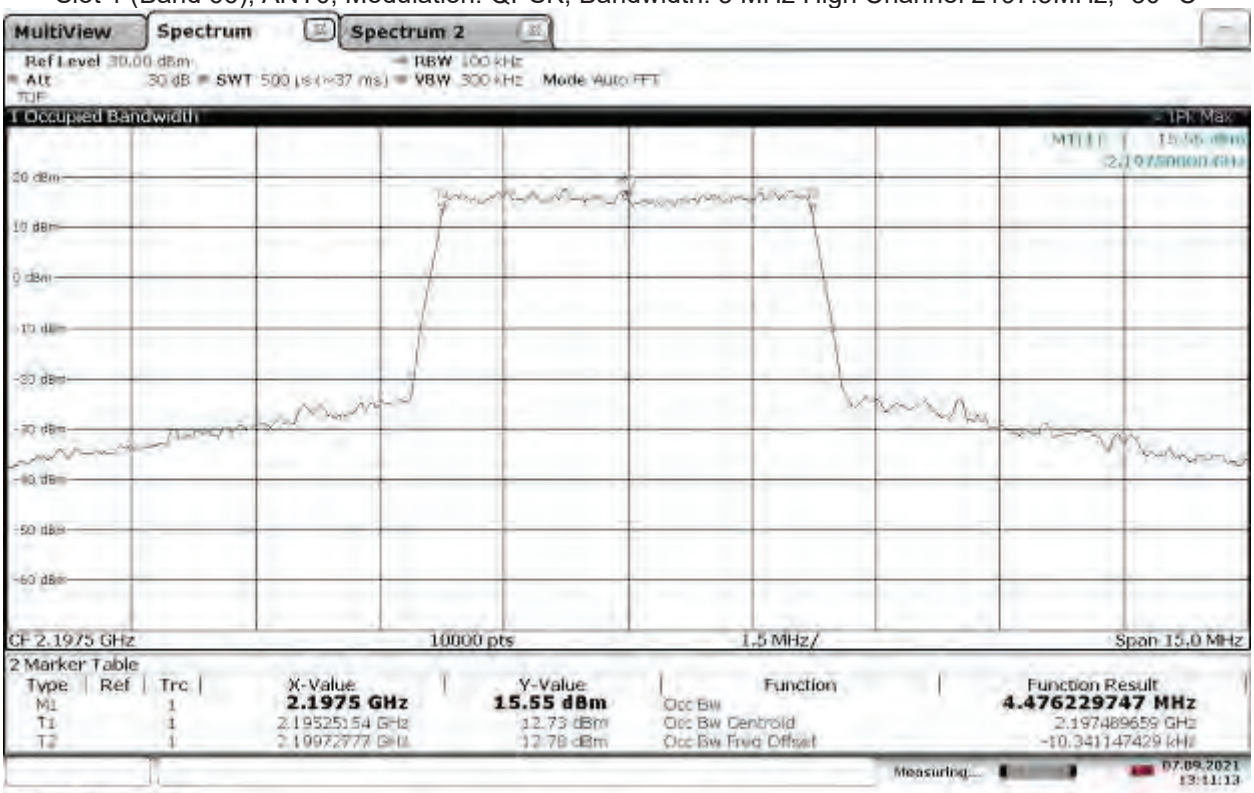
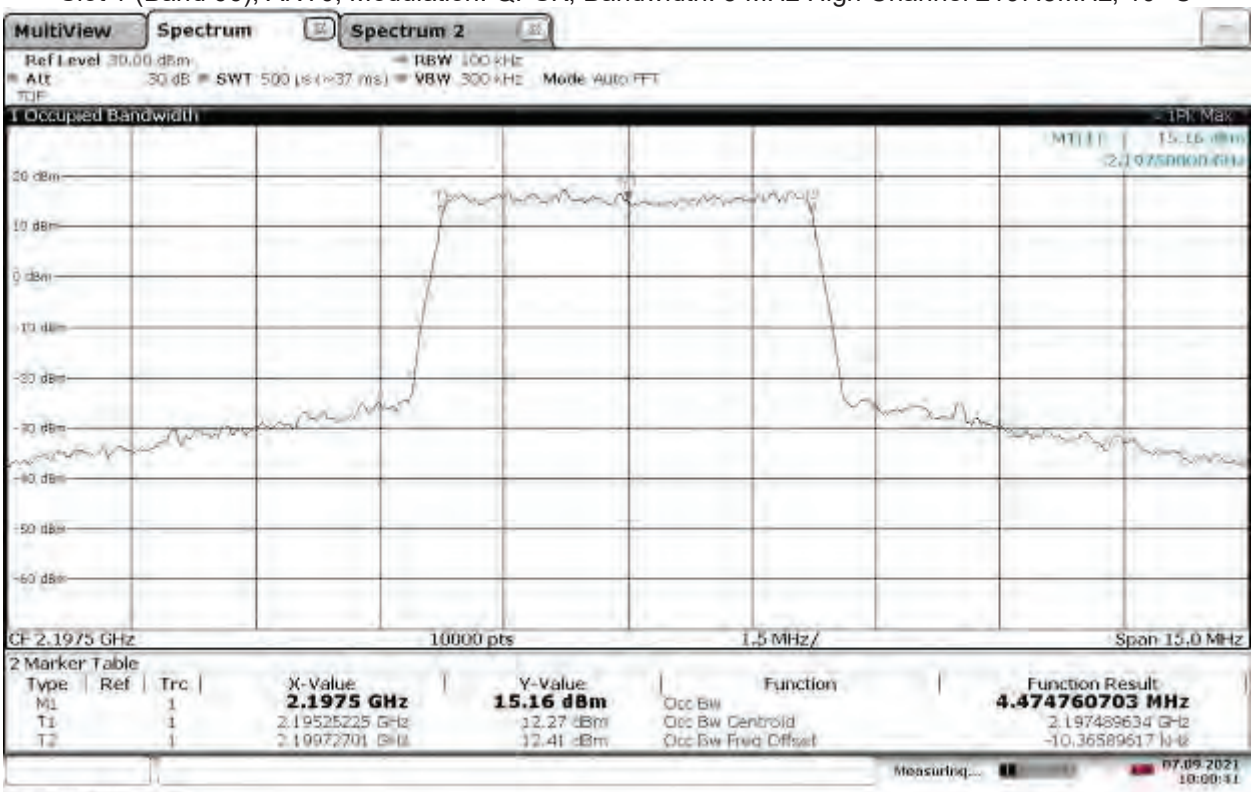
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, -30 ºC



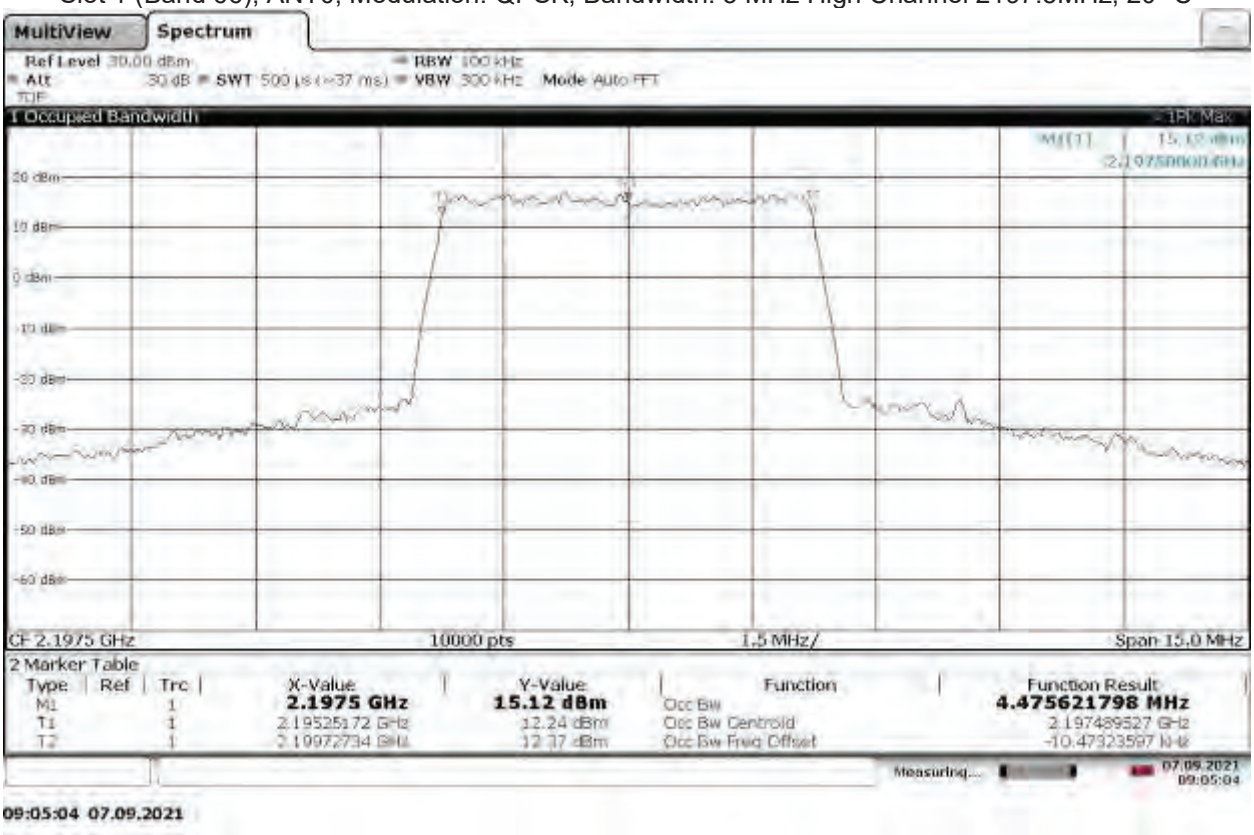
13:11:13 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, 10 ºC

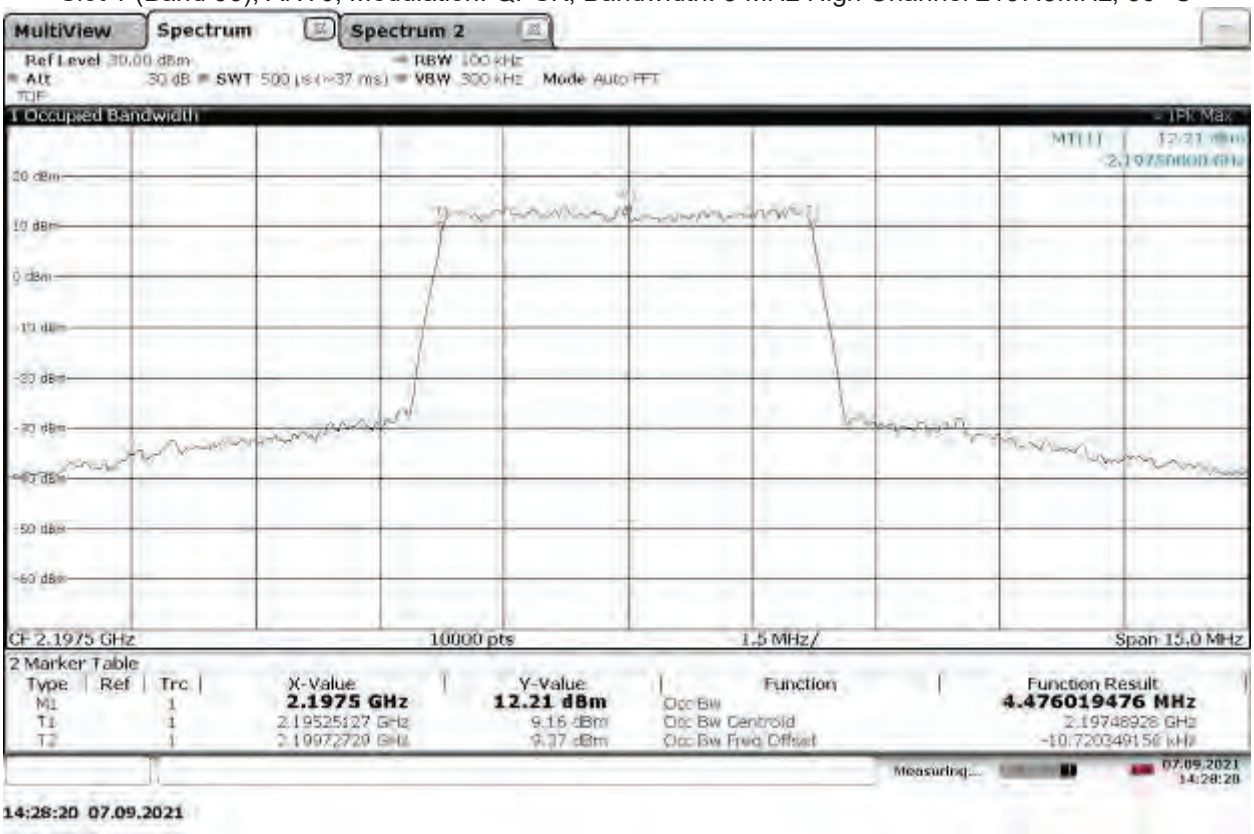


10:00:41 07.09.2021

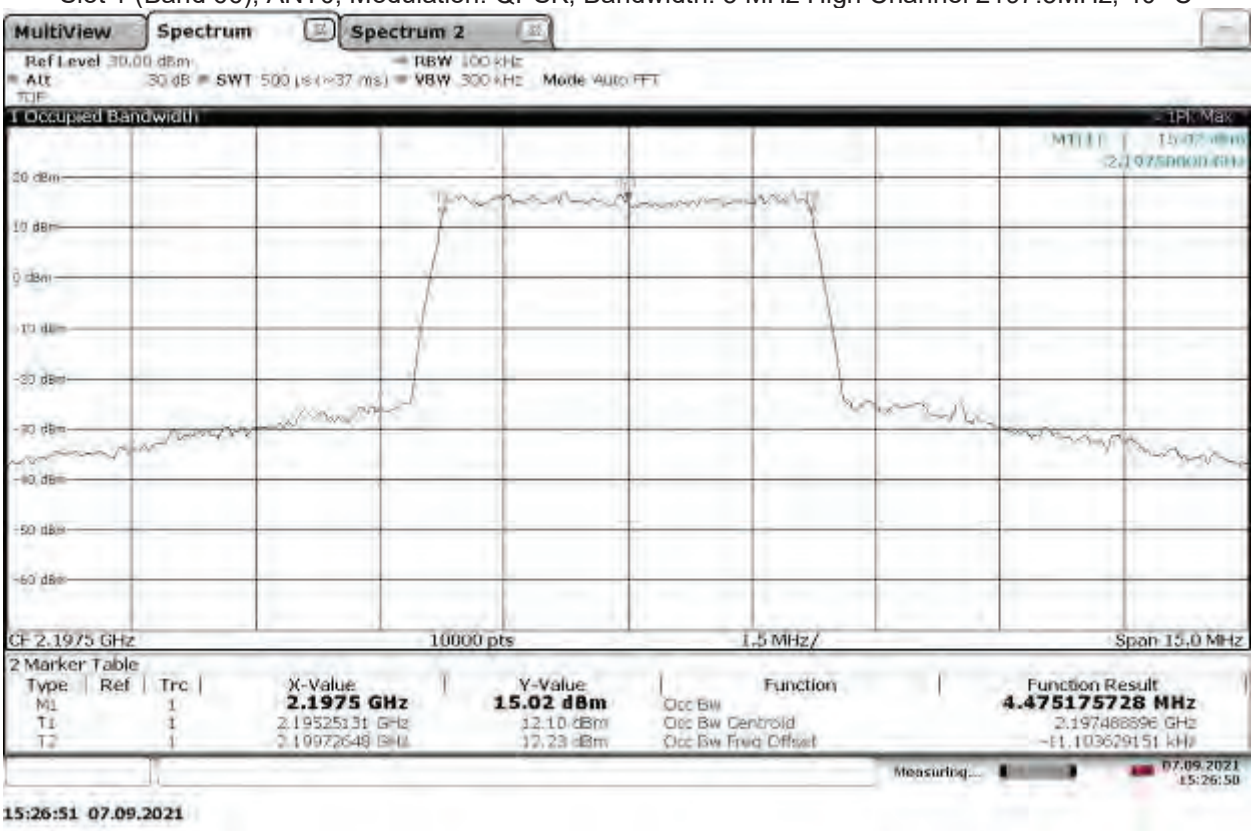
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, 20 ºC



Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, 30 ºC

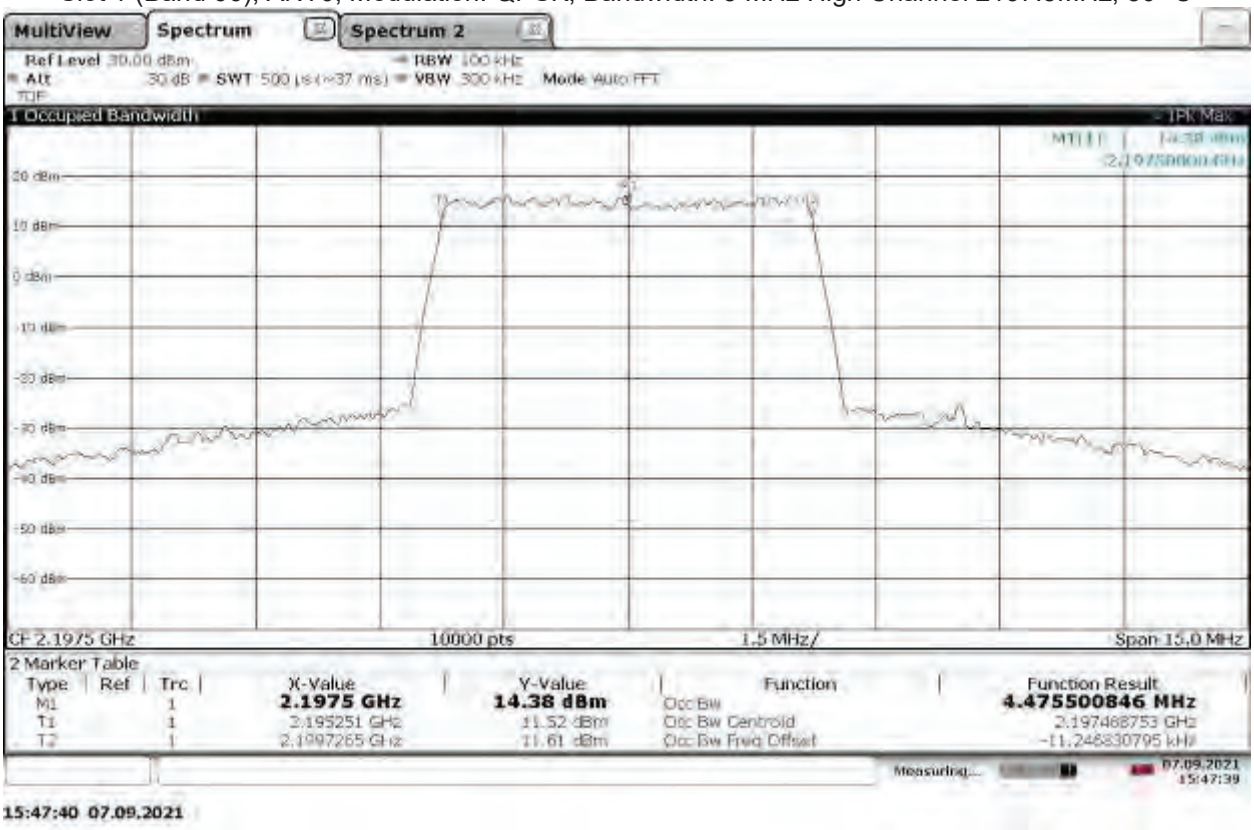


Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, 40 ºC



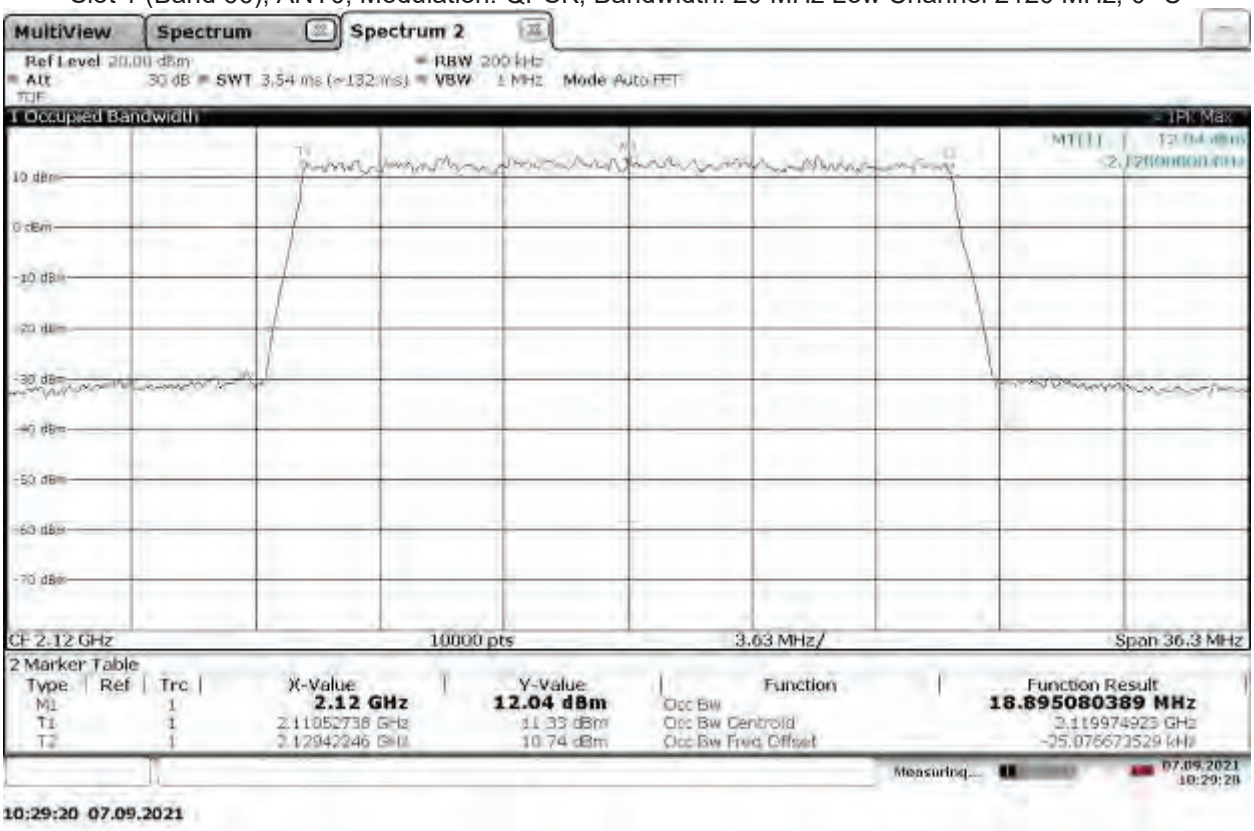
15:26:51 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz High Channel 2197.5MHz, 50 ºC



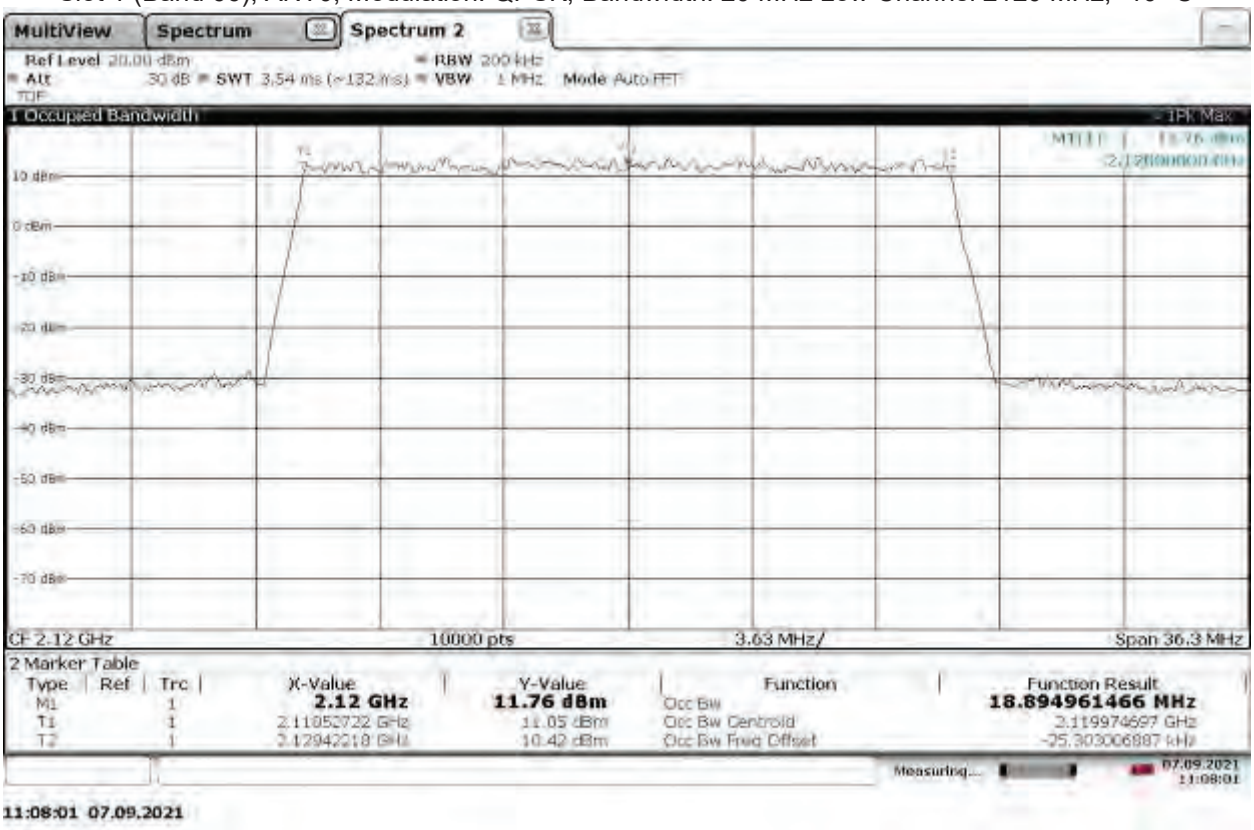
15:47:40 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 0 ºC



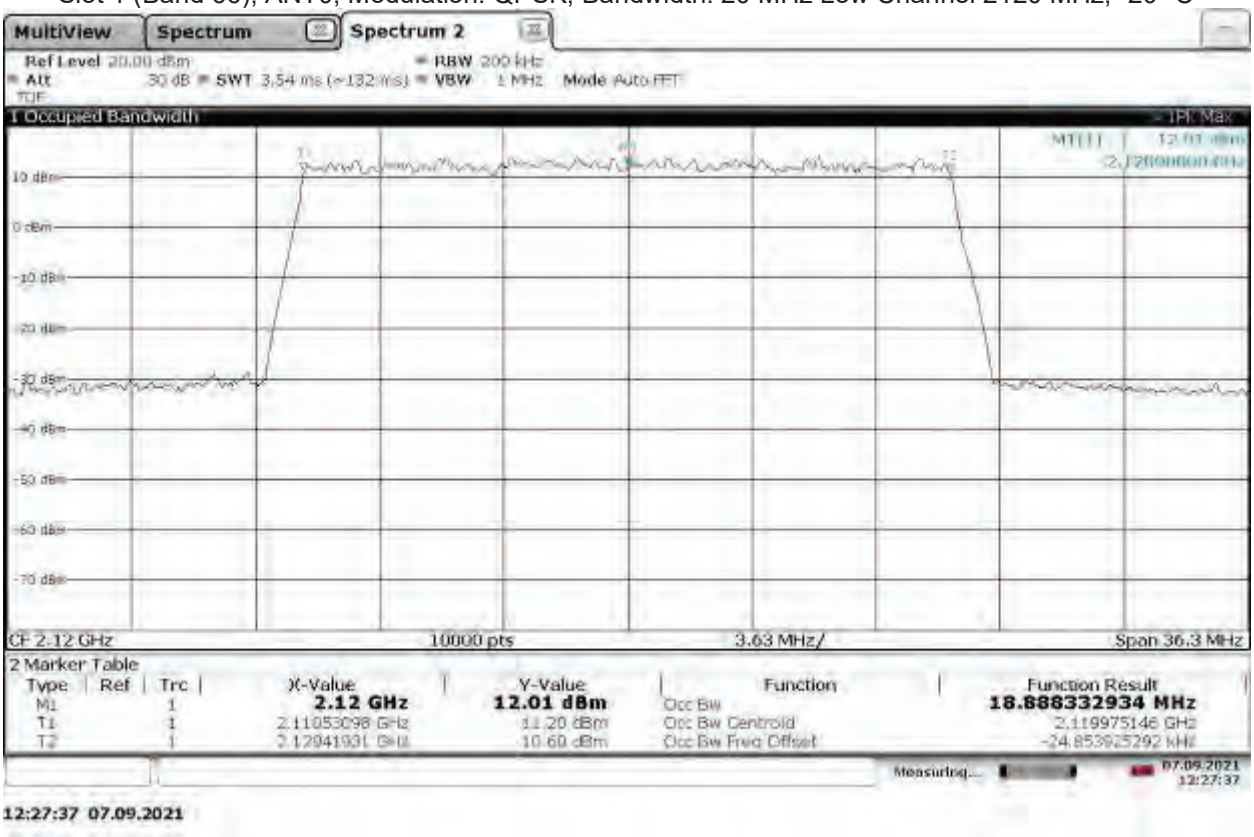
10:29:20 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, -10 ºC

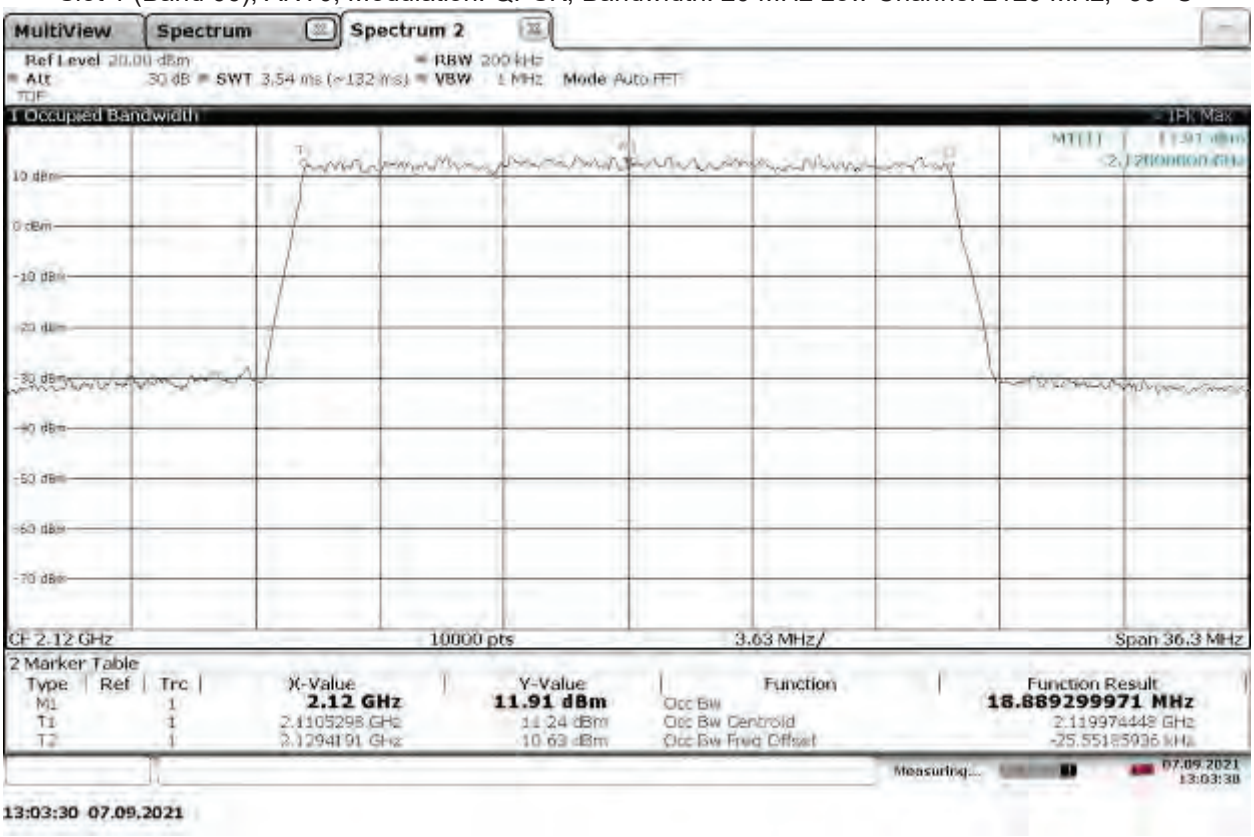


11:08:01 07.09.2021

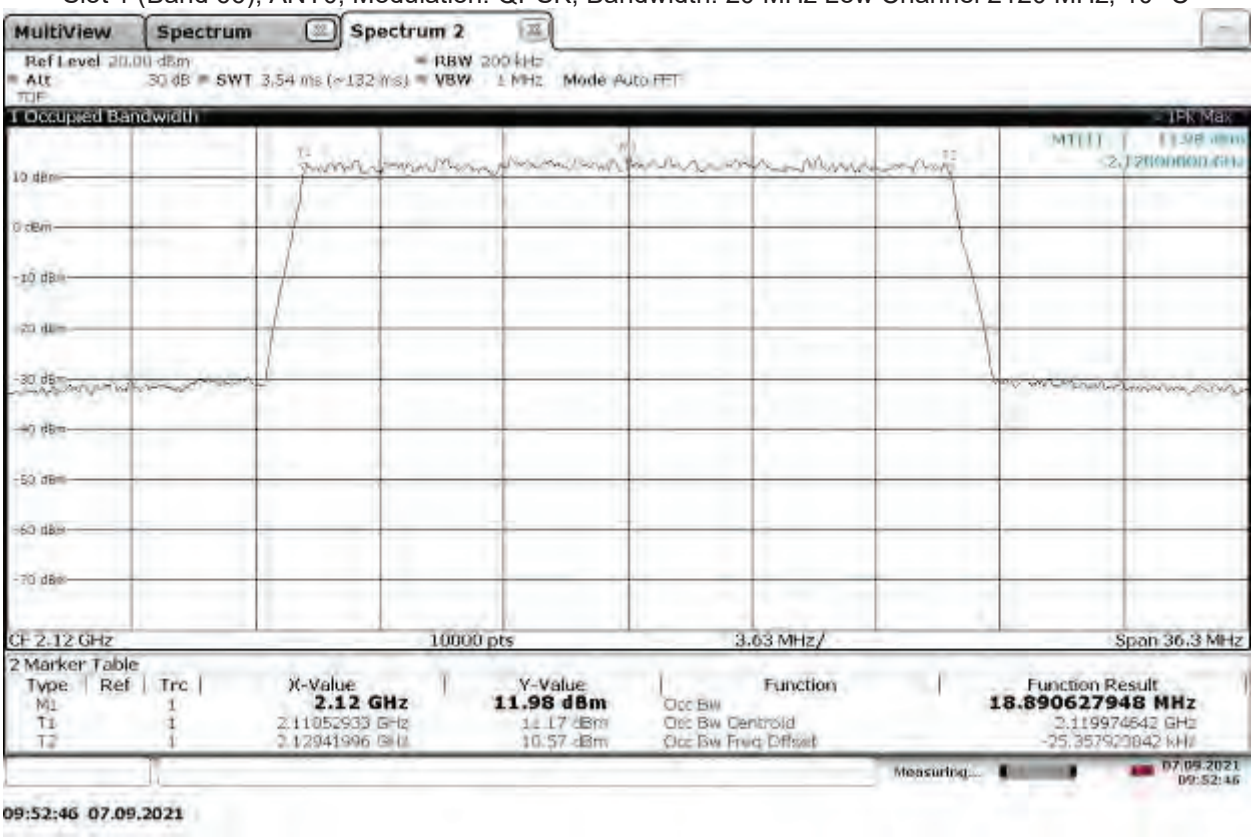
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, -20 ºC



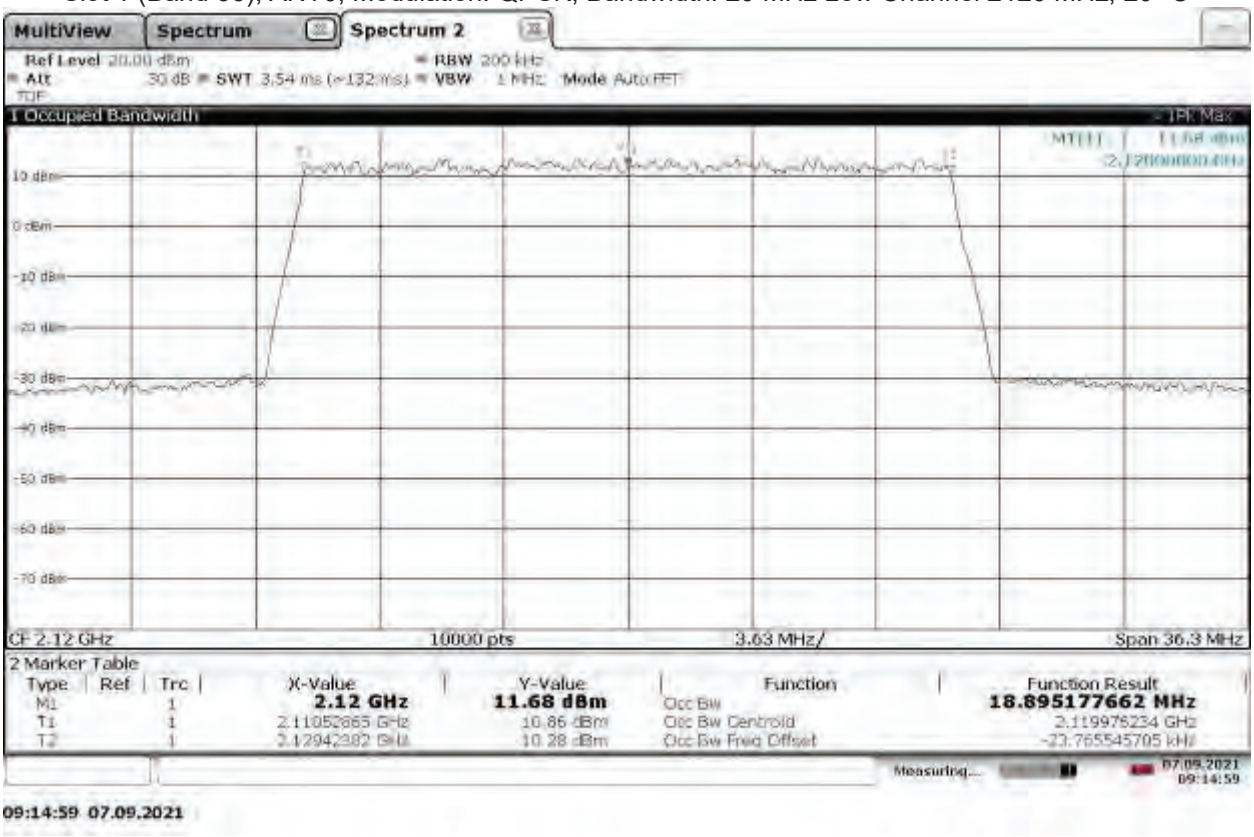
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, -30 ºC



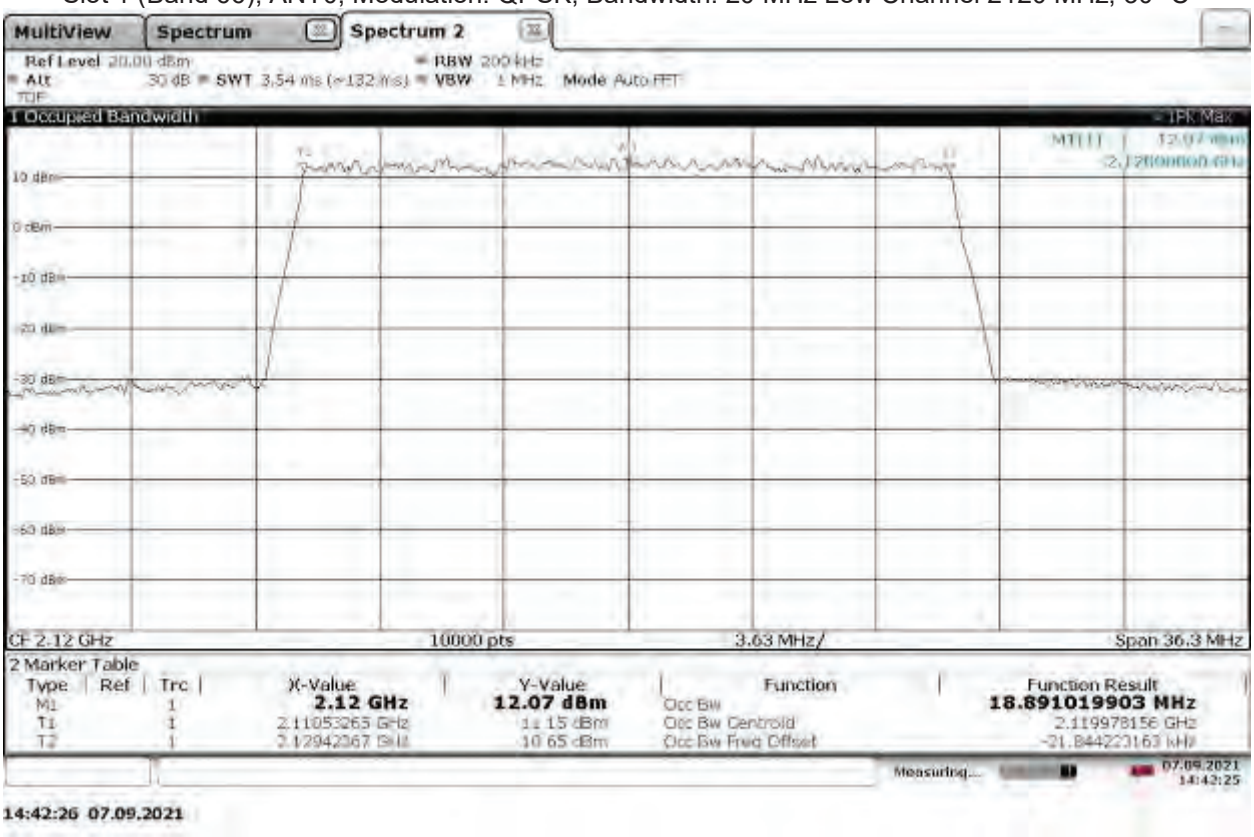
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 10 ºC



Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 20 ºC

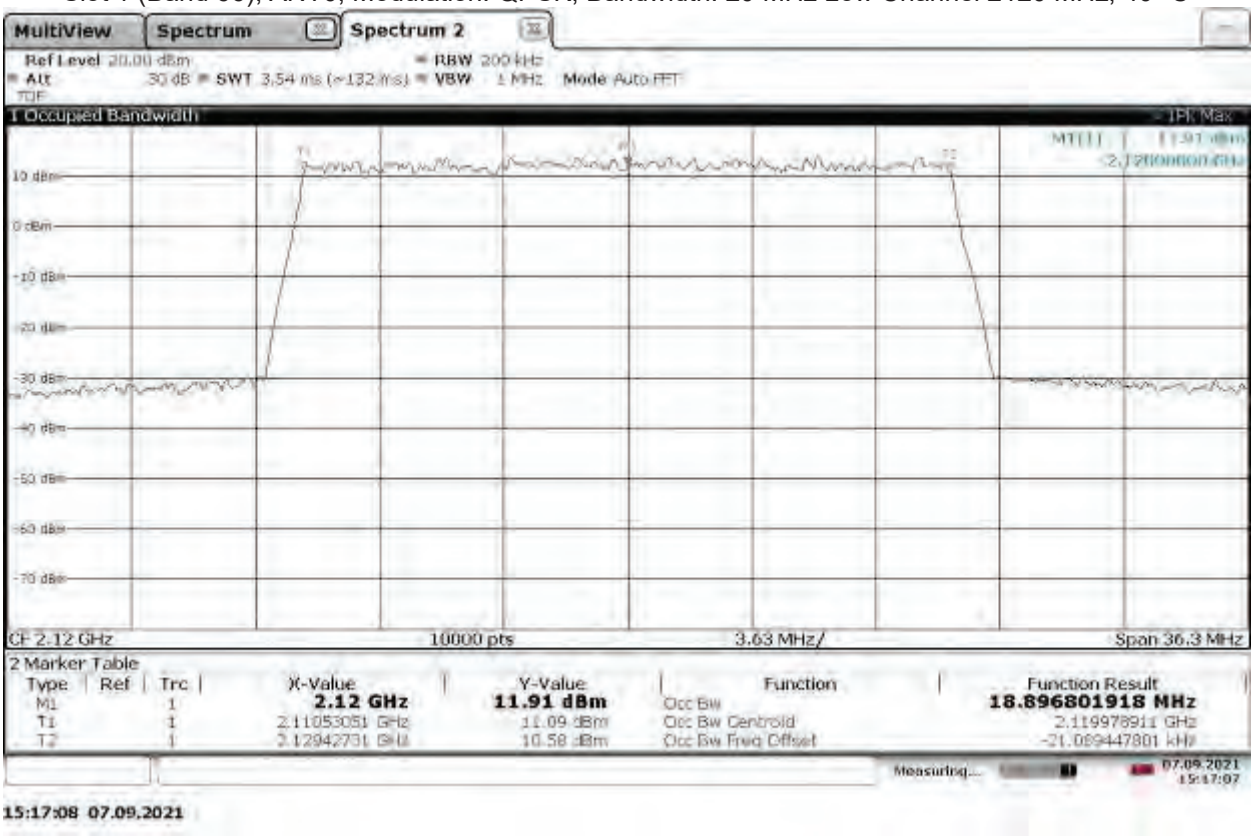


Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 30 ºC



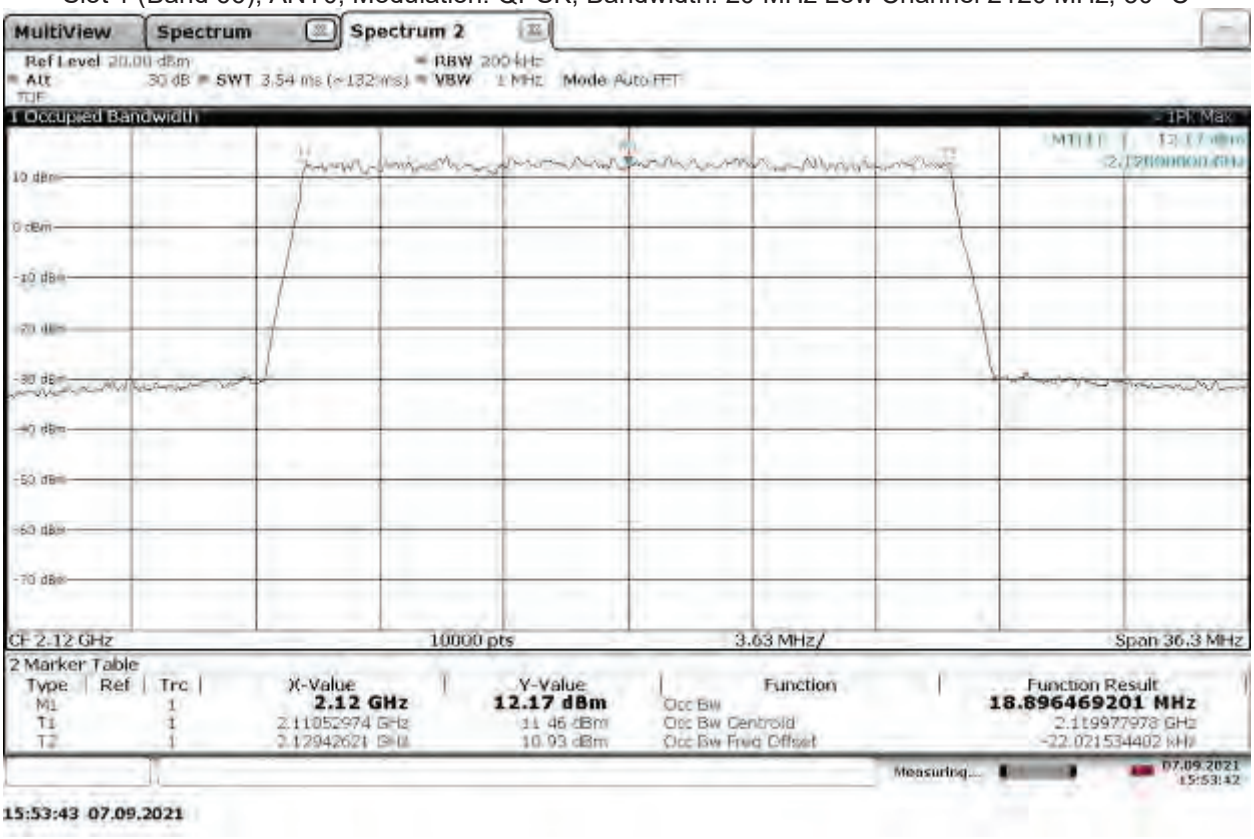
14:42:26 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 40 ºC

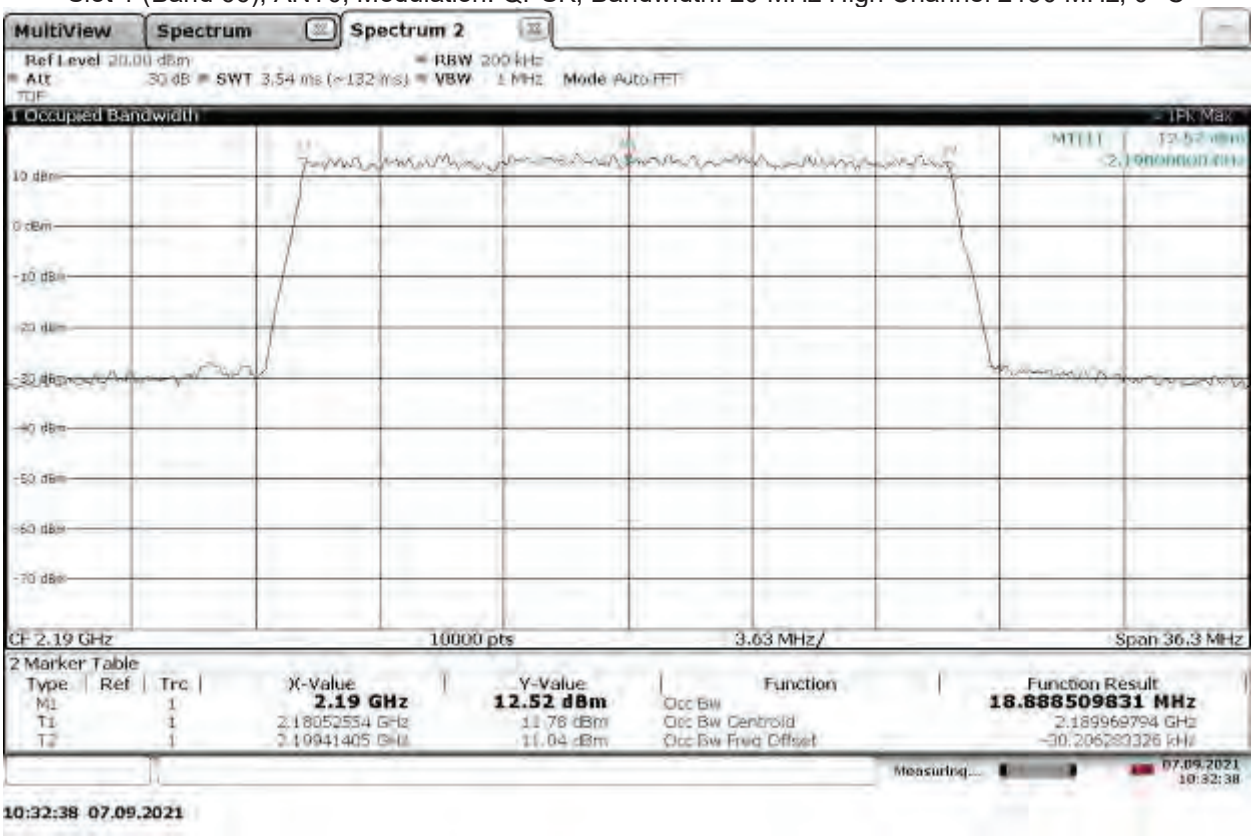


15:17:08 07.09.2021

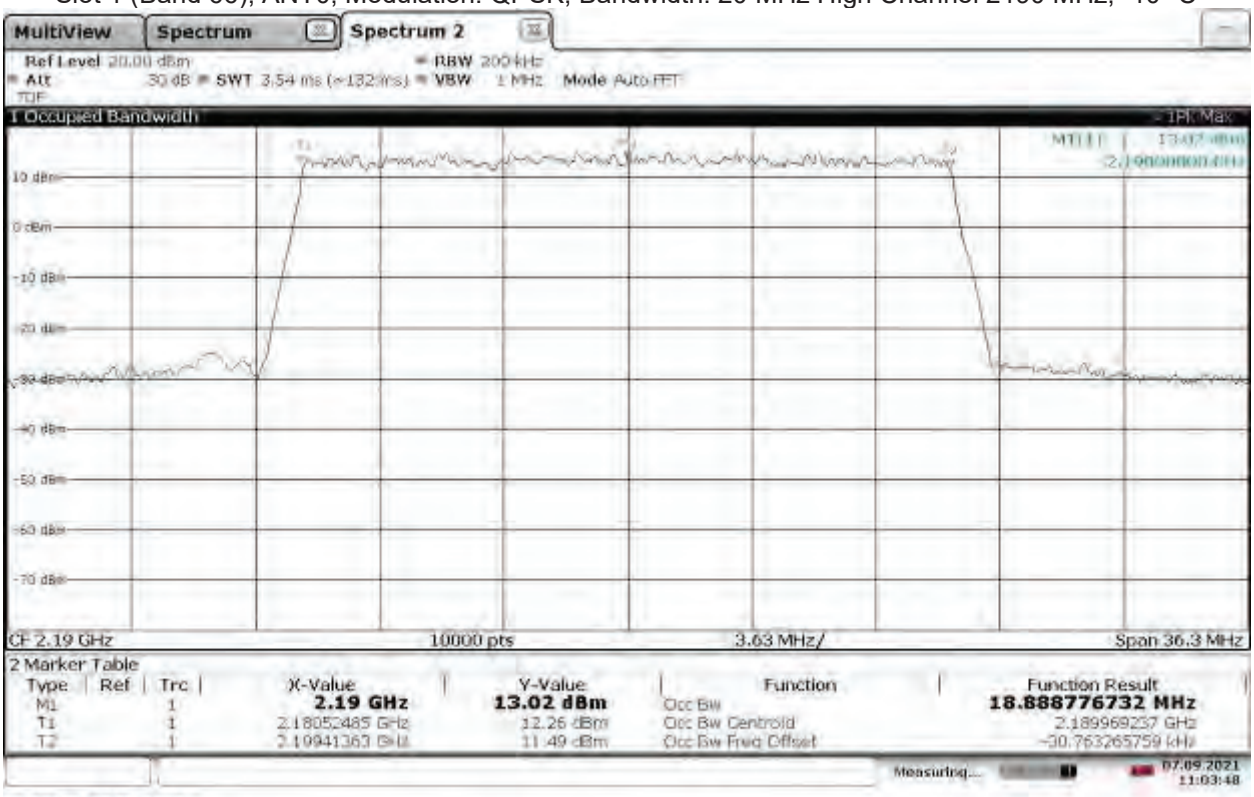
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 2120 MHz, 50 ºC



Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 0 ºC

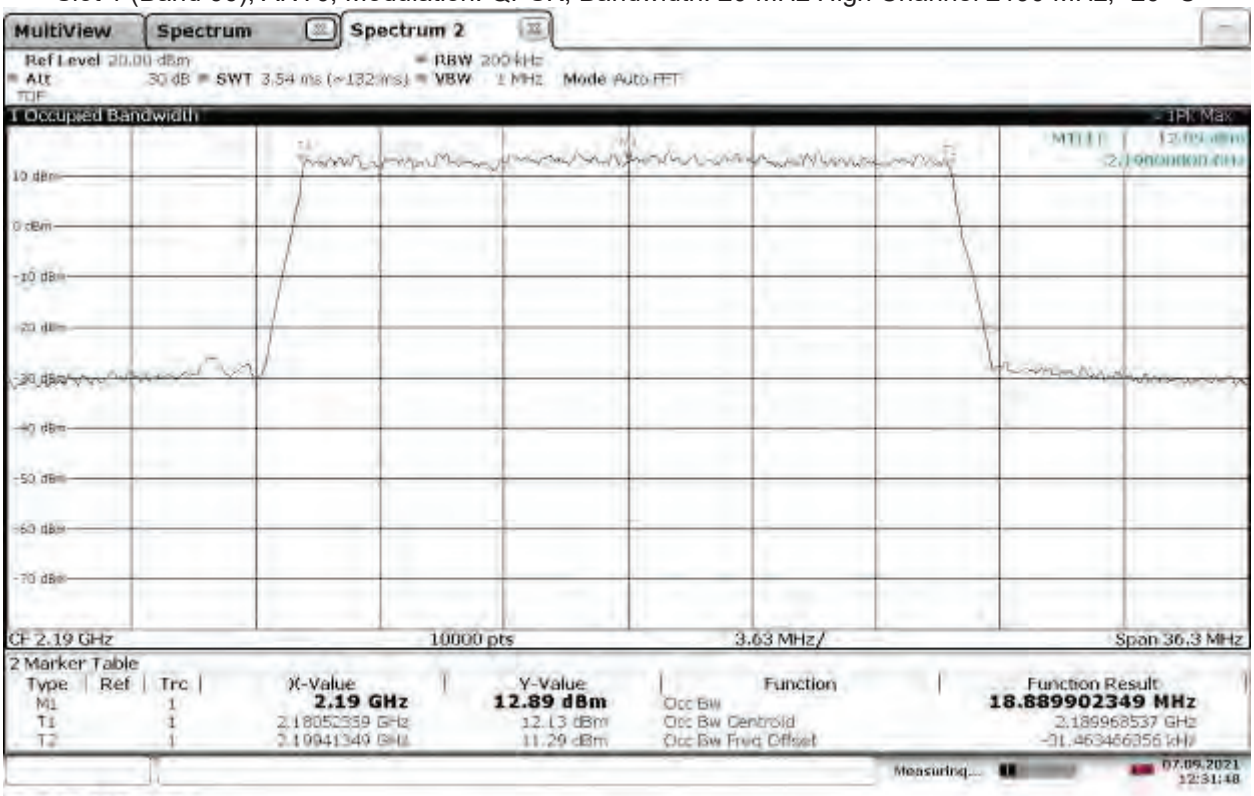


Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, -10 ºC



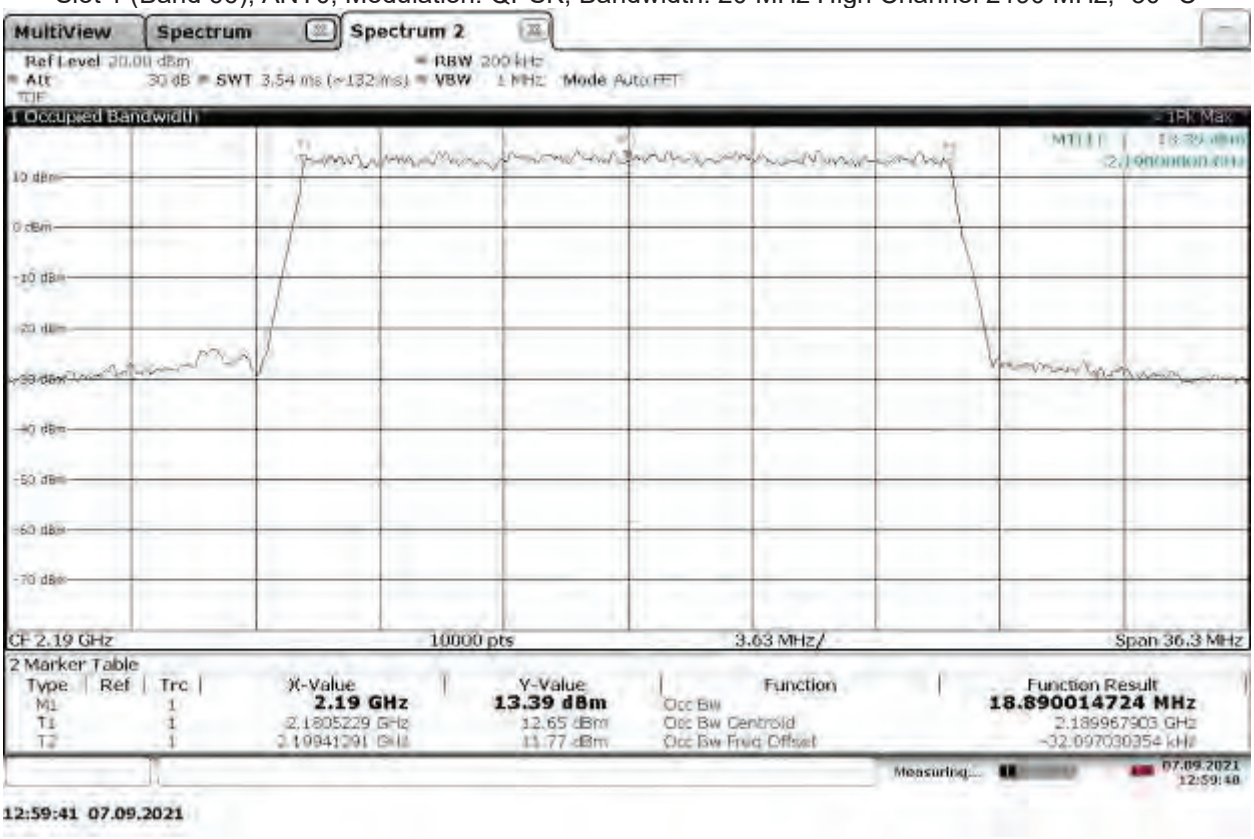
11:03:48 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, -20 ºC

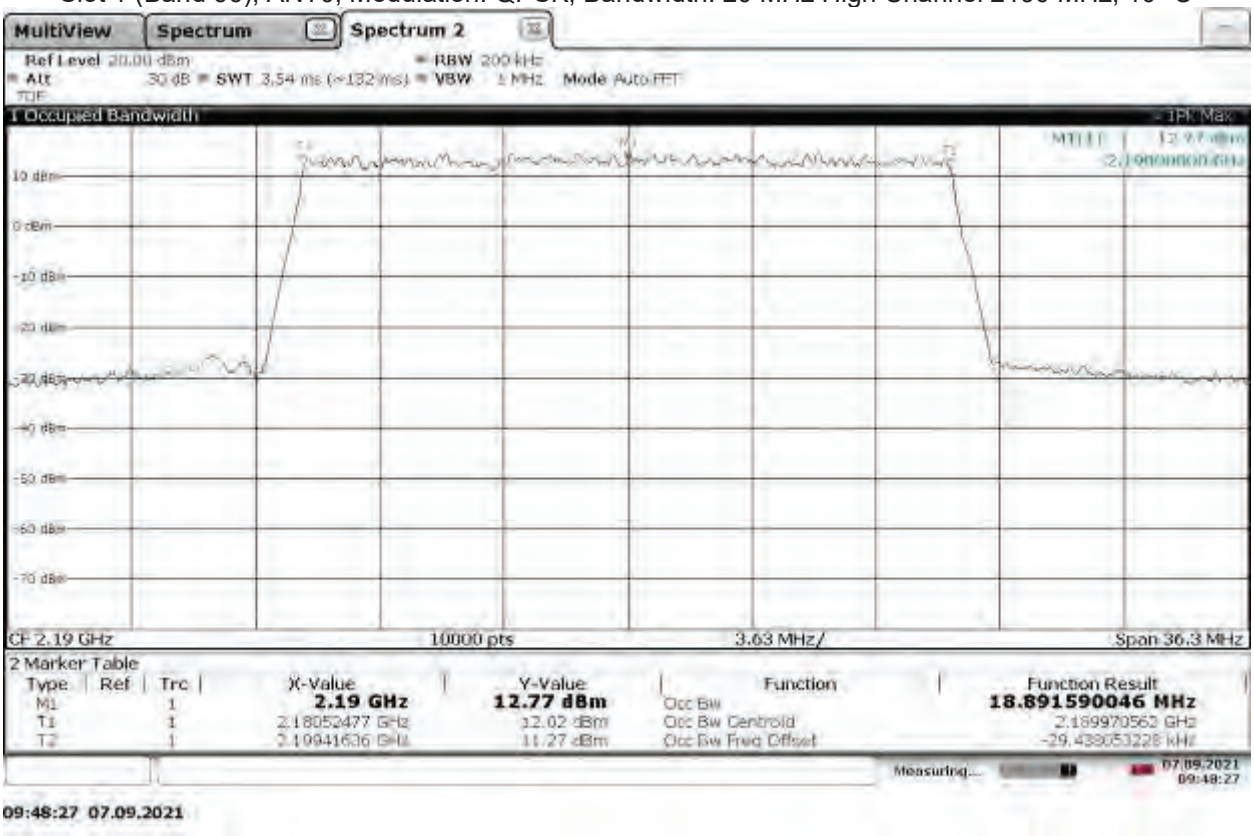


12:31:48 07.09.2021

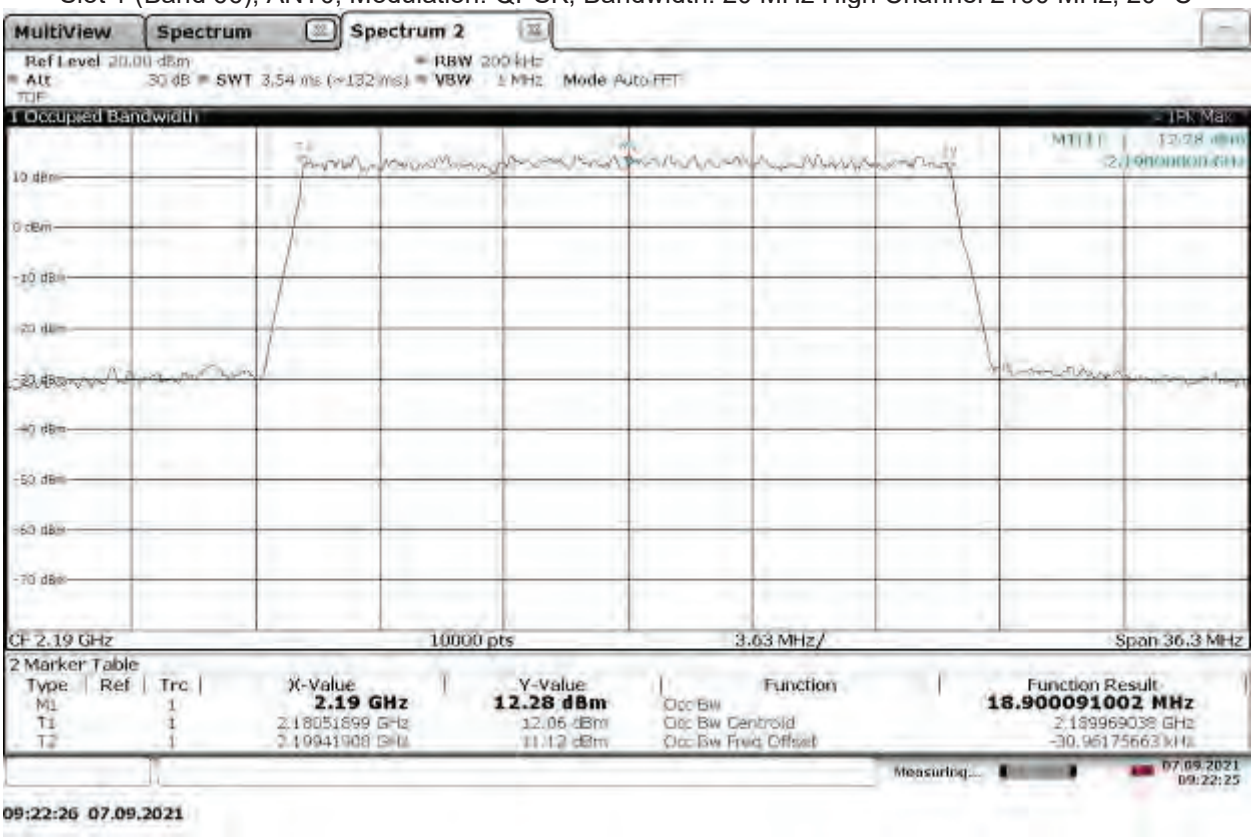
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, -30 ºC



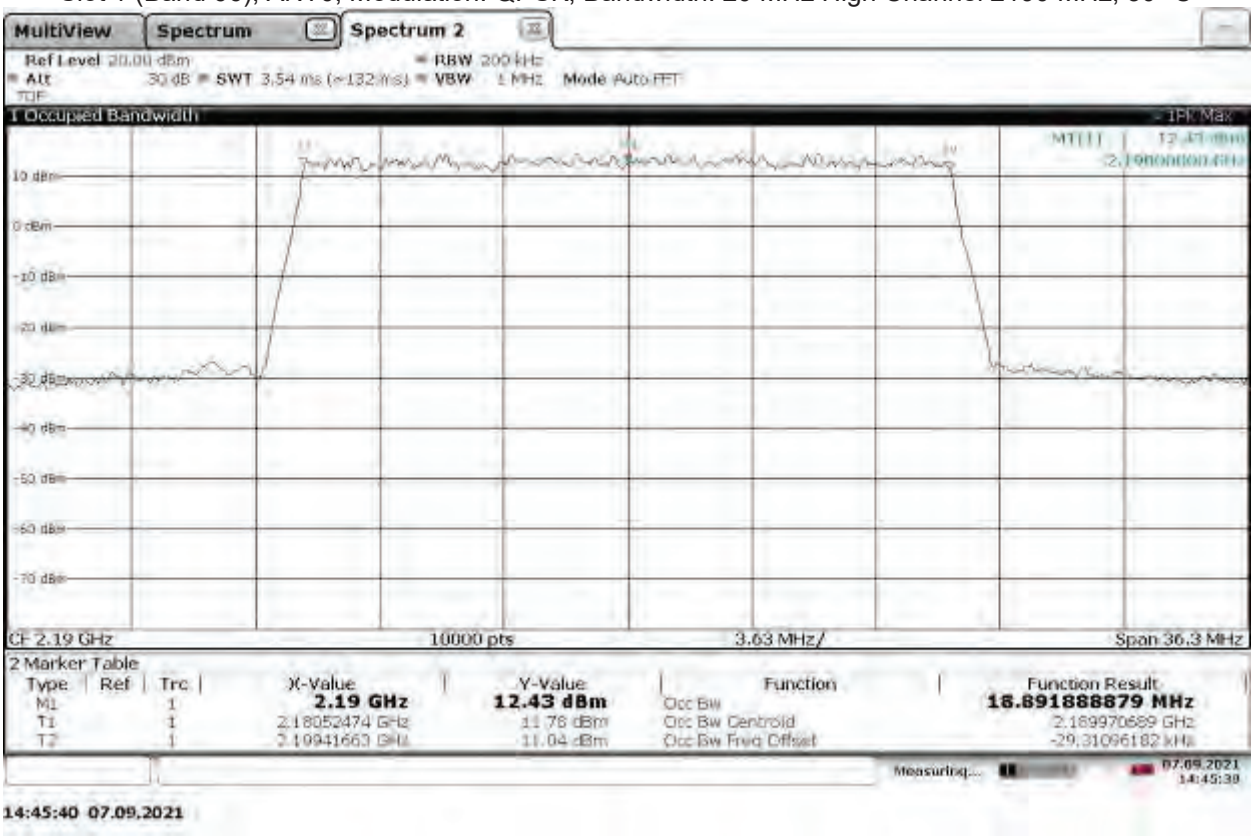
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 10 ºC



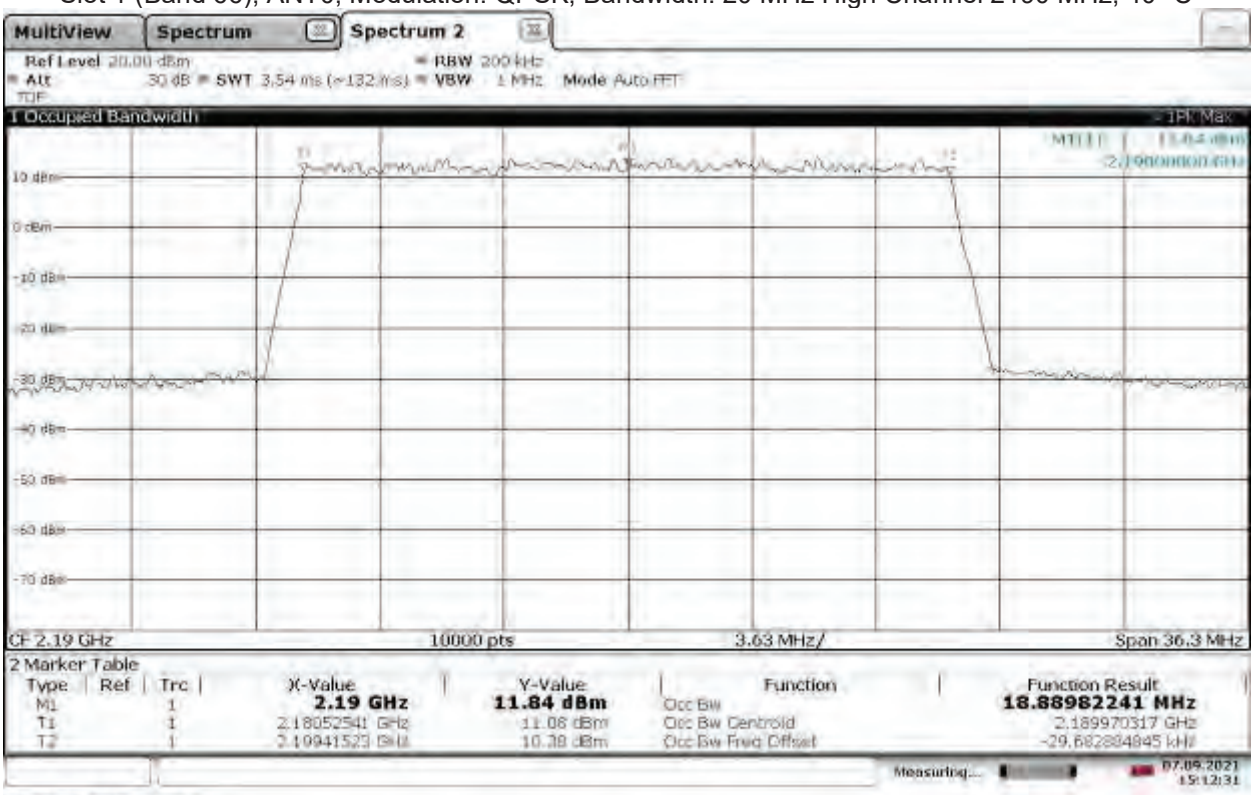
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 20 ºC



Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 30 ºC

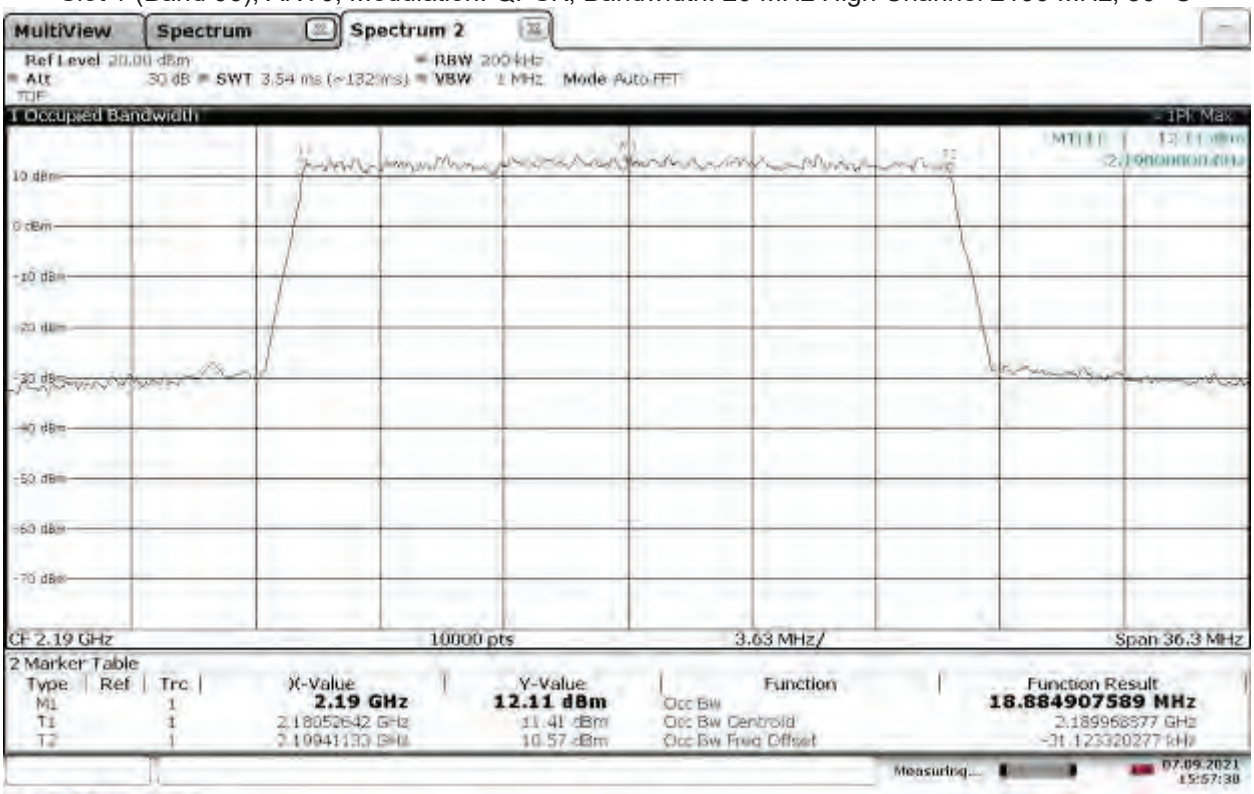


Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 40 ºC



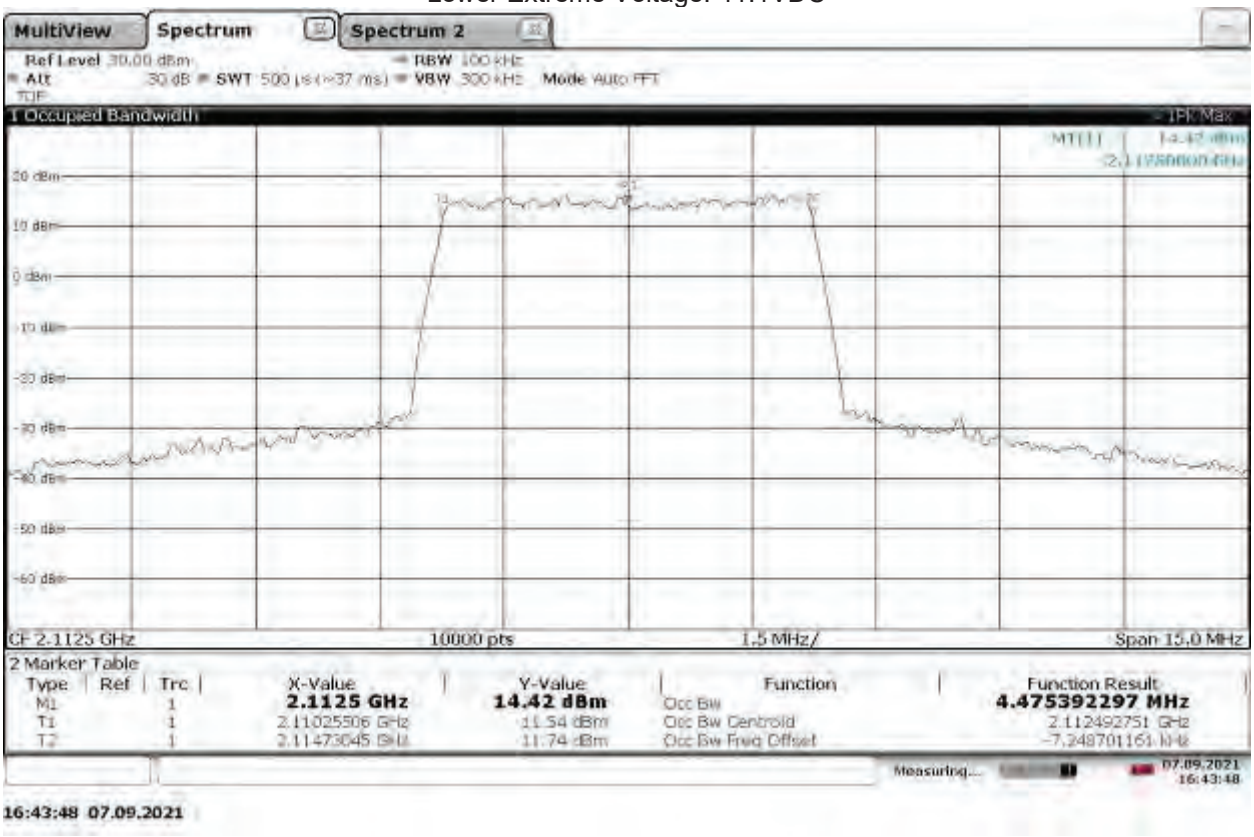
15:12:32 07.09.2021

Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz High Channel 2190 MHz, 50 ºC

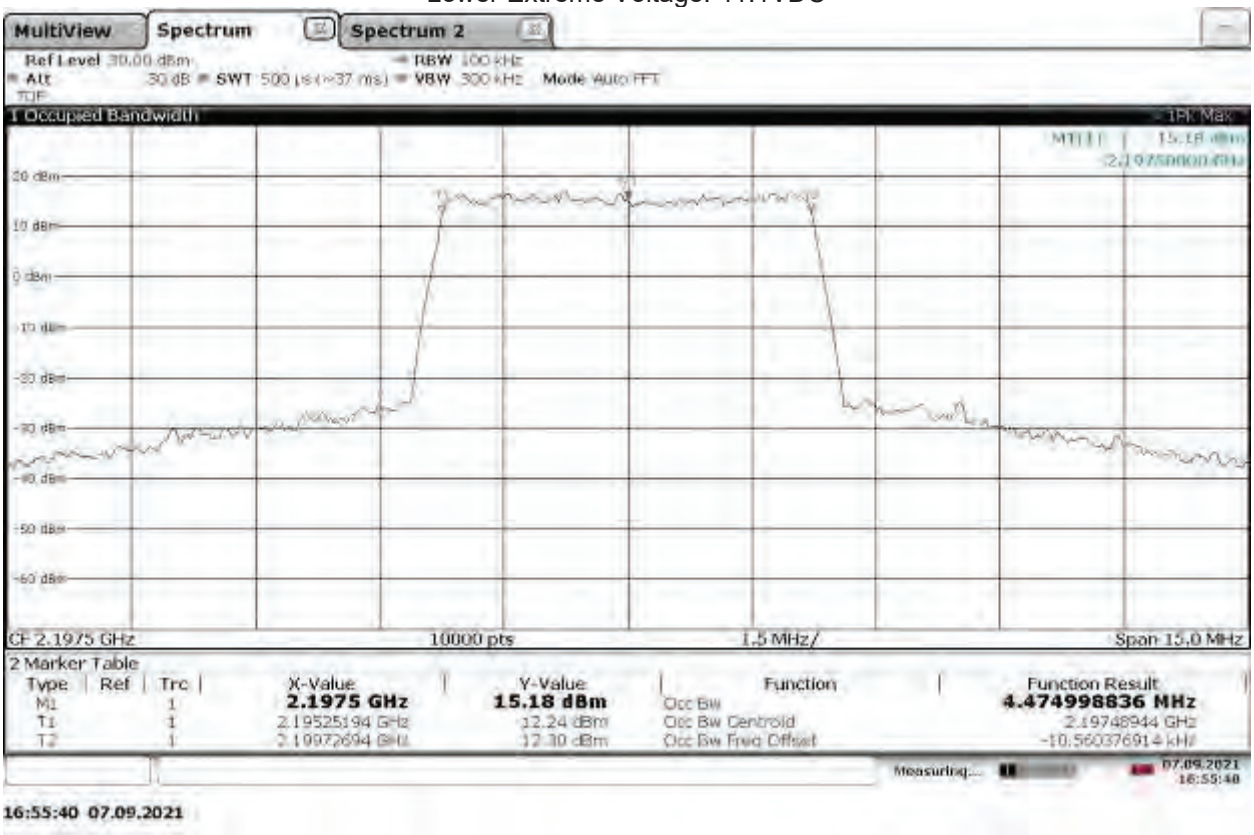


15:57:30 07.09.2021

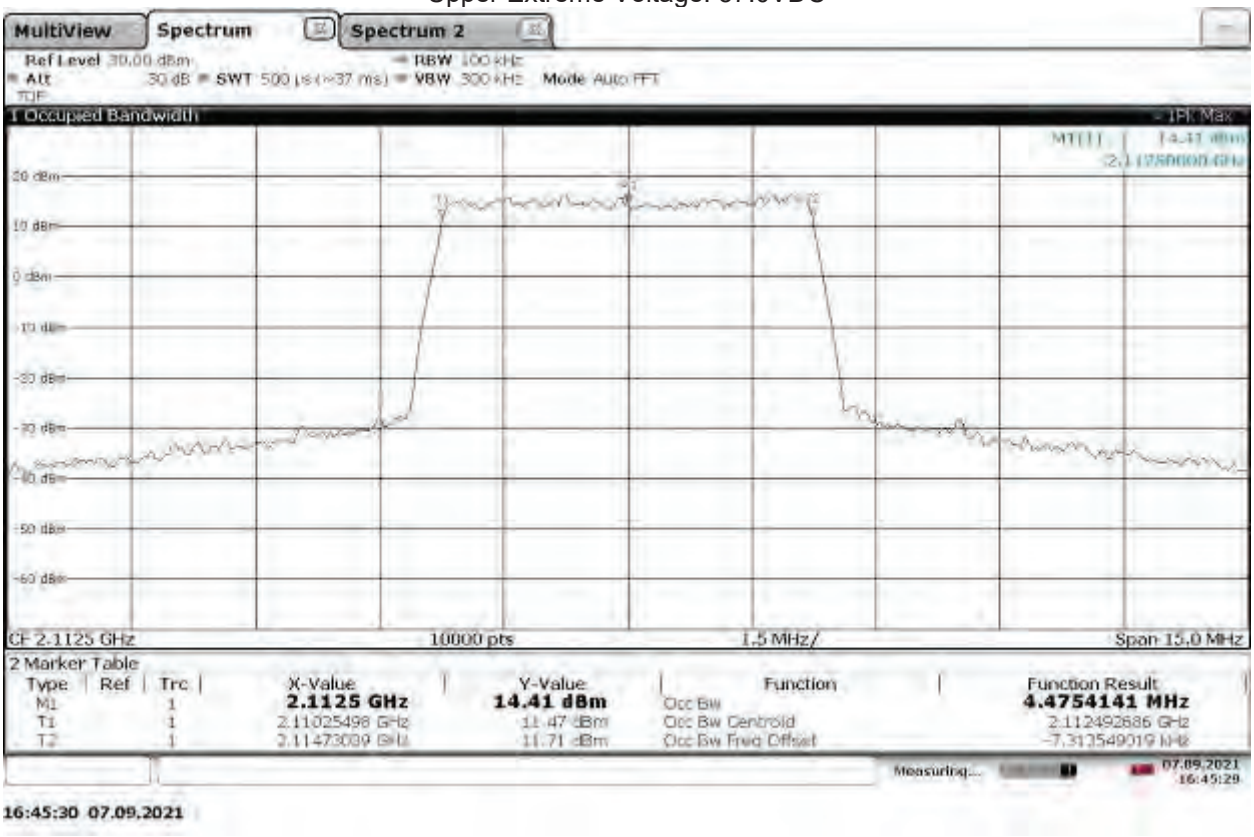
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel,
Lower Extreme Voltage: 41.1VDC



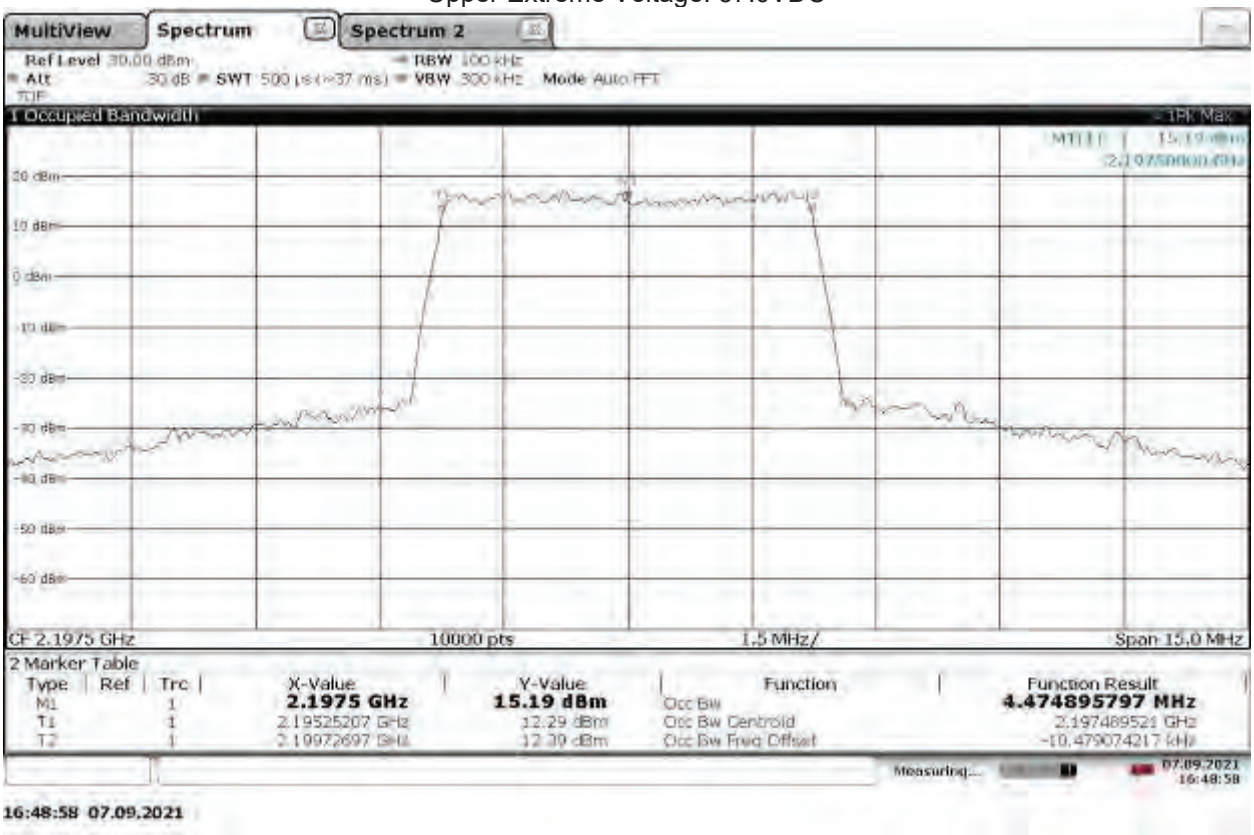
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel,
Lower Extreme Voltage: 41.1VDC



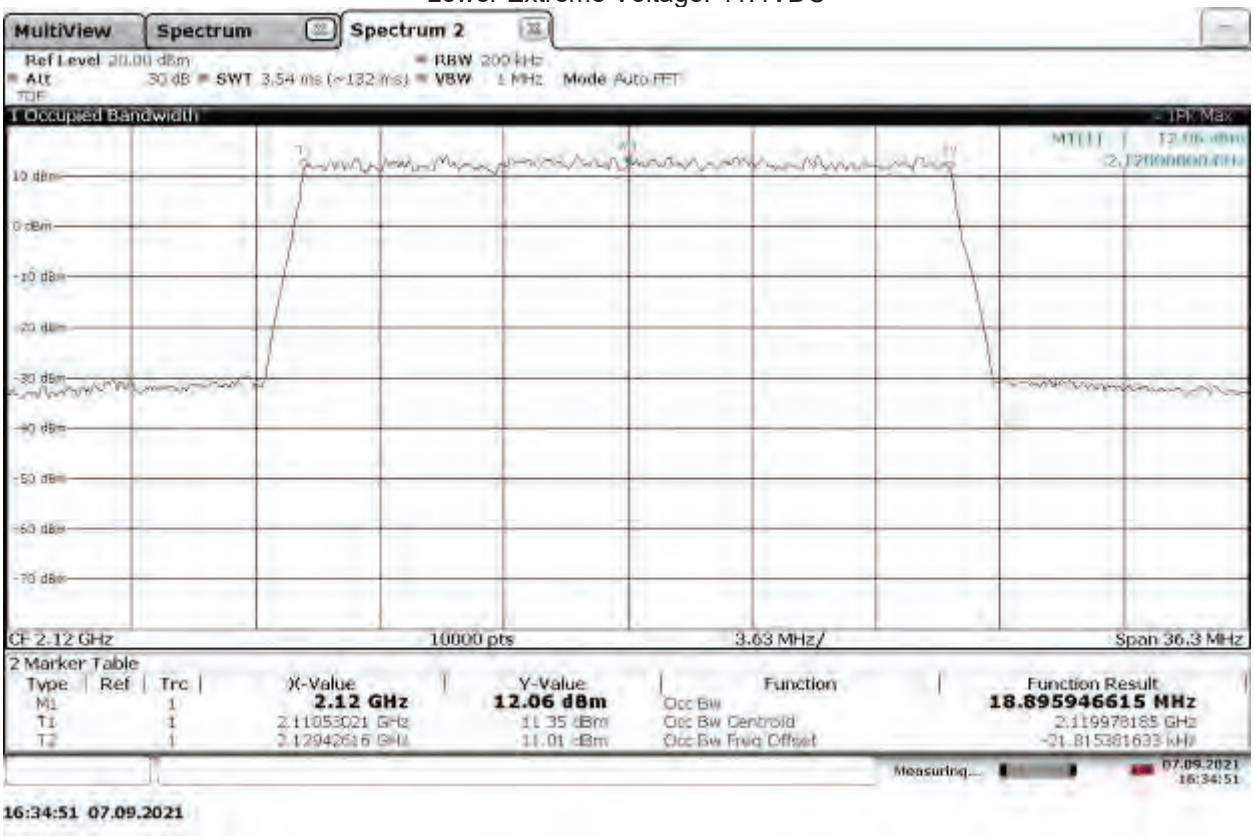
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel,
Upper Extreme Voltage: 57.0VDC



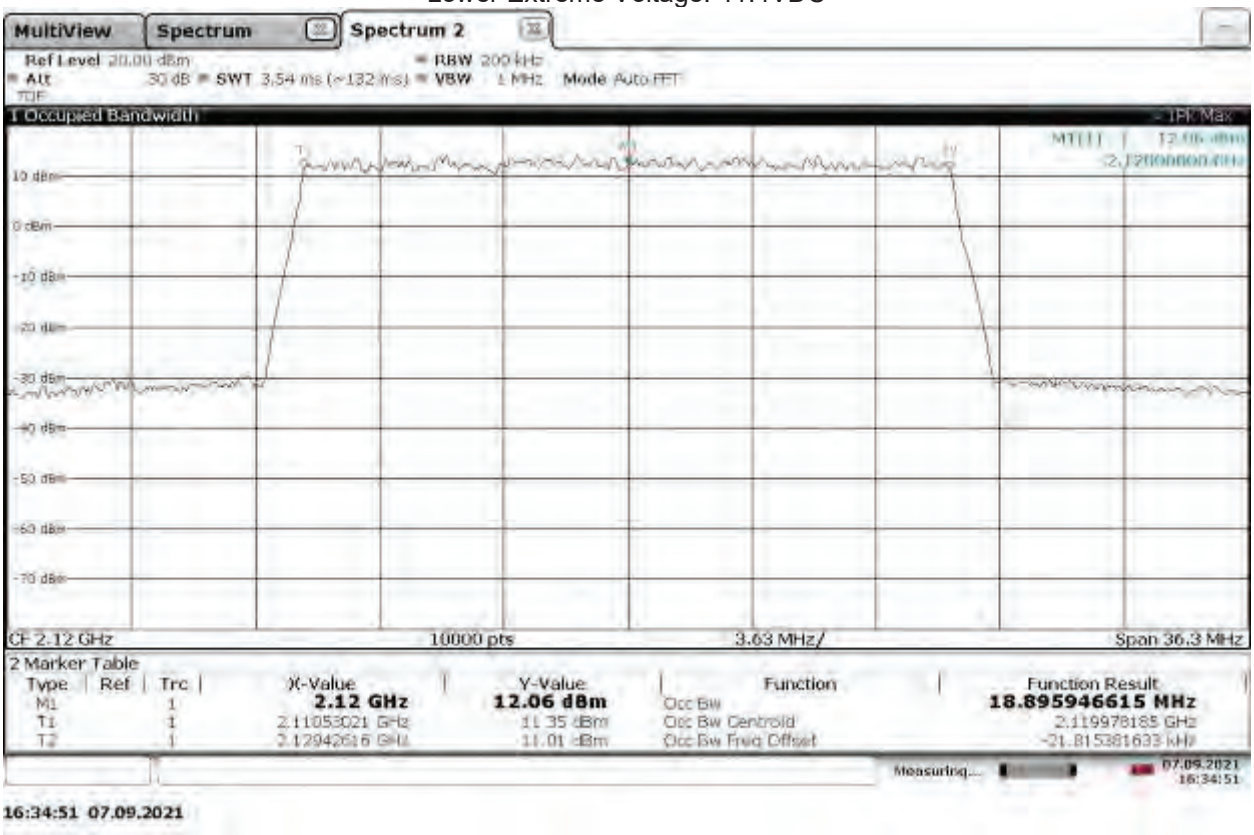
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel,
Upper Extreme Voltage: 57.0VDC



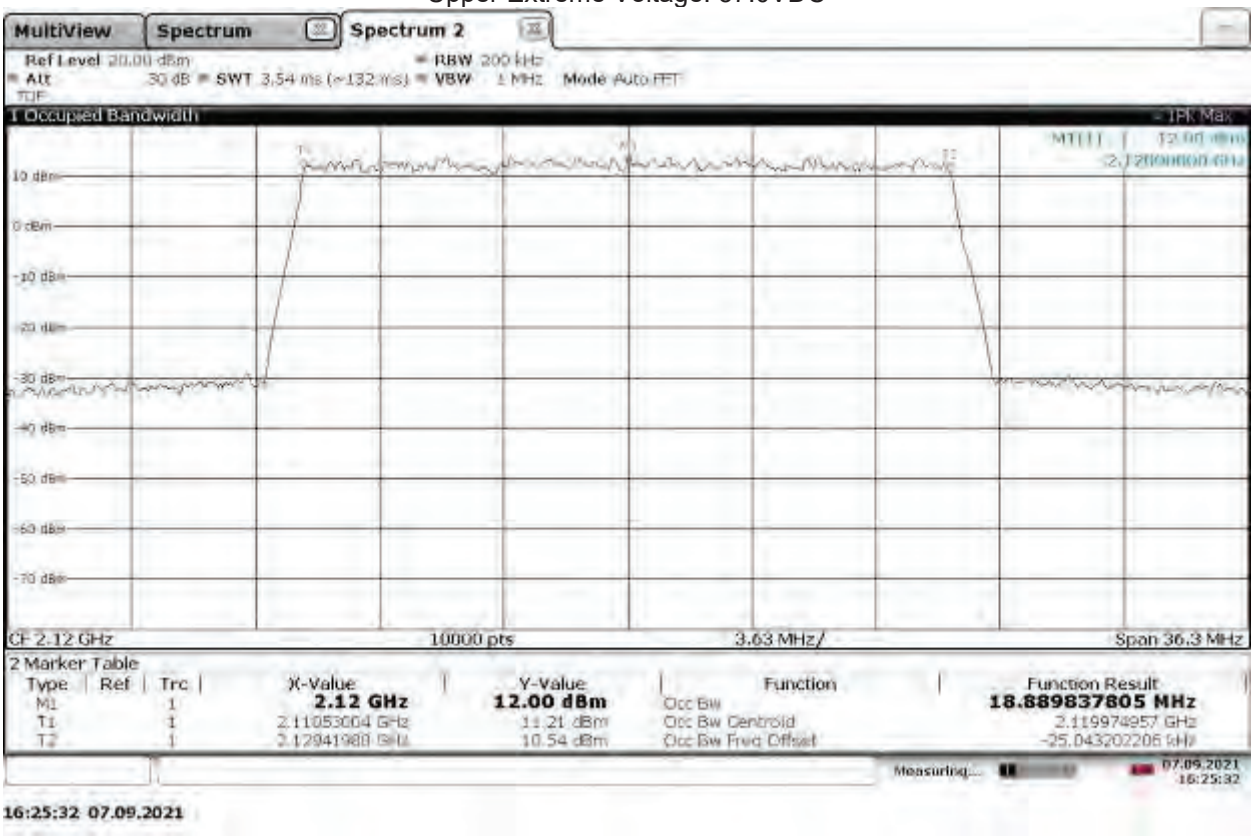
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, Low Channel,
Lower Extreme Voltage: 41.4VDC



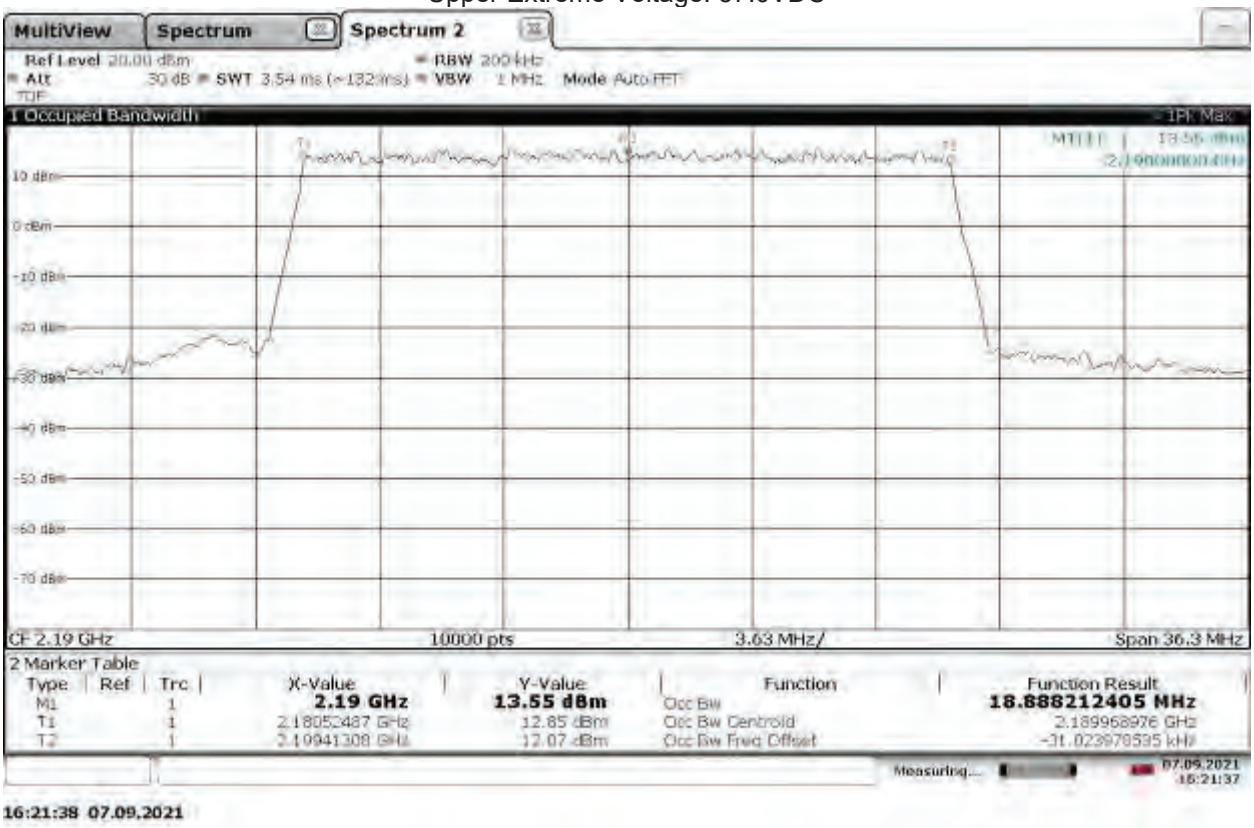
Slot 1 (Band 66), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, High Channel,
Lower Extreme Voltage: 41.4VDC



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



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



Test Personnel:	Kouma Sinn KPS	Test Date:	09/07/2021
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 10.3
Input Voltage:	Internal Battery Powered		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	N/A
		Relative Humidity:	N/A
		Atmospheric Pressure:	N/A

Deviations, Additions, or Exclusions: None

11 Transmitter spurious emissions

11.1 Method

Tests are performed in accordance with ANSI C63.26, CFR47 FCC Parts 2.1051, 2.1053, 2.1057, and 27.

TEST SITE: EMC Lab & 10m ALSE

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

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

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	5.0 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.6 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.9 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.1 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7 dB	5.5 dB

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

Sample Calculation

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

FS = RA + AF + CF - AG
Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

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

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

RA = 52.0 dBμV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBμV/m

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:

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

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

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/20/2021	03/20/2022
147239'	Digital Multimeter (Full Color)	Fluke	187	89300561	02/06/2021	02/06/2022
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/22/2021	06/22/2022
IW001'	2 meter cable	Insulated Wire	2801-NPS	001	10/07/2020	10/07/2021
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	06/09/2021	06/09/2022
HS002'	DC-18GHz cable 1.5M long	Huber & Suhner	SucoFlex 106A	HS002	11/25/2020	11/25/2021
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	09/11/2020	09/11/2021
IW006'	DC-18GHz cable 8.4m long	Insulated Wire	2800-NPS	IW006	11/25/2020	11/25/2021
HS003'	10m under floor cable	Huber-Schuner	10m-1	HS003	02/17/2021	02/17/2022
IW001'	2 meter cable	Insulated Wire	2801-NPS	001	10/07/2020	10/07/2021
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	09/28/2020	09/28/2021
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	09/23/2020	09/23/2021
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	10/08/2020	10/08/2021
PRE12'	Pre-amplifier	Com Power	PAM-118A	18040117	12/07/2020	12/07/2021
145-414'	Cables 145-400 145-403 145-405 145-409	Huber + Suhner	3m Track A cables	multiple	07/09/2021	07/09/2022
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	07/15/2021	07/15/2022
REA004'	3GHz High Pass Filter	Reactel, Inc	7HSX-3G/18G-S11	06-1	02/19/2021	02/19/2022
EMC04'	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	01/28/2021	01/28/2022
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/22/2020	09/22/2021
REA006'	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	04/23/2021	04/23/2022
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/27/2020	10/27/2021
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	09/22/2020	09/22/2021

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.18.0.16

11.3 Results:

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

§27.53(h): The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Note: All spurious emissions were tested with narrowest bandwidth and QPSK modulation settings. Since there were no emissions within 30dB of limit, and settings had ~1dB effect on peak readings, other settings were not tested and EUT was considered compliant.

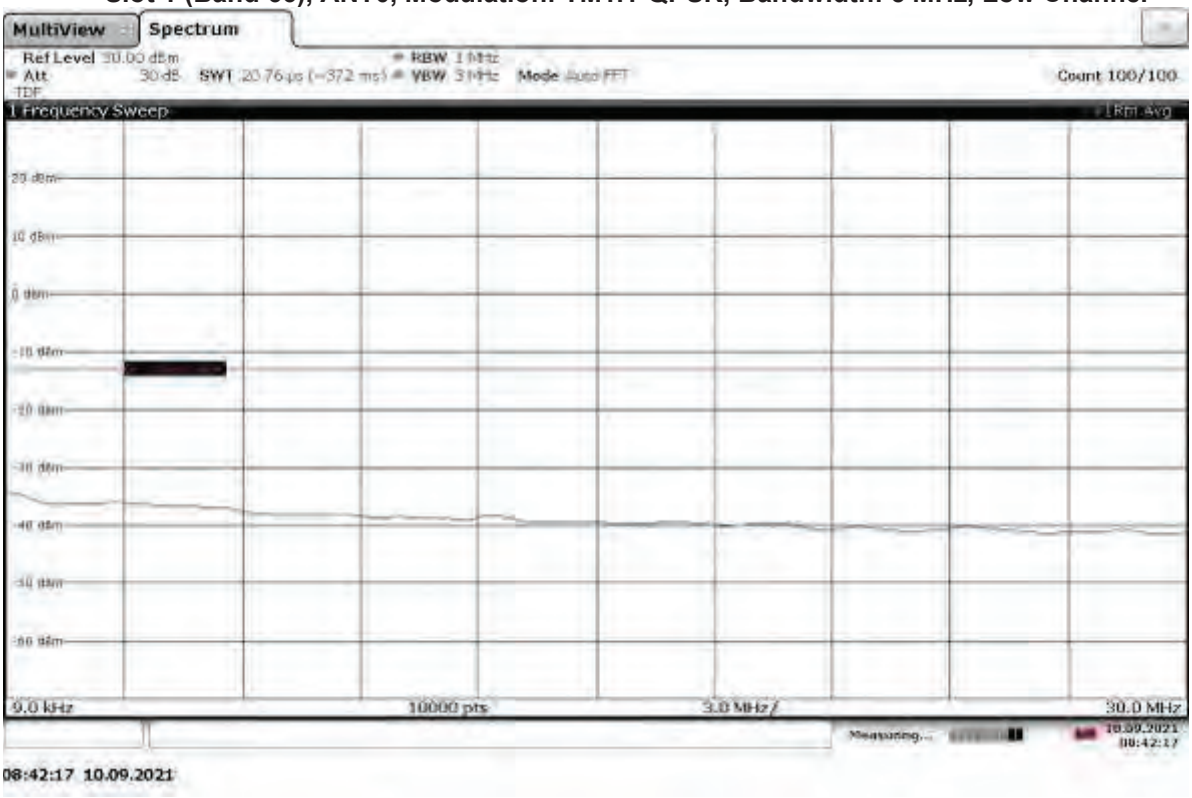
11.4 Setup Photographs:

Confidential – Test setup photo not included in this report

11.5 Plots/Data:

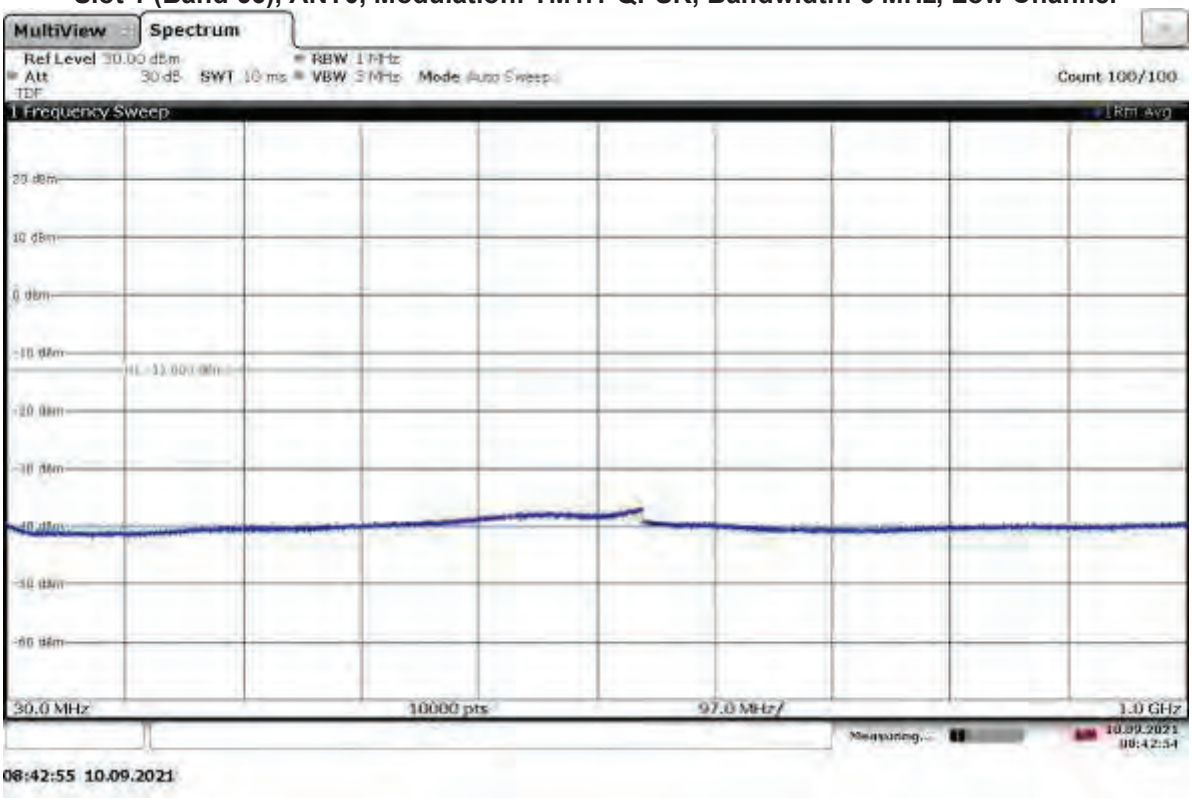
9kHz-30MHz

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

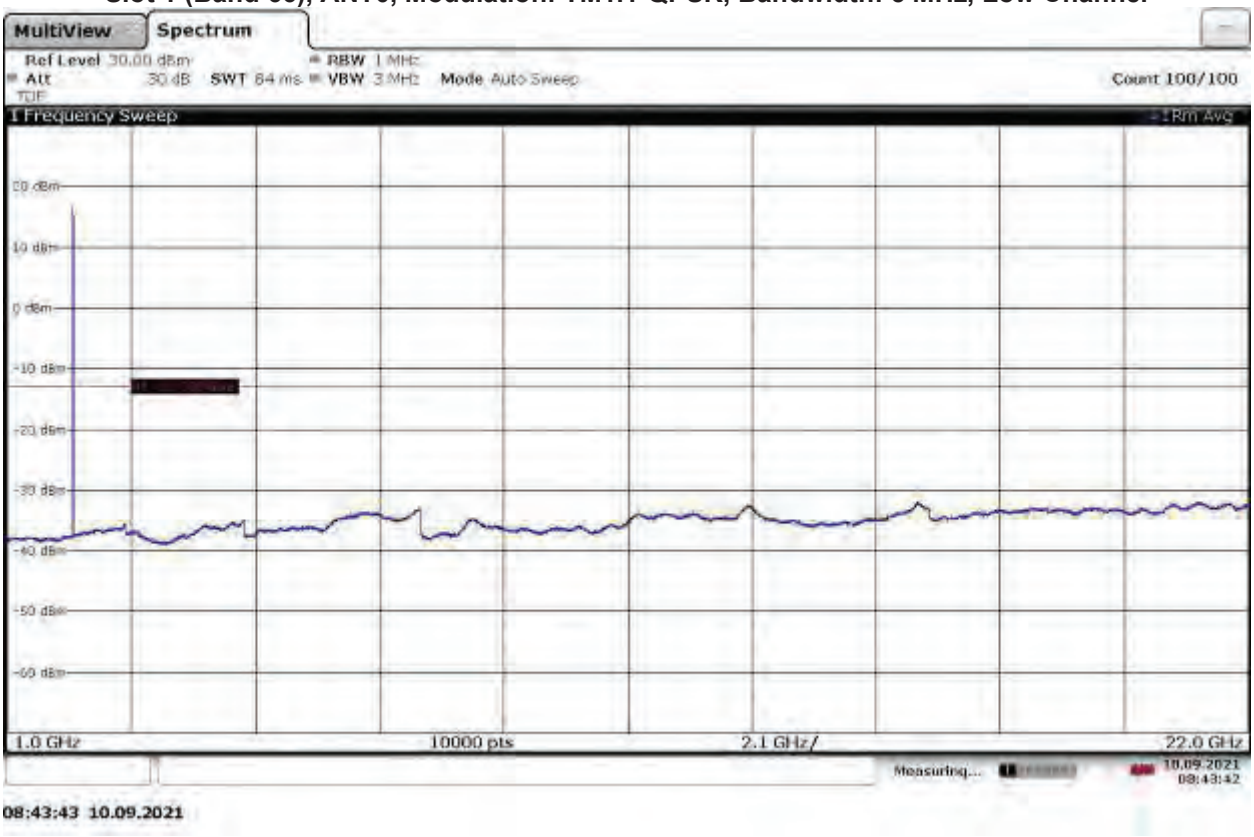


30MHz-1GHz

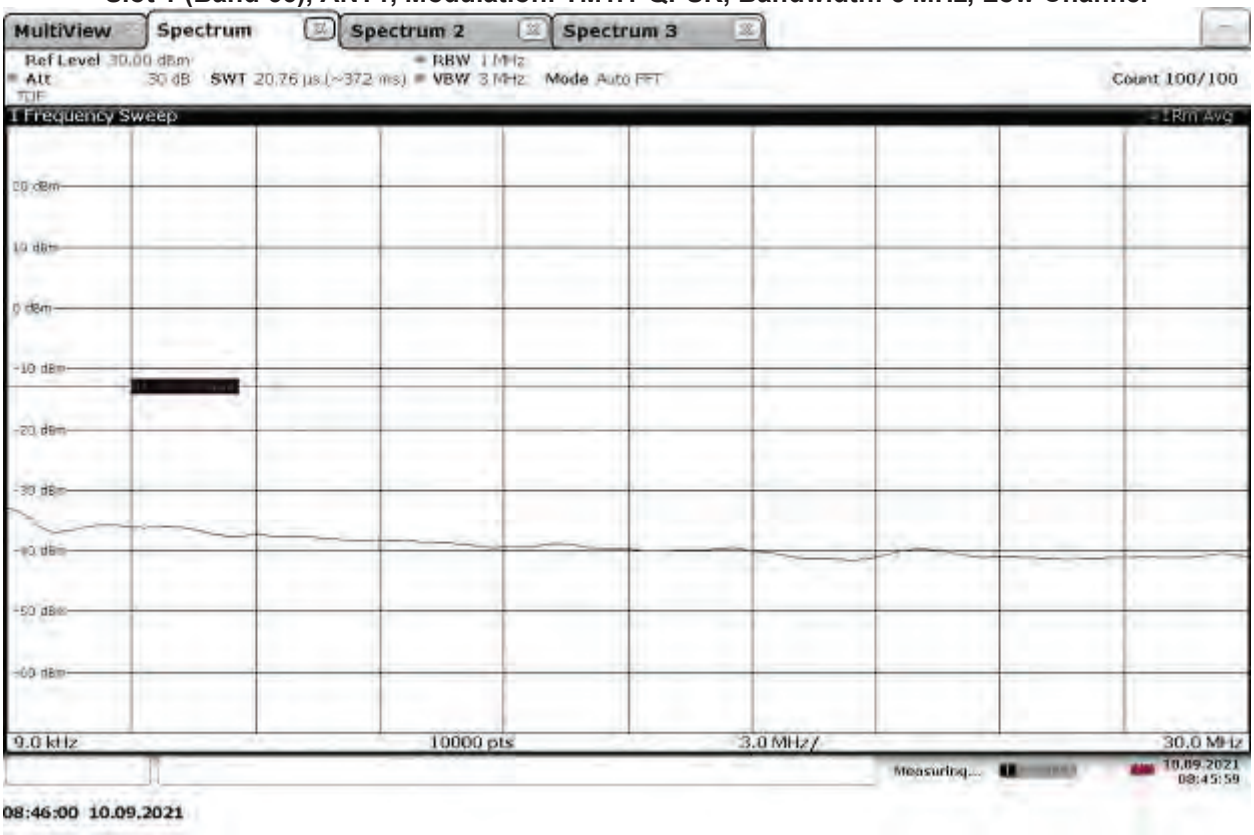
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel



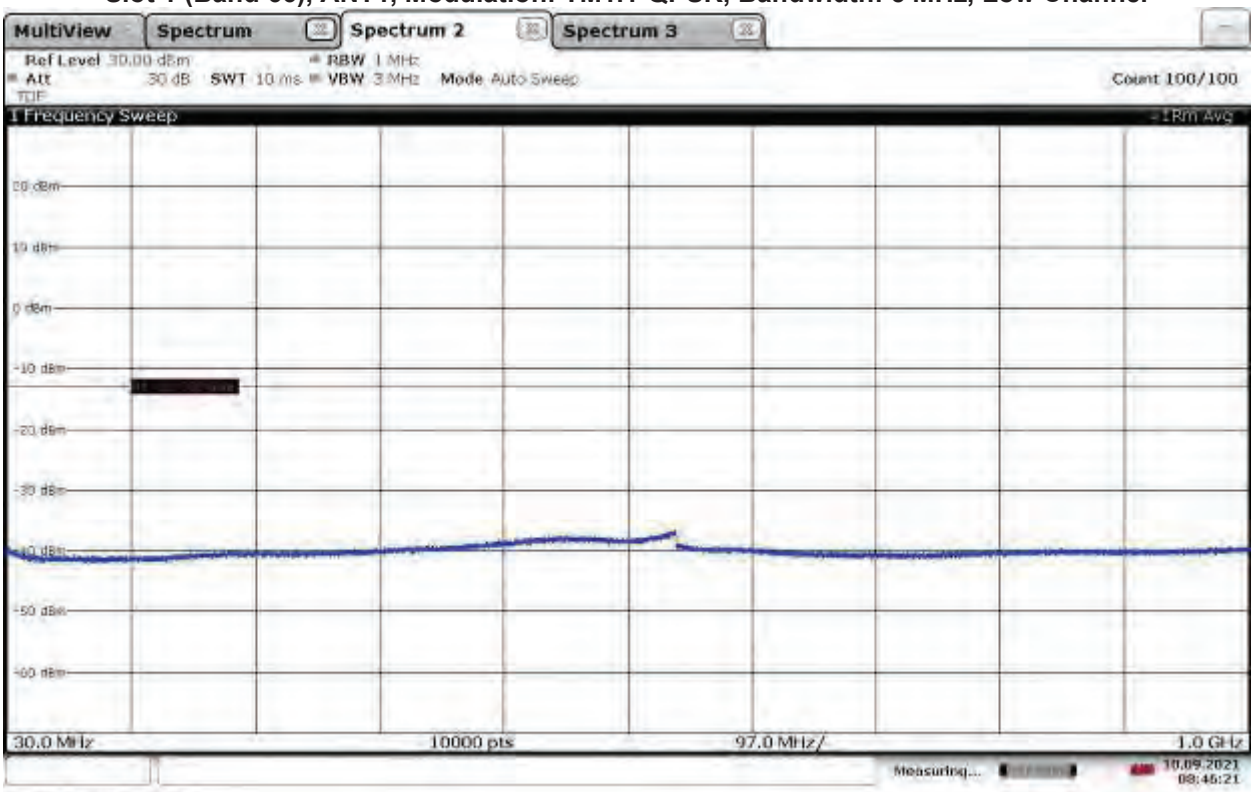
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel



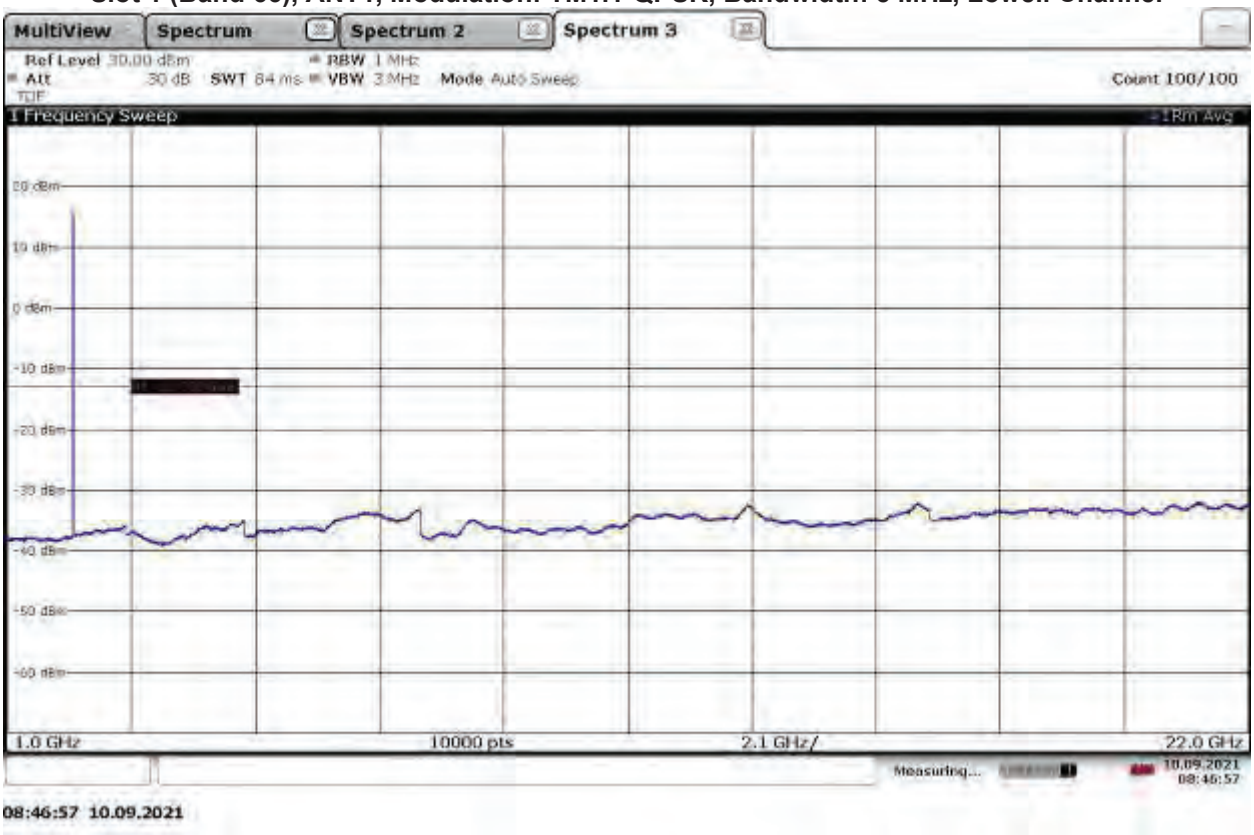
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel



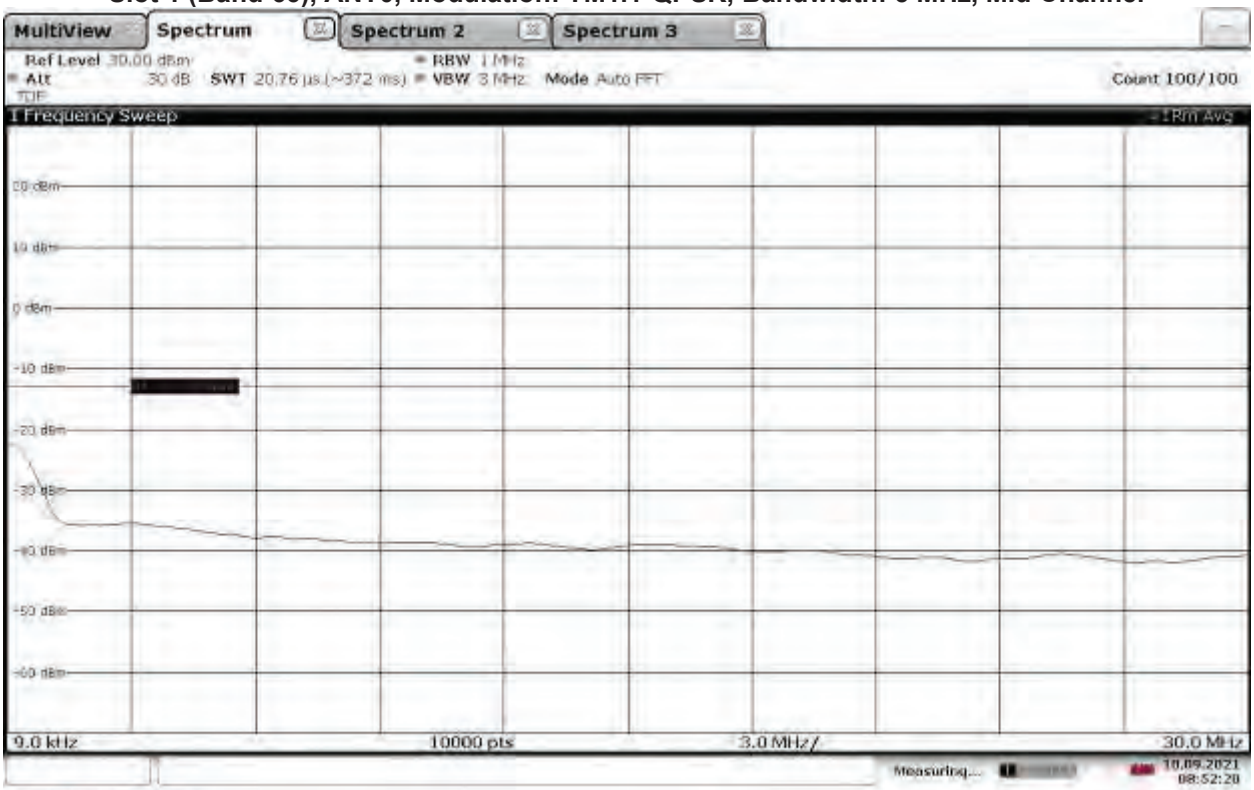
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel



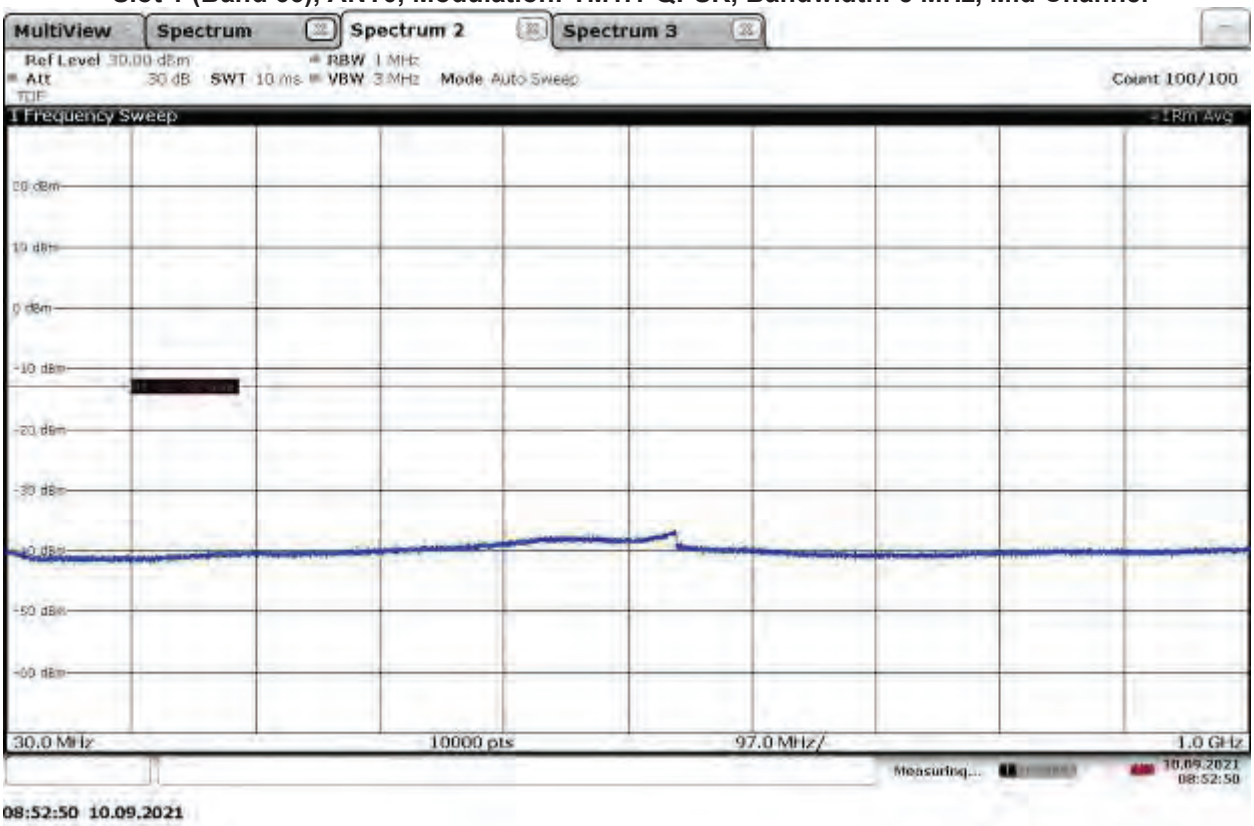
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Lowell Channel



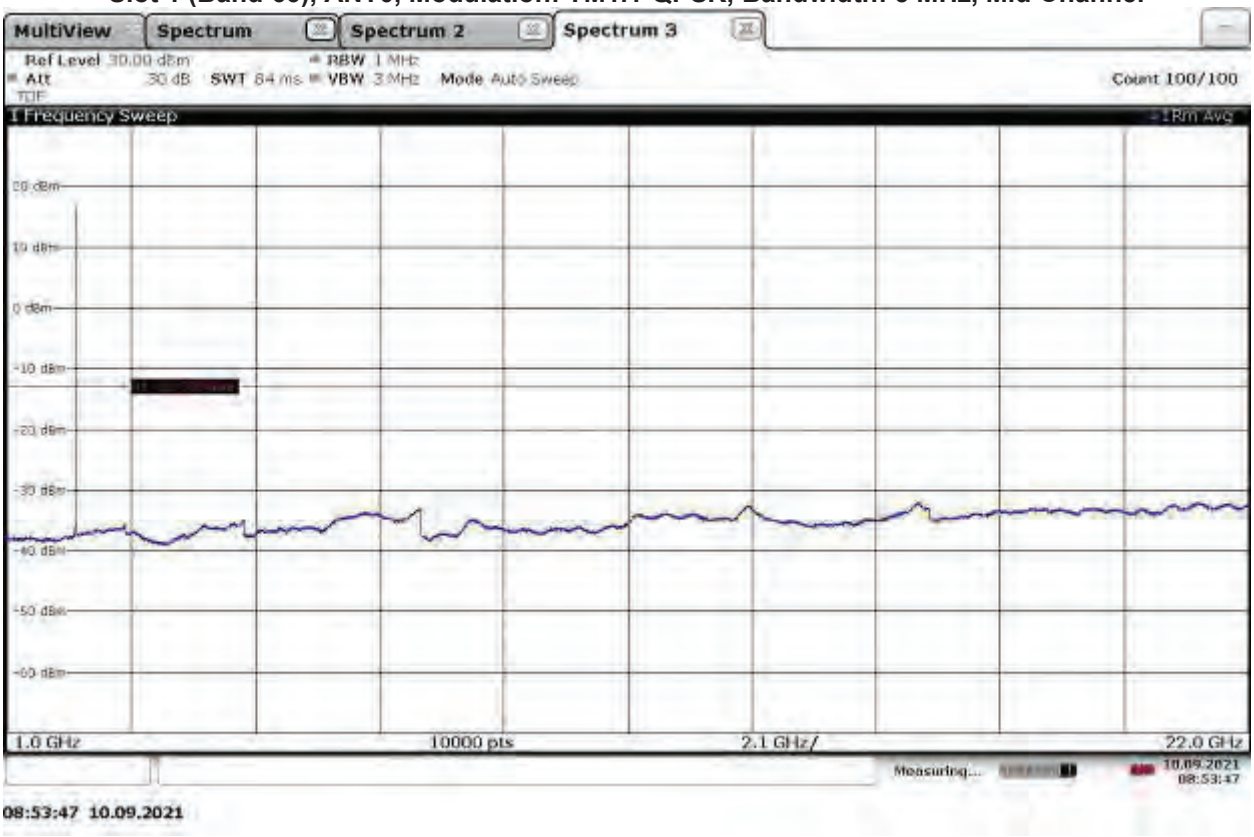
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



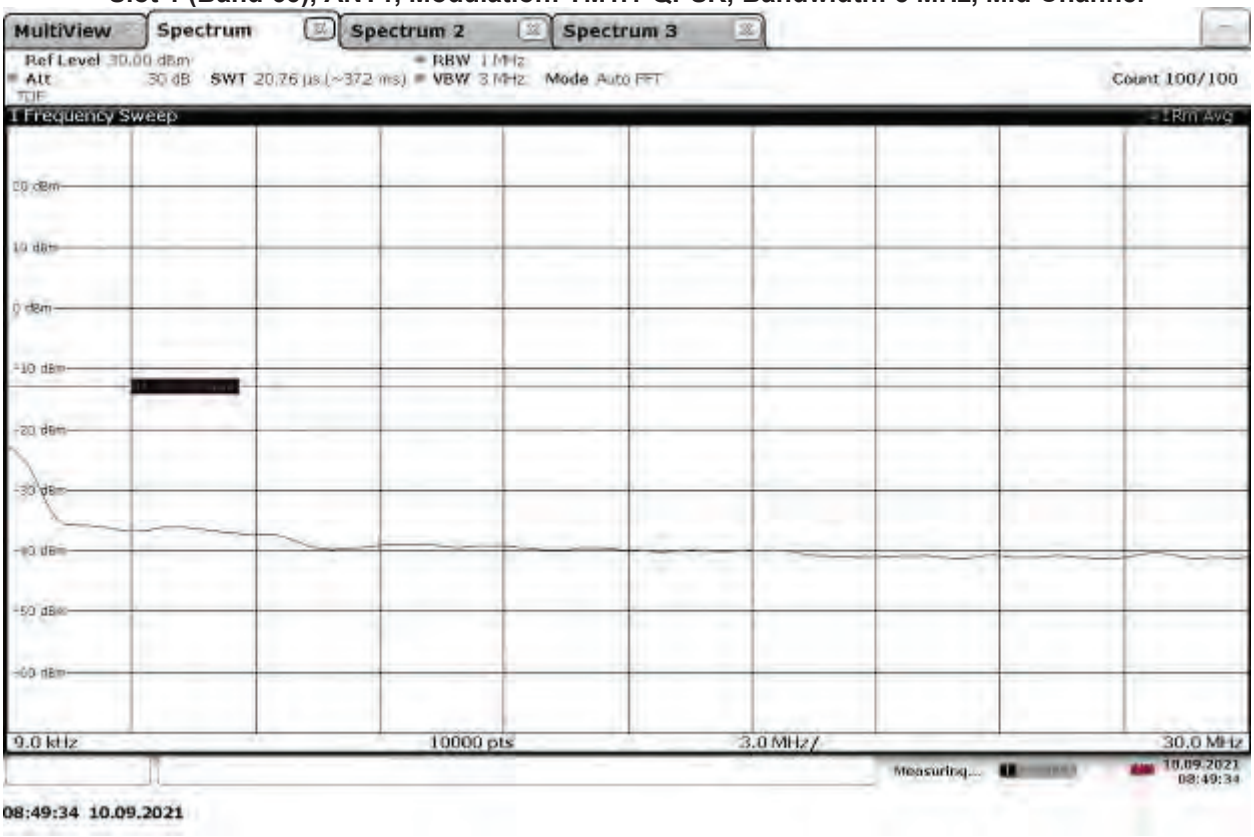
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



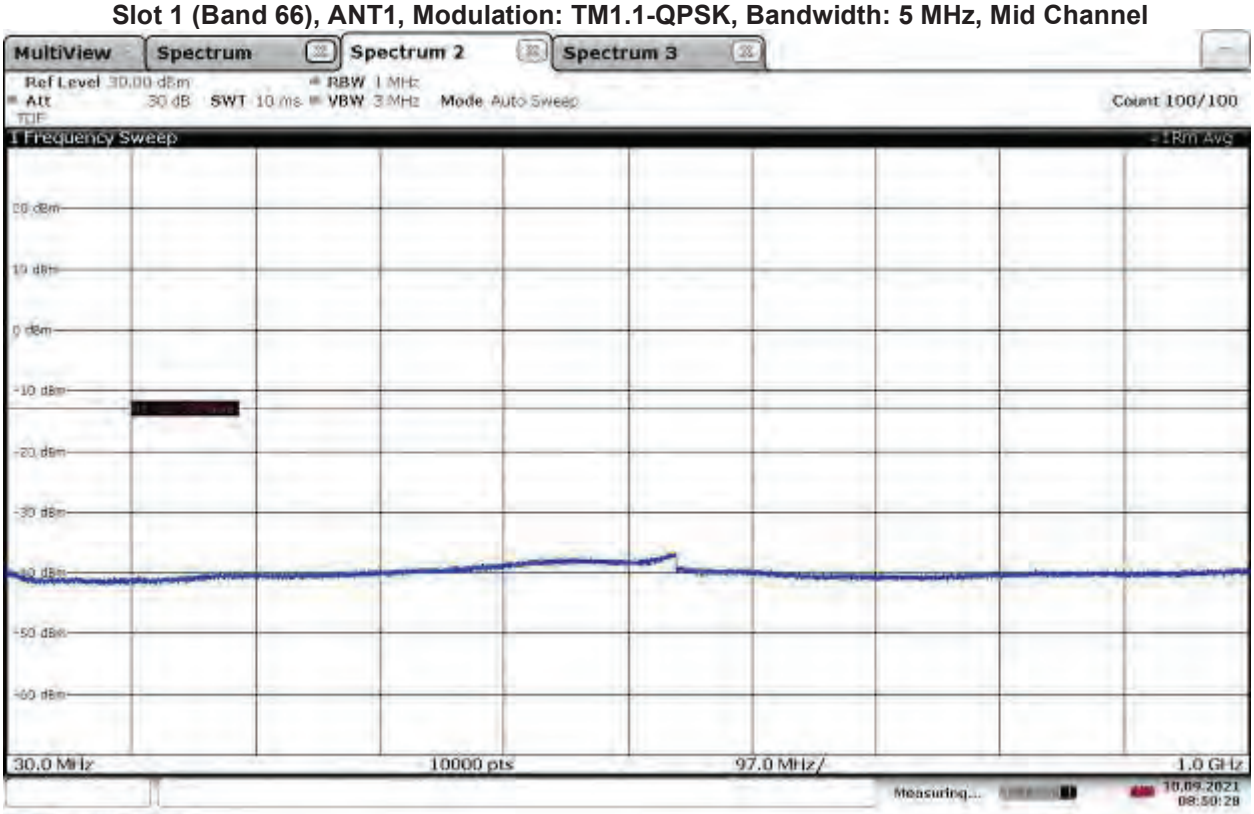
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



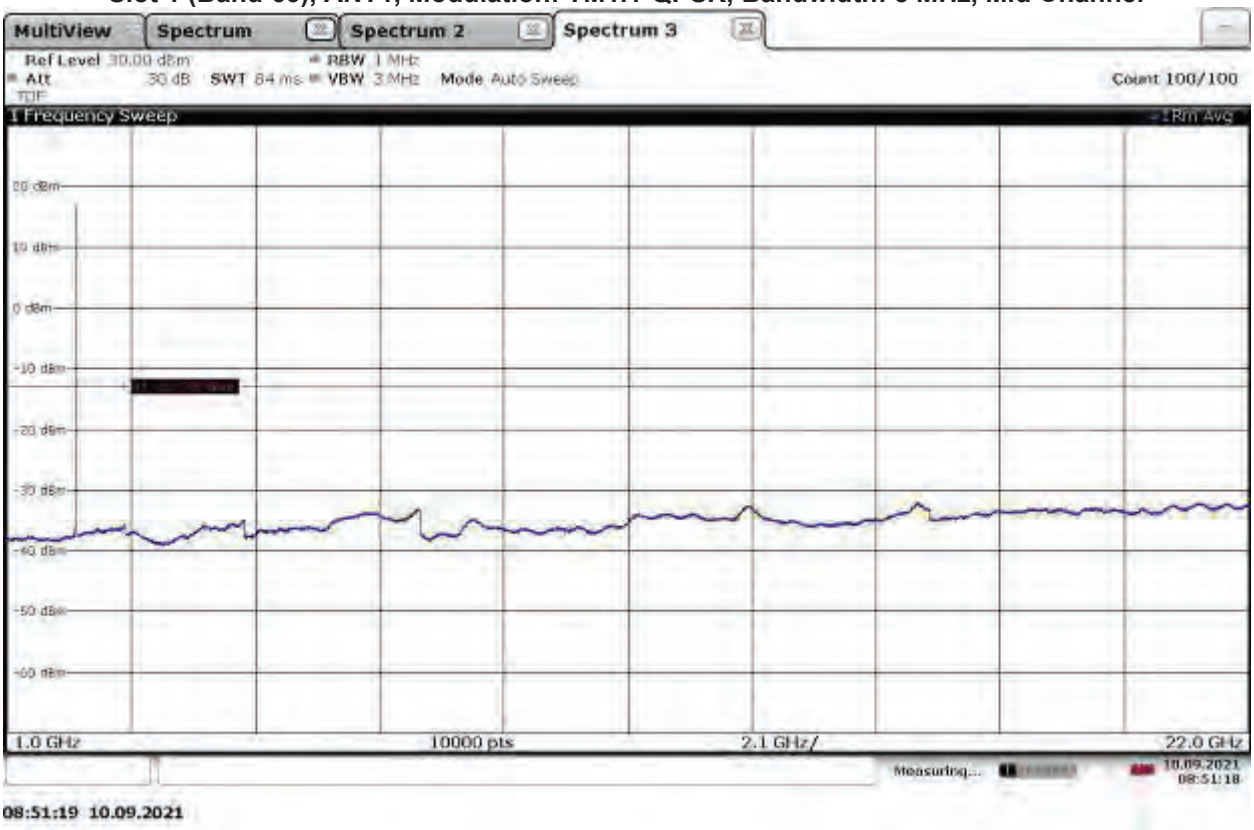
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



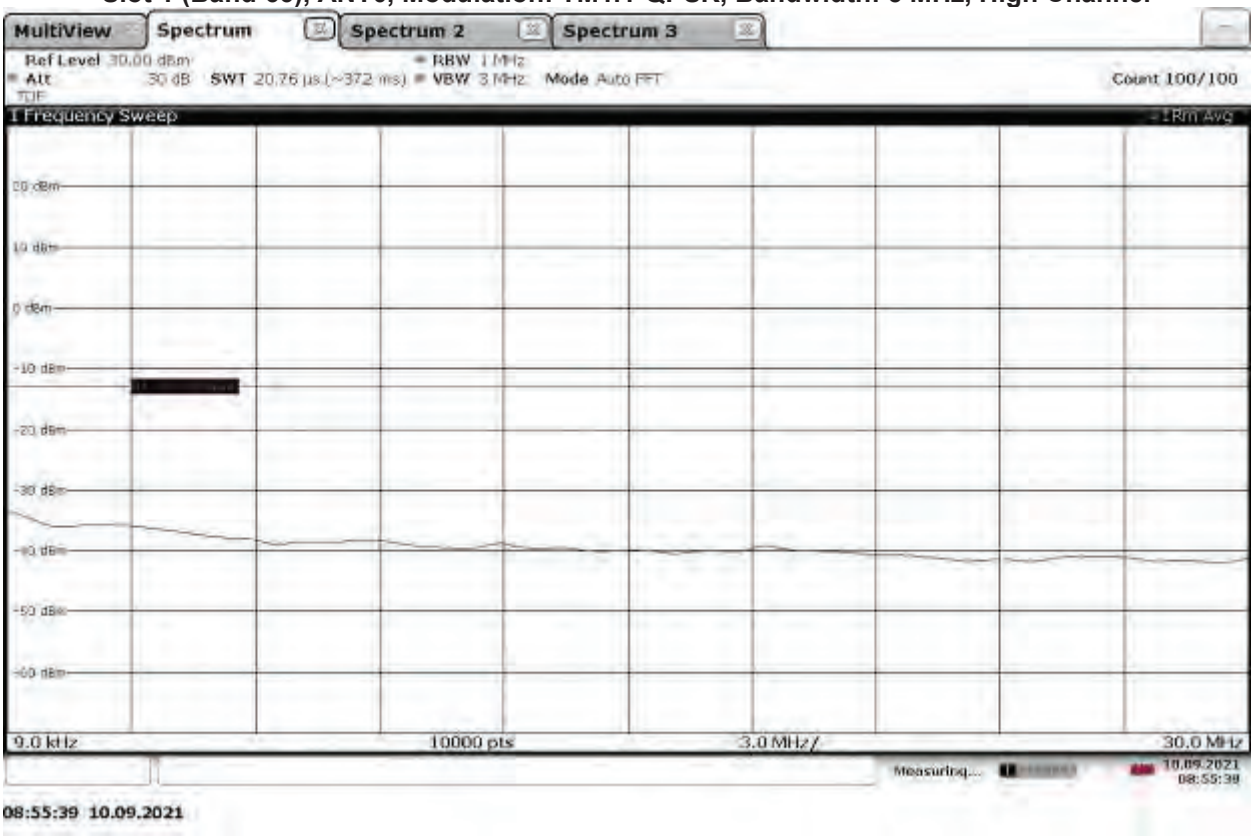
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



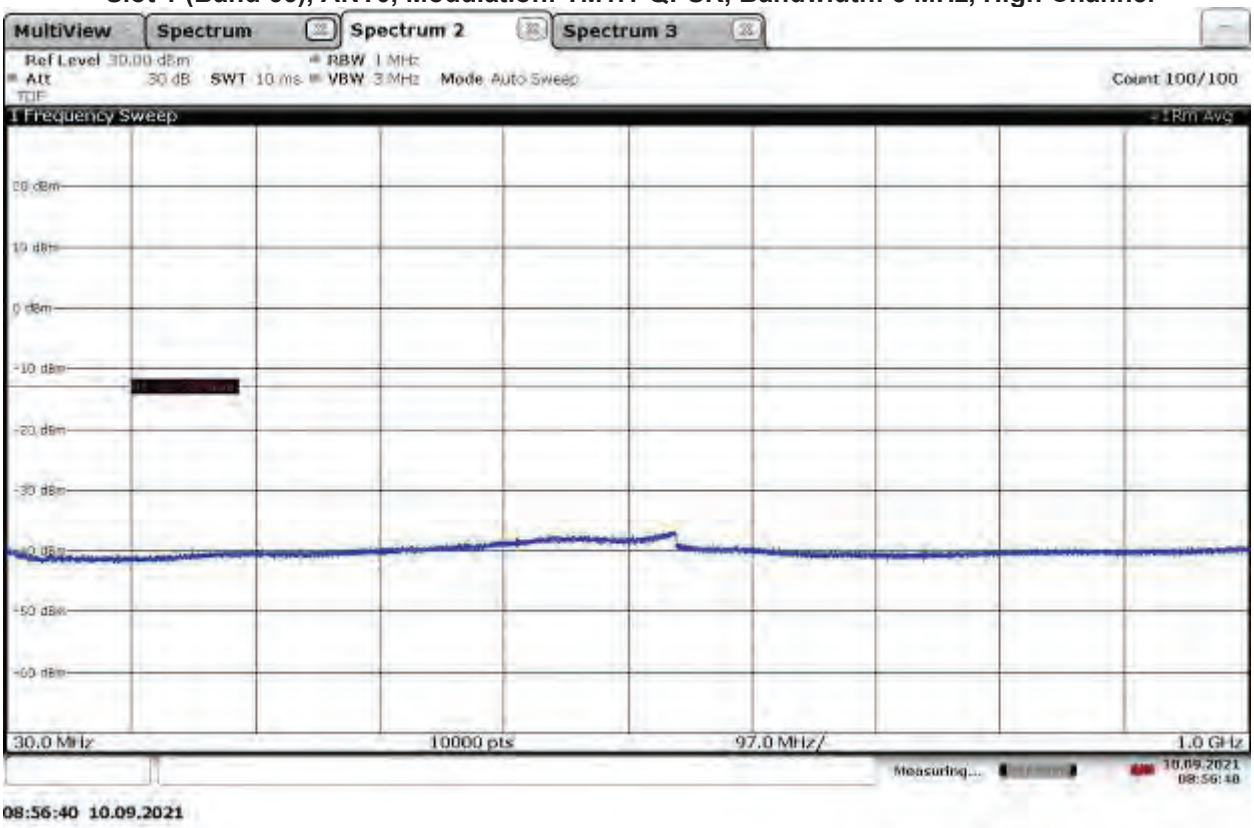
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel



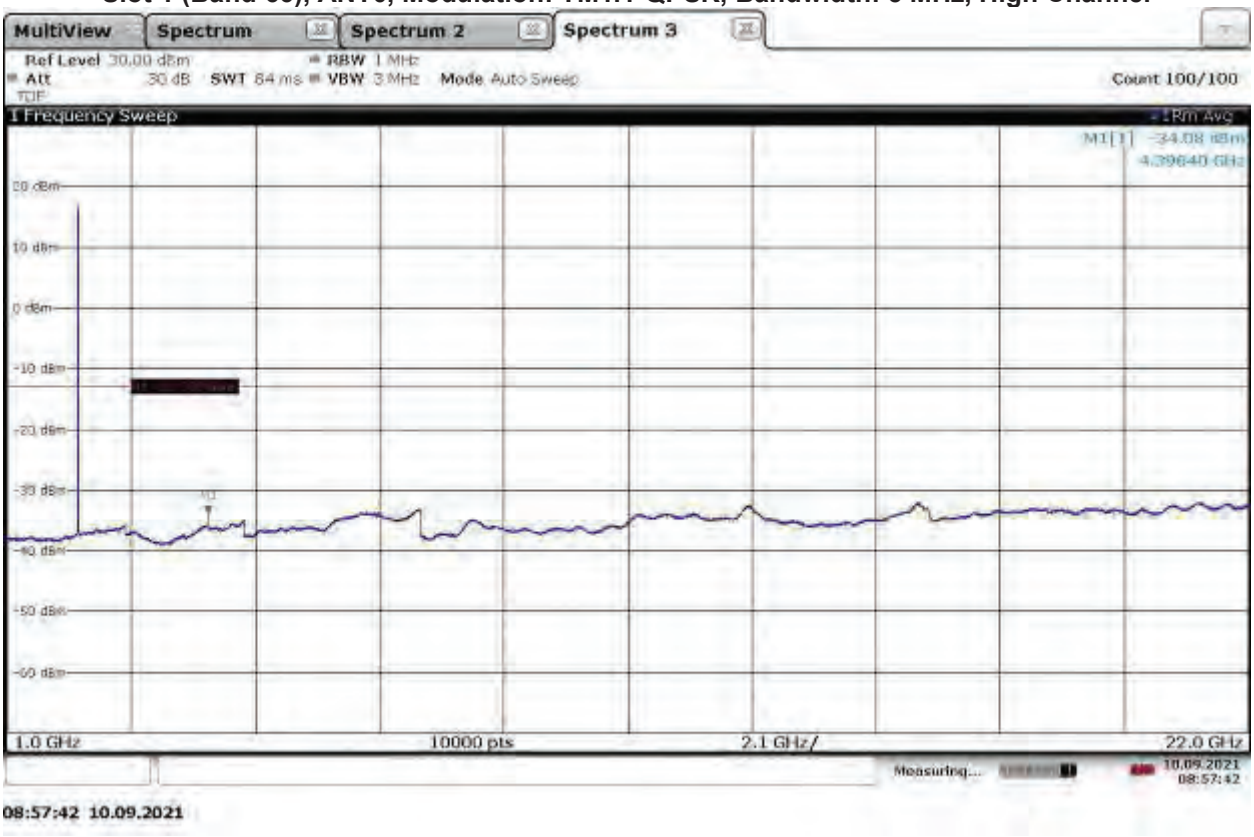
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel



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



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



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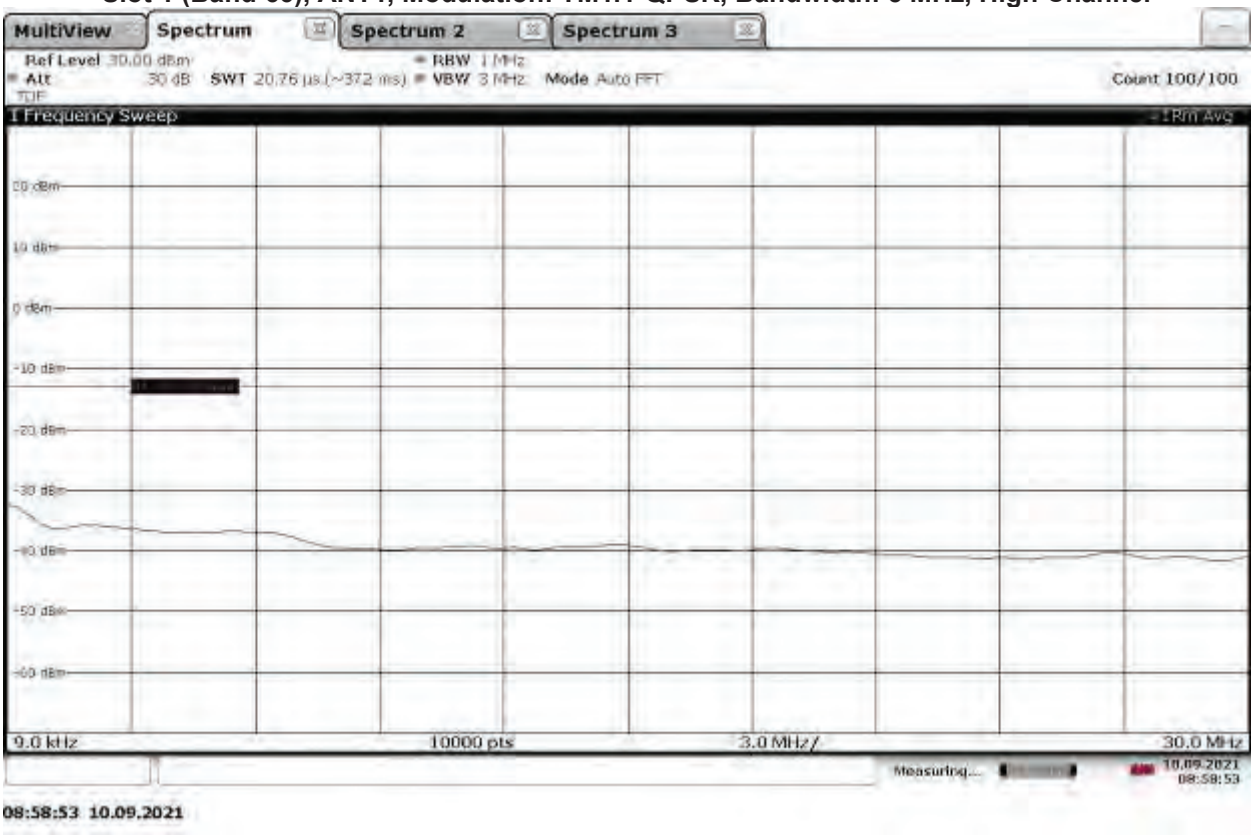
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel



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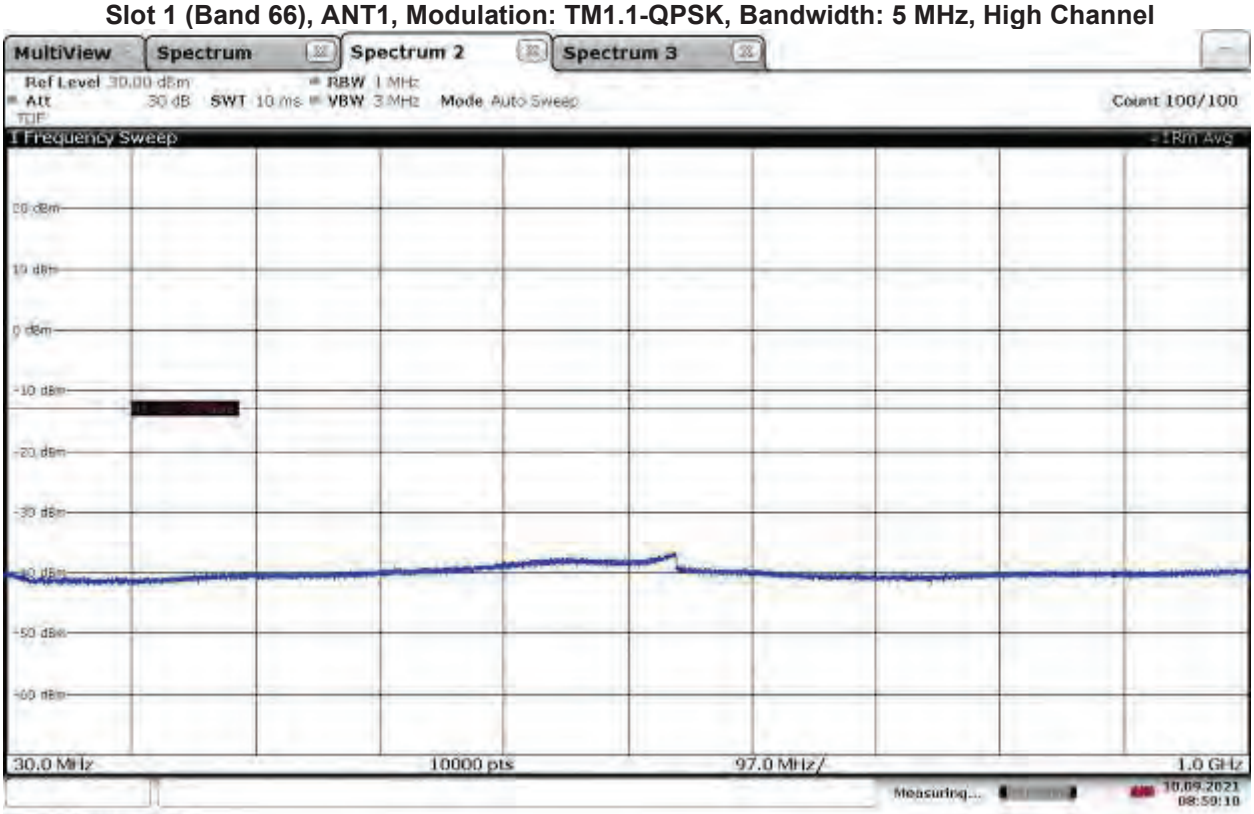
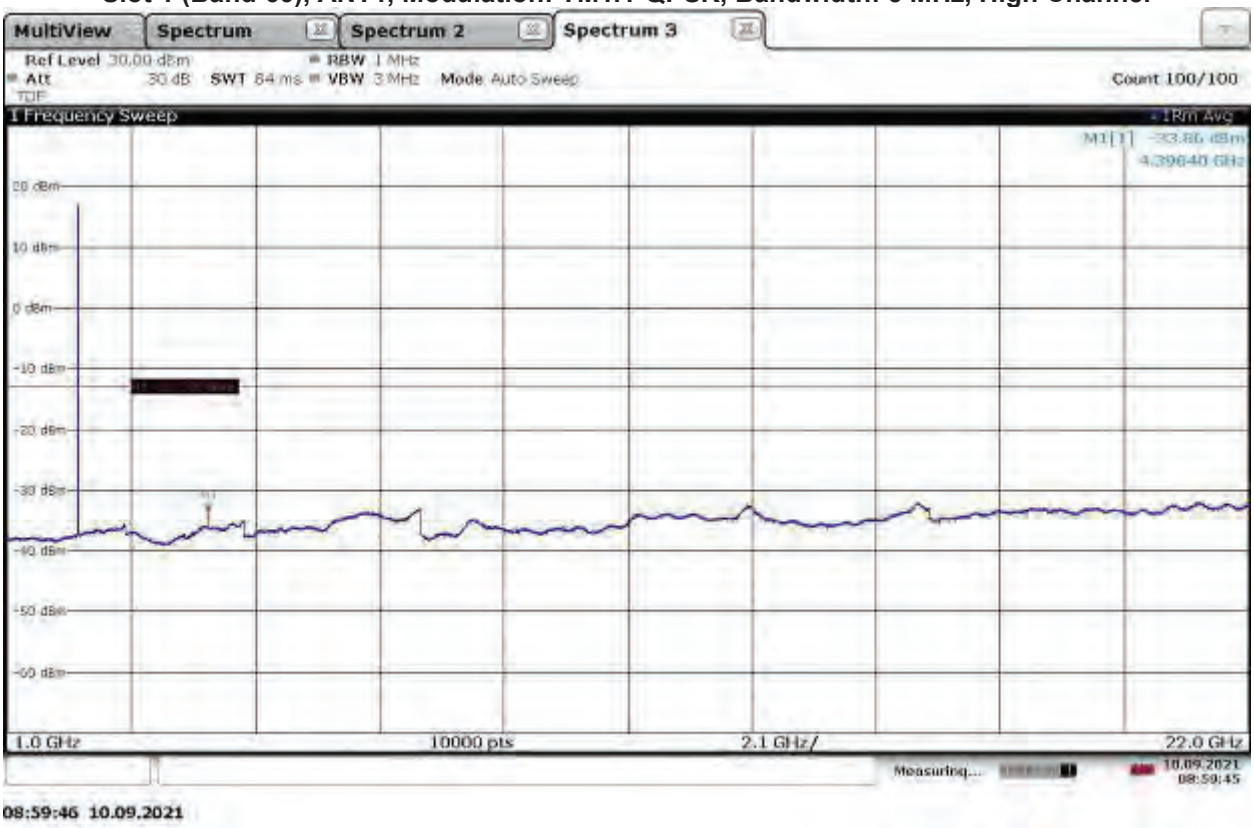
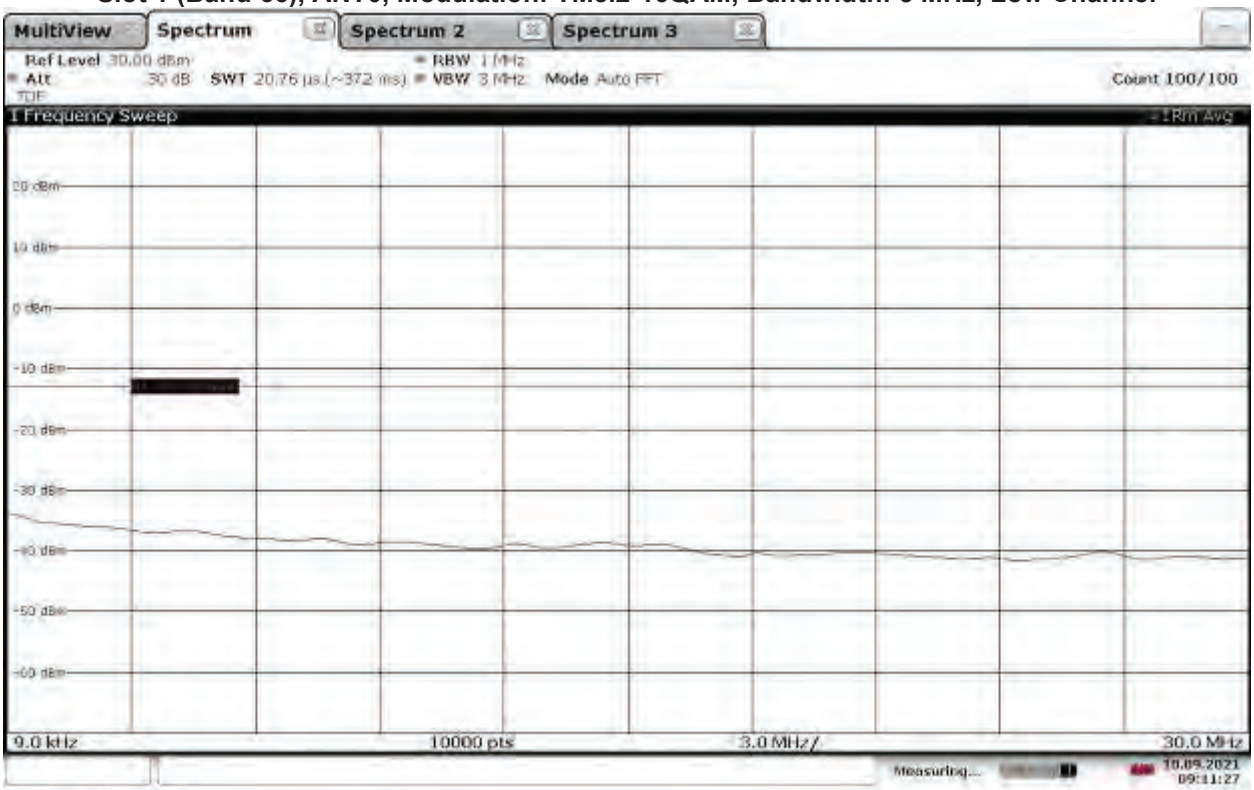
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel



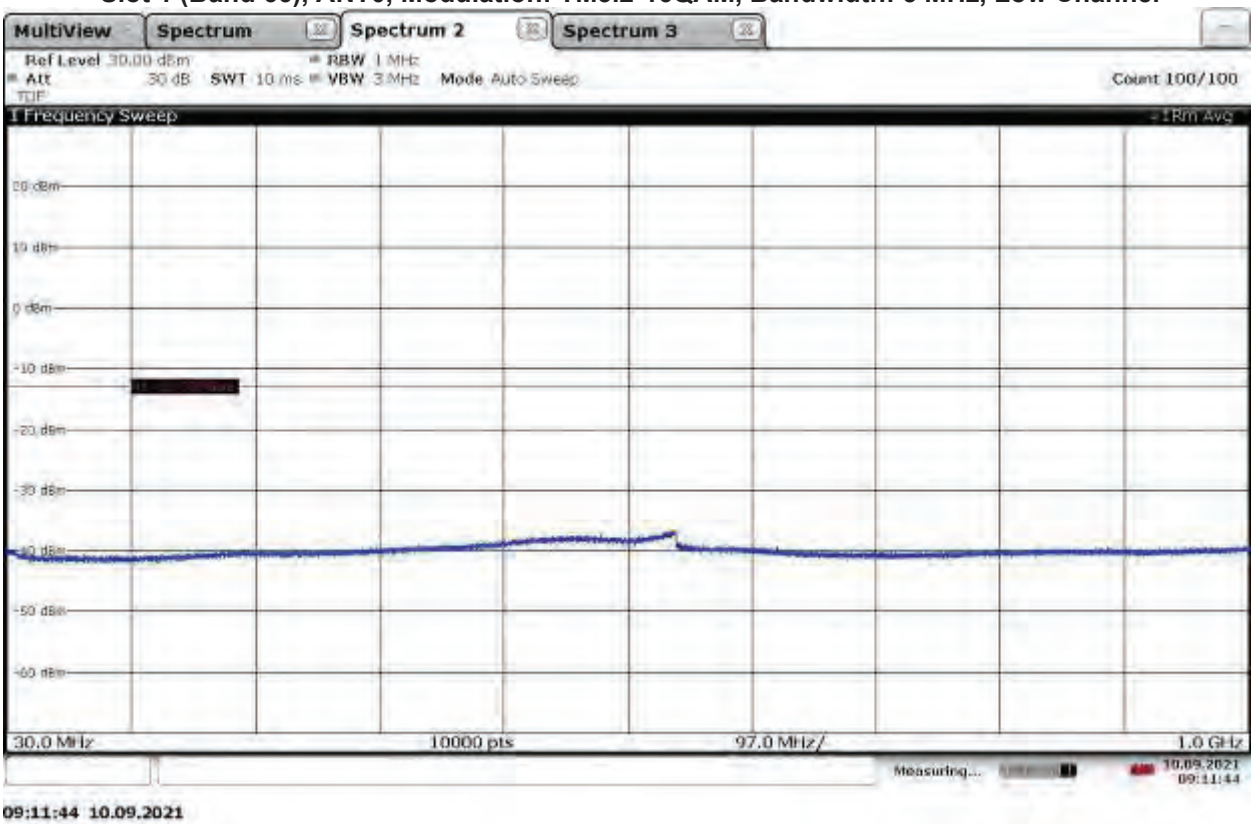
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel



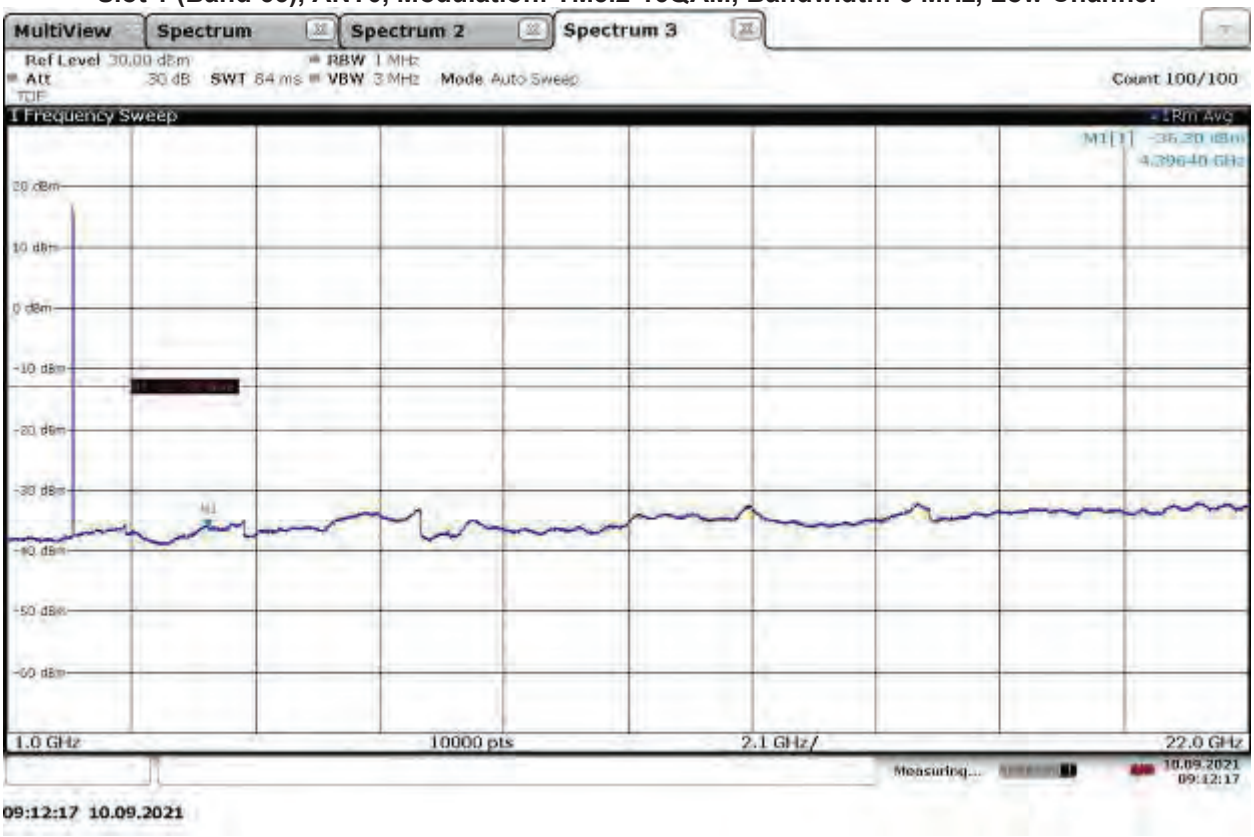
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Low Channel



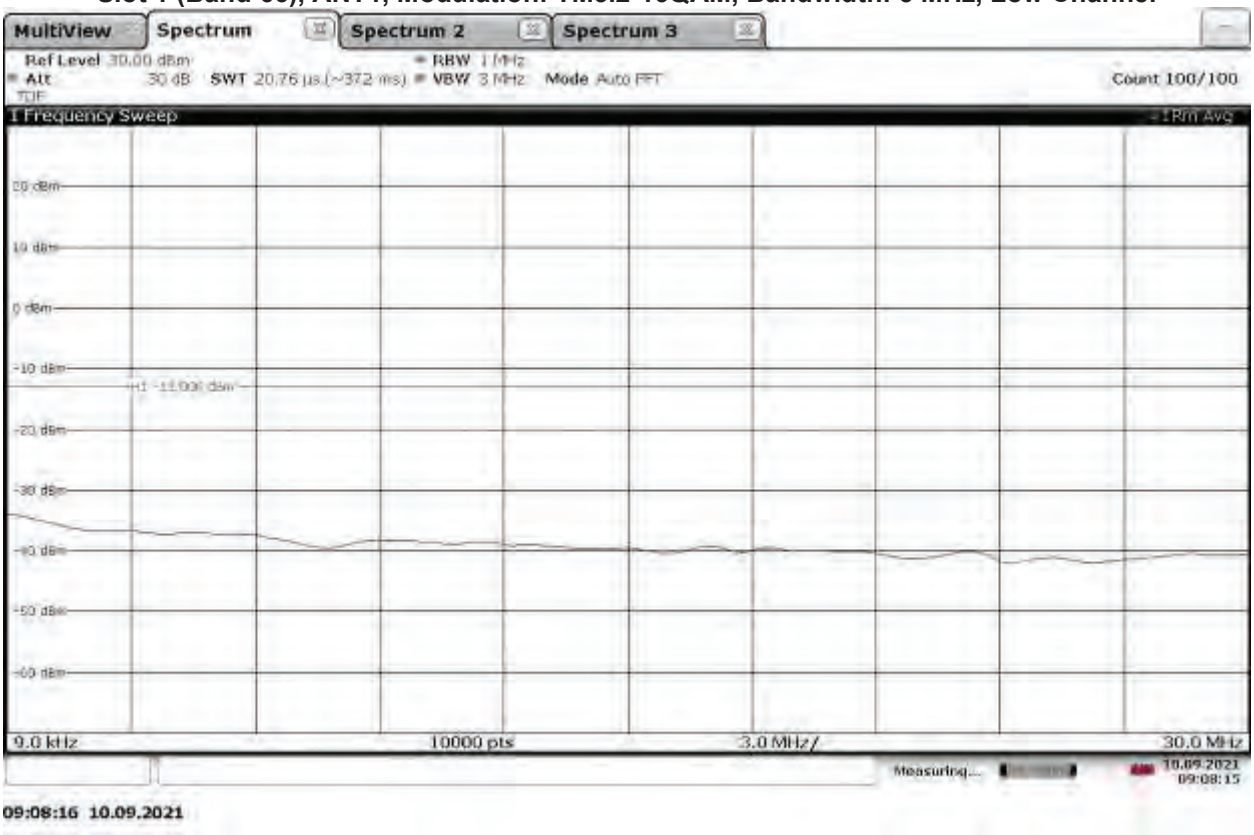
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Low Channel



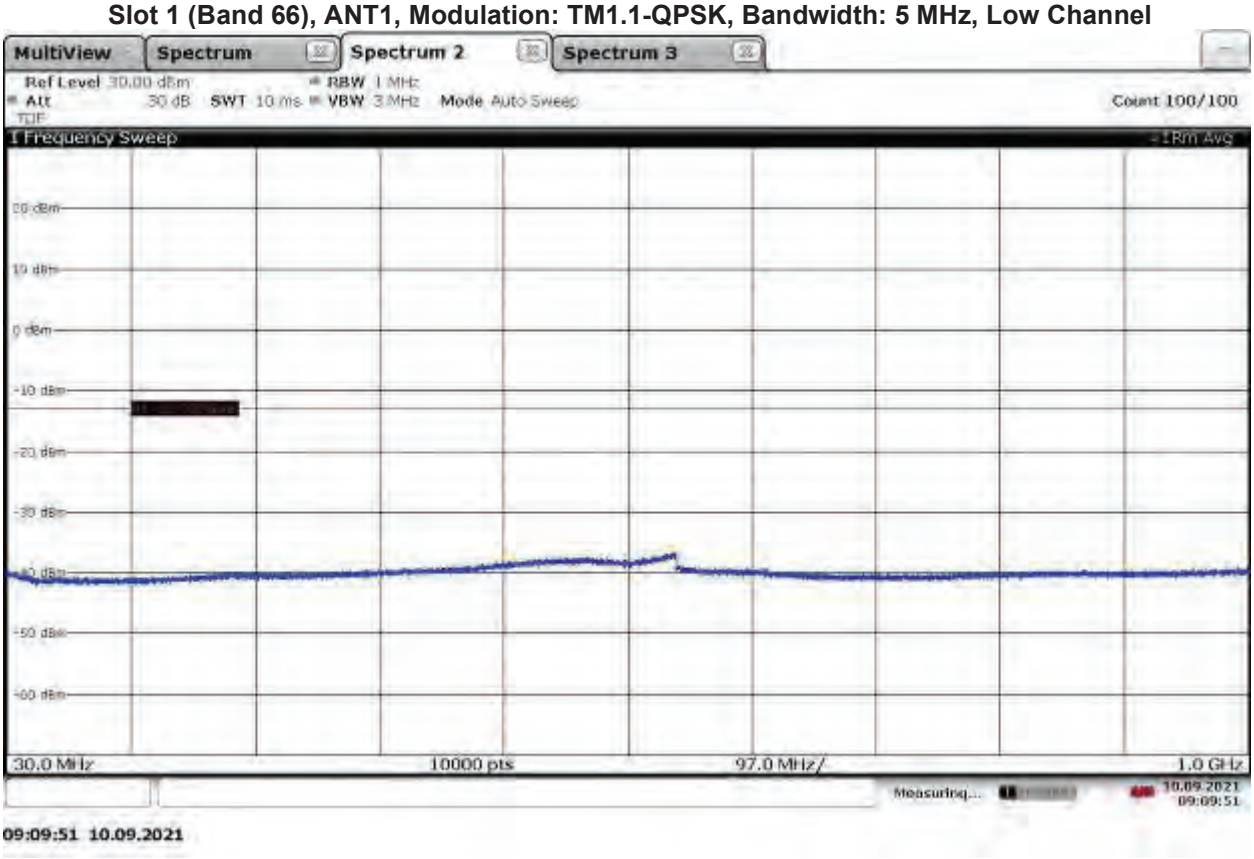
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Low Channel



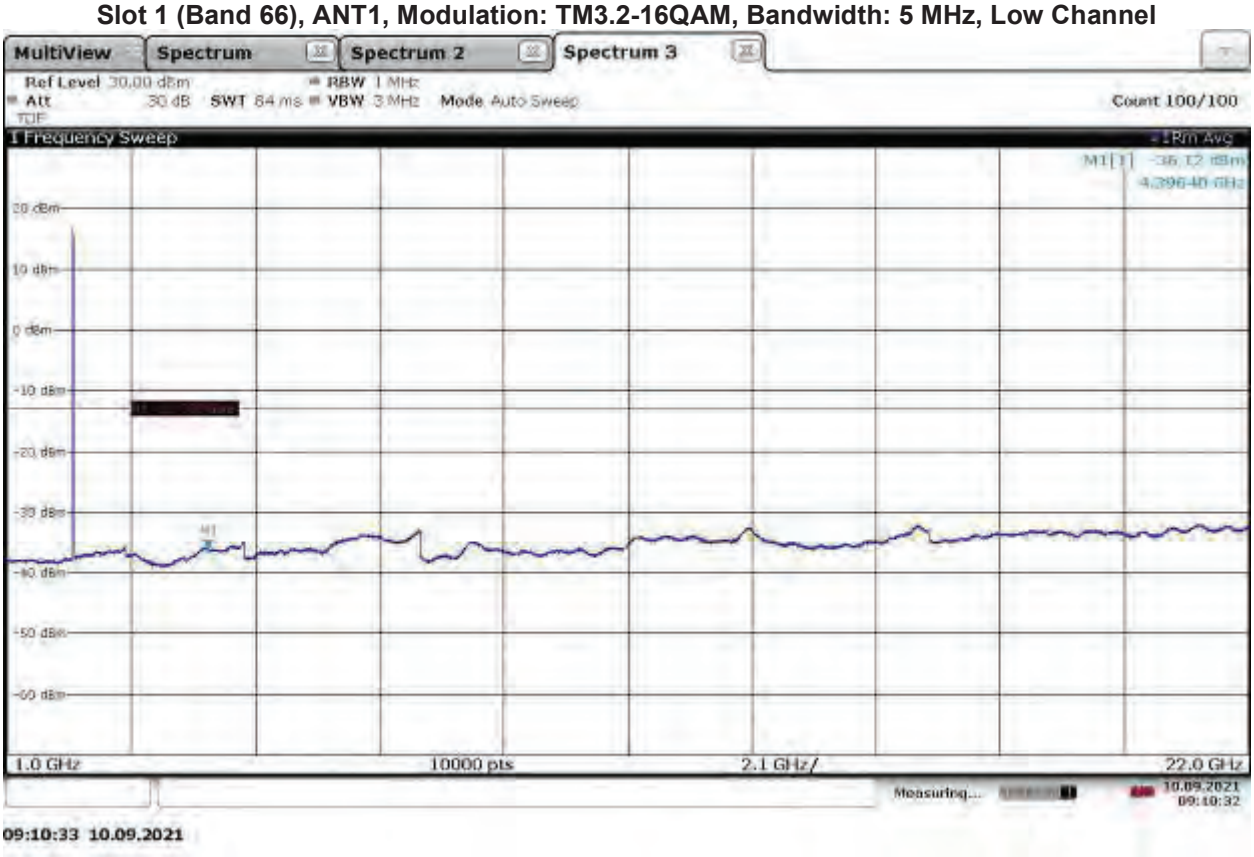
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Low Channel



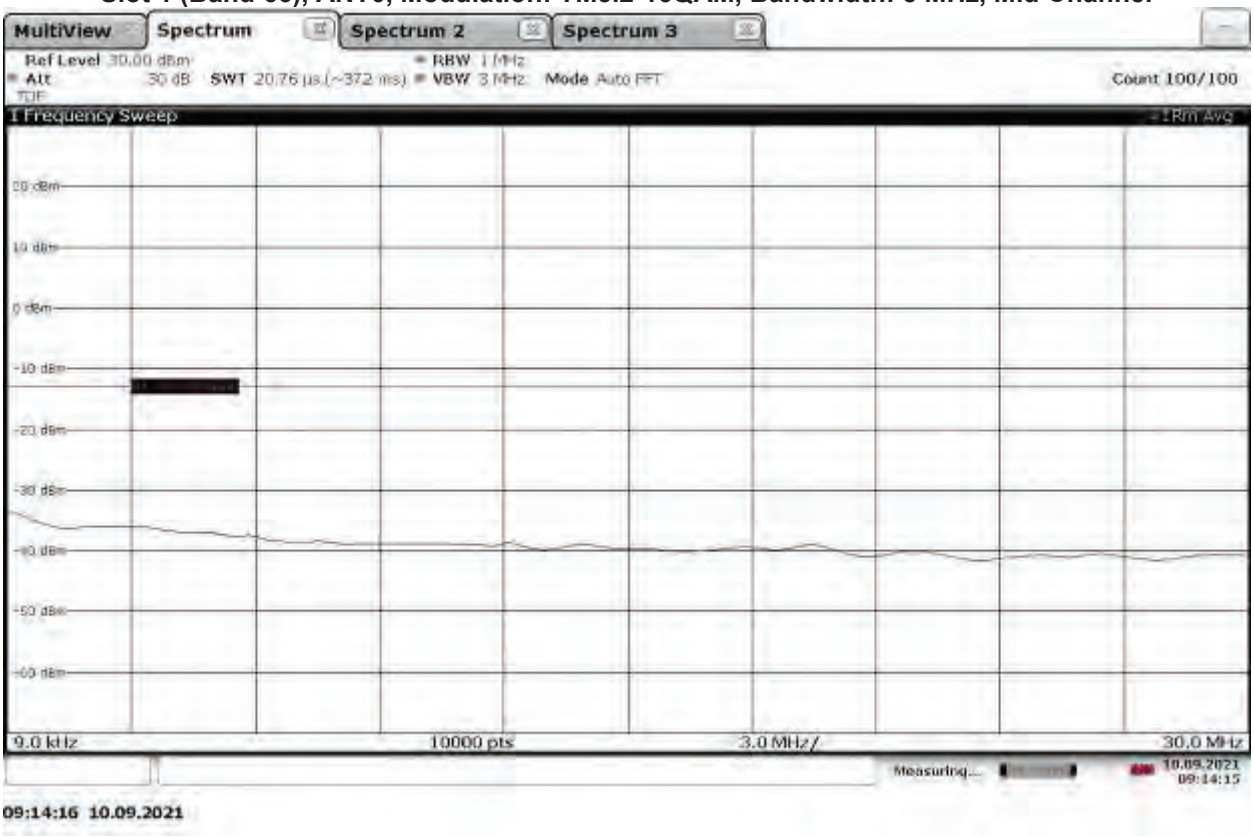
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Low Channel



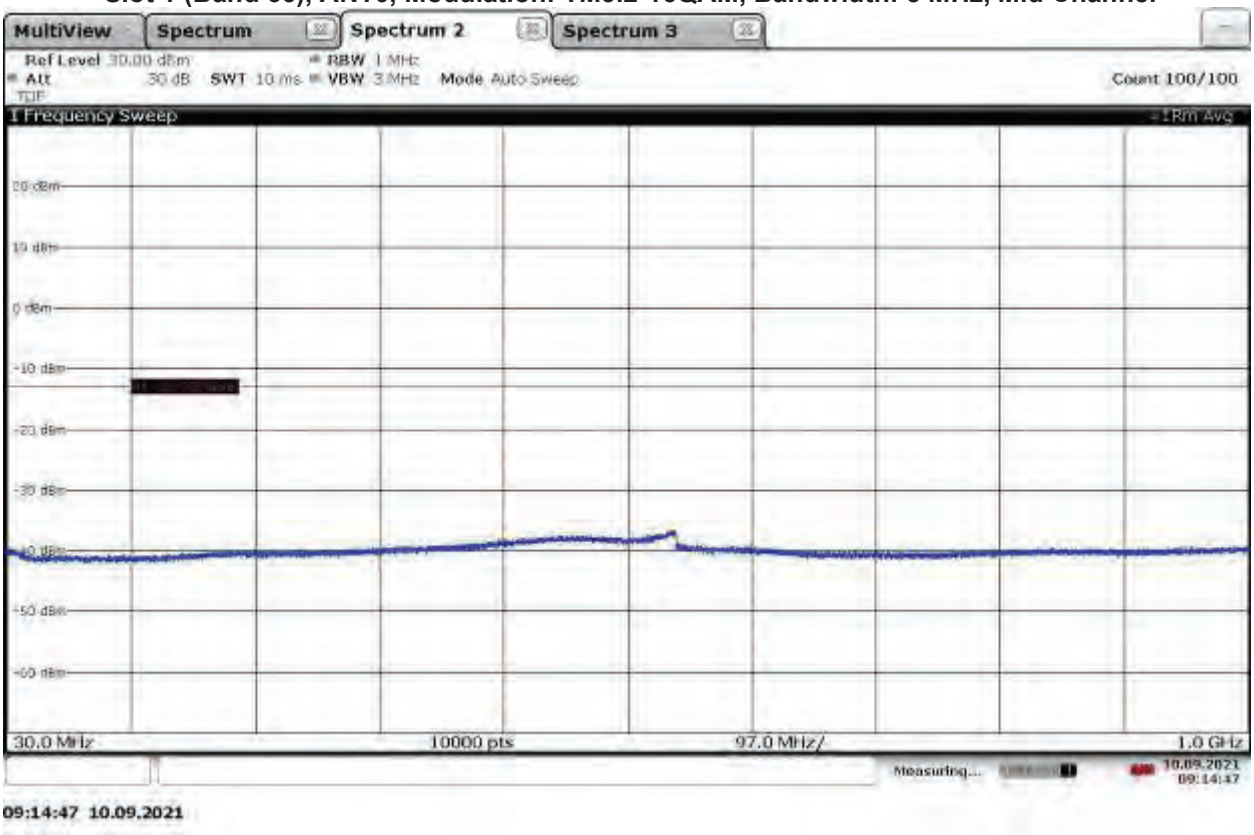
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Low Channel



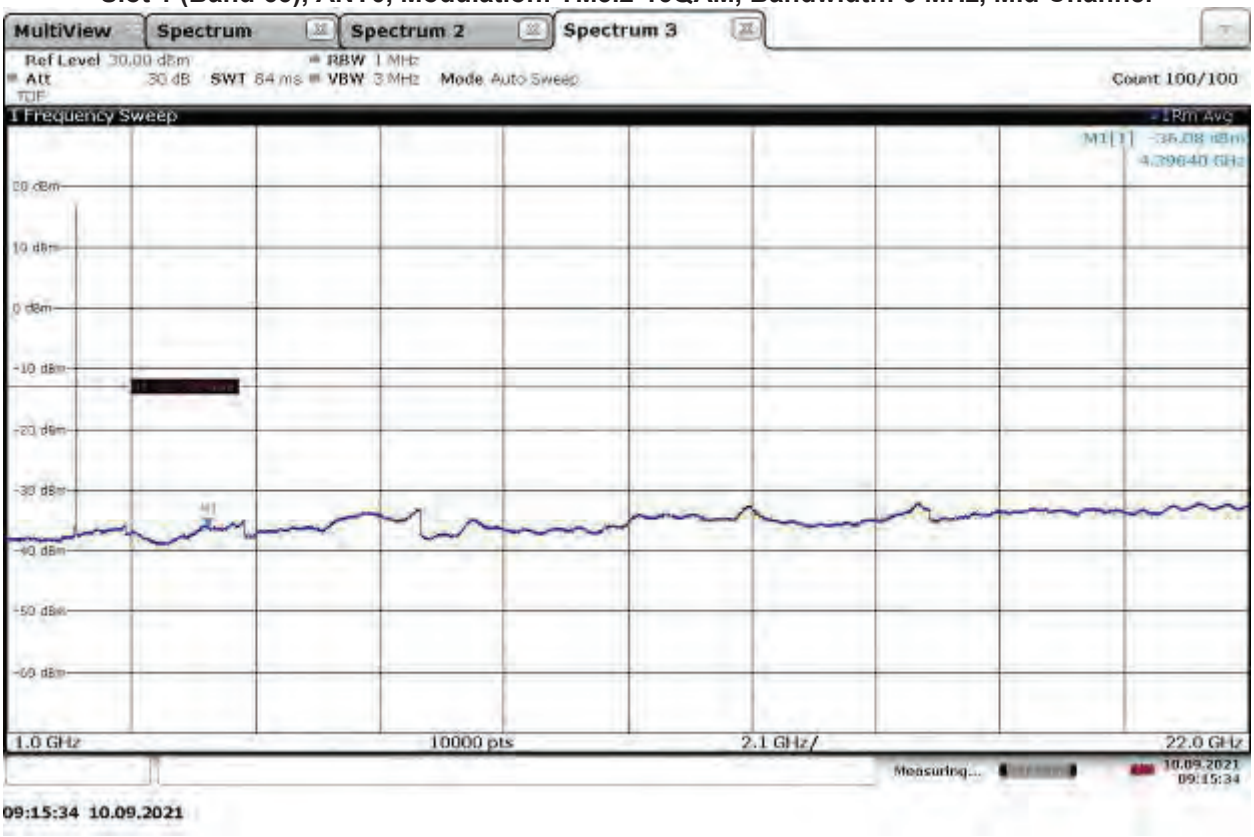
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



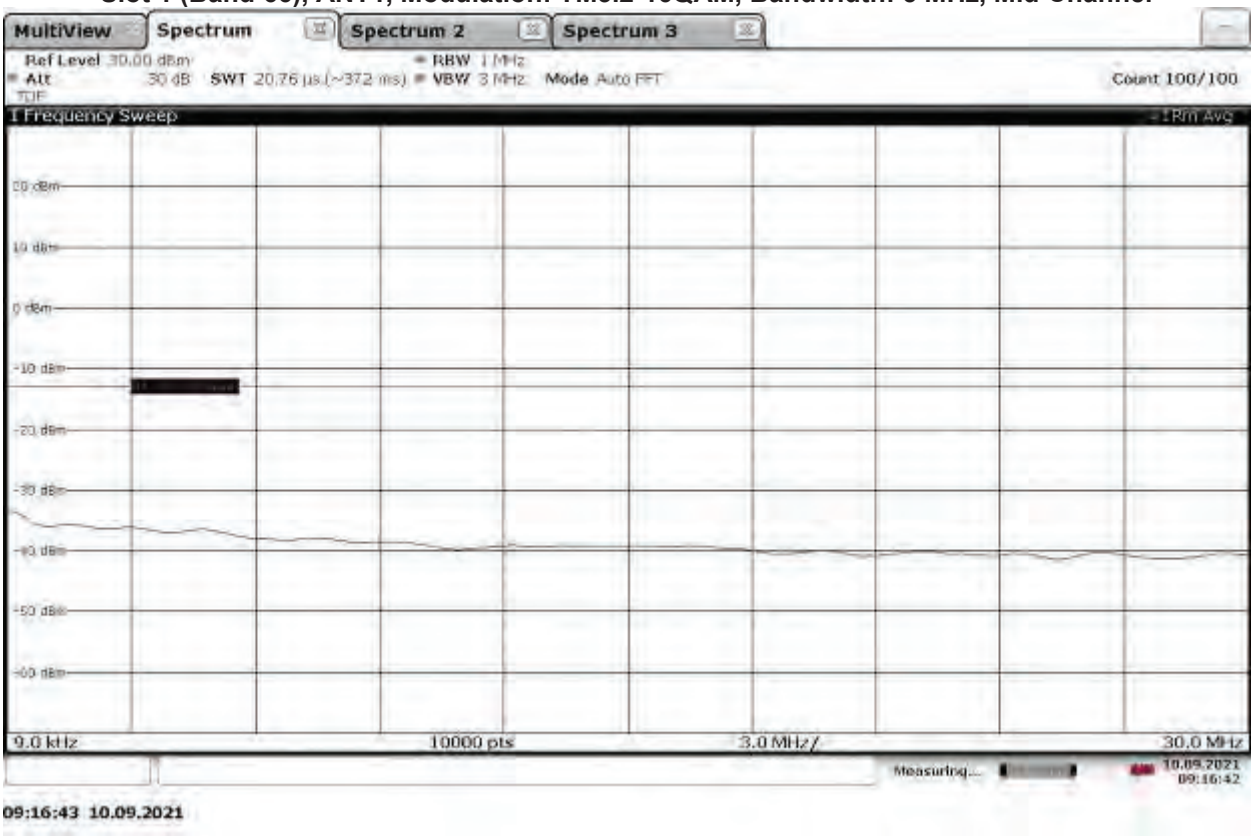
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



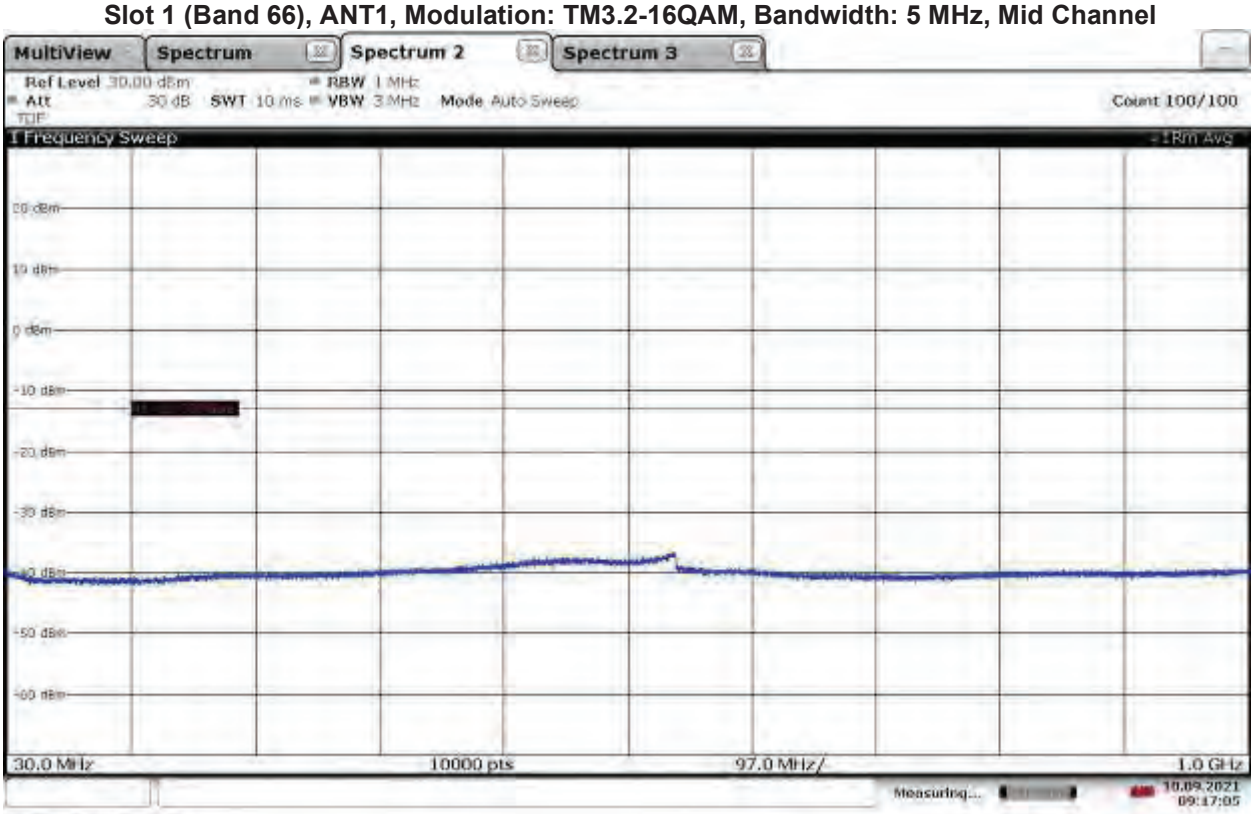
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



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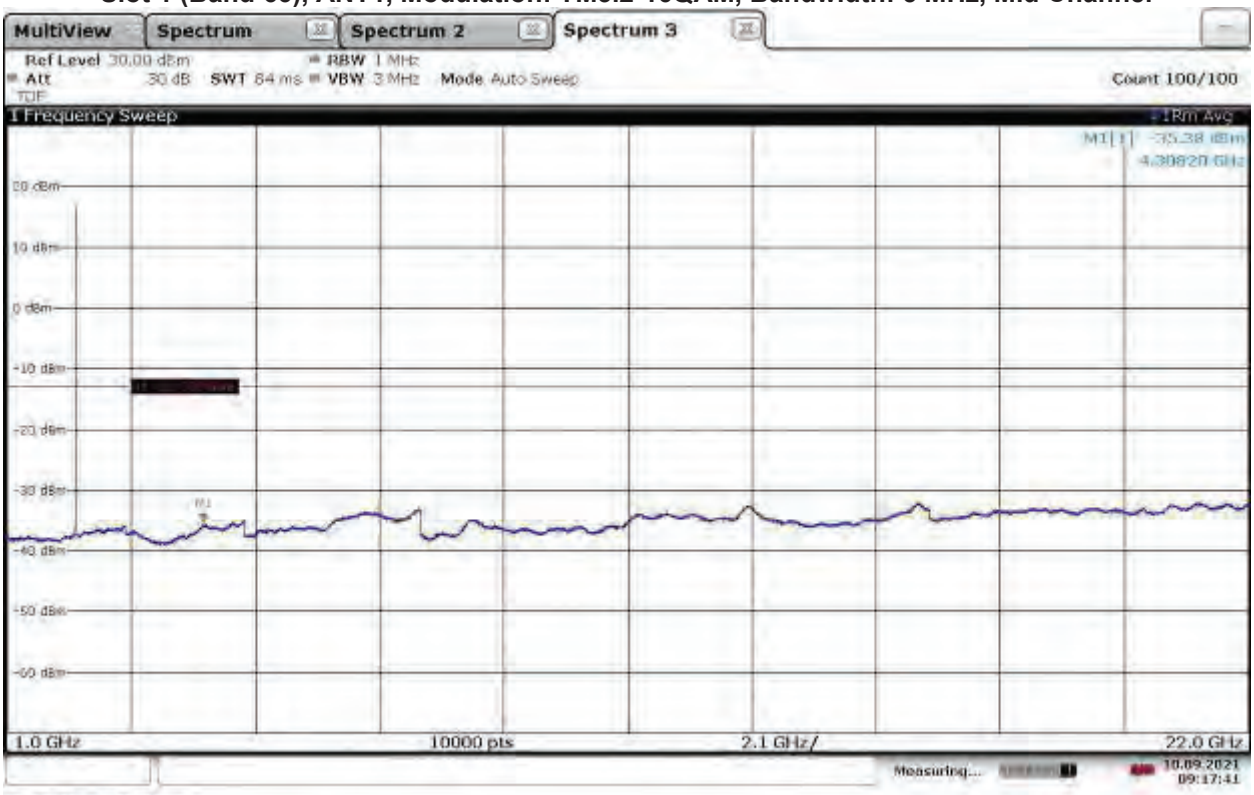
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel



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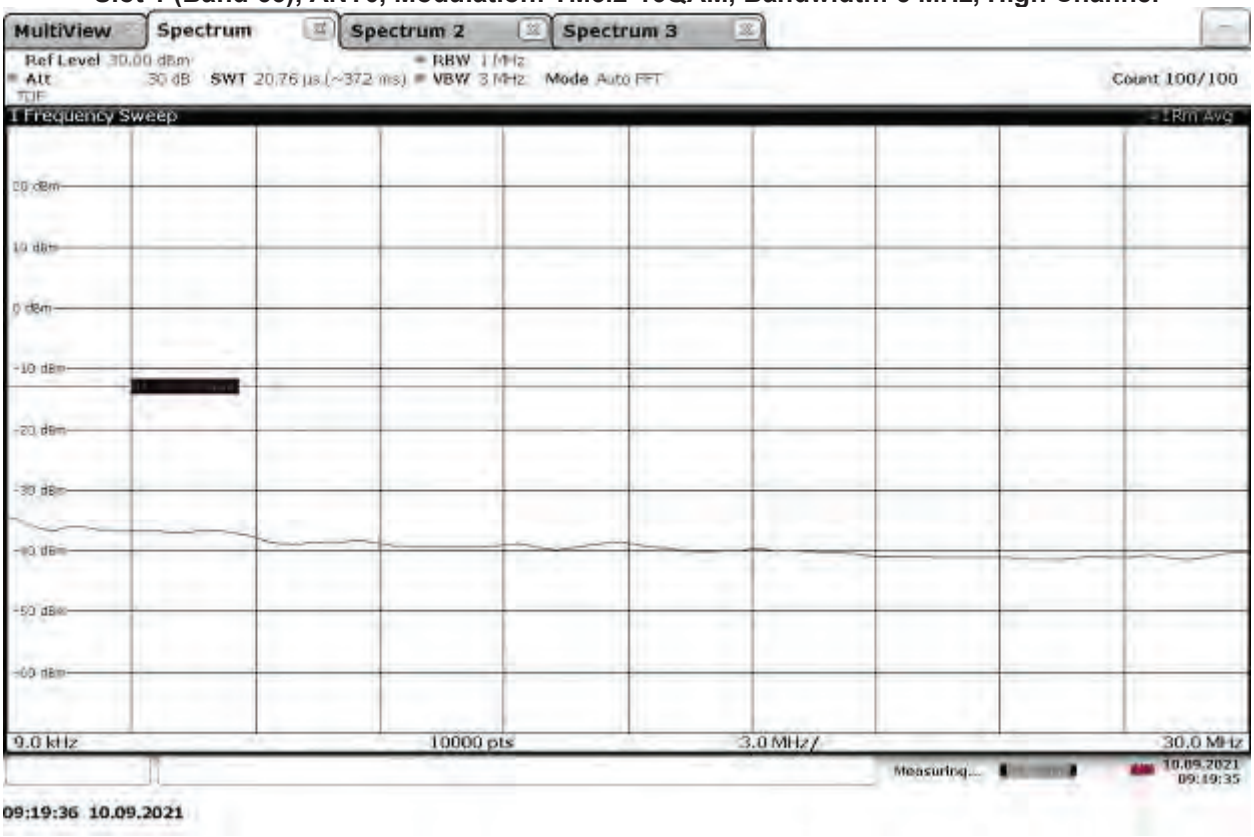
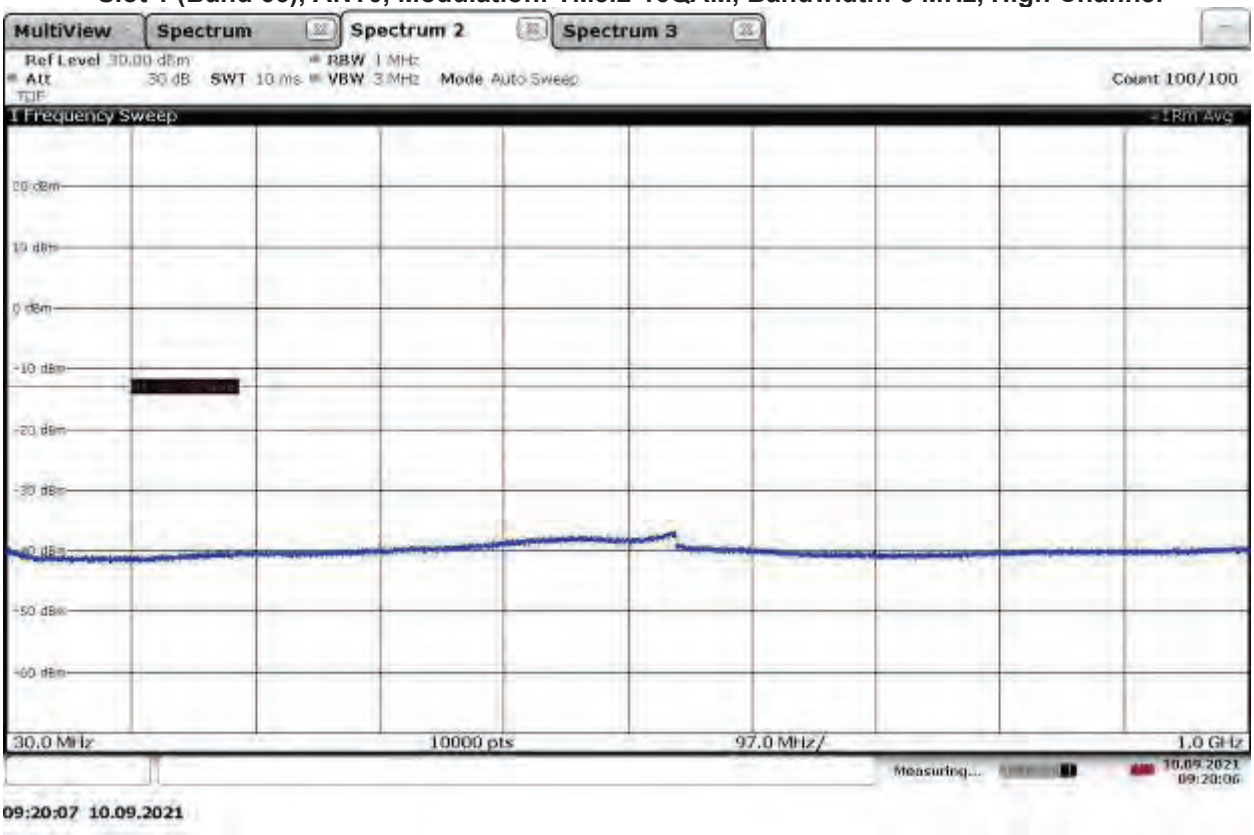
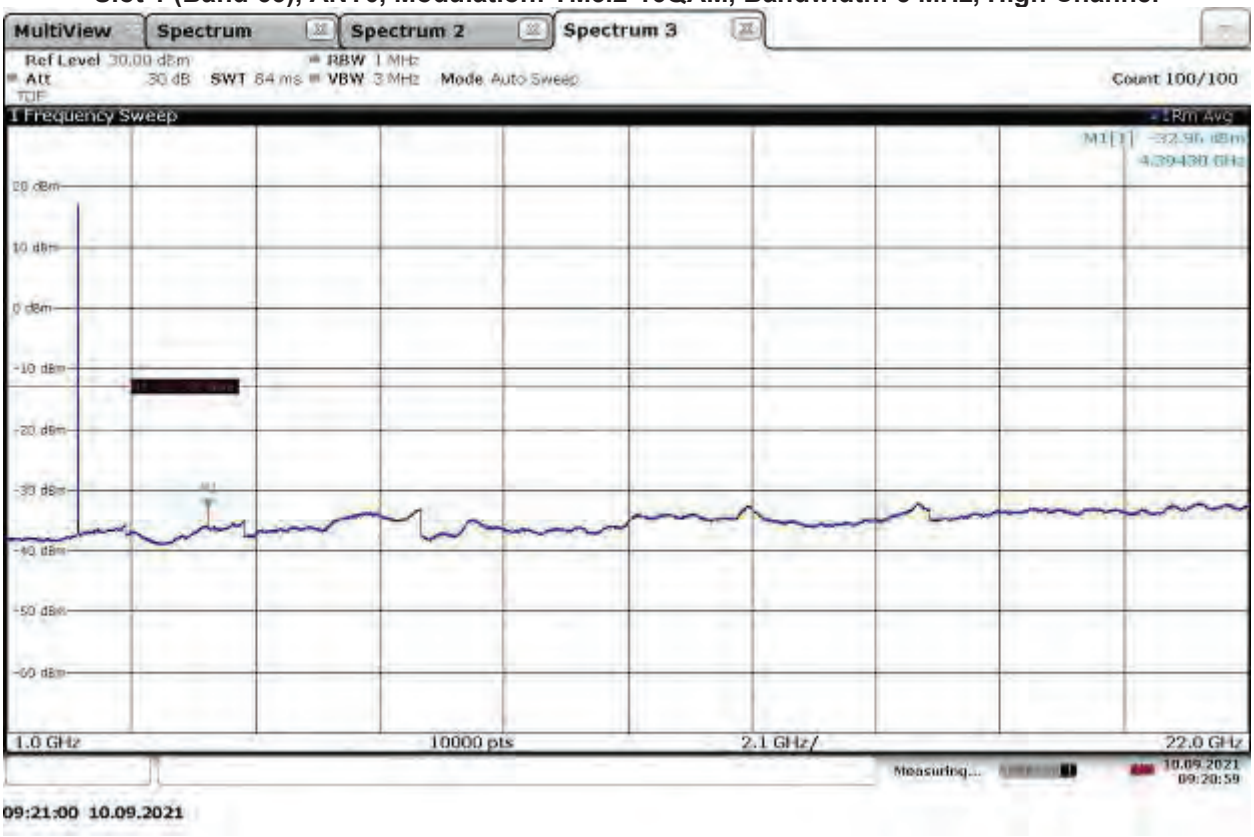
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



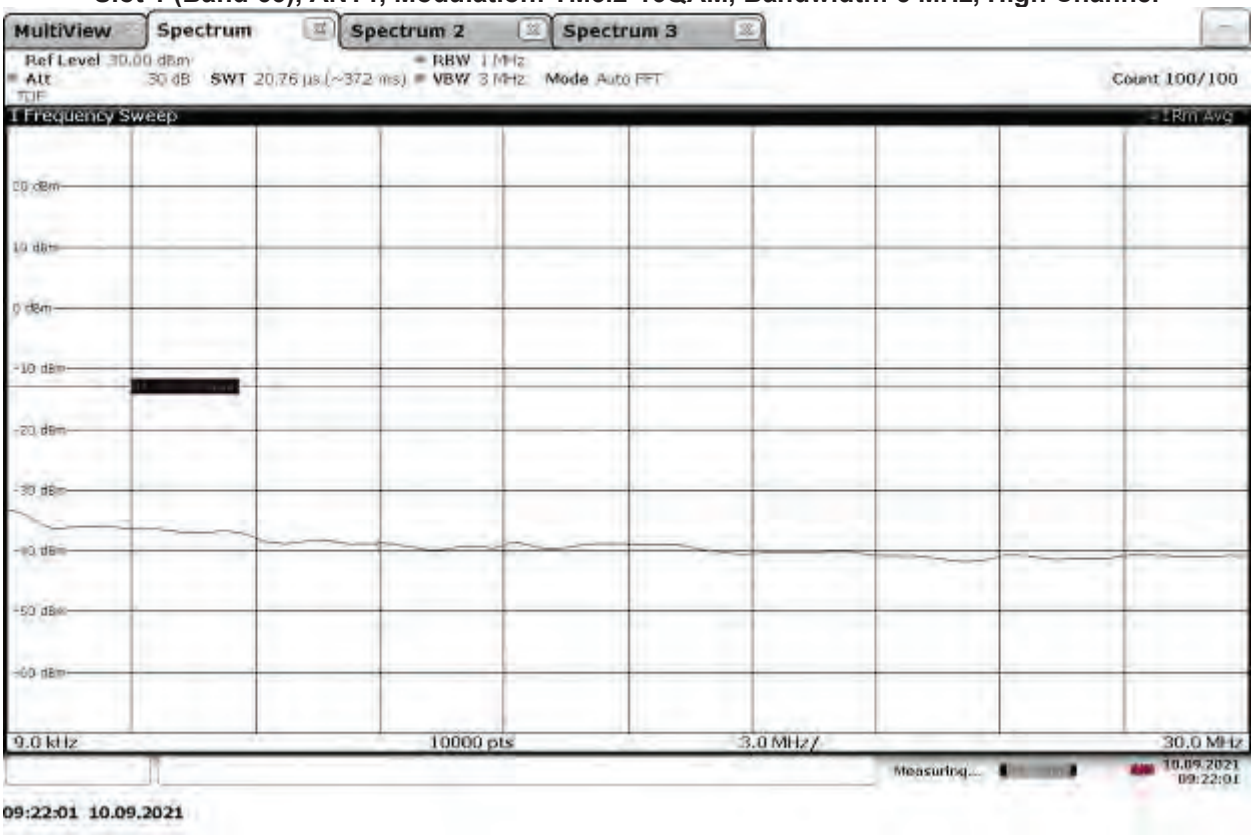
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



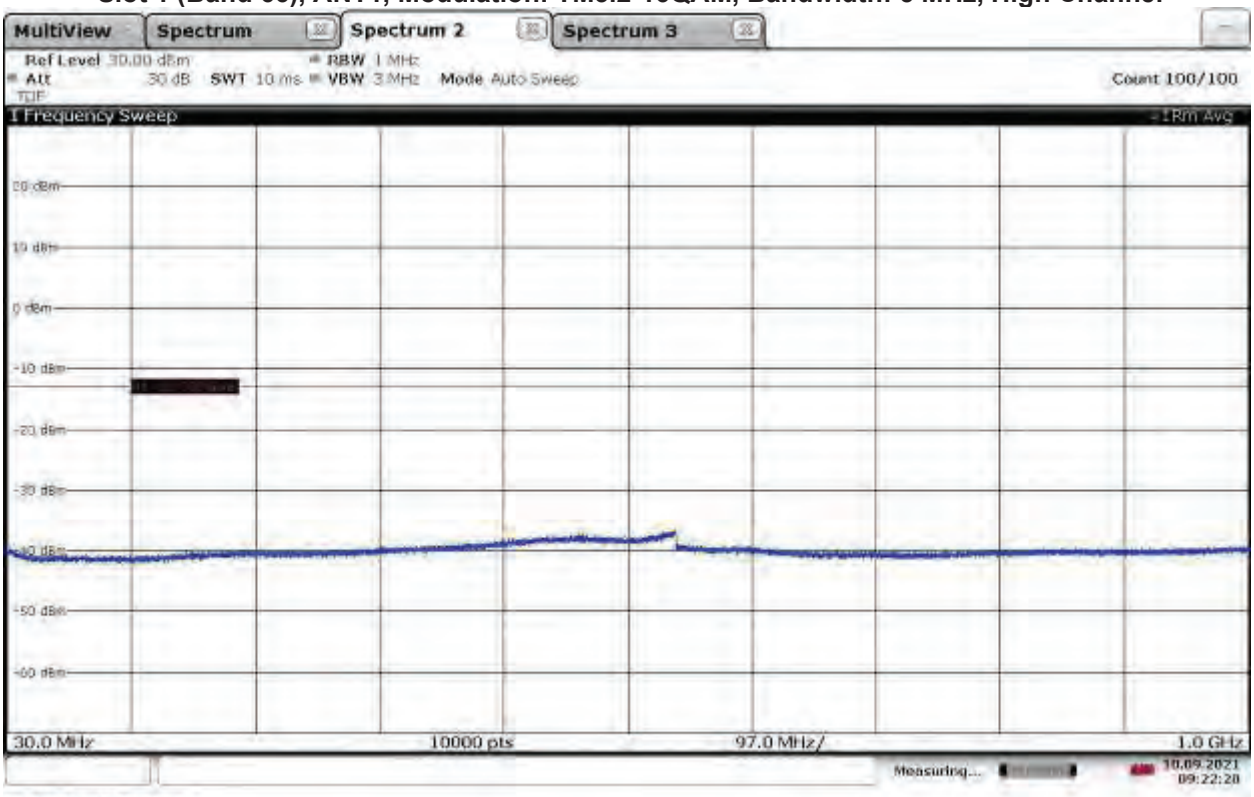
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



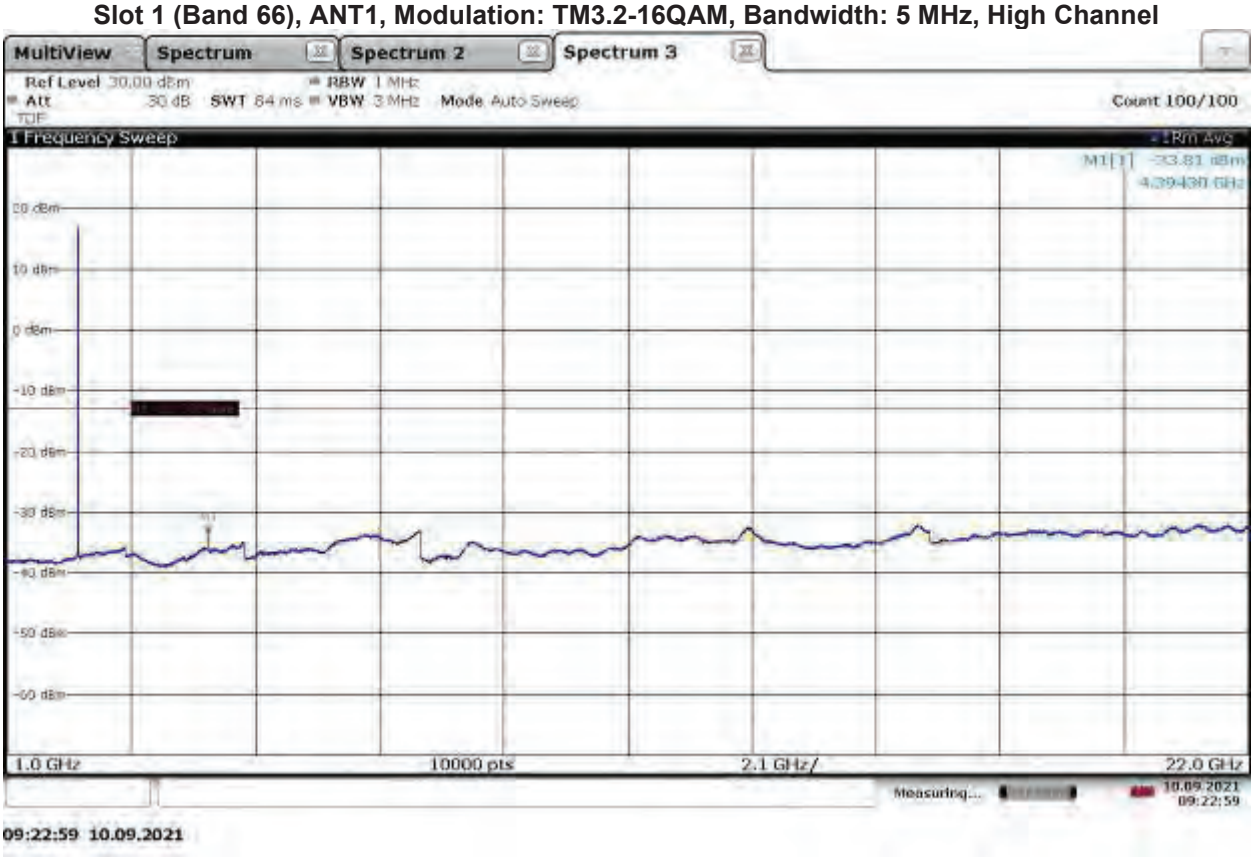
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



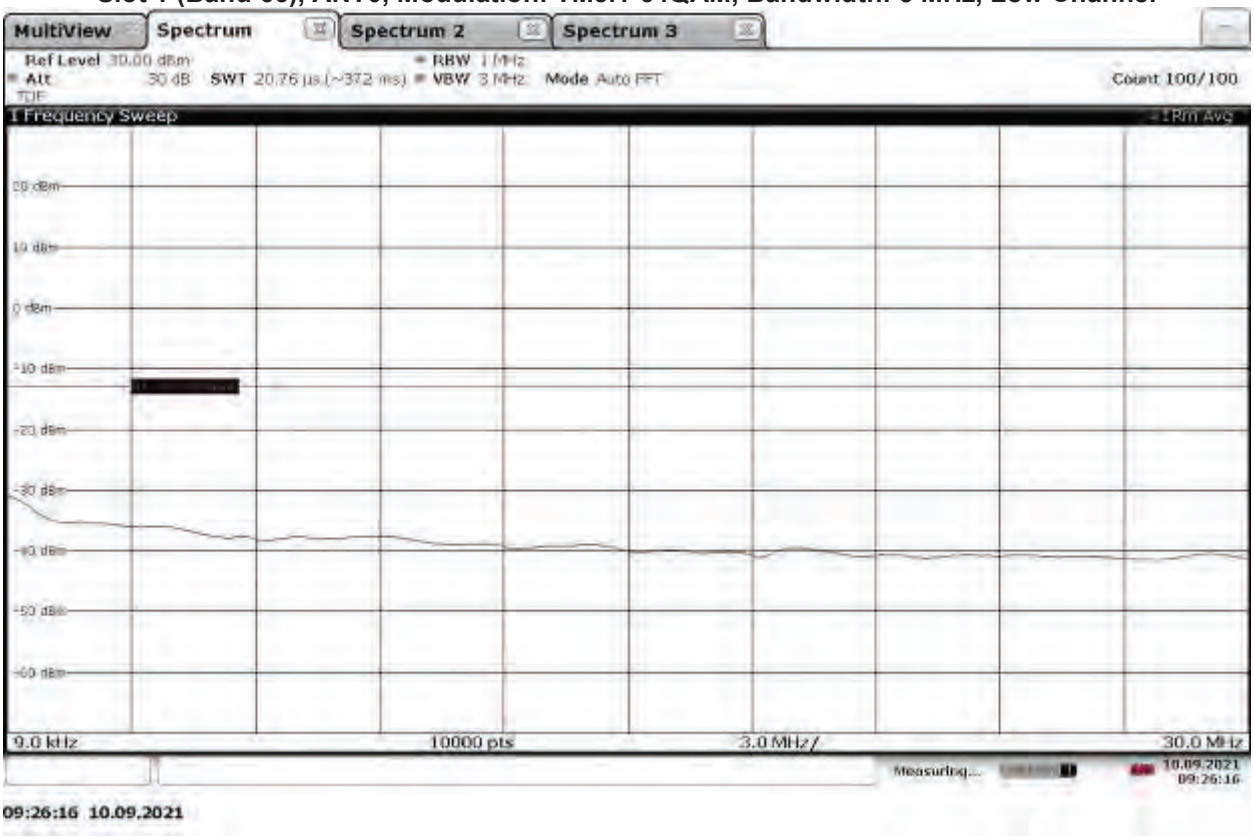
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



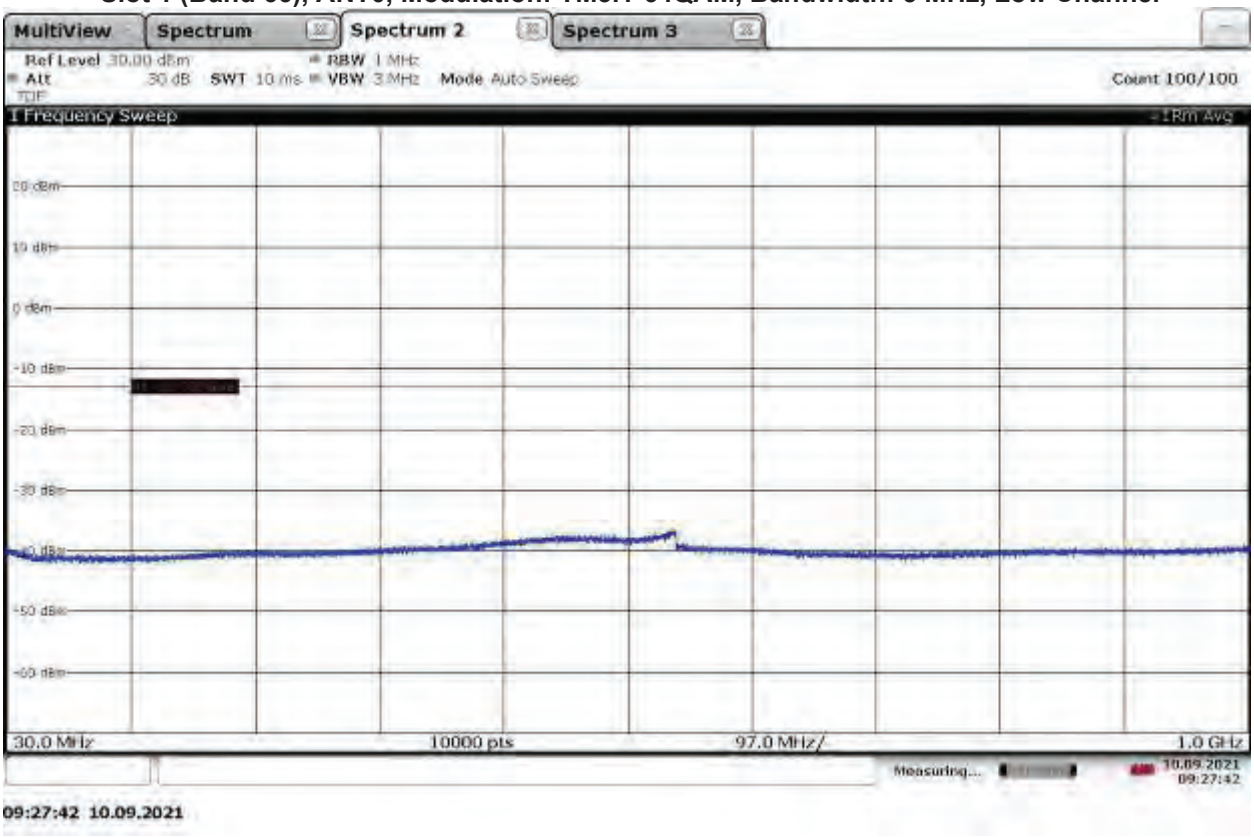
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel



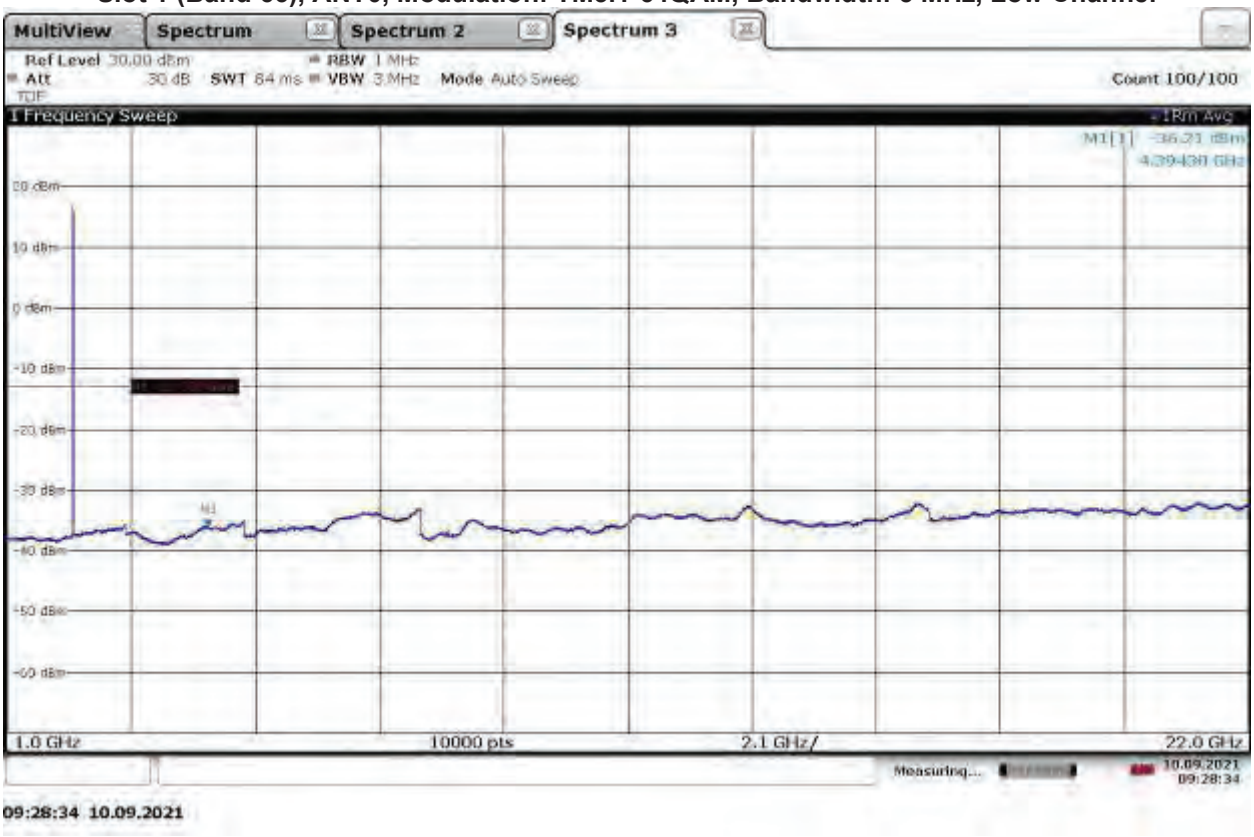
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



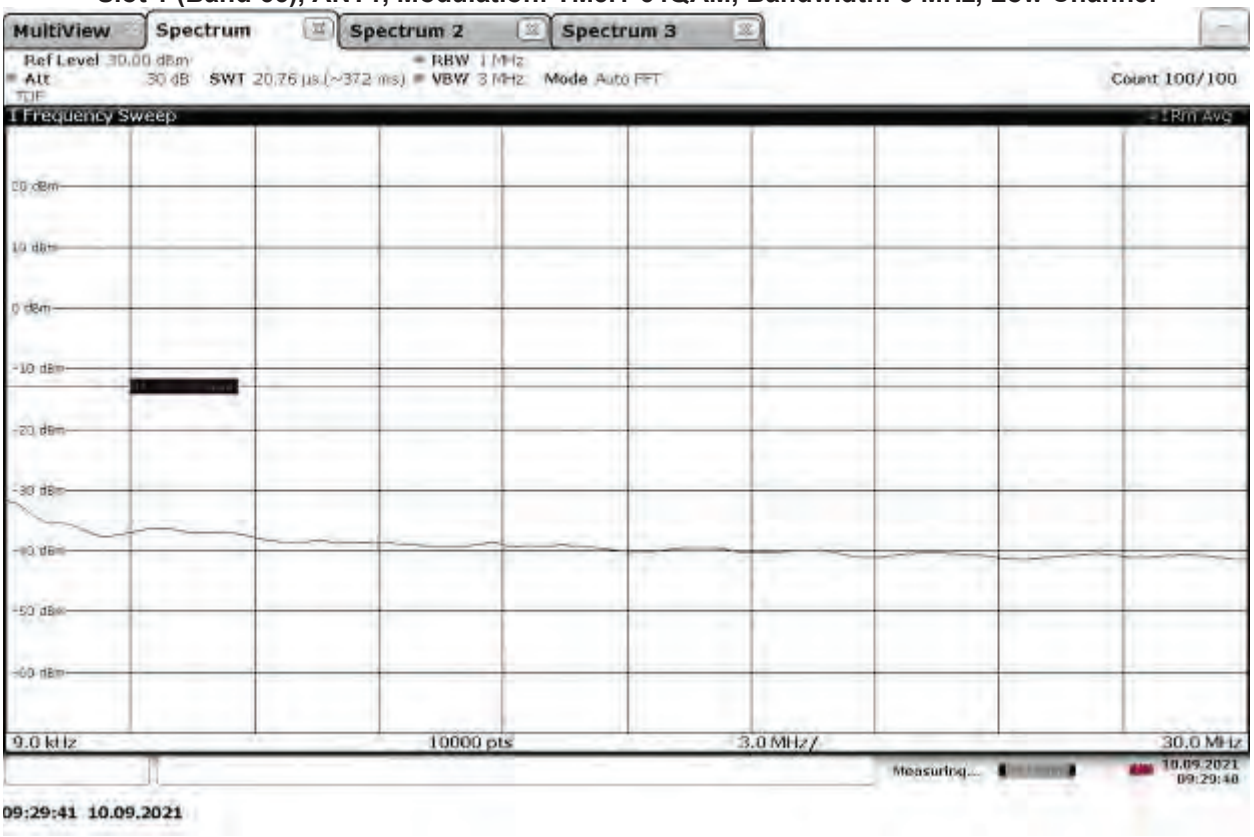
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



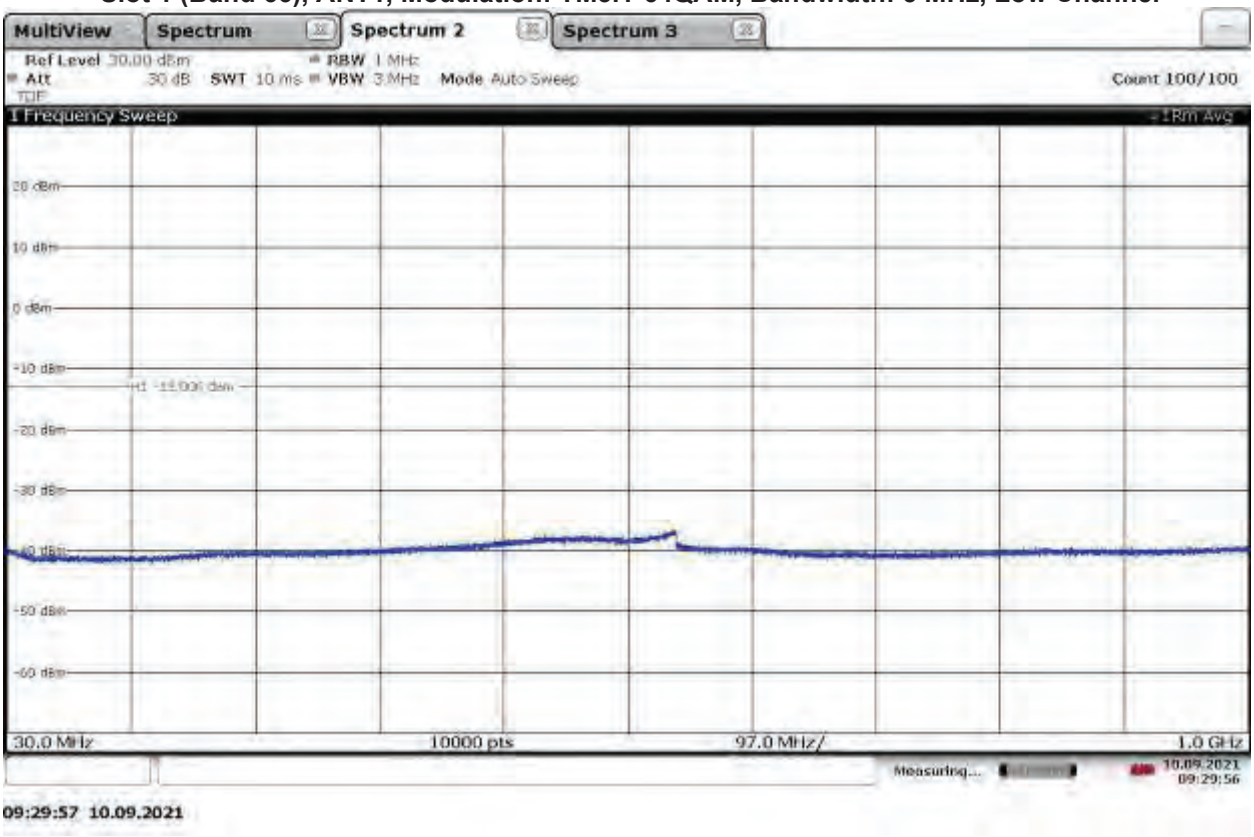
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



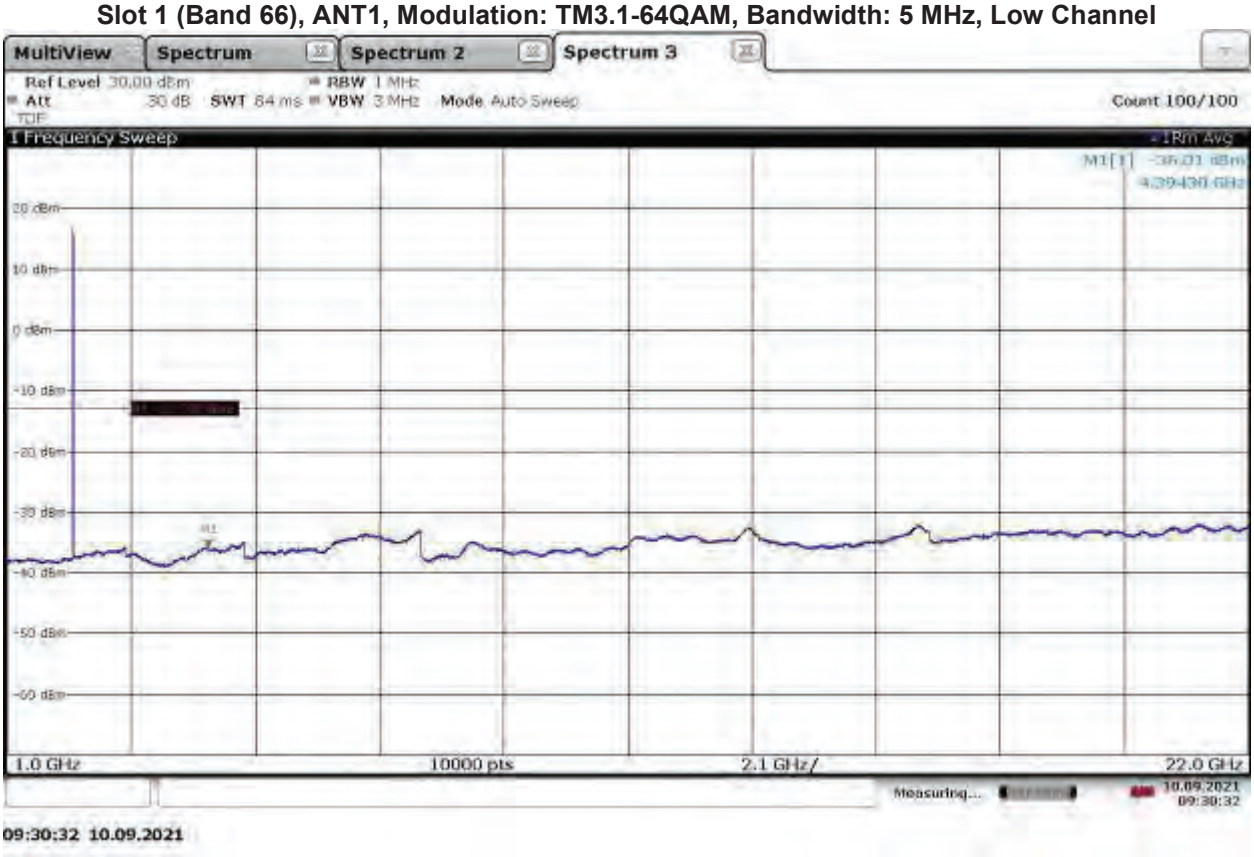
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



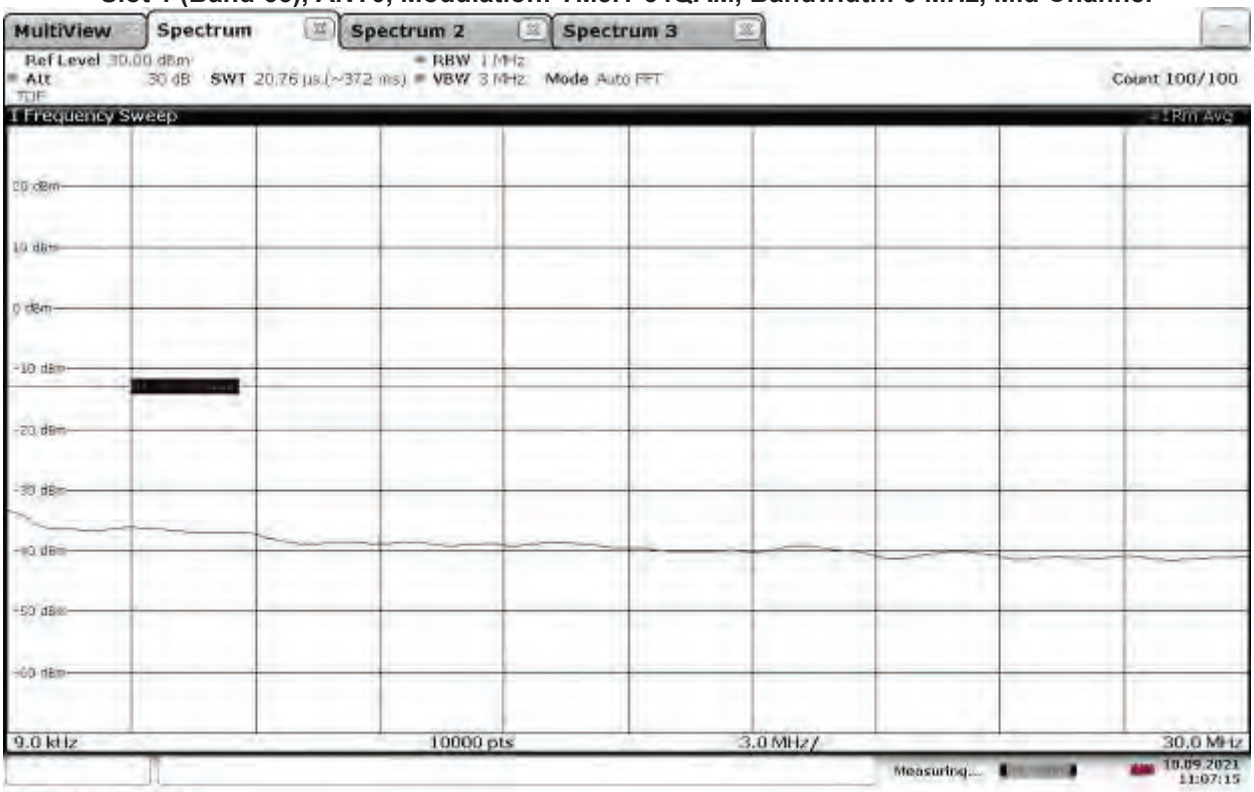
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



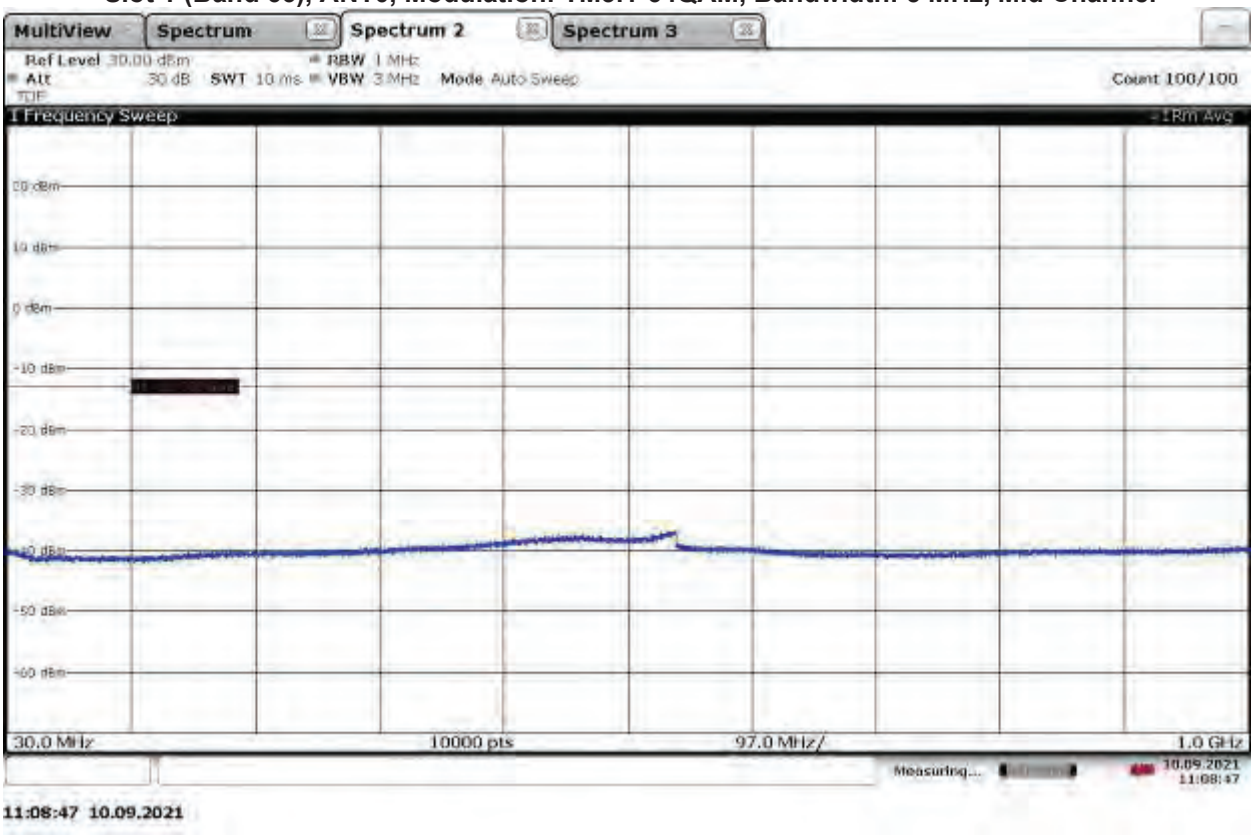
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel



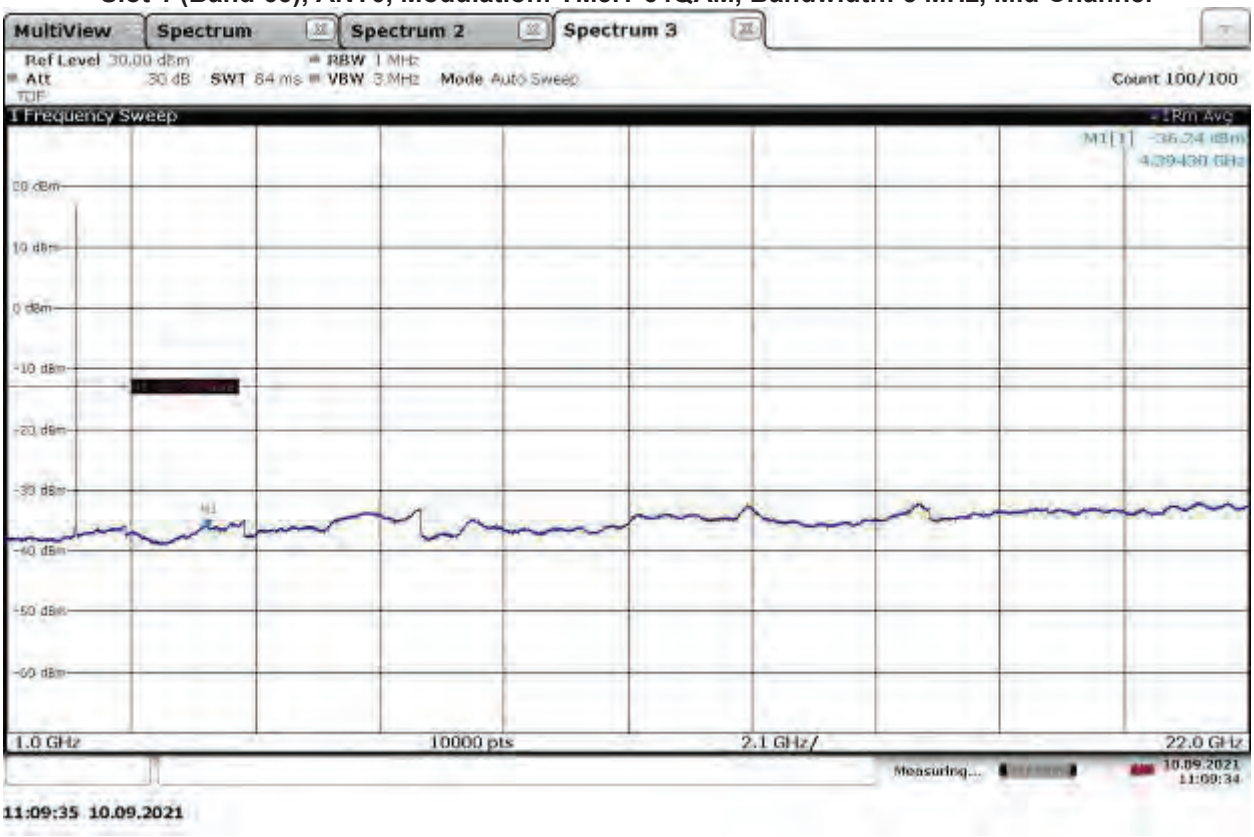
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



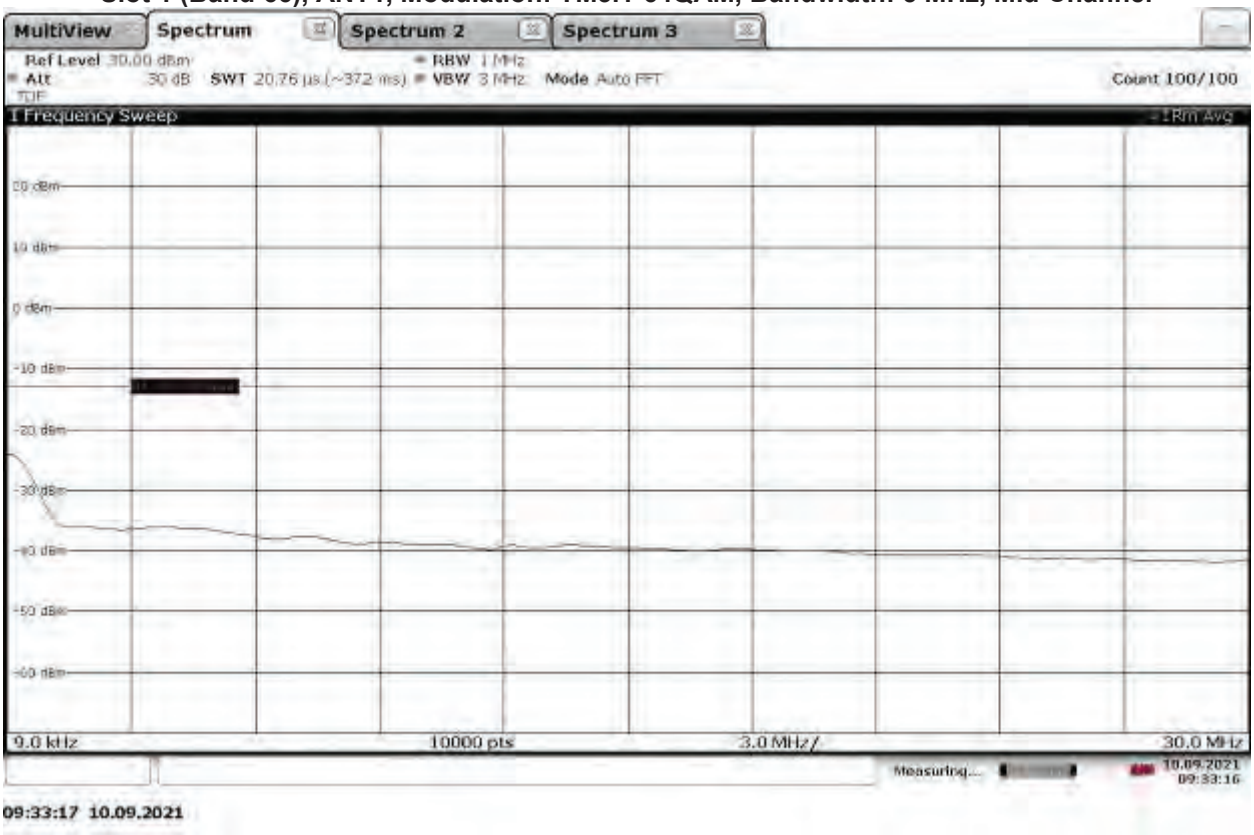
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



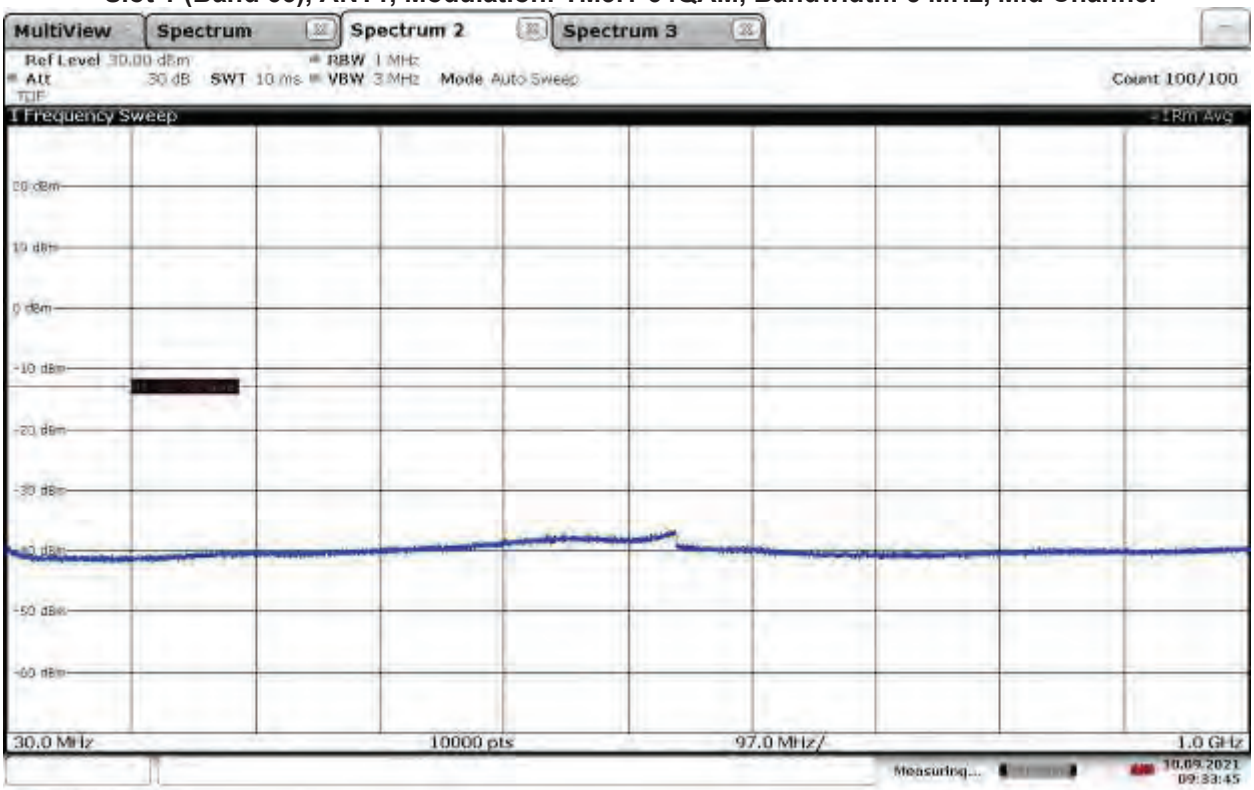
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



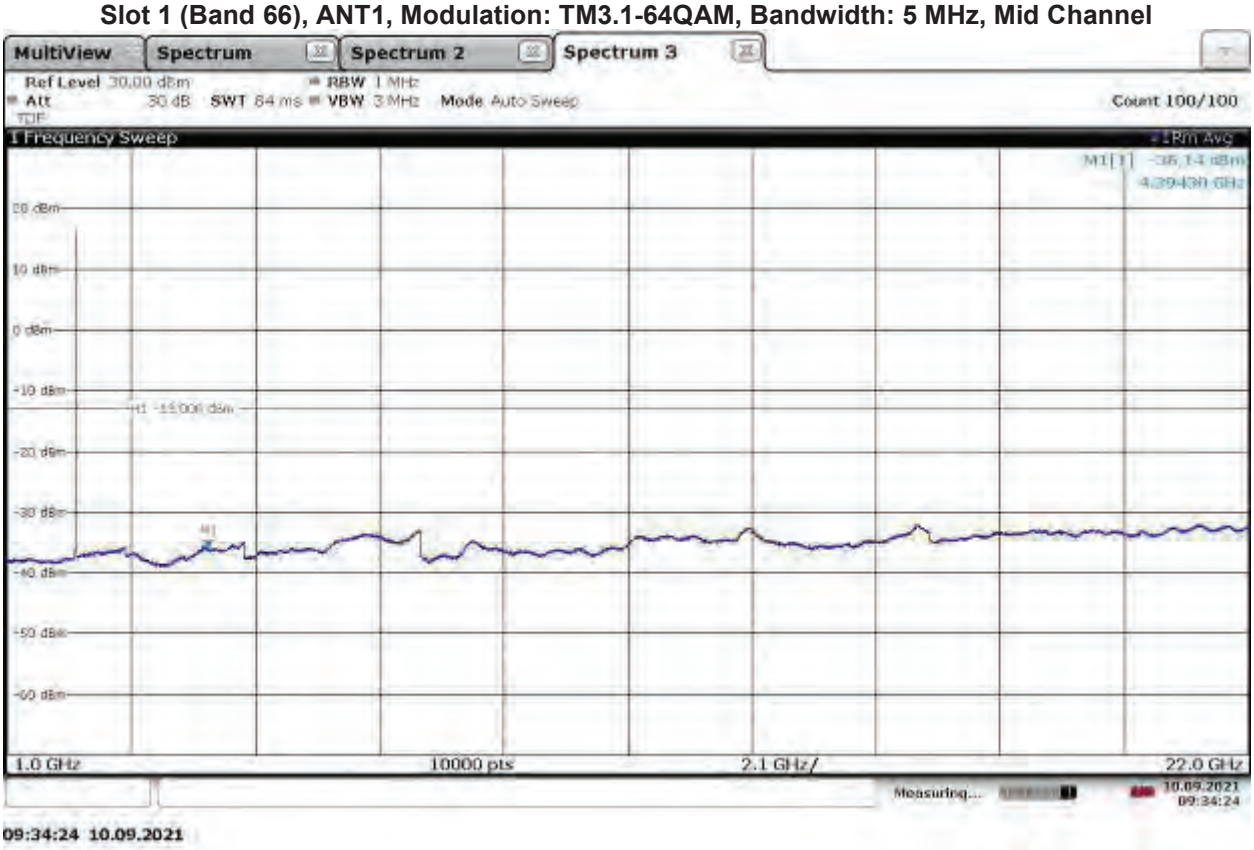
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



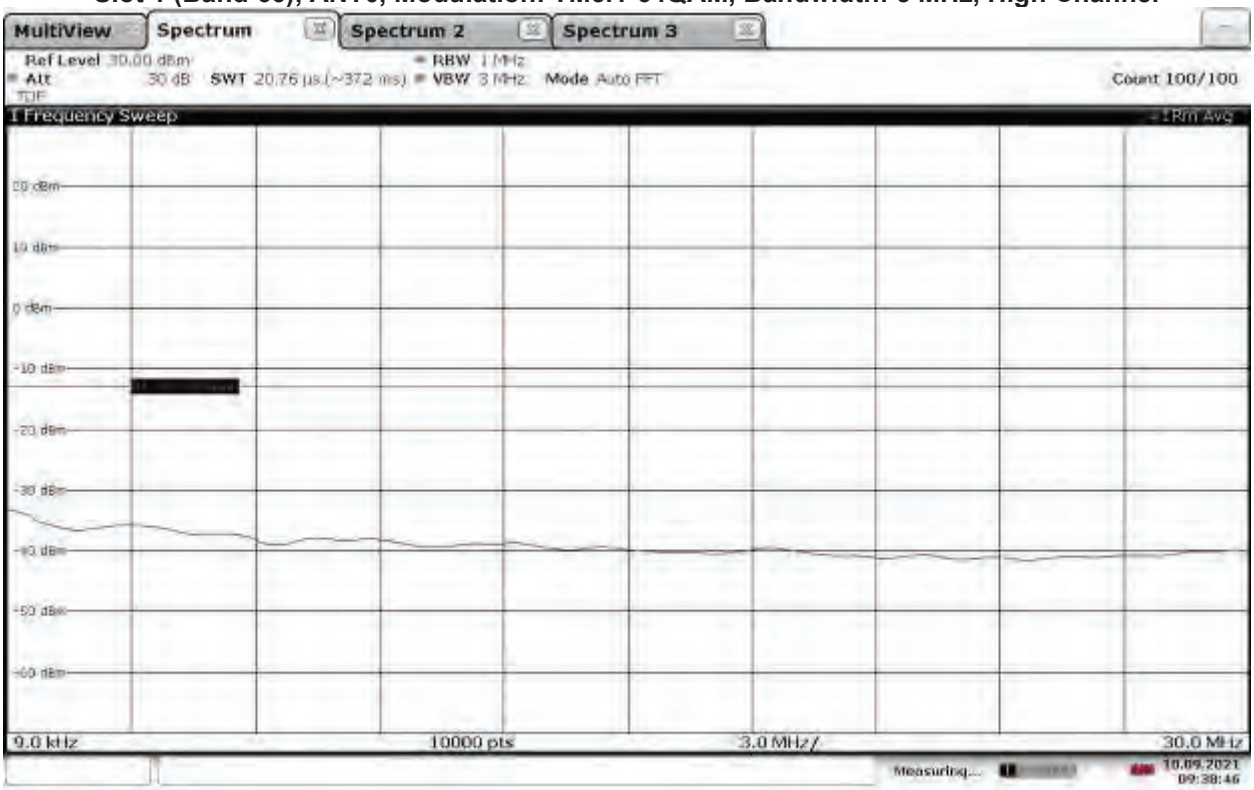
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



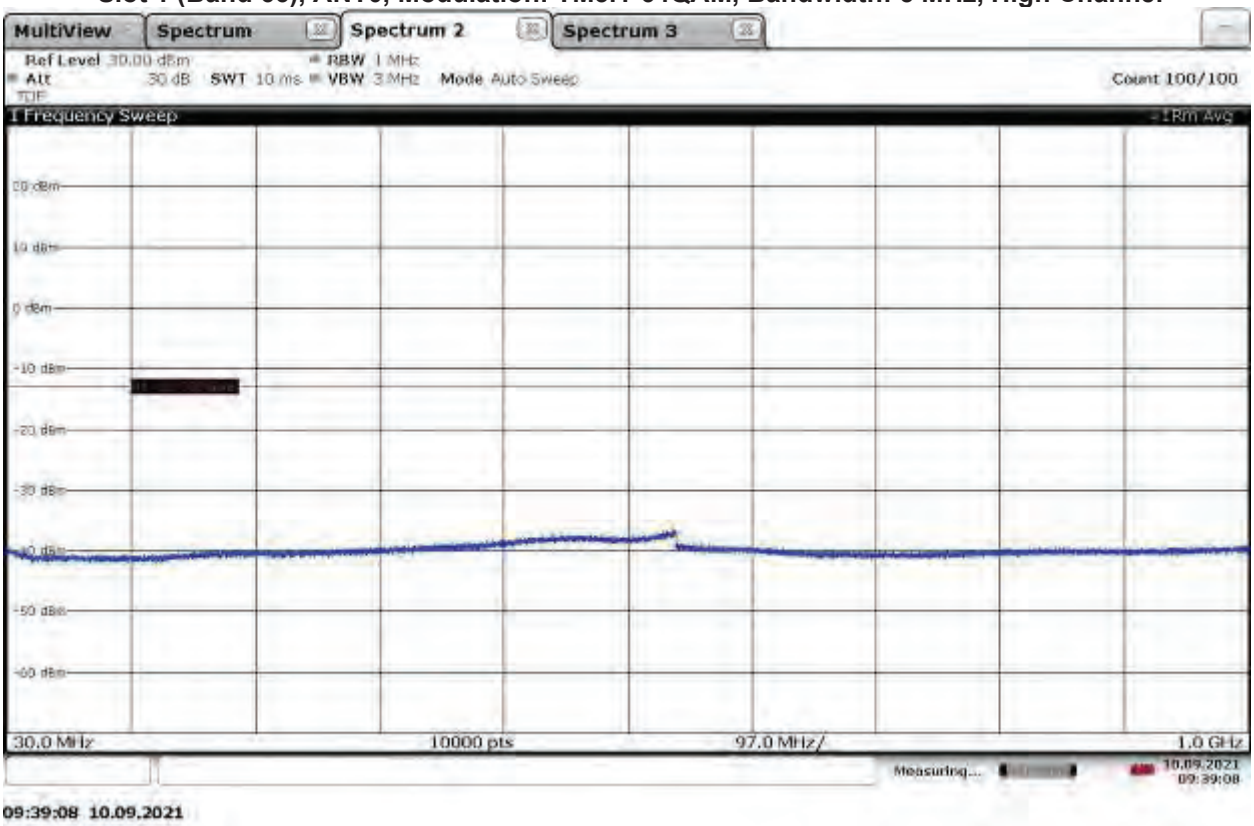
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel



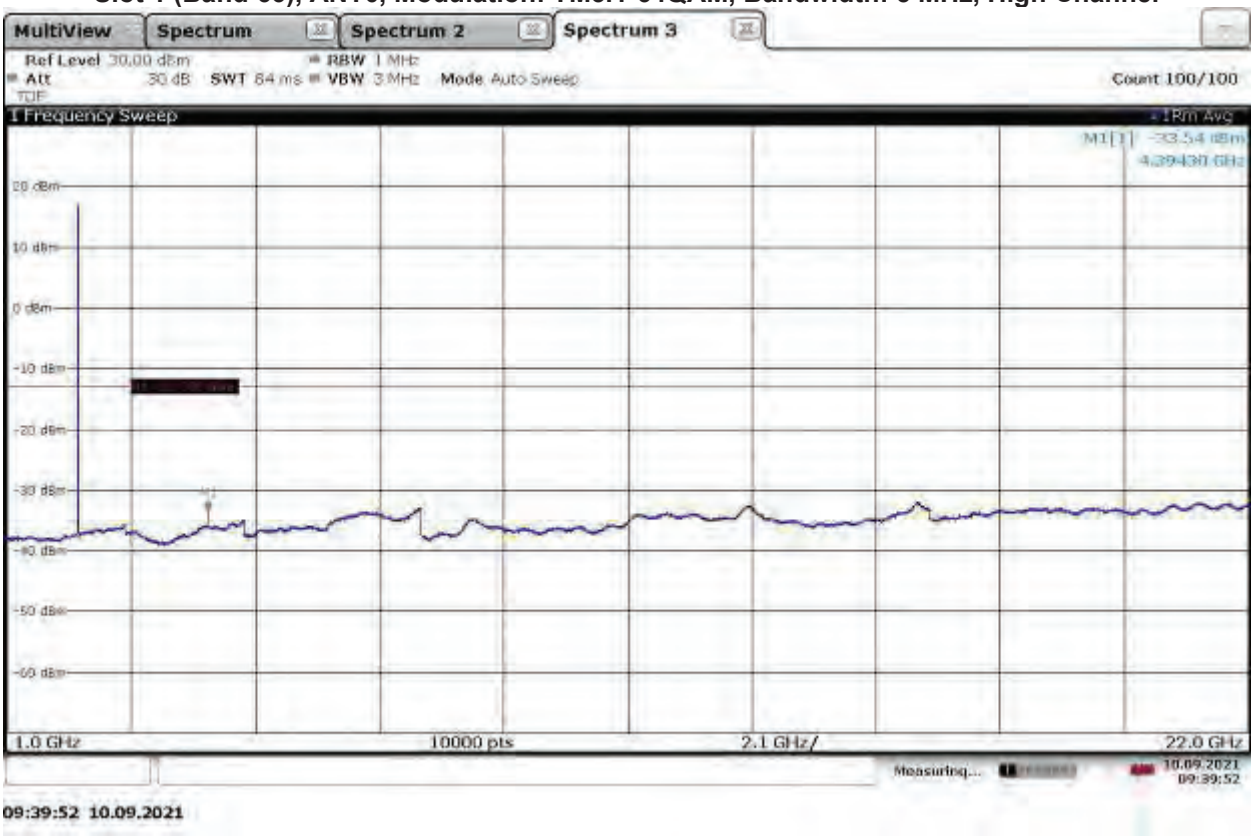
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



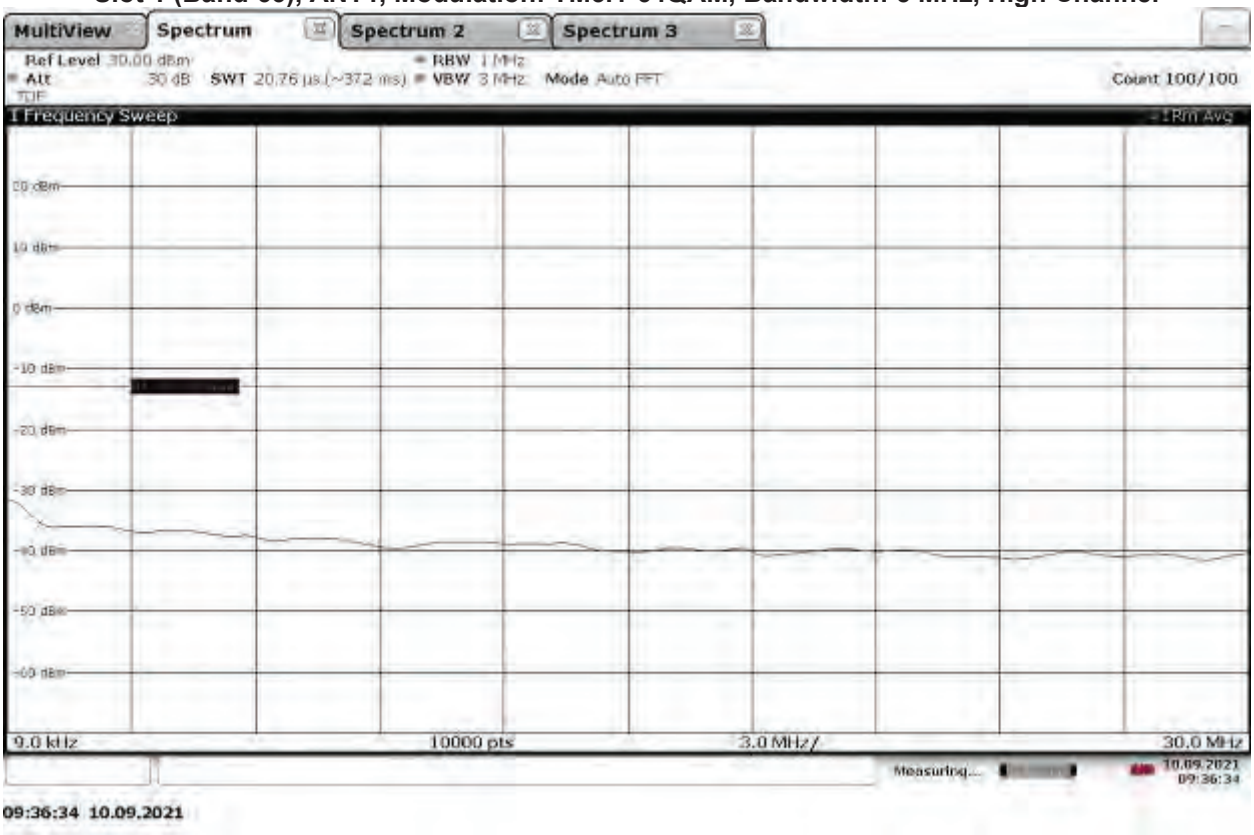
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



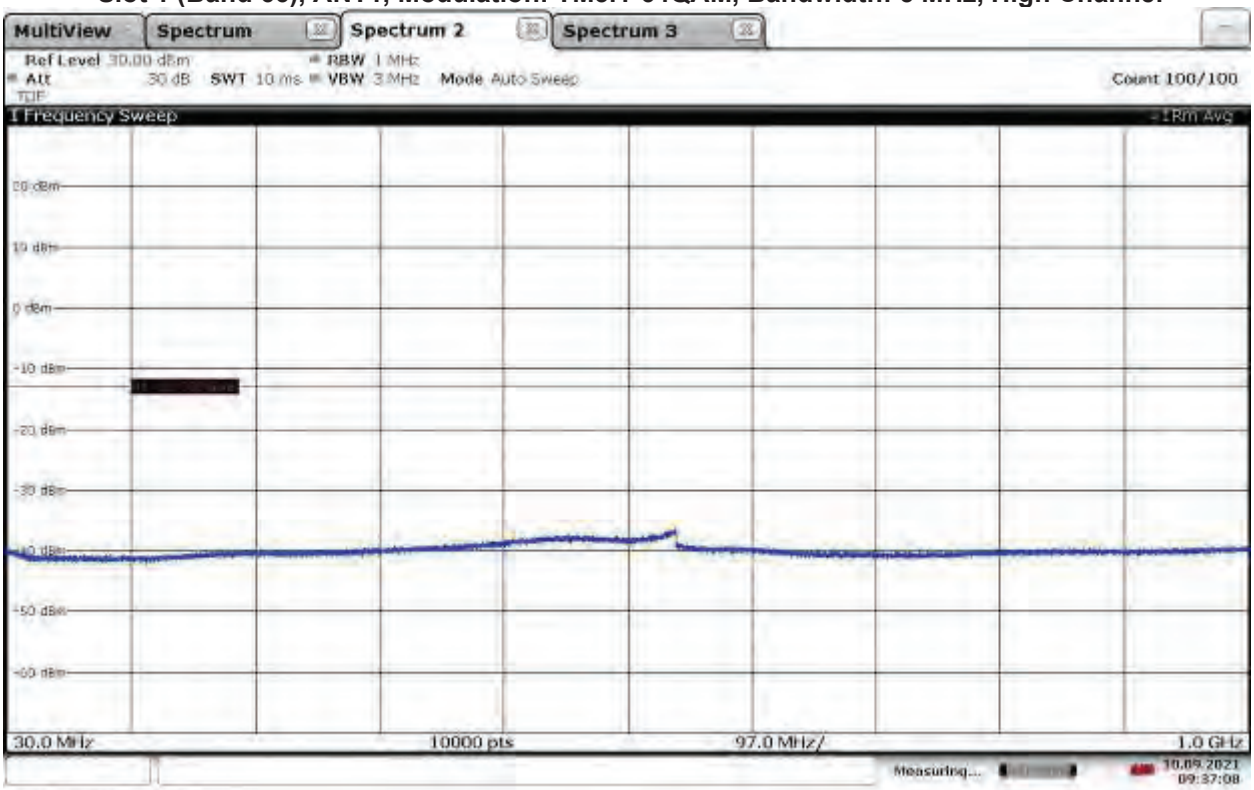
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



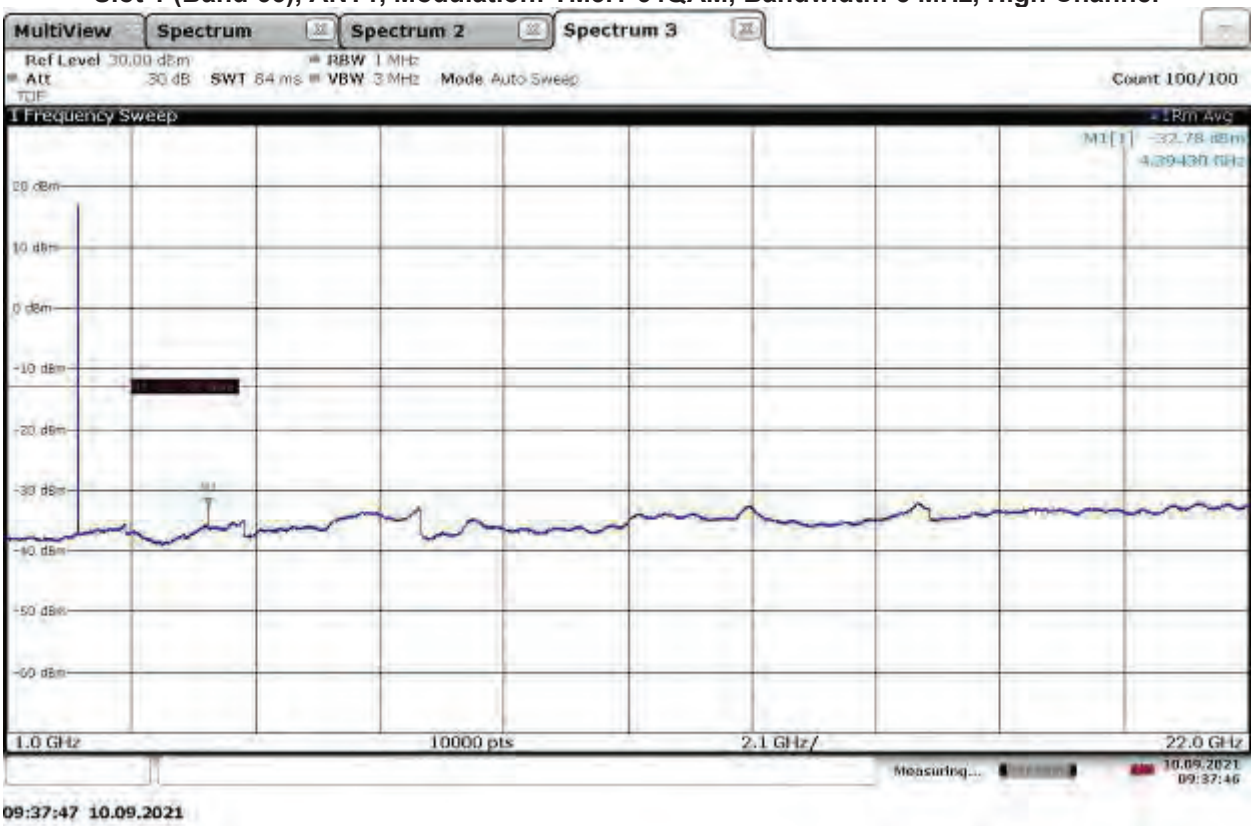
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



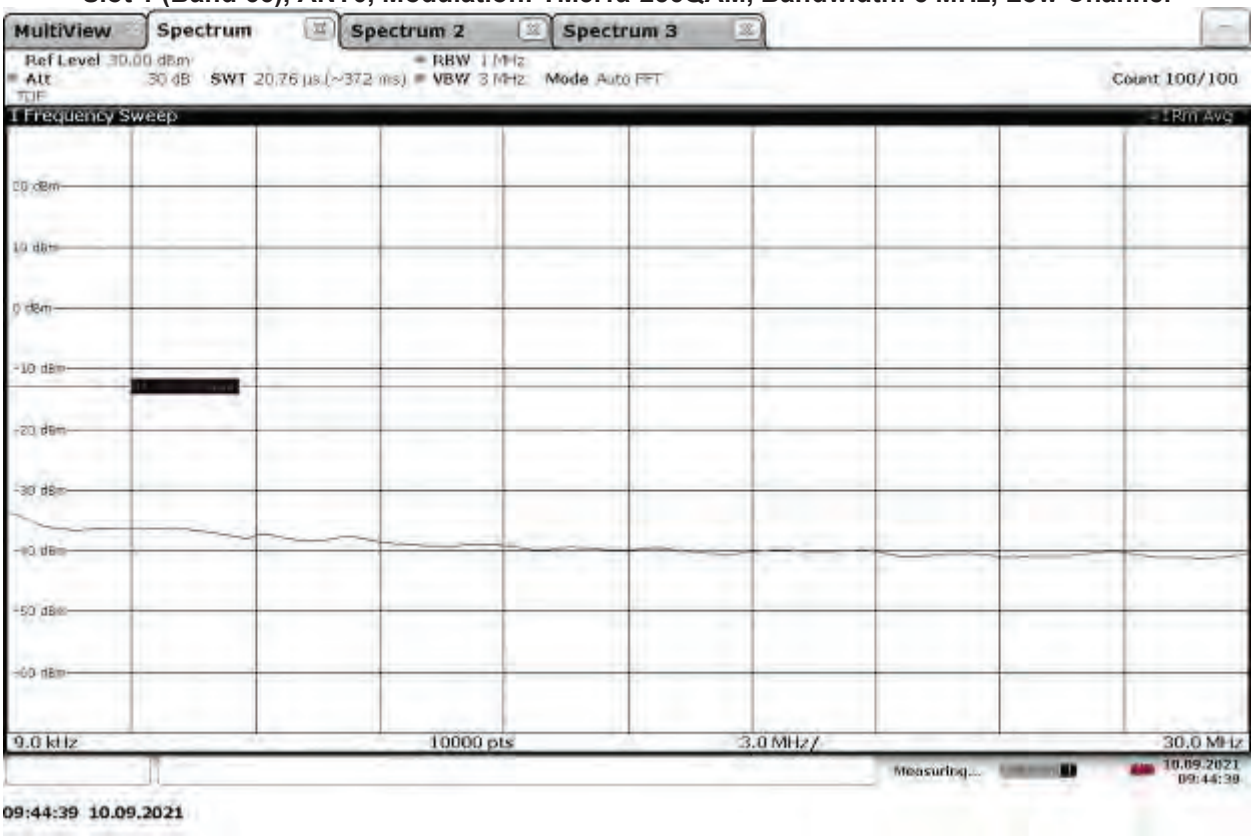
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



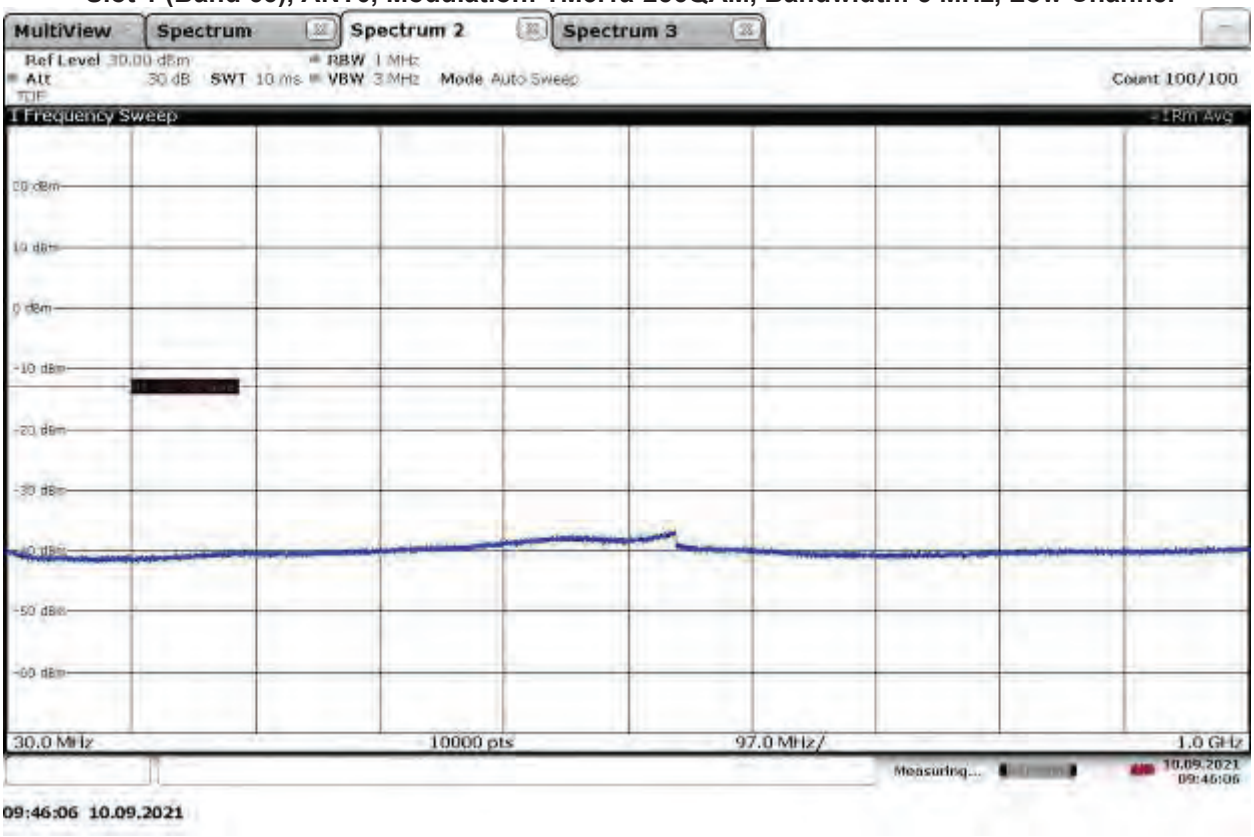
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel



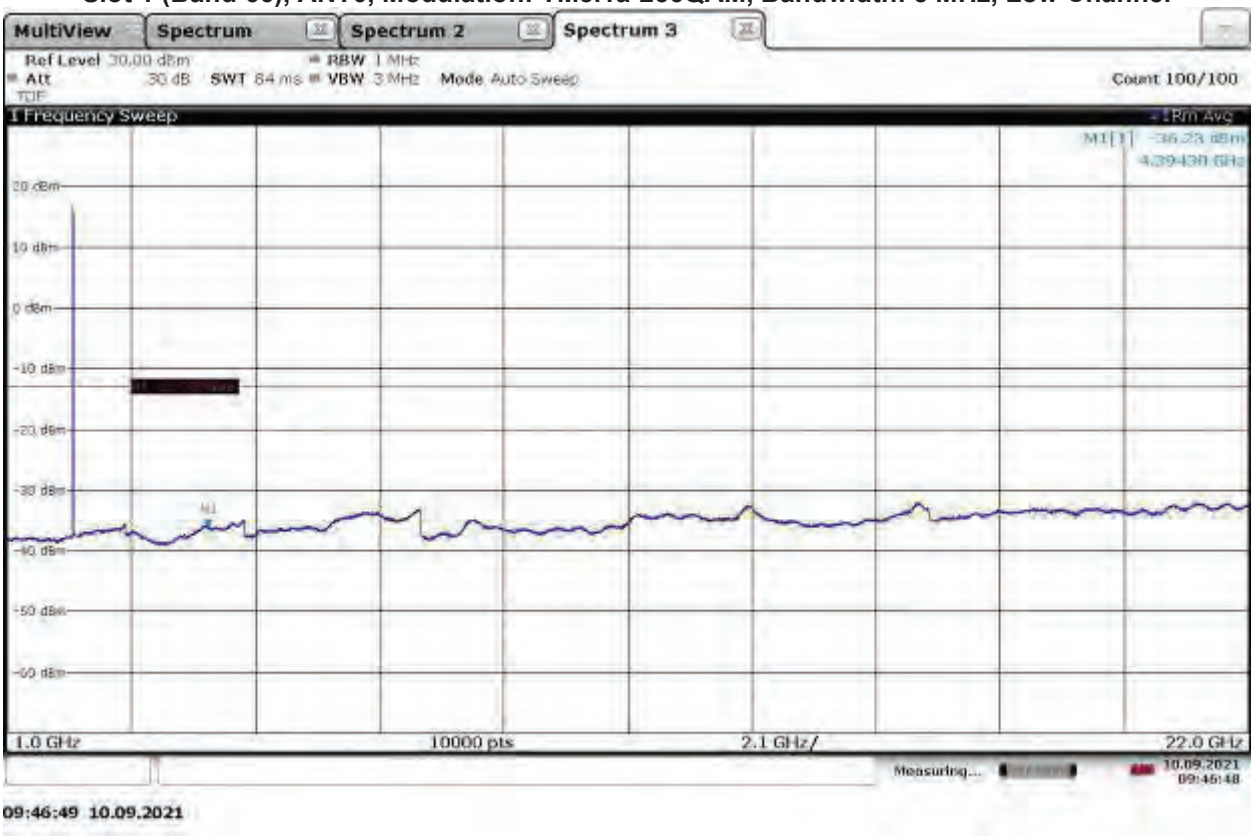
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel



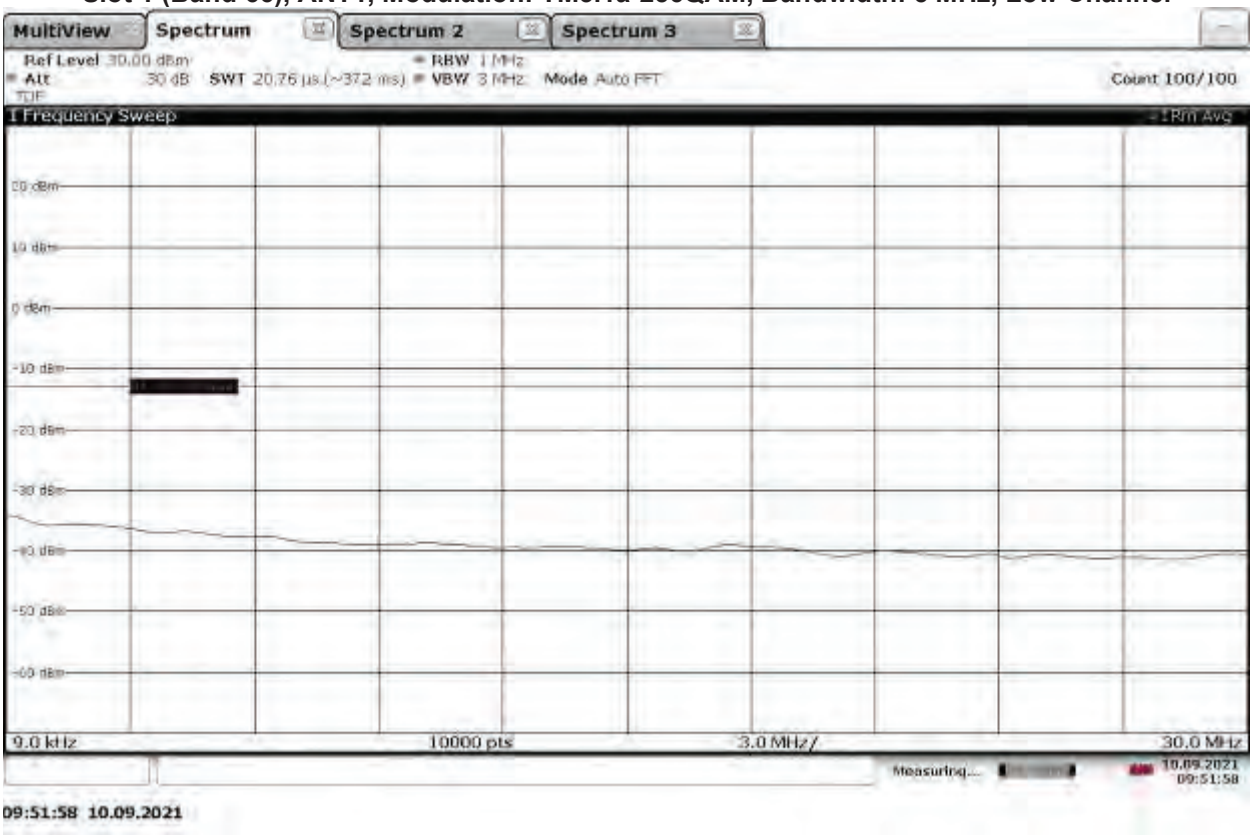
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel



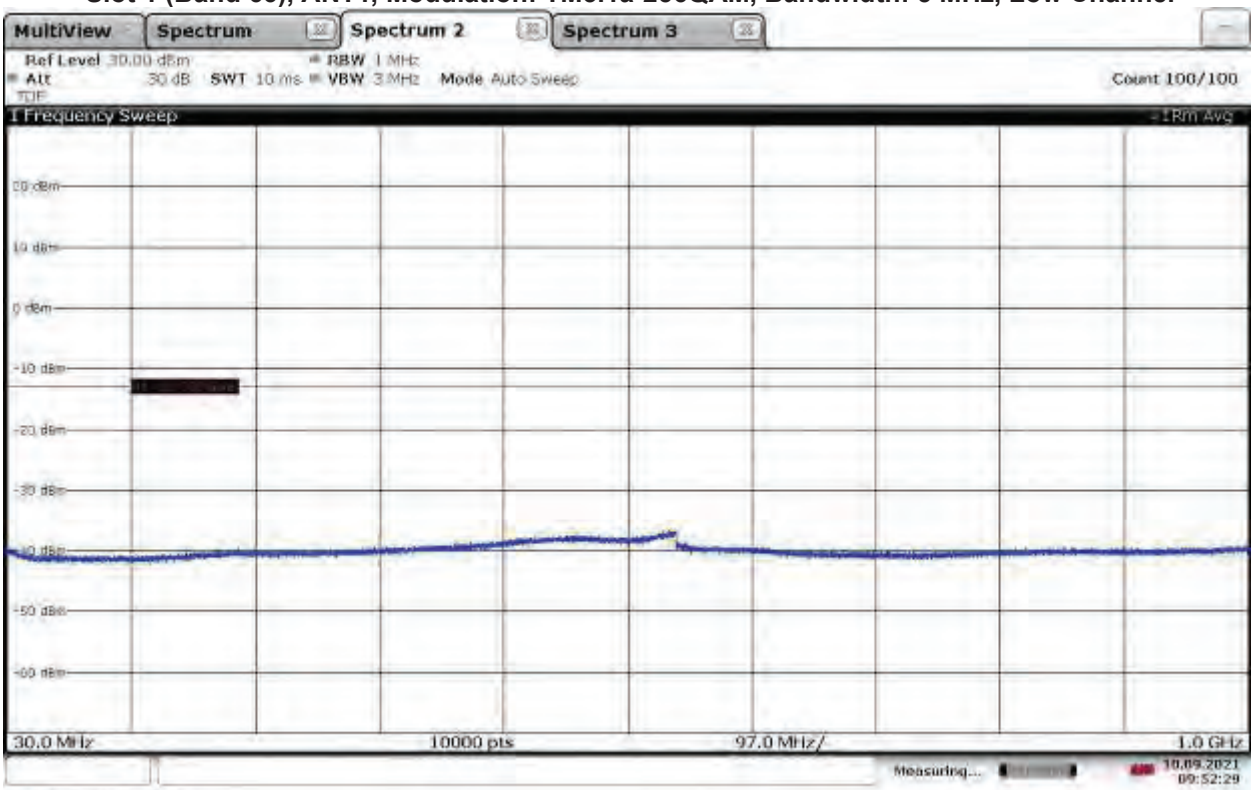
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel



9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel



30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel



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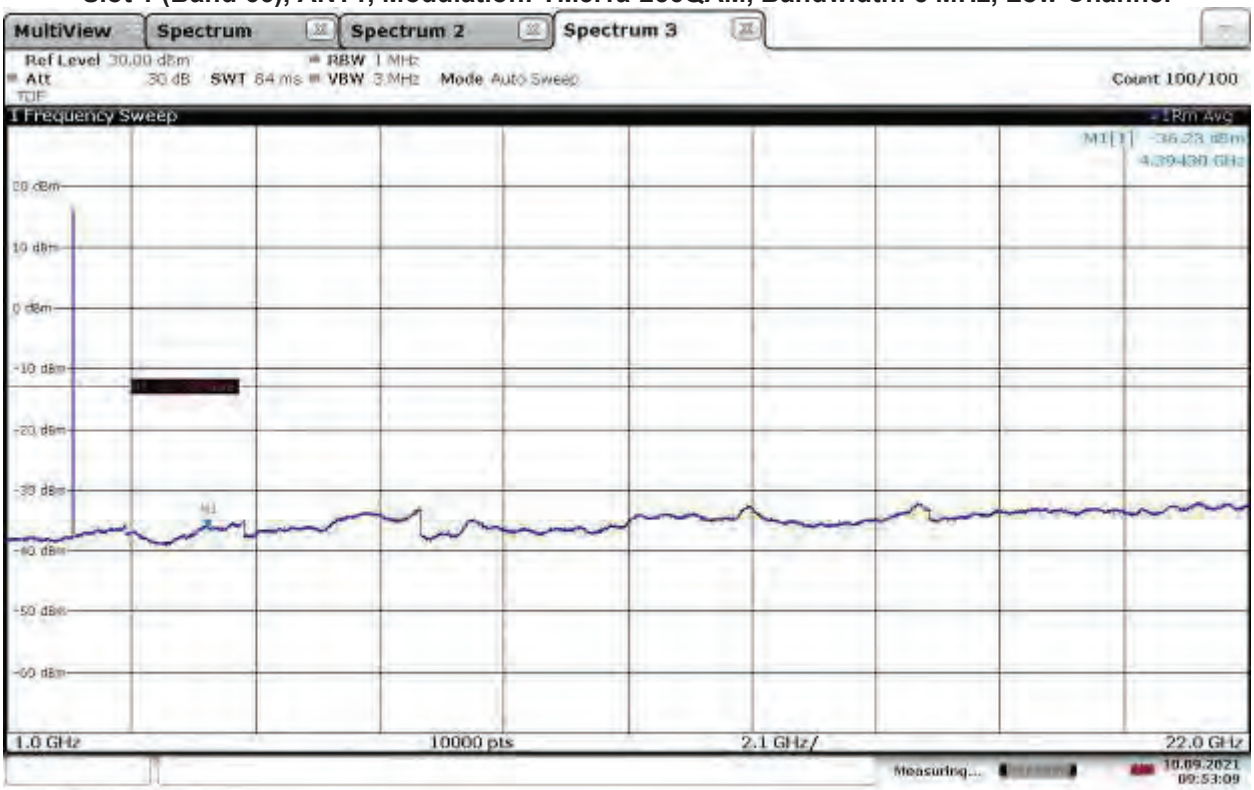
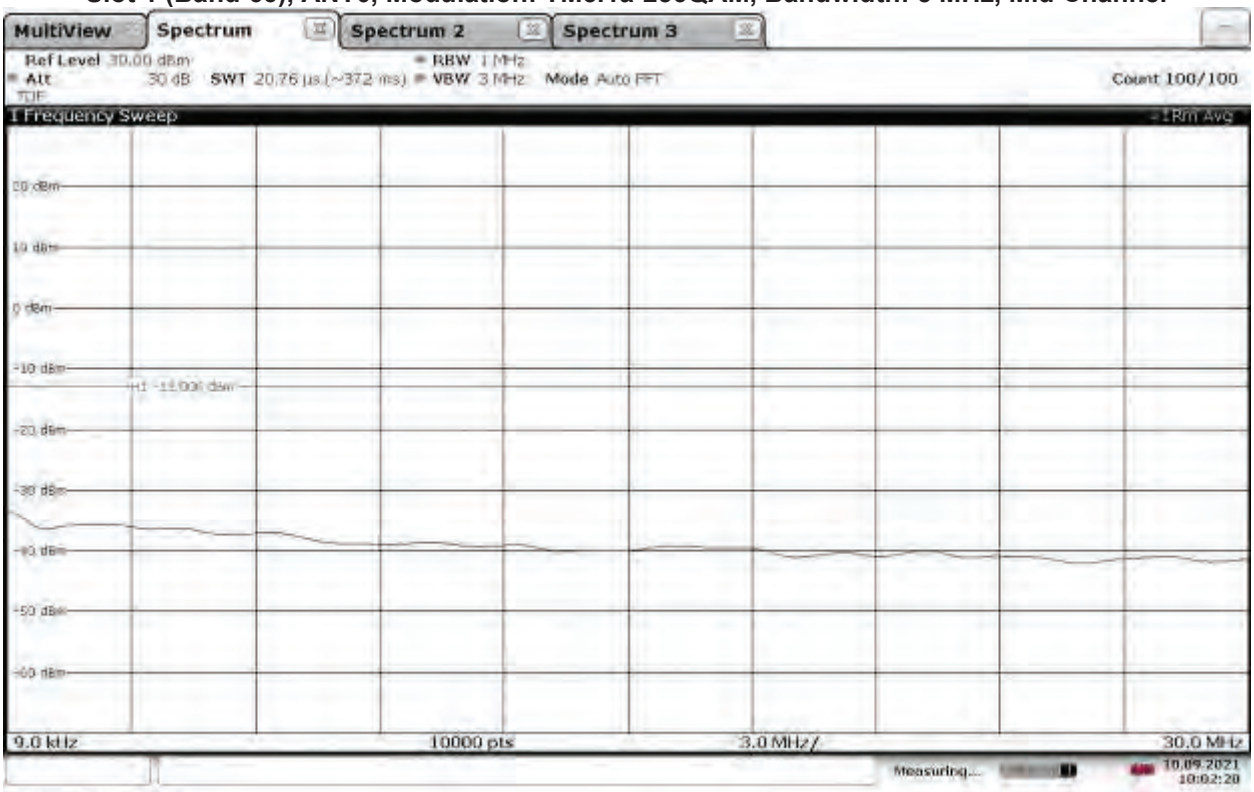
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Low Channel

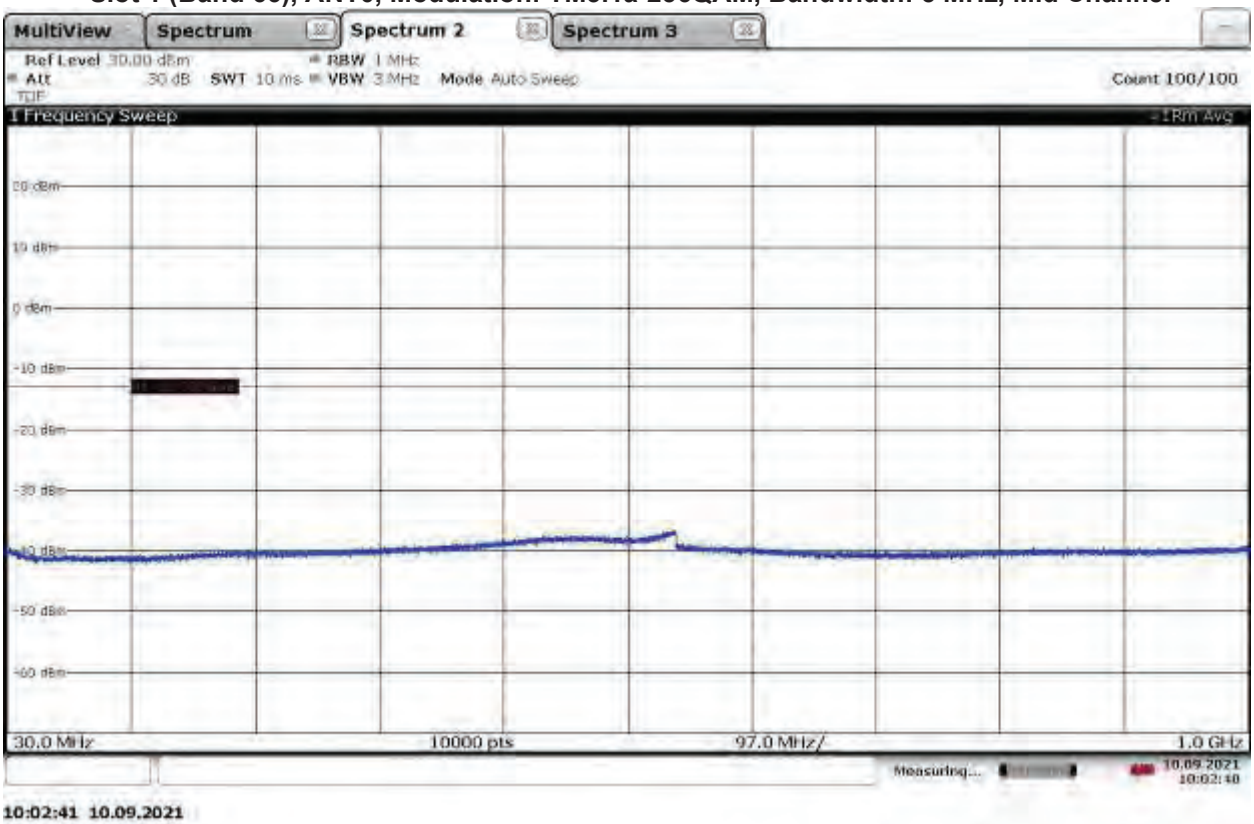


09:53:09 10.09.2021

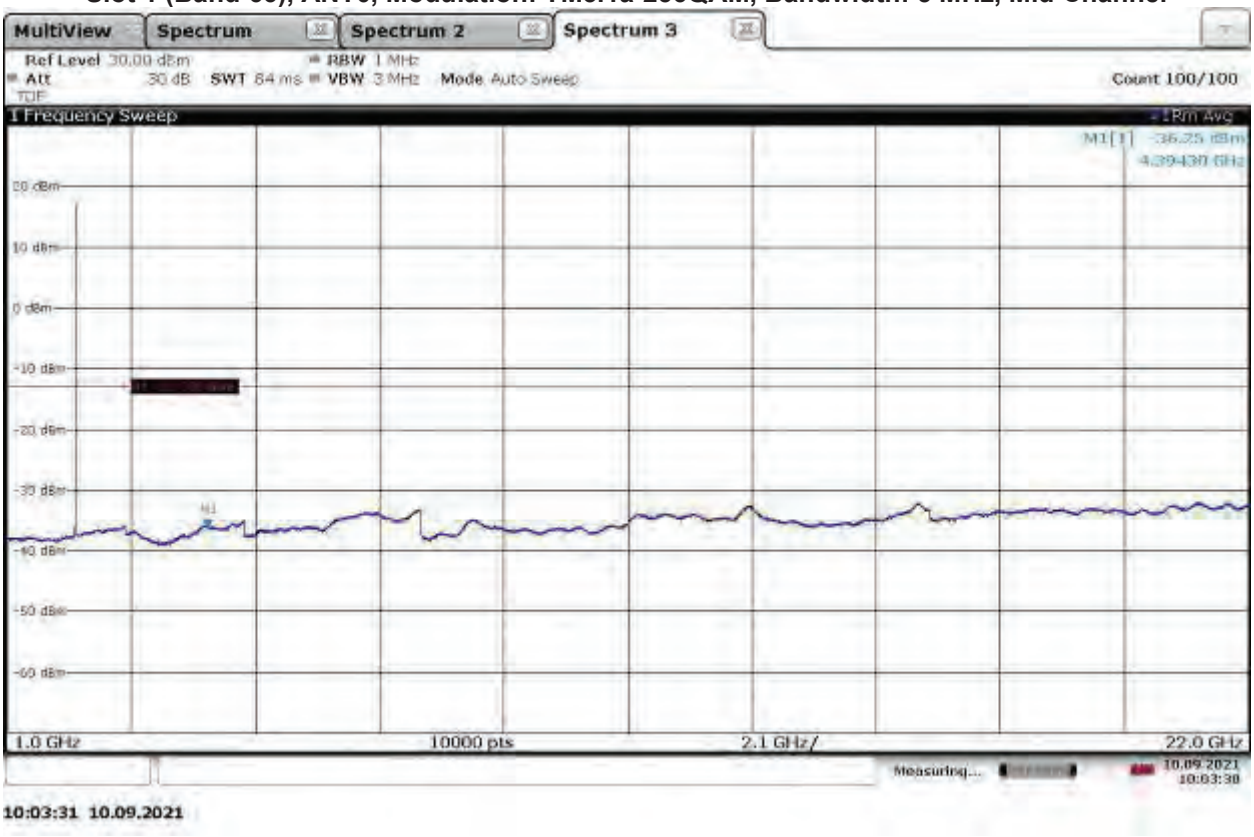
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



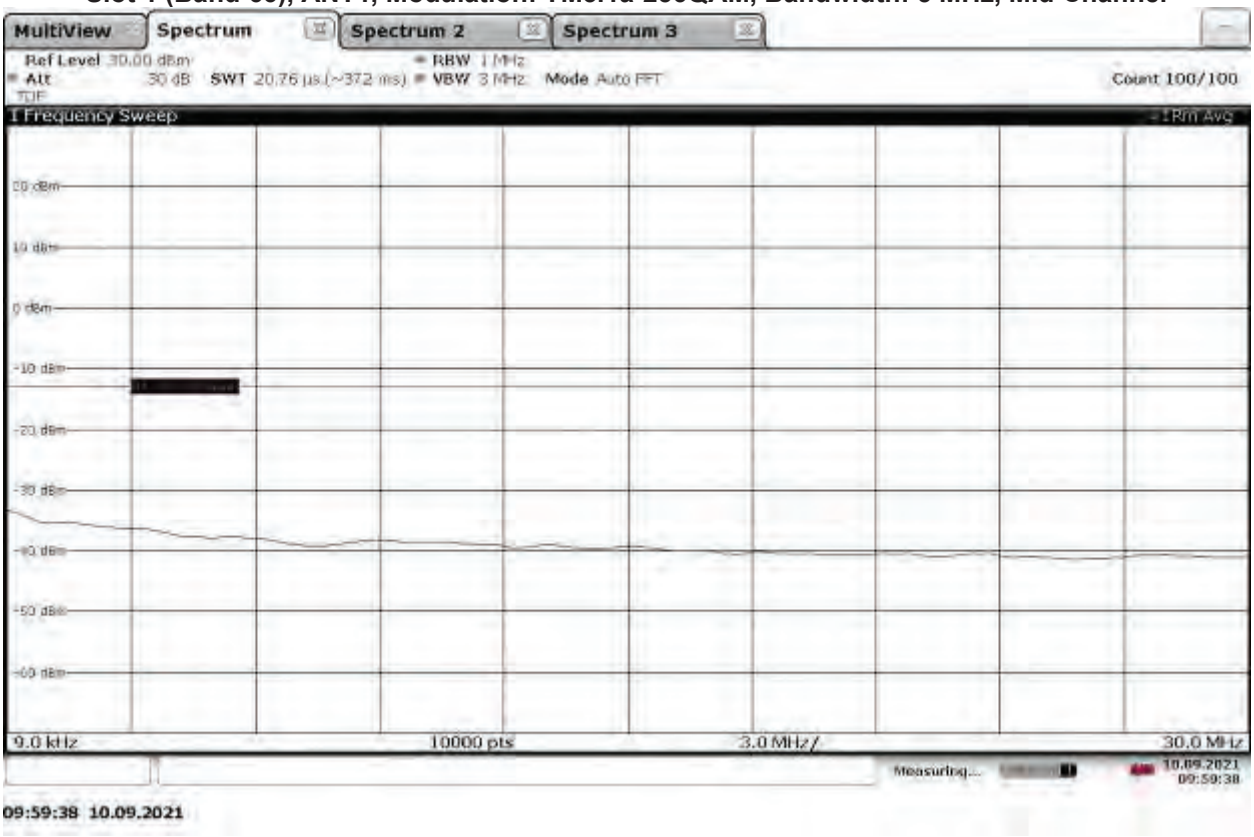
30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



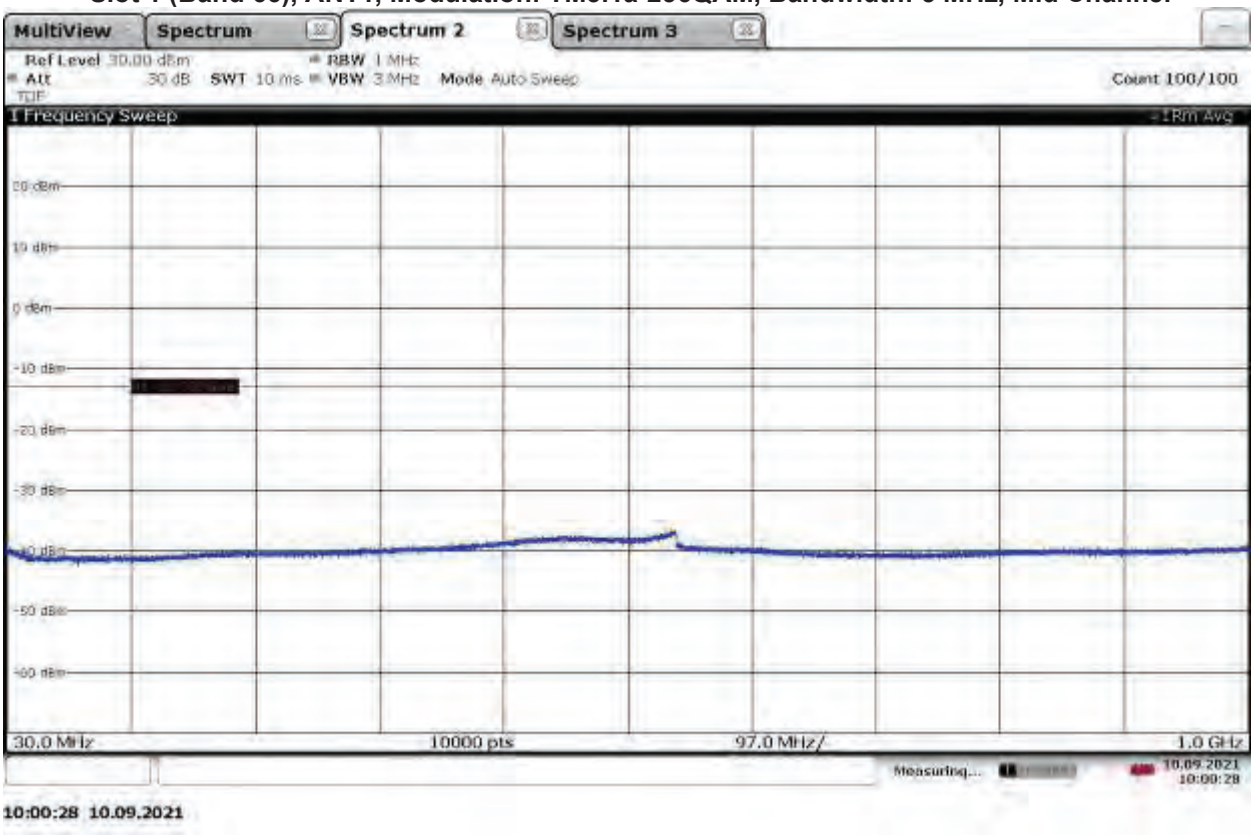
1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



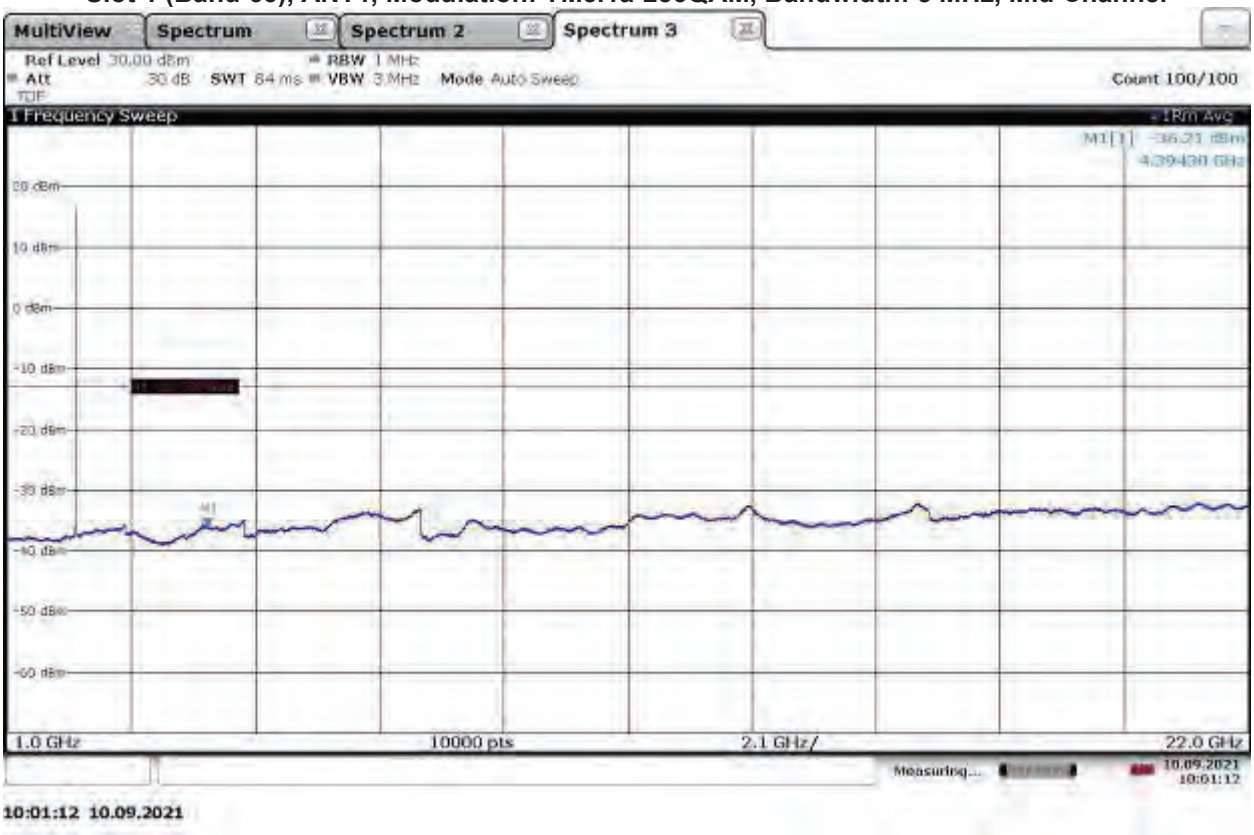
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



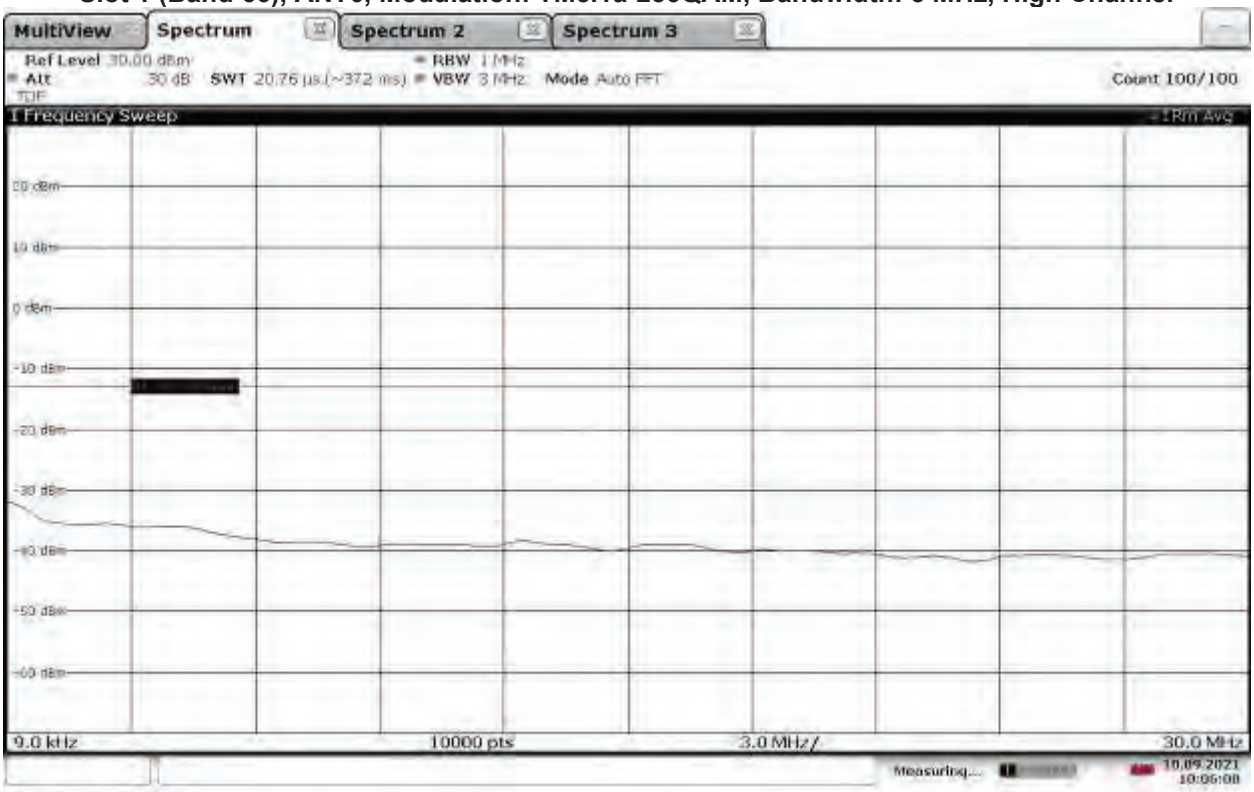
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



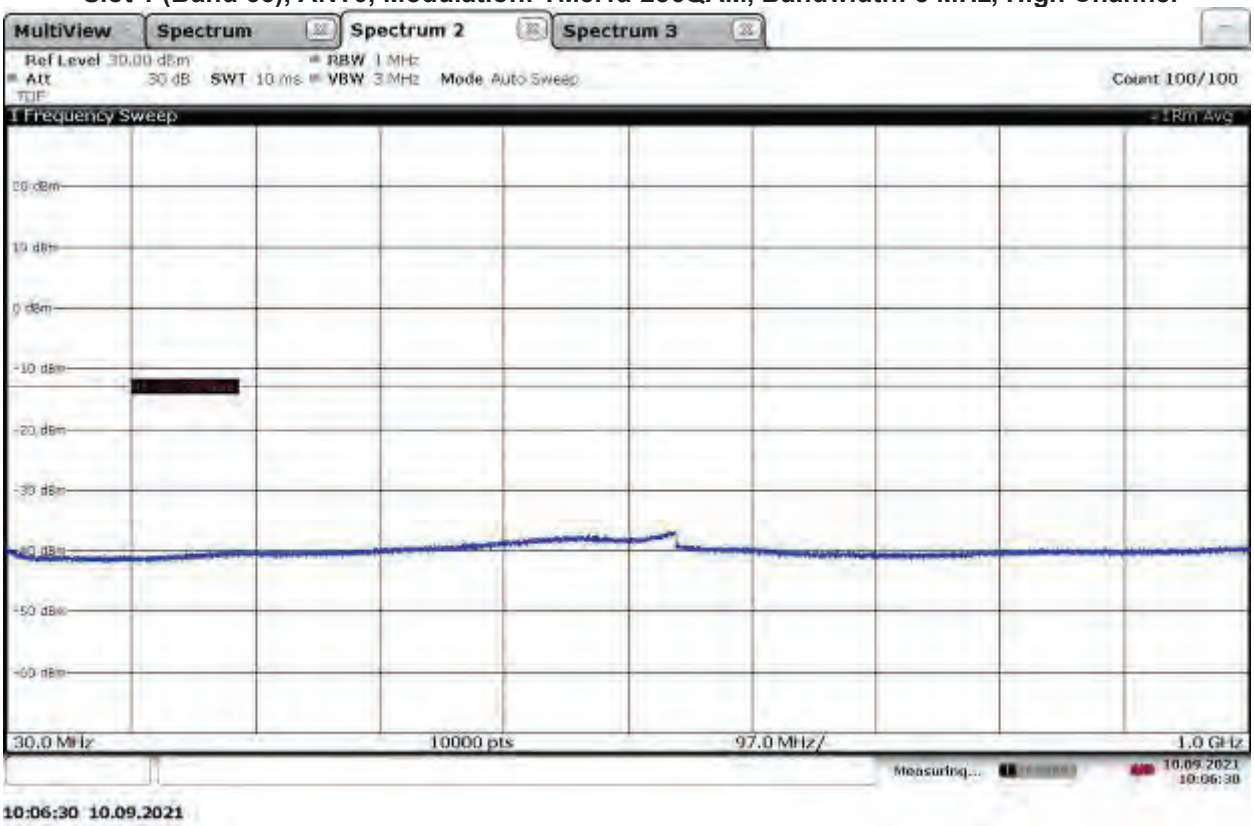
1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel



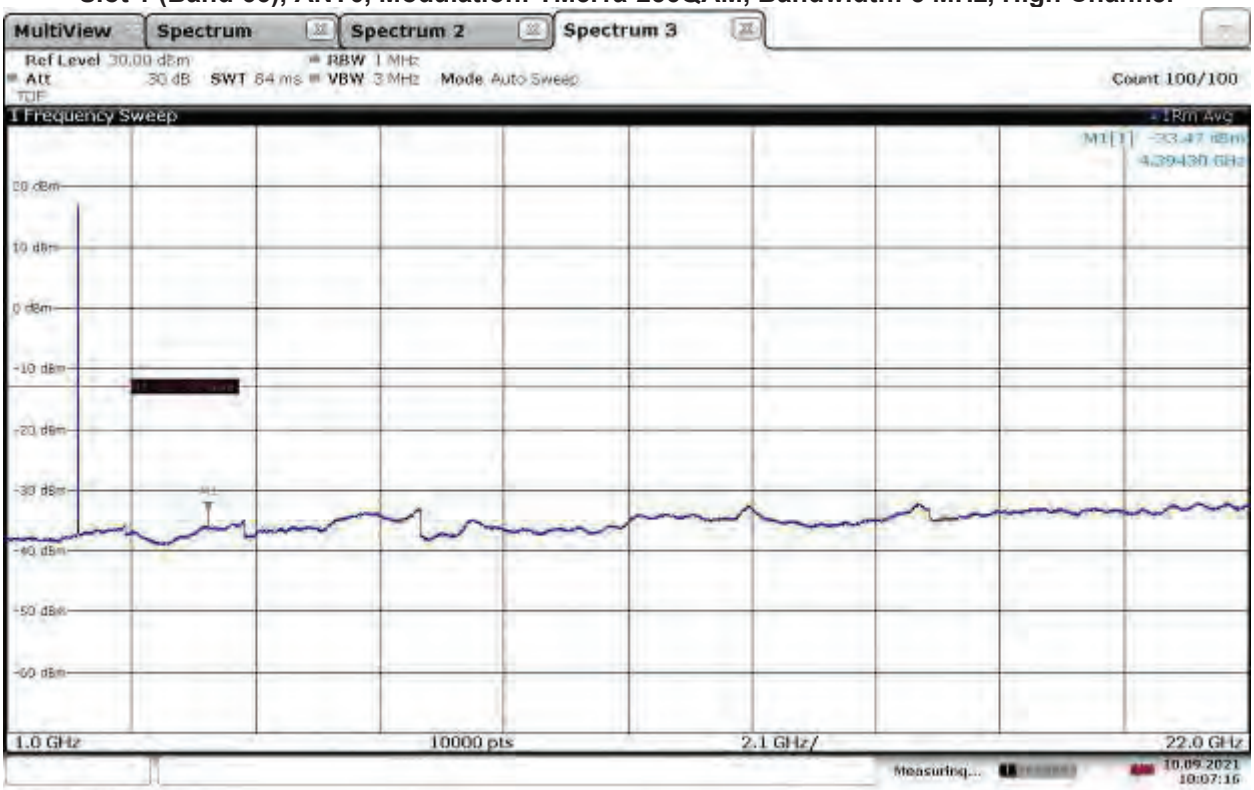
9kHz-30MHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel



30MHz-1GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel



1-22GHz
Slot 1 (Band 66), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel



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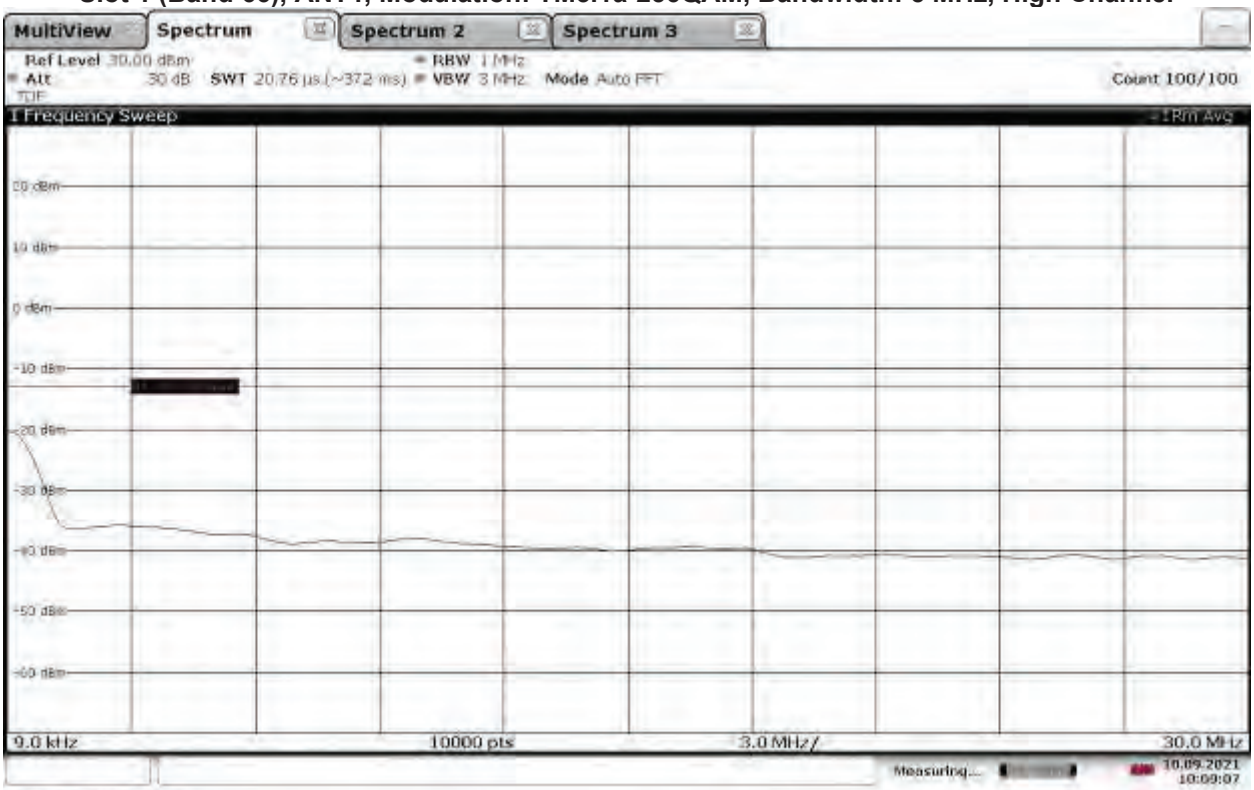
9kHz-30MHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel



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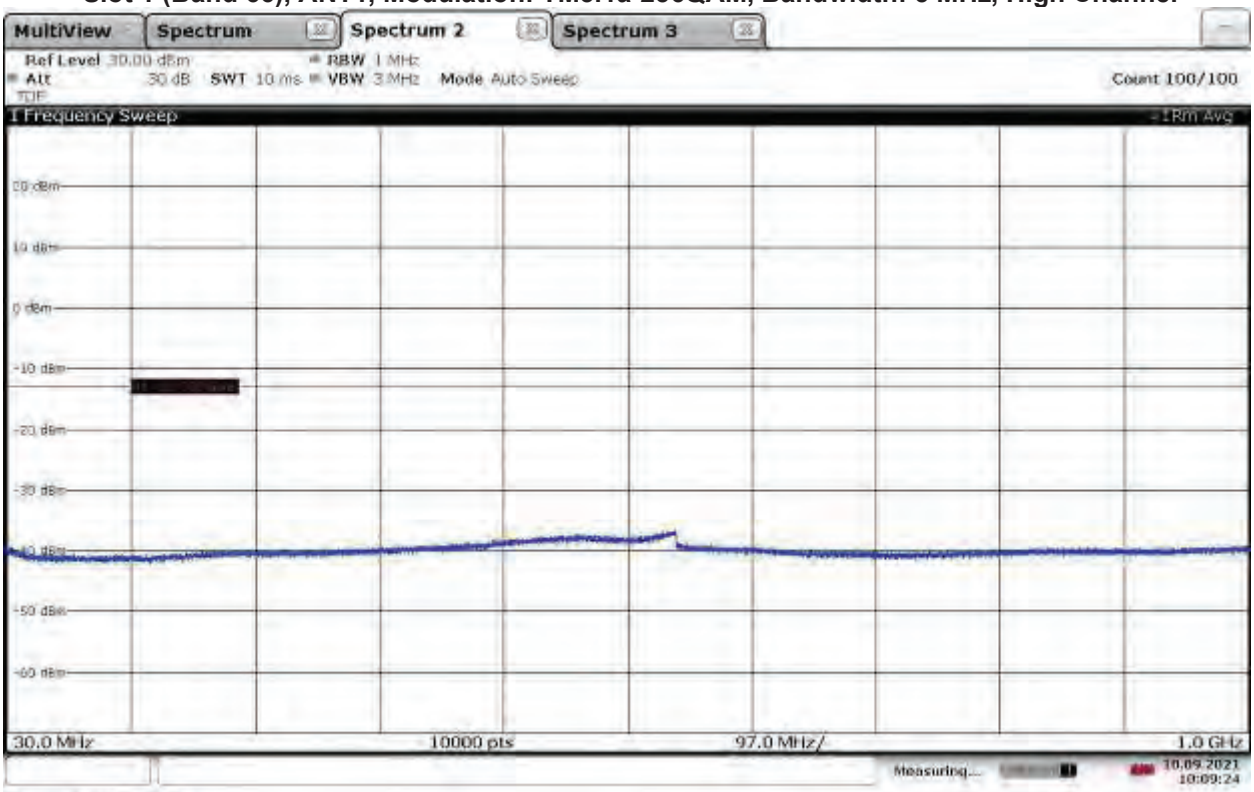
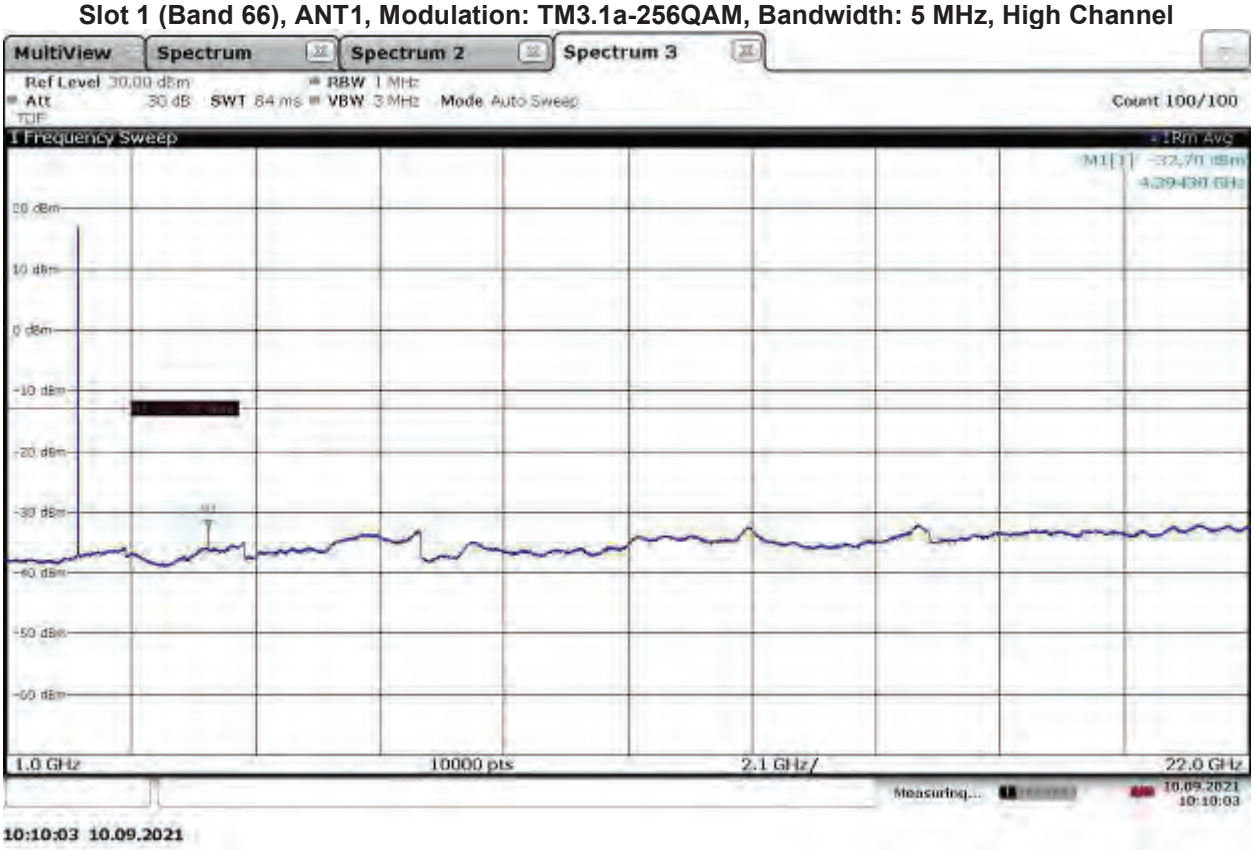
30MHz-1GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel



1-22GHz
Slot 1 (Band 66), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel

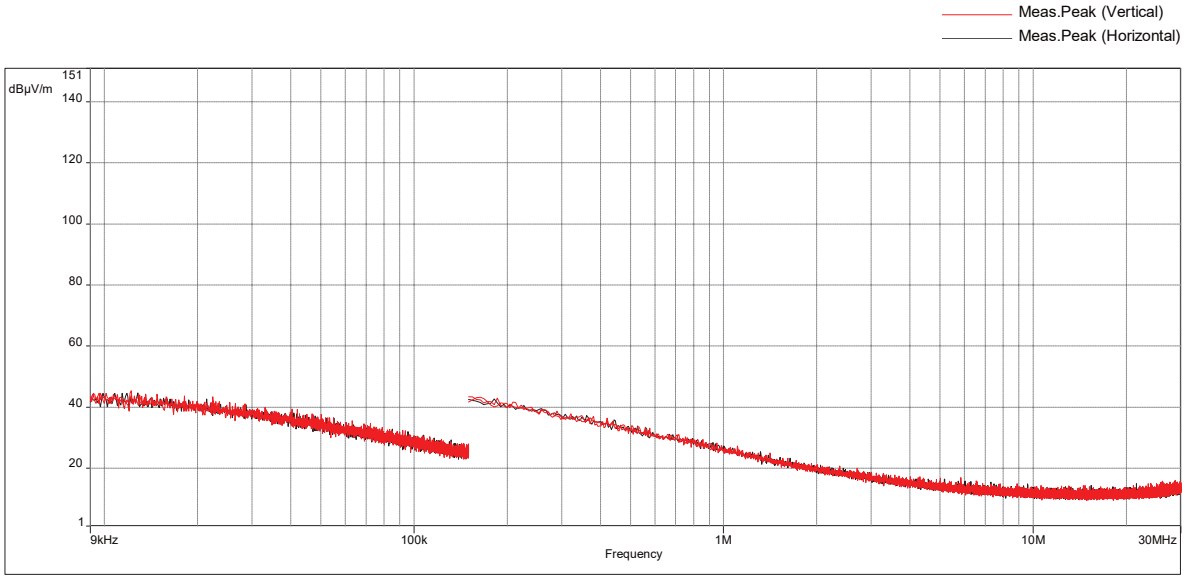


Radiated Emissions, 9 kHz-30 MHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, (Worst-case), Bandwidth 5 MHz (Worst-case), Transmit @ Mid Channel

Test Information:

Date and Time	8/29/2021 2:46:29 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	45 %
Atmospheric Pressure	1015 mbar
Comments	Scan 31: Band 66 w 5200 host, 5MHz Bandwidth (Worst-case), 16QAM (Worst-case), Mid 2155MHz, RE 9kHz-30MHz Loop antenna, Electric Field, 10M Location

Graph:



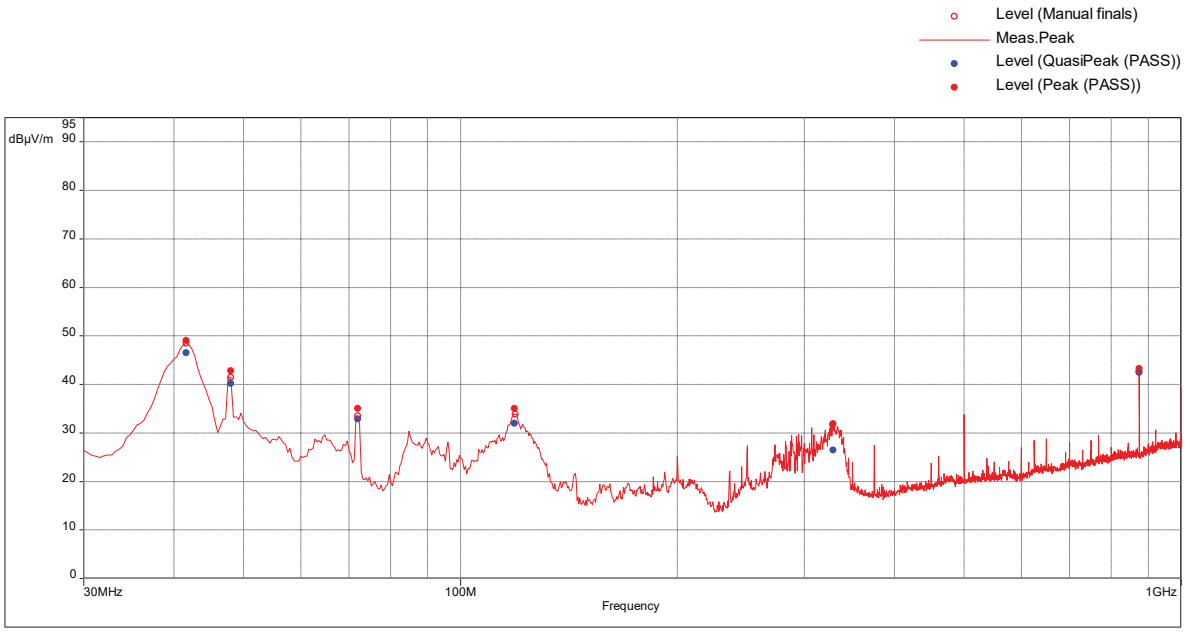
Results: No emission was detected.

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

Test Information:

Date and Time	8/2/2021 9:04:24 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 1: 5MHz Bandwidth, QPSK, Low Ch 2112.5 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.78947368	49.00	-35.8	-13	-22.80	150.00	1.00	Vertical	120000.00	-20.94
48.03157895	42.80	-42	-13	-29.00	0.00	1.46	Vertical	120000.00	-24.54
71.90526316	35.01	-49.79	-13	-36.79	4.00	2.09	Vertical	120000.00	-24.85
118.7578947	35.04	-49.76	-13	-36.76	31.00	2.18	Vertical	120000.00	-18.90
328.7473684	31.92	-52.88	-13	-39.88	304.00	3.01	Horizontal	120000.00	-17.75
874.9894737	43.26	-41.54	-13	-28.54	239.00	1.00	Horizontal	120000.00	-7.12

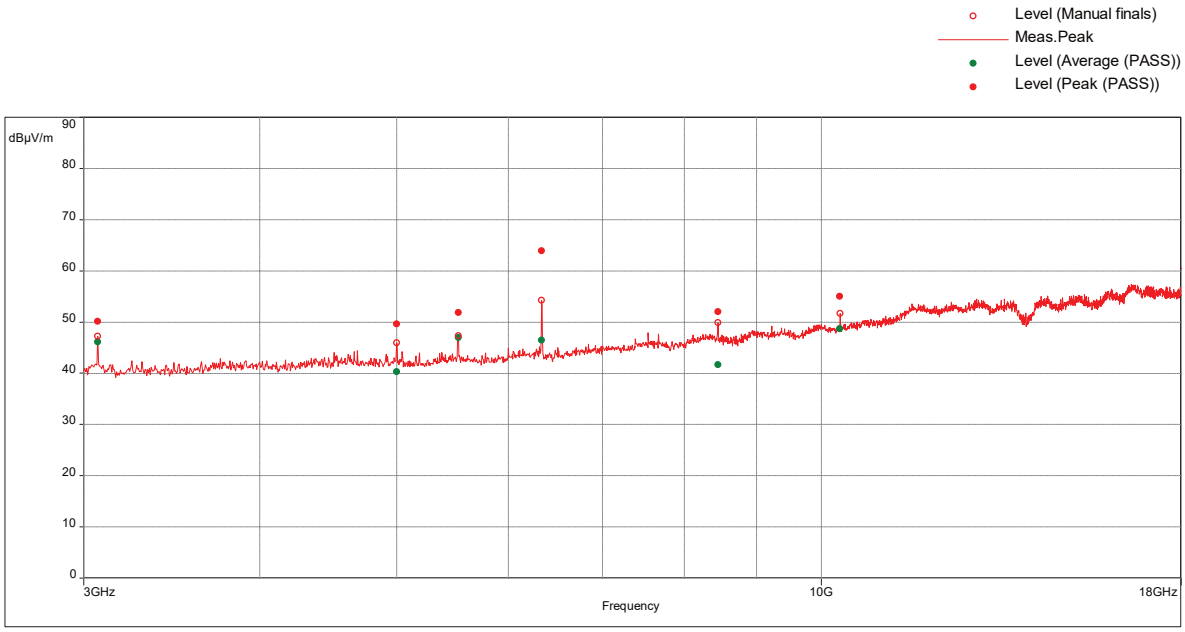
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

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

Test Information:

Date and Time	8/4/2021 8:40:43 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 13: Band 66 w 5200 host, 5MHz Bandwidth, QPSK, Low Ch 2112.5 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	50.11	-45.15	-13	-32.15	62.00	2.45	Vertical	1000000.00	-1.23
5000.263158	49.60	-45.66	-13	-32.66	260.00	2.05	Horizontal	1000000.00	1.31
5529.473684	51.87	-43.39	-13	-30.39	244.00	1.85	Vertical	1000000.00	2.57
6336.842105	63.91	-31.35	-13	-18.35	127.00	1.90	Horizontal	1000000.00	4.36
8450	52.03	-43.23	-13	-30.23	157.00	1.80	Vertical	1000000.00	7.83
10312.36842	54.99	-40.27	-13	-27.27	319.00	1.35	Vertical	1000000.00	9.57

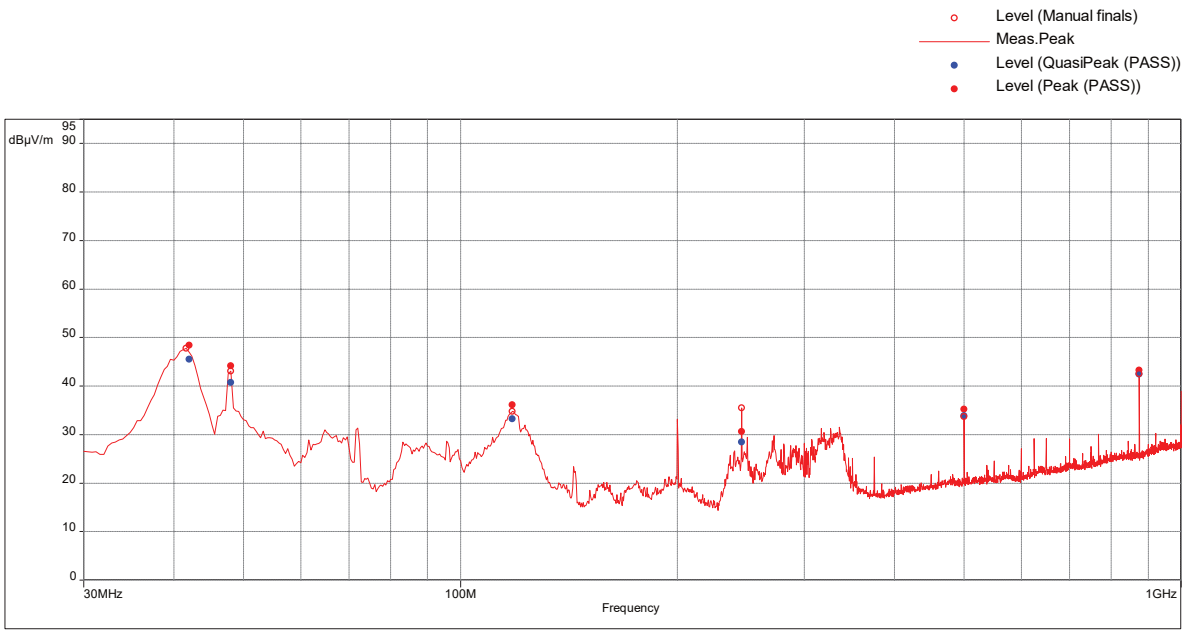
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

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

Test Information:

Date and Time	8/2/2021 9:53:56 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 2: Band 66 w 5200 host, 5MHz Bandwidth, QPSK, Mid Ch 2155 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.88421053	48.42	-36.38	-13	-23.38	62.00	1.57	Vertical	120000.00	-21.02
47.90526316	44.13	-40.67	-13	-27.67	18.00	2.54	Vertical	120000.00	-24.49
117.8736842	36.08	-48.72	-13	-35.72	39.00	2.03	Vertical	120000.00	-18.99
245.7578947	30.61	-54.19	-13	-41.19	224.00	3.52	Horizontal	120000.00	-20.43
500	35.19	-49.61	-13	-36.61	179.00	1.97	Horizontal	120000.00	-13.40
874.9894737	43.28	-41.52	-13	-28.52	239.00	1.00	Horizontal	120000.00	-7.12

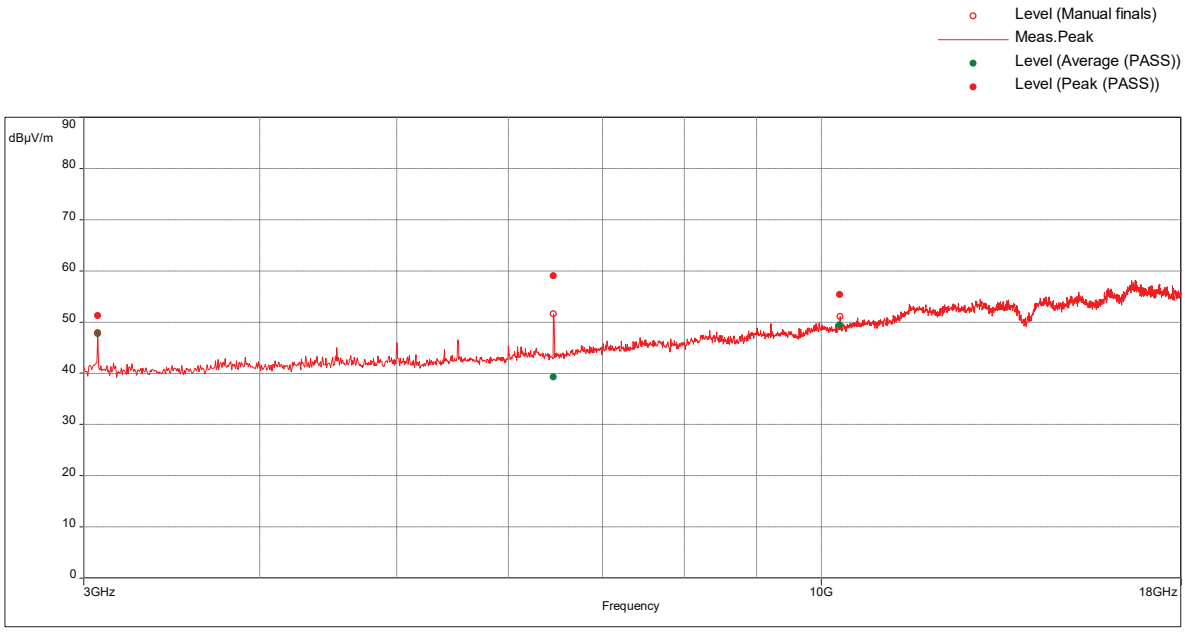
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

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

Test Information:

Date and Time	8/4/2021 9:16:07 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 14: Band 66 w 5200 host, 5MHz Bandwidth, QPSK, Mid Ch 2155 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (3)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3071.842105	51.29	-43.97	-13	-30.97	306.00	3.25	Vertical	1000000.00	-1.22
6461.842105	59.01	-36.25	-13	-23.25	150.00	2.15	Vertical	1000000.00	4.50
10312.36842	55.37	-39.89	-13	-26.89	320.00	1.30	Vertical	1000000.00	9.57

Notes:

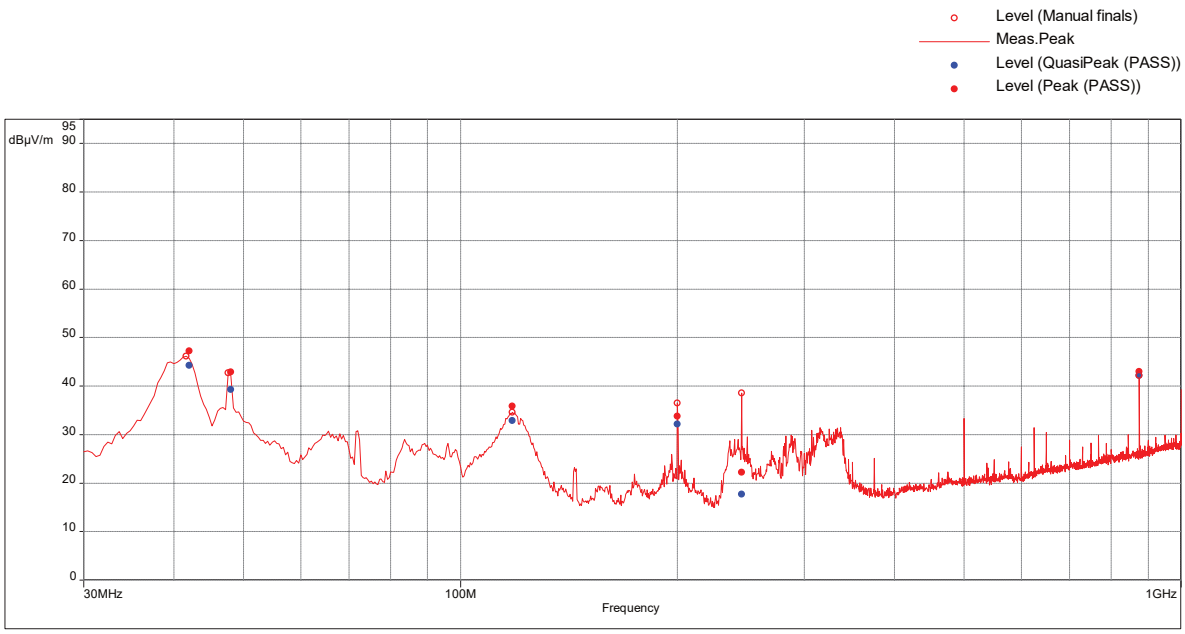
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
1) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

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

Test Information:

Date and Time	8/2/2021 10:41:28 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 3: Band 66 w 5200 host, 5MHz Bandwidth, QPSK, High Ch 2197.5MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.85263158	47.26	-37.54	-13	-24.54	1.00	1.53	Vertical	120000.00	-21.00
47.88421053	42.94	-41.86	-13	-28.86	54.00	3.19	Vertical	120000.00	-24.48
117.8736842	35.87	-48.93	-13	-35.93	39.00	1.63	Vertical	120000.00	-18.99
200	33.80	-51	-13	-38	283.00	3.70	Horizontal	120000.00	-19.48
245.7578947	22.24	-62.56	-13	-49.56	62.00	1.52	Horizontal	120000.00	-20.43
874.9894737	43.01	-41.79	-13	-28.79	241.00	1.00	Horizontal	120000.00	-7.12

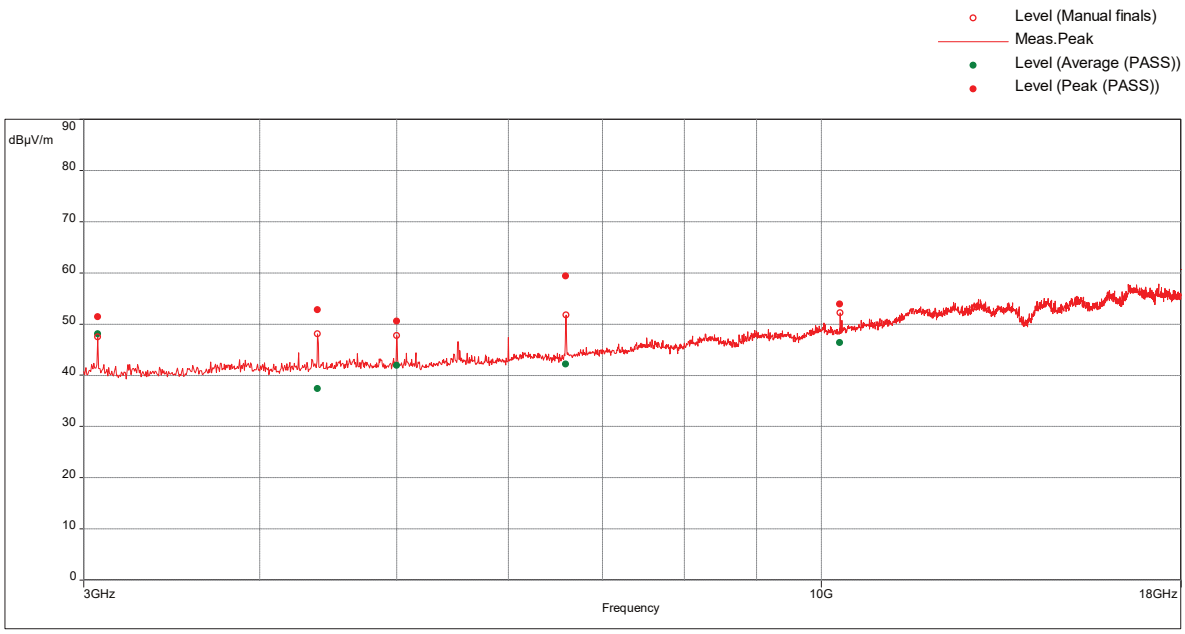
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

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

Test Information:

Date and Time	8/4/2021 9:39:11 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 15: Band 66 w 5200 host, 5MHz Bandwidth, QPSK, High Ch 2197.5 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (5)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	51.43	-43.83	-13	-30.83	306.00	2.70	Vertical	1000000.00	-1.23
4394.473684	52.80	-42.46	-13	-29.46	165.00	1.05	Vertical	1000000.00	0.00
5000	50.60	-44.66	-13	-31.66	261.00	2.05	Horizontal	1000000.00	1.31
6592.105263	59.41	-35.85	-13	-22.85	158.00	2.10	Vertical	1000000.00	4.61
10312.36842	53.91	-41.35	-13	-28.35	326.00	3.34	Vertical	1000000.00	9.57

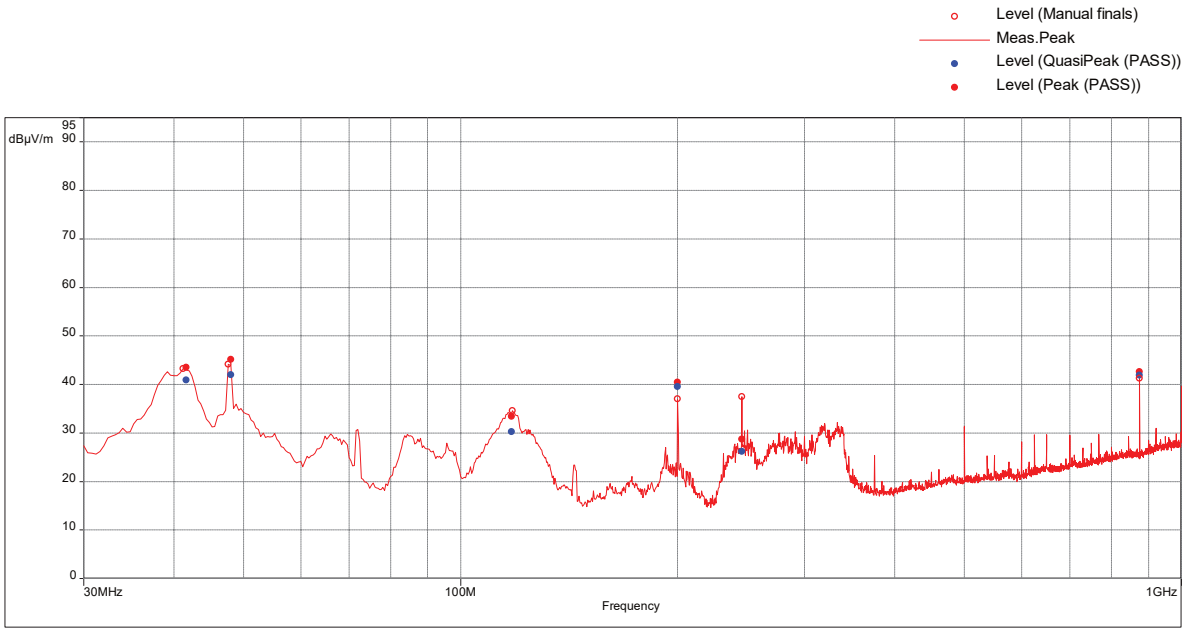
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ Low Channel
Band 66 w 5200 host, 5MHz Bandwidth, 16QAM Modulation, Low Ch 2112.5MHz, RE 30-1000MHz

Test Information:

Date and Time	8/2/2021 11:33:10 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 4: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, Low Ch 2112.5MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.73684211	43.53	-41.27	-13	-28.27	253.00	1.62	Vertical	120000.00	-20.90
47.97894737	45.19	-39.61	-13	-26.61	359.00	1.00	Vertical	120000.00	-24.52
117.7157895	33.43	-51.37	-13	-38.37	99.00	2.29	Vertical	120000.00	-19.01
200	40.43	-44.37	-13	-31.37	128.00	1.00	Vertical	120000.00	-19.48
245.7578947	28.68	-56.12	-13	-43.12	245.00	2.89	Horizontal	120000.00	-20.43
874.9894737	42.66	-42.14	-13	-29.14	320.00	2.09	Vertical	120000.00	-7.12

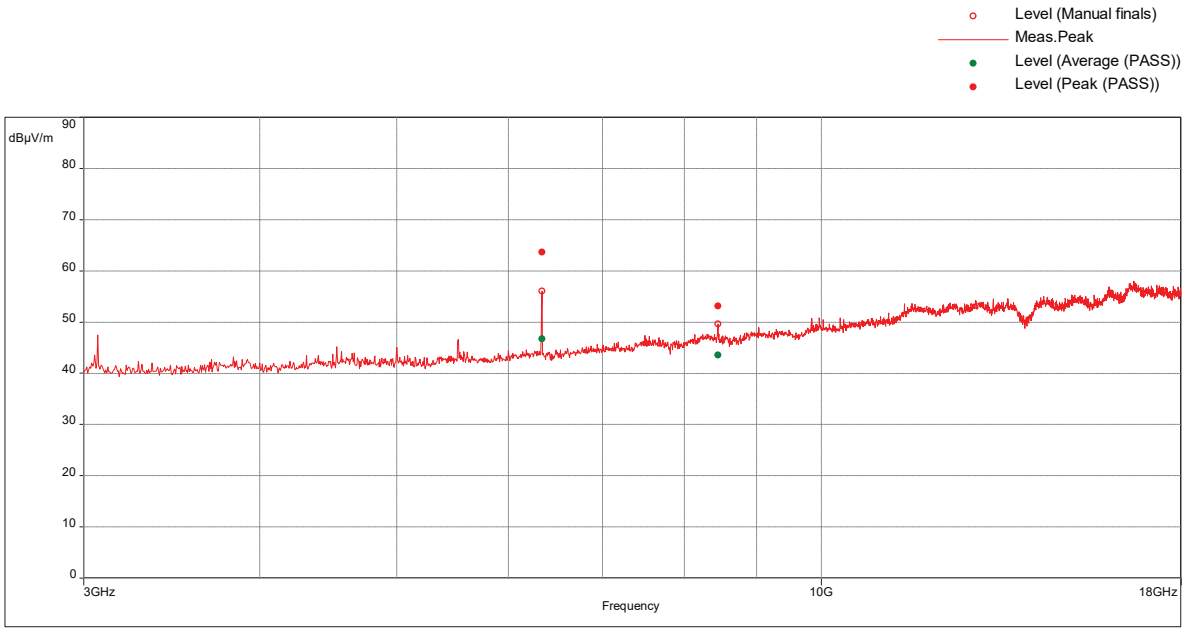
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	8/4/2021 10:08:23 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 16: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, Low Ch 2112.5MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (2)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
6338.421053	63.63	-31.63	-13	-18.63	54.00	1.80	Horizontal	1000000.00	4.37
8450	53.11	-42.15	-13	-29.15	158.00	1.10	Vertical	1000000.00	7.83

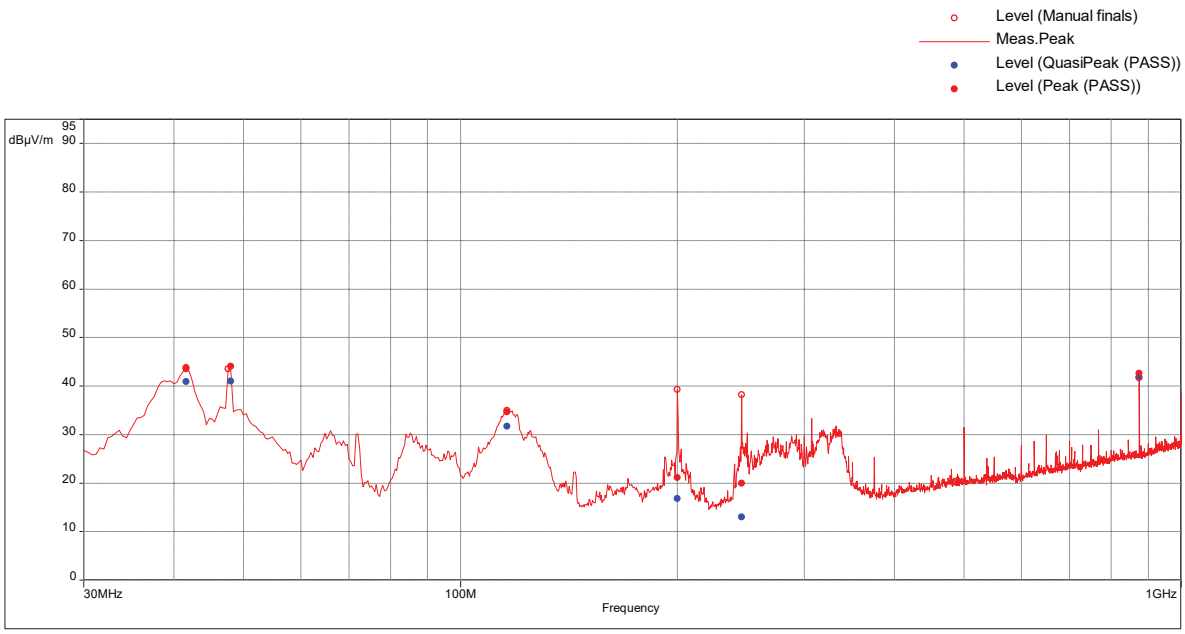
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	8/2/2021 12:22:04 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 5: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, Mid Ch 2155MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.78947368	43.82	-40.98	-13	-27.98	291.00	1.81	Vertical	120000.00	-20.94
48.10526316	44.08	-40.72	-13	-27.72	224.00	2.37	Vertical	120000.00	-24.56
116.1263158	34.73	-50.07	-13	-37.07	107.00	1.00	Vertical	120000.00	-19.17
200	21.10	-63.7	-13	-50.7	69.00	1.97	Vertical	120000.00	-19.48
245.6315789	19.95	-64.85	-13	-51.85	226.00	1.53	Horizontal	120000.00	-20.43
874.9894737	42.60	-42.2	-13	-29.2	231.00	1.00	Horizontal	120000.00	-7.12

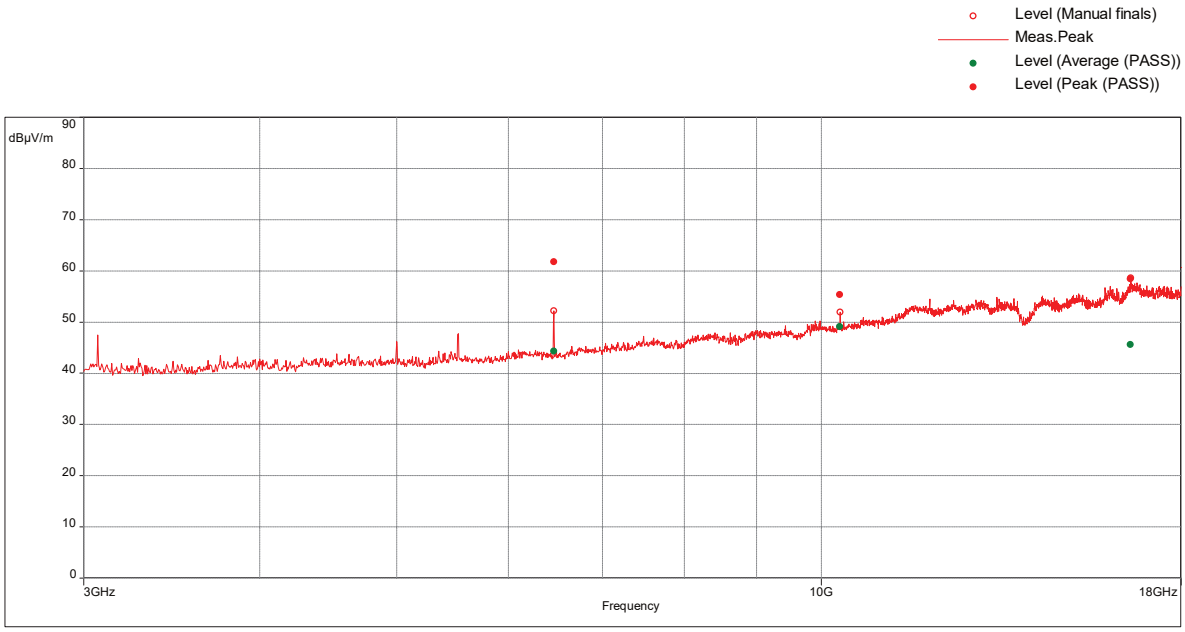
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	8/4/2021 10:27:27 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 17: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, Mid Ch 2155MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (3)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
6466.052632	61.79	-23.01	-13	-10.01	113.00	1.85	Horizontal	1000000.00	4.50
10312.36842	55.37	-29.43	-13	-16.43	321.00	1.35	Vertical	1000000.00	9.57
16571.57895	58.47	-26.33	-13	-13.33	62.00	3.84	Horizontal	1000000.00	19.20

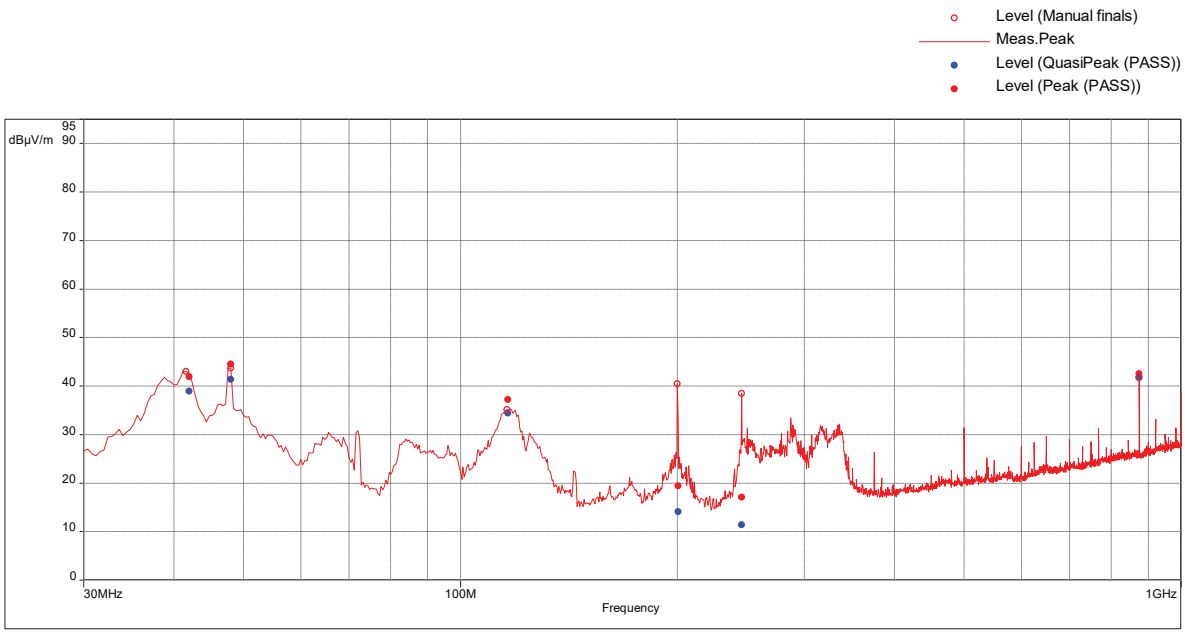
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	8/2/2021 1:10:33 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 6: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, High Ch 2197.5MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
42.10526316	41.87	-42.93	-13	-29.93	267.00	1.00	Vertical	120000.00	-21.19
47.96842105	44.50	-40.30	-13	-27.30	0.00	2.85	Vertical	120000.00	-24.51
116.3157895	37.24	-47.56	-13	-34.56	54.00	1.30	Vertical	120000.00	-19.15
200.2842105	19.46	-65.34	-13	-52.34	113.00	2.18	Vertical	120000.00	-19.53
245.7894737	17.05	-67.75	-13	-54.75	260.00	1.44	Horizontal	120000.00	-20.43
874.9894737	42.56	-42.24	-13	-29.24	223.00	1.00	Horizontal	120000.00	-7.12

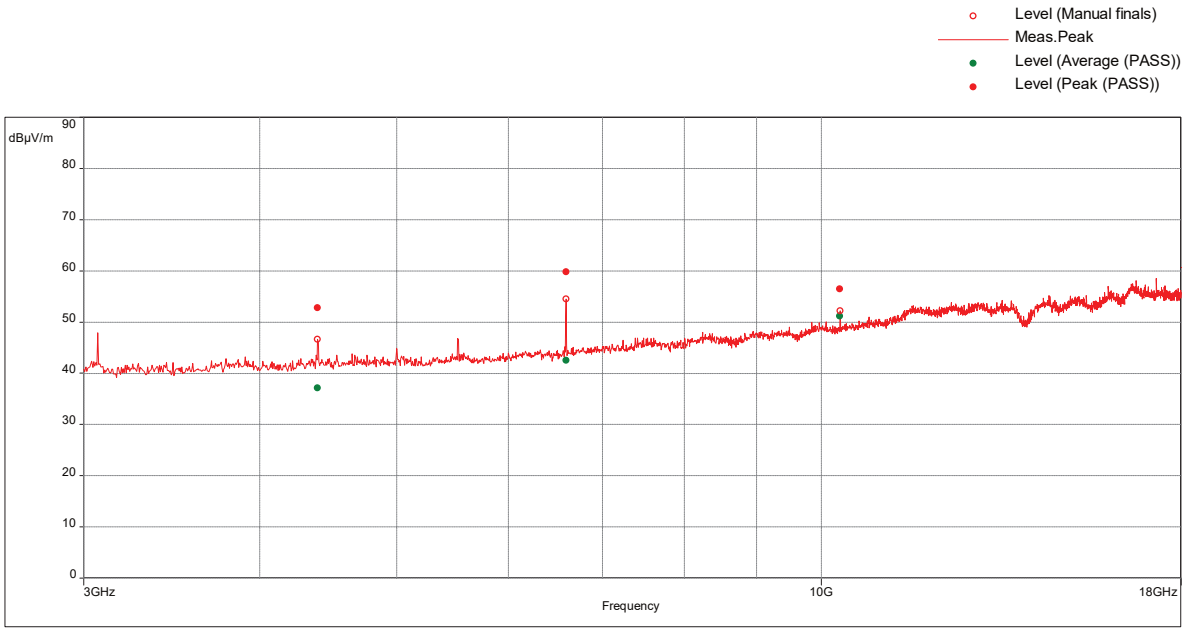
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.2-16QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	8/4/2021 10:50:04 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 18: Band 66 w 5200 host, 5MHz Bandwidth, 16QAM, High Ch 2197.5MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (3)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
4395.789474	52.81	-31.99	-13	-18.99	165.00	2.10	Vertical	1000000.00	0.00
6593.421053	59.83	-24.97	-13	-11.97	158.00	2.10	Vertical	1000000.00	4.61
10312.36842	56.49	-28.31	-13	-15.31	106.00	1.35	Vertical	1000000.00	9.57

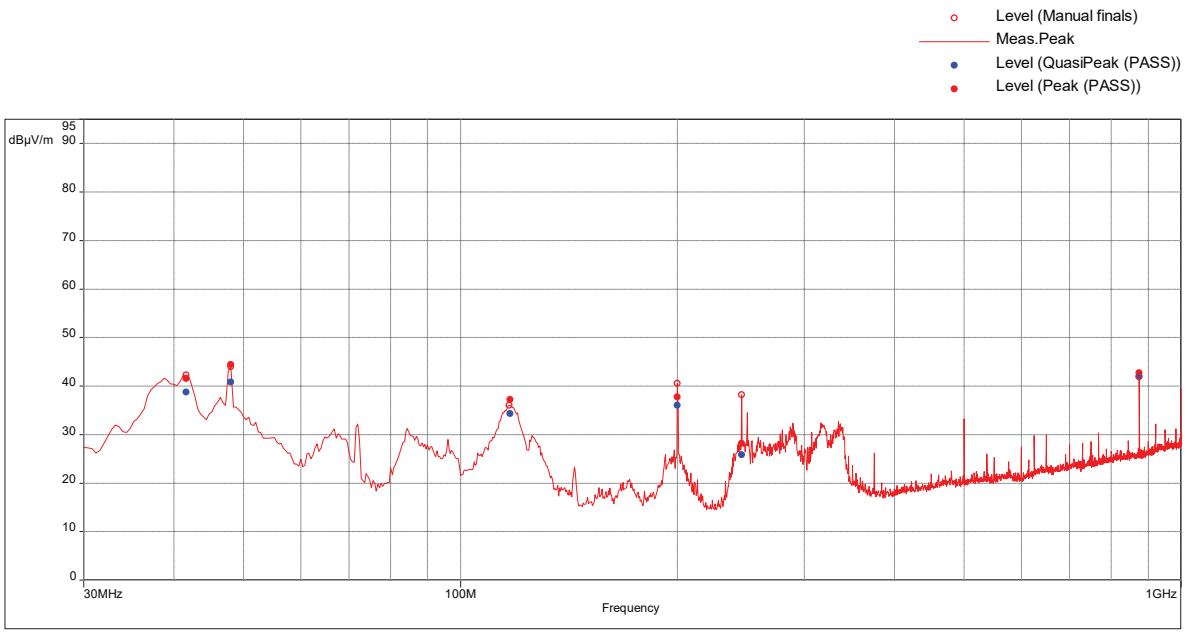
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	8/2/2021 2:15:56 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 7: Band 66 w 5200 host, 5MHz Bandwidth, 64QAM, Low Ch 2112.5MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
41.78947368	41.52	-43.28	-13	-30.28	225.00	1.29	Vertical	120000.00	-20.94
47.90526316	44.39	-40.41	-13	-27.41	0.00	2.35	Vertical	120000.00	-24.49
117.0842105	37.17	-47.63	-13	-34.63	40.00	2.35	Vertical	120000.00	-19.07
200	37.71	-47.09	-13	-34.09	98.00	1.00	Vertical	120000.00	-19.48
245.7578947	28.20	-56.6	-13	-43.6	216.00	2.40	Horizontal	120000.00	-20.43
874.9894737	42.68	-42.12	-13	-29.12	225.00	1.00	Horizontal	120000.00	-7.12

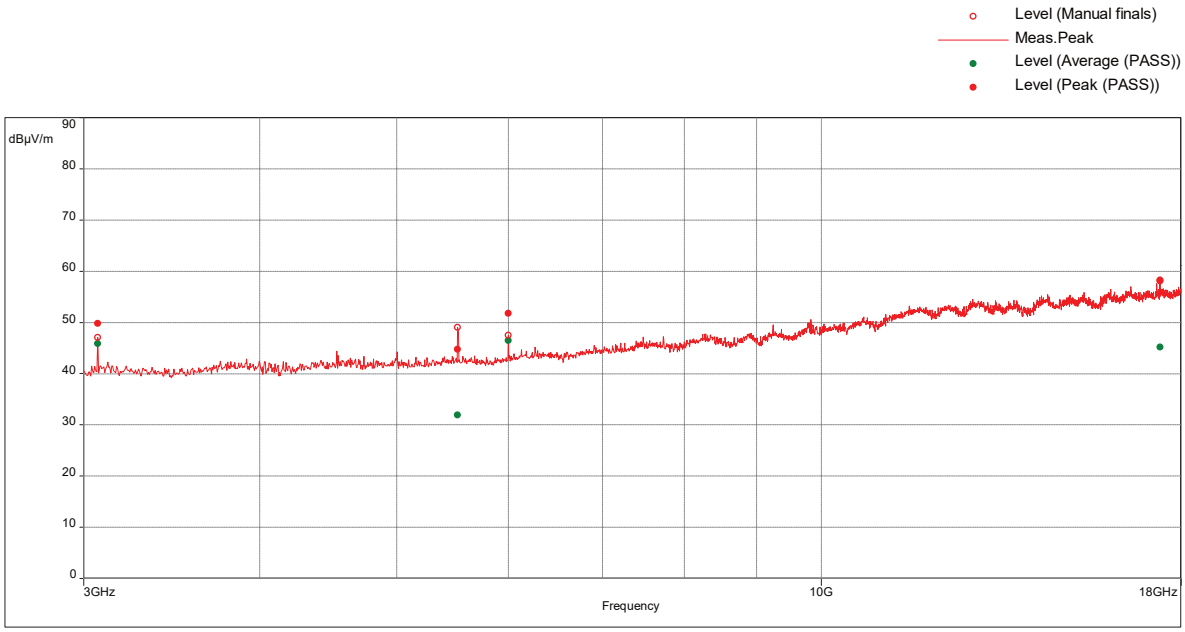
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	9/1/2021 2:29:16 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	43 %
Atmospheric Pressure	1002 mbar
Comments	Scan 7: Band 2 w 5200 host, 5 MHz Bandwidth, 64QAM, Low Channel 1932.5 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	49.76	-45.5	-13	-32.5	296.00	1.30	Horizontal	1000000.00	-2.07
5523.421053	44.76	-50.5	-13	-37.5	246.00	1.50	Horizontal	1000000.00	2.37
6000	51.77	-43.49	-13	-30.49	105.00	3.34	Horizontal	1000000.00	3.42
17388.15789	58.12	-37.14	-13	-24.14	162.00	3.69	Vertical	1000000.00	21.26

Notes:

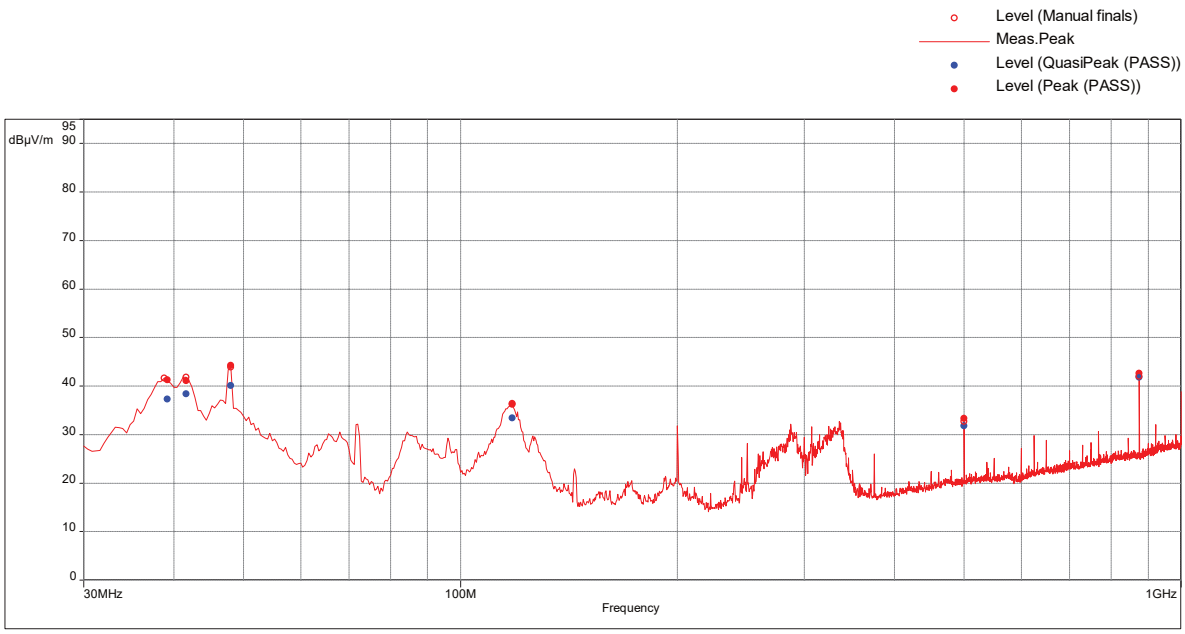
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	8/2/2021 3:03:01 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23C
Humidity	45%
Atmospheric Pressure	1001mbar
Comments	Scan 8: Band 66 w 5200 host, 5MHz Bandwidth, 64QAM, Mid Ch 2155 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
39.27368421	41.26	-43.54	-13	-30.54	1.00	1.00	Vertical	120000.00	-19.07
41.78947368	41.12	-43.68	-13	-30.68	254.00	1.41	Vertical	120000.00	-20.94
47.87368421	44.27	-40.53	-13	-27.53	4.00	2.70	Vertical	120000.00	-24.48
117.9684211	36.24	-48.56	-13	-35.56	274.00	1.92	Vertical	120000.00	-18.98
500	33.32	-51.48	-13	-38.48	276.00	1.00	Vertical	120000.00	-13.40
874.9894737	42.64	-42.16	-13	-29.16	231.00	1.00	Horizontal	120000.00	-7.12

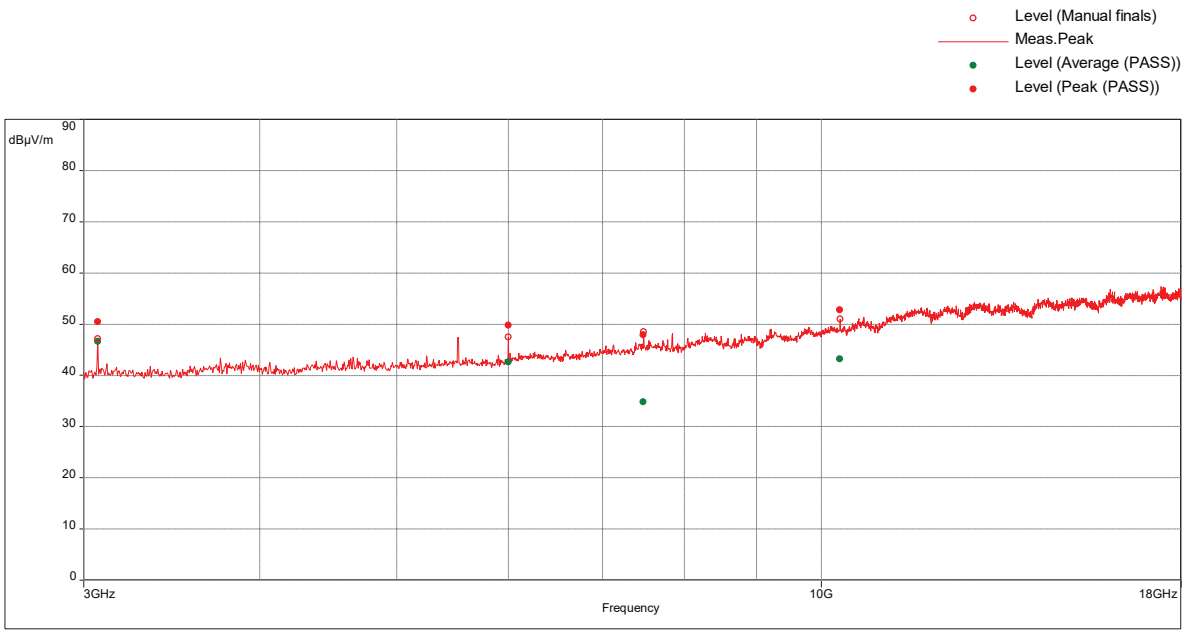
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	9/1/2021 2:58:02 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	43 %
Atmospheric Pressure	1002 mbar
Comments	Scan 8: Band 2 w 5200 host, 5 MHz Bandwidth, 64QAM, Mid Channel 1960 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	50.49	-44.77	-13	-31.77	298.00	2.20	Horizontal	1000000.00	-2.07
6000.263158	49.83	-45.43	-13	-32.43	61.00	1.00	Horizontal	1000000.00	3.42
7481.315789	47.89	-47.37	-13	-34.37	258.00	3.84	Horizontal	1000000.00	5.35
10312.36842	52.83	-42.43	-13	-29.43	316.00	1.30	Horizontal	1000000.00	9.50

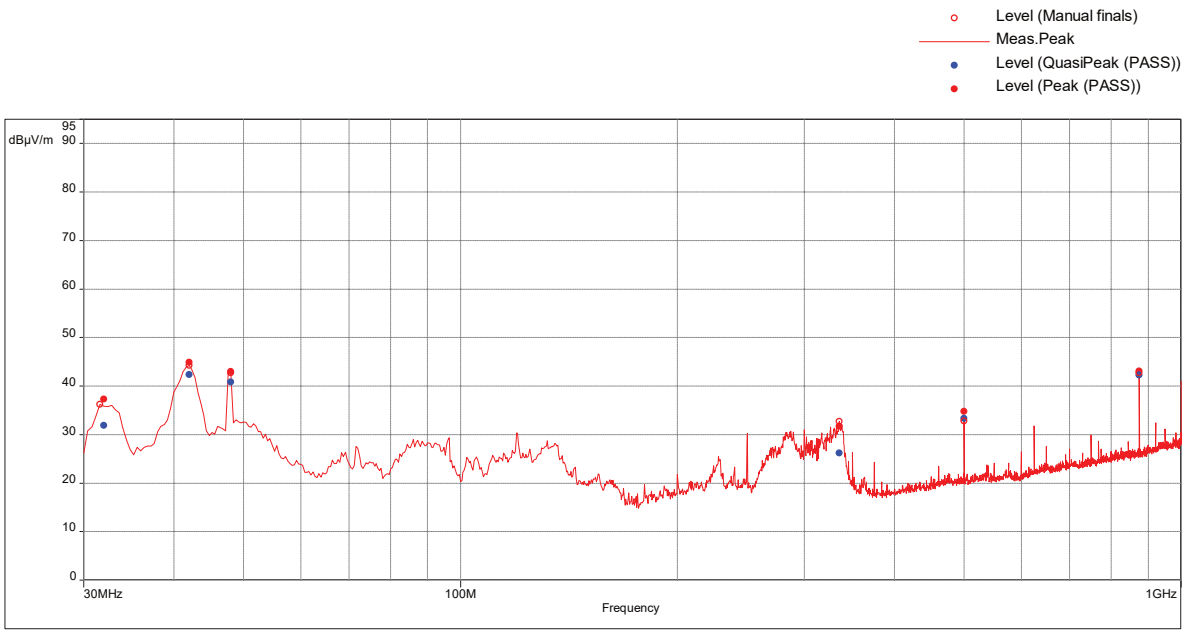
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	8/4/2021 4:32:18 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 9: Band 66 w 5200 host, 5MHz Bandwidth, 64QAM, High Ch 2197.5 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
31.82105263	37.34	-47.46	-13	-34.46	333.00	1.68	Vertical	120000.00	-14.56
42.09473684	44.90	-39.9	-13	-26.9	359.00	1.00	Vertical	120000.00	-21.18
47.90526316	43.01	-41.79	-13	-28.79	150.00	2.41	Vertical	120000.00	-24.49
335.0105263	31.72	-53.08	-13	-40.08	312.00	2.61	Horizontal	120000.00	-17.65
500	34.74	-50.06	-13	-37.06	217.00	1.98	Horizontal	120000.00	-13.40
874.9894737	43.06	-41.74	-13	-28.74	304.00	2.13	Vertical	120000.00	-7.12

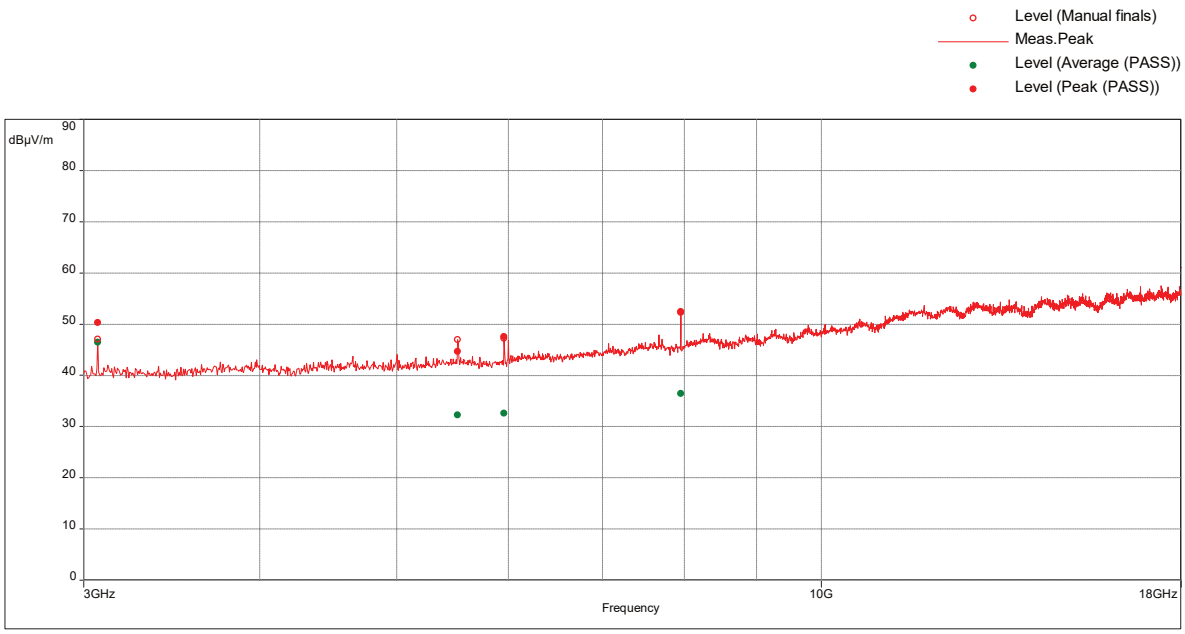
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	9/1/2021 3:24:38 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	43 %
Atmospheric Pressure	1002 mbar
Comments	Scan 9: Band 2 w 5200 host, 5 MHz Bandwidth, 64QAM, High Channel 1987.5 MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3071.842105	50.35	-44.91	-13	-31.91	296.00	2.20	Horizontal	1000000.00	-2.07
5527.105263	44.64	-50.62	-13	-37.62	245.00	1.95	Horizontal	1000000.00	2.37
5960	47.60	-47.66	-13	-34.66	337.00	1.45	Horizontal	1000000.00	3.35
7953.157895	52.46	-42.8	-13	-29.8	208.00	3.54	Horizontal	1000000.00	6.33

Notes:

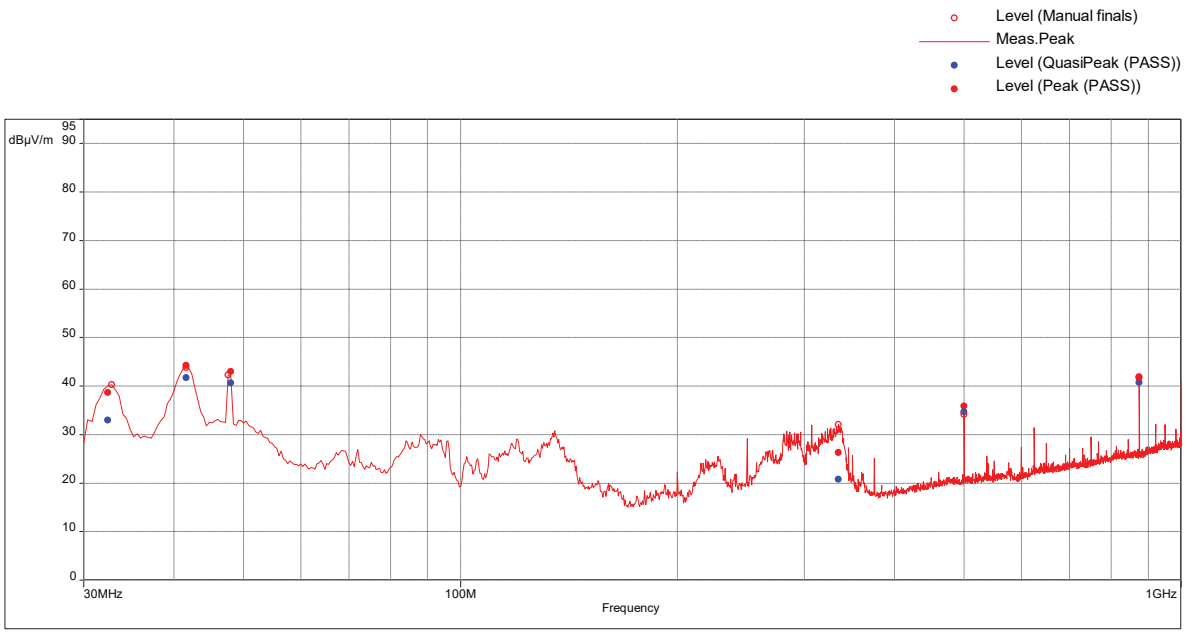
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	8/4/2021 5:25:22 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 10: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, Low Ch 2112.5 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
32.29473684	38.65	-46.15	-13	-33.15	142.00	1.35	Vertical	120000.00	-14.52
41.69473684	44.24	-40.56	-13	-27.56	277.00	1.00	Vertical	120000.00	-20.87
47.91578947	43.04	-41.76	-13	-28.76	359.00	3.45	Vertical	120000.00	-24.49
334.3052632	26.25	-58.55	-13	-45.55	304.00	1.02	Horizontal	120000.00	-17.65
500	35.84	-48.96	-13	-35.96	202.00	2.09	Horizontal	120000.00	-13.40
874.9894737	41.88	-42.92	-13	-29.92	254.00	2.13	Vertical	120000.00	-7.12

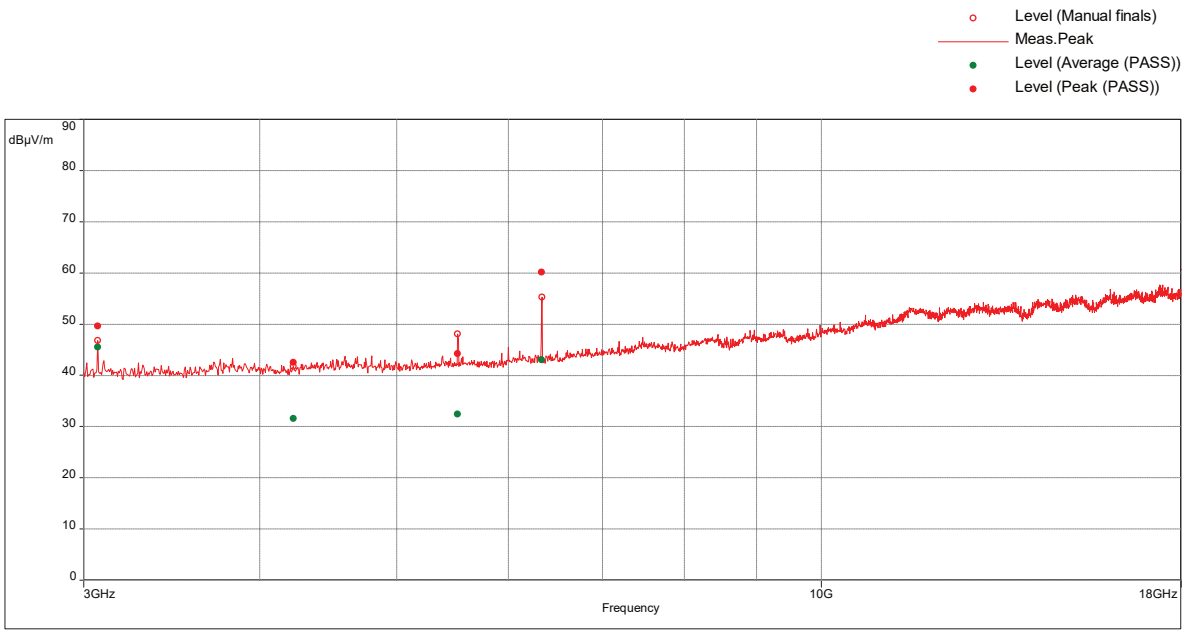
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	8/28/2021 10:44:03 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	40 %
Atmospheric Pressure	1017mbar
Comments	Scan 22: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, Low 2112.5MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	49.61	-45.65	-13	-32.65	105.00	1.70	Horizontal	1000000.00	-2.07
4225	42.53	-52.73	-13	-39.73	265.00	1.75	Horizontal	1000000.00	-0.81
5523.157895	44.23	-51.03	-13	-38.03	93.00	3.20	Horizontal	1000000.00	2.36
6335.526316	60.14	-35.12	-13	-22.12	329.00	1.85	Horizontal	1000000.00	4.15

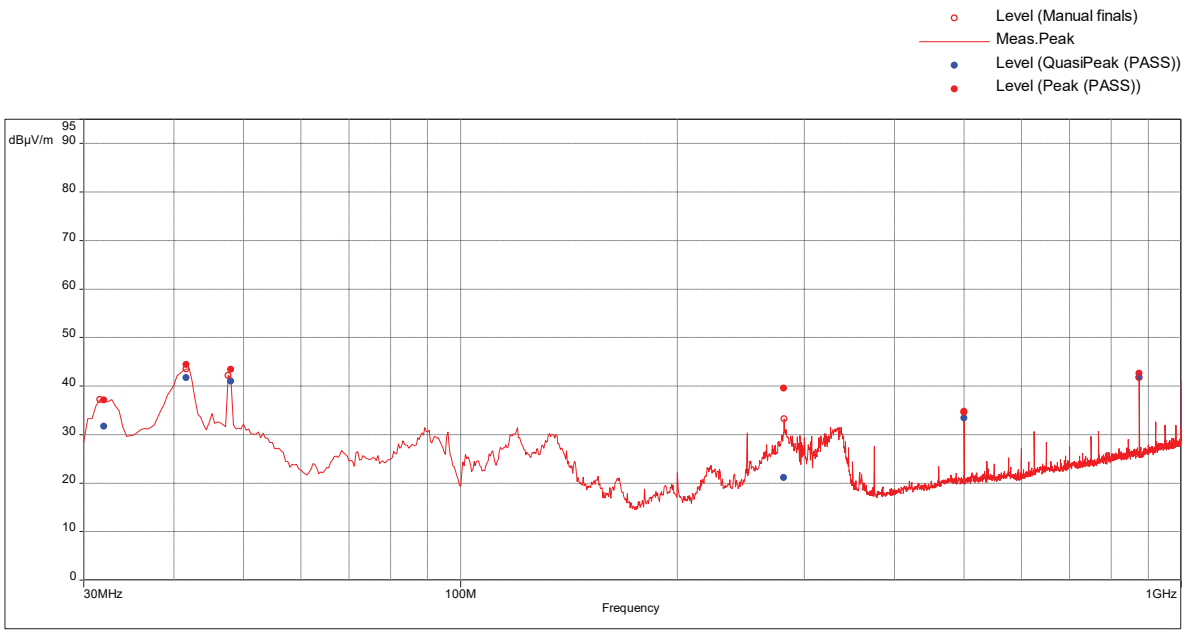
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	8/4/2021 6:20:24 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 11: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, Mid Ch 2155 MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
31.85263158	37.09	-47.71	-13	-34.71	349.00	1.47	Vertical	120000.00	-14.58
41.72631579	44.43	-40.37	-13	-27.37	233.00	1.00	Vertical	120000.00	-20.89
47.91578947	43.44	-41.36	-13	-28.36	335.00	2.46	Vertical	120000.00	-24.49
280.9473684	39.56	-45.24	-13	-32.24	18.00	1.32	Horizontal	120000.00	-18.53
500	34.80	-50	-13	-37	239.00	1.00	Vertical	120000.00	-13.40
874.9894737	42.62	-42.18	-13	-29.18	232.00	1.00	Horizontal	120000.00	-7.12

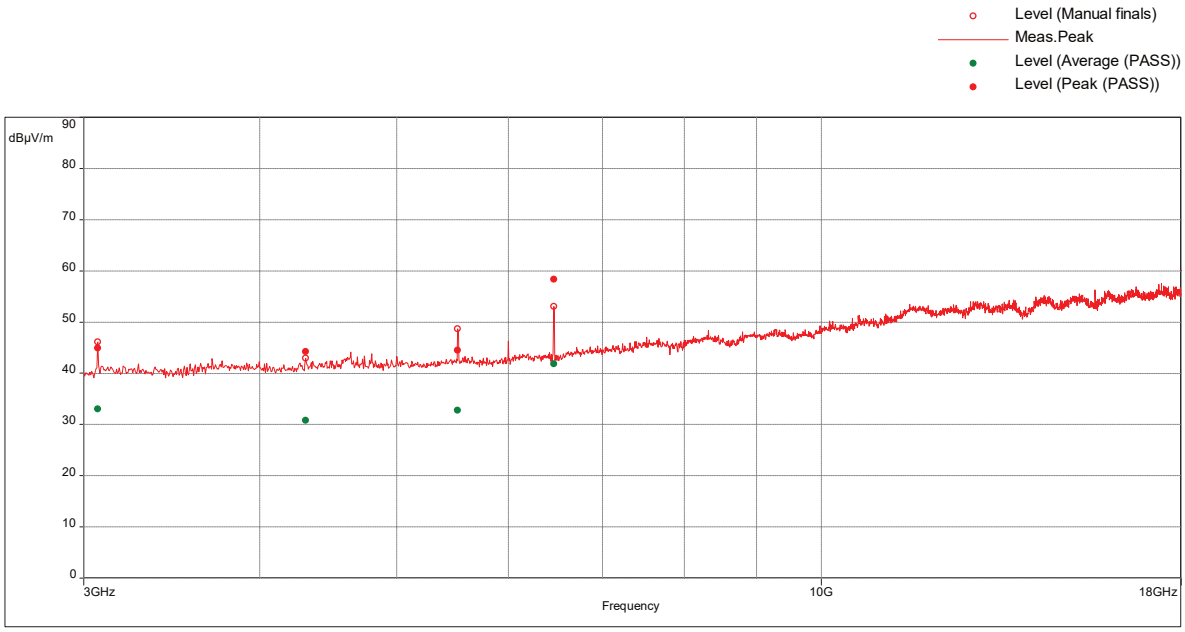
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

Test Information:

Date and Time	8/28/2021 11:12:33 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	40 %
Atmospheric Pressure	1017mbar
Comments	Scan 23: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, Mid 2155MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3071.315789	44.89	-50.37	-13	-37.37	113.00	1.00	Horizontal	1000000.00	-2.08
4307.894737	44.22	-51.04	-13	-38.04	304.00	1.50	Horizontal	1000000.00	-0.57
5525.526316	44.49	-50.77	-13	-37.77	118.00	2.25	Horizontal	1000000.00	2.37
6466.842105	58.32	-36.94	-13	-23.94	329.00	2.75	Horizontal	1000000.00	4.32

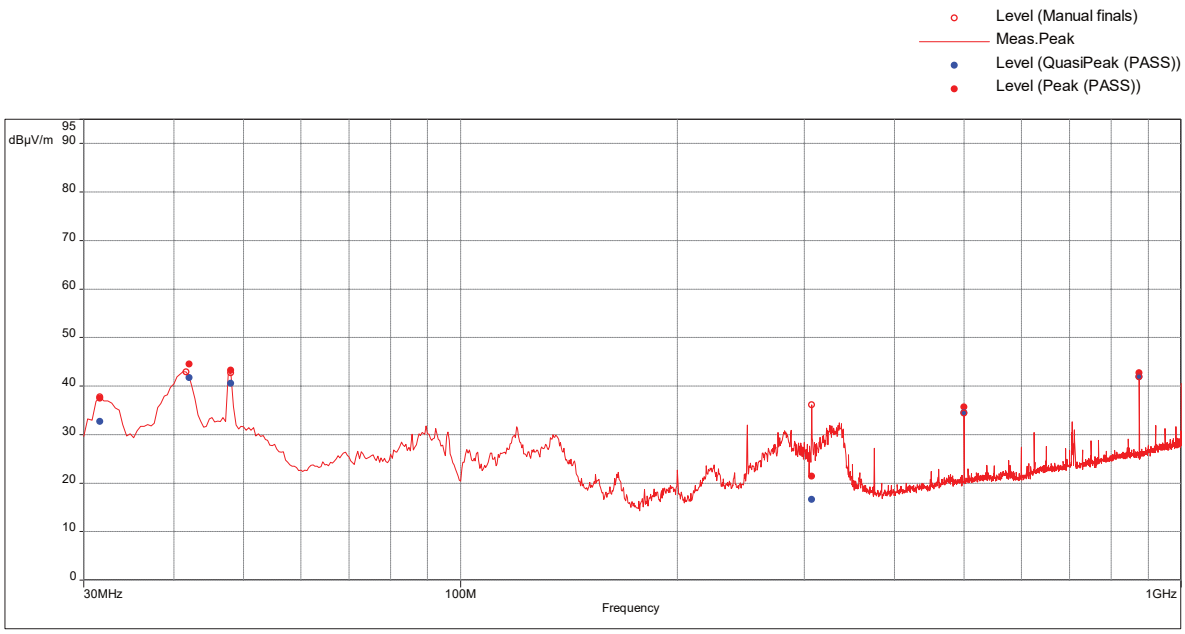
Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Radiated Emissions, 30-1000 MHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	8/4/2021 7:08:33 PM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	26 C
Humidity	39 %
Atmospheric Pressure	1012 mbar
Comments	Scan 12: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, High Ch 2197.5MHz, RE 30-1000MHz SA mode

Graph:



Results:

Peak (PASS) (6)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
31.78947368	37.48	-47.32	-13	-34.32	121.00	1.35	Vertical	120000.00	-14.54
41.85263158	44.49	-40.31	-13	-27.31	253.00	1.00	Vertical	120000.00	-21.00
47.87368421	43.26	-41.54	-13	-28.54	0.00	1.59	Vertical	120000.00	-24.48
307.2315789	21.37	-63.43	-13	-50.43	320.00	1.55	Horizontal	120000.00	-18.08
500	35.66	-49.14	-13	-36.14	202.00	2.12	Horizontal	120000.00	-13.40
874.9894737	42.75	-42.05	-13	-29.05	239.00	1.00	Horizontal	120000.00	-7.12

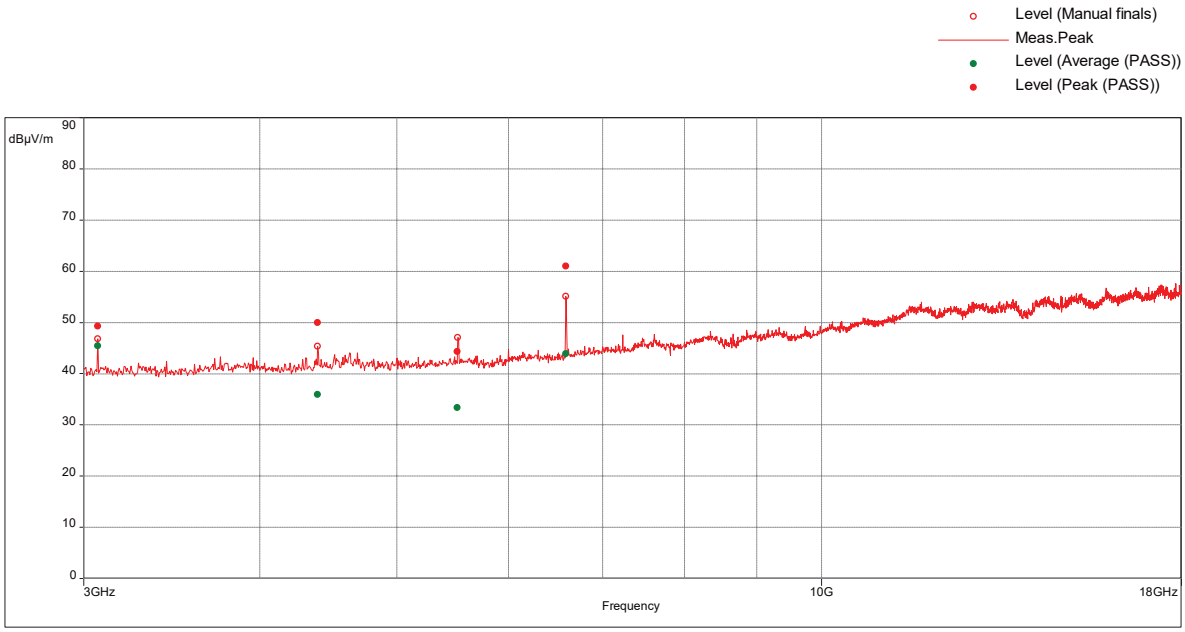
Notes:
The level in E.I.R.P (dBm) is calculated from the peak readings as below.
E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.

Radiated Emissions, 1-22 GHz
Slot 1 (Band 66), Modulation: TM3.1a-256QAM, Bandwidth 5 MHz, Transmit @ High Channel
Band 66 w 5200 host, 5MHz Bandwidth, 256QAM Modulation, High 2197.5MHz, RE 3-18 GHz

Test Information:

Date and Time	8/28/2021 11:42:19 AM
Client and Project Number	Commscope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	40 %
Atmospheric Pressure	1017mbar
Comments	Scan 24: Band 66 w 5200 host, 5MHz Bandwidth, 256QAM, High 2197.5MHz, RE 3-18 GHz_REA004 SA mode

Graph:



Results:

Peak (PASS) (4)

Frequency (MHz)	Peak Level (dBµV/m)	E.I.R.P Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
3072.105263	49.31		-13		106.00	1.70	Horizontal	1000000.00	-2.07
4394.736842	49.99		-13		297.00	1.00	Horizontal	1000000.00	-0.22
5521.052632	44.35		-13		138.00	1.60	Horizontal	1000000.00	2.36
6590.526316	61.04		-13		336.00	1.85	Horizontal	1000000.00	4.38

Notes:
1) The level in E.I.R.P (dBm) is calculated from the peak readings as below. E.I.R.P (dBm) = E Peak (dBµV/m) + 20*Log(d) – 104.8, where d is the measurement distance (in the far field region) in meter.
2) Manual scan was performed from 1-3 GHz and 18-22 GHz at 10 cm distance with no emission was detected.

Test Personnel:	Kouma Sinn KPS	Test Date:	08/02/2021, 08/04/2021, 08/28/2021, 09/10/2021
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 27	Limit Applied:	See report section 11.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	23, 26, 23, 24 ºC
		Relative Humidity:	45, 39, 40, 60 %
		Atmospheric Pressure:	1001, 1012, 1017, 999 mbars

Deviations, Additions, or Exclusions: None

12 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	09/10/2021	104751739BOX-001c	KPS	VFV	Original Issue
1	12/13/2021	104751739BOX-001c	KPS	VFV	Typo correction on page 258, 50°C reading and Page 261, 0°C reading
2	01/10/2022	104751739BOX-001c	KPS	VFV	Removed test setup photos, added frequency stability vs. voltage test results tables, referenced the original LTE and new 5G NR capabilities of this device in product description
3	02/02/2022	104751739BOX-001c	KPS	VFV	Added justification for worst case for spurious emissions on page290