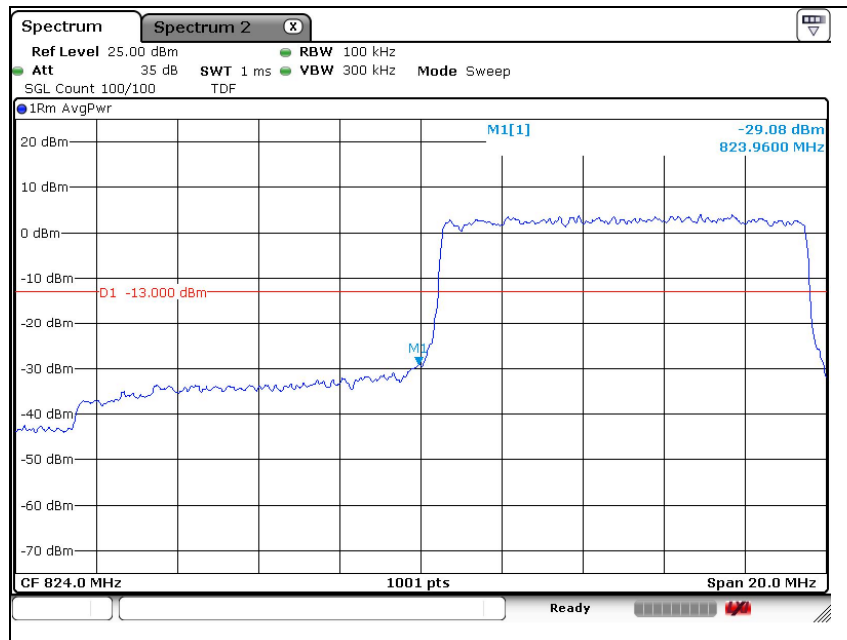


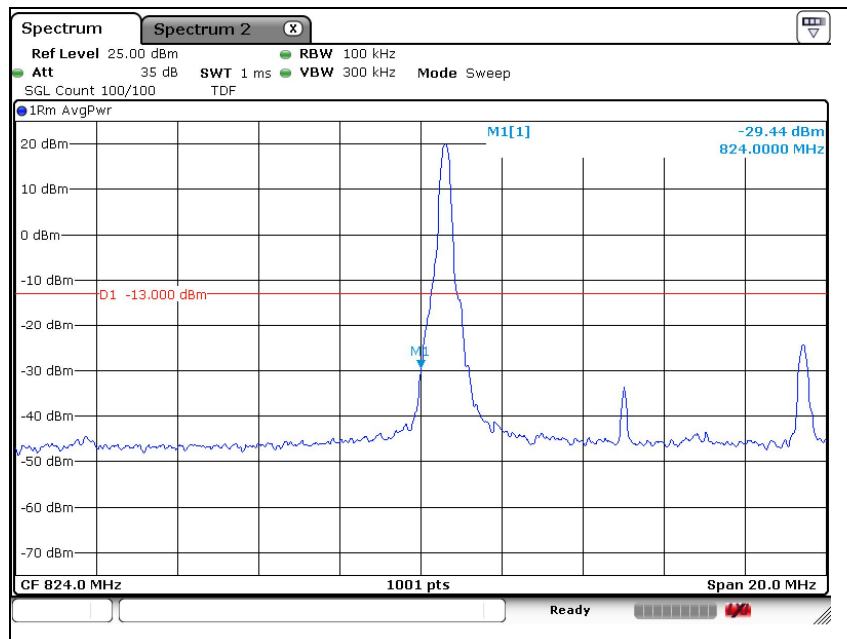
LTE band 26/5 (10 MHz – QPSK_Full RB)

Low Channel



LTE band 26/5 (10 MHz – QPSK_1 RB)

Low Channel



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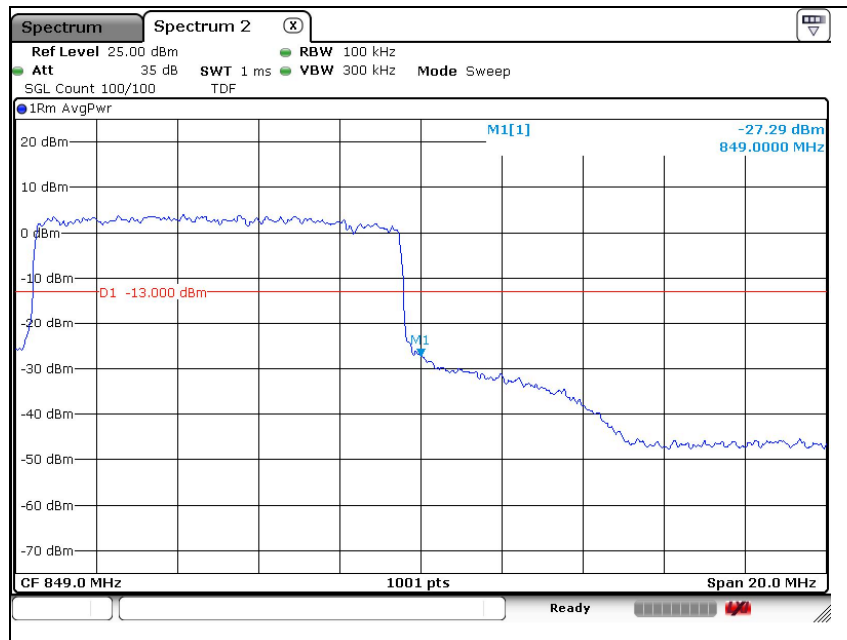
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

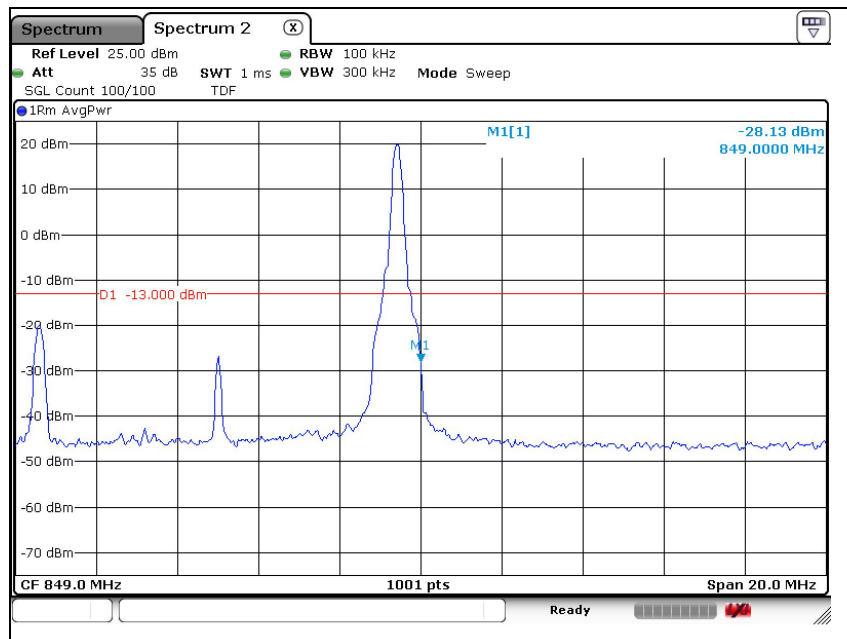
LTE band 26/5 (10 MHz – QPSK_Full RB)

High Channel



LTE band 26/5 (10 MHz – QPSK_1 RB)

High Channel



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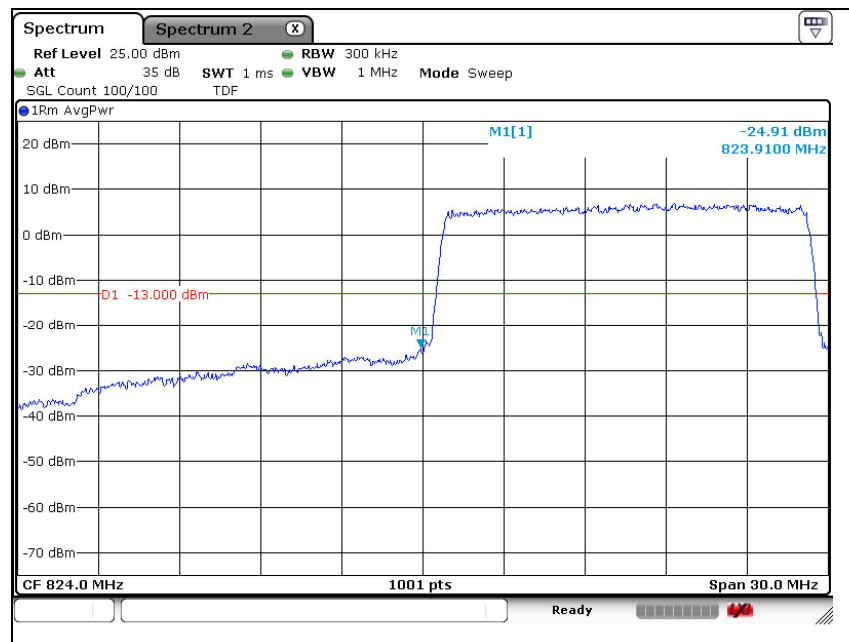
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

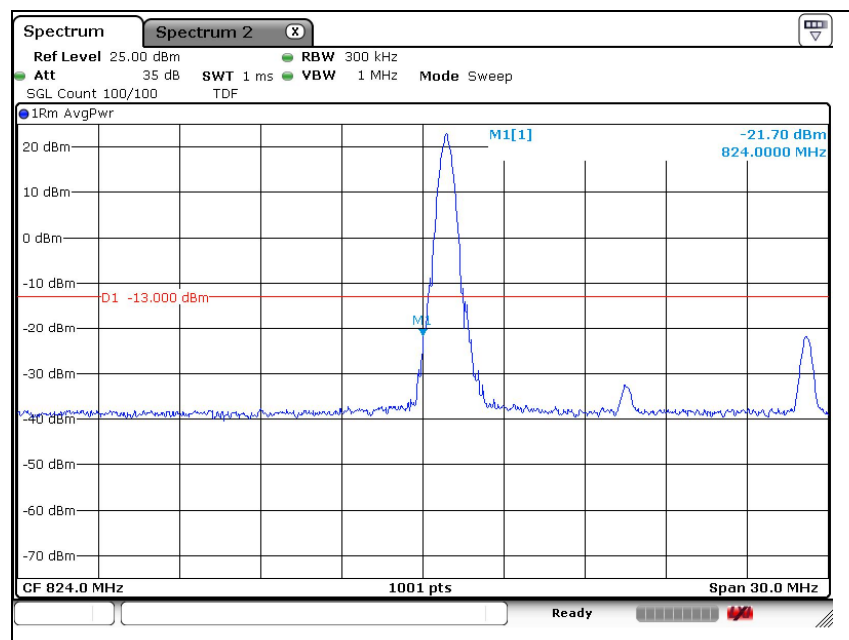
LTE band 26 (15 MHz – QPSK_Full RB)

Low Channel



LTE band 26 (15 MHz – QPSK_1 RB)

Low Channel



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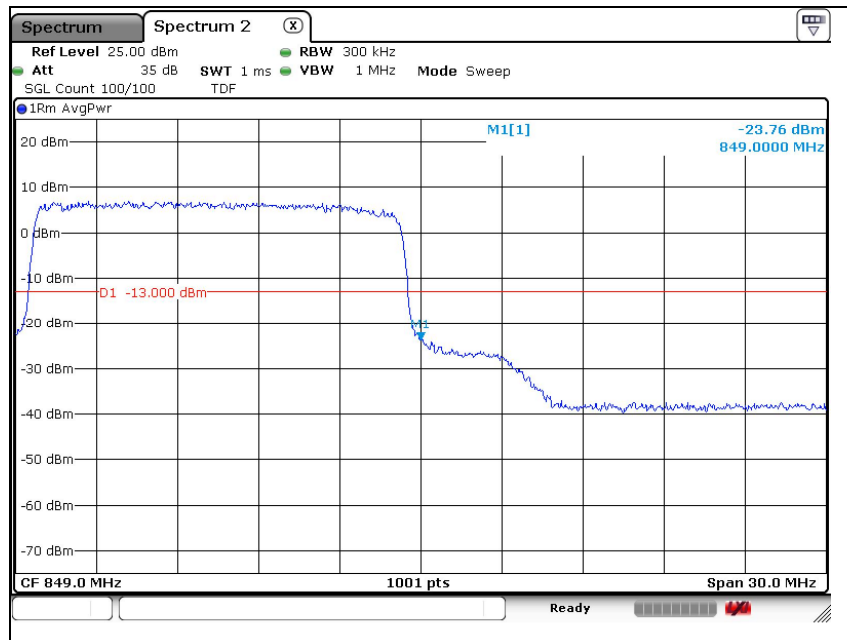
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

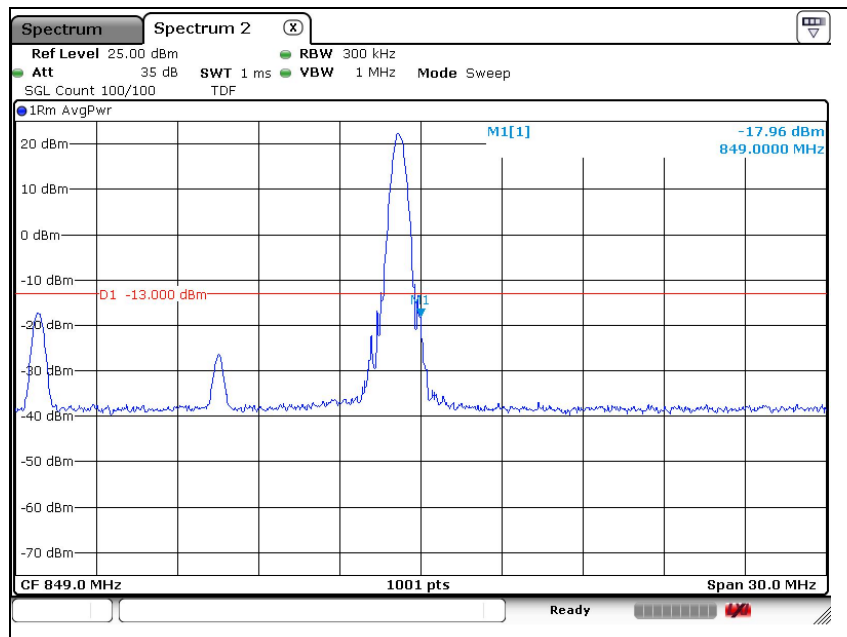
LTE band 26 (15 MHz – QPSK_Full RB)

High Channel



LTE band 26 (15 MHz – QPSK_1 RB)

High Channel



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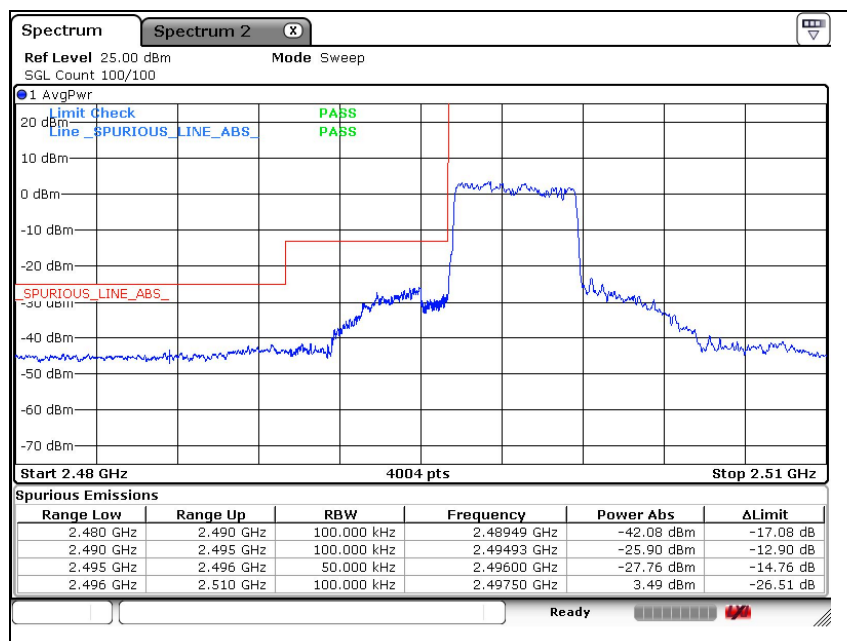
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

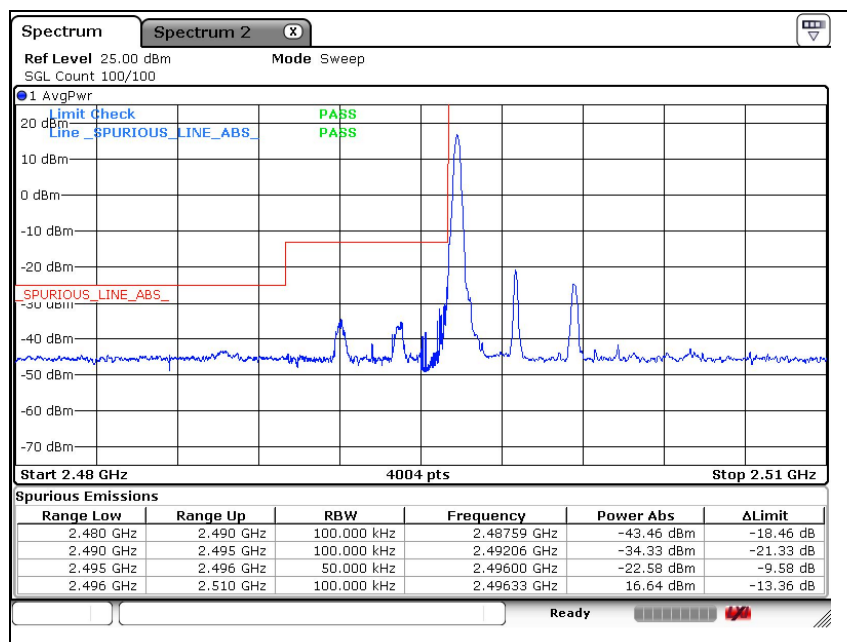
LTE band 41 (5 MHz – QPSK_Full RB)

Low Channel



LTE band 41 (5 MHz – QPSK_1 RB)

Low Channel



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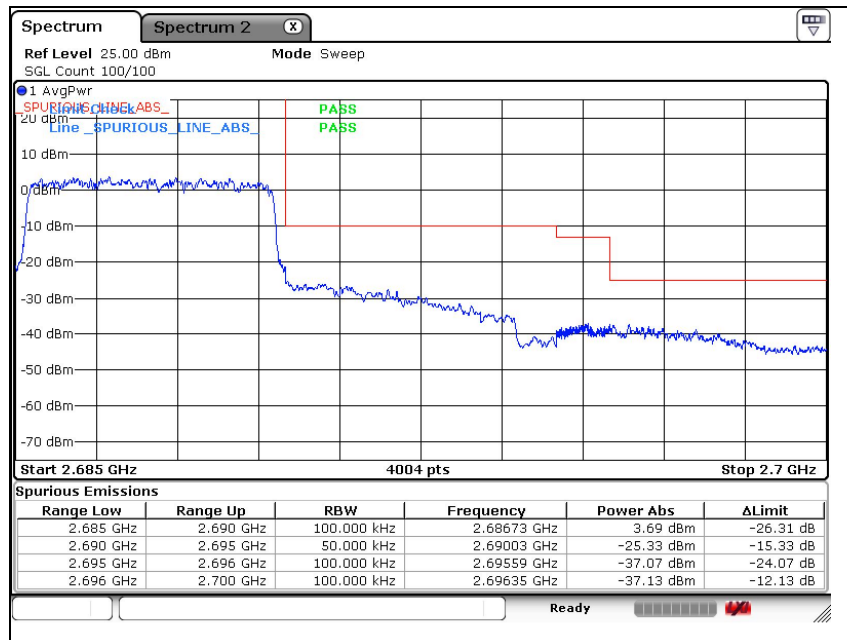
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

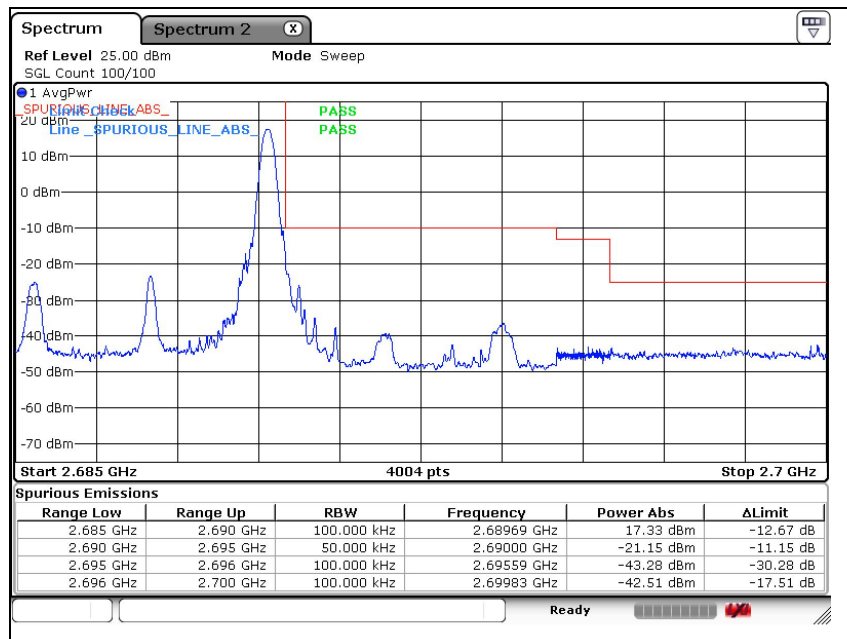
LTE band 41 (5 MHz – QPSK_Full RB)

High Channel



LTE band 41 (5 MHz – QPSK_1 RB)

High Channel



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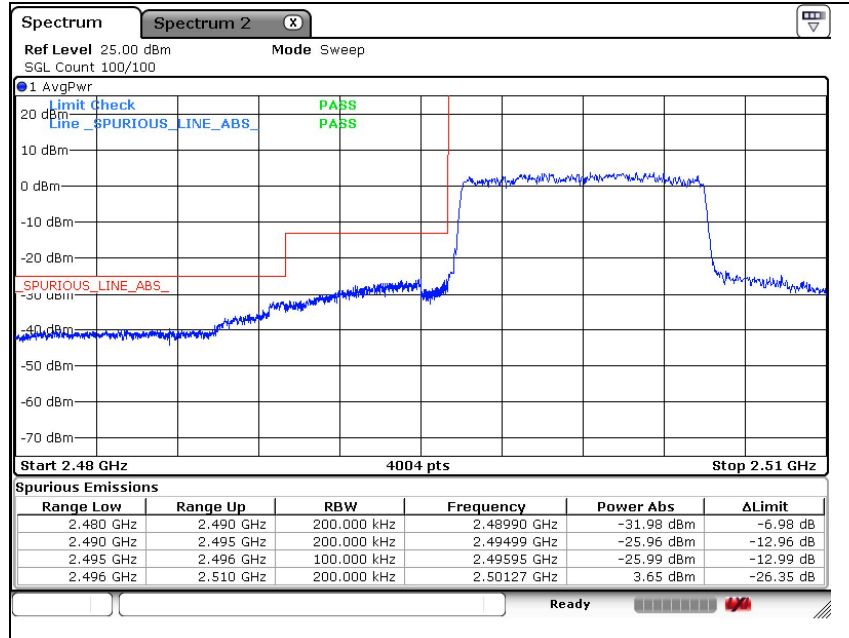
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

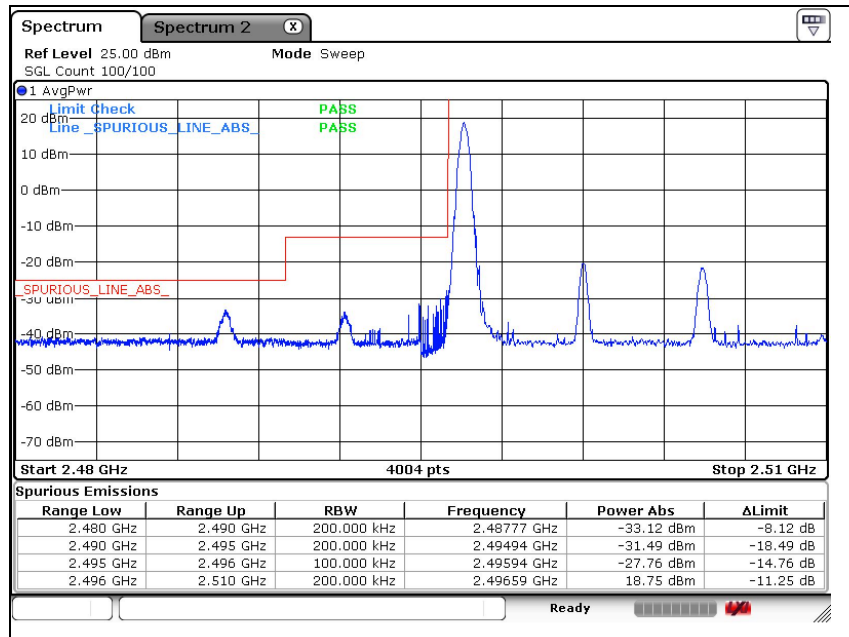
LTE band 41 (10 MHz – QPSK_Full RB)

Low Channel



LTE band 41 (10 MHz – QPSK_1 RB)

Low Channel



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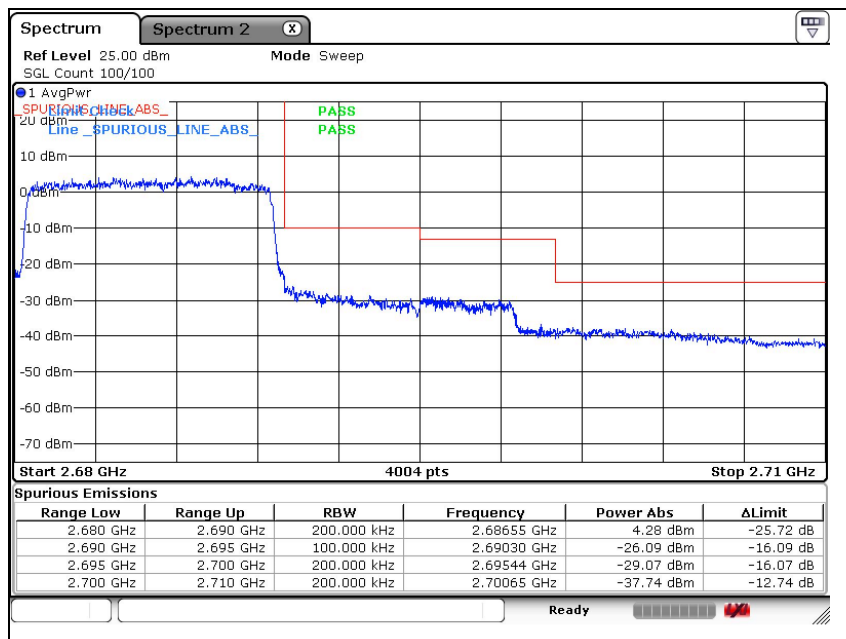
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

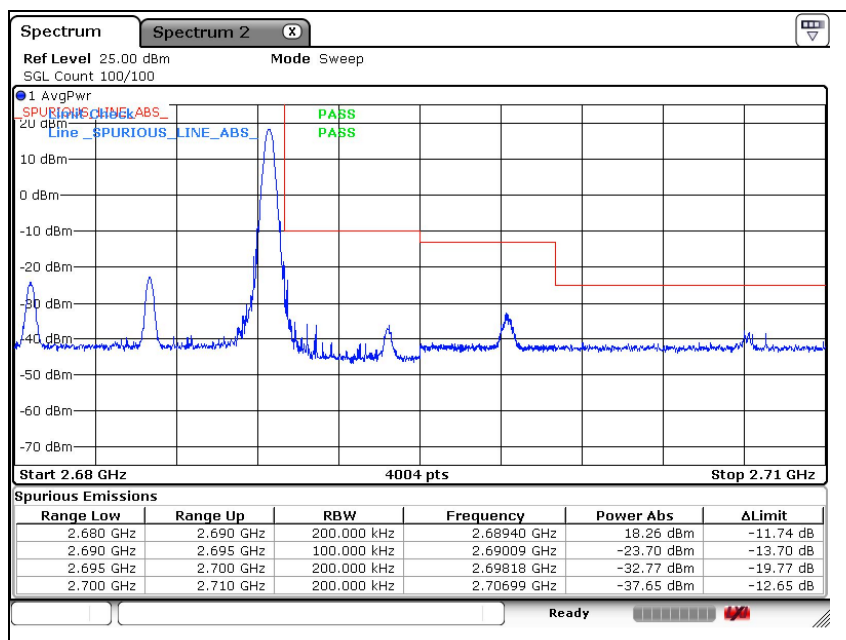
LTE band 41 (10 MHz – QPSK_Full RB)

High Channel



LTE band 41 (10 MHz – QPSK_1 RB)

High Channel



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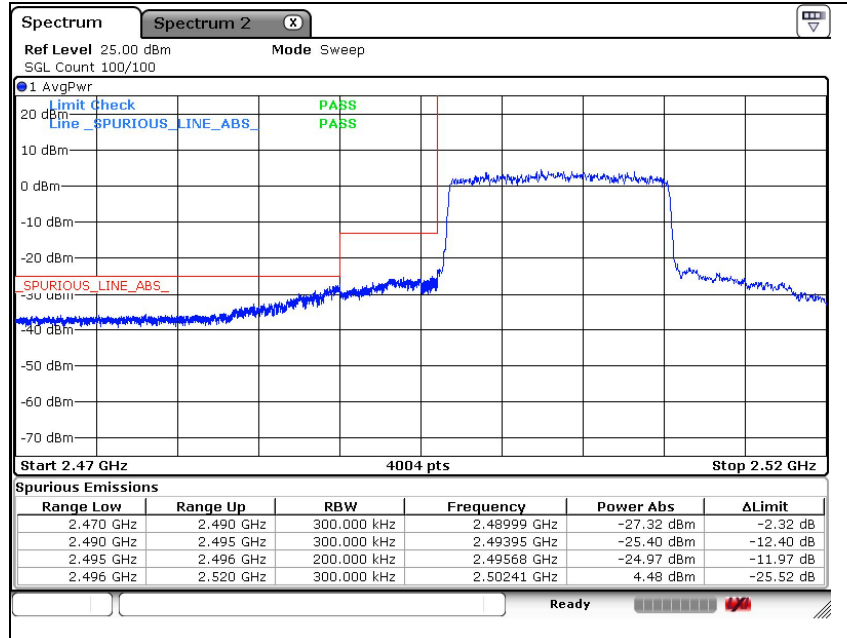
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

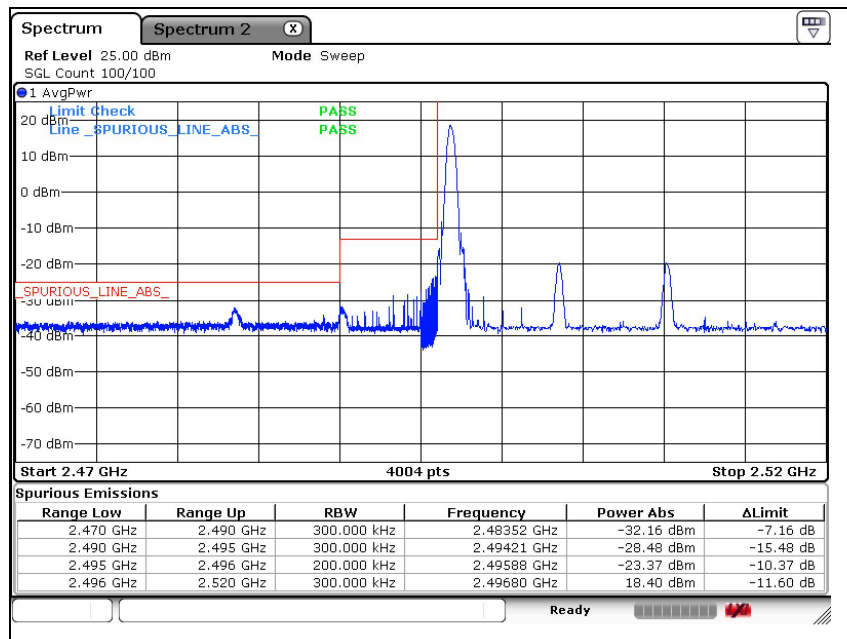
LTE band 41 (15 MHz – QPSK_Full RB)

Low Channel



LTE band 41 (15 MHz – QPSK_1 RB)

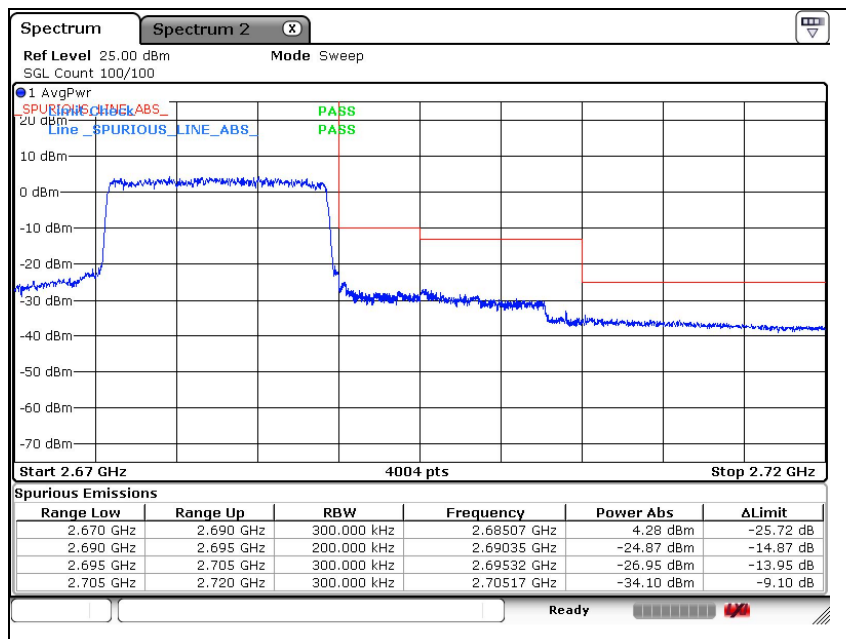
Low Channel



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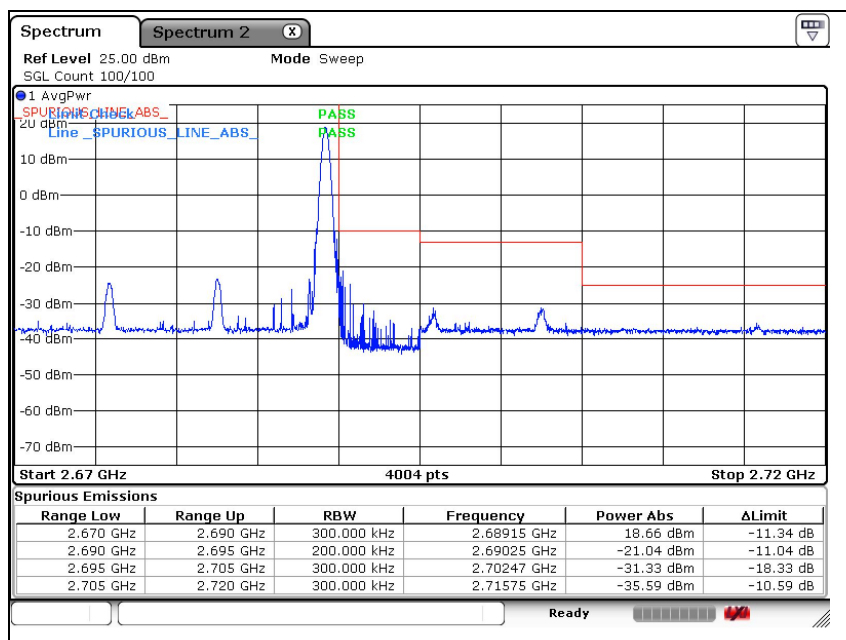
LTE band 41 (15 MHz – QPSK_Full RB)

High Channel



LTE band 41 (15 MHz – QPSK_1 RB)

High Channel



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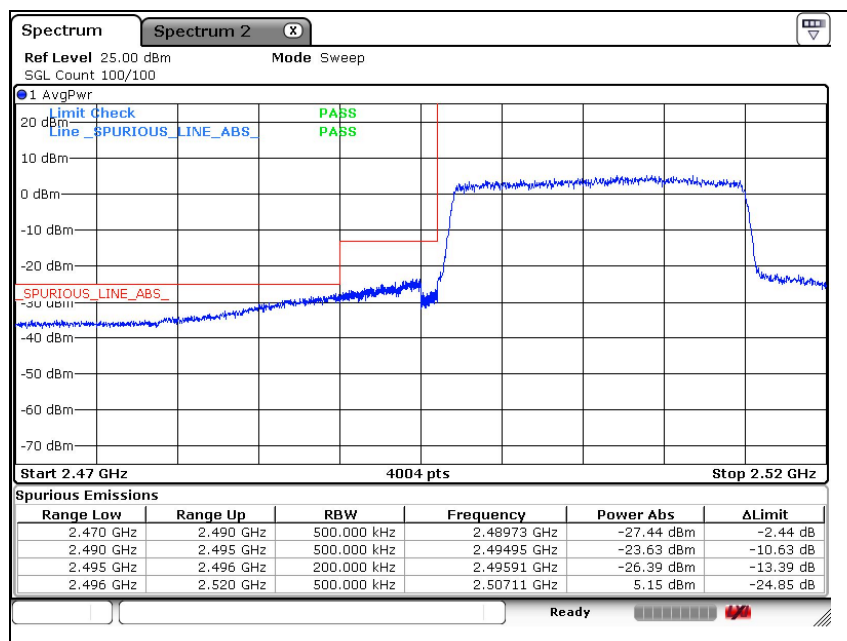
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

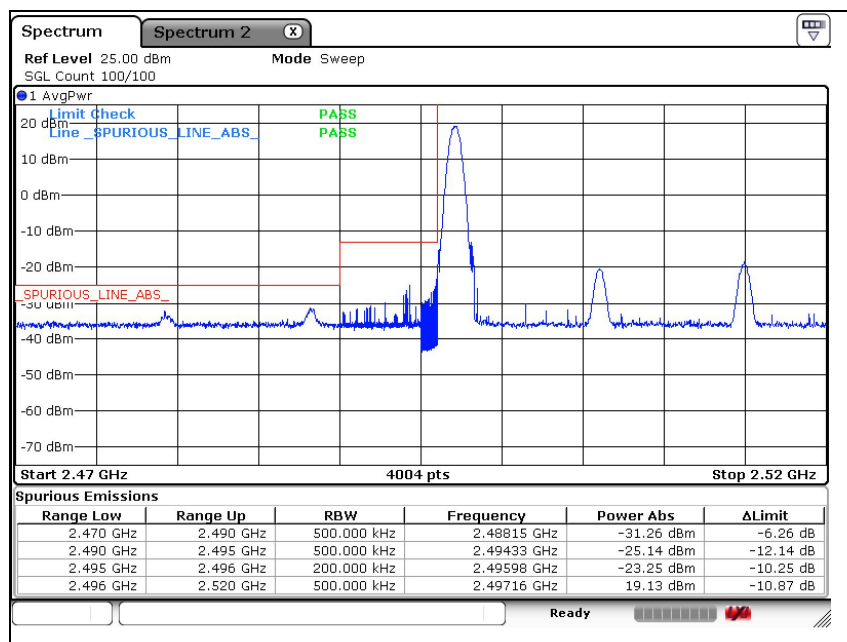
LTE band 41 (20 MHz – QPSK_Full RB)

Low Channel



LTE band 41 (20 MHz – QPSK_1 RB)

Low Channel



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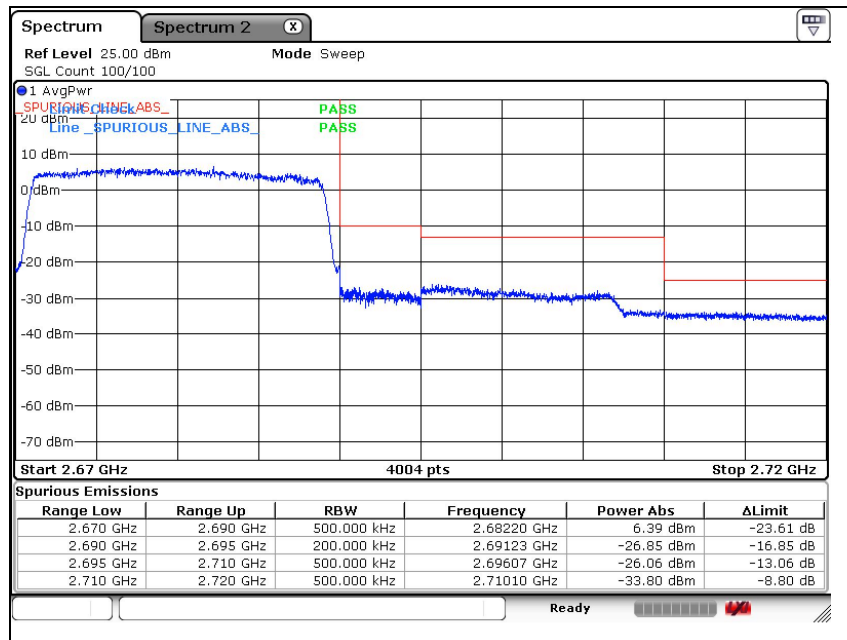
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

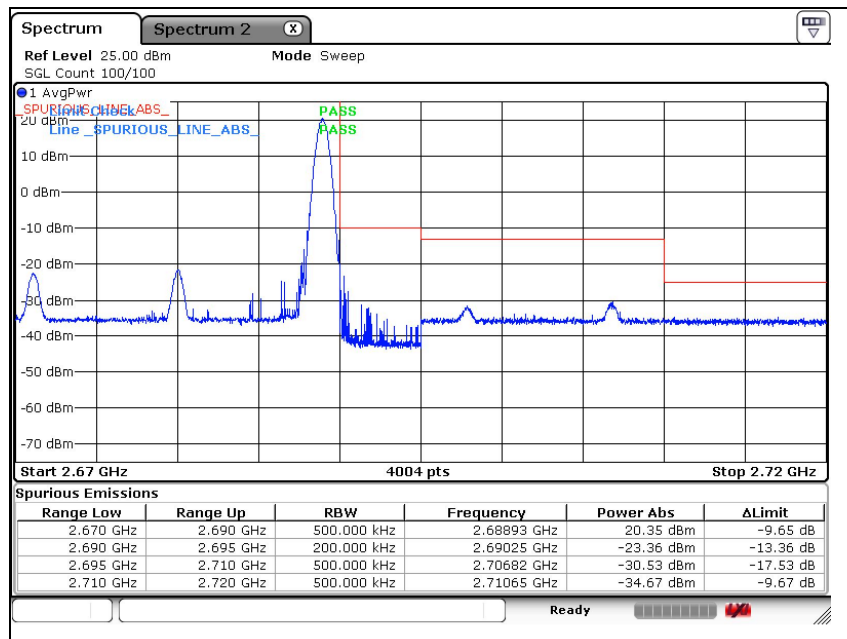
LTE band 41 (20 MHz – QPSK_Full RB)

High Channel



LTE band 41 (20 MHz – QPSK_1 RB)

High Channel



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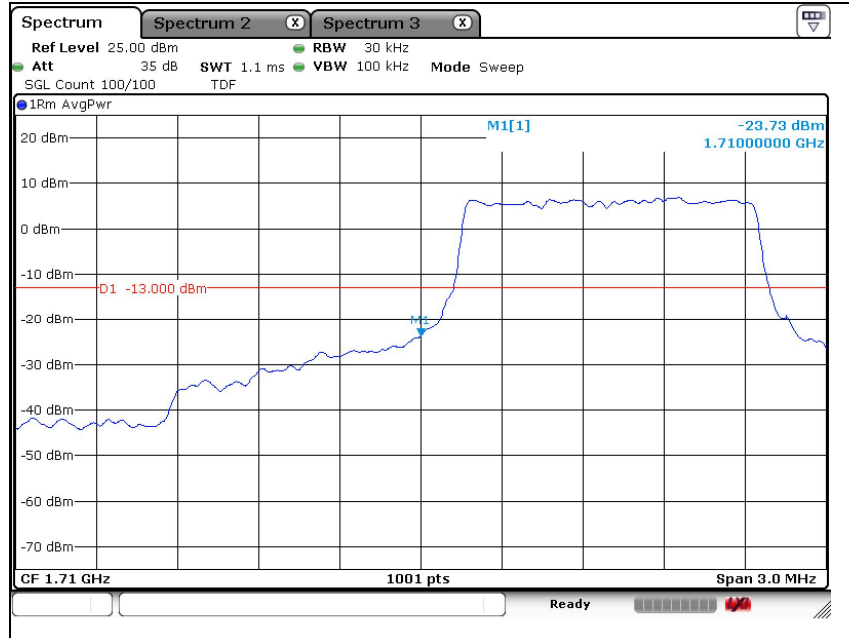
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

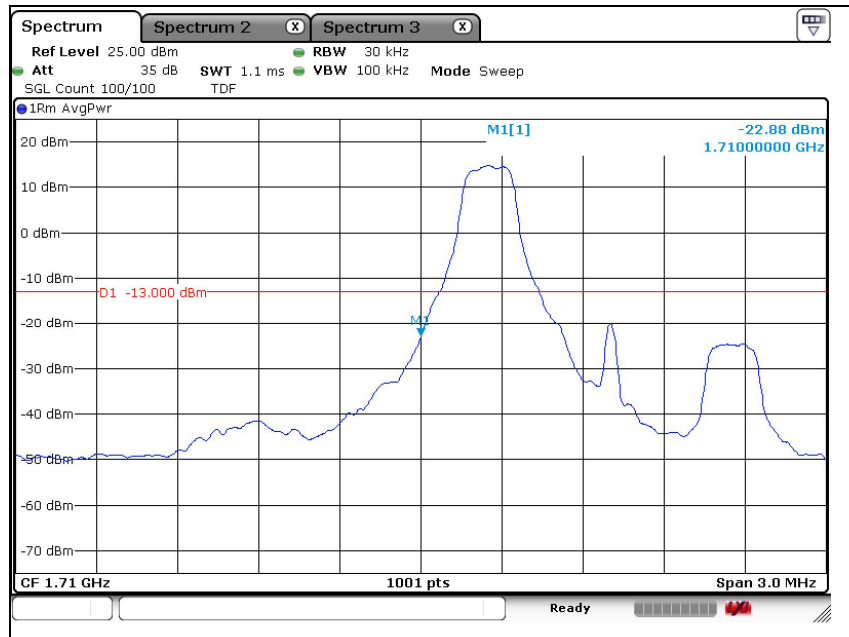
LTE band 66/4 (1.4 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (1.4 MHz – QPSK_1 RB)

Low Channel



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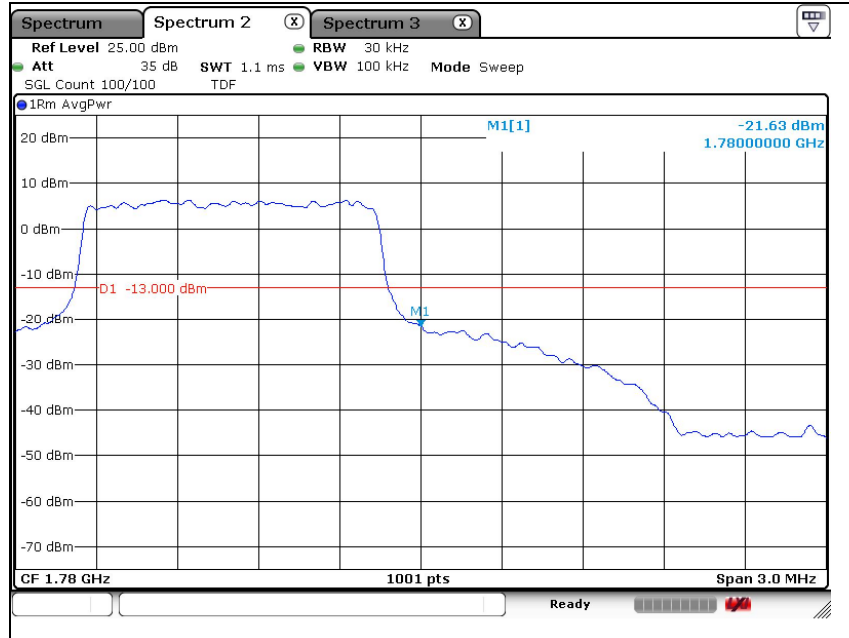
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

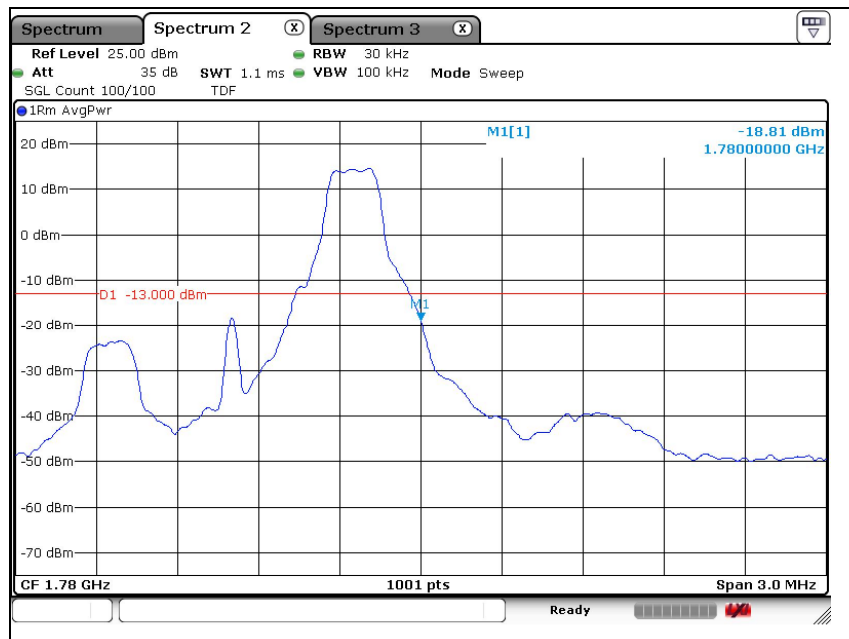
LTE band 66/4 (1.4 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (1.4 MHz – QPSK_1 RB)

High Channel



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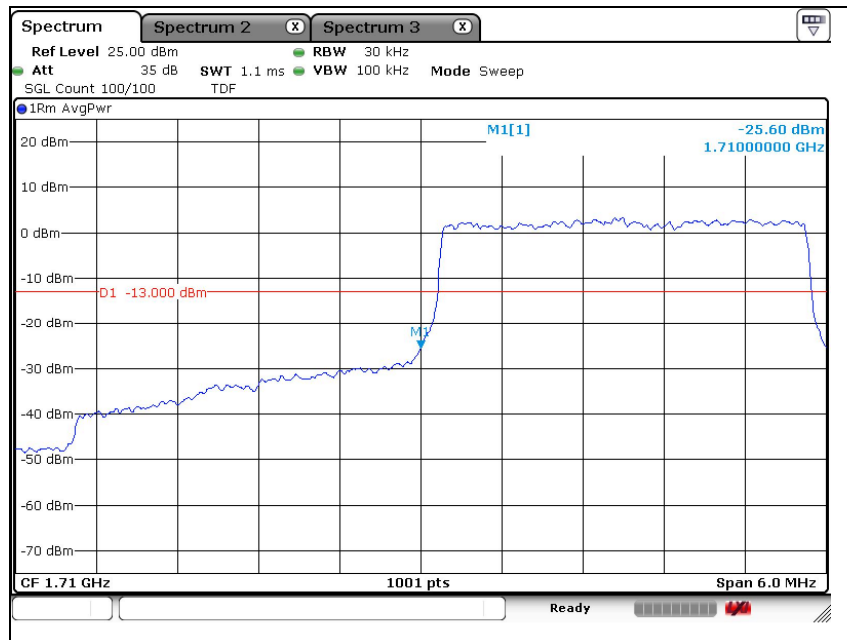
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

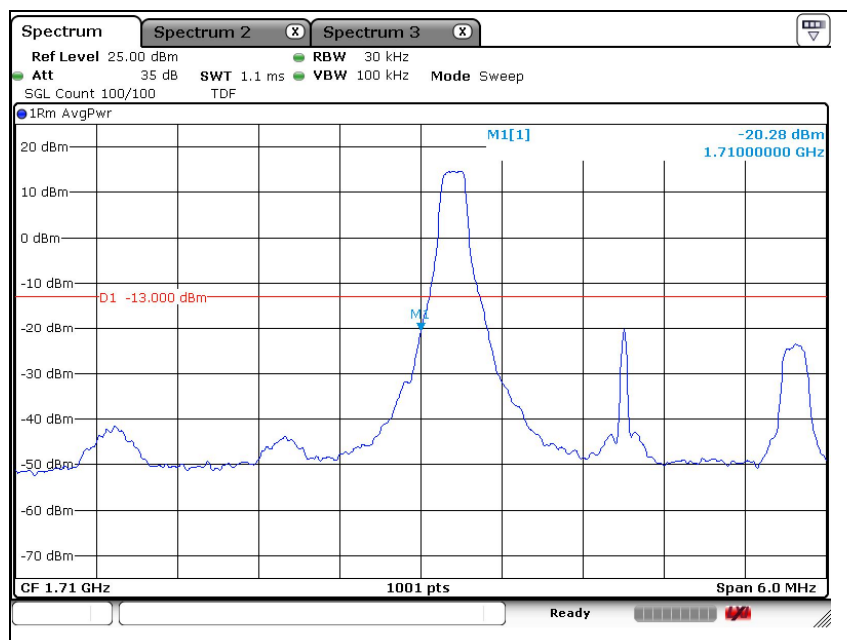
LTE band 66/4 (3 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (3 MHz – QPSK_1 RB)

Low Channel



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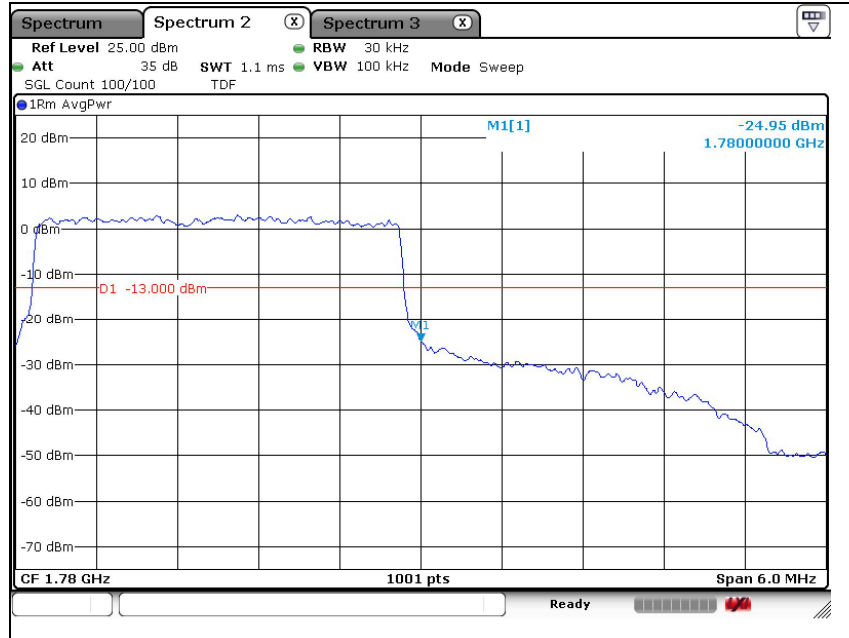
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

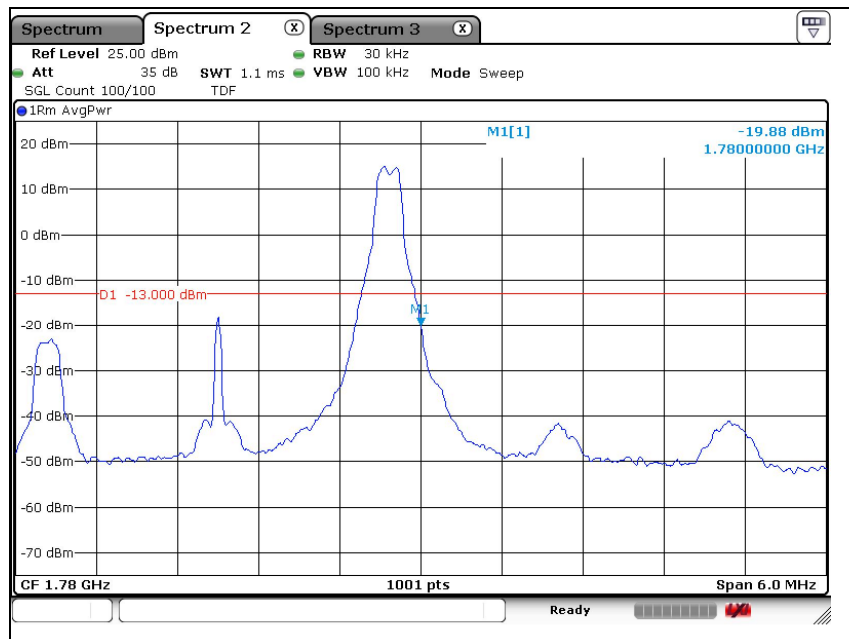
LTE band 66/4 (3 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (3 MHz – QPSK_1 RB)

High Channel



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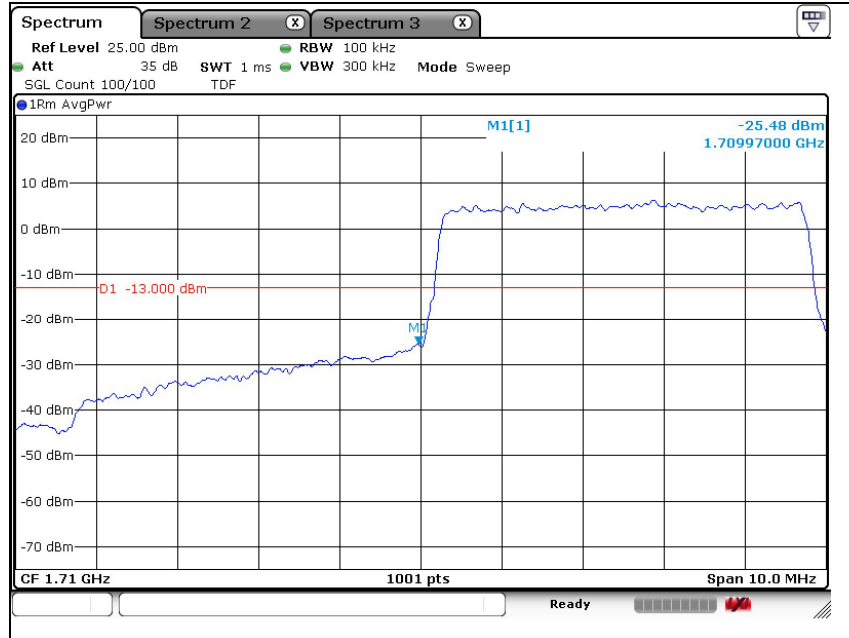
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

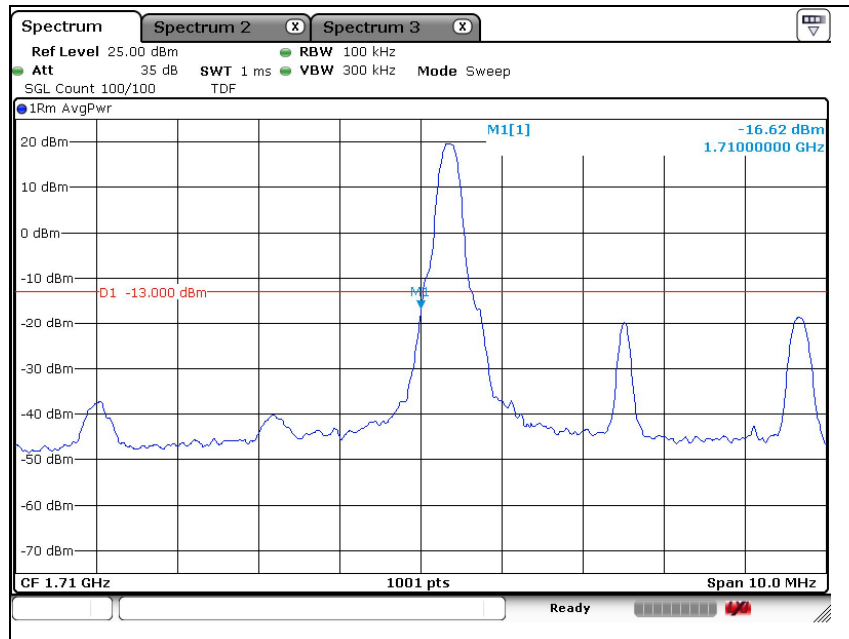
LTE band 66/4 (5 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (5 MHz – QPSK_1 RB)

Low Channel



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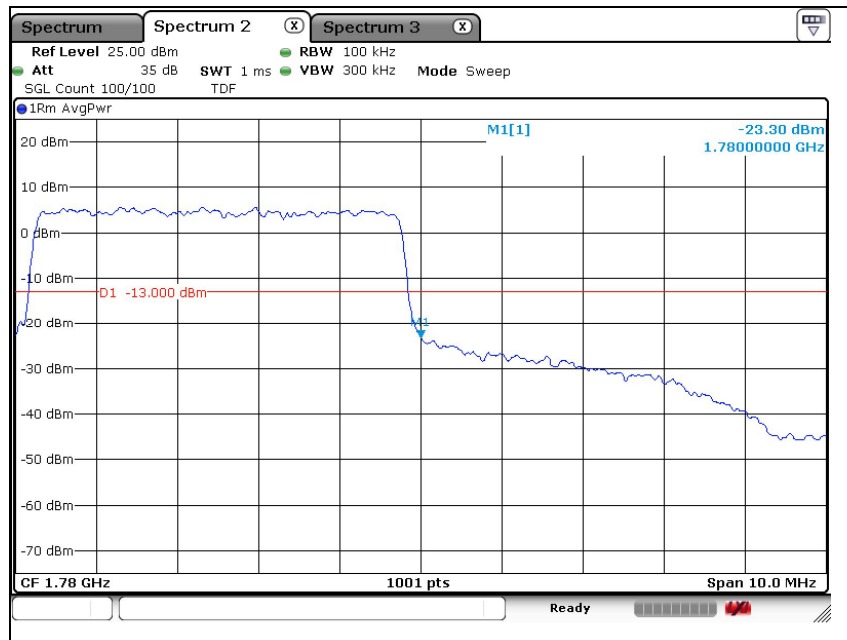
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

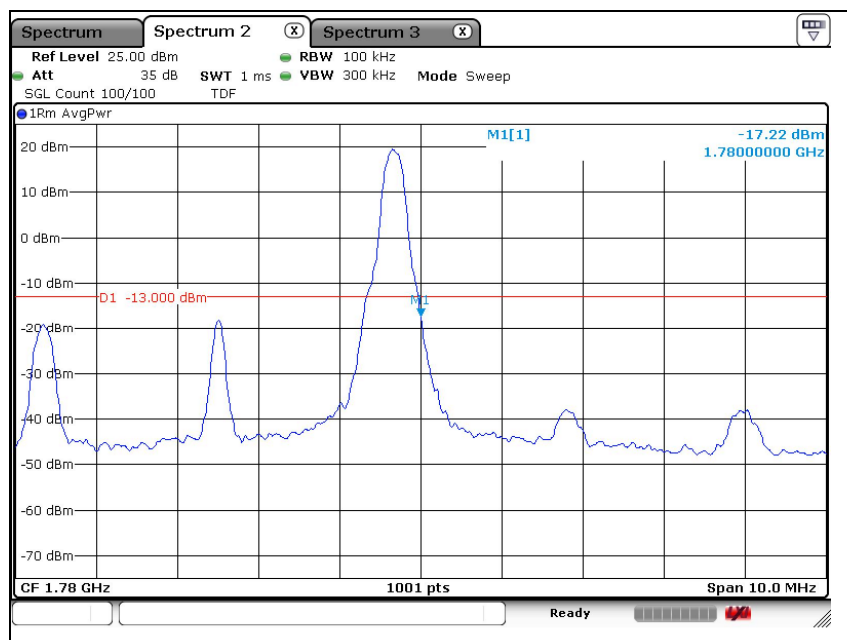
LTE band 66/4 (5 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (5 MHz – QPSK_1 RB)

High Channel



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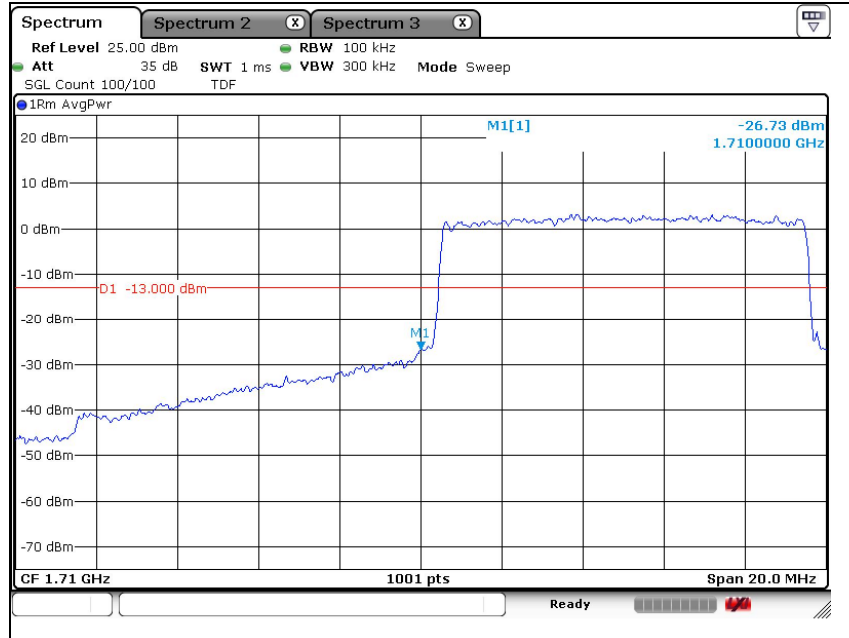
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

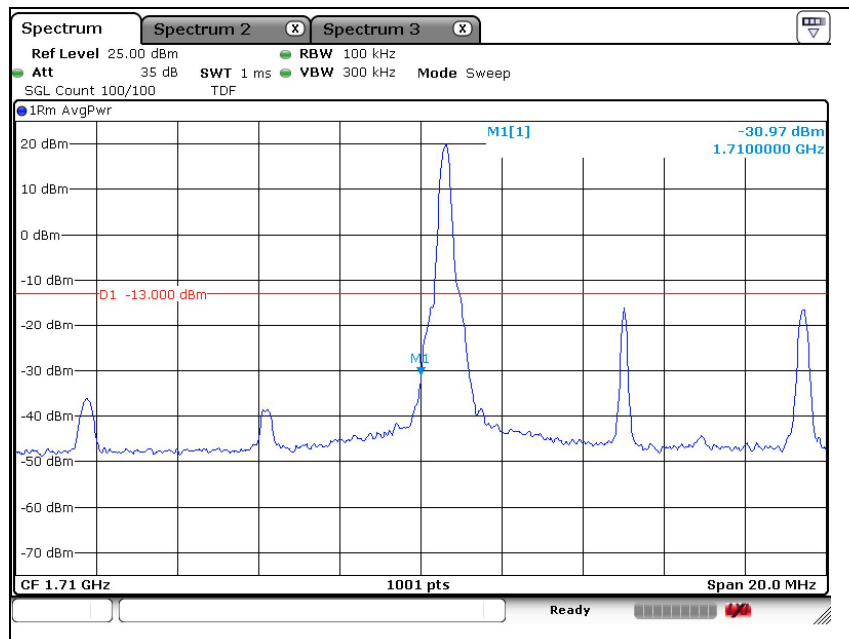
LTE band 66/4 (10 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (10 MHz – QPSK_1 RB)

Low Channel



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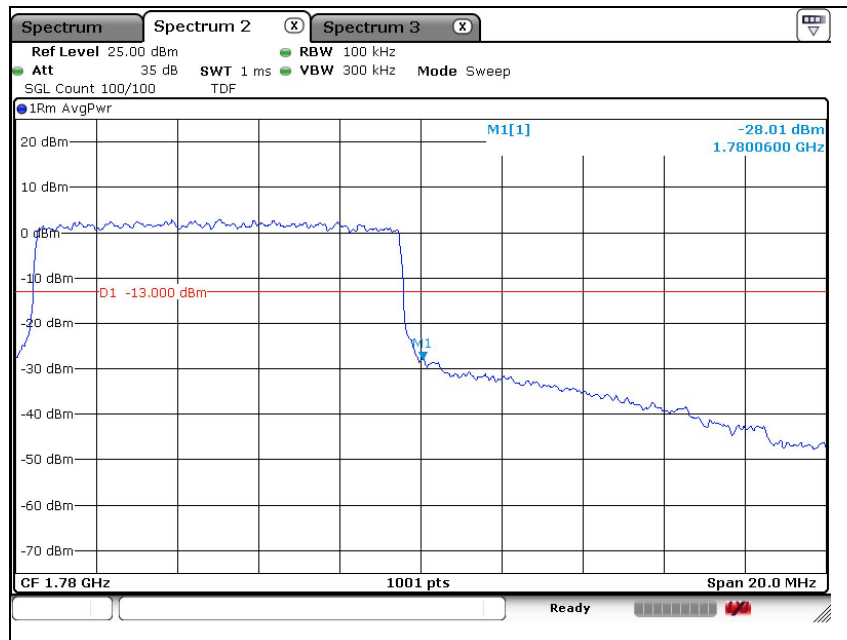
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

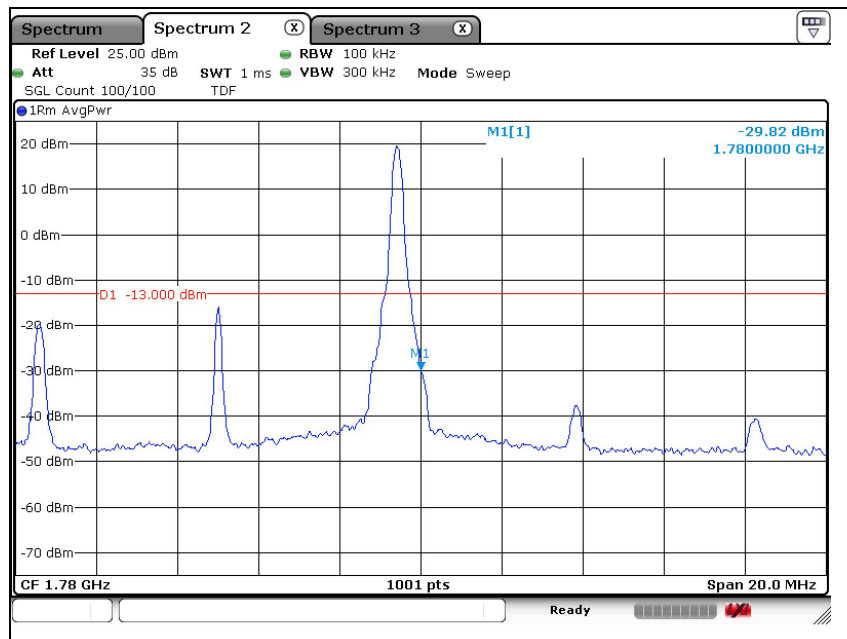
LTE band 66/4 (10 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (10 MHz – QPSK_1 RB)

High Channel



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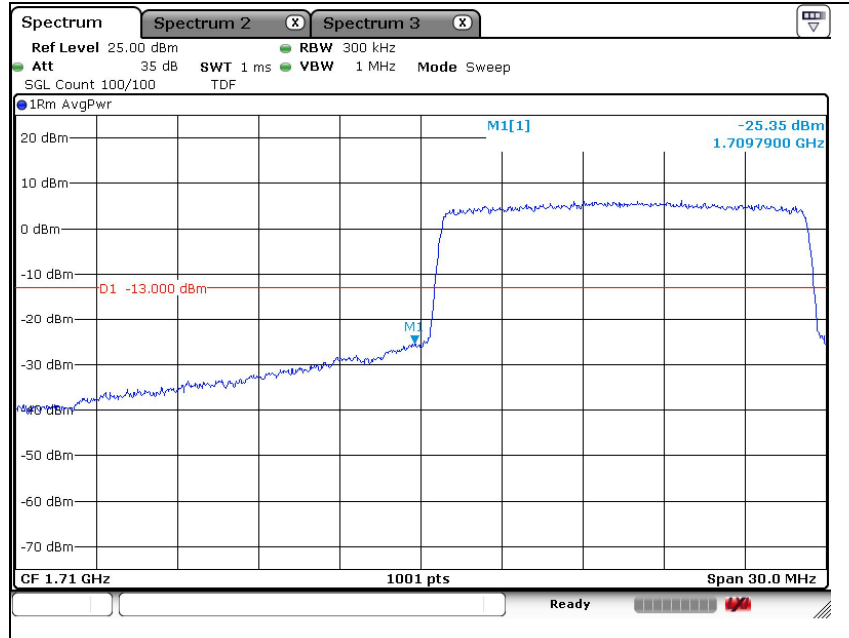
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

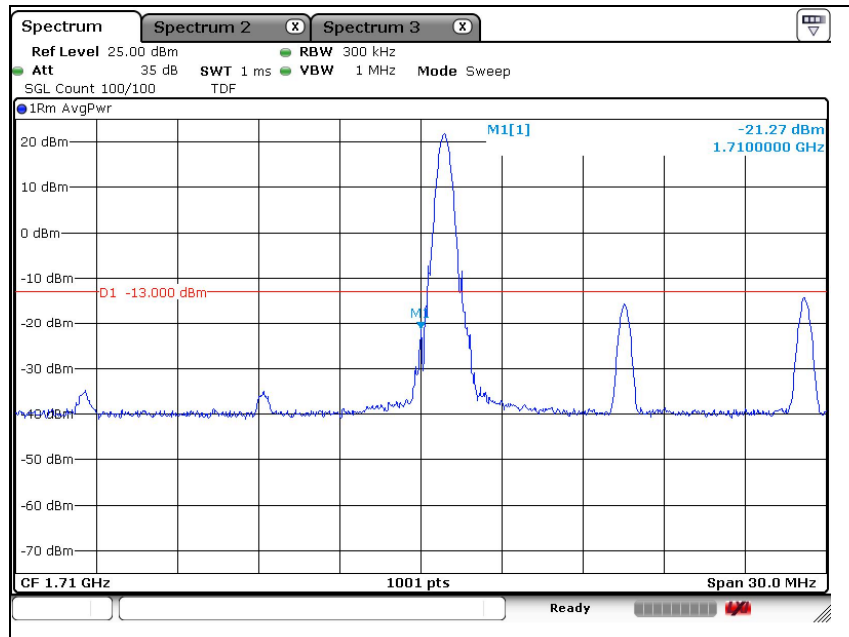
LTE band 66/4 (15 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (15 MHz – QPSK_1 RB)

Low Channel



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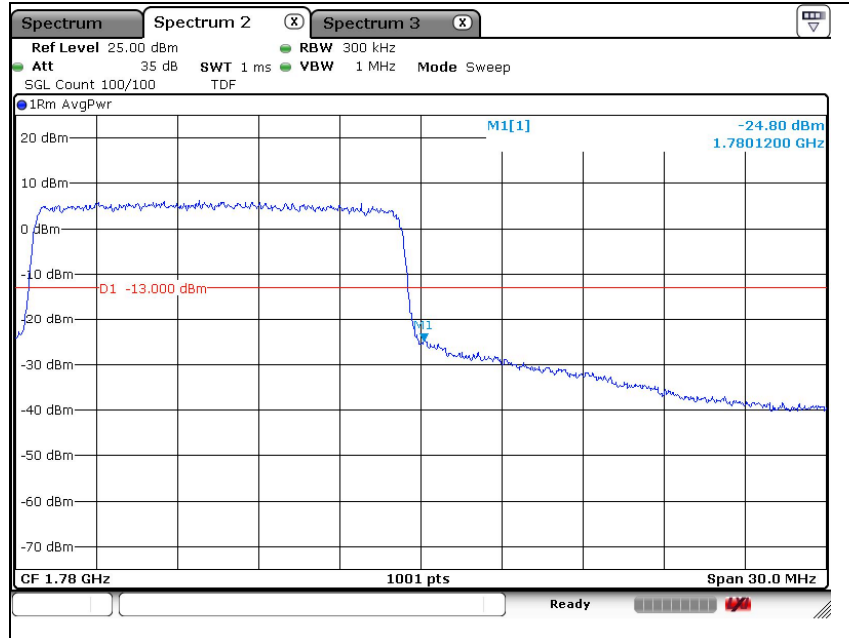
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

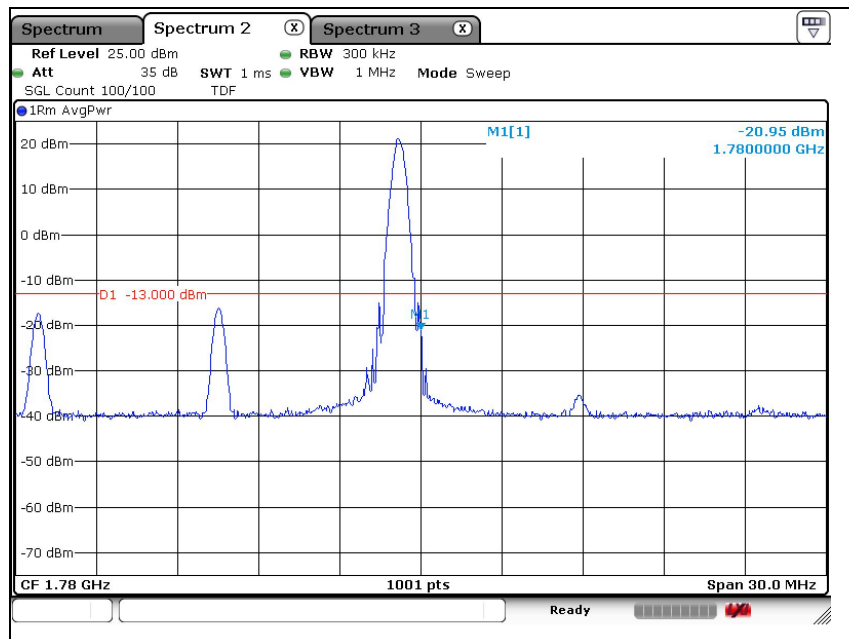
LTE band 66/4 (15 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (15 MHz – QPSK_1 RB)

High Channel



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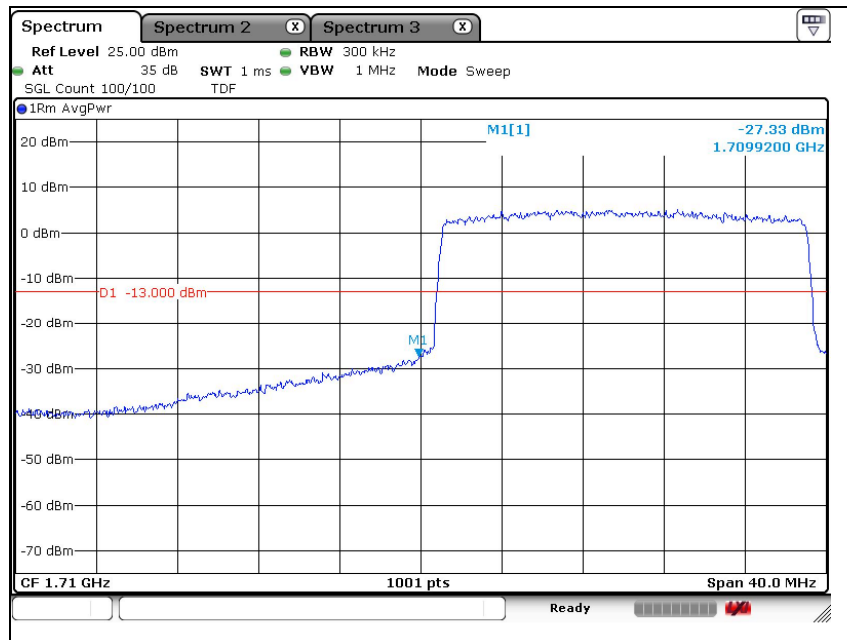
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

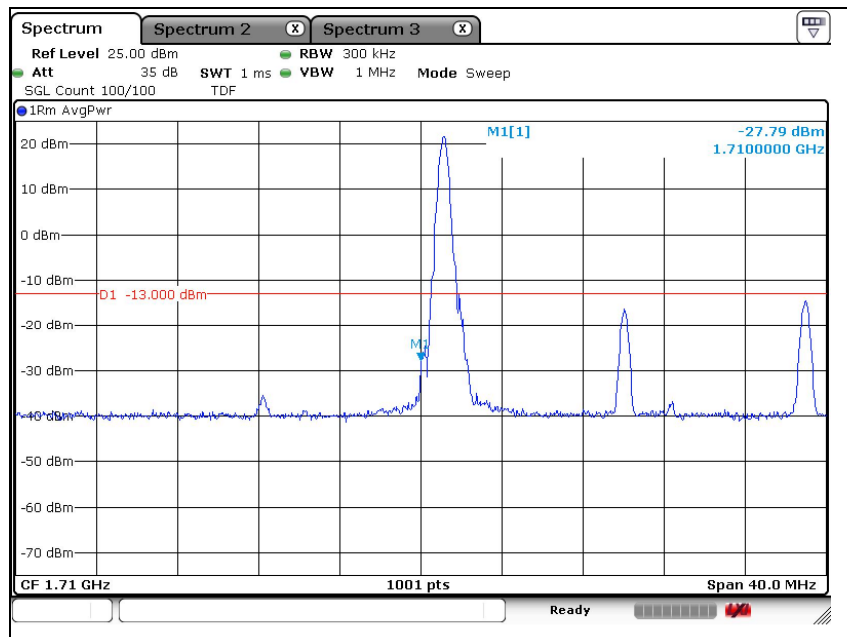
LTE band 66/4 (20 MHz – QPSK_Full RB)

Low Channel



LTE band 66/4 (20 MHz – QPSK_1 RB)

Low Channel



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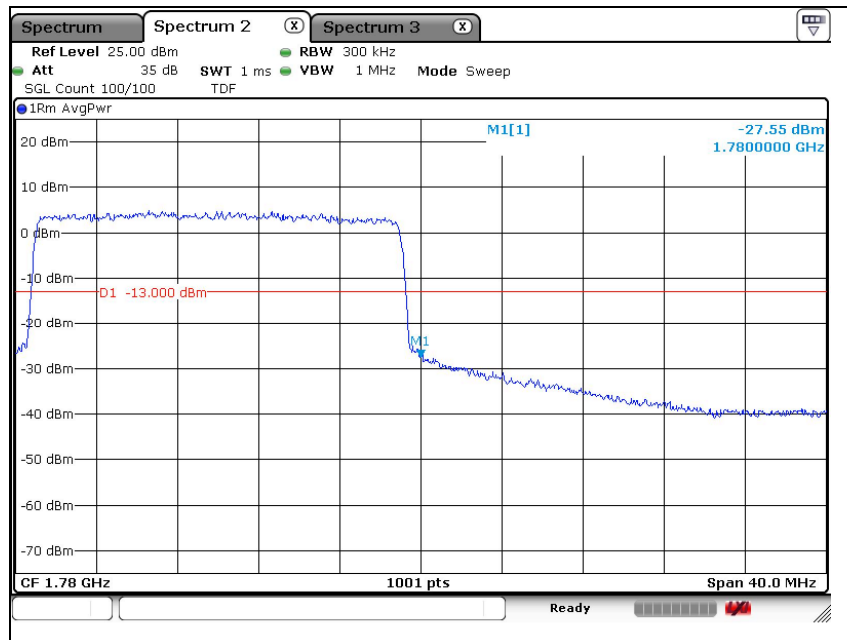
RTT5041-19(2019.04.24)(1)

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A4(210 mm x 297 mm)

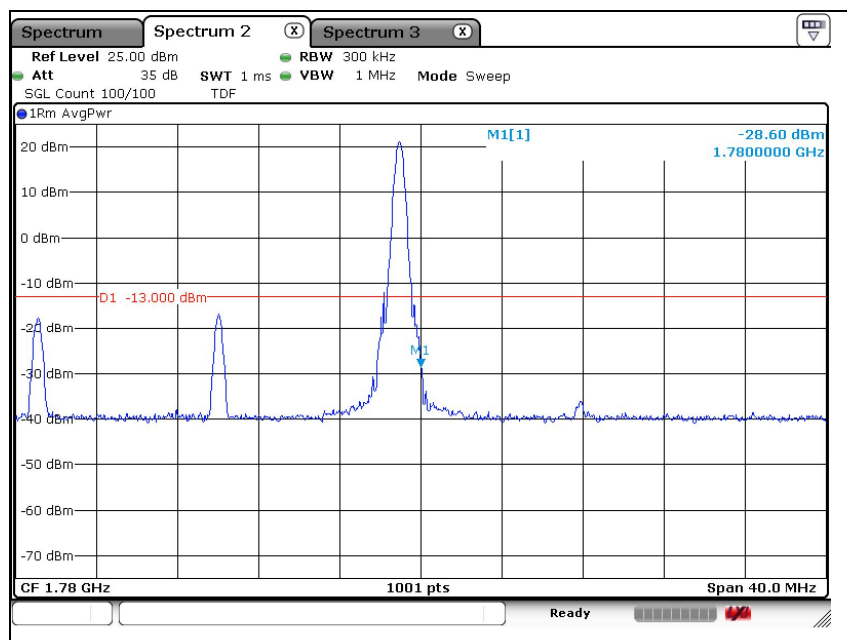
LTE band 66/4 (20 MHz – QPSK_Full RB)

High Channel



LTE band 66/4 (20 MHz – QPSK_1 RB)

High Channel



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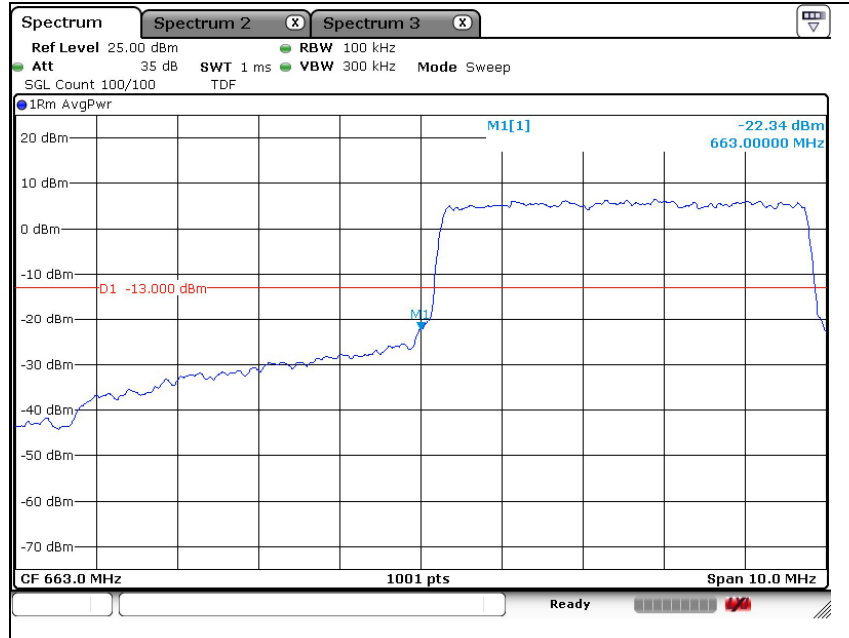
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

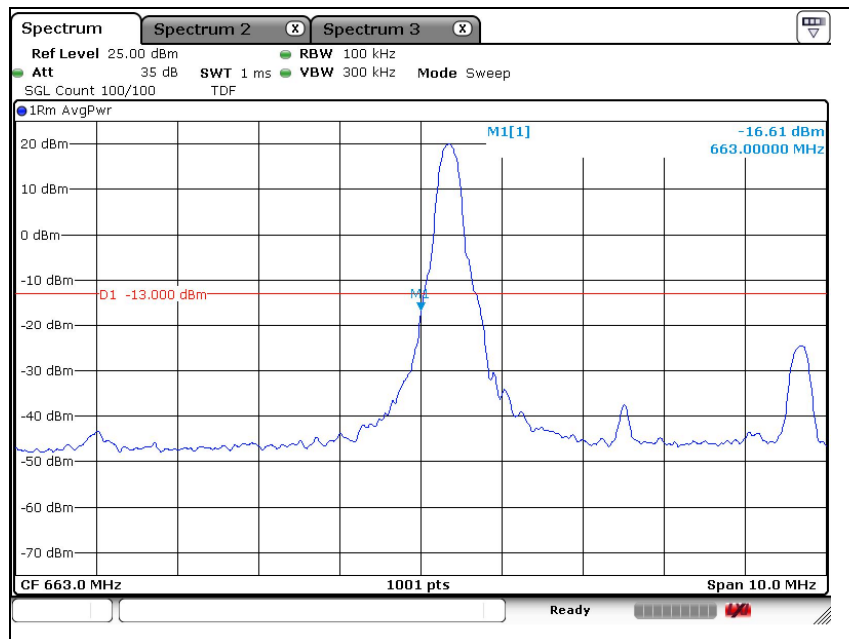
LTE band 71 (5 MHz – QPSK_Full RB)

Low Channel



LTE band 71 (5 MHz – QPSK_1 RB)

Low Channel



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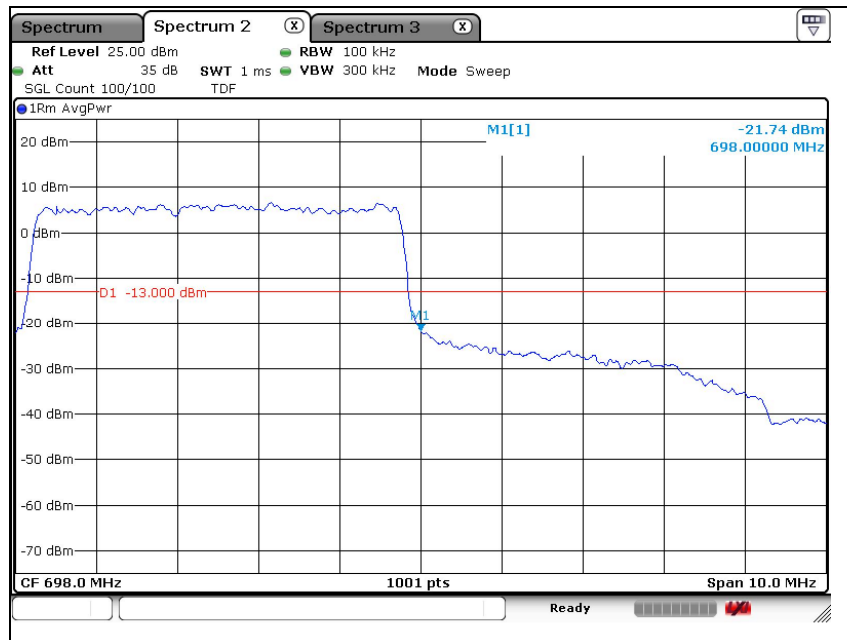
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

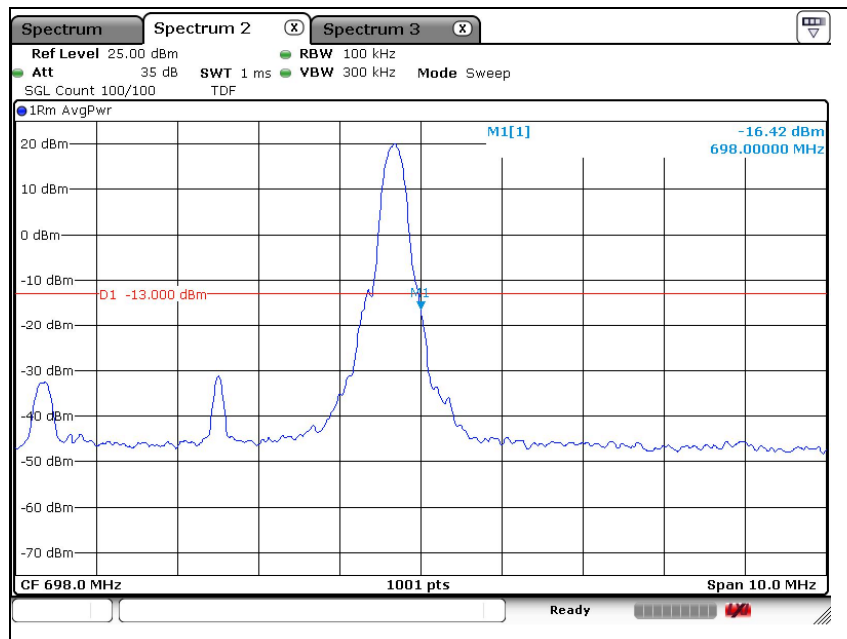
LTE band 71 (5 MHz – QPSK_Full RB)

High Channel



LTE band 71 (5 MHz – QPSK_1 RB)

High Channel



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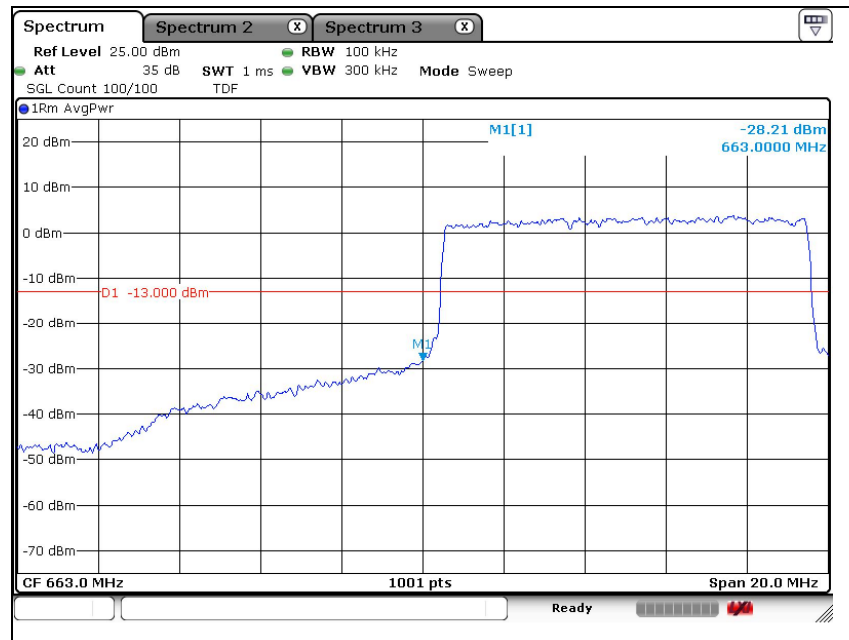
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

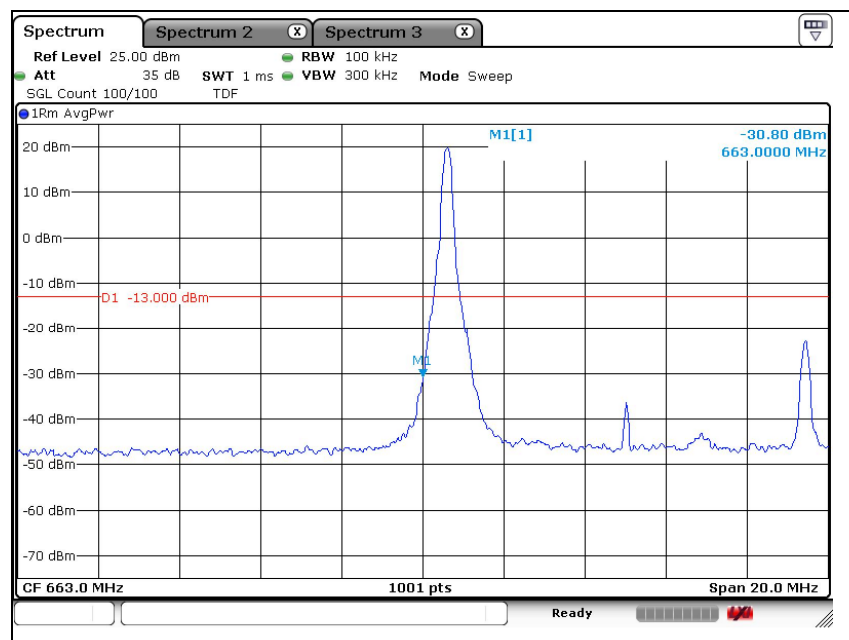
LTE band 71 (10 MHz – QPSK_Full RB)

Low Channel



LTE band 71 (10 MHz – QPSK_1 RB)

Low Channel



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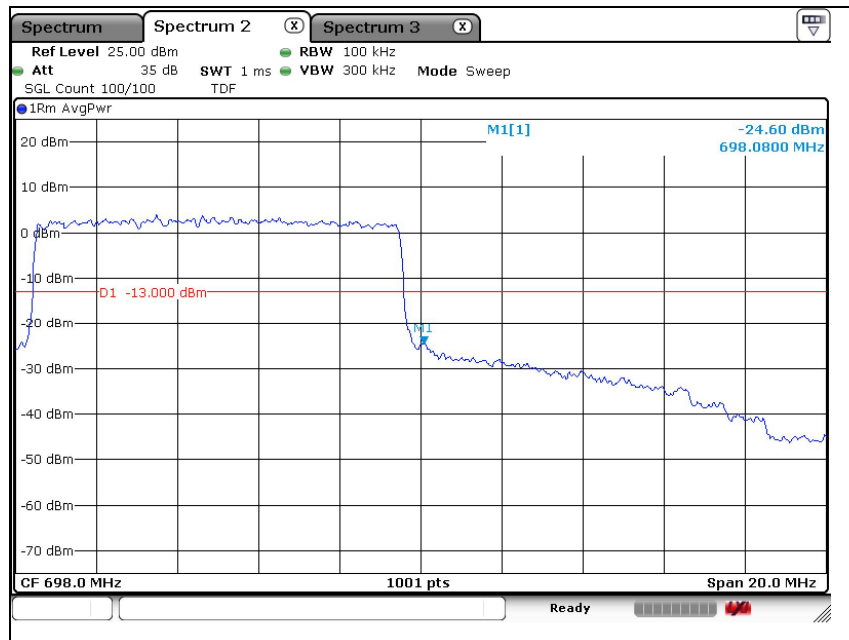
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

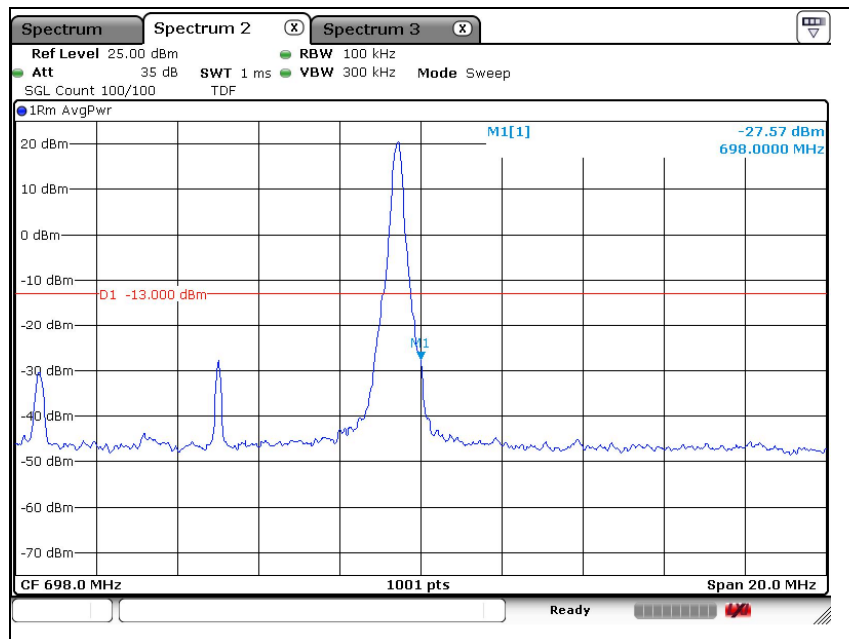
LTE band 71 (10 MHz – QPSK_Full RB)

High Channel



LTE band 71 (10 MHz – QPSK_1 RB)

High Channel



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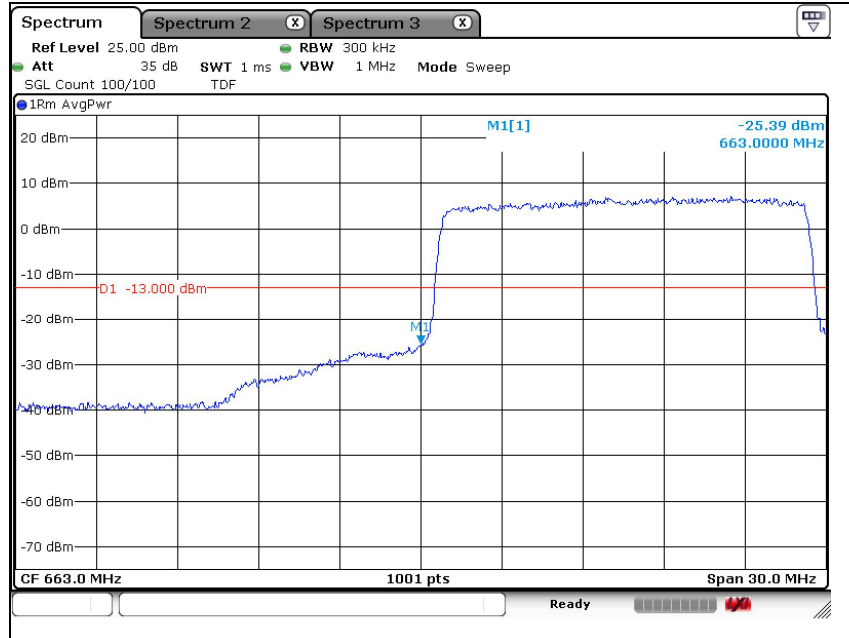
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

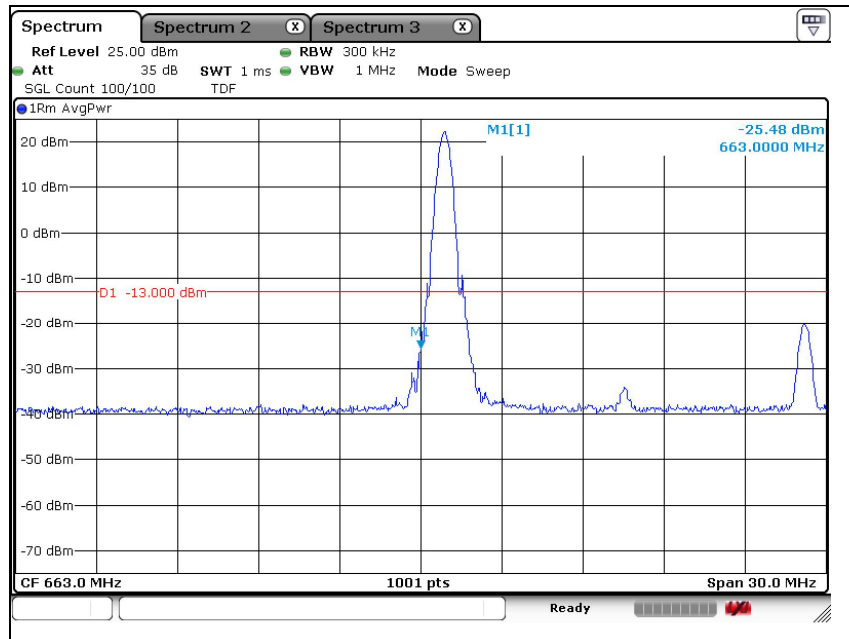
LTE band 71 (15 MHz – QPSK_Full RB)

Low Channel



LTE band 71 (15 MHz – QPSK_1 RB)

Low Channel



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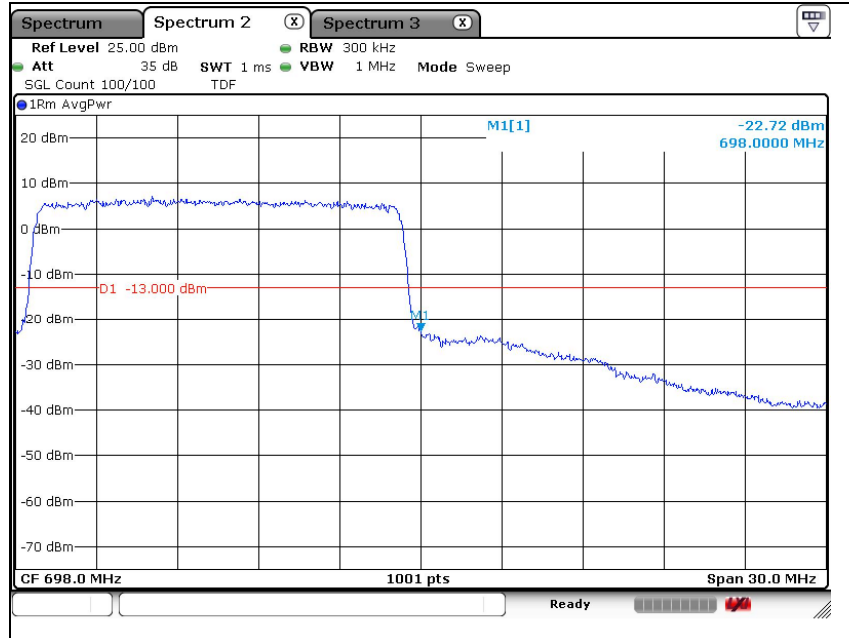
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

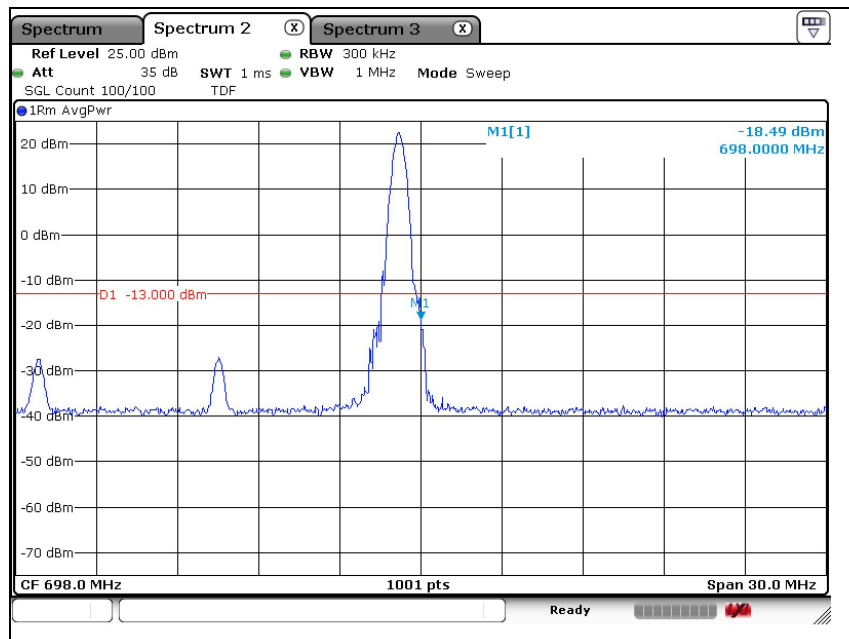
LTE band 71 (15 MHz – QPSK_Full RB)

High Channel



LTE band 71 (15 MHz – QPSK_1 RB)

High Channel



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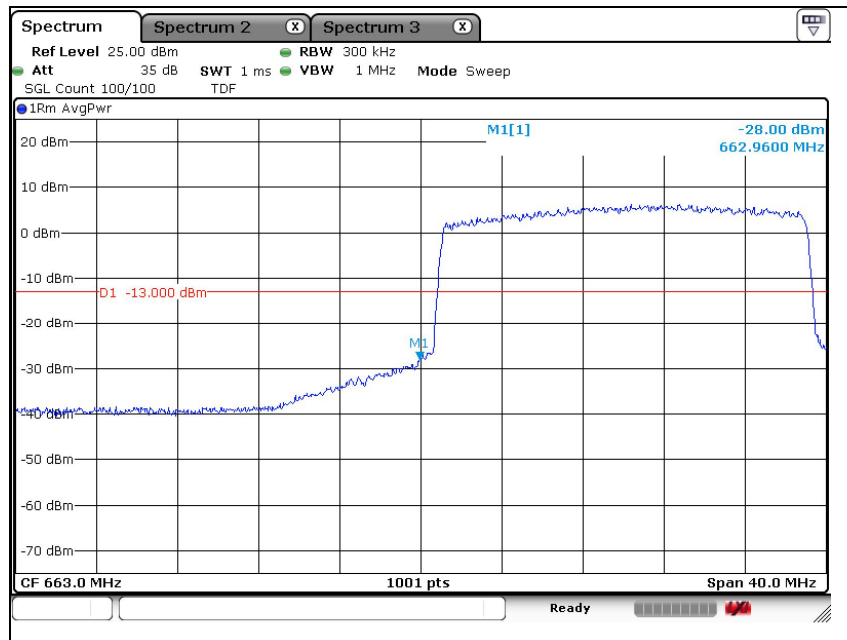
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

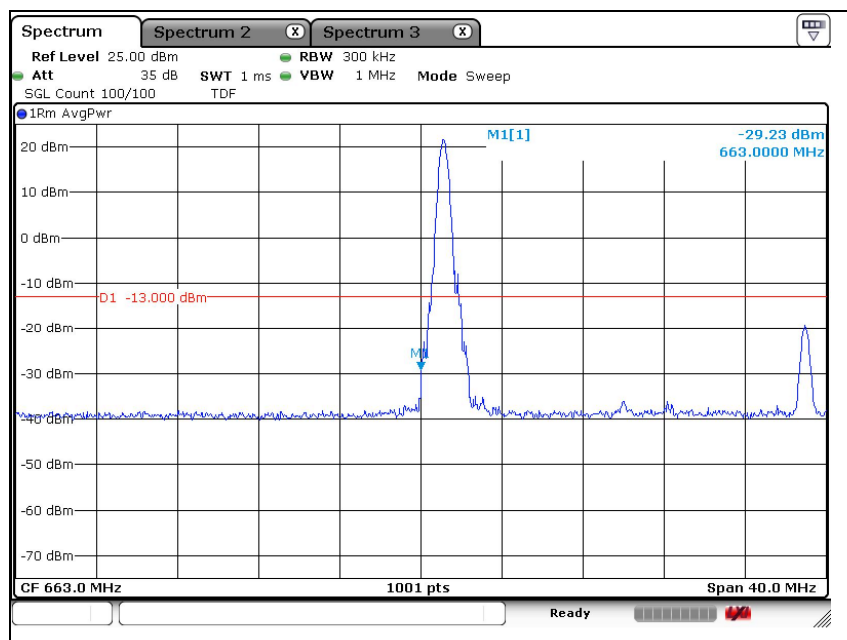
LTE band 71 (20 MHz – QPSK_Full RB)

Low Channel



LTE band 71 (20 MHz – QPSK_1 RB)

Low Channel



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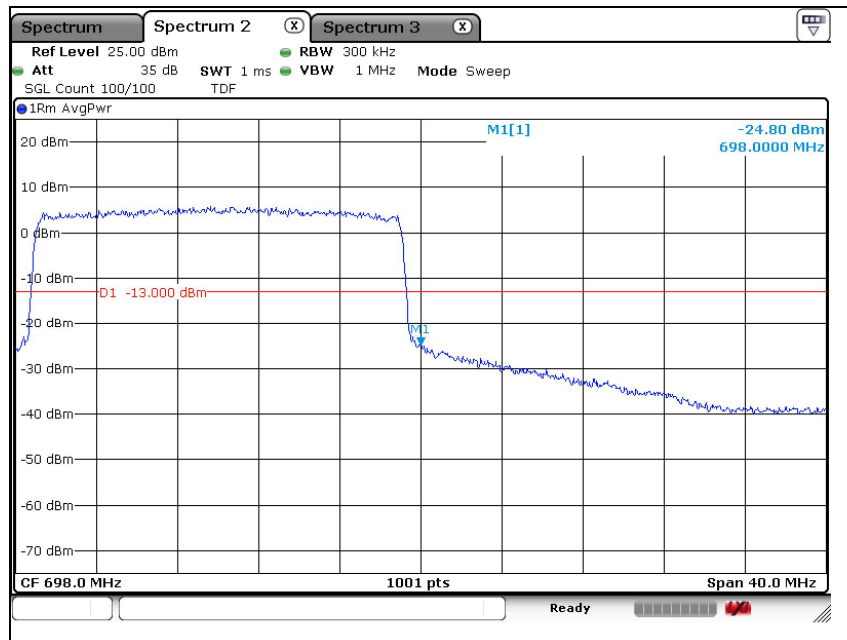
RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

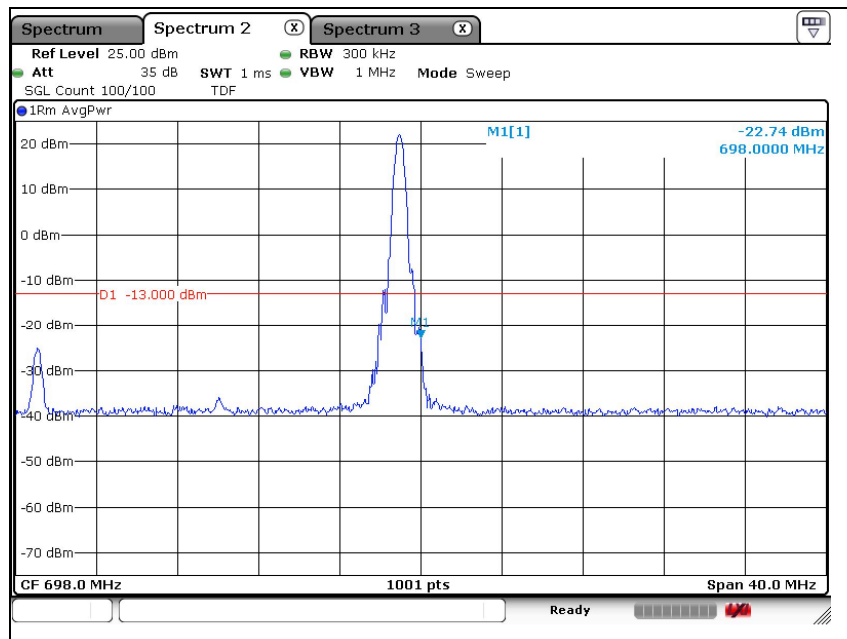
LTE band 71 (20 MHz – QPSK_Full RB)

High Channel



LTE band 71 (20 MHz – QPSK_1 RB)

High Channel



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Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

7. Frequency Stability

7.1. 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.

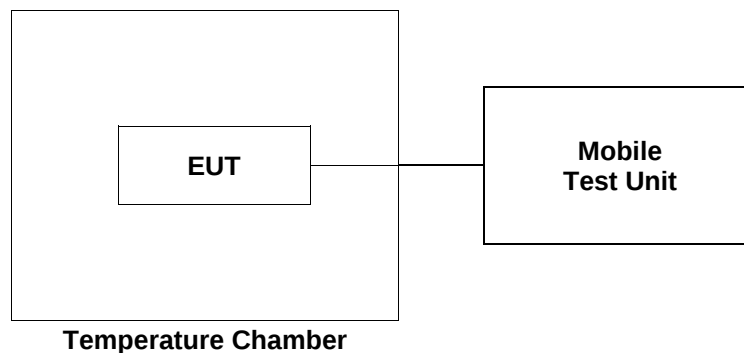
For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §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.

7.2. 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.



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Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

7.3. Test Results

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

LTE band 12 at middle channel

Reference Frequency: 707.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	1	0.001 4
40		-5	-0.007 1
30		2	0.002 8
23		-1	-0.001 4
10		2	0.002 8
0		-1	-0.001 4
-10		3	0.004 2
-20		2	0.002 8
-30		-2	-0.002 8
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	3	0.004 2
	3.23	-3	-0.004 2

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LTE band 25/2 at middle channel

Reference Frequency: 1 882.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	4	0.005 7
40		-1	-0.001 4
30		-3	-0.004 2
23		5	0.007 1
10		2	0.002 8
0		-4	-0.005 7
-10		-3	-0.004 2
-20		5	0.007 1
-30		-2	-0.002 8
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	-3	-0.004 2
	3.23	4	0.005 7

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LTE band 26/5 at middle channel

Reference Frequency: 836.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c.})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	2	0.002 4
40		-1	-0.001 2
30		-4	-0.004 8
23		3	0.003 6
10		-2	-0.002 4
0		4	0.004 8
-10		5	0.006 0
-20		2	0.002 4
-30		-2	-0.002 4
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c.})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	-3	-0.003 6
	3.23	-1	-0.001 2

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LTE band 41 at middle channel

Reference Frequency: 2593.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	2	0.000 8
40		4	0.001 5
30		-2	-0.000 8
23		-2	-0.000 8
10		4	0.001 5
0		3	0.001 2
-10		1	0.000 4
-20		-5	-0.001 9
-30		1	0.000 4
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	2	0.000 8
	3.23	-4	-0.001 5

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LTE band 66/4 at middle channel

Reference Frequency: 1745.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	-3	-0.001 7
40		-2	-0.001 1
30		5	0.002 9
23		1	0.000 6
10		-4	-0.002 3
0		2	0.001 1
-10		-2	-0.001 1
-20		4	0.002 3
-30		1	0.000 6
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	4	0.002 3
	3.23	1	0.000 6

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LTE band 71 at middle channel

Reference Frequency: 680.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	3.8	-3	-0.004 4
40		4	0.005 9
30		2	0.002 9
23		-2	-0.002 9
10		-1	-0.001 5
0		4	0.005 9
-10		2	0.002 9
-20		-3	-0.004 4
-30		3	0.004 4
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V _{d.c})	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	4.37	3	0.004 4
	3.23	-2	-0.002 9

- End of the Test Report -

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