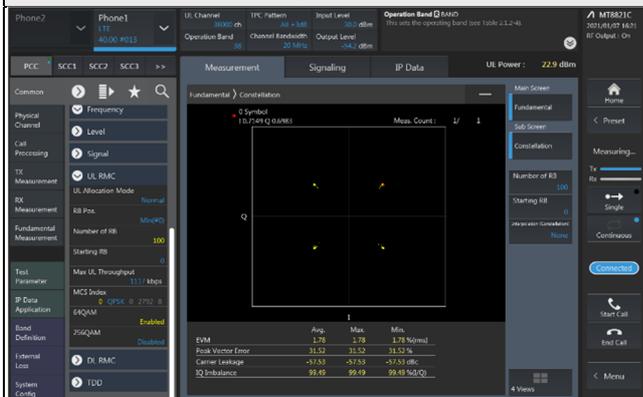


LTE Band 38

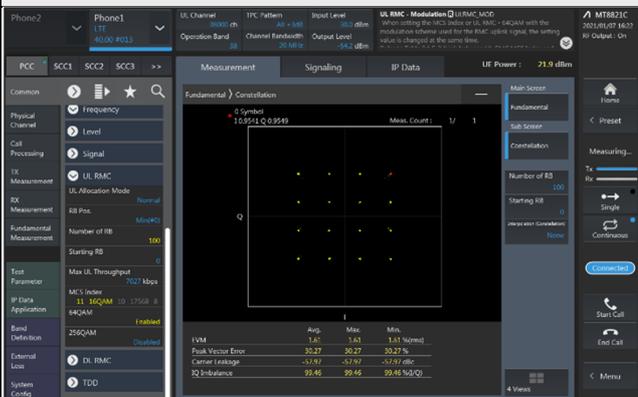
Spectrum Plot of Measurement Value

Channel: 38000 / Frequency (MHz): 2595.0MHz

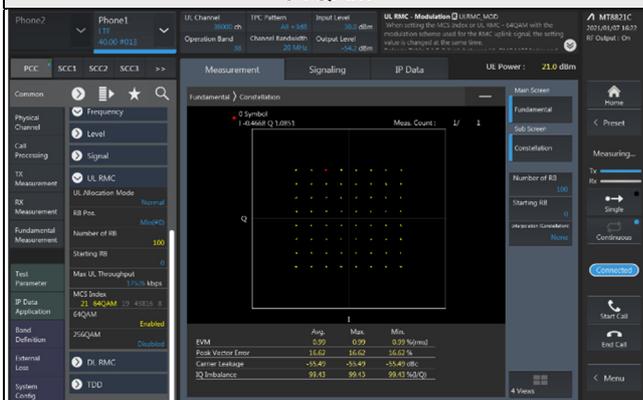
QPSK



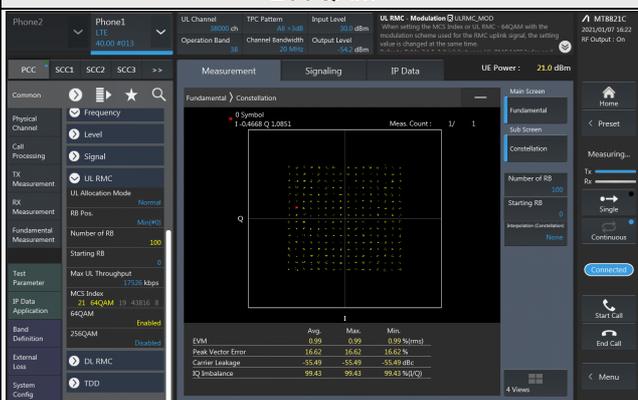
16QAM



64QAM



256QAM

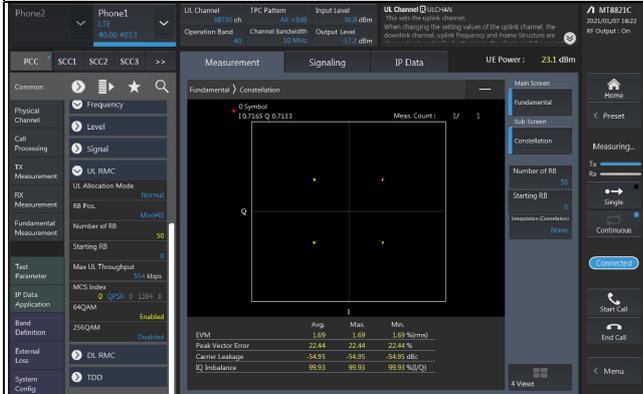


LTE Band 40 (2305MHz ~ 2315MHz)

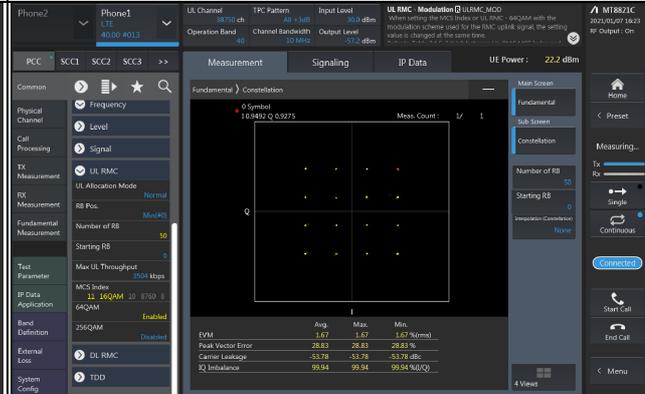
Spectrum Plot of Measurement Value

Channel: 38750 / Frequency (MHz): 2310.0MHz

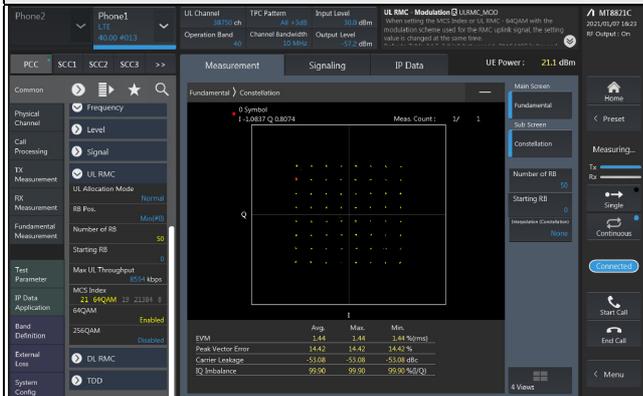
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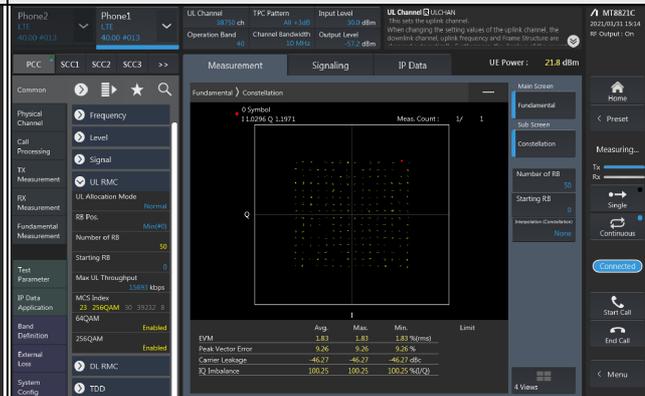
16QAM



64QAM



256QAM

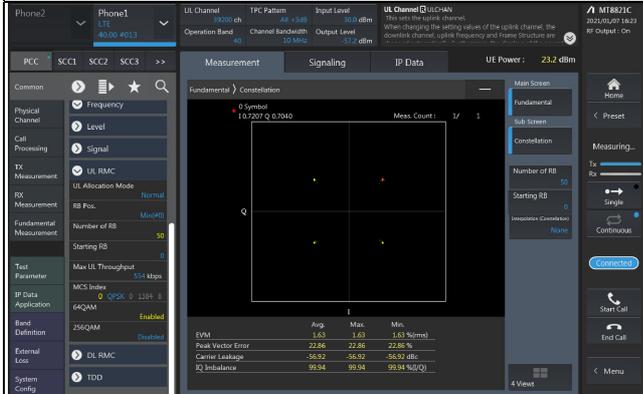


LTE Band 40 (2350MHz ~ 2360MHz)

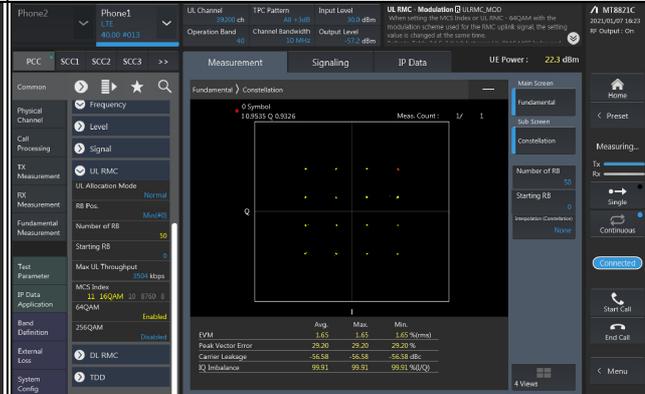
Spectrum Plot of Measurement Value

Channel: 39200 / Frequency (MHz): 2355.0MHz

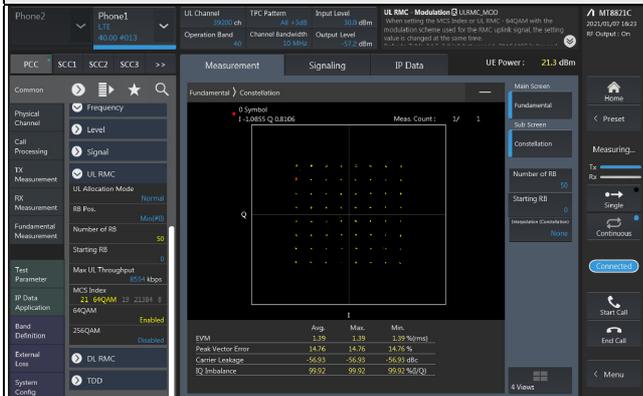
QPSK



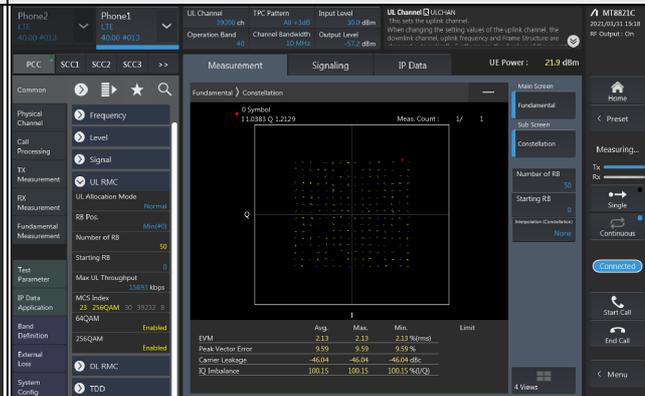
16QAM



64QAM



256QAM

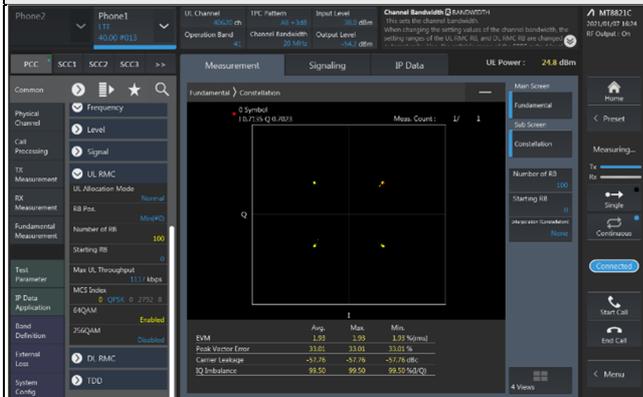


LTE Band 41

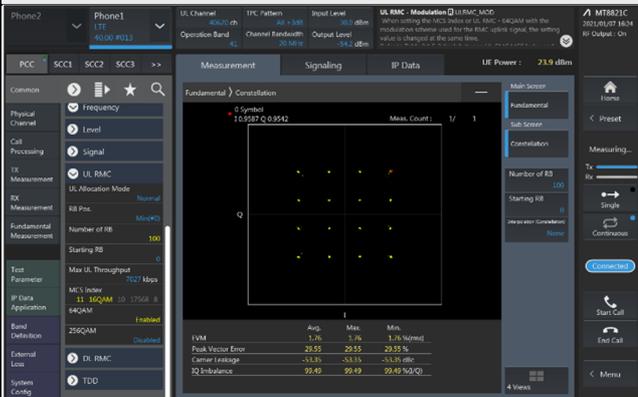
Spectrum Plot of Measurement Value

Channel: 40620 / Frequency (MHz): 2593.0MHz

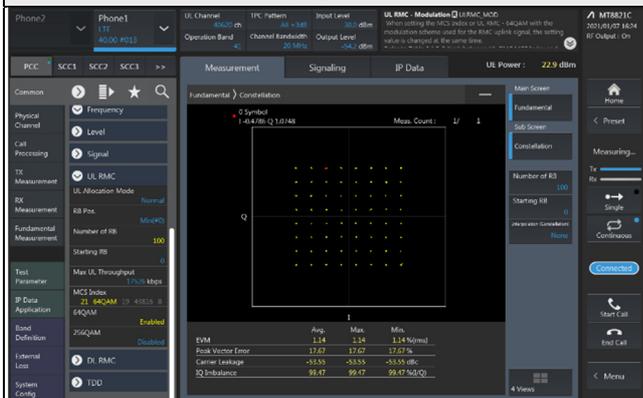
QPSK



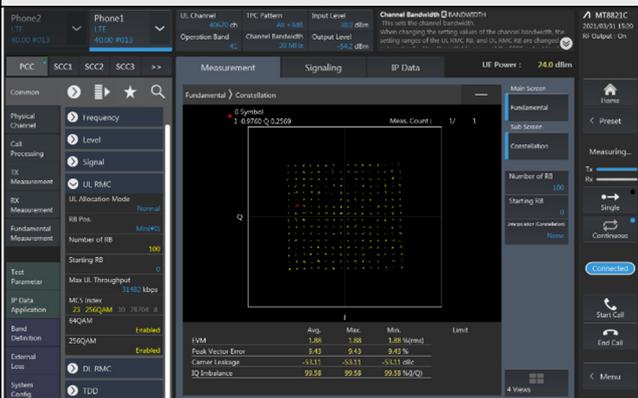
16QAM



64QAM



256QAM

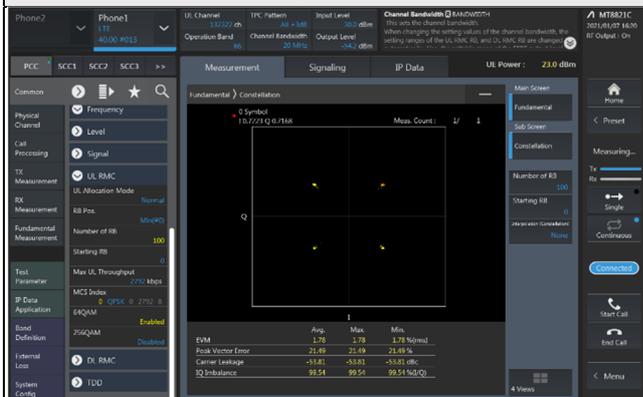


LTE Band 66

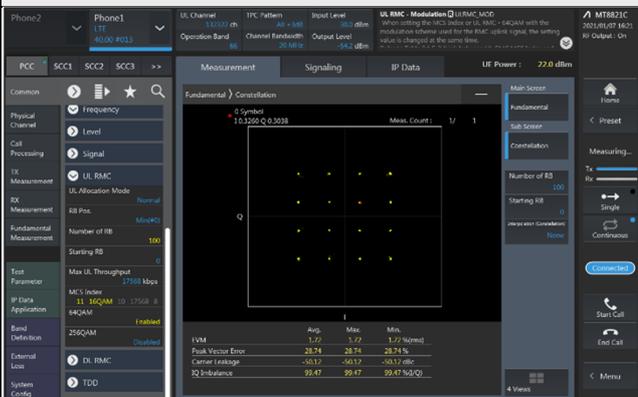
Spectrum Plot of Measurement Value

Channel: 132322 / Frequency (MHz): 1745.0MHz

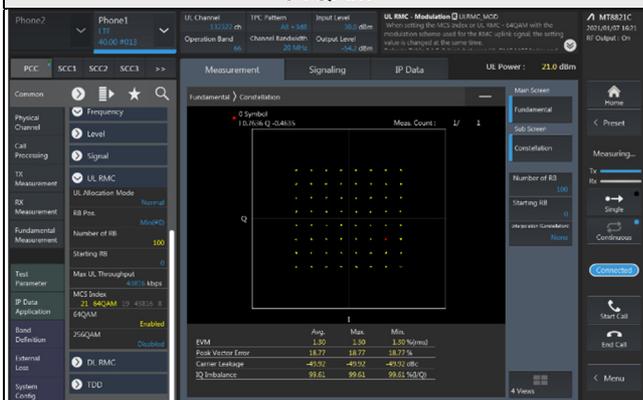
QPSK



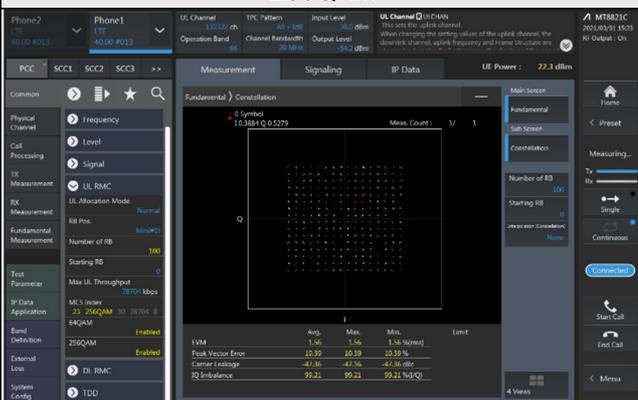
16QAM



64QAM



256QAM

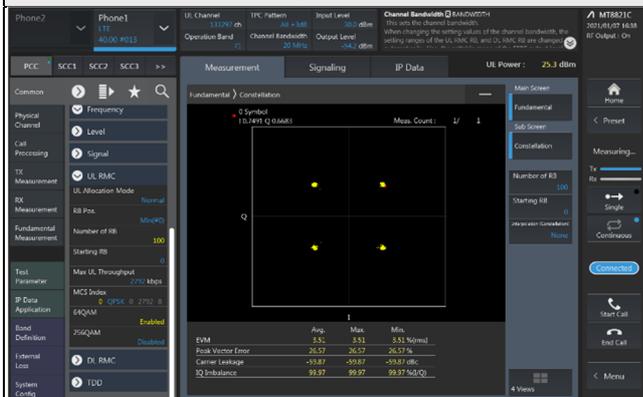


LTE Band 71

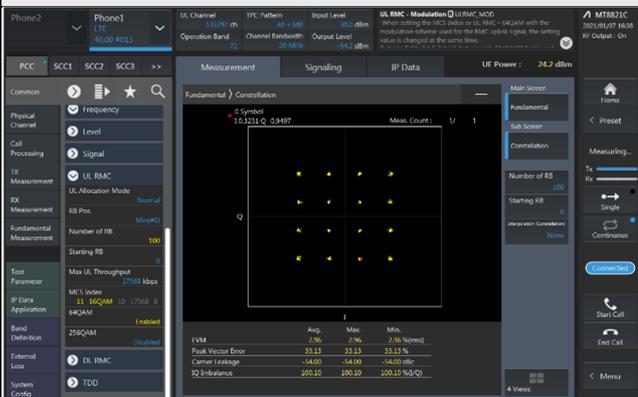
Spectrum Plot of Measurement Value

Channel: 133297 / Frequency (MHz): 680.5MHz

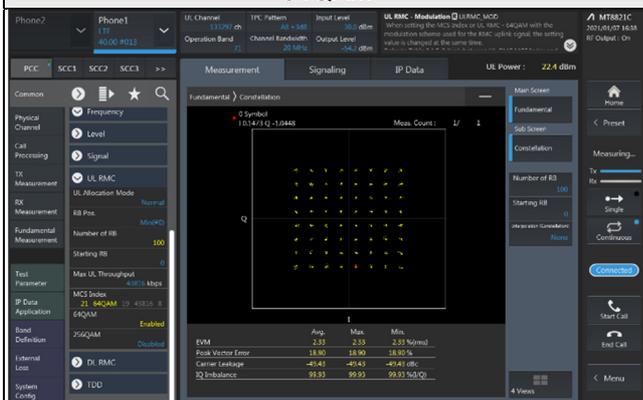
QPSK



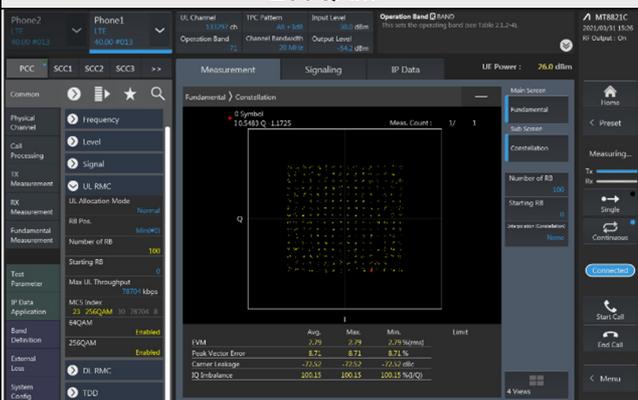
16QAM



64QAM



256QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

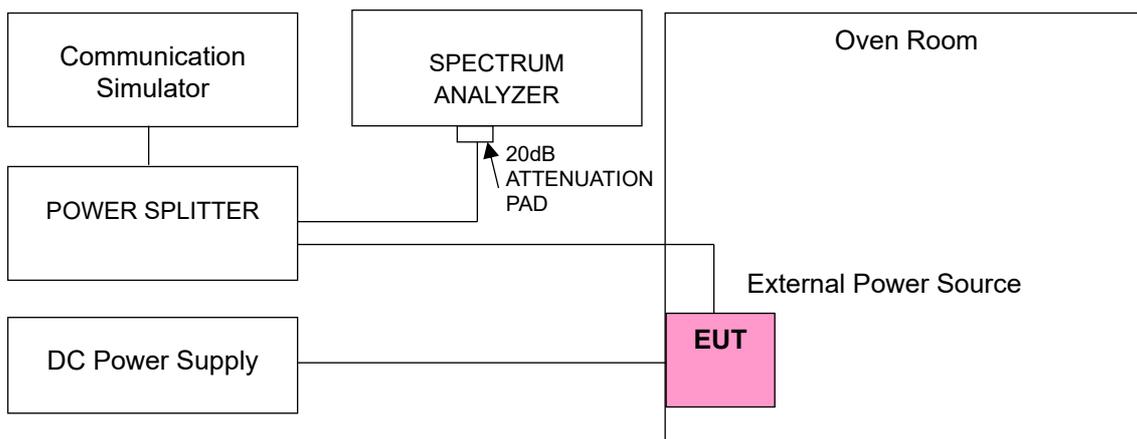
Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 28, 2020	Dec. 27, 2021
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Dec. 24, 2020	Dec. 23, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
DC Power Supply Topward	6306A	727263	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.4 Test Setup



4.3.5 Test Results

Frequency Error vs. Voltage

Voltage (Vdc)	WCDMA Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1712.400003	0.002	1752.600003	0.002
6.58	1712.400003	0.002	1752.600001	0.001
8.90	1712.400005	0.003	1752.600004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.400005	0.003	1752.600003	0.002
-20	1712.400004	0.002	1752.600002	0.001
-10	1712.400005	0.003	1752.600002	0.001
0	1712.400002	0.001	1752.600003	0.002
10	1712.400005	0.003	1752.600004	0.002
20	1712.399999	-0.001	1752.599995	-0.003
30	1712.399996	-0.002	1752.599999	-0.001
40	1712.399996	-0.002	1752.599999	-0.001
50	1712.399998	-0.001	1752.599998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1710.700003	0.002	1754.300004	0.002
6.58	1710.700003	0.002	1754.300005	0.003
8.90	1710.700004	0.002	1754.300002	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.700002	0.001	1754.300002	0.001
-20	1710.700005	0.003	1754.300003	0.002
-10	1710.700003	0.002	1754.300003	0.002
0	1710.700005	0.003	1754.300003	0.002
10	1710.700005	0.003	1754.300001	0.001
20	1710.699996	-0.002	1754.299997	-0.002
30	1710.699996	-0.002	1754.299999	-0.001
40	1710.699996	-0.002	1754.299998	-0.001
50	1710.699997	-0.002	1754.299997	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1711.500002	0.001	1753.500004	0.002
6.58	1711.500004	0.002	1753.500004	0.002
8.90	1711.500002	0.001	1753.500004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1711.500002	0.001	1753.500002	0.001
-20	1711.500002	0.001	1753.500001	0.001
-10	1711.500002	0.001	1753.500001	0.001
0	1711.500003	0.002	1753.500003	0.002
10	1711.500003	0.002	1753.500001	0.001
20	1711.499995	-0.003	1753.499995	-0.003
30	1711.499998	-0.001	1753.499997	-0.002
40	1711.499999	-0.001	1753.499997	-0.002
50	1711.499998	-0.001	1753.499997	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1712.500004	0.002	1752.500002	0.001
6.58	1712.500002	0.001	1752.500004	0.002
8.90	1712.500003	0.002	1752.500003	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500004	0.002	1752.500005	0.003
-20	1712.500004	0.002	1752.500004	0.002
-10	1712.500001	0.001	1752.500001	0.001
0	1712.500003	0.002	1752.500005	0.003
10	1712.500001	0.001	1752.500001	0.001
20	1712.499995	-0.003	1752.499997	-0.002
30	1712.499997	-0.002	1752.499999	-0.001
40	1712.499995	-0.003	1752.499996	-0.002
50	1712.499998	-0.001	1752.499995	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1715.000004	0.002	1750.000002	0.001
6.58	1715.000004	0.002	1750.000003	0.002
8.90	1715.000004	0.002	1750.000005	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1715.000002	0.001	1750.000003	0.002
-20	1715.000003	0.002	1750.000001	0.001
-10	1715.000001	0.001	1750.000002	0.001
0	1715.000003	0.002	1750.000004	0.002
10	1715.000004	0.002	1750.000003	0.002
20	1714.999999	-0.001	1749.999995	-0.003
30	1714.999995	-0.003	1749.999996	-0.002
40	1714.999995	-0.003	1749.999995	-0.003
50	1714.999998	-0.001	1749.999996	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1717.500002	0.001	1747.500001	0.001
6.58	1717.500001	0.001	1747.500003	0.002
8.90	1717.500002	0.001	1747.500004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1717.500002	0.001	1747.500005	0.003
-20	1717.500002	0.001	1747.500002	0.001
-10	1717.500001	0.001	1747.500003	0.002
0	1717.500003	0.002	1747.500005	0.003
10	1717.500004	0.002	1747.500004	0.002
20	1717.499999	-0.001	1747.499999	-0.001
30	1717.499995	-0.003	1747.499999	-0.001
40	1717.499997	-0.002	1747.499998	-0.001
50	1717.499998	-0.001	1747.499997	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1720.000001	0.001	1745.000005	0.003
6.58	1720.000001	0.001	1745.000005	0.003
8.90	1720.000005	0.003	1745.000002	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1720.000005	0.003	1745.000003	0.002
-20	1720.000005	0.003	1745.000005	0.003
-10	1720.000004	0.002	1745.000002	0.001
0	1720.000004	0.002	1745.000001	0.001
10	1720.000002	0.001	1745.000004	0.002
20	1719.999997	-0.002	1744.999998	-0.001
30	1719.999995	-0.003	1744.999996	-0.002
40	1719.999999	-0.001	1744.999998	-0.001
50	1719.999998	-0.001	1744.999999	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2502.500003	0.001	2567.500005	0.002
6.58	2502.500005	0.002	2567.500001	0.000
8.90	2502.500005	0.002	2567.500004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2502.500001	0.000	2567.500005	0.002
-20	2502.500005	0.002	2567.500005	0.002
-10	2502.500003	0.001	2567.500005	0.002
0	2502.500005	0.002	2567.500005	0.002
10	2502.500005	0.002	2567.500005	0.002
20	2502.499997	-0.001	2567.499999	0.000
30	2502.499999	0.000	2567.499997	-0.001
40	2502.499998	-0.001	2567.499998	-0.001
50	2502.499999	0.000	2567.499999	0.000

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2505.000003	0.001	2565.000003	0.001
6.58	2505.000001	0.000	2565.000003	0.001
8.90	2505.000002	0.001	2565.000001	0.000

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2505.000001	0.000	2565.000001	0.000
-20	2505.000003	0.001	2565.000004	0.002
-10	2505.000005	0.002	2565.000002	0.001
0	2505.000004	0.002	2565.000003	0.001
10	2505.000002	0.001	2565.000002	0.001
20	2504.999995	-0.002	2564.999997	-0.001
30	2504.999999	0.000	2564.999997	-0.001
40	2504.999999	0.000	2564.999999	0.000
50	2504.999999	0.000	2564.999997	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2507.500005	0.002	2562.500003	0.001
6.58	2507.500003	0.001	2562.500005	0.002
8.90	2507.500004	0.002	2562.500001	0.000

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2507.500003	0.001	2562.500002	0.001
-20	2507.500005	0.002	2562.500002	0.001
-10	2507.500001	0.000	2562.500001	0.000
0	2507.500003	0.001	2562.500002	0.001
10	2507.500003	0.001	2562.500003	0.001
20	2507.499995	-0.002	2562.499996	-0.002
30	2507.499997	-0.001	2562.499995	-0.002
40	2507.499998	-0.001	2562.499997	-0.001
50	2507.499997	-0.001	2562.499997	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2510.000004	0.002	2560.000001	0.000
6.58	2510.000001	0.000	2560.000005	0.002
8.90	2510.000004	0.002	2560.000001	0.000

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 7			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2510.000003	0.001	2560.000003	0.001
-20	2510.000001	0.000	2560.000001	0.000
-10	2510.000003	0.001	2560.000004	0.002
0	2510.000002	0.001	2560.000003	0.001
10	2510.000003	0.001	2560.000004	0.002
20	2509.999997	-0.001	2559.999997	-0.001
30	2509.999998	-0.001	2559.999997	-0.001
40	2509.999995	-0.002	2559.999998	-0.001
50	2509.999998	-0.001	2559.999995	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	699.700002	0.003	715.300004	0.006
6.58	699.700005	0.007	715.300005	0.007
8.90	699.700004	0.006	715.300002	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	699.700005	0.007	715.300002	0.003
-20	699.700004	0.006	715.300001	0.001
-10	699.700004	0.006	715.300002	0.003
0	699.700001	0.001	715.300004	0.006
10	699.700005	0.007	715.300002	0.003
20	699.699999	-0.001	715.299998	-0.003
30	699.699995	-0.007	715.299995	-0.007
40	699.699998	-0.003	715.299995	-0.007
50	699.699996	-0.006	715.299995	-0.007

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	700.500005	0.007	714.500002	0.003
6.58	700.500001	0.001	714.500001	0.001
8.90	700.500005	0.007	714.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	700.500004	0.006	714.500001	0.001
-20	700.500003	0.004	714.500004	0.006
-10	700.500004	0.006	714.500005	0.007
0	700.500003	0.004	714.500003	0.004
10	700.500004	0.006	714.500002	0.003
20	700.499998	-0.003	714.499995	-0.007
30	700.499998	-0.003	714.499995	-0.007
40	700.499996	-0.006	714.499997	-0.004
50	700.499996	-0.006	714.499997	-0.004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	701.500005	0.007	713.500001	0.001
6.58	701.500004	0.006	713.500005	0.007
8.90	701.500005	0.007	713.500002	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	701.500002	0.003	713.500004	0.006
-20	701.500004	0.006	713.500002	0.003
-10	701.500003	0.004	713.500005	0.007
0	701.500003	0.004	713.500002	0.003
10	701.500005	0.007	713.500005	0.007
20	701.499997	-0.004	713.499997	-0.004
30	701.499995	-0.007	713.499996	-0.006
40	701.499997	-0.004	713.499999	-0.001
50	701.499999	-0.001	713.499997	-0.004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	704.000001	0.001	711.000003	0.004
6.58	704.000004	0.006	711.000003	0.004
8.90	704.000005	0.007	711.000001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	704.000001	0.001	711.000001	0.001
-20	704.000001	0.001	711.000003	0.004
-10	704.000001	0.001	711.000005	0.007
0	704.000003	0.004	711.000004	0.006
10	704.000004	0.006	711.000001	0.001
20	703.999998	-0.003	710.999999	-0.001
30	703.999996	-0.006	710.999999	-0.001
40	703.999997	-0.004	710.999999	-0.001
50	703.999998	-0.003	710.999998	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 13			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	779.500003	0.004	784.500005	0.006
6.58	779.500004	0.005	784.500004	0.005
8.90	779.500005	0.006	784.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 13			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	779.500001	0.001	784.500003	0.004
-20	779.500002	0.003	784.500003	0.004
-10	779.500003	0.004	784.500001	0.001
0	779.500002	0.003	784.500001	0.001
10	779.500005	0.006	784.500004	0.005
20	779.499998	-0.003	784.499998	-0.003
30	779.499997	-0.004	784.499998	-0.003
40	779.499997	-0.004	784.499995	-0.006
50	779.499995	-0.006	784.499999	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 13	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
7.74	782.000001	0.001
6.58	782.000005	0.006
8.90	782.000003	0.004

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 13	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	782.000002	0.003
-20	782.000005	0.006
-10	782.000002	0.003
0	782.000003	0.004
10	782.000004	0.005
20	781.999998	-0.003
30	781.999998	-0.003
40	781.999996	-0.005
50	781.999998	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 17			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	706.500003	0.004	713.500003	0.004
6.58	706.500001	0.001	713.500002	0.003
8.90	706.500005	0.007	713.500002	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 17			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	706.500004	0.006	713.500001	0.001
-20	706.500005	0.007	713.500002	0.003
-10	706.500004	0.006	713.500003	0.004
0	706.500004	0.006	713.500003	0.004
10	706.500002	0.003	713.500003	0.004
20	706.499996	-0.006	713.499997	-0.004
30	706.499996	-0.006	713.499995	-0.007
40	706.499996	-0.006	713.499996	-0.006
50	706.499996	-0.006	713.499995	-0.007

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 17			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	709.000005	0.007	711.000001	0.001
6.58	709.000004	0.006	711.000001	0.001
8.90	709.000005	0.007	711.000003	0.004

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 17			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	709.000005	0.007	711.000001	0.001
-20	709.000002	0.003	711.000004	0.006
-10	709.000003	0.004	711.000003	0.004
0	709.000001	0.001	711.000003	0.004
10	709.000001	0.001	711.000001	0.001
20	708.999996	-0.006	710.999997	-0.004
30	708.999999	-0.001	710.999995	-0.007
40	708.999995	-0.007	710.999996	-0.006
50	708.999996	-0.006	710.999995	-0.007

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 30			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2307.500001	0.000	2312.500003	0.001
6.58	2307.500003	0.001	2312.500004	0.002
8.90	2307.500003	0.001	2312.500001	0.000

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 30			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2307.500003	0.001	2312.500004	0.002
-20	2307.500003	0.001	2312.500005	0.002
-10	2307.500003	0.001	2312.500003	0.001
0	2307.500002	0.001	2312.500002	0.001
10	2307.500002	0.001	2312.500002	0.001
20	2307.499995	-0.002	2312.499997	-0.001
30	2307.499996	-0.002	2312.499999	0.000
40	2307.499997	-0.001	2312.499999	0.000
50	2307.499998	-0.001	2312.499996	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 30	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
7.74	2310.000003	0.001
6.58	2310.000001	0.000
8.90	2310.000004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 30	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	2310.000004	0.002
-20	2310.000003	0.001
-10	2310.000002	0.001
0	2310.000002	0.001
10	2310.000002	0.001
20	2309.999998	-0.001
30	2309.999998	-0.001
40	2309.999999	0.000
50	2309.999999	0.000

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2572.500005	0.002	2617.500004	0.002
6.58	2572.500001	0.000	2617.500001	0.000
8.90	2572.500003	0.001	2617.500004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2572.500001	0.000	2617.500005	0.002
-20	2572.500002	0.001	2617.500001	0.000
-10	2572.500005	0.002	2617.500004	0.002
0	2572.500004	0.002	2617.500003	0.001
10	2572.500003	0.001	2617.500003	0.001
20	2572.499995	-0.002	2617.499996	-0.002
30	2572.499996	-0.002	2617.499996	-0.002
40	2572.499996	-0.002	2617.499998	-0.001
50	2572.499999	0.000	2617.499998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2575.000005	0.002	2615.000003	0.001
6.58	2575.000001	0.000	2615.000005	0.002
8.90	2575.000004	0.002	2615.000002	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2575.000001	0.000	2615.000005	0.002
-20	2575.000005	0.002	2615.000002	0.001
-10	2575.000004	0.002	2615.000002	0.001
0	2575.000004	0.002	2615.000004	0.002
10	2575.000005	0.002	2615.000001	0.000
20	2574.999998	-0.001	2614.999998	-0.001
30	2574.999998	-0.001	2614.999999	0.000
40	2574.999999	0.000	2614.999999	0.000
50	2574.999997	-0.001	2614.999997	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2577.500005	0.002	2612.500001	0.000
6.58	2577.500002	0.001	2612.500003	0.001
8.90	2577.500005	0.002	2612.500003	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2577.500003	0.001	2612.500005	0.002
-20	2577.500003	0.001	2612.500005	0.002
-10	2577.500004	0.002	2612.500001	0.000
0	2577.500002	0.001	2612.500004	0.002
10	2577.500001	0.000	2612.500001	0.000
20	2577.499998	-0.001	2612.499995	-0.002
30	2577.499998	-0.001	2612.499995	-0.002
40	2577.499998	-0.001	2612.499997	-0.001
50	2577.499999	0.000	2612.499996	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2580.000004	0.002	2610.000004	0.002
6.58	2580.000001	0.000	2610.000004	0.002
8.90	2580.000002	0.001	2610.000000	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 38			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2580.000005	0.002	2610.000004	0.002
-20	2580.000001	0.000	2610.000002	0.001
-10	2580.000002	0.001	2610.000005	0.002
0	2580.000001	0.000	2610.000003	0.001
10	2580.000005	0.002	2610.000001	0.000
20	2579.999996	-0.002	2609.999996	-0.002
30	2579.999996	-0.002	2609.999999	0.000
40	2579.999999	0.000	2609.999996	-0.002
50	2579.999998	-0.001	2609.999998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 40 (2305MHz ~ 2315MHz)			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2307.500004	0.002	2312.500005	0.002
6.58	2307.500004	0.002	2312.500001	0.000
8.90	2307.500003	0.001	2312.500005	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 40 (2305MHz ~ 2315MHz)			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2307.500005	0.002	2312.500003	0.001
-20	2307.500005	0.002	2312.500005	0.002
-10	2307.500002	0.001	2312.500002	0.001
0	2307.500002	0.001	2312.500004	0.002
10	2307.500005	0.002	2312.500005	0.002
20	2307.499995	-0.002	2312.499995	-0.002
30	2307.499996	-0.002	2312.499995	-0.002
40	2307.499998	-0.001	2312.499996	-0.002
50	2307.499996	-0.002	2312.499995	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 40 (2305MHz ~ 2315MHz)	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
7.74	2310.000001	0.000
6.58	2310.000002	0.001
8.90	2310.000004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 40 (2305MHz ~ 2315MHz)	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	2310.000003	0.001
-20	2310.000005	0.002
-10	2310.000001	0.000
0	2310.000001	0.000
10	2310.000003	0.001
20	2309.999995	-0.002
30	2309.999998	-0.001
40	2309.999999	0.000
50	2309.999996	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 40 (2350MHz ~ 2360MHz)			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2352.500003	0.001	2357.500004	0.002
6.58	2352.500003	0.001	2357.500003	0.001
8.90	2352.500004	0.002	2357.500003	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 40 (2350MHz ~ 2360MHz)			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2352.500001	0.000	2357.500005	0.002
-20	2352.500005	0.002	2357.500002	0.001
-10	2352.500001	0.000	2357.500003	0.001
0	2352.500001	0.000	2357.500001	0.000
10	2352.500004	0.002	2357.500001	0.000
20	2352.499999	0.000	2357.499995	-0.002
30	2352.499995	-0.002	2357.499999	0.000
40	2352.499997	-0.001	2357.499998	-0.001
50	2352.499998	-0.001	2357.499999	0.000

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 40 (2350MHz ~ 2360MHz)	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
7.74	2355.000004	0.002
6.58	2355.000004	0.002
8.90	2355.000004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 40 (2350MHz ~ 2360MHz)	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	2355.000003	0.001
-20	2355.000005	0.002
-10	2355.000001	0.000
0	2355.000004	0.002
10	2355.000002	0.001
20	2354.999997	-0.001
30	2354.999995	-0.002
40	2354.999998	-0.001
50	2354.999995	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2498.500001	0.000	2687.500004	0.001
6.58	2498.500005	0.002	2687.500003	0.001
8.90	2498.500003	0.001	2687.500004	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2498.500005	0.002	2687.500002	0.001
-20	2498.500002	0.001	2687.500005	0.002
-10	2498.500005	0.002	2687.500002	0.001
0	2498.500002	0.001	2687.500004	0.001
10	2498.500003	0.001	2687.500001	0.000
20	2498.499999	0.000	2687.499997	-0.001
30	2498.499997	-0.001	2687.499996	-0.001
40	2498.499995	-0.002	2687.499998	-0.001
50	2498.499995	-0.002	2687.499999	0.000

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2501.000005	0.002	2685.000002	0.001
6.58	2501.000001	0.000	2685.000004	0.001
8.90	2501.000001	0.000	2685.000001	0.000

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2501.000001	0.000	2685.000003	0.001
-20	2501.000003	0.001	2685.000001	0.000
-10	2501.000001	0.000	2685.000005	0.002
0	2501.000002	0.001	2685.000002	0.001
10	2501.000004	0.002	2685.000005	0.002
20	2500.999997	-0.001	2684.999996	-0.001
30	2500.999999	0.000	2684.999996	-0.001
40	2500.999998	-0.001	2684.999998	-0.001
50	2500.999998	-0.001	2684.999996	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2503.500005	0.002	2682.500003	0.001
6.58	2503.500004	0.002	2682.500003	0.001
8.90	2503.500003	0.001	2682.500004	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2503.500002	0.001	2682.500004	0.001
-20	2503.500005	0.002	2682.500005	0.002
-10	2503.500005	0.002	2682.500001	0.000
0	2503.500005	0.002	2682.500004	0.001
10	2503.500001	0.000	2682.500004	0.001
20	2503.499999	0.000	2682.499998	-0.001
30	2503.499999	0.000	2682.499998	-0.001
40	2503.499997	-0.001	2682.499998	-0.001
50	2503.499998	-0.001	2682.499998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	2506.000004	0.002	2680.000001	0.000
6.58	2506.000005	0.002	2680.000001	0.000
8.90	2506.000005	0.002	2680.000002	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 41			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2506.000002	0.001	2680.000003	0.001
-20	2506.000005	0.002	2680.000005	0.002
-10	2506.000004	0.002	2680.000001	0.000
0	2506.000004	0.002	2680.000002	0.001
10	2506.000005	0.002	2680.000005	0.002
20	2505.999999	0.000	2679.999997	-0.001
30	2505.999998	-0.001	2679.999996	-0.001
40	2505.999995	-0.002	2679.999995	-0.002
50	2505.999995	-0.002	2679.999995	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1710.700004	0.002	1779.300005	0.003
6.58	1710.700001	0.001	1779.300001	0.001
8.90	1710.700003	0.002	1779.300004	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.700002	0.001	1779.300003	0.002
-20	1710.700001	0.001	1779.300005	0.003
-10	1710.700002	0.001	1779.300001	0.001
0	1710.700003	0.002	1779.300001	0.001
10	1710.700001	0.001	1779.300001	0.001
20	1710.699995	-0.003	1779.299998	-0.001
30	1710.699998	-0.001	1779.299996	-0.002
40	1710.699998	-0.001	1779.299998	-0.001
50	1710.699997	-0.002	1779.299998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1711.500003	0.002	1778.500003	0.002
6.58	1711.500002	0.001	1778.500001	0.001
8.90	1711.500005	0.003	1778.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1711.500004	0.002	1778.500002	0.001
-20	1711.500002	0.001	1778.500002	0.001
-10	1711.500005	0.003	1778.500004	0.002
0	1711.500004	0.002	1778.500002	0.001
10	1711.500002	0.001	1778.500005	0.003
20	1711.499998	-0.001	1778.499999	-0.001
30	1711.499996	-0.002	1778.499996	-0.002
40	1711.499996	-0.002	1778.499996	-0.002
50	1711.499999	-0.001	1778.499998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1712.500003	0.002	1777.500004	0.002
6.58	1712.500001	0.001	1777.500003	0.002
8.90	1712.500004	0.002	1777.500003	0.002

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500002	0.001	1777.500004	0.002
-20	1712.500003	0.002	1777.500004	0.002
-10	1712.500005	0.003	1777.500001	0.001
0	1712.500004	0.002	1777.500005	0.003
10	1712.500004	0.002	1777.500001	0.001
20	1712.499995	-0.003	1777.499998	-0.001
30	1712.499997	-0.002	1777.499995	-0.003
40	1712.499996	-0.002	1777.499996	-0.002
50	1712.499999	-0.001	1777.499995	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1715.000001	0.001	1775.000005	0.003
6.58	1715.000001	0.001	1775.000005	0.003
8.90	1715.000001	0.001	1775.000002	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1715.000001	0.001	1775.000005	0.003
-20	1715.000001	0.001	1775.000005	0.003
-10	1715.000005	0.003	1775.000003	0.002
0	1715.000004	0.002	1775.000005	0.003
10	1715.000002	0.001	1775.000005	0.003
20	1714.999995	-0.003	1774.999999	-0.001
30	1714.999996	-0.002	1774.999996	-0.002
40	1714.999997	-0.002	1774.999996	-0.002
50	1714.999995	-0.003	1774.999999	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1717.500001	0.001	1772.500003	0.002
6.58	1717.500002	0.001	1772.500002	0.001
8.90	1717.500001	0.001	1772.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1717.500005	0.003	1772.500002	0.001
-20	1717.500001	0.001	1772.500001	0.001
-10	1717.500002	0.001	1772.500001	0.001
0	1717.500001	0.001	1772.500004	0.002
10	1717.500004	0.002	1772.500001	0.001
20	1717.499999	-0.001	1772.499995	-0.003
30	1717.499995	-0.003	1772.499995	-0.003
40	1717.499995	-0.003	1772.499995	-0.003
50	1717.499995	-0.003	1772.499996	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 66			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	1720.000003	0.002	1770.000003	0.002
6.58	1720.000001	0.001	1770.000004	0.002
8.90	1720.000002	0.001	1770.000005	0.003

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1720.000003	0.002	1770.000002	0.001
-20	1720.000005	0.003	1770.000003	0.002
-10	1720.000004	0.002	1770.000005	0.003
0	1720.000004	0.002	1770.000005	0.003
10	1720.000005	0.003	1770.000001	0.001
20	1719.999998	-0.001	1769.999996	-0.002
30	1719.999996	-0.002	1769.999997	-0.002
40	1719.999998	-0.001	1769.999999	-0.001
50	1719.999996	-0.002	1769.999998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 71			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	665.500002	0.003	695.500005	0.007
6.58	665.500001	0.002	695.500005	0.007
8.90	665.500004	0.006	695.500004	0.006

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 71			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	665.500004	0.006	695.500002	0.003
-20	665.500002	0.003	695.500001	0.001
-10	665.500002	0.003	695.500002	0.003
0	665.500003	0.005	695.500004	0.006
10	665.500001	0.002	695.500005	0.007
20	665.499997	-0.005	695.499998	-0.003
30	665.499999	-0.002	695.499995	-0.007
40	665.499996	-0.006	695.499997	-0.004
50	665.499998	-0.003	695.499995	-0.007

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 71			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	668.000002	0.003	693.000003	0.004
6.58	668.000005	0.007	693.000003	0.004
8.90	668.000004	0.006	693.000003	0.004

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 71			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	668.000001	0.001	693.000003	0.004
-20	668.000002	0.003	693.000004	0.006
-10	668.000005	0.007	693.000002	0.003
0	668.000004	0.006	693.000005	0.007
10	668.000005	0.007	693.000004	0.006
20	667.999996	-0.006	692.999996	-0.006
30	667.999997	-0.004	692.999999	-0.001
40	667.999995	-0.007	692.999997	-0.004
50	667.999998	-0.003	692.999998	-0.003

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 71			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	670.500002	0.003	690.500002	0.003
6.58	670.500004	0.006	690.500004	0.006
8.90	670.500001	0.001	690.500001	0.001

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 71			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	670.500004	0.006	690.500002	0.003
-20	670.500005	0.007	690.500005	0.007
-10	670.500002	0.003	690.500001	0.001
0	670.500003	0.004	690.500005	0.007
10	670.500003	0.004	690.500002	0.003
20	670.499996	-0.006	690.499996	-0.006
30	670.499999	-0.001	690.499997	-0.004
40	670.499998	-0.003	690.499999	-0.001
50	670.499997	-0.004	690.499997	-0.004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 71			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
7.74	673.000003	0.004	688.000001	0.001
6.58	673.000004	0.006	688.000004	0.006
8.90	673.000001	0.001	688.000005	0.007

Note: The applicant defined the normal working voltage is from 6.58Vdc to 8.90Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 71			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	673.000002	0.003	688.000003	0.004
-20	673.000003	0.004	688.000001	0.001
-10	673.000002	0.003	688.000002	0.003
0	673.000004	0.006	688.000005	0.007
10	673.000001	0.001	688.000004	0.006
20	672.999999	-0.001	687.999997	-0.004
30	672.999999	-0.001	687.999995	-0.007
40	672.999998	-0.003	687.999998	-0.003
50	672.999997	-0.004	687.999998	-0.003

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

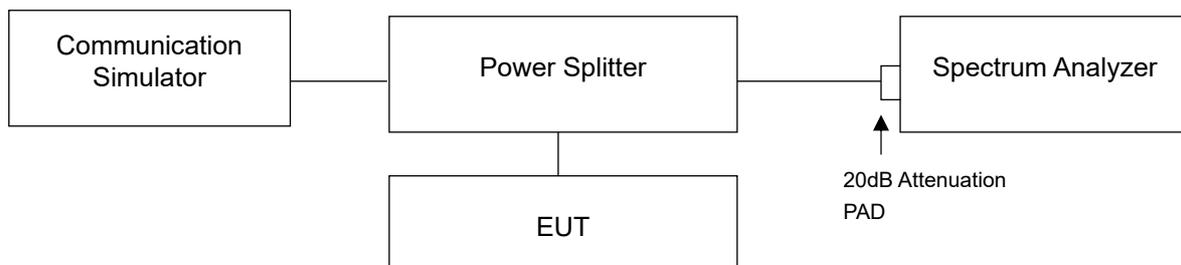
The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission.

4.4.2 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.3 Test Setup



4.4.4 Test Result

Occupied Bandwidth

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.15	4.15	4.16
1413	1732.6	4.15	4.15	4.15
1513	1752.6	4.15	4.15	4.15

Spectrum Plot of Worst Value



LTE Band 4, Channel Bandwidth 1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19957	1710.7	1.09	1.09	1.09	1.08
20175	1732.5	1.09	1.09	1.09	1.09
20393	1754.3	1.09	1.09	1.09	1.08
LTE Band 4, Channel Bandwidth 3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19965	1711.5	2.73	2.69	2.70	2.70
20175	1732.5	2.70	2.70	2.70	2.70
20385	1753.5	2.73	2.73	2.73	2.69
LTE Band 4, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
19975	1712.5	4.49	4.48	4.50	4.49
20175	1732.5	4.48	4.52	4.50	4.49
20375	1752.5	4.50	4.55	4.50	4.49
LTE Band 4, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20000	1715.0	8.95	8.97	9.15	8.96
20175	1732.5	8.95	8.95	8.96	8.96
20350	1750.0	8.90	8.94	8.96	8.95
LTE Band 4, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20025	1717.5	13.47	13.46	13.45	13.46
20175	1732.5	13.45	13.44	13.73	13.44
20325	1747.5	13.46	13.45	13.44	13.44

LTE Band 4, Channel Bandwidth 20MHz

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20050	1720.0	17.94	17.97	17.93	17.95
20175	1732.5	17.91	17.92	17.90	17.92
20300	1745.0	17.92	17.98	17.94	17.94

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / QPSK



5MHz / 16QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 16QAM



LTE Band 7, Channel Bandwidth 5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20775	2502.5	4.49	4.49	4.50	4.49
21100	2535.0	4.49	4.49	4.50	4.49
21425	2567.5	4.49	4.49	4.50	4.49
LTE Band 7, Channel Bandwidth 10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20800	2505.0	8.96	8.96	8.96	8.96
21100	2535.0	8.96	8.96	8.97	8.96
21400	2565.0	8.96	8.96	8.96	8.96
LTE Band 7, Channel Bandwidth 15MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20825	2507.5	13.45	13.44	13.43	13.44
21100	2535.0	13.47	13.45	13.44	13.46
21375	2562.5	13.48	13.46	13.46	13.46
LTE Band 7, Channel Bandwidth 20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM
20850	2510.0	17.89	17.92	17.90	17.90
21100	2535.0	17.92	17.94	17.94	17.96
21350	2560.0	17.97	17.98	17.98	17.93