

FCC Test Report

Report No.: RF_FCC_SL20061901-CMM-004_B12B17

FCC ID: QHYRPM-A5A11-B12

Test Model: RPM-A5A11-B12

Host Name: RP5100 Base Band Module

Series Model: N/A

Received Date: 11/16/2020

Test Date: 11/19/2020-12/16/2020

Standards: FCC Part 2, FCC Part 27

Issued Date: 12/17/2020

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



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 A2LA or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty.....	5
2.2 Test Site and Instruments	6
3 General Information	7
3.1 General Description of EUT	7
3.1.1 Configuration of System under Test	8
3.2 EUT Operating Conditions	8
3.3 General Description of Applied Standards	9
4 Test Types and Results.....	10
4.1 Radiated Emission Measurement	10
4.1.1 Limits of Radiated Emission Measurement	10
4.1.2 Test Procedure.....	10
4.1.3 Deviation from Test Standard.....	10
4.1.4 Test Setup.....	11
4.1.5 Test Results	12
5 Pictures of Test Arrangements.....	18
Appendix – Information on the Testing Laboratories	19

Release Control Record

Issue No.	Description	Date Issued
RF_FCC_SL20061901-CMM-004_B12B17	Original	12/17/2020

1 Certificate of Conformity

Product: OneCell Radio Point

Brand: CommScope

Test Model: RPM-A5A11-B12

Host Name: RP5100 Base Band Module

Series Model: N/A

Sample Status: Sample Received in good condition

Applicant: CommScope

Test Date: 11/19/2020-12/16/2020

Standards: FCC Part 2, FCC Part 27

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas 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 EMC characteristics under the conditions specified in this report.

Prepared by : Deon Dai , **Date:** 12/17/2020
Deon Dai / Test Engineer

Approved by : Gary Chou , **Date:** 12/17/2020
Gary Chou / Engineer Reviewer

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*	N/A
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 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

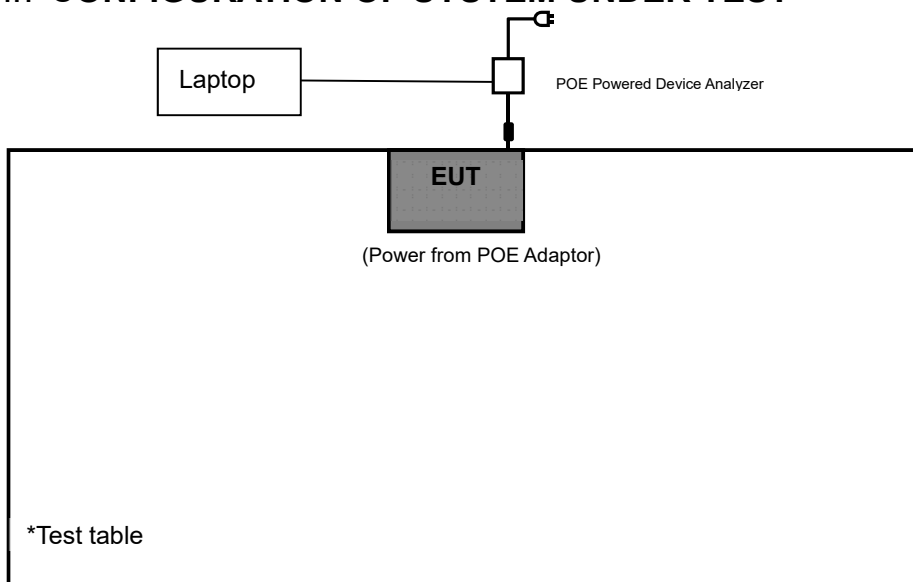
Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
EMI Receiver	ESW 44	1328.4100K-101662-MH	08/30/2020	08/30/2021
Biconilog Antenna Sunol	JB1	A030702	03/09/2019	03/09/2021
Pre-Amplifier RF Bay, Inc.	LPA-6-30	11170601	04/27/2020	04/27/2021
Horn Antenna ETS-Lindgren	3117	218554	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	01/23/20120	01/23/2021

3 General Information

3.1 General Description of EUT

Product	OneCell Radio Point
Host Name	RP5100 Base Band Module
Host model	7778115-00
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
Max. ERP Power	306mW
Antenna Type	Internal antenna
Antenna Connector	U.FL

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	Deon Dai

3.2 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

3.3 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 Radiated Emission Measurement

4.1.1 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 -13dBm

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

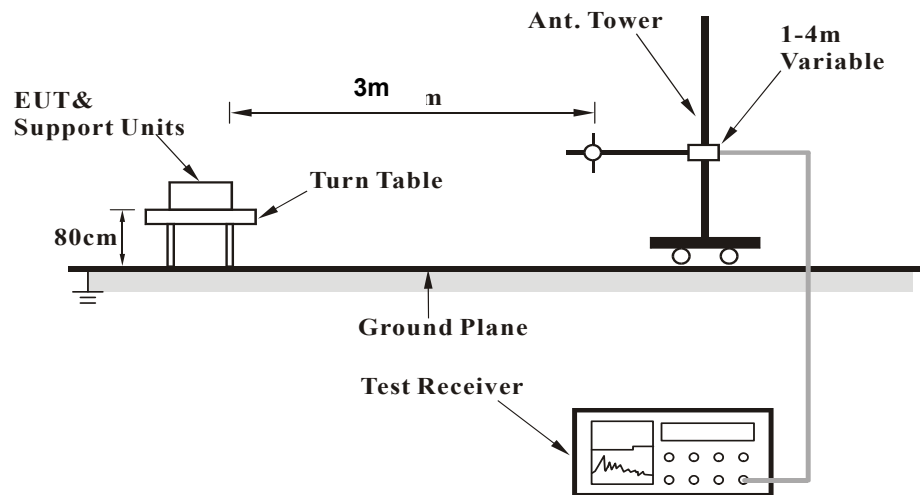
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.1.3 Deviation from Test Standard

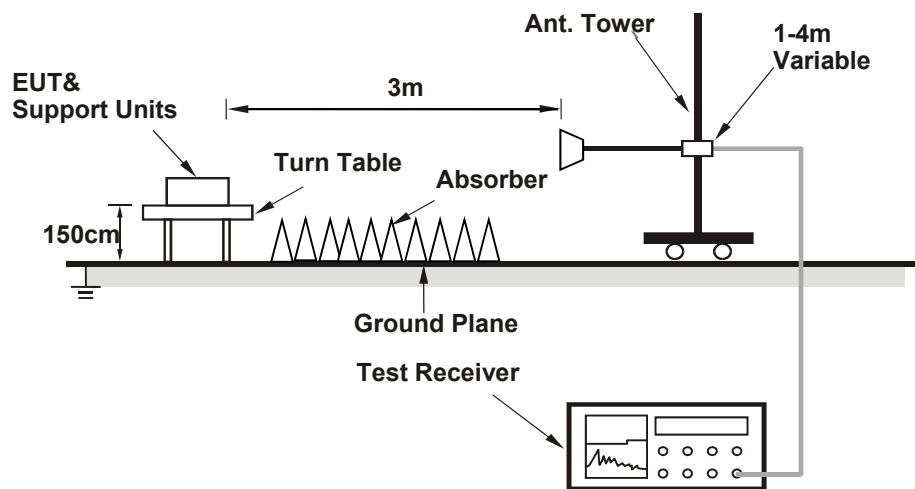
No deviation.

4.1.4 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).

4.1.5 Test Results

Below 1GHz

Below 1GHz Worst-case Data

Frequency Range	30 MHz ~ 1 GHz	Operating Channel	763MHz
------------------------	----------------	--------------------------	--------

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)
53.5	-71.52	312	155	V	53.5	-65.23	0	0.22	-65.45	-13	-52.45
53.5	-72.47	29	208	H	53.5	-67.52	0	0.22	-67.74	-13	-54.74
104.4	-69.24	132	149	V	104.4	-63.64	0	0.34	-63.98	-13	-50.98
104.4	-71.08	208	190	H	104.4	-65.29	0	0.34	-65.63	-13	-52.63

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	-64.63	139	144	V	2194.5	-59.24	9.47	1.56	-51.33	-13	-38.33
2194.5	-66.4	208	250	H	2194.5	-61.53	9.47	1.56	-53.62	-13	-40.62
6902	-55.28	308	192	V	6902	-50.12	10.72	3.18	-42.58	-13	-29.58
6902	-56.82	14	177	H	6902	-51.32	10.72	3.18	-43.78	-13	-30.78

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	-67.83	209	155	V	2212.5	-62.24	9.47	1.56	-54.33	-13	-41.33
2212.5	-68.52	359	169	H	2212.5	-63.38	9.47	1.56	-55.47	-13	-42.47
7233	-53.55	14	148	V	7233	-48.48	10.31	3.2	-41.37	-13	-28.37
7233	-56.21	233	158	H	7233	-50.01	10.31	3.2	-42.9	-13	-29.9

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	-64.25	148	165	V	2230.5	-58.82	9.47	1.56	-50.91	-13	-37.91
2230.5	-65.74	246	173	H	2230.5	-59.21	9.47	1.56	-51.3	-13	-38.3
6883	-55.27	29	156	V	6883	-50.28	10.72	3.1	-42.66	-13	-29.66
6883	-56.26	199	183	H	6883	-51.6	10.72	3.1	-43.98	-13	-30.98

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	-65.23	193	176	V	2202	-60.23	9.47	1.56	-52.32	-13	-39.32
2202	-63.56	154	211	H	2202	-58.5	9.47	1.56	-50.59	-13	-37.59
7114	-55.4	187	174	V	7114	-50.12	10.42	3.2	-42.9	-13	-29.9
7114	-54.86	28	151	H	7114	-49.73	10.42	3.2	-42.51	-13	-29.51

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	-66.34	29	158	V	2212.5	-61.23	9.47	1.56	-53.32	-13	-40.32
2212.5	-65.25	95	155	H	2212.5	-60.73	9.47	1.56	-52.82	-13	-39.82
7457	-53.56	167	178	V	7457	-48.22	10.68	3.22	-40.76	-13	-27.76
7457	-55.03	183	156	H	7457	-49.52	10.68	3.22	-42.06	-13	-29.06

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	-66.48	111	209	V	2223	-60.28	9.47	1.56	-52.37	-13	-39.37
2223	-65.25	178	157	H	2223	-59.47	9.47	1.56	-51.56	-13	-38.56
6890	-55.5	255	179	V	6890	-50.22	10.72	3.1	-42.6	-13	-29.6
6890	-57.4	169	186	H	6890	-51.63	10.72	3.1	-44.01	-13	-31.01

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	-65.38	113	152	V	2209.5	-60.87	9.47	1.56	-52.96	-13	-39.96
2209.5	-64.94	14	164	H	2209.5	-59.7	9.47	1.56	-51.79	-13	-38.79
7022	-56.55	306	186	V	7022	-49.53	10.42	3.19	-42.3	-13	-29.3
7022	-55.07	173	171	H	7022	-50.37	10.42	3.19	-43.14	-13	-30.14

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	-64.67	253	218	V	2212.5	-59.73	9.47	1.56	-51.82	-13	-38.82
2212.5	-65.39	34	220	H	2212.5	-60.88	9.47	1.56	-52.97	-13	-39.97
7131	-56.27	227	166	V	7131	-51.24	10.42	3.2	-44.02	-13	-31.02
7131	-55.86	189	183	H	7131	-50.2	10.42	3.2	-42.98	-13	-29.98

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	-64.64	178	200	V	2215.5	-59.72	9.47	1.56	-51.81	-13	-38.81
2215.5	-65.04	176	218	H	2215.5	-58.37	9.47	1.56	-50.46	-13	-37.46
6998	-56.28	289	188	V	6998	-51.35	10.42	3.19	-44.12	-13	-31.12
6998	-58.4	329	214	H	6998	-52.07	10.42	3.19	-44.84	-13	-31.84

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	-65.72	241	211	V	2209.5	-60.28	9.47	1.56	-52.37	-13	-39.37
2209.5	-64.35	323	216	H	2209.5	-59.84	9.47	1.56	-51.93	-13	-38.93
7348	-54.2	70	170	V	7348	-49.02	10.41	3.22	-41.83	-13	-28.83
7348	-54.85	257	171	H	7348	-50.66	10.41	3.22	-43.47	-13	-30.47

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	-64.23	24	183	V	2220	-58.2	9.47	1.56	-50.29	-13	-37.29
2220	-64.11	58	189	H	2220	-59.92	9.47	1.56	-52.01	-13	-39.01
7522	-54.96	104	209	V	7522	-47.11	10.68	3.22	-39.65	-13	-26.65
7522	-55.27	351	201	H	7522	-48.07	10.68	3.22	-40.61	-13	-27.61

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	-65.42	210	191	V	2230.5	-60.84	9.47	1.56	-52.93	-13	-39.93
2230.5	-64.25	300	210	H	2230.5	-59.27	9.47	1.56	-51.36	-13	-38.36
7149	-54.27	272	163	V	7149	-48.2	10.42	3.2	-40.98	-13	-27.98
7149	-55.34	253	211	H	7149	-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	-64.23	242	171	V	2220	-59.73	9.47	1.56	-51.82	-13	-38.82
2220	-63.67	220	153	H	2220	-58.27	9.47	1.56	-50.36	-13	-37.36
7220	-53.63	194	182	V	7220	-48.52	10.31	3.2	-41.41	-13	-28.41
7220	-55.75	278	181	H	7220	-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:

Milpitas EMC/RF/Safety/Telecom Lab

775 Montague Expressway, Milpitas, CA 95035
Tel: +1 408 526 1188

Sunnyvale OTA/Bluetooth Lab

1293 Anvilwood Avenue, Sunnyvale, CA 94089
Tel: +1 669 600 5293

Littleton EMC/RF/Safety/Environmental Lab

1 Distribution Center Cir #1, Littleton, MA 01460
Tel: +1 978 486 8880

Irvine OTA/PTCRB/Bluetooth/V2X Lab

15 Musick, Irvine, CA 92618
Tel: +1 949 716 6512

Email: sales.eaw@us.bureauveritas.com

Web Site: www.cpsusa-bureauveritas.com

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

--- END ---