

## Partial FCC Test Report

### (PART 22)

**Report No.:** RF180629C15-4

**FCC ID:** O57T77W980

**Test Model:** T77W980

**Received Date:** Jun. 23, 2018

**Test Date:** Aug. 08, 2018 ~ Aug. 14, 2018

**Issued Date:** Aug. 16, 2018

**Applicant:** Lenovo(Shanghai) Electronics Technology Co., Ltd.

**Address:** NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, 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 (1):** No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

**Test Location (2):** No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C

**FCC Registration /  
Designation Number:** 427177 / TW0011



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### Release Control Record

Issue No.	Description	Date Issued
RF180629C15-4	Original Release	Aug. 16, 2018

## 1 Certificate of Conformity

**Product:** Gigabit RF Card

**Brand:** FOXCONN

**Test Model:** T77W980

**Sample Status:** Identical Prototype

**Applicant:** Lenovo(Shanghai) Electronics Technology Co., Ltd.

**Test Date:** Aug. 08, 2018 ~ Aug. 14, 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 :**



**Date:**

Aug. 16, 2018

Gina Liu / Specialist

**Approved by :**



**Date:**

Aug. 16, 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 -41.99 dB at 1652.80 MHz.

### Note:

This report is a Class II change 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 BV CPS report no.: RF180503E05 for module (Brand: FOXCONN, Model: T77W980)

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ( $\pm$ )
Radiated Emissions up to 1 GHz	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	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
Fixed Attenuator Mini-Circuits	BW-N4W5+	PAD-ATT4-01	Jan. 29, 2018	Jan. 28, 2019
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 24, 2017	Oct. 23, 2018
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
HORN Antenna Schwarzbeck	BBHA 9120D	BBHA 9120D	Dec. 12, 2017	Dec. 11, 2018
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	6201010284	Dec. 28, 2017	Dec. 27, 2018
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
Radio Communication Analyzer	MT8821C	6261786083	Dec. 21, 2017	Dec. 20, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2018

- 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 IC7450I-1.

### 3 General Information

#### 3.1 General Description of EUT

<b>Product</b>	Gigabit RF Card	
<b>Brand</b>	FOXCONN	
<b>Test Model</b>	T77W980	
<b>Status of EUT</b>	Identical Prototype	
<b>Power Supply Rating</b>	20 / 15 / 9 / 5 Vdc (adapter) 7.68 Vdc (Li-ion battery)	
<b>Modulation Type</b>	WCDMA	QPSK
	LTE	QPSK, 16QAM, 64QAM
<b>Frequency Range</b>	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
	LTE 5 (Channel Bandwidth: 10+5 MHz)	829 ~ 836.8 MHz
	LTE 5 (Channel Bandwidth: 10+10 MHz)	829 ~ 834.1 MHz
	LTE 26 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 26 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 26 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 26 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
	LTE 26 (Channel Bandwidth: 15 MHz)	831.5 ~ 841.5 MHz
<b>Max. ERP Power</b>	WCDMA	129.06 mW
	LTE 5 (Channel Bandwidth: 1.4 MHz)	126.71 mW
	LTE 5 (Channel Bandwidth: 3 MHz)	127.88 mW
	LTE 5 (Channel Bandwidth: 5 MHz)	128.77 mW
	LTE 5 (Channel Bandwidth: 10 MHz)	129.96 mW
	LTE 5 (Channel Bandwidth: 10+10 MHz)	71.12 mW
	LTE 26 (Channel Bandwidth: 1.4 MHz)	126.47 mW
	LTE 26 (Channel Bandwidth: 3 MHz)	127.64 mW
	LTE 26 (Channel Bandwidth: 5 MHz)	128.82 mW
	LTE 26 (Channel Bandwidth: 10 MHz)	129.72 mW
LTE 26 (Channel Bandwidth: 15 MHz)	130.92 mW	
<b>Antenna Type</b>	Refer to Note as below	
<b>Accessory Device</b>	Refer to Note as below	
<b>Data Cable Supplied</b>	Refer to Note as below	

**Note:**

1. The change list for EUT is listed as below.
  - Adding a specific host.
  - Changing antenna.
  - Changing SW (to disable LTE Band 71 and to disable CA\_38C for configurations of CA).
2. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter	Lenovo	ADLX45YLC3D	I/P: 100-240 Vac, 50-60 Hz, 1.3 A O/P: 20 Vdc, 2.25 A / 15 Vdc, 3A / 9 Vdc, 2A / 5 Vdc, 2A
Battery	Lenovo	L17M4PH3	7.68 Vdc, 7680 mAh
WWAN Module	FOXCONN	T77W980	--

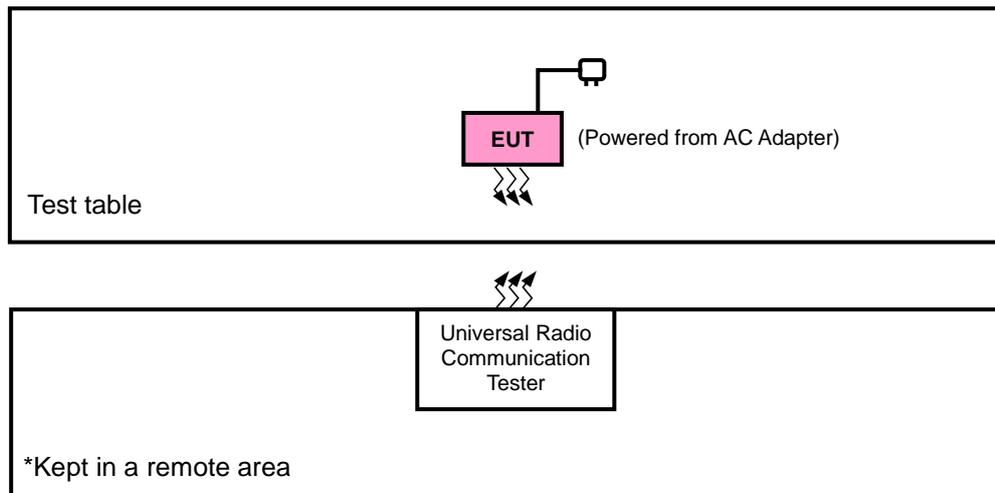
3. The EUT is authorized for use in specific End-product. Please refer to below for more details.

Product	Brand	Model
Notebook Computer	Lenovo	Lenovo YOGA C630-13Q50*****, 81JL *****, (*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)

Antenna Type	Manufacturer	Parts Number	Antenna Gain		
			WCDMA V	LTE B5	LTE B26
PIFA	<b>Tablet Mode</b>				
	ACON Corporation	ANF6Y-100046 (DC330026L00)	-6.37	-6.37	-5.65
	<b>Laptop Mode</b>				
	ACON Corporation	ANF6Y-100046 (DC330026L00)	-0.62	-0.62	-0.62

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

### 3.2 Configuration of System under Test



#### 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, 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	X-plane	Y-axis
CA LTE Band 5	NB-plane	NB-axis
LTE Band 26	X-plane	Y-axis

#### WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
-	Radiated Emission Below 1GHz	4132 to 4233	4132	WCDMA
-	Radiated Emission Above 1GHz	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, 64QAM	1 RB / 2 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 7 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 12 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
-	Radiated Emission Below 1GHz	20425 to 20625	20525	5 MHz	QPSK	1 RB / 12 RB Offset
-	Radiated Emission Above 1GHz	20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 12 RB Offset

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

### CA LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	20450 to 20549	20450+20549	10+10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	20450 to 20549	20450+20549	10+10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	20450 to 20549	20450+20549	10+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.

### LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 5 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
-	Radiated Emission Below 1GHz	26840 to 26990	26915	10 MHz	QPSK	1 RB / 49 RB Offset
-	Radiated Emission Above 1GHz	26840 to 26990	26840, 26915, 26990	10 MHz	QPSK	1 RB / 49 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	120 Vac, 60 Hz	Charles Hsiao, Karl Lee
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao, 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 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 1 MHz for GSM, GPRS & EDGE, and 5 MHz for WCDMA and CDMA, 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,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}$ .

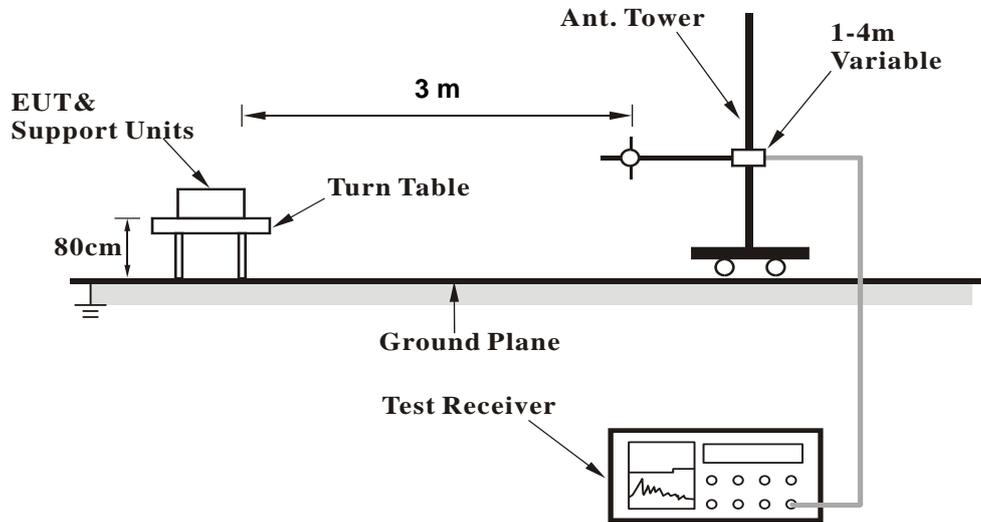
##### **Conducted Power Measurement:**

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, 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.

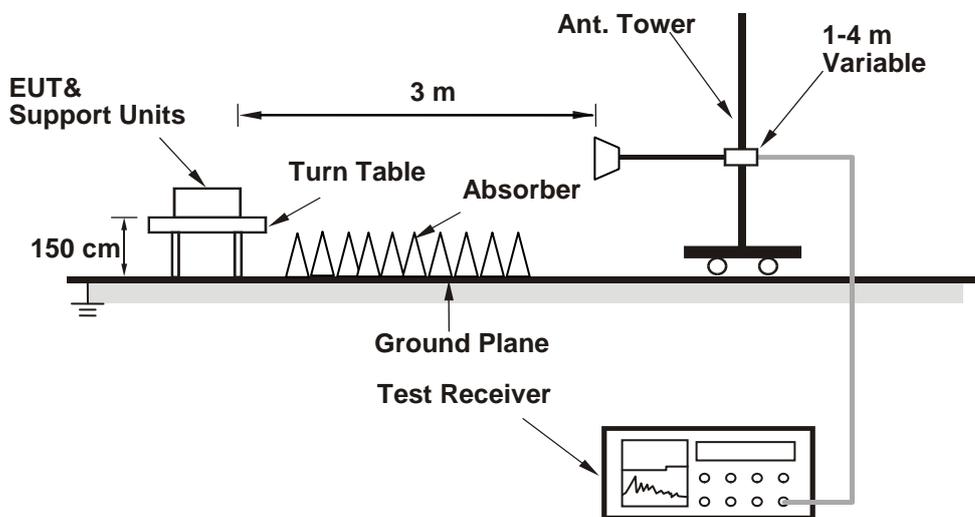
4.1.3 Test Setup

**EIRP / ERP Measurement:**

**<Radiated Emission below or equal 1 GHz>**

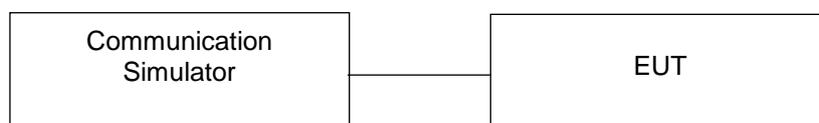


**<Radiated Emission above 1 GHz>**



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 V		
	4132	4182	4233
Channel	826.4	836.4	846.6
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.91	23.87	23.72
HSDPA Subtest-1	22.75	22.71	22.56
HSDPA Subtest-2	22.68	22.64	22.49
HSDPA Subtest-3	22.27	22.23	22.08
HSDPA Subtest-4	22.26	22.22	22.07
DC-HSDPA Subtest-1	22.63	22.59	22.44
DC-HSDPA Subtest-2	22.56	22.52	22.37
DC-HSDPA Subtest-3	22.15	22.11	21.96
DC-HSDPA Subtest-4	22.14	22.10	21.95
HSUPA Subtest-1	22.75	22.71	22.56
HSUPA Subtest-2	20.77	20.73	20.58
HSUPA Subtest-3	21.76	21.72	21.57
HSUPA Subtest-4	20.79	20.75	20.60
HSUPA Subtest-5	22.76	22.72	22.57
HSPA+ Subtest-1	20.28	20.24	20.09

LTE Band 5															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
				20450	20525	20600						20425	20525	20625	
				Channel Frequency (MHz)	829.0	836.5						844.0	Channel Frequency (MHz)	826.5	
10M	QPSK	1	0	23.68	23.56	23.66	0	5M	QPSK	1	0	23.60	23.48	23.58	0
		1	24	23.64	23.52	23.62	0			1	12	23.56	23.44	23.54	0
		1	49	23.59	23.47	23.57	0			1	24	23.51	23.39	23.49	0
		25	0	22.74	22.62	22.72	1			12	0	22.66	22.54	22.64	1
		25	12	22.71	22.59	22.69	1			12	6	22.63	22.51	22.61	1
		25	25	22.69	22.57	22.67	1			12	13	22.61	22.49	22.59	1
		50	0	22.70	22.58	22.68	1			25	0	22.62	22.50	22.60	1
	16QAM	1	0	22.65	22.53	22.63	1		16QAM	1	0	22.57	22.45	22.55	1
		1	24	22.61	22.49	22.59	1			1	12	22.53	22.41	22.51	1
		1	49	22.56	22.44	22.54	1			1	24	22.48	22.36	22.46	1
		25	0	21.71	21.59	21.69	2			12	0	21.63	21.51	21.61	2
		25	12	21.68	21.56	21.66	2			12	6	21.60	21.48	21.58	2
		25	25	21.66	21.54	21.64	2			12	13	21.58	21.46	21.56	2
		50	0	21.67	21.55	21.65	2			25	0	21.59	21.47	21.57	2
	64QAM	1	0	21.67	21.55	21.65	2		64QAM	1	0	21.59	21.47	21.57	2
		1	24	21.63	21.51	21.61	2			1	12	21.55	21.43	21.53	2
		1	49	21.58	21.46	21.56	2			1	24	21.50	21.38	21.48	2
		25	0	20.73	20.61	20.71	3			12	0	20.65	20.53	20.63	3
		25	12	20.70	20.58	20.68	3			12	6	20.62	20.50	20.60	3
		25	25	20.68	20.56	20.66	3			12	13	20.60	20.48	20.58	3
		50	0	20.69	20.57	20.67	3			25	0	20.61	20.49	20.59	3
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
				20415	20525	20635						20407	20525	20643	
				Channel Frequency (MHz)	825.5	836.5						847.5	Channel Frequency (MHz)	824.7	
3M	QPSK	1	0	23.55	23.43	23.53	0	1.4M	QPSK	1	0	23.49	23.37	23.47	0
		1	7	23.51	23.39	23.49	0			1	2	23.45	23.33	23.43	0
		1	14	23.46	23.34	23.44	0			1	5	23.40	23.28	23.38	0
		8	0	22.61	22.49	22.59	1			3	0	23.25	23.13	23.23	0
		8	3	22.58	22.46	22.56	1			3	1	23.22	23.10	23.20	0
		8	7	22.56	22.44	22.54	1			3	3	23.20	23.08	23.18	0
		15	0	22.57	22.45	22.55	1			6	0	23.21	23.09	23.19	1
	16QAM	1	0	22.52	22.40	22.50	1		16QAM	1	0	22.46	22.34	22.44	1
		1	7	22.48	22.36	22.46	1			1	2	22.42	22.30	22.40	1
		1	14	22.43	22.31	22.41	1			1	5	22.37	22.25	22.35	1
		8	0	21.58	21.46	21.56	2			3	0	22.22	22.10	22.20	1
		8	3	21.55	21.43	21.53	2			3	1	22.19	22.07	22.17	1
		8	7	21.53	21.41	21.51	2			3	3	22.17	22.05	22.15	1
		15	0	21.54	21.42	21.52	2			6	0	21.48	21.36	21.46	2
	64QAM	1	0	21.54	21.42	21.52	2		64QAM	1	0	21.48	21.36	21.46	2
		1	7	21.50	21.38	21.48	2			1	2	21.44	21.32	21.42	2
		1	14	21.45	21.33	21.43	2			1	5	21.39	21.27	21.37	2
		8	0	20.60	20.48	20.58	3			3	0	21.24	21.12	21.22	2
		8	3	20.57	20.45	20.55	3			3	1	21.21	21.09	21.19	2
		8	7	20.55	20.43	20.53	3			3	3	21.19	21.07	21.17	2
		15	0	20.56	20.44	20.54	3			6	0	20.50	20.38	20.48	3

CA LTE Band 5															
PCC							SCC							Power	
Band	BW (MHz)	Modulation	RB Size	RB Offset	UL Channel	UL Frequency (MHz)	Band	BW (MHz)	Modulation	RB Size	RB Offset	UL Channel	UL Frequency (MHz)	Single Carrier Tx Power (dBm)	Tx Power with DL-CA Active (dBm)
5	10	QPSK	1	0	20450	829	5	10	QPSK	1	49	20549	838.9	23.68	12.50
			1	49						1	0			23.59	23.55
5	10	QPSK	1	0	20476	831.6	5	10	QPSK	1	49	20575	841.2	23.56	12.70
			1	49						1	0			23.47	23.25
5	10	QPSK	1	0	20501	834.1	5	10	QPSK	1	49	20600	844	23.33	12.64
			1	49						1	0			23.57	23.41

**LTE Band 26**

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
				26865	26915	26965						26840	26915	26990	
				Channel Frequency (MHz)	831.5	836.5						841.5	Channel Frequency (MHz)	829.0	
15M	QPSK	1	0	23.58	23.66	23.61	0	10M	QPSK	1	0	23.51	23.59	23.54	0
		1	37	23.47	23.55	23.50	0			1	24	23.40	23.48	23.43	0
		1	74	23.35	23.43	23.38	0			1	49	23.28	23.36	23.31	0
		36	0	22.40	22.48	22.43	1			25	0	22.33	22.41	22.36	1
		36	19	22.35	22.43	22.38	1			25	12	22.28	22.36	22.31	1
		36	39	22.33	22.41	22.36	1			25	25	22.26	22.34	22.29	1
		75	0	22.34	22.42	22.37	1			50	0	22.27	22.35	22.30	1
	16QAM	1	0	22.55	22.63	22.58	1		16QAM	1	0	22.48	22.56	22.51	1
		1	37	22.44	22.52	22.47	1			1	24	22.37	22.45	22.40	1
		1	74	22.32	22.40	22.35	1			1	49	22.25	22.33	22.28	1
		36	0	21.37	21.45	21.40	2			25	0	21.30	21.38	21.33	2
		36	19	21.32	21.40	21.35	2			25	12	21.25	21.33	21.28	2
		36	39	21.30	21.38	21.33	2			25	25	21.23	21.31	21.26	2
		75	0	21.31	21.39	21.34	2			50	0	21.24	21.32	21.27	2
	64QAM	1	0	21.53	21.61	21.56	2		64QAM	1	0	21.46	21.54	21.49	2
		1	37	21.42	21.50	21.45	2			1	24	21.35	21.43	21.38	2
		1	74	21.30	21.38	21.33	2			1	49	21.23	21.31	21.26	2
		36	0	20.35	20.43	20.38	3			25	0	20.28	20.36	20.31	3
		36	19	20.30	20.38	20.33	3			25	12	20.23	20.31	20.26	3
		36	39	20.28	20.36	20.31	3			25	25	20.21	20.29	20.24	3
		75	0	20.29	20.37	20.32	3			50	0	20.22	20.30	20.25	3
5M	QPSK	1	0	23.46	23.54	23.49	0	3M	QPSK	1	0	23.41	23.49	23.44	1
		1	12	23.35	23.43	23.38	0			1	7	23.30	23.38	23.33	1
		1	24	23.23	23.31	23.26	0			1	14	23.18	23.26	23.21	1
		12	0	22.28	22.36	22.31	1			8	0	22.23	22.31	22.26	3
		12	6	22.23	22.31	22.26	1			8	3	22.18	22.26	22.21	3
		12	13	22.21	22.29	22.24	1			8	7	22.16	22.24	22.19	3
		25	0	22.22	22.30	22.25	1			15	0	22.17	22.25	22.20	6
	16QAM	1	0	22.43	22.51	22.46	1		16QAM	1	0	22.38	22.46	22.41	1
		1	12	22.32	22.40	22.35	1			1	7	22.27	22.35	22.30	1
		1	24	22.20	22.28	22.23	1			1	14	22.15	22.23	22.18	1
		12	0	21.25	21.33	21.28	2			8	0	21.20	21.28	21.23	2
		12	6	21.20	21.28	21.23	2			8	3	21.15	21.23	21.18	2
		12	13	21.18	21.26	21.21	2			8	7	21.13	21.21	21.16	2
		25	0	21.19	21.27	21.22	2			15	0	21.14	21.22	21.17	2
	64QAM	1	0	21.41	21.49	21.44	2		64QAM	1	0	21.36	21.44	21.39	2
		1	12	21.30	21.38	21.33	2			1	7	21.25	21.33	21.28	2
		1	24	21.18	21.26	21.21	2			1	14	21.13	21.21	21.16	2
		12	0	20.23	20.31	20.26	3			8	0	20.18	20.26	20.21	3
		12	6	20.18	20.26	20.21	3			8	3	20.13	20.21	20.16	3
		12	13	20.16	20.24	20.19	3			8	7	20.11	20.19	20.14	3
		25	0	20.17	20.25	20.20	3			15	0	20.12	20.20	20.15	3
1.4M	QPSK	1	0	23.33	23.41	23.36	0	1.4M	QPSK	1	0	23.33	23.41	23.36	0
		1	2	23.22	23.30	23.25	0			1	2	23.22	23.30	23.25	0
		1	5	23.10	23.18	23.13	0			1	5	23.10	23.18	23.13	0
		3	0	22.65	22.73	22.68	0			3	0	22.65	22.73	22.68	0
		3	1	22.60	22.68	22.63	0			3	1	22.60	22.68	22.63	0
		3	3	22.58	22.66	22.61	0			3	3	22.58	22.66	22.61	0
	16QAM	6	0	22.09	22.17	22.12	1		16QAM	6	0	22.09	22.17	22.12	1
		1	0	22.30	22.38	22.33	1			1	0	22.30	22.38	22.33	1
		1	2	22.19	22.27	22.22	1			1	2	22.19	22.27	22.22	1
		1	5	22.07	22.15	22.10	1			1	5	22.07	22.15	22.10	1
		3	0	21.62	21.70	21.65	1			3	0	21.62	21.70	21.65	1
		3	1	21.57	21.65	21.60	1			3	1	21.57	21.65	21.60	1
	64QAM	3	3	21.55	21.63	21.58	1		64QAM	3	3	21.55	21.63	21.58	1
		6	0	21.06	21.14	21.09	2			6	0	21.06	21.14	21.09	2
		1	0	21.28	21.36	21.31	2			1	0	21.28	21.36	21.31	2
		1	2	21.17	21.25	21.20	2			1	2	21.17	21.25	21.20	2
		1	5	21.05	21.13	21.08	2			1	5	21.05	21.13	21.08	2
		3	0	20.60	20.68	20.63	2			3	0	20.60	20.68	20.63	2
	64QAM	3	1	20.55	20.63	20.58	2		64QAM	3	1	20.55	20.63	20.58	2
		3	3	20.53	20.61	20.56	2			3	3	20.53	20.61	20.56	2
		6	0	20.04	20.12	20.07	3			6	0	20.04	20.12	20.07	3

**ERP Power (dBm)**

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	4132	826.4	-7.95	31.208	21.11	129.06	H
	4182	836.4	-8.06	31.3	21.09	128.53	
	4233	846.6	-8.02	31.222	21.05	127.41	
	4132	826.4	-14.21	31.504	15.14	32.69	V
	4182	836.4	-13.87	31.117	15.10	32.34	
	4233	846.6	-14.73	31.922	15.04	31.93	

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)
X	20407	824.7	-8.03	31.208	21.03	126.71	H
	20525	836.5	-8.18	31.3	20.97	125.03	
	20643	848.3	-8.07	31.222	21.00	125.95	
	20407	824.7	-14.34	31.504	15.01	31.72	V
	20525	836.5	-14.02	31.117	14.95	31.24	
	20643	848.3	-14.78	31.922	14.99	31.56	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	20407	824.7	-9.03	31.208	20.03	100.65	H
	20525	836.5	-9.19	31.3	19.96	99.08	
	20643	848.3	-9.08	31.222	19.99	99.82	
	20407	824.7	-15.35	31.504	14.00	25.14	V
	20525	836.5	-15.04	31.117	13.93	24.70	
	20643	848.3	-15.79	31.922	13.98	25.01	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	20407	824.7	-10.04	31.208	19.02	79.76	H
	20525	836.5	-10.20	31.3	18.95	78.52	
	20643	848.3	-10.09	31.222	18.98	79.10	
	20407	824.7	-16.36	31.504	12.99	19.93	V
	20525	836.5	-16.05	31.117	12.92	19.57	
	20643	848.3	-16.79	31.922	12.98	19.87	

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)
X	20415	825.5	-7.99	31.208	21.07	127.88	H
	20525	836.5	-8.14	31.3	21.01	126.18	
	20635	847.5	-8.03	31.222	21.04	127.12	
	20415	825.5	-14.30	31.504	15.05	32.02	V
	20525	836.5	-13.99	31.117	14.98	31.46	
	20635	847.5	-14.75	31.922	15.02	31.78	
Channel Bandwidth: 3 MHz / 16QAM							
X	20415	825.5	-9.00	31.208	20.06	101.34	H
	20525	836.5	-9.15	31.3	20.00	100.00	
	20635	847.5	-9.04	31.222	20.03	100.74	
	20415	825.5	-15.30	31.504	14.05	25.43	V
	20525	836.5	-15.00	31.117	13.97	24.93	
	20635	847.5	-15.76	31.922	14.01	25.19	
Channel Bandwidth: 3 MHz / 64QAM							
X	20415	825.5	-9.01	31.208	20.05	101.11	H
	20525	836.5	-10.15	31.3	19.00	79.43	
	20635	847.5	-10.05	31.222	19.02	79.84	
	20415	825.5	-16.31	31.504	13.04	20.16	V
	20525	836.5	-16.00	31.117	12.97	19.80	
	20635	847.5	-16.76	31.922	13.01	20.01	

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)
X	20425	826.5	-7.96	31.208	21.10	128.77	H
	20525	836.5	-8.11	31.3	21.04	127.06	
	20625	846.5	-8.00	31.222	21.07	128.00	
	20425	826.5	-14.27	31.504	15.08	32.24	V
	20525	836.5	-13.95	31.117	15.02	31.75	
	20625	846.5	-14.71	31.922	15.06	32.08	
Channel Bandwidth: 5 MHz / 16QAM							
X	20425	826.5	-8.97	31.208	20.09	102.05	H
	20525	836.5	-9.12	31.3	20.03	100.69	
	20625	846.5	-9.01	31.222	20.06	101.44	
	20425	826.5	-15.28	31.504	14.07	25.55	V
	20525	836.5	-14.96	31.117	14.01	25.16	
	20625	846.5	-15.72	31.922	14.05	25.42	
Channel Bandwidth: 5 MHz / 64QAM							
X	20425	826.5	-9.98	31.208	19.08	80.87	H
	20525	836.5	-10.13	31.3	19.02	79.80	
	20625	846.5	-10.02	31.222	19.05	80.39	
	20425	826.5	-16.29	31.504	13.06	20.25	V
	20525	836.5	-15.97	31.117	13.00	19.94	
	20625	846.5	-16.72	31.922	13.05	20.19	

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)
X	20450	829.0	-7.92	31.208	21.14	129.96	H
	20525	836.5	-8.06	31.3	21.09	128.53	
	20600	844.0	-7.96	31.222	21.11	129.18	
	20450	829.0	-14.23	31.504	15.12	32.54	V
	20525	836.5	-13.90	31.117	15.07	32.11	
	20600	844.0	-14.67	31.922	15.10	32.37	
Channel Bandwidth: 10 MHz / 16QAM							
X	20425	826.5	-8.93	31.208	20.13	102.99	H
	20525	836.5	-9.06	31.3	20.09	102.09	
	20625	846.5	-8.97	31.222	20.10	102.38	
	20425	826.5	-15.24	31.504	14.11	25.79	V
	20525	836.5	-14.91	31.117	14.06	25.45	
	20625	846.5	-15.67	31.922	14.10	25.72	
Channel Bandwidth: 10 MHz / 64QAM							
X	20450	829.0	-9.93	31.208	19.13	81.81	H
	20525	836.5	-10.07	31.3	19.08	80.91	
	20600	844.0	-9.98	31.222	19.09	81.13	
	20450	829.0	-16.25	31.504	13.10	20.44	V
	20525	836.5	-15.91	31.117	13.06	20.22	
	20600	844.0	-16.68	31.922	13.09	20.38	

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

CA LTE Band 5							
Channel Bandwidth: 10+10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
NB	20450+20549	833.95	-17.39	32.52	12.98	19.86	H
	20450+20549	833.95	-11.72	32.39	18.52	71.12	V

LTE Band 26							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26797	824.7	-8.09	31.208	20.97	124.97	H
	26915	836.5	-8.13	31.3	21.02	126.47	
	27033	848.3	-8.14	31.222	20.93	123.94	
	26797	824.7	-14.39	31.504	14.96	31.36	V
	26915	836.5	-13.98	31.117	14.99	31.53	
	27033	848.3	-14.86	31.922	14.91	30.99	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	26797	824.7	-9.10	31.208	19.96	99.04	H
	26915	836.5	-9.14	31.3	20.01	100.23	
	27033	848.3	-9.15	31.222	19.92	98.22	
	26797	824.7	-15.40	31.504	13.95	24.85	V
	26915	836.5	-14.99	31.117	13.98	24.99	
	27033	848.3	-15.87	31.922	13.90	24.56	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	26797	824.7	-10.11	31.208	18.95	78.49	H
	26915	836.5	-10.15	31.3	19.00	79.43	
	27033	848.3	-10.16	31.222	18.91	77.84	
	26797	824.7	-16.41	31.504	12.94	19.70	V
	26915	836.5	-16.00	31.117	12.97	19.80	
	27033	848.3	-16.88	31.922	12.89	19.46	

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

LTE Band 26							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26805	825.5	-8.06	31.208	21.00	125.83	H
	26915	836.5	-8.09	31.3	21.06	127.64	
	27025	847.5	-8.10	31.222	20.97	125.08	
	26805	825.5	-14.36	31.504	14.99	31.58	V
	26915	836.5	-13.94	31.117	15.03	31.82	
	27025	847.5	-14.82	31.922	14.95	31.28	
Channel Bandwidth: 3 MHz / 16QAM							
X	26805	825.5	-9.07	31.208	19.99	99.72	H
	26915	836.5	-9.10	31.3	20.05	101.16	
	27025	847.5	-9.11	31.222	19.96	99.13	
	26805	825.5	-15.37	31.504	13.98	25.03	V
	26915	836.5	-14.95	31.117	14.02	25.22	
	27025	847.5	-15.83	31.922	13.94	24.79	
Channel Bandwidth: 3 MHz / 64QAM							
X	26805	825.5	-10.08	31.208	18.98	79.03	H
	26915	836.5	-10.11	31.3	19.04	80.17	
	27025	847.5	-10.12	31.222	18.95	78.56	
	26805	825.5	-16.38	31.504	12.97	19.83	V
	26915	836.5	-15.95	31.117	13.02	20.03	
	27025	847.5	-16.84	31.922	12.93	19.64	

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

LTE Band 26							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26815	826.5	-8.02	31.208	21.04	127.00	H
	26915	836.5	-8.05	31.3	21.10	128.82	
	27015	846.5	-8.06	31.222	21.01	126.24	
	26815	826.5	-14.32	31.504	15.03	31.87	V
	26919	836.5	-13.89	31.117	15.08	32.19	
	27015	846.5	-14.78	31.922	14.99	31.56	
Channel Bandwidth: 5 MHz / 16QAM							
X	26815	826.5	-9.03	31.208	20.03	100.65	H
	26915	836.5	-9.06	31.3	20.09	102.09	
	27015	846.5	-9.06	31.222	20.01	100.28	
	26815	826.5	-15.33	31.504	14.02	25.26	V
	26919	836.5	-14.89	31.117	14.08	25.57	
	27015	846.5	-15.78	31.922	13.99	25.07	
Channel Bandwidth: 5 MHz / 64QAM							
X	26815	826.5	-10.04	31.208	19.02	79.76	H
	26915	836.5	-10.07	31.3	19.08	80.91	
	27015	846.5	-10.07	31.222	19.00	79.47	
	26815	826.5	-16.34	31.504	13.01	20.02	V
	26919	836.5	-15.90	31.117	13.07	20.26	
	27015	846.5	-16.79	31.922	12.98	19.87	

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

LTE Band 26							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26840	829.0	-7.98	31.208	21.08	128.17	H
	26915	836.5	-8.02	31.3	21.13	129.72	
	26990	844.0	-8.04	31.222	21.03	126.82	
	26840	829.0	-14.28	31.504	15.07	32.17	V
	26919	836.5	-13.86	31.117	15.11	32.41	
	26990	844.0	-14.74	31.922	15.03	31.86	
Channel Bandwidth: 10 MHz / 16QAM							
X	26840	829.0	-8.99	31.208	20.07	101.58	H
	26915	836.5	-9.03	31.3	20.12	102.80	
	26990	844.0	-9.05	31.222	20.02	100.51	
	26840	829.0	-15.29	31.504	14.06	25.49	V
	26919	836.5	-14.86	31.117	14.11	25.75	
	26990	844.0	-15.75	31.922	14.02	25.25	
Channel Bandwidth: 10 MHz / 64QAM							
X	26840	829.0	-10.00	31.208	19.06	80.50	H
	26915	836.5	-10.04	31.3	19.11	81.47	
	26990	844.0	-10.06	31.222	19.01	79.65	
	26840	829.0	-16.30	31.504	13.05	20.20	V
	26919	836.5	-15.87	31.117	13.10	20.40	
	26990	844.0	-16.76	31.922	13.01	20.01	

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

LTE Band 26							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26865	831.5	-7.94	31.208	21.12	129.36	H
	26915	836.5	-7.98	31.3	21.17	130.92	
	26965	841.5	-8.00	31.222	21.07	128.00	
	26865	831.5	-14.24	31.504	15.11	32.46	V
	26915	836.5	-13.82	31.117	15.15	32.71	
	26965	841.5	-14.70	31.922	15.07	32.15	
Channel Bandwidth: 15 MHz / 16QAM							
X	26865	831.5	-8.95	31.208	20.11	102.52	H
	26915	836.5	-8.98	31.3	20.17	103.99	
	26965	841.5	-9.00	31.222	20.07	101.67	
	26865	831.5	-15.25	31.504	14.10	25.73	V
	26915	836.5	-14.83	31.117	14.14	25.92	
	26965	841.5	-15.71	31.922	14.06	25.48	
Channel Bandwidth: 15 MHz / 64QAM							
X	26865	831.5	-9.96	31.208	19.10	81.25	H
	26915	836.5	-9.99	31.3	19.16	82.41	
	26965	841.5	-10.01	31.222	19.06	80.57	
	26865	831.5	-16.26	31.504	13.09	20.39	V
	26915	836.5	-15.84	31.117	13.13	20.54	
	26965	841.5	-16.71	31.922	13.06	20.24	

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.

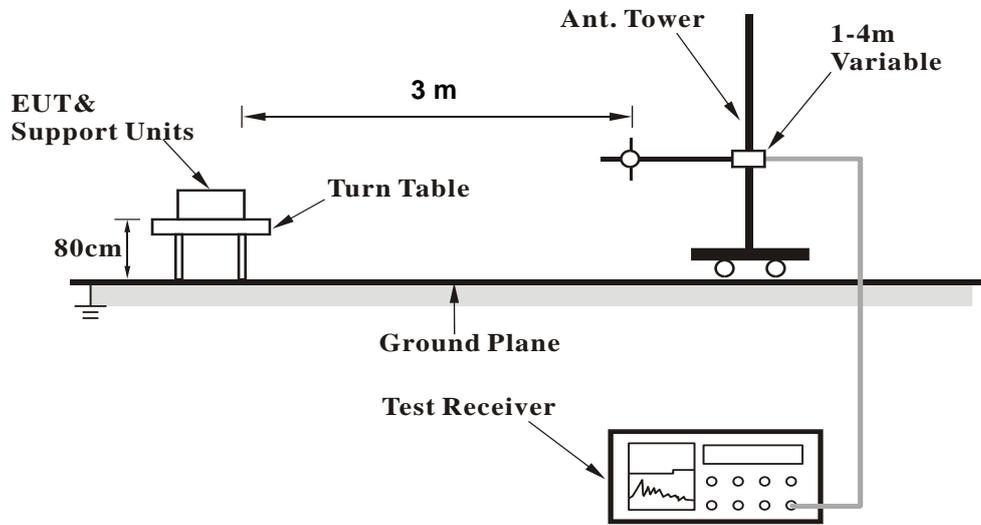
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

### 4.2.3 Deviation from Test Standard

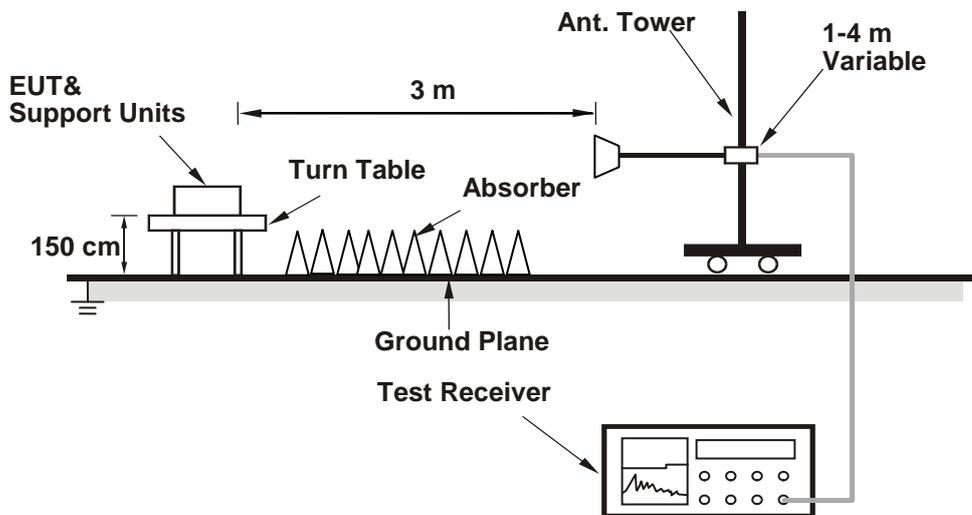
No deviation.

#### 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

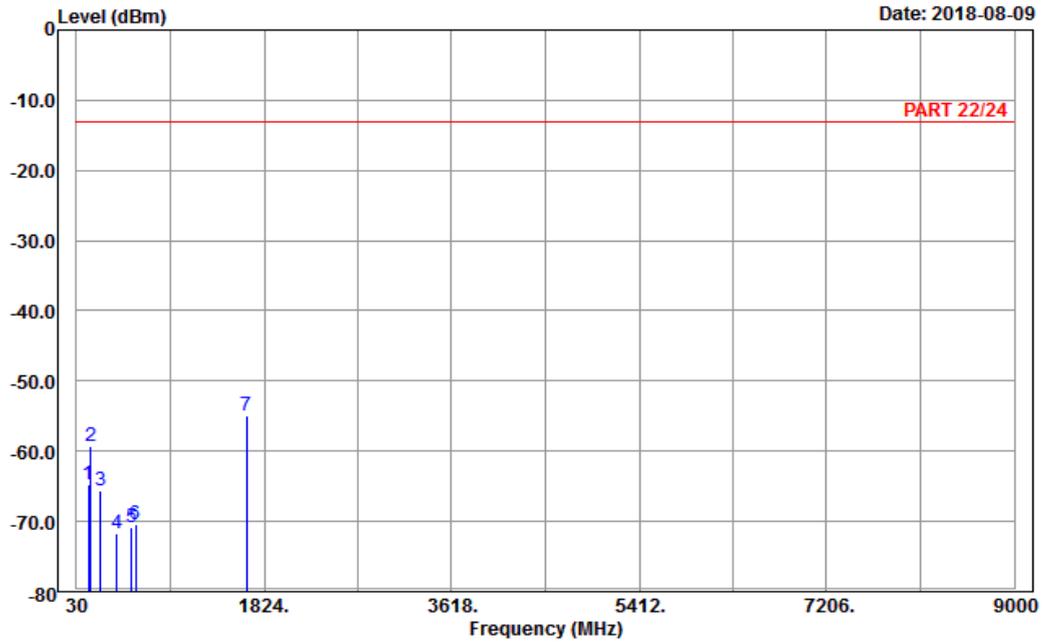


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A D T

Data: 9

Date: 2018-08-09



Site : 966 chamber 1  
Condition: PART 22/24 Horizontal  
Remark : Band V\_Link\_CH4132  
Tested by: Charles Hsiao

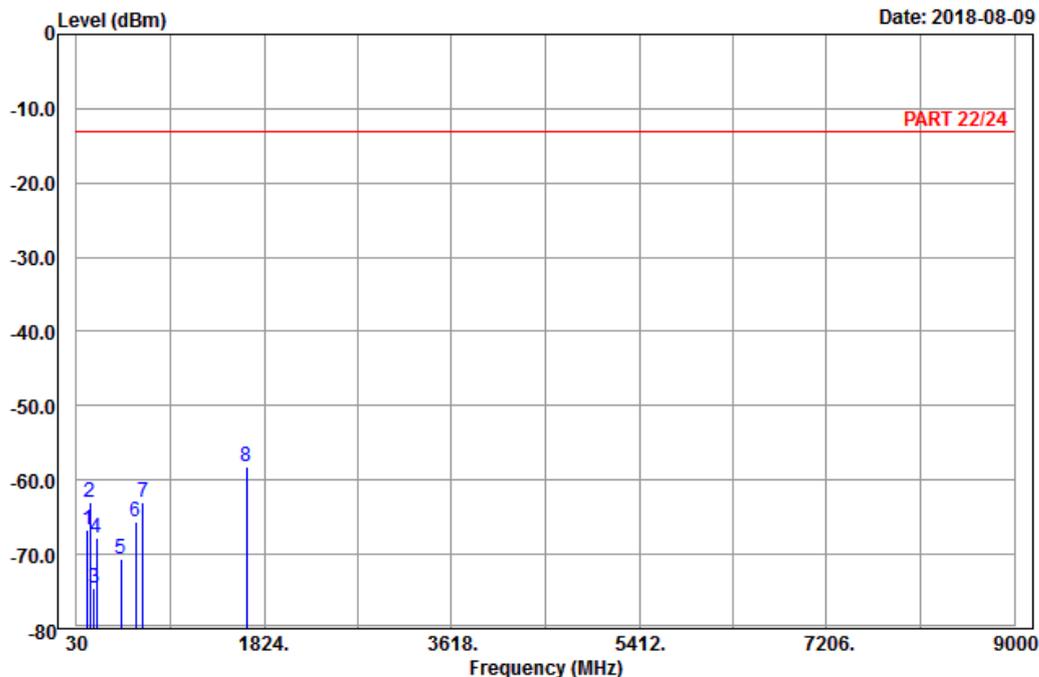
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	139.35	-64.66	-56.97	-13.00	-51.66	-7.69	Peak
2	167.16	-59.26	-52.27	-13.00	-46.26	-6.99	Peak
3	259.77	-65.64	-60.04	-13.00	-52.64	-5.60	Peak
4	413.40	-71.79	-68.75	-13.00	-58.79	-3.04	Peak
5	555.50	-70.74	-69.32	-13.00	-57.74	-1.42	Peak
6	598.20	-70.52	-70.87	-13.00	-57.52	0.35	Peak
7 pp	1652.80	-54.99	-62.72	-13.00	-41.99	7.73	Peak



A D T

Data: 10

Date: 2018-08-09



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : Band V\_Link\_CH4132  
 Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	137.73	-66.66	-58.98	-13.00	-53.66	-7.68	Peak
2	160.68	-63.02	-55.45	-13.00	-50.02	-7.57	Peak
3	194.43	-74.62	-68.66	-13.00	-61.62	-5.96	Peak
4	223.59	-67.88	-62.02	-13.00	-54.88	-5.86	Peak
5	458.20	-70.60	-66.53	-13.00	-57.60	-4.07	Peak
6	595.40	-65.68	-65.91	-13.00	-52.68	0.23	Peak
7	666.10	-63.05	-62.84	-13.00	-50.05	-0.21	Peak
8 pp	1652.80	-58.22	-65.95	-13.00	-45.22	7.73	Peak

Middle Channel

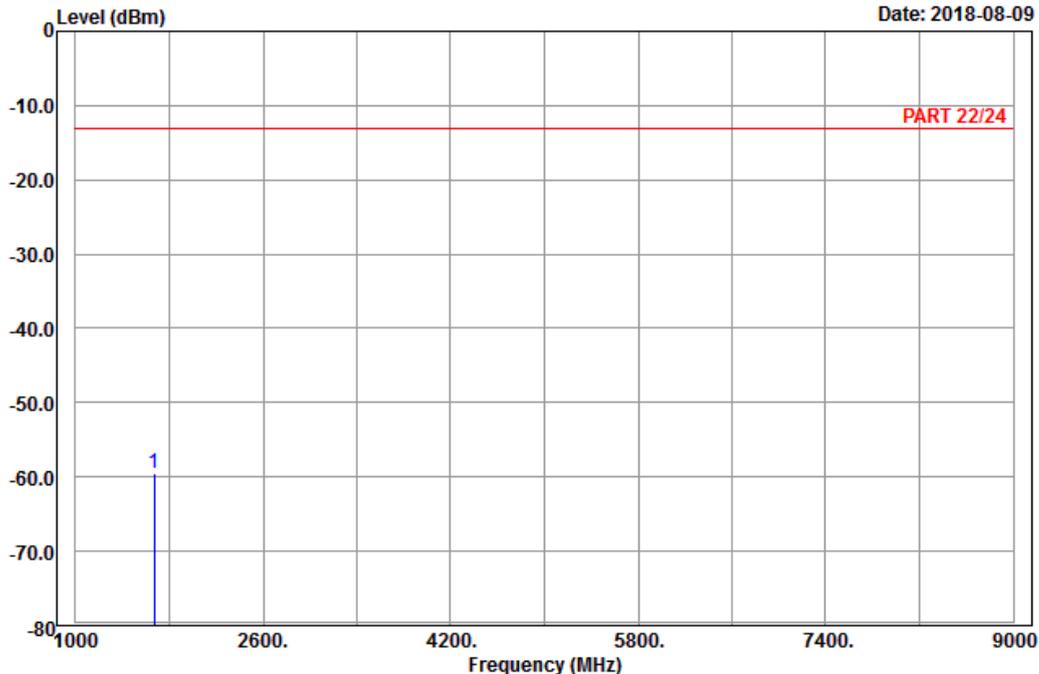


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A D T

Data: 5

Date: 2018-08-09



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : Band V\_Link\_CH4182  
 Tested by: Charles Hsiao

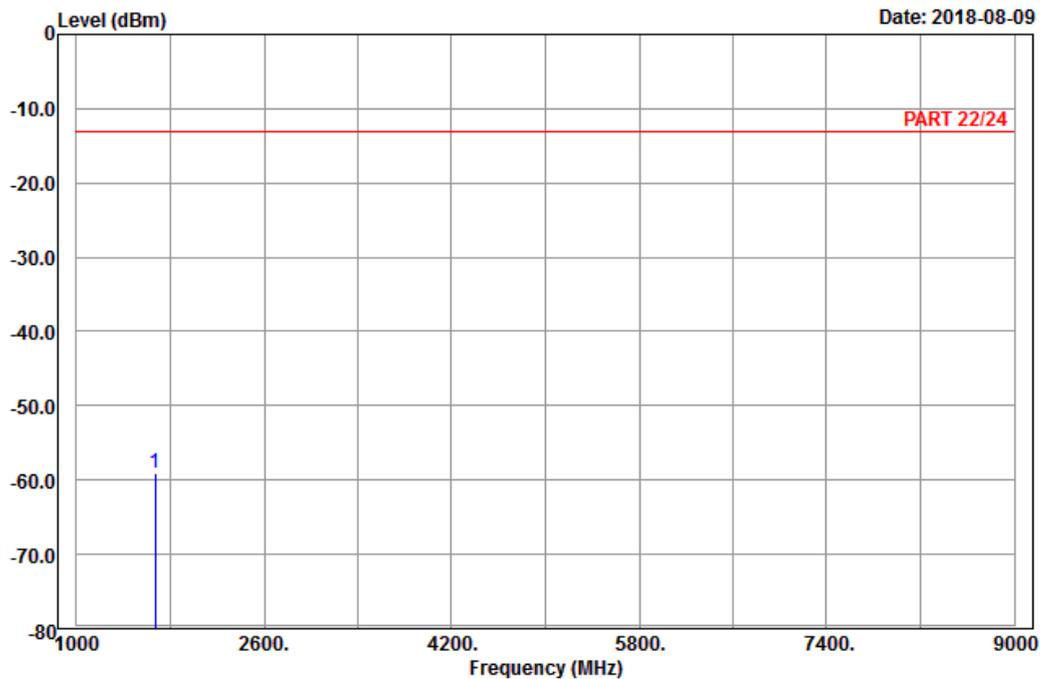
Freq	Level	Read Level	Limit	Over	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1672.80	-59.44	-67.35	-13.00	-46.44	7.91	Peak



A D T

Data: 6

Date: 2018-08-09



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : Band V\_Link\_CH4182  
 Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1672.80	-59.14	-67.05	-13.00	-46.14	7.91	Peak

High Channel

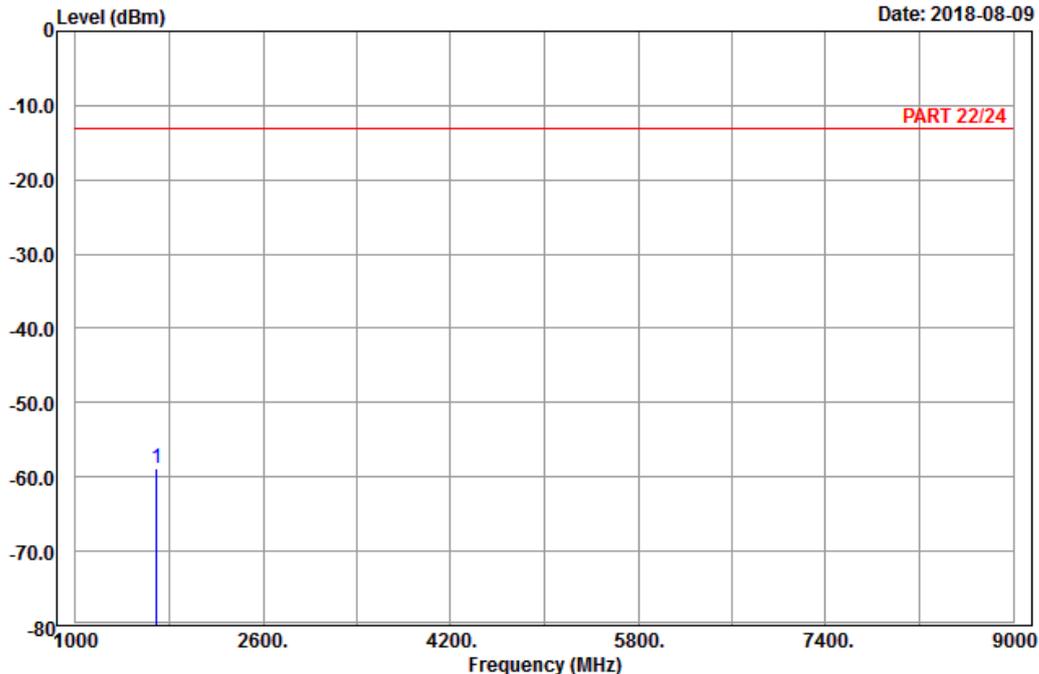


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A D T

Data: 5

Date: 2018-08-09



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : Band V\_Link\_CH4233  
 Tested by: Charles Hsiao

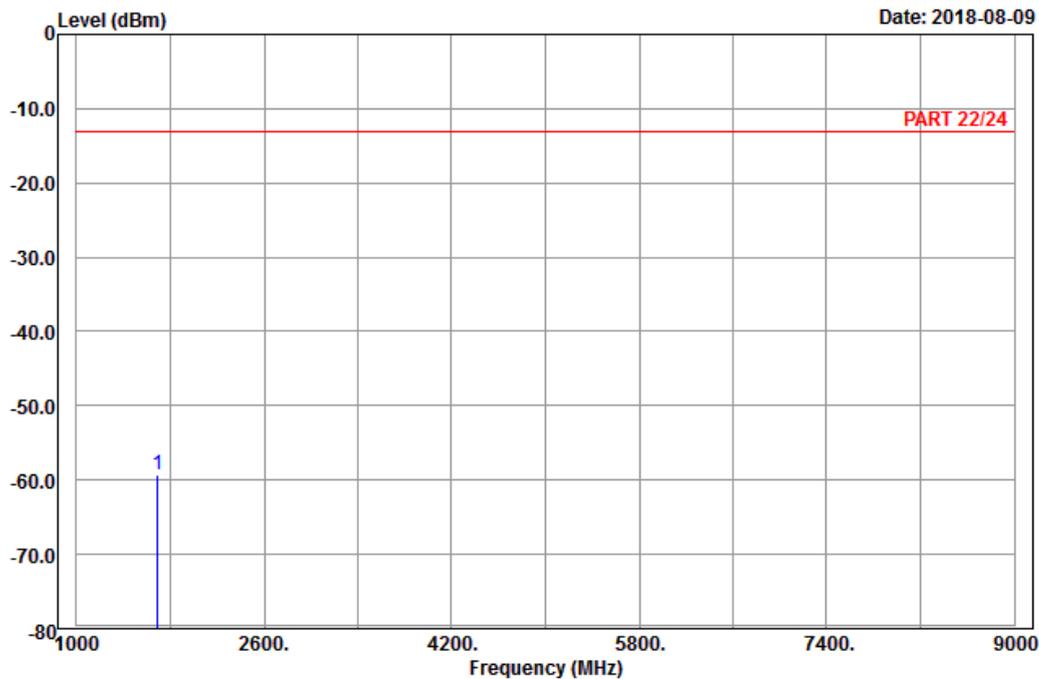
Freq	Level	Read Level	Limit	Over	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1693.20	-58.91	-67.05	-13.00	-45.91	8.14	Peak



A D T

Data: 6

Date: 2018-08-09



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : Band V\_Link\_CH4233  
 Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1693.20	-59.33	-67.47	-13.00	-46.33	8.14	Peak

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

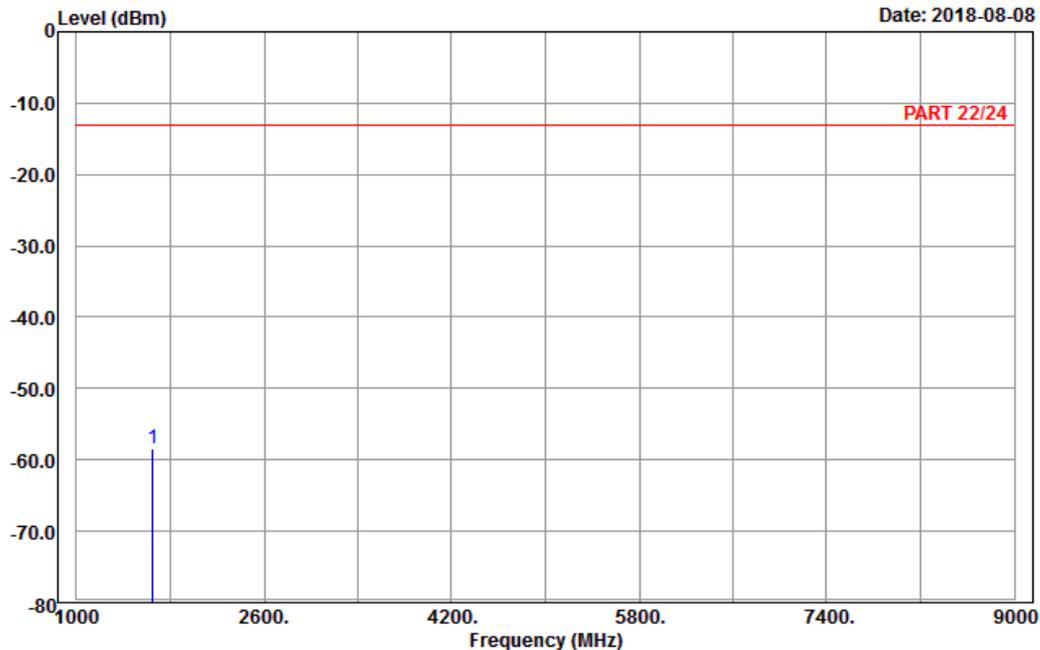


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A D T

Data: 5

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 5\_Link\_CH20425  
 Tested by: Karl Lee

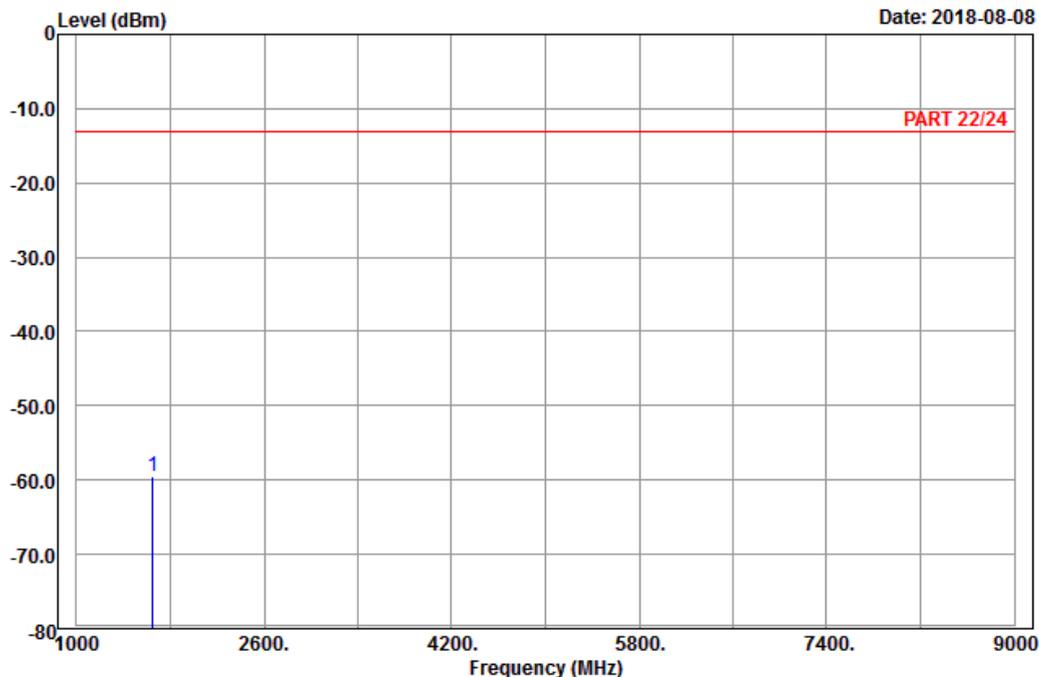
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1653.00	-58.39	-66.12	-13.00	-45.39	7.73	Peak



A D T

Data: 6

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 5\_Link\_CH20425  
 Tested by: Karl Lee

	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 1653.00	-59.44	-67.17	-13.00	-46.44	7.73 Peak

Middle Channel

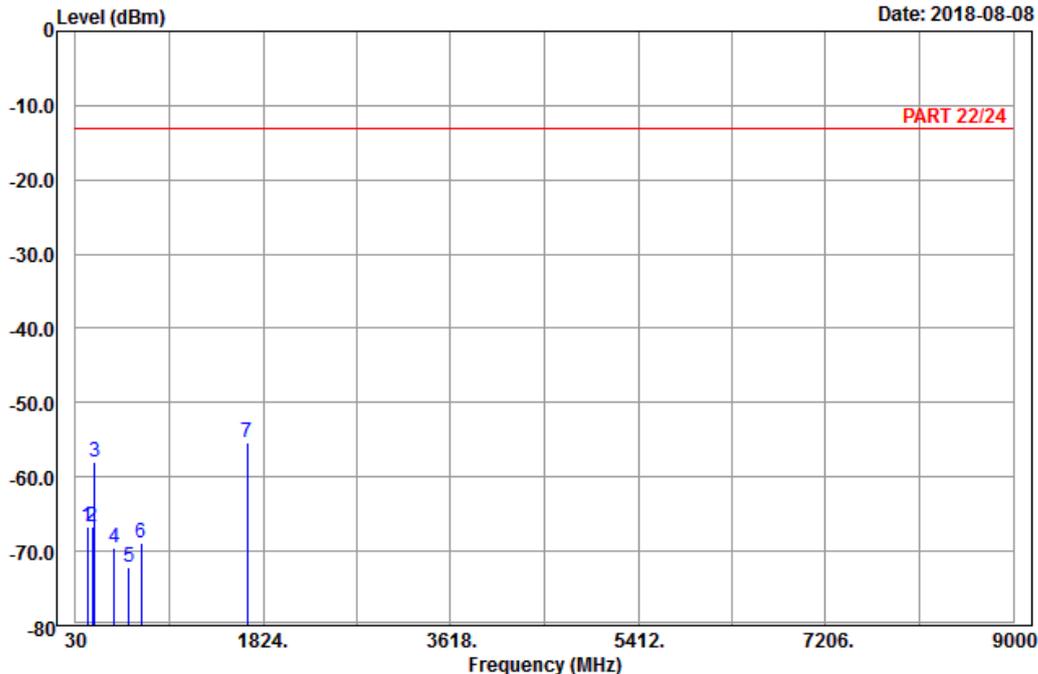


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A D T

Data: 9

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 5\_Link\_CH20525  
 Tested by: Karl Lee

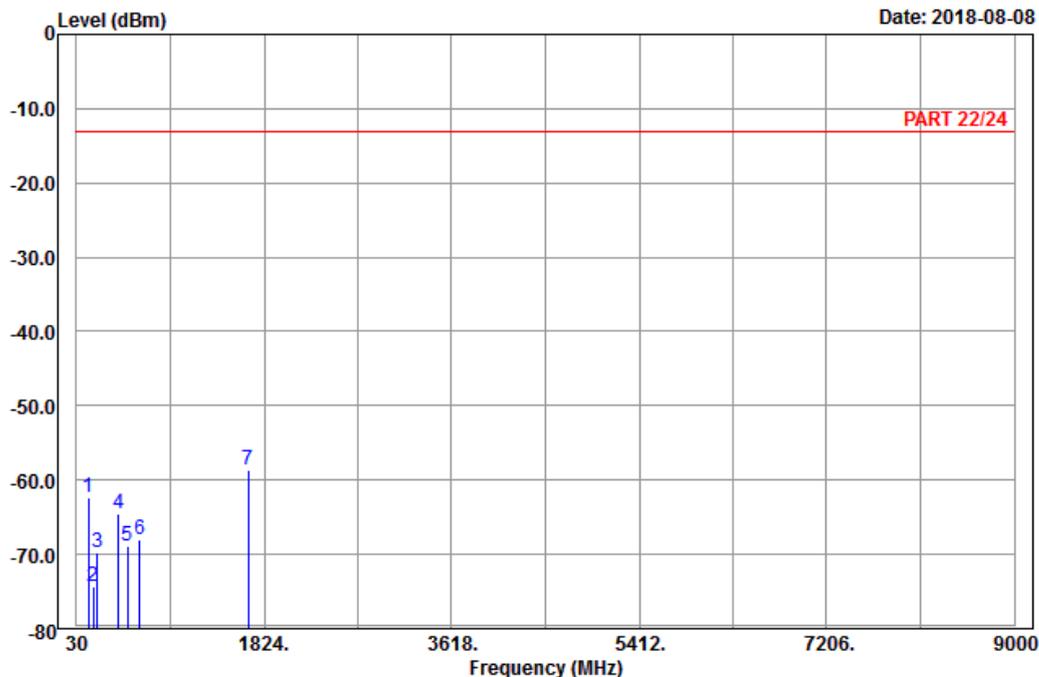
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	141.24	-66.78	-59.04	-13.00	-53.78	-7.74	Peak
2	186.06	-66.62	-60.95	-13.00	-53.62	-5.67	Peak
3	217.11	-58.02	-52.07	-13.00	-45.02	-5.95	Peak
4	401.50	-69.58	-66.80	-13.00	-56.58	-2.78	Peak
5	544.30	-72.17	-70.08	-13.00	-59.17	-2.09	Peak
6	658.40	-68.96	-68.78	-13.00	-55.96	-0.18	Peak
7 pp	1673.00	-55.28	-63.19	-13.00	-42.28	7.91	Peak



A D T

Data: 10

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 5\_Link\_CH20525  
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	145.29	-62.30	-54.47	-13.00	-49.30	-7.83	Peak
2	189.57	-74.40	-68.67	-13.00	-61.40	-5.73	Peak
3	232.23	-69.74	-63.99	-13.00	-56.74	-5.75	Peak
4	431.60	-64.52	-61.08	-13.00	-51.52	-3.44	Peak
5	519.80	-68.82	-64.96	-13.00	-55.82	-3.86	Peak
6	638.10	-67.92	-67.92	-13.00	-54.92	0.00	Peak
7 pp	1673.00	-58.54	-66.45	-13.00	-45.54	7.91	Peak

High Channel

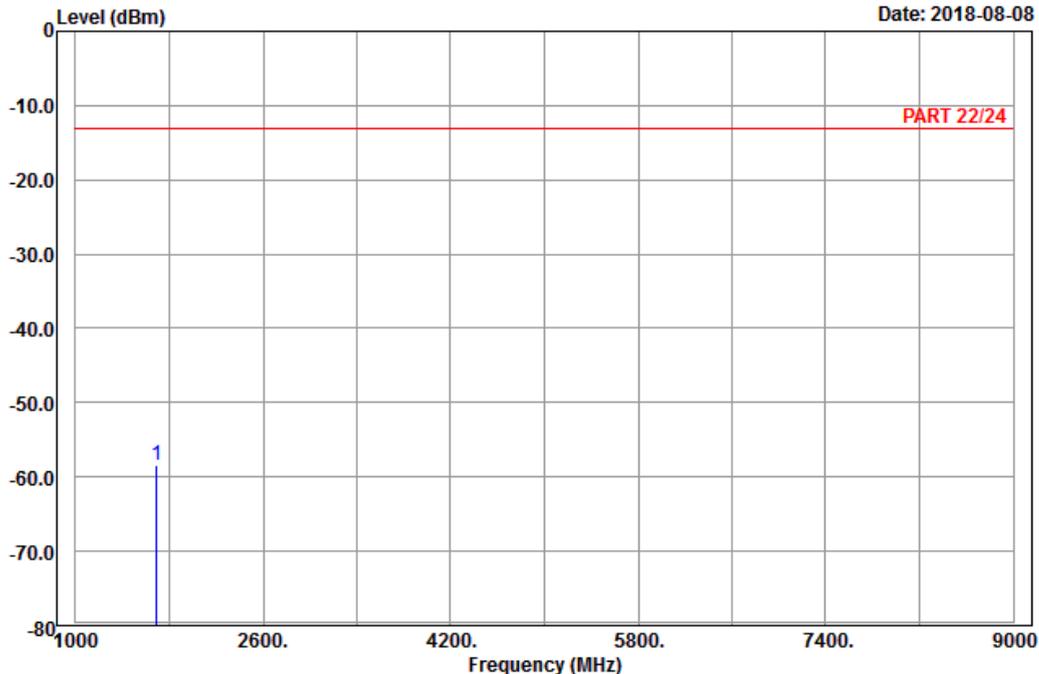


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A D T

Data: 5

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 5\_Link\_CH20625  
 Tested by: Karl Lee

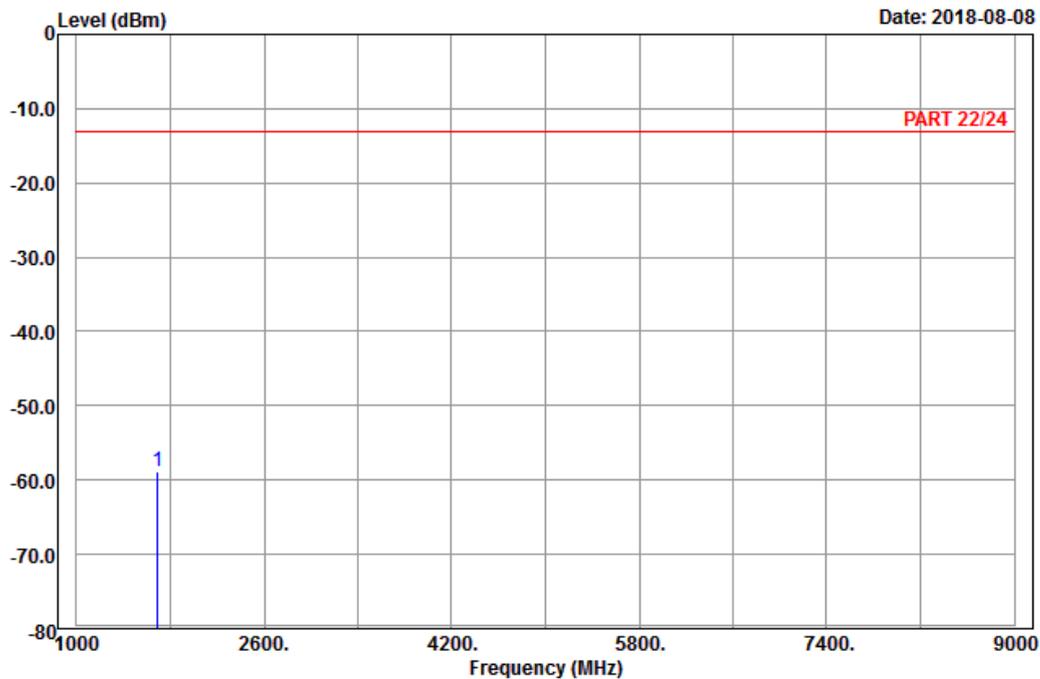
	Freq	Level	Read Level	Limit	Over	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1693.00	-58.47	-66.49	-13.00	-45.47	8.02	Peak



A D T

Data: 6

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 5\_Link\_CH20625  
 Tested by: Karl Lee

	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 1693.00	-58.88	-66.90	-13.00	-45.88	8.02 Peak

CA LTE Band 5  
Channel Bandwidth: 10+10 MHz / QPSK

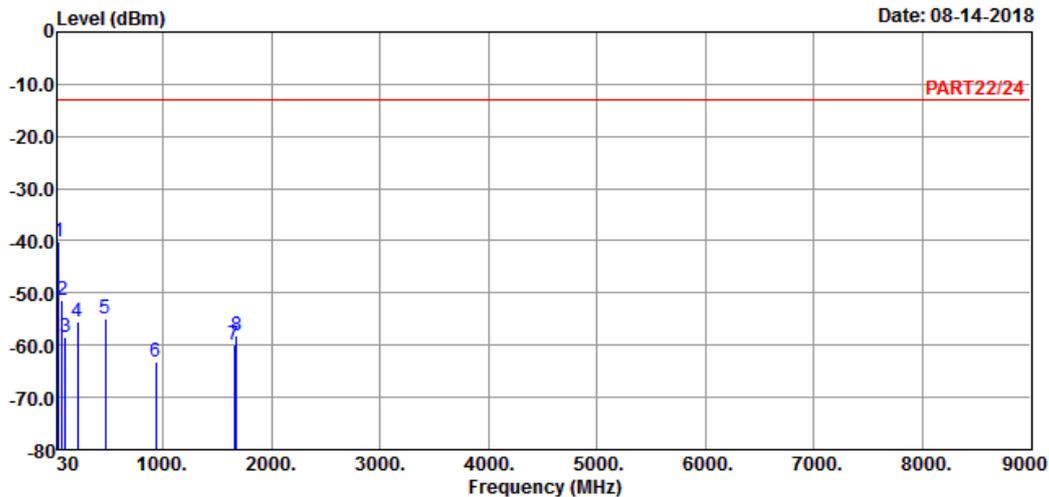


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A D T

Data: 8

Date: 08-14-2018



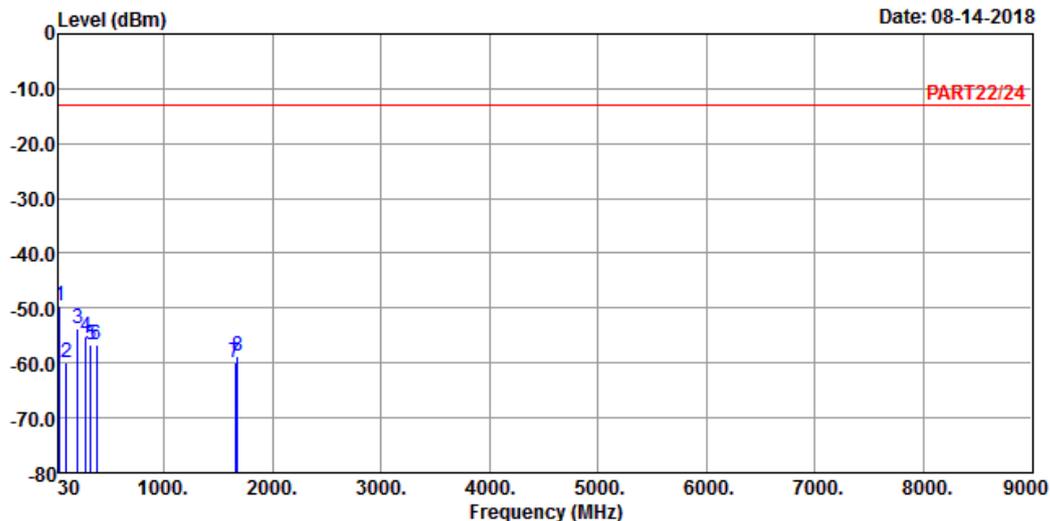
Site : 966 Chamber 5  
Condition: PART22/24 VERTICAL  
Remak : LTE Band 5 QPSK\_20M\_CH20450+CH20549  
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp	39.45	-40.16	-40.80	-13.00	-27.16	0.64 Peak
2		68.07	-51.30	-43.05	-13.00	-38.30	-8.25 Peak
3		97.23	-58.34	-47.61	-13.00	-45.34	-10.73 Peak
4		213.87	-55.57	-48.13	-13.00	-42.57	-7.44 Peak
5		467.30	-55.01	-49.79	-13.00	-42.01	-5.22 Peak
6		933.50	-63.07	-64.46	-13.00	-50.07	1.39 Peak
7		1658.00	-59.83	-46.03	-13.00	-46.83	-13.80 Peak
8		1677.80	-58.04	-44.11	-13.00	-45.04	-13.93 Peak



A D T

Data: 7



Site : 966 Chamber 5  
 Condition: PART22/24 HORIZONTAL  
 Remak : LTE Band 5 QPSK\_20M\_CH20450+CH20549  
 Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	42.69	-49.73	-48.79	-13.00	-36.73	-0.94	Peak
2	96.96	-60.01	-49.28	-13.00	-47.01	-10.73	Peak
3	205.50	-53.83	-46.04	-13.00	-40.83	-7.79	Peak
4	277.05	-55.13	-48.58	-13.00	-42.13	-6.55	Peak
5	325.20	-56.64	-50.01	-13.00	-43.64	-6.63	Peak
6	375.60	-56.62	-50.53	-13.00	-43.62	-6.09	Peak
7	1658.00	-59.80	-46.00	-13.00	-46.80	-13.80	Peak
8	1677.80	-58.79	-44.86	-13.00	-45.79	-13.93	Peak

LTE Band 26  
 Channel Bandwidth: 10 MHz / QPSK  
 Low Channel

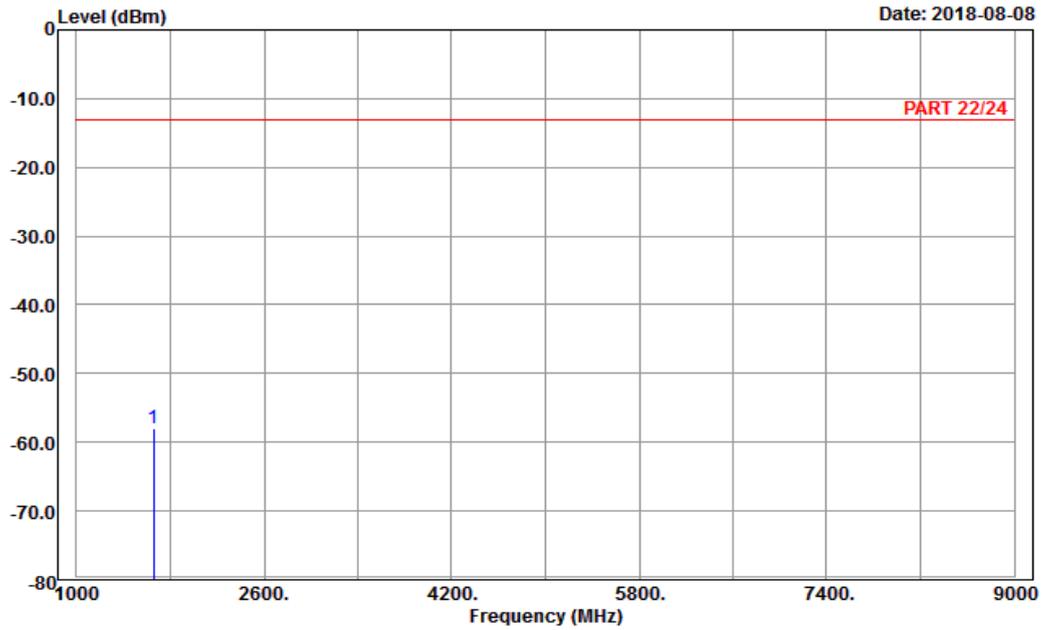


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 26\_Link\_CH26840  
 Tested by: Karl Lee

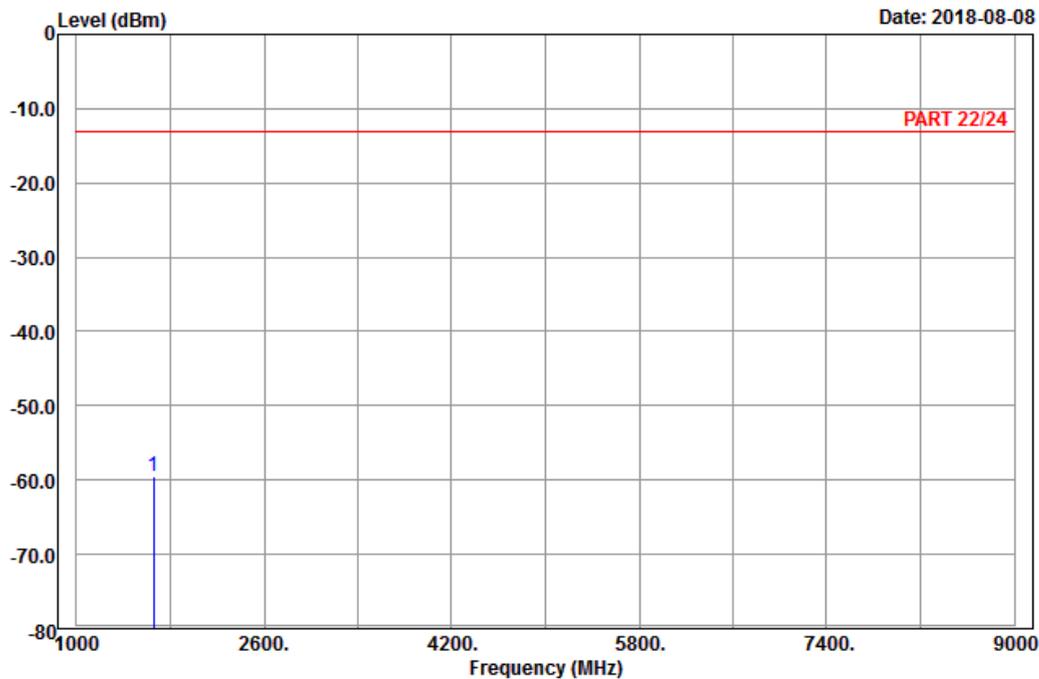
Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1658.00	-58.08	-65.99	-13.00	-45.08	7.91	Peak



A D T

Data: 6

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 26\_Link\_CH26840  
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1658.00	-59.41	-67.32	-13.00	-46.41	7.91	Peak

Middle Channel

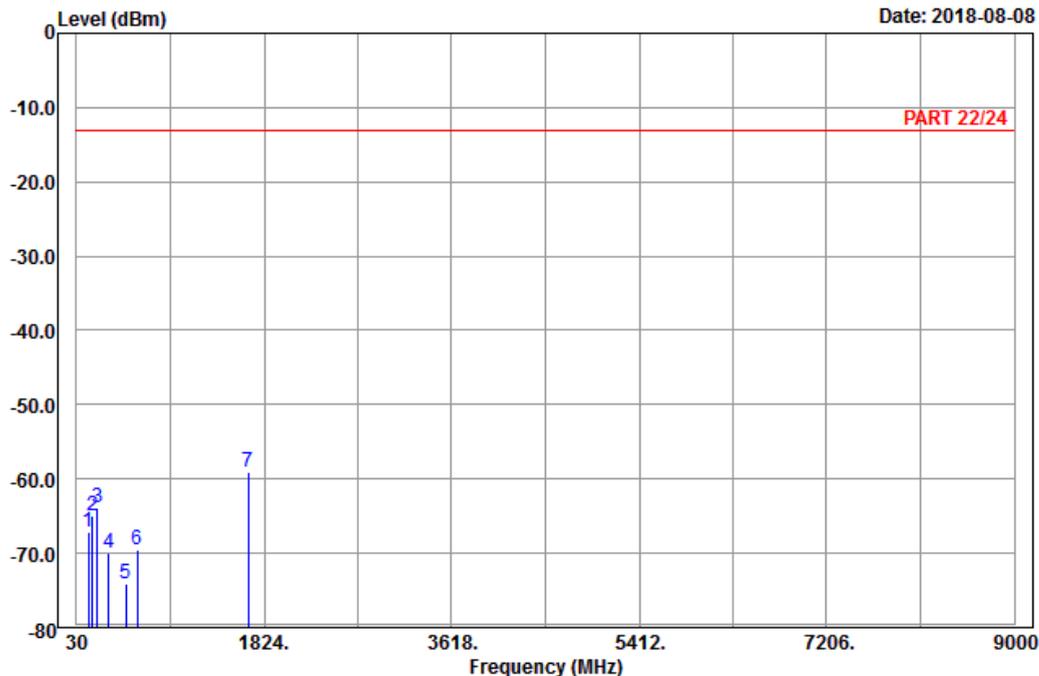


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A D T

Data: 9

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 26\_Link\_CH26915  
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	142.05	-67.03	-59.27	-13.00	-54.03	-7.76	Peak
2	179.85	-64.87	-59.19	-13.00	-51.87	-5.68	Peak
3	231.96	-63.82	-58.07	-13.00	-50.82	-5.75	Peak
4	334.30	-69.99	-64.43	-13.00	-56.99	-5.56	Peak
5	504.40	-74.21	-69.21	-13.00	-61.21	-5.00	Peak
6	614.30	-69.47	-69.74	-13.00	-56.47	0.27	Peak
7 pp	1673.00	-59.00	-66.91	-13.00	-46.00	7.91	Peak

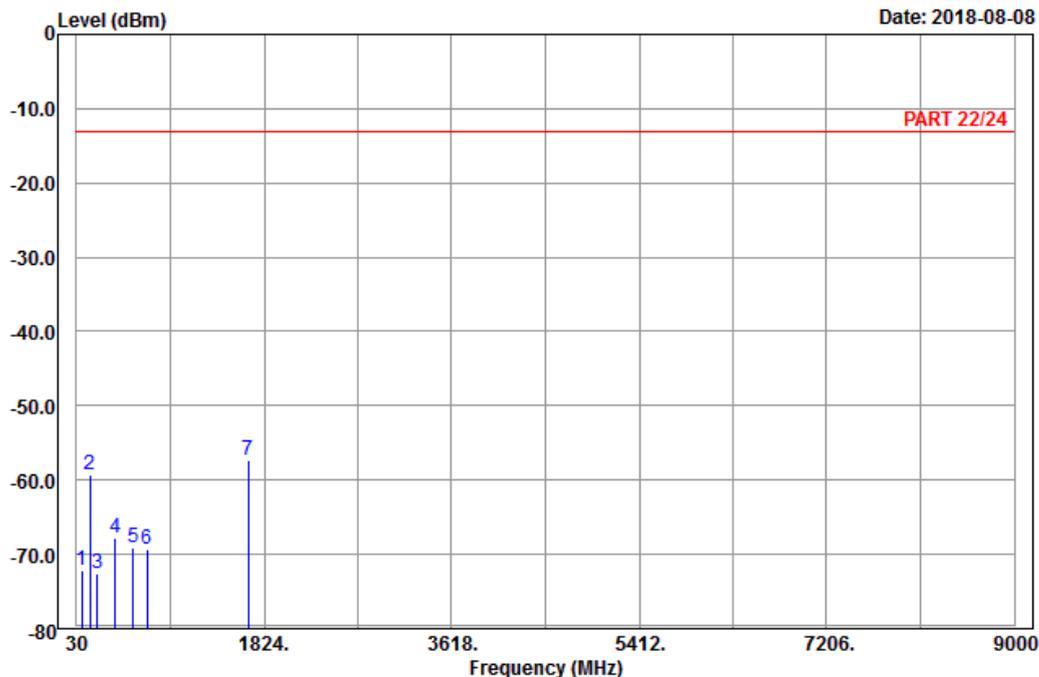


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 26\_Link\_CH26915  
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	84.54	-72.17	-60.84	-13.00	-59.17	-11.33	Peak
2	157.44	-59.39	-51.64	-13.00	-46.39	-7.75	Peak
3	229.53	-72.56	-66.78	-13.00	-59.56	-5.78	Peak
4	400.80	-67.71	-64.95	-13.00	-54.71	-2.76	Peak
5	569.50	-69.09	-68.23	-13.00	-56.09	-0.86	Peak
6	703.90	-69.38	-68.93	-13.00	-56.38	-0.45	Peak
7 pp	1673.00	-57.36	-65.27	-13.00	-44.36	7.91	Peak

High Channel

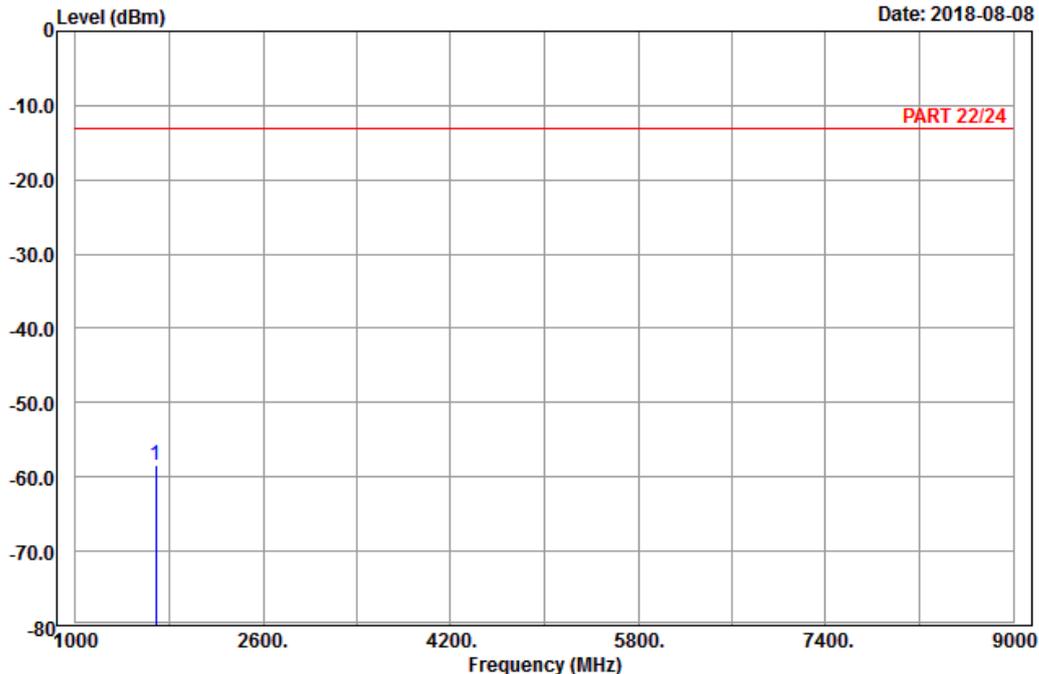


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A D T

Data: 5

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Horizontal  
 Remark : LTE\_Band 26\_Link\_CH26990  
 Tested by: Karl Lee

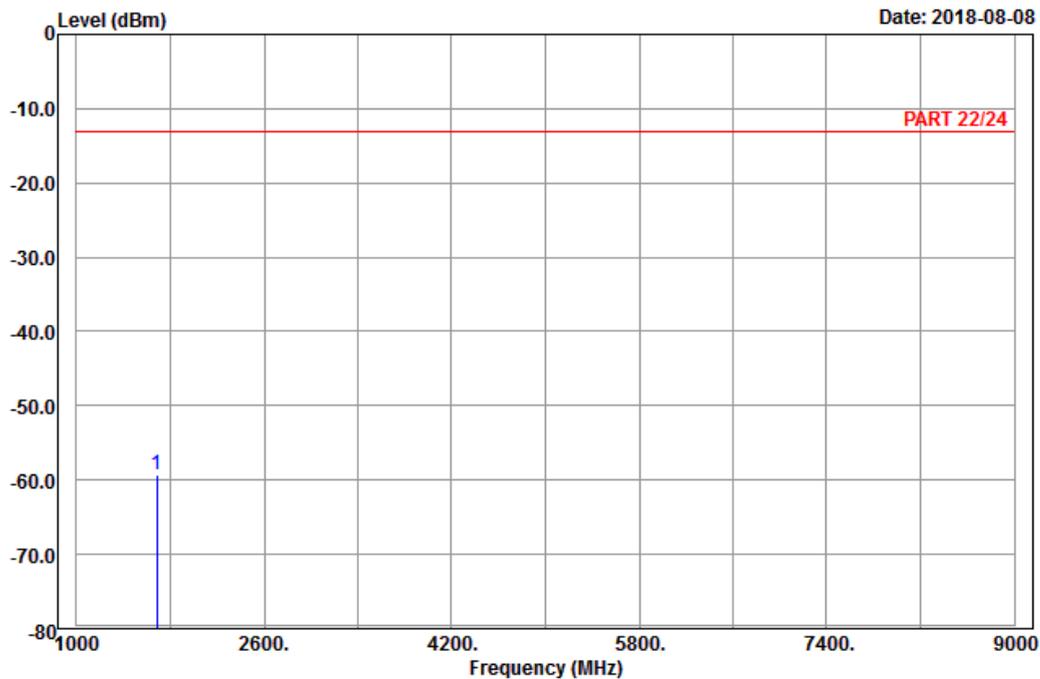
	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor Remark
MHz	dBm	dBm	dBm	dB	dB
1 pp 1688.00	-58.47	-66.49	-13.00	-45.47	8.02 Peak



A D T

Data: 6

Date: 2018-08-08



Site : 966 chamber 1  
 Condition: PART 22/24 Vertical  
 Remark : LTE\_Band 26\_Link\_CH26990  
 Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp 1688.00	-59.36	-67.38	-13.00	-46.36	8.02	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:

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

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