

n25A, 5MHz, Channel 370500

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3704.50	-56.60	3.48	10.38	-49.70	-13.00	36.70	V
5557.50	-41.54	5.35	11.22	-35.67	-13.00	22.67	V
7402.50	-50.35	8.08	10.10	-48.33	-13.00	35.33	V
9262.00	-44.23	8.85	11.70	-41.38	-13.00	28.38	H
11115.00	-46.19	9.83	12.62	-43.40	-13.00	30.40	H
12968.00	-44.07	12.54	12.73	-43.88	-13.00	30.88	H

n25A, 5MHz, Channel 376500

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3765.00	-58.24	3.79	10.14	-51.89	-13.00	38.89	V
5647.50	-43.17	5.60	11.40	-37.37	-13.00	24.37	H
7521.50	-50.94	7.71	10.24	-48.41	-13.00	35.41	V
9412.50	-47.20	9.06	11.55	-44.71	-13.00	31.71	H
11295.50	-43.48	10.61	12.60	-41.49	-13.00	28.49	H
13178.00	-41.88	13.15	12.52	-42.51	-13.00	29.51	V

n25A, 5MHz, Channel 382500

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3824.50	-56.49	3.93	9.95	-50.47	-13.00	37.47	V
5737.50	-42.01	5.87	11.32	-36.56	-13.00	23.56	V
7650.00	-53.51	6.85	10.40	-49.96	-13.00	36.96	H
9562.50	-44.08	8.61	11.90	-40.79	-13.00	27.79	V
11475.50	-40.89	12.31	12.52	-40.68	-13.00	27.68	H
13387.50	-41.69	12.43	12.41	-41.71	-13.00	28.71	V

n41A, 10MHz, Channel 500202

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5002.50	-50.32	5.16	11.32	-44.16	-25.00	19.16	V
7478.50	-50.55	7.69	10.16	-48.08	-25.00	23.08	H
10011.50	-50.39	9.35	11.79	-47.95	-25.00	22.95	H
12506.50	-43.73	12.36	13.58	-42.51	-25.00	17.51	H
15018.50	-47.48	14.74	14.66	-47.56	-25.00	22.56	H
17494.50	-37.00	19.73	13.09	-43.64	-25.00	18.64	H

n41A, 10MHz, Channel 518598

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5187.00	-59.15	5.74	11.67	-53.22	-25.00	28.22	H
7763.00	-53.62	7.43	10.73	-50.32	-25.00	25.32	H
10382.50	-47.09	10.69	11.98	-45.80	-25.00	20.80	V
12966.00	-44.83	12.53	12.73	-44.63	-25.00	19.63	H
15565.50	-48.17	16.67	15.60	-49.24	-25.00	24.24	H
17993.50	-37.09	19.95	13.41	-43.63	-25.00	18.63	H

n41A, 10MHz, Channel 537000

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5370.50	-59.00	5.80	11.66	-53.14	-25.00	28.14	V
8057.50	-52.12	7.84	11.12	-48.84	-25.00	23.84	H
10758.50	-46.74	12.46	12.16	-47.04	-25.00	22.04	H
13426.00	-43.06	12.53	12.37	-43.22	-25.00	18.22	V
16112.00	-44.88	17.09	15.10	-46.87	-25.00	21.87	H
17991.00	-36.70	19.95	13.42	-43.23	-25.00	18.23	H

n66A, 5MHz, Channel 342500

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3425.00	-57.73	5.38	8.02	-55.09	-13.00	42.09	H
5138.00	-64.44	6.86	10.09	-61.21	-13.00	48.21	V
6849.50	-60.74	7.82	11.42	-57.14	-13.00	44.14	V
10266.50	-60.81	9.53	13.01	-57.33	-13.00	44.33	H
11987.50	-53.52	10.11	13.00	-50.63	-13.00	37.63	V
13700.00	-57.91	10.60	14.32	-54.19	-13.00	41.19	H

n66A, 5MHz, Channel 349000

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.00	-62.72	5.50	8.18	-60.04	-13.00	47.04	V
5235.00	-56.65	7.00	10.23	-53.42	-13.00	40.42	H
6979.50	-61.91	8.14	11.58	-58.47	-13.00	45.47	V
8741.50	-62.56	8.48	13.05	-57.99	-13.00	44.99	V
10453.00	-59.27	9.72	13.08	-55.91	-13.00	42.91	H
12215.00	-57.99	10.05	13.09	-54.95	-13.00	41.95	H

n66A, 5MHz, Channel 355500

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3554.50	-61.97	5.87	8.28	-59.56	-13.00	46.56	V
5332.50	-65.83	6.97	10.37	-62.43	-13.00	49.43	H
7110.00	-60.33	8.16	11.73	-56.76	-13.00	43.76	V
8907.50	-62.79	8.87	13.08	-58.58	-13.00	45.58	V
10665.00	-62.16	9.30	13.13	-58.33	-13.00	45.33	V
12442.50	-53.08	10.33	13.18	-50.23	-13.00	37.23	H

n71A, 5MHz, Channel 133100

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1331.00	-57.12	1.84	7.45	2.15	-53.66	-13.00	40.66	H
1996.50	-51.59	3.37	7.74	2.15	-49.37	-13.00	36.37	V
2650.50	-50.62	4.78	10.20	2.15	-47.35	-13.00	34.35	V
5318.00	-59.31	5.08	11.76	2.15	-54.78	-13.00	41.78	V
5990.00	-53.25	5.66	10.70	2.15	-50.36	-13.00	37.36	H
6655.00	-51.64	6.20	10.41	2.15	-49.58	-13.00	36.58	H

n71A, 5MHz, Channel 136100

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2041.50	-50.29	3.71	7.70	2.15	-48.45	-13.00	35.45	V
2714.50	-49.64	4.88	10.23	2.15	-46.44	-13.00	33.44	V
4751.50	-58.19	4.81	11.00	2.15	-54.15	-13.00	41.15	V
5430.00	-57.45	5.55	11.42	2.15	-53.73	-13.00	40.73	V
6124.50	-52.27	6.13	10.65	2.15	-49.90	-13.00	36.90	V
6804.50	-52.92	6.38	10.39	2.15	-51.06	-13.00	38.06	V

n71A, 5MHz, Channel 139100

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2086.50	-50.81	3.52	7.77	2.15	-48.71	-13.00	35.71	V
2786.00	-50.36	4.90	10.37	2.15	-47.04	-13.00	34.04	V
4185.50	-57.39	4.08	10.07	2.15	-53.55	-13.00	40.55	H
5563.50	-56.64	5.37	11.23	2.15	-52.93	-13.00	39.93	V
6259.00	-47.38	6.14	10.80	2.15	-44.87	-13.00	31.87	H
6955.00	-49.93	6.47	10.40	2.15	-48.15	-13.00	35.15	V

Note: Peak EIRP (dBm) = P_{Mea}(dBm) - Path Loss(dB) + Antenna Gain(dBi)

Semi-anechoic chamber 6 with absorbers
FAC 3-6

Test item	Frequency ranges	Measurement uncertainty (k=2)
Radiated Emission	30MHz-1GHz	2.12dB
	1GHz-18GHz	3.10dB
	18GHz-40GHz	3.44dB

A.3 Frequency Stability

A.3.1 Method of Measurement

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage. Two reference points are established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as F_L and F_H respectively.

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of MT8000A.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the MT8000A, and in a simulated call on middle channel for each NR band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the MT8000A and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C decrements from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.

A.3.2 Measurement results

n25

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.87	1850.096	1914.856		
50				-0.40	0.0002
40				6.80	0.0036
30				12.00	0.0064
10				13.40	0.0071
0				6.20	0.0033
-10				0.70	0.0004
-20				3.00	0.0016
-30				9.90	0.0053

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1850.096	1914.856	0.10	0.0001
4.4				20.00	0.0106

n41

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.87	2496.672	2688.160		
50				1.50	0.0006
40				9.90	0.0038
30				15.10	0.0058
10				23.70	0.0091
0				28.40	0.0110
-10				-8.10	0.0031
-20				20.80	0.0080
-30				4.60	0.0018

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2496.672	2688.160	14.20	0.0055
4.4				6.70	0.0026

n66
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.87	1710.112	1779.872		
50				-6.50	0.0037
40				-2.90	0.0017
30				7.20	0.0041
10				7.30	0.0042
0				0.50	0.0003
-10				0.70	0.0004
-20				-2.50	0.0014
-30				2.90	0.0017

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.112	1779.872	-1.40	0.0008
4.4				-4.10	0.0023

n71
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.87	663.432	696.464		
50				-0.50	0.0007
40				-0.30	0.0004
30				3.70	0.0054
10				3.90	0.0057
0				-0.40	0.0006
-10				4.80	0.0071
-20				6.30	0.0093
-30				1.30	0.0019

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	663.432	696.464	2.80	0.0041
4.4				5.40	0.0079

Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.047k \text{ Hz}$, $k = 2$.

A.4 Occupied Bandwidth

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the mid frequencies frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

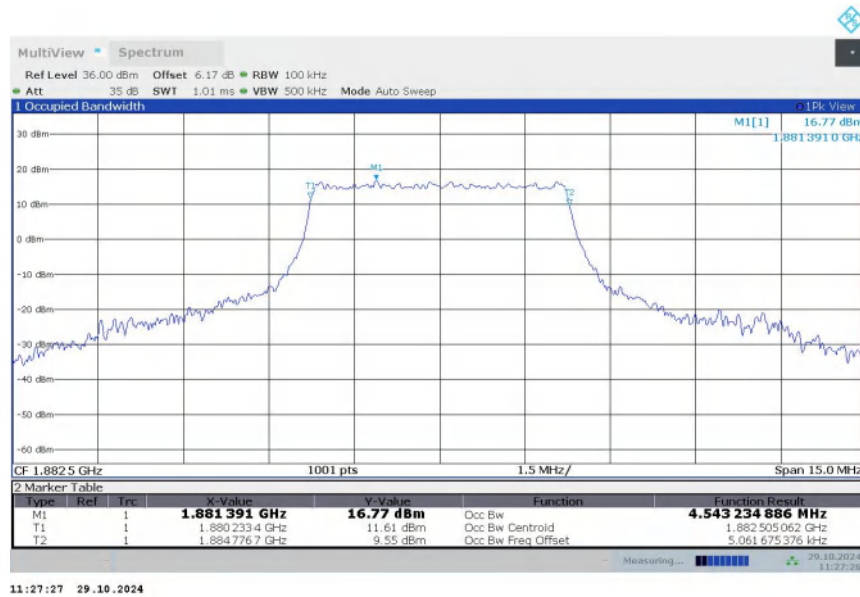
- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) Set the detection mode to peak, and the trace mode to max-hold.

n25

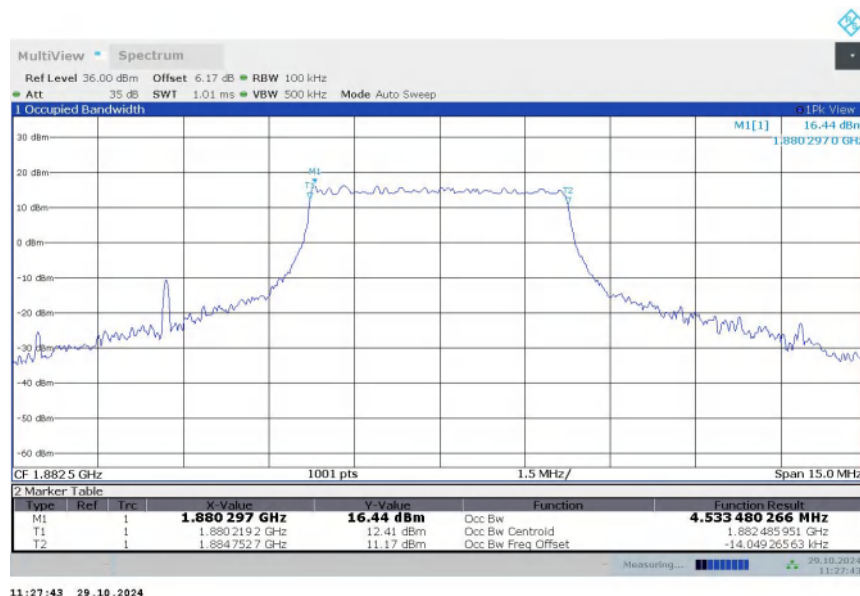
n25,5MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	4.543	4.533

n25,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,5MHz Bandwidth,DFT-s-QPSK (99% BW)

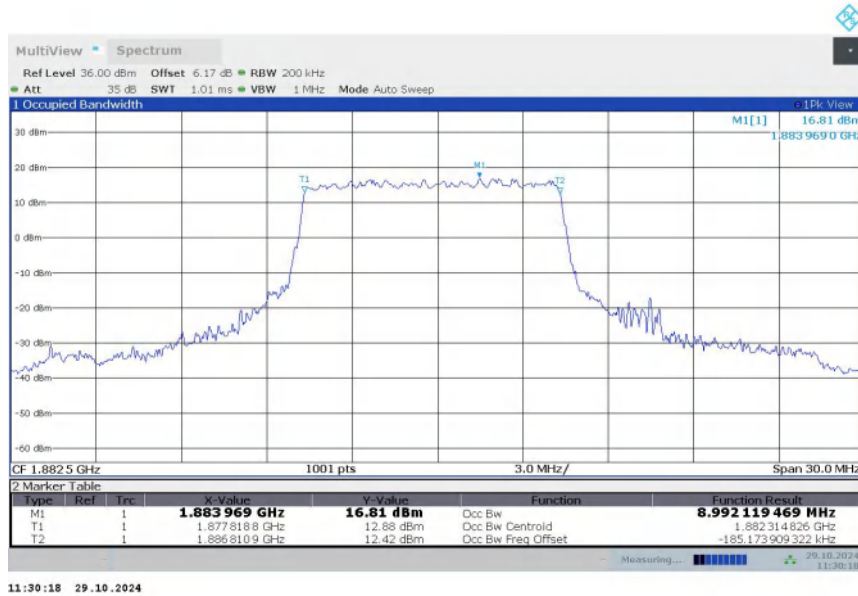


n25

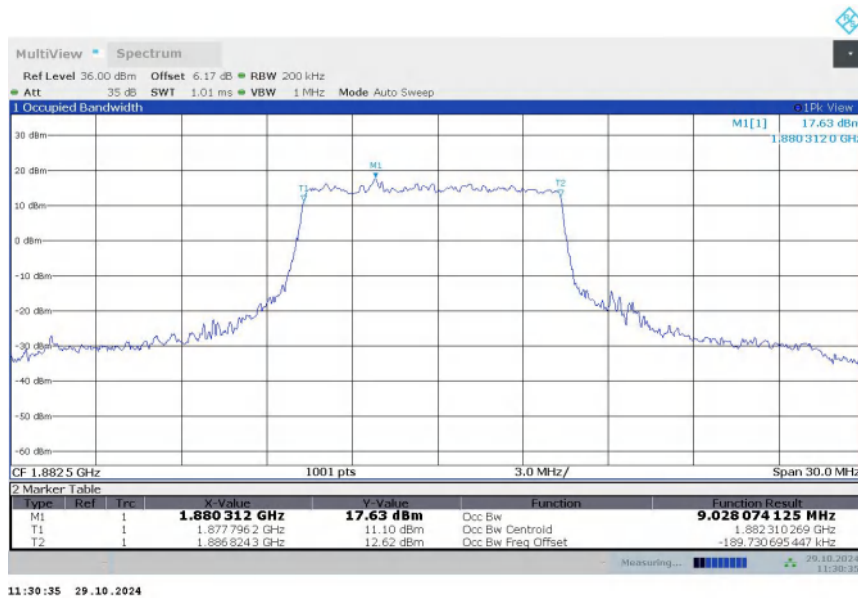
n25,10MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	8.992	9.028

n25,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,10MHz Bandwidth,DFT-s-QPSK (99% BW)

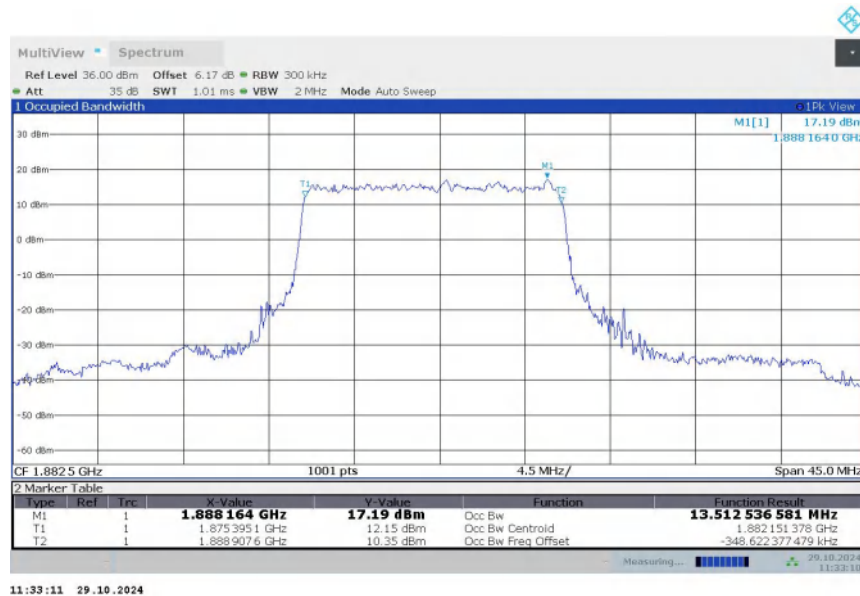


n25

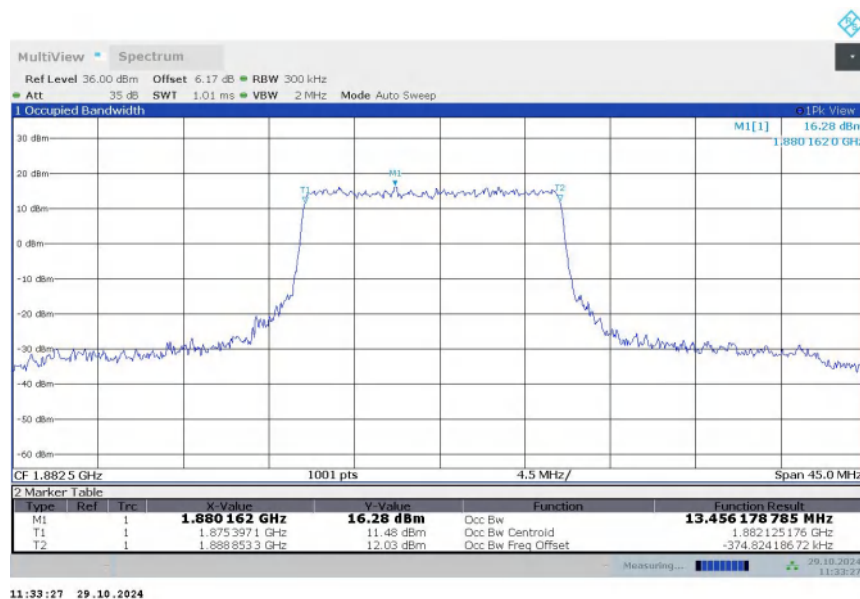
n25,15MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	13.513	13.456

n25,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,15MHz Bandwidth,DFT-s-QPSK (99% BW)

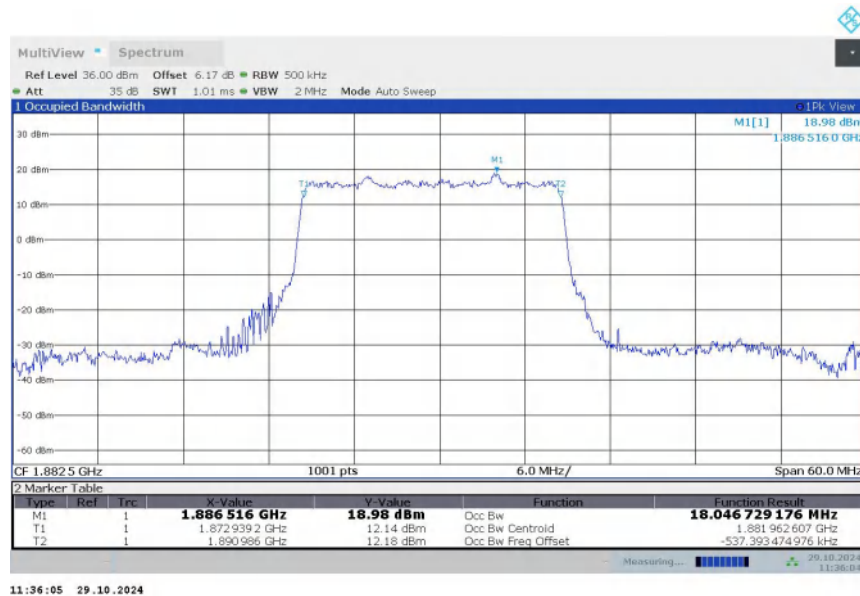


n25

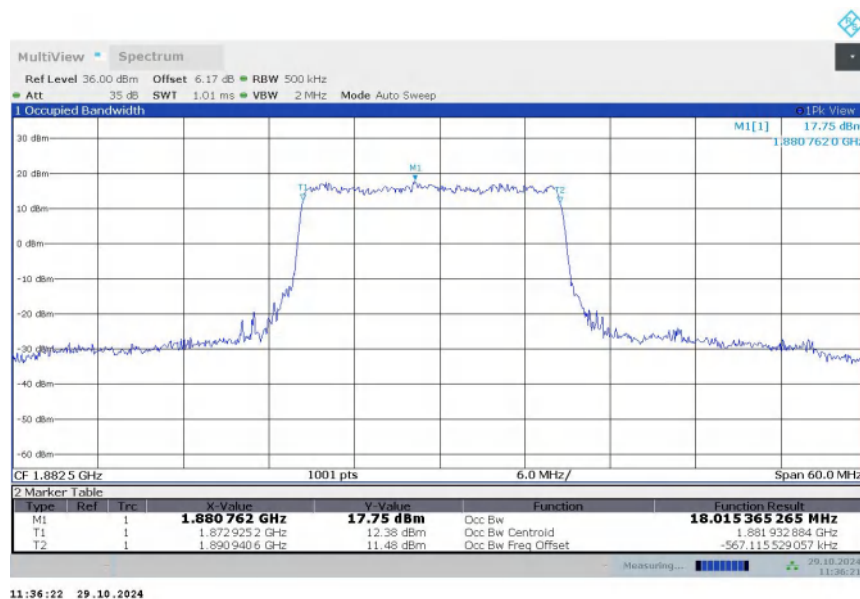
n25,20MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	18.047	18.015

n25,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,20MHz Bandwidth,DFT-s-QPSK (99% BW)

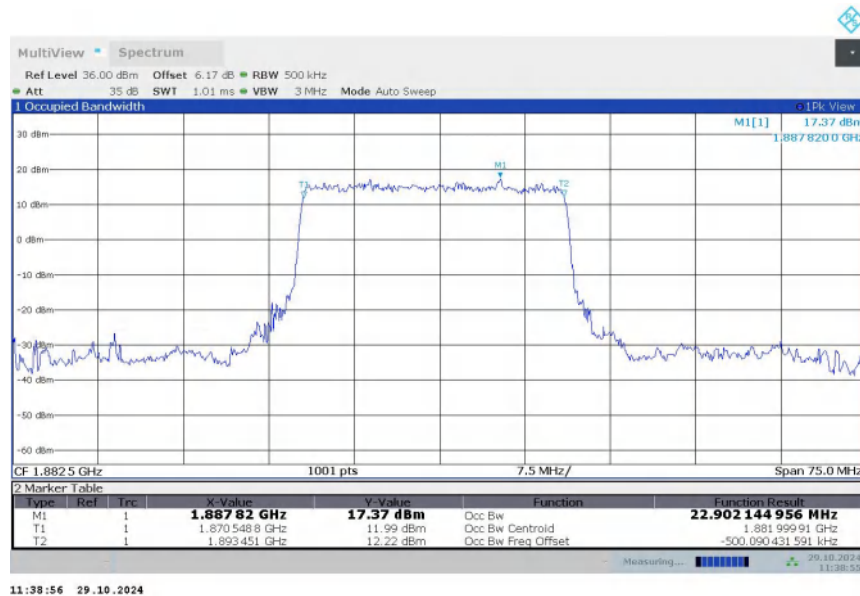


n25

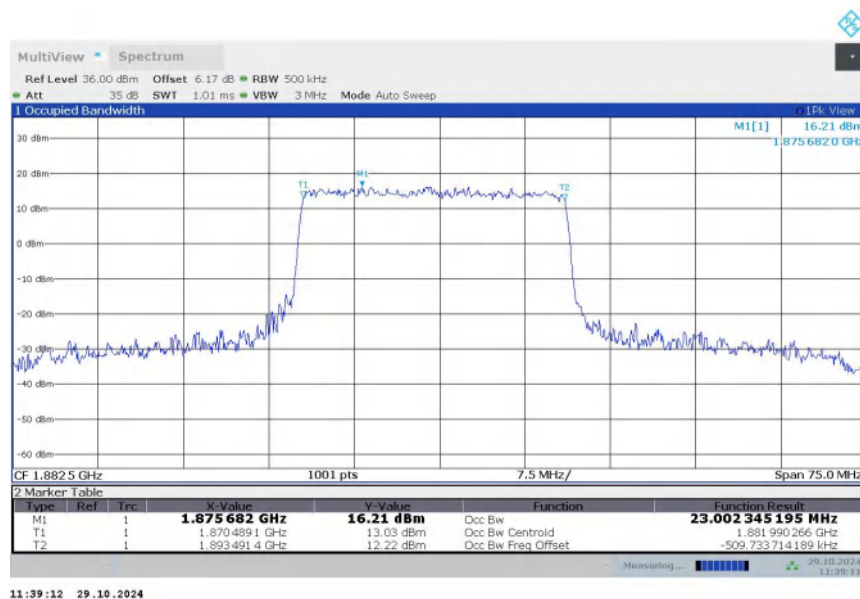
n25,25MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	22.902	23.002

n25,25MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,25MHz Bandwidth,DFT-s-QPSK (99% BW)

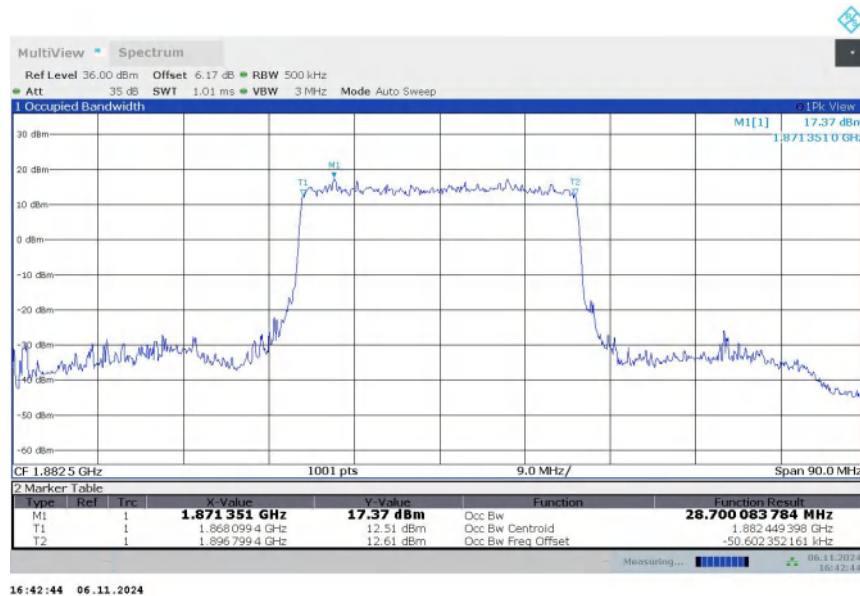


n25

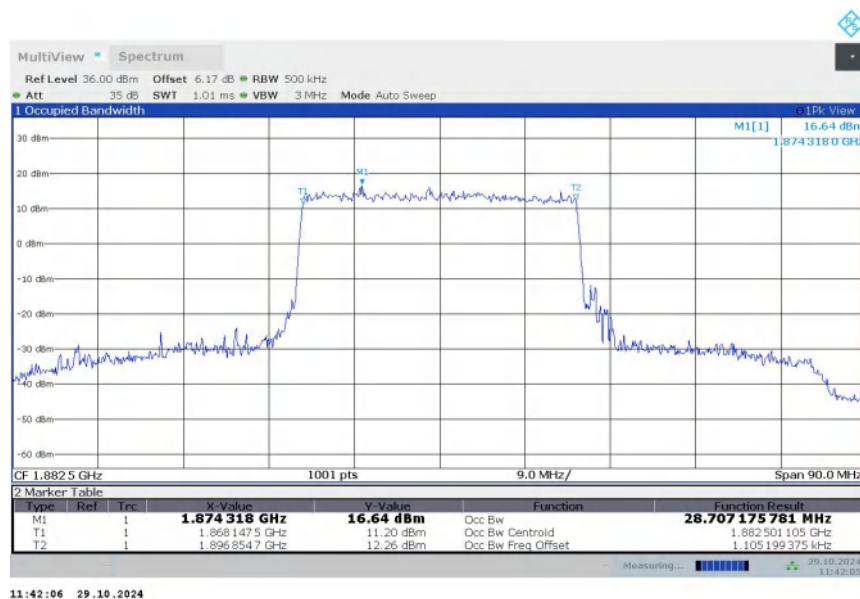
n25,30MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	28.700	28.707

n25,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,30MHz Bandwidth,DFT-s-QPSK (99% BW)

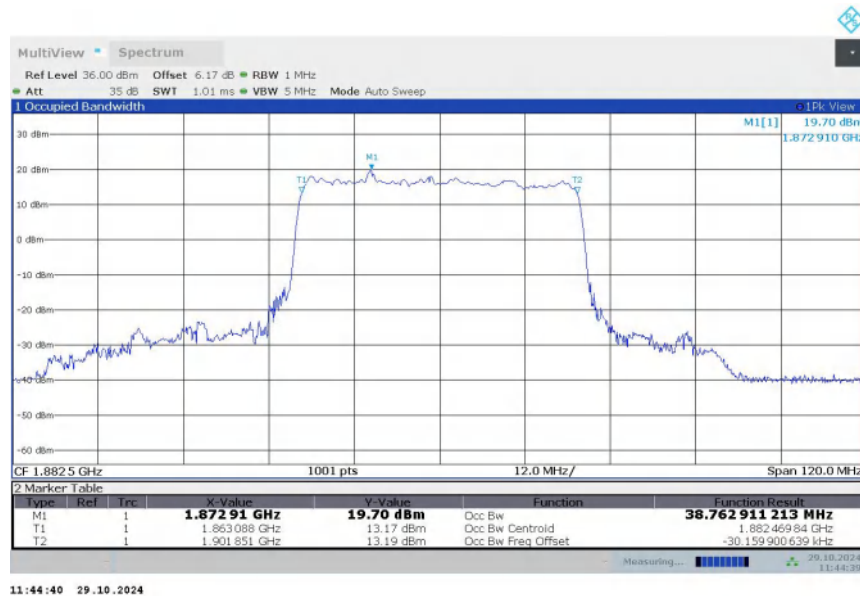


n25

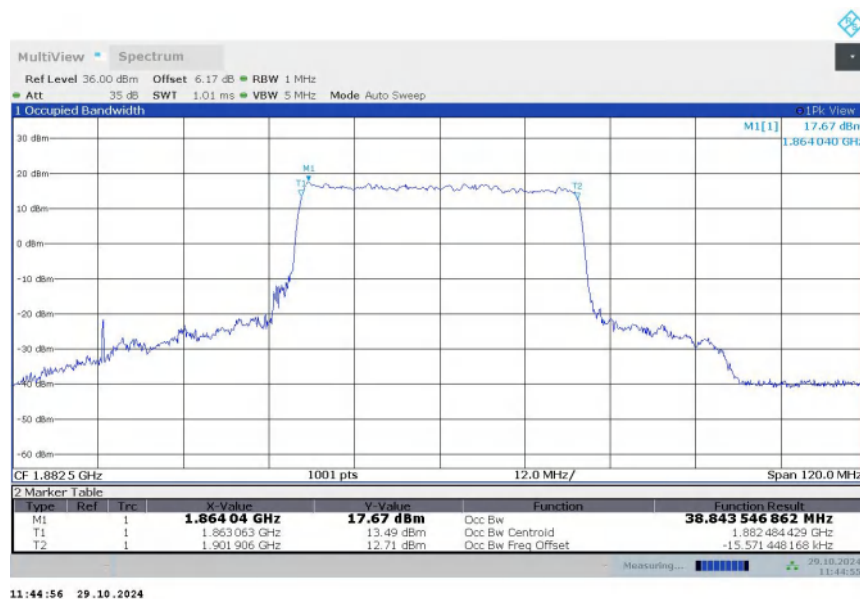
n25,40MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	38.763	38.844

n25,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n25,40MHz Bandwidth,DFT-s-QPSK (99% BW)

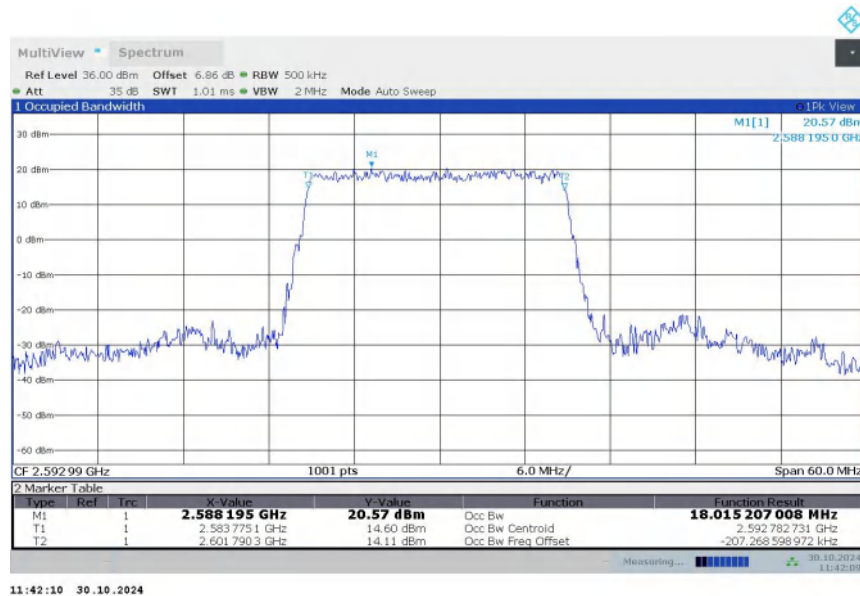


n41

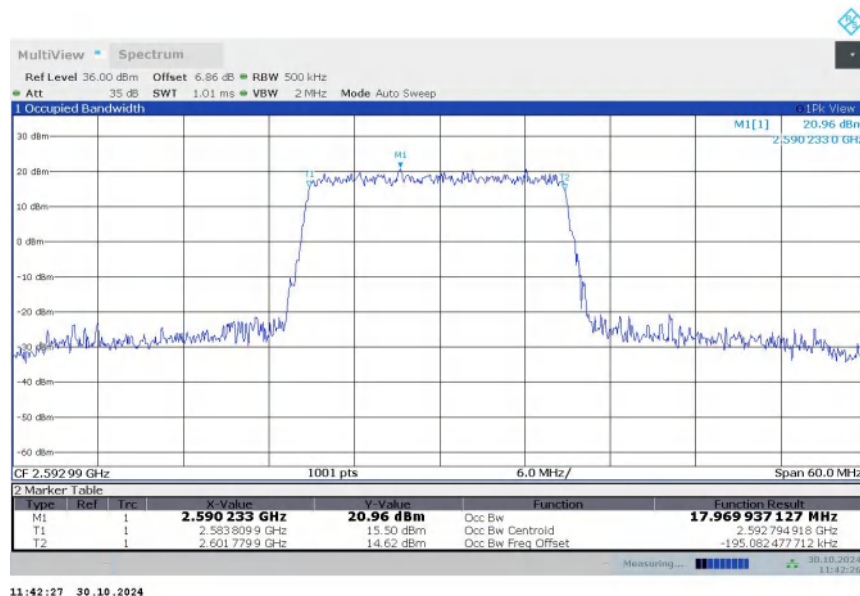
n41,20MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	18.015	17.970

n41,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,20MHz Bandwidth,DFT-s-QPSK (99% BW)

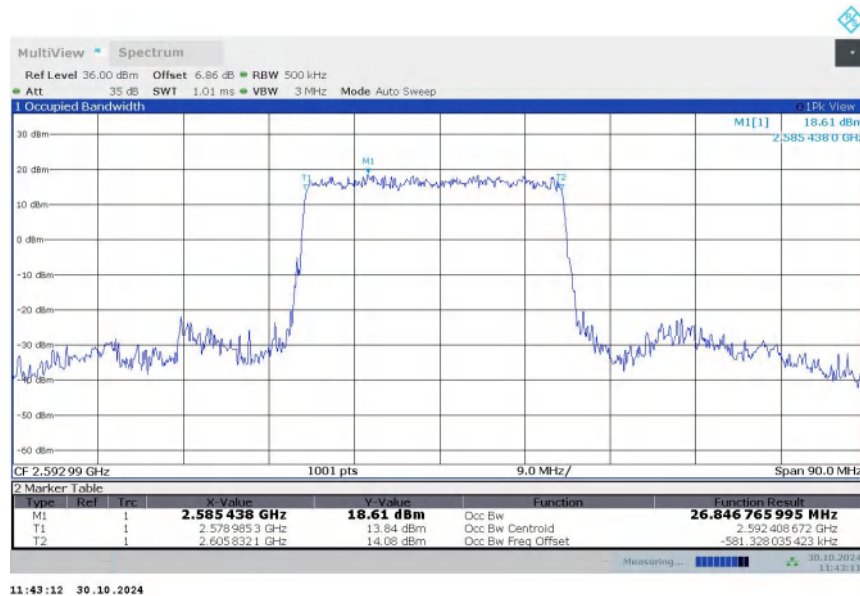


n41

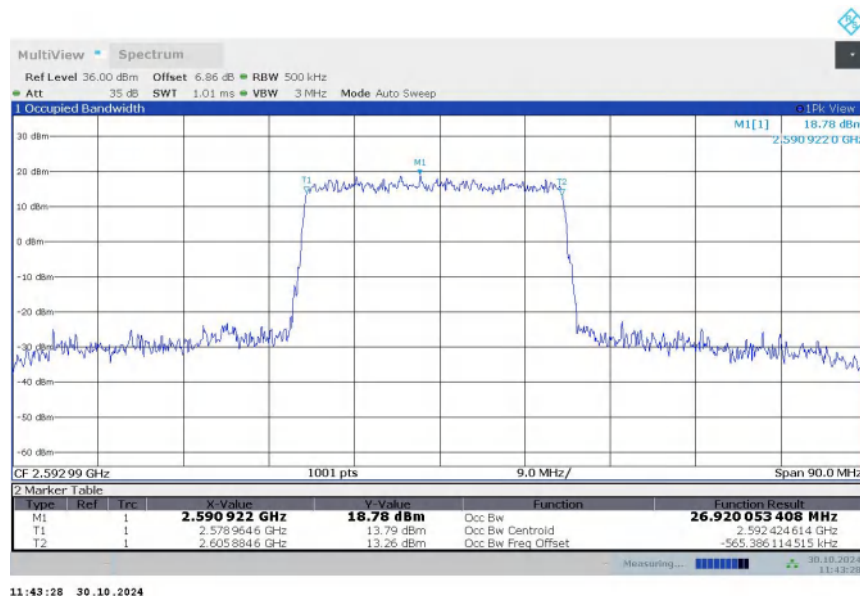
n41,30MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	26.847	26.920

n41,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,30MHz Bandwidth,DFT-s-QPSK (99% BW)

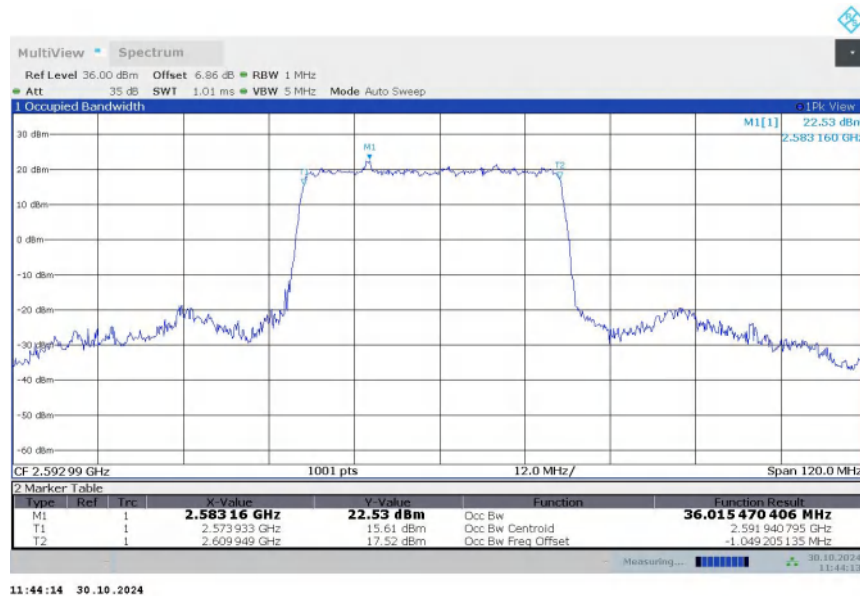


n41

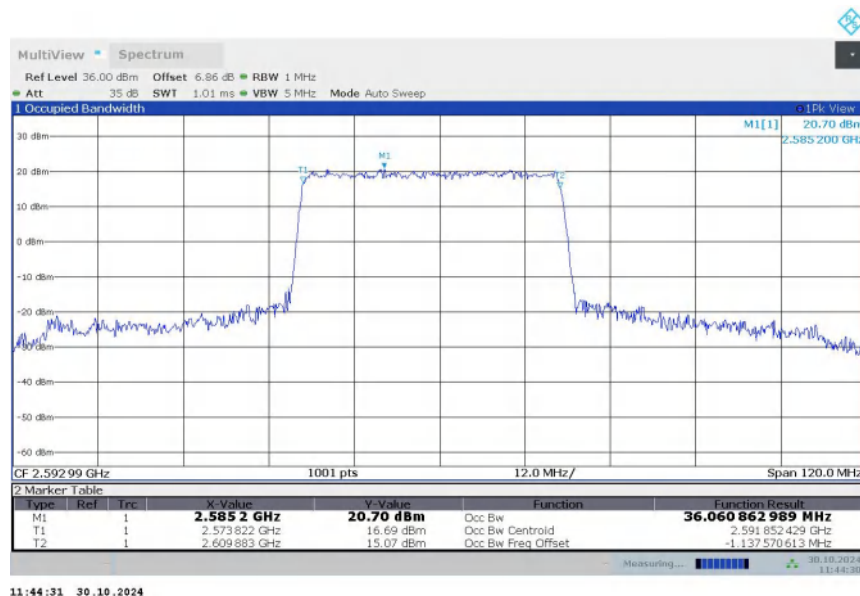
n41,40MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	36.015	36.061

n41,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,40MHz Bandwidth,DFT-s-QPSK (99% BW)

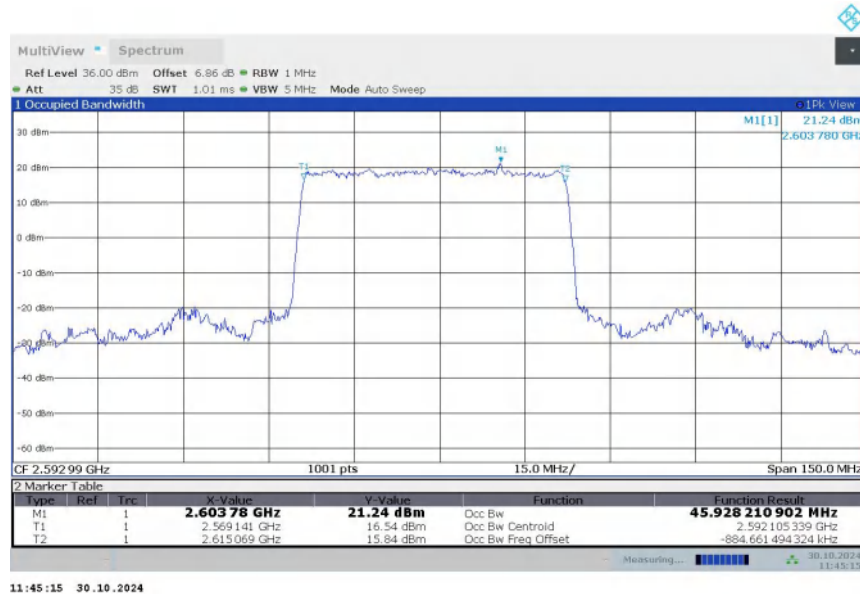


n41

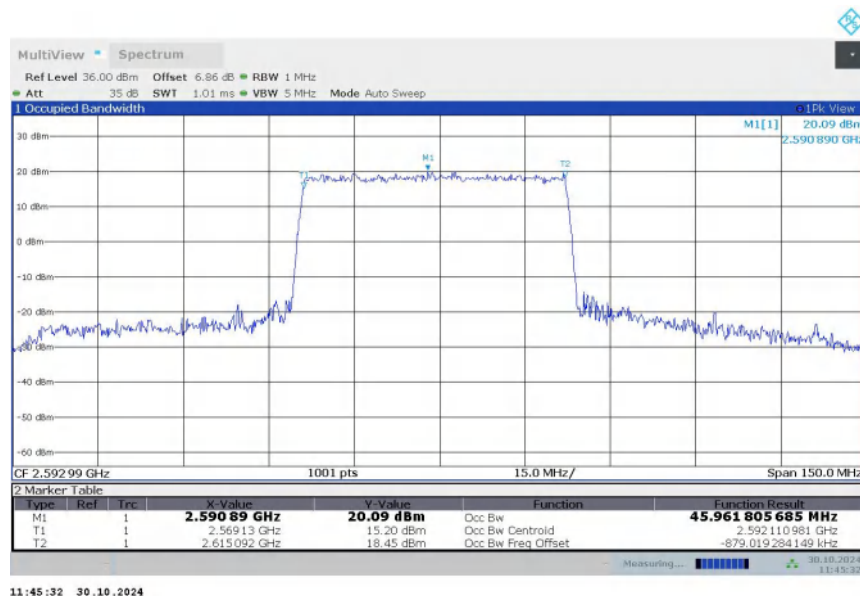
n41,50MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	45.928	45.962

n41,50MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,50MHz Bandwidth,DFT-s-QPSK (99% BW)

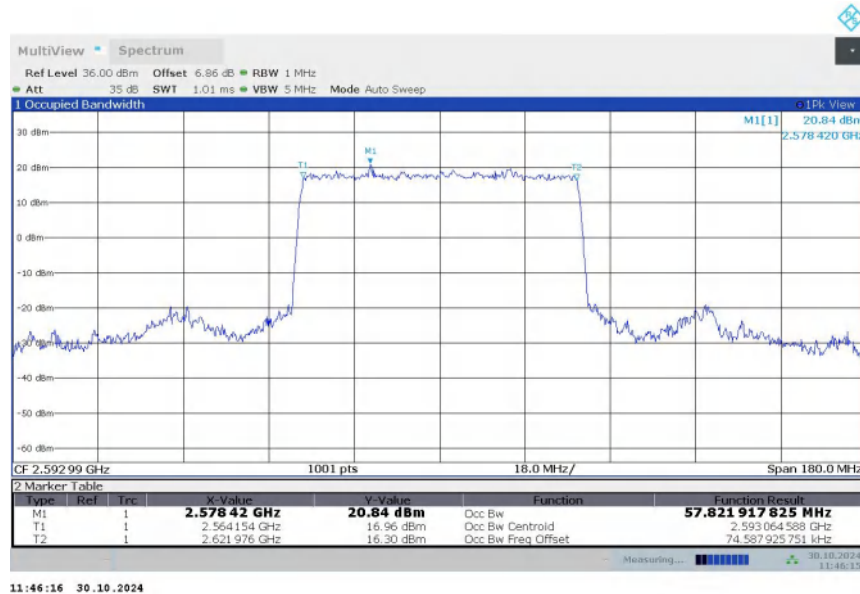


n41

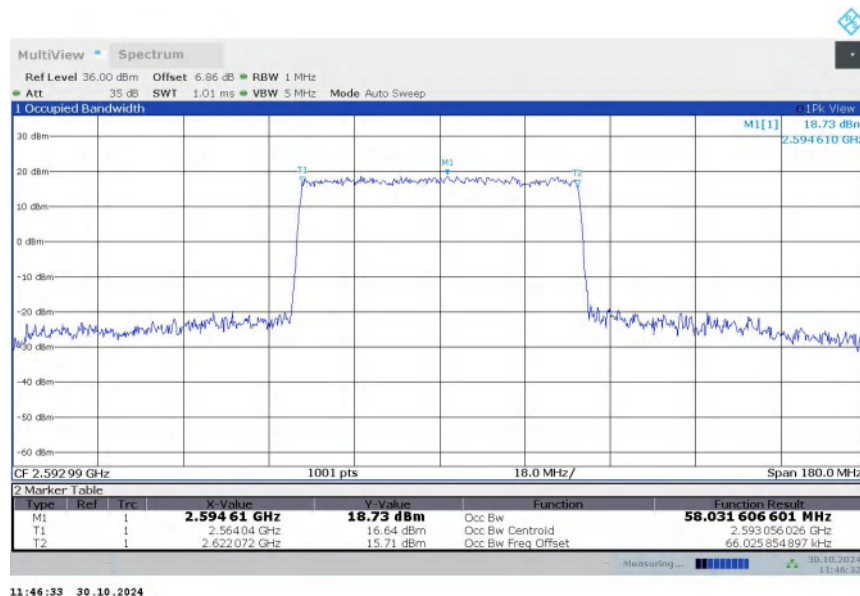
n41,60MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	57.822	58.032

n41,60MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,60MHz Bandwidth,DFT-s-QPSK (99% BW)

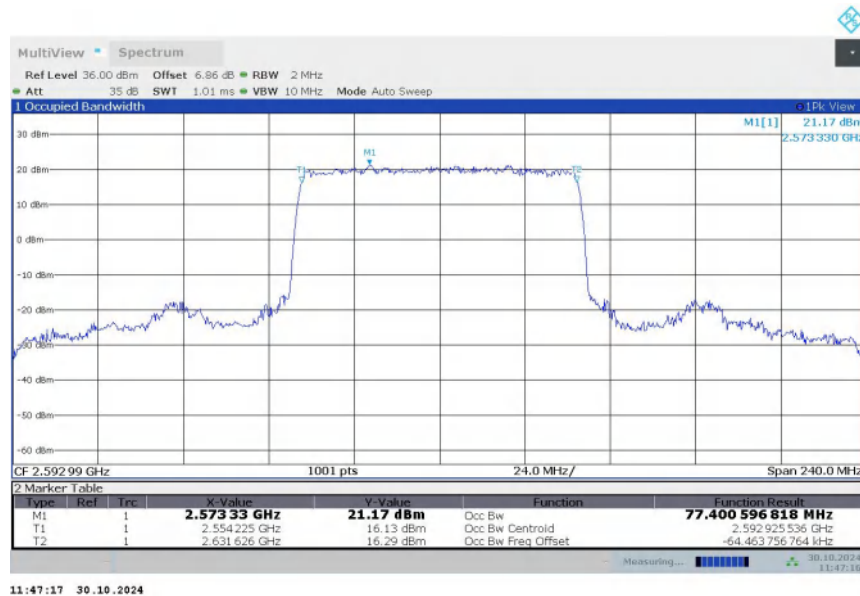


n41

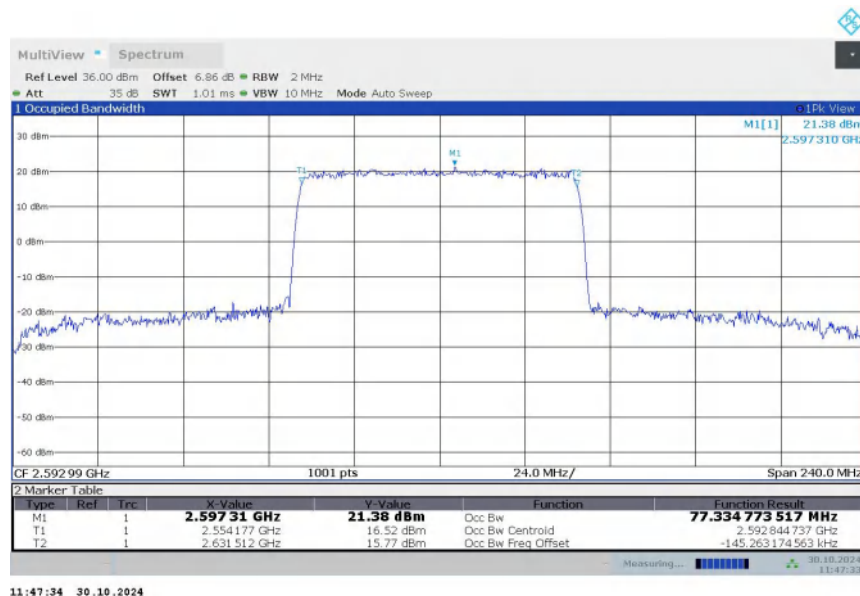
n41,80MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	77.401	77.335

n41,80MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,80MHz Bandwidth,DFT-s-QPSK (99% BW)

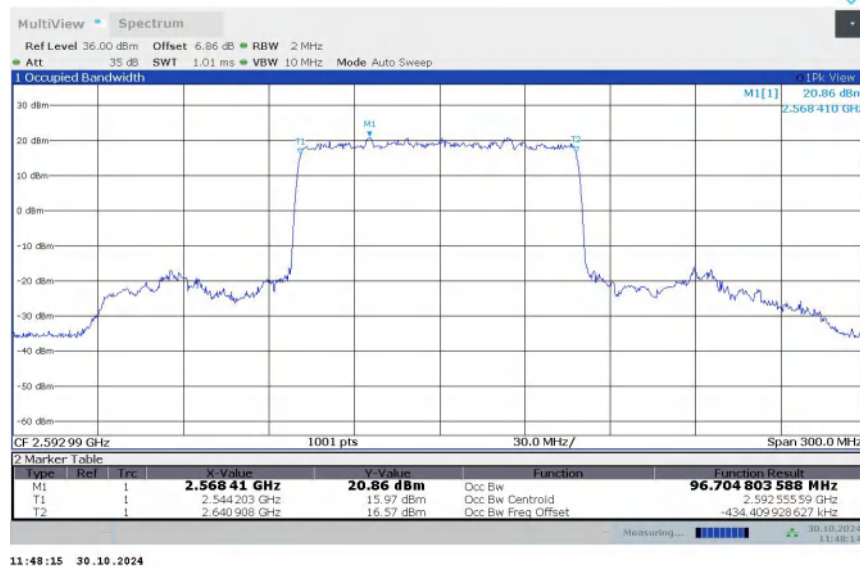


n41

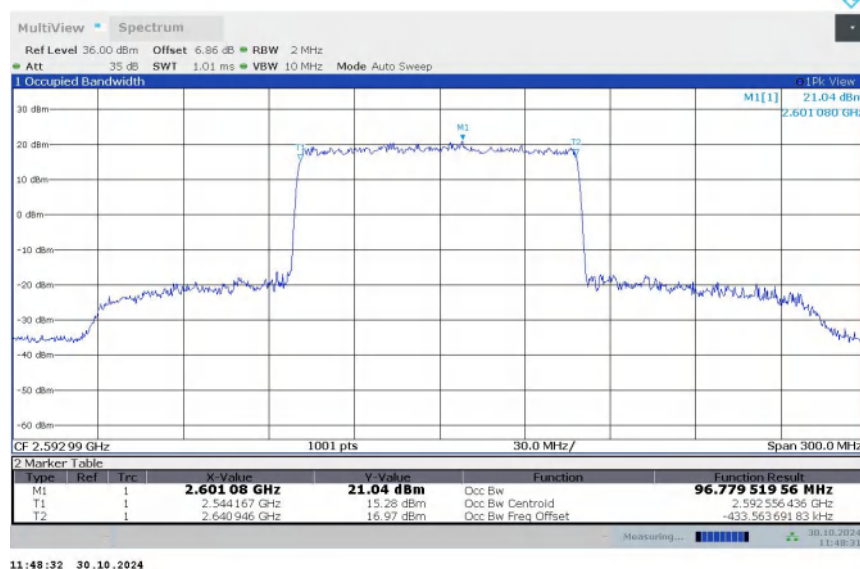
n41,100MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	96.705	96.780

n41,100MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n41,100MHz Bandwidth,DFT-s-QPSK (99% BW)



n66

n66,5MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	4.522	4.533

n66,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,5MHz Bandwidth,DFT-s-QPSK (99% BW)

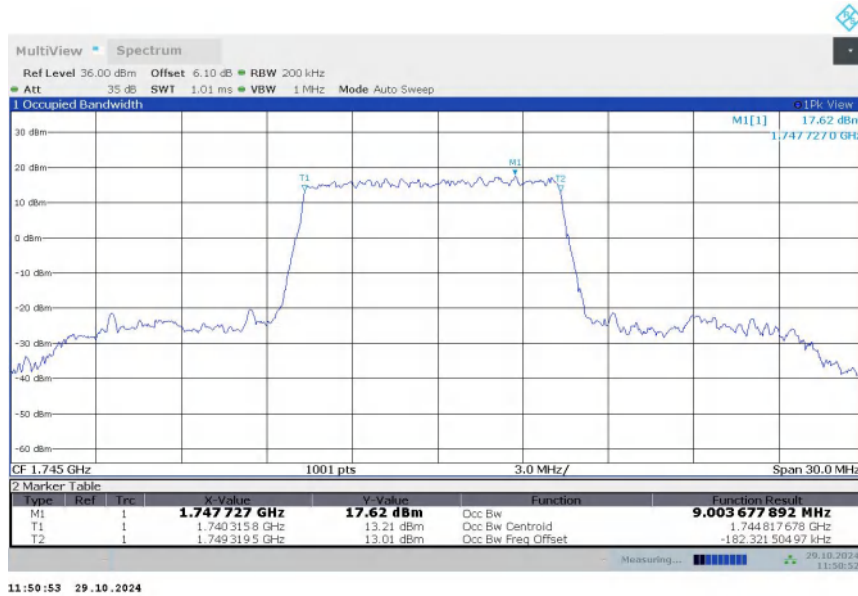


n66

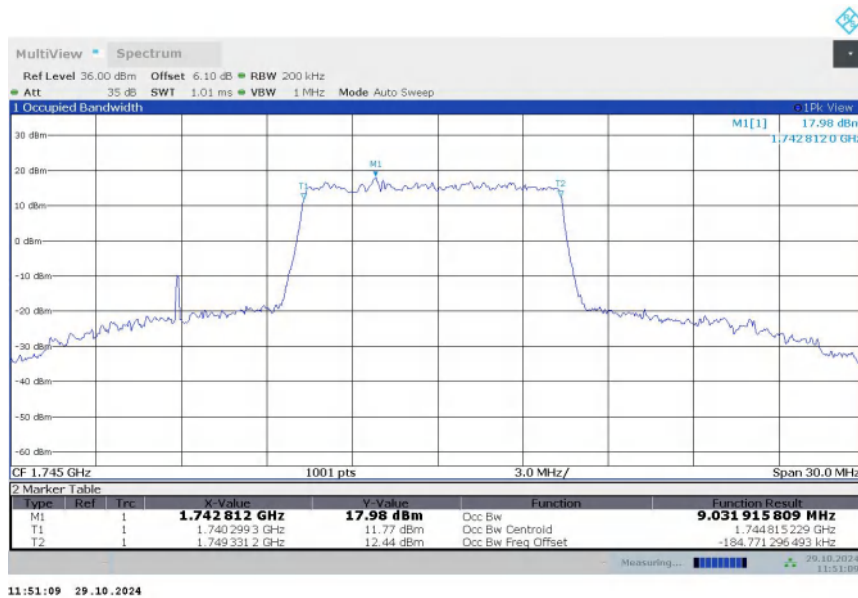
n66,10MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	9.004	9.032

n66,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,10MHz Bandwidth,DFT-s-QPSK (99% BW)



n66

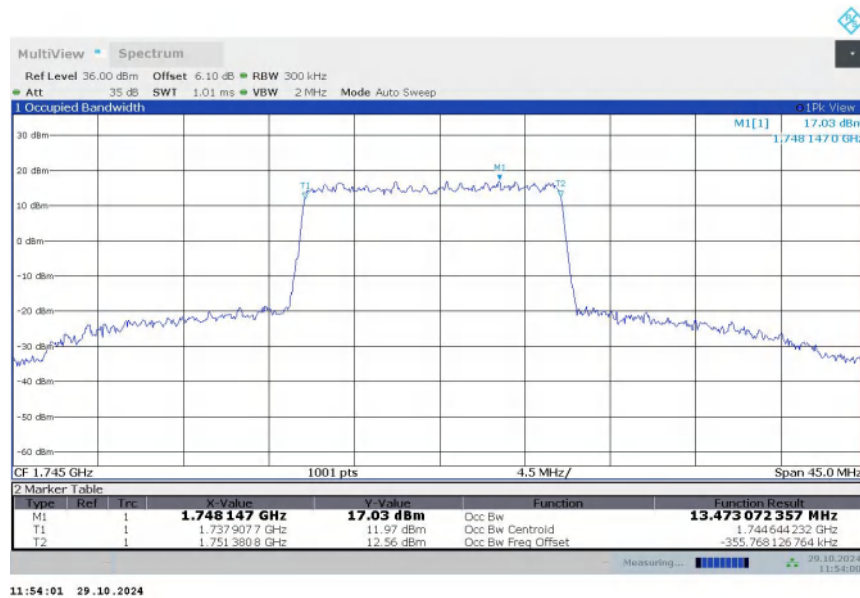
n66,15MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	13.469	13.473

n66,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,15MHz Bandwidth,DFT-s-QPSK (99% BW)

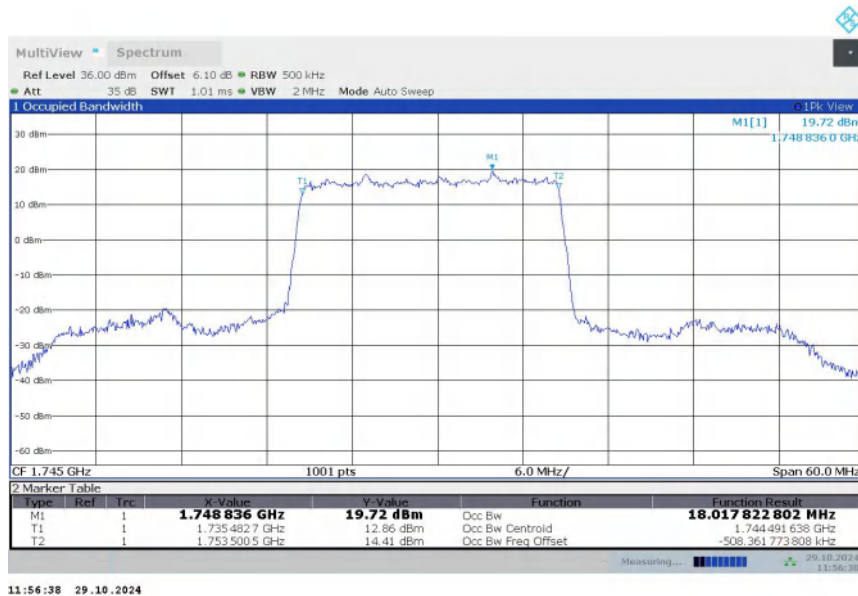


n66

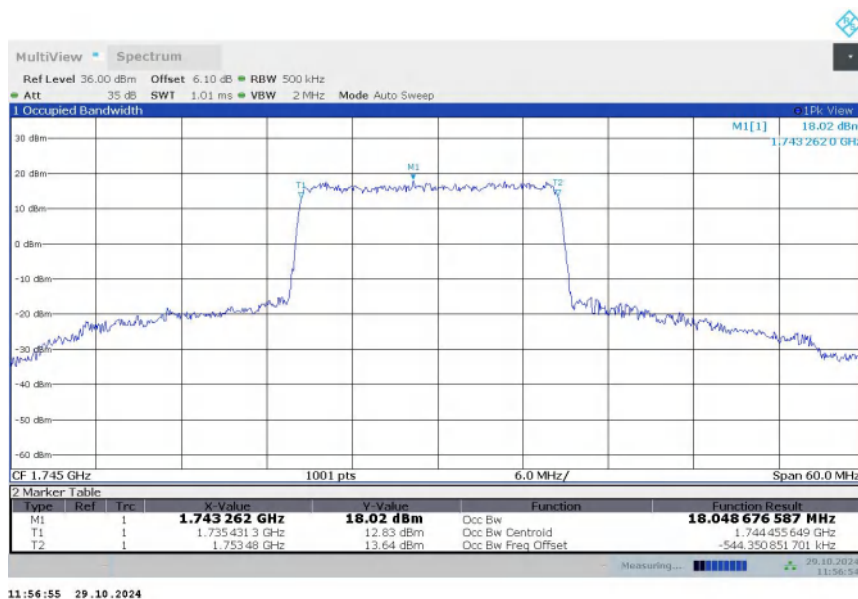
n66,20MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	18.018	18.049

n66,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,20MHz Bandwidth,DFT-s-QPSK (99% BW)

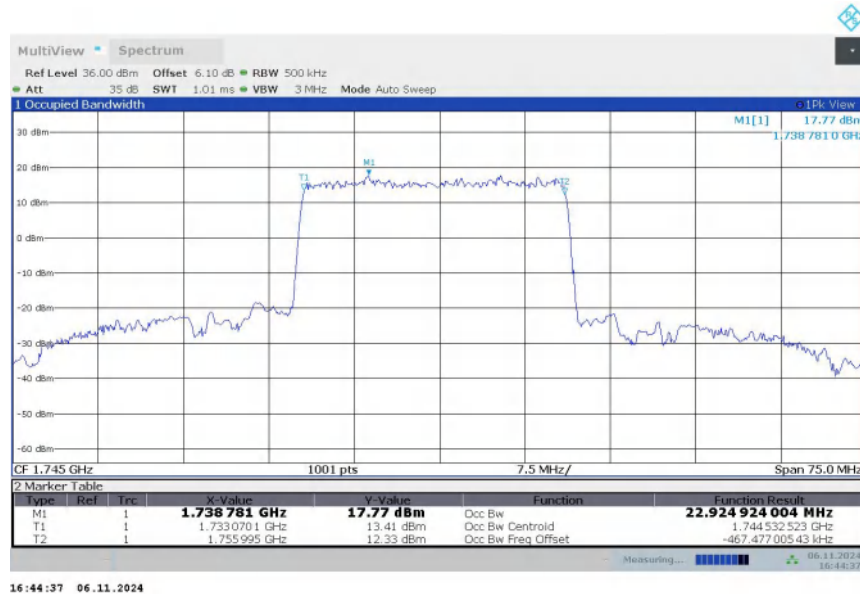


n66

n66,25MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	22.925	23.034

n66,25MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,25MHz Bandwidth,DFT-s-QPSK (99% BW)

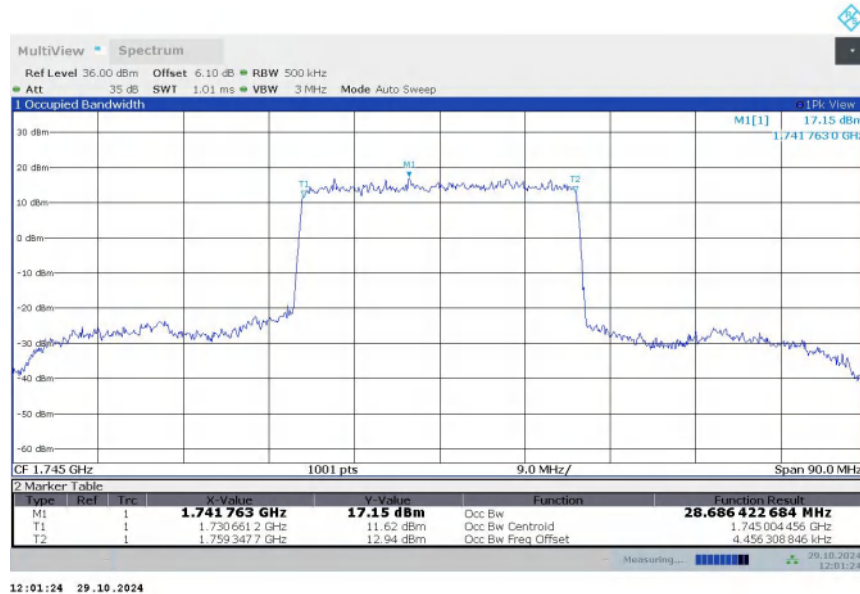


n66

n66,30MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	28.686	28.677

n66,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,30MHz Bandwidth,DFT-s-QPSK (99% BW)



n66

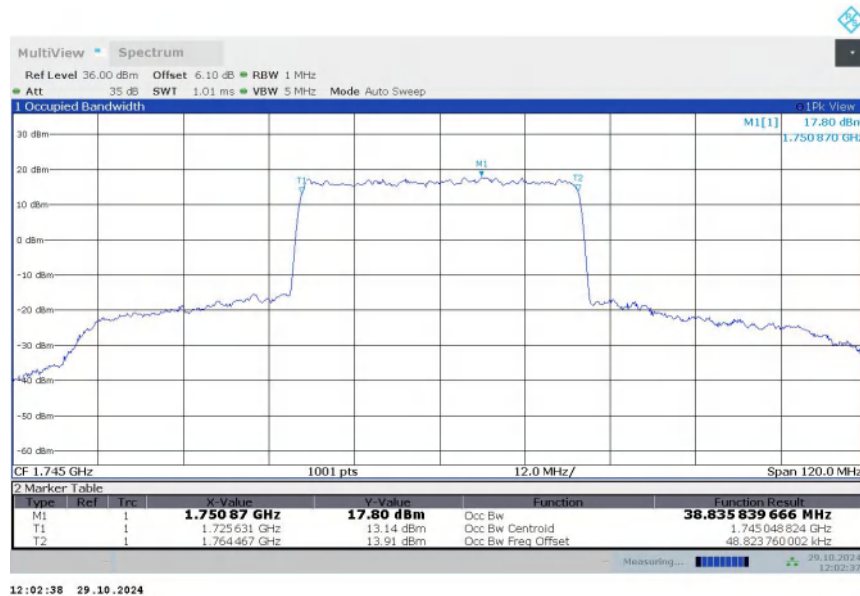
n66,40MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	38.713	38.836

n66,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n66,40MHz Bandwidth,DFT-s-QPSK (99% BW)

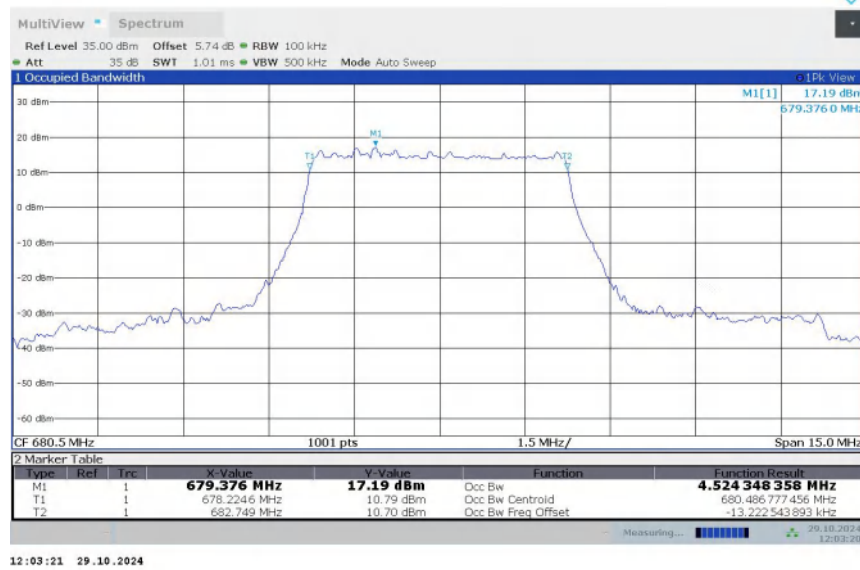


n71

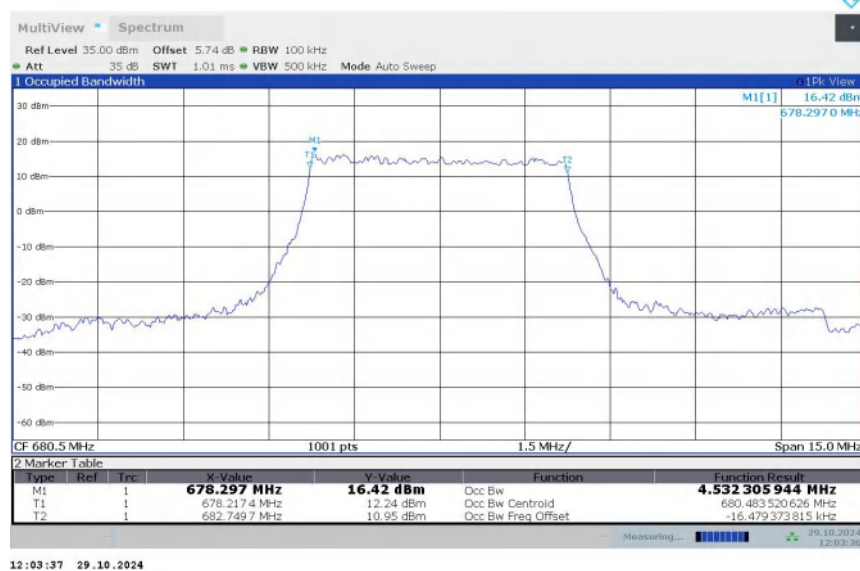
n71,5MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	4.524	4.532

n71,5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n71,5MHz Bandwidth,DFT-s-QPSK (99% BW)

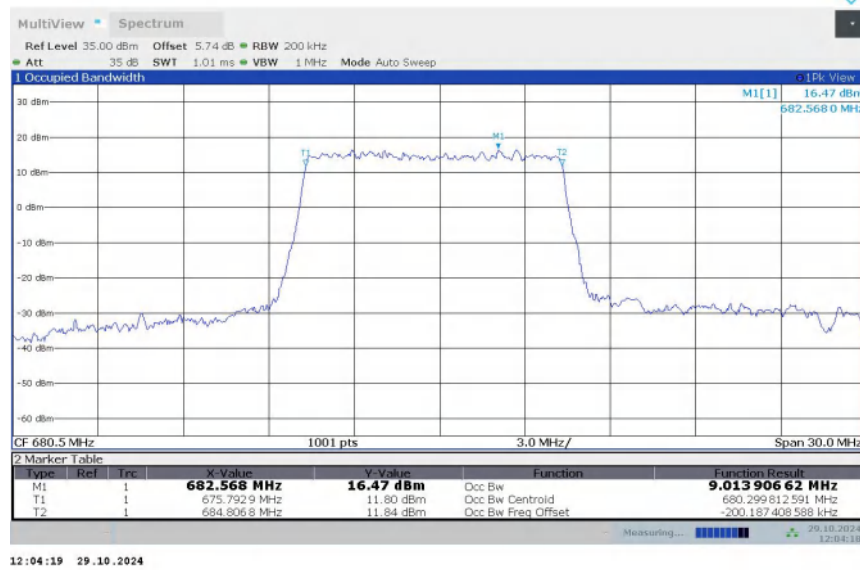


n71

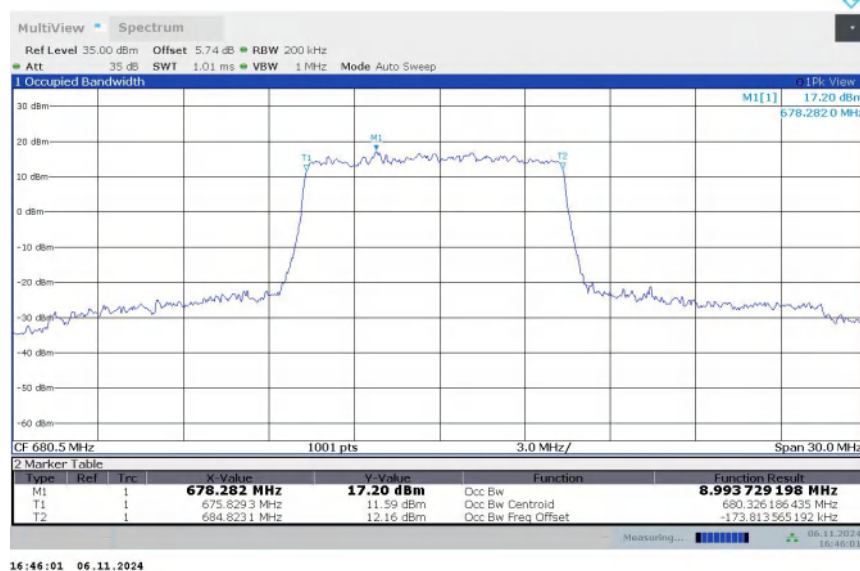
n71,10MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	9.014	8.994

n71,10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n71,10MHz Bandwidth,DFT-s-QPSK (99% BW)

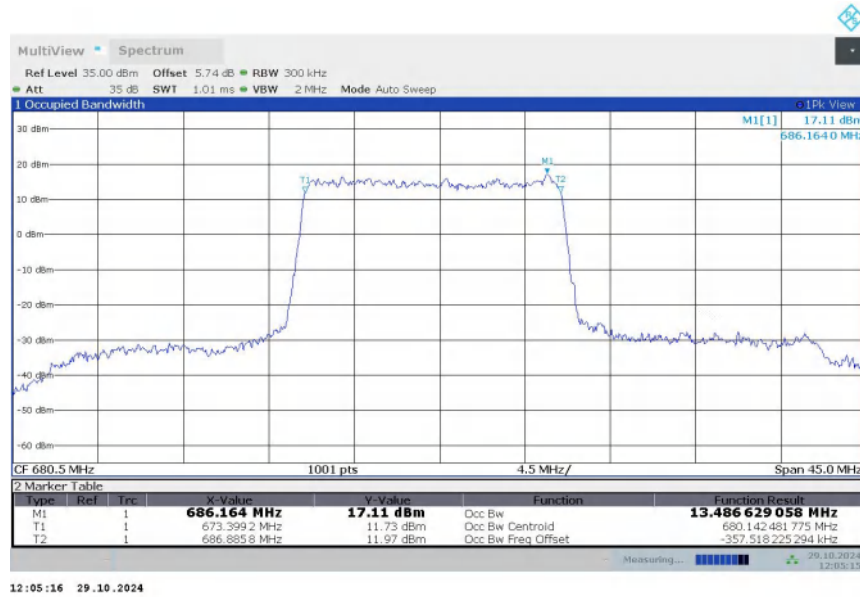


n71

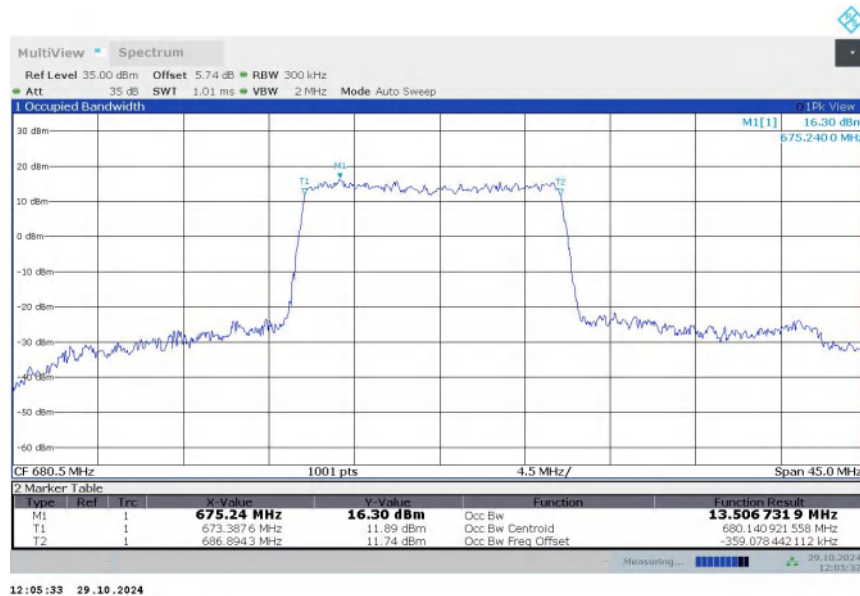
n71,15MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	13.487	13.507

n71,15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n71,15MHz Bandwidth,DFT-s-QPSK (99% BW)

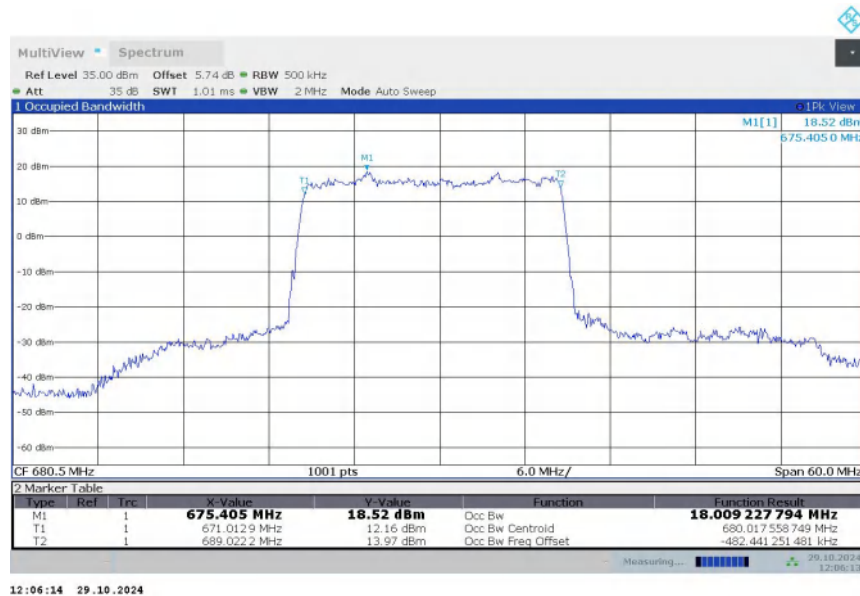


n71

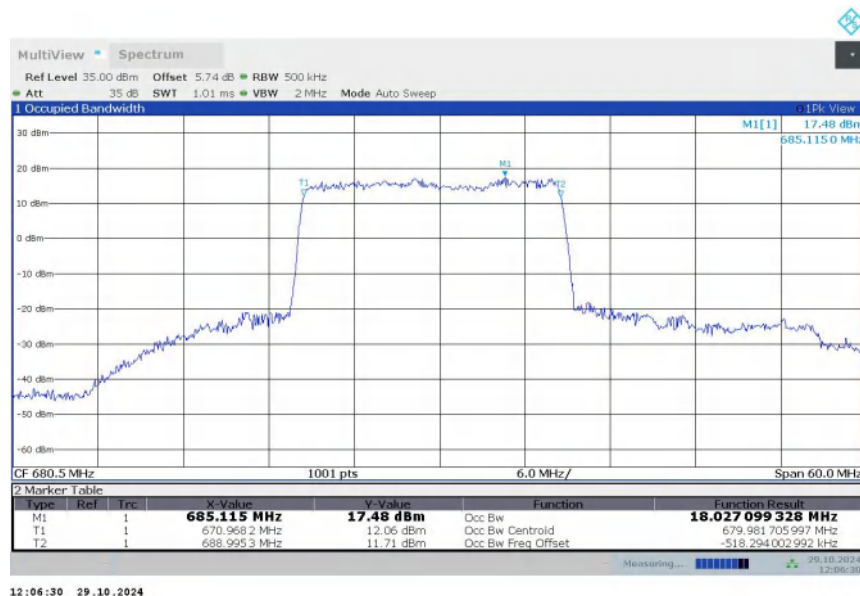
n71,20MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	18.009	18.027

n71,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



n71,20MHz Bandwidth,DFT-s-QPSK (99% BW)


Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.626$ kHz, $k = 2$.

A.5 Emission Bandwidth

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

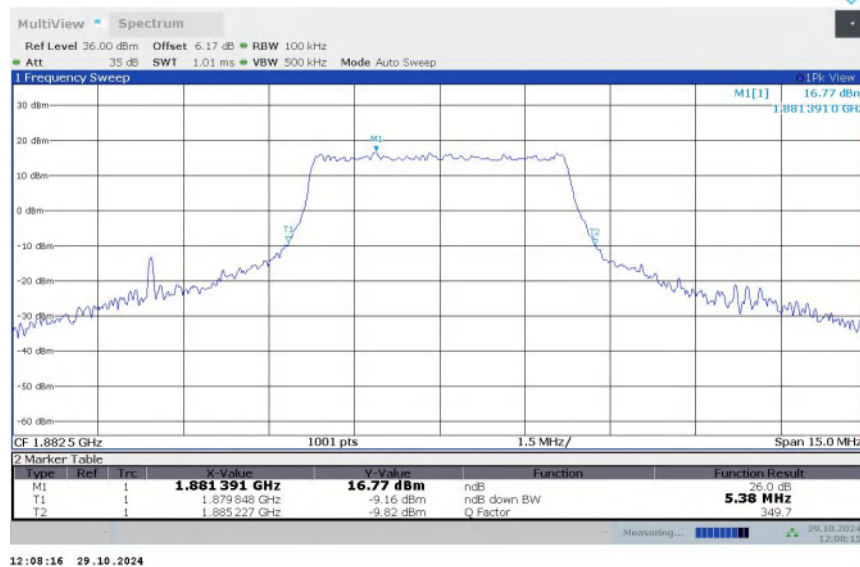
- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

n25

n25,5MHz(-26dBc)

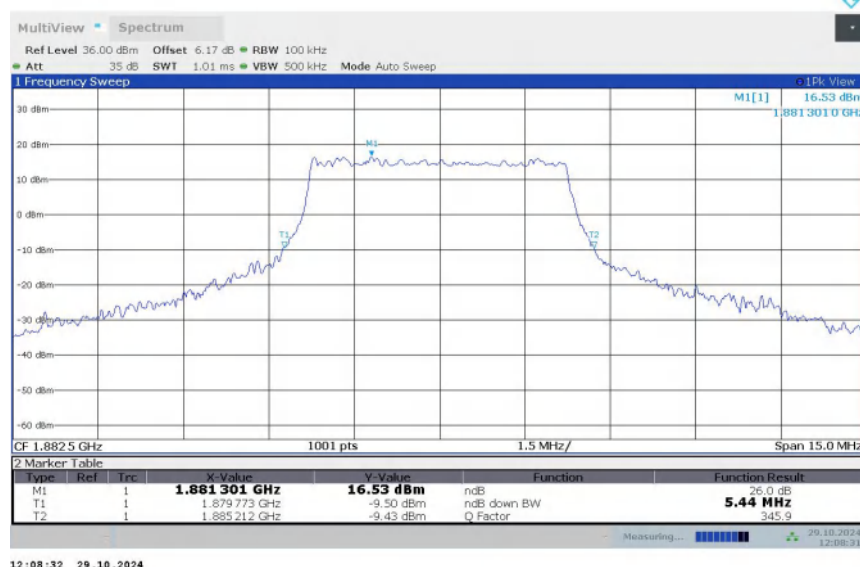
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	5.380	5.440

n25,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



12:08:16 29.10.2024

n25,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



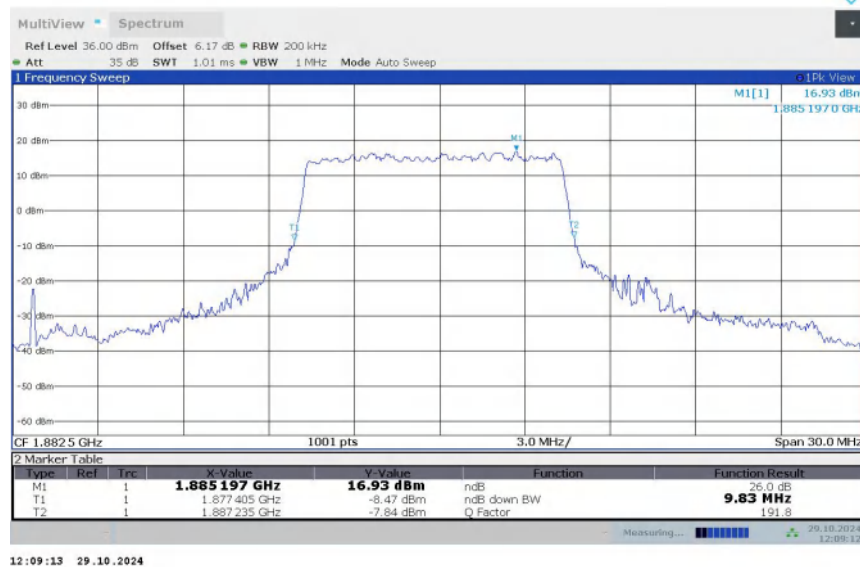
12:08:32 29.10.2024

n25

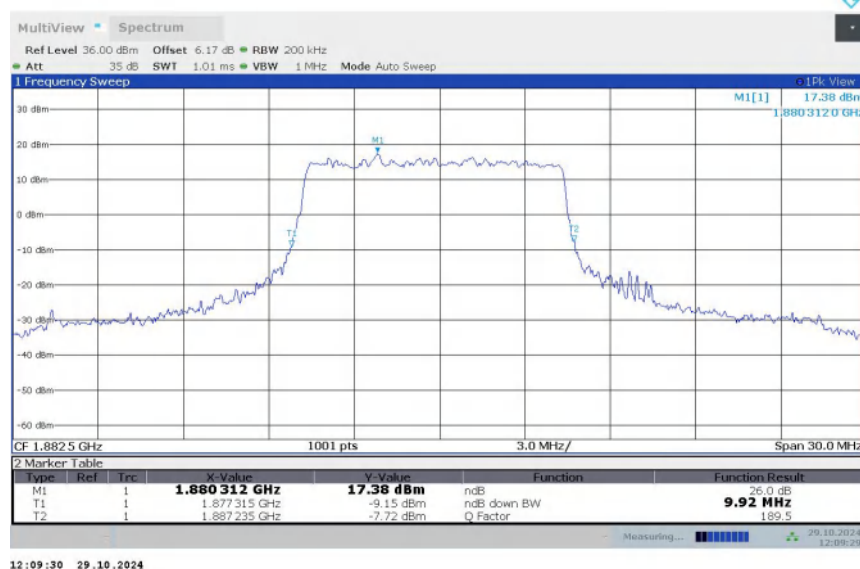
n25,10MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	9.830	9.920

n25,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

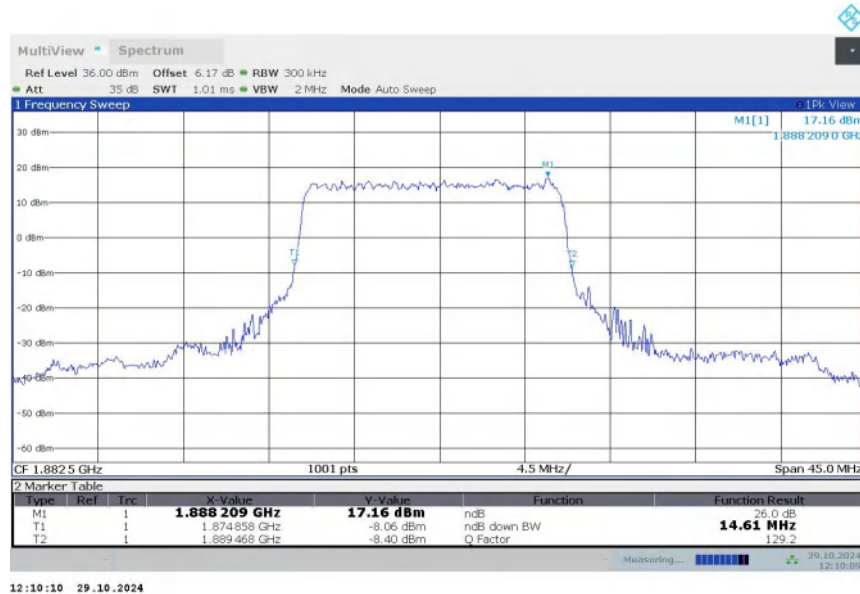


n25

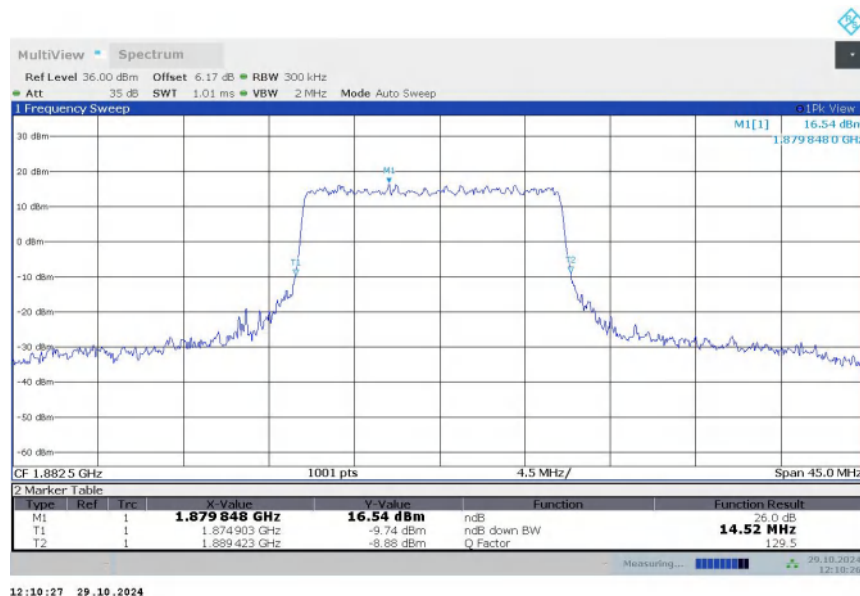
n25,15MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	14.610	14.520

n25,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

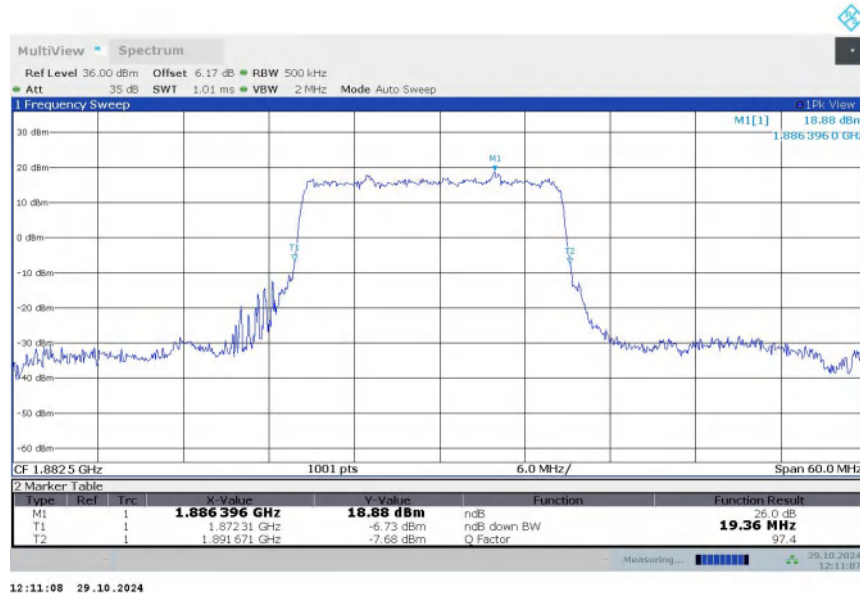


n25

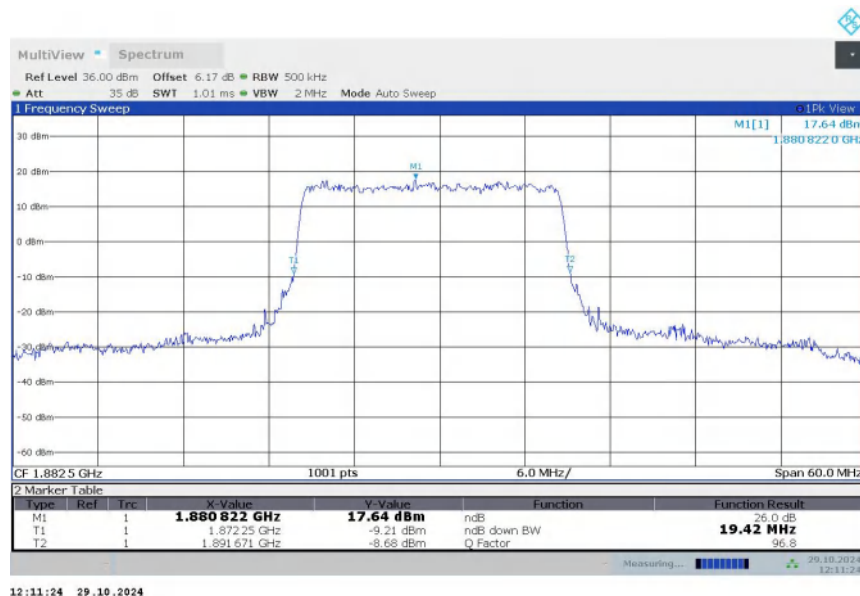
n25,20MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	19.361	19.421

n25,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

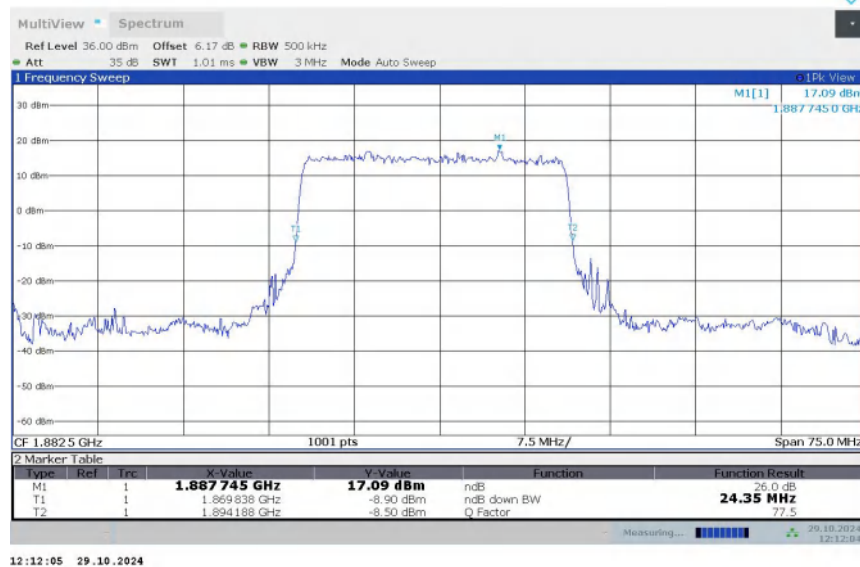


n25

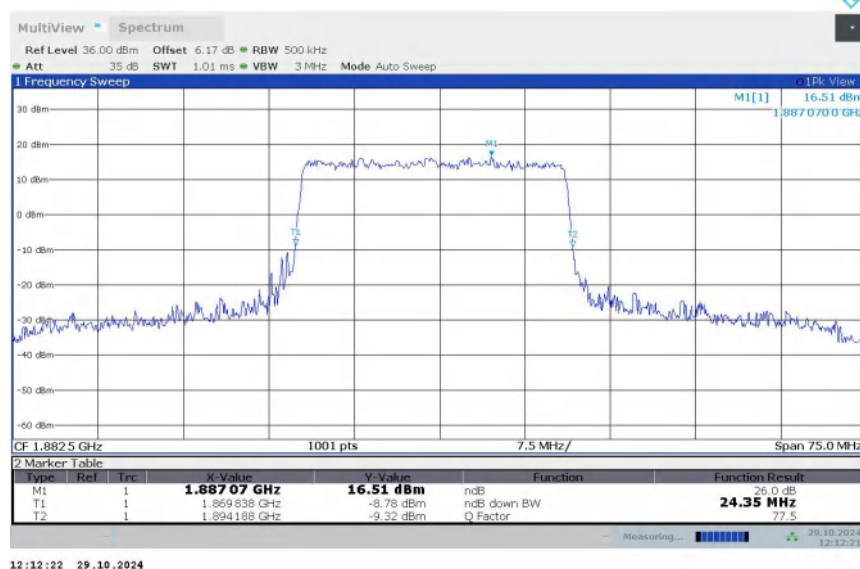
n25,25MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	24.351	24.351

n25,25MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,25MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

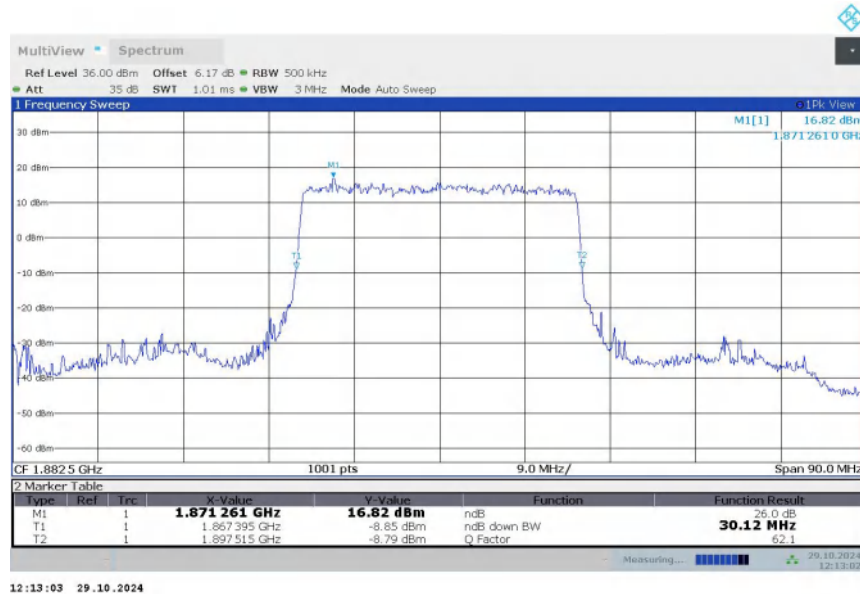


n25

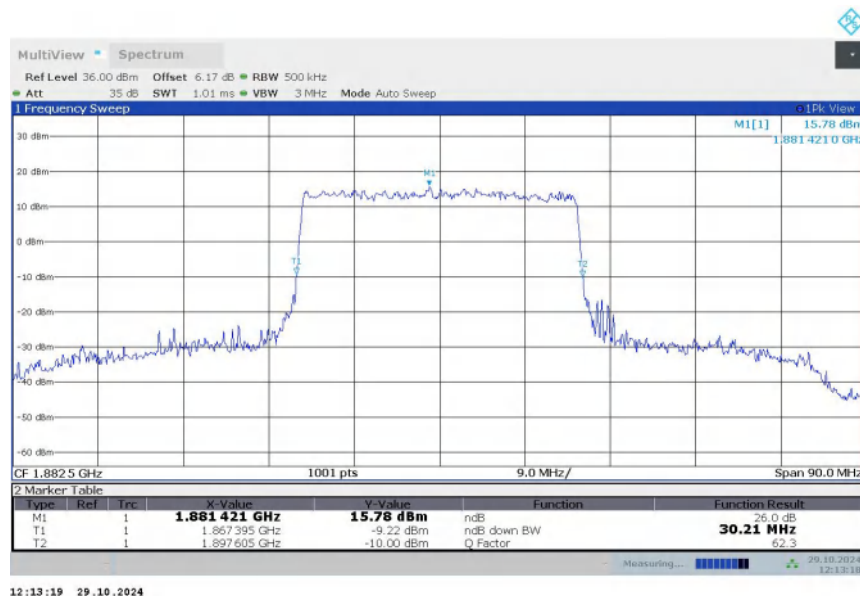
n25,30MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	30.120	30.210

n25,30MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,30MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

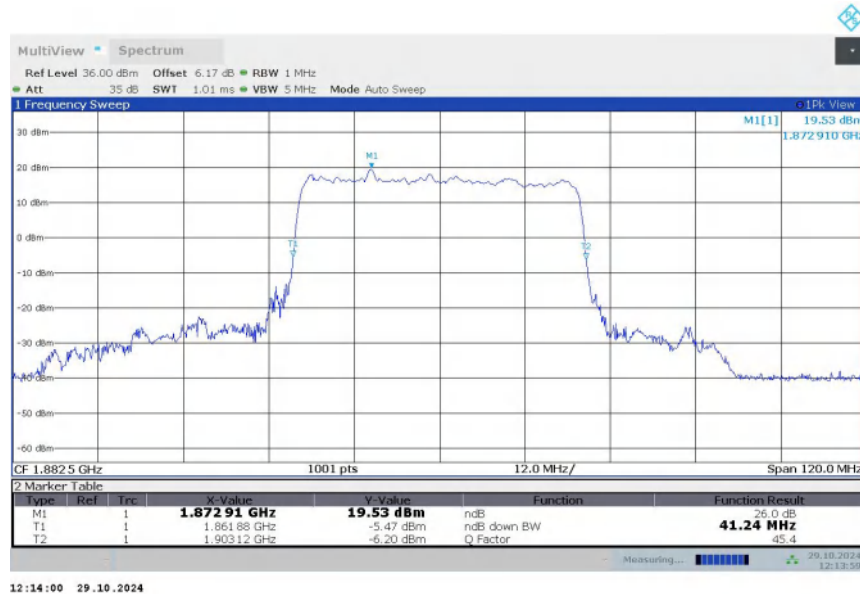


n25

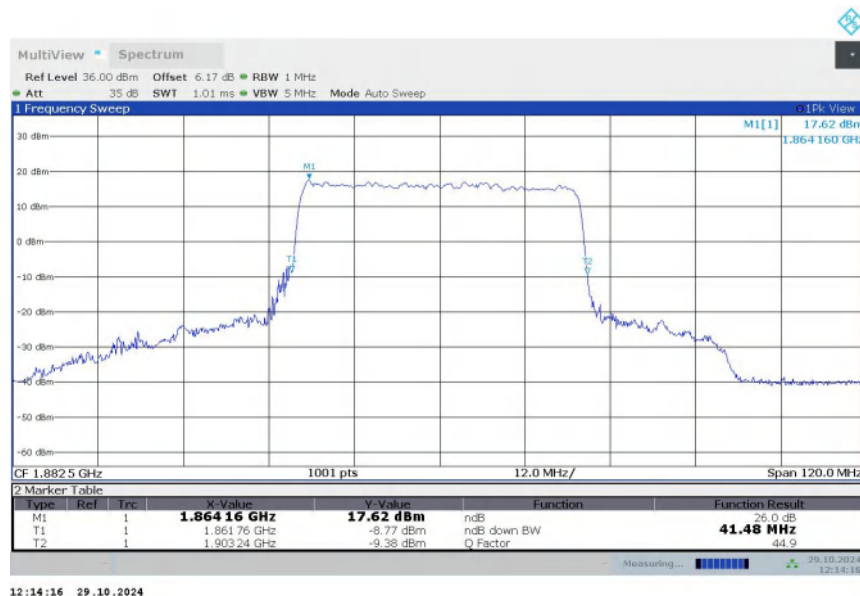
n25,40MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1882.5	41.240	41.480

n25,40MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n25,40MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

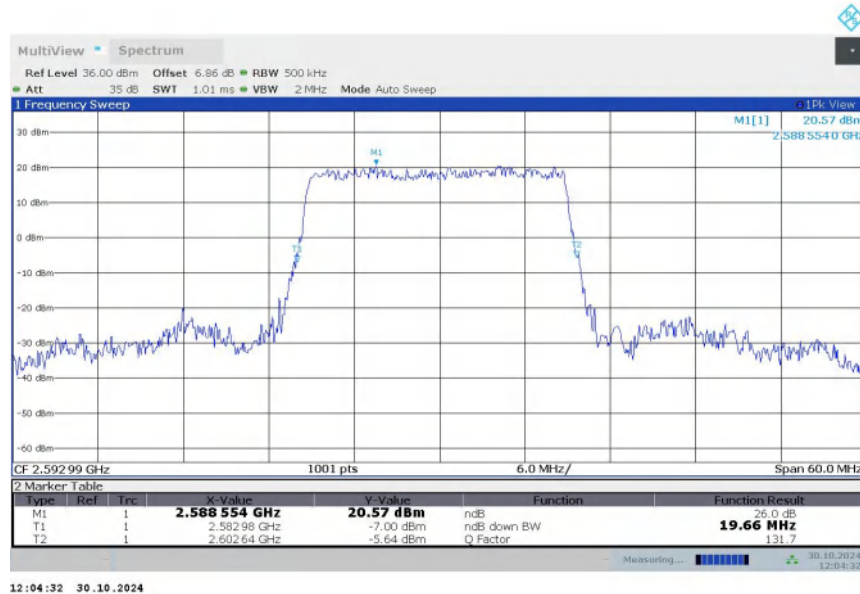


n41

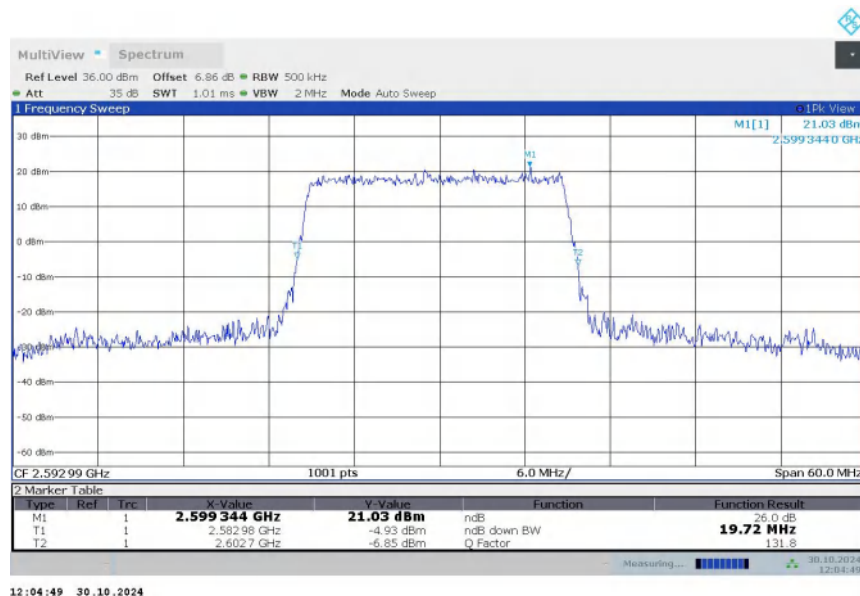
n41,20MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	19.660	19.720

n41,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

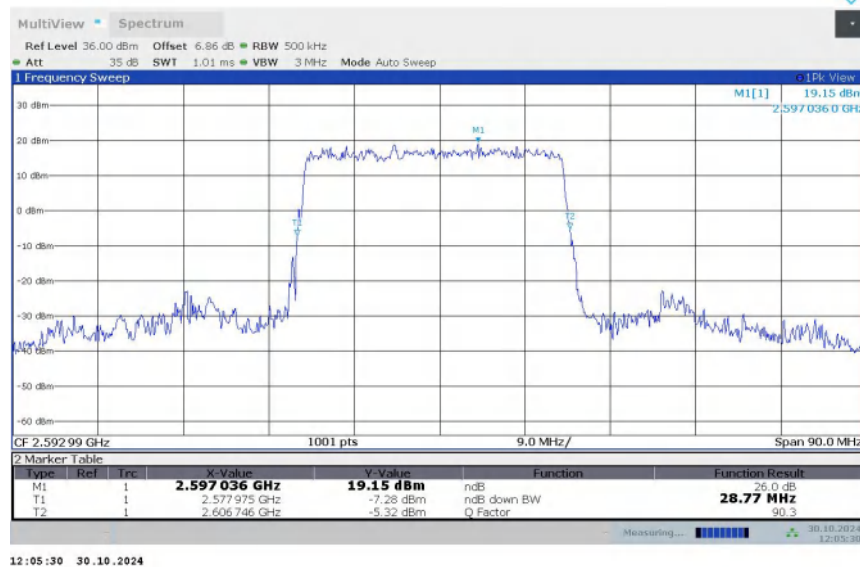


n41

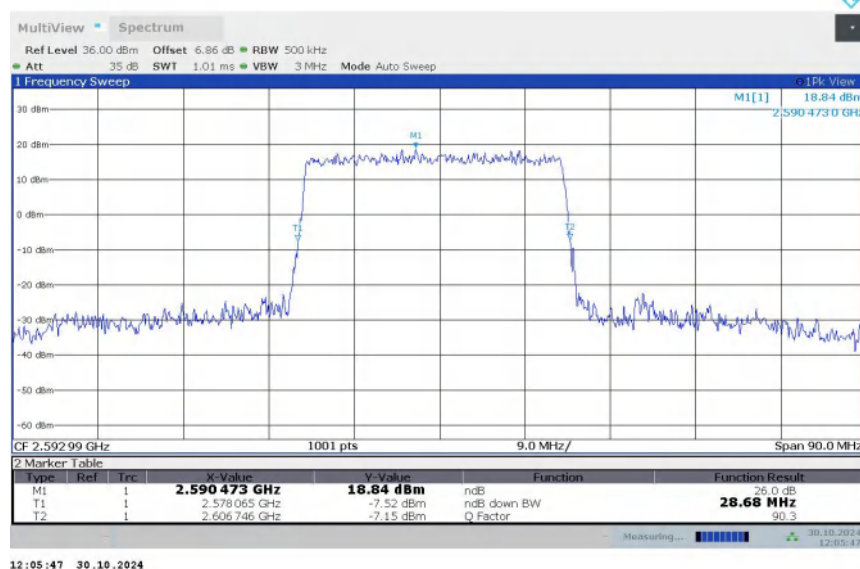
n41,30MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	28.771	28.681

n41,30MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,30MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

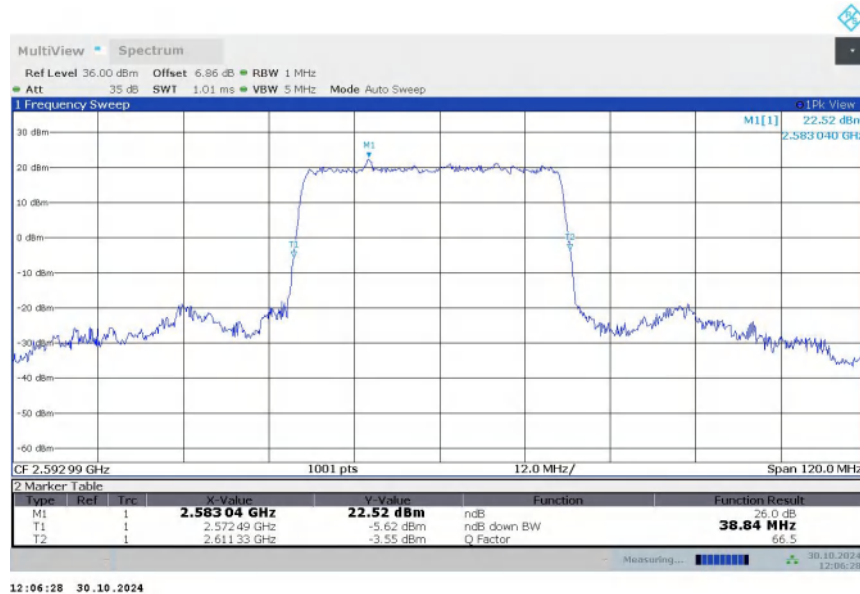


n41

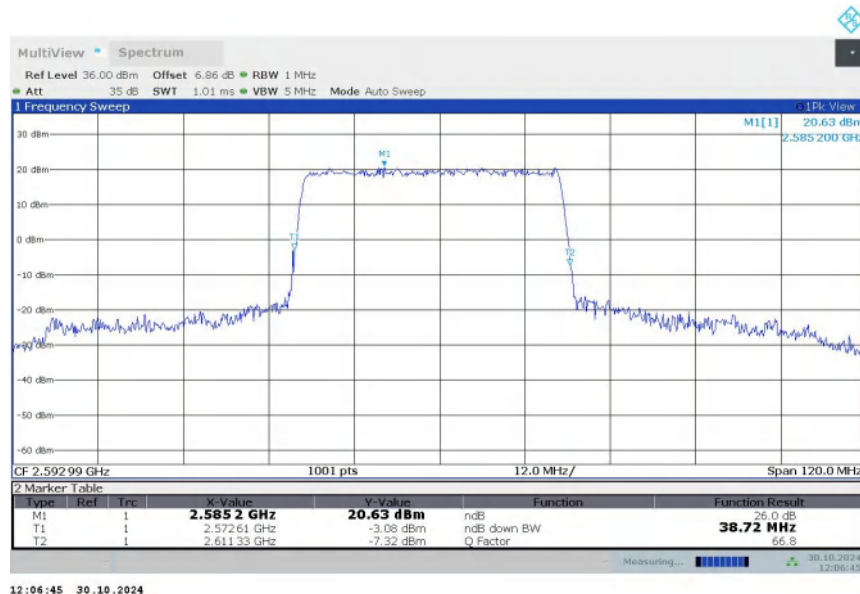
n41,40MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	38.840	38.720

n41,40MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,40MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

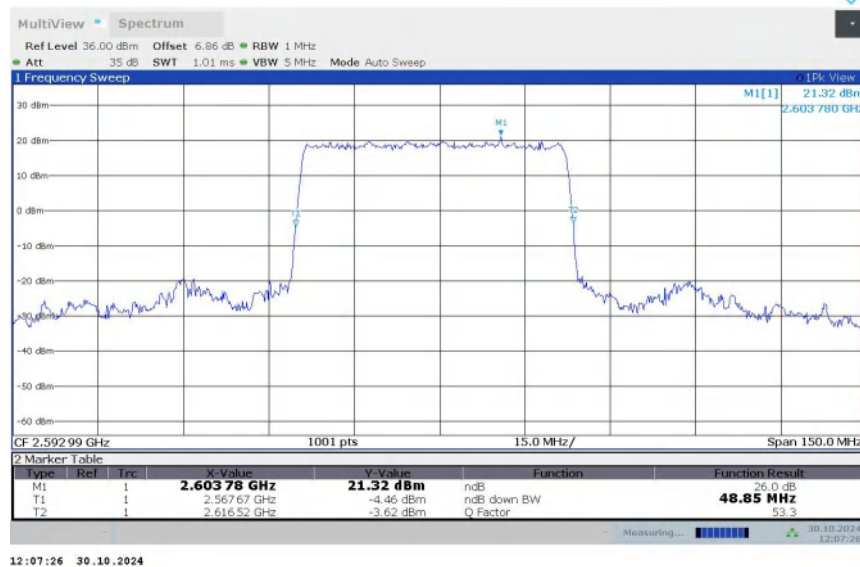


n41

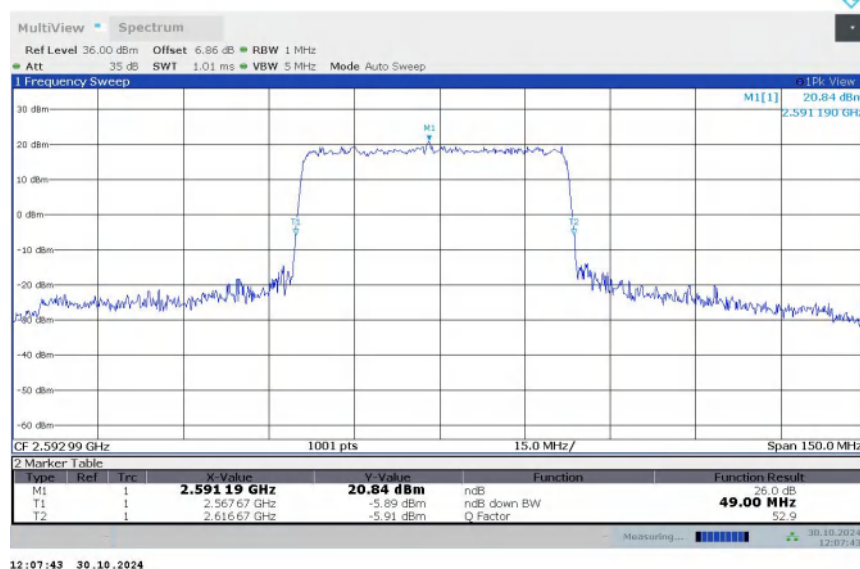
n41,50MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	48.850	49.000

n41,50MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,50MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

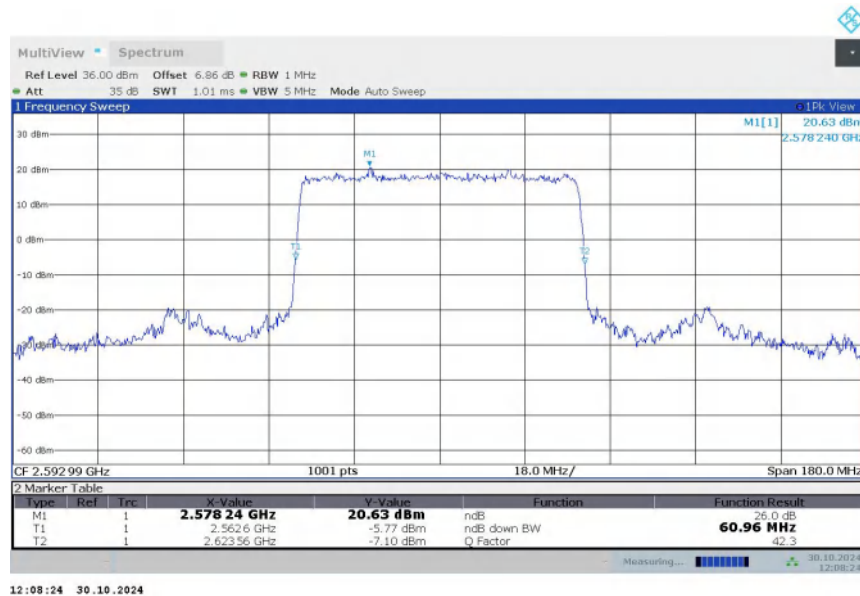


n41

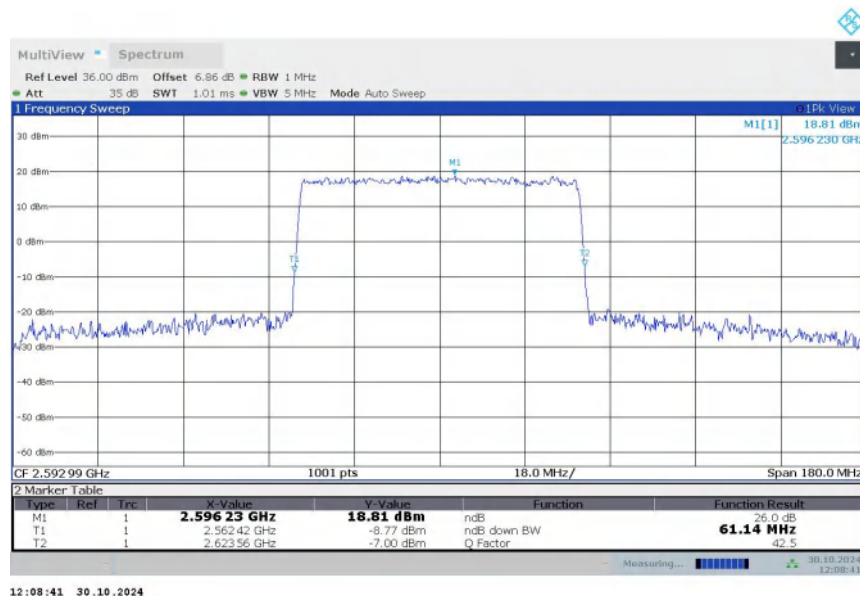
n41,60MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	60.960	61.140

n41,60MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,60MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

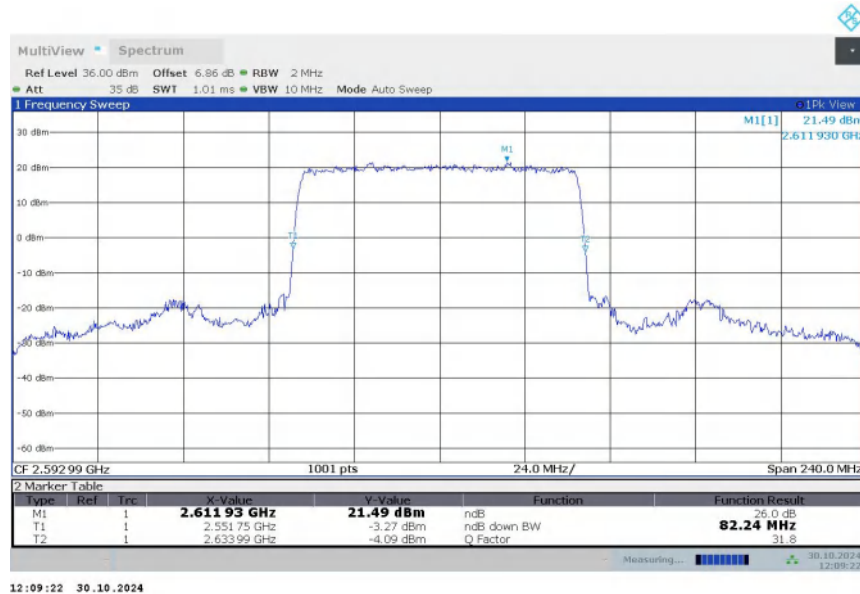


n41

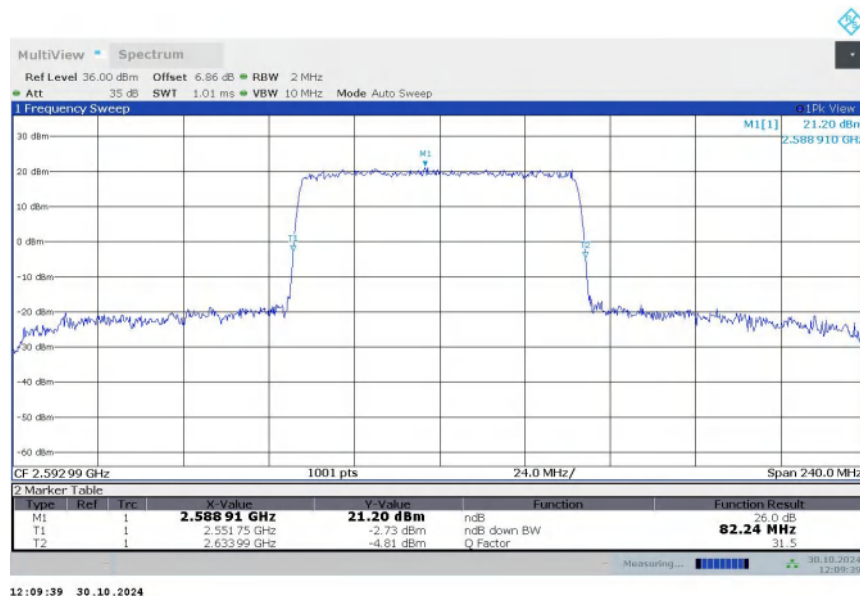
n41,80MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	82.240	82.240

n41,80MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,80MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

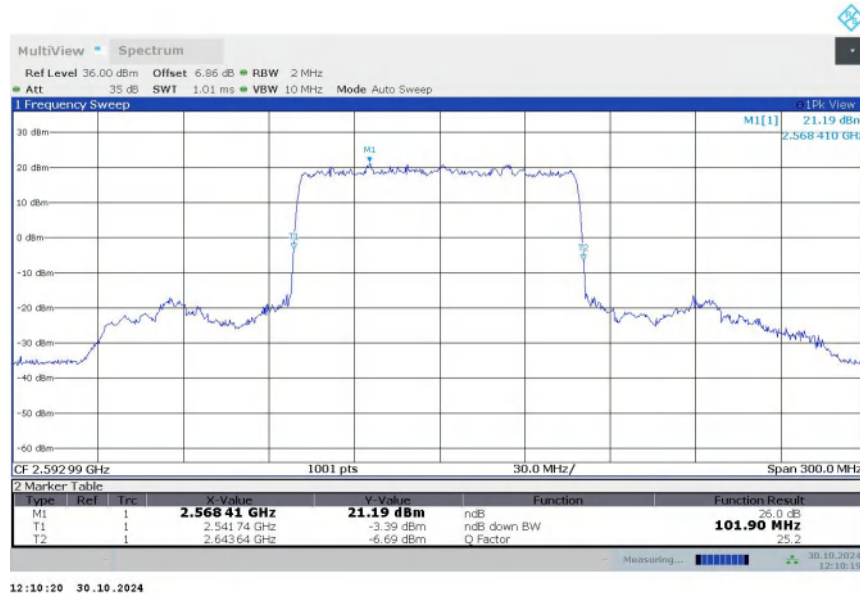


n41

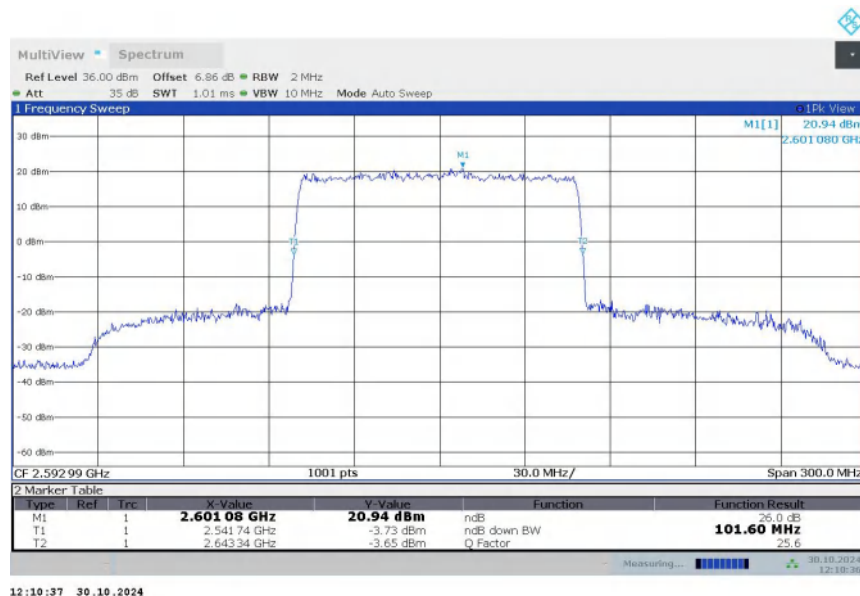
n41,100MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	101.900	101.600

n41,100MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n41,100MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

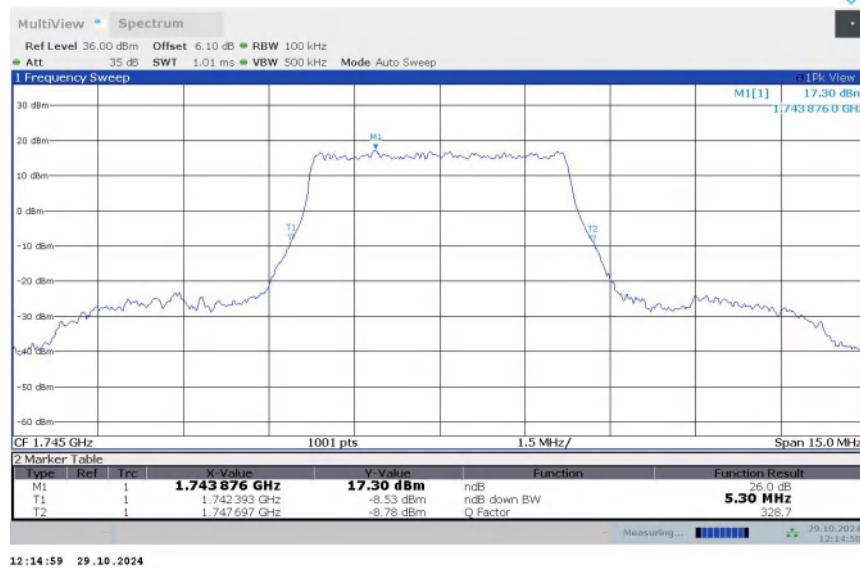


n66

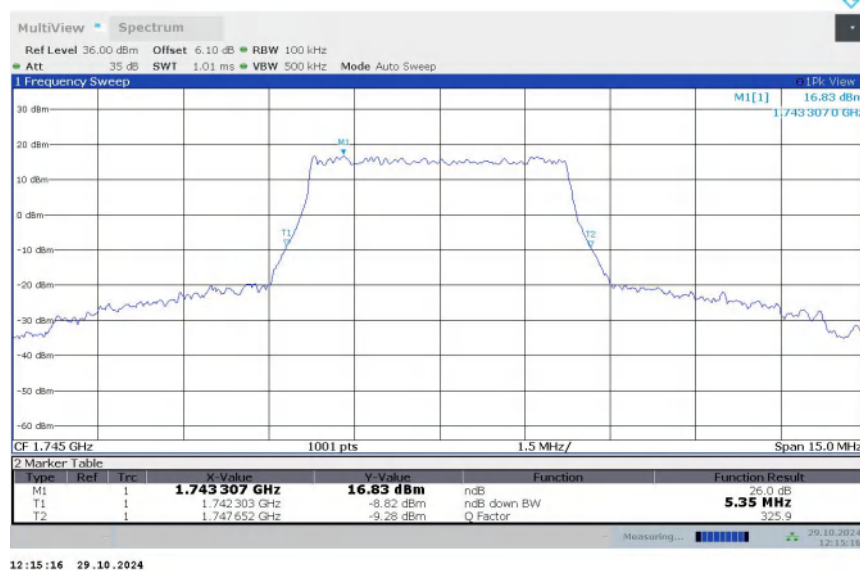
n66,5MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	5.305	5.350

n66,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



n66

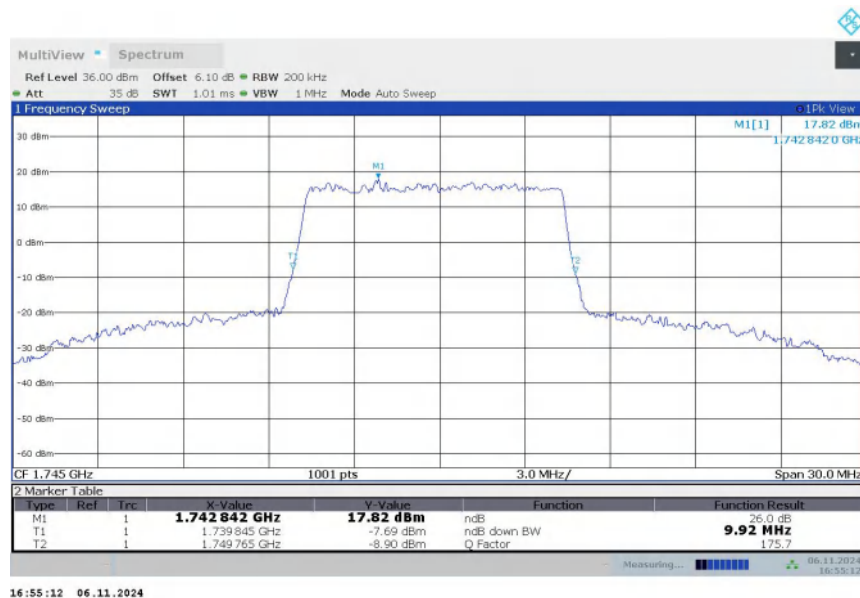
n66,10MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	10.010	9.920

n66,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

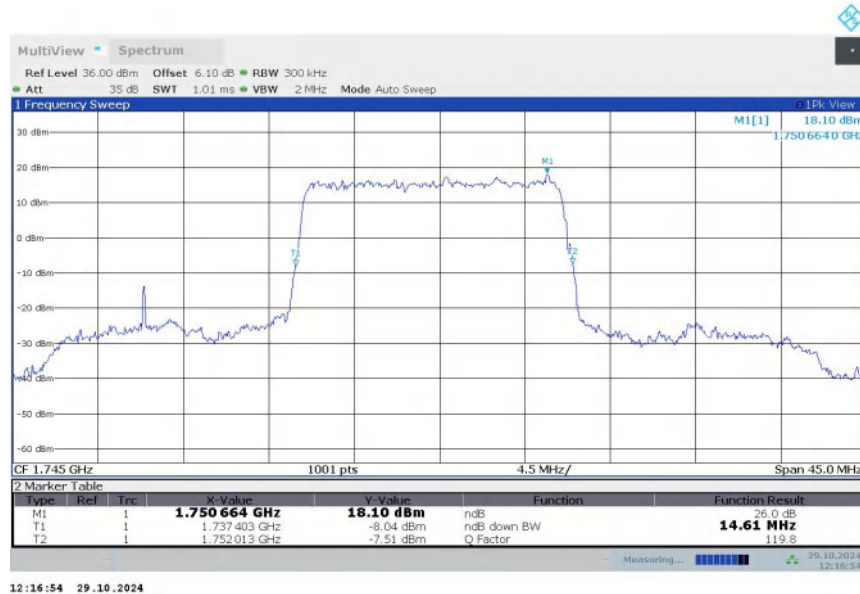


n66

n66,15MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	14.610	14.520

n66,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

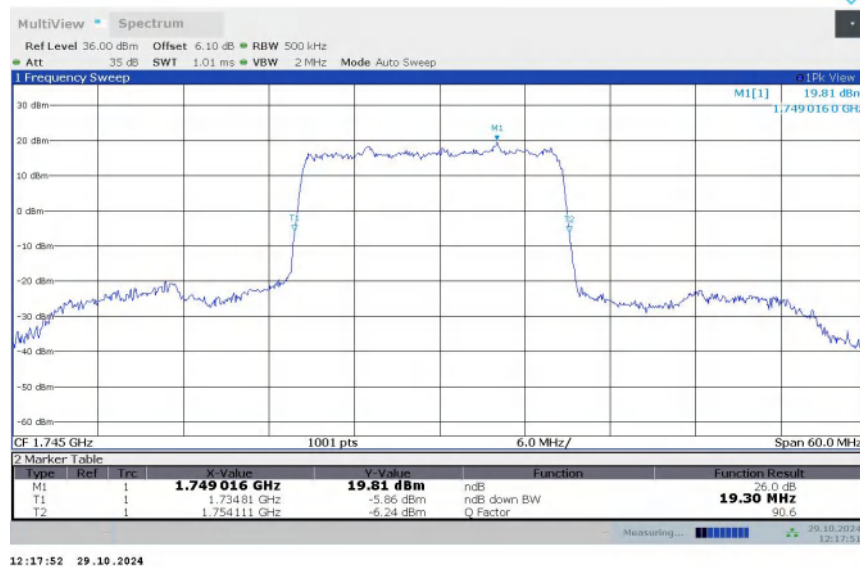


n66

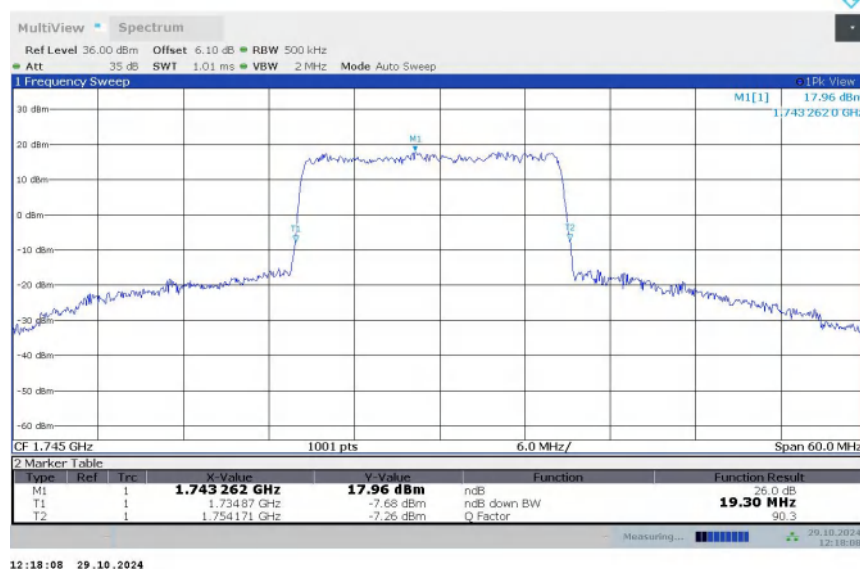
n66,20MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	19.301	19.301

n66,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



n66

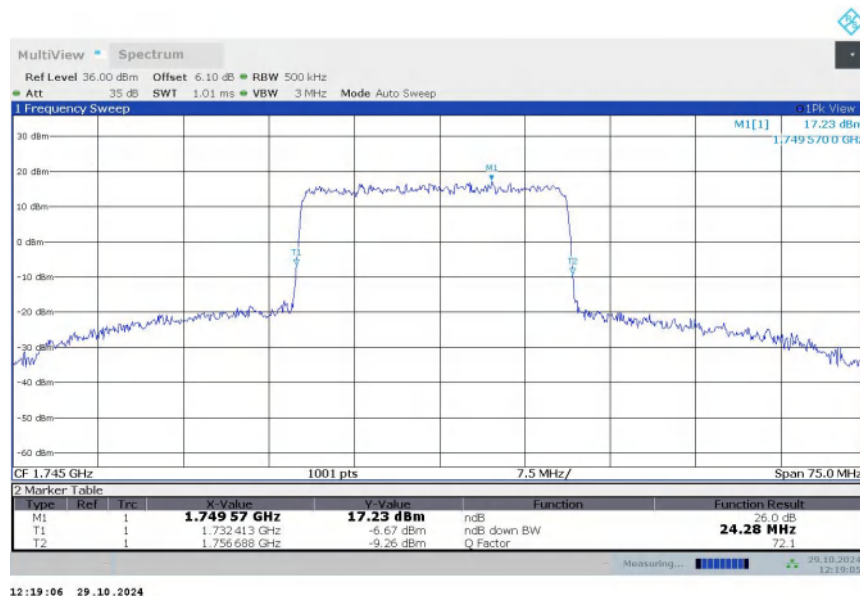
n66,25MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	24.276	24.276

n66,25MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,25MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

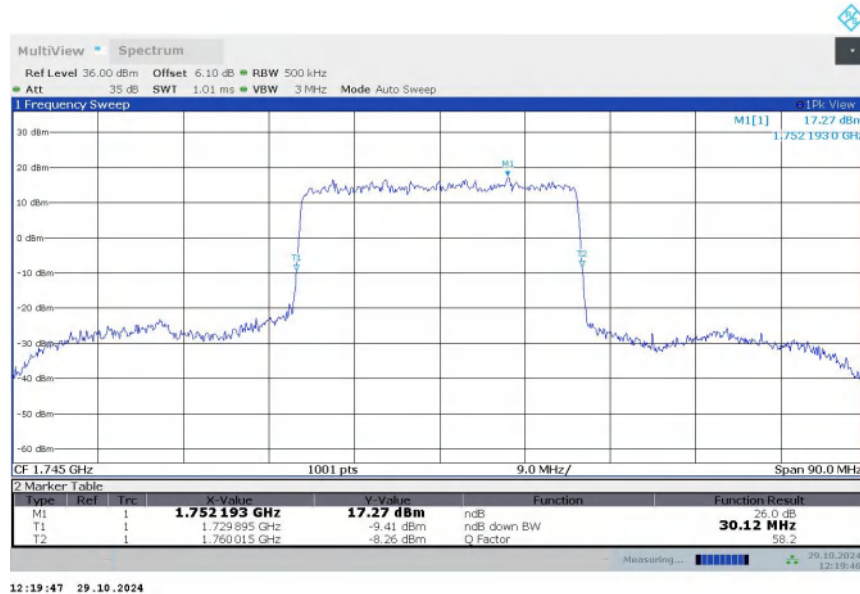


n66

n66,30MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	30.120	30.210

n66,30MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,30MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



n66

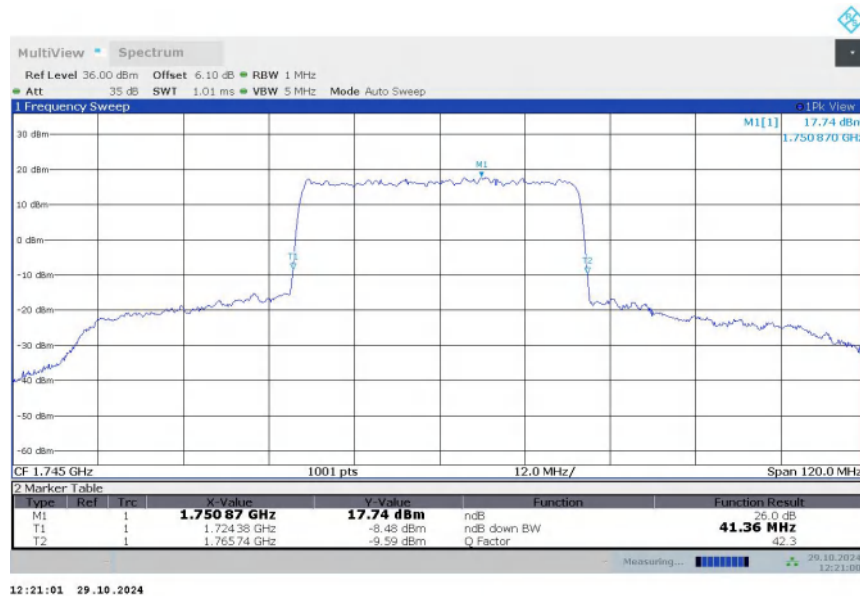
n66,40MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	41.240	41.360

n66,40MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n66,40MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

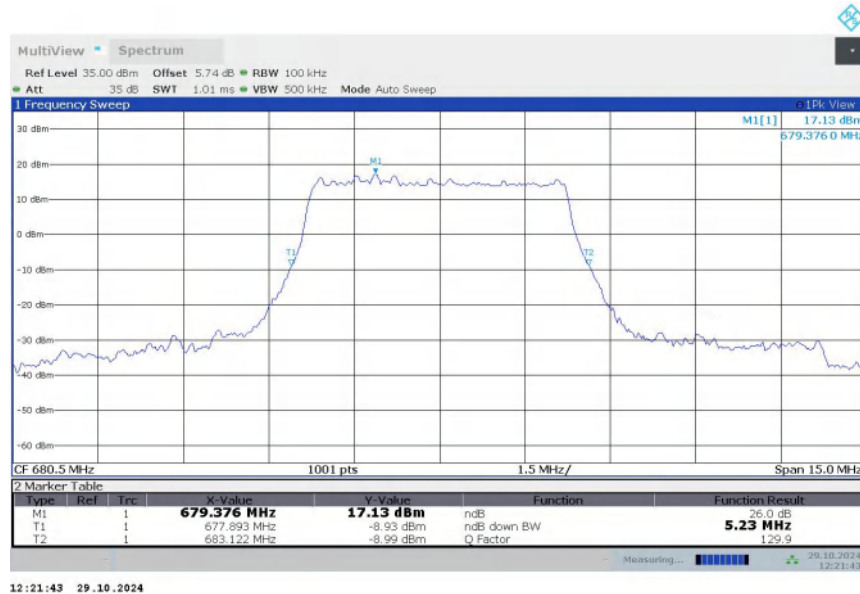


n71

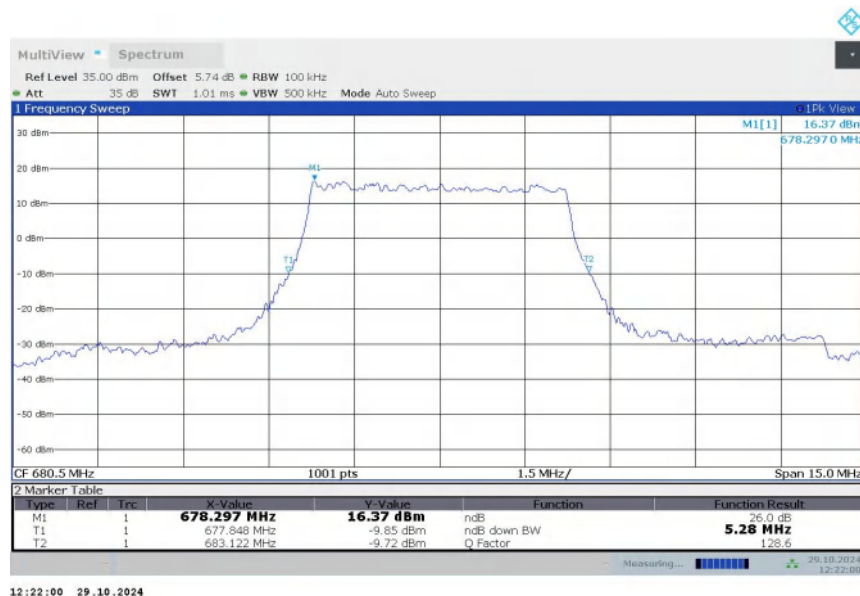
n71,5MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	5.230	5.275

n71,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n71,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

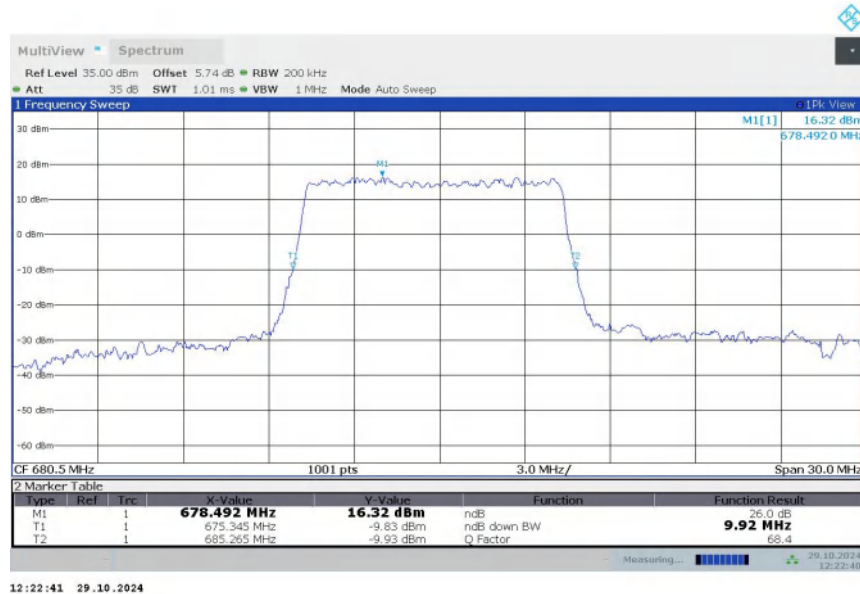


n71

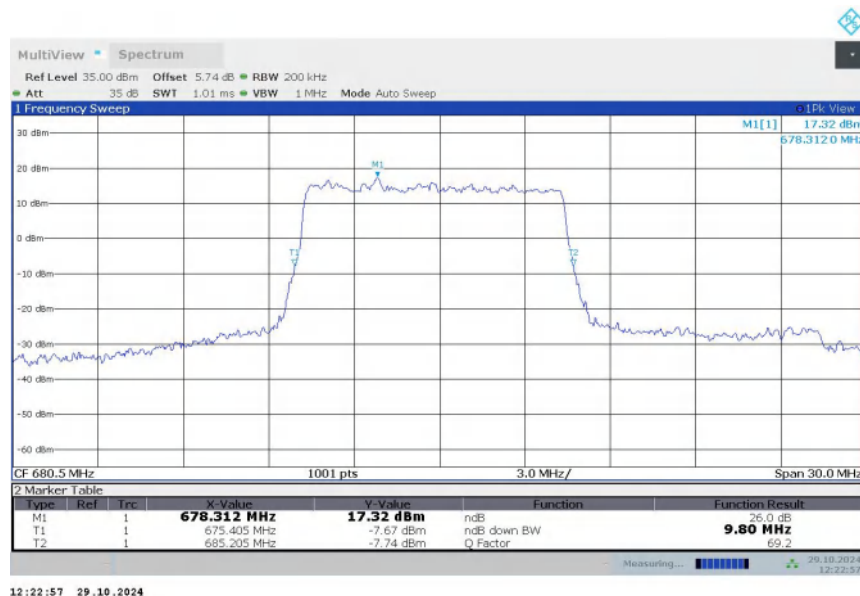
n71,10MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	9.920	9.800

n71,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n71,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

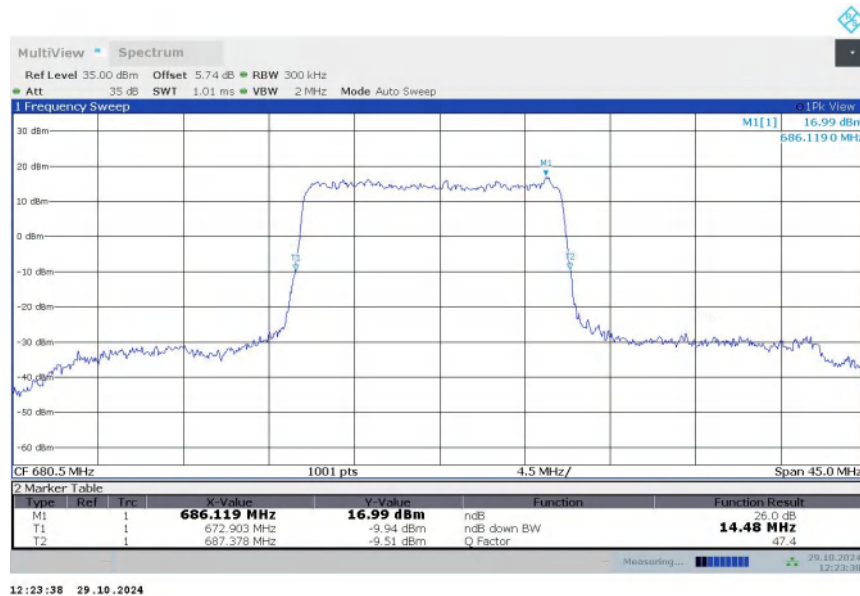


n71

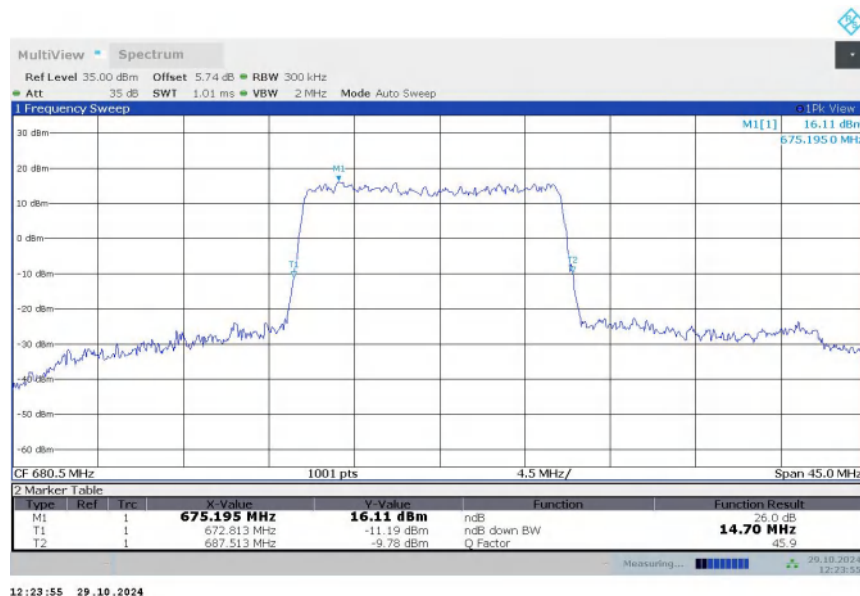
n71,15MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	14.476	14.700

n71,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n71,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



n71

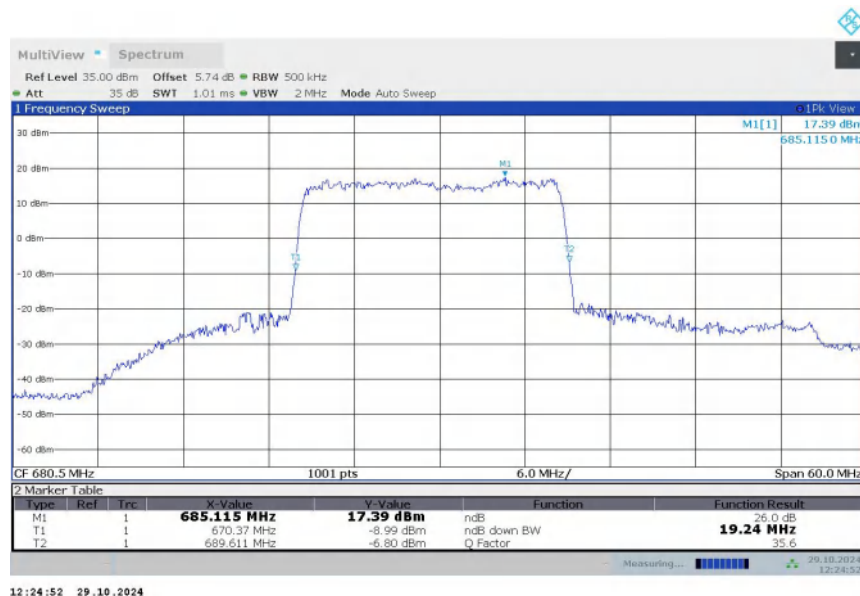
n71,20MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
680.5	19.361	19.241

n71,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n71,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.626 \text{ kHz}$, $k = 2$.

A.6 Band Edge Compliance

A.6.1 Measurement limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

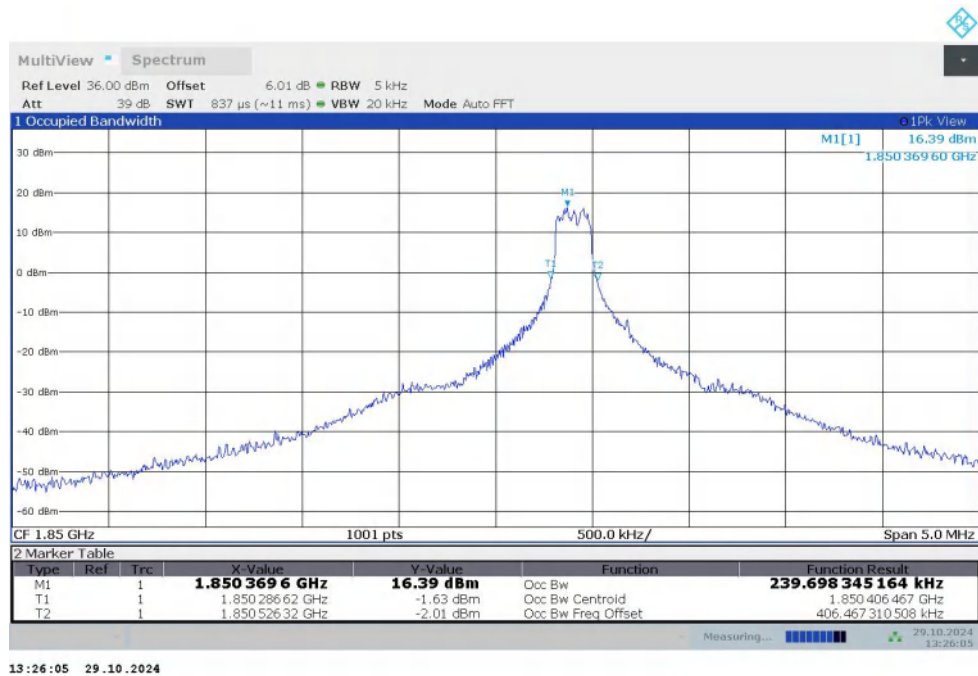
Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

The spectrum analyzer readings are corrected by $[10 \log(1/\text{duty cycle})]$ for the non-continuous transmitting scenario.

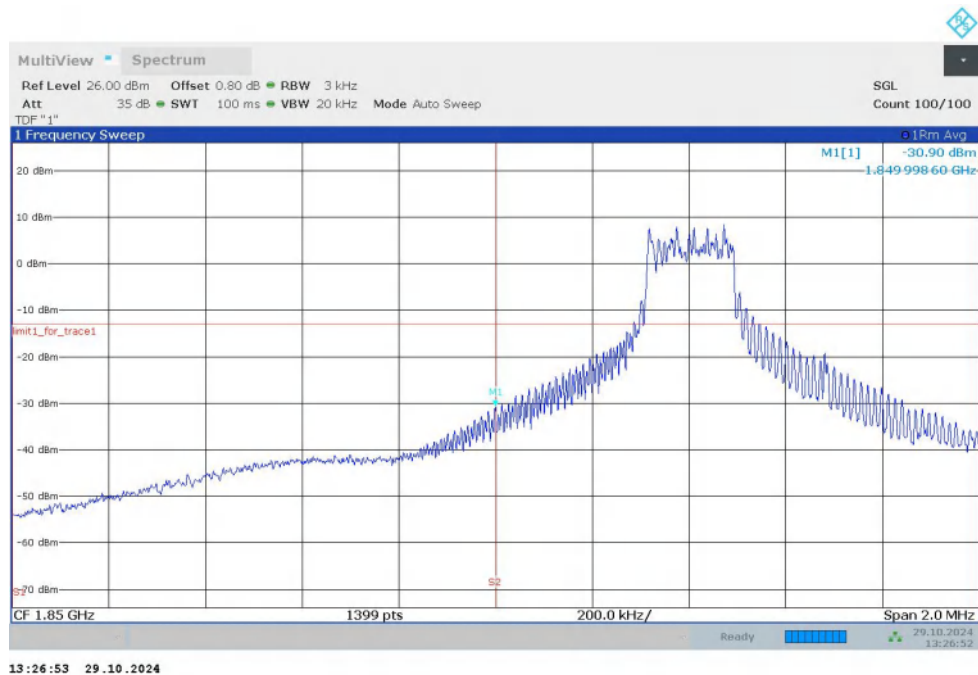
A.6.2 Measurement result

NR n25

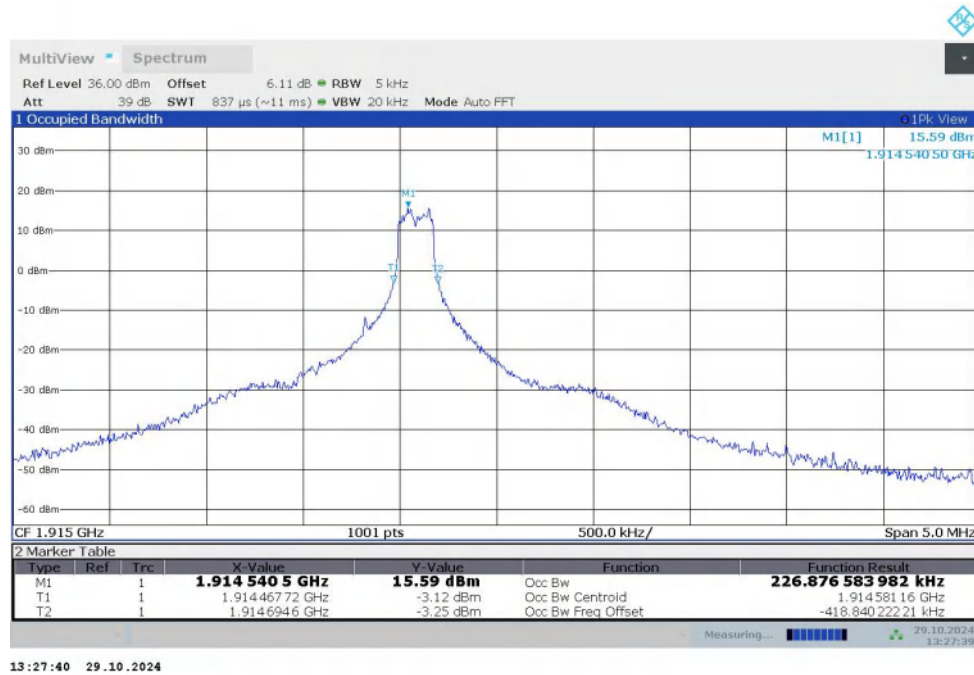
OBW: 1RB-LOW_offset



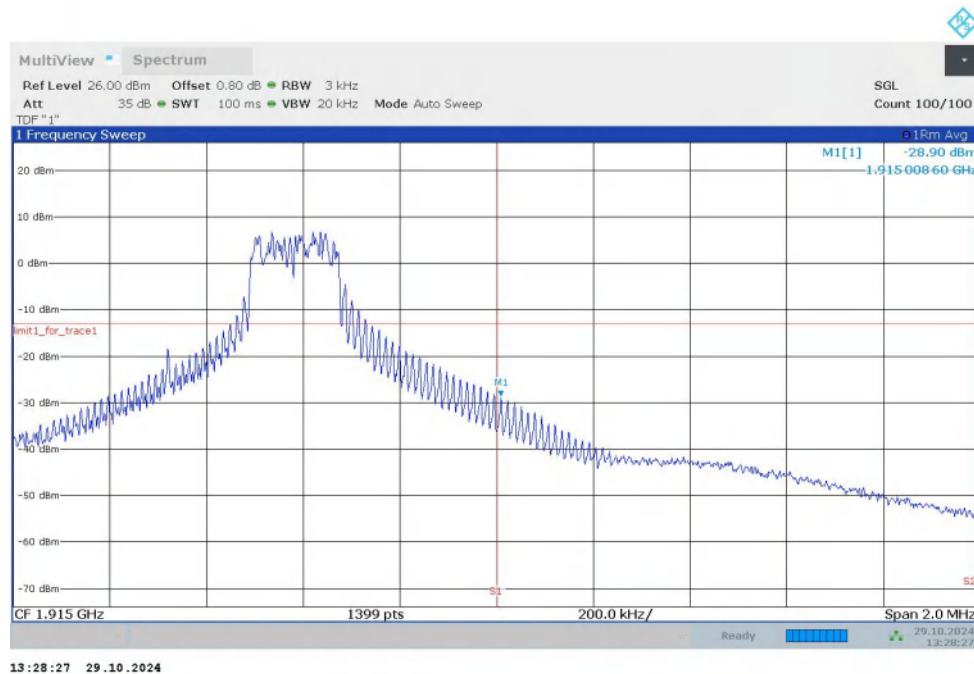
LOW BAND EDGE BLOCK-1RB-LOW_offset



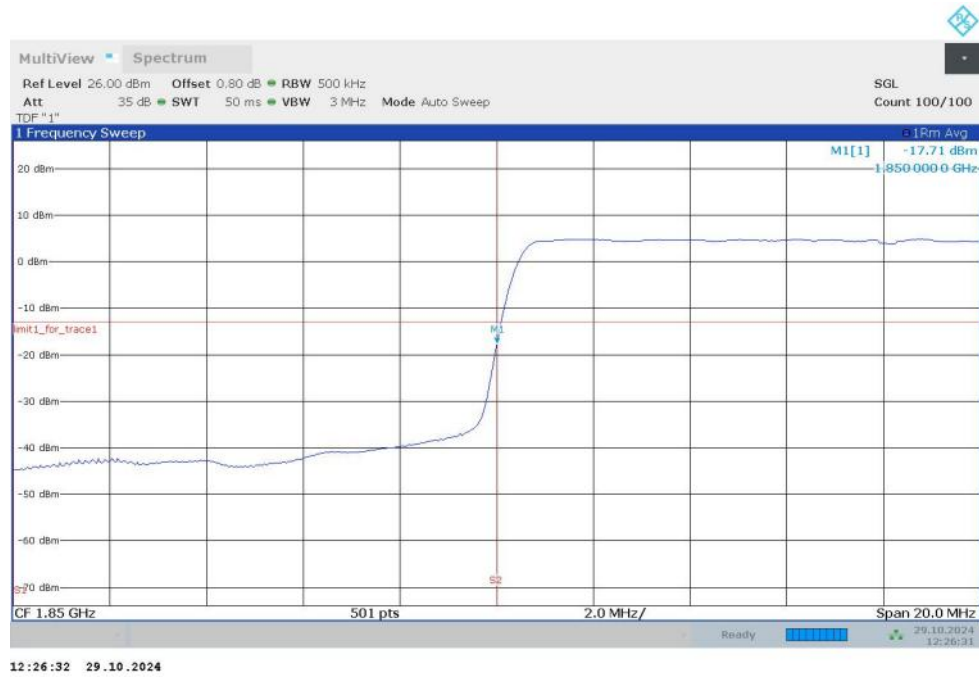
OBW: 1RB-HIGH_offset



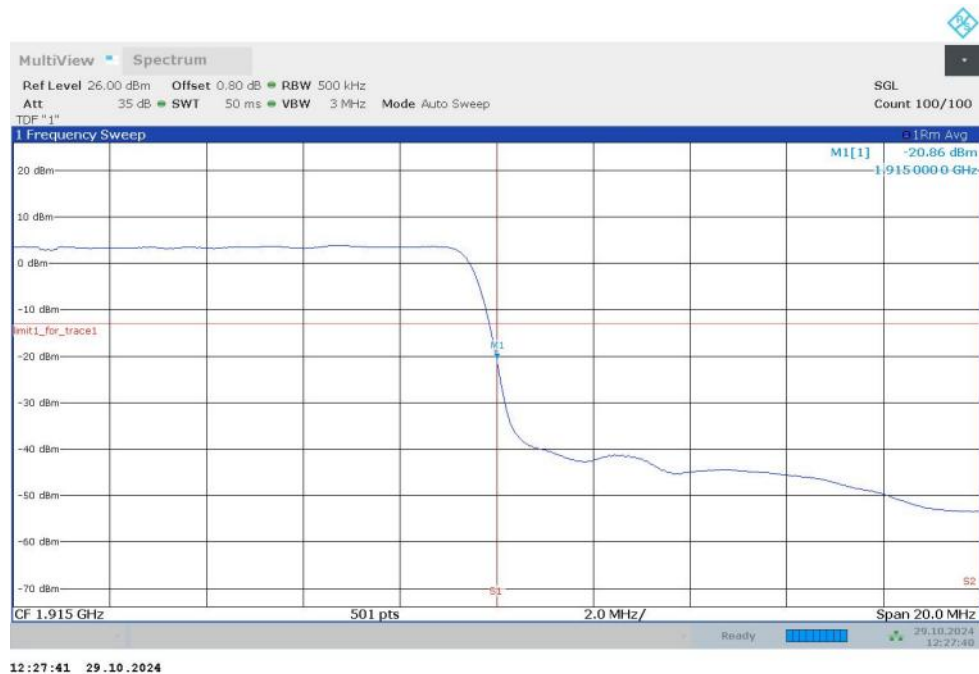
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



LOW BAND EDGE BLOCK-40MHz-100%RB

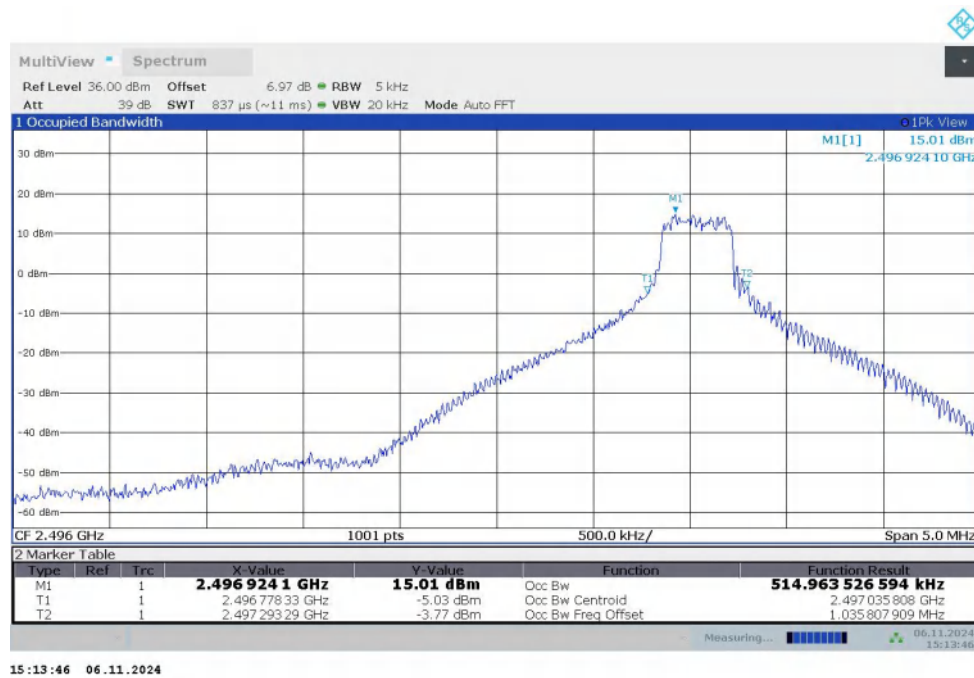


HIGH BAND EDGE BLOCK-40MHz-100%RB

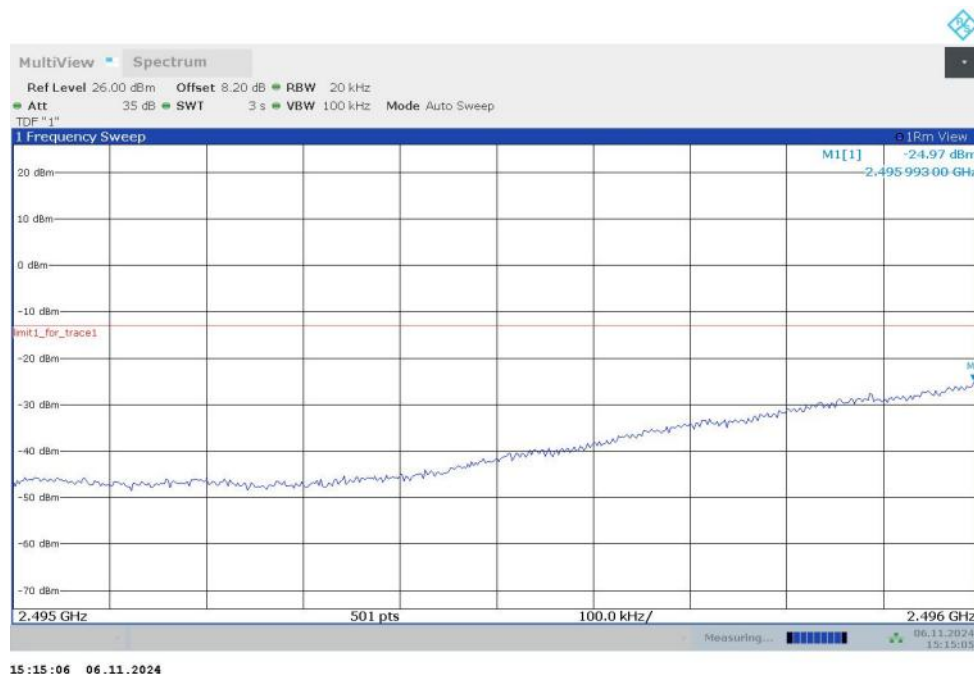


NR n41

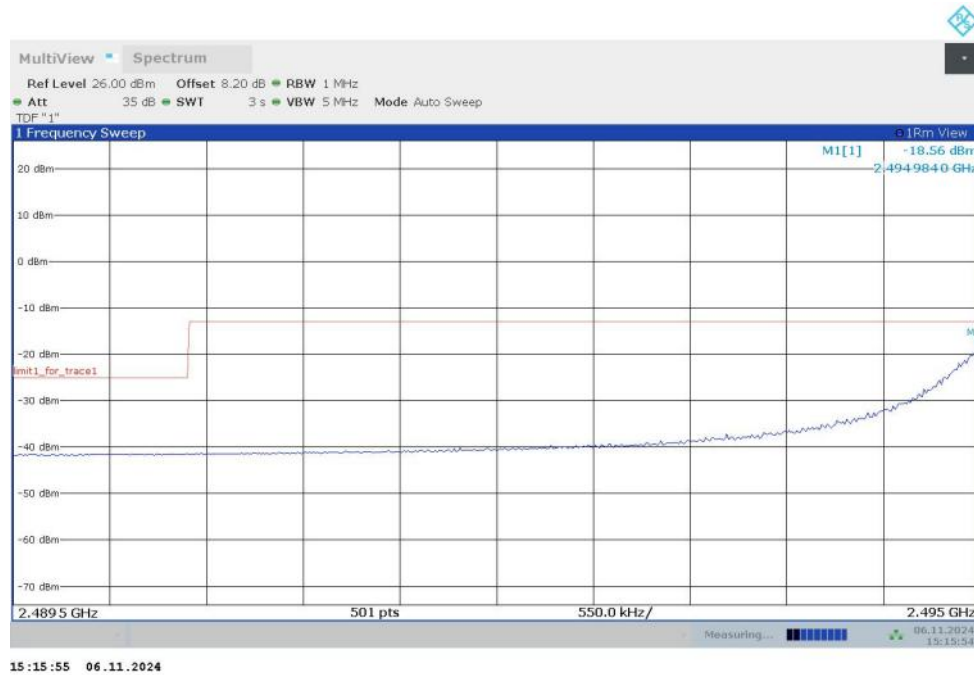
OBW: 1RB-LOW_offset



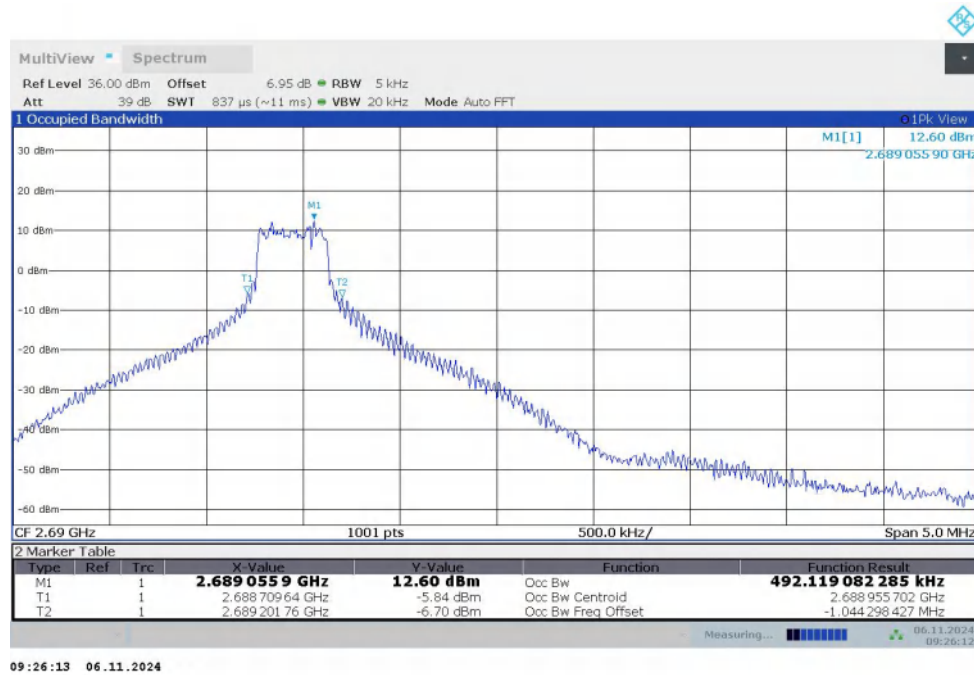
LOW BAND EDGE BLOCK-1RB-LOW_offset



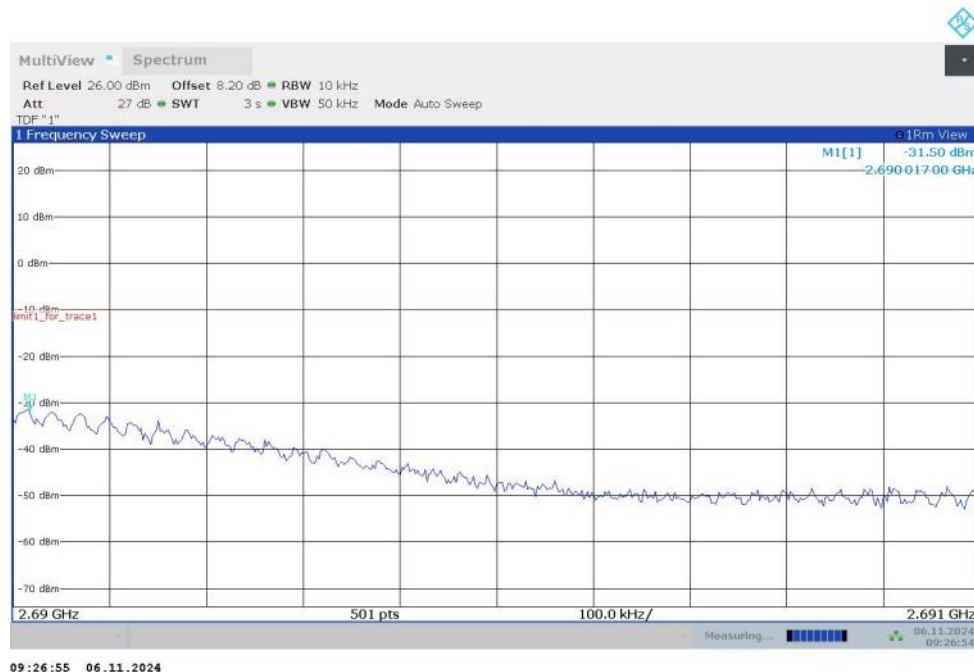
LOW BAND EDGE BLOCK-1RB-LOW_offset



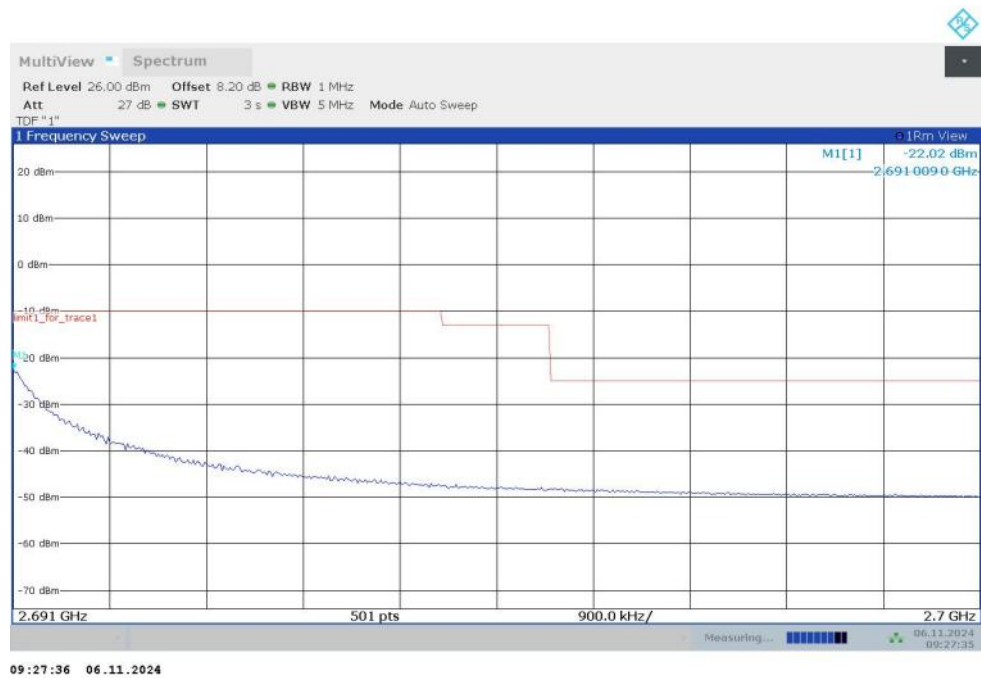
OBW: 1RB-HIGH_offset



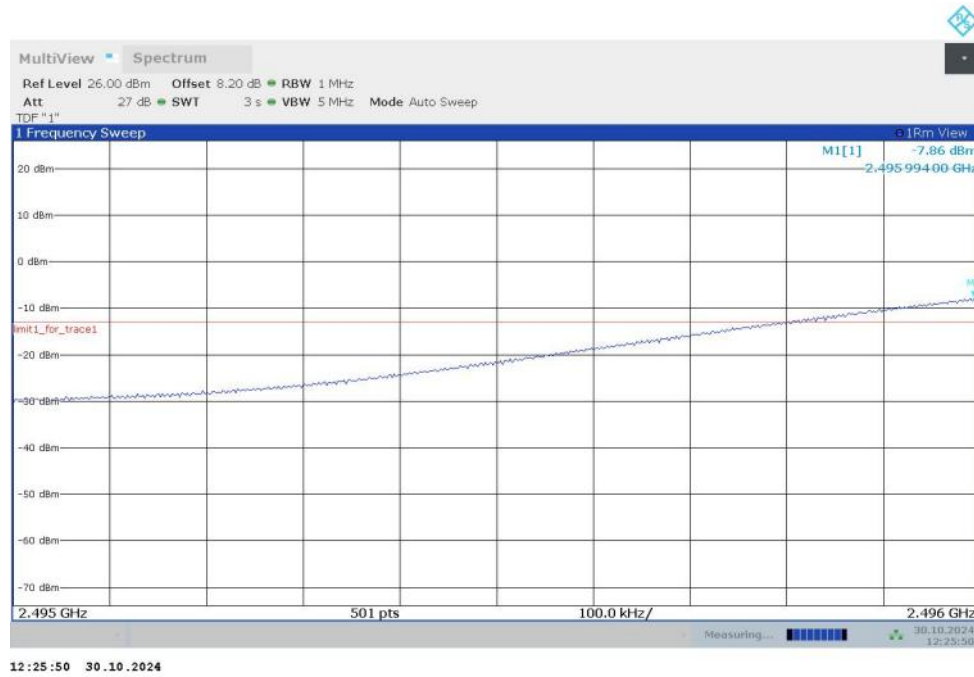
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



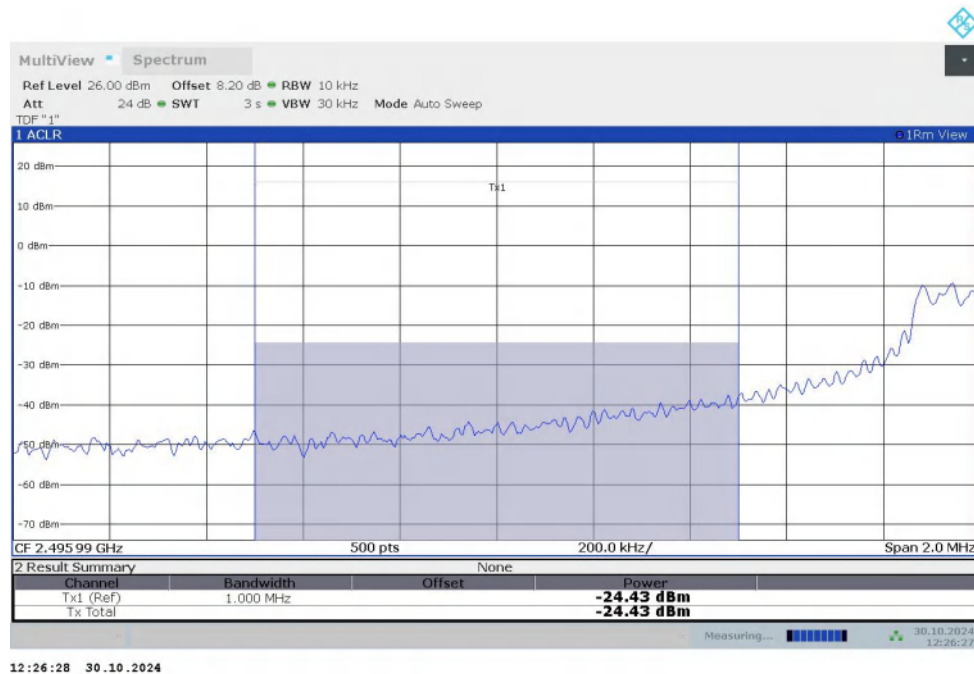
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



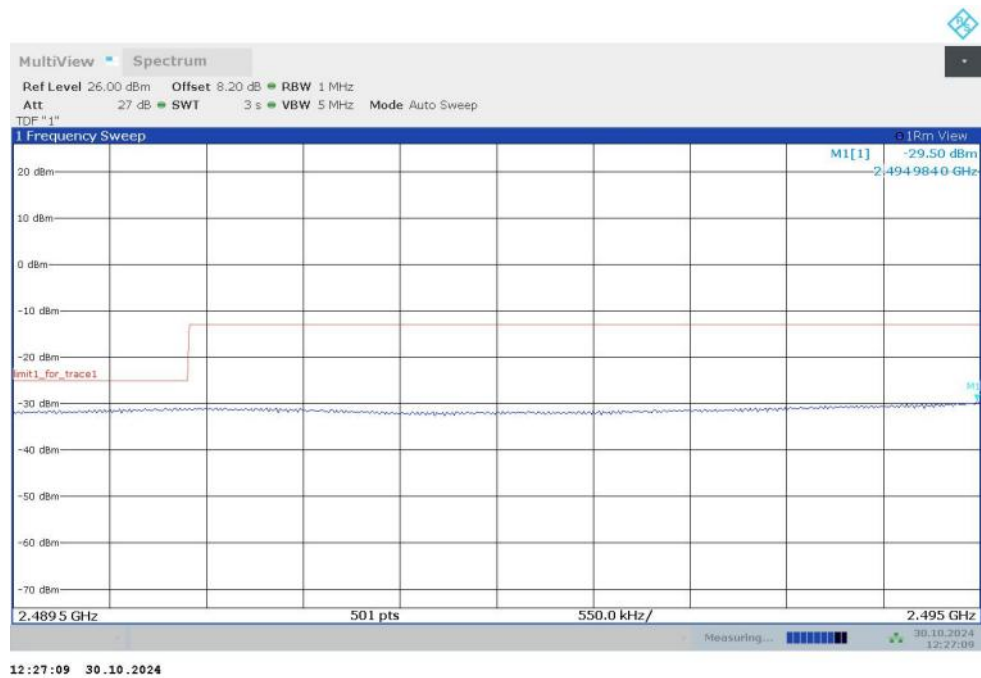
LOW BAND EDGE BLOCK-100MHz-100%RB



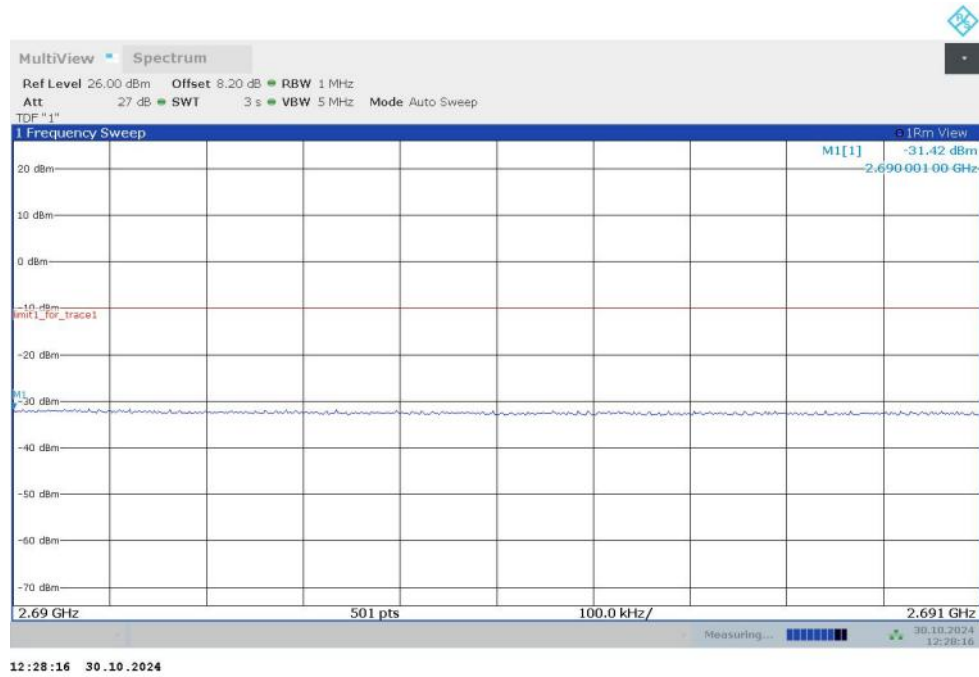
Channel power



LOW BAND EDGE BLOCK-100MHz-100%RB



HIGH BAND EDGE BLOCK-100MHz-100%RB

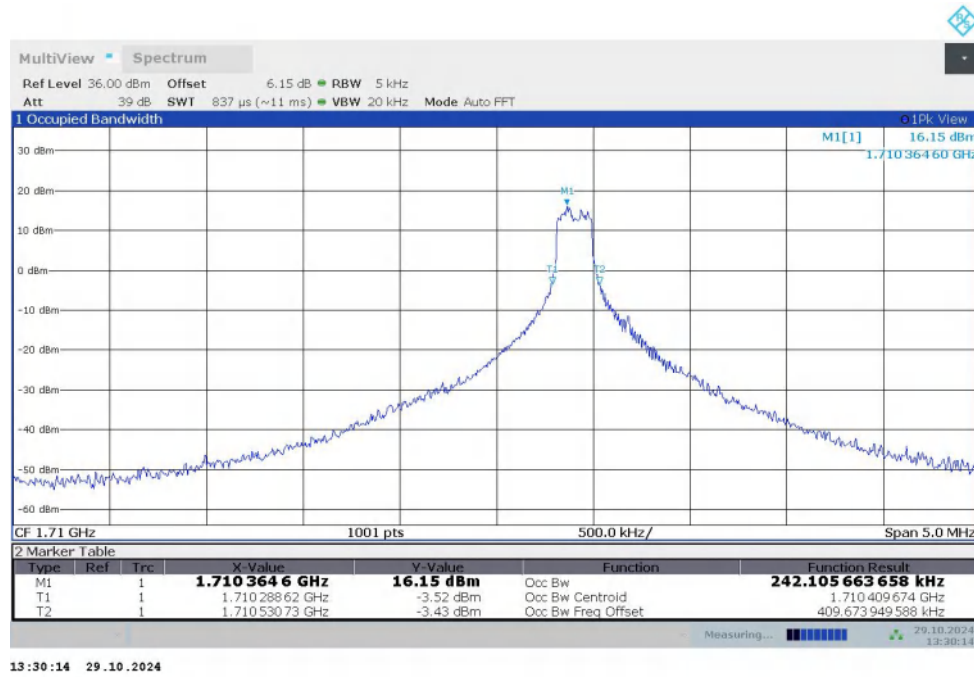


HIGH BAND EDGE BLOCK-100MHz-100%RB

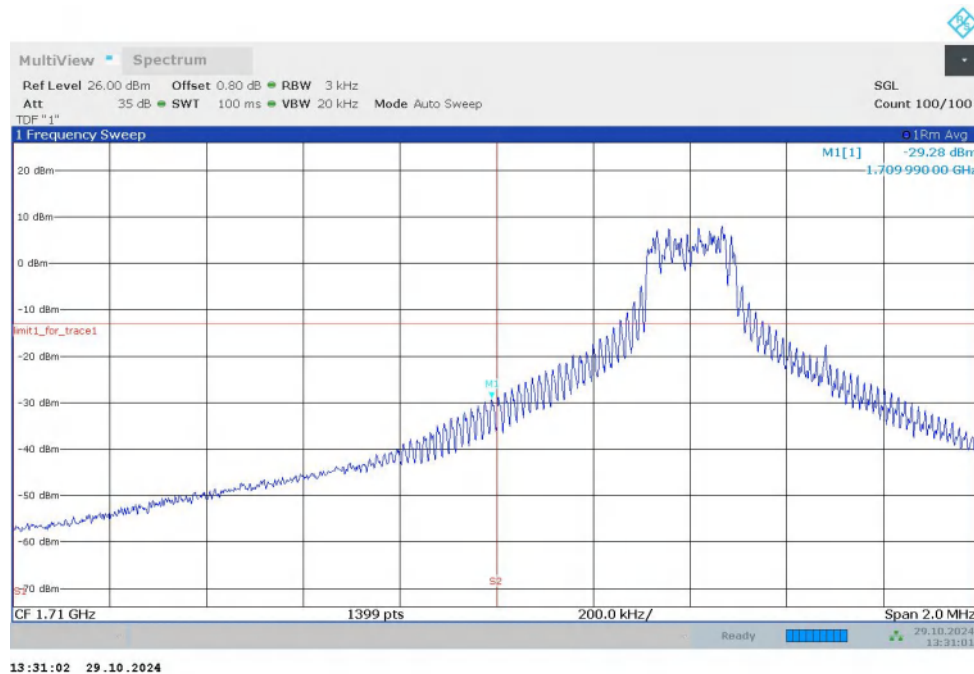


NR n66

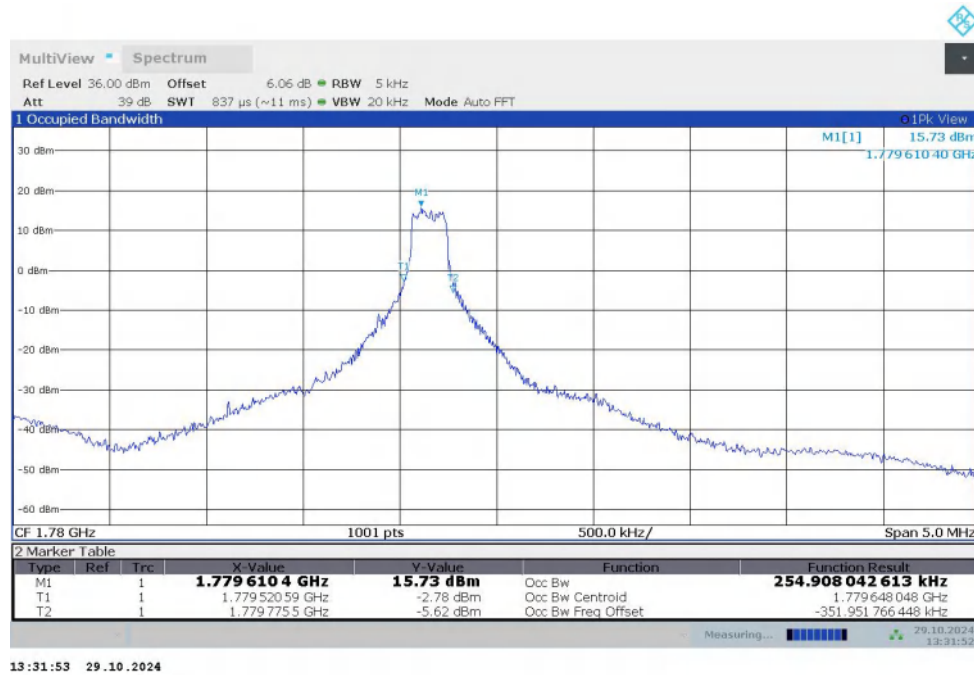
OBW: 1RB-LOW_offset



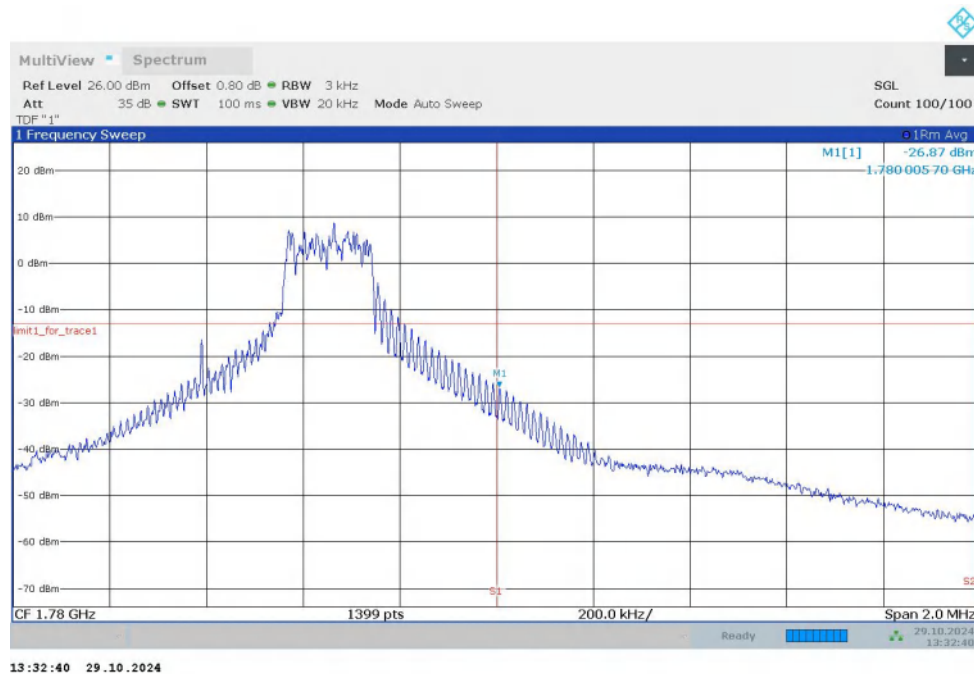
LOW BAND EDGE BLOCK-1RB-LOW_offset



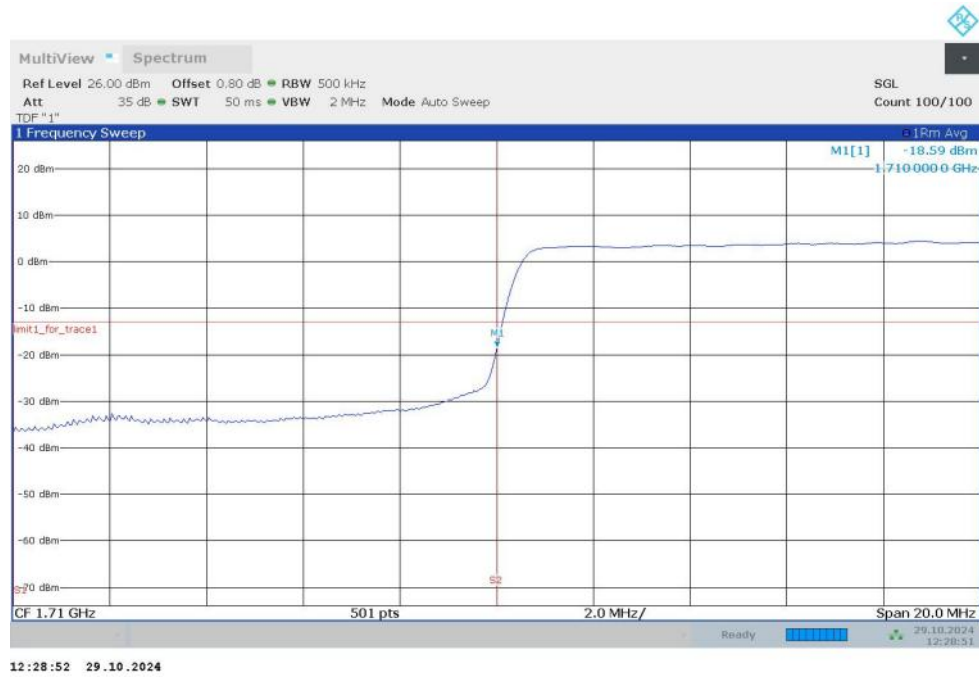
OBW: 1RB-HIGH_offset



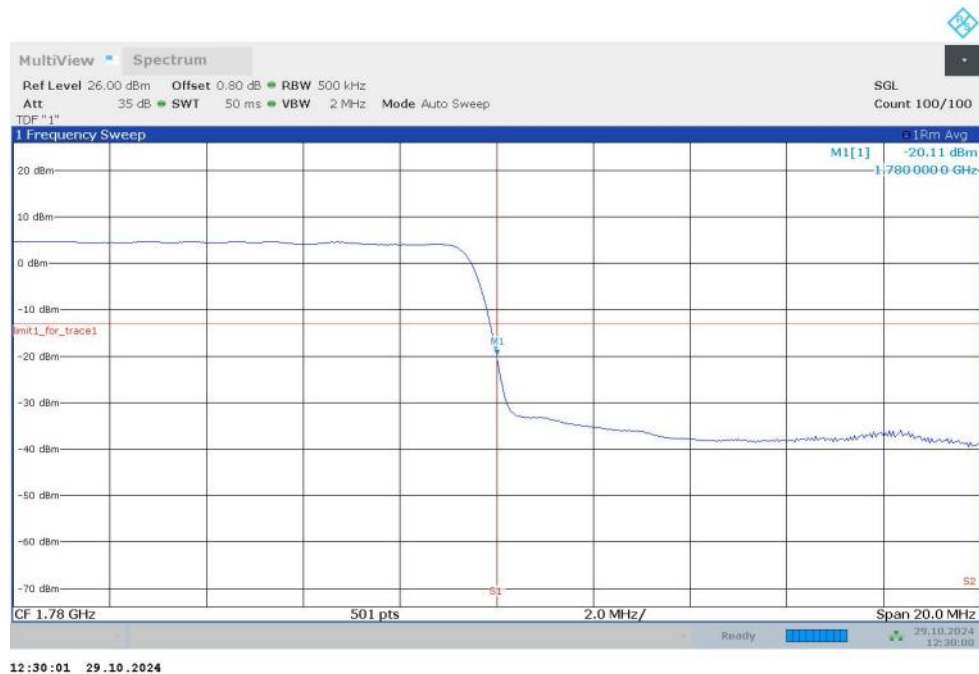
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



LOW BAND EDGE BLOCK-40MHz-100%RB

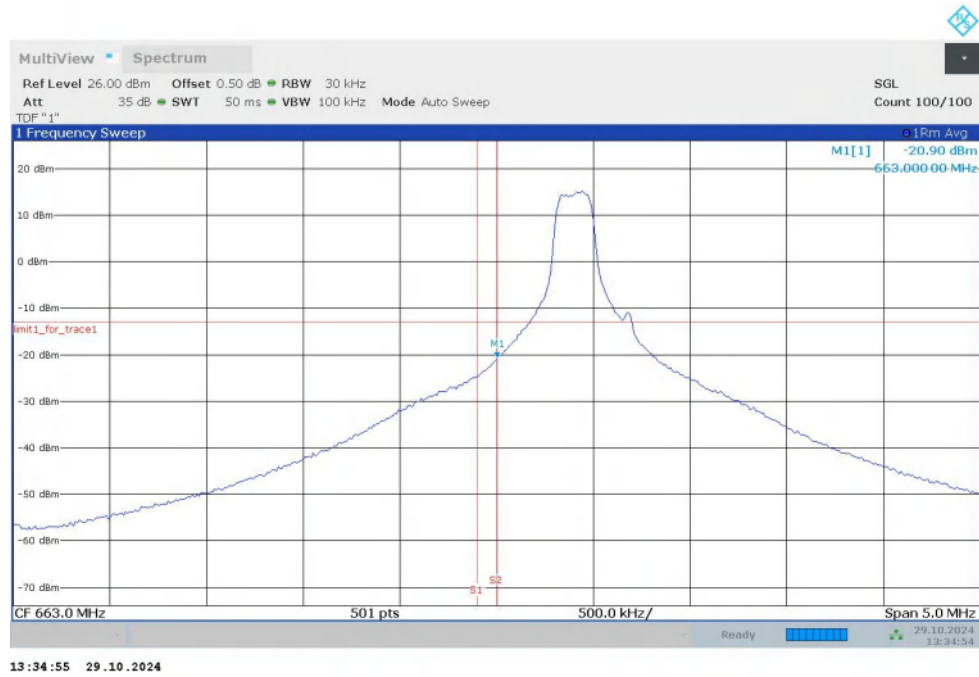


HIGH BAND EDGE BLOCK-40MHz-100%RB

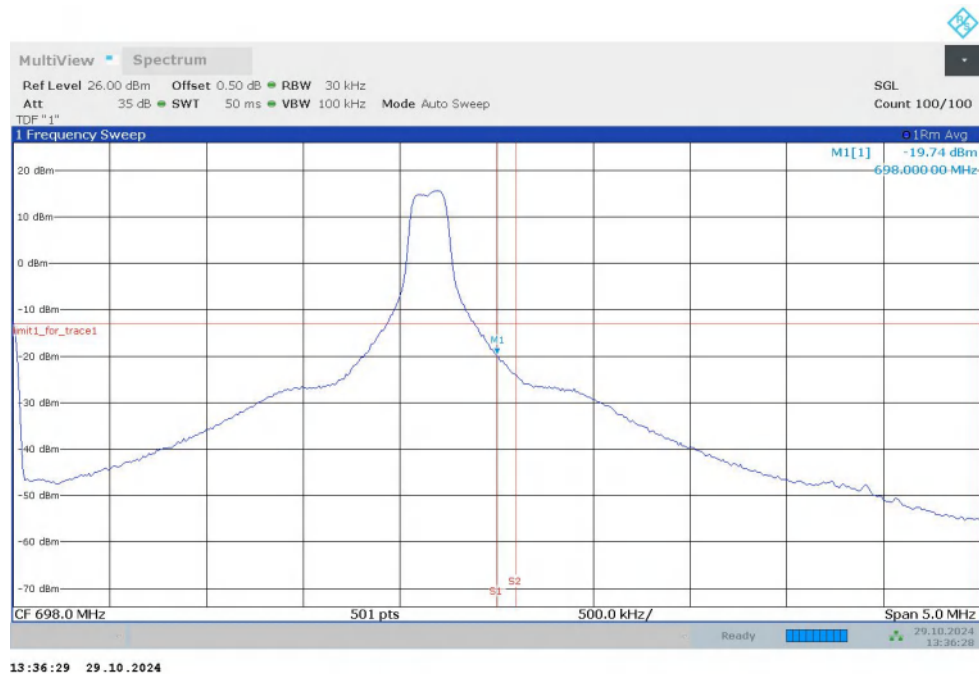


NR n71

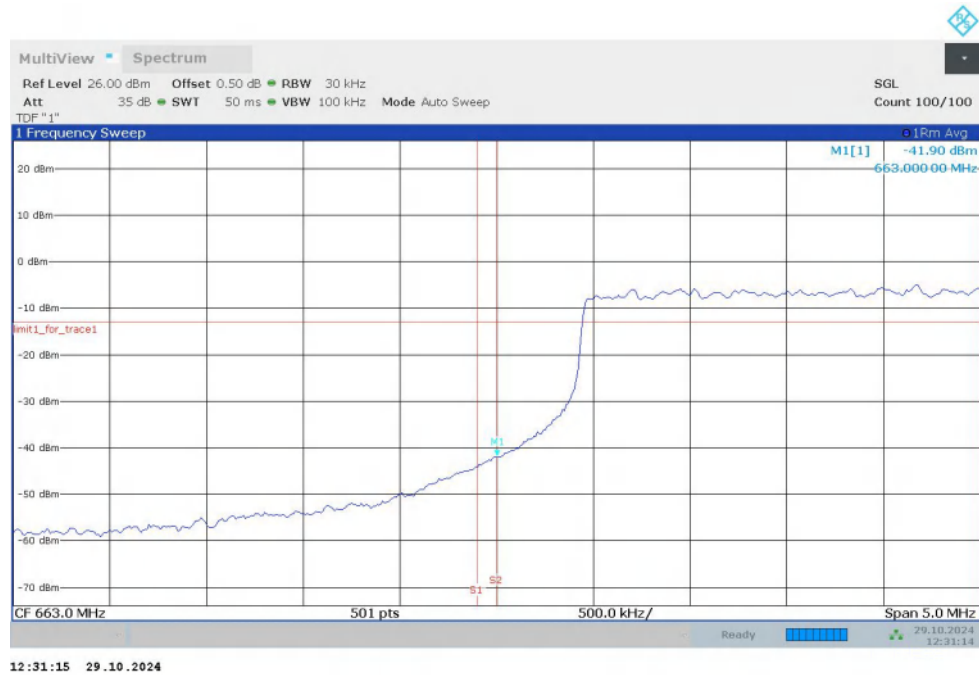
LOW BAND EDGE BLOCK-1RB-LOW_offset



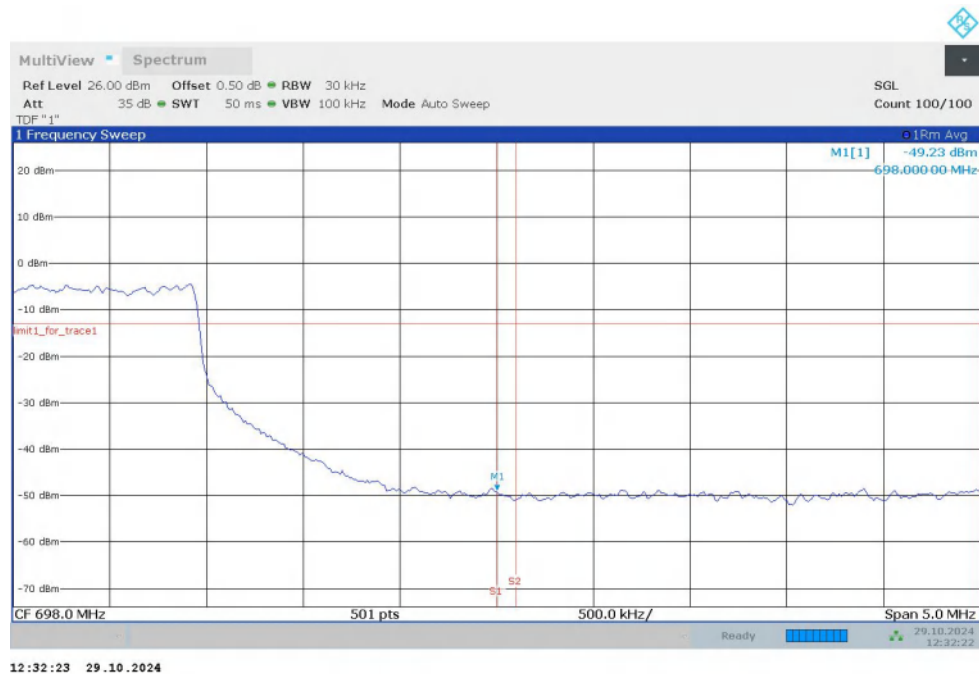
HIGH BAND EDGE BLOCK-1RB-HIGH_offset



LOW BAND EDGE BLOCK-20MHz-100%RB



HIGH BAND EDGE BLOCK-20MHz-100%RB



Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.626 \text{ kHz}$, $k = 2$.

A.7 Conducted Spurious Emission

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
 - (a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
 - (b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is greater than $2 \times \text{span} / \text{RBW}$.

A. 7.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

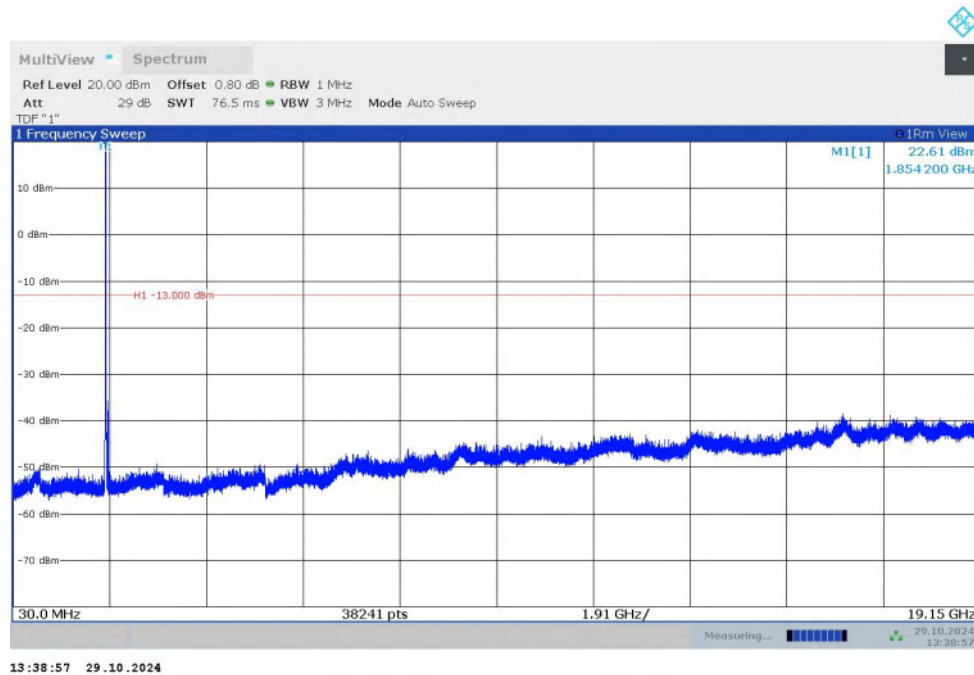
Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

A. 7.3 Measurement result

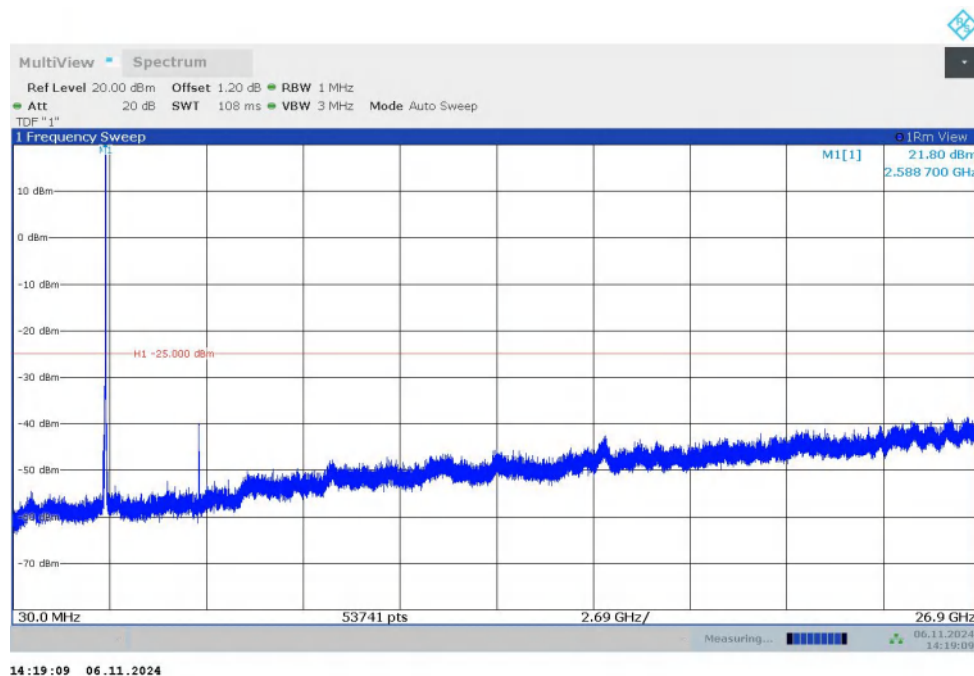
n25

NOTE: peak above the limit line is the carrier frequency.



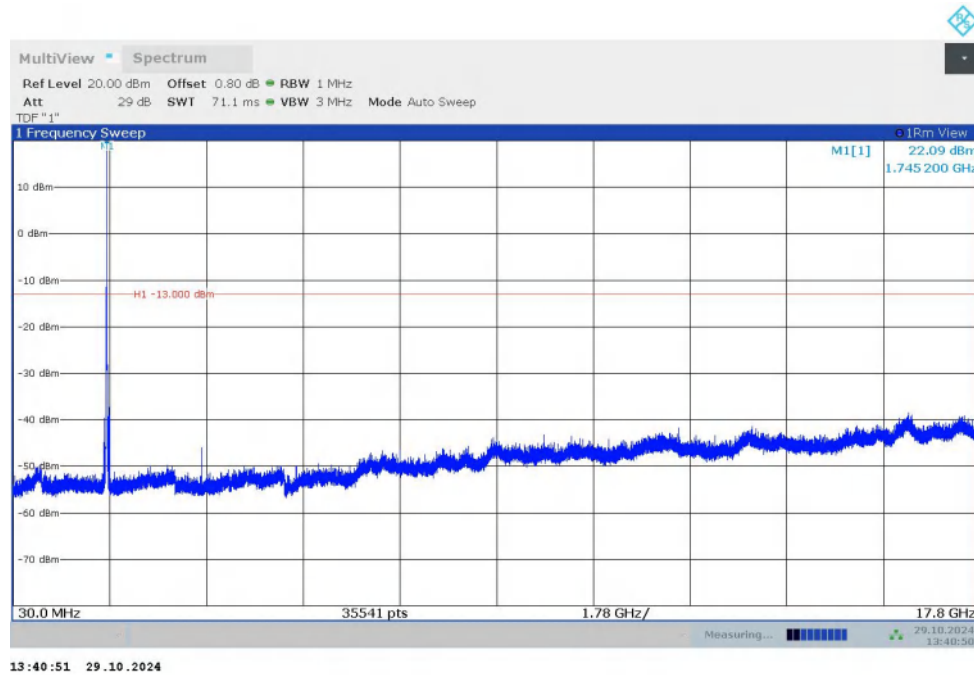
n41

NOTE: peak above the limit line is the carrier frequency.



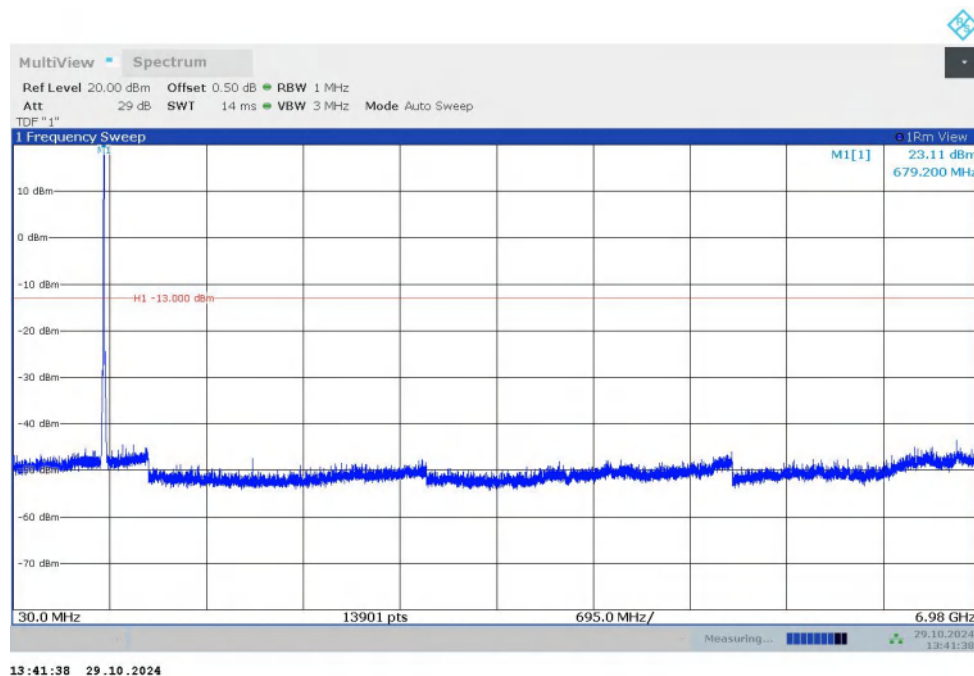
n66

NOTE: peak above the limit line is the carrier frequency.



n71

NOTE: peak above the limit line is the carrier frequency.



Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.372 \text{ dB}$, $k = 2$.

A.8 Peak-to-Average Power Ratio

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

- Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

Measurement results

n25,40MHz

Frequency (MHz)	PAPR (dB)								
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM	DFT-s-64QAM	DFT-s-256QAM	CP-QPSK	CP-16QAM	CP-64QAM	CP-256QAM
1882.5	4.49	5.27	6.05	6.32	8.84	7.04	7.13	7.54	9.57

n41,100MHz

Frequency (MHz)	PAPR (dB)								
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM	DFT-s-64QAM	DFT-s-256QAM	CP-QPSK	CP-16QAM	CP-64QAM	CP-256QAM
2592.99	4.91	5.88	6.86	6.59	6.70	7.69	7.83	8.19	8.70

n66,40MHz

Frequency (MHz)	PAPR (dB)								
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM	DFT-s-64QAM	DFT-s-256QAM	CP-QPSK	CP-16QAM	CP-64QAM	CP-256QAM
1745	4.04	4.79	5.67	6.00	6.51	6.95	6.71	7.12	8.32

n71,20MHz

Frequency (MHz)	PAPR (dB)								
	DFT-s-pi/2 BPSK	DFT-s-QPSK	DFT-s-16QAM	DFT-s-64QAM	DFT-s-256QAM	CP-QPSK	CP-16QAM	CP-64QAM	CP-256QAM
680.5	4.97	5.23	6.15	6.14	6.47	7.26	7.29	7.15	8.34

Note: The maximum value of expanded measurement uncertainty for this test item is $U = 0.356$ dB, $k = 2$.

Annex B: Accreditation Certificate



END OF REPORT