

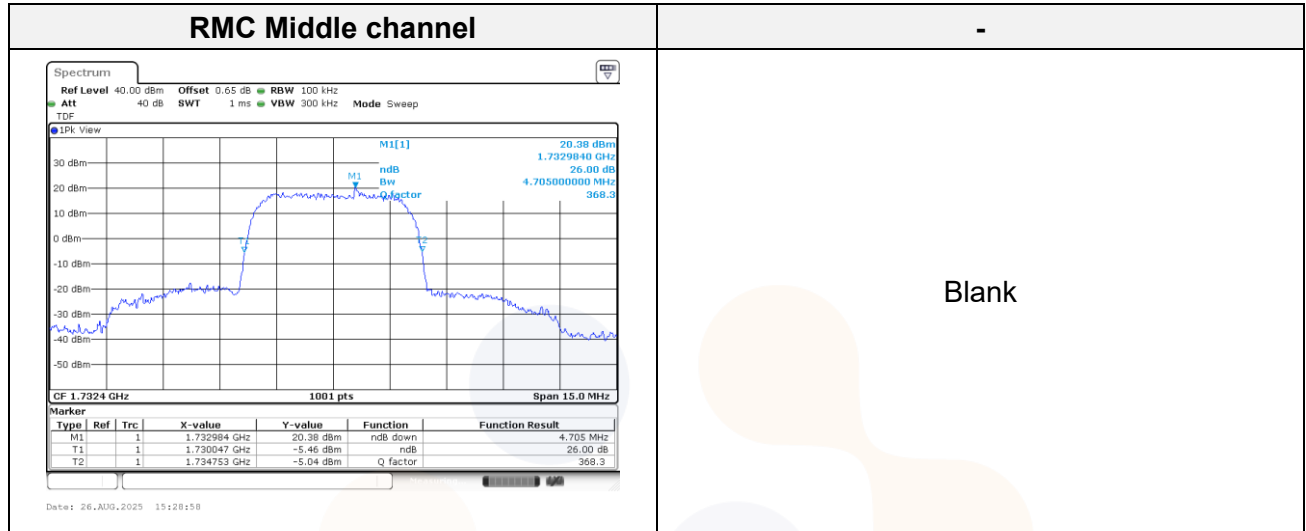
Test Band	Bandwidth (MHz)	Channel	Waveform	SCS (kHz)	Modulation	26dB Bandwidth (MHz)	99 % Bandwidth (MHz)
5G NR n66	5	Low	DFT-s OFDM	15	QPSK	4.933	4.520
		16QAM			4.958	4.496	
		Middle			QPSK	4.945	4.520
		16QAM			4.958	4.496	
		High			QPSK	4.933	4.508
		16QAM			4.933	4.508	
	10	Low	DFT-s OFDM		QPSK	9.540	8.991
		16QAM			9.515	8.991	
		Middle			QPSK	9.565	8.966
		16QAM			9.540	8.966	
		High			QPSK	9.515	8.991
		16QAM			9.565	8.966	
	15	Low	DFT-s OFDM		QPSK	14.348	13.449
		16QAM			14.498	13.449	
		Middle			QPSK	14.311	13.449
		16QAM			14.311	13.487	
		High			QPSK	14.348	13.487
		16QAM			14.348	13.487	
	20	Low	DFT-s OFDM		QPSK	19.181	17.932
		16QAM			19.181	17.932	
		Middle			QPSK	19.181	17.982
		16QAM			19.181	17.982	
		High			QPSK	19.231	18.032
		16QAM			19.181	18.032	

Test Band	Bandwidth (MHz)	Frequency (MHz)	Waveform	SCS (kHz)	Modulation	26dB bandwidth (MHz)	99 % bandwidth (MHz)
5G NR n71	5	665.5	DFT-s OFDM	15	QPSK	4.920	4.508
		16QAM			4.908	4.508	
		680.5			QPSK	4.895	4.520
		16QAM			4.908	4.508	
		695.5			QPSK	4.945	4.508
		16QAM			4.870	4.496	
	10	668.0	DFT-s OFDM		QPSK	9.540	8.991
		16QAM			9.540	8.991	
		680.5			QPSK	9.491	8.991
		16QAM			9.565	8.991	
		693.0			QPSK	9.540	8.991
		16QAM			9.515	8.966	
	15	670.5	DFT-s OFDM		QPSK	14.273	13.449
		16QAM			14.273	13.449	
		680.5			QPSK	14.386	13.524
		16QAM			14.386	13.487	
		690.5			QPSK	14.236	13.449
		16QAM			14.236	13.412	
	20	673.0	DFT-s OFDM		QPSK	19.131	17.932
		16QAM			19.181	17.932	
		680.5			QPSK	19.231	18.032
		16QAM			19.281	18.032	
		688.0			QPSK	19.181	17.982
		16QAM			19.181	17.982	

In order to simplify the report, only Middle channel test plots are attached

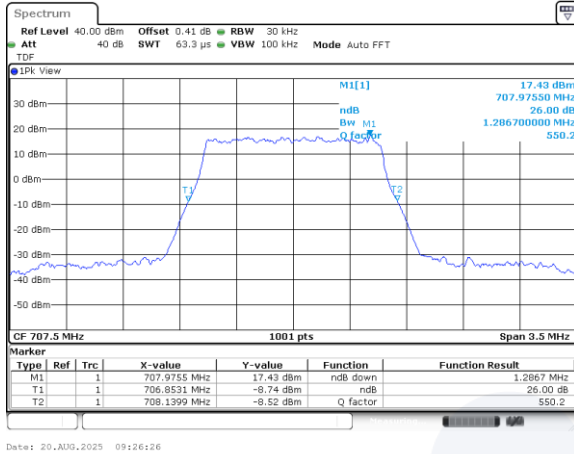
26dB Bandwidth

Test mode: WCDMA 1700

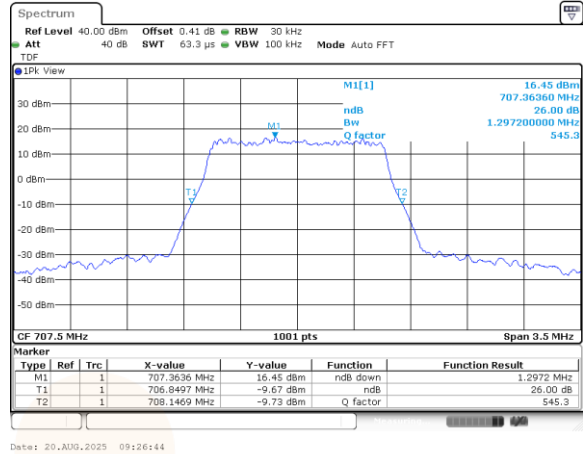


Test mode: LTE B12/17

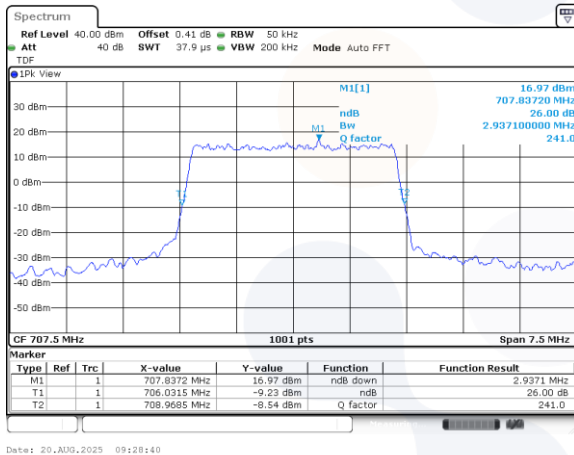
1.4M BW QPSK Middle channel



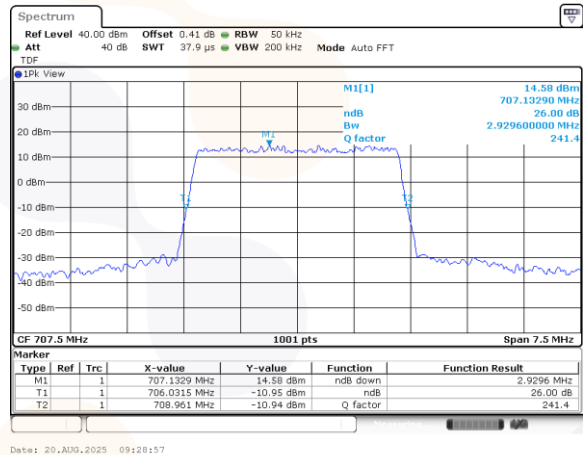
1.4M BW 16QAM Middle channel



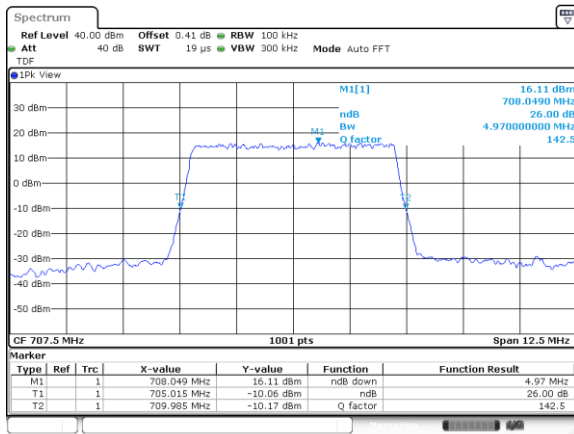
3M BW QPSK Middle channel



3M BW 16QAM Middle channel

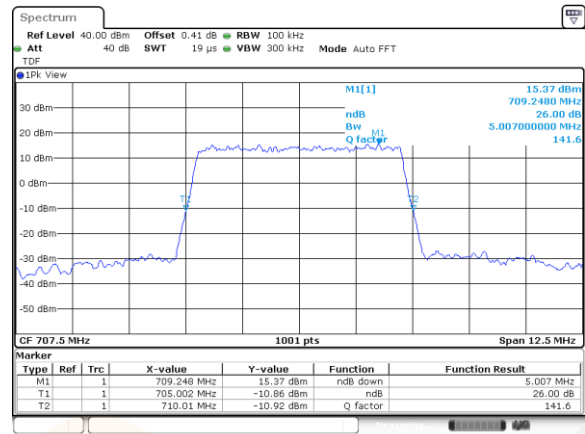


5M BW QPSK Middle channel



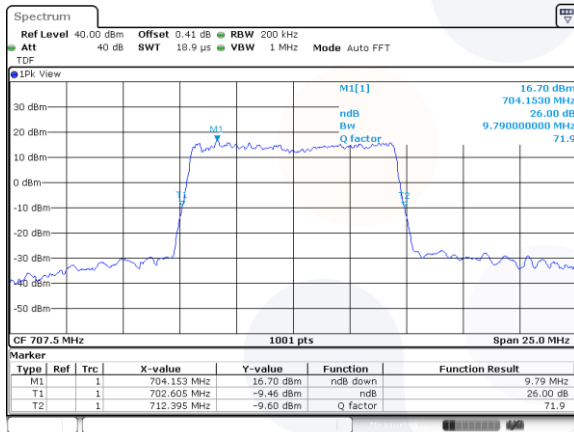
Date: 20.AUG.2025 09:30:30

5M BW 16QAM Middle channel



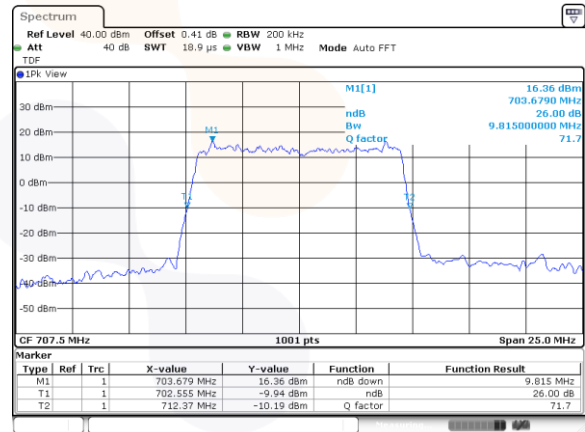
Date: 20.AUG.2025 09:30:47

10M BW QPSK Middle channel



Date: 20.AUG.2025 09:32:19

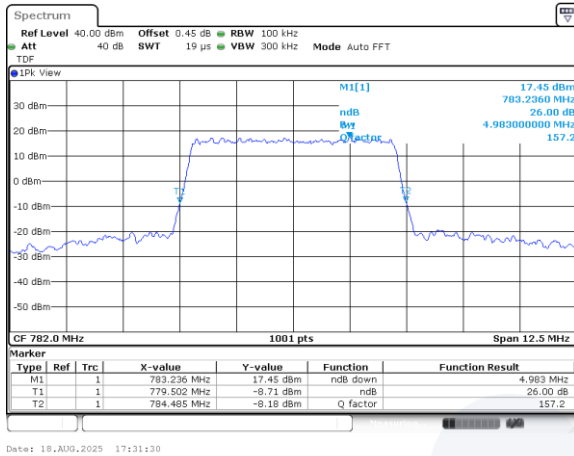
10M BW 16QAM Middle channel



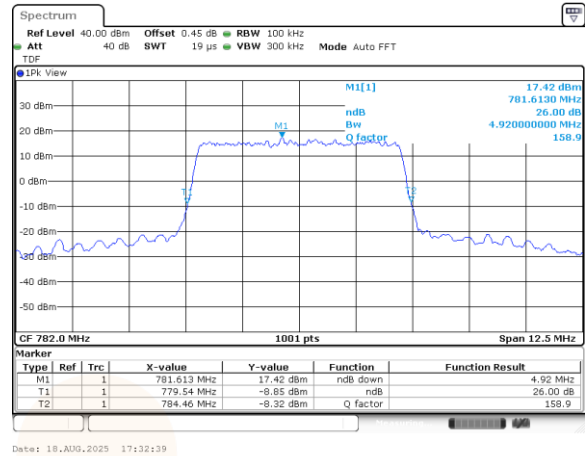
Date: 20.AUG.2025 09:32:37

Test mode: LTE B13

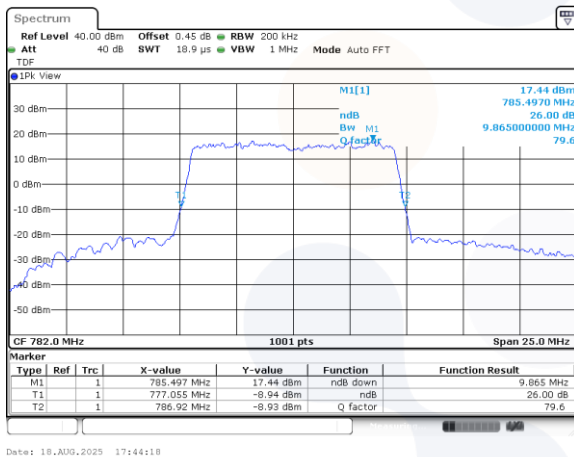
5M BW QPSK Middle channel



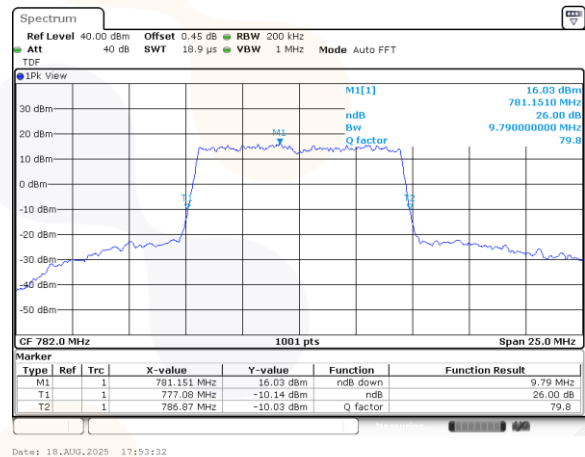
5M BW 16QAM Middle channel



10M BW QPSK Middle channel

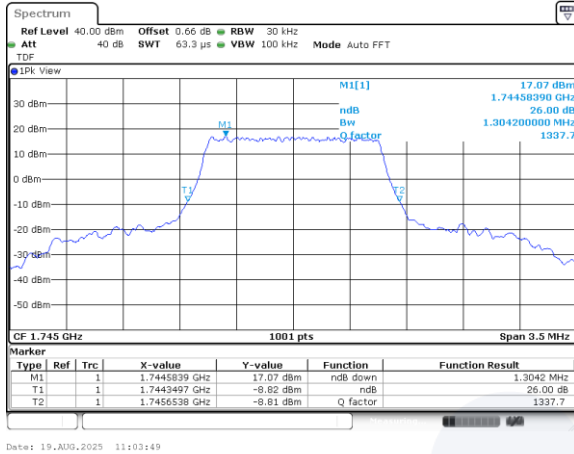


10M BW 16QAM Middle channel

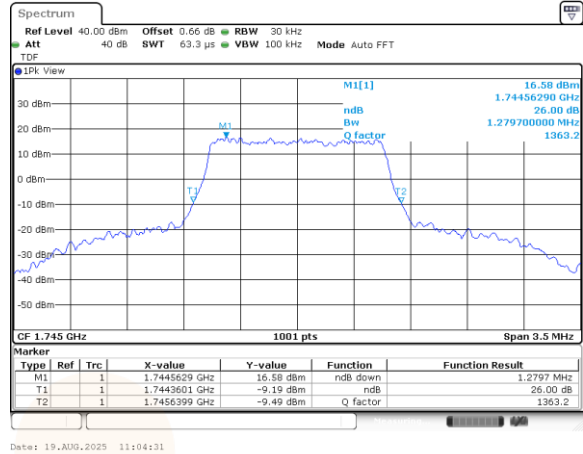


Test mode: LTE B66/4

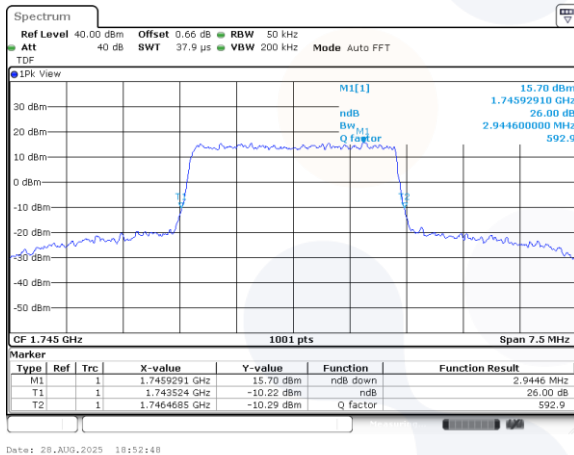
1.4M BW QPSK Middle channel



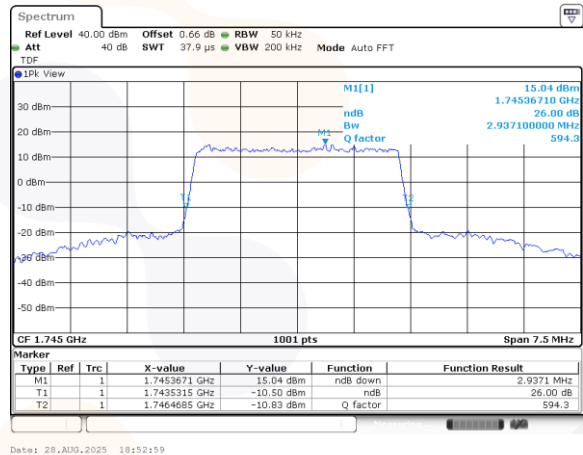
1.4M BW 16QAM Middle channel



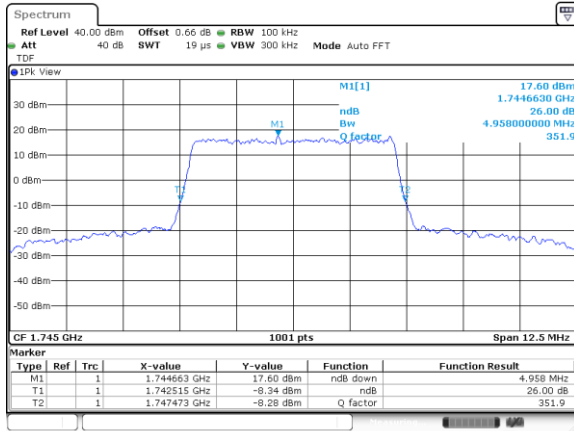
3M BW QPSK Middle channel



3M BW 16QAM Middle channel

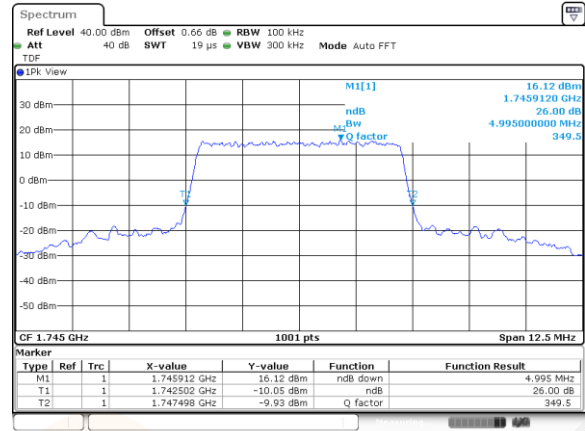


5M BW QPSK Middle channel



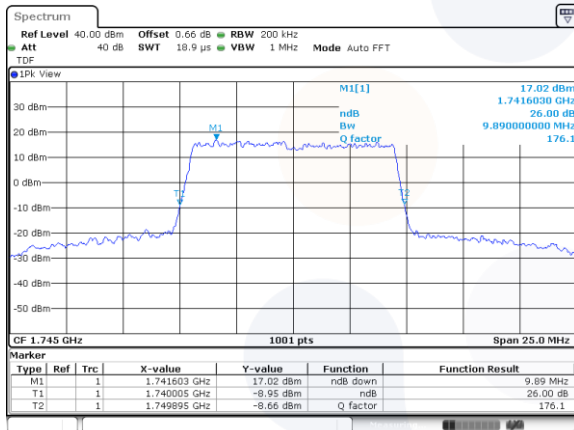
Date: 19.AUG.2025 11:12:36

5M BW 16QAM Middle channel



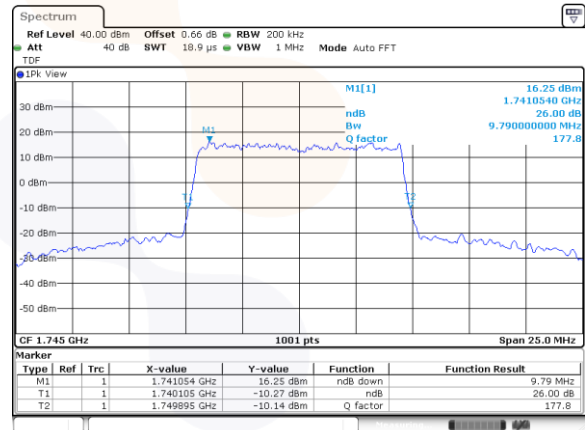
Date: 19.AUG.2025 11:13:16

10M BW QPSK Middle channel



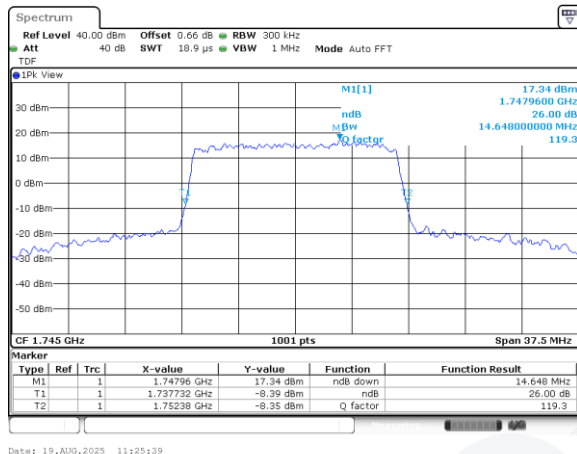
Date: 19.AUG.2025 11:19:23

10M BW 16QAM Middle channel

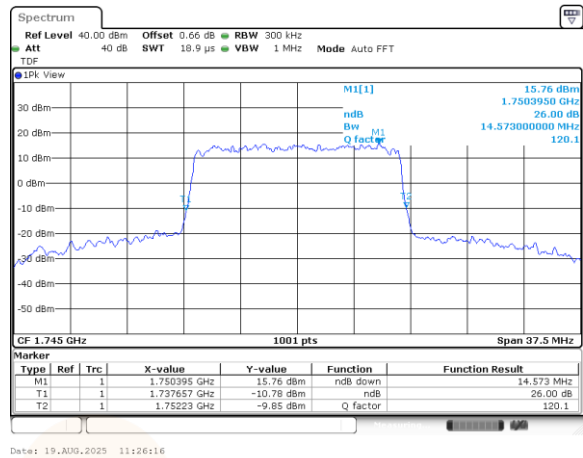


Date: 19.AUG.2025 11:20:02

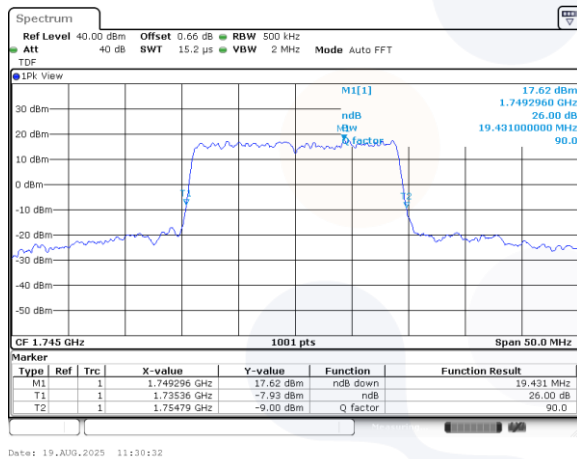
15M BW QPSK Middle channel



15M BW 16QAM Middle channel



20M BW QPSK Middle channel

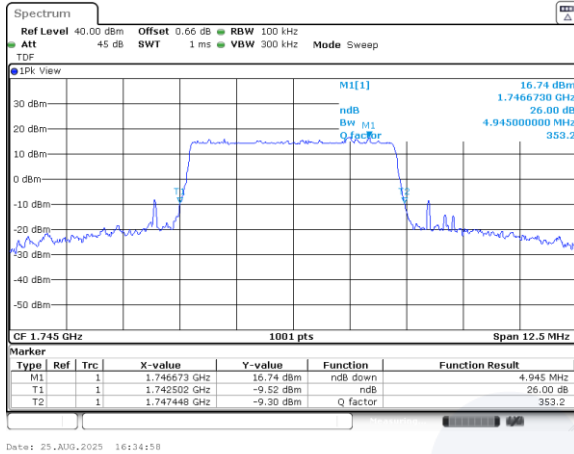


20M BW 16QAM Middle channel

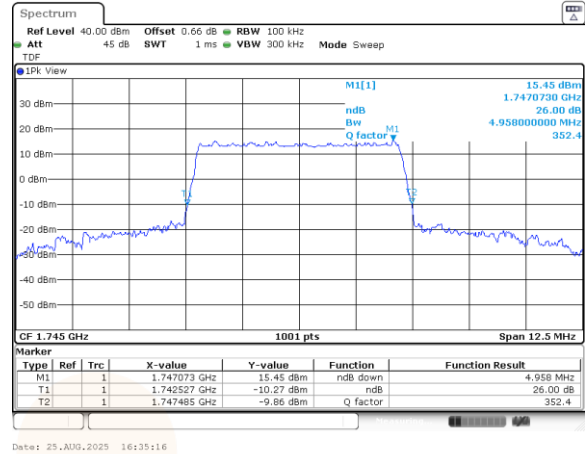


Test mode: 5G NR n66 DFT-s OFDM

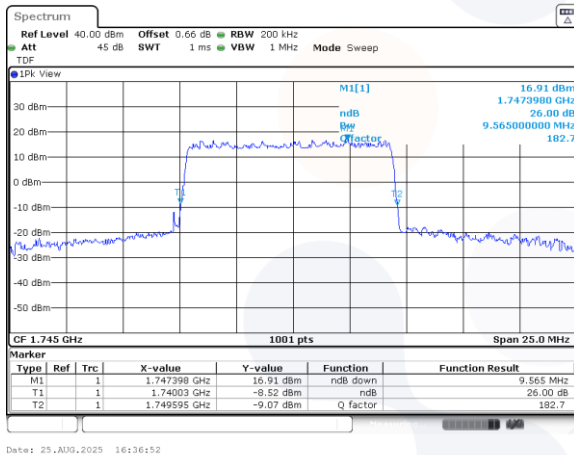
5M BW QPSK Middle channel



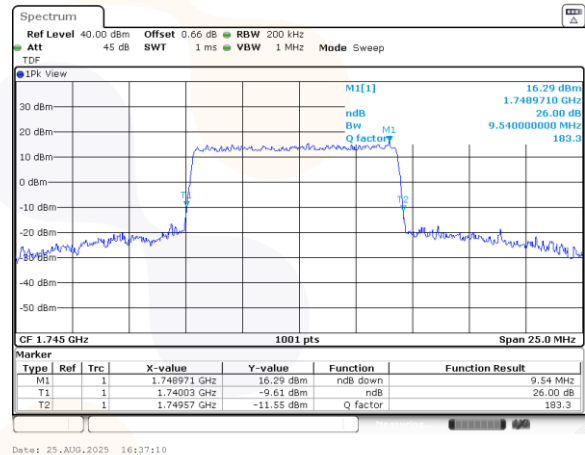
5M BW 16QAM Middle channel



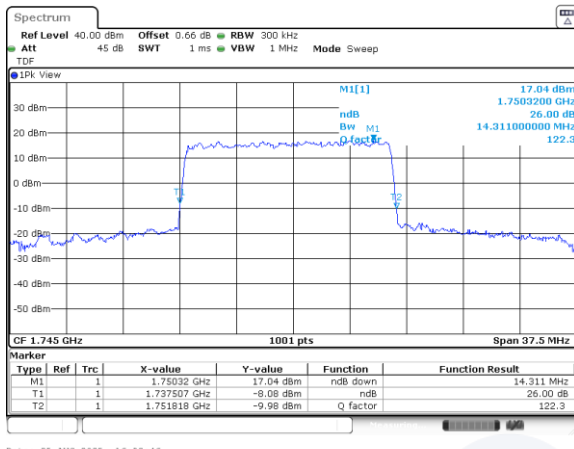
10M BW QPSK Middle channel



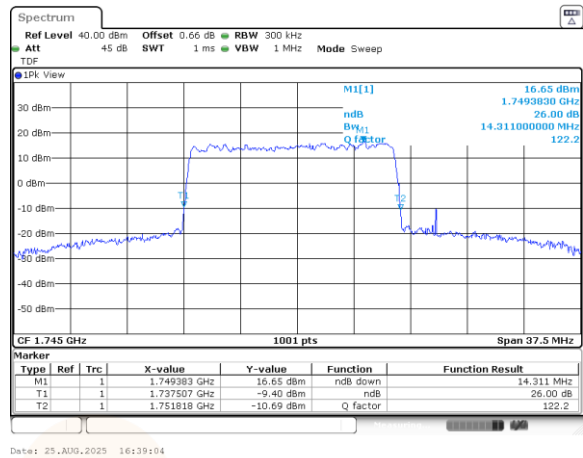
10M BW 16QAM Middle channel



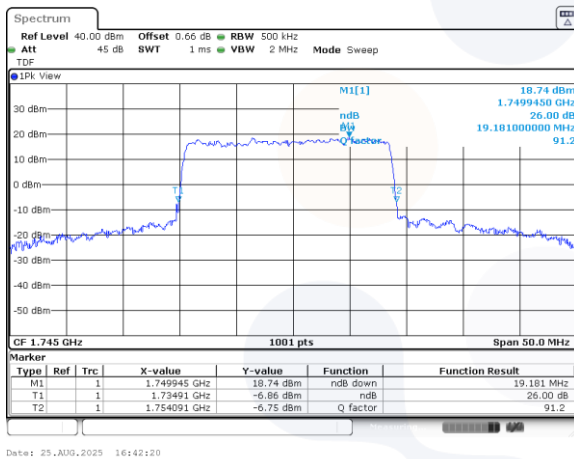
15M BW QPSK Middle channel



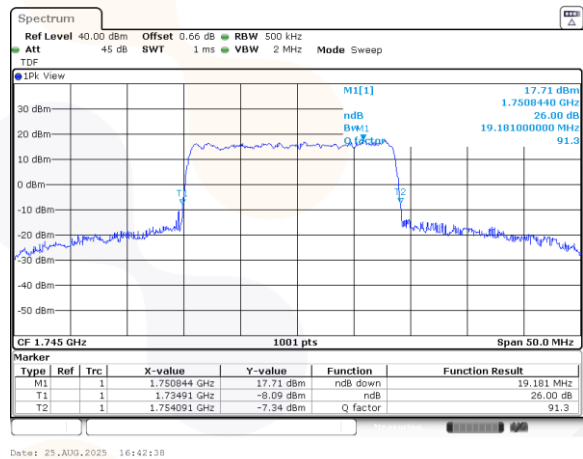
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

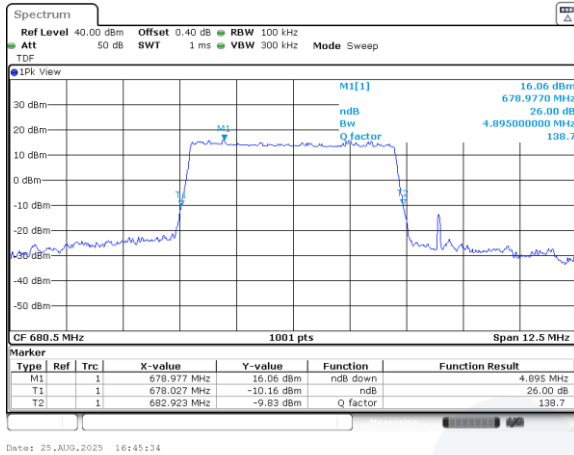


20M BW 16QAM Middle channel

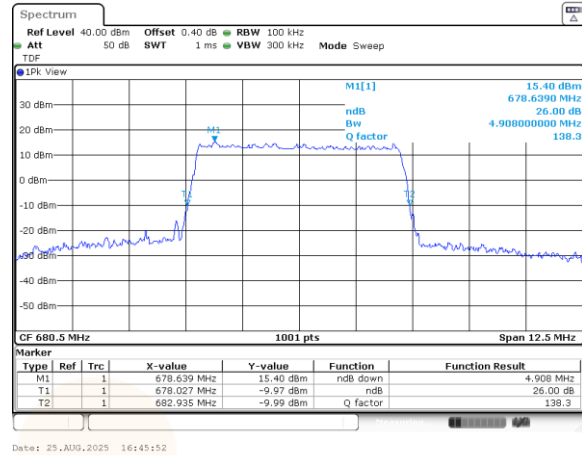


Test mode: 5G NR n71 DFT-s OFDM

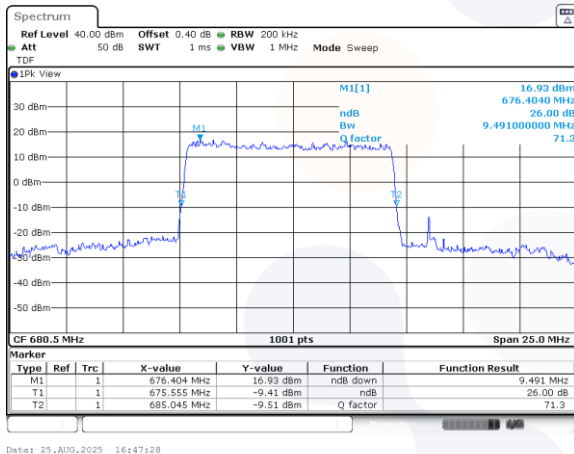
5M BW QPSK Middle channel



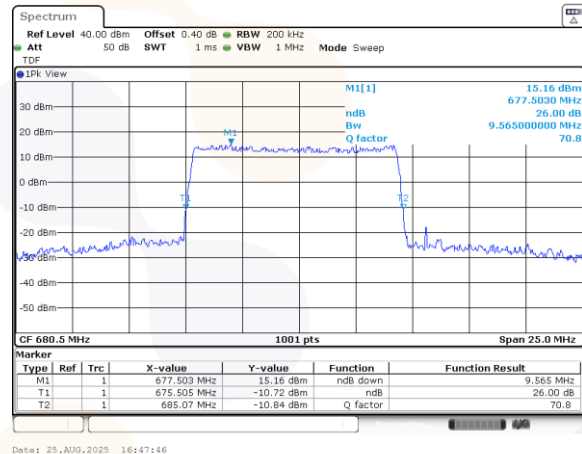
5M BW 16QAM Middle channel



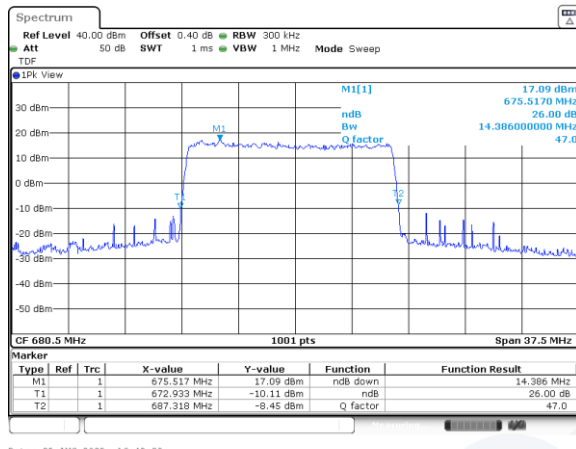
10M BW QPSK Middle channel



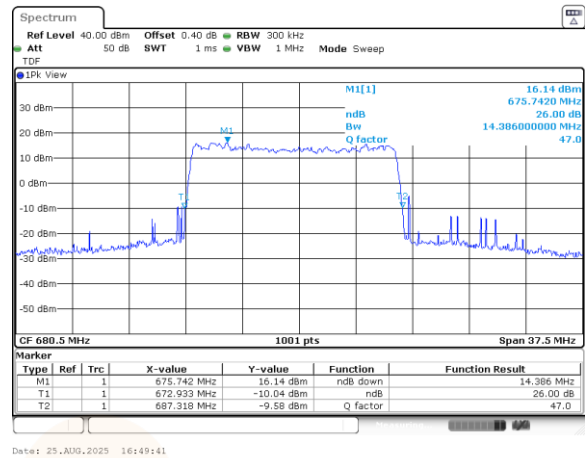
10M BW 16QAM Middle channel



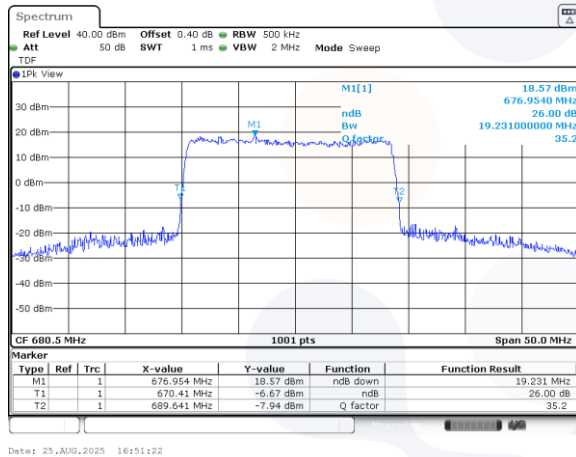
15M BW QPSK Middle channel



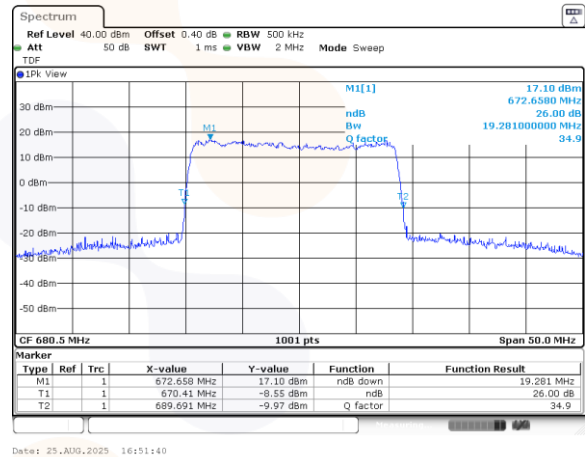
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

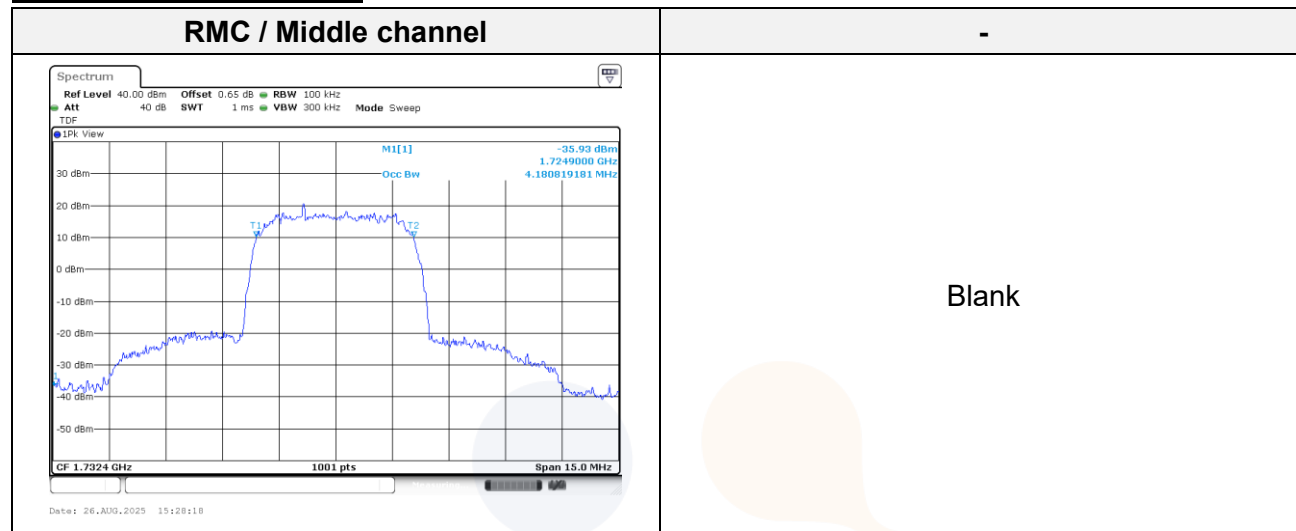


20M BW 16QAM Middle channel



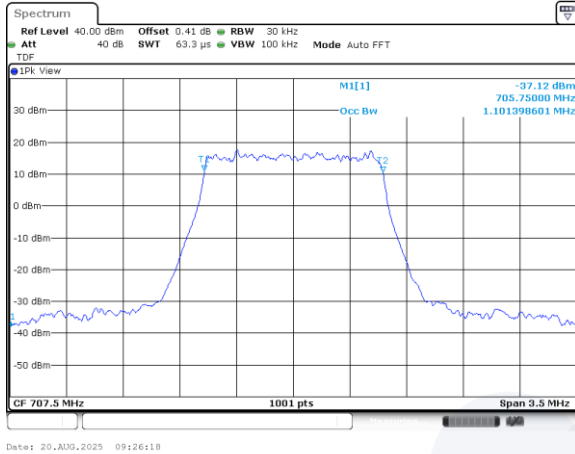
99% Occupied Bandwidth

Test mode: WCDMA 1700

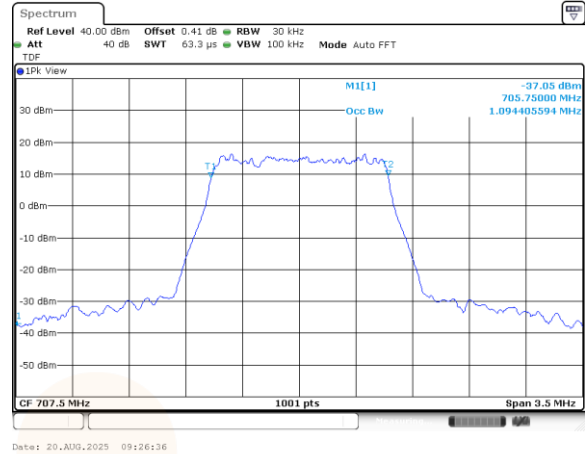


Test mode: LTE B12/17

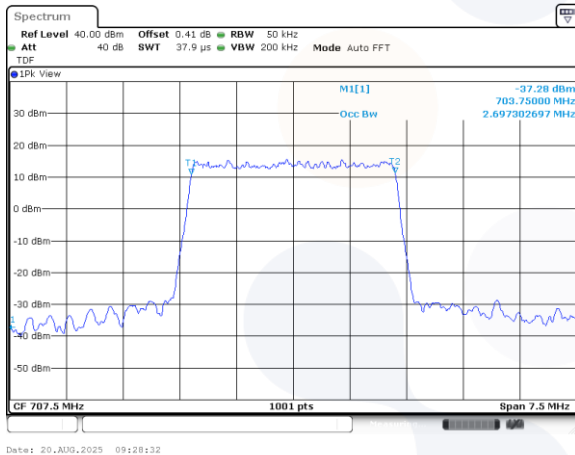
1.4M BW QPSK Middle channel



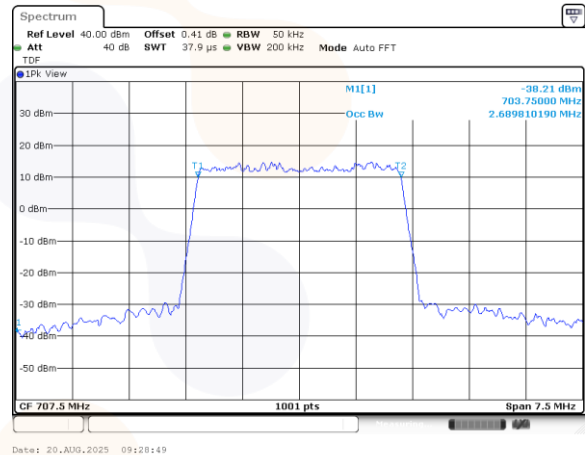
1.4M BW 16QAM Middle channel



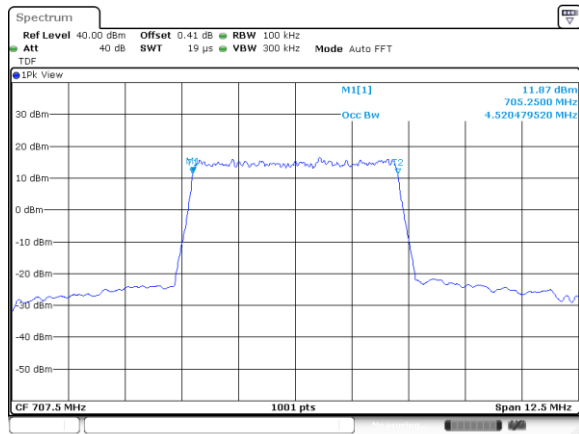
3M BW QPSK Middle channel



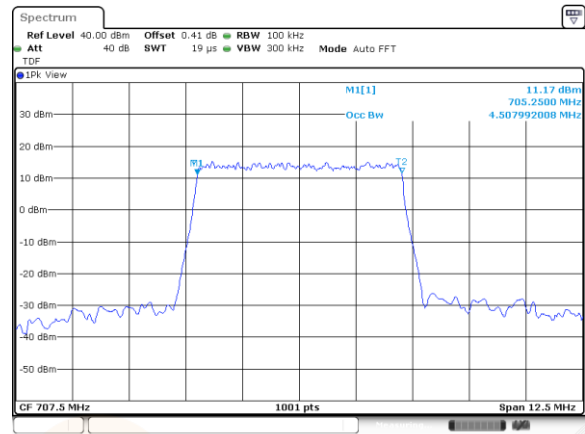
3M BW 16QAM Middle channel



5M BW QPSK Middle channel



5M BW 16QAM Middle channel



10M BW QPSK Middle channel

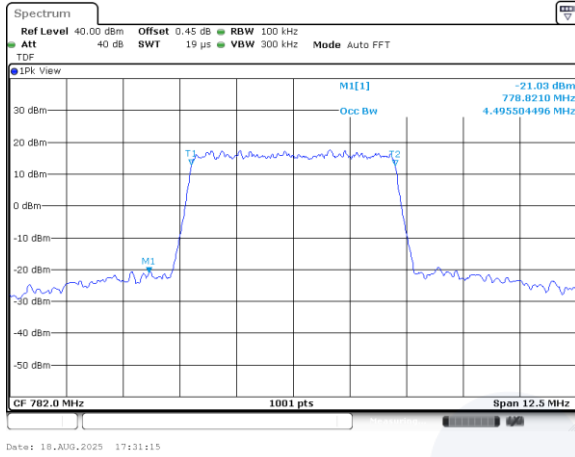


10M BW 16QAM Middle channel

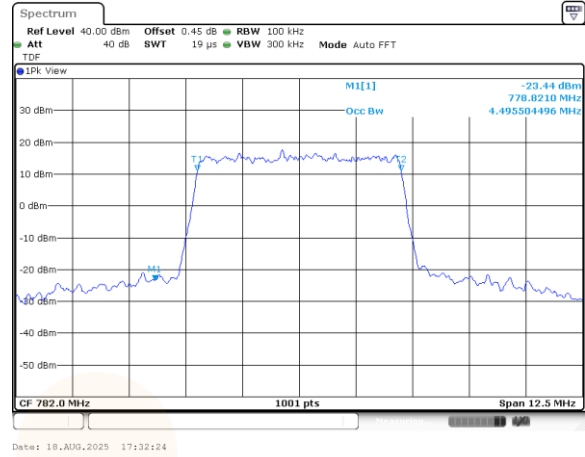


Test mode: LTE B13

5M BW QPSK Middle channel



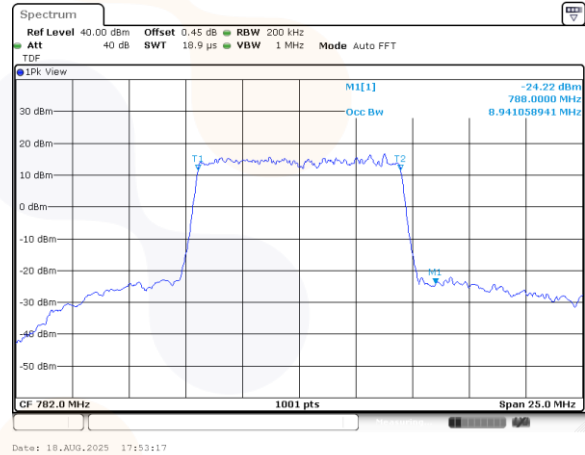
5M BW 16QAM Middle channel



10M BW QPSK Middle channel

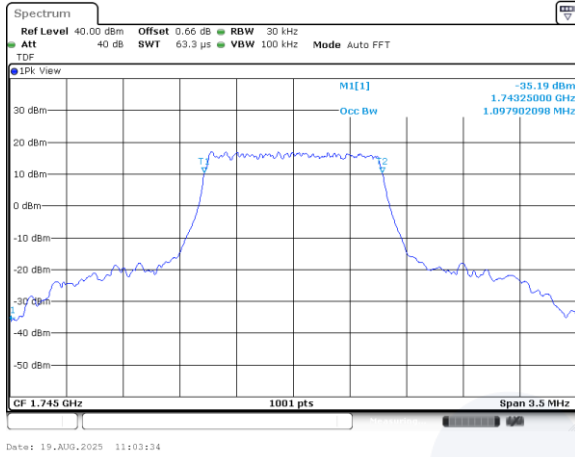


10M BW 16QAM Middle channel

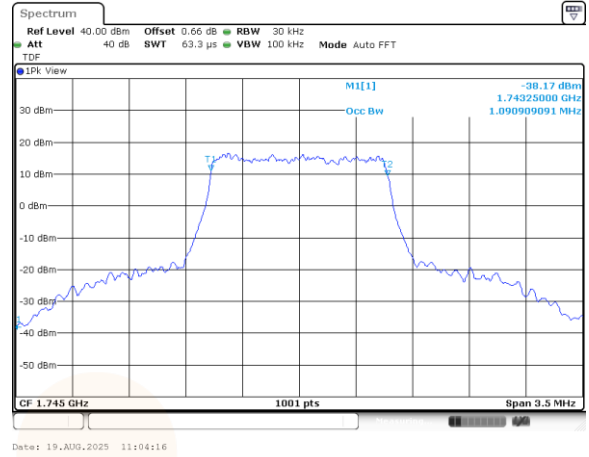


Test mode: LTE B66/4

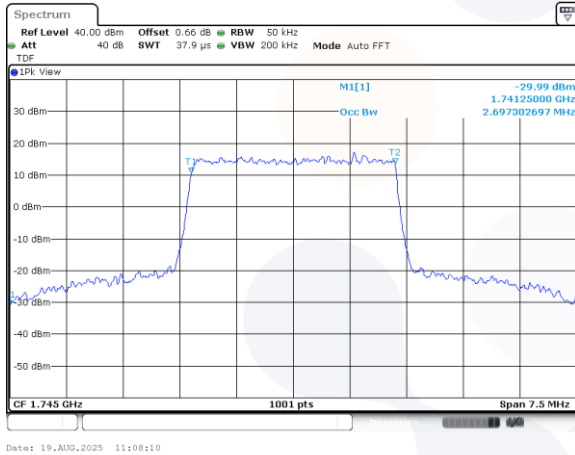
1.4M BW QPSK Middle channel



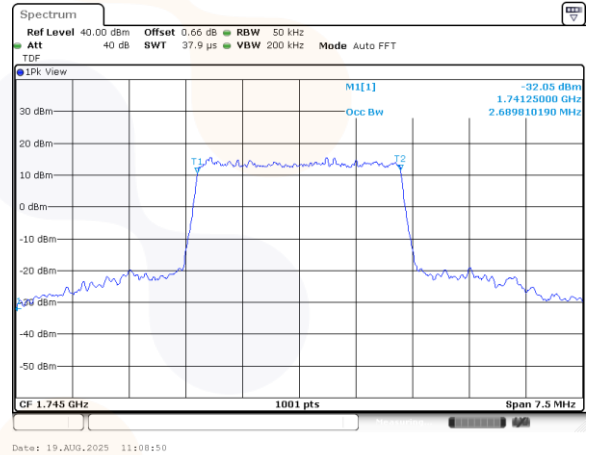
1.4M BW 16QAM Middle channel



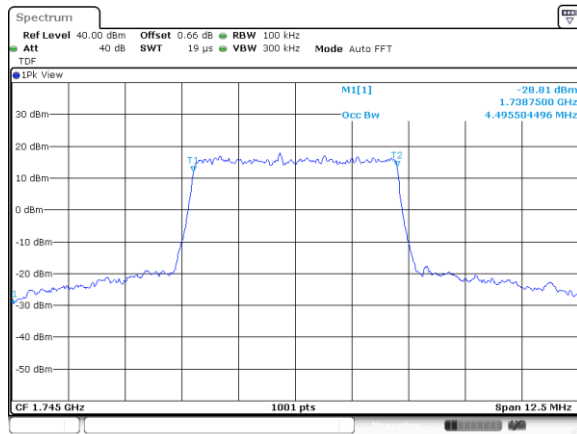
3M BW QPSK Middle channel



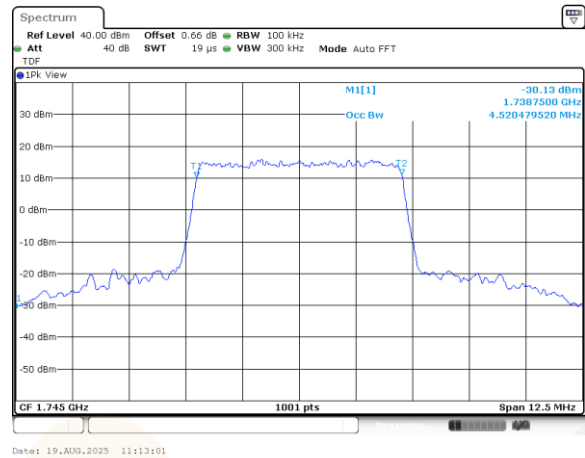
3M BW 16QAM Middle channel



5M BW QPSK Middle channel



5M BW 16QAM Middle channel



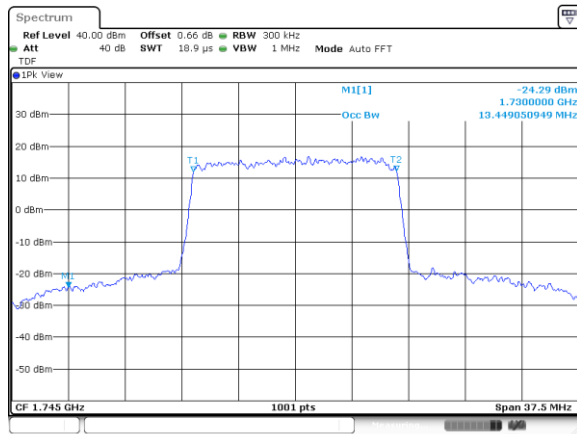
10M BW QPSK Middle channel



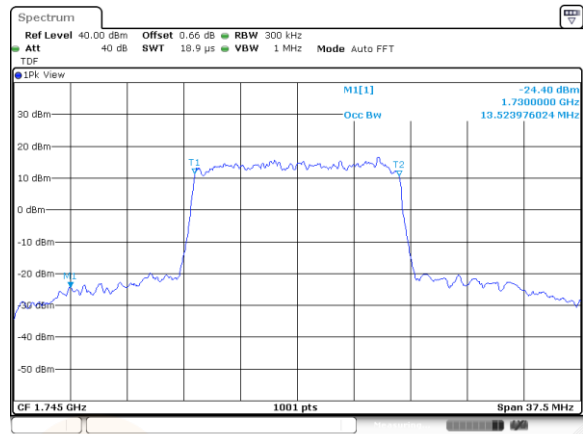
10M BW 16QAM Middle channel



15M BW QPSK Middle channel



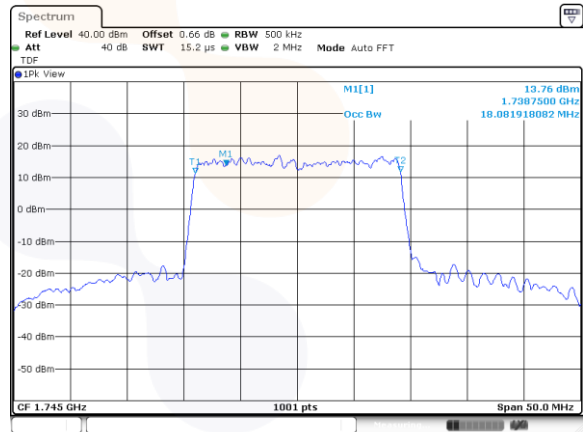
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

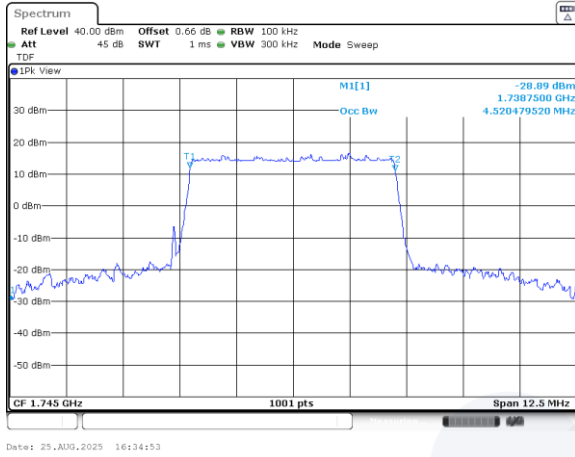


20M BW 16QAM Middle channel

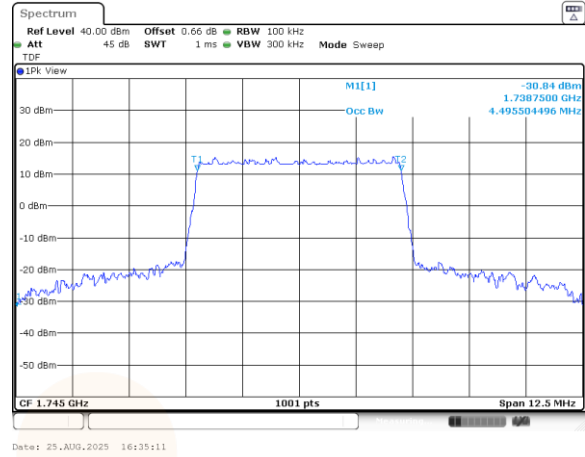


Test mode: 5G NR n66 DFT-s OFDM

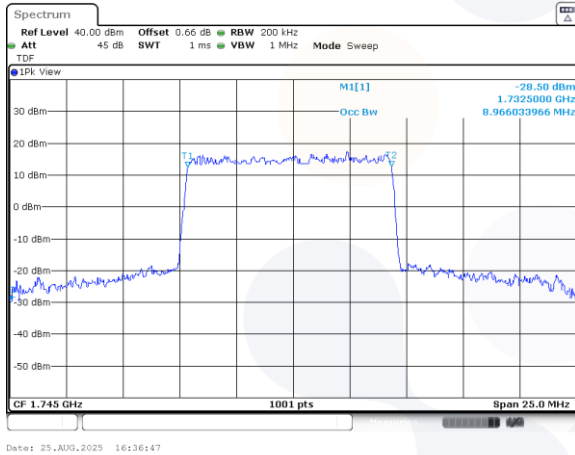
5M BW QPSK Middle channel



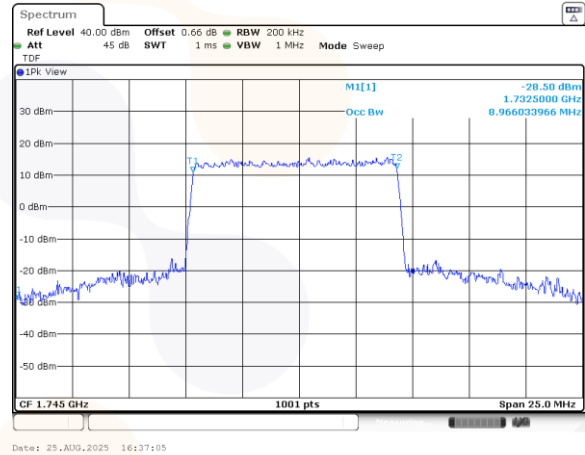
5M BW 16QAM Middle channel



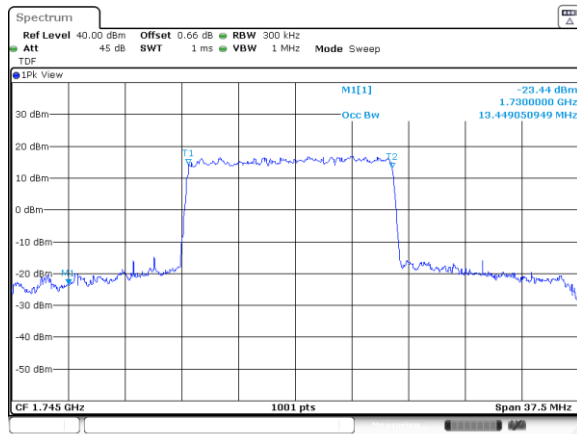
10M BW QPSK Middle channel



10M BW 16QAM Middle channel



15M BW QPSK Middle channel



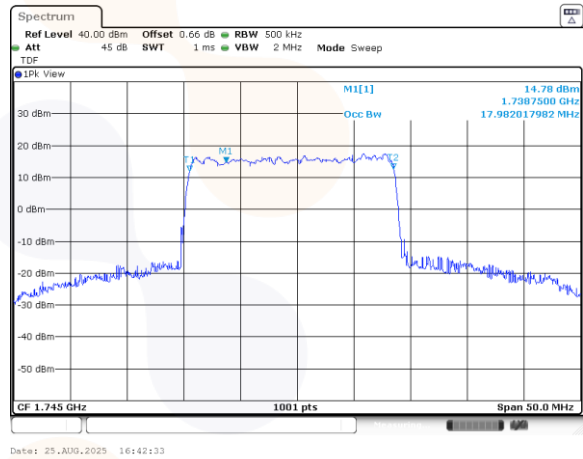
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

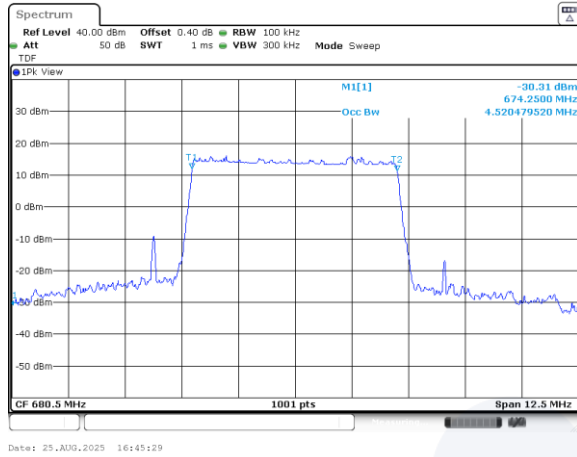


20M BW 16QAM Middle channel

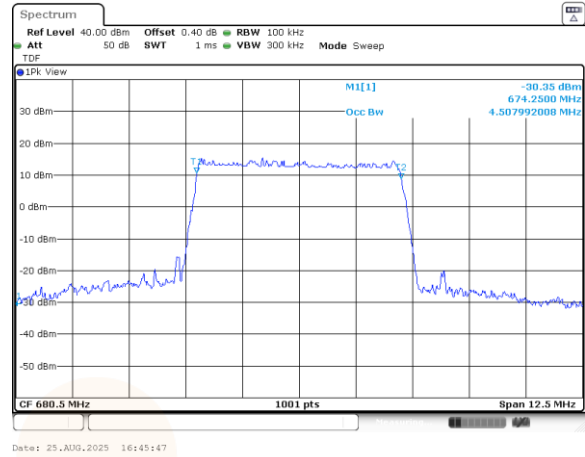


Test mode: 5G NR n71 DFT-s OFDM

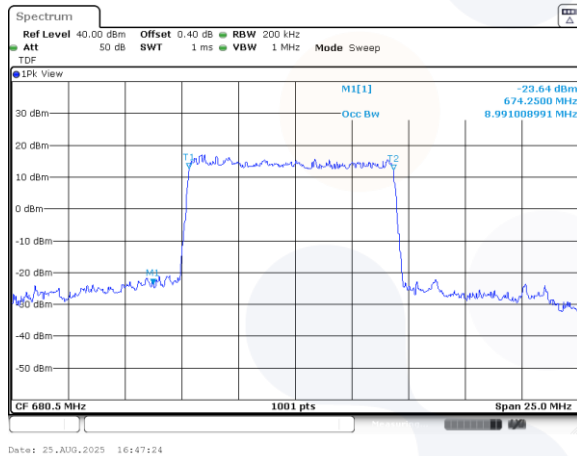
5M BW QPSK Middle channel



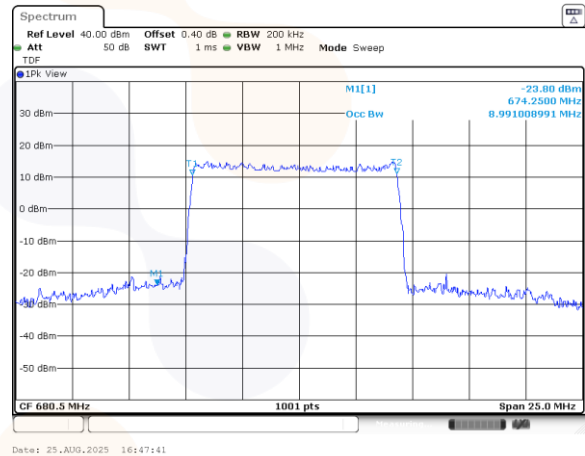
5M BW 16QAM Middle channel



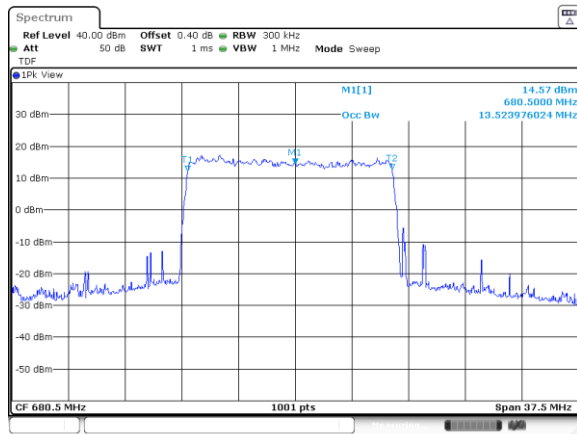
10M BW QPSK Middle channel



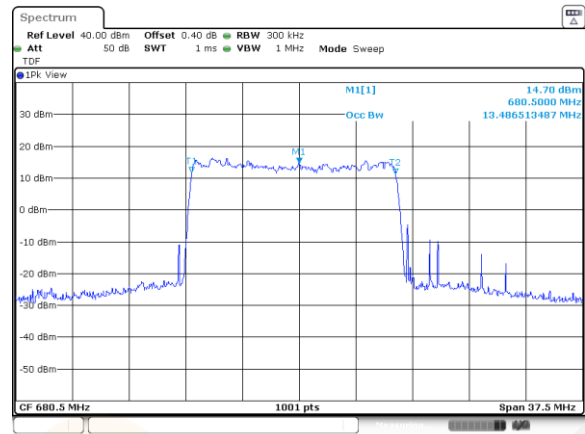
10M BW 16QAM Middle channel



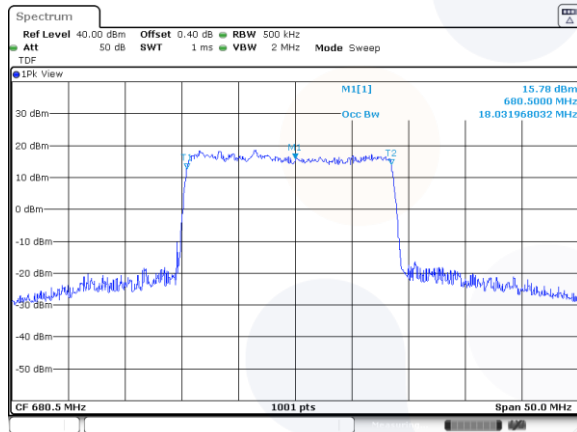
15M BW QPSK Middle channel



15M BW 16QAM Middle channel



20M BW QPSK Middle channel

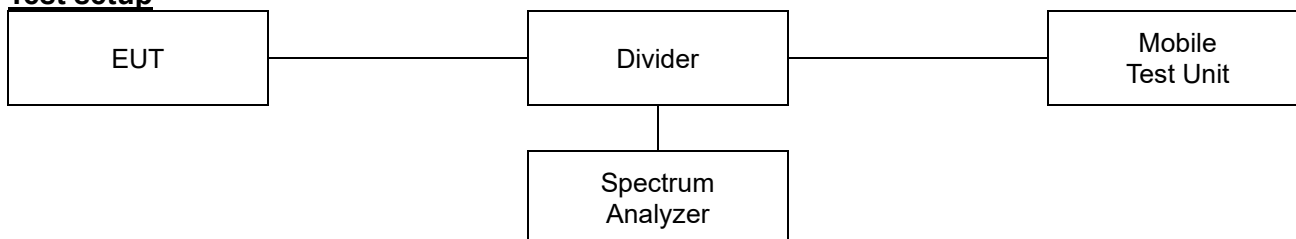


20M BW 16QAM Middle channel



7.3. Band Edge Emissions at Antenna Terminal

Test setup



Limit

According to §27.53(c),

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the 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, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment

According to §27.53(g),

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 $43 + 10 \log (P_{\text{[Watts]}})$ dB.

According to §27.53(h),

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log (P_{\text{[Watts]}})$ dB.

Test procedure

971168 D01 v03r01 - Section 6

ANSI C63.26-2015 – Section 5.7

Test settings

- 1) Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2) Span was set large enough so as to capture all out of band emissions near the band edge.
- 3) Set the RBW > 1% of the emission bandwidth.
- 4) Set the VBW $\geq 3 \times$ RBW.
- 5) Set the number of sweep points $\geq 2 \times$ Span/RBW
- 6) Detector = RMS
- 7) Trace mode = trace average
- 8) Sweep time should be auto for peak detection. For RMS detection the sweep time should be set as follows:
 - a) If the device can be configured to transmit continuously (duty cycle $\geq 98\%$), set the (sweep time) > (number of points in sweep) $\times$ (symbol period) (e.g., by a factor of $10 \times$ symbol period $\times$ number of points) Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols.
 - b) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) $\times$ (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time
 - c) If the device cannot be configured to transmit continuously (duty cycle > 98%), and a free-running sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) $\times$ (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by $[10 \log (1/\text{duty cycle})]$. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$).
 - d) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > $\pm 2\%$), set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) $\times$ (number of points), while also maintaining the sweep time < (transmitter on-time). The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured.
- 9) Allow trace to fully stabilize.

Notes:

- Per 27.53(c)(5), for operations in the 776-768 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed.
- Per 27.53(c)(6), for operation in the 763-775 MHz and 793-805 MHz, the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- Per 27.53(g), 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.
- Per 27.53(h)(3), compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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.

5. Band-Edge extended:

1) For 27.53(c, g)

Channel BW (MHz)	RBW Used (kHz)	CF for emissions more than 100 kHz	CF for emissions more than 1 MHz
1.4, 3, 5, 10 (B12/17)	30	+5.23 dB	+15.23 dB
5, 10 (B13)	100	N/A	+10.00 dB
5	50	+3.01 dB	+13.01 dB
10	100	N/A	+10.00 dB
15	200	N/A	+6.99 dB
20	200	N/A	+6.99 dB

2) For 27.53(h)

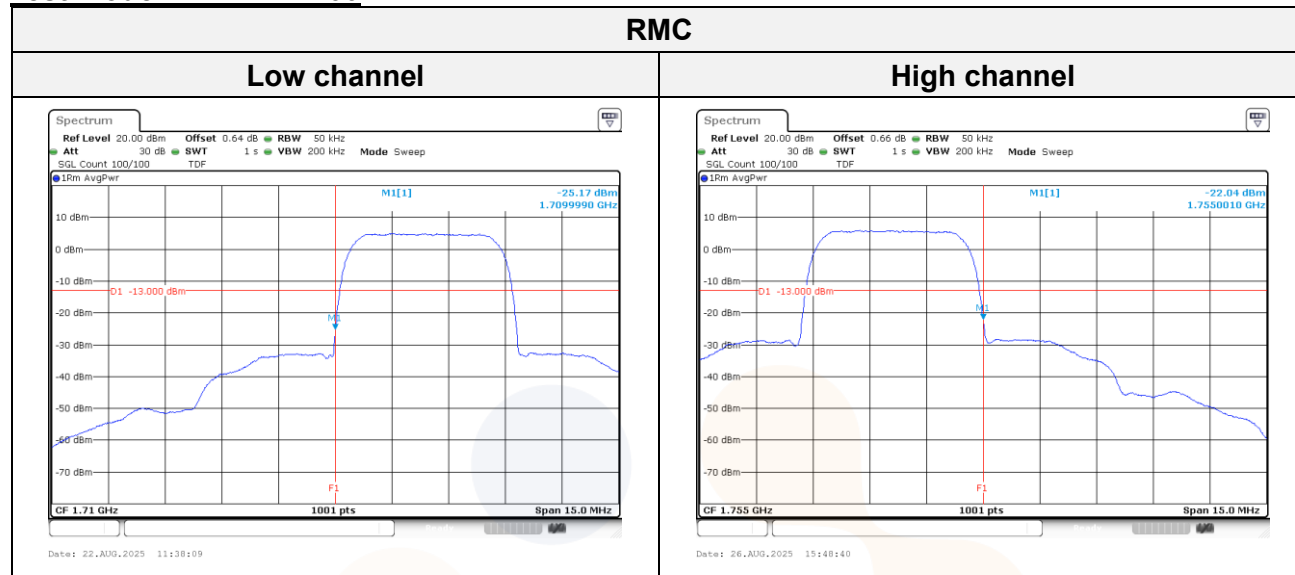
Channel BW (MHz)	RBW Used (kHz)	CF for emissions more than 100 kHz	CF for emissions more than 1 MHz
1.4	20	+6.99 dB	+16.99 dB
3	30	+5.23 dB	+15.23 dB
5	50	+3.01 dB	+13.01 dB
10	100	N/A	+10.00 dB
15	200	N/A	+6.99 dB
20	200	N/A	+6.99 dB

For emission levels measured with a resolution bandwidth of [RBW Used] at frequency offsets greater than 100 kHz from the band edge, even after applying a correction factor to represent the equivalent level in a 100 kHz or 1 MHz resolution bandwidth, the levels remain below -13 dBm.

- The EUT was setup to maximum output power as its lowest and highest channel with all bandwidth, modulation and RB configurations.

Test results

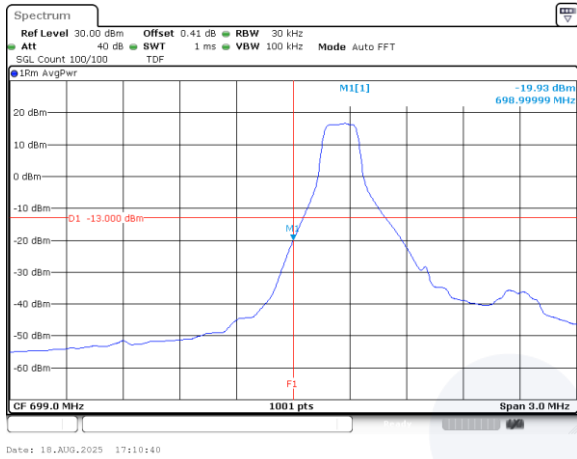
Test mode: WCDMA 1700



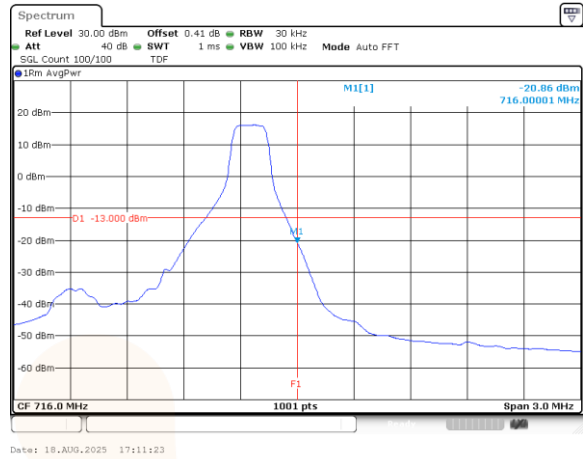
Test mode: LTE B12/17

1.4M BW QPSK

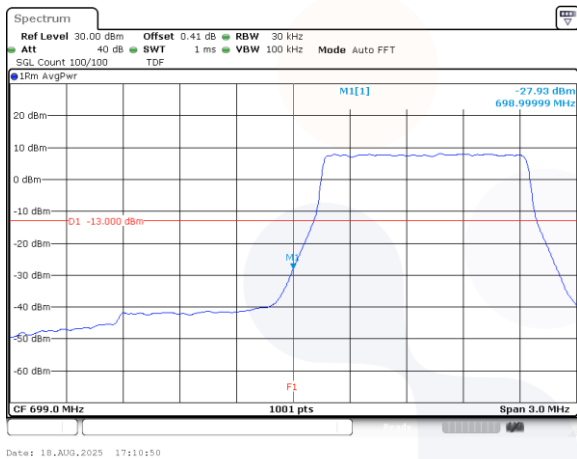
Low channel 1RB



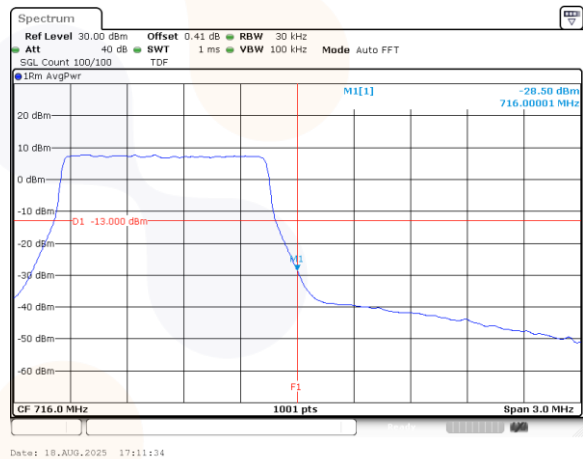
High channel 1RB



Low channel FRB

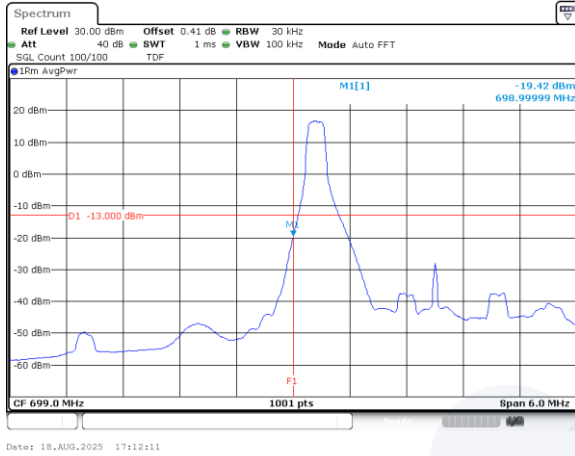


High channel FRB



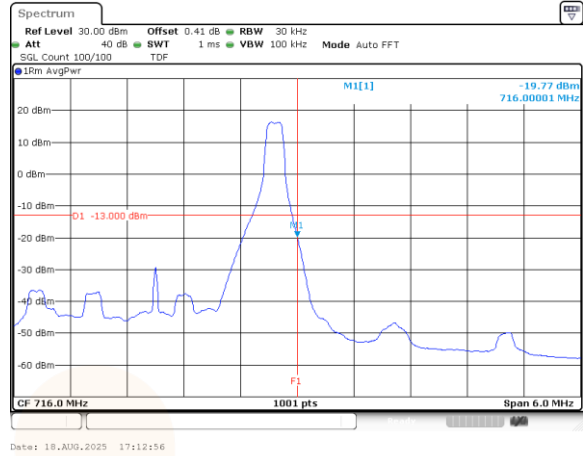
3M BW QPSK

Low channel 1RB



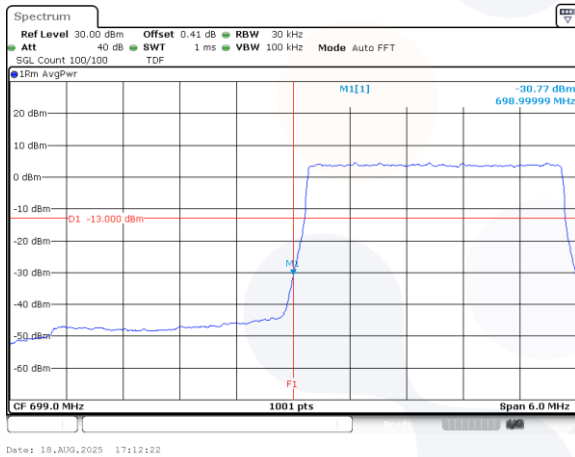
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High channel 1RB



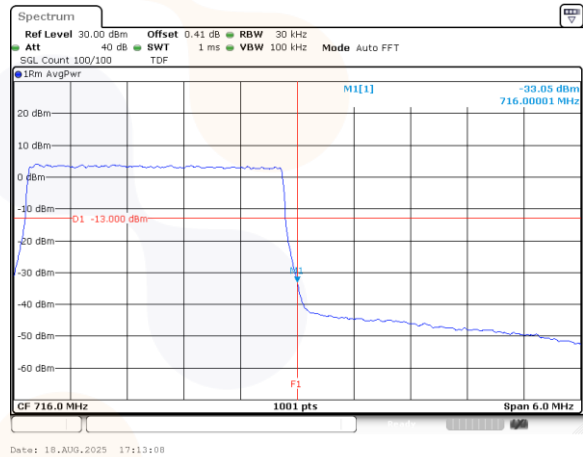
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Low channel FRB



Date: 18.AUG.2025 17:12:22

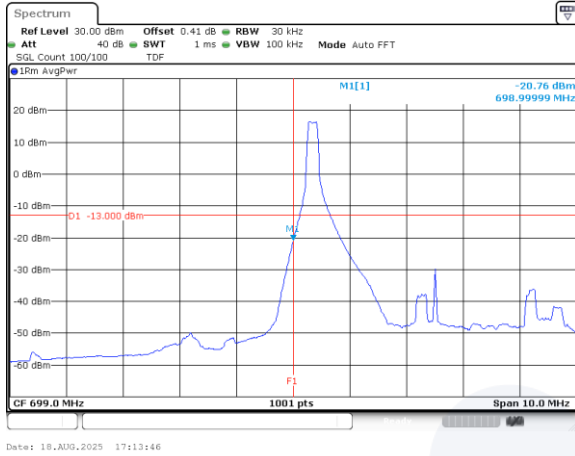
High channel FRB



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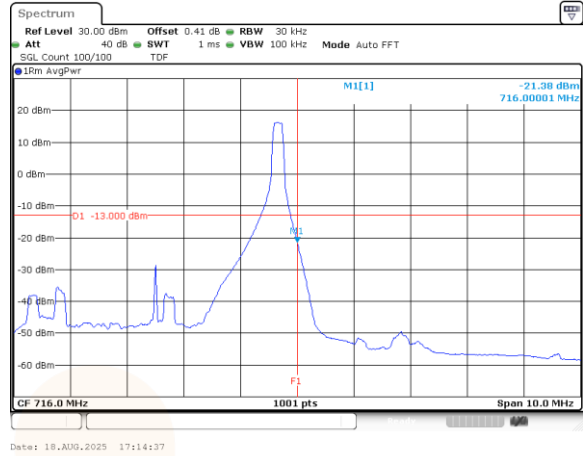
5M BW QPSK

Low channel 1RB



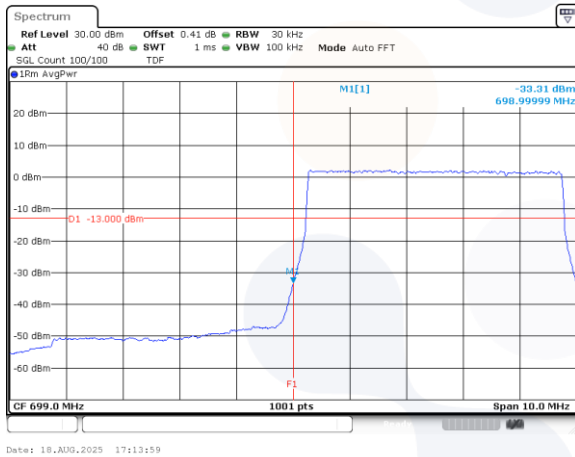
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High channel 1RB



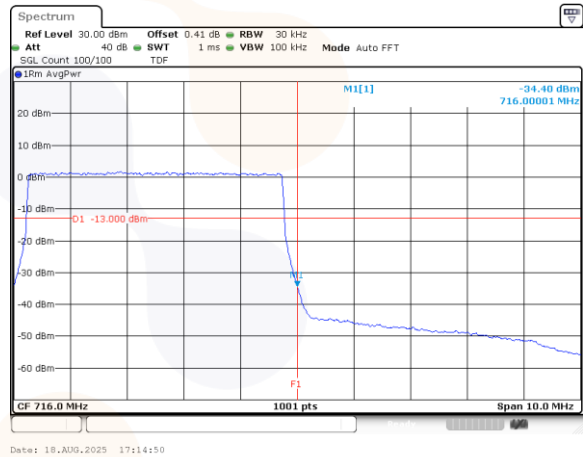
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Low channel FRB



Date: 18.AUG.2025 17:13:59

High channel FRB

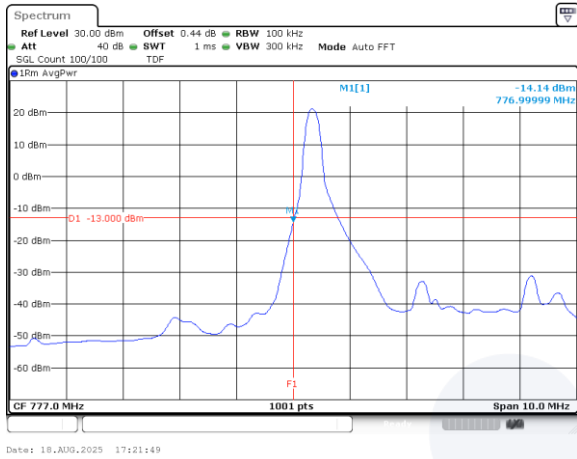


Date: 18.AUG.2025 17:14:50

Test mode: LTE B13

5M BW QPSK

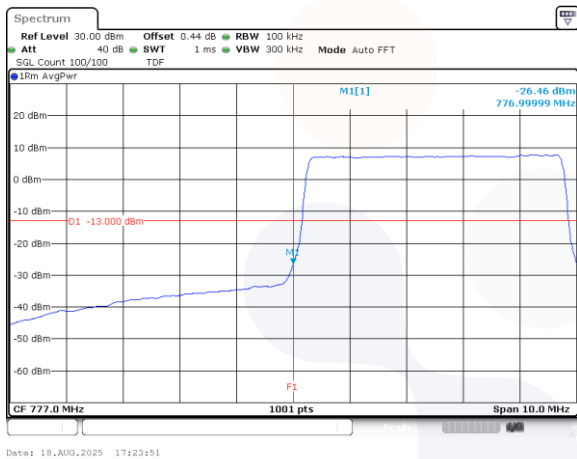
Low channel 1RB



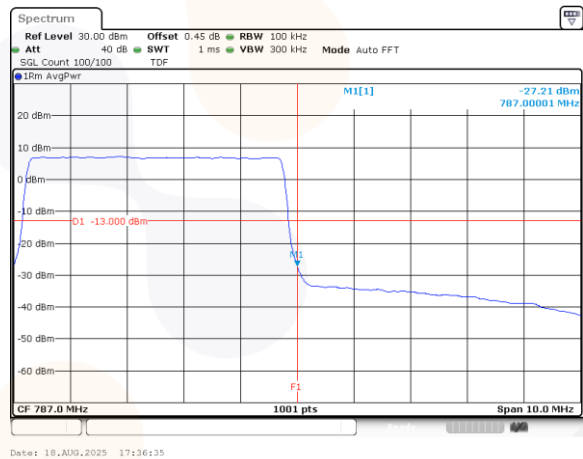
High channel 1RB



Low channel FRB

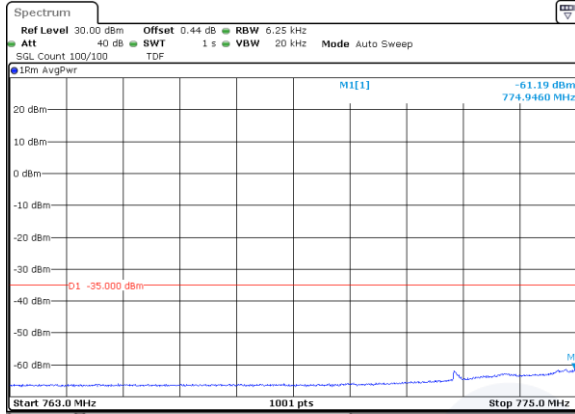


High channel FRB

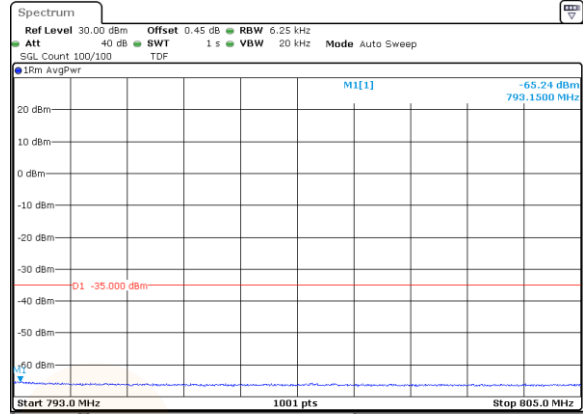


5M BW QPSK

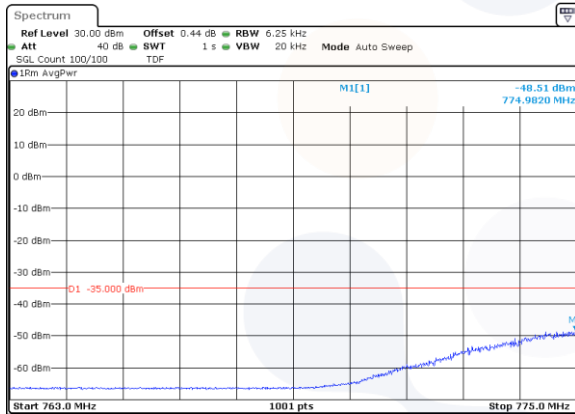
Lower extended 1RB



Upper extended 1RB

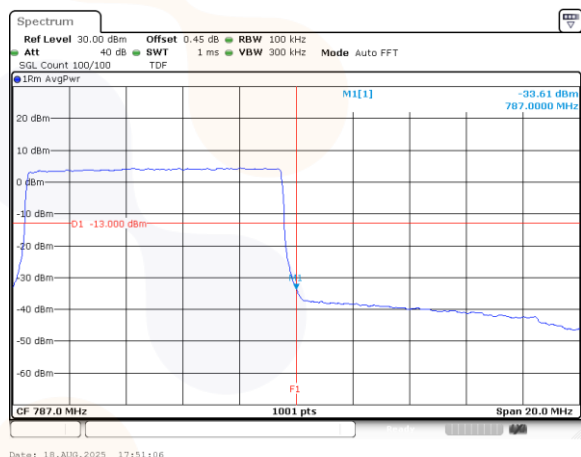


Lower extended FRB



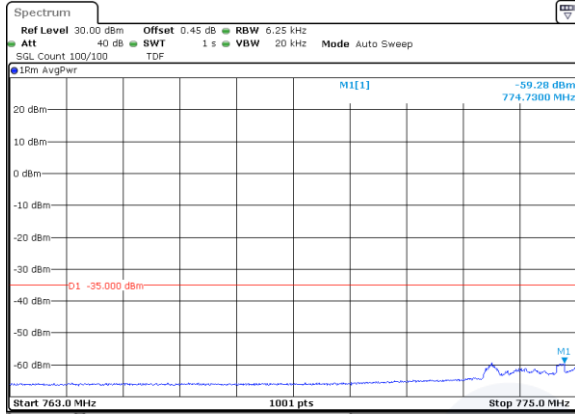
Upper extended FRB





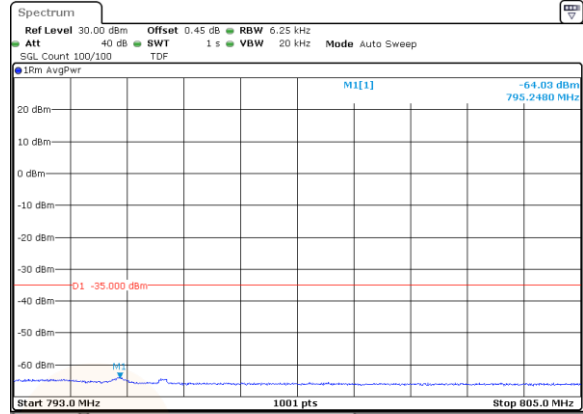
10M BW QPSK

Lower extended 1RB



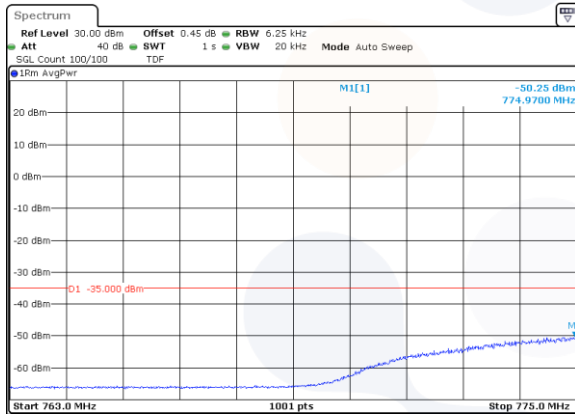
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Upper extended 1RB



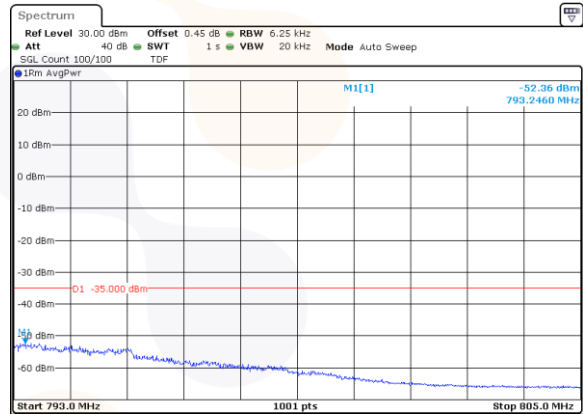
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Lower extended FRB



Date: 18.AUG.2025 17:51:01

Upper extended FRB

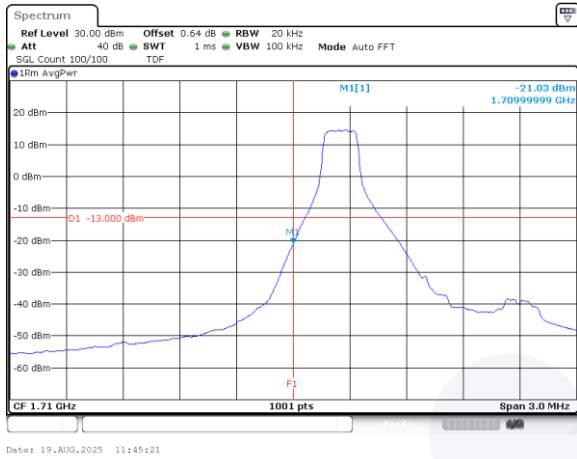


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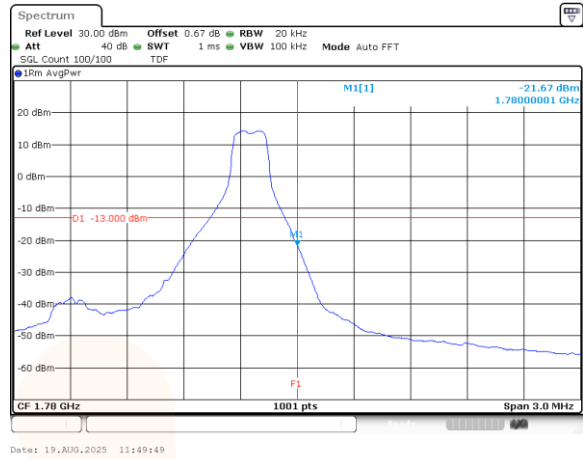
Test mode: LTE B66/4

1.4M BW QPSK

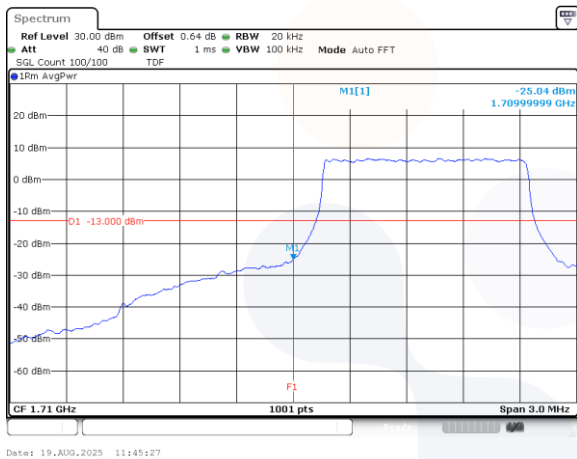
Low channel 1RB



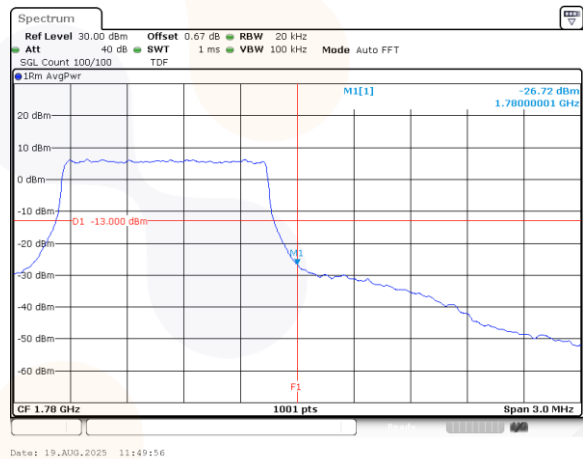
High channel 1RB



Low channel FRB

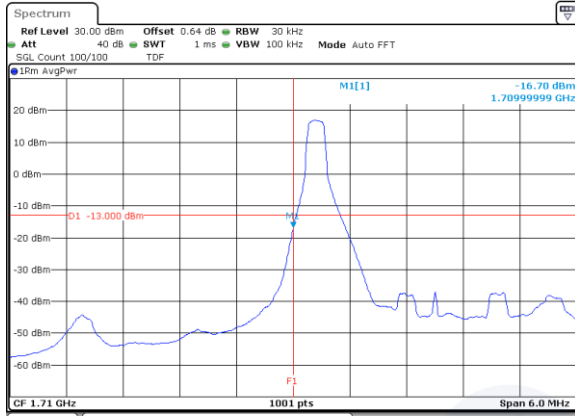


High channel FRB



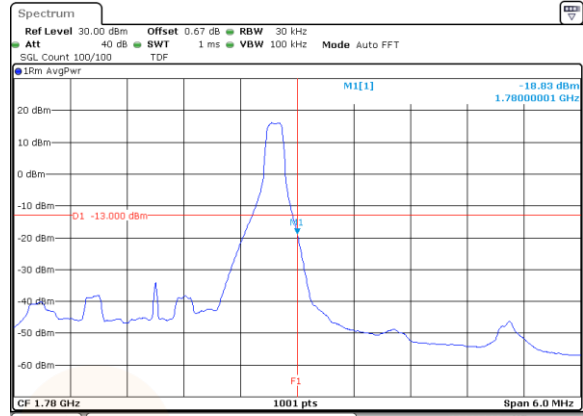
3M BW QPSK

Low channel 1RB



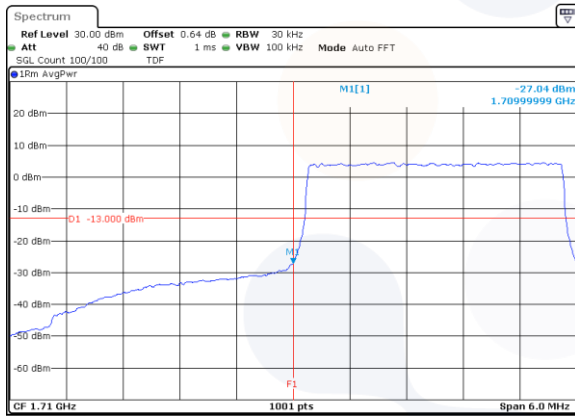
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High channel 1RB



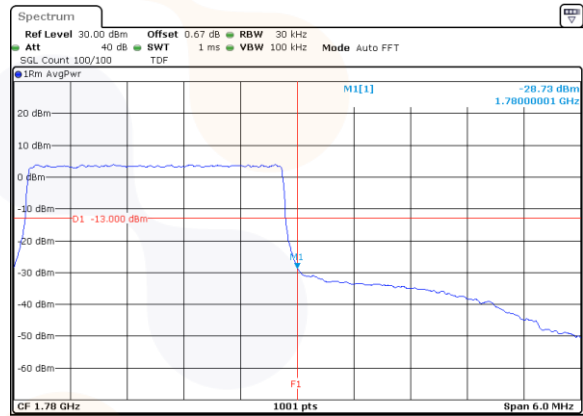
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Low channel FRB



Date: 19.AUG.2025 12:11:11

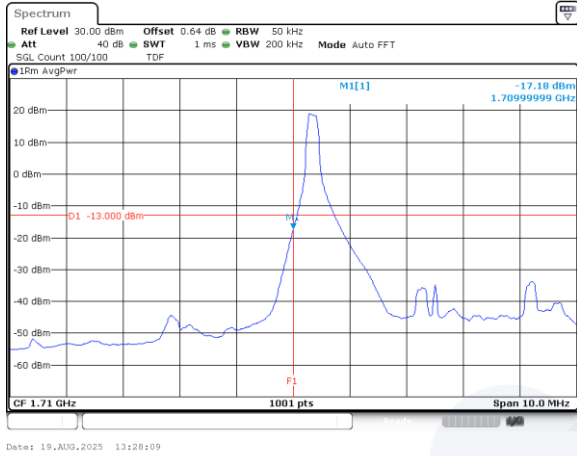
High channel FRB



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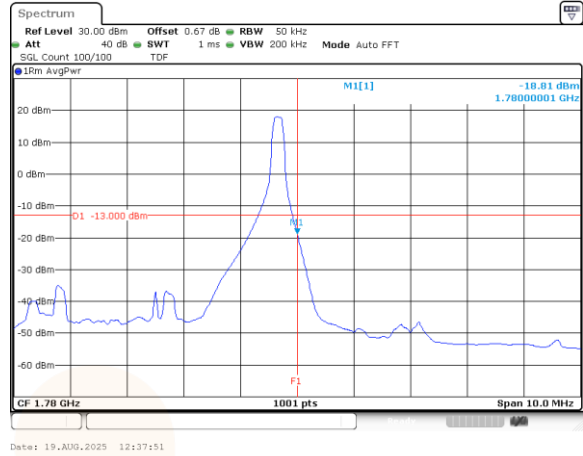
5M BW QPSK

Low channel 1RB



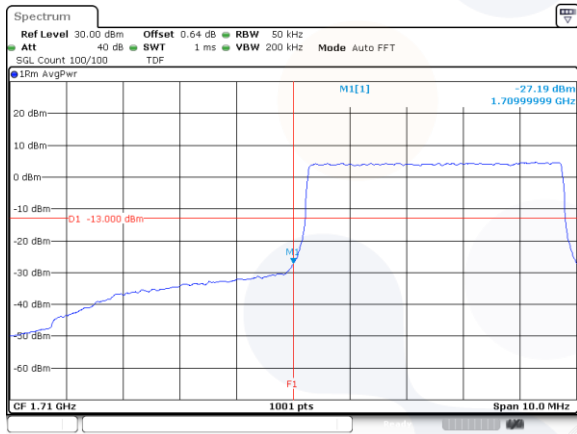
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High channel 1RB



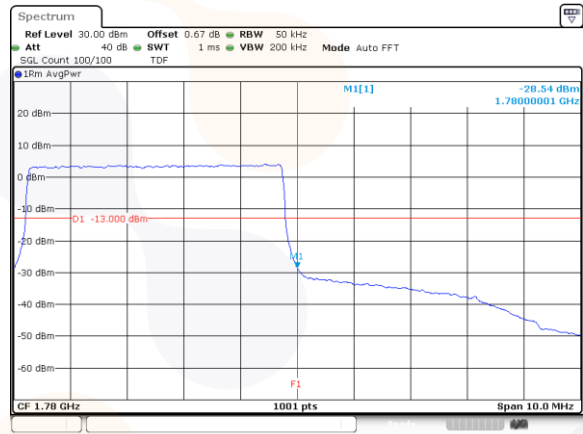
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Low channel FRB



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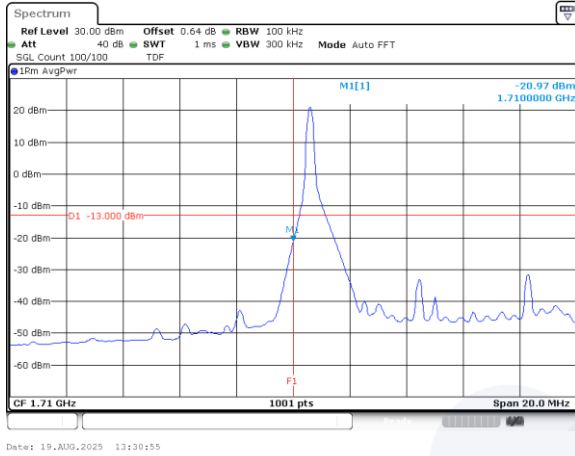
High channel FRB



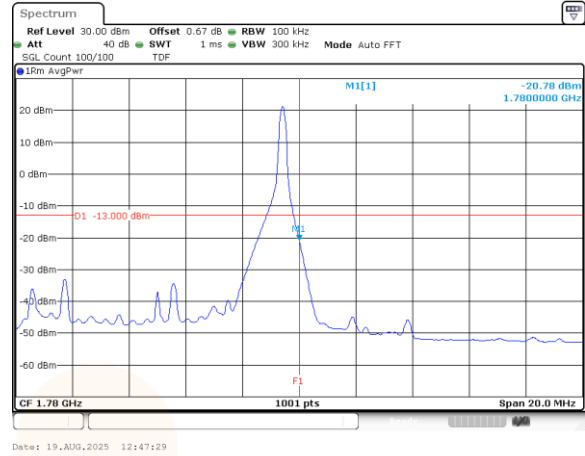
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10M BW QPSK

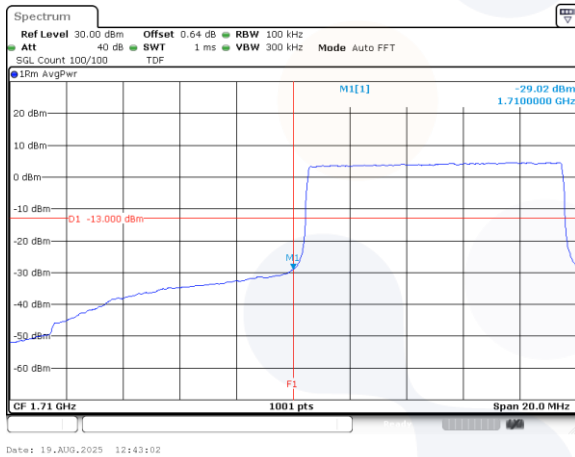
Low channel 1RB



High channel 1RB



Low channel FRB



High channel FRB

