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Radio measurements on Air 1281 B261

Product name: Air 1281 B261
Product number: KRD 901 165/2

RISE Research Institutes of Sweden AB Vehicles and Automation - EMC-IKT

Performed by

Examined by

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Testing
ISO/IEC 17025

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Summary

Standard Listed part of	Compliant
FCC CFR 47 part 30 Subpart C	
2.1046 RF power output	Yes
2.1049 Occupied bandwidth	Yes
2.1053 Field strength of spurious radiation	Yes

Description of the test object

Equipment:	Radio equipment:, Air 1281 B261 Product number: KRD 901 165/2 including KRX 101 01/1, Rev. R1A with FCC ID: TA8AKRX10101
Hardware revision state:	R1A
Tested configuration:	3GPP NR TDD
Frequency range:	TX/ RX: 27500 – 28350 MHz
No of supported beams:	Config mode 1: 2 beams in 2 orthogonal polarizations each, 4 beams in total. Config mode 2: 1 beam in 2 orthogonal polarizations each, 2 beams in total.
Operating bandwidth:	Config mode 1: Two segments of 400 MHz Config mode 2: One segment of 400 MHz
Nominal Output power (EIRP):	53 dBm/ beam and polarization config mode 2 47 dBm/ beam and polarization config mode 1
RF configurations:	TX Diversity, SU and MU MIMO up to 2 layers 1x(2x2), Contiguous Spectrum (CS) and Non-Contiguous spectrum (NCS), Carrier Aggregation (CA) intra-band supported
Antenna beam steering:	Azimuth ± 60 deg, elevation ± 15 deg
Channel bandwidth(s)/ Sub Carrier Spacing:	50MHz and 100 MHz/ 120 kHz
Modulations:	QPSK, 16QAM and 64QAM
Emission designators:	46M1W7D and 95M0W7D
Emission designators Carrier Aggregation:	793MW7D (8x 100 MHz)
RF power Tolerance:	+1.5/ -2.0 dB
CPRI Speed	Up to 10.1 Gbit/s

The information above is supplied by the manufacturer.

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in applicable items of FCC CFR 47 Part 30.

Operation modes during measurements

The measurements were performed with the test object transmitting test models as defined in 3GPP TS 38.141-2. Test model NR-FR2 TM 1.1 is used to represent QPSK, test model NR-FR2 TM 3.2 to represent 16QAM, test model NR-FR2 TM 3.1 to represent 64QAM modulation

The settings below were deemed representative for worst case settings, for all traffic scenarios when settings with different modulations and RF configurations was found to represent worst case settings.

MIMO mode, NR-FR2 TM1.1, QPSK with the beams locked in boresight. All measurements were performed with the test object configured for maximum transmit power.

The measurement shall be done during active part of transmission, or if the measurement is performed with constant duty cycle <98%, the result shall be adjusted for the duty cycle according to ANSI C63.26 5.2.4.3.4. The duty cycle was measured to 74% and to compensate for this 1.31 dB was added to the test results.

Measurements

The test object was powered with -48 VDC by an external power supply. Additional connections are documented in the setup drawings for radiated measurements.

Far field distance for power, OBW and Band edge measurements is 3.5 m, based on the EUT antenna dimensions and the highest transmitter frequency (28.35 GHz).

Far field distances for OOB emissions is based on the measurement antenna dimension and highest frequency in the measure frequency range:

Frequency range [GHz]	Far field distance [m]	Measured distance [m]
18 – 26.5	0.73	4
26.5 – 40	0.49	4
40 – 60	0.34	3
60 – 80	0.18	1
80 – 100	0.16	1

Formula for far field distance calculation:

$$R = 2 \times D^2 / \lambda$$

References

Measurements were done according to relevant parts of the following documents:

CFR 47 part 30, May 2020

ANSI C63.26-2015

KDB 842590 D01 Upper Microwave Flexible Use Service v01r01

3GPP TS 38.141-2 V15.5.0 (2020-03)

3GPP TR 37.842 V13.3.0 (2020-01)

RISE Measurement equipment

	Calibration Due	RISE number
Anechoic chamber, Hertz	2020-11	BX50194
R&S FSW 43	2021-07	902 073
R&S ESU 40	2021-07	901 385
R&S ZNB 40	2021-07	BX50051
RF Cable VNA-calibration	2021-01	BX50189
RF Cable VNA-calibration	2021-01	BX50190
RF Cable	2021-05	BX50236
RF Cable	2020-09	BX50192
RF Cable	2021-01	BX81431
RF Cable	2021-05	BX81423
RF Cable	2020-09	503 681
RF Cable FSW-B21	2020-10	BX62069
RF Cable FSW-B21	2020-10	BX62073
Bilog antenna Schaffner 6143A	2021-08	504 079
Flann STD Gain Horn Antenna 20240-20	-	BX92412
Flann STD Gain Horn Antenna 22240-20	-	BX92413
Flann STD Gain Horn Antenna 24240-20	-	BX92414
Flann STD Gain Horn Antenna 26240-20	-	BX92415
Flann STD Gain Horn Antenna 27240-20	-	BX92416
Mixer FS-Z60	2023-08	BX90566
Mixer FS-Z90	2021-01	BX90567
Mixer FS-Z110	2021-07	BX81425
Miteq, Low Noise Amplifier	2021-01	503 278
EMCO Horn Antenna 3115	2021-07	502 175
EMCO Horn Antenna 3115	2022-02	902 212
EMCO Horn Antenna 3116	2021-07	503 279
µComp Nordic, Low Noise Amplifier	2021-01	901 544
Temperature and humidity meter, Testo 615	2021-06	503 498

EAB Measurement equipment

Calibrated at RISE before testing.

	Calibration Due	S/N
SWH010 HPF 30-40 GHz	2021-06	ST010619225
SSL036 LPF 26.5 GHz	2021-06	ST012717003

Uncertainties

Measurement and test instrument uncertainties are described in the quality assurance documentation "SP-QD 10885". The uncertainties are calculated with a coverage factor $k=2$ (95% level of confidence).

Compliance evaluation is based on a shared risk principle with respect to the measurement uncertainty.

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery of test object

The test object was delivered: 2020-06-22

Manufacturer's representative

Mikael Jansson, Ericsson AB.

Test engineers

Tomas Lennhager and Karl Flysjö, RISE

Test participant(-s)

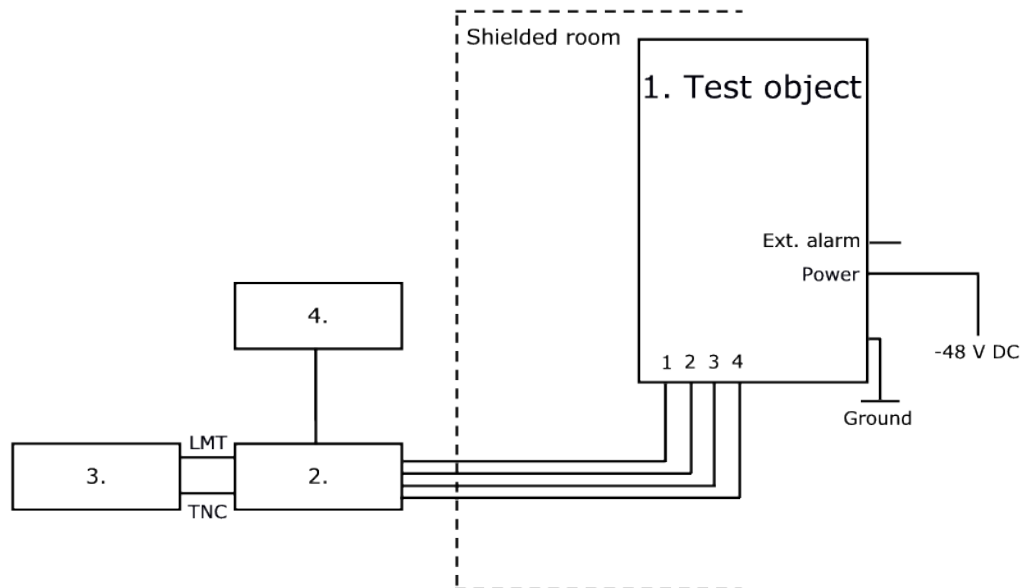
None

Test frequencies used for radiated measurements

nr-arfcn:	Frequency Hor/ Ver [MHz]	Symbolic name	Config mode	Comment
2071249	27525.00	BL ₅₀	2	50 MHz BW, TX bottom Lower block
2077499	27900.00	TL ₅₀	2	50 MHz BW, TX Top Lower block
2078339	27950.04	BH ₅₀	2	50 MHz BW, TX Bottom High block
2084581	28324.92	TH ₅₀	2	50 MHz BW, TX Top High block
2071679	27550.08	BL ₁₀₀	2	100 MHz BW, TX bottom Lower block
2077081	27874.92	TL ₁₀₀	2	100 MHz BW, TX Top Lower block
2078749	27975.00	BH ₁₀₀	2	100 MHz BW, TX Bottom High block
2084165	28299.96	TH ₁₀₀	2	100 MHz BW, TX Top High block
2071667 2073333	27550.08 27650.04	BL2 ₁₀₀	2	100 MHz BW, TX 2 carrier Bottom Lower band
2082499 2084165	28200.00 28299.96	TH2 ₁₀₀	2	100 MHz BW, TX 2 carrier Top High band
2071249 2072083 2077081	27525.00 27575.04 27874.92	BIM3 ₅₀	2	50 MHz BW, TX 3 carrier Bottom Lower block
2078749 2083749 2084581	27975.00 28275.00 28324.92	TIM3 ₅₀	2	50 MHz BW, TX 3 carrier Top High block
2071667 2073333 2076665	27550.08 27650.04 27849.96	BIM3 ₁₀₀	2	100 MHz BW, TX 3 carrier Bottom Lower block
2079165 2082499 2084165	27999.96 28200.00 28299.96	TIM3 ₁₀₀	2	100 MHz BW, TX 3 carrier Top High block
2071667 2073333 2074999 2076665	27550.08 27650.04 27750.00 27849.96	BL4 ₁₀₀	2	100 MHz BW, TX 4 carrier Bottom Lower block
2079165 2080831 2082499 2084165	27999.96 28099.92 28200.00 28299.96	TH4 ₁₀₀	2	100 MHz BW, TX 4 carrier Top High block
2071249 2072083 2076249 2077081 2078749 2079581 2083749 2084581	27525.00 27575.04 27825.00 27874.92 27975.00 28024.92 28275.00 28324.92	BT8 ₅₀	1	50 MHz BW, TX 8 carrier Bottom and Top block
2074999 2075831 2076665 2077499 2078333 2079165 2079999 2080831	27750.00 27799.92 27849.96 27900.00 27950.04 27999.96 28050.00 28099.92	M8 ₅₀	1	50 MHz BW, TX 8 carrier Middle

nr-arfcn:	Frequency Hor/ Ver [MHz]	Symbolic name	Config mode	Comment
2071667 2073333 2074999 2076665 2079165 2080831 2082499 2084165	27550.08 27650.04 27750.00 27849.96 27999.96 28099.92 28200.00 28299.96	BT8 ₁₀₀	1	100 MHz BW, TX 8 carrier Bottom and Top block
2072083 2073749 2075415 2077083 2078749 2080415 2082083 2083749	27575.04 27675.00 27774.96 27875.04 27975.00 28074.96 28175.04 28275.00	M8 ₁₀₀	1	100 MHz BW, TX 8 carrier Middle

Test setup: radiated measurements



Test object:

- | | |
|----|--|
| 1. | AIR 1281 B261, KRD 901 165/2, rev. R1A, s/n: E23B497412
including KRX 101 01/1 rev R1A with FCC ID: TA8AKRX10101
Radio Software: CXP 203 0045/1, rev. R5A400 |
|----|--|

Associated equipment:

- | | |
|----|---|
| 2. | Testing Equipment:
Baseband 6630, KDU 137 848/1, rev. R3B, s/n: E23B220402
with software: CXP904418/15, rev. R11A67 |
|----|---|

Functional test equipment:

- | | |
|----|--|
| 3. | Computer, HP ZBook, BAMS - 1001530471 |
| 4. | GPS Active Antenna, KRE 101 2082/1
GPS 02 01, NCD 901 41/1, rev. R1D, s/n: A401804384 |

Interfaces:

Power input configuration DC (KRD 901 165/2): -48 VDC	Power
EXT Alarm, shielded multi-wire	Signal
1, Optical Interface Link, single mode opto fibre	Signal
2, Optical Interface Link, single mode opto fibre	Signal
3, Optical Interface Link, single mode opto fibre	Signal
4, Optical Interface Link, single mode opto fibre	Signal
Ground wire	Ground

RF power output measurements according to CFR 47 §30.202

Date	Temperature	Humidity
2020-08-11	24 °C ± 3 °C	42 % ± 5 %
2020-08-12	23 °C ± 3 °C	46 % ± 5 %
2020-08-13	23 °C ± 3 °C	49 % ± 5 %

Test set-up and procedure

The test object was located in a anechoic chamber. The measuring antenna was aligned to the centre of the PAAM. A turn table was used to find the highest output power. A signal analyzer with the channel power function activated was used to measure the output power with the RMS detector activated. The bandwidth setting of the channel power function was set to 100 MHz.

A substitution measurement defined in 3GPP TR 37.842 chapter 10.3.1.1.2 was used to get the actual correction factor (Transducer factor A-D in the figure 1 below) with a Network analyzer (ZNB 40).

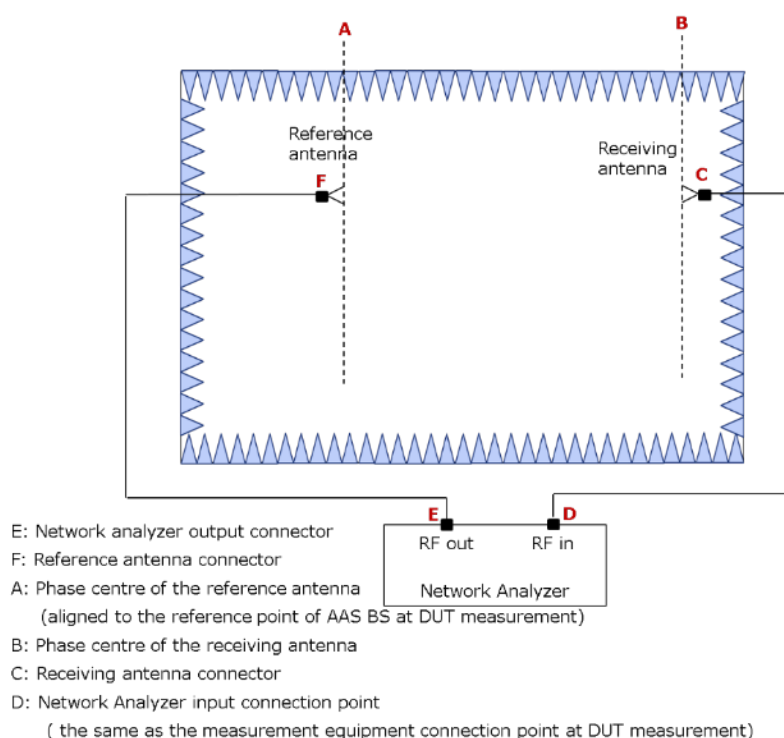


Figure 1: Indoor Anechoic Chamber calibration system setup for EIRP

Stage 1 - Calibration:

- 1) Connect the reference antenna and the receiving antenna to the measurement RF out port and RF in port of the network analyzer, respectively, as shown in figure 1.
- 2) Install the reference antenna with its *beam peak direction* and the height of its phase centre aligned with the receiving antenna.
- 3) Set the centre frequency of the network analyzer to the carrier centre frequency of the tested signal for EIRP measurement of the EUT and measure $LF_{\text{EIRP}, E \rightarrow D}$, which is equivalent to $20\log|S_{21}|$ (dB) obtained by the network analyzer:
 $LF_{\text{EIRP}, E \rightarrow D}$: Pathloss between E and D in figure 1.

- 4) Measure the cable loss, $LF_{EIRP, E \rightarrow F}$ between the reference antenna connector and the network analyzer connector:
 $LF_{EIRP, E \rightarrow F}$: Cable loss between E and F in figure 1.
- 5) Calculate the calibration value between A and D with the following formula:
 $L_{EIRP_cal, A \rightarrow D} = LF_{EIRP, E \rightarrow D} + G_{REF_ANT_EIRP, A \rightarrow F} - LF_{EIRP, E \rightarrow F}$.
 $L_{EIRP_cal, A \rightarrow D}$: Calibration value between A and D in figure 1. Was implemented in the spectrum analyzer as a transducer.
 $G_{REF_ANT_EIRP, A \rightarrow F}$: Antenna gain of the reference antenna.

Stage 2 - Measurement:

- 6) Uninstall the reference antenna and install the EUT with the manufacturer declared coordinate system reference point in the same place as the phase centre of the reference antenna. The manufacturer declared coordinate system orientation of the EUT is set to be aligned with the testing system.
- 7) Measure the mean power, $P_{R_EUT_EIRP, D}$, D in figure 1.
- 8) Calculate the EIRP with the following formula:

$$EIRP = P_{R_EUT_EIRP, D} + L_{EIRP_cal, A \rightarrow D}$$

Test Setup, measuring distance 4m:

Measurement equipment	RISE number
Anechoic chamber, Hertz	BX50194
R&S FSW 43	902 073
R&S ZNB 40	BX50051
EMCO Horn Antenna 3116	503 279
FLANN Std gain 22240-20	BX92413
RF Cable	BX81423
Testo 615, temperature and humidity meter	503 498

Measurement uncertainty: 3.3 dB

Results

Single carrier Config mode 2

Beam index 0 Boresight, Carrier Bandwidth 50 MHz, QPSK

Nominal rated output power (EIRP) per Beam: 53 dBm/ Polarization.

	Output power per 100 MHz, EIRP [RMS dBm] Vertical/ Horizontal
Symbolic name	Carrier 1
BL ₅₀	53.90/ 53.69
TL ₅₀	53.44/ 53.25
BH ₅₀	53.60/ 53.13
TH ₅₀	53. 69/ 53.18

Beam index 0 Boresight, Carrier Bandwidth 100 MHz, QPSK

Nominal rated output power (EIRP) per Beam: 53 dBm/ Polarization.

	Output power per 100 MHz, EIRP [RMS dBm] Vertical/ Horizontal
Symbolic name	Carrier 1
BL ₁₀₀	54.04/ 53.89
TL ₁₀₀	53.57/ 53.34
BH ₁₀₀	53.69/ 53.12
TH ₁₀₀	53.71/ 52.93

2-Carrier Config mode 2

Beam index 0 Boresight, Carrier Bandwidth 100 MHz, QPSK

Nominal rated output power (EIRP) per Beam: 53 dBm/ Polarization.

	Output power per 100 MHz, EIRP [RMS dBm] Vertical/ Horizontal		
Symbolic name	Carrier 1	Carrier 2	Total (per 200 MHz)
BL2 ₁₀₀	50.74/ 50.50	51.08/ 50.59	53.92/ 53.56
TH2 ₁₀₀	50.75/ 50.26	50.70/ 50.01	53.74/ 53.15

4-Carrier Config mode 2

Beam index 0 Boresight, Bandwidth 100MHz, QPSK

Nominal rated output power (EIRP) per Beam: 53 dBm/ Polarization

	Output power per 100 MHz, EIRP [RMS dBm] Vertical/ Horizontal				
Symbolic name	Carrier 1	Carrier 2	Carrier 3	Carrier 4	Total (per 400 MHz)
BL4 ₁₀₀	47.36/ 47.62	47.65/ 47.53	48.03/ 47.49	48.04/ 47.84	53.80/ 53.64
TH4 ₁₀₀	47.39/ 47.31	47.56/ 47.27	47.97/ 47.36	47.54/ 47.38	53.64/ 53.35

8-Carrier Config mode 1

Beam index 0 Boresight, Carrier Bandwidth 50 MHz

Nominal rated output power (EIRP) per Beam: 47.0 dBm/ Polarization.

		Output power per 50 MHz, EIRP [RMS dBm] Vertical/ Horizontal									
		Beam 1					Beam 2				
Modulation	Symbolic name	A	B	C	D	Total Power Beam 1	E	F	G	H	Total power Beam 2
QPSK	BT8 ₅₀	41.95/ 41.26	42.11/ 41.83	42.13/ 41.63	42.20/ 41.99	48.12/ 47.7	41.04/ 41.28	41.50/ 41.53	41.70/ 41.15	41.23/ 41.54	47.40/ 47.40
QPSK	M8 ₅₀	41.52/ 41.40	41.93/ 41.30	41.91/ 41.16	42.25/ 41.41	47.93/ 47.34	41.31/ 40.92	41.18/ 41.42	41.21/ 41.46	42.02/ 41.47	47.46/ 47.34

Beam index 0 Boresight, Carrier Bandwidth 100 MHz

Nominal rated output power (EIRP) per Beam: 47.0 dBm/ Polarization.

		Output power per 100 MHz, EIRP [RMS dBm] Vertical/ Horizontal									
		Beam 1					Beam 2				
Modulation	Symbolic name	A	B	C	D	Total Power Beam 1	E	F	G	H	Total power Beam 2
QPSK	BT8 ₁₀₀	41.93/ 41.43	41.87/ 41.47	42.15/ 41.40	42.30/ 41.75	48.09/ 47.54	41.25/ 41.28	41.55/ 41.19	41.80/ 41.45	41.65/ 41.31	47.59/ 47.33
QPSK	M8 ₁₀₀	41.88/ 41.28	41.83/ 41.33	42.07/ 41.33	42.24/ 41.65	48.03/ 47.42	41.22/ 41.24	41.55/ 41.11	41.83/ 41.47	41.73/ 41.38	47.61/ 47.32

Limits

CFR47 §30.202 Power limits.

- (a) For fixed and base stations operating in connection with mobile systems, the average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75dBm/100 MHz. For channel bandwidths less than 100 MHz the EIRP must be reduced proportionally and linearly based on the bandwidth relative to 100 MHz.

Complies?	Yes
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Occupied bandwidth measurements according to CFR47 §2.1049

Date	Temperature	Humidity
2020-08-12	23 °C ± 3 °C	46 % ± 5 %
2020-08-13	23 °C ± 3 °C	49 % ± 5 %

Test set-up and procedure

The test object was located in a anechoic chamber. The measuring antenna was aligned to the centre of the of the PAAM. A turn table was used to find the highest output power. A signal analyzer with Peak detector and max hold was used to measure the OBW.

Test Setup, measuring distance 4m:

Measurement equipment	RISE number
Anechoic chamber, Hertz	BX50194
R&S FSW 43	902 073
R&S ZNB 40	BX50051
EMCO Horn Antenna 3116	503 279
FLANN Std gain 22240-20	BX92413
RF Cable	BX81423
Testo 615, temperature and humidity meter	503 498

Measurement uncertainty: 3.3 dB

Results

Single carrier, Config mode 2, Bandwidth: 50MHz Modulation: QPSK

Diagram	Symbolic name	Polarization	Occupied BW (99%) [MHz]
1.1	TL ₅₀	Hor	46.138
1.2	TL ₅₀	Ver	46.115

Single carrier, Config mode 2, Bandwidth: 100MHz Modulation: QPSK

Diagram	Symbolic name	Polarization	Occupied BW (99%) [MHz]
1.3	TL ₁₀₀	Hor	95.006
1.4	TL ₁₀₀	Ver	95.008

Carrier Aggregation, Config mode 1, Bandwidth: 8x 100MHz, Modulation: QPSK

Diagram	Symbolic name	Polarization	Occupied BW (99%) [MHz]
1.5	M8 ₁₀₀	Hor	791.357
1.6	M8 ₁₀₀	Ver	793.120

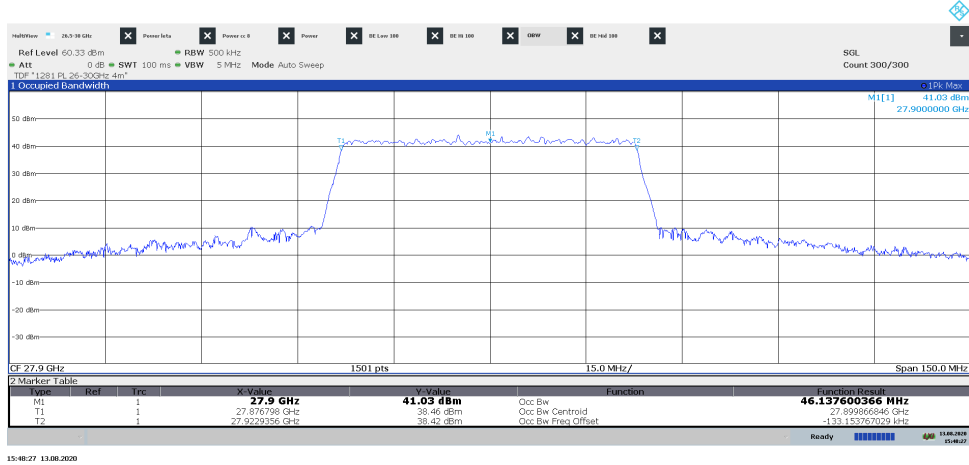
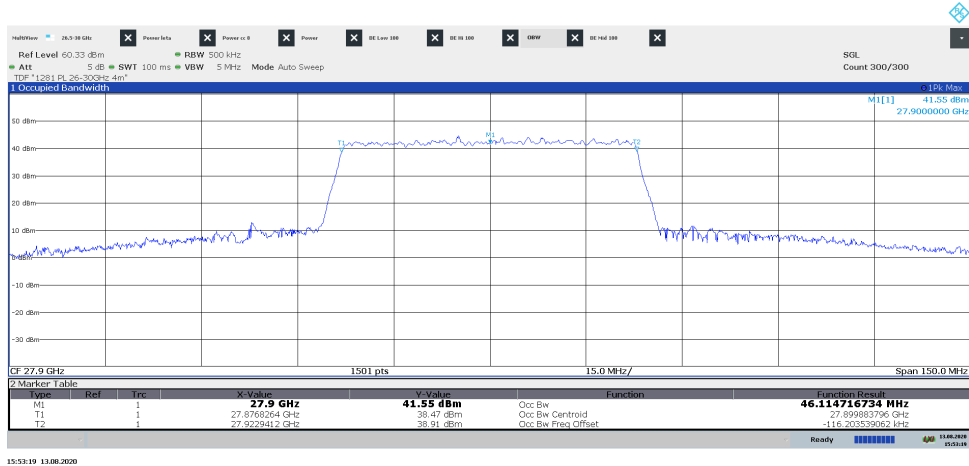
Diagram 1.1, TL₅₀, QPSK, Horizontal:Diagram 1.2, TL₅₀, QPSK, Vertical:

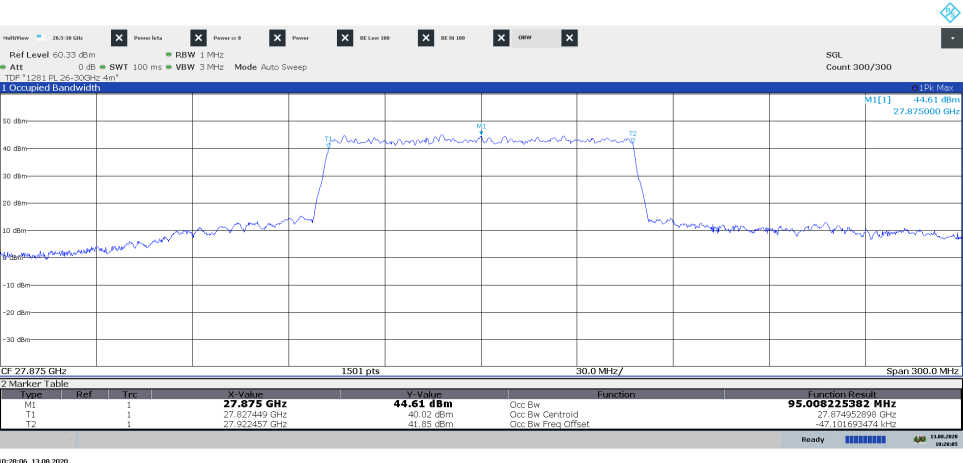
Diagram 1.3, TL₁₀₀, QPSK, Horizontal:Diagram 1.4, TL₁₀₀, QPSK, Vertical::

Diagram 1.5, M8₁₀₀, QPSK, Horizontal:Diagram 1.6, M8₁₀₀, QPSK, Vertical::

Field strength of spurious radiation measurements according to CFR 47 §30.203

Date	Temperature	Humidity
2020-08-11	24 °C ± 3 °C	42 % ± 5 %
2020-08-12	23 °C ± 3 °C	46 % ± 5 %
2020-08-13	23 °C ± 3 °C	49 % ± 5 %
2020-08-04	23 °C ± 3 °C	48 % ± 5 %
2020-08-25	23 °C ± 3 °C	26 % ± 5 %
2020-08-26	22 °C ± 3 °C	37 % ± 5 %
2020-08-27	23 °C ± 3 °C	27 % ± 5 %
2020-08-28	23 °C ± 3 °C	30 % ± 5 %
2020-08-31	23 °C ± 3 °C	23 % ± 5 %

The measurements were performed with both horizontal and vertical polarization of the antenna. The measurement was performed with a RBW of 1 MHz. The antenna distance and test object height in the different frequency ranges is described below.

In the test range from 40 – 100 GHz

A propagation loss in free space was calculated. The used formula was

$$\gamma = 20 \log \left(\frac{4\pi D}{\lambda} \right), \quad \gamma \text{ is the propagation loss and } D \text{ is the antenna distance.}$$

For 40 – 60 GHz D was 3.0 m and for 60 – 100 GHz D was 1.0 m.

In the test range from 30MHz – 40 GHz a substitution measurement defined in 3GPP TR 37.842 chapter 10.3.1.1.2 was used to get the actual correction factor (Transducer factor A-D in the figure 1 below) with a Network analyzer (ZNB 40).

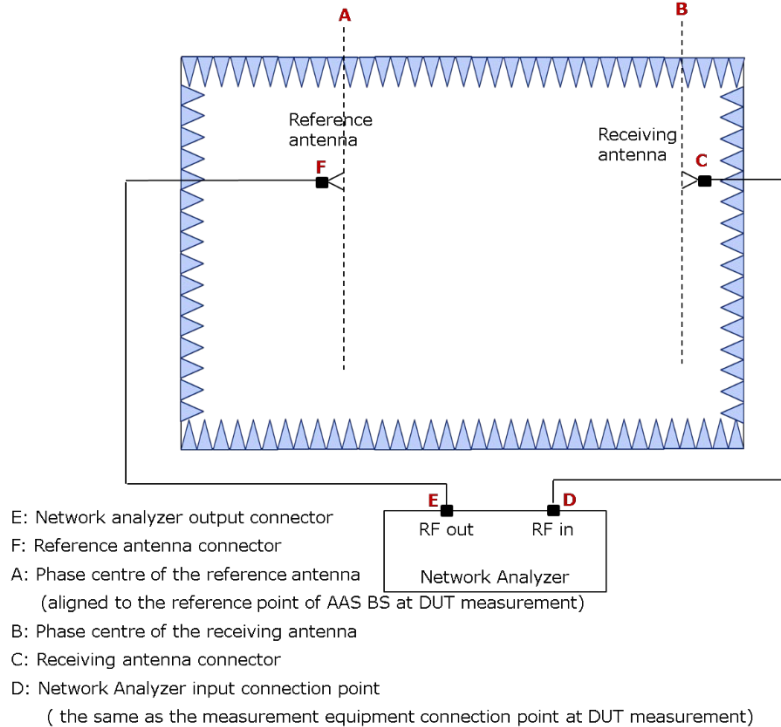


Figure 1: Indoor Anechoic Chamber calibration system setup for EIRP

Stage 1 - Calibration:

- 1) Connect the reference antenna and the receiving antenna to the measurement RF out port and RF in port of the network analyzer, respectively, as shown in figure 1.
- 2) Install the reference antenna with its *beam peak direction* and the height of its phase centre aligned with the receiving antenna.
- 3) Set the centre frequency of the network analyzer to the carrier centre frequency of the tested signal for EIRP measurement of the EUT and measure $LF_{EIRP, E \rightarrow D}$, which is equivalent to $20\log|S_{21}|$ (dB) obtained by the network analyzer:
 $LF_{EIRP, E \rightarrow D}$: Pathloss between E and D in figure 1.
- 4) Measure the cable loss, $LF_{EIRP, E \rightarrow F}$ between the reference antenna connector and the network analyzer connector:
 $LF_{EIRP, E \rightarrow F}$: Cable loss between E and F in figure 1.
- 5) Calculate the calibration value between A and D with the following formula:
 $L_{EIRP_cal, A \rightarrow D} = LF_{EIRP, E \rightarrow D} + G_{REF_ANT_EIRP, A \rightarrow F} - LF_{EIRP, E \rightarrow F}$.
 $L_{EIRP_cal, A \rightarrow D}$: Calibration value between A and D in figure 1. Was implemented in the spectrum analyzer as a transducer.
 $G_{REF_ANT_EIRP, A \rightarrow F}$: Antenna gain of the reference antenna.

Stage 2 - Measurement:

- 6) Uninstall the reference antenna and install the EUT with the manufacturer declared coordinate system reference point in the same place as the phase centre of the reference antenna. The manufacturer declared coordinate system orientation of the EUT is set to be aligned with the testing system.
- 7) Measure the mean power, $P_{R_EUT_EIRP, D}$, D in figure 1.
- 8) Calculate the EIRP with the following formula:

$$EIRP = P_{R_EUT_EIRP, D} + L_{EIRP_cal, A \rightarrow D}$$

The measurement procedure was as the following:

1. An EIRP pre-scan with the measurement antenna in horizontal and vertical polarization is performed with RMS detector and Max Hold on the spectrum analyzer. The turn table was slowly rotating from 0-360 degrees.
2. EIRP spurious radiation on frequencies closer than 10 dB to the TRP limit in the pre-scan a manual search for maximum response was done.
3. If the recorded EIRP value was above the TRP limit, a TRP measurement was done according to KDB 842590 D01 chapter 4.4. Overview of the methods.
 - a. Two Cut method according to KDB 842590 D01 chapter 4.4.2.2
 - i. EUT set in vertical orientation
 - ii. EIRP measurement samples with horizontal and vertical polarization of the measurement antenna. Angular step size based on frequency and dimension of the EUT
 - iii. EUT set in horizontal orientation
 - iv. EIRP measurement samples with horizontal and vertical polarization of the measurement antenna. Angular step size based on frequency and dimension of the EUT.
 - v. $TRP = EIRP \text{ measurement samples averaged} + \Delta TRP$.
(ΔTRP = Margin factor based on grid selection).

- b. Two Cut method when pattern multiplication is applicable and used according to KDB 842590 D01 chapter 4.4.2.3
 - i. EUT set in vertical orientation
 - ii. EIRP measurement samples with horizontal and vertical polarization of the measurement antenna. Angular step size based on frequency and dimension of the EUT
 - iii. EUT set in horizontal orientation
 - iv. EIRP measurement samples with horizontal and vertical polarization of the measurement antenna. Angular step size based on frequency and dimension of the EUT.
 - v. TRP is calculated using the formula in Appendix E of KDB 842590 D01
- c. EIRP to Conducted Power Conversion in Band Edge Using Antenna Gain according to KDB 842590 D01 chapter 4.4.2.5
 - i. Convert each radiated measurement to conducted power/BW using the equations:
$$\text{Conducted Power level (dBm) at any frequency/BW} = \text{Measured EIRP level (dBm)/BW} - \text{EUT antenna Gain (dBi)}$$
 - ii. Sum the radiated power Horizontal and Vertical polarisations for total conducted power level/BW.
 - iii. Evaluate the pass/fail decision by comparing total conducted power level/BW against the applicable TRP limit.

Rise Measurement equipment

Measurement equipment	RISE number
Anechoic chamber, Hertz	BX50194
R&S FSW 43	902 073
R&S ESU 40	901 385
R&S ZNB 40	BX50051
EMCO Horn Antenna 3116	503 279
Bilog antenna Schaffner 6143	504 079
Flann STD Gain Horn Antenna 20240-20	BX92412
Flann STD Gain Horn Antenna 22240-20	BX92413
Flann STD Gain Horn Antenna 24240-20	BX92414
Flann STD Gain Horn Antenna 26240-20	BX92415
Flann STD Gain Horn Antenna 27240-20	BX92416
Mixer FS-Z60	BX90566
Mixer FS-Z90	BX90567
Mixer FS-Z110	BX81425
Miteq, Low Noise Amplifier	503 278
EMCO Horn Antenna 3115	502 175
EMCO Horn Antenna 3115	902 212
µComp Nordic, Low Noise Amplifier	901 544
RF Cable	BX81423
RF Cable	503 681
RF Cable FSW-B21	BX62069
RF Cable FSW-B21	BX62073
Temperature and humidity meter, Testo 615	503 498

EAB Measurement equipment

Calibrated at RISE before testing

	S/N
SWH010 HPF 30-40 GHz	ST010619225
SSL036 LPF 26,5 GHz	ST012717003

Results

The diagrams represents worst case configurations for each frequency range.

Diagram	Symbolic name	Config mode	Pol	Frequency range	Measurement method	“Early exit?”
2.1a	TH ₅₀	2	Hor	30-1000 MHz	Pre scan EIRP	Yes
2.1b	TH ₅₀	2	Ver	30-1000 MHz	Pre scan EIRP	Yes
2.2a	BT8 ₁₀₀	1	Hor	30-1000 MHz	Pre scan EIRP	Yes
2.2b	BT8 ₁₀₀	1	Ver	30-1000 MHz	Pre scan EIRP	Yes
2.3a	TH ₅₀	2	Hor	1-18 GHz	Pre scan EIRP	Yes
2.3b	TH ₅₀	2	Ver	1-18 GHz	Pre scan EIRP	Yes
2.4a	BT8 ₁₀₀	1	Hor	1-18 GHz	Pre scan EIRP	Yes
2.4b	BT8 ₁₀₀	1	Ver	1-18 GHz	Pre scan EIRP	Yes
2.5a	TH ₅₀	2	Hor	18-26.5 GHz	Pre scan EIRP	No
2.5b	TH ₅₀	2	Ver	18-26.5 GHz	Pre scan EIRP	No
2.5c	TH ₅₀	2	Hor/Ver	26.113-26.213 GHz	Two cut TRP	Compliant to TRP limit
2.6a	BT8 ₁₀₀	1	Hor	18-26.5 GHz	Pre scan EIRP	Yes
2.6b	BT8 ₁₀₀	1	Ver	18-26.5 GHz	Pre scan EIRP	Yes
2.7a	BL ₅₀	2	Hor	26.5-30 GHz	Pre scan EIRP	No
2.7b	BL ₅₀	2	Ver	26.5-30 GHz	Pre scan EIRP	No
2.7c	BL ₅₀	2	Hor	27-27.51 GHz	Pre scan EIRP	Yes ¹
2.7d	BL ₅₀	2	Ver	27-27.51 GHz	Pre scan EIRP	Yes ¹
2.8a	TH ₁₀₀	2	Hor	26.5-30 GHz	Pre scan EIRP	No
2.8b	TH ₁₀₀	2	Ver	26.5-30 GHz	Pre scan EIRP	No
2.8c	TH ₁₀₀	2	Ver	28.34-28.85 GHz	Pre scan EIRP	Yes ¹
2.8d	TH ₁₀₀	2	Ver	28.34-28.85 GHz	Pre scan EIRP	Yes ¹
2.8e	TH ₁₀₀	2	Hor/Ver	27.39-27.49 GHz	Two cut TRP	Compliant to TRP limit
2.9a	Bim3 ₅₀	2	Hor	26.5-30 GHz	Pre scan EIRP	No
2.9b	Bim3 ₅₀	2	Ver	26.5-30 GHz	Pre scan EIRP	No
2.9c	Bim3 ₅₀	2	Hor	26.8-27.51 GHz	Pre scan EIRP	No
2.9d	Bim3 ₅₀	2	Ver	26.8-27.51 GHz	Pre scan EIRP	No
2.9e	Bim3 ₅₀	2	Hor/Ver	26.8-27.5 GHz	Pattern multiplication TRP	Compliant to TRP limit
2.10a	TL ₅₀	2	Hor	27.625-28.225 GHz	Pre scan EIRP	Yes ¹
2.10b	TL ₅₀	2	Ver	27.625-28.225 GHz	Pre scan EIRP	Yes ¹
2.11a	BH ₅₀	2	Hor	27.625-28.225 GHz	Pre scan EIRP	Yes ¹
2.11b	BH ₅₀	2	Ver	27.625-28.225 GHz	Pre scan EIRP	Yes ¹
2.12a	TH ₅₀	2	Hor	26.5-30 GHz	Pre scan EIRP	No ²
2.12b	TH ₅₀	2	Ver	26.5-30 GHz	Pre scan EIRP	No ²
2.12c	TH ₅₀	2	Hor	28.34-28.85 GHz	Pre scan EIRP	Yes ¹
2.12d	TH ₅₀	2	Ver	28.34-28.85 GHz	Pre scan EIRP	Yes ¹

¹⁾ Calculated conducted power based on antenna gain below limit

²⁾ Early Exit based on Lower EIRP compared to TH₁₀₀ (Diagram 2.8) for the spurious at 27.44GHz .

Diagram	Symbolic name	Config mode	Pol	Frequency range	Measurement method	“Early exit?”
2.13a	Tim ₃₅₀	2	Hor	26.5-30 GHz	Pre scan EIRP	No ²
2.13b	Tim ₃₅₀	2	Ver	26.5-30 GHz	Pre scan EIRP	No ²
2.13c	Tim ₃₅₀	2	Hor	28.34-28.85 GHz	Pre scan EIRP	No
2.13d	Tim ₃₅₀	2	Ver	28.34-28.85 GHz	Pre scan EIRP	No
2.13e	Tim ₃₅₀	2	Hor/Ver	28.35-28.85 GHz	Pattern multiplication TRP	Compliant to TRP limit
2.14a	BT ₈₁₀₀	1	Hor	26.5-30 GHz	Pre scan EIRP	No
2.14b	BT ₈₁₀₀	1	Ver	26.5-30 GHz	Pre scan EIRP	No
2.14c	BT ₈₁₀₀	1	Hor	27-27.51 GHz	Pre scan EIRP	Yes ¹
2.14d	BT ₈₁₀₀	1	Ver	27-27.51 GHz	Pre scan EIRP	Yes ¹
2.14e	BT ₈₁₀₀	1	Hor	28.34-28.85 GHz	Pre scan EIRP	Yes ¹
2.14f	BT ₈₁₀₀	1	Ver	28.34-28.85 GHz	Pre scan EIRP	Yes ¹
2.15a	BL ₅₀	2	Hor	30-40 GHz	Pre scan EIRP	No
2.15b	BL ₅₀	2	Ver	30-40 GHz	Pre scan EIRP	No
2.15c	BL ₅₀	2	Hor/Ver	30.55-30.65 GHz	Two cut TRP	Compliant to TRP limit
2.16a	BT ₈₁₀₀	1	Hor	30-40 GHz	Pre scan EIRP	Yes ³
2.16b	BT ₈₁₀₀	1	Ver	30-40 GHz	Pre scan EIRP	Yes ³
2.17a	TH ₅₀	2	Hor	40-60 GHz	Pre scan EIRP	Yes
2.17b	TH ₅₀	2	Ver	40-60 GHz	Pre scan EIRP	Yes
2.18a	BT ₈₁₀₀	1	Hor	40-60 GHz	Pre scan EIRP	Yes
2.18b	BT ₈₁₀₀	1	Ver	40-60 GHz	Pre scan EIRP	Yes
2.19a	TH ₅₀	2	Hor	60-80 GHz	Pre scan EIRP	Yes
2.19b	TH ₅₀	2	Ver	60-80 GHz	Pre scan EIRP	Yes
2.20a	BT ₈₁₀₀	1	Hor	60-80 GHz	Pre scan EIRP	Yes
2.20b	BT ₈₁₀₀	1	Ver	60-80 GHz	Pre scan EIRP	Yes
2.21a	TH ₅₀	2	Hor	80-100 GHz	Pre scan EIRP	Yes
2.21b	TH ₅₀	2	Ver	80-100 GHz	Pre scan EIRP	Yes
2.22a	BT ₈₁₀₀	1	Hor	80-100 GHz	Pre scan EIRP	Yes
2.22b	BT ₈₁₀₀	1	Ver	80-100 GHz	Pre scan EIRP	Yes

¹⁾ Calculated conducted power based on antenna gain below limit

²⁾ Early Exit based on Lower EIRP compared to TH₁₀₀ (Diagram 2.8) for the spurious at 27.44GHz .

³⁾ Early Exit based on Lower EIRP compared to BL₅₀ (Diagram 2.15)

Measurement uncertainty: 30 – 1000 MHz 3.1 dB
1 – 18 GHz, 3.0 dB
18 – 40 GHz, 3.1 dB
40 – 60 GHz, 2.27 dB
60 – 75 GHz, 2.70 dB
75 – 100 GHz, 4.24 dB

Limits

CFR 47 §30.203 Emission limits.

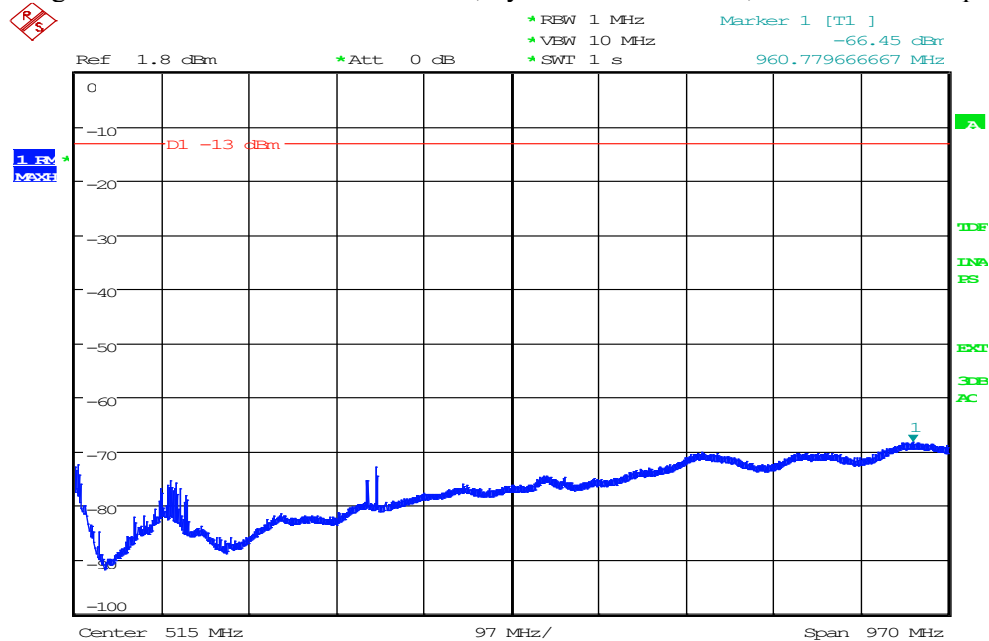
(a) The conductive power or the total radiated power of any emission outside a licensee's frequency block shall be -13 dBm/MHz or lower. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive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

(b)(1) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

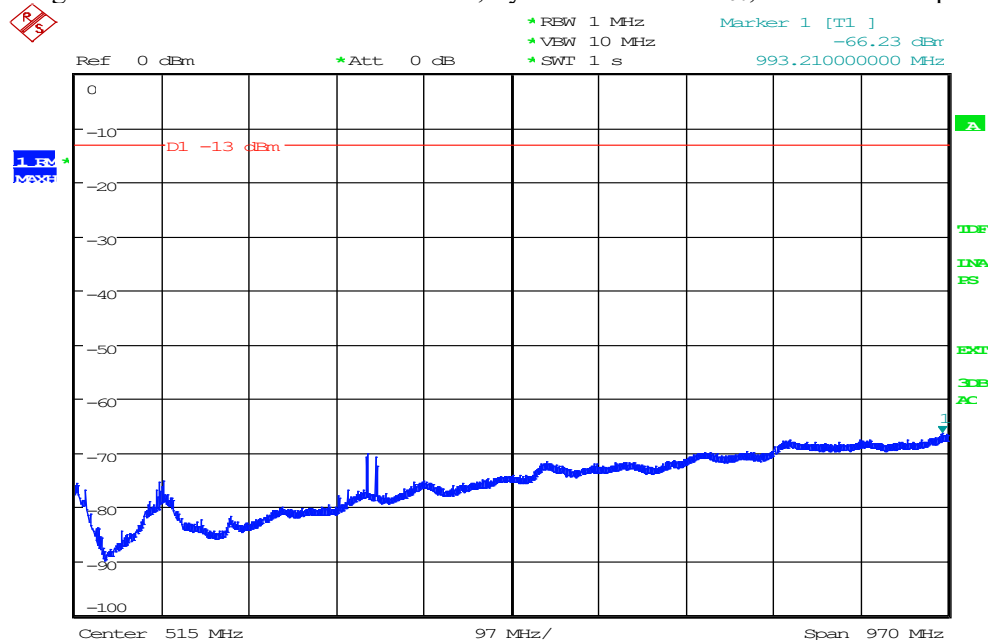
(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges as the design permits.

(3) The measurements of emission power can be expressed in peak or average values.

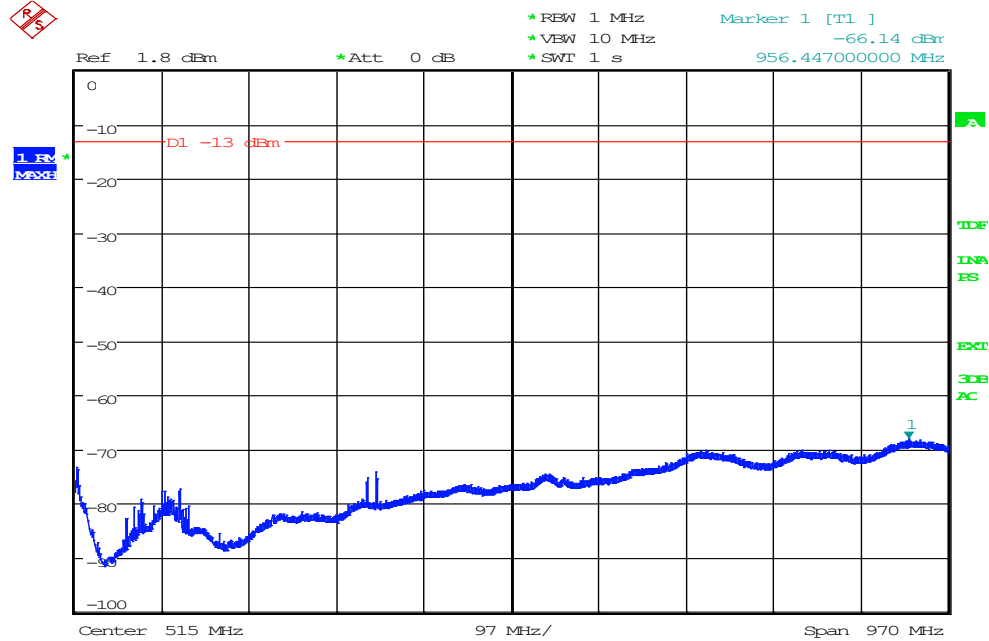
Complies?	Yes
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Diagram 2.1a: Pre scan 30 – 1000 MHz, Symbolic name: TH₅₀, EIRP Horizontal polarization

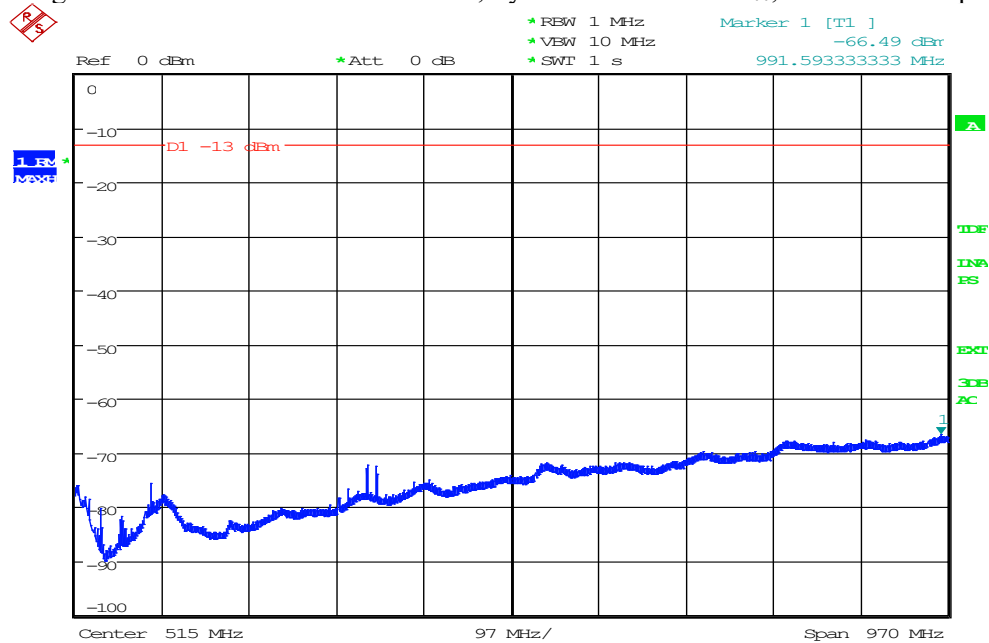
Date: 14.AUG.2020 15:30:27

Diagram 2.1b: Pre scan 30 – 1000 MHz, Symbolic name: TH₅₀, EIRP Vertical polarization

Date: 14.AUG.2020 15:34:11

Diagram 2.2a: Pre scan 30 – 1000 MHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarization

Date: 14.AUG.2020 15:18:48

Diagram 2.2b: Pre scan 30 – 1000 MHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

Date: 14.AUG.2020 15:13:29

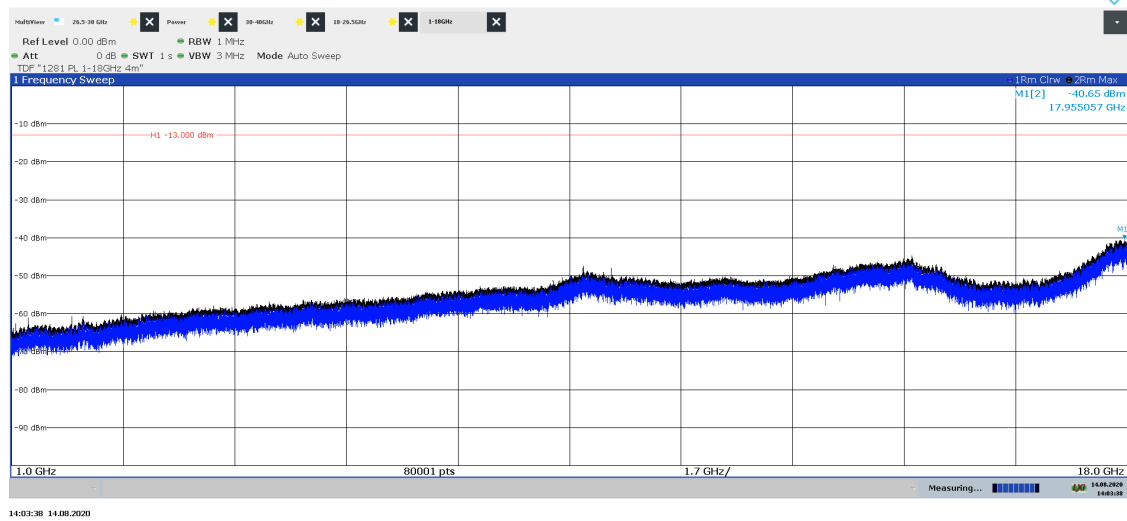
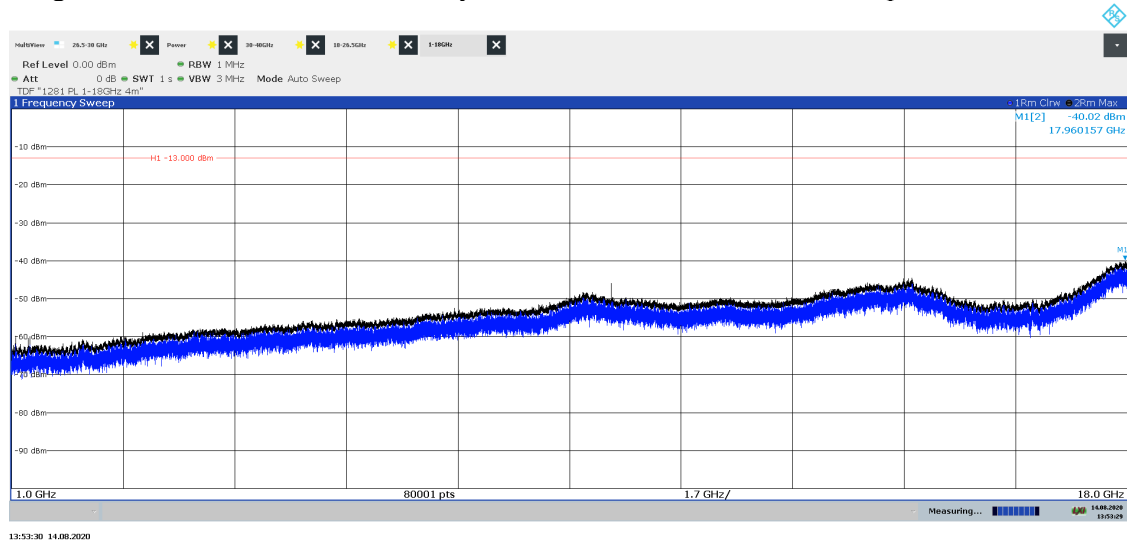
Diagram 2.3a: Pre scan 1 – 18 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarizationDiagram 2.3b: Pre scan 1 – 18 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization

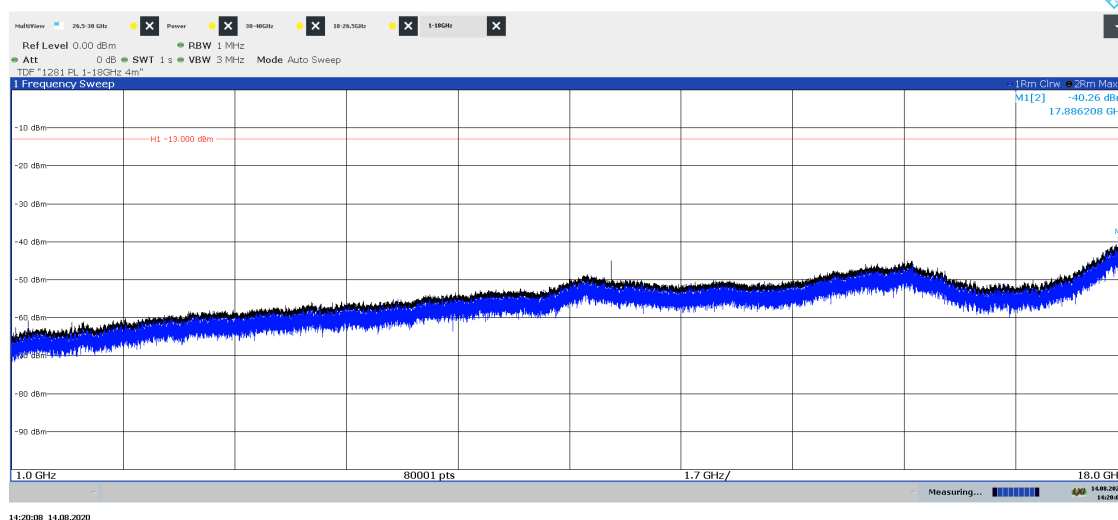
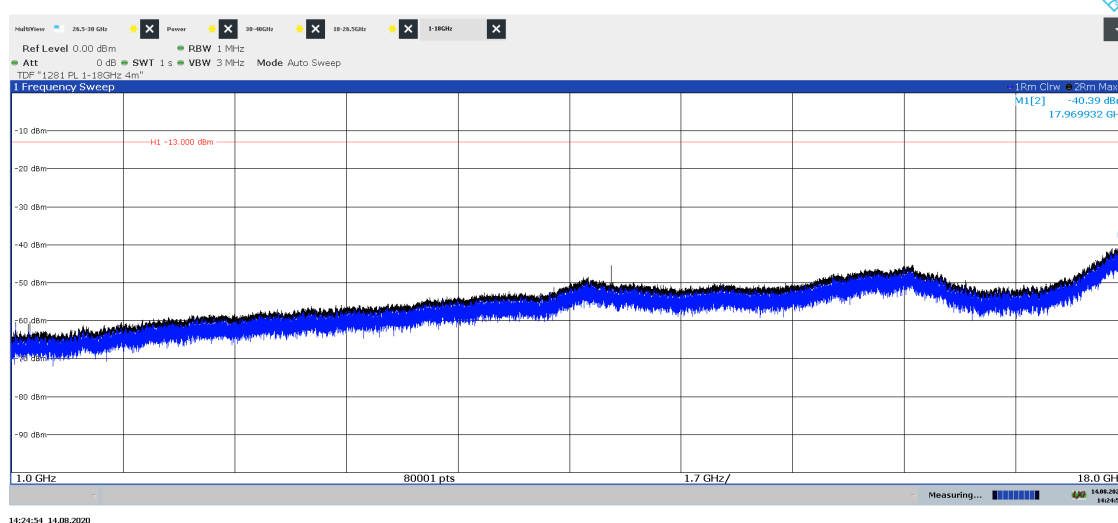
Diagram 2.4a: Pre scan 1 – 18 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarizationDiagram 2.4b: Pre scan 1 – 18 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

Diagram 2.5a: Pre scan 18 – 26.5 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarization
See diagram 2.5c for TRP result

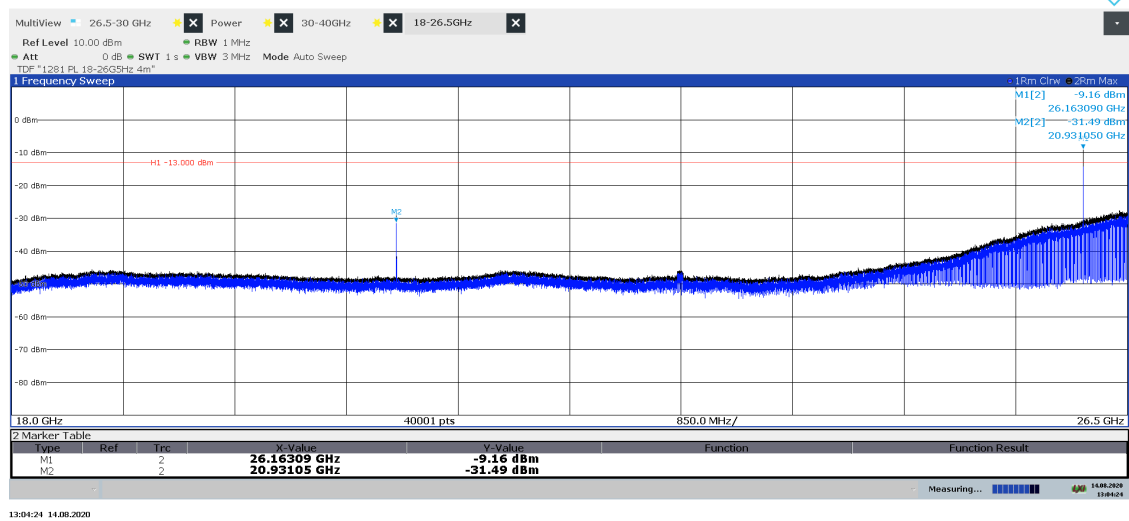


Diagram 2.5b: Pre scan 18 – 26.5 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization
See diagram 2.5c for TRP result

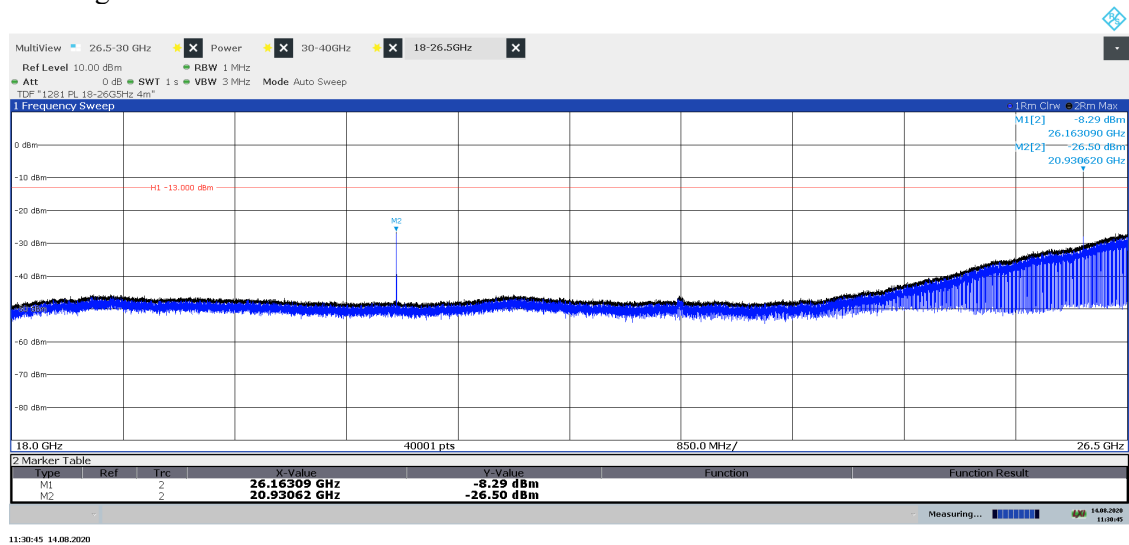


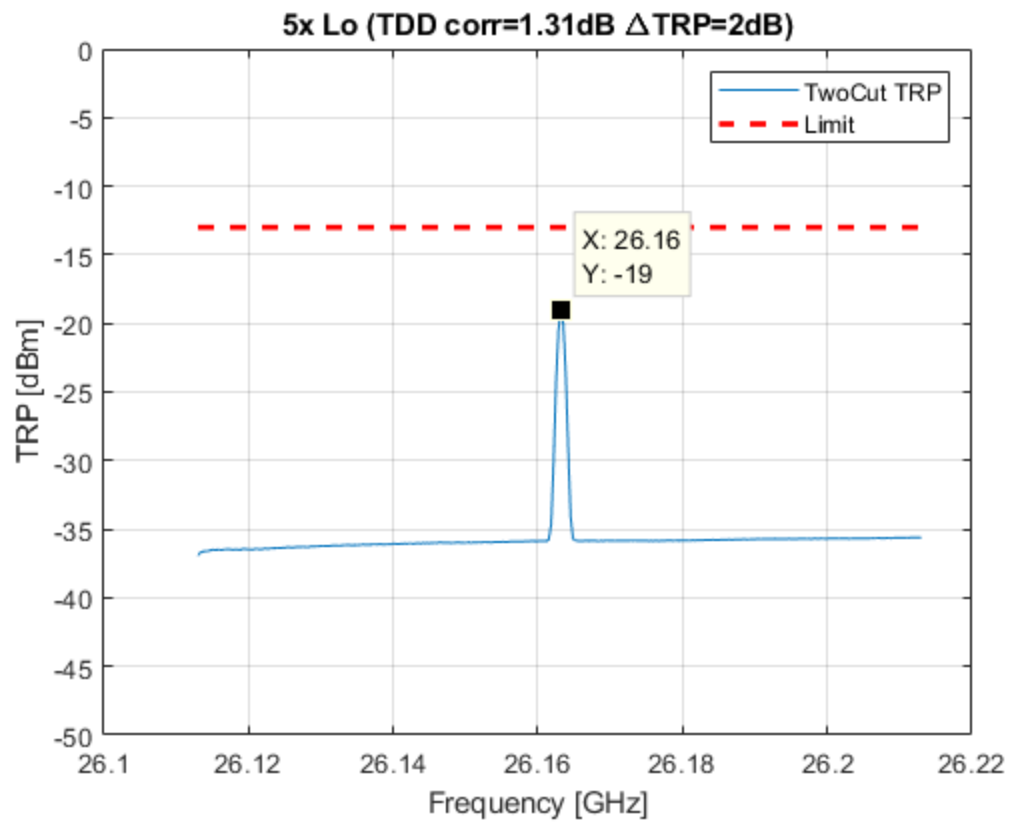
Diagram 2.5c: Two cut TRP 26.113 – 26.213 GHz 5x LO, Symbolic name: TH₅₀

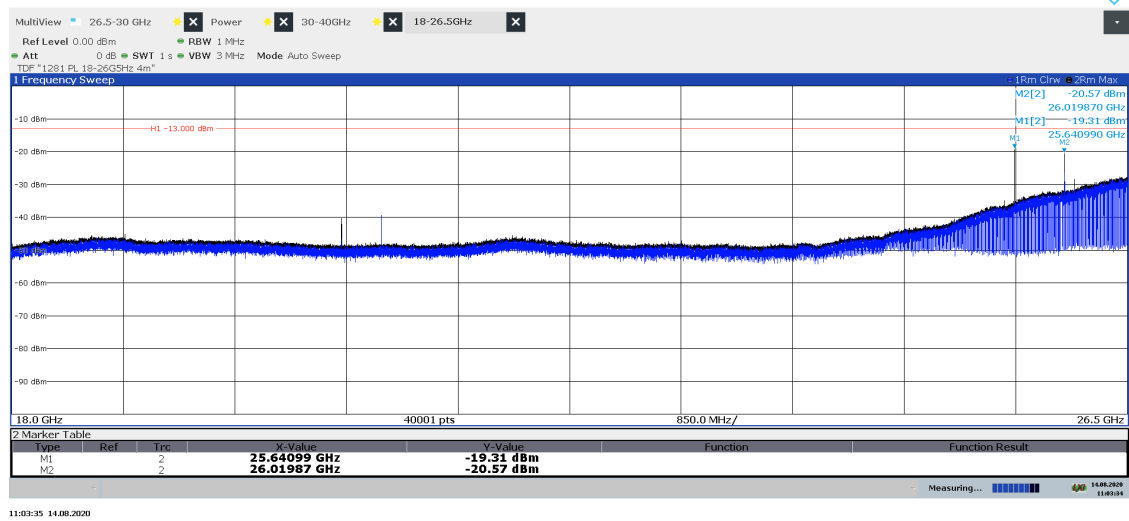
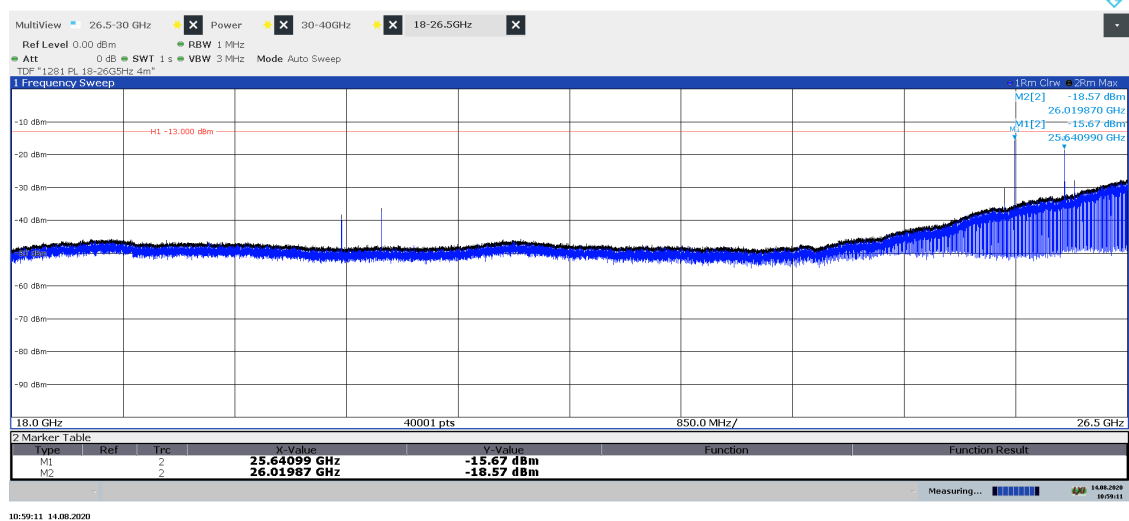
Diagram 2.6a: Pre scan 18 – 26.5 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarizationDiagram 2.6b: Pre scan 18 – 26.5 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

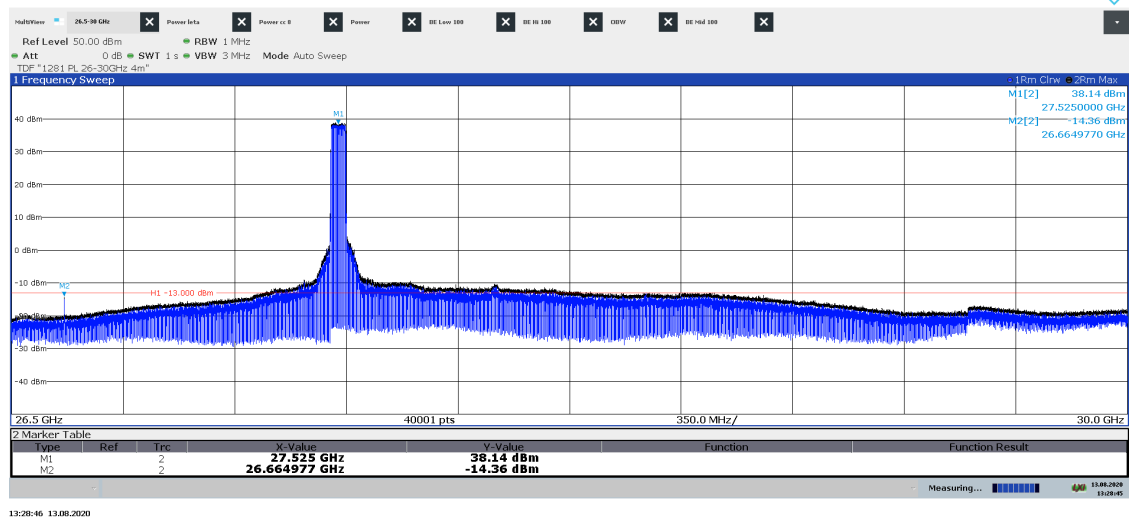
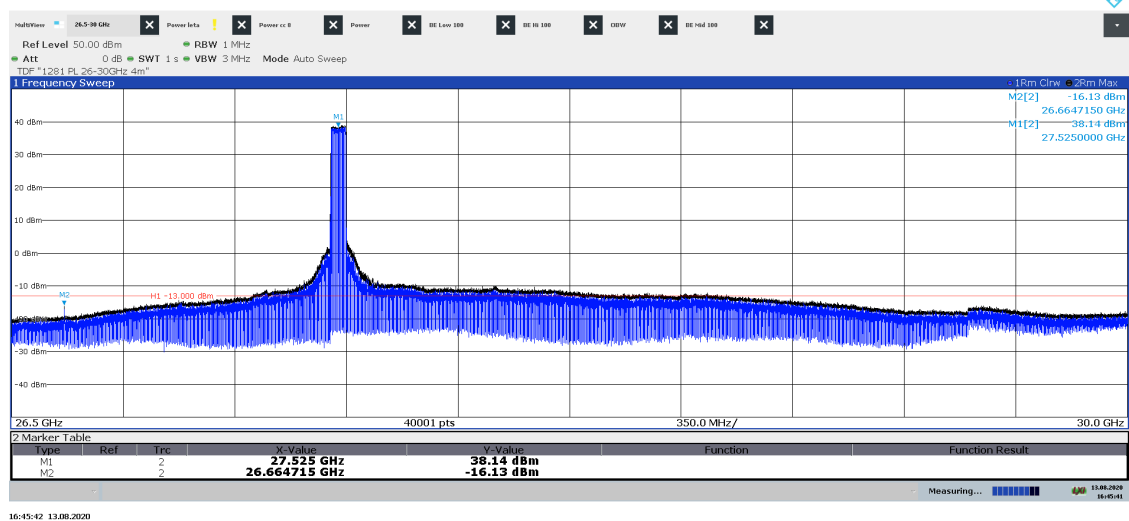
Diagram 2.7a: Pre scan 26.5 – 30.0 GHz, Symbolic name: BL₅₀, EIRP Horizontal polarizationDiagram 2.7b: Pre scan 26.5 – 30.0 GHz, Symbolic name: BL₅₀, EIRP Vertical polarization

Diagram 2.7c: Pre scan 27.00 – 27.51 GHz, Symbolic name: BL₅₀, EIRP Horizontal polarization

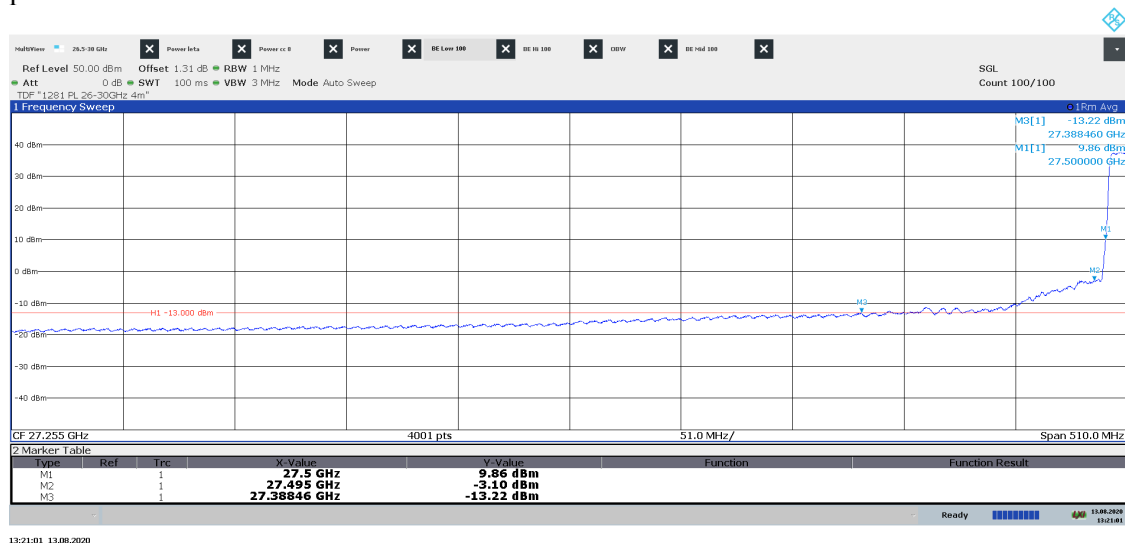


Diagram 2.7d: Pre scan 27.00 – 27.51 GHz, Symbolic name: BL₅₀, EIRP Vertical polarization



Power EIRP for 27.5GHz Hor/ Ver [dBm]	Power EIRP for 27.49 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 27.5 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 27.49 GHz (Limit -13 dBm) [dBm]/ Verdict
9.86/ 10.57	-3.10/ -2.43	28.66/ 28.74	-15.46/ Pass	-28.44/ Pass

Diagram 2.8a: Pre scan 26.5 – 30.0 GHz, Symbolic name: TH₁₀₀, EIRP Horizontal polarization
See diagram 2.8e for TRP result

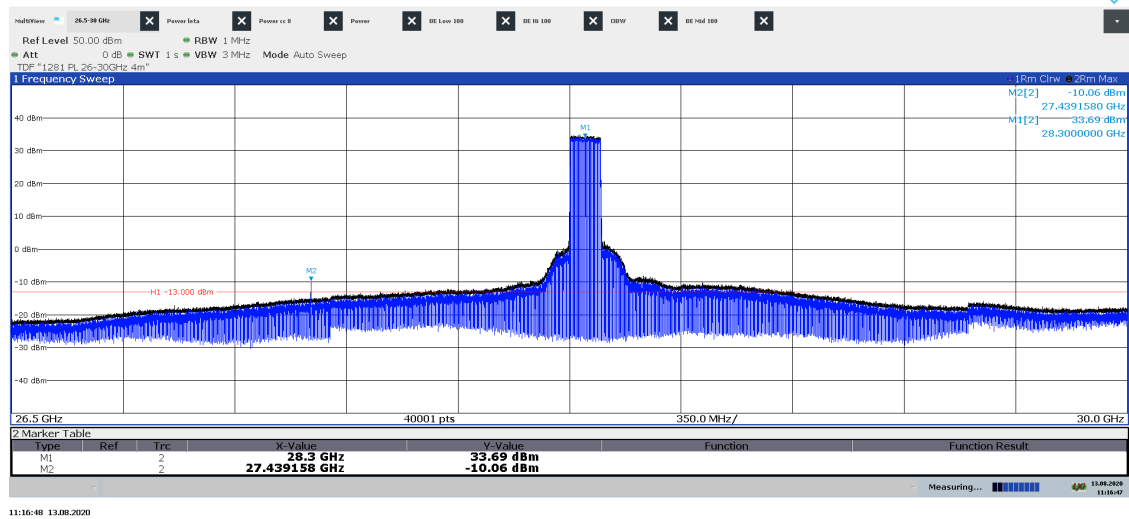


Diagram 2.8b: Pre scan 26.5 – 30.0 GHz, Symbolic name: TH₁₀₀, EIRP Vertical polarization
See diagram 2.8e for TRP result

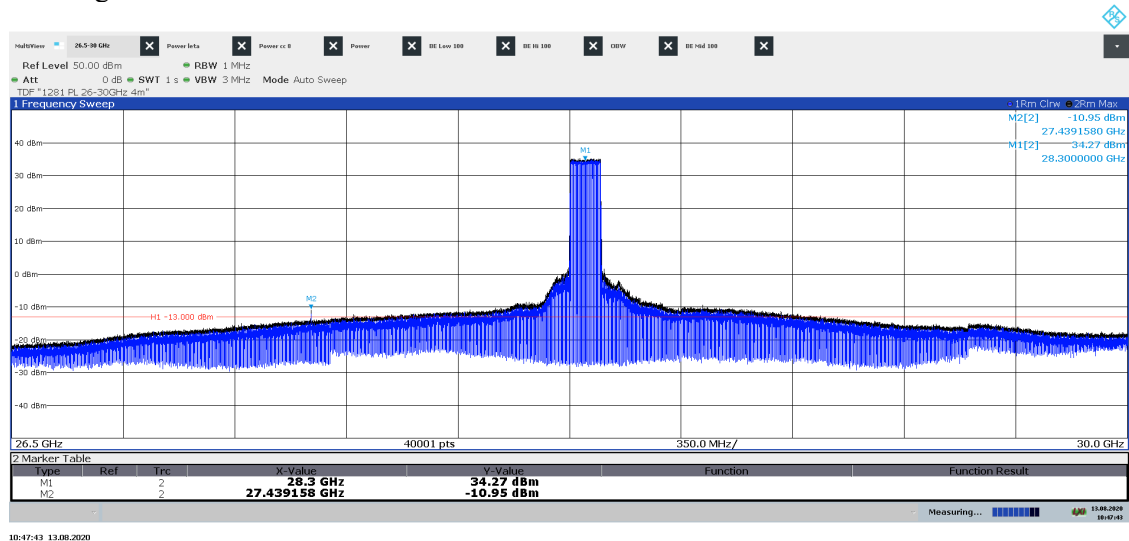


Diagram 2.8c: Pre scan 28.34 – 28.85GHz, Symbolic name: TH₁₀₀, EIRP Horizontal polarization

See diagram 2.8e for TRP result

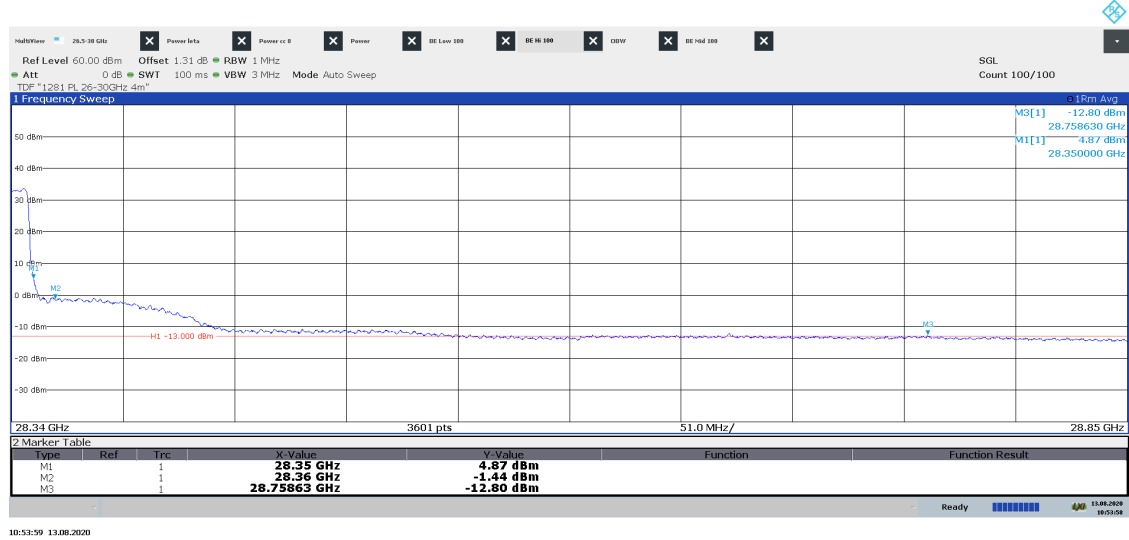
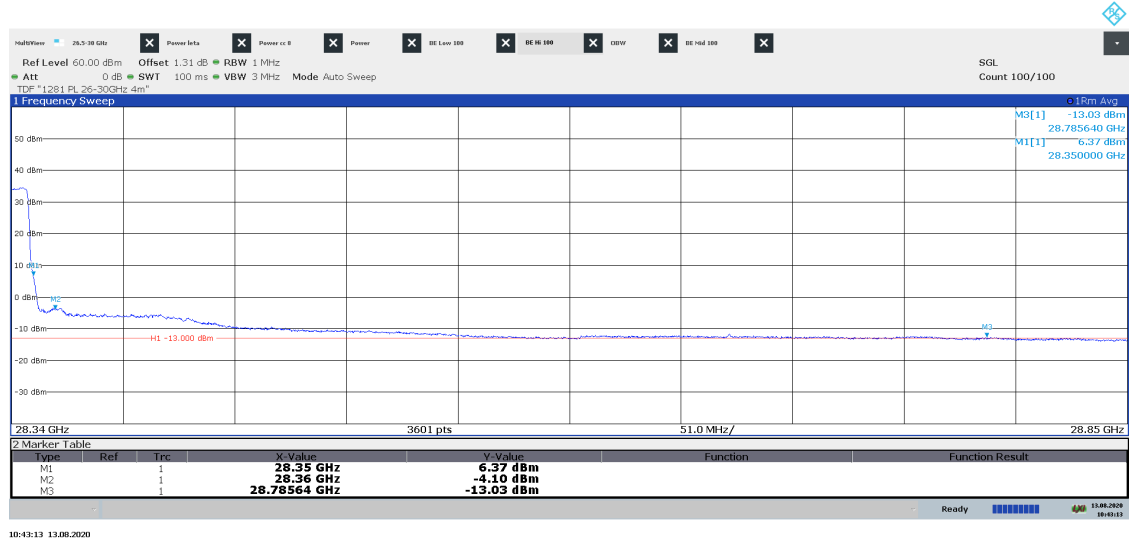


Diagram 2.8d: Pre scan 28.34 – 28.85 GHz, Symbolic name: TH₁₀₀, EIRP Vertical polarization

See diagram 2.8e for TRP result



Power EIRP for 28.35 GHz Hor/ Ver [dBm]	Power EIRP for 28.36 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 28.35 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 28.36 GHz (Limit -13 dBm) [dBm]/ Verdict
4.87/ 6.37	-1.44/ -4.10	28.9/ 28.92	-20.22/ Pass	-28.47/ Pass

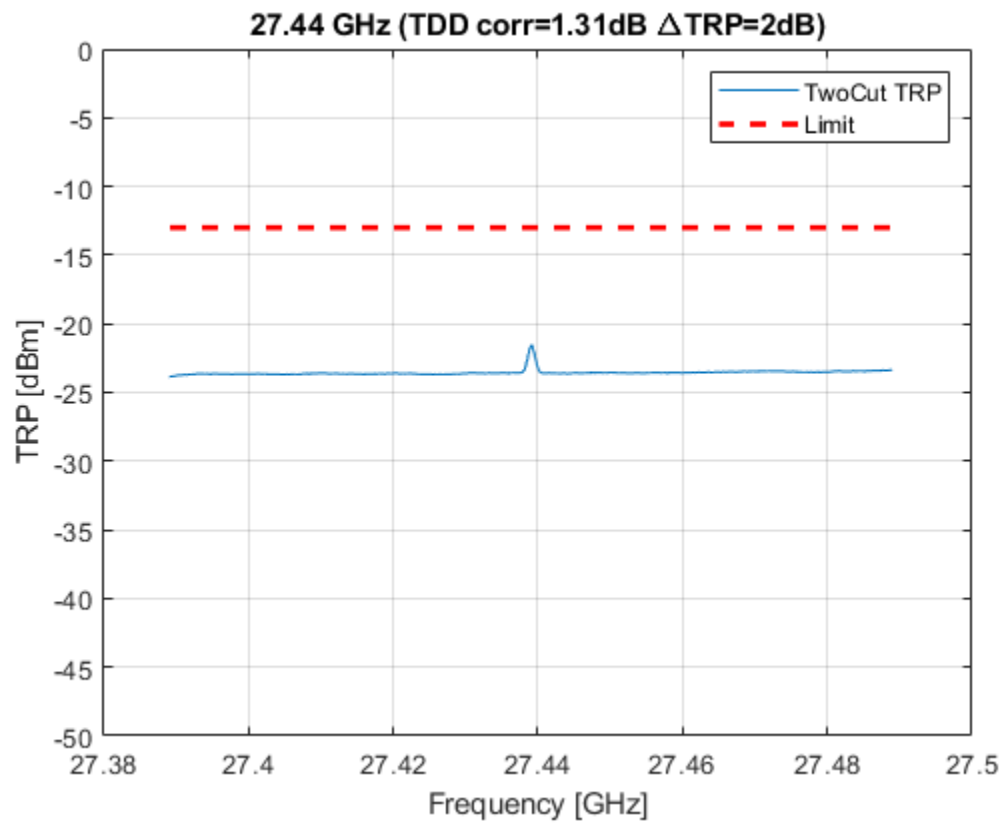
Diagram 2.8c: Two cut TRP 27.39 – 27.49 GHz, Symbolic name: TH₁₀₀

Diagram 2.9a: Pre scan 26.5 – 30.0 GHz, Symbolic name: Bim3₅₀, EIRP Horizontal polarization
See diagram 2.9e for TRP result

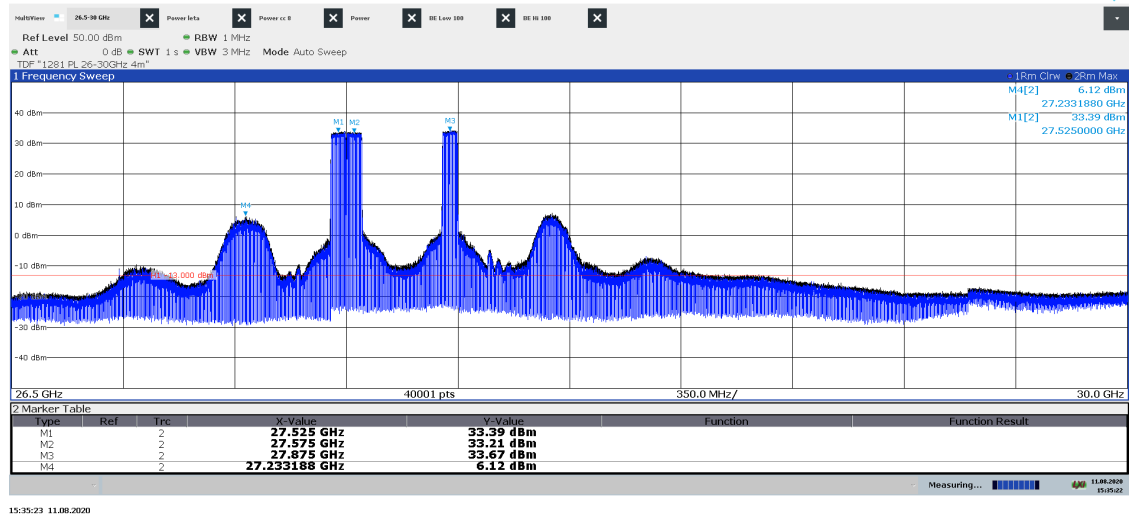


Diagram 2.9b: Pre scan 26.5 – 30.0 GHz, Symbolic name: Bim3₅₀, EIRP Vertical polarization
See diagram 2.9e for TRP result

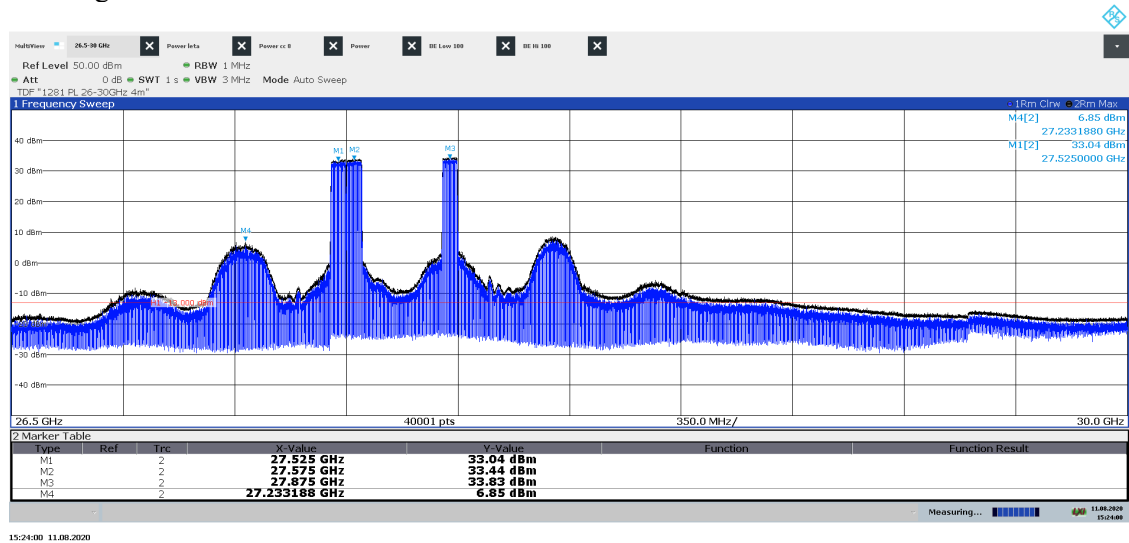


Diagram 2.9c: Pre scan 27.00 – 27.51 GHz, Symbolic name: Bim3₅₀, EIRP Horizontal polarization
See diagram 2.9e for TRP result

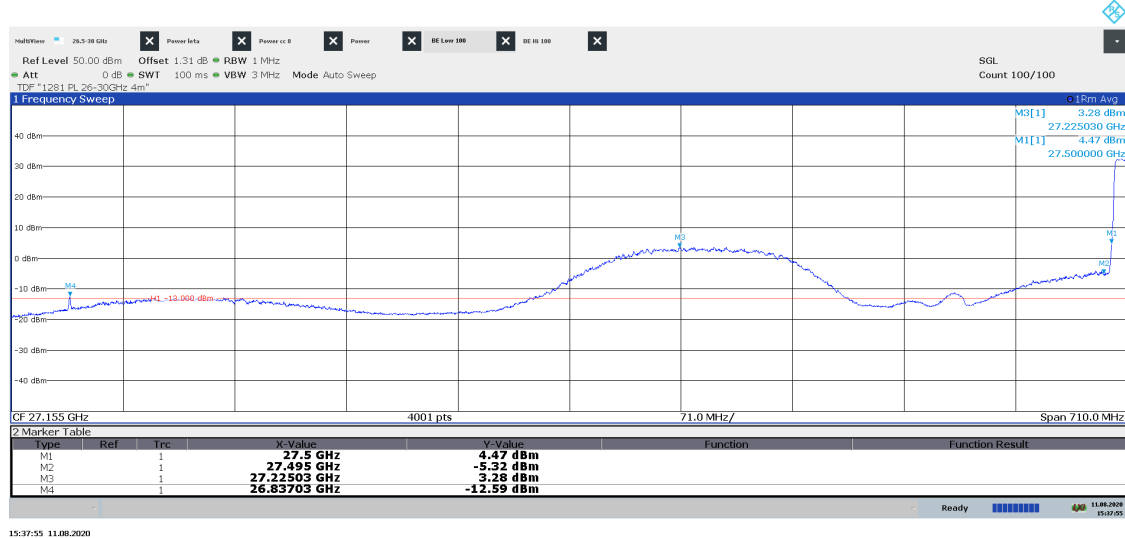
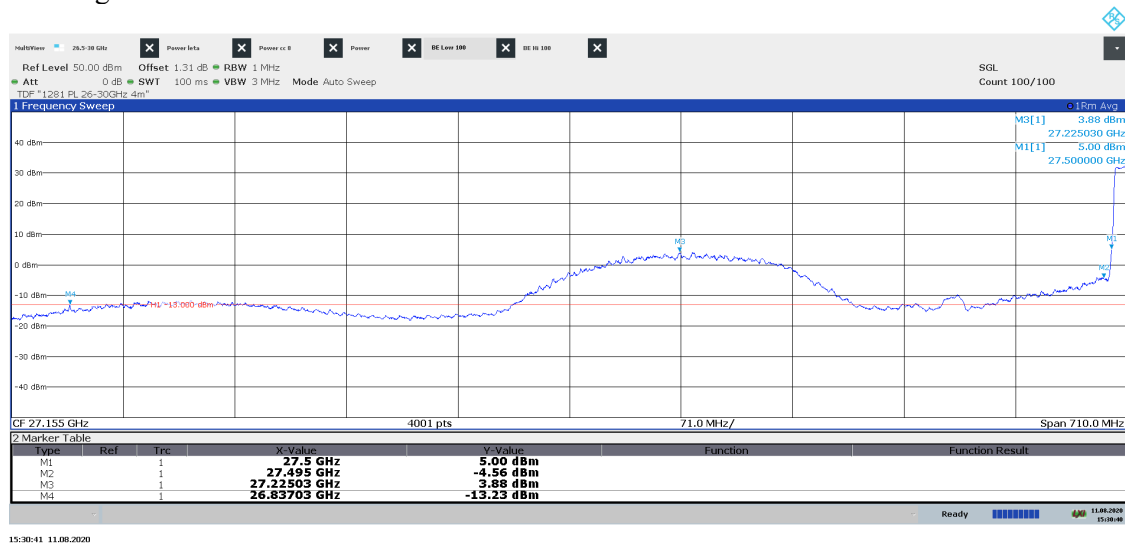


Diagram 2.9d: Pre scan 27.00 – 27.51 GHz, Symbolic name: Bim3₅₀, EIRP Vertical polarization
See diagram 2.9e for TRP result



Power EIRP for 27.5GHz Hor/ Ver [dBm]	Power EIRP for 27.49 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 27.5 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 27.49 GHz (Limit -13 dBm) [dBm]/ Verdict
4.47/ 5.00	-5.32/ -4.56	28.66/ 28.74	-20.95/ Pass	-30.62/ Pass

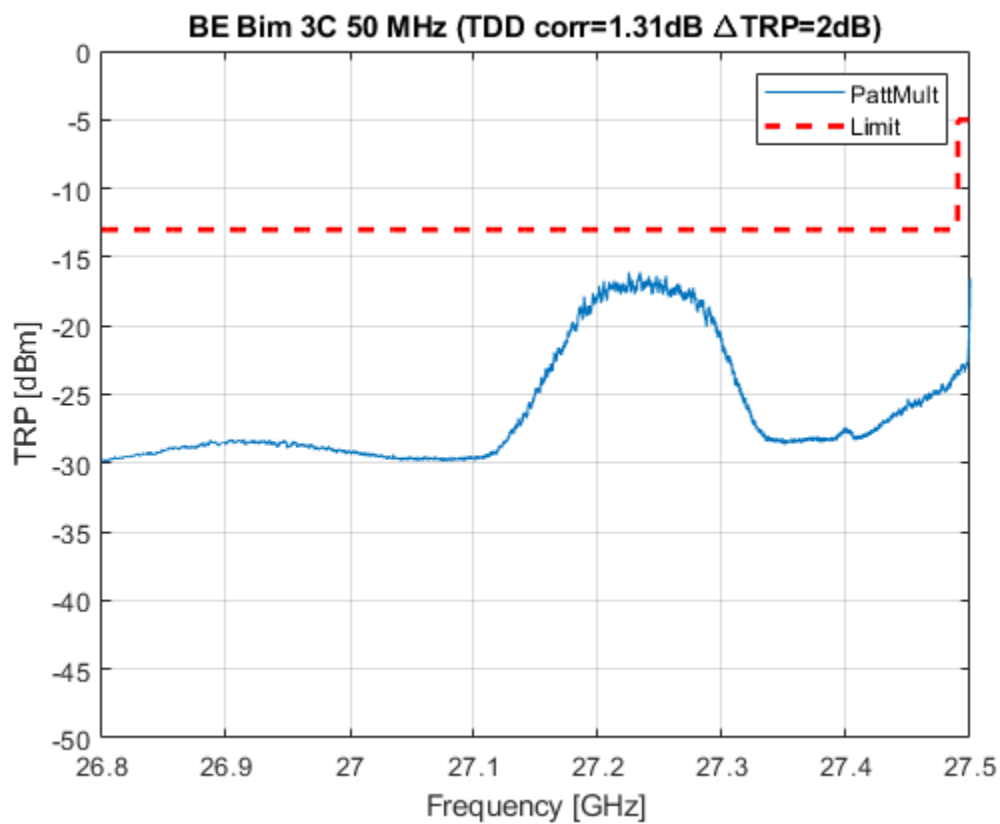
Diagram 2.9e: Pattern multiplication TRP 26.8 – 27.5 GHz, Symbolic name: Bim3₅₀

Diagram 2.10a: Pre scan 27.625 – 28.225 GHz, Symbolic name: TL₅₀, EIRP Horizontal polarization

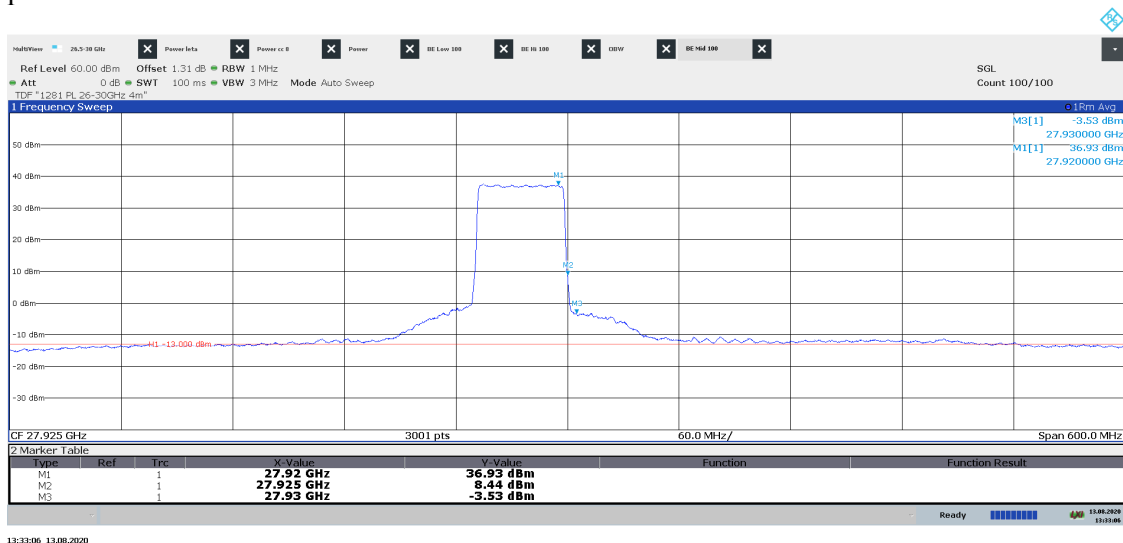
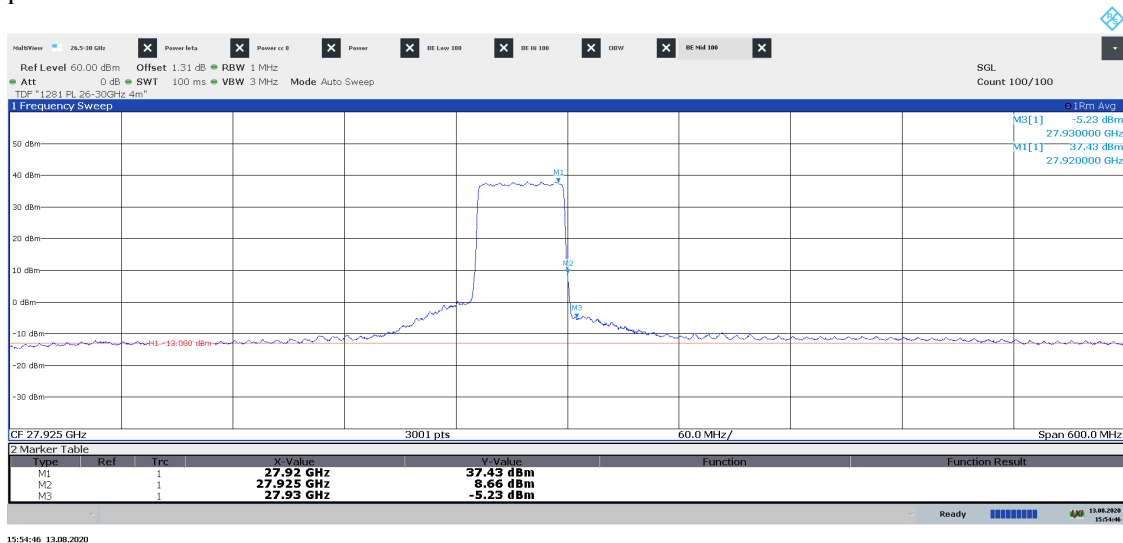


Diagram 2.10b: Pre scan 27.625 – 28.225 GHz, Symbolic name: TL₅₀, EIRP Vertical polarization



Power EIRP for 27.925 GHz Hor/ Ver [dBm]	Power EIRP for 27.935 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 27.925 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 27.935 GHz (Limit -13 dBm) [dBm]/ Verdict
8.44/ 8.66	-3.53/ -5.23	28.8/ 28.83	-17.25/ Pass	-30.10/ Pass

Diagram 2.11a: Pre scan 27.625 – 28.225 GHz, Symbolic name: BH₅₀, EIRP Horizontal polarization

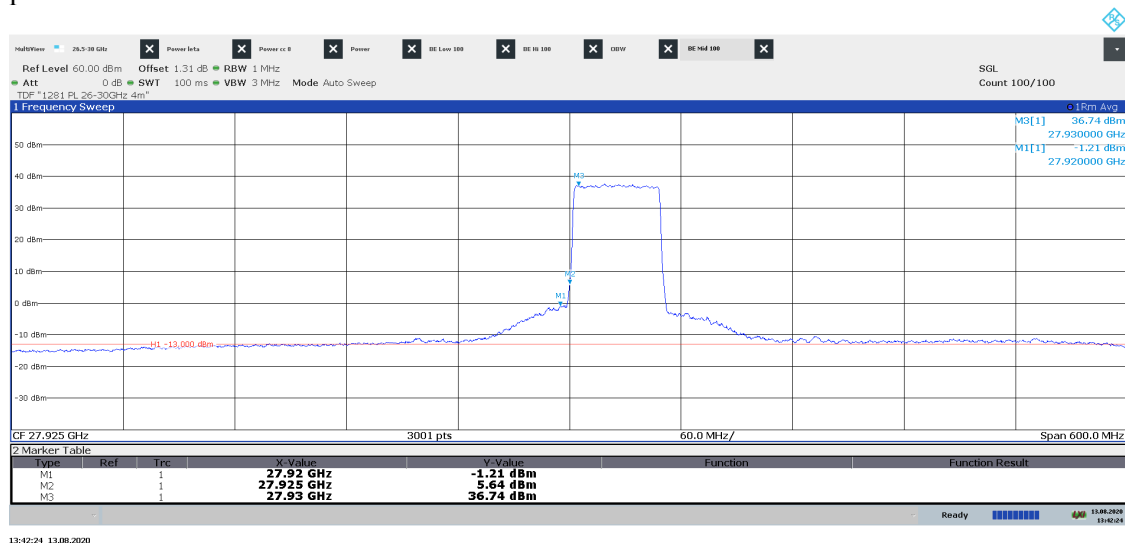
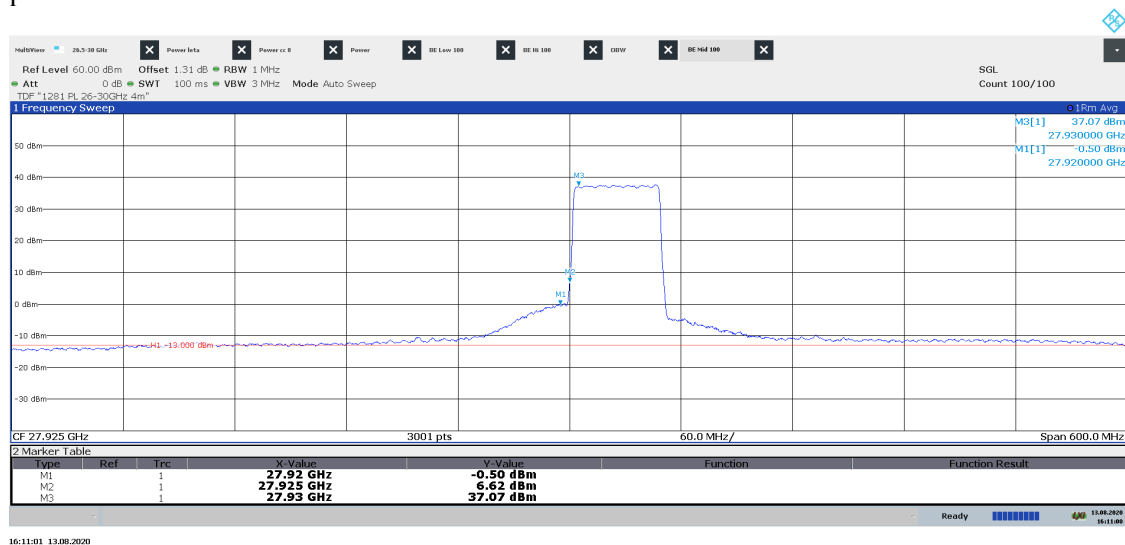


Diagram 2.11b: Pre scan 27.625 – 28.225 GHz, Symbolic name: BH₅₀, EIRP Vertical polarization



Power EIRP for 27.925 GHz Hor/ Ver [dBm]	Power EIRP for 27.915 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 27.925 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 27.915 GHz (Limit -13 dBm) [dBm]/ Verdict
5.64/ 6.62	-1.21/ -0.50	28.8/ 28.83	-19.65/ Pass	-26.65/ Pass

Diagram 2.12a: Pre scan 26.5 – 30.0 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarization

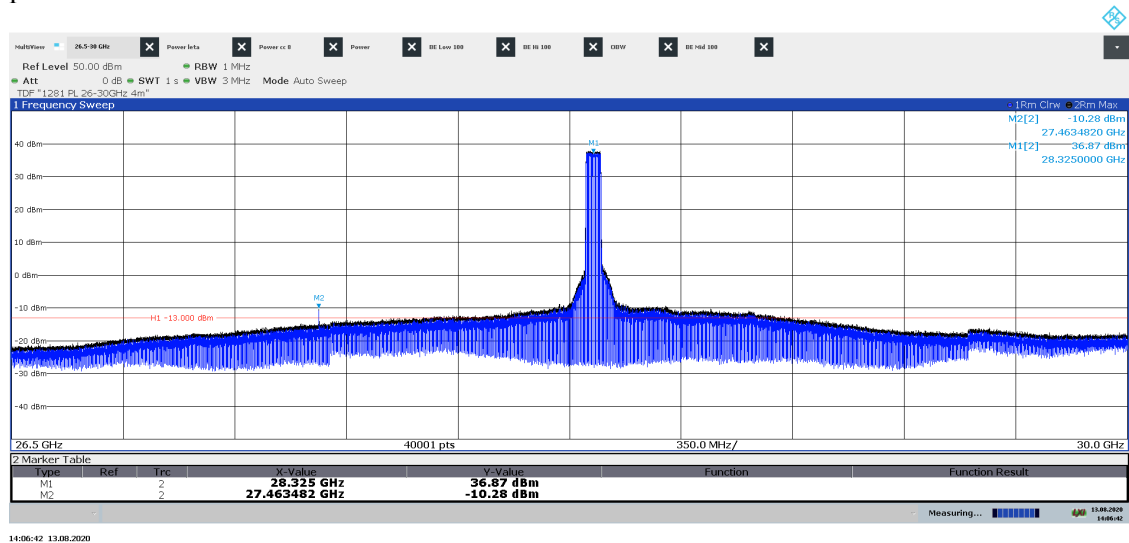


Diagram 2.12b: Pre scan 26.5 – 30.0 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization

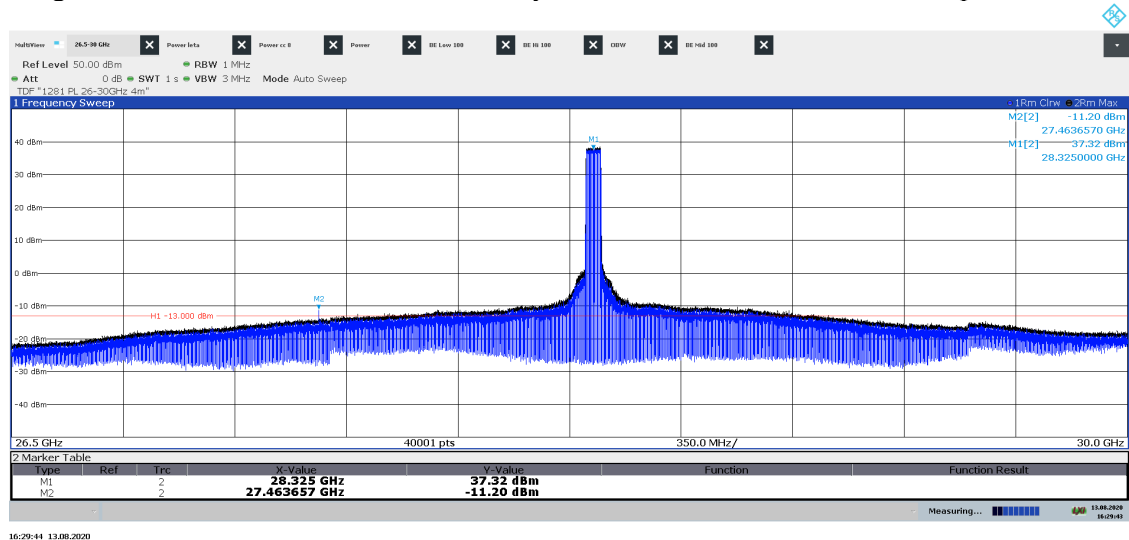


Diagram 2.12c: Pre scan 28.34 – 28.85 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarization



Diagram 2.12d: Pre scan 28.34 – 28.85 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization



Power EIRP for 28.35 GHz Hor/ Ver [dBm]	Power EIRP for 28.355 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 28.35 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 28.355 GHz (Limit -13 dBm) [dBm]/ Verdict
8.07/ 8.78	0.20/ -1.95	28.9/ 28.92	-17.46/ Pass	-26.64/ Pass

Diagram 2.13a: Pre scan 26.5 – 30 GHz, Symbolic name: Tim3₅₀, EIRP Horizontal polarization
See diagram 2.13e for TRP result

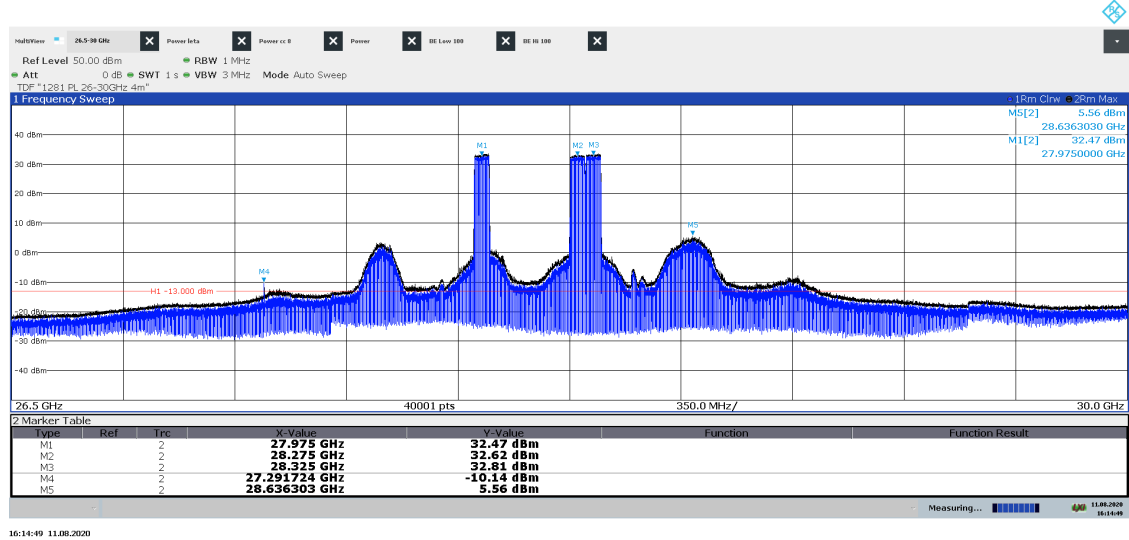


Diagram 2.13b: Pre scan 26.5 – 30 GHz, Symbolic name: Tim3₅₀, EIRP Vertical polarization
See diagram 2.13e for TRP result

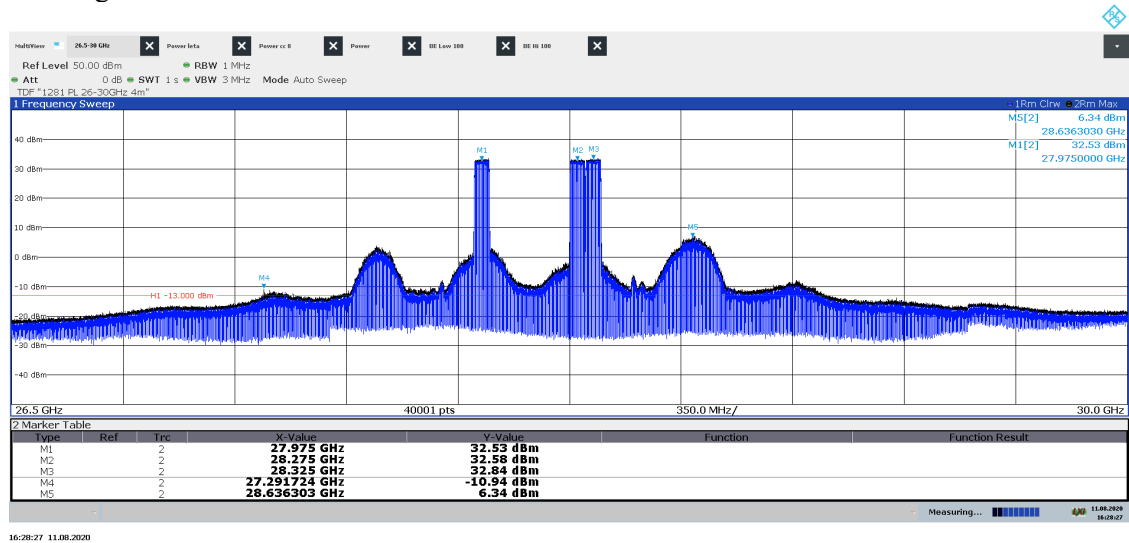


Diagram 2.13c: Pre scan 28.34 – 28.85 GHz, Symbolic name: Tim3₅₀, EIRP Horizontal polarization

See diagram 2.13e for TRP result

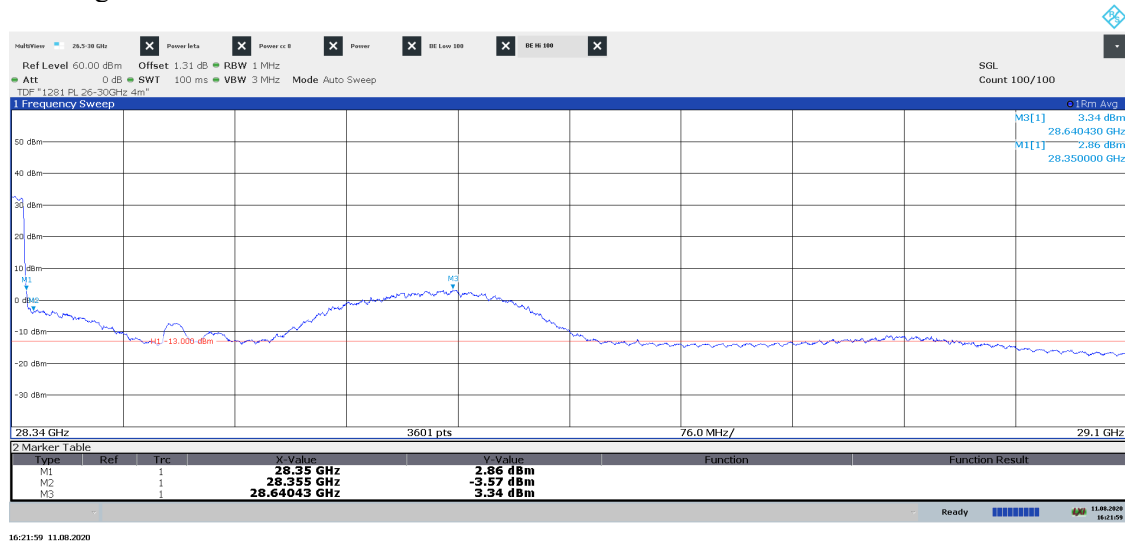
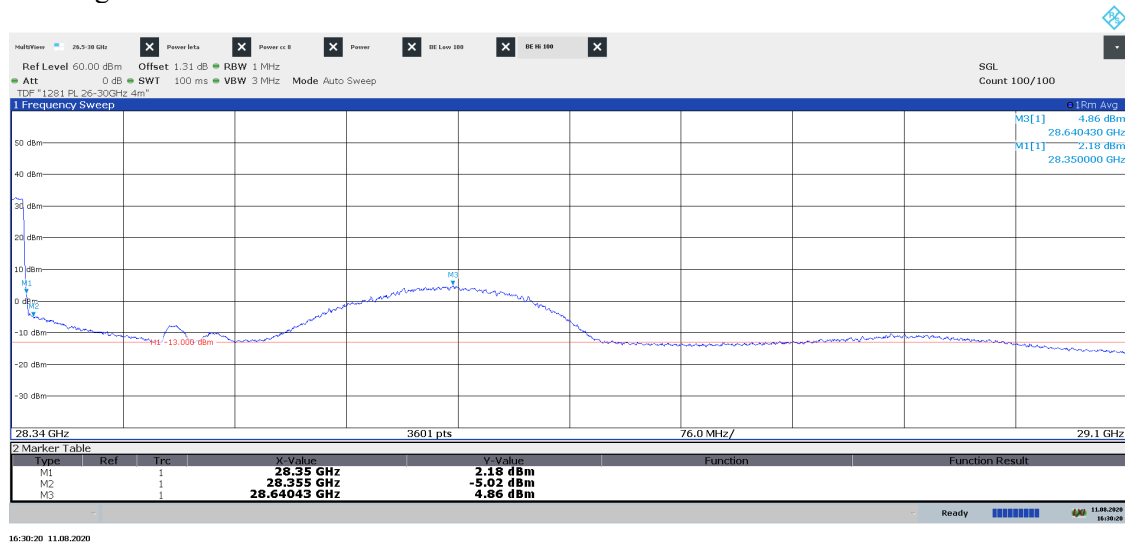


Diagram 2.13d: Pre scan 28.34 – 28.85 GHz, Symbolic name: Tim3₅₀, EIRP Vertical polarization

See diagram 2.13e for TRP result



Power EIRP for 28.35 GHz Hor/ Ver [dBm]	Power EIRP for 28.355 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 28.35 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 28.355 GHz (Limit -13 dBm) [dBm]/ Verdict
2.86/ 2.18	-3.57/ -5.02	28.9/ 28.92	-23.37/ Pass	-30.13/ Pass

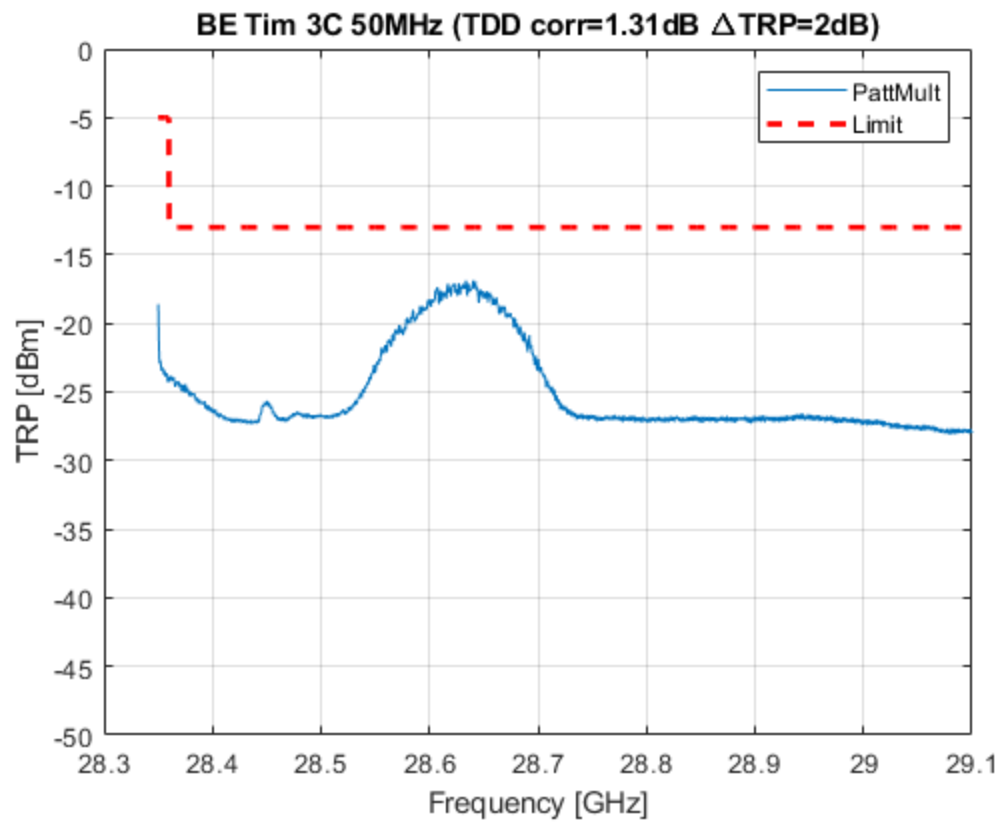
Diagram 2.13e: Pattern multiplication TRP 28.35 – 28.85 GHz, Symbolic name: Tim3₅₀

Diagram 2.14a: Pre scan 26.5 – 30 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarization

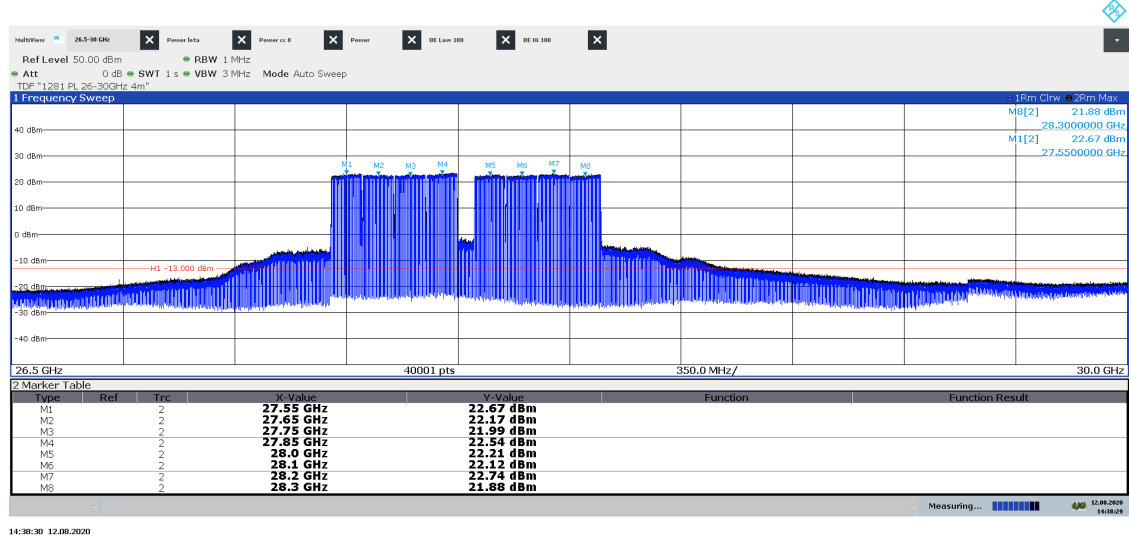


Diagram 2.14b: Pre scan 26.5 – 30 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

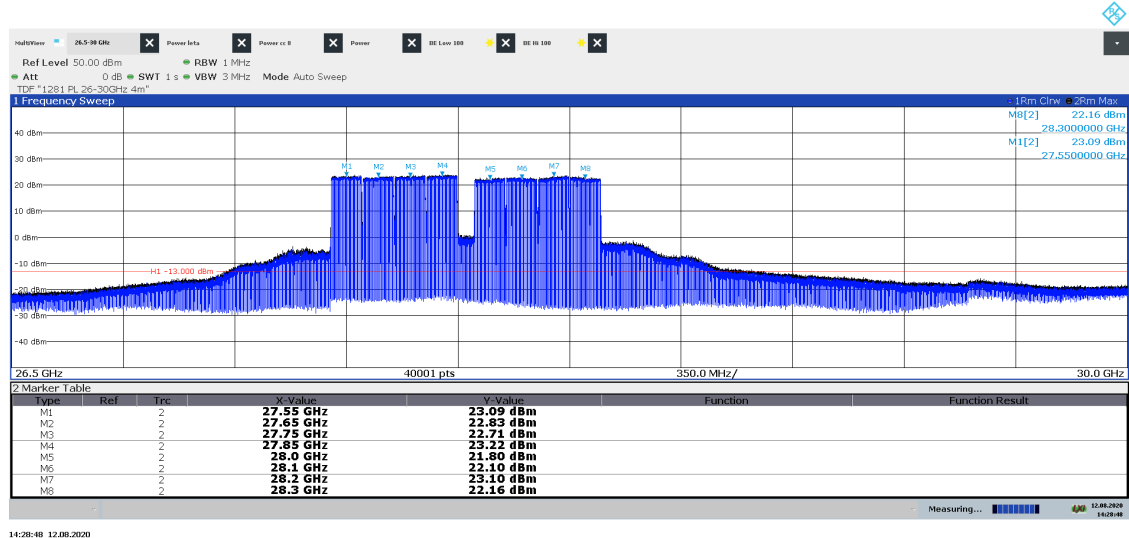


Diagram 2.14c: Pre scan 27.00 – 27.51 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarization

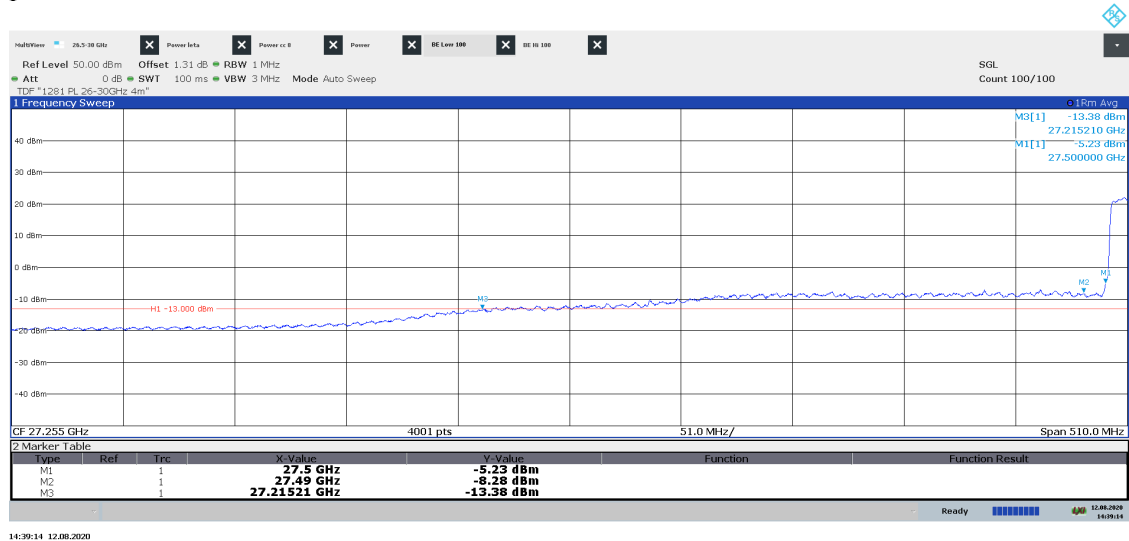
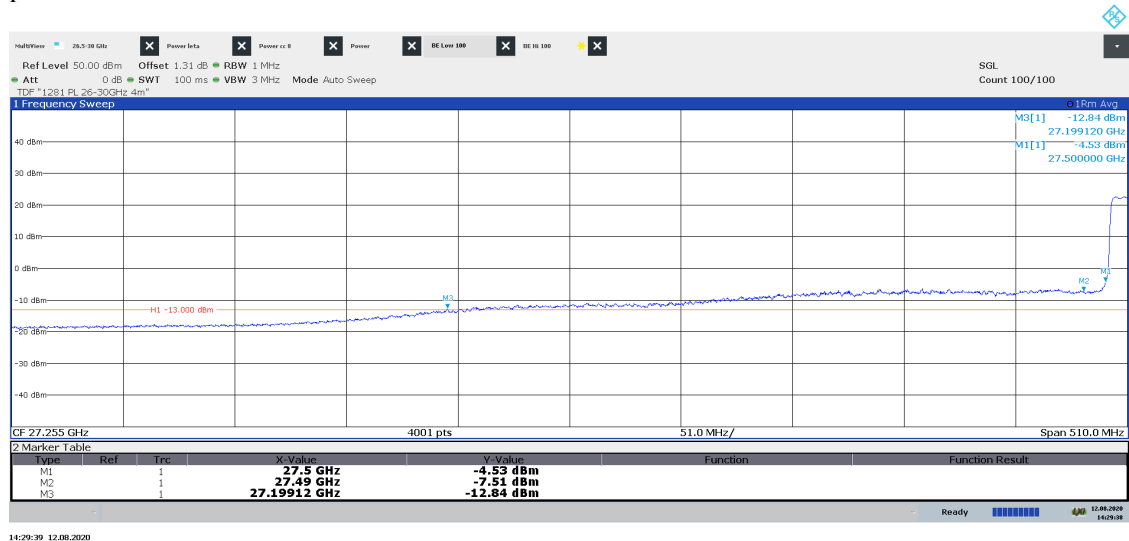


Diagram 2.14d: Pre scan 27.00 – 27.51 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization



Power EIRP for 27.5GHz Hor/ Ver [dBm]	Power EIRP for 27.49 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 27.5 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 27.49 GHz (Limit -13 dBm) [dBm]/ Verdict
-5.23/ -4.53	-8.28/ -7.51	25.79/ 25.83	-27.67/ Pass	-30.68/ Pass

Diagram 2.14e: Pre scan 28.34 – 28.85 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarization

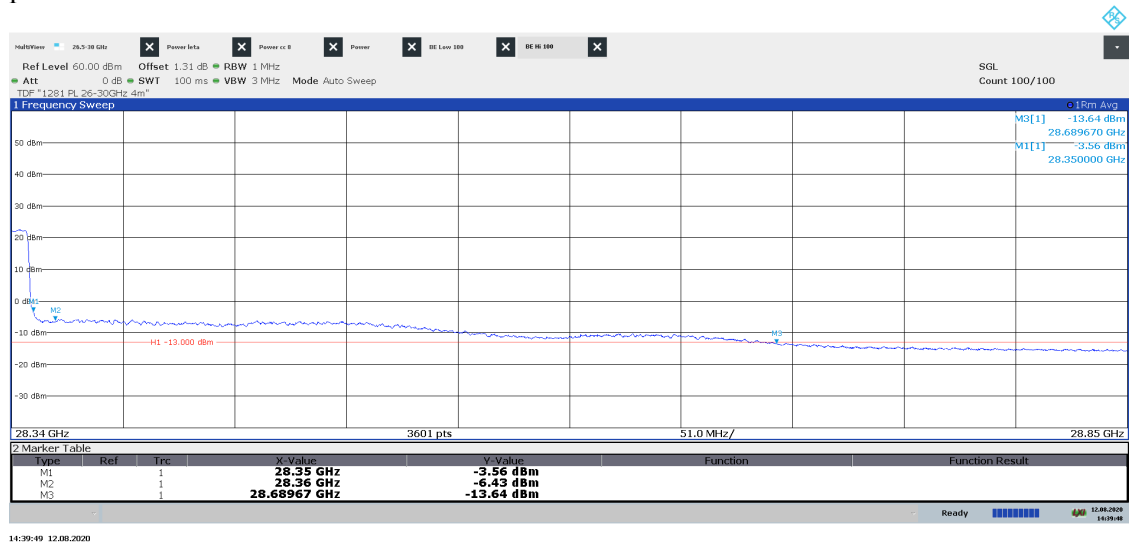
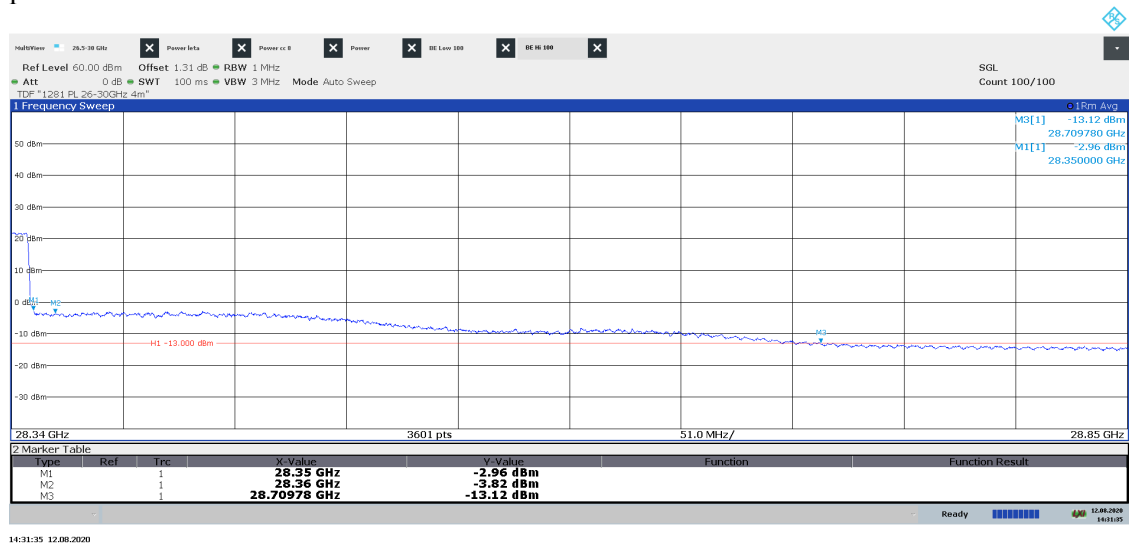


Diagram 2.14f: Pre scan 28.34 – 28.85 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization



Power EIRP for 28.35 GHz Hor/ Ver [dBm]	Power EIRP for 28.36 GHz Hor/ Ver [dBm]	Antenna Gain Hor/ Ver [dBi]	Total conducted power/BW for 28.35 GHz (Limit -5 dBm) [dBm]/ Verdict	Total conducted power/BW for 28.36 GHz (Limit -13 dBm) [dBm]/ Verdict
-3.56/ -2.96	-6.43/ -3.82	25.9/ 26.04	-26.21/ Pass	-27.91/ Pass

Diagram 2.15a: Pre scan 30 – 40 GHz, Symbolic name: BL₅₀, EIRP Horizontal polarization
See diagram 2.15c for TRP result

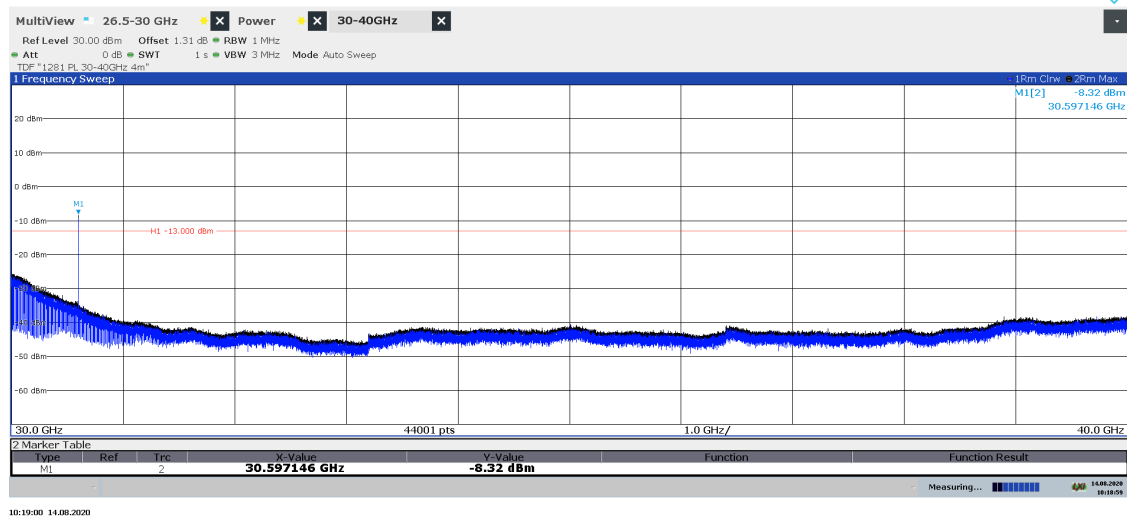


Diagram 2.15b: Pre scan 30 – 40 GHz, Symbolic name: BL₅₀, EIRP Vertical polarization
See diagram 2.15c for TRP result

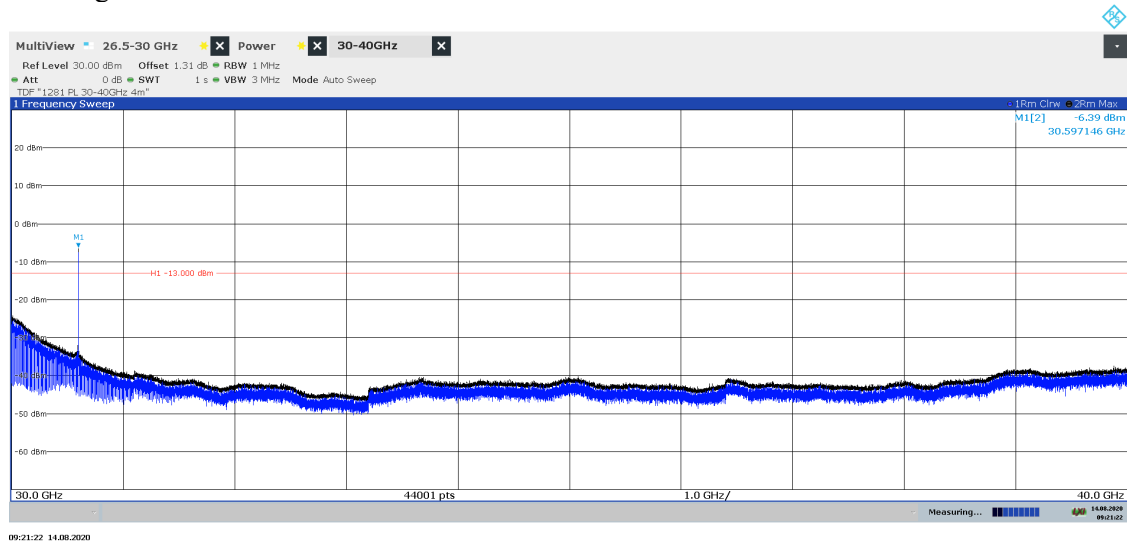


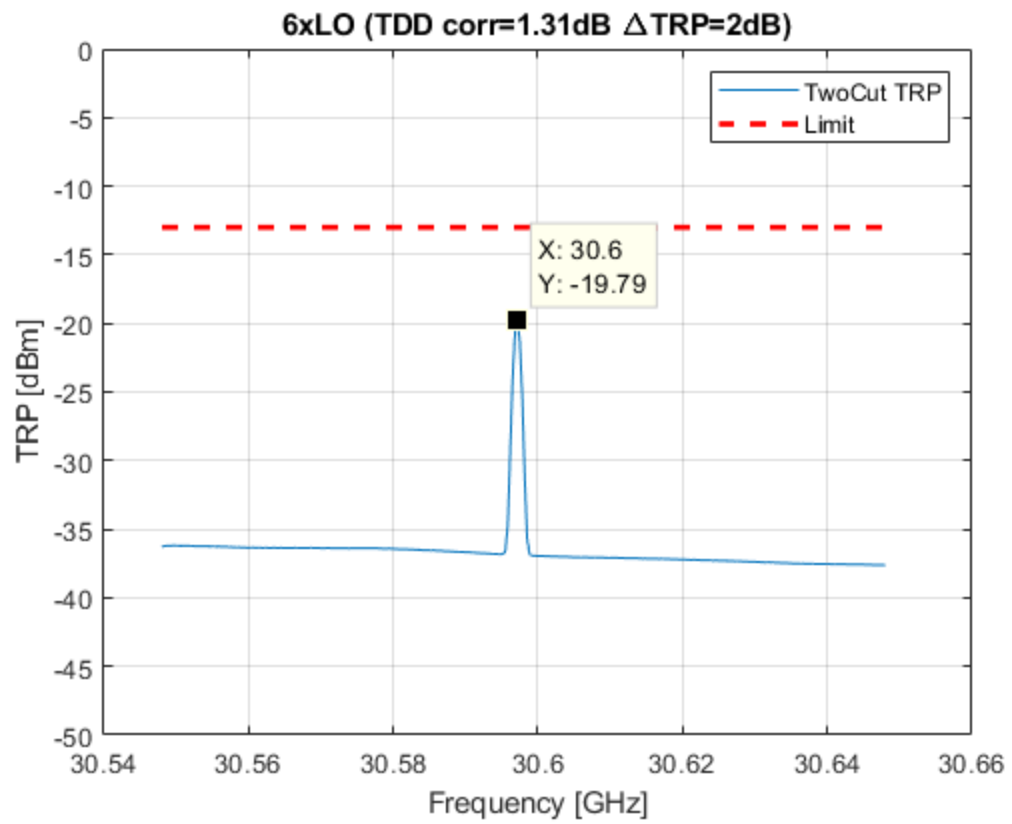
Diagram 2.15c: Two cut TRP 30.55 – 30.65 GHz 6x LO, Symbolic name: BL₅₀

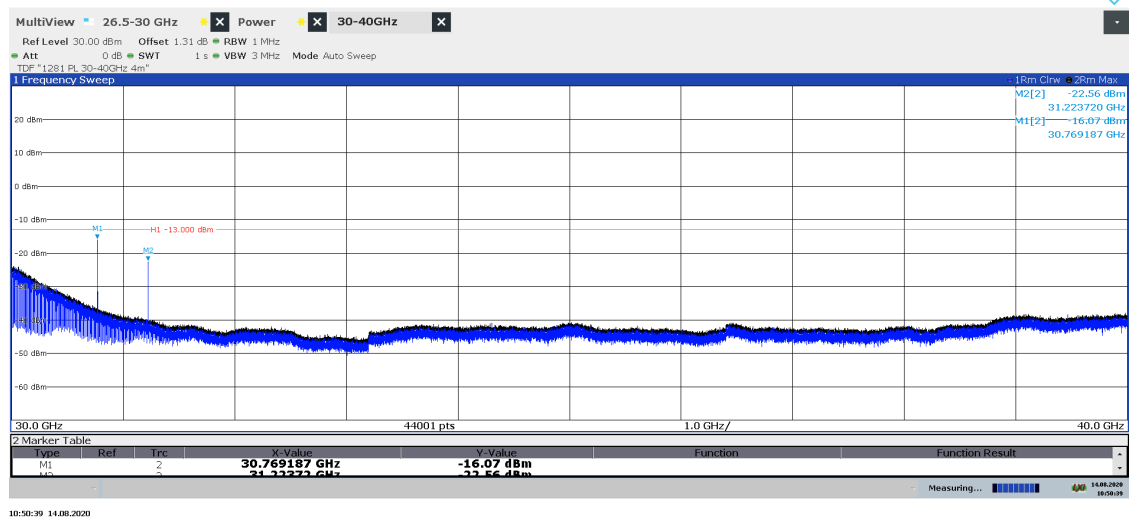
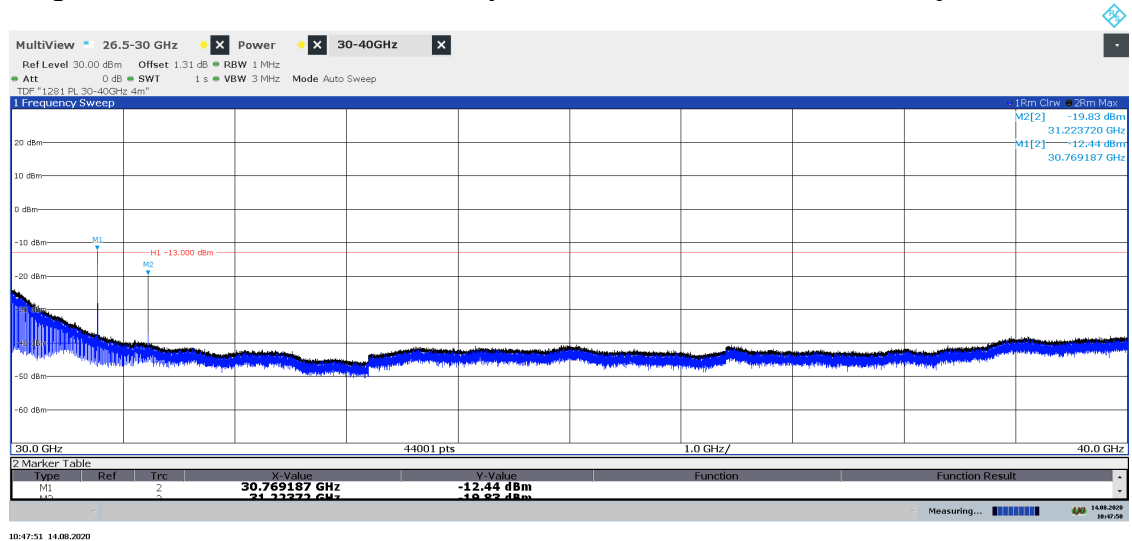
Diagram 2.16a: Pre scan 30 – 40 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarizationDiagram 2.16b: Pre scan 30 – 40 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

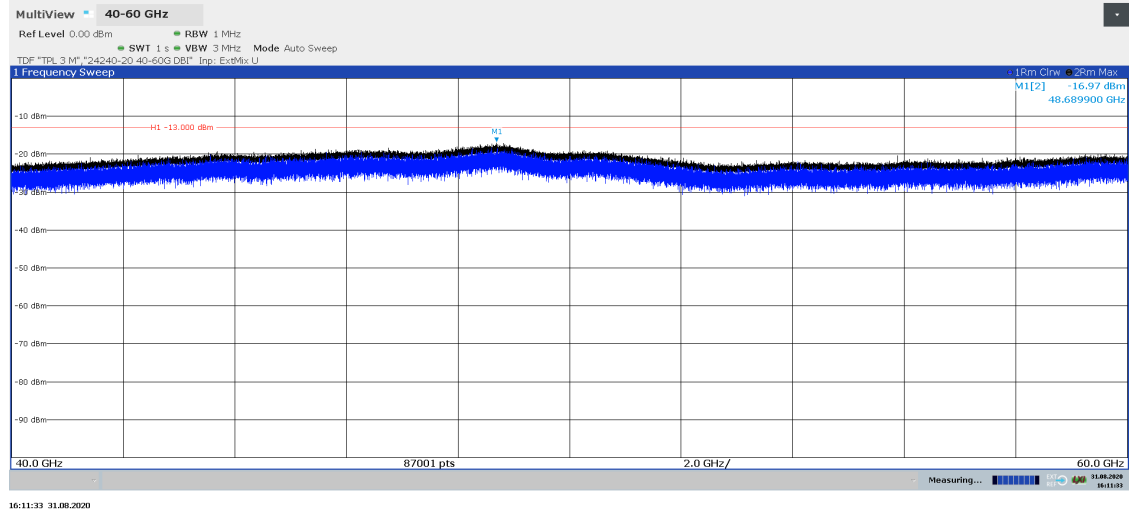
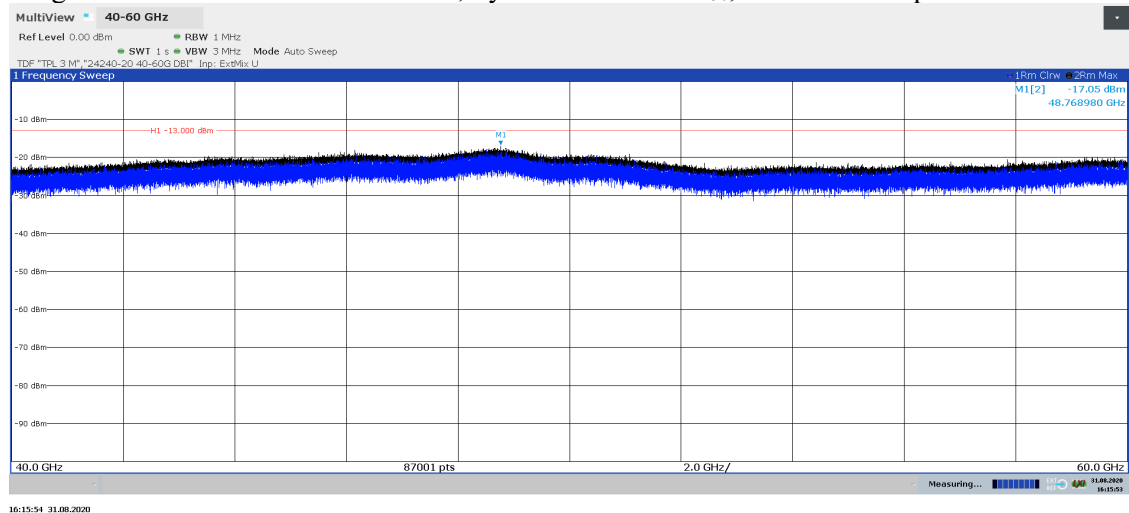
Diagram 2.17a: Pre scan 40 – 60 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarizationDiagram 2.17b: Pre scan 40 – 60 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization

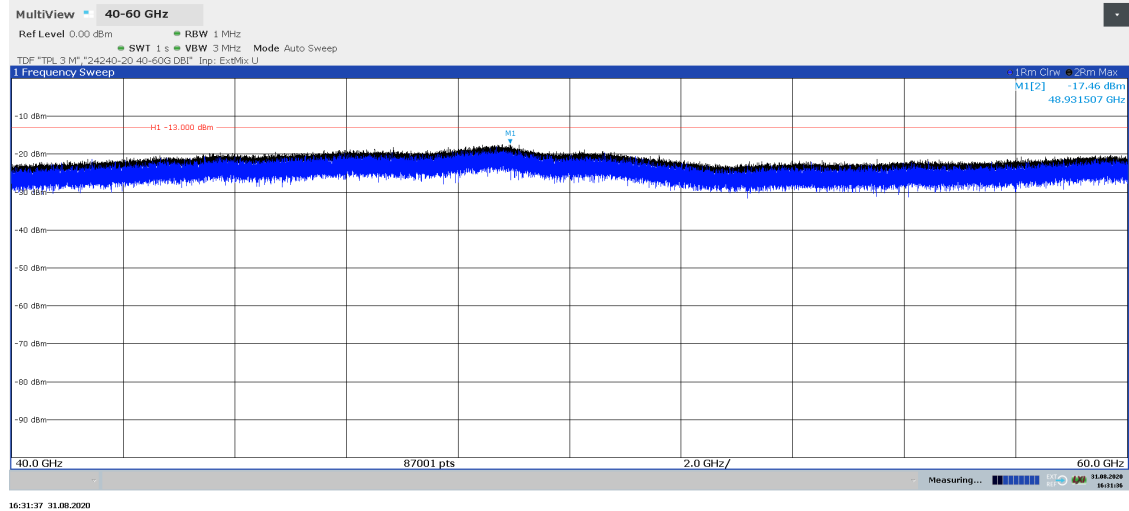
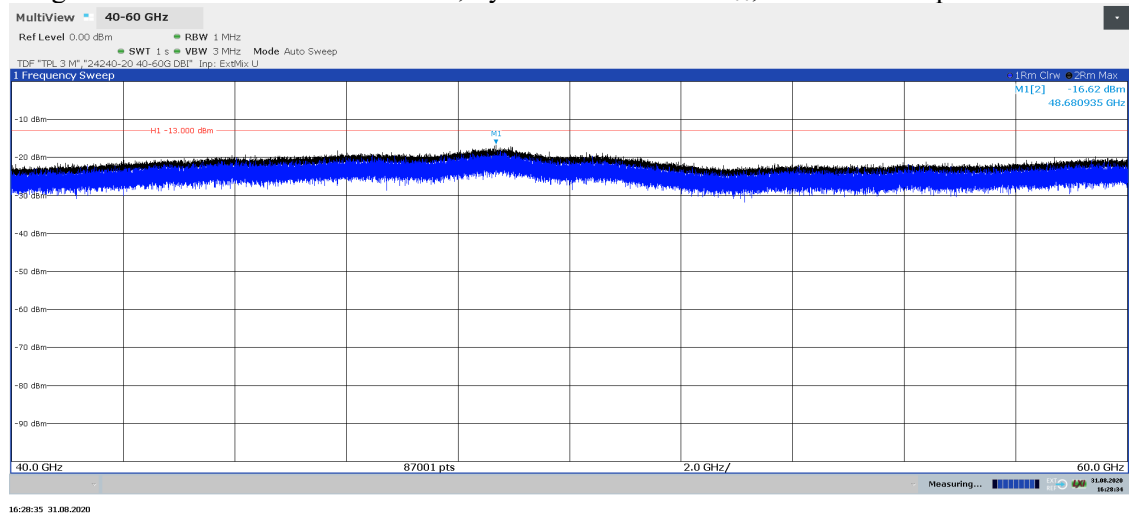
Diagram 2.18a: Pre scan 40 – 60 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarizationDiagram 2.18b: Pre scan 40 – 60 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

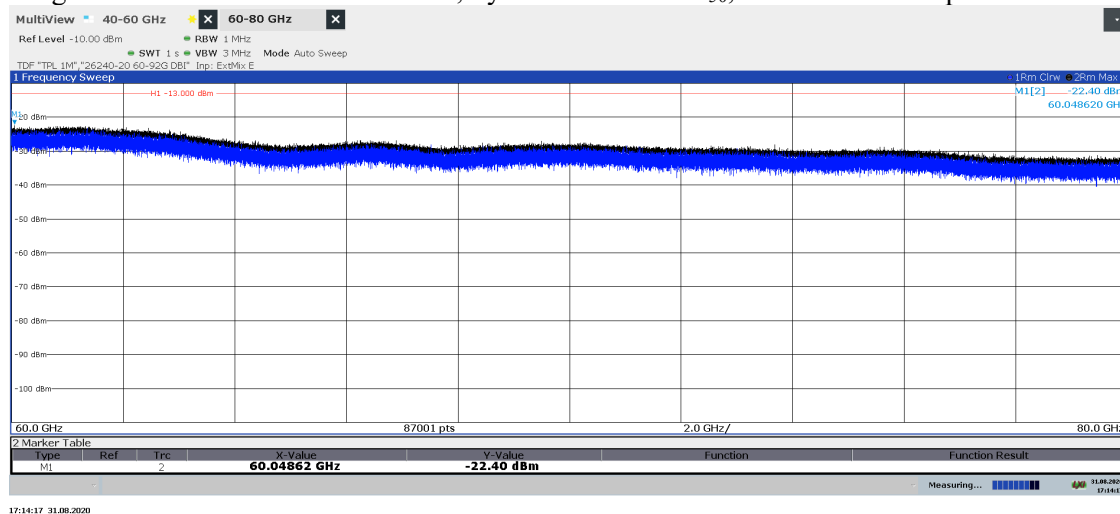
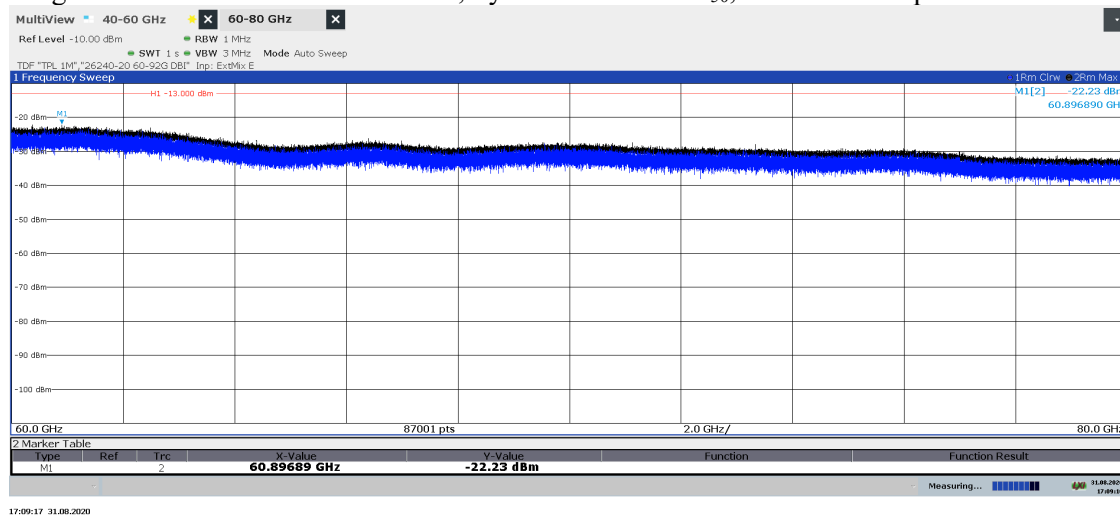
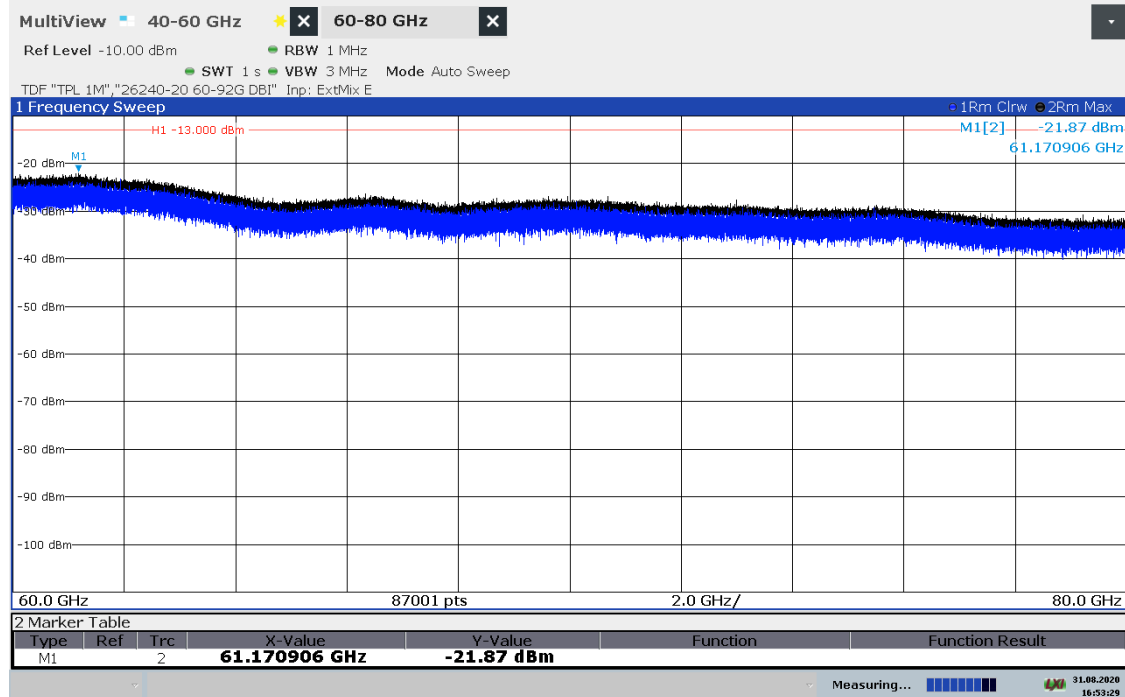
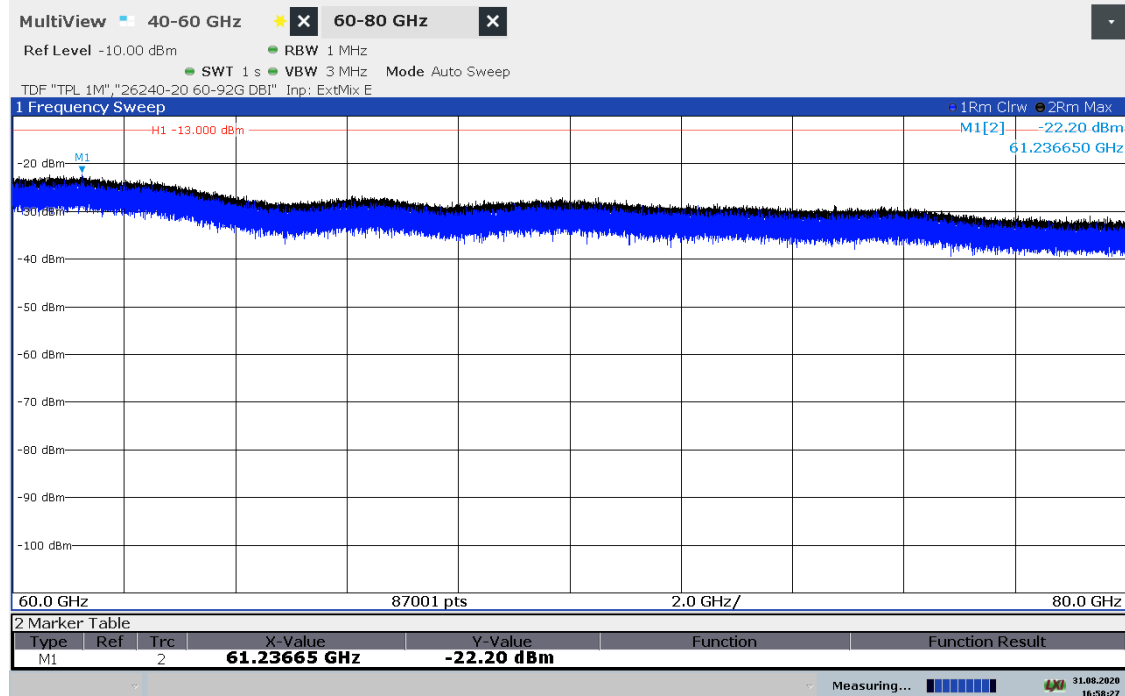
Diagram 2.19a: Pre scan 60 – 80 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarizationDiagram 2.19b: Pre scan 60 – 80 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization

Diagram 2.20a: Pre scan 60 – 80 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarization

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Diagram 2.20b: Pre scan 60 – 80 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

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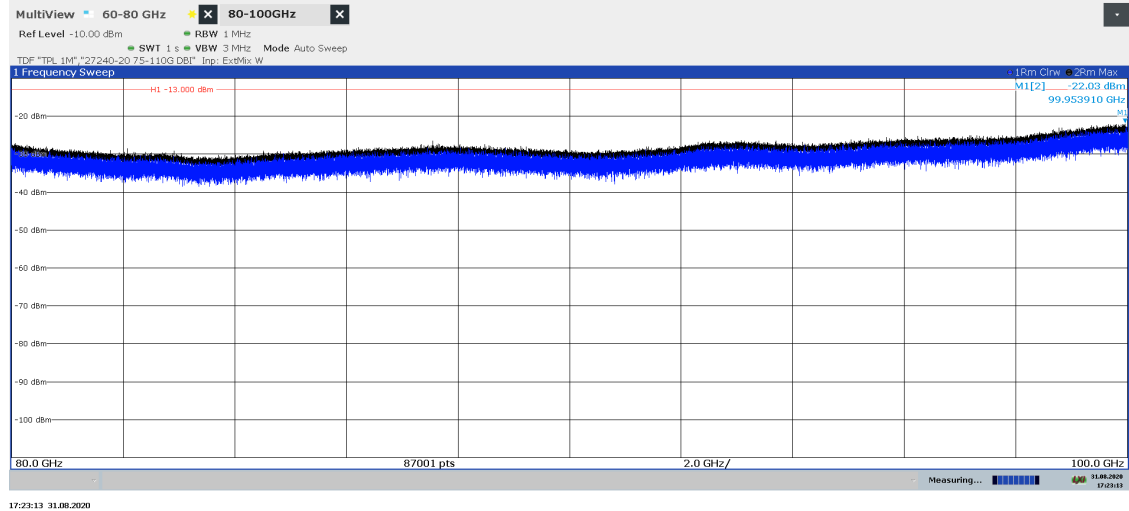
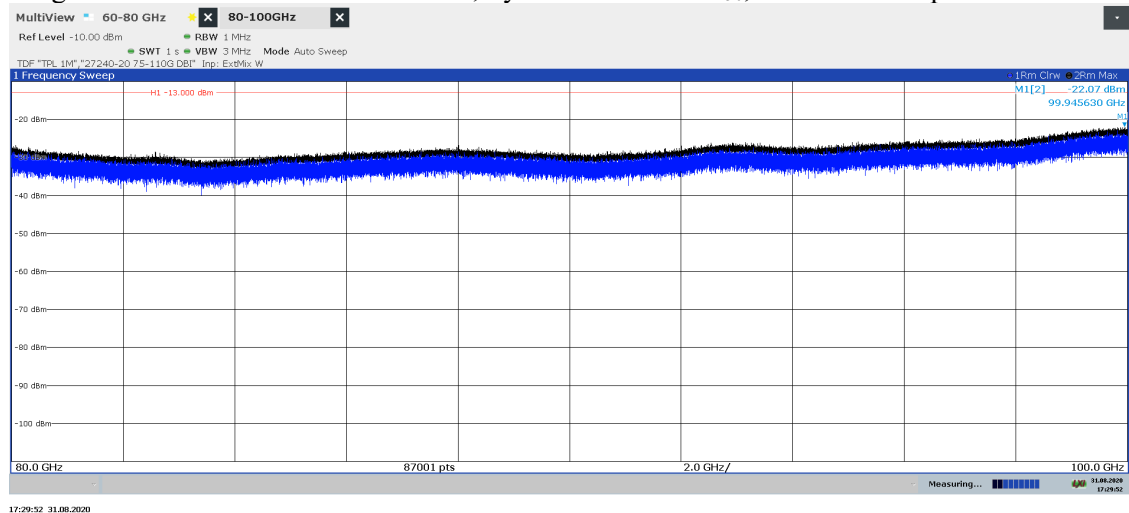
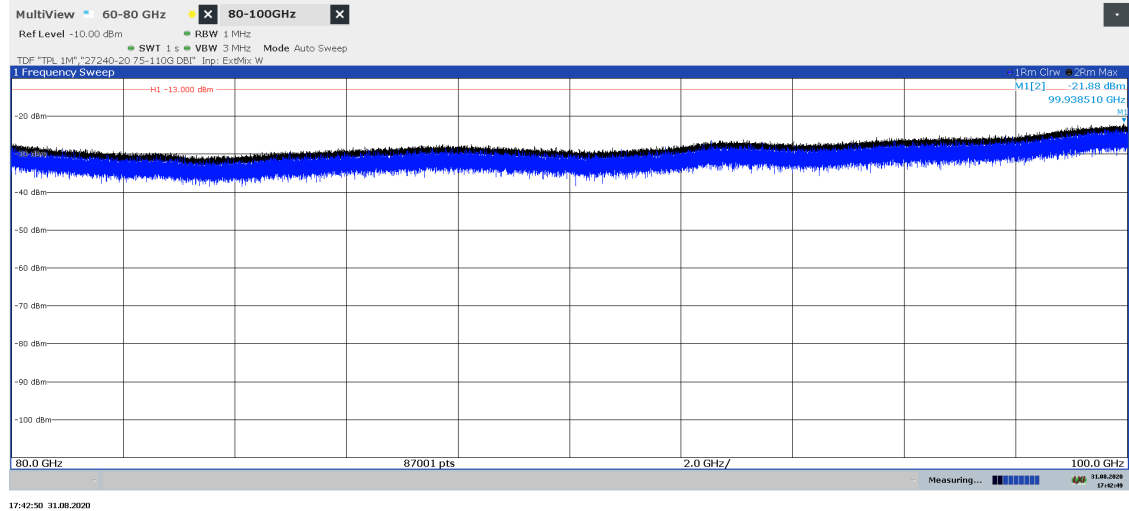
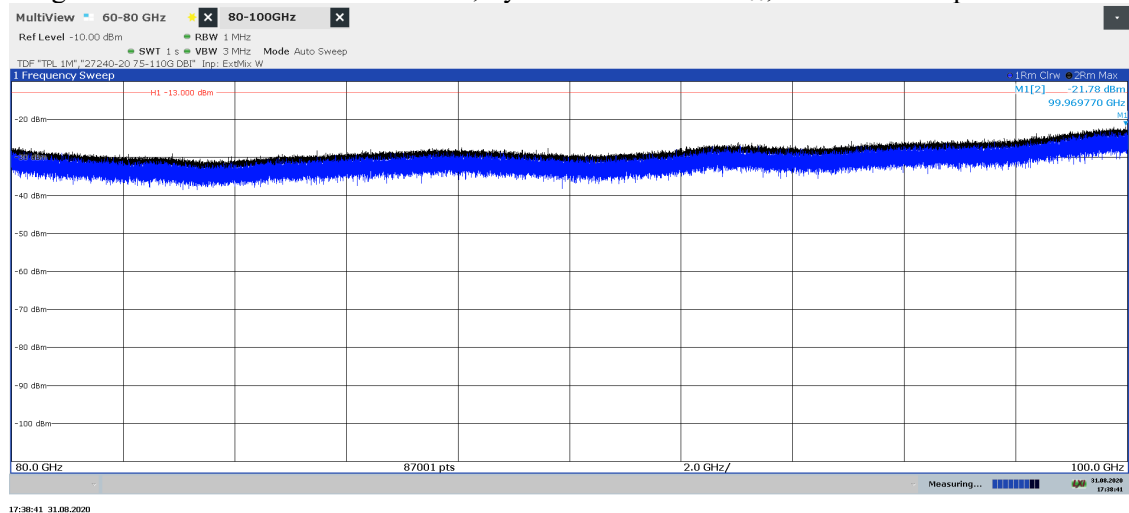
Diagram 2.21a: Pre scan 80 – 100 GHz, Symbolic name: TH₅₀, EIRP Horizontal polarizationDiagram 2.21b: Pre scan 80 – 100 GHz, Symbolic name: TH₅₀, EIRP Vertical polarization

Diagram 2.22a: Pre scan 80 – 100 GHz, Symbolic name: BT8₁₀₀, EIRP Horizontal polarizationDiagram 2.22b: Pre scan 80 – 100 GHz, Symbolic name: BT8₁₀₀, EIRP Vertical polarization

End of report.