

# CommScope Technologies, LLC TEST REPORT

### **SCOPE OF WORK**

EMISSIONS TESTING - RPM-A5A11-B66 in new host model RP5200

### **REPORT NUMBER**

104601893BOX-001

**ISSUE DATE** 

[REVISED DATE]

May 12, 2021 May 24, 2021

# **PAGES**

141

# **DOCUMENT CONTROL NUMBER**

Non-Specific Radio Report Shell Rev. December 2017 © 2017 INTERTEK





# **EMISSIONS TEST REPORT**

(FULL COMPLIANCE)

Report Number: 104601893BOX-001 Project Number: G104601893

Report Issue Date: 05/12/2021 Report Revision Date: 05/24/2021

Model(s) Tested: RPM-A5A11-B66 in new host RP5200

Model(s) Partially Tested: None

Model(s) Not Tested but declared equivalent by the client: None

**Standards:** CFR47 FCC Part 27 (05/2021)

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
CommScope Technologies LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Report prepared by

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# Intertek

Report Number: 104601893BOX-001

Issued: 05/12/2021 Revised: 05/24/2021

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### **Introduction and Conclusion** 1

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

### 2 **Test Summary**

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test and Variant Models	
5	System Setup and Method	
6	Maximum Peak Output Power and Human RF exposure CFR47 FCC Parts 2.1046 and 27.50(d)(1-2)	Pass
7	Occupied Bandwidth CFR47 FCC Parts 2.1049 and 27.53(h)(3)	Pass
8	Frequency Stability over voltage CFR47 FCC Parts 2.1055 and 27.54	Pass
9	Transmitter Spurious Emissions CFR47 Parts 2.1051, 2.1053, 2.1057, and 27.53(h)	Pass
10	Revision History	

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Revised: 05/24/2021

### Client Information

### This EUT was tested at the request of:

Client: CommScope Technologies LLC

> 900 Chelmsford St. Lowell, MA 01851

**USA** 

Contact: Mr. Kevin Craig Telephone: (978) 250-2678

Fax: None

kevin.craig@commscope.com Email:

# **Description of Equipment Under Test and Variant Models**

CommScope Telecommunications (China) Ltd. Manufacturer:

68 Su Hong Xi Lu, Suzhou Industrial Park.

Suzhou, Jiangsu, 215021, China

Equipment Under Test				
Description	Manufacturer	Model Numb	er	Serial Number
Band 66 Radio Module	CommScope Technologies L	_C RPM-A	5A11-B66	19173000001
Onecell Radio Point	CommScope Technologies L	C RP520	0	05321060064

Receive Date:	03/24/2021
Received Condition:	Good
Type:	Production

### Description of Equipment Under Test (provided by client)

The Radio Module is band specific using the Analog devices RF Agile Transceiver IC, AD936x. The device combines an RF front end with a flexible mixed-signal baseband section and integrated frequency synthesizers providing a configurable digital interface to the processor. The Radio Module also contains a band specific front end, band specific antenna and required power rails. All power rails required are derived from the 12 VDC bus supplied by the Baseband card. The reference frequency for the radio IC is 38.4 MHz is derived from the from an OCXO which is disciplined from a 1588 reference clock.

It supports bandwidths of 5, 10, 15, and 20 MHz with four modulations; TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM. The radio is fixed.

# Description of Radio Host (provided by client)

The OneCell® RP5200 family is factory configurable with 2 – 4 Radios Modules mounted to a Baseband card. The same PCB's will be used in both indoor and outdoor version of the radio point. The device is fixed.

The baseband card is the host for the modular radios. It contains a two ethernet PHY's with one supporting 100M/1G/2.5G/5G/10G ethernet and the other supporting 100M/1G. The main processor is Zylinx Ultrascale+ MPSoC with 2 GB DDR3 and 4 GB Flash memory. The baseband PCBA converts POE power to +12 VDC bus voltage require as input to the radio modules.

Equipment Under Test Power Configuration				
Rated Voltage Rated Current Rated Frequency Number of Phases				
48 VDC	0.960 mA per pair max	DC	N/A	

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Pre-programmed to transmit at Low, Mid, and High channels at four different modulations, TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM.

## Software used by the EUT:

No.	Descriptions of EUT Exercising
1	RP5200 Diagnostics Ver 1009

Radio/Re	Radio/Receiver Characteristics				
Frequency Band(s)	2110-2200 MHz				
Modulation Type(s)	TM1.1-QPSK, TM3.2-16QAM, TM3.1-64 QAM, TM3.1a- 256QAM				
Maximum Output Power (conducted)	23.26 dBm (Conducted)				
Test Channels	Low, Middle, High Channels of 5 MHz, 10 MHz, 15 MHz, and 20 MHz Bandwidths, Single Channel operation only				
Occupied Bandwidth	18.006 MHz (Worst-case)				
MIMO Information (# of Transmit and	2x2 MIMO using cross polarized antennas and				
Receive antenna ports)	uncorrelated data streams				
Equipment Type	Module in a host				
Antenna Type and Gain	Detachable Antenna: +4 dBi (as provided by the client. Intertek takes no responsibility for the accuracy of this information. Actual antenna gain will be determined at the time of licensing)				

### **Variant Models:**

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

# **System Setup and Method**

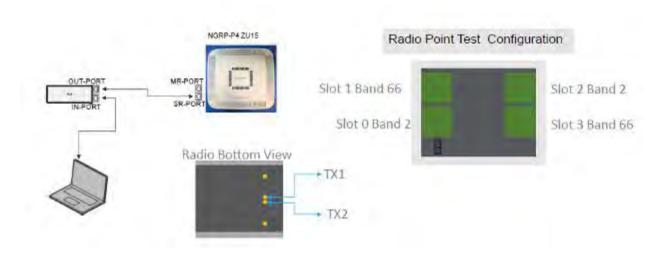
	Cables						
ID	Description	Length (m)	Shielding	Ferrites	Termination		
	LAN (POE Power Cable)	2.58	Shielded	None	POE P/S		
	LAN (Communication)	9.00	Shielded	None	Laptop		

Support Equipment				
Description	Manufacturer	Model Number	Serial Number	
Laptop	Dell	LATITUDE	None	
Power Device Analzyer	Sifos Technologies	PDA-604A	604A0033	

### 5.1 Method:

Configuration as required by ANSI C63.26-2015, KDB662911, and CFR47 FCC Part 27 (05/2021).

### 5.2 **EUT Block Diagram:**



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### Maximum Peak Output Power and Human RF exposure

### 6.1 Method

Tests are performed in accordance with CFR47 FCC Parts 2.1046 and 27, KDB 662911, and ANSI C63.26 Section 5.2.4.4.

**TEST SITE: EMC Lab** 

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due	
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022	
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022	
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021	
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022	

### **Software Utilized:**

Name	Manufacturer	Version
None		1

### Results: 6.3

The maximum conducted output power was measured to be 23.26 dBm, which is much less than the EIRP limit of 27.50(d)(1-2). The sample tested was found to Comply. Antenna gain limitations will depend on the location of deployment. Output power from the two antenna ports was not summed since the data streams are uncorrelated and the antennas are cross polarized.

§27.50(d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:

- (1) The power of each fixed or base station transmitting in the 1995-2000 MHz, 2110-2155 MHz, 2155-2180 MHz or 2180-2200 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to:
- (i) An equivalent isotropically radiated power (EIRP) of 3280 watts when transmitting with an emission bandwidth of 1 MHz or less:
- (ii) An EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
- (2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
- (i) An equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
- (ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	22.44
		ANT1	22.27
Mid	2155.00	ANT0	23.26
		ANT1	22.46
High	2197.50	ANT0	23.00
_		ANT1	22.61

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)	
Low	2115.00	ANT0	22.28	
		ANT1	22.26	
Mid	2155.00	ANT0	23.16	
		ANT1	22.48	
High	2195.00	ANT0	23.05	
		ANT1	22.74	

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	22.20
		ANT1	22.23
Mid	2155.00	ANT0	23.08
		ANT1	22.38
High	2192.50	ANT0	23.07
		ANT1	22.82

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	21.95
		ANT1	22.07
Mid	2155.00	ANT0	22.36
		ANT1	21.72
High	2190.00	ANT0	22.55
		ANT1	22.31

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	22.38
		ANT1	22.21
Mid	2155.00	ANT0	23.25
		ANT1	22.38
High	2197.50	ANT0	22.85
		ANT1	22.60

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3,2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	22.32
		ANT1	22.35
Mid	2155.00	ANT0	23.17
		ANT1	22.44
High	2195.00	ANT0	23.07
		ANT1	22.76

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	22.18
		ANT1	22.31
Mid	2155.00	ANT0	23.13
		ANT1	22.38
High	2192.50	ANT0	23.05
		ANT1	22.81

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	21.36
		ANT1	21.54
Mid	2155.00	ANT0	22.25
		ANT1	21.55
High	2190.00	ANT0	22.00
		ANT1	21.74

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	22.40
		ANT1	22.19
Mid	2155.00	ANT0	23.18
		ANT1	22.49
High	2197.50	ANT0	22.94
		ANT1	22.58

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	22.38
		ANT1	22.29
Mid	2155.00	ANT0	23.15
		ANT1	22.47
High	2195.00	ANT0	23.02
_		ANT1	22.73

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3,1-64QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	22.22
		ANT1	22.31
Mid	2155.00	ANT0	23.09
		ANT1	22.41
High	2192.50	ANT0	23.08
		ANT1	22.82

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	21.91
		ANT1	22.10
Mid	2155.00	ANT0	22.72
		ANT1	22.13
High	2190.00	ANT0	22.57
_		ANT1	22.37

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Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	22.38
		ANT1	22.21
Mid	2155.00	ANT0	23.20
		ANT1	22.47
High	2197.50	ANT0	22.96
_		ANT1	22.72

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)	
Low	2115.00	ANT0	22.28	
		ANT1	22.29	
Mid	2155.00	ANT0	23.18	
		ANT1	22.43	
High	2195.00	ANT0	22.99	
		ANT1	22.73	

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)	
Low	2117.50	ANT0	22.20	
		ANT1	22.33	
Mid	2155.00	ANT0	23.11	
		ANT1	22.39	
High	2192.50	ANT0	22.81	
		ANT1	23.03	

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	21.92
		ANT1	22.05
Mid	2150.00	ANT0	22.71
		ANT1	22.12
High	2190.00	ANT0	22.60
_		ANT1	22.33

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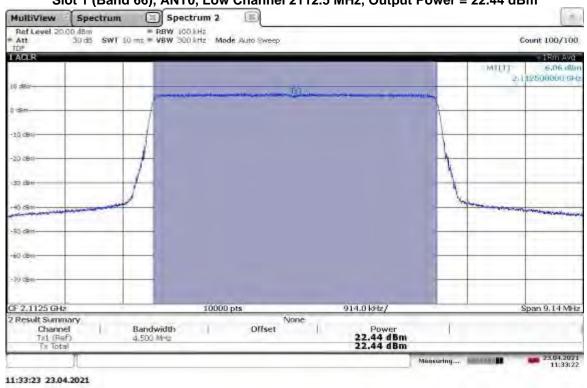
Report Number: 104601893BOX-001 Issued: 05/12/2021 Revised: 05/24/2021

# 6.4 Setup Photograph:

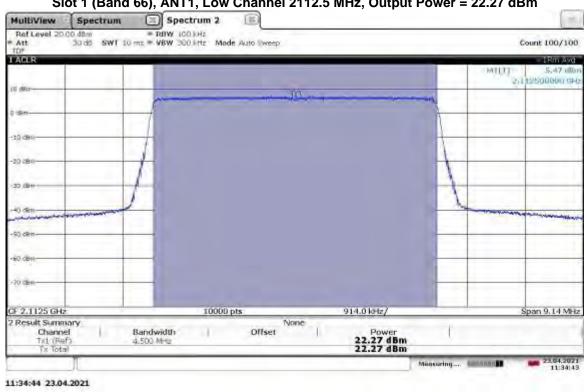
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### 6.5 Plots/Data:

TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2112.5 MHz, Output Power = 22.44 dBm

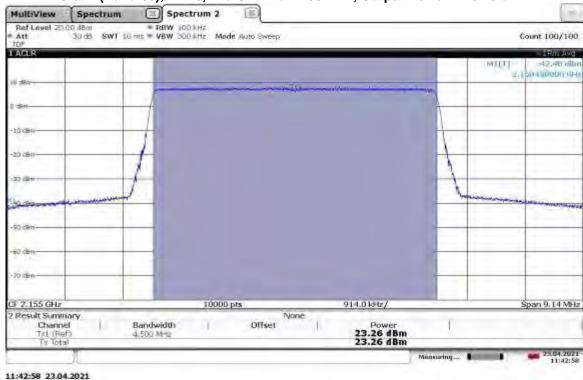


TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2112.5 MHz, Output Power = 22.27 dBm

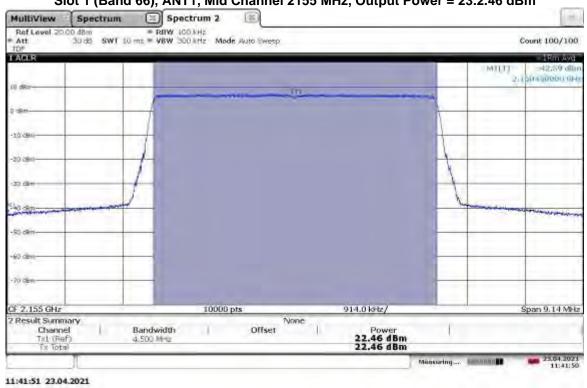


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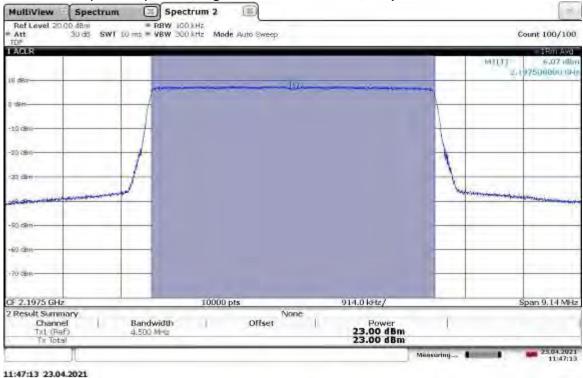
TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.26 dBm



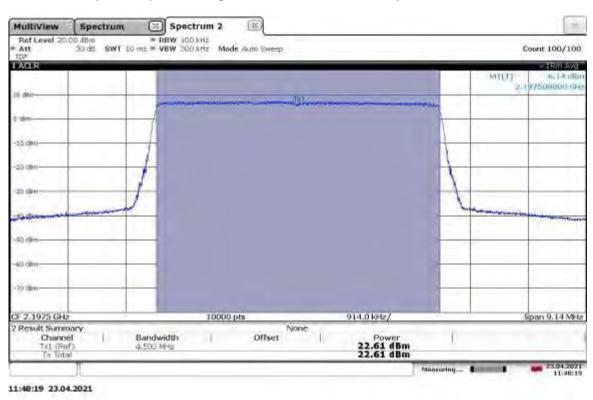
TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 23.2.46 dBm



TM1.1-QPSK\_5 MHz Bandwidth
Slot 1 (Band 66), ANT0, High Channel 2197.5 MHz, Output Power = 23.00 dBm

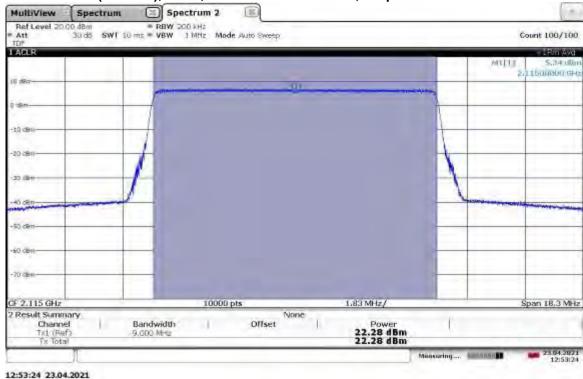


TM1.1-QPSK\_5 MHz Bandwidth
Slot 1 (Band 66), ANT1, High Channel 2197.5 MHz, Output Power = 22.61 dBm

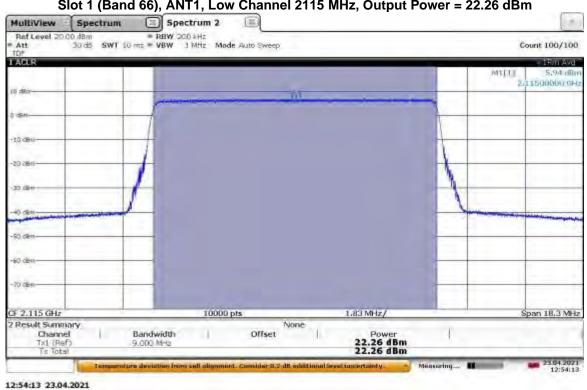


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TM1.1-QPSK\_10 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2115 MHz, Output Power = 22.28 dBm



TM1.1-QPSK\_10 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2115 MHz, Output Power = 22.26 dBm



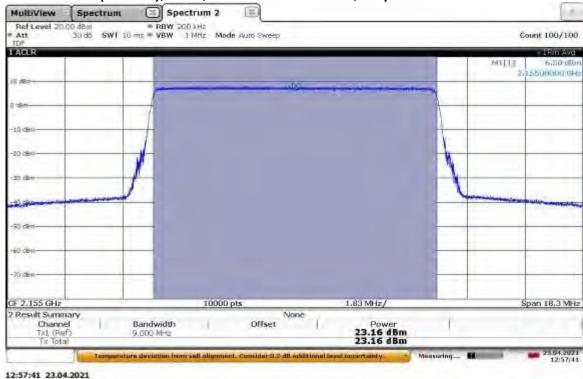
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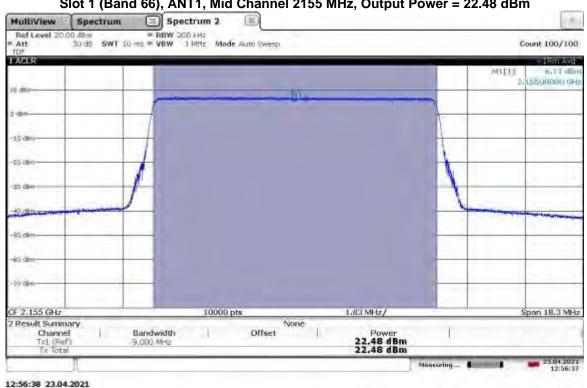
Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

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TM1.1-QPSK\_10 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.16 dBm

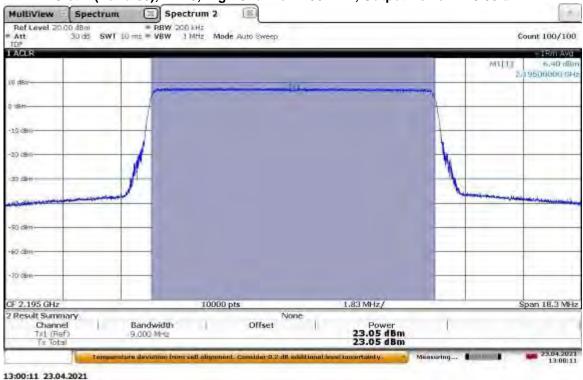


TM1.1-QPSK\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.48 dBm

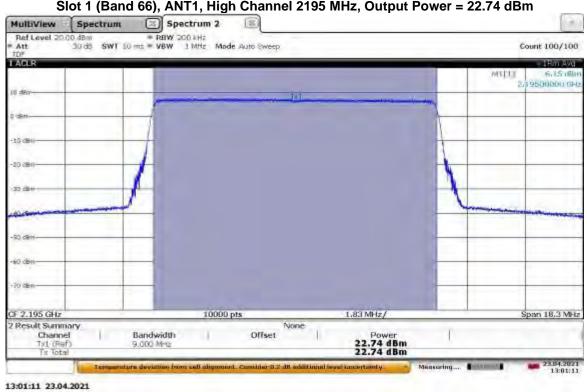


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TM1.1-QPSK\_10 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2195 MHz, Output Power = 23.05 dBm

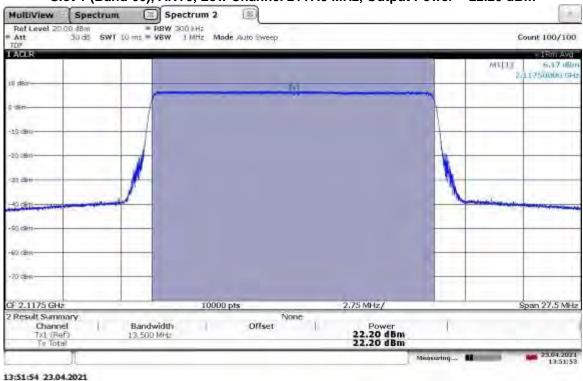


TM1.1-QPSK\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2195 MHz, Output Power = 22.74 dBm

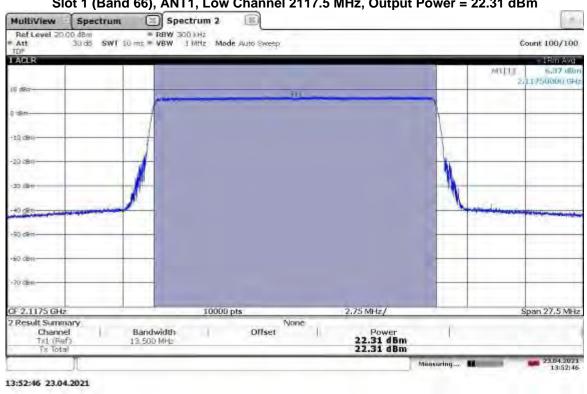


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TM1.1-QPSK 15 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2117.5 MHz, Output Power = 22.20 dBm

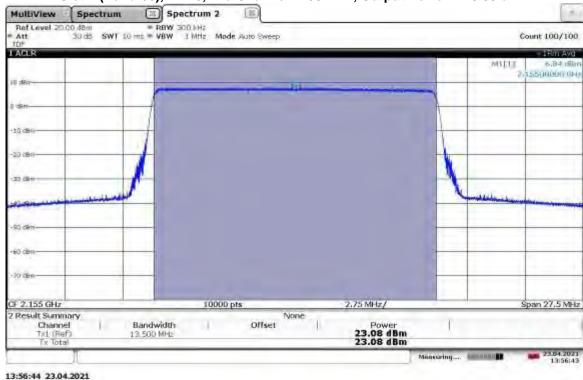


TM1.1-QPSK\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2117.5 MHz, Output Power = 22.31 dBm

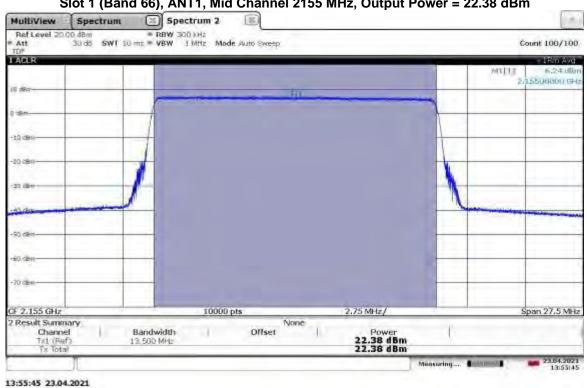


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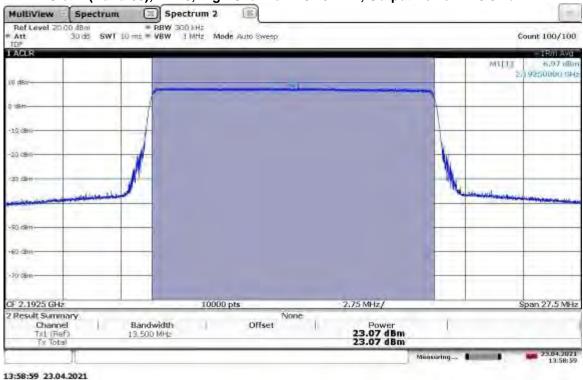
TM1.1-QPSK\_15 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.08 dBm



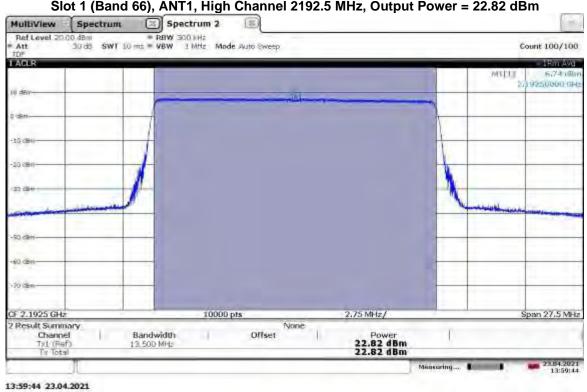
TM1.1-QPSK\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.38 dBm



TM1.1-QPSK\_15 MHz Bandwidth Slot 1 (Band 66), ANT0, High Channel 2192.5 MHz, Output Power = 23.07 dBm

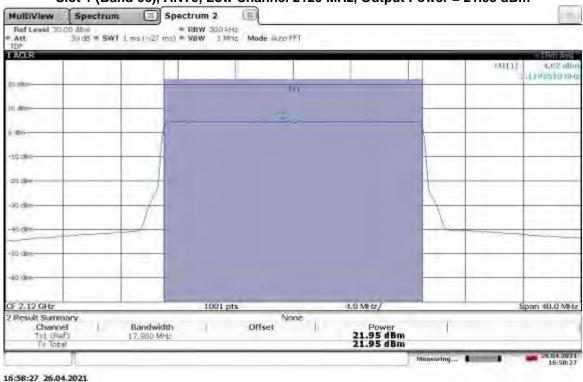


TM1.1-QPSK\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2192.5 MHz, Output Power = 22.82 dBm

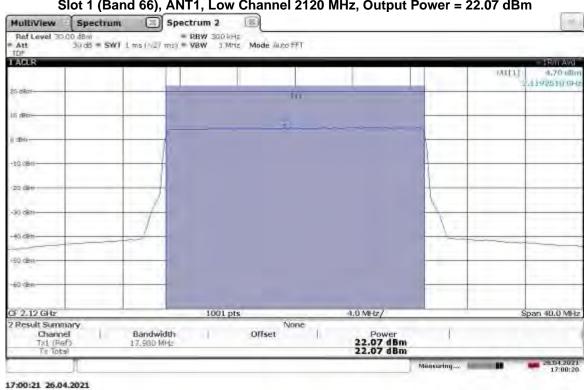


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TM1.1-QPSK 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Low Channel 2120 MHz, Output Power = 21.95 dBm

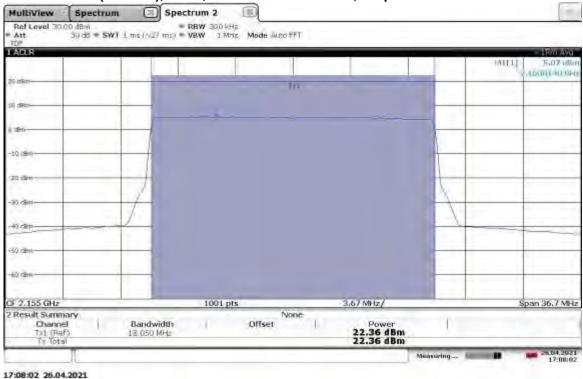


TM1.1-QPSK\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2120 MHz, Output Power = 22.07 dBm

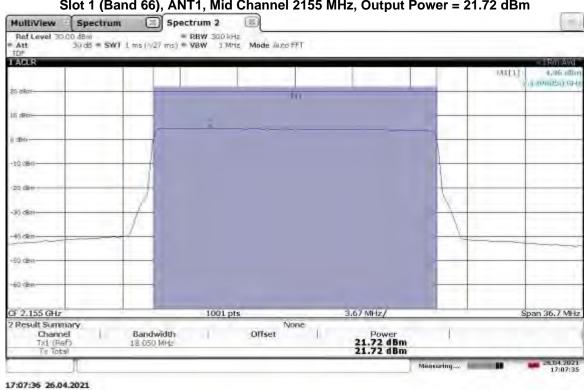


Issued: 05/12/2021 Revised: 05/24/2021

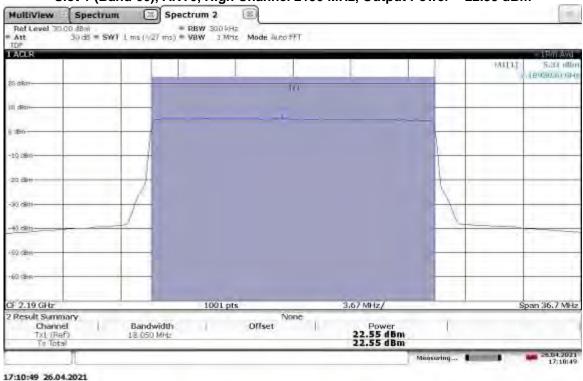
TM1.1-QPSK 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 22.36dBm



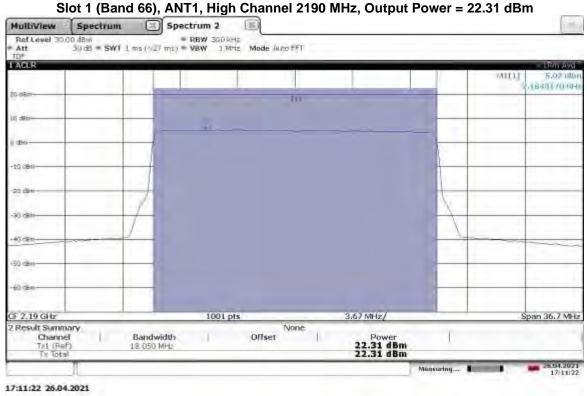
TM1.1-QPSK\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 21.72 dBm



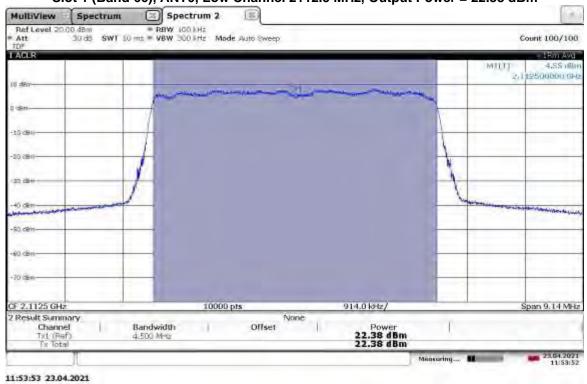
TM1.1-QPSK 20 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2190 MHz, Output Power = 22.55 dBm



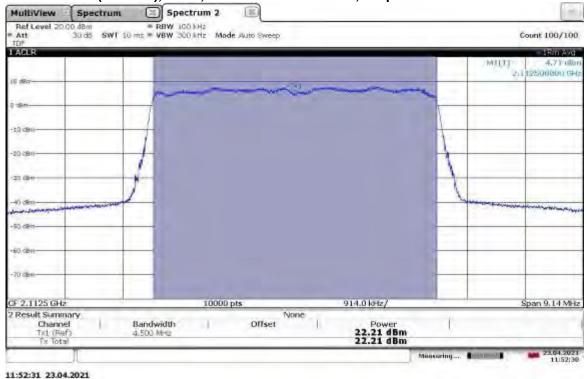
TM1.1-QPSK\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2190 MHz, Output Power = 22.31 dBm



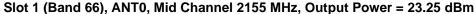
TM3.2-16QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2112.5 MHz, Output Power = 22.38 dBm

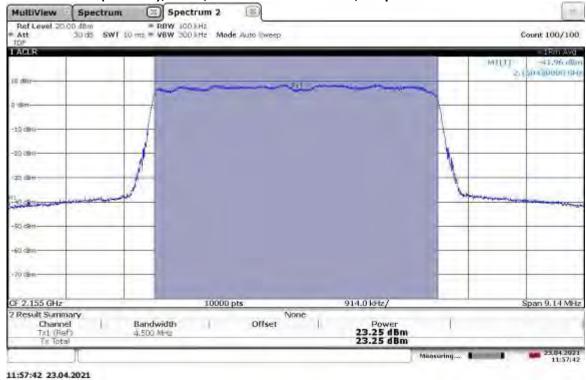


TM3.2-16QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2115 MHz, Output Power = 22.21 dBm

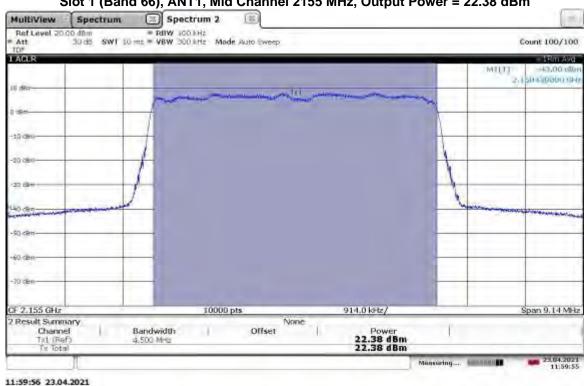


TM3.2-16QAM\_5 MHz Bandwidth



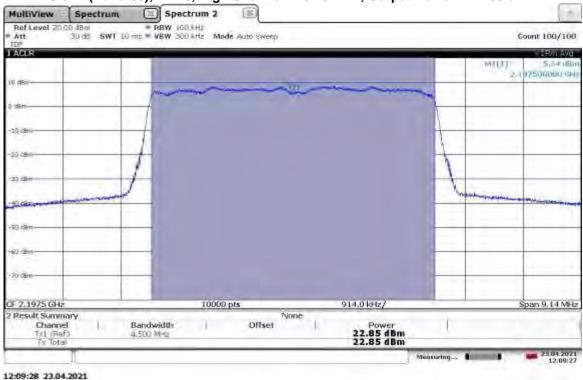


TM3.2-16QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.38 dBm

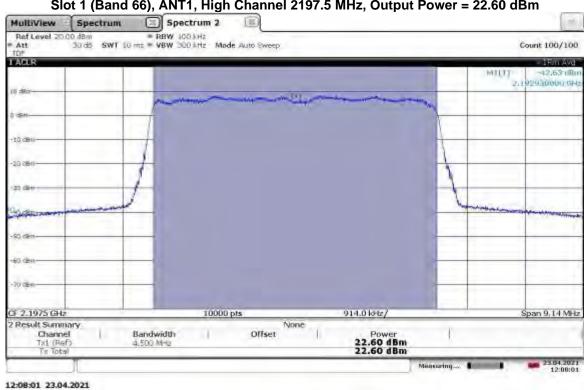


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TM3.2-16QAM 5 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2197.5 MHz, Output Power = 22.85 dBm

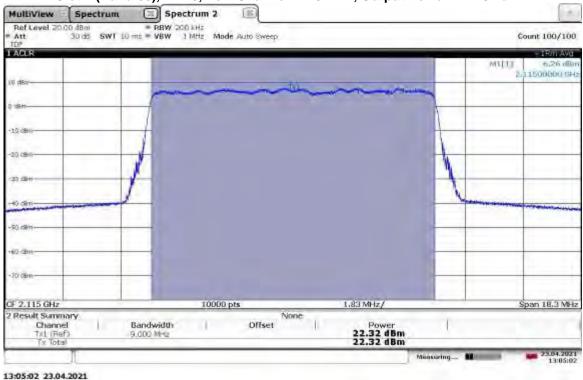


TM3.2-16QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2197.5 MHz, Output Power = 22.60 dBm

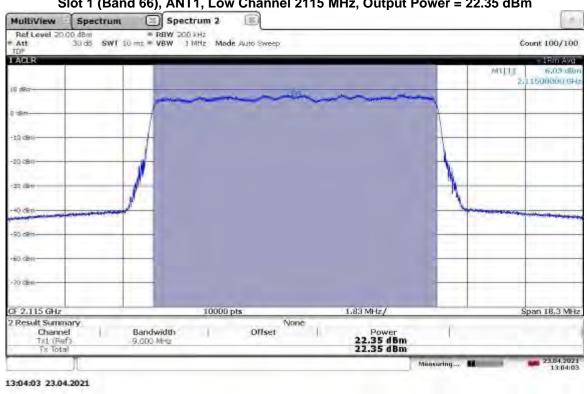


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TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2115 MHz, Output Power = 22.32 dBm



TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2115 MHz, Output Power = 22.35 dBm



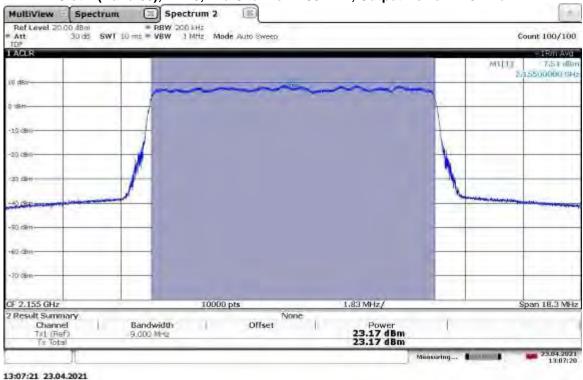
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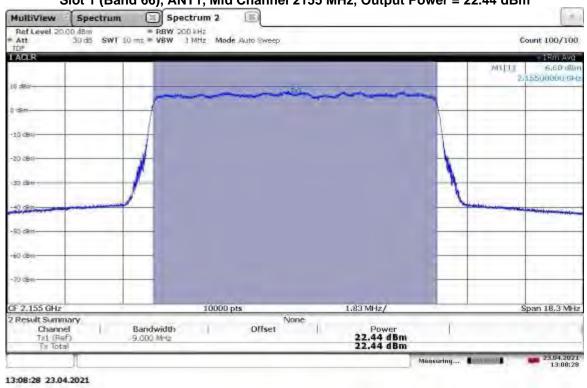
Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

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TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT0, Mid Channel 2155 MHz, Output Power = 23.17 dBm

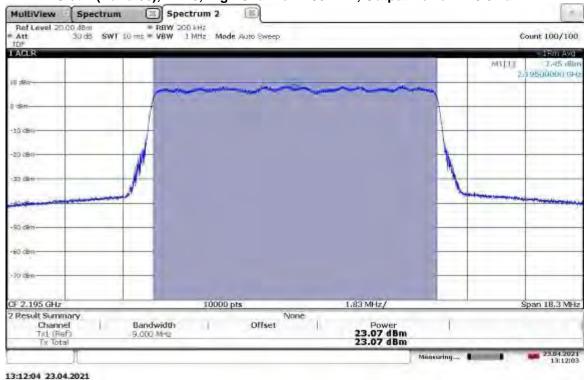


TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.44 dBm

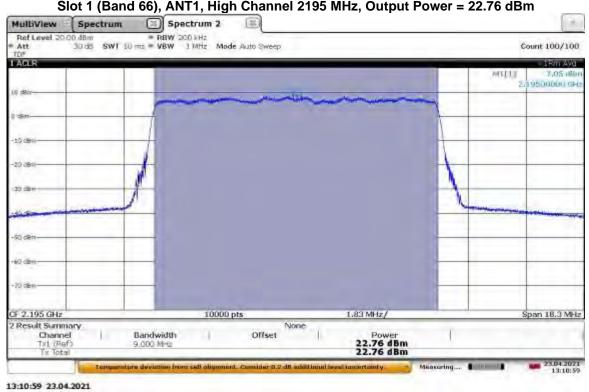


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TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT0, High Channel 2195 MHz, Output Power = 23.07 dBm

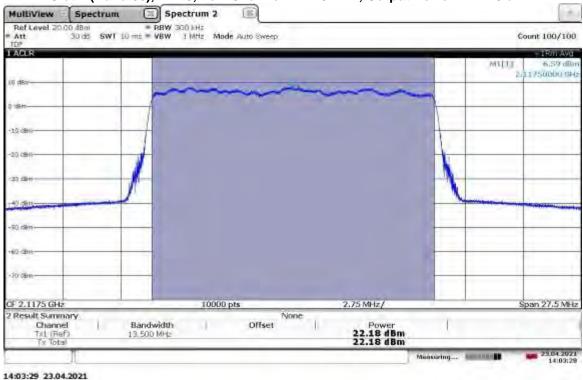


TM3.2-16QAM\_10 MHz Bandwidth
Slot 1 (Band 66), ANT1, High Channel 2195 MHz, Output Power = 22.76 dBm

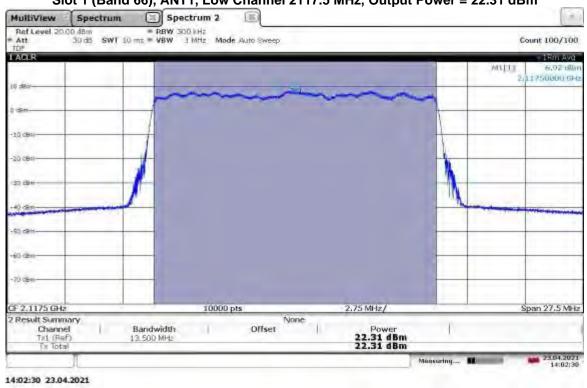


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TM3.2-16QAM\_15 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2117.5 MHz, Output Power = 22.18 dBm

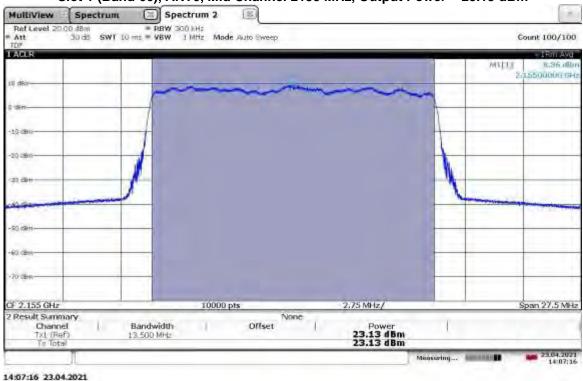


TM3.2-16QAM\_15 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2117.5 MHz, Output Power = 22.31 dBm

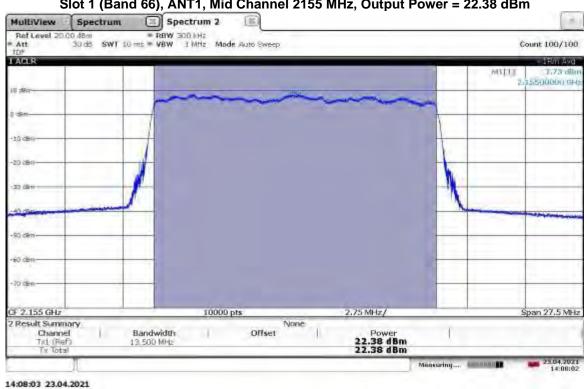


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TM3.2-16QAM 15 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.13 dBm

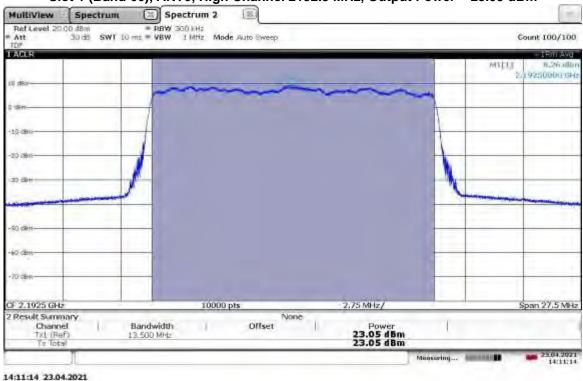


TM3.2-16QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.38 dBm

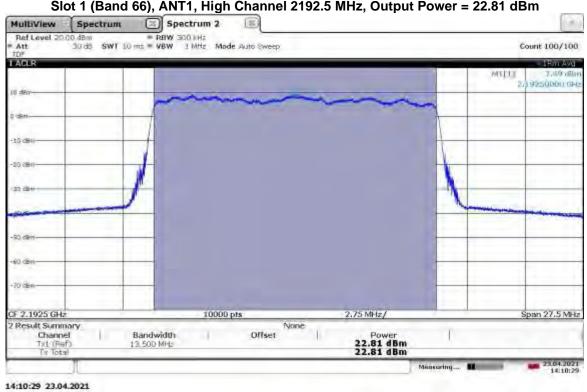


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TM3.2-16QAM 15 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2192.5 MHz, Output Power = 23.05 dBm

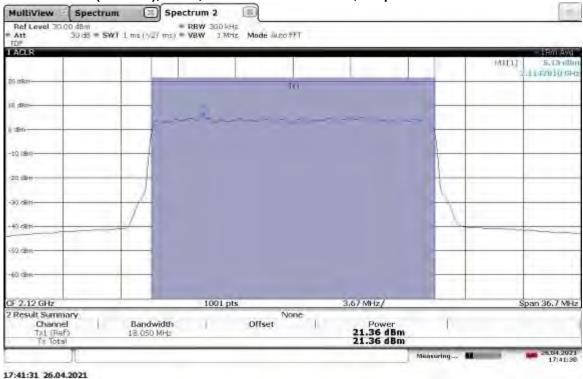


TM3.2-16QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2192.5 MHz, Output Power = 22.81 dBm

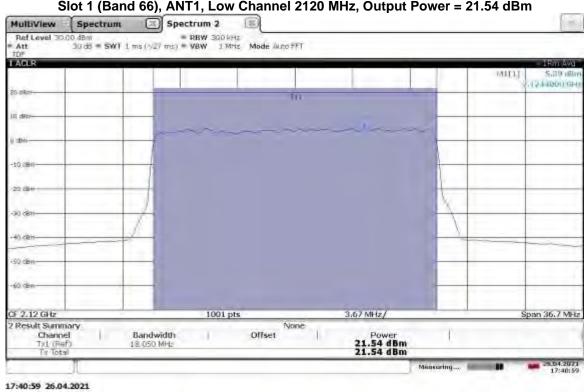


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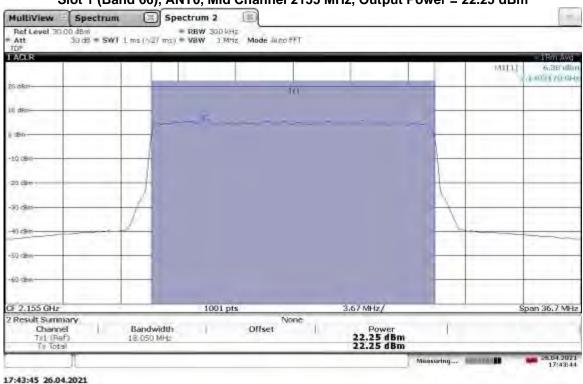
TM3.2-16QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Low Channel 2120 MHz, Output Power = 21.36 dBm



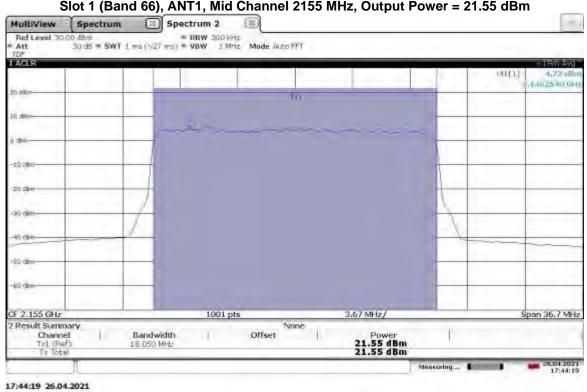
TM3.2-16QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2120 MHz, Output Power = 21.54 dBm



TM3.2-16QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 22.25 dBm

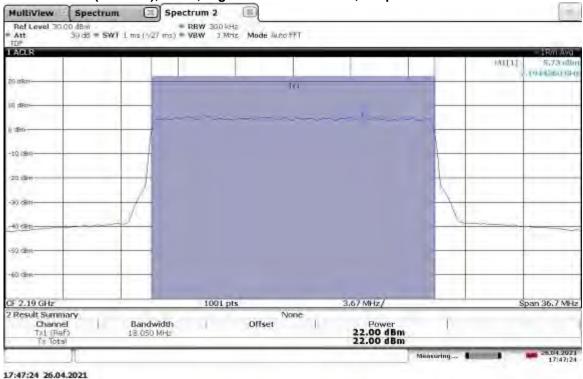


TM3.2-16QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 21.55 dBm

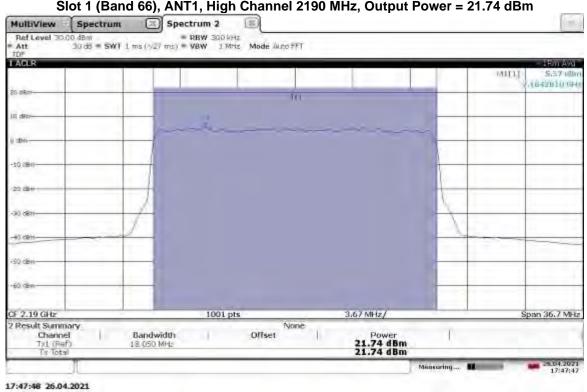


Issued: 05/12/2021 Revised: 05/24/2021

TM3.2-16QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2190 MHz, Output Power = 22.00 dBm

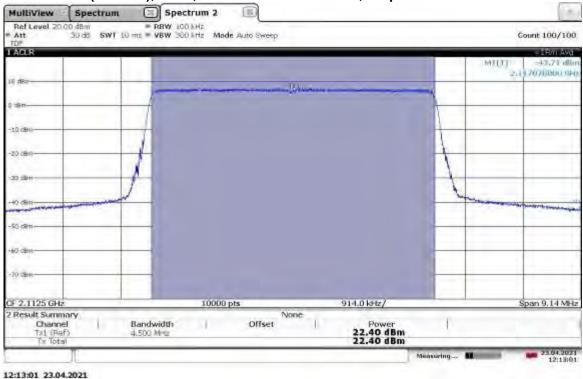


TM3.2-16QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2190 MHz, Output Power = 21.74 dBm

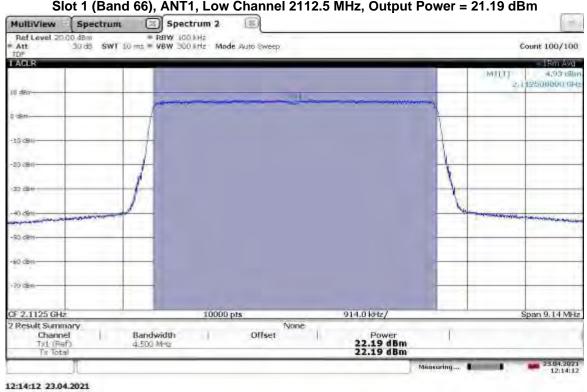


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TM3.1-64QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2112.5 MHz, Output Power = 22.40 dBm



TM3.1-64QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2112.5 MHz, Output Power = 21.19 dBm

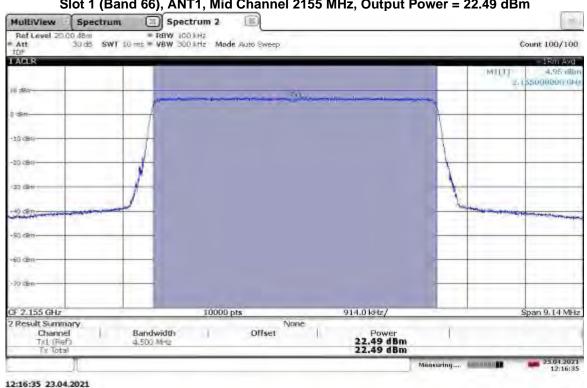


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 5 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.18 dBm

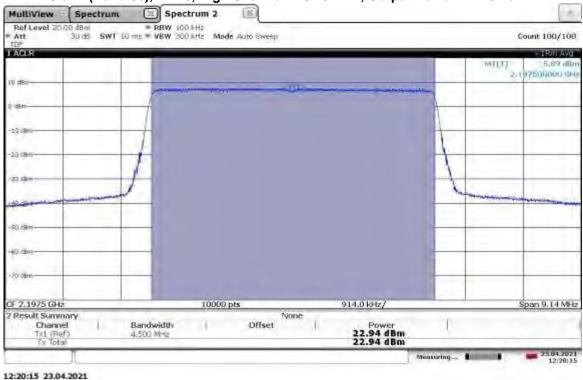


TM3.1-64QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.49 dBm

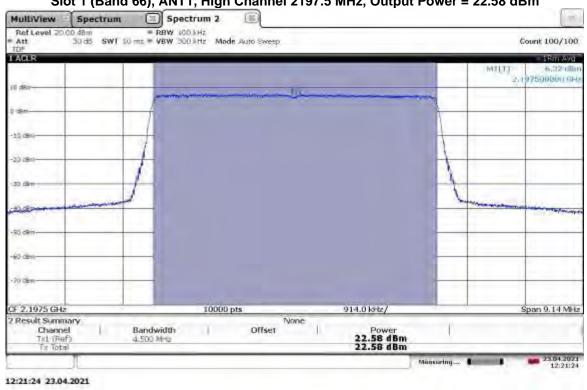


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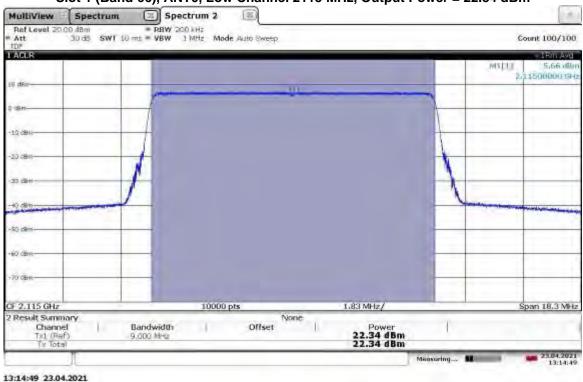
TM3.1-64QAM 5 MHz Bandwidth Slot 1 (Band 66), ANT0, High Channel 2197.5 MHz, Output Power = 22.94 dBm



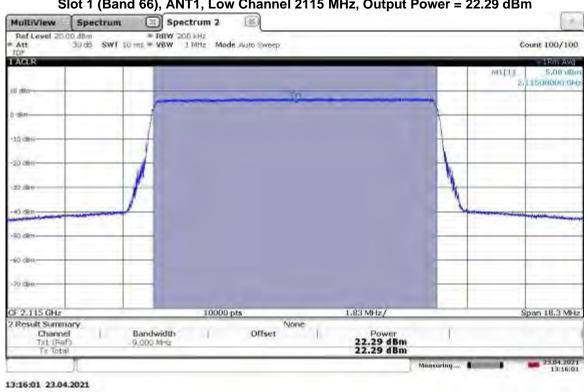
TM3.1-64QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2197.5 MHz, Output Power = 22.58 dBm



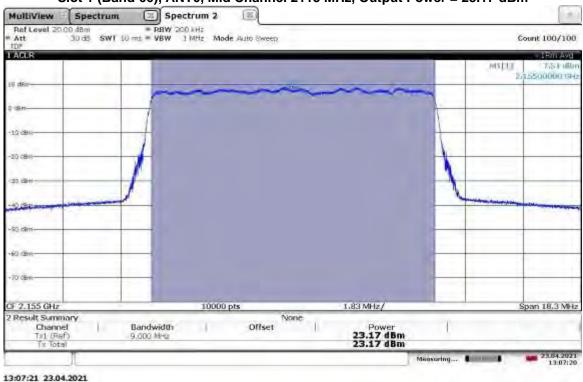
TM3.1-64QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANTO, Low Channel 2115 MHz, Output Power = 22.34 dBm



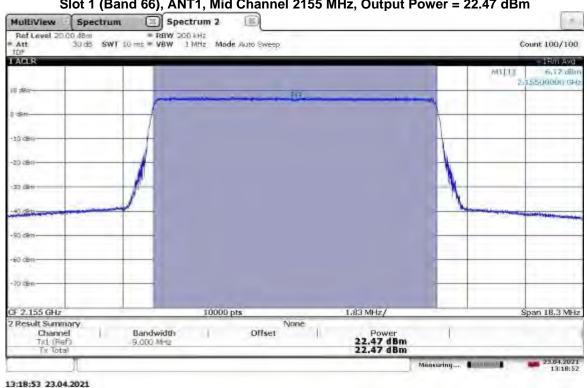
TM3.1-64QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2115 MHz, Output Power = 22.29 dBm



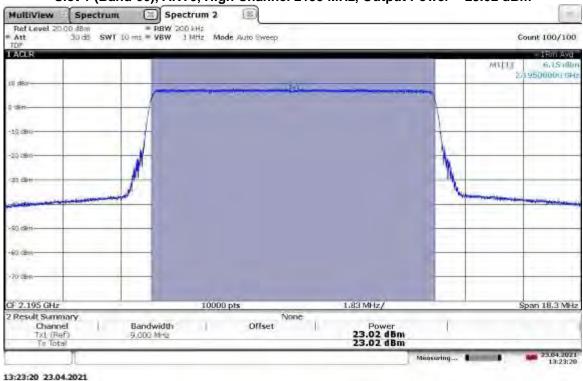
TM3.1-64QAM 10 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2115 MHz, Output Power = 23.17 dBm



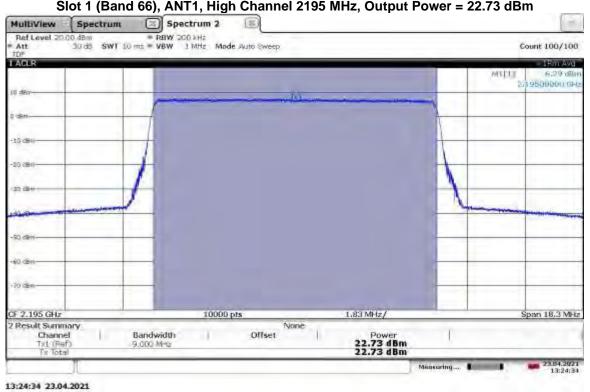
TM3.1-64QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.47 dBm



TM3.1-64QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2195 MHz, Output Power = 23.02 dBm

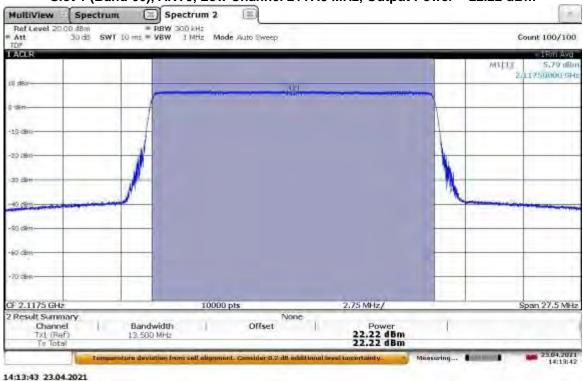


TM3.1-64QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2195 MHz, Output Power = 22.73 dBm

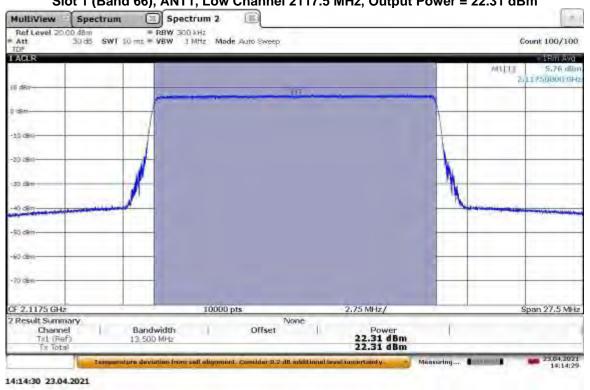


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 15 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2117.5 MHz, Output Power = 22.22 dBm



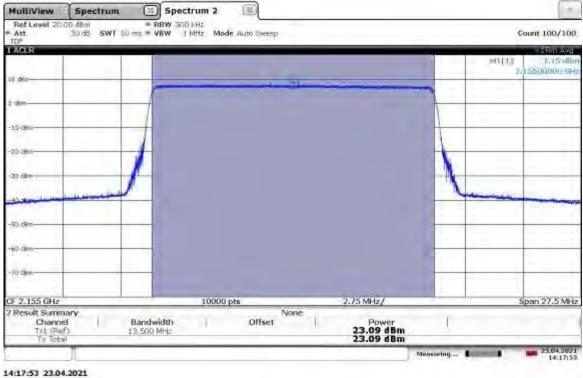
TM3.1-64QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2117.5 MHz, Output Power = 22.31 dBm



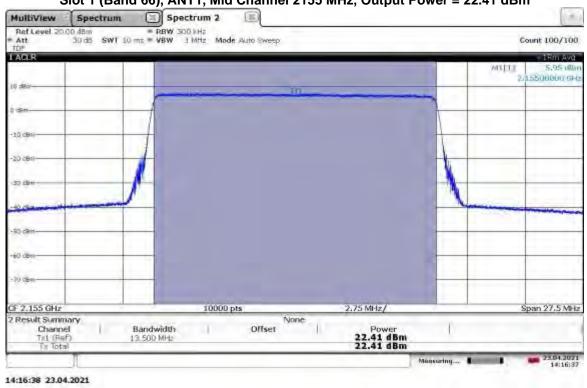
Report Number: 104601893BOX-001 Issued: 05/12/2021

Revised: 05/24/2021

TM3.1-64QAM 15 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.09 dBm

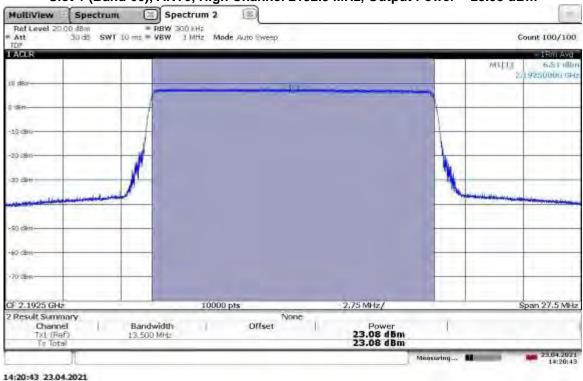


TM3.1-64QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.41 dBm

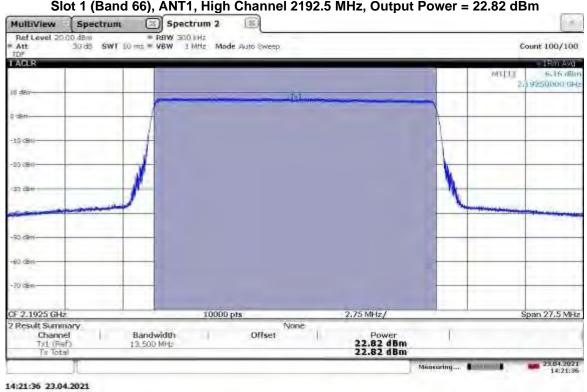


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 15 MHz Bandwidth Slot 1 (Band 66), ANT0, High Channel 2192.5 MHz, Output Power = 23.08 dBm

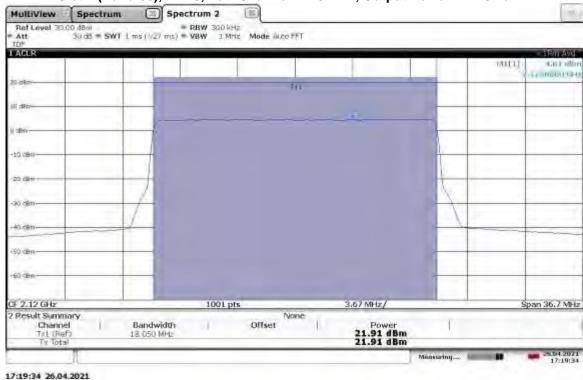


TM3.1-64QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2192.5 MHz, Output Power = 22.82 dBm

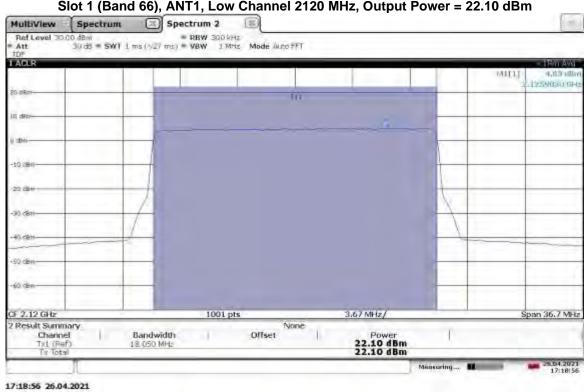


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Low Channel 2120 MHz, Output Power = 21.91 dBm

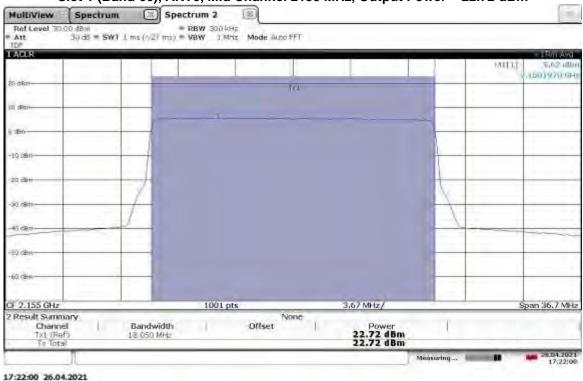


TM3.1-64QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2120 MHz, Output Power = 22.10 dBm

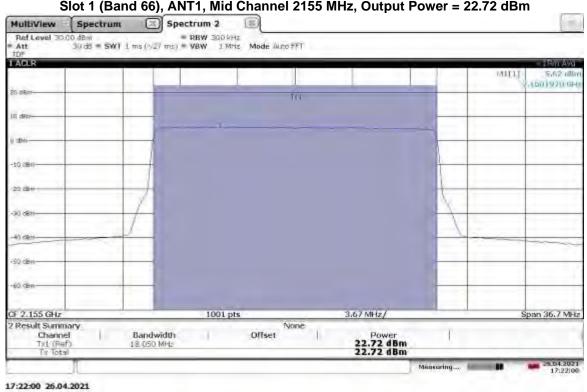


Issued: 05/12/2021 Revised: 05/24/2021

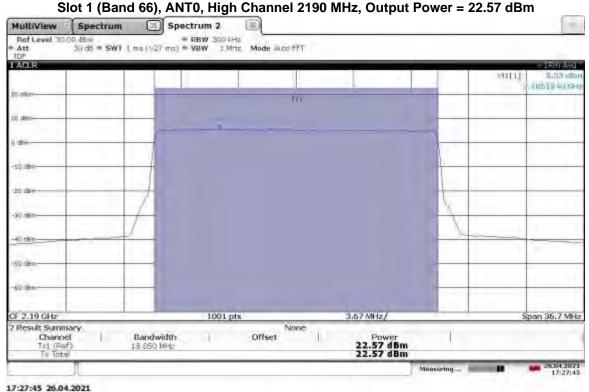
TM3.1-64QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 22.72 dBm



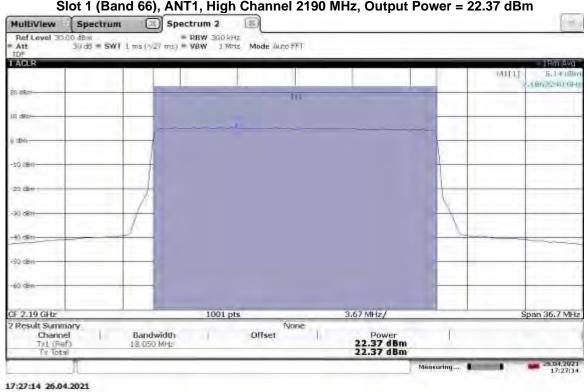
TM3.1-64QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.72 dBm



TM3.1-64QAM 20 MHz Bandwidth

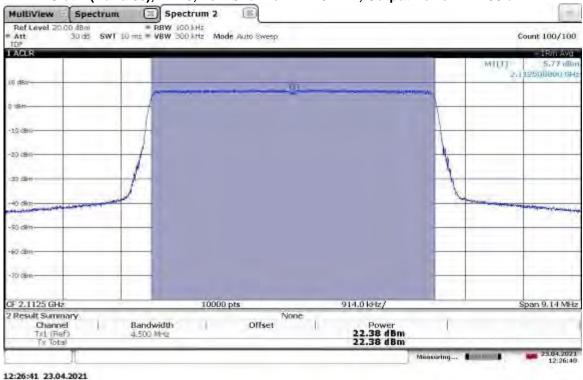


TM3.1-64QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2190 MHz, Output Power = 22.37 dBm

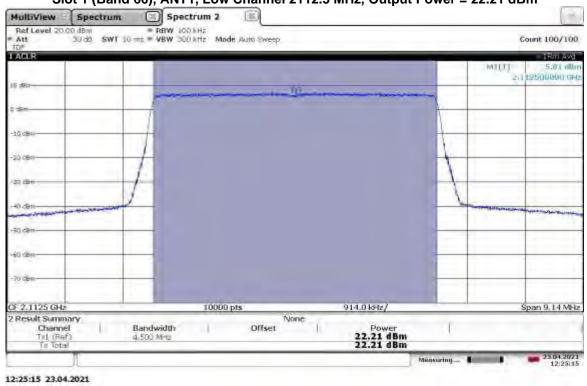


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TM3.1a-256QAM 5 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2112.5 MHz, Output Power = 22.38 dBm

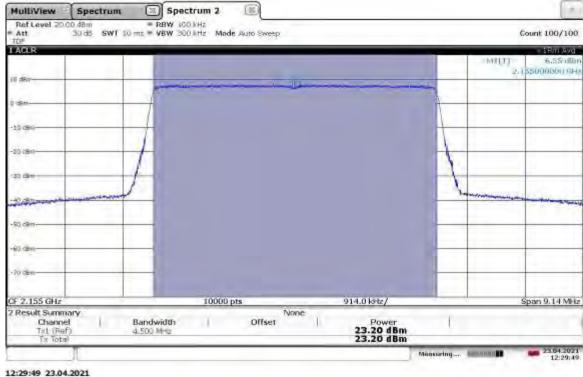


TM3.1a-256QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2112.5 MHz, Output Power = 22.21 dBm

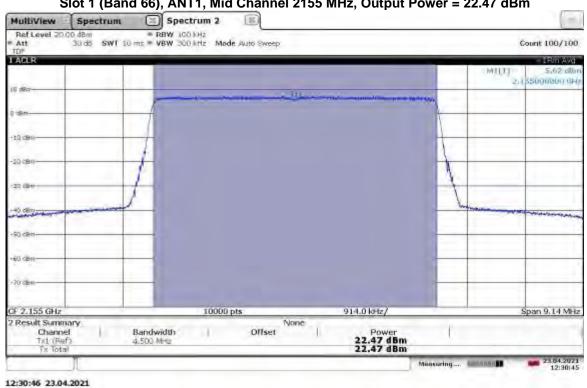


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT0, Mid Channel 2155 MHz, Output Power = 23.20 dBm

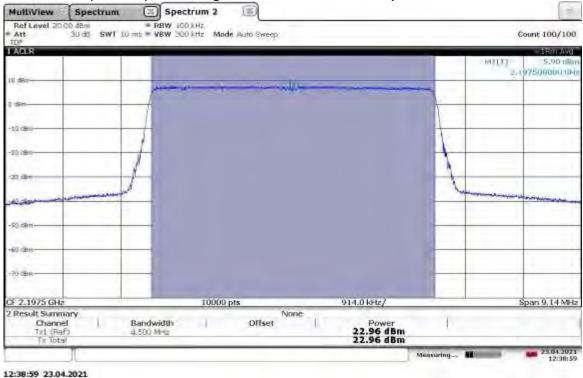


TM3.1a-256QAM\_5 MHz Bandwidth
Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.47 dBm

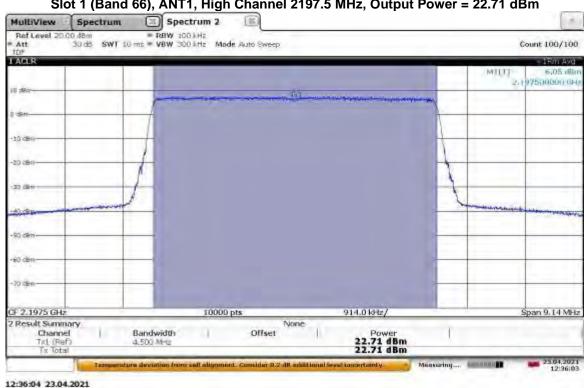


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 5 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2197.5 MHz, Output Power = 22.96 dBm

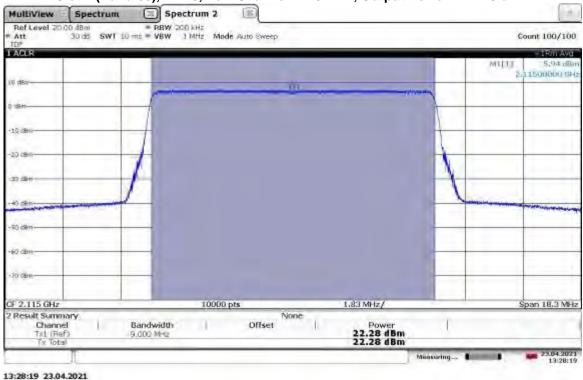


TM3.1a-256QAM\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2197.5 MHz, Output Power = 22.71 dBm

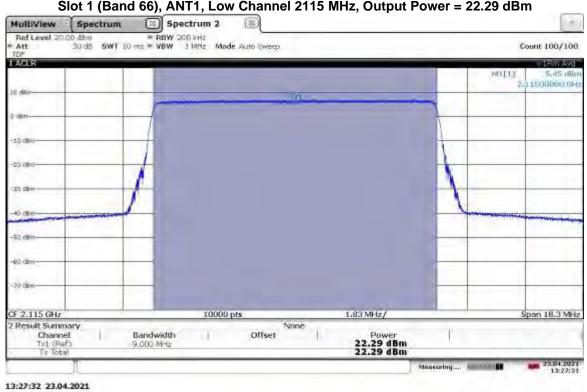


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 10 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2115 MHz, Output Power = 22.28 dBm

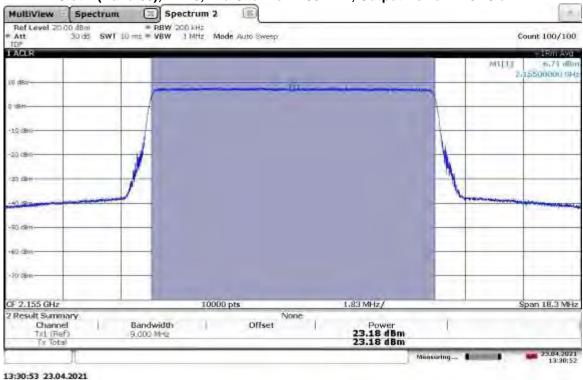


TM3.1a-256QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2115 MHz, Output Power = 22.29 dBm

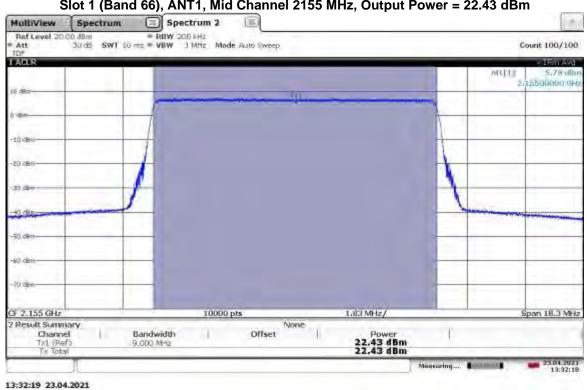


Issued: 05/12/2021 Revised: 05/24/2021

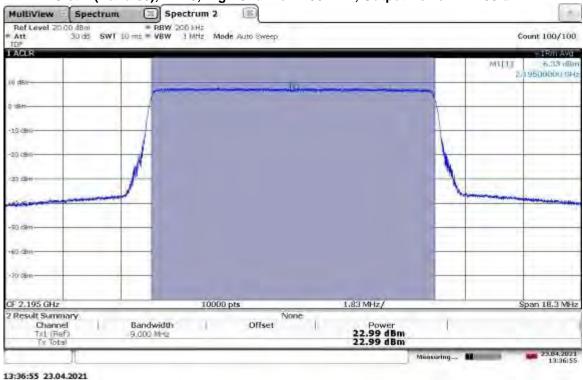
TM3.1a-256QAM 10 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.18 dBm



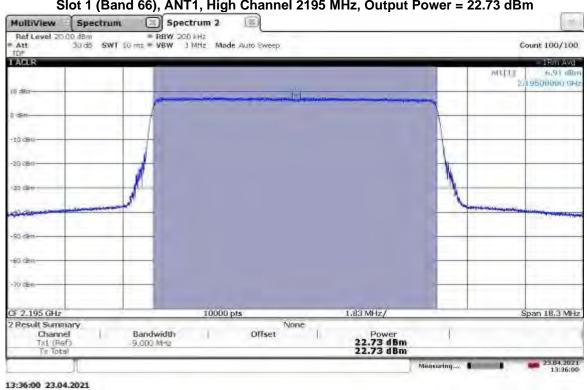
TM3.1a-256QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.43 dBm



TM3.1a-256QAM 10 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2195 MHz, Output Power = 22.99 dBm

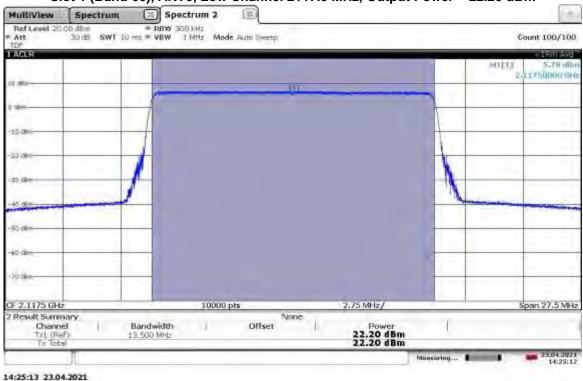


TM3.1a-256QAM\_10 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2195 MHz, Output Power = 22.73 dBm

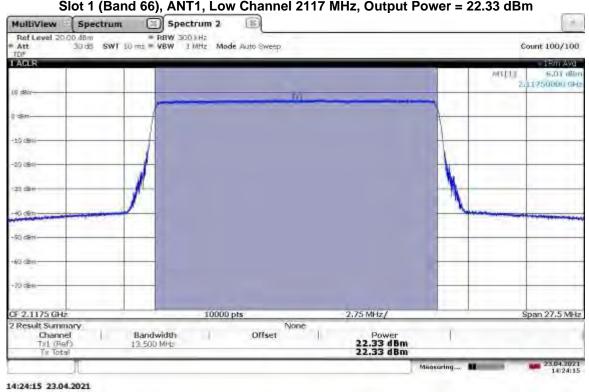


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 15 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel 2117.5 MHz, Output Power = 22.20 dBm

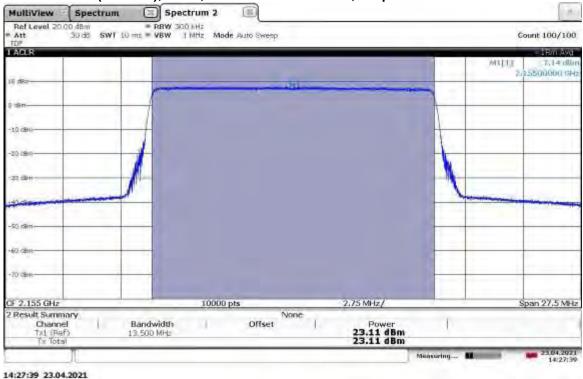


TM3.1a-256QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2117 MHz, Output Power = 22.33 dBm

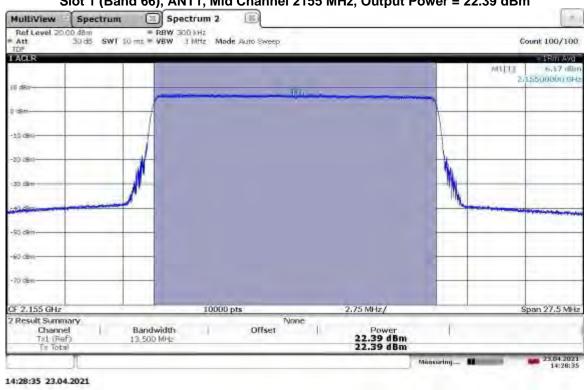


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 15 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 23.11 dBm



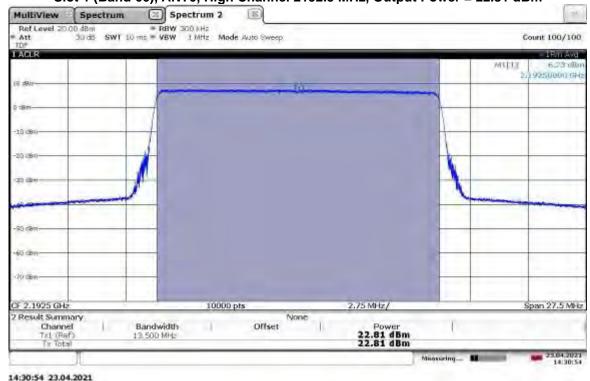
TM3.1a-256QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.39 dBm



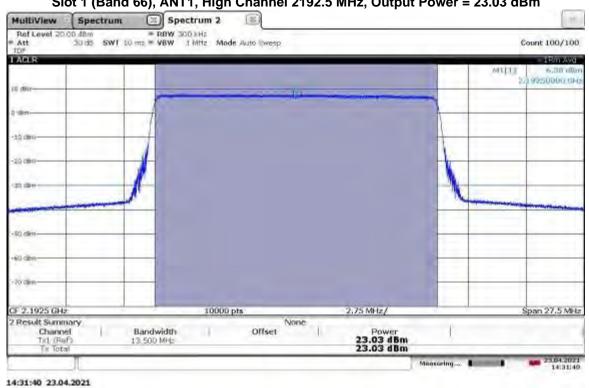
Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM\_15 MHz Bandwidth



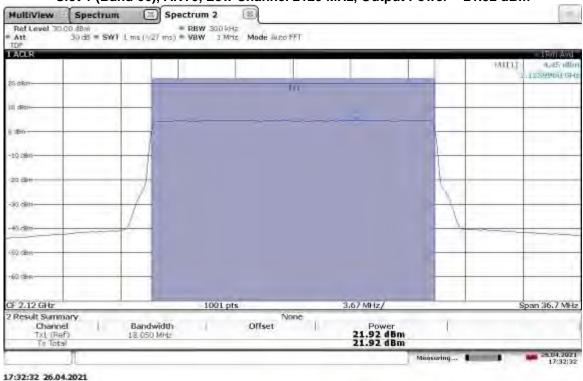


TM3.1a-256QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2192.5 MHz, Output Power = 23.03 dBm

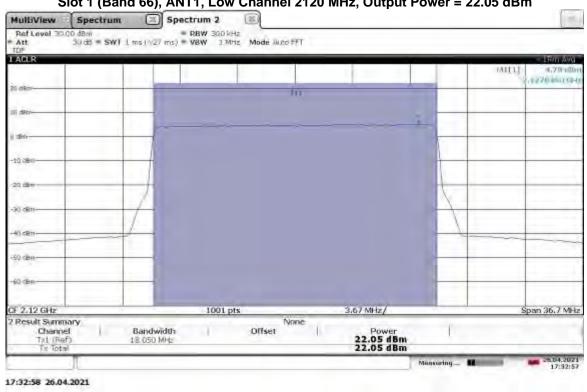


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Low Channel 2120 MHz, Output Power = 21.92 dBm

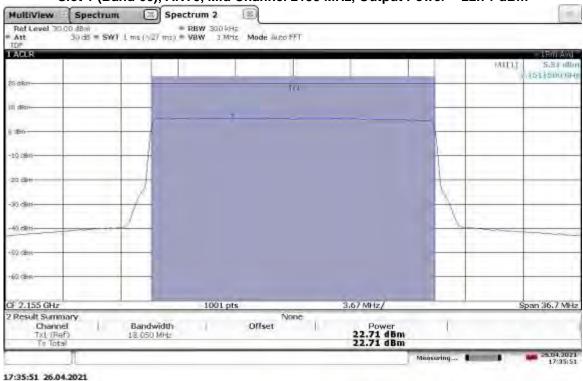


TM3.1a-256QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel 2120 MHz, Output Power = 22.05 dBm

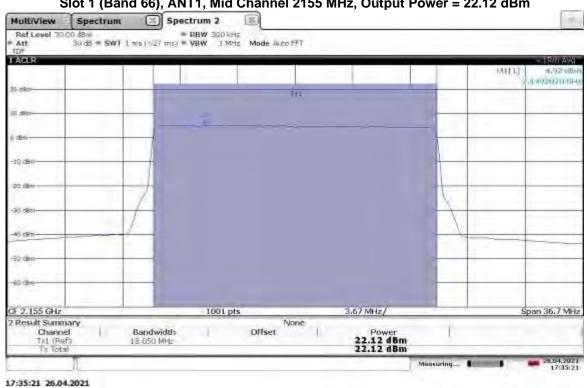


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, Mid Channel 2155 MHz, Output Power = 22.71 dBm

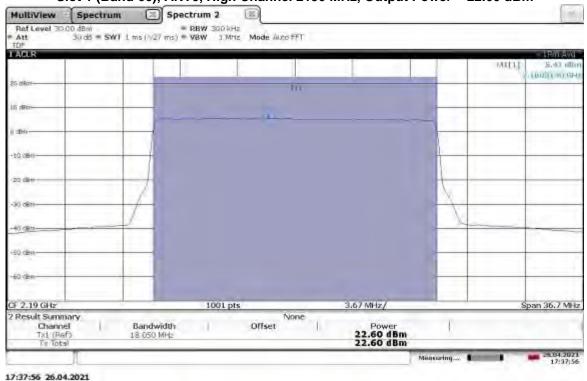


TM3.1a-256QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, Mid Channel 2155 MHz, Output Power = 22.12 dBm

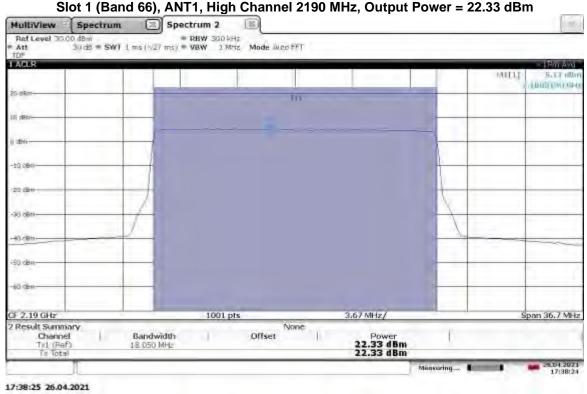


Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM 20 MHz Bandwidth Slot 1 (Band 66), ANTO, High Channel 2190 MHz, Output Power = 22.60 dBm



TM3.1a-256QAM\_20 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel 2190 MHz, Output Power = 22.33 dBm



# **Limit for Maximum Permissible Exposure (MPE)**

# **FCC Human RF Exposure Limits:**

The FCC §1.1310 The criteria listed in table 1 was used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices shall be evaluated according to the provisions of §2.1093 of this chapter.

Part §1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range	Electric field strength	Magnetic field strength	Power density	Averaging time
(MHz)	(V/m)	(A/m)	(mW/cm <sup>2</sup> )	(minutes)
	(A) Limits for O	ccupational/Controlled Expo	sure	
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
	(B) Limits for Gener	al Population/Uncontrolled E	xposure	
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density

Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

<sup>(1)</sup> Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase exercise control means that an exposed person is allowed to and knows how to reduce or avoid exposure by administrative or engineering controls and work practices, such as use of personal protective equipment or time averaging of exposure.

<sup>(2)</sup> General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

#### **Test Procedure**

RF exposure for licensed transmitter is handled at the time of licensing, however, an MPE calculation was performed in order to show the distance at which the device is compliant with the limits of §1.1310, assuming antenna gains of 0 dBi and 4 dBi. The highest measured conducted output power was used, adjusted by +3dB to account for two antenna MIMO operation.

FCC Limit For General Population/Uncontrolled Exposure at 2.155 GHz = 1 mW/cm<sup>2</sup>

Power Density =  $[EIRP] / [4\pi \times (D_{cm})^2]$ 

Where EIRP is in milliwatts and D is in centimeters. Setting the power density equal to the limit of 1 mW/cm² and solving for D<sub>cm</sub> yields the following results.

#### Results:

EUT EIRP = Conducted power + Array Gain + Antenna gain in dBi

Power Density Limit = [EIRP] /  $[4\pi \text{ x } (D_{cm})^2]$ 1 mW/cm<sup>2</sup> = [EIRP] /  $[4\pi \text{ x } (D_{cm})^2]$  $D_{cm}$  = ([EIRP] /  $[4\pi]$ )<sup>1/2</sup>

For Gain = 0 dBi,

EIRP = 23.26 dBm + 10\*LOG(2) + 0 dBi = 23.26 dBm + 3 dB + 0 dBi

EIRP = 26.26 dBm or 422.669 mW

Therefore, the minimum safe distance  $D_{cm} = ([422.669] / [4\pi])^{1/2}$ 

D<sub>cm</sub> = 5.80 cm at 0 dBi gain two antenna MIMO

For Gain = 4 dBi,

EIRP = 23.26 dBm + 10\*LOG(2) + 4 dBi = 23.26 dBm + 3 dB + 4dBi

EIRP = 30.26 dBm or 1061.696 mW

Therefore, the minimum safe distance  $D_{cm} = ([1297] / [4\pi])^{1/2}$ 

D<sub>cm</sub> = 9.19 cm at 4 dBi gain two antenna MIMO

For Gain = X dBi,

EIRP = 23.26 dBm + 10\*LOG(2) + X dBi = 23.26 dBm + 3 dB + XdBi

EIRP = 26.26+X dBm or  $422.669 + 10^{(X/10)}$  mW

Therefore, the minimum safe distance  $D_{cm} = ([422.669 + 10^{\wedge}(X/10)] / [4\pi])^{1/2}$  $D_{cm} = 0.282 * (422.669 + 10^{\wedge}(X/10))^{1/2}$  cm at X dBi gain two antenna MIMO

Test Personnel:	Kouma Sinn 45	Test Date:	04/23/2021
	Vathana Ven	_	04/26/2021
Supervising/Reviewing Engineer:			
(Where Applicable)	N/A	<u>-</u>	
Product Standard: Input Voltage:	FCC Part 27 48 VDC (POE)	_ Limit Applied:	See report section 6.3
Pretest Verification w/ Ambient Signals or		Ambient Temperature:	23, 23 °C
BB Source:	N/A	Relative Humidity:	18, 15 %
		Atmospheric Pressure:	1000, 1013 mbars

Deviations, Additions, or Exclusions: None

Revised: 05/24/2021

## 7 Occupied Bandwidth

### 7.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1049 and 27.

**TEST SITE:** EMC Lab

<u>The EMC Lab</u> has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022

#### **Software Utilized:**

Name	Manufacturer	Version
None		

#### 7.3 Results:

The sample tested was found to Comply.

§27.53(h)(3): The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

§2.1049: The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2112.50	ANT0	4.498
		ANT1	4.500
Mid	2155.00	ANT0	4.507
		ANT1	4.505
High	2197.50	ANT0	4.501
_		ANT1	4.489

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

	5:51 : \2 and 50); 2 and material 10 mm2; modulation 1 mm: 4: 5:1				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)		
Low	2115.00	ANT0	9.056		
		ANT1	9.001		
Mid	2155.00	ANT0	9.997		
		ANT1	8.988		
High	2195.00	ANT0	9.012		
		ANT1	8.989		

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Siot i (Band 60), Bandwidth. 13 Milz, Moddiation. TMT.1-&1 SK				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	2117.50	ANT0	13.446	
		ANT1	13.347	
Mid	2155.00	ANT0	13.457	
		ANT1	13.523	
High	2192.50	ANT0	13.511	
		ANT1	13.550	

Slot 1 (Rand 66) Randwidth: 20 MHz Modulation: TM1 1-OPSK

Siot 1 (Band 66), Bandwidth. 20 MHz, Modulation. 1M1.1-QF3K				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	2120.00	ANT0	17.979	
		ANT1	17.964	
Mid	2155.00	ANT0	17.941	
		ANT1	18.056	
High	2190.00	ANT0	17.959	
		ANT1	17.957	

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Side i (Baild 66), B	Siot 1 (Band 60), Bandwidth. 5 MHz, Modulation. 1 MS.2-16QAM				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)		
Low	2112.50	ANT0	4.469		
		ANT1	4.498		
Mid	2155.00	ANT0	4.466		
		ANT1	4.461		
High	2197.50	ANT0	4.467		
		ANT1	4.474		

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2115.00	ANT0	8.999
		ANT1	8.999
Mid	2155.00	ANT0	8.963
		ANT1	8.973
High	2195.00	ANT0	9.025
		ANT1	9.024

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

	5:51 : \2 and 50/; 2 and material 10 mm2; moderation 1 mol2 10 and m				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)		
Low	2117.50	ANT0	13.504		
		ANT1	13.470		
Mid	2155.00	ANT0	13.487		
		ANT1	13.434		
High	2192.50	ANT0	13.494		
		ANT1	13.472		

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3,2-16QAM

Siot 1 (Band 60), Bandwidth. 20 Mil 2, Modulation. 1 M3.2-10QAM				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	2120.00	ANT0	17.947	
		ANT1	17.907	
Mid	2155.00	ANT0	17.886	
		ANT1	17.940	
High	2190.00	ANT0	17.916	
		ANT1	17.875	

Slot 1 (Band 66) Bandwidth: 5 MHz Modulation: TM3 1-64QAM

Siot 1 (Band 60), Bandwidth. 5 Milz, Moddiation. 1 Mis.1-04&AM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2112.50	ANT0	4.540
		ANT1	4.522
Mid	2155.00	ANT0	4.525
		ANT1	4.590
High	2197.50	ANT0	4.522
_		ANT1	4.521

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Siot I (Band 66), Bandwidth. 10 MHz, Modulation. 1MS.1-64QAM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2115.00	ANT0	9.079
		ANT1	8.989
Mid	2155.00	ANT0	9.028
		ANT1	9.050
High	2195.00	ANT0	8.976
		ANT1	9.016

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2117.50	ANT0	13.491
		ANT1	13.463
Mid	2155.00	ANT0	13.459
		ANT1	13.448
High	2192.50	ANT0	13.488
		ANT1	13.466

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

olot i (Bana oo), Banawiatii. 20 Mil2, Modalation. 1 Mo. 1-0-44AM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2120.00	ANT0	17.952
		ANT1	17.938
Mid	2150.00	ANT0	17.933
		ANT1	17.941
High	2190.00	ANT0	17.933
		ANT1	17.929

Slot 1 (Band 66), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

olot i (Balla 00), Ballawiatili o ililiz, ilioadiation. Tilio. la 2004/lili			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2112.50	ANT0	4.502
		ANT1	4.509
Mid	2155.00	ANT0	4.506
		ANT1	4.508
High	2197.50	ANT0	4.492
		ANT1	4.482

Slot 1 (Band 66), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Siot i (Band 60), Bandwidth. 10 Milz, Modulation. 1M3.1a-230@AM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2115.00	ANT0	8.977
		ANT1	8.999
Mid	2155.00	ANT0	9.083
		ANT1	9.001
High	2195.00	ANT0	9.029
		ANT1	8.974

Slot 1 (Band 66), Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Siot 1 (Band 00), Bandwidth. 13 MHz, Modulation. 1M3.1a-230QAM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2117.50	ANT0	13.435
		ANT1	13.446
Mid	2155.00	ANT0	13.535
		ANT1	13.476
High	2192.50	ANT0	13.448
_		ANT1	13.449

Slot 1 (Band 66), Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	2120.00	ANT0	18.006
		ANT1	17.992
Mid	2150.00	ANT0	17.983
		ANT1	17.997
High	2190.00	ANT0	17.982
		ANT1	17.979

Inte	rtek
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# 7.4 Setup Photograph:

Confidential

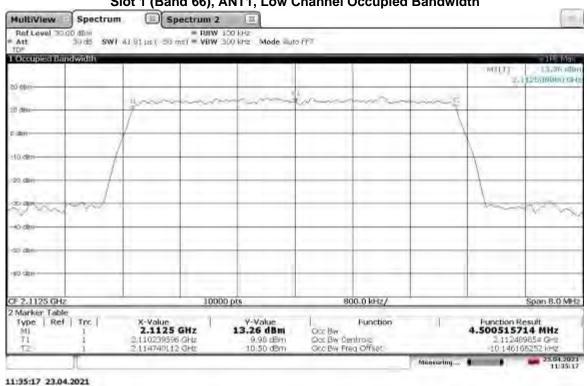
Issued: 05/12/2021 Revised: 05/24/2021

#### 7.5 Plots/Data:

TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANT0, Low Channel Occupied Bandwidth



TM1.1-QPSK\_5 MHz Bandwidth Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



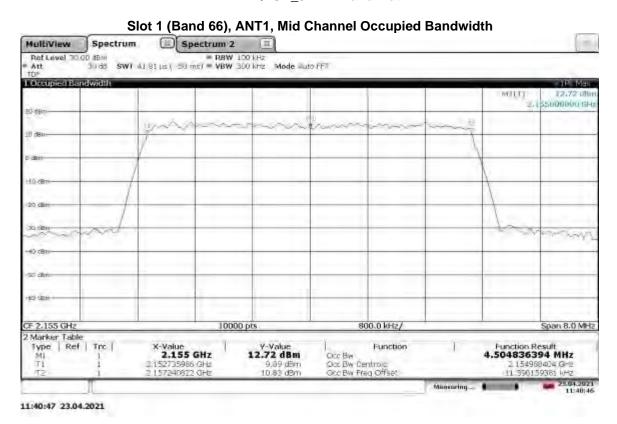
Report Number: 104601893BOX-001 Issued: 05/12/2021

Revised: 05/24/2021

TM1.1-QPSK\_5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm Att 30.d8 = RBW 100 kHz ms) = VBW 300 kHz | Mode =uto FFT 1 Occupied Bandwidth Z. 155000000 GH 10000 pts 800.0 kHz/ CF 2.155 GHz Span 8.0 MHz 2 Marker Table Type | Ref | Trc | X-Value 2.155 GHz V-Value 13.18 dBm Function Function Result 4.50746417 MHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2.152743769 GHz 2.157251233 GHz 10,45 d5m 11,42 d8m 2.154997501 GHz -2.499206792 kHz

TM1.1-QPSK\_5 MHz Bandwidth

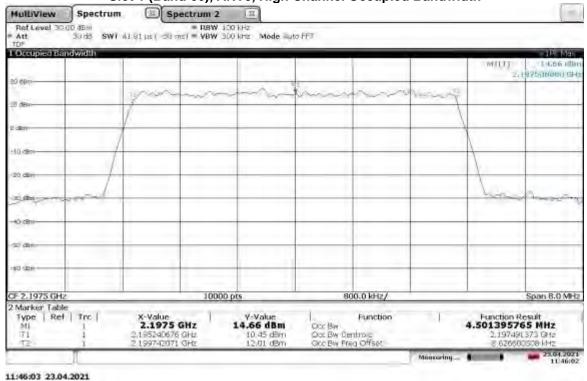


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11:42:33 23.04.2021

# TM1.1-QPSK 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth

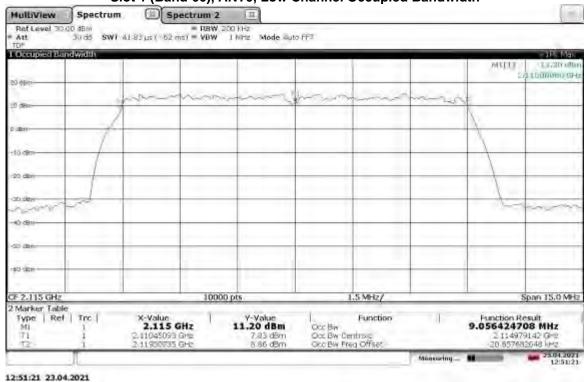


TM1.1-QPSK\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm # Att 30 d8 = RBW 100 kHz SWI 41 81 µs ( 30 ms) = VBW 300 kHz Mode = uto FFT Z. (97500000 GH 800.0 kHz/ Marker Table V-Value 14.14 dBm Function Result 489021091 MHz Type | Ref | Trc | X-Value 2.1975 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2.197469879 GHz -10.12065846 kHz 10.72 dBm 10.97 dBm 11/47/56 11:47:57 23.04.2021

# TM1.1-QPSK 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth

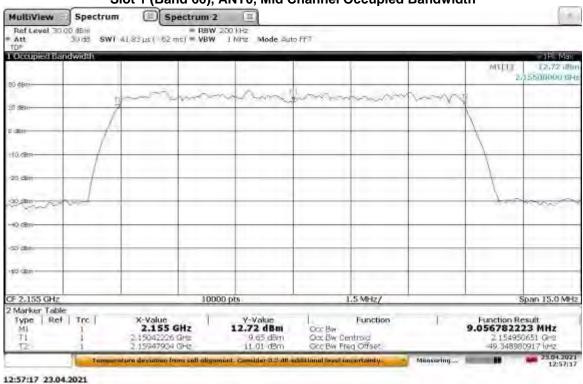


TM1.1-QPSK\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm \* Att 30 dB = RBW 200 kHz SWT 41.83 µs ( 52 ms) = VBW 1 MHz Mode Auto FFT 1500000 GH Span 15.0 MHz Marker V-Value 10.67 dBm Function Result 9.001392399 MHz Type | Ref | Trc | X-Value 2.115 GHz Function Occ Bw Occ Bw Centroid Occ Bw Freq Offset 2.114988882 GHz 11.11786211 kHz 9.99 dBm 12:53:59 23.04.2021

TM1.1-QPSK\_10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth

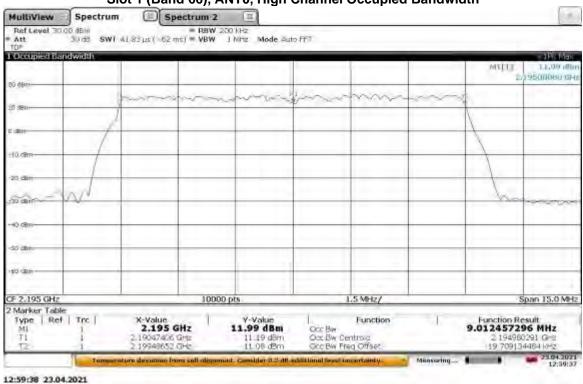


TM1.1-QPSK\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm Att 30 dB = RBW 200 kHz SWI 41.83 µs ( 62 ms) = VBW 1 kHz Mode auto FFT Stanona ch Span 15.0 MHz Marker Table V-Value 12.04 dBm Function Result 8.988498279 MHz Type | Ref | Trc | X-Value 2.155 GHz Oct Bw Oct Bw Centrals Oct Bw Freg Offset 9,80 dBm 10,35 dBm 2.154996149 GHz 3.850633757 kHz 12:56:12 23.04.2021

### TM1.1-QPSK 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM1.1-QPSK\_10 MHz Bandwidth

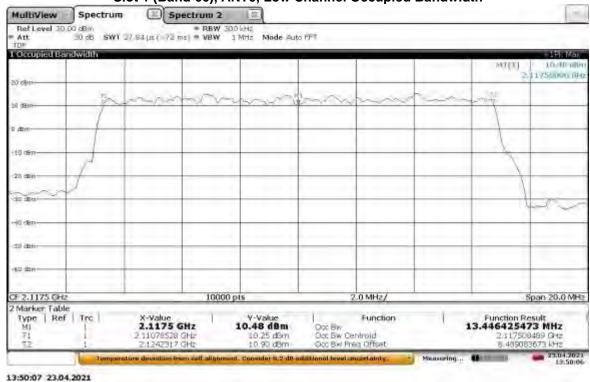
Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm \* Att 30 dB = RBW 200 kHz SWT 41.83 µs ( 52 ms) = VBW 1 MHz Mode Auto FFT 95000bio GH Span 15.0 MHz Marker Table Function Result 8.988556708 MHz Type | Ref | Trc | X-Value 2.195 GHz Y-Value 11.62 dBm Function Occ Bw Occ Bw Centroid Occ Bw Freq Offset 2 194974558 G 1 25 442104482 km² 9:37 dBm 13:00:51 23.04.2021

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Issued: 05/12/2021 Revised: 05/24/2021

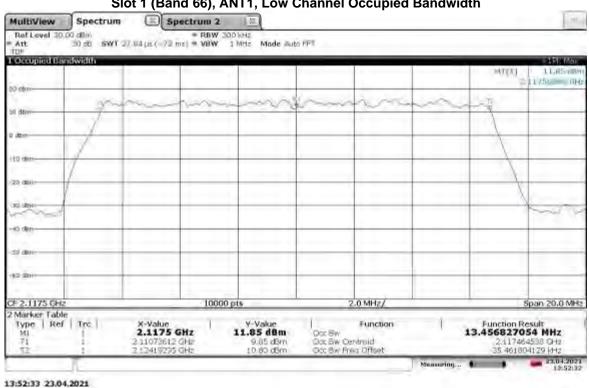
TM1.1-QPSK 15 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM1.1-QPSK\_15 MHz Bandwidth

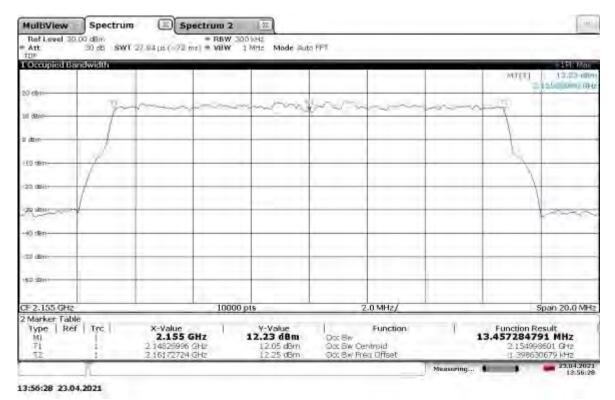
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



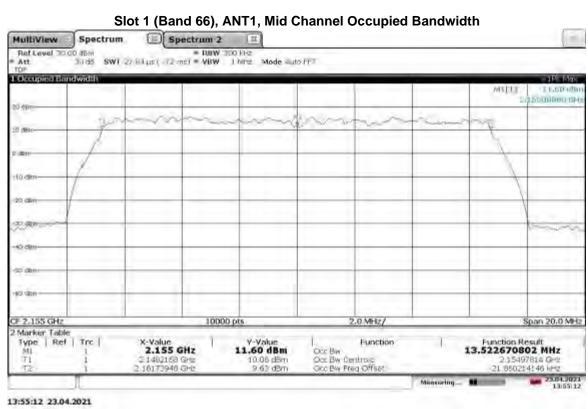
Issued: 05/12/2021 Revised: 05/24/2021

TM1.1-QPSK\_15 MHz Bandwidth

#### Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



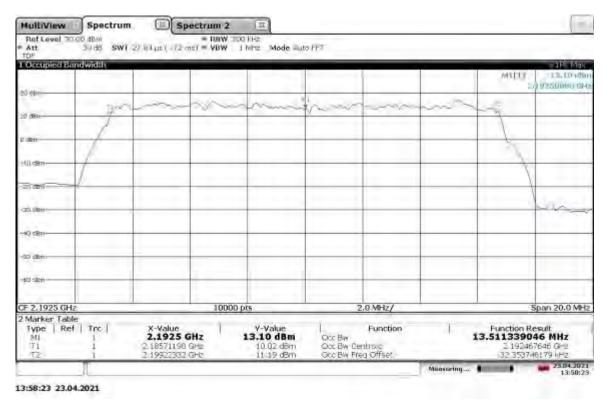
TM1.1-QPSK\_15 MHz Bandwidth



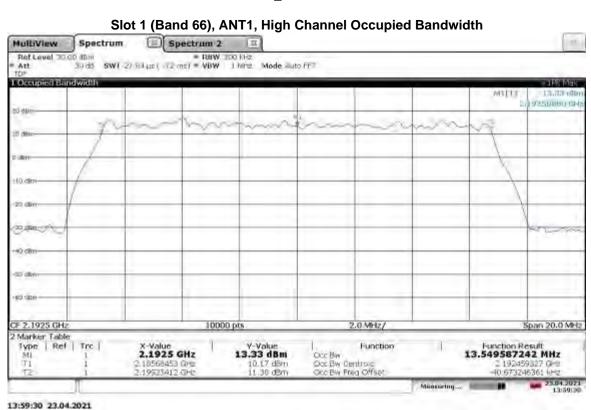
Non-Specific Radio Report Shell Rev. December 2017 Page 75 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

TM1.1-QPSK 15 MHz Bandwidth

#### Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



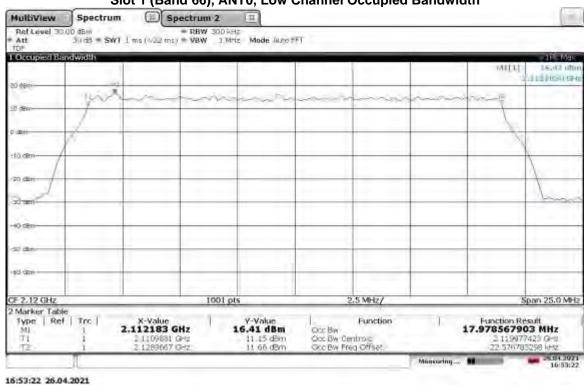
TM1.1-QPSK\_15 MHz Bandwidth



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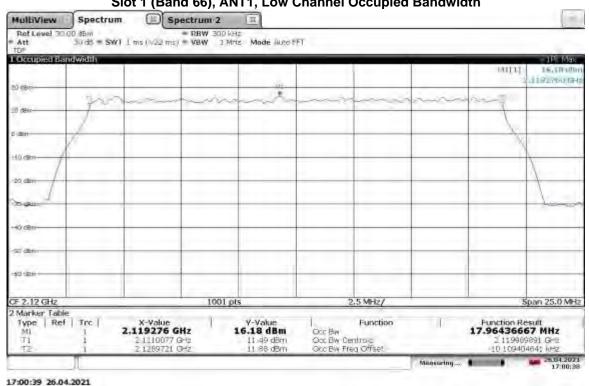
TM1.1-QPSK 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM1.1-QPSK\_20 MHz Bandwidth

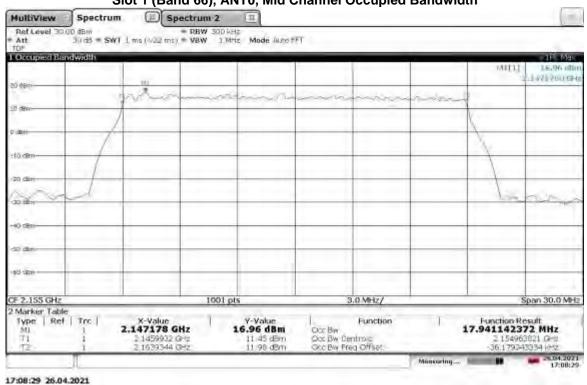
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



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TM1.1-QPSK\_20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM1.1-QPSK\_20 MHz Bandwidth

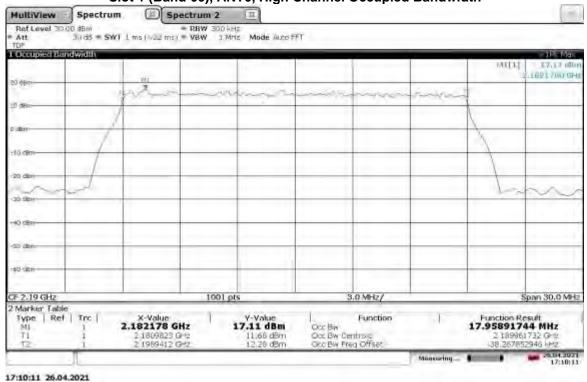
Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level Livi veo ca-o 3.0 MHz/ Marker Table V-Value 23.80 dBm Function Result 18.055736812 MHz Type | Ref | Trc | X-Value 2.147178 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 17.50 dBm 18.00 dBm 17:04:17 26.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 78 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

TM1.1-QPSK\_20 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM1.1-QPSK\_20 MHz Bandwidth

17:11:42 26.04.2021

Marker Table

Type | Ref | Trc |

X-Value 2.189251 GHz Function Result 17.95745627 MHz

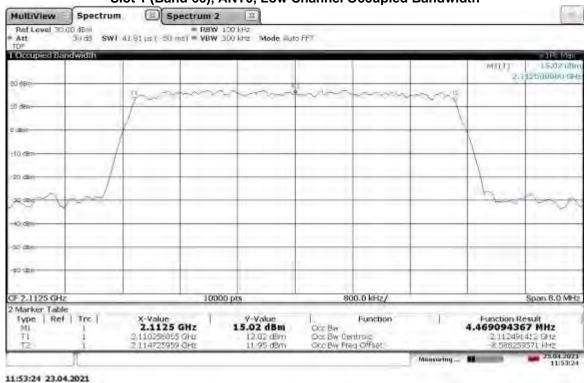
2 189958205 GHz 41 794567635 kHz

Y-Value 16.44 dBm

11.37 d5m 11.82 d8m Occ Bw Occ Bw Centraic Occ Bw Freq Offset

TM3.2-16QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANT0, Low Channel Occupied Bandwidth



TM3.2-16QAM\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm \* Att 30 d8 = RBW 100 kHz SWI 41 81 µs ( 50 ms) = VBW 300 kHz Mode auto FFT 2.112500000 GH 800.0 kHz/ Marker Table V-Value 14.50 dBm Function Result 497585604 MHz Type | Ref | Trc | X-Value 2.1125 GHz Oct Bw Oct Bw Centrals Got Bw Freg Offset 2:11:2469267 GHz 10:73275299 kHz 10.97 dBm 11.53 dBm 11:51:24 11:51:24 23.04.2021

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Issued: 05/12/2021 Revised: 05/24/2021

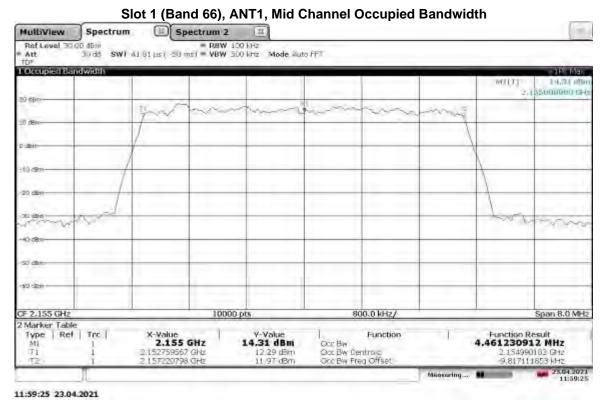
#### TM3.2-16QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



11:57:00 23.04.2021

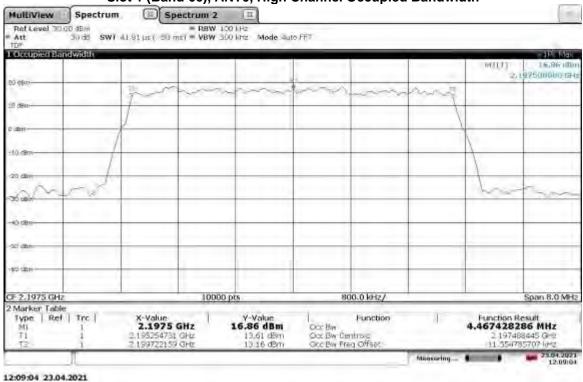
TM3.2-16QAM\_5 MHz Bandwidth



Non-Specific Radio Report Shell Rev. December 2017 Page 81 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## TM3.2-16QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



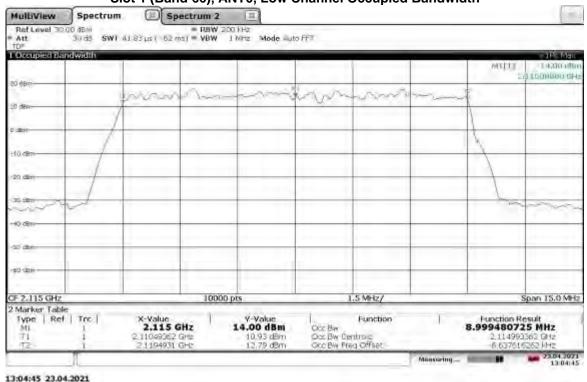
TM3.2-16QAM\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm Att 30 dB = RBW 100 kHz SWI 41 81 µs ( 50 ms) = VBW 300 kHz Mode auto FFT 2.197500000 G-0 10000 pts 800.0 kHz/ Span 8.0 MHz Marker Function Result .474050524 MHz Type | Ref | Trc | X-Value 2.1975 GHz Y-Value 15.05 dBm Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2.197492392 GHz -7 608379914 kHz 12.97 dBm 12.36 dBm 12:07:24 12:07:24 23.04.2021

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# TM3.2-16QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.2-16QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm \* Att 30 dB = RBW 200 kHz SWT 41.83 µs (=62 ms) = VBW 1 MHz Mode Auto FFT 15000000 GH 1.5 MHz/ Marker Function Result 8,998845413 MHz Type | Ref | Trc | X-Value 2.115 GHz V-Value 12.46 dBm Occ Bw Occ Bw Centroid Occ Bw Freq Offset 12.5¢ d8m 11,90 d8m 2,11498172 GHz 18 279685603 kHz

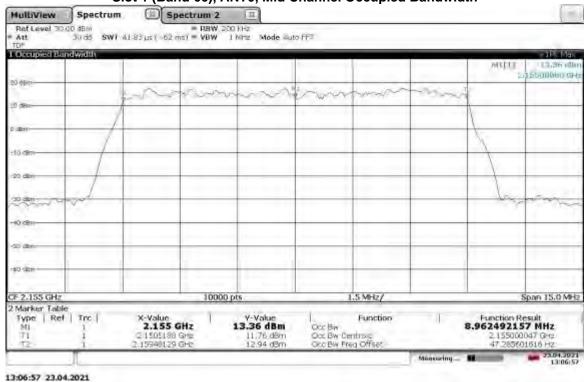
Non-Specific Radio Report Shell Rev. December 2017 Page 83 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

13:03:19 23.04.2021

Issued: 05/12/2021 Revised: 05/24/2021

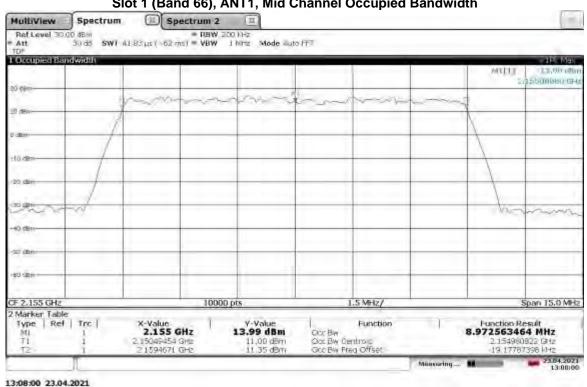
### TM3.2-16QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3.2-16QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth

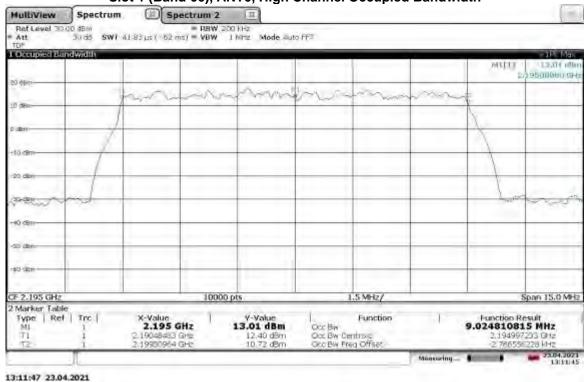


Non-Specific Radio Report Shell Rev. December 2017 Page 84 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

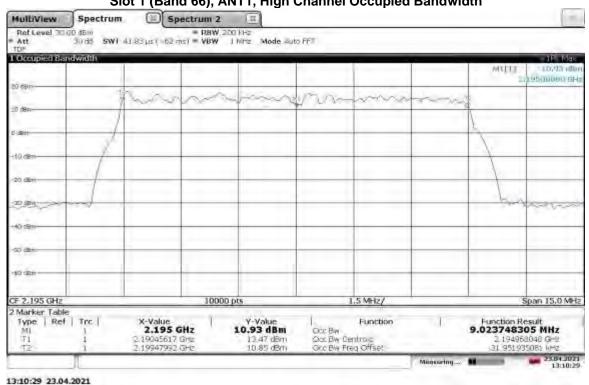
TM3.2-16QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.2-16QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth

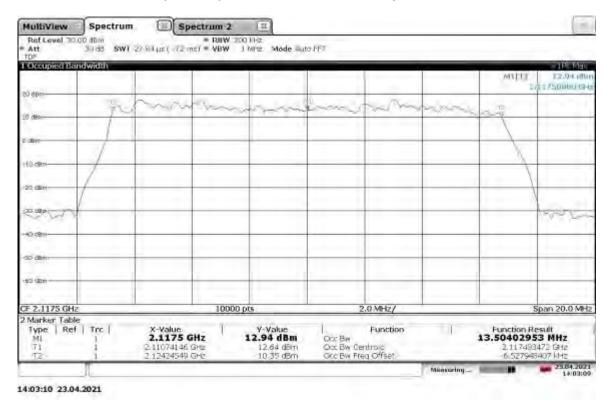


Non-Specific Radio Report Shell Rev. December 2017 Page 85 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

TM3.2-16QAM\_15 MHz Bandwidth

#### Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.2-16QAM\_15 MHz Bandwidth

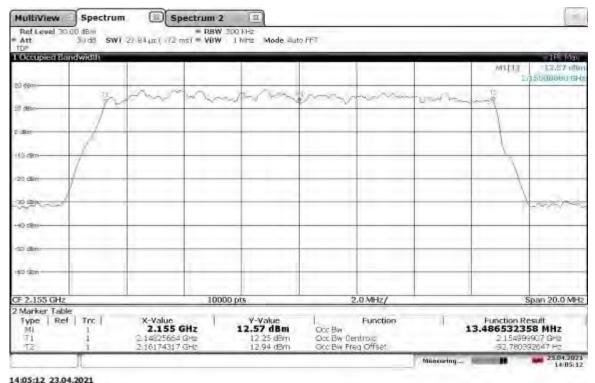
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth MultiView Spectrum Spectrum 2 = RBW 350 KHz SWT 27 84 µs ( 1/2 ms) = VBW 1 KHz Mode auto FFT Ref Level 30.00 fBm 301 da SSOMBHO CH 2.0 MHz/ F 2.155 GHz 10000 pts Span 20.0 MHz 2 Marker Table Type | Ref | Trc | Function Result 13.433569776 MHz X-Value 2.155 GHz V-Value 12.16 dBm Function Occ Bw Occ Bw Centroic Occ Bw Freq Offset 10,47 dBm 10,87 dBm 8,936405003 kH 14:07:46 23.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 86 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

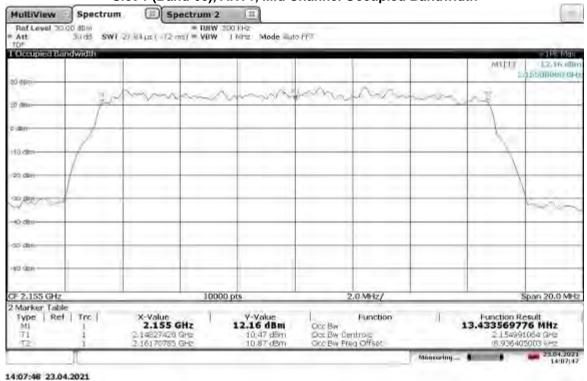
# TM3.2-16QAM\_15 MHz Bandwidth

# Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3 2-160AM 15 MHz Bandwidth

TM3.2-16QAM\_15 MHz Bandwidth
Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth

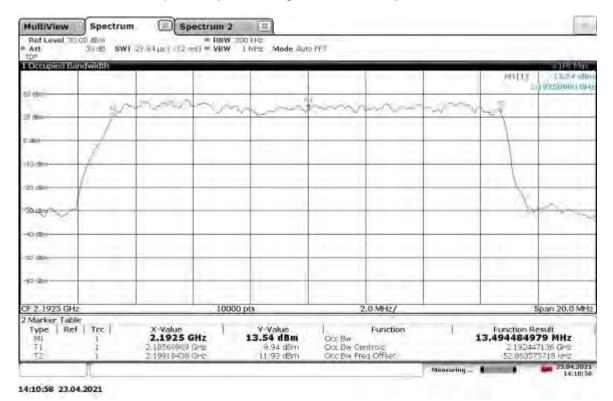


Non-Specific Radio Report Shell Rev. December 2017

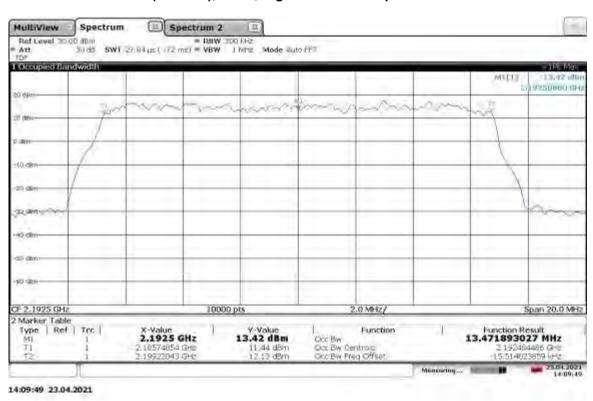
Page 87 of 141

TM3.2-16QAM\_15 MHz Bandwidth

# Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.2-16QAM\_15 MHz Bandwidth Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth

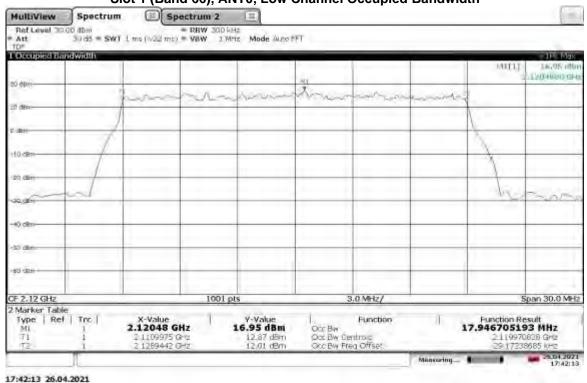


Non-Specific Radio Report Shell Rev. December 2017 Page 88 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

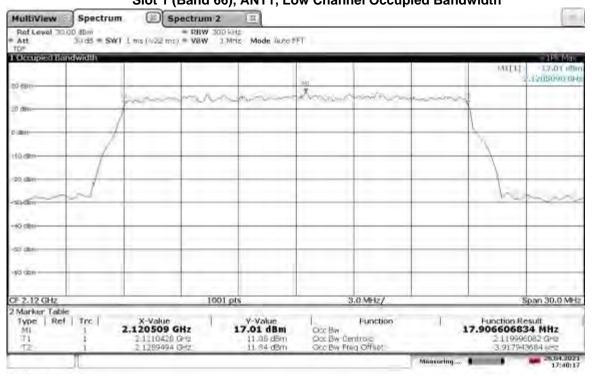
# TM3.2-16QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.2-16QAM\_20 MHz Bandwidth

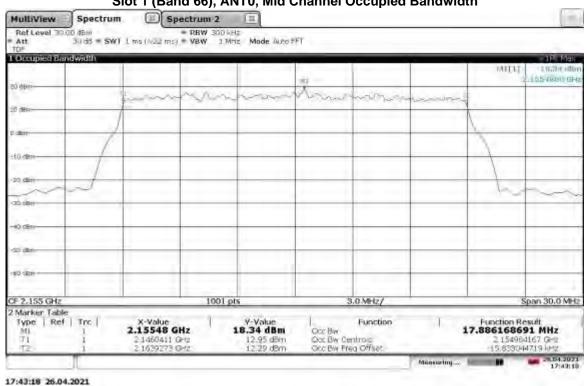
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



17:40:18 26.04:2021 TM3.2-

## 16QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



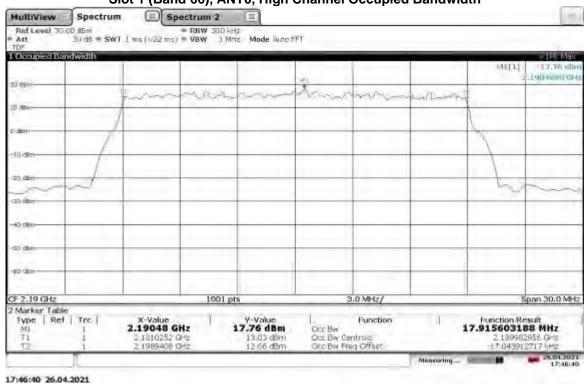
TM3.2-16QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 155-feeu GH 3.0 MHz/ Marker Table Function Result 17.940024643 MHz Type | Ref | Trc | X-Value 2.15548 GHz 17.45 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 2 154949176 GHz 50:824089396 kHz 12,83 dBm 11,55 dBm 17:44:35 26.04.2021

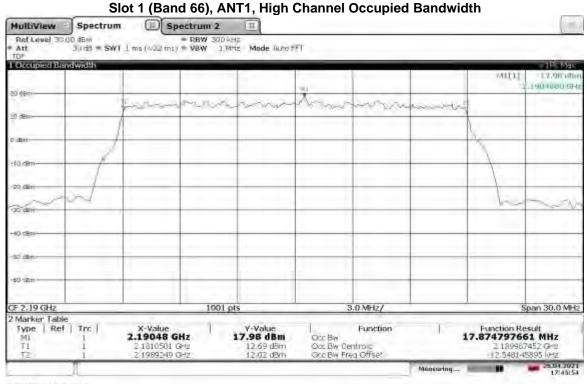
Page 90 of 141 Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## TM3.2-16QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.2-16QAM\_20 MHz Bandwidth

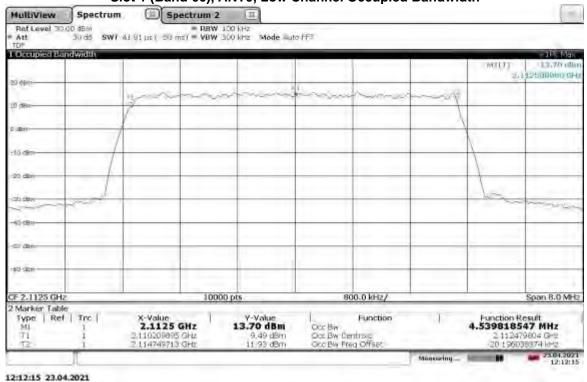


17:45:54 26.04.2021

Issued: 05/12/2021 Revised: 05/24/2021

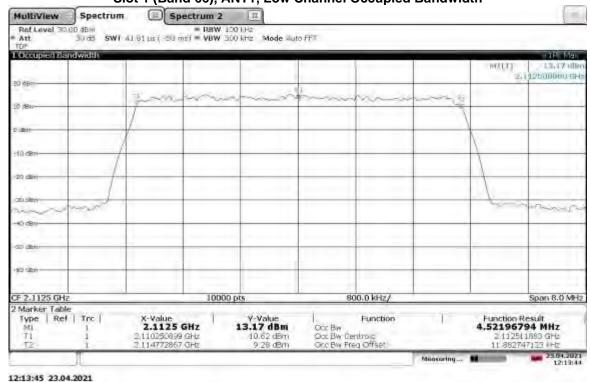
TM3.1-64QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1-64QAM\_5 MHz Bandwidth

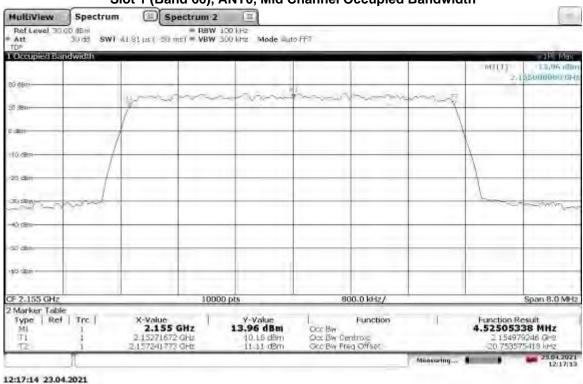
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



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TM3.1-64QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



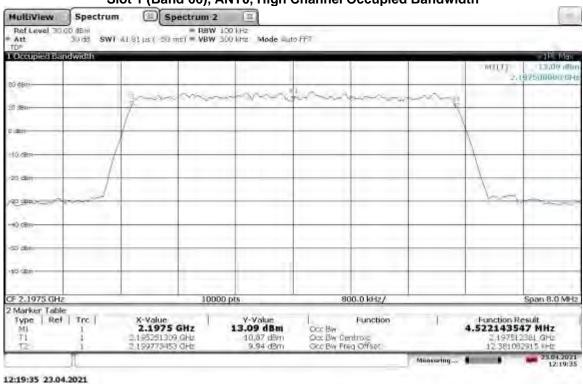
TM3.1-64QAM\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm \* Att 30 d8 = RBW 100 kHz SWI 41 81 µs ( 50 ms) = VBW 300 kHz Mode Auto FFT 2.155000000 000 800.0 kHz/ Marker Table V-Value 14.31 dBm Function Result 4,461230912 MHz Type | Ref | Trc | X-Value 2.155 GHz Oct Bw Oct Bw Centrals Oct Bw Freq Offset 12.29 dBm 11.97 dBm 2.154990183 GHz -9.817111853 kHz 11:59:25 23.04.2021

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TM3.1-64QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1-64QAM\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm \* Att 30 d8 = RBW 100 kHz SWI 41 81 µs ( 50 ms) = VBW 300 kHz Mode auto FFT 2,197500000 070 800.0 kHz/ Span 8.0 MHz Marker Table V-Value 13.42 dBm Function Result 4.520602129 MHz Type | Ref | Trc | X-Value 2.1975 GHz Oct Bw Oct Bw Centrals Oct Bw Freg Offset 8.84 dBm 2.19748081 GHz 19.19038973 kHz 195220509 GHz 199741111 GHb 12:20:59 23.04.2021

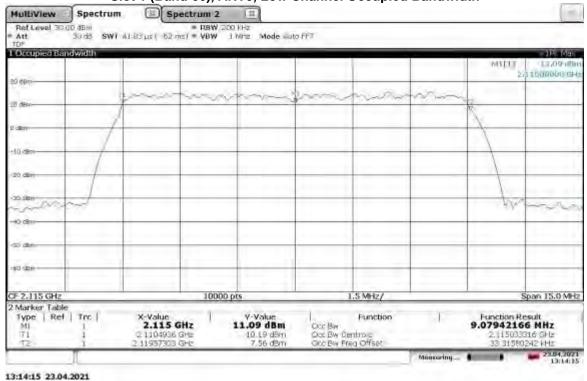
Non-Specific Radio Report Shell Rev. December 2017 Page 94 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

13(15)41

### TM3.1-64QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1-64QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30:00 dBm \* Att 30:d8 = RBW, 200 KHz SWT 41.83 µs ( 62 ms ( = VBW 1 Mrs Mode Auto FFT 15000000 GH 10000 pts 1.5 MHz/ Span 15.0 MHz Marker V-Value 10.75 dBm Function Result 8,988891879 MHz Type | Ref | Trc | X-Value 2.115 GHz Oct Bw Oct Bw Centraic Oct Bw Freq Offset 10.54 dBm 10.15 dBm 2.115009624 GHz 9.624184673 kHz

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13:15:41 23.04.2021

# TM3.1-64QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3.1-64QAM\_10 MHz Bandwidth

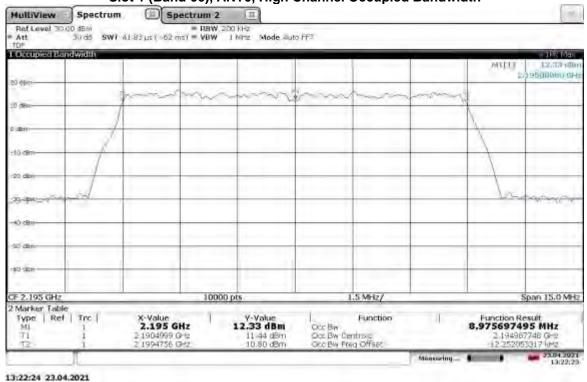
Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30:00 dBm Att 30:d8 = RBW 200 kHz SWI 41.83 µs ( 62 ms) = VBW 1 kHz Mode suto FFT Standen die Span 15.0 MHz Marker Table Y-Value 11,43 dBm Function Result 9.050309071 MHz Type | Ref | Trc | X-Value 2.155 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2 154977965 GHz 22:035163688 kHz 9.93 dBm 10.73 dBm 13:18:02 23.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 96 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

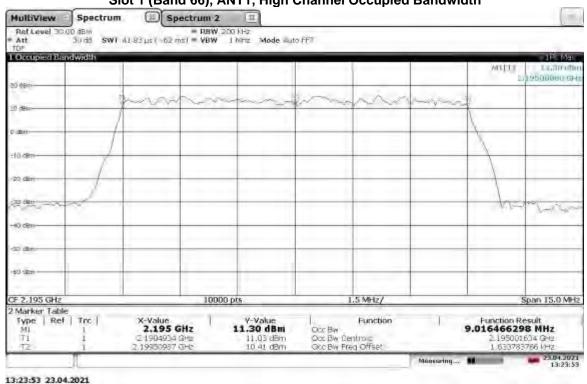
TM3.1-64QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1-64QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth



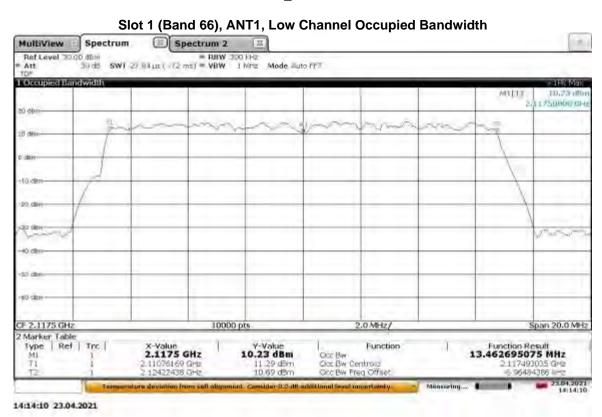
Non-Specific Radio Report Shell Rev. December 2017 Page 97 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 15 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm Att 30 dB = RBW 350 kHz (72 ms) = VBW 1 MHz Mode Auto FFT 1 Occupied Ba 1750000 @40 10000 pts CF 2.1175 GHz 2.0 MHz/ Span 20.0 MHz 2 Marker Table Type | Ref | Trc | X-Value 2.1175 GHz V-Value 13.33 dBm Function Function Result 13.490877945 MHz Occ Bw Occ Bw Centroid Occ Bw Freq Offset 10,80 d5m 11,42 d8m 2.117469681 GHz 30.318632022 kHz

TM3.1-64QAM\_15 MHz Bandwidth



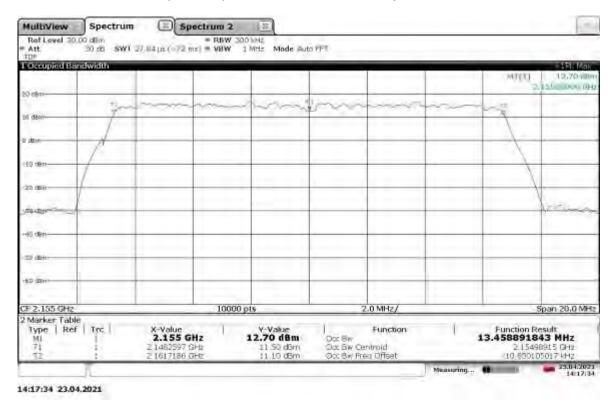
Page 98 of 141 Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

14:13:13 23.04.2021

Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM\_15 MHz Bandwidth

# Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



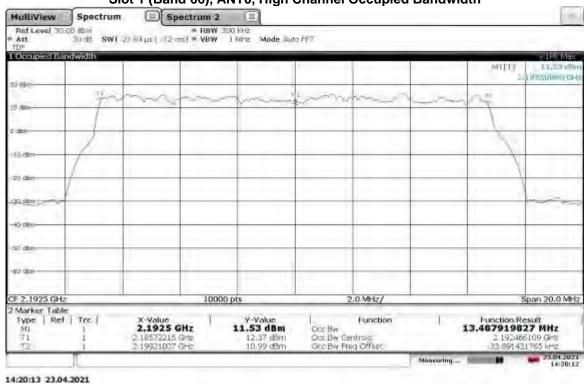
TM3.1-64QAM\_15 MHz Bandwidth
Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth



14:15:59 23:04:2021 TM3.1-

#### 64QAM 15 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



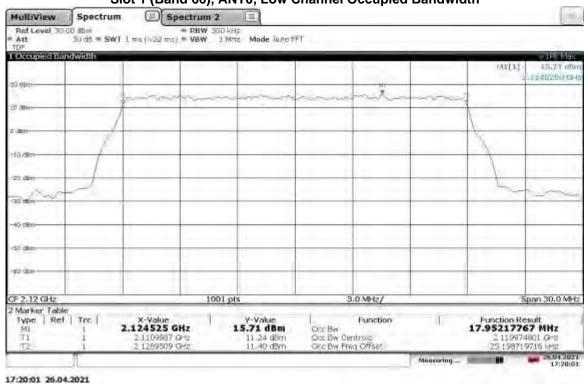
TM3.1-64QAM\_15 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth MultiView Spectrum Spectrum 2 = RBW 300 KHz SWT 27 81 µs ( 72 ms) = VBW 1 hree Mode auto FFT Ref Level 30.00 fBm - Att 30 de 9250800 GH 10000 pts 2.0 MHz/ F 2.1925 GHz Span 20.0 MHz 2 Marker Table Type | Ref | Trc | Function Result 13.466098464 MHz 11.42 dBm Function X-Value 2.1925 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2 192507662 GH2 7 662457977 kHz 9,86 dBm 10,86 dBm 2.18577461 GH 2.19924071 GH 14:21:16 23.04.2021

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TM3.1-64QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1-64QAM\_20 MHz Bandwidth

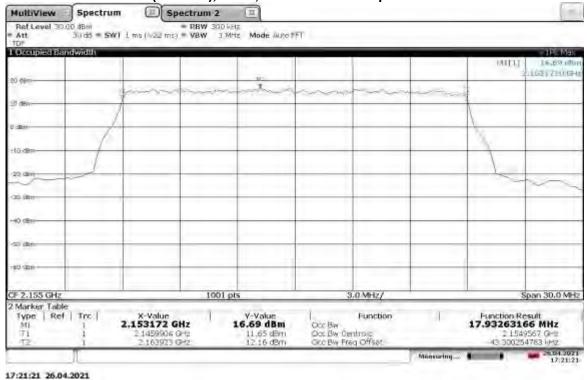
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 11 45 25 0 GH CF 2.12 GHz 3.0 MHz/ Marker Table V-Value 16.17 dBm Function Result 17,938195343 MHz Type | Ref | Trc | X-Value 2,124525 GHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 1110195 G-6 1289575 GHz 11.13 dBm 11.86 dBm 2.11998838 GHz 11.619868763 kHz 17:18:06 26.04.2021

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Issued: 05/12/2021 Revised: 05/24/2021

TM3.1-64QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



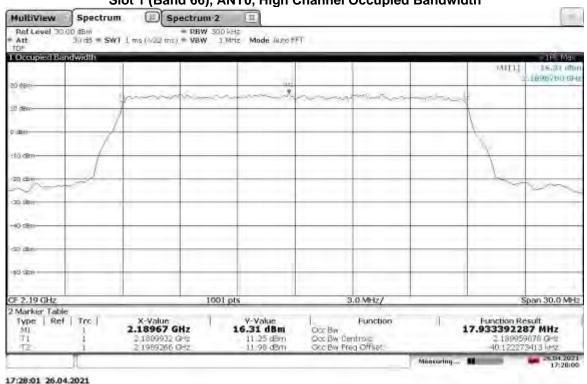
TM3.1-64QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 1210 HOUGH 3.0 MHz/ Marker Table X-Value 2.15464 GHz Function Result 17.940807938 MHz Type | Ref | Trc | V-Value 15.74 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 11.16 dBm 11.40 dBm 2 154951623 GH2 48 377406905 kHz 17:25:11 26.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 102 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## TM3.1-64QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1-64QAM\_20 MHz Bandwidth

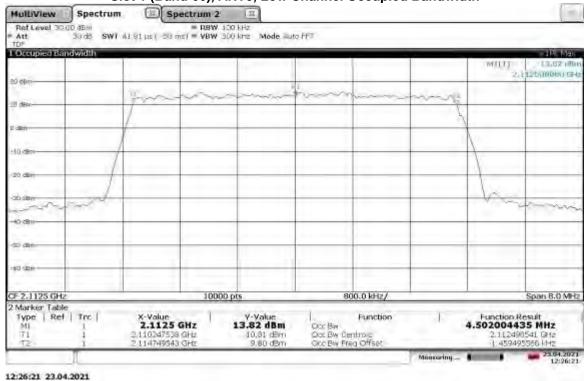
Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 1801710 GH 3.0 MHz/ Marker X-Value 2,188172 GHz V-Value 16.37 dBm Function Result 17.928810229 MHz Type | Ref | Trc | Occ Bw Occ Bw Centroic Occ Bw Freq Offset 1809905 GHz 1989193 GHz 11.35 d8m 11.72 d8m 2 189954906 GHz 45 093550114 kHz 17:26:38 26.04.2021

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Issued: 05/12/2021 Revised: 05/24/2021

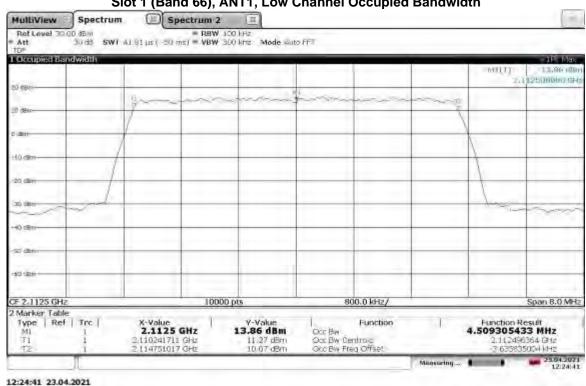
### TM3.1a-256QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1a-256QAM\_5 MHz Bandwidth

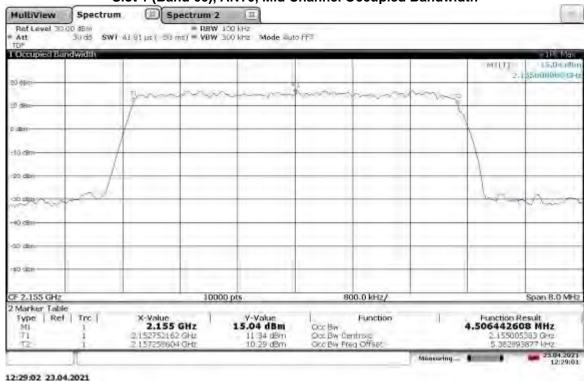
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth



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# TM3.1a-256QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



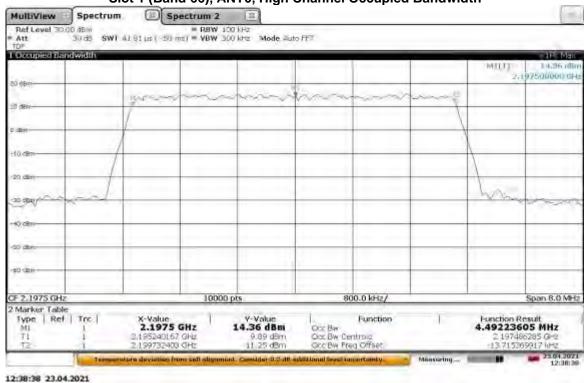
TM3.1a-256QAM\_5 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm Att 30 dB = RBW 100 kHz SWI 41 81 µs ( 50 ms) = VBW 300 kHz Mode auto FFT 2.155000000 000 800.0 kHz/ Marker Table V-Value 13.11 dBm Function Result 4.508307291 MHz Type | Ref | Trc | X-Value 2.155 GHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 2.154990798 GHz -9.202360744 kHz 9.32 dBm 9.99 dBm 12:30:28 23.04.2021

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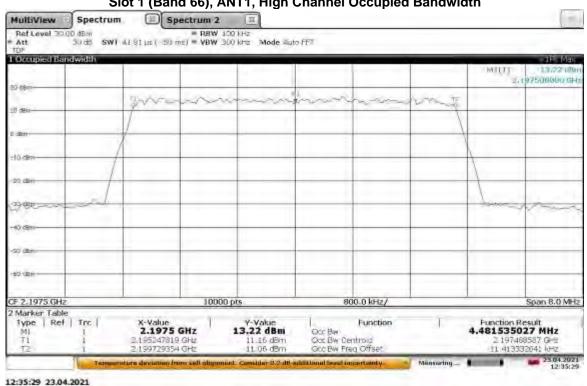
# TM3.1a-256QAM 5 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1a-256QAM\_5 MHz Bandwidth

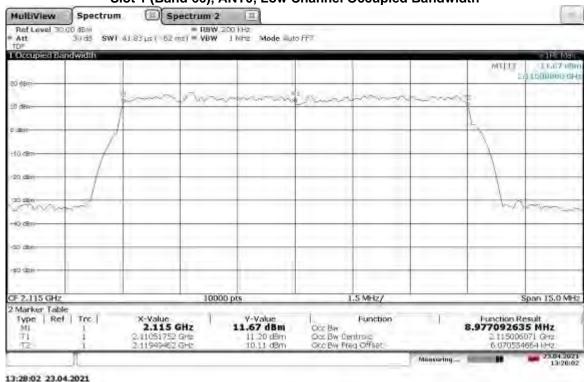
Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth



Non-Specific Radio Report Shell Rev. December 2017 Page 106 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## TM3.1a-256QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1a-256QAM\_10 MHz Bandwidth

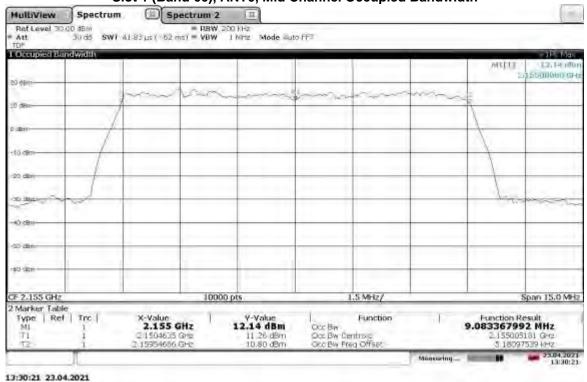
Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm Att 30 dB = PAW 200 KHz SWI 41.83 µs ( 62 ms) = VBW 1 MHz Mode auto FFT 1500000 GH 1.5 MHz/ Span 15.0 MHz Marker Function Result 8,998982157 MHz Type | Ref | Trc | X-Value 2.115 GHz Y-Value 11.56 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 10.83 dBm 10.62 dBm Z 115006194 GHz 6.194005543 kHz 13:26:50 23.04.2021

Page 107 of 141 Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

# TM3.1a-256QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3.1a-256QAM\_10 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30:00 dBm Att 30:d8 = PAW 200 KHz SWT 41.83 µs ( 62 ms) = VBW 1 MHz Mode Auto FFT Standen die 1.5 MHz/ Span 15.0 MHz Marker Table V-Value 11.71 dBm Function Result 9.001310484 MHz Type | Ref | Trc | X-Value 2.155 GHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 10,96 dBm 10,39 dBm 2 154960931 GHz 39 068809045 kHz 13:31:30 13:31:30 23.04.2021

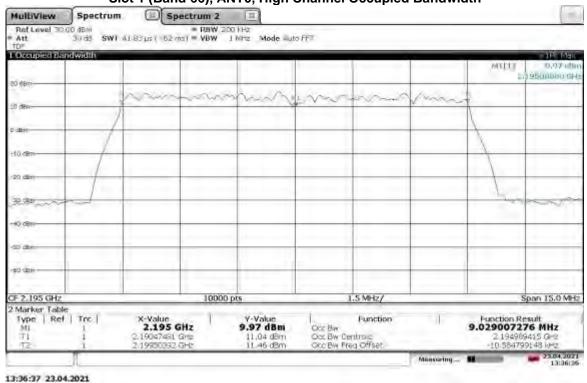
Non-Specific Radio Report Shell Rev. December 2017 Page 108 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Report Number: 104601893BOX-001 Issued: 05/12/2021

Revised: 05/24/2021

## TM3.1a-256QAM 10 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1a-256QAM\_10 MHz Bandwidth

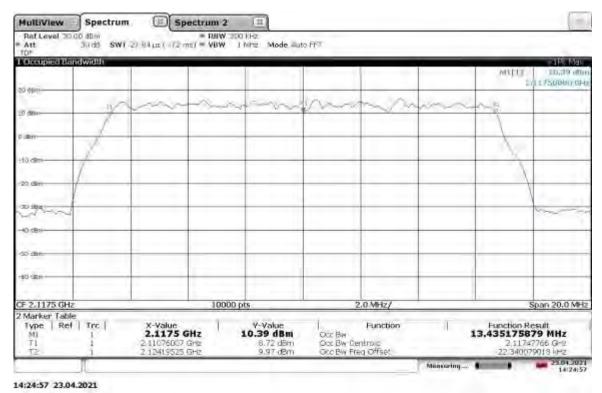
Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30 00 dBm \* Att 30 d8 = PLBW 200 KHz SWT 41.83 µs ( 62 ms ( = VBW 1 MHz Mode suto FFT **9500000 сна** Span 15.0 MHz Marker Table Function Result 8,973848708 MHz Type | Ref | Trc | X-Value 2.195 GHz V-Value 11.36 dBm Oct Bw Oct Bw Centrals Oct Bw Freg Offset 12.39 dBm 11.36 dBm 13:35:17 23.04.2021

Page 109 of 141 Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

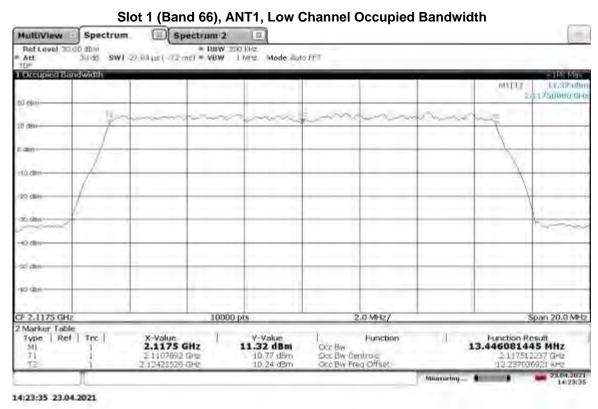
Issued: 05/12/2021 Revised: 05/24/2021

TM3.1a-256QAM\_15 MHz Bandwidth

## Slot 1 (Band 66), ANTO, Low Channel Occupied Bandwidth



TM3.1a-256QAM\_15 MHz Bandwidth

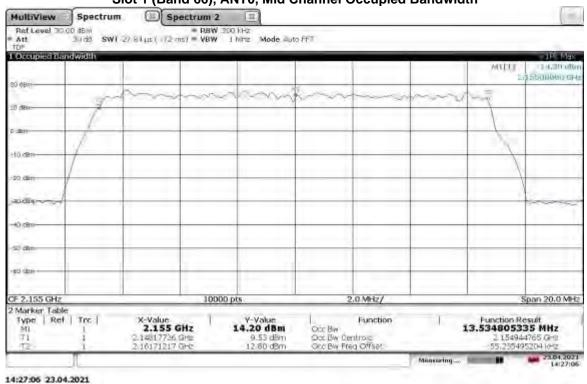


Non-Specific Radio Report Shell Rev. December 2017 Page 110 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

### TM3.1a-256QAM\_15 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3.1a-256QAM\_15 MHz Bandwidth

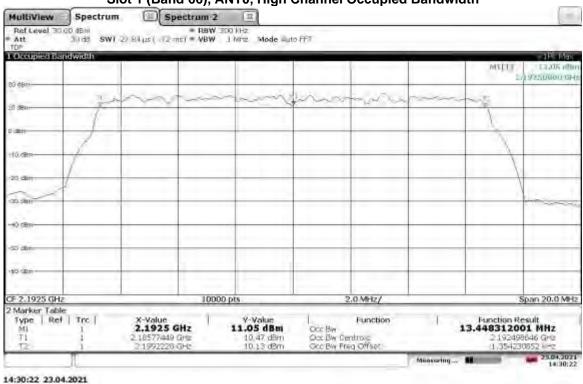
Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum MultiView Spectrum 2 = RBW 300 KH2 SWT 27 81 µs ( 1/2 ms) = VBW 1 hree Mode auto FFT Ref Level 30.00 fBm - Att 30 de Standon de 10000 pts 2.0 MHz/ Span 20.0 MHz F 2.155 GH 2 Marker Table V-Value 10.84 dBm Type | Ref | Trc | Function Result 13.476158753 MHz X-Value 2.155 GHz Function Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2.14926493 GHz 2.16174109 GHz 2 155003014 Gre 10:25 d8m 11:12 d8m 3.013571846 48 23.04.2021 14:28:15 23.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 111 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

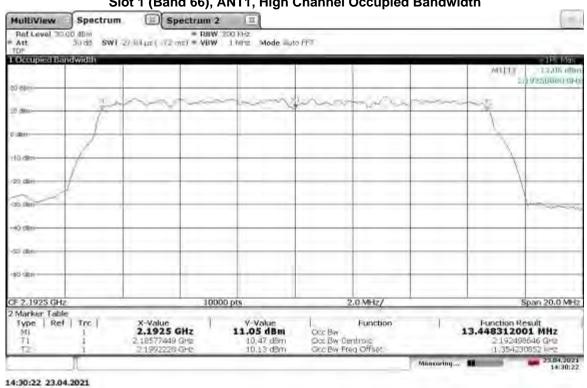
#### TM3.1a-256QAM 15 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



TM3.1a-256QAM\_15 MHz Bandwidth

Slot 1 (Band 66), ANT1, High Channel Occupied Bandwidth

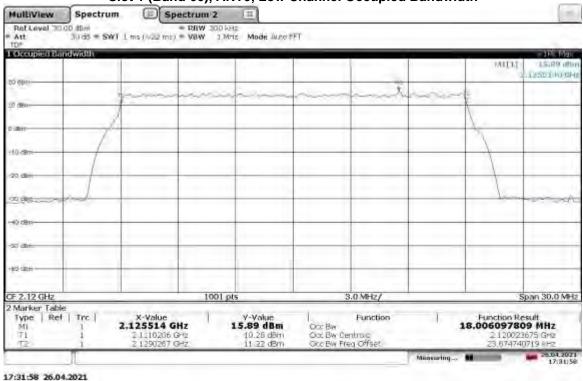


Page 112 of 141 Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

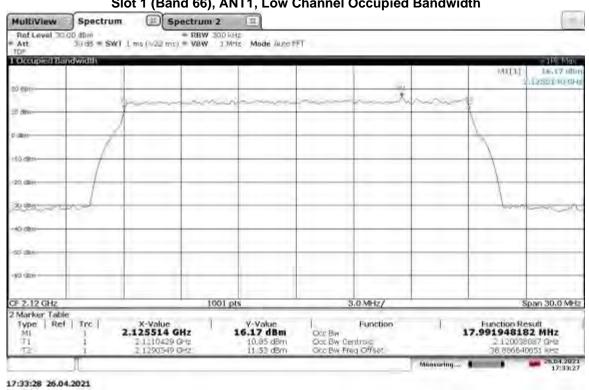
## TM3.1a-256QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANT0, Low Channel Occupied Bandwidth



TM3.1a-256QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANT1, Low Channel Occupied Bandwidth

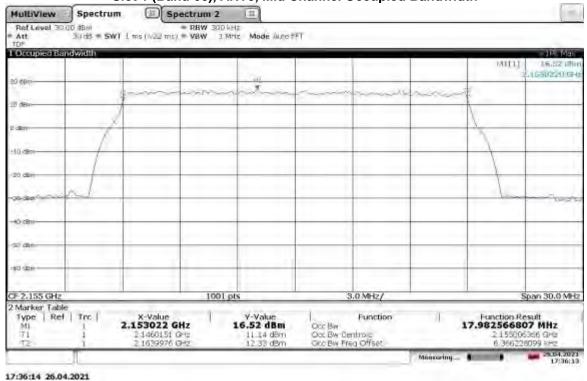


Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Issued: 05/12/2021 Revised: 05/24/2021

### TM3.1a-256QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, Mid Channel Occupied Bandwidth



TM3.1a-256QAM\_20 MHz Bandwidth

Slot 1 (Band 66), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 1600 110 616 3.0 MHz/ Marker Table X-Value 2.160514 GHz V-Value 15.86 dBm Function Result 17.996764934 MHz Type | Ref | Trc | Occ Bw Occ Bw Centroic Occ Bw Freq Offset 2 155000829 GHz 829 110490799 Fz 10.76 d5m 11.71 d8m 17:34:51 26.04.2021

Non-Specific Radio Report Shell Rev. December 2017 Page 114 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

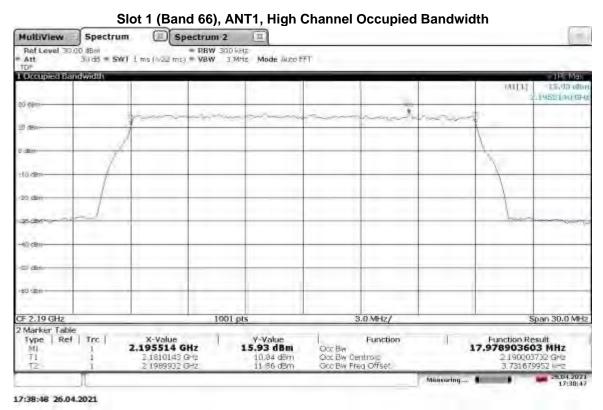
## TM3.1a-256QAM 20 MHz Bandwidth

Slot 1 (Band 66), ANTO, High Channel Occupied Bandwidth



17:37:30 26.04.2021

TM3.1a-256QAM\_20 MHz Bandwidth



Non-Specific Radio Report Shell Rev. December 2017 Page 115 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Intertek

Report Number: 104601893BOX-001 Issued: 05/12/2021 Revised: 05/24/2021

Test Personnel: Kouma Sinn 45 Test Date: 04/23/2021 04/26/2021 Supervising/Reviewing Engineer: (Where Applicable) N/A Product Standard: FCC Part 27 Limit Applied: See report section 7.3 Input Voltage: 48 VDC (POE) Pretest Verification w/ Ambient Temperature: 22, 23 °C Ambient Signals or BB Source: Relative Humidity: 21, 15 % Atmospheric Pressure: 1004, 1013 mbars

Non-Specific Radio Report Shell Rev. December 2017 Page 116 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Report Number: 104601893BOX-001 Issued: 05/12/2021

Revised: 05/24/2021

# **Frequency Stability Over Voltages**

#### Method 8.1

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1055 and 27.

**TEST SITE:** Safety Lab

## 8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due	
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022	
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022	
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021	
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022	

### **Software Utilized:**

Name	Manufacturer	Version
None	1	

#### 8.3 Results:

The sample tested was found to Comply.

§27.54 Frequency stability – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The occupied bandwidth measurement was used to make sure the lower and upper frequencies of the occupied bandwidth remains within the assigned band of 2110-2200 MHz.

Non-Specific Radio Report Shell Rev. December 2017 Page 117 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Intertek	(
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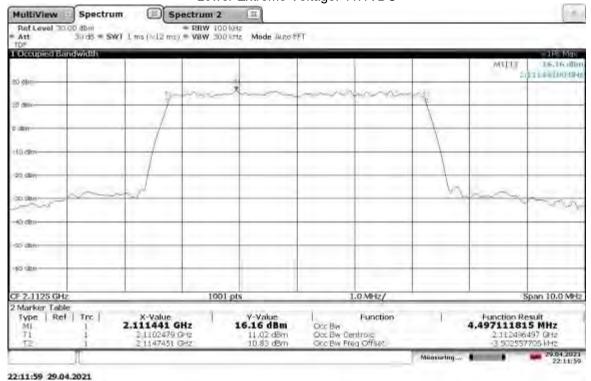
#### Setup Photograph: 8.4

Confidential

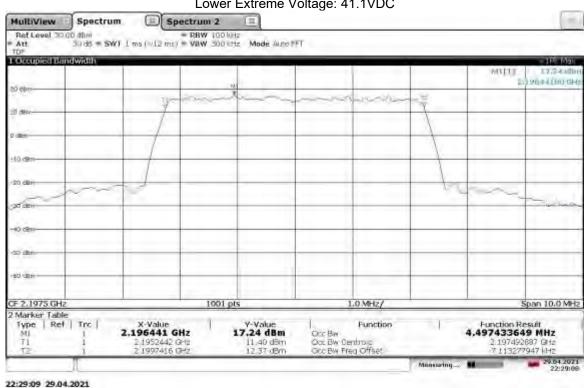
Page 118 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

#### 8.5 Plots/Data:

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel, Lower Extreme Voltage: 41.1VDC

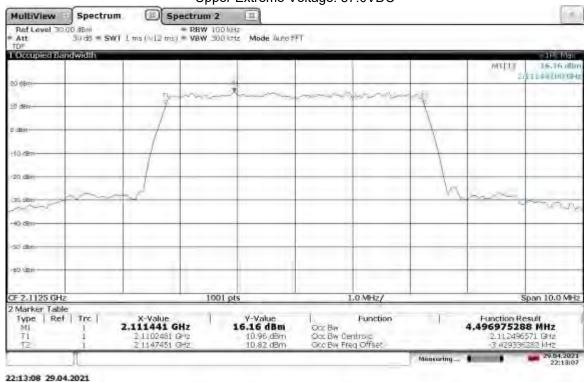


Slot 1 (Band 66), ANTO, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Lower Extreme Voltage: 41.1VDC

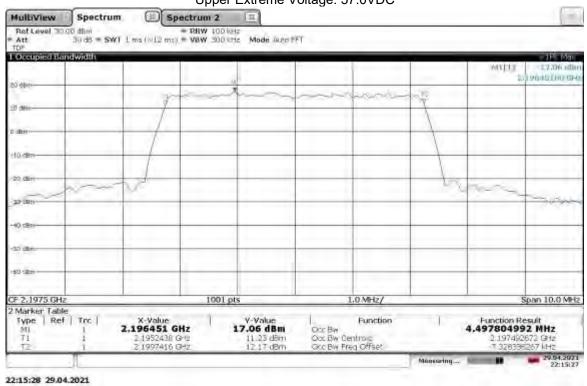


Non-Specific Radio Report Shell Rev. December 2017 Page 119 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

> Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel, Upper Extreme Voltage: 57.0VDC



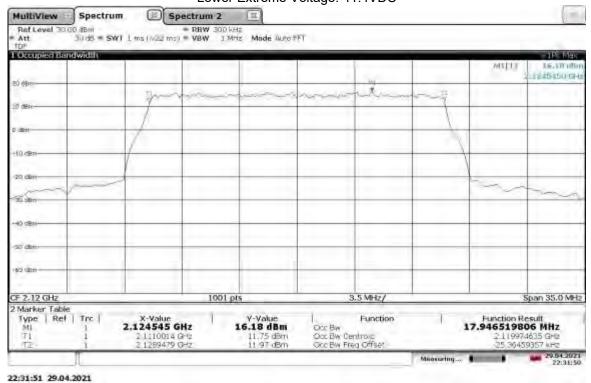
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Upper Extreme Voltage: 57.0VDC



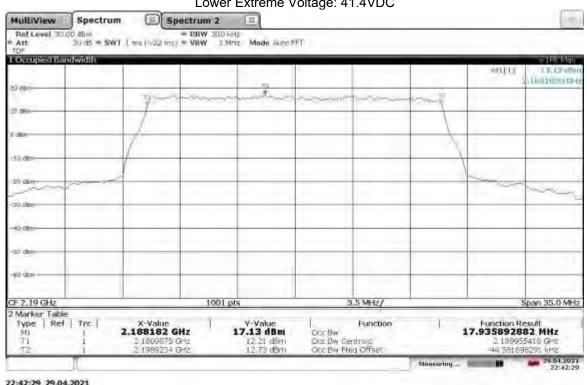
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Issued: 05/12/2021 Revised: 05/24/2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, Low Channel, Lower Extreme Voltage: 41.4VDC

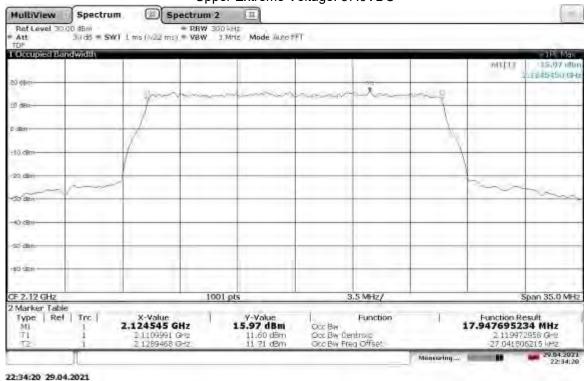


Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, High Channel, Lower Extreme Voltage: 41.4VDC

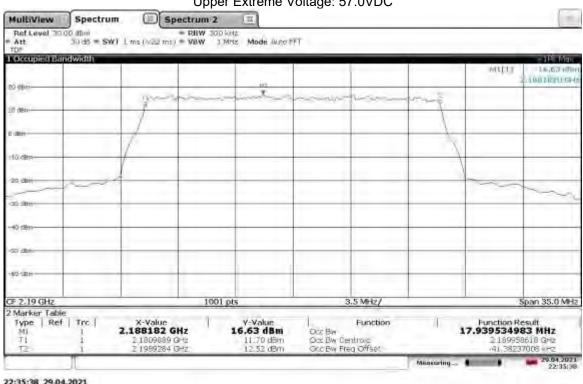


Non-Specific Radio Report Shell Rev. December 2017 Page 121 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

> Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, Low Channel, Upper Extreme Voltage: 57.0VDC



Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, High Channel, Upper Extreme Voltage: 57.0VDC



Non-Specific Radio Report Shell Rev. December 2017 Page 122 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

Intertek

Report Number: 104601893BOX-001 Issued: 05/12/2021 Revised: 05/24/2021

Test Personnel: Vathana Ven V Test Date: 04/29/2021
Supervising/Reviewing

Engineer: (Where Applicable) Kouma Sinn 45

Deviations, Additions, or Exclusions: None

Product Standard: FCC Part 27 Limit Applied: See report section 8.3 Limit Applied: See report section 8.3

Pretest Verification w/ Ambient Temperature: 22 °C Ambient Signals or

BB Source: N/A Relative Humidity: 41 %

Atmospheric Pressure: 1011 mbars

Non-Specific Radio Report Shell Rev. December 2017 Page 123 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## **Transmitter spurious emissions**

#### 9.1 Method

Tests are performed in accordance with ANSI C63.26, CFR47 FCC Parts 2.1051, 2.1053, 2.1057, and

TEST SITE: EMC Lab & 10m ALSE

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

## **Measurement Uncertainty**

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions  $U_{\it lab}$  is less than the corresponding  $U_{\it CISPR}$ reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## **Sample Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

Where FS = Field Strength in  $dB\mu V/m$ 

RA = Receiver Amplitude (including preamplifier) in dB<sub>µ</sub>V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $_{\mu}$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $_{\mu}$ V/m. This value in dB $_{\mu}$ V/m was converted to its corresponding level in  $_{\mu}$ V/m.

RA =  $52.0 \text{ dB}_{\mu}\text{V}$ AF = 7.4 dB/mCF = 1.6 dBAG = 29.0 dBFS =  $32 \text{ dB}_{\mu}\text{V/m}$ 

To convert from  $dB\mu V$  to  $\mu V$  or mV the following was used:

```
UF = 10^{(NF/20)} where UF = Net Reading in \muV
NF = Net Reading in dB\muV
```

#### **Example:**

FS = RA + AF + CF - AG = 
$$52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
  
UF =  $10^{(32 \text{ dB}\mu\text{V}/20)} = 39.8 \text{ uV/m}$ 

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

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## 9.2 Test Equipment Used:

Test equipment used for antenna port conducted test

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022

#### **Software Utilized:**

Name	Manufacturer	Version
None		

Test equipment used for Radiated emissions

Asset	Description Description	Manufacturer	Model	Serial	Cal Date	Cal Due
	·			MS19121200		
DS42'	Weather Station Vantage Vue	Davis	6250	3	02/24/2021	02/24/2022
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/07/2020	05/07/2021
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	09/21/2020	09/21/2021
145108'	Receiver	Rhode & Schwarz	ESIB40	100209	06/08/2020	06/08/2021
HS002'	Pre-amp to under floor cable	Huber & Suhner	SucoFlex 106A	HS002	11/25/2020	11/25/2021
145-406'	10m Track A In-floor Cable #1	Huber + Suhner	sucoflex 160- 19220mm	001	07/13/2020	07/13/2021
IW001'	Receiver to floor cable	Insulated Wire	2801-NPS	001	10/07/2020	10/07/2021
IW006'	Pre-amp to antenna cable	Insulated Wire	2800-NPS	IW006	11/25/2020	11/25/2021
PRE12'	Pre-amp, 1-18GHz	Com-Power	PAM-118A	18040117	12/07/2020	12/07/2021
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	08/03/2020	08/03/2021
145-414'	3m Track A cables	Huber + Suhner	3m Track A cables	multiple	06/25/2020	06/25/2021
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	09/23/2020	09/23/2021
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	10/08/2020	10/08/2021
EMC04'	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	01/28/2021	01/28/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable – SET2	Sucoflex (Huber Suhn	SF102	252675001	02/10/2021	02/10/2022
PRE9'	PREAMPLFIER 1- 40 GHz	MITEQ	NSP4000-NFG	1260417	09/22/2020	09/22/2021
CBLHF2012-5M-2	5m 9kHz-40GHz Coaxial Cable – SET2	Sucoflex (Huber Suhn	SF102	252676002	02/10/2021	02/10/2022

### **Software Utilized:**

Name	Manufacturer	Version
BAT-EMC	Nexio	3.18.0.16

#### 9.3 Results:

The sample tested was found to Comply. Where a resolution bandwidth of less than 1 MHz was used (in some cases, 120 kHz or 100 kHz), more than 10 dB margin to the limit is shown. Since the two antenna ports transmit uncorrelated data streams and use cross polarized antennas, no adjustments to the test results were applied due to MIMO operation, per KDB 662911.

§27.53(h): 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.

Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

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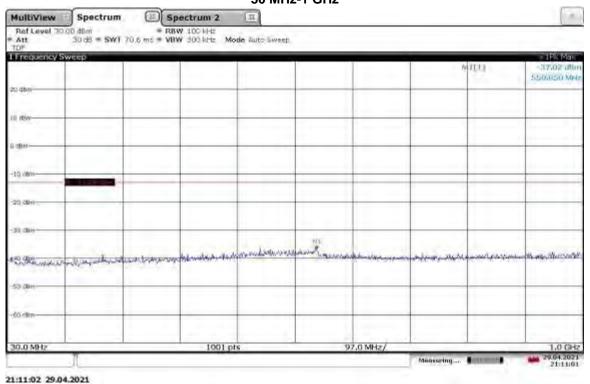
**Setup Photographs:** 9.4

Confidential

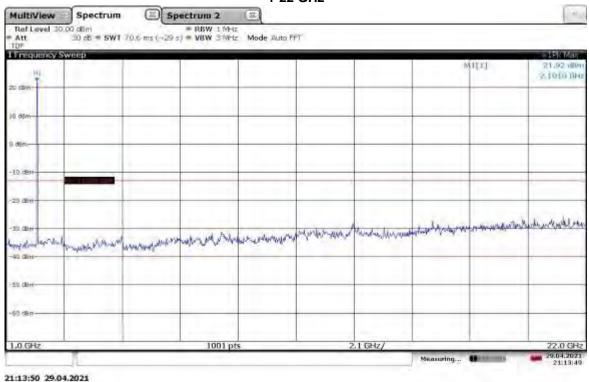
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#### Plots/Data: 9.5

Slot 1 (Band 66), ANTO, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel 30 MHz-1 GHz

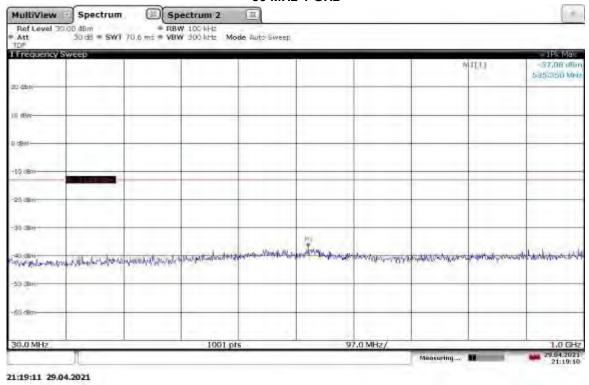


Slot 1 (Band 66), ANTO, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel 1-22 GHz

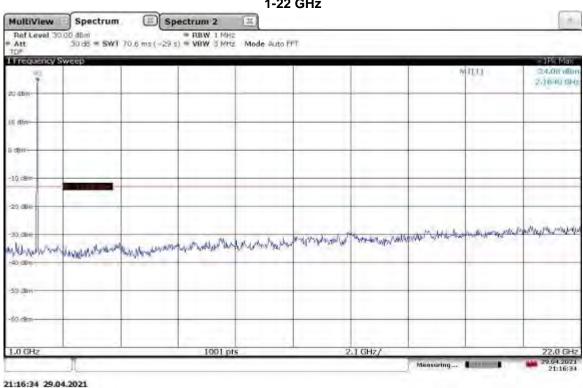


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Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel 30 MHz-1 GHz

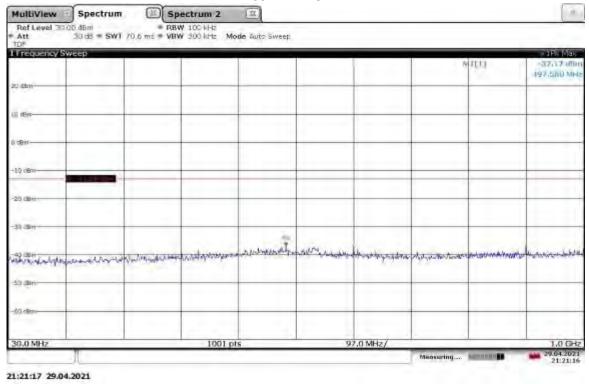


Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel 1-22 GHz

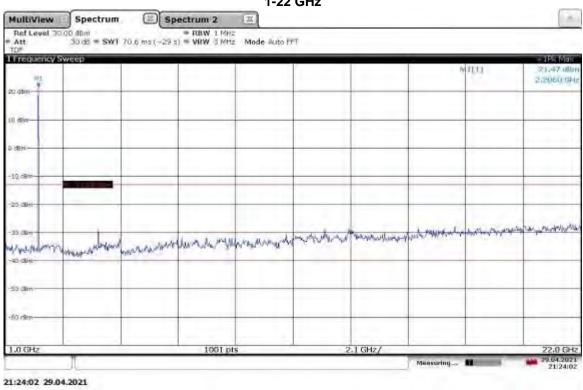


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Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel 30 MHz-1 GHz

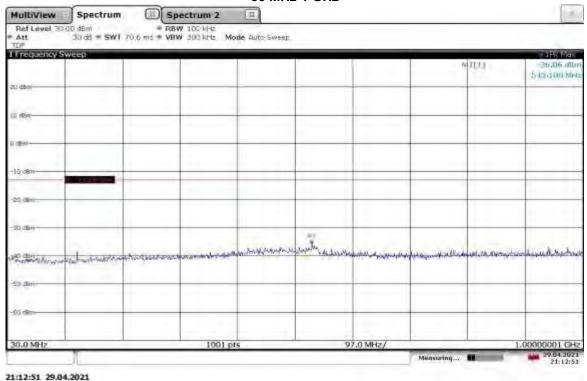


Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel 1-22 GHz

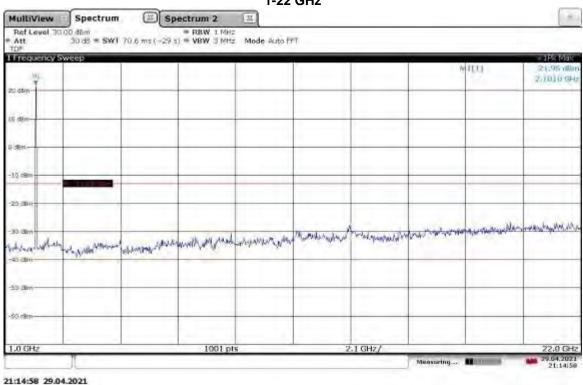


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Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel 30 MHz-1 GHz

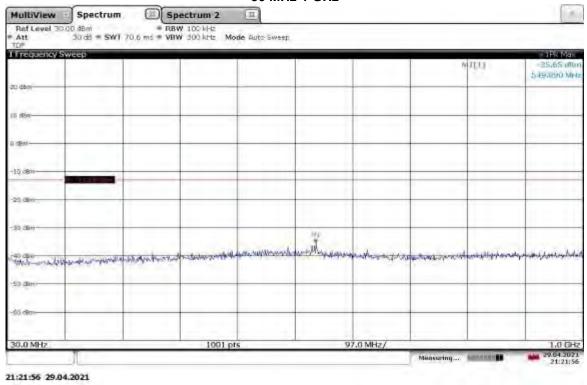


Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel 1-22 GHz

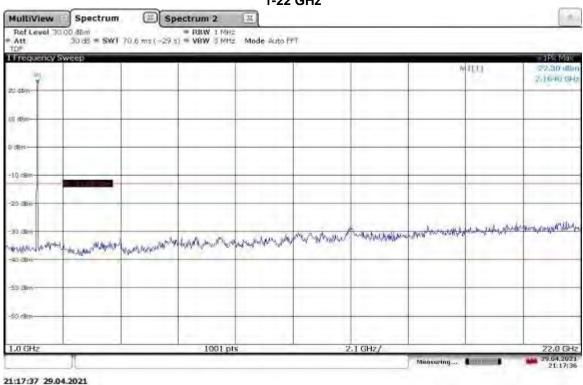


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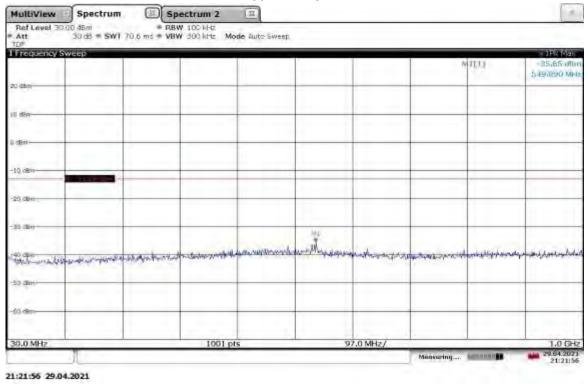
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel 30 MHz-1 GHz



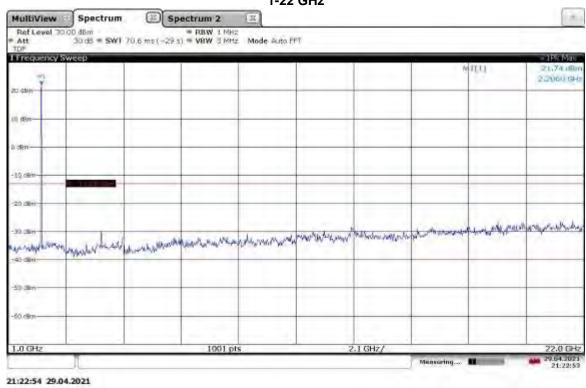
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel 1-22 GHz



Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel 30 MHz-1 GHz



Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel 1-22 GHz



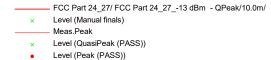
Radiated Emissions, 30-1000 MHz

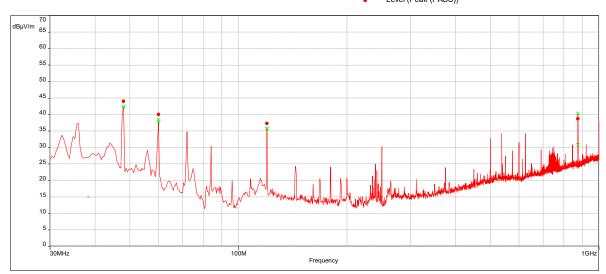
# Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ Low Channel

## **Test Information:**

Date and Time	4/30/2021 8:30:29 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 30-1000MHz_POE_Band 66_5MHz BW_TM3.2(worst-case)_Tx Low CH
	2112.5MHz

#### Graph:





### Results:

Peak (PASS) (4)

Peak (PASS) (	(4)								
Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
48	44.02	-40.38	-13.00	-27.38	300.00	1.00	Vertical	120000.00	-24.72
60	40.03	-44.37	-13.00	-31.37	11.00	1.80	Vertical	120000.00	-25.86
120	37.28	-47.12	-13.00	-34.12	0.00	1.96	Vertical	120000.00	-18.93
874.9894737	38.67	-45.73	-13.00	-32.73	18.00	1.58	Horizontal	120000.00	-7.44

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4.

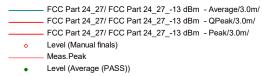
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# Radiated Emissions, 1-22 GHz Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ Low Channel

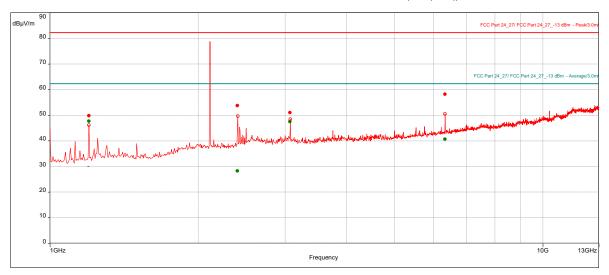
## **Test Information:**

Date and Time	4/27/2021 10:40:44 PM
Client and Project Number	CommScope_G104601893
Engineer	Vathana Ven
Temperature	25 deg C
Humidity	18%
Atmospheric Pressure	1002 mB
Comments	RE 1 to 13GHz_POE_BAND 66_5MHz_TM3.2 (worst-case)_Tx mode_Low CH
	2112.5MHz

#### Graph:



- Level (Peak (PASS))



## Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
1200	49.82	-34.58	-13.00	-21.58	10.00	3.40	Vertical	1000000.00	-8.41
2401.578947	53.69	-30.71	-13.00	-17.71	142.00	2.50	Vertical	1000000.00	-3.62
3072.105263	51.03	-33.37	-13.00	-20.37	9.00	1.25	Vertical	1000000.00	-1.38
6336.315789	58.17	-26.23	-13.00	-13.23	230.00	1.20	Vertical	1000000.00	4.18

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

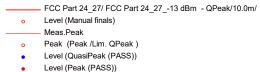
Big pick was a fundamental frequency. Scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

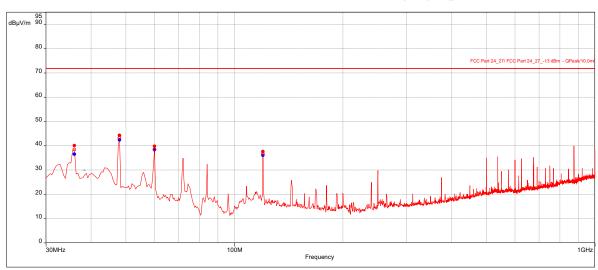
Non-Specific Radio Report Shell Rev. December 2017 Page 135 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

## Radiated Emissions, 30-1000 MHz Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ Mid Channel **Test Information**:

Date and Time	4/30/2021 6:45:35 PM						
Client and Project Number	Commscope_G104601893						
Engineer	Vathana Ven						
Temperature	24 deg C						
Humidity	32%						
Atmospheric Pressure	984 mbar						
Comments	RE 30-1000MHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx Mid CH 1960MHz						

### Graph:





### Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
35.96842105	39.97	-44.43	-13.00	-31.43	11.00	1.00	Vertical	120000.00	-16.53
48	44.24	-40.16	-13.00	-27.16	290.00	1.00	Vertical	120000.00	-24.72
60	39.74	-44.66	-13.00	-31.66	25.00	1.96	Vertical	120000.00	-25.86
120	37.58	-46.82	-13.00	-33.82	1.00	1.37	Vertical	120000.00	-18.93

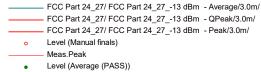
Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4.

Non-Specific Radio Report Shell Rev. December 2017 Page 136 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

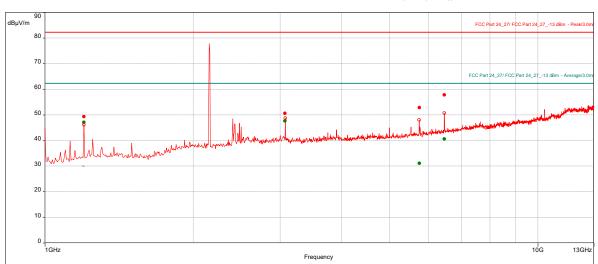
# Radiated Emissions, 1-22 GHz Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ Mid Channel Test Information:

Date and Time	4/27/2021 10:16:50 PM
Client and Project Number	CommScope_G104601893
Engineer	Vathana Ven
Temperature	25 deg C
Humidity	18%
Atmospheric Pressure	1002 mB
Comments	RE 1 to 13GHz_POE_BAND 66_5MHz_TM3.2 (worst-case)_Tx mode_Mid CH
	2155MHz

### Graph:







## Results:

# Peak (PASS) (4)

1 cak (1 A00) (	<u> </u>								
Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
1200	49.29	-35.11	-22.11	-32.97	10.00	1.60	Vertical	1000000.00	-8.41
3072.105263	50.60	-33.80	-20.80	-31.66	9.00	1.30	Vertical	1000000.00	-1.38
5748.947368	52.81	-31.59	-18.59	-29.45	231.00	3.10	Vertical	1000000.00	2.74
6465.526316	57.75	-26.65	-13.65	-24.51	188.00	1.00	Vertical	1000000.00	4.33

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

Big pick was a fundamental frequency. Scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

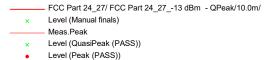
Non-Specific Radio Report Shell Rev. December 2017 Page 137 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

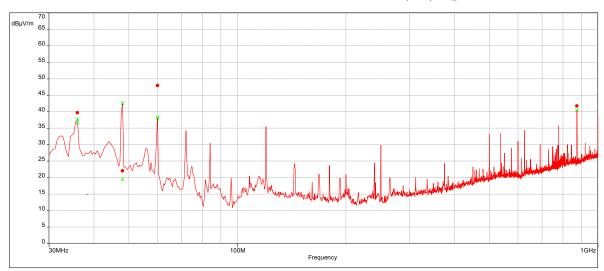
# Radiated Emissions, 30-1000 MHz Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ High Channel

## **Test Information:**

Date and Time	4/30/2021 8:51:34 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 30-1000MHz_POE_Band 66_5MHz BW_TM3.2(worst-case)_Tx High CH
	2197.5MHz

## Graph:





## Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
36	39.69	-44.71	-13.00	-32.11	62.00	1.00	Vertical	120000.00	-16.56
48	22.03	-62.37	-13.00	-49.77	106.00	3.67	Horizontal	120000.00	-24.72
60	47.89	-36.51	-13.00	-23.91	76.00	1.66	Vertical	120000.00	-25.86
874.9894737	41.72	-42.68	-13.00	-30.08	135.00	1.00	Horizontal	120000.00	-7.44

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4.

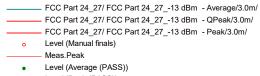
Non-Specific Radio Report Shell Rev. December 2017 Page 138 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

# Radiated Emissions, 1-22 GHz Slot 1 (Band 66), Modulation: TM1.1-QPSK, Bandwidth 5 MHz, Transmit @ High Channel

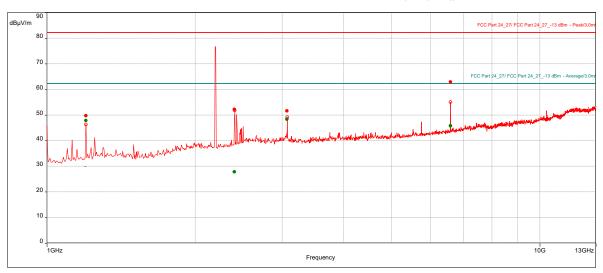
## **Test Information:**

Date and Time	4/27/2021 9:25:01 PM
Client and Project Number	CommScope_G104601893
Engineer	Vathana Ven
Temperature	25 deg C
Humidity	18%
Atmospheric Pressure	1002 mB
Comments	RE 1 to 13GHz_POE_BAND 66_5MHz_TM3.2 (worst-case)_Tx mode_High CH
	2197.5MHz

## Graph:







## Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
1200	49.69	-34.71	-13.00	-21.71	18.00	2.20	Vertical	1000000.00	-8.41
2401.842105	52.23	-32.17	-13.00	-19.17	180.00	1.75	Vertical	1000000.00	-3.61
3072.105263	51.60	-32.80	-13.00	-19.80	11.00	1.00	Vertical	1000000.00	-1.38
6591.315789	62.91	-21.49	-13.00	-8.49	335.00	2.60	Vertical	1000000.00	4.44

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

Big pick was a fundamental frequency. Scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

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Intertek

Report Number: 104601893BOX-001 Issued: 05/12/2021 Revised: 05/24/2021

Test Personnel: Test Date: 04/27/2021, 04/30/2021 Supervising/Reviewing Engineer: Kouma Sinn (Where Applicable) Product Standard: FCC Part 27 Limit Applied: See report section 9.3 Input Voltage: 48 VDC (POE) Pretest Verification w/ Ambient Temperature: 25, 24 °C Ambient Signals or BB Source: N/A Relative Humidity: 18, 32 % Atmospheric Pressure: \_\_1002, 982 mbars

Deviations, Additions, or Exclusions: None

Non-Specific Radio Report Shell Rev. December 2017 Page 140 of 141 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 in new host model RP5200

# Intertek

Report Number: 104601893BOX-001 Issued: 05/12/2021 Revised: 05/24/2021

# 10 Revision History

Revision	Date	Report Number	Prepared	Reviewed	Notes
Level			Ву	Ву	
0	05/12/2021	104601893BOX-001	VFV	KPS 45	Original Issue
1	05/24/2021	104601893BOX-001	VFV <sup>V</sup> 5 <sup>IV</sup>	KPS 45	Administrative correction and removed test setup photos

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