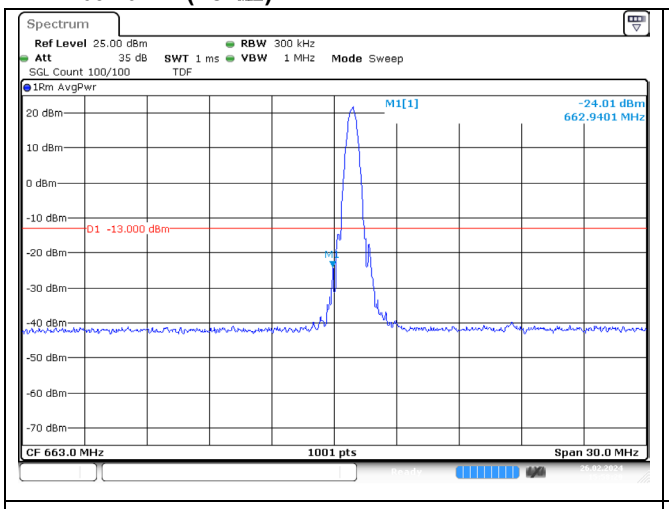
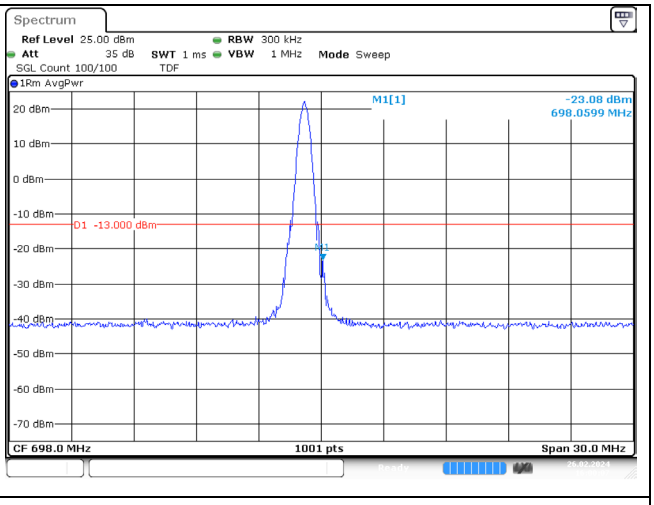
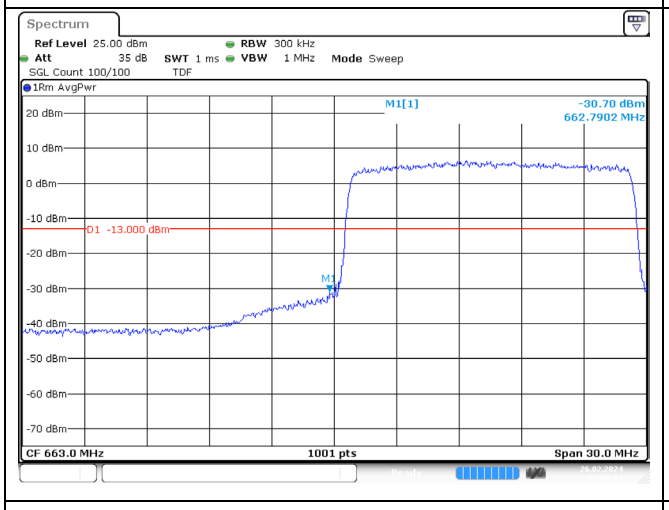
LTE band 71 (15 ㎒)



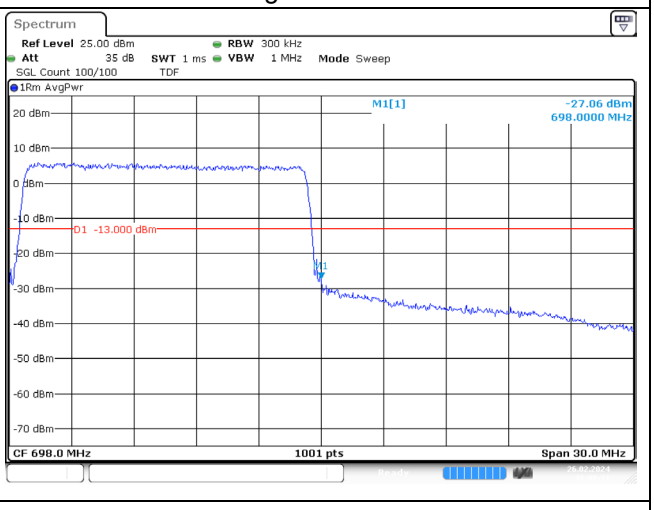
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

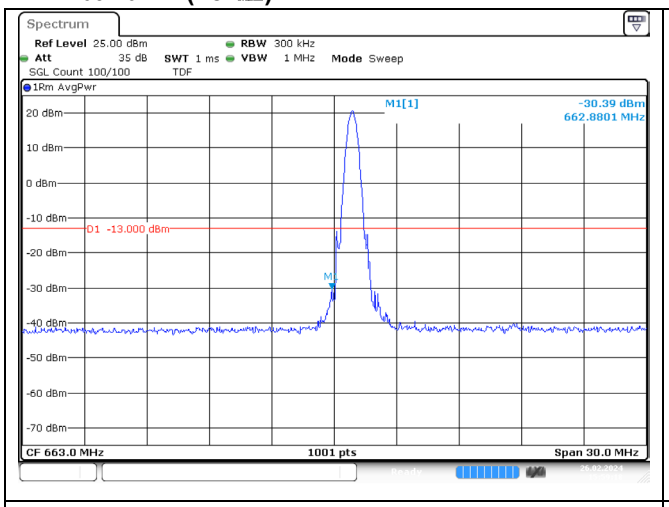


QPSK Low Channel - Full RB

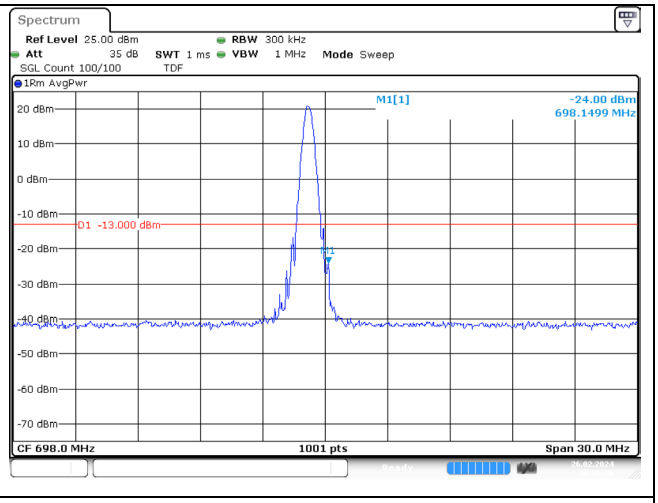


QPSK High Channel - Full RB

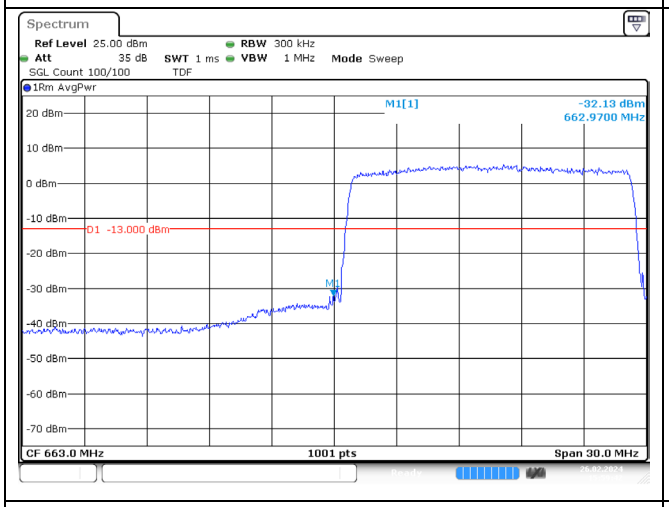
LTE band 71 (15 ㎒)



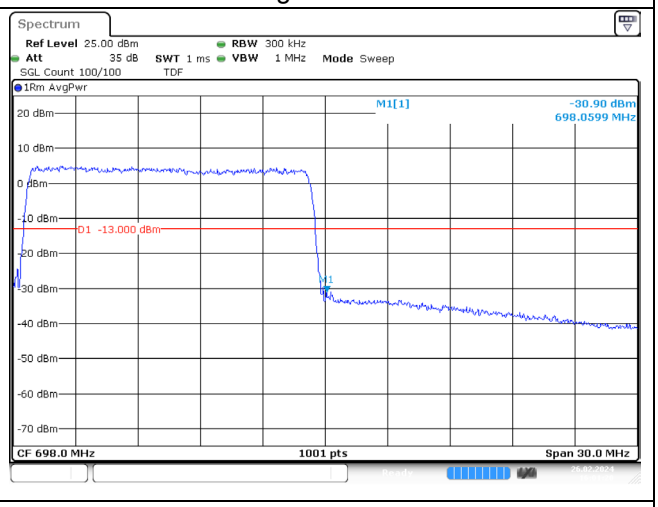
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB

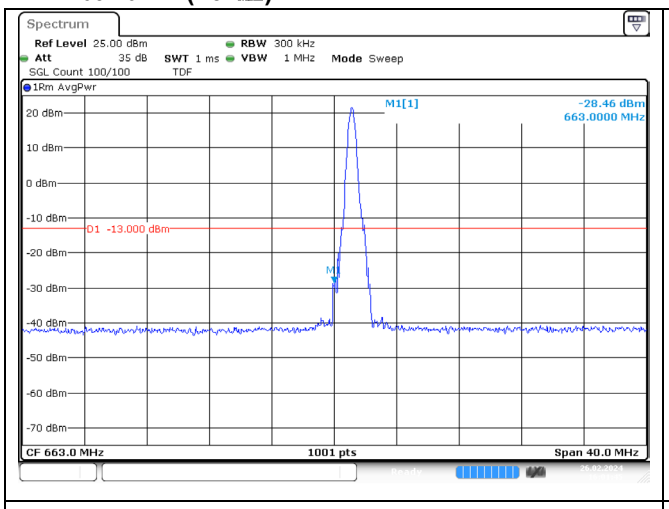


16QAM Low Channel - Full RB

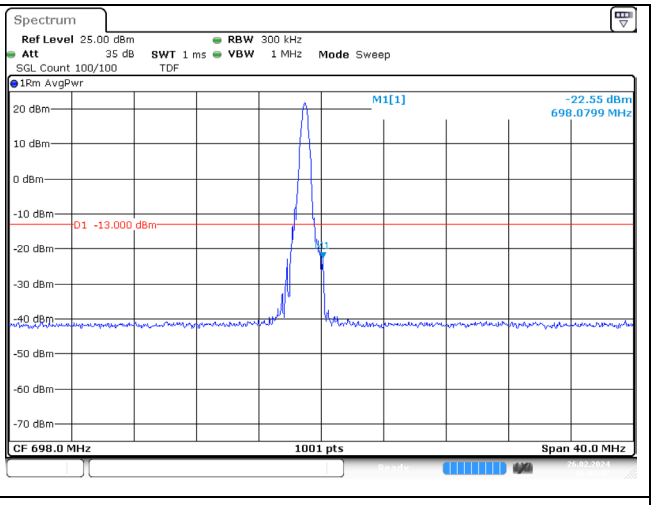


16QAM High Channel - Full RB

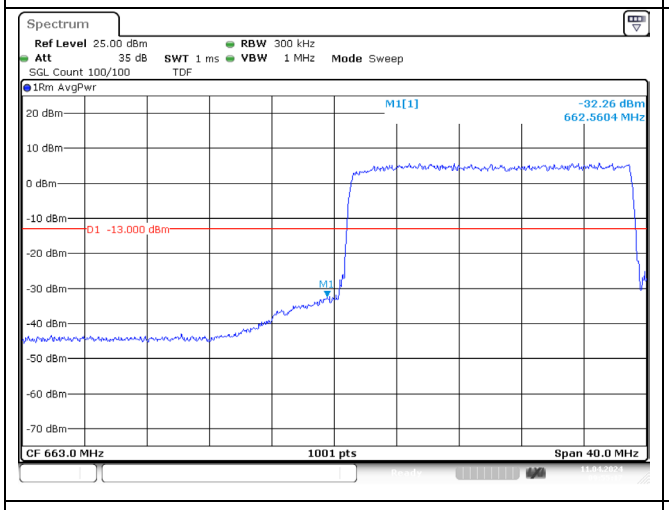
LTE band 71 (20 ㎒)



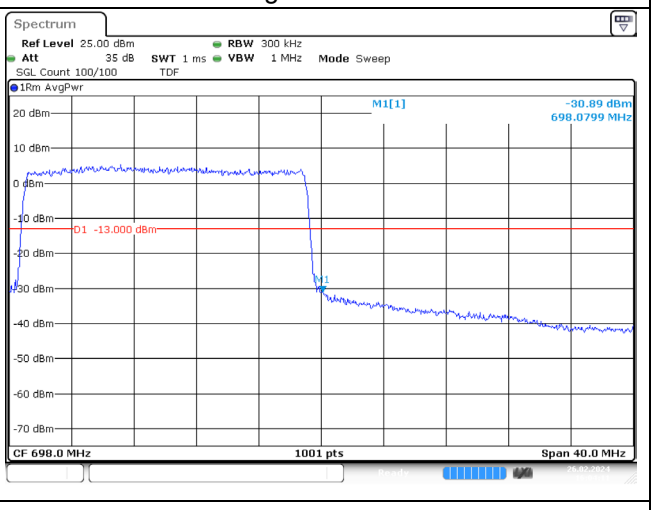
QPSK Low Channel - 1 RB



QPSK High Channel - 1 RB

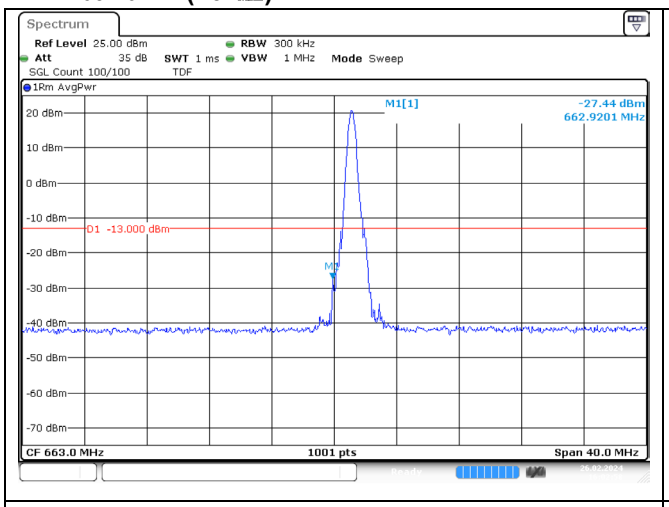


QPSK Low Channel - Full RB

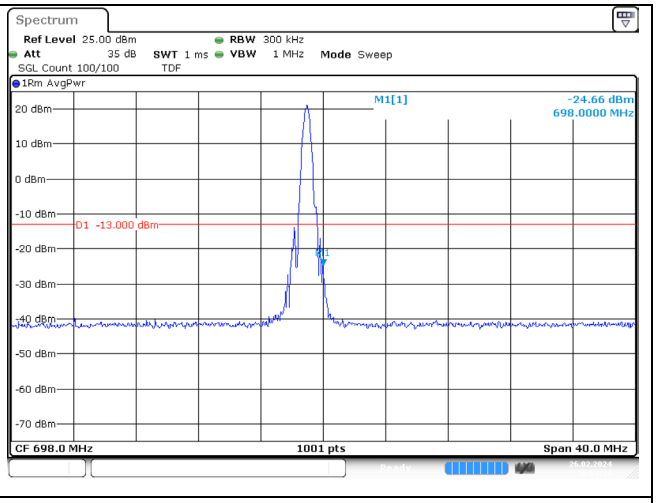


QPSK High Channel - Full RB

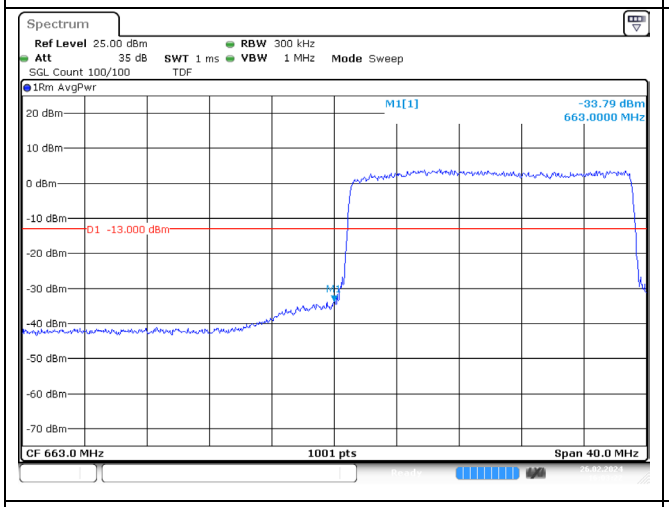
LTE band 71 (20 ㎒)



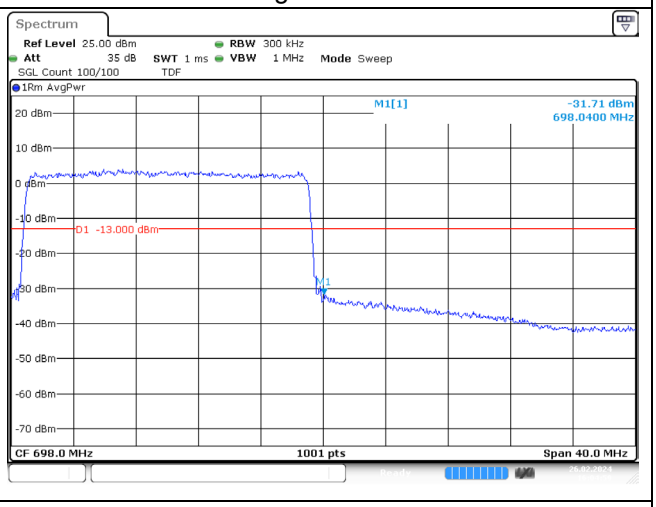
16QAM Low Channel - 1 RB



16QAM High Channel - 1 RB



16QAM Low Channel - Full 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.

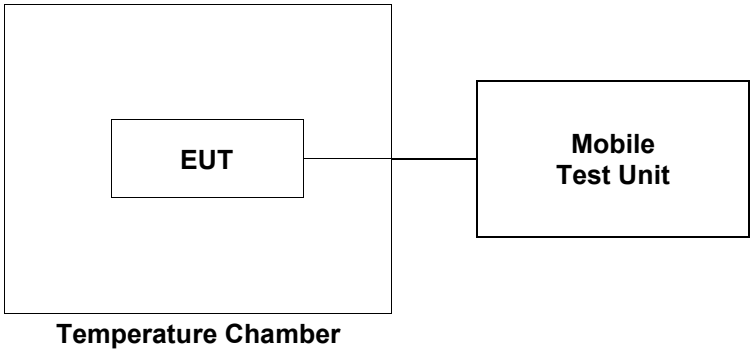
- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §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 12/17 at middle channel

Reference Frequency: 707.5 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	8.12	0.000 10
40		11.83	0.005 34
30		6.15	-0.002 69
20(Ref.)		8.05	-
10		4.38	-0.005 19
0		6.88	-0.001 65
-10		9.02	0.001 37
-20		14.20	0.008 69
-30		4.97	-0.004 35
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	11.07	0.004 27
	4.60 (115%)	9.66	0.002 28

LTE band 13 at middle channel

Reference Frequency: 782 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	6.21	-0.003 18
40		9.95	0.001 60
30		4.60	-0.005 24
20(Ref.)		8.70	-
10		1.35	-0.009 40
0		4.21	-0.005 74
-10		9.76	0.001 36
-20		12.68	0.005 09
-30		6.35	-0.003 01
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	11.01	0.002 95
	4.60 (115%)	9.58	0.001 13

LTE band 14 at middle channel

Reference Frequency: 793 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	5.82	0.004 62
40		7.78	0.007 09
30		13.04	0.013 72
20(Ref.)		2.16	-
10		8.62	0.008 15
0		4.99	0.003 57
-10		8.29	0.007 73
-20		9.90	0.009 76
-30		3.15	0.001 25
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	10.37	0.010 35
	4.60 (115%)	7.63	0.006 90

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 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

LTE band 71 at middle channel

Reference Frequency: 680.5 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	4.00	9.34	0.007 10
40		8.86	0.006 39
30		14.31	0.014 40
20(Ref.)		4.51	-
10		8.83	0.006 35
0		7.95	0.005 06
-10		9.32	0.007 07
-20		9.38	0.007 16
-30		7.81	0.004 85
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V)**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
20	3.40 (85%)	10.49	0.008 79
	4.60 (115%)	10.96	0.009 48

- End of the Test Report -