

Annex 1: Measurement diagrams 20-1-0017102T03a-C01-A1

Number of pages:	24	Date of Report:	2021-Jun-04
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	SICK AG
Product:	UWB Tag		
Model:	LOCU111-0020		
FCC ID:	WRMLOCU1	IC:	10066A-LOCU1
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter A §15.250 ISED-Regulations RSS-Gen, Issue 5 RSS-220, Issue 1, Amendment 1 Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		

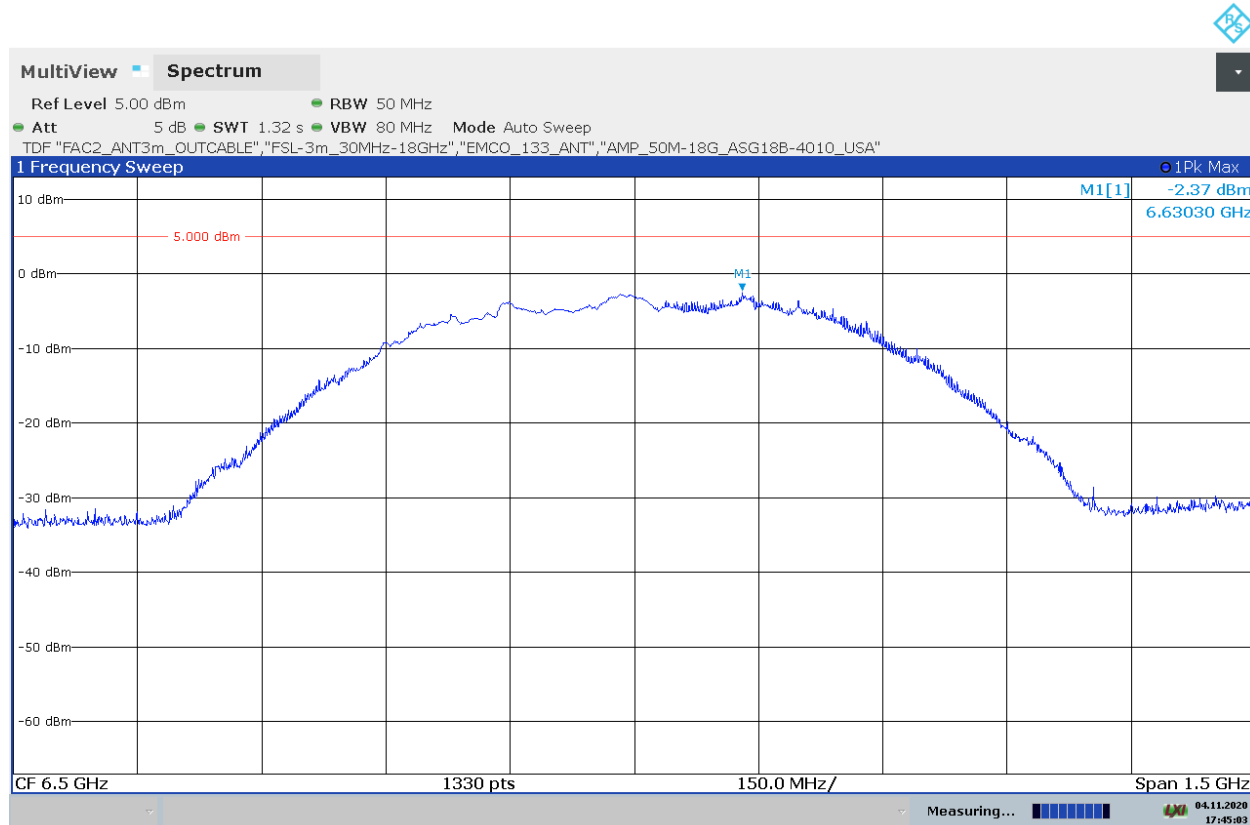
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1 Measurement diagrams

1.1 Fundamental emission peak power

7.01_Peak_PWR



17:45:03 04.11.2020

5 dBm is the Reference Level, Limit is 0 dBm E.I.R.P

1.2 Radiated field strength emissions below 30MHz

2.01

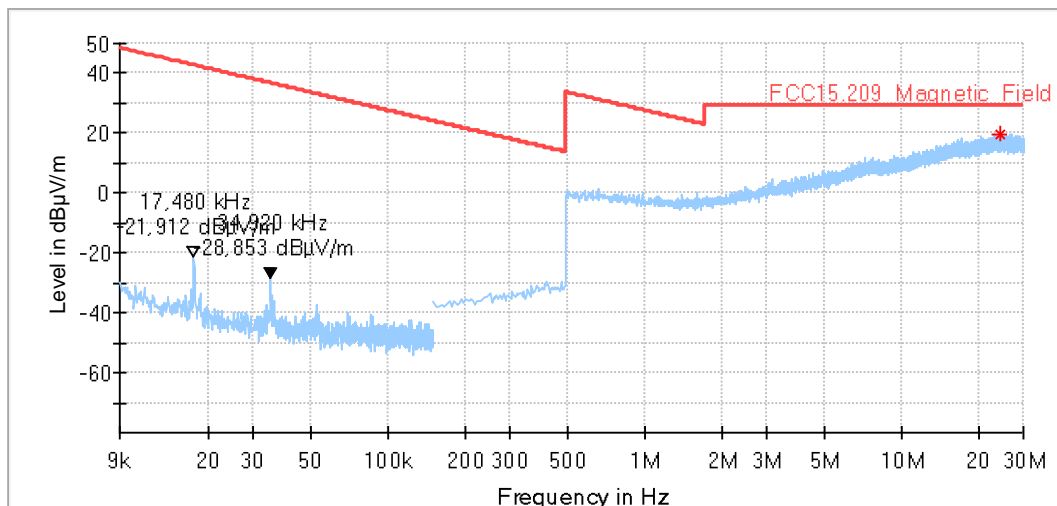
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	Mah
Operating Mode:	Channel 5 - RF 5 - 6.5GHz
Environmental Conditions::	Humidity : 52%rH; Temperature: 20°C
EUT Setup:	1
Verdict:	Passed
Comment:	

EUT Information

PMT number:	20-1-00171S08_C01
Manufacturer:	SICK AG

Full Spectrum



2.02

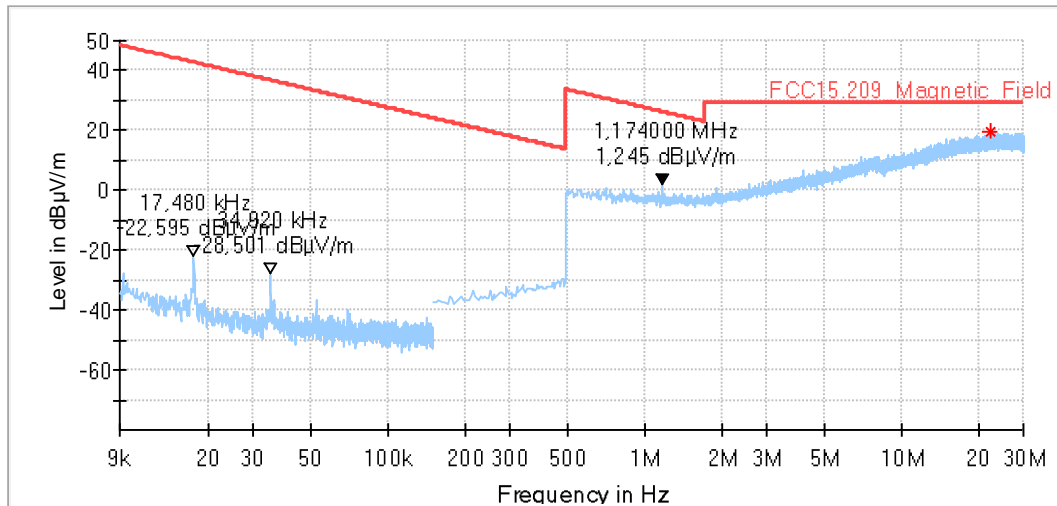
Common Information

Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	Mah
Operating Mode:	Channel 5 - RF 5 - 6.5GHz
Environmental Conditions::	Humidity : 52%rH; Temperature: 20°C
EUT Setup:	1
Verdict:	Passed
Comment:	

EUT Information

PMT number:	20-1-00171S08_C01
Manufacturer:	SICK AG

Full Spectrum



1.3 Radiated field strength emissions 30MHz – 960 MHz

3.01

Common Information

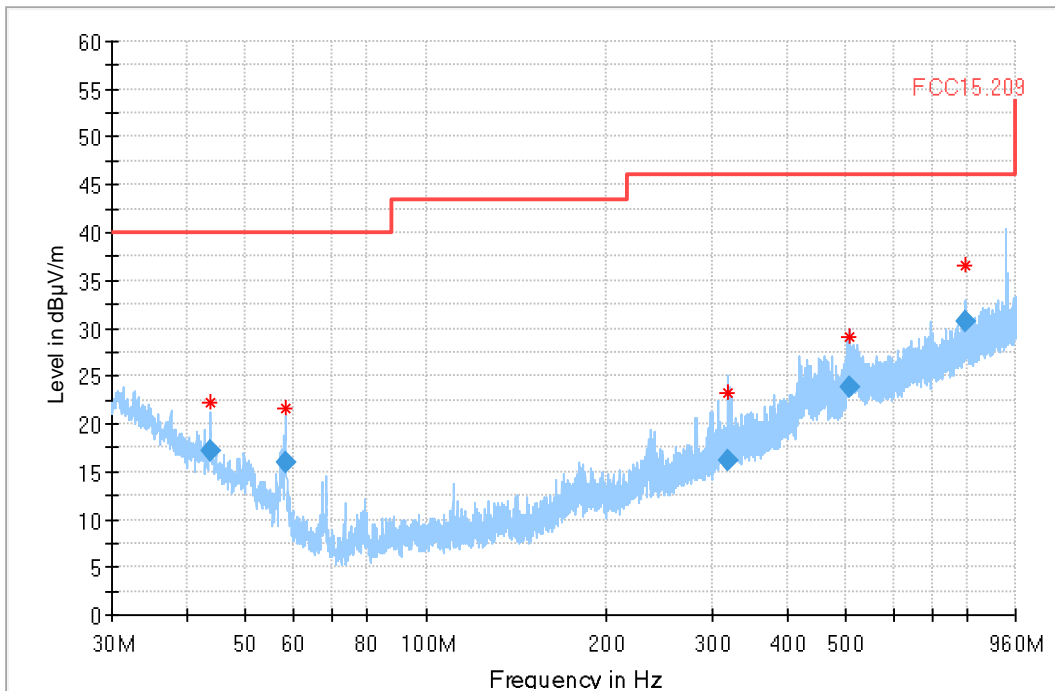
Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Environmental Conditions:: Humidity : 52%rH; Temperature: 20°C
 Operator: Mah
 Operating Mode: Channel 5 - RF 5 - 6.5GHz
 Environmental Conditions:: Humidity : 52%rH; Temperature: 20°C
 EUT Setup: 1
 Verdict: Passed
 Comment:

EUT Information

PMT number: 20-1-00171S08_C01
 Manufacturer: SICK AG

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.740000	FINAL	17.16	40.00	22.84	1000.0	120.00	111.0	V	58.0
58.358000	FINAL	15.97	40.00	24.03	1000.0	120.00	136.0	V	201.0
318.060000	FINAL	16.26	46.00	29.74	1000.0	120.00	130.0	H	38.0
506.090000	FINAL	23.89	46.00	22.11	1000.0	120.00	105.0	V	142.0
791.890000	FINAL	30.74	46.00	15.26	1000.0	120.00	356.0	H	165.0

Remark:

Peaks at 791.89 MHz and 928.41 MHz are known external Interferer and do not come from the EUT.

3.02

Common Information

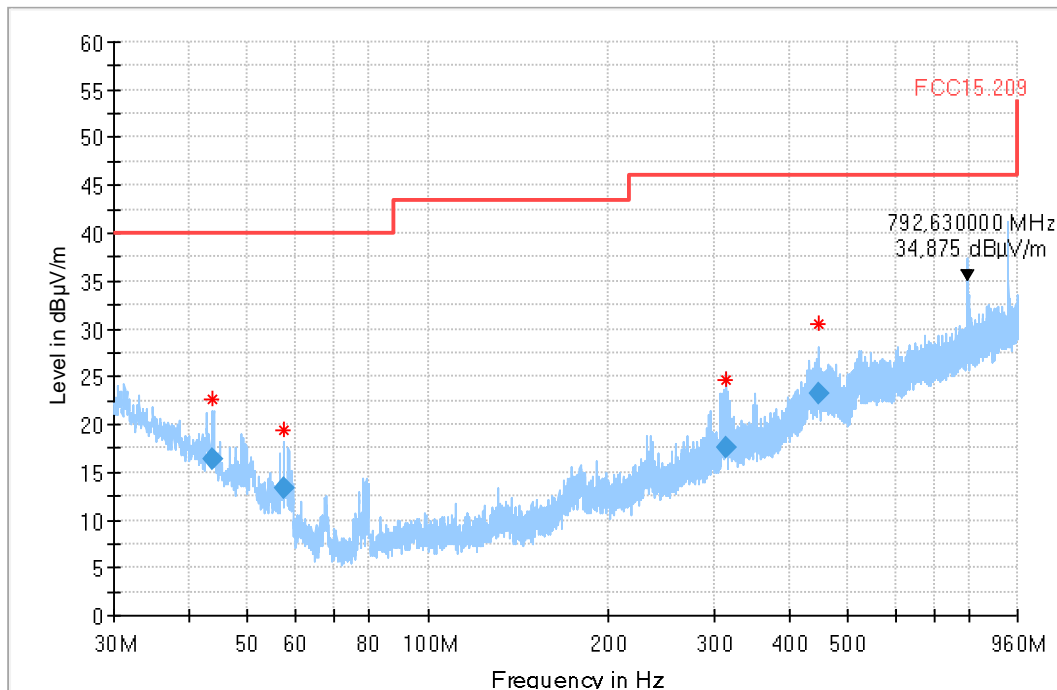
Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Environmental Conditions: Humidity : 52%rH; Temperature: 20°C
 Operator: Mah
 Operating Mode: Channel 5 - RF 5 - 6.5GHz
 Environmental Conditions: Humidity : 52%rH; Temperature: 20°C
 EUT Setup: 1
 Verdict: Passed
 Comment:

EUT Information

PMT number: 20-1-00171S08_C01
 Manufacturer: SICK AG

Full Spectrum



Final Result

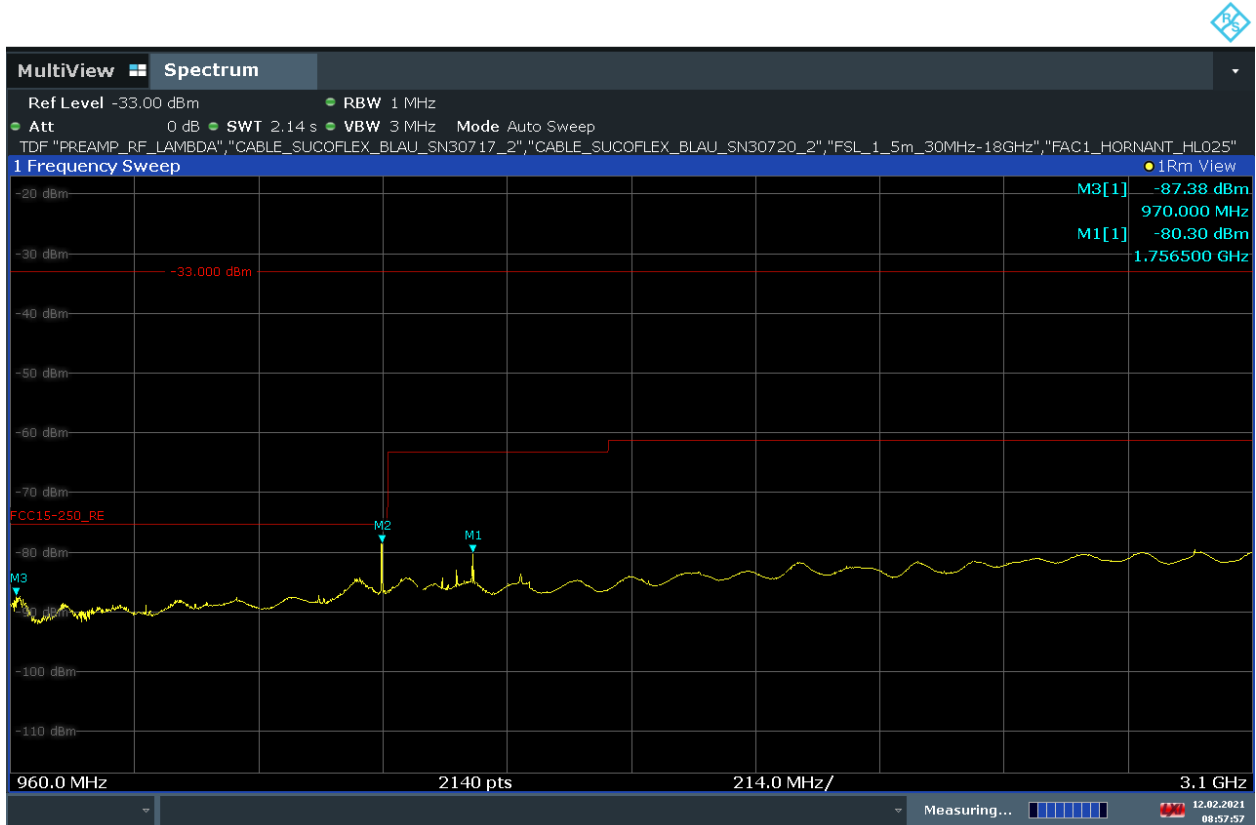
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.686000	16.43	40.00	23.57	1000.0	120.000	105.0	V	50.0	15.6
57.686000	13.27	40.00	26.73	1000.0	120.000	122.0	V	227.0	9.9
313.694000	17.51	46.00	28.49	1000.0	120.000	112.0	H	290.0	15.6
449.148000	23.19	46.00	22.81	1000.0	120.000	122.0	V	140.0	19.3

Remark:

Peaks at 792.63 MHz and 928 MHz are known external Interferer and do not come from the EUT.

1.4 Radiated field strength emissions above 960 MHz

4.01_RSE_S08_960MHZ_3.1GHz_AntH



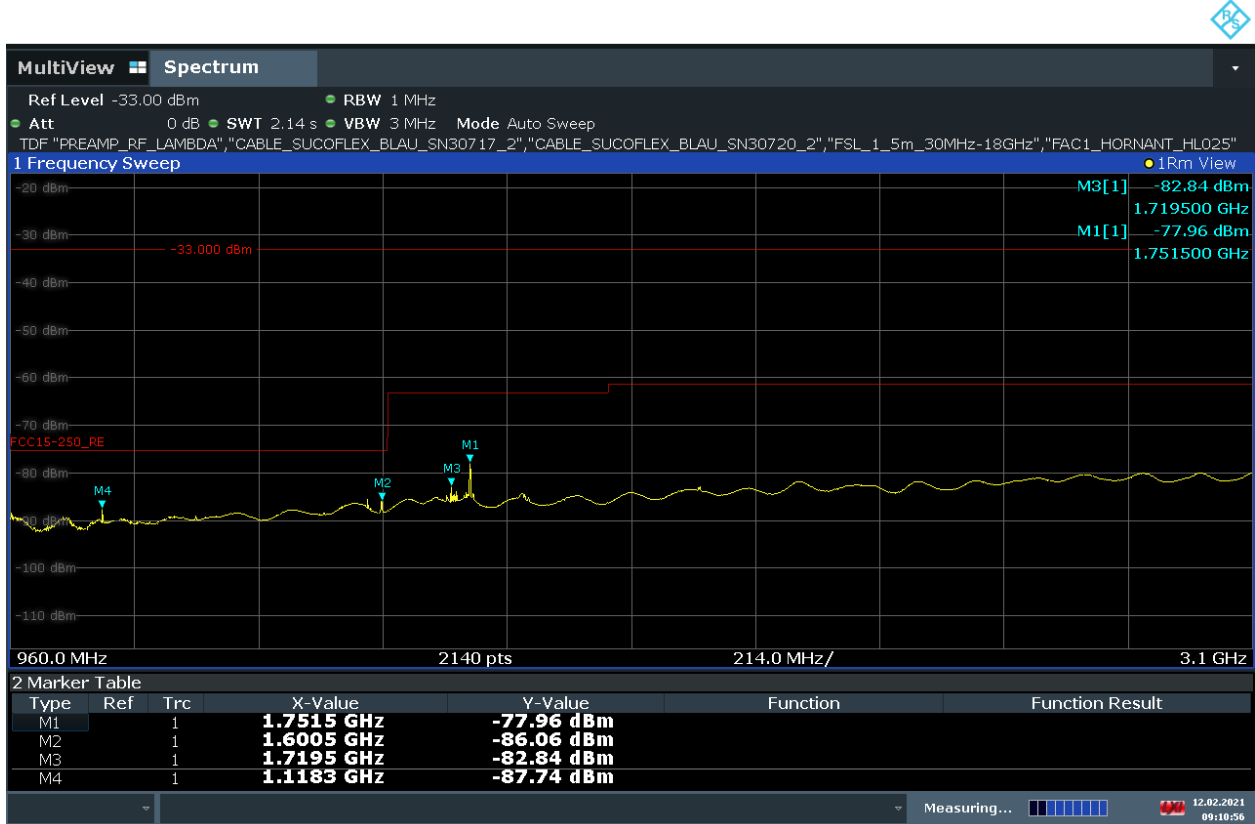
08:57:58 12.02.2021

Remark:

FCC 15.250 Limits are -63.3 dBm in the Freq Range: 1610-1990 MHz
and -60.3 dBm 1990 to 3100 MHz.

RSS -220 Limits are -75.3 dBm in the Frequency Range 960-1610 MHz and
-70.0 in the Frequency Range 1610-3100 MHz

4.02_RSE_S08_960MHZ_3.1GHz_AntV



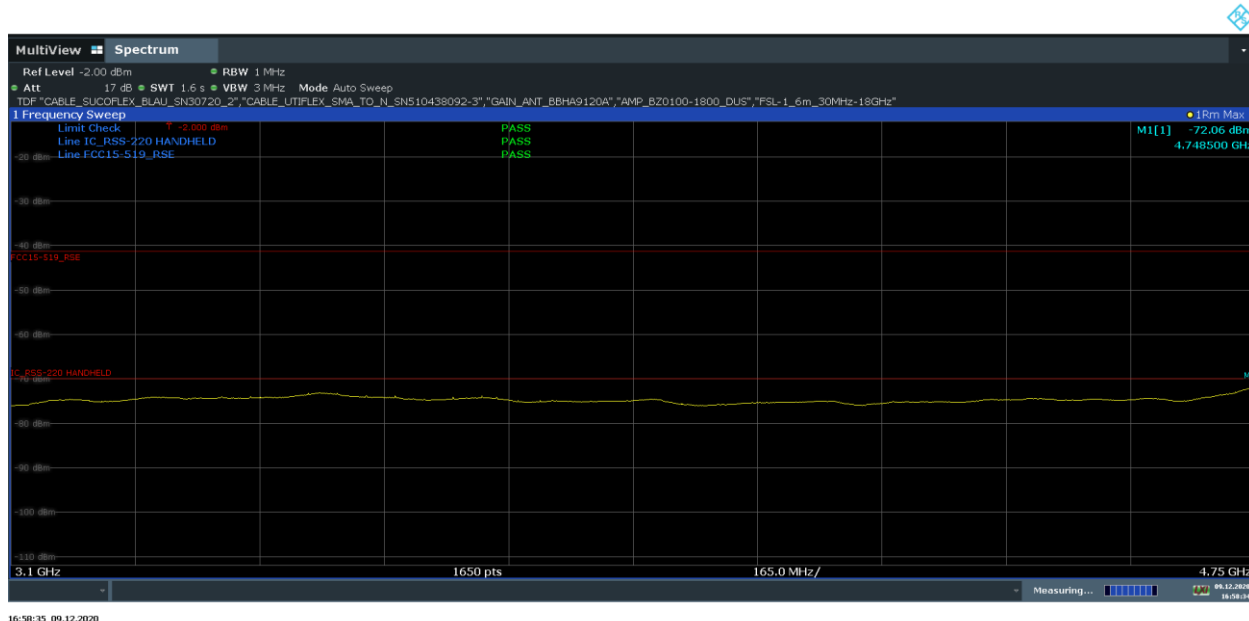
09:10:56 12.02.2021

Remark:

FCC 15.250 Limits are -63.3 dBm in the Freq Range: 1610-1990 MHz and -60.3 dBm 1990 to 3100 MHz.

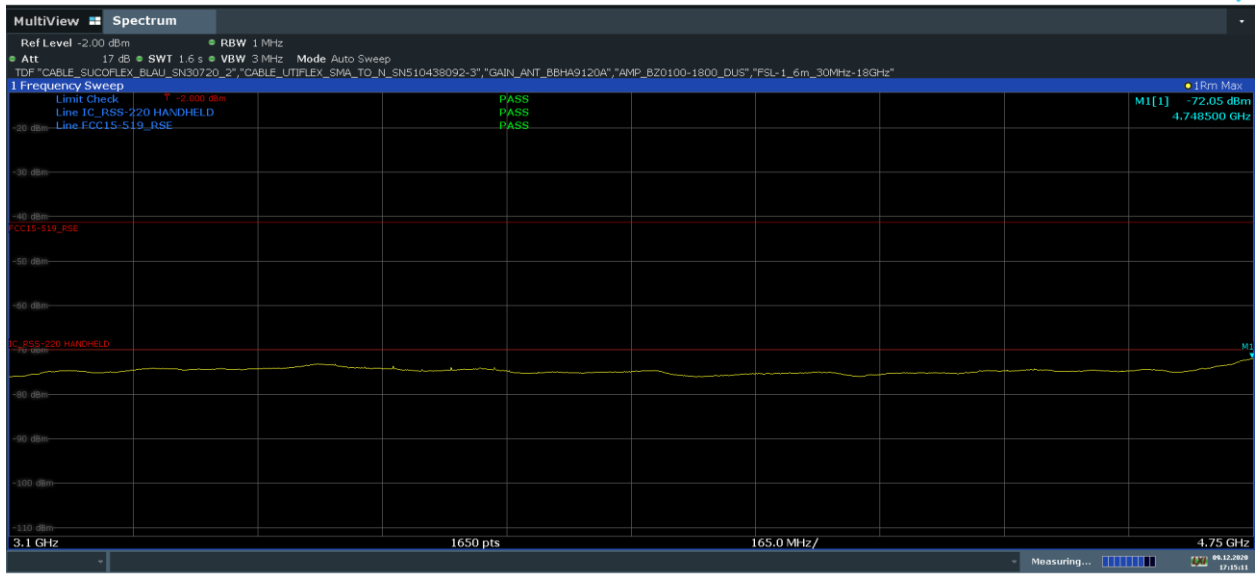
RSS -220 Limits are -75.3 dBm in the Frequency Range 960-1610 MHz and -70.0 in the Frequency Range 1610-3100 MHz

4.03_RSE_S08+3.1GHz_4.75GHz_AntHV



Limit Shown is RSS-220, -70.0 dBm. FCC 15.250 Limit is -51.3 dBm

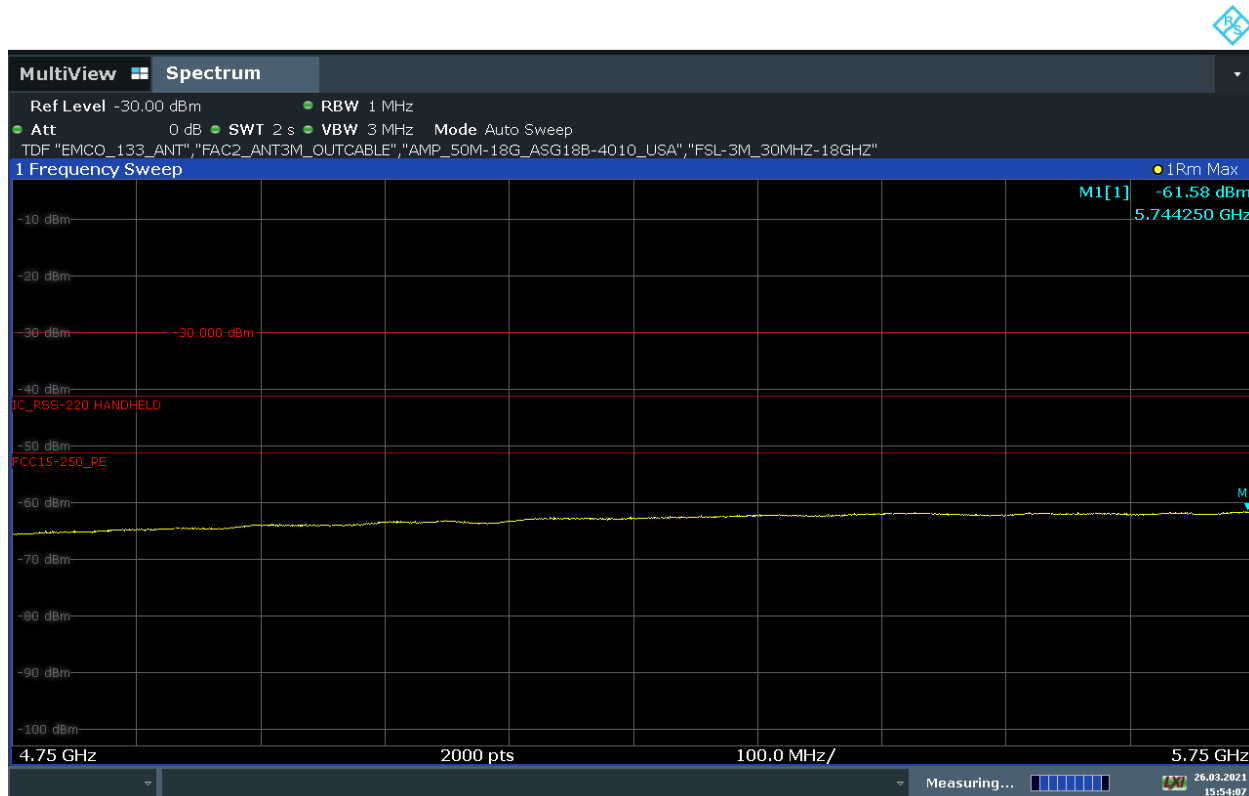
4.04_RSE_S08+3.1GHz_4.75GHz_AntHV_EUT90



17:15:12 09.12.2020

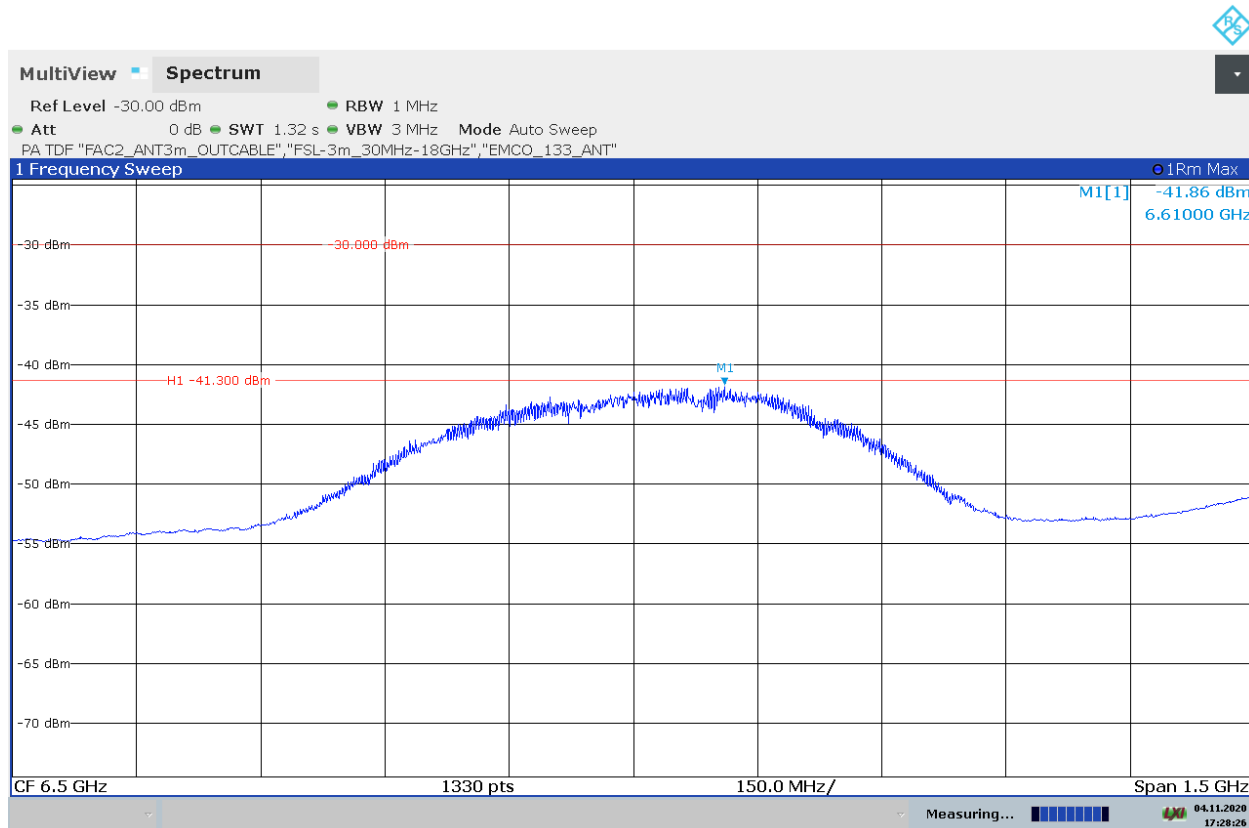
Limit Shown is RSS-220, -70.0 dBm.FCC 15.250 Limit is -51.3 dBm

4.05_RSE_3.1G_5.75G



15:54:08 26.03.2021

4.06_RSE_5.75G_7.25G



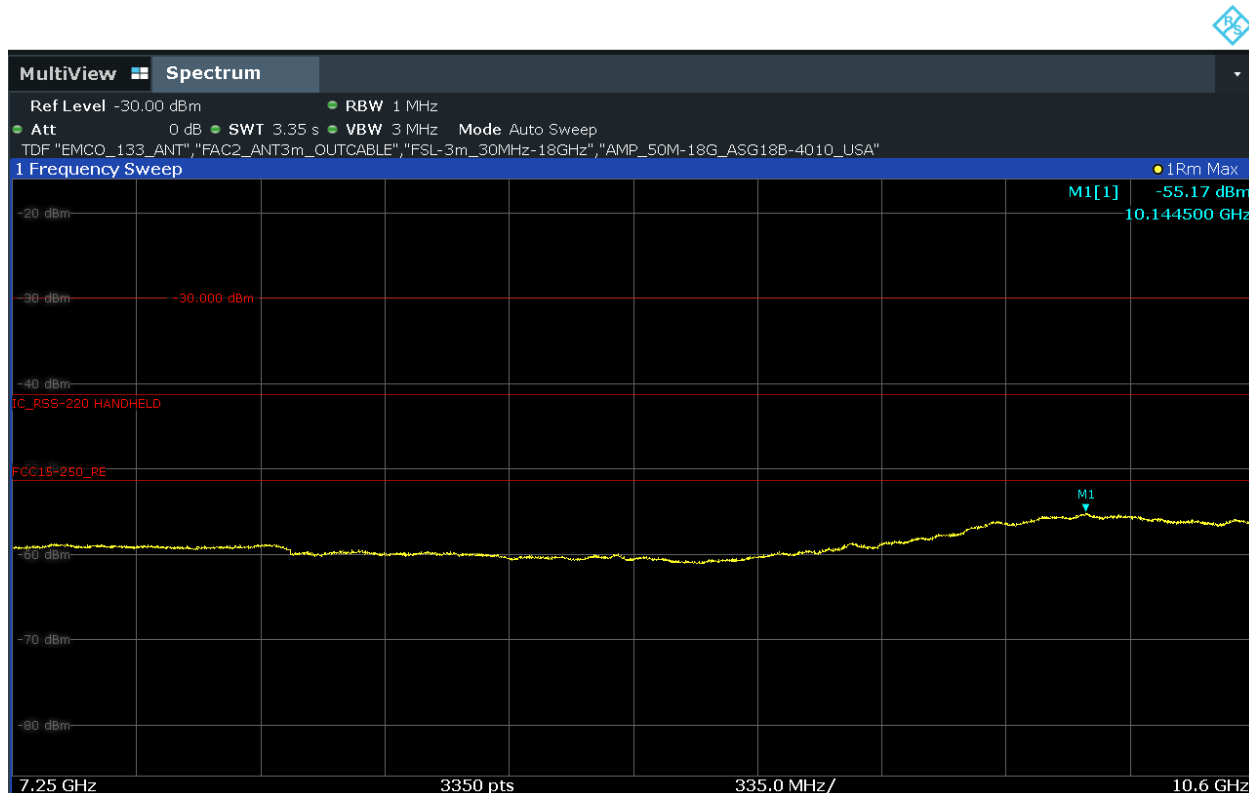
17:28:26 04.11.2020

Applicable Limits

for RSS-220 from 4.75 GHz to 10.6 GHz is -41.3 dBm

for FCC 15.250 from 3.1 GHz to 5.925 GHz -51.3 and from 5.925 GHz to 7.25GHz is Limit -41.3 dBm

4.07_RSE_7.25G_10.6G

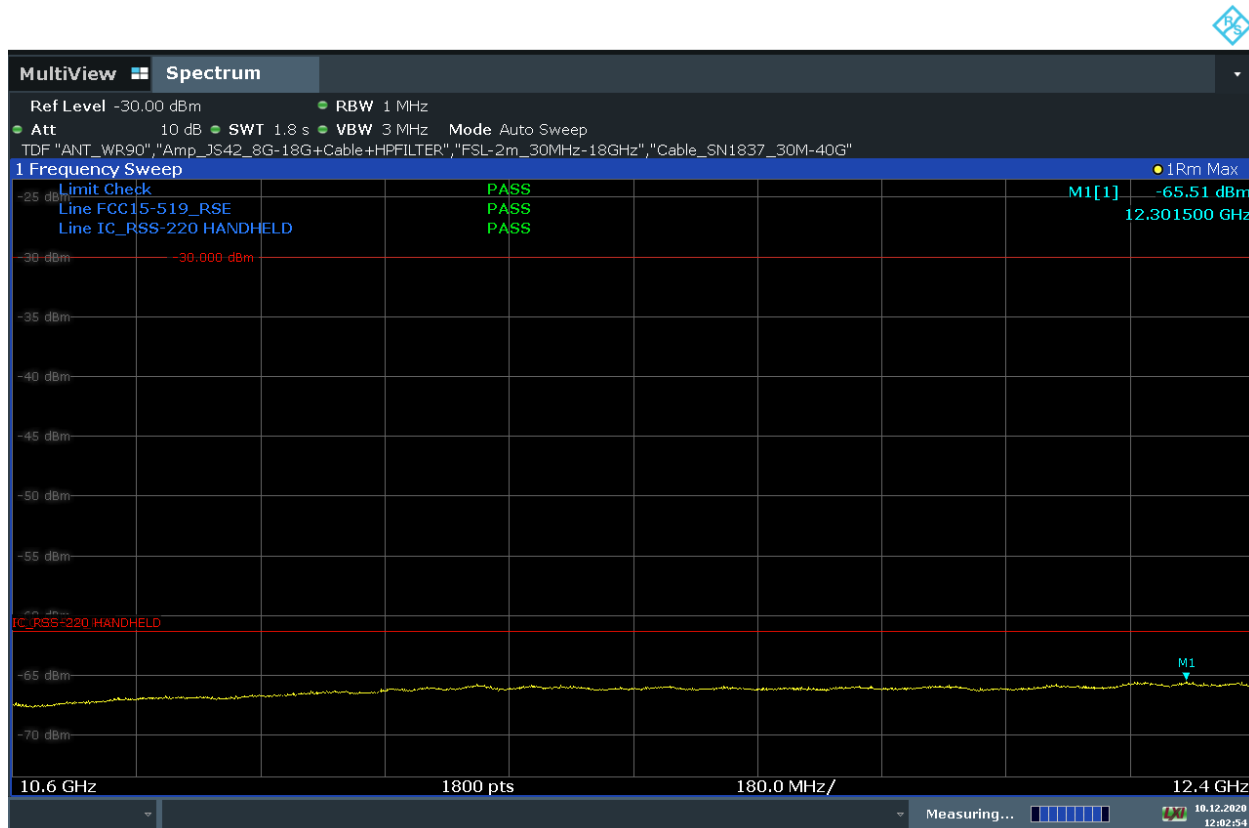


Applicable Limits

for RSS-220 from 4.75 GHz to 10.6 GHz is -41.3 dBm

for FCC 15.250 7.25 GHz to 10.6GHz is -51.3 dBm

4.08_T01_UWB_ANTH_EUTO_90_10.6G_12.4G



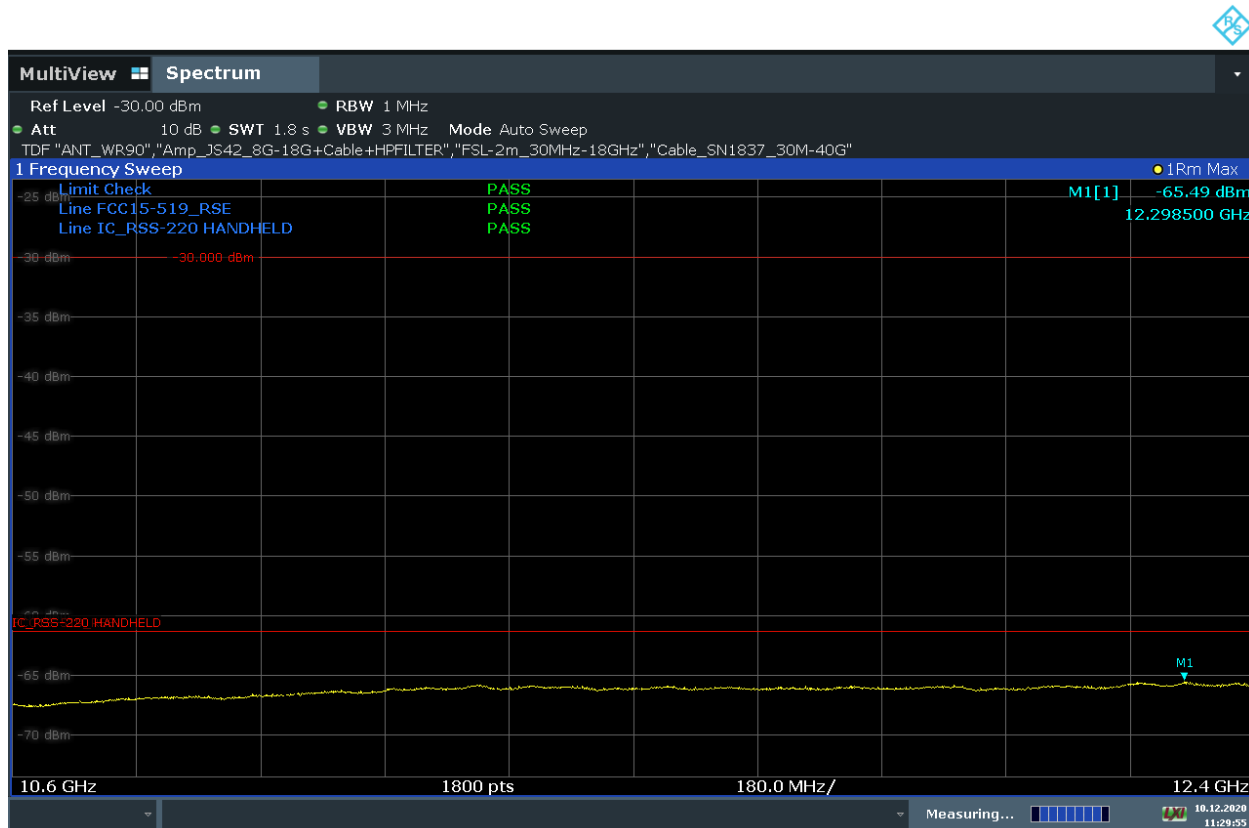
12:02:54 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.09_T01_UWB_ANTV_EUTO_90_10.6G_12.4G



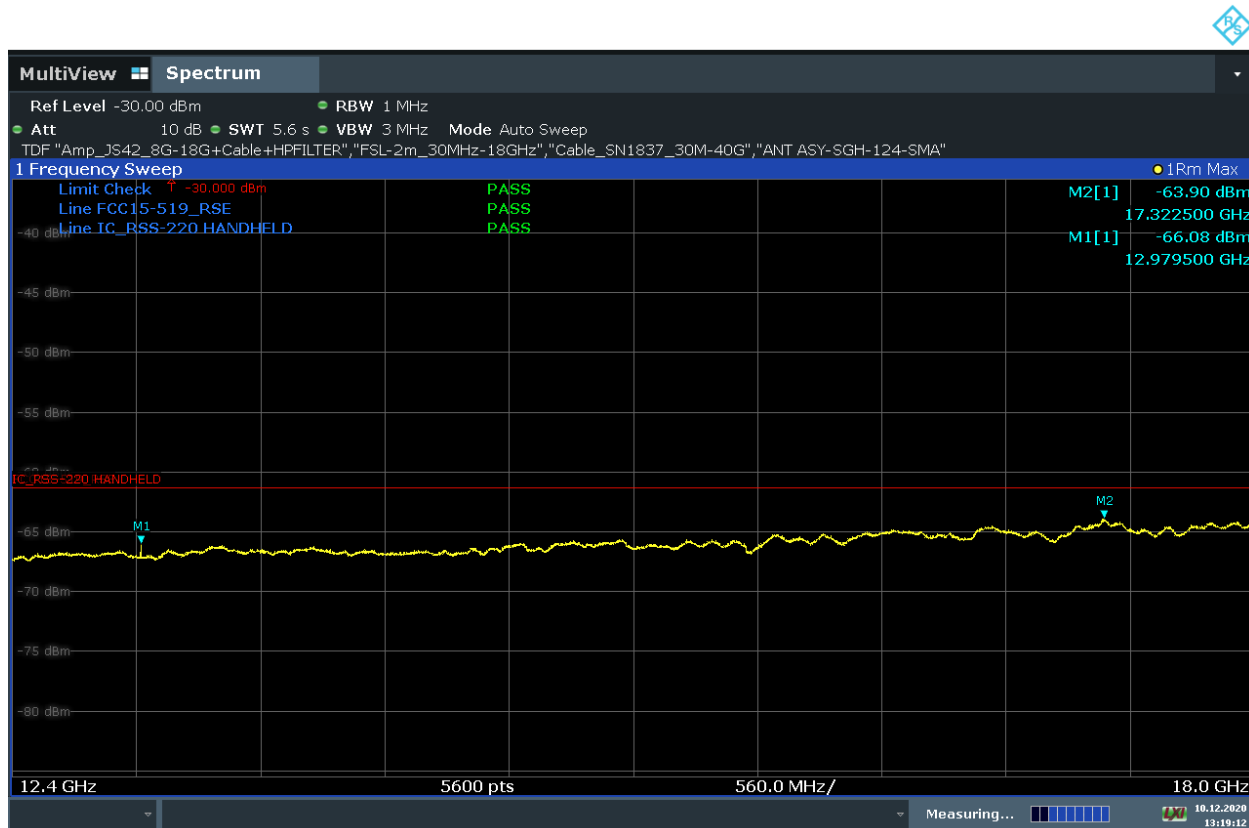
11:29:56 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.10_T01_UWB_ANTV_EUTO_90_12.4G_18G



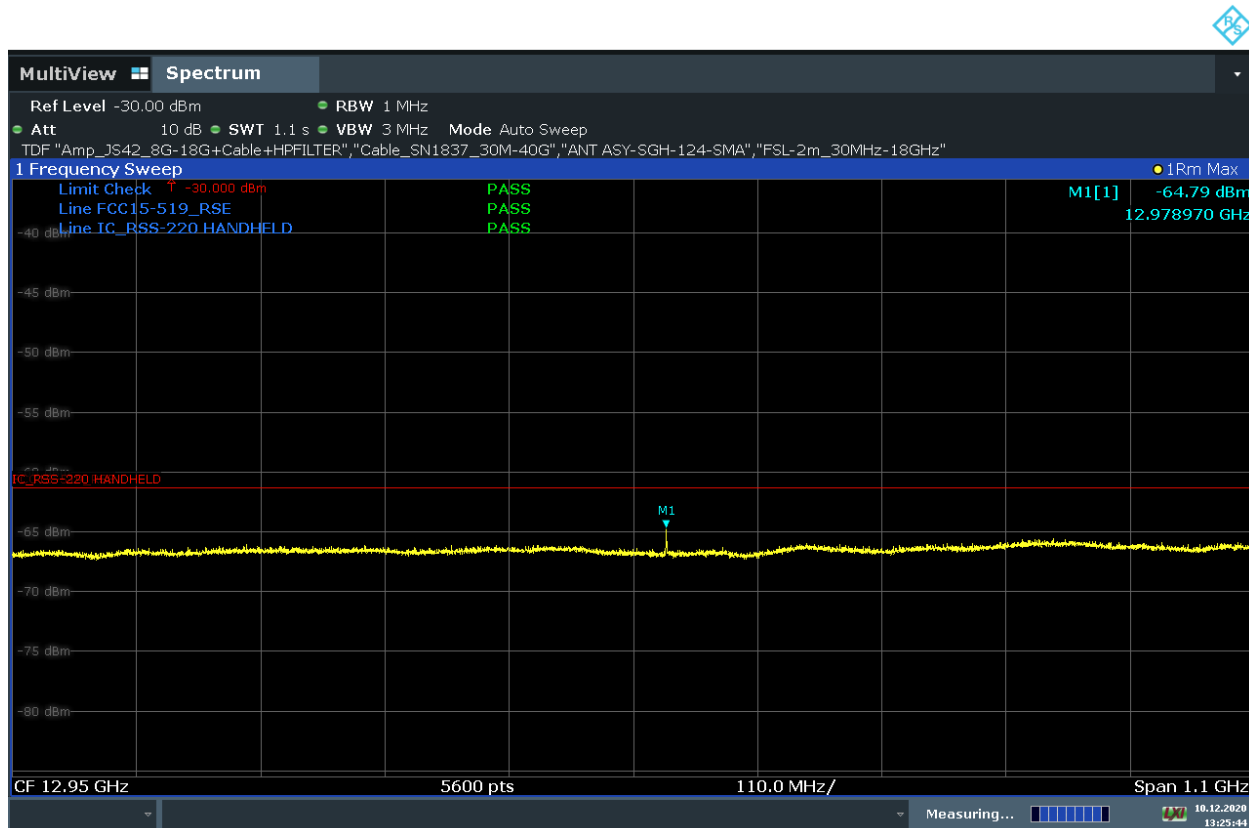
13:19:13 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.11_T01_UWB_ANTV_EUT0_90_12.4G_18G_zoom



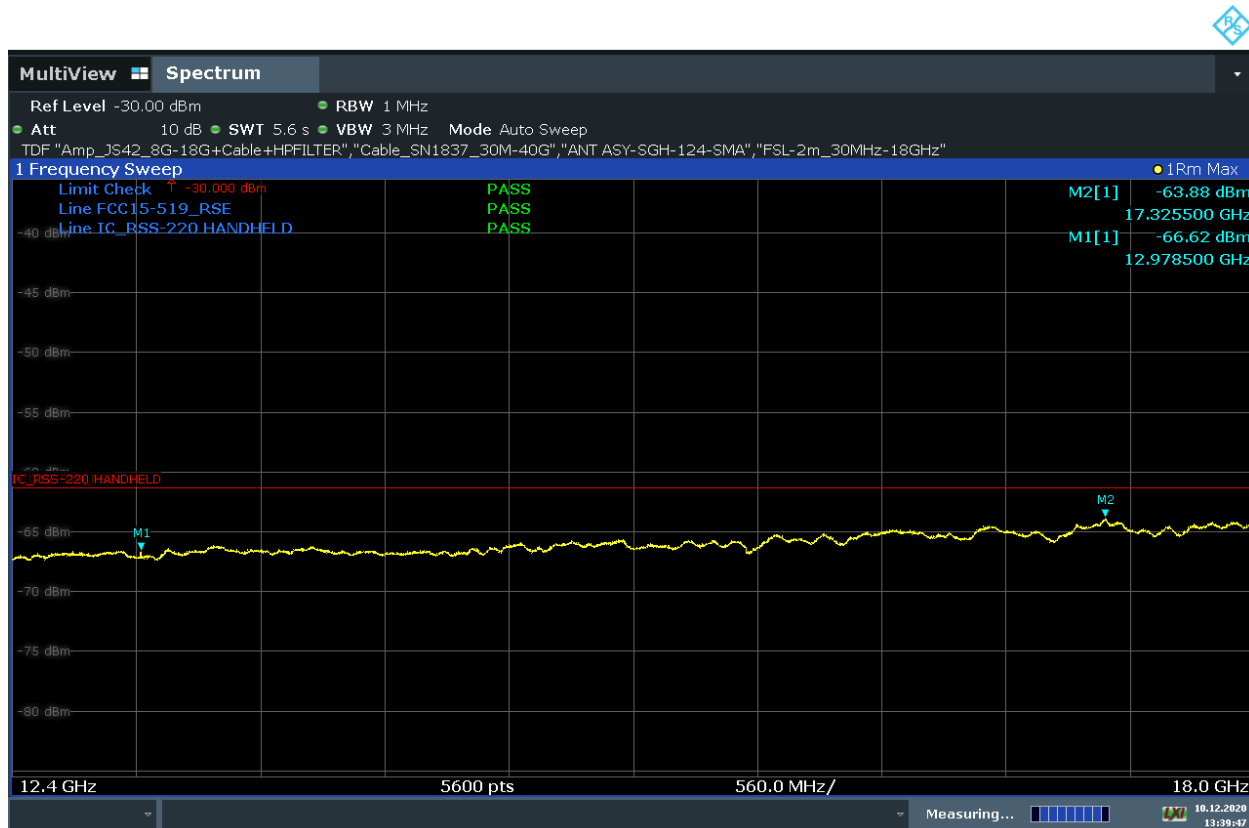
13:25:45 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.12_T01_UWB_ANTH_EUTO_90_12.4G_18G



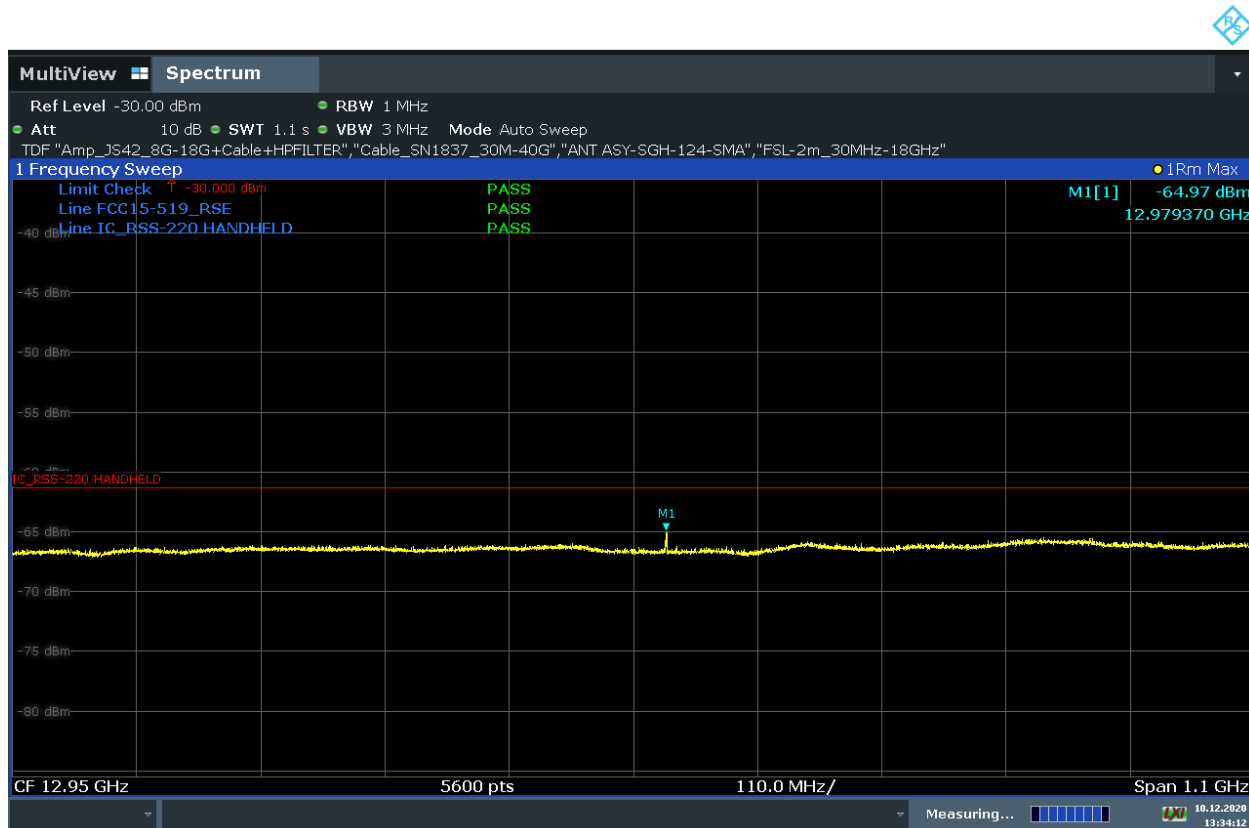
13:39:47 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.13_T01_UWB_ANTH_EUT0_90_12.4G_18G_zoom



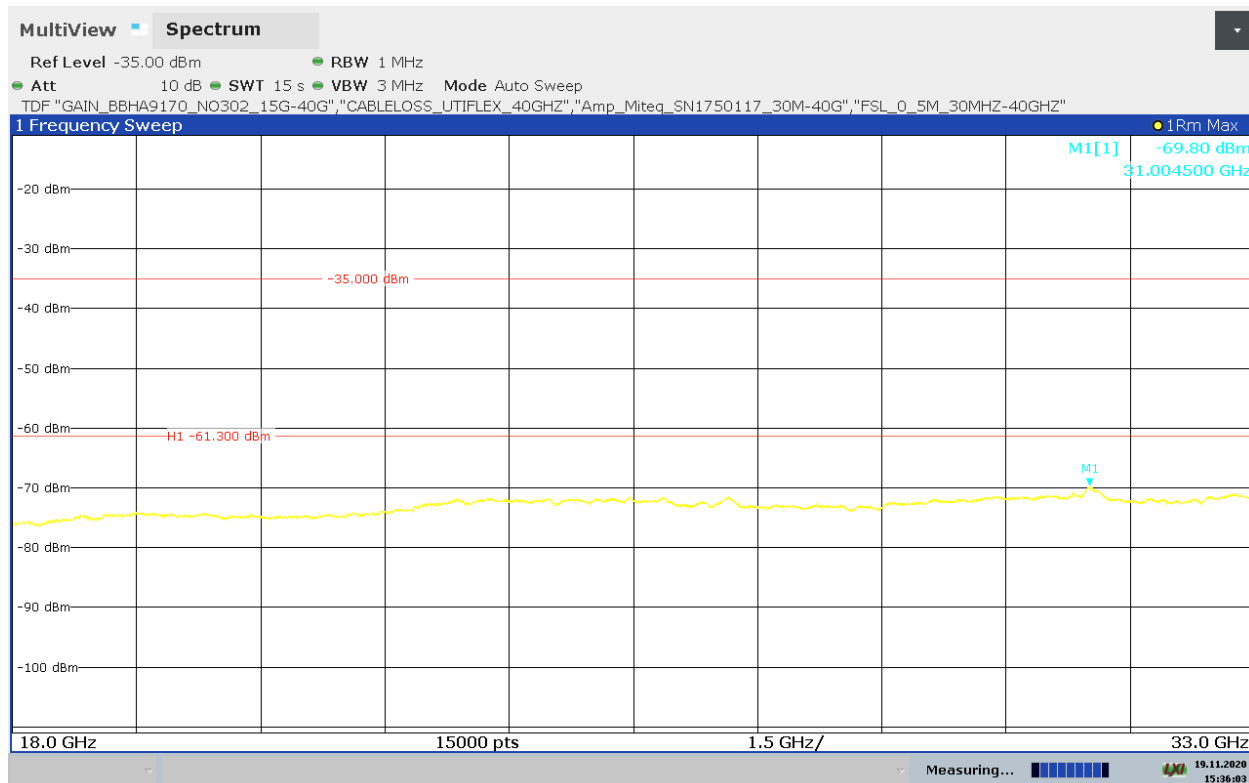
13:34:13 10.12.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.14_RSE_18G_33G



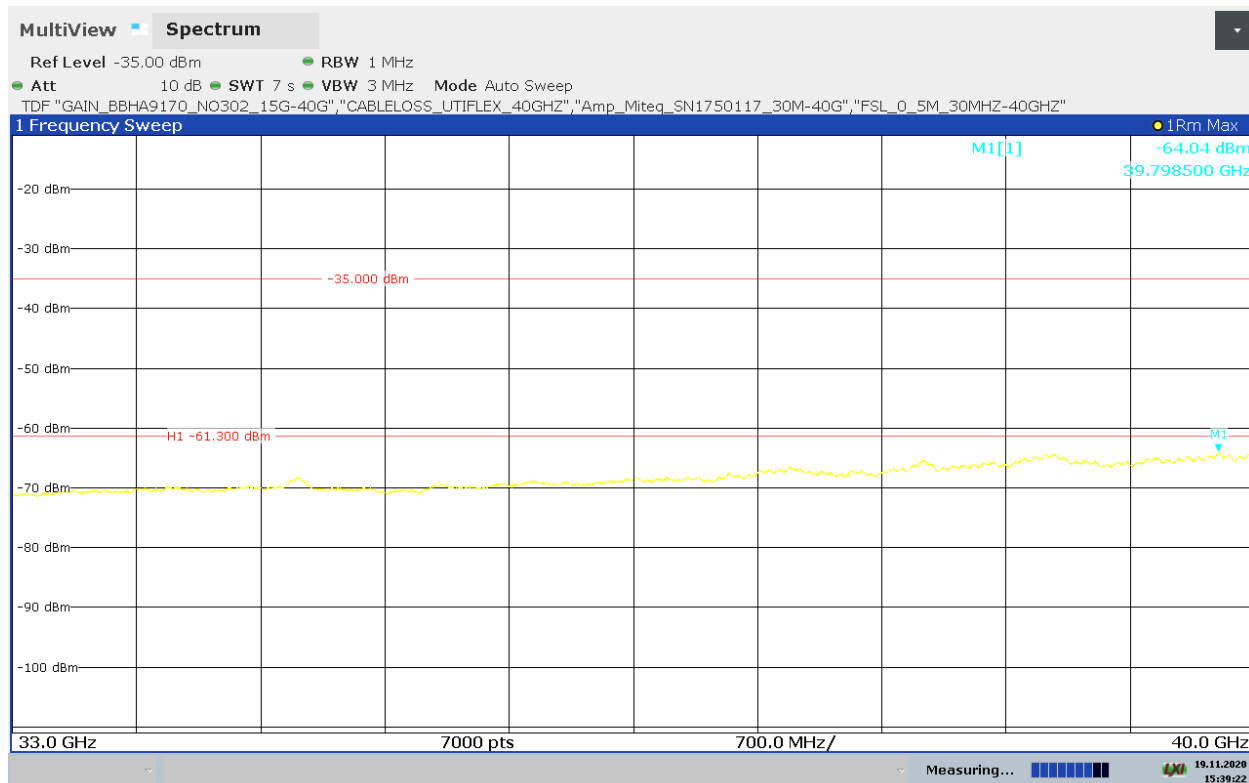
15:36:03 19.11.2020

Applicable Limits

for RSS-220 from above 10.6 GHz is -61.3 dBm

for FCC 15.250 above 10.6GHz is -61.3 dBm

4.15_RSE_33G_40G



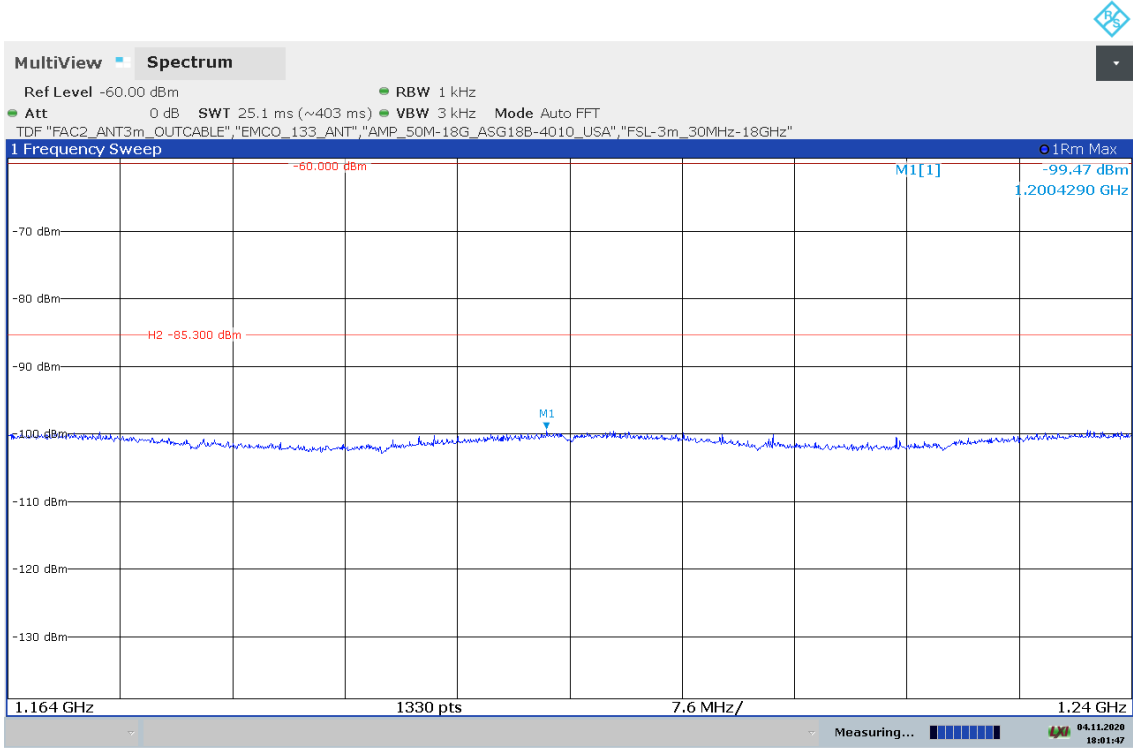
15:39:22 19.11.2020

Applicable Limits

- for RSS-220 from above 10.6 GHz is -61.3 dBm
- for FCC 15.250 above 10.6GHz is -61.3 dBm

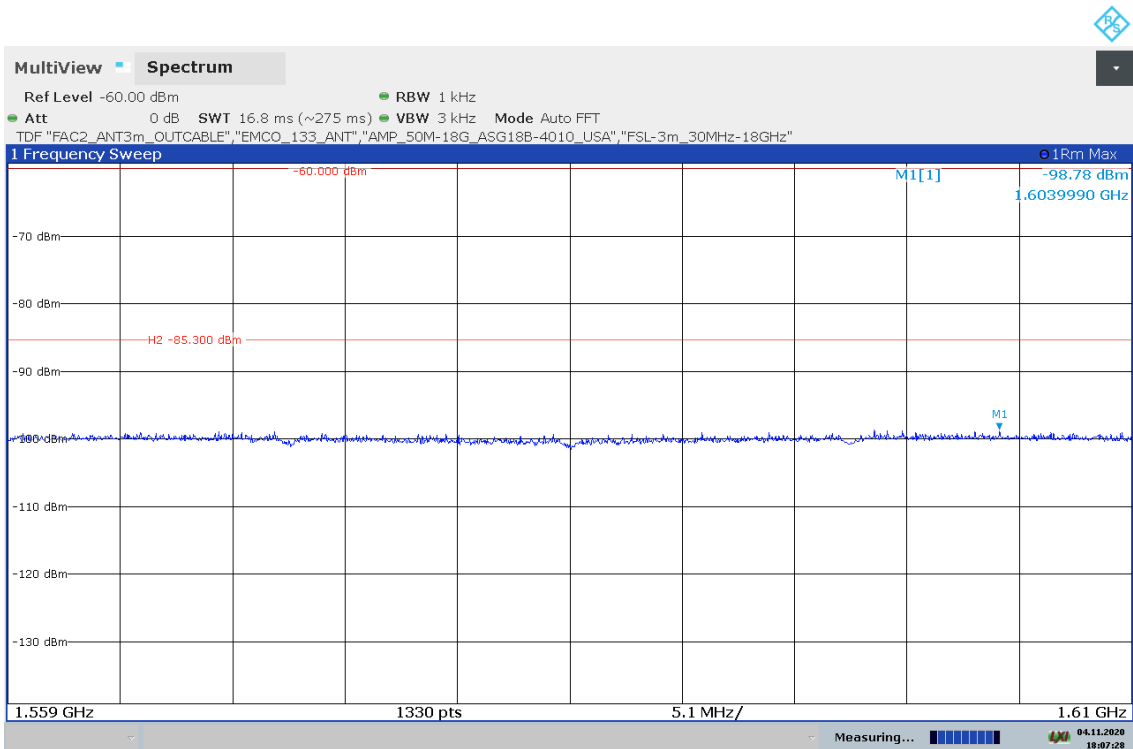
1.5 Emissions in Band 1164 MHz – 1240 MHz and 1559 MHz – 1610 MHz

4.16_ANTH



18:01:47 04.11.2020

4.17_ANTV



18:07:28 04.11.2020

END of ANNEX 1