

# CommScope Technologies, LLC TEST REPORT

SCOPE OF WORK EMISSIONS TESTING – RPM-A5A11-B66 (Band 10)

**REPORT NUMBER** 105081151BOX-002

ISSUE DATE June 13, 2022 [REVISED DATE] July 15, 2022

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





**EMISSIONS TEST REPORT** 

(FULL COMPLIANCE)

**Report Number:** 105081151BOX-002 **Project Number:** G105081151

Report Issue Date: 06/13/2022 Report Revision Date: 07/15/2022

Model(s) Tested: RP Model(s) Partially Tested: Nor Model(s) Not Tested but declared equivalent by the client: Nor

Model(s) Tested: RPM-A5A11-B66 (Band 10) Partially Tested: None ent by the client: None

Standards: CFR47 FCC Part 27 (06/2022)

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

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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	Maximum Peak Output Power CFR47 FCC Parts 2.1046 and 27.50(d)(1-2)	Pass
7	Peak-to-Average Power Ratio (PAPR) CFR47 FCC Part 27.50(d)(5)	Pass
8	26 dB Bandwidth and Occupied Bandwidth CFR47 FCC Parts 2.1049 and 27.53(h)(3)	Pass
9	Band Edge Compliance CFR47 FCC 2.1051, 2.1053, and 27.53(h)	Pass
10	Transmitter Spurious Emissions CFR47 Parts 2.1051, 2.1053, 2.1057, and 27.53(h)	Pass
11	Revision History	

Notes: Band 10 is a subset of Band 66 the hardware is identical. It was added as a class 2 permissive change to Band 66 module.

#### 3 Client Information

This EUT was tested at the request of:

Client:	CommScope Technologies LLC 900 Chelmsford St. Lowell, MA 01851 USA
Contact:	Mr. 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	Serial			
			Number	
Band 10 Radio Module	CommScope Technologies LLC	RPM-A5A11-B66 (Band 10)	19473000001	

Notes: Band 10 is a subset of Band 66 the hardware is identical. It was added as a class 2 permissive change to Band 66 module.

Receive Date:	06/03/2022
Received Condition:	Good
Туре:	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<sup>®</sup> RP5100 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
	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:

Ν	lo.	Descriptions of EUT Exercising
	1	RP5200_B4_B10

Radio/Receiver Characteristics			
Frequency Band(s)	2110-2170 MHz		
Modulation Type(s)	TM1.1-QPSK, TM3.2-16QAM, TM3.1-64 QAM, TM3.1a-		
	256QAM		
Maximum Output Power (conducted)	22.73 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	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

# 5 System Setup and Method

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

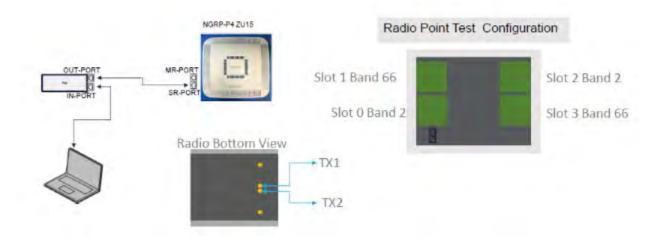
Support Equipment				
Description Manufacturer		Model Number	Serial Number	
Laptop	Dell	LATITUDE 3520	None	
Power Device Analzyer	Sifos Technologies	PDA-604A	604A0107	
OneCell <sup>®</sup> RP5200*	CommScope Technologies LLC	RP-A52xxi	16361780004	

\*Radio host used for testing

# 5.1 Method:

Configuration as required by ANSI C63.26-2015, KDB662911, and CFR47 FCC Part 27 (06/2022).

# 5.2 EUT Block Diagram:



#### 6 Maximum Peak Output Power

# 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	01/26/2022	01/26/2023
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable – SET2	Huber & Suhner	SF102	252675001	02/10/2022	02/10/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
DAV005'	Weather Station	Davis	6250	MS191218083	02/11/2022	02/11/2023

#### Software Utilized:

Name	Manufacturer	Version
None		

# 6.3 Results:

The maximum conducted output power was measured to be 22.73 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.

FCC Part §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.

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	Band 10, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK							
Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)			
Mid	2140.00	ANT0	4	22.31	26.31			
		ANT1	4	21.84	25.84			
High	2167.50	ANT0	4	22.32	26.32			
		ANT1	4	22.73	26.73			

#### Band 10, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.62	26.62
		ANT1	4	21.98	25.98
High	2165.00	ANT0	4	21.97	25.97
		ANT1	4	22.62	26.62

# Band 10, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.46	26.46
		ANT1	4	21.95	25.95
High	2162.50	ANT0	4	22.08	26.08
		ANT1	4	22.65	26.65

#### Band 10, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.43	26.43
		ANT1	4	21.93	25.93
High	2160.00	ANT0	4	22.17	26.17
		ANT1	4	22.66	26.66

# Band 10, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.01	26.01
		ANT1	4	21.53	25.53
High	2167.50	ANT0	4	21.58	25.58
		ANT1	4	22.05	26.05

#### Band 10 Bandwidth: 10 MHz Modulation: TM3 2-160AM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	21.95	25.95
		ANT1	4	21.53	25.53
High	2165.00	ANT0	4	21.45	25.45
		ANT1	4	22.18	26.18

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	Band 10, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM							
Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)			
Mid	2140.00	ANT0	4	21.76	25.76			
		ANT1	4	21.30	25.30			
High	2162.50	ANT0	4	21.41	25.41			
		ANT1	4	22.01	26.01			

#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	21.95	25.95
		ANT1	4	21.60	25.60
High	2160.00	ANT0	4	21.73	25.73
		ANT1	4	22.40	26.40

#### Band 10, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.64	26.64
		ANT1	4	22.22	26.22
High	2167.50	ANT0	4	22.19	26.19
		ANT1	4	22.51	26.51

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.69	26.69
		ANT1	4	21.99	25.99
High	2165.00	ANT0	4	22.00	26.00
		ANT1	4	22.66	26.66

#### Band 10 Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.46	26.46
		ANT1	4	21.97	25.97
High	2162.50	ANT0	4	22.07	26.07
		ANT1	4	22.59	26.59

#### Band 10. Bandwidth: 20 MHz. Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	nna Port Antenna Gain Conducted (dBi) Output Power (dBm)		EIRP Output power (dBm)	
Mid	Mid 2140.00	ANT0	4	22.46	26.46	
		ANT1	4	21.78	25.78	
High	High 2160.00 ANT0		4	22.12	26.12	
_		ANT1	4	22.65	26.65	

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	Band 10, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM									
Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)					
Mid	2140.00	ANT0	4	22.34	26.34					
		ANT1	4	21.91	25.91					
High	gh 2167.50 ANTO		4	22.13	26.13					
		ANT1	4	22.56	26.56					

# - - - - -

#### Band 10. Bandwidth: 10 MHz. Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)	
Mid	2140.00	ANT0	4	22.42	26.42	
		ANT1	4	21.94	25.94	
High	High 2165.00		4	21.99	25.99	
		ANT1	4	22.68	26.68	

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.27	26.27
		ANT1	4	21.85	25.85
High	2162.50	ANT0	4	22.68	26.68
		ANT1	4	22.07	26.07

# Band 10, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Antenna Gain (dBi)	Conducted Output Power (dBm)	EIRP Output power (dBm)
Mid	2140.00	ANT0	4	22.48	26.48
		ANT1	4	21.99	25.99
High	ligh 2160.00 ANT0		4	22.09	26.09
		ANT1	4	22.71	26.71

# 6.4 Setup Photograph:

Confidential – Photos not included in this report

# 6.5 Plots/Data:

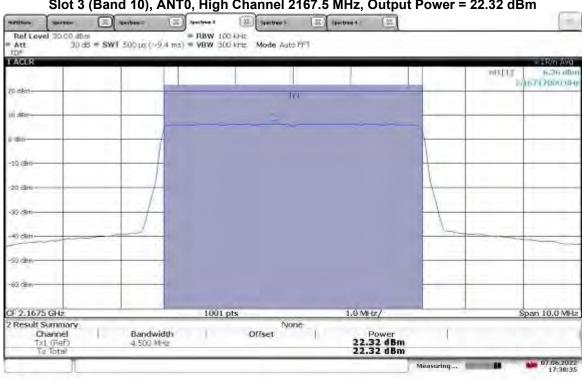
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50 ODM									
-60 dBm	-		-						
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Ch Tx	sannel 1 (Ref) (Tota)	Band 4.500		(	fiset	1	Power 22.31 dBm 22.31 dBm	1	

17:17:15 07.06.2022

# TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.84 dBm

TDP I ACLR						-		- 1R/n A/d
				1			MILL	5,90 dlla 13957000 dH
20 dAm			ĵ	1×				
11 d9m-								
	-					1		1
1.80-	1					t		
10 oBm						1	_	
20 dbm -						1	_	
30.68m-								
-0.68 04								
SU CBIR								1
						1		
-63 dBm-								
F 2.14 GHz		1001 pts			1.0 MHz/			Span 10.0 MH
Result Summary Channel	Bandwidth		Offset	wie:	Power	í.		
Tx1 (Ref)	4.500 MHz		Unser		21.84 dBm 21.84 dBm	1		

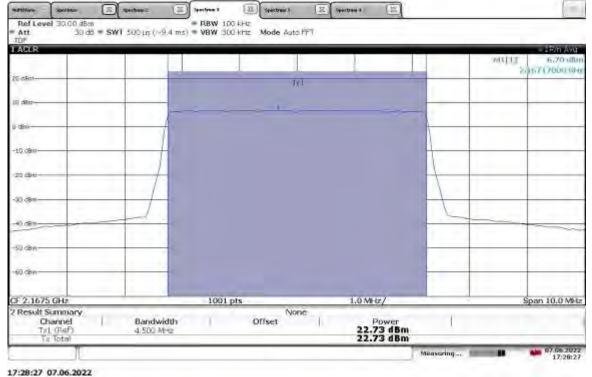
17:20:57 07.06.2022



17:38:35 07.06.2022

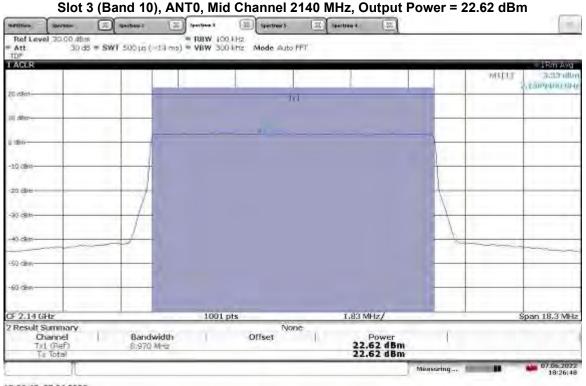
# TM1.1-QPSK\_5 MHz Bandwidth

Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz, Output Power = 22.73 dBm



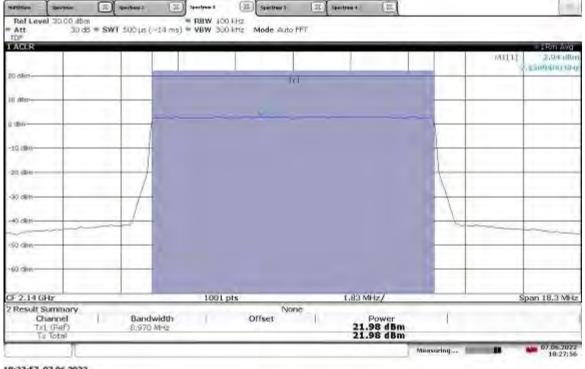
# TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz, Output Power = 22.32 dBm

TM1.1-QPSK\_10 MHz Bandwidth



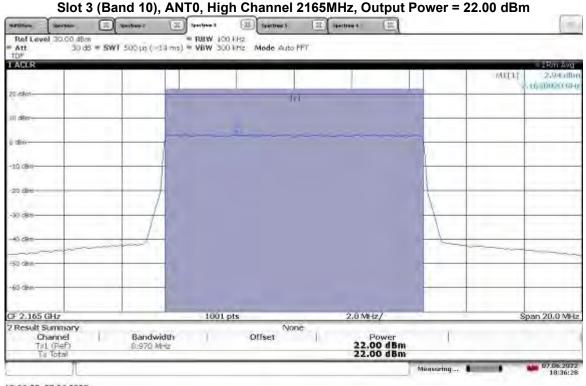
18:26:48 07.06.2022

# TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.98 dBm



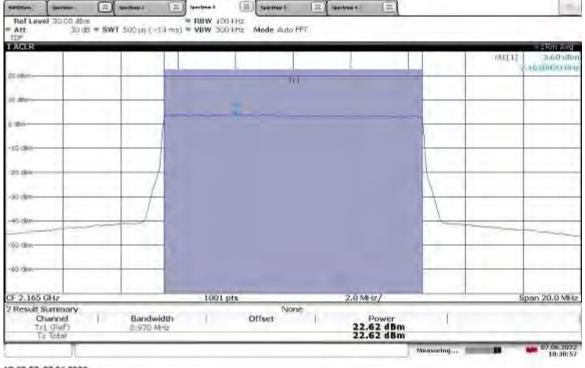
18:27:57 07.06.2022

TM1.1-QPSK\_10 MHz Bandwidth

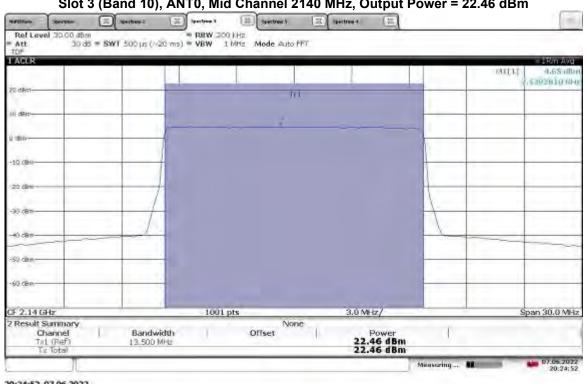


18:36:28 07.06.2022

# TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz, Output Power = 22.62 dBm



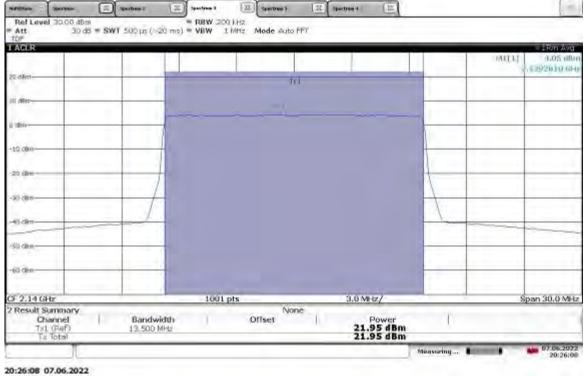
18:30:57 07.06.2022

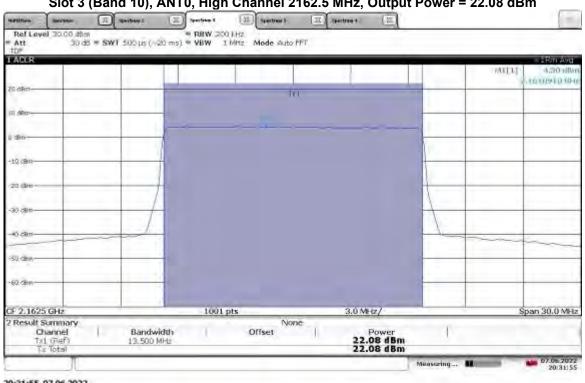


# TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.46 dBm

20:24:52 07.06.2022

# TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.95 dBm

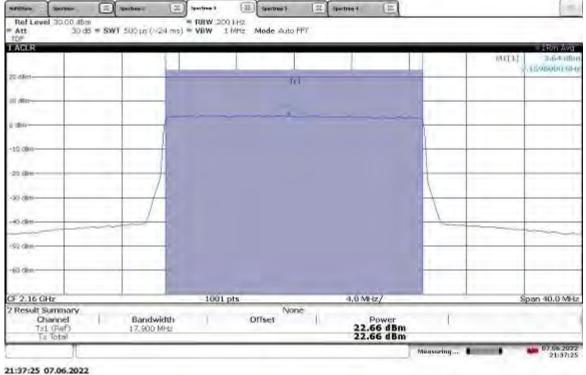


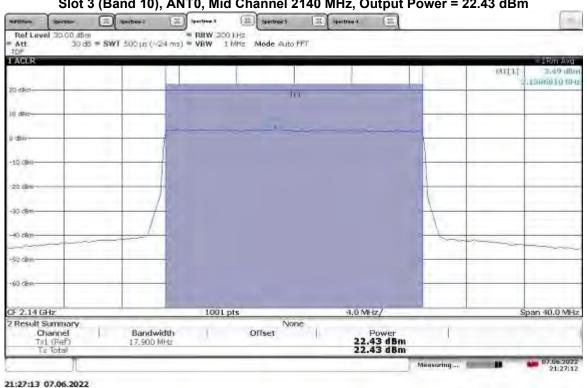


# TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz, Output Power = 22.08 dBm

20:31:55 07.06.2022

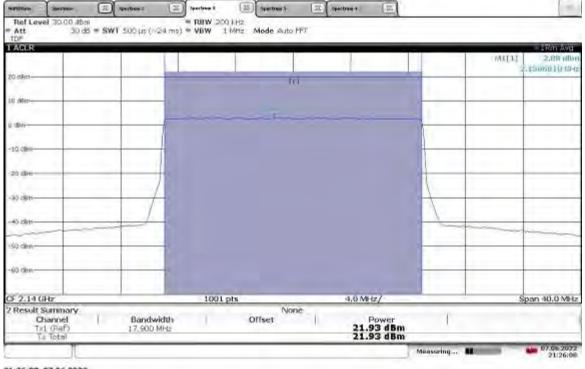
# TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz, Output Power = 22.66 dBm



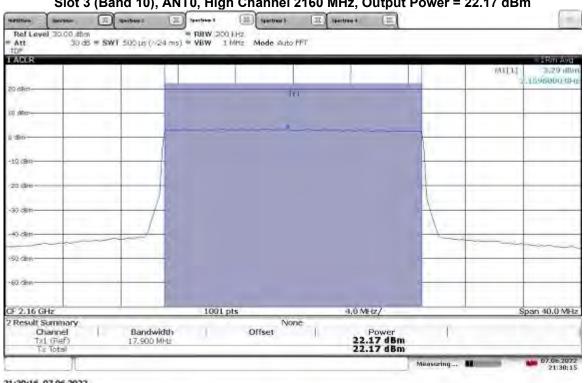


# TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.43 dBm

TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.93 dBm



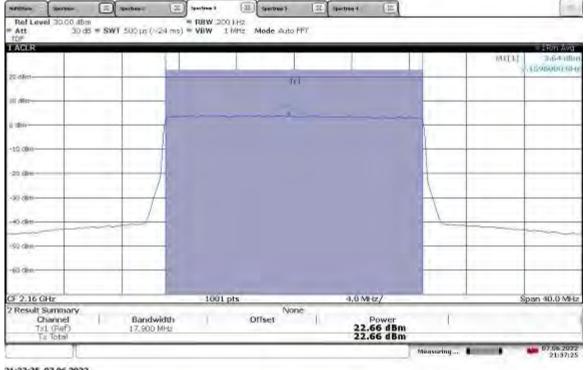
21:26:08 07.06.2022



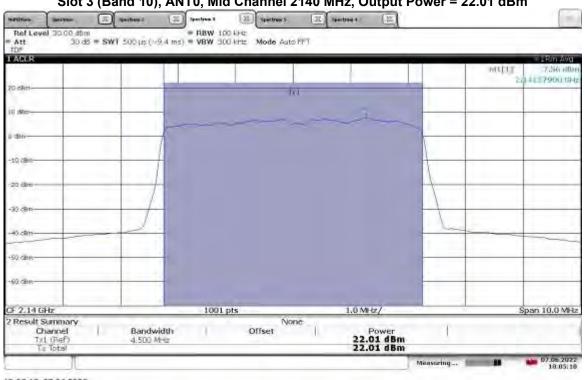
# TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz, Output Power = 22.17 dBm

21:30:16 07.06.2022

# TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz, Output Power = 22.66 dBm

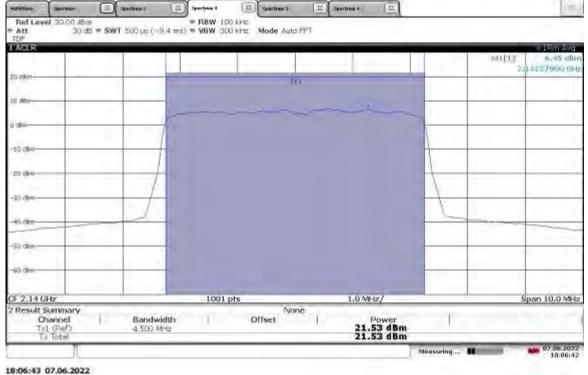


21:37:25 07.06.2022

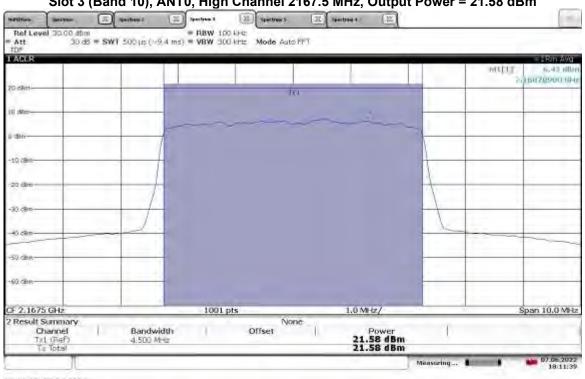


18:05:18 07.06.2022

# TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.53 dBm



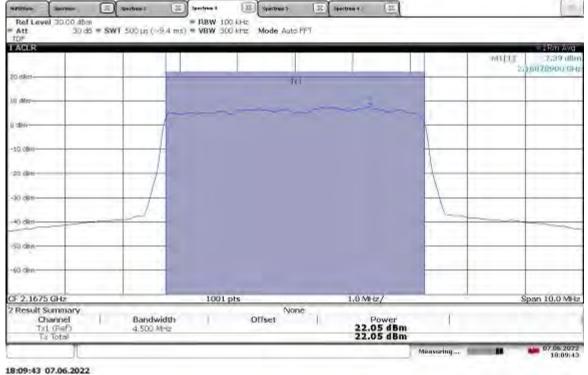
TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.01 dBm

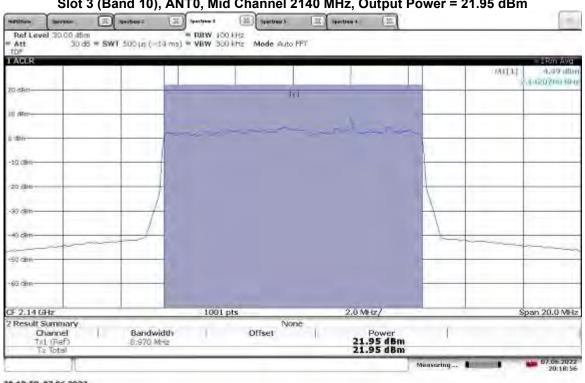


TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz, Output Power = 21.58 dBm

18:11:40 07.06.2022

# TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz, Output Power = 22.05 dBm

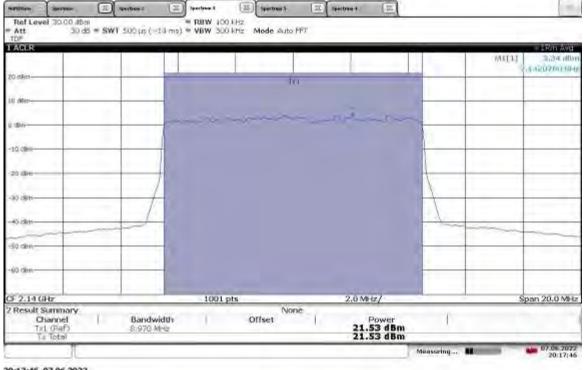




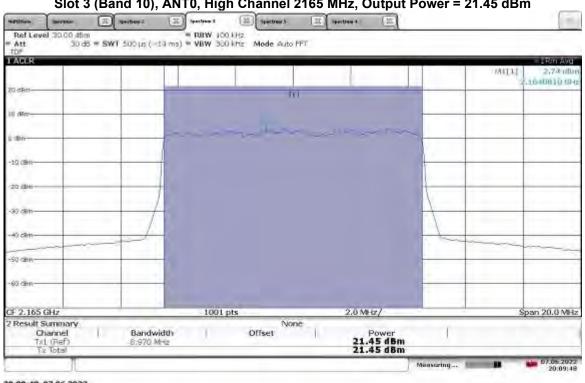
# TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 21.95 dBm

20:18:58 07.06.2022

# TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.53 dBm



20:17:46 07.06.2022



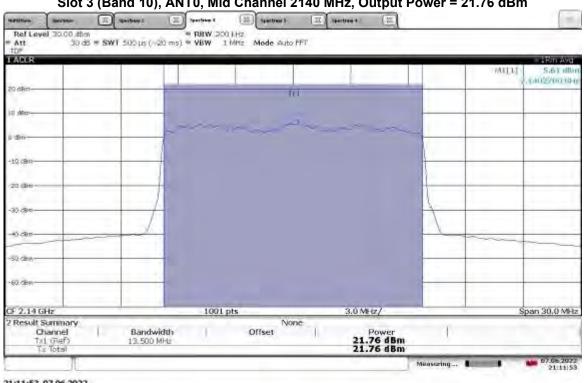
TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2165 MHz, Output Power = 21.45 dBm

20:09:48 07.06.2022

TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz, Output Power = 22.18 dBm

TOP		- Hereit -	and to rear	11.000	Mode Auto P	_				= 1 P/n Avid
AGER									WITT	3.57 illu
20 dBm-	_		-	_	DC	0			_	
anish ()	_									
180					- the second	~		1		
1Q dBm	-							1		
20 dbm -	_							1	_	-
30 c8m	_	-/-						1		
40.c8m-		1								
SÜ CIBIN-										
60 dBm-									_	
F 2.165 GHz	_	- 4	10	01 pts			2.0 MHz/			Span 20.0 MH
Result Summary Channel Tx1 (Ref) Tx Total	1	Bandwid 8.970 MH		4	Non Offset	e - 1	Power 22.18 dBm 22.18 dBm	ſ		

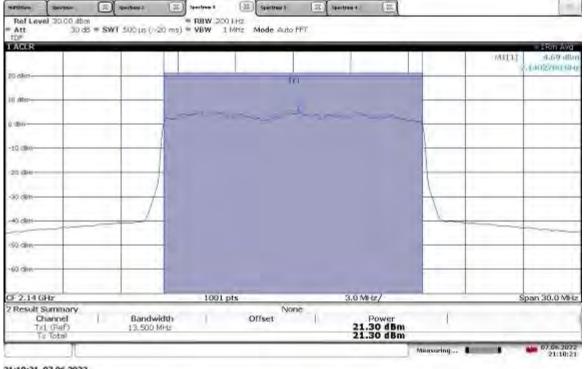
20:11:54 07.06.2022



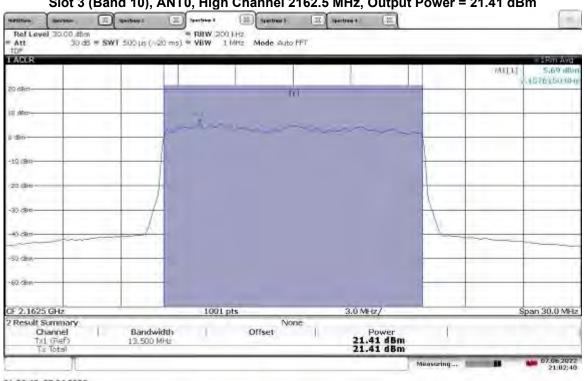
# TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 21.76 dBm

21:11:53 07.06.2022

# TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.30 dBm



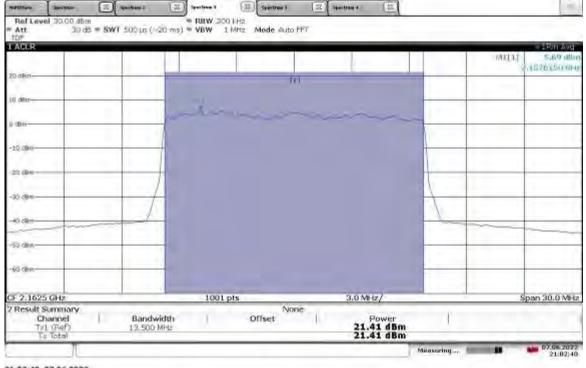
21:10:21 07.06.2022



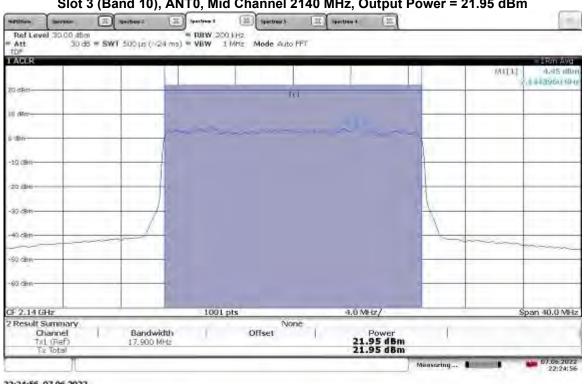
# TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz, Output Power = 21.41 dBm

21:02:40 07.06.2022

# TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz, Output Power = 21.41 dBm



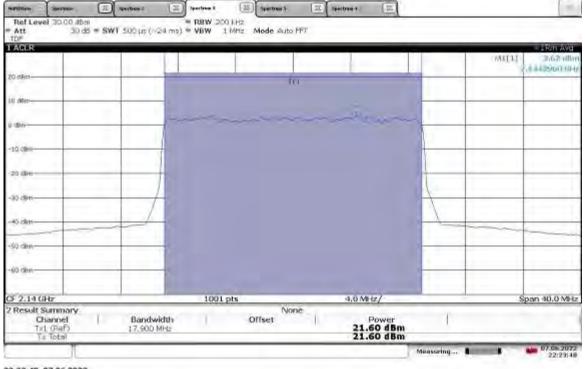
21:02:40 07.06.2022



TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 21.95 dBm

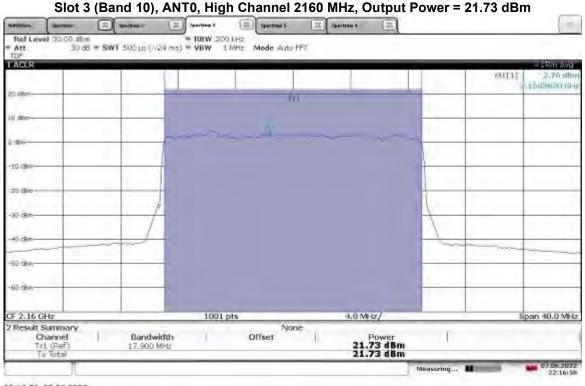
22:24:56 07.06.2022

# TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.60 dBm



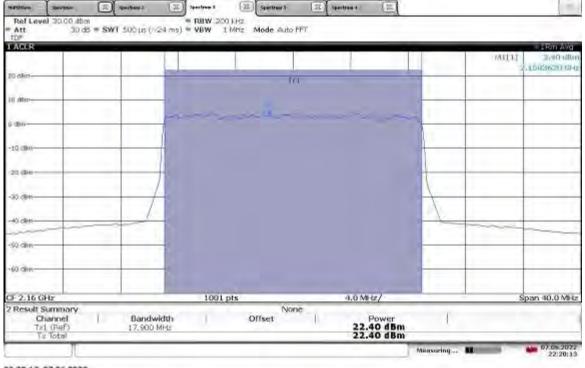
22:23:49 07.06.2022

TM3.2-16QAM\_20 MHz Bandwidth



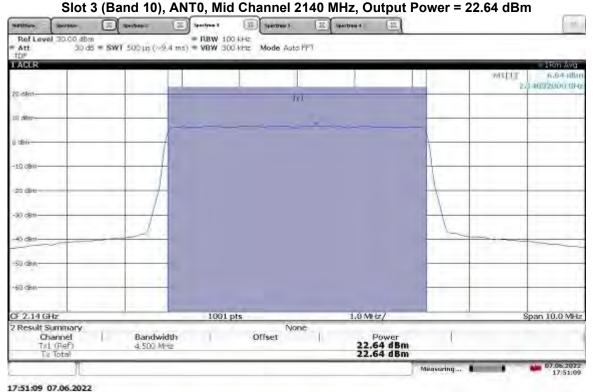
22:16:58 07.06.2022

# TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz, Output Power = 22.40 dBm



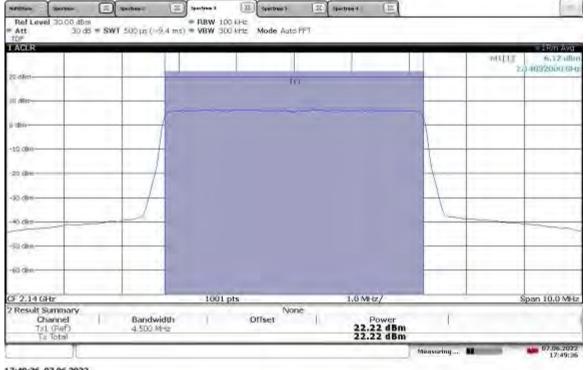
22:20:13 07.06.2022

TM3.1-64QAM\_5 MHz Bandwidth

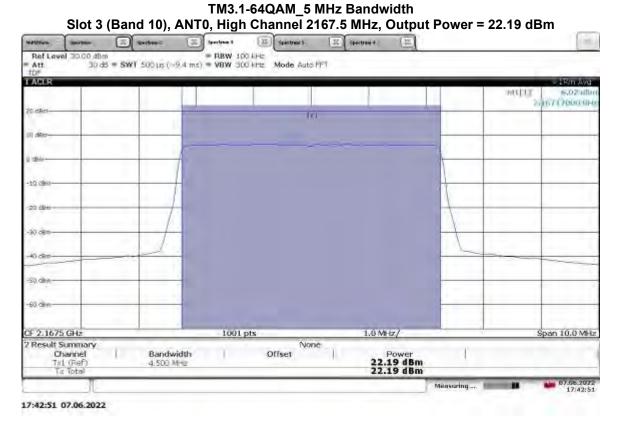


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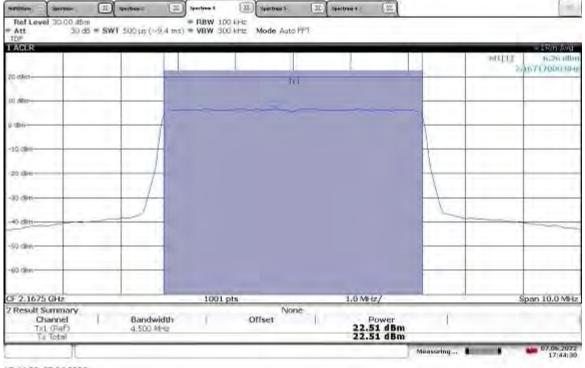
# TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 22.22 dBm



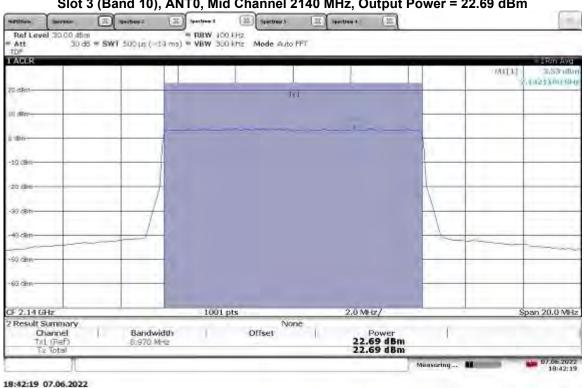
17:49:36 07.06.2022



# TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz, Output Power = 22.51 dBm

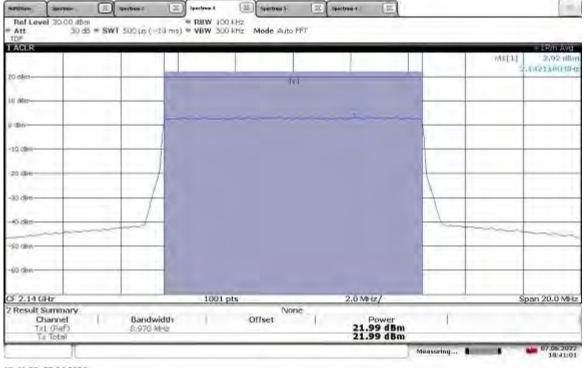


17:44:30 07.06.2022

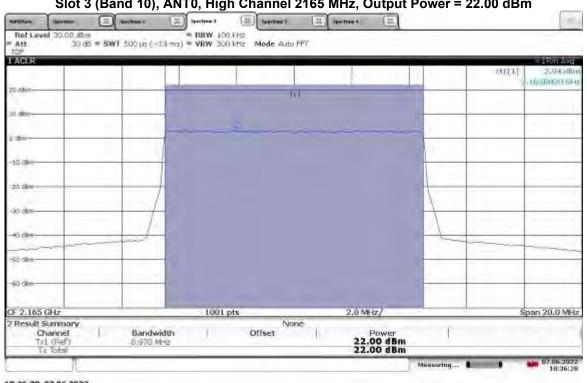


#### TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.69 dBm

TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.99 dBm



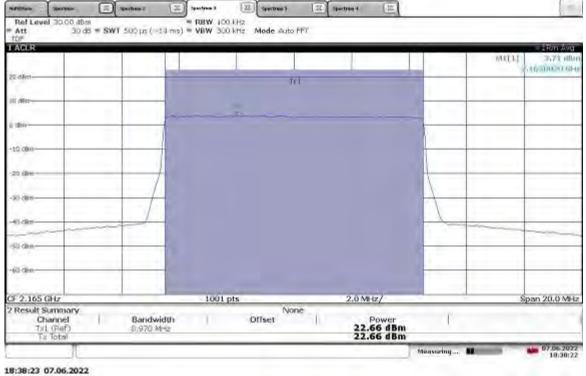
18:41:02 07.06.2022

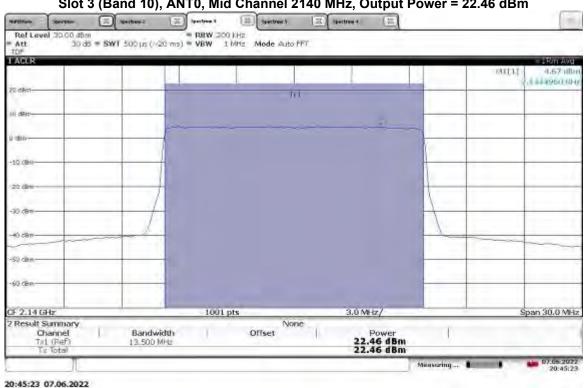


# TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2165 MHz, Output Power = 22.00 dBm

18:36:28 07.06.2022

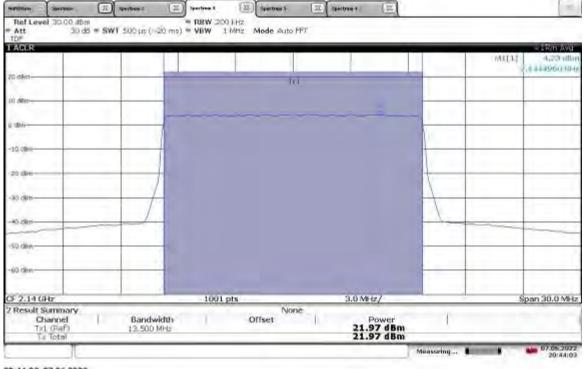
# TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz, Output Power = 22.66 dBm



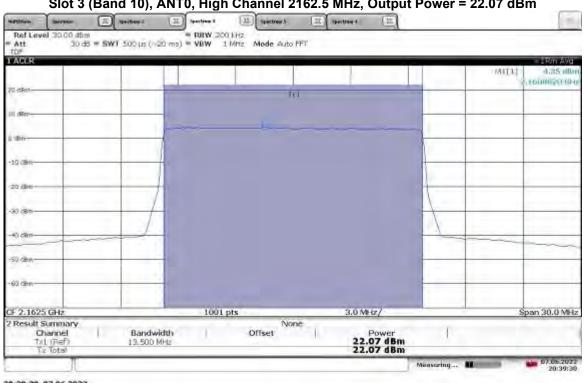


# TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.46 dBm

TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.97 dBm



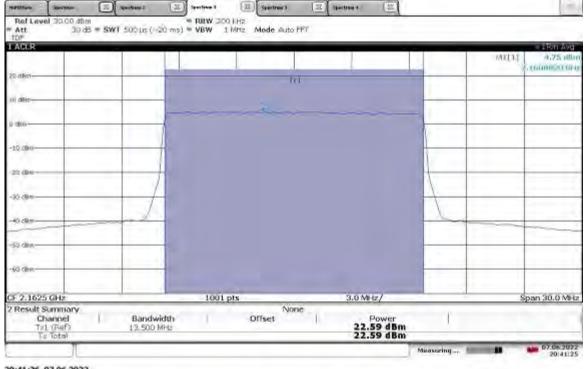
20:44:03 07.06.2022



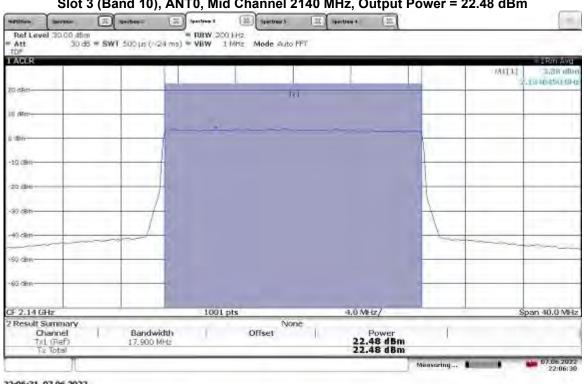
# TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz, Output Power = 22.07 dBm

20:39:30 07.06.2022

# TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz, Output Power = 22.59 dBm



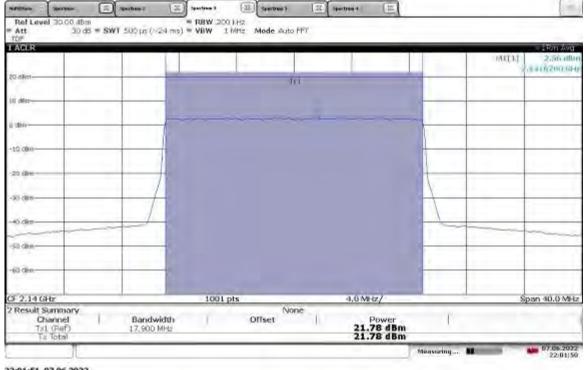
20:41:26 07.06.2022



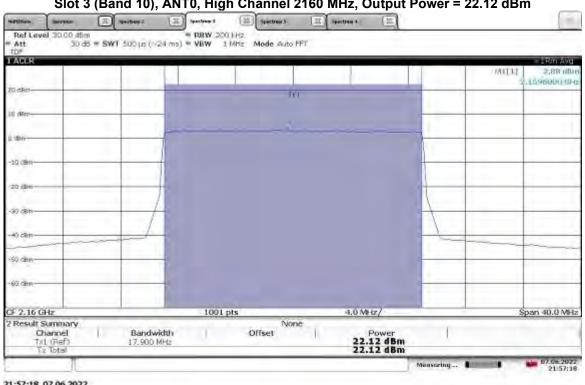
#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.48 dBm

22:06:31 07.06.2022

# TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.78 dBm



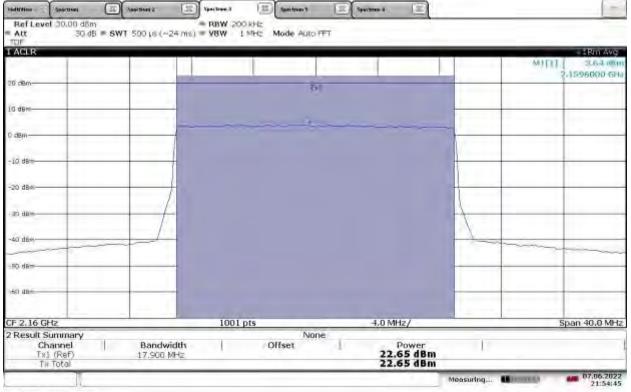
22:01:51 07.06.2022



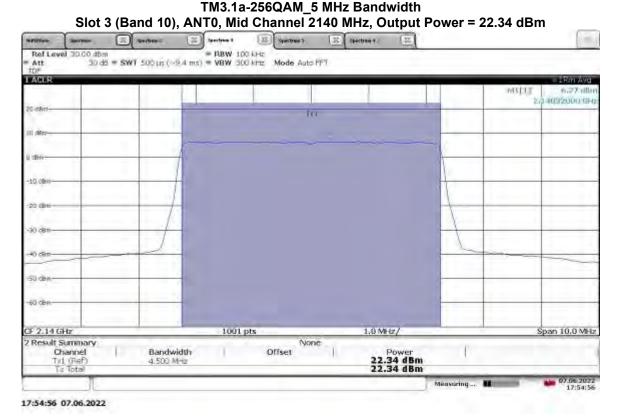
# TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz, Output Power = 22.12 dBm

21:57:18 07.06.2022

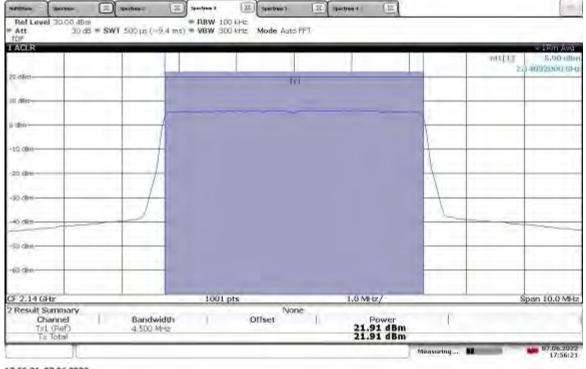
#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz, Output Power = 22.65 dBm



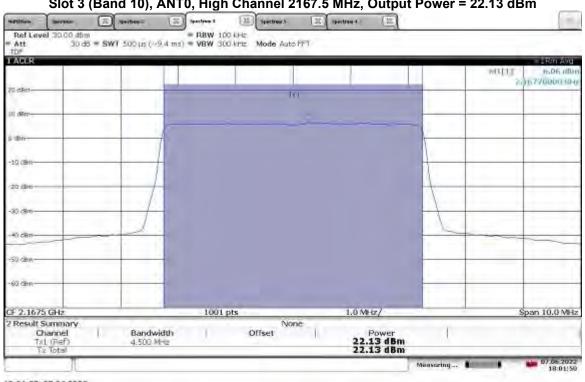
21:54:45 07.06.2022



### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.91 dBm



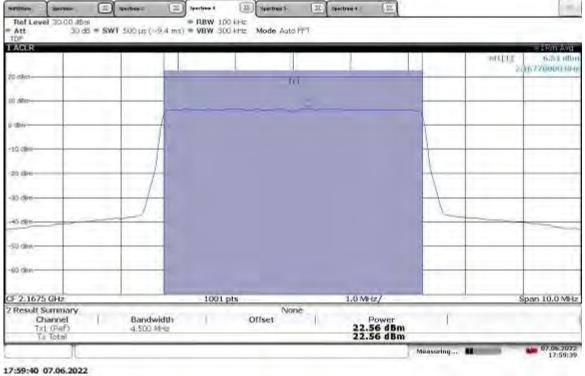
17:56:21 07.06.2022

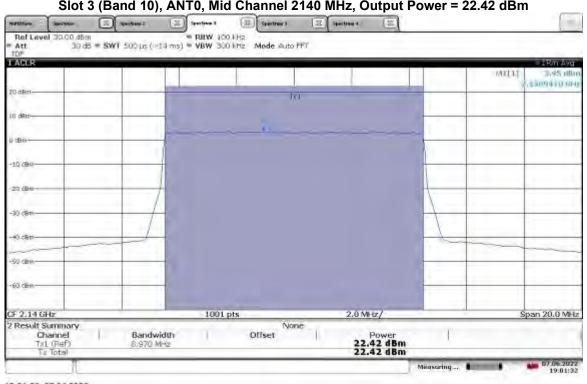


### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz, Output Power = 22.13 dBm

18:01:50 07.06.2022

### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz, Output Power = 22.56 dBm

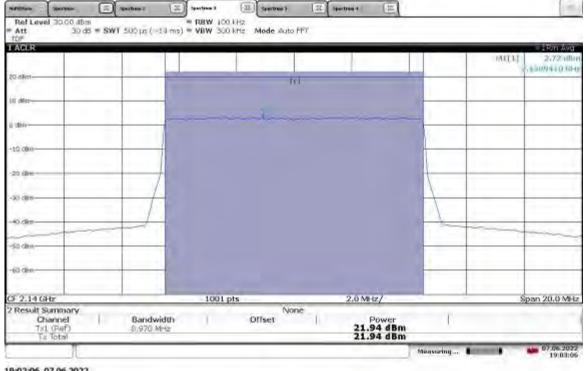




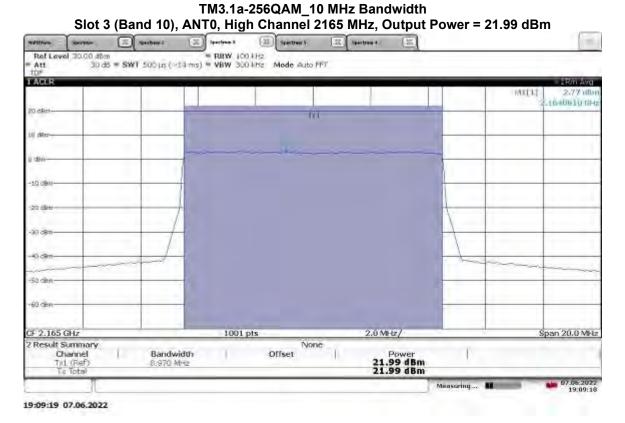
### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.42 dBm

19:01:32 07.06.2022

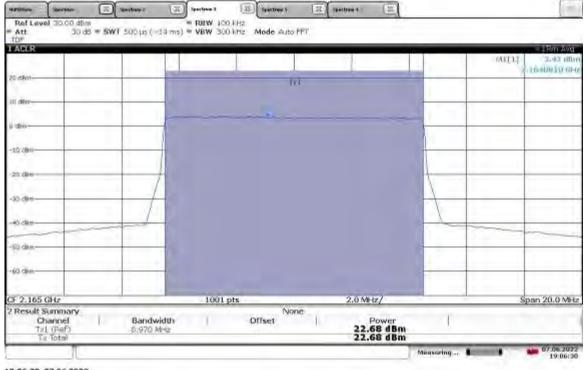
### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.94 dBm



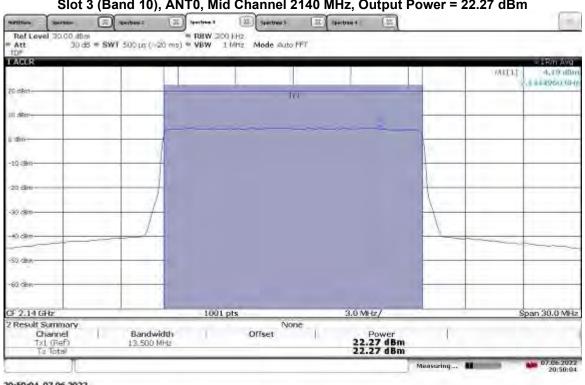
19:03:06 07.06.2022



#### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz, Output Power = 22.68 dBm



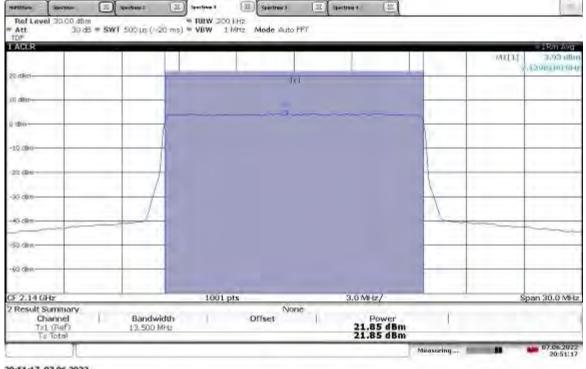
19:06:30 07.06.2022



### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 22.27 dBm

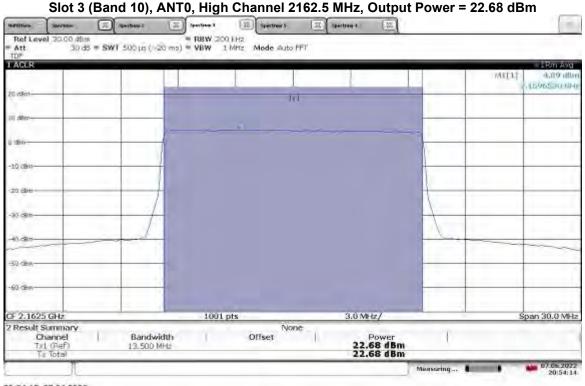
20:50:04 07.06.2022

### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.85 dBm



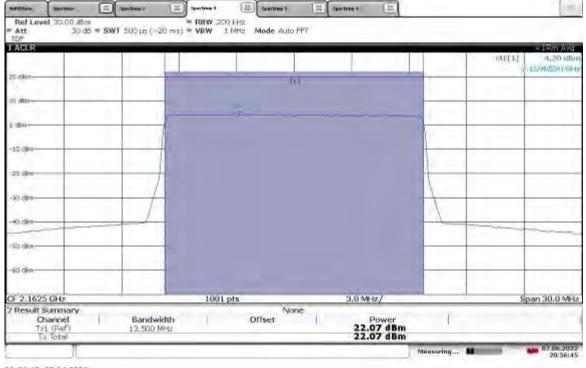
20:51:17 07.06.2022

TM3.1a-256QAM\_15 MHz Bandwidth

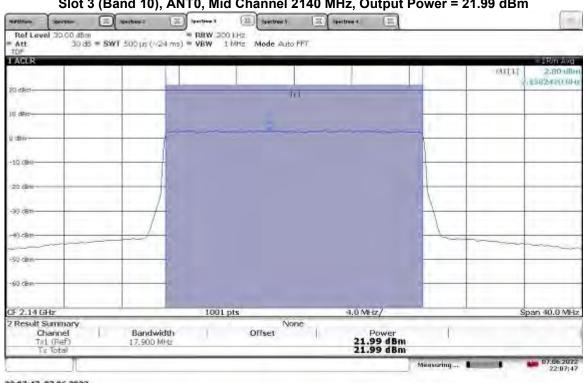


20:54:15 07.06.2022

### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz, Output Power = 22.07 dBm



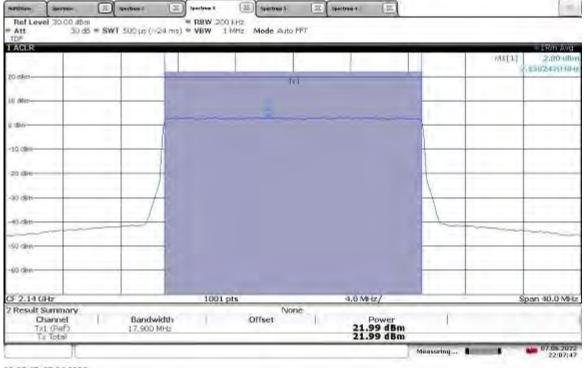
20:56:45 07.06.2022



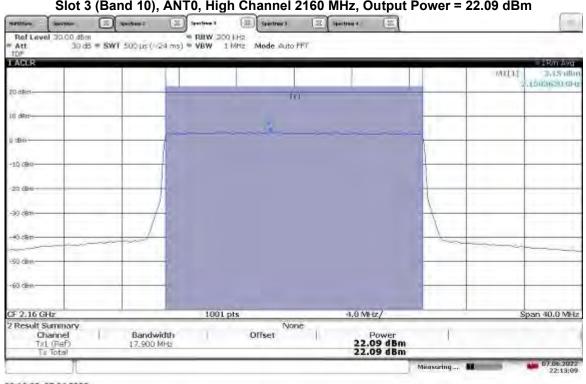
TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz, Output Power = 21.99 dBm

22:07:47 07.06.2022

### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz, Output Power = 21.99 dBm



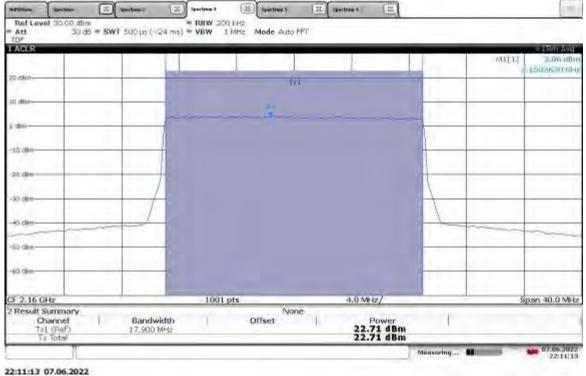
22:07:47 07.06.2022



### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz, Output Power = 22.09 dBm

22:13:09 07.06.2022

### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz, Output Power = 22.71 dBm



	Intertek						
Report Number: 105081151BOX-002			Issued: 06/13/2022				
		I	Revised: 07/15/2022				
Test Personnel <sup>.</sup>	Vathana Ven	Test Date:	06/07/2022				
Supervising/Reviewing							
Engineer: (Where Applicable)	N/A						
Product Standard:	FCC Part 27 48 VDC (POE)	Limit Applied:	See report section 6.3				
input voltage.							
Pretest Verification w/		Ambient Temperature:	25 °C				
Ambient Signals or BB Source:	N/A	Relative Humidity:	43 %				
		Atmospheric Pressure:	1006 mbars				

Deviations, Additions, or Exclusions: None

### 7 Peak-to-Average Power Ratio (PAPR)

### 7.1 Method

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

#### 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
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	252675001	02/10/2022	02/10/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
DAV005'	Weather Station	Davis	6250	MS191218083	02/11/2022	02/11/2023

#### Software Utilized:

Name	Manufacturer	Version
None		

### 7.3 Results:

The sample tested was found to Comply.

FCC Part §27.50(d)(5) The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Band 10, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK					
Channel	Frequency (MHz)	Antenna Port	PAPR (dB)		
Mid	2140.00	ANT0	10.22		
		ANT1	10.24		
High	2167.50	ANT0	11.11		
_		ANT1	10.25		

#### Band 10, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.26
		ANT1	10.08
High	2165.00	ANT0	10.29
_		ANT1	10.18

### Band 10, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	11.63
		ANT1	11.84
High	2162.50	ANT0	11.08
		ANT1	11.58

#### Band 10, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	11.26
		ANT1	11.36
High	2160.00	ANT0	11.25
		ANT1	10.57

#### Band 10. Bandwidth: 5 MHz. Modulation: TM3.2-16QAM

		,	
Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	9.78
		ANT1	9.87
High	2167.50	ANT0	10.61
		ANT1	10.46

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.74
		ANT1	10.41
High	2165.00	ANT0	10.86
		ANT1	10.74

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.73
		ANT1	10.87
High	2162.50	ANT0	10.80
_		ANT1	10.01

### Band 10, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	11.07
		ANT1	11.21
High	2160.00	ANT0	10.68
		ANT1	10.11

Band 10, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM					
Channel	Frequency (MHz)	Antenna Port	PAPR (dB)		
Mid	2140.00	ANT0	9.92		
		ANT1	10.22		
High	2167.50	ANT0	9.77		
_		ANT1	10.02		

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.65
		ANT1	11.06
High	2165.00	ANT0	11.10
		ANT1	10.11

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.38
		ANT1	10.55
High	2162.50	ANT0	10.51
_		ANT1	11.47

#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	11.81
		ANT1	10.49
High	2160.00	ANT0	10.64
		ANT1	10.20

### Band 10, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.08
		ANT1	10.27
High	2167.50	ANT0	10.21
		ANT1	10.02

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	9.90
		ANT1	10.17
High	2165.00	ANT0	10.88
		ANT1	10.52

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	9.81
		ANT1	11.34
High	2162.50	ANT0	10.75
		ANT1	10.26

#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

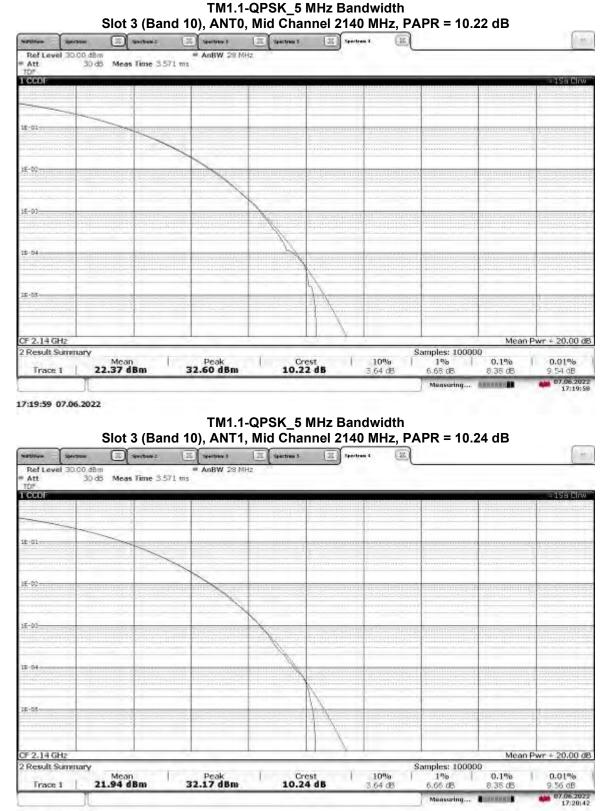
Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Mid	2140.00	ANT0	10.28
		ANT1	10.32
High	2160.00	ANT0	10.39

Intertek			
	Issued: 06/13/2022		
	Revised: 07/15/2022		
ANT1	10.57		

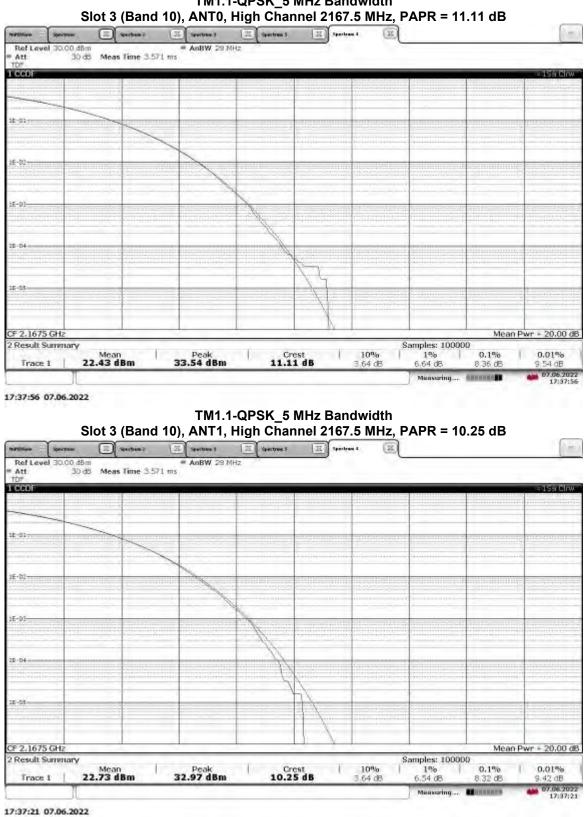
# 7.4 Setup Photograph:

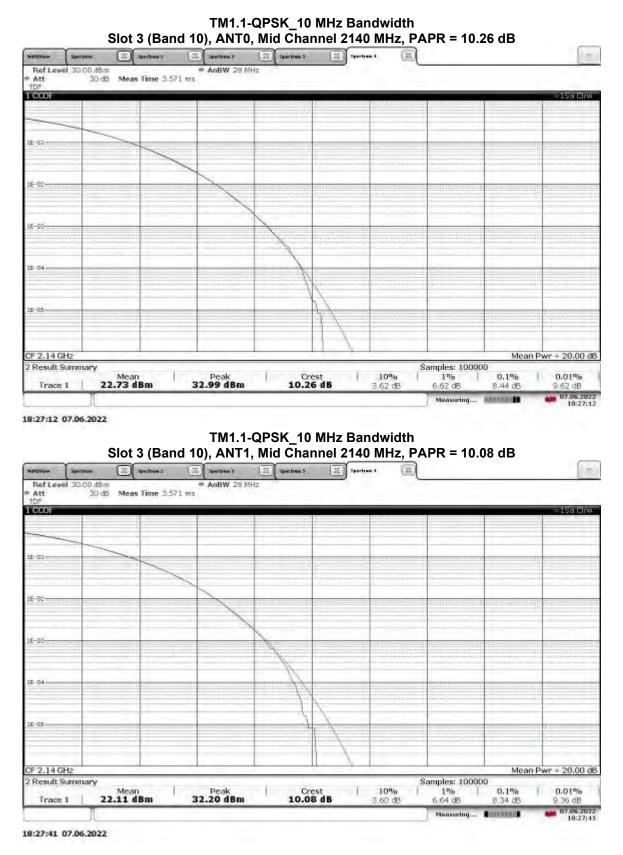
Confidential – Photos not included in this report

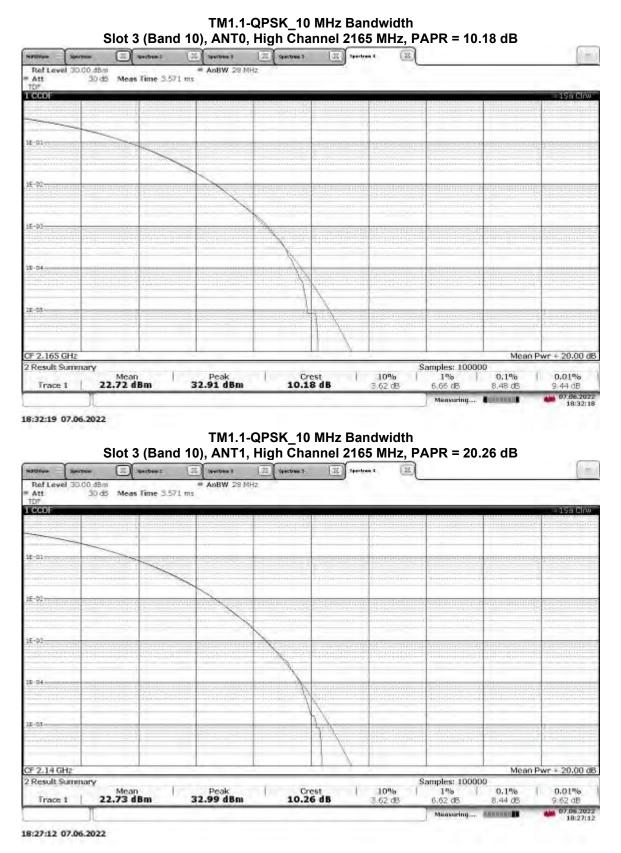
### 7.5 Plots/Data:

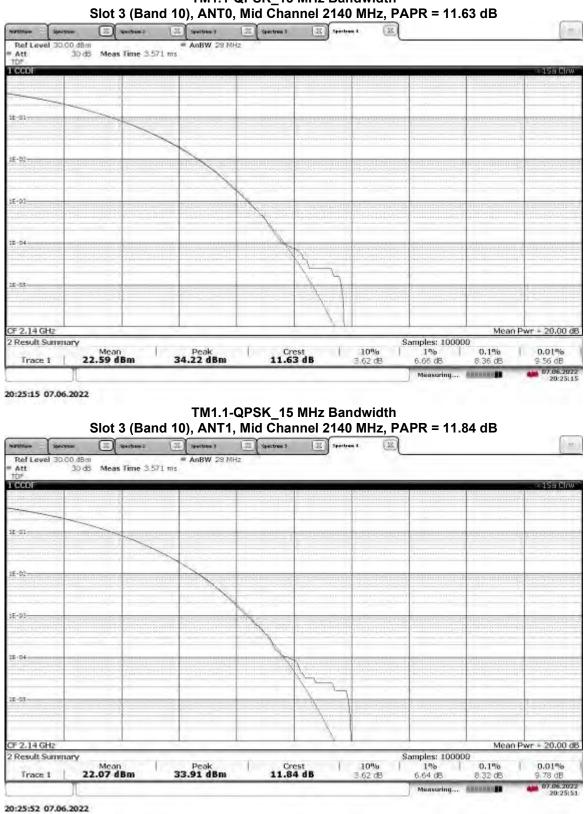


<sup>17:20:42 07.06.2022</sup> 

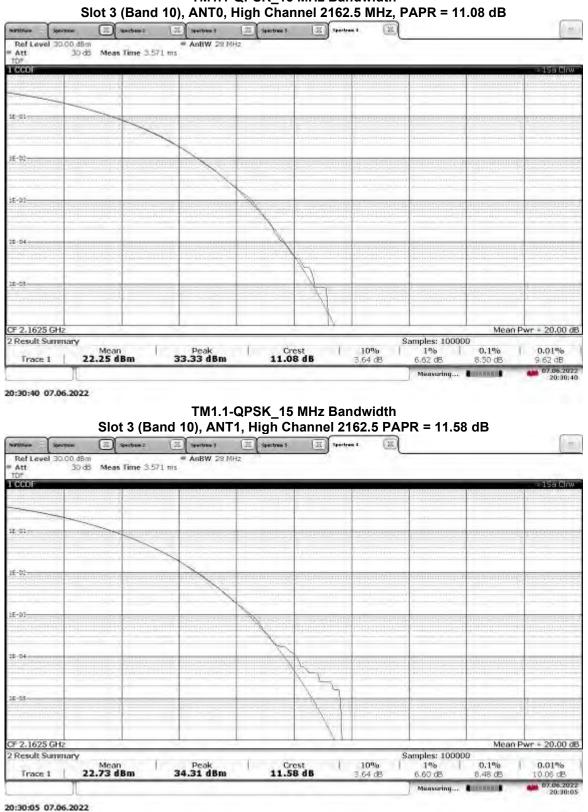


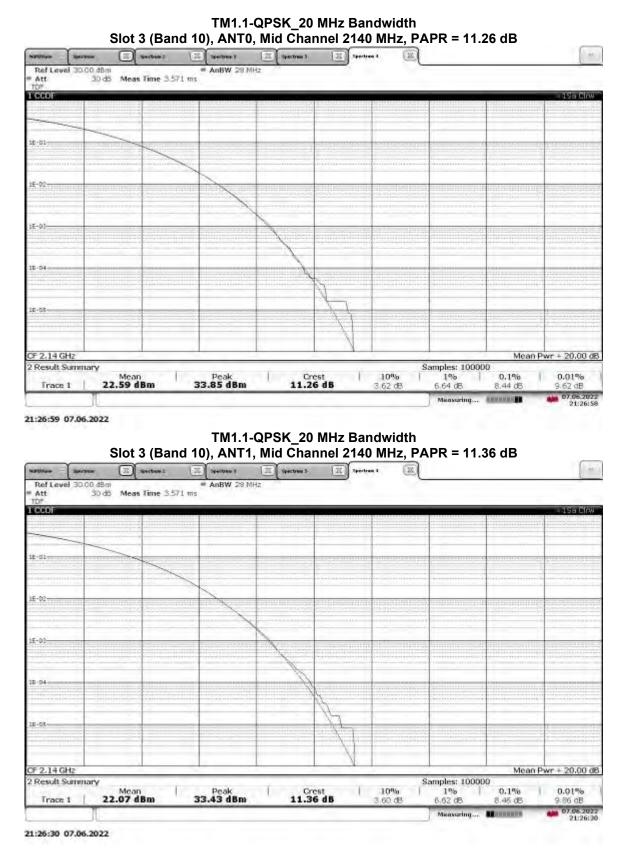




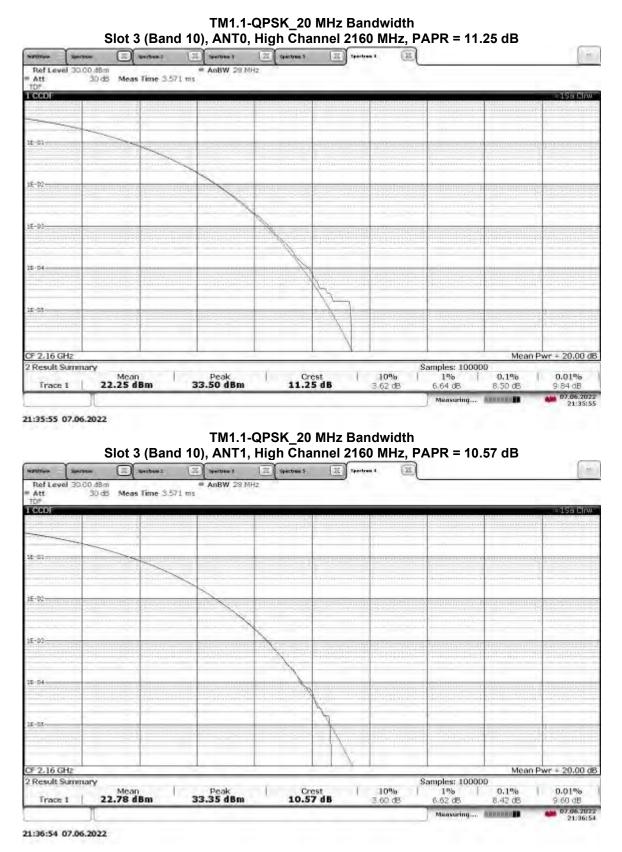


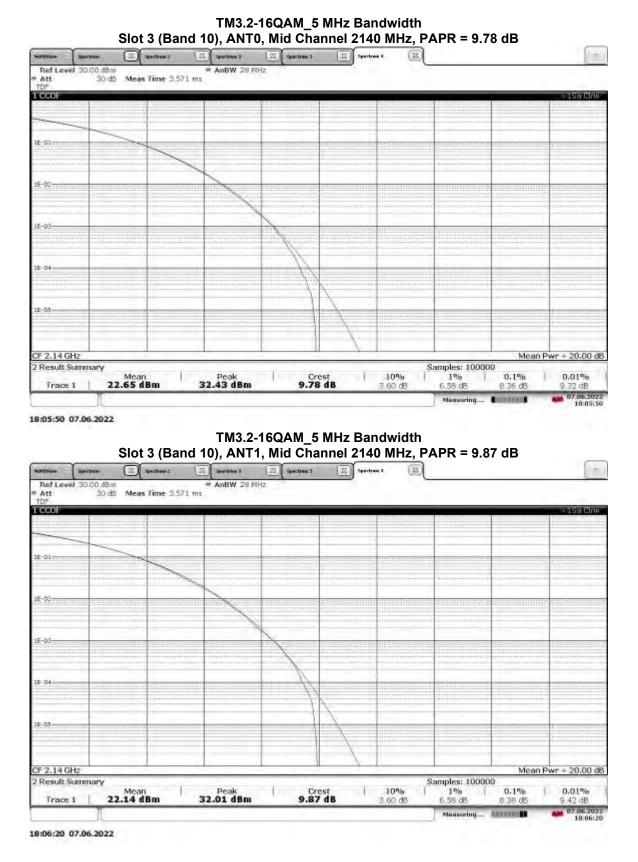
TM1.1-QPSK\_15 MHz Bandwidth



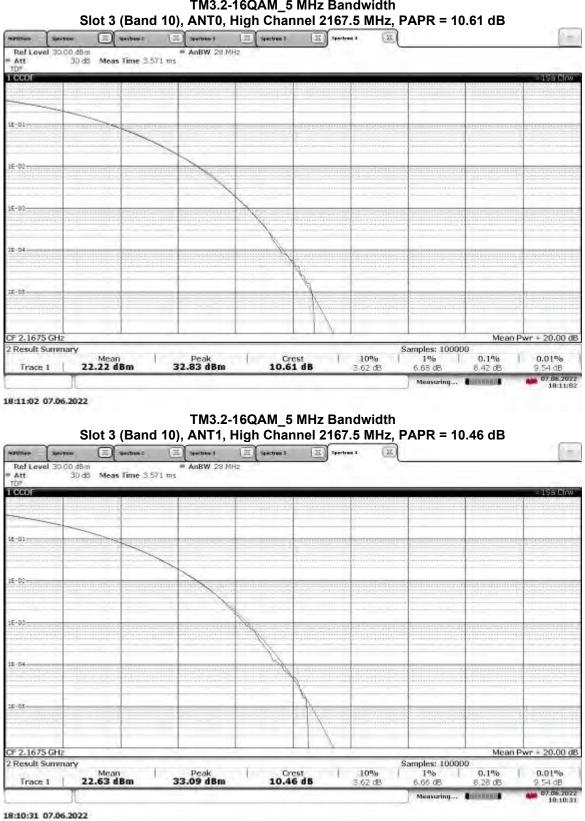


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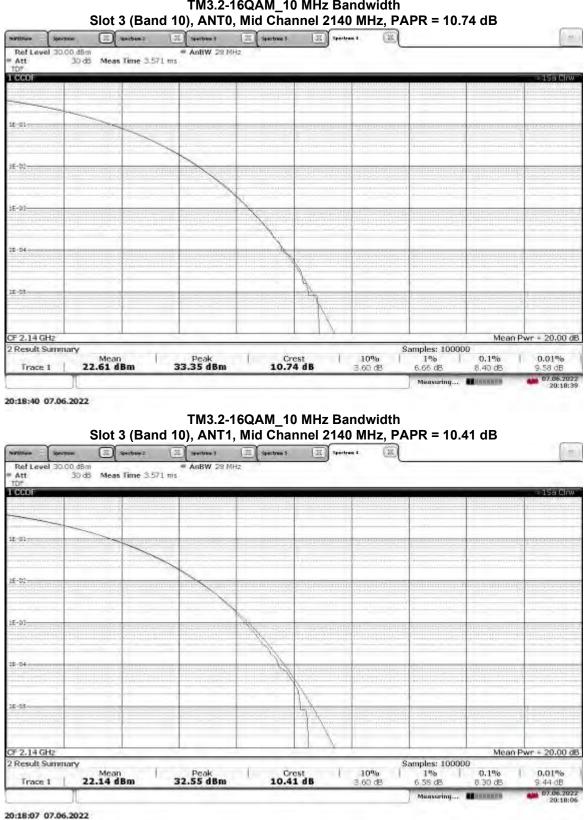


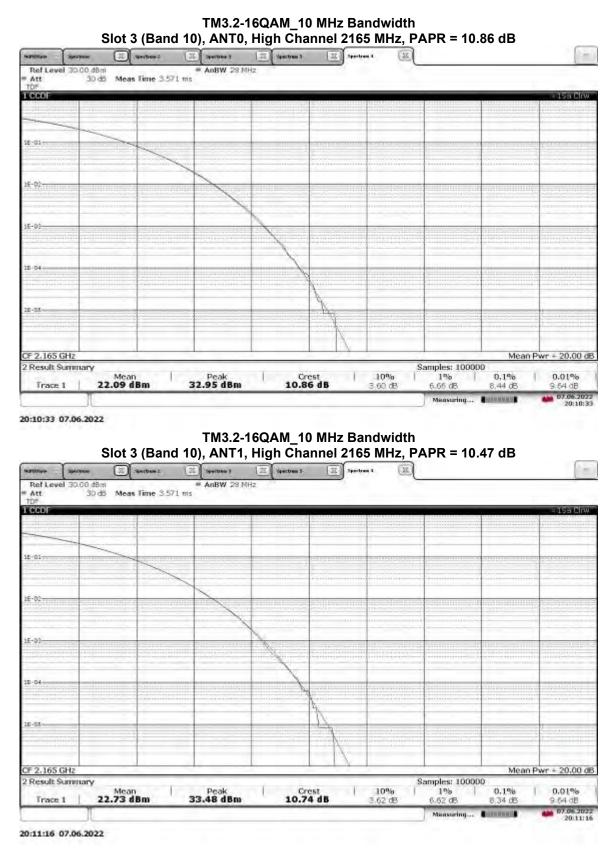


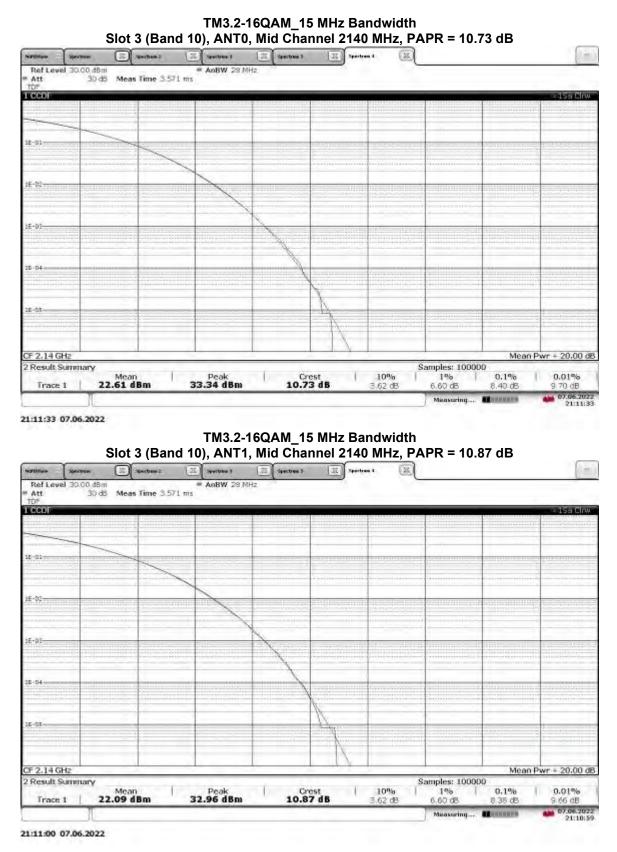
Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 (Band 10)

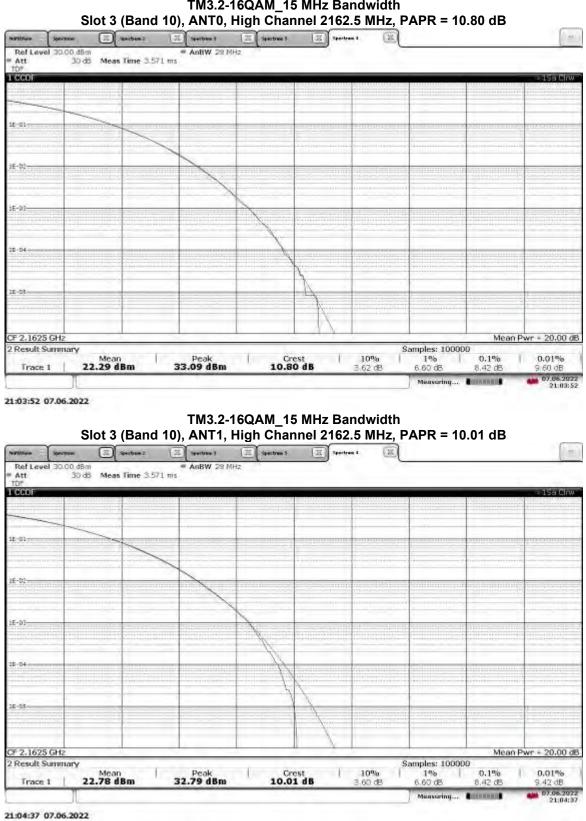


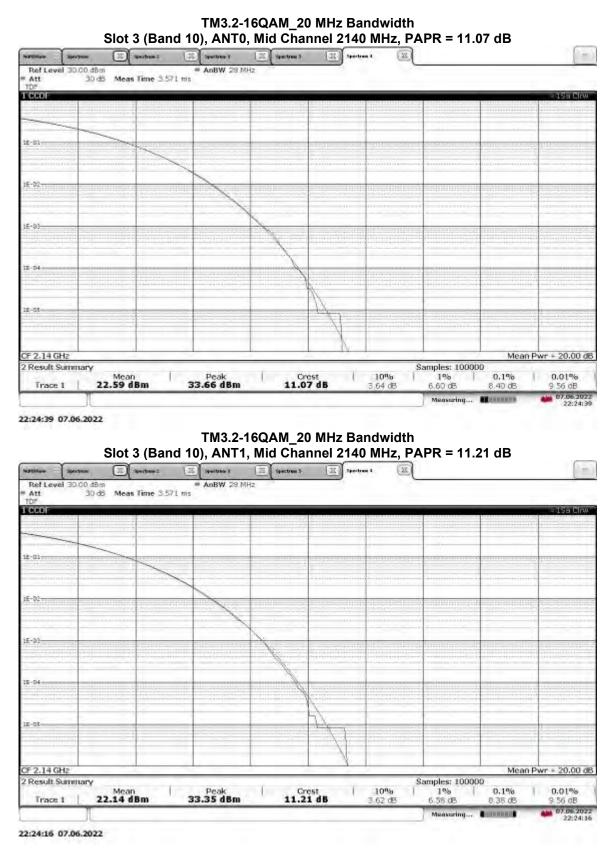
TM3.2-16QAM\_5 MHz Bandwidth

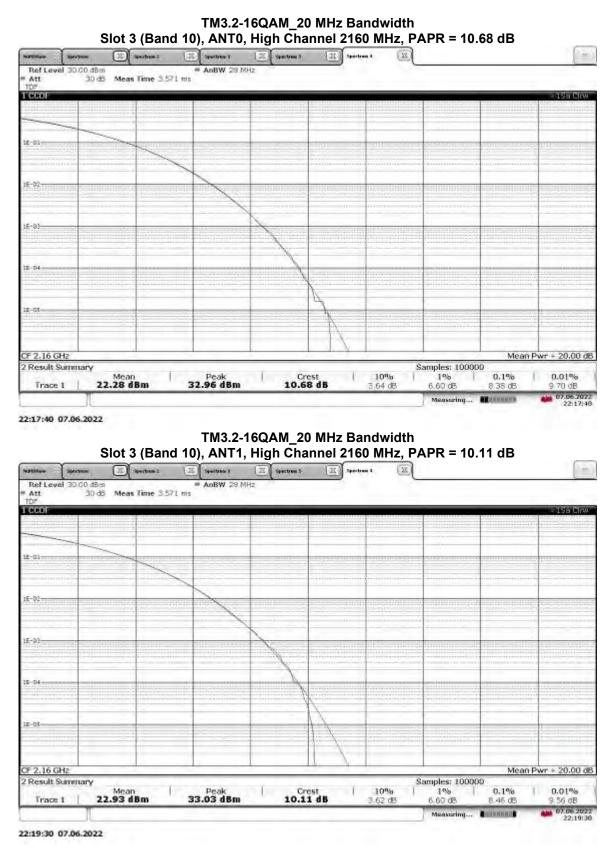


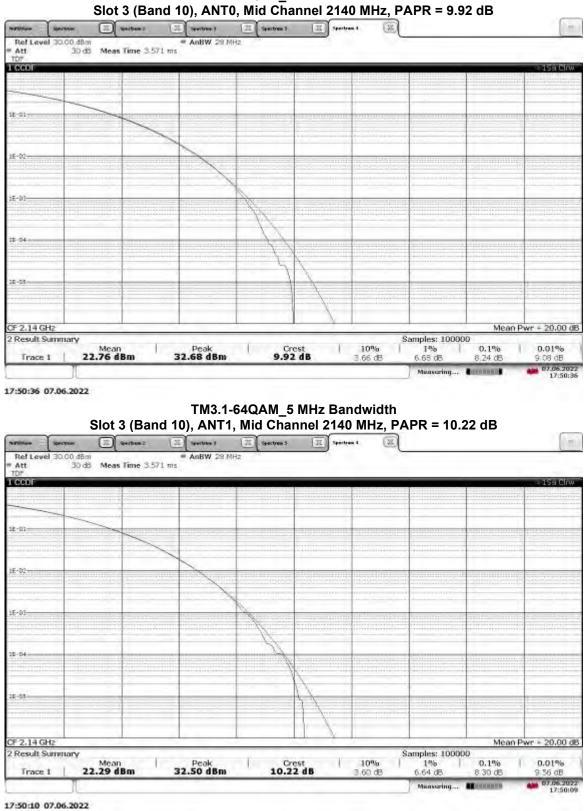


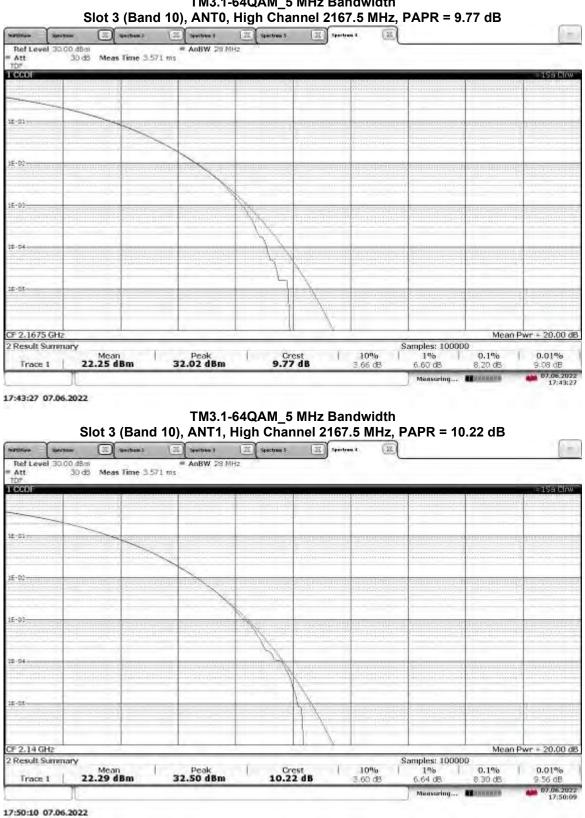


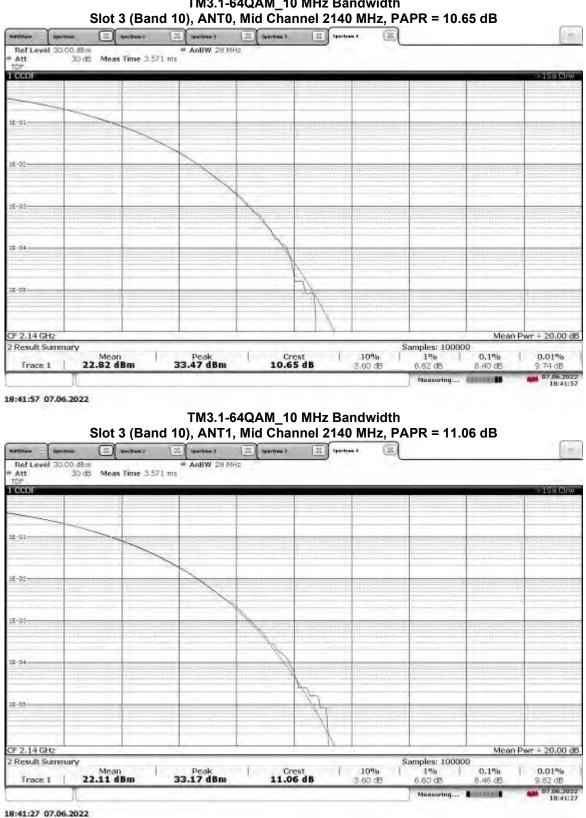


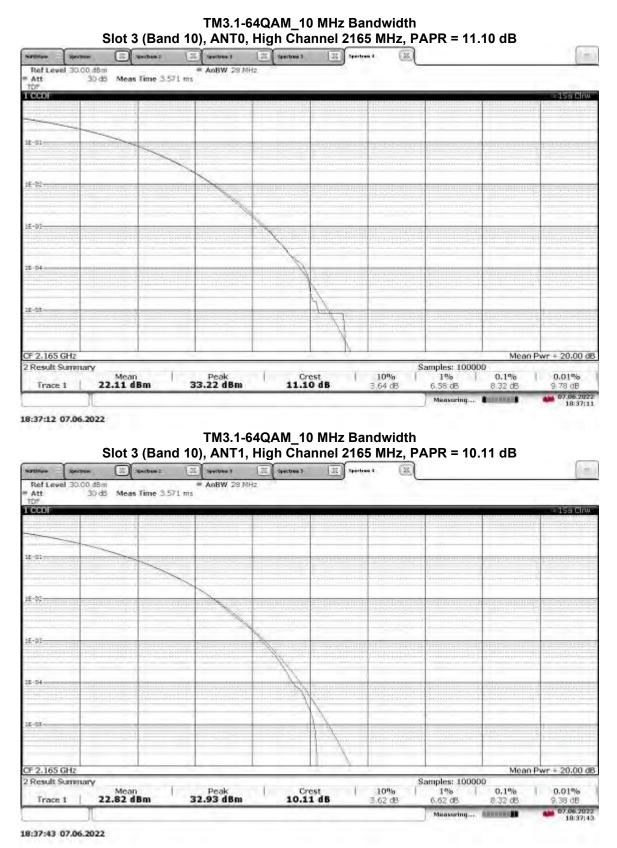




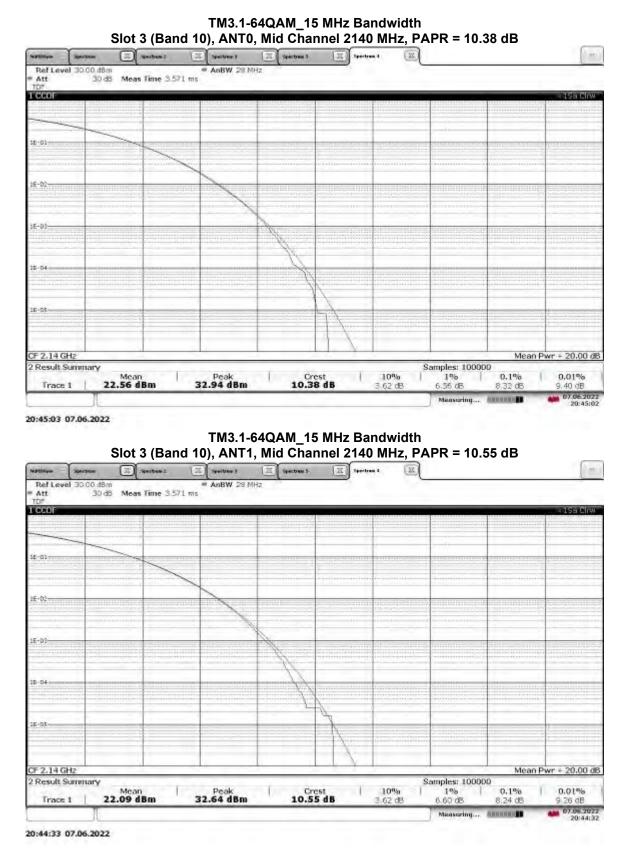


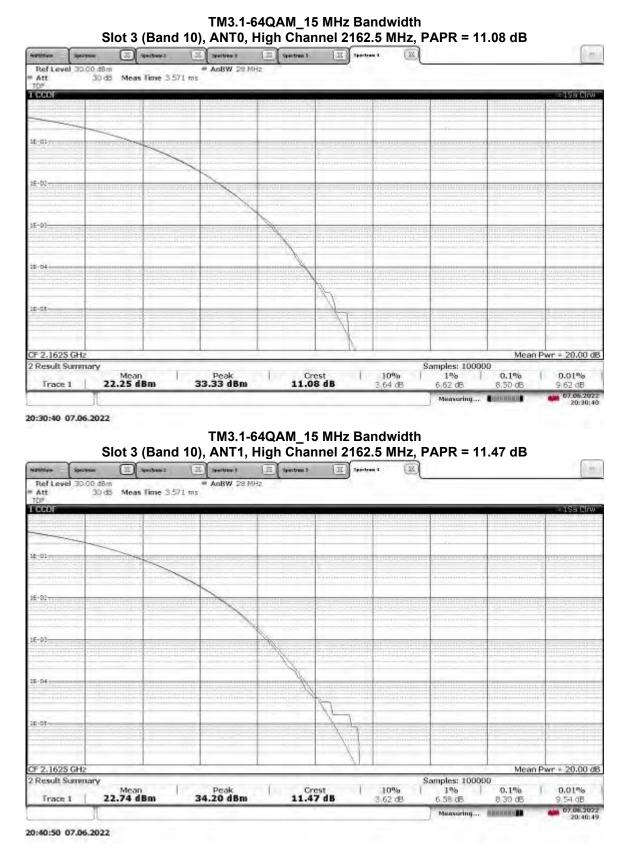


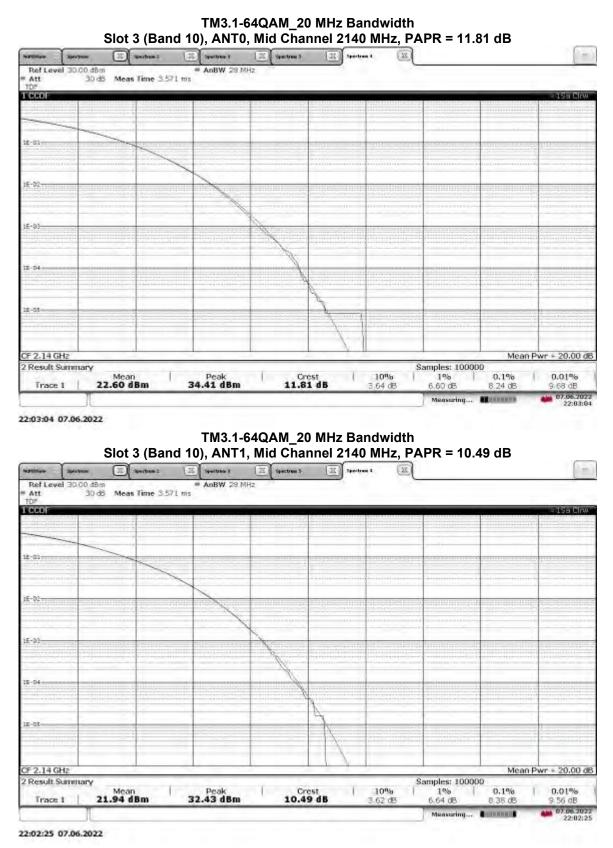




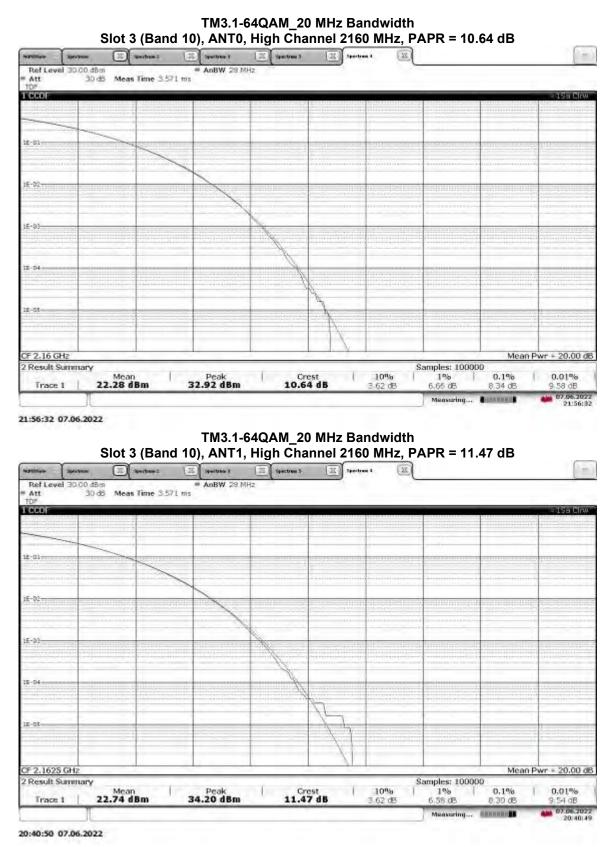
Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 (Band 10)

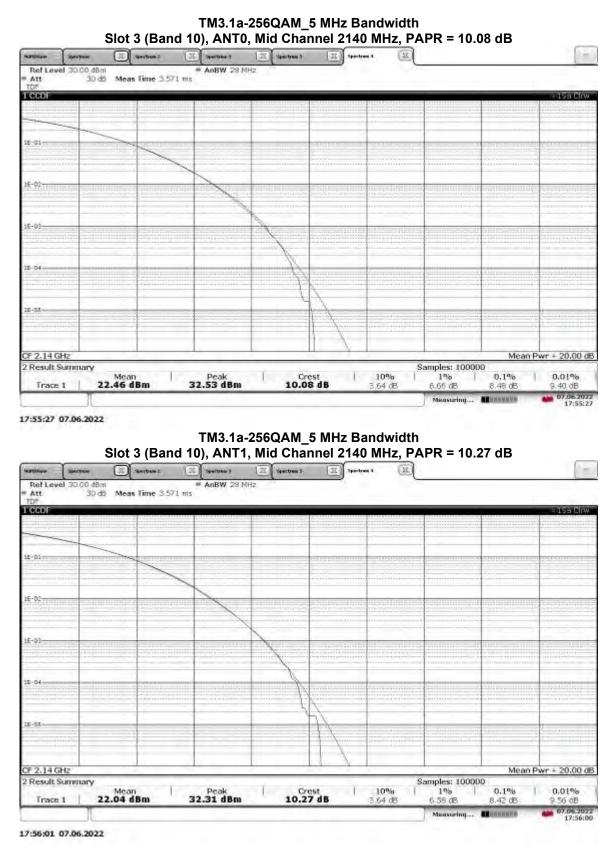


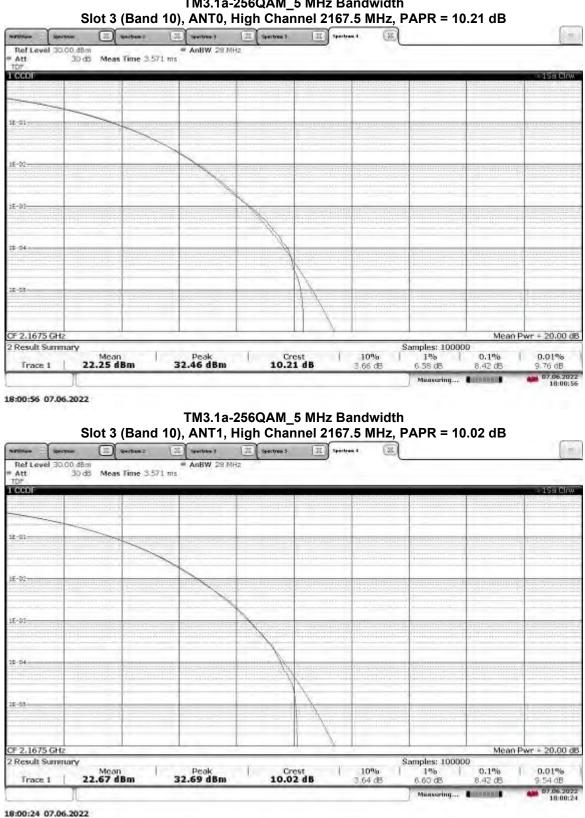


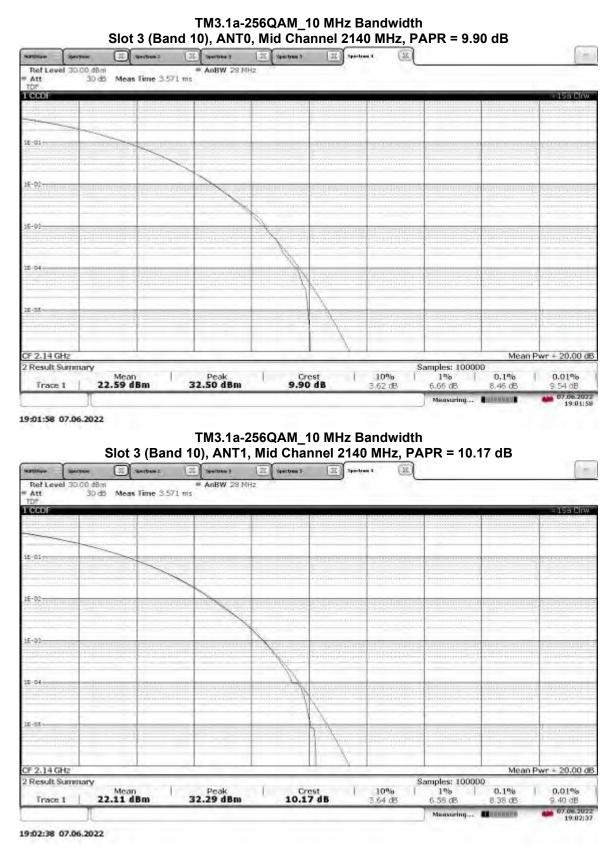


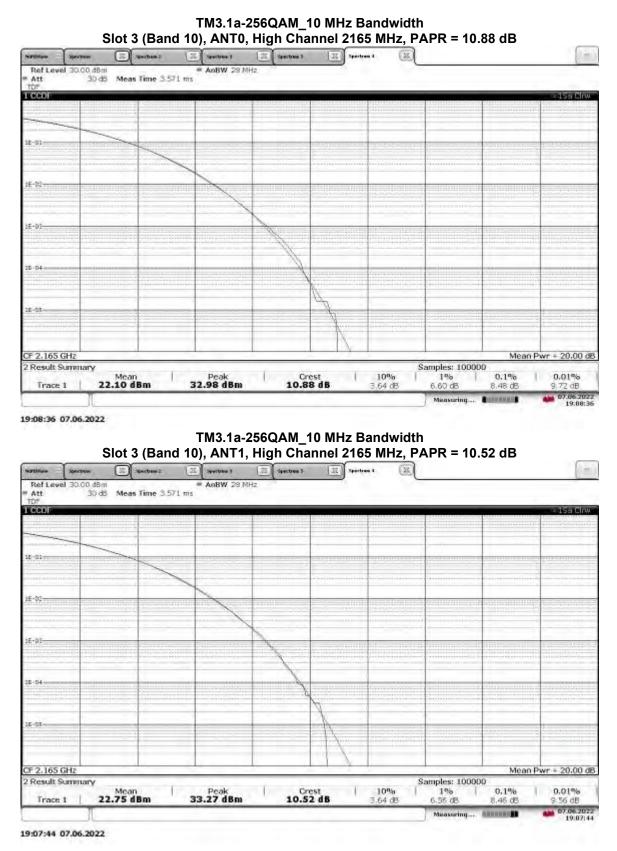
Non-Specific Radio Report Shell Rev. December 2017 Client: CommScope Technologies LLC / Model: RPM-A5A11-B66 (Band 10)

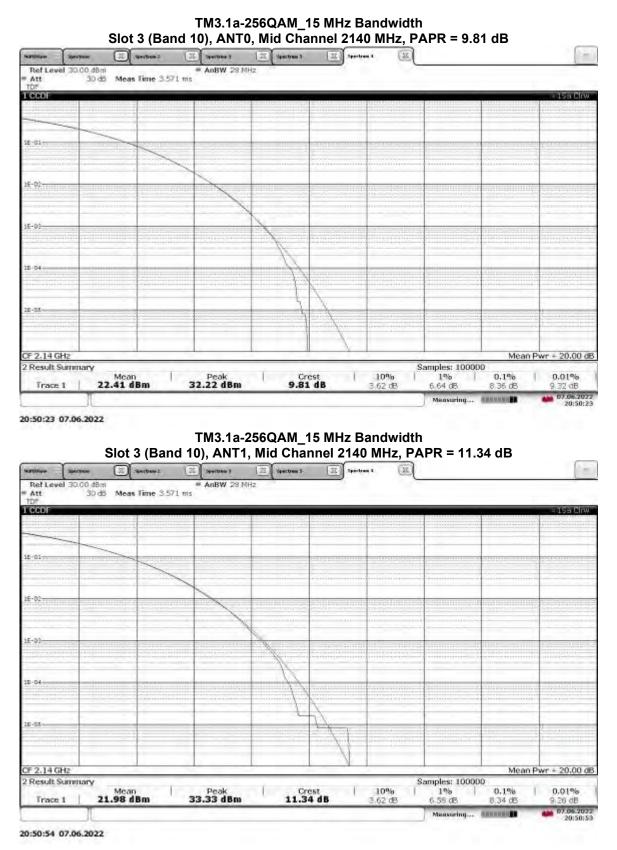


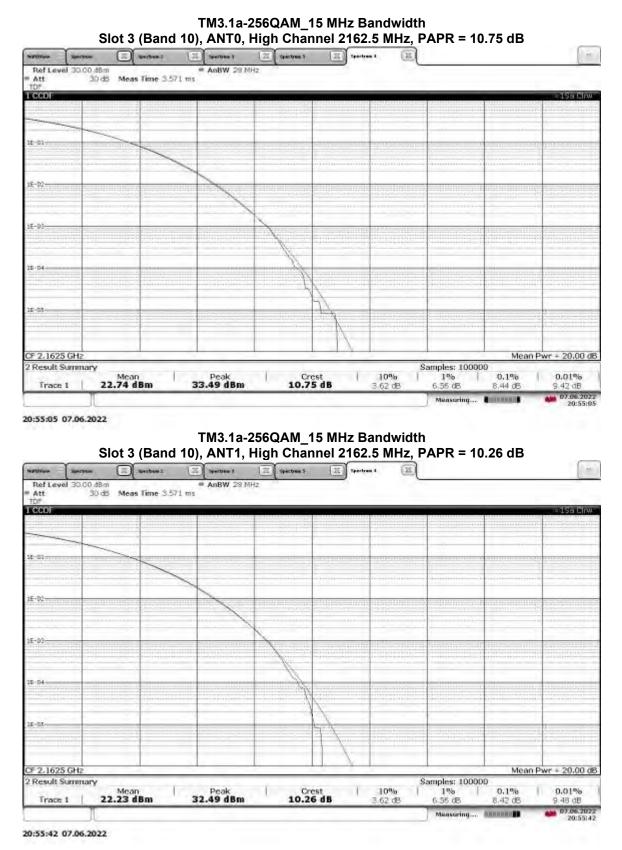


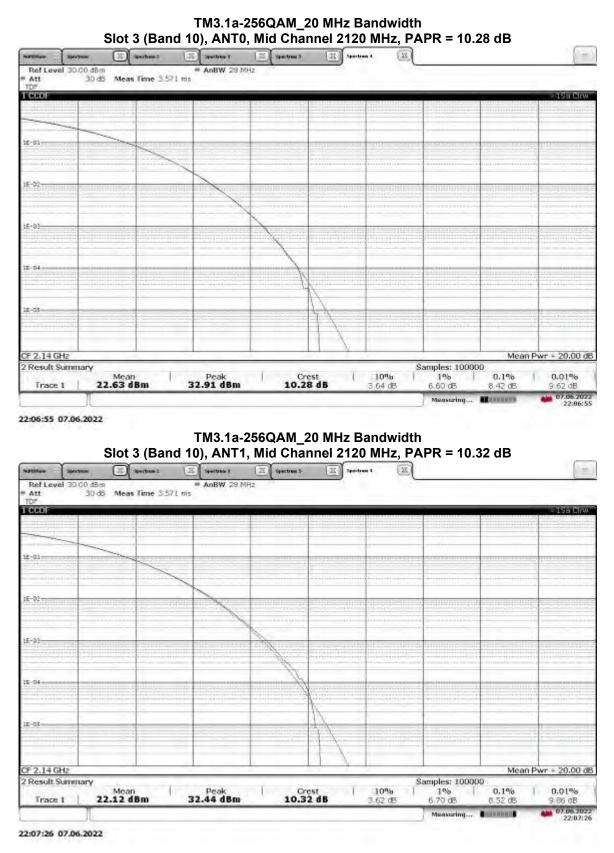


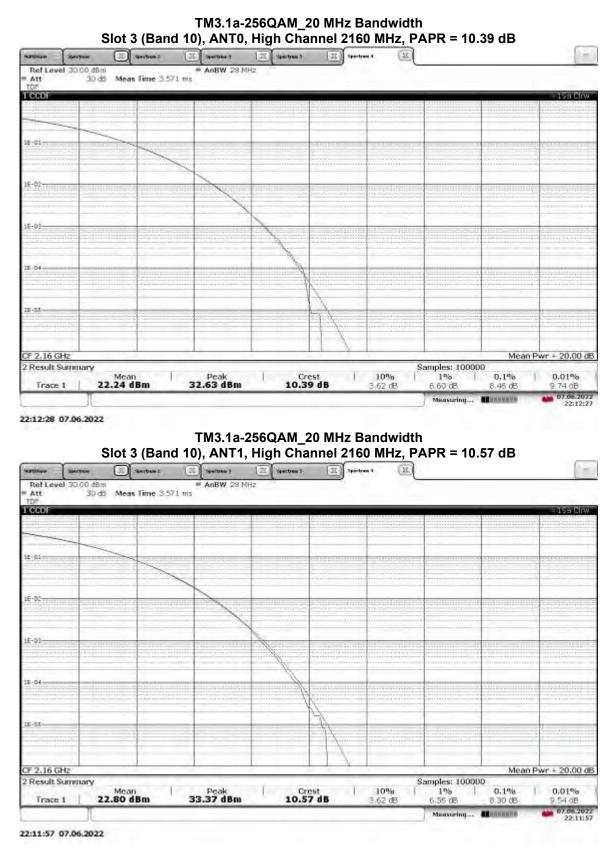












Intertek						
Report Number: 10	5081151BOX-002		Issued: 06/13/2022			
			Revised: 07/15/2022			
Test Personnel:	Vathana Ven	Test Date:	06/07/2022			
Supervising/Reviewing Engineer: (Where Applicable)	N/A					
Product Standard: Input Voltage:	FCC Part 27 48 VDC (POE)	Limit Applied:	See report section 7.3			
Pretest Verification w/ Ambient Signals or		Ambient Temperature:	25 °C			
BB Source:	N/A	Relative Humidity:	43 %			
		Atmospheric Pressure:	1006 mbars			

Deviations, Additions, or Exclusions: None

### 8 26 dB Bandwidth and Occupied Bandwidth

### 8.1 Method

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

#### 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.

### 8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
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	252675001	02/10/2022	02/10/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
DAV005'	Weather Station	Davis	6250	MS191218083	02/11/2022	02/11/2023

#### Software Utilized:

Name	Manufacturer	Version
None	-	

### 8.3 Results:

The sample tested was found to Comply.

FCC Part §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.

FCC Part §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.

Band 10	Bandwidth:	5 MHz.	Modulation:	TM1.1-QPSK
Balla IV	Banamatin	•	modulation	

Bana ro, Banamatin o initz, inocalation. Timitri Qi ort						
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)		
Mid	2140.00	ANT0	4.50	5.00		
		ANT1	4.50	5.00		
High	2167.50	ANT0	4.50	5.00		
		ANT1	4.50	5.00		

#### Band 10, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Mid	2140.00	ANT0	8.97	9.85
		ANT1	8.97	9.85
High	2165.00	ANT0	8.97	9.87
-		ANT1	8.97	9.85

#### Band 10, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Mid	2140.00	ANT0	13.46	14.78
		ANT1	13.46	14.80
High	2162.50	ANT0	13.46	14.78
		ANT1	13.46	14.78

#### Band 10, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)		
Mid	2140.00	ANT0	17.89	19.50		
		ANT1	17.89	19.54		
High	2160.00	ANT0	17.89	19.54		
		ANT1	17.88	19.50		

#### Band 10, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)	
Mid	2140.00	ANT0	4.49	4.95	
		ANT1	4.47	4.95	
High	2167.50	ANT0	4.49	4.95	
		ANT1	4.49	4.95	

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)	
Mid	2140.00	ANT0	8.95	9.69	
		ANT1	8.91	9.73	
High	2165.00	ANT0	8.96	9.75	
		ANT1	8.92	9.69	

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

 Dana 10, Danawiatin. 10 miliz, modaliation. 1mo.z 106Am						
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)		
Mid	2140.00	ANT0	13.40	14.51		
		ANT1	13.39	14.65		
High	2162.50	ANT0	13.39	14.56		
-		ANT1	13.40	14.51		

#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Mid	2140.00	ANT0	17.92	19.42
		ANT1	17.90	19.42
High	2160.00	ANT0	17.92	19.46
_		ANT1	17.90	19.42

Report Number: 105081151BOX-002

Band 10, Bandwidth: 5 MHz, Mc	dulation: TM3.1-64QAM
-------------------------------	-----------------------

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)							
Mid	2140.00	ANT0	4.53	5.01							
		ANT1	4.53	5.00							
High	2167.50	ANT0	4.53	5.00							
		ANT1	4.53	5.01							

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)	
Mid	2140.00	ANT0	8.98	9.85	
		ANT1	8.98	9.85	
High	2165.00	ANT0	8.98	9.85	
		ANT1	8.98	9.85	

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Mid	2140.00	ANT0	13.48	14.80
		ANT1	13.47	14.80
High	2162.50	ANT0	13.47	14.78
		ANT1	13.46	14.78

#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)							
Mid	2140.00	ANT0	17.89	19.42							
		ANT1	17.89	19.50							
High	2160.00	ANT0	17.88	19.50							
		ANT1	17.89	19.50							

#### Band 10, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)					
Mid	2140.00	ANT0	4.52	5.00					
		ANT1	4.52	5.00					
High	2167.50	ANT0	4.52	5.00					
		ANT1	4.52	5.00					

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)					
Mid	2140.00	ANT0	8.96	9.77					
		ANT1	8.96	9.77					
High	2165.00	ANT0	8.96	9.77					
		ANT1	8.96	9.79					

#### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)						
Mid	2140.00	ANT0	13.45	14.71						
		ANT1	13.45	14.80						
High	2162.50	ANT0	13.45	14.78						
		ANT1	13.45	14.80						

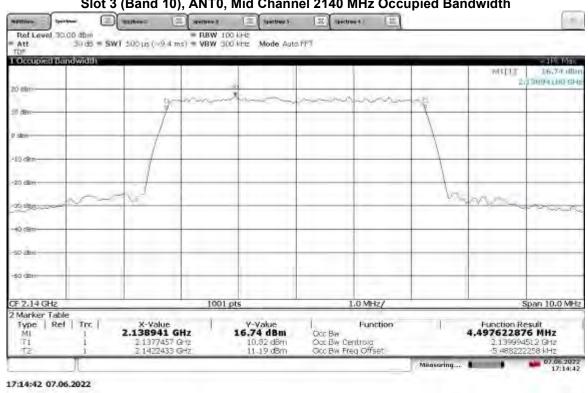
#### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Mid	2140.00	ANT0	17.89	19.50
		ANT1	17.88	19.54
High	2160.00	ANT0	17.89	19.58
		ANT1	17.88	19.58

### 8.4 Setup Photograph:

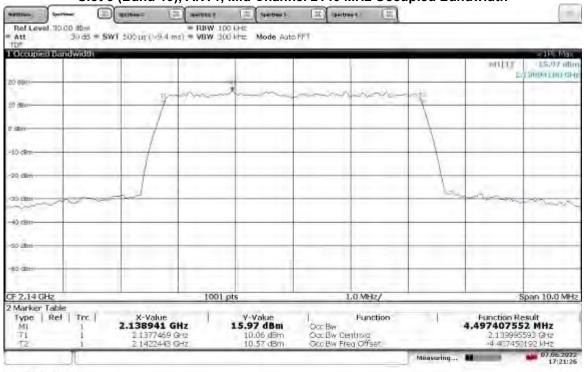
Confidential - Photos not included in this report

### 8.5 Plots/Data:

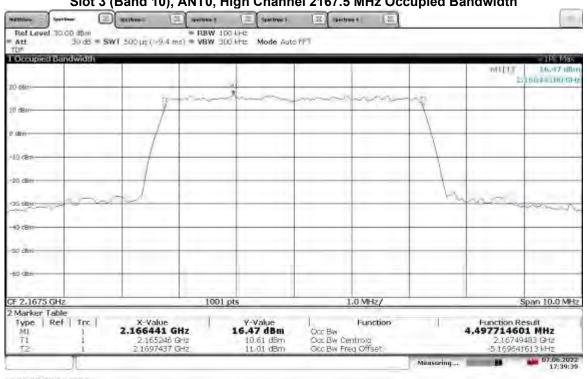


#### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

#### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



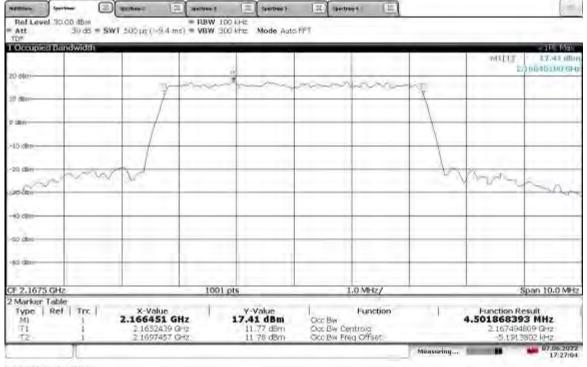
17:21:27 07.06.2022



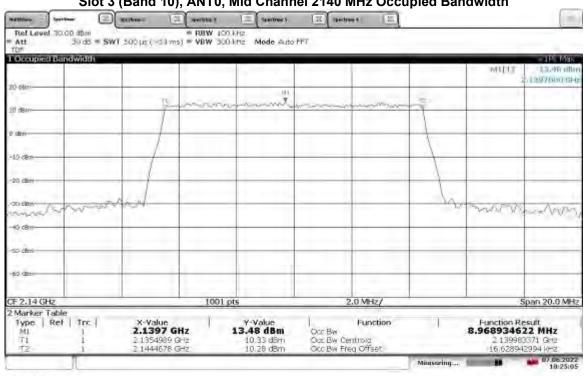
### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz Occupied Bandwidth

17:39:39 07.06.2022

#### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz Occupied Bandwidth



17:27:04 07.06.2022



TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

18:25:05 07.06.2022

### TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth

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Marker Table Type   Ref	Trc	X-Value		Y-Value	1	Function	1	Function Re	cult
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71	i	2.1355007 0		9.64 dBm 9.93 dBm	Occ Bw Ce Occ Bw Fr				536 GHE

18:28:27 07.06.2022



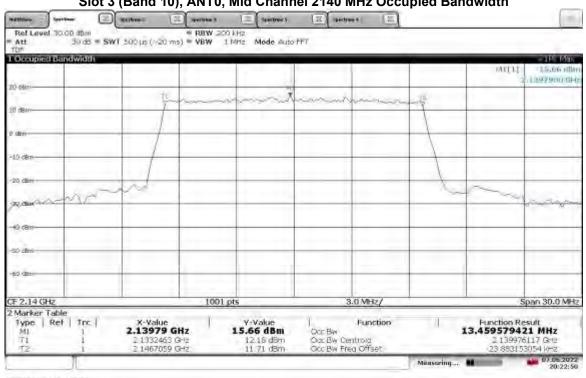
TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2165 MHz Occupied Bandwidth

18:34:13 07.06.2022

#### TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz Occupied Bandwidth

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2.165 GHz			1001 pt	s	2	.0 MHz/	-	4	Span 20.0 MHz
Marker Table									
Type   Ref	Trc	X-Value		Y-Value	I. State	Function		Function R	
MI 71	1	2.162363 G		10.80 dBm	Occ Bw Occ Bw Cer	atusa		8.9704195	03 MHZ 0621 GH2
T2	1	2 1694658 0		10,27 dBm	Occ Bw De			19.37868	

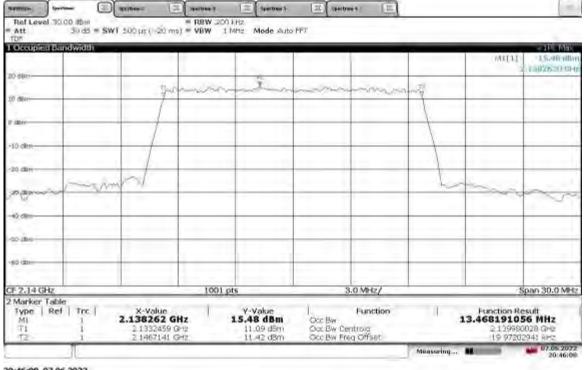
18:29:38 07.06.2022



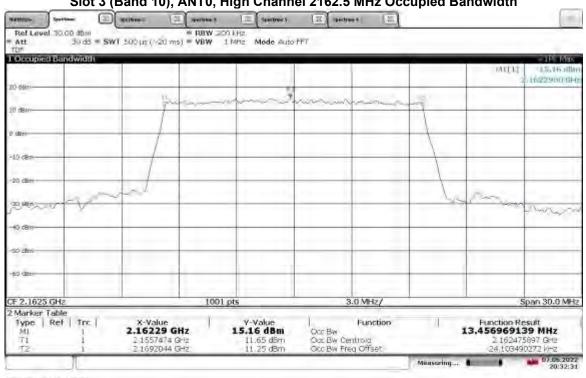
TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

20:22:51 07.06.2022

#### TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



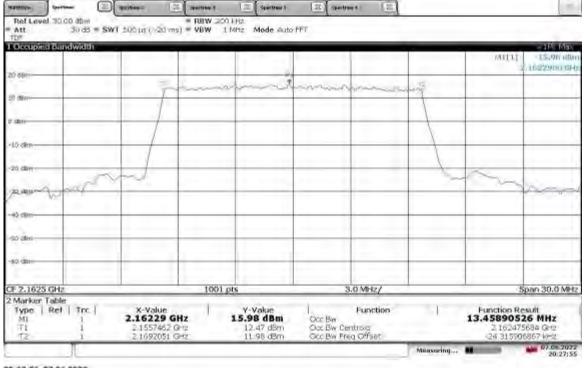
20:46:09 07.06.2022



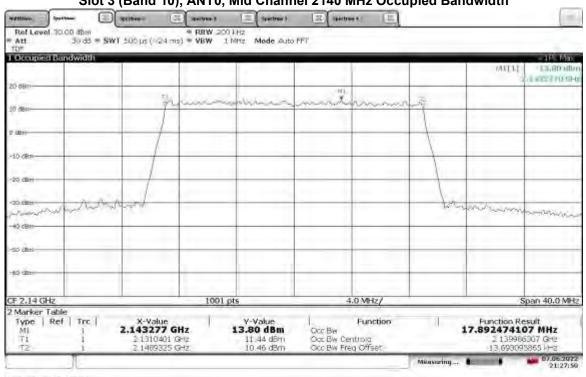
TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz Occupied Bandwidth

20:32:31 07.06.2022

#### TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz Occupied Bandwidth



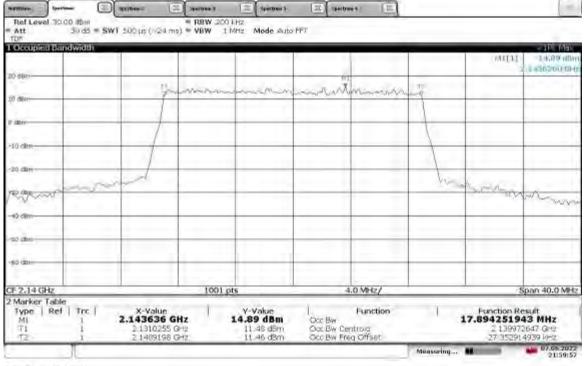
20:27:56 07.06.2022



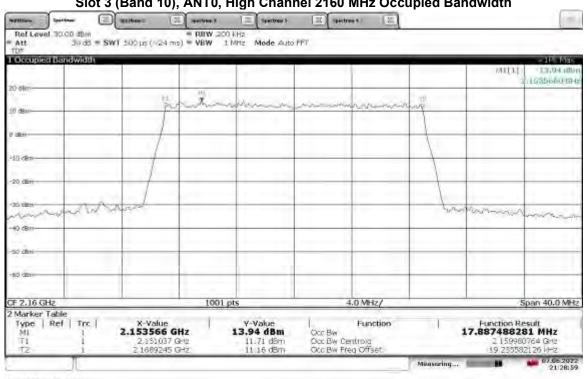
TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

21:27:50 07.06.2022

### TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



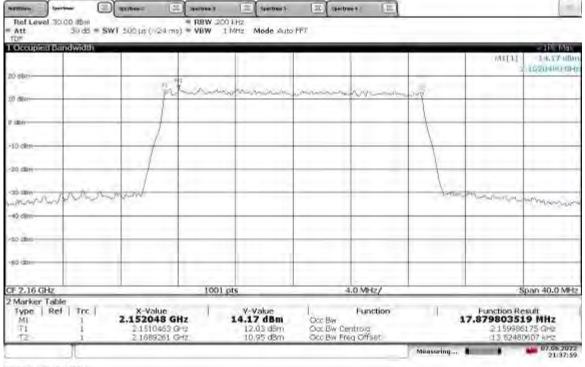
21:59:57 07.06.2022



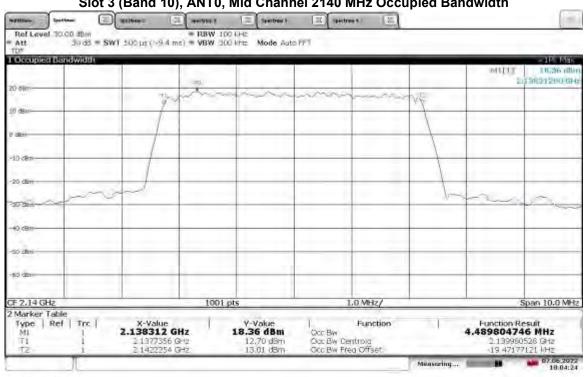
TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz Occupied Bandwidth

21:29:00 07.06.2022

### TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz Occupied Bandwidth



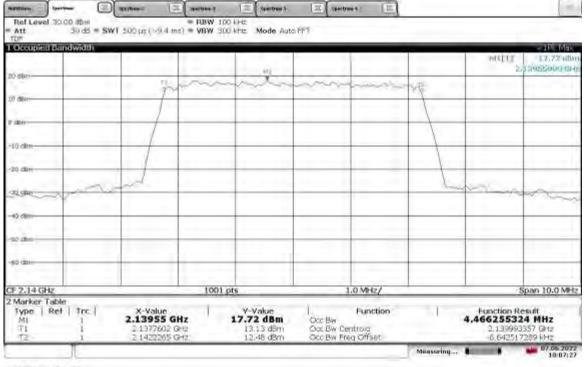
21:37:59 07.06.2022



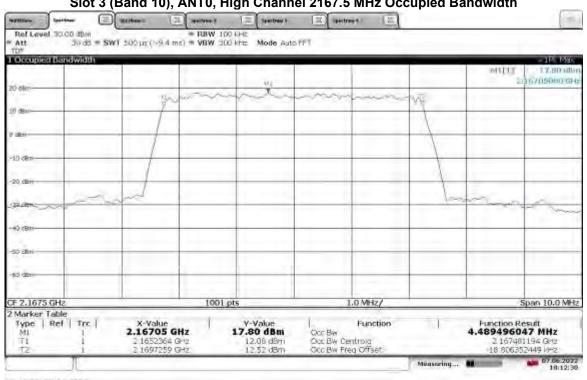
TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

18:04:24 07.06.2022

### TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



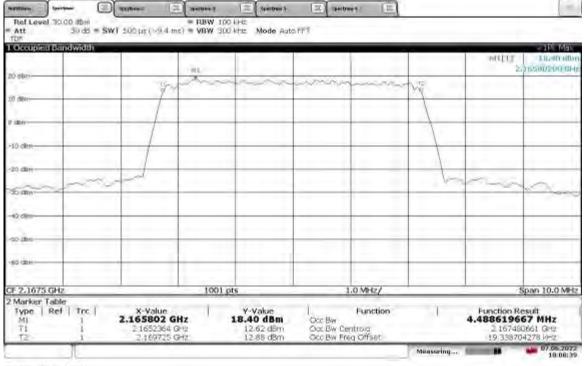
18:07:27 07.06.2022



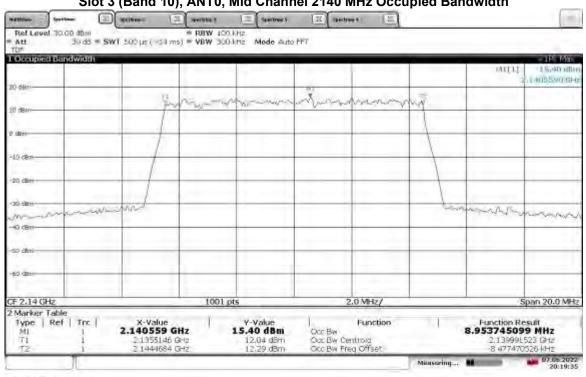
TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz Occupied Bandwidth

18:12:30 07.06.2022

### TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz Occupied Bandwidth



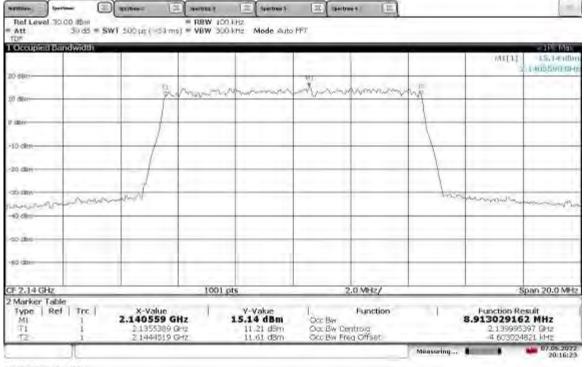
18:08:39 07.06.2022



TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

20:19:35 07.06.2022

### TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



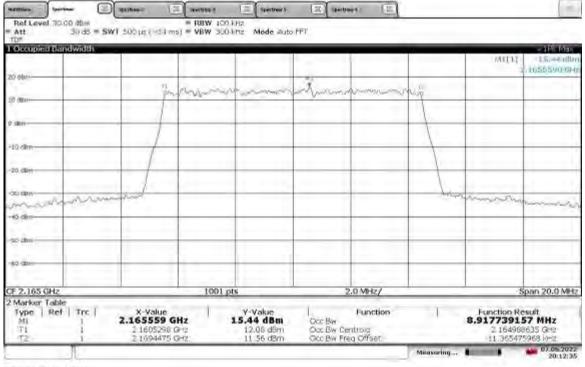
20:16:24 07.06.2022



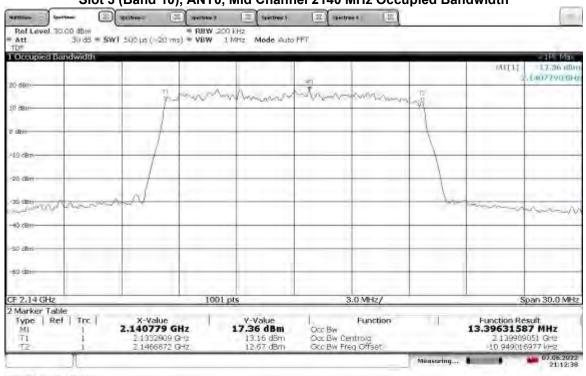
TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2165 MHz Occupied Bandwidth

20:08:45 07.06.2022

#### TM3.2-16QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz Occupied Bandwidth



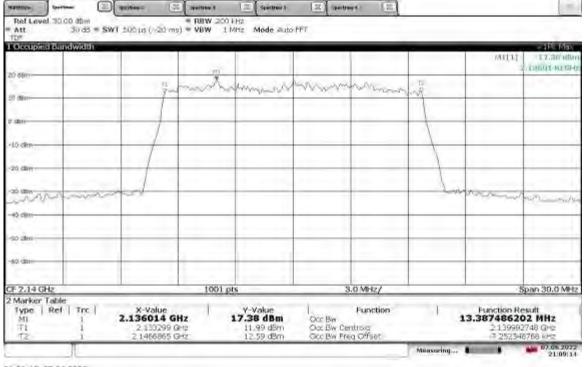
20:12:35 07.06.2022



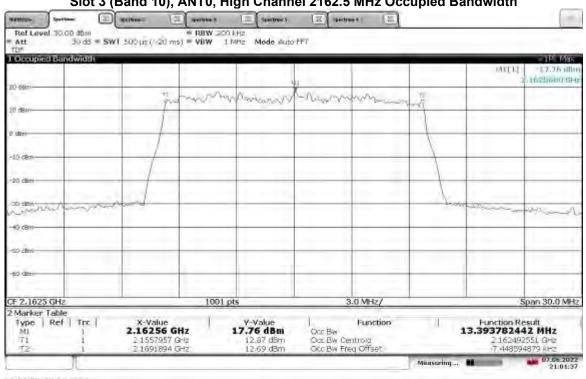
TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

21:12:38 07.06.2022

### TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



21:09:15 07.06.2022



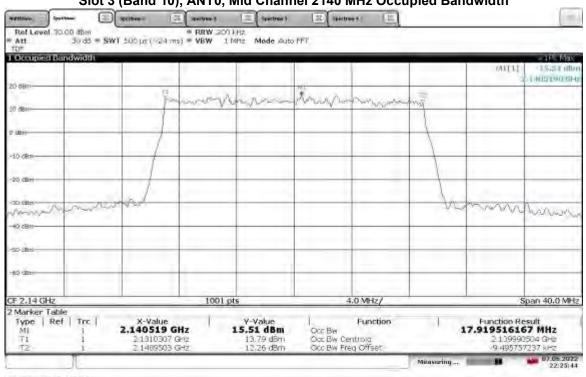
TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz Occupied Bandwidth

21:01:37 07.06.2022

### TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz Occupied Bandwidth

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i0 dBm								
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10 GBH - A - /1	1.2.0000	I		1			ho	- 11 - Land - Maria
40 cBm								and and an
so chri		-						
Contra Contra								
50 dBm								
F 2.1625 GHz		_	1001 pi	ts	3	3.0 MHz/	-	Span 30.0 MH
Marker Table Type   Ref Mi T1 T2	Trc	X-Value 2.163279 G 2.1557697 ( 2.1691905 (	2-12	V-Value 17.77 dBm 13.72 dBm 13.00 dBm	Occ Bw Occ Bw Cer Occ Bw Fre		1.0	Function Result 13.400827616 MHz 2.162490076 GHz 19.924344417 kHz

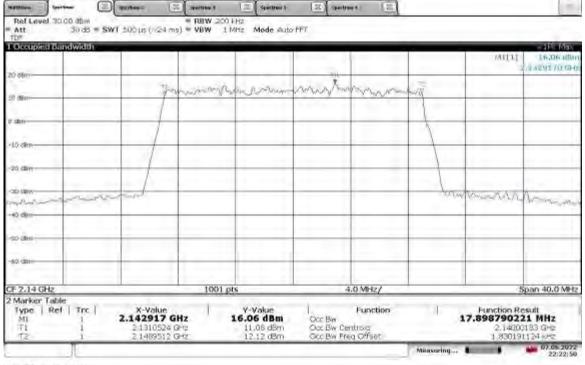
21:06:52 07.06.2022



TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

22:25:44 07.06.2022

### TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



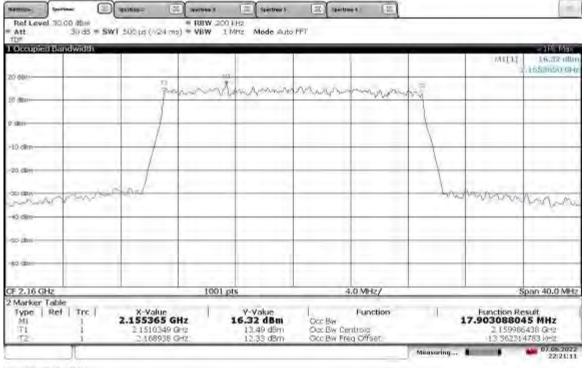
22:22:50 07.06.2022



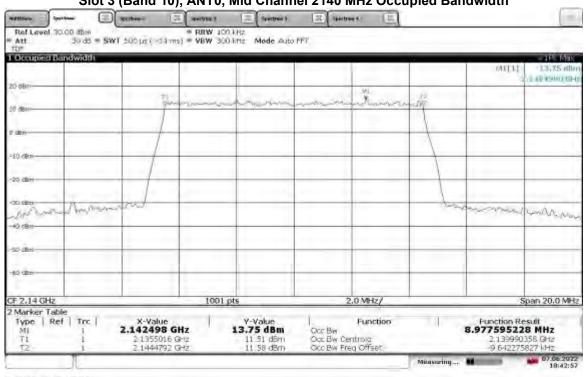
TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz Occupied Bandwidth

22:16:15 07.06.2022

#### TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz Occupied Bandwidth



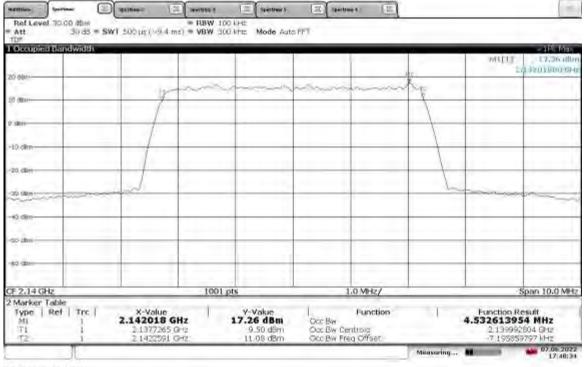
22:21:12 07.06.2022



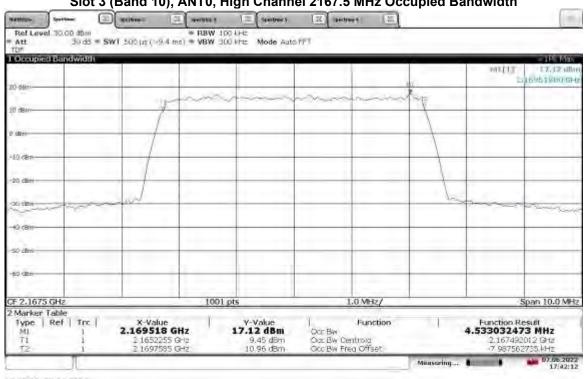
TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

18:42:57 07.06.2022

#### TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



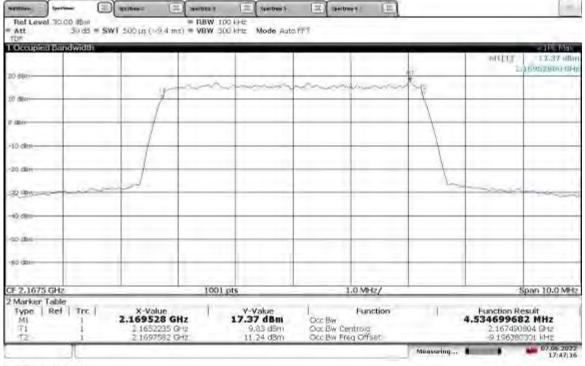
17:48:34 07.06.2022



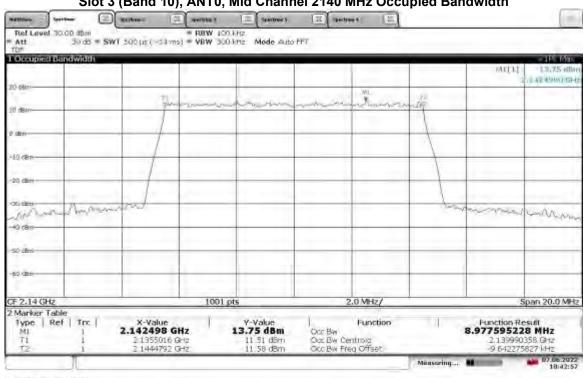
TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz Occupied Bandwidth

17:42:12 07.06.2022

### TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz Occupied Bandwidth



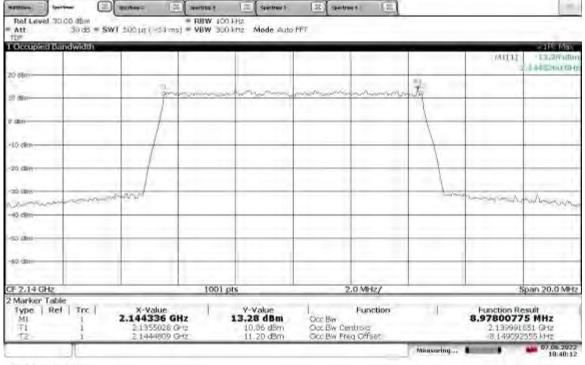
17:47:16 07.06.2022



### TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

18:42:57 07.06.2022

### TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



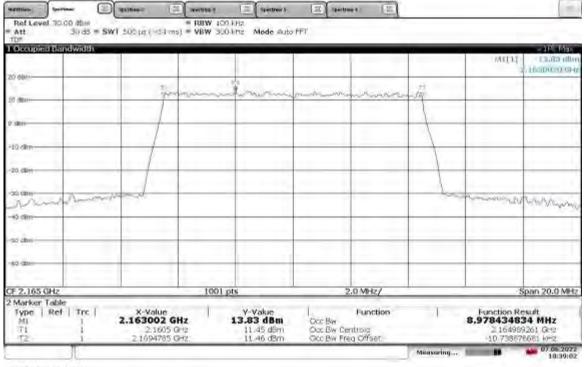
18:40:12 07.06.2022



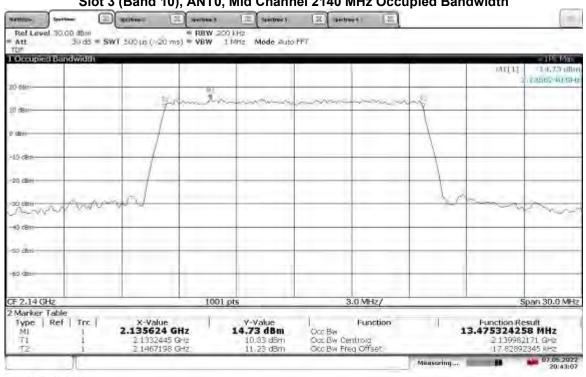
TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2165 MHz Occupied Bandwidth

18:35:49 07.06.2022

#### TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz Occupied Bandwidth



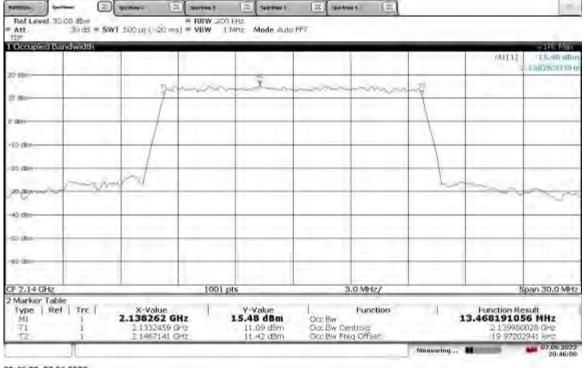
18:39:02 07.06.2022



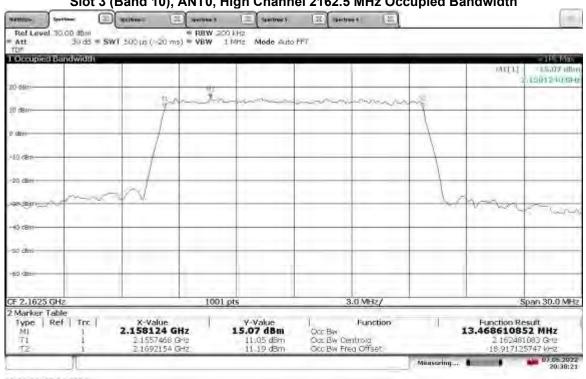
TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

20:43:08 07.06.2022

#### TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



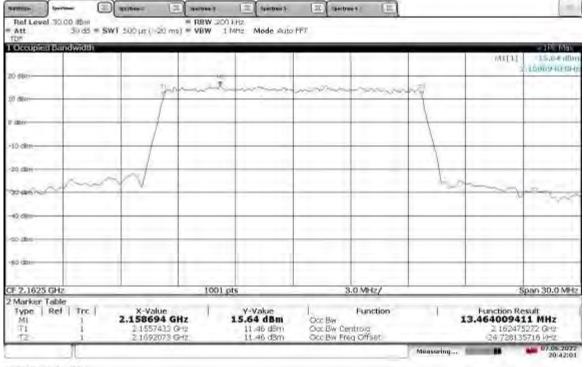
20:46:09 07.06.2022



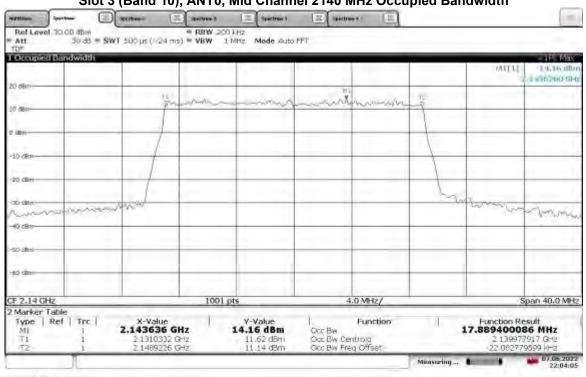
TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2162.5 MHz Occupied Bandwidth

20:38:21 07.06.2022

#### TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz Occupied Bandwidth



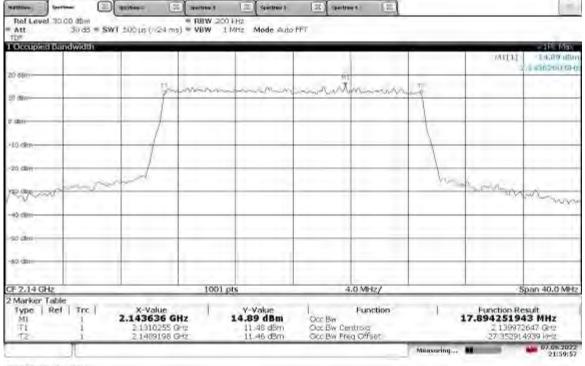
20:42:01 07.06.2022



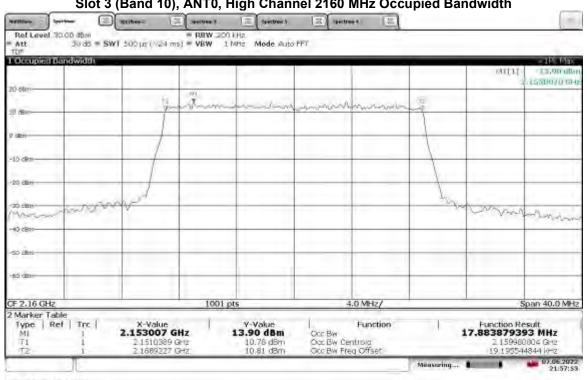
TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

22:04:05 07.06.2022

#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



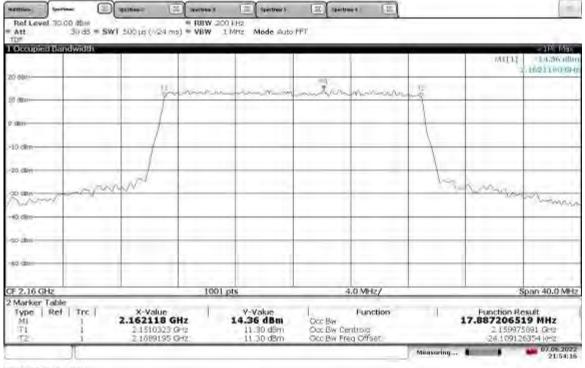
21:59:57 07.06.2022



#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz Occupied Bandwidth

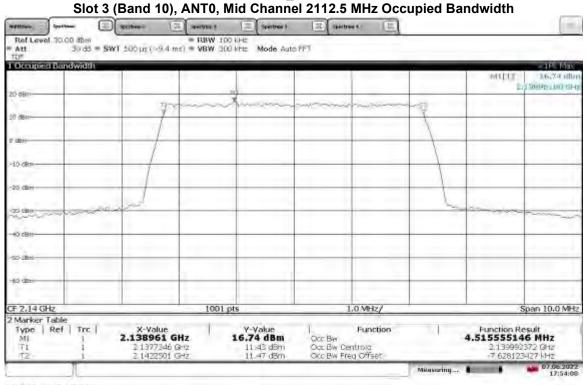
21:57:54 07.06.2022

#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz Occupied Bandwidth



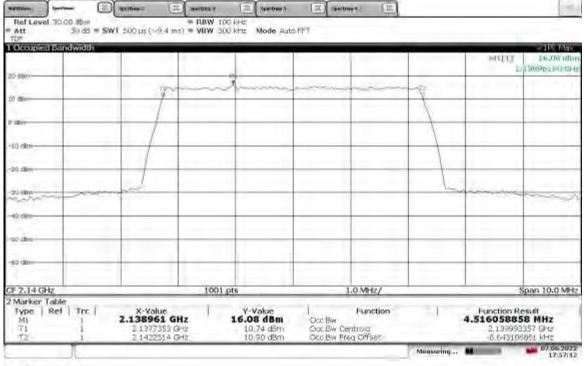
21:54:16 07.06.2022

TM3.1a-256QAM\_5 MHz Bandwidth

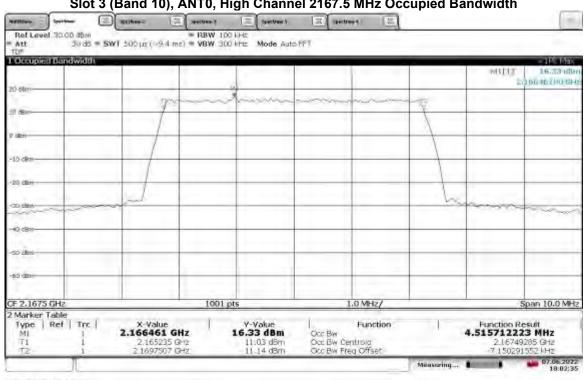


17:54:08 07.06.2022

#### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2112.5 MHz Occupied Bandwidth



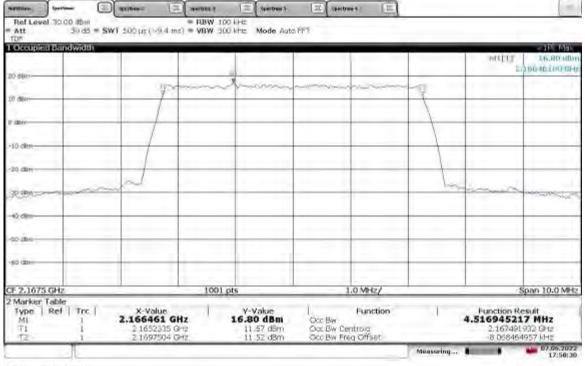
17:57:13 07.06.2022



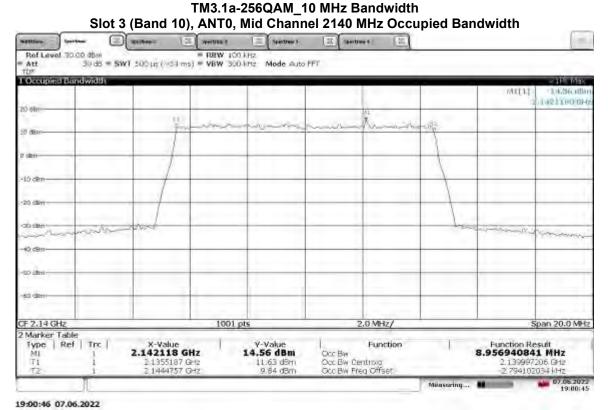
TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2167.5 MHz Occupied Bandwidth

18:02:35 07.06.2022

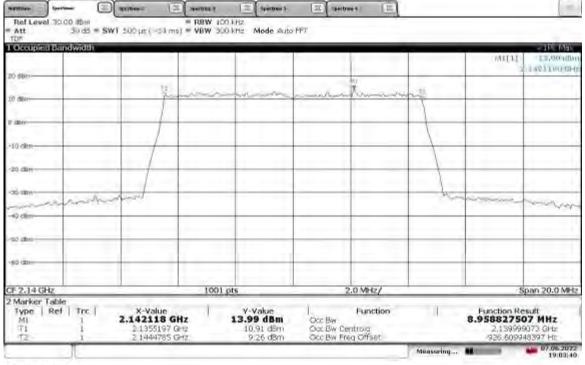
#### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2167.5 MHz Occupied Bandwidth



17:58:31 07.06.2022

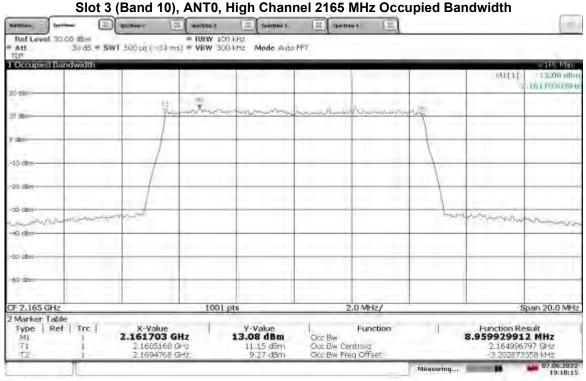


#### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



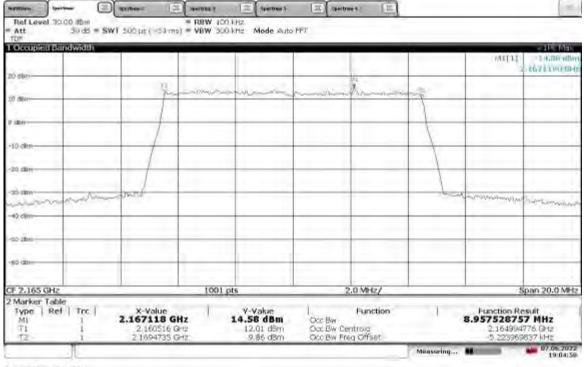
19:03:40 07.06.2022

TM3.1a-256QAM\_10 MHz Bandwidth



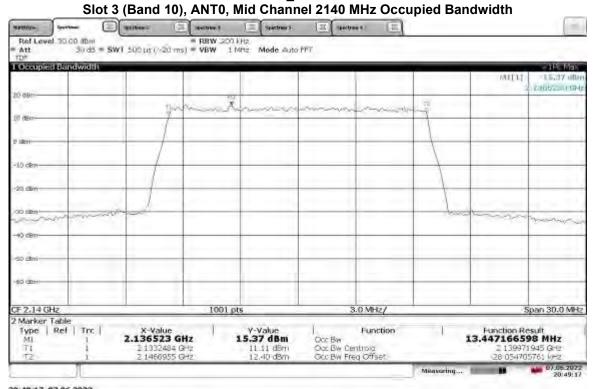
19:10:16 07.06.2022

#### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2165 MHz Occupied Bandwidth



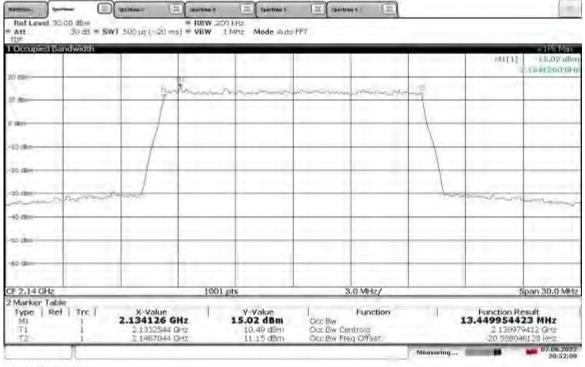
19:04:59 07.06.2022

TM3.1a-256QAM\_15 MHz Bandwidth



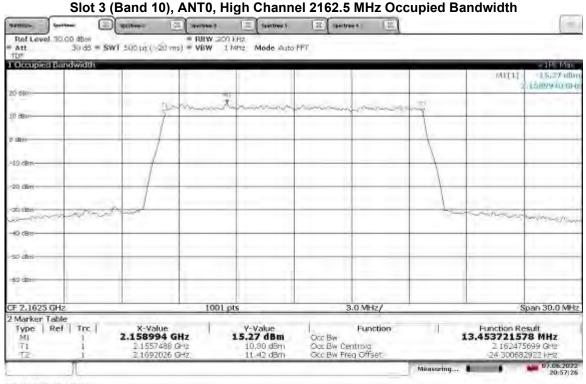
20:49:17 07.06.2022

#### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



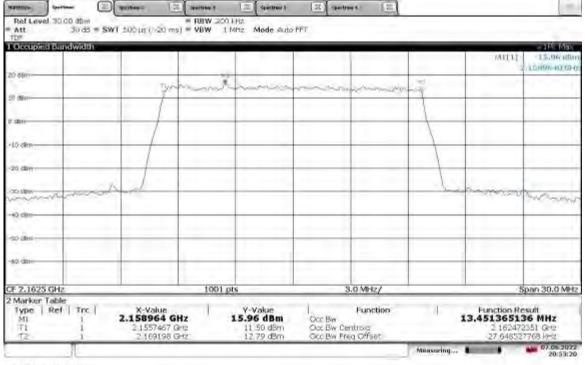
20:52:09 07.06.2022

TM3.1a-256QAM\_15 MHz Bandwidth

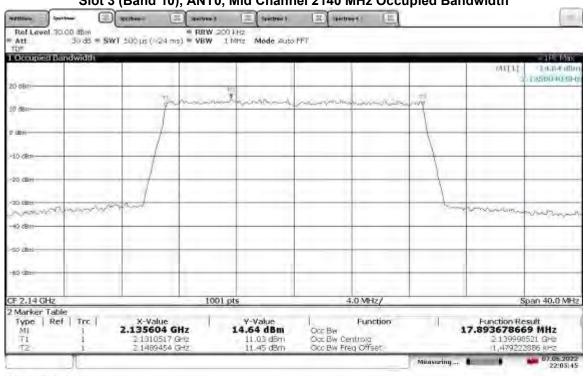


20:57:27 07.06.2022

#### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2162.5 MHz Occupied Bandwidth



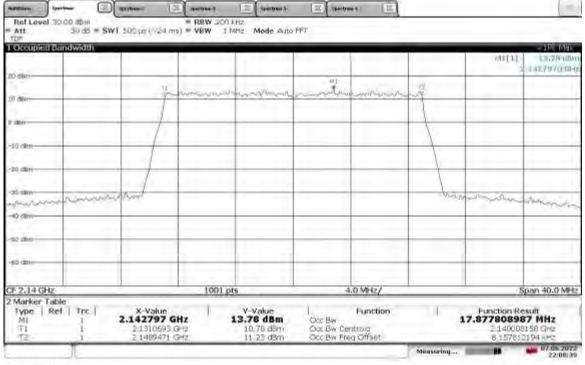
20:53:21 07.06.2022



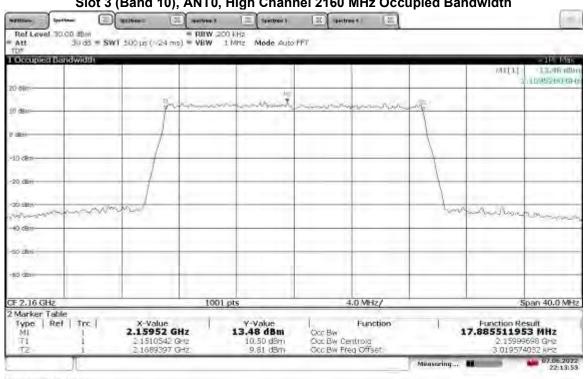
TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 2140 MHz Occupied Bandwidth

22:05:46 07.06.2022

#### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 2140 MHz Occupied Bandwidth



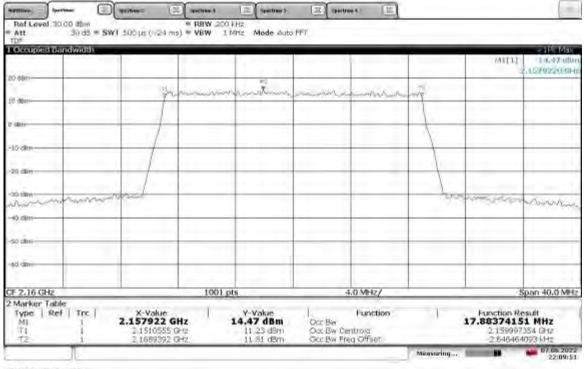
22:08:39 07.06.2022



#### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 2160 MHz Occupied Bandwidth

22:13:54 07.06.2022

#### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 2160 MHz Occupied Bandwidth



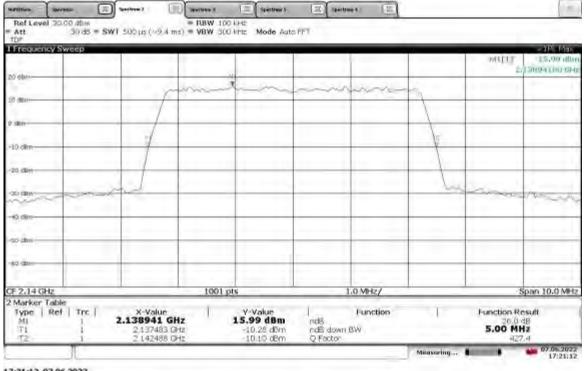
22:09:52 07.06.2022



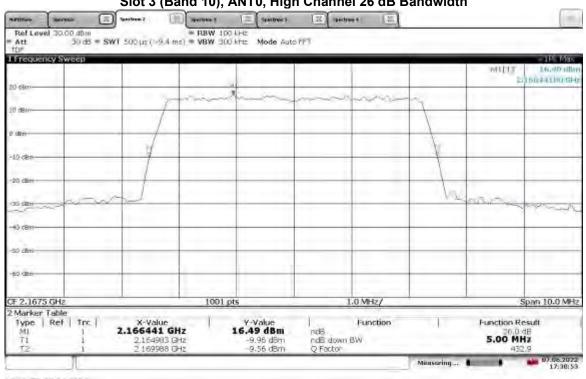
TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

17:16:05 07.06.2022

#### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



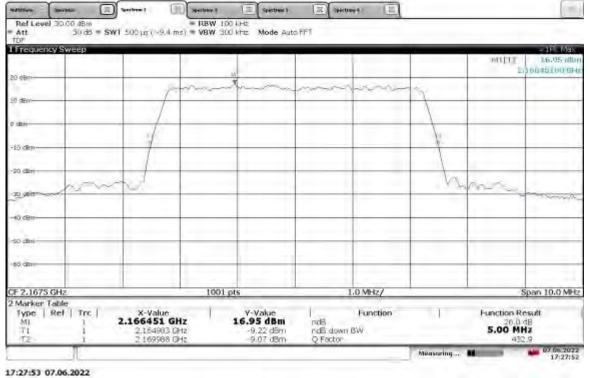
17:21:12 07.06.2022

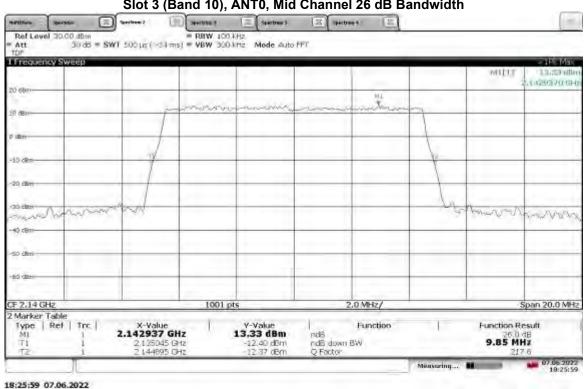


TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

17:38:53 07.06.2022

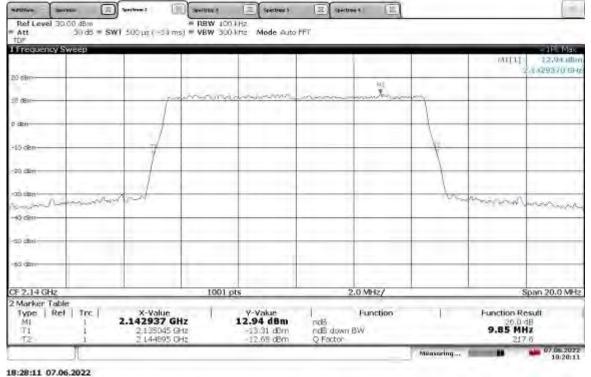
#### TM1.1-QPSK\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



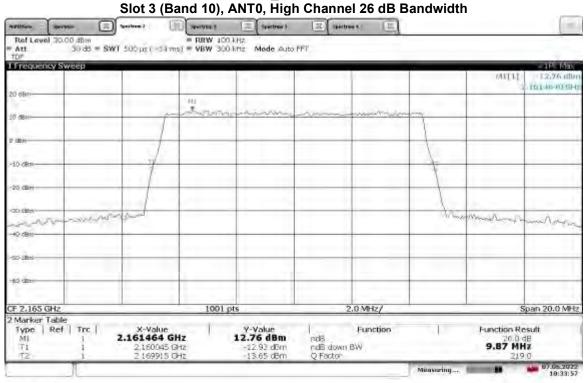


#### TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

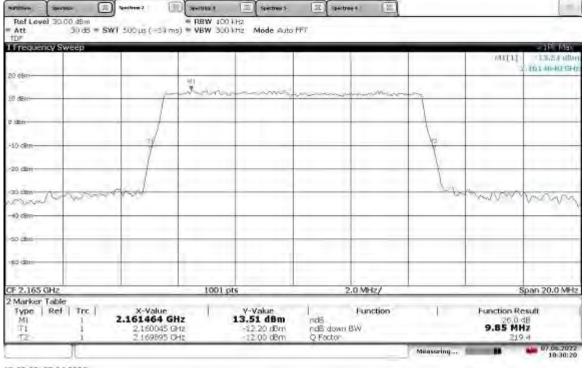


TM1.1-QPSK\_10 MHz Bandwidth



18:33:57 07.06.2022

#### TM1.1-QPSK\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



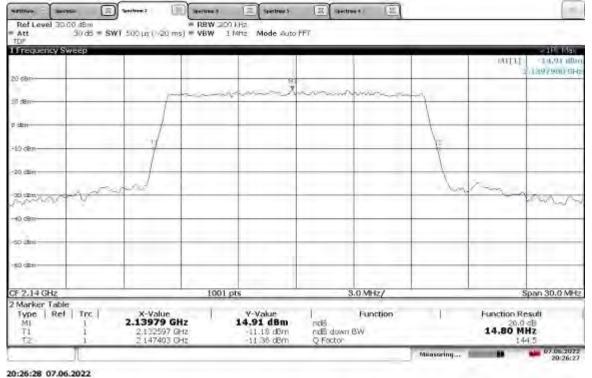
18:30:20 07.06.2022



TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

20:23:56 07.06.2022

#### TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

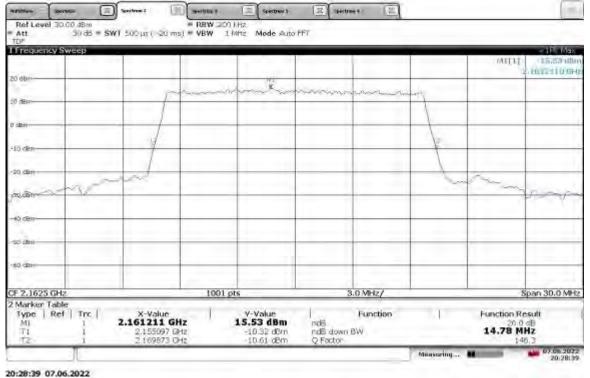




TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

20:32:15 07.06.2022

#### TM1.1-QPSK\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

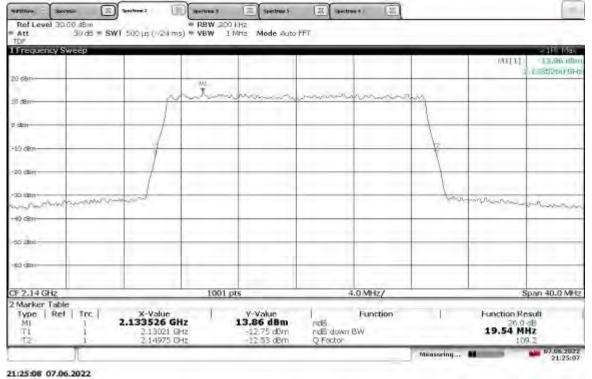


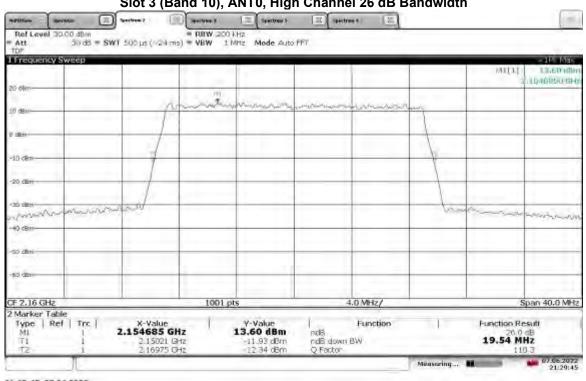


TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

21:27:29 07.06.2022

#### TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

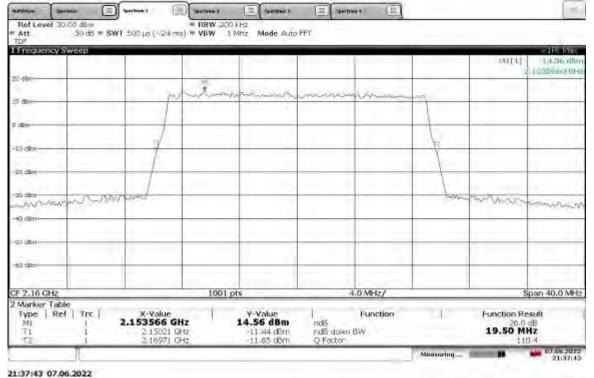




### TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

21:29:45 07.06.2022

#### TM1.1-QPSK\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

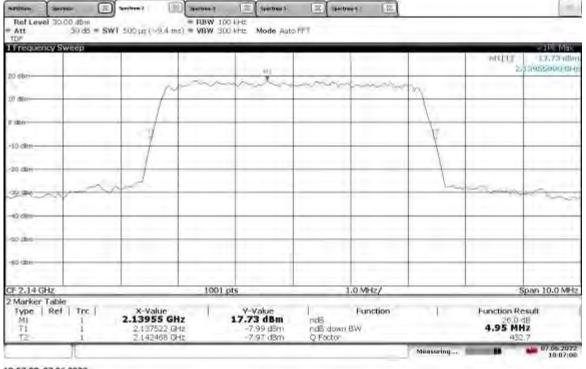


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GHz 1001.pts			1.0 MHz/			Span 10.0 MHz		
ble					Function		Function R	
	/ Sweep							

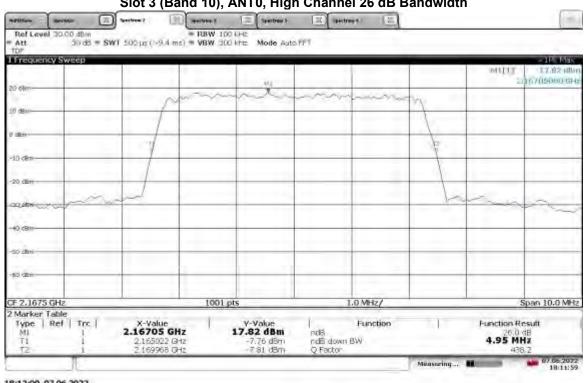
#### TM3.2-16QAM\_5 MHz Bandwidth ot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

18:04:49 07.06.2022

#### TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



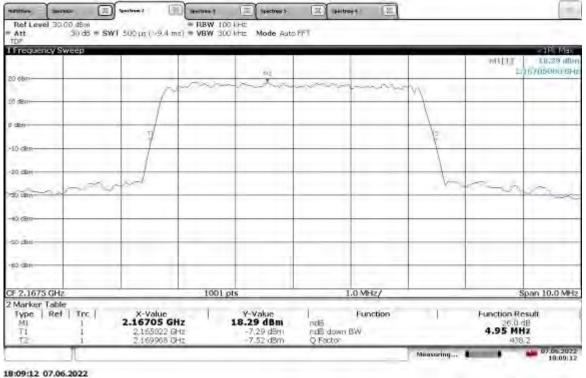
18:07:08 07.06.2022

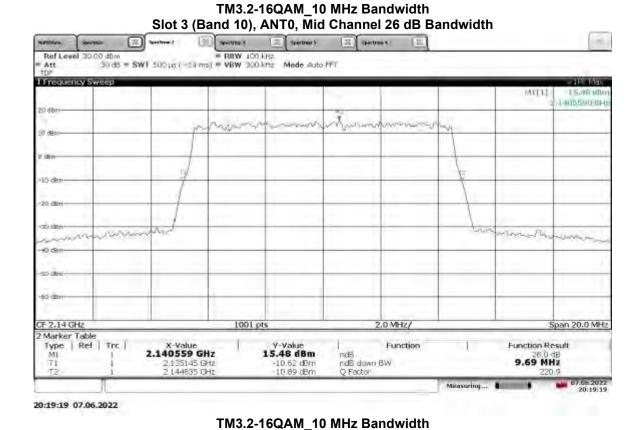


#### TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

18:12:00 07.06.2022

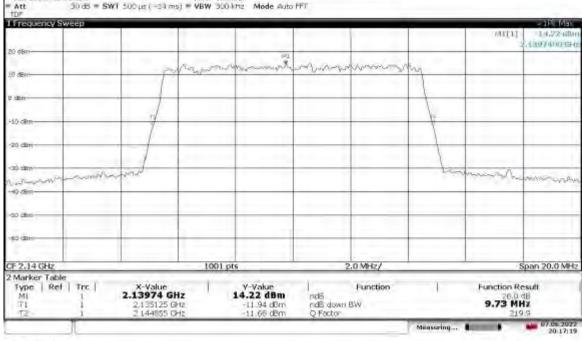
#### TM3.2-16QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth





#### seving i E spectrus I I spectrus 4 100 10.22 Speakeen 2 00 dBm = RBW 100 kHz 30 dB = SWT 500 µs ( -54 ms) = VBW 300 kHz Mode Auto FFT

Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



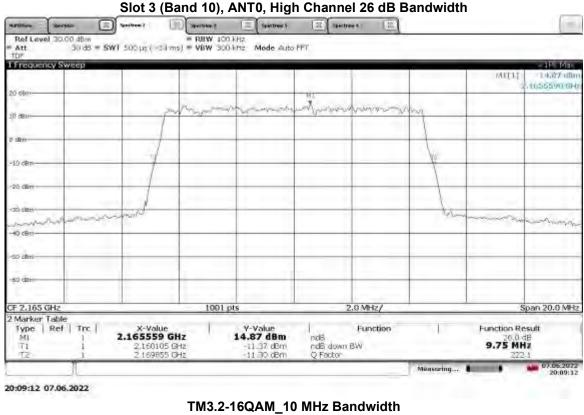
20:17:19 07.06.2022

Notifiers.

Ref Level 30.00 dBm

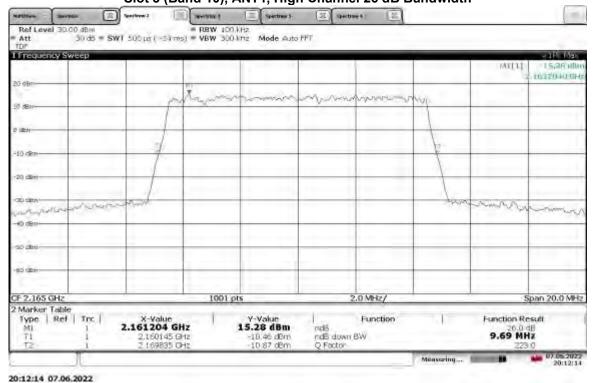
[2]

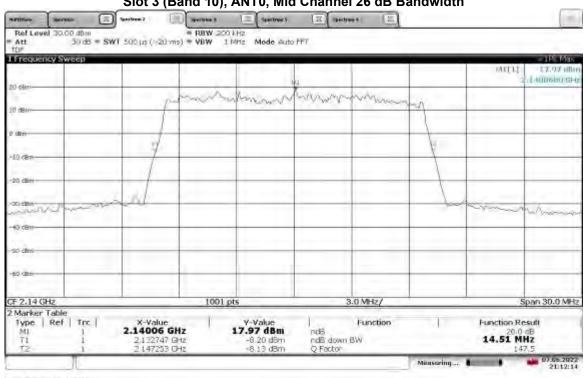
-



# TM3.2-16QAM\_10 MHz Bandwidth

Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

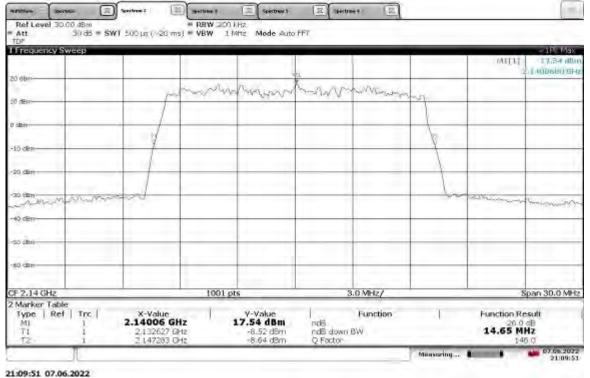


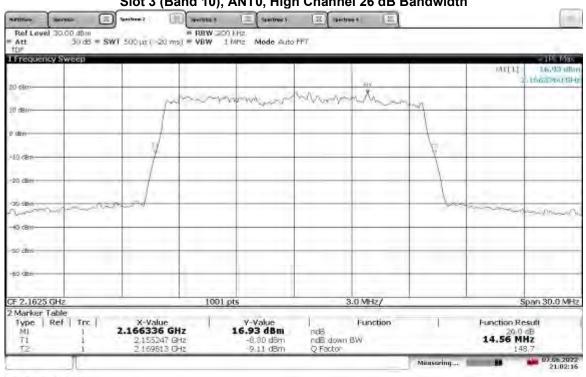


TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

21:12:14 07.06.2022

#### TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

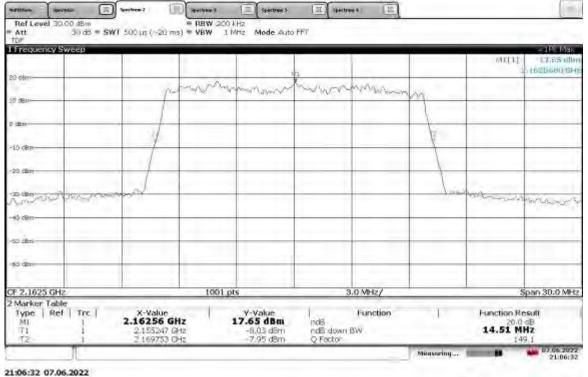




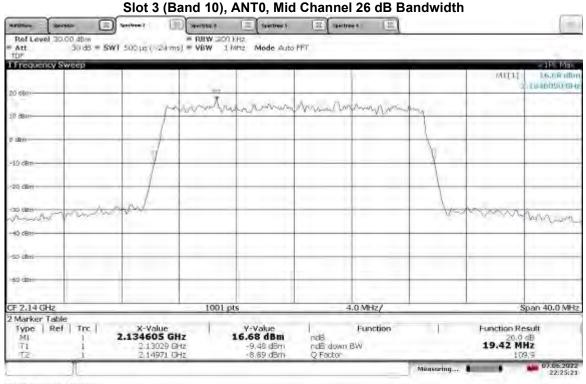
TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

21:02:16 07.06.2022

#### TM3.2-16QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

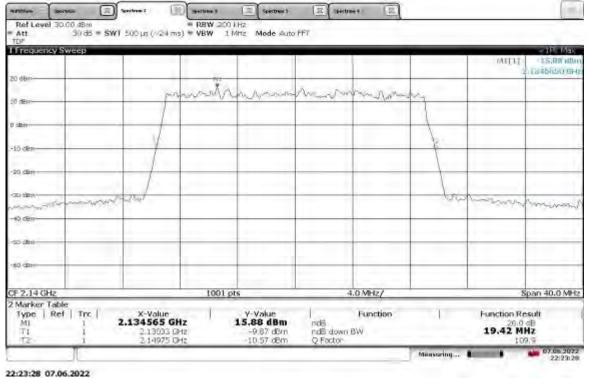


TM3.2-16QAM\_20 MHz Bandwidth

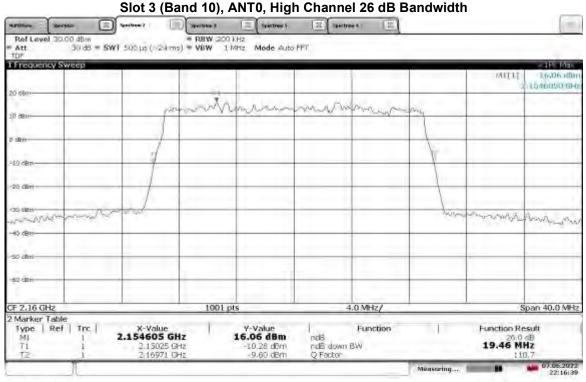


22:25:22 07.06.2022

#### TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

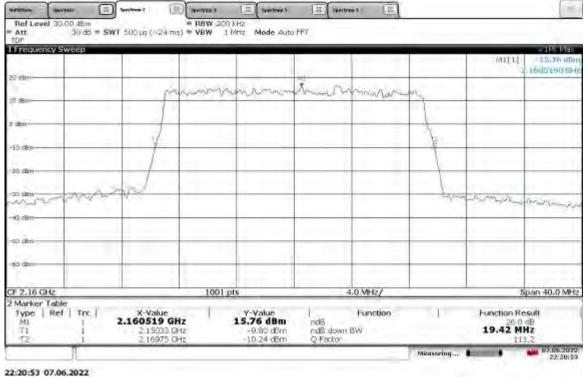


TM3.2-16QAM\_20 MHz Bandwidth



22:16:40 07.06.2022

#### TM3.2-16QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

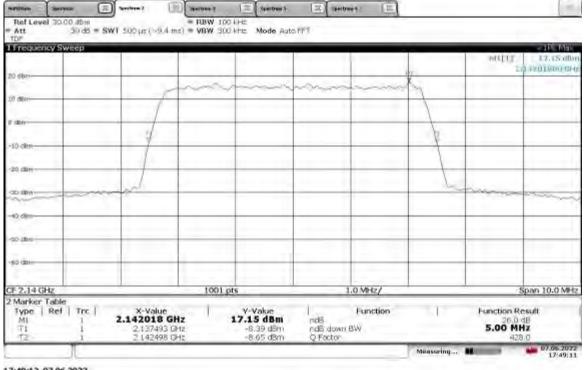




TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

17:51:42 07.06.2022

TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



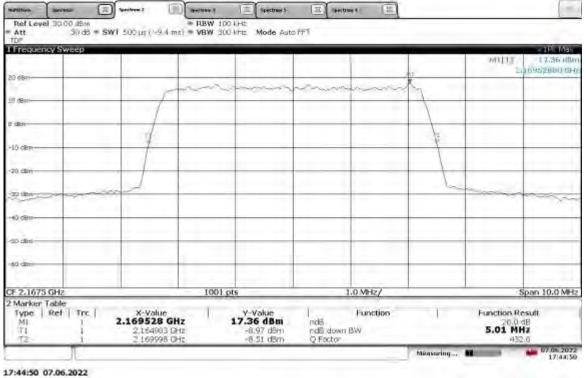
17:49:12 07.06.2022

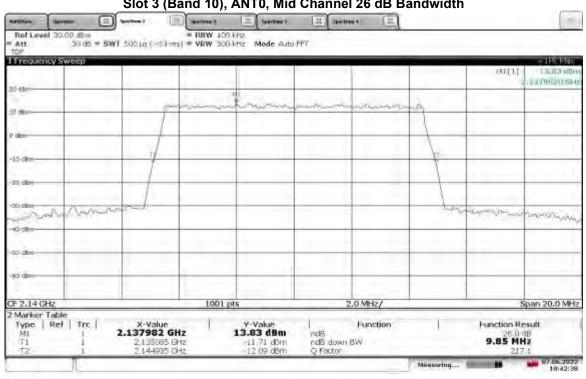


#### TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

17:42:37 07.06.2022

#### TM3.1-64QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

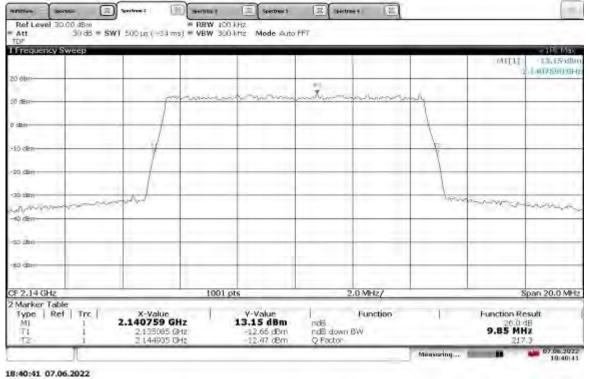


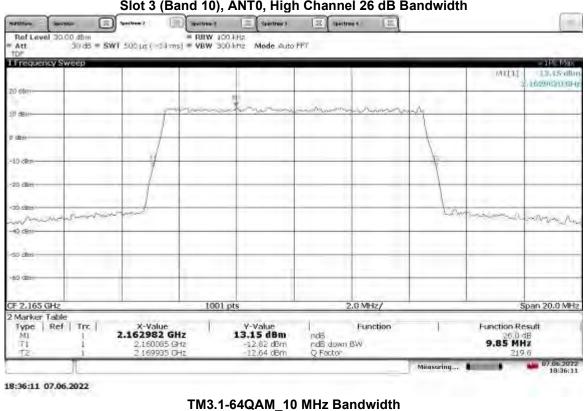


TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

18:42:38 07.06.2022

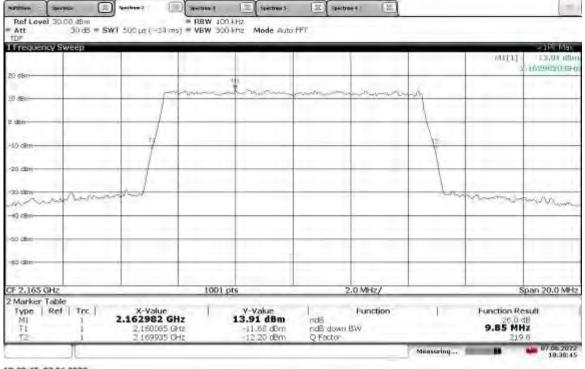
#### TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



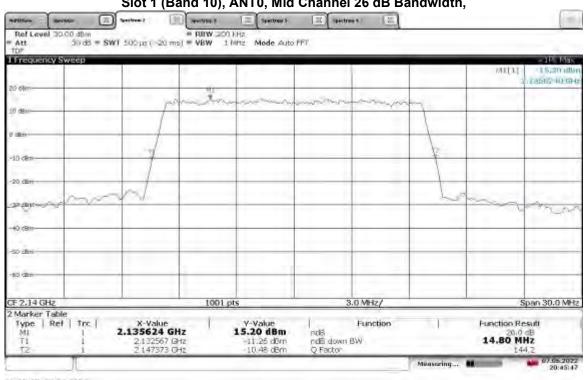


TM3.1-64QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



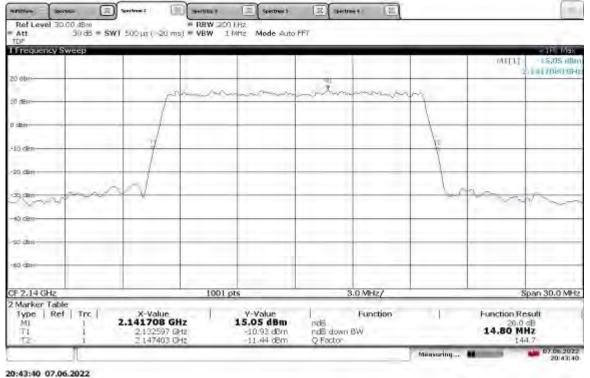
18:38:45 07.06.2022



### TM3.1-64QAM\_15 MHz Bandwidth Slot 1 (Band 10), ANT0, Mid Channel 26 dB Bandwidth,

20:45:47 07.06.2022

#### TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

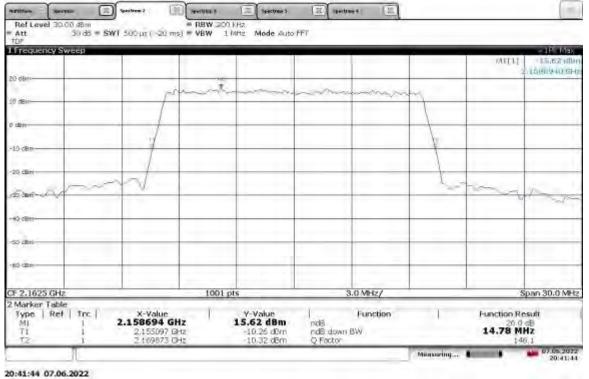




TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

20:38:54 07.06.2022

#### TM3.1-64QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

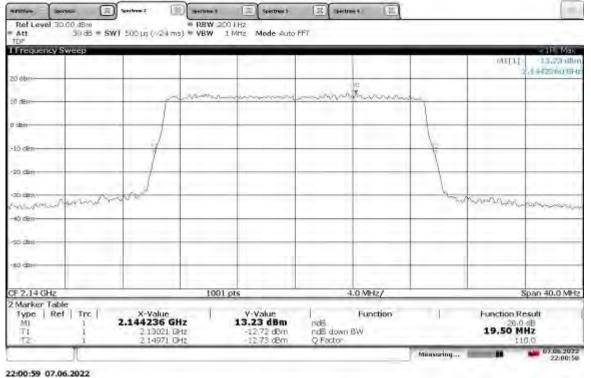




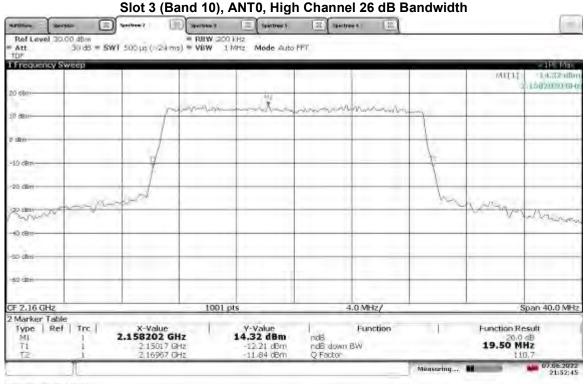
TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

22:03:46 07.06.2022

#### TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

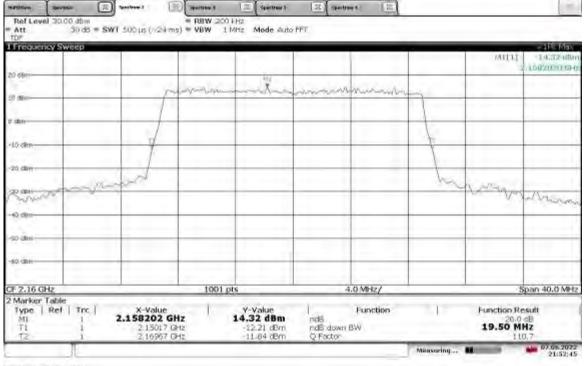


TM3.1-64QAM\_20 MHz Bandwidth



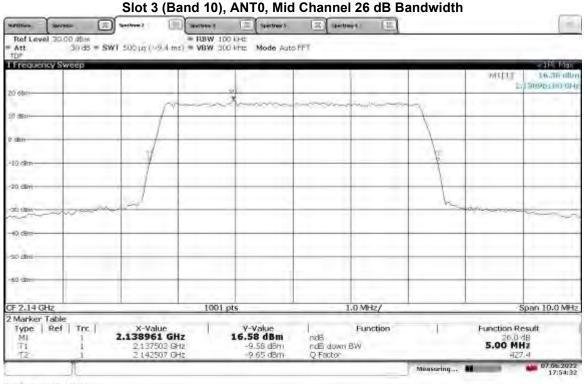
21:52:45 07.06.2022

TM3.1-64QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



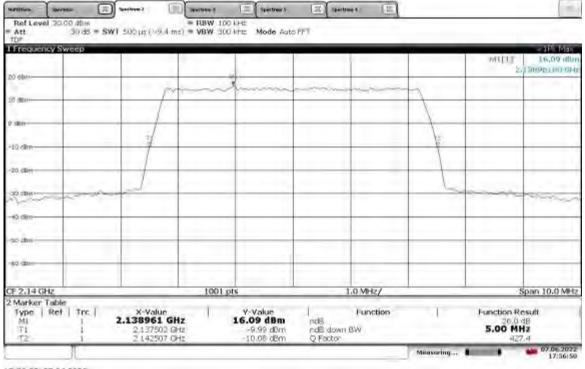
21:52:45 07.06.2022

TM3.1a-256QAM\_5 MHz Bandwidth



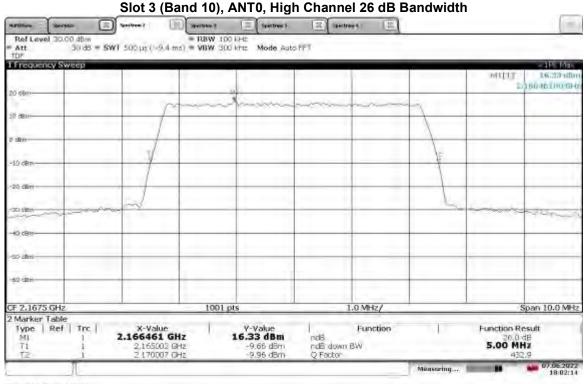
17:54:33 07.06.2022

### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



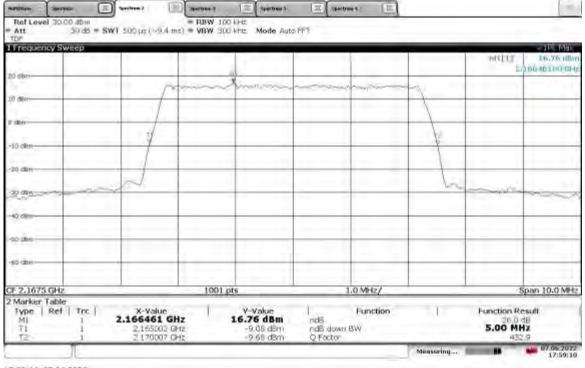
17:56:50 07.06.2022

TM3.1a-256QAM\_5 MHz Bandwidth



18:02:15 07.06.2022

### TM3.1a-256QAM\_5 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



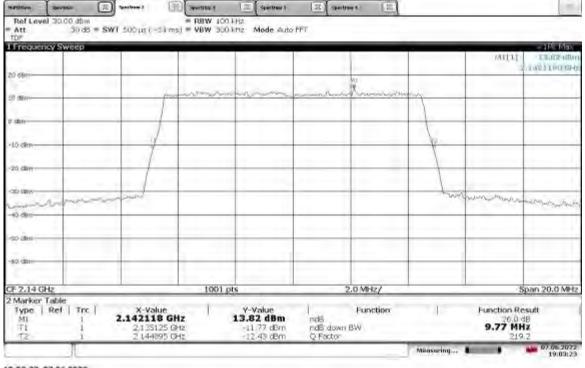
17:59:11 07.06.2022



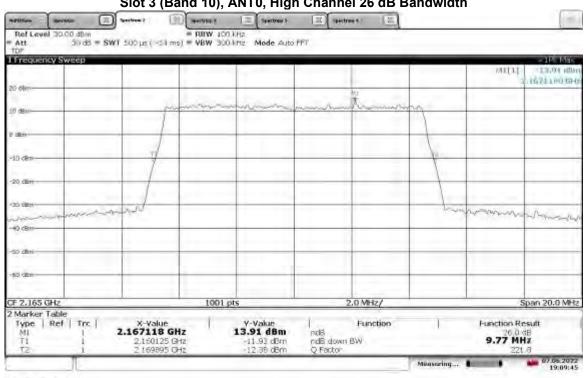
TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

19:01:12 07.06.2022

TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



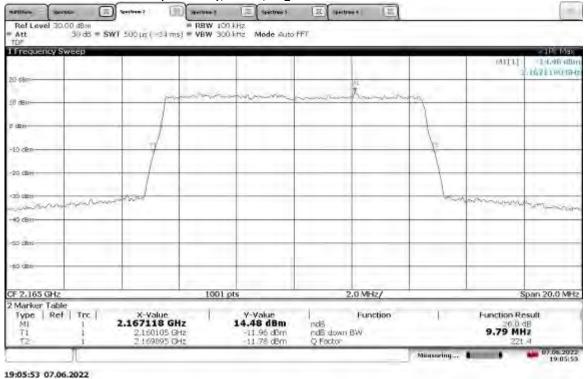
19:03:23 07.06.2022



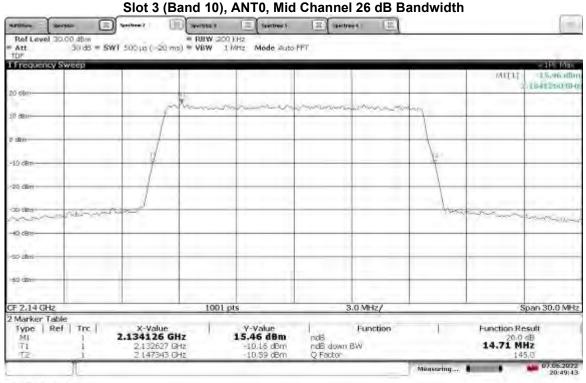
TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

19:09:45 07.06.2022

#### TM3.1a-256QAM\_10 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth

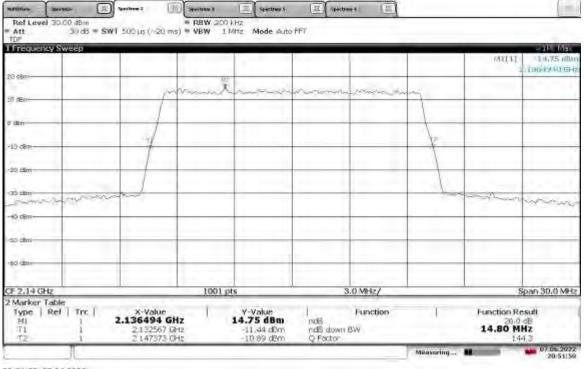


TM3.1a-256QAM\_15 MHz Bandwidth



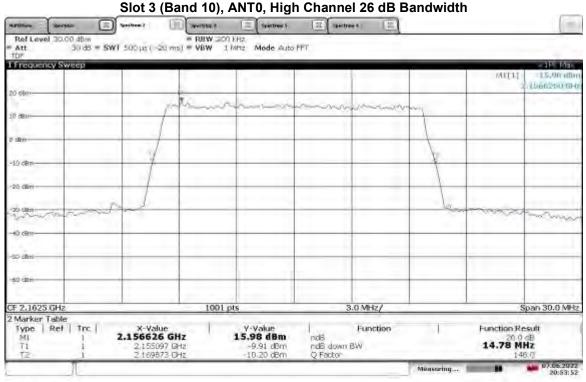
20:49:44 07.06.2022

### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth



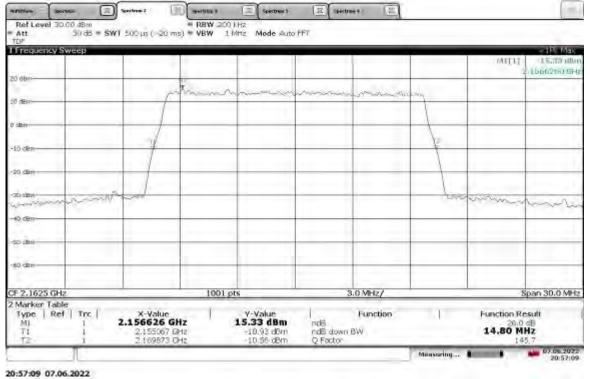
#### 20:51:50 07.06.2022

TM3.1a-256QAM\_15 MHz Bandwidth



20:53:52 07.06.2022

### TM3.1a-256QAM\_15 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



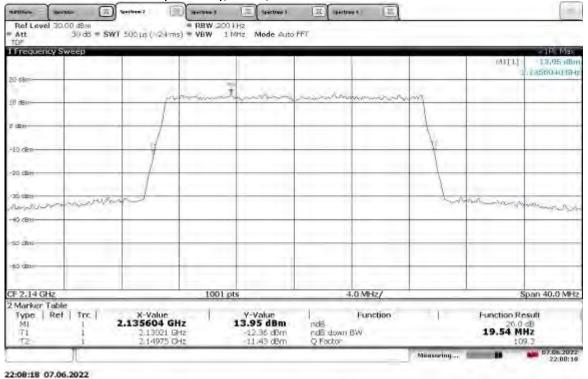
# \_\_\_\_\_



TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, Mid Channel 26 dB Bandwidth

22:06:12 07.06.2022

#### TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, Mid Channel 26 dB Bandwidth

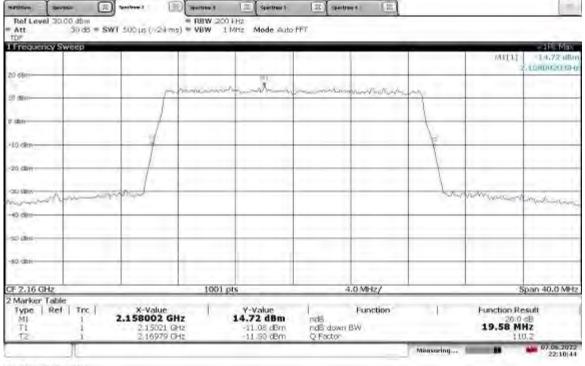




TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT0, High Channel 26 dB Bandwidth

22:13:32 07.06.2022

TM3.1a-256QAM\_20 MHz Bandwidth Slot 3 (Band 10), ANT1, High Channel 26 dB Bandwidth



22:10:45 07.06.2022

		Intertek	
Report Number: 105081151BOX-002			Issued: 06/13/2022
			Revised: 07/15/2022
Test Personnel:	Vathana Ven	Test Date:	06/07/2022
Supervising/Reviewing			
Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 8.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/		Ambient Temperature:	25 °C
Ambient Signals or BB Source:	N/A	Relative Humidity:	43 %
		Atmospheric Pressure:	1006 mbars

Deviations, Additions, or Exclusions: None

### 9 Upper Band Edge Compliance

### 9.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1051, 2.1053, and 27.

### 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.

### 9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
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	252675001	02/10/2022	02/10/2023
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/02/2021	11/02/2022
				MS19121808		
DAV005'	Weather Station	Davis	6250	3	02/11/2022	02/11/2023

#### Software Utilized:

Name	Manufacturer	Version
None		

### 9.3 Results:

The sample tested was found to Comply.

FCC Part § 27.53(h) (1) & (3): 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.

### Band 10, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

		,		
Bar	d Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
	High	2167.50	ANT0	-28.85
			ANT1	-27.93

### Band 10, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2165.00	ANT0	-31.99
		ANT1	-31.12

### Band 10, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2162.50	ANT0	-33.26
		ANT1	-32.44

### Band 10, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2160.00	ANT0	-34.39
		ANT1	-33.37

#### Band 10, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2167.50	ANT0	-29.43
		ANT1	-28.29

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2165.00	ANT0	-32.01
		ANT1	-30.94

### Band 10, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2162.50	ANT0	-33.51
		ANT1	-32.67

### Band 10, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2160.00	ANT0	-34.26
		ANT1	-33.22

### Band 10, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2167.50	ANT0	-29.09
		ANT1	-28.15

#### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2165.00	ANT0	-32.06
		ANT1	-30.84

### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2162.50	ANT0	-33.37
_		ANT1	-32.43

### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2160.00	ANT0	-34.14
		ANT1	-33.19

### Band 10, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2167.50	ANT0	-29.12
		ANT1	-28.12

### Band 10, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2165.00	ANT0	-31.98
		ANT1	-30.91

### Band 10, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2162.50	ANT0	-33.26
		ANT1	-32.38

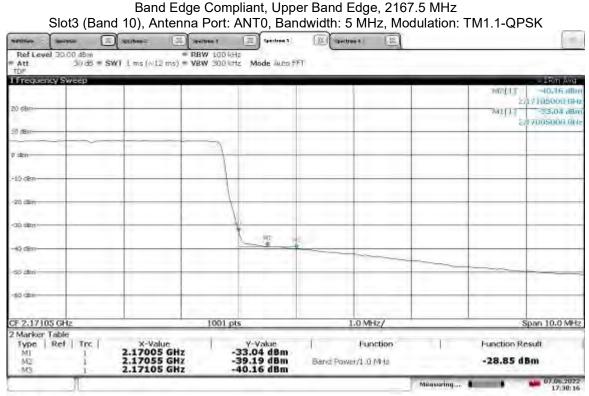
### Band 10, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
High	2160.00	ANT0	-34.04
		ANT1	-33.15

# 9.4 Setup Photograph:

Confidential – Photos not included in this report

### 9.5 Plots/Data:



17:38:16 07.06.2022

### Band Edge Compliant, Upper Band Edge, 2167.5 MHz Slot 3 (Band 10), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

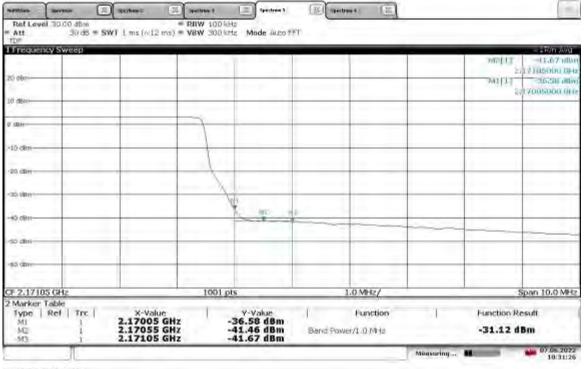
-	-	· Reiben-	(3) Sector	et.	(III) Spectres 1	- (III) 1844 b	991 E		1.00
Ref Leve Att	i 30.00 dBm 30 dB =	SWI 1 ms (~1)	= RBW 2 ms) = VBW		z Mode Auto #	FT			
	cy Sweep								- 1Rm Ava
									2/17/105000 GH
20 d8m-	-								741[1] -32.61 dBn 2.17005000 00
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D steri	-	-		1		_			
-10 cBm			_	+					
-20 clim									
-30 eiter	-		-	-	HE N	-			
-40 cBm	-			Ť	<u></u>				
-so alm	-	-		-					
-60 (Ba)	-								
CF 2.1710	5 GHz			1001 pt	5		1.0 MHz/		Span 10.0 MHz
2 Marker Type MI M2 M3		X-Va 2.1700 2.1705 2.1710	GHZ	-3	Y-Vake 32.61 dBm 38.23 dBm 39.22 dBm	 Band Pow	Function er/1.0 MHz	1	Function Result
	1							Measuring	07.66.2022 17:35:53

Band Edge Compliant, Upper Band Edge, 2165 MHz Slot 3 (Band 10), Antenna Port: ANTO, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



18:33:14 07.06.2022

Band Edge Compliant, Upper Band Edge, 2165 MHz Slot 3 (Band 10), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



18:31:26 07.06.2022

Report Number: 105081151BOX-002

	-	Stibme:		(	(III) Spectrone # (	1		
Ref Lev Att	el 30.00 dB 30 c		(17 ms) = VBW 1	MHz Mode Auto FF	a l			
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o ubre	-		1					
			1					
-10 cBm			1					
-20 clim			1					1
an chil			1					
co sta-	_		1					
				27th at				
-+0.0811								
		_		-				
so atm-	-							
				_				
50 (3Day)								
F 2.171			1001	l pts	1.0 N	/Hz/		Span 10.0 MHz
Marker Type	Ref   Tr	x I X-V	salue	Y-Value	I B	inction	Function F	
MI	1	2.170	05 GHz	-36,56 dBm				
MI M2 M3	1	2.170	05 GHZ 55 GHZ 05 GHZ	-36,56 dBm -40,48 dBm -40,70 dBm	Band Power/1.	0 Mills	-33.26	1Bm

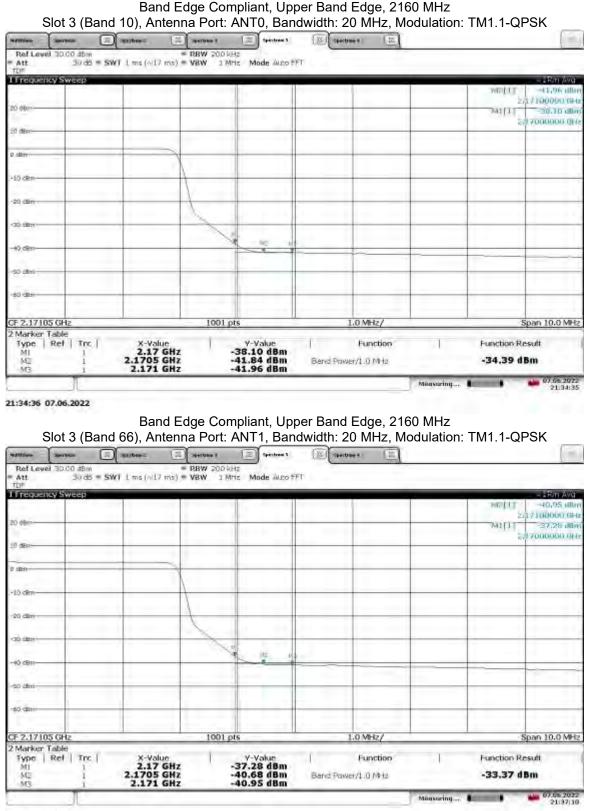
21:14:07 07.06.2022

Band Edge Compliant, Upper Band Edge, 2162.5 MHz Slot 3 (Band 10), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

-	and the second s	Stipes-	E 344949 1	Tentitren 1	(III) (III)	991 2			1
Ref Lev Att	el 30.00 dBm 30 dB =	SWT 1 ms (ed7 r	= RBW 20 ns) = VBW :		FT				
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20 d8m-									17105000 60
no one	-							243[1]	-36,15 dBw 17005000 000
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and April									
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-40 cBm				THE P	-		-		
40 0011				1					
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-30 Lann									
-60 cm++-		-							
and General									
			-			-		1	
F 2.171			100	1 pts		1.0 MHz/			Span 10.0 MHz
2 Marker Type		X-Value	1	Y-Value	1	Function		Function R	are de
MI	Rei   He	2.17005		-36.15 dBm	1	L'ID SC (1990)			
M2 M3	1	2.17055	GHZ	-39.58 dBm -39.73 dBm	Band Pow	er/1.0 MHz		-32.44 d	Bm
	1					1	Measuring	Report of the local division of the local di	1114:42

21:14:43 07.06.2022

Report Number: 105081151BOX-002

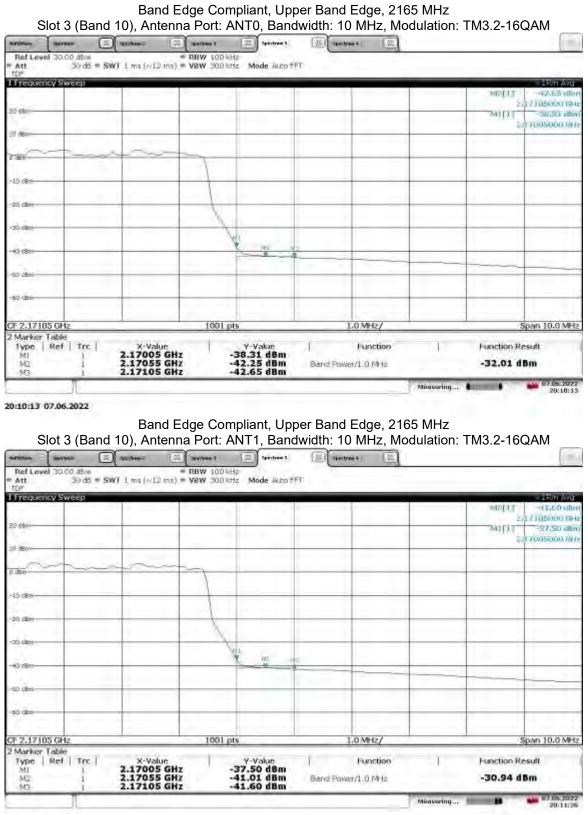


21:37:11 07.06.2022

Report Number: 105081151BOX-002

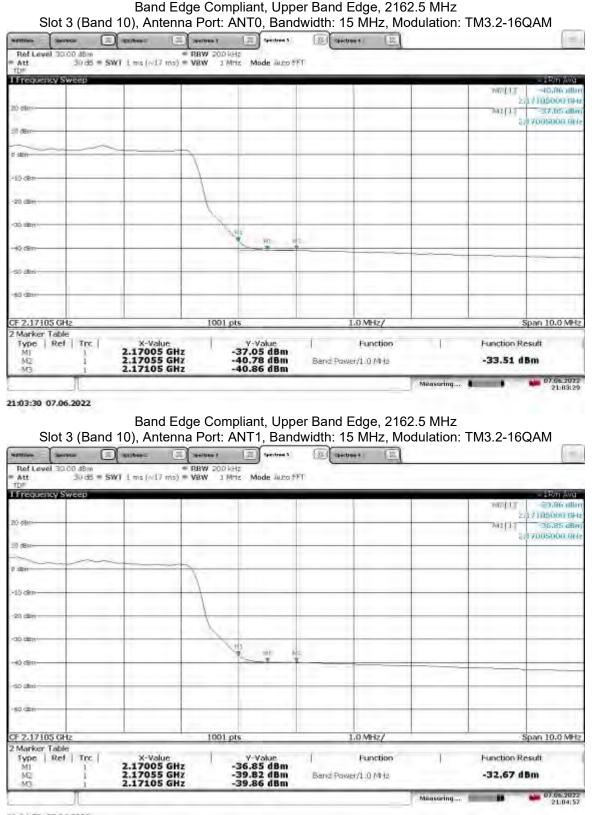
-	mu 🖾 🖬	aibme 🗐	Seelline F	Tarentree 1	(III) (pertrae i	u (22)			
f Level 3			RBW 10040		-				
		r ms (iviz ms) =	ARM 200 G	tz Mode Auto FF					170-0
squency	sweep							WRIT	-40,53
m						_		742[1]	-32.53
		_							17005000
tr			~						
			1						-
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Dry									-
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Bat									-
im-	-								-
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17105 G			1001 p	te .	10	MHz/		L	Span 10.0
nker Tab	de	a short be	toorp	(5)					
pe   Re	f Trc 2	X-Value .17005 GHz		V-Value 33.53 dBm	4	Function		Function R	esult
3	1 2	.17055 GHz .17105 GHz		39.63 dBm 40.53 dBm	Band Power/	1.0 1448		-29.43 d	Bm
Slo	t 3 (Band 1	0), Antenr	na Port: A		dwidth: 5 N	/Hz, Mod		<b>m</b> M3.2-160	18:1
Slo • (*	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz	M3.2-160	18:1
Slo •• (* fLevel 3	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz	M3.2-160	QAM
Slo •• (* fLevel 3	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz	NULT	QAM
Slo •• (* fLevel 3	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz	NULT	2AM
Slo • • • • • • • • • • • • • • • • • • •	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		
Slo Cevel 3 Cevel 3	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
Slo Slo Scuency	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
Slo Level 3 ocency	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		QAM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
m (we filewel 3)	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
Slo T Level 3 Cosency m m m m m m m m m m m m m	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
Slo m www. flevel3 outputs m m m m m m m m m m m m m	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz		2AM
	t 3 (Band 1)	0), Antenr	RBW 1004	ANT1, Band	dwidth: 5 N	/Hz, Mod	.5 MHz	>mm(1)1 2 342(1)1 2	2AM
Slo Carlored 2 Carlored 2 C	t 3 (Band 1)	0), Antenr	Ha Port: A	ANT1, Band	dwidth: 5 M	AHz, Mod	.5 MHz		2AM
Slo Carlored 2 Carlored 2 C	t 3 (Band 1)	0), Antenr	1001 p	ANT1, Band	dwidth: 5 M	MHz/ Function	.5 MHz	>mm(1)1 2 342(1)1 2	2AM

Report Number: 105081151BOX-002



20:11:37 07.06.2022

Report Number: 105081151BOX-002



21:04:58 07.06.2022

Report Number: 105081151BOX-002



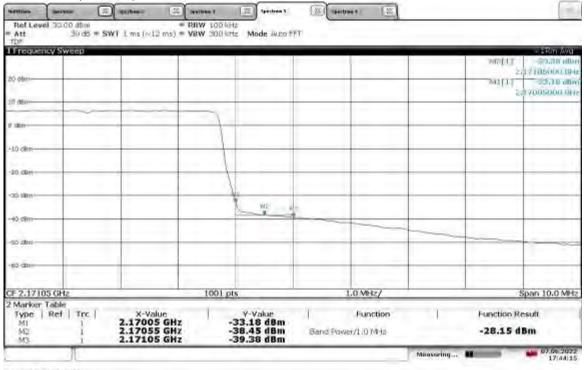
22:19:57 07.06.2022

Report Number: 105081151BOX-002

-		Stiber:	anitati anitati	p 🗐 tpertres 1	(E) (pertree 4	122	
Ref Lev Att	el 30.00 dBm 30 dB	SWT 1 ms (w1	= RBW 2 ms) = VBW :	100 kHz 300 kHz Mode Auto FF	er .	-	
	ncy Sweep						- LE/n A/a
							N0[11 -40.43 alla
ee dam-	_						2/17/105000 GH M1[1] -33,35 dBn
							2,17005000 00
id dem-	_	_					
				1			
sitere	-			1			
						_	
10 cBm-							
20 cBm							
sol cmil							
an ener-				N.			
				1 10			
40.cBm-				-			
			_				
so atm-	_			_			
50 (3B1)							
					1.00	_	1
F 2.1710	05 GHz		10	101 pts	1.0 MHz/		Span 10.0 MHz
Marker					I month		Property of the second
MI	Ref   Trc	2.1700		-33.55 dBm	Functio	9	Function Result
M2 M3	î	2.1705		-39.39 dBm -40.43 dBm	Band Power/1.0 MHz		-29.09 dBm

17:43:12 07.06.2022

Band Edge Compliant, Upper Band Edge, 2167.5 MHz Slot 3 (Band 10), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



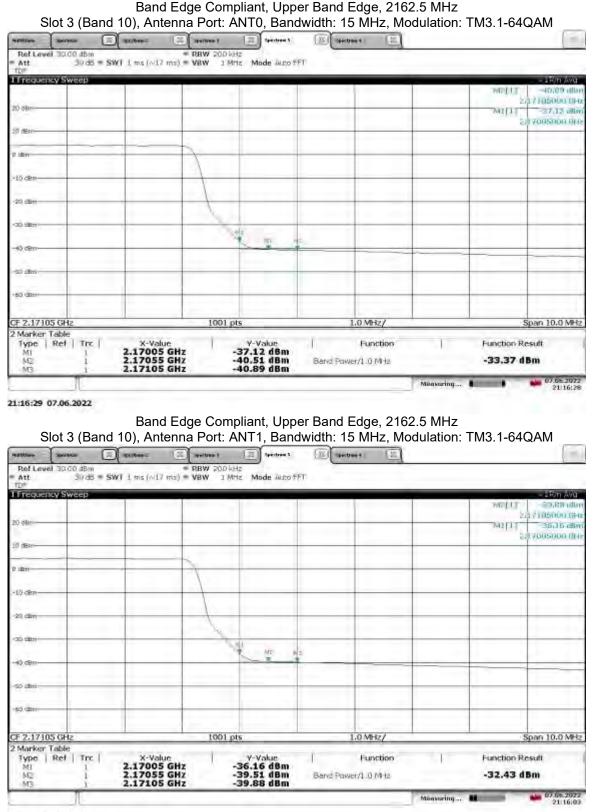
17:44:15 07.06.2022

Report Number: 105081151BOX-002



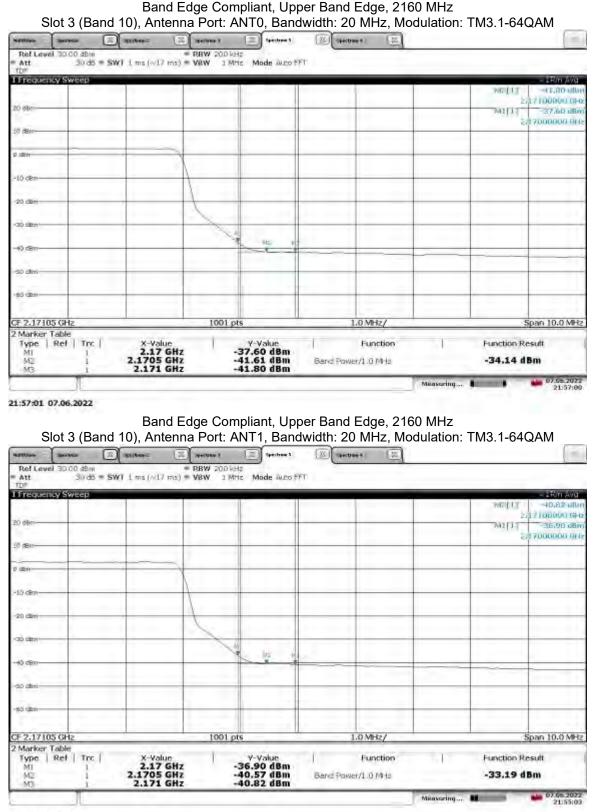
18:38:02 07.06.2022

Report Number: 105081151BOX-002



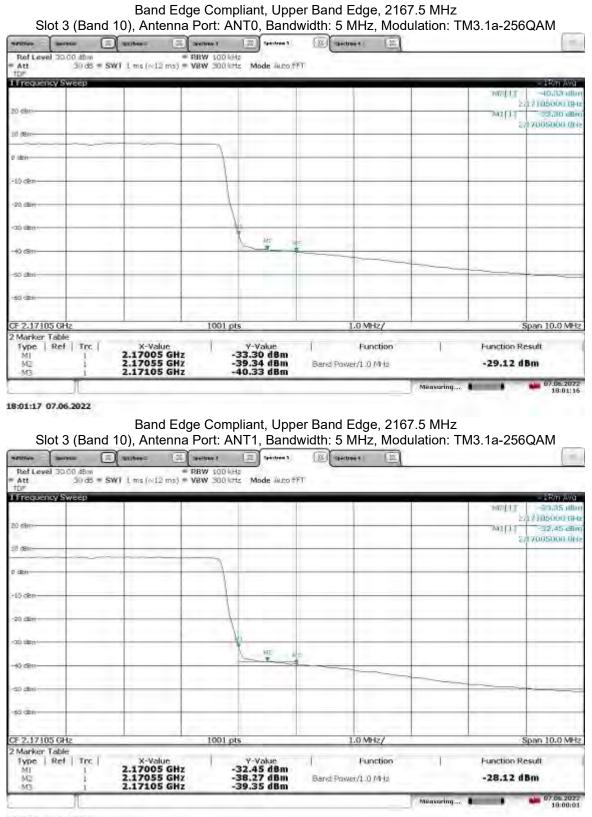
21:16:04 07.06.2022

Report Number: 105081151BOX-002



21:55:03 07.06.2022

Report Number: 105081151BOX-002



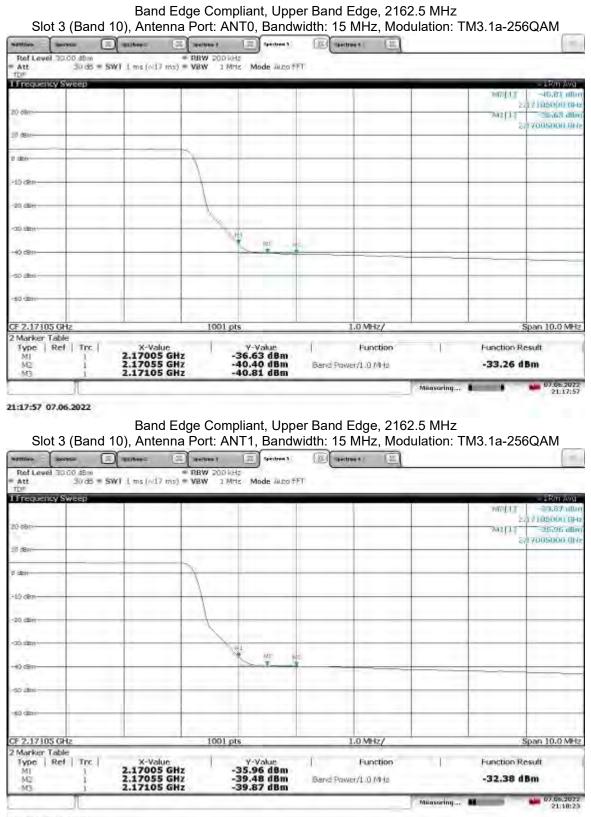
18:00:01 07.06.2022

Report Number: 105081151BOX-002



19:08:07 07.06.2022

Report Number: 105081151BOX-002



21:18:24 07.06.2022

Report Number: 105081151BOX-002



22:11:35 07.06.2022

Intertek								
Report Number: 105081151BOX-002			lssued: 06/13/2022 Revised: 07/15/2022					
		Ι	Revised. 07/15/2022					
Test Personnel:	Vathana Ven	Test Date:	06/07/2022					
Supervising/Reviewing Engineer:								
(Where Applicable)	N/A							
Product Standard:		Limit Applied:	See report section 9.3					
Input Voltage:	48 VDC (POE)							
Pretest Verification w/		Ambient Temperature:	25 °C					
Ambient Signals or BB Source:	N/A	Relative Humidity:	43 %					
		Atmospheric Pressure:	1006 mbars					

Deviations, Additions, or Exclusions: None

# 10 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	06/13/2022	105081151BOX-002	VFVV	KPS 4	Original Issue
1	07/15/2022	105081151BOX-002	VFV <sup>V</sup> 5V	KPS 45	Modified result tables on pages 9-10