

# CommScope Technologies, LLC TEST REPORT

#### SCOPE OF WORK

Emissions testing of model RPM-A5A11-B14 (Band 14 with 5G nR and 5100 Host (Lo-PIM) and Band 14 with 5G nR and 5100 Host (Hi-PIM)) for Class II Permissive Change

#### **REPORT NUMBER**

105250625BOX-001.2

#### ISSUE DATE November 30, 2022

[REVISED DATE] January 11, 2023



#### DOCUMENT CONTROL NUMBER

Generic EMC Report Shell Rev. October 2022 © 2022 INTERTEK



## EMISSIONS TEST REPORT

(FULL COMPLIANCE) – CLASS II PERMISSIVE CHANGE

Report Number: 105250625BOX-001.2 Project Number: G105250625

Report Issue Date: November 30, 2022 Report Revision Date: January 11, 2023

Model(s) Tested: RPM-A5A11-B14 (Band 14 with 5G nR and 5100 Host (Lo-PIM) and Band 14 with 5G nR and 5100 Host (Hi-PIM))

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

Standards: CFR47 FCC Part 90: 11/2022)

Tested by: Intertek 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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#### 1 Introduction and Conclusion

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	Output Power (ERP) CFR47 FCC Part 90.542 (a)(3): 11/2022	Pass
7	Occupied and 26 dB Bandwidths CFR47 FCC Part 90.543 (d): 11/2022, CFR47 FCC Part 2.1049: 11/2022	Pass
8	Band Edges and Emission Mask CFR47 FCC Part 90.543 (e)(1) and (e)(3): 11/2022 CFR47 FCC Part 2.1051: 11/2022, CFR47 FCC Part 2.1057: 2022	Pass
9	Antenna Port Conducted and Radiated Emissions CFR47 FCC Part 90.543 (e)(1) and (e)(3): 11/2022	Pass
10	Revision History	

Notes: This is a class II permissive. Only selected tests as listed above were performed.

Radio modules for RP5100 host platform which cover band 14. Both old and new versions of the hardware were tested; referenced as Hi-PIM and Lo-PIM. Testing was conducted to add 5G nR waveforms to the filing, there were no changes to the hardware in this permissive change.

#### 3 Client Information

This EUT was tested at the request of:

Client:	CommScope Technologies, LLC 900 Chelmsford St. Lowell, MA 01851 USA
Contact:	Zac Johnson
Telephone:	(978) 250-2678
Fax:	None
Email:	zac.johnson@commscope.com

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

Manufacturer:	CommScope Telecommunications (China) Ltd.
	68 Su Hong Xi Lu, Suzhou Industrial Park.
	Suzhou, Jiangsu, 215021, China

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Band 14 with 5G nR	CommScope	RPM-A5A11-B14	2131810253
and 5100 Host (Lo-PIM)	Technologies, LLC		
Band 14 with 5G nR	CommScope	RPM-A5A11-B14	21128470062
and 5100 Host (Hi-PIM)	Technologies, LLC		

Receive Date:	11/03/2022
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client) Radio modules for RP5100 host platform which cover band 14. Both old and new versions of the hardware were tested; referenced as Hi-PIM and Lo-PIM. Testing was conducted to add 5G nR waveforms to the filing, there were no changes to the hardware in this permissive change.

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 at 5 MHz and 10 MHz Bandwidths

#### Software used by the EUT:

No.	Descriptions of EUT Exercising
1	RP5100_B14

Radio/Receiver Characteristics				
Frequency Band(s)	758 – 768 MHz			
Modulation Type(s)	TM1.1-QPSK, TM3.2-16QAM, TM3.1-64 QAM, TM3.1a- 256QAM			
Maximum Output Power (ERP)	23.16 dBm (Lo-PIM), 22.62 dBm (Hi-PIM)			
Test Channels	Low, Middle, High Channels of 5 MHz and 10 MHz Bandwidths, Single Channel operation only			
Occupied Bandwidth	9.299 MHz (Lo-PIM), 9.297 MHz (Hi-PIM)			
MIMO Information (# of Transmit and	t and 2x2 MIMO using cross polarized antennas and uncorrelated			
Receive antenna ports) 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 and are not eligible for certification; 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

#### 5 System Setup and Method

	Cables					
ID	ID Description		Shielding	Ferrites	Termination	
		(m)				
	LAN (POE Power Cable)	2.17	None	None	POE P/S	
	LAN (Communication)	9.00	None	None	Laptop	

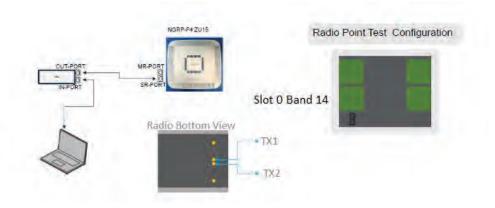
Notes: Longer cables were used to accommodate emission testing in the 10m Chamber.

Support Equipment			
Description Manufacturer		Model Number	Serial Number
POE Power Supply	Sifos Technologies	PDA-604A	604A0107
Laptop	Dell	Latitude 3520	None

#### 5.1 Method:

Configuration as required by ANSI C63.26-2015, KDB 662911, and CFR47 FCC Part 90: 11/2022.

#### 5.2 EUT Block Diagram:



#### 6 Output Power

#### 6.1 Method

Tests are performed in accordance with CFR47 FCC Parts 2.1046 and 90, KDB662911, 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
DAV005'	Weather Station	Davis	6250	MS191218083	02/11/2022	02/11/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/26/2022	01/26/2023
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/10/2022	02/10/2023
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/26/2022	01/26/2023
None	Mini SMA cable	Provided by CommScope	None	None	VBU	Verified

#### Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

#### 6.3 Results:

The sample tested was found to Comply.

#### Limits:

CFR47 FCC Part 90.542 (a)(3) – Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section.

Notes: ERP = EIRP - 2.15 dB. ERP = {Conducted Power (dBm) + Antenna Gain (dBi)} - 2.15 dB

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	21.27	24.11	23.12	25.96	60	-36.88
		ANT1	20.93	24.11	22.78	25.90	60	-37.22
Mid	763.00	ANT0	21.01	23.90	22.86	25.75	60	-37.14
		ANT1	20.77	23.90	22.62	25.75	60	-37.38
High	765.50	ANT0	20.79	23.64	22.64	25.49	60	-37.36
		ANT1	20.46	23.04	22.31	20.49	60	-37.69

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	21.29	24.12	23.14	25.97	60	-36.86
		ANT1	20.92	24.12	22.77	25.97	60	-37.23
Mid	763.00	ANT0	21.05	23.94	22.90	25.79	60	-37.10
		ANT1	20.80	23.94	22.65	25.79	60	-37.35
High	765.50	ANT0	20.84	23.68	22.69	25.53	60	-37.31
		ANT1	20.50	23.00	22.35	25.55	60	-37.65

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.52	23.48	22.37	- 25.33	60	-37.63
		ANT1	20.42	23.40	22.27		60	-37.73
Mid	763.00	ANT0	20.79	23.8	22.64	25.65	60	-37.36
		ANT1	20.78	23.0	22.63	25.65	60	-37.37
High	765.50	ANT0	20.57	23.54	22.42	42 25.39	60	-37.58
		ANT1	20.49	23.34	22.34	20.09	60	-37.66

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	21.31	24.14	23.16	25.99	60	-36.84
		ANT1	20.94	24.14	22.79	25.99	60	-37.21
Mid	763.00	ANT0	21.05	23.94	22.90	25.80	60	-37.10
		ANT1	20.81	23.94	22.66	25.60	60	-37.34
High	765.50	ANT0	20.83	23.68	22.68	25.53	60	-37.32
		ANT1	20.50	23.00	22.35	20.00	60	-37.65

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	21.02	22.06	22.87	05.74	60	-37.13
-		ANT1	20.68	23.86	22.53	25.71	60	-37.47

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency	Antenna	Conducted	Combined	ERP	Combined	ERP	ERP		
	(MHz)	Port	Output	Conducted	(dBm)	ERP	Limit	Margin		
			Power	Output		(dBm	(dBm)	(dB)		
			(dBm)	Power						
			, í	(dBm)						
High	763.00	ANT0	21.07	22.0	22.92	25.75	60	-37.08		
_		ANT1	20.70	23.9	22.55	25.75	60	-37.45		

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	21.03	(dBm)	22.88	05 70	60	-37.12
		ANT1	20.71	23.88	22.56	25.73	60	-37.44

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	20.71	23.88	22.56	25.73	60	-37.44
		ANT1	21.03	23.00	22.88	20.75	60	-37.12

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.48	22 51	22.33	25.26	60	-37.67
		ANT1	20.51	23.51	22.36	25.36	60	-37.64
Mid	763.00	ANT0	20.52	23.58	22.37	25.43	60	-37.63
		ANT1	20.62	23.30	22.47	20.43	60	-37.53
High	765.50	ANT0	20.59	23.68	22.44	25.53	60	-37.56
		ANT1	20.75	23.00	22.60	20.03	60	-37.4

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.51	23.53	22.36	25.91	60	-37.64
		ANT1	20.53	23.03	22.38	25.91	60	-37.62
Mid	763.00	ANT0	20.54	23.59	22.39	25.44	60	-37.61
		ANT1	20.62	23.39	22.47	20.44	60	-37.53
High	765.50	ANT0	20.61	23.70	22.46	25.55	60	-37.54
		ANT1	20.77	23.70	22.62	25.55	60	-37.38

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	ERP (dBm)	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.49	22.34	60	-37.66
		ANT1	20.53	22.38	60	-37.62
Mid	763.00	ANT0	20.53	22.38	60	-37.62
		ANT1	20.63	22.48	60	-37.52
High	765.5	ANT0	20.59	22.44	60	-37.56
		ANT1	20.73	22.58	60	-37.42

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.49	00 E0	22.34	05.07	60	-37.66
		ANT1	20.53	23.52	22.38	25.37	60	-37.62
Mid	763.00	ANT0	20.53	22 50	22.38	0E 44	60	-37.62
		ANT1	20.63	23.59	22.48	25.44	60	-37.52
High	765.50	ANT0	20.59	23.67	22.44	25.52	60	-37.56
		ANT1	20.73	23.07	22.58	20.02	60	-37.42

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	ERP (dBm)	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.47	22.32	60	-37.68
		ANT1	20.50	22.35	60	-37.65
Mid	763.00	ANT0	20.53	22.38	60	-37.62
		ANT1	20.62	22.47	60	-37.53
High	765.5	ANT0	20.58	22.43	60	-37.57
		ANT1	20.73	22.58	60	-37.42

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
Low	760.50	ANT0	20.47	23.5	22.32	25.35	60	-37.68
		ANT1	20.50	23.5	22.35	20.00	60	-37.65
Mid	763.00	ANT0	20.53	23.56	22.38	25.44	60	-37.62
		ANT1	20.62	23.30	22.47	23.44	60	-37.53
High	765.50	ANT0	20.58	23.67	22.43	25.52	60	-37.57
		ANT1	20.73	23.07	22.58	20.02	60	-37.42

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	20.35	23.2	22.20	25.42	60	-37.80
_		ANT1	20.16	23.2	22.01	25.12	60	-37.99

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	20.54	22.50	22.39	0E 14	60	-37.61
_		ANT1	20.62	23.59	22.47	25.44	60	-37.53

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM (5G nR)

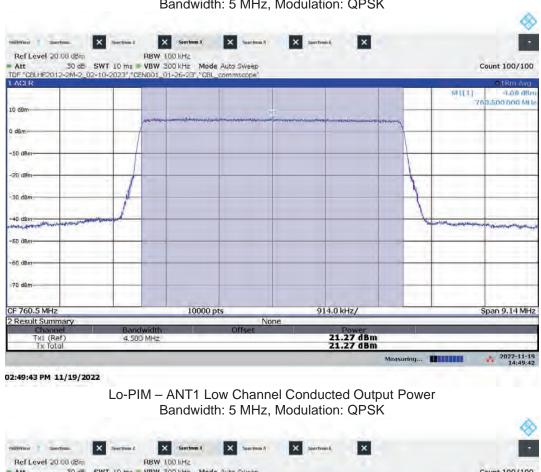
Channel	Frequency	Antenna	Conducted	Combined	ERP	Combined	ERP	ERP
	(MHz)	Port	Output	Conducted	(dBm)	ERP	Limit	Margin
			Power	Output		(dBm	(dBm)	(dB)
			(dBm)	Power				
				(dBm)				
High	763.00	ANT0	20.49	22 54	22.34	25.20	60	-37.66
_		ANT1	20.56	23.54	22.41	25.39	60	-37.59

Channel	Frequency (MHz)	Antenna Port	Conducted Output Power (dBm)	Combined Conducted Output Power (dBm)	ERP (dBm)	Combined ERP (dBm	ERP Limit (dBm)	ERP Margin (dB)
High	763.00	ANT0	20.49	23.54	22.34	25.39	60	-37.66
		ANT1	20.57	23.34	22.42	20.39	60	-37.58

### 6.4 **Setup Photographs**:

Confidential - Photos not included in this report

#### 6.5 Plots/Data:



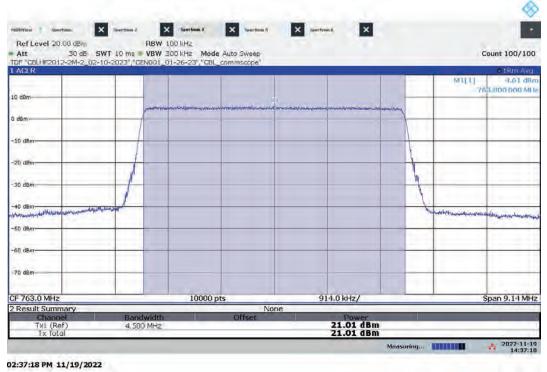
Lo-PIM – ANTO Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK

 Att 30 dB SWT 10 ms ■ VBW 300 kHz Mode Auto Sweep
 TDF "CBLHE2012-2M-2\_02-10-2023","CEN001\_01-26-23","CBL\_commscope" Count 100/100 1 ACLR MILII 4.77 dBn 760.500 000 MI I 10 d8 0 dBr -10 dBr -20 dBr 30 dBr 40 dBm A distanting the second 50 dBn -60 dBm 70 d8m-CF 760.5 MHz 10000 pts 914.0 kHz/ Span 9.14 MHz 2 Result Summary None Bandwidth 20.93 dBm 20.93 dBm 4,500 MHz Tx1 (Ref Tx Total 2022-11-19 14:57:49 Measuring...

02:57:49 PM 11/19/2022

#### Lo-PIM – ANTO Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK

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Lo-PIM – ANT1 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK



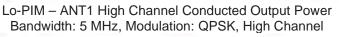
02:43:15 PM 11/19/2022

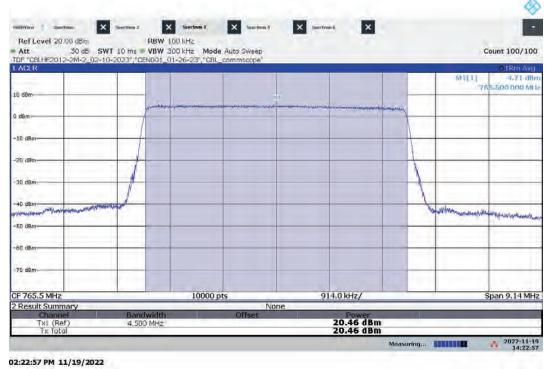
#### Lo-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK

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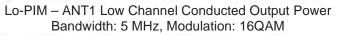


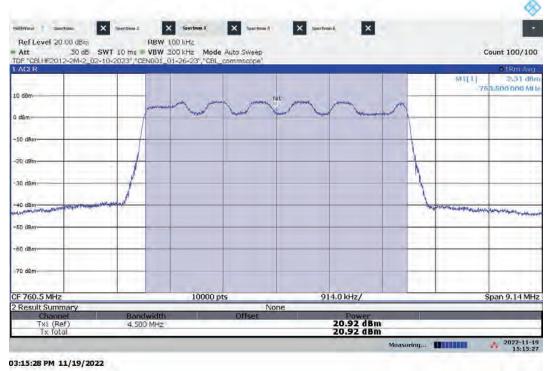
#### Lo-PIM – ANT0 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM

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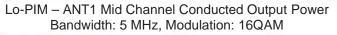


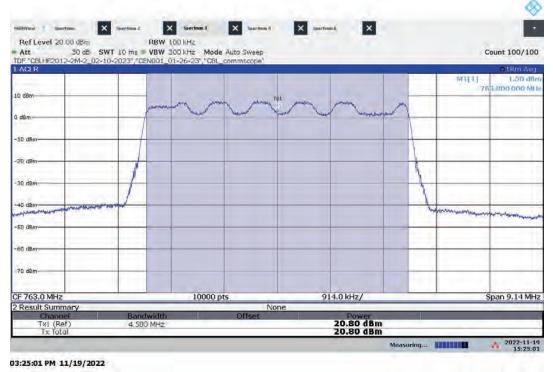
#### Lo-PIM – ANTO Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM

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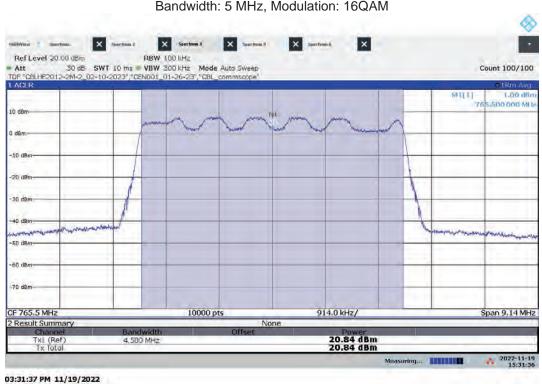


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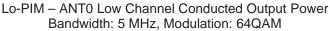
Intertek

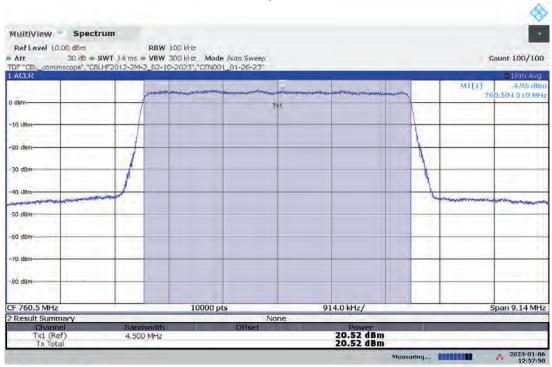


Lo-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM

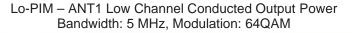
Lo-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM

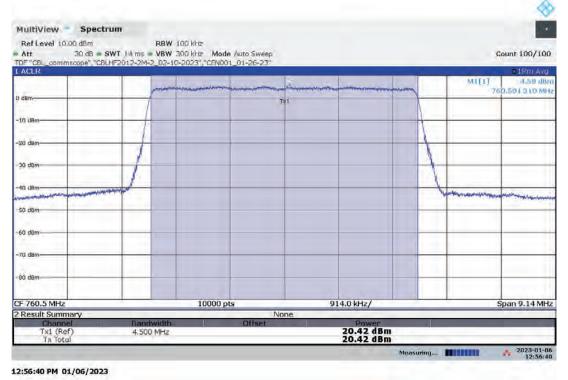


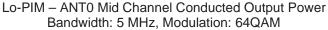


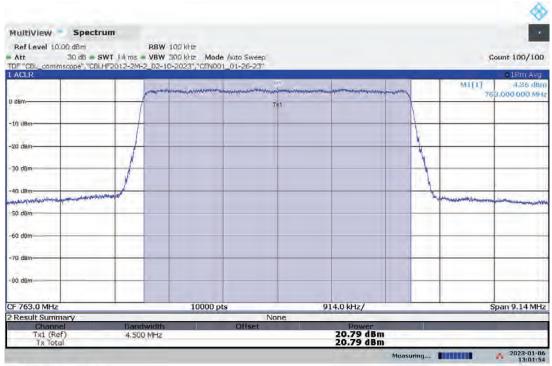


12:57:51 PM 01/06/2023



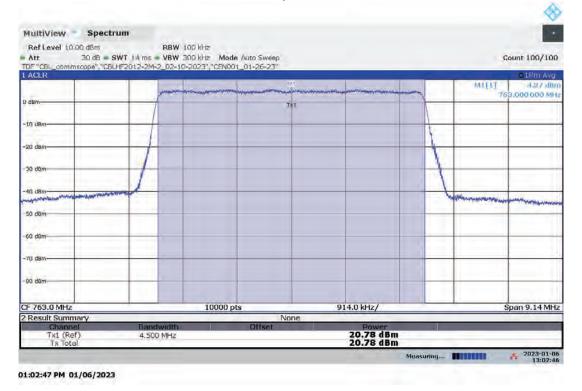


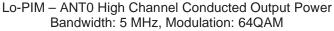


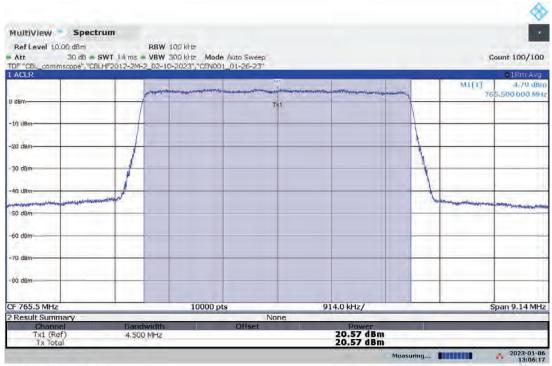


01:01:55 PM 01/06/2023



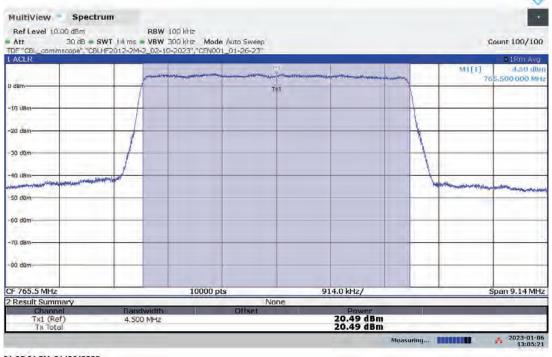






01:06:17 PM 01/06/2023





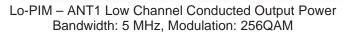
01:05:21 PM 01/06/2023

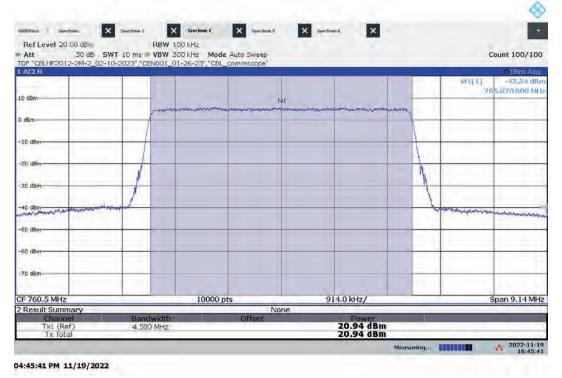
#### Lo-PIM – ANT0 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

Intertek



04:41:36 PM 11/19/2022



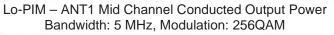


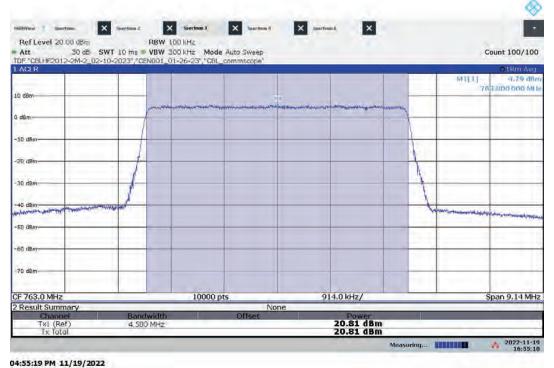
#### Lo-PIM – ANTO Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

Intertek



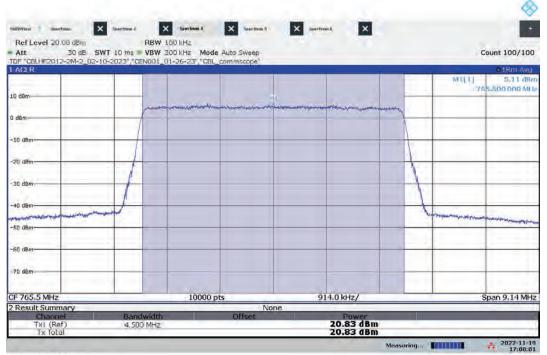
04:52:37 PM 11/19/2022



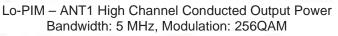


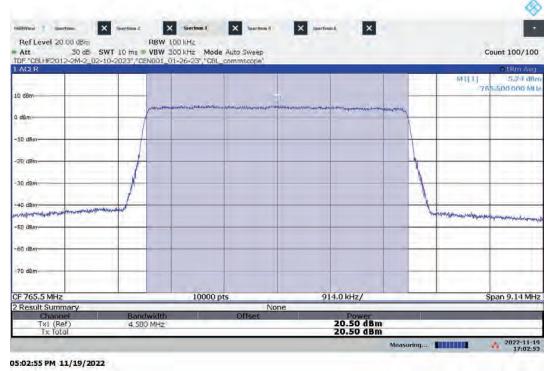
#### Lo-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

Intertek



05:00:02 PM 11/19/2022

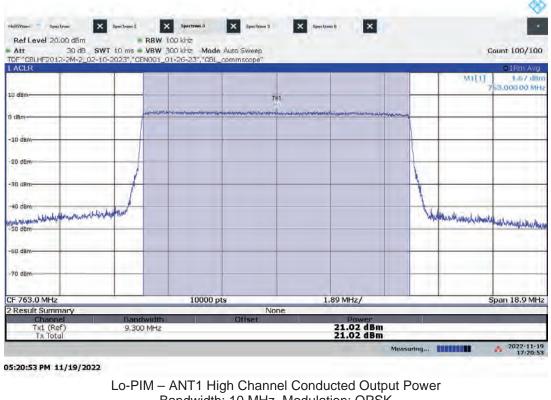




0

#### Lo-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: QPSK

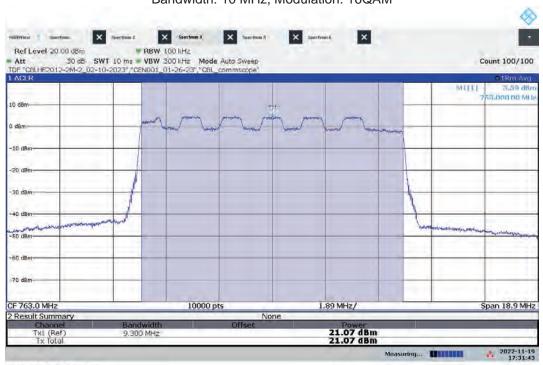
Intertek

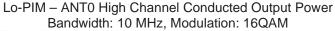


## Bandwidth: 10 MHz, Modulation: QPSK

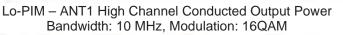
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40 dBm	mental			1	(a)
30 dBm				1	
20 dBm	++++				
10 dBm-					
dBm	-	man and the product of the second of the second	animpto Printer agree attractioned ben from	Marine.	
dêm		Tet			753,000,004

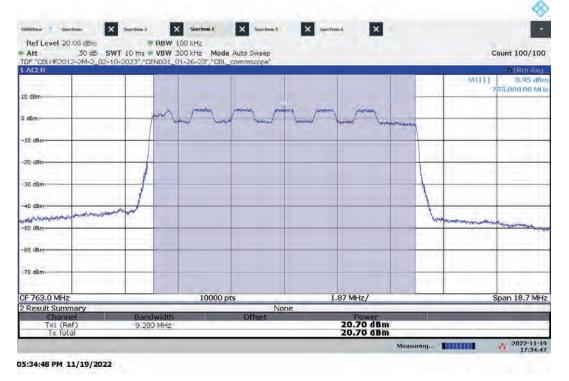
Notes: Low and mid channels are the same frequency as high channel.





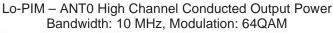
05:31:43 PM 11/19/2022





Notes: Low and mid channels are the same frequency as high channel.

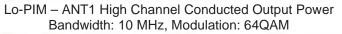
Intertek

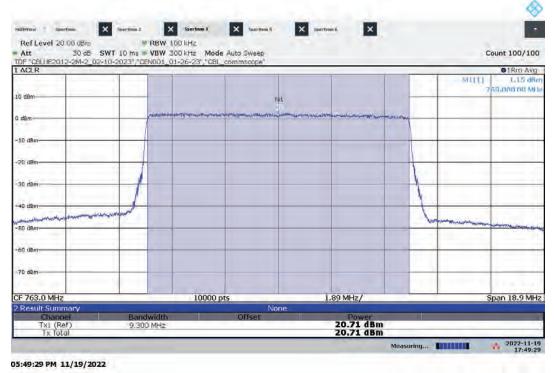


Intertek



05:46:11 PM 11/19/2022





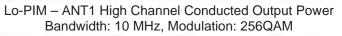
Notes: Low and mid channels are the same frequency as high channel.

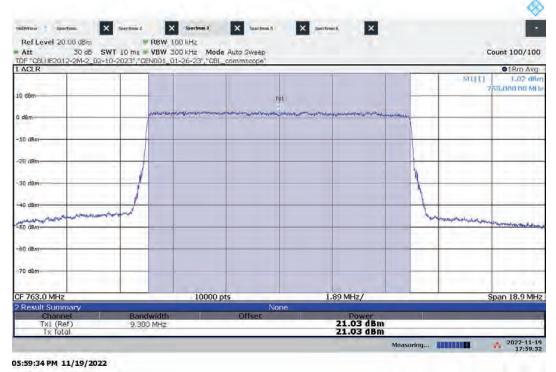
#### Lo-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 256QAM

Intertek



05:55:49 PM 11/19/2022





Notes: Low and mid channels are the same frequency as high channel.

#### Hi-PIM – ANT0 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK



07:05:18 PM 11/19/2022

#### Hi-PIM – ANT1 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK

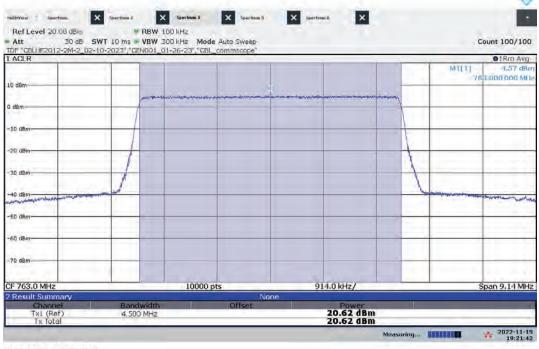


#### Hi-PIM – ANT0 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK



<sup>07:19:12</sup> PM 11/19/2022

#### Hi-PIM – ANT1 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK



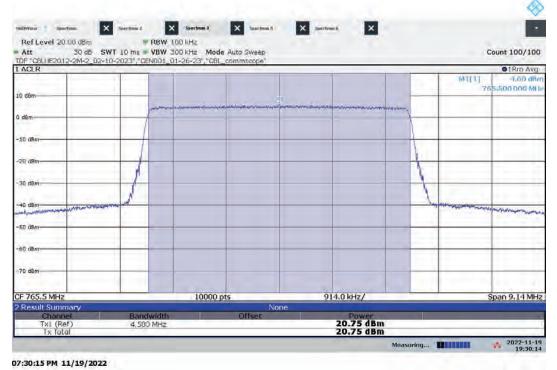
07:21:42 PM 11/19/2022

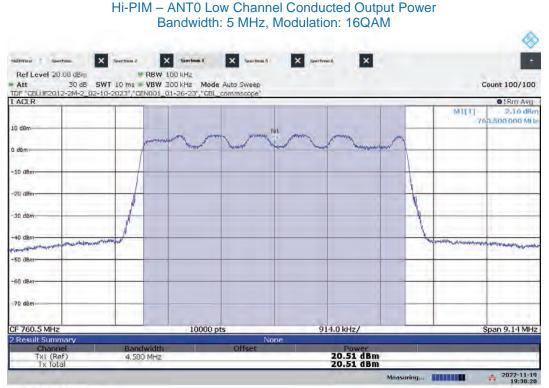
#### Hi-PIM – ANTO High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: QPSK



07:27:36 PM 11/19/2022

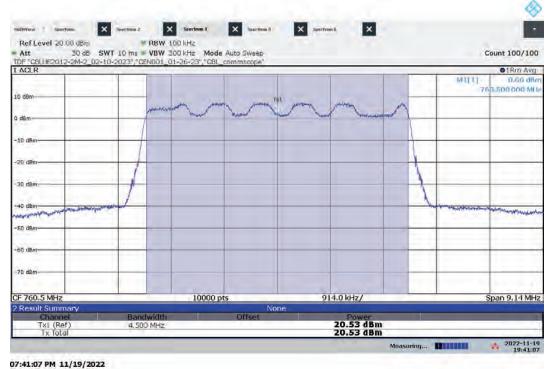






07:38:28 PM 11/19/2022

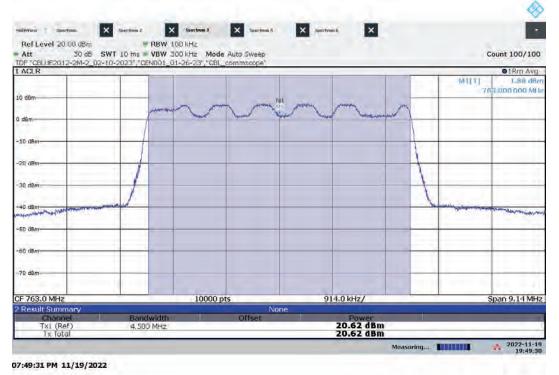




#### Hi-PIM – ANTO Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM ∞ × Spectrum 8 × Spartnum 5 × Spectrum & × × Spectrum 2 Ref Level 20.00 dBm \* RBW 100 kHz Att 30 dB SWT 10 ms VBW 300 kHz TDF "CBLHE2012-2M-2\_02-10-2023","CEN001\_01-26-23" 30 dB SWT 10 ms . VBW 300 kHz Mode Auto Sweep Count 100/100 "CBL commiscope 1 ACLR O1Rm Avg MILLI 1.39 dBn 763.000 000 MI L 10 dân (inter 0 dBm -10 dBm -20 dE 30 dBm -40 dBm المراد بالبالين 50 dBm -60 dBr 70 dBm-914.0 kHz/ CF 763.0 MHz 10000 pts Span 9.14 MHz Result Summ Bandwidth 4,500 MHz 20.54 dBm 20.54 dBm Tx1 (Ref Tx Total + 2022-11-19 19:47:00 Measuring...

07:47:09 PM 11/19/2022

#### Hi-PIM – ANT1 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 16QAM

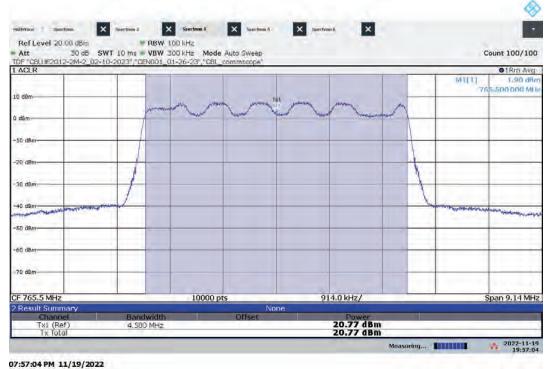




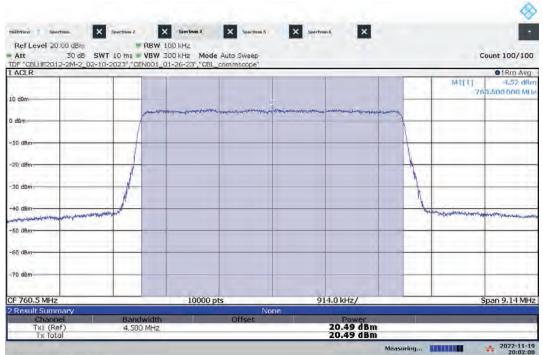


07:54:38 PM 11/19/2022





## Hi-PIM – ANT0 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM



08:02:09 PM 11/19/2022

# Hi-PIM – ANT1 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM

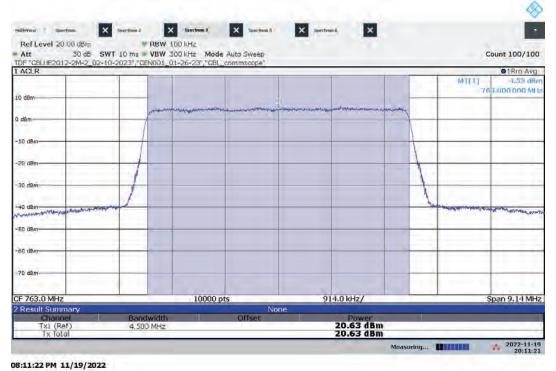


# Hi-PIM – ANT0 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM



08:09:17 PM 11/19/2022

# Hi-PIM – ANT1 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM



## Hi-PIM – ANTO High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM



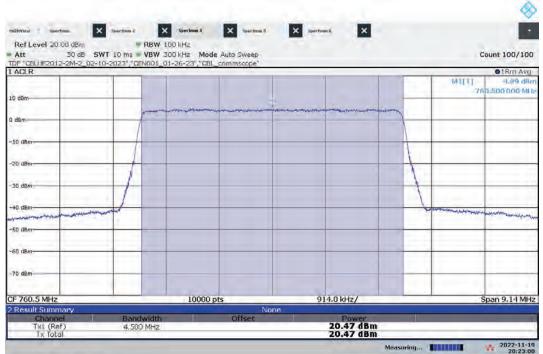
08:15:21 PM 11/19/2022

# Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 64QAM



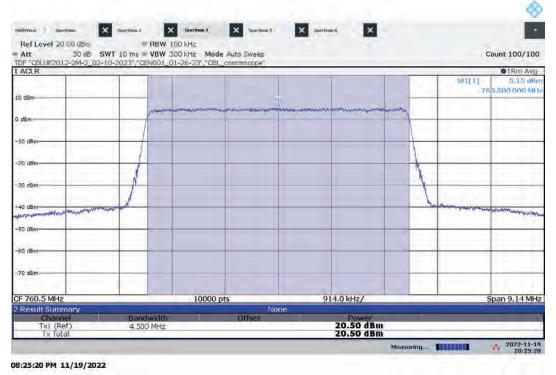
08:17:29 PM 11/19/2022

#### Hi-PIM – ANT0 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM



08:23:00 PM 11/19/2022

# Hi-PIM – ANT1 Low Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

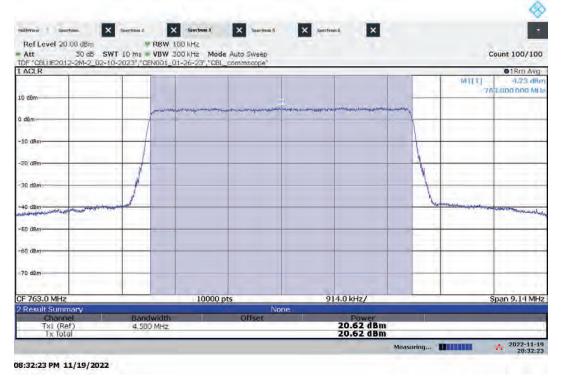


### Hi-PIM – ANT0 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM



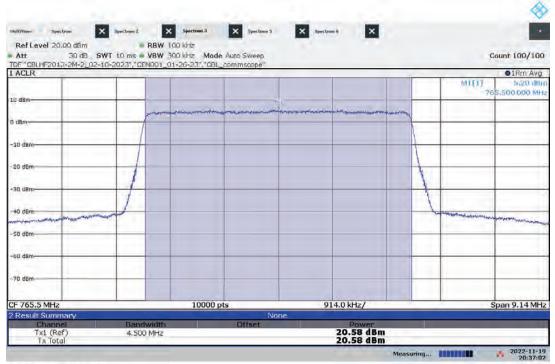
08:29:52 PM 11/19/2022

# Hi-PIM – ANT1 Mid Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM



#### Hi-PIM – ANT0 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

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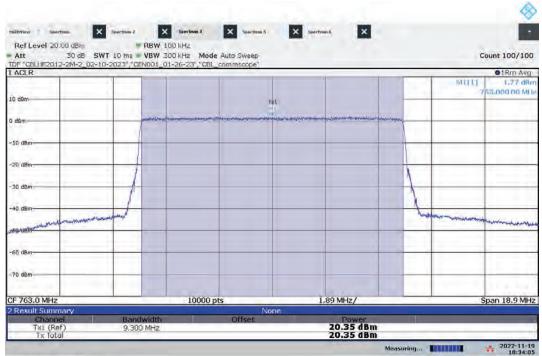


<sup>08:37:02</sup> PM 11/19/2022

#### Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 5 MHz, Modulation: 256QAM

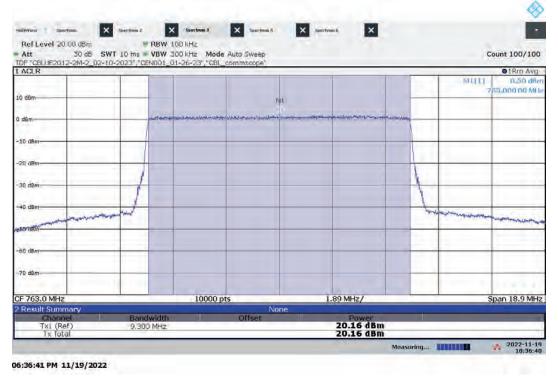


## Hi-PIM – ANTO High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: QPSK



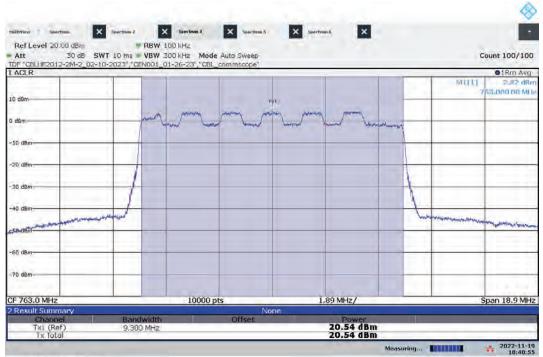
06:34:06 PM 11/19/2022

# Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: QPSK





#### Hi-PIM – ANTO High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 16QAM

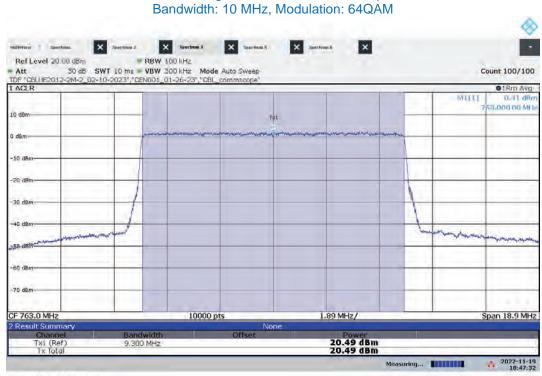


06:40:55 PM 11/19/2022

# Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 16QAM



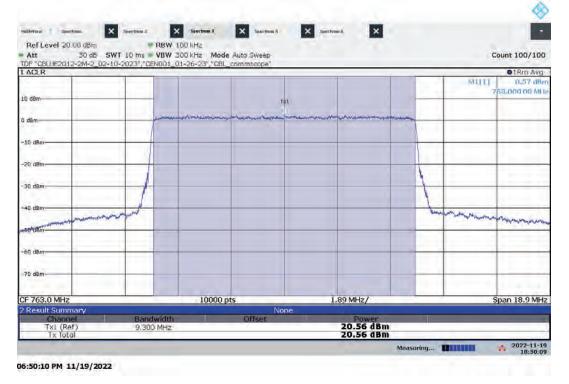
06:43:01 PM 11/19/2022

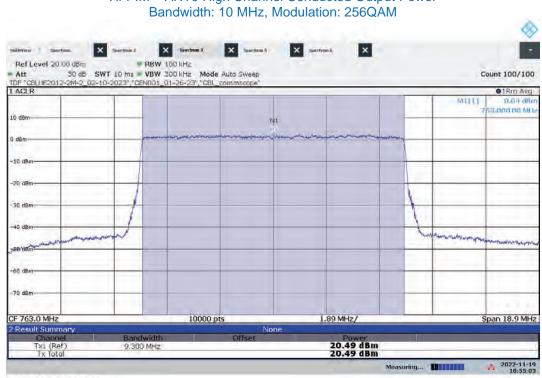


#### Hi-PIM – ANTO High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 64QAM

06:47:32 PM 11/19/2022

## Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 64QAM

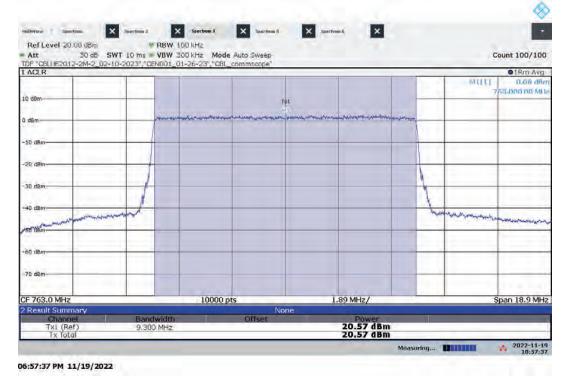




Hi-PIM – ANTO High Channel Conducted Output Power

06:55:04 PM 11/19/2022

## Hi-PIM – ANT1 High Channel Conducted Output Power Bandwidth: 10 MHz, Modulation: 256QAM



	Product Standard: CFR47 FCC Part 90			Limit applied: See Report Section 6.3 Pretest Verification w/BB source: N/A			
Test Date	Test Personnel/ Initials			Mode Ten C <sup>e</sup>		Atmospheric Data Relative Atmospheri Humidity % Pressure mb	
11/19/2022	Kouma Sinn 43	Vathana F. Ven	POE	Transmit	24	14	1009

Deviations, Additions, or Exclusions: None

# 7 Occupied and 26 dB Bandwidths

# 7.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1049 and 90.

# 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.

# 7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV005'	Weather Station	Davis	6250	MS191218083	02/11/2022	02/11/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/26/2022	01/26/2023
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/10/2022	02/10/2023
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/26/2022	01/26/2023
None	Mini SMA cable	Provided by CommScope	None	None	VBU	Verified

#### Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

# 7.3 Results:

The sample tested was found to Comply.

§90.543 (d): *Authorized bandwidth*. Provided that the ACP requirements of this section are met, applicants may request any authorized bandwidth that does not exceed the channel size.

§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.

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.472	4.98
		ANT1	4.468	4.98
Mid	763.00	ANT0	4.474	4.98
		ANT1	4.475	4.99
High	765.50	ANT0	4.465	4.98
		ANT1	4.469	4.98

# Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK (5G nR)

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.516	5.02
		ANT1	4.519	5.02
Mid	763.00	ANT0	4.515	5.04
		ANT1	4.513	5.03
High	765.50	ANT0	4.512	5.01
		ANT1	5.514	5.02

## Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.481	4.99
		ANT1	4.480	4.99
Mid	763.00	ANT0	4.477	4.85
		ANT1	4.473	4.87
High	765.50	ANT0	4.472	4.97
		ANT1	4.474	4.99

## Lo-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.480	4.99
		ANT1	4.473	5.01
Mid	763.00	ANT0	4.480	4.98
		ANT1	4.479	4.97
High	765.50	ANT0	4.470	4.99
		ANT1	4.472	4.99

## Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.299	10.09
		ANT1	9.293	10.11

# Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.222	9.97
		ANT1	9.215	9.97

	Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM (5G nR)						
	Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)		
ſ	High	763.00	ANT0	9.297	10.09		
			ANT1	9.295	10.07		

#### Lo-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency	Antenna Port	Occupied BW	26 dB BW
	(MHz)		(MHz)	(MHz)
High	763.00	ANT0	9.291	10.07
		ANT1	9.278	10.11

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.467	4.99
		ANT1	4.470	4.97
Mid	763.00	ANT0	4.475	4.99
		ANT1	4.478	4.99
High	765.50	ANT0	4.467	4.99
		ANT1	4.472	4.96

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.514	5.03
		ANT1	4.519	5.03
Mid	763.00	ANT0	4.522	5.04
		ANT1	4.515	5.03
High	765.50	ANT0	4.485	5.03
		ANT1	4.511	5.01

#### Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.487	4.93
		ANT1	4.480	4.92
Mid	763.00	ANT0	4.487	4.93
		ANT1	4.487	4.92
High	765.50	ANT0	4.479	4.93
_		ANT1	4.479	4.93

## Hi-PIM, Slot 0 (Band 14), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	760.50	ANT0	4.480	4.96
		ANT1	4.477	4.95
Mid	763.00	ANT0	4.486	4.96
		ANT1	4.473	4.96
High	765.50	ANT0	4.478	4.95
		ANT1	4.477	4.95

Hi-PIM Slot 0	(Band 14), Bandwidth	· 10 MHz N	Adulation · TM	11 1-QPSK (5G nR)
	(Dana 14), Danawiath			

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.295	10.11
		ANT1	9.291	10.11

### Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.235	9.97
_		ANT1	9.231	9.95

## Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.297	10.07
		ANT1	9.300	10.09

# Hi-PIM, Slot 0 (Band 14), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM (5G nR)

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
High	763.00	ANT0	9.290	10.11
		ANT1	9.294	10.09

# 7.4 **Setup Photographs:**

Confidential – Photos not included in this report

# 7.5 Plots/Data:

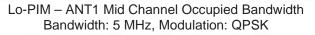
Lo-PIM – ANTO Low Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: QPSK

W See	00 d8m 30 d8 SWT 2-2N-2 02-10- mdwidth	Spermus 2         X           1.41.82 µs (>6.9 m         2023","CENDO1_0		20 KHz Mode Au commscope"	Suschum A			1 12.50 756.500.00
Level 20 C6LH=201 supied ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 16	30 kHz 30 kHz Mode Au commscope"			MIII)	1 12:50
Level 20 C6LHF201 supied Ba m sm sm sm	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			M((1))	1 12.50
Level 20 CBLHF201 upied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			M()()	1 12.50
Level 20 CBUHE201 upied Bz m m m m m m	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			M(1)	1 12.50
Level 20 CBLHF201 appied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			MIII.	01P61 12:50 756:500.00
Level 20 C6LHF201 supied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut				1 12.50
Level 20 CBLHE201 Sopied Bz	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut		×		1 12.50
Level 20 CBLHE201 Sopied Bz	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			M(1)	1 12.50
Level 20 CBLHF201 supied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut				1 12.50
Level 20 CBLHF201 Cupied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			MUL	1 12.50
Level 20 CBLHF2O1 Supied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			witt)	1 12.50
Level 20 CBLHF2O1 Supied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut			MUU	1 12.50
Level 20 CBLHF201 upied Ba	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut		×	witt	1 12.50
Level 20	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut		×	MUL	1 12.50
Level 20	30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut		×		019/1
Level 20	100 dBm 30 dB SWT	r 41.82 µs (~6.9 m	RBW 10	00 kHz. 00 kHz. Mode Aut		×		
w spe	ectrum 🗙	Spertrum 2	Sportune il	× Sparmin 8	× spectrum &	×		
					Modulation: (			
23 P.P. 1	1 19 2022	Lo-PIM	– ANT1	Low Char	nnel Occupie	d Bandwidth		
13 84 4	1/19/2022					-masuring.		14:4
12	.1.	762.726.49 M		9.62 dBm	Ooc Bw Freq Offse			083 905 kHz
ie i kei	1	760.5 M		12.94 dBm 9.93 dBm	Occ Bw Occ Bw Centroid		4.471 870	
ker Tabl		X-Value	-	Y-Value	Funct	ion	Function	Result
0.5 MHz			1001 p	ots	914.0 kH	z/		Span 9.14
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5m	-	-						-
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sm								
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		18m	min	mini	1 miles	in the mast	MIL	758.500.00
								O1Pk I
	2-2M-2_02-10- andwidth	2023","CEN001_0	1-26-23","CBL	_commscope"	_			
CBLHF201	30 dB SWT	F 41.82 µs (~6.9 m •2023","CENDO1_0	ns) = VBW 30	0 kHz Mode Aut	30 FFT			
Level 20 CBLHF201	30 dB SWT			0 kHz Mode Aut	to FFT	-		

## Lo-PIM – ANTO Mid Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: QPSK

					O1Pk Max
Contraction of the second s	II may may	minin		mante	MU[1] 12.08 dBr 753.000.00 MH
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dBm					
10 dBm-	+/				
20 dBm		_			
30 (Bm		_		- hr	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
fü dem-	-				
50 dBm				-	
ou dem-	-				
70 dBm-					
F 763.0 MHz Marker Table	1	001 pts	914.0 kHz/		Span 9,14 MH

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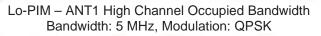


	30 dB SWT	41.82 µs (~6.9 ms		kHz Mode Aut	o FFT				
Occupied Ban	2M-2_02-10- dwidth	2023","CEN001_01	-26-23","GBL_0	commscope"				_	O 1 Pk Max
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ou dBm-							1	1	
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The second second						and the second second	1		
F 763.0 MHz		A	1001 pts	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	91	4.0 kHz/		4	Span 9.14 MF
Marker Table	Tre	X-Value	_	Y-Value	-	Function	_	Trans Prove Da	
Type Ref M1	1	763.0 MH	7 1	2.30 dBm	Occ Bw	Punction		Function R 4.475100	
TI	i	760.751 92 MH	IZ	9.64 dBm	Occ Bw Ce	ntroid.		762.989 4	68 676 MHz
T2	-1	765.227 02 MH	Z	9.17 dBm	Oor Bw Fre	g Offset		-10,5313	23 502 kHz

# Lo-PIM – ANT0 High Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: QPSK

Att 30 dE	SWT 41.82 µs (~6.9 ms)		X suerhum A X		
Occupied Bandwidt	_02-10-2023","CEND01_01-26	-23","SBL_commscope"		1	●1Pk Max
_	12mm	man	Linhimi	WAR !!	MILLI 12.55 dB/ 755.500.00 MI
D dBm-	1				
dBm-					
10 dBm					
20 dBm					
	And -			- bo	mm
40 dBm					
5		11 11 11 11 11	1.2.1		
50 dBm					
ou dem-					
70 dBm-					
				1	de brene
F 765.5 MHz Marker Table	1 1	1001 pts	914.0 kHz/	X - X	Span 9,14 MH
Type Ref Irc	X-Value	Y-Value	Function		Function Result
M1 1 T1 1 T2 1	765.5 MHz 763,25415 MHz 767,71943 MHz	12.55 dBm 9.37 dBm 9.50 dBm	Occ Bw Occ Bw Centroid Occ Bw Freg Offset	4.4	765.486787942 MHz -13.212058103 kHz

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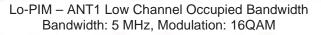


Ref Level 20.0 Att		41.82 µs (~6.9 ms	RBW 100	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	o FFT				
DF "CBLHF2012 Occupied Ban	-2M-2_02-10-	2023","CEND01_01	-26-23","CBL_(	commscope"		-			O1Pk Max
								Will	
U dam-	-	in the second		man	m	man	where the	-	765-500 00 MI
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10 dBm								-	-
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30 dBm	Ver					-		100	The
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ou dam									
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F 765.5 MHz		1	1001 pts		01	4.0 kHz/			Span 9.14 MH
Marker Table						- no to tey		_	open stations
Type Ref	Tre	X-Value		Y-Value		Function		Function	
M1 T1	1	765.5 MH 763.252 28 MH		2.17 dBm 9.18 dBm	Occ Bw Occ Bw Cer	biosto			917 396 MHz
T2	1	767.721 55 MH		9.02 dBm	Occ Bw Ere	g Offset			2603751 kHz
		-Partitus and the	16	Sinc Goilt	COLOW LIC	al arriting	Measuring		+ 2022-11 14:22

# Lo-PIM – ANTO Low Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 16QAM

D dBm-				
-10 dBm				
20 dBm	****		h	~~~~~
40 dBm				
60 dBm-				
70 dBm-				

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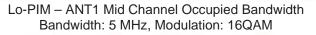
Occupied Bandwidth		s in .	min m	-	71.72	MILL	<ul> <li>1 Pk Max</li> <li>10.64 dBr</li> <li>50.500 00 Mt</li> </ul>
J dBm-	m	~~~~	K. L.	/ has	-	X	59200.00 MI
dBm-				-			
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s0 dBm	~			-	f f	mon	m
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ad mont							
50 dBm-							
70 dBm						-	-
F 760.5 MHz		1001 pts		14.0 kHz/		S	nan 9.14 MH
F 760.5 MHz Marker Table	1	1001 pts	g	014.0 kHz/		S	pan 9,14 Mi

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## Lo-PIM – ANTO Mid Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 16QAM

TDF "GBLHF2012-2 L Occupied Band		023"/"GENU01_	01-26-23 , 0	BL_commscope"			4	O1Pk Mai
		12-	In 1	m m	m	m	nu	Milij 10.81 dB 755.000 00 M
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0 d8m		-	-	_			-	
0 dBm								
u asm-			-					
F 763.0 MHz		-	100	1 pts	g	14.0 kHz/	<u></u>	Span 9.14 MF
Marker Table		1000						
Type Ref M1	Trc 1	X-Value 763.0 P		V-Value 10.81 dBm	Occ Bw	Function		Function Result 4.515183 MHz
T1 T2	1	760.75224		9.87 dBm 9.97 dBm	Occ Bw Co Occ Bw Fr			763.009 829 965 MHz 9.829 965 199 kHz
							Measuring	2022-11-1

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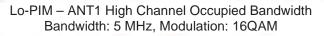


TDF "CBLHF2012 L Occupied Bar		023","CEND01_0	1-26-23","CBL	commscope"		-		O1Pk Max
		12	n m	a more	m	m	Ster	755.000 00 MH
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and more the				11				· · · · · · · · · · · · · · · · · · ·
ou dBm	-							
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F 763.0 MHz			1001 p	s	0	14.0 kHz/	ļ	Span 9.14 MF
Marker Table	1	1.0.4-1	roor p			THO REP		
Type Ref M1	Trc	X-Value 763.0 MI	17	V-Value 10.48 dBm	Occ Bw	Function	4	Function Result 512756394 MHz
TI	1	760.751 51 M		9.33 dBm 9.46 dBm	Occ Bw Ce	ntroid eq Offset	-	763.007.890 9 MHz 7.890.899 595 kHz

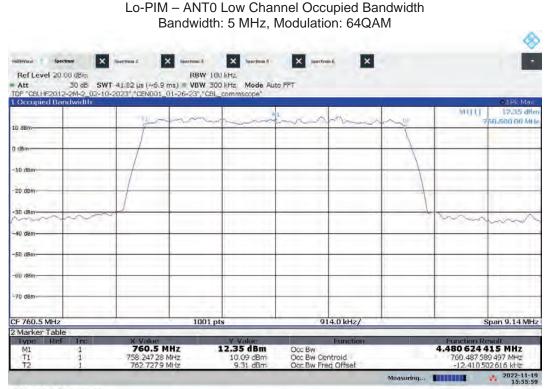
# Lo-PIM – ANT0 High Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 16QAM

	SWT 41.82 µs (~6.9 ms) = 1 2-10-2023","CEN001_01-26-2		0 FFT		
Occupied Bandwidth			200	1	•1Pk Max Mt[1] 10.65 dBr
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FU dBm	~ ~			Y	
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00 d8m-					
70 dBm					
F 765.5 MHz		1001 pts	914.0 kHz/		Span 9.14 MH
7 4242102 1911 12.		roor pia	STHURIES		Sport sit title

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Occupied Band		2023","CENDO1,	01-26-23","C	BL_commscope"	ID FFT				• 1Pk Max
		Illin	n 1	n n	m	m	~	991111	10.58 dB 755.500 00 MI
D dBm-		1		100	N N	the second	~ {	-	
dBm-			-	-					-
10 dBm								1	1
								-	-
20 dBm		1/	-				1		
30 dBm		1			_			-	
m		1		1 1 1 1 1 1 1 1		7		man	m
FO dam-				11 11 11 11	11111		1	1	1
i0 dBm			1						-
u dBm-					1 1		1		
70 dBm								-	
F 765.5 MHz			1001	pts	91	4.0 kHz/	<u> </u>	-	Span 9.14 M
Marker Table Type Ref	Irc	X-Value		V-Value	-	Function		Function R	and the second s
M1 T1 T2	1	765.5 1 763.251 2 .767.76536	MHz	10.58 dBm 9.40 dBm 9.20 dBm	Occ Bw Occ Bw Cer Occ Bw Fre	htroid		4.514178 765.5082	
- 16-		.197.703-30	r 1711 12-	-9.20 GDIT	- WALDWITE	d wheet	Measuring		2022-11-1 15:33:5



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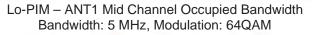
dBm									O1Pk Max
dBm		The	in		-n-n	mon	115	MILLI	11.96 dBn 750.500 00 MH
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dBm-						_		-	
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0 dBm	-	J					<u> </u>	h	
	_					-			
0 dBm-	_				1.1.1.1		1		
0 dBm									-
0 dBm				1.					_
0 dBm									
760.5 MHz	_		1001 pts	\$	91	14.0 kHz/	<u> </u>	-	Span 9.14 MHz
Marker Table									
Type Ref M1 T1 T2	1 1	X-Value 760.5 M 758.24914 N .762.729.04 N	MHz	V-Value <b>1.98 dBm</b> 9.60 dBm 9.07 dBm	Occ Bw Occ Bw Cer Occ Bw Fre	Function ntroid			

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## Lo-PIM – ANTO Mid Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 64QAM

)F "CBLHF2012-2M-2_( Occupied Bandwidth	2-10-2023","CEN001_01-26	VBW 300 kHz Mode A -23","CBL_commscope"	Auto FFT	_	o t Pk Max
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ou d8m-								
DO GUNT						1	1	
70 dBm								
F 763.0 MHz	2	1	001 pts	91	4.0 kHz/	1	-	Span 9.14 MH
Marker Tab	le							
Type Re	f Trc	X-Value	Y-Value		Function		Function	Result
M1	1	763.0 MHz	18.53 dBm	Occ Bw				38 81 MHz
T1	1	760.750.6 MHz .765.223.24 MHz	10.31 dBm 9.49 dBm	Occ Bw Cer	ntroid a Offset			922 795 MHz 205 095 kHz

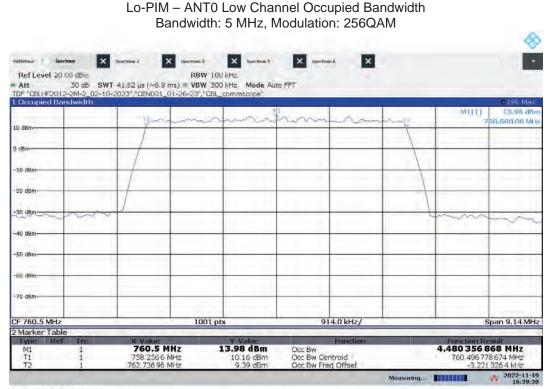
# Lo-PIM – ANT0 High Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 64QAM

	SWT 41.82 µs (~6.9 ms)		20 FFT		
OF "CBLHF2012-2M-2_ Occupied Bandwidth	02-10-2023","CEND01_01-26-3	23","CBL_commscope"			O 1 Pk Max
	The man	min in	inner .	- E	M1[1] 11.95 dB 755-500 00 Mi
J dBm-	T			- M	
dBm					
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765.5 MHz		1001 pts	914.0 kHz/	1	Span 9.14 M
Marker Table	0.00				
Type Ref Irc M1 1	X-Value 765.5 MHz	Y-Value 11.95 dBm	Function Occ Bw		Function Result 472 495 228 MHz
T1 1 T2 1	763.24644 MHz 767.71894 MHz	9.69 dBm 9.03 dBm	Occ Bw Centroid Occ Bw Freg Offset		765.482689903 MHz -17.310096678 kHz

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		hann	12	MULT 755	01Pk Max 11.62 dB 5.500.00 Mi
	~~~~~~	hand	12	761	5.500.00 MI
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			-		
			-		
	1001 pts	914.0 kHz/	1	Sp	an 9.14 Mi
V Value	M. Madam	Equation	_	Constitute Data	
765.5 MHz 763.24432 MHz	11.62 dBm 9.46 dBm	Occ Bw Occ Bw Centroid		4.474 245 04 765.481 4395	6 MHz 985 MHz
	X-Value 765.5 MHz	765.5 MHz 11.62 dBm 763.244 32 MHz 9.46 dBm	X Value         Y Value         Function           765.5 MHz         11.62 dBm         Occ Bw           763.24432 MHz         9.46 dBm         Occ Bw	X Value         Y. Value         Function           765.5 MHz         11.62 dBm         Occ Bw           763.244.32 MHz         9.46 dBm         Occ Bw	X Value         Y Value         Function         Function           765.5 MHz         11.62 dBm         Occ Bw         4.474 245 04           763.244 32 MHz         9.46 dBm         Occ Bw Centroid         765.481 430



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## Lo-PIM – ANT1 Low Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 256QAM

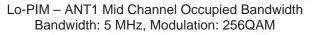
				-18 -18	MIIII	13,49 dBn 759,500 00 MH
					J. S.	Y 5H 300 00 MI
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1001 pts		014.0			-	Span 9.14 MH
1001 pis		5140	Ki ley		-	Spart 9.1-4140
	9.75 dBm	Occ Bw Occ Bw Centro	id.		760,4968	
5	5 MHz 13 52 MHz	Y Value 5 MHz 13.49 dBm 52 MHz 9.75 dBm	Y Value Fi MHz 13.49 dBm Occ Bw 52 MHz 9.75 dBm Occ Bw Centro	Y Value         Function           6 MHz         13.49 dBm         Occ Bw           52 MHz         9.75 dBm         Occ Bw Centroid           36 MHz         9.02 dBm         Occ Bw Freq Offset	Y Value         Function           6 MHz         13.49 dBm         Occ Bw           52 MHz         9.75 dBm         Occ Bw Centroid           36 MHz         9.02 dBm         Occ Bw Freq Offset	Y Value         Function         Function           MHz         13.49 dBm         Occ Bw         4.472 560           S2 MHz         9.75 dBm         Occ Bw         760.4961

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## Lo-PIM – ANTO Mid Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 256QAM

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uiltiview Spectrus	# × 3	ipertium 2 X Sumetru	nil X Sparfrom A	X Spectrum A	×	
Ref Level 20.00			BW 100 kHz			
			3W 300 kHz Mode Aut	D FFT		
Occupied Band		023","CEN001_01-26-23	","Gal_commscope"		100	O 1Pk Max
						MUTT 13.02 dB
U dBm-		15 month	mon	non		753.000 00 MI
- dann						
dBm					1	
10 dBm						
20 dBm						
30 dBm-						
	SUN.	2			har	man
40 dBm-						~~~
	1		1.11 11 12 12 12	1		
50 dBm						
ou dam-		1				
70 dBm						
Vu ubin						
F 763.0 MHz			001 pts	914.0 kHz/		Span 9,14 MH
Marker Table			dor pis	914.0 KHZ/		apart 9, 14 Min
Type Ref	Inc	X-Value	Y-Value	Function		Function Result
M1 T1	1	763.0 MHz 760.75549 MHz	13.62 dBm 9.93 dBm	Occ Bw Occ Bw Centroid	4,	479 619 731 MHz 762,995 303 127 MHz
T2	1	765.23511 MHz	9.17 dBm	Occ.Bw Freq Offset		-4.696873279 kHz
					Measuring	2022-11-1

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30.08m         40.08m           40.08m         50.08m           50.08m         50.08m           70.08m         50.08m	
30 (Bm 40 dBm 50 dBm 60 dBm 70 dBm	
20. dBm 40. dBm 50. dBm 60. dBm	
30.08m 40 dem 50.08m	~~~
30, (Bm) 40 dBm	
	~
20 dBm	_
10 /Bm	-
) dbm	
iD dam-	
Occupied Bandwidth	<ul> <li>1 1.80 dB</li> <li>3.000 00 M</li> </ul>

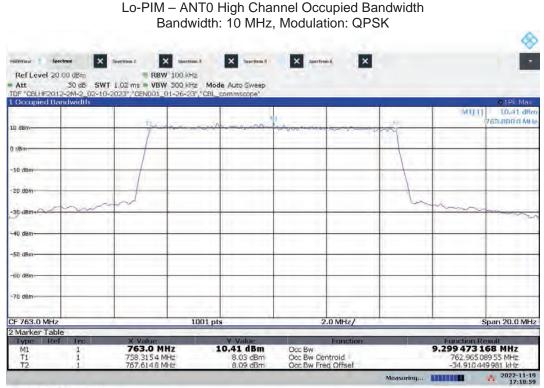
# Lo-PIM – ANT0 High Channel Occupied Bandwidth Bandwidth: 5 MHz, Modulation: 256QAM

Occupied Bandwidt	h		1	TT	• 1Pk Max MULT 13.01 dBr
U dBm-	4 man	m	mon	and the	755.500.00 MI
dBm					
0 dBm					
20 dBm				1	
80 dBm-				1	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	W			Y	Land
f0 dBm-				1	
i0 dBm-				-	
an an					
50 dem					
70 dBm					
F 765.5 MHz		1001 pts	914.0 kHz/		Span 9.14 MH

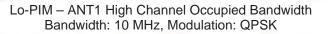
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Ref Level 20. Att	00 dBm			/ 100.hHz 300.kHz Mode Aut	Spectrum	×			
	-2M-2_02-10-2			CBL_commscope"	5001				O1Pk Max
- occupied ba	in within		1				1	MUU	
U dam-	-	17-	-	min	mm	mm	m		755-500.00 MI
a dann									
dBm-		- /	-			_	1		-
							1		
10 dBm		1/	1				1		-
10.00									
20 dBm									
-30 (Bm			_				1		_
ann	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			11 10 10 10 10			L	-n-	
40 dBm-			-			_			
				11 11 11 11	1.1.1				
-50 dBm			1						-
ou dem							1		1
-ou asm-							1		
70 dBm-			-				-		-
14			-	-					-
F 765.5 MHz			100	01 pts	91	4.0 kHz/		-	Span 9.14 MH
2 Marker Table		and a							
Type Ref M1	Tre	X-Value 765.5	MHZ	Y Value 13.19 dBm	Doc Bw	Function		Function   4.472 038	
TI	1	763.25872	MHz	8,80 dBm	Occ Bw Cen	troid.		765.494	736 312 MHz
T2	.1.	767.73076	MHz	8.73 dBm	Oor Bw Free	Offset		-5.263	688 092 kHz



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DF "CBLHF2012-2M-2 Occupied Bandwidt		001_01-26-23"	"CBL_commscope"				_	O 1 Pk Max
			1			1	MITT	10.20 dBr
U dam-	T	1- pro-	- marine	WWW WWW		13		763-000 0 MI
						a g		
dBm-	- 1							
0 dBm								-
							-	-
20 dBm					-	1 1-		
	mond		<ul> <li>41 (1) (2) (2) (2)</li> </ul>			lima		
a all when the second	N.						and the	an when any
10 dam-		-					-	
5							1	
50 dBm								
0 dBm		-						
							-	
0 dBm								
763.0 MHz			001 pts		.0 MHz/		-	Span 20.0 MH
Marker Table			JUT DIS		.0 MHZ/	-		span zu.u wie.
Type Ref Irc			Y-Value		Function		Function R	
M1 1 T1 1	758.31	91 MHz	10.20 dBm 7.45 dBm	Occ Bw Occ Bw Cer				50 543 MHz
T2 .1	767.61	26 MHz	7.60 dBm	Oor Bw Fre	q Offset		-34,1494	56 547 kHz 2022-11-1 17:22:4:

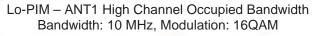
Notes: Low and mid channels are the same frequency as high channel.

A

# Lo-PIM – ANTO High Channel Occupied Bandwidth Bandwidth: 10 MHz, Modulation: 16QAM

-50 dBm					
50 dBm	1				
And a second sec					
40 dBm-					- man and - man
30 dBm	m			hum	manna
20 dBm					
10 dBm					
dBm					
U dBm-	1 Cro	that had	had had t	mining	
	The	my inty	non ma ma		M1[1] 12.26 dB (763.000.0 M)

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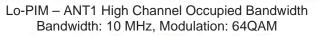
			100 M		MT[1] 12.03 dB 763.000 d M
dBm-		The hat	month and my	MAR.	
dBm-					
0 dBm				+ \ - +	
0 dBm				+	
0 dBm	- m				
0 dBm- Nacher Waltham Market 0 dBm-			1 1	Ling	montheman
0 dBm-					
0 dBm					
0 dBm-		-			
763.0 MHz		1001 pts	2.0 MHz/		Span 20.0 M

A

# Lo-PIM – ANT0 High Channel Occupied Bandwidth Bandwidth: 10 MHz, Modulation: 64QAM

Ref Level 20.00 dBm Att 30 dB	BBW 100 kHz SWT 1.02 ms - VBW 300 kHz			×	
DF "CBLHF2012-2M-2_02 Occupied Bandwidth	2-10-2023","CEND01_01-26-23	"CBL_commscope"			O 1Pk Max
					M1[1] 9.58 dBr
U dBm	The Autom	a a a a a a a a a a a a a a a a a a a	م <del>لاير کا سيمان سريان ساي جرم</del> :	www.	763-R00 A MI
dBm					
10 dBm					
20 dBm					
200			the second second		
-30 dBm-	Anna				
30 dBm				www	when and when the
50 dBm-					
ou dem-					
70 dBm-					
F 763.0 MHz	i	001 pts	2.0 MHz/		Span 20.0 MH
Marker Table	X-Value	Y-Value	Function		Function Result
M1 1 T1 1 T2 1	763.0 MHz 758.3236 MHz 757.6206 MHz	9.58 dBm 8.45 dBm 8.15 dBm	Occ Bw Occ Bw Centroid Occ Bw Freq Offsef		297 049 252 MHz 762.972101 809 MHz -27.898191197 kHz

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TDF "CBLHF2012-2 I Occupied Band		23","CEND	01_01-26-23"	"CBL_commscope"					
Occupied Band	width		1	1		-	1	MILI	01Pk Max 9,24 dBr
		TĚ	1		1		115		765-000-0 MI
U dBm-		- The	- And the	and a state of the state of the	to and the second	the contraction	CAN	1	
		1							-
dBm-						-			-
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		1		and the second second second					-
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Manual A	Jon .						Jun	www.www.	Man
40 dbm-					· · · · · · · · · ·				
10 M									1
50 dBm									
							1		
ou dBm							1		
70 dBm			-					-	
F 763.0 MHz		-	10	01 pts		.0 MHz/		1	Span 20.0 MH
Marker Table				ior pra		131 141 127			50.0 1411
Type Ref	Trc	X-Value	e	Y-Value:		Function		Function I	Result
M1	1	763.0	MHz	9.24 dBm	Occ Bw			9.294 770	311 MHz
T1	1	758.324		7.96 dBm	Occ Bw Ce				063914 MHz
T2	-1-	767.619	4 MHz	7.69 dBm	Occ. Bw Fre	eq Offset		-27.936	086163 kHz