

Test mode:	LTE Band 12 (1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3701.40	Vertical	-36.72	-13.00	Pass
5552.10	V	-39.01		
7402.80	V	-38.32		
9253.50	V	-42.91		
11104.20	V	---		
3701.40	Horizontal	-39.42	-13.00	Pass
5552.10	H	-42.25		
7402.80	H	-44.97		
9253.50	H	-46.09		
11104.20	H	---		
Test mode:	LTE Band 12 (1.4MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-37.03	-13.00	Pass
5640.00	V	-39.24		
7520.00	V	-37.79		
9400.00	V	-43.55		
11280.00	V	---		
3760.00	Horizontal	-39.05	-13.00	Pass
5640.00	H	-42.46		
7520.00	H	-45.27		
9400.00	H	-46.30		
11280.00	H	---		
Test mode:	LTE Band 12 (1.4MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3818.60	Vertical	-36.56	-13.00	Pass
5727.90	V	-39.00		
7637.20	V	-37.56		
9546.50	V	-43.00		
11455.80	V	---		
3818.60	Horizontal	-38.66	-13.00	Pass
5727.90	H	-42.42		
7637.20	H	-44.39		
9546.50	H	-46.22		
11455.80	H	---		

Remark :

- 1 The emission behaviour belongs to narrowband spurious emission, all modes investigated and only worst case is reported.
- 2 Remark"---" means that the emission level is too low (20dB lower than the limit) to be measured
- 3 The emission levels of below 1 GHz are very lower (20dB lower than the limit) than the limit and not show in test report.

Test mode:	LTE Band 26(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3421.40	Vertical	-36.83	-13.00	Pass
5132.10	V	-39.34		
6842.80	V	-37.82		
8553.50	V	-43.76		
10264.20	V	---		
3421.40	Horizontal	-39.26	-13.00	Pass
5132.10	H	-42.74		
6842.80	H	-44.85		
8553.50	H	-45.90		
10264.20	H	---		
Test mode:	LTE Band 26(1.4MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3465.00	Vertical	-36.68	-13.00	Pass
5197.50	V	-39.77		
6930.00	V	-37.67		
8662.50	V	-43.61		
10395.00	V	---		
3465.00	Horizontal	-39.16	-13.00	Pass
5197.50	H	-43.01		
6930.00	H	-45.31		
8662.50	H	-45.58		
10395.00	H	---		
Test mode:	LTE Band 26(1.4MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3508.60	Vertical	-36.83	-13.00	Pass
5262.90	V	-38.95		
7017.20	V	-37.64		
8771.50	V	-42.92		
10525.80	V	---		
3508.60	Horizontal	-39.56	-13.00	Pass
5262.90	H	-42.75		
7017.20	H	-44.49		
8771.50	H	-46.02		
10525.80	H	---		

## Remark:

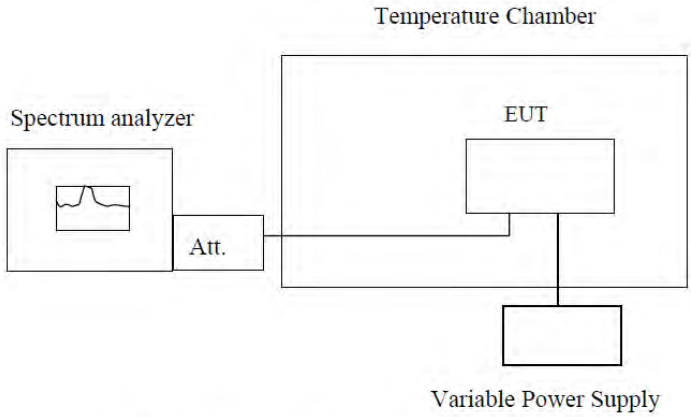
- 1 The emission behaviour belongs to narrowband spurious emission, all modes investigated and only worst case is reported.
- 2 Remark"---" means that the emission level is too low (20dB lower than the limit) to be measured
- 3 The emission levels of below 1 GHz are very lower (20dB lower than the limit) than the limit and not show in test report.

Test mode:	LTE Band 41 (5MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3701.40	Vertical	-36.43	-13.00	Pass
5552.10	V	-39.02		
7402.80	V	-37.52		
9253.50	V	-43.63		
11104.20	V	---		
3701.40	Horizontal	-39.13	-13.00	Pass
5552.10	H	-42.25		
7402.80	H	-44.77		
9253.50	H	-45.69		
11104.20	H	---		
Test mode:	LTE Band 41 (5MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-36.48	-13.00	Pass
5640.00	V	-39.62		
7520.00	V	-37.60		
9400.00	V	-42.96		
11280.00	V	---		
3760.00	Horizontal	-39.39	-13.00	Pass
5640.00	H	-42.55		
7520.00	H	-44.41		
9400.00	H	-45.99		
11280.00	H	---		
Test mode:	LTE Band 41 (5MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3818.60	Vertical	-36.31	-13.00	Pass
5727.90	V	-39.15		
7637.20	V	-38.46		
9546.50	V	-43.65		
11455.80	V	---		
3818.60	Horizontal	-39.26	-13.00	Pass
5727.90	H	-42.60		
7637.20	H	-45.29		
9546.50	H	-45.80		
11455.80	H	---		

Remark :

- 1 The emission behaviour belongs to narrowband spurious emission, all modes investigated and only worst case is reported.
- 2 Remark"---" means that the emission level is too low (20dB lower than the limit) to be measured
- 3 The emission levels of below 1 GHz are very lower (20dB lower than the limit) than the limit and not show in test report.

#### 4.10 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b), FCC part90.213.(a)
Test Method:	ANSI C63.26:2015
Limit:	2.5ppm(Part 22) Within the authorized bands of operation(Part 24, Part 27)
Test setup:	 <p style="text-align: center;"><b>Note :</b> Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> <li>1. The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>3. The EUT was placed inside the temperature chamber.</li> <li>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>5. Turn EUT off and set the chamber temperature to –20°C . After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.</li> </ol>
Test Instruments:	Refer to section 3 for details
Test mode:	Refer to section 4.1 for details
Test results:	Pass
Remark:	If all frequencies stability are comply with the lower limit, then all results can be considered qualified

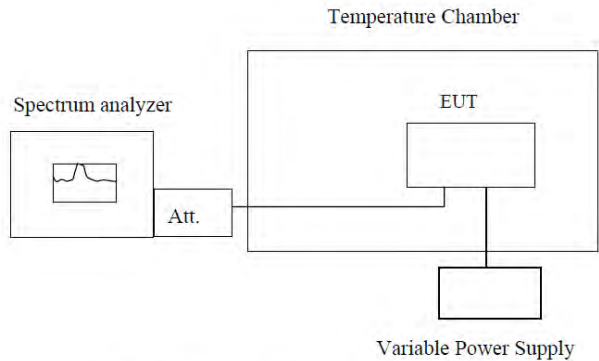
## Measurement Data

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	18	0.0095	Within the authorized bands	Pass
	-10°C	23	0.0122		
	-5°C	22	0.0116		
	0°C	-28	-0.0147		
	+10°C	20	0.0105		
	+20°C	12	0.0061		
	+30°C	-3	-0.0016		
	+40°C	12	0.0064		
	+50°C	18	0.0094		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	14	0.0081	2.5	Pass
	-10°C	13	0.0073		
	-5°C	13	0.0073		
	0°C	-17	-0.0098		
	+10°C	10	0.0059		
	+20°C	13	0.0076		
	+30°C	0	-0.0002		
	+40°C	14	0.0079		
	+50°C	15	0.0086		
Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	12	0.0141	2.5	Pass
	-10°C	15	0.0178		
	-5°C	9	0.0107		
	0°C	-16	-0.0191		
	+10°C	9	0.0106		
	+20°C	12	0.0141		
	+30°C	-2	-0.0019		
	+40°C	10	0.0121		
	+50°C	15	0.0177		

Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	20	0.0079	Within the authorized bands	Pass
	-10°C	24	0.0095		
	-5°C	22	0.0087		
	0°C	-26	-0.0104		
	+10°C	16	0.0062		
	+20°C	14	0.0055		
	+30°C	-1	-0.0003		
	+40°C	7	0.0028		
	+50°C	17	0.0066		
Reference Frequency: LTE Band 12 Middle channel=23095 channel=707.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	15	0.0219	2.5	Pass
	-10°C	10	0.0146		
	-5°C	10	0.0147		
	0°C	-29	-0.0417		
	+10°C	12	0.0176		
	+20°C	13	0.0178		
	+30°C	-5	-0.0070		
	+40°C	7	0.0093		
	+50°C	10	0.0147		
Reference Frequency: LTE Band 17 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	13	0.0051	Within the authorized bands	Pass
	-10°C	11	0.0043		
	-5°C	-29	-0.0114		
	0°C	8	0.0031		
	+10°C	16	0.0062		
	+20°C	-5	-0.0019		
	+30°C	5	0.0021		
	+40°C	9	0.0036		
	+50°C	14	0.0055		

Reference Frequency: LTE Band 26 Middle channel=26740 channel=819MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	9	0.0115	2.5	Pass
	-10°C	11	0.0140		
	-5°C	-28	-0.0338		
	0°C	12	0.0151		
	+10°C	13	0.0157		
	+20°C	-4	-0.0046		
	+30°C	7	0.0083		
	+40°C	9	0.0114		
	+50°C	11	0.0138		
Reference Frequency: LTE Band 41 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.8	-20°C	15	0.0059	Within the authorized bands	Pass
	-10°C	8	0.0033		
	-5°C	-19	-0.0074		
	0°C	8	0.0033		
	+10°C	15	0.0060		
	+20°C	-1	-0.0003		
	+30°C	9	0.0034		
	+40°C	8	0.0032		
	+50°C	13	0.0051		

**4.11 Frequency stability V.S. Voltage measurement**

Test Requirement:	FCC Part2.1055(d)(1)(2), FCC part90.213.(a)
Test Method:	ANSI C63.26:2015
Limit:	2.5ppm Band II & Band VII should be within authorized band.
Test setup:	 <p style="text-align: center;">Temperature Chamber</p> <p style="text-align: center;">Spectrum analyzer      Att.      EUT</p> <p style="text-align: center;">Variable Power Supply</p> <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> <li>1. Set chamber temperature to 20°C . Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.</li> </ol>
Test Instruments:	Refer to section 3 for details
Test mode:	Refer to section 4.1 for details
Test results:	Pass
Remark:	<ol style="list-style-type: none"> <li>1. Manufacturer specified the battery operating end point voltage is 3.32VDC, max voltage is 4.37VDC.</li> <li>2. If all frequencies stability are comply with the lower limit, then all results can be considered qualified</li> </ol>



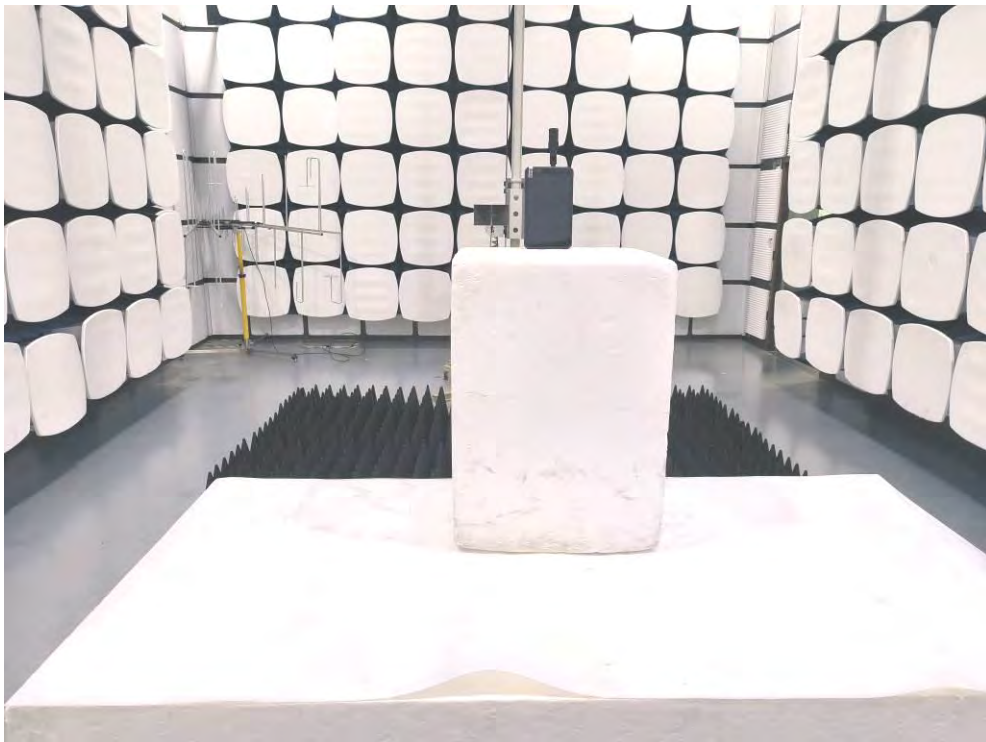
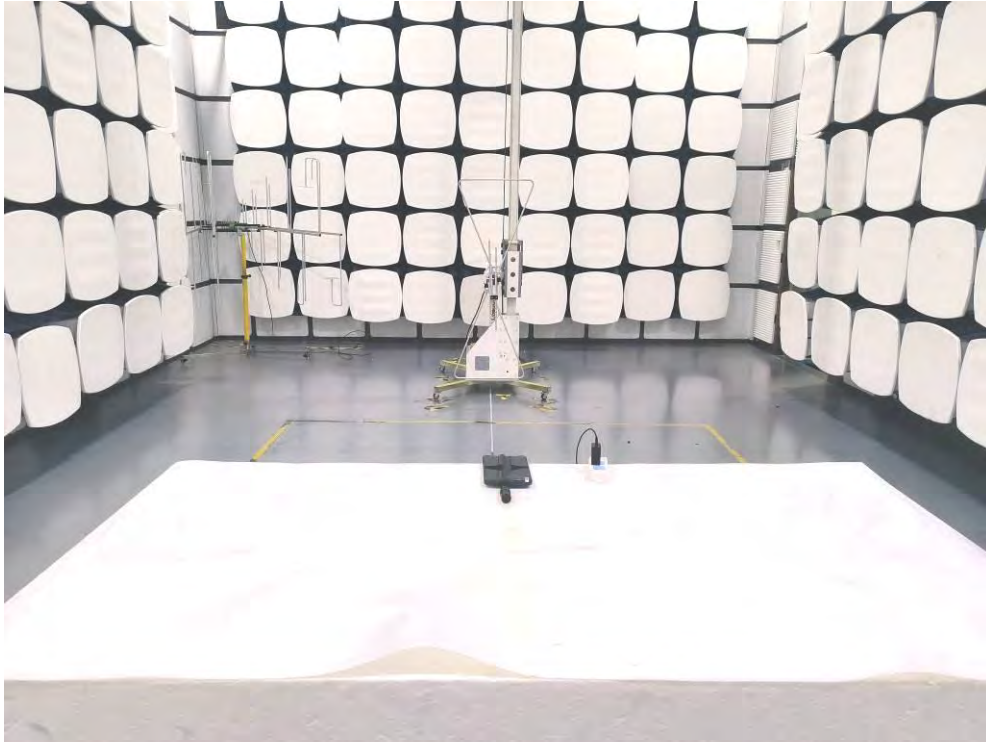
## Measurement Data

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	7	0.0038	within authorized band	Pass
	3.80	8	0.0045		
	3.61	12	0.0064		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	17	0.0097	2.5	Pass
	3.80	13	0.0077		
	3.61	14	0.0080		
Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	8	0.0096	2.5	Pass
	3.80	12	0.0146		
	3.61	11	0.0127		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	14	0.0054	within authorized band	Pass
	3.80	-17	-0.0066		
	3.61	8	0.0032		

Reference Frequency: LTE Band 12 Middle channel=23095 channel=707.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	12	0.0165	within authorized band	Pass
	3.80	11	0.0150		
	3.61	6	0.0087		
Reference Frequency: LTE Band 17 Middle channel=20175 channel=836.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	18	0.0214	2.5	Pass
	3.80	12	0.0148		
	3.61	10	0.0114		
Reference Frequency: LTE Band 26 Middle channel=26740 channel=819MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	13	0.0156	2.5	Pass
	3.80	-2	-0.0026		
	3.61	8	0.0098		
Reference Frequency: LTE Band 41 Middle channel=20175 channel=1732.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.18	7	0.0043	2.5	Pass
	3.80	11	0.0065		
	3.61	-2	-0.0013		

**4.12 Test Setup Photo**

Radiated Emission



-----END OF REPORT-----