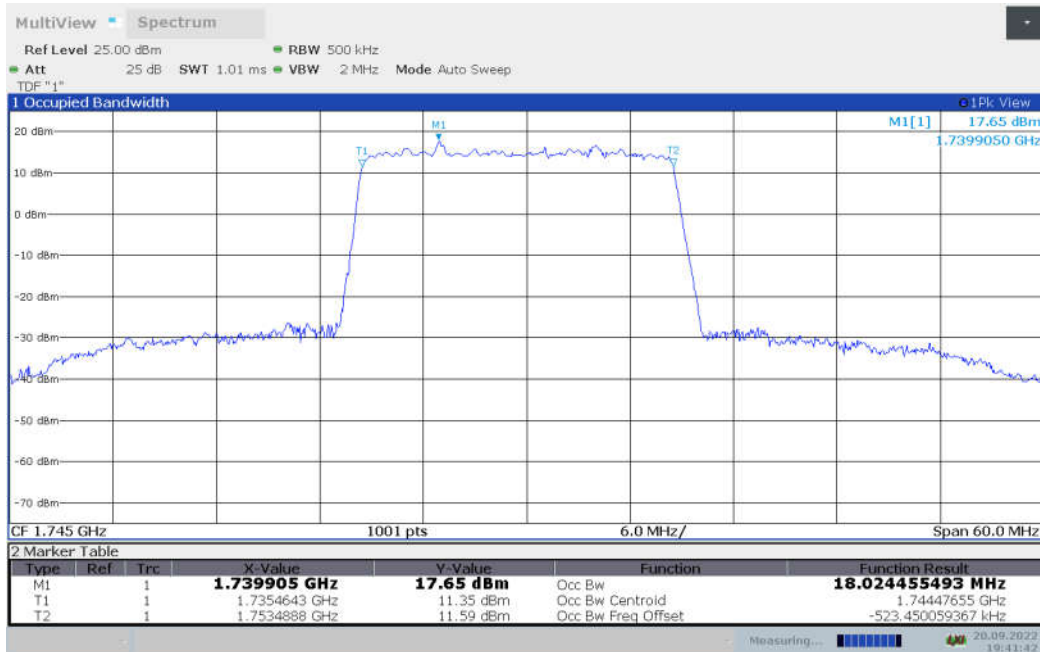




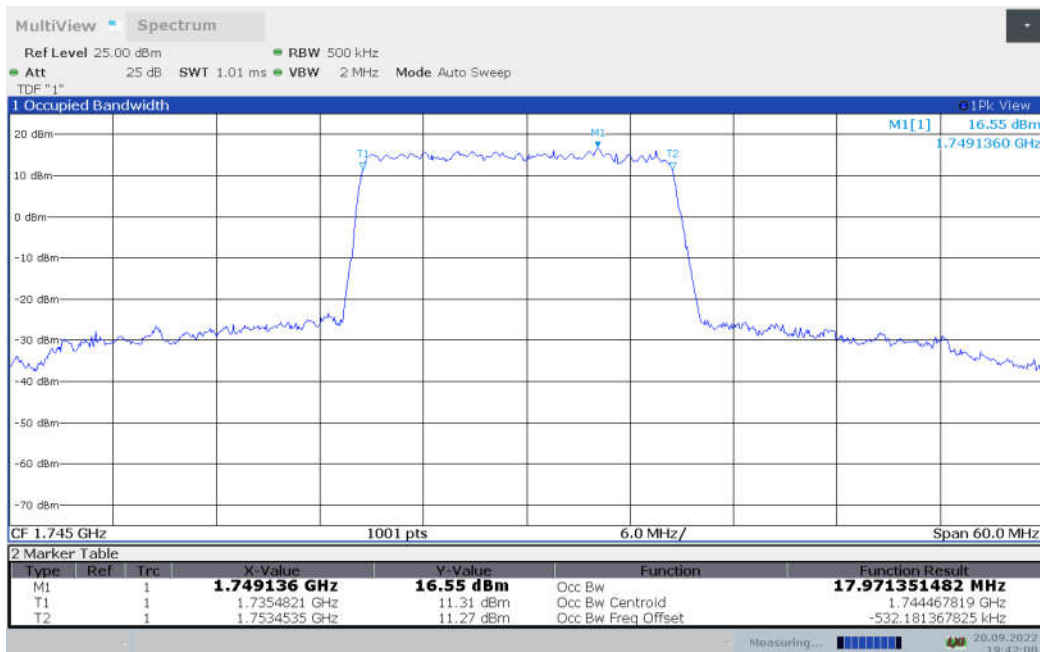
**DC\_7A-n66A,20MHz(99%)**

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	18.024	17.971

**DC\_7A-n66A,20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)**



**DC\_7A-n66A,20MHz Bandwidth,DFT-s-QPSK (99% BW)**

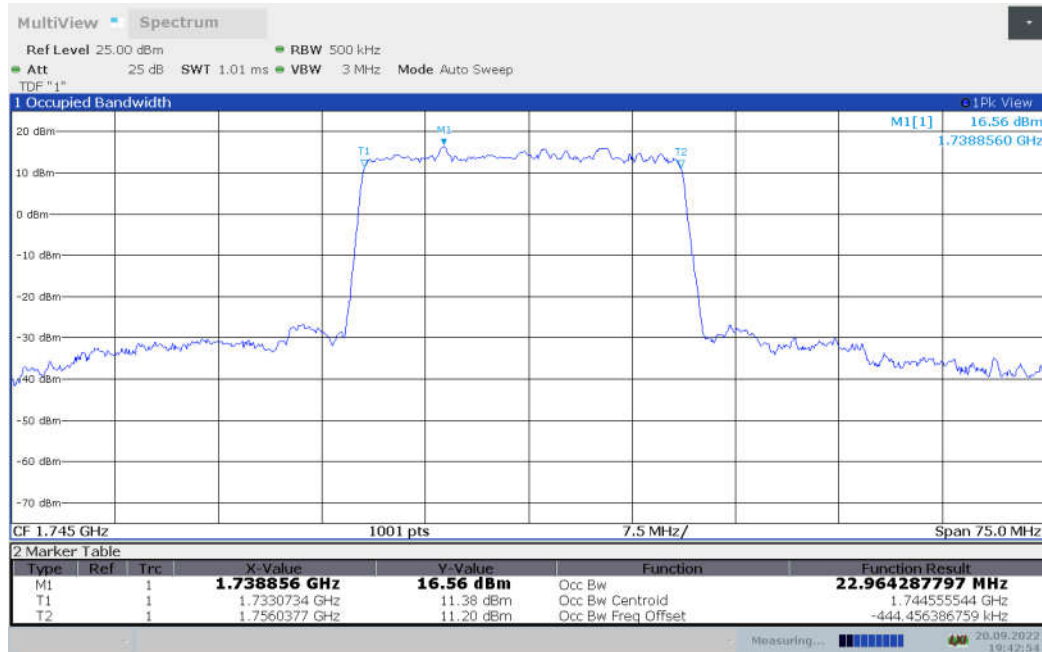




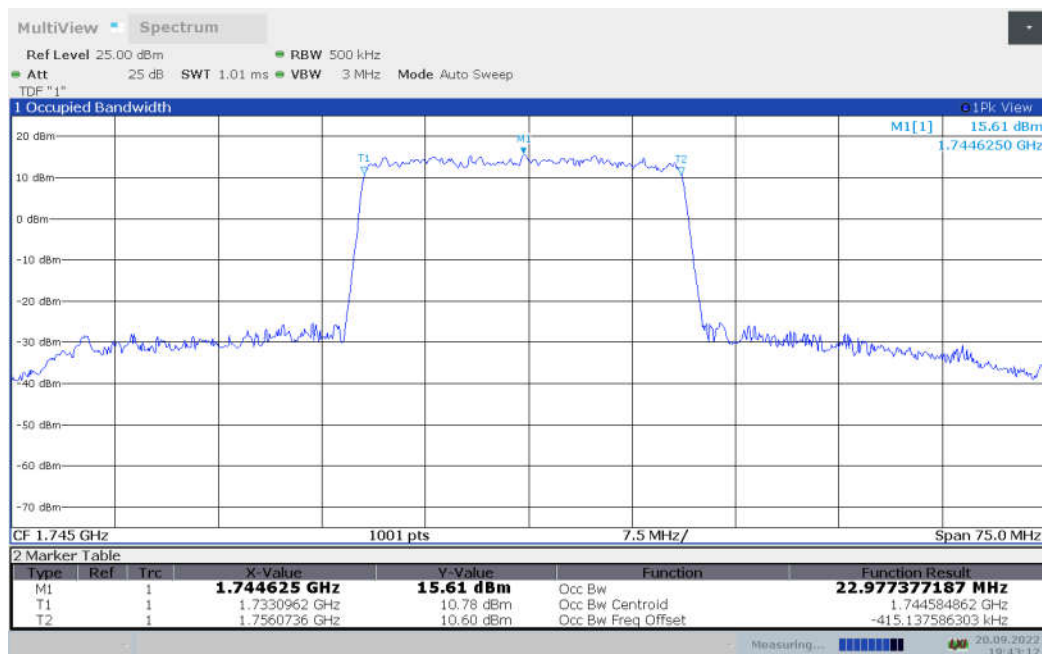
**DC\_7A-n66A,25MHz(99%)**

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	22.964	22.977

**DC\_7A-n66A,25MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)**



**DC\_7A-n66A,25MHz Bandwidth,DFT-s-QPSK (99% BW)**

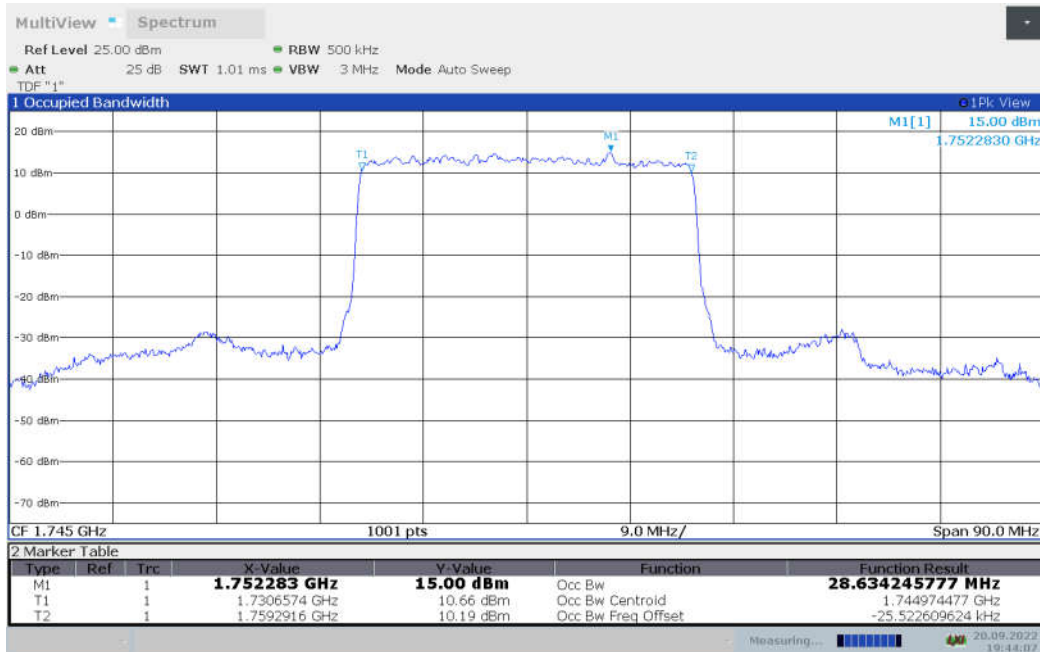




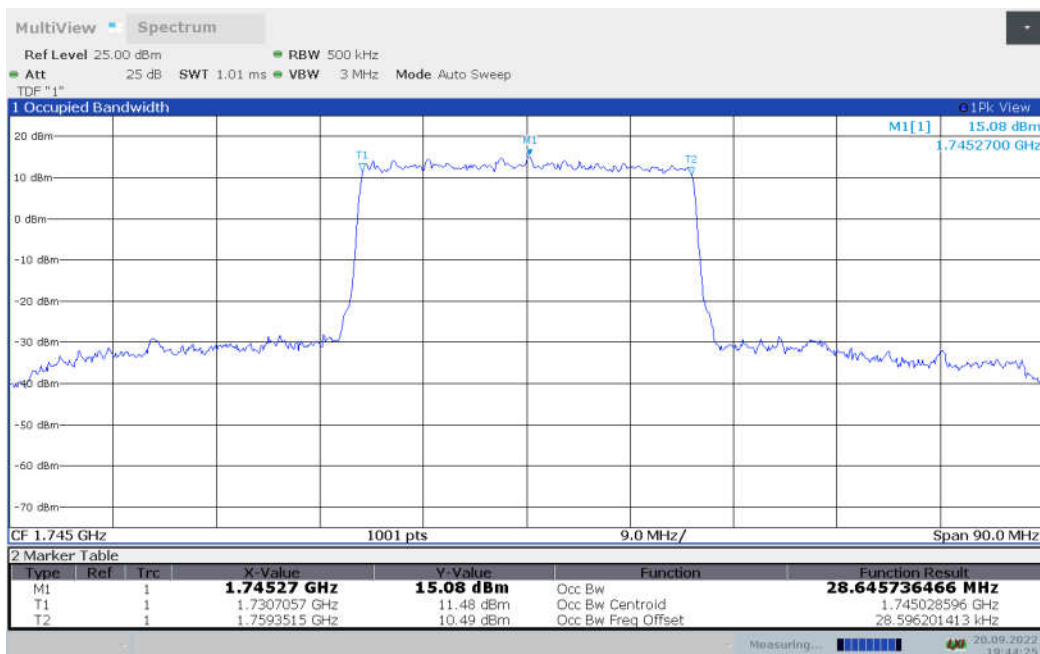
**DC\_7A-n66A,30MHz(99%)**

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	28.634	28.646

**DC\_7A-n66A,30MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)**



**DC\_7A-n66A,30MHz Bandwidth,DFT-s-QPSK (99% BW)**

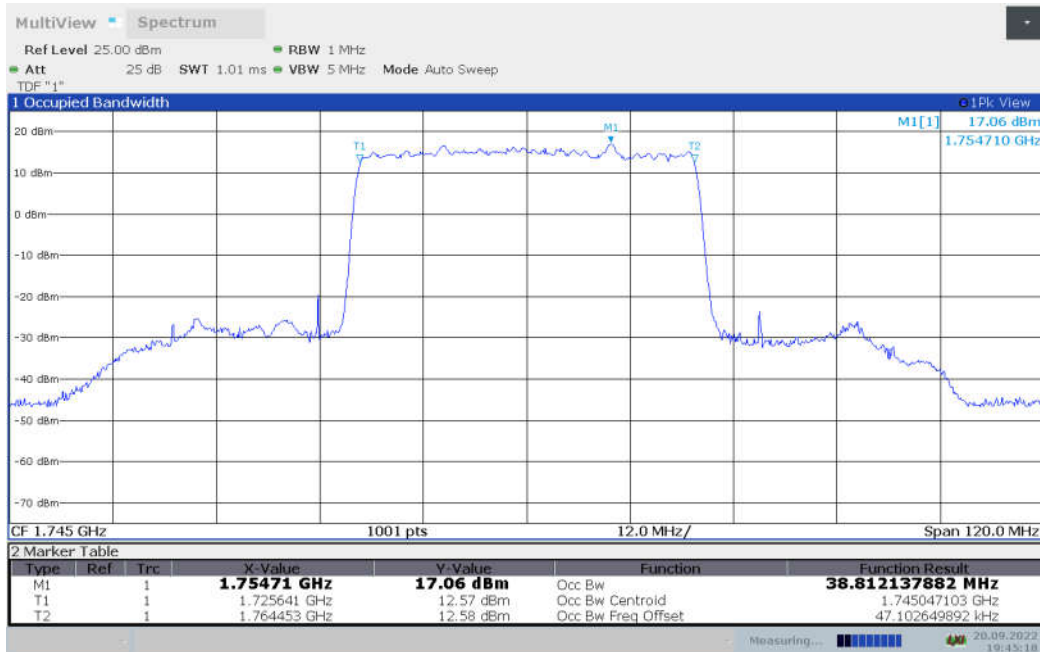




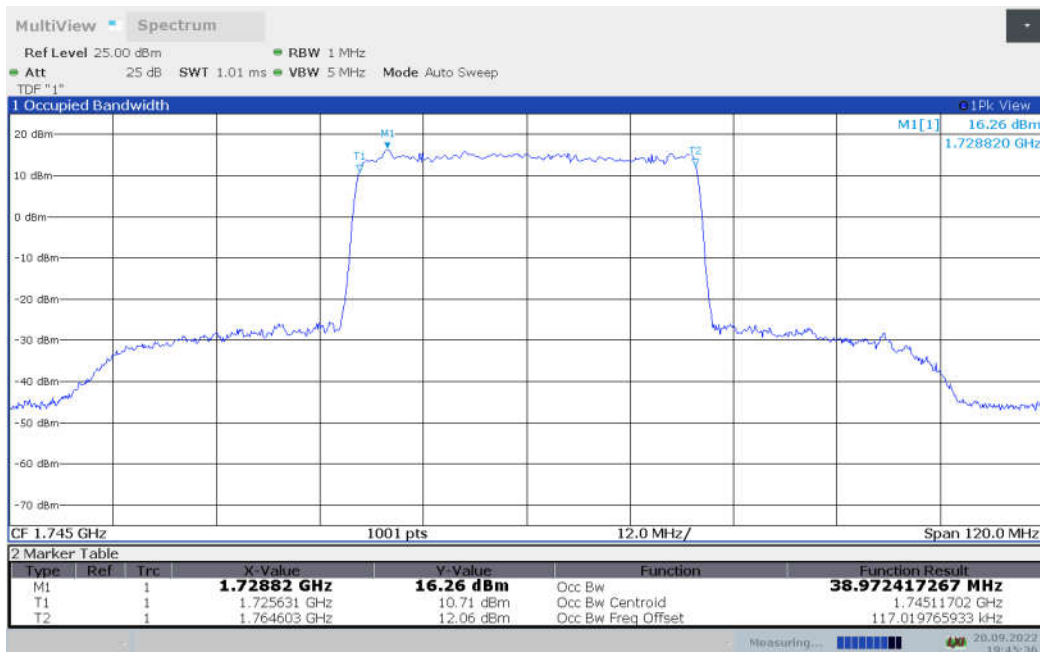
DC\_7A-n66A,40MHz(99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	38.812	38.972

DC\_7A-n66A,40MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



DC\_7A-n66A,40MHz Bandwidth,DFT-s-QPSK (99% BW)



Note: Expanded measurement uncertainty is  $U = 3428$  Hz,  $k = 2$



## **A.5 EMISSION BANDWIDTH**

### **Reference**

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53.

### **A.5.1 Measurement Procedure**

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.

- 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 (i.e., two to five times the OBW).
- b) The nominal IF filter bandwidth 3 dB (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least  $10\log(OBW / RBW)$  below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 26dB bandwidth function of the spectrum analyzer and report the measured bandwidth.

### **A.5.2 Emission Bandwidth Results**

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

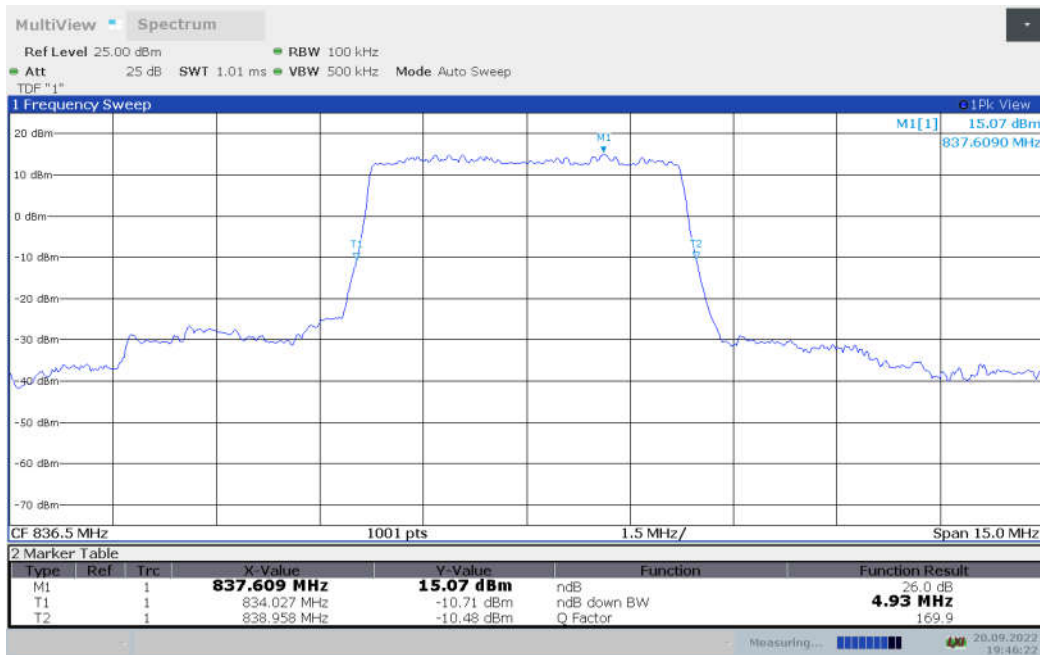


DC\_7A-n5A

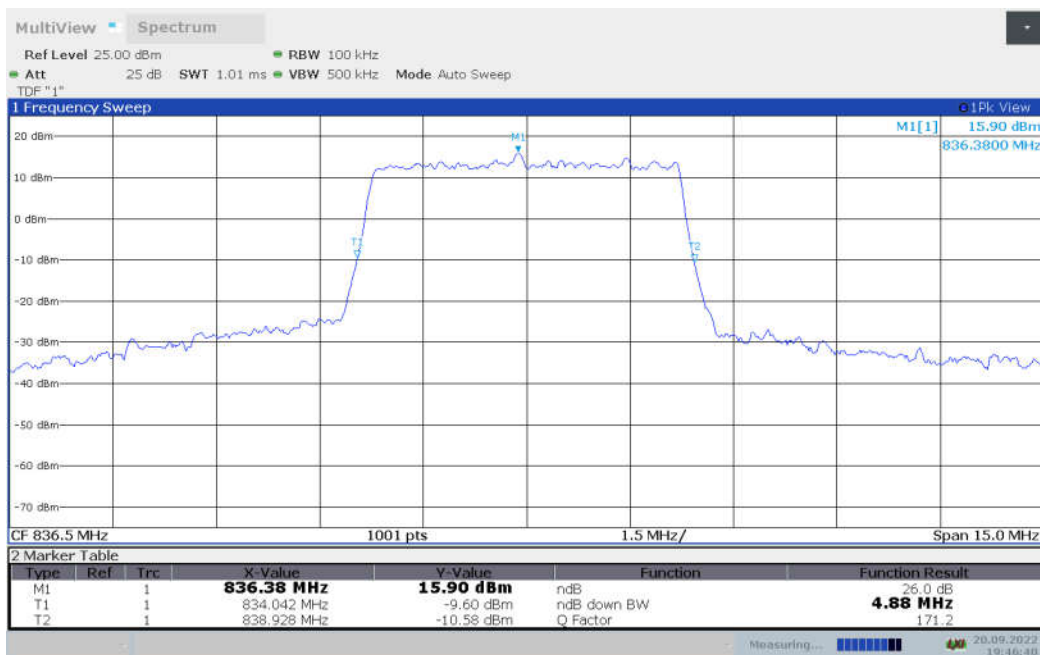
DC\_7A-n5A,5MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	4.930	4.885

DC\_7A-n5A,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



DC\_7A-n5A,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

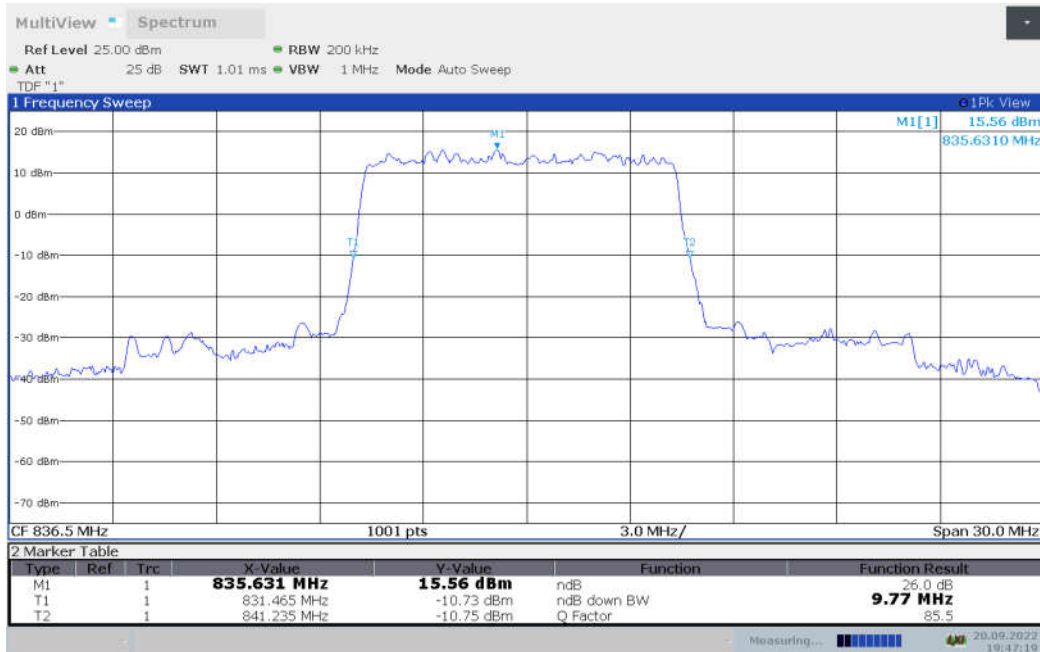




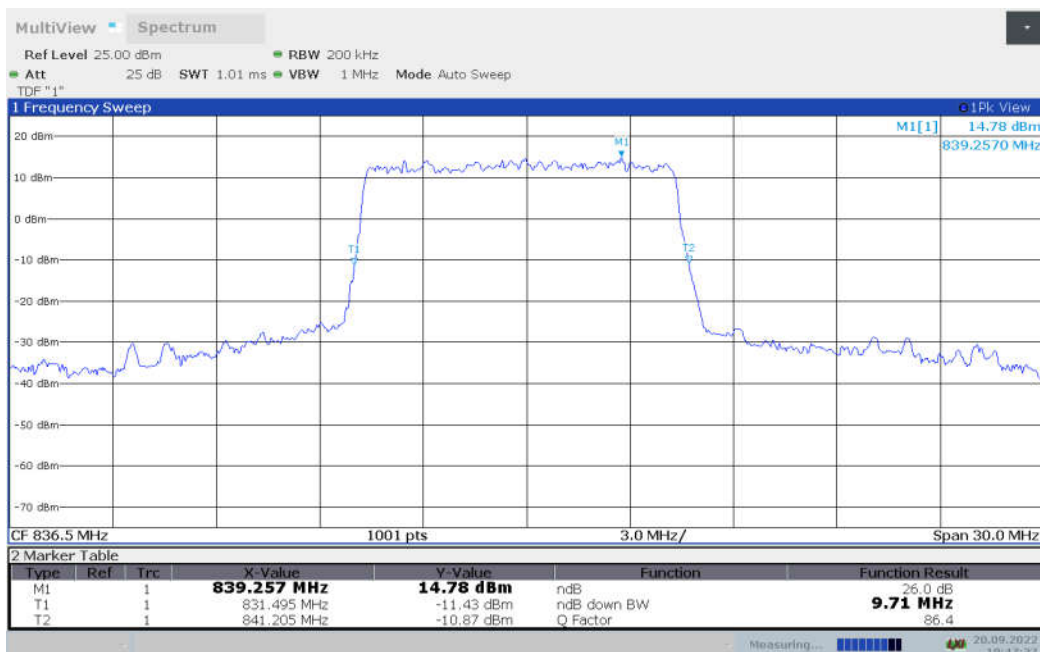
**DC\_7A-n5A,10MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	9.770	9.710

**DC\_7A-n5A,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n5A,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

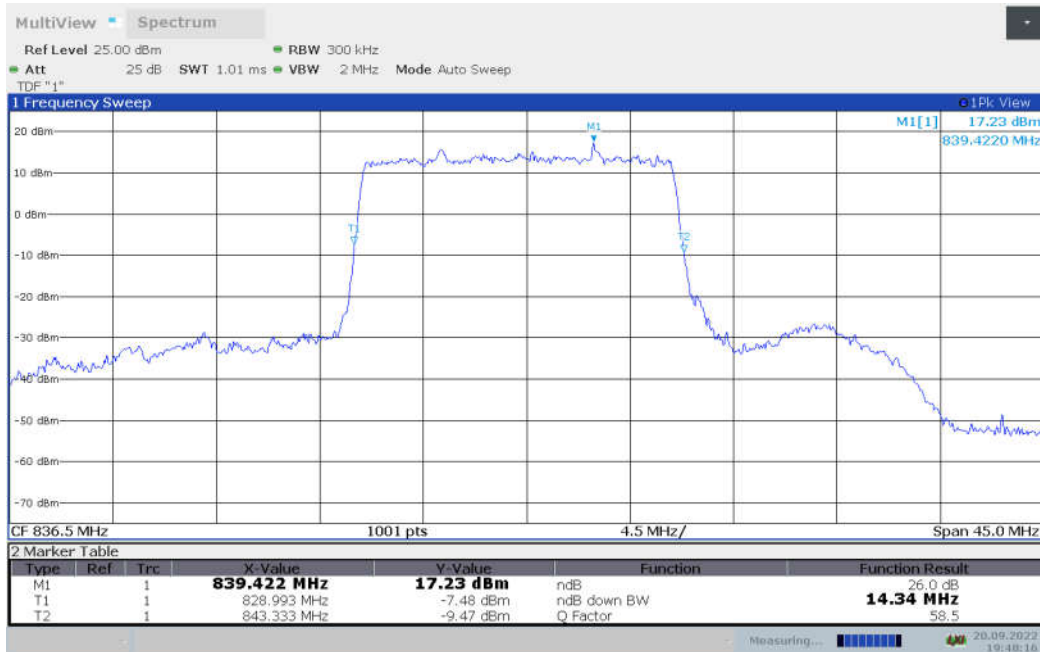




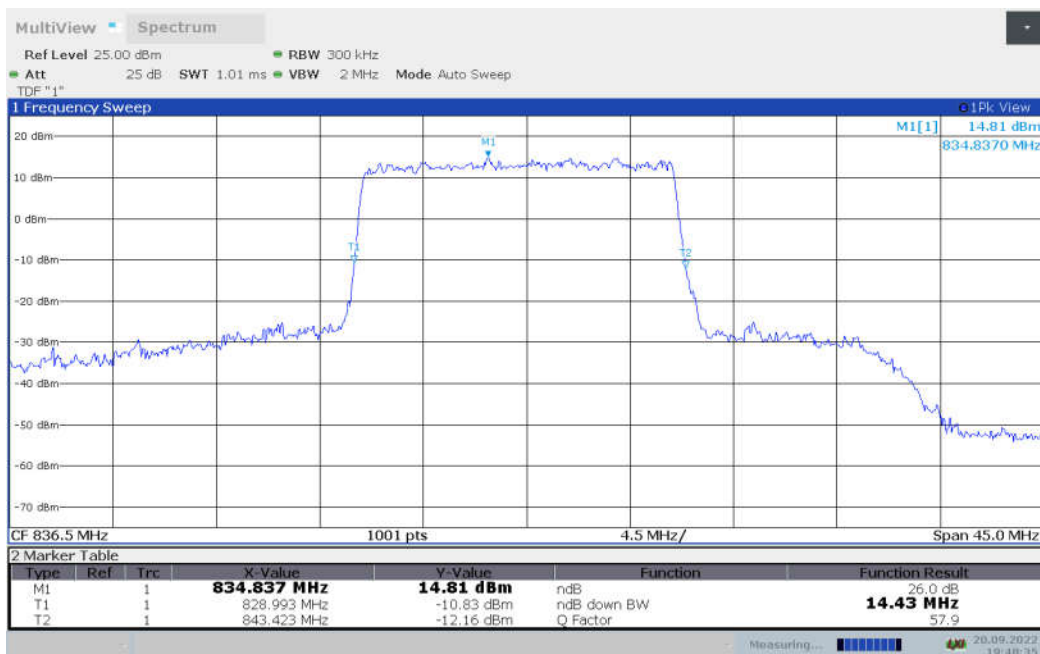
**DC\_7A-n5A,15MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	14.341	14.431

**DC\_7A-n5A,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n5A,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**



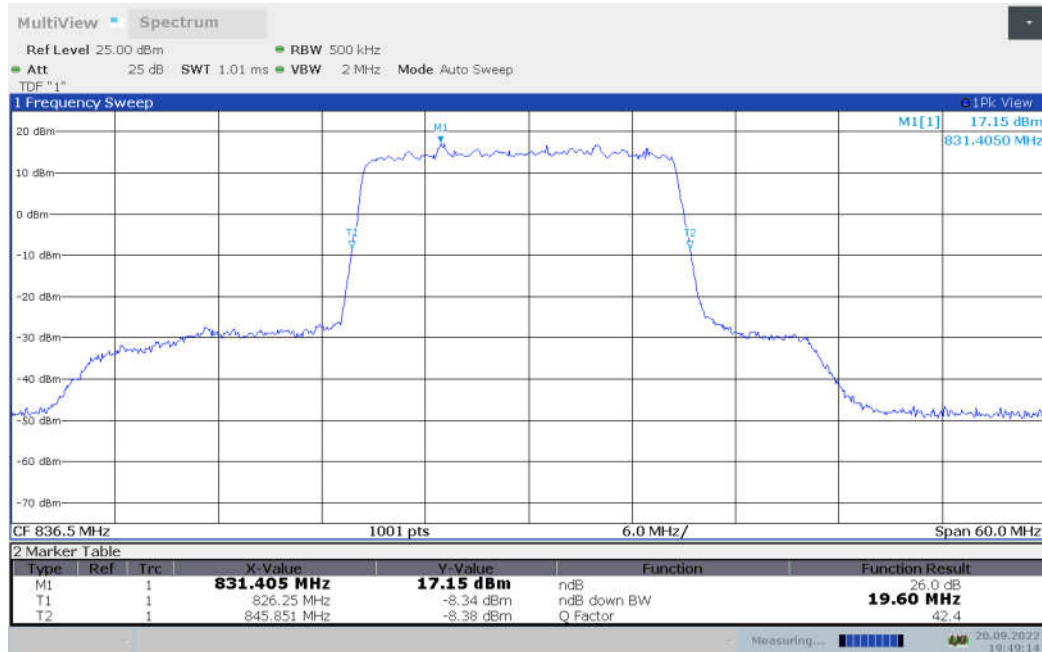




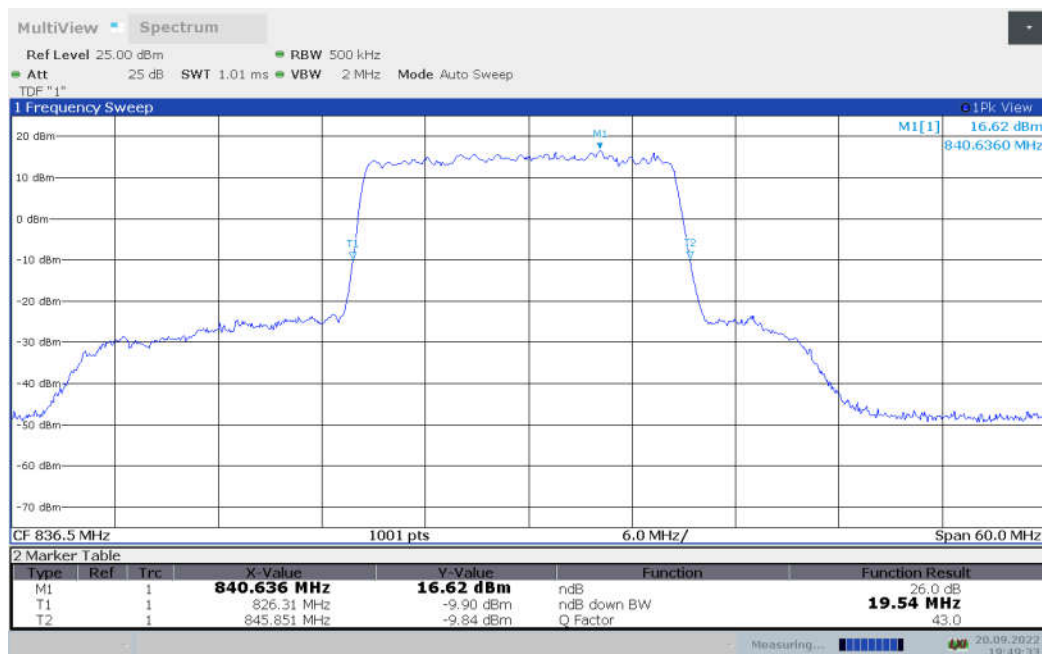
**DC\_7A-n5A,20MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	19.600	19.540

**DC\_7A-n5A,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n5A,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**



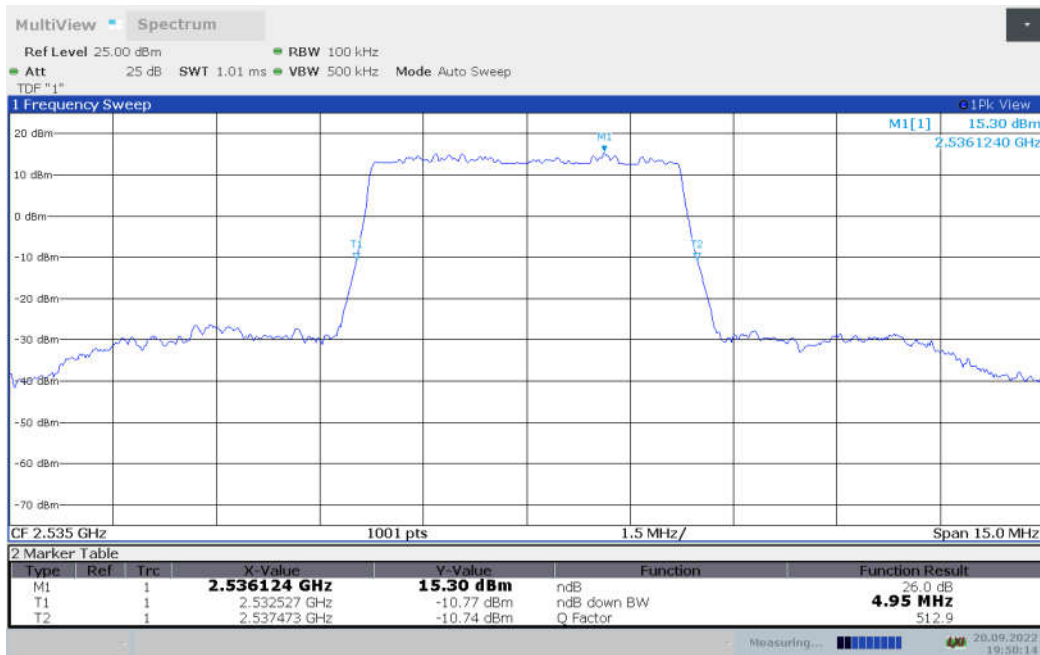


DC\_2A-n7A

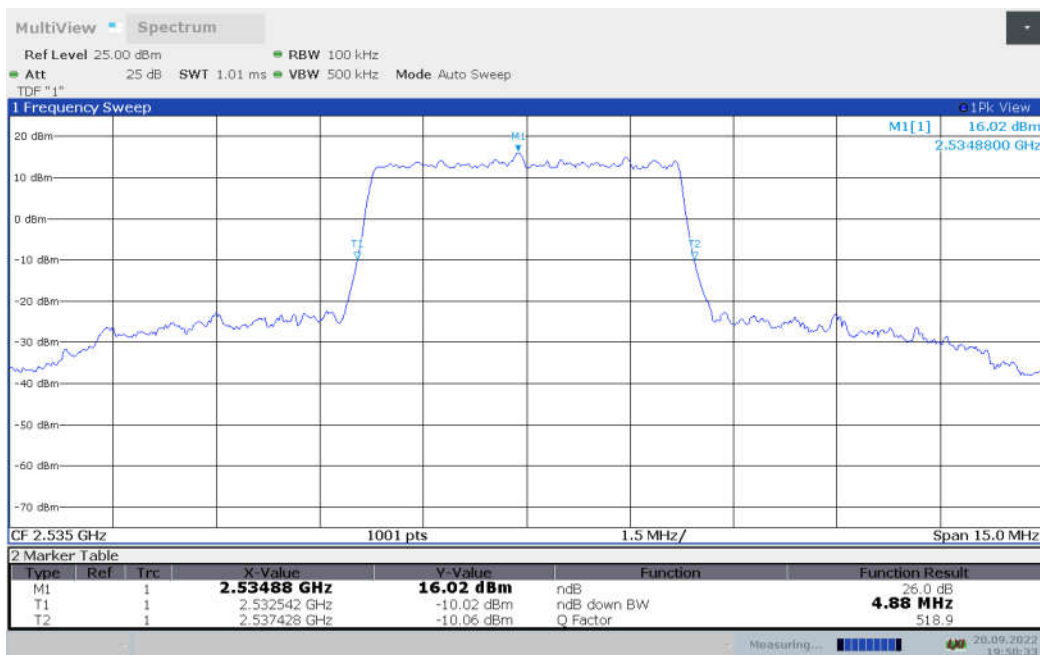
DC\_2A-n7A,5MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2535	4.945	4.885

DC\_2A-n7A,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



DC\_2A-n7A,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

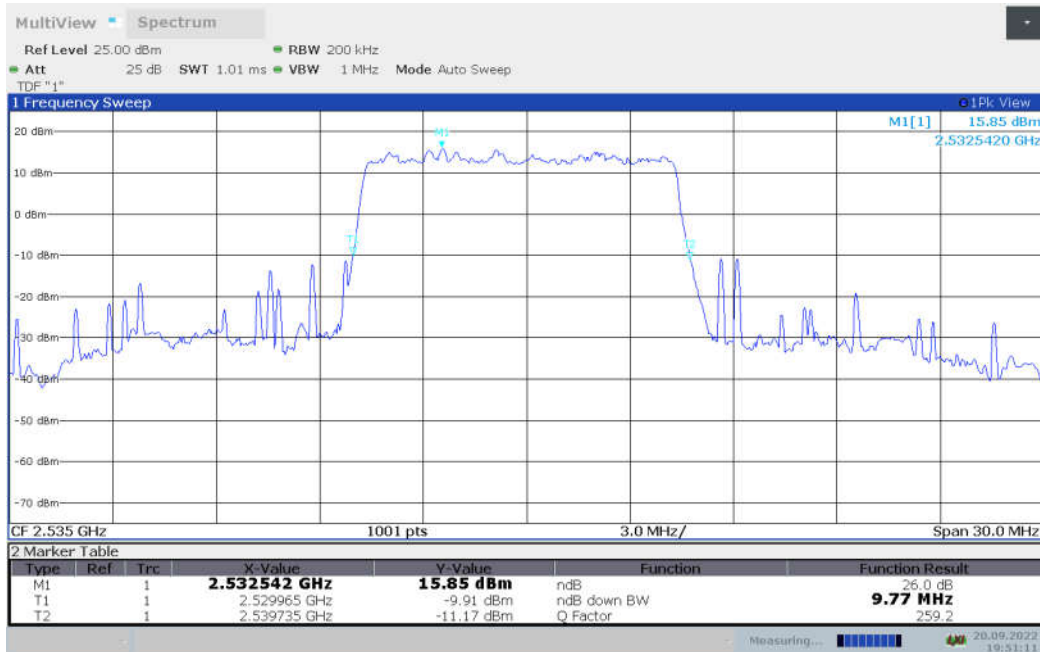




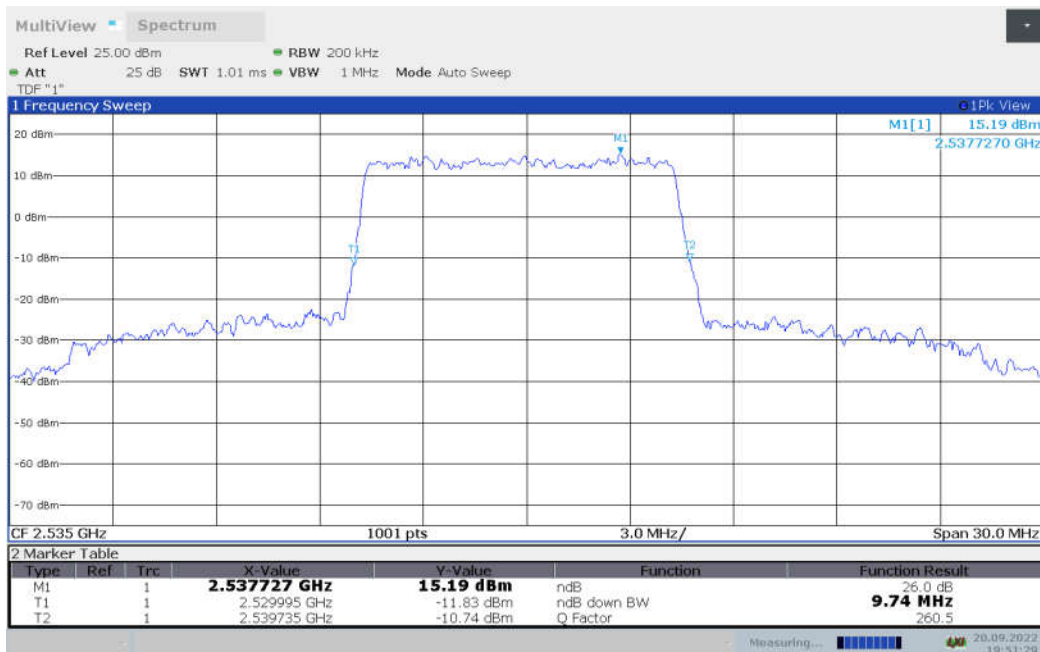
**DC\_2A-n7A,10MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2535	9.770	9.740

**DC\_2A-n7A,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_2A-n7A,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

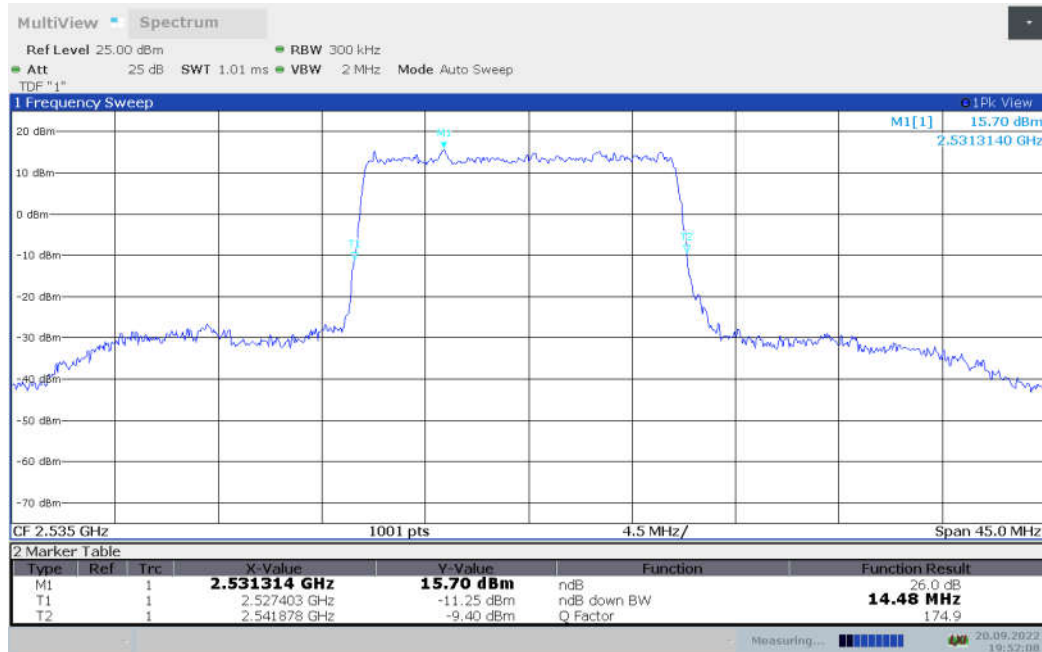




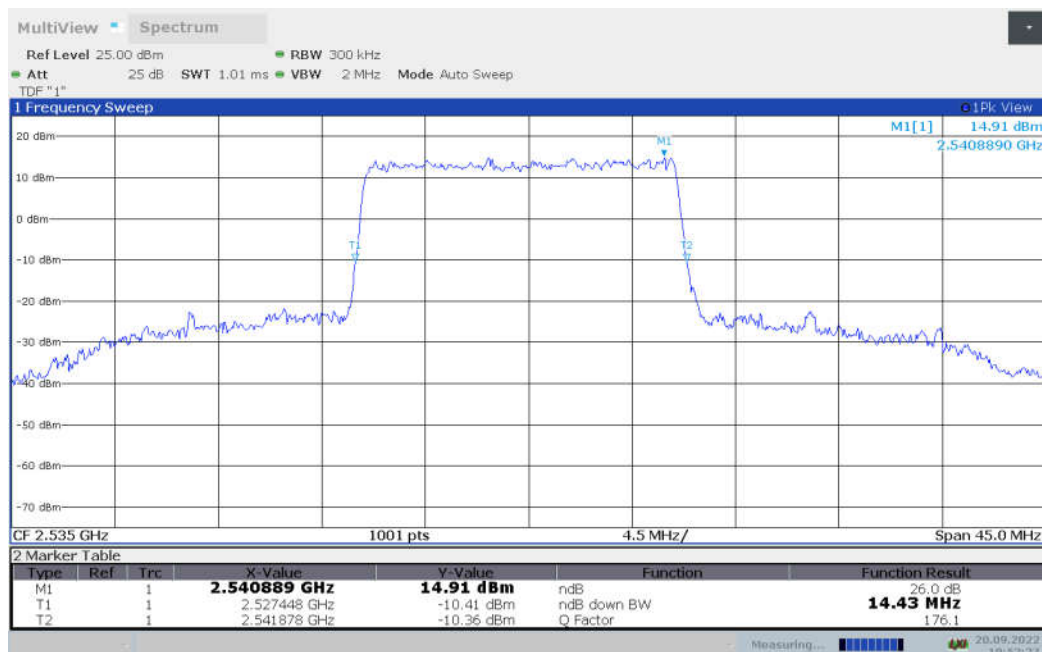
**DC\_2A-n7A,15MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2535	14.476	14.431

**DC\_2A-n7A,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_2A-n7A,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

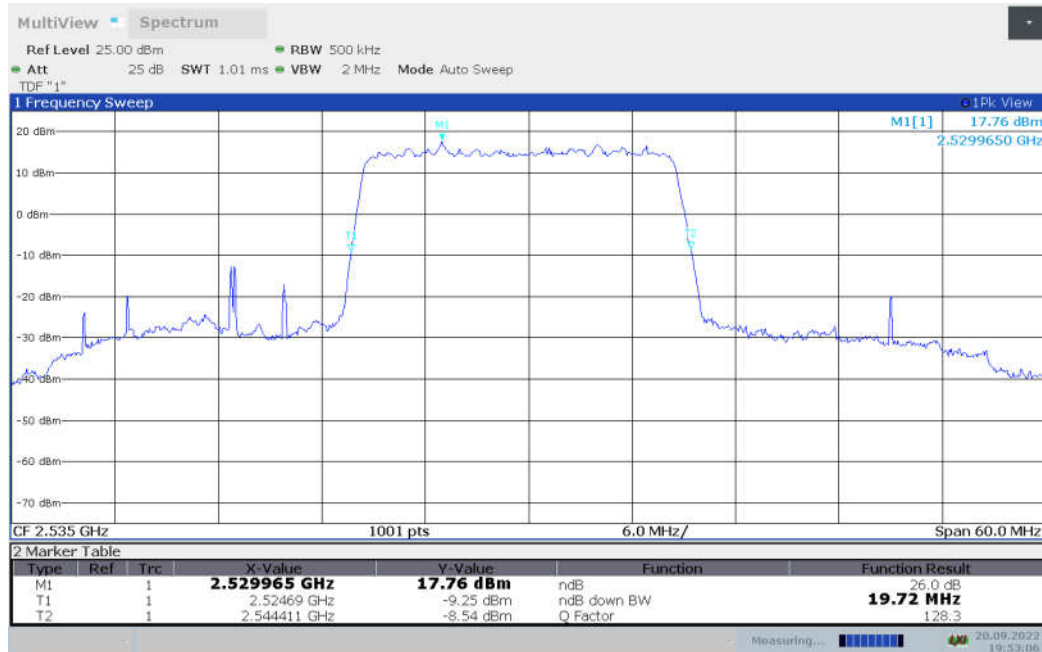




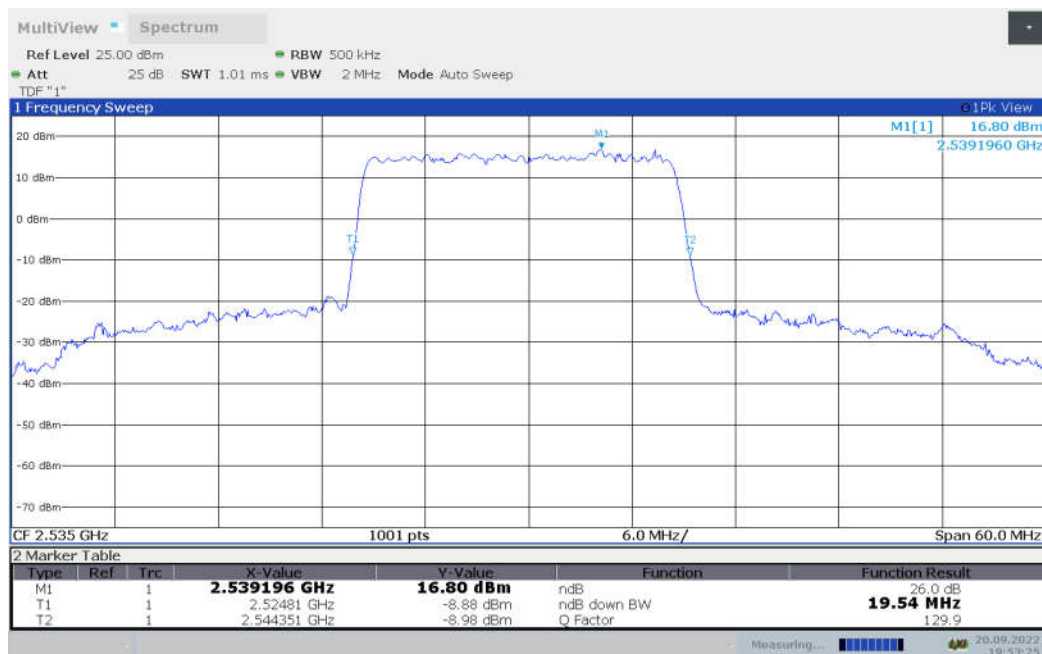
**DC\_2A-n7A,20MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2535	19.720	19.540

**DC\_2A-n7A,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_2A-n7A,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**



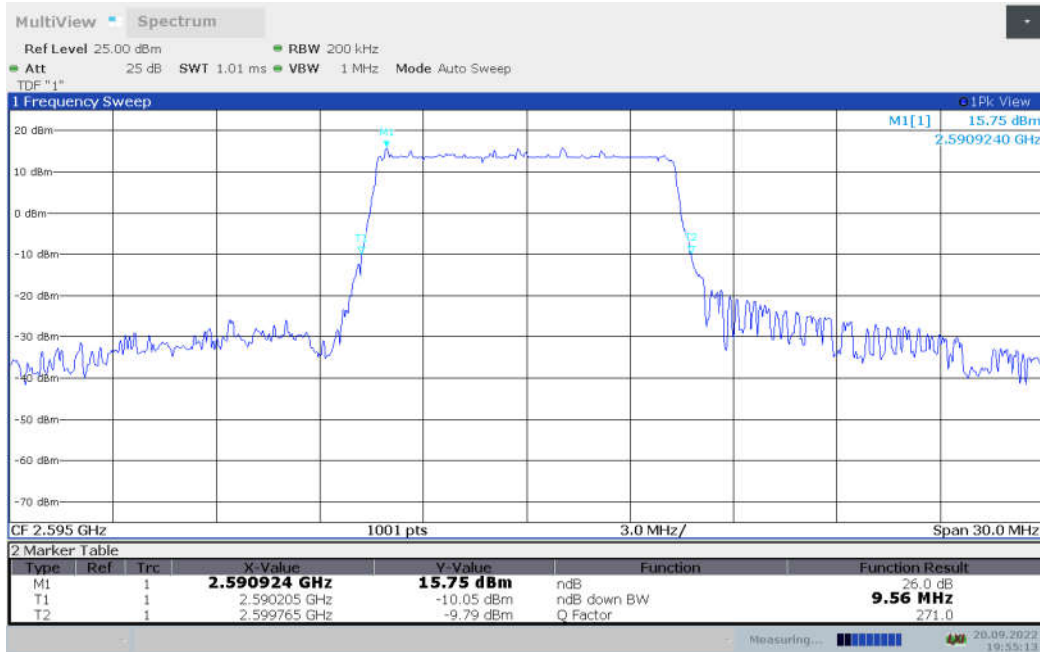


n38

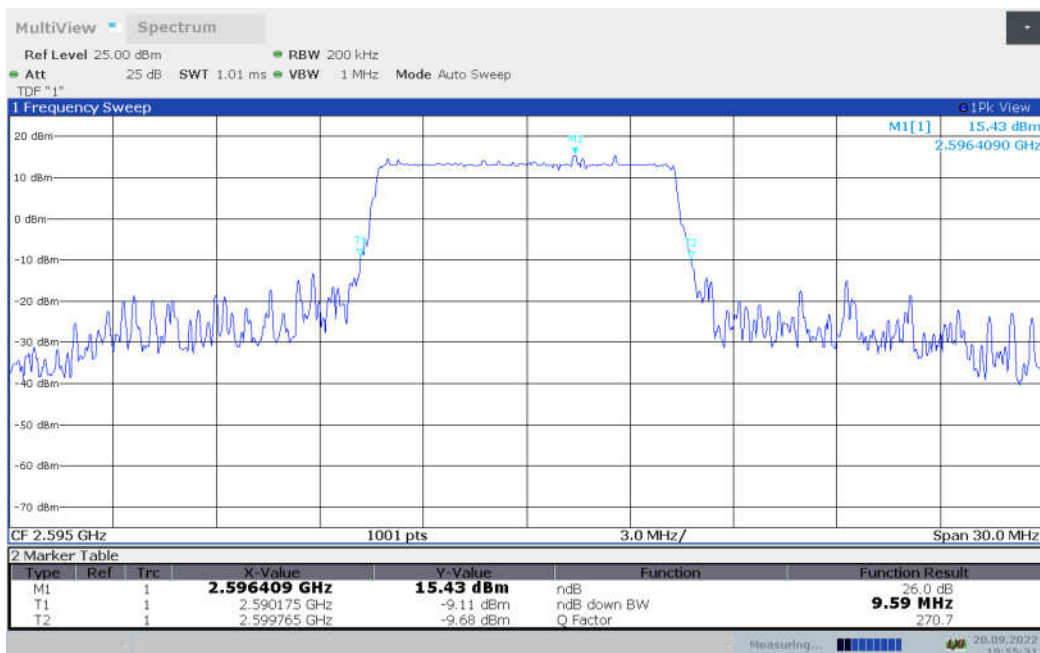
**n38,10MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2595	9.560	9.590

**n38,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**n38,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

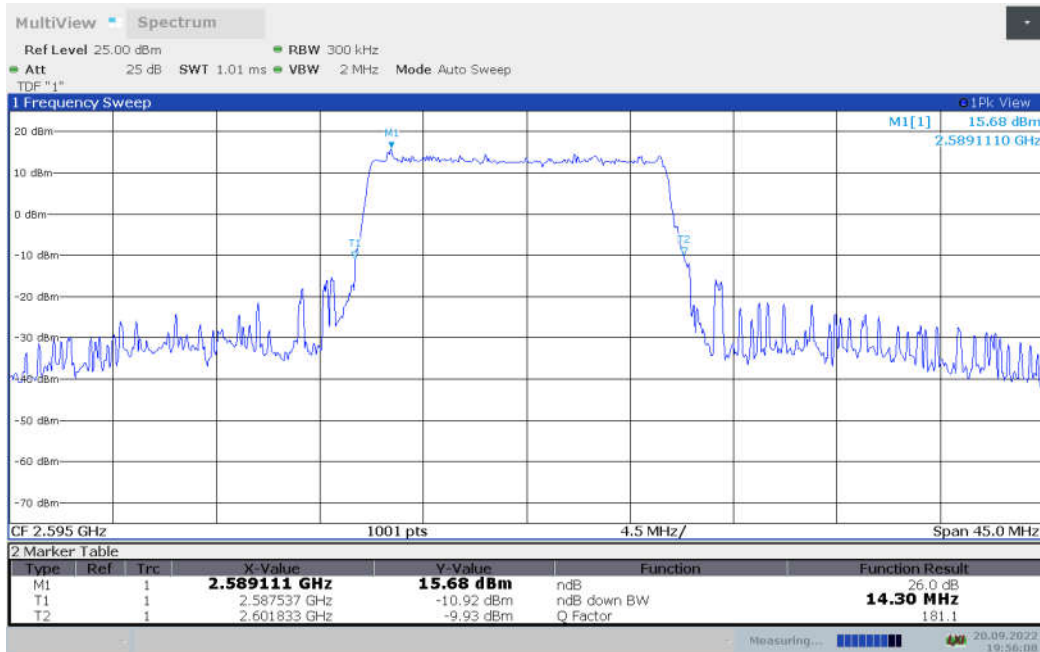




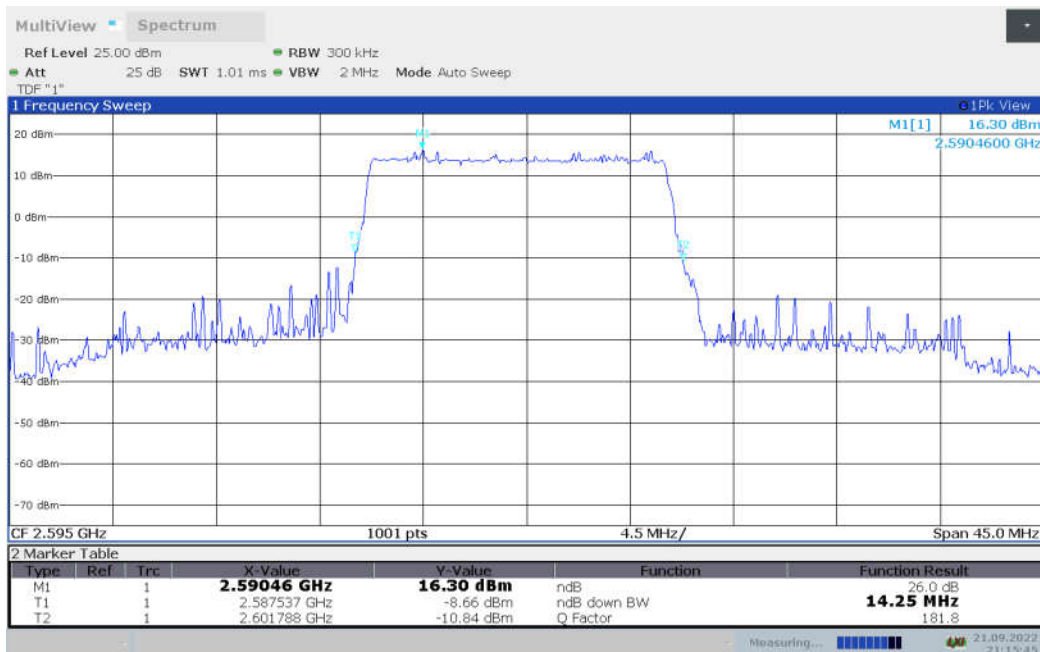
**n38,15MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2595	14.296	14.251

**n38,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**n38,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

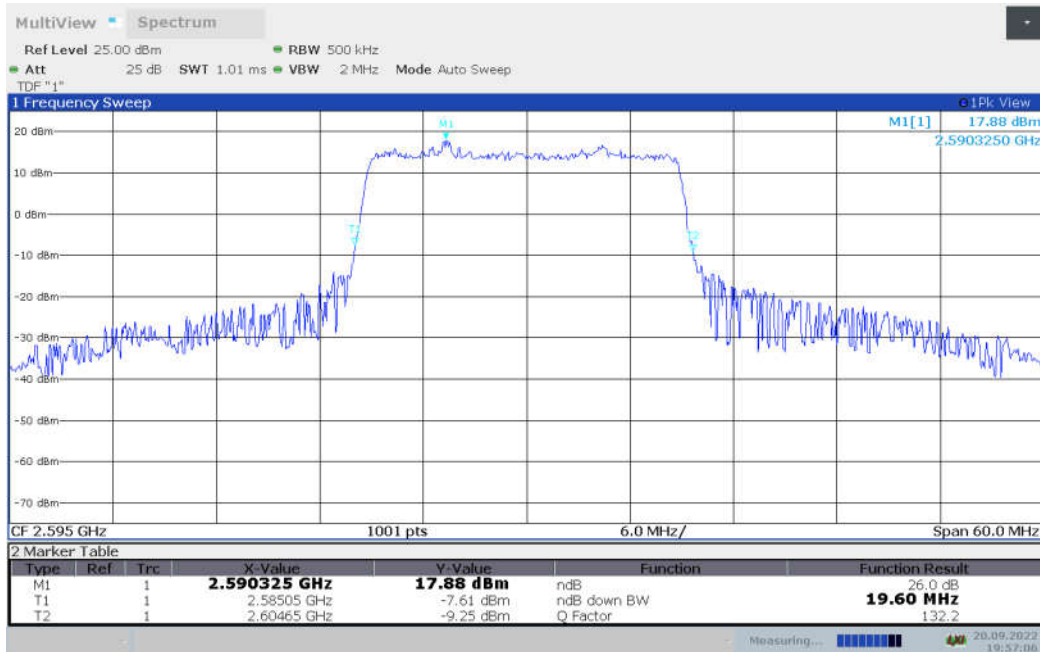




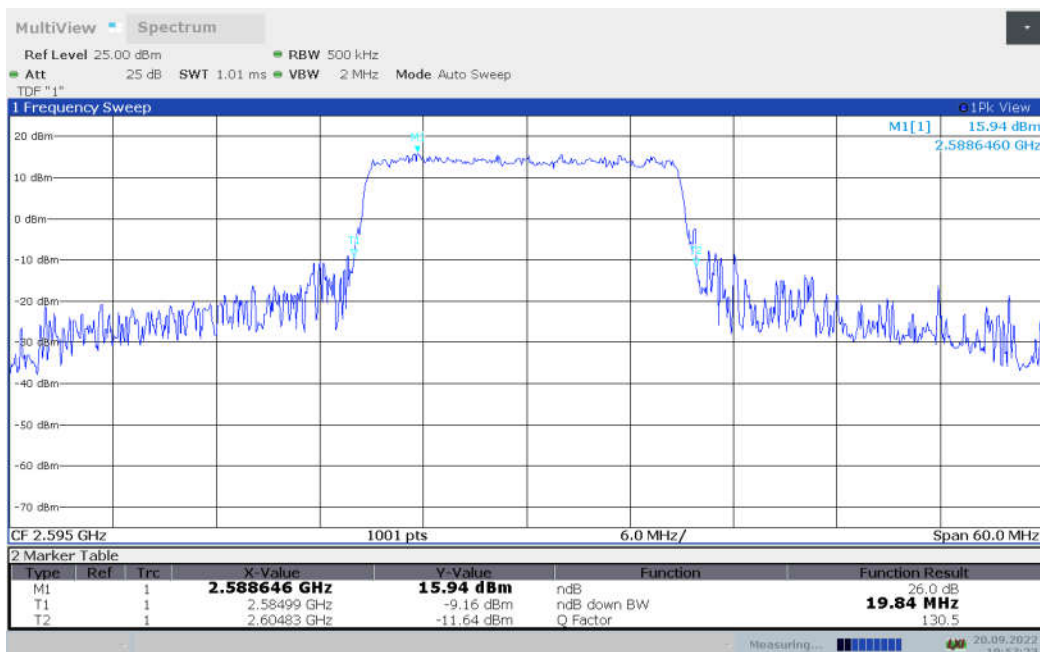
**n38,20MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2595	19.600	19.840

**n38,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**n38,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**





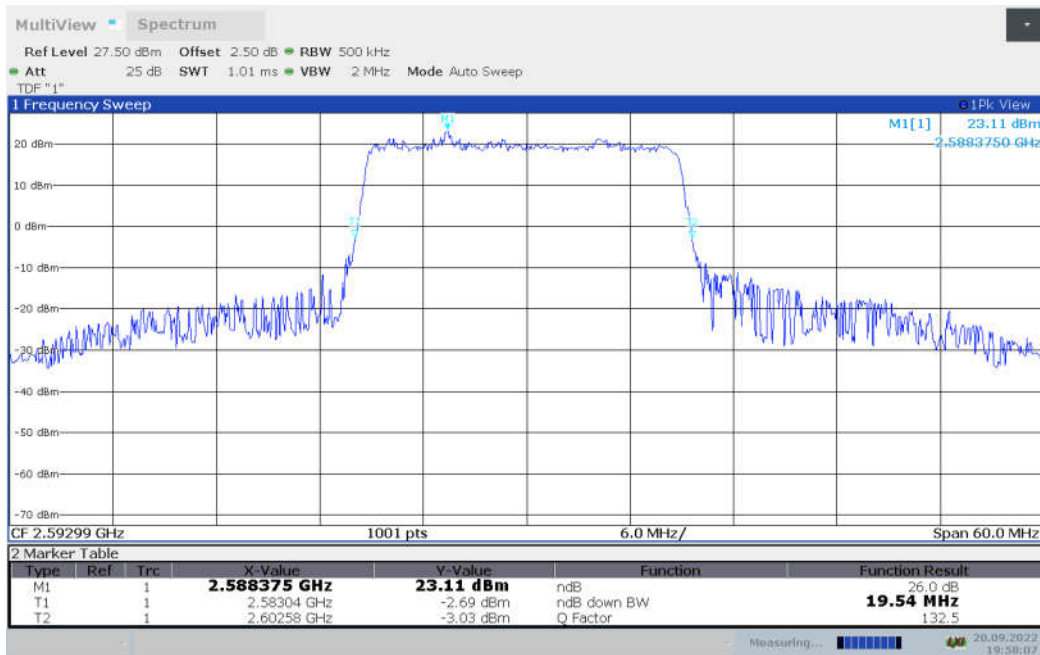


n41

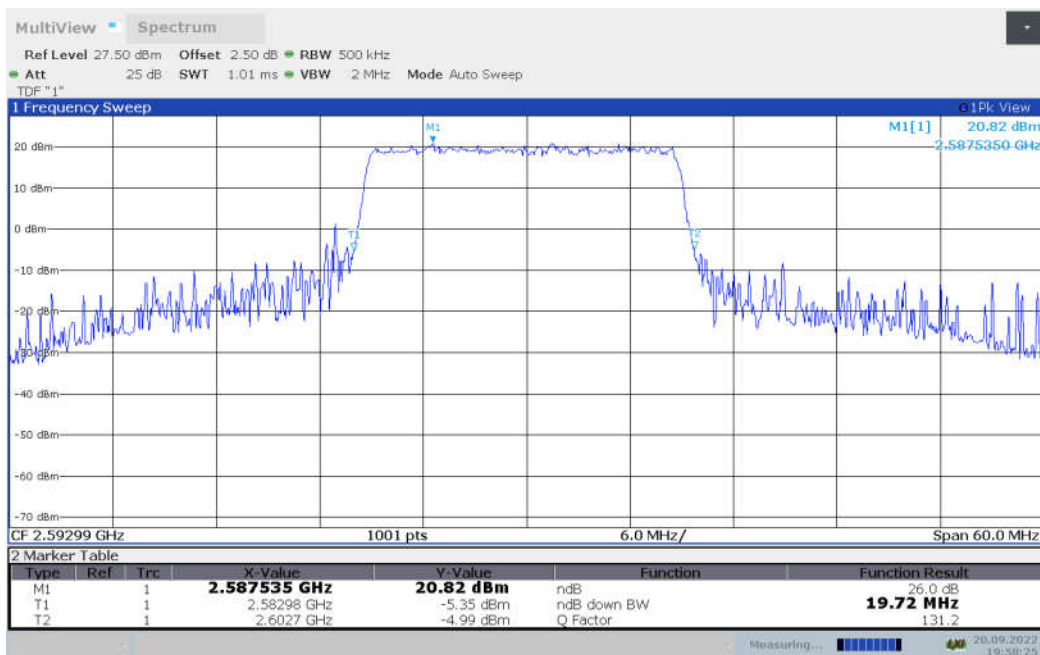
**n41,20MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	19.540	19.720

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



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

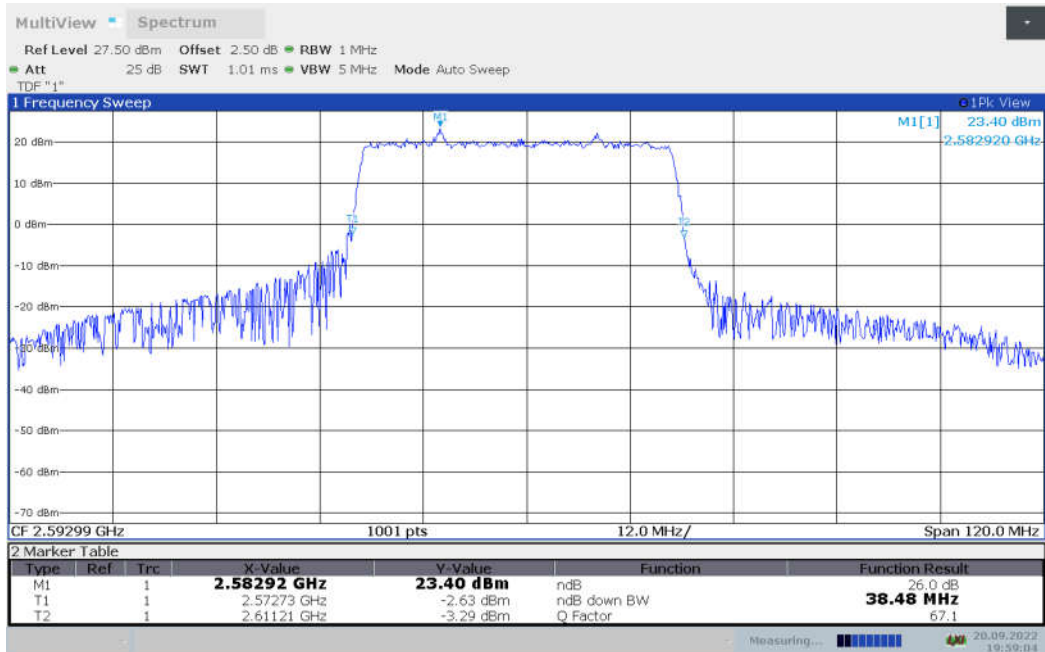




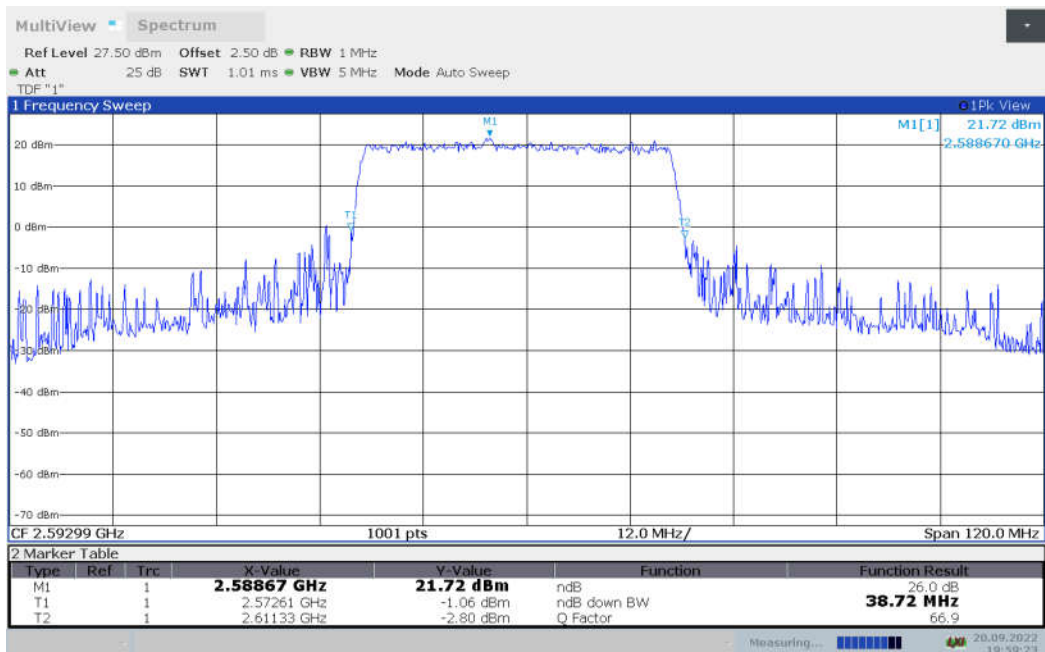
**n41,40MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	38.480	38.720

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



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

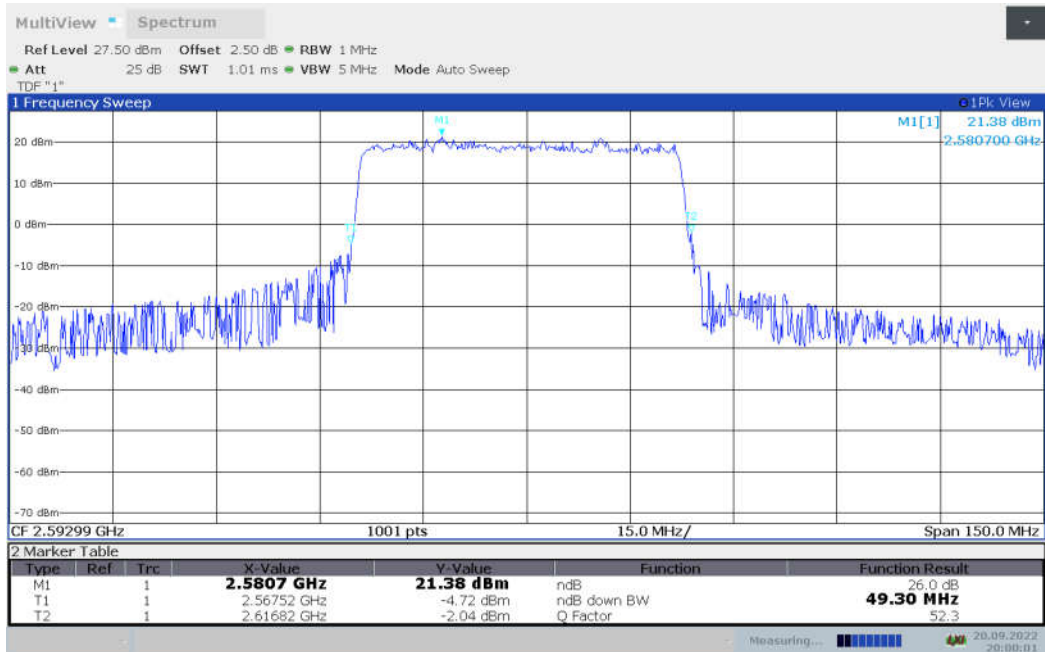




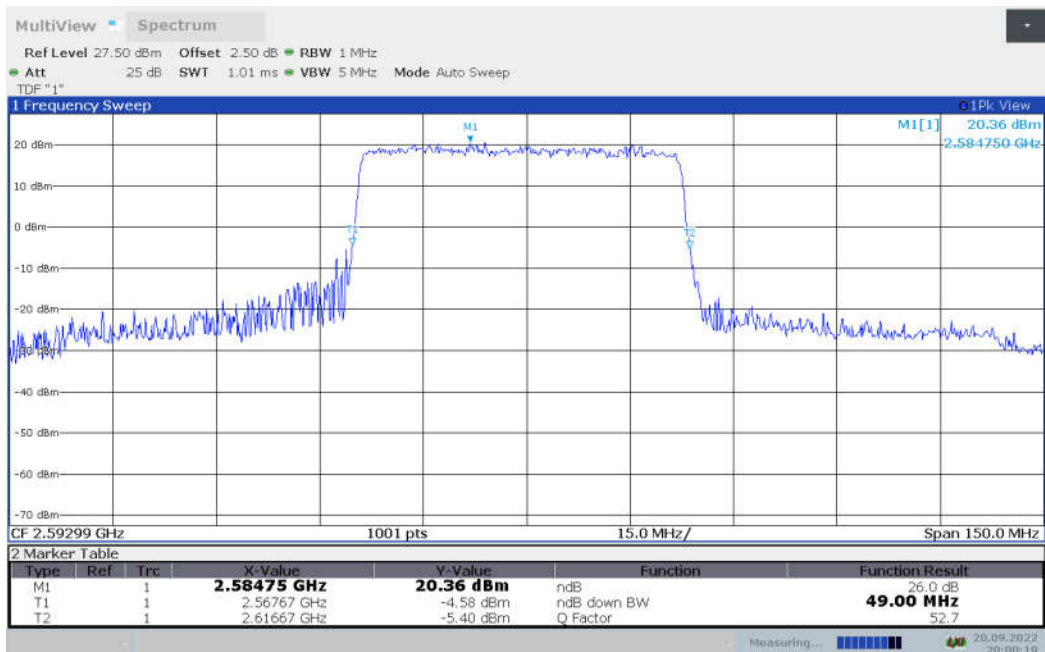
**n41,50MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	49.300	49.000

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



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

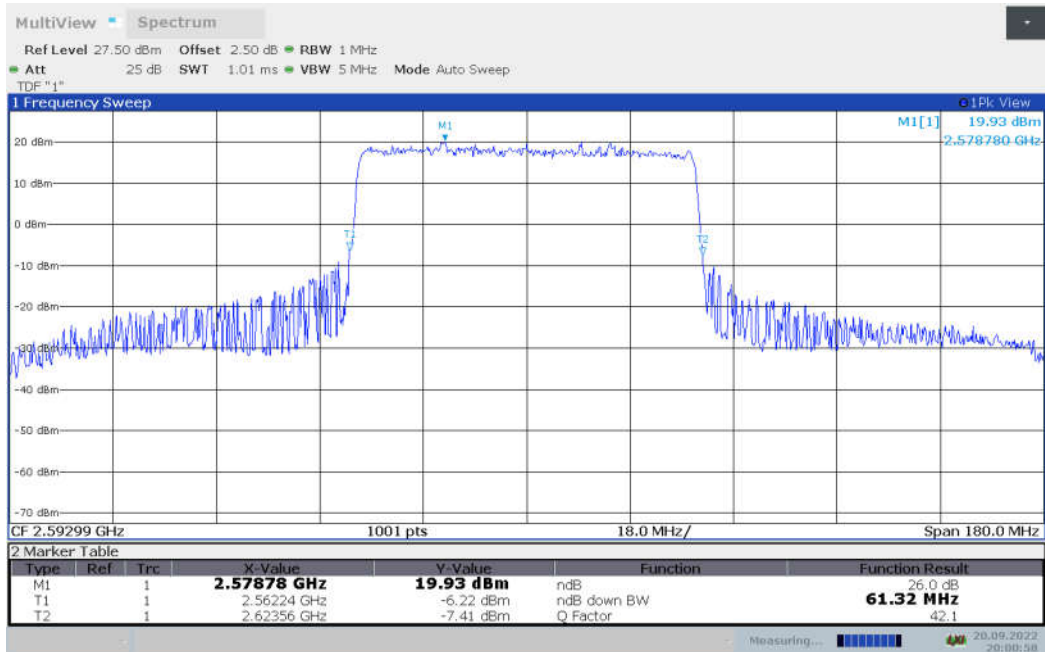




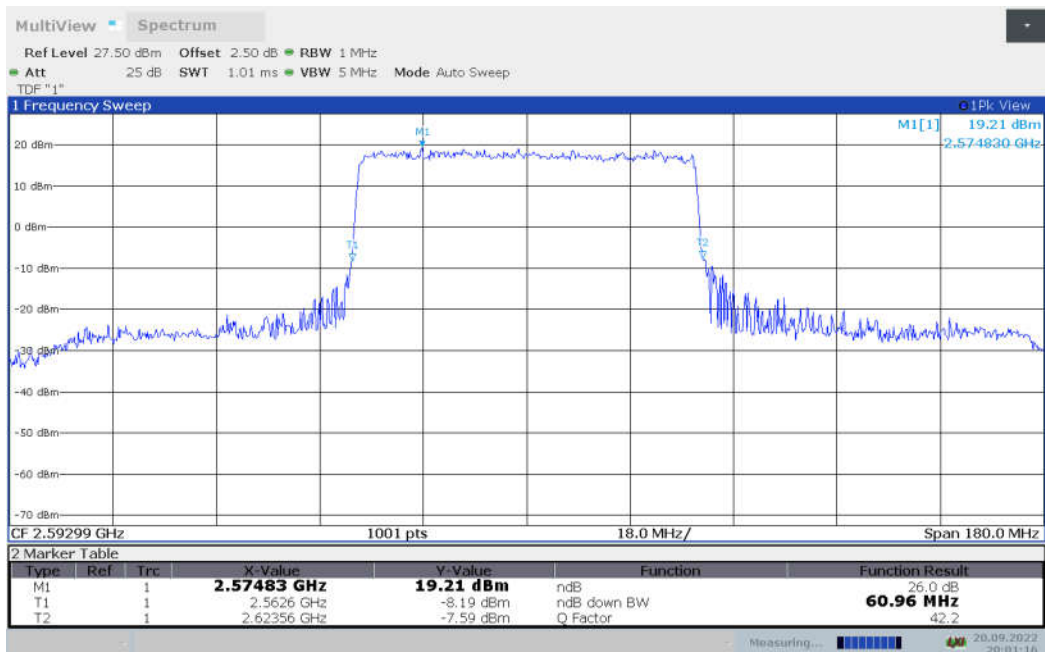
**n41,60MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	61.320	60.960

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



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

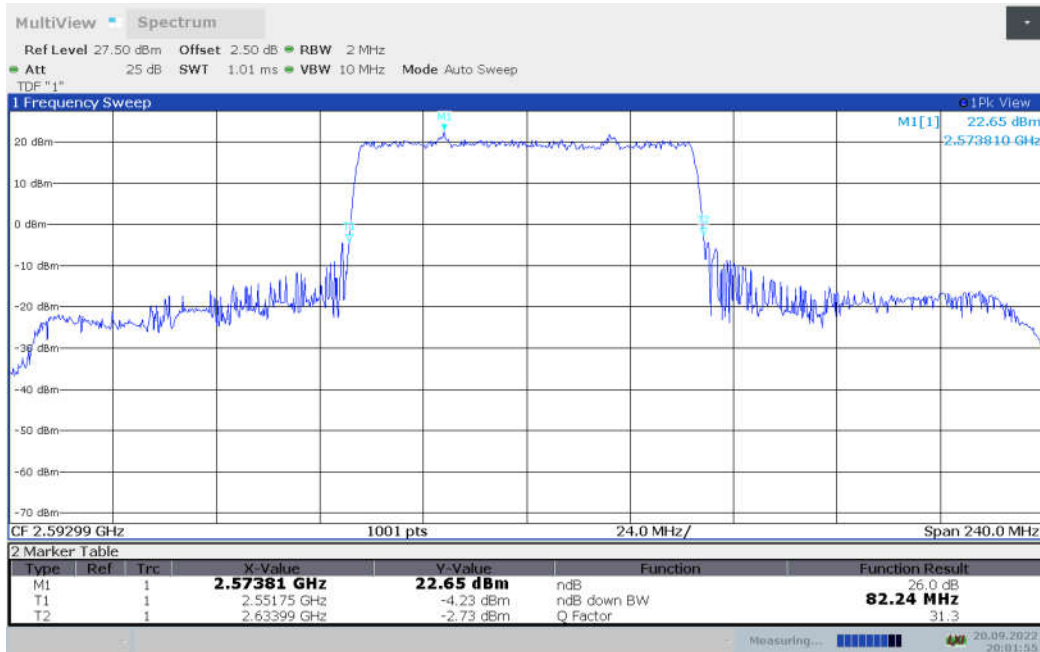




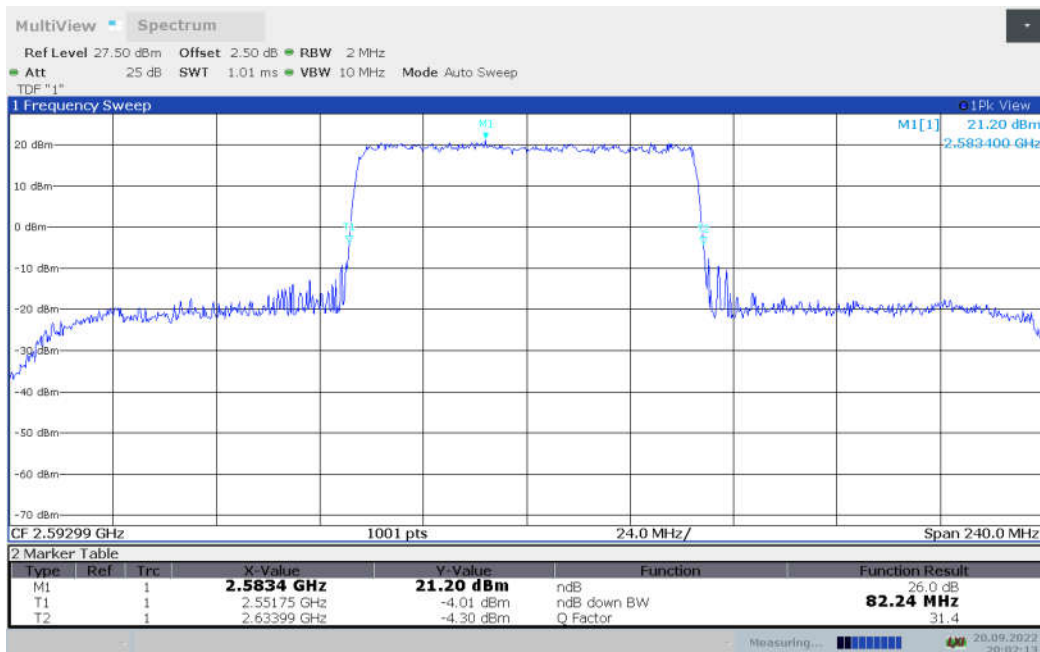
**n41,80MHz(-26dBc)**

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)**

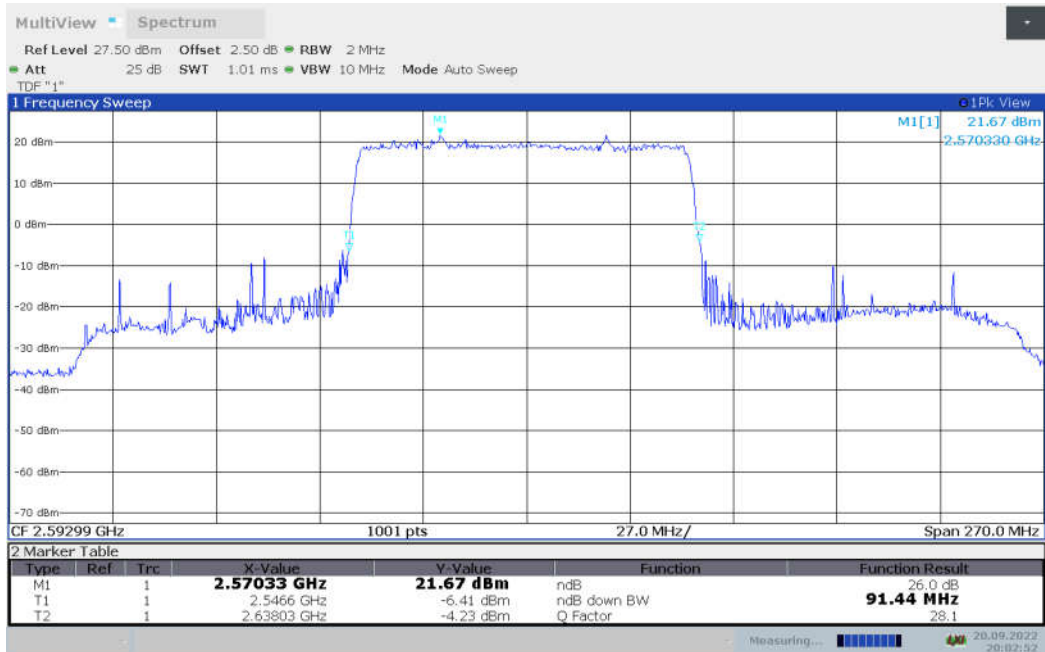




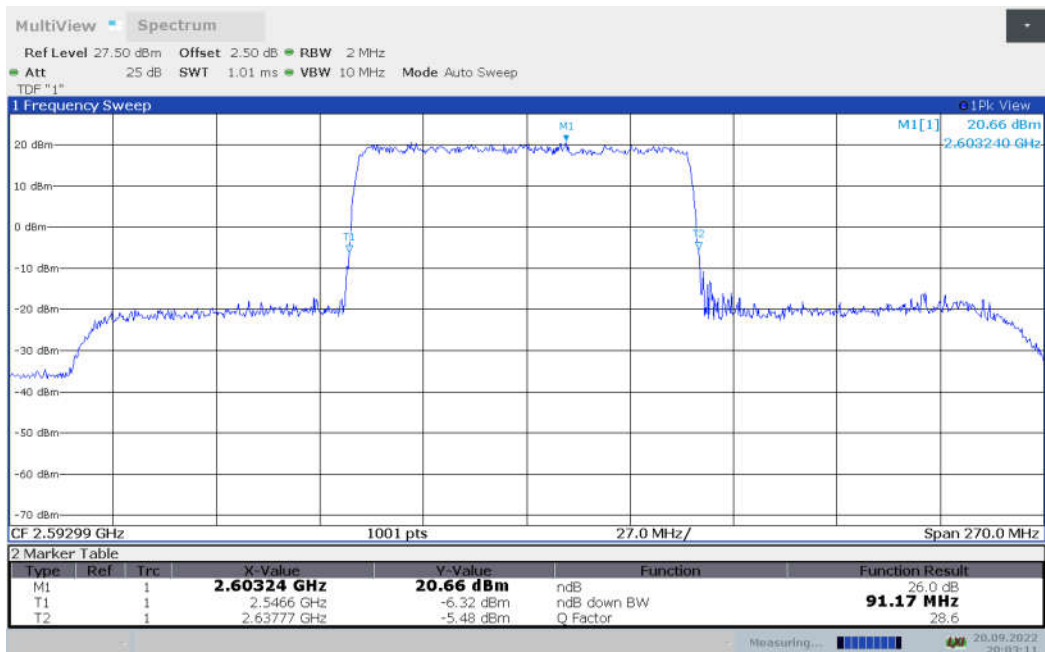
**n41,90MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
2592.99	91.440	91.170

**n41,90MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**n41,90MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

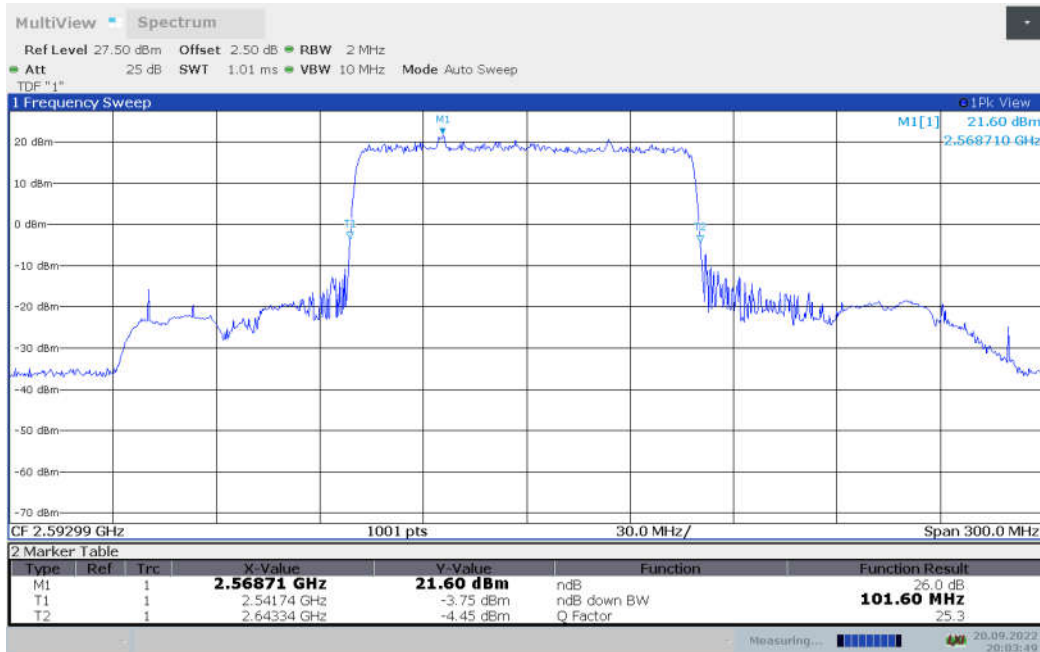




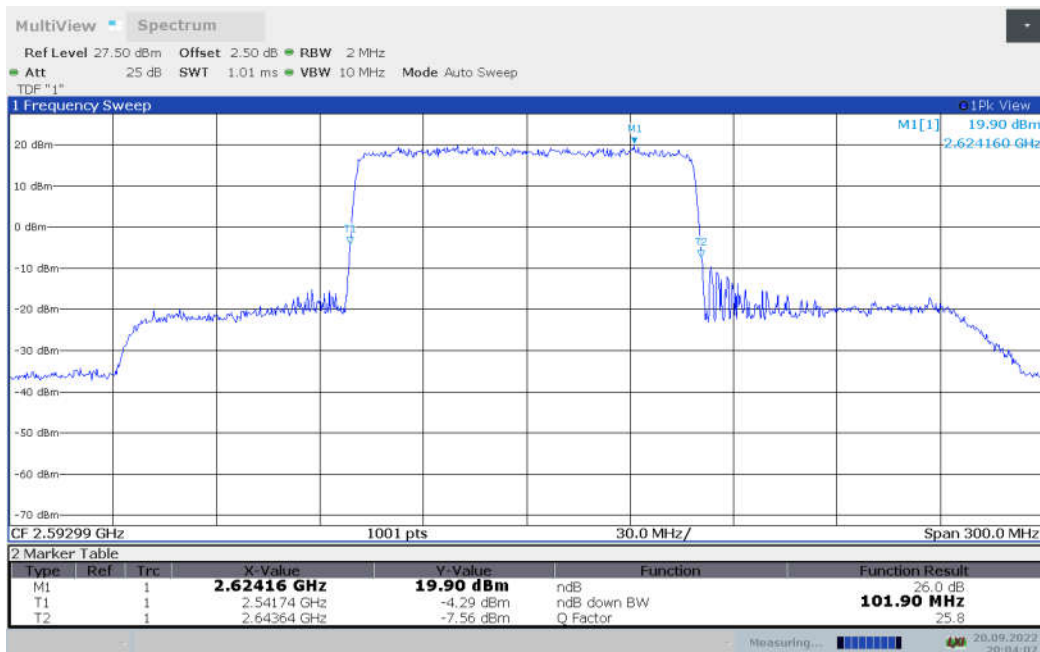
**n41,100MHz(-26dBc)**

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

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



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



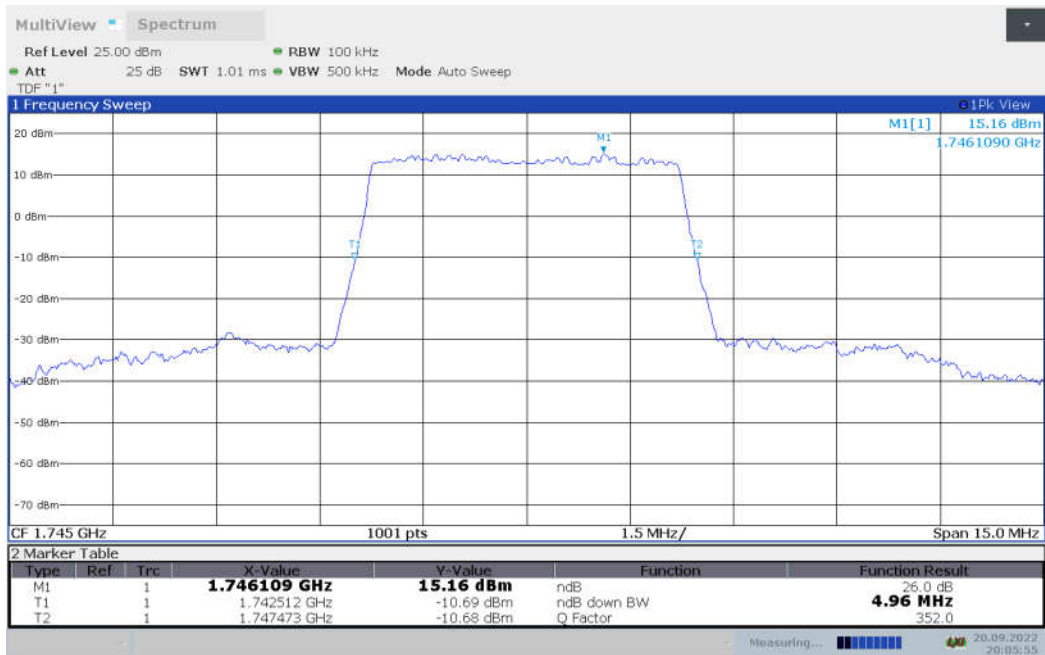


DC\_7A-n66A

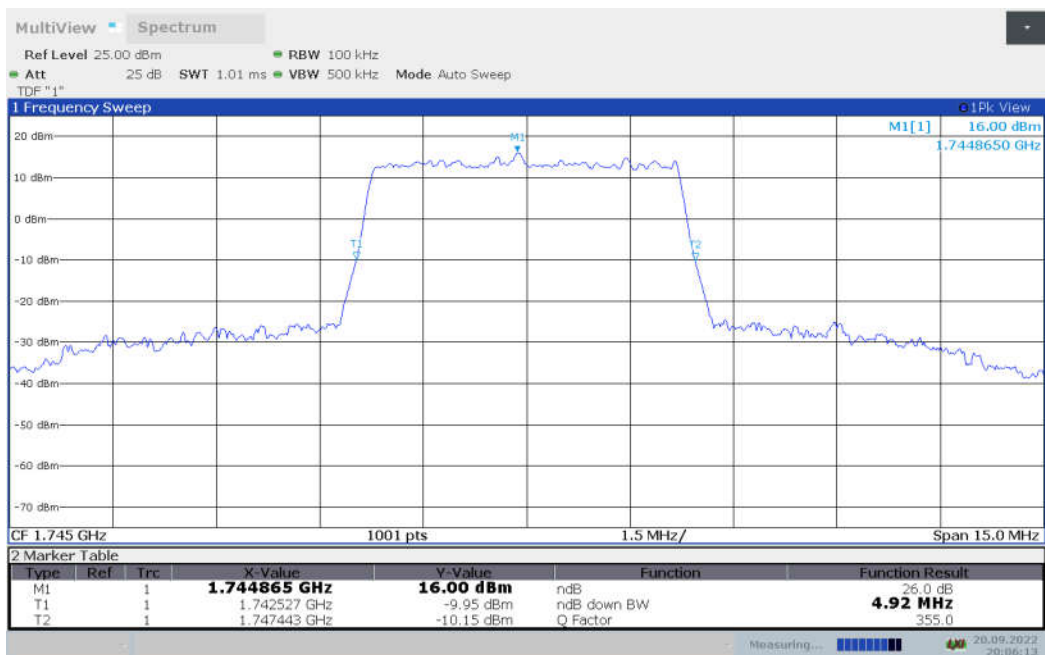
DC\_7A-n66A,5MHz(-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	4.960	4.915

DC\_7A-n66A,5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



DC\_7A-n66A,5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



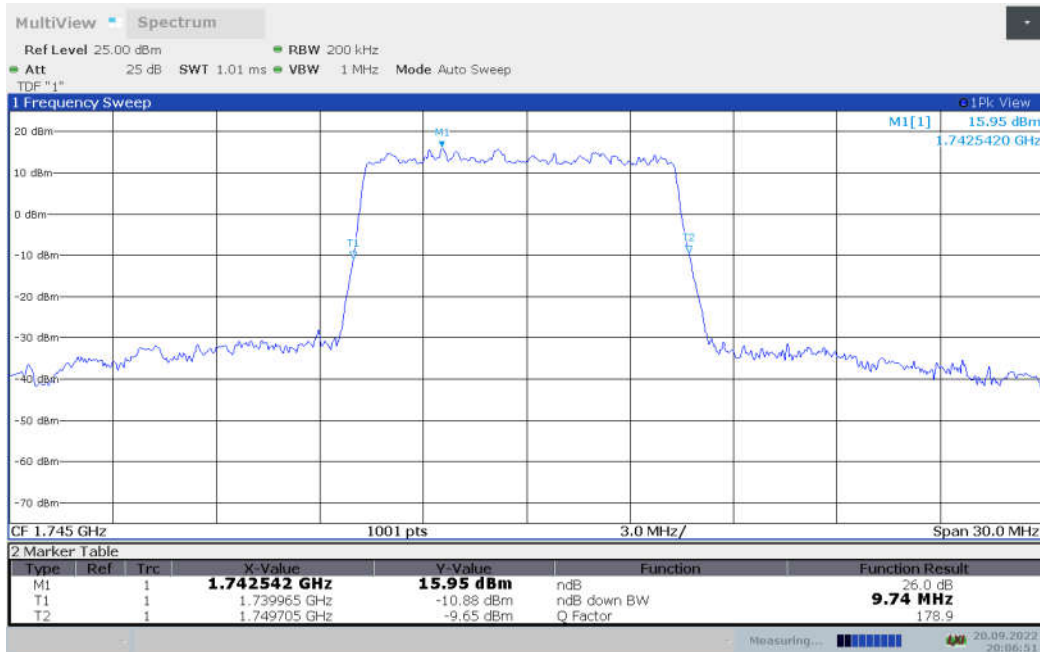




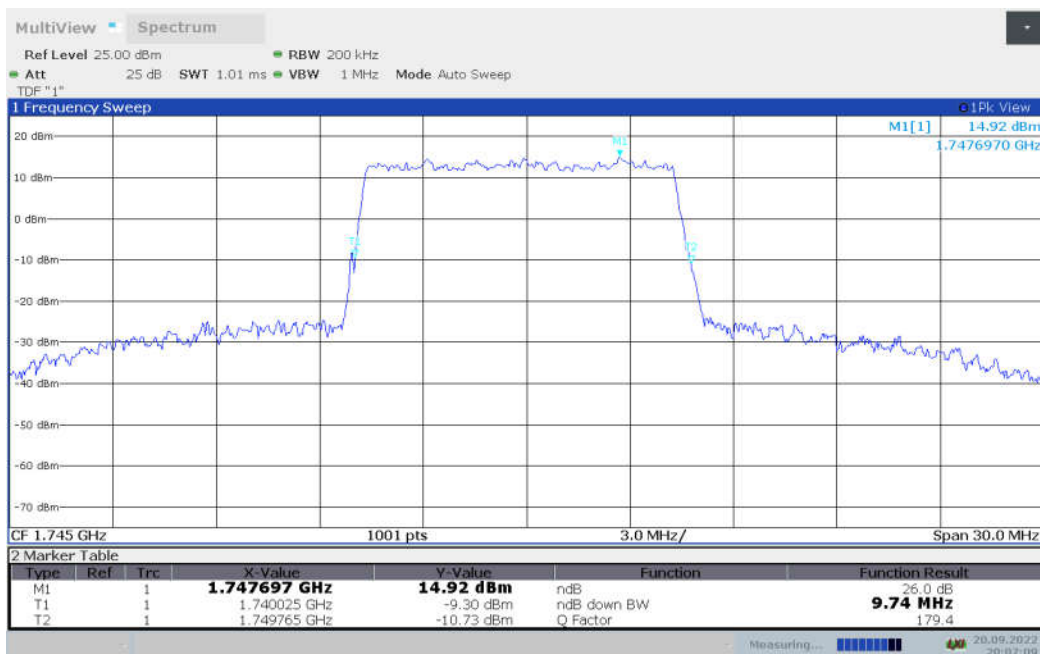
**DC\_7A-n66A,10MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	9.740	9.740

**DC\_7A-n66A,10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

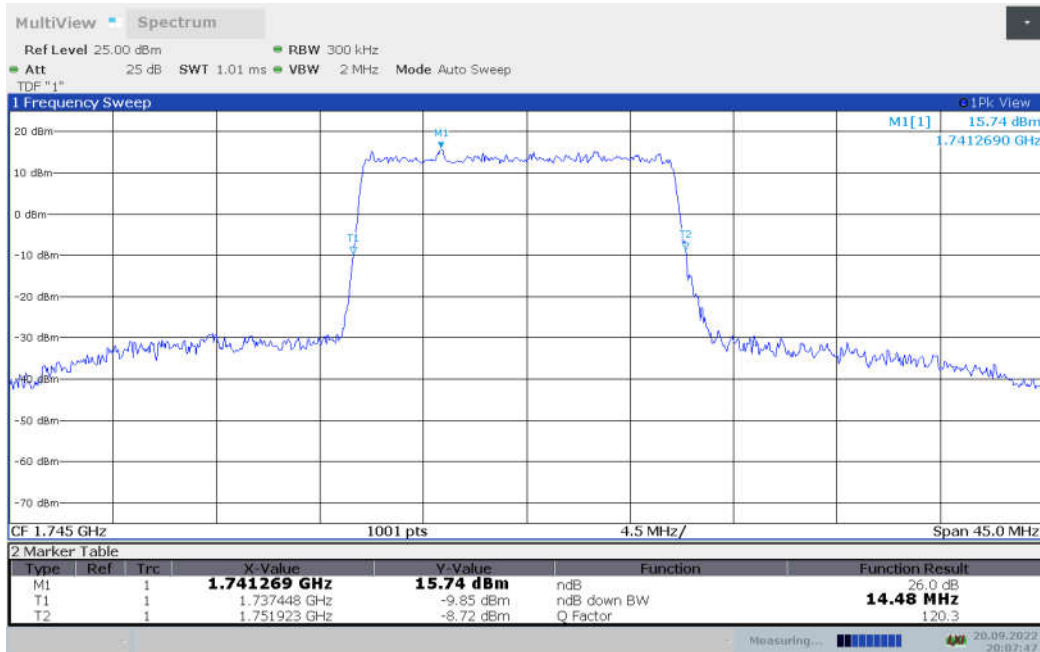




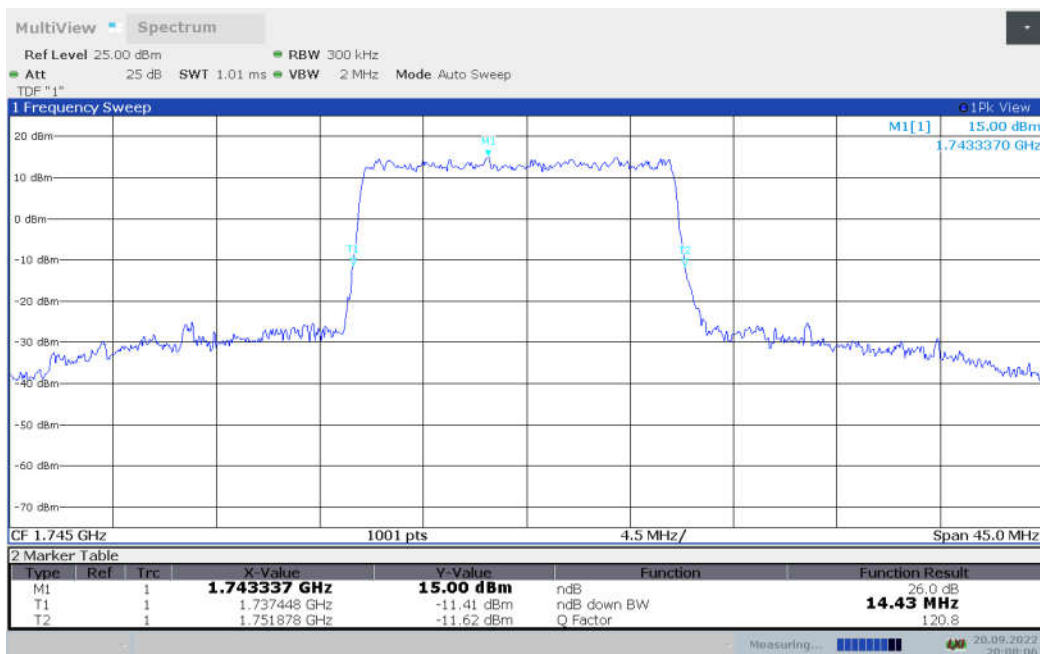
**DC\_7A-n66A,15MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	14.476	14.431

**DC\_7A-n66A,15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

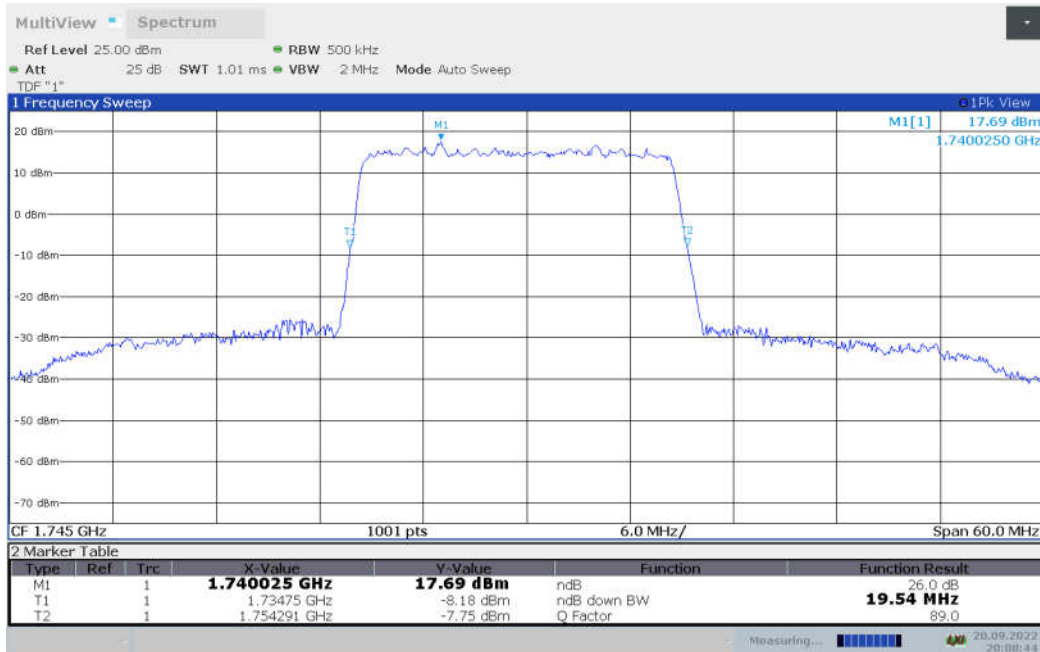




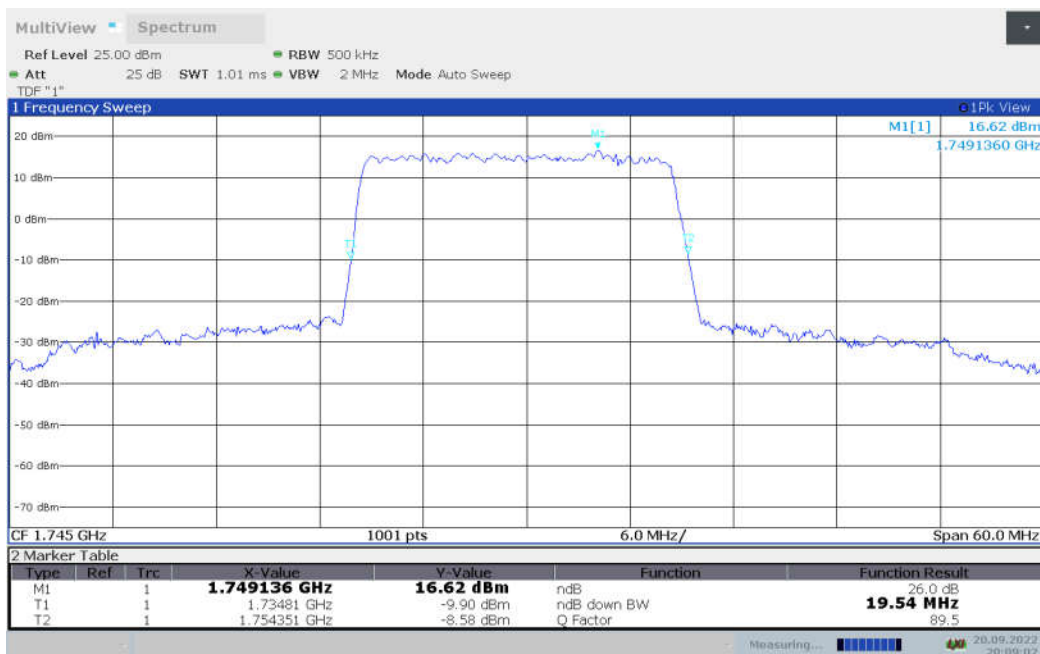
**DC\_7A-n66A,20MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	19.540	19.540

**DC\_7A-n66A,20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

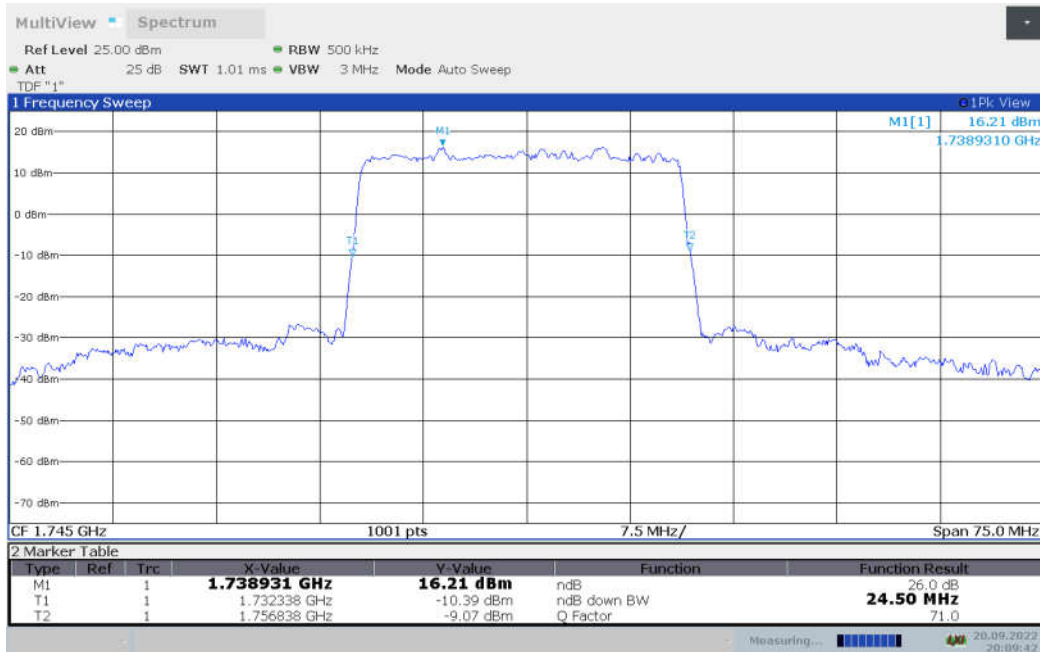




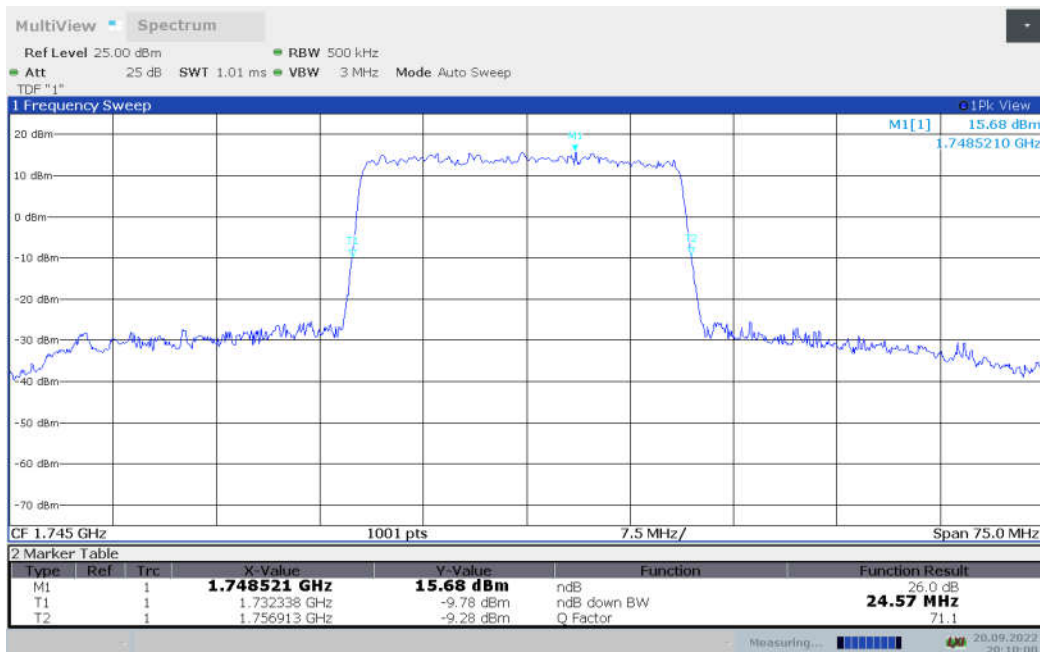
**DC\_7A-n66A,25MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	24.500	24.575

**DC\_7A-n66A,25MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,25MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

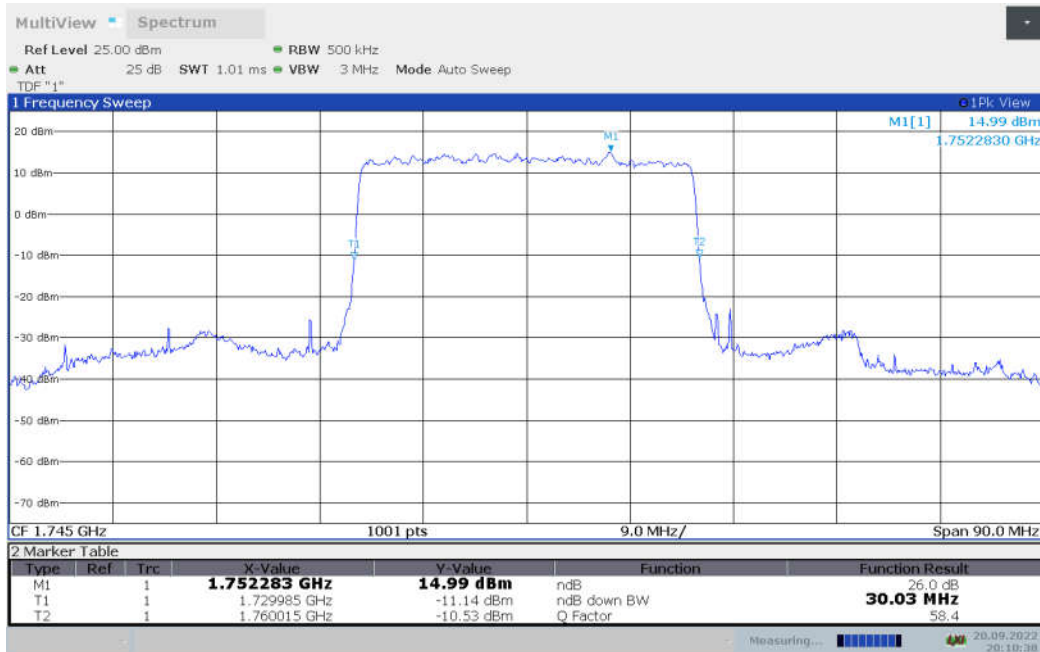




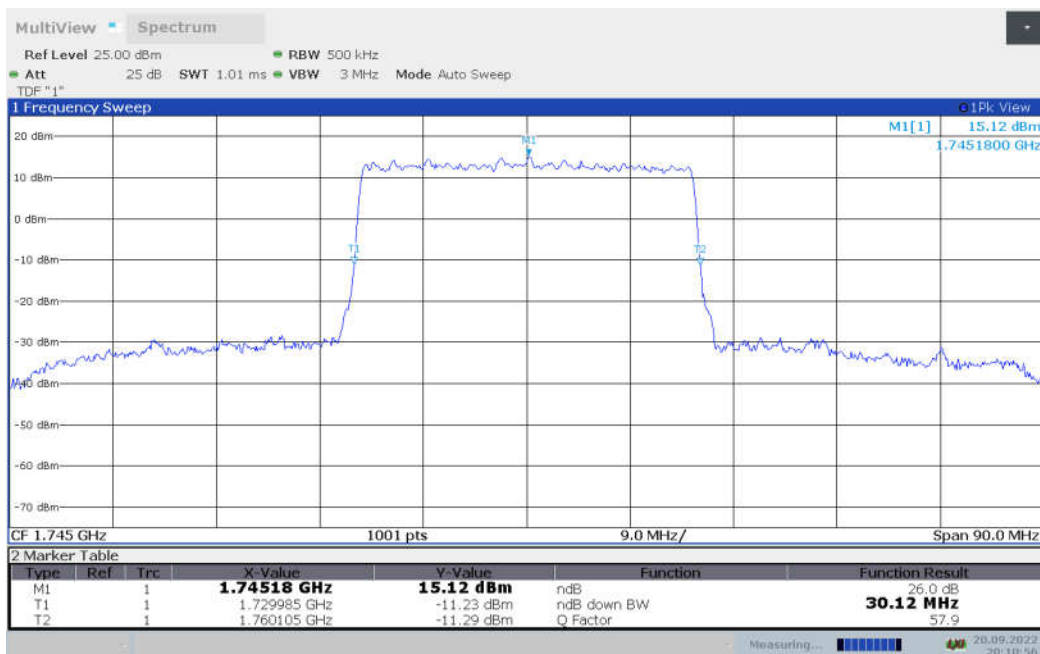
**DC\_7A-n66A,30MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	30.030	30.120

**DC\_7A-n66A,30MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,30MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**

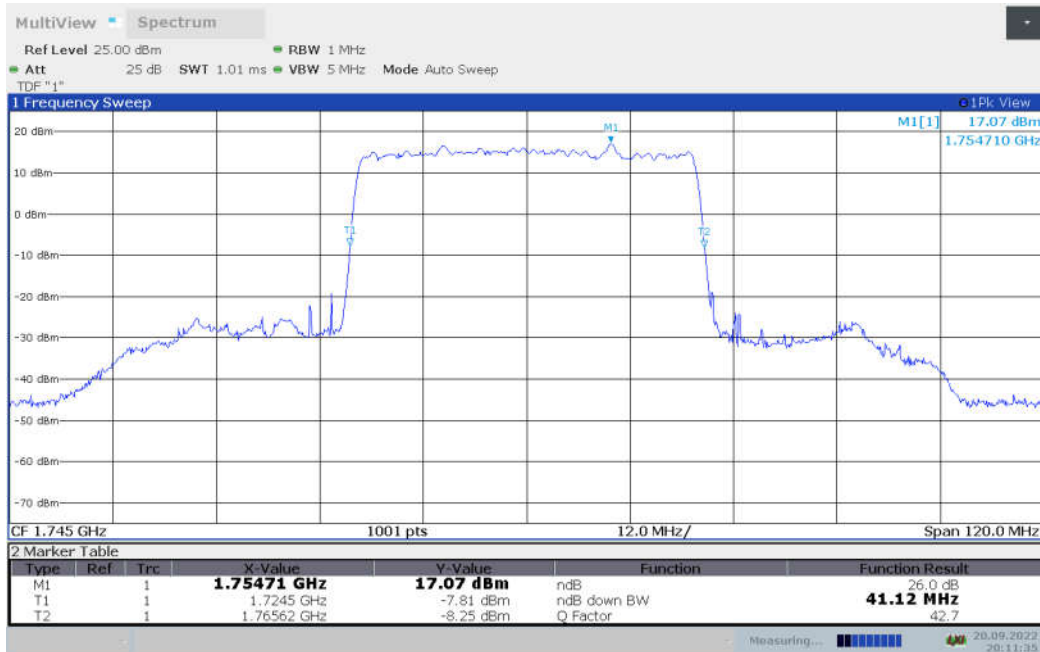




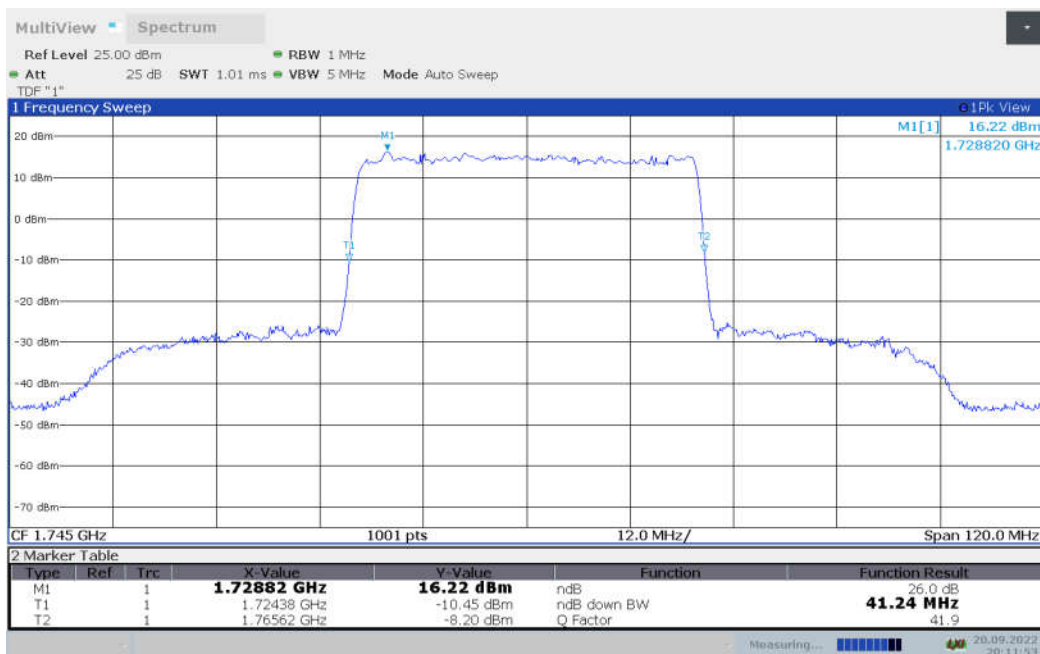
**DC\_7A-n66A,40MHz(-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
1745	41.120	41.240

**DC\_7A-n66A,40MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)**



**DC\_7A-n66A,40MHz Bandwidth,DFT-s-QPSK (-26dBc BW)**



Note: Expanded measurement uncertainty is  $U = 0.49\text{dB}(100\text{kHz}-2\text{GHz})/1.21\text{dB}(2\text{GHz}-26.5\text{GHz})$ ,  $k = 1.96$



No. I22N01710-RF-NR



## **A.6 BAND EDGE COMPLIANCE**

### **Reference**

FCC: CFR Part 2.1051, 22.917, 27.53.

### **A.5.1 Measurement limit**

Part 22.917 For operations in the 824–849MHz band, the FCC limit is  $43 + 10 \log (P)$  dB below the transmitter power(P) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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.5.2 Measurement Procedure**

The testing follows ANSI C63.26

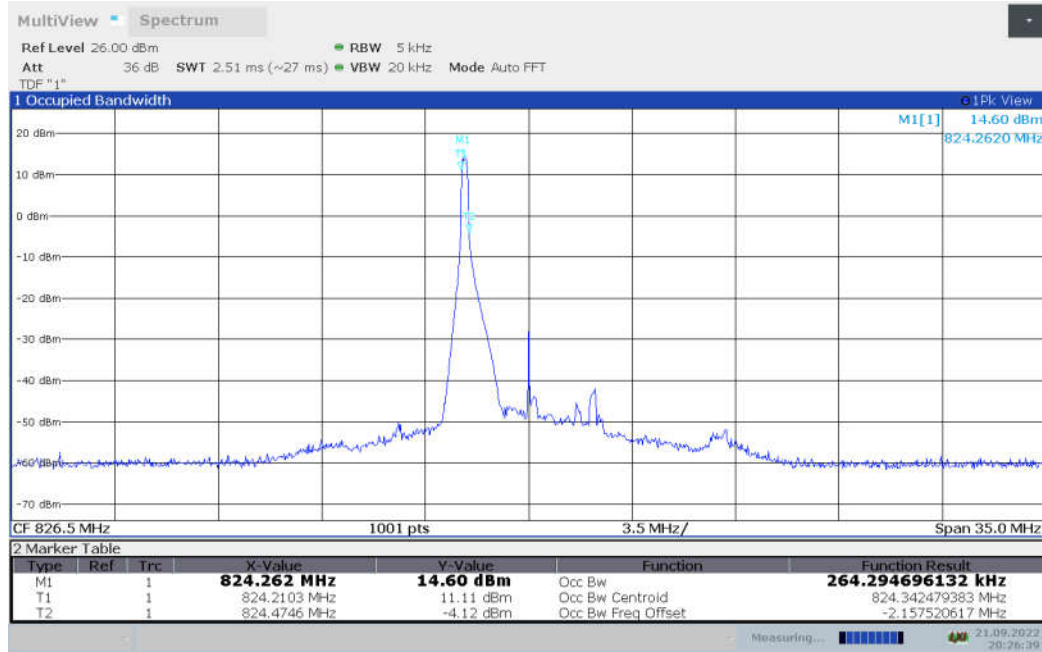
- a) The EUT was connected to spectrum analyzer and system simulator via a power divider.
- b) The band edges of low and high channels for the highest RF powers were measured.
- c) Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
- d) Set spectrum analyzer with RMS detector.
- e) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- f) Checked that all the results comply with the emission limit line.



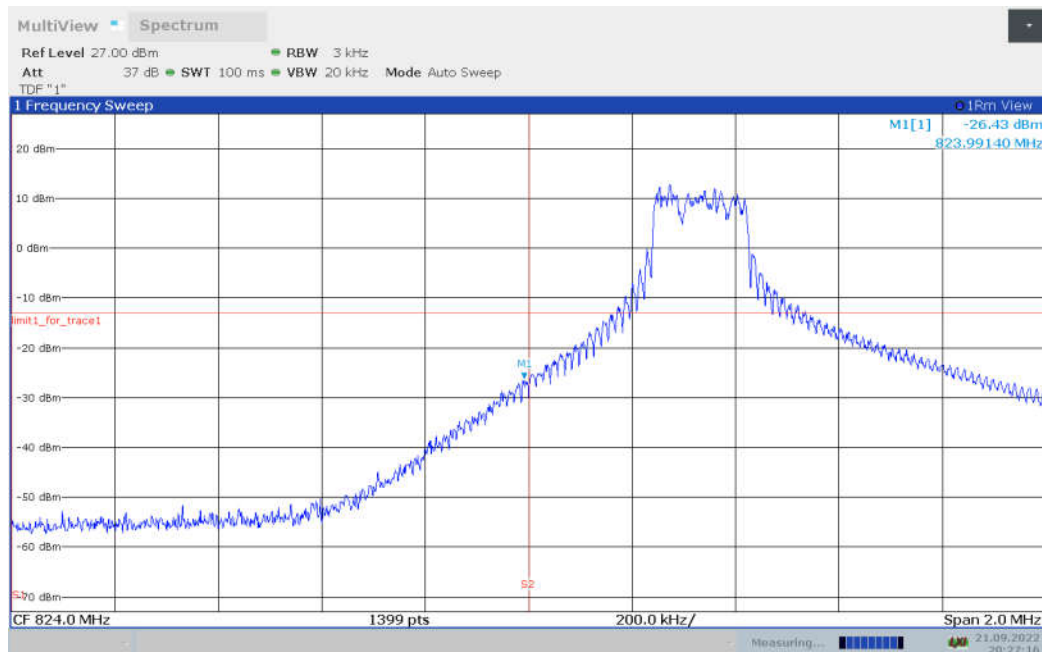


**A.5.3 Measurement result**  
**Only worst case result is given below**  
**NR DC\_7A-n5A**

**OBW: 1RB-LOW\_offset**

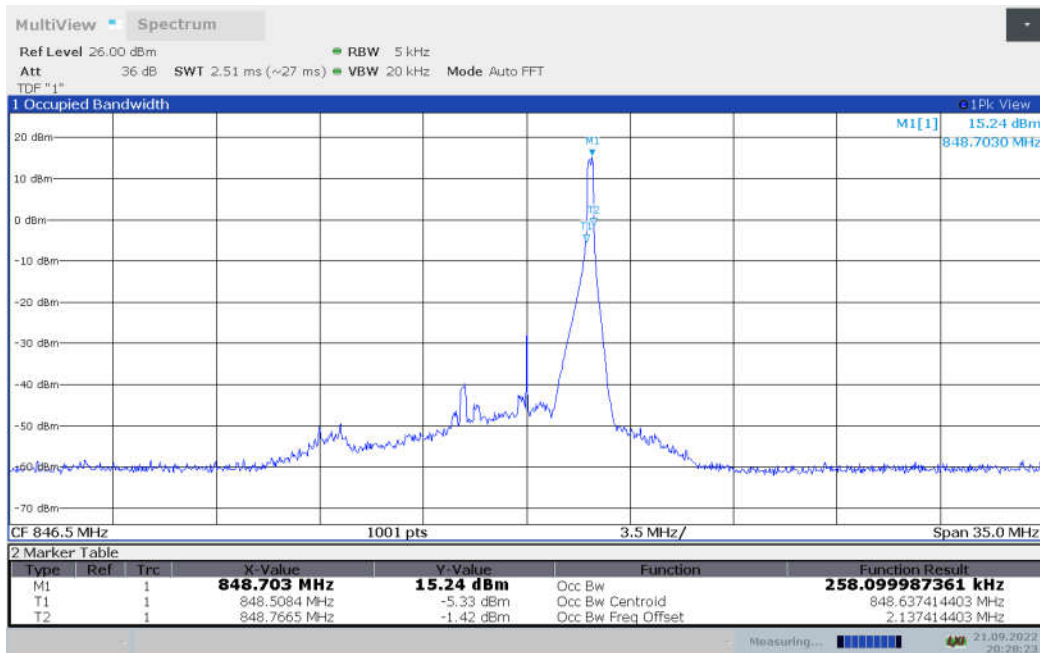


**LOW BAND EDGE BLOCK-1RB-LOW\_offset**

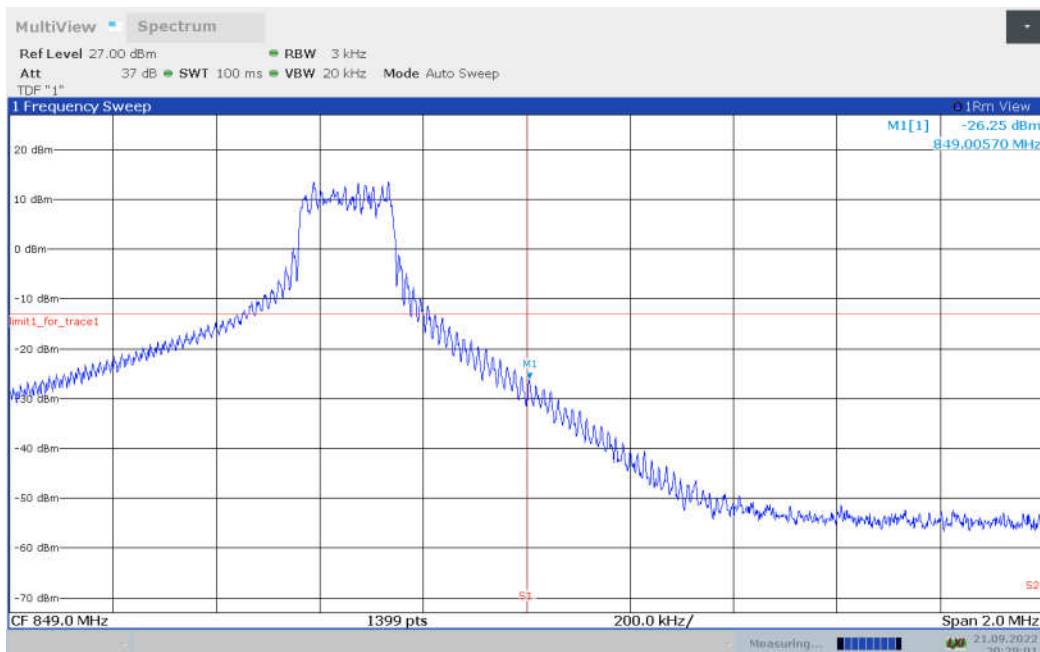




**OBW: 1RB-HIGH\_offset**



**HIGH BAND EDGE BLOCK-1RB-HIGH\_offset**



**LOW BAND EDGE BLOCK-20M-100%RB**