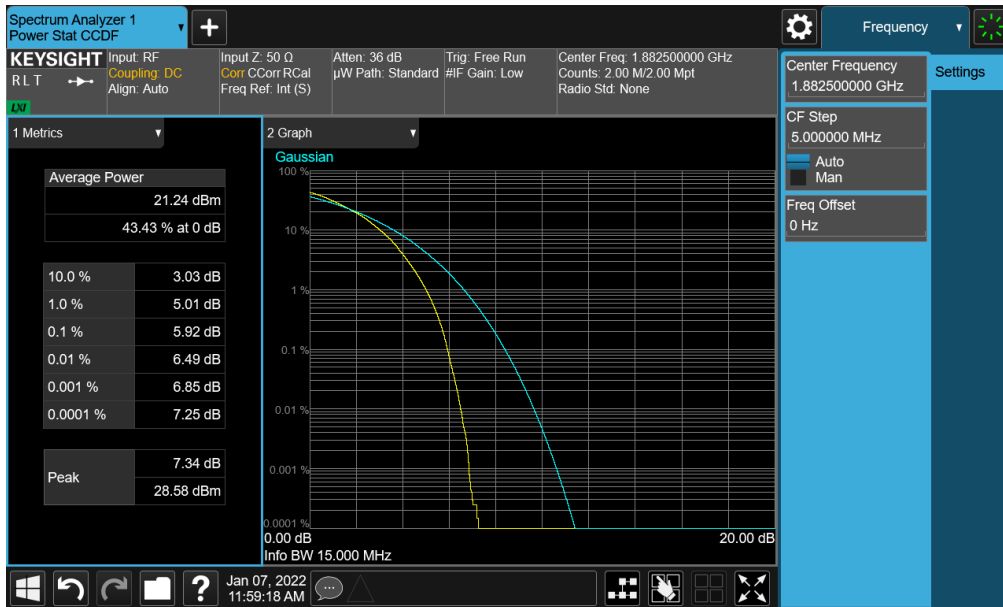
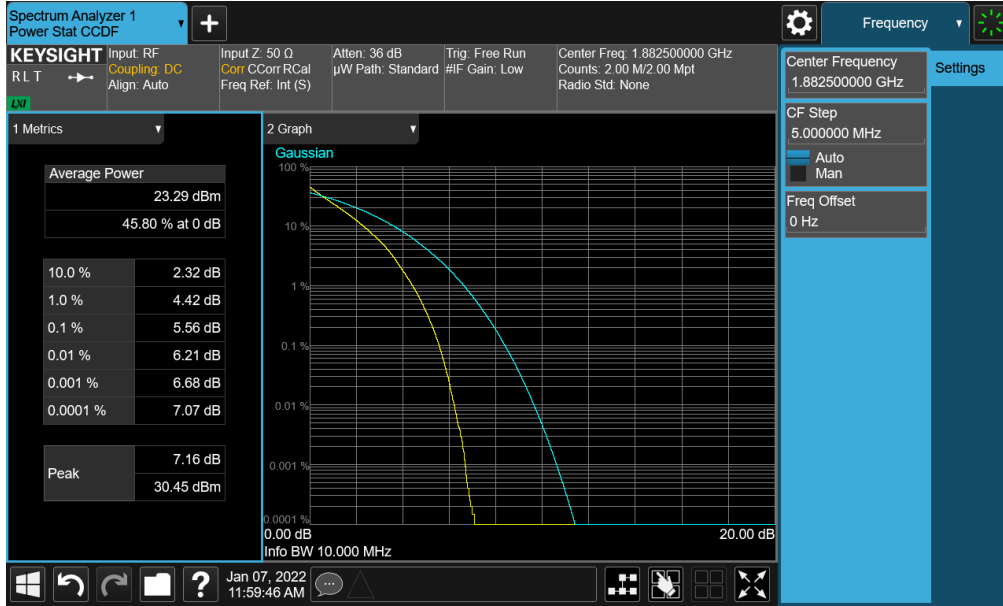


Plot 7-87. PAR Plot (LTE Band 25/2 - 15MHz QPSK - Full RB)

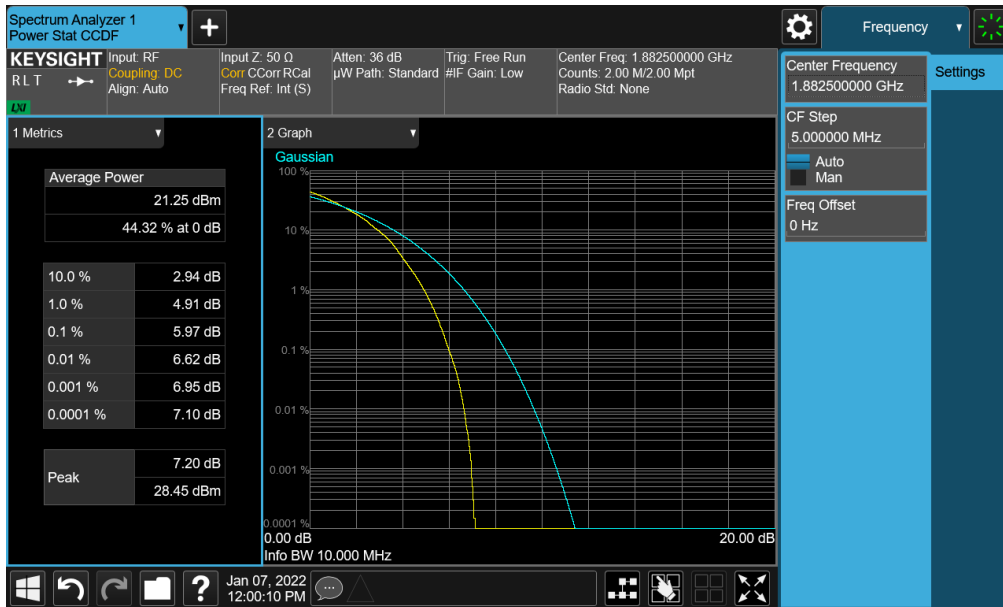


Plot 7-88. PAR Plot (LTE Band 25/2 - 15MHz 64-QAM - Full RB)

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 61 of 87

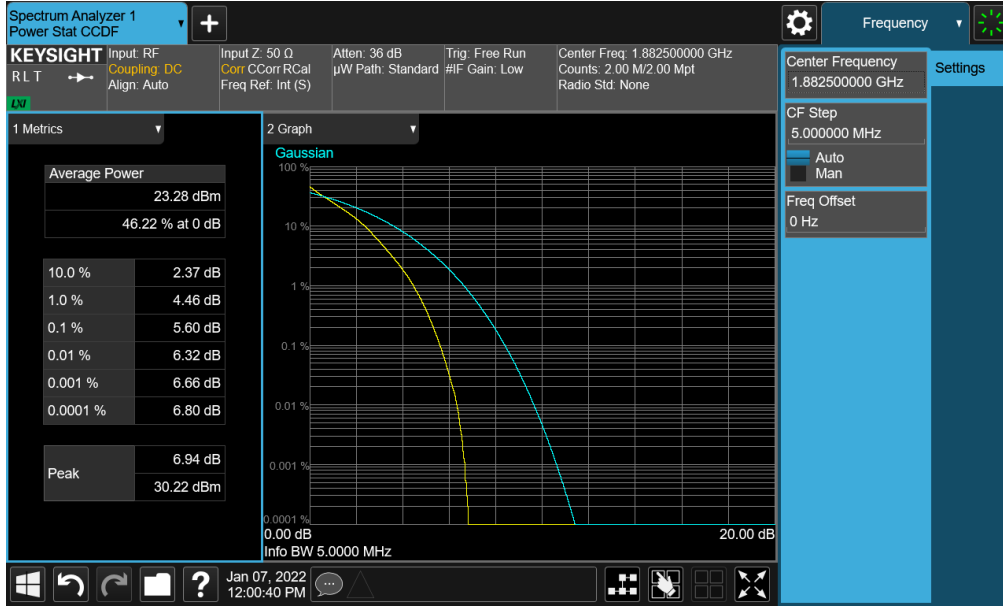


**Plot 7-89. PAR Plot (LTE Band 25/2 - 10MHz QPSK - Full RB)**

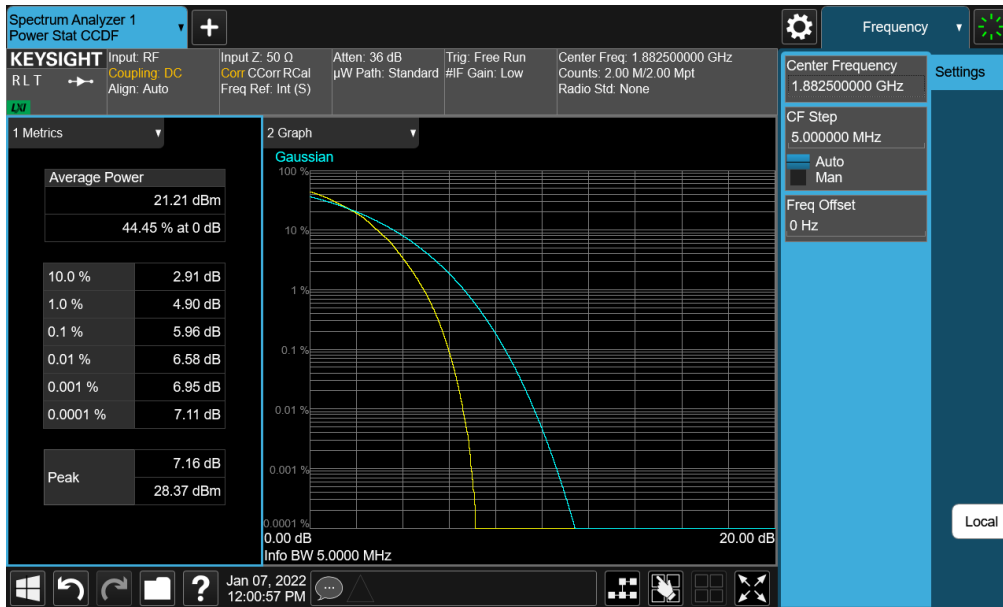


**Plot 7-90. PAR Plot (LTE Band 25/2 - 10MHz 64-QAM - Full RB)**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 62 of 87

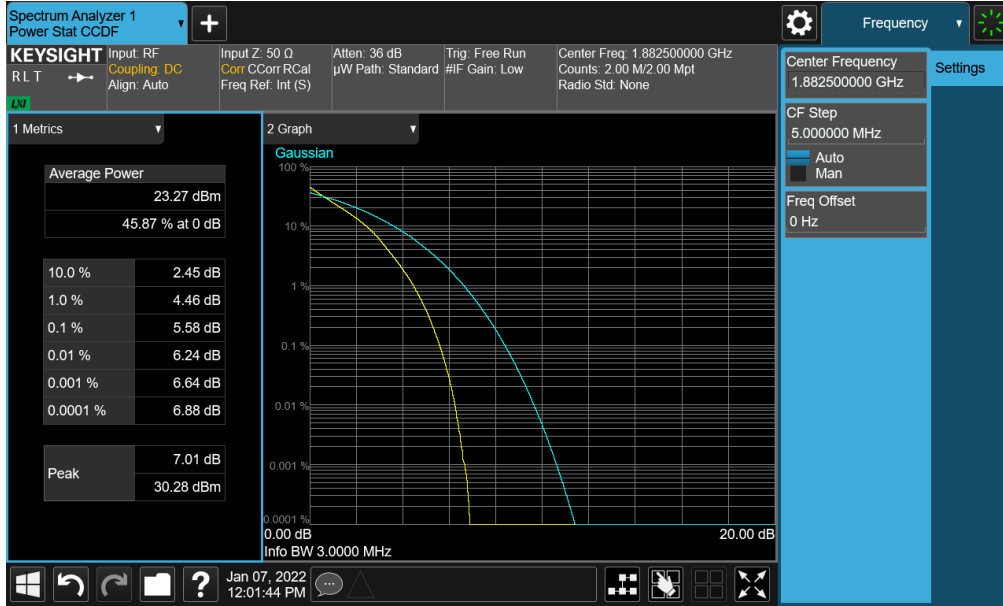


**Plot 7-91. PAR Plot (LTE Band 25/2 - 5MHz QPSK - Full RB)**

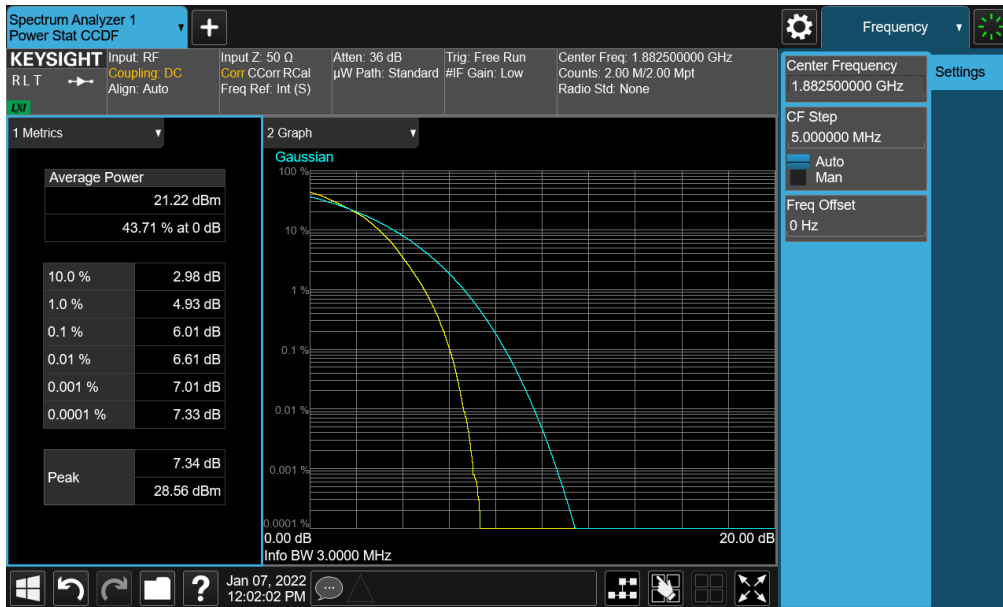


**Plot 7-92. PAR Plot (LTE Band 25/2 - 5MHz 64-QAM - Full RB)**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 63 of 87

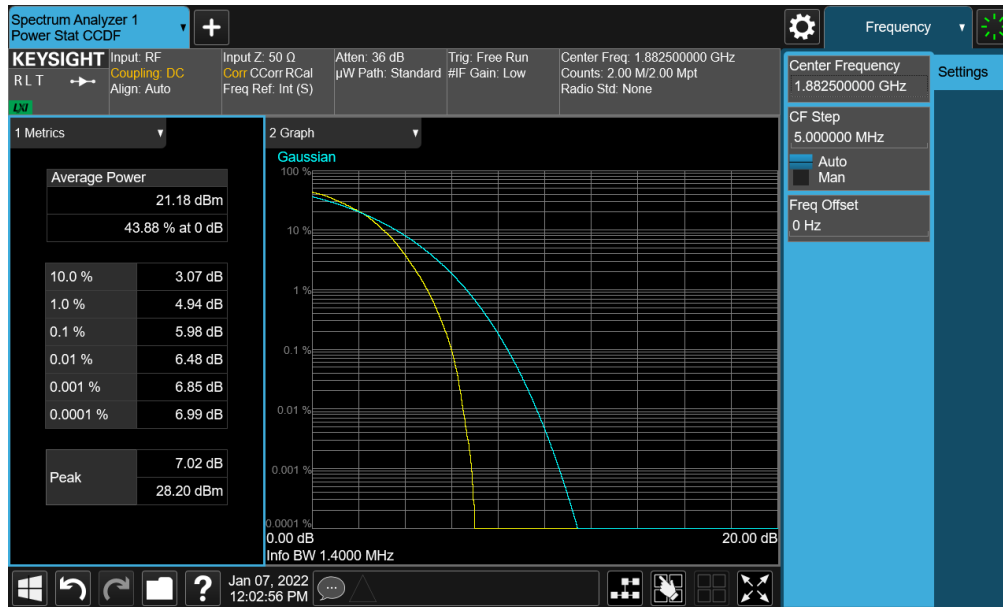
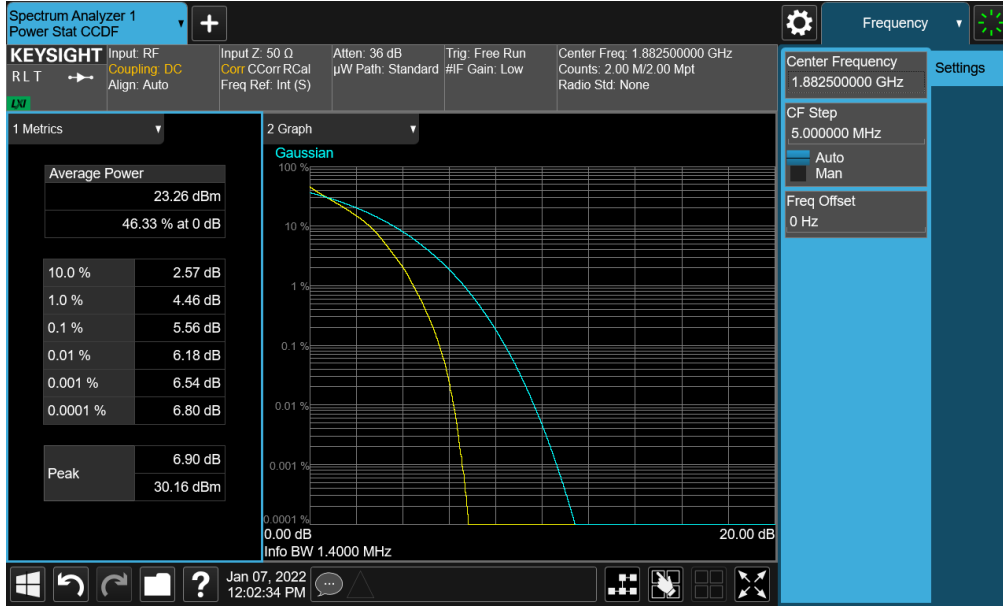


**Plot 7-93. PAR Plot (LTE Band 25/2 - 3MHz QPSK - Full RB)**



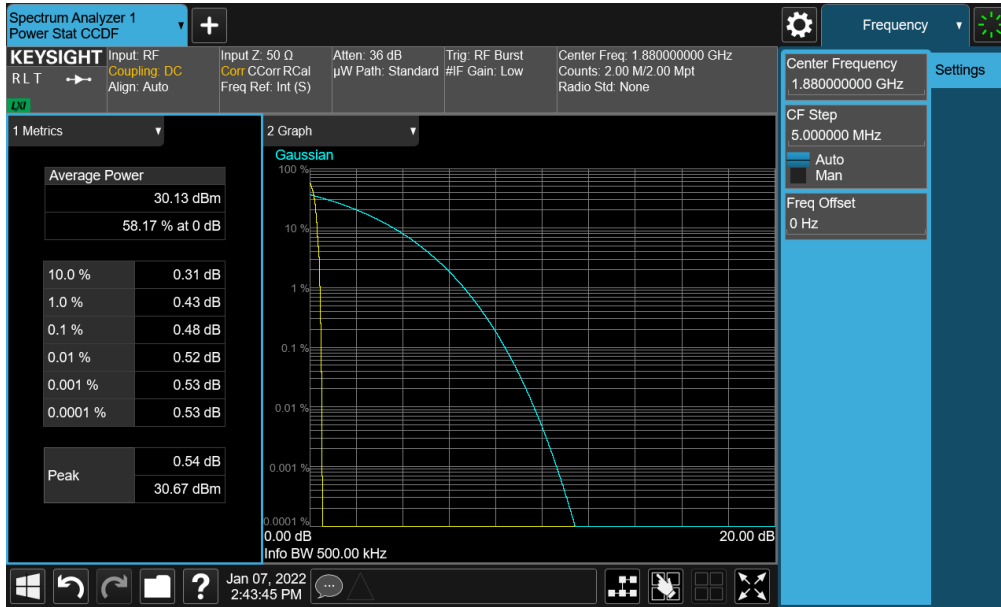
**Plot 7-94. PAR Plot (LTE Band 25/2 - 3MHz 64-QAM - Full RB)**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 64 of 87

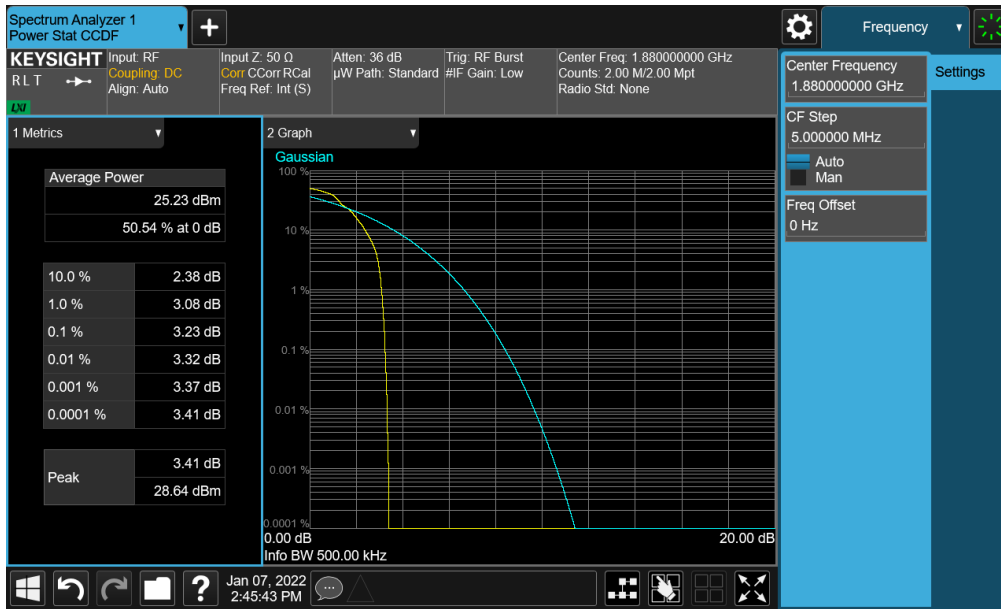


FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 65 of 87

# GSM/GPRS PCS



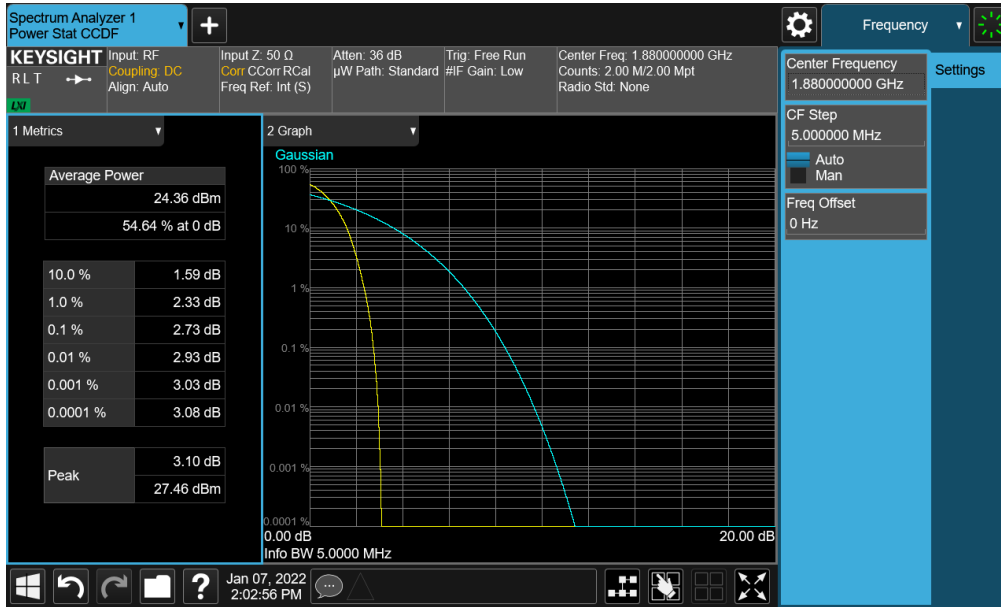
Plot 7-97. PAR Plot (GPRS, Ch. 661)



Plot 7-98. PAR Plot (EDGE, Ch. 661)

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	PART 24 MEASUREMENT REPORT	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 66 of 87

**WCDMA PCS**



<b>FCC ID:</b> A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112270166-03.A3L	<b>Test Dates:</b> 01/03/2022 - 01/26/2022	<b>EUT Type:</b> Portable Handset		Page 67 of 87

## 7.6 Radiated Power (ERP/EIRP)

### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz 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

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

### Test Settings

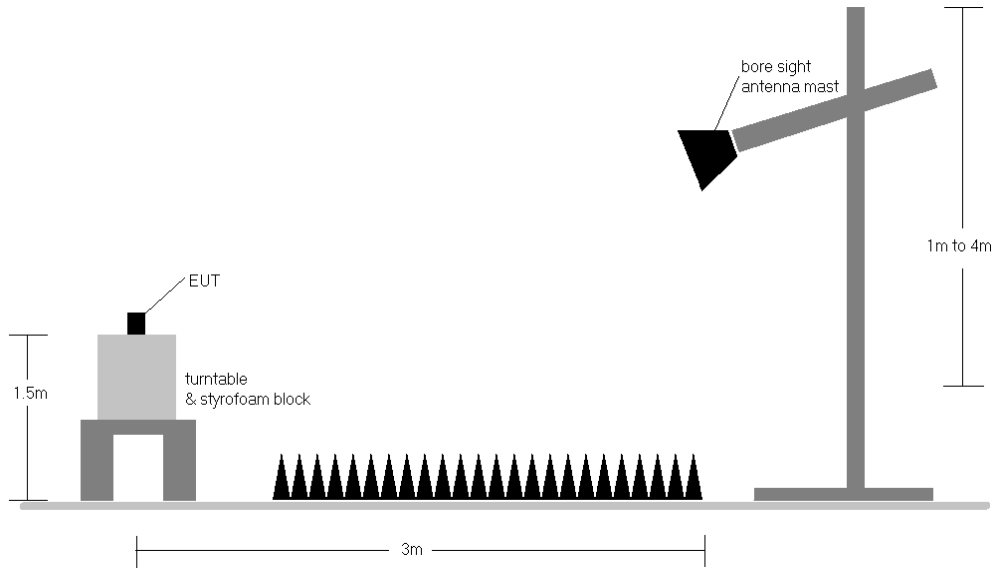
1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer’s “time domain power” measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW  $\geq$  3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $\geq$  2 x 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

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset	Page 68 of 87



**Test Setup**

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





**Figure 7-5. Radiated Test Setup >1GHz**

<p>FCC ID: A3LSMA135U</p>	<p><b>PCTEST</b> Proud to be part of element</p>	<p><b>PART 24 MEASUREMENT REPORT</b></p>	<p><b>Approved by:</b> Technical Manager</p>
<p><b>Test Report S/N:</b> 1M2112270166-03.A3L</p>	<p><b>Test Dates:</b> 01/03/2022 - 01/26/2022</p>	<p><b>EUT Type:</b> Portable Handset</p>	<p>Page 69 of 87</p>

**Test Notes**

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is 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 power is 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.

<b>FCC ID:</b> A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112270166-03.A3L	<b>Test Dates:</b> 01/03/2022 - 01/26/2022	<b>EUT Type:</b> Portable Handset	Page 70 of 87

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1860.0	V	113	113	8.28	1 / 99	14.59	22.87	0.194	33.01	-10.14
	QPSK	1882.5	V	105	110	8.29	1 / 0	14.80	23.09	0.204	33.01	-9.92
	QPSK	1905.0	V	104	113	8.33	1 / 99	15.08	<b>23.41</b>	0.219	33.01	-9.60
	16-QAM	1905.0	V	104	113	8.33	1 / 99	13.98	22.31	0.170	33.01	-10.70
15 MHz	QPSK	1857.5	V	113	113	8.28	1 / 37	14.88	23.16	0.207	33.01	-9.85
	QPSK	1882.5	V	105	110	8.29	1 / 74	15.04	23.33	0.215	33.01	-9.68
	QPSK	1907.5	V	104	113	8.34	1 / 37	15.38	<b>23.72</b>	0.235	33.01	-9.29
	16-QAM	1907.5	V	104	113	8.34	1 / 37	14.39	22.73	0.187	33.01	-10.28
10 MHz	QPSK	1855.0	V	113	113	8.28	1 / 25	14.91	23.19	0.208	33.01	-9.82
	QPSK	1882.5	V	105	110	8.29	1 / 25	15.04	23.33	0.215	33.01	-9.68
	QPSK	1910.0	V	104	113	8.35	1 / 25	15.56	<b>23.91</b>	0.246	33.01	-9.10
	16-QAM	1910.0	V	104	113	8.35	1 / 0	14.40	22.75	0.188	33.01	-10.26
5 MHz	QPSK	1852.5	V	113	113	8.27	1 / 0	14.83	23.11	0.205	33.01	-9.90
	QPSK	1882.5	V	105	110	8.29	1 / 12	14.95	23.24	0.211	33.01	-9.77
	QPSK	1912.5	V	104	113	8.36	1 / 24	15.41	<b>23.77</b>	0.238	33.01	-9.24
	16-QAM	1912.5	V	104	113	8.36	1 / 0	14.33	22.69	0.186	33.01	-10.32
3 MHz	QPSK	1851.5	V	113	113	8.27	1 / 14	14.72	22.99	0.199	33.01	-10.02
	QPSK	1882.5	V	105	110	8.29	1 / 7	14.80	23.09	0.204	33.01	-9.92
	QPSK	1913.5	V	104	113	8.37	1 / 0	15.21	<b>23.58</b>	0.228	33.01	-9.43
	16-QAM	1913.5	V	104	113	8.37	1 / 14	14.28	22.65	0.184	33.01	-10.36
1.4 MHz	QPSK	1850.7	V	113	113	8.27	1 / 3	14.64	22.91	0.195	33.01	-10.10
	QPSK	1882.5	V	105	110	8.29	1 / 3	14.59	22.88	0.194	33.01	-10.13
	QPSK	1914.3	V	104	113	8.37	1 / 3	15.25	<b>23.62</b>	0.230	33.01	-9.39
	16-QAM	1914.3	V	104	113	8.37	1 / 5	14.13	22.50	0.178	33.01	-10.51
20 MHz	Opposite Pol.	1905.0	H	110	353	8.37	1 / 0	13.37	21.74	0.149	33.01	-11.27



Table 7-2. EIRP Data (LTE Band 25/2)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	V	129	114	17.57	8.27	25.84	0.384	33.01	-7.17
1880.00	GPRS1900	V	114	114	18.39	8.29	26.68	0.466	33.01	-6.33
1909.80	GPRS1900	V	137	96	18.54	8.35	<b>26.89</b>	<b>0.489</b>	33.01	-6.12
1909.80	GPRS1900	H	147	9	17.26	8.35	25.61	0.364	33.01	-7.40
1909.80	EDGE1900	V	137	96	14.98	8.35	<b>23.33</b>	0.215	33.01	-9.68

Table 7-3. EIRP Data (GPRS PCS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA 1900	V	132	90	14.91	8.27	23.18	0.208	33.01	-9.83
1880.00	WCDMA 1900	V	114	117	15.02	8.29	<b>23.31</b>	<b>0.214</b>	33.01	-9.70
1907.60	WCDMA 1900	V	104	119	14.65	8.34	22.99	0.199	33.01	-10.02
1880.00	WCDMA 1900	H	148	4	11.33	8.29	19.62	0.092	33.01	-13.39

Table 7-4. EIRP Data (WCDMA PCS)

FCC ID: A3LSMA135U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 71 of 87

## 7.7 Radiated Spurious Emissions Measurements

### Test Overview



Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole 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

KDB 971168 D01 v03r01 – Section 5.8

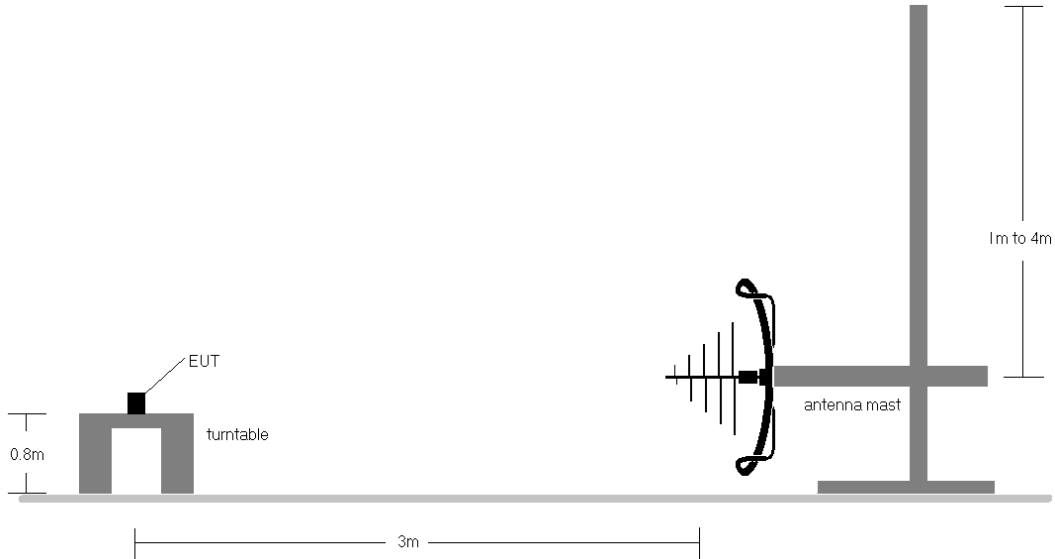
### Test Settings

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

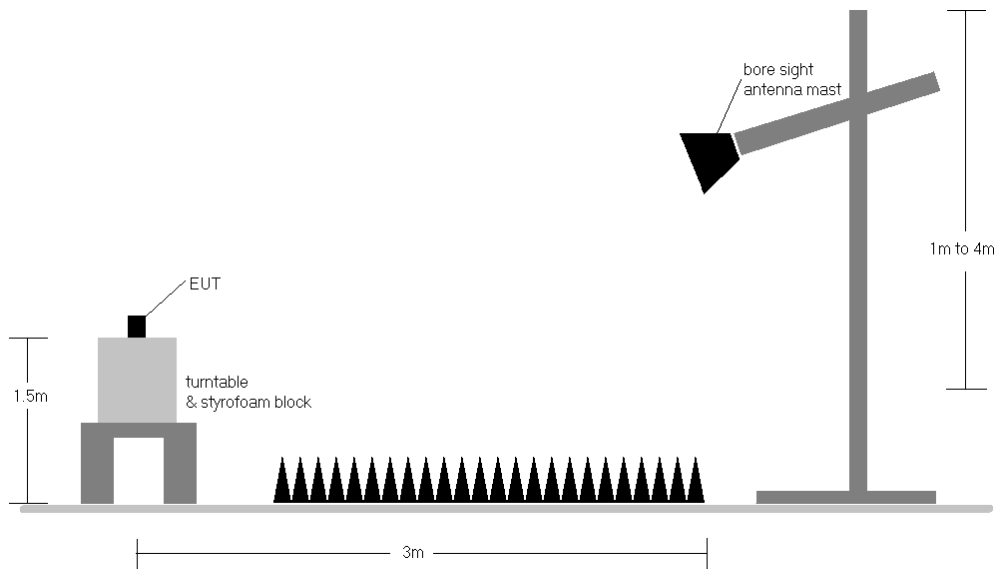
FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset	Page 72 of 87

**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 >1 GHz**

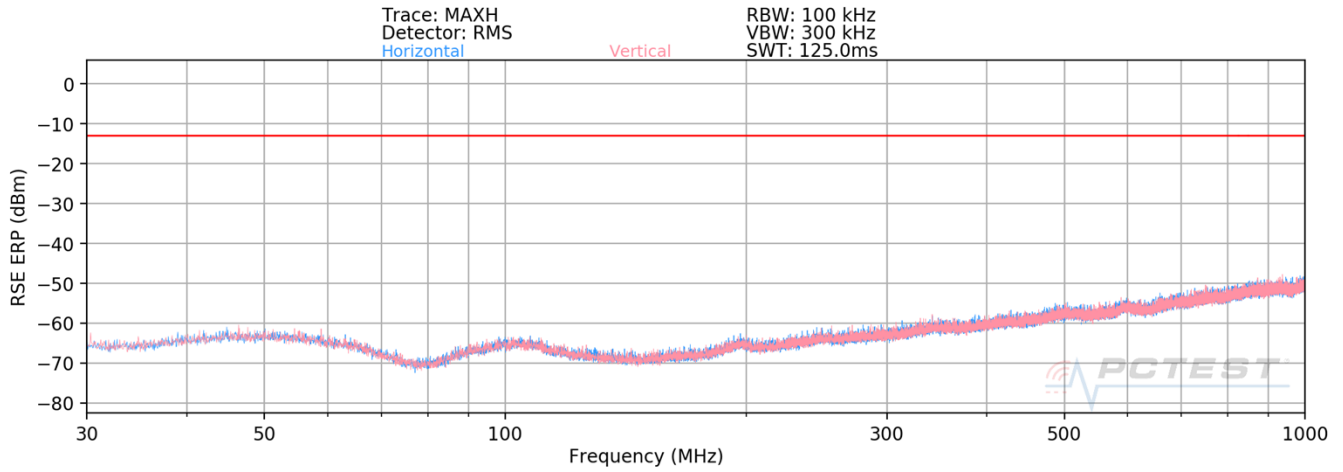
<p>FCC ID: A3LSMA135U</p>		<p><b>PART 24 MEASUREMENT REPORT</b></p>	<p>Approved by: Technical Manager</p>
<p>Test Report S/N: 1M2112270166-03.A3L</p>	<p>Test Dates: 01/03/2022 - 01/26/2022</p>	<p>EUT Type: Portable Handset</p>	<p>Page 73 of 87</p>

## Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
  - 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 is 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 power is 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.

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset	Page 74 of 87

## LTE Band 25/2



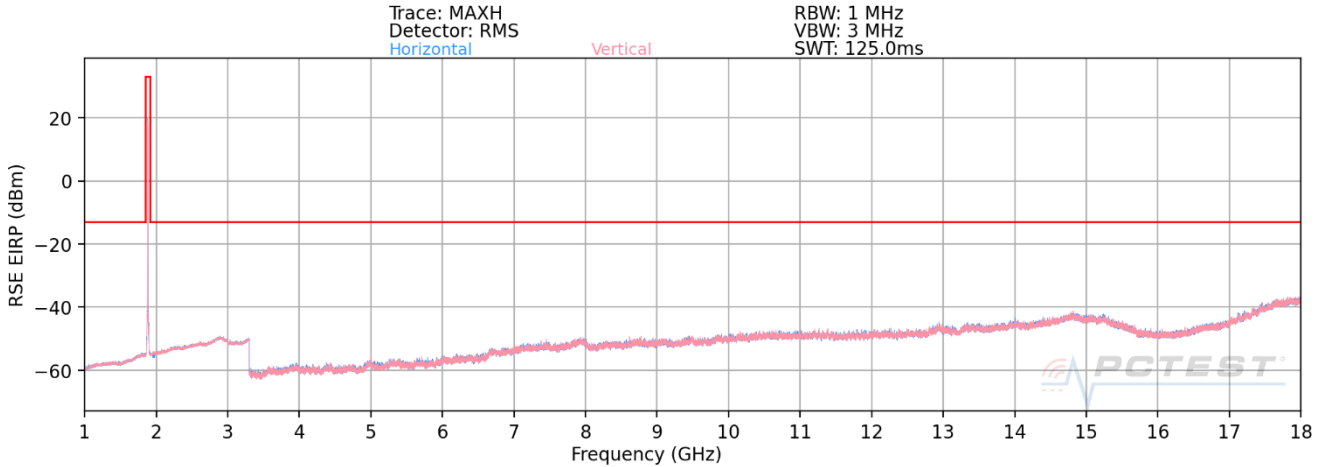
**Plot 7-100. Radiated Spurious Plot Below 1GHz (LTE Band 25/2)**

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1/50

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]
930.32	V	-	-	-84.52	25.41	47.89	-47.37	-13.00	-34.37

**Table 7-5. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 75 of 87



**Plot 7-101. Radiated Spurious Plot (LTE Band 25/2)**

Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 50

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]
3720.00	H	-	-	-76.99	-0.21	29.80	-65.45	-13.00	-52.45
5580.00	H	-	-	-78.67	3.62	31.95	-63.31	-13.00	-50.31
7440.00	H	-	-	-80.29	8.66	35.37	-59.89	-13.00	-46.89

**Table 7-6. Radiated Spurious Data (LTE Band 25/2 – Low Channel)**

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 50

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]
3765.00	H	-	-	-76.65	0.47	30.82	-64.43	-13.00	-51.43
5647.50	H	-	-	-77.73	3.40	32.67	-62.58	-13.00	-49.58
7530.00	H	-	-	-79.71	8.60	35.89	-59.37	-13.00	-46.37

**Table 7-7. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)**

Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 50

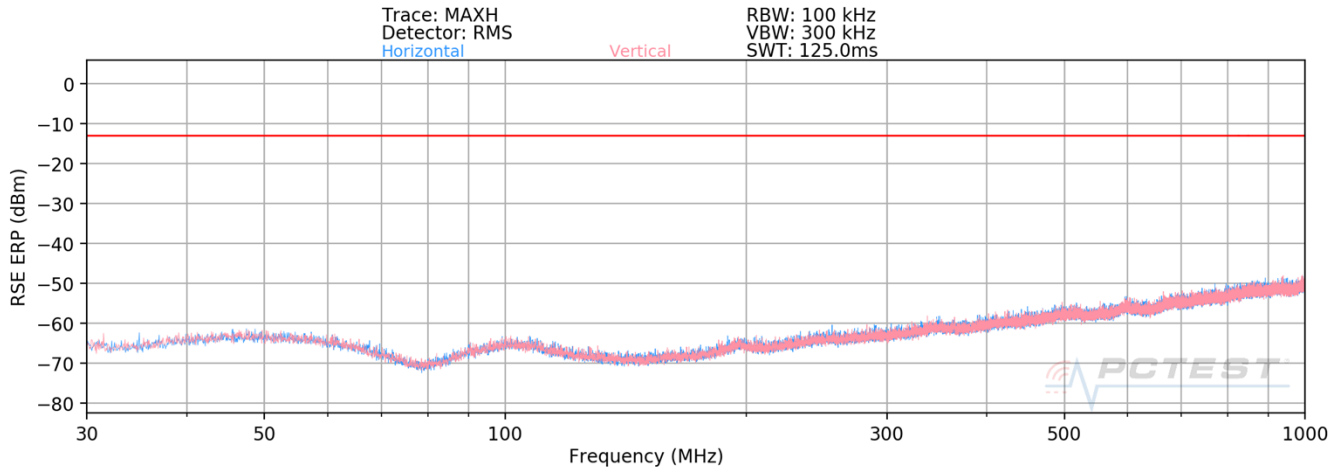
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3810.00	H	-	-	-77.04	1.05	31.01	-64.25	-13.00	-51.25
5715.00	H	-	-	-78.86	3.94	32.08	-63.18	-13.00	-50.18
7620.00	H	-	-	-80.28	8.65	35.37	-59.89	-13.00	-46.89

**Table 7-8. Radiated Spurious Data (LTE Band 25/2 – High Channel)**

FCC ID: A3LSMA135U	<b>PART 24 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset	Page 76 of 87



## GSM/GPRS PCS



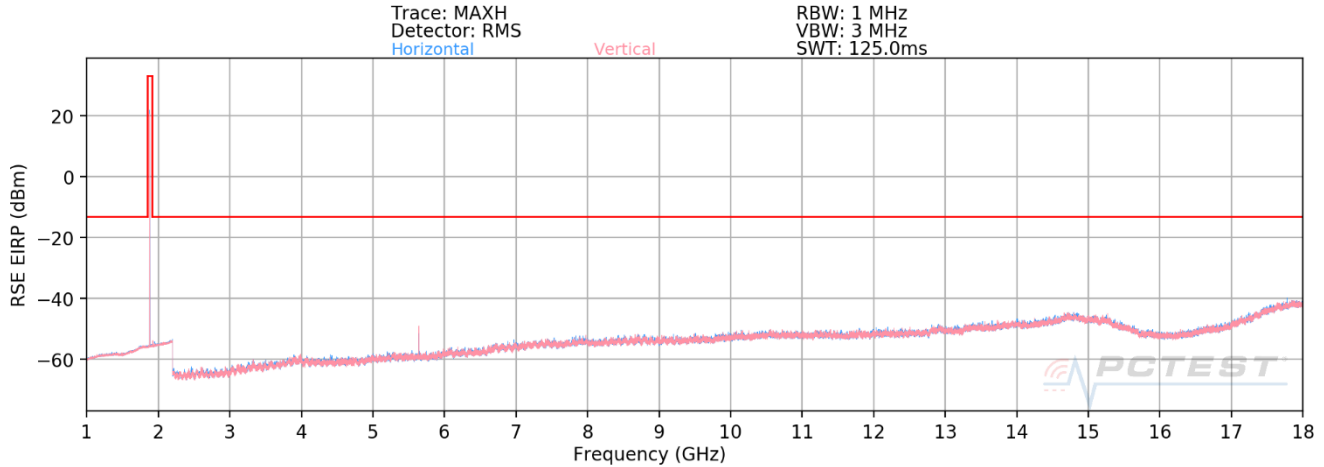
**Plot 7-102. Radiated Spurious Plot Below 1GHz (GPRS PCS)**

<b>Mode:</b>	GPRS 1 Tx Slot
<b>Channel:</b>	810
<b>Frequency (MHz):</b>	1909.8

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]
931.72	V	-	-	-84.44	25.41	47.97	-47.29	-13.00	-34.29

**Table 7-9. Radiated Spurious Data (GPRS PCS – Hi Channel)**

<b>FCC ID:</b> A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112270166-03.A3L	<b>Test Dates:</b> 01/03/2022 - 01/26/2022	<b>EUT Type:</b> Portable Handset		Page 77 of 87



**Plot 7-103. Radiated Spurious Plot Above 1GHz (GPRS PCS)**

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2



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]
3700.40	V	-	-	-68.59	-0.25	38.16	-57.09	-13.00	-44.09
5550.60	V	105	37	-65.52	4.09	45.57	-49.68	-13.00	-36.68
7400.80	V	-	-	-71.71	8.70	43.99	-51.27	-13.00	-38.27
9251.00	V	-	-	-74.27	11.92	44.65	-50.61	-13.00	-37.61
11101.20	V	-	-	-74.37	13.02	45.65	-49.61	-13.00	-36.61

**Table 7-10. Radiated Spurious Data (GPRS PCS – Low Channel)**

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880

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]
3760.00	V	-	-	-68.95	0.35	38.40	-56.86	-13.00	-43.86
5640.00	V	103	45	-63.50	3.42	46.92	-48.34	-13.00	-35.34
7520.00	V	-	-	-72.00	8.66	43.66	-51.60	-13.00	-38.60
9400.00	V	-	-	-73.61	11.55	44.94	-50.31	-13.00	-37.31
11280.00	V	-	-	-74.21	13.39	46.18	-49.08	-13.00	-36.08



**Table 7-11. Radiated Spurious Data (GPRS PCS – Mid Channel)**

FCC ID: A3LSMA135U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 78 of 87

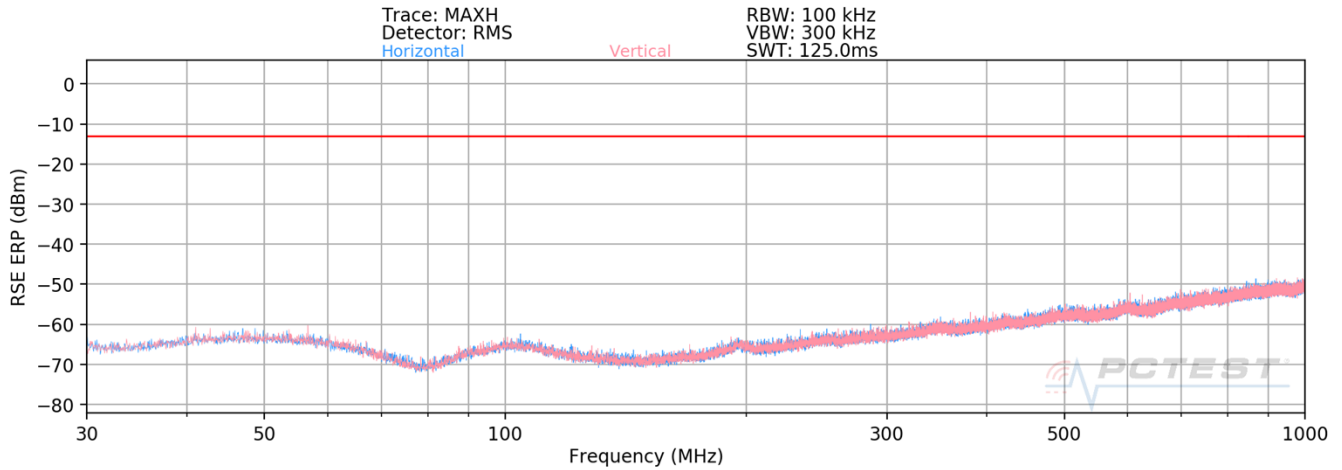
Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8

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]
3819.60	V	-	-	-69.09	1.24	39.15	-56.10	-13.00	-43.10
5729.40	V	100	40	-63.15	4.00	47.85	-47.41	-13.00	-34.41
7639.20	V	-	-	-72.05	8.44	43.39	-51.86	-13.00	-38.86
9549.00	V	-	-	-73.63	11.54	44.91	-50.34	-13.00	-37.34
11458.80	V	-	-	-73.98	13.71	46.73	-48.53	-13.00	-35.53

**Table 7-12. Radiated Spurious Data (GPRS PCS – High Channel)**

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
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## WCDMA PCS



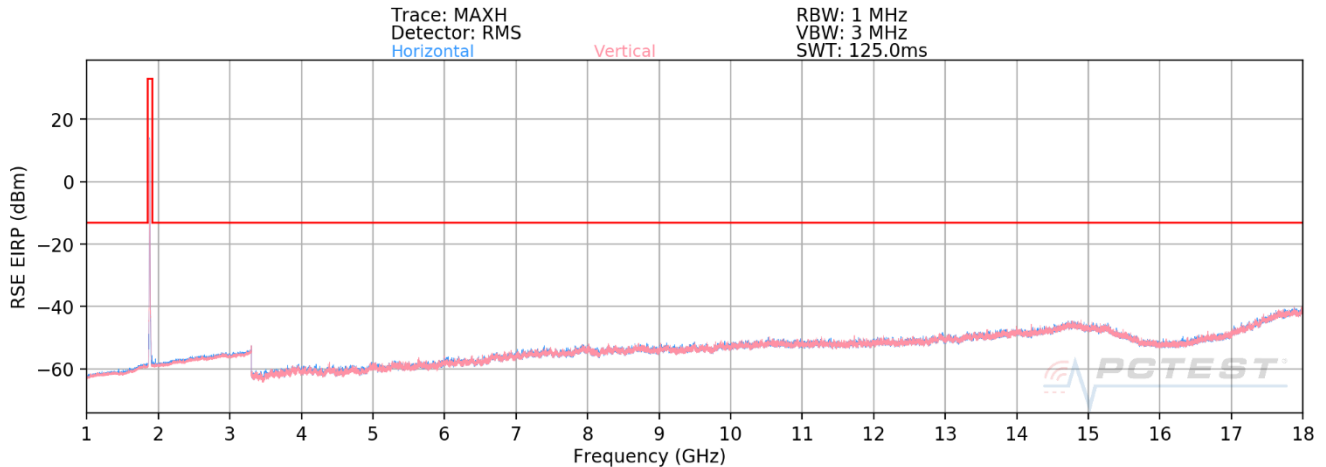
**Plot 7-104. Radiated Spurious Plot Below 1GHz (WCDMA PCS)**

Channel:	9400
Frequency (MHz):	1880

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]
961.48	V	-	-	-82.63	25.36	49.73	-45.53	-13.00	-32.53

**Table 7-13. Radiated Spurious Data (WCDMA PCS – Mid Channel)**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 80 of 87



**Plot 7-105. Radiated Spurious Plot (WCDMA PCS)**

Mode:	WCDMA RMC
Channel:	9262
Frequency (MHz):	1852.4

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]
3704.80	V	-	-	-76.73	-0.26	30.01	-65.25	-13.00	-52.25
5557.20	V	103	40	-77.38	3.91	33.53	-61.73	-13.00	-48.73
7409.60	V	-	-	-80.44	8.70	35.26	-60.00	-13.00	-47.00
9262.00	V	-	-	-82.48	11.55	36.07	-59.18	-13.00	-46.18
11114.40	V	-	-	-82.31	13.17	37.86	-57.40	-13.00	-44.40

**Table 7-14. Radiated Spurious Data (WCDMA PCS – Low Channel)**

Mode:	WCDMA RMC
Channel:	9400
Frequency (MHz):	1880

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]
3760.00	V	-	-	-77.75	0.35	29.60	-65.66	-13.00	-52.66
5640.00	V	105	33	-77.17	3.42	33.25	-62.01	-13.00	-49.01
7520.00	V	-	-	-80.89	8.66	34.77	-60.49	-13.00	-47.49
9400.00	V	-	-	-81.41	11.55	37.14	-58.11	-13.00	-45.11
11280.00	V	-	-	-82.43	13.39	37.96	-57.30	-13.00	-44.30



**Table 7-15. Radiated Spurious Data (WCDMA PCS – Mid Channel)**

FCC ID: A3LSMA135U	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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Mode:	WCDMA RMC
Channel:	9538
Frequency (MHz):	1907.6

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]
3815.20	V	-	-	-76.99	1.15	31.16	-64.09	-13.00	-51.09
5722.80	V	103	43	-76.68	3.98	34.30	-60.96	-13.00	-47.96
7630.40	V	-	-	-80.18	8.42	35.24	-60.02	-13.00	-47.02
9538.00	V	-	-	-82.15	11.87	36.72	-58.54	-13.00	-45.54
11445.60	V	-	-	-83.02	14.37	38.35	-56.91	-13.00	-43.91

**Table 7-16. Radiated Spurious Data (WCDMA PCS – High Channel)**

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
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## 7.8 Frequency Stability / Temperature Variation

### Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. 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.

### Test Procedure Used

ANSI/TIA-603-E-2016

### 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

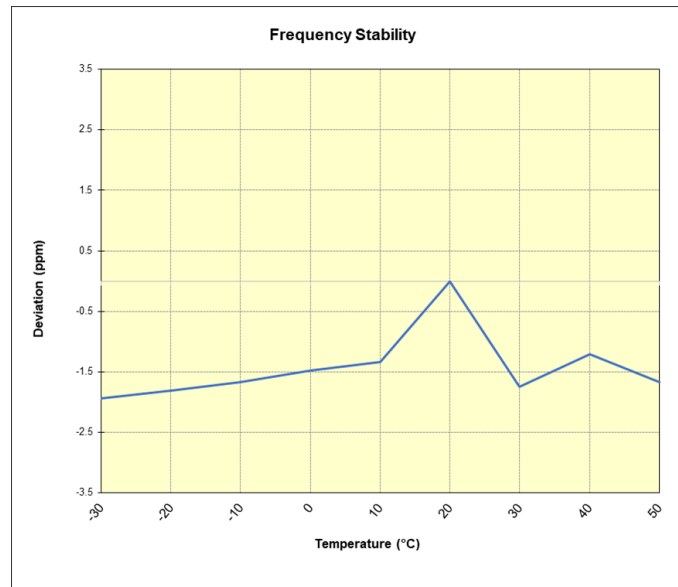
None

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112270166-03.A3L	<b>Test Dates:</b> 01/03/2022 - 01/26/2022	<b>EUT Type:</b> Portable Handset	Page 83 of 87

**LTE Band 25/2**

<b>LTE Band 25/2</b>					
		Operating Frequency (Hz):		1,882,500,000	
		Ref. Voltage (VDC):		4.31	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,882,499,500	-3,650	-0.0001939
		- 20	1,882,499,750	-3,400	-0.0001806
		- 10	1,882,500,000	-3,150	-0.0001673
		0	1,882,500,375	-2,775	-0.0001474
		+ 10	1,882,500,625	-2,525	-0.0001341
		+ 20 (Ref)	1,882,503,150	0	0.0000000
		+ 30	1,882,499,875	-3,275	-0.0001740
		+ 40	1,882,500,875	-2,275	-0.0001208
Battery Endpoint	3.58	+ 20	1,882,500,250	-2,900	-0.0001541

**Table 7-17. LTE Band 25/2 Frequency Stability Data**



**Plot 7-106. LTE Band 25/2 Frequency Stability Chart**

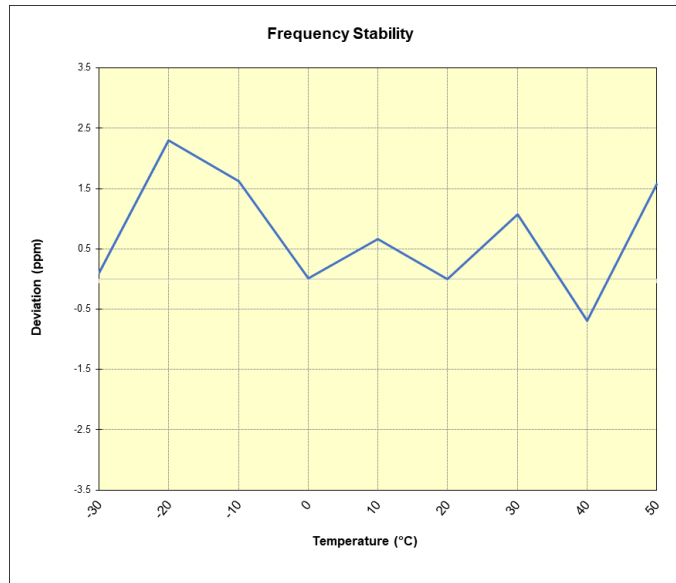
FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 84 of 87



**GSM/GPRS PCS**

<b>GSM/GPRS PCS</b>					
Operating Frequency (Hz):		1,880,000,000			
Ref. Voltage (VDC):		4.31			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,879,999,451	201	0.0000107
		- 20	1,880,003,570	4,320	0.0002298
		- 10	1,880,002,298	3,048	0.0001621
		0	1,879,999,274	24	0.0000013
		+ 10	1,880,000,507	1,257	0.0000669
		+ 20 (Ref)	1,879,999,250	0	0.0000000
		+ 30	1,880,001,273	2,023	0.0001076
		+ 40	1,879,997,957	-1,293	-0.0000688
Battery Endpoint	3.58	+ 20	1,879,998,647	-603	-0.0000321

**Table 7-18. GSM/GPRS PCS Frequency Stability Data**



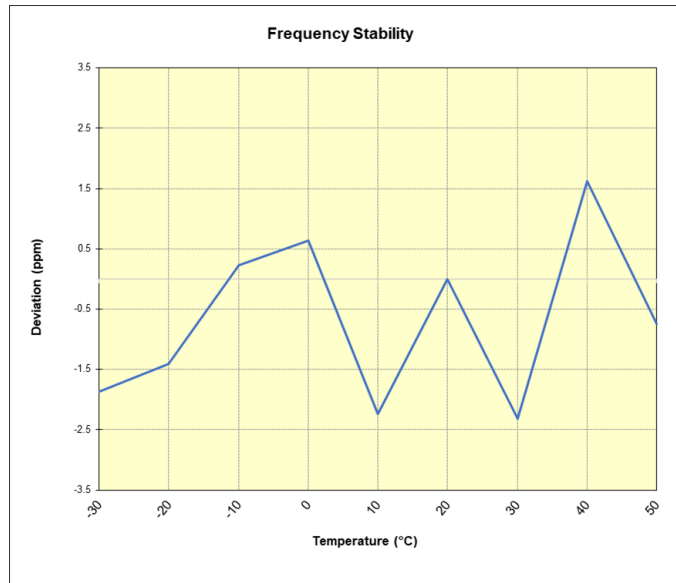
**Plot 7-107. GSM/GPRS PCS Frequency Stability Chart**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>		Approved by: Technical Manager
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**WCDMA PCS**

<b>WCDMA PCS</b>					
Operating Frequency (Hz):		1,880,000,000			
Ref. Voltage (VDC):		4.31			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,879,998,960	-3,520	-0.0001872
		- 20	1,879,999,840	-2,640	-0.0001404
		- 10	1,880,002,920	440	0.0000234
		0	1,880,003,680	1,200	0.0000638
		+ 10	1,879,998,280	-4,200	-0.0002234
		+ 20 (Ref)	1,880,002,480	0	0.0000000
		+ 30	1,879,998,120	-4,360	-0.0002319
		+ 40	1,880,005,520	3,040	0.0001617
Battery Endpoint	3.58	+ 20	1,879,999,960	-2,520	-0.0001340

**Table 7-19. WCDMA PCS Frequency Stability Data**





**Plot 7-108. WCDMA PCS Frequency Stability Chart**

FCC ID: A3LSMA135U	<b>PCTEST</b> Proud to be part of element	<b>PART 24 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset		Page 86 of 87

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset** **FCC ID: A3LSMA135U** complies with all the requirements of Part 24 of the FCC rules.

FCC ID: A3LSMA135U	 <b>PART 24 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
Test Report S/N: 1M2112270166-03.A3L	Test Dates: 01/03/2022 - 01/26/2022	EUT Type: Portable Handset	Page 87 of 87