

## FCC Test Report

**Report No.:** RF\_FCC\_SL21030302-CMM-011\_B12B17 Rev\_1.0

**FCC ID:** QHYRPM-A5A11-B12

**Test Model:** RPM-A5A11-B12

**Host Name:** RP5200 Base Band Module

**Series Model:** N/A

**Received Date:** 03/16/2021

**Test Date:** 04/16/2021-04/22/2021

**Standards:** FCC Part 2, FCC Part 27

**Issued Date:** 06/02/2021

**Applicant:** CommScope

**Address:** 900 Chelmsford St, Lowell, MA 01851

**Issued By:** Bureau Veritas Consumer Products Services, Inc.

**Lab Address:** 775 Montague Expressway, Milpitas, CA 95035

**Test Location (1):** 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /  
Designation Number:** 540430

**ISED# / CAB identifier:** 4842D



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### Release Control Record

Issue No.	Description	Date Issued
RF_FCC_SL21030302-CMM-011_B12B17	Original Release	04/26/2021
RF_FCC_SL21030302-CMM-011_B12B17 Rev_1.0	Update per review	06/02/2021



## 2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1047	Modulation Characteristics	PASS	N/A
2.1046 27.50	Output Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS*	N/A
2.1049	Occupied Bandwidth	PASS*	N/A
27.50	Peak To Average Ratio	PASS*	N/A
2.1051 27.53	Conducted Spurious Emissions	PASS*	N/A
2.1053 27.53	Radiated Spurious Emissions	PASS	Meet the requirement of limit.

Note: The report is reproduced in full content only.

The EUT is digital modulation.

All data rate QPSK, 16QAM, 64QAM and 256QAM are evaluated for output power and QPSK and 16QAM are the worst case.

Per ANSI C63.26: 2015 section 5.1.2.2, the results includes worst case modulation only.

Pass\*: Only output power and radiated spurious emission test in this report, for other details please refer report: RF\_FCC\_LT19092001-CMM-001B12B17 Rev\_6.0.

### 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) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.51dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	3.73dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.64dB
	6GHz ~ 18GHz	4.82dB
	18GHz ~ 40GHz	4.91dB

## 2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
EMI Receiver	ESW 44	1328.4100K-101662-MH	08/30/2020	08/30/2021
Biconilog Antenna Sunol	JB1	A030702	03/09/2021	03/09/2022
Pre-Amplifier RF Bay, Inc.	LPA-6-30	11170601	04/27/2020	04/27/2021
Horn Antenna ETS-Lindgren	3117	218554	11/22/2020	11/22/2021
Pre-Amplifier RF-Lambda	RAMP00M50GA	17032300048	06/18/2020	06/18/2021
Tuned Dipole Antenna 30 - 1000 MHz (4pcs set)	AD-100	40133	01/23/2020	01/23/2022
DRG Horn Antenna ETS-Lingren	3117	214309	11/22/2020	11/22/2021
Attenuator Mini-Circuits	VAT-30W2+	1112	N/A	N/A

### 3 General Information

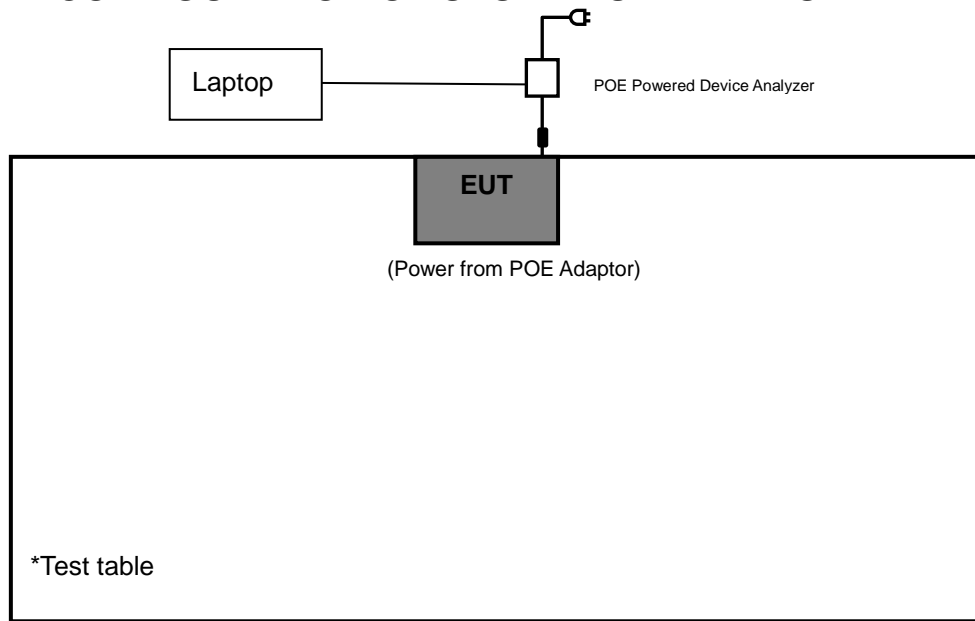
#### 3.1 General Description of EUT

Product	OneCell Radio Point
Host Name	RP5200 Base Band Module
Brand	CommScope
Module Model	RPM-A5A11-B12
Test Model	RPM-A5A11-B12
Identification No. of EUT	19198000003
Series Model	N/A
Model Difference	N/A
Power Supply Rating	POE : Input: 100-240VAC ; OutPut: 42-57V
Modulation Type	QPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	OFDM
Operating Frequency	LTE band 12: 729-746MHz LTE band 17: 734-746MHz
Antenna Type	PCB antenna
Antenna Gain	4 dBi
Antenna Connector	U.FL

Note:

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

### 3.1.1 CONFIGURATION OF SYSTEM UNDER TEST



#### Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
Radiated Spurious Emission	21deg. C, 71%RH	48Vdc	Gary Chou

### 3.2 EUT Operating Conditions

The EUT work at maximum output power under transmission mode and specific channel frequency through the software "NGPR\_Bringup\_BV" provided by customer.



### **3.3 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 v02r02**

**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

Per FCC Part 27.50

Fixed and base stations transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section;

#### 4.1.2 Test Procedures

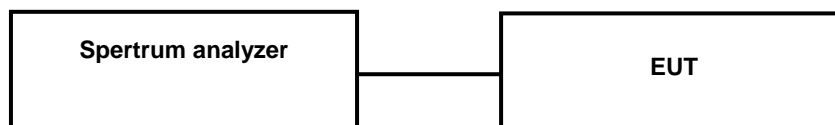
##### Conducted Power Measurement:

The EUT was set up for the maximum power with 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:

CONDUCTED POWER MEASUREMENT:



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

#### 4.1.4 Test Results

##### Conducted Output Power

LTE Band 12						
BW	Modulation	CH	Frequency	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Combined (dBm)
			(MHz)			
5 MHz	QPSK	5035	731.5	21.04	21.32	24.19
		5095	737.5	21.44	21.52	24.49
		5155	743.5	20.83	21.03	23.94
	16QAM	5035	731.5	21.04	21.41	24.24
		5095	737.5	21.57	21.74	24.67
		5155	743.5	20.98	20.83	23.92
	64QAM	5035	731.5	20.34	21.14	23.77
		5095	737.5	20.88	20.89	23.90
		5155	743.5	20.32	20.87	23.61
	256QAM	5035	731.5	21.03	20.51	23.79
		5095	737.5	21.24	21.42	24.34
		5155	743.5	20.98	20.57	23.79
10 MHz	QPSK	5060	734.0	21.77	21.34	24.57
		5095	737.5	21.76	21.52	24.65
		5130	741.0	21.41	21.49	24.46
	16QAM	5060	734.0	21.39	21.52	24.47
		5095	737.5	21.51	21.44	24.49
		5130	741.0	21.42	21.31	24.38
	64QAM	5060	734.0	20.99	21.04	24.03
		5095	737.5	21.48	21.52	24.51
		5130	741.0	21.08	21.32	24.21
	256QAM	5060	734.0	21.22	21.41	24.33
		5095	737.5	21.48	21.45	24.48
		5130	741.0	21.41	21.2	24.32
15 MHz	QPSK	5085	736.5	21.55	21.48	24.53
		5095	737.5	21.41	21.53	24.48
		5105	738.5	21.32	21.29	24.32
	16QAM	5085	736.5	21.52	21.37	24.46
		5095	737.5	21.24	21.32	24.29
		5105	738.5	21.52	21.3	24.42
	64QAM	5085	736.5	20.84	20.99	23.93
		5095	737.5	21.42	21.31	24.38
		5105	738.5	20.99	20.98	24.00
	256QAM	5085	736.5	21.42	21.03	24.24
		5095	737.5	21.1	21.42	24.27
		5105	738.5	20.98	21.47	24.24

## Conducted Output Power

LTE Band 17						
BW	Modulation	CH	Frequency	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Combined (dBm)
			(MHz)			
5 MHz	QPSK	5755	736.5	21.35	21.5	24.44
		5790	740.0	21.4	21.48	24.45
		5825	743.5	21.43	21.59	24.52
	16QAM	5755	736.5	21.52	21.52	24.53
		5790	740.0	21.55	21.35	24.46
		5825	743.5	21.25	21.2	24.24
	64QAM	5755	736.5	20.99	21.05	24.03
		5790	740.0	21.02	21.12	24.08
		5825	743.5	20.83	20.86	23.86
	256QAM	5755	736.5	20.98	21.06	24.03
		5790	740.0	21.05	20.99	24.03
		5825	743.5	20.83	20.91	23.88
10MHz	QPSK	5790	740.0	21.52	21.34	24.44
	16QAM	5790	740.0	21.47	21.56	24.53
	64QAM	5790	740.0	20.9	21.2	24.06
	256QAM	5790	740.0	21.05	21.25	24.16

## 4.2 Radiated Emission Measurement

### 4.2.1 Limits of Radiated Emission Measurement

(1)The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB. The limit of emission equal to  $-13\text{dBm}$

### 4.2.2 Test Procedure

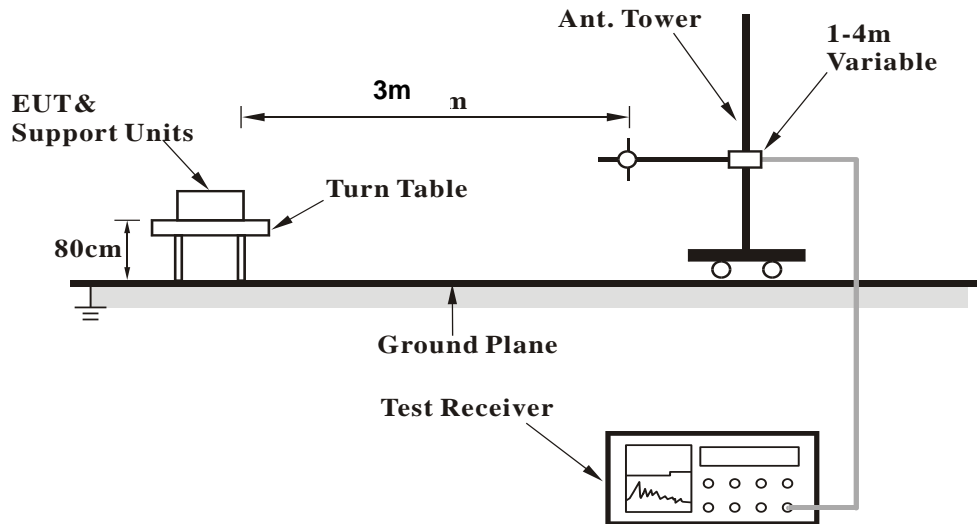
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The 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.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi.}$

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

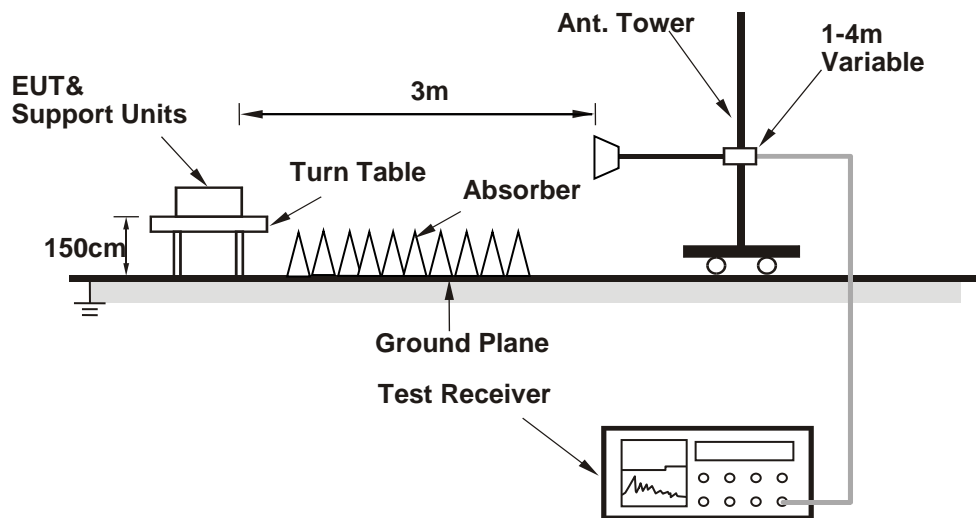
### 4.2.3 Deviation from Test Standard

No deviation.

4.2.4 Test Setup  
**For Radiated emission 30MHz to 1GHz**



**For Radiated emission above 1GHz**



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

#### 4.2.5 Test Results

Below 1GHz

#### Below 1GHz Worst-case Data

<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Operating Channel</b>	737.5MHz
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Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
78.34	-65.32	109	191	V	78.34	-59.34	0	0.23	-59.57	-13	-46.57
78.34	-68.32	18	162	H	78.34	-62.32	0	0.23	-62.55	-13	-49.55
122.5	-64.64	352	183	V	122.5	-58.38	0	0.35	-58.73	-13	-45.73
122.5	-66.91	11	168	H	122.5	-60.27	0	0.35	-60.62	-13	-47.62

#### REMARKS:

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.

Above 1GHz

LTE band 12

5MHz BW, low channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2194.5	-60.23	49	193	V	2194.5	-54.23	9.47	1.56	-46.32	-13	-33.32
2194.5	-62.53	352	152	H	2194.5	-57.13	9.47	1.56	-49.22	-13	-36.22
6193	-57.8	14	148	V	6193	-52.52	10.31	2.6	-44.81	-13	-31.81
6193	-56.33	233	158	H	6193	-51.46	10.31	2.6	-43.75	-13	-30.75

5MHz BW, mid channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2212.5	-61.2	233	212	V	2212.5	-56.2	9.47	1.56	-48.29	-13	-35.29
2212.5	-62.53	107	161	H	2212.5	-57.33	9.47	1.56	-49.42	-13	-36.42
6563	-55.32	29	156	V	6563	-49.28	10.62	2.72	-41.38	-13	-28.38
6563	-55.6	199	183	H	6563	-50.23	10.62	2.72	-42.33	-13	-29.33

5MHz BW, high channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2230.5	-57.43	301	167	V	2230.5	-52.52	9.47	1.56	-44.61	-13	-31.61
2230.5	-60.02	342	170	H	2230.5	-54.24	9.47	1.56	-46.33	-13	-33.33
6253	-56.24	32	210	V	6253	-51.29	10.41	2.62	-43.5	-13	-30.5
6253	-57.8	27	200	H	6253	-52.57	10.41	2.62	-44.78	-13	-31.78

**REMARKS:**

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.



### 10MHz BW, low channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2202	-57.8	292	175	V	2202	-52.23	9.47	1.56	-44.32	-13	-31.32
2202	-58.9	334	208	H	2202	-53.13	9.47	1.56	-45.22	-13	-32.22
6331	-54.21	18	194	V	6331	-48.82	10.53	2.64	-40.93	-13	-27.93
6331	-56.05	304	200	H	6331	-50.27	10.53	2.64	-42.38	-13	-29.38

### 10MHz BW, mid channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2212.5	-61.2	178	200	V	2212.5	-54.28	9.47	1.56	-46.37	-13	-33.37
2212.5	-62.42	176	218	H	2212.5	-56.23	9.47	1.56	-48.32	-13	-35.32
6545	-55.6	347	190	V	6545	-50.18	10.59	2.71	-42.3	-13	-29.3
6545	-57.85	210	177	H	6545	-52.42	10.59	2.71	-44.54	-13	-31.54

### 10MHz BW, high channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2223	-59.21	113	152	V	2223	-53.52	9.47	1.56	-45.61	-13	-32.61
2223	-60.32	14	164	H	2223	-55.29	9.47	1.56	-47.38	-13	-34.38
6955	-54.55	49	163	V	6955	-49.82	10.55	2.85	-42.12	-13	-29.12
6955	-56.21	174	220	H	6955	-50.25	10.55	2.85	-42.55	-13	-29.55

#### REMARKS:

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.

### 15MHz BW, low channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2209.5	-59.03	253	218	V	2209.5	-53.52	9.47	1.56	-45.61	-13	-32.61
2209.5	-61.24	34	220	H	2209.5	-56.23	9.47	1.56	-48.32	-13	-35.32
6472	-54.25	136	152	V	6472	-48.1	10.56	2.69	-40.23	-13	-27.23
6472	-58.35	308	219	H	6472	-52.52	10.56	2.69	-44.65	-13	-31.65

### 15MHz BW, mid channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2212.5	-58.43	4	176	V	2212.5	-53.1	9.47	1.56	-45.19	-13	-32.19
2212.5	-62.1	95	196	H	2212.5	-56.23	9.47	1.56	-48.32	-13	-35.32
6564	-54.66	184	152	V	6564	-49.28	10.62	2.72	-41.38	-13	-28.38
6564	-56.87	2	205	H	6564	-51.12	10.62	2.72	-43.22	-13	-30.22

### 15MHz BW, high channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2215.5	-56.4	241	211	V	2215.5	-51.34	9.47	1.56	-43.43	-13	-30.43
2215.5	-57.8	323	216	H	2215.5	-53.52	9.47	1.56	-45.61	-13	-32.61
6071	-56.42	267	189	V	6071	-50.8	10.24	2.56	-43.12	-13	-30.12
6071	-58.2	194	167	H	6071	-52.09	10.24	2.56	-44.41	-13	-31.41

#### REMARKS:

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.

### LTE band 17

#### 5MHz BW, low channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2209.5	-60.32	24	183	V	2209.5	-54.57	9.47	1.56	-46.66	-13	-33.66
2209.5	-57.63	58	189	H	2209.5	-52.53	9.47	1.56	-44.62	-13	-31.62
6486	-54.23	225	165	V	6486	-49.2	10.55	2.69	-41.34	-13	-28.34
6486	-55.63	308	176	H	6486	-50.92	10.55	2.69	-43.06	-13	-30.06

#### 5MHz BW, mid channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2220	-57.36	210	191	V	2220	-52.5	9.47	1.56	-44.59	-13	-31.59
2220	-59.9	300	210	H	2220	-53.63	9.47	1.56	-45.72	-13	-32.72
6721	-56.23	320	177	V	6721	-50.23	10.68	2.77	-42.32	-13	-29.32
6721	-57.1	7	184	H	6721	-51.52	10.68	2.77	-43.61	-13	-30.61

#### 5MHz BW, high channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2230.5	-58.2	273	210	V	2230.5	-53.52	9.47	1.56	-45.61	-13	-32.61
2230.5	-59.64	53	163	H	2230.5	-54.63	9.47	1.56	-46.72	-13	-33.72
7133	-53.55	268	186	V	7133	-48.2	10.42	3.2	-40.98	-13	-27.98
7133	-55.34	254	165	H	7133	-49.29	10.42	3.2	-42.07	-13	-29.07

#### REMARKS:

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.

### 10MHz BW, mid channel, QPSK

Indicated			Test Antenna		Substituted						
Frequency (MHz)	Raw (dBm)	Degree	Hgt (cm)	Pol (V/H)	Frequency (MHz)	Level (dBm)	Ant Gain (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
2220	-56.32	239	210	V	2220	-51.02	9.47	1.56	-43.11	-13	-30.11
2220	-58.9	227	196	H	2220	-53.53	9.47	1.56	-45.62	-13	-32.62
7123	-53.2	256	181	V	7123	-48.52	10.31	3.2	-41.41	-13	-28.41
7123	-55.77	358	193	H	7123	-49.56	10.31	3.2	-42.45	-13	-29.45

#### REMARKS:

1. Absolute level (dBm) = Level (dBm) + Ant Gain(dBi) – Cable Loss(dB)
2. Margin value = Absolute level – Limit value.

## 5 Pictures of Test Arrangements

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

## Appendix – Information on the Testing Laboratories

Bureau Veritas is a global leader in testing, inspection and certification (TIC) services. We help businesses improve safety, sustainability and productivity; and our clients include the majority of leading brands in retail, manufacturing and other industries. With a presence in every major country around the world, our quality assurance and compliance solutions are vital in helping our customers enhance product quality and concept-to-consumer journeys. We also assist with increasing speed to market, profitability and brand equity throughout the supply chain. Bureau Veritas is a leading wireless/IoT testing, inspection, audit and certification provider, with a global network of test laboratories to support the IoT industry in areas of connectivity, security, interoperability as well as quality, health & safety, and environmental/chemical requirements.

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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