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TEST REPORT

SCOPE OF WORK
EMISSIONS TESTING – RPM-A5A11-B66 (Band 4)

REPORT NUMBER
103866582BOX-24a

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EMISSIONS TEST REPORT

(FULL COMPLIANCE)

Report Number: 103866582BOX-24a
Project Number: G103866582

Report Issue Date: 08/14/2019
Report Re-issued Date: 09/16/2019

Model(s) Tested: RPM-A5A11-B66
Model(s) Partially Tested: None
Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 27 (04/2019)

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

Client:
CommScope Technologies LLC
250 Apollo Drive
Chelmsford, MA 01824
USA

Report prepared by

Kouma Sinn / EMC Staff Engineer

Report reviewed by

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1 Introduction and Conclusion

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

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

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Maximum Peak Output Power and Human RF exposure 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	Frequency Stability CFR47 FCC Parts 2.1055 and 27.54	Pass
11	Transmitter Spurious Emissions CFR47 Parts 2.1051, 2.1053, 2.1057, and 27.53(h)	Pass
12	Revision History	--

Notes: Band 4 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
250 Apollo Drive
Chelmsford, MA 01824
USA

Contact: Mr. Kevin Craig
Telephone: (978) 250-2678
Fax: None
Email: kevin.craig@commscope.com

4 Description of Equipment Under Test and Variant Models

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

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Band 4 Radio Module	CommScope Technologies LLC	RPM-A5A11-B66	19063000051

Notes: Band 4 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:	04/23/2019
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
The Radio Module is band specific using the Analog devices RF Agile Transceiver IC, AD936x. The device combines an RF front end with a flexible mixed-signal baseband section and integrated frequency synthesizers providing a configurable digital interface to the processor. The Radio Module also contains a band specific front end, band specific antenna and required power rails. All power rails required are derived from the 12 VDC bus supplied by the Baseband card. The reference frequency for the radio IC is 38.4 MHz is derived from the from an OCXO which is disciplined from a 1588 reference clock. It supports bandwidths of 5, 10, 15, and 20 MHz with four modulations; TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM. The radio is fixed.

Description of Radio Host (provided by client)
The OneCell® 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
1	Pre-programmed to transmit at Low, Mid, and High channels at four different modulations, TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM.

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	RP5100 Diagnostics Ver 1009

Radio/Receiver Characteristics	
Frequency Band(s)	2110-2155 MHz
Modulation Type(s)	TM1.1-QPSK, TM3.2-16QAM, TM3.1-64 QAM, TM3.1a-256QAM
Maximum Output Power (conducted)	25.10 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	17.945 MHz (Worst-case)
MIMO Information (# of Transmit and Receive antenna ports)	2x2 MIMO using cross polarized antennas and 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 (m)	Shielding	Ferrites	Termination
--	LAN (POE Power Cable)	2.58	Shielded	None	POE P/S
--	LAN (Communication)	9.00	Shielded	None	Laptop

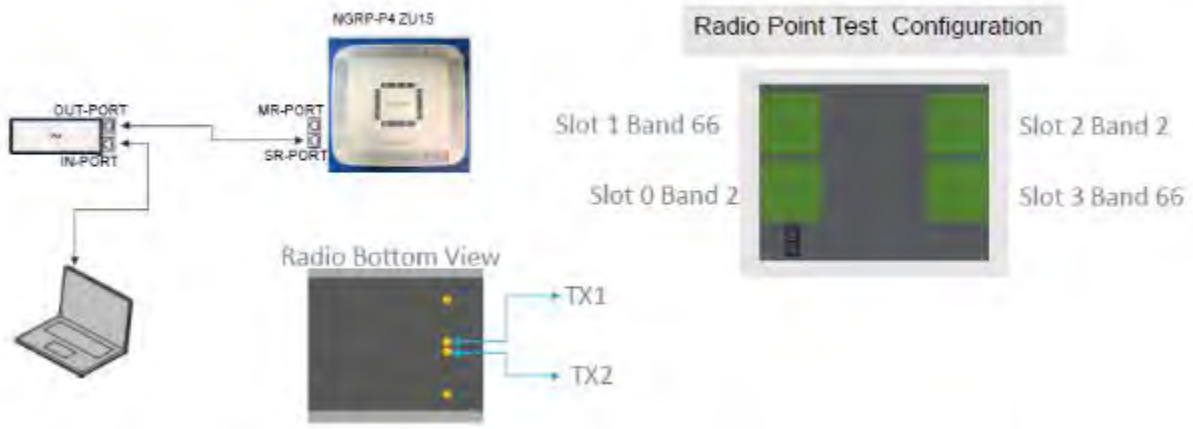
Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	Dell	LATITUDE	None
Power Device Analzyer	Sifos Technologies	PDA-604A	604A0033
OneCell® RP5100*	CommScope Technologies LLC	RP-A51xxi	None

*Radio host used for testing

5.1 Method:

Configuration as required by ANSI C63.26-2015, KDB662911, and CFR47 FCC Part 27 (04/2019).

5.2 EUT Block Diagram:



6 Maximum Peak Output Power and Human RF exposure

6.1 Method

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

TEST SITE: EMC Lab

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

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/01/2019	02/01/2020
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/01/2019	02/01/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/15/2018	10/15/2019
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/06/2018	11/06/2019

Software Utilized:

Name	Manufacturer	Version
None	--	--

6.3 Results:

The maximum conducted output power was measured to be 25.1 dBm, which is much less than the EIRP limit of 27.50(d)(1-2). The sample tested was found to Comply. Antenna gain limitations will depend on the location of deployment. Output power from the two antenna ports was not summed since the data streams are uncorrelated and the antennas are cross polarized.

§27.50(d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:
(1) The power of each fixed or base station transmitting in the 1995-2000 MHz, 2110-2155 MHz, 2155-2180 MHz or 2180-2200 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to:
(i) An equivalent isotropically radiated power (EIRP) of 3280 watts when transmitting with an emission bandwidth of 1 MHz or less;
(ii) An EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
(2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
(i) An equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
(ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

Band 4, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	23.66
		ANT1	23.91
Mid	2132.50	ANT0	23.72
		ANT1	25.02
High	2152.50	ANT0	24.14
		ANT1	23.38

Band 4, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	23.86
		ANT1	23.86
Mid	2132.50	ANT0	23.82
		ANT1	25.04
High	2150.00	ANT0	23.91
		ANT1	23.30

Band 4, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	23.87
		ANT1	24.01
Mid	2132.50	ANT0	23.85
		ANT1	25.10
High	2147.50	ANT0	24.12
		ANT1	23.41

Band 4, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	23.88
		ANT1	23.97
Mid	2132.50	ANT0	23.83
		ANT1	25.05
High	2145.00	ANT0	23.81
		ANT1	23.68

Band 4, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	23.89
		ANT1	24.00
Mid	2132.50	ANT0	22.67
		ANT1	23.94
High	2152.50	ANT0	23.38
		ANT1	22.54

Band 4, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	23.99
		ANT1	23.89
Mid	2132.50	ANT0	22.67
		ANT1	23.98
High	2150.00	ANT0	23.32
		ANT1	22.64

Band 4, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	23.85
		ANT1	23.71
Mid	2132.50	ANT0	22.86
		ANT1	23.90
High	2147.50	ANT0	23.56
		ANT1	23.07

Band 4, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	24.03
		ANT1	23.81
Mid	2132.50	ANT0	22.89
		ANT1	24.15
High	2145.00	ANT0	22.20
		ANT1	23.04

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	24.08
		ANT1	23.97
Mid	2132.50	ANT0	23.73
		ANT1	24.91
High	2152.50	ANT0	23.92
		ANT1	23.20

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	23.78
		ANT1	23.87
Mid	2132.50	ANT0	23.33
		ANT1	24.61
High	2150.00	ANT0	23.88
		ANT1	23.20

Band 4 Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	24.04
		ANT1	24.04
Mid	2132.50	ANT0	23.34
		ANT1	24.62
High	2147.50	ANT0	23.89
		ANT1	23.41

Band 4, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	23.99
		ANT1	24.11
Mid	2132.50	ANT0	23.14
		ANT1	24.42
High	2145.00	ANT0	23.57
		ANT1	23.48

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2112.50	ANT0	24.05
		ANT1	24.00
Mid	2132.50	ANT0	23.73
		ANT1	24.83
High	2152.50	ANT0	23.71
		ANT1	22.85

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2115.00	ANT0	23.91
		ANT1	24.02
Mid	2132.50	ANT0	23.41
		ANT1	24.74
High	2150.00	ANT0	23.79
		ANT1	23.30

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2117.50	ANT0	23.88
		ANT1	23.97
Mid	2132.50	ANT0	23.02
		ANT1	24.36
High	2147.50	ANT0	24.03
		ANT1	23.65

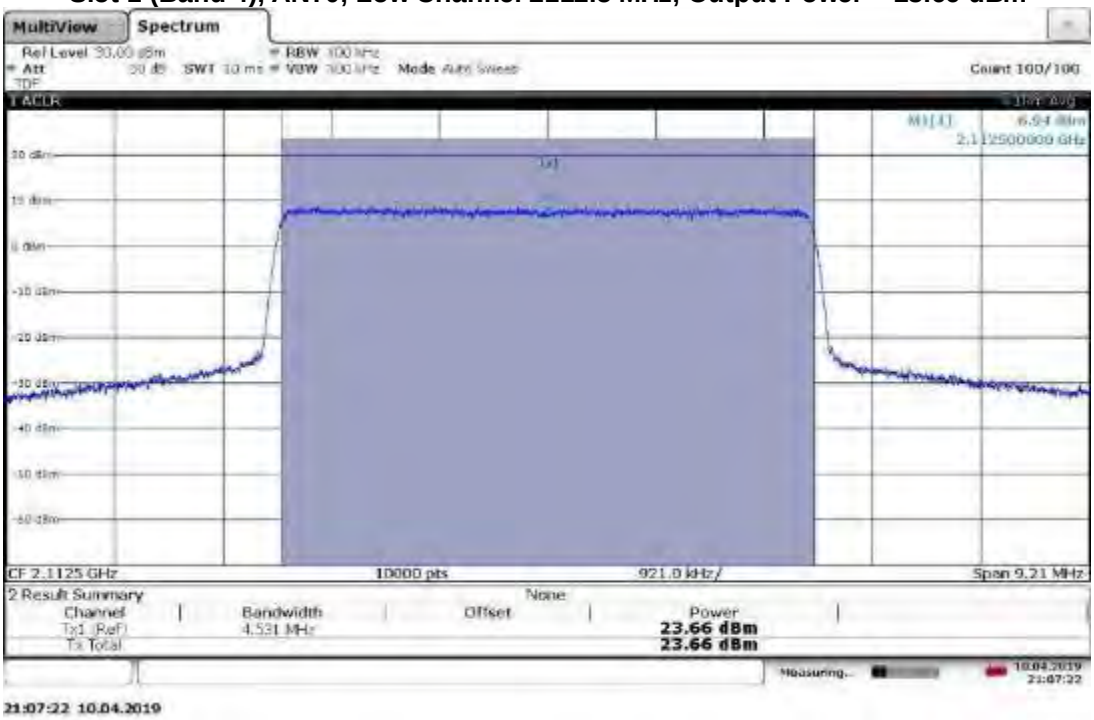
Band 4, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	2120.00	ANT0	23.83
		ANT1	24.02
Mid	2132.50	ANT0	23.21
		ANT1	24.51
High	2145.00	ANT0	23.71
		ANT1	23.66

6.4 Setup Photograph:

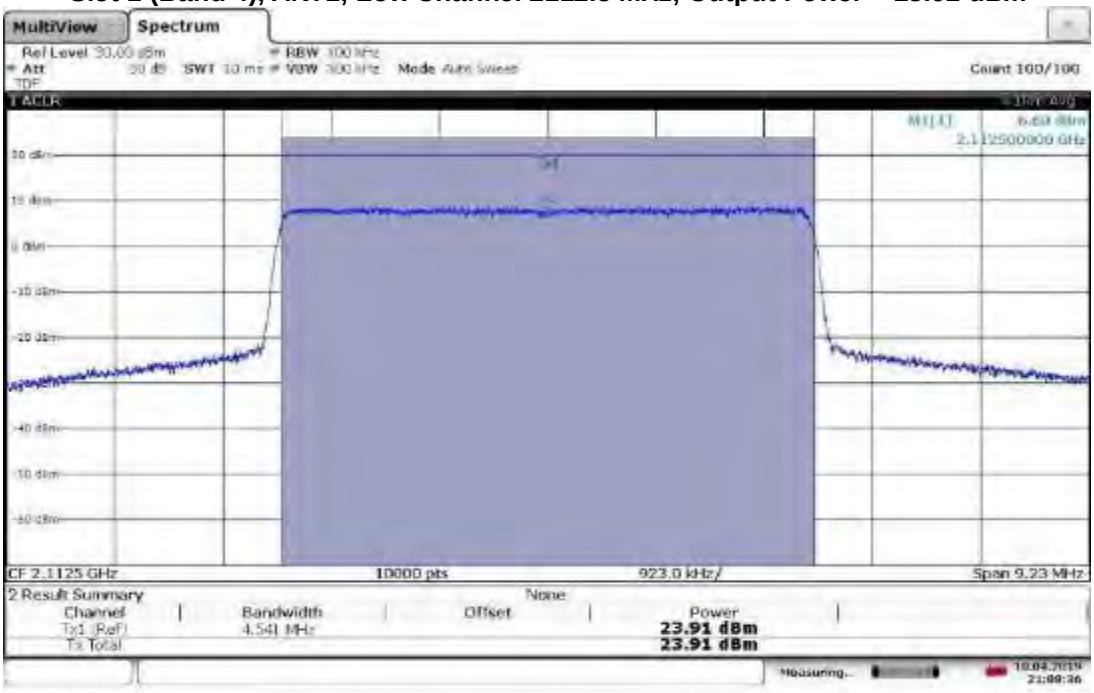
6.5 Plots/Data:

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, Output Power = 23.66 dBm



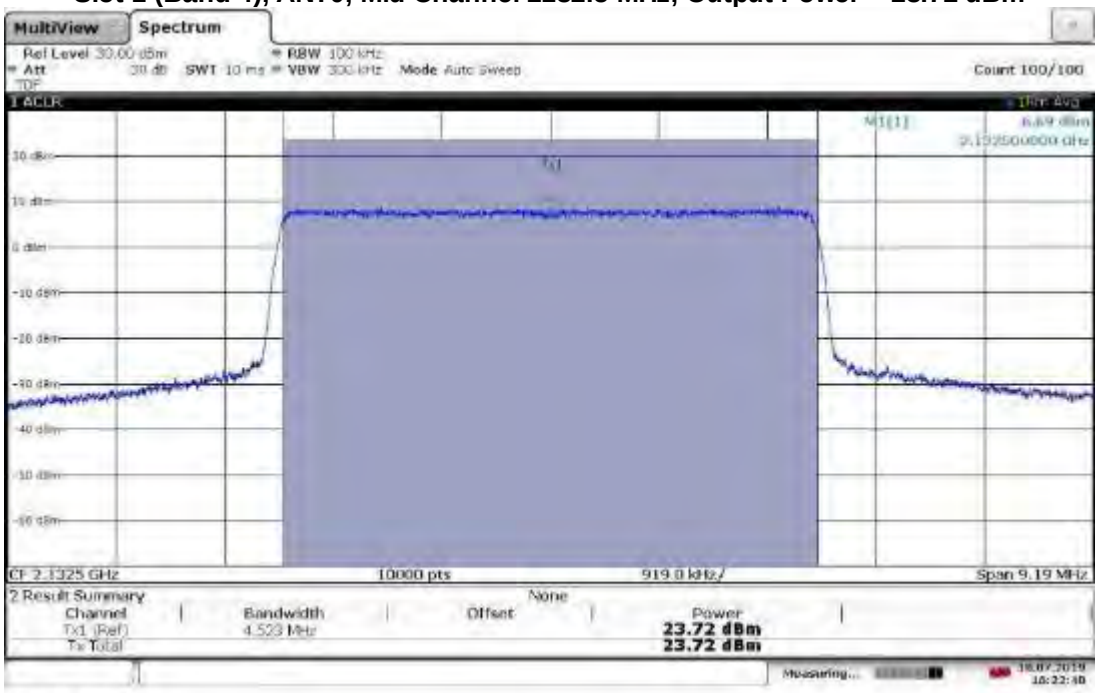
21:07:22 10.04.2019

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, Output Power = 23.91 dBm

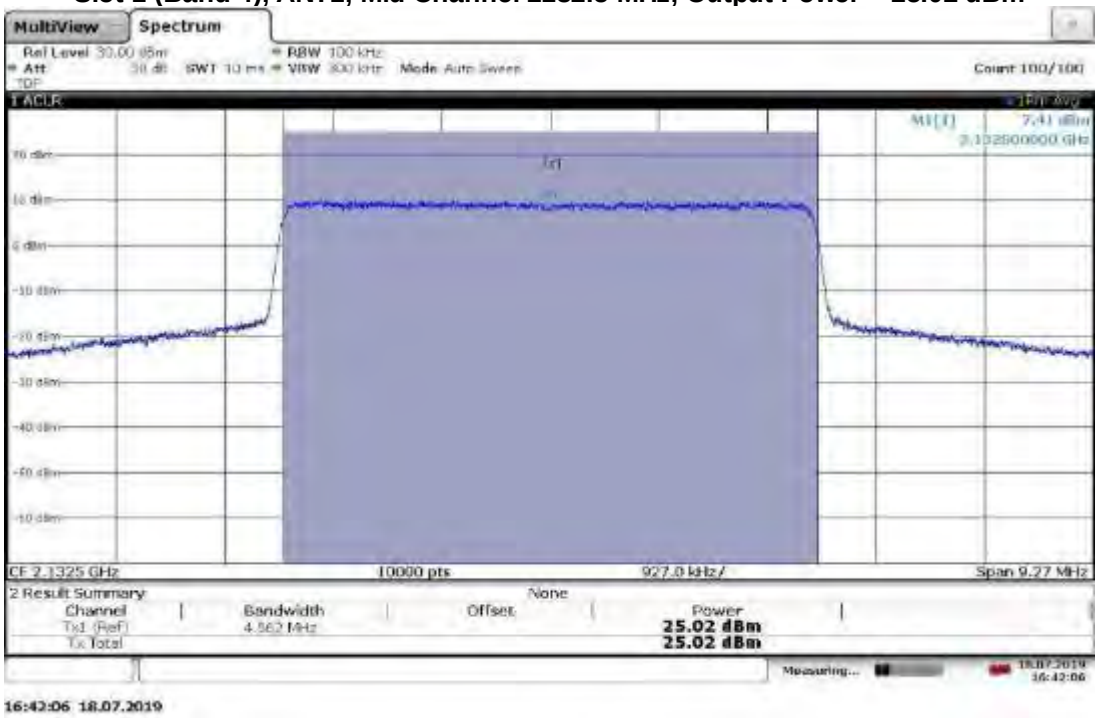


21:08:37 10.04.2019

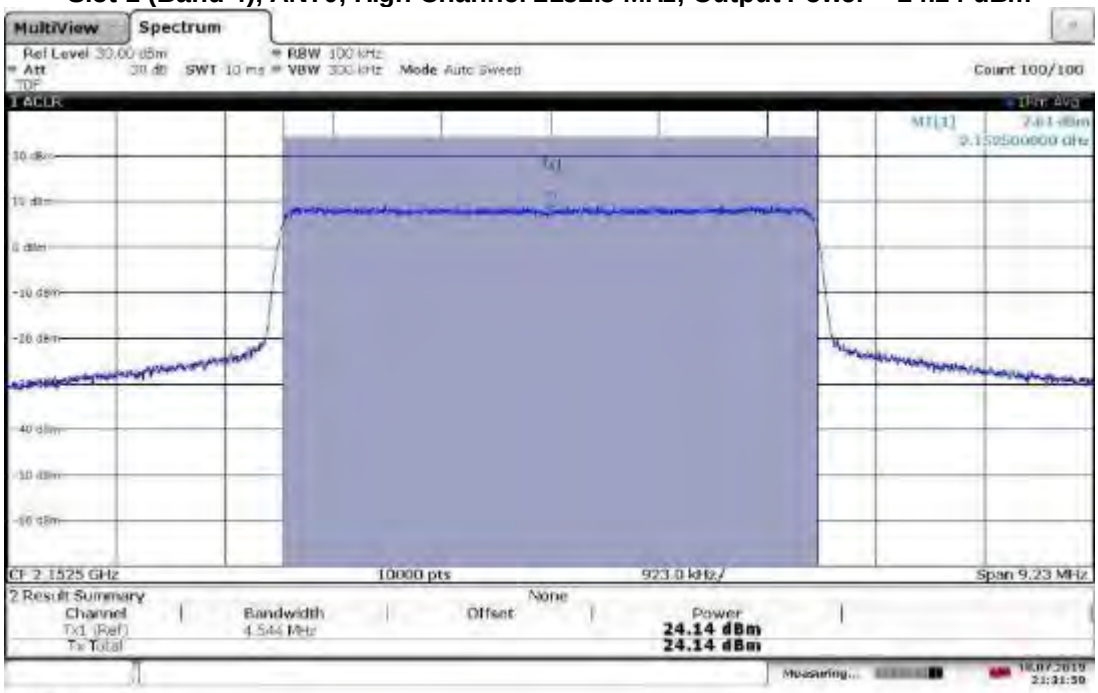
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.72 dBm



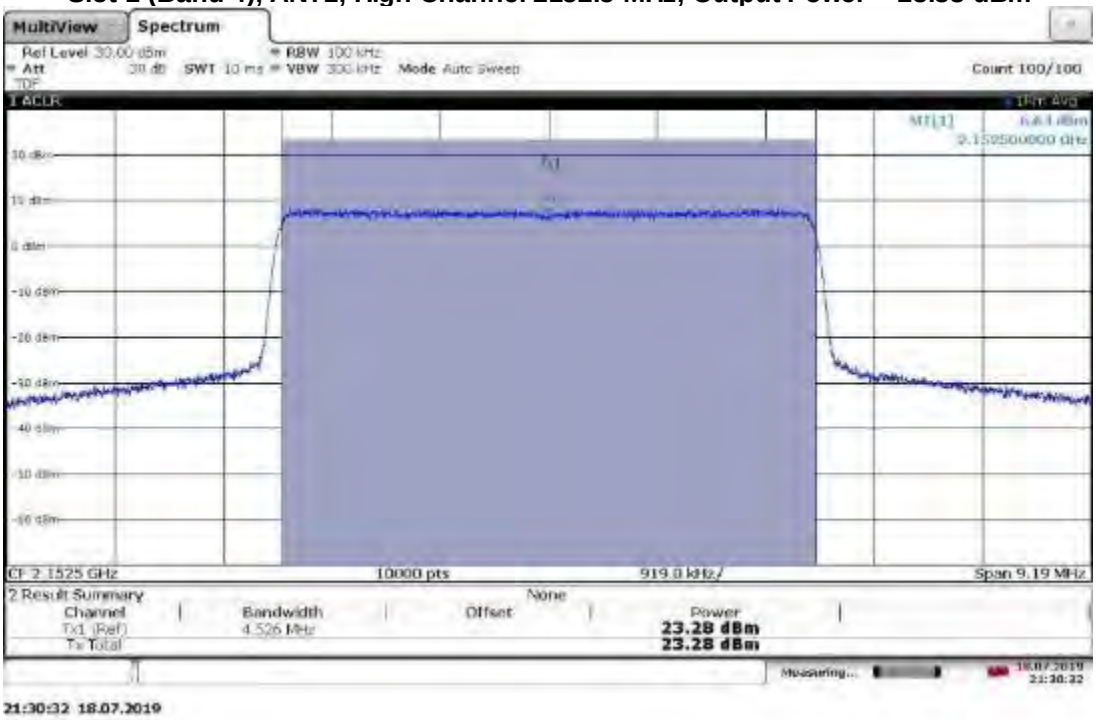
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 25.02 dBm



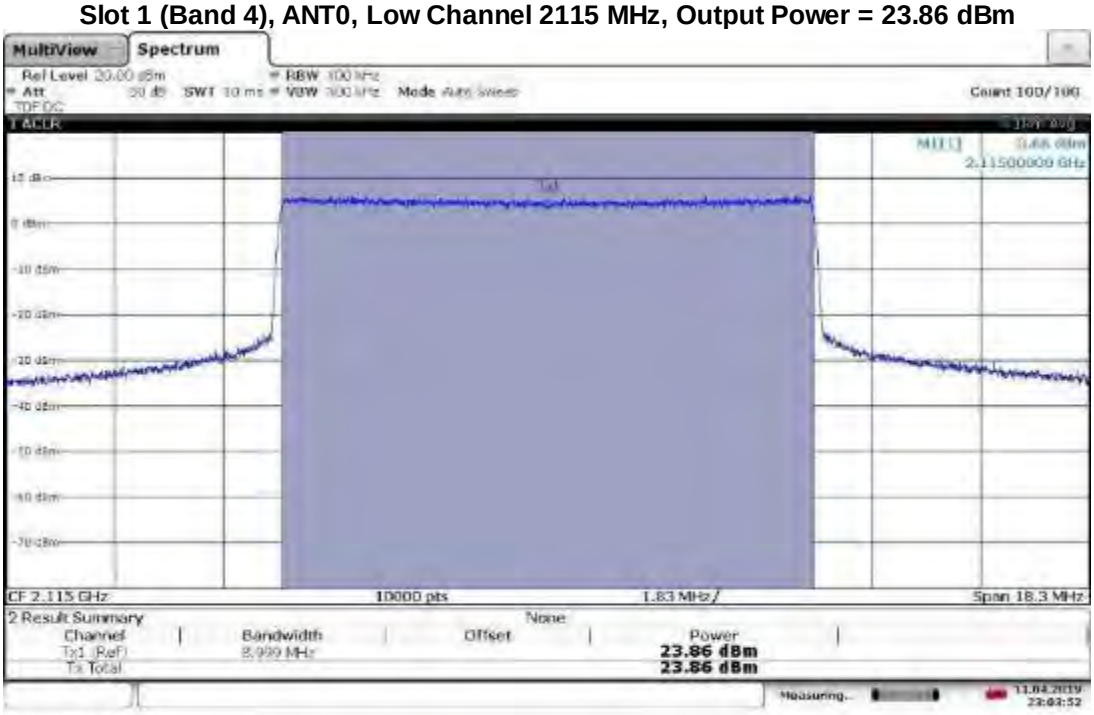
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, Output Power = 24.14 dBm



TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, Output Power = 23.38 dBm

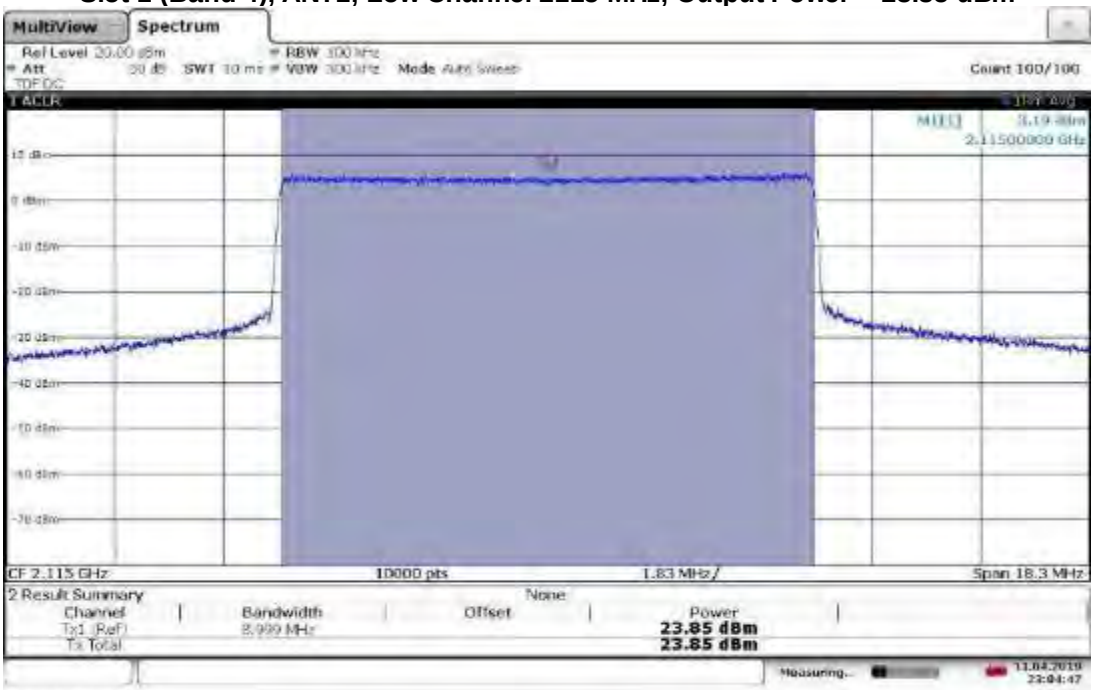


TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, Output Power = 23.86 dBm



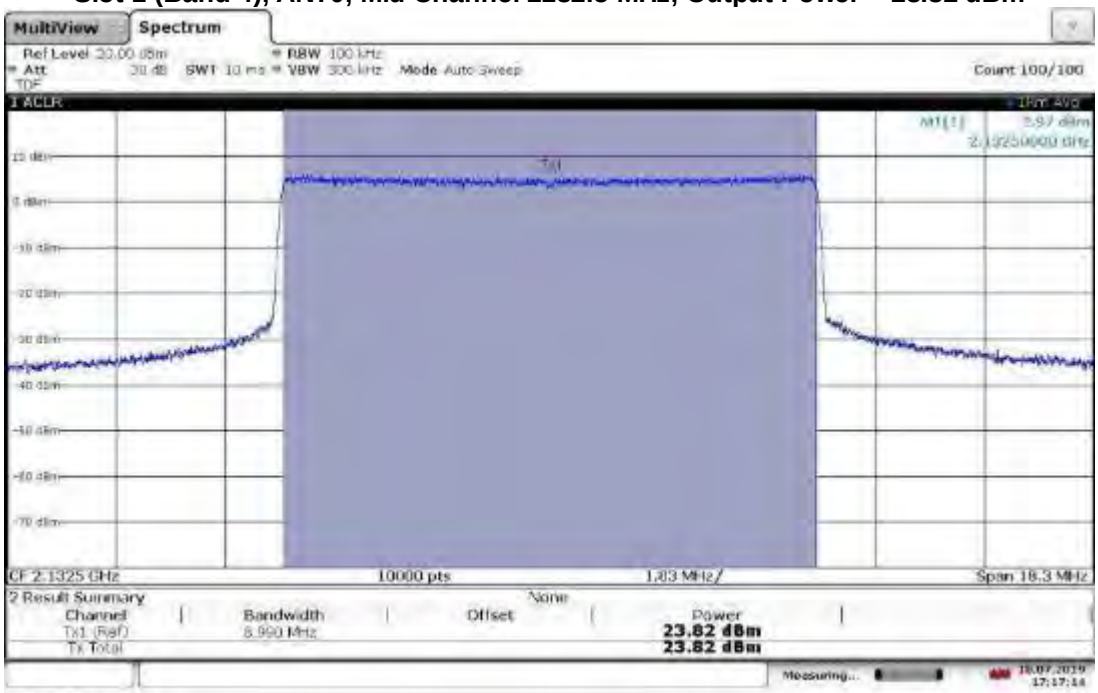
23:03:53 11.04.2019

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, Output Power = 23.85 dBm

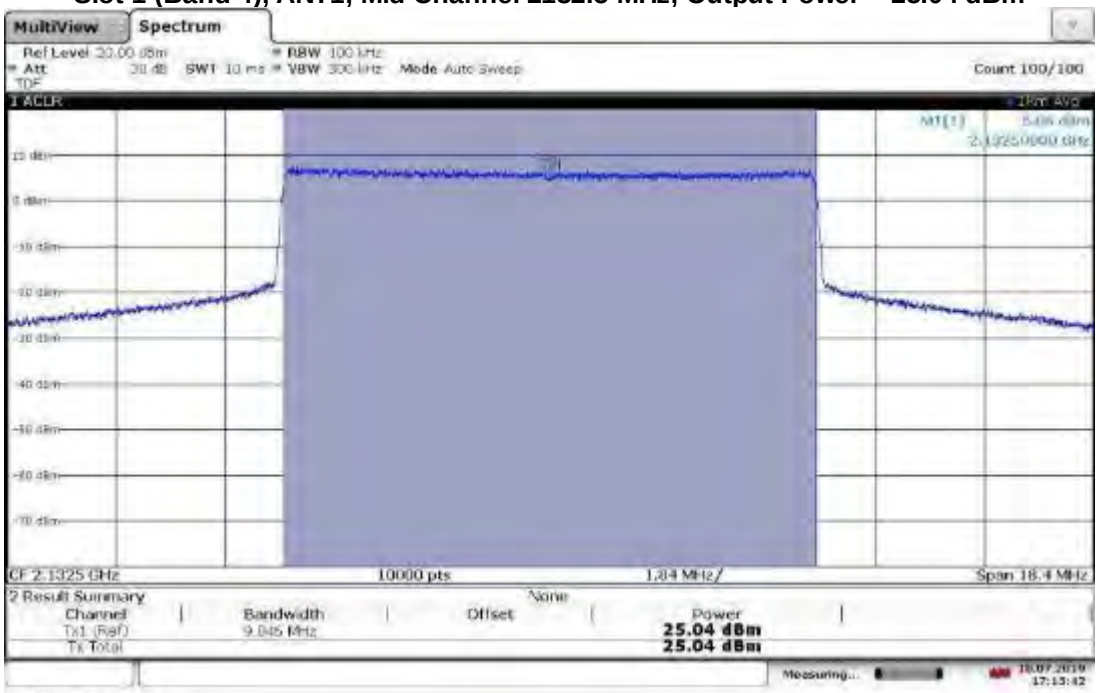


23:04:47 11.04.2019

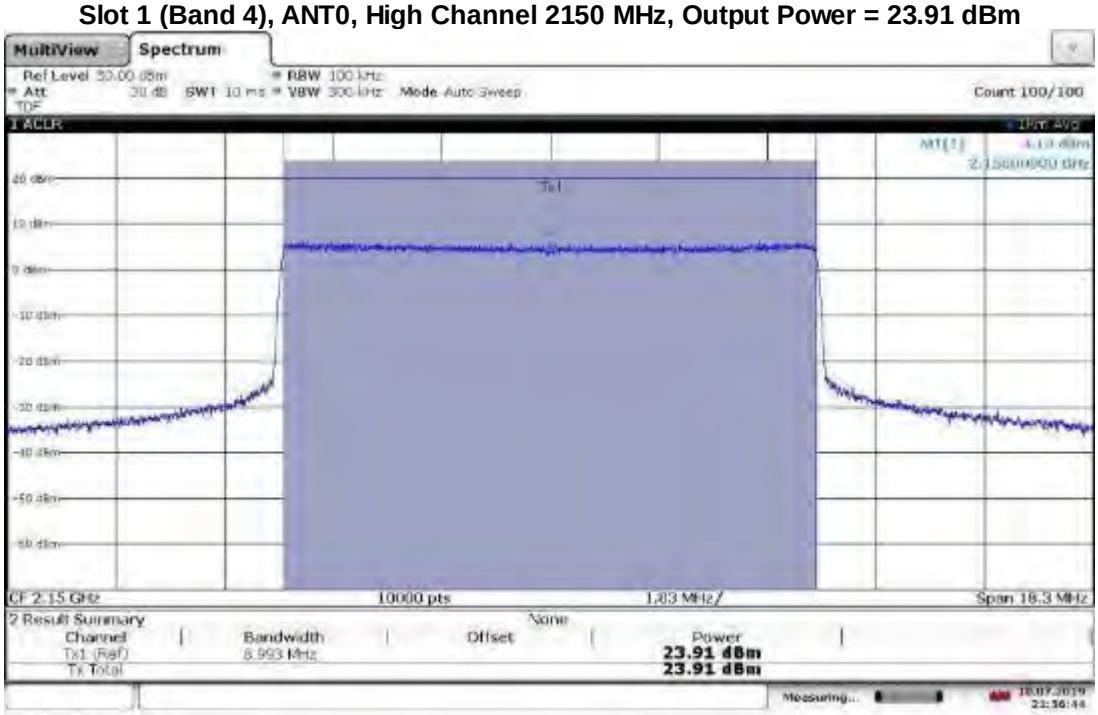
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.82 dBm



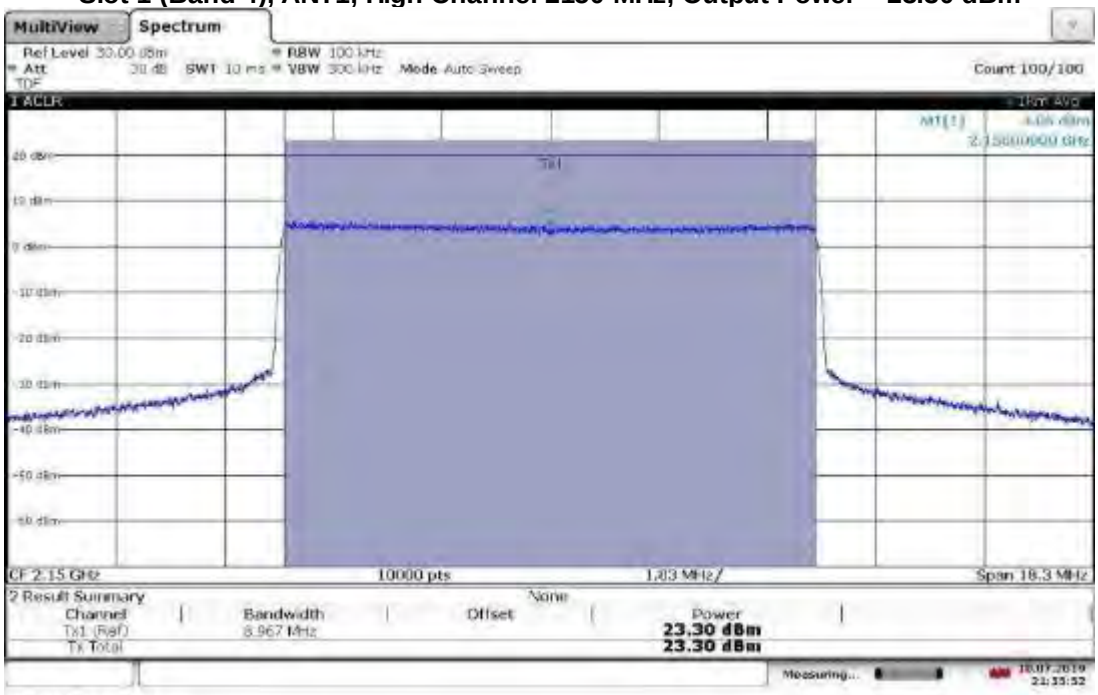
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 25.04 dBm



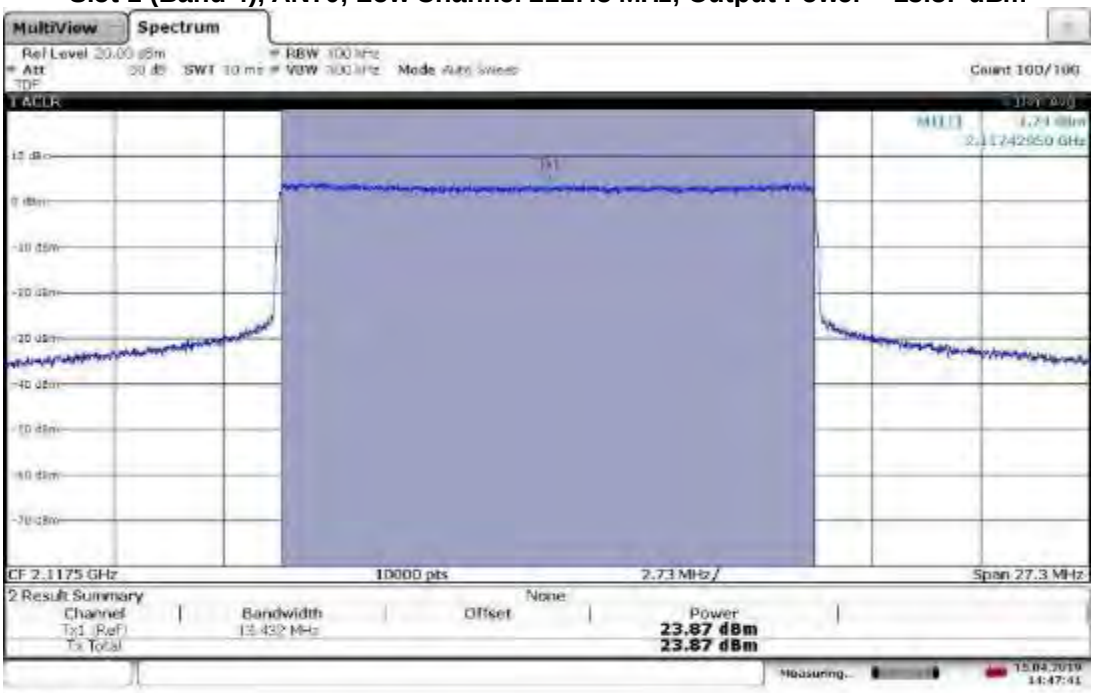
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, Output Power = 23.91 dBm



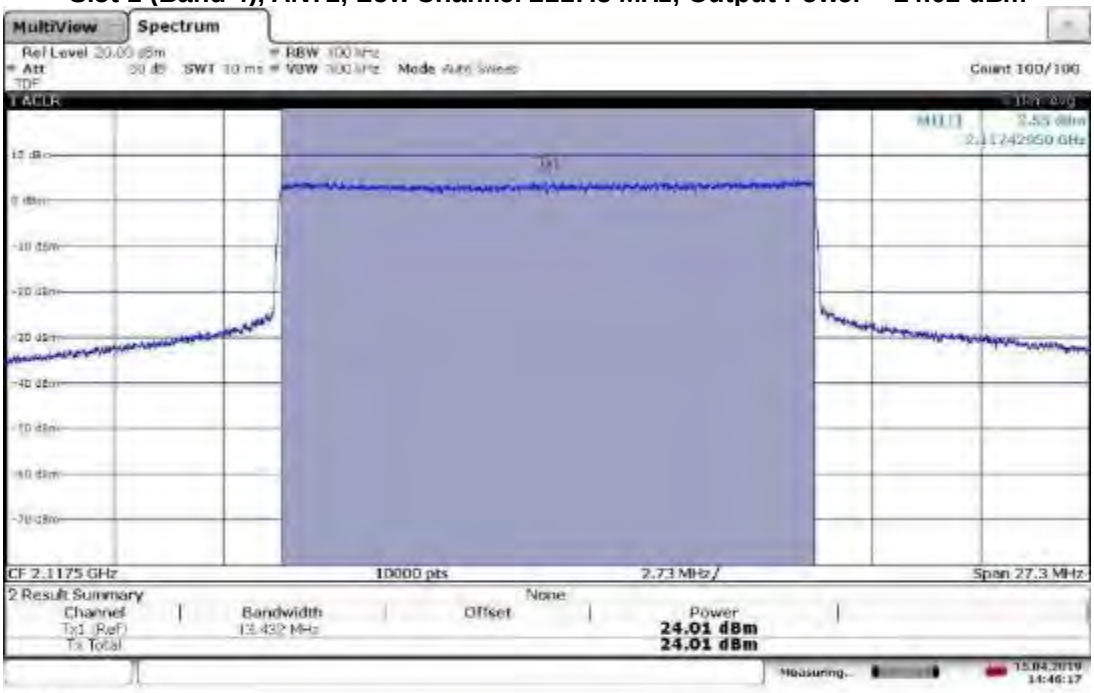
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, Output Power = 23.30 dBm



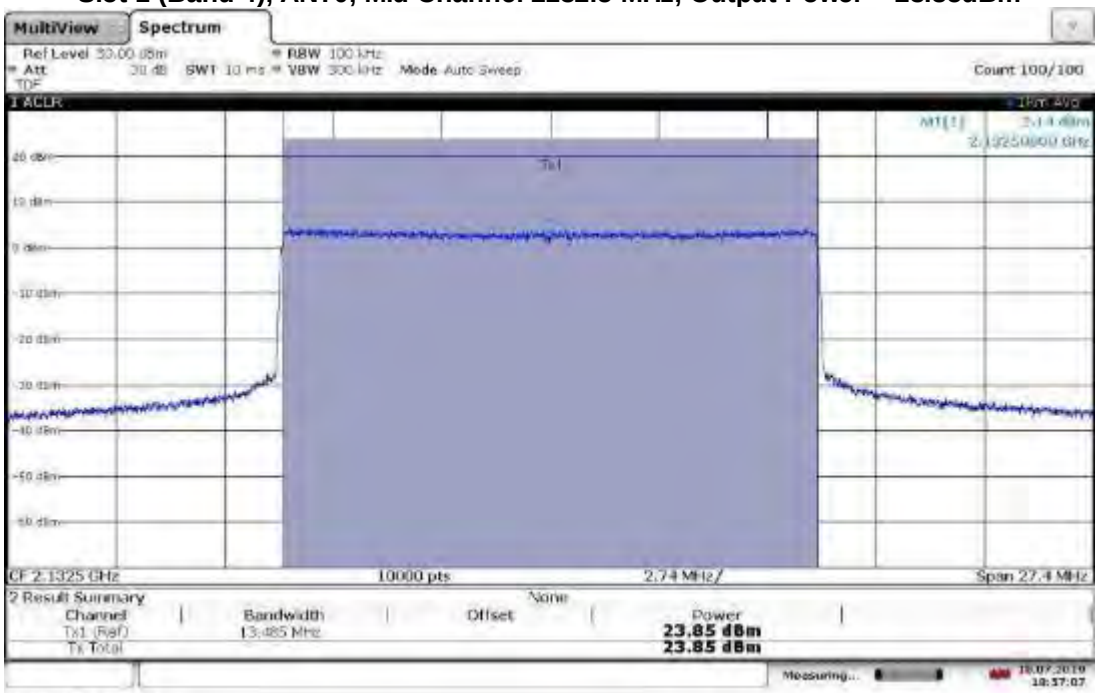
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, Output Power = 23.87 dBm



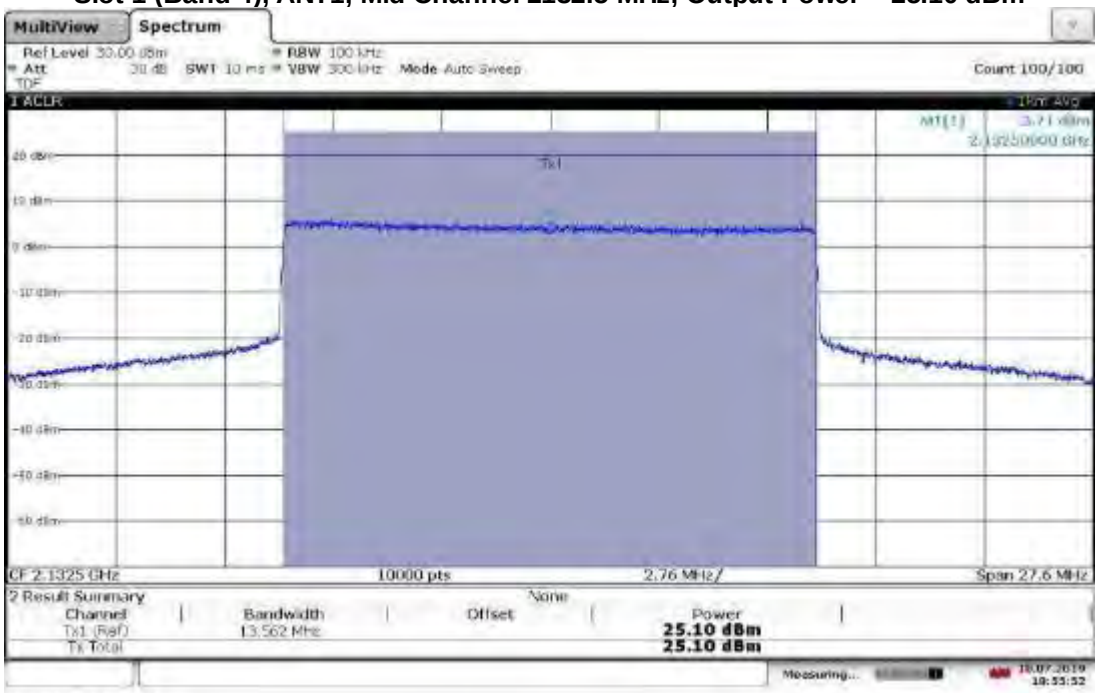
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, Output Power = 24.01 dBm



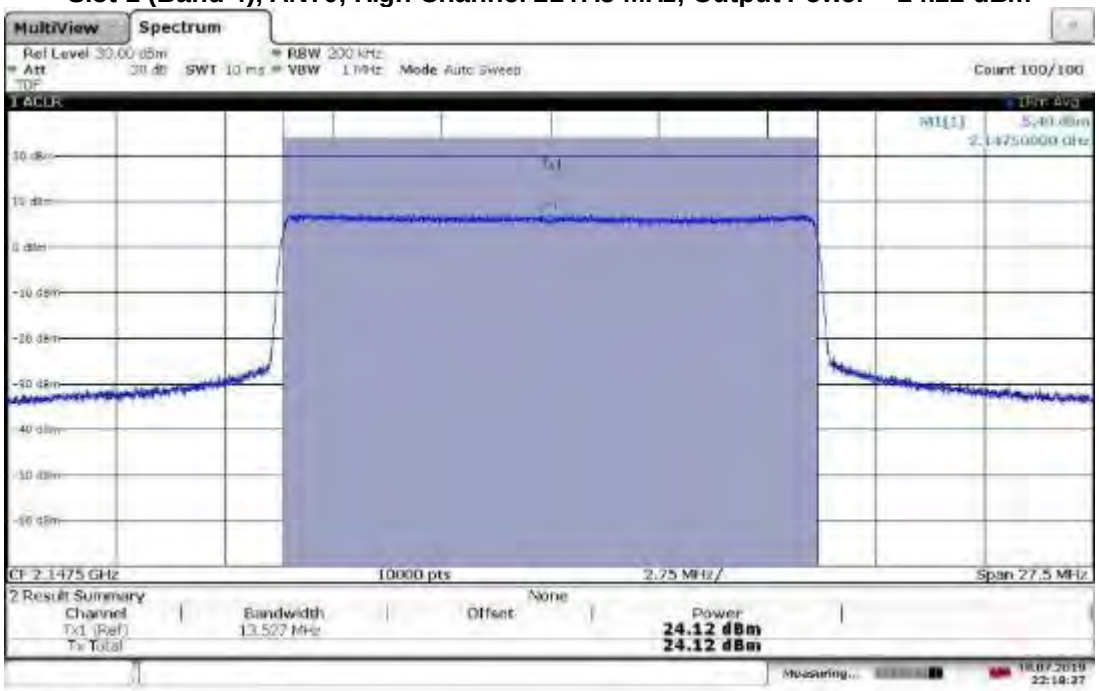
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.85dBm



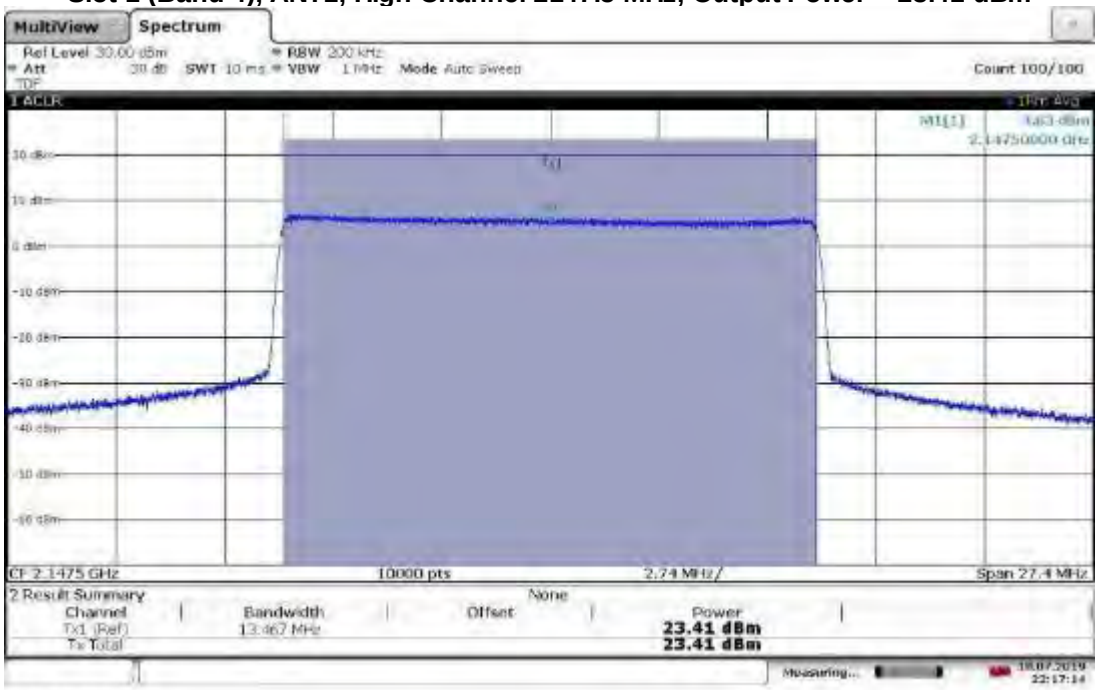
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 25.10 dBm



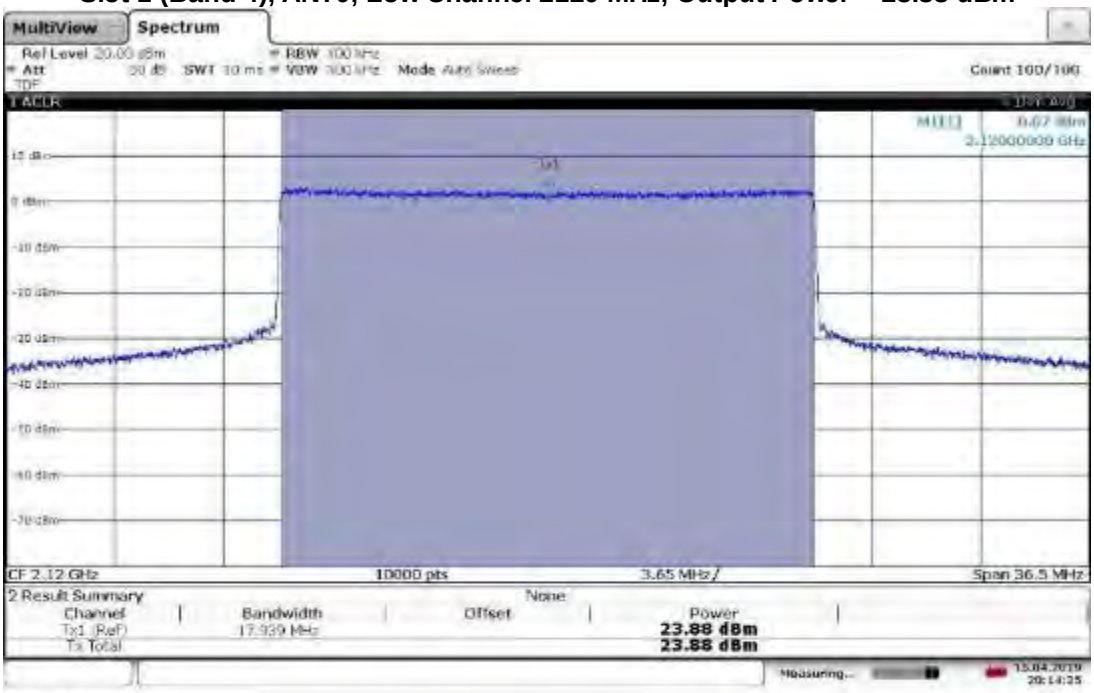
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, Output Power = 24.12 dBm



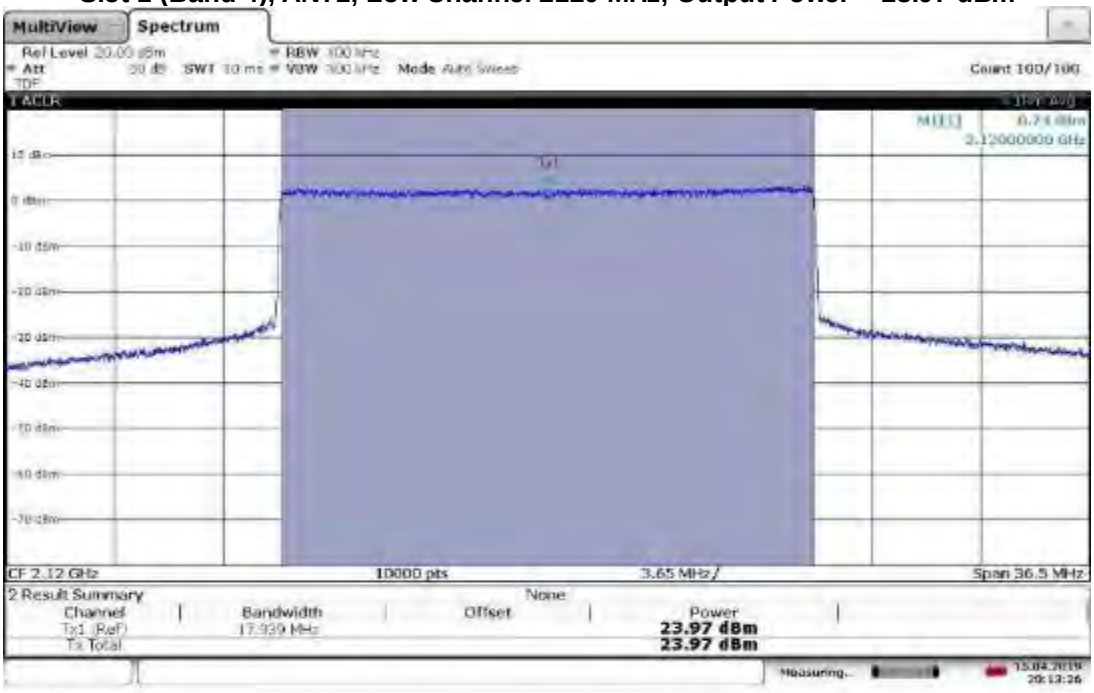
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, Output Power = 23.41 dBm



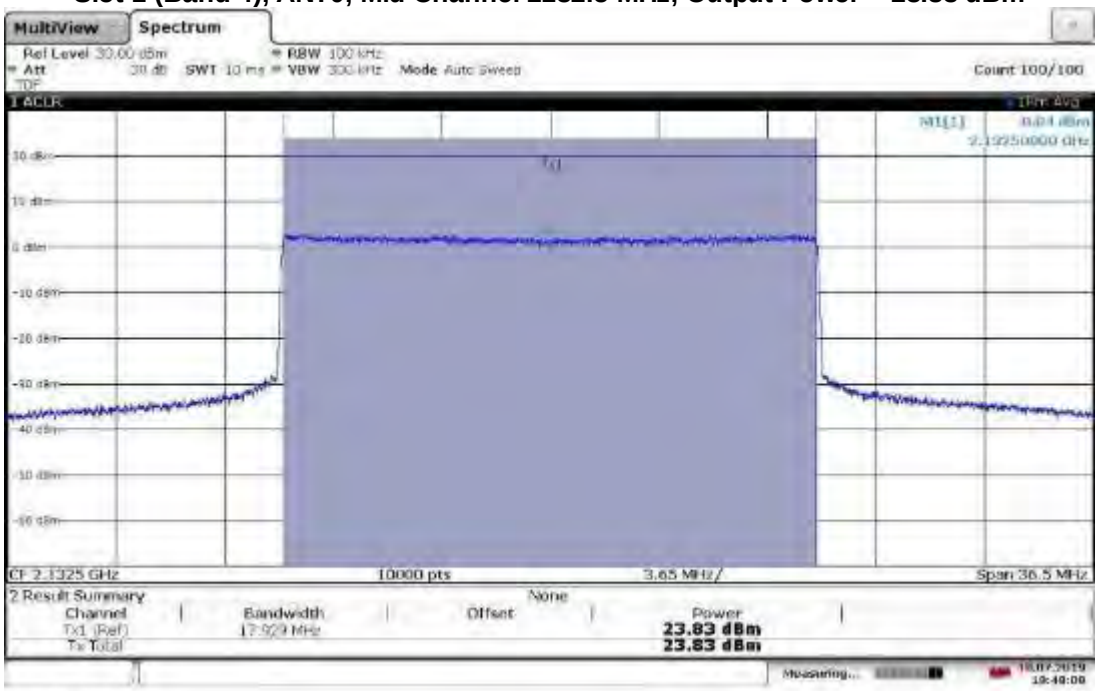
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, Output Power = 23.88 dBm



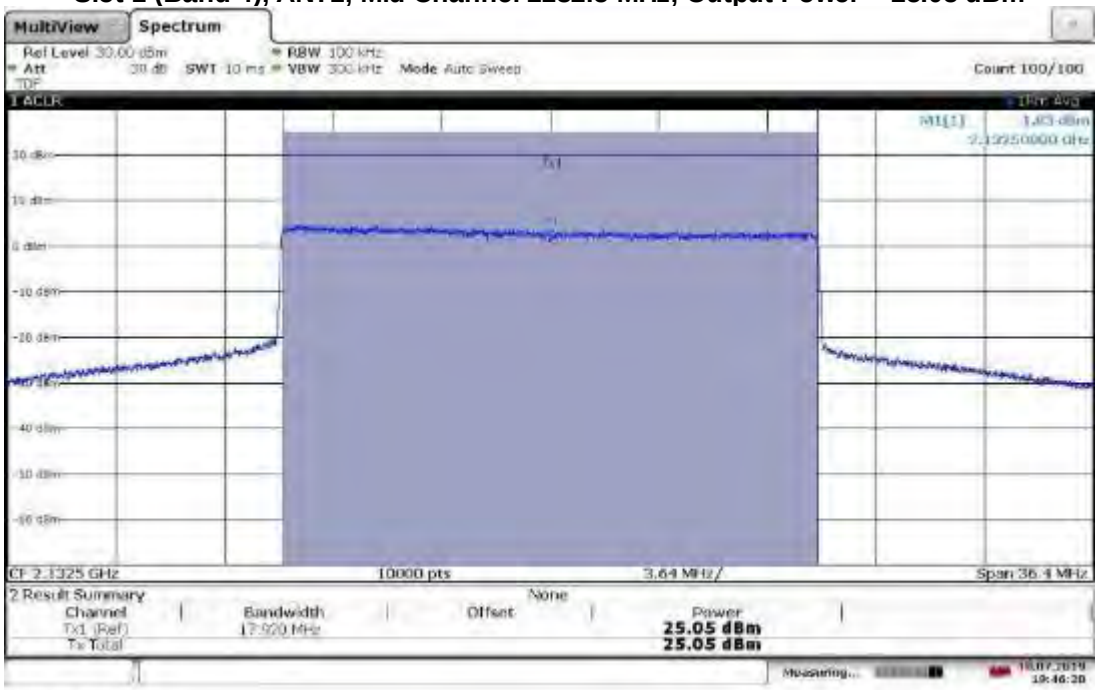
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, Output Power = 23.97 dBm



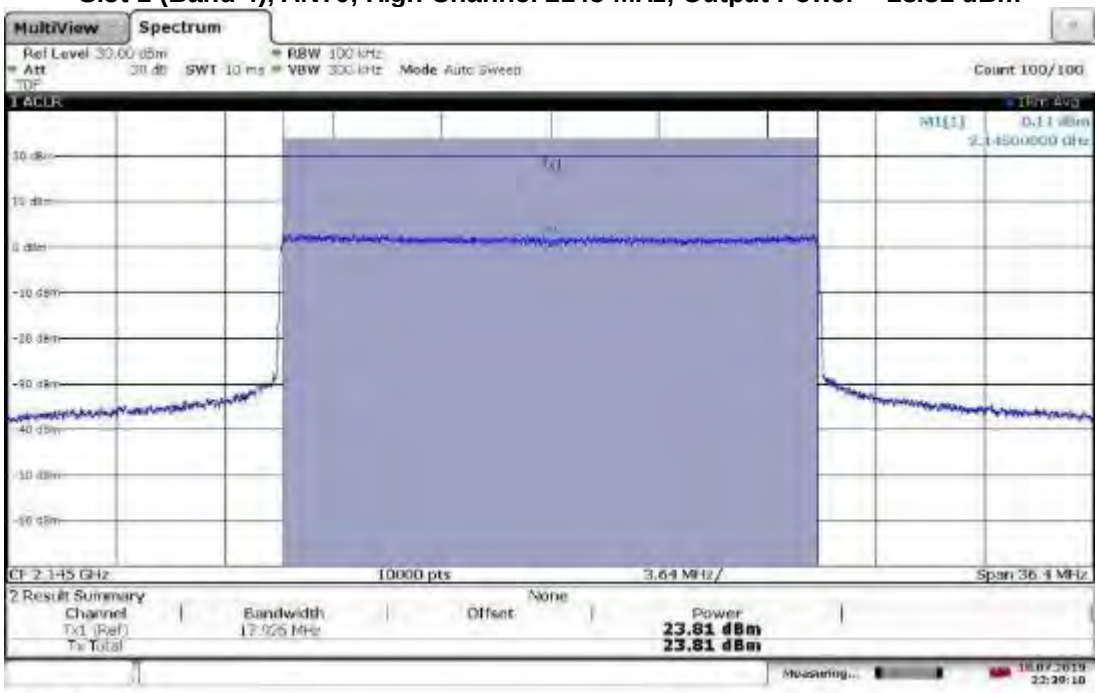
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.83 dBm



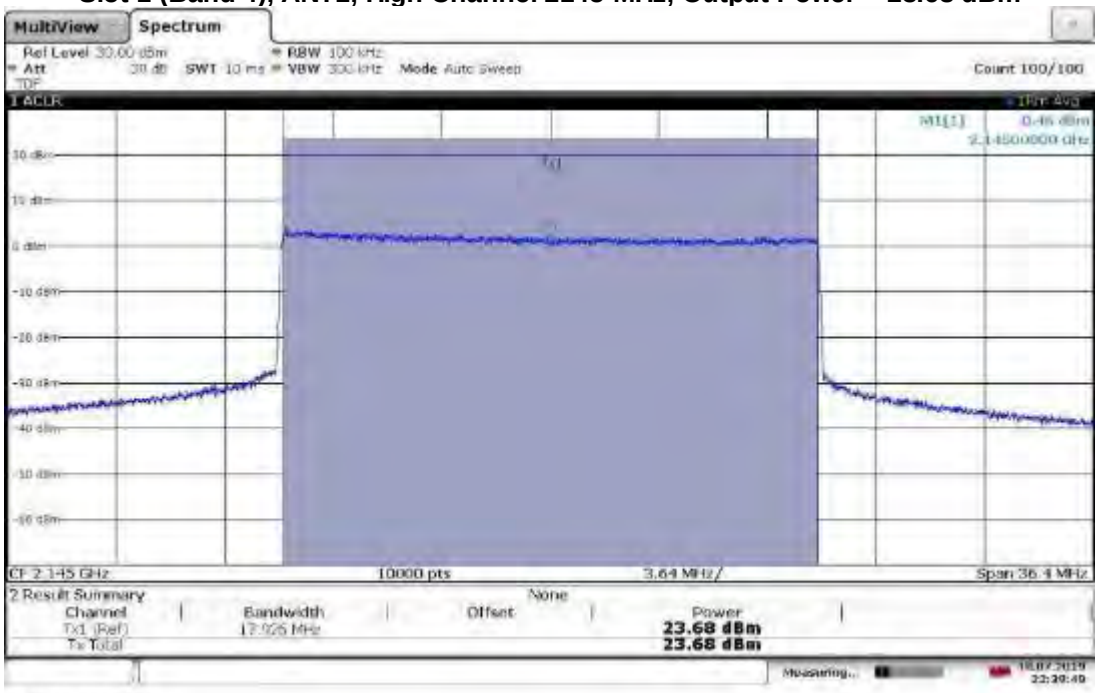
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 25.05 dBm



TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, Output Power = 23.81 dBm



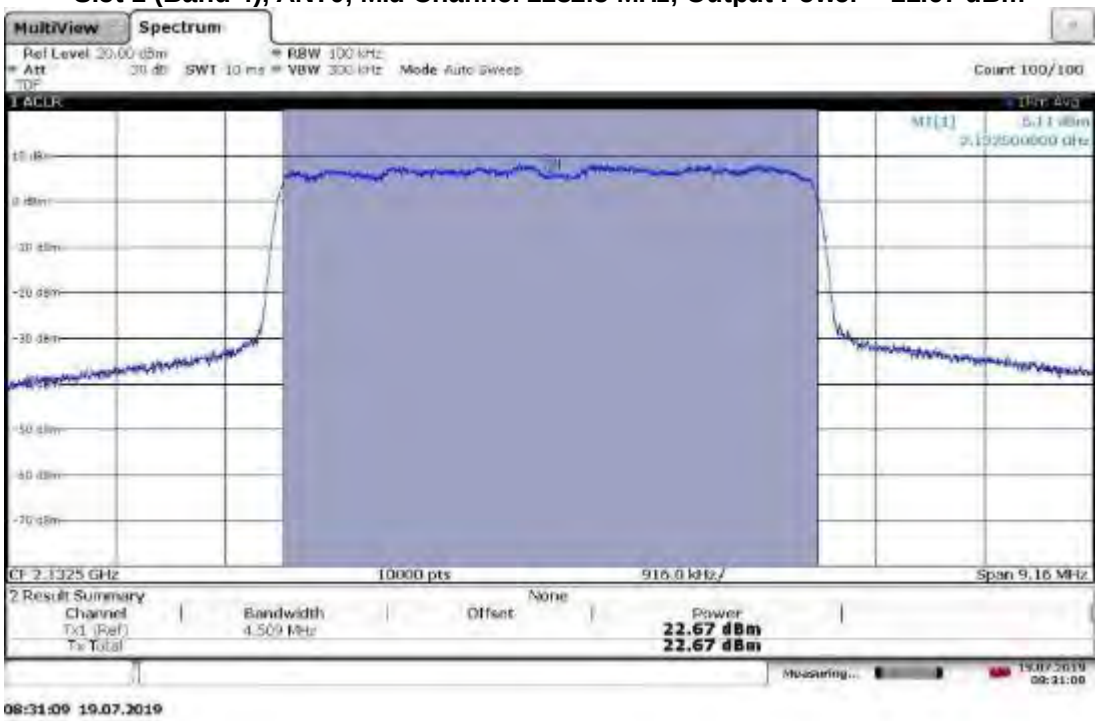
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, Output Power = 23.68 dBm



TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, Output Power = 23.89 dBm

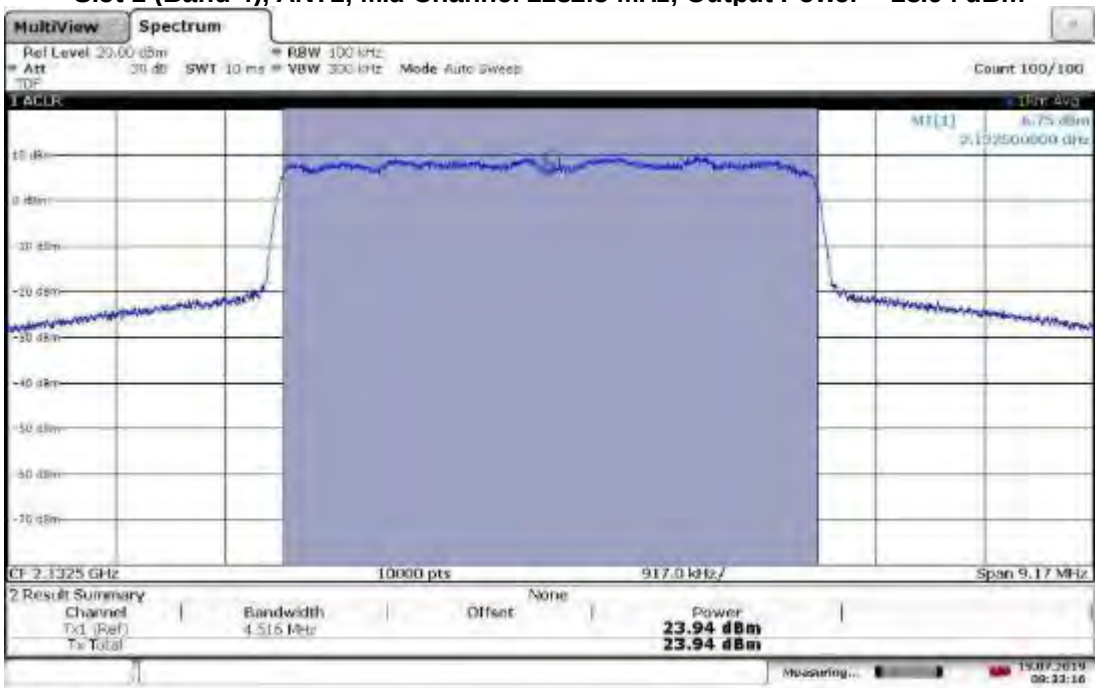
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, Output Power = 24.00 dBm

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 22.67 dBm



08:31:09 19.07.2019

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 23.94 dBm

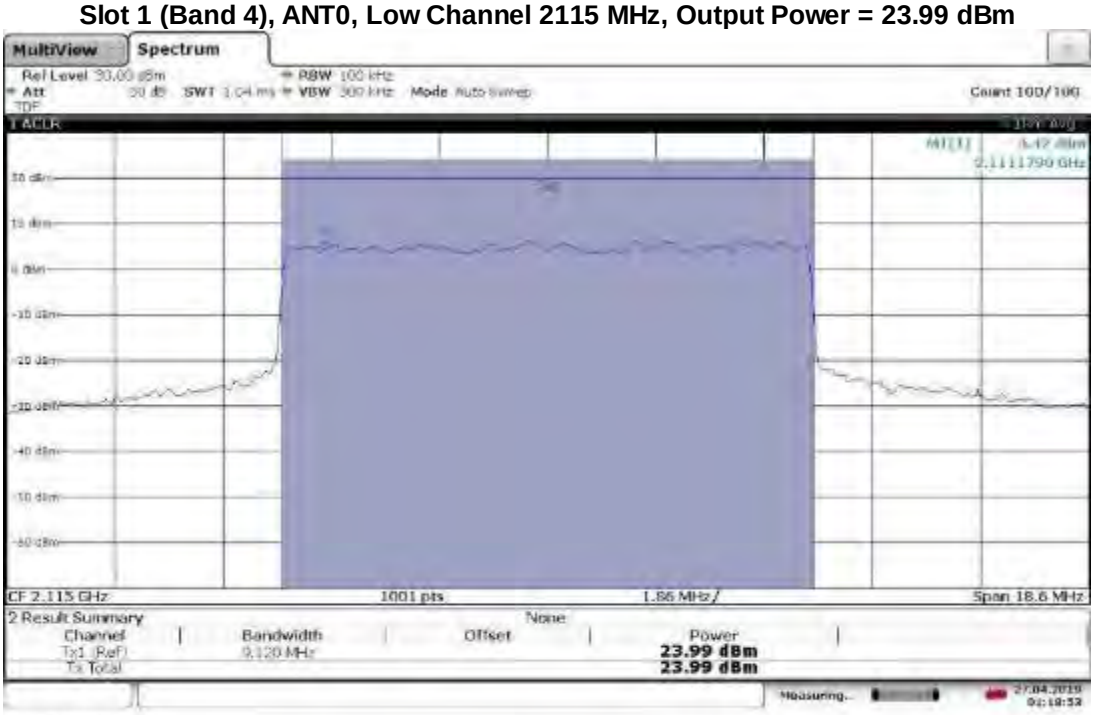


08:33:16 19.07.2019

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, Output Power = 23.38 dBm

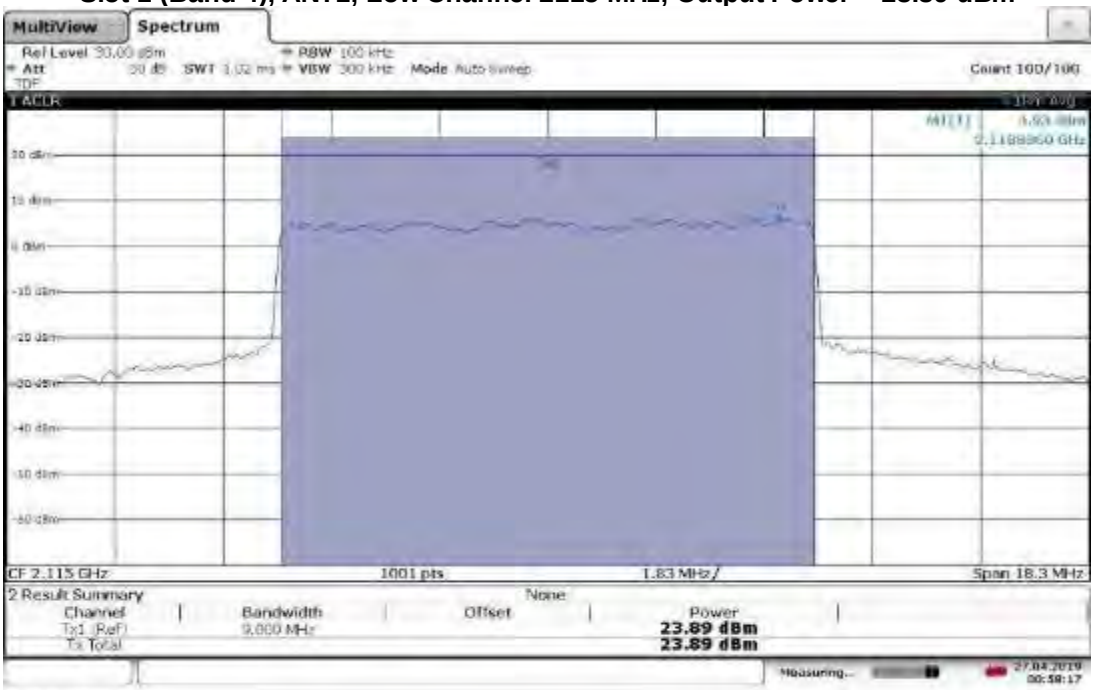
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, Output Power = 22.54 dBm

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, Output Power = 23.99 dBm



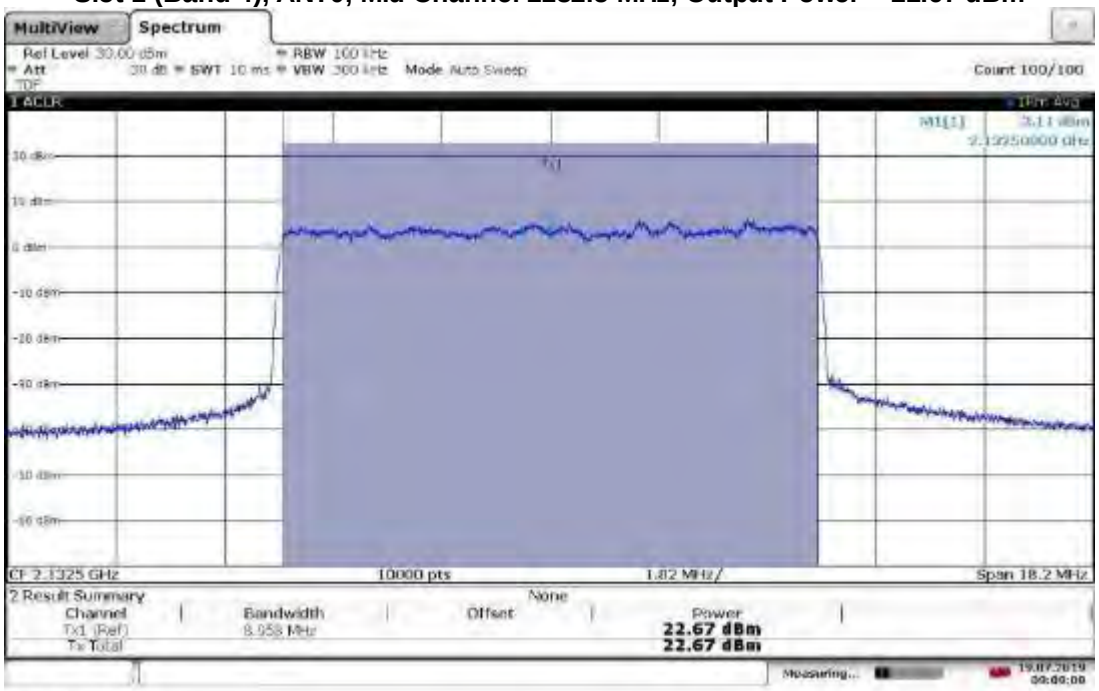
01:18:54 27.04.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, Output Power = 23.89 dBm



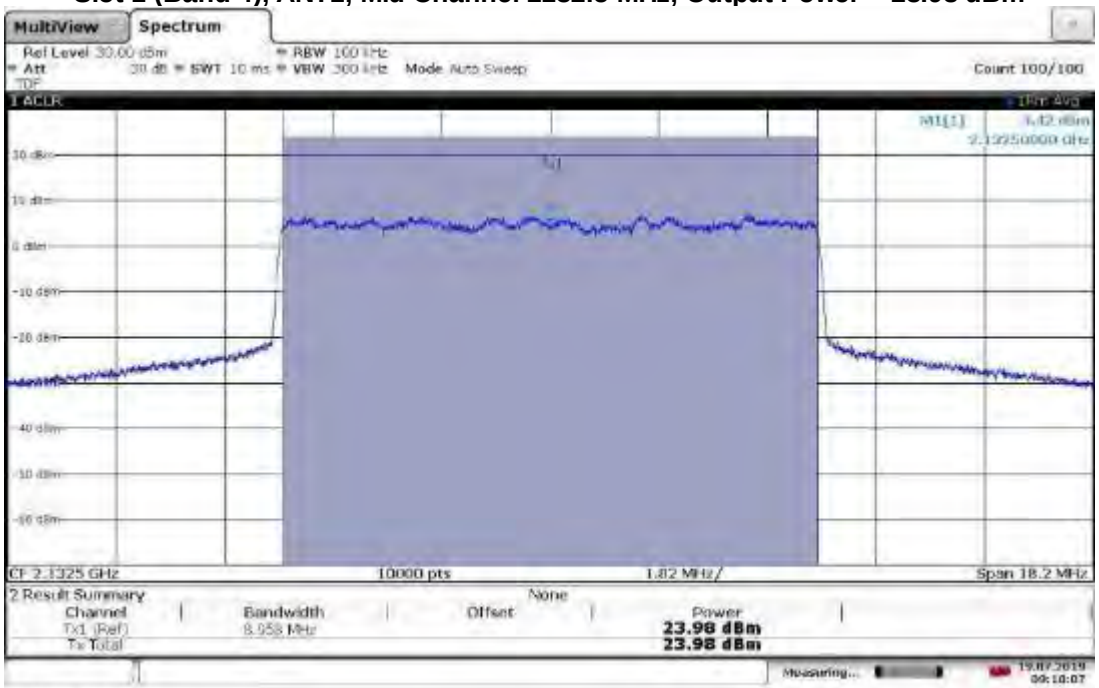
00:58:17 27.04.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 22.67 dBm



00:00:00 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 23.98 dBm



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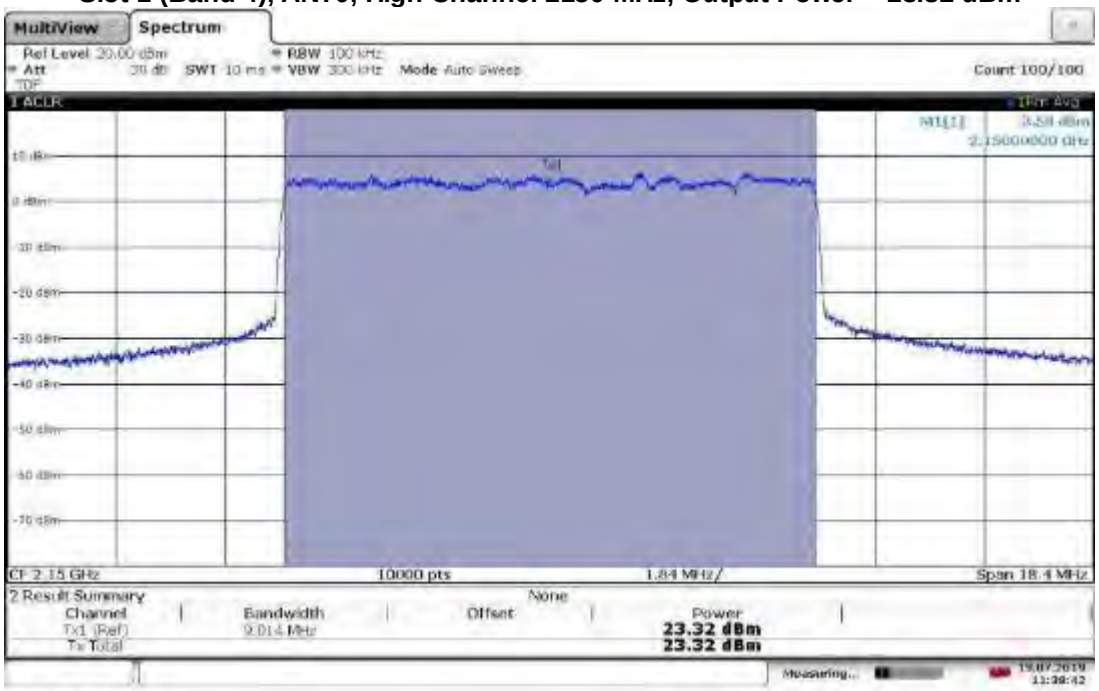
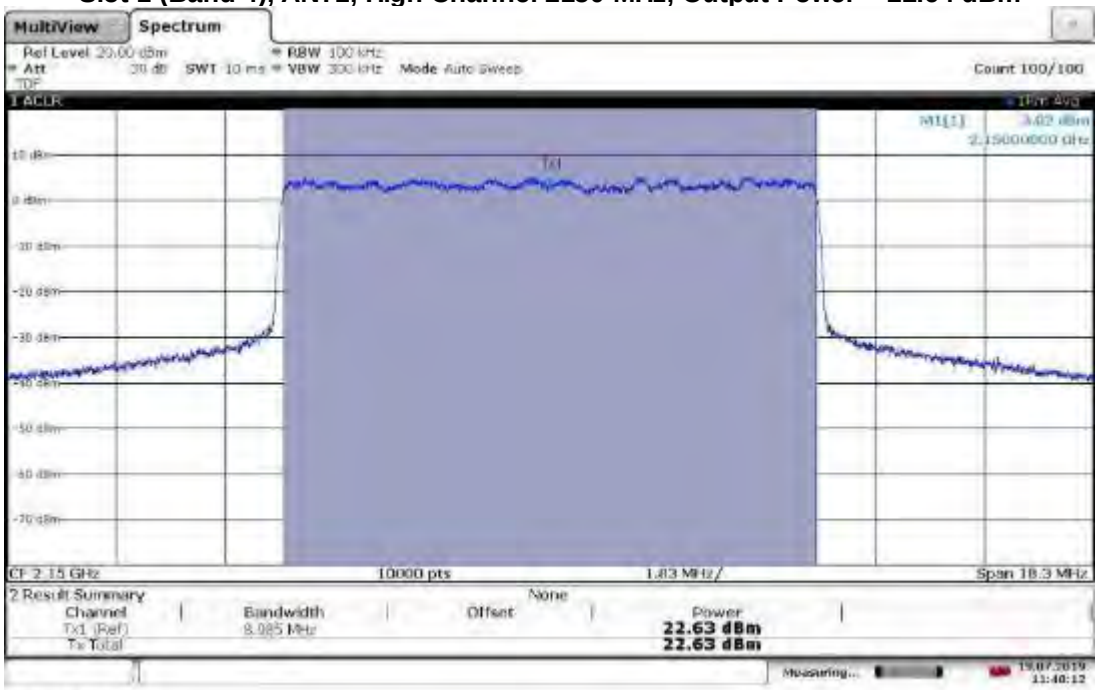
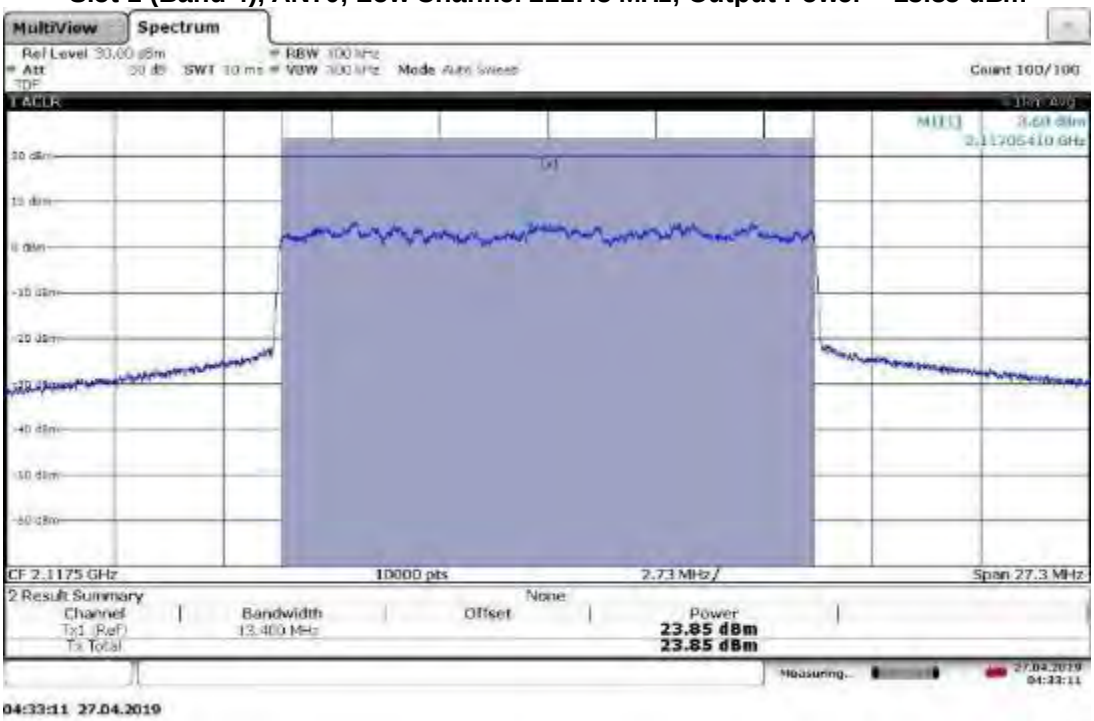
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, Output Power = 23.32 dBm



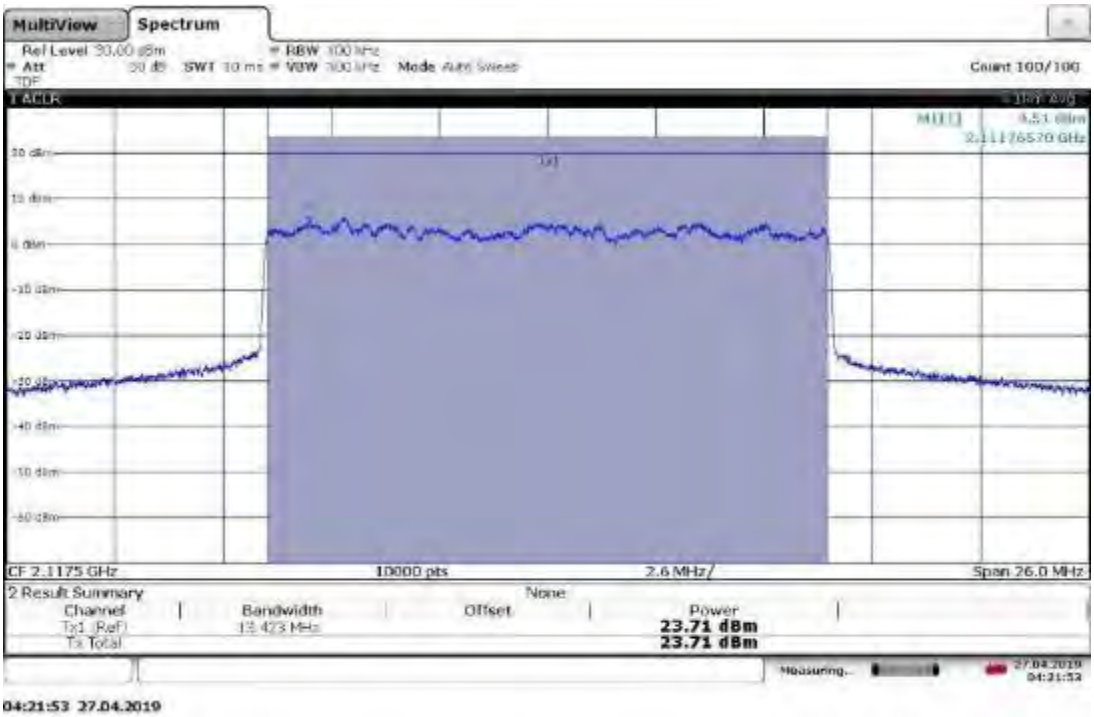
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, Output Power = 22.64 dBm



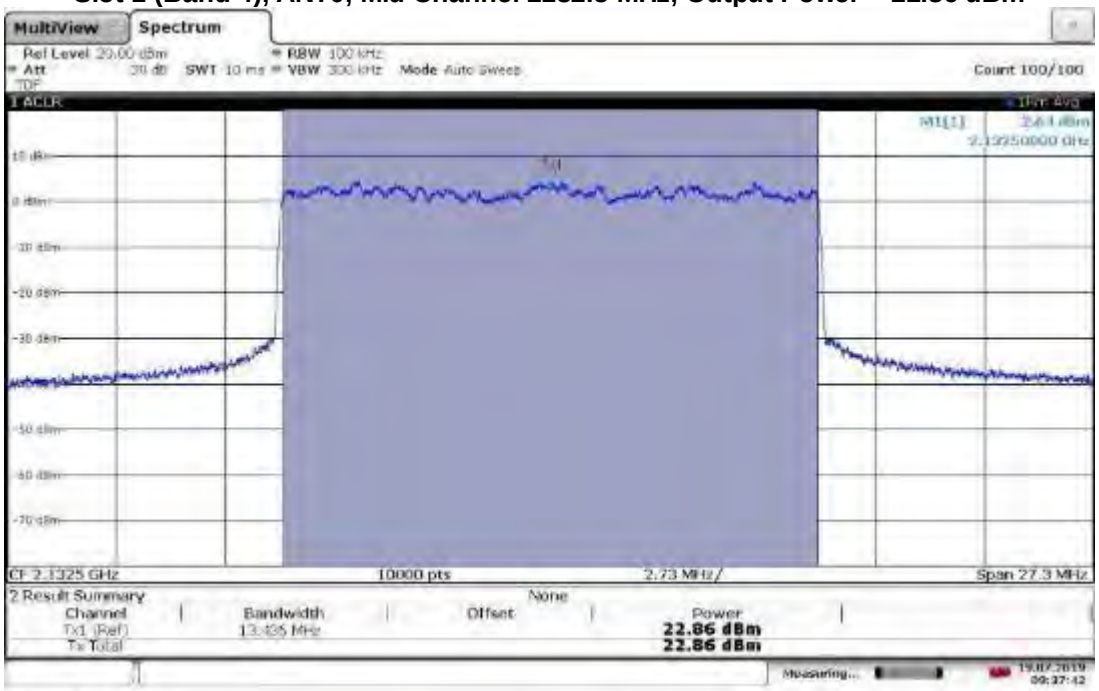
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, Output Power = 23.85 dBm



TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, Output Power = 23.71 dBm



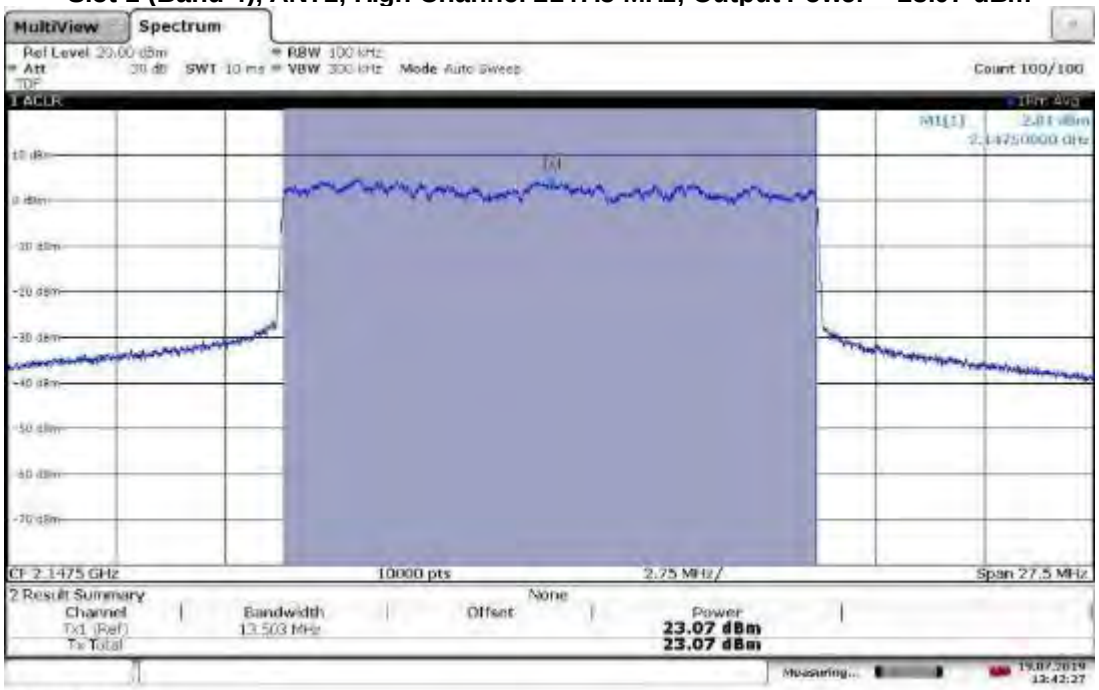
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 22.86 dBm



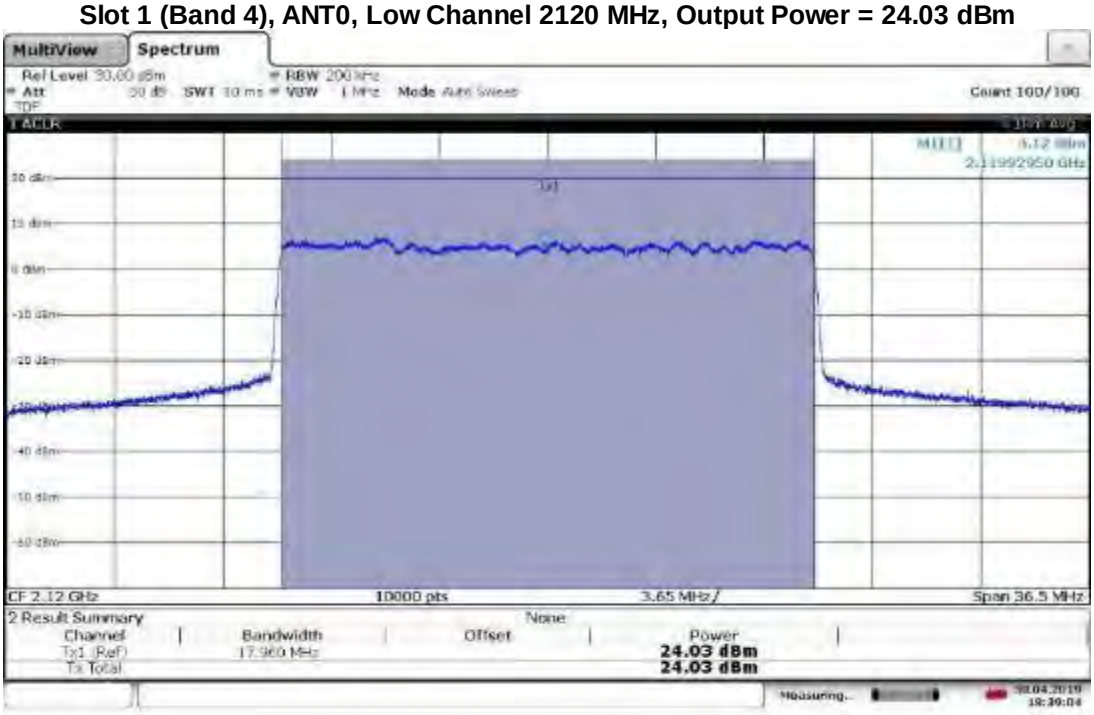
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 23.90 dBm

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, Output Power = 23.56 dBm

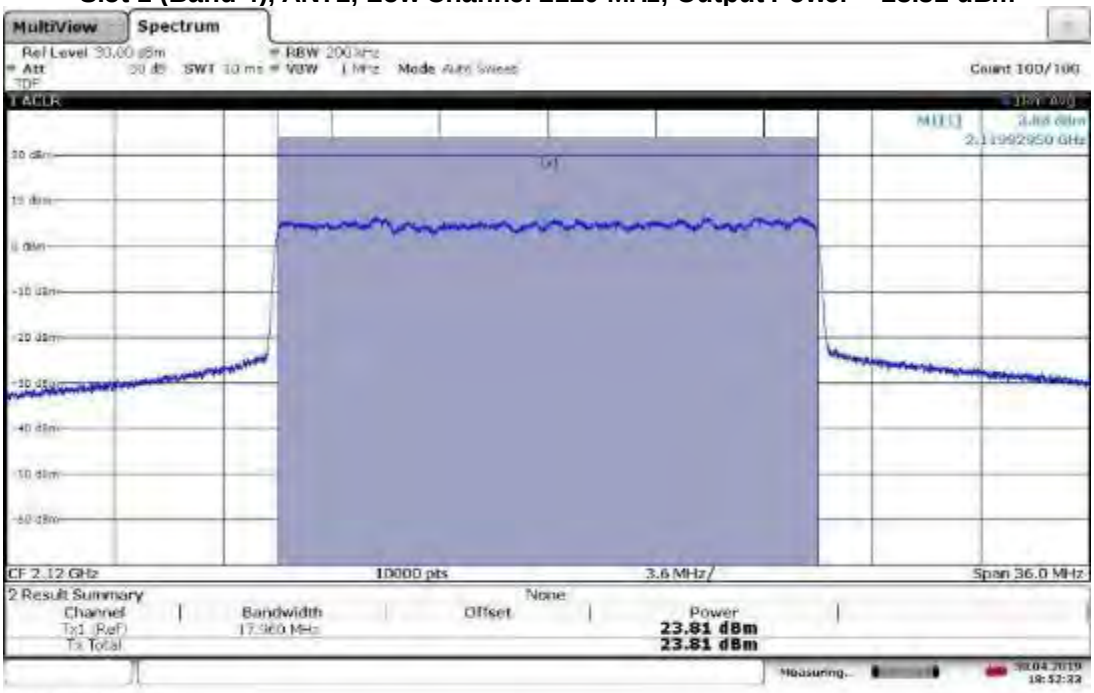
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, Output Power = 23.07 dBm



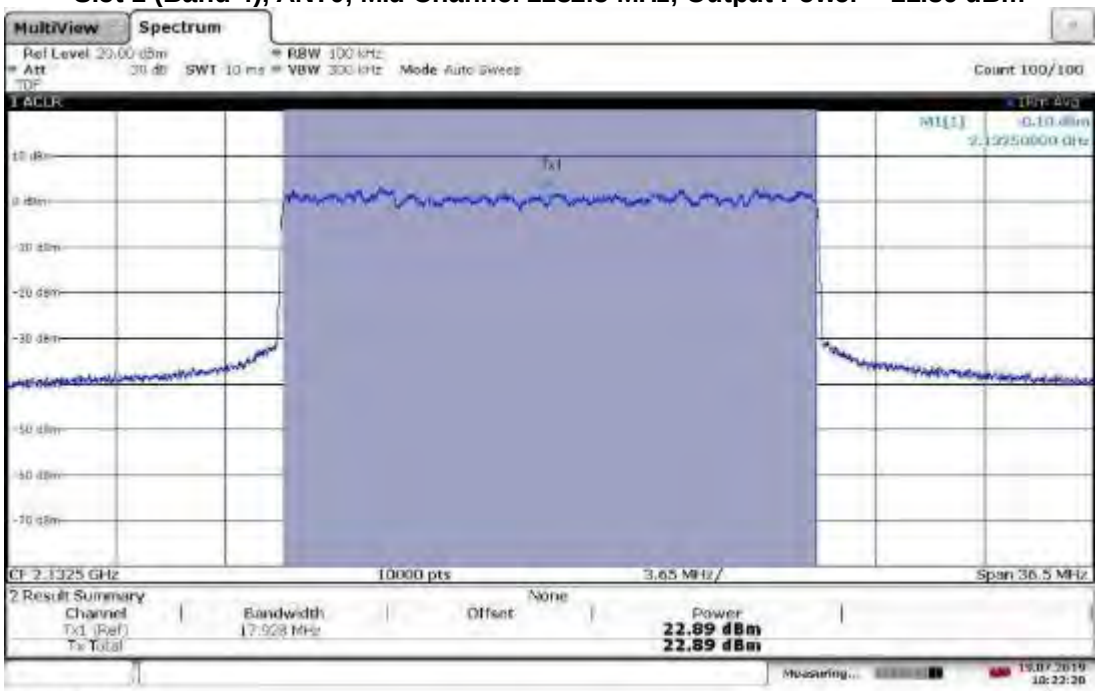
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, Output Power = 24.03 dBm



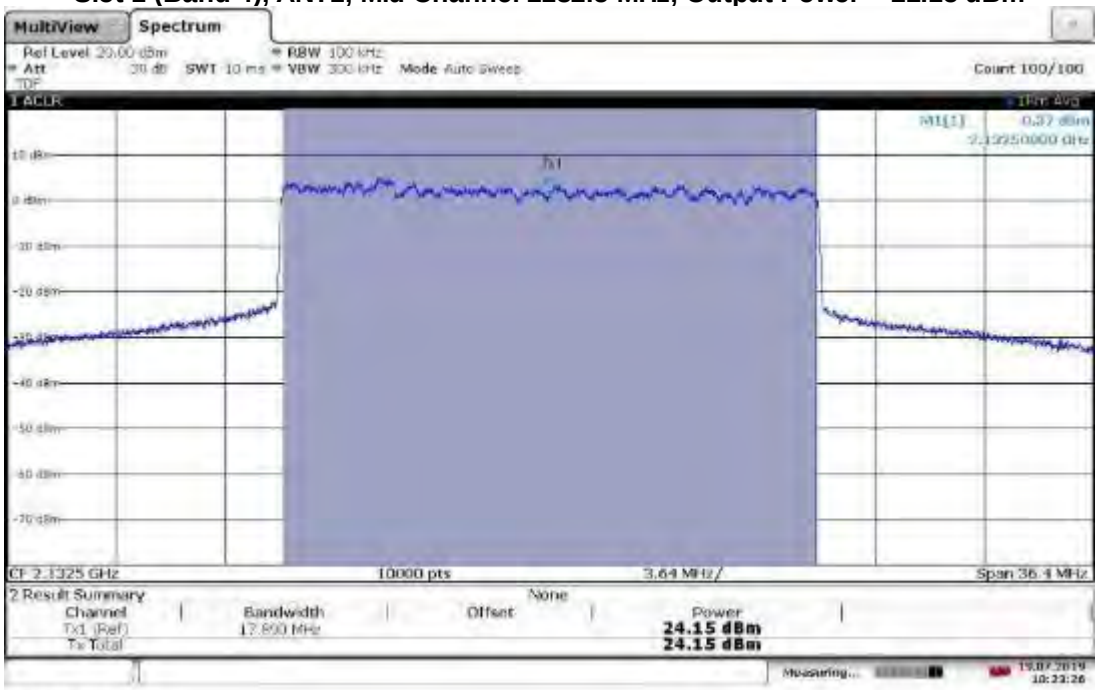
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, Output Power = 23.81 dBm



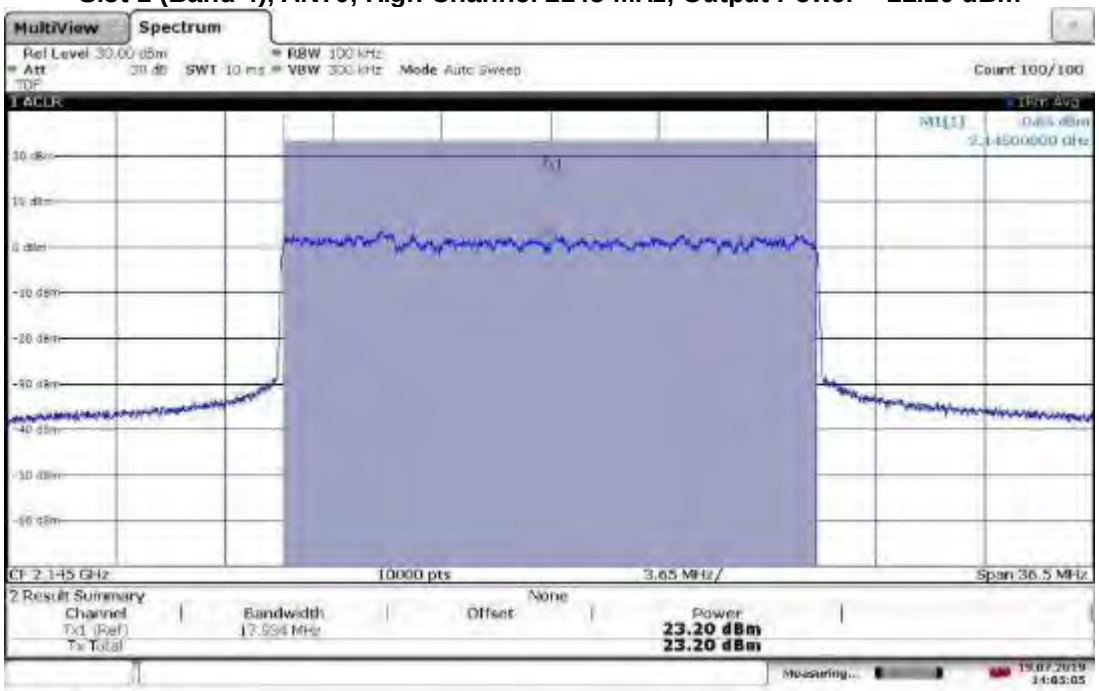
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 22.89 dBm



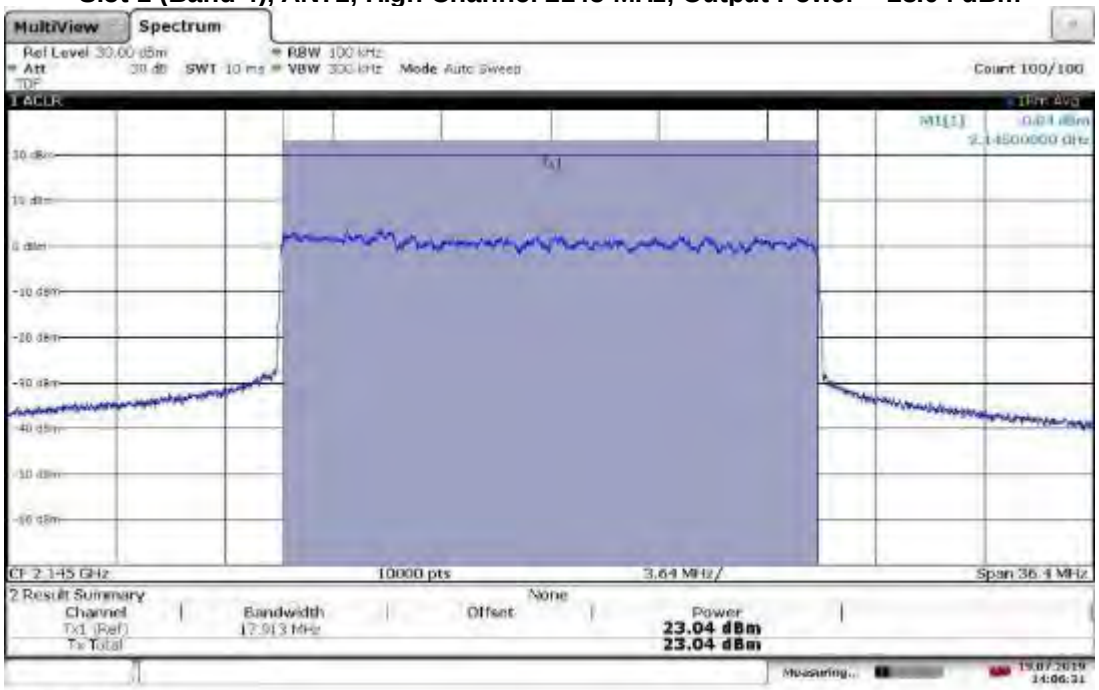
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 22.15 dBm



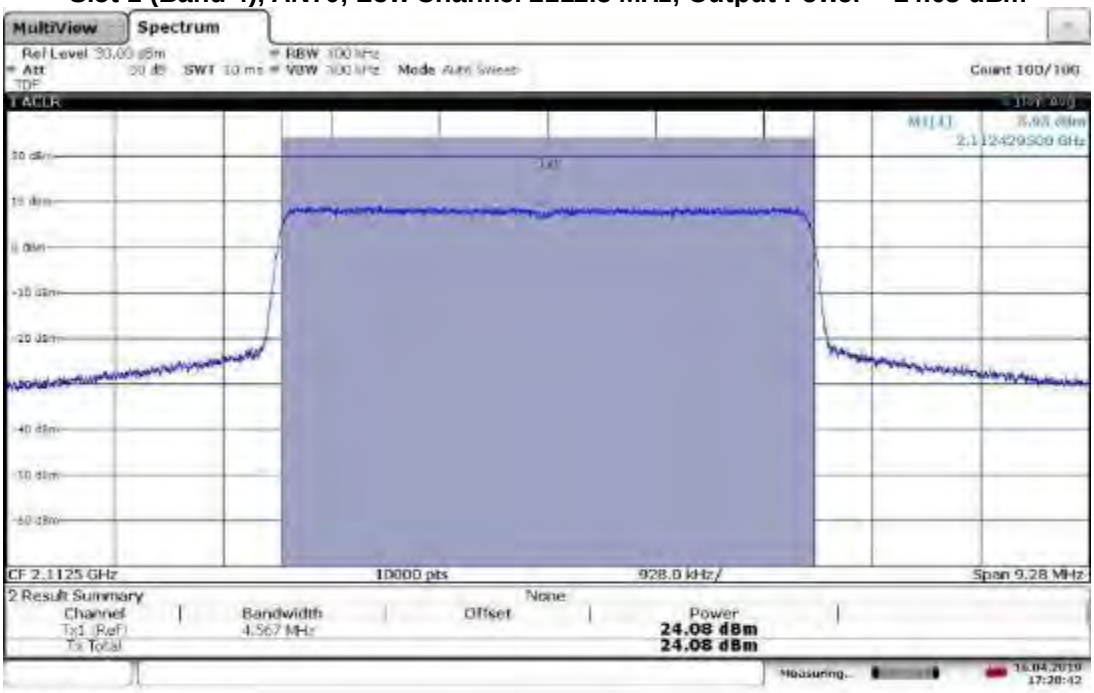
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, Output Power = 22.20 dBm



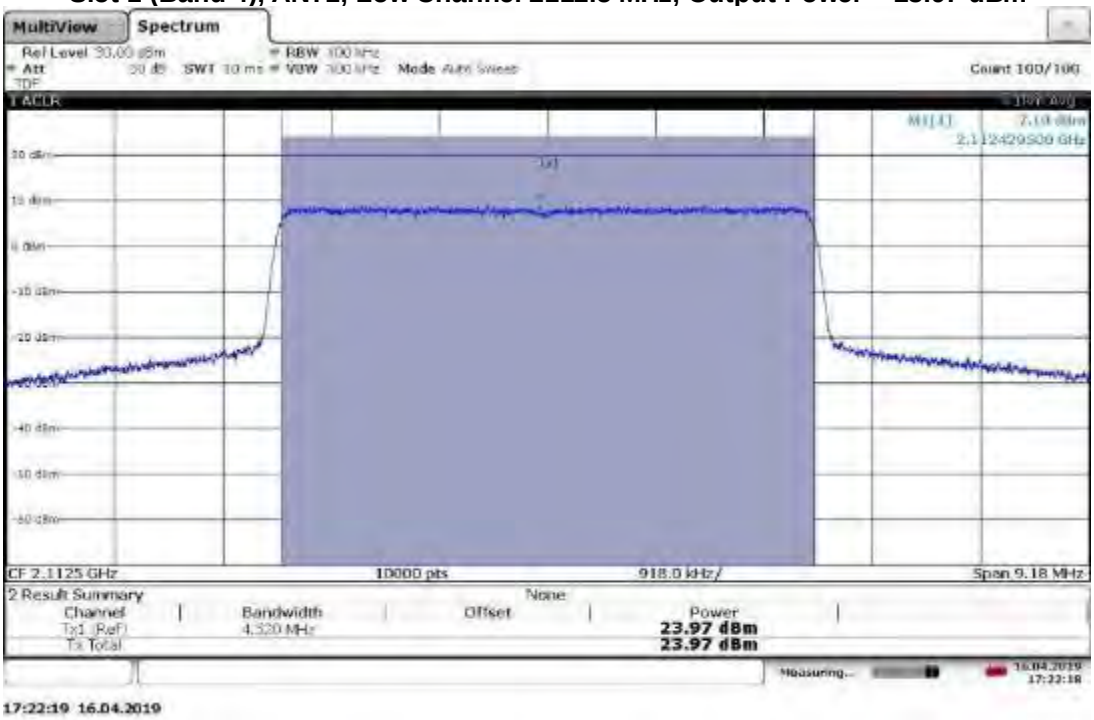
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, Output Power = 23.04 dBm



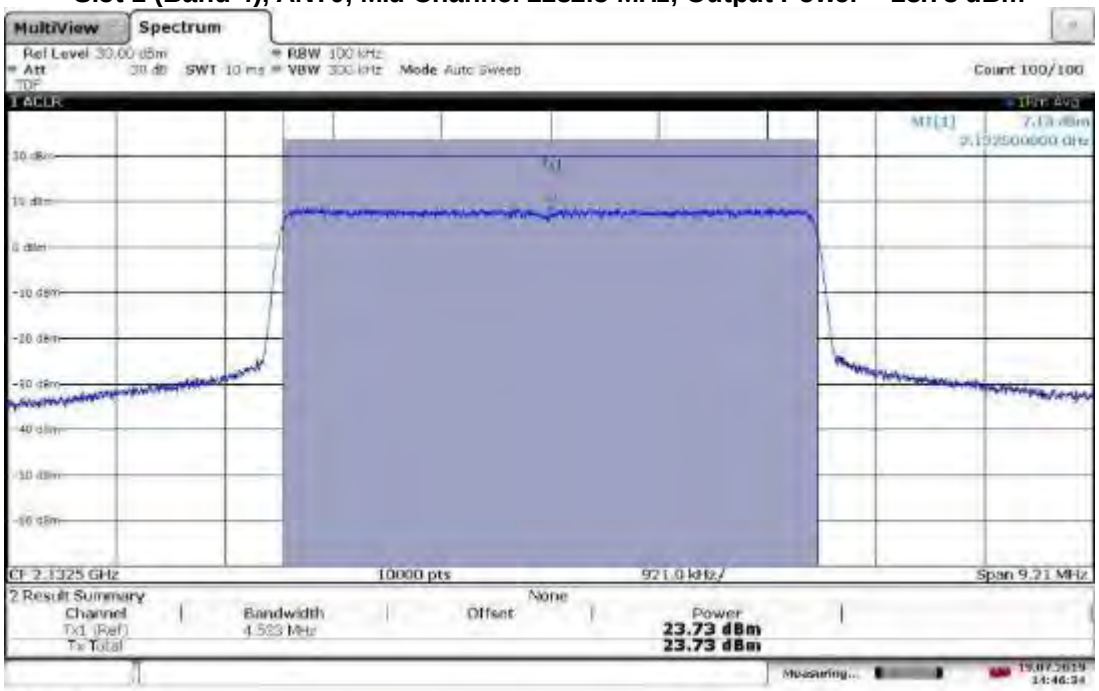
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, Output Power = 24.08 dBm



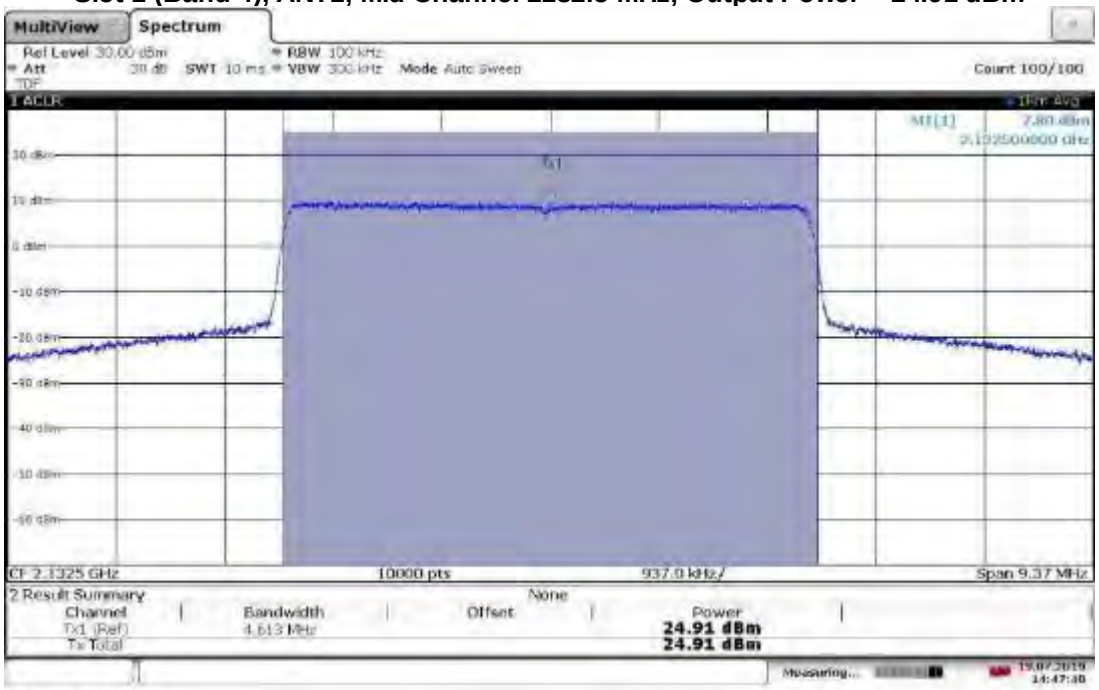
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, Output Power = 23.97 dBm



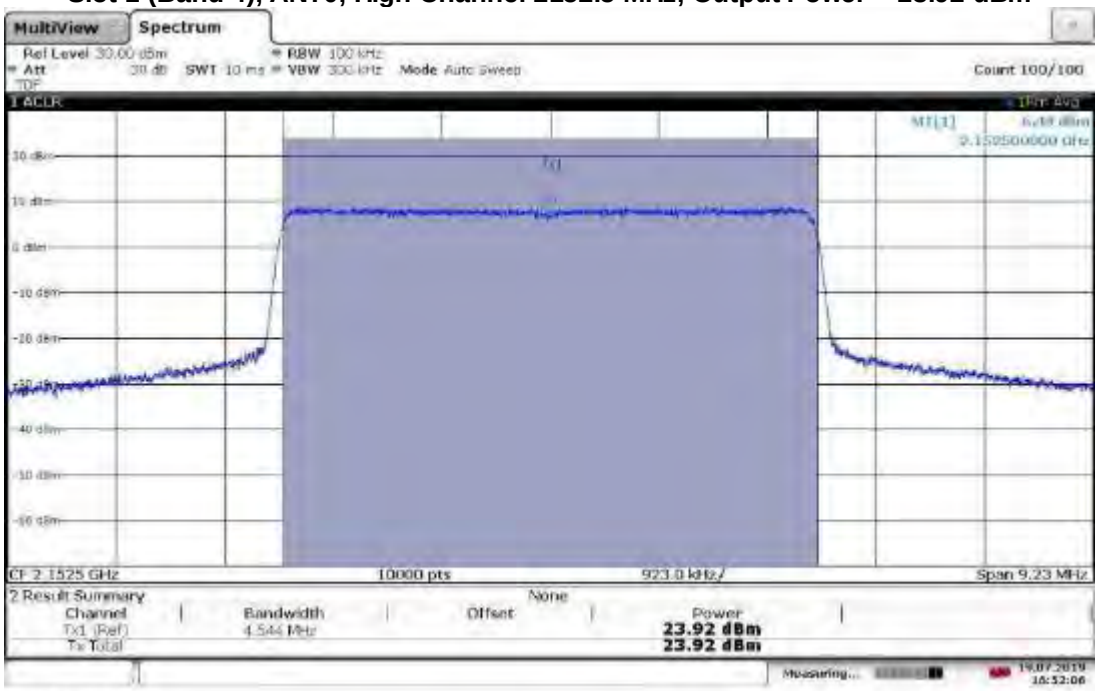
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.73 dBm



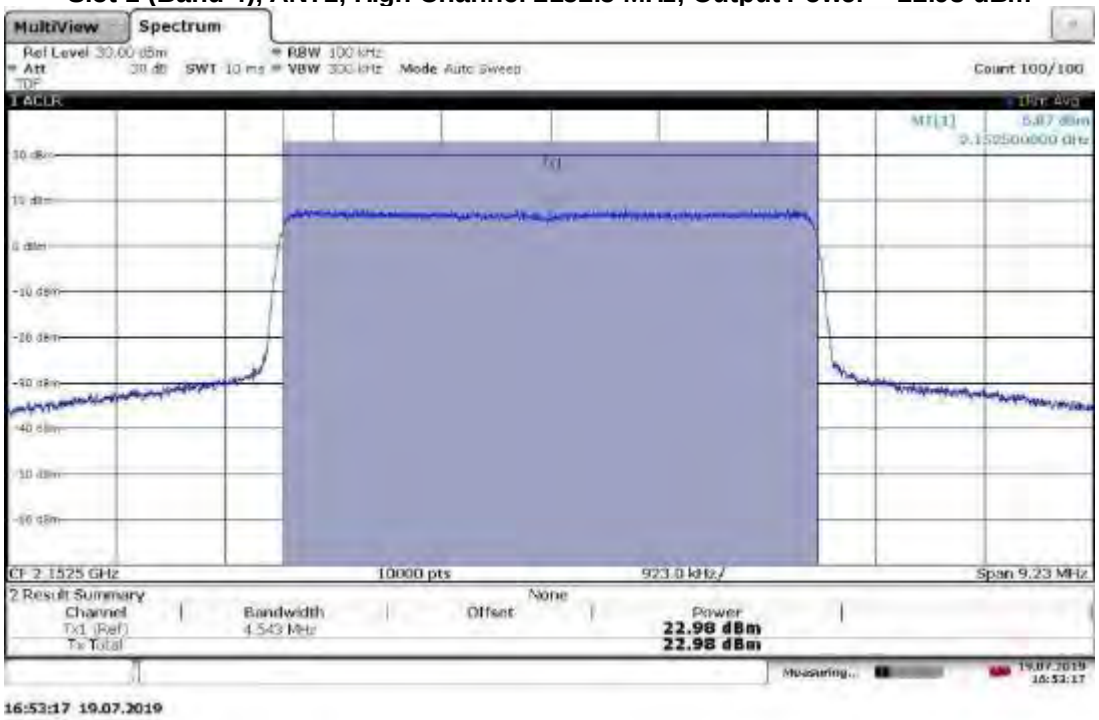
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.91 dBm



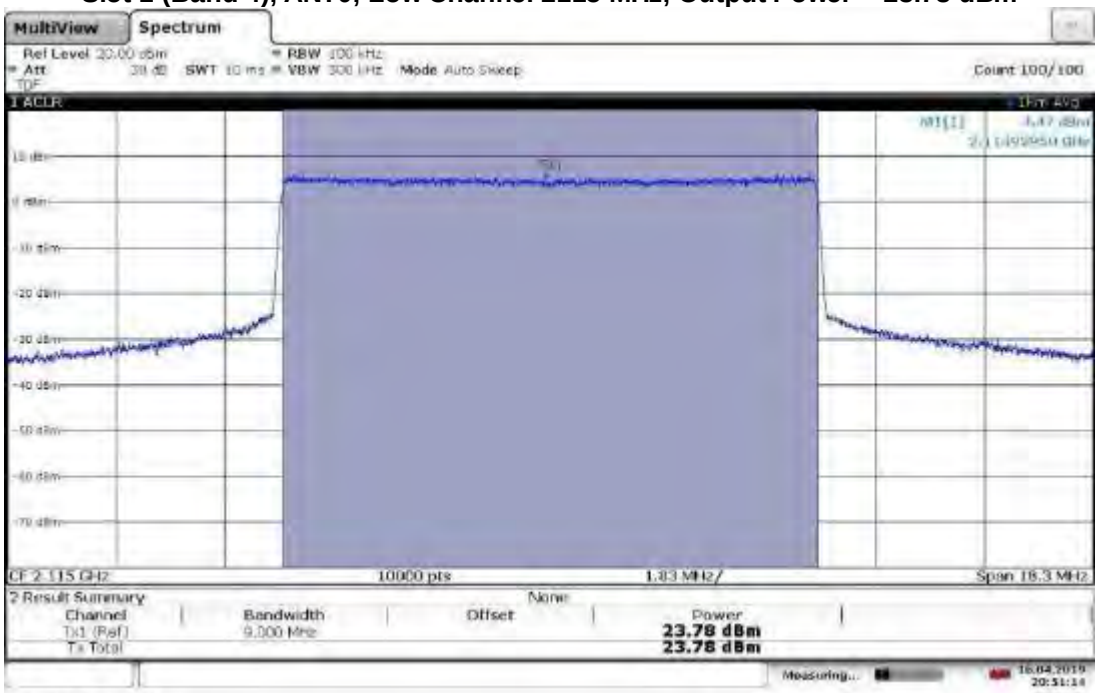
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, Output Power = 23.92 dBm



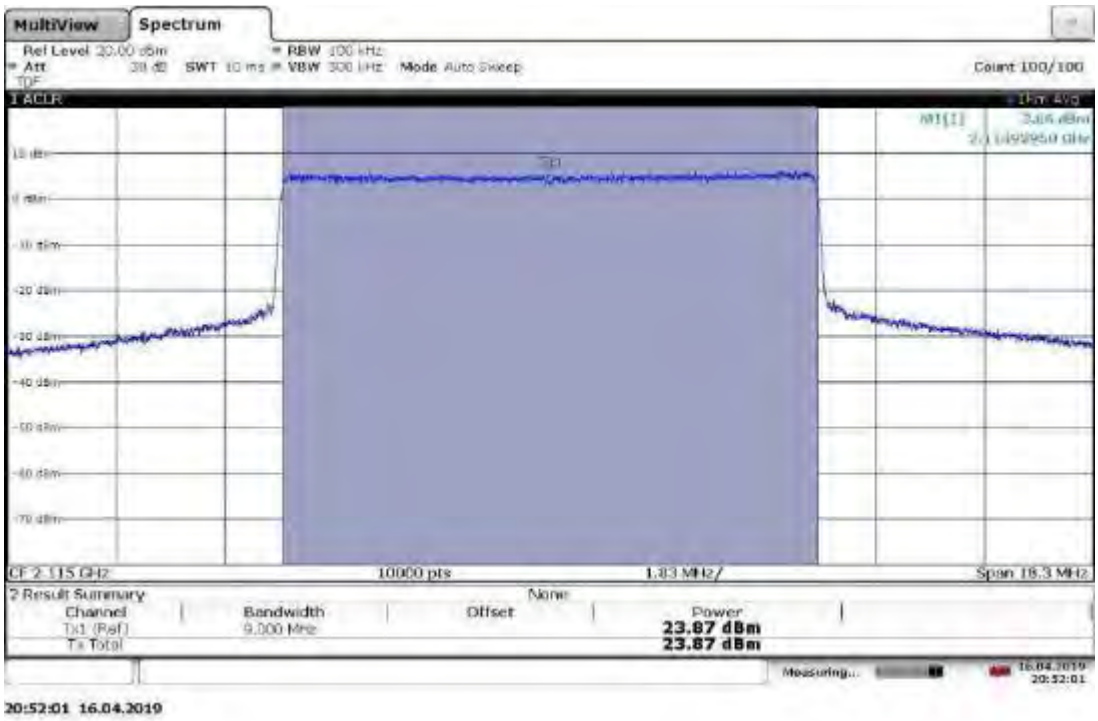
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, Output Power = 22.98 dBm



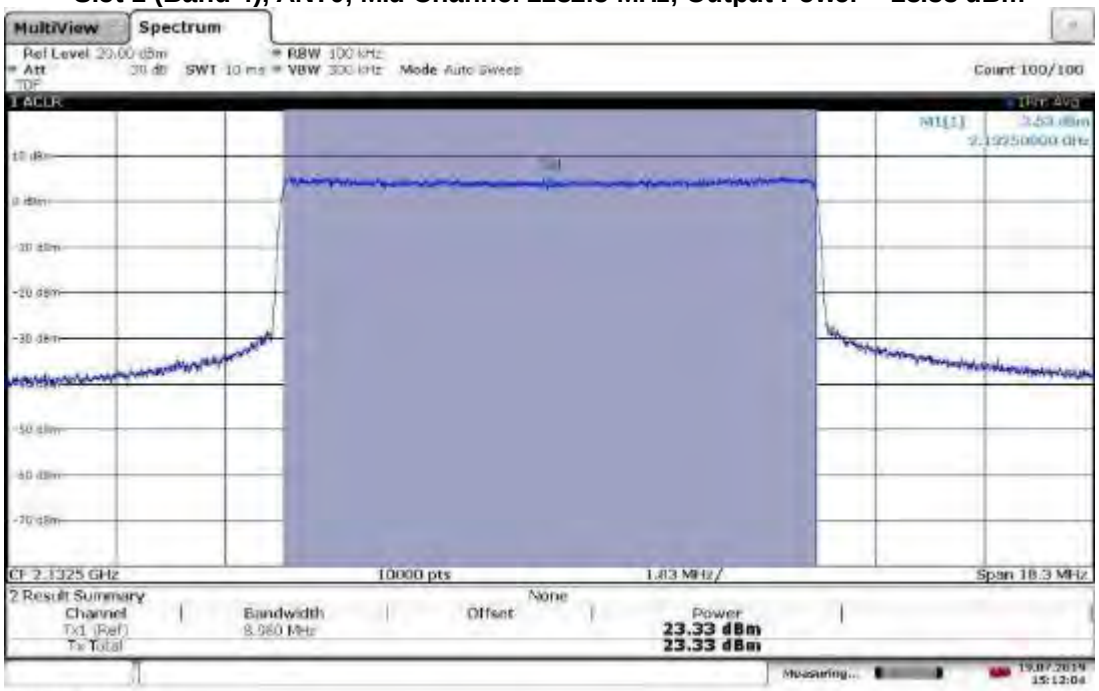
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, Output Power = 23.78 dBm



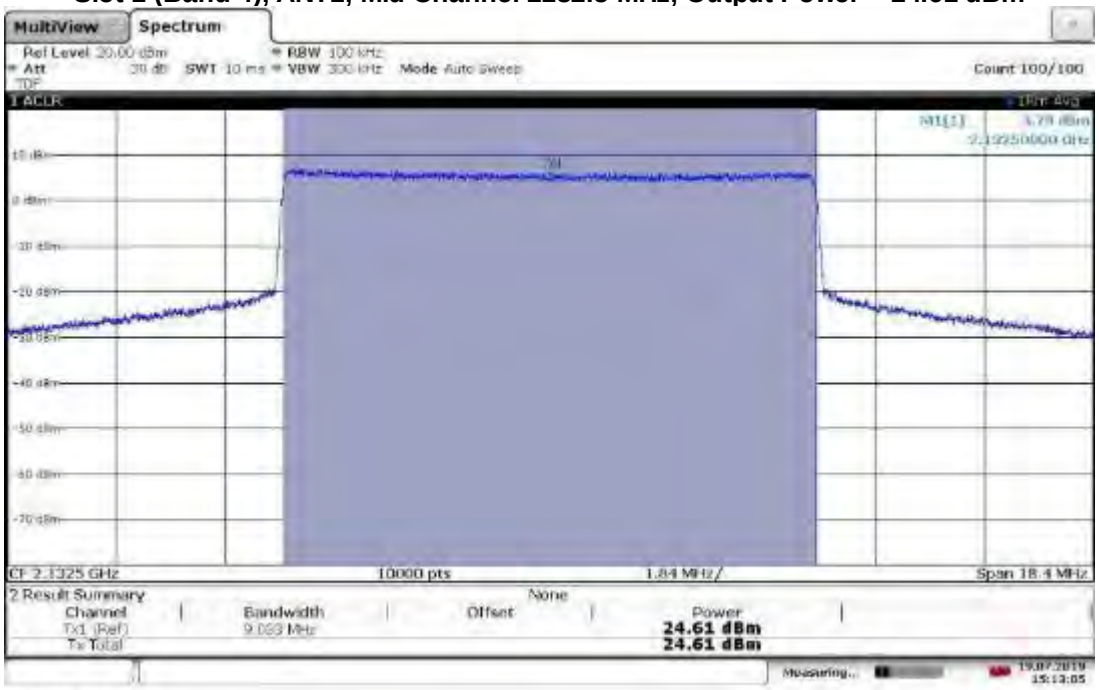
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, Output Power = 23.87 dBm



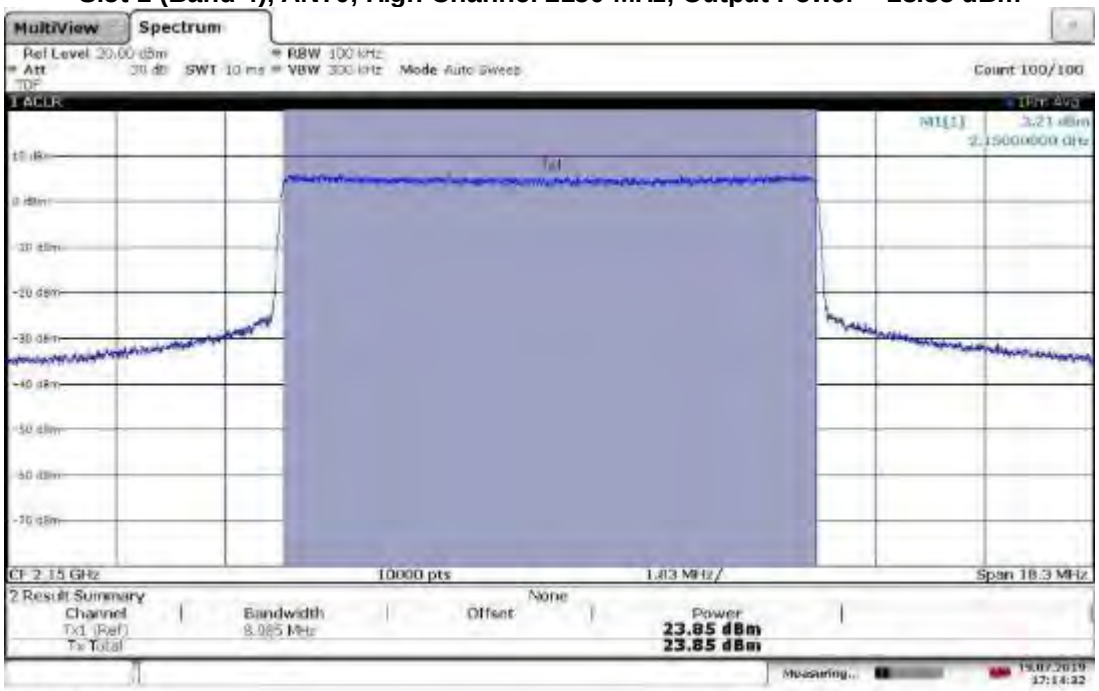
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.33 dBm



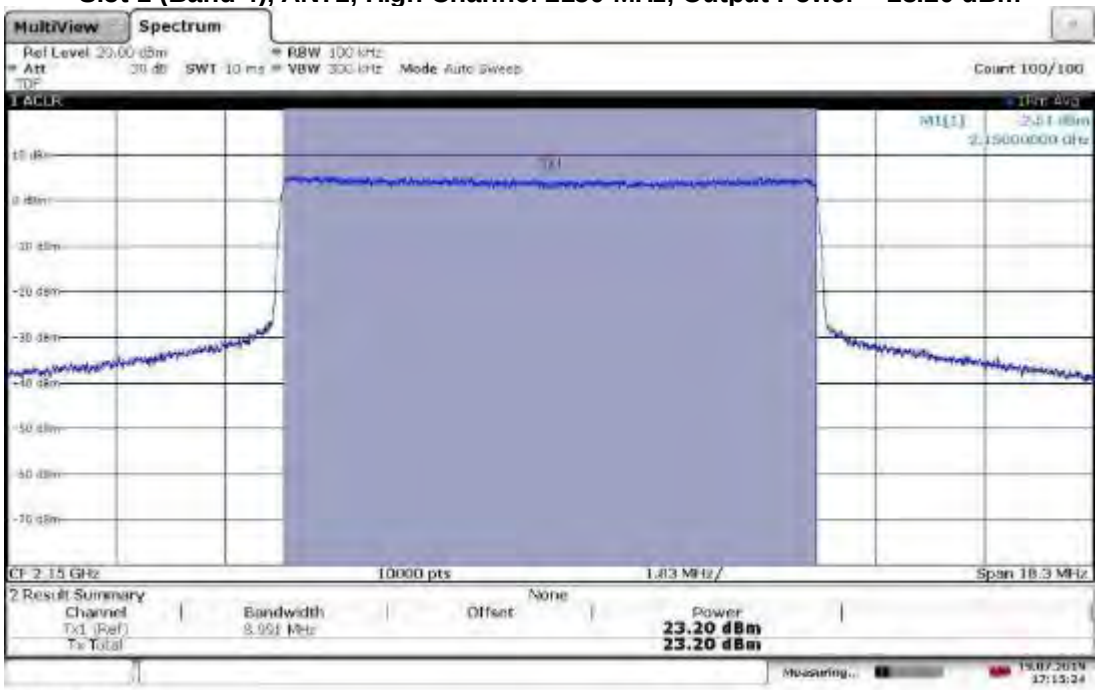
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.61 dBm



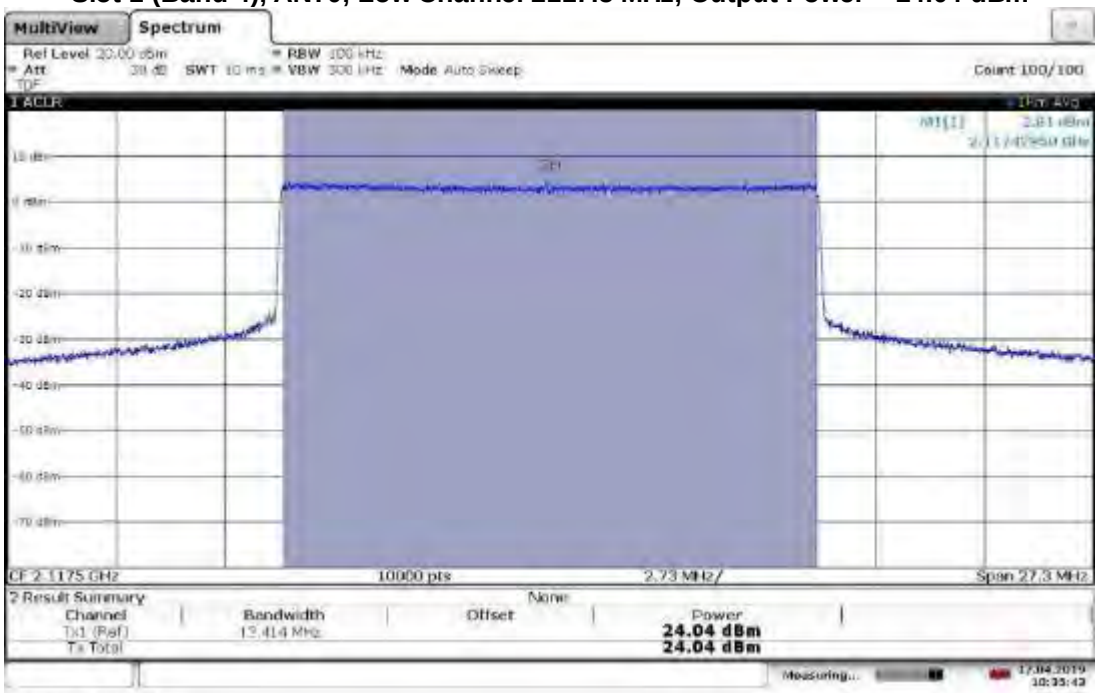
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, Output Power = 23.85 dBm



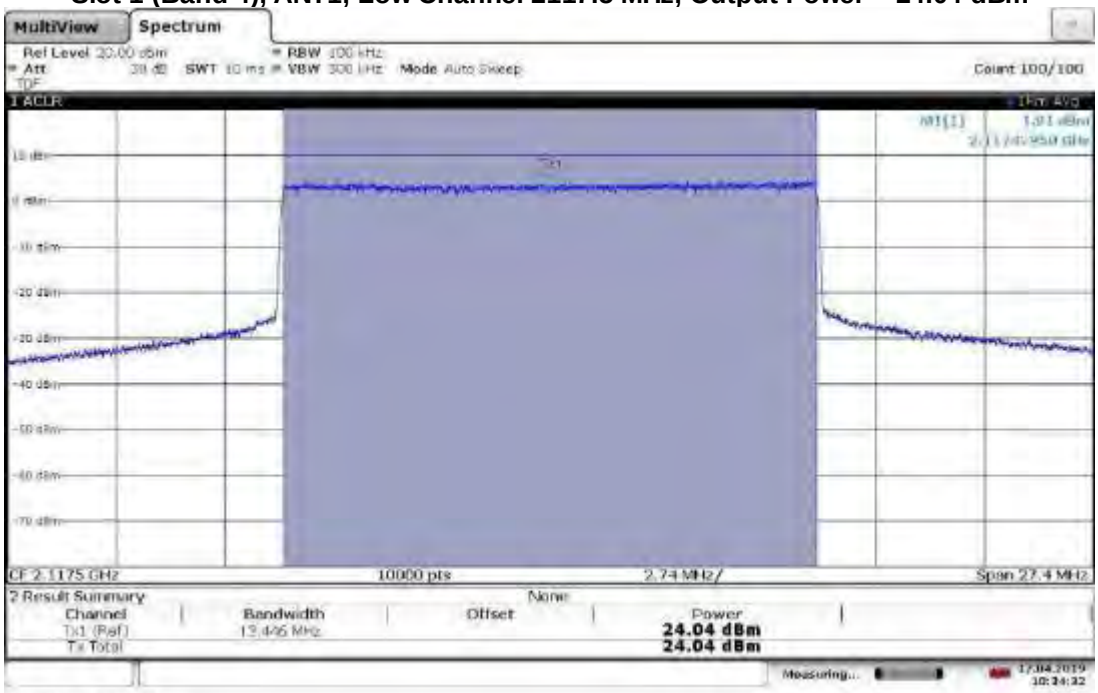
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, Output Power = 23.20 dBm



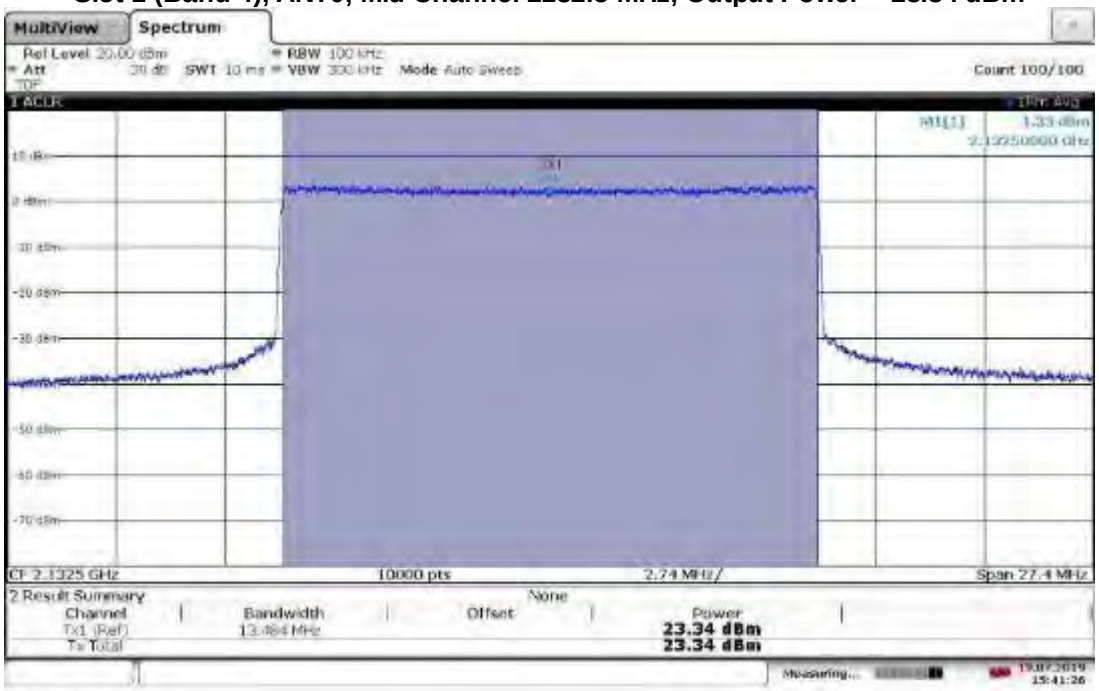
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, Output Power = 24.04 dBm



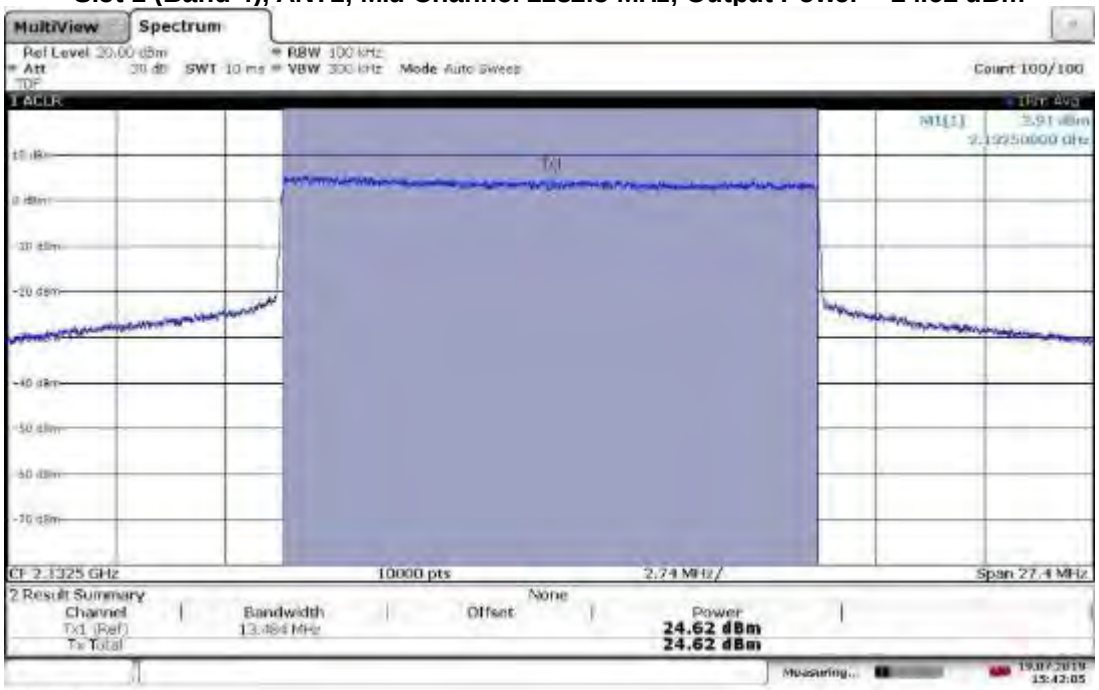
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, Output Power = 24.04 dBm



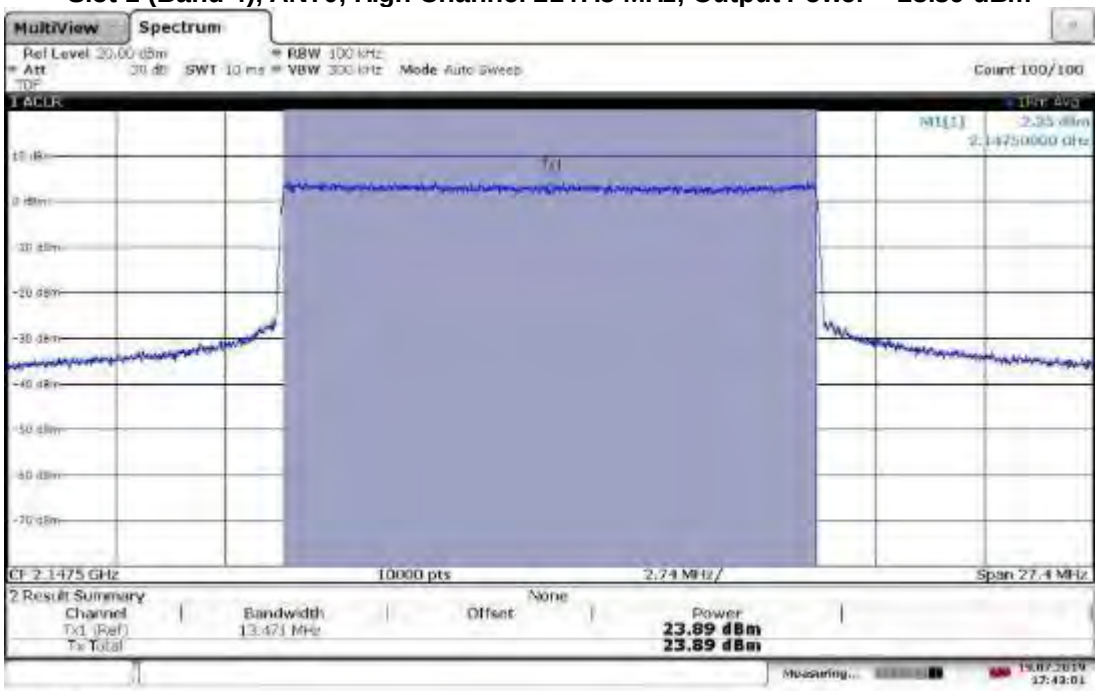
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.34 dBm



TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.62 dBm

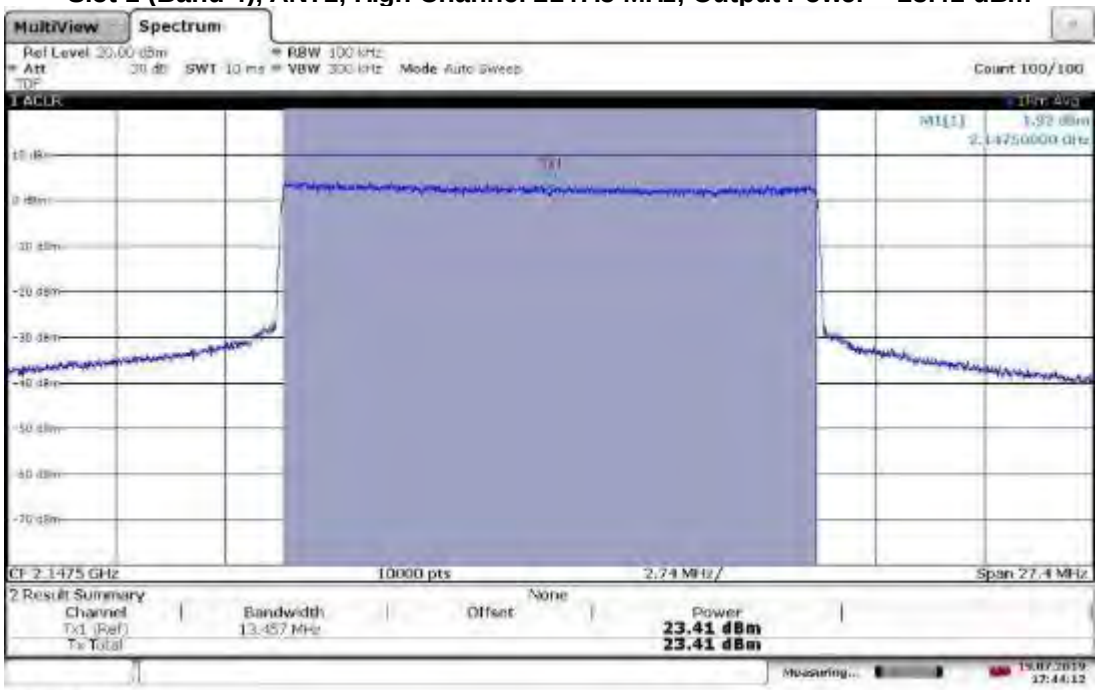


TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, Output Power = 23.89 dBm



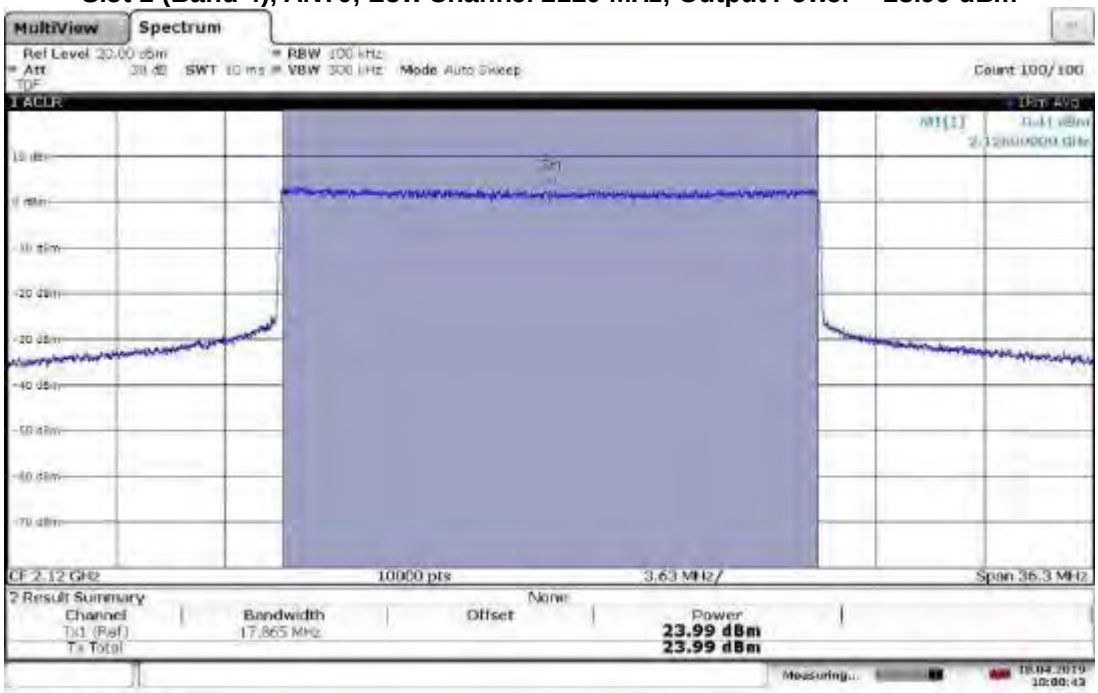
17:43:02 19.07.2019

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, Output Power = 23.41 dBm

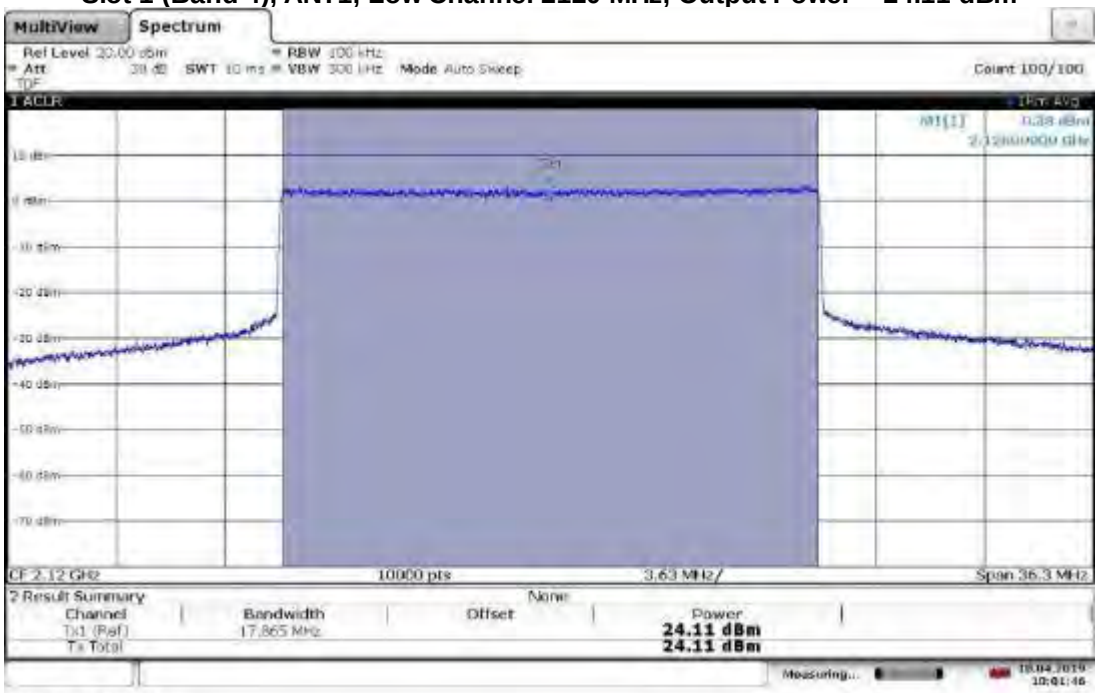


17:44:12 19.07.2019

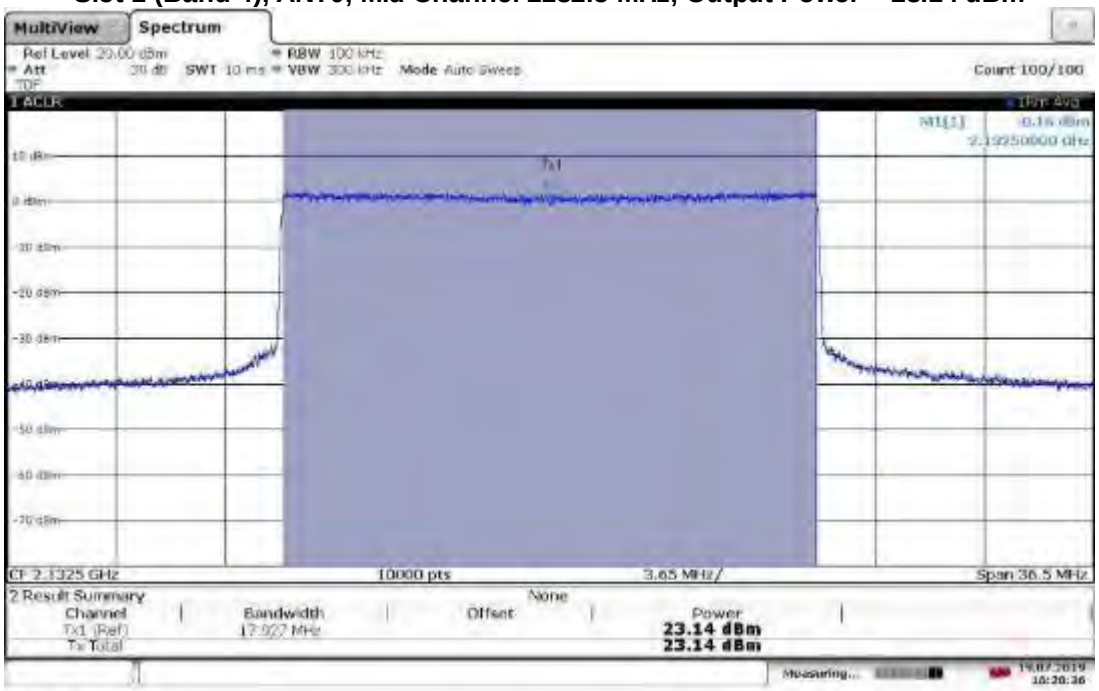
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, Output Power = 23.99 dBm



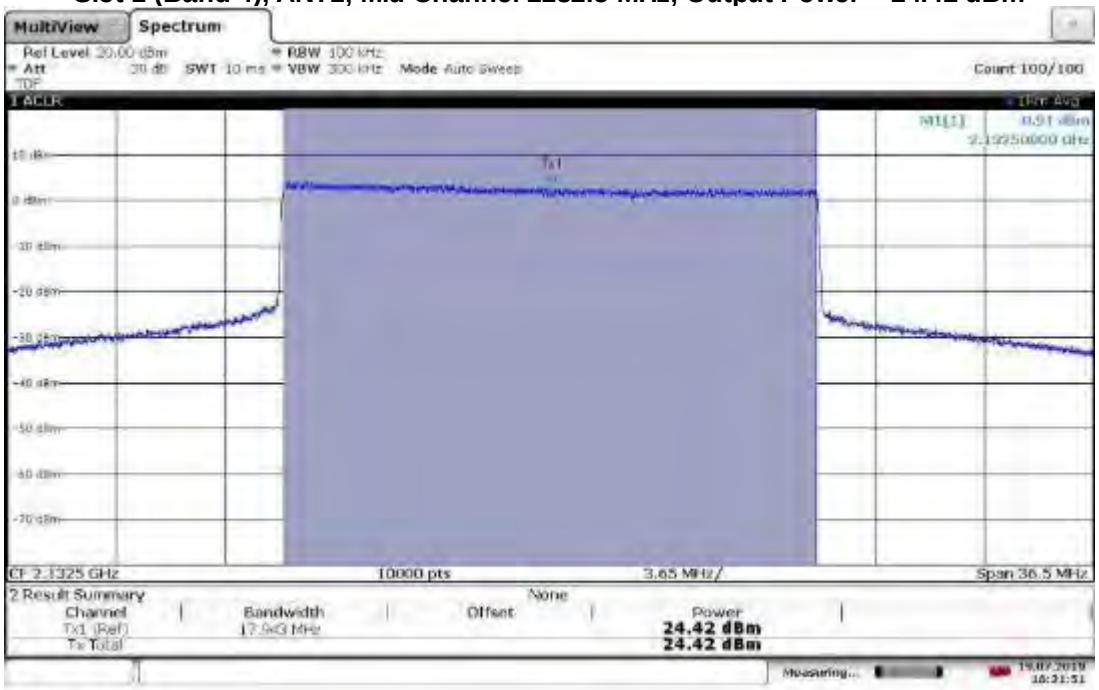
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, Output Power = 24.11 dBm



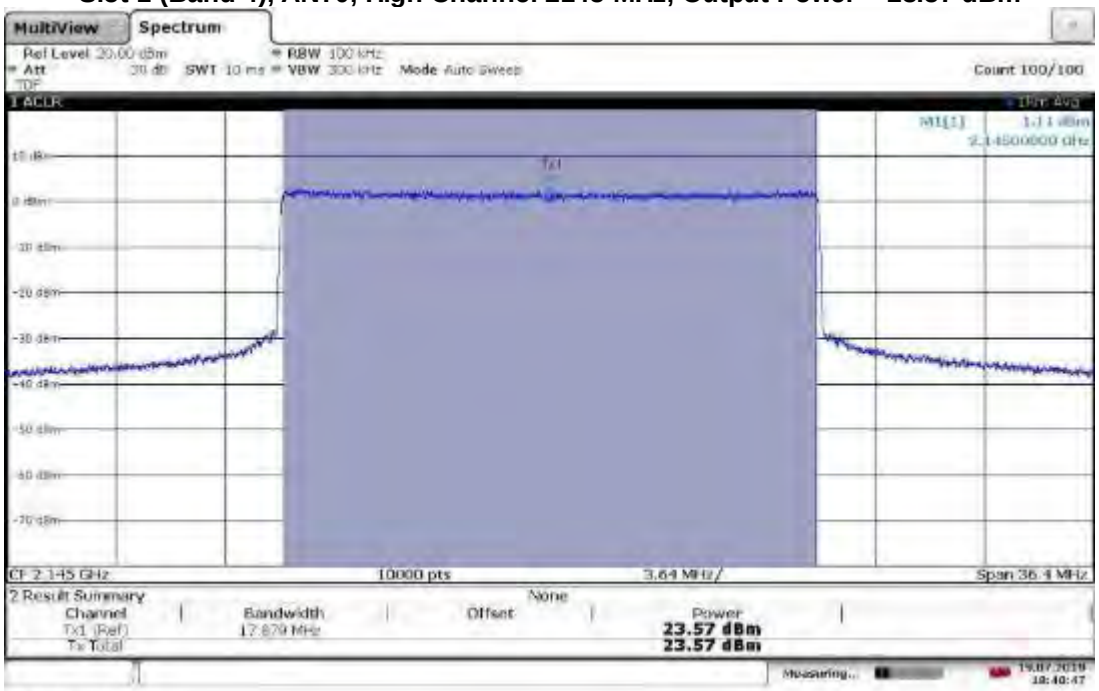
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.14 dBm



TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.42 dBm

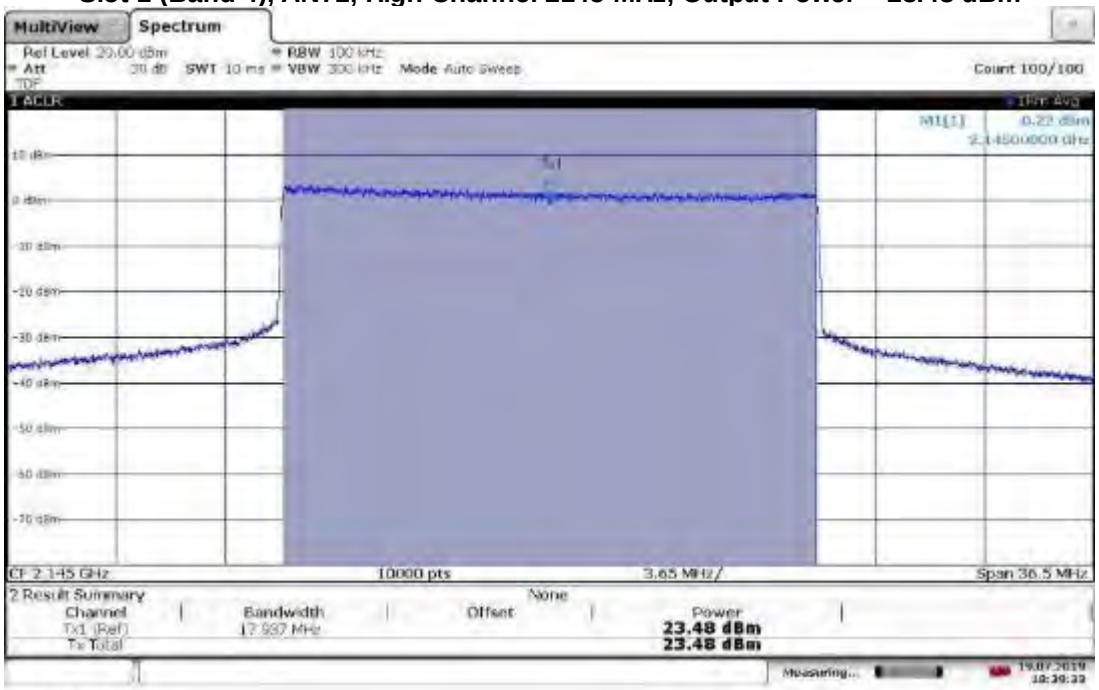


TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, Output Power = 23.57 dBm



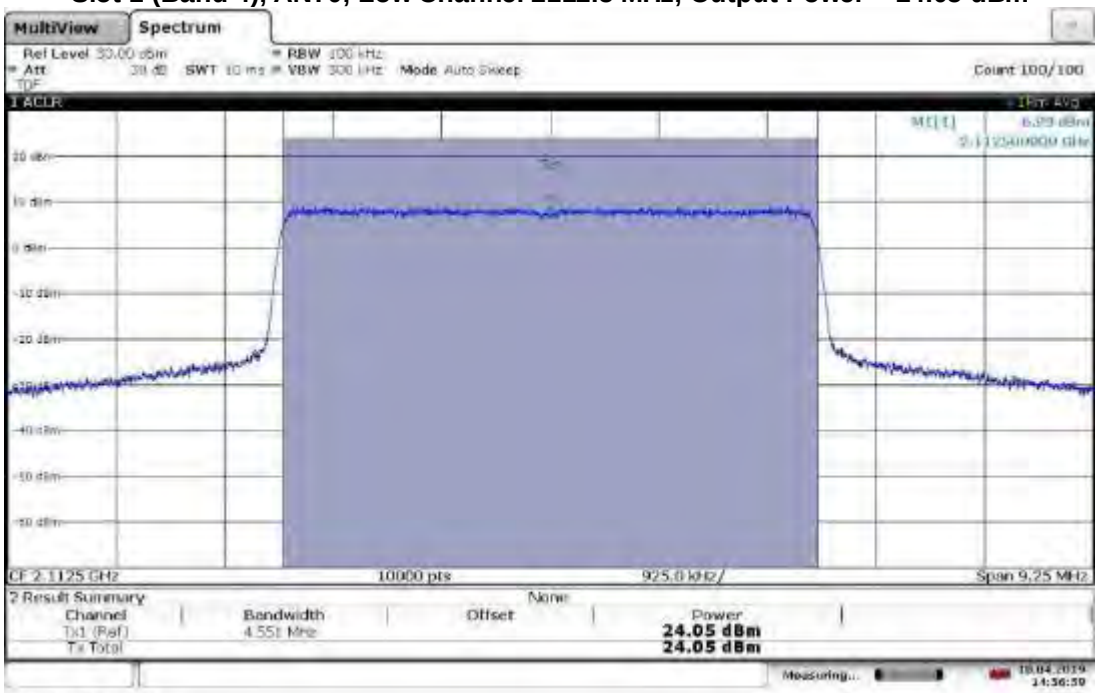
18:40:47 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, Output Power = 23.48 dBm

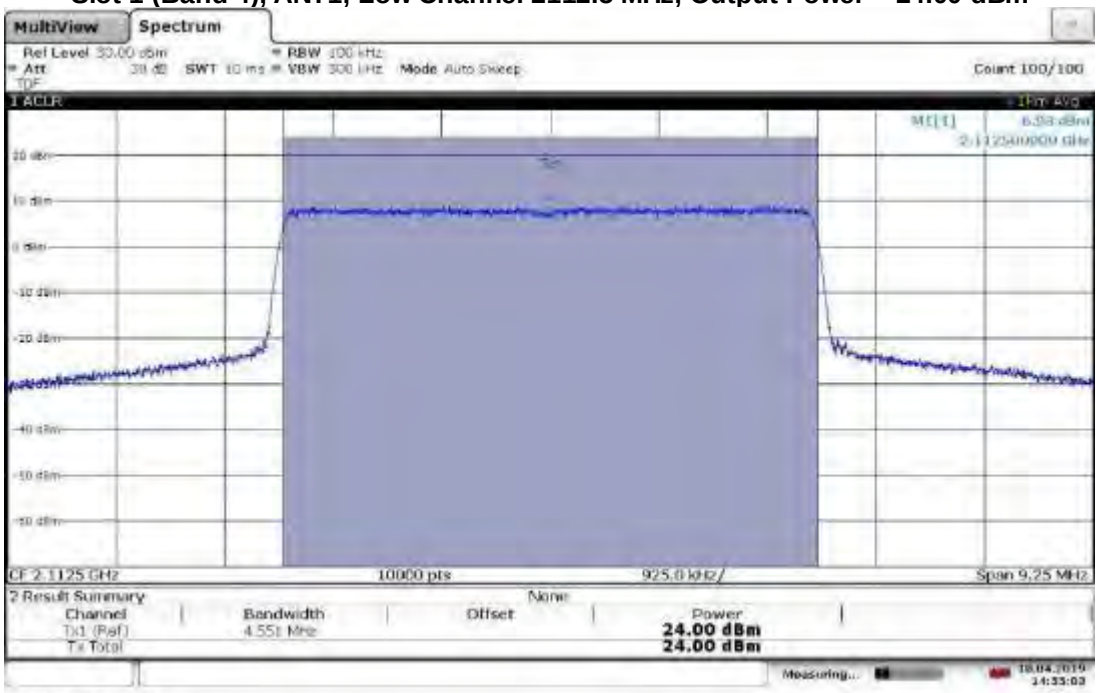


18:39:33 19.07.2019

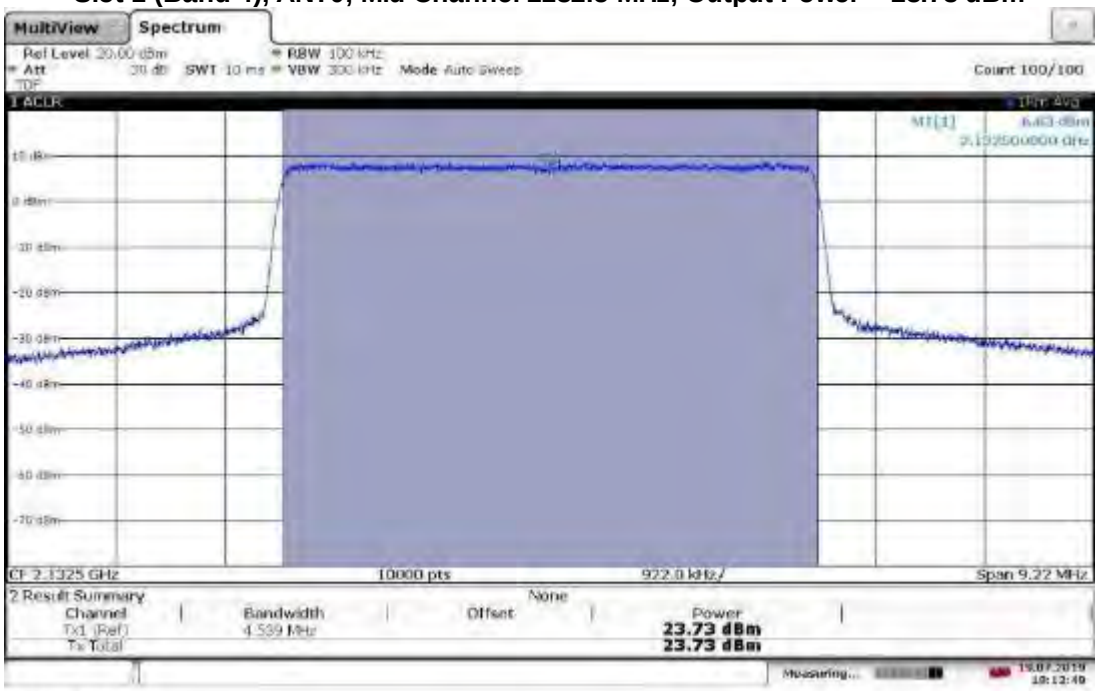
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, Output Power = 24.05 dBm



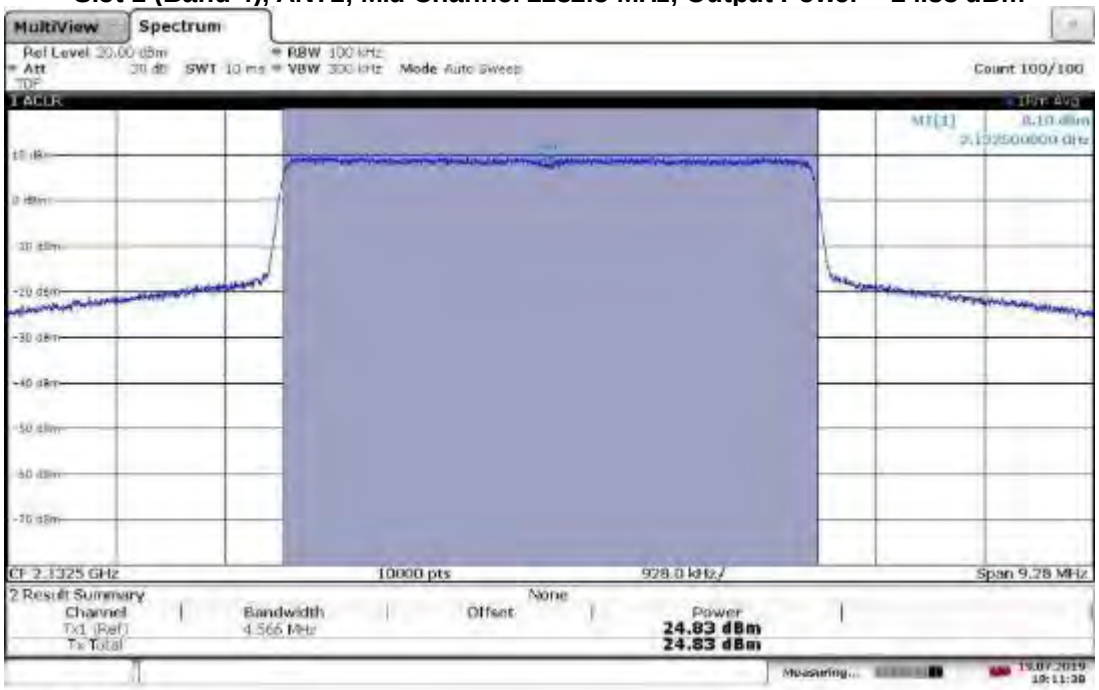
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, Output Power = 24.00 dBm



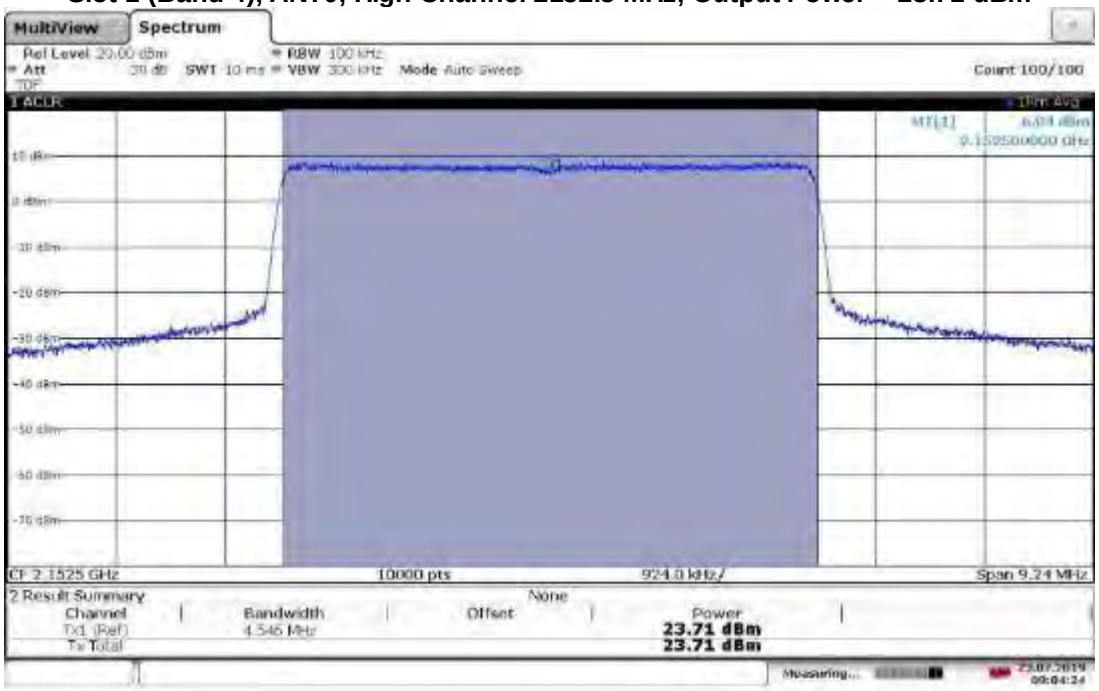
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.73 dBm



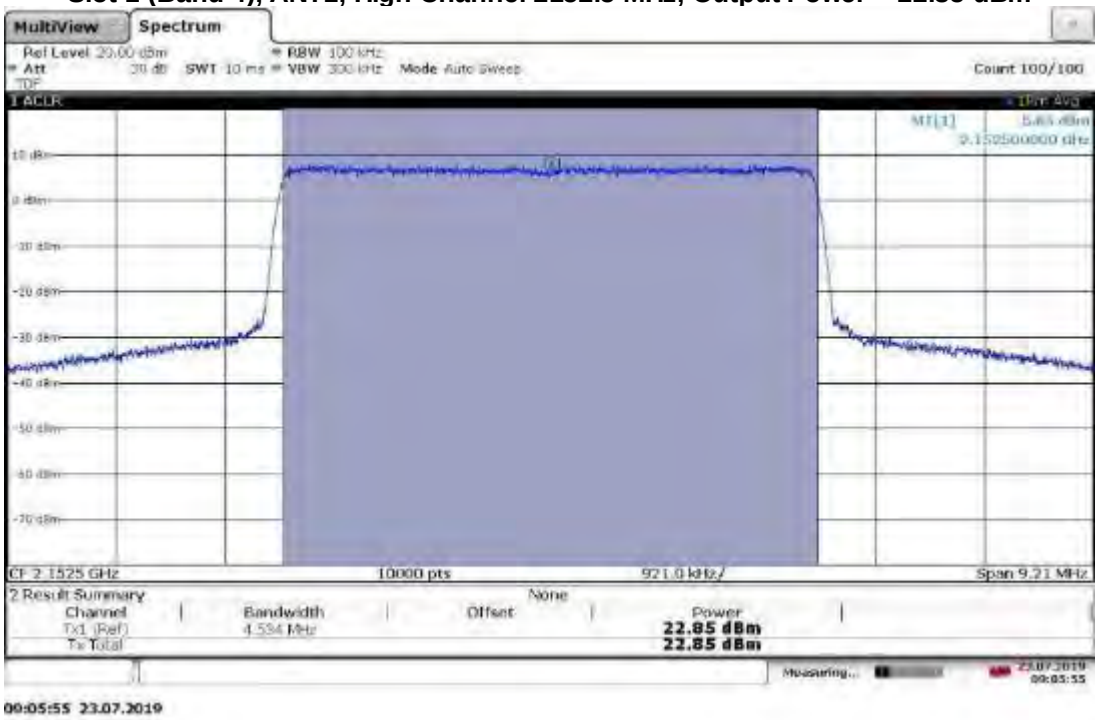
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.83 dBm



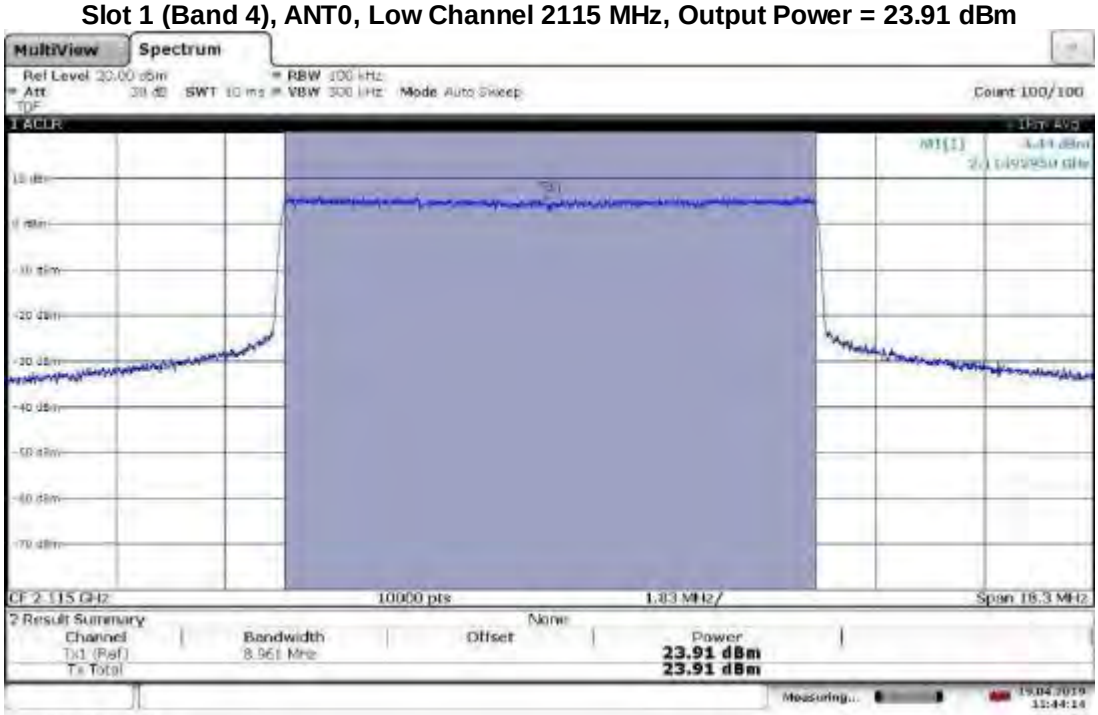
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, Output Power = 23.71 dBm



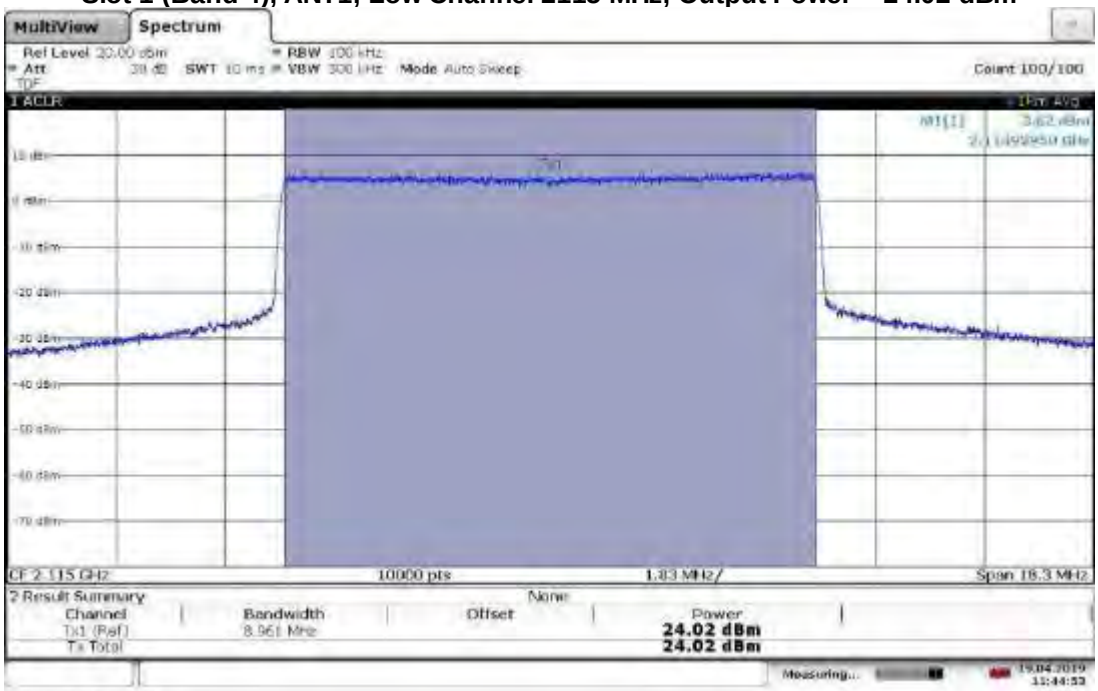
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, Output Power = 22.85 dBm



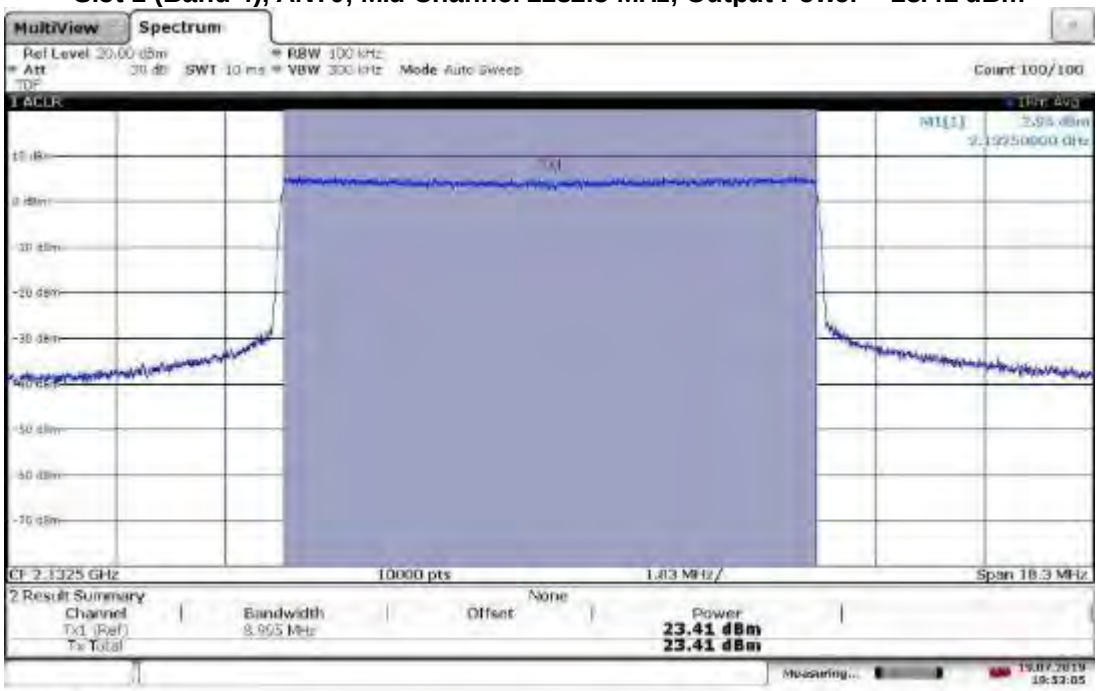
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, Output Power = 23.91 dBm



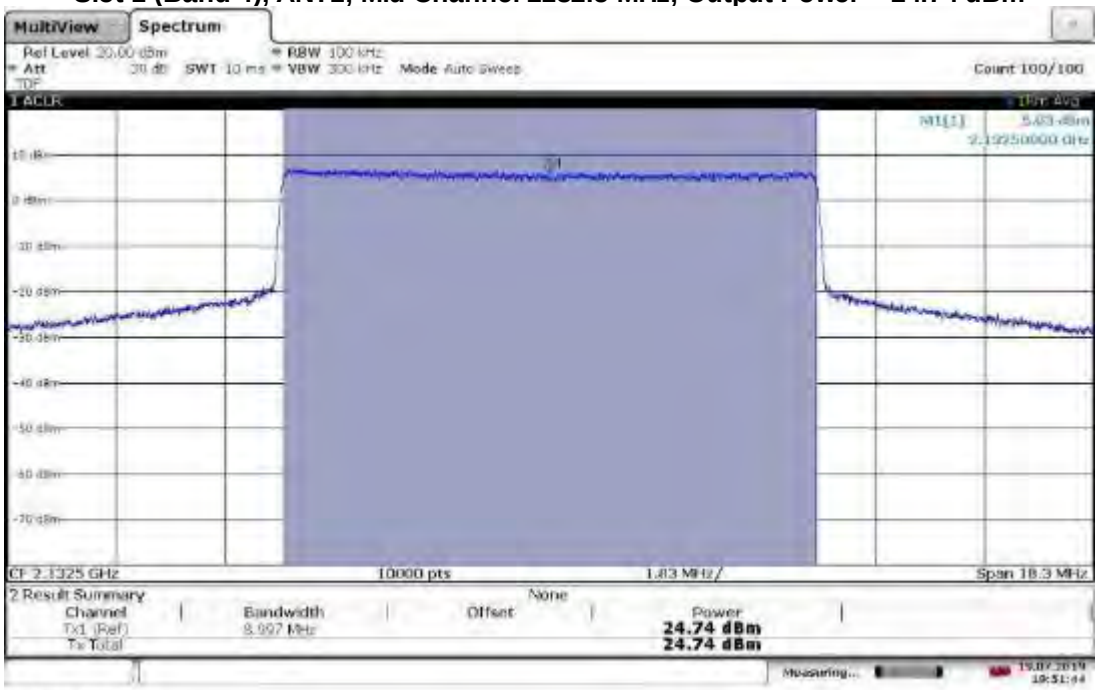
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, Output Power = 24.02 dBm



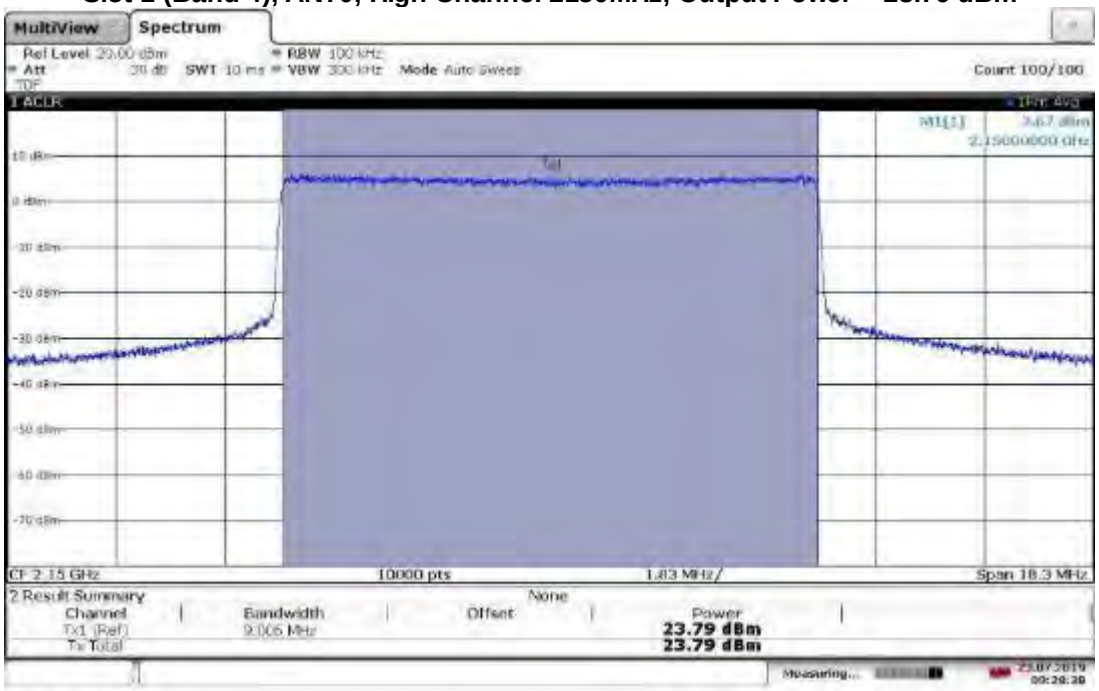
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.41 dBm



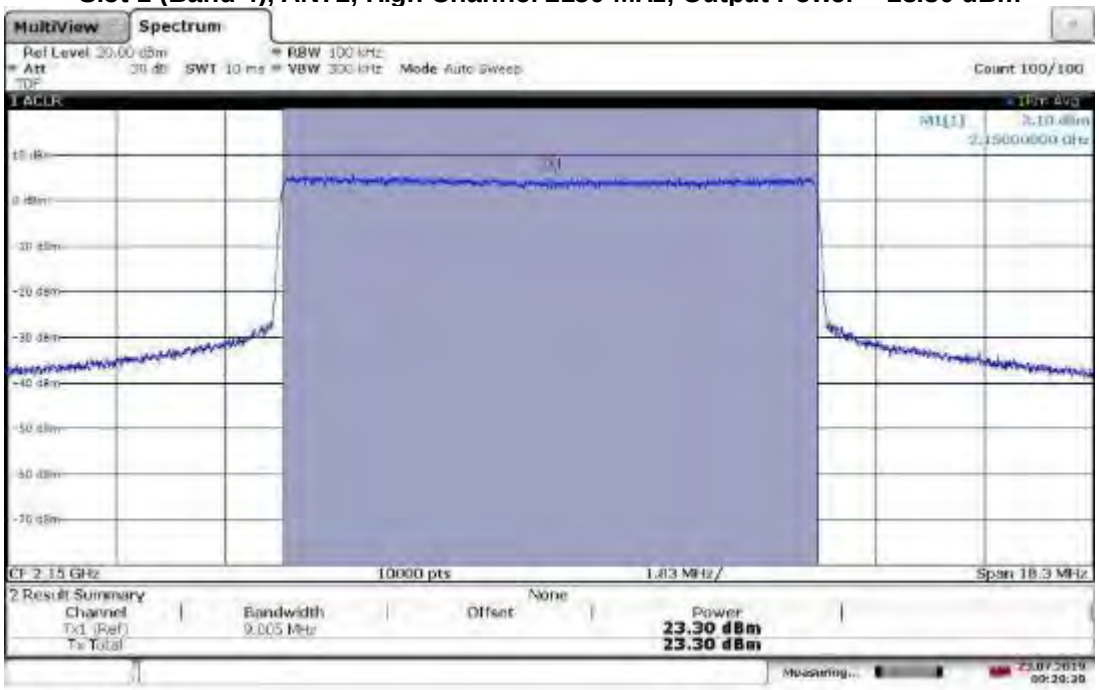
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.74 dBm



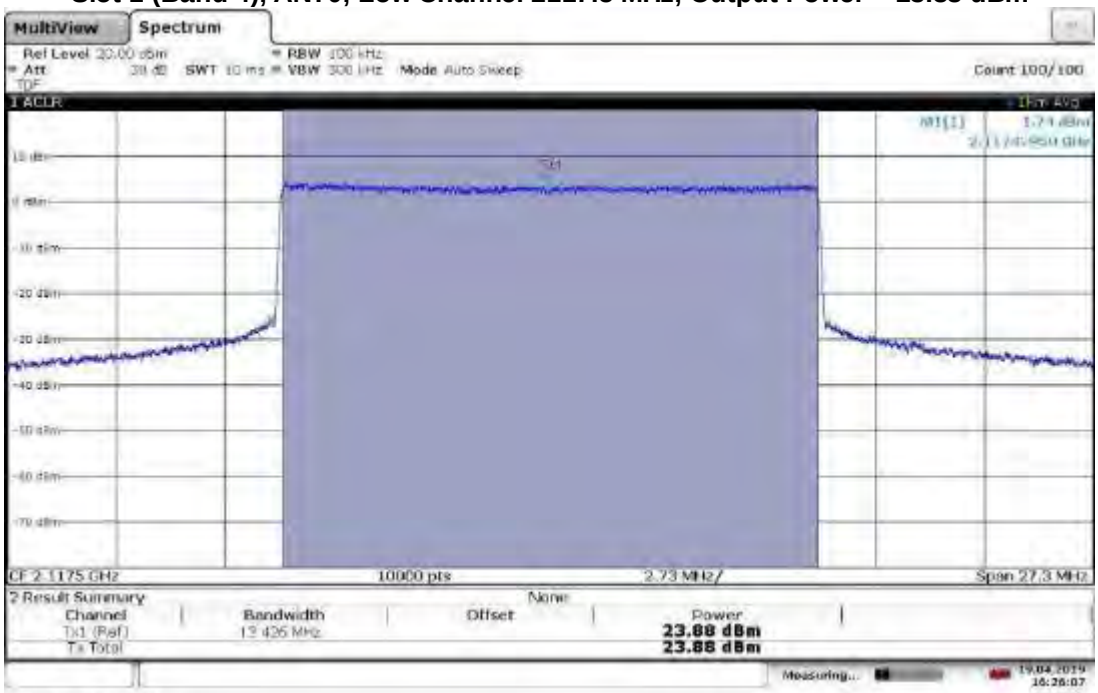
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150MHz, Output Power = 23.79 dBm



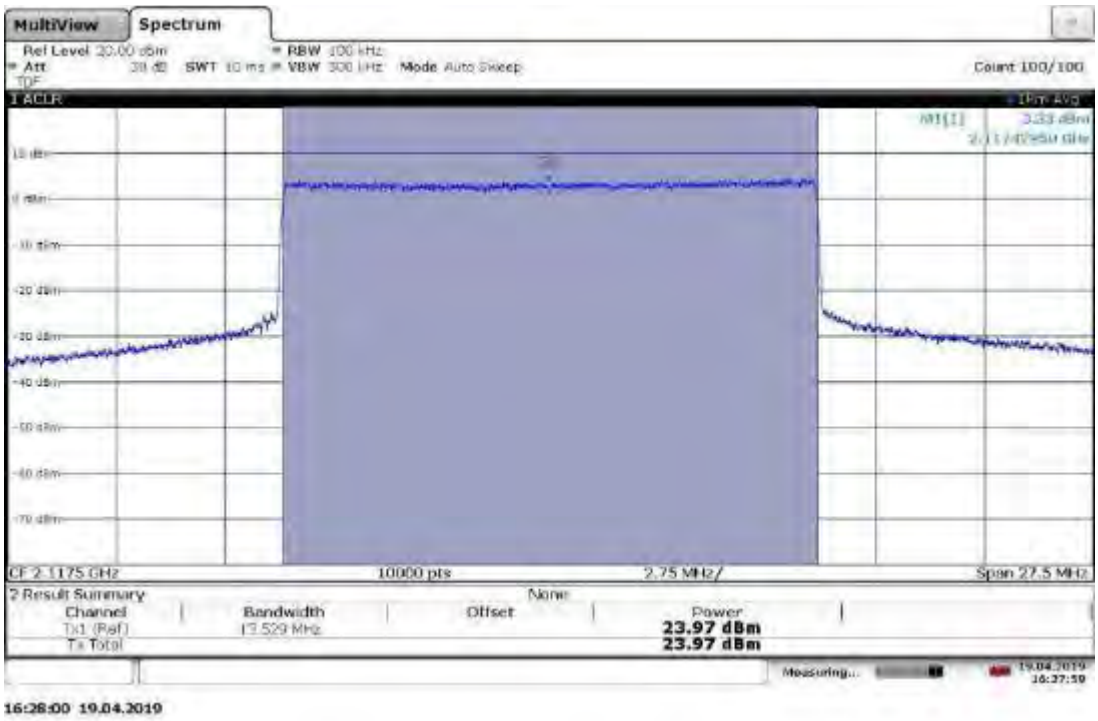
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, Output Power = 23.30 dBm



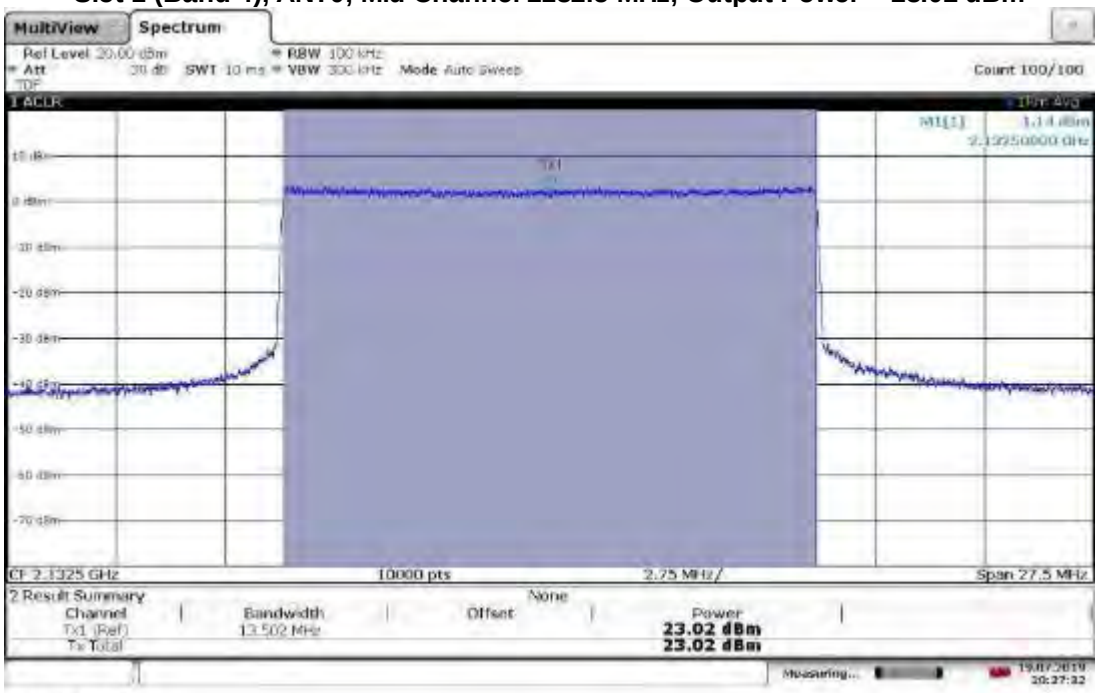
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, Output Power = 23.88 dBm



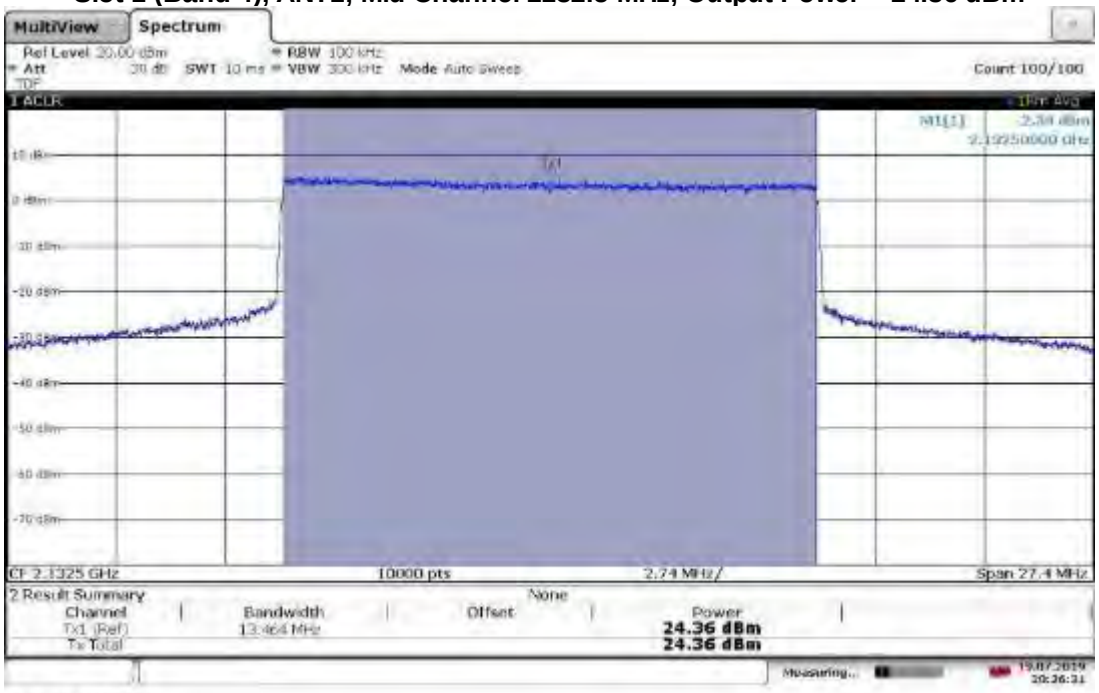
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117 MHz, Output Power = 23.97 dBm



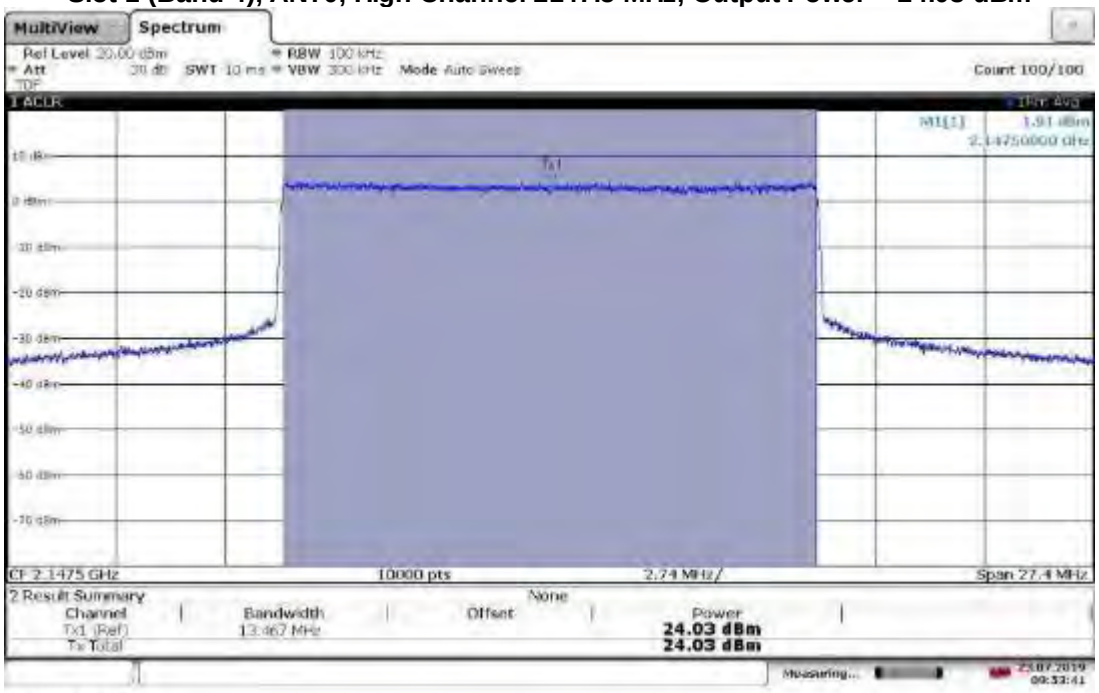
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.02 dBm



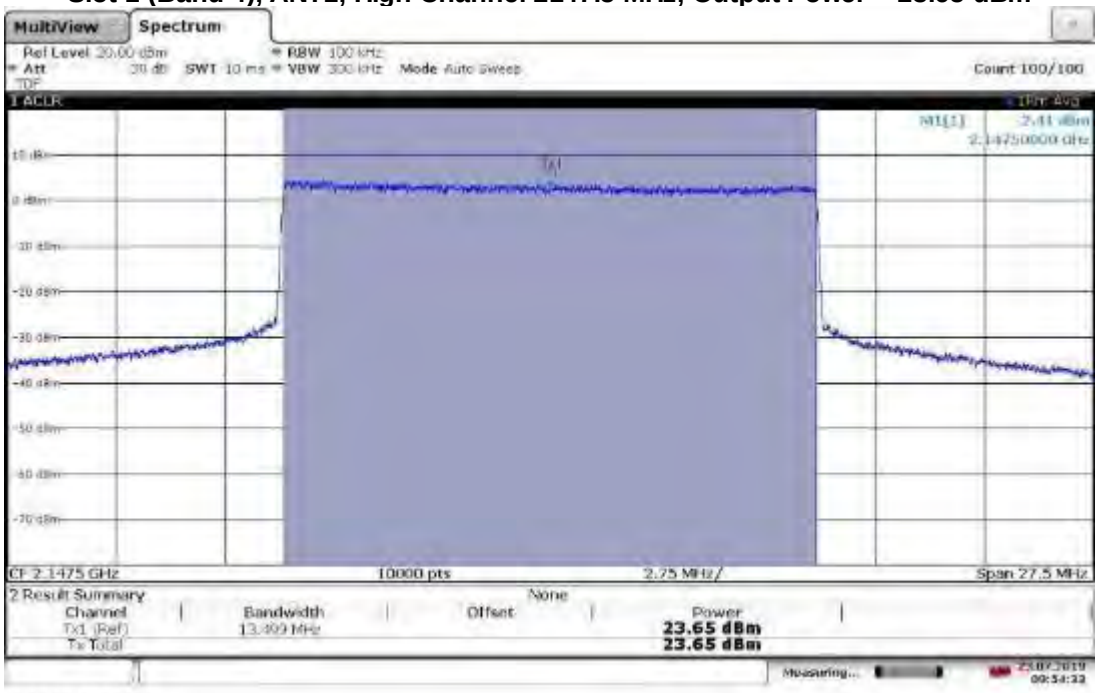
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.36 dBm



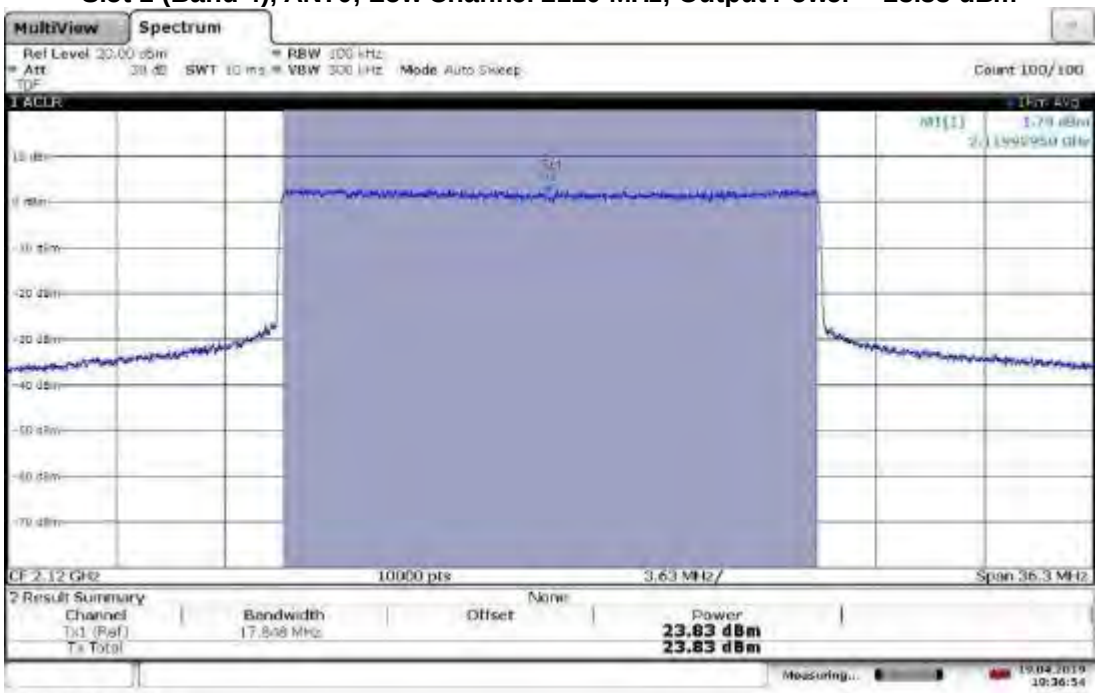
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, Output Power = 24.03 dBm



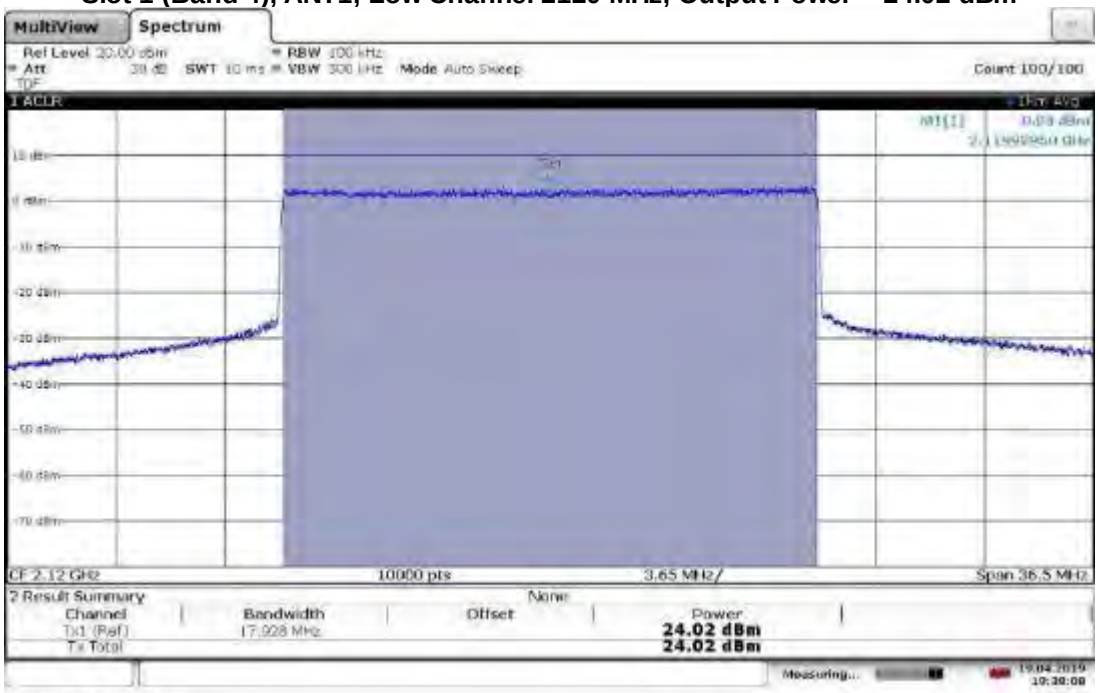
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, Output Power = 23.65 dBm



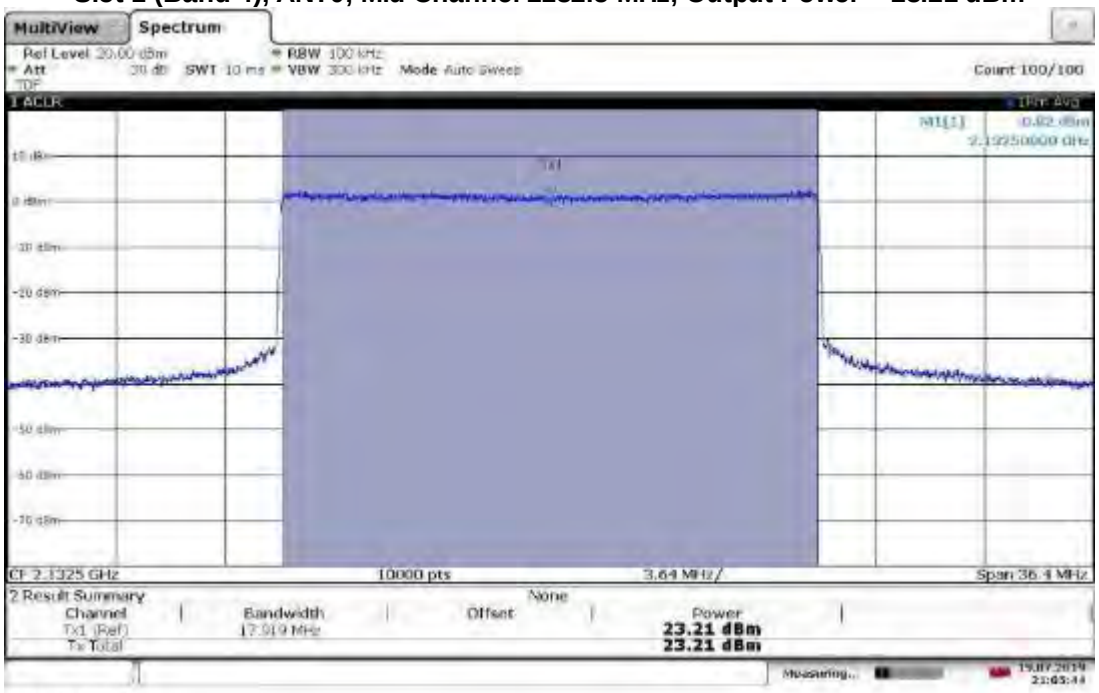
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, Output Power = 23.83 dBm



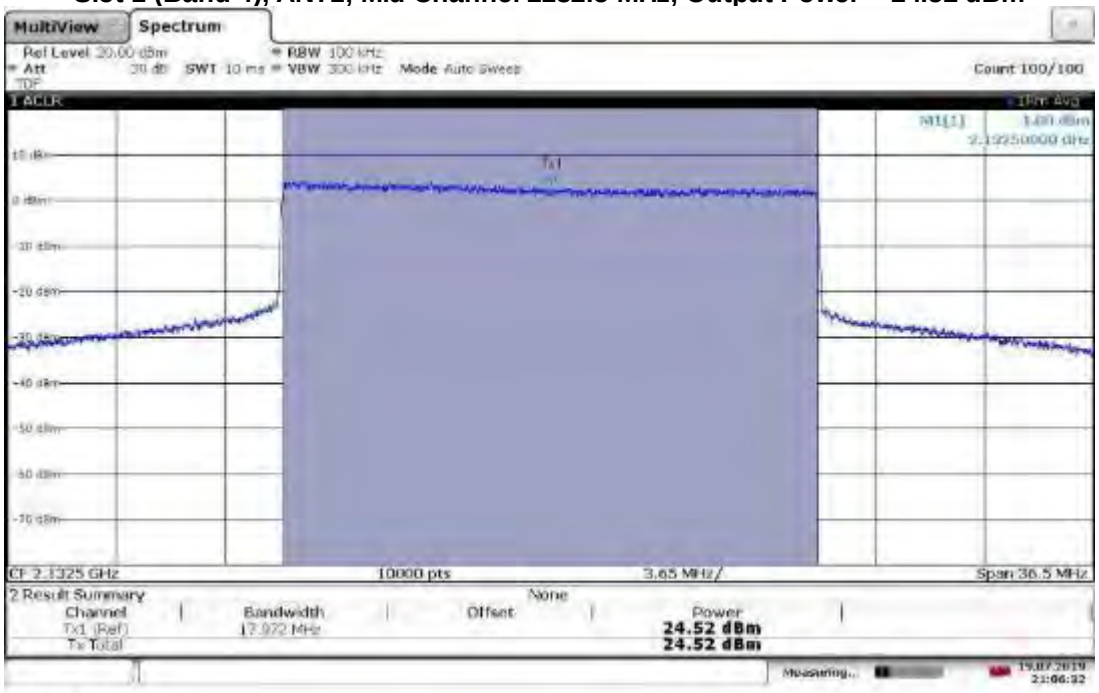
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, Output Power = 24.02 dBm



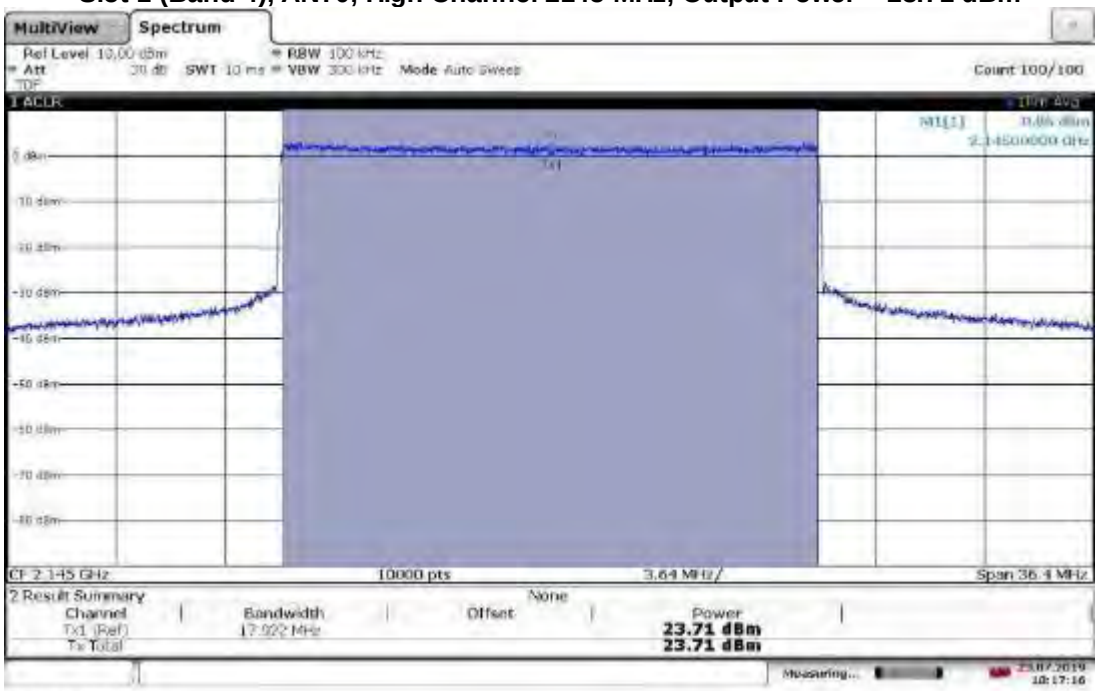
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, Output Power = 23.21 dBm



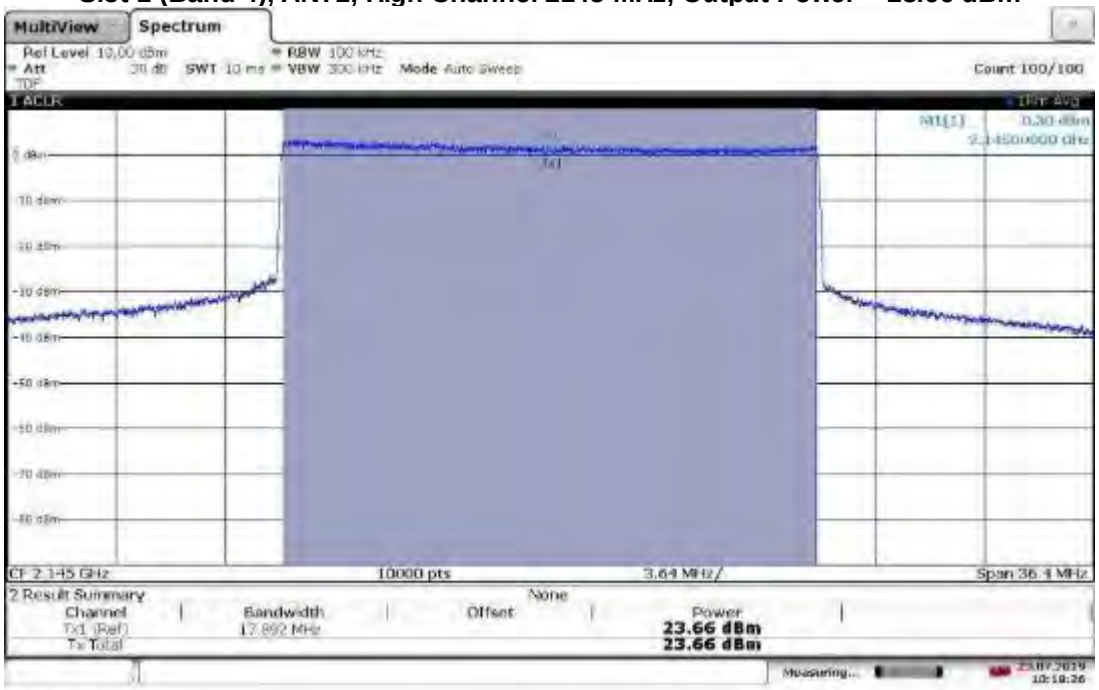
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, Output Power = 24.52 dBm



TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, Output Power = 23.71 dBm



TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, Output Power = 23.66 dBm



Limit for Maximum Permissible Exposure (MPE)

FCC Human RF Exposure Limits:

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

Part §1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f^2	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f^2	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

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

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

Test Procedure

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

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

Power Density = [EIRP] / [4π x $(D_{cm})^2$]

Where EIRP is in milliwatts and D is in centimeters. Setting the power density equal to the limit of 1 mW/cm^2 and solving for D_{cm} yields the following results.

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

Power Density Limit = [EIRP] / [4π x $(D_{cm})^2$]
1 mW/cm^2 = [EIRP] / [4π x $(D_{cm})^2$]
D_{cm} = ([EIRP] / [4π])$^{1/2}$

For Gain = 0 dBi,
EIRP = 25.10 dBm + 10*LOG(2) + 0 dBi = 25.1 dBm + 3 dB + 0dBi
EIRP = 28.1 dBm or 630.96 mW
Therefore, the minimum safe distance D_{cm} = ([630.96] / [4π])$^{1/2}$
D_{cm} = 7.17 cm at 0 dBi gain two antenna MIMO

For Gain = 4 dBi,
EIRP = 25.1 dBm + 10*LOG(2) + 4 dBi = 25.1 dBm + 3 dB + 4dBi
EIRP = 32.1 dBm or 1621.81 mW
Therefore, the minimum safe distance D_{cm} = ([1621.81] / [4π])$^{1/2}$
D_{cm} = 11.36 cm at 4 dBi gain two antenna MIMO

For Gain = X dBi,
EIRP = 25.1 dBm + 10*LOG(2) + X dBi = 25.1 dBm + 3 dB + XdBi
EIRP = 28.11+X dBm or 630.96 + 10^(X/10) mW
Therefore, the minimum safe distance D_{cm} = ([630.96 + 10^(X/10)] / [4π])$^{1/2}$
D_{cm} = 0.282 * (630.96 + 10^(X/10))$^{1/2}$ cm at X dBi gain two antenna MIMO

		Test Date:	04/10/2019, 04/11/2019, 04/18/2019, 04/19/2019, 04/26/2019, 07/18/2019, 07/19/2019
Test Personnel:	Kouma Sinn KPS		
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 6.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	22, 23, 22, 22, 20, 21, 22 ºC
		Relative Humidity:	21, 15, 23, 47, 42, 64, 62 %
		Atmospheric Pressure:	1004, 1013, 1014, 1000, 996, 1005, 1005 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	02/01/2019	02/01/2020
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/01/2019	02/01/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde &Schwarz	FSW43	100646	10/15/2018	10/15/2019
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/06/2018	11/06/2019

Software Utilized:

Name	Manufacturer	Version
None	--	--

7.3 Results:

The sample tested was found to Comply.

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

Band 4, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2112.50	ANT0	6.90
		ANT1	6.44
Mid	2132.50	ANT0	6.89
		ANT1	5.54
High	2152.50	ANT0	6.48
		ANT1	7.23

Band 4, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2115.00	ANT0	6.66
		ANT1	6.74
Mid	2132.50	ANT0	7.04
		ANT1	5.59
High	2150.00	ANT0	6.71
		ANT1	7.42

Band 4, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2117.50	ANT0	7.05
		ANT1	7.26
Mid	2132.50	ANT0	7.59
		ANT1	6.23
High	2147.50	ANT0	7.59
		ANT1	6.23

Band 4, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2120.00	ANT0	7.38
		ANT1	6.91
Mid	2132.50	ANT0	7.38
		ANT1	6.22
High	2145.00	ANT0	7.64
		ANT1	7.60

Band 4, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2112.50	ANT0	6.11
		ANT1	5.89
Mid	2132.50	ANT0	7.59
		ANT1	6.08
High	2152.50	ANT0	6.61
		ANT1	7.54

Band 4, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2115.00	ANT0	6.11
		ANT1	5.86
Mid	2132.50	ANT0	7.57
		ANT1	6.12
High	2150.00	ANT0	6.71
		ANT1	7.44

Band 4, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2117.50	ANT0	6.80
		ANT1	6.49
Mid	2132.50	ANT0	7.68
		ANT1	6.88
High	2147.50	ANT0	7.31
		ANT1	7.44

Band 4, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2120.00	ANT0	6.90
		ANT1	6.82
Mid	2132.50	ANT0	7.84
		ANT1	6.56
High	2145.00	ANT0	7.51
		ANT1	7.57

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2112.50	ANT0	6.40
		ANT1	6.37
Mid	2132.50	ANT0	6.87
		ANT1	5.59
High	2152.50	ANT0	6.48
		ANT1	7.36

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2115.00	ANT0	6.61
		ANT1	6.40
Mid	2132.50	ANT0	7.39
		ANT1	5.83
High	2150.00	ANT0	6.85
		ANT1	7.46

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2117.50	ANT0	7.25
		ANT1	6.95
Mid	2132.50	ANT0	7.81
		ANT1	6.52
High	2147.50	ANT0	7.24
		ANT1	7.70

Band 4, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2120.00	ANT0	6.92
		ANT1	6.79
Mid	2132.50	ANT0	7.89
		ANT1	6.50
High	2145.00	ANT0	7.39
		ANT1	7.54

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2112.50	ANT0	6.56
		ANT1	6.48
Mid	2132.50	ANT0	6.87
		ANT1	5.63
High	2152.50	ANT0	6.73
		ANT1	7.53

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2115.00	ANT0	6.66
		ANT1	6.37
Mid	2132.50	ANT0	7.31
		ANT1	5.85
High	2150.00	ANT0	6.73
		ANT1	7.53

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2117.50	ANT0	7.20
		ANT1	7.10
Mid	2132.50	ANT0	8.40
		ANT1	6.87
High	2147.50	ANT0	7.19
		ANT1	7.41

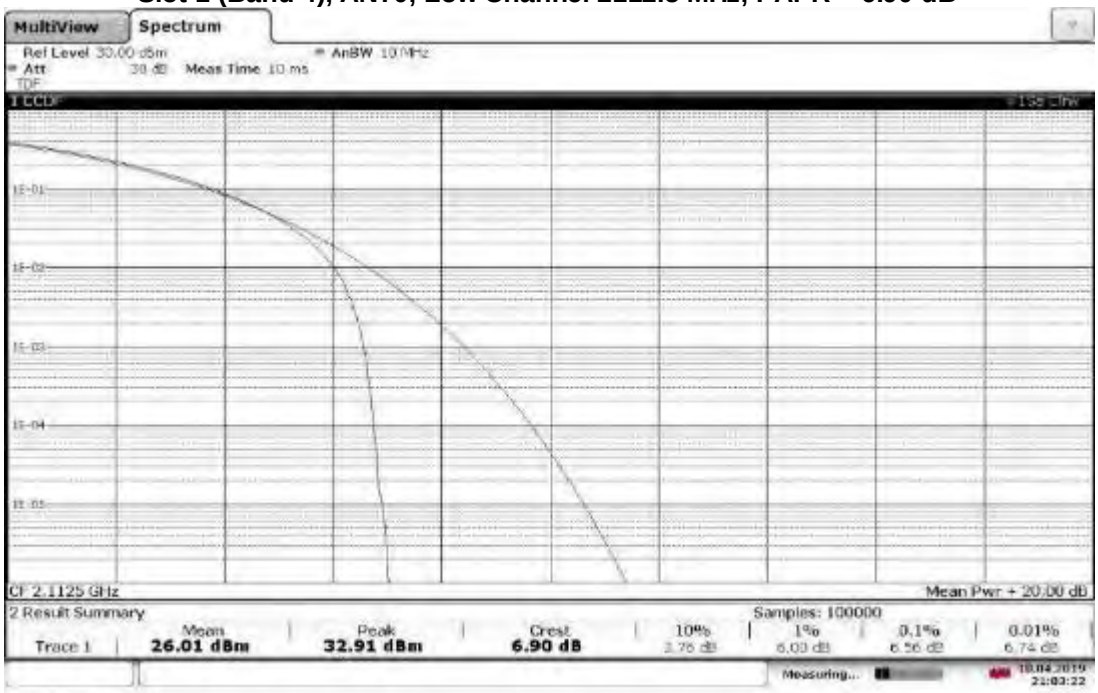
Band 4, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	PAPR (dB)
Low	2120.00	ANT0	7.27
		ANT1	7.19
Mid	2132.50	ANT0	8.01
		ANT1	6.66
High	2145.00	ANT0	7.57
		ANT1	7.53

7.4 Setup Photograph:

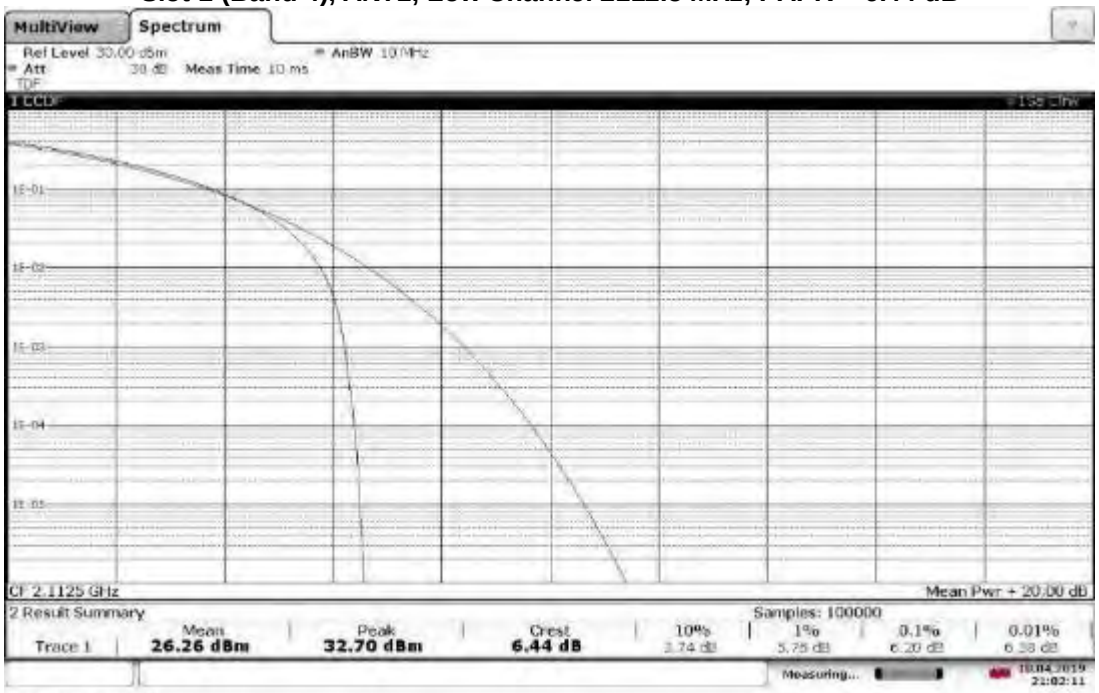
7.5 Plots/Data:

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, PAPR = 6.90 dB



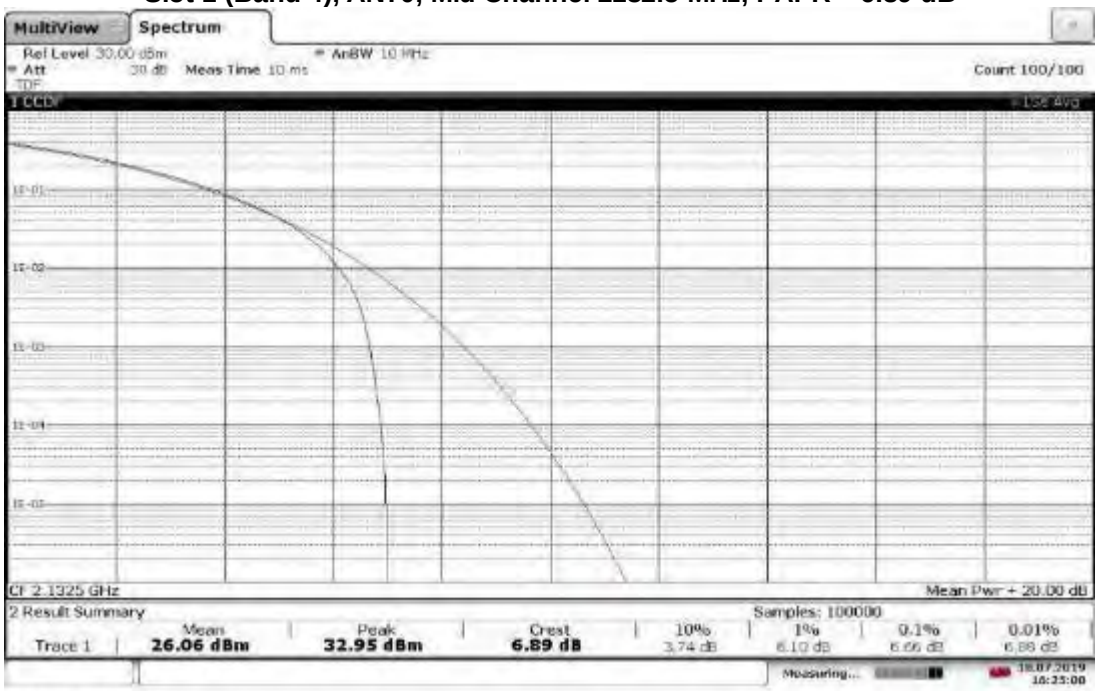
21:03:23 10.04.2019

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, PAPR = 6.44 dB

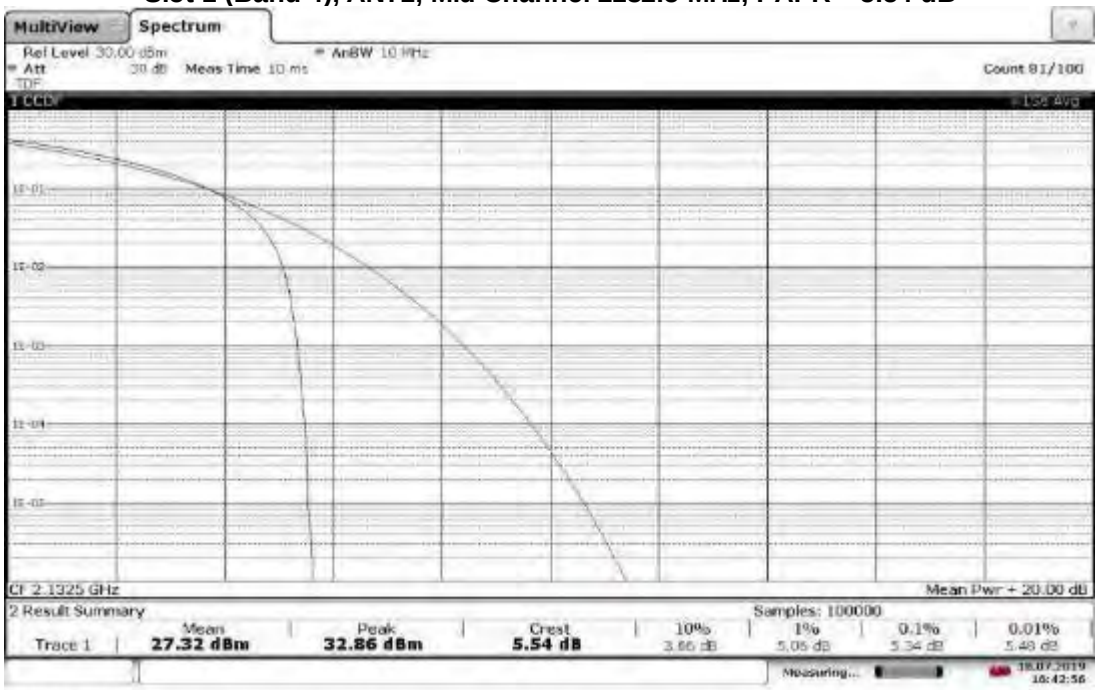


21:02:11 10.04.2019

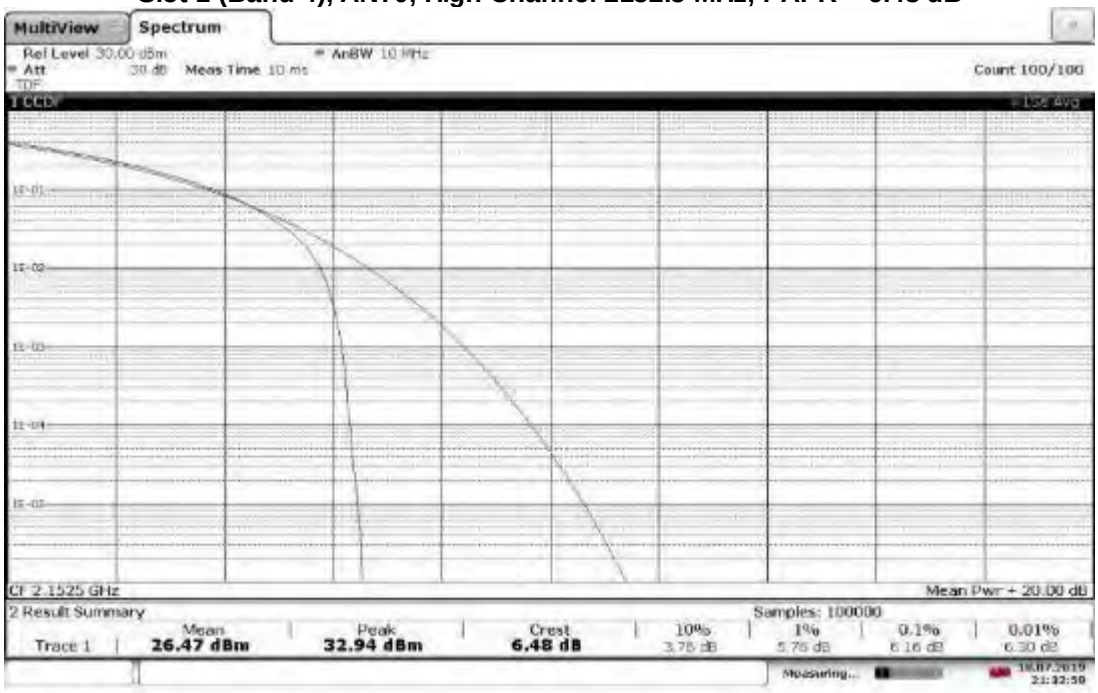
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 6.89 dB



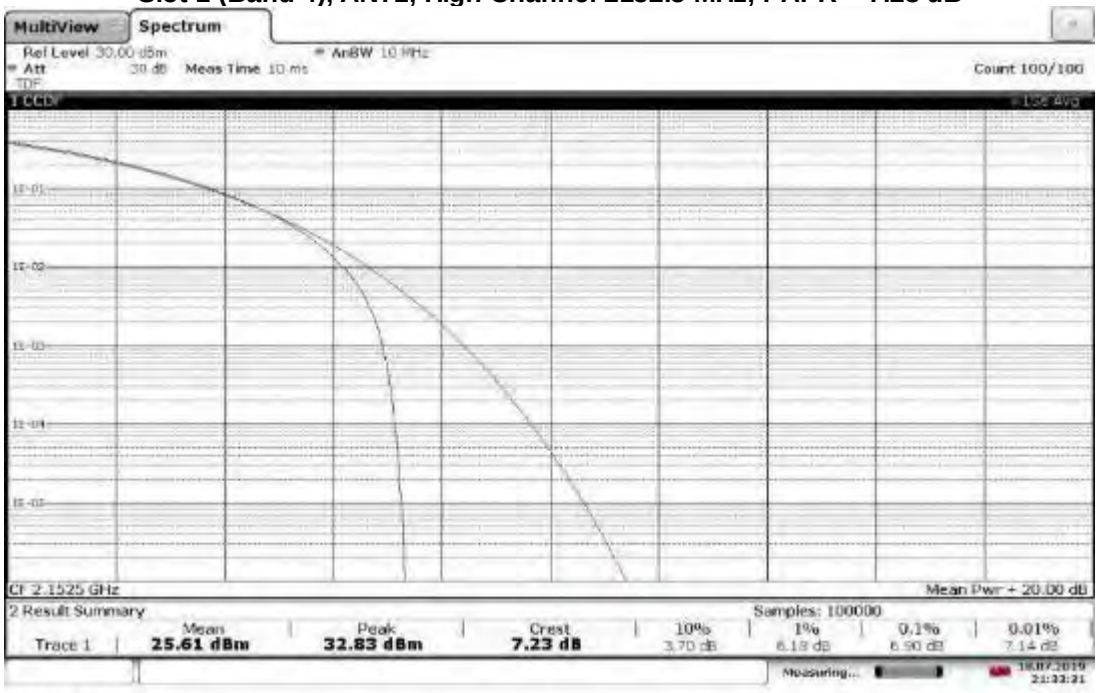
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.54 dB



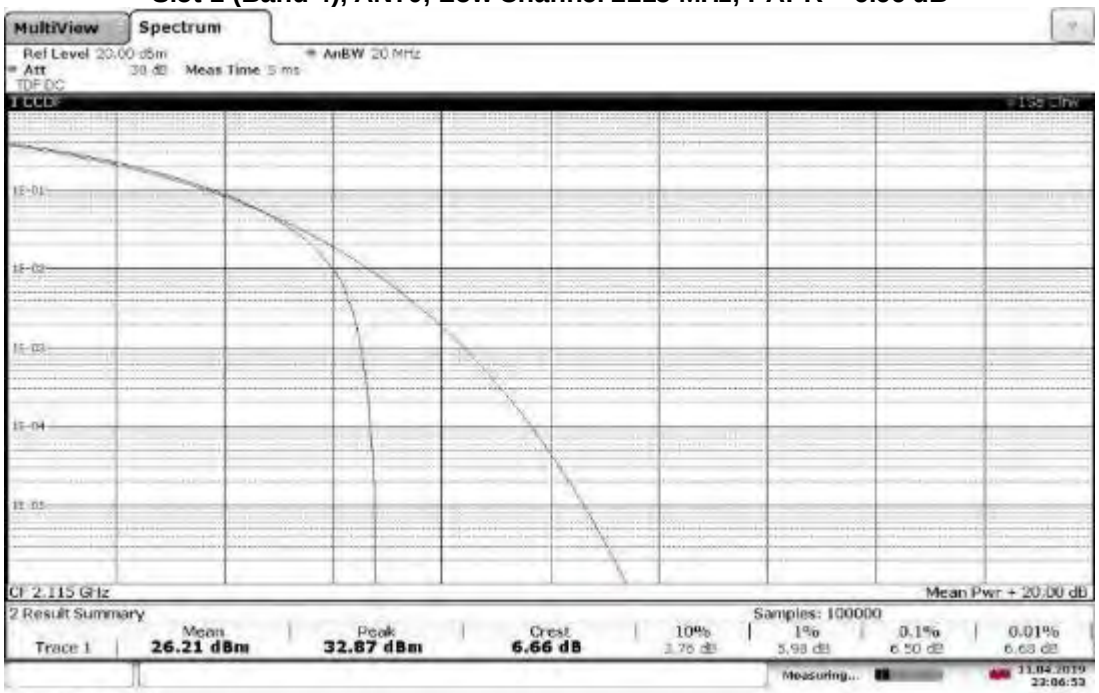
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, PAPR = 6.48 dB



TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, PAPR = 7.23 dB

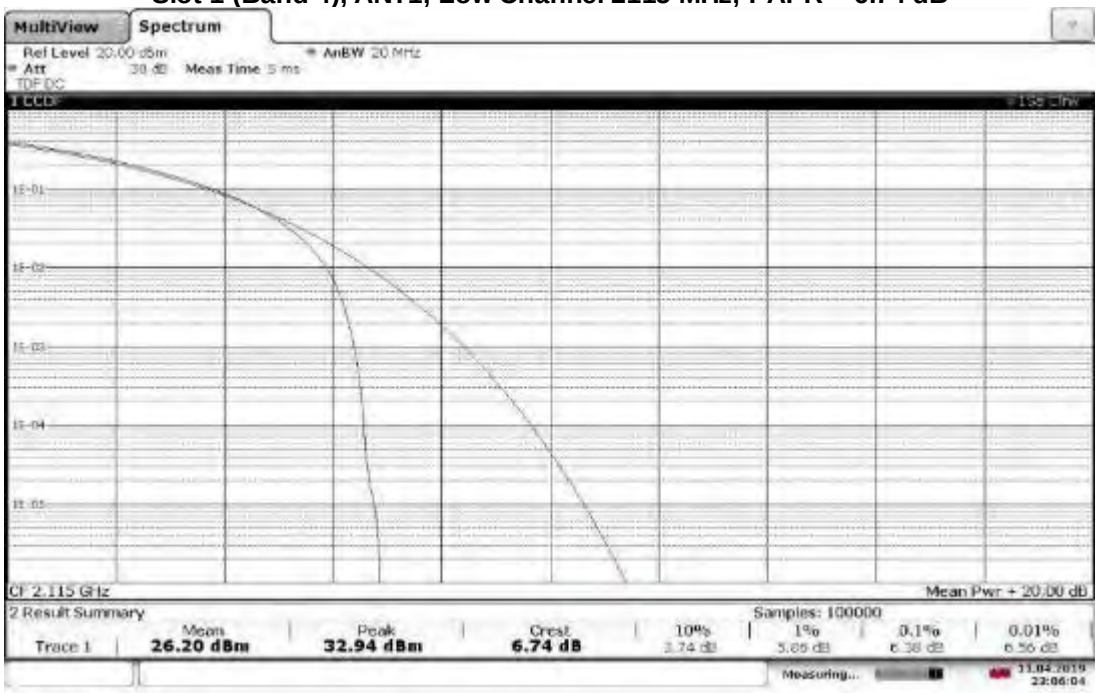


TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, PAPR = 6.66 dB



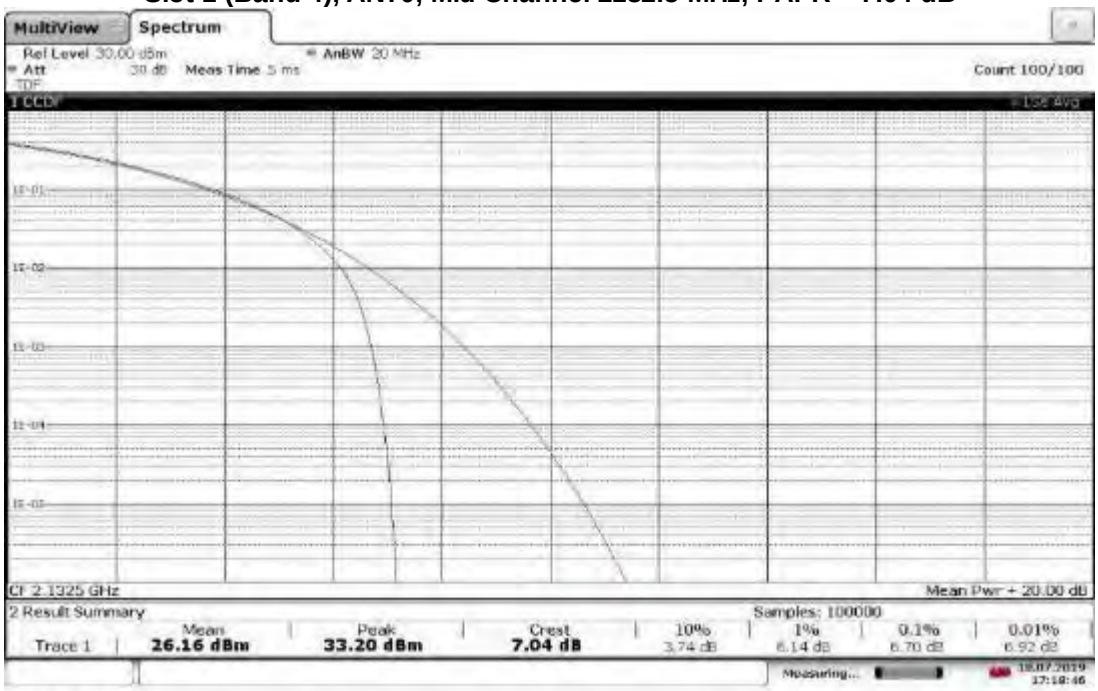
23:06:53 11.04.2019

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, PAPR = 6.74 dB

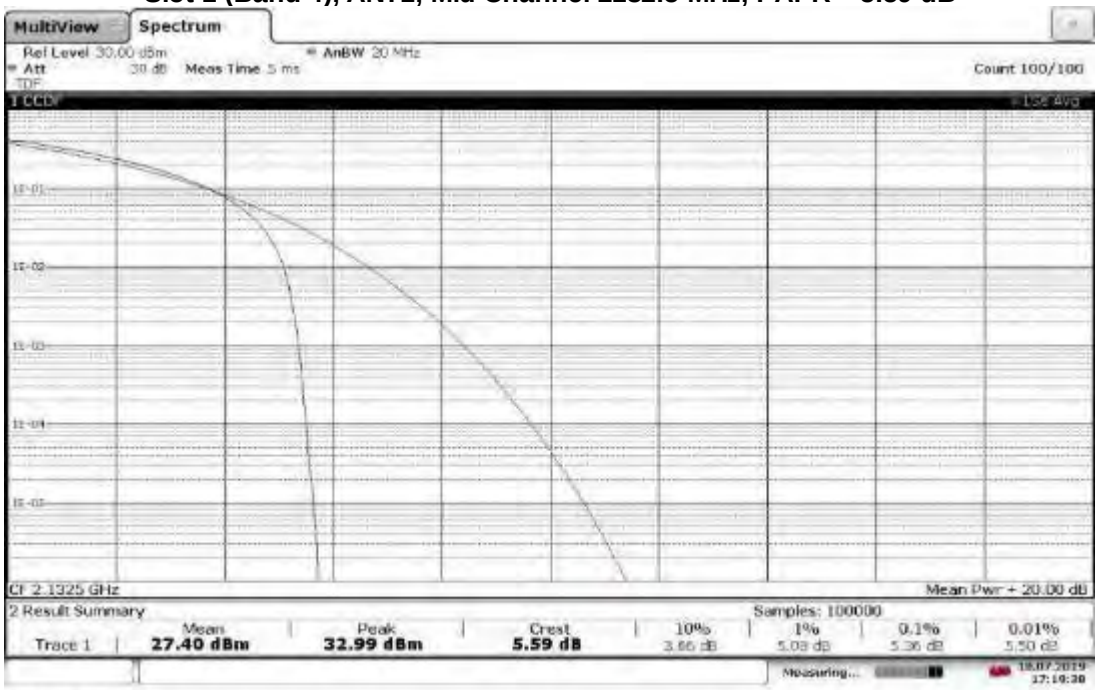


23:06:04 11.04.2019

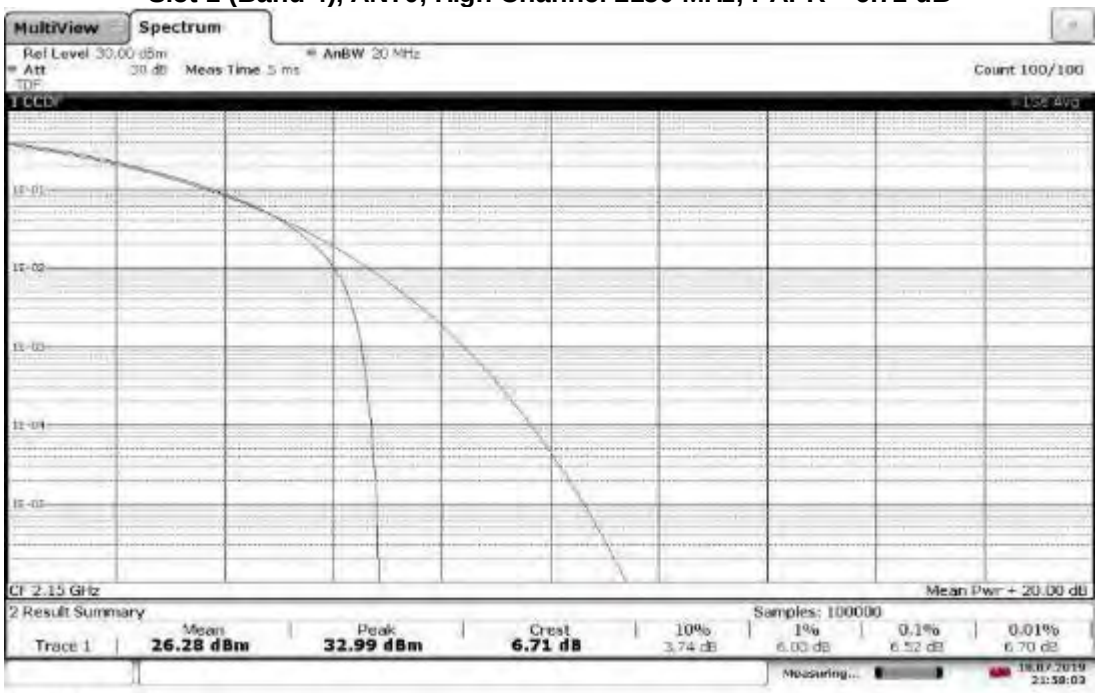
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.04 dB



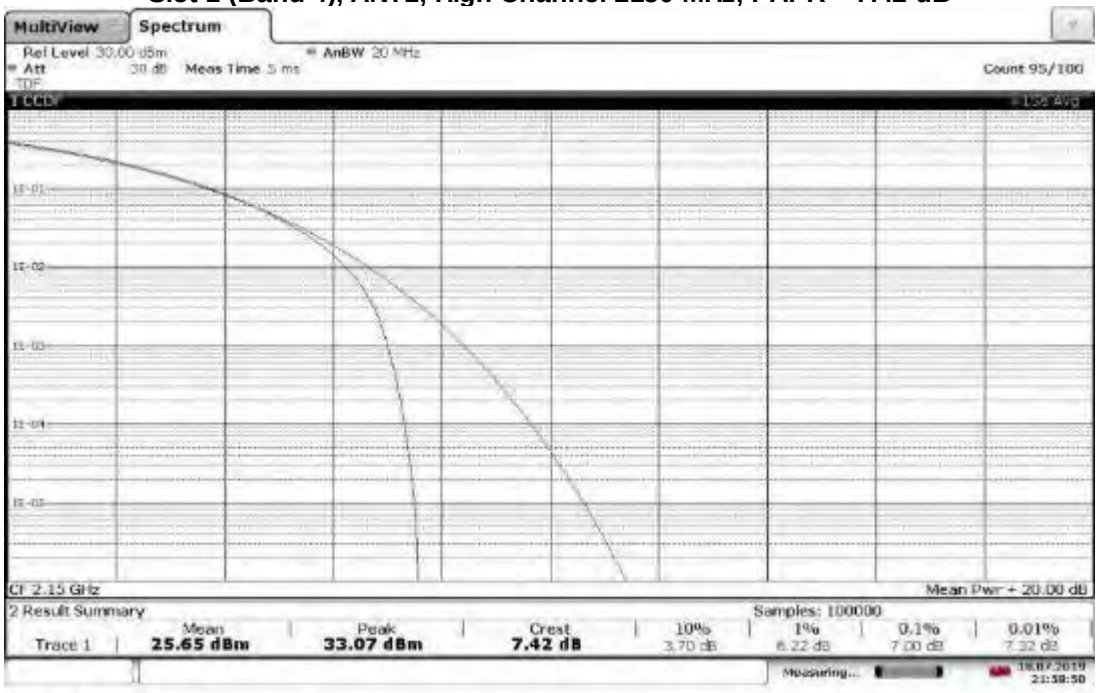
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.59 dB



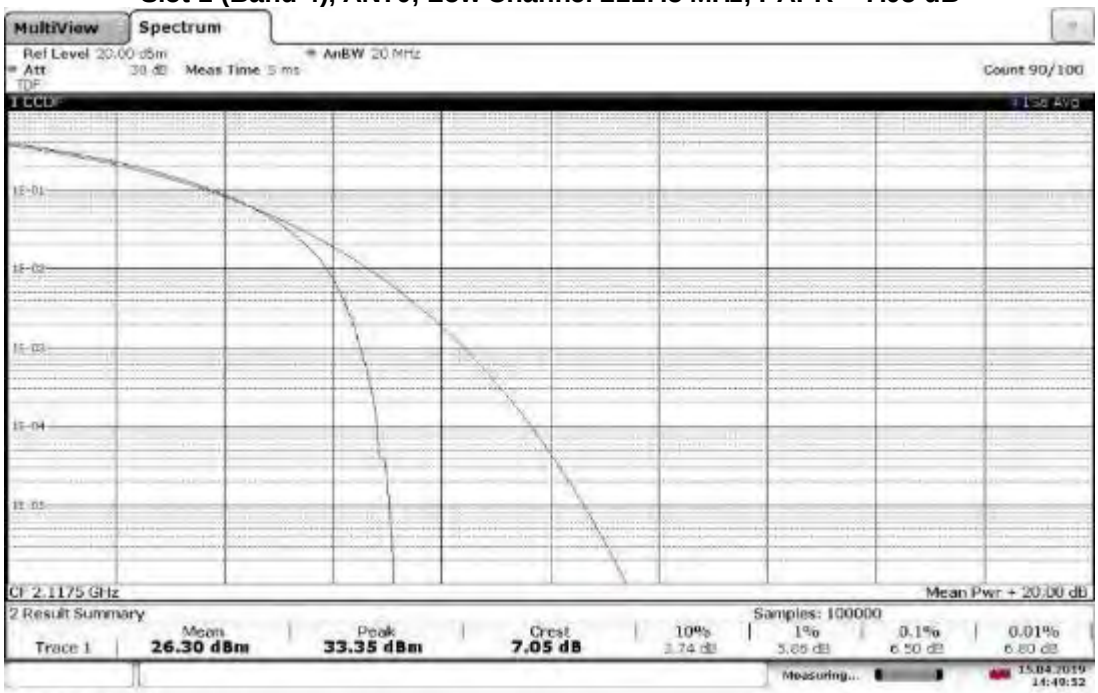
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, PAPR = 6.71 dB



TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, PAPR = 7.42 dB

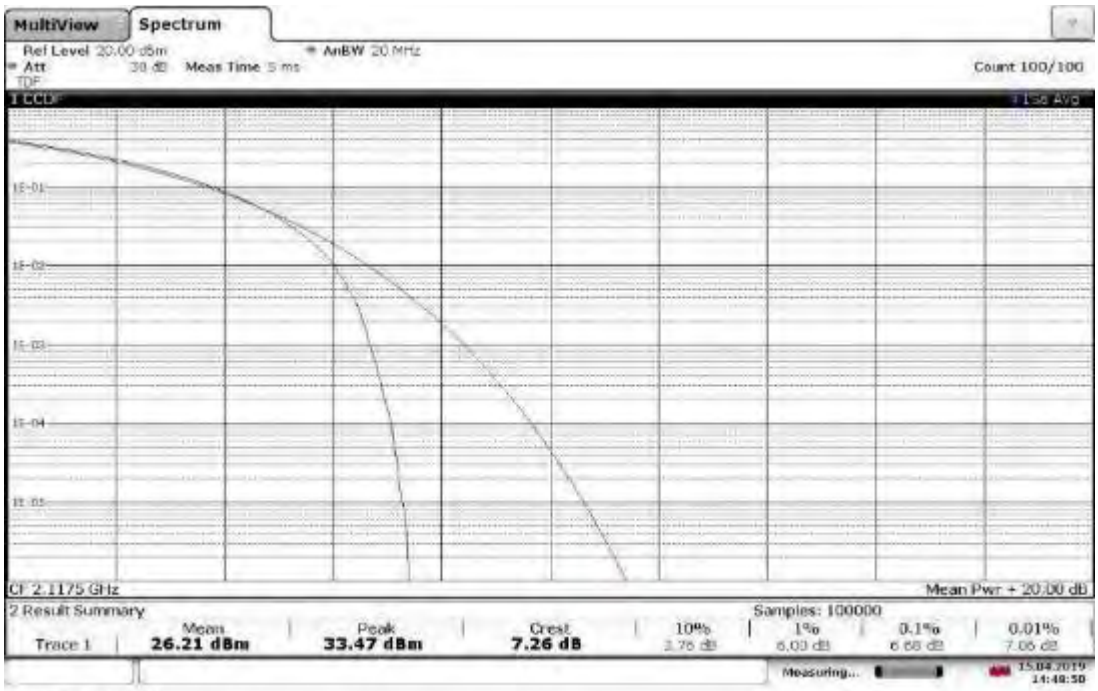


TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, PAPR = 7.05 dB



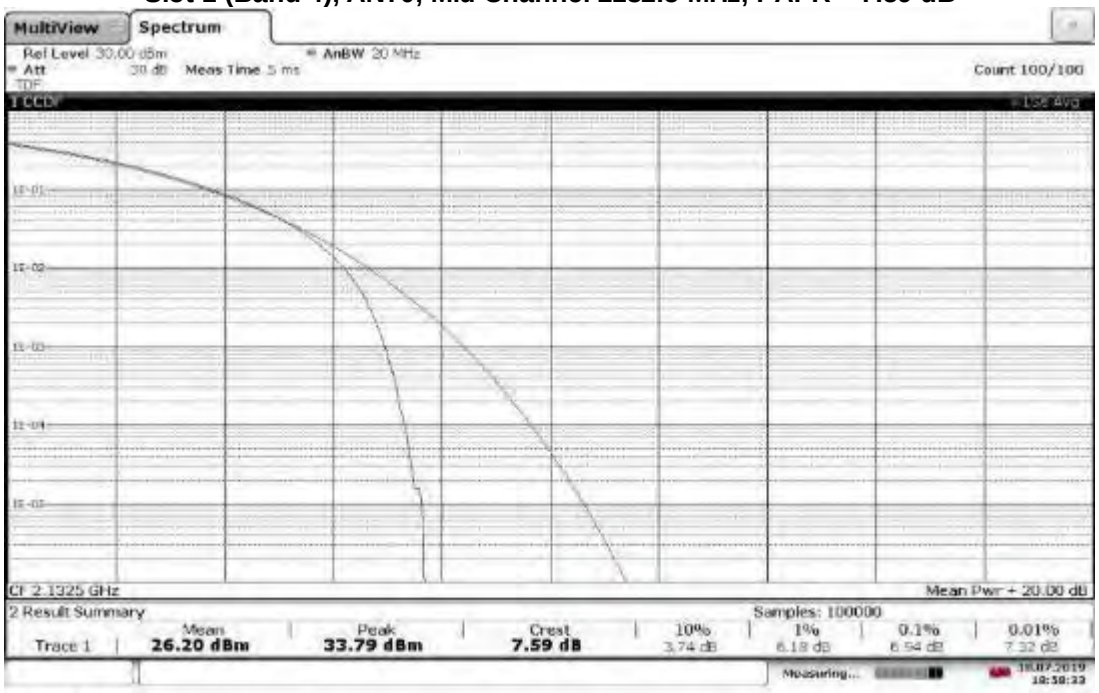
14:40:53 15.04.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, PAPR = 7.26 dB

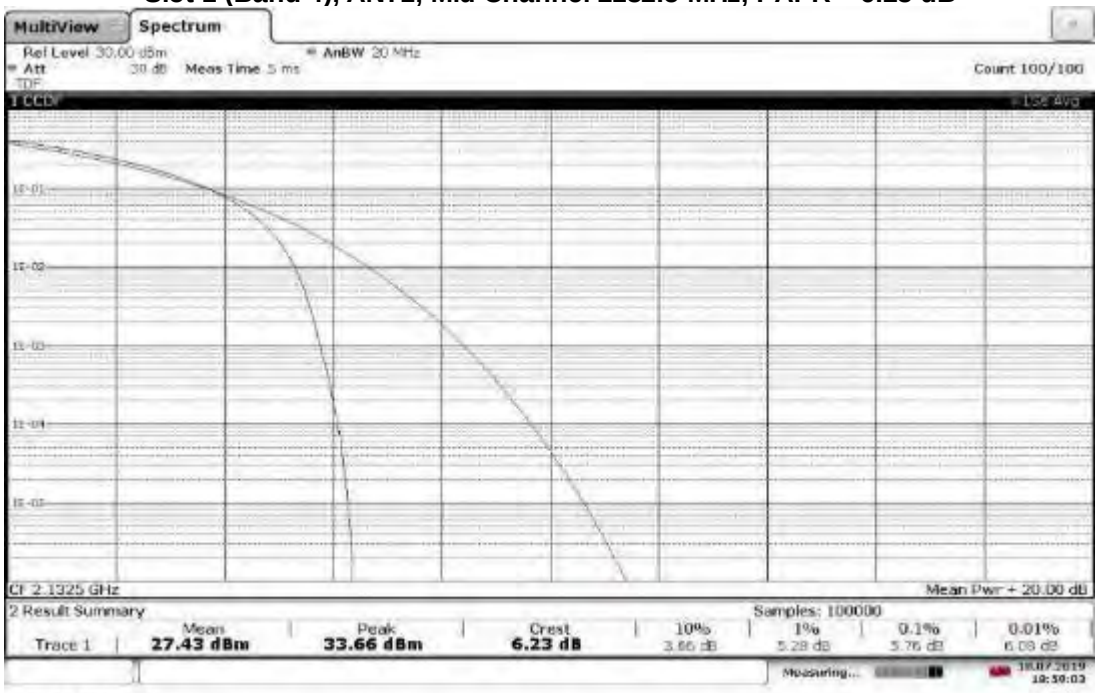


14:48:50 15.04.2019

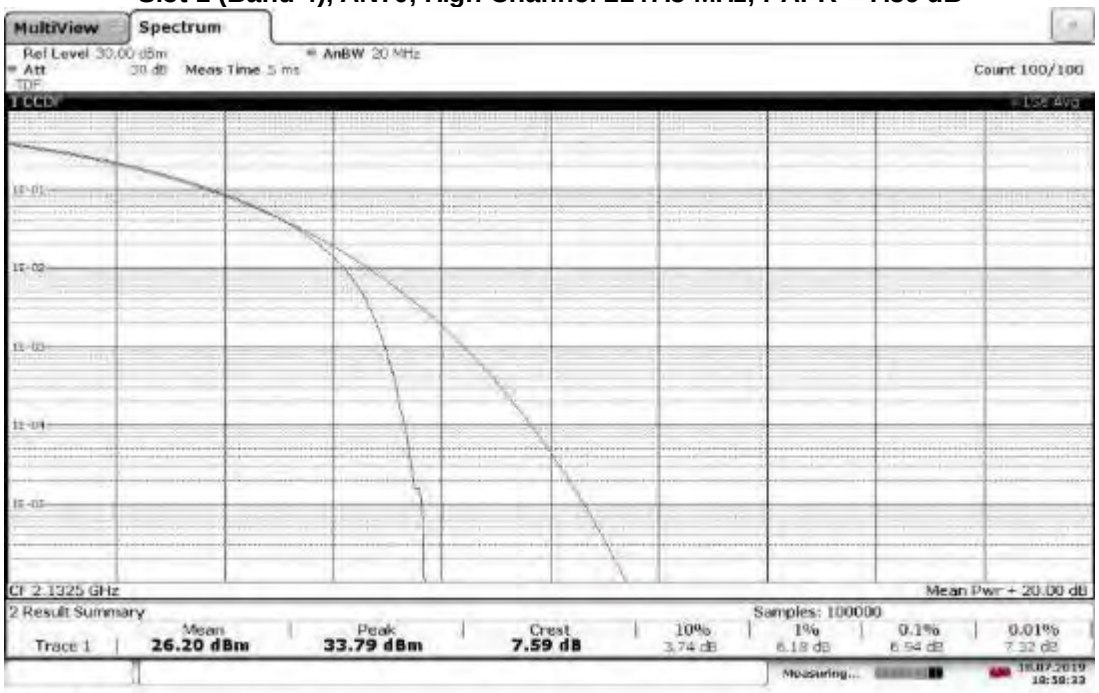
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.59 dB



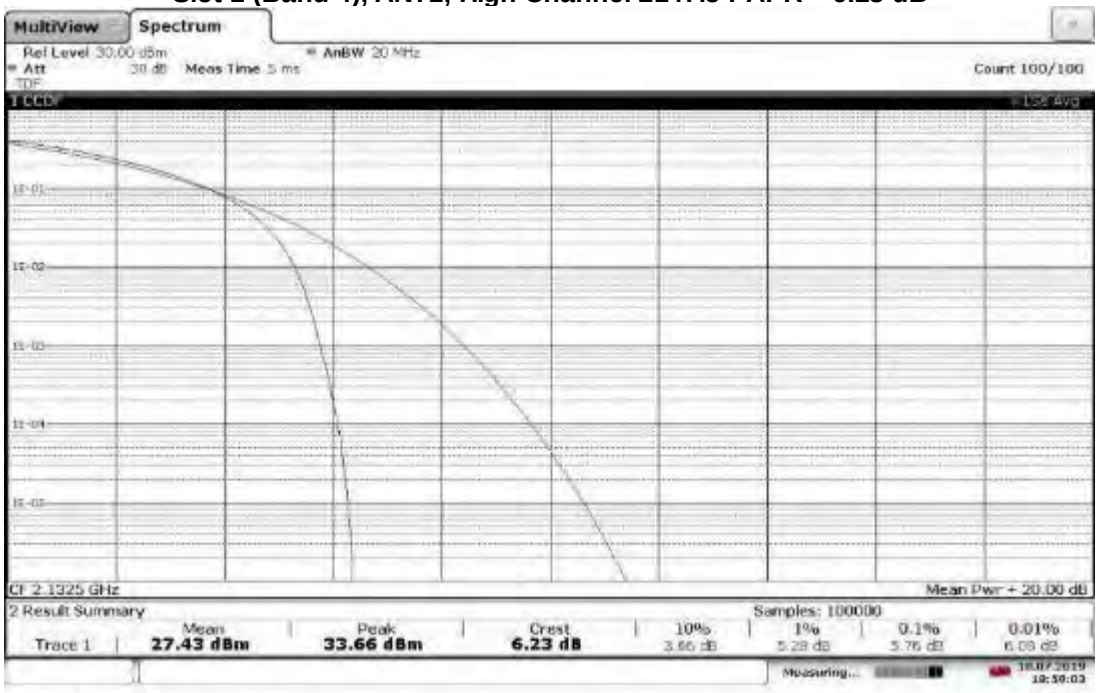
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.23 dB



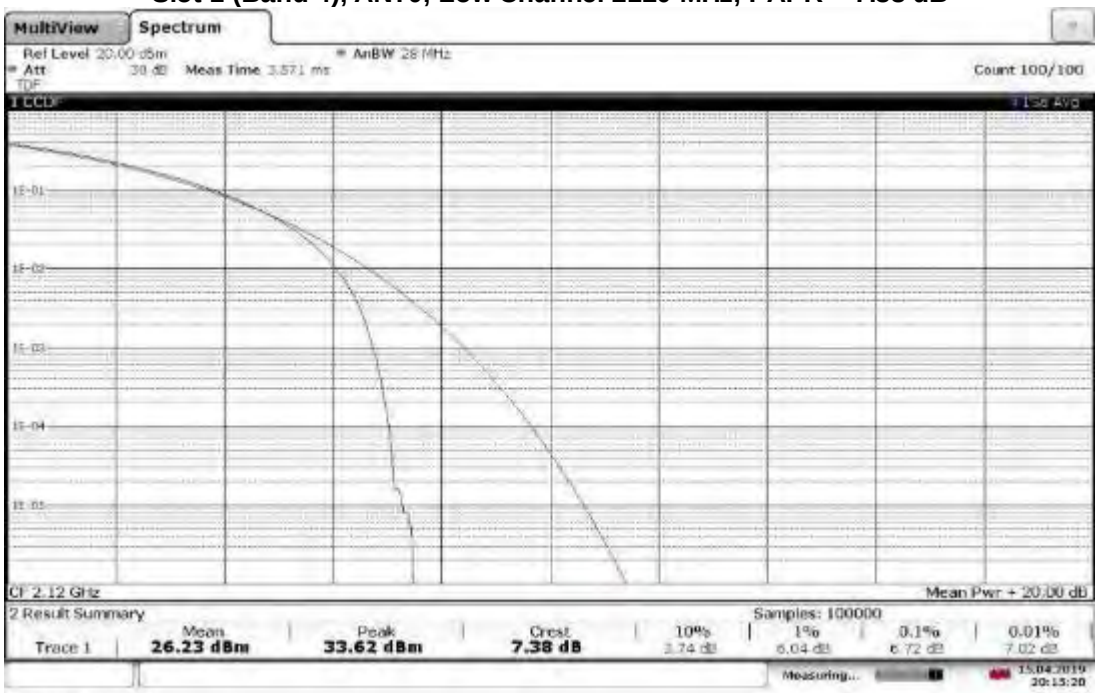
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, PAPR = 7.59 dB



TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 PAPR = 6.23 dB



TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, PAPR = 7.38 dB



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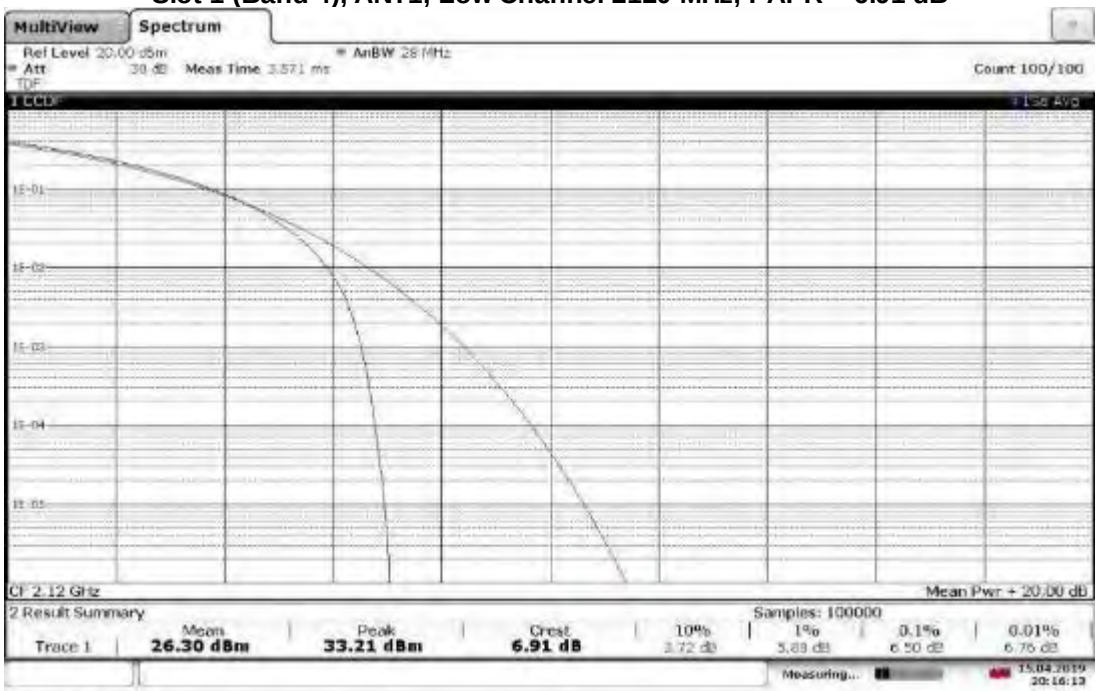
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, PAPR = 6.91 dB



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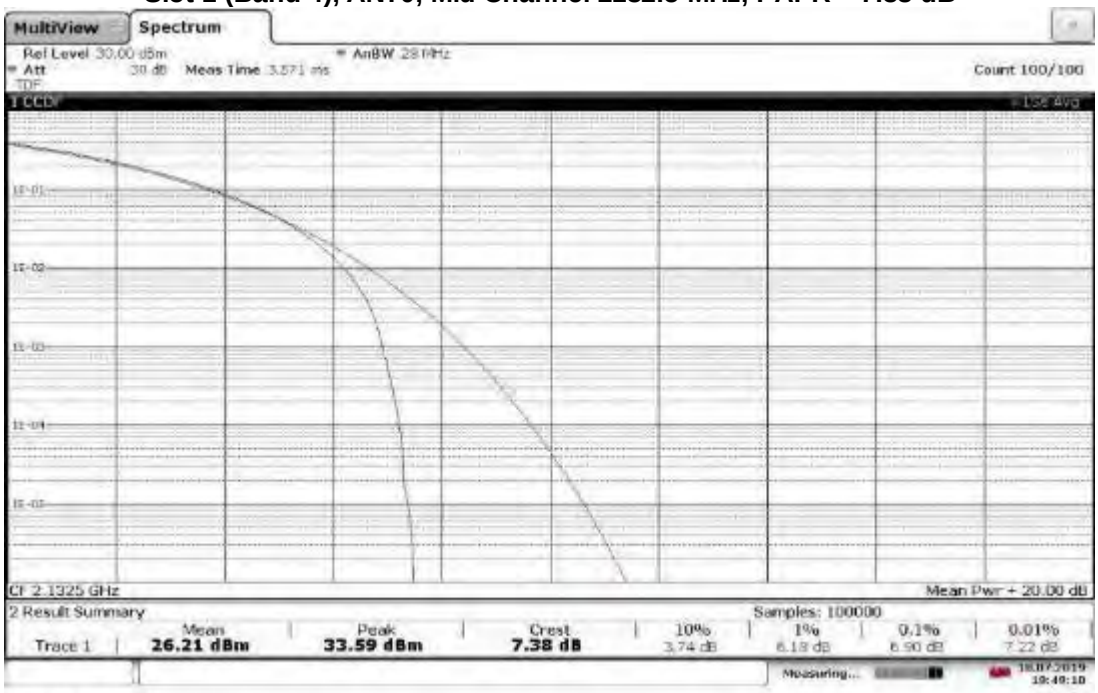
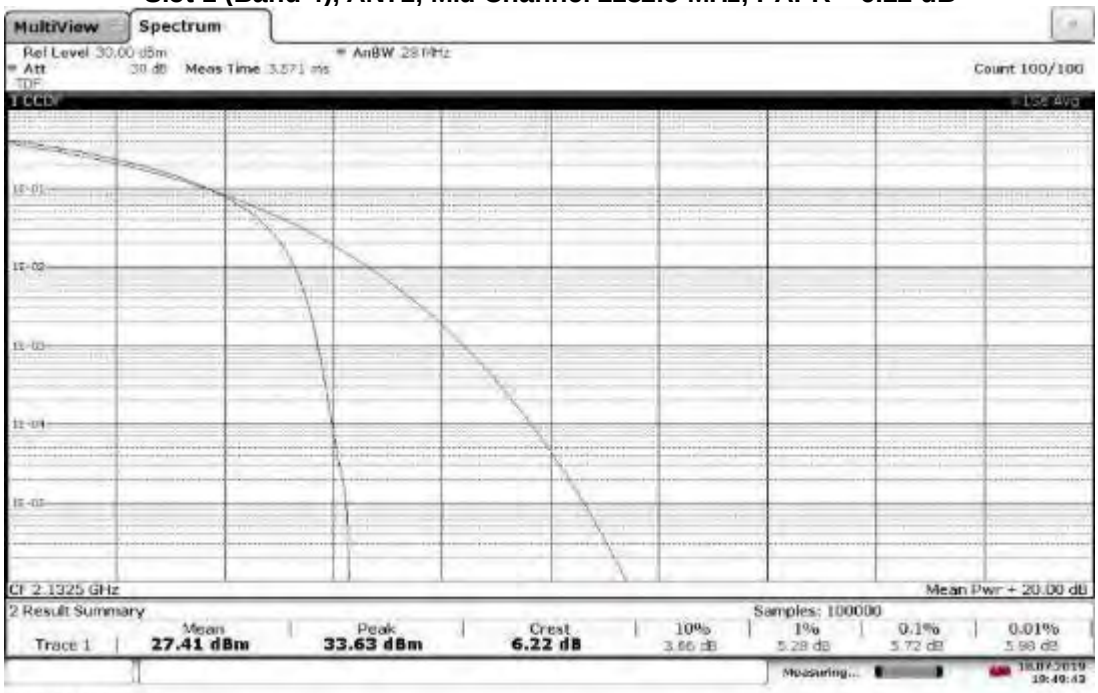
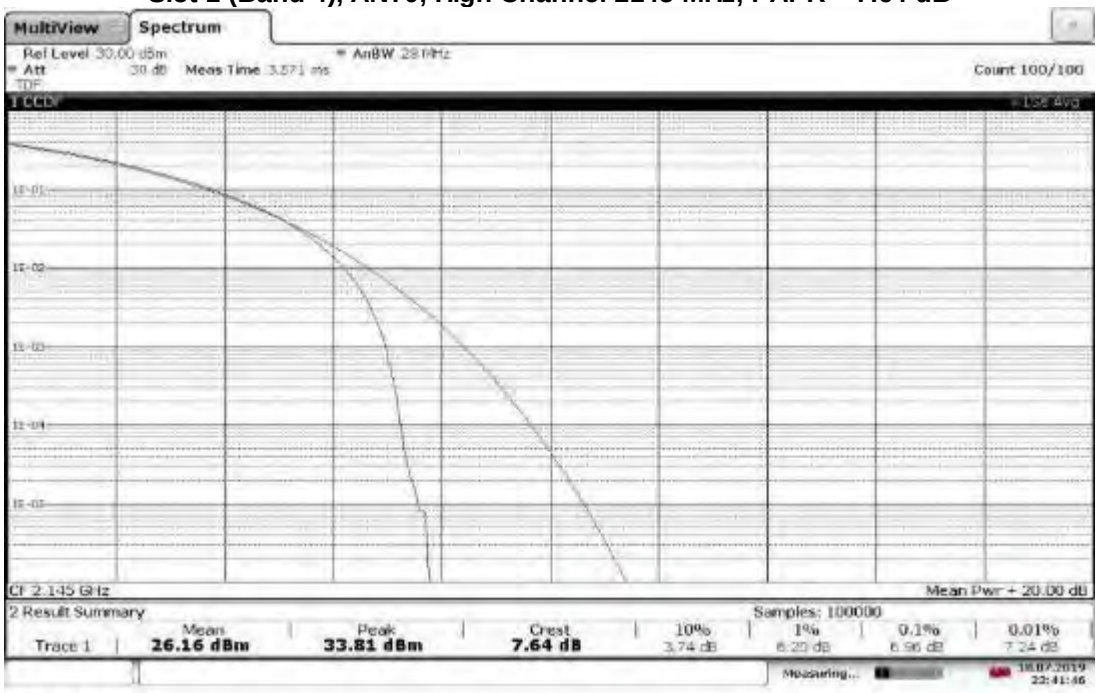
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.38 dB



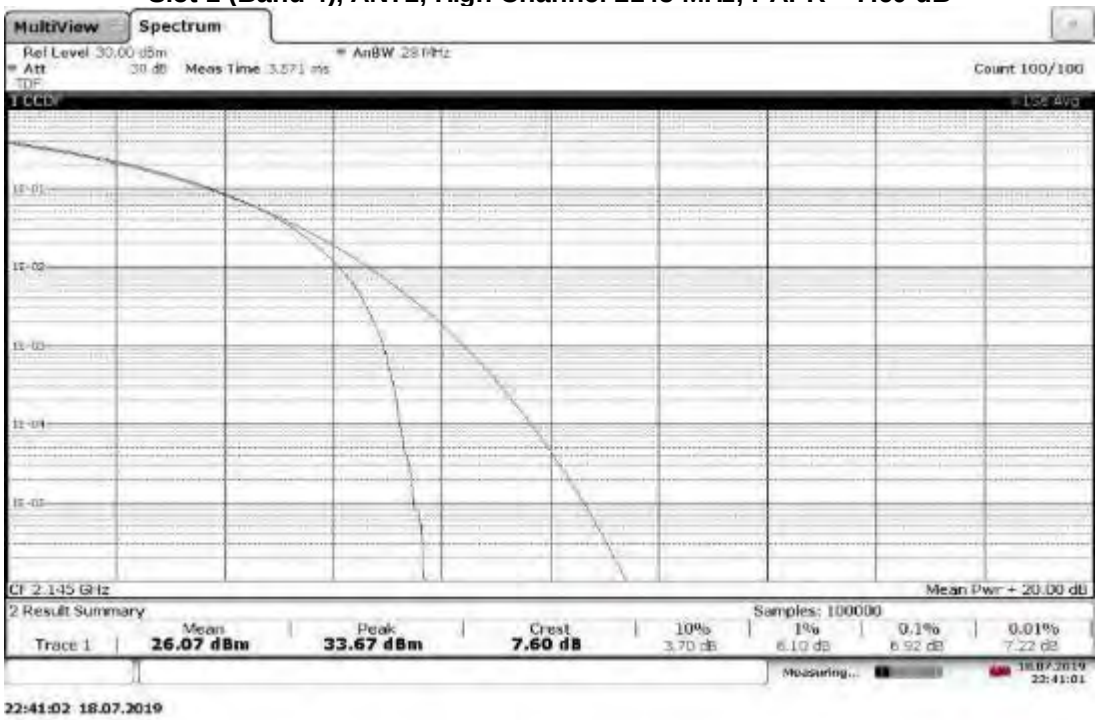
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.22 dB



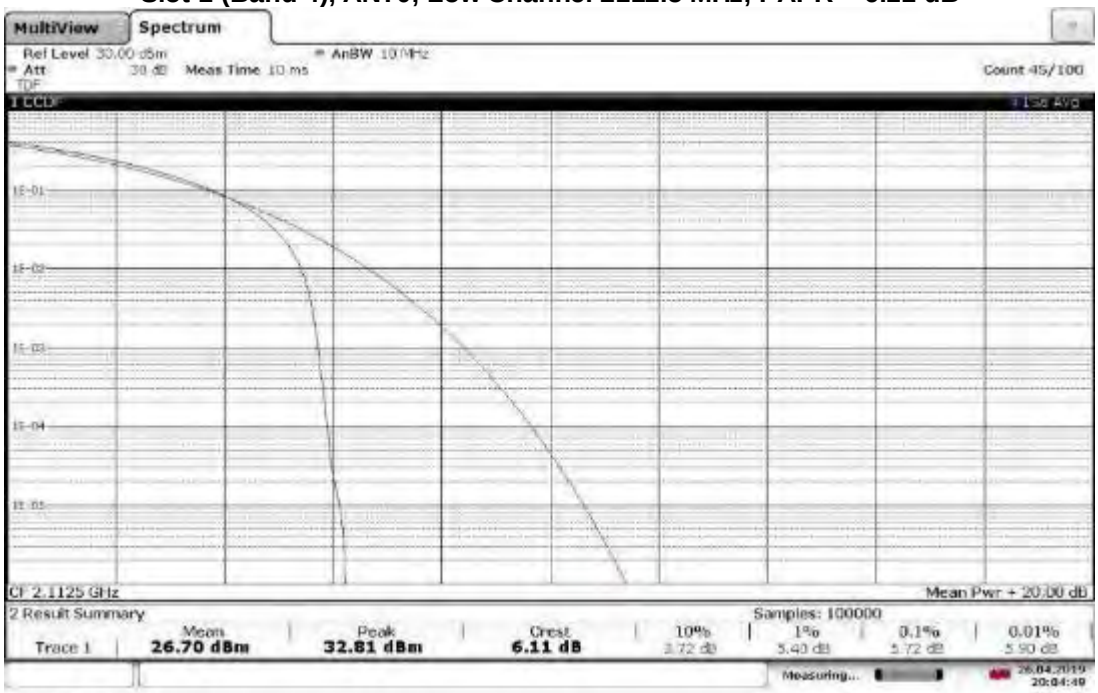
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, PAPR = 7.64 dB



TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, PAPR = 7.60 dB

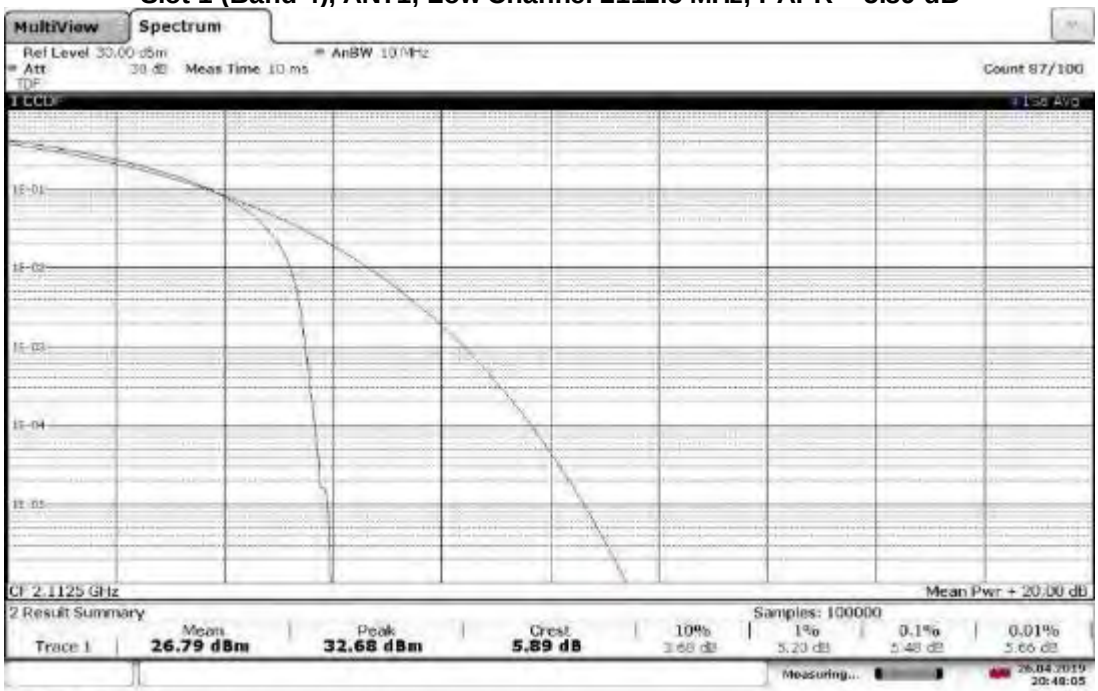


TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, PAPR = 6.11 dB



20:04:50 26.04.2019

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, PAPR = 5.89 dB



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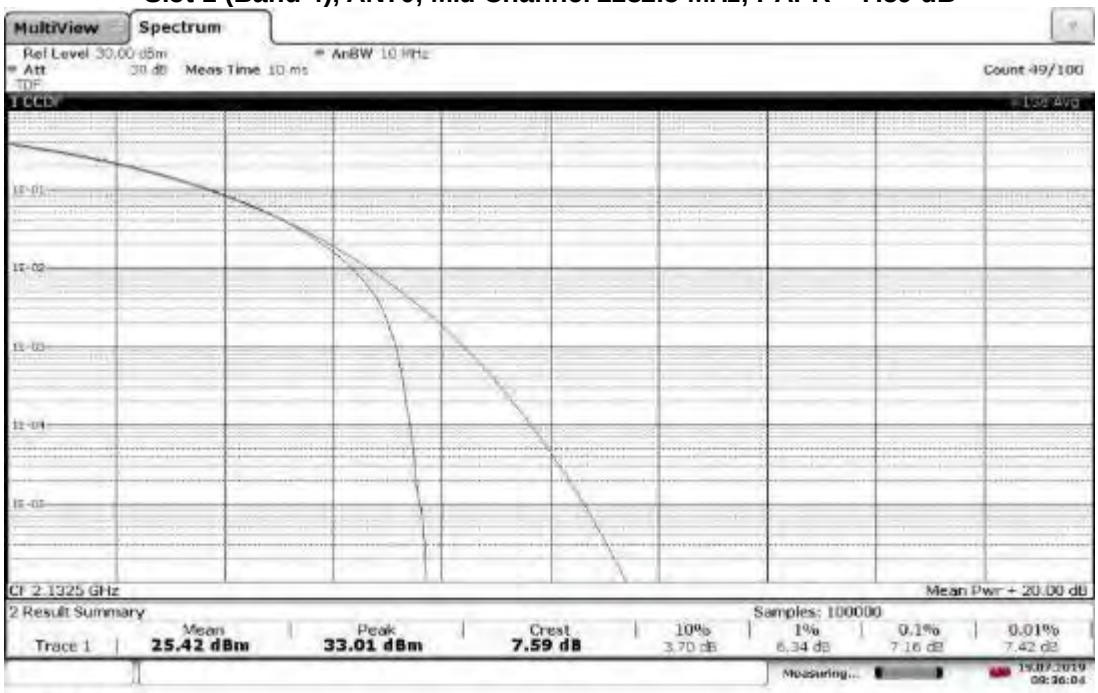
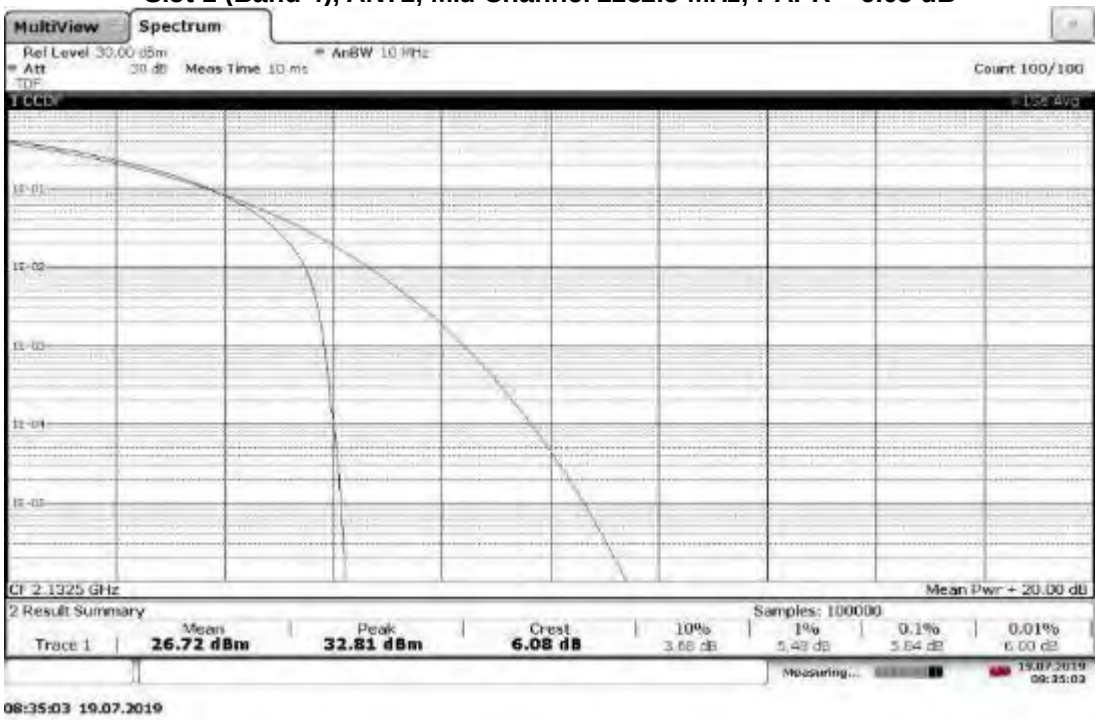
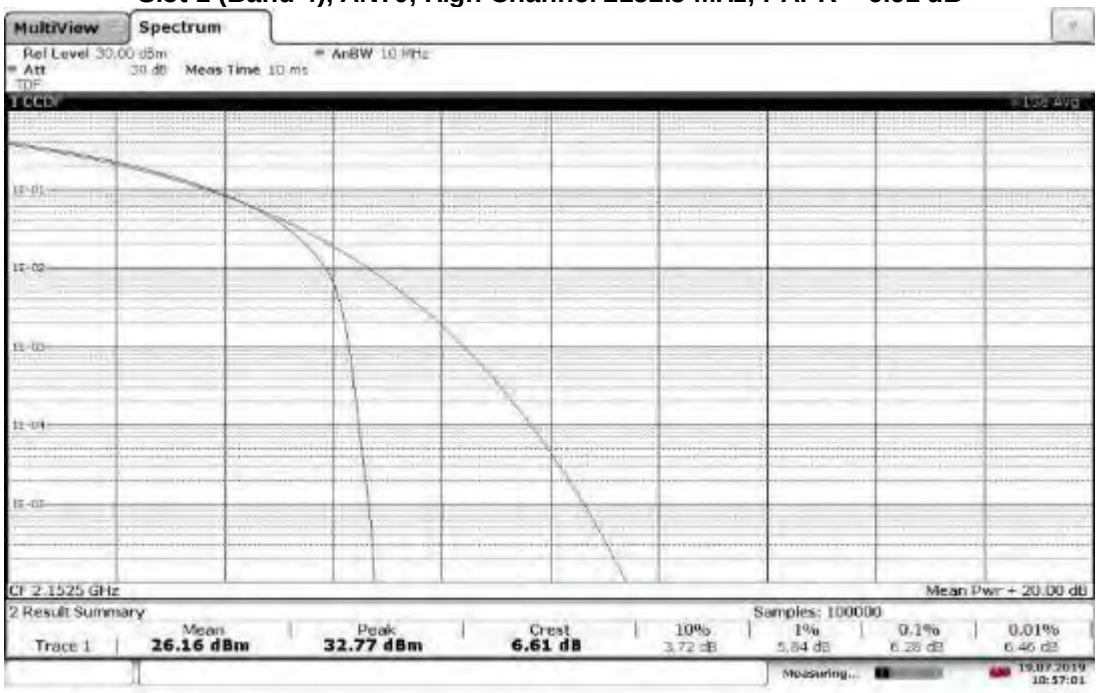
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.59 dB



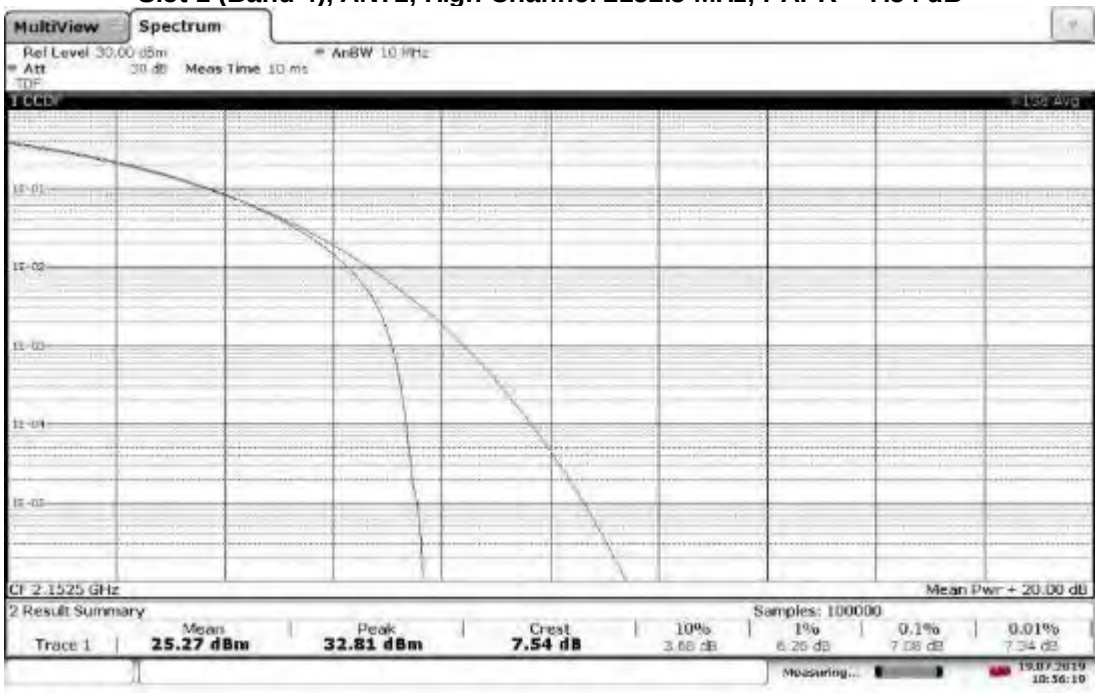
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.08 dB



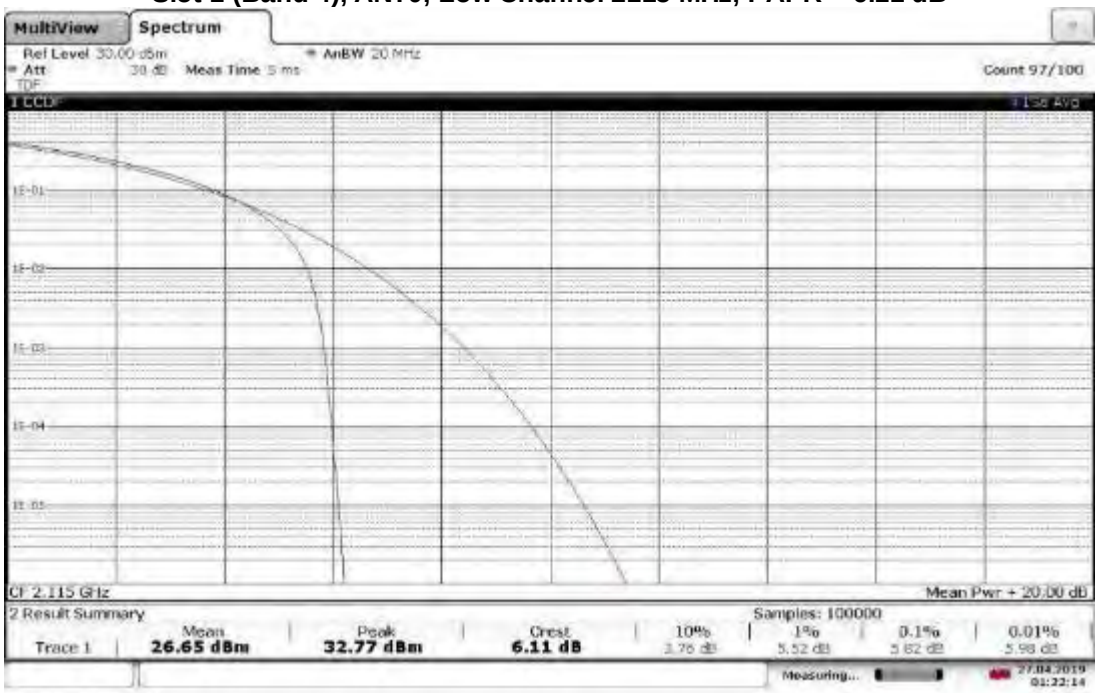
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, PAPR = 6.61 dB



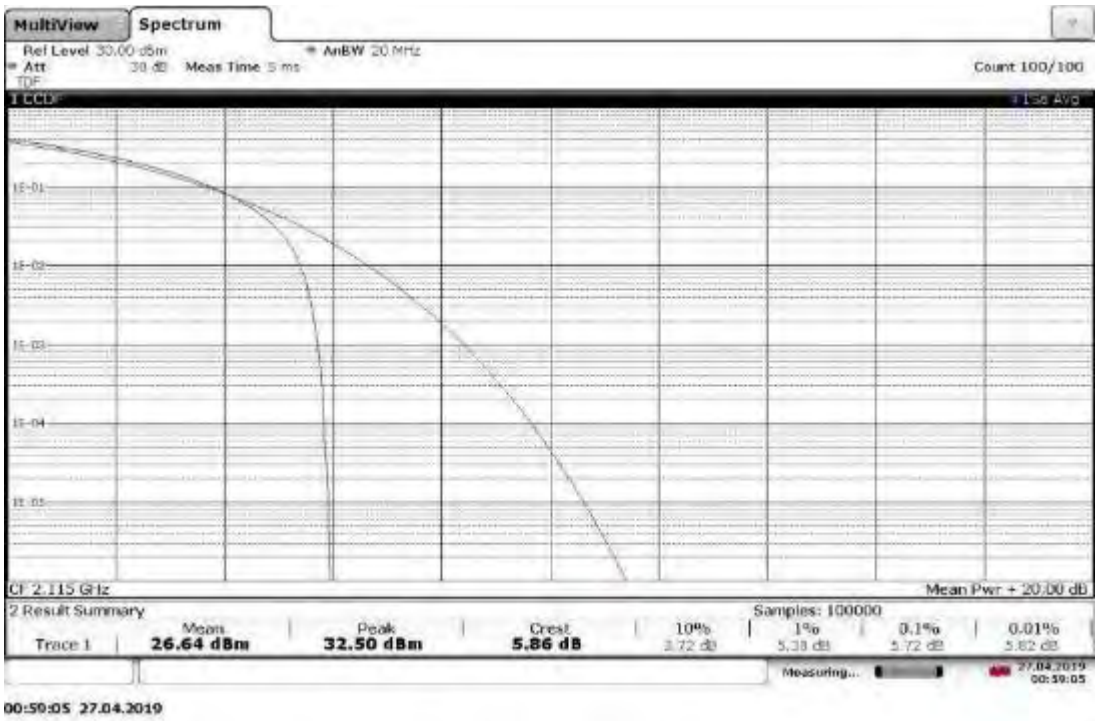
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, PAPR = 7.54 dB



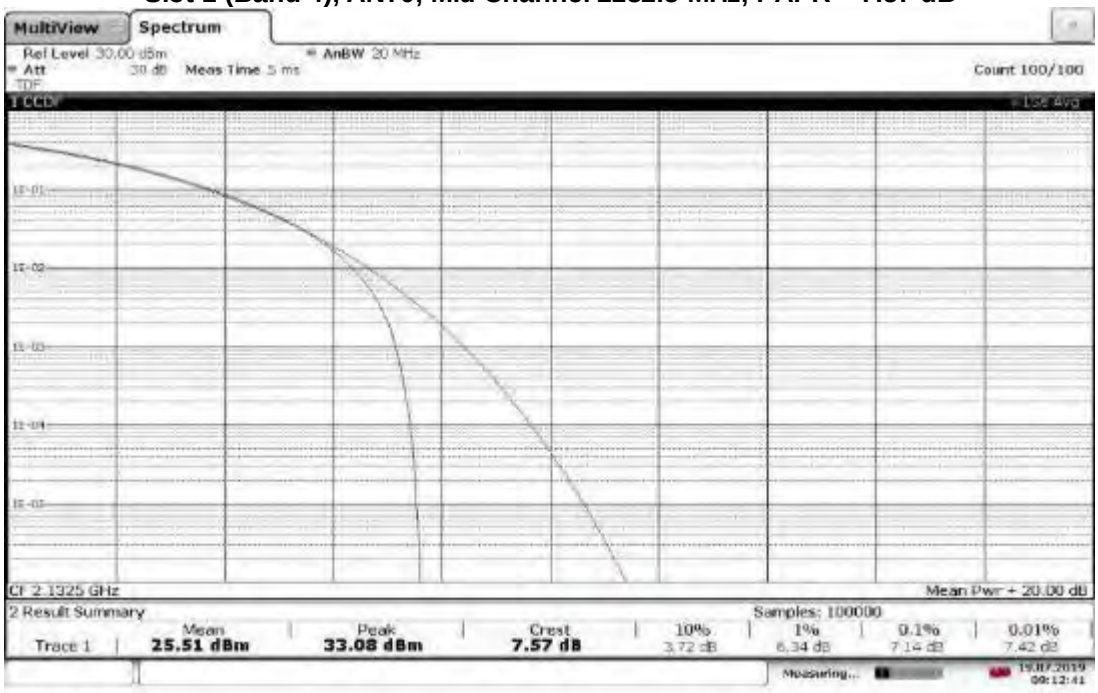
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, PAPR = 6.11 dB



TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, PAPR = 5.86 dB



TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.57 dB



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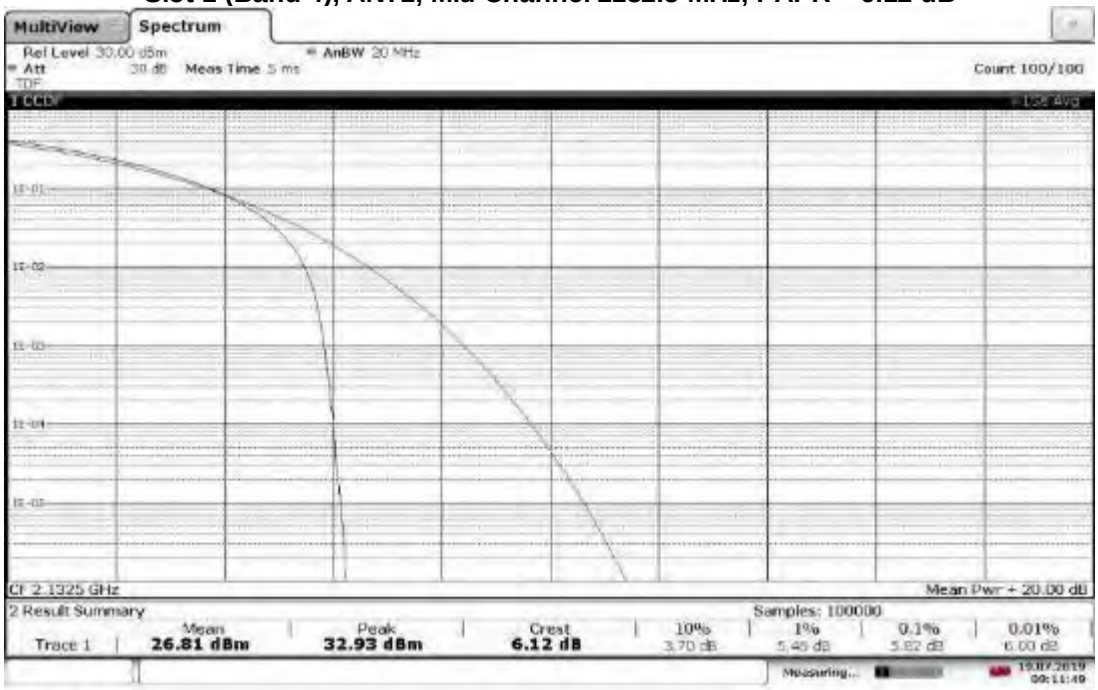
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.12 dB



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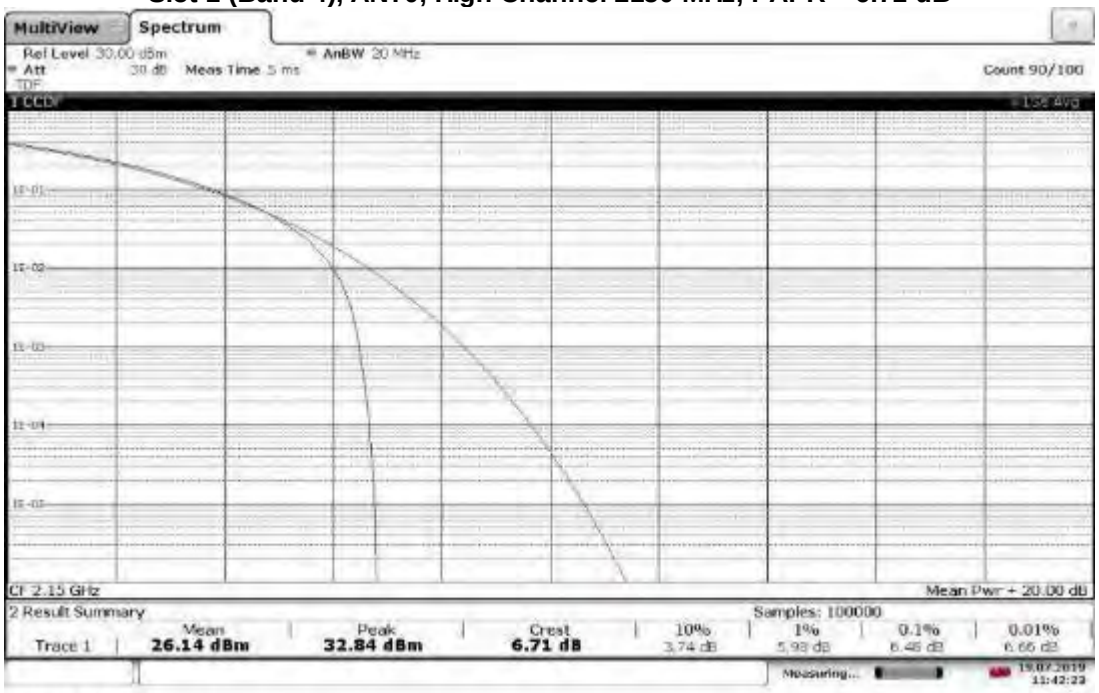
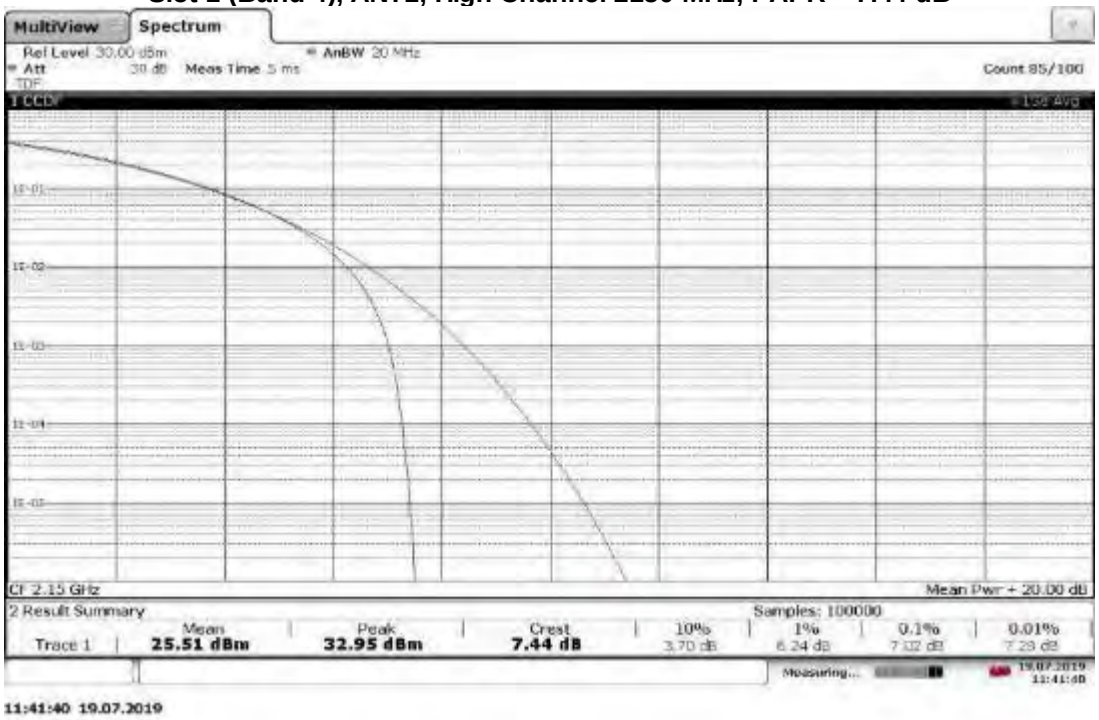
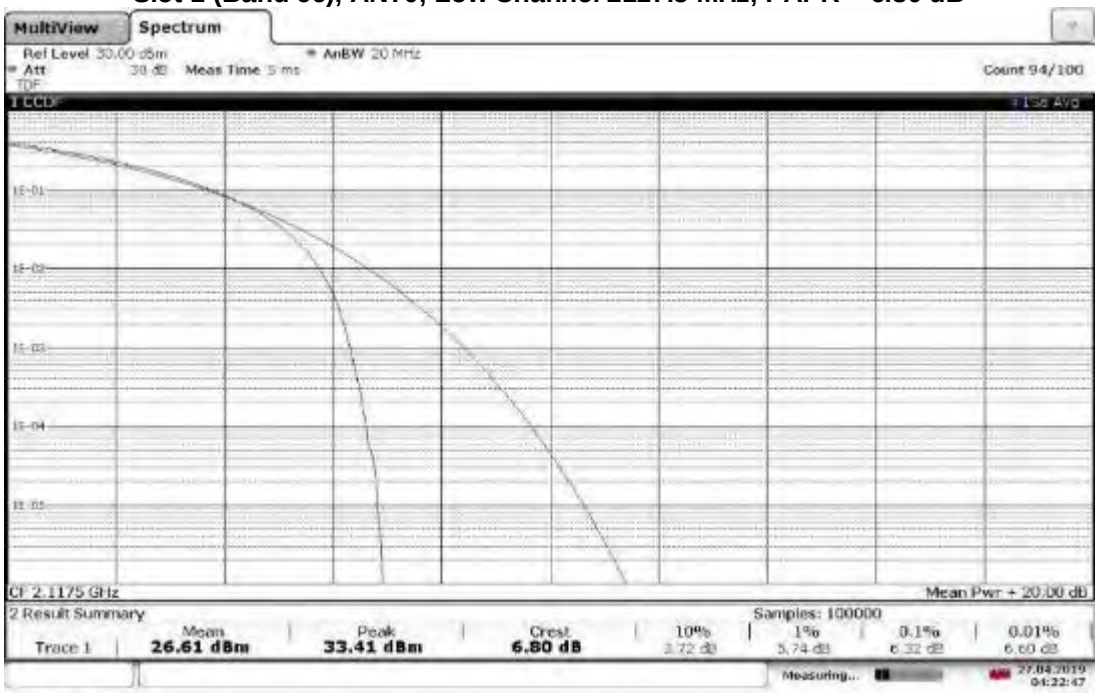
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, PAPR = 6.71 dB



TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, PAPR = 7.44 dB

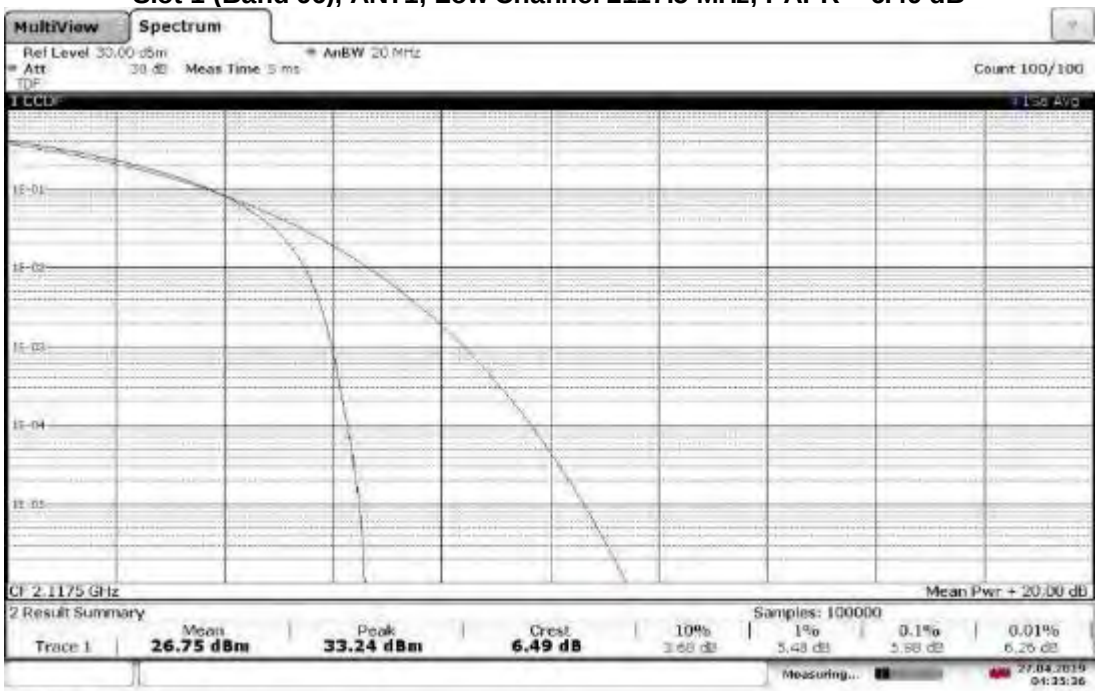


TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 66), ANT0, Low Channel 2117.5 MHz, PAPR = 6.80 dB



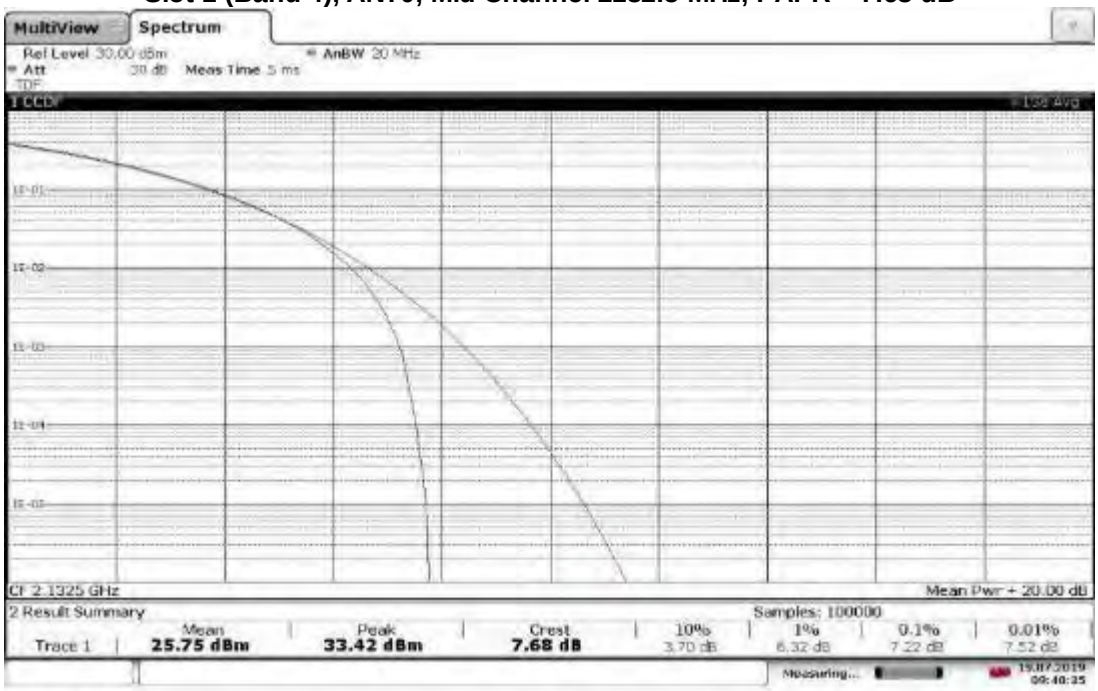
04:22:47 27.04.2019

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 66), ANT1, Low Channel 2117.5 MHz, PAPR = 6.49 dB

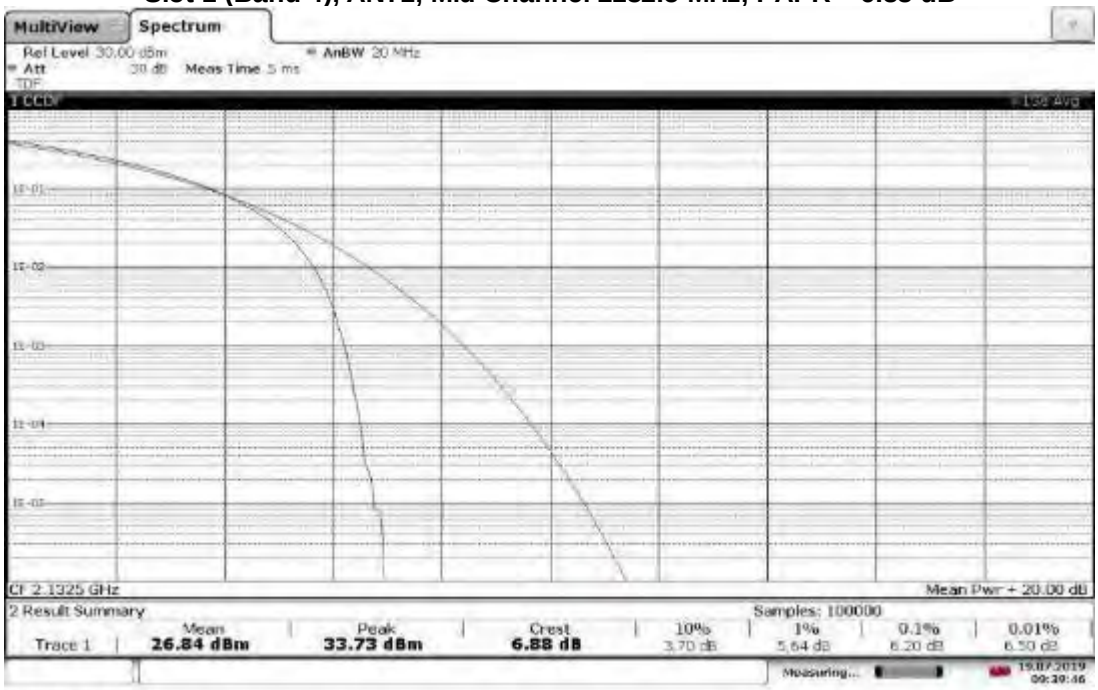


04:35:37 27.04.2019

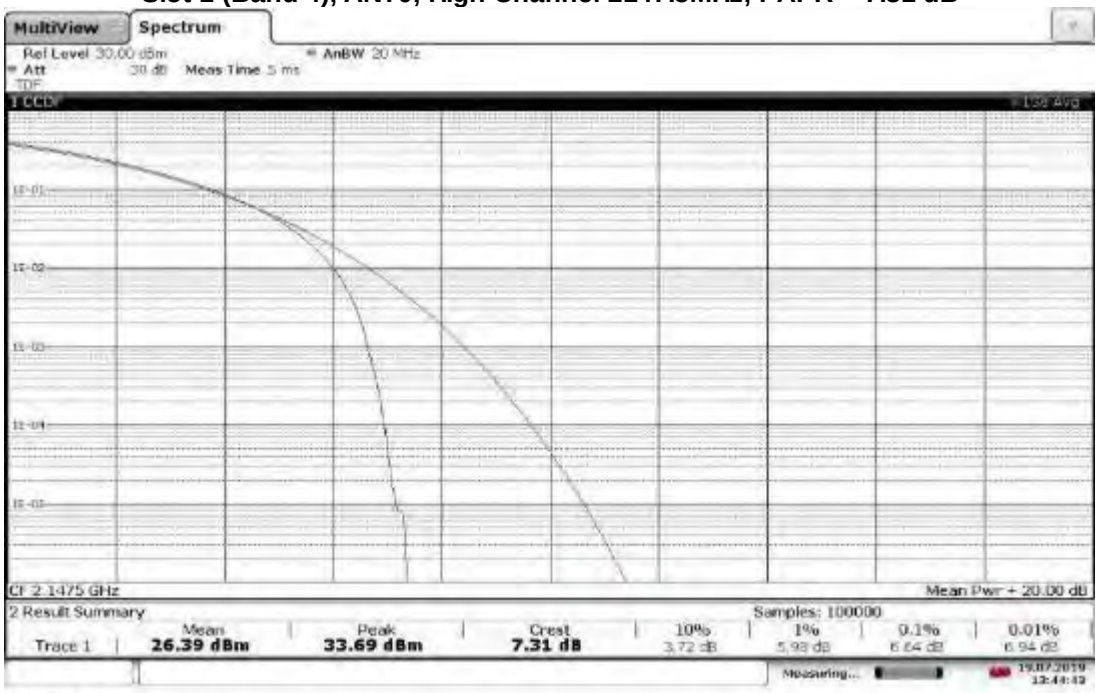
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.68 dB



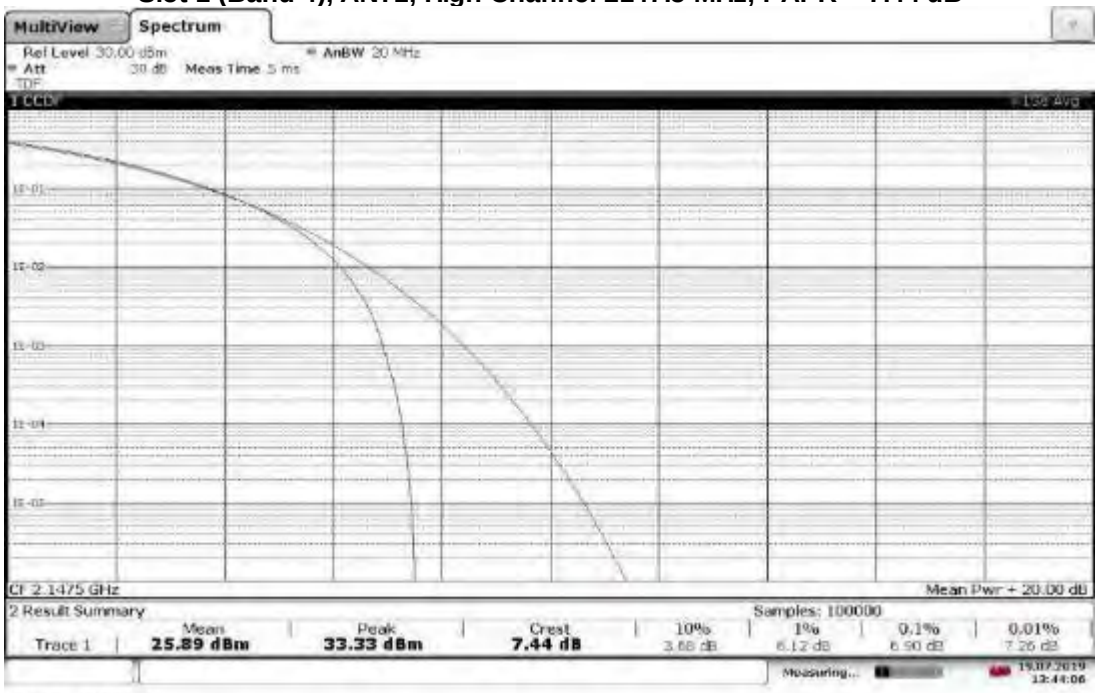
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.88 dB



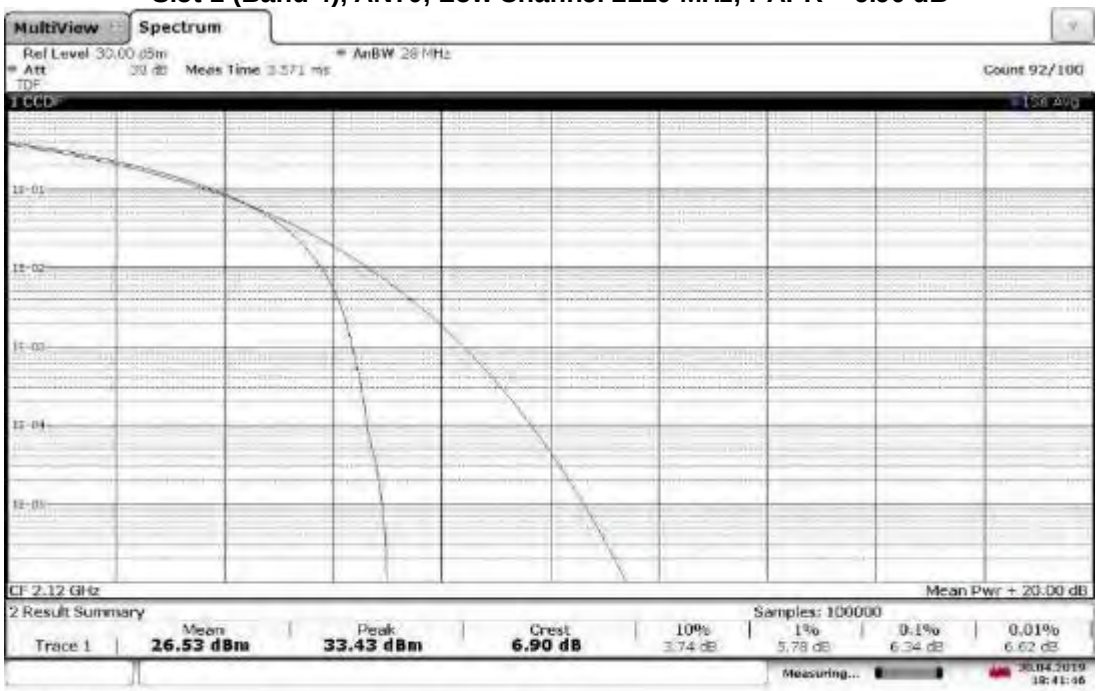
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5MHz, PAPR = 7.31 dB



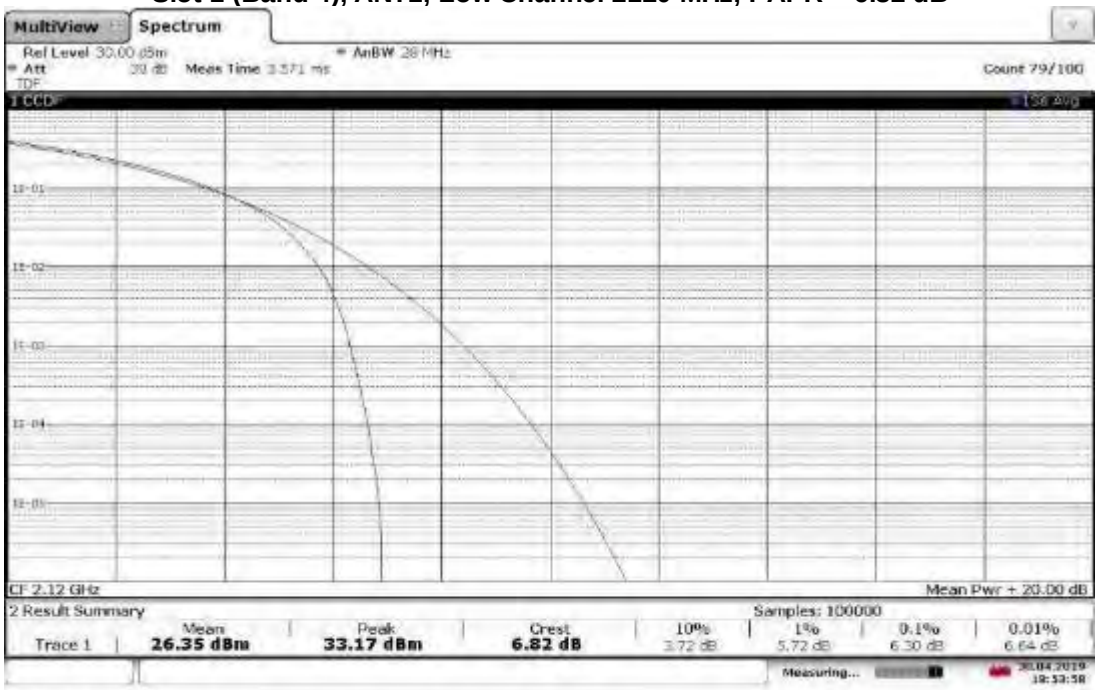
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, PAPR = 7.44 dB



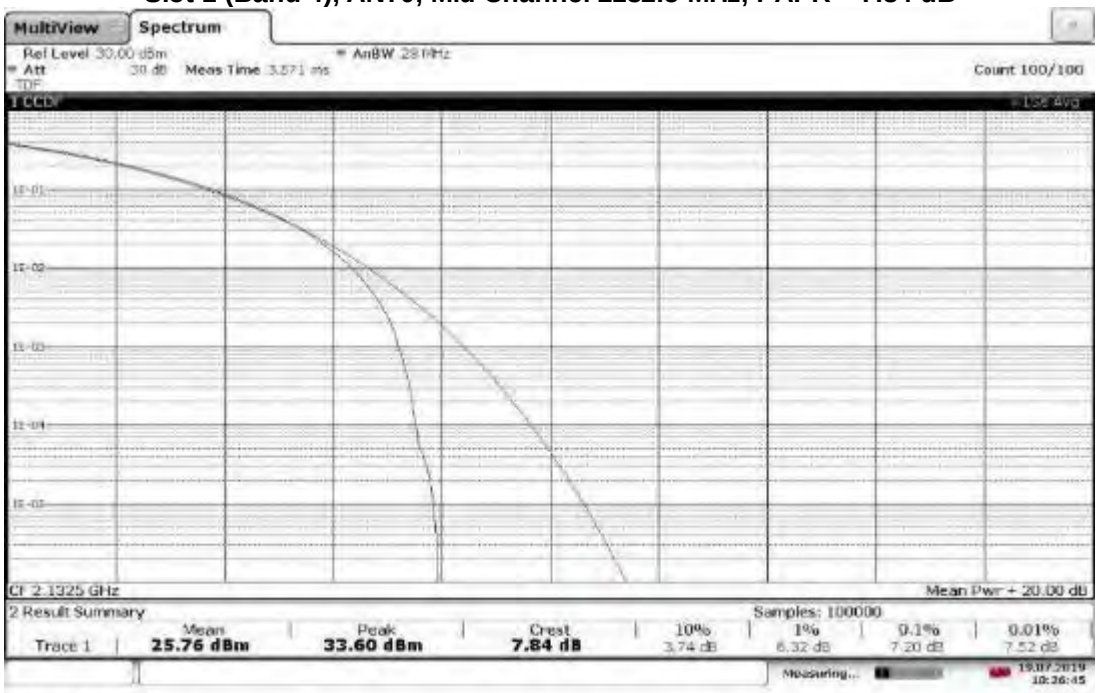
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, PAPR = 6.90 dB



TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, PAPR = 6.82 dB



TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.84 dB



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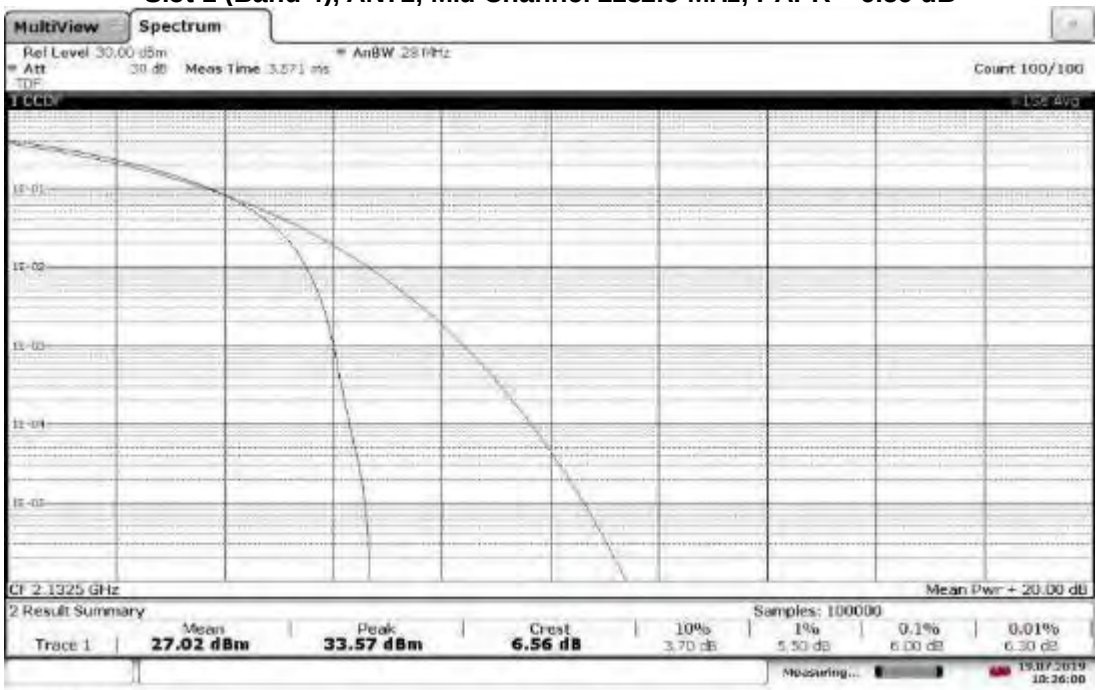
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.56 dB



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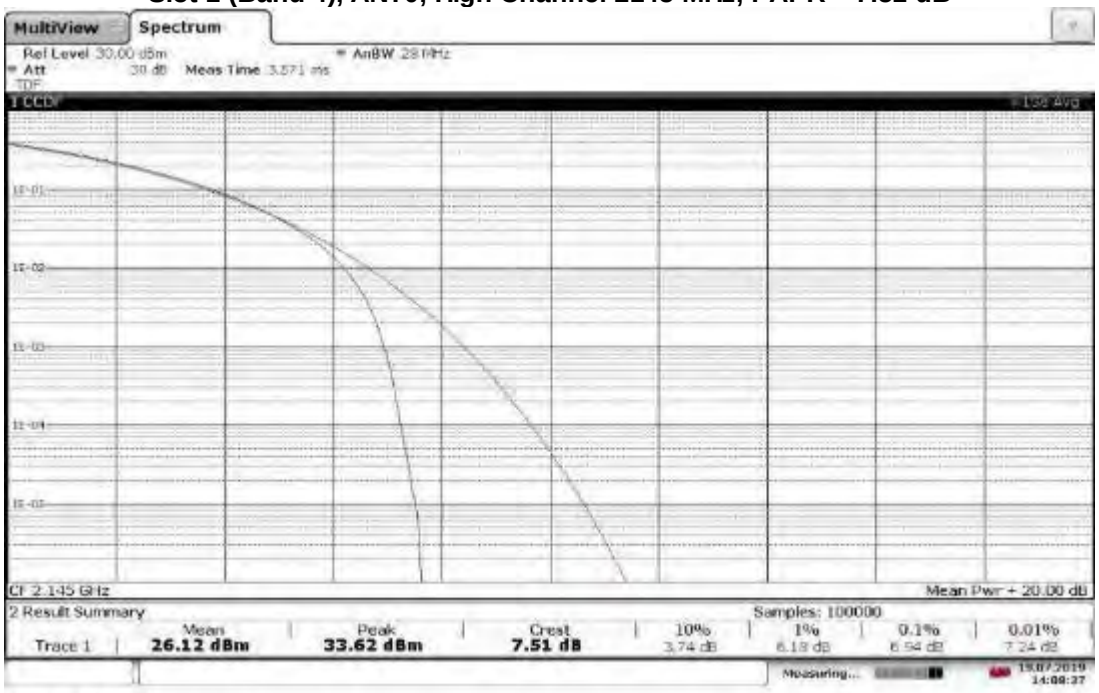
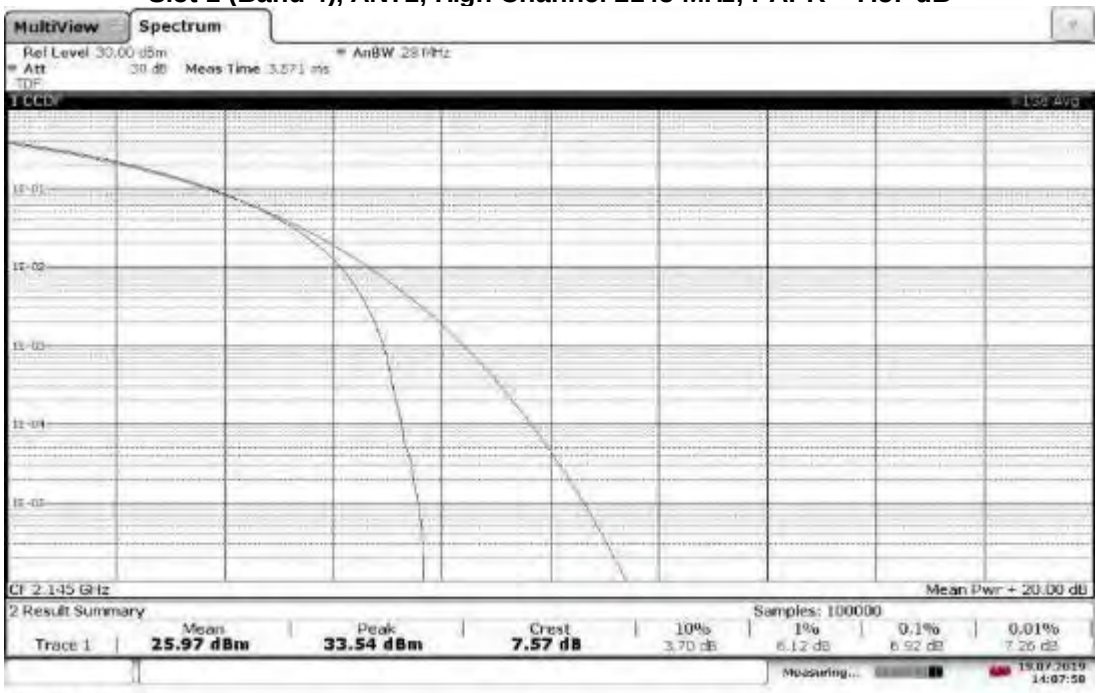
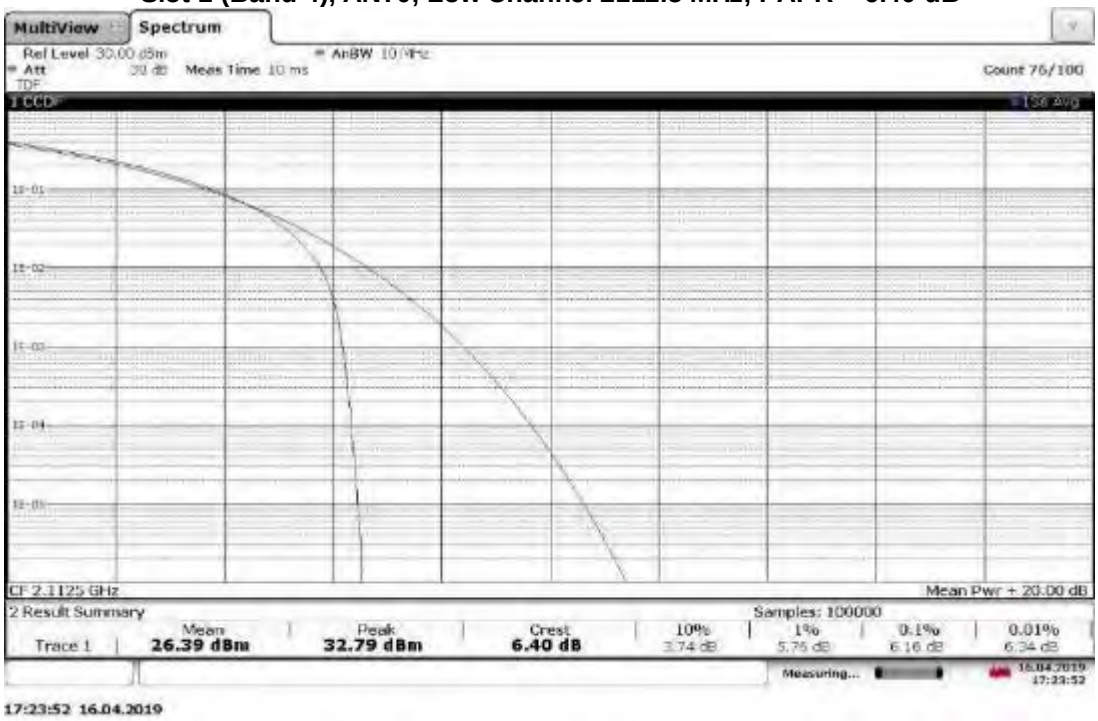
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, PAPR = 7.51 dB



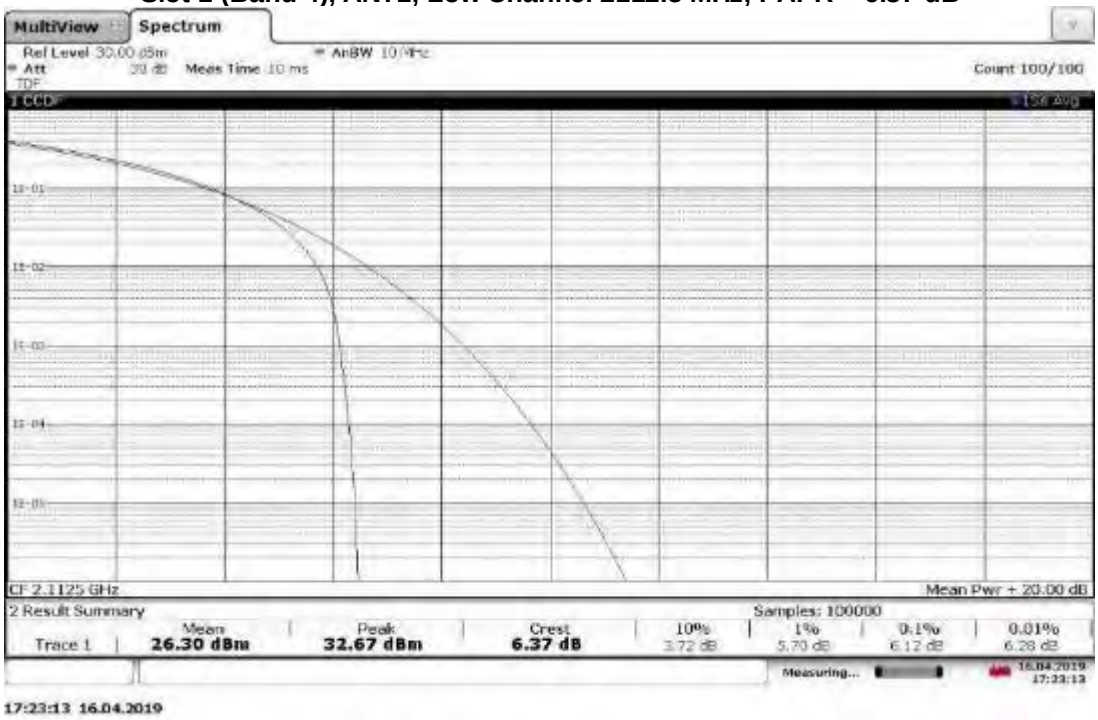
TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, PAPR = 7.57 dB



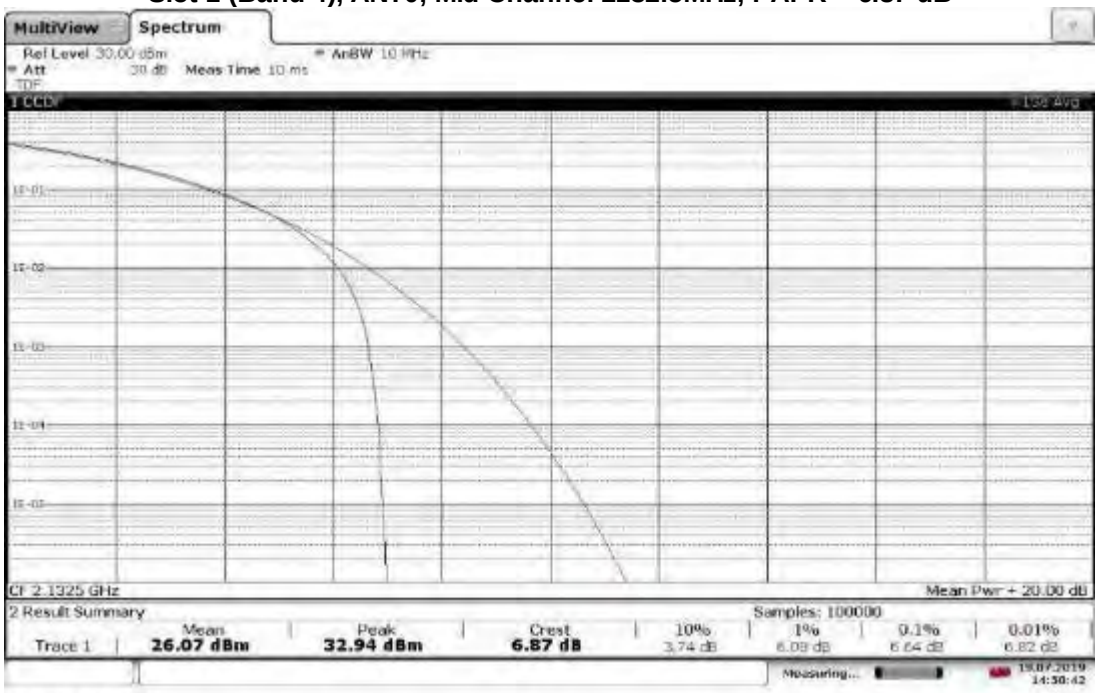
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, PAPR = 6.40 dB



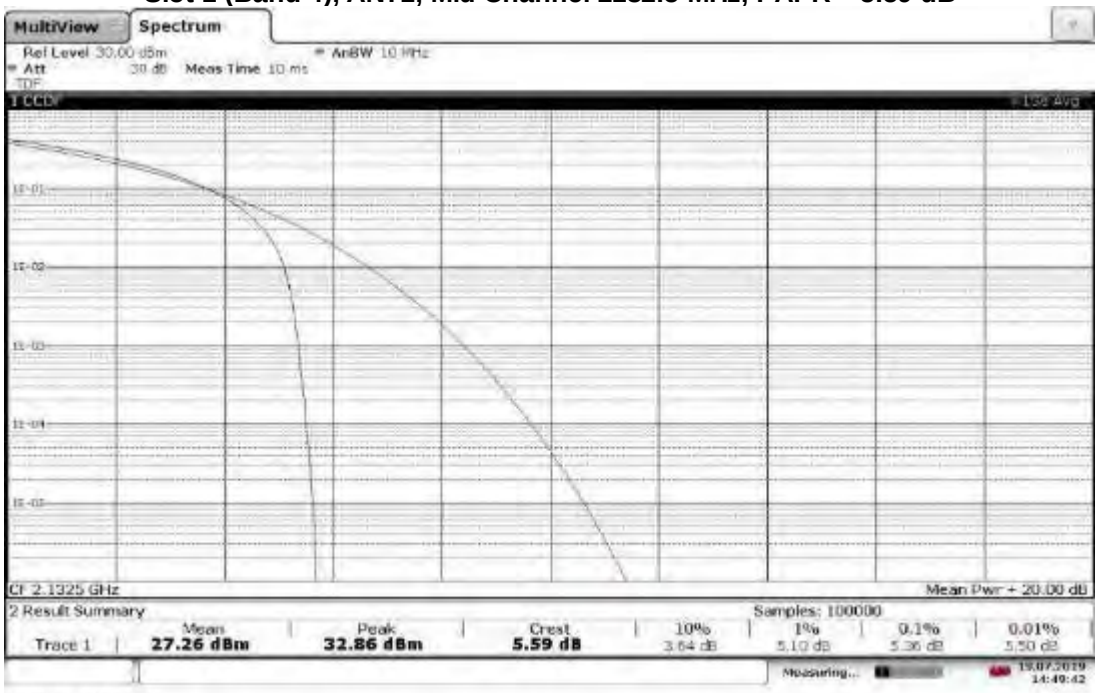
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, PAPR = 6.37 dB



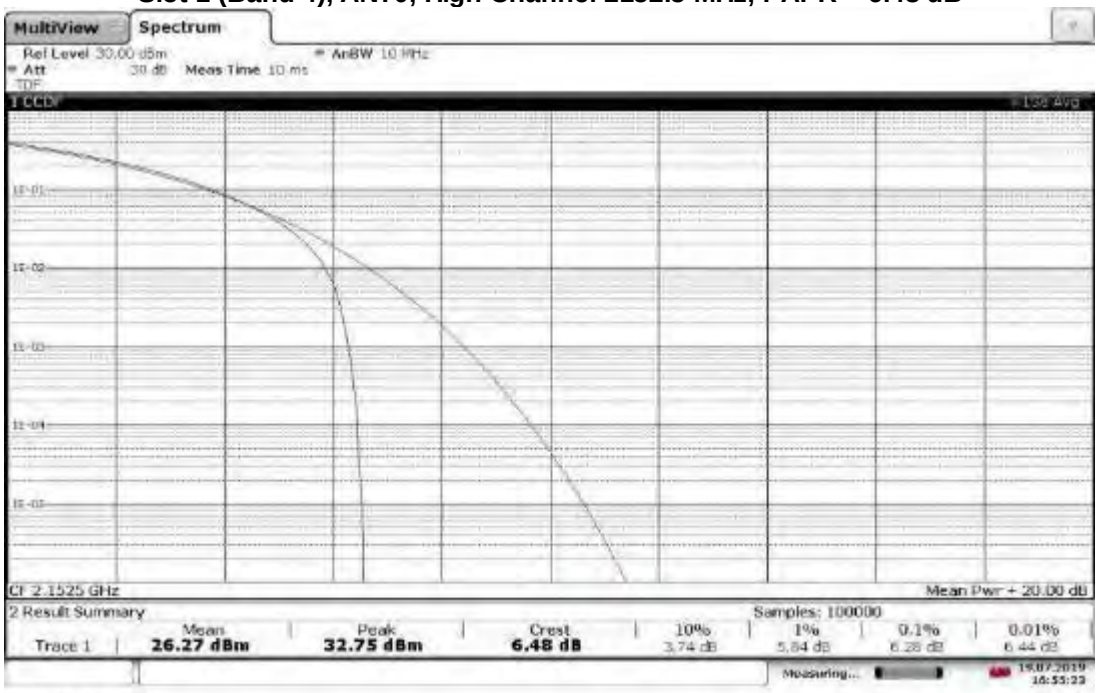
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5MHz, PAPR = 6.87 dB



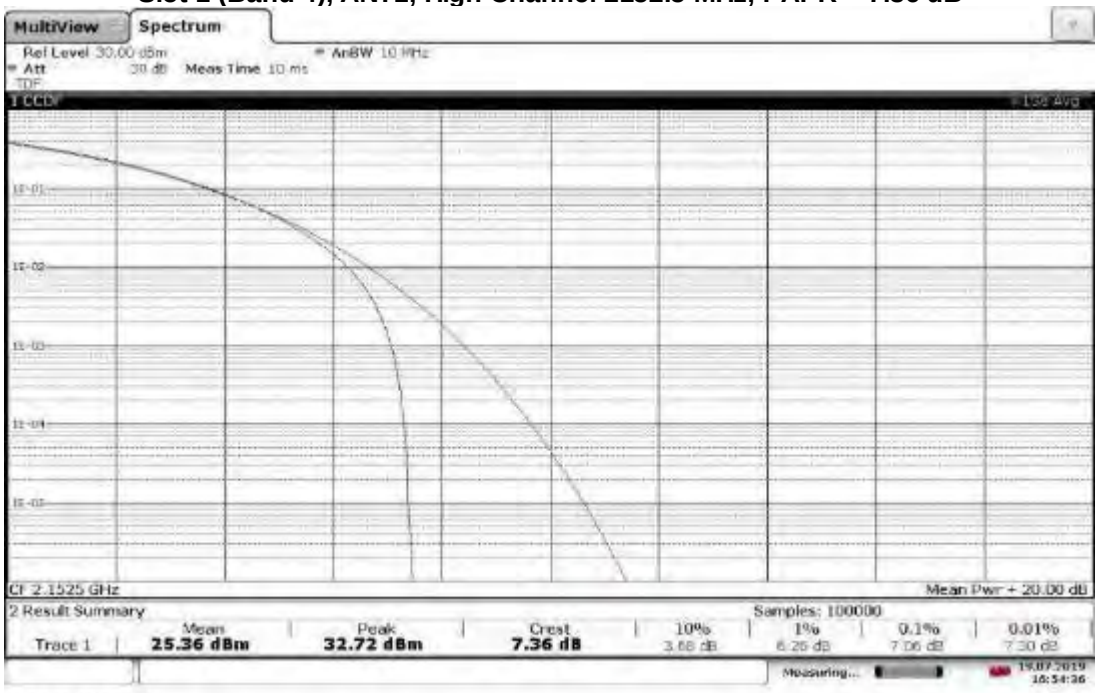
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.59 dB



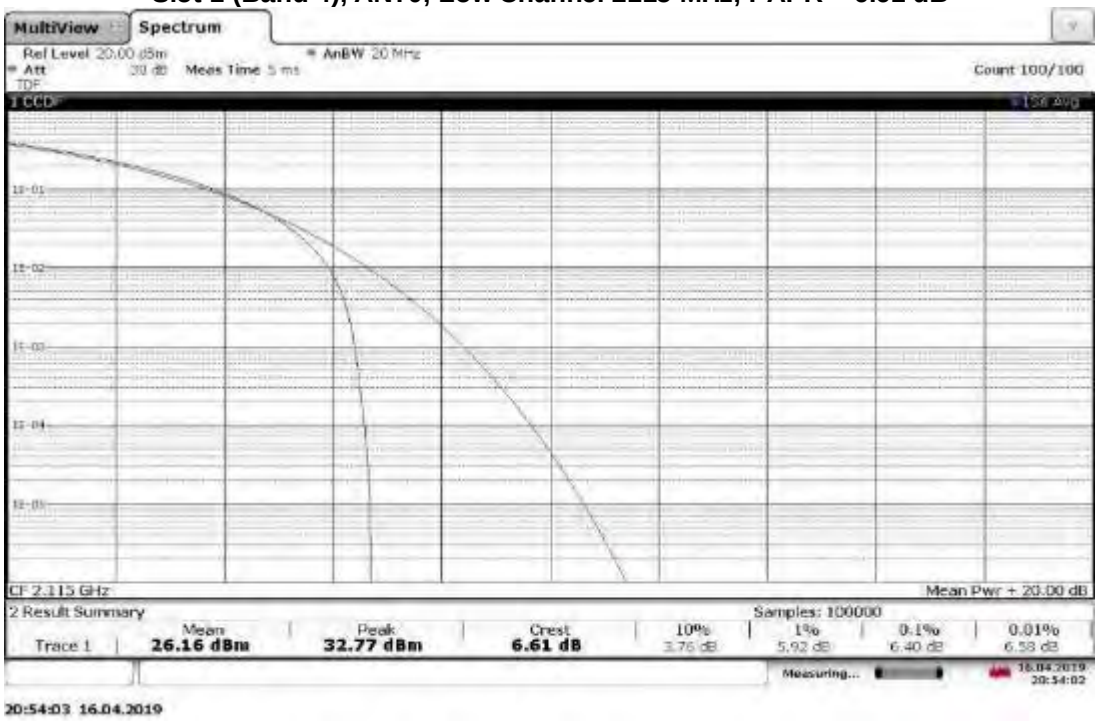
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, PAPR = 6.48 dB



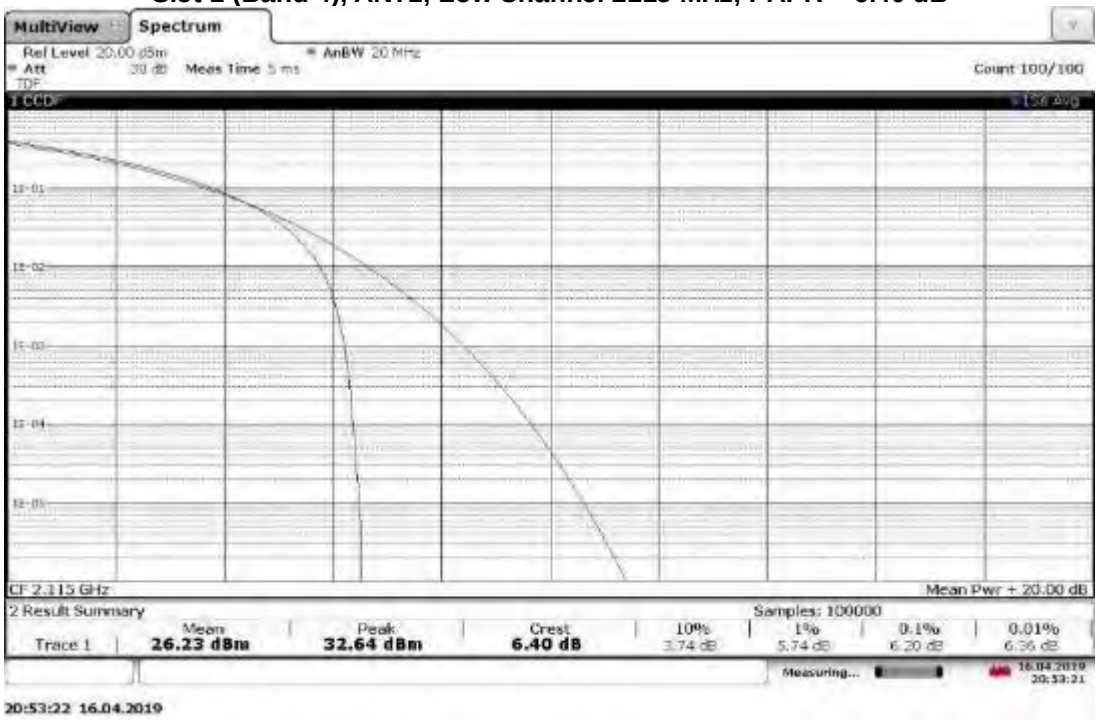
TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, PAPR = 7.36 dB



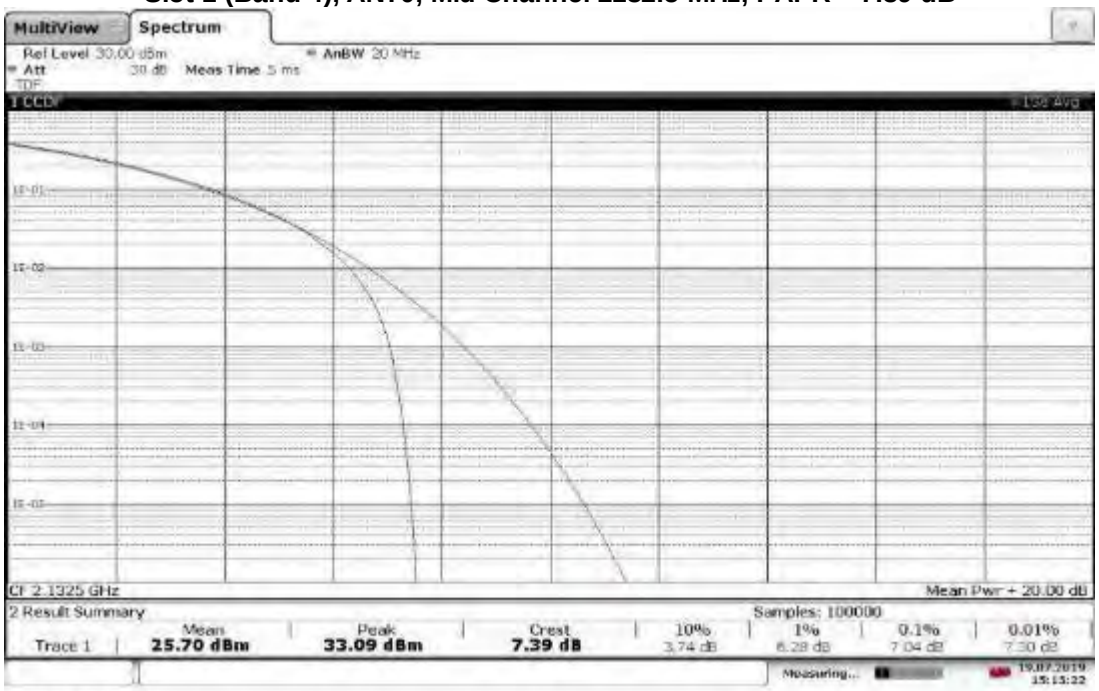
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, PAPR = 6.61 dB



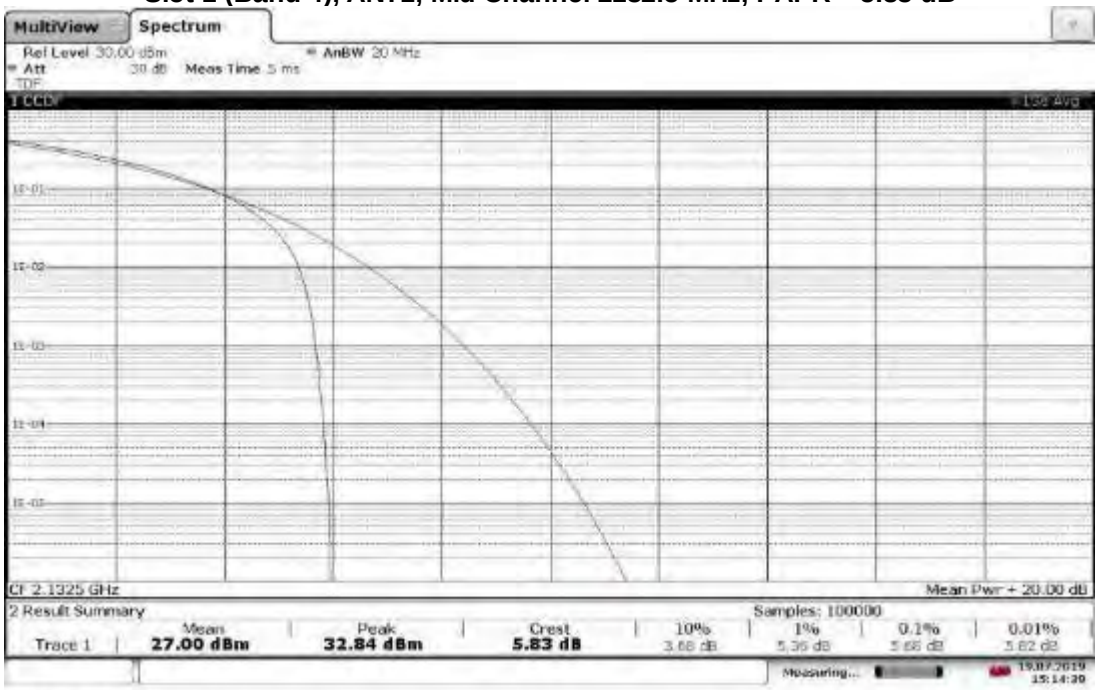
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, PAPR = 6.40 dB



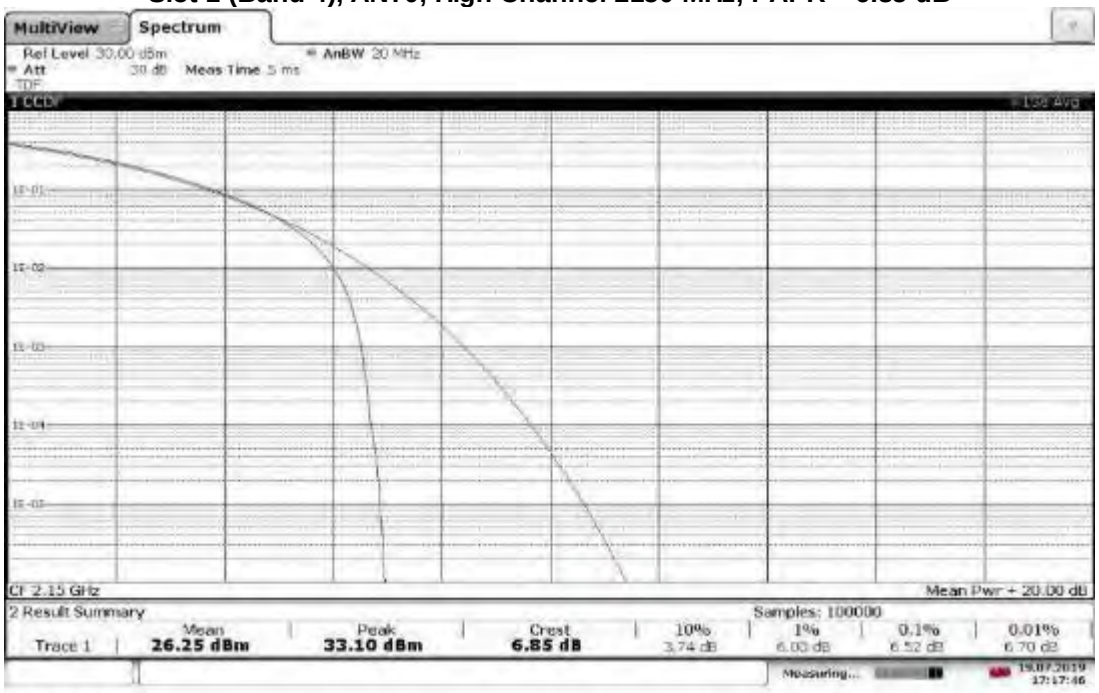
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.39 dB



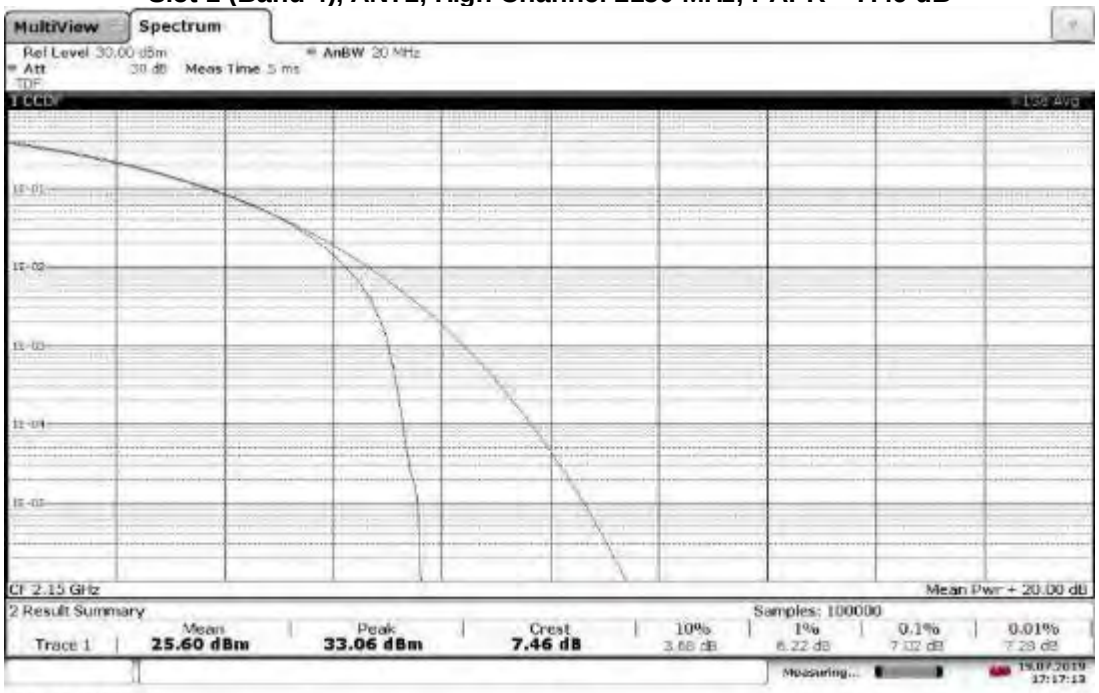
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.83 dB



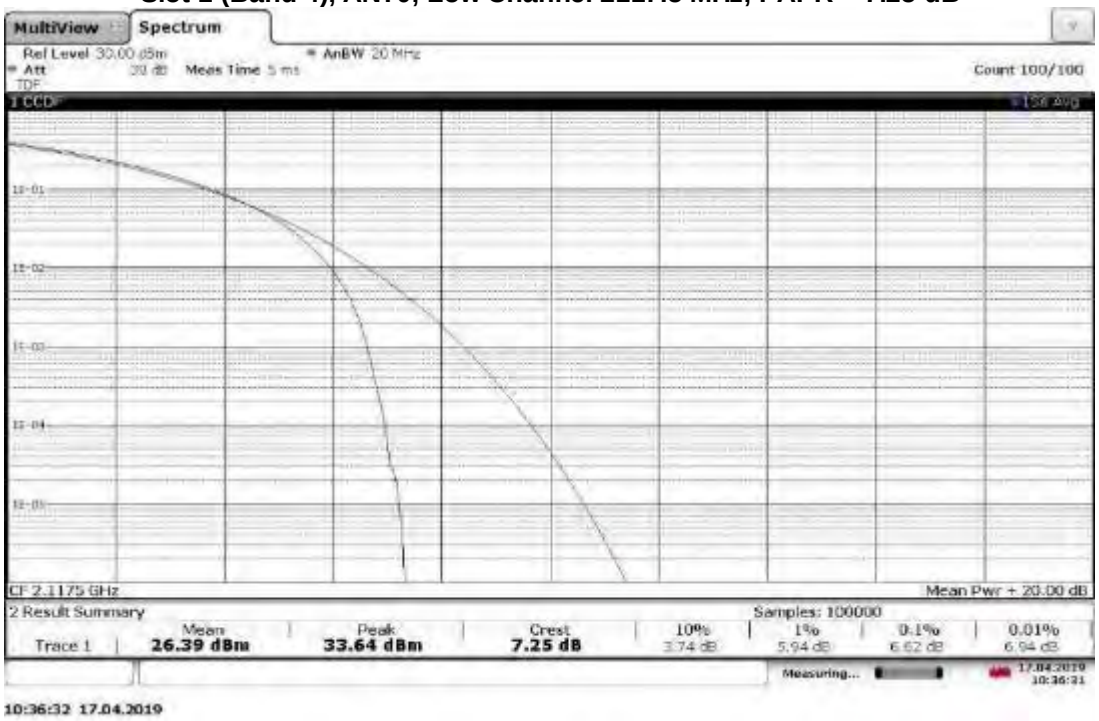
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, PAPR = 6.85 dB



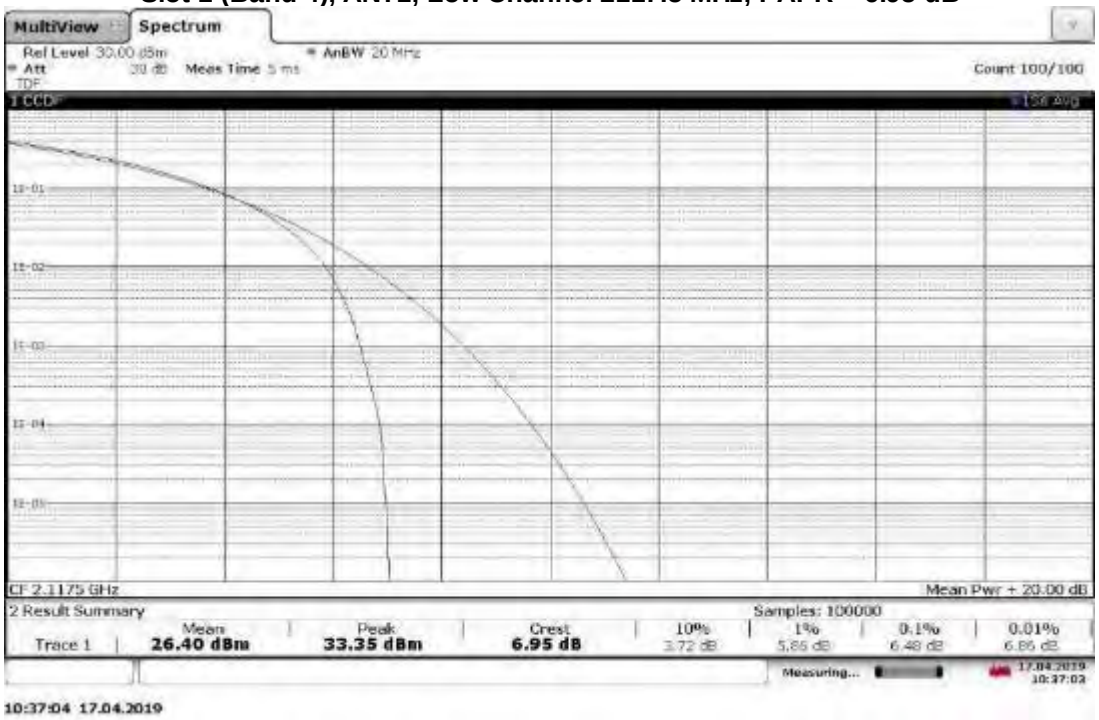
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, PAPR = 7.46 dB



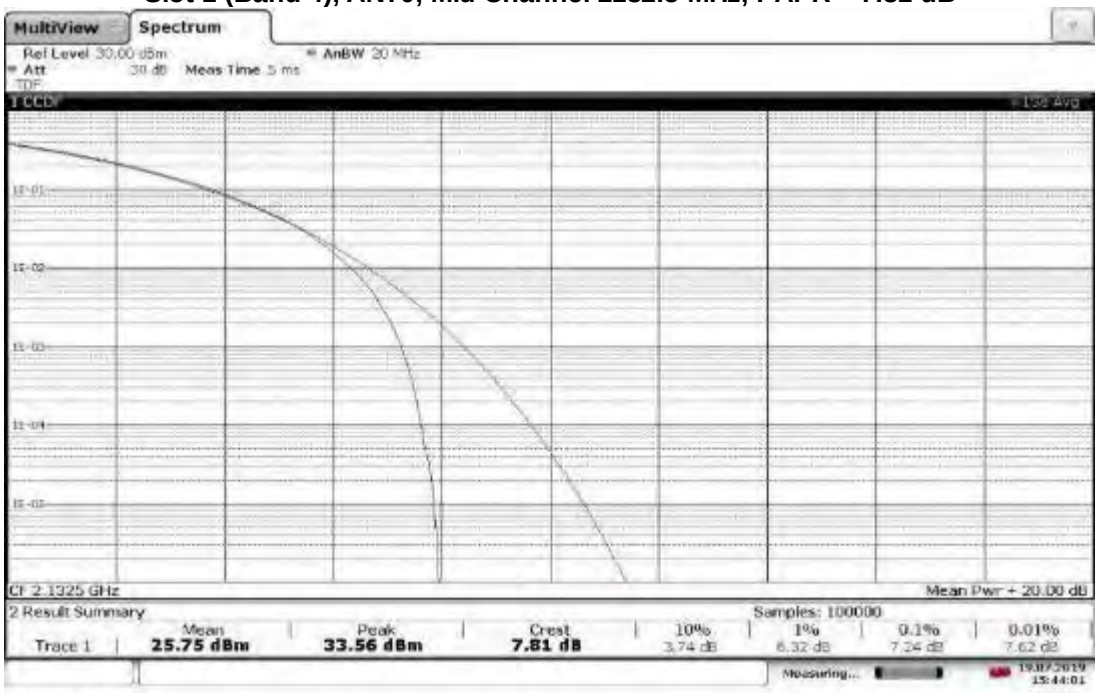
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, PAPR = 7.25 dB



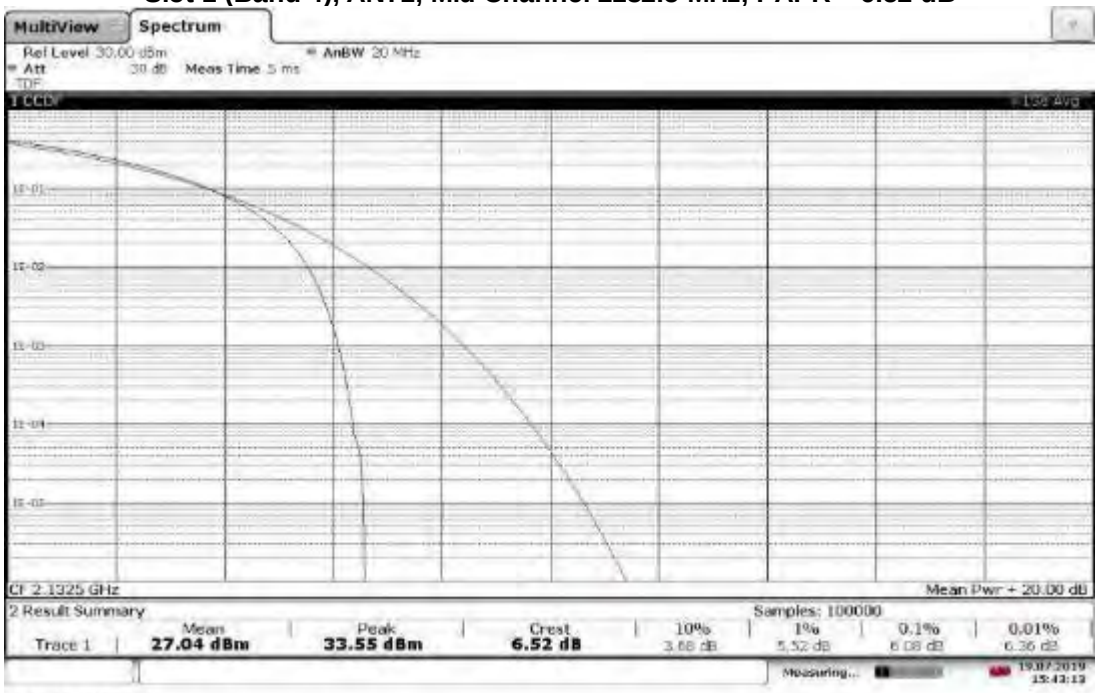
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, PAPR = 6.95 dB



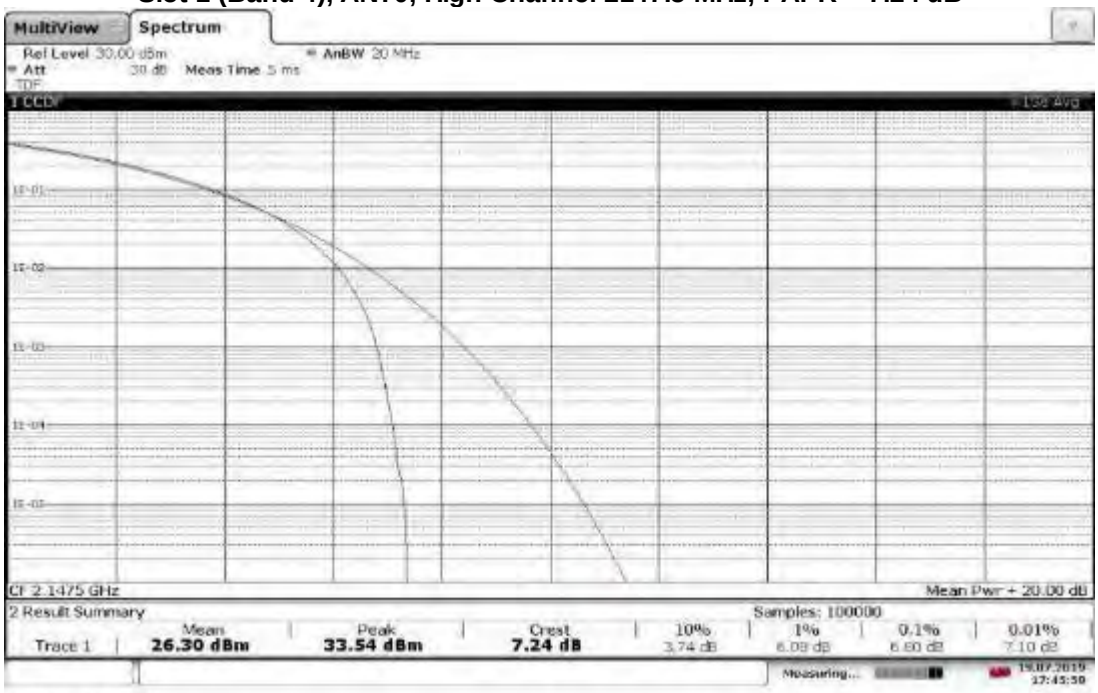
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.81 dB



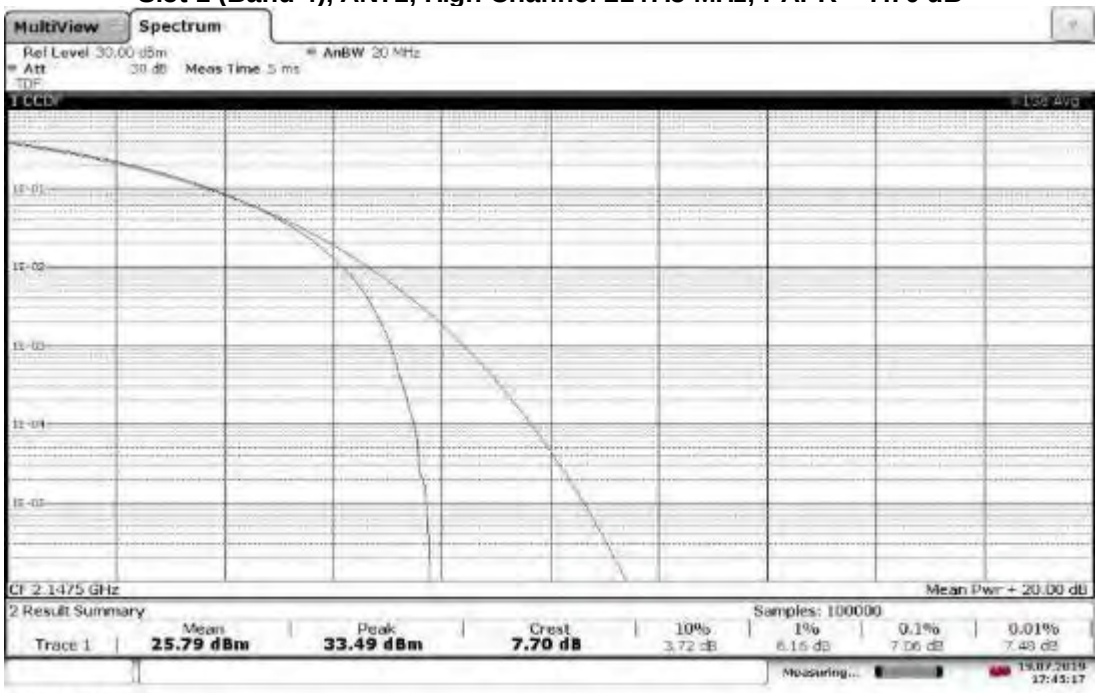
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.52 dB



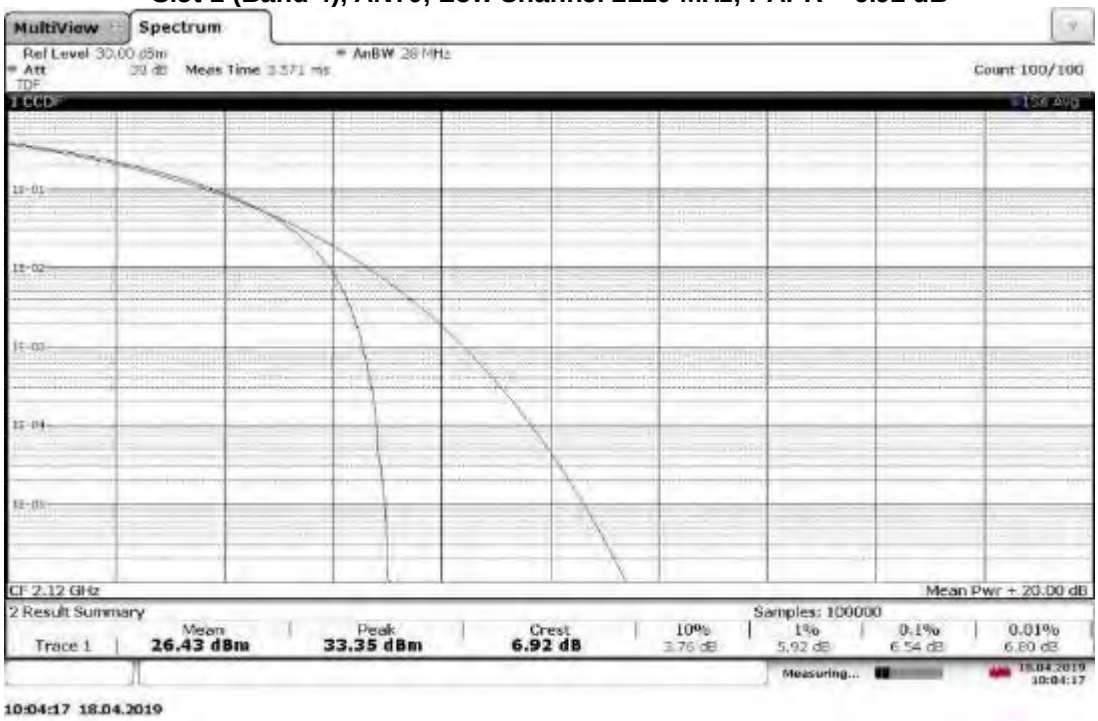
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, PAPR = 7.24 dB



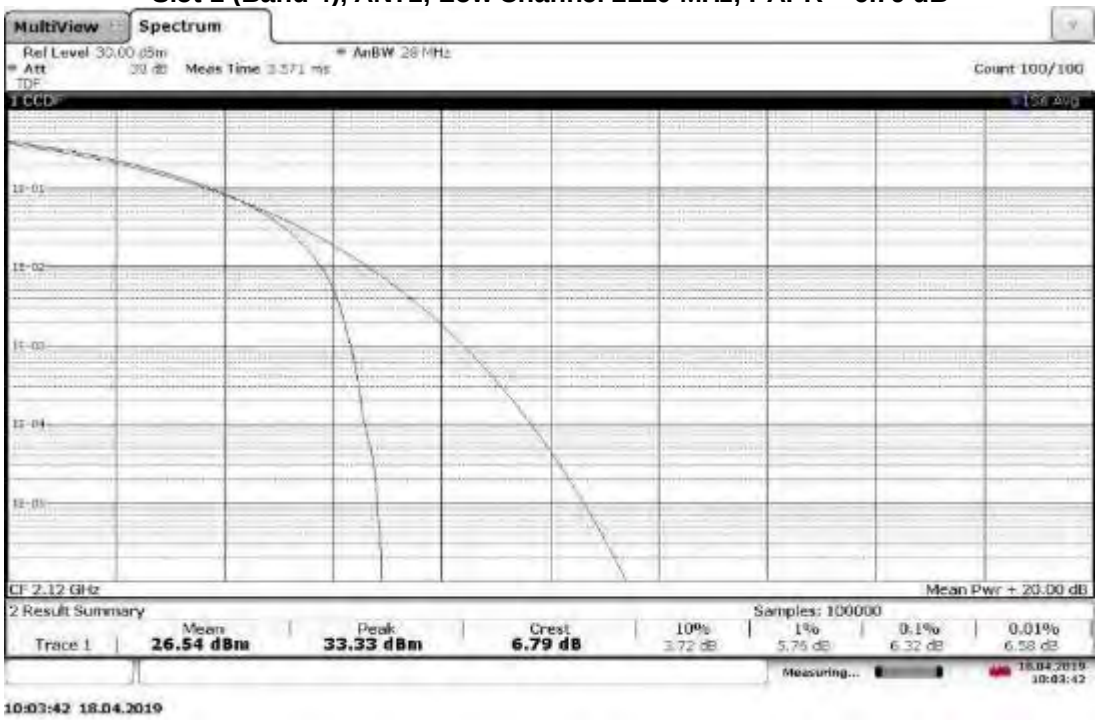
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, PAPR = 7.70 dB



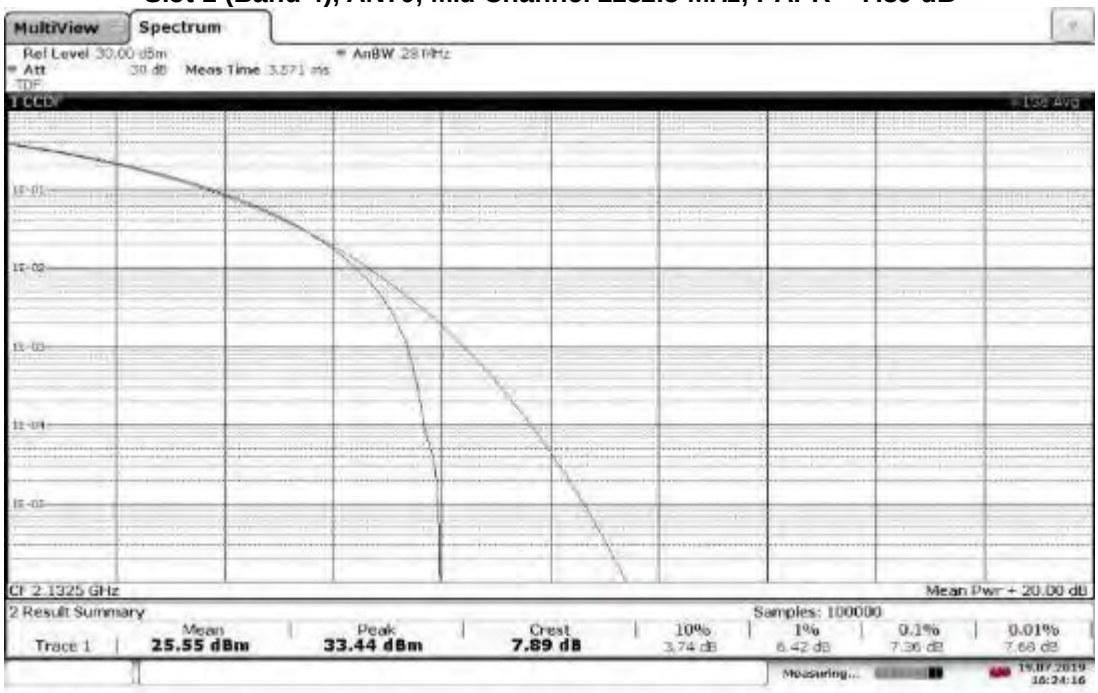
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, PAPR = 6.92 dB



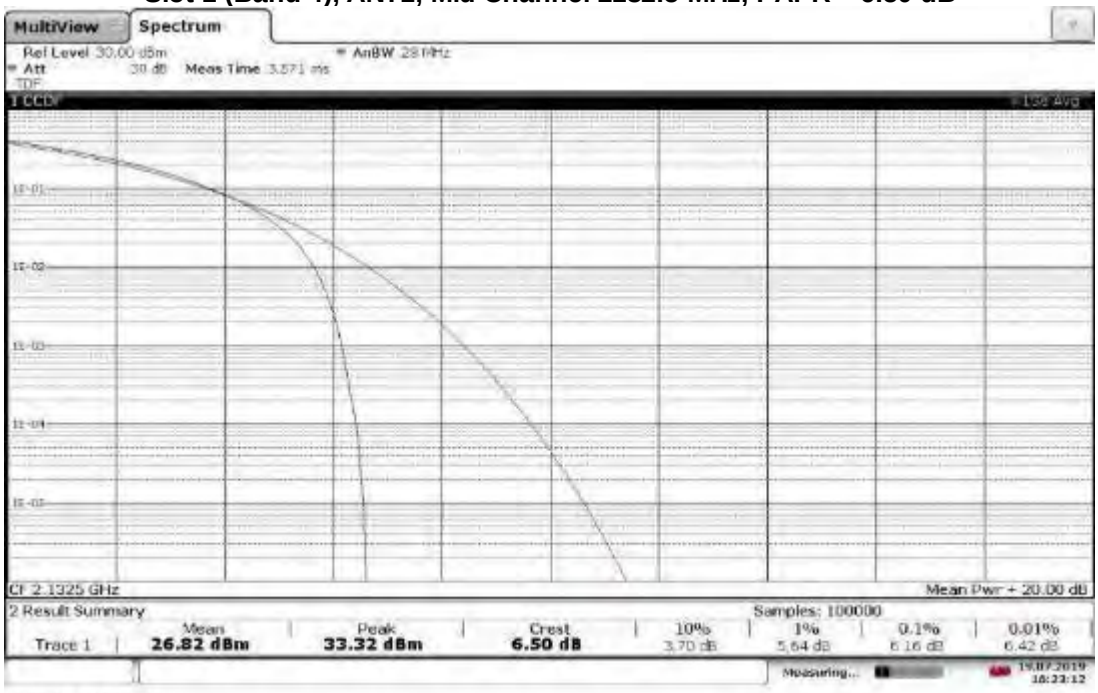
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, PAPR = 6.79 dB



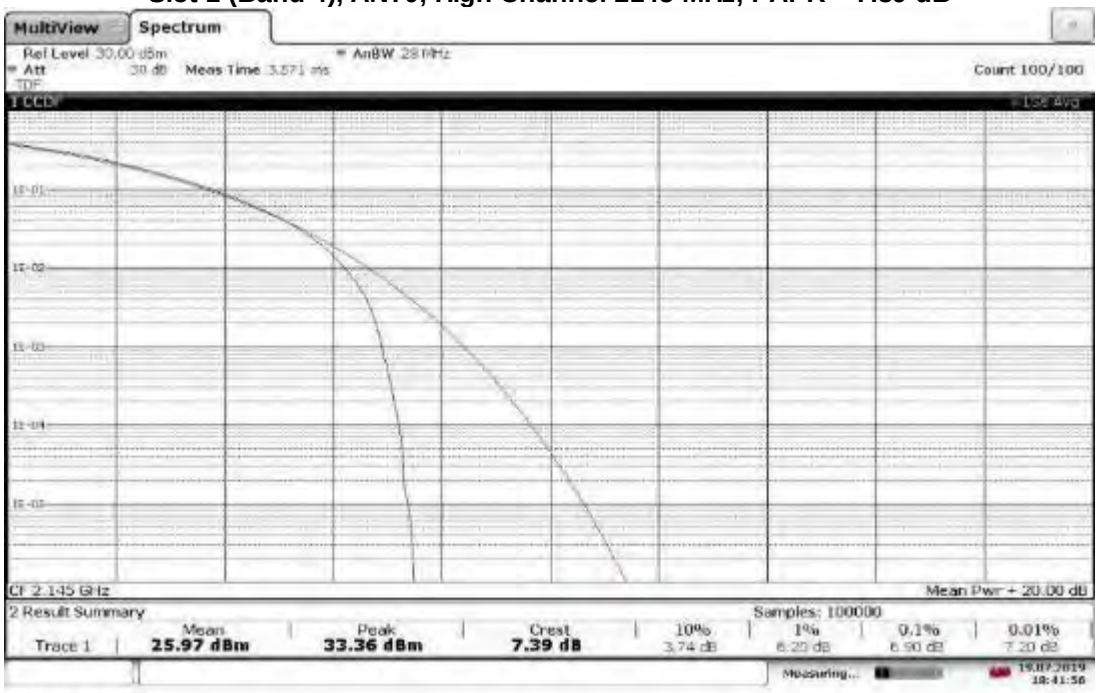
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.89 dB



TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.50 dB



TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, PAPR = 7.39 dB



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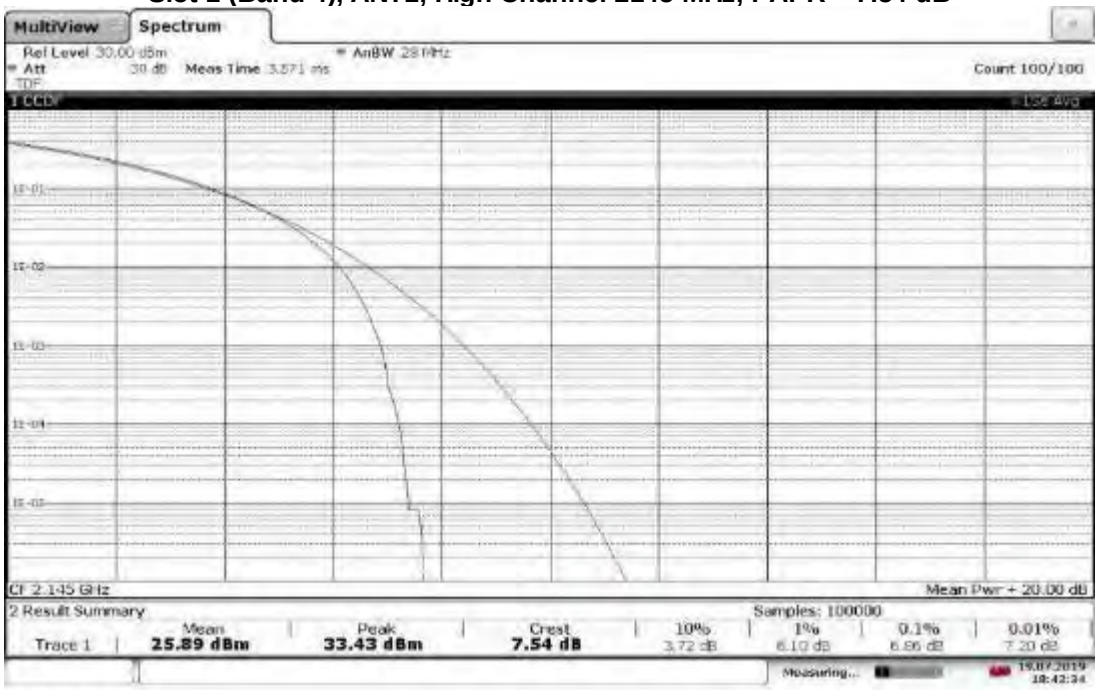
TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, PAPR = 7.54 dB



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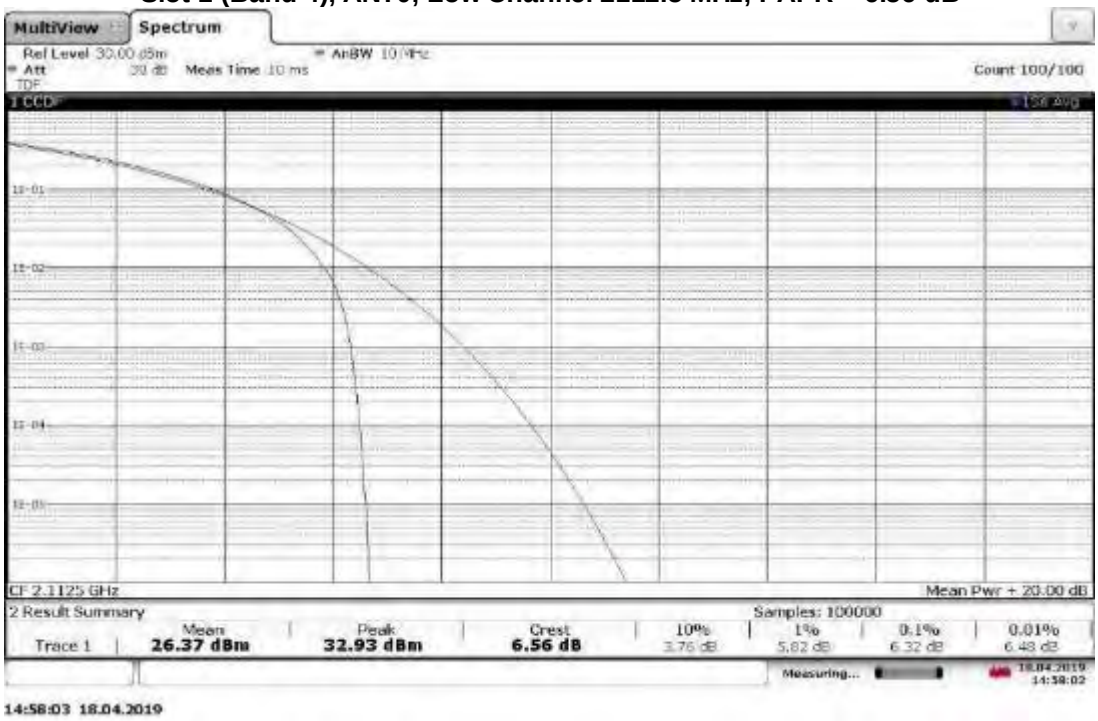
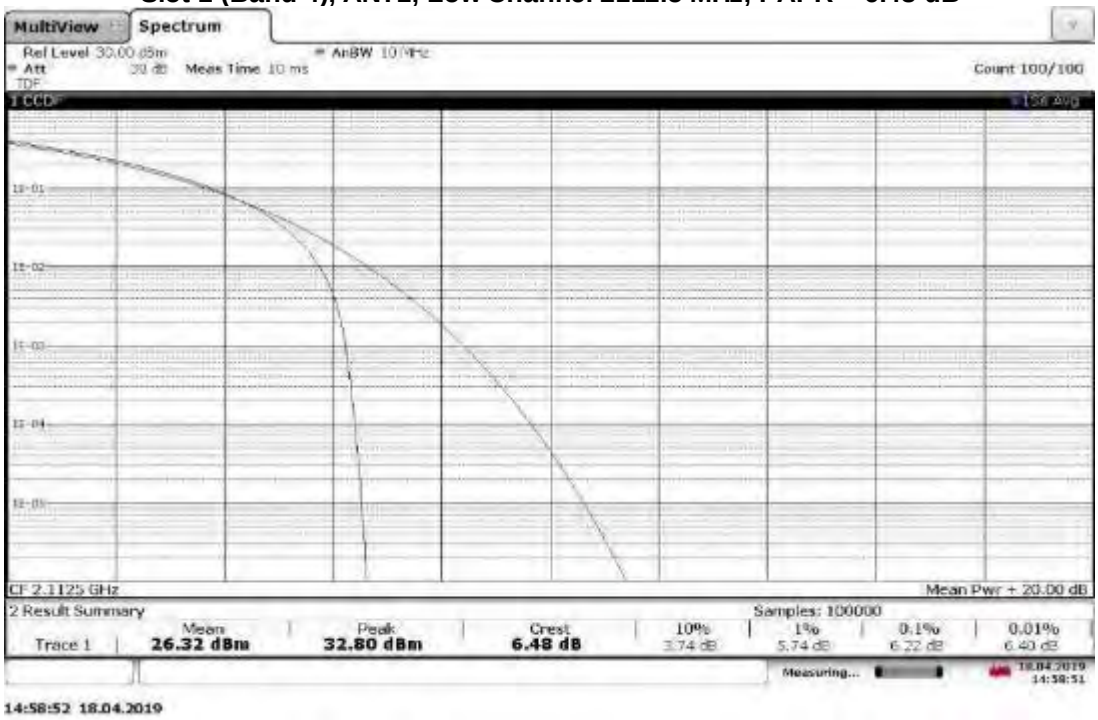
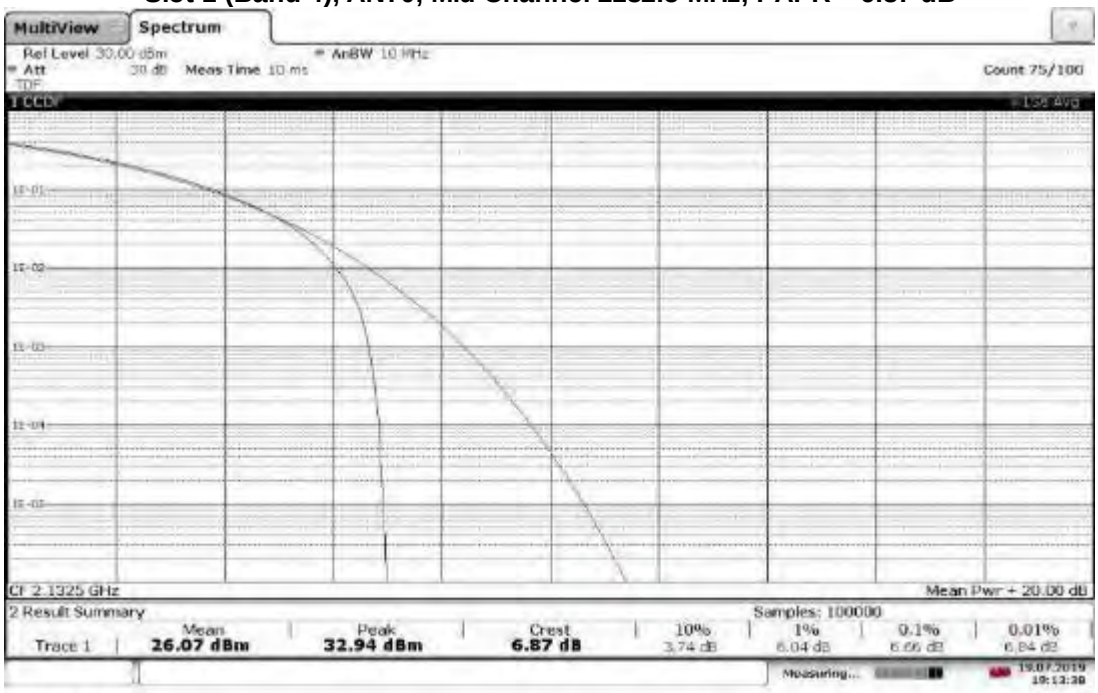
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2112.5 MHz, PAPR = 6.56 dB



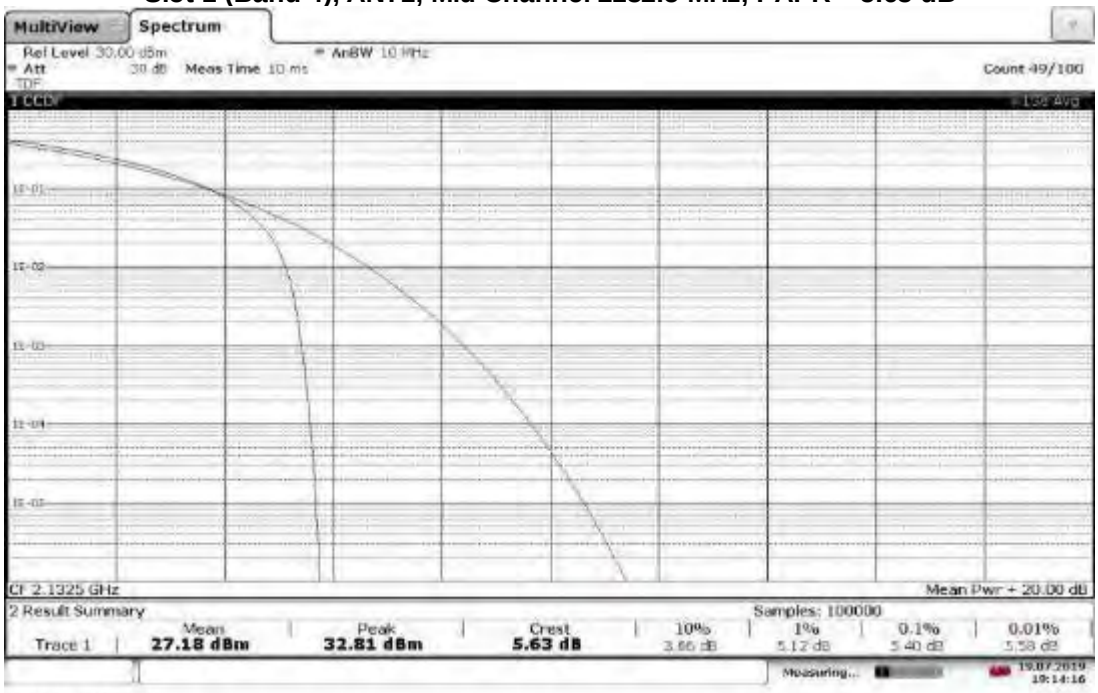
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2112.5 MHz, PAPR = 6.48 dB



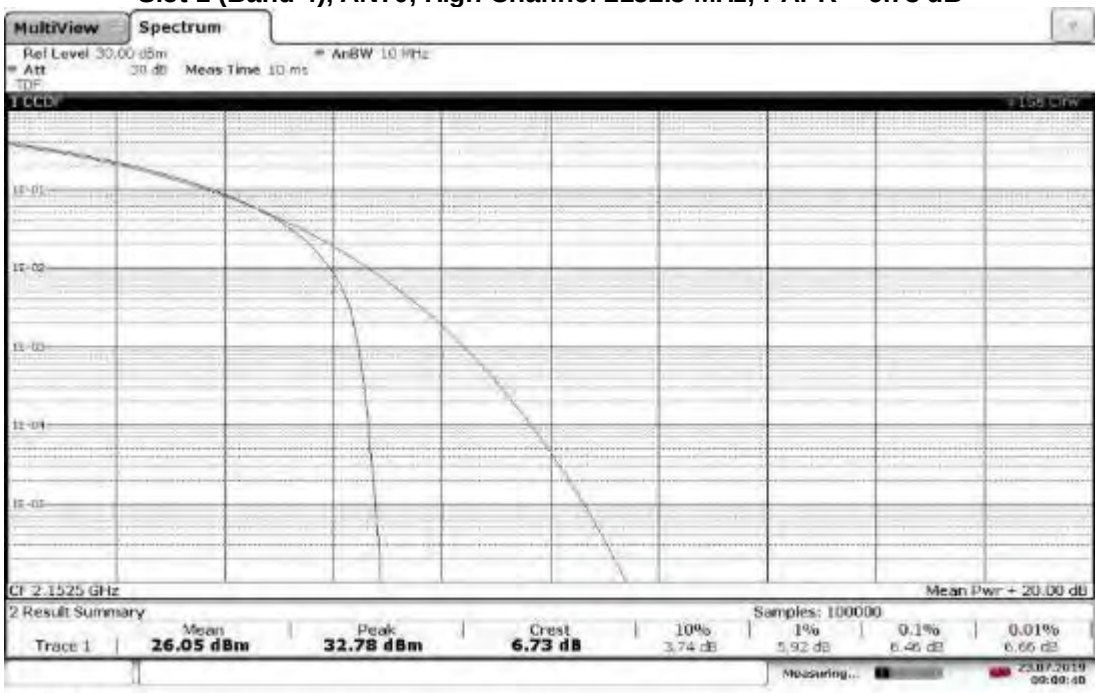
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 6.87 dB



TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.63 dB

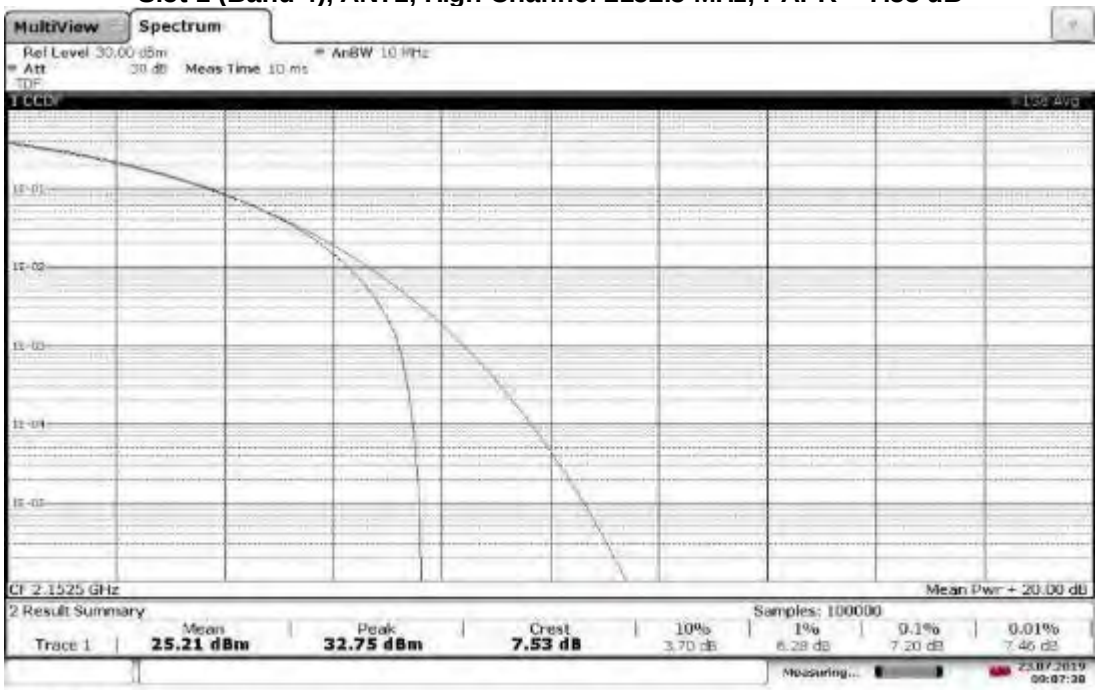


TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2152.5 MHz, PAPR = 6.73 dB



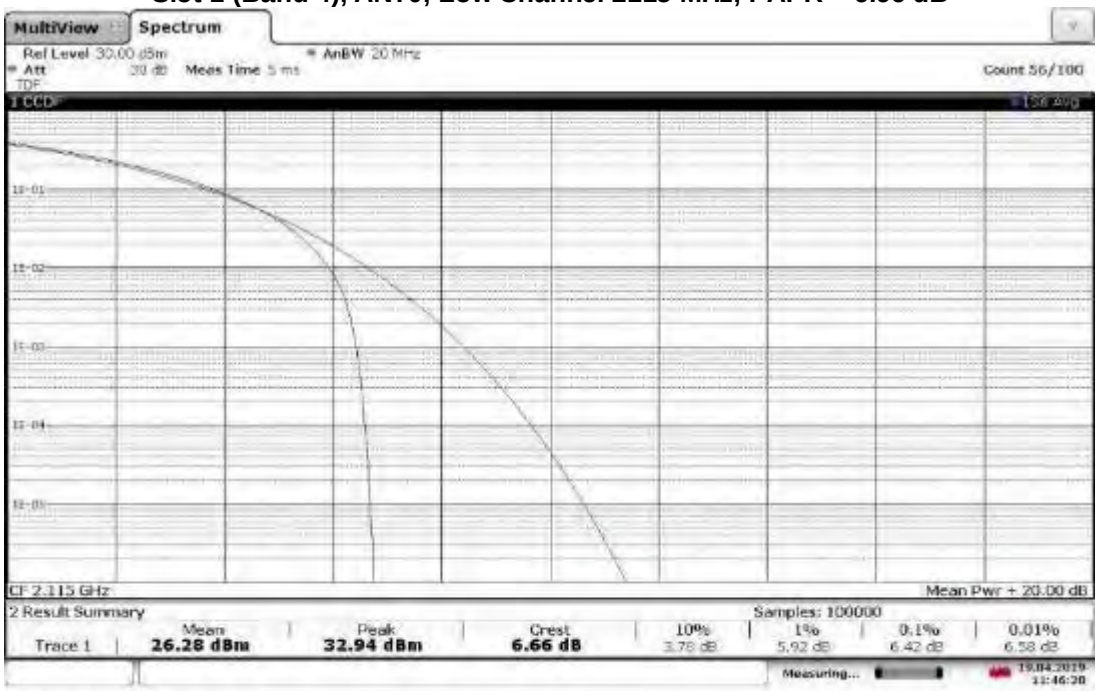
09:00:41 23.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2152.5 MHz, PAPR = 7.53 dB

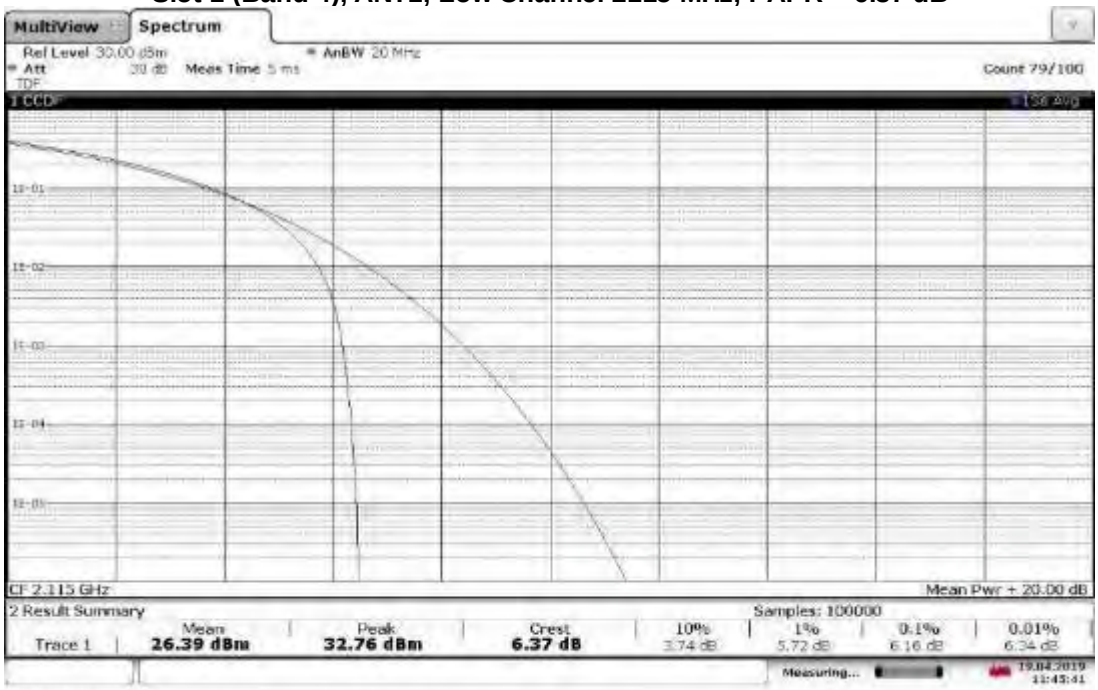


09:07:38 23.07.2019

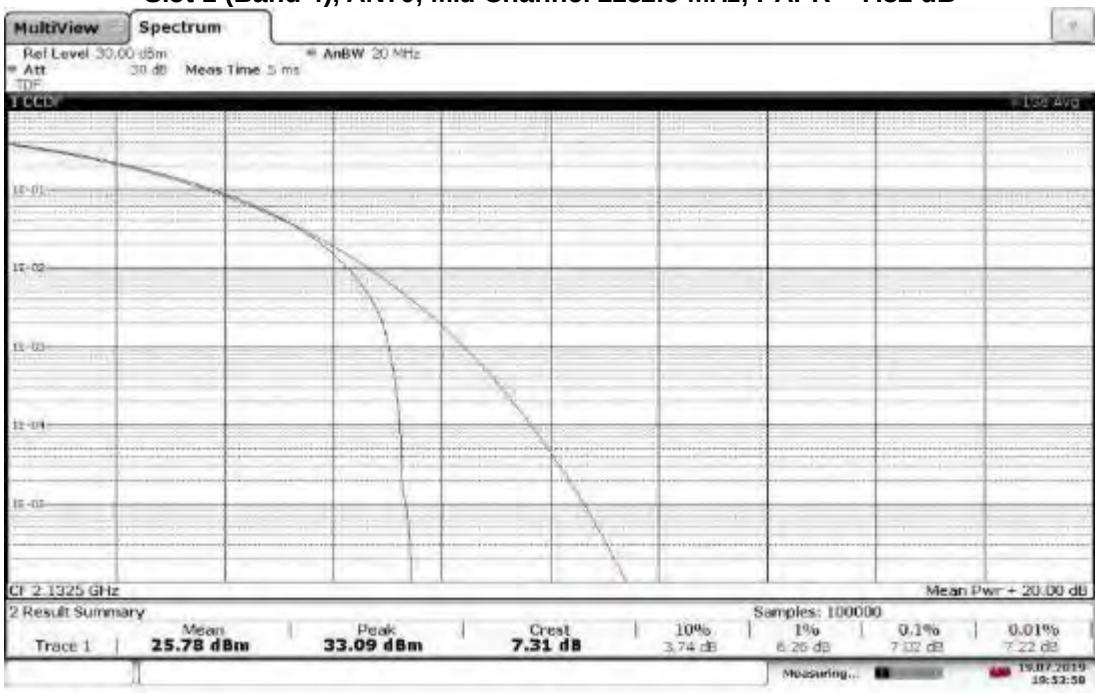
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2115 MHz, PAPR = 6.66 dB



TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2115 MHz, PAPR = 6.37 dB

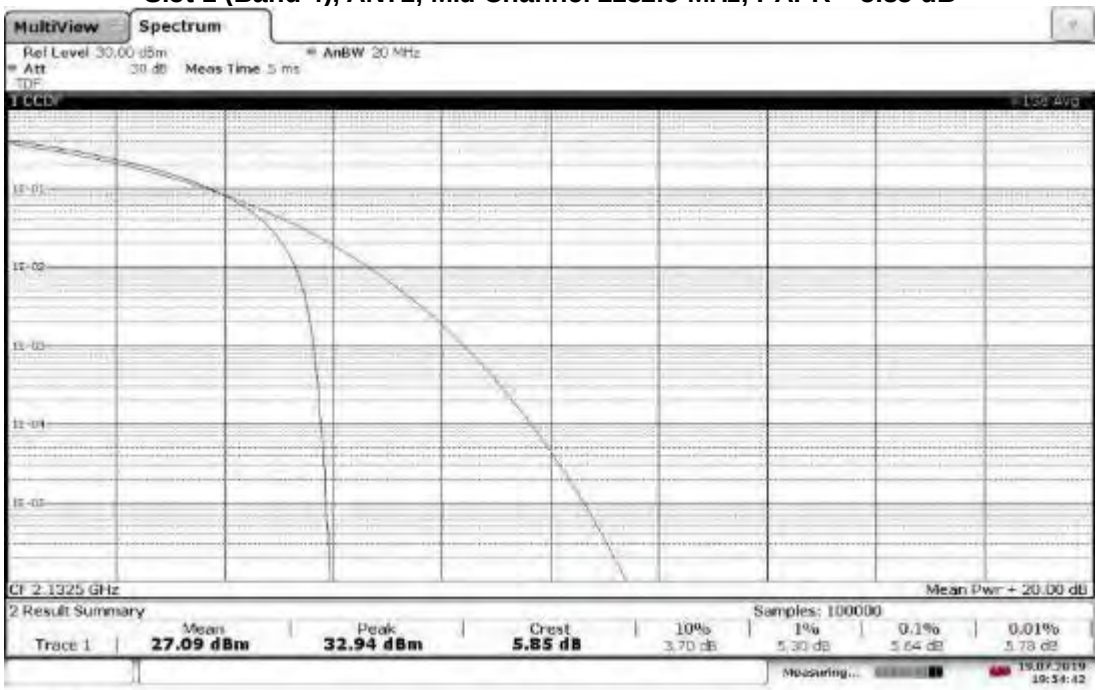


TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 7.31 dB



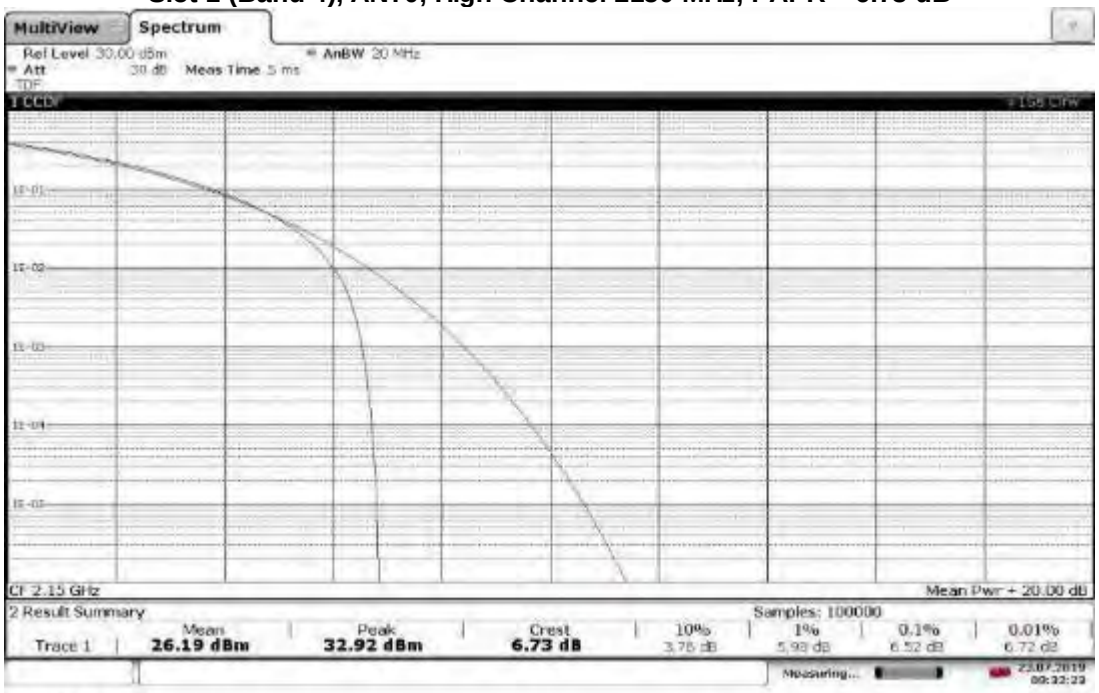
19:53:58 19.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 5.85 dB

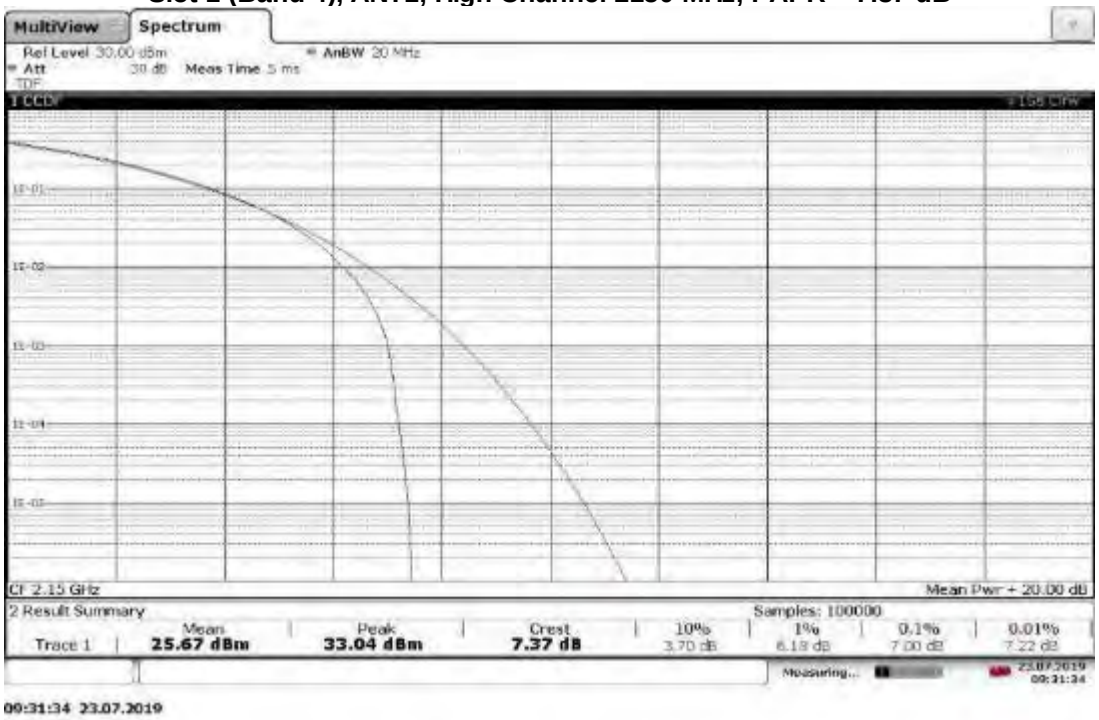


19:54:43 19.07.2019

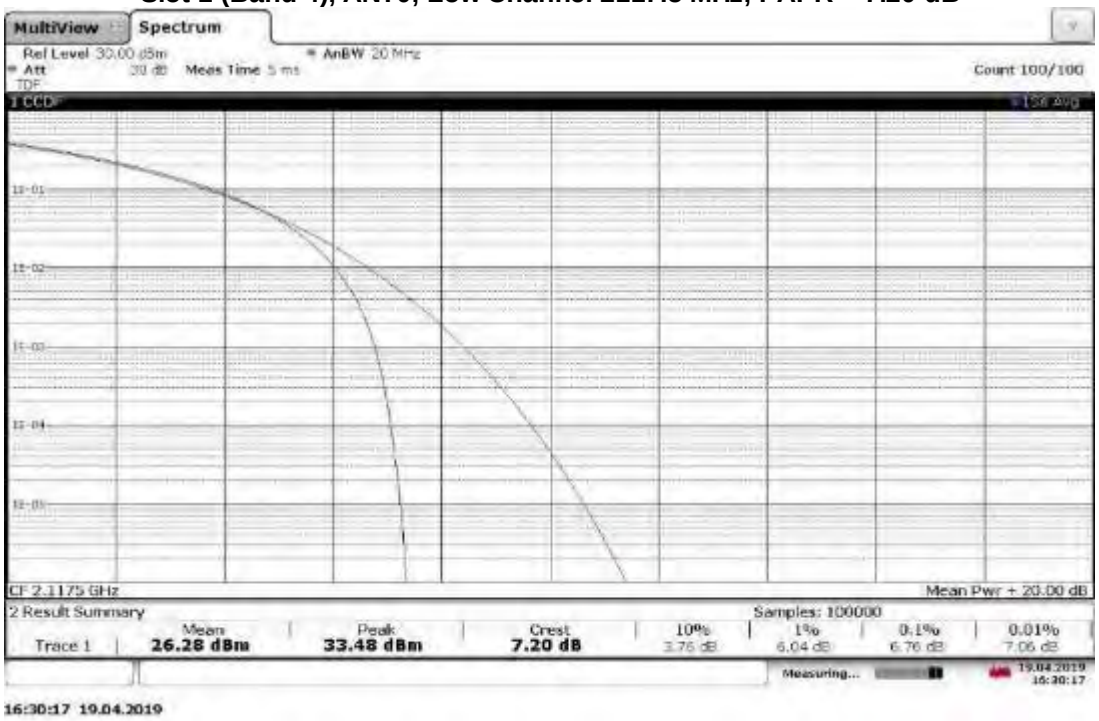
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2150 MHz, PAPR = 6.73 dB



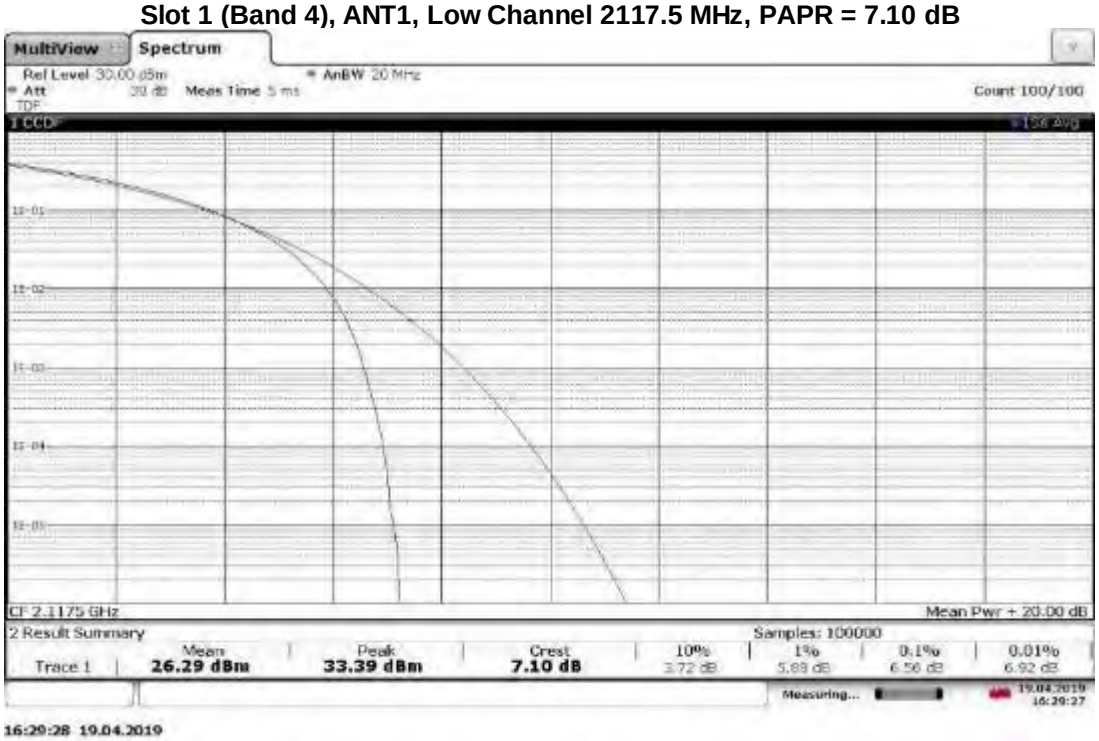
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2150 MHz, PAPR = 7.37 dB



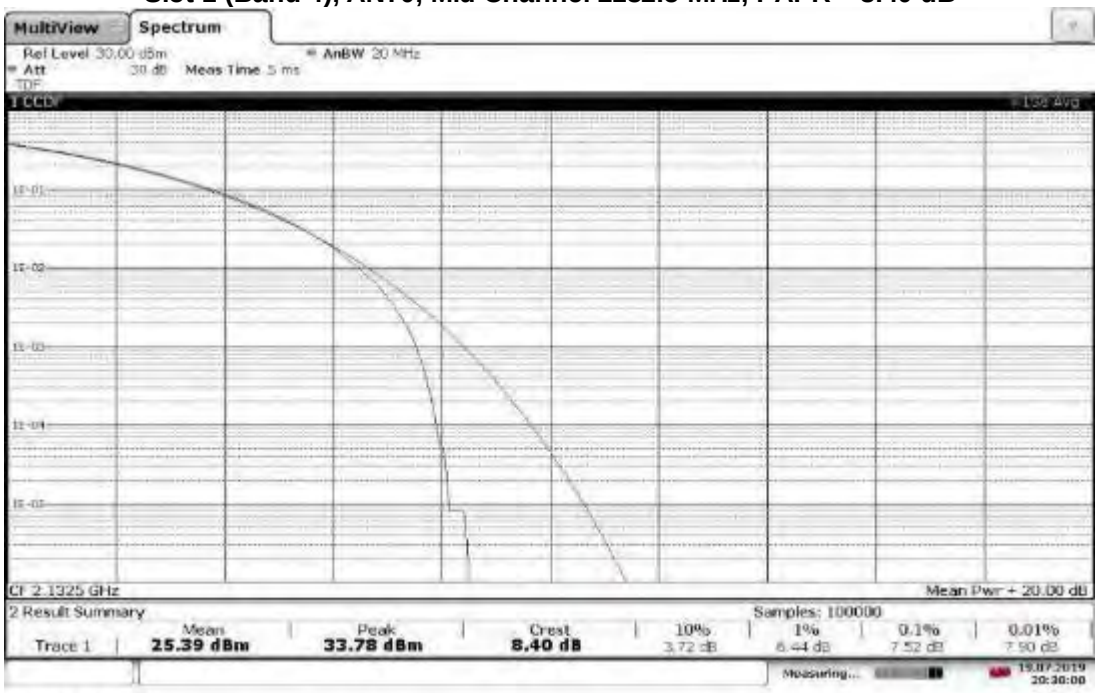
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2117.5 MHz, PAPR = 7.20 dB



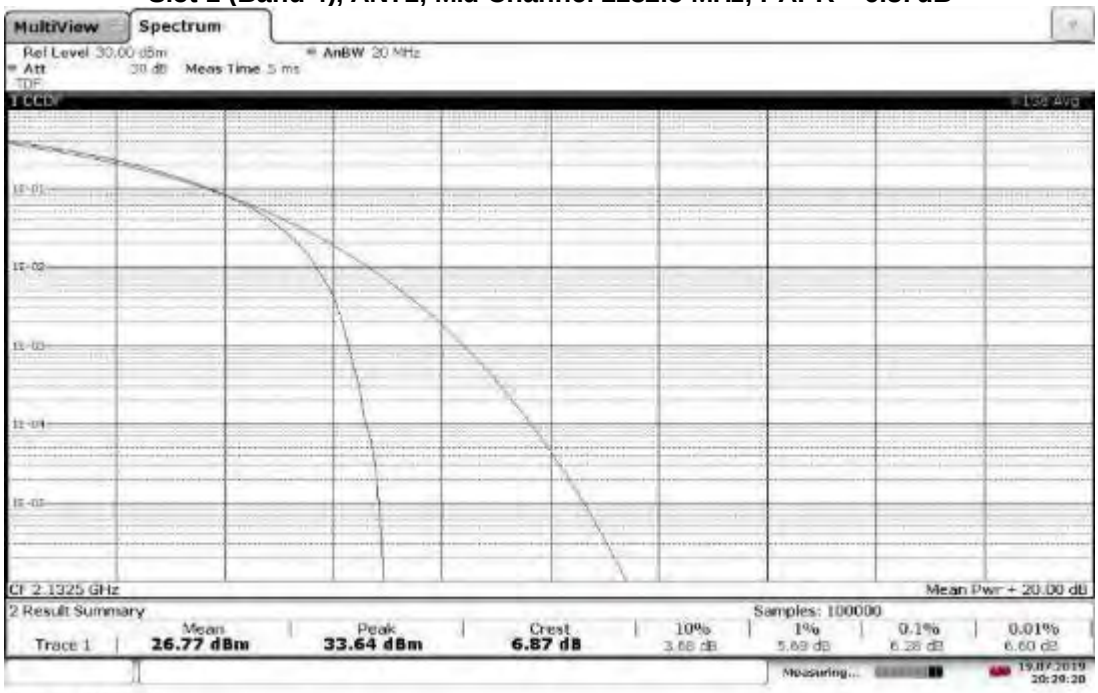
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2117.5 MHz, PAPR = 7.10 dB



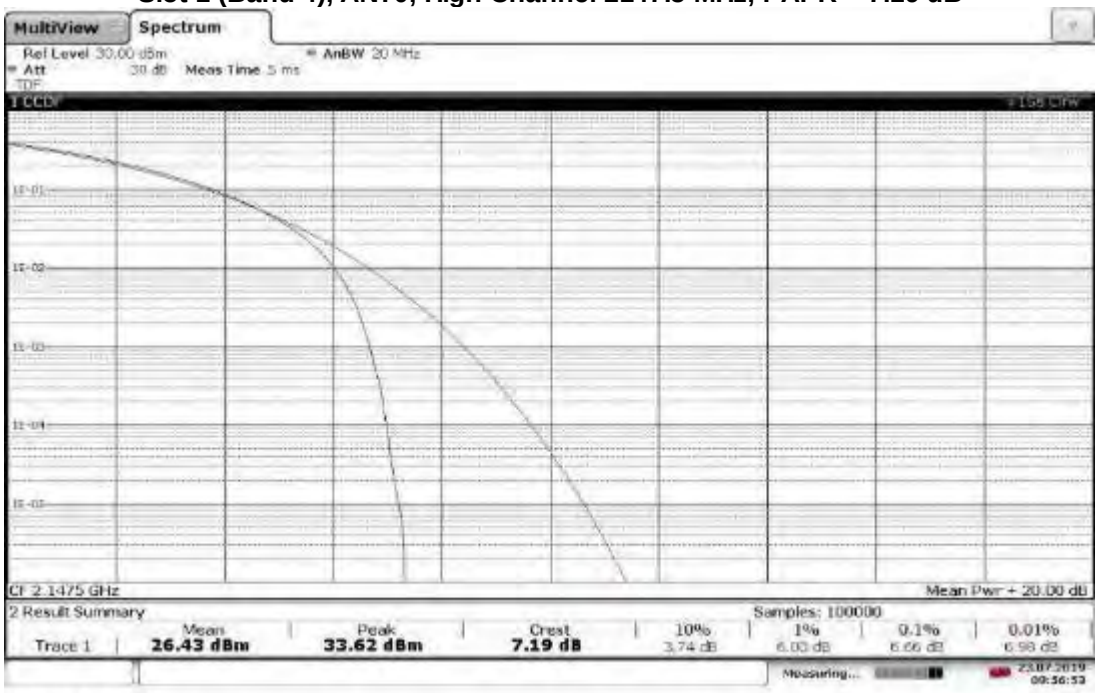
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 8.40 dB



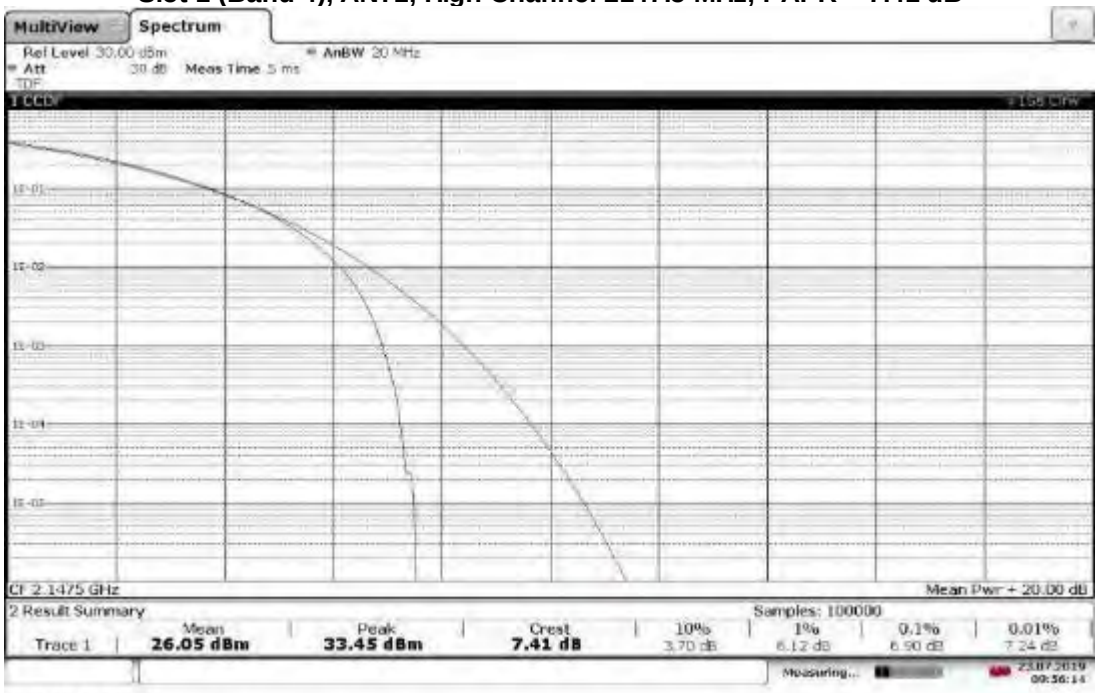
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.87dB



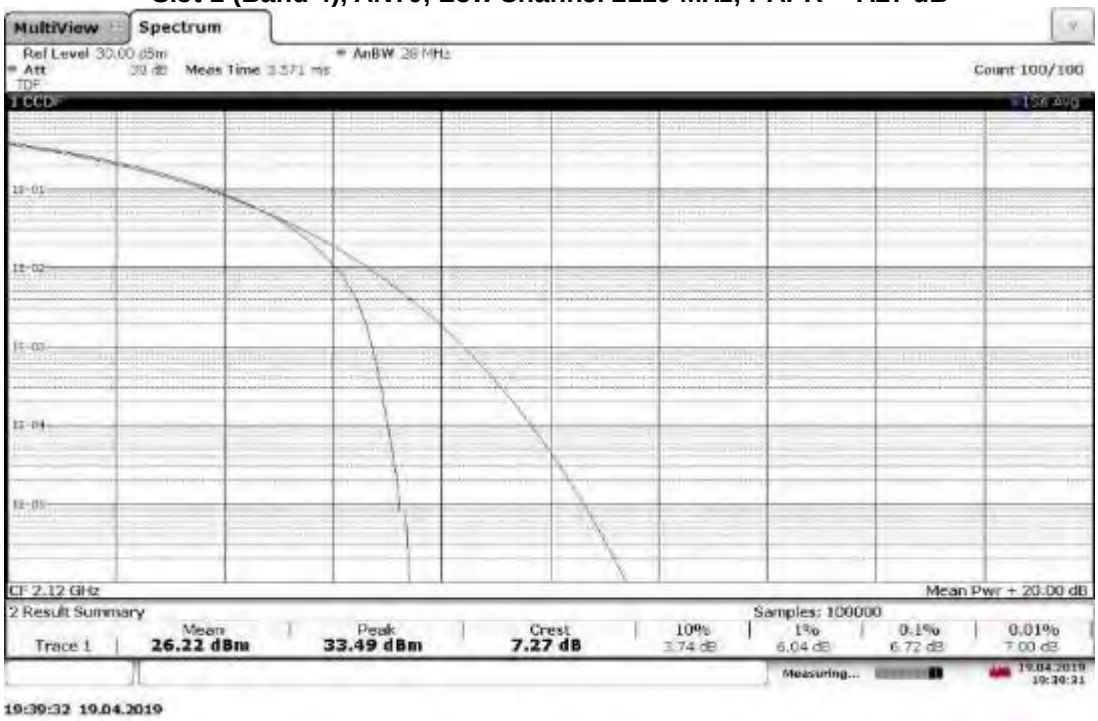
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2147.5 MHz, PAPR = 7.19 dB



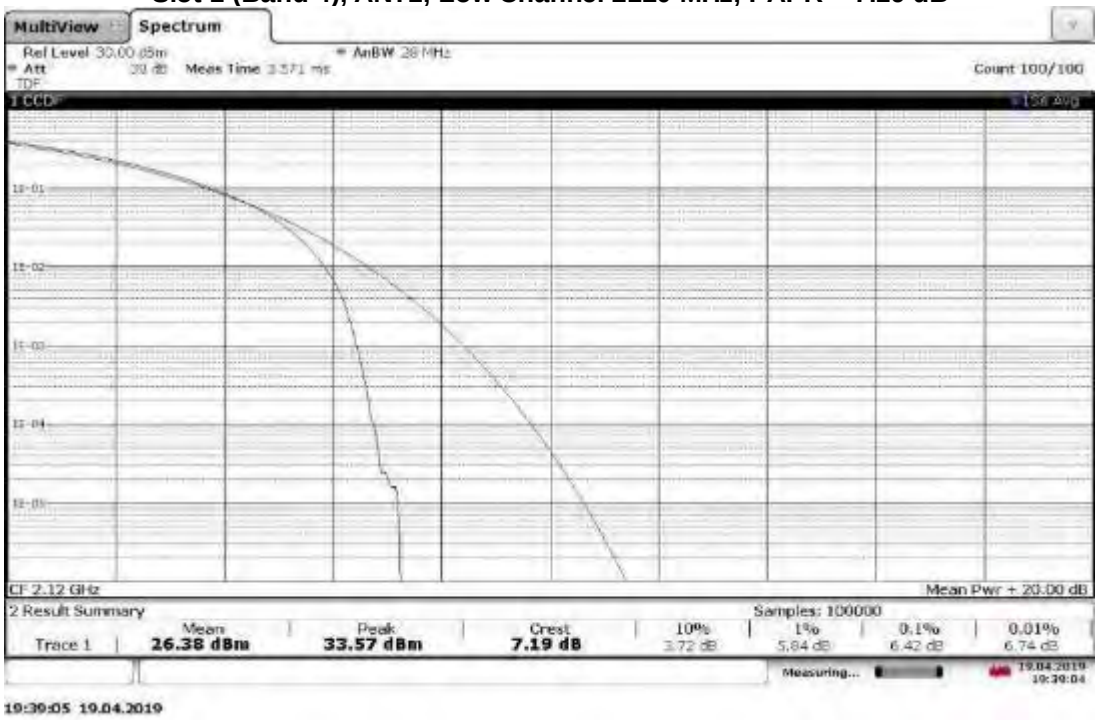
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2147.5 MHz, PAPR = 7.41 dB



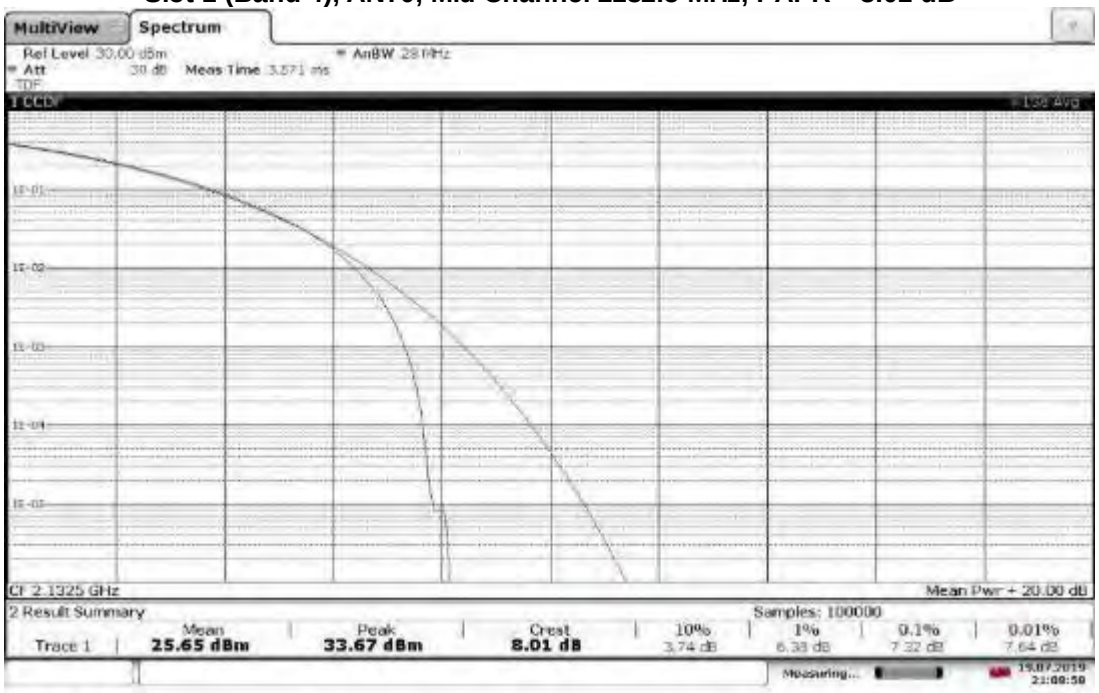
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 2120 MHz, PAPR = 7.27 dB



TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 2120 MHz, PAPR = 7.19 dB

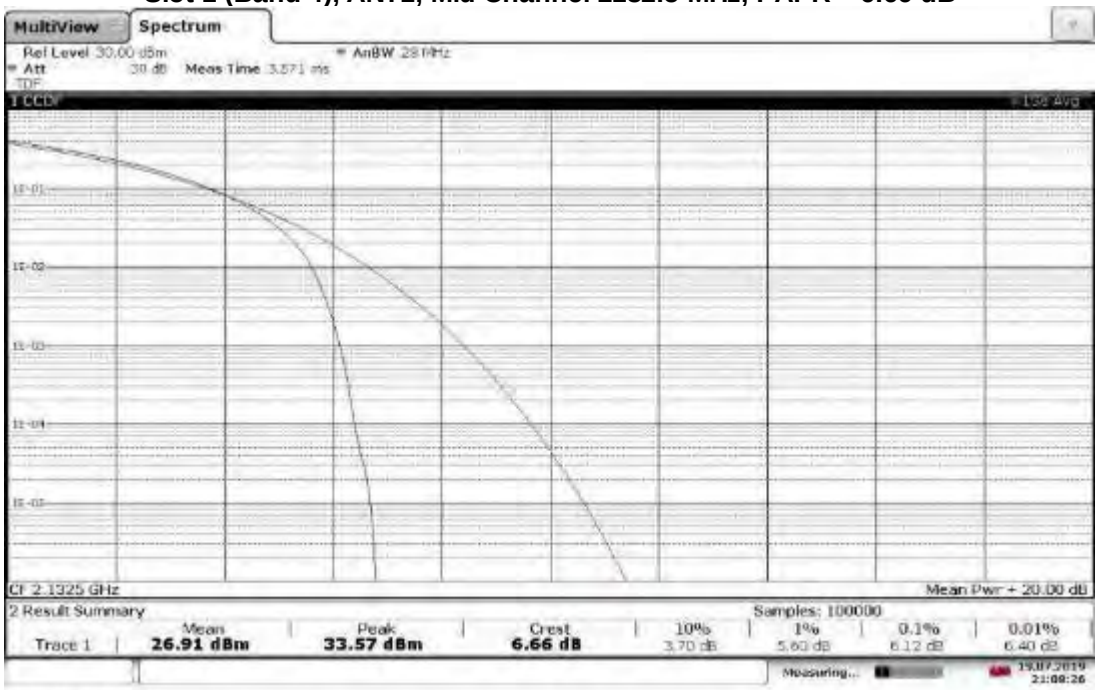


TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 2132.5 MHz, PAPR = 8.01 dB



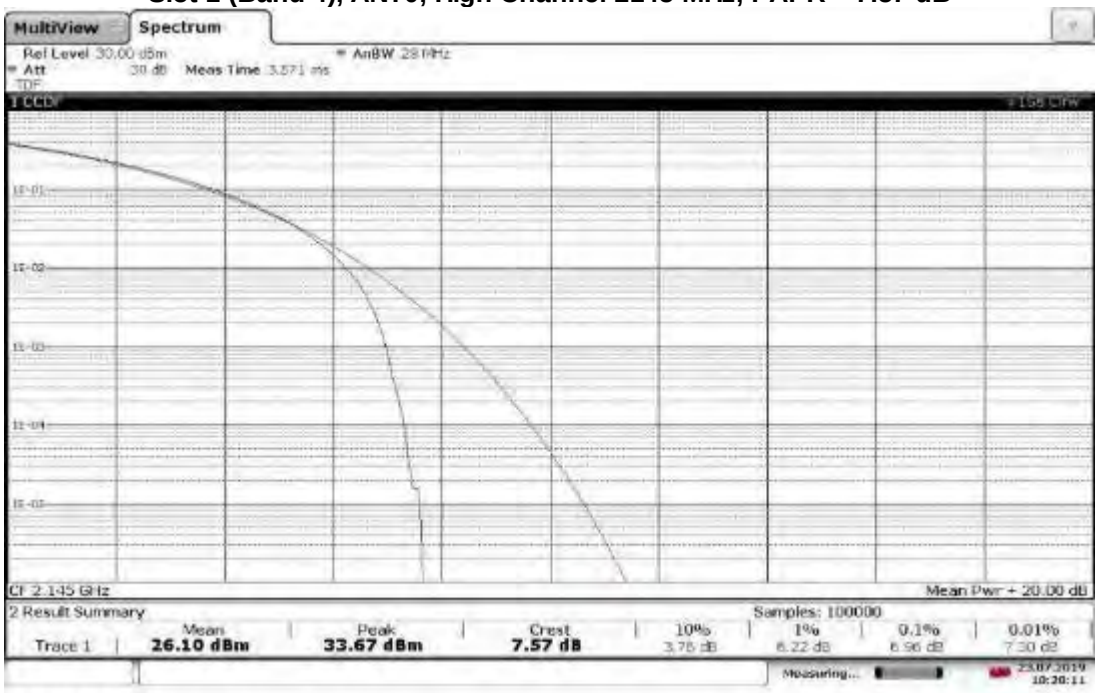
21:08:58 19.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 2132.5 MHz, PAPR = 6.66 dB

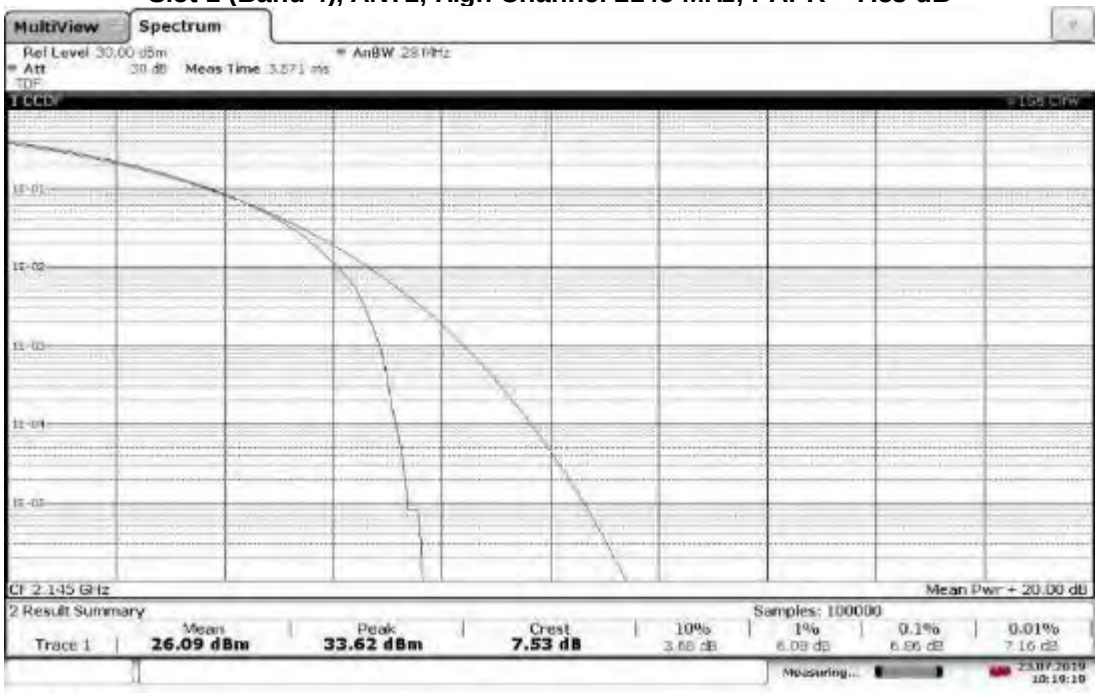


21:08:26 19.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 2145 MHz, PAPR = 7.57 dB



TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 2145 MHz, PAPR = 7.53 dB



Test Personnel:	Kouma Sinn KPS	Test Date:	04/10/2019, 04/11/2019, 04/16/2019, 04/19/2019, 04/27/2019, 04/30/2019, 07/18/2019, 07/19/2019, 07/23/2019
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 7.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	22, 23, 23, 22, 20, 22, 21, 21, 21 ºC
		Relative Humidity:	21, 15, 20, 47, 42, 35, 64, 71, 71 %
		Atmospheric Pressure:	1004, 1013, 1001, 1000, 996, 1017, 1005, 1005, 1001 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	02/01/2019	02/01/2020
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/01/2019	02/01/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde &Schwarz	FSW43	100646	10/15/2018	10/15/2019
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/06/2018	11/06/2019

Software Utilized:

Name	Manufacturer	Version
None	--	--

8.3 Results:

The sample tested was found to Comply.

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

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

Band 4, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2112.50	ANT0	4.531	5.21
		ANT1	4.541	5.01
Mid	2132.50	ANT0	4.523	5.03
		ANT1	4.562	5.42
High	2152.50	ANT0	4.544	5.43
		ANT1	4.526	5.04

Band 4, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2115.00	ANT0	8.999	9.95
		ANT1	8.992	9.98
Mid	2132.50	ANT0	8.990	9.96
		ANT1	9.046	10.39
High	2150.00	ANT0	8.993	9.84
		ANT1	8.967	9.97

Band 4, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2117.50	ANT0	13.510	14.77
		ANT1	13.475	14.72
Mid	2132.50	ANT0	13.485	14.80
		ANT1	13.562	15.81
High	2147.50	ANT0	13.527	14.84
		ANT1	13.467	14.93

Band 4, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2120.00	ANT0	17.939	19.39
		ANT1	17.907	19.31
Mid	2132.50	ANT0	17.929	19.66
		ANT1	17.920	20.00
High	2145.00	ANT0	17.926	19.59
		ANT1	17.865	19.58

Band 4, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2112.50	ANT0	4.544	5.14
		ANT1	4.556	5.23
Mid	2132.50	ANT0	4.509	4.98
		ANT1	4.516	5.01
High	2152.50	ANT0	4.500	4.99
		ANT1	4.502	4.96

Band 4, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2115.00	ANT0	9.014	9.91
		ANT1	8.985	9.91
Mid	2132.50	ANT0	8.958	9.85

		ANT1	8.979	9.81
High	2150.00	ANT0	9.014	9.83
		ANT1	8.985	9.87

Band 4, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2117.50	ANT0	13.524	14.48
		ANT1	13.453	14.47
Mid	2132.50	ANT0	13.436	14.65
		ANT1	13.451	14.79
High	2147.50	ANT0	13.535	14.61
		ANT1	13.503	14.70

Band 4, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2120.00	ANT0	17.945	19.11
		ANT1	17.892	19.51
Mid	2132.50	ANT0	17.928	19.53
		ANT1	17.890	19.65
High	2145.00	ANT0	17.934	19.22
		ANT1	17.913	19.30

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2112.50	ANT0	4.567	4.99
		ANT1	4.520	5.08
Mid	2132.50	ANT0	4.533	4.97
		ANT1	4.613	5.63
High	2152.50	ANT0	4.544	5.05
		ANT1	4.543	5.04

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2115.00	ANT0	8.996	9.90
		ANT1	9.022	9.92
Mid	2132.50	ANT0	8.980	9.84
		ANT1	9.033	10.05
High	2150.00	ANT0	8.985	9.92
		ANT1	8.991	9.90

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2117.50	ANT0	13.518	14.59
		ANT1	13.501	14.65
Mid	2132.50	ANT0	13.484	14.86
		ANT1	13.521	15.17
High	2147.50	ANT0	13.471	14.77
		ANT1	13.457	14.84

Band 4, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2120.00	ANT0	17.865	19.53
		ANT1	17.913	19.46
Mid	2132.50	ANT0	17.927	19.67

		ANT1	17.943	19.62
High	2145.00	ANT0	17.879	19.65
		ANT1	17.937	19.60

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2112.50	ANT0	4.553	5.04
		ANT1	4.551	5.08
Mid	2132.50	ANT0	4.539	5.06
		ANT1	4.566	5.27
High	2152.50	ANT0	4.546	5.05
		ANT1	4.534	5.05

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2115.00	ANT0	8.967	9.85
		ANT1	9.007	9.84
Mid	2132.50	ANT0	8.995	9.85
		ANT1	8.997	9.95
High	2150.00	ANT0	9.006	9.85
		ANT1	9.005	9.89

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2117.50	ANT0	13.445	14.70
		ANT1	13.505	14.73
Mid	2132.50	ANT0	13.502	14.63
		ANT1	13.464	14.47
High	2147.50	ANT0	13.467	14.80
		ANT1	13.499	14.94

Band 4, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	26 dB BW (MHz)
Low	2120.00	ANT0	17.848	19.42
		ANT1	17.928	19.49
Mid	2132.50	ANT0	17.919	19.63
		ANT1	17.971	19.65
High	2145.00	ANT0	17.922	19.57
		ANT1	17.892	19.42

8.4 Setup Photograph:

8.5 Plots/Data:

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

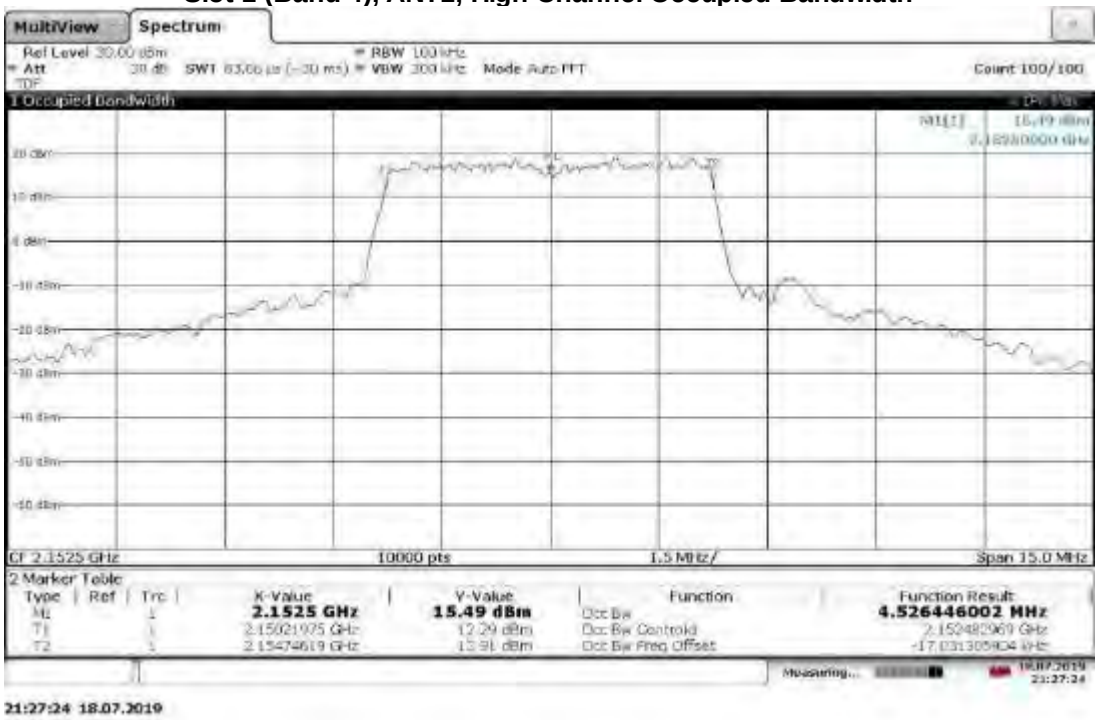
TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth



TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

23:00:39 11.04.2019

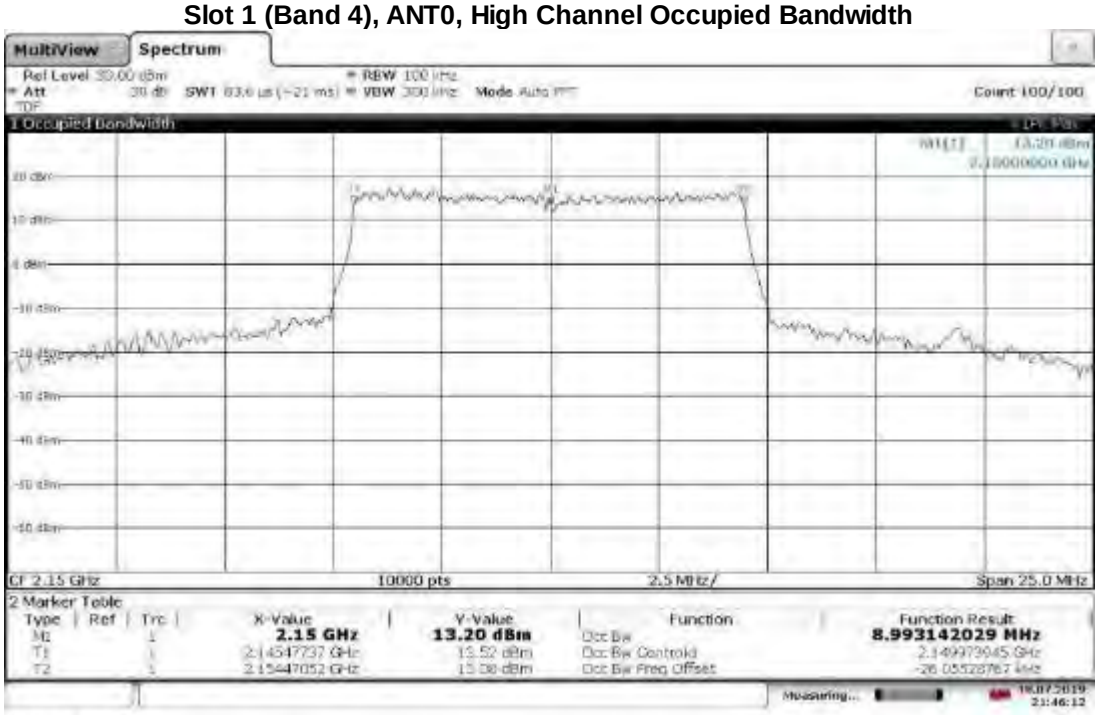
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

22:57:13 11.04.2019

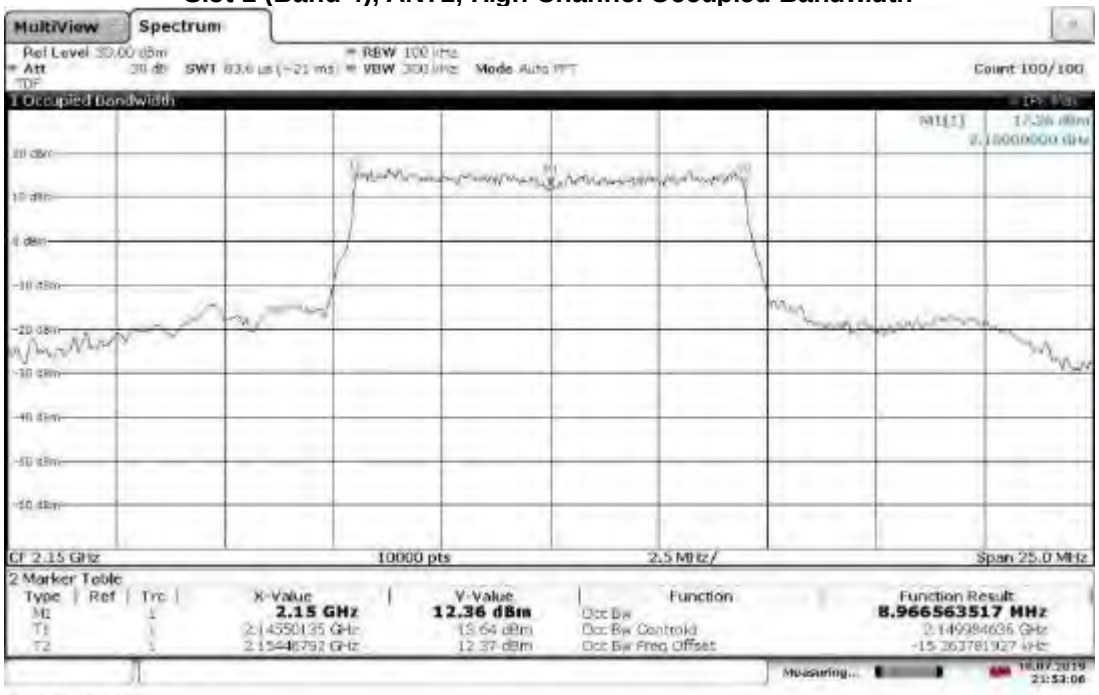
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

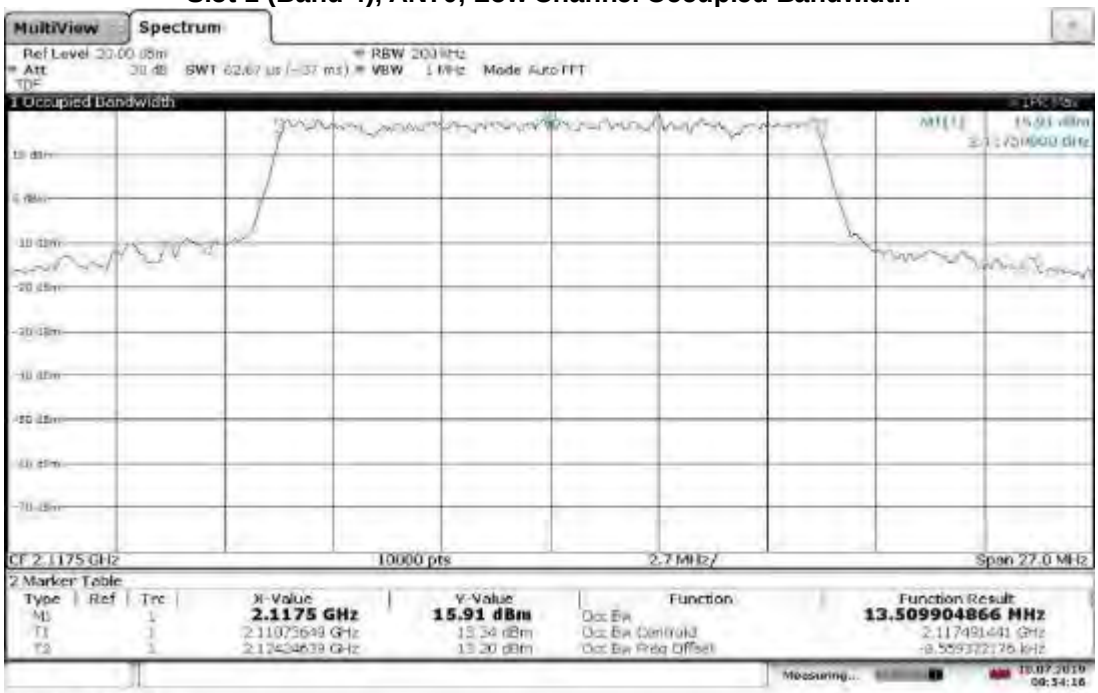
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth



TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

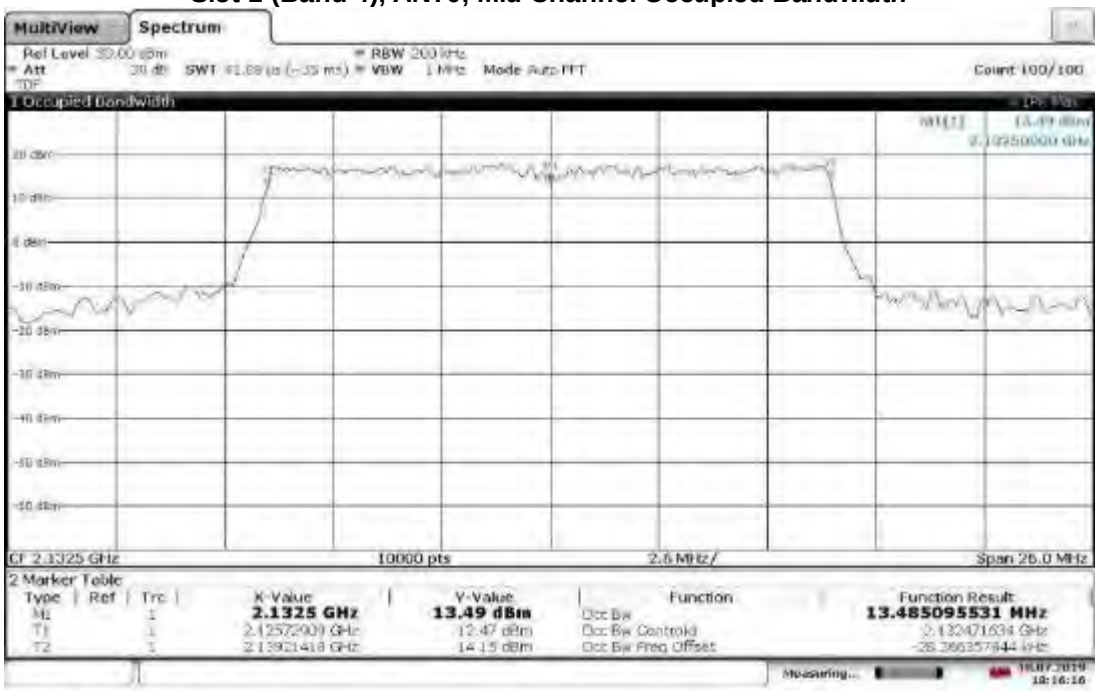


TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth



TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth



18:16:16 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

18:50:38 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

22:11:39 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

22:15:06 18.07.2019

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

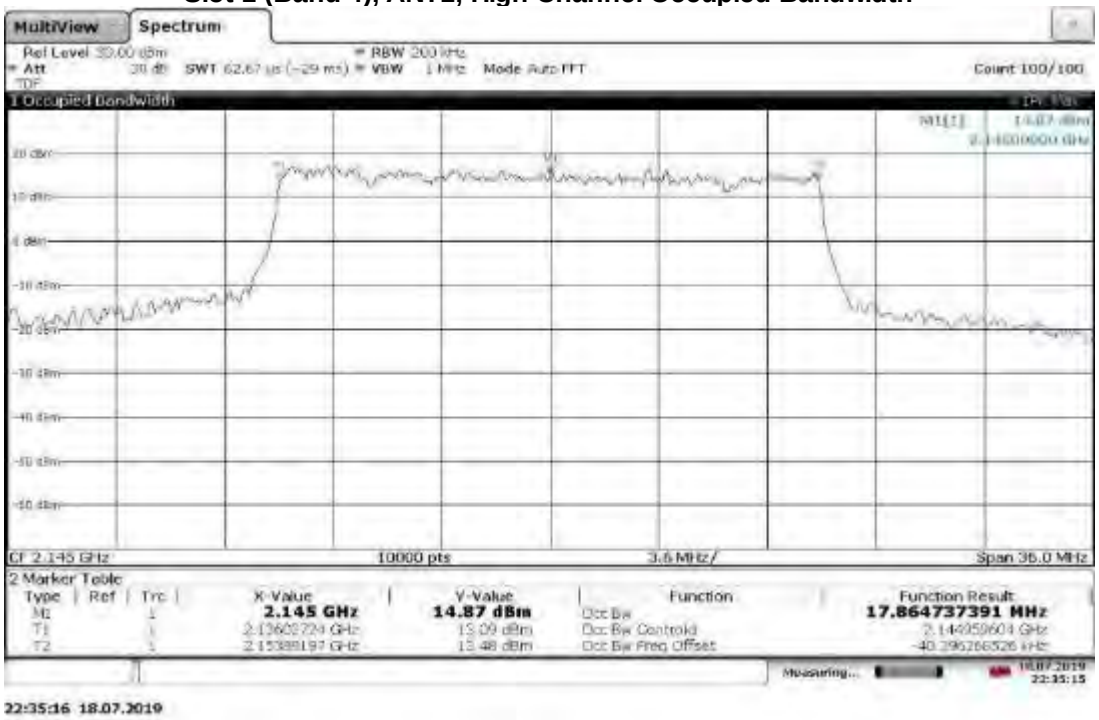
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

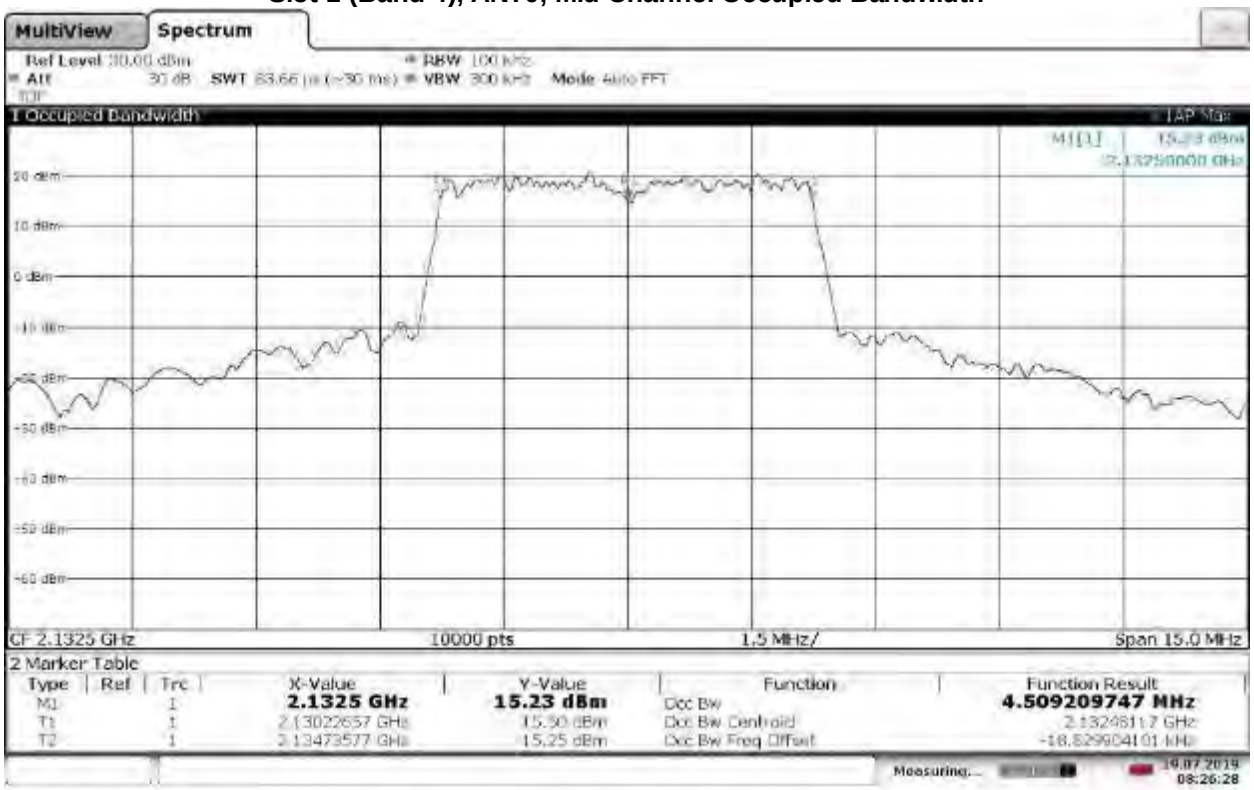
TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth



TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

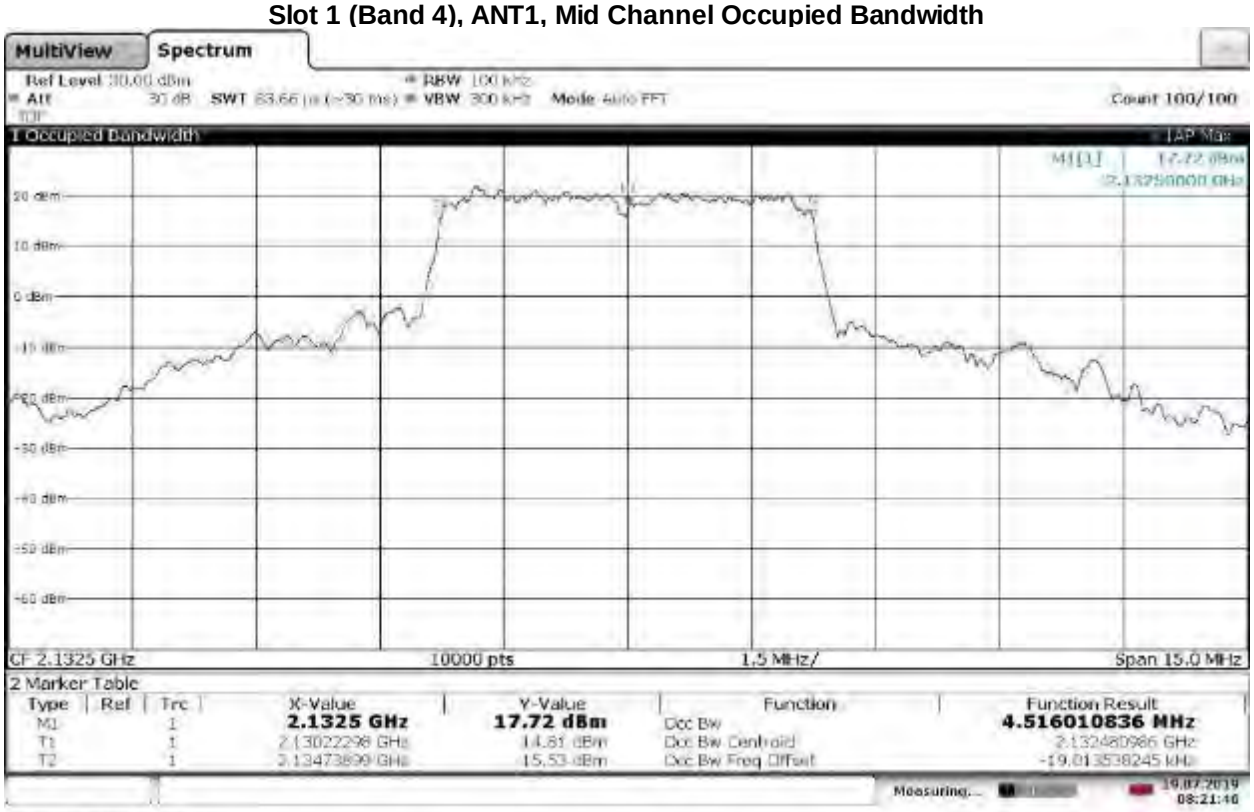
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth



08:26:29 19.07.2019

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



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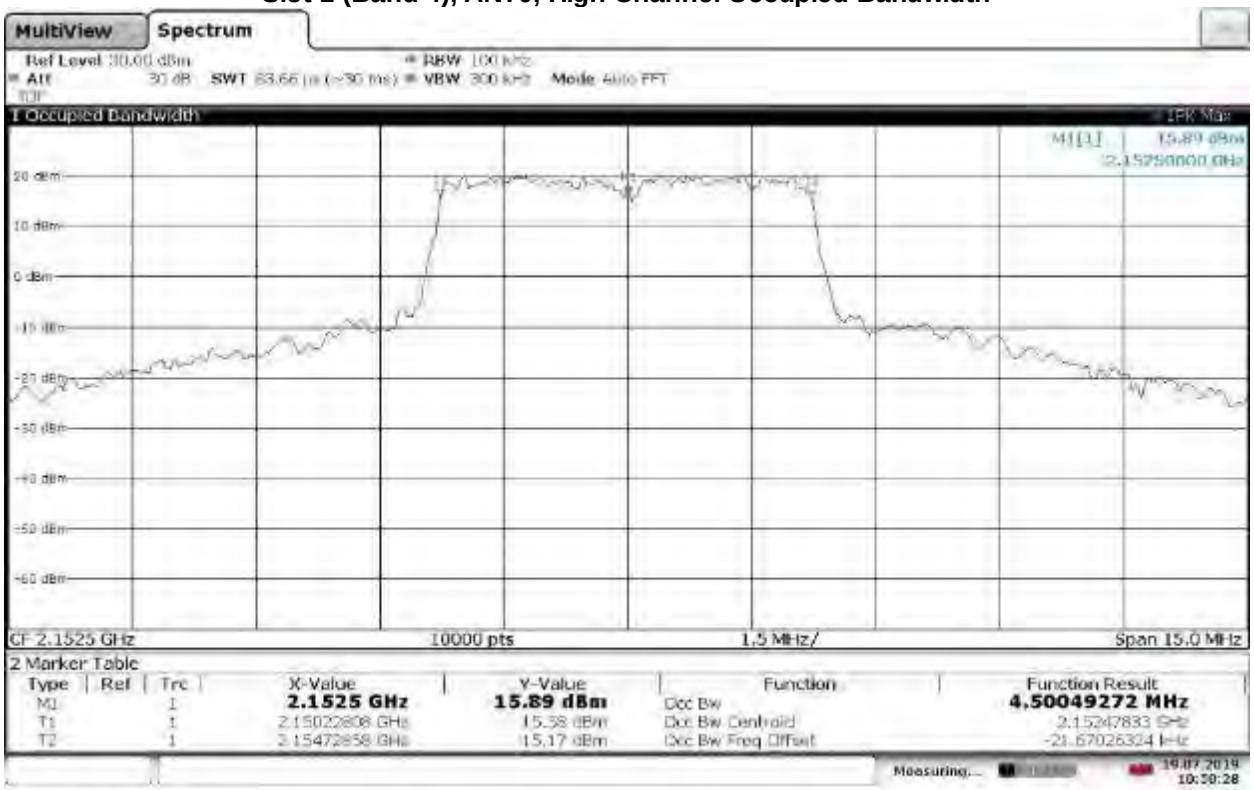
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth



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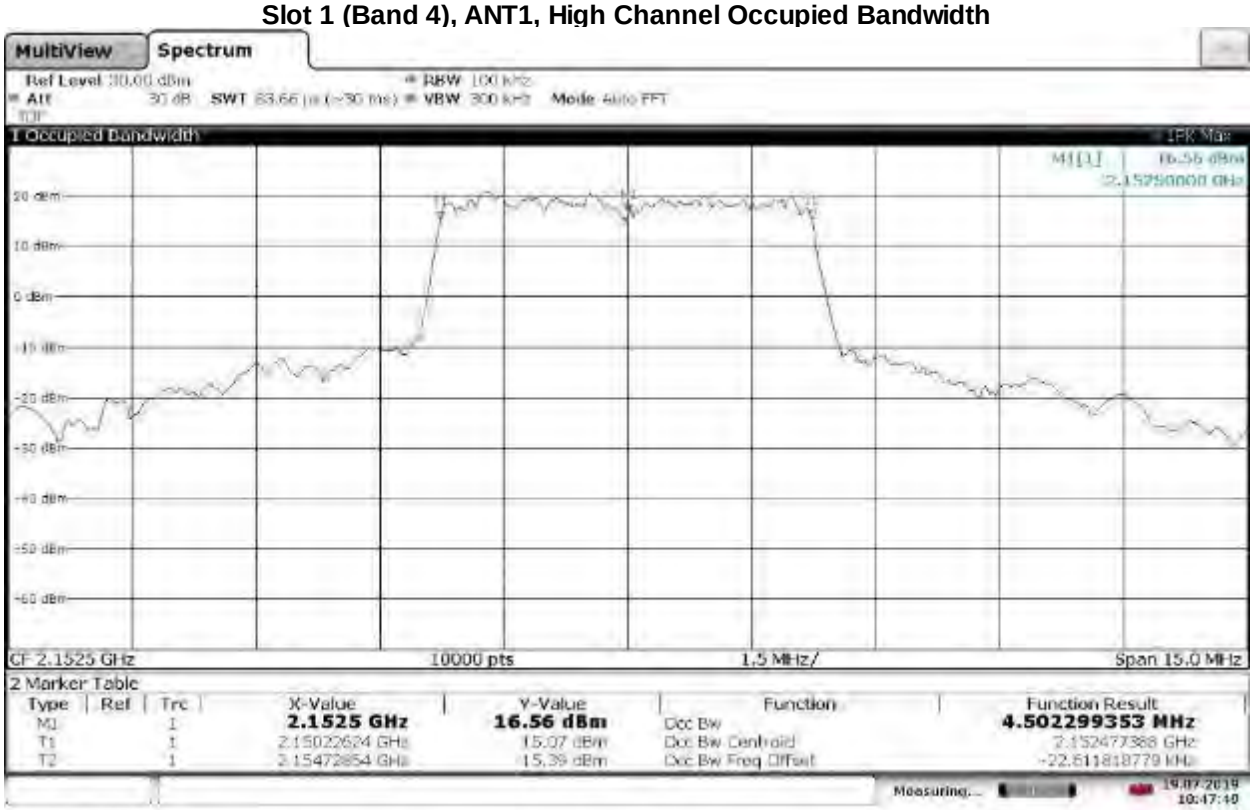
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

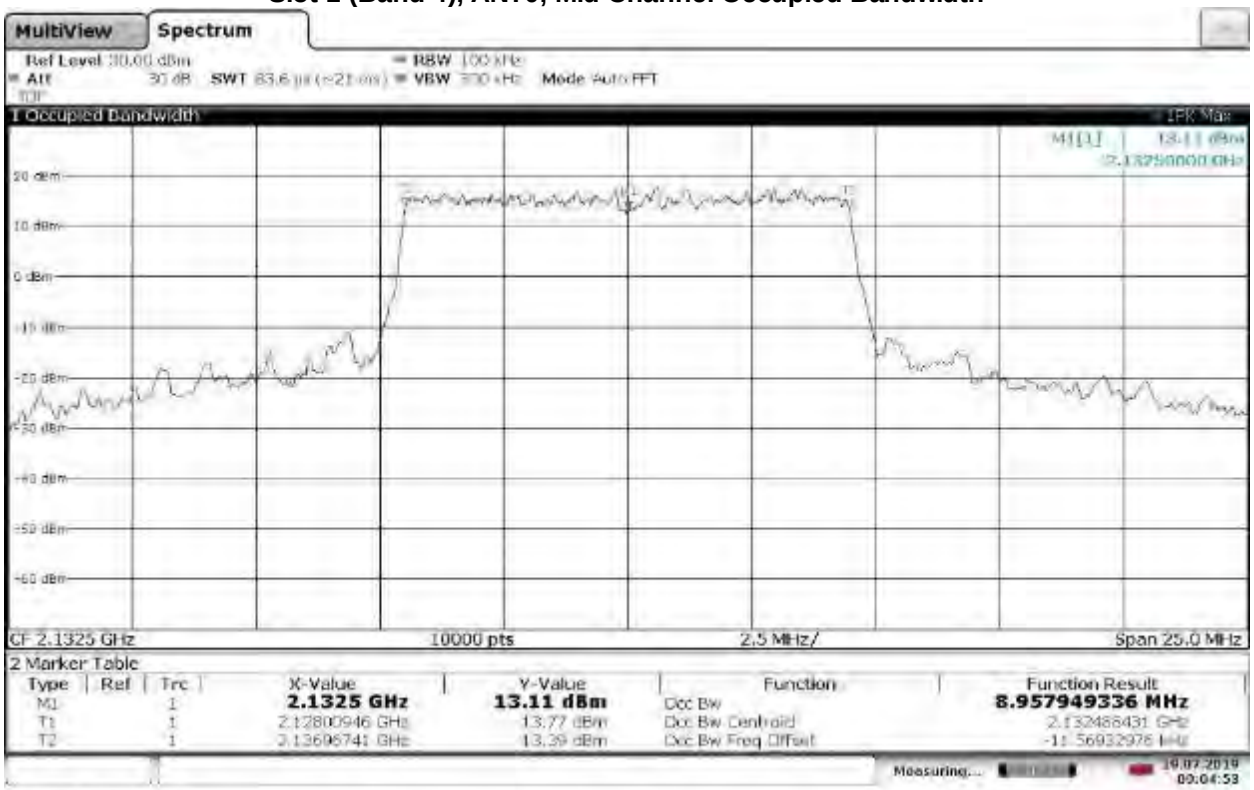


10:47:49 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

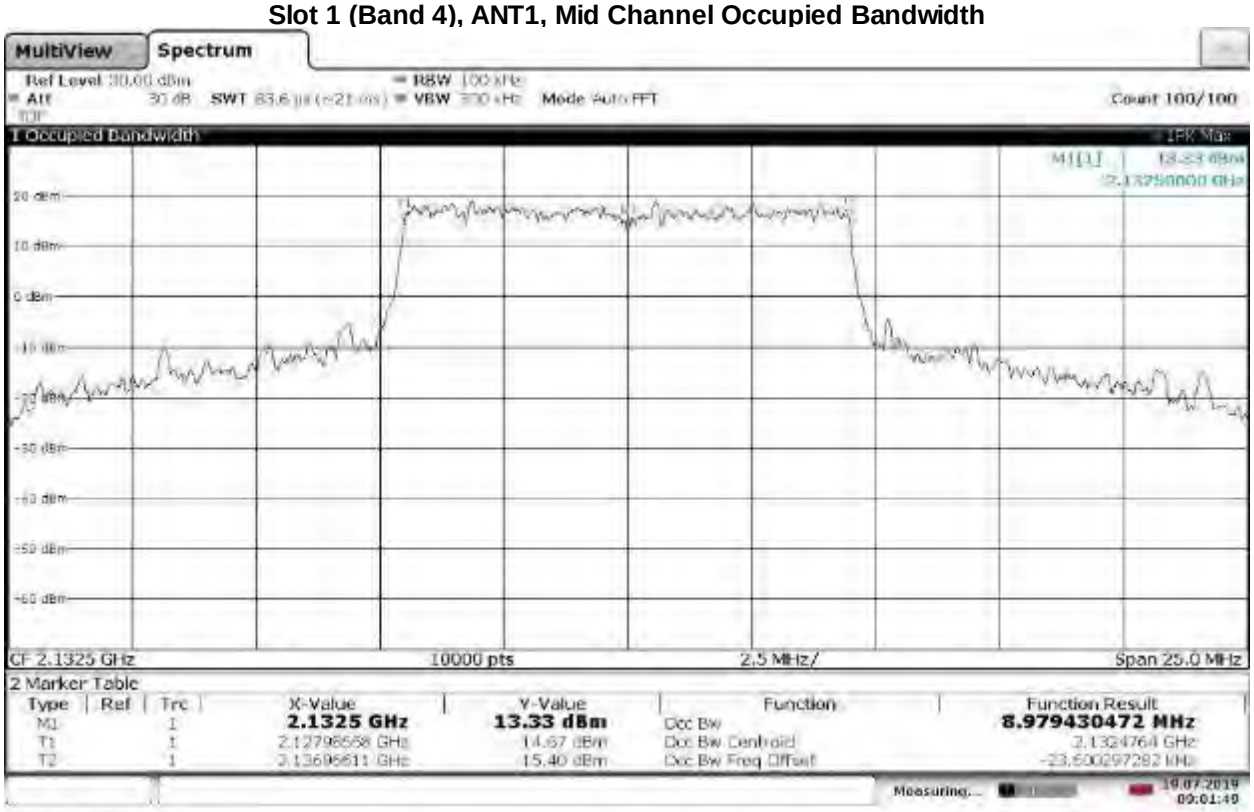
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth



09:04:53 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



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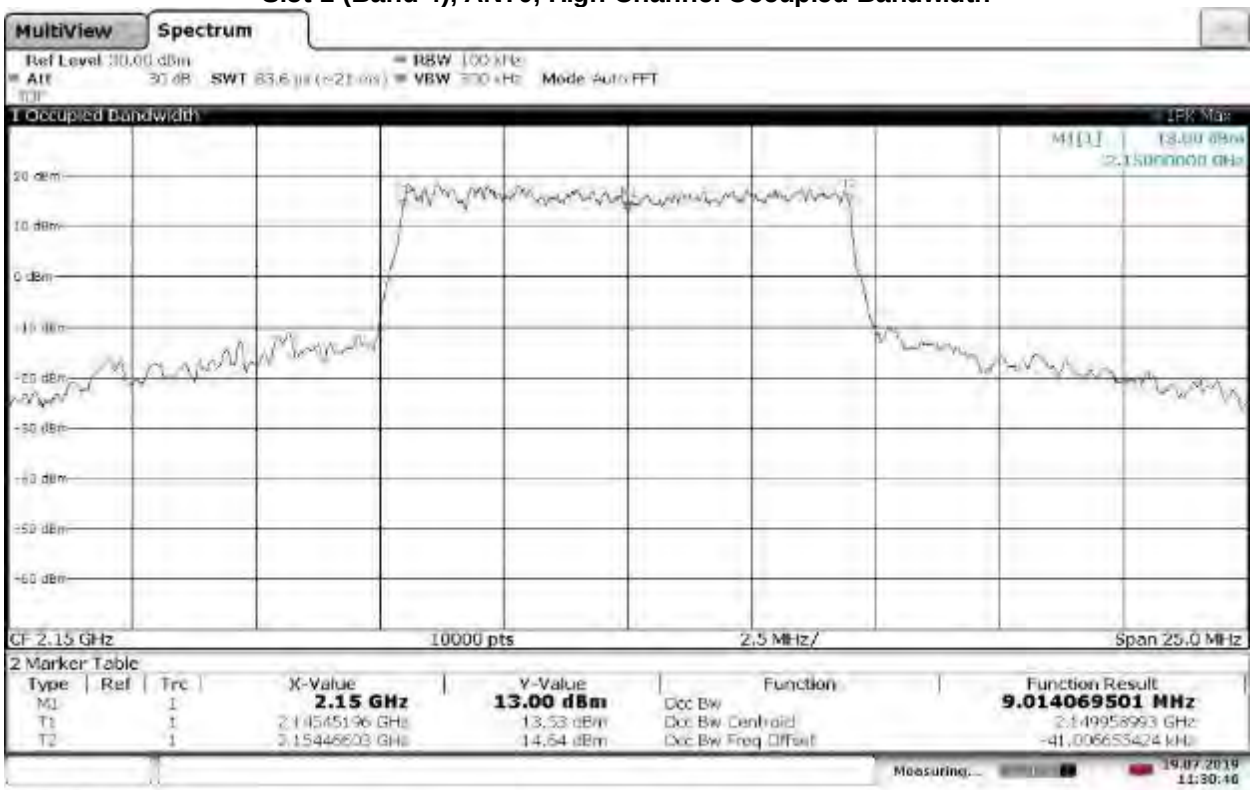
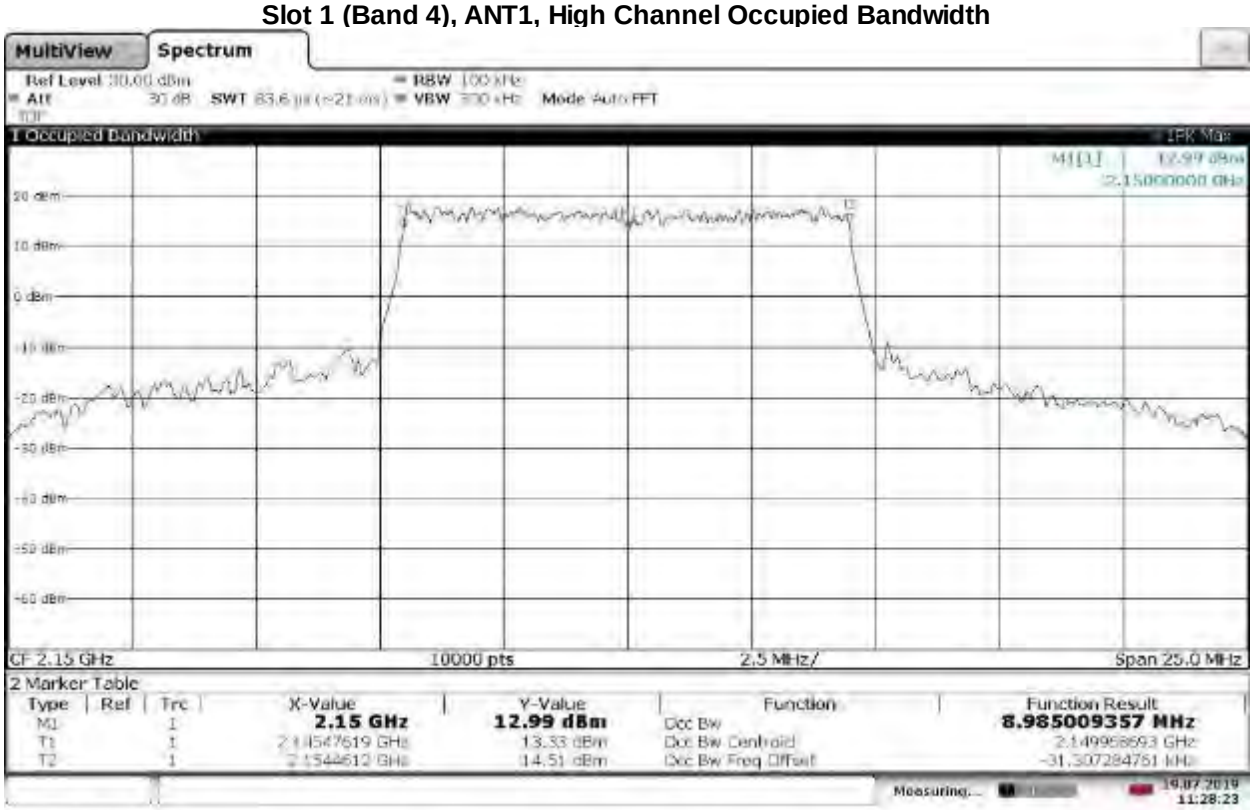
TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth



11:30:47 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

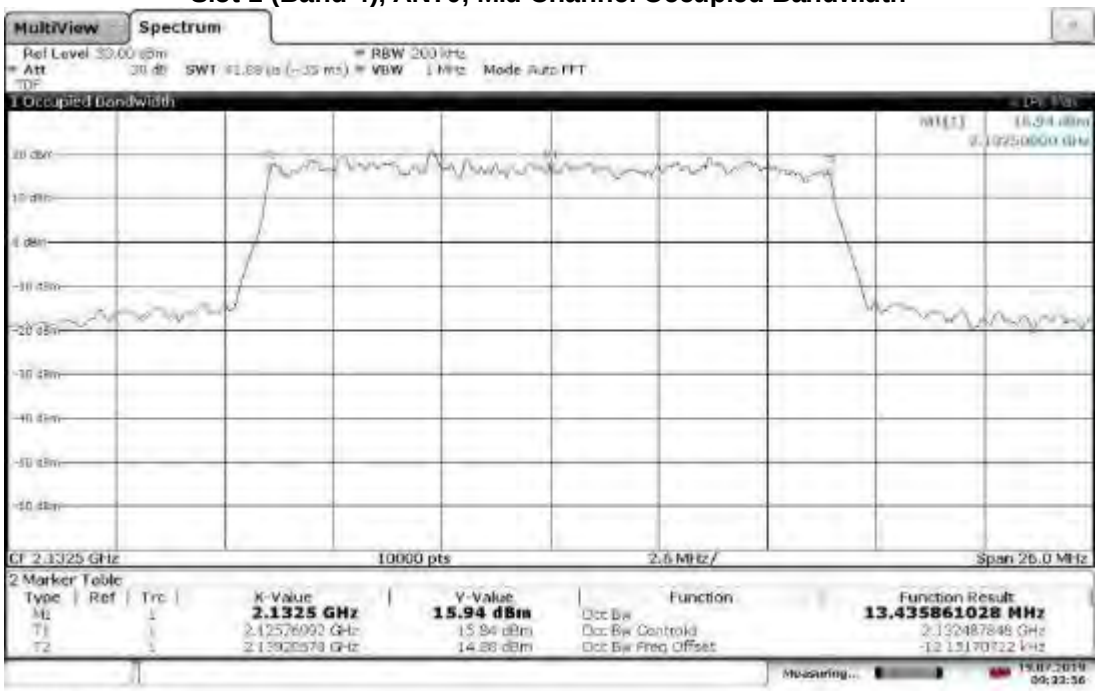


11:28:23 19.07.2019

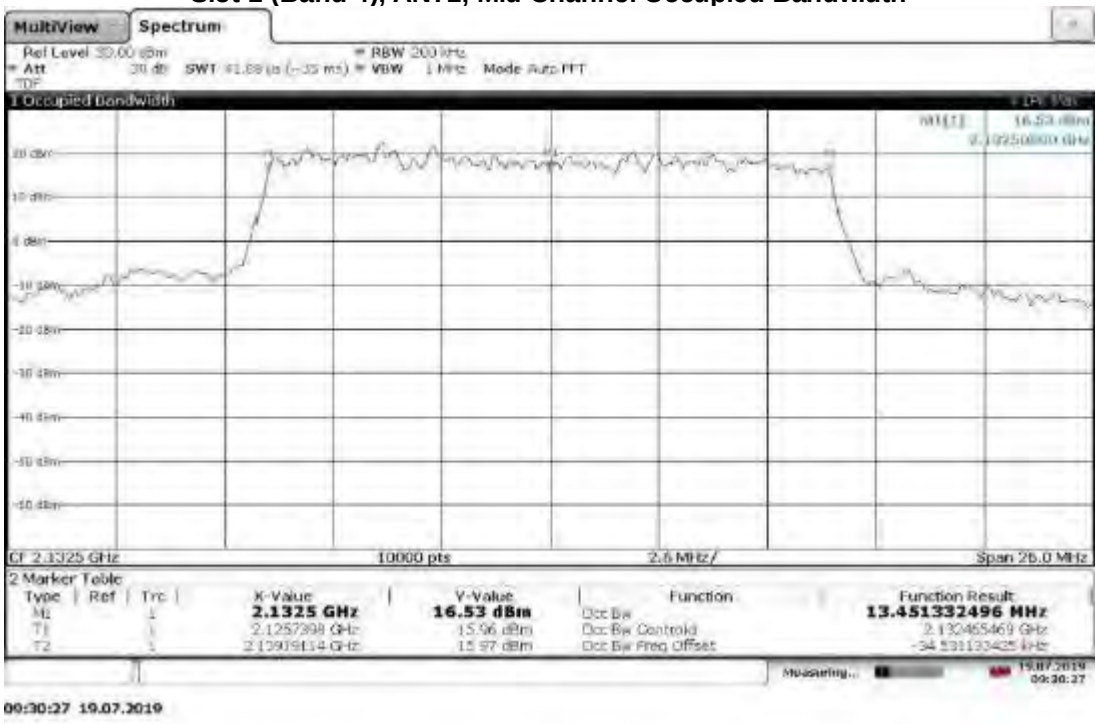
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

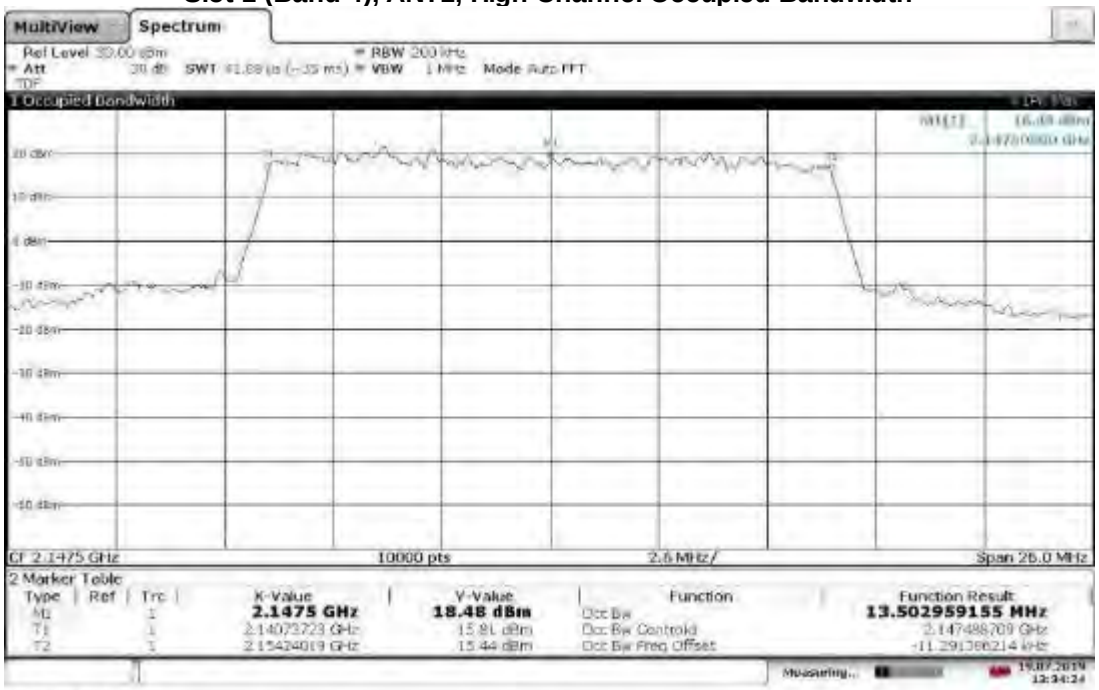


TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth



TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

18:35:33 30.04.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

18:50:24 30.04.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

10:18:20 19.07.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

10:15:37 19.07.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

14:01:39 19.07.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

13:56:10 19.07.2019

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

17:16:30 16.04.2019

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

17:14:10 16.04.2019

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

15:00:01 19.07.2019

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

15:03:28 19.07.2019

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

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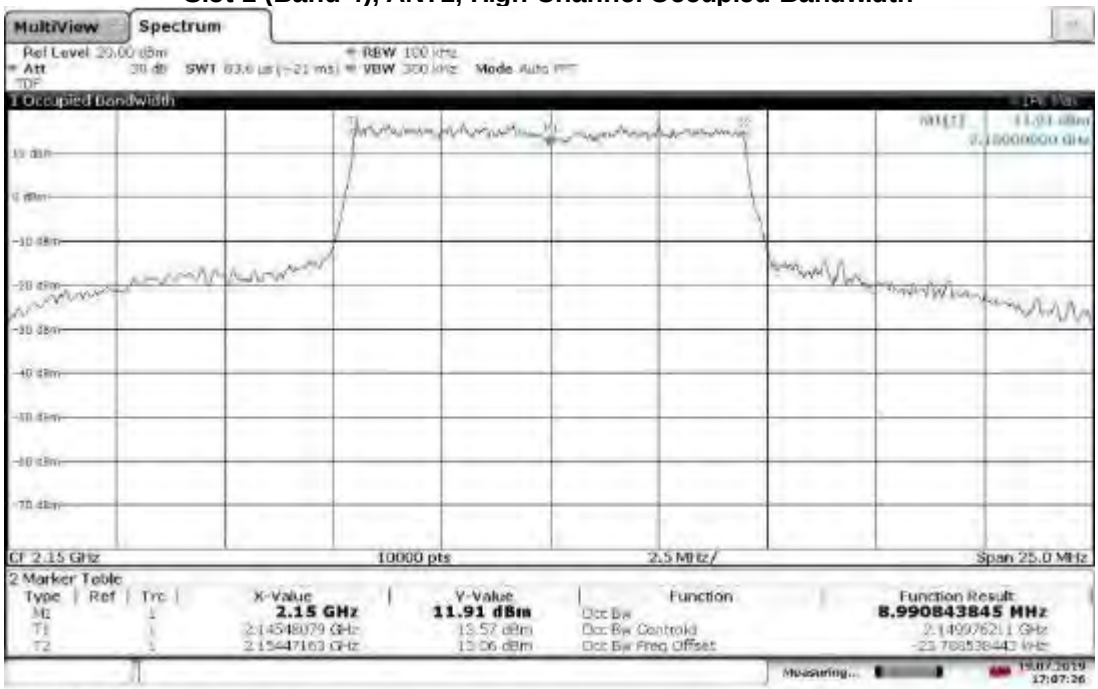
TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth



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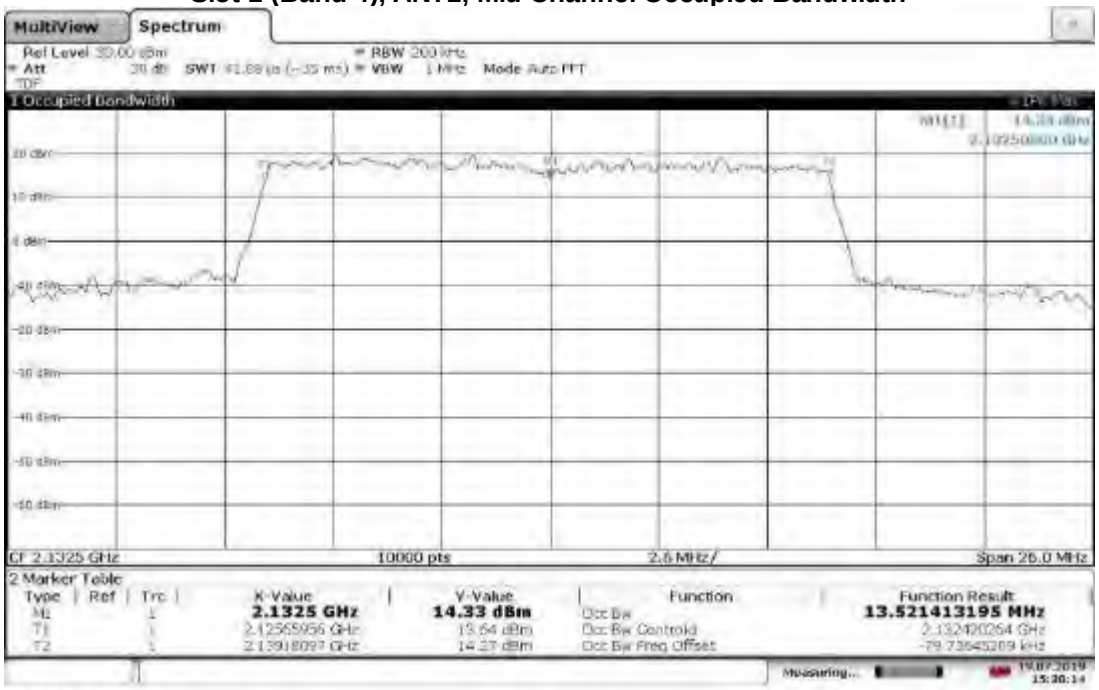
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

15:33:13 19.07.2019

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



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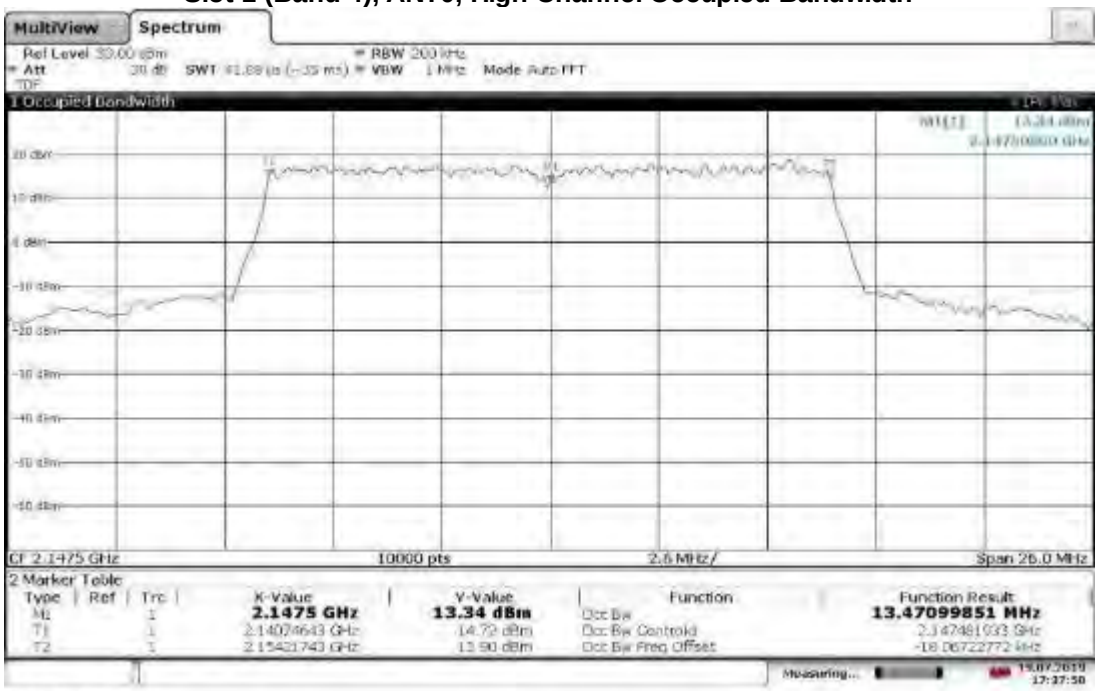
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth



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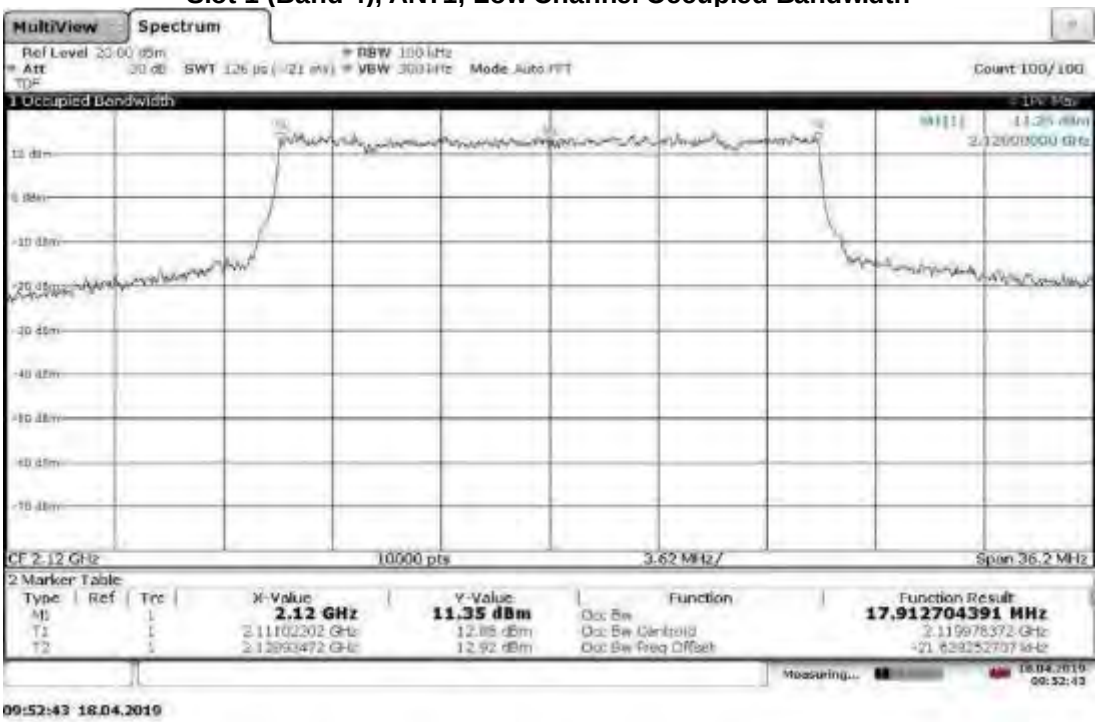
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

17:35:02 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth



TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

18:10:45 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

18:07:37 19.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

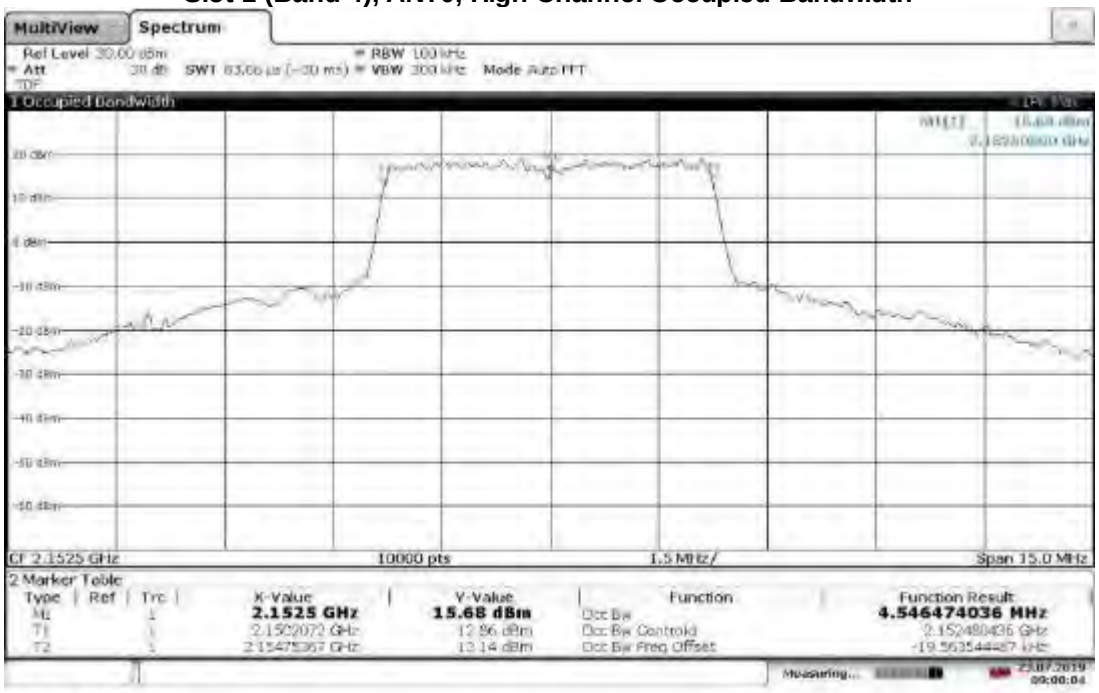
TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

19:04:29 19.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

19:07:40 19.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth



09:00:05 23.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

08:40:48 23.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

11:37:50 19.04.2019

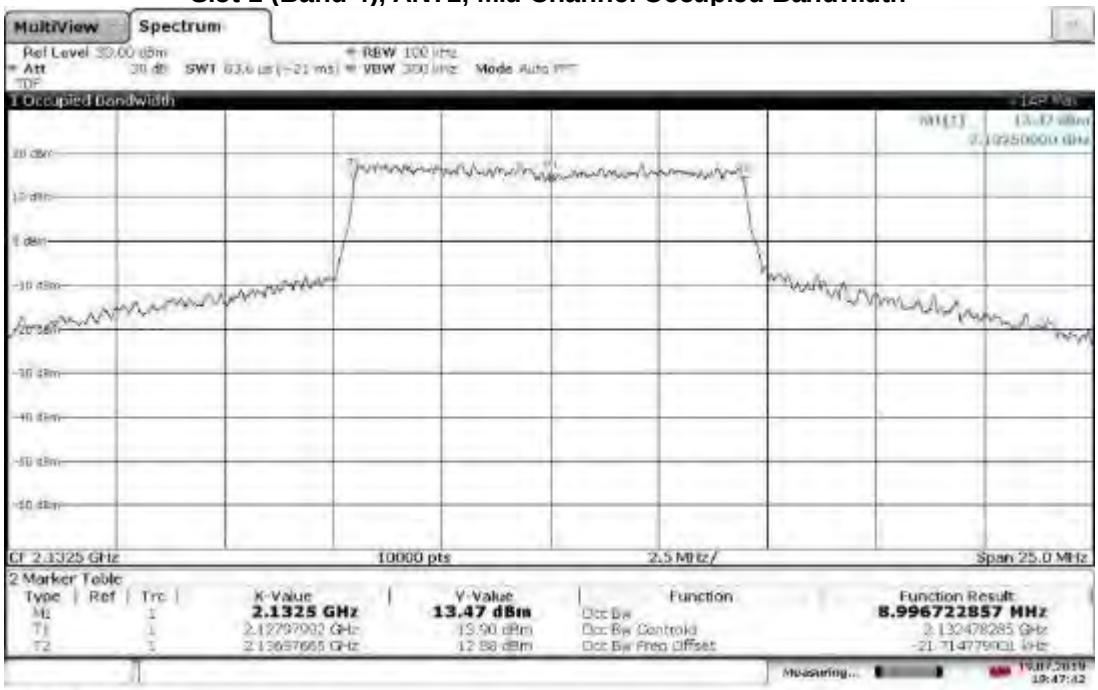
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

11:35:03 19.04.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

19:44:52 19.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



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TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

00:25:10 23.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

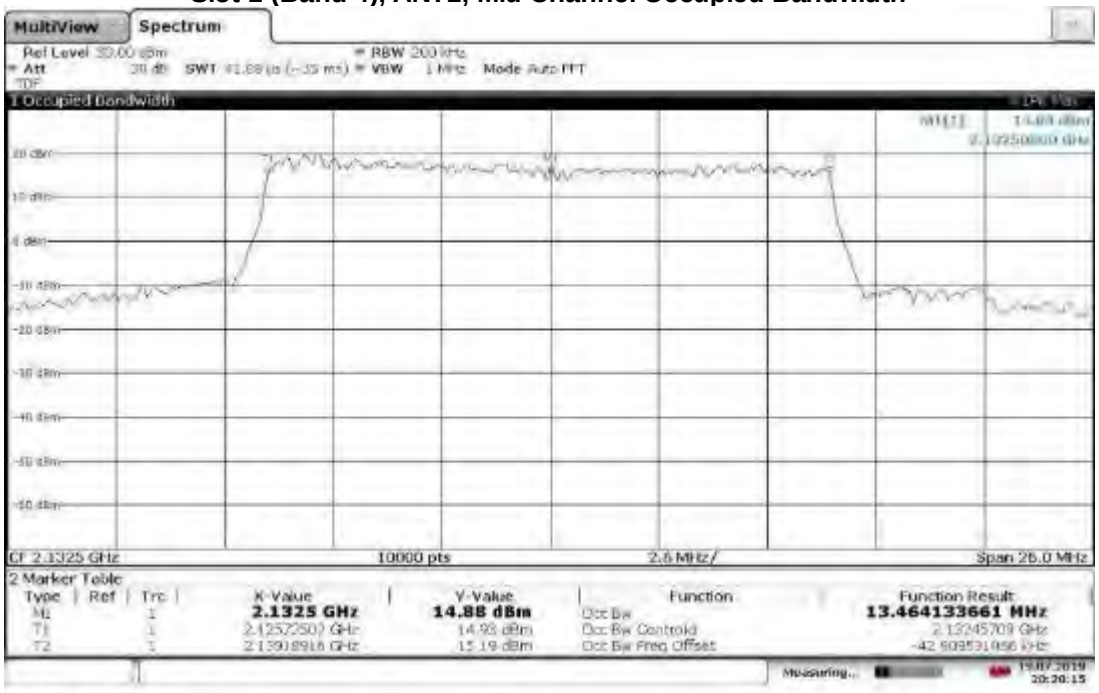
00:22:27 23.07.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth

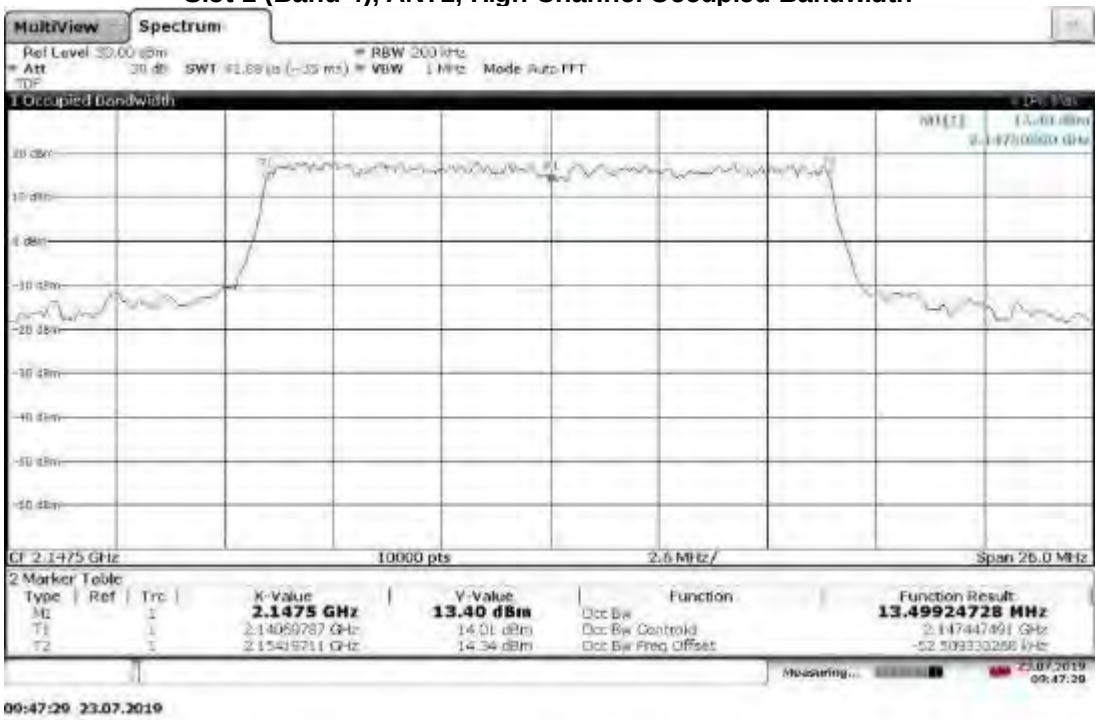
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth



TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

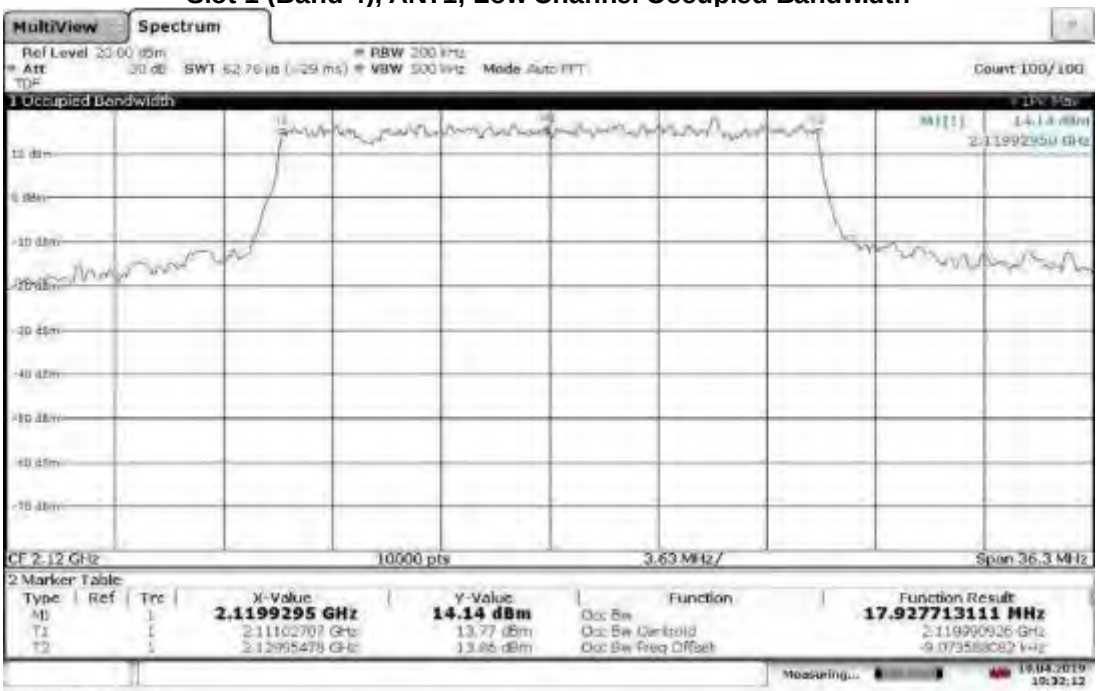
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth



TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel Occupied Bandwidth

19:33:45 19.04.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel Occupied Bandwidth



19:32:12 19.04.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel Occupied Bandwidth

21:01:54 19.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel Occupied Bandwidth

20:56:35 19.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel Occupied Bandwidth

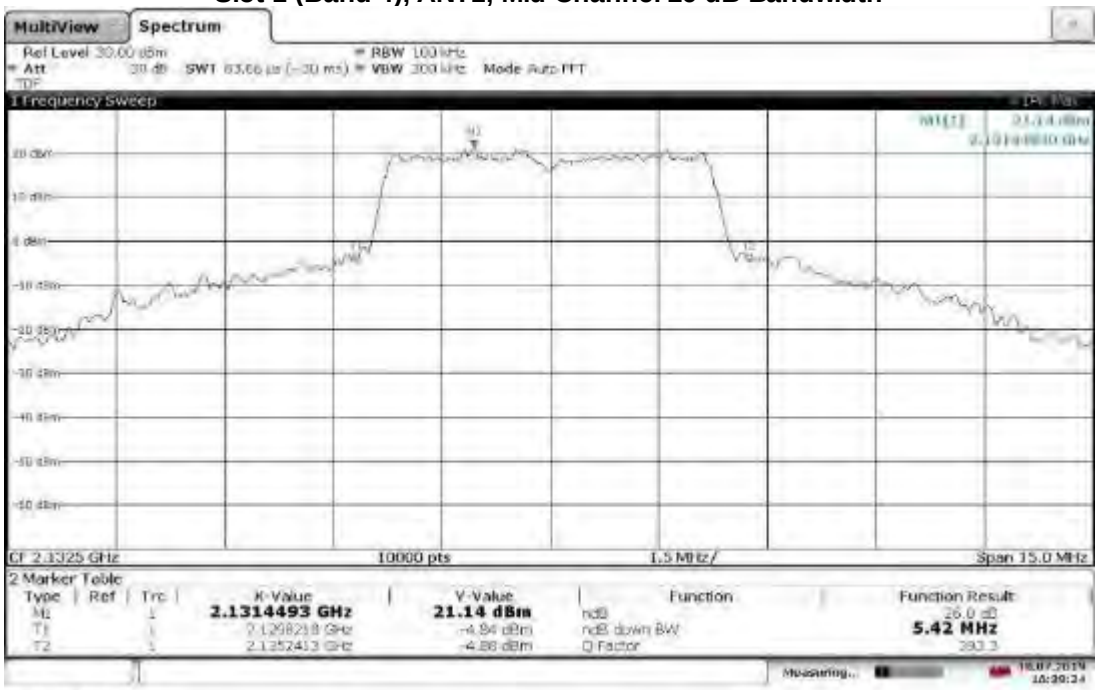
TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel Occupied Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM1.1-QPSK_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

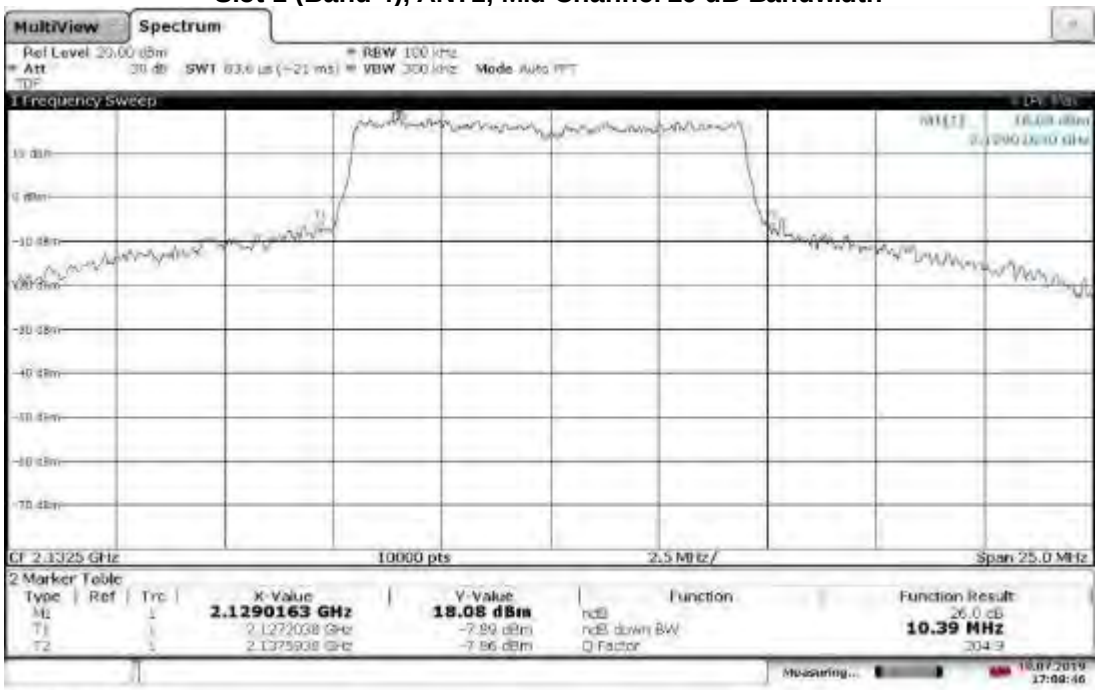
23:01:12 11.04.2019

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

22:59:31 11.04.2019

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

21:51:21 18.07.2019

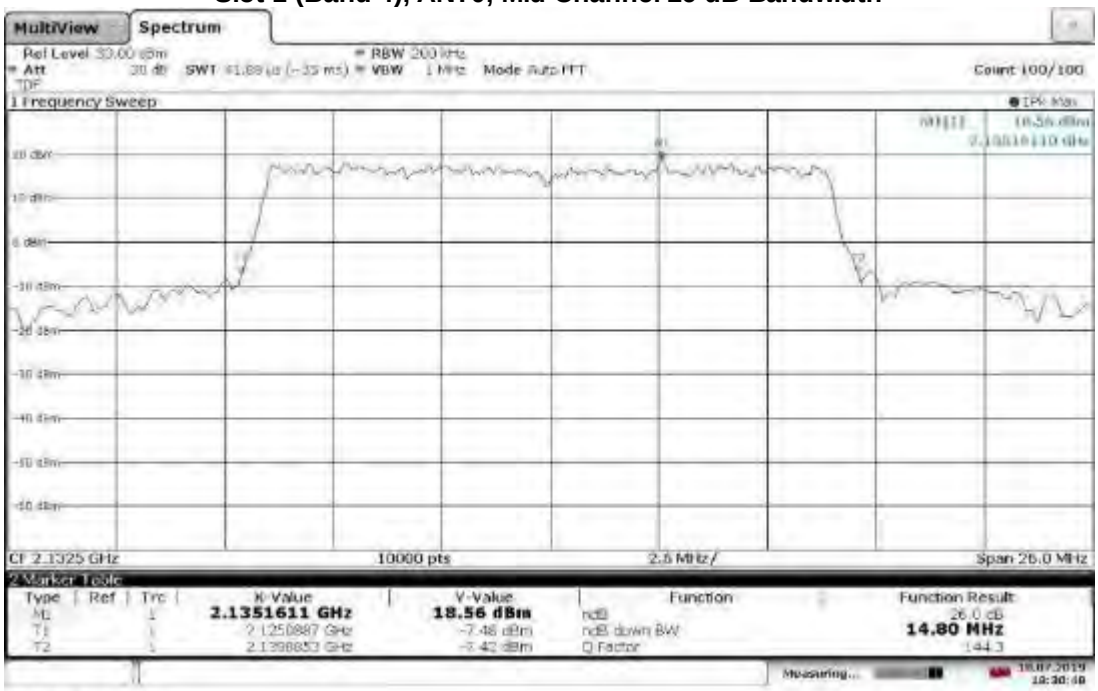
TM1.1-QPSK_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

21:52:25 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

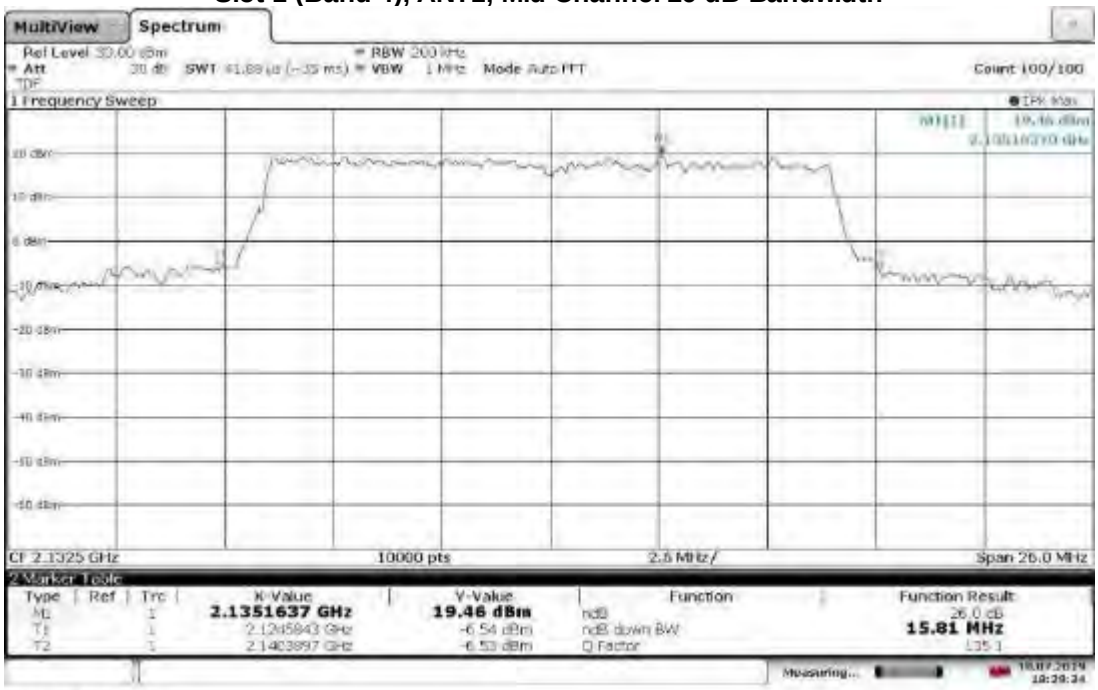
TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth



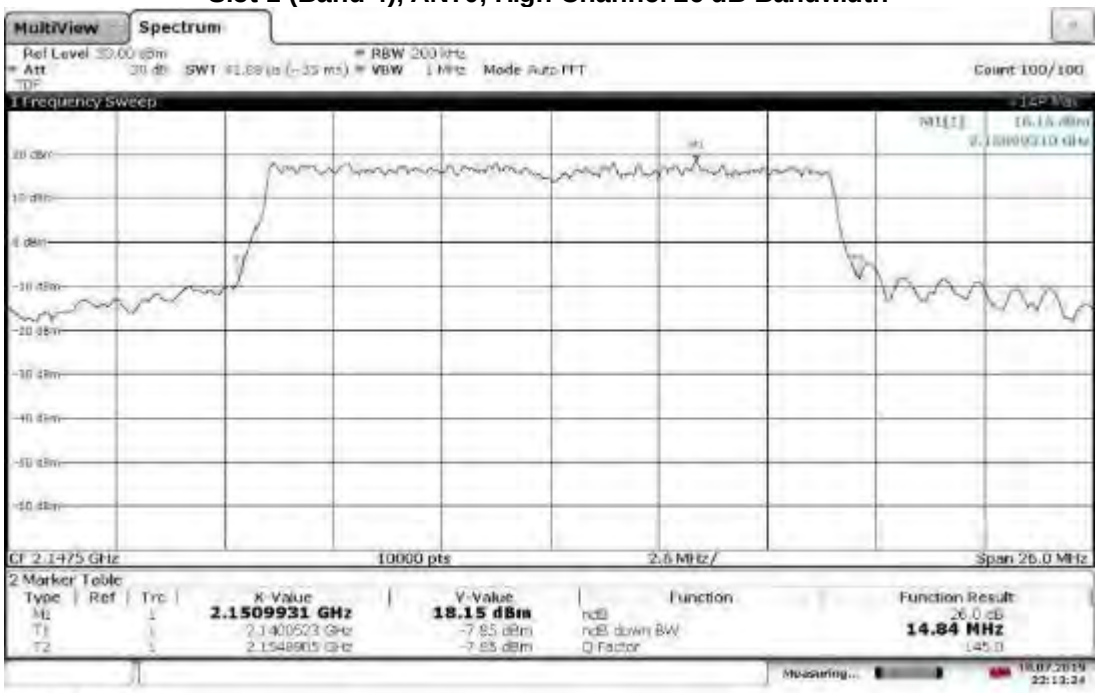
18:30:48 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



18:20:35 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth



22:13:25 18.07.2019

TM1.1-QPSK_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

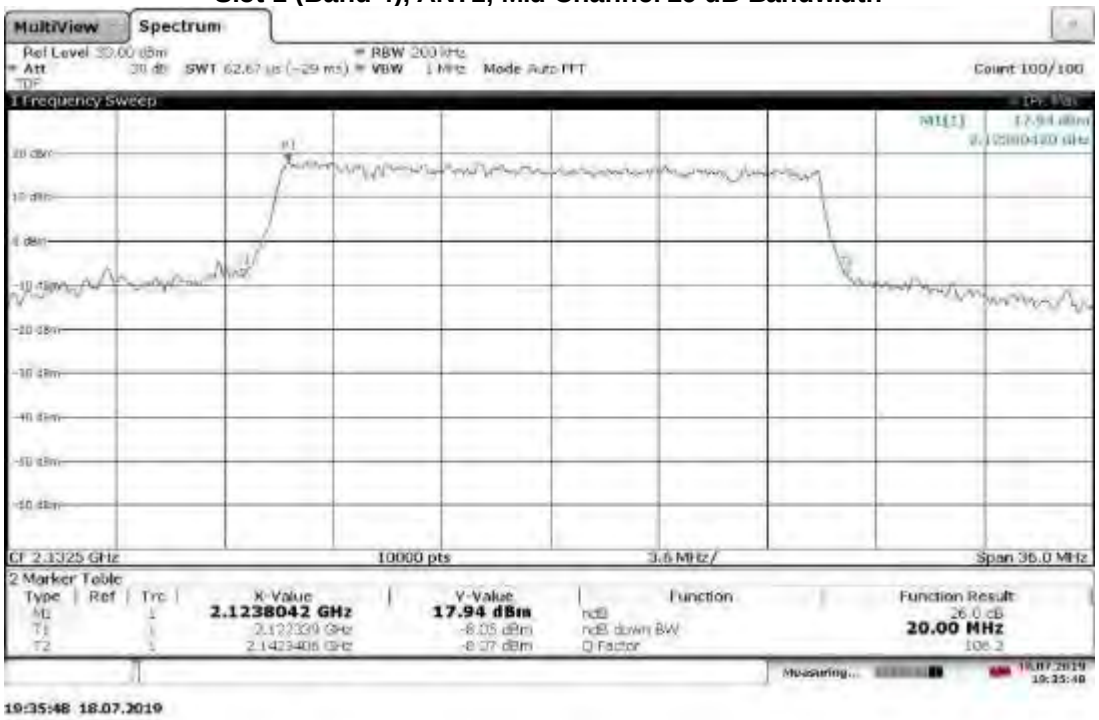
22:14:28 18.07.2019

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

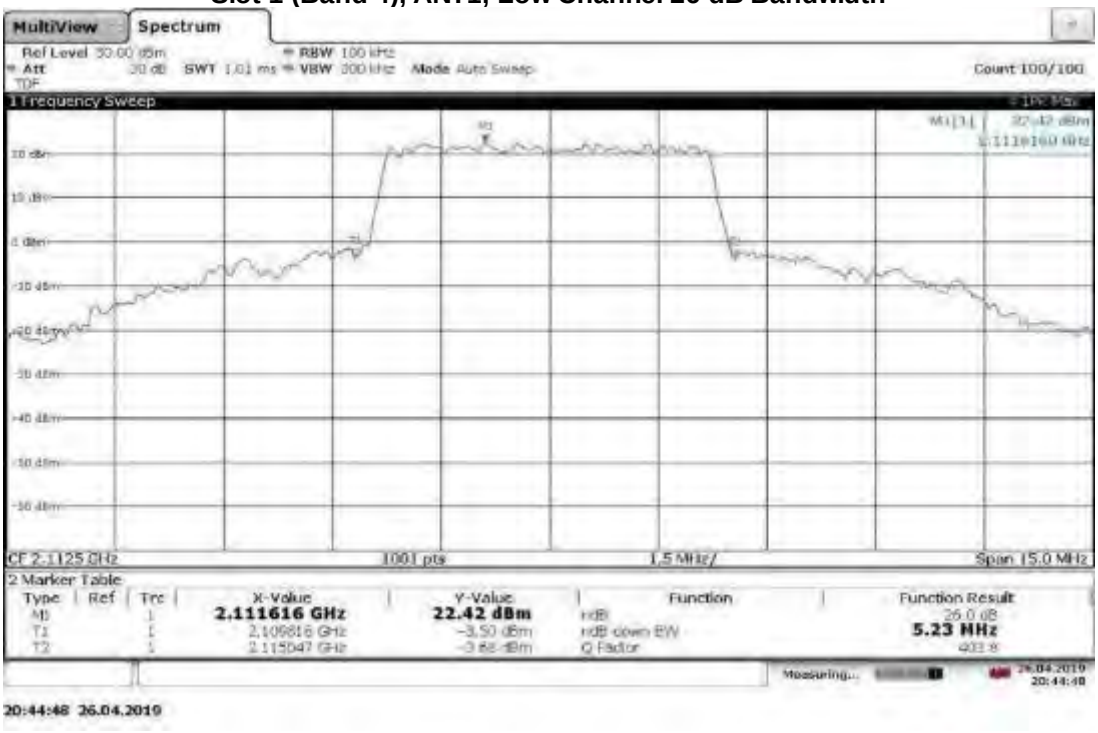


TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM1.1-QPSK_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

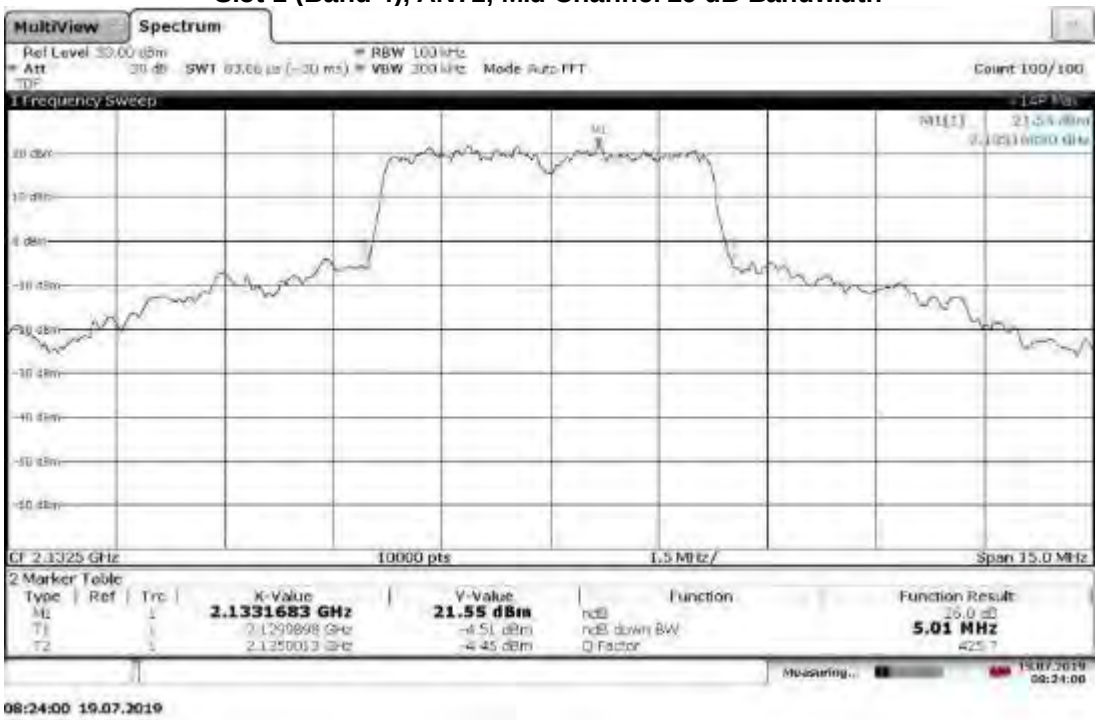
TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth



TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM3.2-16QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

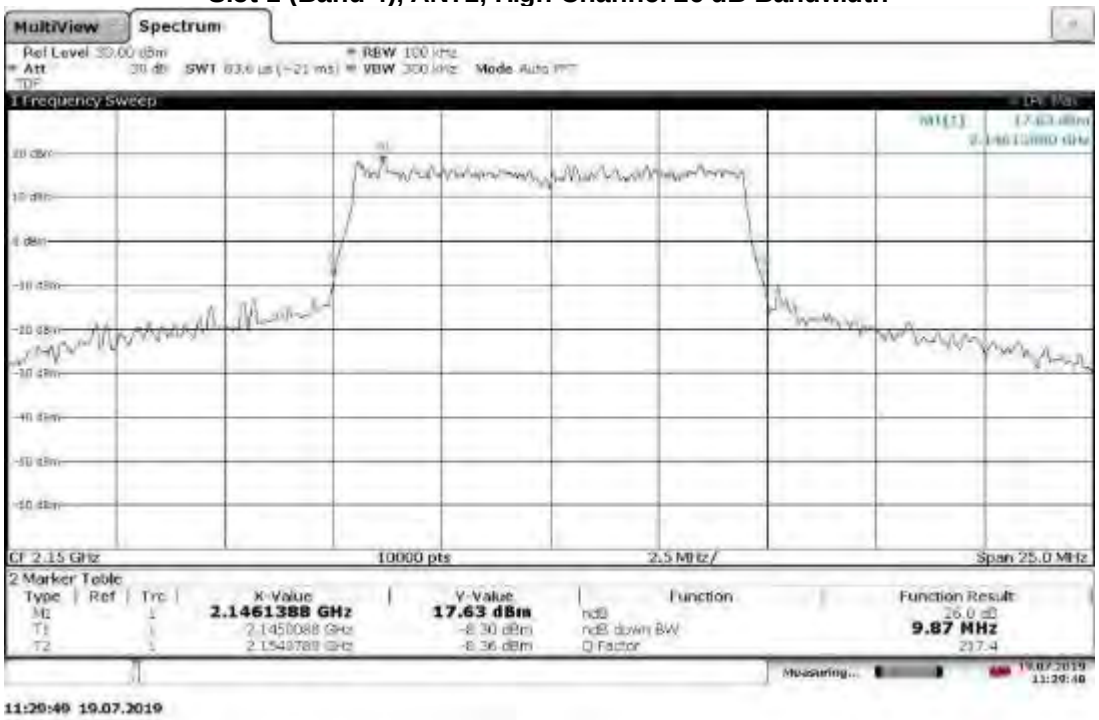
00:04:05 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

00:02:32 19.07.2019

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM3.2-16QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth



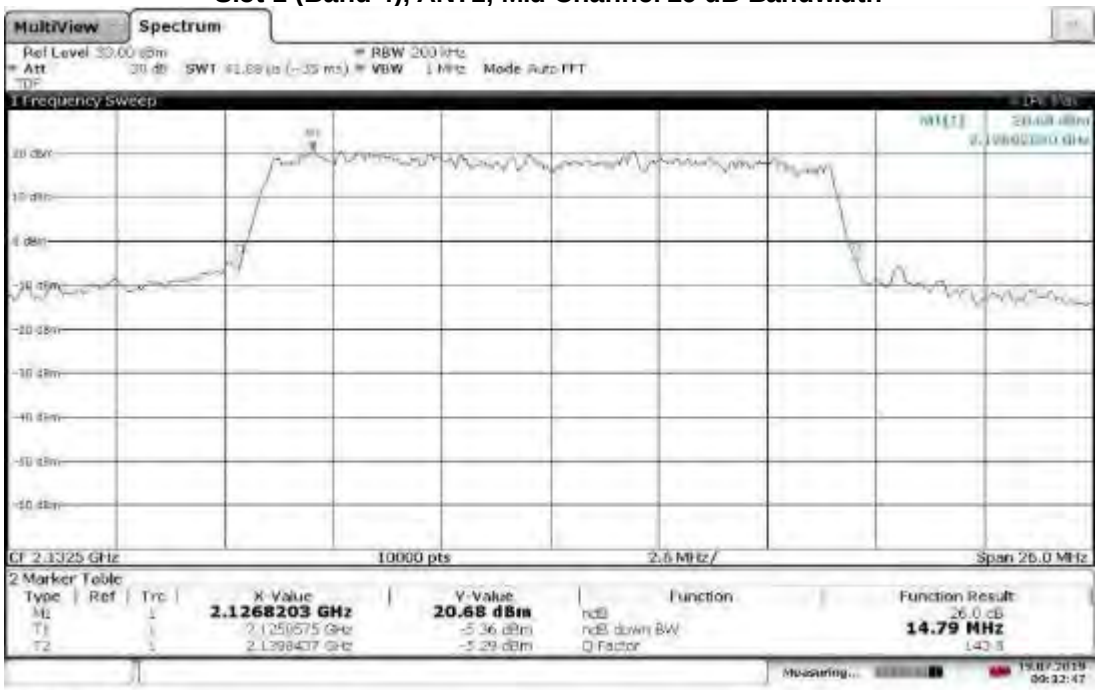
TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

00:34:33 19.07.2019

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



00:32:47 19.07.2019

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

13:37:32 19.07.2019

TM3.2-16QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

13:35:51 19.07.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

18:37:15 30.04.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

18:50:52 30.04.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

14:02:16 19.07.2019

TM3.2-16QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

13:57:49 19.07.2019

TM3.1-64QAM_5 MHz Bandwidth

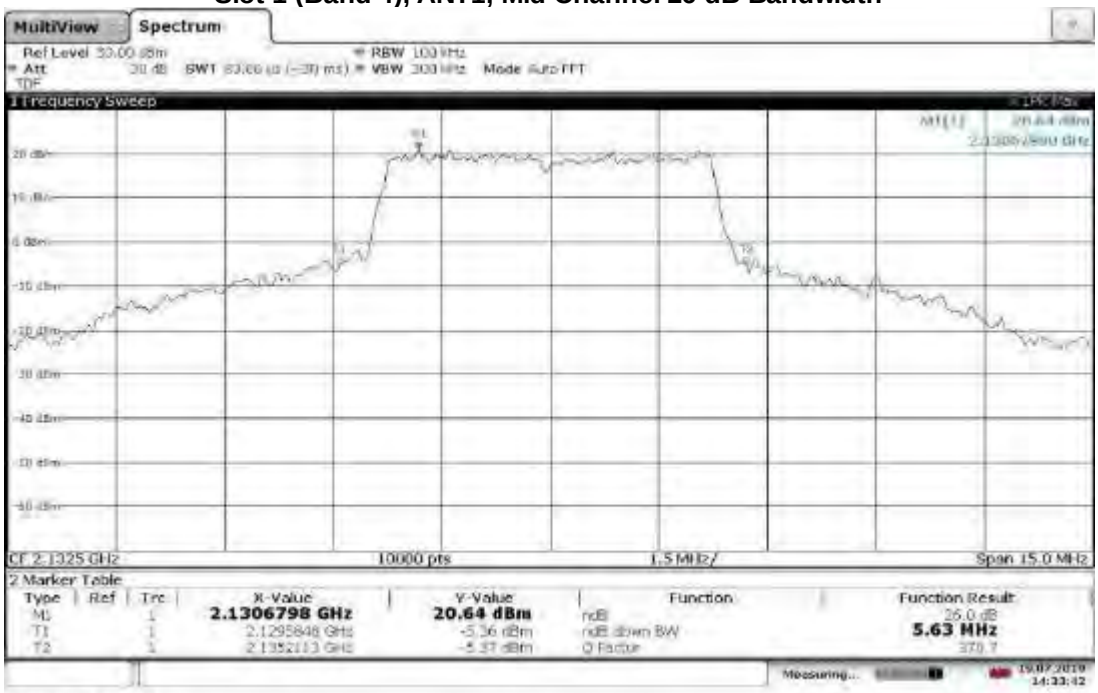
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.1-64QAM_5 MHz Bandwidth

Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth



TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

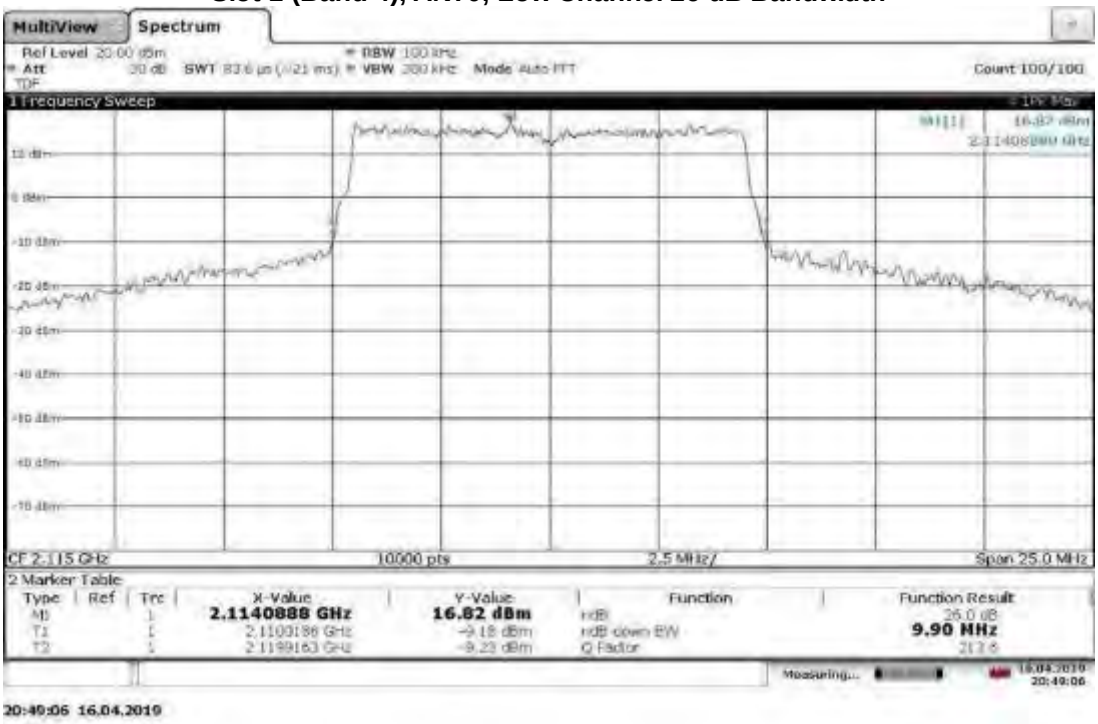
16:48:11 19.07.2019

TM3.1-64QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

16:46:43 19.07.2019

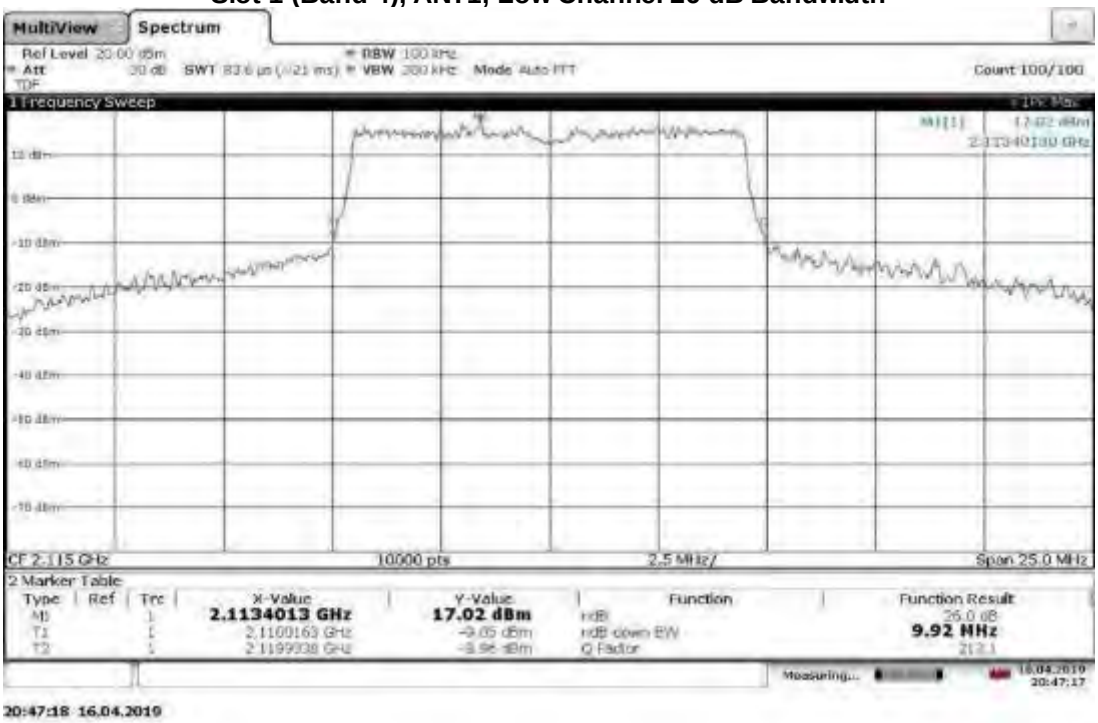
TM3.1-64QAM_10 MHz Bandwidth

Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth



TM3.1-64QAM_10 MHz Bandwidth

Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth



TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

15:07:16 19.07.2019

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

15:05:04 19.07.2019

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

17:11:25 19.07.2019

TM3.1-64QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

17:09:40 19.07.2019

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

10:30:45 17.04.2019

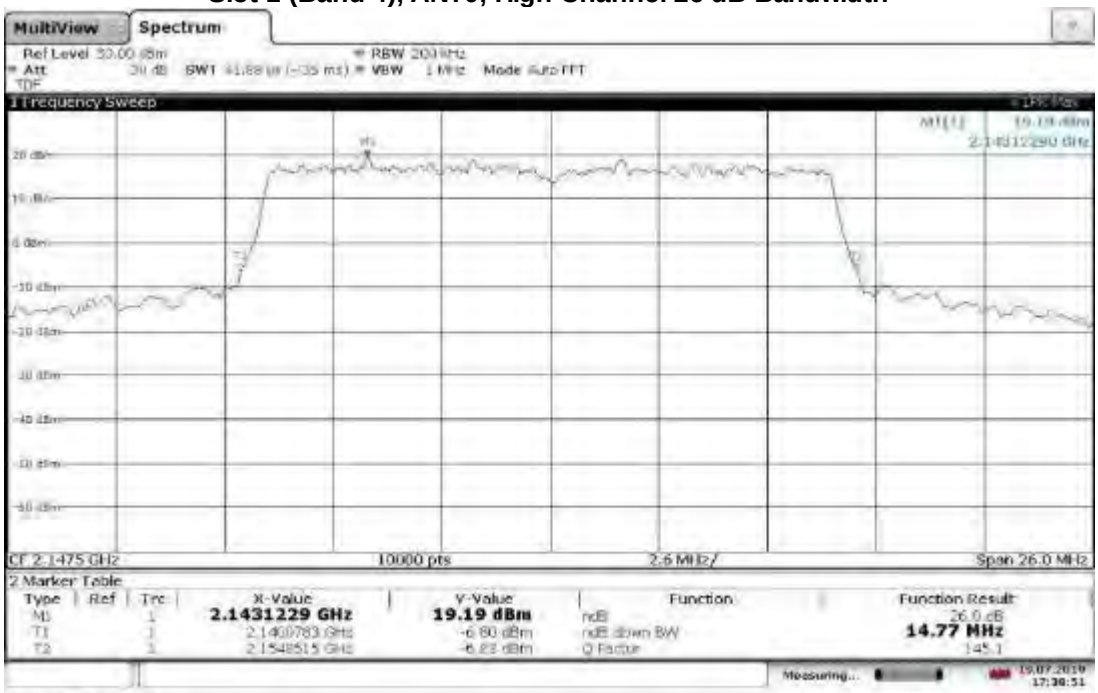
TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

10:29:18 17.04.2019

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth



17:38:52 19.07.2019

TM3.1-64QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

17:36:47 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

16:15:28 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

16:13:40 19.07.2019

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM3.1-64QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

19:06:31 19.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

19:08:28 19.07.2019

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

TM3.1a-256QAM_5 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

19:46:42 19.07.2019

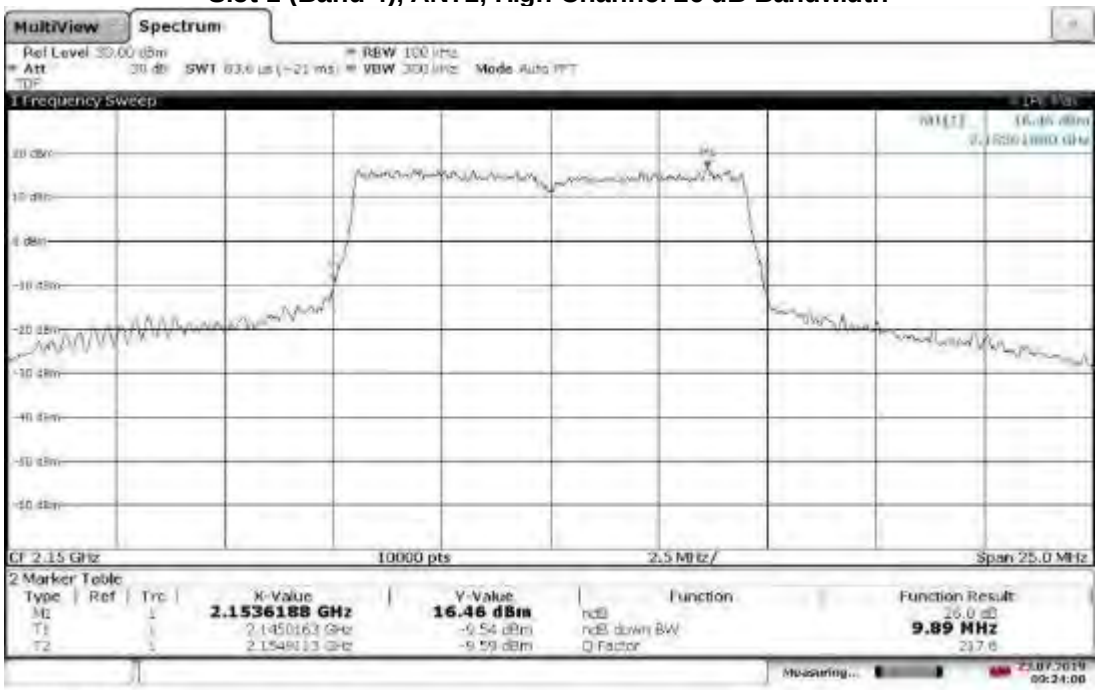
TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

19:48:35 19.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

00:25:55 23.07.2019

TM3.1a-256QAM_10 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth



00:24:01 23.07.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

16:24:07 19.04.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

16:22:11 19.04.2019

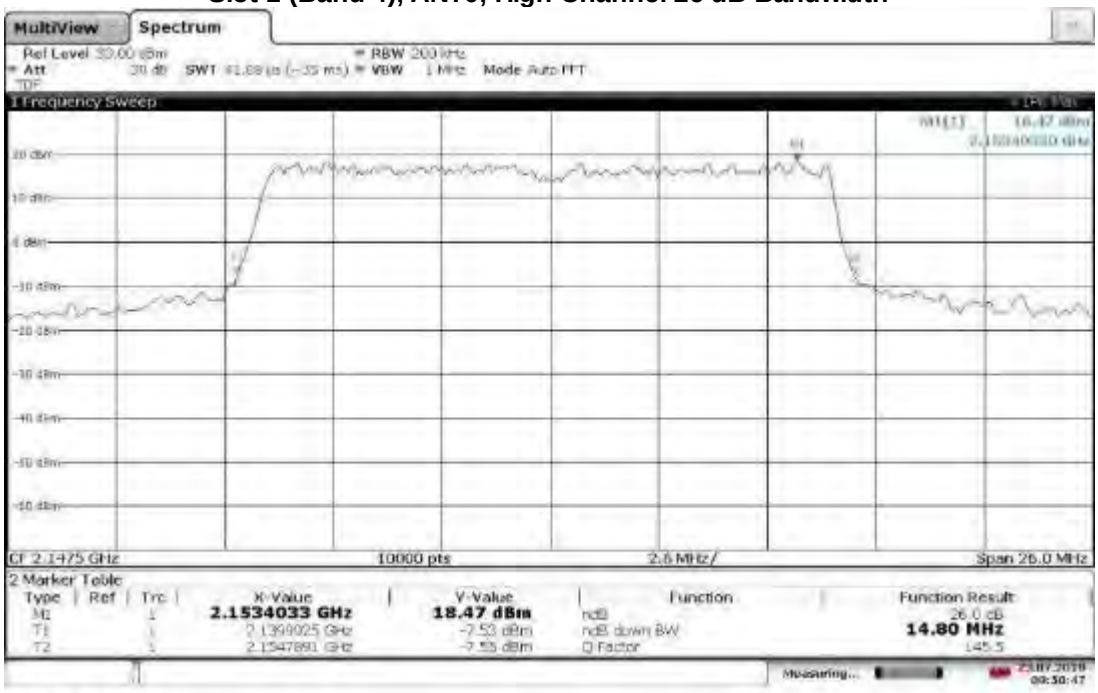
TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

20:19:15 19.07.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

20:20:58 19.07.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth



00:50:48 23.07.2019

TM3.1a-256QAM_15 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

00:40:11 23.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Low Channel 26 dB Bandwidth

19:34:21 19.04.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Low Channel 26 dB Bandwidth

19:32:43 19.04.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, Mid Channel 26 dB Bandwidth

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, Mid Channel 26 dB Bandwidth

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT0, High Channel 26 dB Bandwidth

10:12:54 23.07.2019

TM3.1a-256QAM_20 MHz Bandwidth
Slot 1 (Band 4), ANT1, High Channel 26 dB Bandwidth

10:10:49 23.07.2019

		Test Date:	04/10/2019, 04/11/2019, 04/12/2019, 04/10/2019, 04/11/2019, 04/15/2019, 04/16/2019, 04/17/2019, 04/18/2019, 04/26/2019, 04/30/2019, 07/18/2019, 07/19/2019, 07/23/2019
Test Personnel:	Kouma Sinn KPS		
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 8.3
Input Voltage:	48 VDC (POE)		
		Ambient Temperature:	22, 23, 22, 23, 23, 23, 23, 22, 22, 20, 22, 22, 22, 21 ºC
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Relative Humidity:	21, 15, 21, 15, 26, 47, 20, 22, 23, 42, 35, 64, 62, 71 %
		Atmospheric Pressure:	1004, 1013, 1004, 1013, 1004, 980, 1001, 1011, 1014, 996, 1017, 1007, 1005, 1001 mbars