TEST REPORT

No. I21Z62086-EMC01

for

5G NR/ LTE/WCDMA/GSM Mobile Phone

Model Name: T781S，T781SPP

FCC ID: 2ACCJN056

with

Hardware Version: 03

Software Version: 3D5G

Issued Date: 2021-12-07

Note:

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Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Revision	Description	Issue Date
Rev.0	1st edition	2021-12-01
Rev.1	2nd edition. Updata The Equipment Utilized.	2021-12-07

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#:24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.4. Project Data

Testing Start Date: 2021-10-22

Testing End Date: 2021-11-30

1.5. Signature

An Hui

(Prepared this test report)

Zhang Ying

(Reviewed this test report)

Zhang Xia

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address /Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact:	Gong Zhizhou
Email:	Zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address /Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact:	Gong Zhizhou
Email:	Zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	5G NR/ LTE/WCDMA/GSM Mobile Phone
Model Name	T781S，T781SPP
FCC ID	2ACCJN056
Antenna	Embedded
Output power	18.64dBm maximum EIRP measured for n260
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-10°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL.

The EUT supports n260 and n261 bands, 50MHz and 100MHz bandwidth for 1CC, 100MHz+100MHz for 2CC, SCS 120kHz. For uplink modulation, in CP-OFDM, the EUT supports QPSK, 16QAM, 64QAM, and in DFT-s-OFDM, the EUT supports PI/2 BPSK, QPSK, 16QAM, 64QAM.

The EUT has two antenna modules. Each antenna module has two chains, and supports 2x2 MIMO working mode under CP-OFDM. The two modules did not support transmitting simultaneously. Every chain supports 15 kinds of Beamforming which was identified by Beam ID.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI / Serial Number	HW Version	SW Version
UT06a	016048000215740	03	3D5G
UT08a	016048000215781	03	3D5G

*EUT ID: is used to identify the test sample in the lab internally.

The IMEI and SW version information were provided by the applicant.

The frequency stability was performed on UT03a, the others were performed on UT01a.

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 30	UPPER MICROWAVE FLEXIBLE USE SERVICE	10-1-20 Edition
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 842590	Upper Microwave Flexible Use Service v01r01	April 3, 2020

5. Laboratory Environment

Semi/Full-anechoic chamber SAC-1 (23 meters × 17meters × 10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz

6. Summary Of Test Result

n260

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	2.1046, 30.202	Pass
2	Unwanted Emission	30.203	Pass
3	Frequency Stability	2.1055	Pass
4	Occupied Bandwidth	2.1049	Pass
5	Band Edge Compliance	2.1051, 30.203	Pass

n261

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	2.1046, 30.202	Pass
2	Unwanted Emission	30.203	Pass
3	Frequency Stability	2.1055	Pass
4	Occupied Bandwidth	2.1049	Pass
5	Band Edge Compliance	2.1051, 30.203	Pass

Terms used in Verdict column

P	Pass. The EUT complies with the essential requirements in the standard.
NP	Not Performed. The test was not performed by CTTL.
NA	Not Applicable.The test was not applicable.
BR	Re-use test data from basic model report.
F	Fail. The EUT does not comply with the essential requirements in the standard.

Explanation of worst-case configuration

The worst-case scenario for all measurements is based on the output power, occupied bandwidth, band edge emission measurement investigation results. The test results shown in the following sections represent the worst case measurement results. For each frequency only the maximum measurement results of Beam ID were represent in the report. The Beam ID of maximum results for low, center and high frequency of different chains maybe vary.

Note: This report is for 2CC test results of the EUT. The 1CC test results of the EUT were in report I21Z61482-EMC02.

7. Measurement Uncertainty

Measurement Uncertainty:

Frequency Range	Uncertainty(dB) (k=2)
30MHz-1GHz	5.18
1GHz-18GHz	5.54
Above 18GHz	5.26

Note: Uncertainty of the above 18GHz, giving only the worst case.

8. Test Equipment Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL. DUE DATE	CAL. INTERVAL
1	Signal Generator	SMF100A	104940	R&S	2021-12-09	1 year
2	Signal Generator	E8257D（60GHz）	MY59140557	Keysight	2022-01-19	1 year
3	Antenna	VULB 9163	01223	SCHWARZBECK	2022-03-22	1 year
4	Antenna	3115	6914	ETS-Lindgren	2022-02-03	1 year
5	Upconverter(50GHz-75GHz)	SMZ-75	101309	R&S	2022-01-14	1 year
6	Upconverter(75GHz-110GHz)	SMZ-110	101357	R&S	2022-01-14	1 year
7	Upconverter(110GHz-170GHz)/	82406B	ZEI00141	Ceyear	2022-02-04	1 year
8	Upconverter(170GHz-220GHz)/	82406C	ZEI00164	Ceyear	2022-02-04	1 year
9	Spectrum Analyzer	FSW67	103290	R&S	2022-02-04	1 year
10	(downconverter)Harmonic Mixer(60GHz-90GHz)	FS-Z90	101655	R&S	2022-02-04	1 year
11	(downconverter)Harmonic Mixer(75GHz-110GHz)	FS-Z110	101463	R&S	2022-01-19	1 year
12	(downconverter)Harmonic Mixer(110GHz-170GHz)/	FS-Z170	101008	R&S	2022-02-17	1 year
13	(downconverter)Harmonic Mixer(170GHz-220GHz)/	FS-Z220	101054	R&S	2021-12-14	1 year
14	Standard Gain Horn Antenna（40GHz-60GHz）	LB-19-25	J202024086	A-INFO	2022-01-14	1 year
15	Standard Gain Horn Antenna（40GHz-60GHz）	LB-19-25	J202024087	A-INFO	2022-01-14	1 year
16	Standard Gain Horn Antenna（60GHz-90GHz）	LB-12-25	J202062912	A-INFO	2022-02-17	1 year
17	Standard Gain HornAntenna（50GHz-75GHz）	LB-15-25	J202062019	A-INFO	2021-12-14	1 year
18	Standard Gain Horn Antenna（75GHz-110GHz）	LB-10-25	J202023231	A-INFO	2022-01-27	1 year
19	Standard Gain Horn Antenna（75GHz-110GHz）	LB-10-25	J202023232	A-INFO	2022-01-27	1 year
24	Standard Gain Horn Antenna（110GHz-170GHz）	LB-6-25-A	J202061245	A-INFO	2022-01-27	1 year
25	Standard Gain Horn Antenna（170GHz-200GHz）	LB-5-25-A	J202067630	A-INFO	2022-01-27	1 year
26	DC power supply	PAS20-18	UH000695	Kikusui	2022-08-14	1 year
27	Incubator	SH-641	92009470	ESPEC	2022-02-14	1 year
28	Receiver	ESP40	100012	R&S	2022-01-03	1 year

Annex A: Measurement Results

A.1 Radiated Output Power

A.1.1 Summary

During the process of testing, the EUT was controlled via communication tester to ensure max power transmission and proper modulation.

In all cases, output power is within the specified limits.

30.202 (b) For mobile stations, the average power of the sum of all antenna elements is limited to a maximum EIRP of +43 dBm.

A.1.2.1 Method of Measurements

According to ANSI C63.26 chapter 5.2, the test site was validated to ANSI C63.4 requirements, the radiated output power were measured using the direct radiated field strength method.

The EUT was set up for the max output power with pseudo random data modulation.

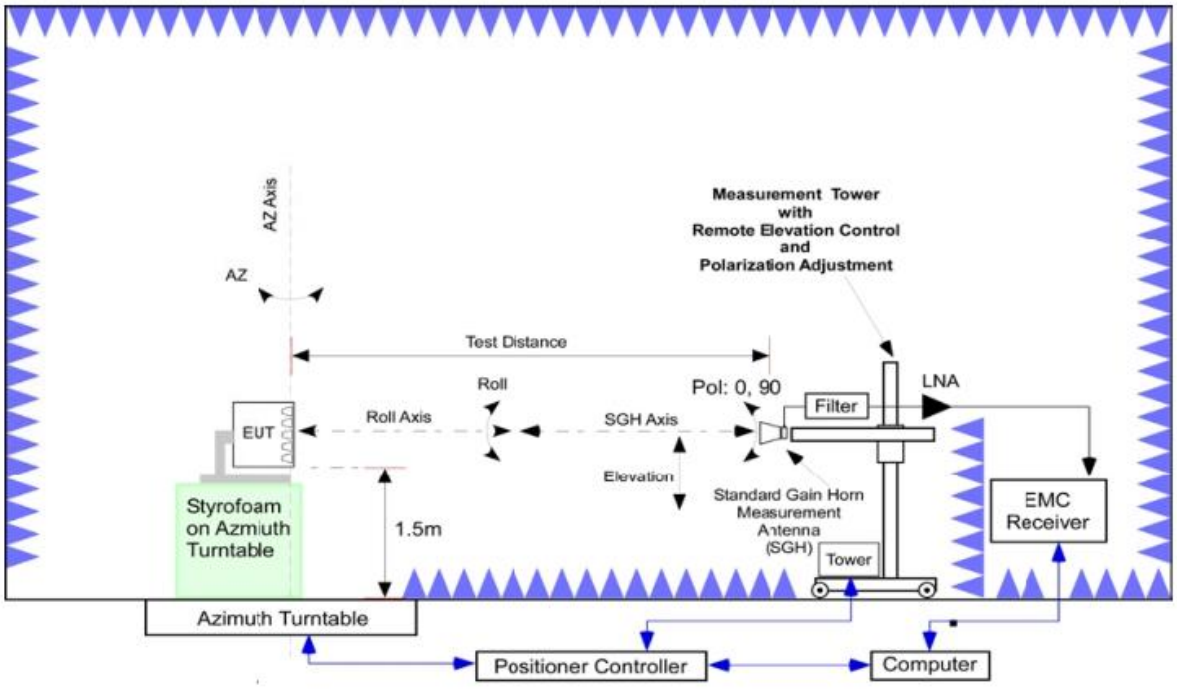
The measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

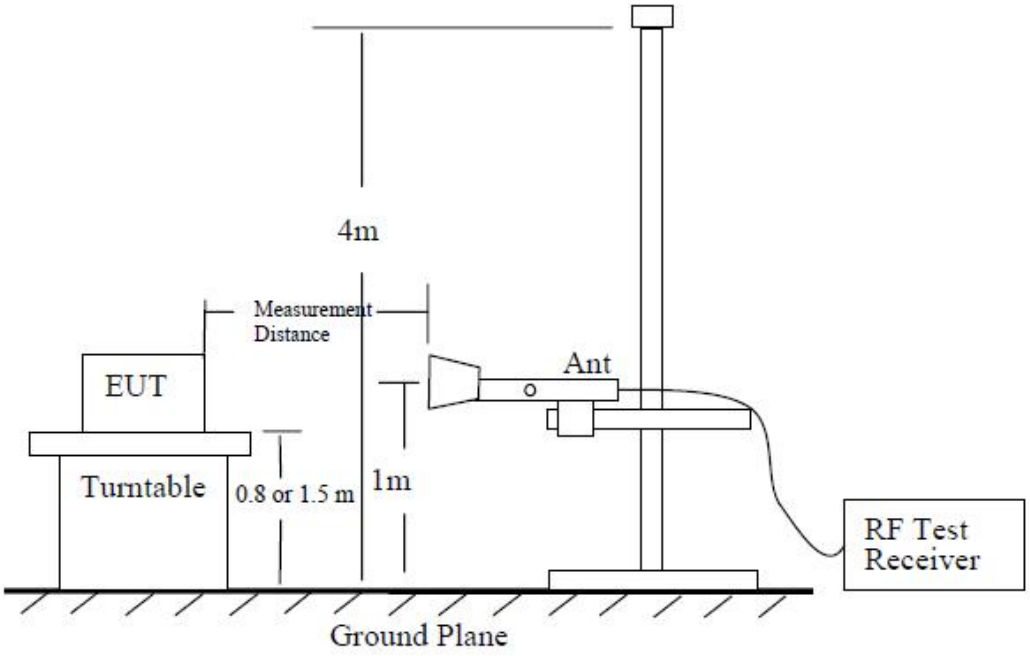
The average RF output power measurements were performed. During the measurements, the active transmission of EUT was keeping at the maximum output power level continuously.

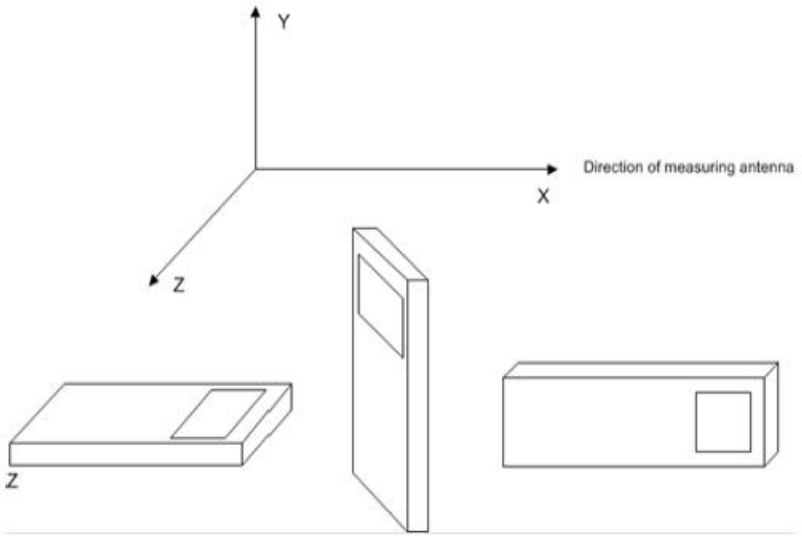
The EIRP measurement used integration method and the bandwidth was the EUT specified bandwidth, e.g, 50MHz, 100MHz.

The procedure is as follows:

Using the test configuration as follow, measure the radiated output power from the EUT and convert the measured received power to EIRP, as required, for comparison to the applicable limits.







The emission characteristics of the EUT can be identified from the pre-scan measurement information.

Exploratory radiated measurements (pre-scans) may be performed to determine the general EUT radiated emissions characteristics and, when necessary, the EUT-to-measurement antenna orientation that produces the maximum emission amplitude. Pre-scans shall only be used to determine the emission frequencies (i.e., not amplitude levels). The information garnered from a pre-scan can then be used to perform final compliance measurements using either the substitution or direct field strength method.

For radiated measurements performed, the EUT shall be placed on a RF-transparent table or support at a specified height above the reference ground plane with absorbers. Radiated measurements shall be made with the measurement antenna positioned at both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated

signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.
For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a specified height above the ground plane with absorbers. To get the maximum power from the EUT for measurement, the EUT and its transmitting antenna(s) shall be rotated through 360°. For each mode of transmit operation to be tested, the frequency spectrum (based on findings from exploratory measurements) shall be monitored.

Test Note:
The average EIRP reported below is calculated by:
EIRP(dBm)=Spectrum Analyzer Channel Power Level(dBm)-Antenna Factor(dBi) + Cable Loss(dB) + 20log(F)+20log(D)-27.56
Where:
F:frequency (MHz)
D:Distance(m) = 3m

A.1.2.2 Measurement Result

n260, SCS=120kHz, Module0, Tx Chain 0, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	37050	37150	26	15.68
		100% RB	39849.96	39949.92	26	17.53
		1% RB	37050	37150	26	13.60
		1% RB	39849.96	39949.92	26	15.75
	16QAM	100% RB	39849.96	39949.92	26	15.89
	64QAM	100% RB	39849.96	39949.92	26	13.24

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module0, Tx Chain 0, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	37050	37150	26	14.87
		100% RB	39849.96	39949.92	26	16.21
		1 RB	37050	37150	26	12.87
		1 RB	39849.96	39949.92	26	14.65
	QPSK	100% RB	37050	37150	26	15.32
		100% RB	39849.96	39949.92	26	17.50
		1 RB	37050	37150	26	13.28
		1 RB	39849.96	39949.92	26	15.28
	16QAM	100% RB	39849.96	39949.92	26	16.97
	64QAM	100% RB	39849.96	39949.92	26	15.97

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module0, Tx Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	37050	37150	152	15.00
		100% RB	39849.96	39949.92	152	18.31
		1% RB	37050	37150	152	12.89
		1% RB	39849.96	39949.92	152	16.72
	16QAM	100% RB	39849.96	39949.92	152	16.81
	64QAM	100% RB	39849.96	39949.92	152	13.57

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module0, Tx Chain 1, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	37050	37150	152	14.67
		100% RB	39849.96	39949.92	152	17.90
		1 RB	37050	37150	152	12.02
		1 RB	39849.96	39949.92	152	16.24
	QPSK	100% RB	37050	37150	152	14.64
		100% RB	39849.96	39949.92	152	18.71
		1 RB	37050	37150	152	12.70
		1 RB	39849.96	39949.92	152	16.46
	16QAM	100% RB	39849.96	39949.92	152	17.54
	64QAM	100% RB	39849.96	39949.92	152	16.29

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module0 2*2, Tx Chain 0 + Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	39849.96	39949.92	27+155	18.21

Note: According to the measurement results for Chain 0 and Chain 1, the set of modulation, RB size and channel with higher power was measured on Module 0 2*2 working mode.

n260, SCS=120kHz, Module1, Tx Chain 0, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	37050	37150	20	15.27
		100% RB	39849.96	39949.92	20	17.85
		1% RB	37050	37150	20	13.10
		1% RB	39849.96	39949.92	20	14.16
	16QAM	100% RB	39849.96	39949.92	20	14.53
	64QAM	100% RB	39849.96	39949.92	20	11.78

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module1, Tx Chain 0, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	37050	37150	20	15.07
		100% RB	39849.96	39949.92	20	16.26
		1 RB	37050	37150	20	12.89
		1 RB	39849.96	39949.92	20	14.15
	QPSK	100% RB	37050	37150	20	14.61
		100% RB	39849.96	39949.92	20	16.35
		1 RB	37050	37150	20	12.74
		1 RB	39849.96	39949.92	20	14.02
	16QAM	100% RB	39849.96	39949.92	20	15.45
	64QAM	100% RB	39849.96	39949.92	20	14.26

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module1, Tx Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	37050	37150	148	15.74
		100% RB	39849.96	39949.92	148	18.20
		1% RB	37050	37150	148	13.75
		1% RB	39849.96	39949.92	148	16.04
	16QAM	100% RB	39849.96	39949.92	148	16.56
	64QAM	100% RB	39849.96	39949.92	148	13.75

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260, SCS=120kHz, Module1, Tx Chain 1, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	37050	37150	148	15.50
		100% RB	39849.96	39949.92	148	18.61
		1 RB	37050	37150	148	13.82
		1 RB	39849.96	39949.92	148	16.45
	QPSK	100% RB	37050	37150	148	15.57
		100% RB	39849.96	39949.92	148	18.60
		1 RB	37050	37150	148	16.53
		1 RB	39849.96	39949.92	148	16.22
	16QAM	100% RB	39849.96	39949.92	148	17.72
	64QAM	100% RB	39849.96	39949.92	148	16.52

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n260,SCS=120kHz, Module1 2*2, Tx Chain 0 + Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	37050	37150	31+159	18.64

Note: According to the measurement results for Chain 0 and Chain 1, the set of modulation, RB size and channel with higher power was measured on Module1 2*2 working mode.

n261, SCS=120kHz, Module0, Tx Chain 0, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	27550.08	27650.08	31	14.86
		100% RB	28200.02	28299.96	31	14.47
		1% RB	27550.08	27650.08	31	12.47
		1% RB	28200.02	28299.96	31	12.46
	16QAM	100% RB	27550.08	27650.08	31	14.00
	64QAM	100% RB	27550.08	27650.08	31	11.48

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module0, Tx Chain 0, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	27550.08	27650.08	31	16.76
		100% RB	28200.02	28299.96	31	16.45
		1 RB	27550.08	27650.08	31	13.24
		1 RB	28200.02	28299.96	31	11.18
	QPSK	100% RB	27550.08	27650.08	31	16.68
		100% RB	28200.02	28299.96	31	16.61
		1 RB	27550.08	27650.08	31	13.72
		1 RB	28200.02	28299.96	31	12.09
	16QAM	100% RB	27550.08	27650.08	31	13.65
	64QAM	100% RB	27550.08	27650.08	31	12.30

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module0, Tx Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	27550.08	27650.08	150	14.75
		100% RB	28200.02	28299.96	150	15.04
		1% RB	27550.08	27650.08	150	13.86
		1% RB	28200.02	28299.96	150	13.23
	16QAM	100% RB	28200.02	28299.96	150	14.12
	64QAM	100% RB	28200.02	28299.96	150	11.05

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module0, Tx Chain 1, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	27550.08	27650.08	150	16.67
		100% RB	28200.02	28299.96	150	16.78
		1 RB	27550.08	27650.08	150	13.62
		1 RB	28200.02	28299.96	150	12.97
	QPSK	100% RB	27550.08	27650.08	150	16.69
		100% RB	28200.02	28299.96	150	16.67
		1 RB	27550.08	27650.08	150	13.76
		1 RB	28200.02	28299.96	150	13.09
	16QAM	100% RB	27550.08	27650.08	150	14.89
	64QAM	100% RB	27550.08	27650.08	150	13.41

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module 0,Tx Chain 0 + Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz+ 100MHz	QPSK	100% RB	28200.02	28299.96	23+151	16.25

Note: According to the measurement results for Chain 0 and Chain 1, the set of modulation, RB size and channel with higher power was measured on Module1 2*2 working mode.

n261, SCS=120kHz, Module1, Tx Chain 0, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	27550.08	27650.08	18	14.65
		100% RB	28200.02	28299.96	18	15.59
		1% RB	27550.08	27650.08	18	13.28
		1% RB	28200.02	28299.96	18	14.60
	16QAM	100% RB	28200.02	28299.96	18	14.27
	64QAM	100% RB	28200.02	28299.96	18	11.85

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module1, Tx Chain 0, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	27550.08	27650.08	18	16.65
		100% RB	28200.02	28299.96	18	16.83
		1 RB	27550.08	27650.08	18	13.07
		1 RB	28200.02	28299.96	18	14.23
	QPSK	100% RB	27550.08	27650.08	18	16.62
		100% RB	28200.02	28299.96	18	16.78
		1 RB	27550.08	27650.08	18	13.31
		1 RB	28200.02	28299.96	18	13.99
	16QAM	100% RB	28200.02	28299.96	18	15.87
	64QAM	100% RB	28200.02	28299.96	18	14.19

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module1 , Tx Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	27550.08	27650.08	146	14.71
		100% RB	28200.02	28299.96	146	16.37
		1% RB	27550.08	27650.08	146	13.74
		1% RB	28200.02	28299.96	146	14.85
	16QAM	100% RB	28200.02	28299.96	146	13.13
	64QAM	100% RB	28200.02	28299.96	146	8.44

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module1 , Tx Chain 1, DFT

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	Pi/2 BPSK	100% RB	27550.08	27650.08	146	15.50
		100% RB	28200.02	28299.96	146	16.20
		1 RB	27550.08	27650.08	146	13.50
		1 RB	28200.02	28299.96	146	13.48
	QPSK	100% RB	27550.08	27650.08	146	15.47
		100% RB	28200.02	28299.96	146	16.18
		1 RB	27550.08	27650.08	146	13.22
		1 RB	28200.02	28299.96	146	13.50
	16QAM	100% RB	28200.02	28299.96	146	15.12
	64QAM	100% RB	28200.02	28299.96	146	13.60

Note:The channel and RB size with the max Power of QPSK was chose, 16QAM, 64QAM were measured on that mode.

n261, SCS=120kHz, Module1, Tx Chain 0 + Chain 1, CP

Bandwidth	Modulation	RB size	Centre Frequency (MHz)		Beam ID	Power (dBm)
			CC1	CC2		
100MHz + 100MHz	QPSK	100% RB	28200.02	28299.96	27+155	16.17

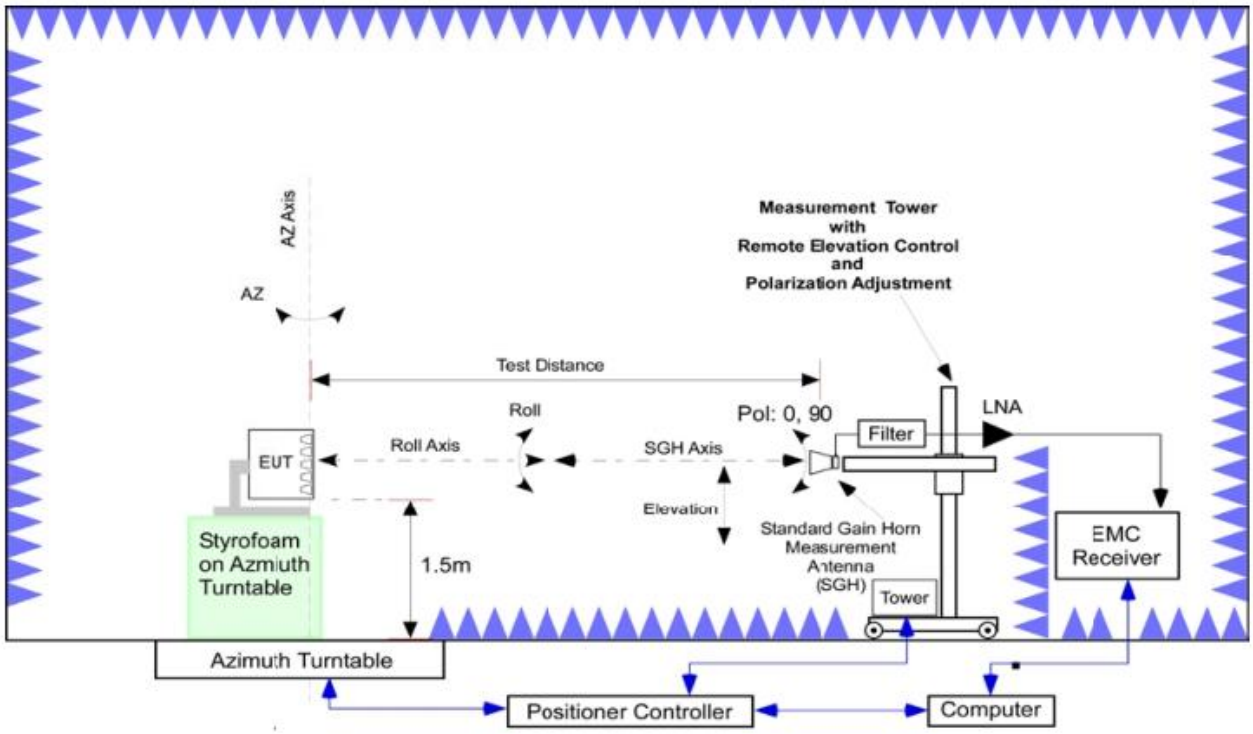
Note: According to the measurement results for Chain 0 and Chain 1, the set of modulation, RB size and channel with higher power was measured on Module1 2*2 working mode.

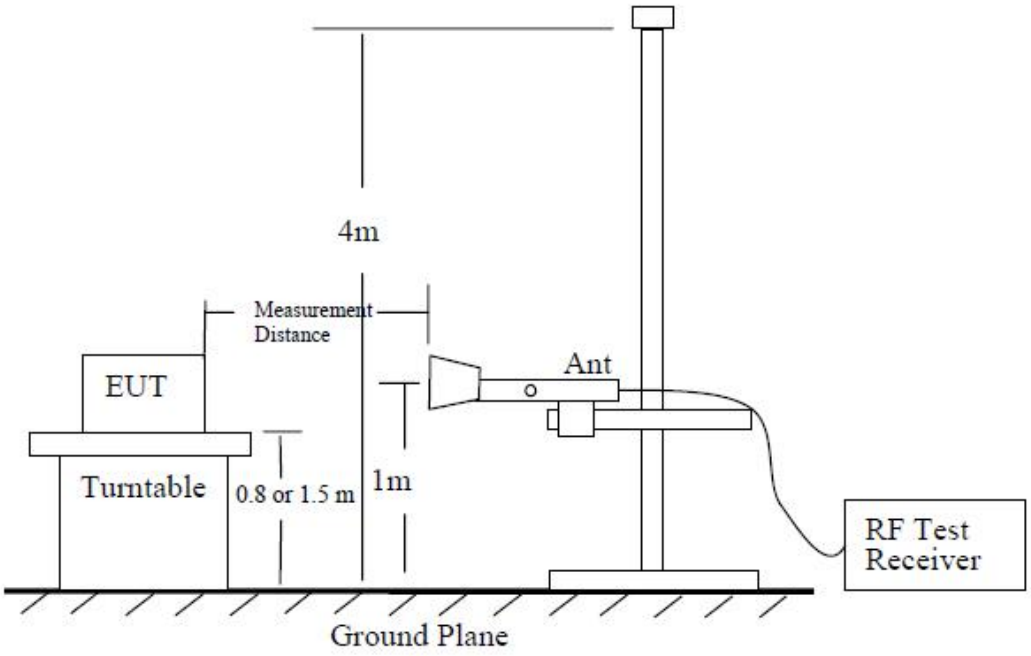
A.2 Emission Limit

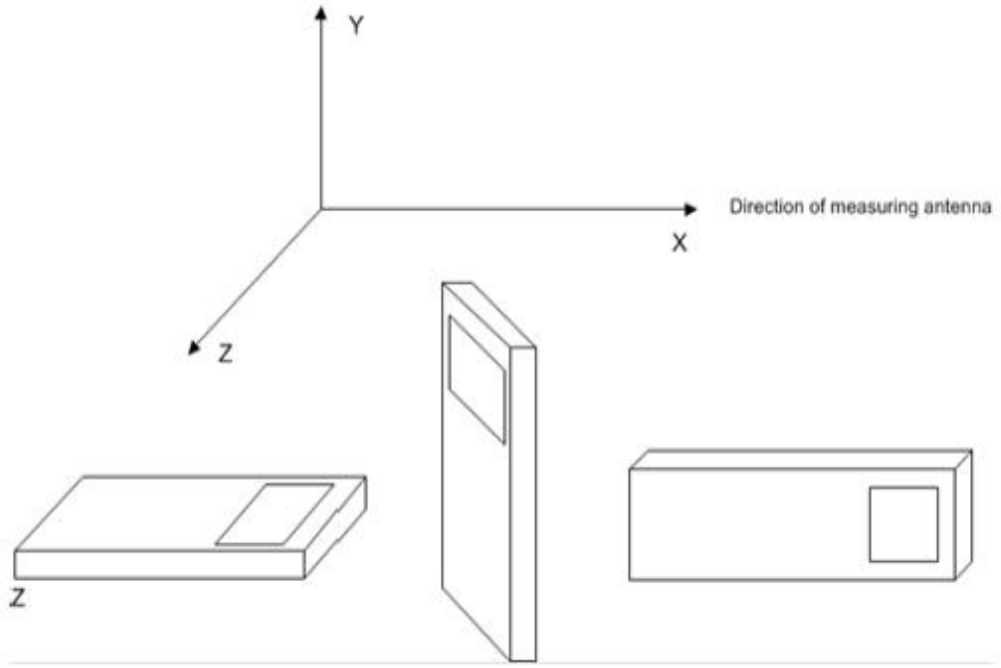
A.2.1 Measurement Method

The measurement procedures in ANSI C63.26 are used.
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 30.203.
When required for measurements of conducted and radiated emissions, the spectrum shall be investigated from the lowest RF signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below.
If the equipment transmits below 10 GHz, unwanted emissions measurements shall be performed up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
If the equipment transmits at or above 10 GHz and below 30 GHz, unwanted emissions measurements shall be performed up to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
If the equipment transmits at or above 30 GHz, the measurements shall be performed up to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower.
In this report, the spectrum of FR2 n260 was scanned from 30 MHz to 200GHz, the spectrum of FR2 n261 was scanned from 30 MHz to 110GHz.
The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of FR2 n260 and FR2 n261.
NASI C63.26 chapter 5.5.2.1: Such radiated measurements shall use substitution methods unless a test site validated to ANSI C63.4 requirements is utilized, in which case, radiated fundamental and/or unwanted emissions can be measured using the direct radiated field strength method.

The procedure of radiated spurious emissions is as follows:
Using the test configuration as follow, measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits.







The emission characteristics of the EUT can be identified from the pre-scan measurement information.

Exploratory radiated measurements (pre-scans) may be performed to determine the general EUT radiated emissions characteristics and, when necessary, the EUT-to-measurement antenna orientation that produces the maximum emission amplitude. Pre-scans shall only be used to determine the emission frequencies (i.e., not amplitude levels). The information garnered from a pre-scan can then be used to perform final compliance measurements using either the substitution or direct field strength method.

For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.

For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5 m above the ground plane.

When maximizing the emissions from the EUT for measurement, the EUT and its transmitting antenna(s) shall be rotated through 360°. For each mode of operation to be tested, the frequency spectrum (based on findings from exploratory measurements) shall be monitored.

Final measurements shall be performed for the worst case combination(s) of variable technical parameters that result in the maximum measured emission amplitude, record the frequency and amplitude of the highest fundamental emission (if applicable), and the frequency and amplitude data for the six highest-amplitude spurious emissions.

Test Setting:
Detector=RMS
Trace mode=trace average
Sweep time= auto couple
Number of sweep points ≥2*span/RBW
The trace was allowed to stabilize
RBW=1MHz, VBW=3MHz

The average EIRP reported below is canculated by:
30M-1GHz:
ERP(dBm)=Spectrum Analyzer Level(dBm)+Total loss(dB)-2.15
1GHz-18GHz：
EIRP(dBm)= Spectrum Analyzer Level(dBm)+Total loss(dB)
18GHz-60GHz:
EIRP(dBm)= Spectrum Analyzer Level(dBm)-Antenna Factor(dBi) + Cable Loss(dB) + 20log(F)+20log(D)-27.56
60GHz-110GHz:
EIRP(dBm)= Spectrum Analyzer Level(dBm)-Antenna Factor(dBi) + converter Loss(dB) + 20log(F)+20log(D)-27.56
Where: F:frequency (MHz), D:Distance(m)

Frequency Range	Distance(m)	Frequency Range	Distance(m)
30MHz-1GHz	3	60GHz-75GHz	3
1GHz-18GHz	3	75GHz-110GHz	3
18GHz-40GHz	3	110GHz-170GHz	1
40GHz-60GHz	3	170GHz-200GHz	0.5

A.2.2 Measurement Limit

Part 30.203 specify that the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive power or the total radiated power of any emission shall be −5 dBm/MHz or lower.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the FR2 n260 and n261. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the FR2 n260 and n261 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operatin.In this report, the spectrum of FR2 n260 was scanned from 30 MHz to 200GHz, the spectrum of FR2 n261 was scanned from 30 MHz to 110GHz.

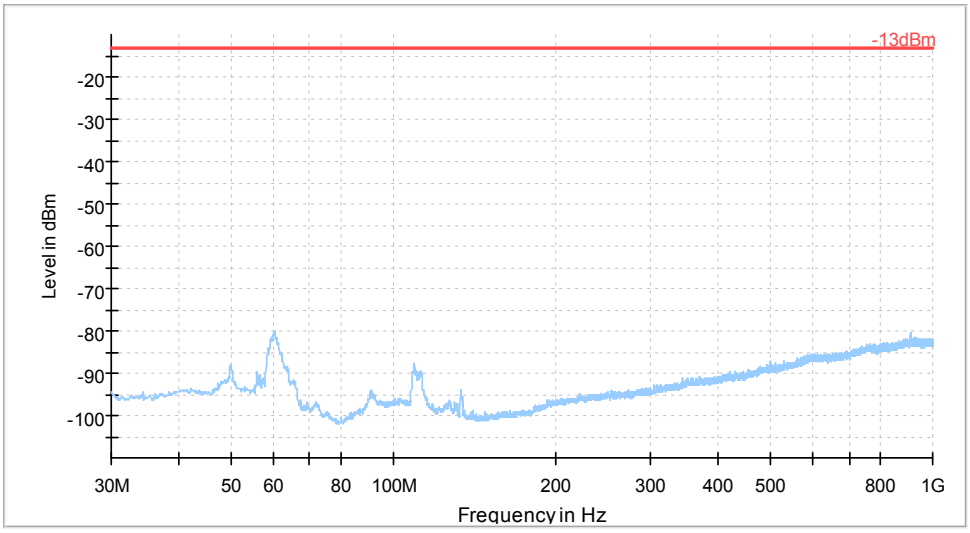
A.2.4 Measurement Results Table (worse case of the power measured)

Band	Antenna	Modulation	Band-width	Channel	Frequency Range	Result
n260	Module 1 2*2 BeamID 31+159	CP QPSK Full RB	100MHz + 100MHz	Low	30MHz-200GHz	Pass
				Middle		Pass
				High		Pass
n261	Module 1 Chain 0 Beam ID 18	DFT Pi/2 BPSK Full RB	100MHz + 100MHz	Low	30MHz-100GHz	Pass
				Middle		Pass
				High		Pass

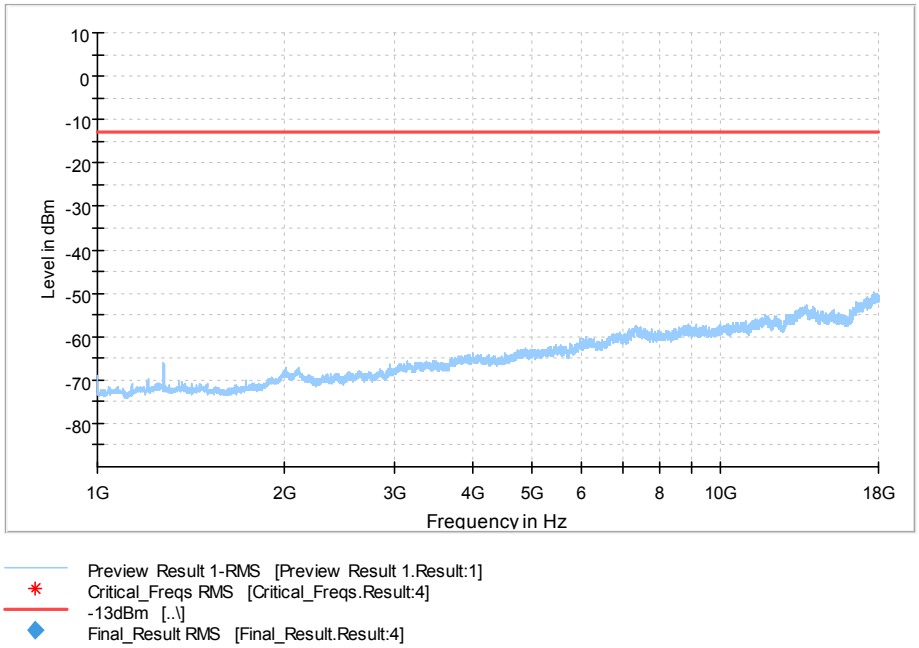
Test Reports

l Section 8, page 11 of test report, it seems it is missing the antenna information for above 110GHz. Please kindly confirm.

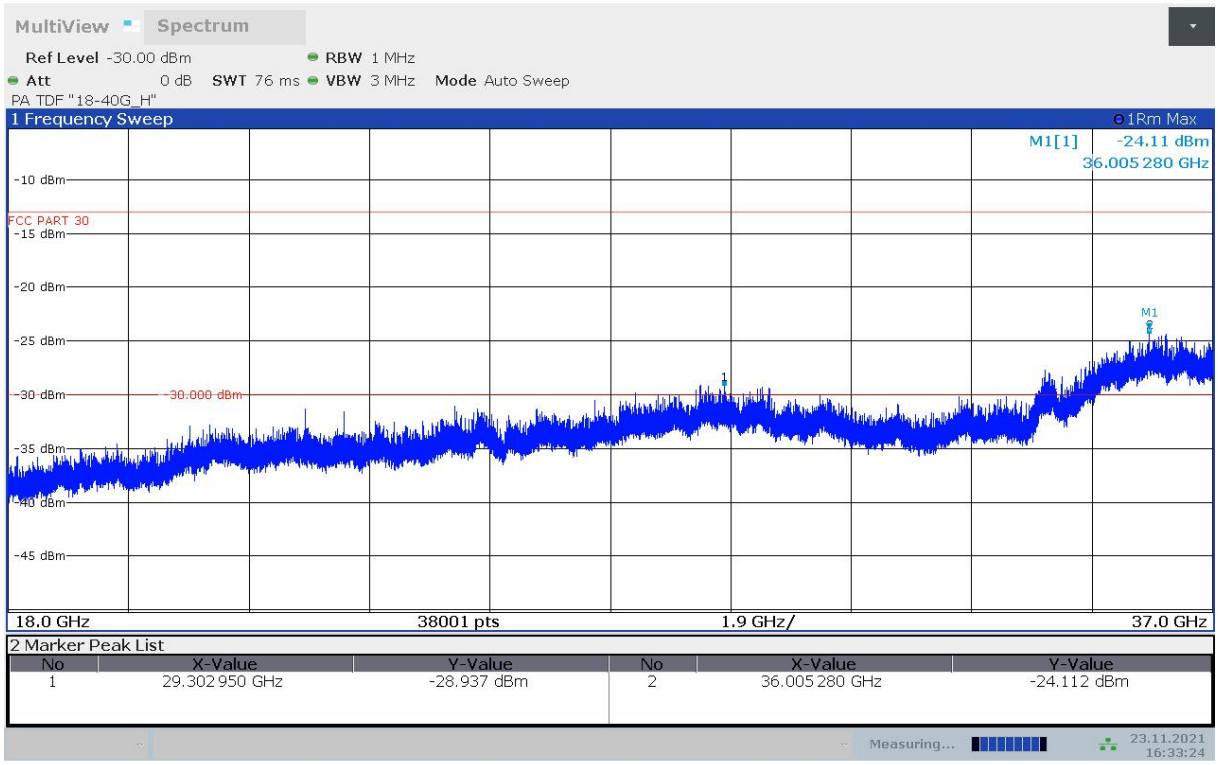
l I only found the spurious emission test data for above 110GHz of n260, how about n261? Sorry if I missed it.



n260, 30MHz-1GHz, Middle Channel, Horizontal/Vertical

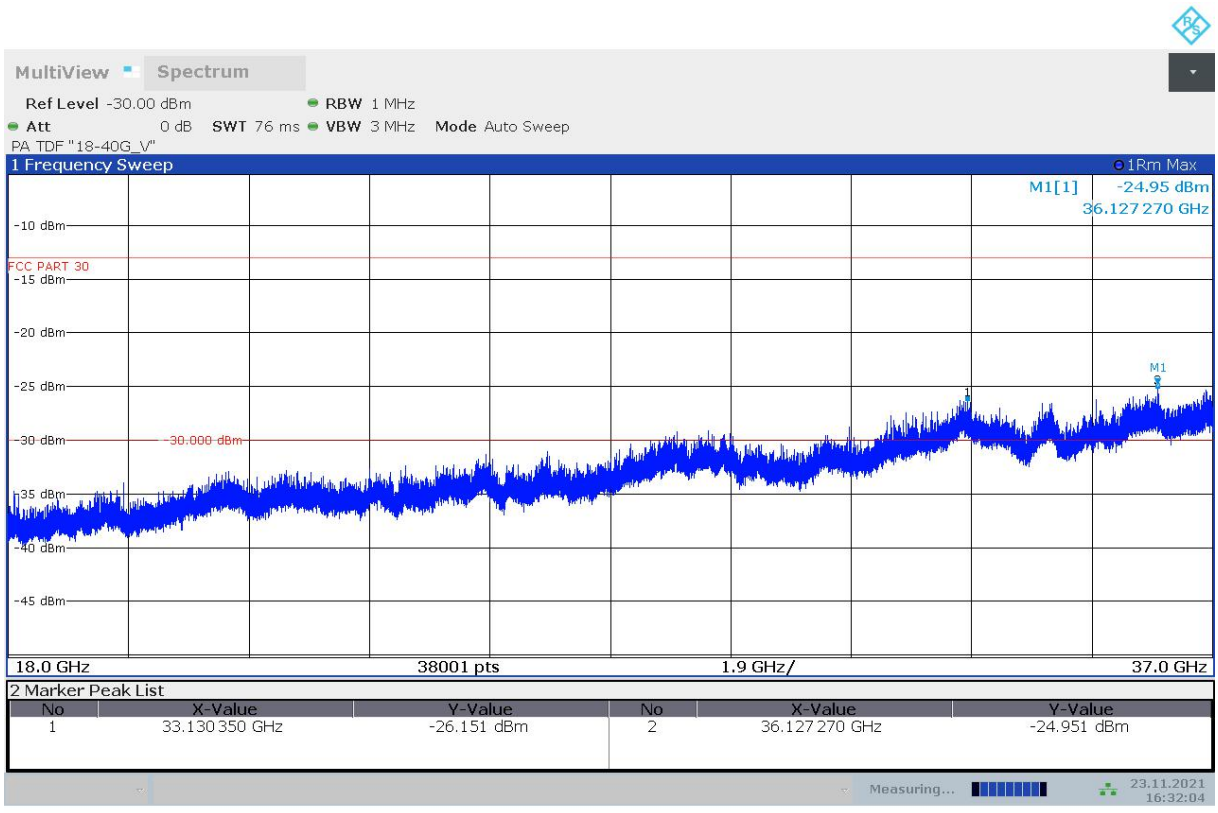


n260, 1GHz-18GHz, Middle Channel, Horizontal/Vertical



16:33:24 23.11.2021

n260, Low Channel, 18GHz-37GHz, Horizontal



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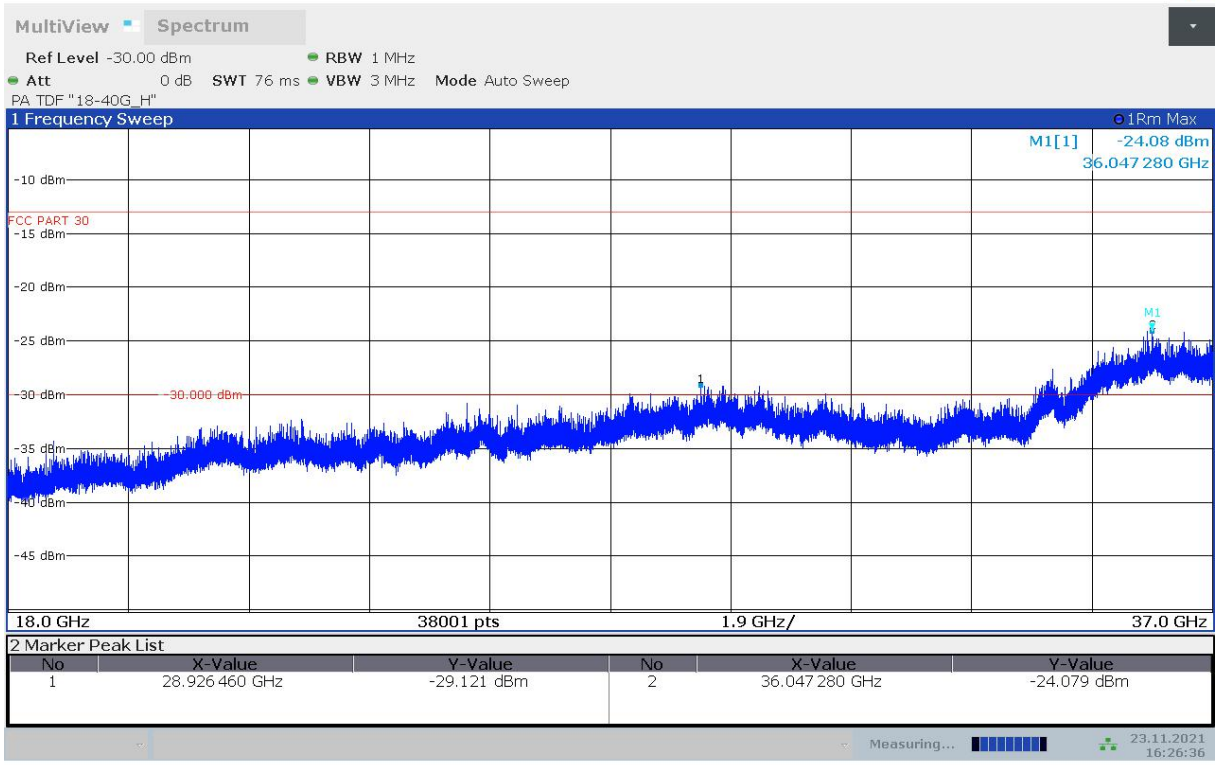
n260, Low Channel, 18GHz-37GHz, Vertical



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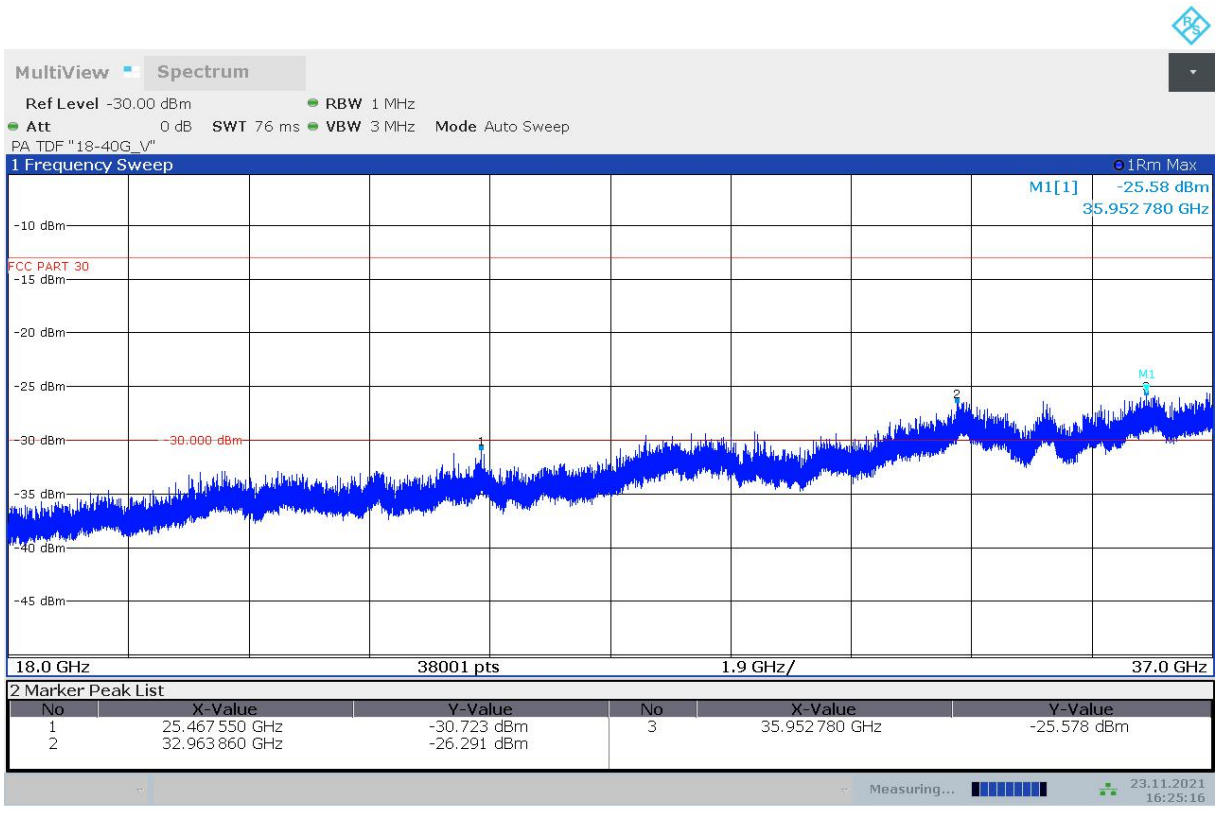
n260, Middle Channel, 18GHz-37GHz, Horizontal



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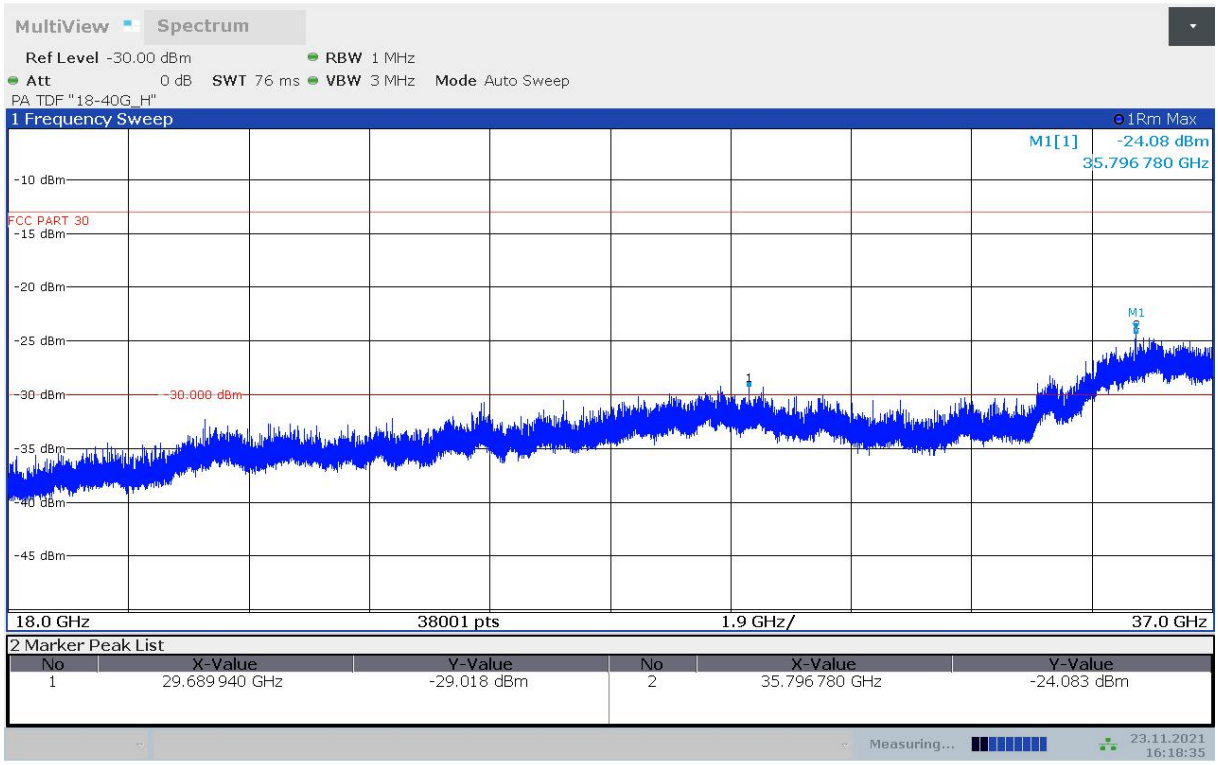
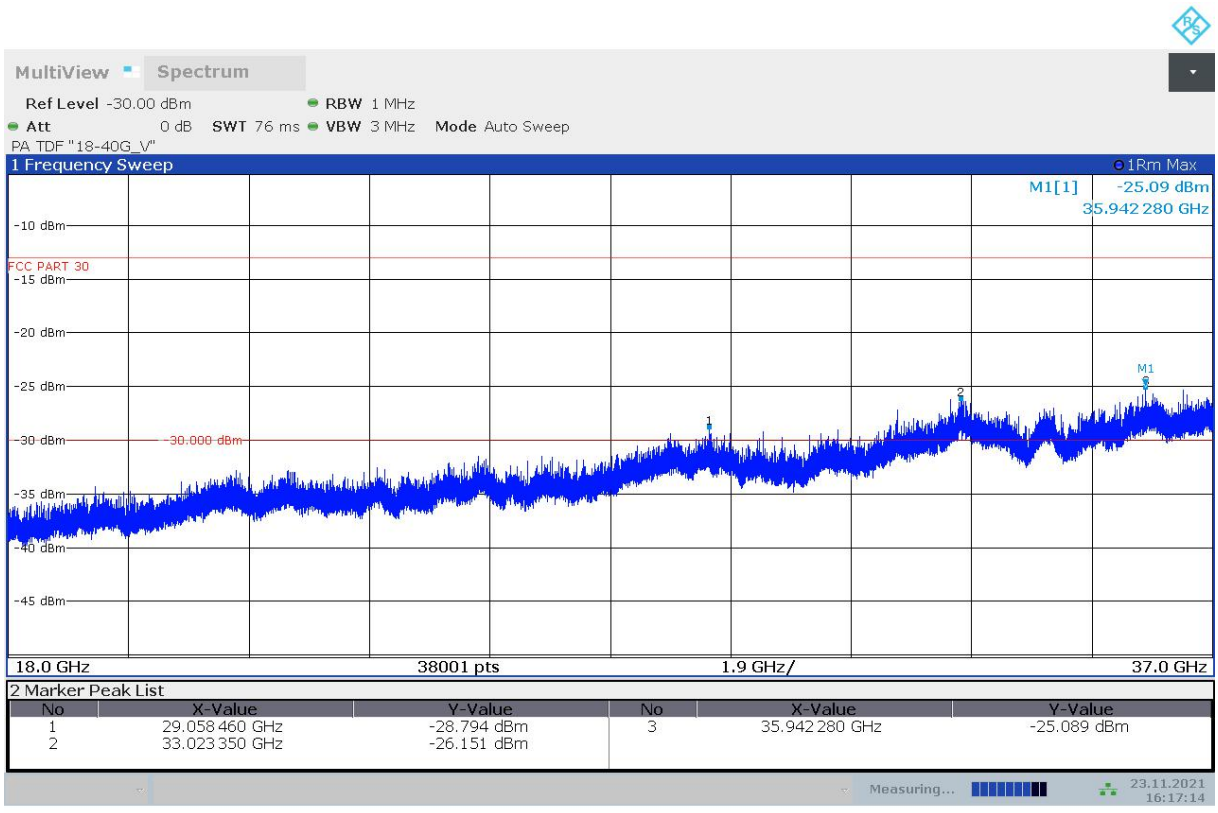
n260, Middle Channel, 18GHz-37GHz, Vertical



16:18:36 23.11.2021

n260, High Channel, 18GHz-37GHz, Horizontal



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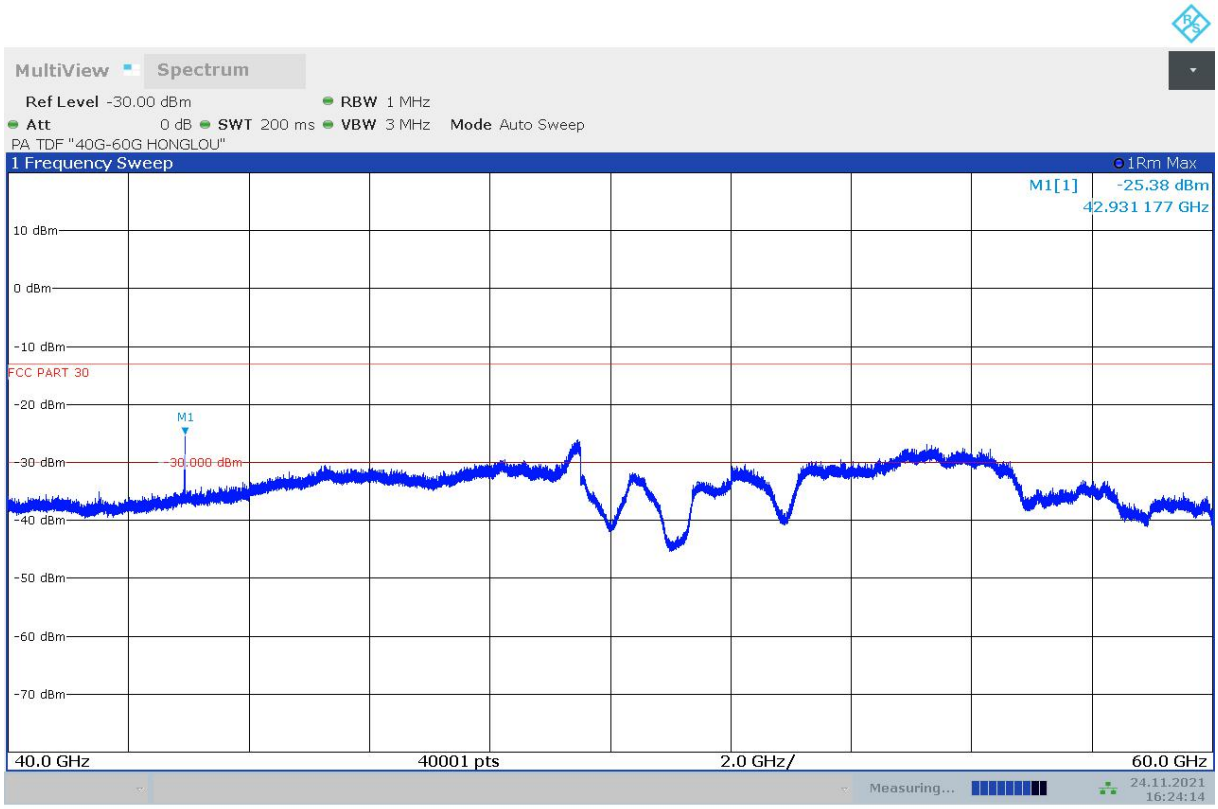
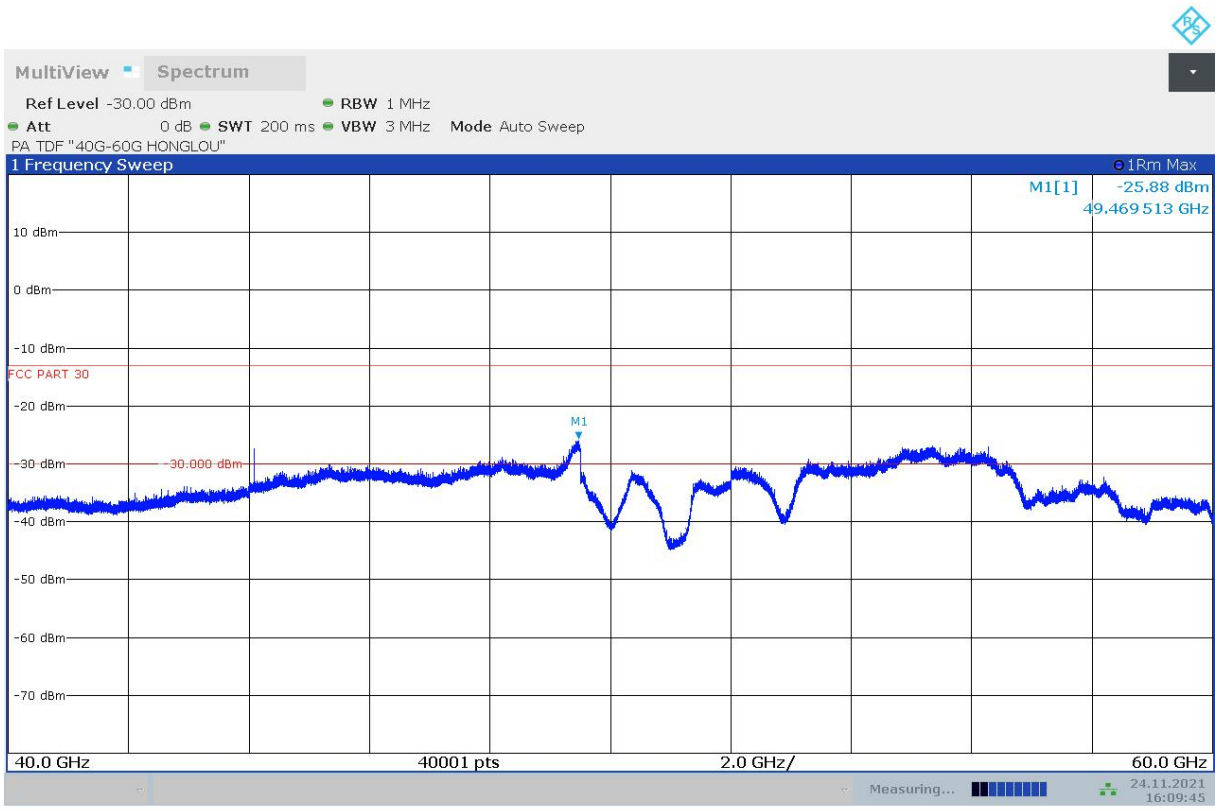
n260, High Channel, 18GHz-37GHz, Vertical



16:24:14 24.11.2021

n260, Low Channel, 40GHz-60GHz, , Horizontal/Vertical



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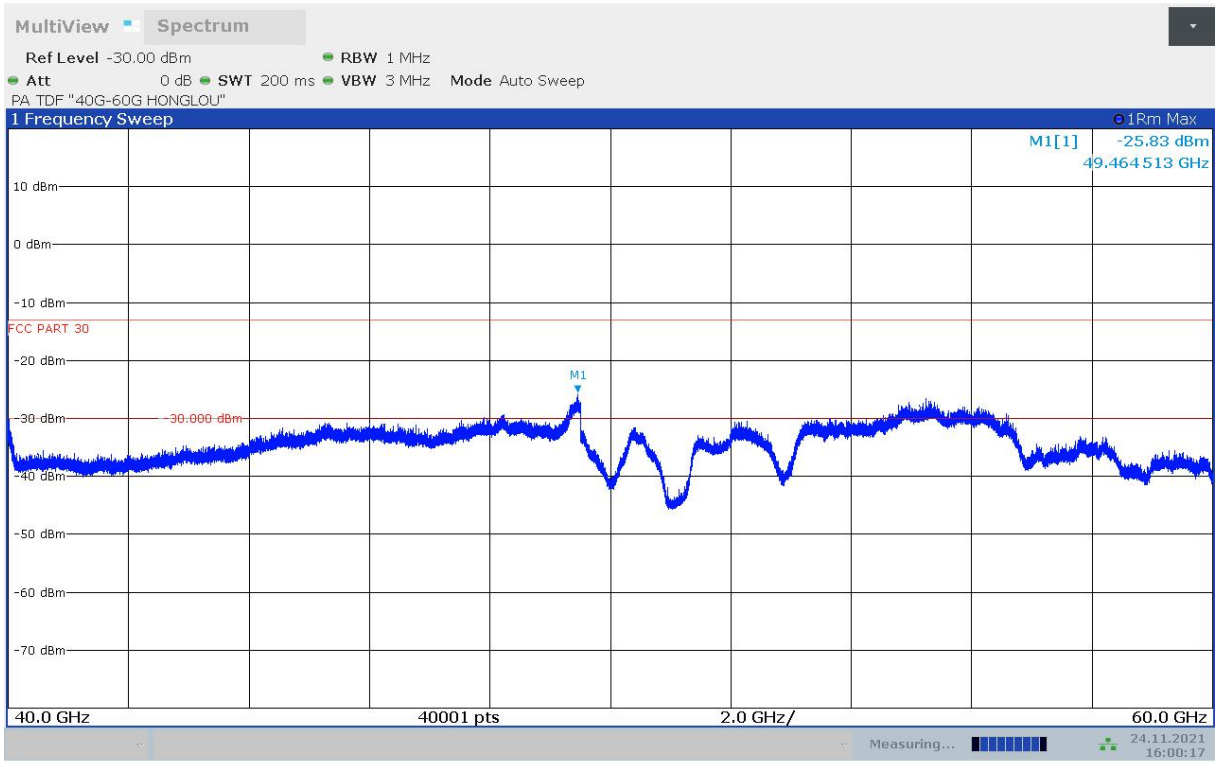
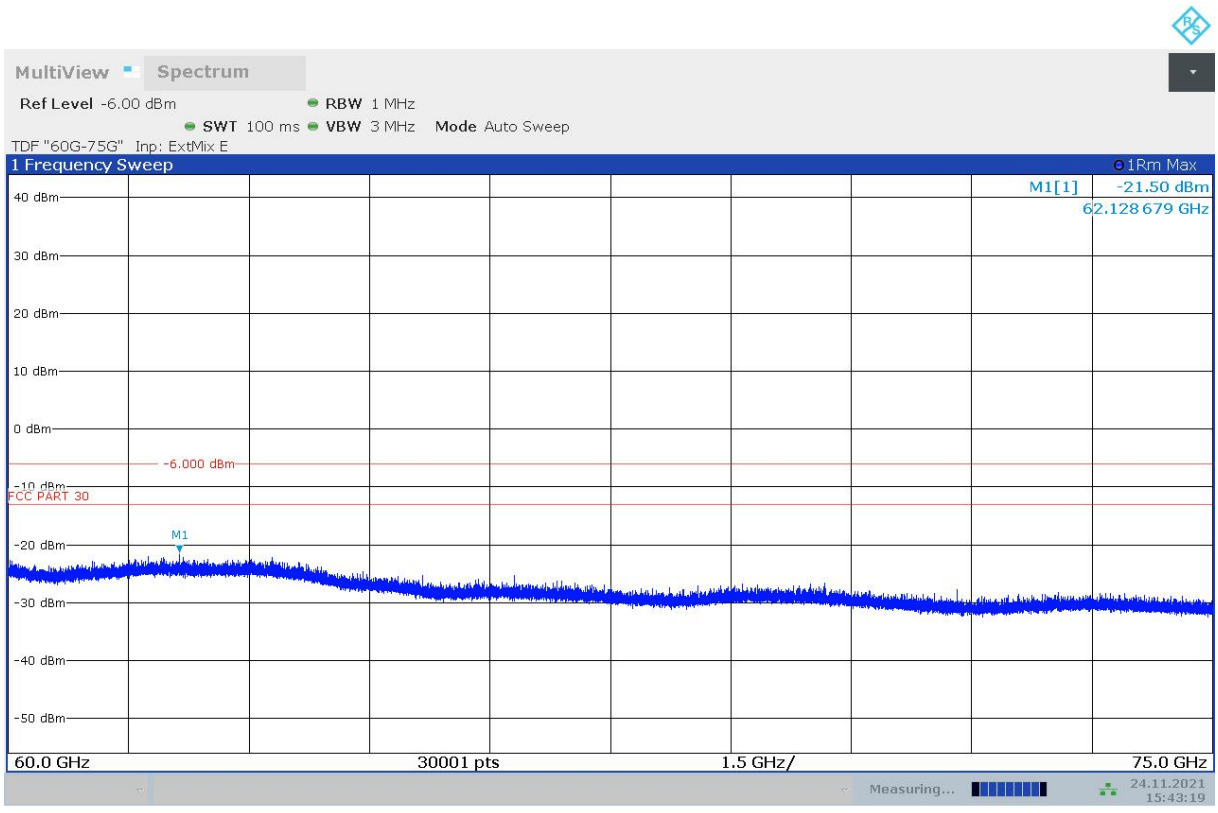
n260, Middle Channel, 40GHz-60GHz, , Horizontal/Vertical



16:00:18 24.11.2021

n260, High Channel, 40GHz-60GHz, , Horizontal/Vertical



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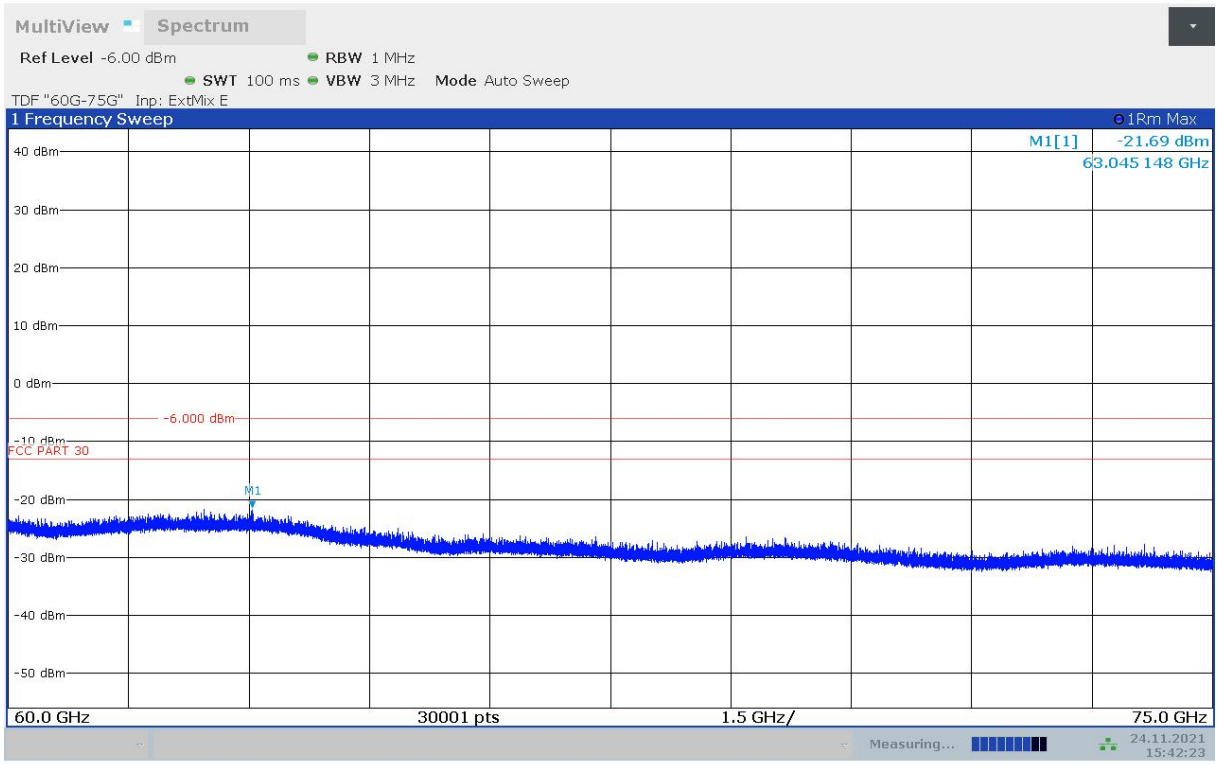
n260, Low Channel, 60GHz-75GHz, Horizontal



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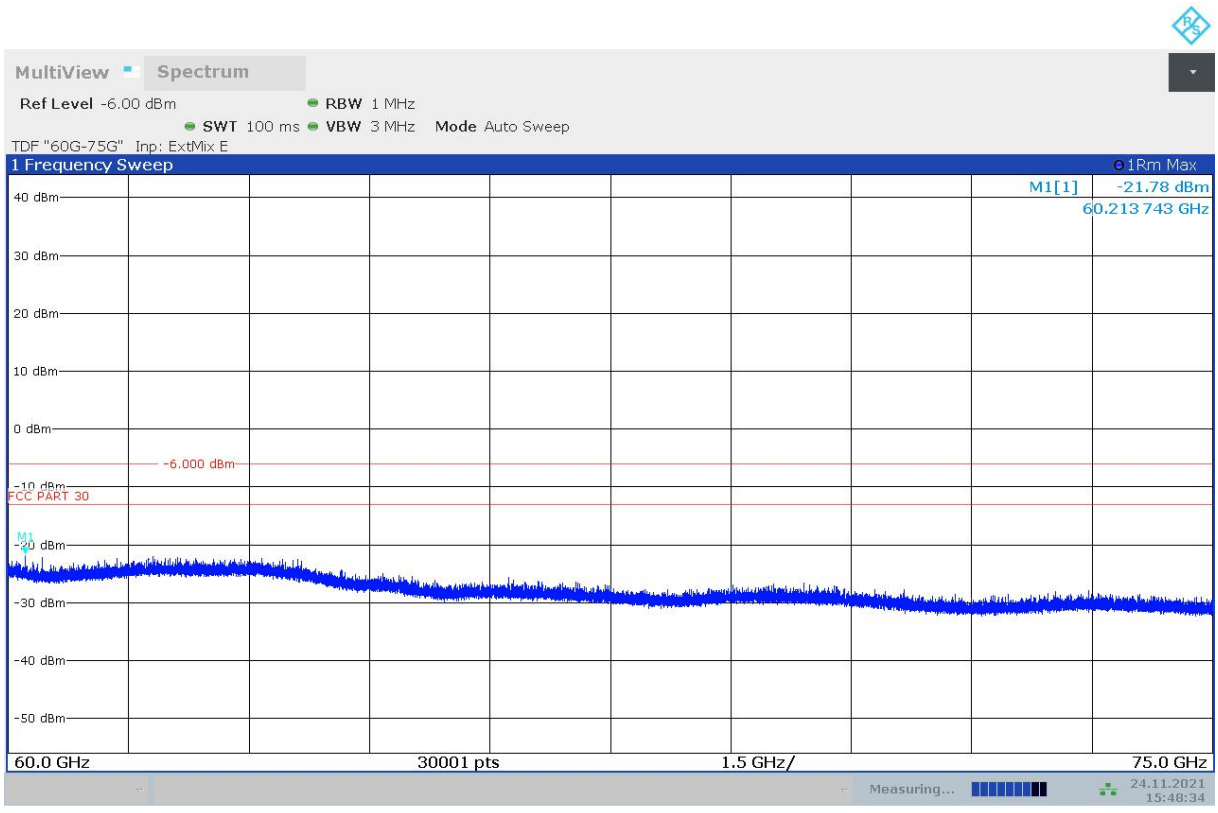
n260, Low Channel, 60GHz-75GHz, Vertical



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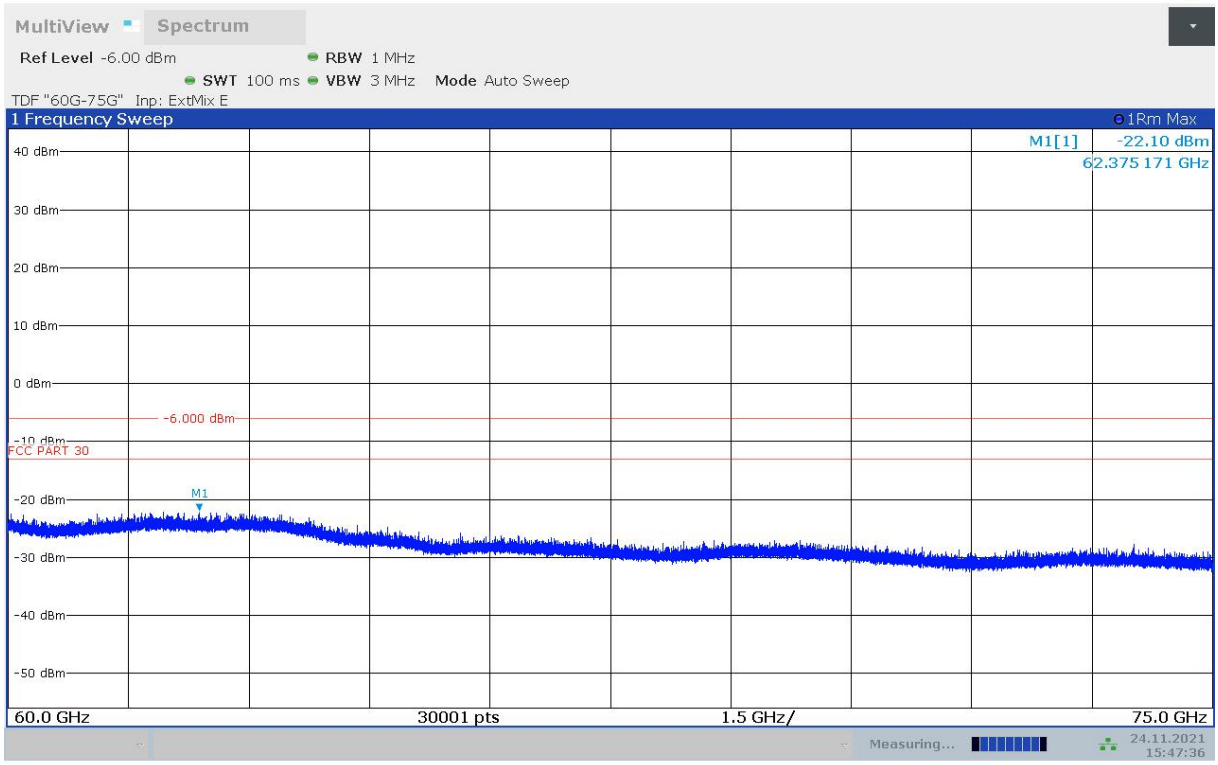
n260, Middle Channel, 60GHz-75GHz, Horizontal



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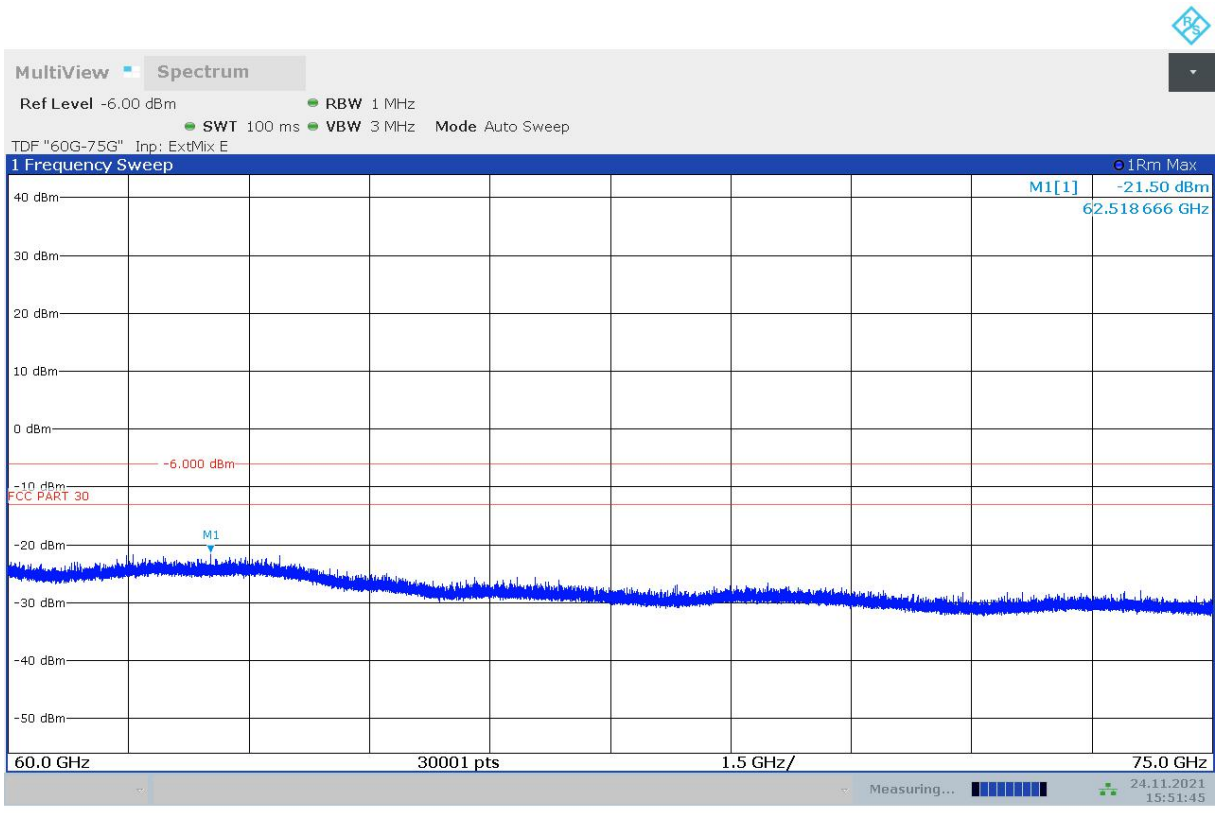
n260, Middle Channel, 60GHz-75GHz, Vertical



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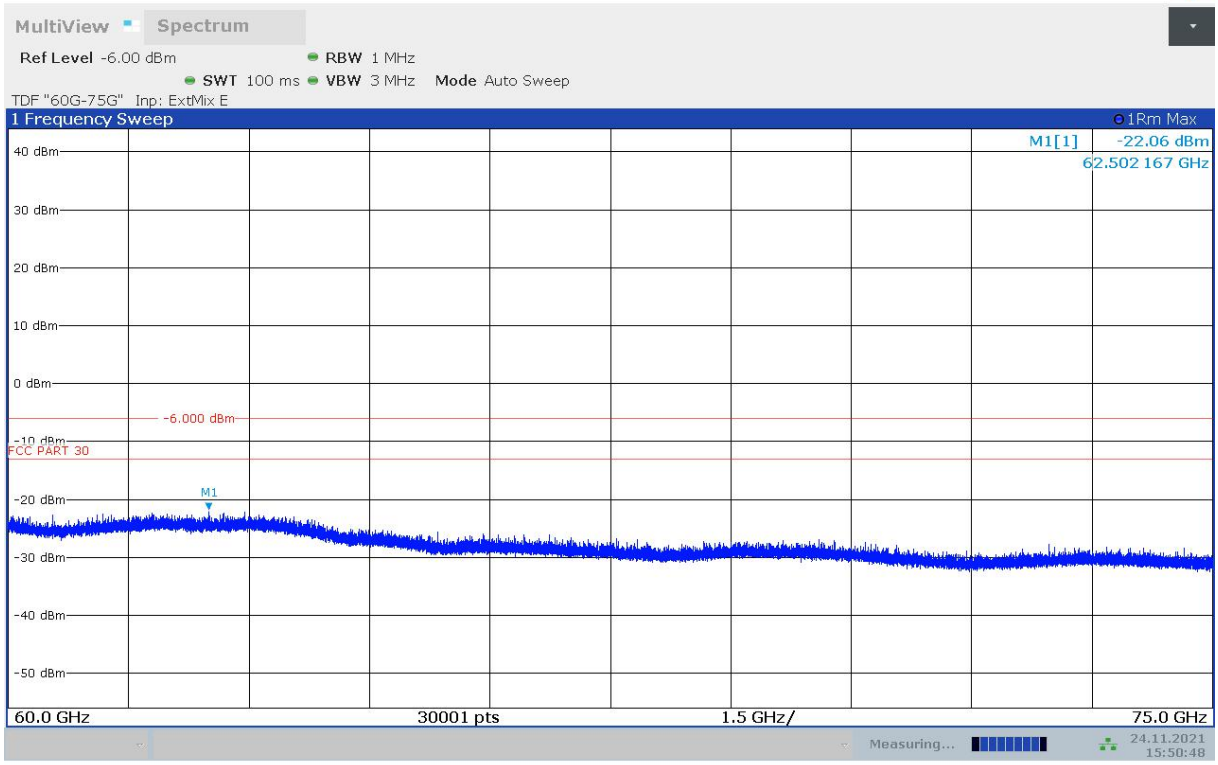
n260, High Channel, 60GHz-75GHz, Horizontal



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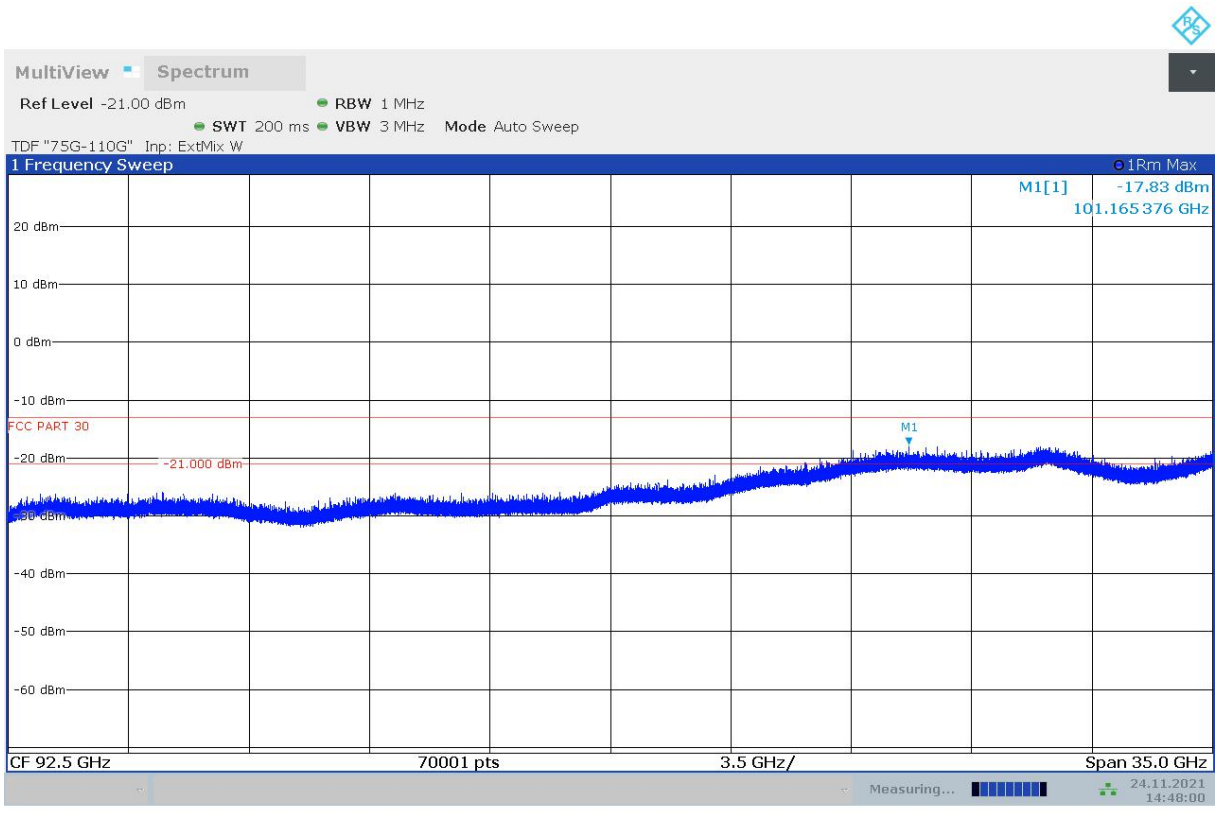
n260, High Channel, 60GHz-75GHz, Vertical



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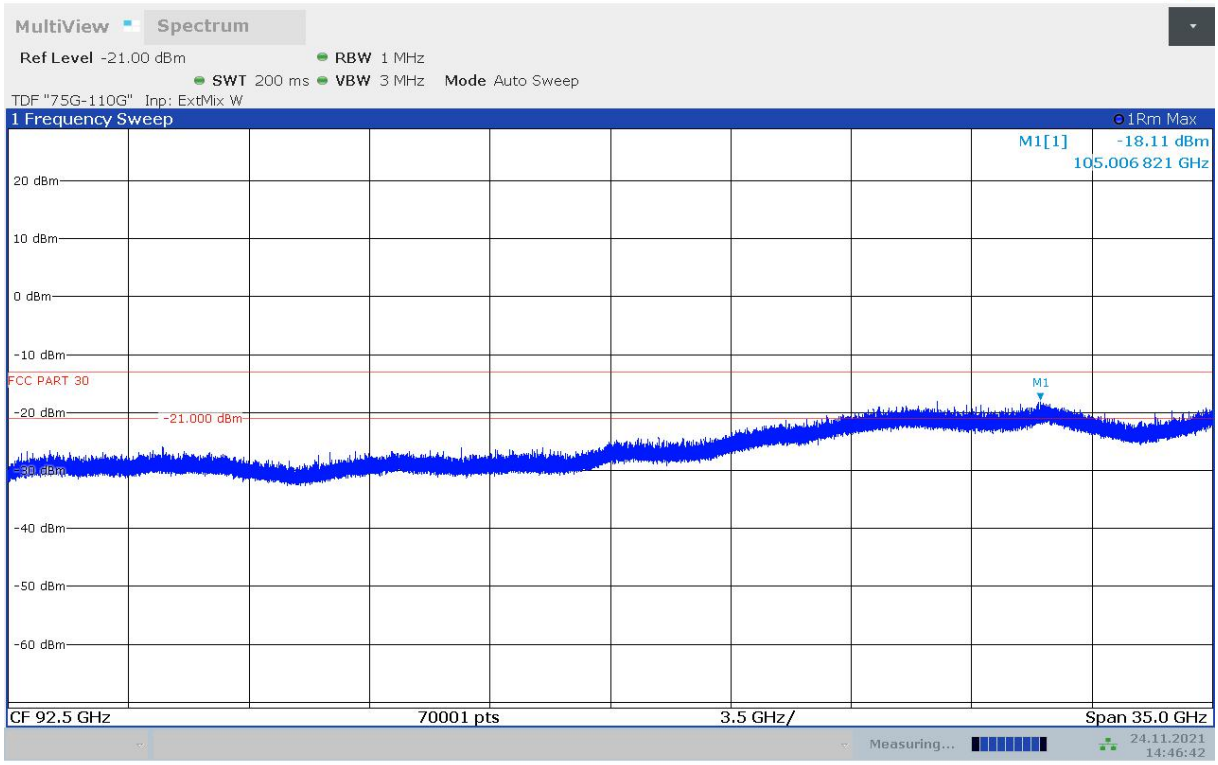
n260, Middle Channel, 75GHz-110GHz, Horizontal



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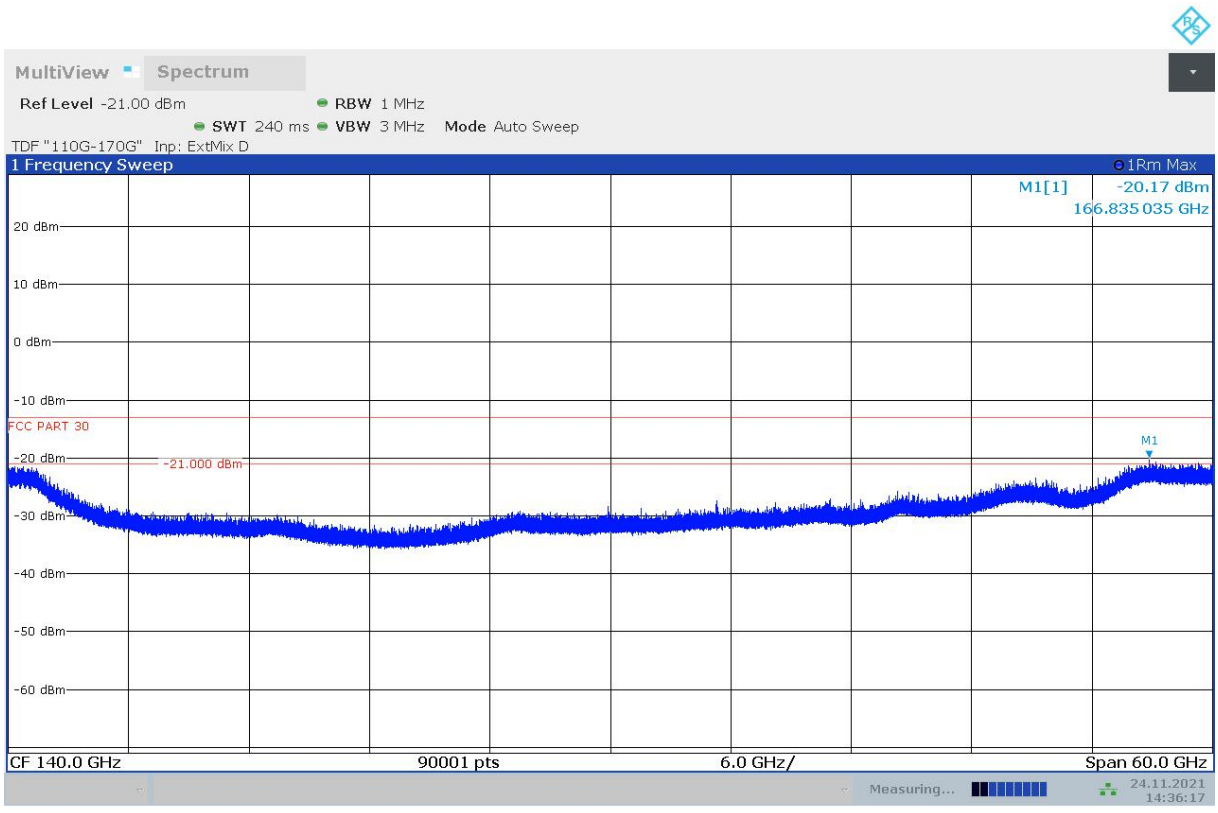
n260, Middle Channel, 75GHz-110GHz, Vertical



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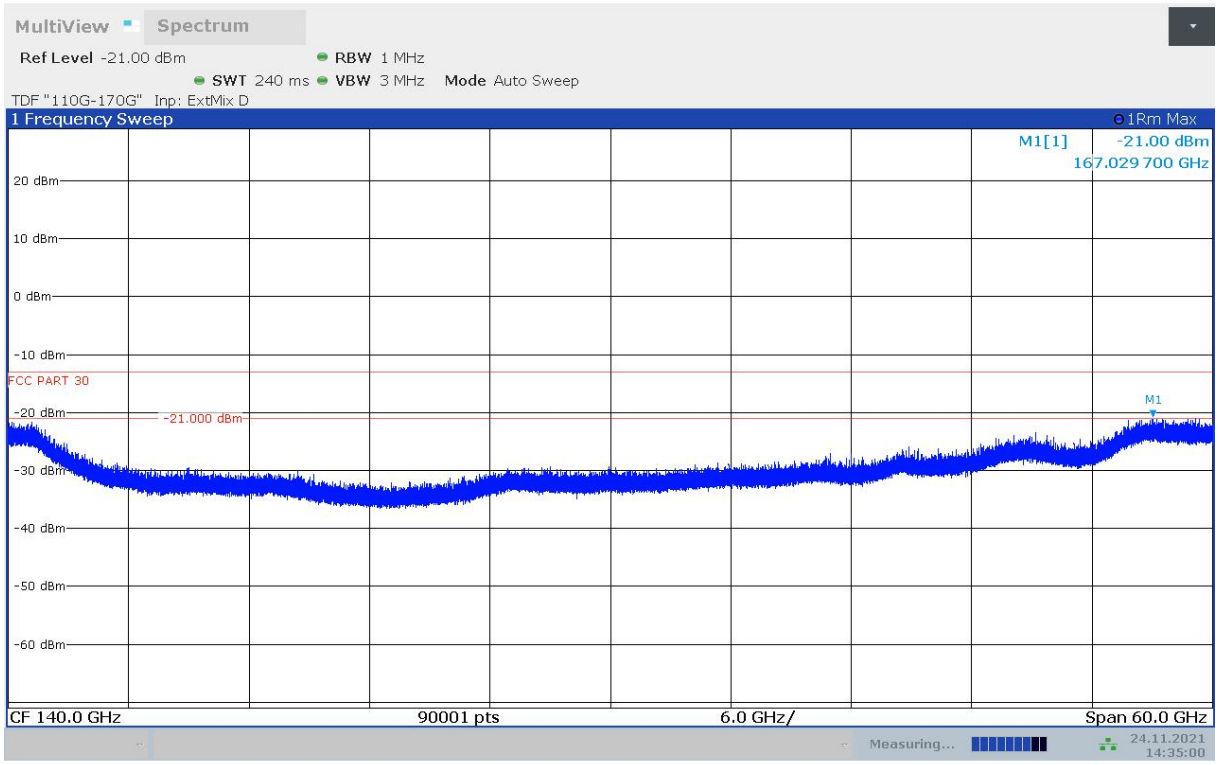
n260, Middle Channel,110GHz-170GHz, Horizontal



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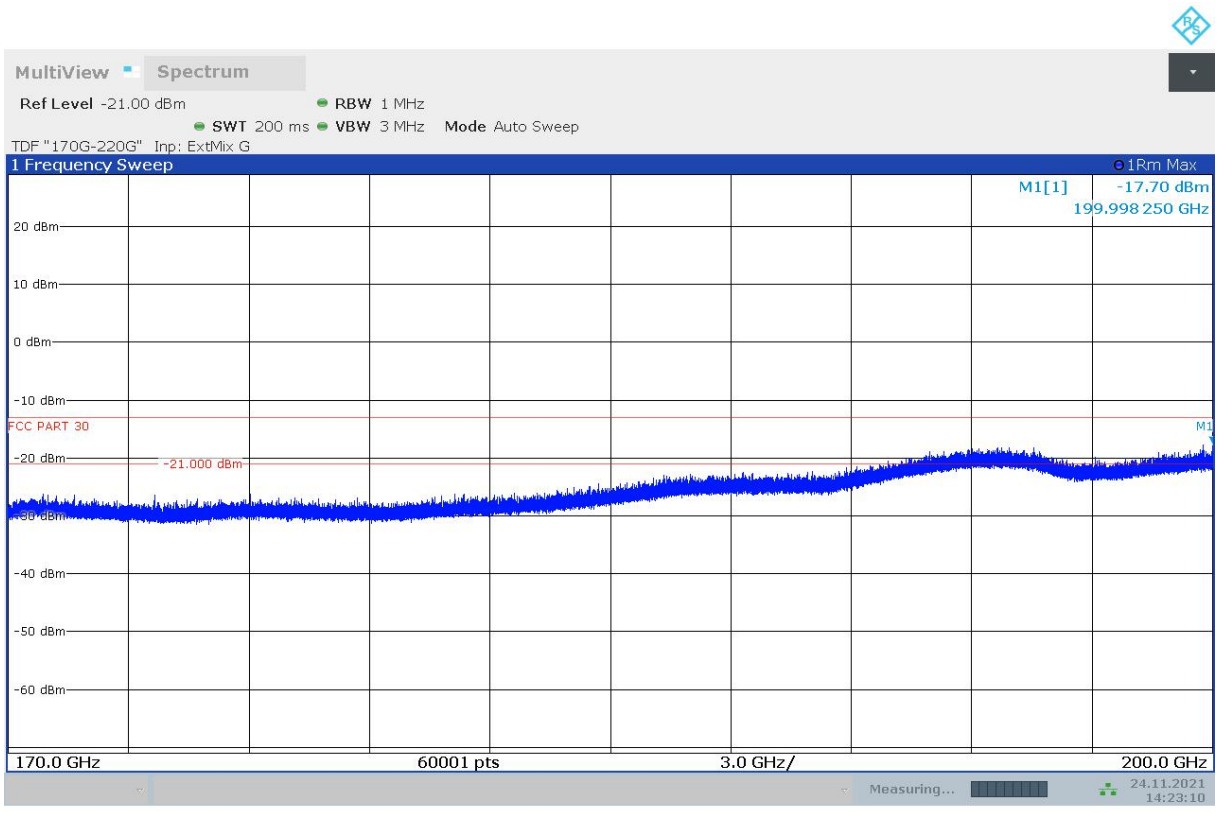
n260, Middle Channel, 110GHz-170GHz, Vertical



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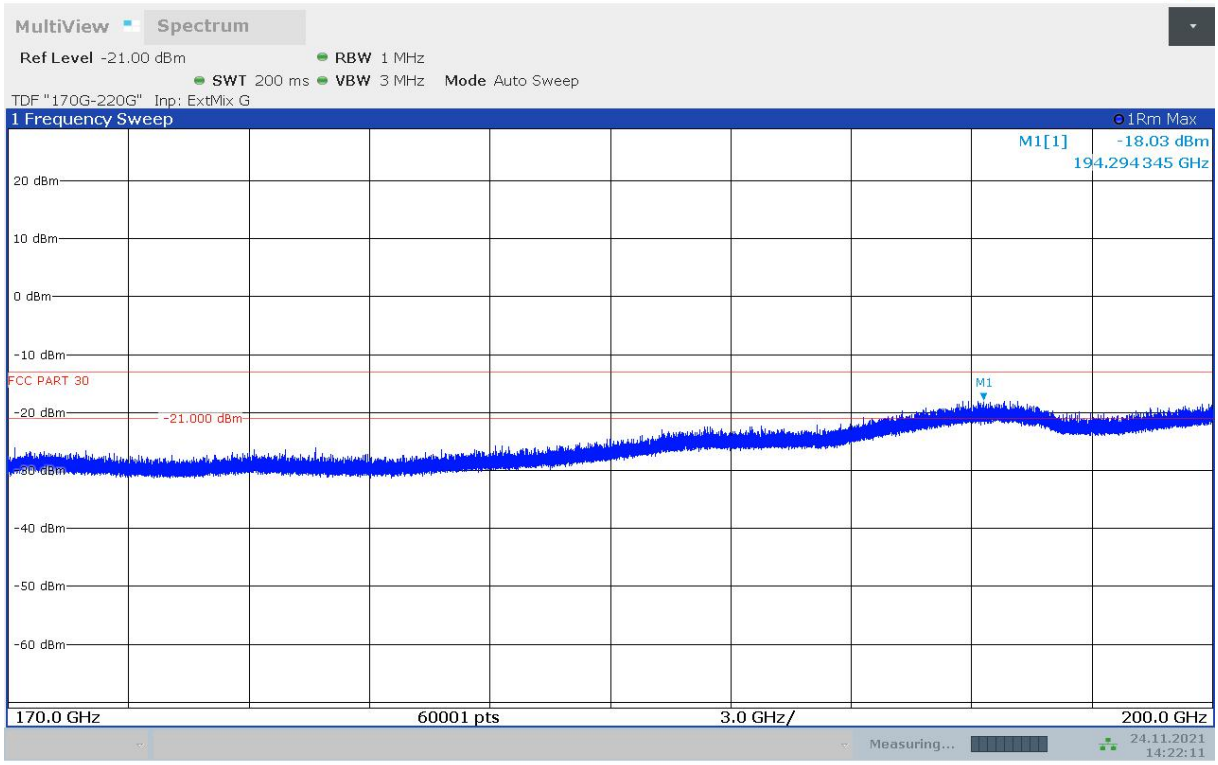
n260, Middle Channel, 170GHz-200GHz, Horizontal



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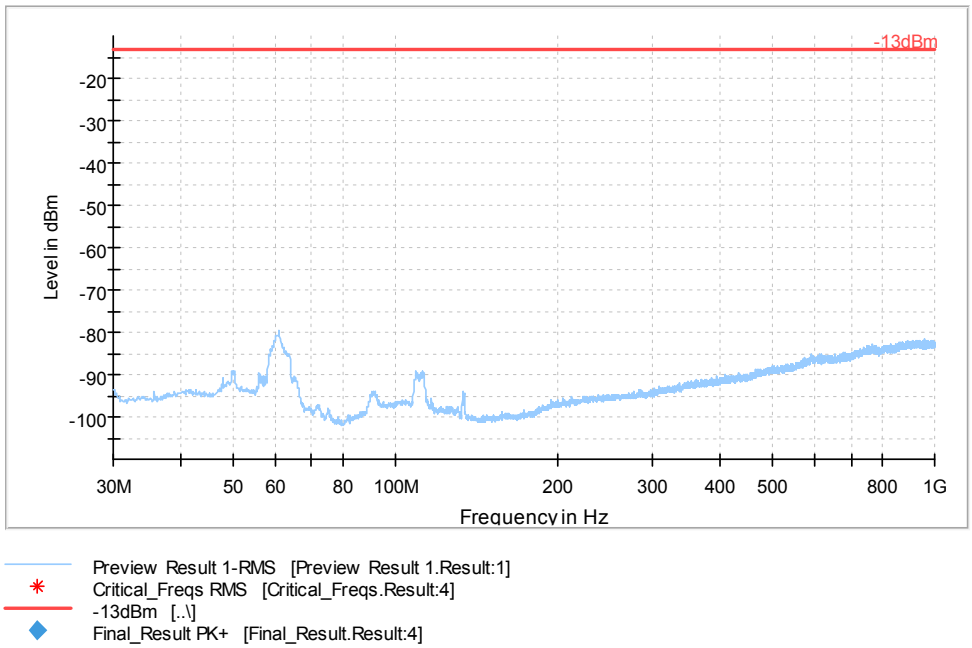
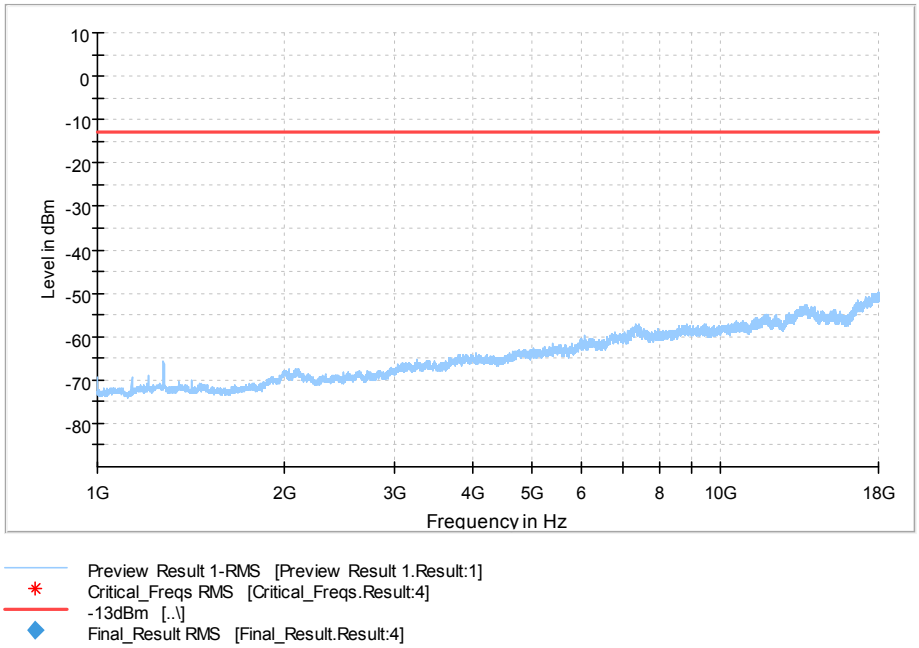
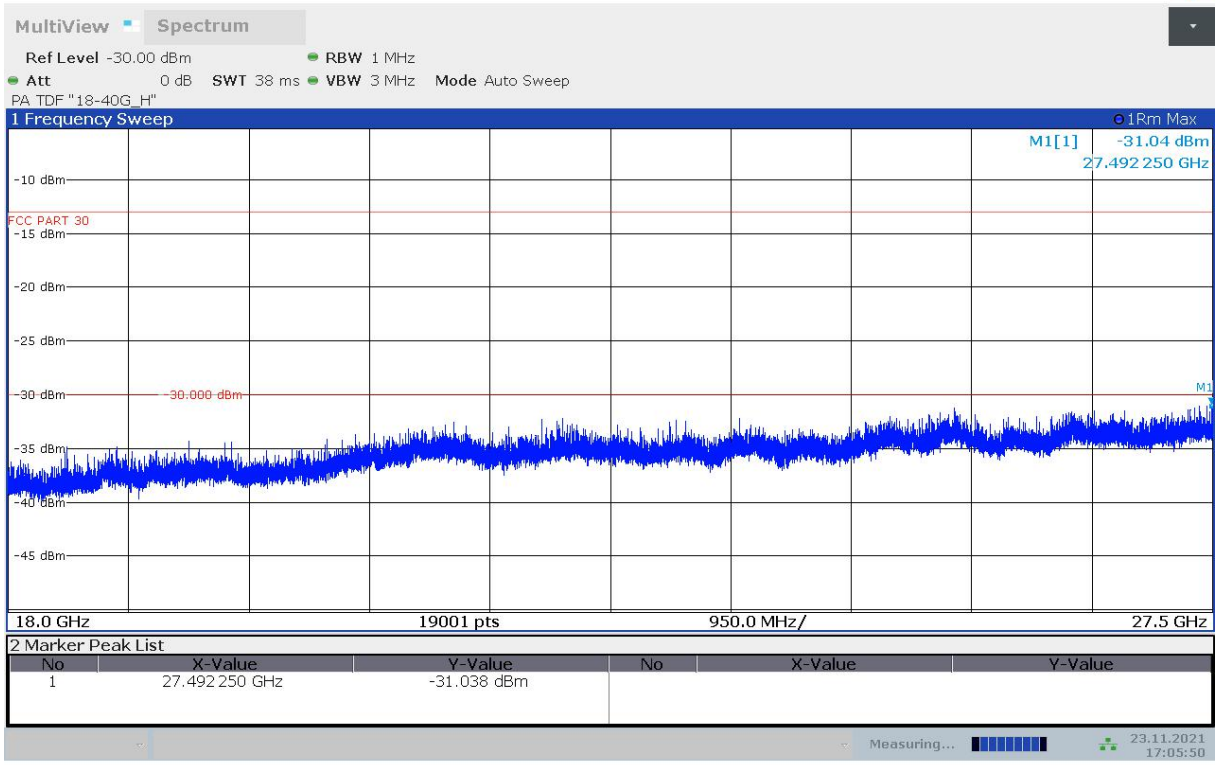
n260, Middle Channel, 170GHz-200GHz, Vertical



n261, 30MHz-1GHz, Middle Channel, , Horizontal/Vertical



n261, 1GHz-18GHz, Middle Channel, , Horizontal/Vertical



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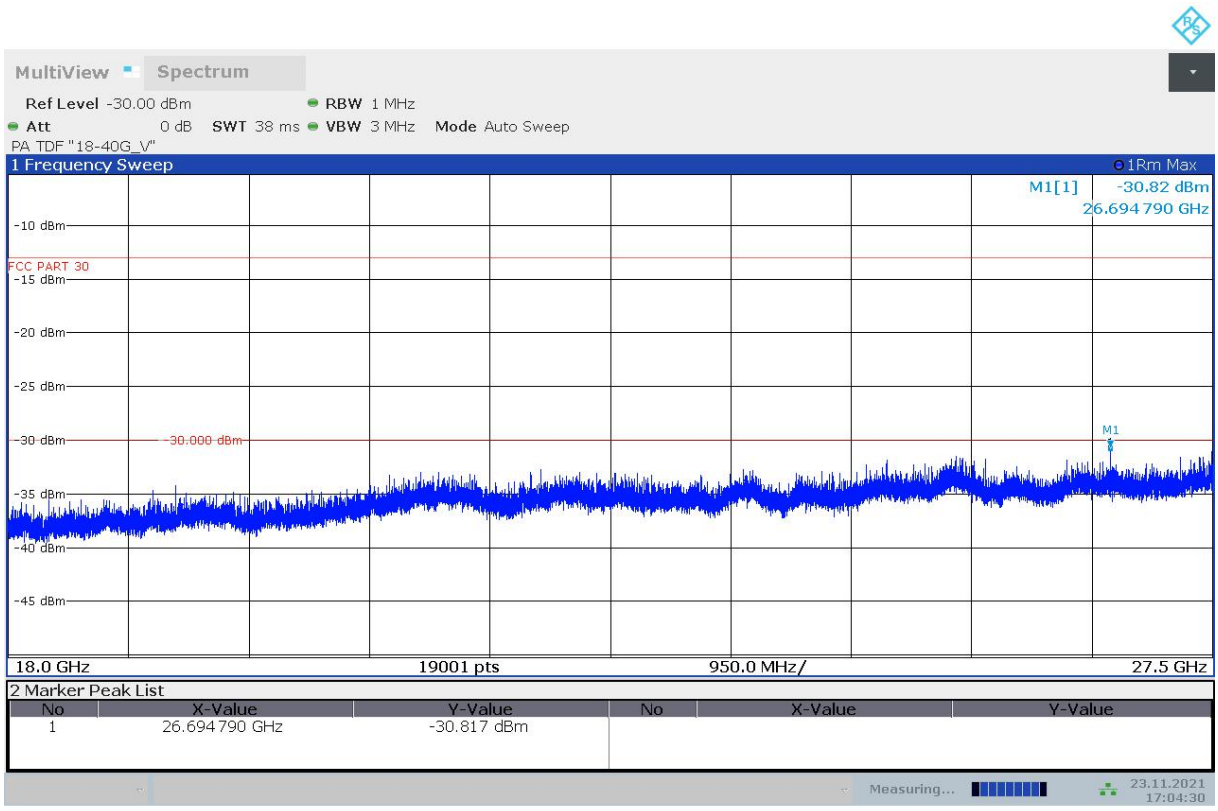
n261, Low Channel, 18GHz-27.5GHz, Horizontal



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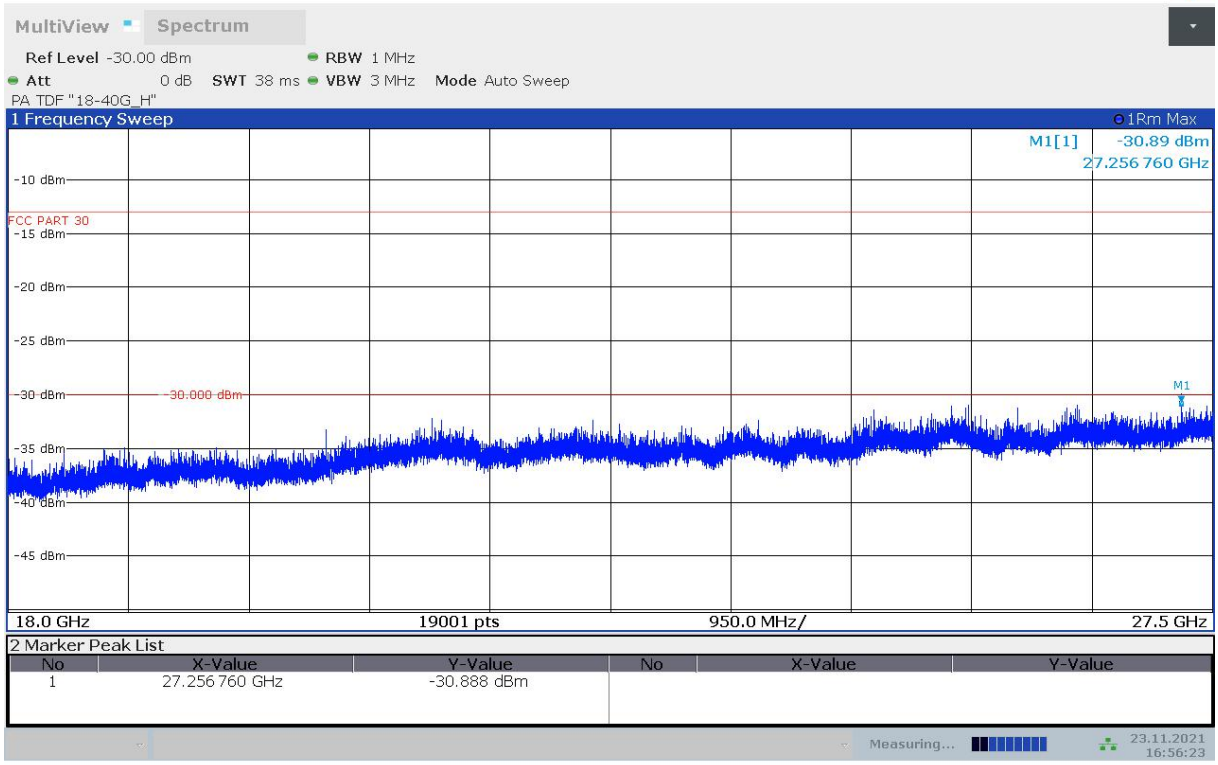
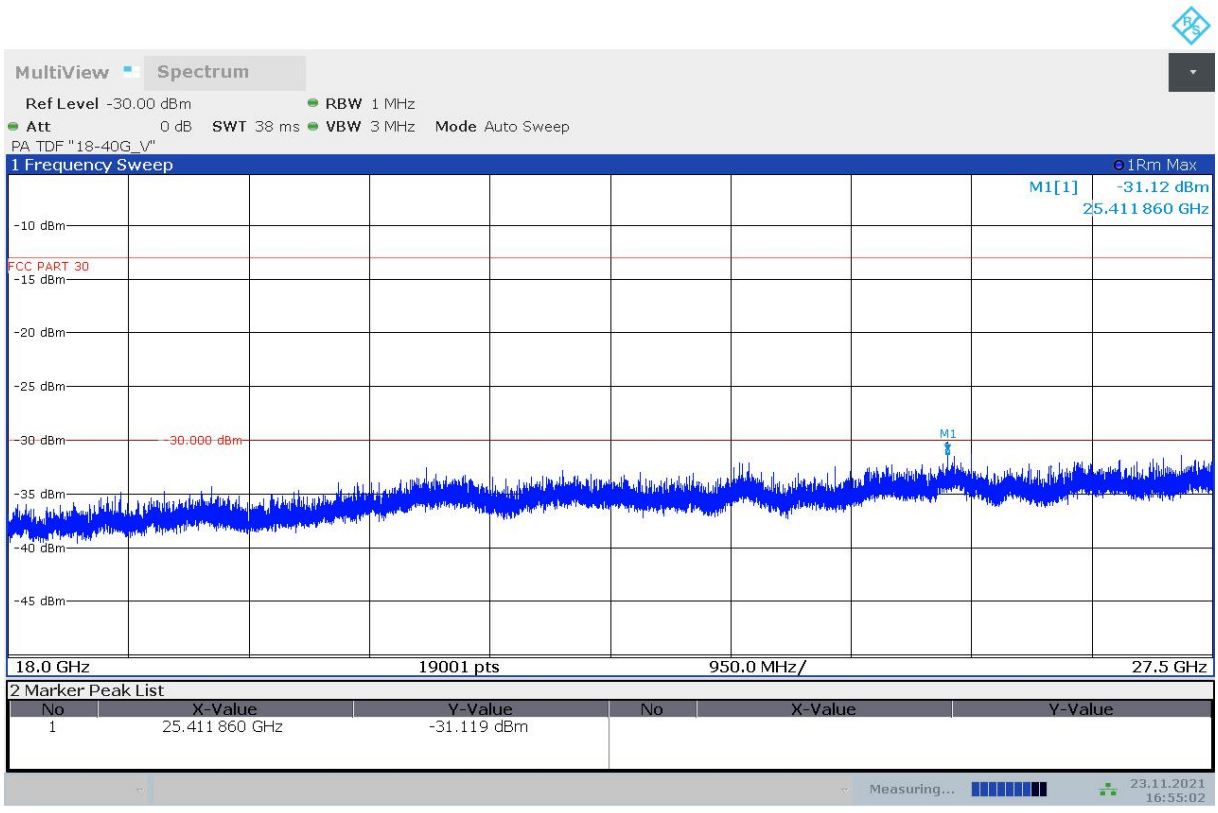
n261, Low Channel, 18GHz-27.5GHz, Vertical



16:56:23 23.11.2021

n261, Middle Channel, 18GHz-27.5GHz, Horizontal



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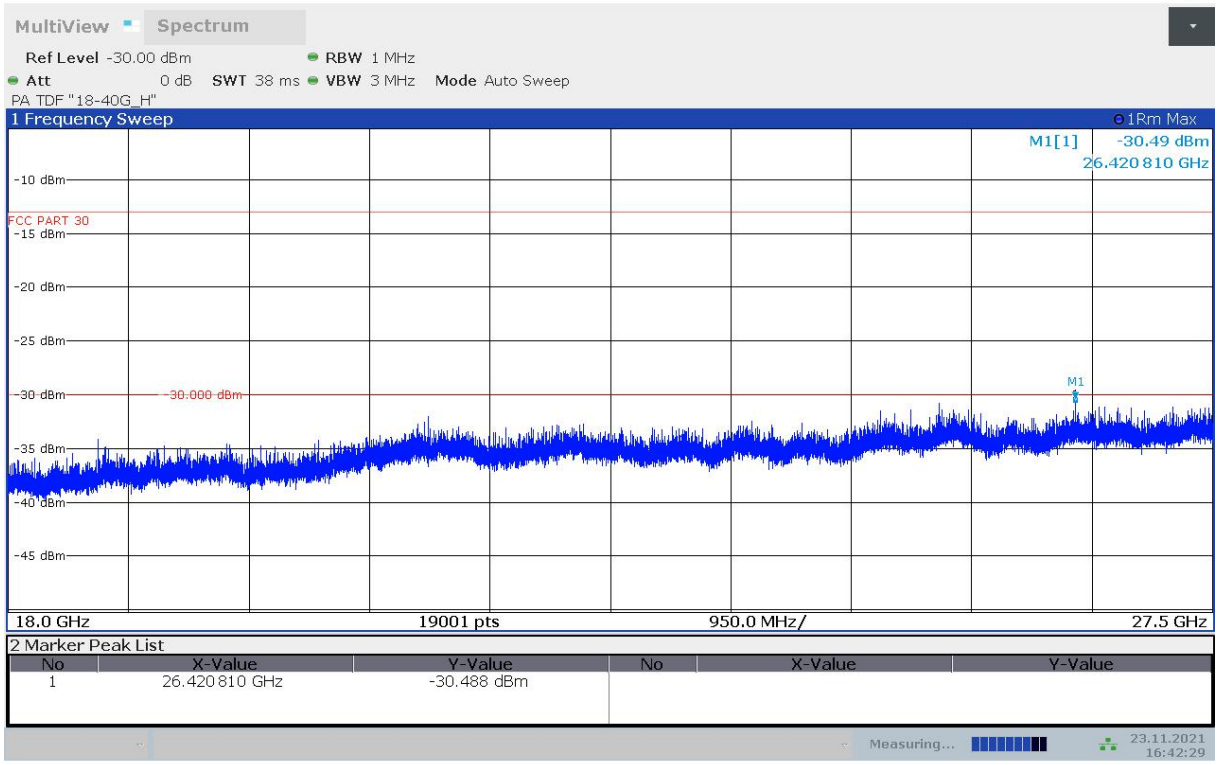
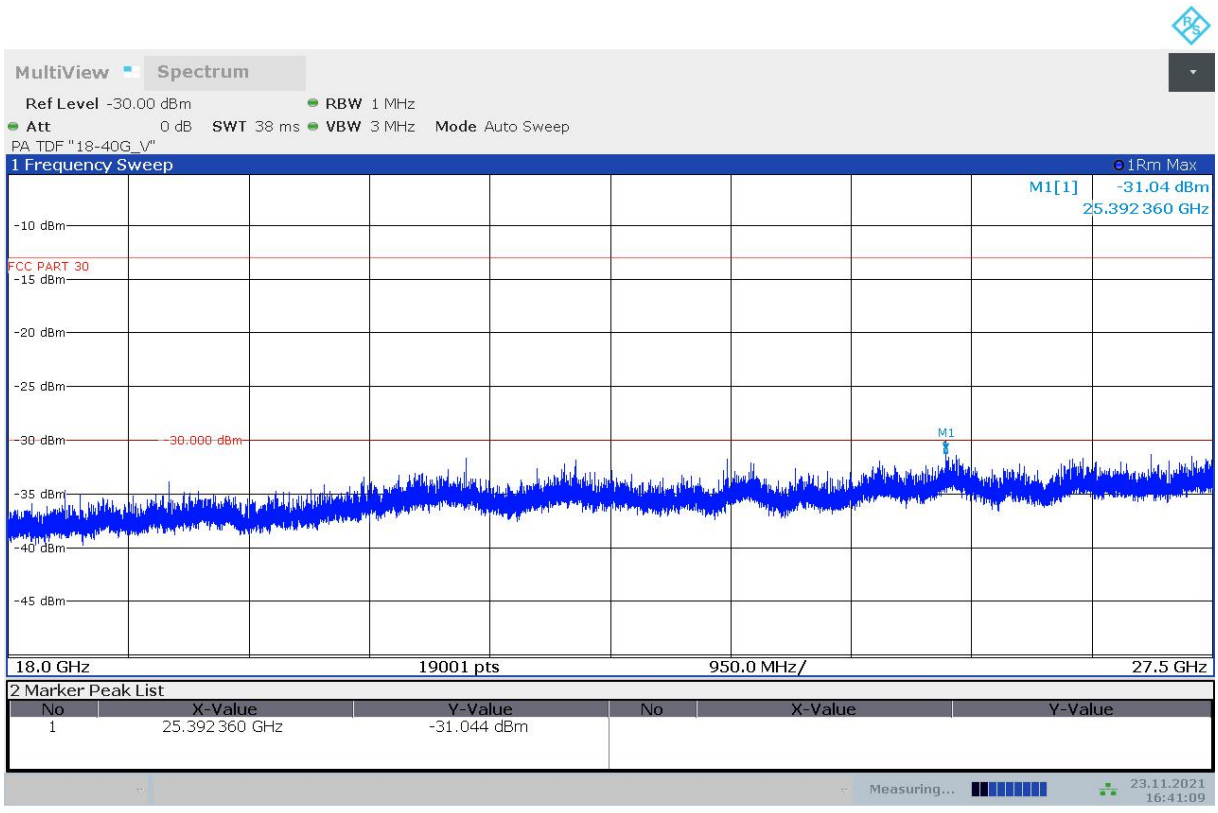
n261, Middle Channel, 18GHz-27.5GHz, Vertical



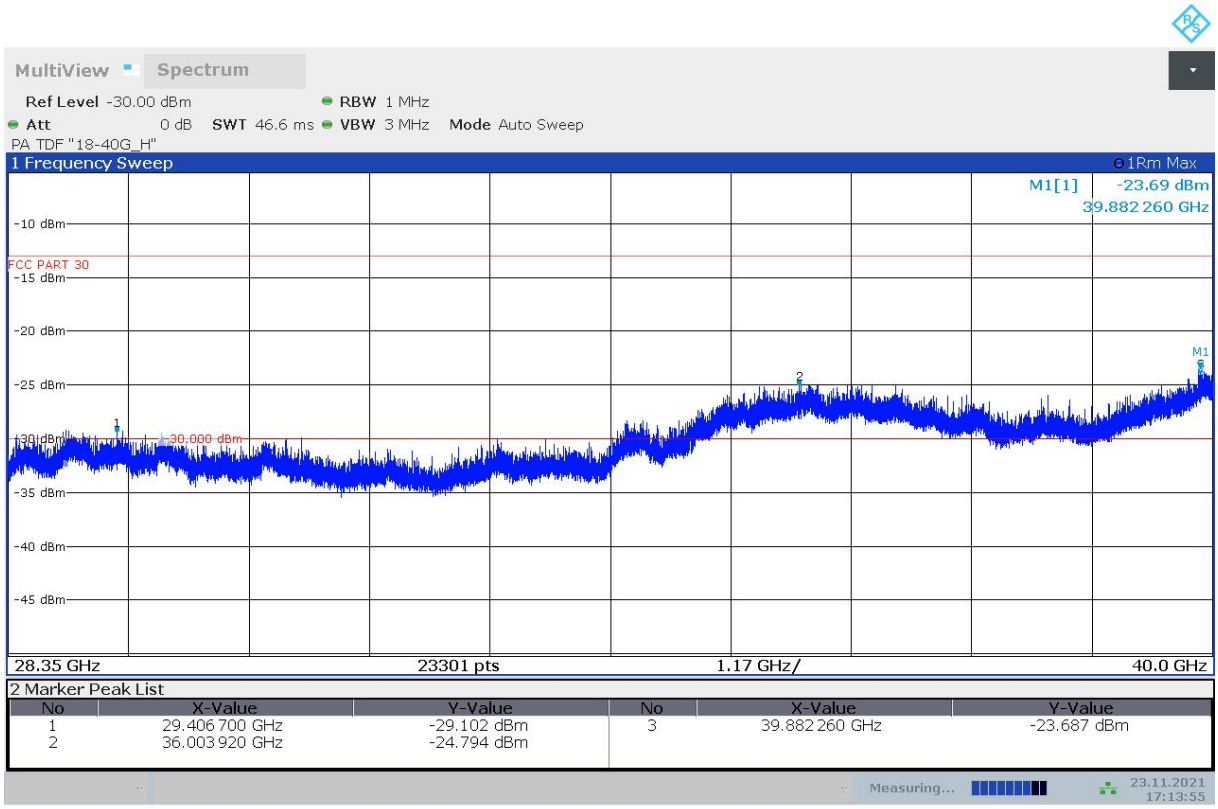
16:42:30 23.11.2021

n261, High Channel, 18GHz-27.5GHz, Horizontal



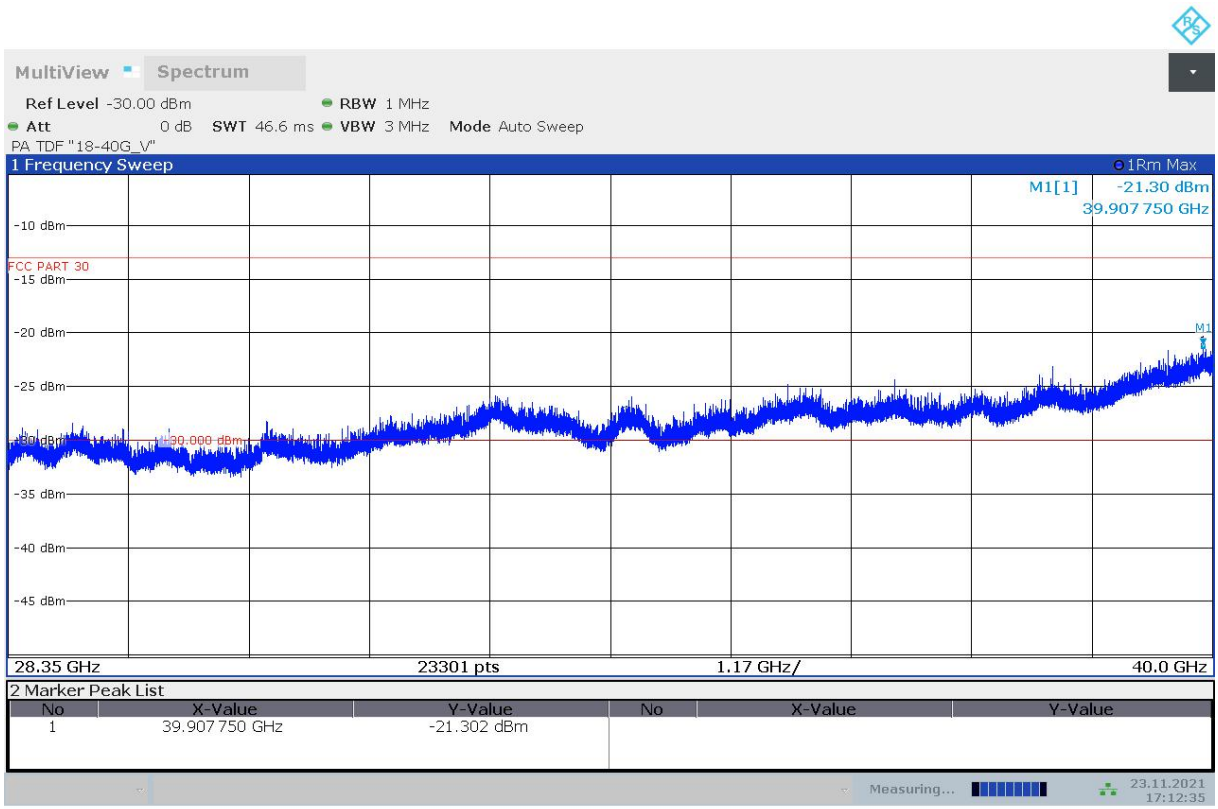
16:41:10 23.11.2021

n261, High Channel, 18GHz-27.5GHz, Vertical



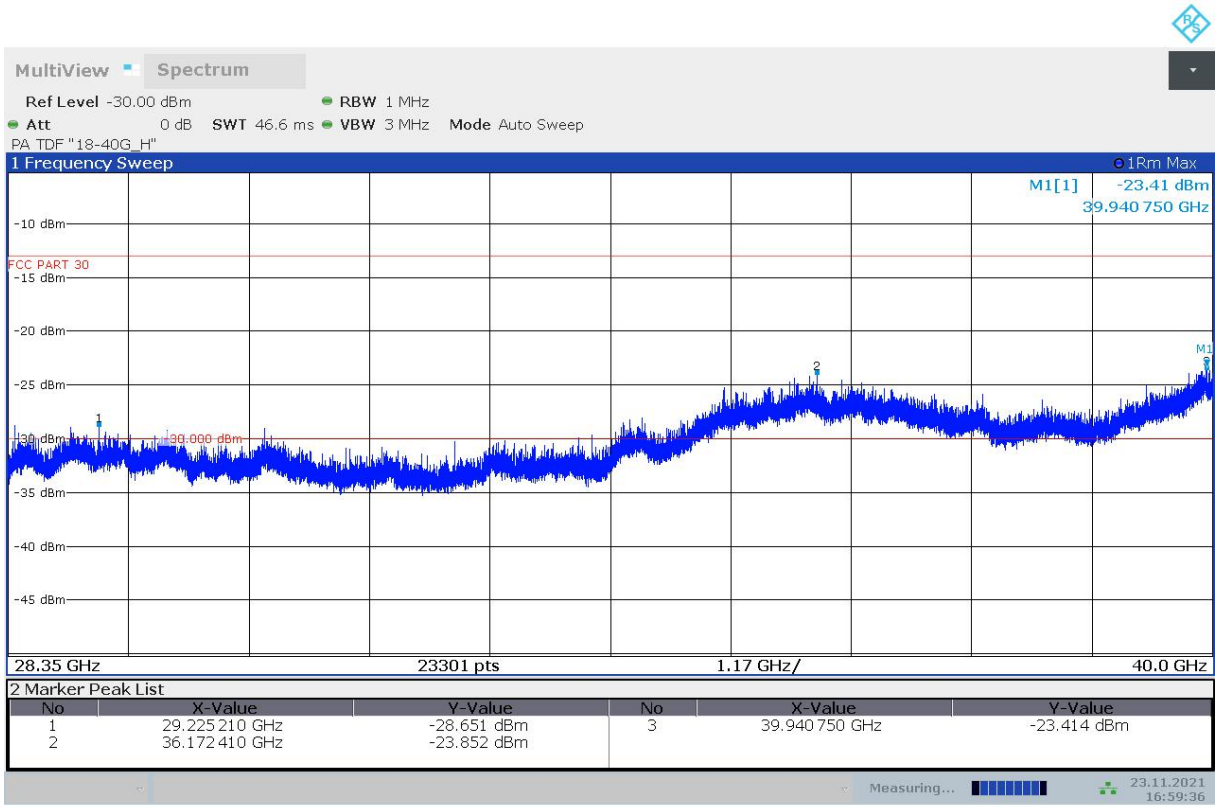
17:13:56 23.11.2021

n261, Low Channel, 28.35GHz-40GHz, Horizontal



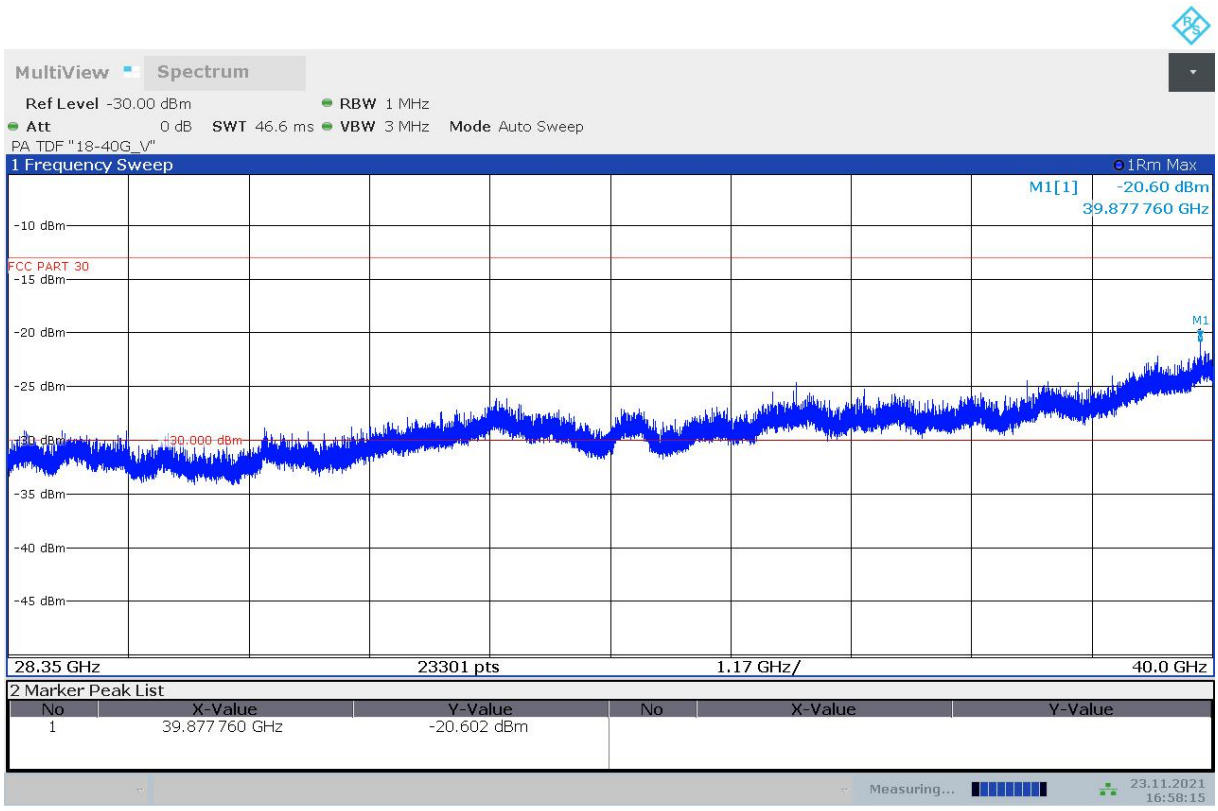
17:12:36 23.11.2021

n261, Low Channel, 28.35GHz-40GHz, Vertical



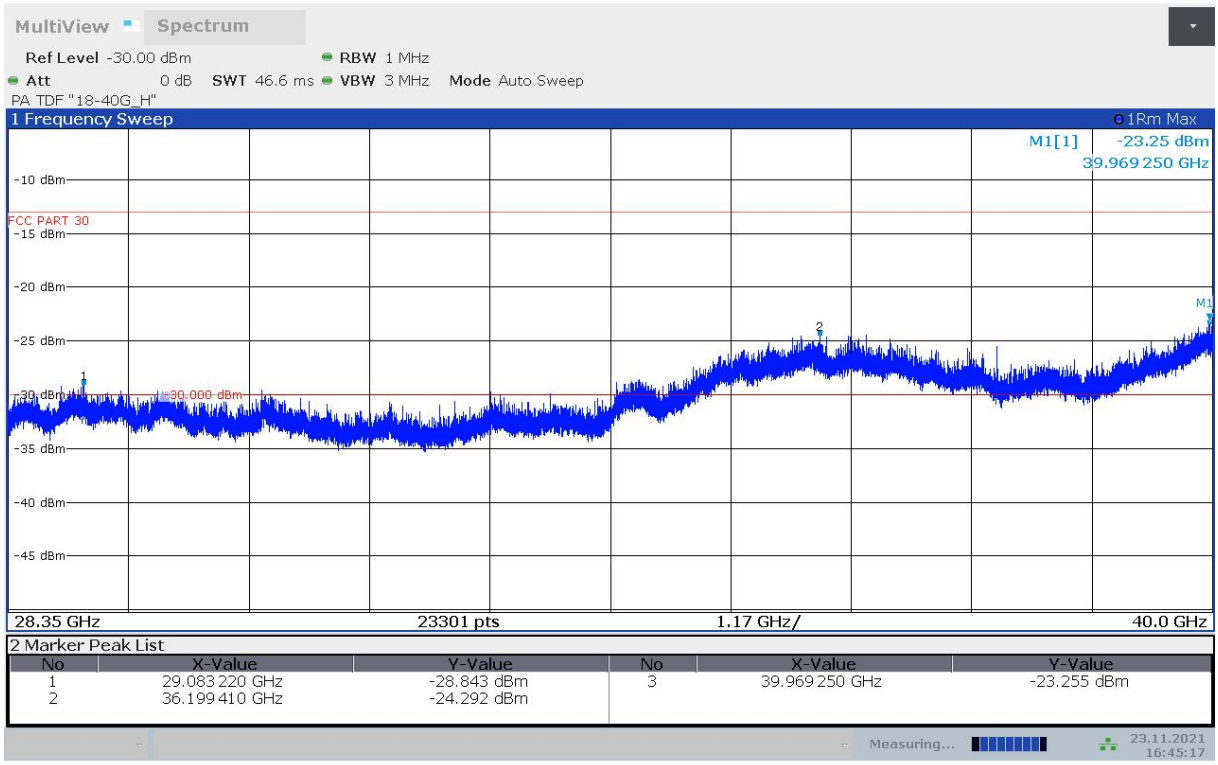
16:59:36 23.11.2021

n261, Middle Channel, 28.35GHz-40GHz, Horizontal



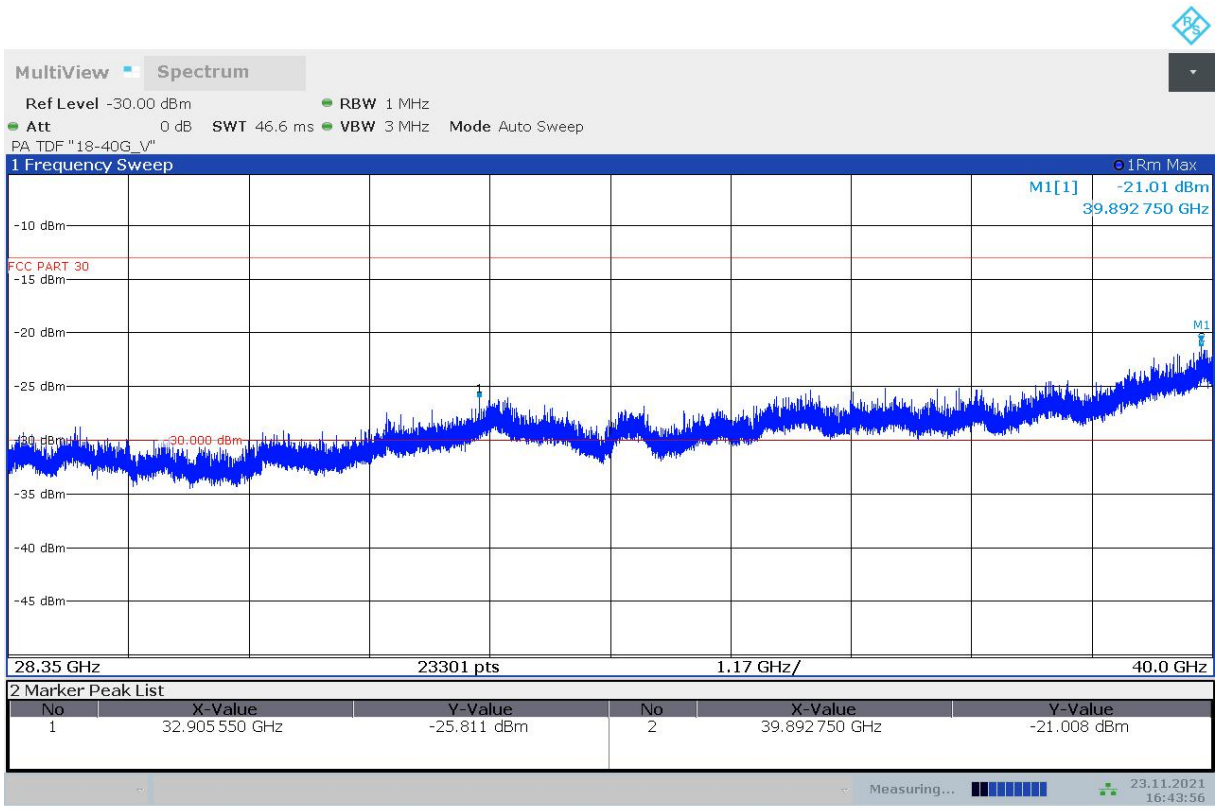
16:58:15 23.11.2021

n261, Middle Channel, 28.35GHz-40GHz, Vertical



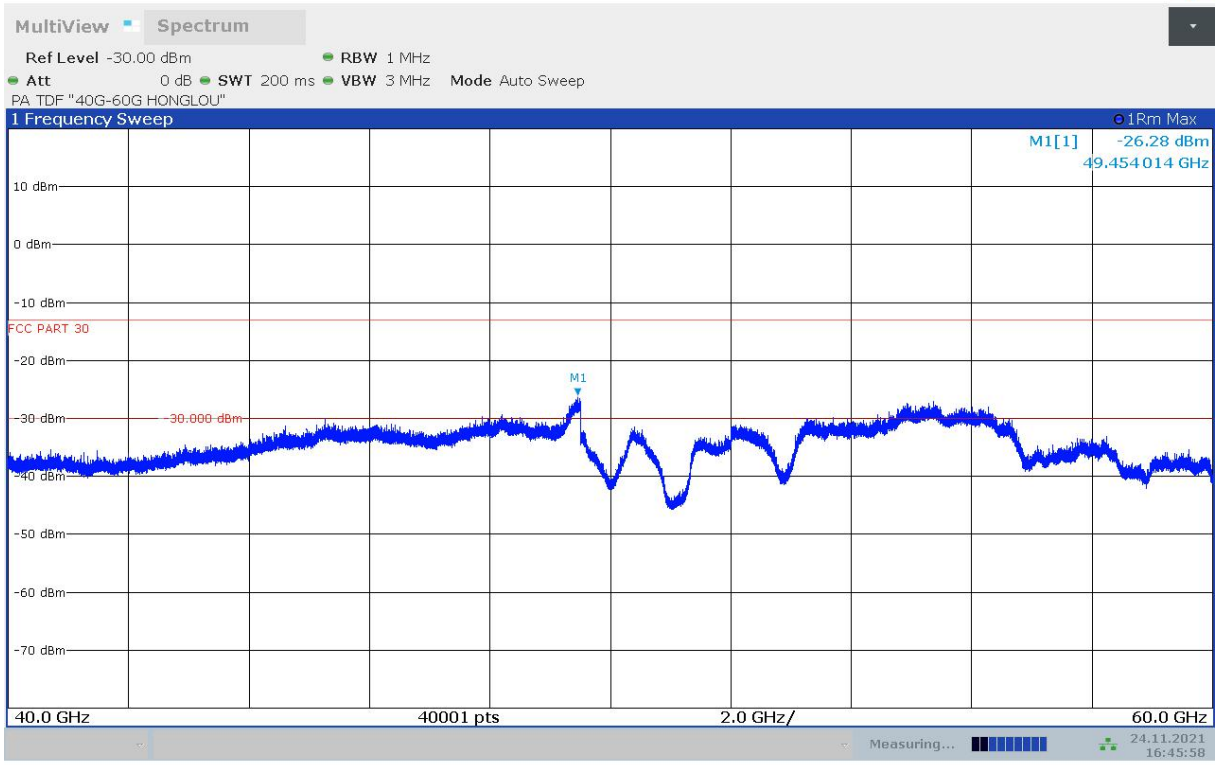
16:45:17 23.11.2021

n261, High Channel, 28.35GHz-40GHz, Horizontal



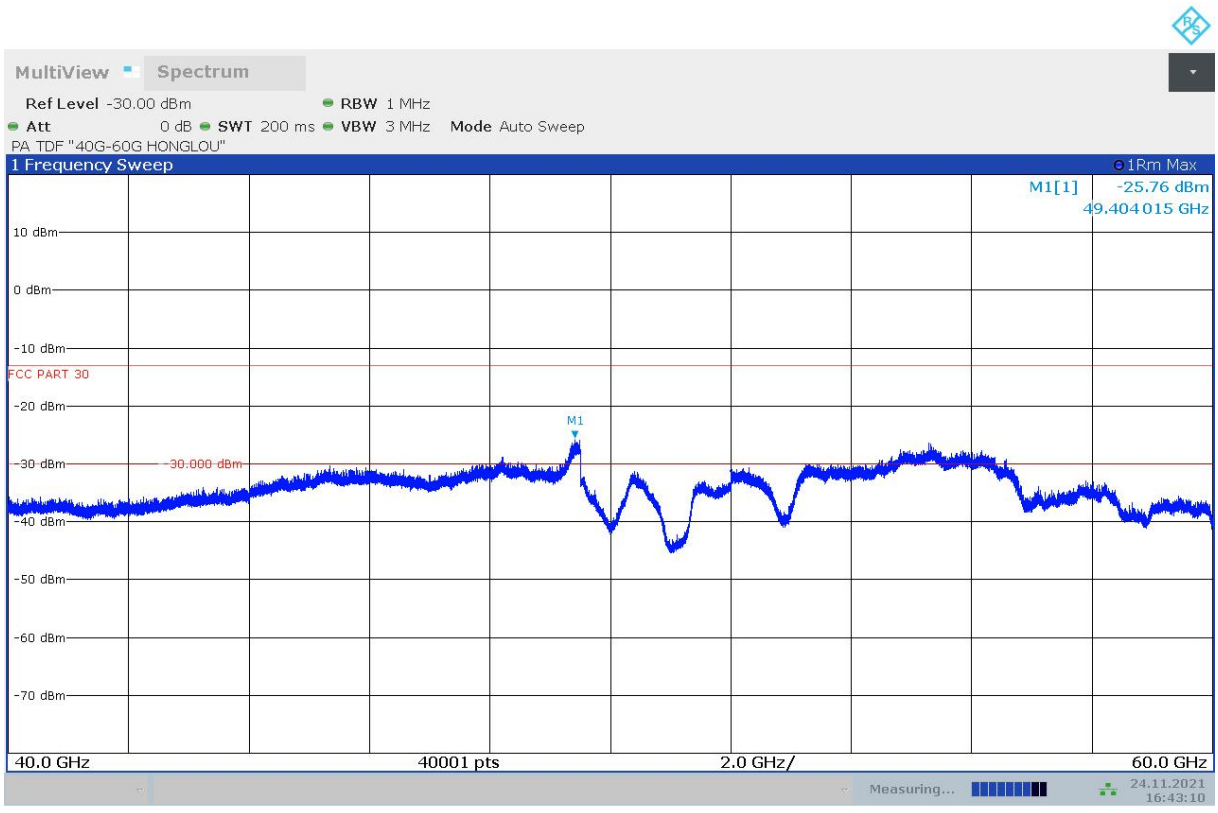
16:43:57 23.11.2021

n261, High Channel, 28.35GHz-40GHz, Vertical



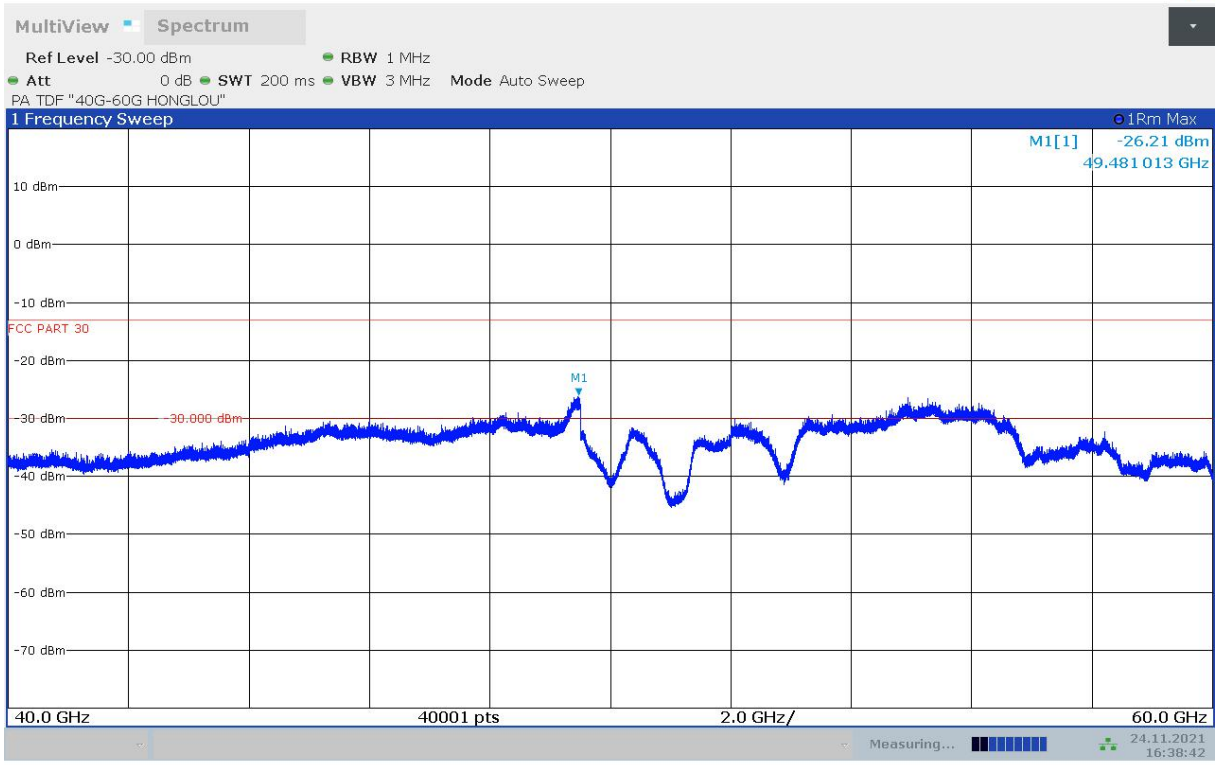
16:45:58 24.11.2021

n261, Low Channel, 40GHz-60GHz, Horizontal/Vertical



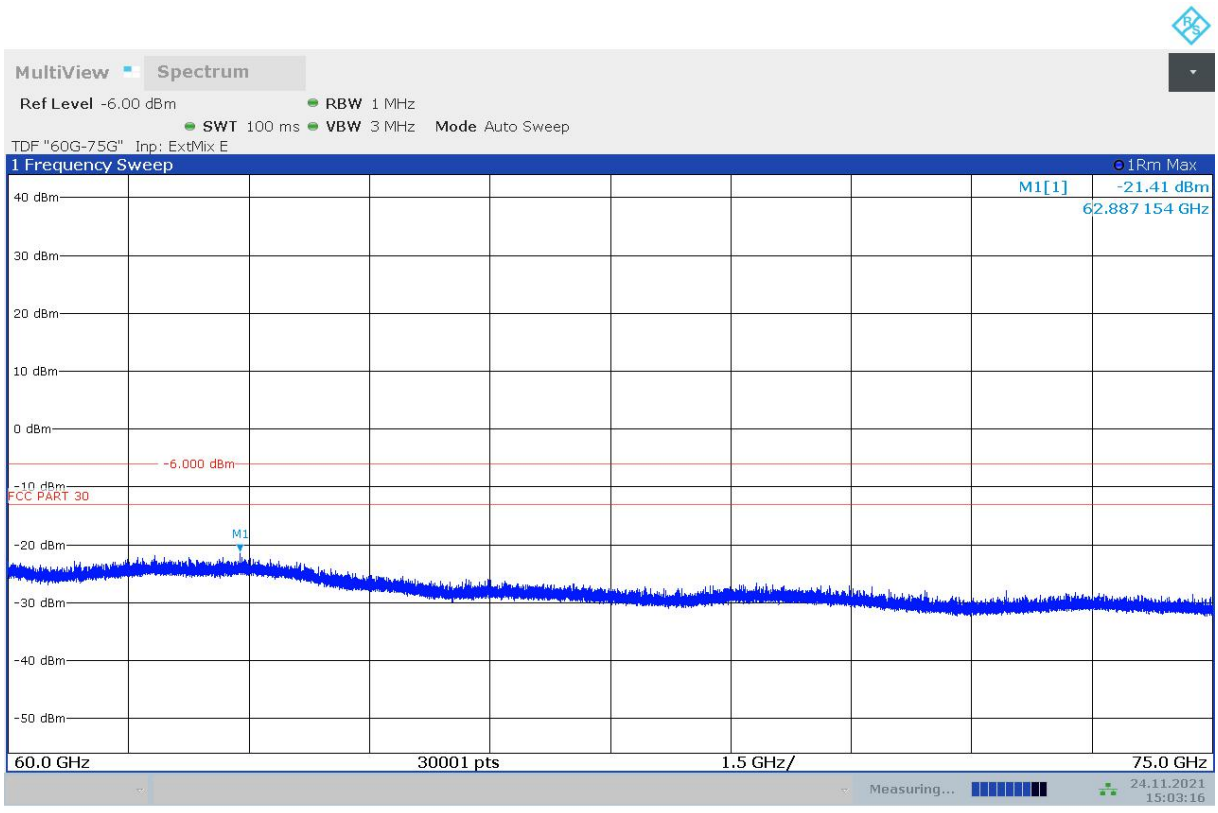
16:43:11 24.11.2021

n261, Middle Channel, 40GHz-60GHz, Horizontal/Vertical



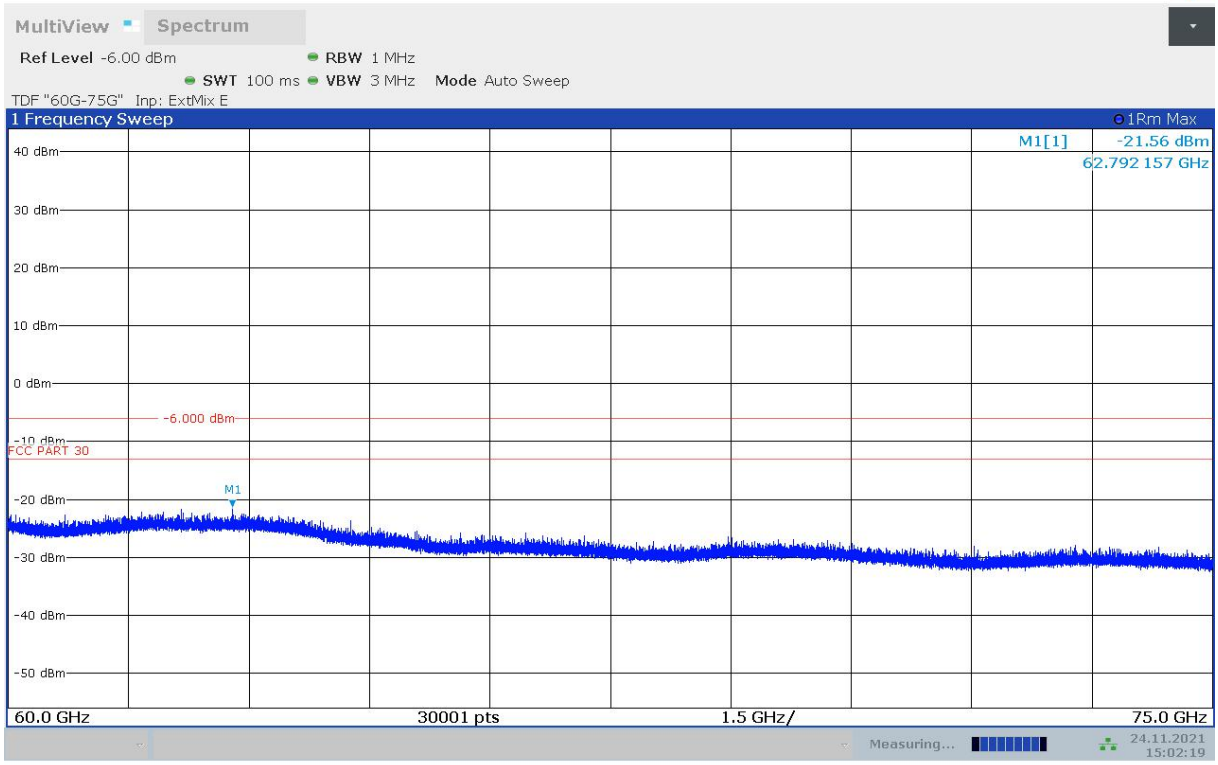
16:38:42 24.11.2021

n261, High Channel, 40GHz-60GHz, Horizontal/Vertical



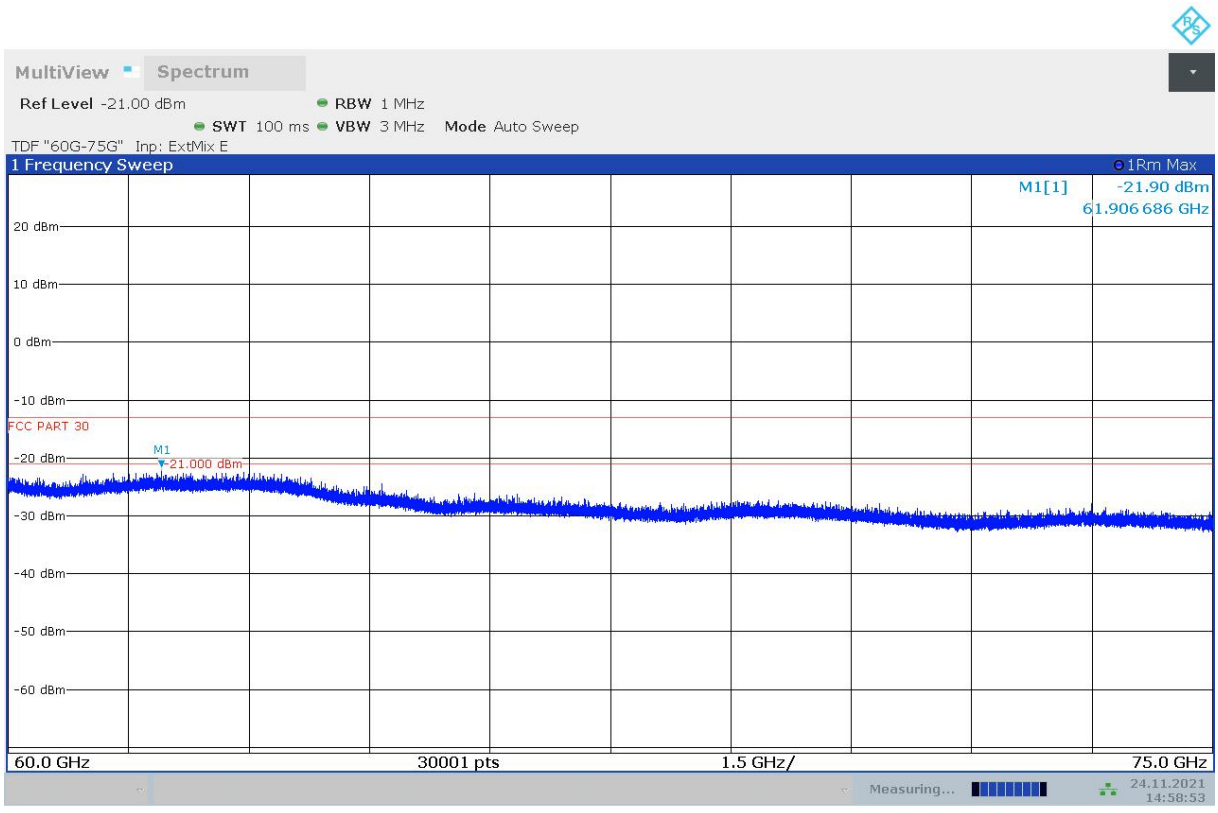
15:03:17 24.11.2021

n261, Low Channel, 60GHz-75GHz, Horizontal



15:02:19 24.11.2021

n261, Low Channel, 60GHz-75GHz, Vertical



14:58:54 24.11.2021

n261, Middle Channel, 60GHz-75GHz, Horizontal