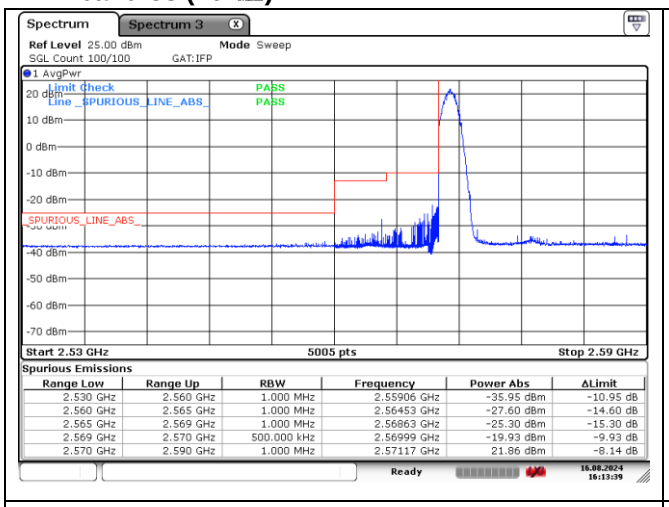
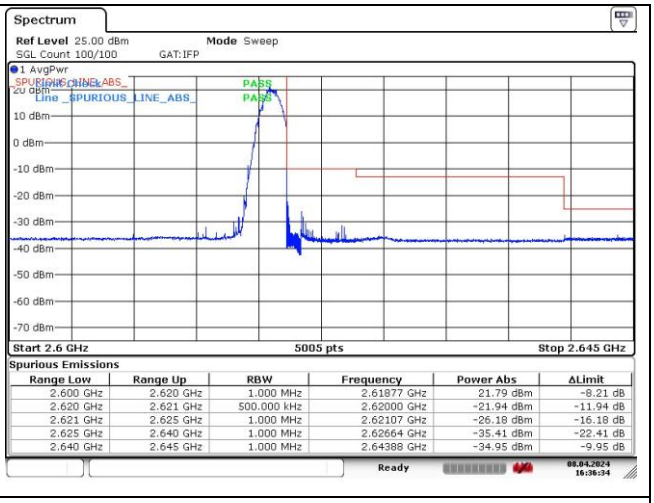
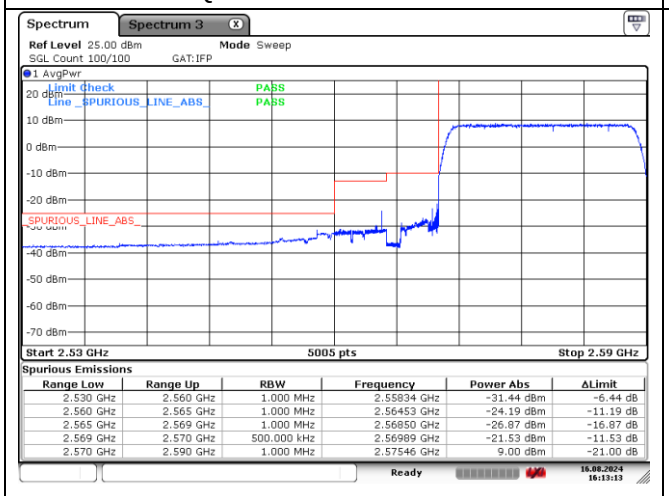
LTE band 38 (20 ㎒)



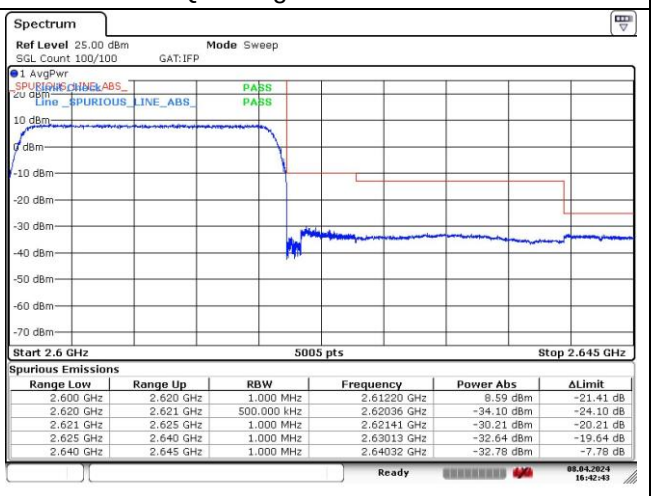
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

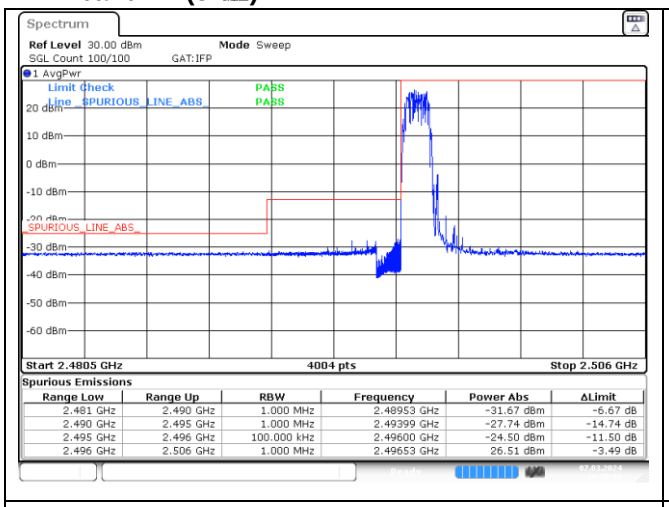


16QAM Low Channel - Full RB

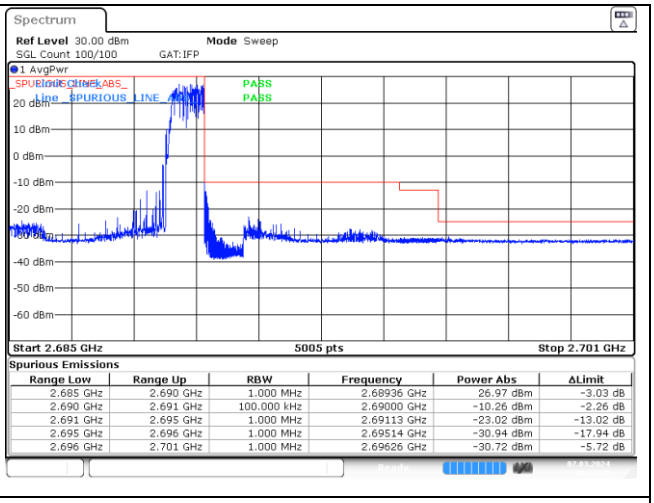


16QAM High Channel - Full RB

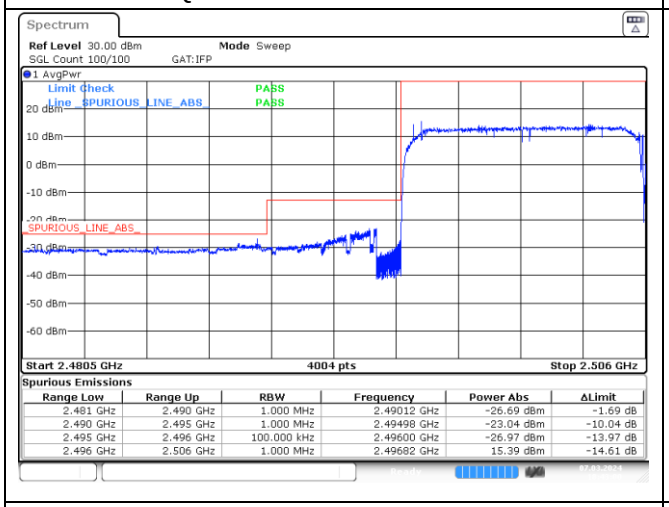
LTE band 41 (5 ㎒)



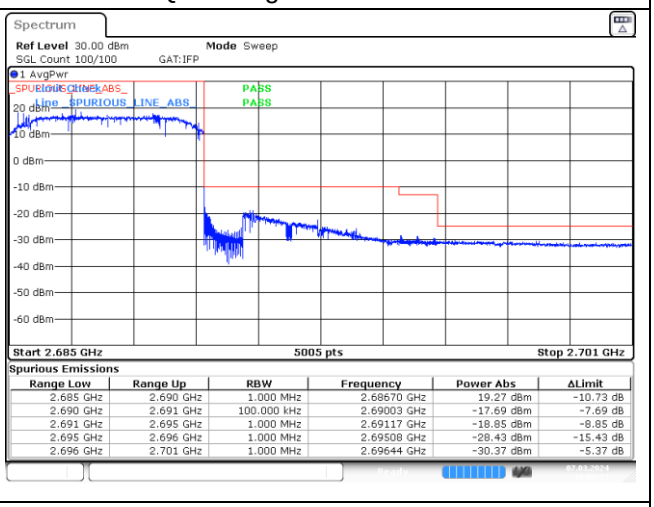
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

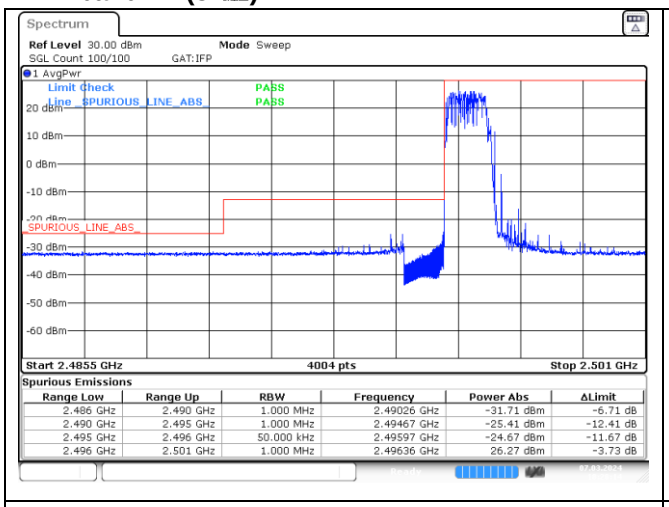


QPSK Low Channel - Full RB

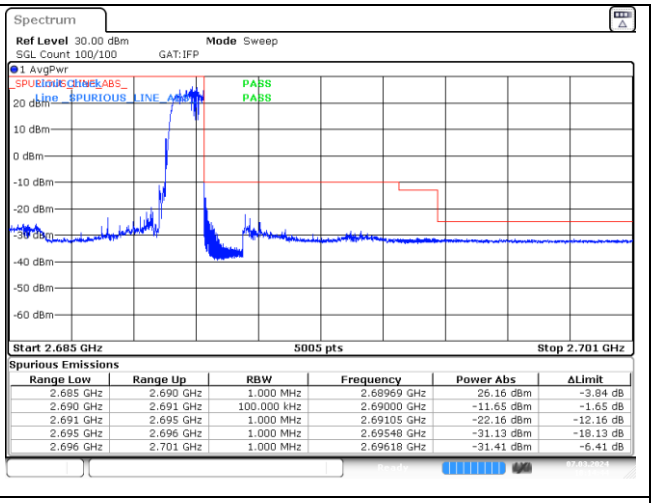


QPSK High Channel - Full RB

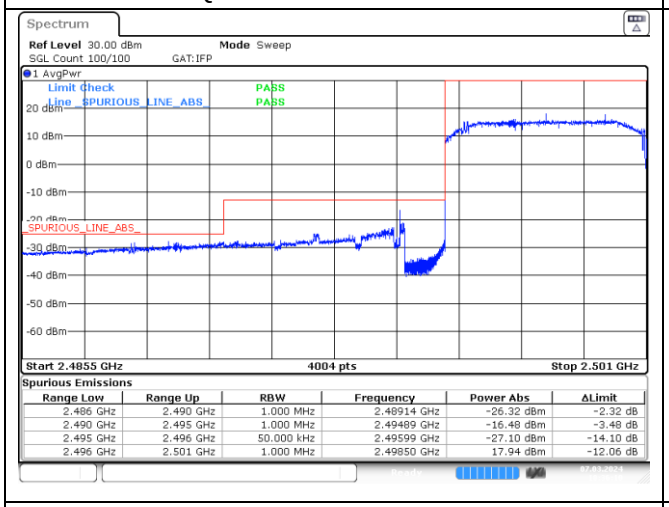
LTE band 41 (5 ㎒)



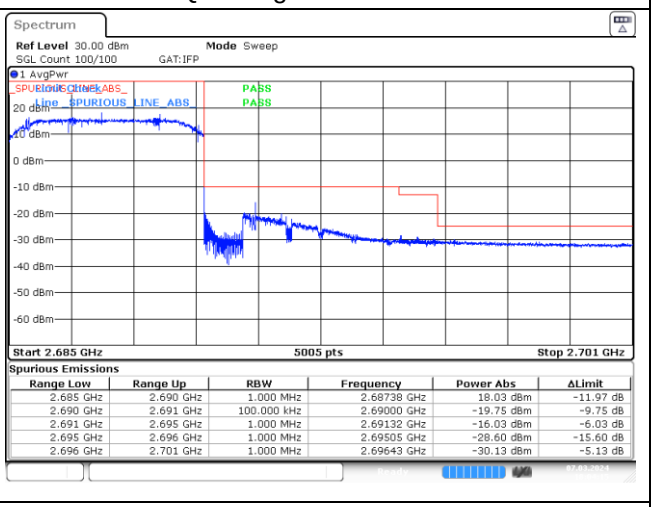
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

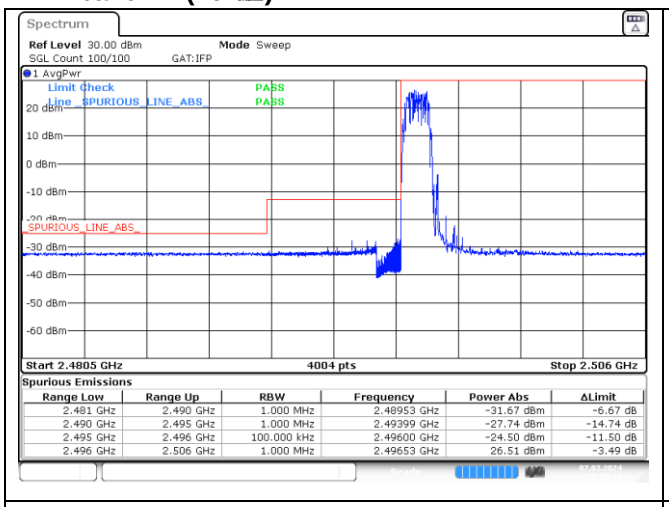


16QAM Low Channel - Full RB

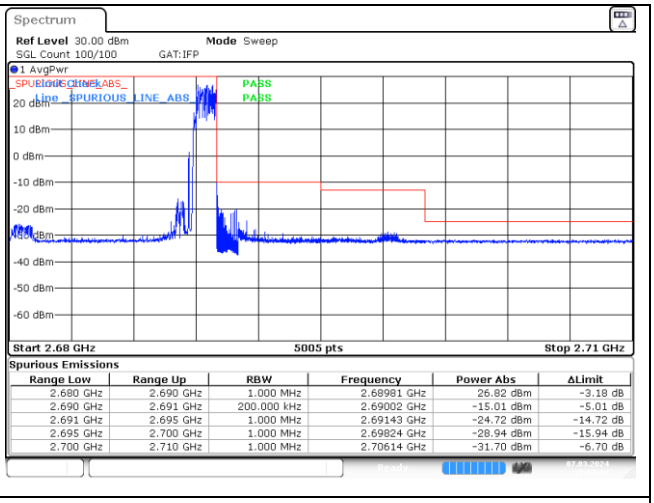


16QAM High Channel - Full RB

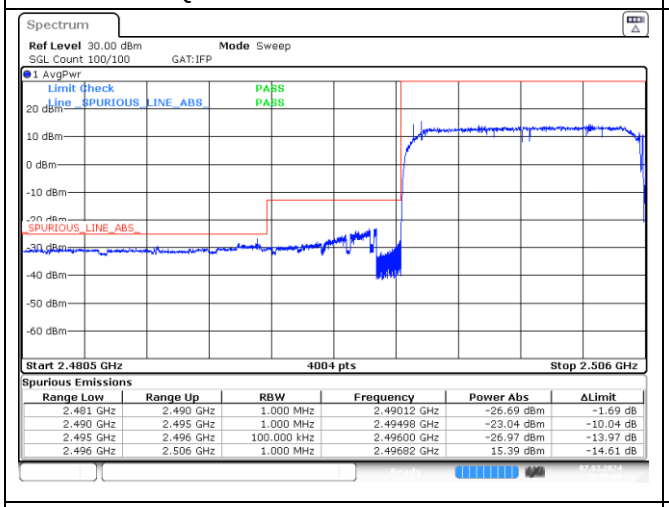
LTE band 41 (10 ㎒)



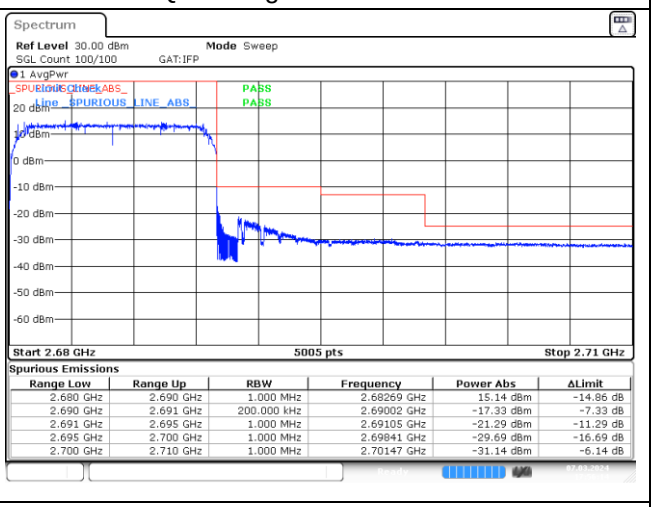
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

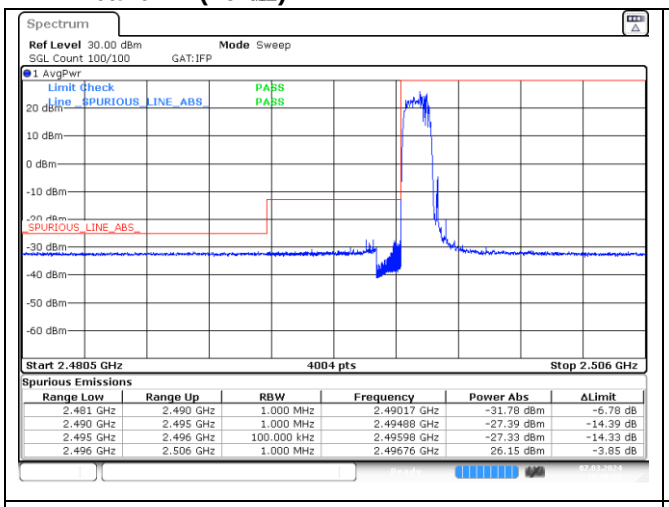


QPSK Low Channel - Full RB

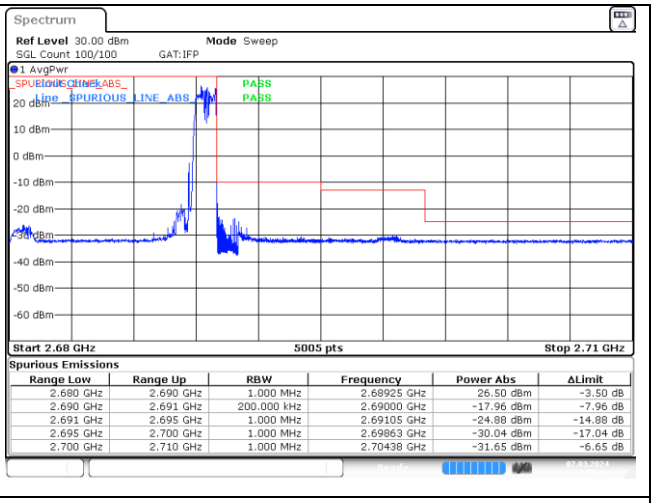


QPSK High Channel - Full RB

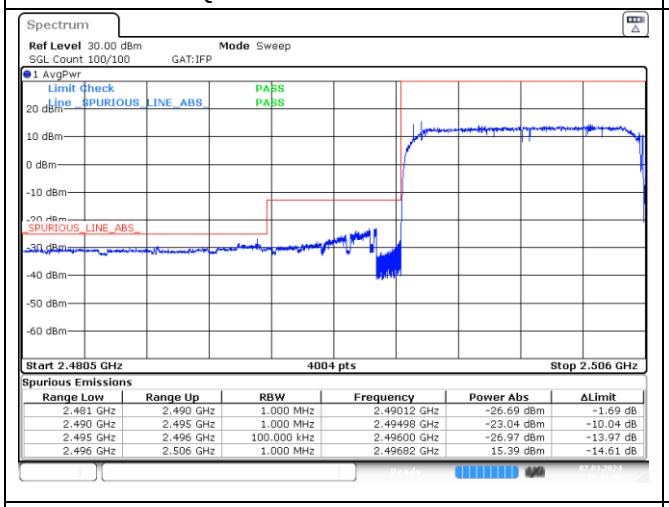
LTE band 41 (10 ㎒)



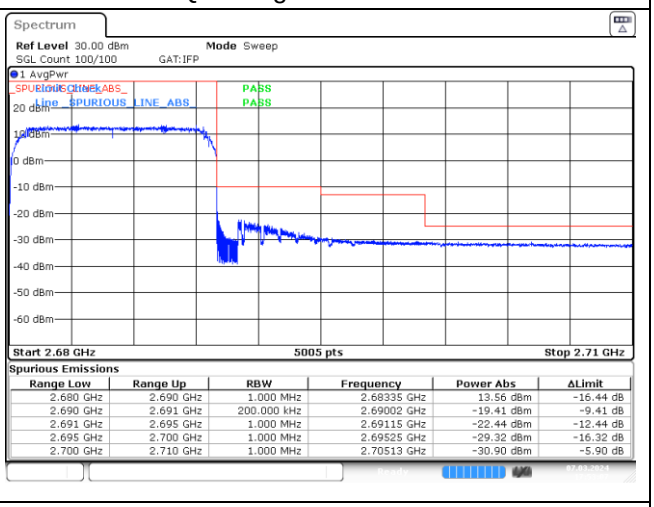
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

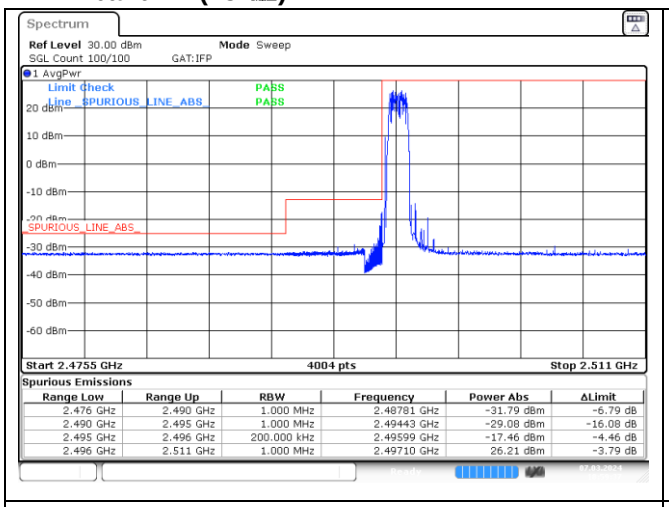


16QAM Low Channel - Full RB

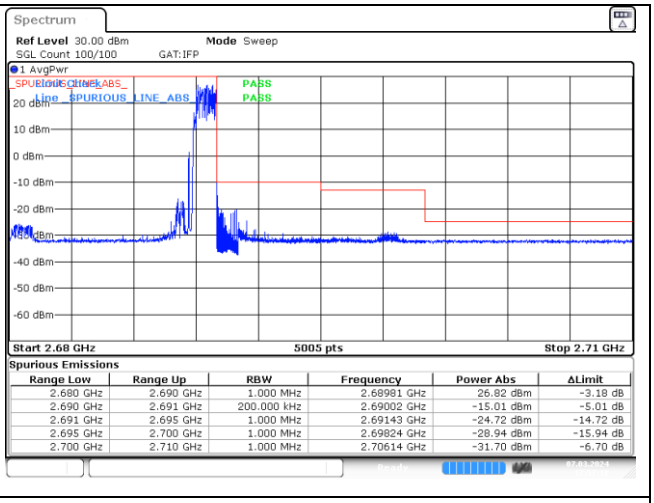


16QAM High Channel - Full RB

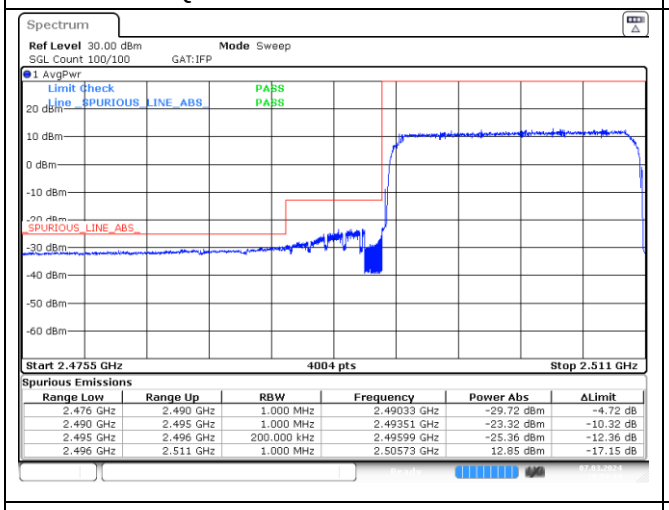
LTE band 41 (15 ㎒)



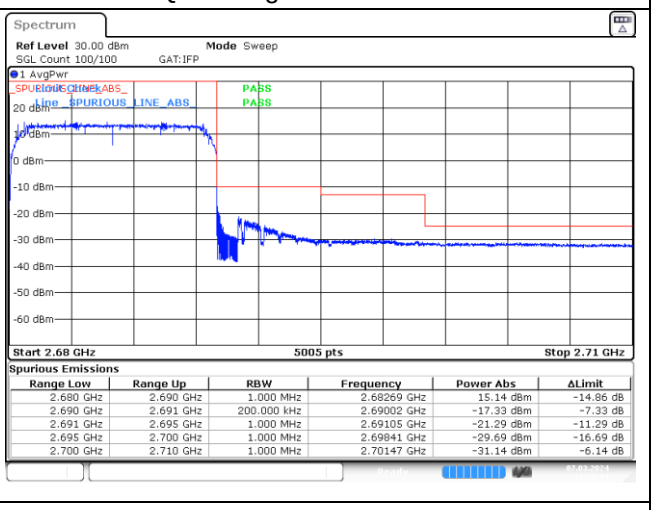
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

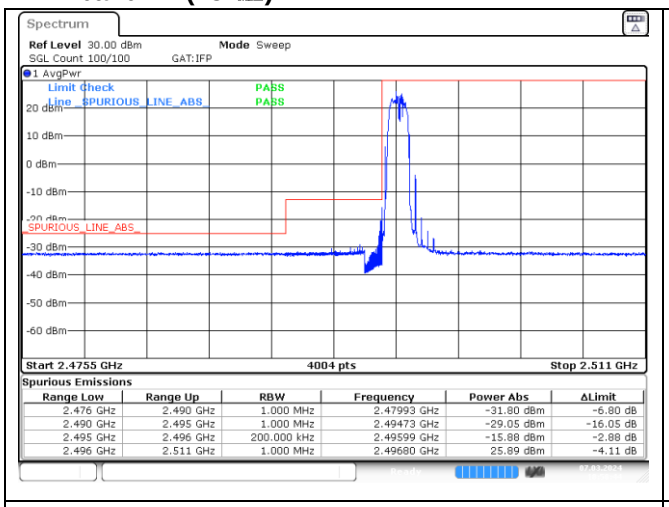


QPSK Low Channel - Full RB

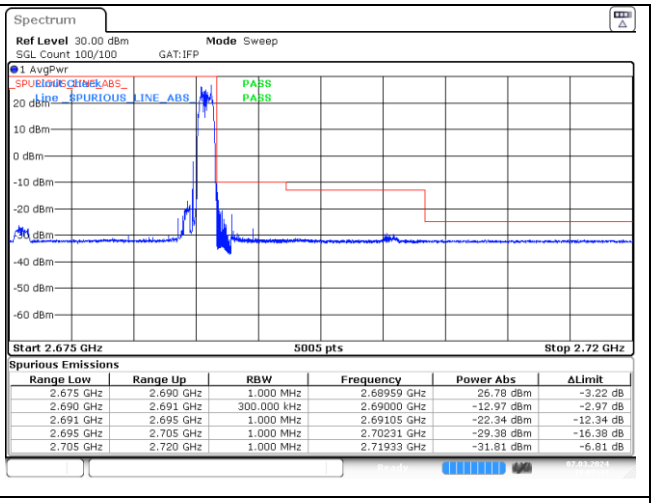


QPSK High Channel - Full RB

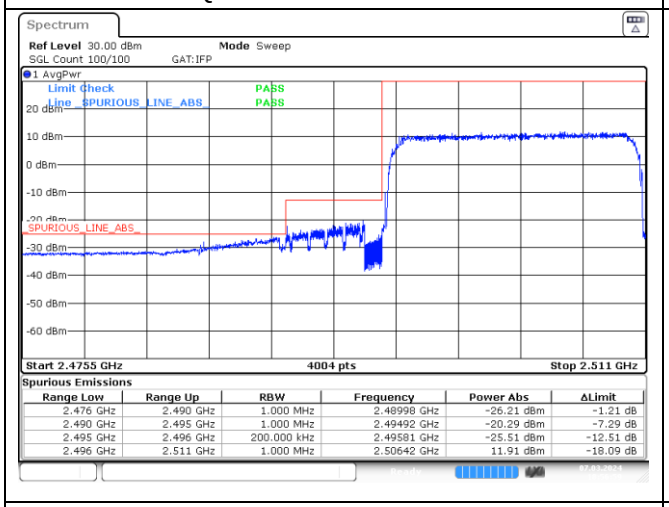
LTE band 41 (15 ㎒)



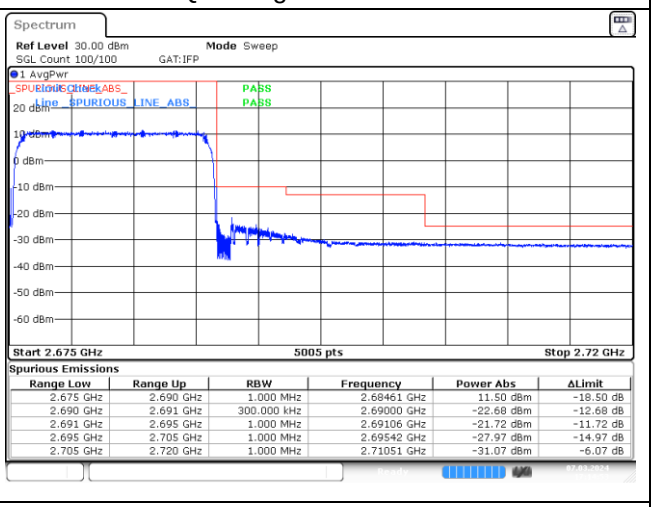
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

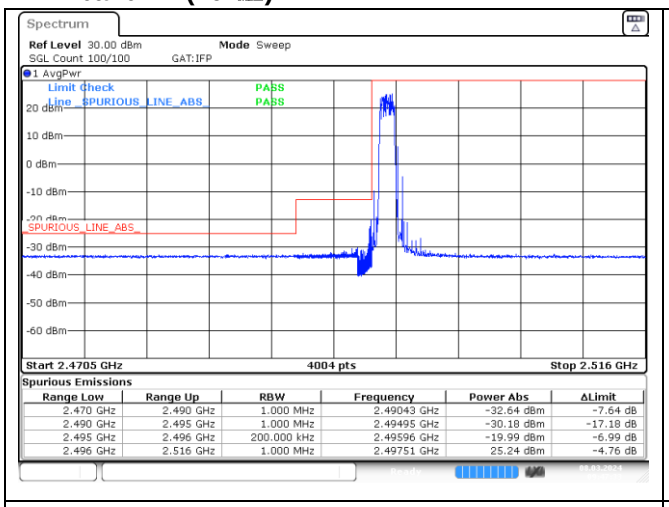


16QAM Low Channel - Full RB

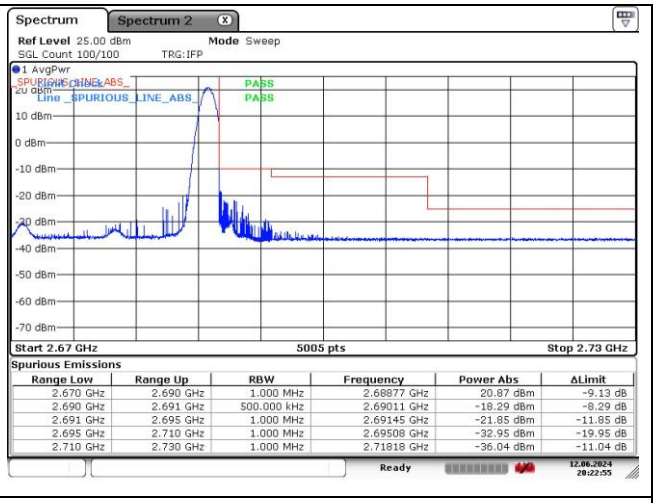


16QAM High Channel - Full RB

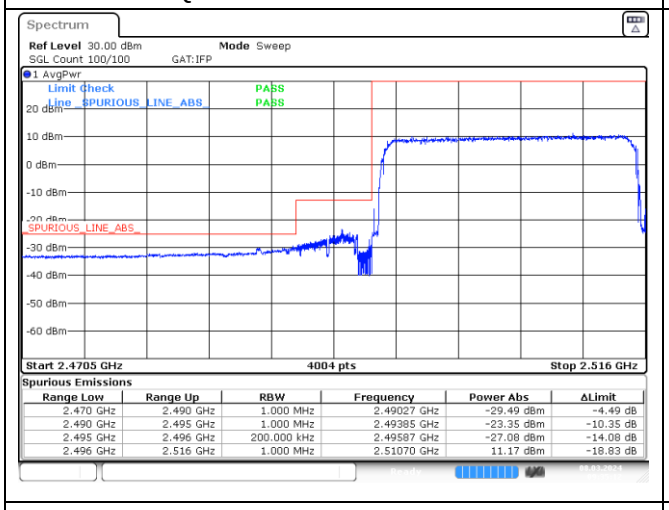
LTE band 41 (20 ㎒)



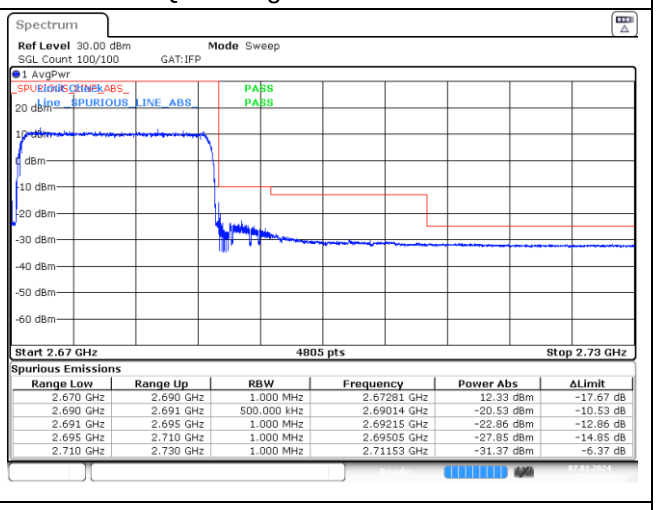
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

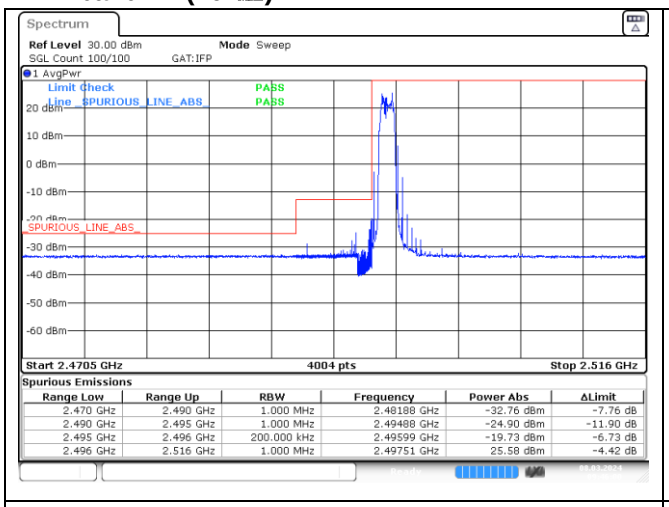


QPSK Low Channel - Full RB

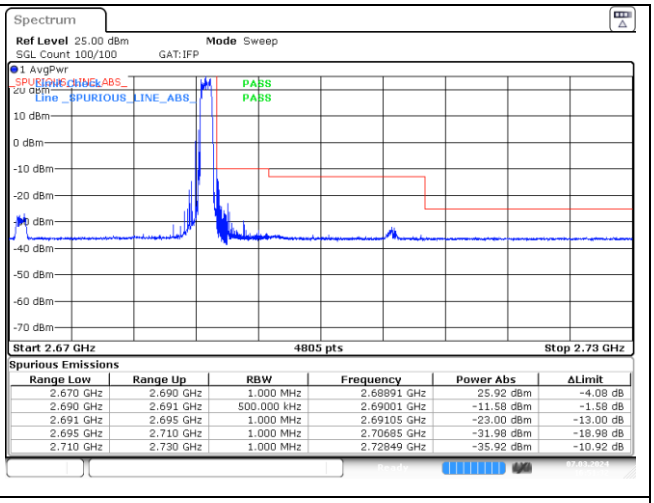


QPSK High Channel - Full RB

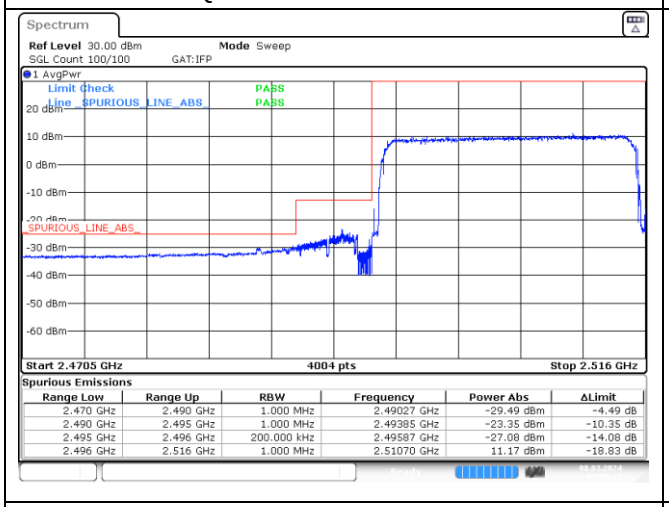
LTE band 41 (20 ㎒)



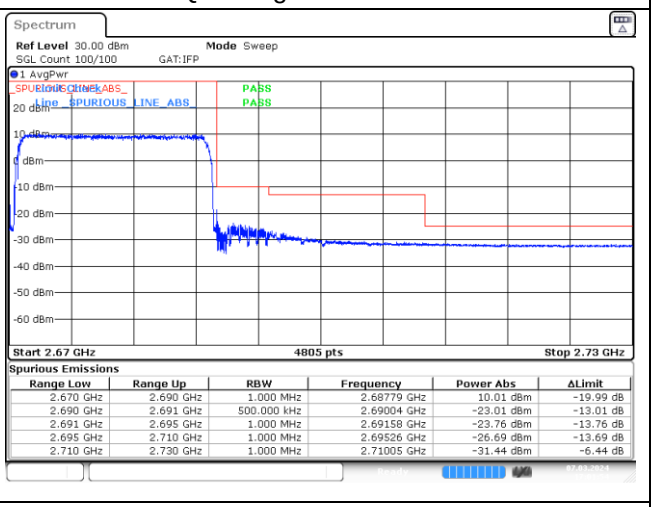
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

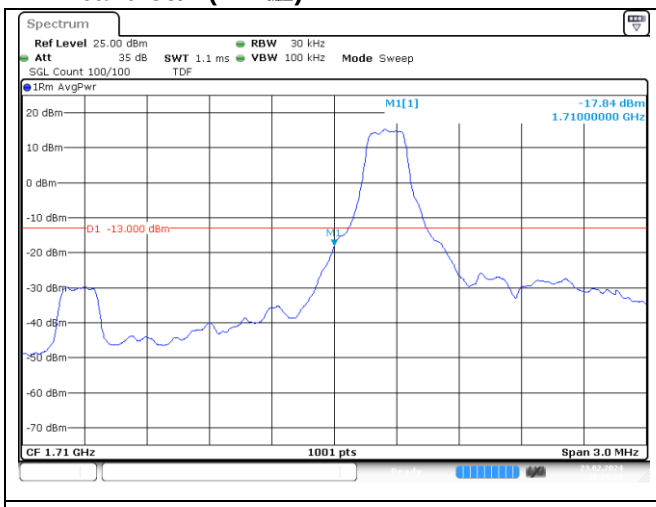


16QAM Low Channel - Full RB

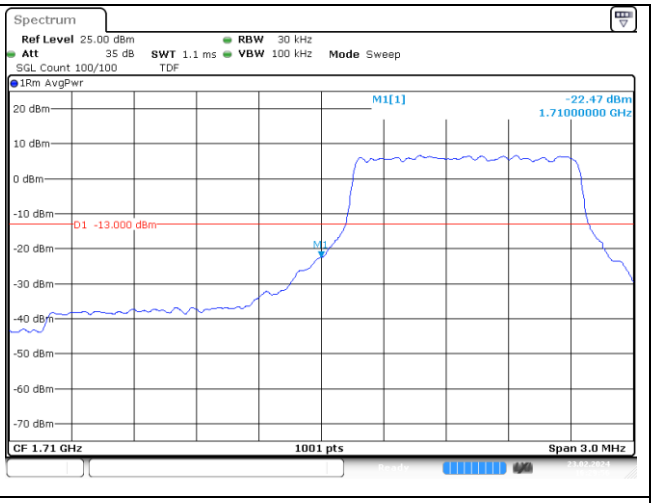


16QAM High Channel - Full RB

LTE band 66/4 (1.4 ㎒)

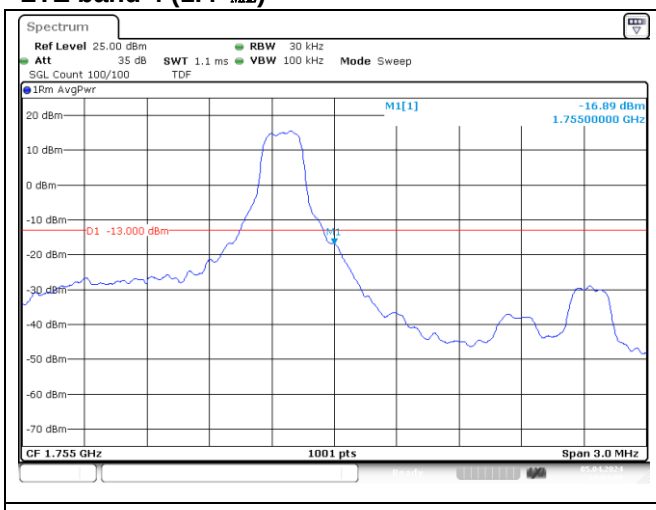


QPSK Low Channel - 1 RB

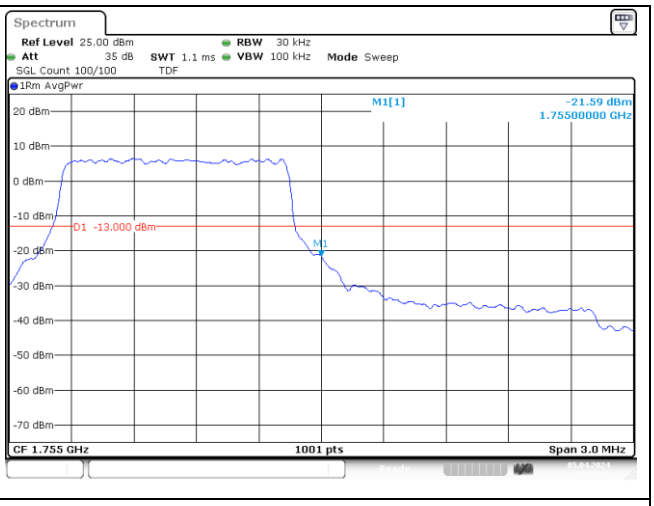


QPSK Low Channel - Full RB

LTE band 4 (1.4 ㎒)

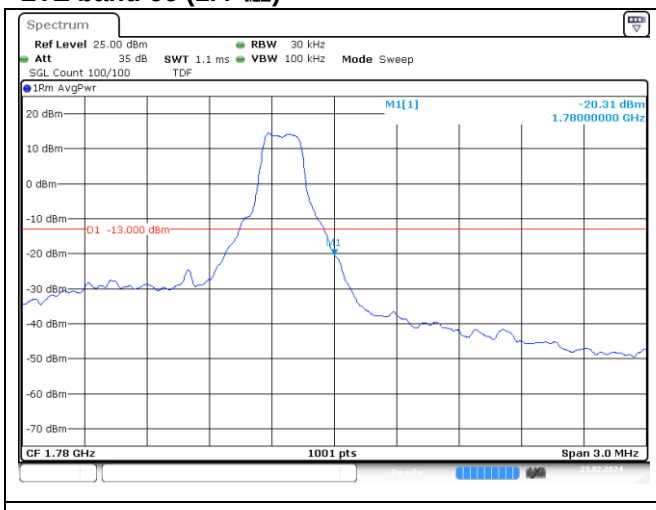


QPSK High Channel - 1 RB

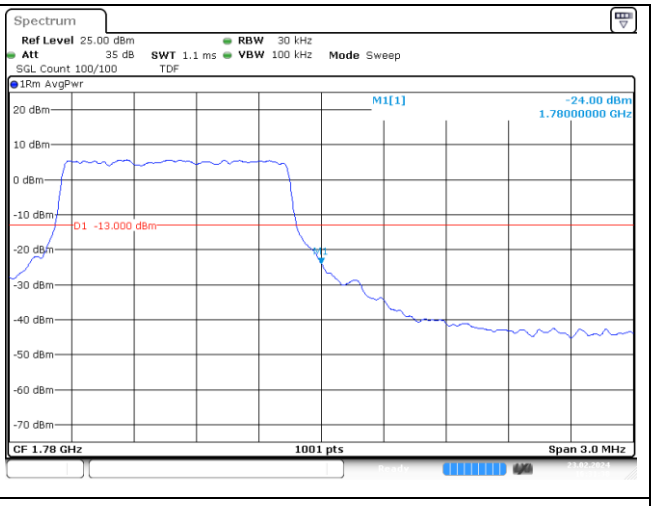


QPSK High Channel - Full RB

LTE band 66 (1.4 ㎒)

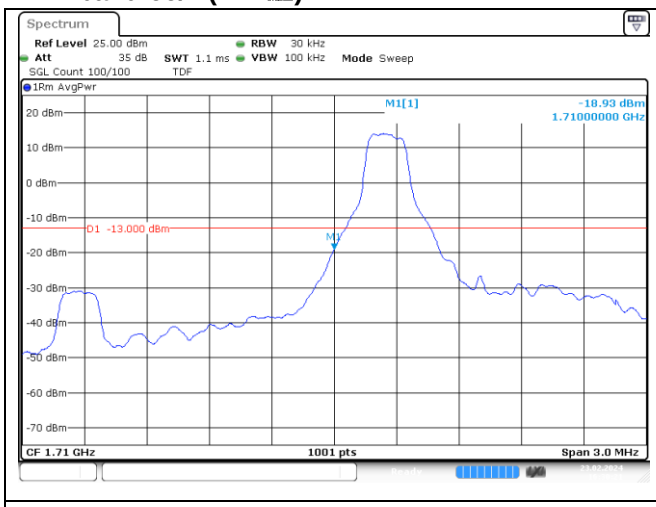


QPSK High Channel - 1 RB

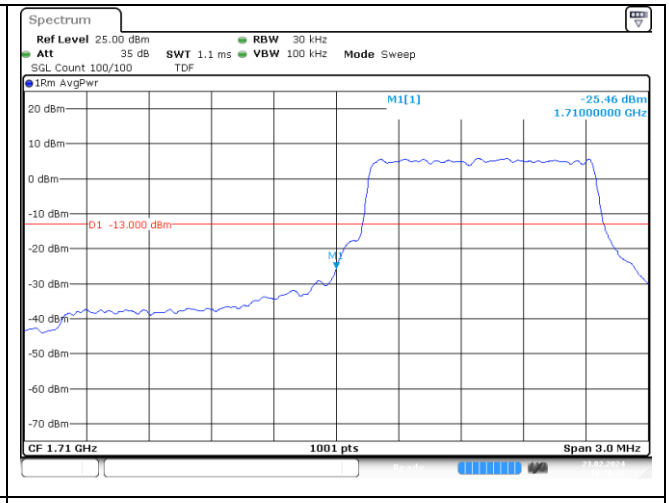


QPSK High Channel - Full RB

LTE band 66/4 (1.4 ㎒)

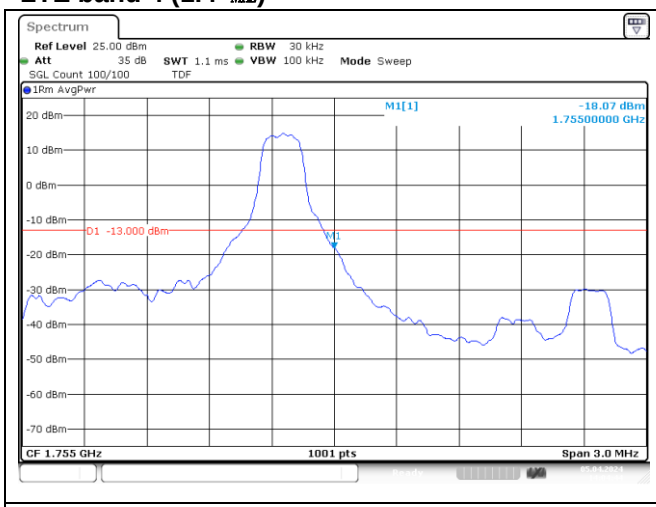


16QAM Low Channel - 1 RB

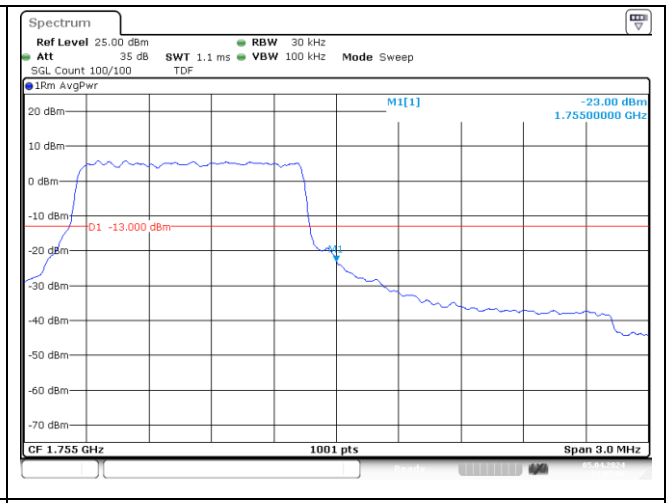


16QAM Low Channel - Full RB

LTE band 4 (1.4 ㎒)

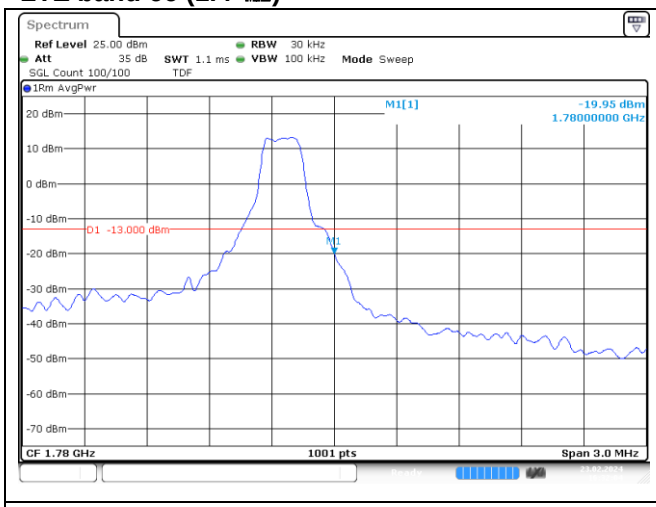


16QAM High Channel - 1 RB

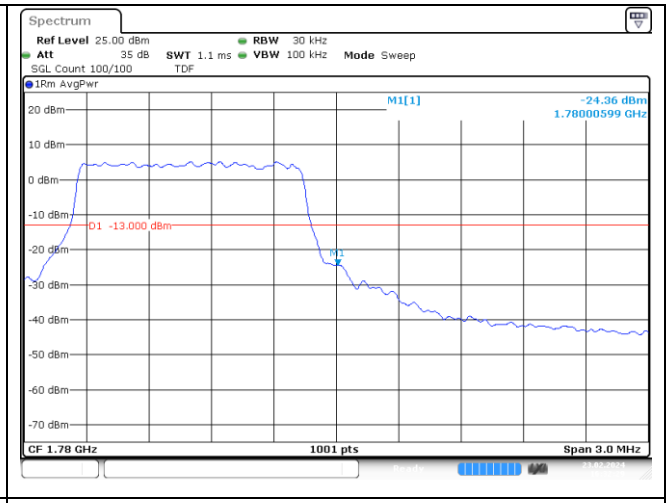


16QAM High Channel - Full RB

LTE band 66 (1.4 ㎒)

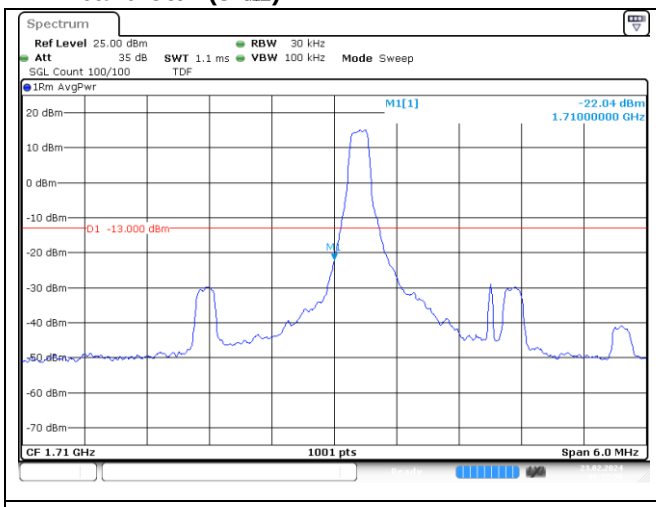


16QAM High Channel - 1 RB

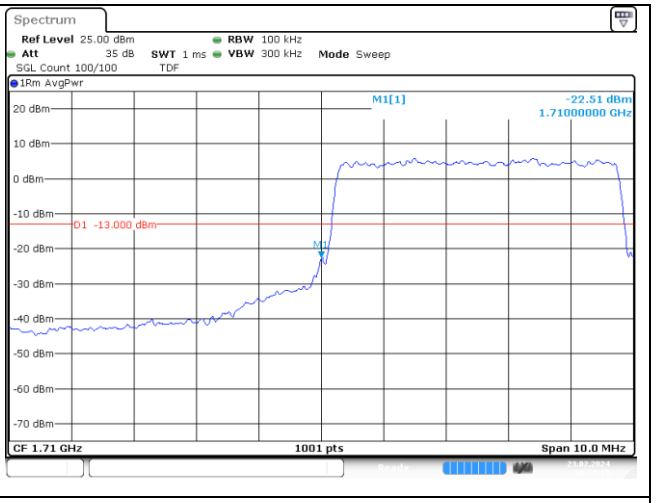


16QAM High Channel - Full RB

LTE band 66/4 (3 ㎒)

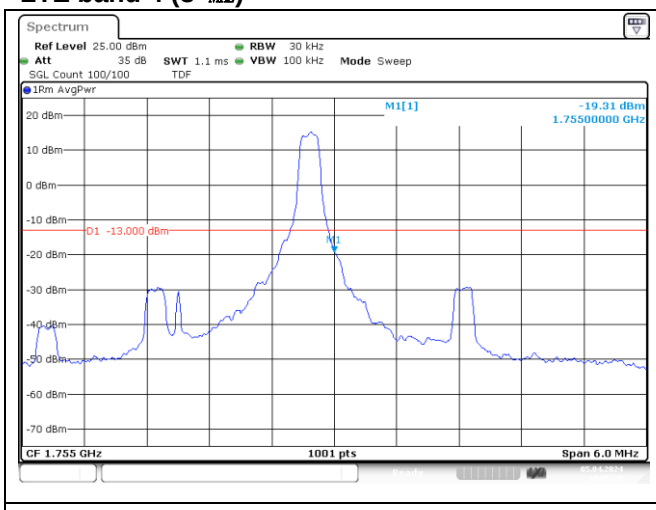


QPSK Low Channel - 1 RB

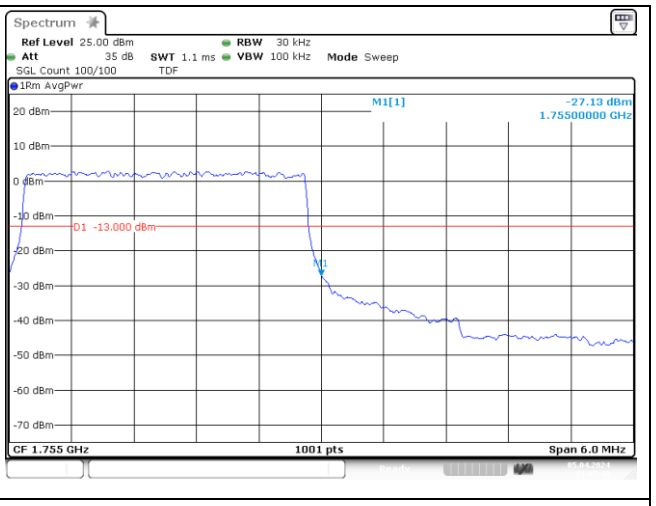


QPSK Low Channel - Full RB

LTE band 4 (3 ㎒)

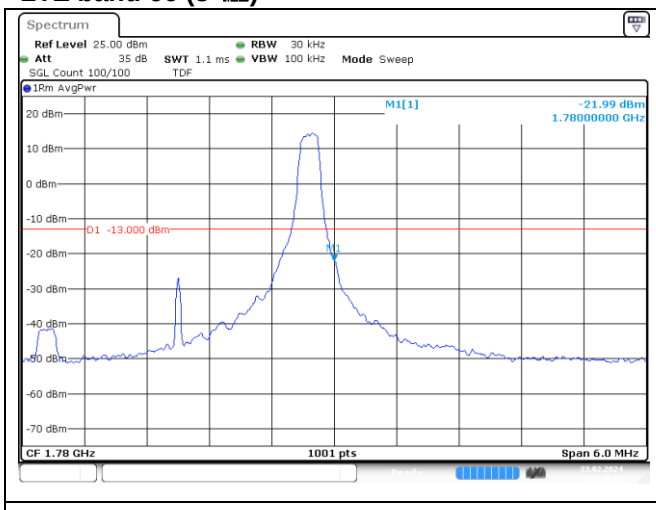


QPSK High Channel - 1 RB

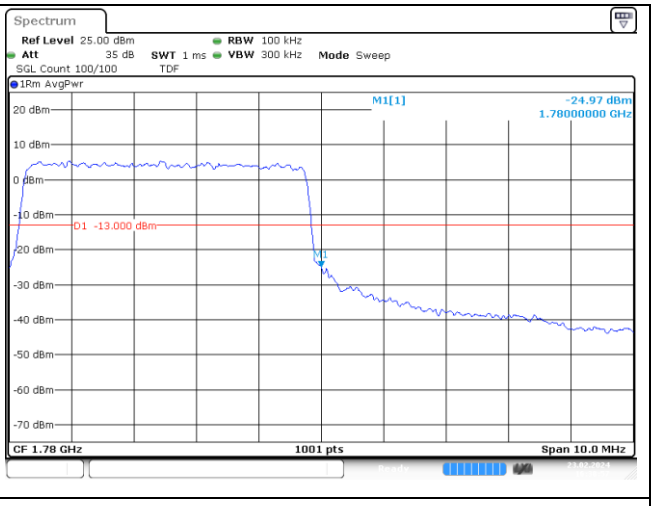


QPSK High Channel - Full RB

LTE band 66 (3 ㎒)

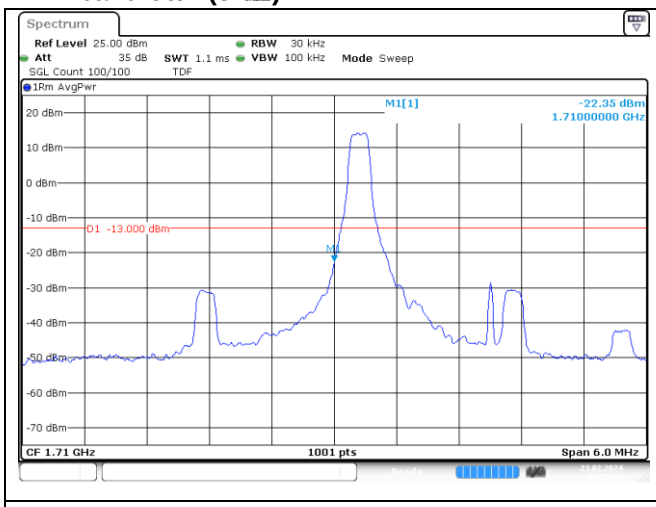


QPSK High Channel - 1 RB

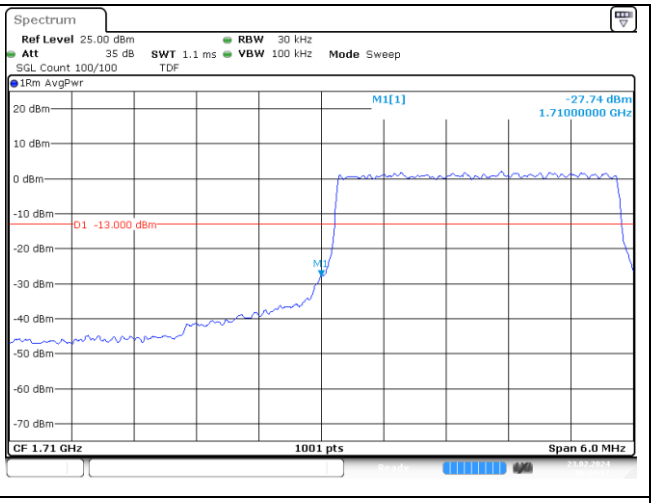


QPSK High Channel - Full RB

LTE band 66/4 (3 ㎒)

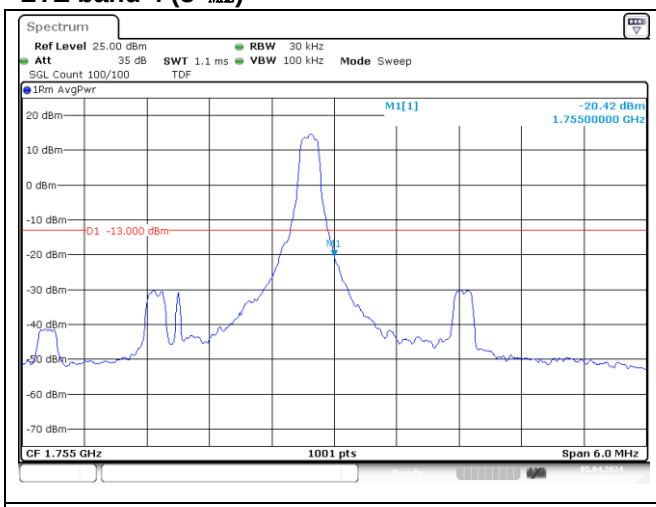


16QAM Low Channel - 1 RB

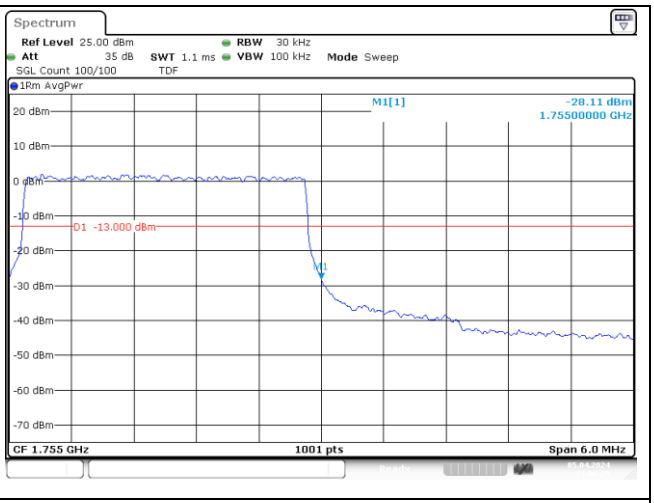


16QAM Low Channel - Full RB

LTE band 4 (3 ㎒)

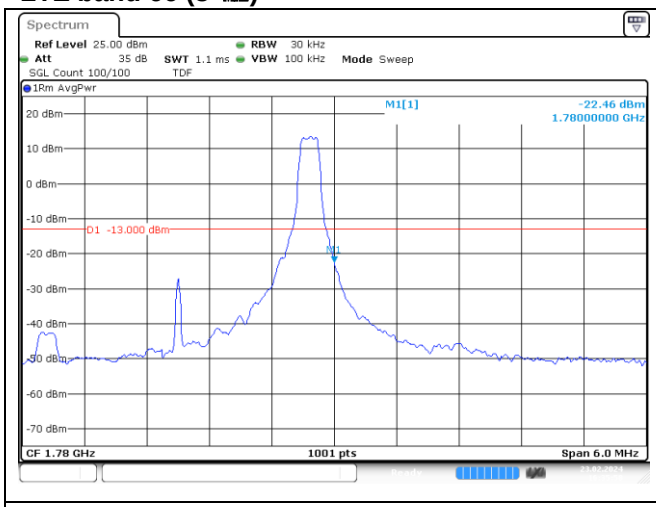


16QAM High Channel - 1 RB

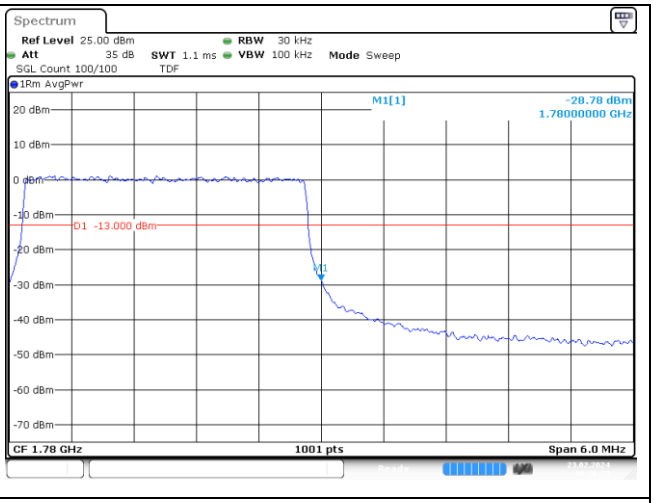


16QAM High Channel - Full RB

LTE band 66 (3 ㎒)

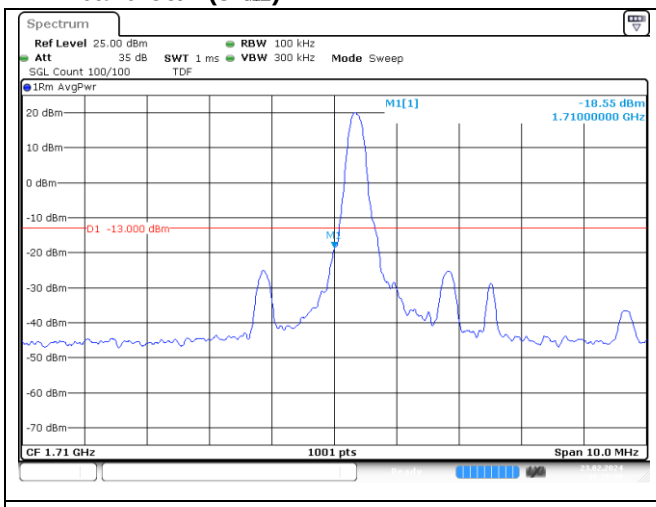


16QAM High Channel - 1 RB

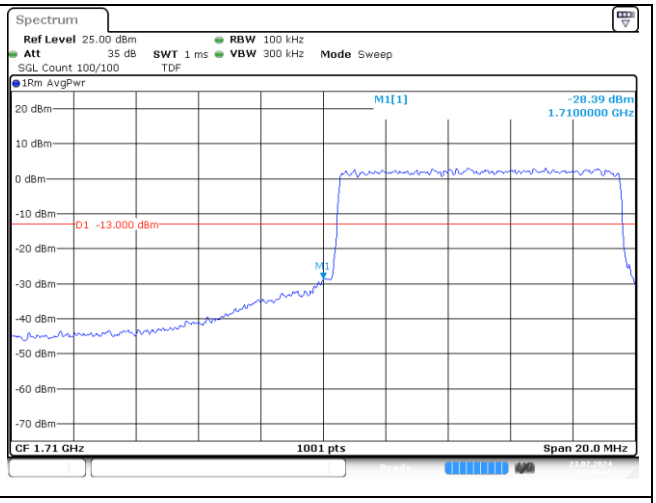


16QAM High Channel - Full RB

LTE band 66/4 (5 ㎒)

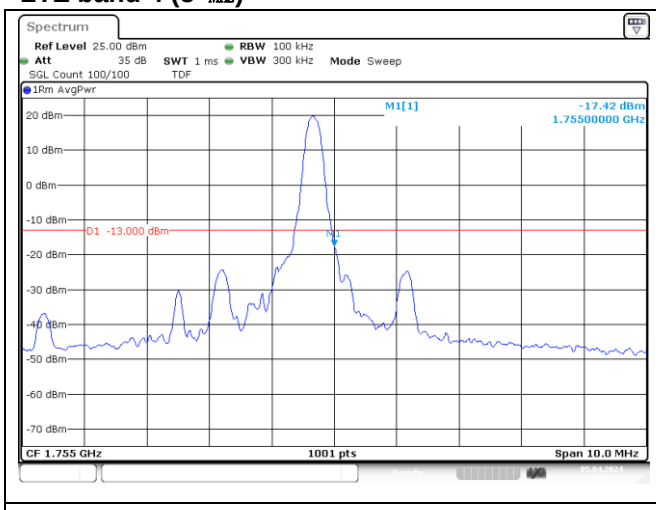


QPSK Low Channel - 1 RB

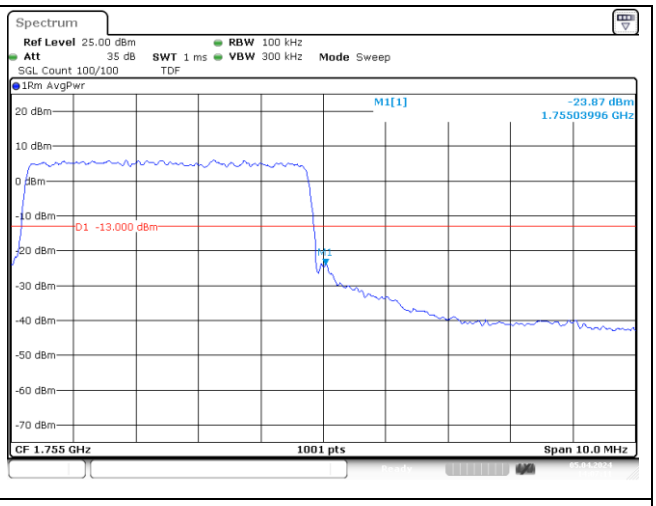


QPSK Low Channel - Full RB

LTE band 4 (5 ㎒)

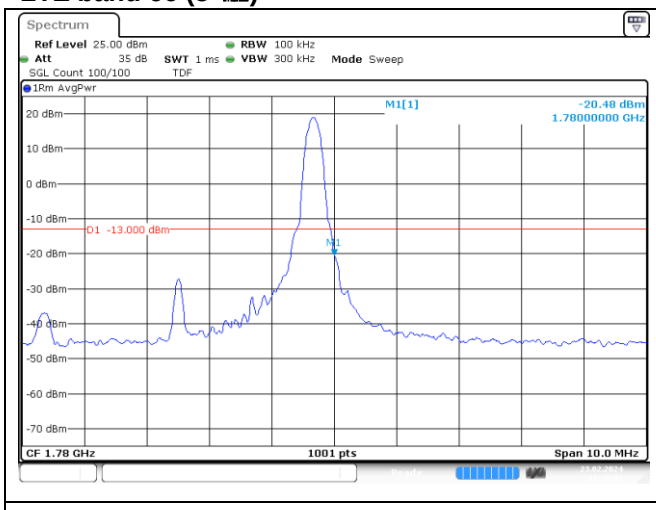


QPSK High Channel - 1 RB

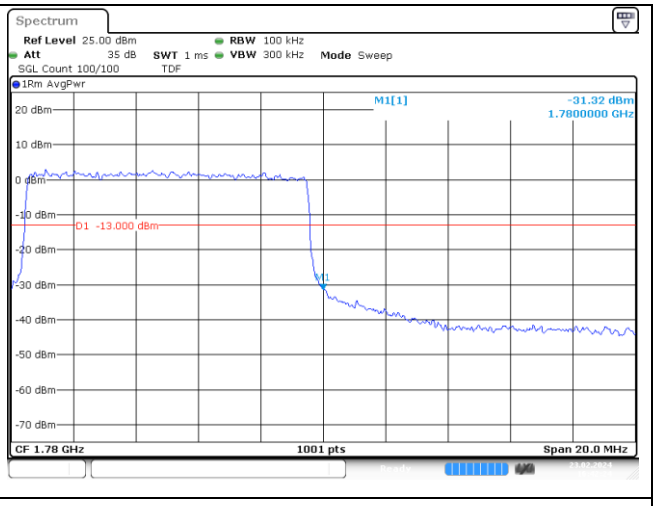


QPSK High Channel - Full RB

LTE band 66 (5 ㎒)

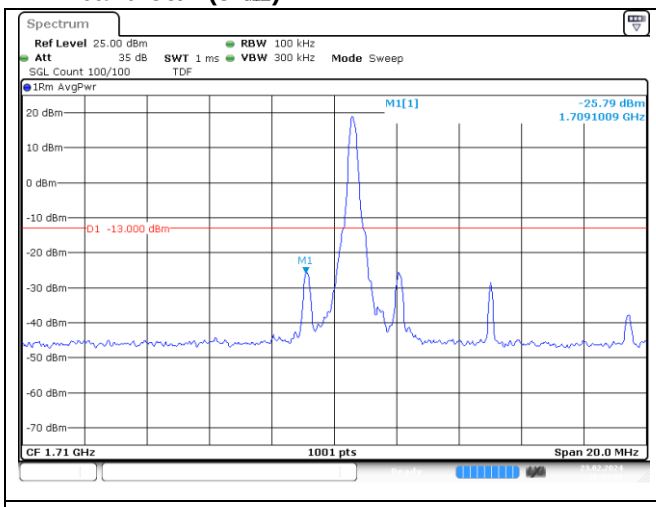


QPSK High Channel - 1 RB

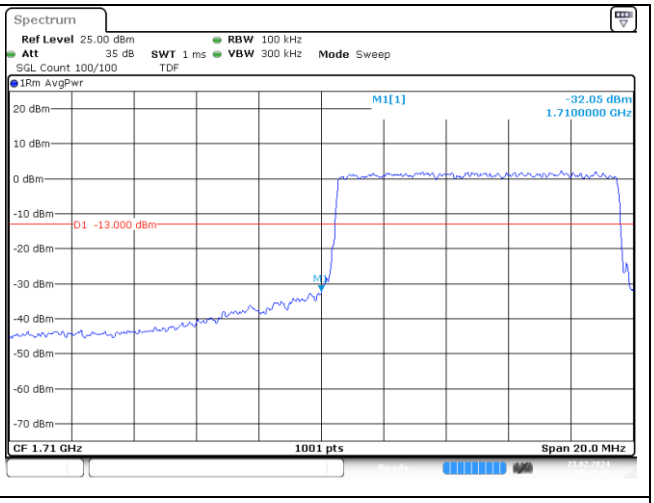


QPSK High Channel - Full RB

LTE band 66/4 (5 ㎒)

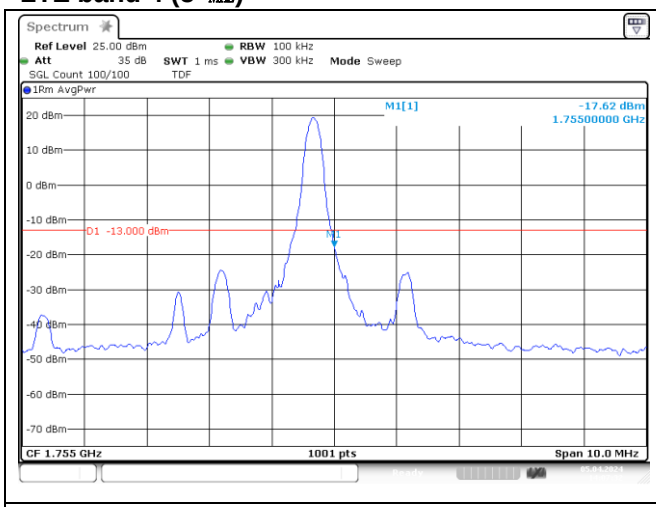


16QAM Low Channel - 1 RB



16QAM Low Channel - Full RB

LTE band 4 (5 ㎒)



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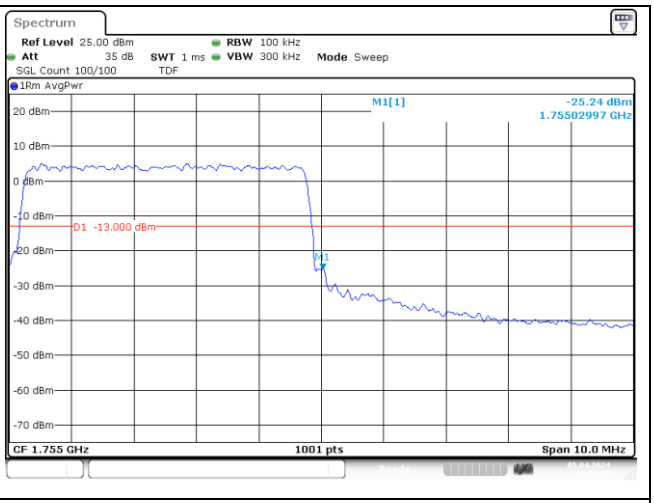
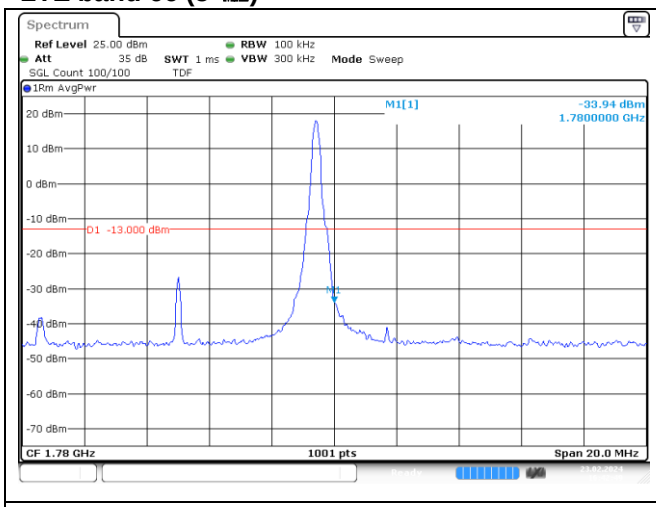


16QAM High Channel - Full RB

LTE band 66 (5 ㎒)



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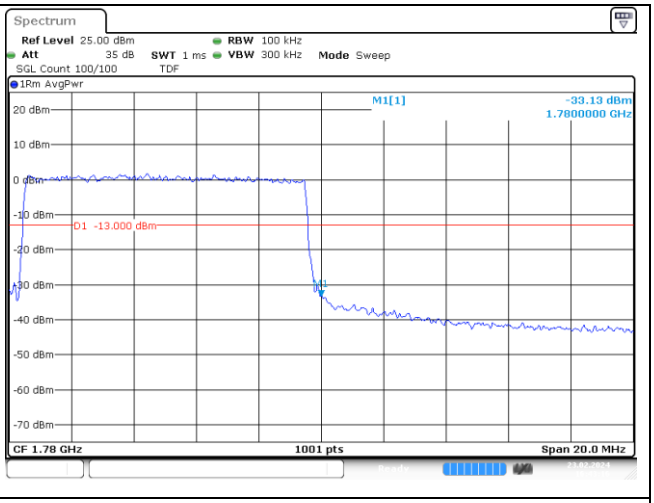
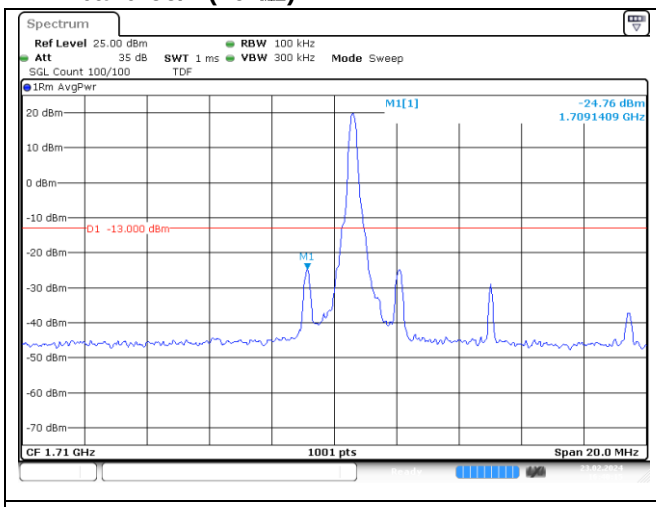
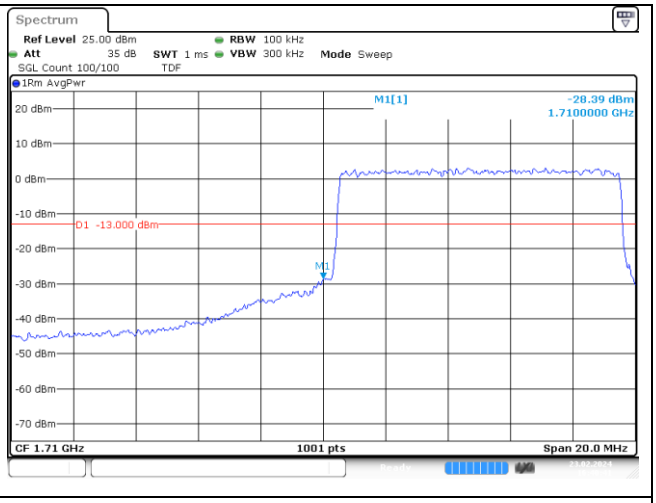


16QAM High Channel - Full RB

LTE band 66/4 (10 ㎒)

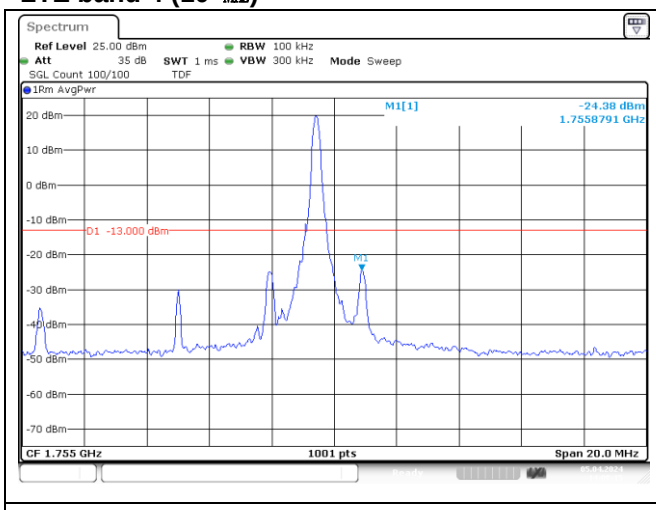


QPSK Low Channel - 1 RB



QPSK Low Channel - Full RB

LTE band 4 (10 ㎒)



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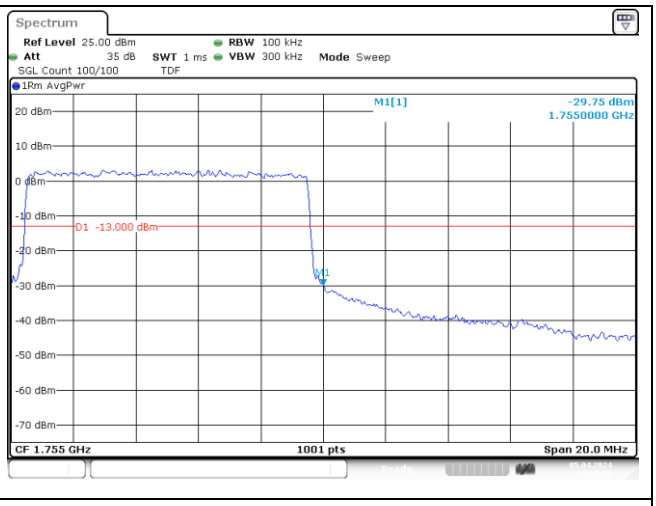
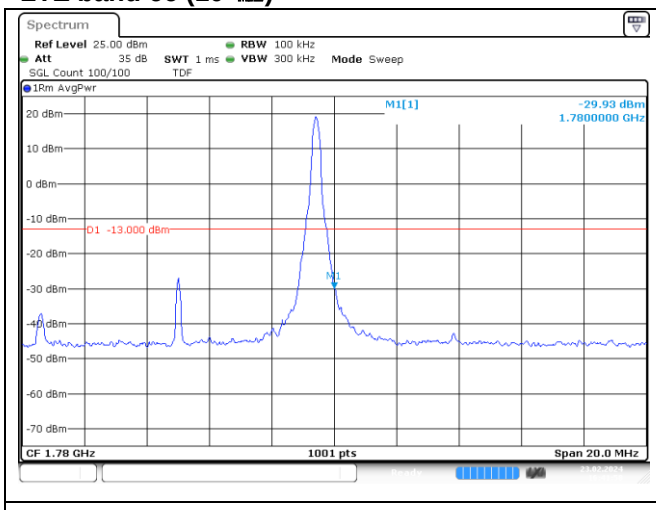
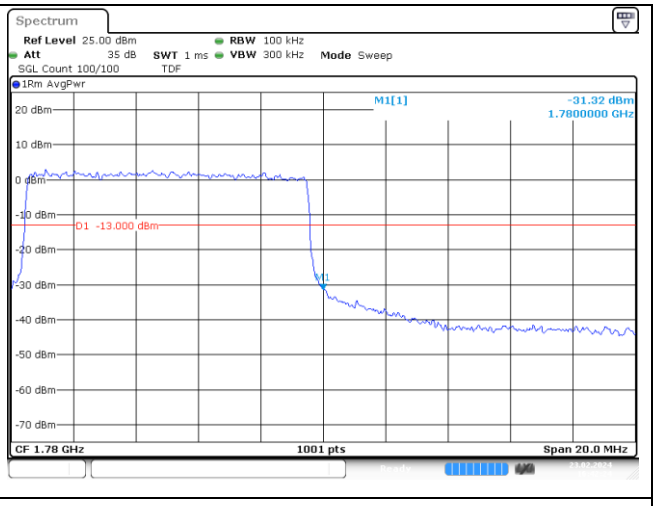


QPSK High Channel - Full RB

LTE band 66 (10 ㎒)

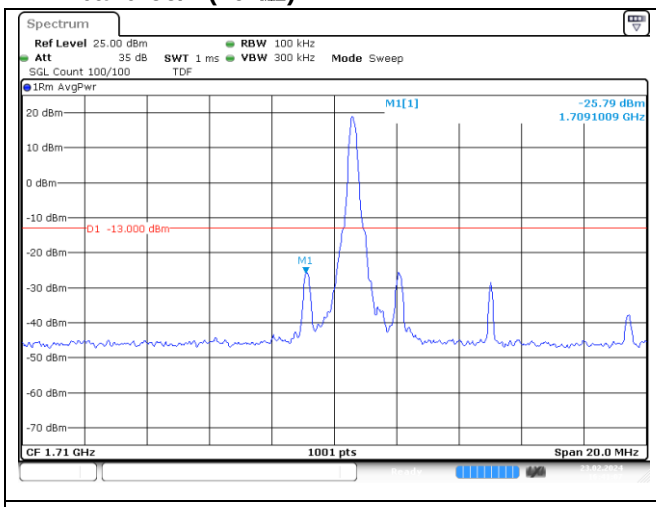


QPSK High Channel - 1 RB

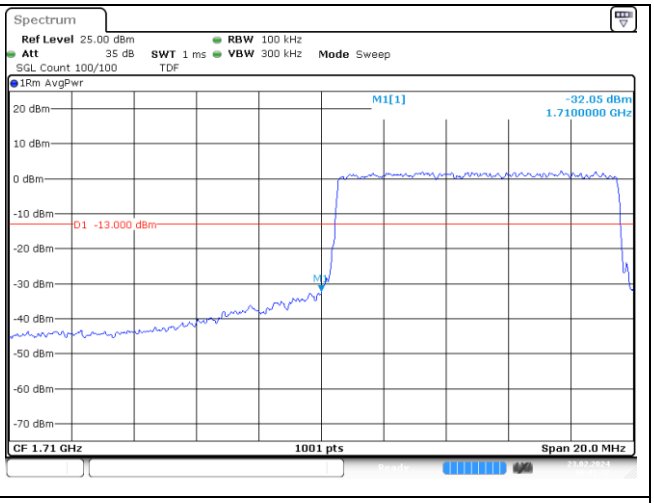


QPSK High Channel - Full RB

LTE band 66/4 (10 ㎒)

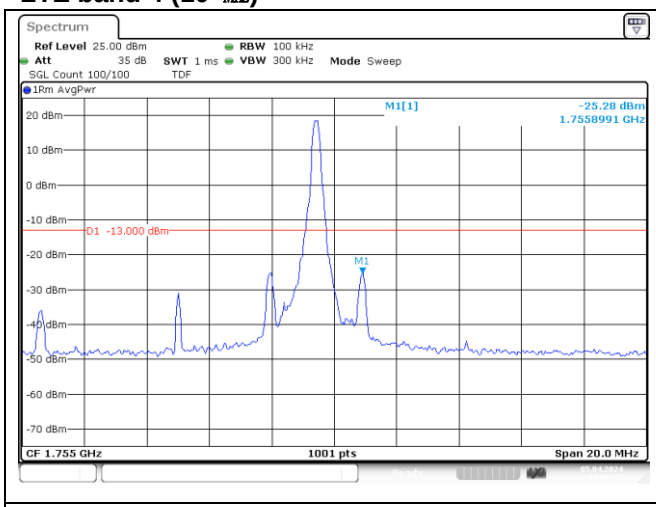


16QAM Low Channel - 1 RB



16QAM Low Channel - Full RB

LTE band 4 (10 ㎒)



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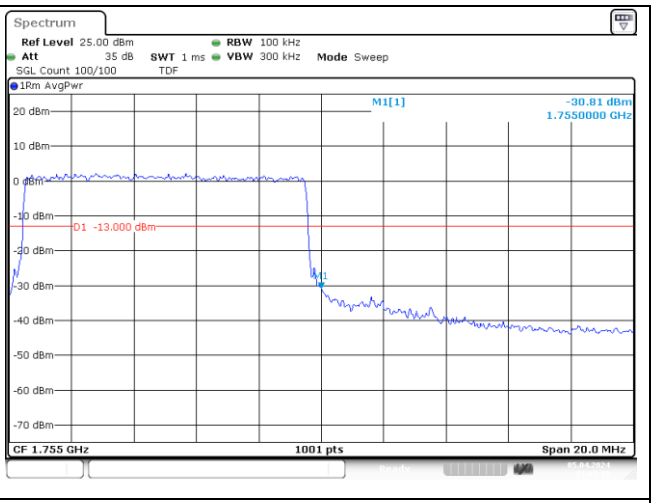

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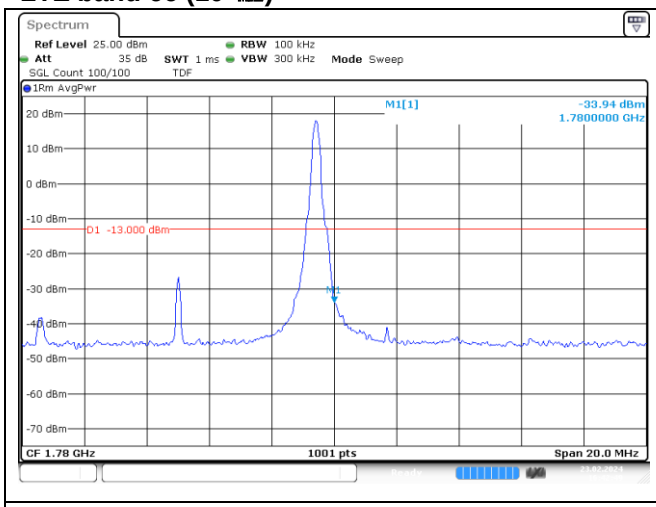
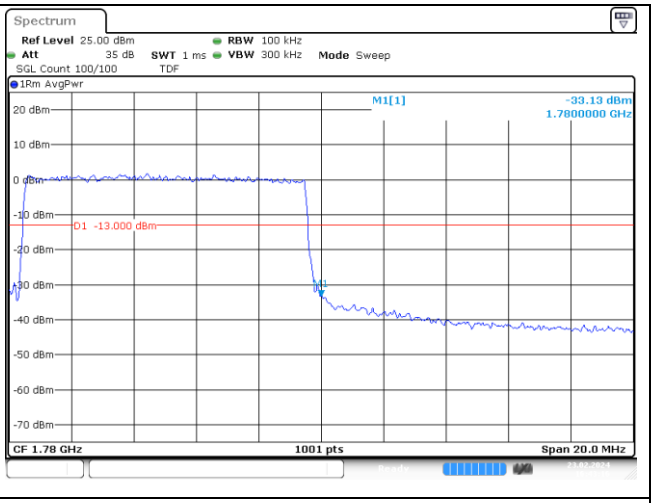
LTE band 66 (10 ㎒)

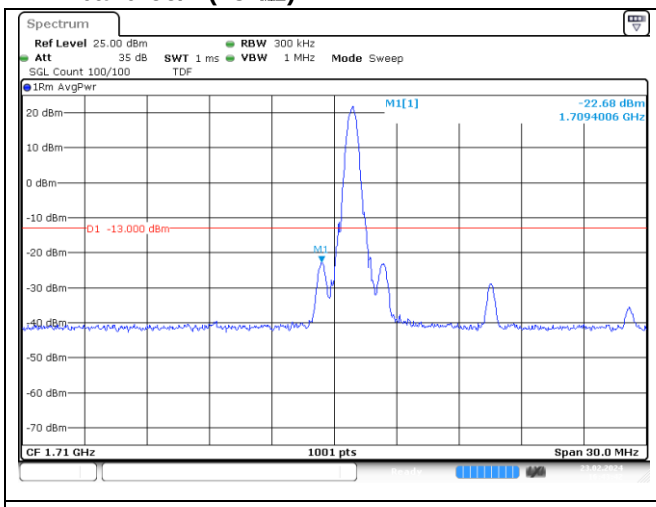


16QAM High Channel - 1 RB

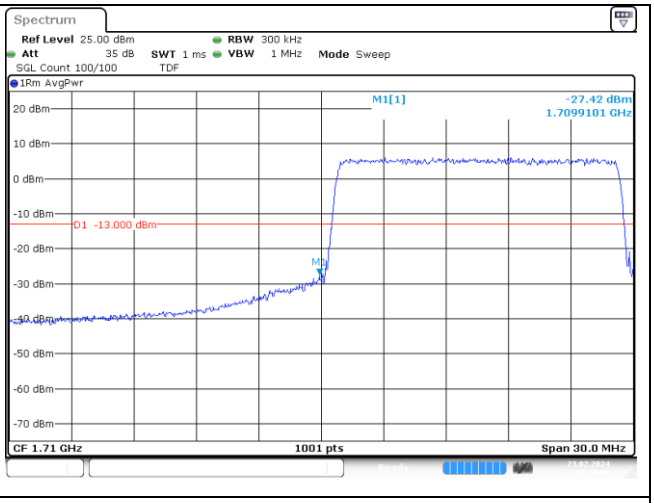


16QAM High Channel - Full RB

LTE band 66/4 (15 ㎒)

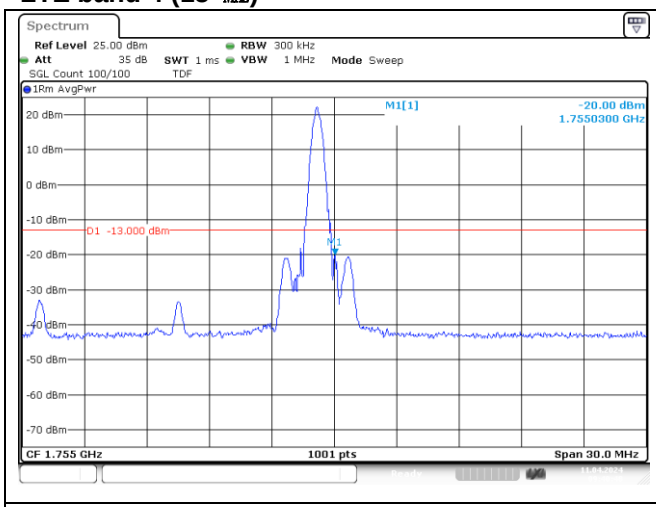


QPSK Low Channel - 1 RB



QPSK Low Channel - Full RB

LTE band 4 (15 ㎒)



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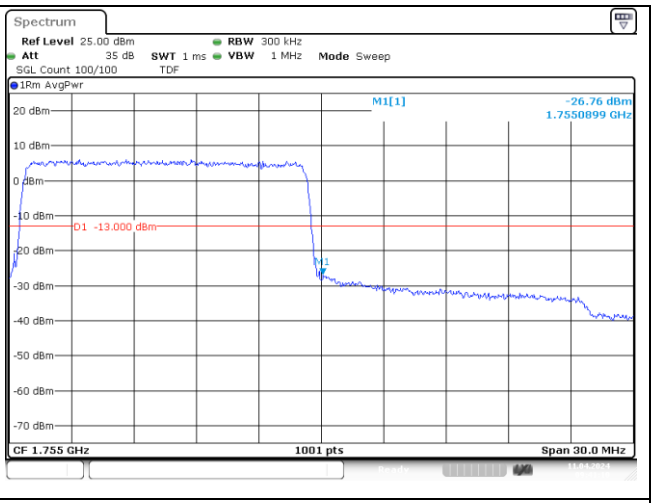
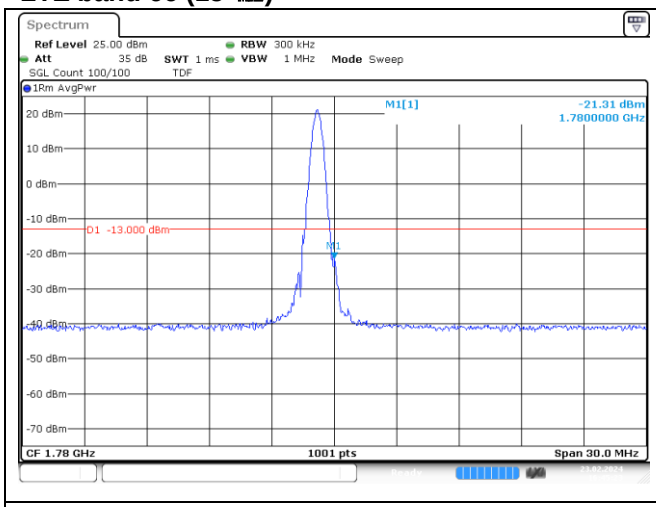
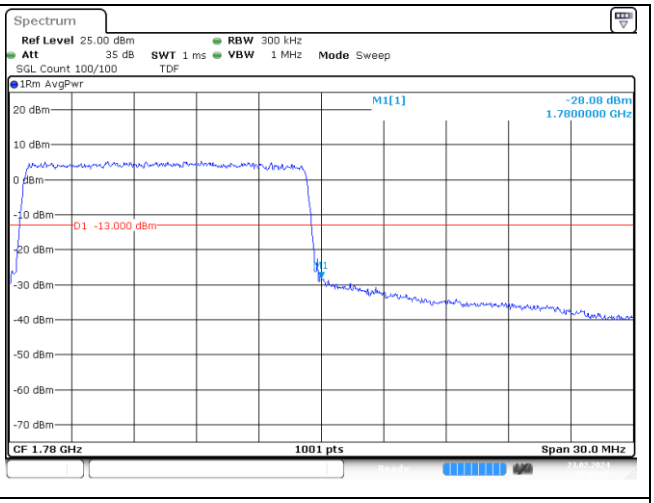


QPSK High Channel - Full RB

LTE band 66 (15 ㎒)

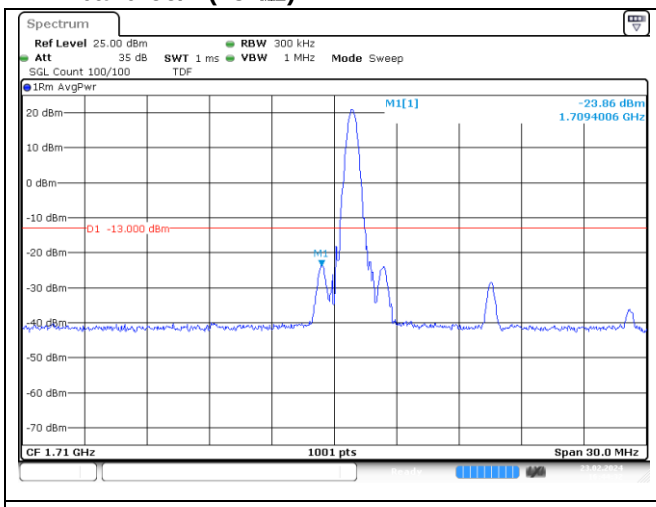


QPSK High Channel - 1 RB

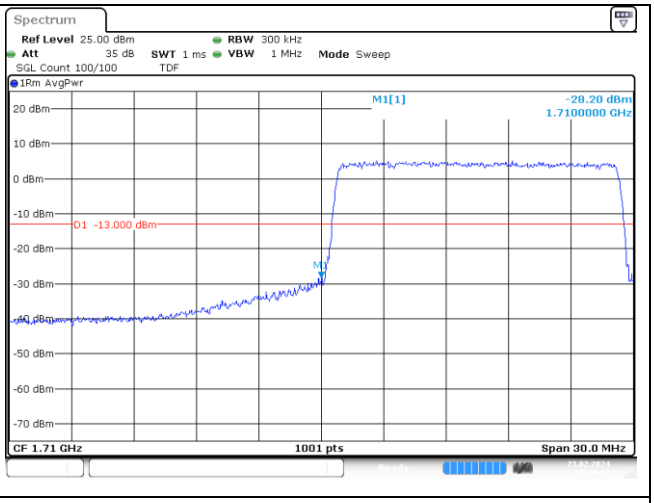


QPSK High Channel - Full RB

LTE band 66/4 (15 ㎒)

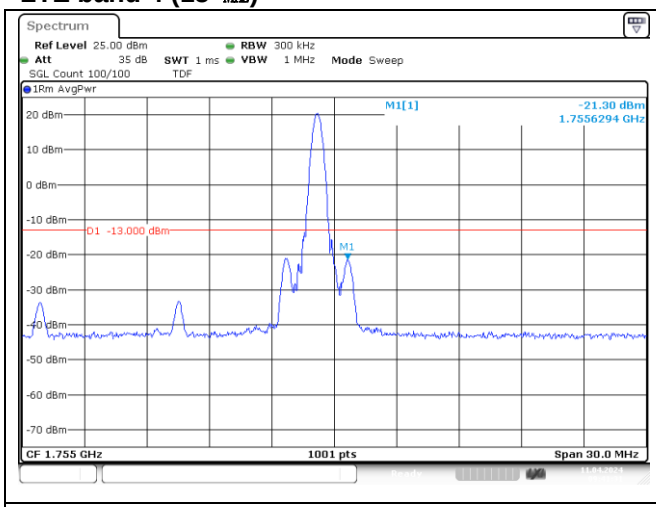


16QAM Low Channel - 1 RB



16QAM Low Channel - Full RB

LTE band 4 (15 ㎒)



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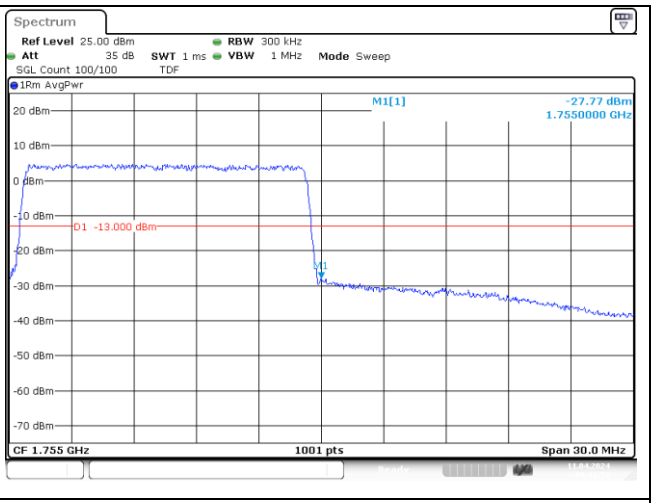
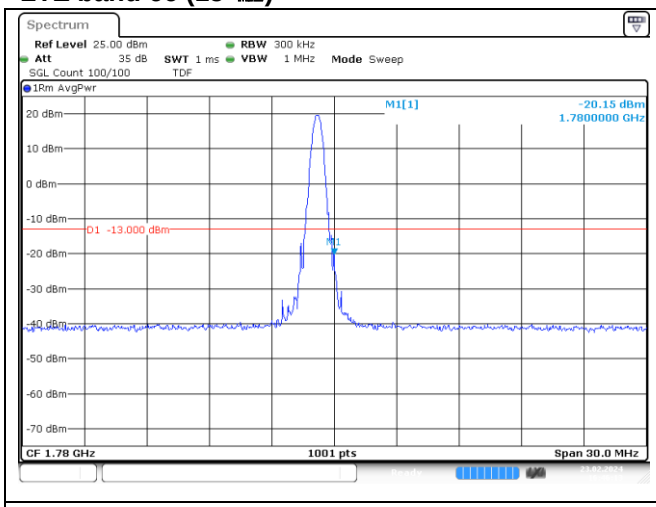
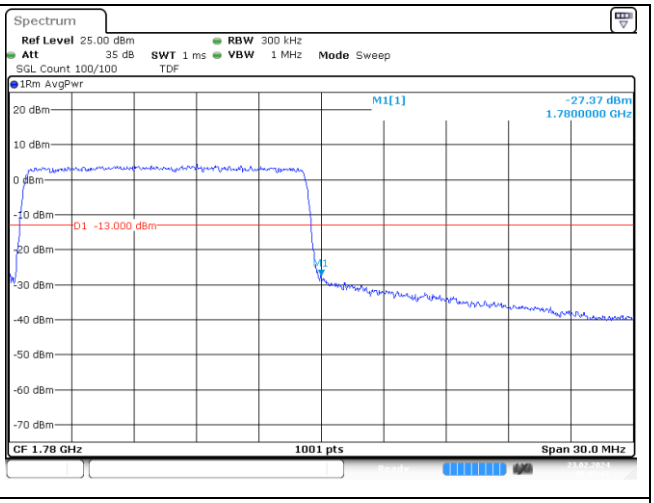


16QAM High Channel - Full RB

LTE band 66 (15 ㎒)

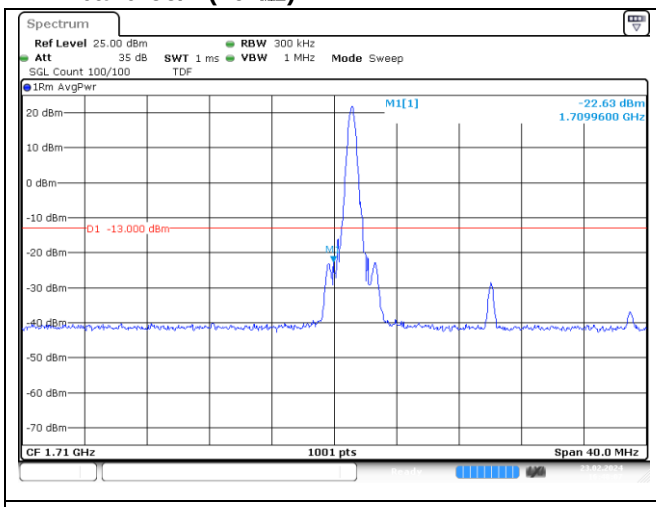


16QAM High Channel - 1 RB

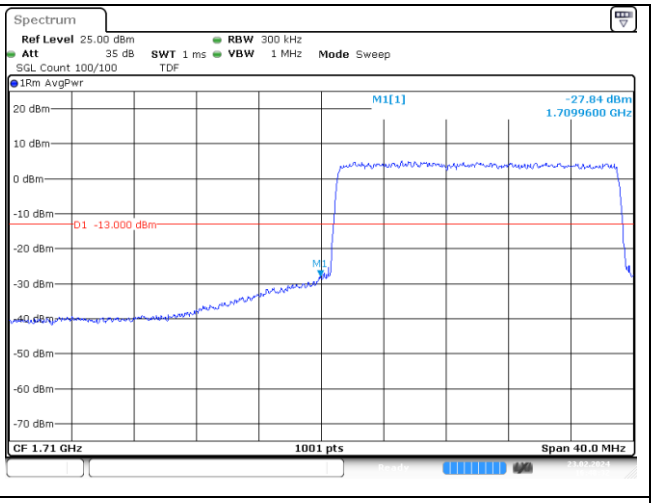


16QAM High Channel - Full RB

LTE band 66/4 (20 ㎒)

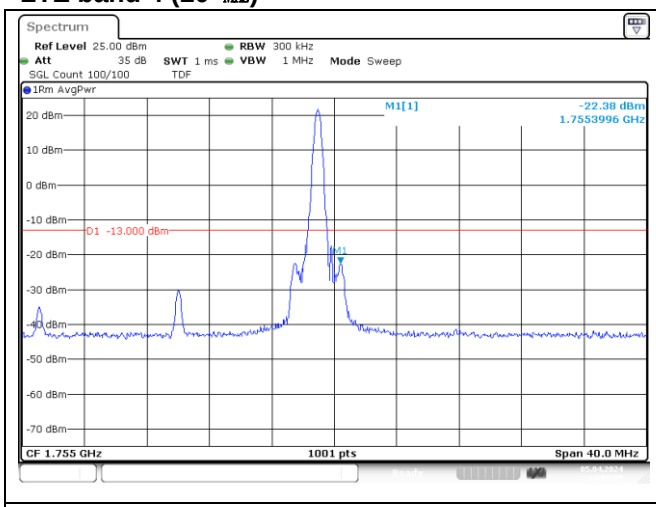


QPSK Low Channel - 1 RB

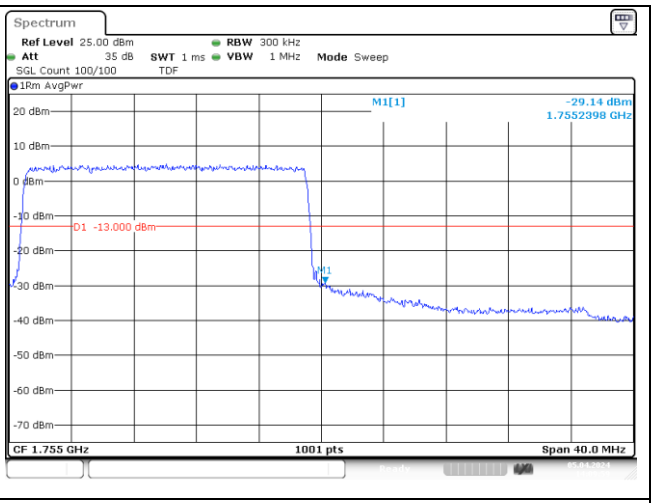


QPSK Low Channel - Full RB

LTE band 4 (20 ㎒)

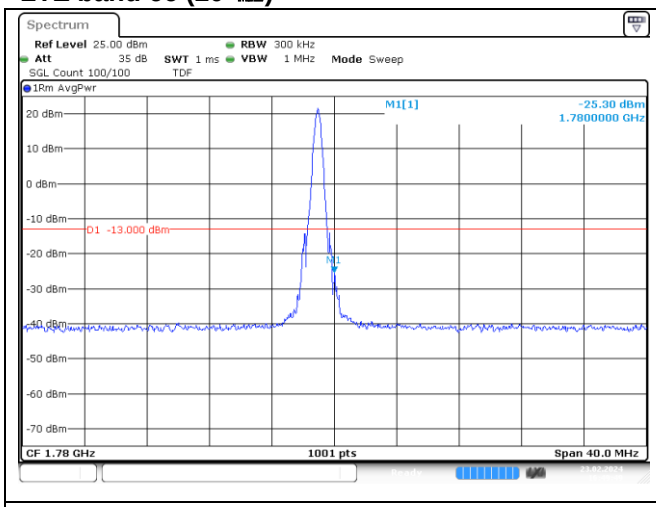


QPSK High Channel - 1 RB

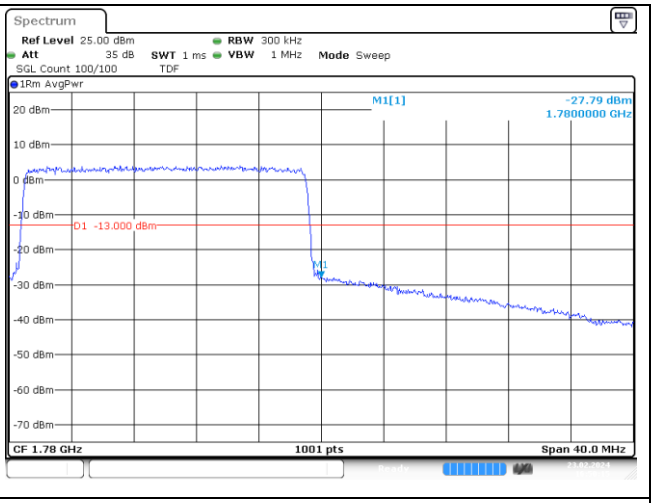


QPSK High Channel - Full RB

LTE band 66 (20 ㎒)

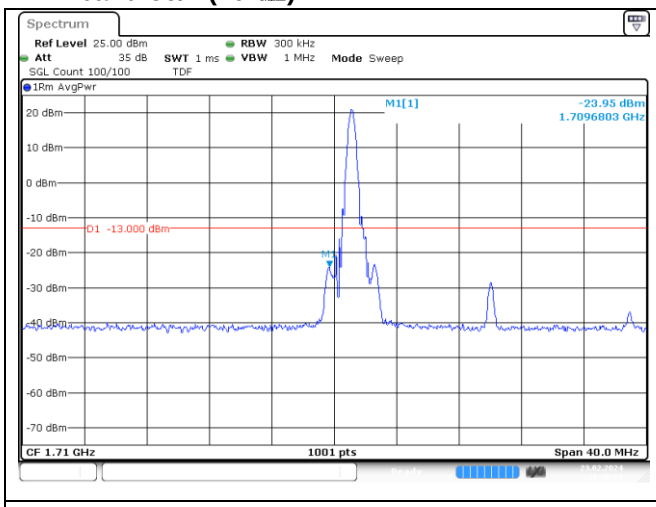


QPSK High Channel - 1 RB

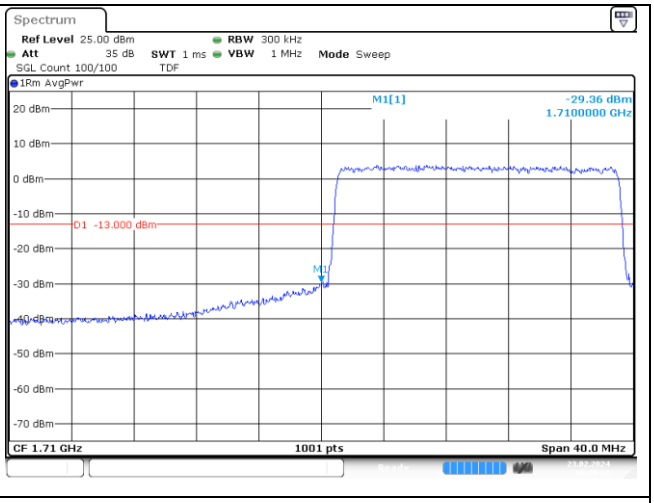


QPSK High Channel - Full RB

LTE band 66/4 (20 ㎒)

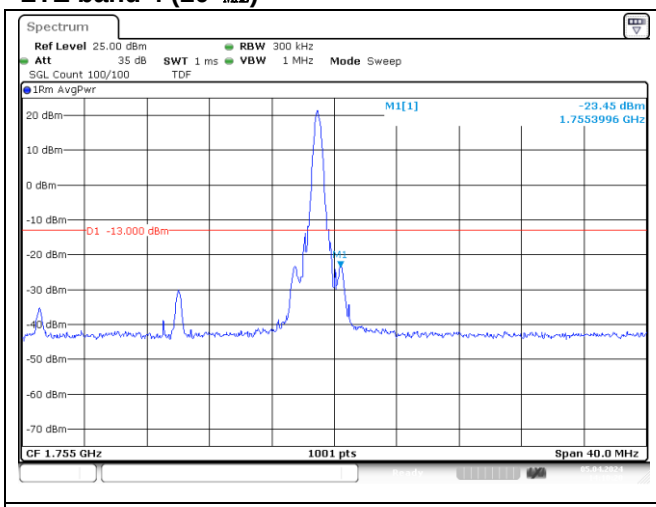


16QAM Low Channel - 1 RB

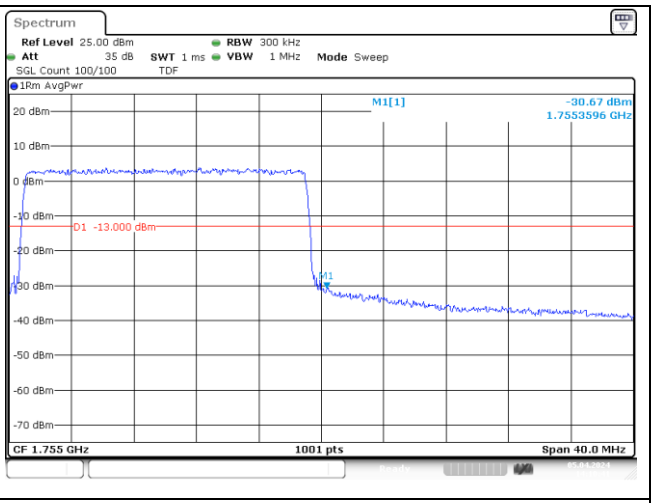


16QAM Low Channel - Full RB

LTE band 4 (20 ㎒)

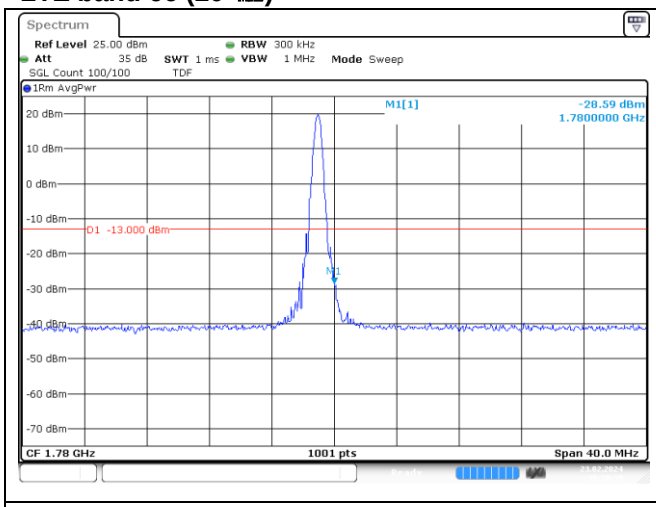


16QAM High Channel - 1 RB

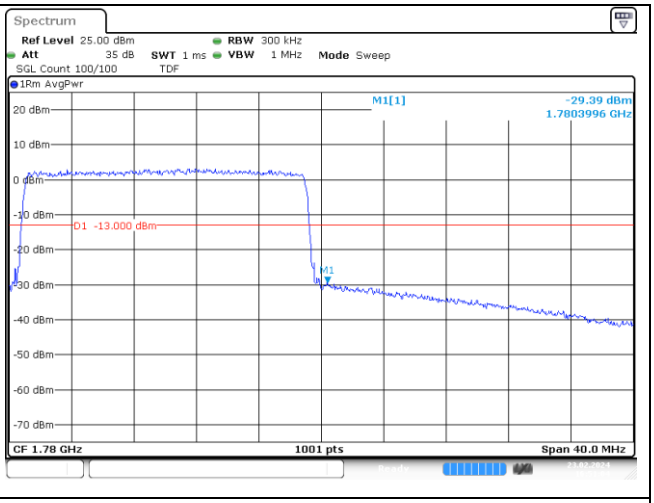


16QAM High Channel - Full RB

LTE band 66 (20 ㎒)



16QAM High Channel - 1 RB



16QAM High Channel - Full RB

8. Frequency Stability

8.1. Limit

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.
For Mobile devices operating in the 824 to 849 ㎒ band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

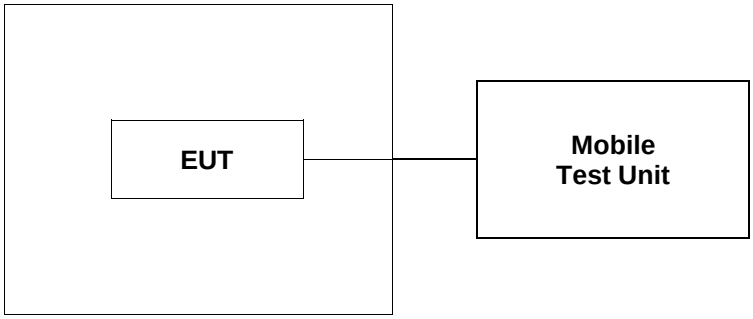
- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

- §90.213, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.
For Mobile devices operating in the 809 to 824 ㎒ band at a power level 2 Watts or less, the limit specified in Table is +/- 2.5 ppm.

8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



8.3. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

LTE band 7 at middle channel

Reference Frequency: 2 535.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	9.31	0.000 23
40		13.16	0.001 75
30		8.30	-0.000 17
20(Ref.)		8.72	-
10		7.01	-0.000 67
0		8.01	-0.000 28
-10		11.92	0.001 26
-20		14.08	0.002 11
-30		3.77	-0.001 95
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	10.93	0.000 87
	4.60 (115%)	9.62	0.000 36

LTE band 25/2 at middle channel

Reference Frequency: 1 882.5 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	7.97	0.000 76
40		8.64	0.001 12
30		12.15	0.002 98
20(Ref.)		6.54	-
10		5.25	-0.000 69
0		9.88	0.001 77
-10		15.20	0.004 60
-20		8.87	0.001 24
-30		3.80	-0.001 46
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	8.75	0.001 17
	4.60 (115%)	9.13	0.001 38

LTE band 26/5_Part 22 at middle channel

Reference Frequency: 836.5 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	8.53	0.001 78
40		7.88	0.001 00
30		12.48	0.006 50
20(Ref.)		7.04	-
10		3.11	-0.004 70
0		7.19	0.000 18
-10		13.16	0.007 32
-20		8.14	0.001 32
-30		4.02	-0.003 61
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	11.05	0.004 79
	4.60 (115%)	9.67	0.003 14

LTE band 26_Part 90 at middle channel

Reference Frequency: 819 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	6.79	0.002 92
40		6.95	0.003 11
30		9.45	0.006 17
20(Ref.)		4.40	-
10		4.45	0.000 06
0		7.95	0.004 33
-10		14.45	0.012 27
-20		5.82	0.001 73
-30		1.27	-0.003 82
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	11.07	0.008 14
	4.60 (115%)	9.51	0.006 24

LTE band 38 at middle channel

Reference Frequency: 2 595.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	4.70	0.000 92
40		2.50	0.000 08
30		2.20	-0.000 04
20(Ref.)		2.30	-
10		9.30	0.002 70
0		5.50	0.001 23
-10		4.70	0.000 92
-20		8.30	0.002 31
-30		6.90	0.001 77
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	9.40	0.002 74
	4.60 (115%)	8.90	0.002 54

LTE band 41 at middle channel

Reference Frequency: 2 593.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	8.27	0.000 72
40		11.31	0.001 89
30		13.79	0.002 85
20(Ref.)		6.41	-
10		9.29	0.001 11
0		11.03	0.001 78
-10		9.92	0.001 35
-20		9.78	0.001 30
-30		8.27	0.000 72
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	10.92	0.001 74
	4.60 (115%)	9.53	0.001 20

LTE band 66/4 at middle channel

Reference Frequency: 1 745.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	6.87	0.001 27
40		8.24	0.002 05
30		12.45	0.004 46
20(Ref.)		4.66	-
10		7.99	0.001 91
0		8.35	0.002 11
-10		9.29	0.002 65
-20		5.14	0.000 28
-30		8.64	0.002 28
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	10.88	0.003 56
	4.60 (115%)	9.94	0.003 03

- End of the Test Report -