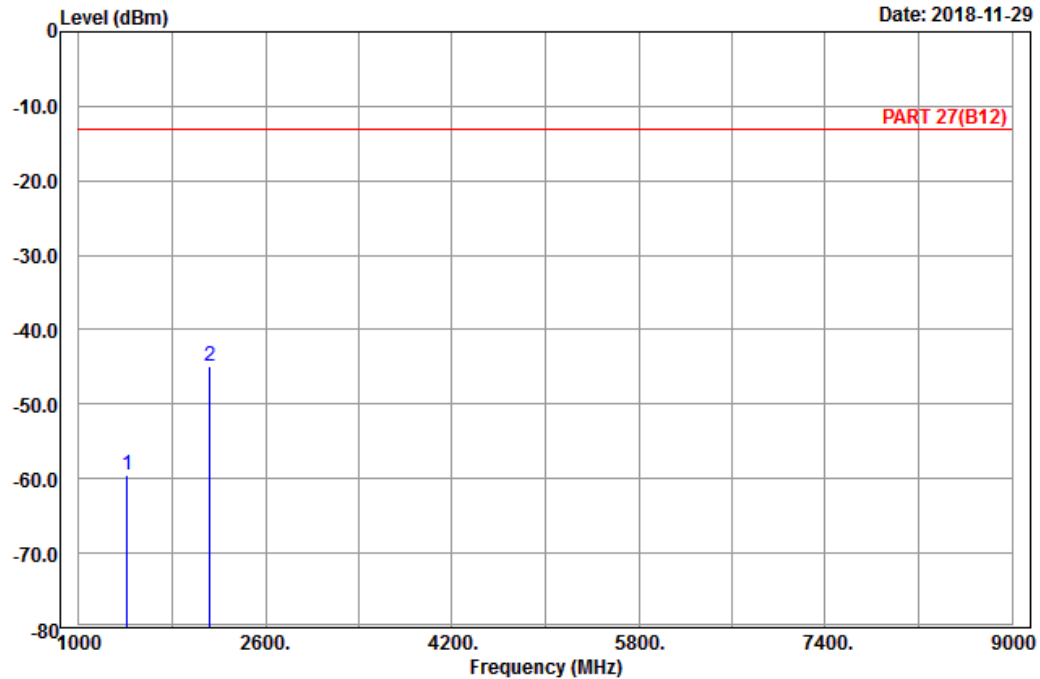
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 chamber 1
 Condition: PART 27(B12) Horizontal
 Remark : LTE_Band 12_Link_CH23095
 Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-59.46	-65.82	-13.00	-46.46	6.36	Peak
2 pp	2122.50	-44.91	-56.02	-13.00	-31.91	11.11	Peak

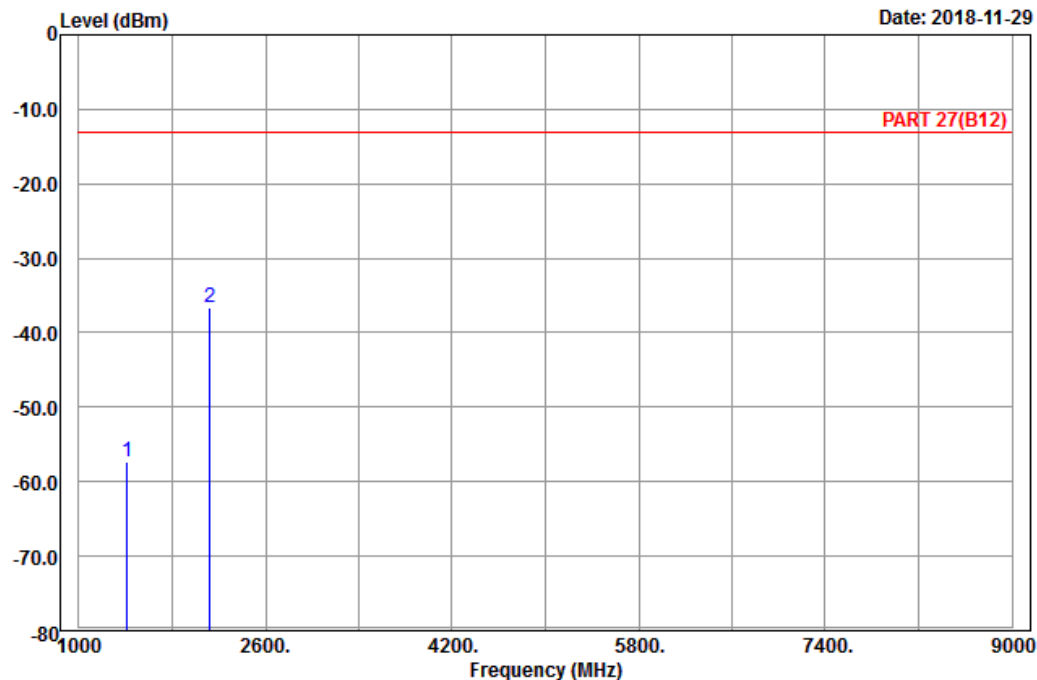


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23095
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-57.38	-63.74	-13.00	-44.38	6.36	Peak
2 pp	2122.50	-36.66	-47.77	-13.00	-23.66	11.11	Peak

High Channel

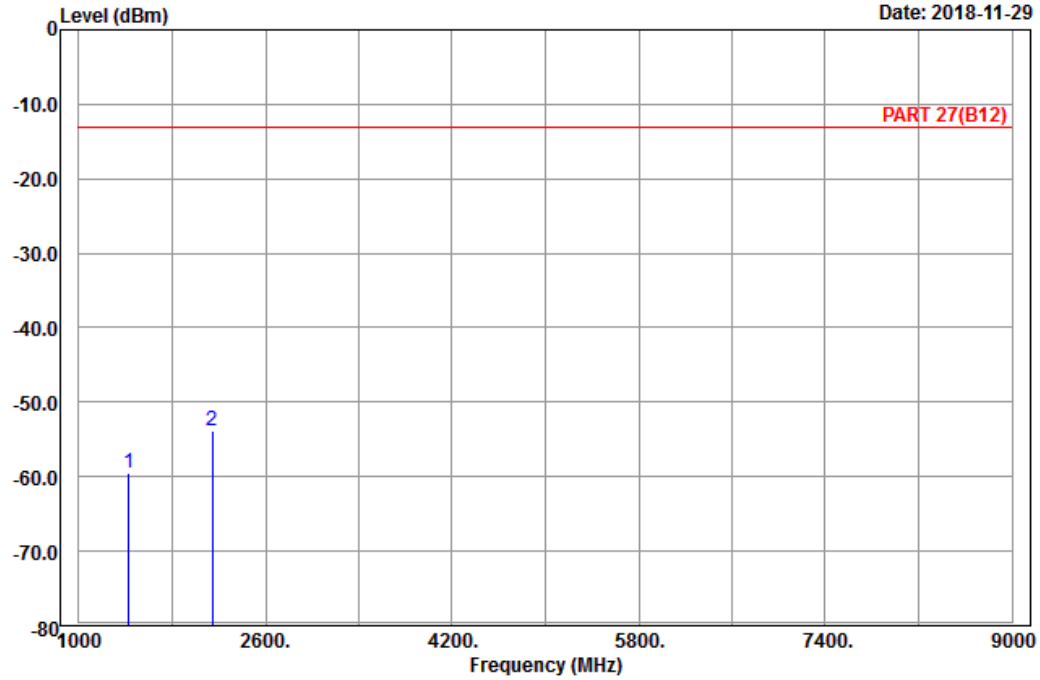


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 5

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23173
Tested by: Karl Lee

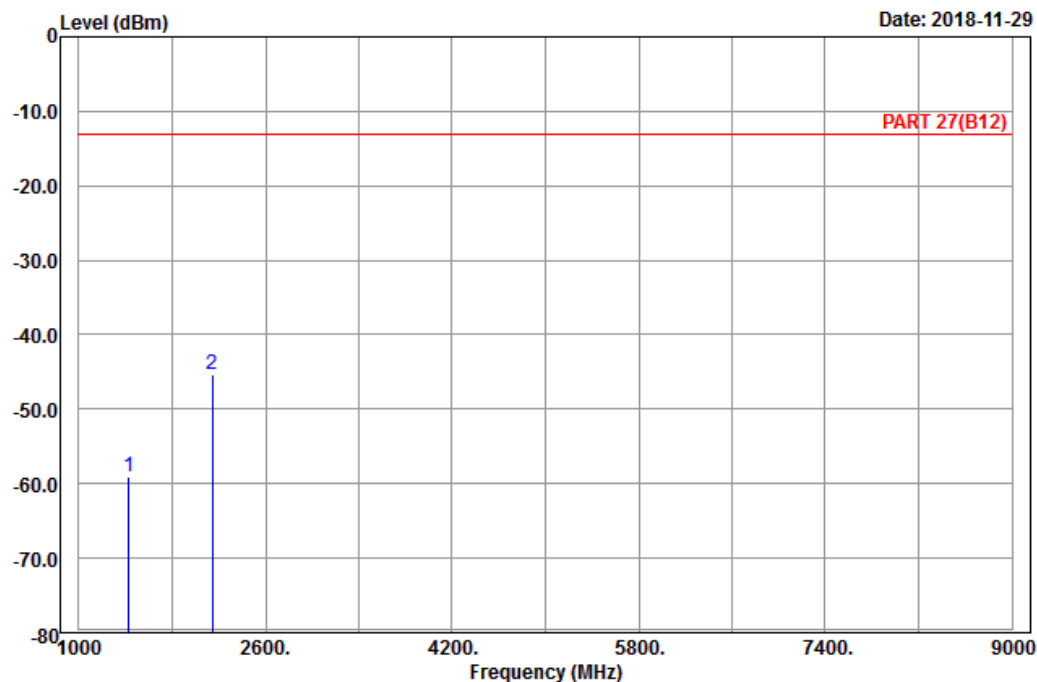
			Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark	
MHz	dBm	dBm	dBm	dB	dB		
1	1430.60	-59.51	-65.75	-13.00	-46.51	6.24	Peak
2	2145.90	-53.94	-65.19	-13.00	-40.94	11.25	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23173
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1430.60	-59.12	-65.36	-13.00	-46.12	6.24	Peak
2 pp	2145.90	-45.28	-56.53	-13.00	-32.28	11.25	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

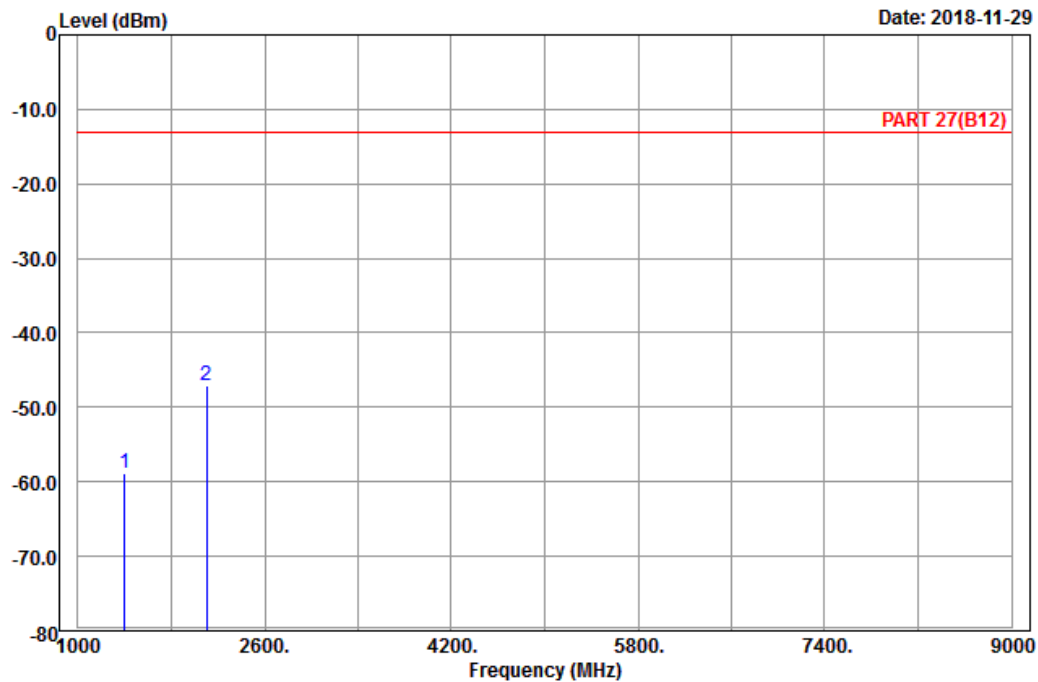


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23035
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1403.00	-58.76	-64.86	-13.00	-45.76	6.10	Peak
2 pp	2104.50	-46.98	-57.91	-13.00	-33.98	10.93	Peak

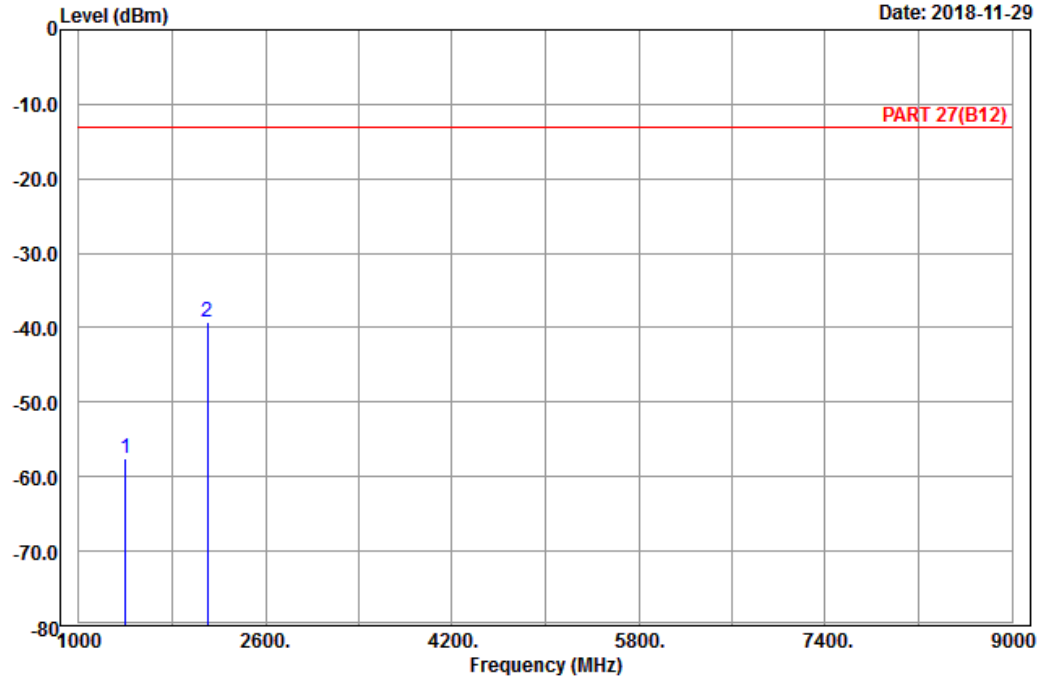


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23035
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1403.00	-57.48	-63.58	-13.00	-44.48	6.10	Peak
2 pp	2104.50	-39.18	-50.11	-13.00	-26.18	10.93	Peak

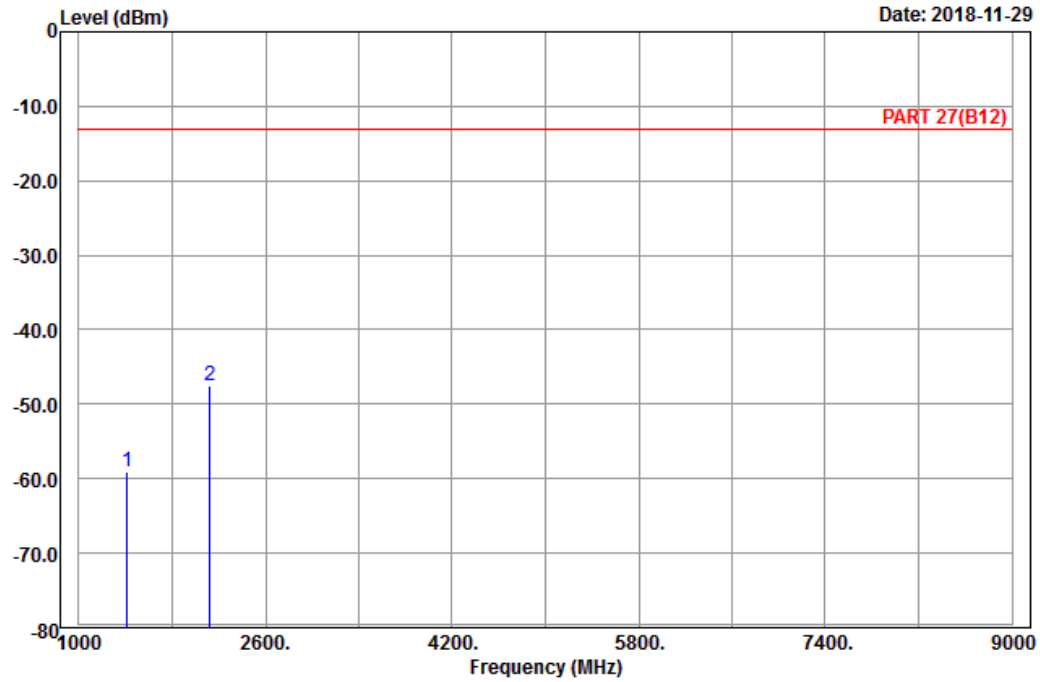
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 chamber 1
 Condition: PART 27(B12) Horizontal
 Remark : LTE_Band 12_Link_CH23095
 Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-59.12	-65.48	-13.00	-46.12	6.36	Peak
2	pp 2122.50	-47.48	-58.59	-13.00	-34.48	11.11	Peak

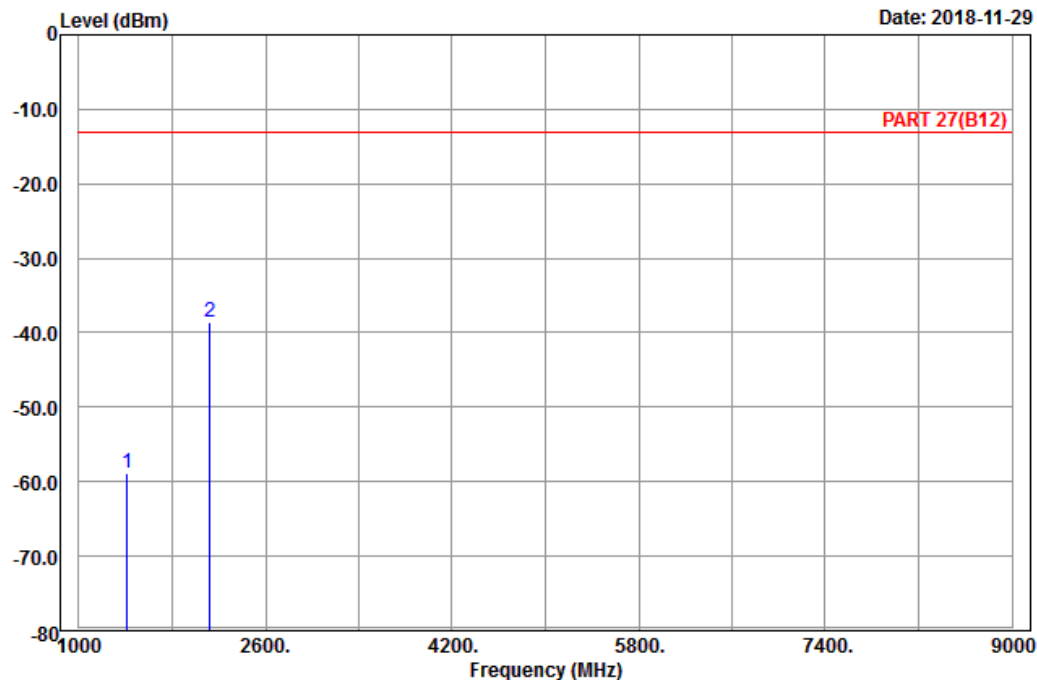


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23095
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-58.86	-65.22	-13.00	-45.86	6.36	Peak
2 pp	2122.50	-38.50	-49.61	-13.00	-25.50	11.11	Peak

High Channel

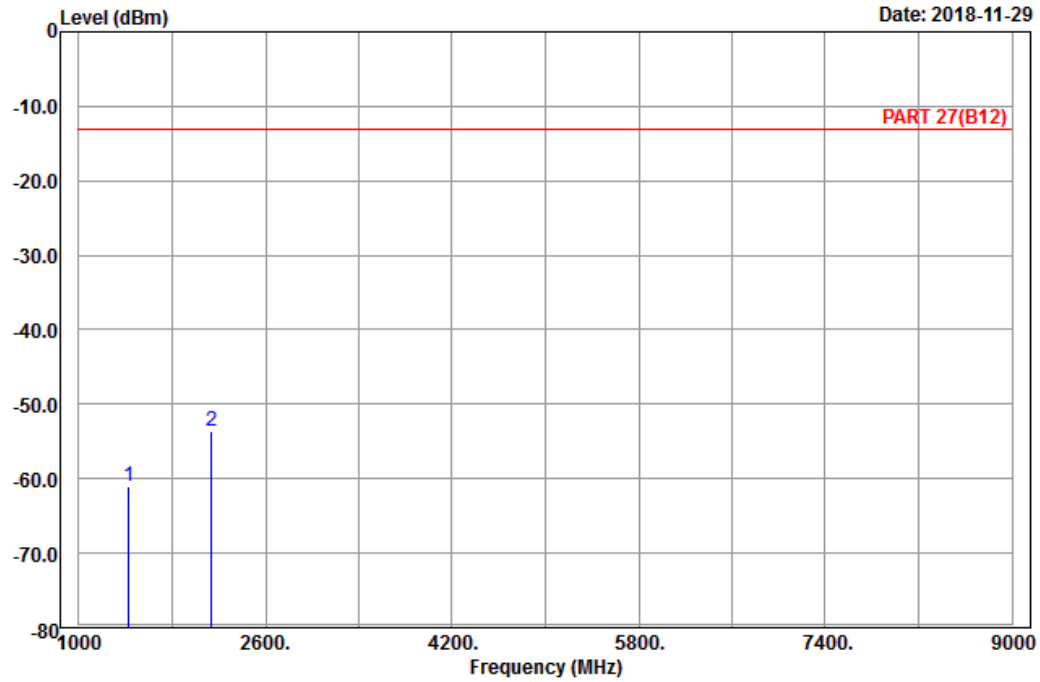


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23155
Tested by: Karl Lee

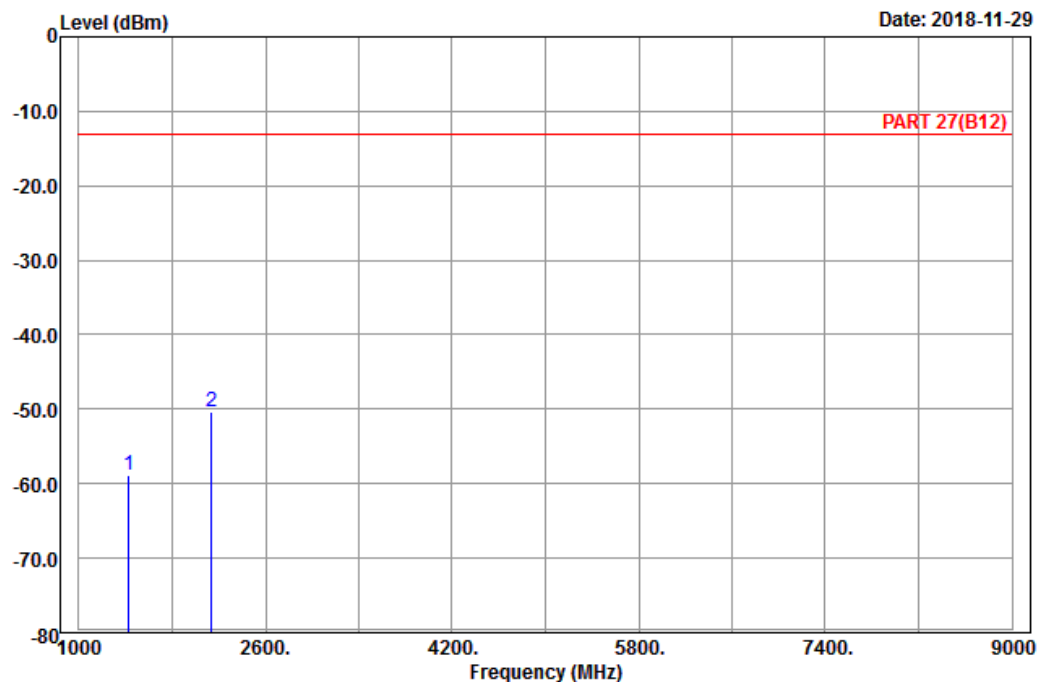
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1427.00	-61.01	-67.25	-13.00	-48.01	6.24	Peak
2 pp	2140.50	-53.73	-65.01	-13.00	-40.73	11.28	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 chamber 1
 Condition: PART 27(B12) Vertical
 Remark : LTE_Band 12_Link_CH23155
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1427.00	-58.75	-64.99	-13.00	-45.75	6.24	Peak
2 pp	2140.50	-50.26	-61.54	-13.00	-37.26	11.28	Peak

Channel Bandwidth: 10 MHz / QPSK
Low Channel

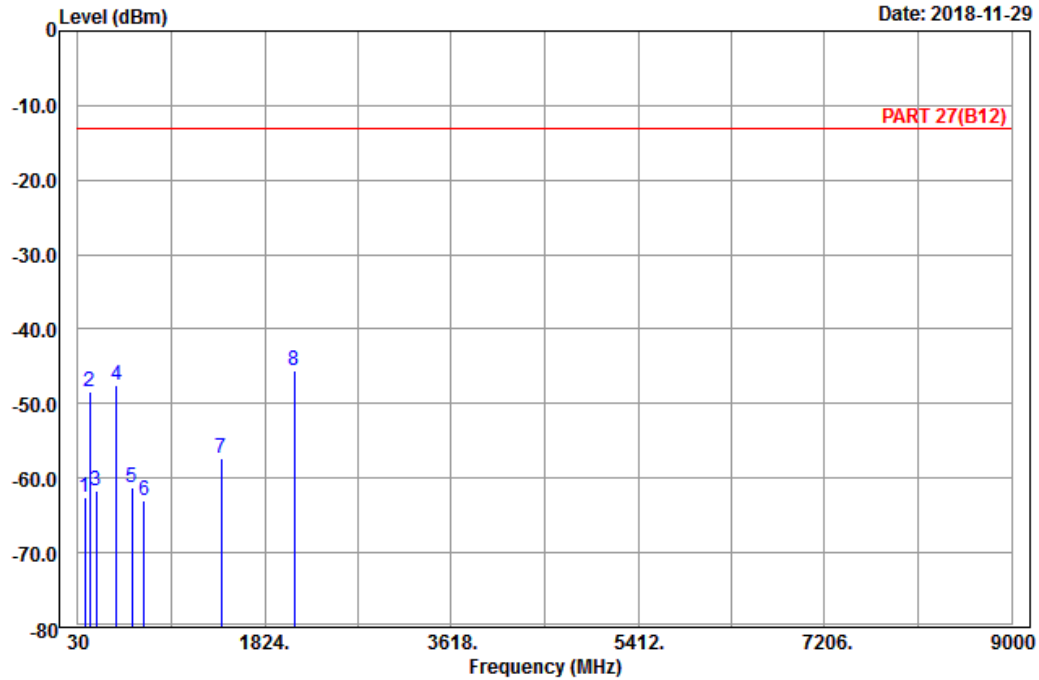


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23060
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	96.69	-62.48	-52.19	-13.00	-49.48	-10.29	Peak
2	142.05	-48.34	-40.58	-13.00	-35.34	-7.76	Peak
3	208.20	-61.58	-55.51	-13.00	-48.58	-6.07	Peak
4	403.60	-47.43	-44.60	-13.00	-34.43	-2.83	Peak
5	549.90	-61.17	-59.51	-13.00	-48.17	-1.66	Peak
6	661.90	-62.90	-62.71	-13.00	-49.90	-0.19	Peak
7	1408.00	-57.28	-63.64	-13.00	-44.28	6.36	Peak
8 pp	2112.00	-45.46	-56.57	-13.00	-32.46	11.11	Peak

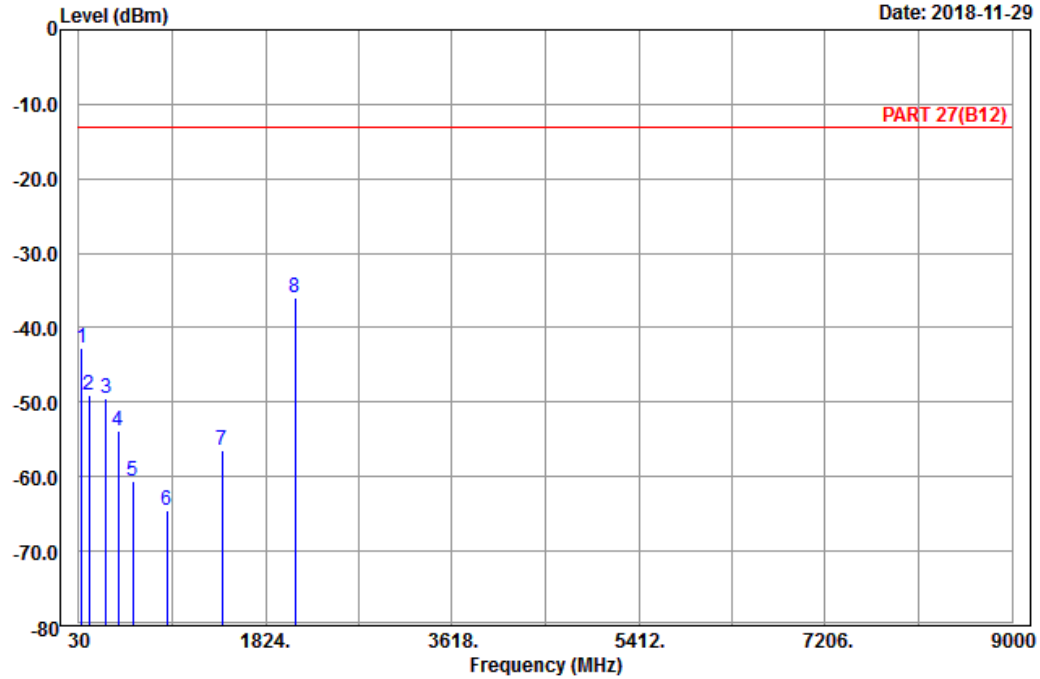


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23060
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	55.11	-42.64	-28.58	-13.00	-29.64	-14.06	Peak
2	124.50	-48.99	-40.98	-13.00	-35.99	-8.01	Peak
3	287.85	-49.48	-43.63	-13.00	-36.48	-5.85	Peak
4	409.90	-53.86	-50.89	-13.00	-40.86	-2.97	Peak
5	550.60	-60.65	-59.03	-13.00	-47.65	-1.62	Peak
6	875.40	-64.54	-66.74	-13.00	-51.54	2.20	Peak
7	1408.00	-56.49	-62.85	-13.00	-43.49	6.36	Peak
8 pp	2112.00	-35.88	-46.99	-13.00	-22.88	11.11	Peak

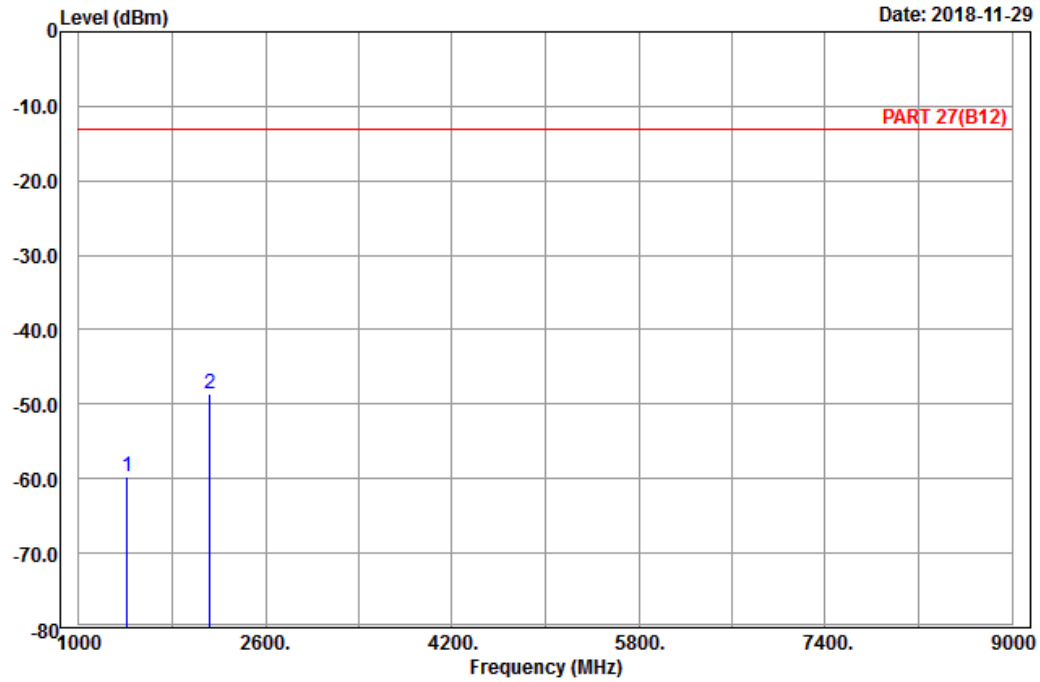
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 chamber 1
 Condition: PART 27(B12) Horizontal
 Remark : LTE_Band 12_Link_CH23095
 Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-59.68	-66.04	-13.00	-46.68	6.36	Peak
2 pp	2122.50	-48.61	-59.72	-13.00	-35.61	11.11	Peak

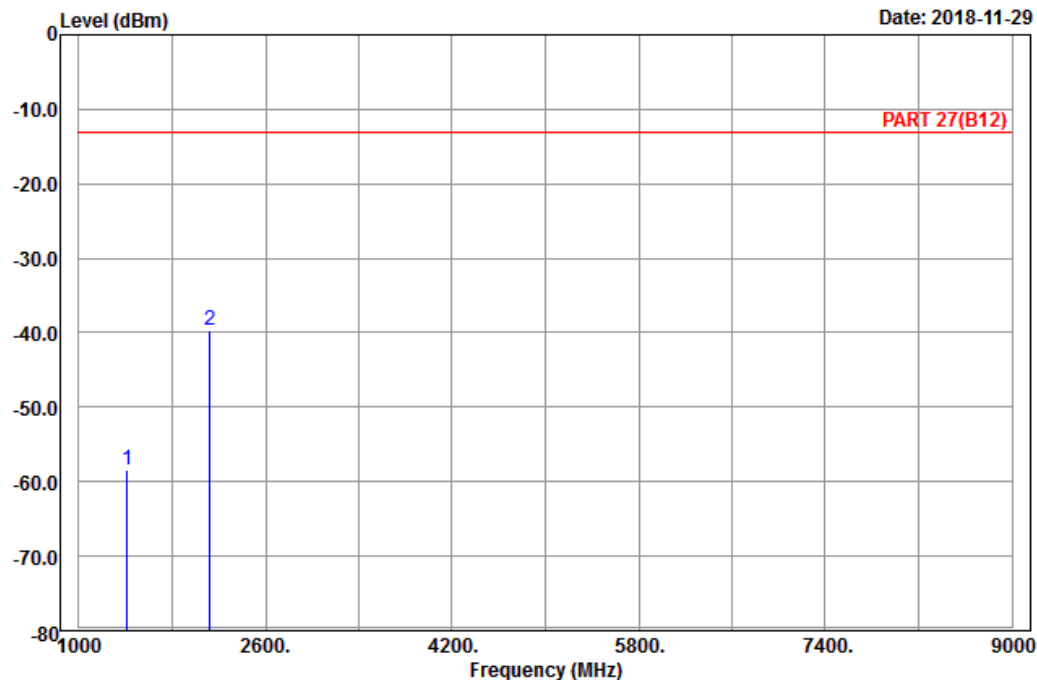


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23095
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1415.00	-58.46	-64.82	-13.00	-45.46	6.36	Peak
2 pp	2122.50	-39.58	-50.69	-13.00	-26.58	11.11	Peak

High Channel

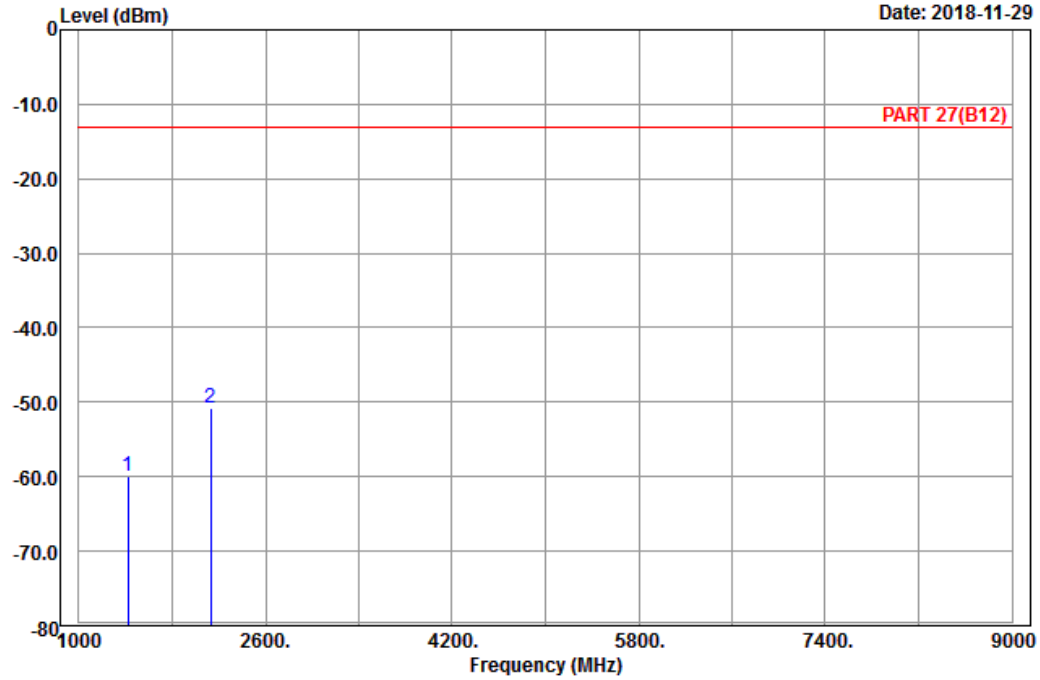


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 5

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Horizontal
Remark : LTE_Band 12_Link_CH23130
Tested by: Karl Lee

			Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark	
MHz	dBm	dBm	dBm	dB	dB		
1	1422.00	-59.92	-66.28	-13.00	-46.92	6.36	Peak
2 pp	2133.00	-50.86	-62.14	-13.00	-37.86	11.28	Peak

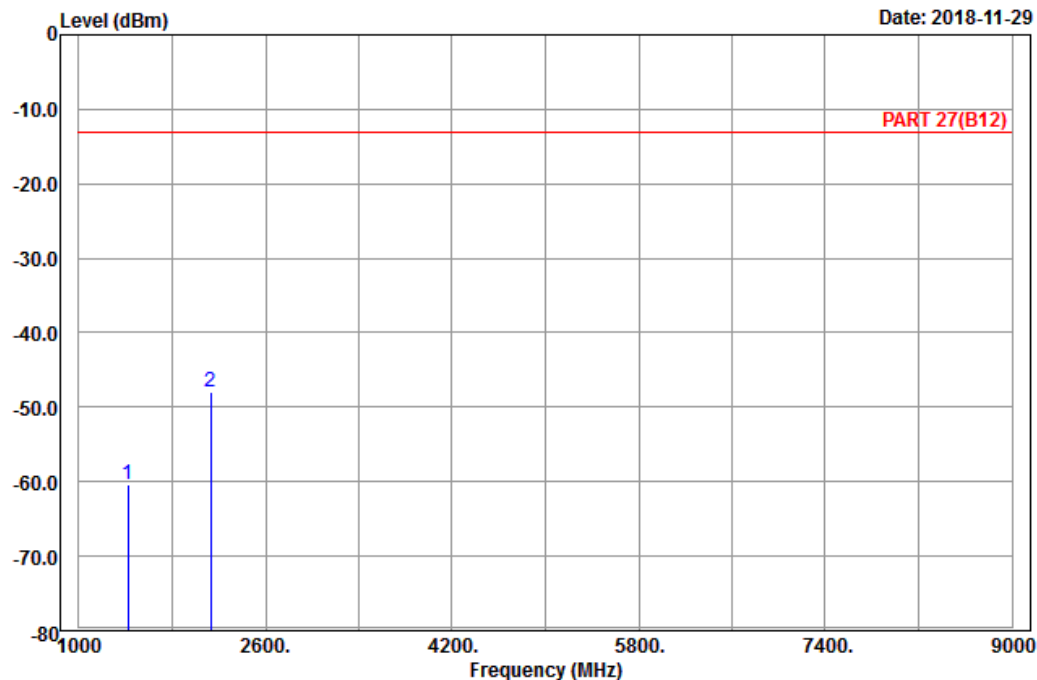


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 2018-11-29



Site : 966 chamber 1
Condition: PART 27(B12) Vertical
Remark : LTE_Band 12_Link_CH23130
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1422.00	-60.36	-66.72	-13.00	-47.36	6.36	Peak
2 pp	2133.00	-47.97	-59.25	-13.00	-34.97	11.28	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:

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 ---