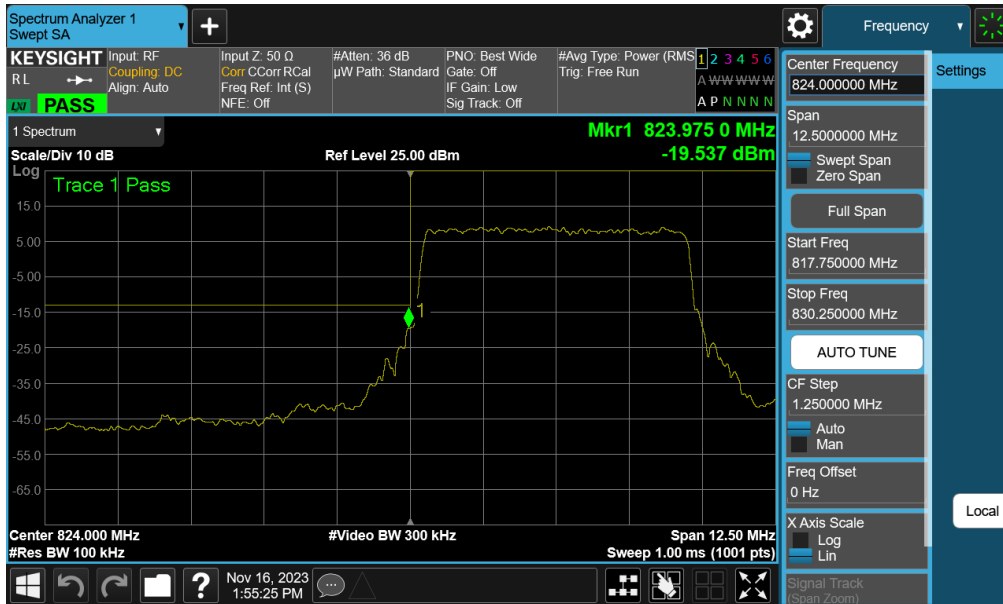


NR Band n5



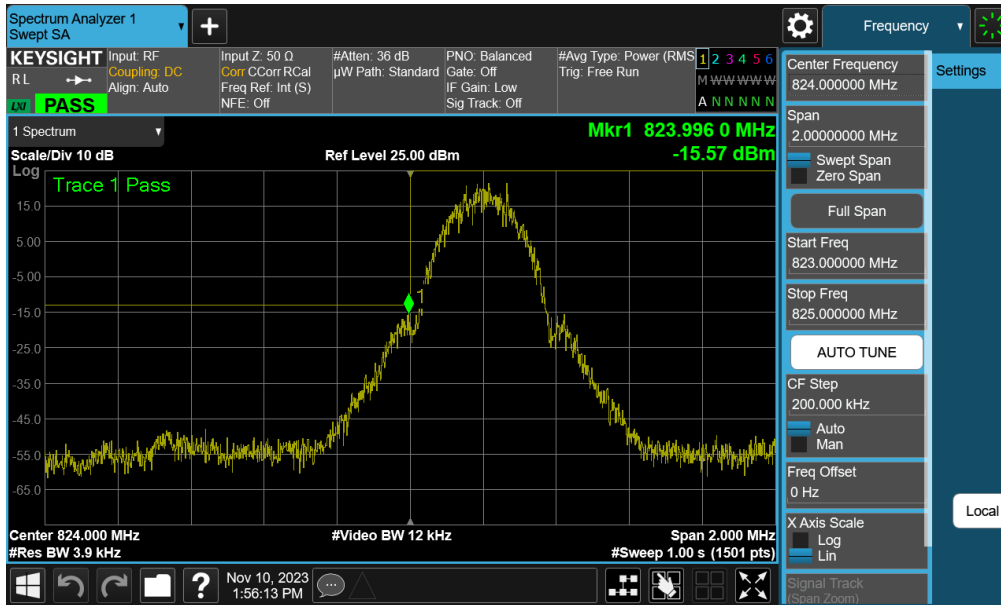
Plot 7-40. Lower Band Edge Plot (NR Band n5 – 5.0MHz BPSK - Full RB)



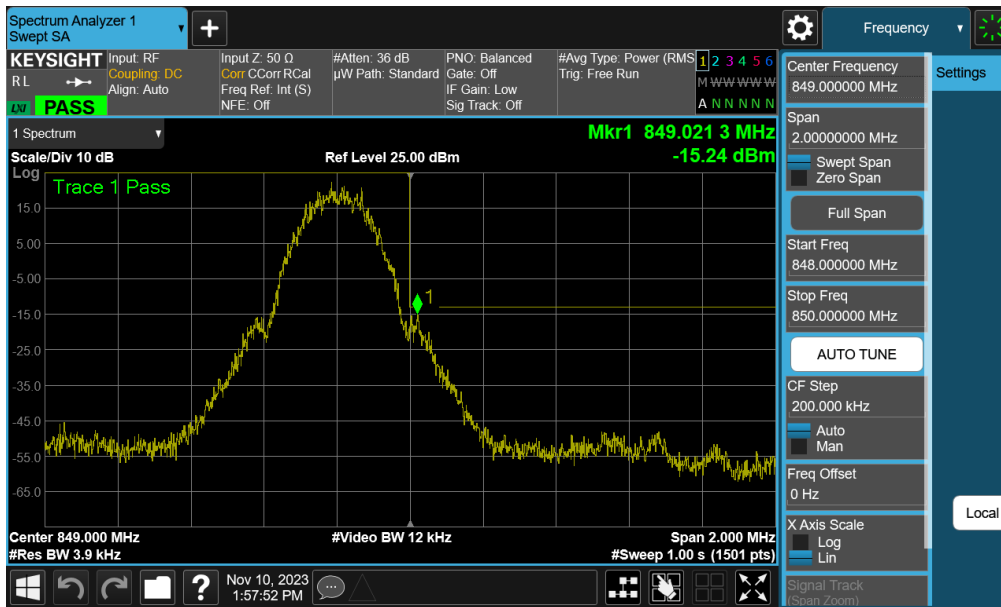
Plot 7-41. Upper Band Edge Plot (NR Band n5 – 5.0MHz BPSK - Full RB)

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GSM/GPRS Cell



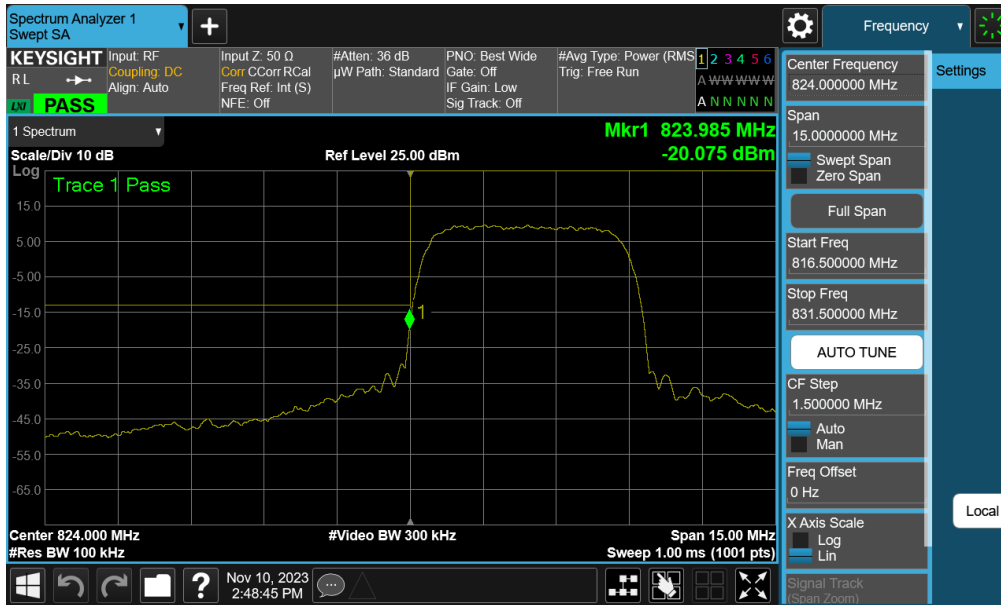
Plot 7-42. Lower Band Edge Plot (GPRS Cell – Ch. 128)



Plot 7-43. Upper Band Edge Plot (GPRS Cell – Ch. 251)

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WCDMA Cell



Plot 7-44. Lower Band Edge Plot (WCDMA Cell – Ch. 4132)



Plot 7-45. Upper Band Edge Plot (WCDMA Cell – Ch. 4233)

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7.5 Radiated Power (ERP)

Test Overview

Effective Radiated Power (ERP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.2.4.4

Test Settings

1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer’s “time domain power” measurement capability is used.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to “free run” for signals with continuous operation with the sweep times set to “auto”. Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration.
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the “gating” function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize.

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Test Setup

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

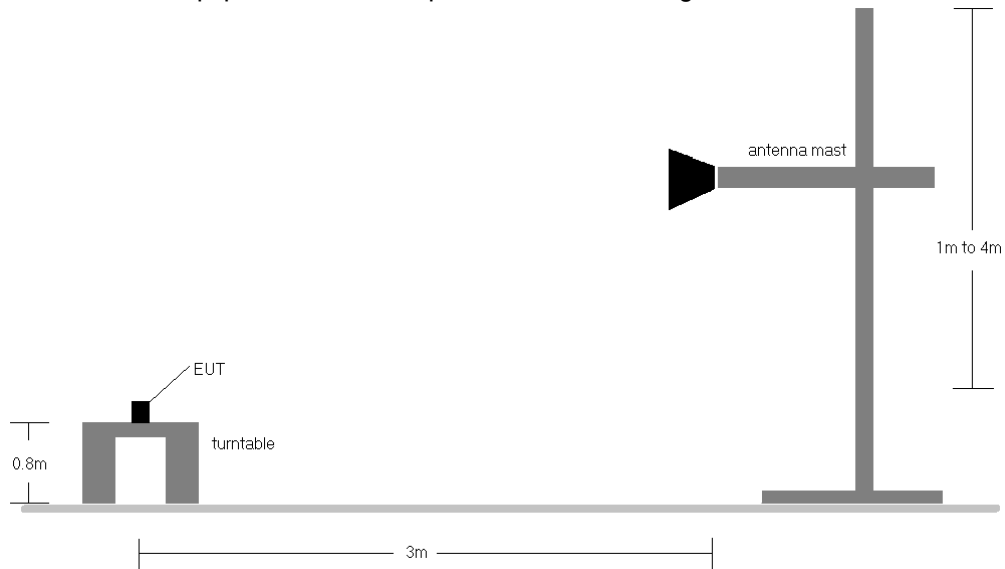


Figure 7-4. Radiated Test Setup < 1GHz

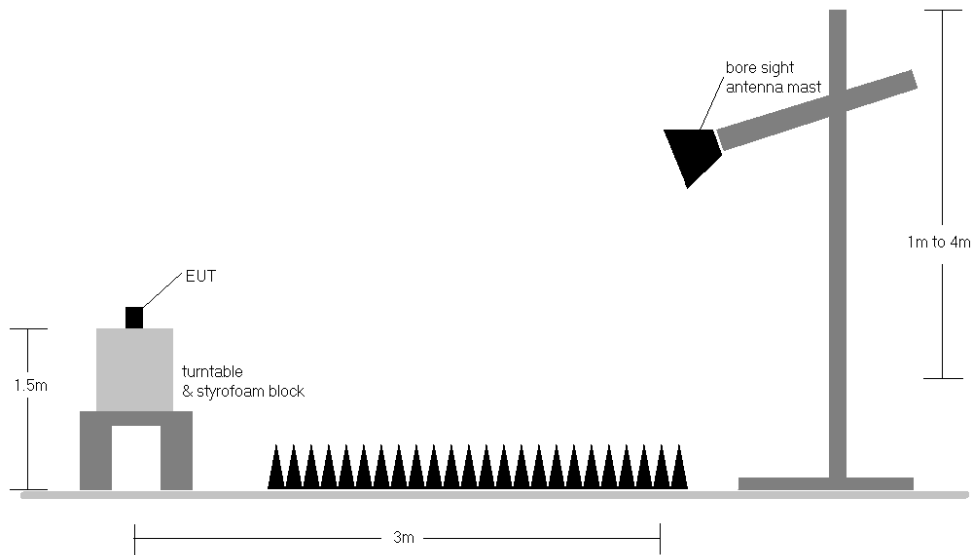


Figure 7-5. Radiated Test Setup > 1GHz

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Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) 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.
- 4) This unit was tested with its standard battery.
- 5) 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.

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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]
15MHz (Band 26 only)	QPSK	831.50	H	112	62	1.29	1/ 37	18.74	17.88	0.061	38.45	-20.57	20.03	0.101	40.61	-20.58
	QPSK	836.50	H	112	66	1.31	1/ 0	18.90	18.06	0.064	38.45	-20.39	20.21	0.105	40.61	-20.40
	QPSK	841.50	H	115	60	1.33	1/ 0	18.20	17.38	0.055	38.45	-21.07	19.53	0.090	40.61	-21.07
	16-QAM	831.50	H	112	62	1.29	1/ 37	18.44	17.58	0.057	38.45	-20.87	19.73	0.094	40.61	-20.88
10 MHz	QPSK	829.00	H	112	62	1.27	1/ 0	18.84	17.96	0.063	38.45	-20.49	20.11	0.103	40.61	-20.49
	QPSK	836.50	H	112	66	1.31	1/ 0	18.98	18.14	0.065	38.45	-20.31	20.29	0.107	40.61	-20.32
	QPSK	844.00	H	115	60	1.35	1/ 0	18.26	17.45	0.056	38.45	-21.00	19.60	0.091	40.61	-21.00
	16-QAM	829.00	H	112	62	1.27	1/ 0	18.42	17.55	0.057	38.45	-20.91	19.70	0.093	40.61	-20.91
5 MHz	QPSK	826.50	H	112	62	1.26	1/ 0	19.11	18.22	0.066	38.45	-20.23	20.37	0.109	40.61	-20.24
	QPSK	836.50	H	112	66	1.31	1/ 0	18.96	18.12	0.065	38.45	-20.33	20.27	0.106	40.61	-20.34
	QPSK	846.50	H	115	60	1.36	1/ 0	18.20	17.41	0.055	38.45	-21.04	19.56	0.090	40.61	-21.04
	16-QAM	826.50	H	112	62	1.26	1/ 0	18.57	17.68	0.059	38.45	-20.77	19.83	0.096	40.61	-20.77
3 MHz	QPSK	825.50	H	112	62	1.26	1/ 7	19.26	18.37	0.069	38.45	-20.09	20.52	0.113	40.61	-20.09
	QPSK	836.50	H	112	66	1.31	1/ 7	19.17	18.33	0.068	38.45	-20.12	20.48	0.112	40.61	-20.13
	QPSK	847.50	H	115	60	1.36	1/ 7	18.33	17.55	0.057	38.45	-20.90	19.70	0.093	40.61	-20.91
	16-QAM	825.50	H	112	62	1.26	1/ 7	18.59	17.70	0.059	38.45	-20.75	19.85	0.097	40.61	-20.76
1.4 MHz	QPSK	824.70	H	112	62	1.25	1/ 0	19.08	18.18	0.066	38.45	-20.27	20.33	0.108	40.61	-20.28
	QPSK	836.50	H	112	66	1.31	1/ 3	19.19	18.35	0.068	38.45	-20.10	20.50	0.112	40.61	-20.11
	QPSK	848.30	H	115	60	1.37	1/ 3	18.34	17.56	0.057	38.45	-20.89	19.71	0.094	40.61	-20.90
	16-QAM	824.70	H	112	62	1.25	1/ 0	18.77	17.87	0.061	38.45	-20.58	20.02	0.100	40.61	-20.59
15MHz	QPSK (Opposite Pol.)	836.50	V	146	231	1.31	1/ 37	17.40	16.56	0.045	38.45	-21.89	18.71	0.074	40.61	-21.90

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

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	834.00	H	113	61	1.30	1/ 53	18.89	18.04	0.064	38.45	-20.41	20.19	0.104	40.61	-20.42
	π/2 BPSK	836.50	H	113	61	1.31	1/ 53	18.91	18.07	0.064	38.45	-20.38	20.22	0.105	40.61	-20.39
	π/2 BPSK	839.00	H	117	55	1.32	1/ 53	18.96	18.13	0.065	38.45	-20.32	20.28	0.107	40.61	-20.32
	QPSK	834.00	H	113	61	1.30	1/ 53	18.63	17.78	0.060	38.45	-20.67	19.93	0.098	40.61	-20.68
	QPSK	836.50	H	113	61	1.31	1/ 53	18.84	18.00	0.063	38.45	-20.45	20.15	0.104	40.61	-20.46
	QPSK	839.00	H	117	55	1.32	1/ 53	19.13	18.30	0.068	38.45	-20.15	20.45	0.111	40.61	-20.15
15 MHz	16-QAM	839.00	H	117	55	1.32	1/ 53	18.16	17.33	0.054	38.45	-21.12	19.48	0.089	40.61	-21.12
	π/2 BPSK	831.50	H	113	61	1.29	1/ 39	18.94	18.08	0.064	38.45	-20.37	20.23	0.105	40.61	-20.38
	π/2 BPSK	836.50	H	113	61	1.31	1/ 1	18.83	17.99	0.063	38.45	-20.46	20.14	0.103	40.61	-20.47
	π/2 BPSK	841.50	H	117	55	1.33	1/ 39	18.88	18.06	0.064	38.45	-20.39	20.21	0.105	40.61	-20.40
	QPSK	831.50	H	113	61	1.29	1/ 39	18.67	17.80	0.060	38.45	-20.65	19.95	0.099	40.61	-20.65
	QPSK	836.50	H	113	61	1.31	1/ 77	18.89	18.05	0.064	38.45	-20.40	20.20	0.105	40.61	-20.40
10 MHz	QPSK	841.50	H	117	55	1.33	1/ 39	19.18	18.36	0.069	38.45	-20.09	20.51	0.112	40.61	-20.10
	16-QAM	841.50	H	117	55	1.33	1/ 39	18.09	17.28	0.053	38.45	-21.17	19.43	0.088	40.61	-21.18
	π/2 BPSK	829.00	H	113	61	1.27	1/ 1	18.80	17.92	0.062	38.45	-20.53	20.07	0.102	40.61	-20.53
	π/2 BPSK	836.50	H	113	61	1.31	1/ 1	18.88	18.04	0.064	38.45	-20.41	20.19	0.105	40.61	-20.41
	π/2 BPSK	844.00	H	117	55	1.35	1/ 1	18.91	18.10	0.065	38.45	-20.35	20.25	0.106	40.61	-20.36
	QPSK	829.00	H	113	61	1.27	1/ 26	18.59	17.72	0.059	38.45	-20.73	19.87	0.097	40.61	-20.74
5 MHz	QPSK	836.50	H	113	61	1.31	1/ 1	18.87	18.03	0.064	38.45	-20.42	20.18	0.104	40.61	-20.43
	QPSK	844.00	H	117	55	1.35	1/ 26	18.97	18.17	0.066	38.45	-20.28	20.32	0.108	40.61	-20.29
	16-QAM	844.00	H	117	55	1.35	1/ 1	18.16	17.36	0.054	38.45	-21.09	19.51	0.089	40.61	-21.10
	π/2 BPSK	829.00	H	113	61	1.26	1/ 12	18.94	18.05	0.064	38.45	-20.40	20.20	0.105	40.61	-20.41
	π/2 BPSK	836.50	H	113	61	1.31	1/ 12	19.03	18.19	0.066	38.45	-20.26	20.34	0.108	40.61	-20.26
	π/2 BPSK	844.00	H	117	55	1.36	1/ 12	19.09	18.30	0.068	38.45	-20.15	20.45	0.111	40.61	-20.16
20 MHz	QPSK	829.00	H	113	61	1.26	1/ 12	18.74	17.85	0.061	38.45	-20.60	20.00	0.100	40.61	-20.60
	QPSK	836.50	H	113	61	1.31	1/ 1	19.02	18.18	0.066	38.45	-20.27	20.33	0.108	40.61	-20.27
	QPSK	844.00	H	117	55	1.36	1/ 12	18.99	18.20	0.066	38.45	-20.25	20.35	0.108	40.61	-20.26
	16-QAM	844.00	H	117	55	1.36	1/ 1	18.15	17.36	0.054	38.45	-21.09	19.51	0.089	40.61	-21.09
	QPSK (CP-OFDM)	839.00	H	117	55	1.32	1/ 104	17.02	16.19	0.042	38.45	-22.28	18.34	0.068	40.61	-22.27
	QPSK (Opposite Pol.)	839.00	V	138	234	1.32	1/ 53	17.19	16.36	0.043	38.45	-22.09	18.51	0.071	40.61	-22.10

Table 7-6. ERP Data (NR Band n5)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GSM850	H	123	71	25.44	1.25	24.54	0.284	38.45	-13.91	26.69	0.467	40.61	-13.92
836.60	GSM850	H	117	63	25.90	1.31	25.06	0.321	38.45	-13.39	27.21	0.526	40.61	-13.40
848.80	GSM850	H	118	70	26.13	1.37	25.35	0.343	38.45	-13.10	27.50	0.562	40.61	-13.11
848.80	GSM850 (Opposite Pol.)	V	146	202	25.71	1.37	24.93	0.311	38.45	-13.52	27.08	0.510	40.61	-13.53
848.80	EDGE850	H	118	70	17.32	1.37	16.54	0.045	38.45	-21.91	18.69	0.074	40.61	-21.92

Table 7-7. ERP Data (GPRS Cell)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	H	113	64	18.08	1.26	17.19	0.052	38.45	-21.26	19.34	0.086	40.61	-21.27
836.60	WCDMA850	H	113	53	18.51	1.31	17.67	0.058	38.45	-20.78	19.82	0.096	40.61	-20.79
846.60	WCDMA850	H	118	62	18.60	1.36	17.81	0.060	38.45	-20.64	19.96	0.099	40.61	-20.65
846.60	WCDMA850 (Opposite Pol.)	V	145	195	18.07	1.31	17.23	0.053	38.45	-21.22	19.38	0.087	40.61	-21.23

Table 7-8. ERP Data (WCDMA Cell)

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7.6 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 $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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Test Setup

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

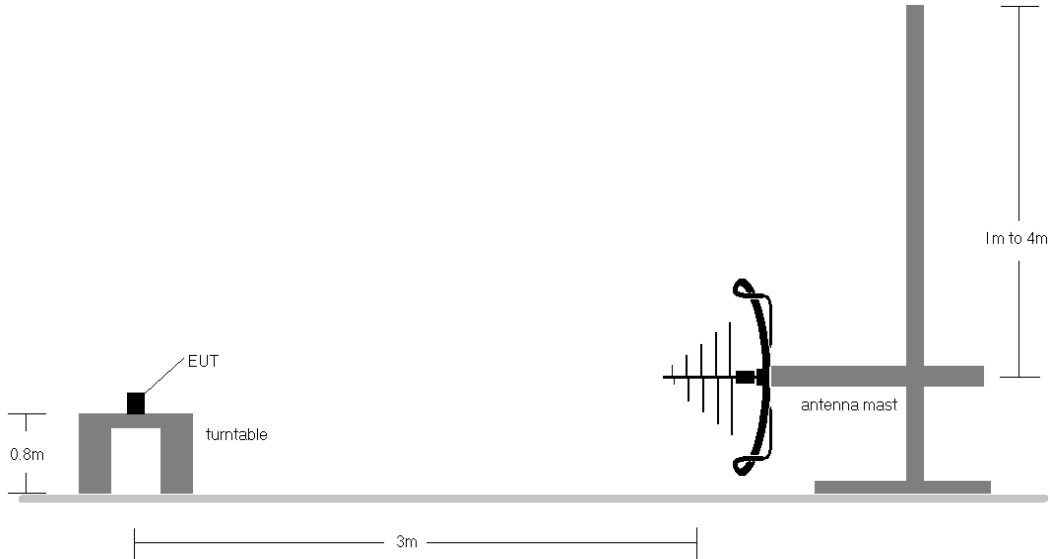


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

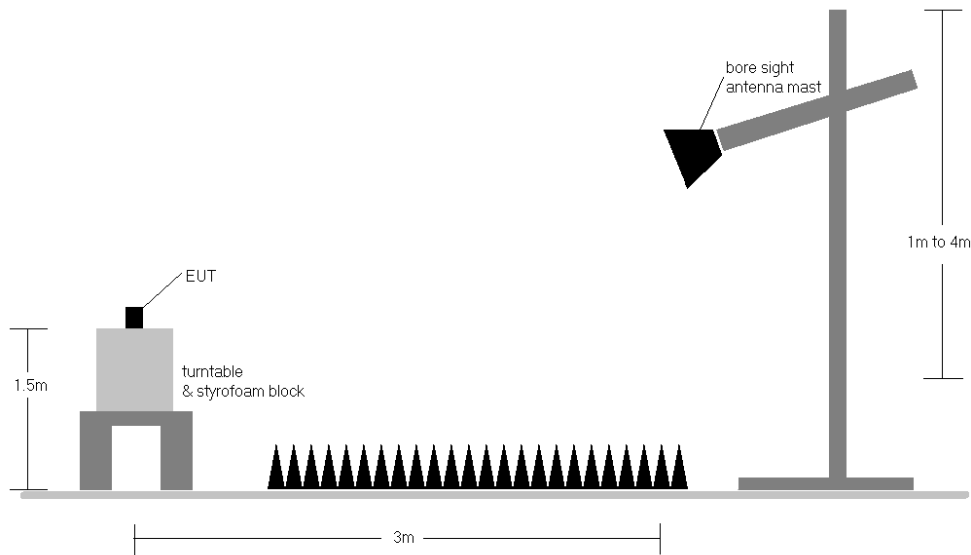


Figure 7-7. Test Instrument & Measurement Setup > 1GHz

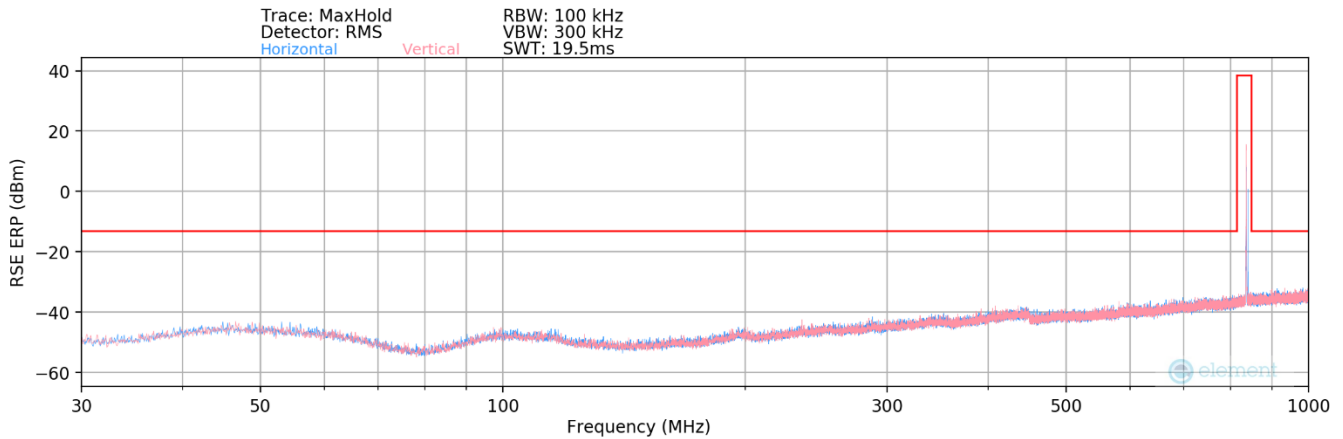
FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
 - a) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) 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.
- 5) This unit was tested with its standard battery.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) 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.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 9) 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.
- 10) Spurious emission in EN-DC Operating mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor) has been checked and was found to not to be the worst case.

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LTE Band 26/5

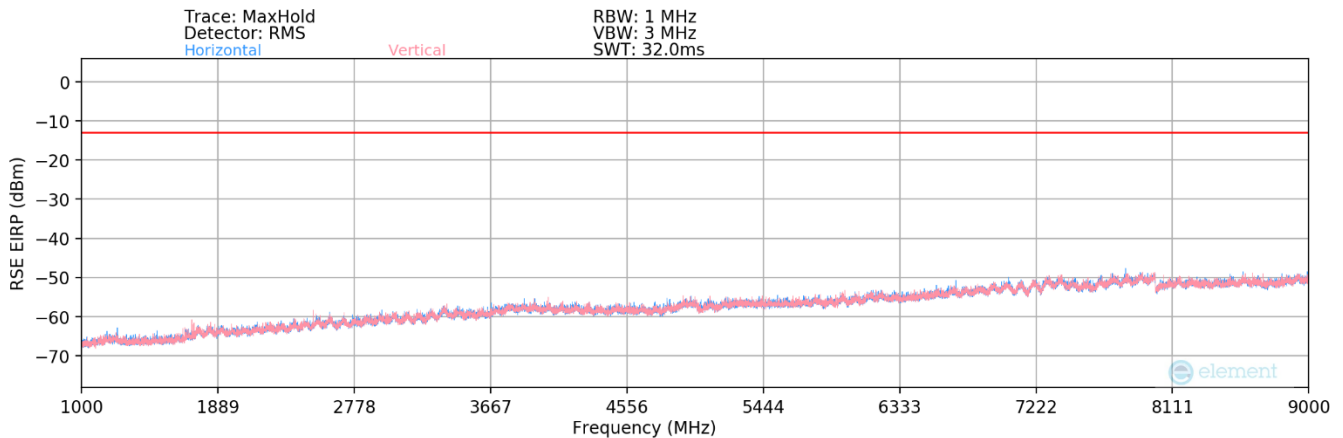


Plot 7-46. Radiated Spurious Plot Below 1GHz (LTE Band 26/5)

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / 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]
877.20	H	-	-	-82.69	30.26	54.57	-42.83	-13.00	-29.83

Table 7-9. Radiated Spurious Data Below 1GHz (LTE Band 26/5)



Plot 7-47. Radiated Spurious Plot Above 1GHz (LTE Band 26/5)

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Bandwidth (MHz):	10
Frequency (MHz):	829
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1658.00	H	148	214	-72.88	-8.93	25.19	-70.07	-13.00	-57.07
2487.00	H	154	307	-67.44	-5.16	34.40	-60.86	-13.00	-47.86
3316.00	H	-	-	-76.06	-1.76	29.18	-66.08	-13.00	-53.08
4145.00	H	-	-	-75.43	-0.02	31.55	-63.71	-13.00	-50.71
4974.00	H	-	-	-76.25	1.50	32.25	-63.01	-13.00	-50.01

Table 7-10. Radiated Spurious Data Above 1GHz (LTE Band 26/5 – Low Channel)

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.00	H	147	200	-72.01	-8.79	26.20	-69.05	-13.00	-56.05
2509.50	H	159	312	-70.59	-4.88	31.53	-63.73	-13.00	-50.73
3346.00	H	-	-	-75.18	-1.21	30.61	-64.64	-13.00	-51.64
4182.50	H	-	-	-76.36	0.18	30.82	-64.44	-13.00	-51.44
5019.00	H	-	-	-76.47	0.78	31.31	-63.95	-13.00	-50.95

Table 7-11. Radiated Spurious Data Above 1GHz (LTE Band 26/5 – Mid Channel)

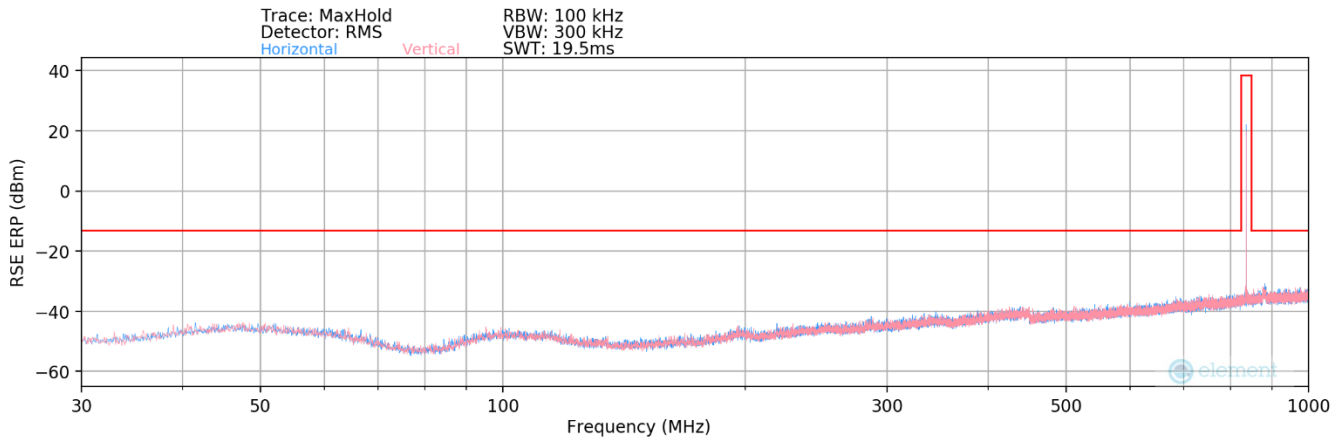
Bandwidth (MHz):	10
Frequency (MHz):	844
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	H	150	213	-71.81	-8.58	26.61	-68.65	-13.00	-55.65
2532.00	H	158	311	-66.46	-4.65	35.89	-59.36	-13.00	-46.36
3376.00	H	-	-	-75.27	-0.92	30.81	-64.45	-13.00	-51.45
4220.00	H	-	-	-75.53	0.01	31.48	-63.78	-13.00	-50.78
5064.00	H	-	-	-76.38	1.11	31.73	-63.53	-13.00	-50.53

Table 7-12. Radiated Spurious Data Above 1GHz (LTE Band 26/5 – High Channel)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n5

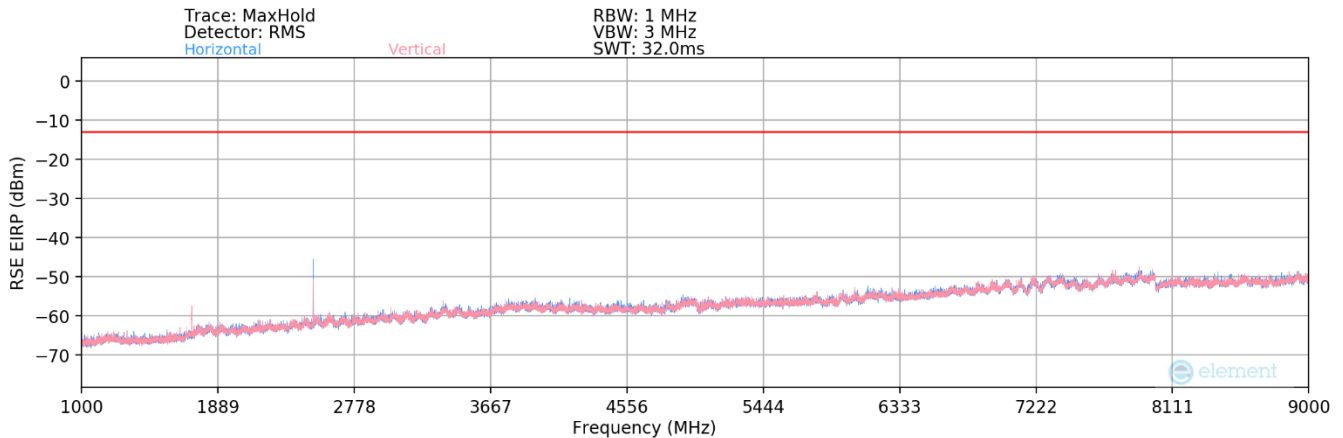


Plot 7-48. Radiated Spurious Plot Below 1GHz (NR Band n5)

Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53

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]
551.09	H	-	-	-79.44	25.41	52.97	-44.44	-13.00	-31.44

Table 7-13. Radiated Spurious Data Below 1GHz (NR Band n5)



Plot 7-49. Radiated Spurious Plot Above 1GHz (NR Band n5)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth (MHz):	20
Frequency (MHz):	834
RB / Offset:	1 / 53

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1668.00	H	112	9	-68.60	-8.83	29.57	-65.69	-13.00	-52.69
2502.00	H	116	21	-60.27	-4.98	41.75	-53.51	-13.00	-40.51
3336.00	H	-	-	-75.34	-1.37	30.29	-64.97	-13.00	-51.97
4170.00	H	-	-	-75.91	0.10	31.19	-64.06	-13.00	-51.06
5004.00	H	-	-	-75.95	1.29	32.34	-62.92	-13.00	-49.92

Table 7-14. Radiated Spurious Data Above 1GHz (NR Band n5 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.00	H	111	16	-68.61	-8.79	29.60	-65.65	-13.00	-52.65
2509.50	H	110	25	-61.31	-4.88	40.81	-54.45	-13.00	-41.45
3346.00	H	-	-	-75.61	-1.21	30.18	-65.07	-13.00	-52.07
4182.50	H	-	-	-76.36	0.18	30.82	-64.44	-13.00	-51.44
5019.00	H	-	-	-75.94	0.78	31.84	-63.42	-13.00	-50.42

Table 7-15. Radiated Spurious Data 1GHz (NR Band n5 – Mid Channel)

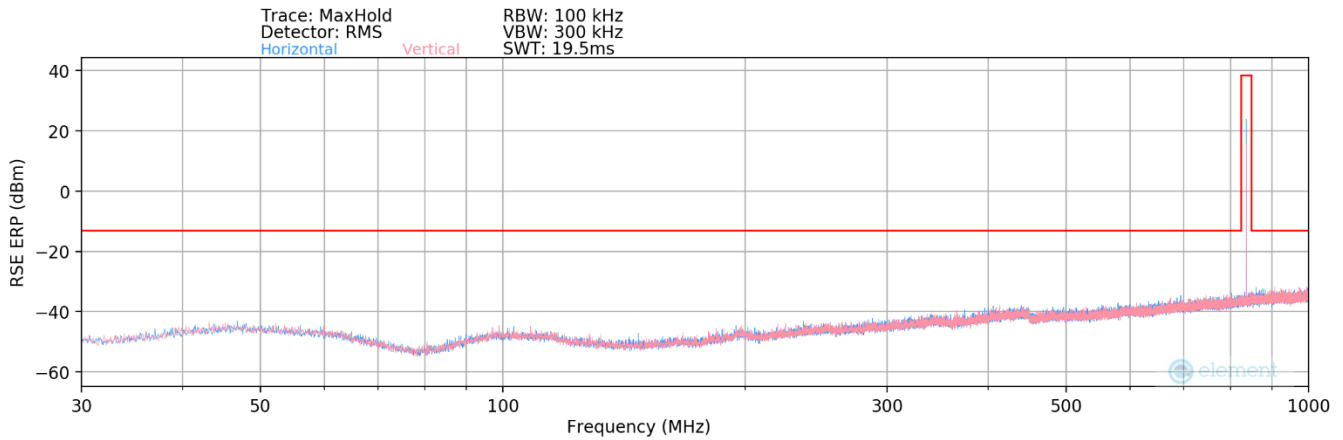
Bandwidth (MHz):	20
Frequency (MHz):	839
RB / Offset:	1 / 53

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1678.00	H	108	13	-67.32	-8.73	30.95	-64.30	-13.00	-51.30
2517.00	H	124	26	-60.18	-4.77	42.05	-53.21	-13.00	-40.21
3356.00	H	-	-	-75.34	-1.04	30.62	-64.64	-13.00	-51.64
4195.00	H	-	-	-75.44	0.13	31.69	-63.57	-13.00	-50.57
5034.00	H	-	-	-75.59	0.87	32.28	-62.98	-13.00	-49.98

Table 7-16. Radiated Spurious Data 1GHz (NR Band n5 – High Channel)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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GSM/GPRS Cell

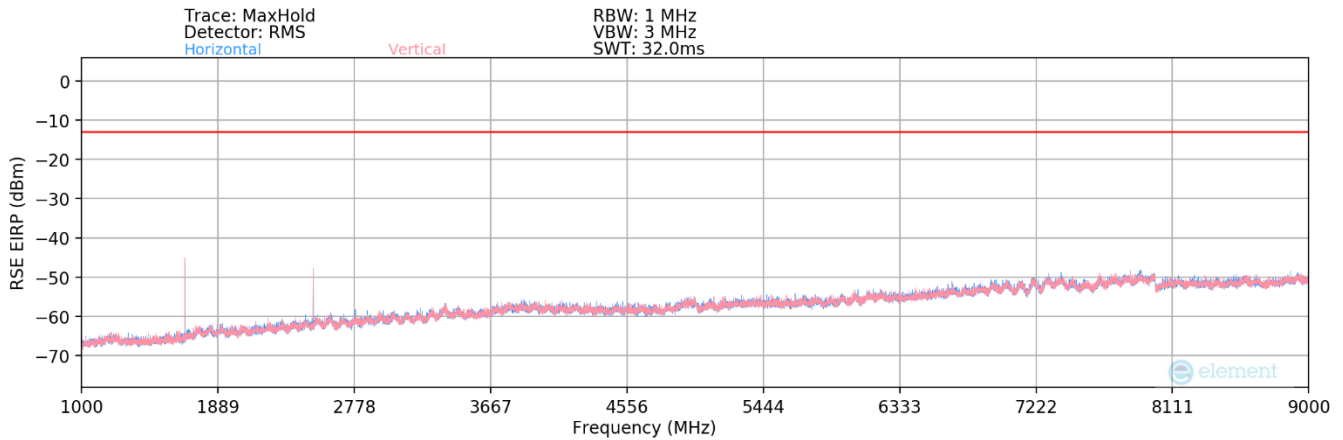


Plot 7-50. Radiated Spurious Plot Below 1GHz (GPRS Cell)

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

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]
546.54	H	-	-	-80.55	25.31	51.76	-45.65	-13.00	-32.65

Table 7-17. Radiated Spurious Data Below 1GHz (GPRS Cell)



Plot 7-51. Radiated Spurious Plot Above 1GHz (GPRS Cell)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

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]
1648.40	H	244	133	-46.35	-9.05	51.60	-43.66	-13.00	-30.66
2472.60	H	367	343	-50.48	-5.69	50.83	-44.43	-13.00	-31.43
3296.80	H	-	-	-73.58	-2.58	30.84	-64.42	-13.00	-51.42
4121.00	H	-	-	-74.11	-0.18	32.71	-62.55	-13.00	-49.55
4945.20	H	-	-	-74.25	1.04	33.79	-61.46	-13.00	-48.46

Table 7-18. Radiated Spurious Data Above 1GHz (GPRS Cell – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

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]
1673.20	H	235	132	-46.95	-8.81	51.24	-44.02	-13.00	-31.02
2509.80	H	352	349	-52.95	-5.28	48.77	-46.48	-13.00	-33.48
3346.40	H	-	-	-73.52	-1.96	31.52	-63.74	-13.00	-50.74
4183.00	H	-	-	-74.05	-0.03	32.92	-62.33	-13.00	-49.33
5019.60	H	-	-	-74.01	0.50	33.49	-61.77	-13.00	-48.77

Table 7-19. Radiated Spurious Data Above 1GHz (GPRS Cell – Mid Channel)

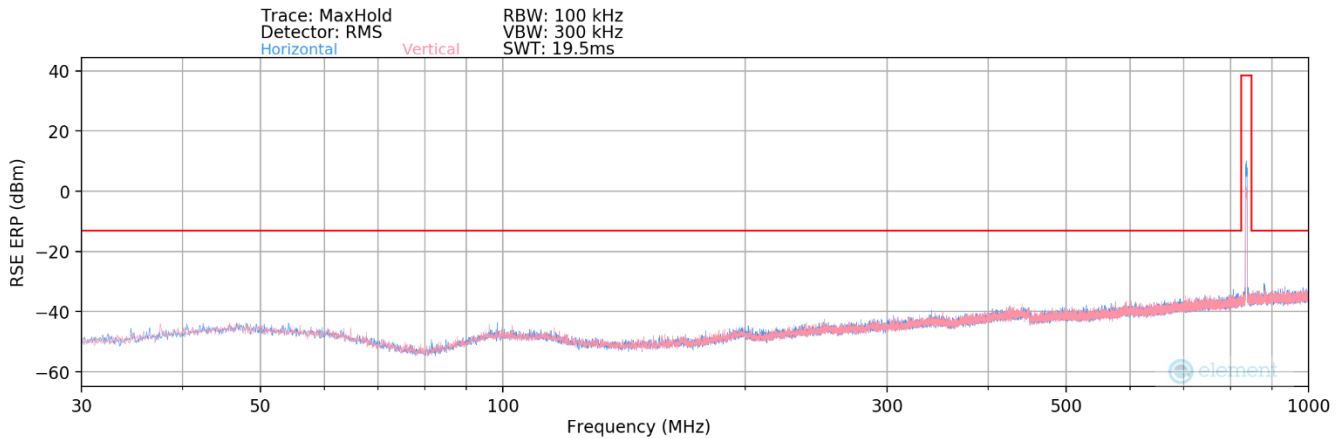
Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8

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]
1697.60	H	237	130	-46.42	-8.50	52.08	-43.17	-13.00	-30.17
2546.40	H	361	355	-55.88	-4.96	46.16	-49.10	-13.00	-36.10
3395.20	H	-	-	-73.61	-1.65	31.74	-63.52	-13.00	-50.52
4244.00	H	-	-	-74.54	-0.60	31.86	-63.40	-13.00	-50.40
5092.80	H	-	-	-74.29	1.11	33.82	-61.43	-13.00	-48.43

Table 7-20. Radiated Spurious Data Above 1GHz (GPRS Cell – High Channel)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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WCDMA Cell

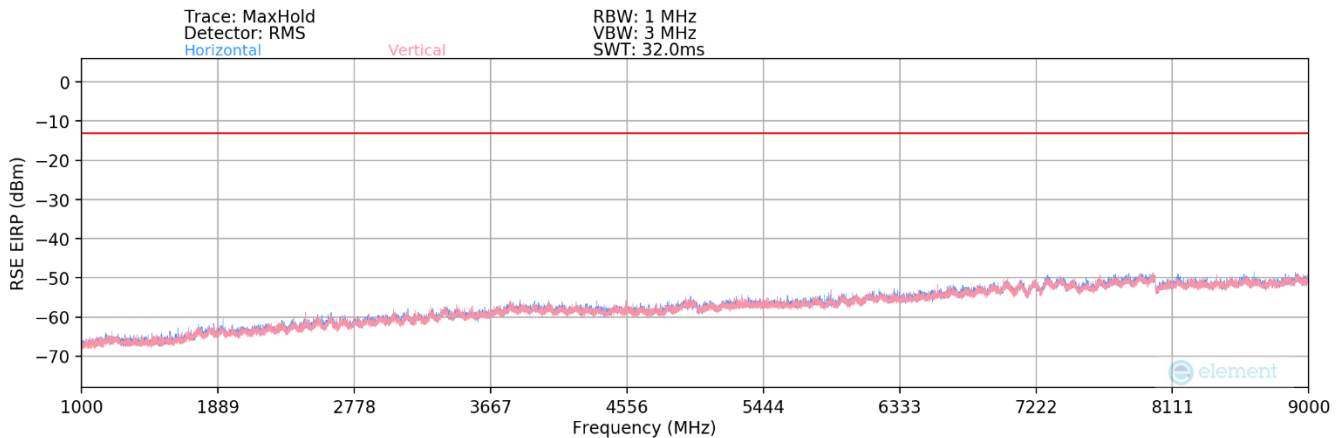


Plot 7-52. Radiated Spurious Plot Below 1GHz (WCDMA Cell)

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

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]
634.57	H	-	-	-80.28	31.04	57.76	-39.65	-13.00	-26.65

Table 7-21. Radiated Spurious Data Below 1GHz (WCDMA Cell)



Plot 7-53. Radiated Spurious Plot Above 1GHz (WCDMA Cell)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode:	WCDMA RMC
Channel:	4132
Frequency (MHz):	826.4

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]
1652.80	H	207	21	-73.90	-9.00	24.10	-71.16	-13.00	-58.16
2479.20	H	194	26	-69.30	-5.64	32.06	-63.20	-13.00	-50.20
3305.60	H	-	-	-74.67	-2.50	29.83	-65.43	-13.00	-52.43
4132.00	H	-	-	-74.79	-0.23	31.98	-63.28	-13.00	-50.28
4958.40	H	-	-	-75.27	1.08	32.81	-62.45	-13.00	-49.45

Table 7-22. Radiated Spurious Data Above 1GHz (WCDMA Cell – Low Channel)

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

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]
1673.20	H	193	27	-73.52	-8.81	24.67	-70.59	-13.00	-57.59
2509.80	H	190	15	-69.01	-5.28	32.71	-62.54	-13.00	-49.54
3346.40	H	-	-	-74.74	-1.96	30.30	-64.96	-13.00	-51.96
4183.00	H	-	-	-75.44	-0.03	31.53	-63.72	-13.00	-50.72
5019.60	H	-	-	-75.09	0.50	32.41	-62.85	-13.00	-49.85

Table 7-23. Radiated Spurious Data Above 1GHz (WCDMA Cell – Mid Channel)

Mode:	WCDMA RMC
Channel:	4233
Frequency (MHz):	846.6

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]
1693.20	H	199	3	-72.62	-8.56	25.82	-69.43	-13.00	-56.43
2539.80	H	194	8	-68.73	-5.00	33.27	-61.99	-13.00	-48.99
3386.40	H	-	-	-74.68	-1.63	30.69	-64.57	-13.00	-51.57
4233.00	H	-	-	-74.65	-0.28	32.07	-63.19	-13.00	-50.19
5079.60	H	-	-	-75.00	0.82	32.82	-62.43	-13.00	-49.43

Table 7-24. Radiated Spurious Data Above 1GHz (WCDMA Cell – High Channel)

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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7.7 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.

For Part 22 and RSS-132, 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

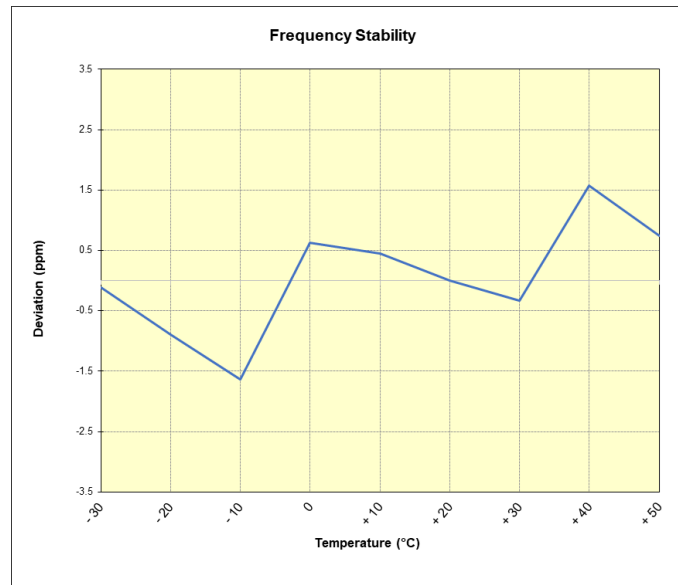
None

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LTE Band 26/5

LTE Band 26/5					
		Operating Frequency (Hz):		836,500,000	
		Ref. Voltage (VDC):		4.414	
		Deviation Limit:		± 0.00025% or 2.5 ppm	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.414	- 30	836,499,053	-100	-0.0000120
		- 20	836,498,401	-752	-0.0000899
		- 10	836,497,783	-1,370	-0.0001637
		0	836,499,677	524	0.0000626
		+ 10	836,499,530	377	0.0000451
		+ 20 (Ref)	836,499,153	0	0.0000000
		+ 30	836,498,872	-281	-0.0000336
		+ 40	836,500,469	1,316	0.0001573
Battery Endpoint	3.774	+ 20	836,503,486	4,333	0.0005180

Table 7-25. LTE Band 26/5 Frequency Stability Data



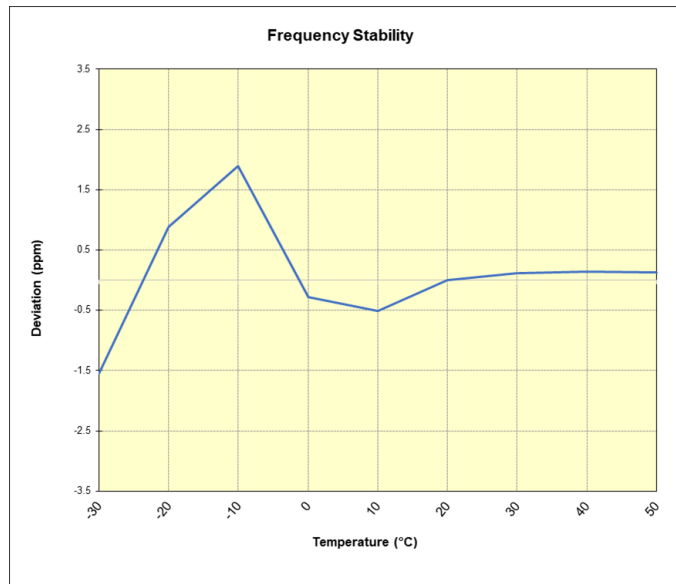
Plot 7-54. LTE Band 26/5 Frequency Stability Chart

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n5

NR Band n5					
Operating Frequency (Hz):		836,500,000			
Ref. Voltage (VDC):		4.414			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.414	- 30	836,300,174	-1,296	-0.0001549
		- 20	836,302,205	735	0.0000879
		- 10	836,303,058	1,588	0.0001899
		0	836,301,238	-231	-0.0000277
		+ 10	836,301,043	-427	-0.0000511
		+ 20 (Ref)	836,301,470	0	0.0000000
		+ 30	836,301,567	98	0.0000117
		+ 40	836,301,589	119	0.0000143
Battery Endpoint	3.774	+ 20	836,301,559	90	0.0000107

Table 7-26. NR Band n5 Frequency Stability Data



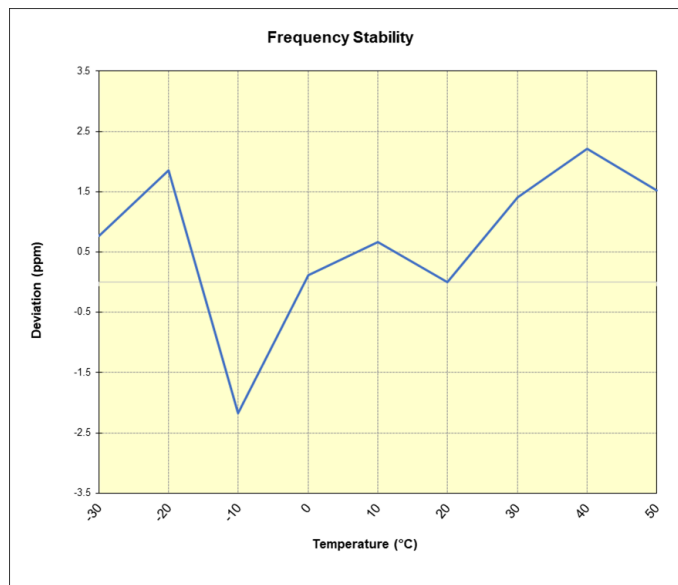
Plot 7-55. NR Band n5 Frequency Stability Chart

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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GSM/GPRS Cell

GSM/GPRS Cellular					
		Operating Frequency (Hz):		836,600,000	
		Ref. Voltage (VDC):		4.414	
		Deviation Limit:		± 0.00025% or 2.5 ppm	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.414	- 30	836,598,038	646	0.0000773
		- 20	836,598,940	1,549	0.0001852
		- 10	836,595,572	-1,819	-0.0002174
		0	836,597,486	95	0.0000113
		+ 10	836,597,948	557	0.0000666
		+ 20 (Ref)	836,597,391	0	0.0000000
		+ 30	836,598,567	1,176	0.0001406
		+ 40	836,599,240	1,849	0.0002210
Battery Endpoint	3.774	+ 20	836,605,078	7,687	0.0009189

Table 7-27. GSM/GPRS Cell Frequency Stability Data



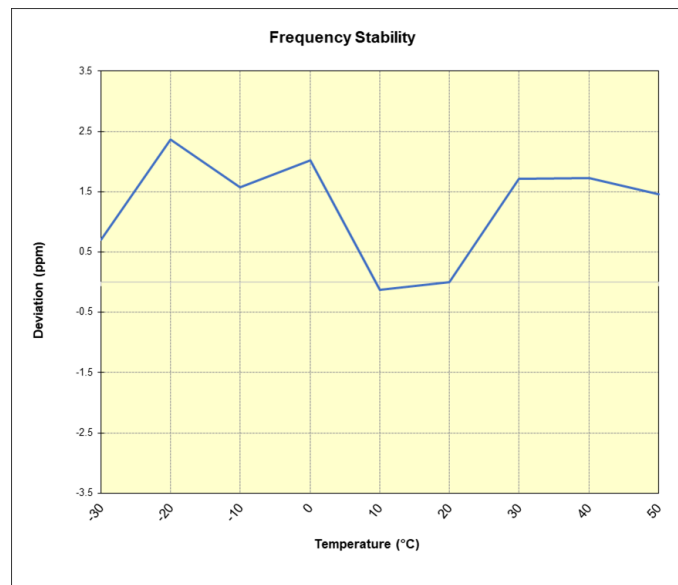
Plot 7-56. GSM/GPRS Cell Frequency Stability Chart

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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WCDMA Cell

WCDMA Cellular					
Operating Frequency (Hz):		836,600,000			
Ref. Voltage (VDC):		4.414			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.414	- 30	836,591,423	589	0.0000704
		- 20	836,592,811	1,977	0.0002363
		- 10	836,592,148	1,314	0.0001571
		0	836,592,521	1,687	0.0002017
		+ 10	836,590,727	-106	-0.0000127
		+ 20 (Ref)	836,590,834	0	0.0000000
		+ 30	836,592,266	1,433	0.0001713
		+ 40	836,592,274	1,440	0.0001722
Battery Endpoint	3.774	+ 20	836,591,343	509	0.0000608

Table 7-28. WCDMA Cell Frequency Stability Data



Plot 7-57. WCDMA Cell Frequency Stability Chart

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA356E** complies with all the requirements of Part 22 of the FCC rules.

FCC ID: A3LSMA356E	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2310260110-01.A3L	Test Dates: 11/6/2023 - 11/21/2023	EUT Type: Portable Handset	Page 63 of 63