Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
10 MHz	QPSK	793.0	V	145	112	1.15	1 / 49	21.15	**20.15**	0.103	34.77	-14.63	22.30	0.170	40.61	-18.31
	16-QAM	793.0	V	145	112	1.15	1 / 49	20.42	19.42	0.087	34.77	-15.36	21.57	0.143	40.61	-19.04
5 MHz	QPSK	790.5	V	145	112	1.15	1 / 12	21.21	**20.21**	0.105	34.77	-14.56	22.36	0.172	40.61	-18.24
	QPSK	793.0	V	145	112	1.15	1 / 12	21.19	20.19	0.104	34.77	-14.58	22.34	0.171	40.61	-18.27
	QPSK	795.5	V	145	112	1.14	1 / 0	21.21	20.20	0.105	34.77	-14.57	22.35	0.172	40.61	-18.25
	16-QAM	795.5	V	145	112	1.14	1 / 0	20.65	19.64	0.092	34.77	-15.13	21.79	0.151	40.61	-18.82
10 MHz	QPSK	795.5	H	232	70	1.15	1 / 49	20.45	19.45	0.088	34.77	-15.33	21.60	0.144	40.61	-19.01
	QPSK (WCP)	790.5	V	137	33	1.15	1 / 49	18.27	17.27	0.053	34.77	-17.51	19.42	0.087	40.61	-21.19

Table 7-4. ERP Data (LTE Band 14)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
15 MHz	QPSK	821.5	V	149	115	1.24	1 / 0	22.40	**21.49**	0.141	38.45	-16.96	23.64	0.231	40.61	-16.97
	16-QAM	821.5	V	149	115	1.24	1 / 0	21.64	20.73	0.118	38.45	-17.72	22.88	0.194	40.61	-17.73
	QPSK	816.5	H	238	69	1.24	1 / 0	18.70	17.79	0.060	38.45	-20.66	19.94	0.099	40.61	-20.67
	QPSK (WCP)	821.5	V	136	66	1.24	1 / 0	19.25	18.34	0.068	38.45	-20.11	20.49	0.112	40.61	-20.12

Table 7-5. ERP Data (LTE Band 26)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	824.0	V	136	113	6.15	1 / 79	16.12	**20.12**	0.103	38.45	-18.33	**22.27**	0.169	40.61	-18.34
	QPSK	824.0	V	136	113	6.15	1 / 79	15.97	19.97	0.099	38.45	-18.48	22.12	0.163	40.61	-18.49
	16-QAM	824.0	V	136	113	6.15	1 / 79	15.07	19.07	0.081	38.45	-19.38	21.22	0.132	40.61	-19.39
15 MHz	π/2 BPSK	821.5	V	136	113	6.12	1 / 20	16.22	**20.20**	0.105	38.45	-18.26	**22.35**	0.172	40.61	-18.26
	QPSK	821.5	V	136	113	6.12	1 / 20	16.10	20.07	0.102	38.45	-18.38	22.22	0.167	40.61	-18.38
	16-QAM	821.5	V	136	113	6.12	1 / 20	14.74	18.71	0.074	38.45	-19.74	20.86	0.122	40.61	-19.74
20 MHz	QPSK (CP-OFDM)	824.0	V	136	113	6.15	1 / 79	14.55	**18.55**	0.072	38.45	-19.90	20.70	0.117	40.61	-19.91
	QPSK (Opposite Pol.)	824.0	H	204	83	6.65	1 / 26	13.49	17.99	0.063	38.45	-20.46	20.14	0.103	40.61	-20.47
	QPSK (WCP)	824.0	V	136	113	6.15	1 / 79	9.33	13.33	0.022	38.45	-25.12	15.48	0.035	40.61	-25.13

Table 7-6. ERP Data (NR Band n26)

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.5.4

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

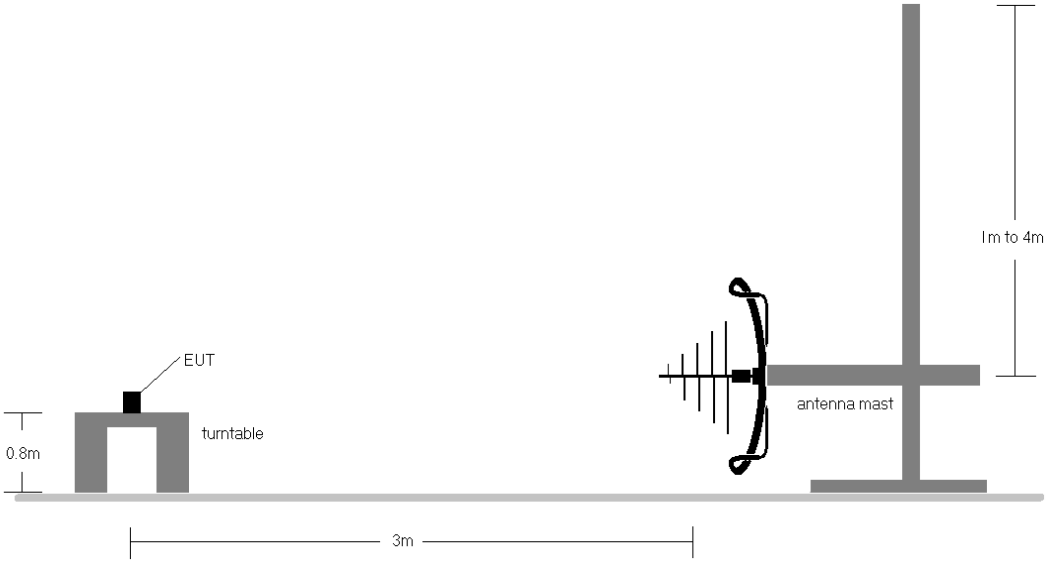


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

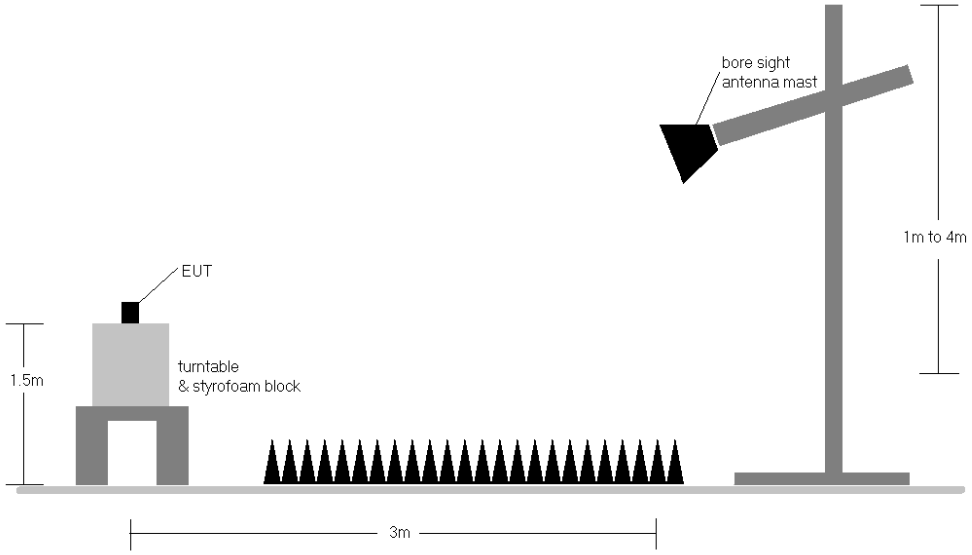


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

Test Notes

1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD – 104.8; where D is the measurement distance in meters.

2) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

3) This unit was tested with its standard battery.

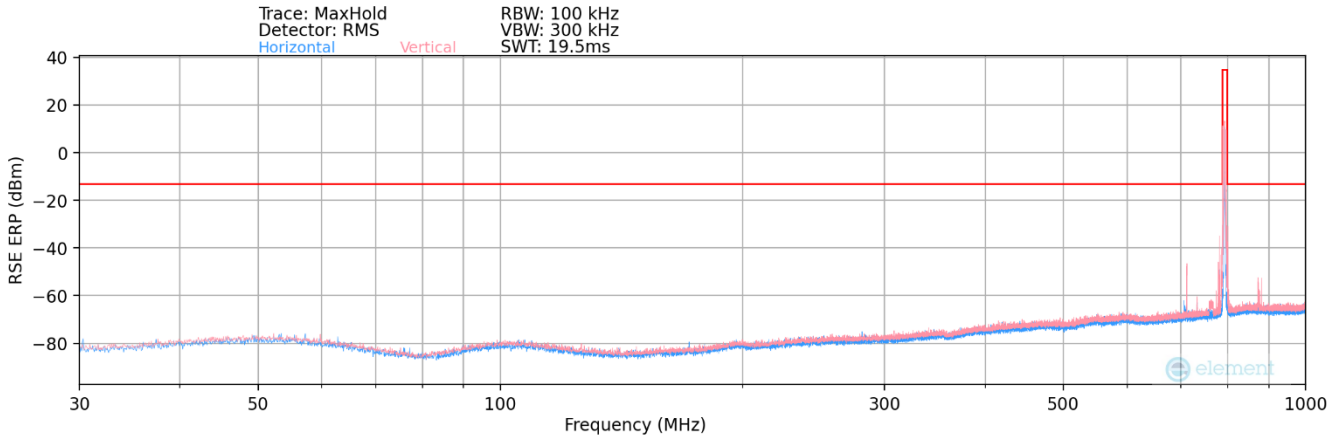
4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

5) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.

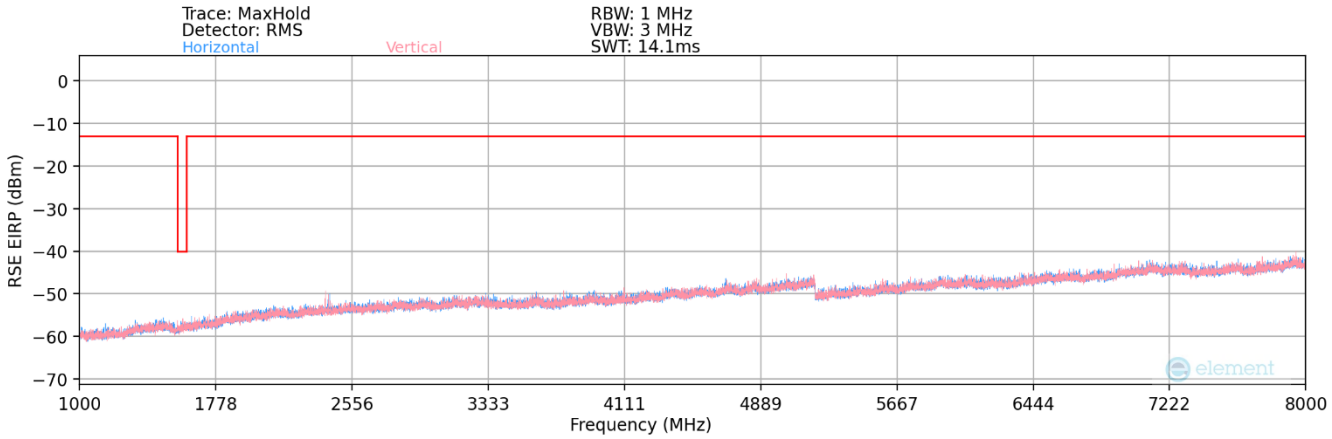
6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

LTE Band 14



Plot 7-57. Radiated Spurious Plot (LTE Band 14 – Below 1GHz)



Plot 7-58. Radiated Spurious Plot (LTE Band 14 – Above 1GHz)

Bandwidth (MHz):	10
Frequency (MHz):	793
RB Config (Size / Offset):	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
727.54	V	236	133	-71.72	-6.46	28.82	-68.59	-13.00	-55.59
870.75	V	-	-	-90.23	-3.99	12.78	-84.62	-13.00	-71.62

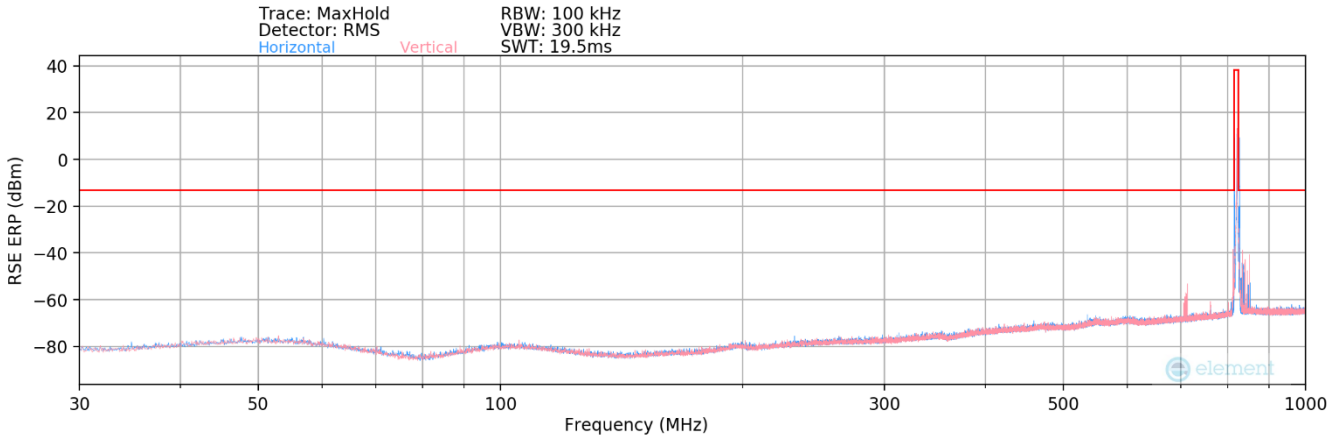
Table 7-7. Radiated Spurious Data (LTE Band 14 – Mid Channel – Below 1GHz)

Bandwidth (MHz):	10
Frequency (MHz):	793
RB Config (Size / Offset):	1 / 25

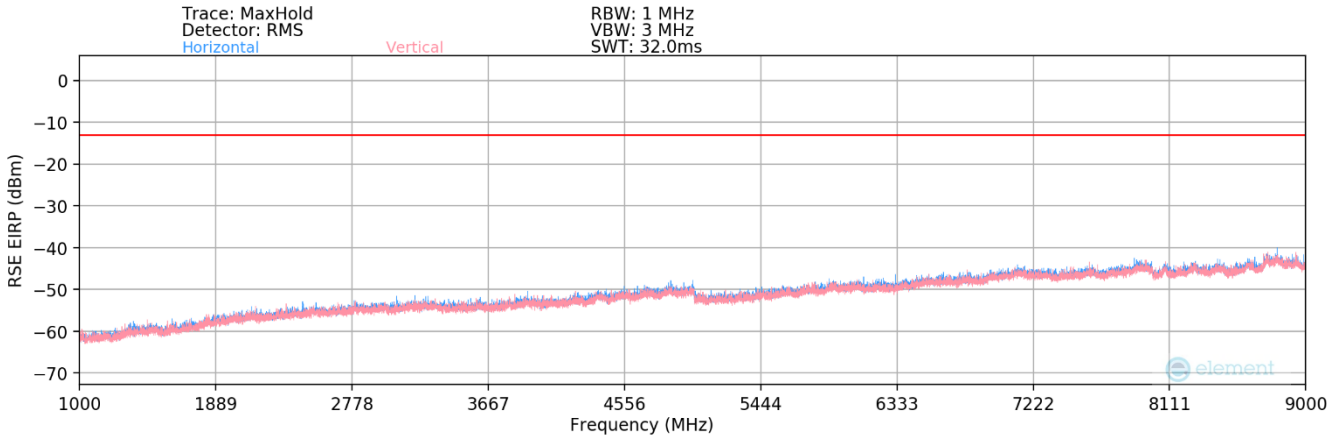
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1586.00	V	-	-	-78.10	0.33	29.23	-66.03	-40.00	-26.03
2379.00	V	-	-	-78.56	4.41	32.85	-62.41	-13.00	-49.41
3172.00	V	-	-	-79.73	6.63	33.90	-61.36	-13.00	-48.36

Table 7-8. Radiated Spurious Data (LTE Band 14 – Mid Channel)

LTE Band 26



Plot 7-59. Radiated Spurious Plot (LTE Band 26 – Below 1GHz)



Plot 7-60. Radiated Spurious Plot (LTE Band 26 – Above 1GHz)

Bandwidth (MHz):	15
Frequency (MHz):	821.5
RB Config (Size / Offset):	1 / 37

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
714.57	V	-	-	-81.07	-6.50	19.43	-77.98	-13.00	-64.98

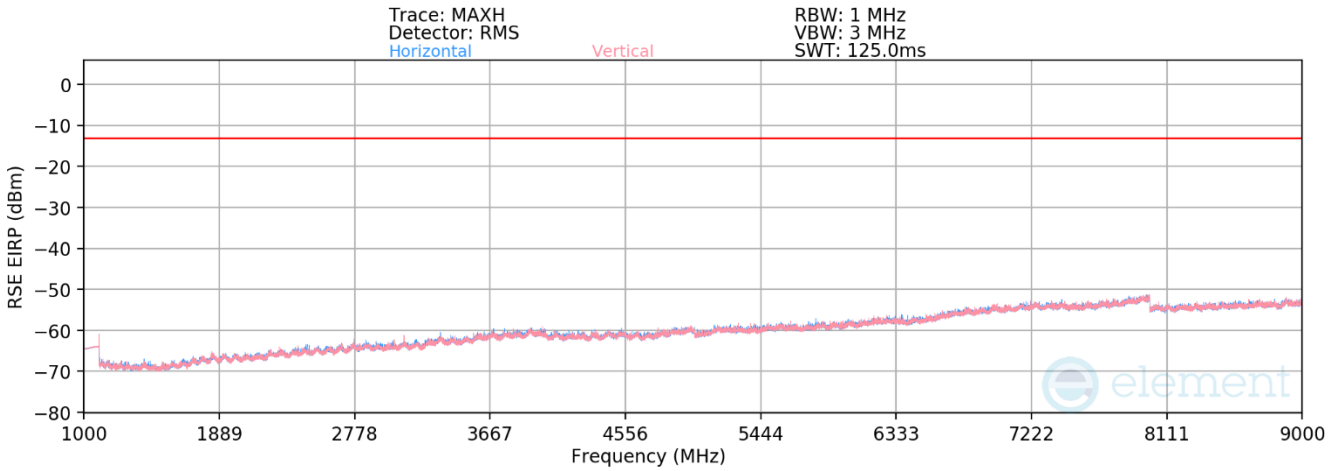
Table 7-9. Radiated Spurious Data (LTE Band 26 – Mid Channel – Below 1GHz)

Bandwidth (MHz):	15
Frequency (MHz):	821.5
RB Config (Size / Offset):	1 / 37

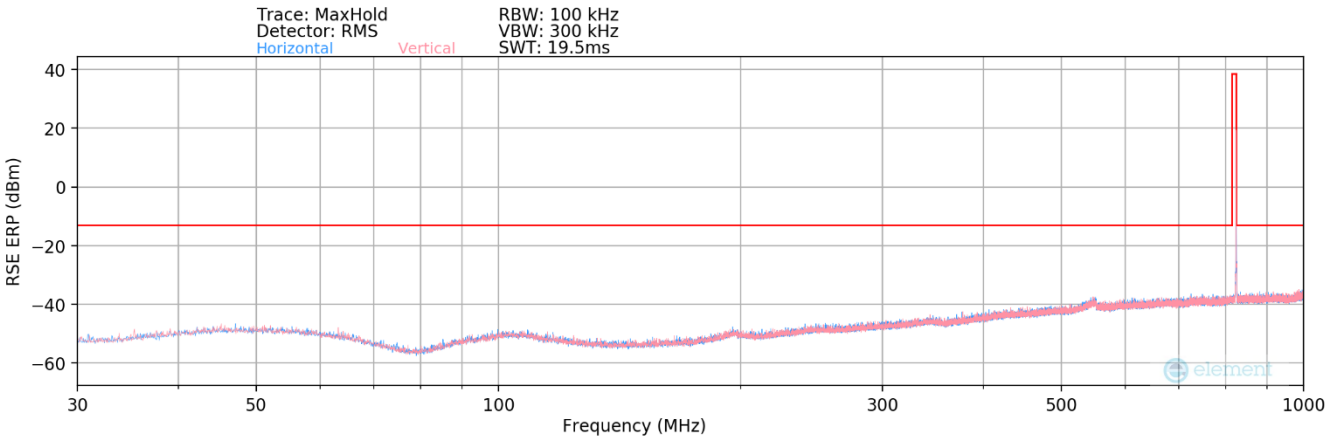
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1643.00	V	-	-	-78.22	0.37	29.15	-66.11	-13.00	-53.11
2464.50	V	-	-	-79.15	4.55	32.40	-62.86	-13.00	-49.86
3286.00	V	-	-	-79.66	6.72	34.06	-61.19	-13.00	-48.19

Table 7-10. Radiated Spurious Data (LTE Band 26 – Mid Channel – Below 1GHz)

NR Band n26



Plot 7-61. Radiated Spurious Plot (NR Band n26 – Below 1GHz)



Plot 7-62. Radiated Spurious Plot (NR Band n26 – Above 1GHz)

Bandwidth (MHz):	20
Frequency (MHz):	824
RB / Offset:	1 / 53
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
450.63	V	-	-	-79.52	17.91	45.39	-49.87	-13.00	-36.87
550.50	V	-	-	-79.09	19.71	47.62	-47.64	-13.00	-34.64
996.75	V	-	-	-81.02	25.86	51.84	-43.41	-13.00	-30.41

Table 7-11. Radiated Spurious Data (NR Band n26 – Mid Channel – Below 1GHz)

Bandwidth (MHz):	20
Frequency (MHz):	824
RB / Offset:	1 / 53
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1648.00	V	-	-	-75.67	-7.78	23.55	-71.71	-13.00	-58.71
2472.00	V	-	-	-76.92	-4.26	25.82	-69.44	-13.00	-56.44
3296.00	V	-	-	-78.28	-0.95	27.77	-67.48	-13.00	-54.48
4120.00	V	-	-	-77.75	0.81	30.06	-65.20	-13.00	-52.20
4944.00	V	-	-	-78.02	1.45	30.43	-64.83	-13.00	-51.83
5768.00	V	-	-	-78.79	3.58	31.79	-63.46	-13.00	-50.46

Table 7-12. Radiated Spurious Data (NR Band n26 – Mid Channel)

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Test Procedure Used

ANSI C63.26-2015 – Section 5.6

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

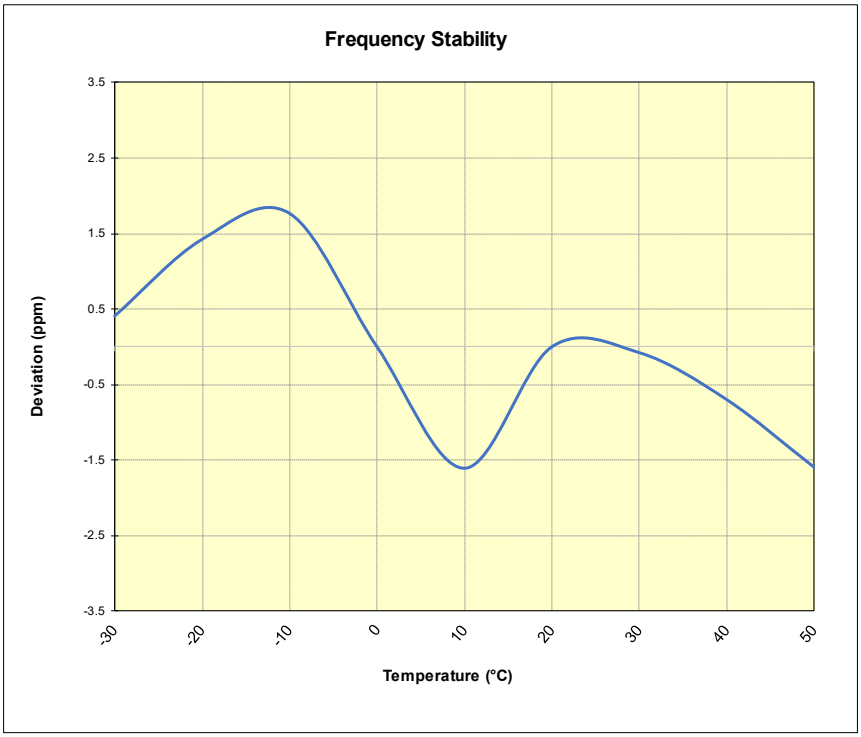
Frequency Stability / Temperature Variation

LTE Band 14

Operating Frequency (Hz):	793,000,000
Ref. Voltage (VDC):	4.35

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.35	- 30	793,003,245	325	0.0000410
		- 20	793,004,053	1,133	0.0001429
		- 10	793,004,327	1,407	0.0001774
		0	793,002,922	2	0.0000003
		+ 10	793,001,640	-1,280	-0.0001614
		+ 20 (Ref)	793,002,920	0	0.0000000
		+ 30	793,002,859	-61	-0.0000077
		+ 40	793,002,365	-555	-0.0000700
		+ 50	793,001,652	-1,268	-0.0001599
Battery Endpoint	3.69	+ 20	793,003,913	993	0.0001252

Table 7-13. LTE Band 14 Frequency Stability Data



Plot 7-63. LTE Band 14 Frequency Stability Chart

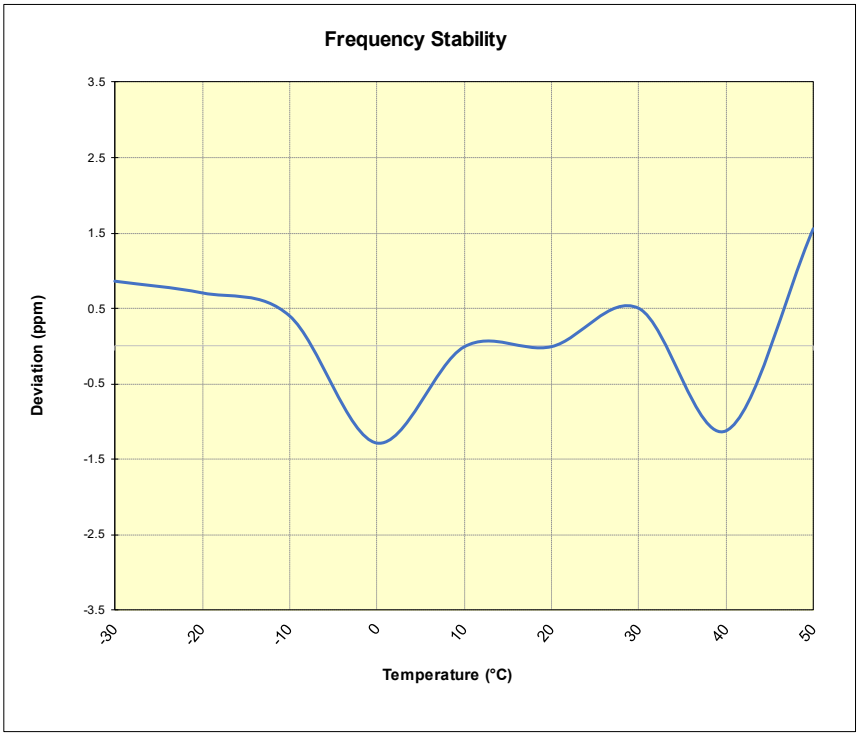
Frequency Stability / Temperature Variation

LTE Band 26

Operating Frequency (Hz):	819,000,000
Ref. Voltage (VDC):	4.35
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.35	- 30	819,003,389	710	0.0000867
		- 20	819,003,262	583	0.0000712
		- 10	819,003,015	336	0.0000410
		0	819,001,635	-1,044	-0.0001275
		+ 10	819,002,676	-3	-0.0000004
		+ 20 (Ref)	819,002,679	0	0.0000000
		+ 30	819,003,095	416	0.0000508
		+ 40	819,001,767	-912	-0.0001114
		+ 50	819,003,957	1,278	0.0001560
Battery Endpoint	3.69	+ 20	819,003,387	708	0.0000864

Table 7-14. LTE Band 26 Frequency Stability Data



Plot 7-64. LTE Band 26 Frequency Stability Chart

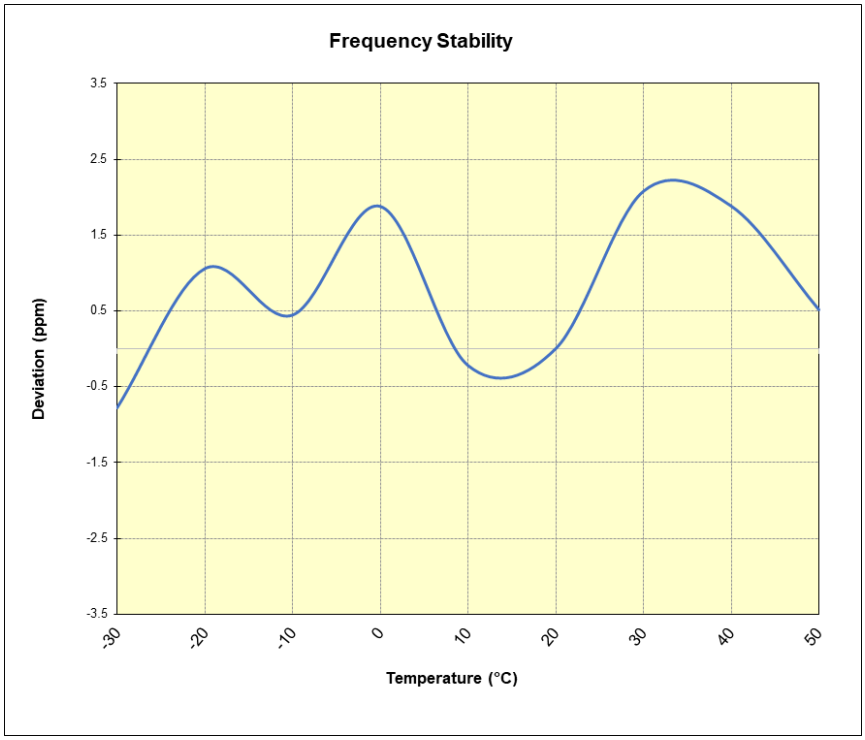
Frequency Stability / Temperature Variation

NR Band n26

Operating Frequency (Hz):	824,000,000
Ref. Voltage (VDC):	4.35

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.35	- 30	824,076,495	-644	-0.0000781
		- 20	824,078,008	869	0.0001055
		- 10	824,077,504	365	0.0000443
		0	824,078,685	1,546	0.0001876
		+ 10	824,076,957	-182	-0.0000221
		+ 20 (Ref)	824,077,139	0	0.0000000
		+ 30	824,078,849	1,710	0.0002075
		+ 40	824,078,688	1,549	0.0001880
		+ 50	824,077,562	423	0.0000513
Battery Endpoint	3.69	+ 20	824,077,881	742	0.0000900

Table 7-15. NR Band n26 Frequency Stability Data



Plot 7-65. NR Band n26 Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS918U** complies with all the requirements of Parts 22(H) and 90 of the FCC rules.