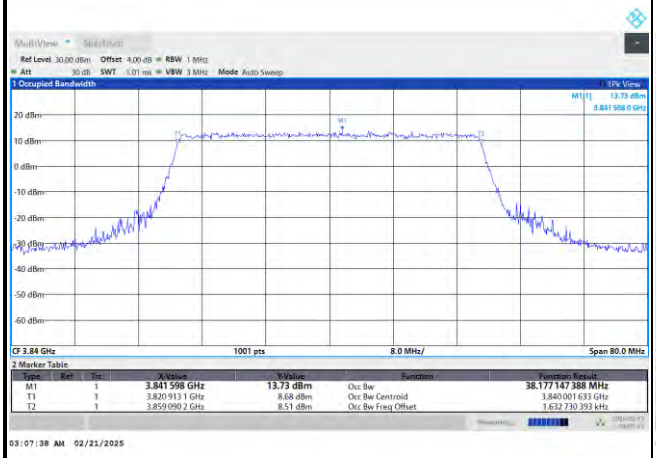
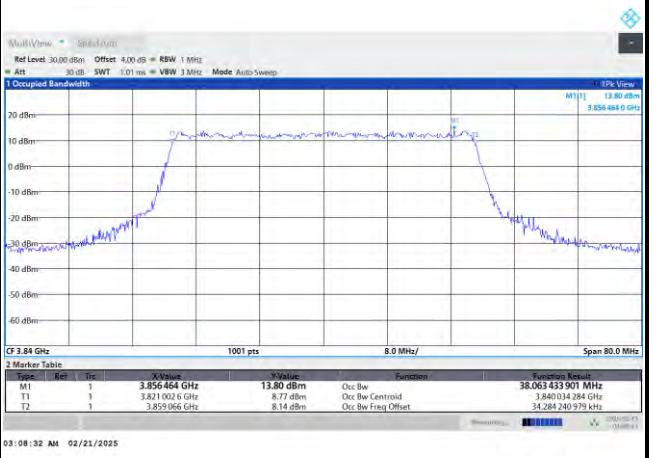
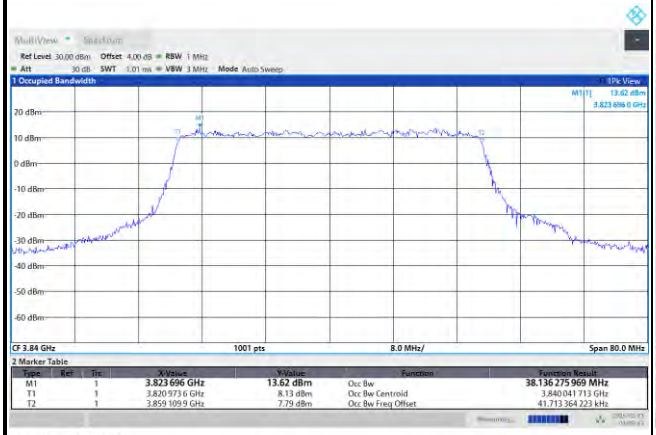
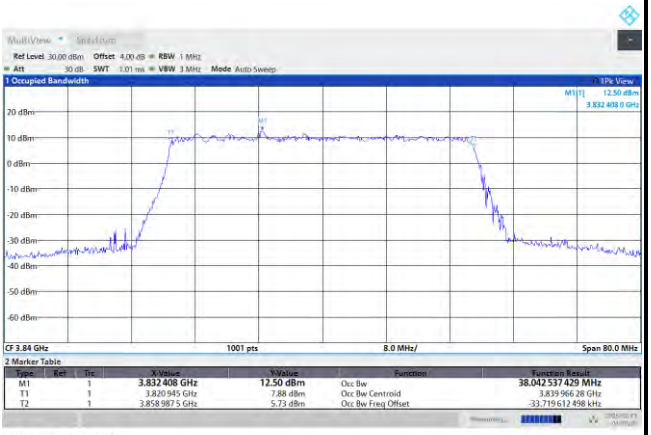
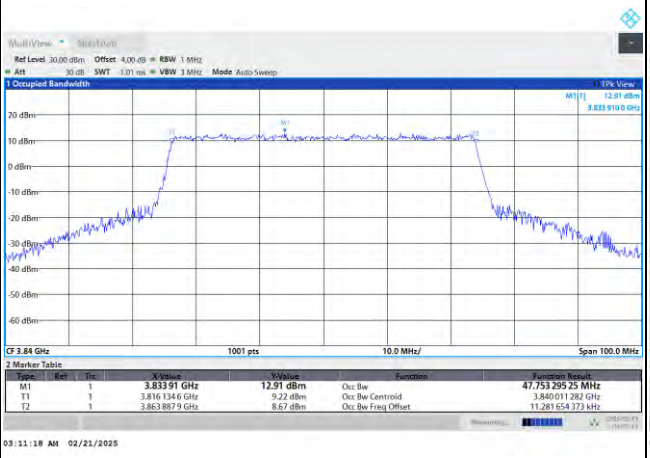
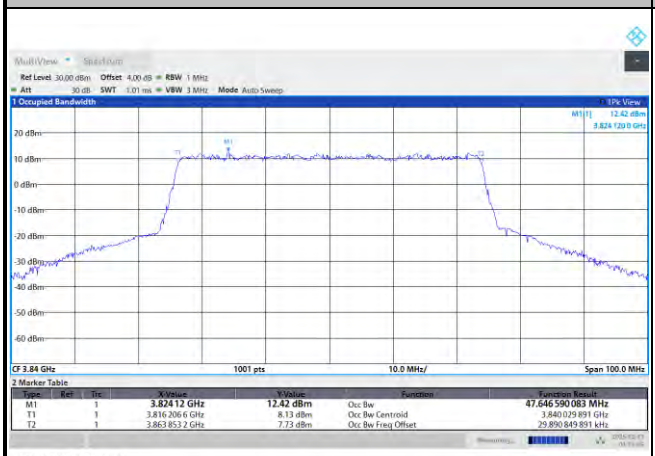
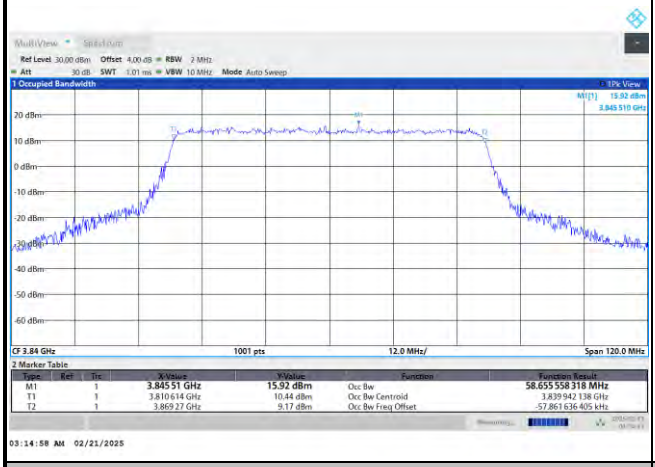
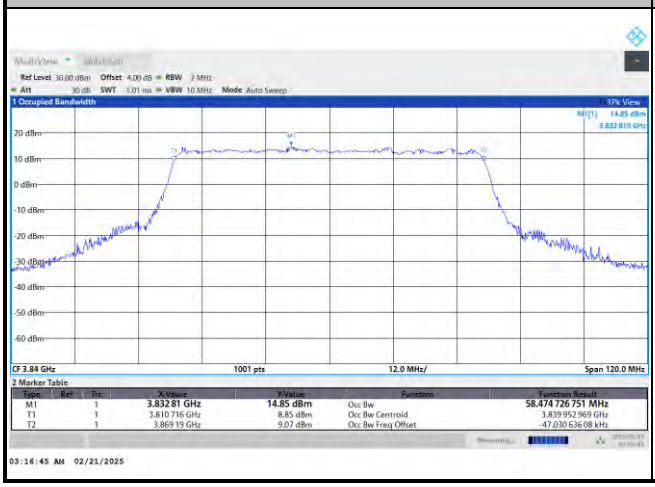
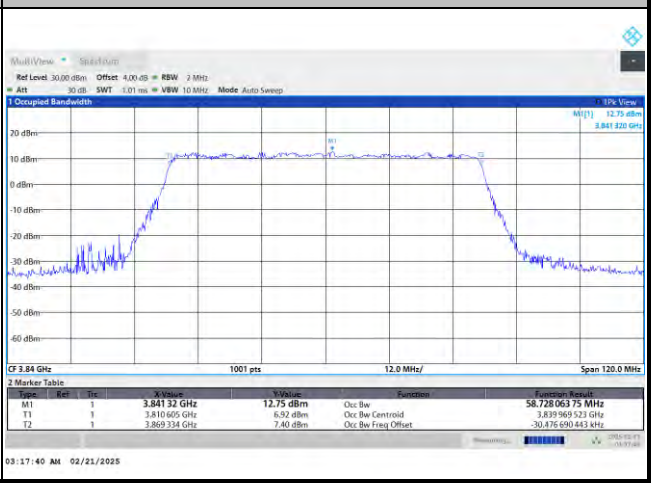
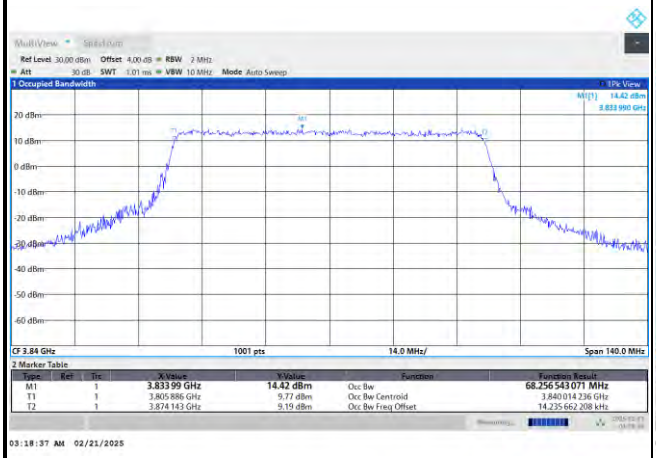
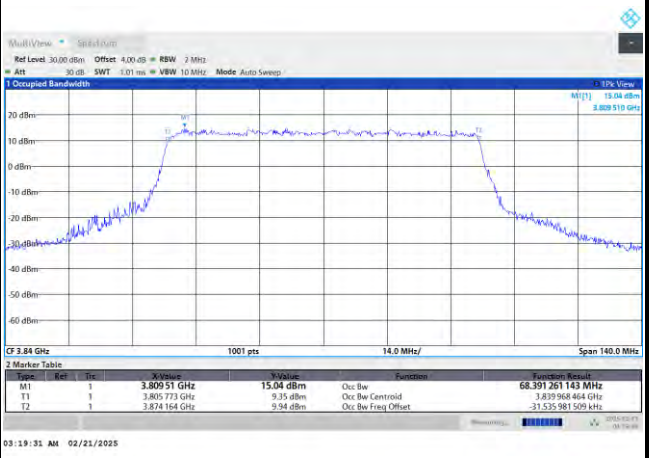
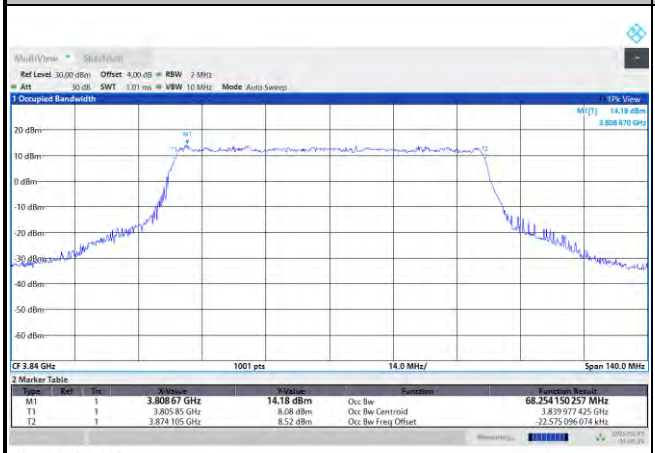
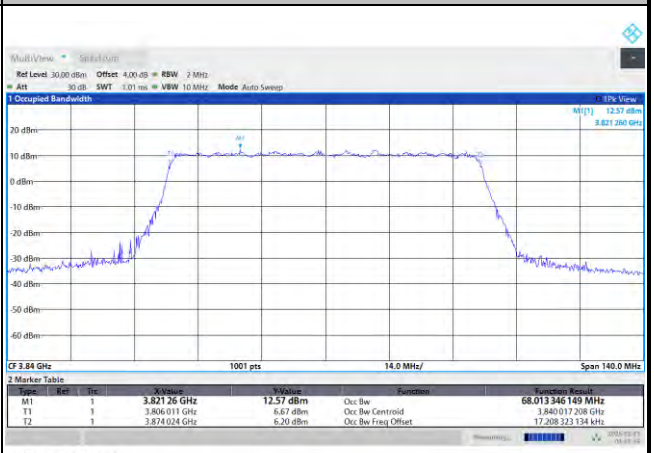
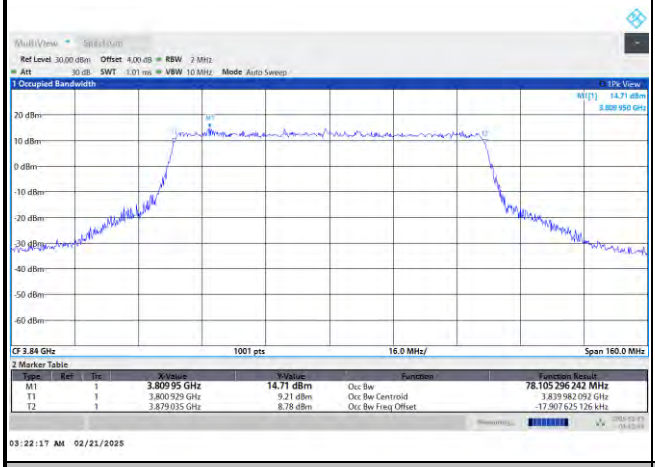
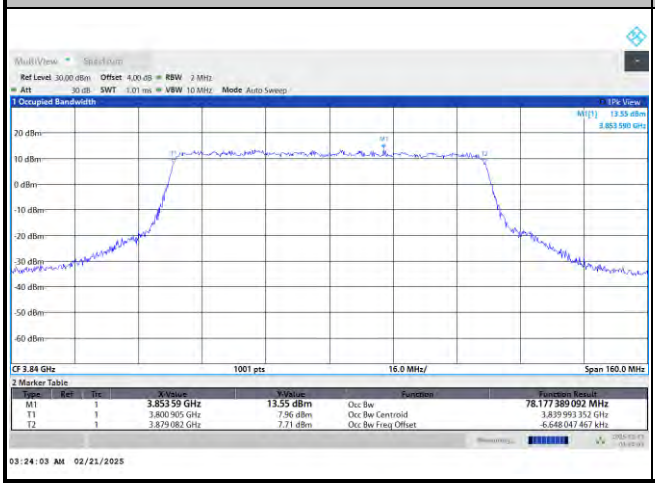
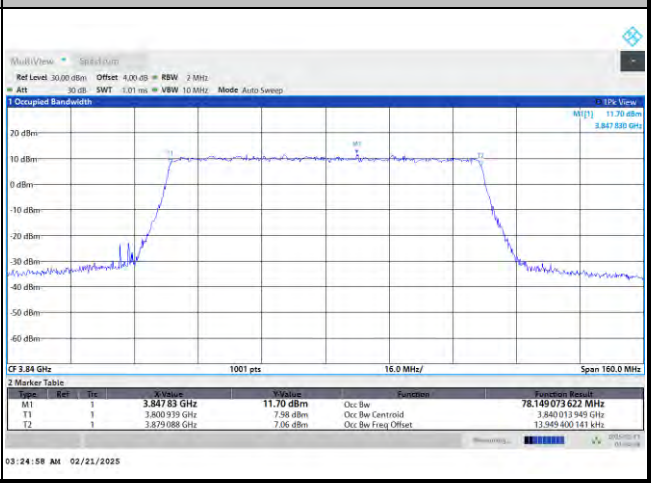
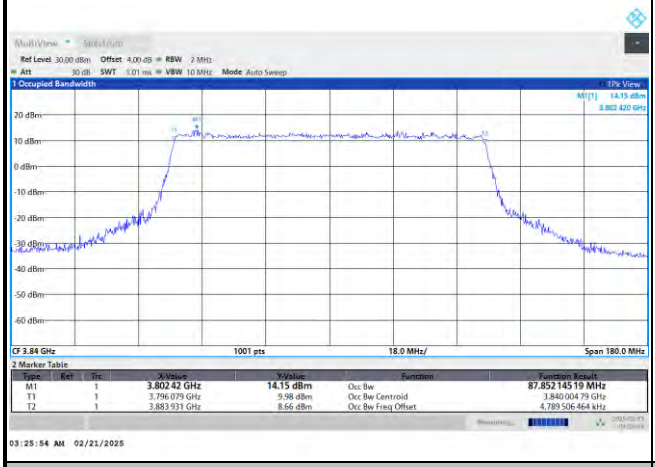
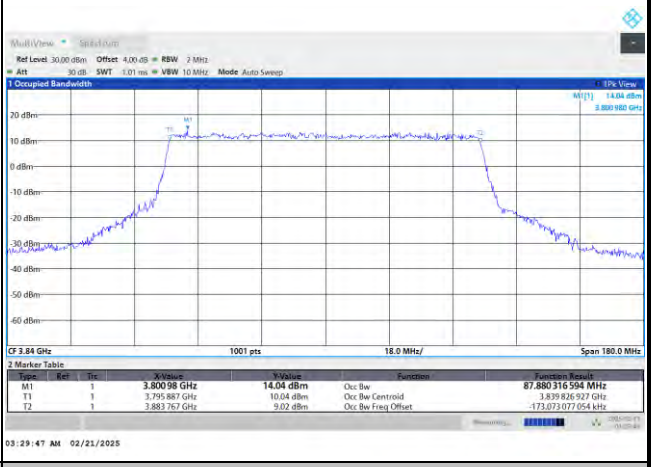
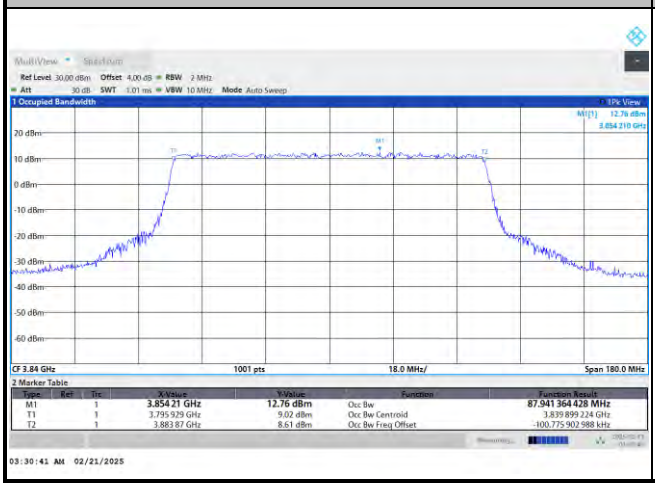
FR1 n77 / 40MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 50MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 60MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

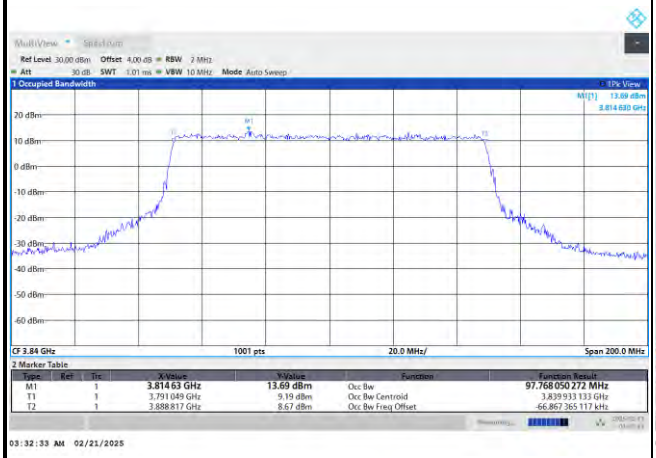
FR1 n77 / 70MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 80MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

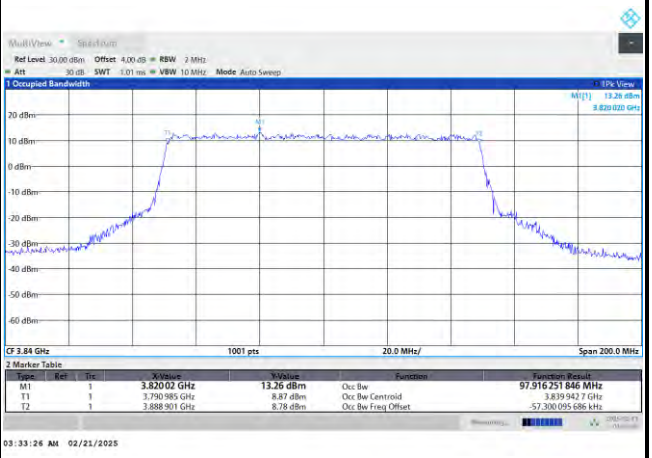
FR1 n77 / 90MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 100MHz / CP OFDM / Middle Channel / Full RB

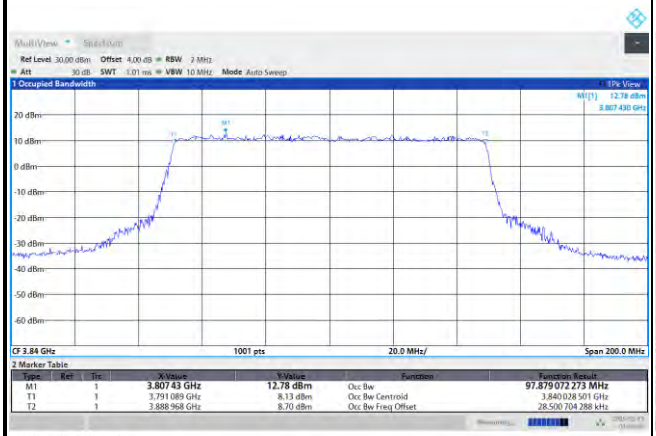
QPSK



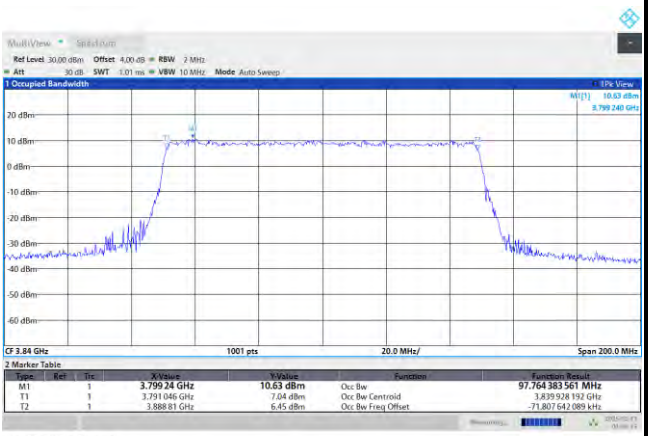
16QAM



64QAM



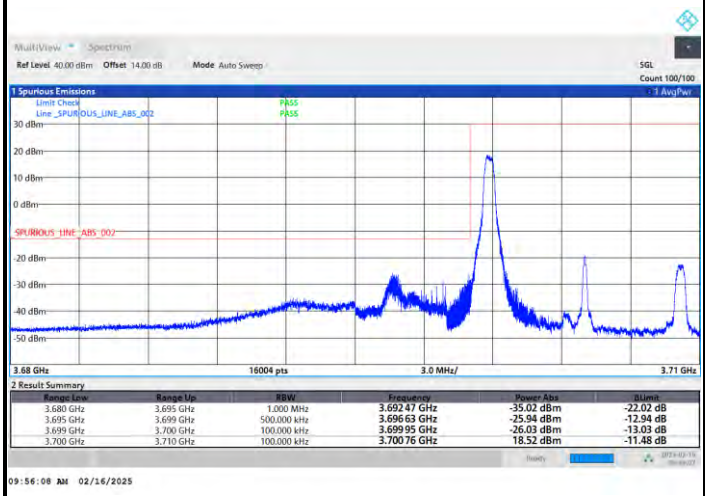
256QAM



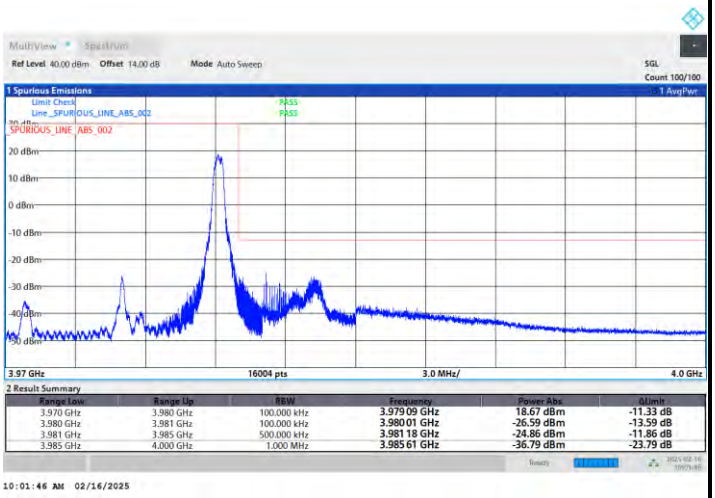
Conducted Band Edge

FR1 n77 / 10MHz / CP OFDM / QPSK

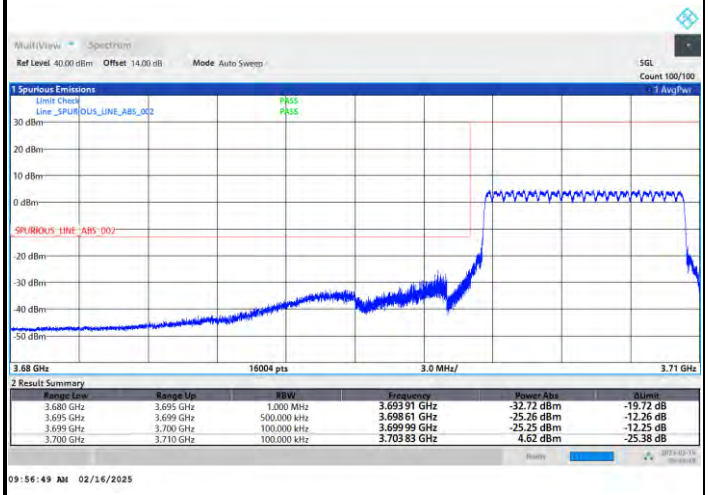
Lowest Band Edge / 1RB0



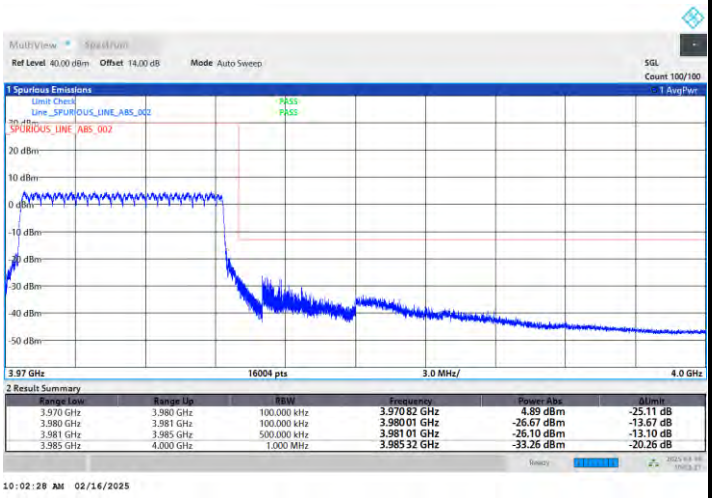
Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

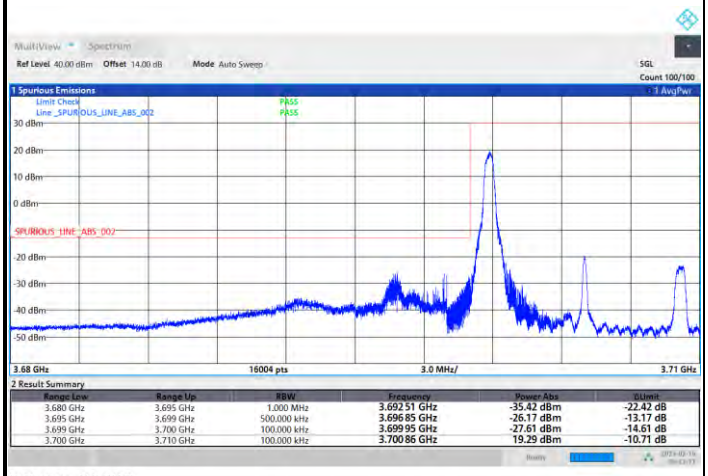


Highest Band Edge / Full RB

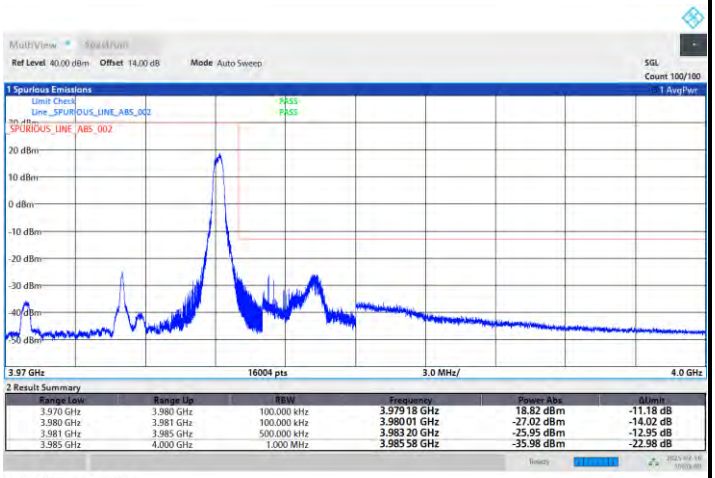


FR1 n77 / 10MHz / CP OFDM / 16QAM

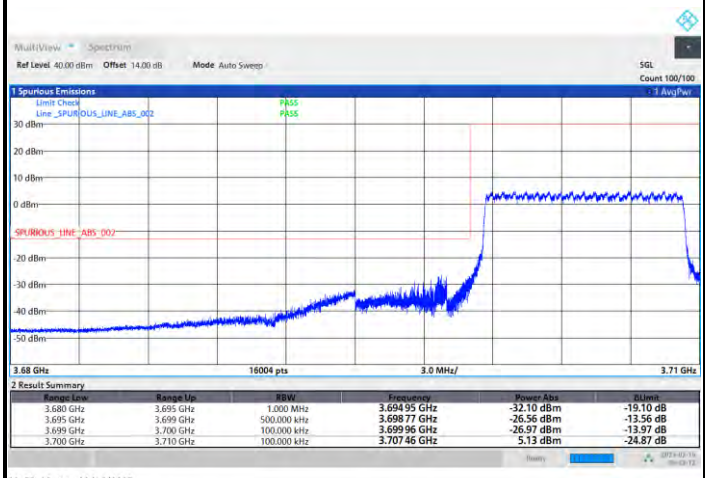
Lowest Band Edge / 1RB0



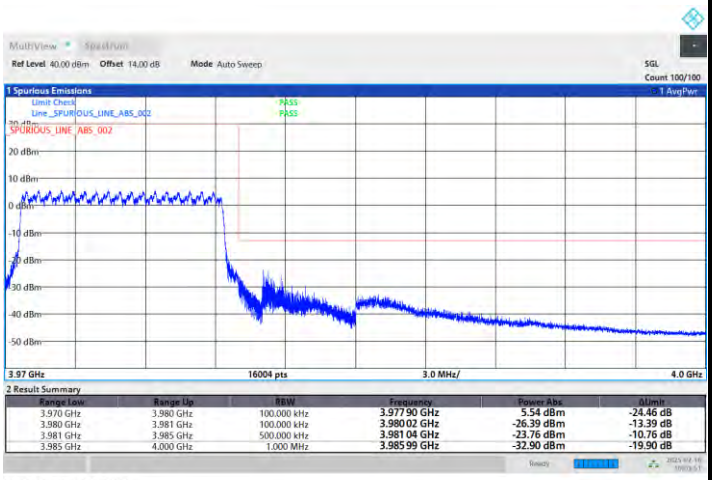
Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

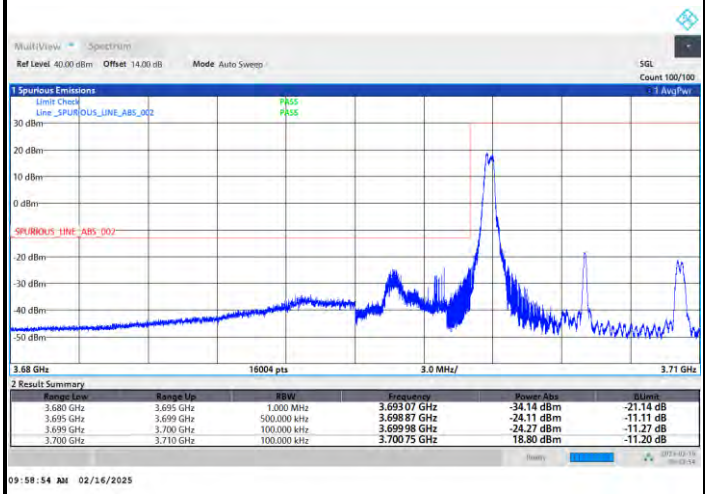


Highest Band Edge / Full RB

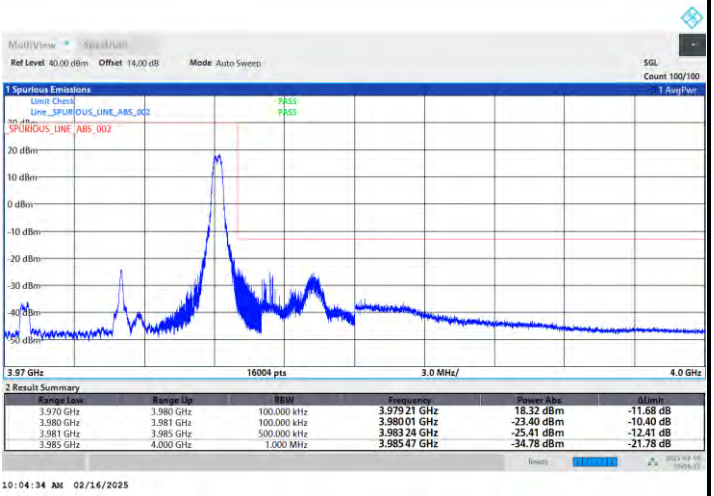


FR1 n77 / 10MHz / CP OFDM / 64QAM

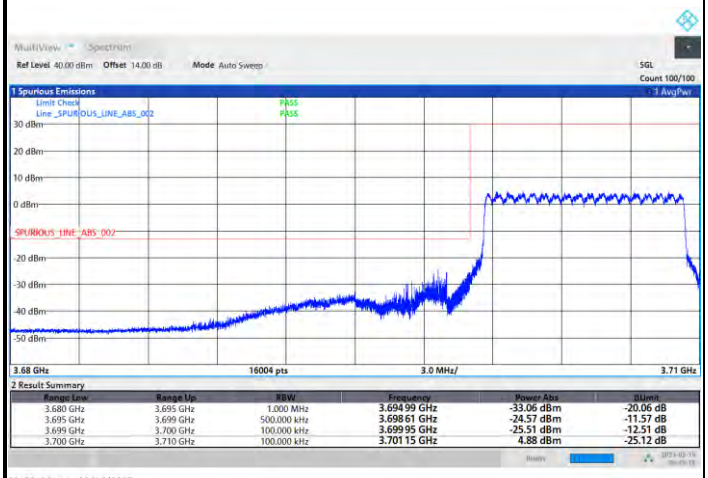
Lowest Band Edge / 1RB0



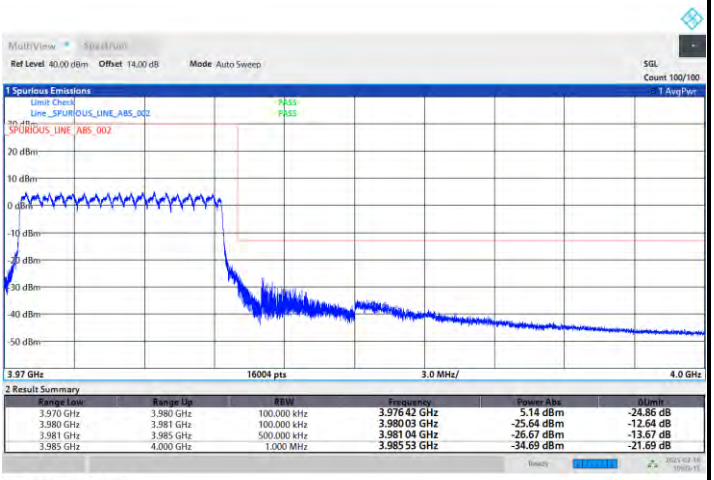
Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

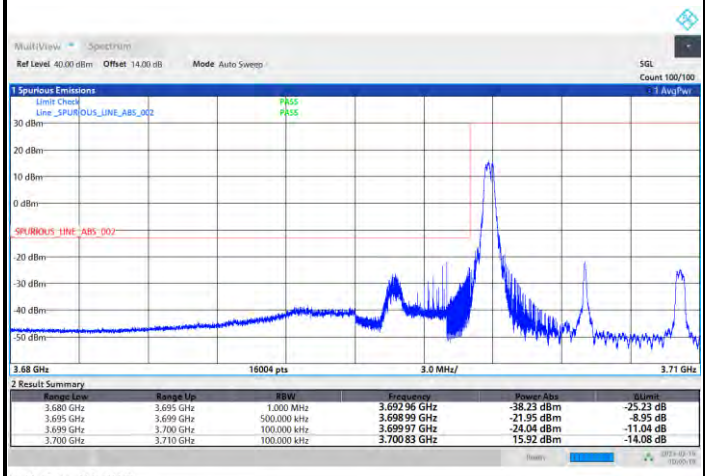


Highest Band Edge / Full RB

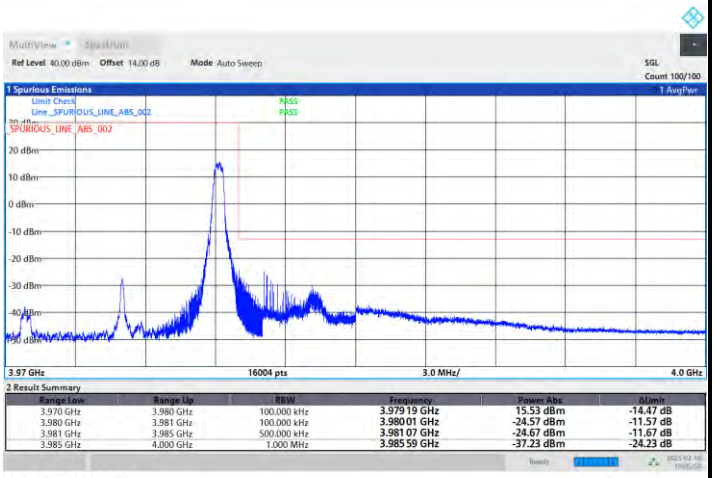


FR1 n77 / 10MHz / CP OFDM / 256QAM

Lowest Band Edge / 1RB0

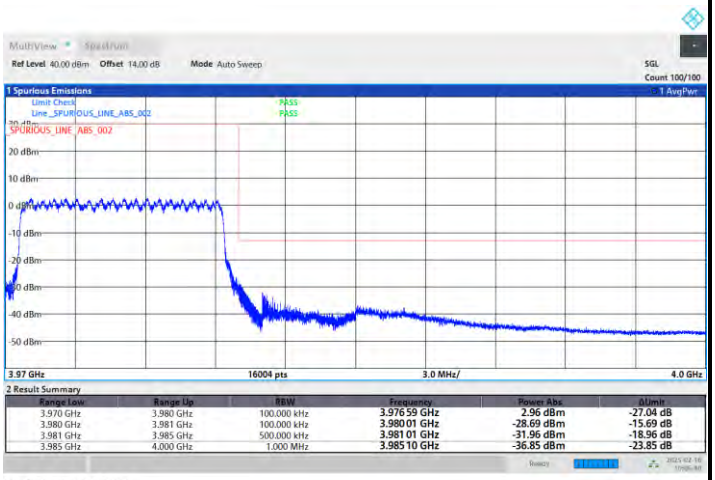


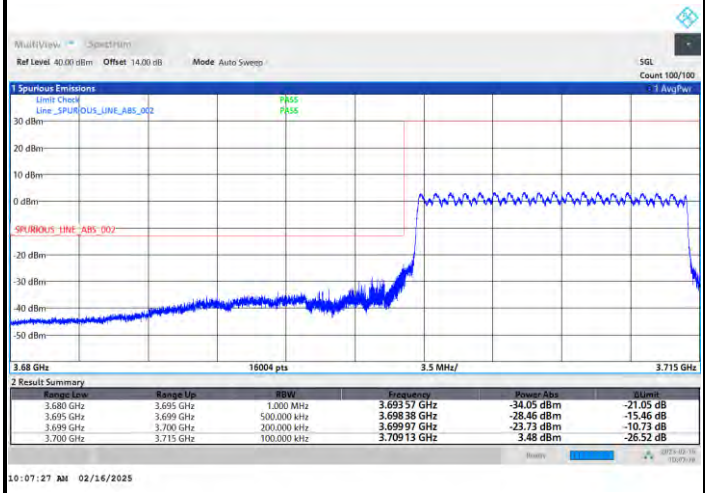
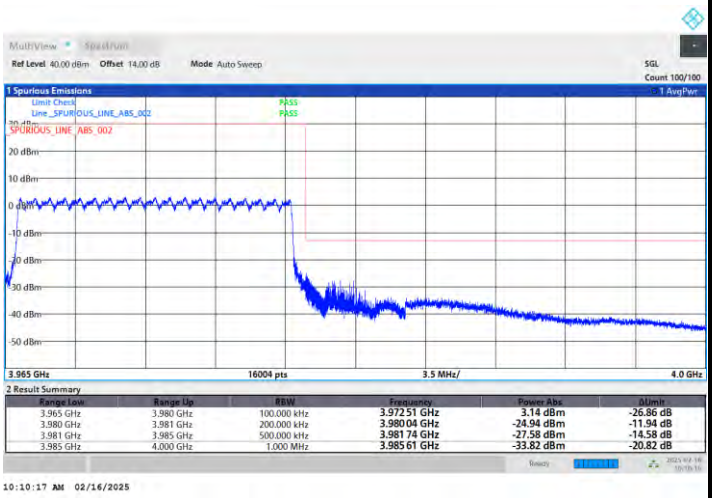
Highest Band Edge / 1RBmax

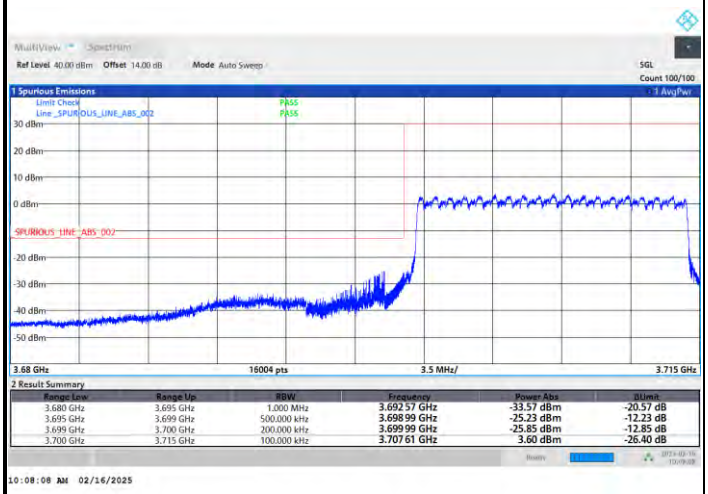
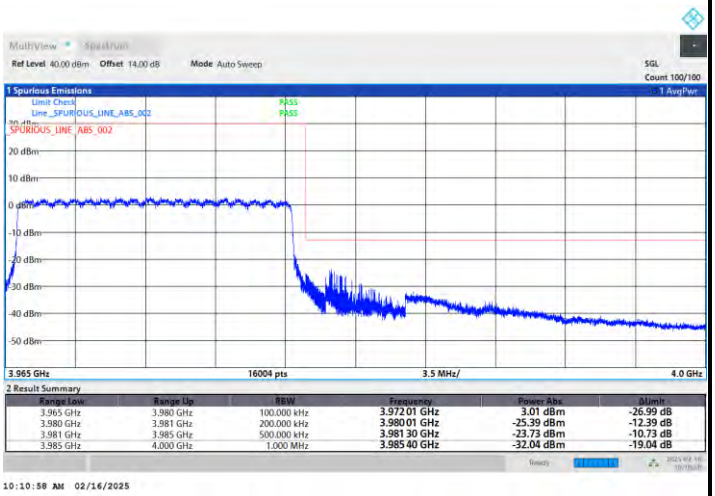


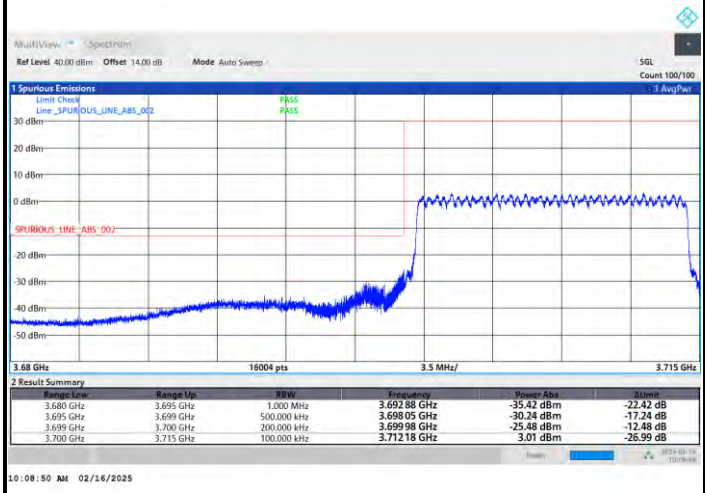
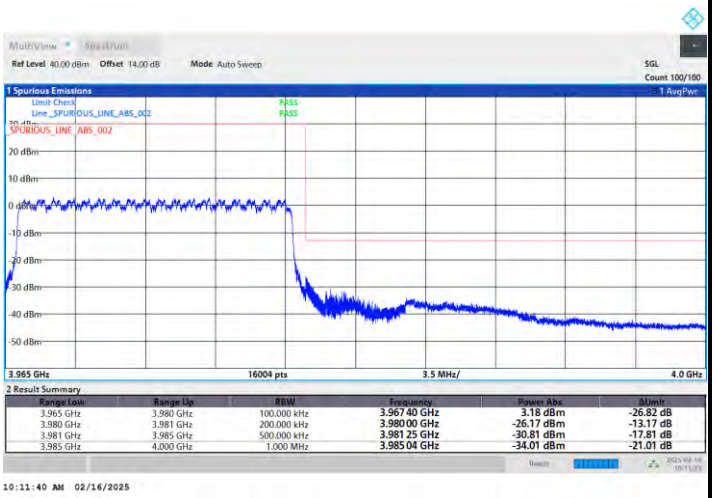
Lowest Band Edge / Full RB

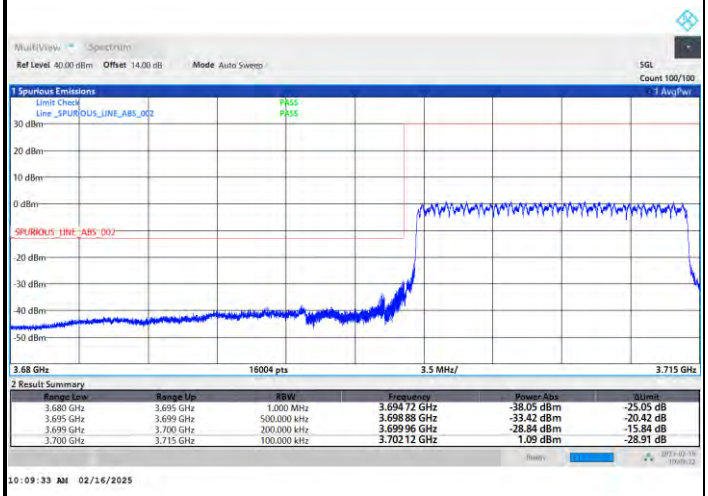
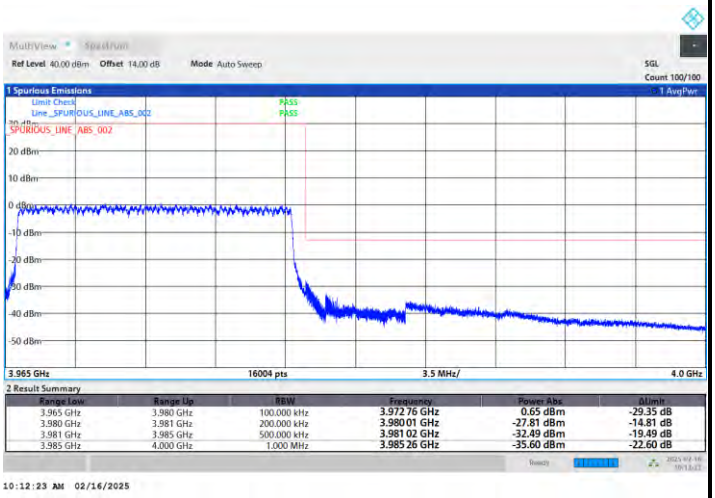
Highest Band Edge / Full RB

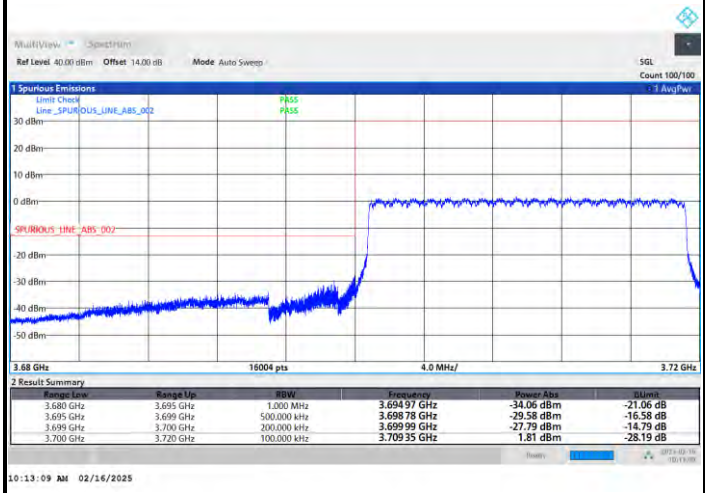
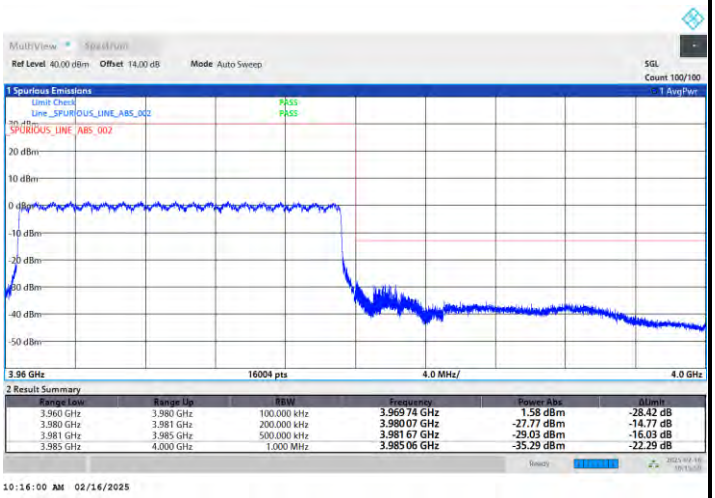


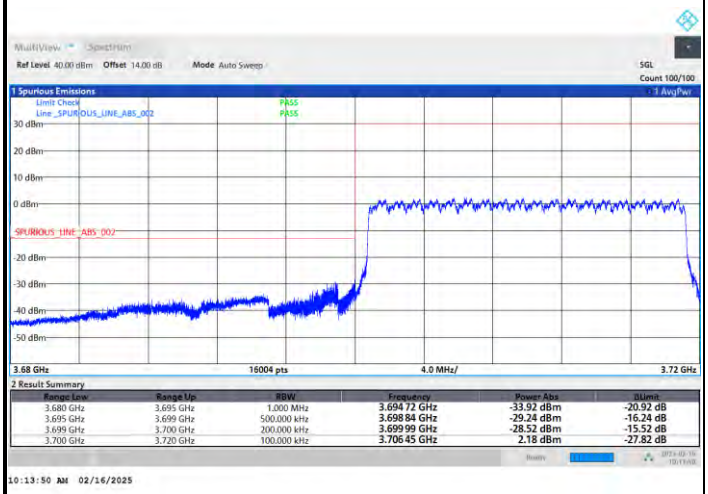
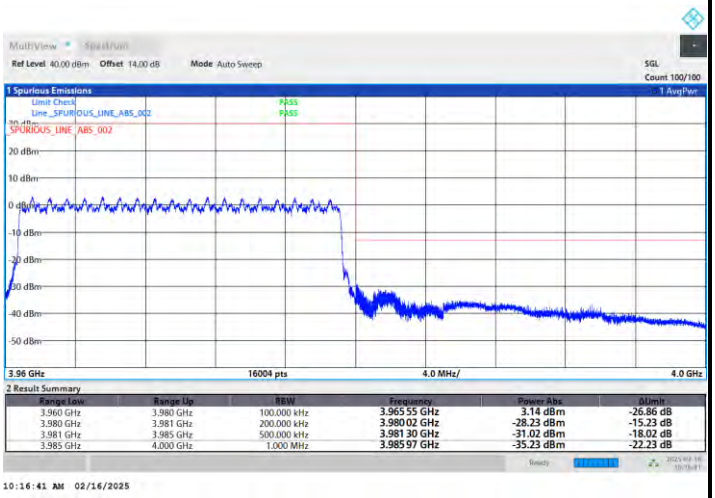
FR1 n77 / 15MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

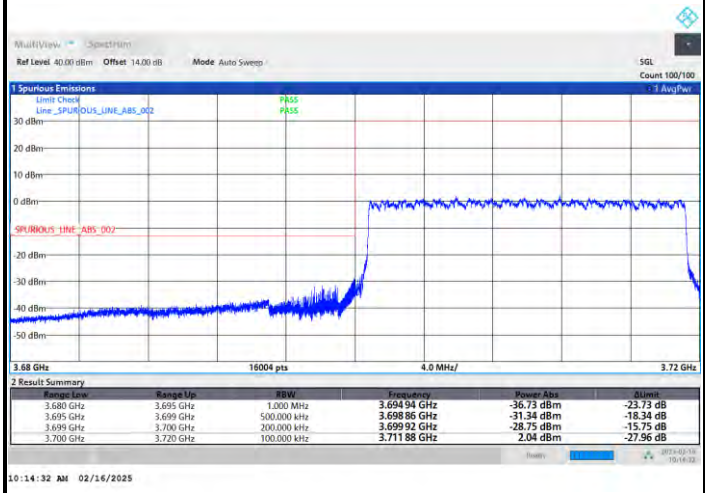
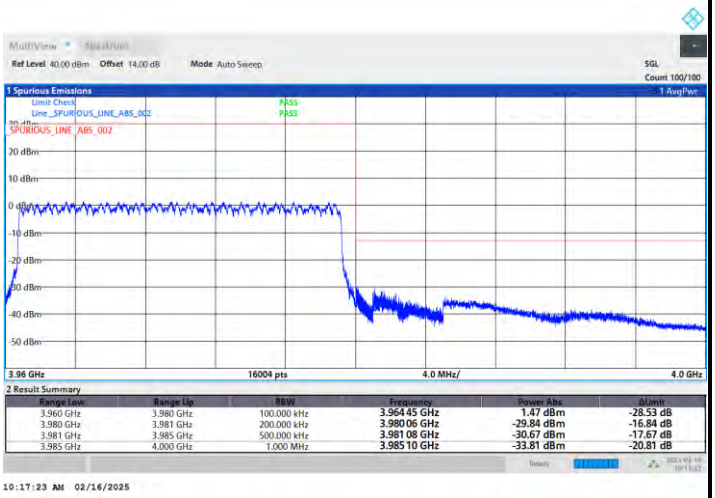
FR1 n77 / 15MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 15MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 15MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

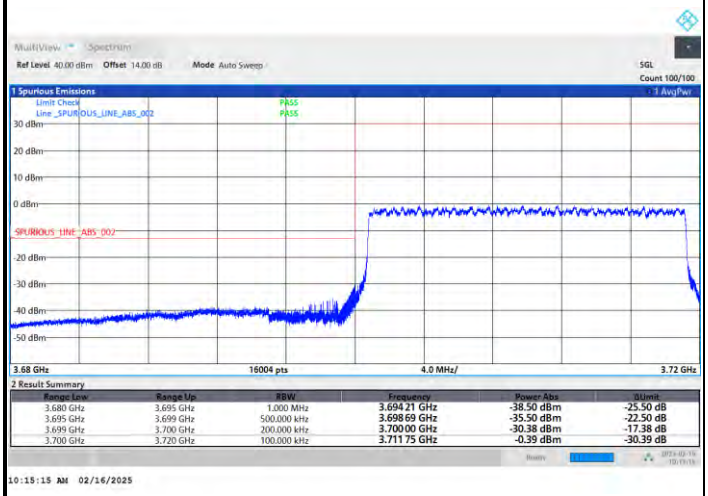
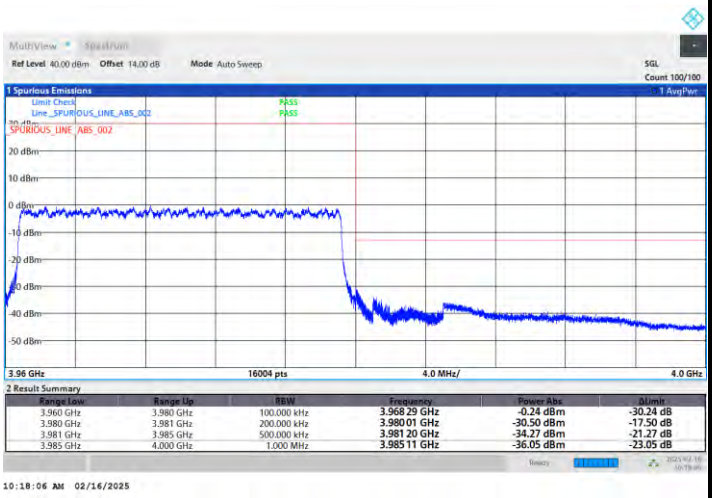
FR1 n77 / 20MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 20MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 20MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.694 94 GHz	-36.73 dBm	-23.73 dB
3.695 GHz	3.699 GHz	500.000 kHz	3.698 86 GHz	-31.34 dBm	-18.34 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.699 92 GHz	-28.75 dBm	-15.75 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.711 88 GHz	2.04 dBm	-27.96 dB

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.964 45 GHz	1.47 dBm	-28.53 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.980 06 GHz	-29.84 dBm	-16.84 dB
3.981 GHz	3.985 GHz	500.000 kHz	3.981 08 GHz	-30.67 dBm	-17.67 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.985 10 GHz	-33.81 dBm	-20.81 dB

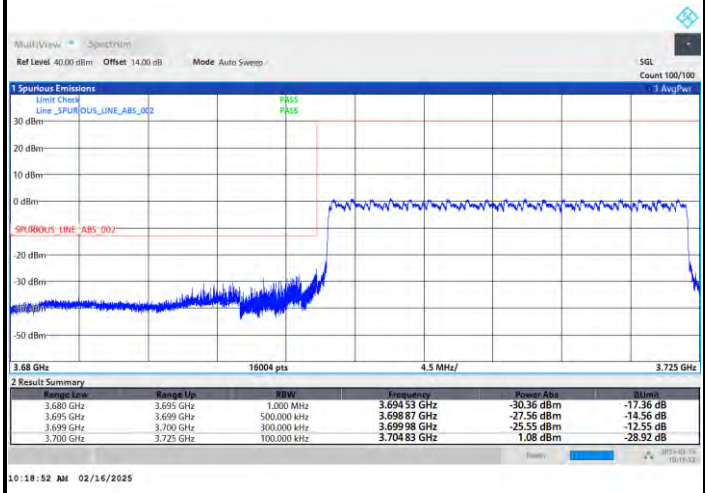
FR1 n77 / 20MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.694 21 GHz	-38.50 dBm	-25.50 dB
3.695 GHz	3.699 GHz	500.000 kHz	3.698 69 GHz	-35.50 dBm	-22.50 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.700 00 GHz	-30.38 dBm	-17.38 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.711 75 GHz	-0.39 dBm	-30.39 dB

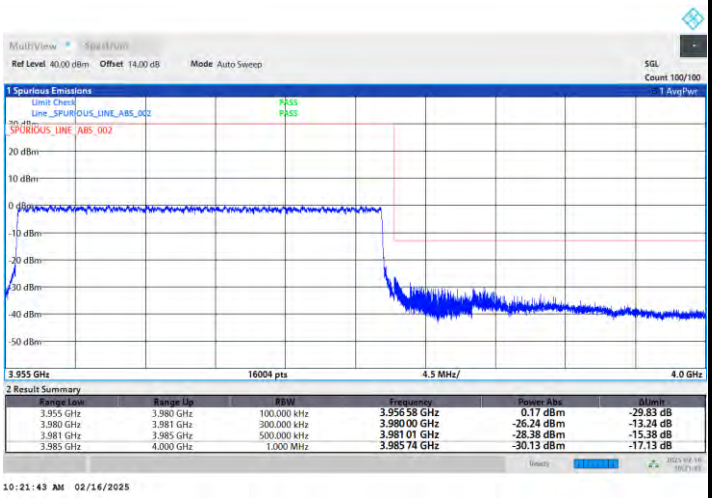
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.968 29 GHz	-0.24 dBm	-30.24 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.980 01 GHz	-30.50 dBm	-17.50 dB
3.981 GHz	3.985 GHz	500.000 kHz	3.981 20 GHz	-34.27 dBm	-21.27 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.985 11 GHz	-36.05 dBm	-23.05 dB

FR1 n77 / 25MHz / CP OFDM / QPSK

Lowest Band Edge / Full RB

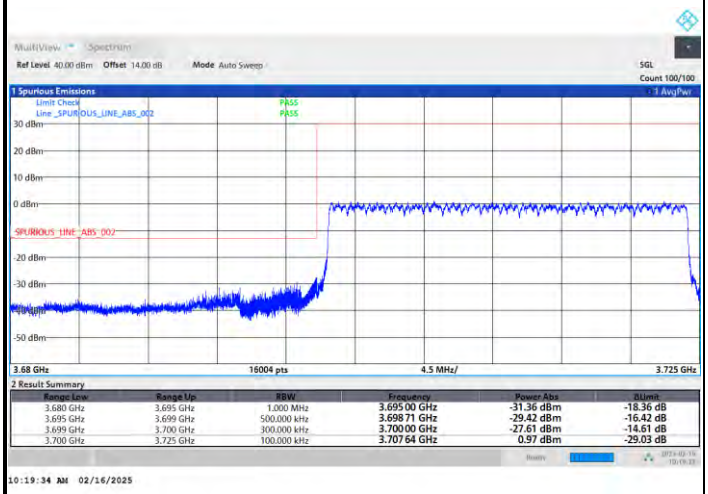


Highest Band Edge / Full RB

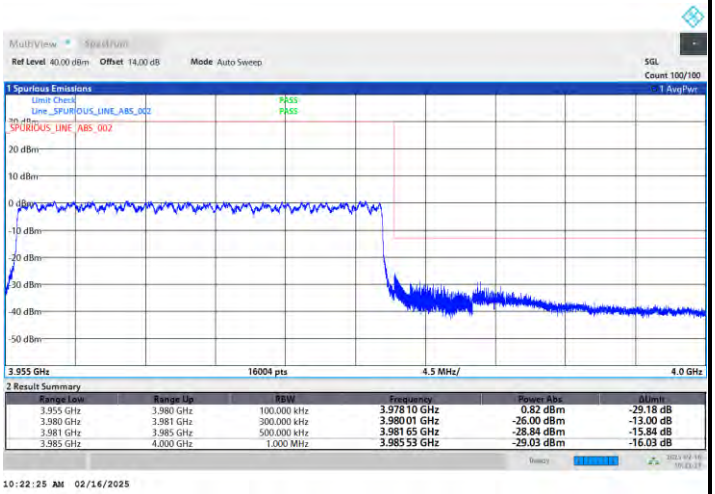


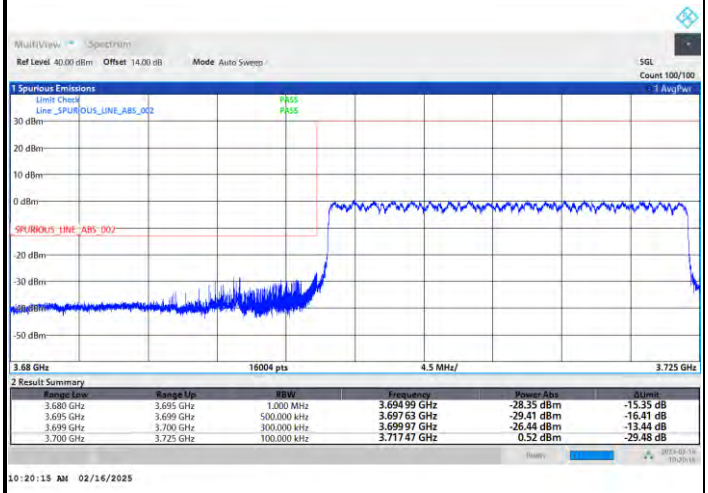
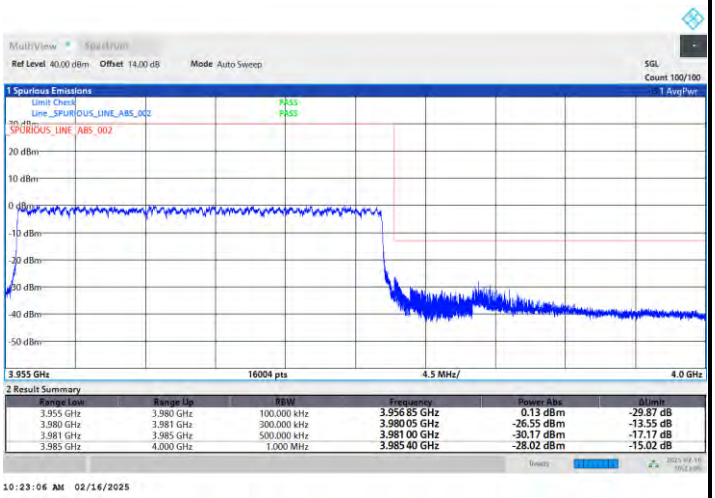
FR1 n77 / 25MHz / CP OFDM / 16QAM

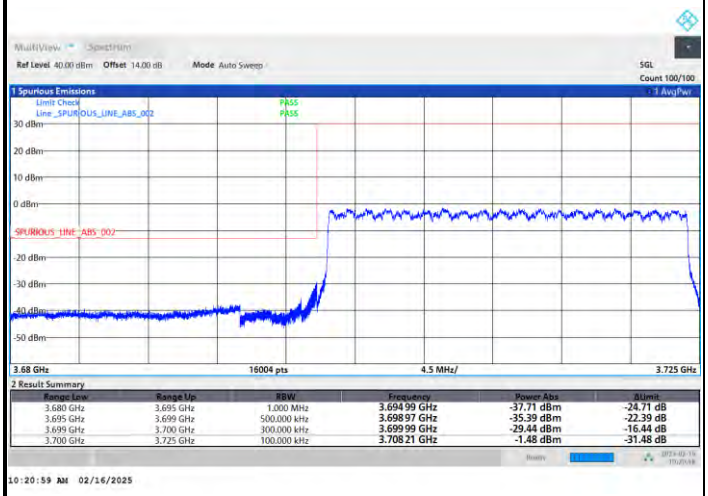
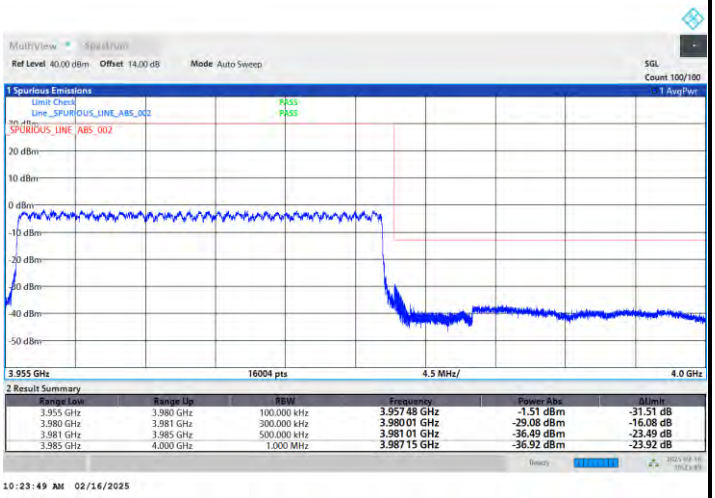
Lowest Band Edge / Full RB

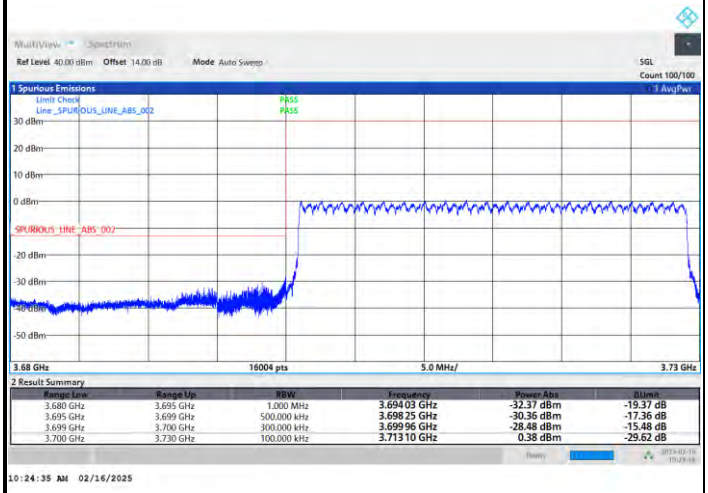
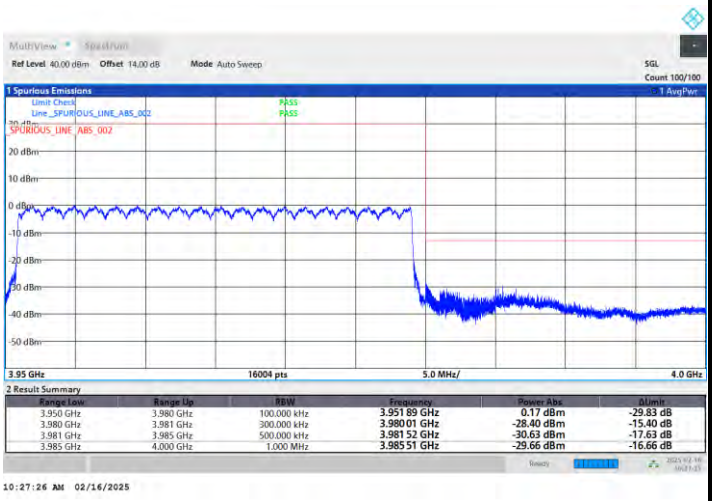


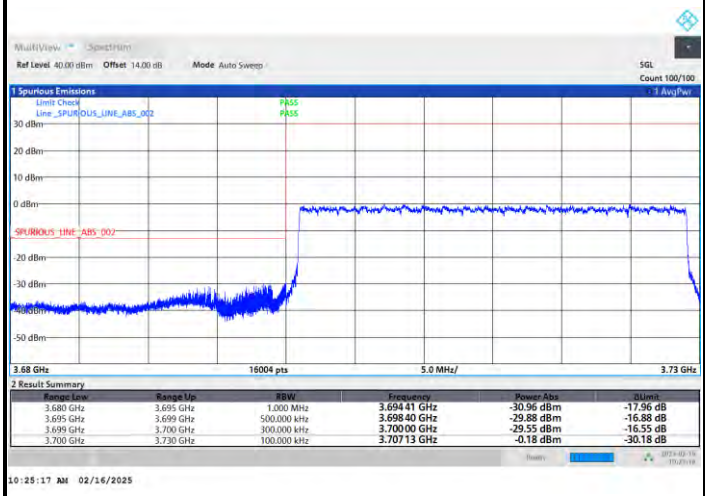
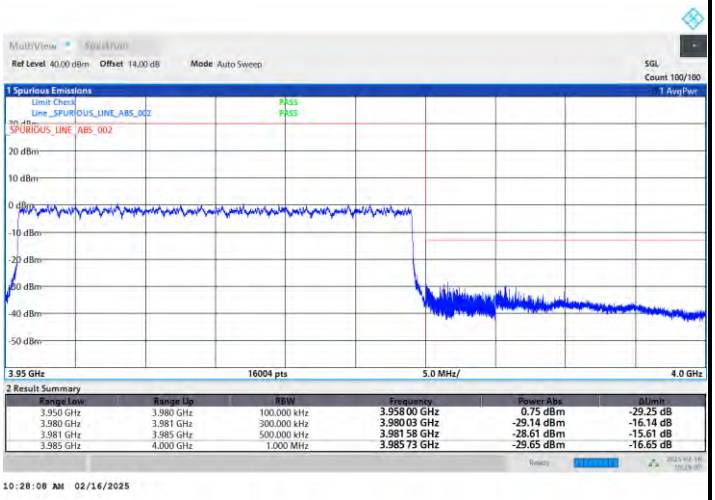
Highest Band Edge / Full RB

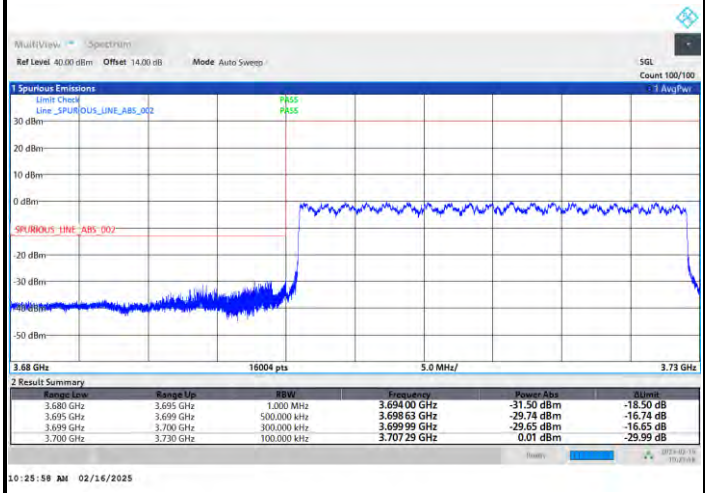
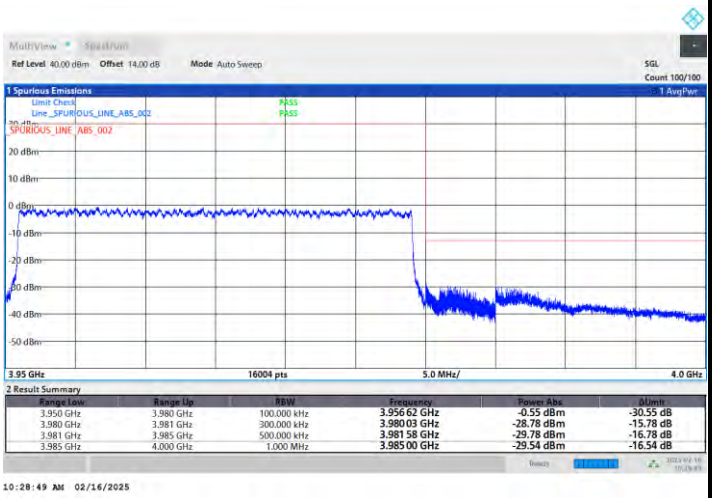


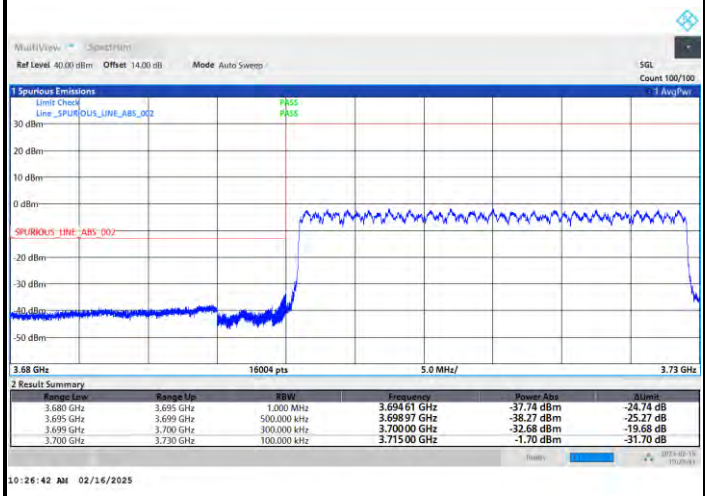
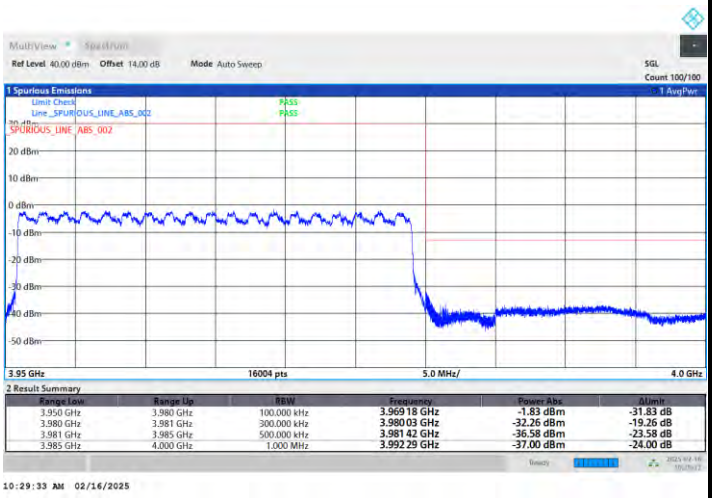
FR1 n77 / 25MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

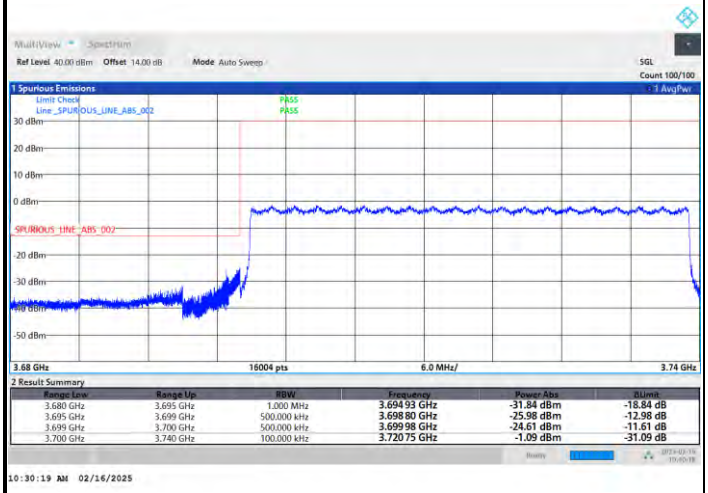
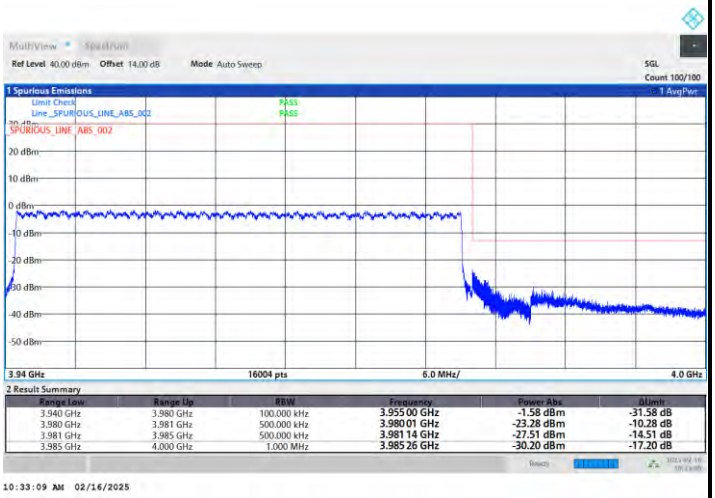
FR1 n77 / 25MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

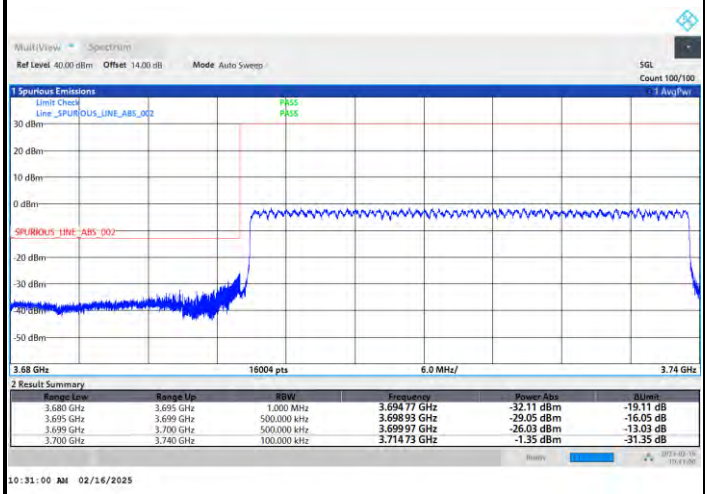
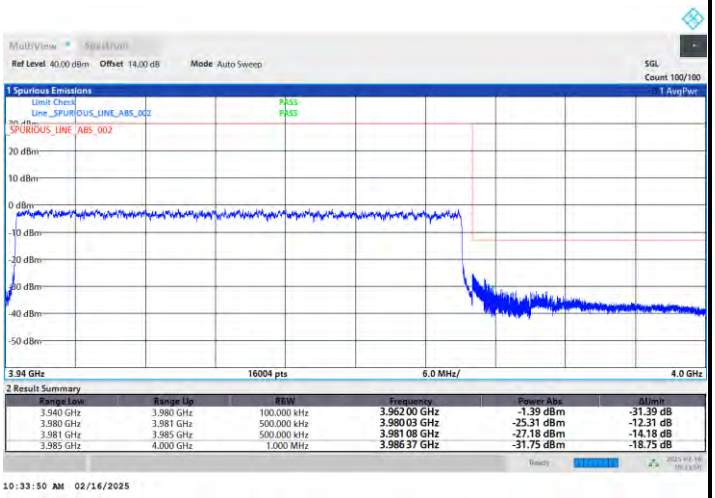
FR1 n77 / 30MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

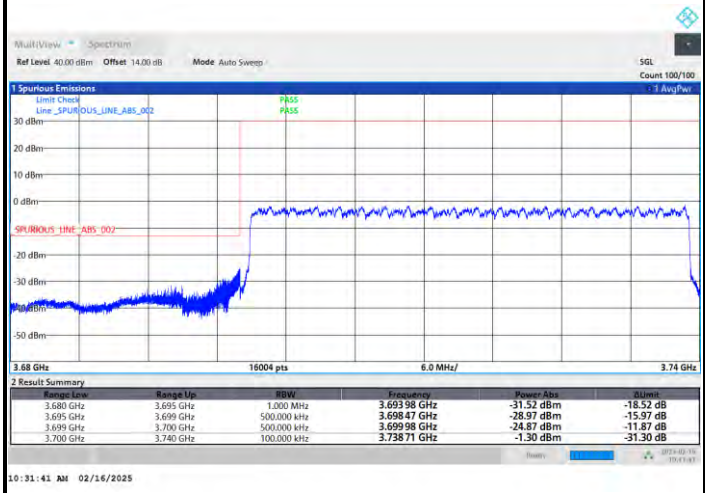
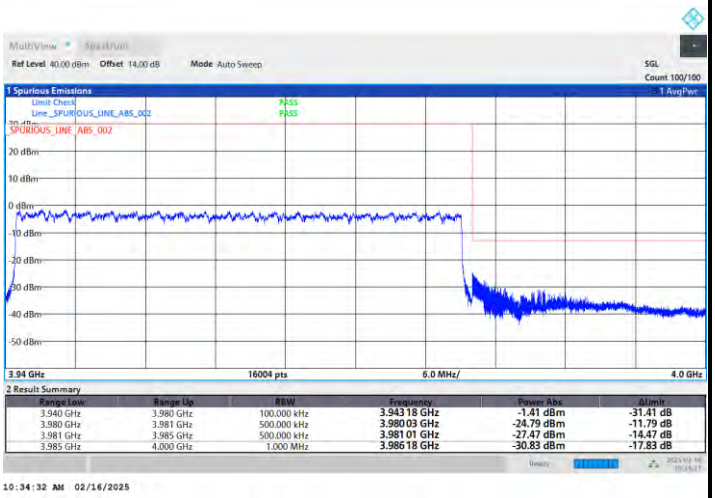
FR1 n77 / 30MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

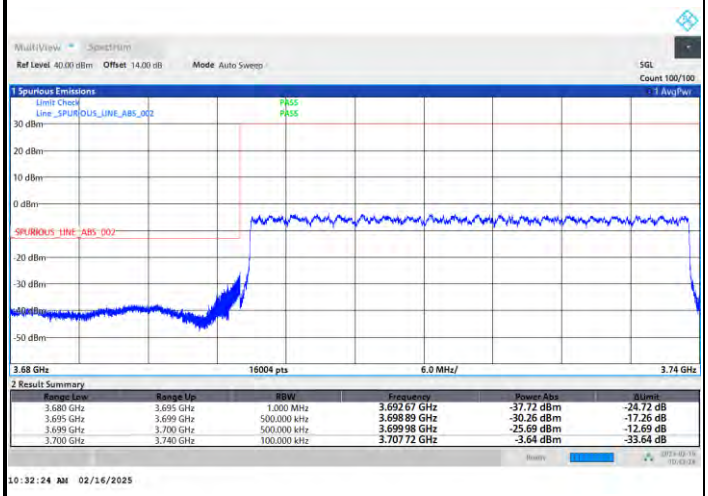
FR1 n77 / 30MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

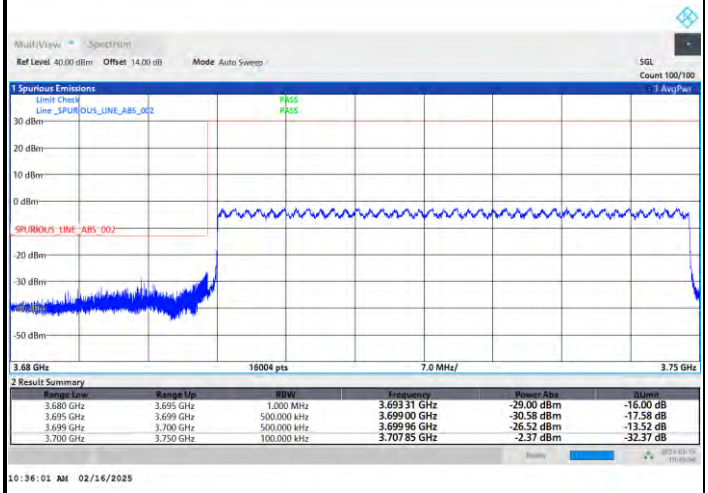
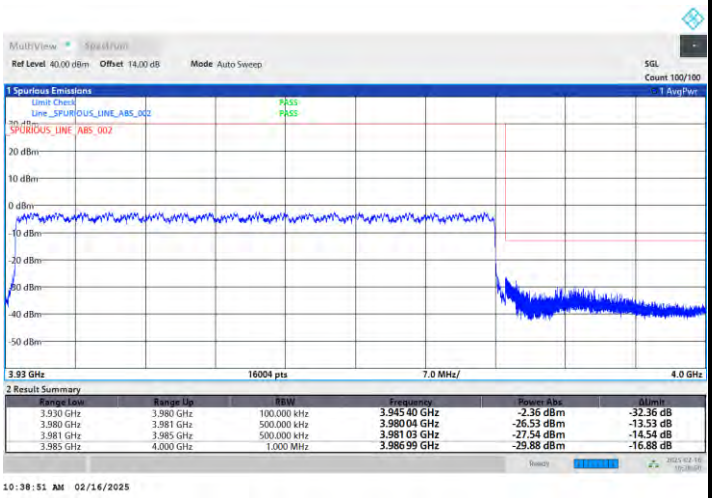
FR1 n77 / 30MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

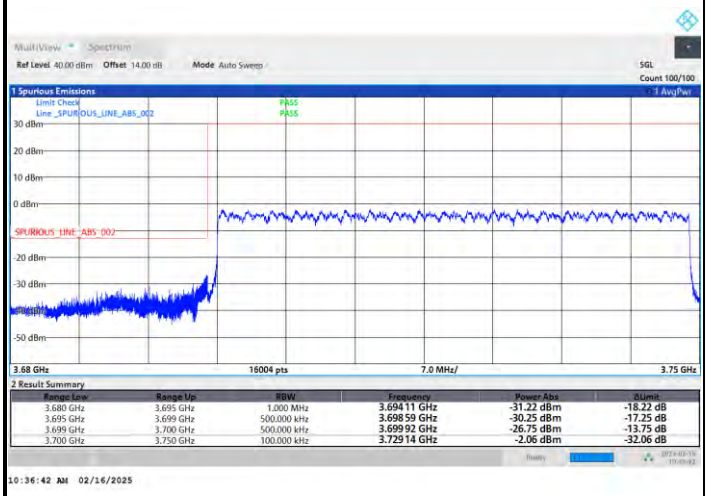
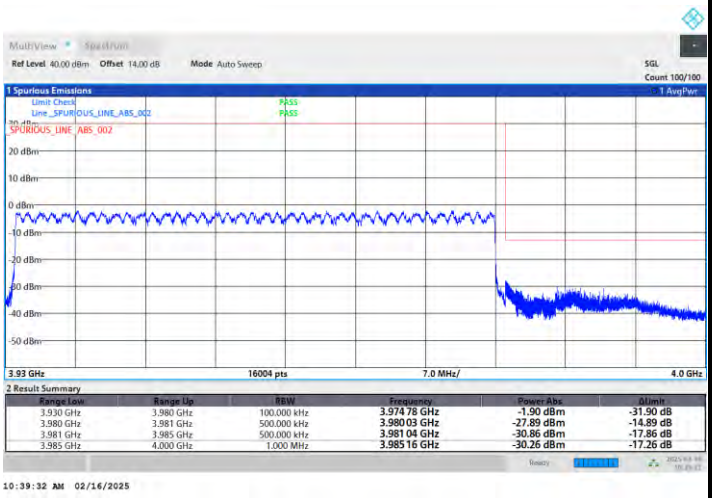
FR1 n77 / 40MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

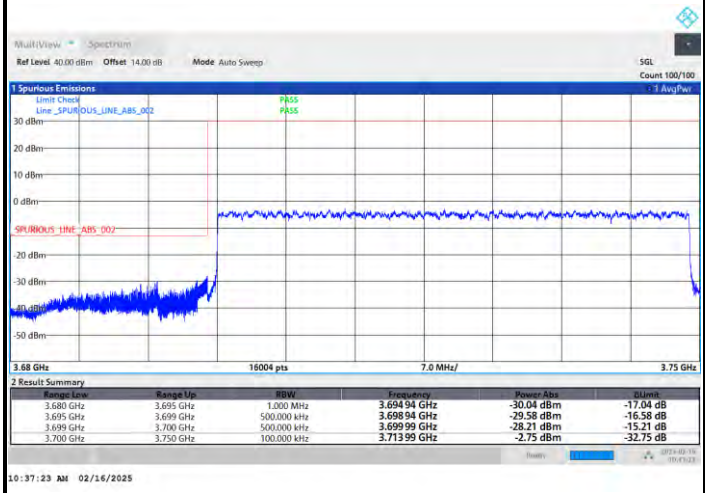
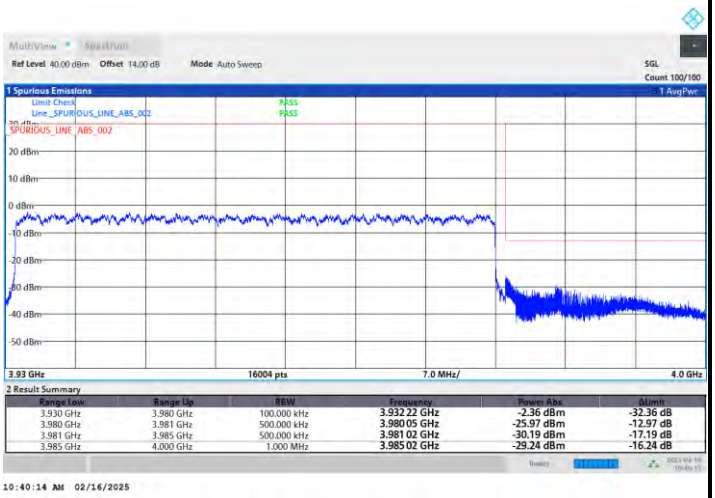
FR1 n77 / 40MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

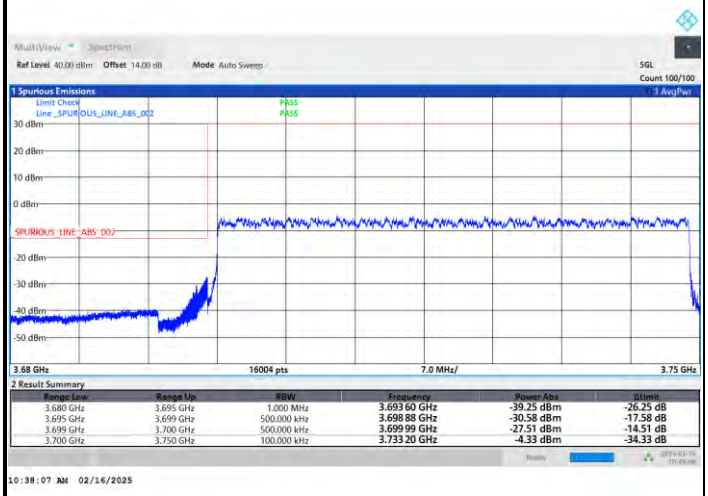
FR1 n77 / 40MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

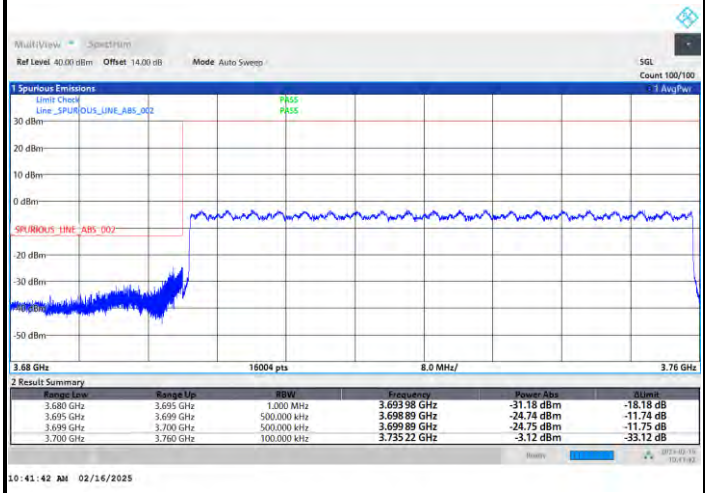
FR1 n77 / 40MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

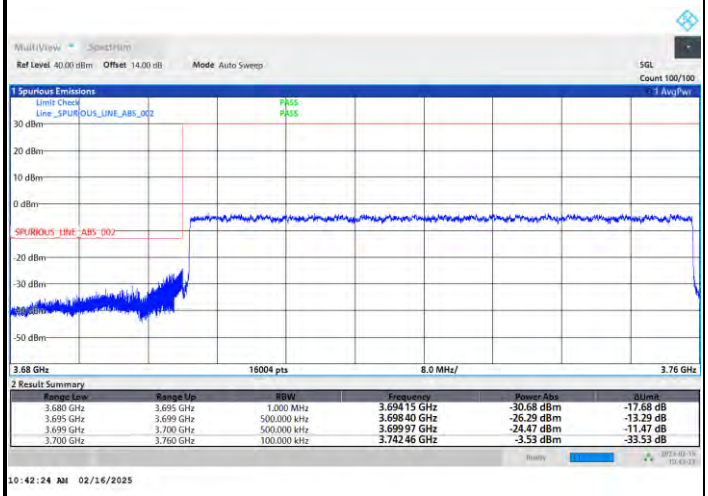
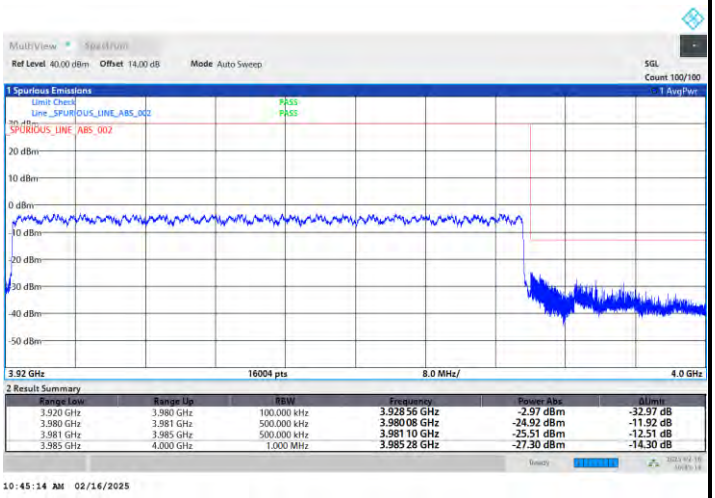
FR1 n77 / 50MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

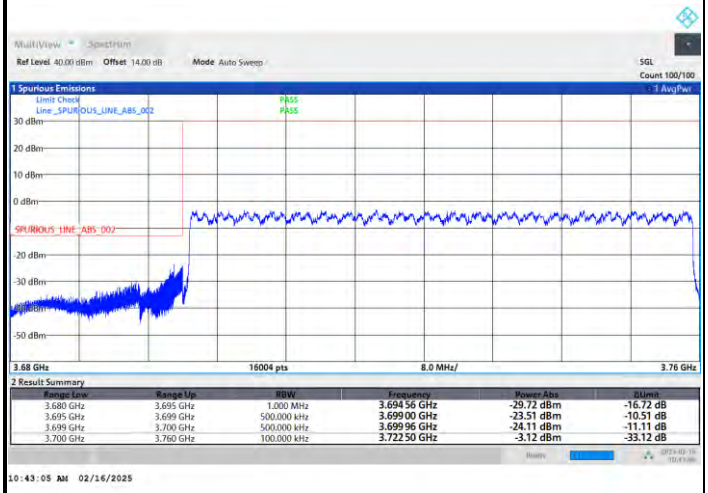
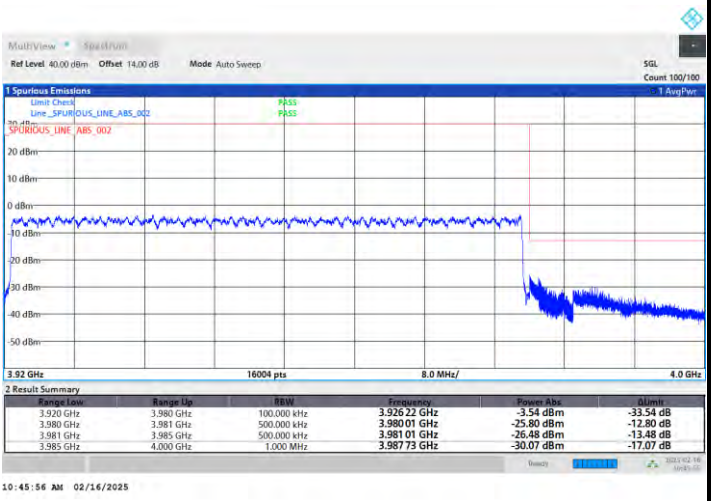
FR1 n77 / 50MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

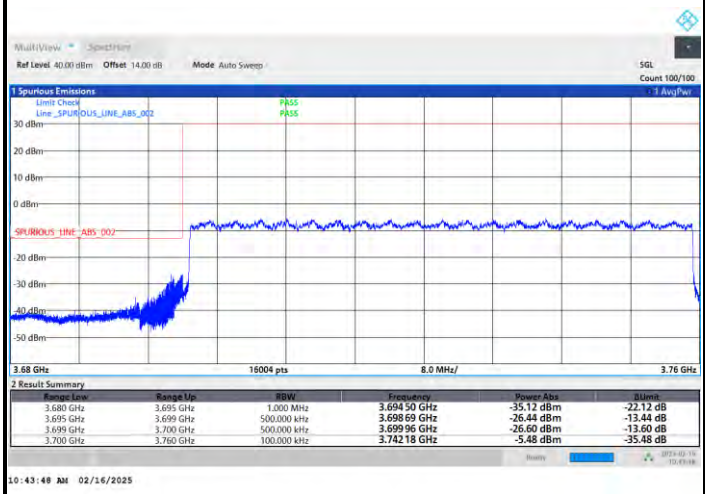
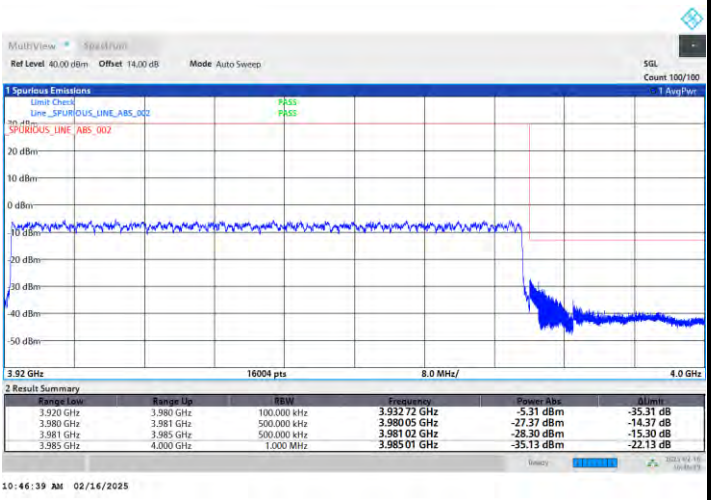
FR1 n77 / 50MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 50MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 60MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

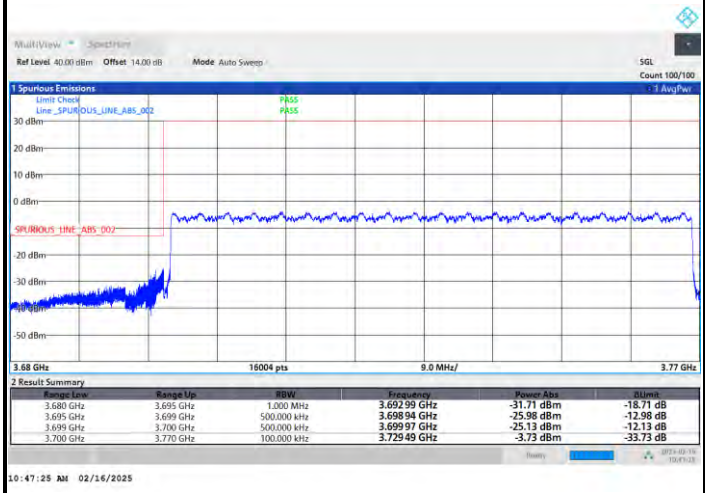
FR1 n77 / 60MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 60MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

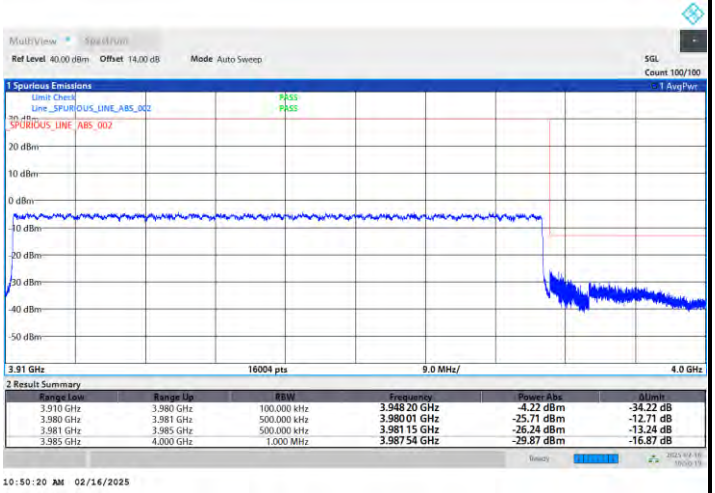
FR1 n77 / 60MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 70MHz / CP OFDM / QPSK

Lowest Band Edge / Full RB

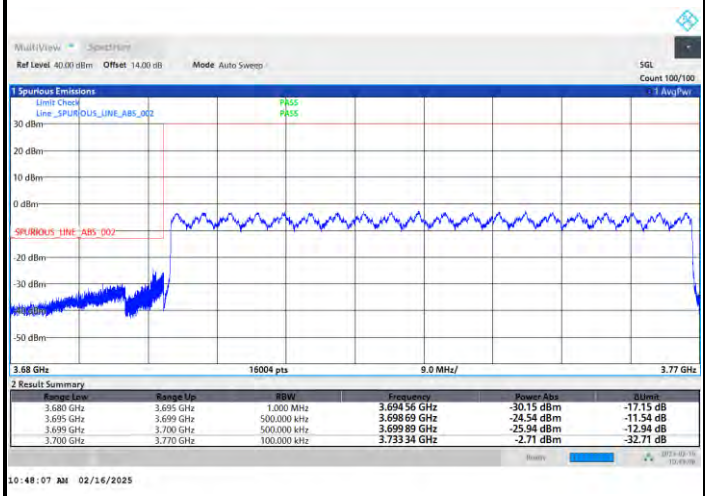


Highest Band Edge / Full RB

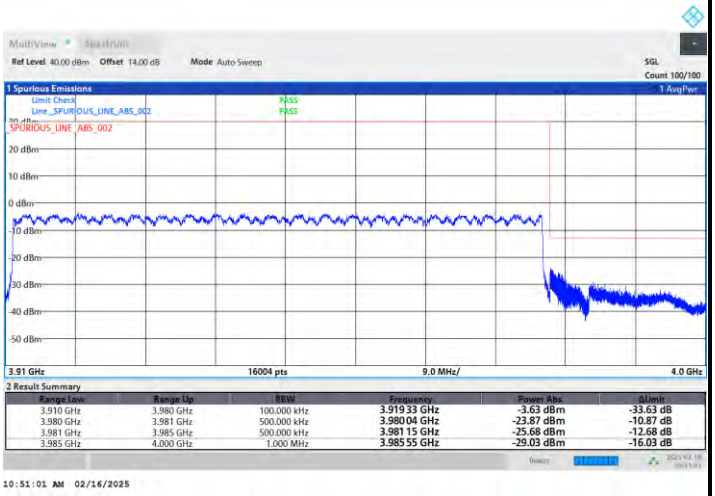


FR1 n77 / 70MHz / CP OFDM / 16QAM

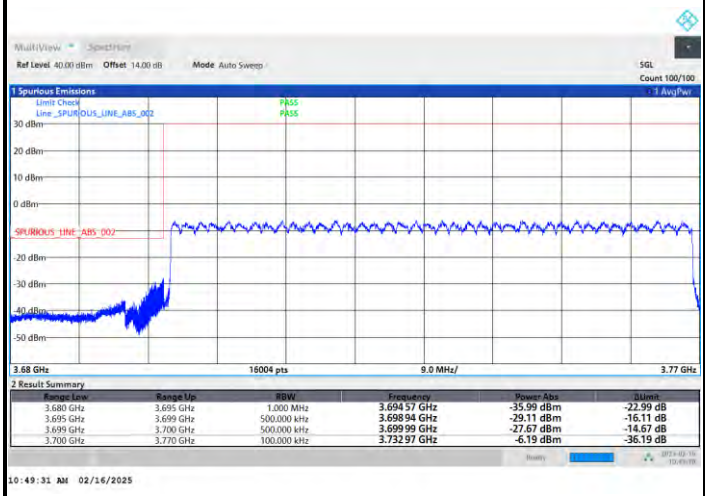
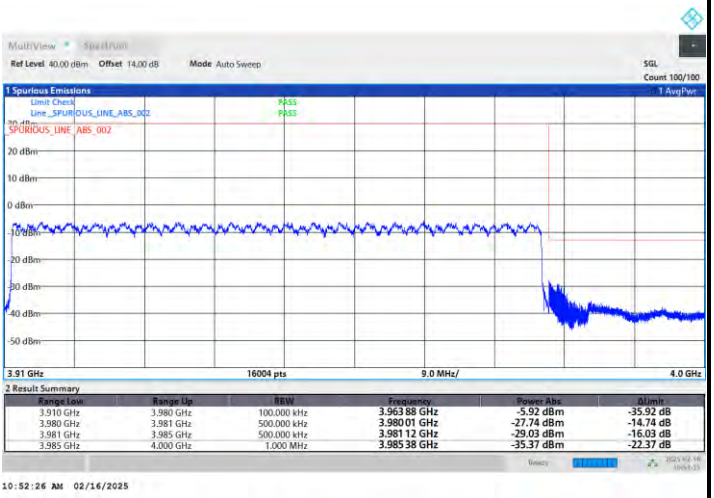
Lowest Band Edge / Full RB

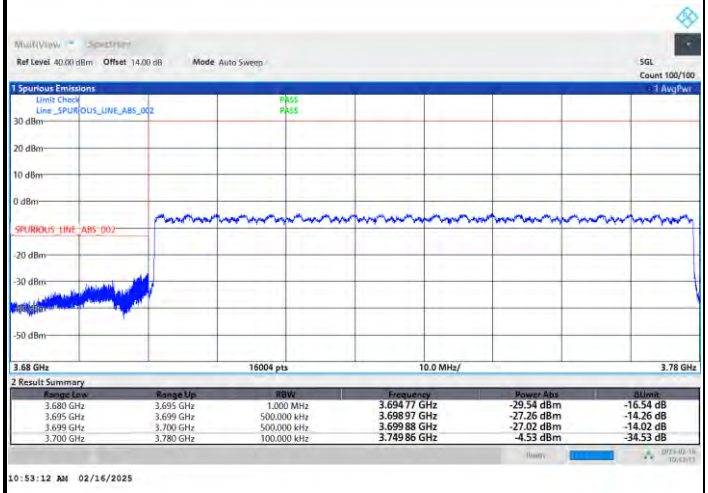
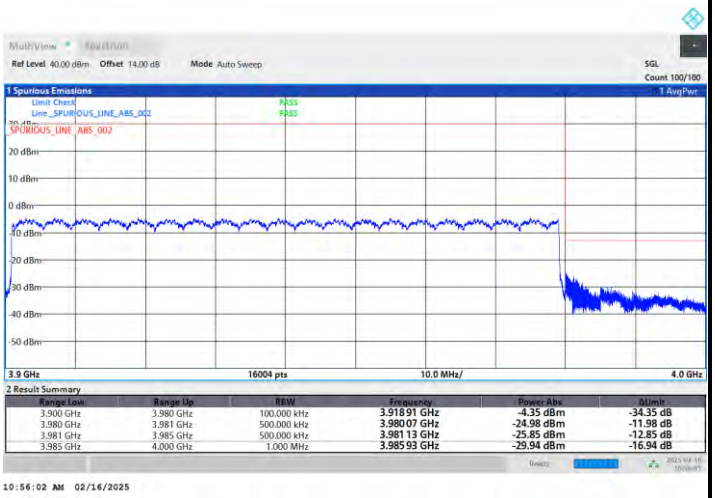


Highest Band Edge / Full RB



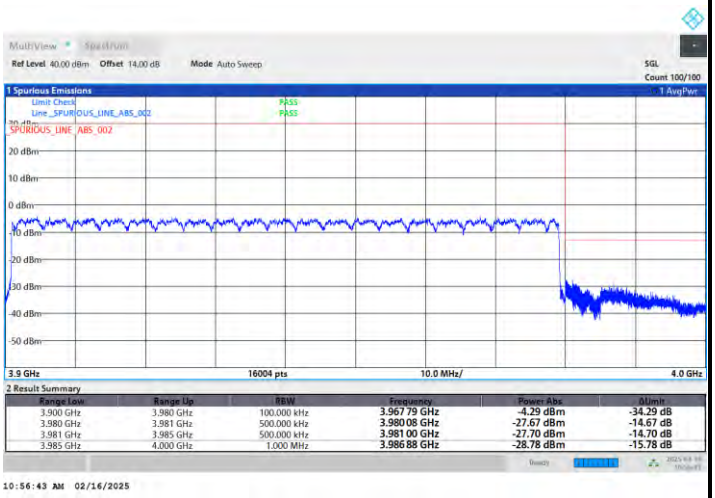
FR1 n77 / 70MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**

FR1 n77 / 70MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 80MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

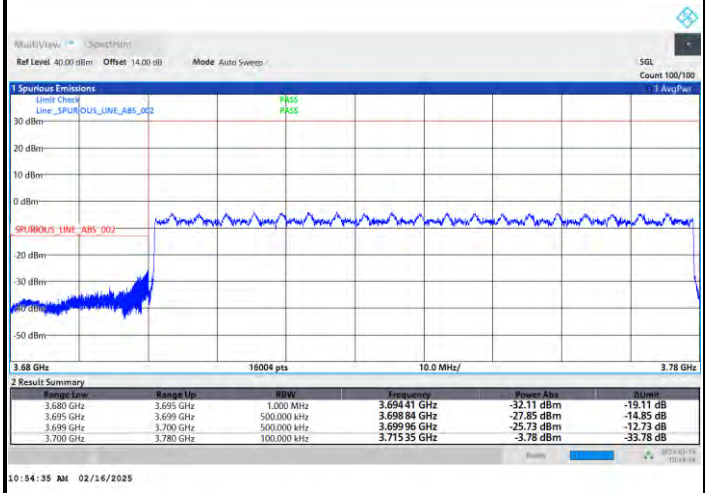
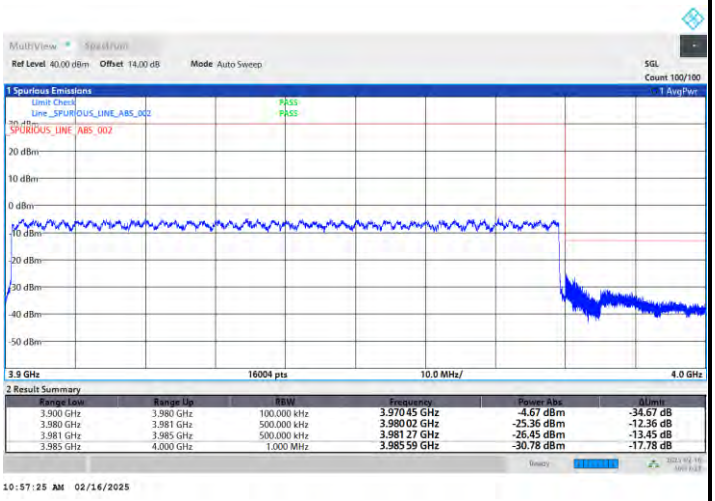
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.694 77 GHz	-29.54 dBm	-16.54 dB
3.695 GHz	3.699 GHz	500.000 kHz	3.698 97 GHz	-27.26 dBm	-14.26 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.699 88 GHz	-27.02 dBm	-14.02 dB
3.700 GHz	3.780 GHz	100.000 kHz	3.749 86 GHz	-4.53 dBm	-34.53 dB

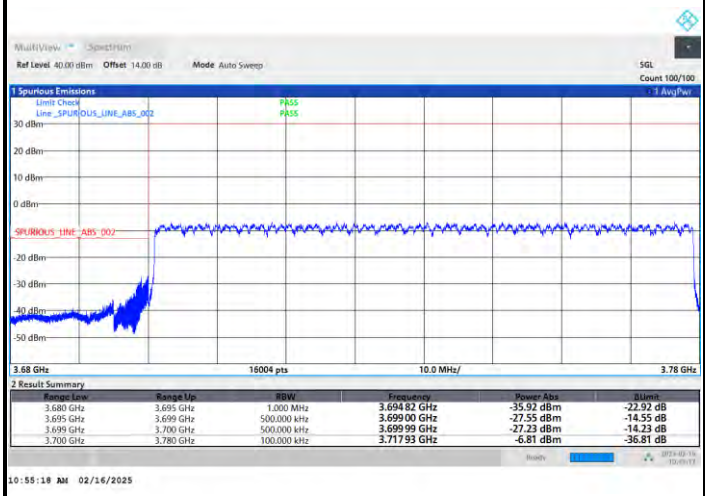
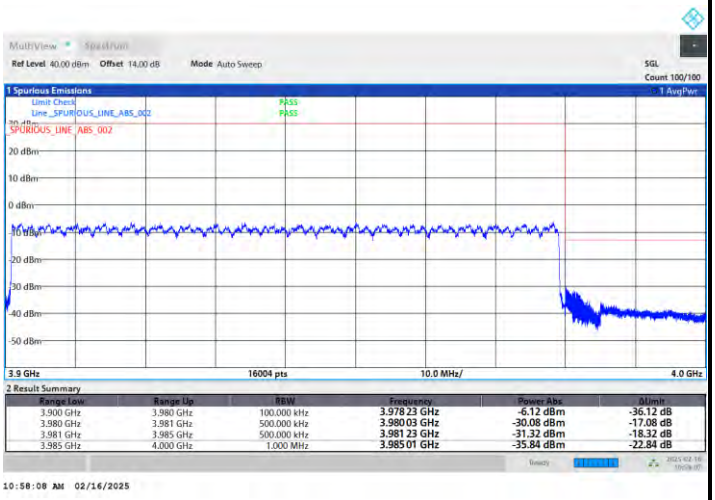
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.900 GHz	3.980 GHz	100.000 kHz	3.918 91 GHz	-4.35 dBm	-34.35 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.980 07 GHz	-24.98 dBm	-11.98 dB
3.981 GHz	3.985 GHz	500.000 kHz	3.981 13 GHz	-25.85 dBm	-12.85 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.985 93 GHz	-29.94 dBm	-16.94 dB

FR1 n77 / 80MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.694 15 GHz	-30.65 dBm	-17.65 dB
3.695 GHz	3.699 GHz	500.000 kHz	3.698 88 GHz	-26.12 dBm	-13.12 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.699 93 GHz	-25.78 dBm	-12.78 dB
3.700 GHz	3.780 GHz	100.000 kHz	3.725 18 GHz	-3.78 dBm	-33.78 dB

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.900 GHz	3.980 GHz	100.000 kHz	3.967 79 GHz	-4.29 dBm	-34.29 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.980 08 GHz	-27.67 dBm	-14.67 dB
3.981 GHz	3.985 GHz	500.000 kHz	3.981 00 GHz	-27.70 dBm	-14.70 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.986 88 GHz	-28.78 dBm	-15.78 dB

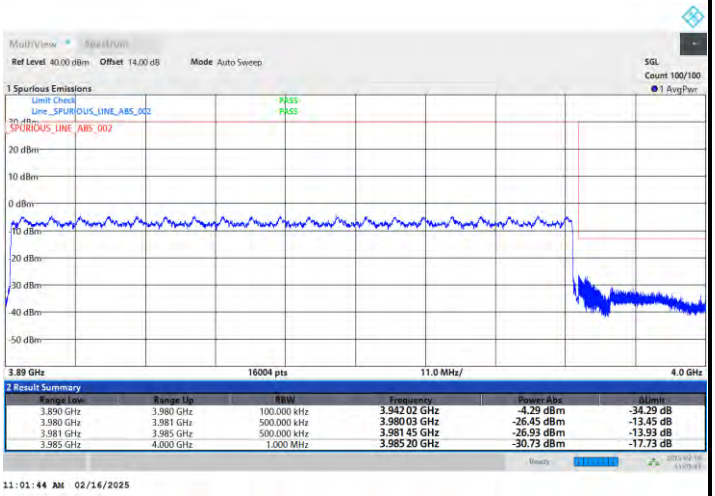
FR1 n77 / 80MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 80MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 90MHz / CP OFDM / QPSK

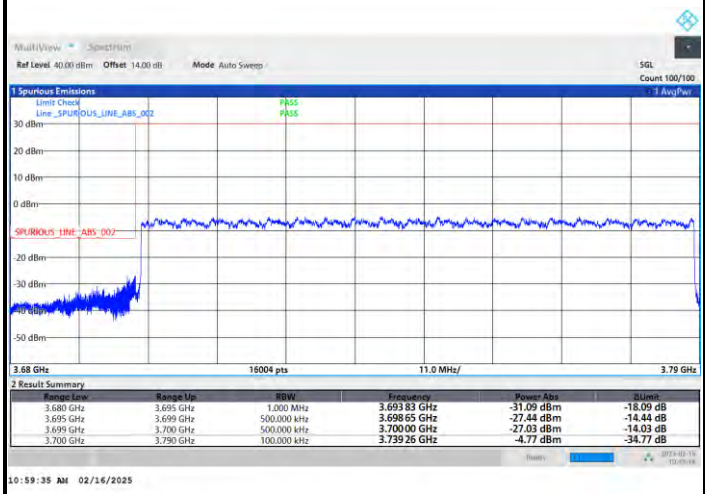
Lowest Band Edge / Full RB

Highest Band Edge / Full RB

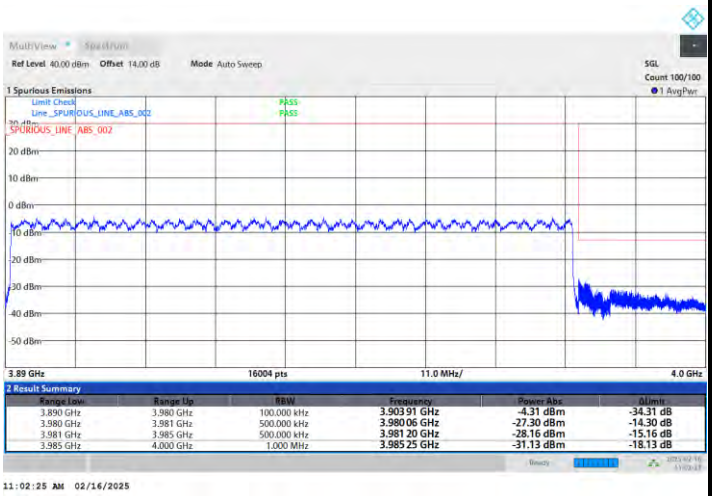


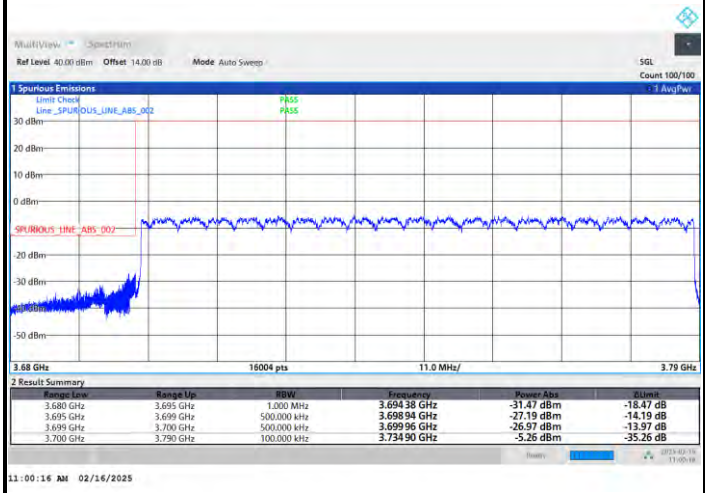
FR1 n77 / 90MHz / CP OFDM / 16QAM

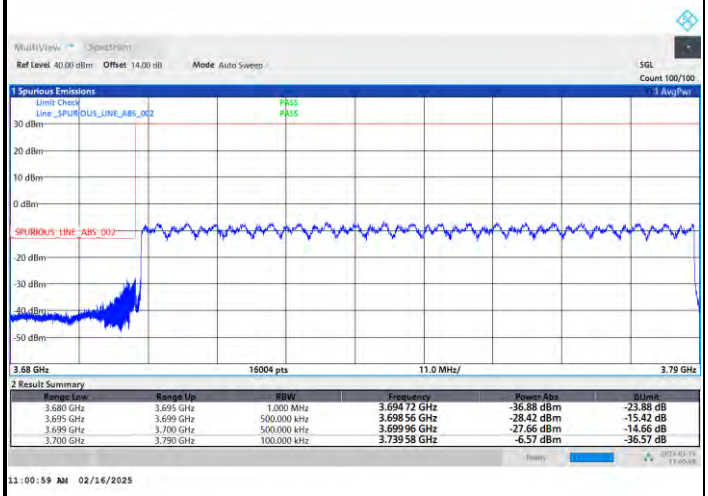
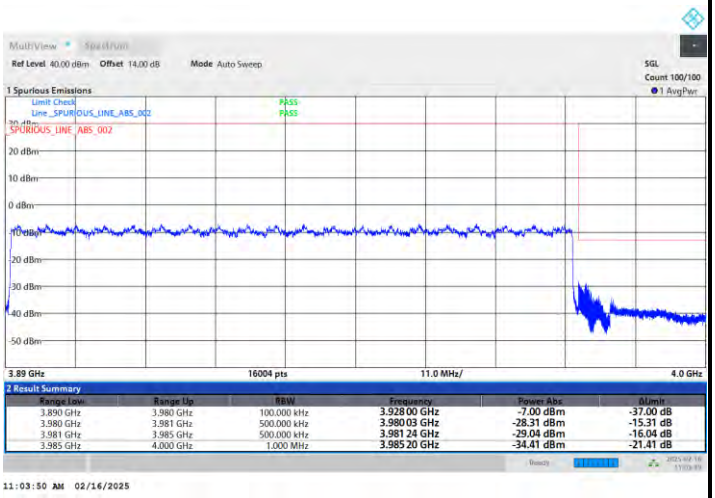
Lowest Band Edge / Full RB



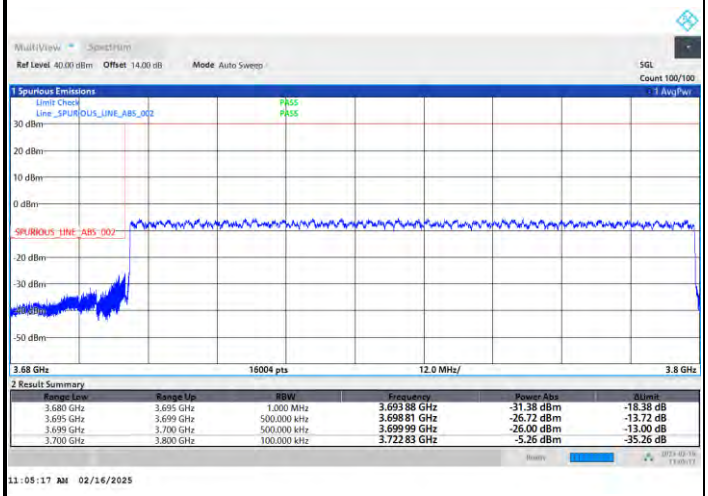
Highest Band Edge / Full RB

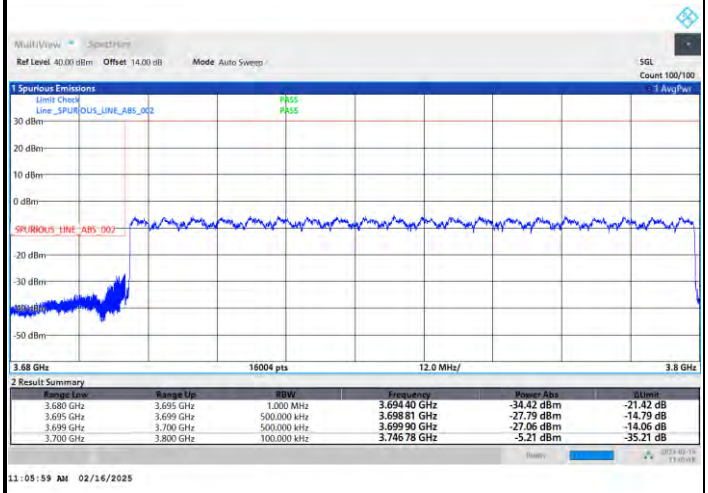


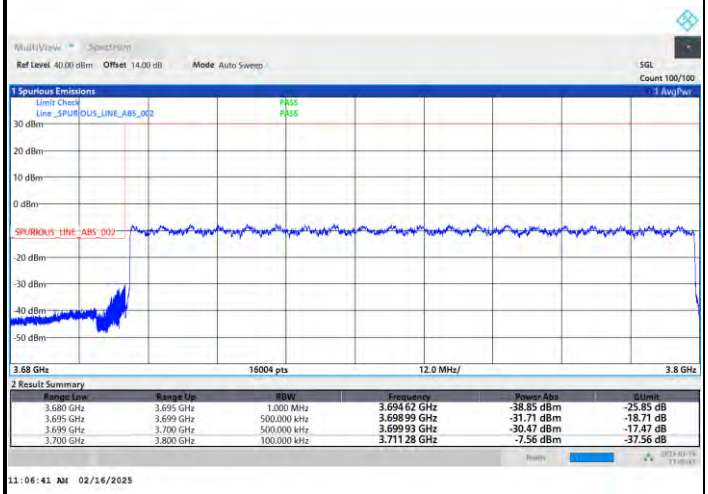
FR1 n77 / 90MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 90MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 100MHz / CP OFDM / QPSK	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**

FR1 n77 / 100MHz / CP OFDM / 16QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

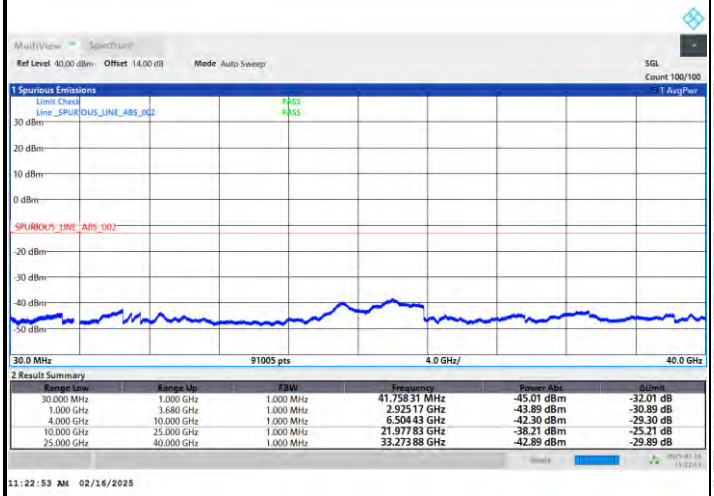
FR1 n77 / 100MHz / CP OFDM / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 100MHz / CP OFDM / 256QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

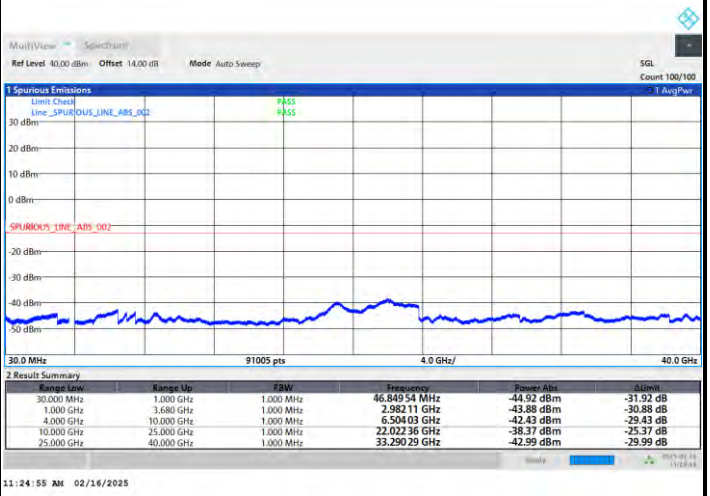
Conducted Spurious Emission

FR1 n77 / 10MHz / CP OFDM / QPSK / 1RB1

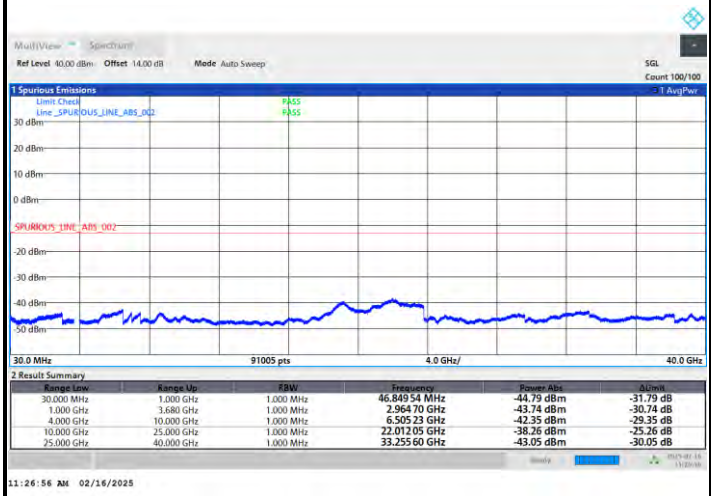
Lowest Channel



Middle Channel



Highest Channel



Frequency Stability

Test Conditions		FR1 n77 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	**0.0177**	PASS
40	Normal Voltage	**0.0205**	
30	Normal Voltage	**0.0157**	
20(Ref.)	Normal Voltage	**0.0000**	
10	Normal Voltage	**0.0172**	
0	Normal Voltage	**0.0103**	
-10	Normal Voltage	**0.0174**	
-20	Normal Voltage	**0.0061**	
-30	Normal Voltage	**0.0206**	
20	Maximum Voltage	**0.0199**	
20	Normal Voltage	**0.0206**	
20	Minimum Voltage	**0.0102**	

Note:

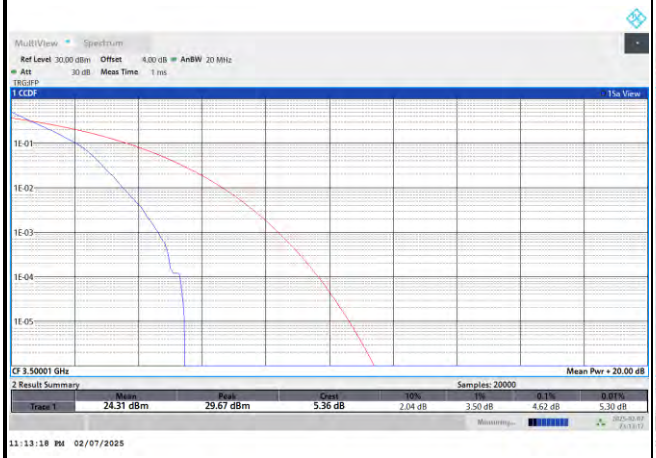
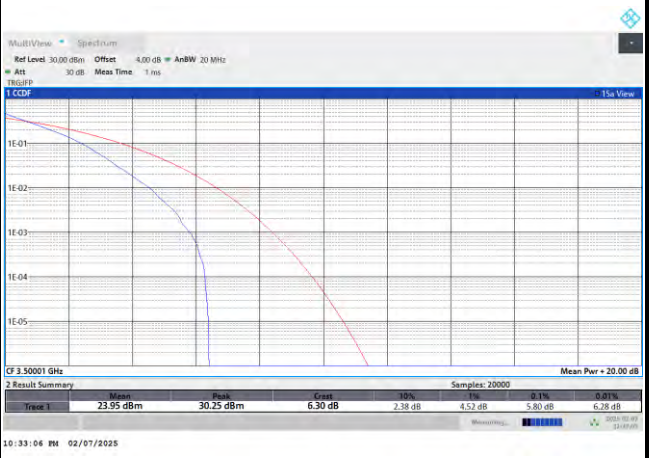
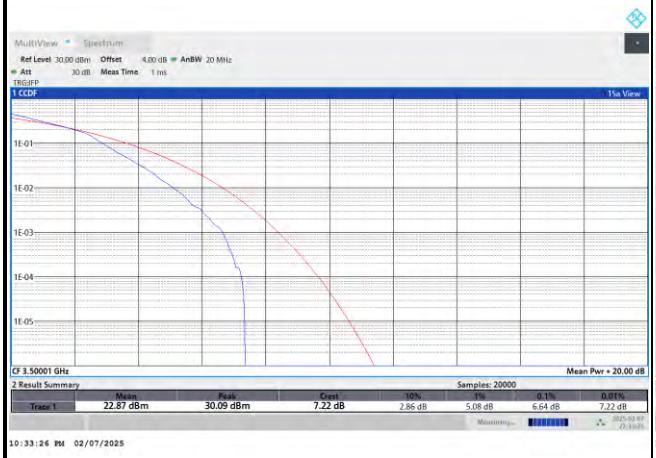
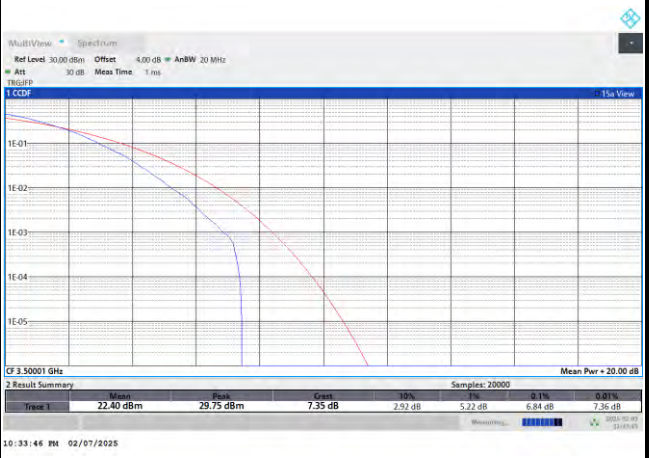
1. Normal Voltage = 3.9 V.；Minimum Voltage = 3.6 V.；Maximum Voltage = 4.5 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

FR1 n77_Part27Q

<SISO Mode>

Peak-to-Average Ratio

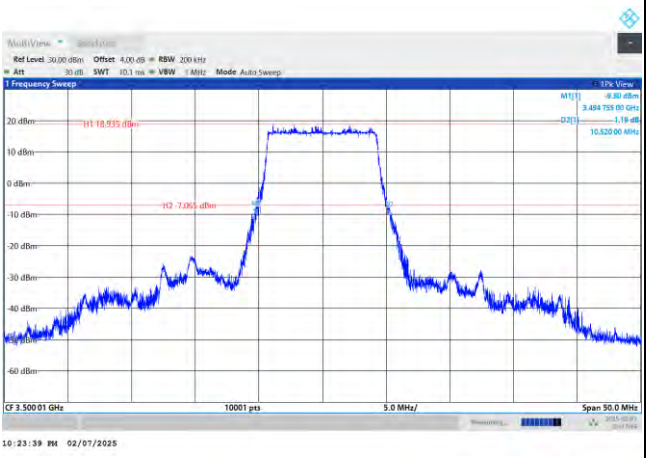
Mode	FR1 n77 / 20MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.62	5.80	6.64	6.84	PASS
Mode	FR1 n77 / 20MHz / DFT-S OFDM				
Mod.	256QAM				Limit: 13dB
RB Size	Full RB				Result
Middle CH	6.68				PASS

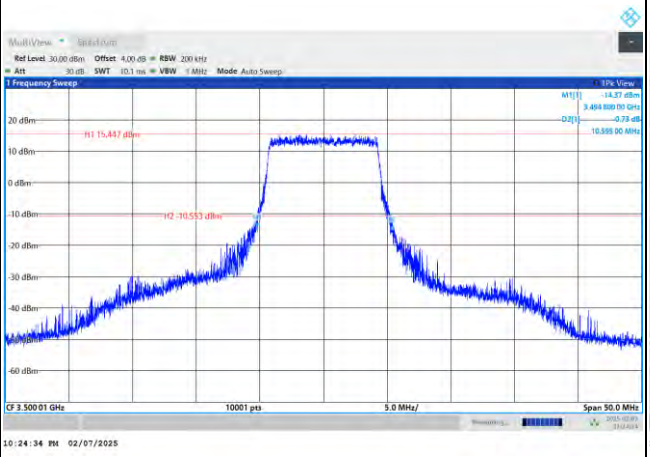
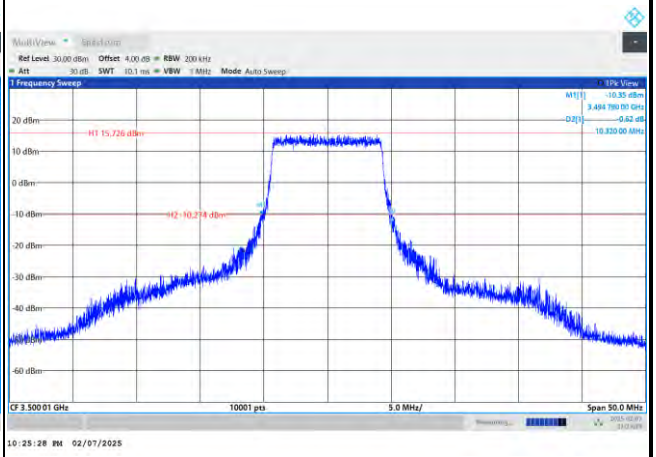
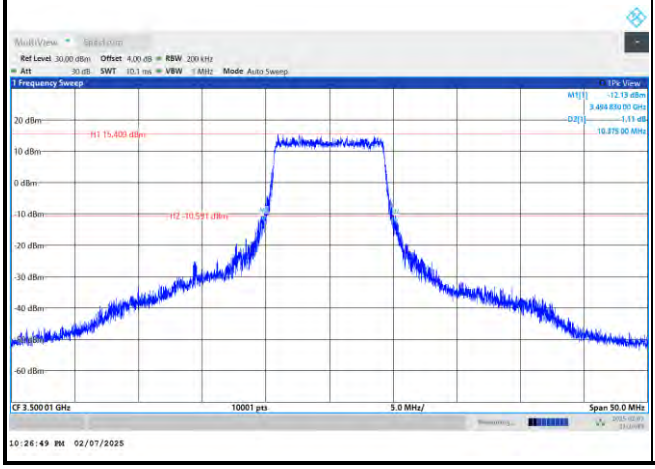
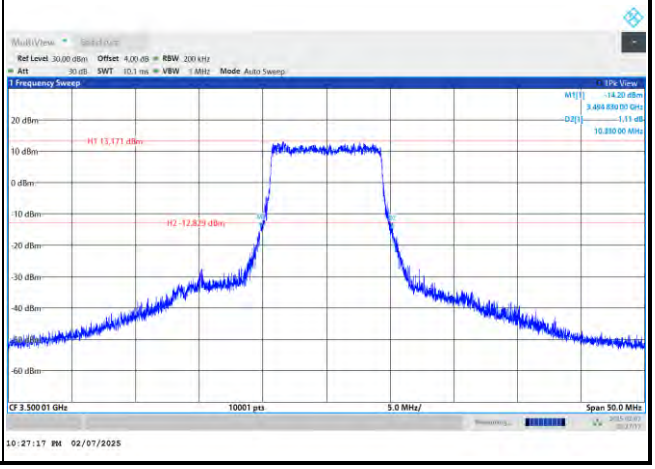
FR1 n77 / 20MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	QPSK
	
16QAM	64QAM
	
256QAM	

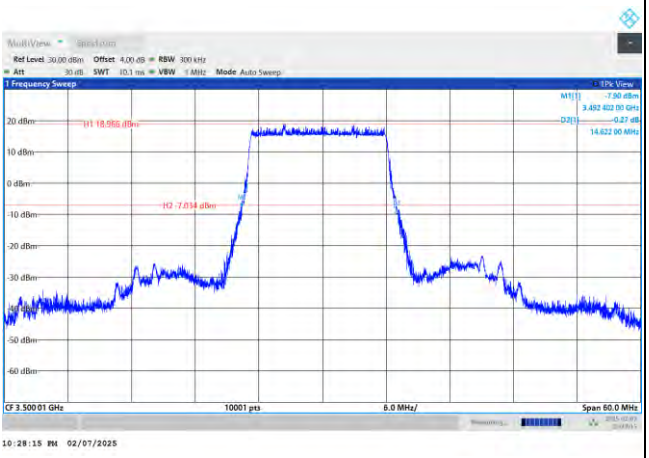
26dB Bandwidth

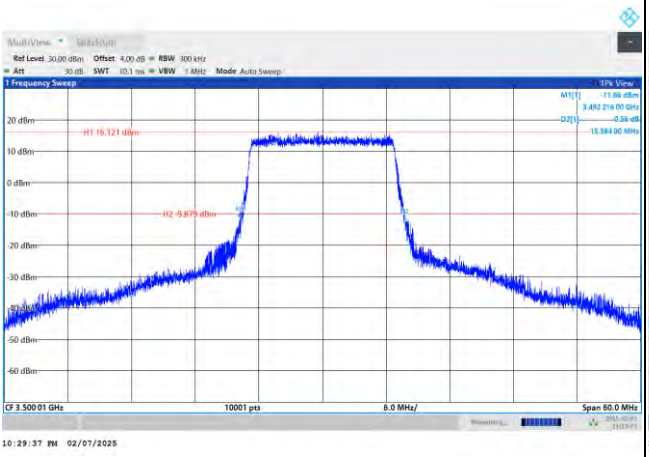
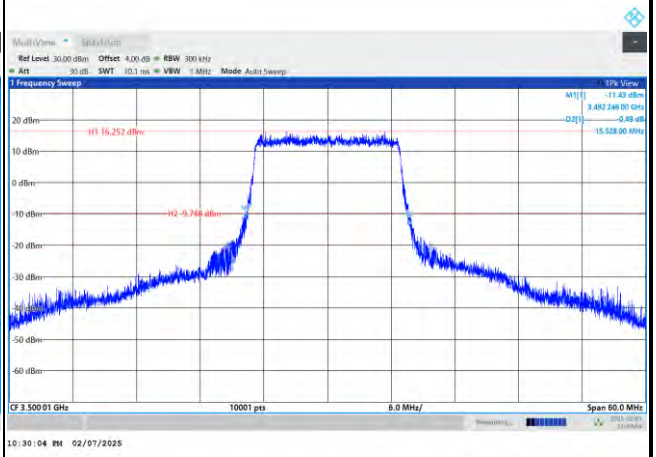
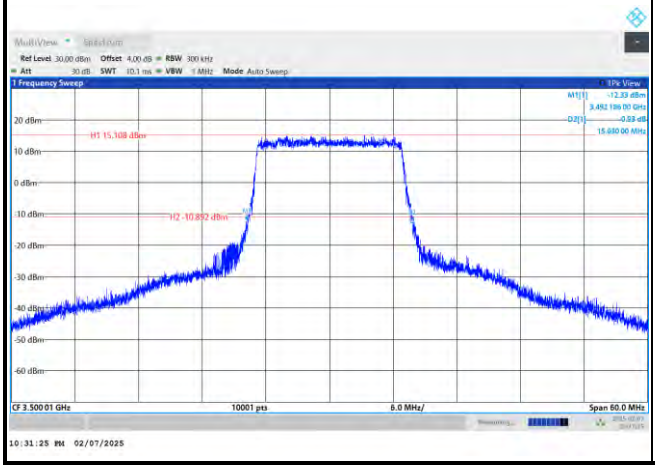
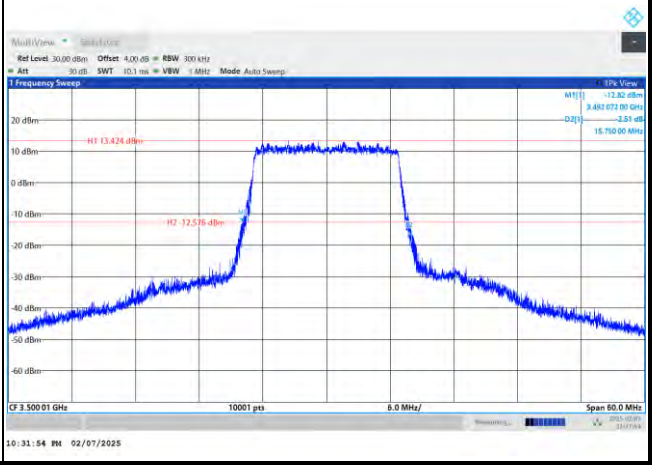
Mode	FR1 n77 : 26dB BW(MHz) / DFT-S OFDM							
BW	10MHz	15MHz	20MHz	25MHz	30MHz	40MHz	50MHz	60MHz
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK
Middle CH	10.52	14.62	20.03	25.31	29.95	38.76	49.86	91.11
BW	70MHz	80MHz	90MHz	100MHz				
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK				
Middle CH	72.76	84.37	105.16	106.09				

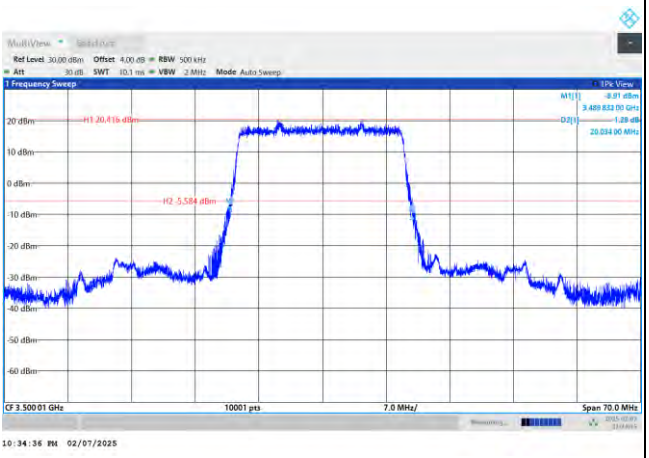
Mode	FR1 n77 : 26dB BW(MHz) / CP OFDM							
BW	10MHz		15MHz		20MHz		25MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	10.59	10.32	15.59	15.52	20.72	20.55	25.76	25.74
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	10.37	10.33	15.63	15.75	20.52	20.51	25.54	25.55
BW	30MHz		40MHz		50MHz		60MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	31.14	30.93	42.72	42.75	52.16	52.09	93.36	88.32
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	31.20	30.97	42.27	42.86	52.41	52.26	109.08	92.68
BW	70MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	76.61	76.09	107.46	84.41	105.21	110.18	106.26	105.77
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	83.60	77.36	101.11	95.72	106.51	102.75	106.55	106.28

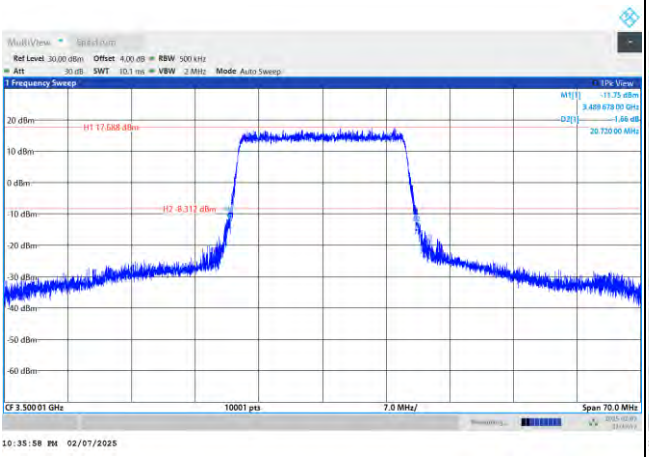
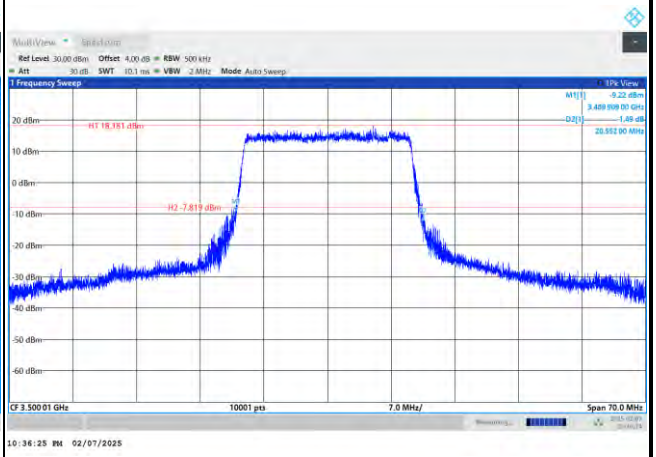
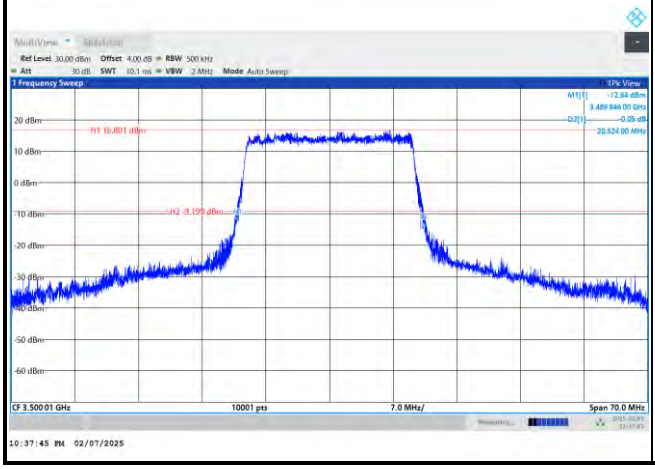
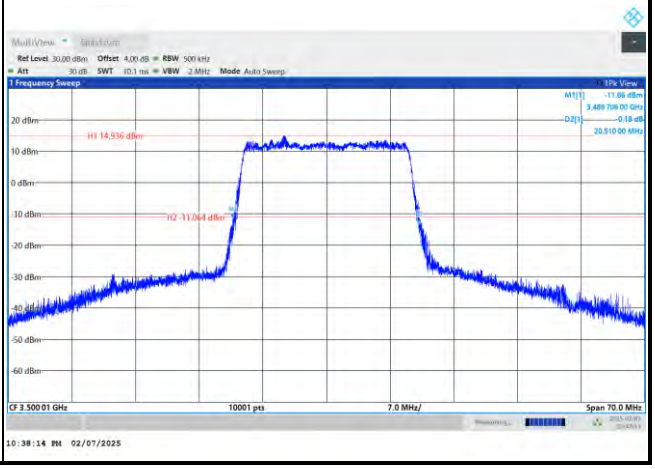
FR1 n77 / 10MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

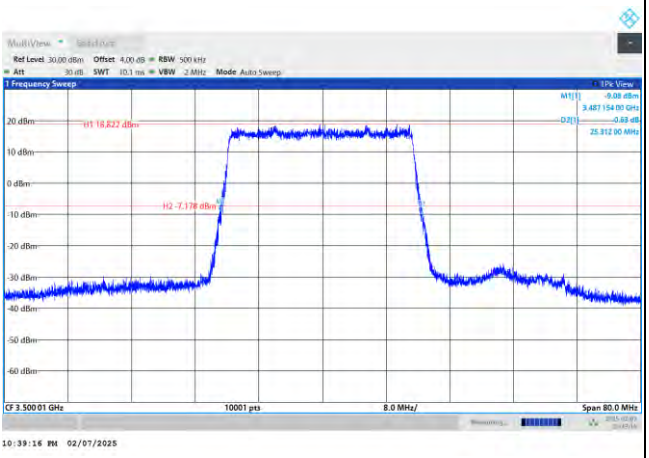
FR1 n77 / 10MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

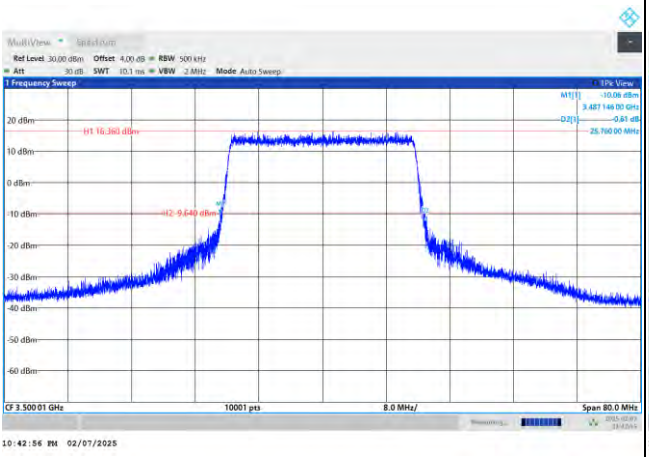
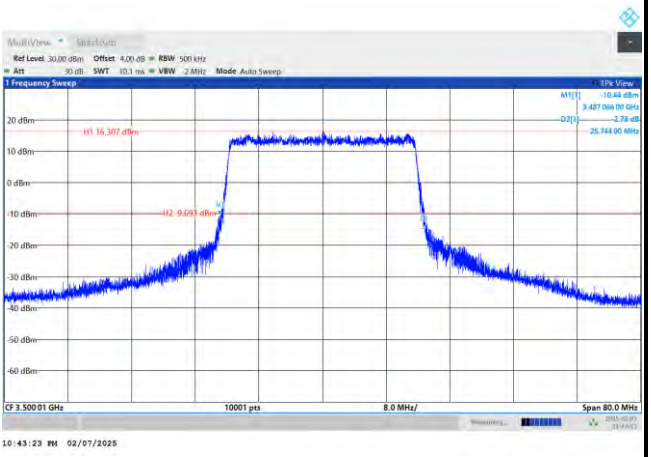
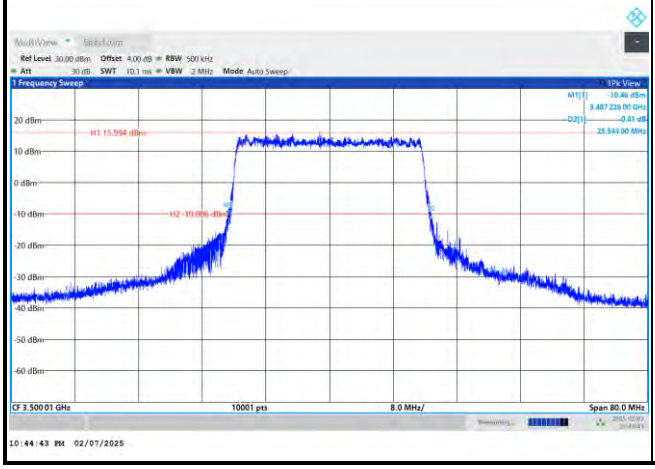
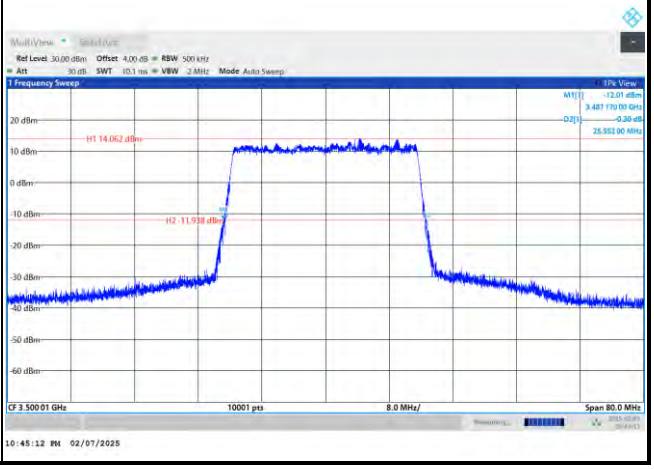
FR1 n77 / 15MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

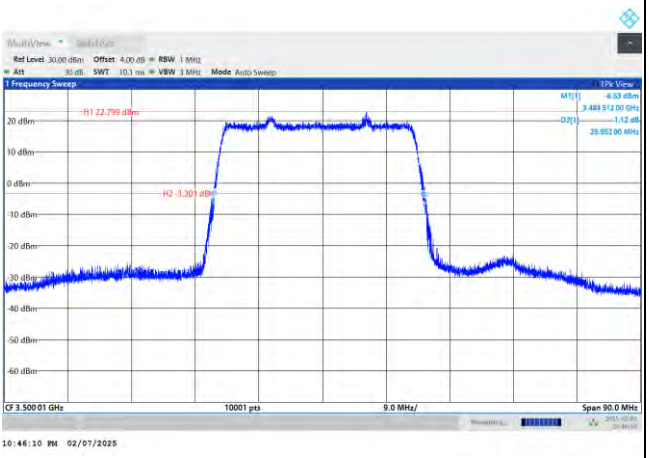
FR1 n77 / 15MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

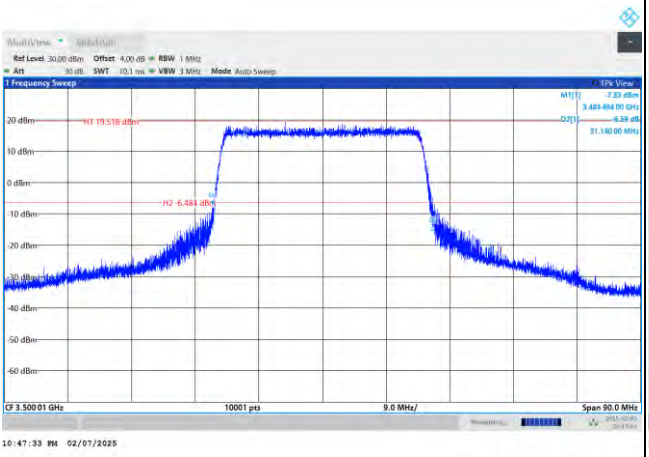
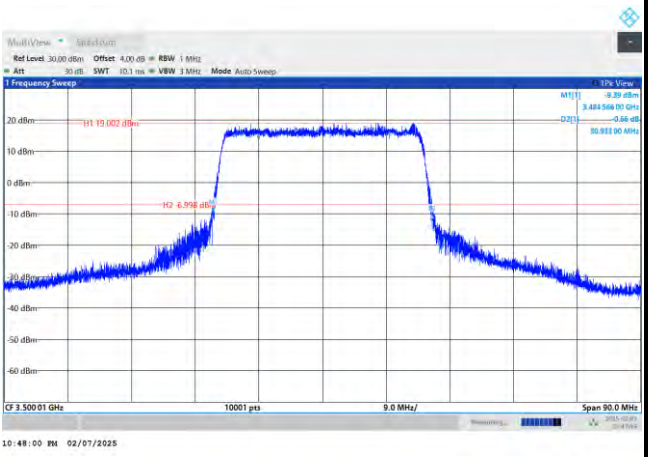
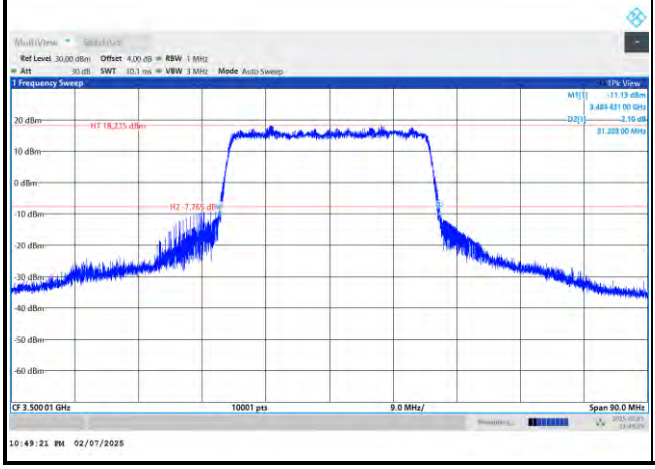
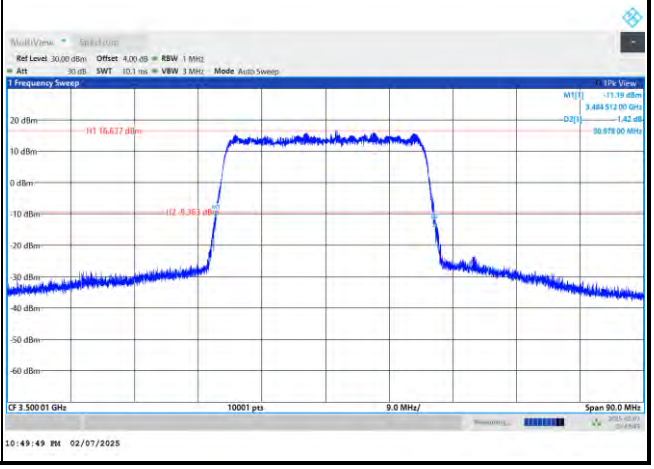
FR1 n77 / 20MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

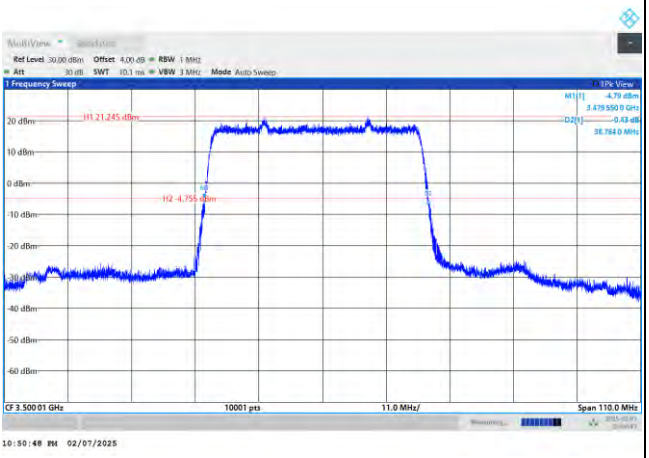
FR1 n77 / 20MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

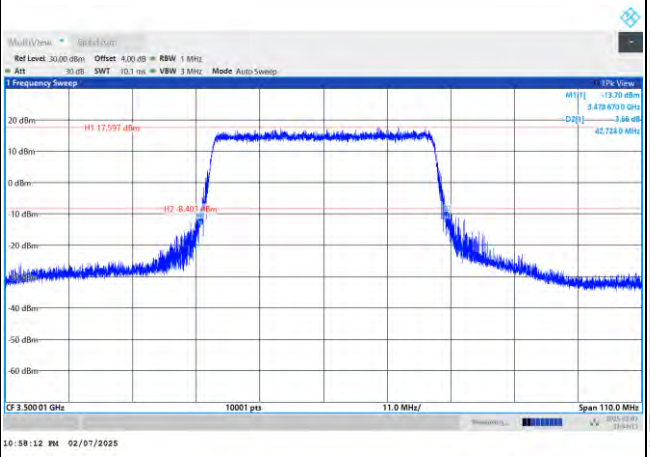
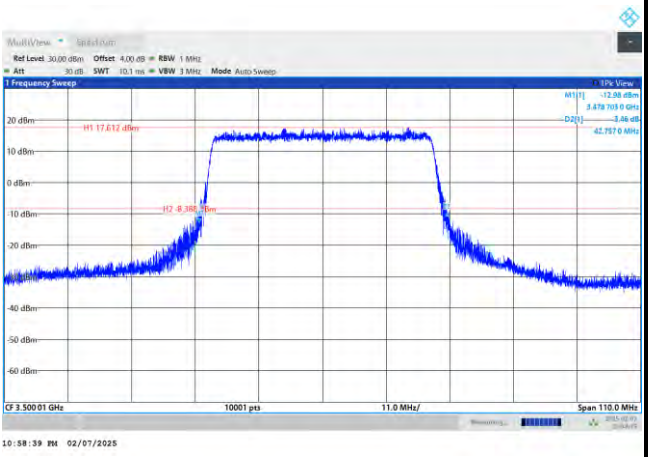
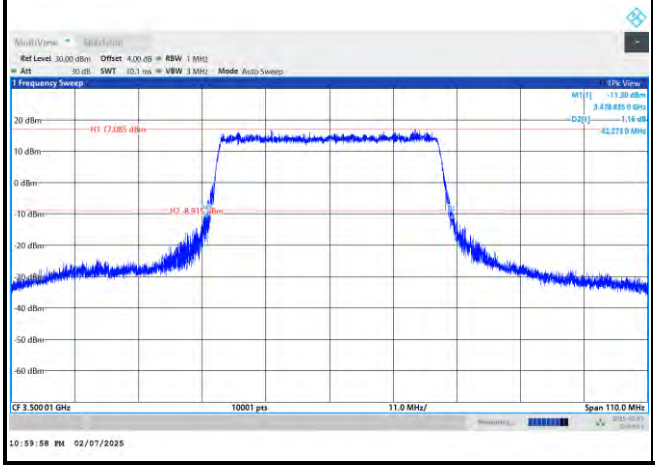
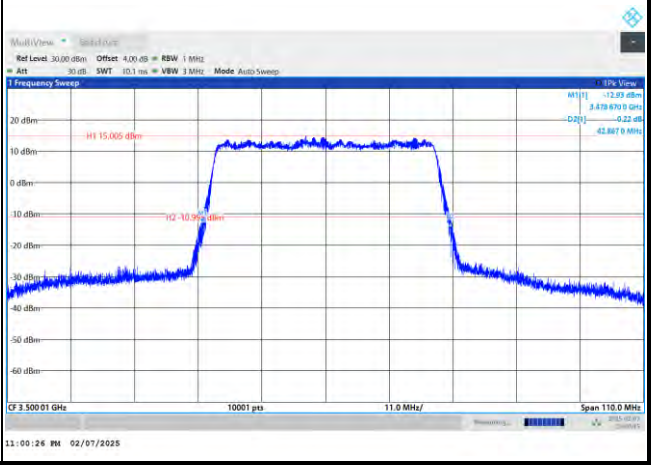
FR1 n77 / 25MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

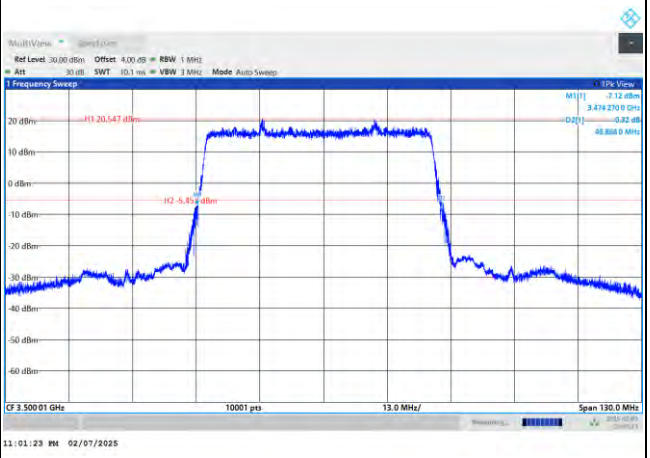
FR1 n77 / 25MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

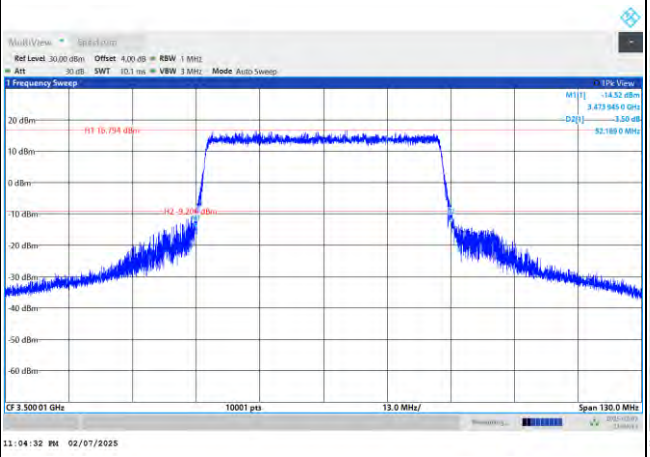
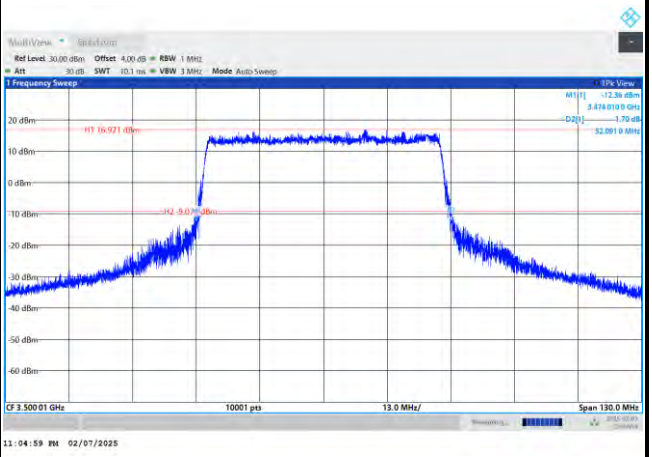
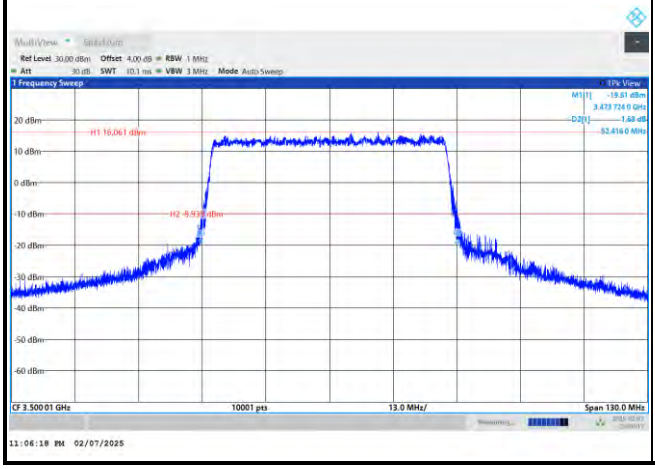
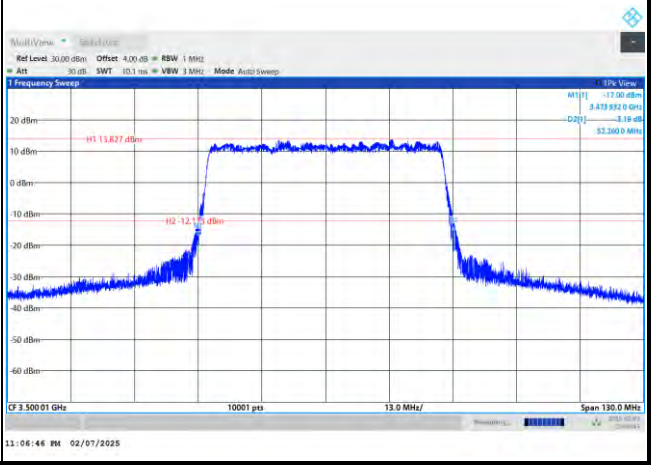
FR1 n77 / 30MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

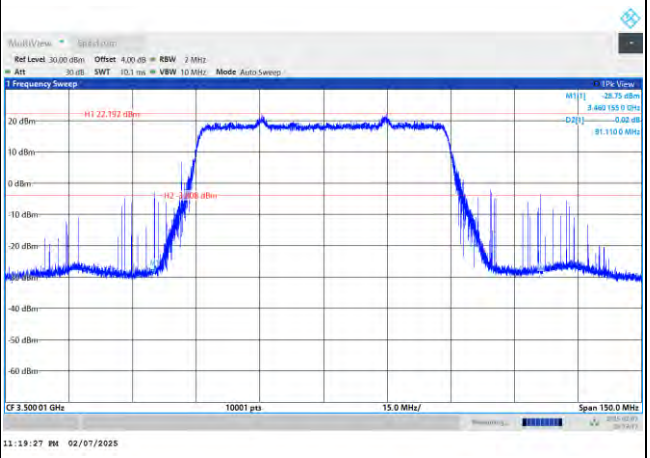
FR1 n77 / 30MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

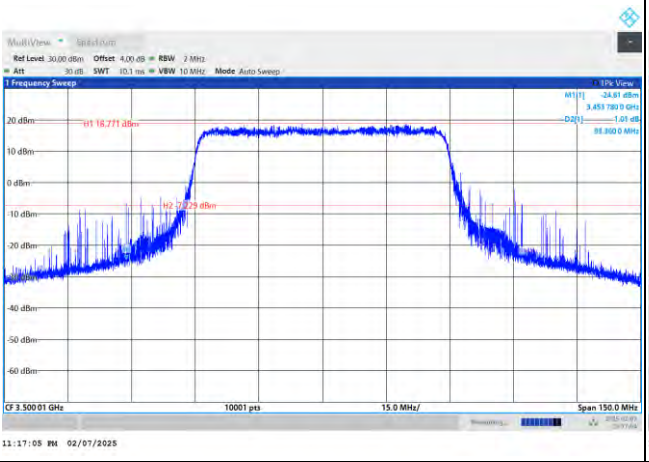
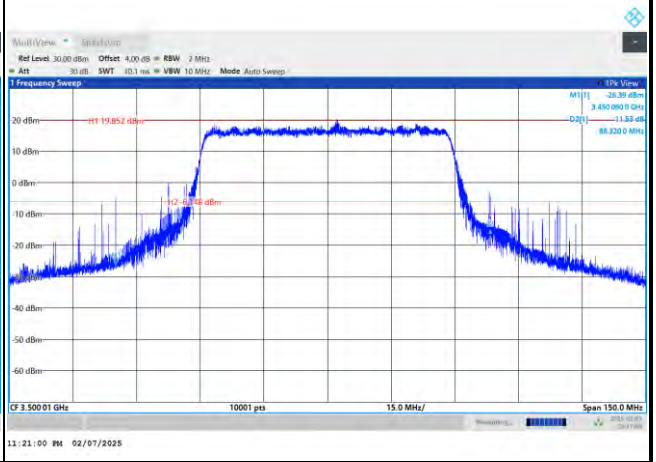
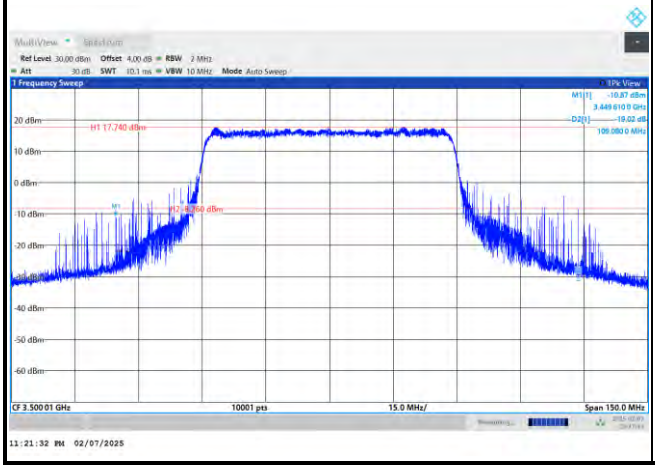
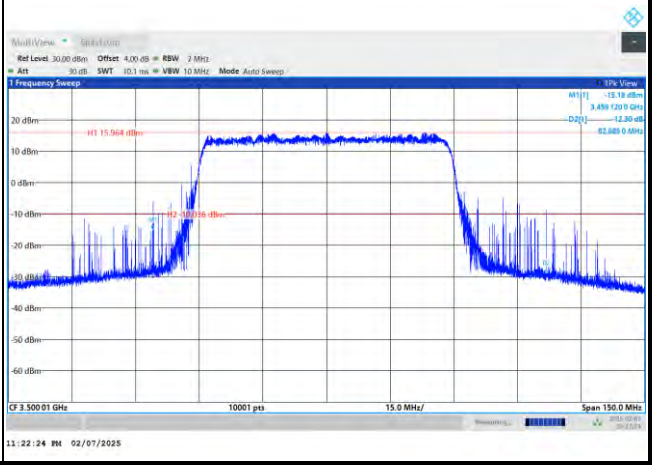
FR1 n77 / 40MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

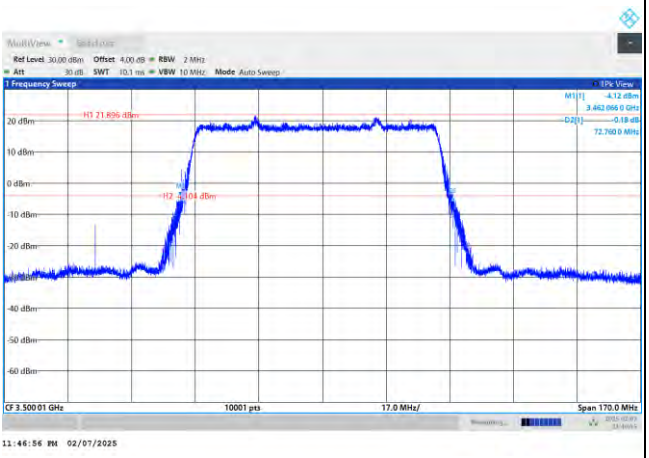
FR1 n77 / 40MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

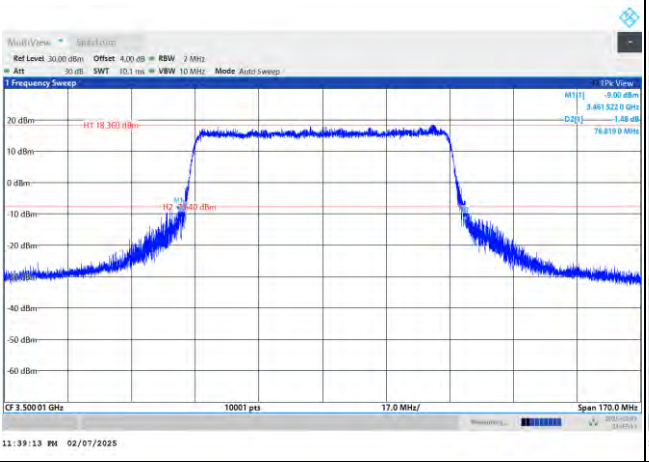
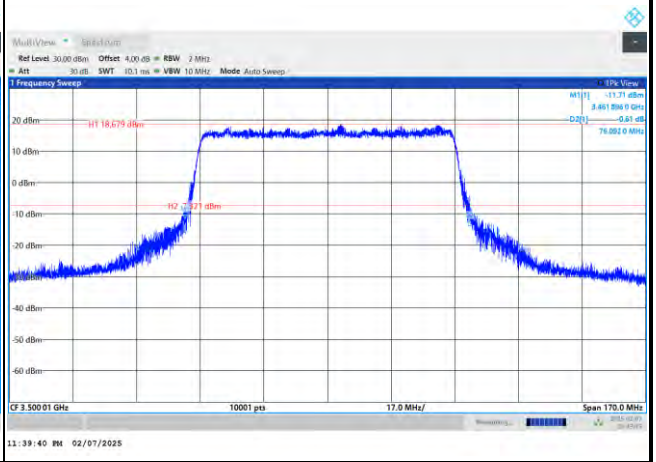
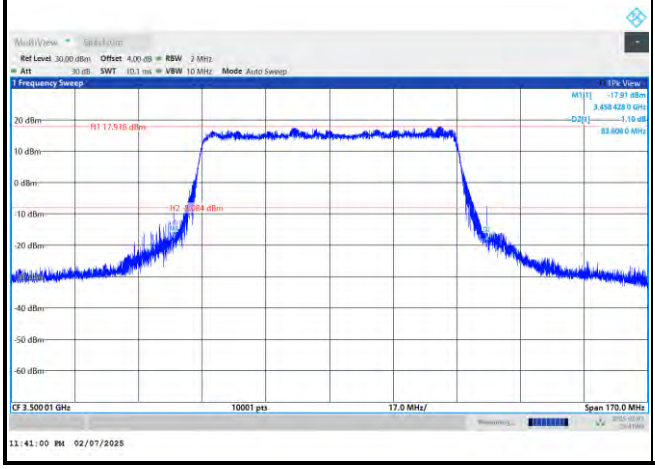
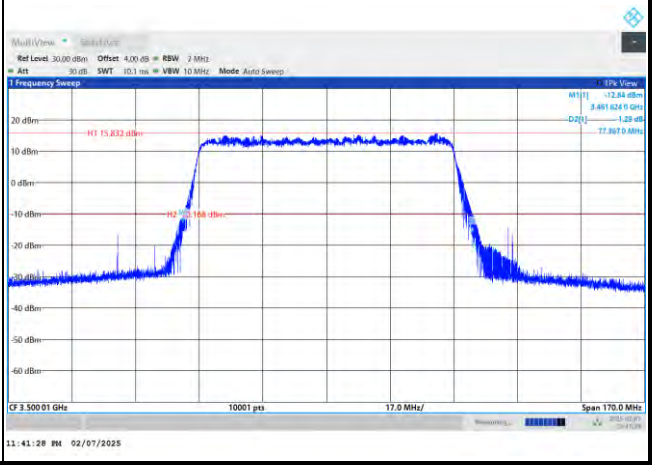
FR1 n77 / 50MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

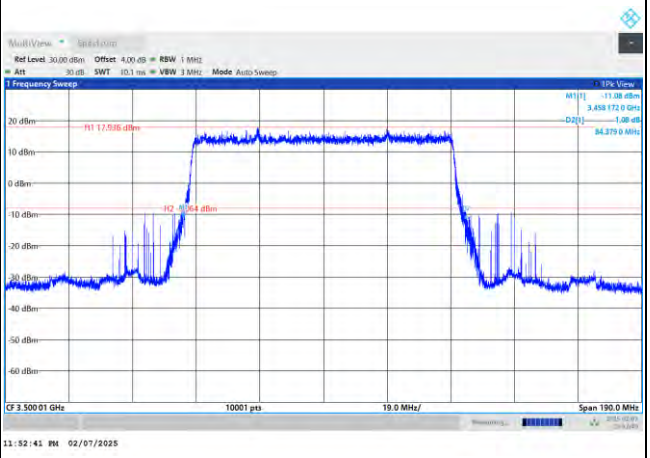
FR1 n77 / 50MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

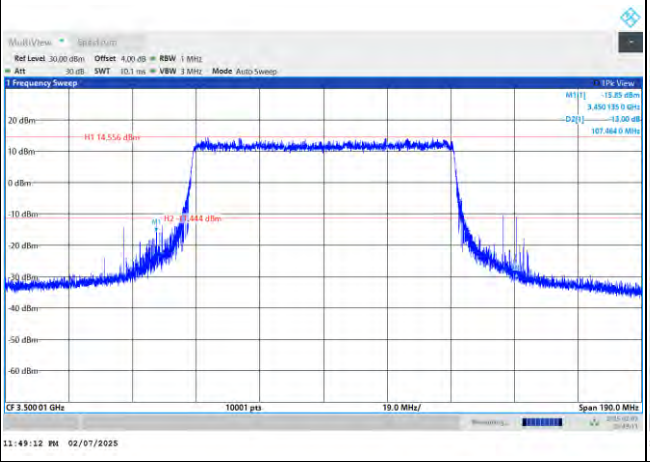
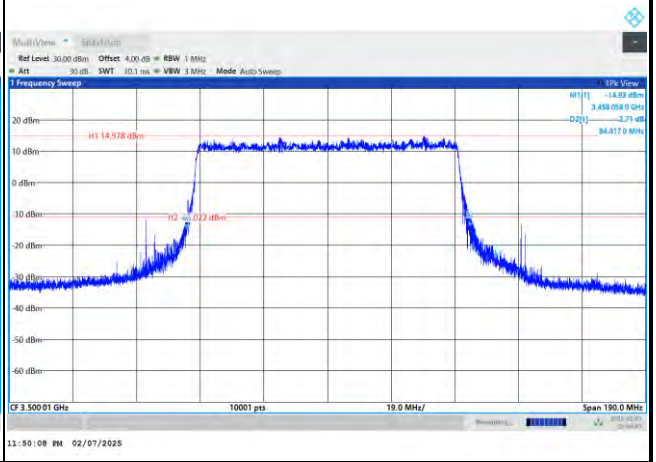
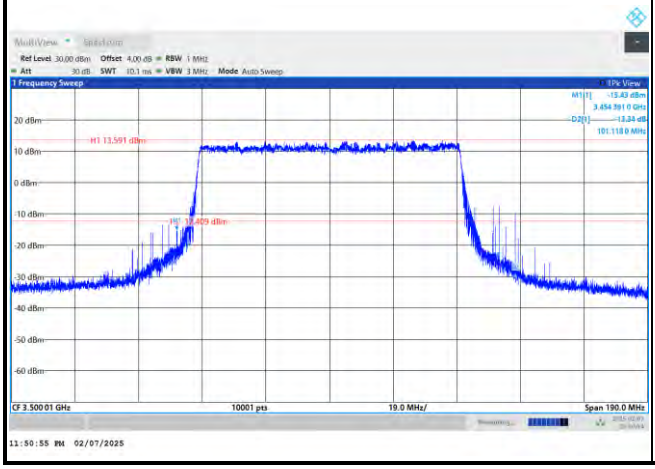
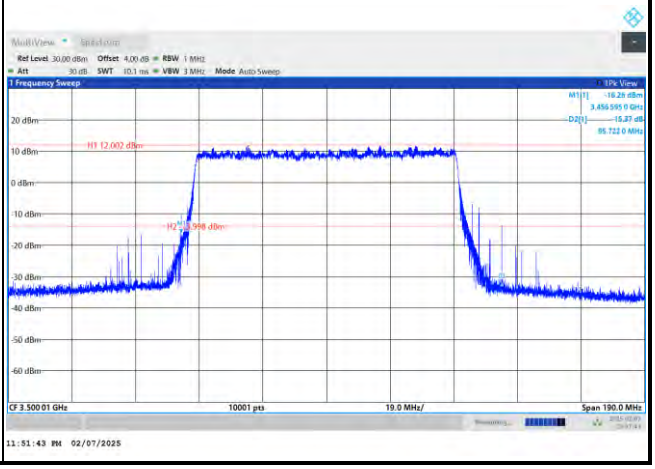
FR1 n77 / 60MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

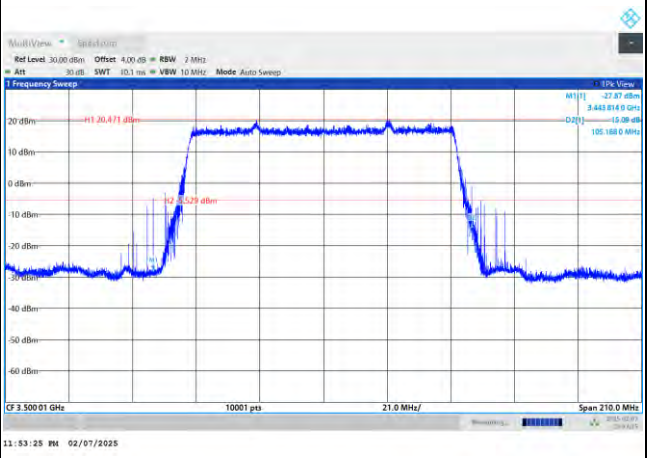
FR1 n77 / 60MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

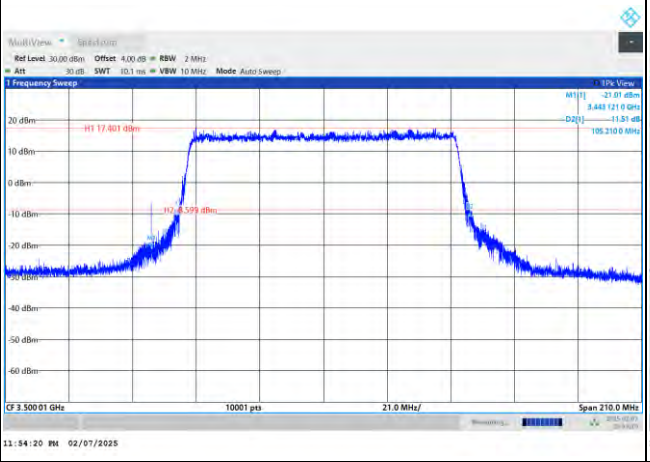
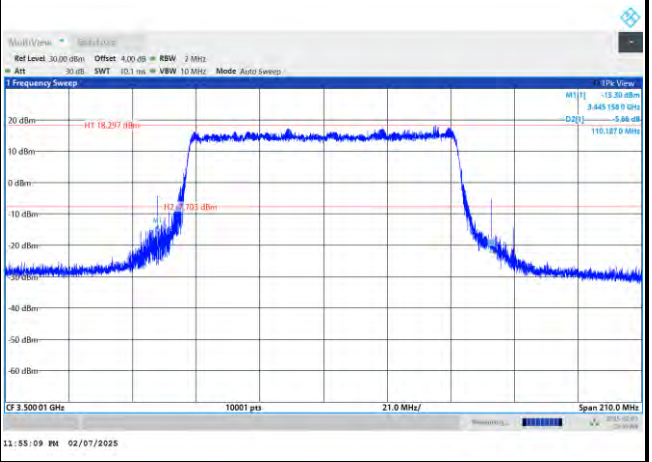
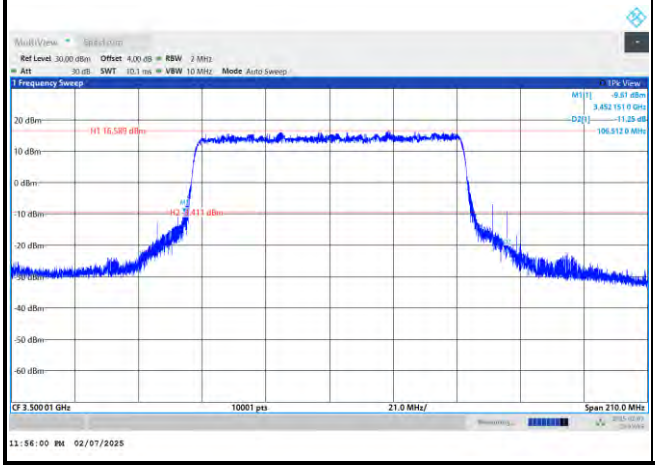
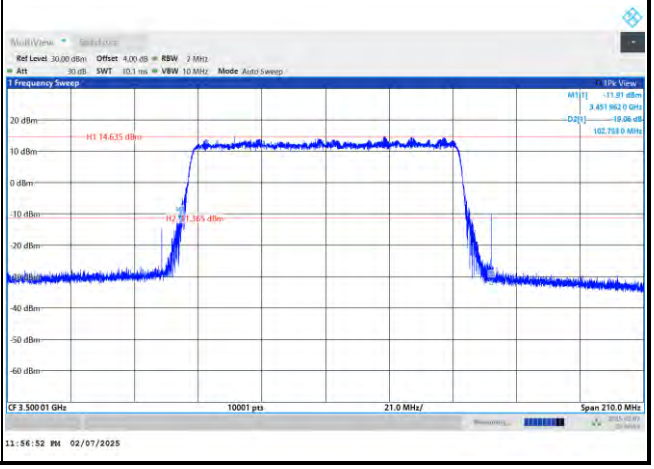
FR1 n77 / 70MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

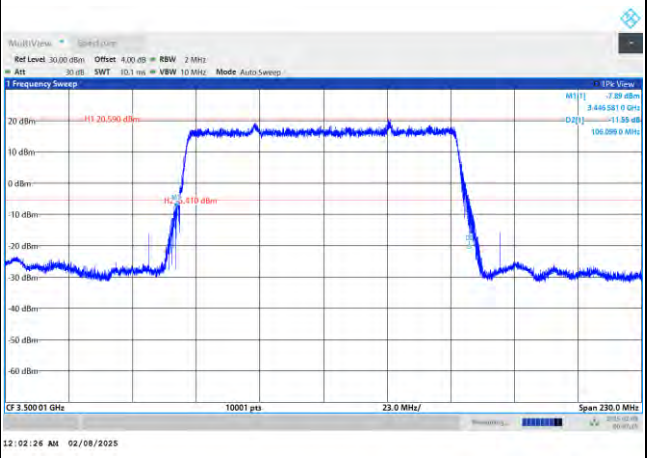
FR1 n77 / 70MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

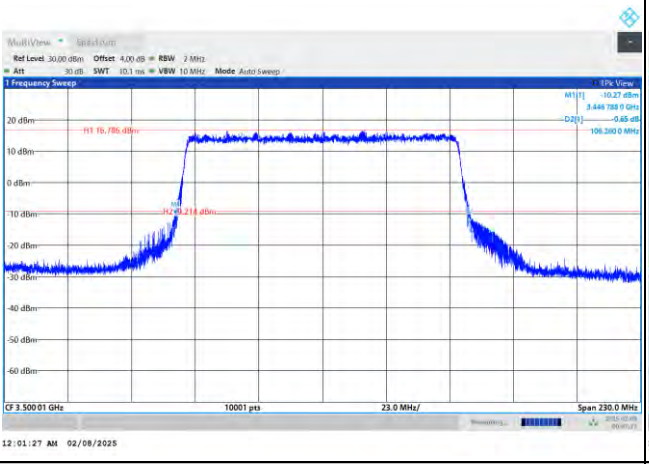
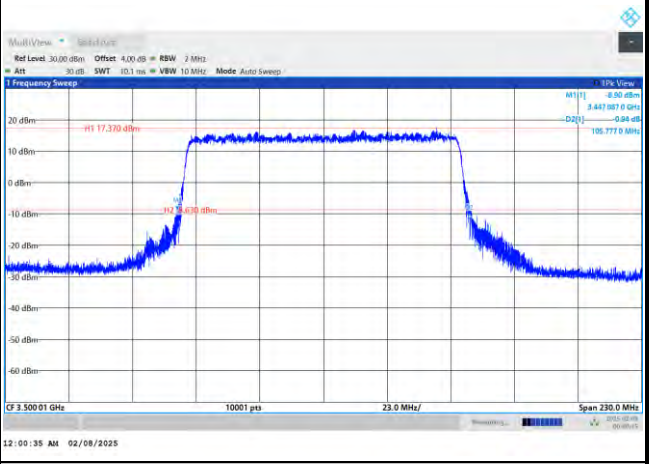
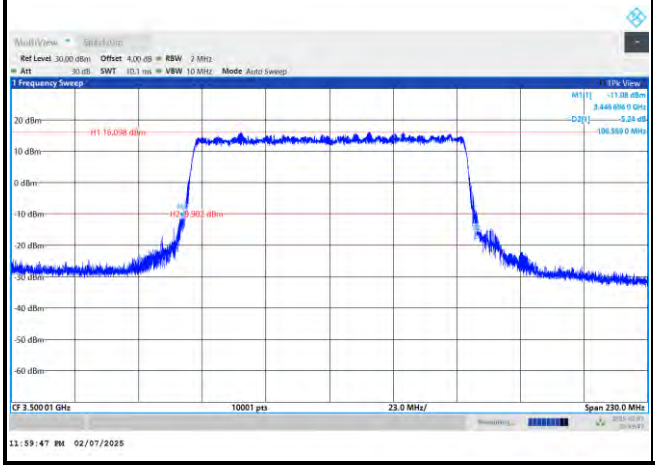
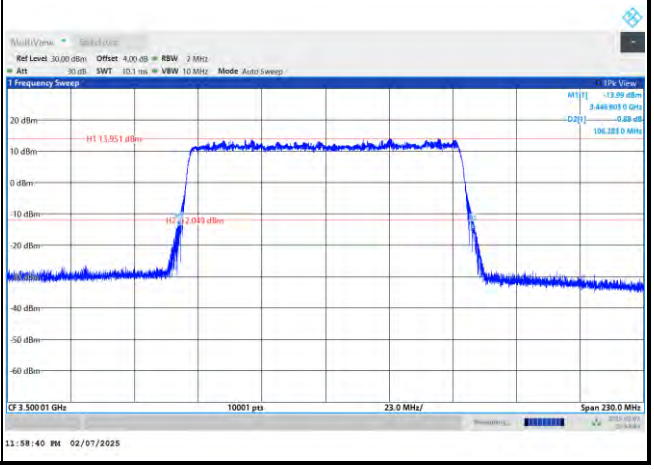
FR1 n77 / 80MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

FR1 n77 / 80MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 90MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

FR1 n77 / 90MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

FR1 n77 / 100MHz / DFT-S OFDM / Middle Channel / Full RB	
PI/2 BPSK	
	

FR1 n77 / 100MHz / CP OFDM / Middle Channel / Full RB	
QPSK	16QAM
	
64QAM	256QAM
	

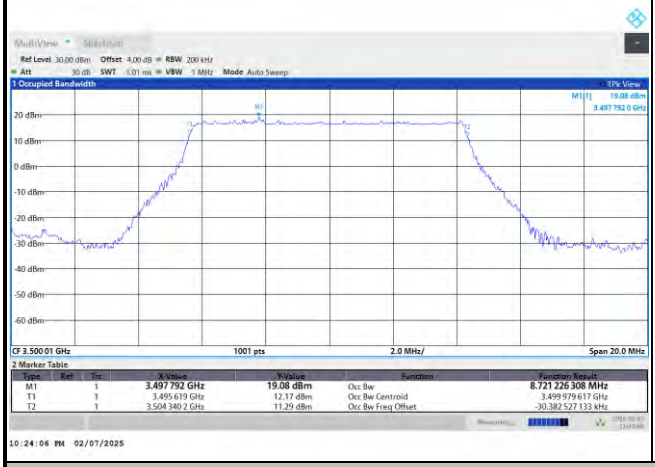
Occupied Bandwidth

Mode	FR1 n77 : OB BW(MHz) / DFT-S OFDM							
BW	10MHz	15MHz	20MHz	25MHz	30MHz	40MHz	50MHz	60MHz
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK
Middle CH	8.72	12.96	18.06	22.99	27.26	36.03	46.05	58.64
BW	70MHz	80MHz	90MHz	100MHz				
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK				
Middle CH	65.05	77.87	87.20	96.97				

Mode	FR1 n77 : OB BW(MHz) / CP OFDM							
BW	10MHz		15MHz		20MHz		25MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	8.69	8.67	13.67	13.64	18.35	18.40	23.30	23.36
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	8.66	8.66	13.74	13.69	18.34	18.38	23.32	23.29
BW	30MHz		40MHz		50MHz		60MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	28.23	28.21	38.09	38.16	47.75	47.74	58.57	58.65
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	28.28	28.17	38.13	38.35	47.76	47.67	58.56	58.50
BW	70MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	68.23	68.08	78.14	78.04	87.82	87.91	97.67	97.72
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	68.27	68.25	78.11	78.08	87.74	87.90	97.76	97.74

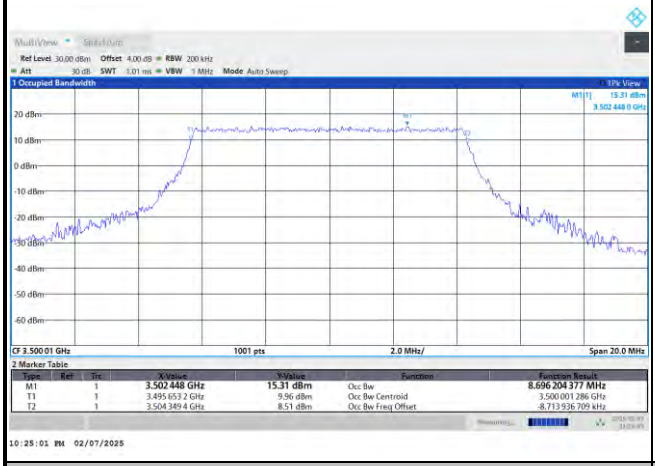
FR1 n77 / 10MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

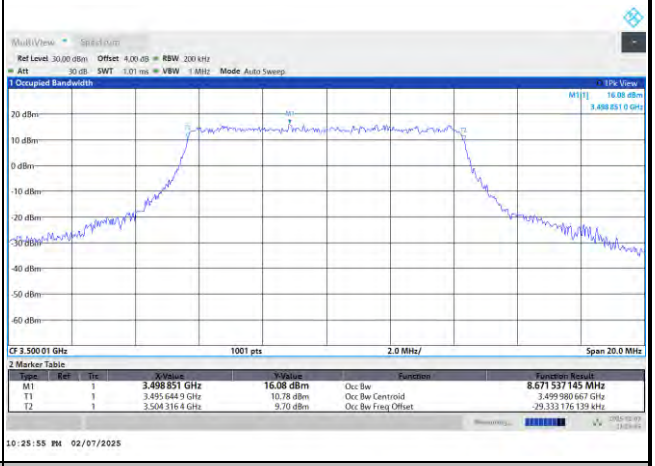


FR1 n77 / 10MHz / CP OFDM / Middle Channel / Full RB

QPSK

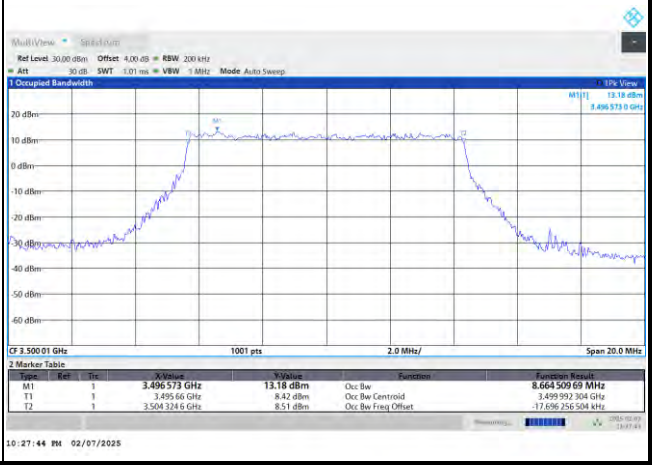


16QAM



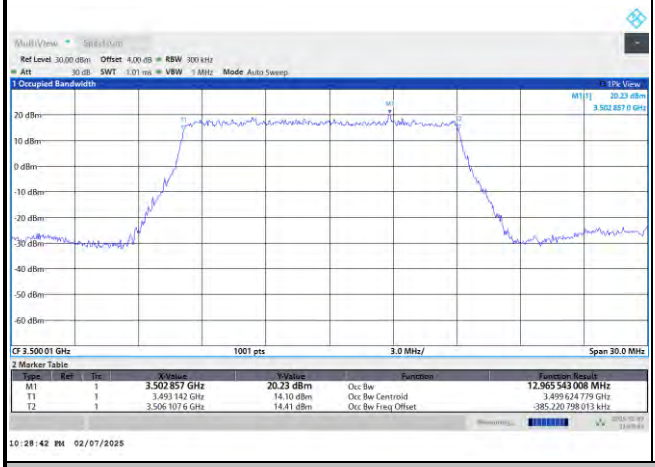
64QAM

256QAM



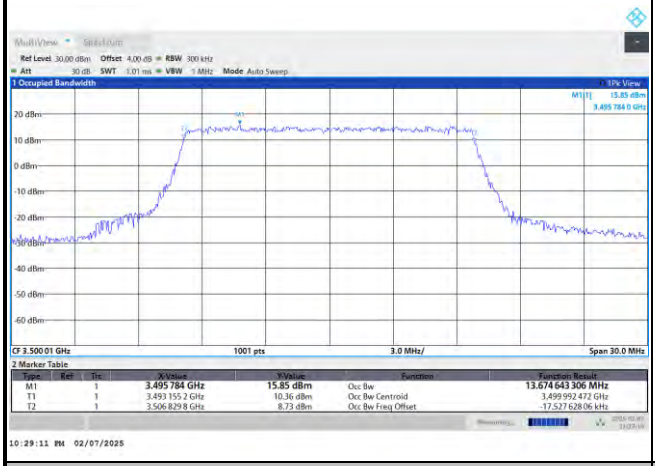
FR1 n77 / 15MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

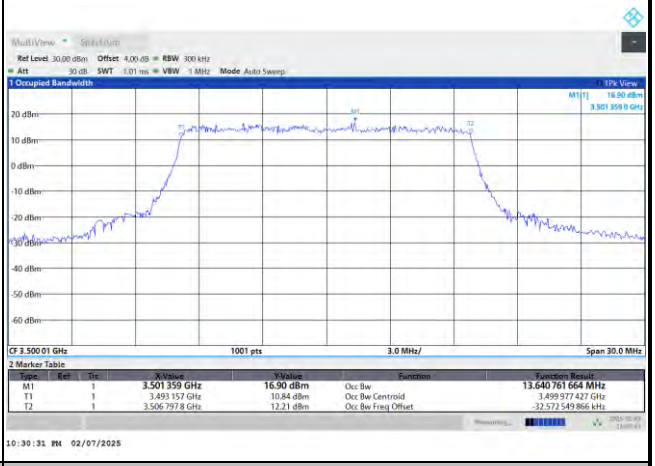


FR1 n77 / 15MHz / CP OFDM / Middle Channel / Full RB

QPSK

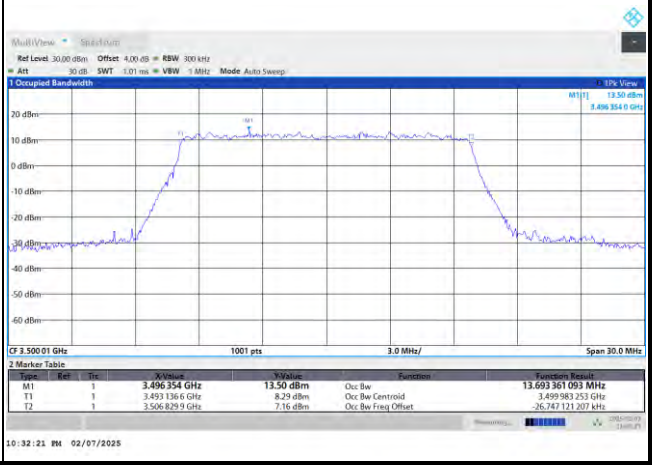


16QAM



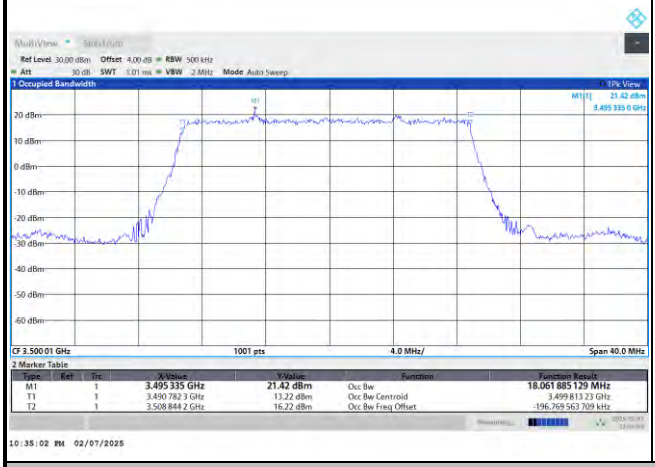
64QAM

256QAM



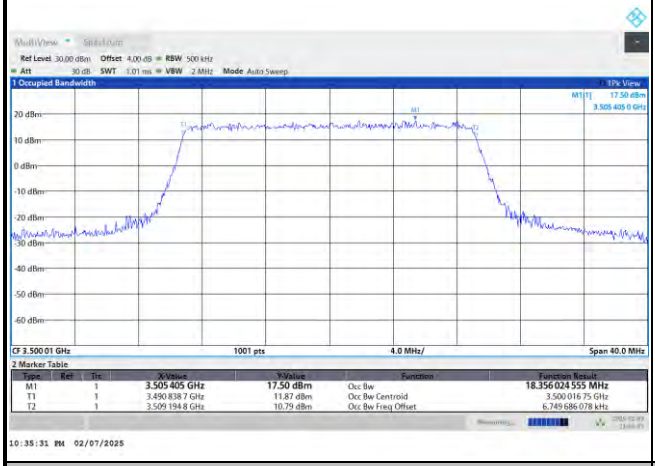
FR1 n77 / 20MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

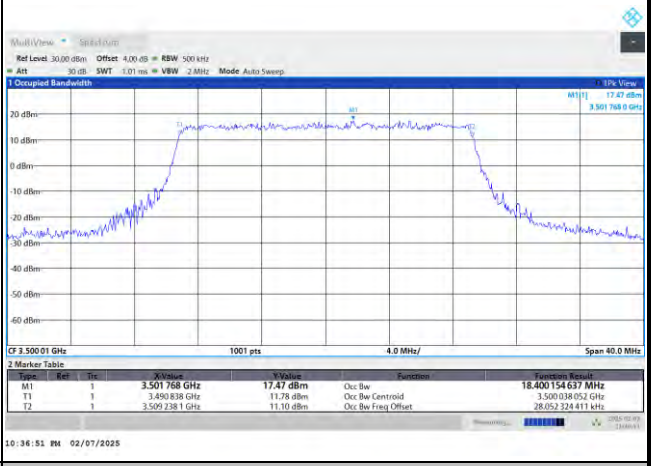


FR1 n77 / 20MHz / CP OFDM / Middle Channel / Full RB

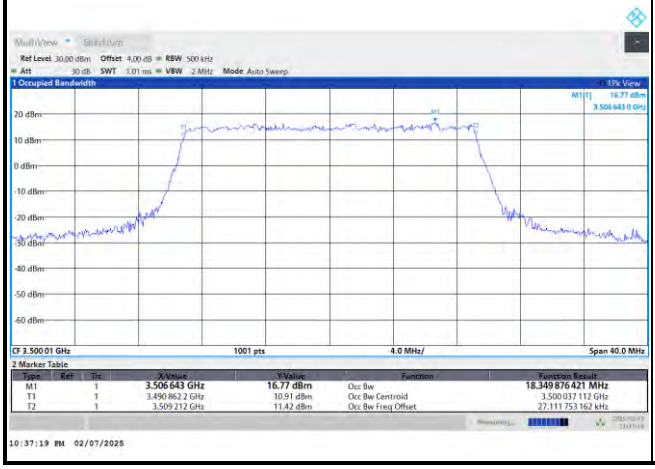
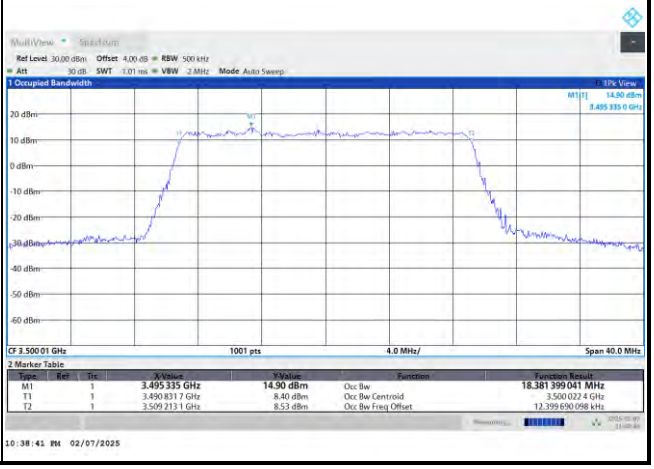
QPSK



16QAM



64QAM



256QAM