



FR1 n48 Conducted Test Items

<MIMO ANT 1>

Maximum EIRP (dBm/10MHz)

Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	18.88	-	16.28	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	-	-	18.95	18.83	16.22	16.24	-	-

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 2TX> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	28.48	-	25.88	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	-	-	28.55	28.43	25.82	25.84	-	-
Limit	30dBm/10MHz							
Result	PASS							

Note

1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	18.96	-	16.93	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	19.05	18.97	16.68	16.62	-	-

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 2TX> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	28.56	-	26.53	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	28.65	28.57	26.28	26.22	-	-
Limit	30dBm/10MHz							
Result	PASS							

Note

1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	-	-	19.43	-	16.82	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	-	-	18.66	18.46	16.41	16.47	-	-

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 2TX> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	-	-	29.03	-	26.42	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	-	-	28.26	28.06	26.01	26.07	-	-
Limit	30dBm/10MHz							
Result	PASS							

Note

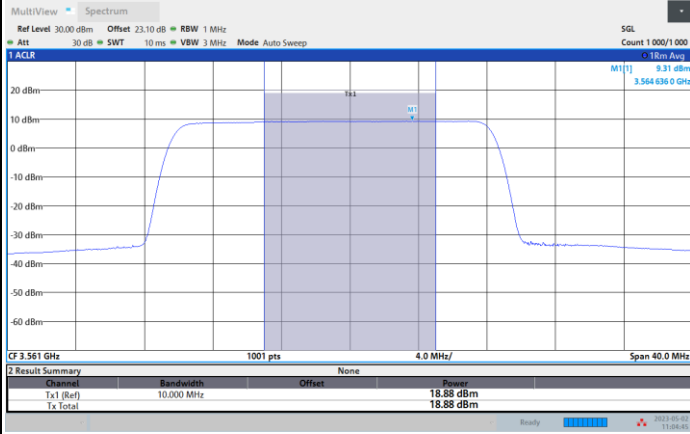
1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



FR1 n48 / 20MHz / Lowest Channel / Conducted (dBm/10MHz)

QPSK

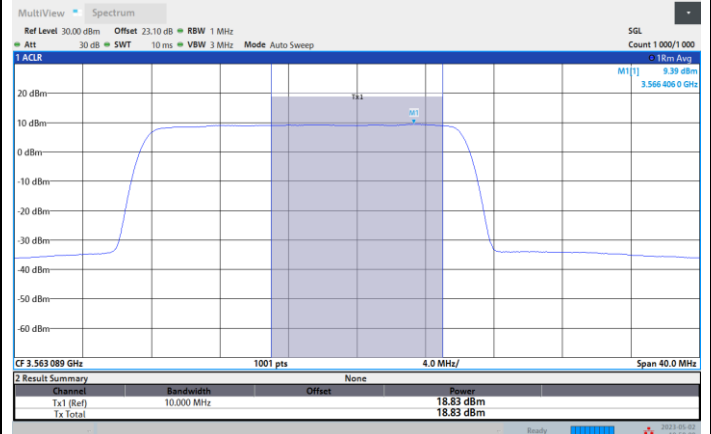
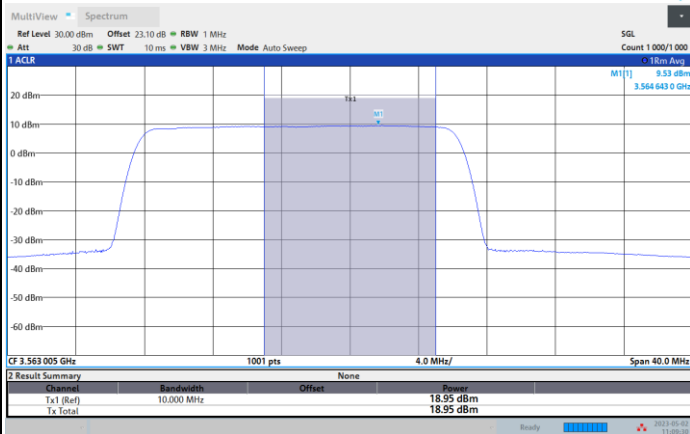
16QAM



N/A

64QAM

256QAM



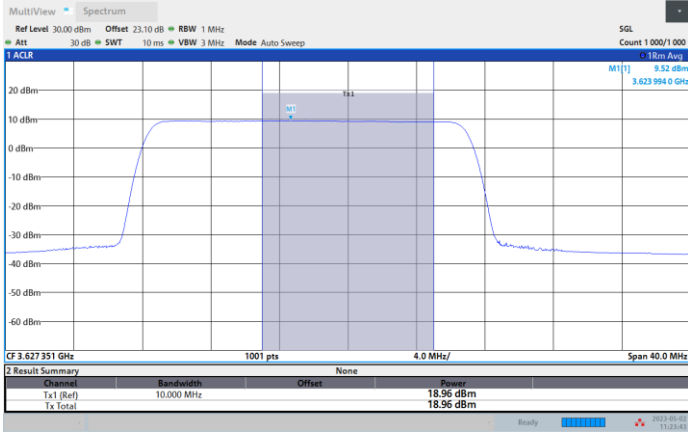


FR1 n48 / 20MHz / Middle Channel / Conducted (dBm/10MHz)

QPSK

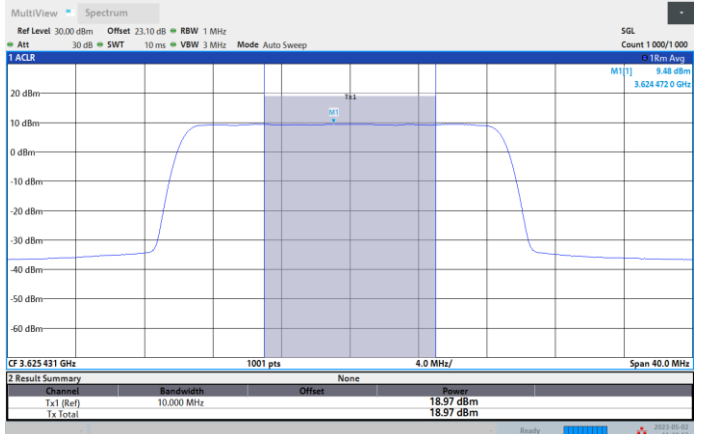
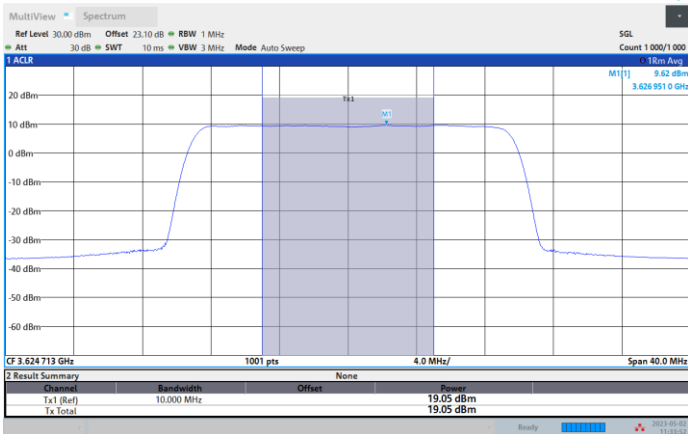
16QAM

P N/A



64QAM

256QAM

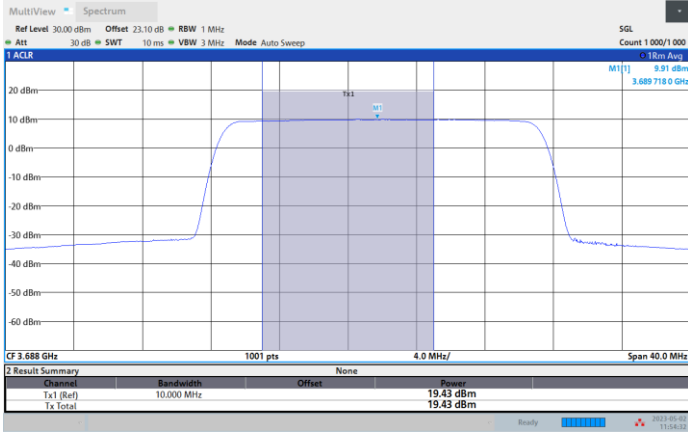




FR1 n48 / 20MHz / Highest Channel / Conducted (dBm/10MHz)

QPSK

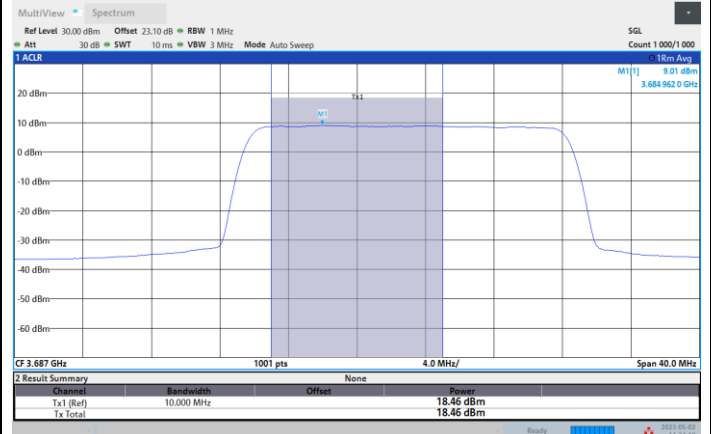
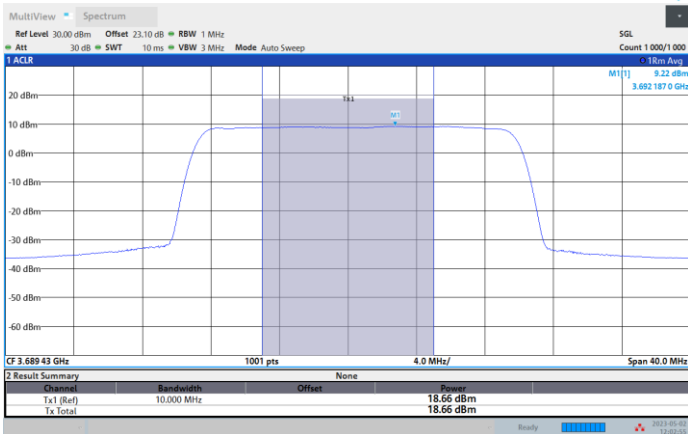
16QAM



N/A

64QAM

256QAM

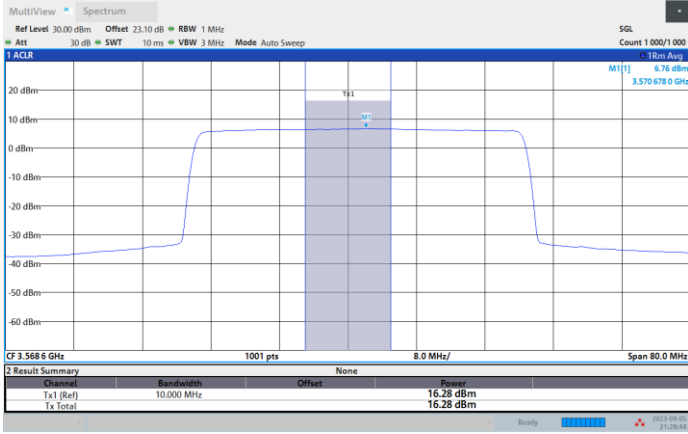




FR1 n48 / 40MHz / Lowest Channel / Conducted (dBm/10MHz)

QPSK

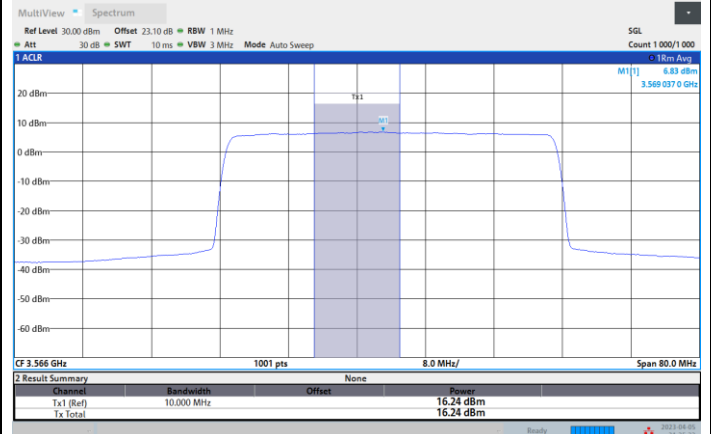
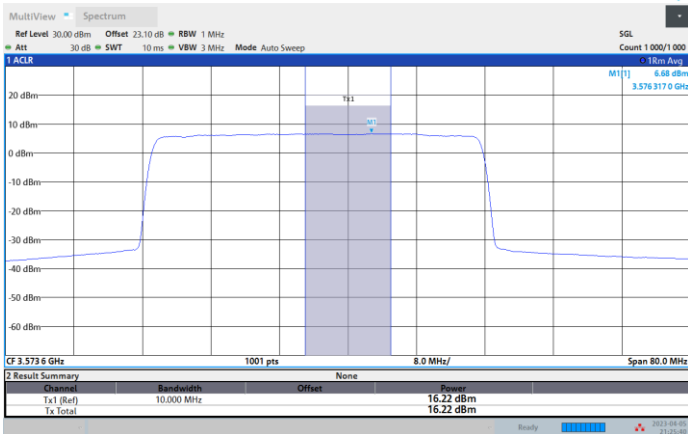
16QAM



N/A

64QAM

256QAM

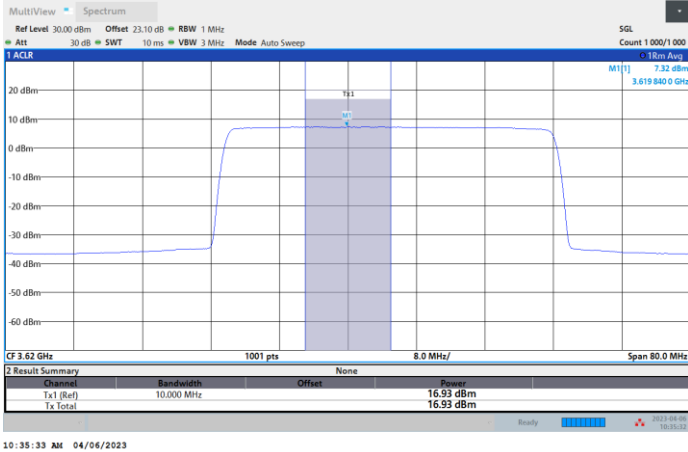




FR1 n48 / 40MHz / Middle Channel / Conducted (dBm/10MHz)

QPSK

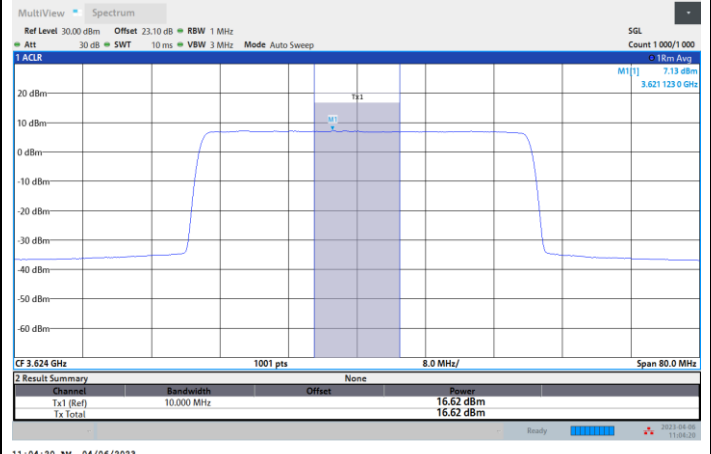
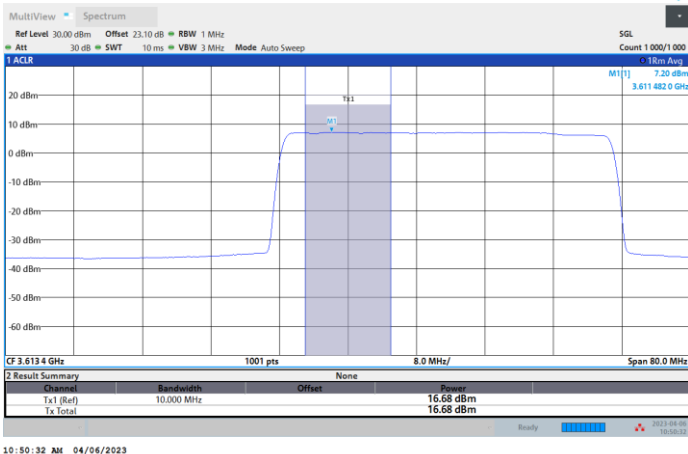
16QAM



N/A

64QAM

256QAM

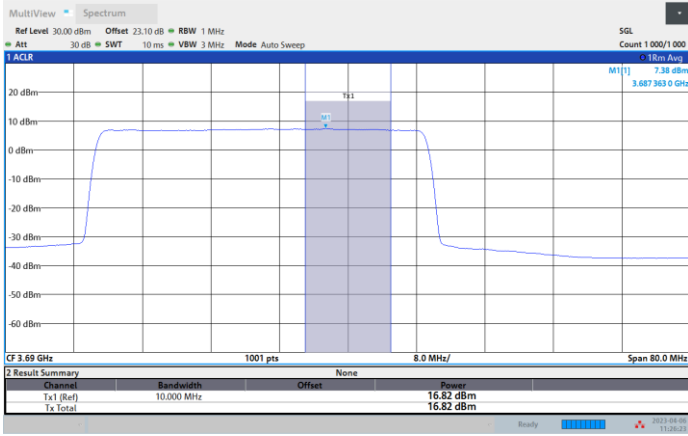




FR1 n48 / 40MHz / Highest Channel / Conducted (dBm/10MHz)

QPSK

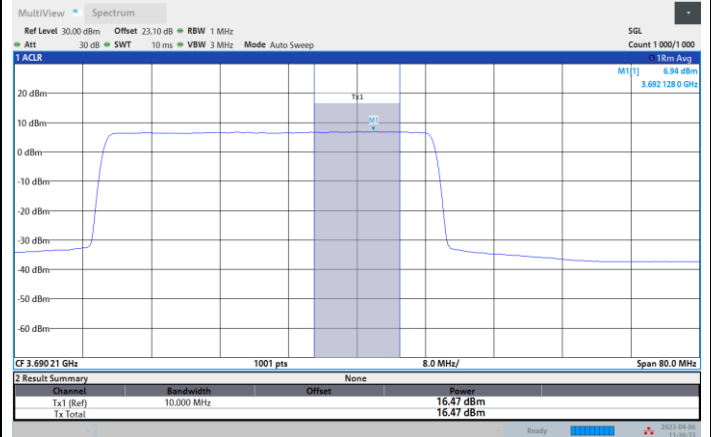
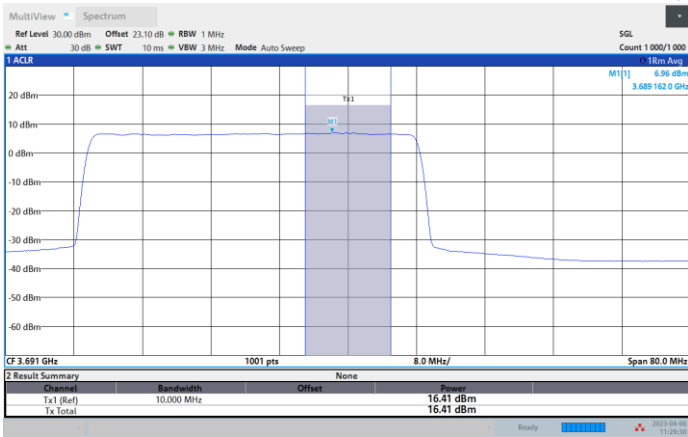
16QAM



N/A

64QAM

256QAM





Power Spectral Density

Mode	FR1 n48 : Conducted PSD (dBm/MHz) <SISO> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	10.13	-	6.54	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	-	-	10.19	9.96	7.06	7.05	-	-

Mode	FR1 n48 : EIRP PSD (dBm/MHz) <MIMO 2TX> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	19.73	-	16.14	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	-	-	19.79	19.56	16.66	16.65	-	-
Limit	20dBm/MHz							
Result	PASS							

Note

1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted PSD (dBm/MHz) <SISO> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	9.80	-	7.70	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	9.91	10.20	7.73	7.61	-	-

Mode	FR1 n48 : EIRP PSD (dBm/MHz) <MIMO 2TX> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	19.40	-	17.3	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	19.51	19.80	17.33	17.21	-	-
Limit	20dBm/MHz							
Result	PASS							

Note

1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted PSD (dBm/MHz) <SISO> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	-	-	10.16	-	7.79	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	-	-	9.97	9.61	7.67	7.58	-	-

Mode	FR1 n48 : EIRP PSD (dBm/MHz) <MIMO 2TX> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	-	-	19.76	-	17.39	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	-	-	19.57	19.21	17.27	17.18	-	-
Limit	20dBm/MHz							
Result	PASS							

Note

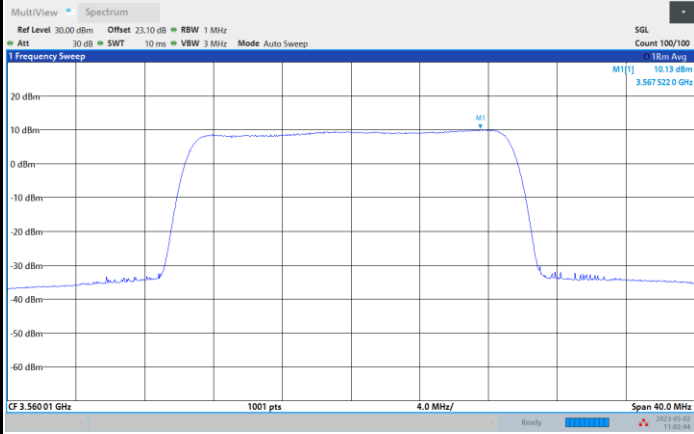
1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 3.01dB (2TX) + 6.59dBi MIMO antenna gain.



FR1 n48 / 20MHz / Lowest Channel / PSD

QPSK

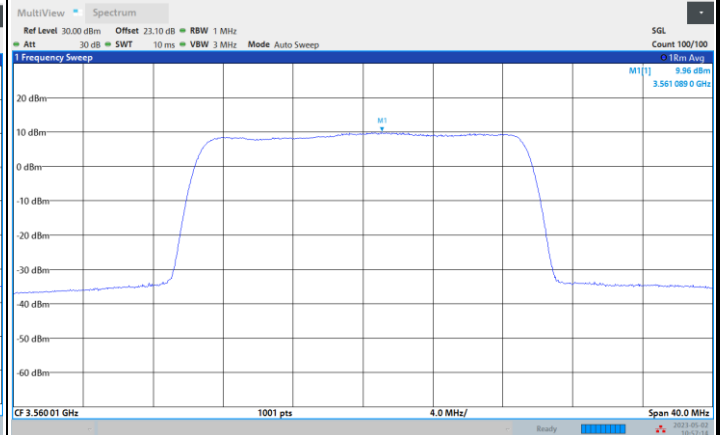
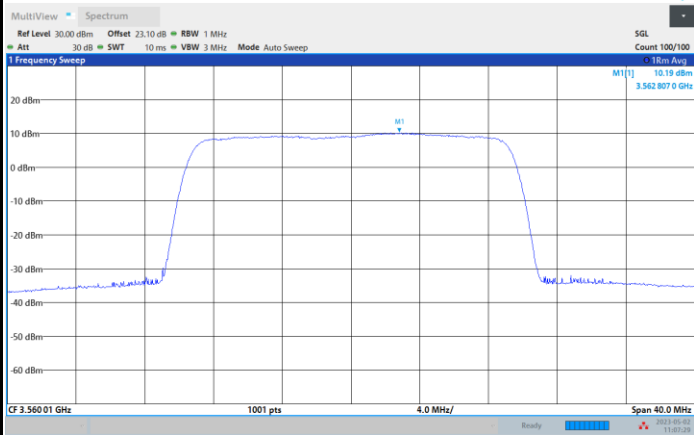
16QAM



N/A

64QAM

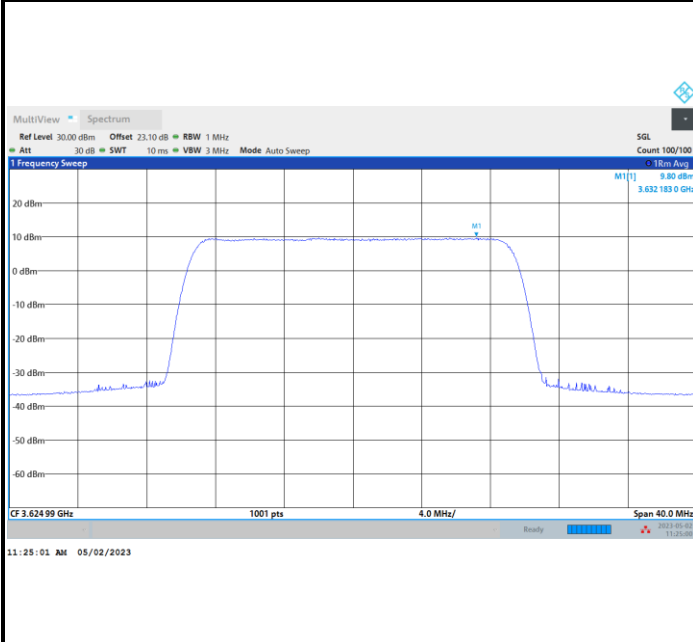
256QAM





FR1 n48 / 20MHz / Middle Channel / PSD

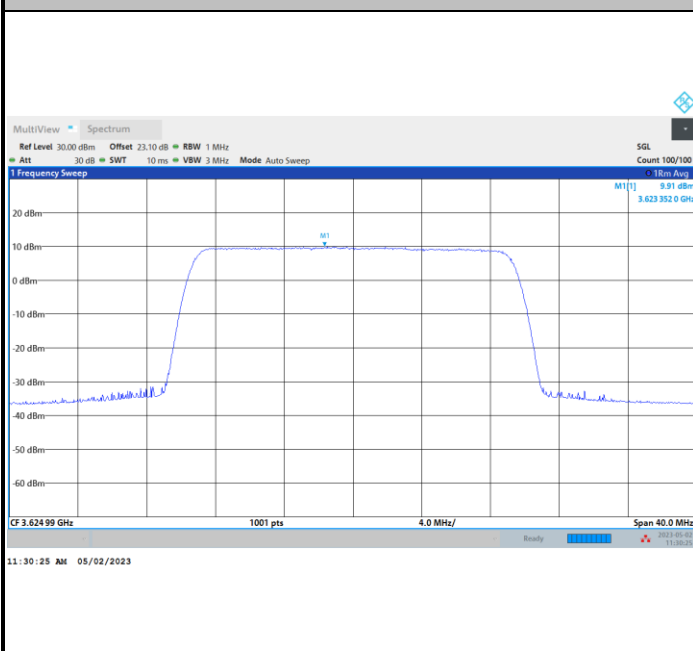
QPSK



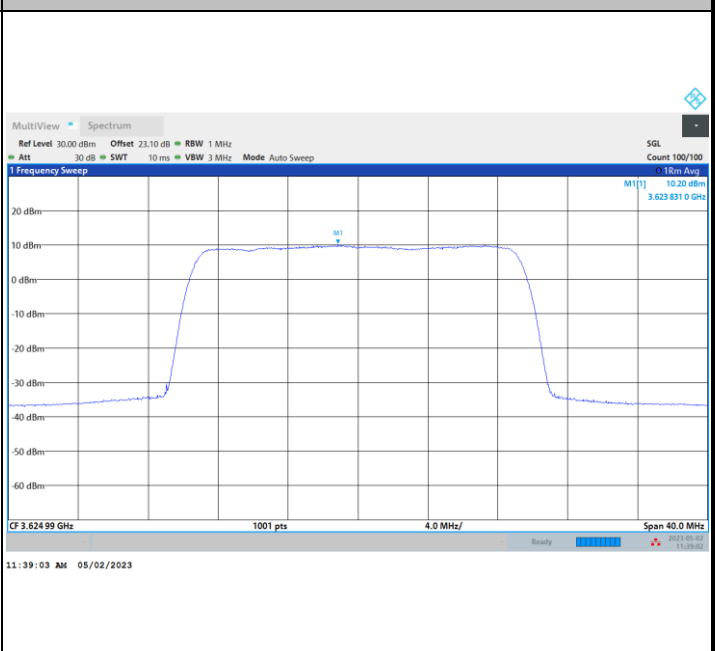
16QAM

N/A

64QAM



256QAM

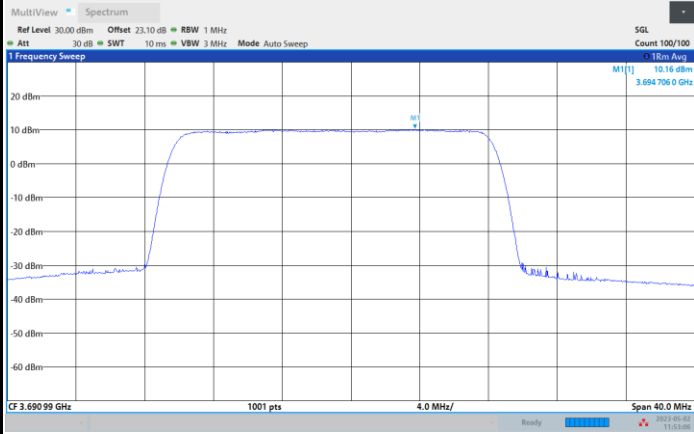




FR1 n48 / 20MHz / Highest Channel / PSD

QPSK

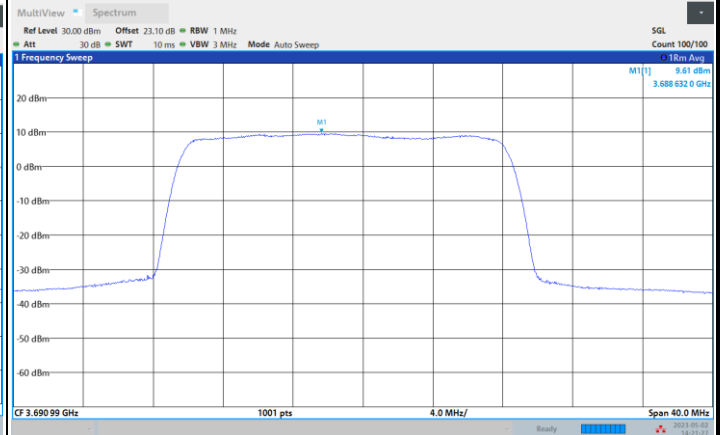
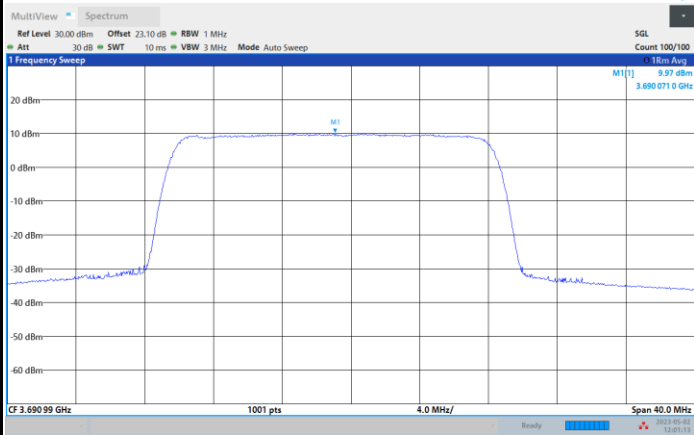
16QAM



N/A

64QAM

256QAM

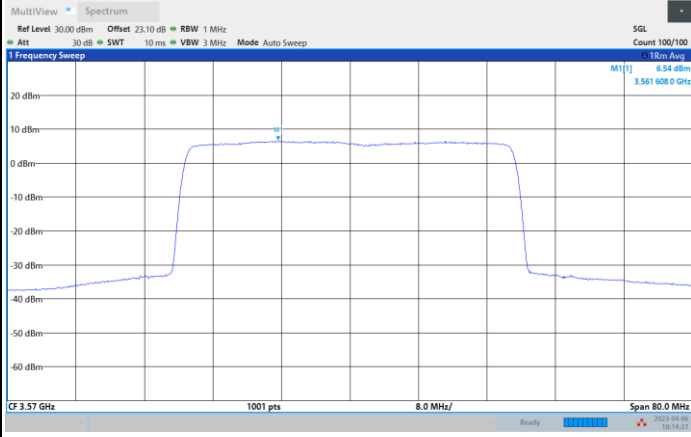




FR1 n48 / 40MHz / Lowest Channel / PSD

QPSK

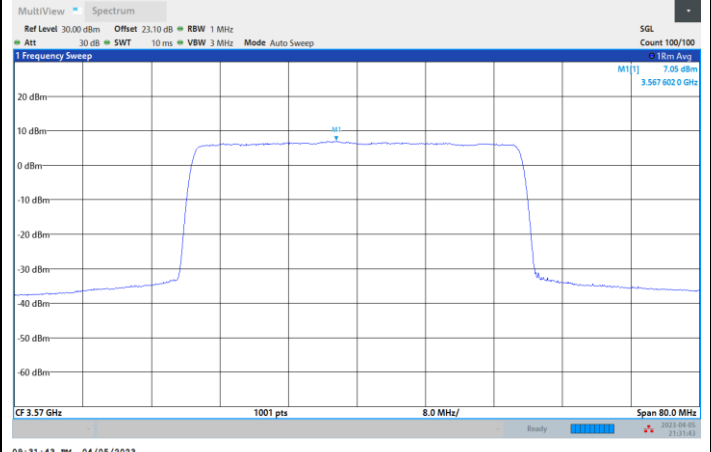
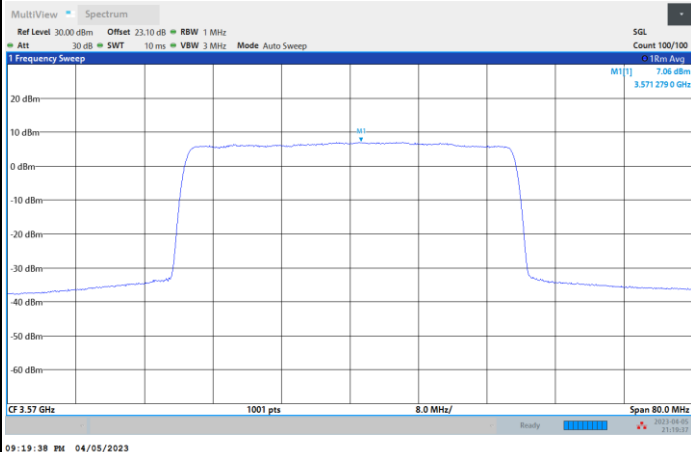
16QAM



N/A

64QAM

256QAM

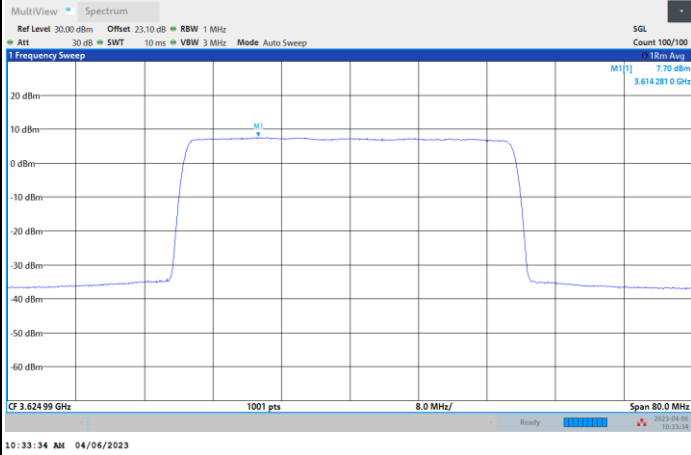




FR1 n48 / 40MHz / Middle Channel / PSD

QPSK

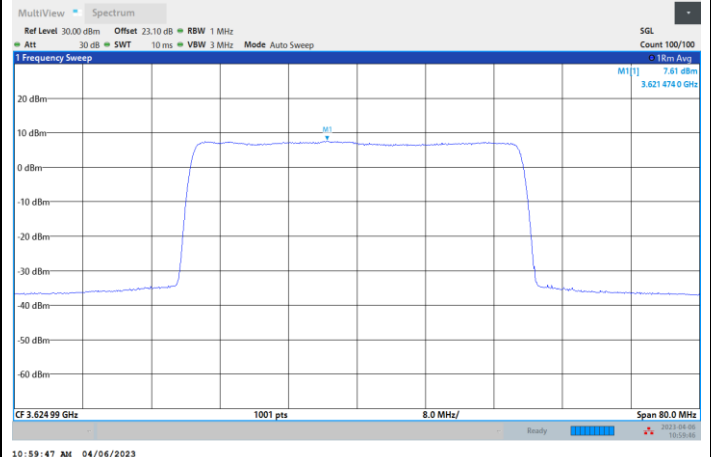
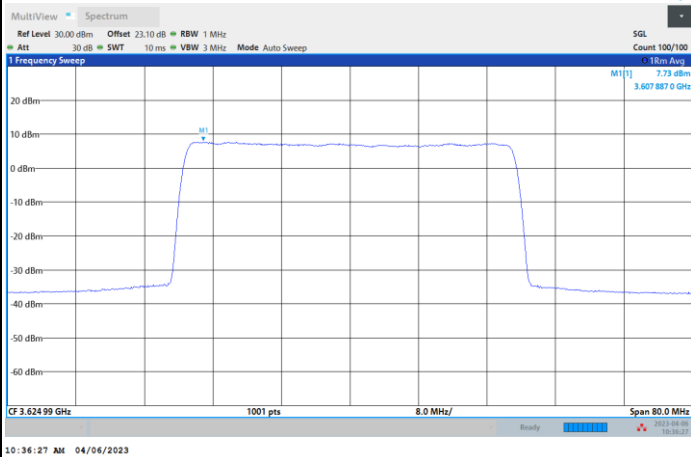
16QAM



N/A

64QAM

256QAM

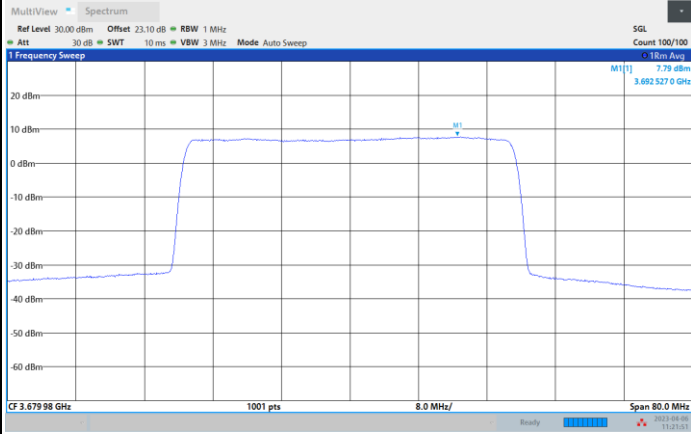




FR1 n48 / 40MHz / Highest Channel / PSD

QPSK

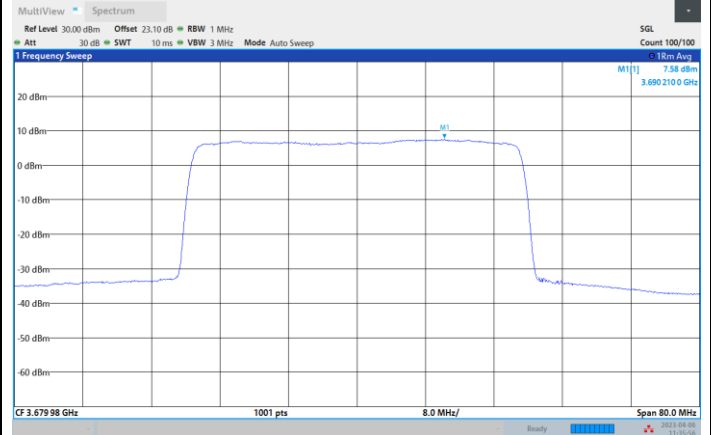
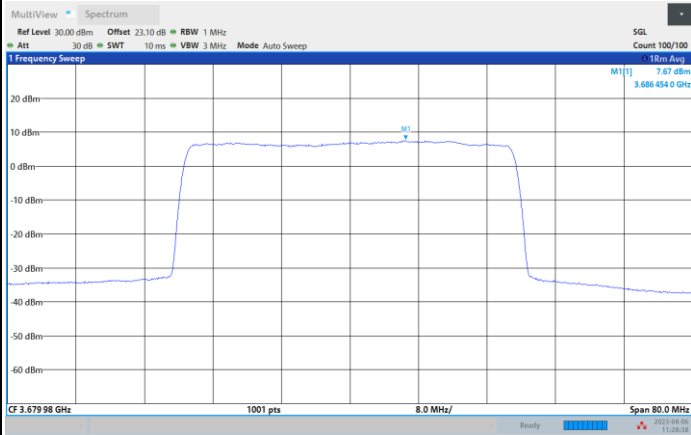
16QAM



N/A

64QAM

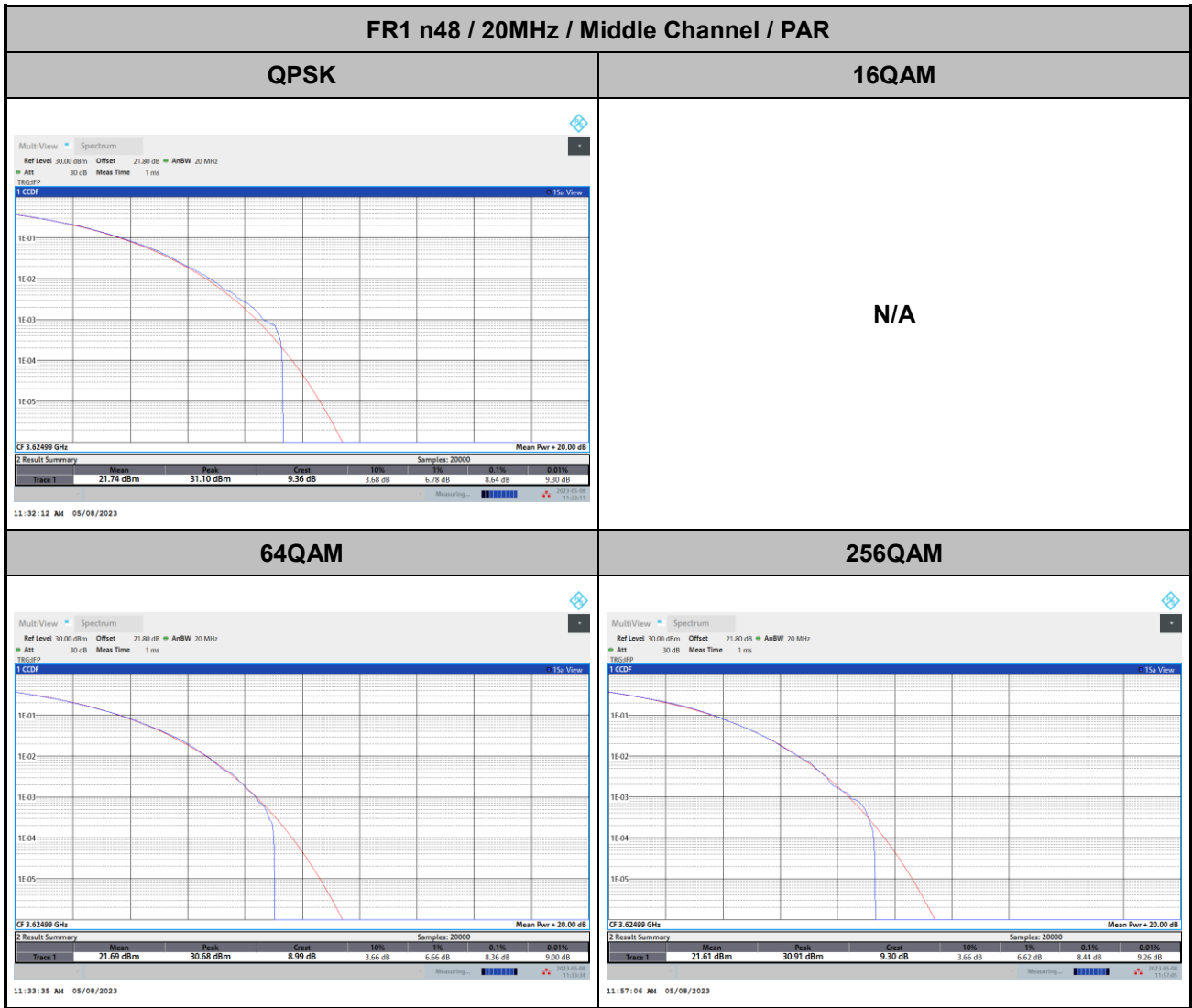
256QAM





Peak-to-Average Ratio

Mode	FR1 n48 / 20MHz / PAR (dB)				Limit: 13dB
Mod.	QPSK	16QAM	64QAM	256QAM	Result
Middle CH	8.64	-	8.36	8.44	PASS





26dB Bandwidth

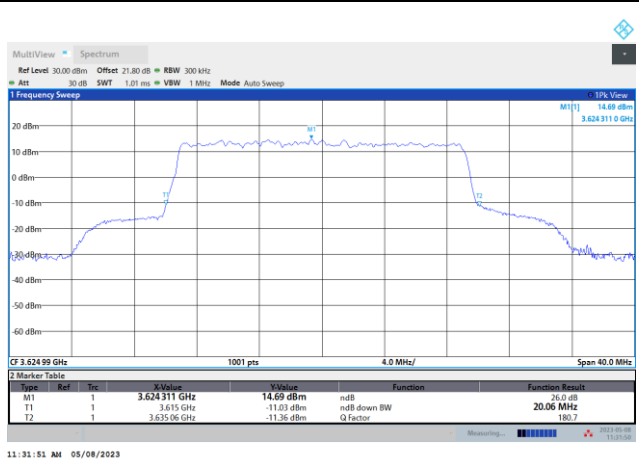
Mode	FR1 n48 : 26dB BW(MHz)							
BW	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	20.06	-	40.84	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	20.02	19.74	41.00	42.20	-	-



FR1 n48 / 20MHz / Middle Channel / 26dB BW

QPSK

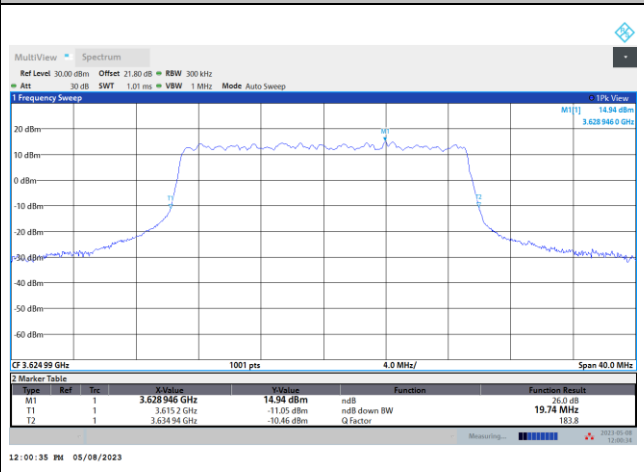
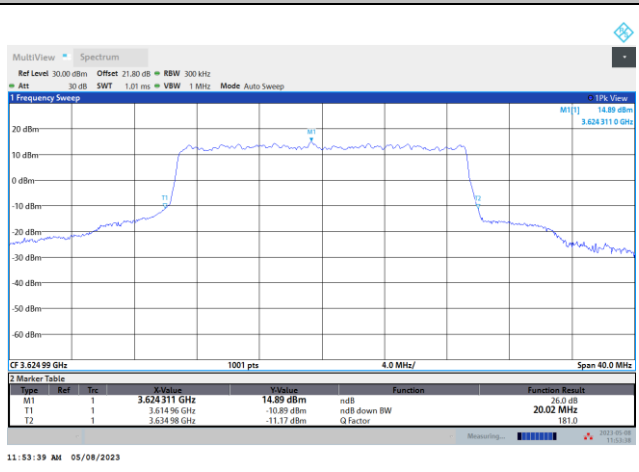
16QAM



N/A

64QAM

256QAM

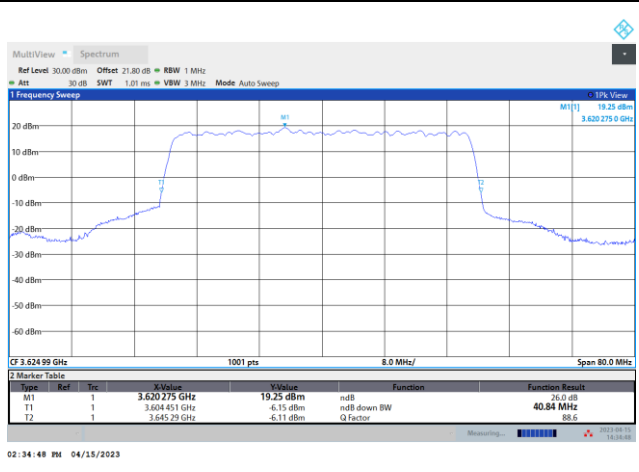




FR1 n48 / 40MHz / Middle Channel / 26dB BW

QPSK

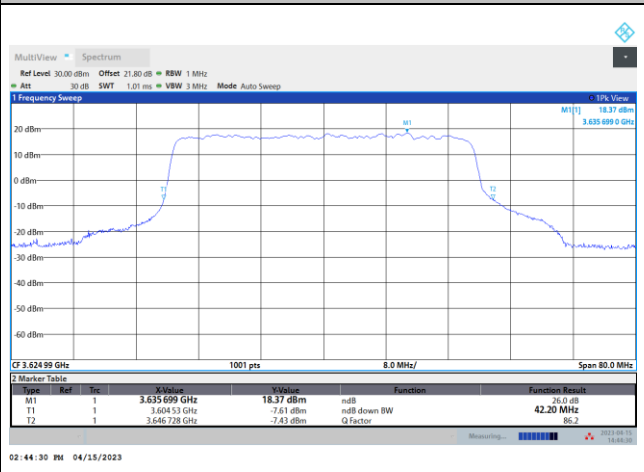
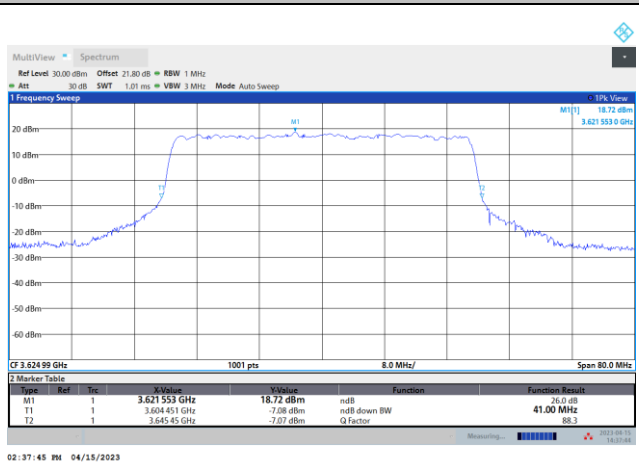
16QAM



N/A

64QAM

256QAM





Occupied Bandwidth

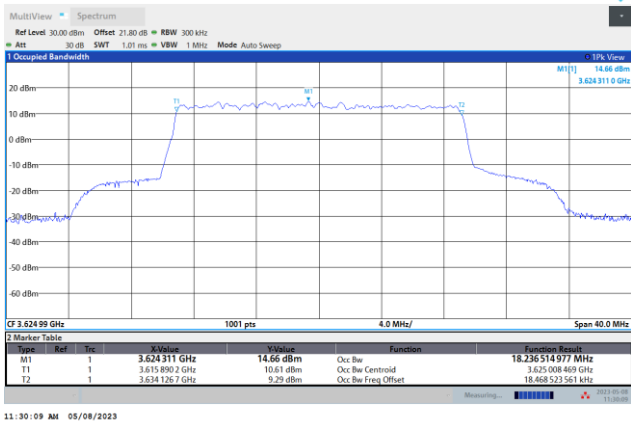
Mode	FR1 n48 : 99%OBW (MHz)							
BW	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	18.23	-	37.98	-	-	-
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	-	-	18.28	18.18	38.03	38.01	-	-



FR1 n48 / 20MHz / Middle Channel / 99%OBW

QPSK

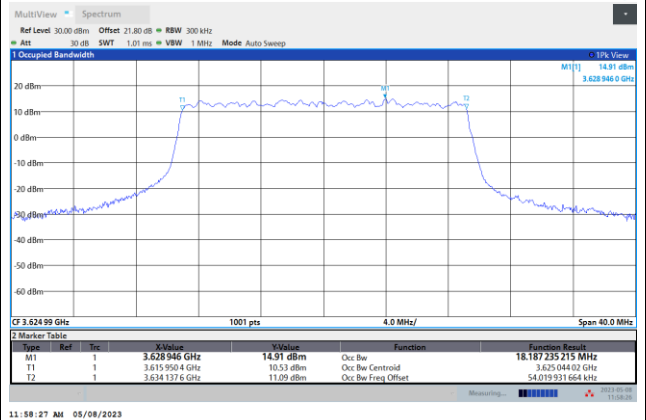
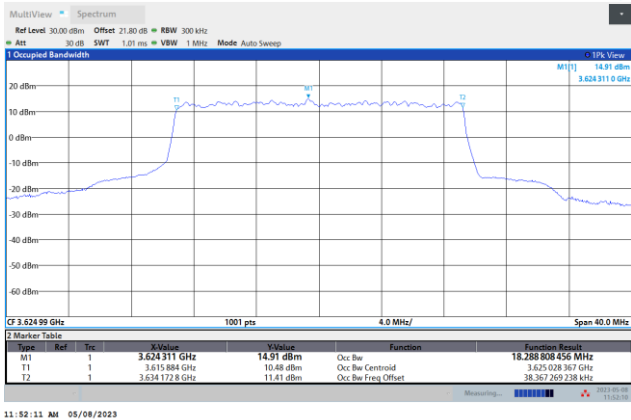
16QAM



N/A

64QAM

256QAM

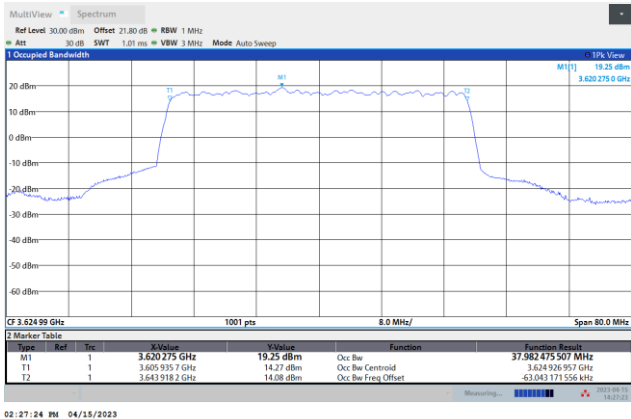




FR1 n48 / 40MHz / Middle Channel / 99%OBW

QPSK

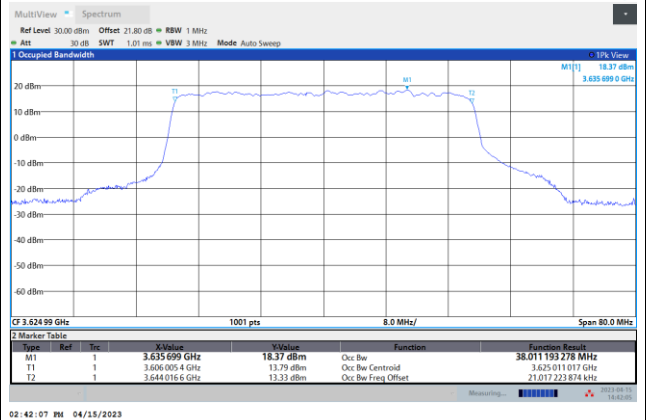
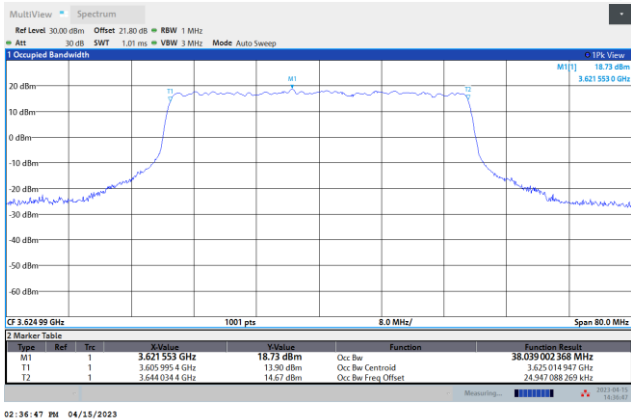
16QAM



N/A

64QAM

256QAM



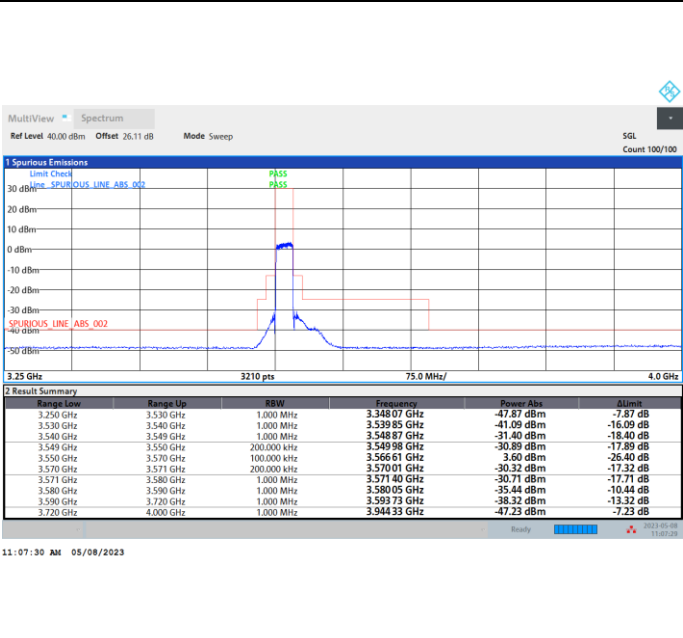


Unwanted Emission (MASK)

FR1 n48 / 20MHz / Lowest Channel / MASK

QPSK

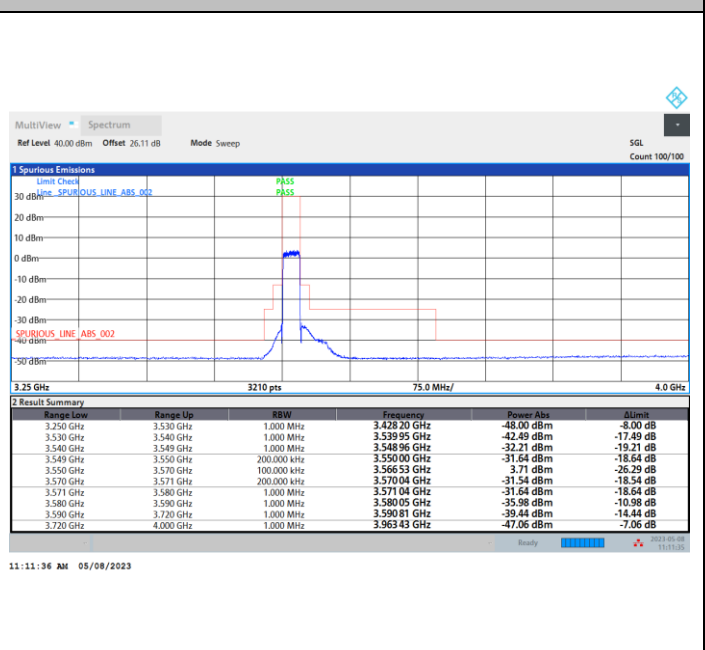
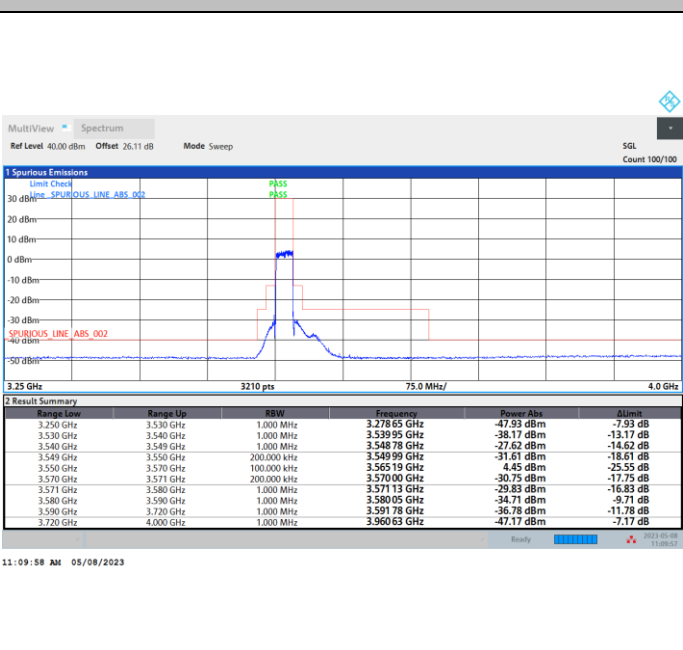
16QAM



N/A

64QAM

256QAM

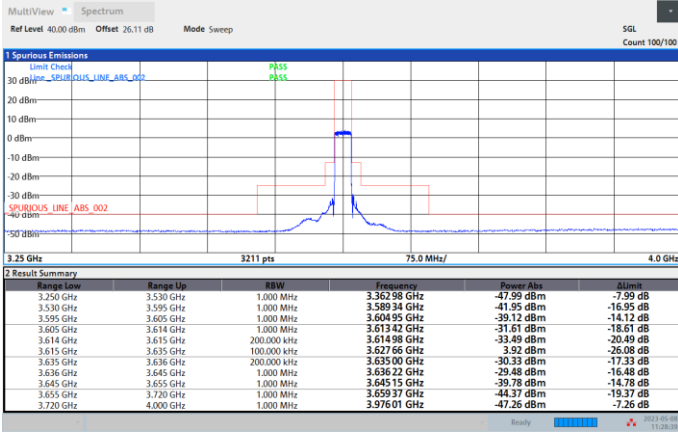




FR1 n48 / 20MHz / Middle Channel / MASK

QPSK

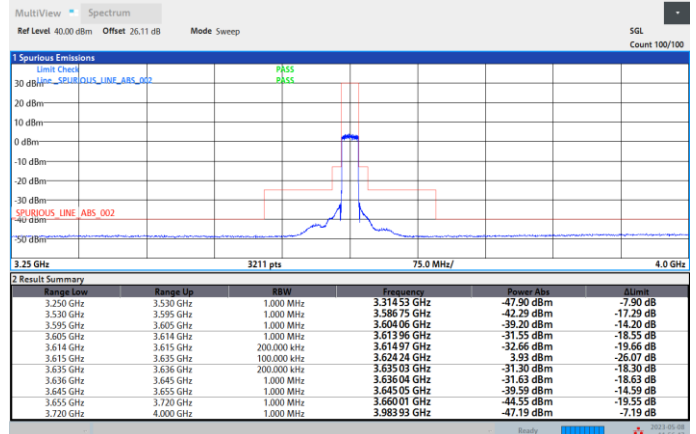
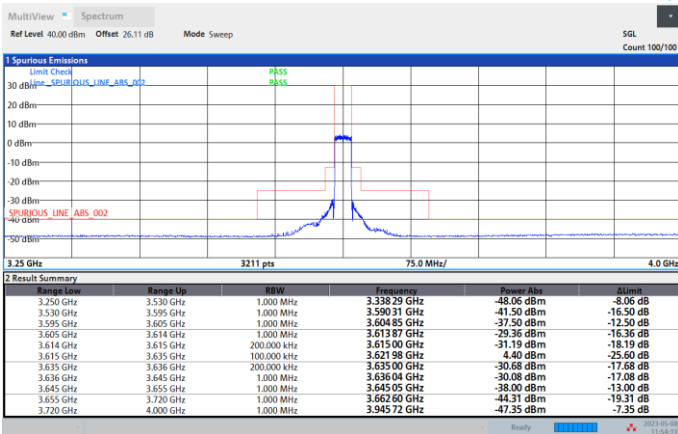
16QAM



N/A

64QAM

256QAM

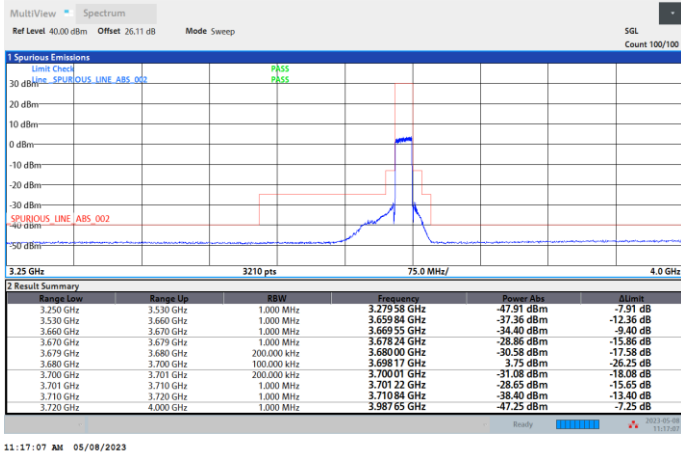




FR1 n48 / 20MHz / Highest Channel / MASK

QPSK

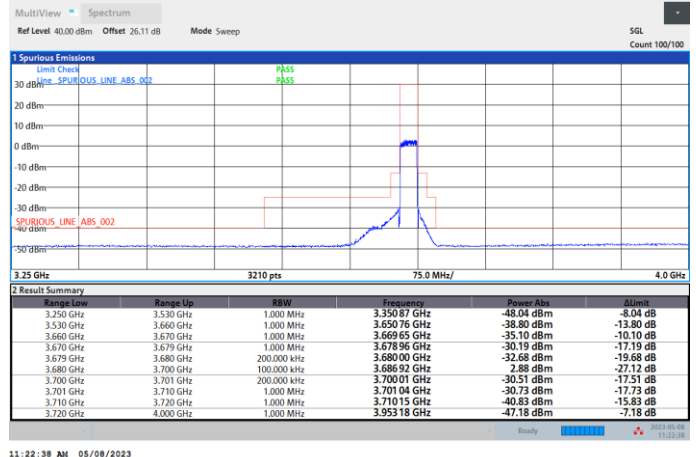
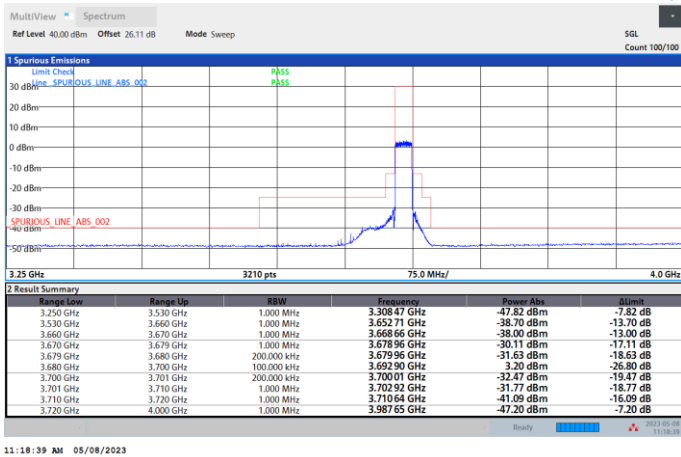
16QAM



N/A

64QAM

256QAM

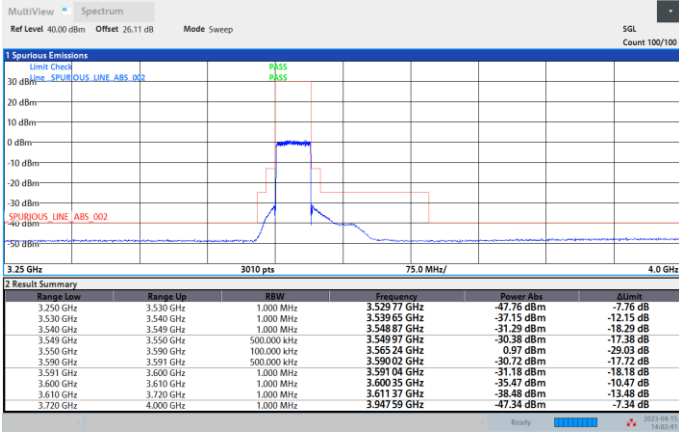




FR1 n48 / 40MHz / Lowest Channel / MASK

QPSK

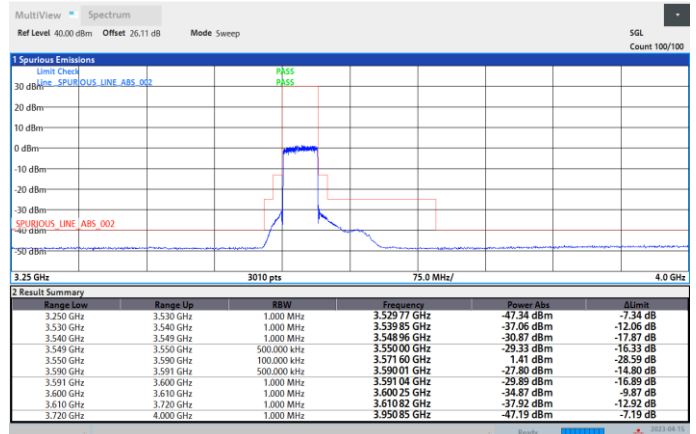
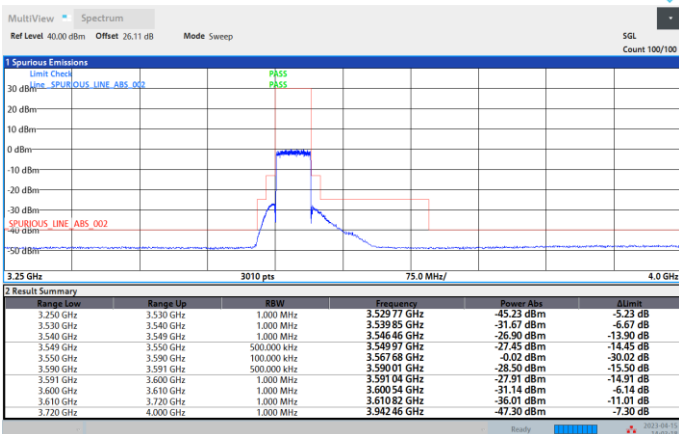
16QAM



N/A

64QAM

256QAM

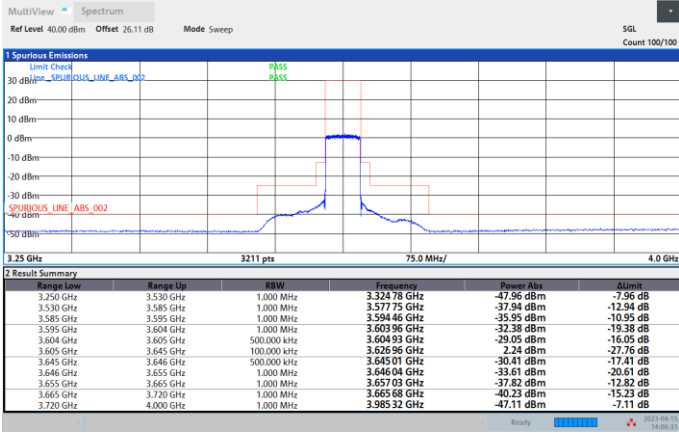




FR1 n48 / 40MHz / Middle Channel / MASK

QPSK

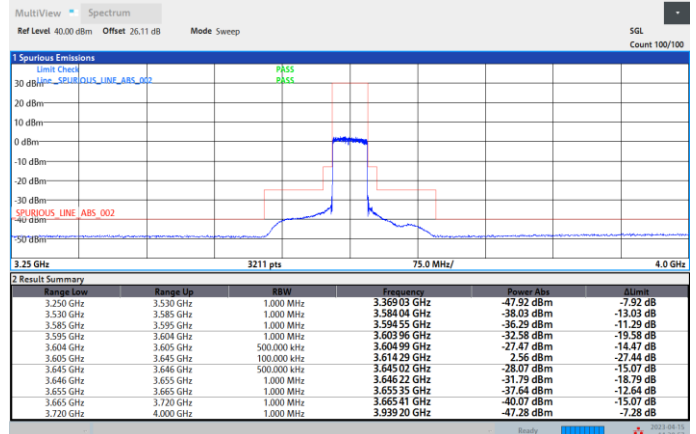
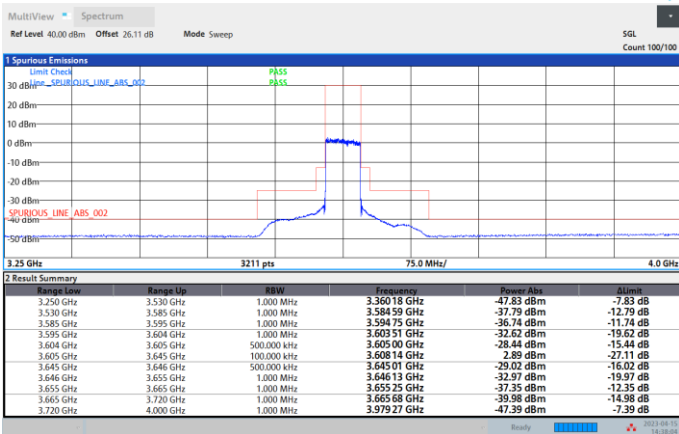
16QAM



N/A

64QAM

256QAM

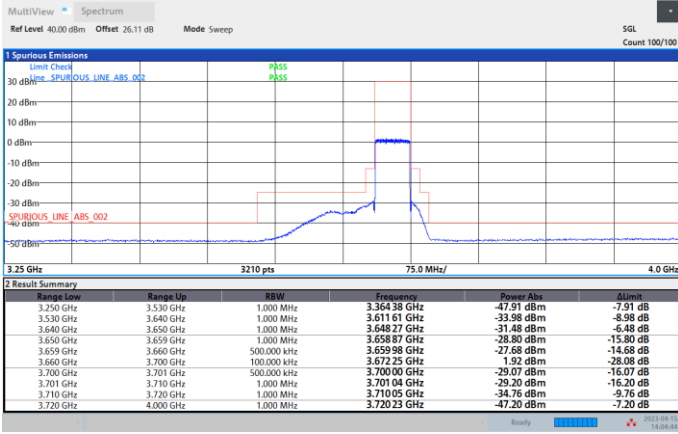




FR1 n48 / 40MHz / Highest Channel / MASK

QPSK

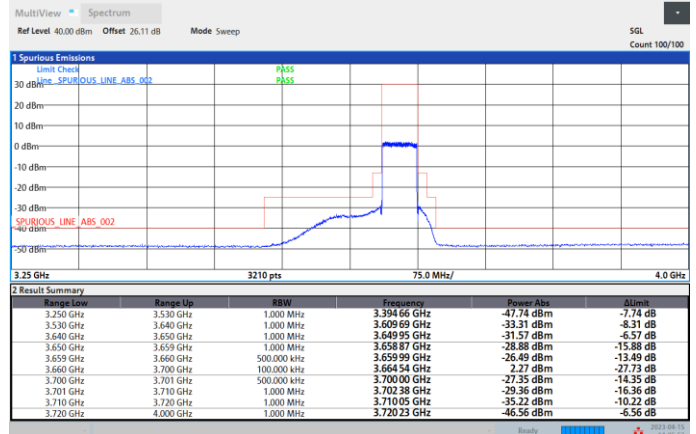
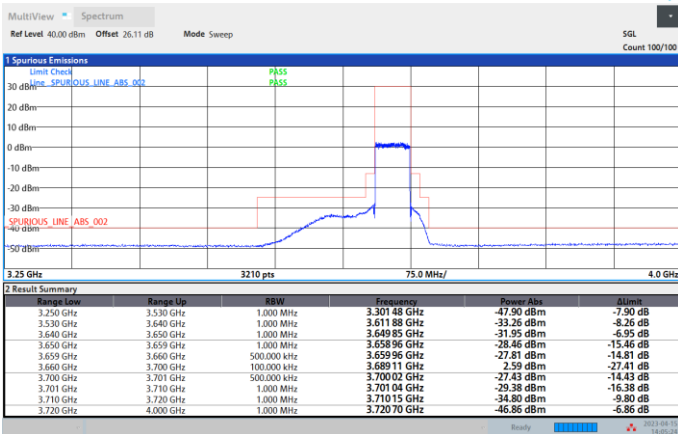
16QAM



N/A

64QAM

256QAM



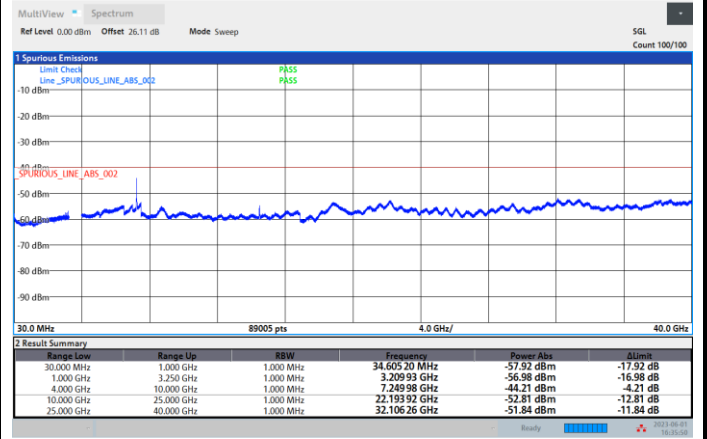
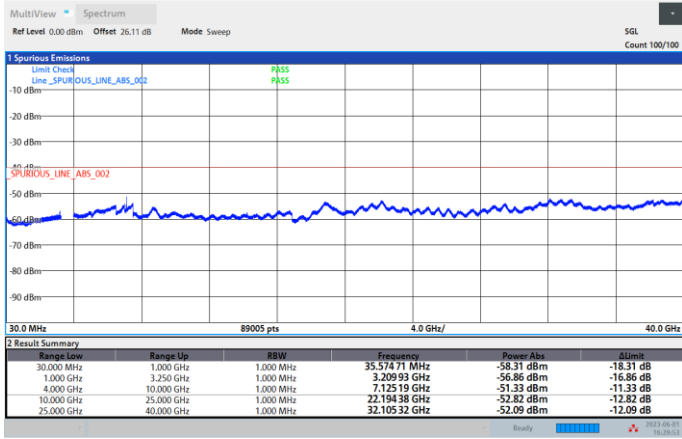


Conducted Spurious Emission

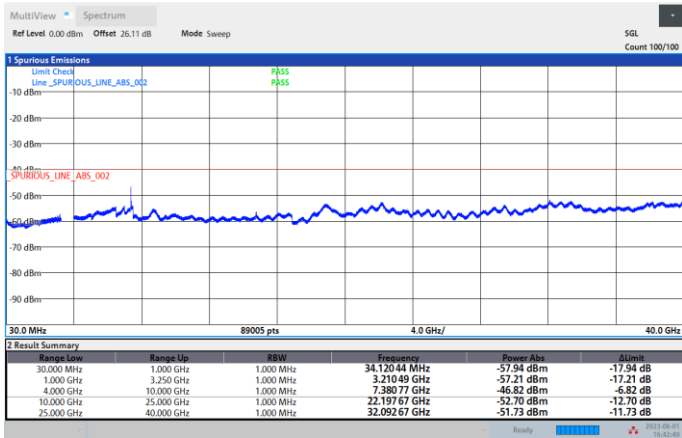
FR1 n48 / 20MHz / QPSK / CSE

Lowest Channel

Middle Channel



Highest Channel

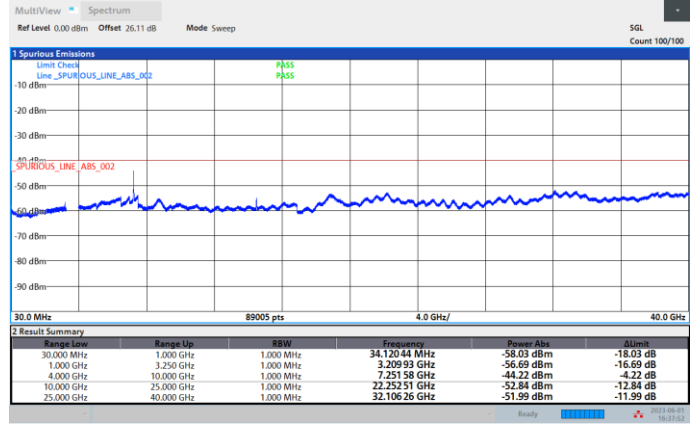
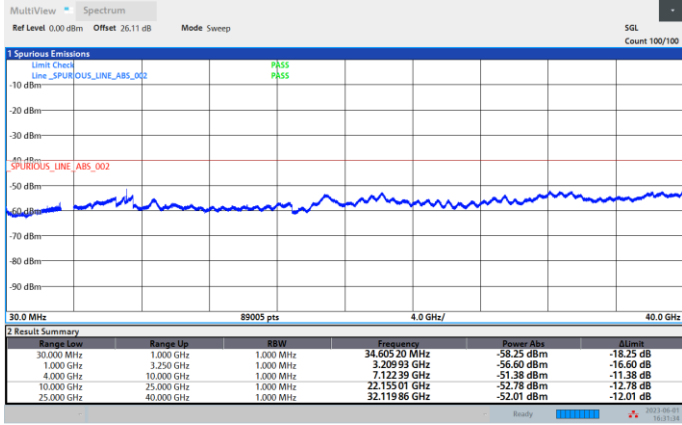




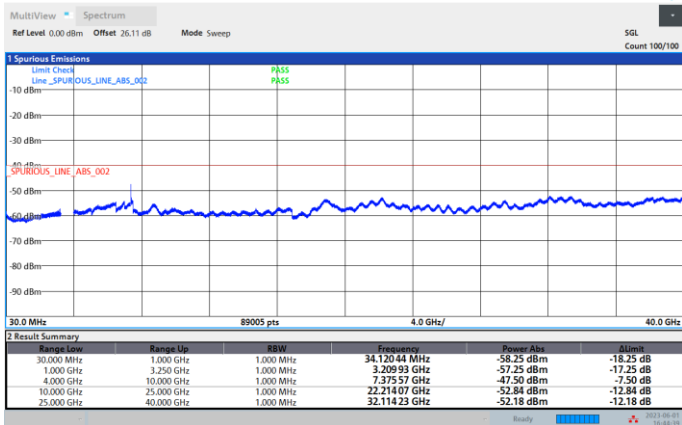
FR1 n48 / 20MHz / 64QAM / CSE

Lowest Channel

Middle Channel



Highest Channel

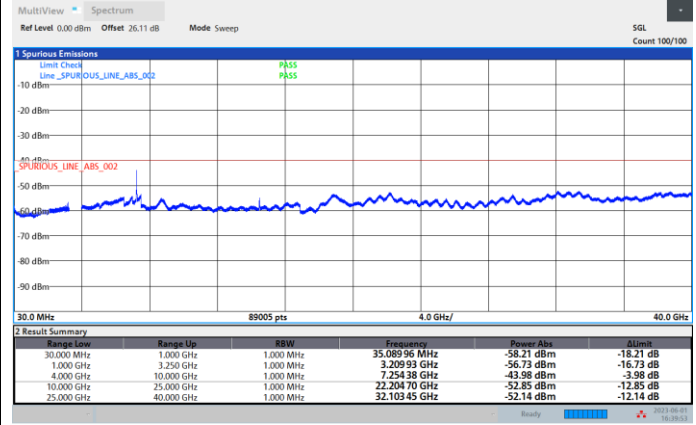
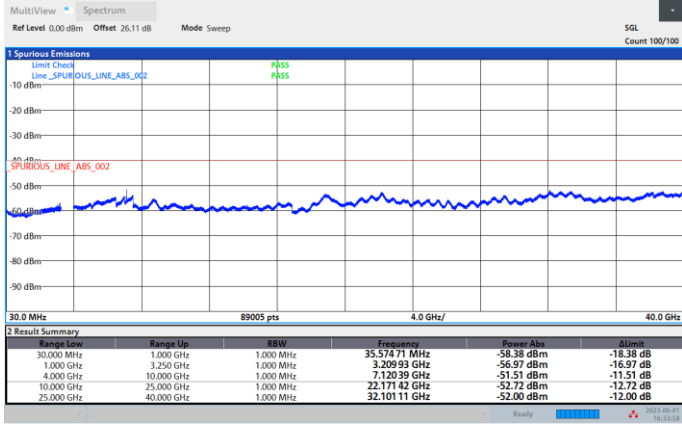




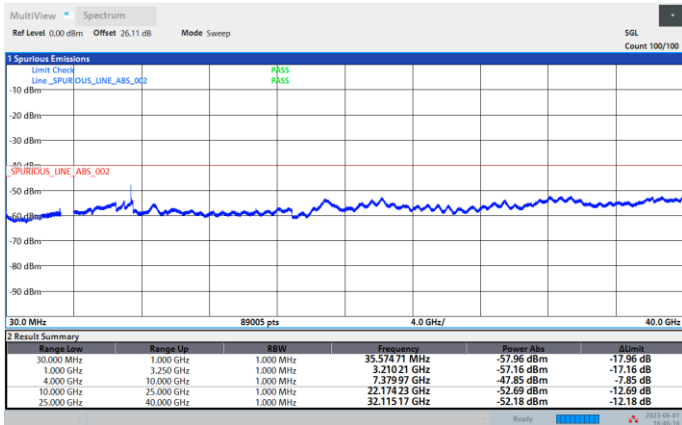
FR1 n48 / 20MHz / 256QAM / CSE

Lowest Channel

Middle Channel



Highest Channel

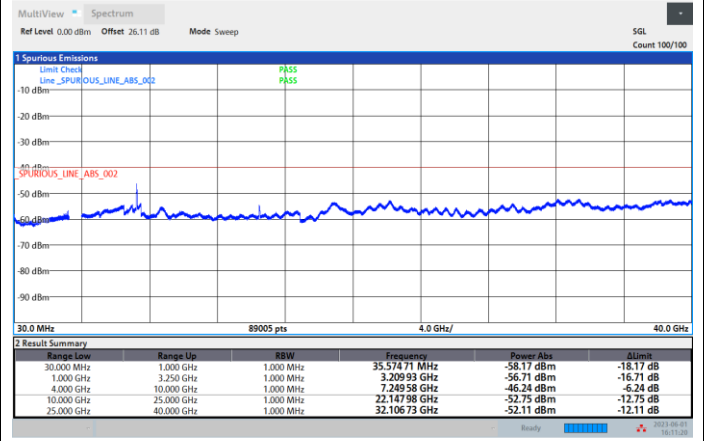
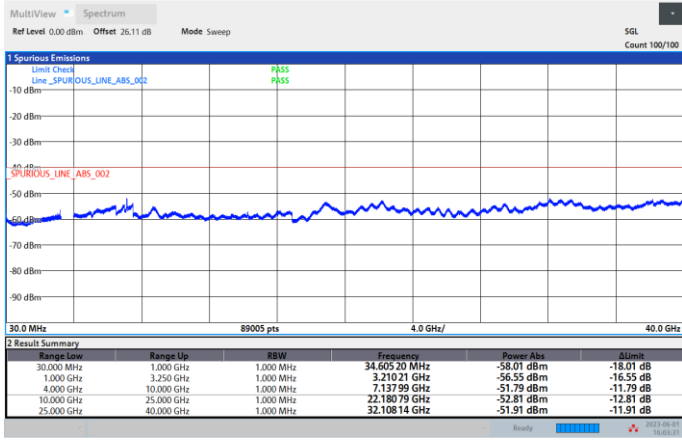




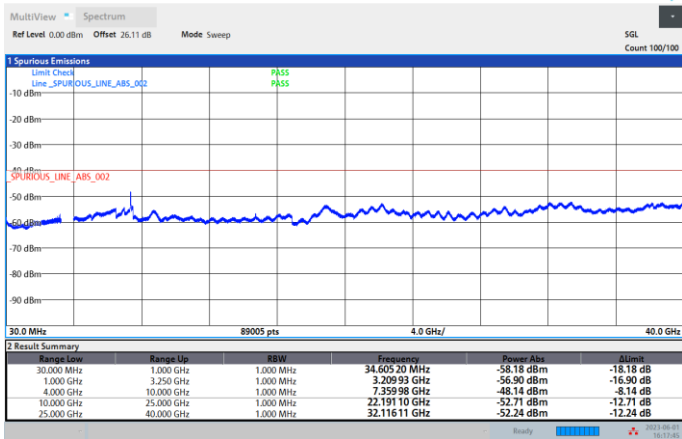
FR1 n48 / 40MHz / QPSK / CSE

Lowest Channel

Middle Channel



Highest Channel

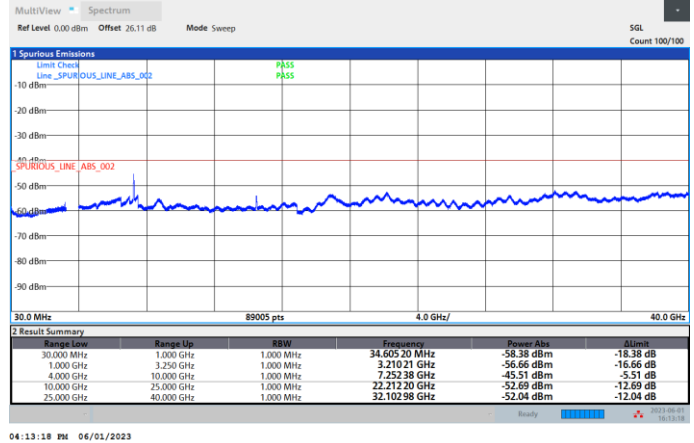
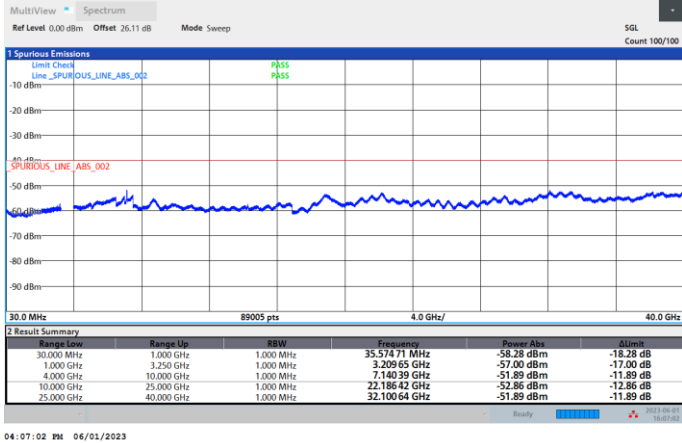




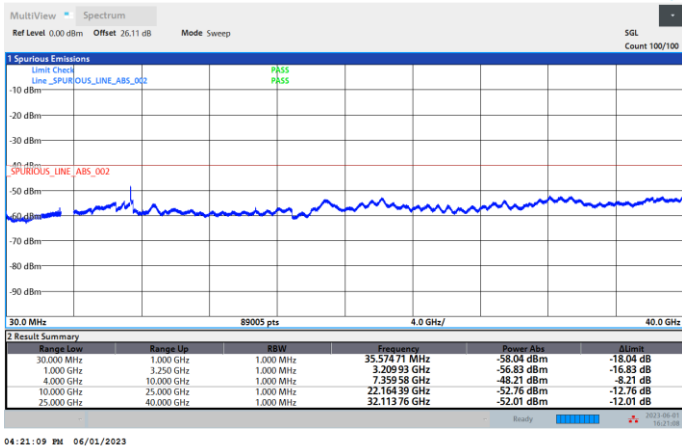
FR1 n48 / 40MHz / 64QAM / CSE

Lowest Channel

Middle Channel



Highest Channel

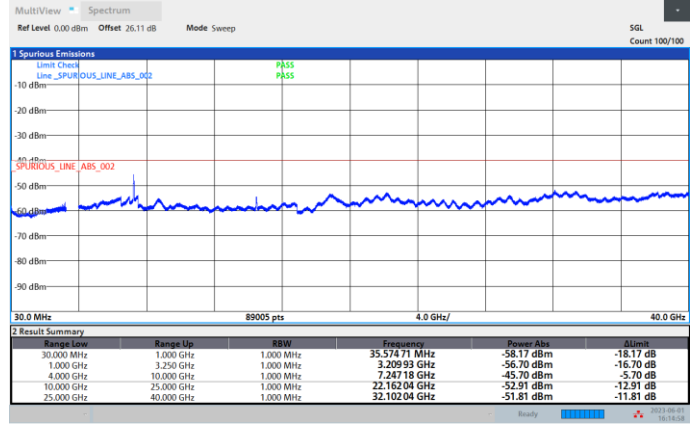
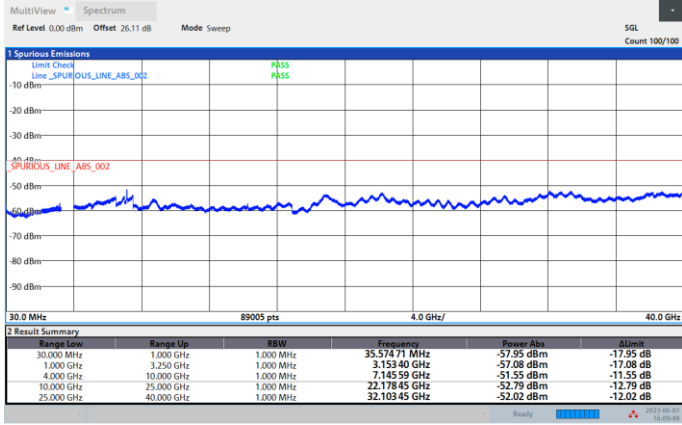




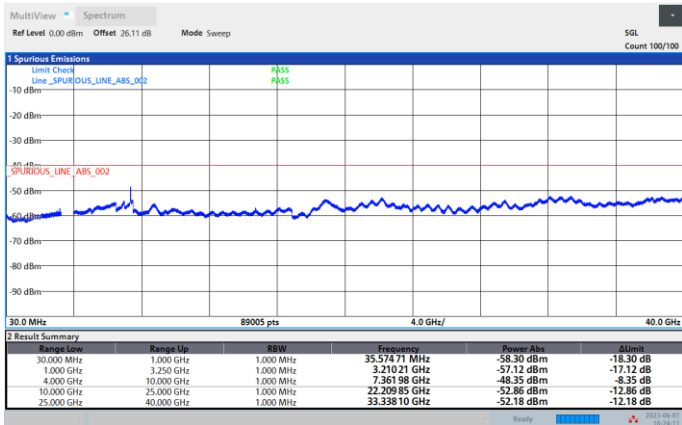
FR1 n48 / 40MHz / 256QAM / CSE

Lowest Channel

Middle Channel



Highest Channel





Frequency Stability

Test Conditions		FR1 n48 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Note 2.
		Frequency offset (ppm)	Result
50	Normal Voltage	1.3793	PASS
40	Normal Voltage	1.4897	
30	Normal Voltage	0.6621	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	1.4897	
0	Normal Voltage	0.9379	
-10	Normal Voltage	1.4345	
-20	Normal Voltage	2.3172	
-30	Normal Voltage	1.9862	
20	Maximum Voltage	0.1655	
20	Normal Voltage	0.2759	
20	Minimum Voltage	0.5517	

Note:

- 1. Normal Voltage = 48 V. ; Minimum Voltage = 43.2 V. ; Maximum Voltage = 57 V.
- 2. The frequency fundamental emissions stay within the authorized frequency block.



Appendix B. Test Results of Radiated Test

SA-n48A MIMO Part 96

SA-n48A MIMO / 40MHz / PI/2 BPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7140	-57.72	-40	-17.72	-55.3	-67.33	1.84	11.45	H
	10710	-54.67	-40	-14.67	-56.23	-63.11	2.23	10.67	H
	14280	-50.59	-40	-10.59	-58.31	-60.18	2.64	12.23	H
	21420	-64.06	-40	-24.06	-78.08	-79.01	3.35	18.30	H
	24990	-60.69	-40	-20.69	-78.17	-75.39	3.70	18.41	H
	28560	-57.28	-40	-17.28	-76.91	-72.68	3.99	19.39	H
									H
	7140	-54.07	-40	-14.07	-51.95	-63.68	1.84	11.45	V
	10710	-54.54	-40	-14.54	-55.74	-62.98	2.23	10.67	V
	14280	-49.70	-40	-9.70	-57.45	-59.29	2.64	12.23	V
	21420	-64.25	-40	-24.25	-77.96	-79.20	3.35	18.30	V
	24990	-61.19	-40	-21.19	-78.35	-75.89	3.70	18.41	V
	28560	-57.77	-40	-17.77	-76.98	-73.17	3.99	19.39	V
									V



Middle	7250	-50.83	-40	-10.83	-48.68	-60.29	1.87	11.33	H
	10875	-53.77	-40	-13.77	-55.63	-62.13	2.21	10.58	H
	14500	-47.54	-40	-7.54	-55.36	-57.02	2.62	12.10	H
	14500	-48.30	-40	-8.30	-56.12	-57.78	2.62	12.10	H
	18124	-62.62	-40	-22.62	-73.47	-76.99	3.23	17.60	H
	21749	-64.53	-40	-24.53	-78.94	-79.74	3.44	18.65	H
									H
	7250	-46.28	-40	-6.28	-44.45	-55.74	1.87	11.33	V
	7250	-47.10	-40	-7.10	-45.27	-56.56	1.87	11.33	V
	10875	-53.82	-40	-13.82	-55.47	-62.18	2.21	10.58	V
	14500	-46.14	-40	-6.14	-54.47	-55.62	2.62	12.10	V
	14500	-46.99	-40	-6.99	-55.32	-56.47	2.62	12.10	V
	18124	-62.40	-40	-22.40	-72.96	-76.77	3.23	17.60	V
									V
Highest	7360	-50.49	-40	-10.49	-48.71	-59.95	1.92	11.38	H
	11040	-54.49	-40	-14.49	-56.69	-62.82	2.22	10.55	H
	14720	-50.05	-40	-10.05	-58.14	-60.04	2.59	12.58	H
	18399	-64.31	-40	-24.31	-75.48	-78.67	3.24	17.60	H
	22079	-64.36	-40	-24.36	-79.02	-79.73	3.51	18.88	H
	25759	-60.88	-40	-20.88	-78.72	-76.05	3.88	19.05	H
									H
	7360	-45.75	-40	-5.75	-44.12	-55.21	1.92	11.38	V
	11040	-53.99	-40	-13.99	-56.12	-62.32	2.22	10.55	V
	14720	-46.44	-40	-6.44	-55.47	-56.43	2.59	12.58	V
	18399	-65.02	-40	-25.02	-75.95	-79.38	3.24	17.60	V
	22079	-64.91	-40	-24.91	-79.19	-80.28	3.51	18.88	V
	25759	-61.22	-40	-21.22	-78.77	-76.39	3.88	19.05	V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



SA-n48A MIMO Part 96

SA-n48A MIMO / 20MHz / PI/2 BPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7120	-57.80	-40	-17.80	-55.35	-67.46	1.84	11.50	H
	10680	-55.47	-40	-15.47	-56.99	-63.93	2.23	10.69	H
	14240	-50.17	-40	-10.17	-57.88	-59.78	2.65	12.26	H
	21360	-64.19	-40	-24.19	-78.02	-79.09	3.33	18.23	H
	24920	-61.35	-40	-21.35	-78.83	-76.09	3.71	18.45	H
	28480	-57.71	-40	-17.71	-77.22	-73.13	3.99	19.41	H
									H
	7120	-52.53	-40	-12.53	-50.35	-62.19	1.84	11.50	V
	10680	-55.09	-40	-15.09	-56.22	-63.55	2.23	10.69	V
	14240	-49.89	-40	-9.89	-57.55	-59.50	2.65	12.26	V
	21360	-64.99	-40	-24.99	-78.52	-79.89	3.33	18.23	V
	24920	-61.51	-40	-21.51	-78.67	-76.25	3.71	18.45	V
	28480	-57.95	-40	-17.95	-77.05	-73.37	3.99	19.41	V
									V
Middle	7250	-47.59	-40	-7.59	-45.44	-57.05	1.87	11.33	H
	10875	-53.07	-40	-13.07	-54.93	-61.43	2.21	10.58	H
	14500	-46.39	-40	-6.39	-54.21	-55.87	2.62	12.10	H
	18124	-62.36	-40	-22.36	-73.21	-76.73	3.23	17.60	H
	21749	-64.30	-40	-24.30	-78.71	-79.51	3.44	18.65	H
	25374	-60.79	-40	-20.79	-78.39	-75.85	3.79	18.85	H
									H
	7250	-45.95	-40	-5.95	-44.12	-55.41	1.87	11.33	V
	10875	-52.88	-40	-12.88	-54.53	-61.24	2.21	10.58	V
	14500	-45.54	-40	-5.54	-53.87	-55.02	2.62	12.10	V
	18124	-62.60	-40	-22.60	-73.16	-76.97	3.23	17.60	V
	21749	-64.66	-40	-24.66	-78.73	-79.87	3.44	18.65	V
	25374	-61.50	-40	-21.50	-78.82	-76.56	3.79	18.85	V
									V



Highest	7380	-51.21	-40	-11.21	-49.48	-60.67	1.93	11.39	H
	11070	-54.52	-40	-14.52	-56.82	-62.88	2.23	10.58	H
	14760	-48.41	-40	-8.41	-56.54	-58.49	2.59	12.67	H
	18450	-65.17	-40	-25.17	-76.39	-79.53	3.24	17.60	H
	22140	-64.01	-40	-24.01	-78.75	-79.36	3.52	18.87	H
	25830	-60.46	-40	-20.46	-78.36	-75.63	3.90	19.07	H
									H
	7380	-44.75	-40	-4.75	-43.15	-54.21	1.93	11.39	V
	11070	-53.24	-40	-13.24	-55.48	-61.60	2.23	10.58	V
	14760	-42.68	-40	-2.68	-51.84	-52.76	2.59	12.67	V
	18450	-65.01	-40	-25.01	-76	-79.37	3.24	17.60	V
	22140	-64.29	-40	-24.29	-78.64	-79.64	3.52	18.87	V
	25830	-61.07	-40	-21.07	-78.67	-76.24	3.90	19.07	V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.