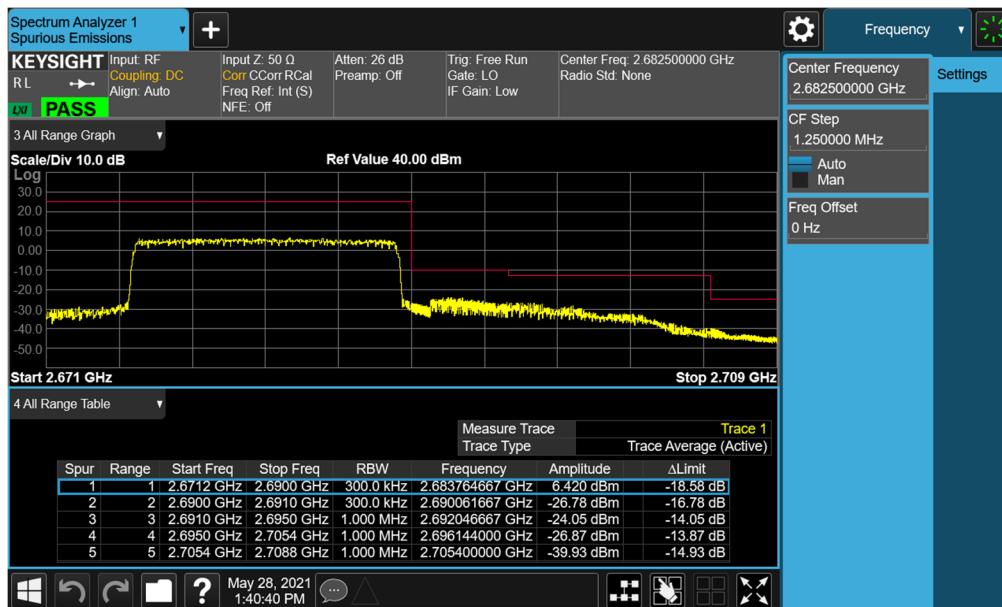
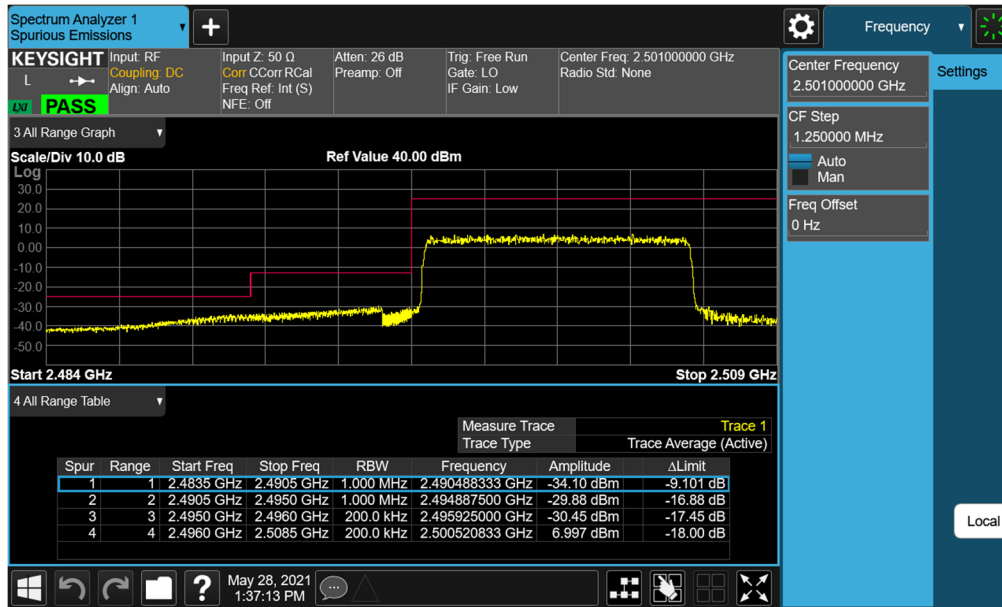


Plot 7-20. Lower ACP Plot (LTE Band 41(PC3) - 15MHz QPSK – Full RB)

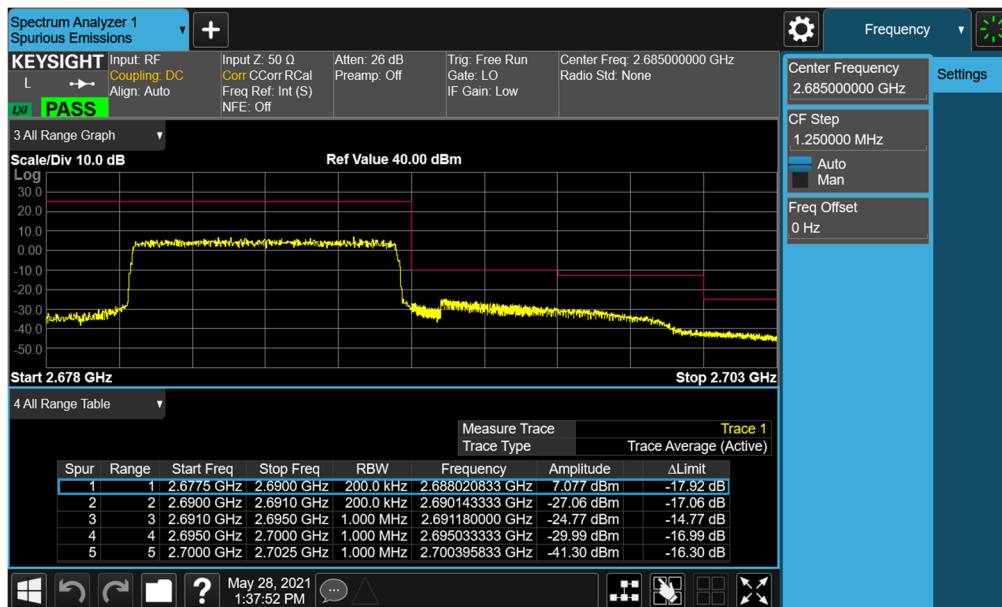


Plot 7-21. Upper ACP Plot (LTE Band 41(PC3) - 15MHz QPSK – Full RB)

FCC ID: A3LSMA127FN	<b>PCTEST</b> Proud to be part of element	PART 27 MEASUREMENT REPORT	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1K210511001902-03.A3L	Test Dates: 05/13/2021 – 06/01/2021	EUT Type: Portable Handset		Page 25 of 38

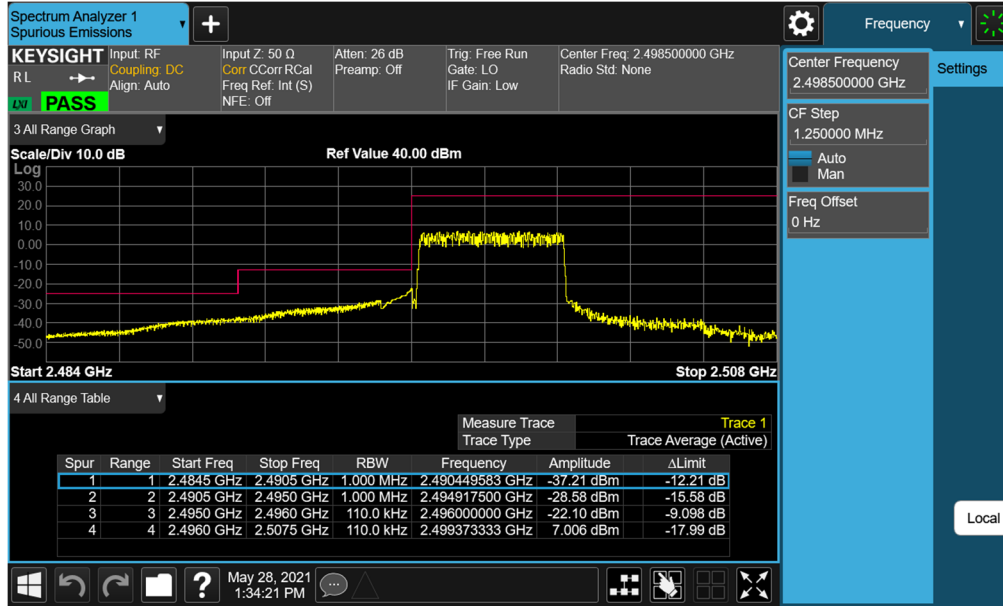


Plot 7-22. Lower ACP Plot (LTE Band 41(PC3) - 10MHz QPSK – Full RB)

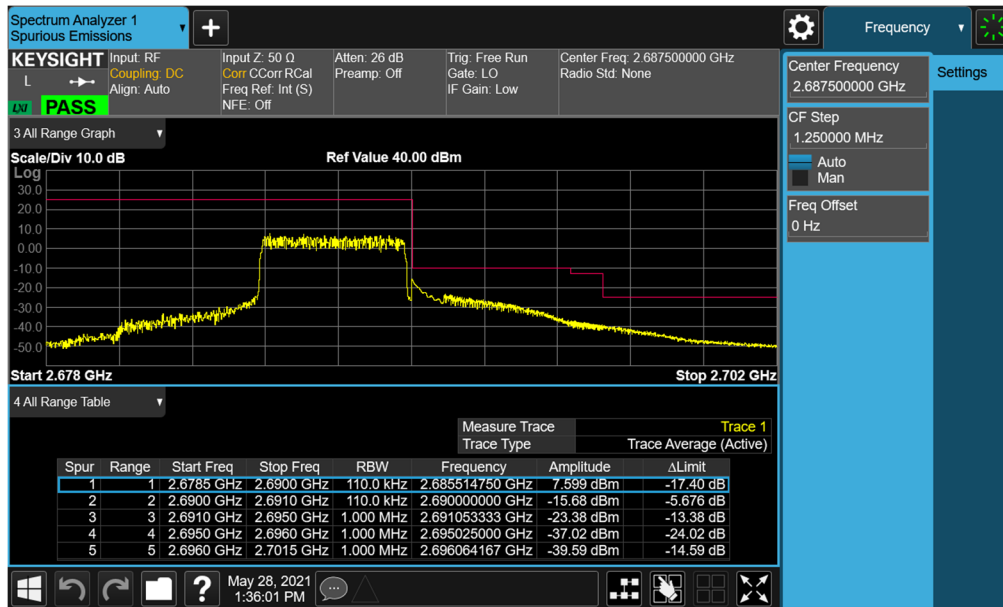


Plot 7-23. Upper ACP Plot (LTE Band 41(PC3) - 10MHz QPSK – Full RB)

FCC ID: A3LSMA127FN	<b>PCTEST</b> Proud to be part of element	<b>PART 27 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1K210511001902-03.A3L	Test Dates: 05/13/2021 – 06/01/2021	EUT Type: Portable Handset		Page 26 of 38



Plot 7-24. Lower ACP Plot (LTE Band 41(PC3) - 5MHz QPSK – Full RB)



Plot 7-25. Upper ACP Plot (LTE Band 41(PC3) - 5MHz QPSK – Full RB)

FCC ID: A3LSMA127FN	<b>PCTEST</b> Proud to be part of element	<b>PART 27 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1K210511001902-03.A3L	Test Dates: 05/13/2021 – 06/01/2021	EUT Type: Portable Handset		Page 27 of 38

## 7.5 Radiated Power (EIRP)

### Test Overview

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

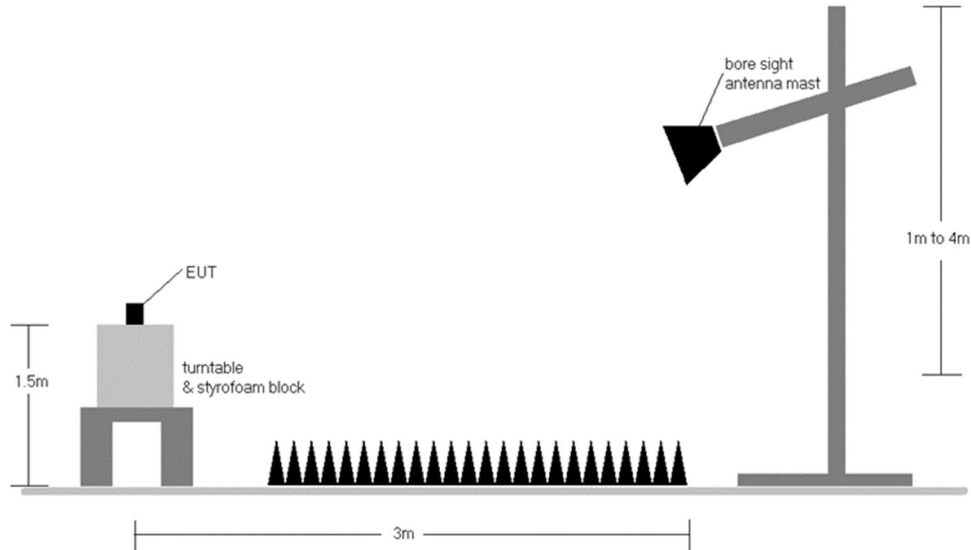
FCC ID: A3LSMA127FN	 PCTEST® Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1K210511001902-03.A3L	Test Dates: 05/13/2021 – 06/01/2021	EUT Type: Portable Handset		Page 28 of 38

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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**



**Test Notes**

- 1) 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.
- 2) This unit was tested with its standard battery.

<p><b>FCC ID:</b> A3LSMA127FN</p>		<p align="center"><b>PART 27 MEASUREMENT REPORT</b></p>	<p><b>Approved by:</b> Technical Manager</p>
<p><b>Test Report S/N:</b> 1K210511001902-03.A3L</p>	<p><b>Test Dates:</b> 05/13/2021 – 06/01/2021</p>	<p><b>EUT Type:</b> Portable Handset</p>	<p>Page 29 of 38</p>

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	2506.0	V	218	43	9.20	1 / 99	14.66	23.86	0.243	33.01	-9.15
		2593.0	V	221	55	9.23	1 / 50	14.86	<b>24.09</b>	0.257	33.01	-8.92
		2680.0	V	224	73	9.49	1 / 99	14.20	23.69	0.234	33.01	-9.32
15 MHz	16-QAM	2506.0	V	218	43	9.20	1 / 99	14.15	23.35	0.216	33.01	-9.66
		2503.5	V	222	45	9.19	1 / 37	14.29	23.48	0.223	33.01	-9.53
		2593.0	V	219	42	9.23	1 / 37	14.58	<b>23.81</b>	0.241	33.01	-9.20
10 MHz	16-QAM	2682.5	V	229	49	9.50	1 / 37	14.24	23.74	0.237	33.01	-9.27
		2593.0	V	219	42	9.23	1 / 37	13.89	23.12	0.205	33.01	-9.89
		2501.0	V	220	42	9.19	1 / 25	13.85	23.04	0.201	33.01	-9.97
5 MHz	QPSK	2593.0	V	221	54	9.23	1 / 25	14.60	<b>23.83</b>	0.242	33.01	-9.18
		2685.0	V	202	69	9.51	1 / 25	14.10	23.61	0.230	33.01	-9.40
		2593.0	V	221	54	9.23	1 / 25	13.87	23.10	0.204	33.01	-9.91
20 MHz	Opposite Pol.	2498.5	V	219	31	9.18	1 / 12	13.52	22.70	0.186	33.01	-10.31
		2593.0	V	219	52	9.23	1 / 12	14.68	<b>23.91</b>	0.246	33.01	-9.10
		2687.5	V	203	61	9.52	1 / 12	14.16	23.68	0.233	33.01	-9.33
20 MHz	Opposite Pol.	2593.0	V	219	52	9.23	1 / 12	13.92	23.15	0.207	33.01	-9.86
20 MHz	Opposite Pol.	2593.0	H	114	76	9.49	1 / 50	14.16	23.65	0.232	33.01	-9.36

**Table 7-2. EIRP Data (LTE Band 41(PC3))**

FCC ID: A3LSMA127FN	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1K210511001902-03.A3L	Test Dates: 05/13/2021 – 06/01/2021	EUT Type: Portable Handset	Page 30 of 38

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

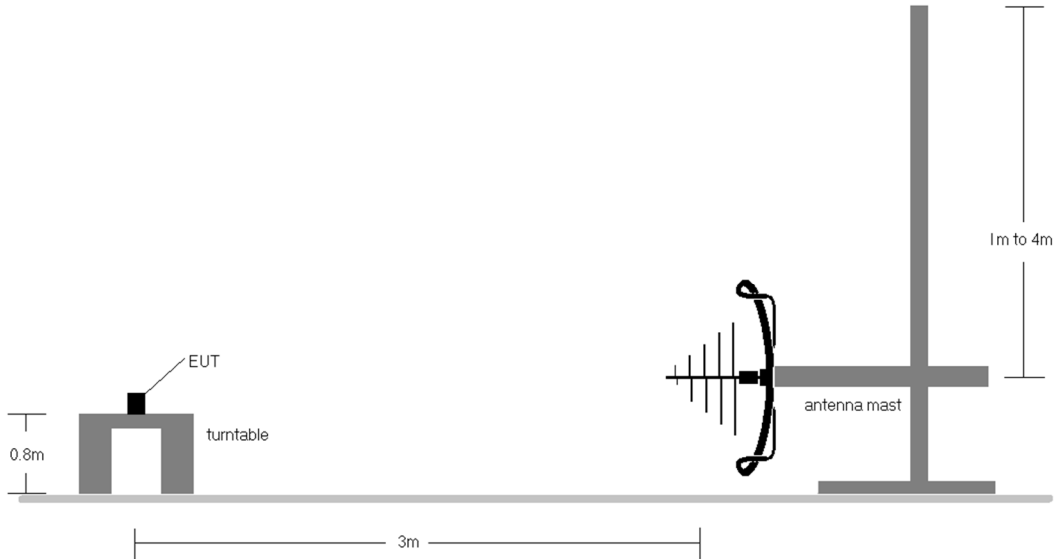
<b>FCC ID:</b> A3LSMA127FN	 <b>PART 27 MEASUREMENT REPORT</b> 		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1K210511001902-03.A3L	<b>Test Dates:</b> 05/13/2021 – 06/01/2021	<b>EUT Type:</b> Portable Handset	Page 31 of 38

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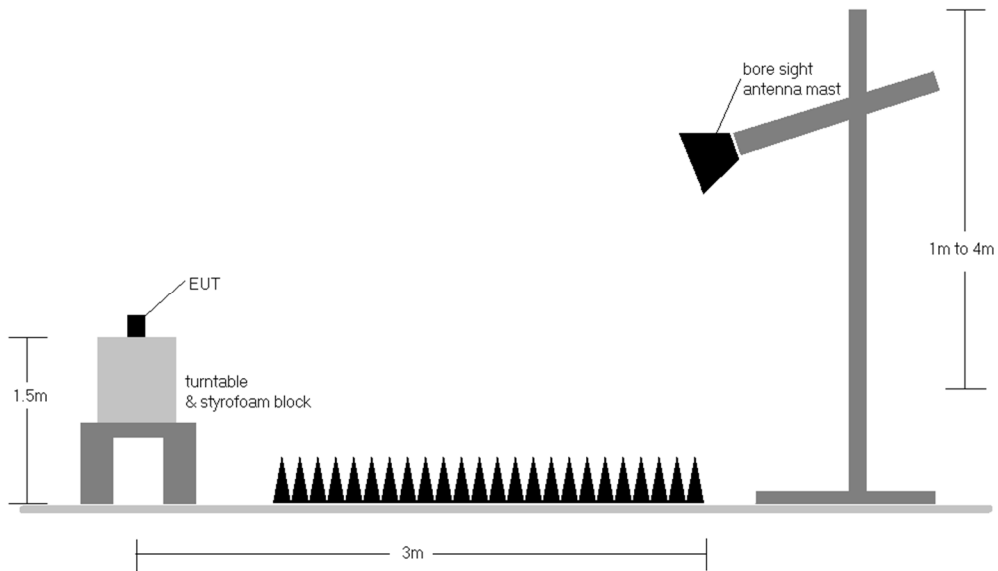
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**Test Setup**

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



**Figure 7-5. Test Instrument & Measurement Setup < 1GHz**





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

<p>FCC ID: A3LSMA127FN</p>	<p><b>PCTEST</b> Proud to be part of element</p>	<p><b>PART 27 MEASUREMENT REPORT</b></p>	<p><b>Approved by:</b> Technical Manager</p>
<p><b>Test Report S/N:</b> 1K210511001902-03.A3L</p>	<p><b>Test Dates:</b> 05/13/2021 – 06/01/2021</p>	<p><b>EUT Type:</b> Portable Handset</p>	<p>Page 32 of 38</p>



## Test Notes

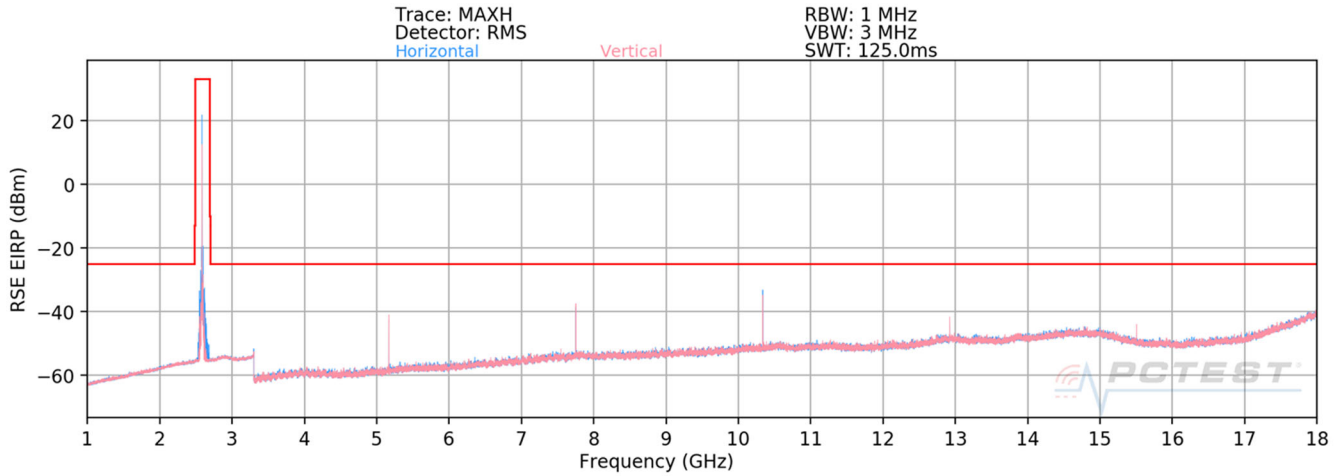
- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
  - a)  $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
  - b)  $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$ ; where D is the measurement distance in meters.
- 2) 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.

FCC ID: A3LSMA127FN	 <b>PART 27 MEASUREMENT REPORT</b> 		Approved by: Technical Manager
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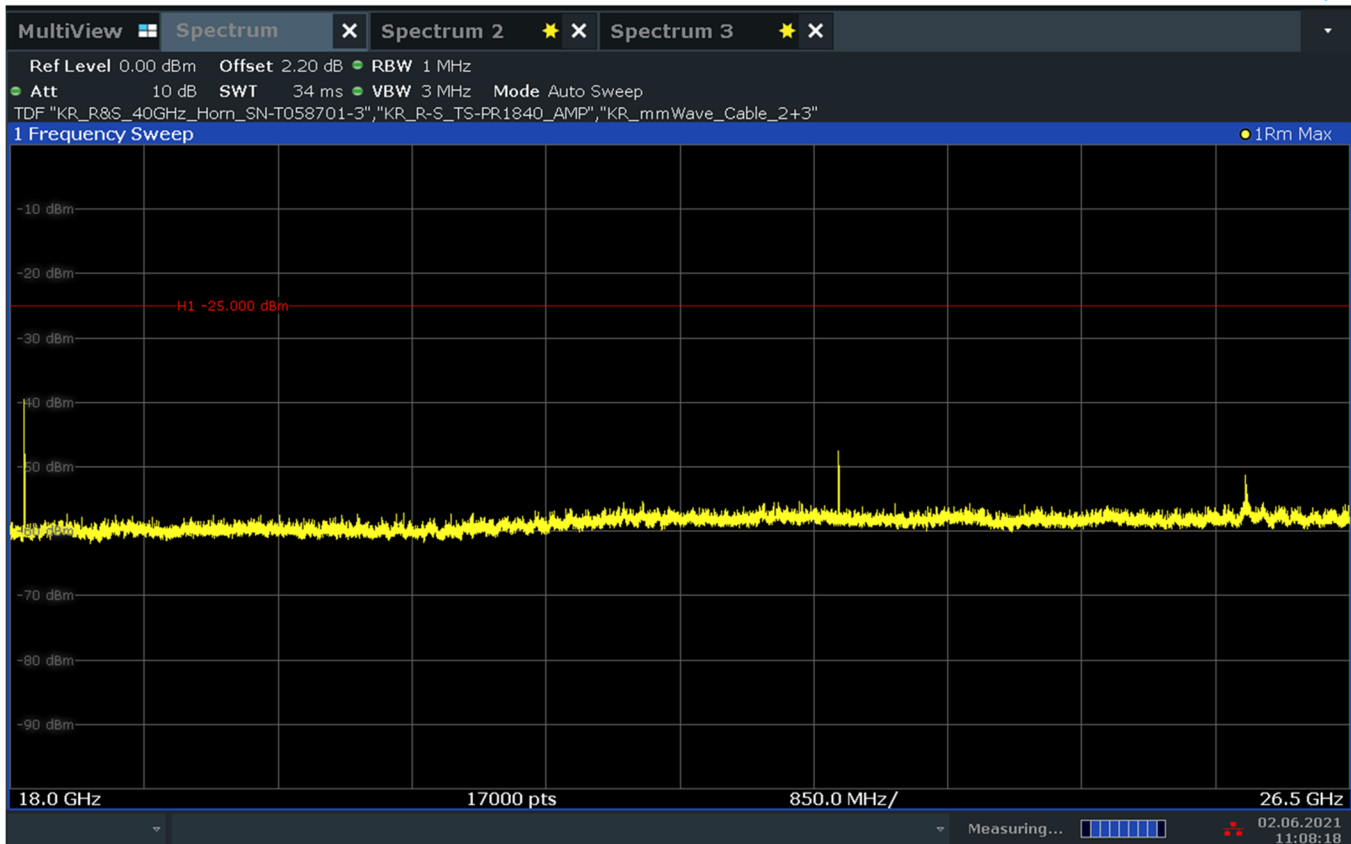
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### LTE Band 41(PC3)



**Plot 7-26. Radiated Spurious Plot (LTE Band 41(PC3))**



**Plot 7-27. Radiated Spurious Plot (LTE Band 41(PC3))**

FCC ID: A3LSMA127FN	<b>PCTEST</b> Proud to be part of element	<b>PART 27 MEASUREMENT REPORT</b>		Approved by: Technical Manager
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Bandwidth (MHz):	20
Frequency (MHz):	2506.0
RB / Offset:	1 / 0

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]
5012.0	V	300	292	-60.60	2.72	49.12	-46.13	-25.00	-21.13
7518.0	V	151	347	-63.87	9.05	52.18	-43.08	-25.00	-18.08
10024.0	V	282	336	-63.81	12.91	56.10	-39.16	-25.00	-14.16
12530.0	V	124	344	-74.04	16.29	49.25	-46.01	-25.00	-21.01
15036.0	V	-	-	-83.02	19.06	43.04	-52.22	-25.00	-27.22
17542.0	V	197	345	-69.84	21.82	58.98	-36.28	-25.00	-11.28
20048.0	V	150	231	-58.31	-4.39	44.30	-60.50	-25.00	-35.50
22554.0	V	150	230	-50.82	-3.45	52.73	-52.07	-25.00	-27.07

Table 7-3. Radiated Spurious Data (LTE Band 41(PC3) – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
RB / Offset:	1 / 0



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]
5186.0	V	307	282	-60.17	3.24	50.07	-45.18	-25.00	-20.18
7779.0	V	169	324	-66.51	10.05	50.54	-44.72	-25.00	-19.72
10372.0	V	284	3	-60.30	13.73	60.43	-34.83	-25.00	-9.83
12965.0	V	122	326	-79.72	18.17	45.45	-49.81	-25.00	-24.81
15558.0	V	116	4	-79.47	15.77	43.30	-51.96	-25.00	-26.96
18151.0	V	150	287	-44.93	-4.14	57.93	-46.87	-25.00	-21.87
20744.0	V	150	270	-62.42	-4.55	40.03	-64.77	-25.00	-39.77
23337.0	V	150	256	-54.56	-3.43	49.01	-55.79	-25.00	-30.79

Table 7-4. Radiated Spurious Data (LTE Band 41(PC3) – Mid Channel)

Bandwidth (MHz):	20
Frequency (MHz):	2680.0
RB / Offset:	1 / 0

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]
5360.0	V	276	296	-65.05	4.16	46.11	-49.14	-25.00	-24.14
8040.0	V	158	323	-64.96	9.57	51.61	-43.65	-25.00	-18.65
10720.0	V	284	0	-66.76	13.90	54.14	-41.12	-25.00	-16.12
13400.0	V	126	355	-78.55	17.77	46.22	-49.03	-25.00	-24.03
16080.0	V	114	352	-80.20	15.97	42.77	-52.49	-25.00	-27.49
18760.0	V	150	284	-48.64	-4.16	54.20	-50.60	-25.00	-25.60
21440.0	V	150	313	-58.59	-3.63	44.78	-60.02	-25.00	-35.02
24120.0	V	150	308	-61.63	-3.15	42.22	-62.58	-25.00	-37.58

Table 7-5. Radiated Spurious Data (LTE Band 41(PC3) – High Channel)

FCC ID: A3LSMA127FN	 PCTEST Proud to be part of element	PART 27 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/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

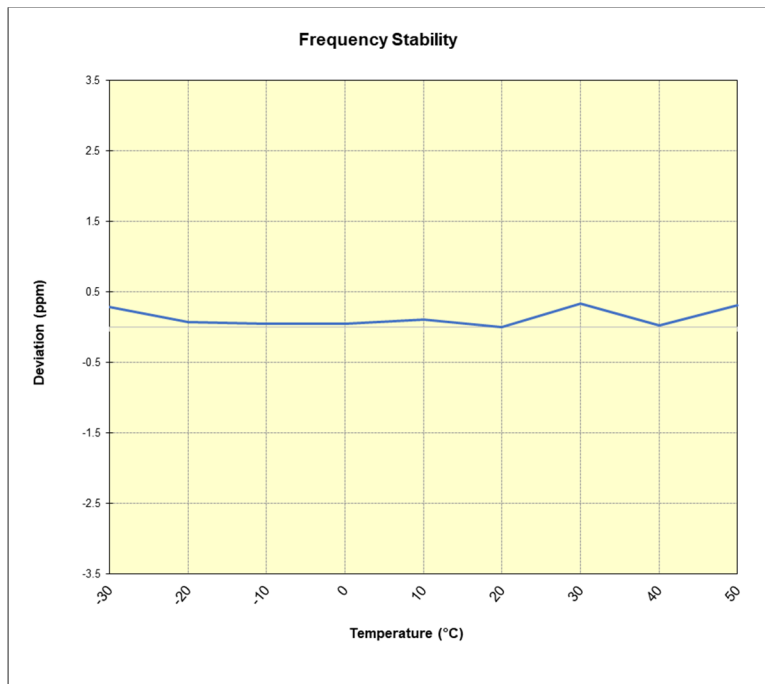
FCC ID: A3LSMA127FN		PART 27 MEASUREMENT REPORT	 Approved by: Technical Manager
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<b>LTE Band 41</b>					
		Operating Frequency (Hz):		2,593,000,000	
		Ref. Voltage (VDC):		4.36	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.36	- 30	2,593,000,781	750	0.0000289
		- 20	2,593,000,232	201	0.0000077
		- 10	2,593,000,160	129	0.0000050
		0	2,593,000,158	126	0.0000049
		+ 10	2,593,000,313	282	0.0000109
		+ 20 (Ref)	2,593,000,031	0	0.0000000
		+ 30	2,593,000,901	870	0.0000336
		+ 40	2,593,000,110	79	0.0000030
		+ 50	2,593,000,860	829	0.0000320
Battery Endpoint	3.57	+ 20	2,593,000,091	60	0.0000023

**Table 7-6. LTE Band 41 Frequency Stability Data**





**Plot 7-28. LTE Band 41 Frequency Stability Chart**

<b>FCC ID:</b> A3LSMA127FN	<b>PCTEST</b> Proud to be part of element	<b>PART 27 MEASUREMENT REPORT</b>	<b>SAMSUNG</b>	<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1K210511001902-03.A3L	<b>Test Dates:</b> 05/13/2021 – 06/01/2021	<b>EUT Type:</b> Portable Handset		Page 37 of 38

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset** **FCC ID: A3LSMA127FN** complies with all the requirements of Part 27 of the FCC rules.

FCC ID: A3LSMA127FN		<b>PART 27 MEASUREMENT REPORT</b> 	<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1K210511001902-03.A3L	<b>Test Dates:</b> 05/13/2021 – 06/01/2021	<b>EUT Type:</b> Portable Handset	Page 38 of 38

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