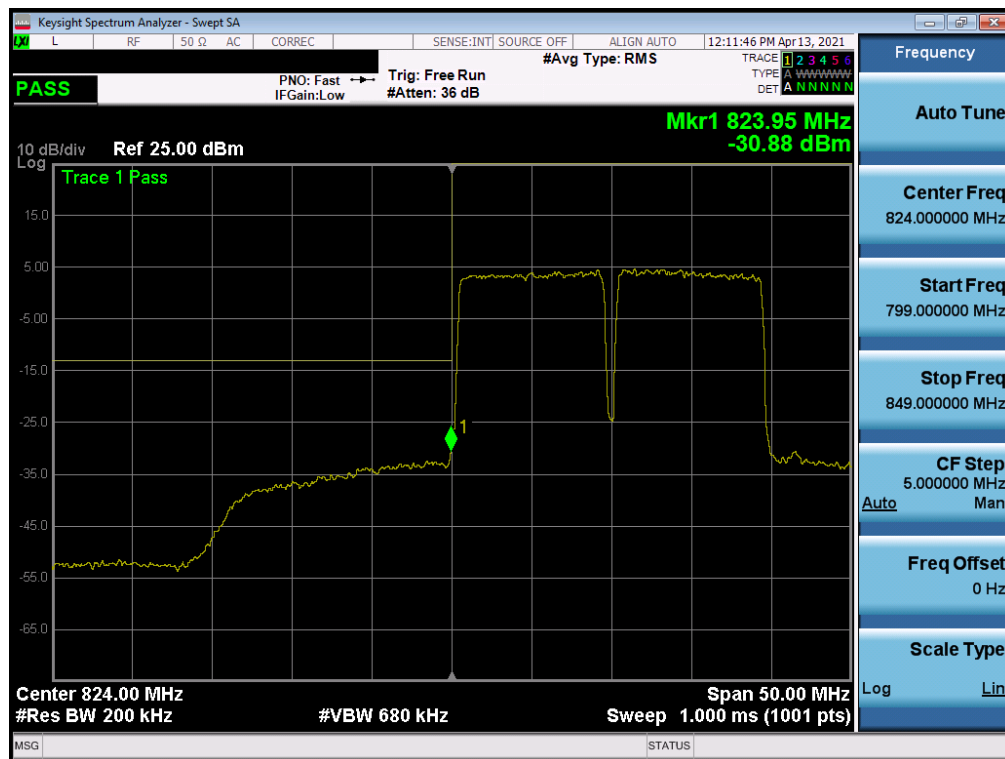
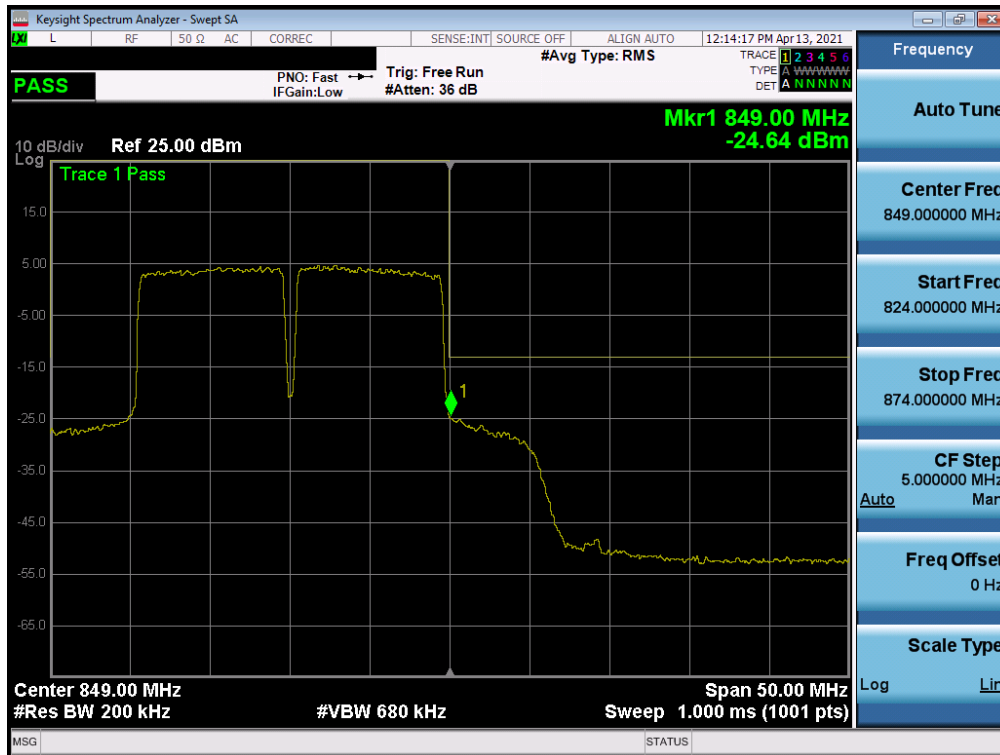


Plot 7-105. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/0 SCC 1/49 – High Channel)



Plot 7-106. Lower Band Edge Plot (Band 5 QPSK – PCC: 10MHz SCC: 10MHz – Full RB)

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Plot 7-107. Upper Band Edge Plot (Band 5 QPSK – PCC: 10MHz SCC: 10MHz – Full RB)

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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

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Test Setup

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

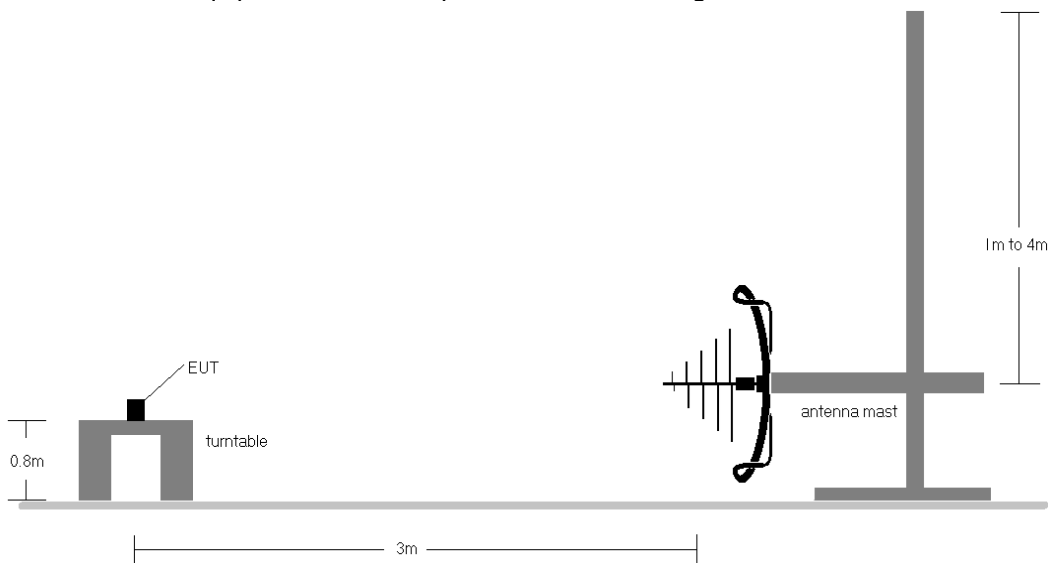


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

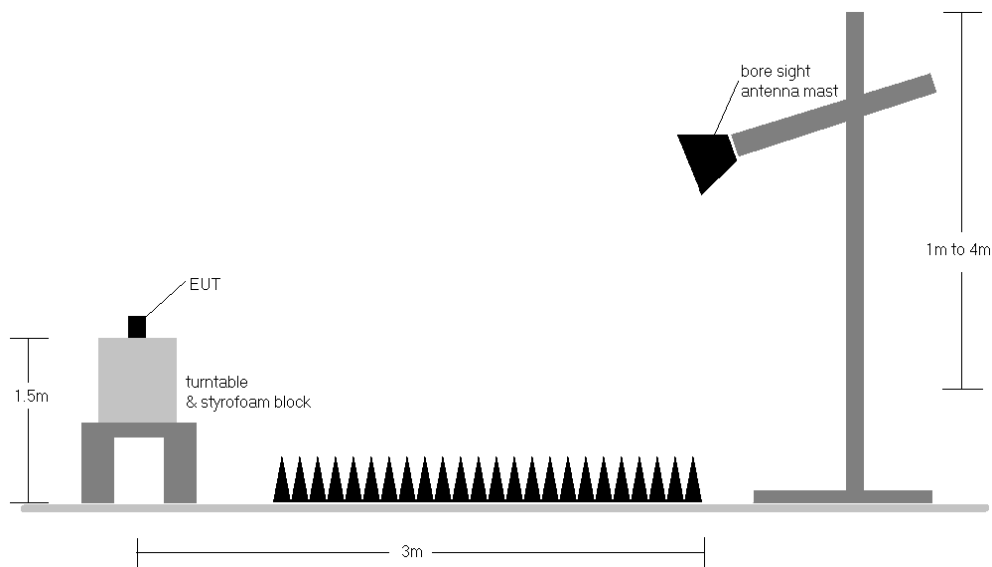




Figure 7-7. Test Instrument & Measurement Setup >1 GHz

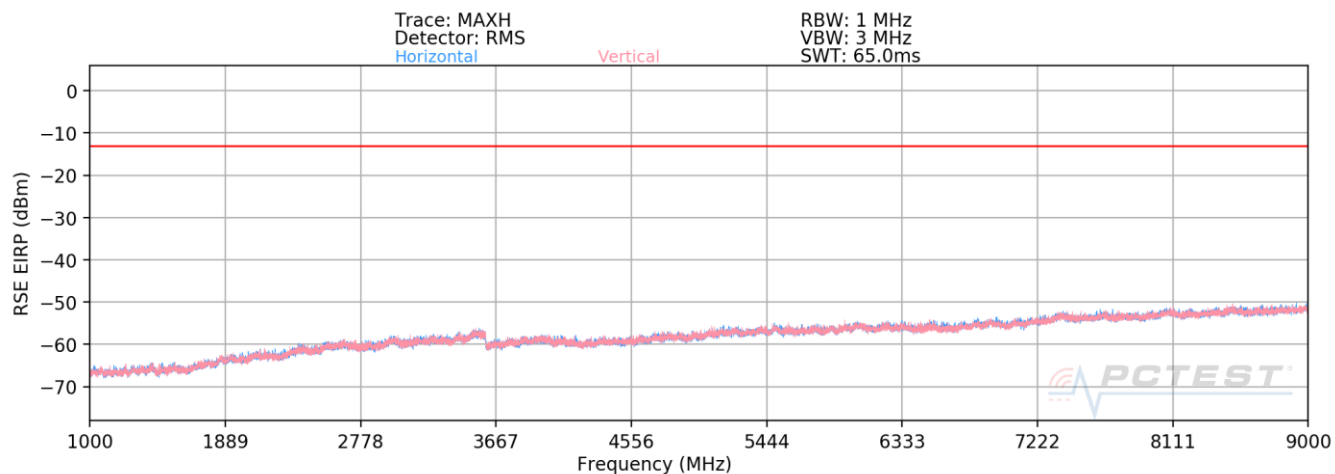
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Test Notes

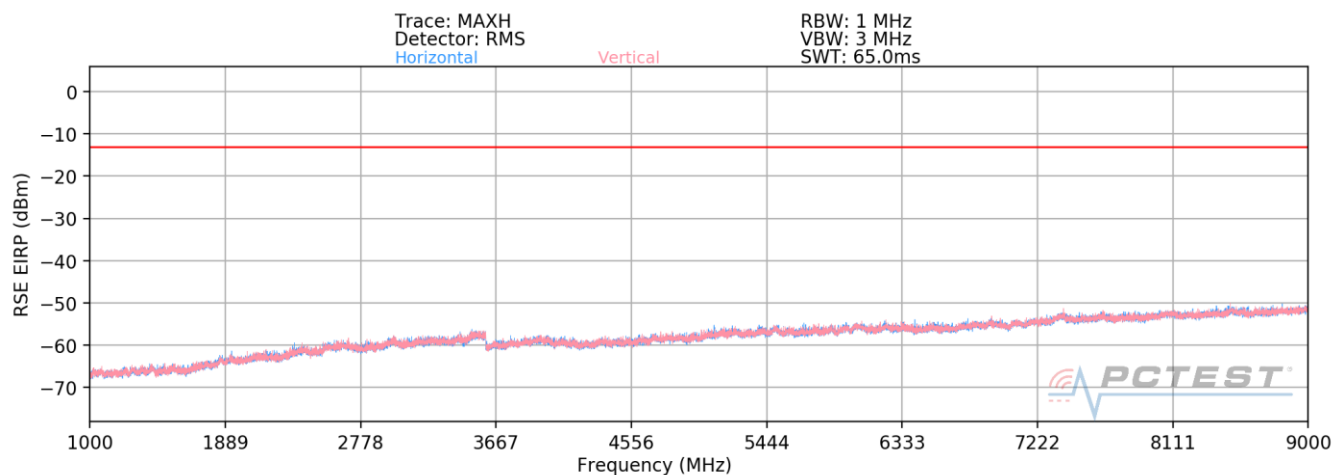
- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - a) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; 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) For CDMA, this device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 5) 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.
- 6) This unit was tested with its standard battery.
- 7) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 8) 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.
- 9) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 10) ULCA spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
- 11) 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.
- 12) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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LTE Band 26/5



Plot 7-108. Radiated Spurious Plot (LTE Band 26/5) – Open



Plot 7-109. Radiated Spurious Plot (LTE Band 26/5) – Closed

Bandwidth (MHz):	10
Frequency (MHz):	829.0
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]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1658.0	H	-	-	-76.71	-5.53	24.76	-70.50	-13.00	-57.50
2487.0	H	147	168	-73.94	-2.63	30.43	-64.83	-13.00	-51.83
3316.0	H	-	-	-77.17	0.44	30.27	-64.99	-13.00	-51.99
4145.0	H	-	-	-78.11	1.86	30.75	-64.51	-13.00	-51.51
4974.0	H	-	-	-78.22	3.78	32.56	-62.70	-13.00	-49.70

Table 7-8. Radiated Spurious Data (LTE Band 26/5 – Low Channel) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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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]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.0	H	285	220	-76.29	-5.40	25.31	-69.95	-13.00	-56.95
2509.5	H	118	196	-74.61	-2.54	29.85	-65.41	-13.00	-52.41
3346.0	H	-	-	-77.23	0.30	30.07	-65.18	-13.00	-52.18
4182.5	H	-	-	-78.18	2.02	30.84	-64.42	-13.00	-51.42
5019.0	H	-	-	-79.52	4.16	31.64	-63.62	-13.00	-50.62

Table 7-9. Radiated Spurious Data (LTE Band 26/5 – Mid Channel) – Open

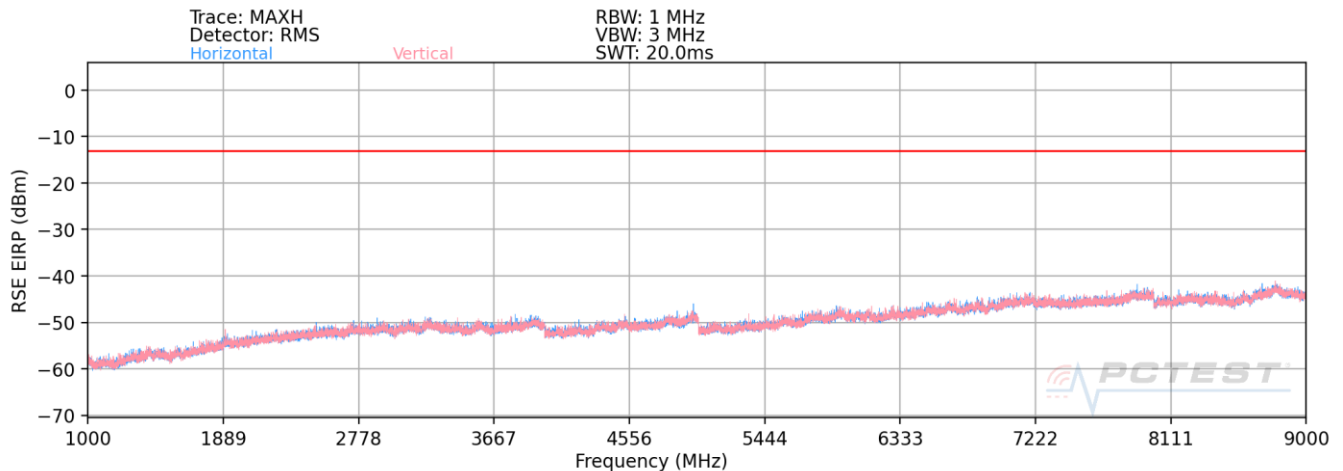
Bandwidth (MHz):	10
Frequency (MHz):	844.0
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	H	147	132	-76.17	-5.26	25.57	-69.68	-13.00	-56.68
2532.00	H	114	166	-73.92	-2.10	30.98	-64.28	-13.00	-51.28
3376.00	H	-	-	-77.63	0.28	29.65	-65.61	-13.00	-52.61
4220.00	H	-	-	-78.39	1.90	30.51	-64.75	-13.00	-51.75
5064.00	H	-	-	-78.94	4.52	32.58	-62.67	-13.00	-49.67

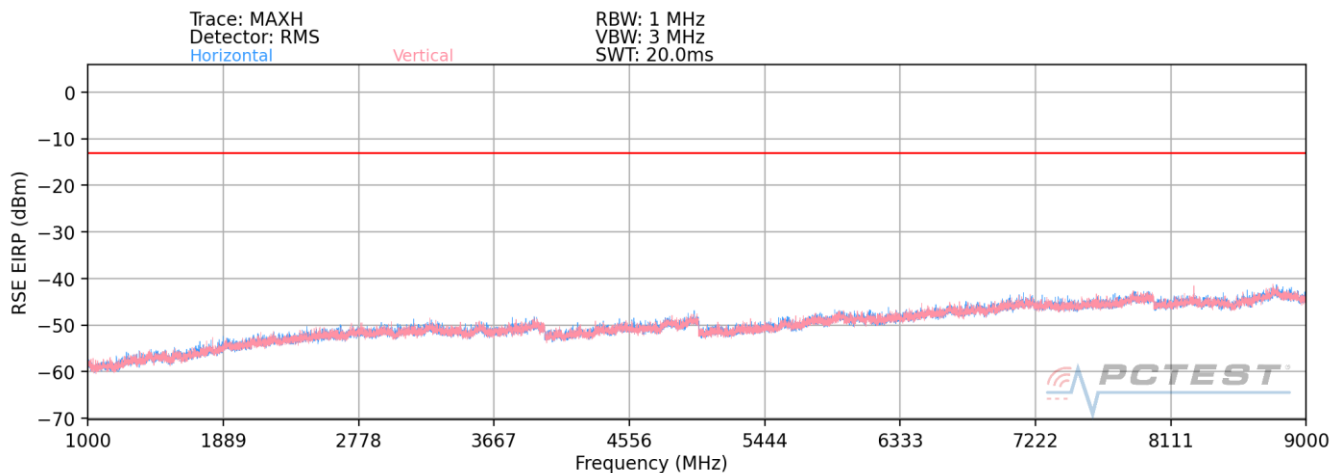
Table 7-10. Radiated Spurious Data (LTE Band 26/5 – High Channel) – Open

FCC ID: A3LSMF711U	 PART 22 MEASUREMENT REPORT 	Approved by: Technical Manager
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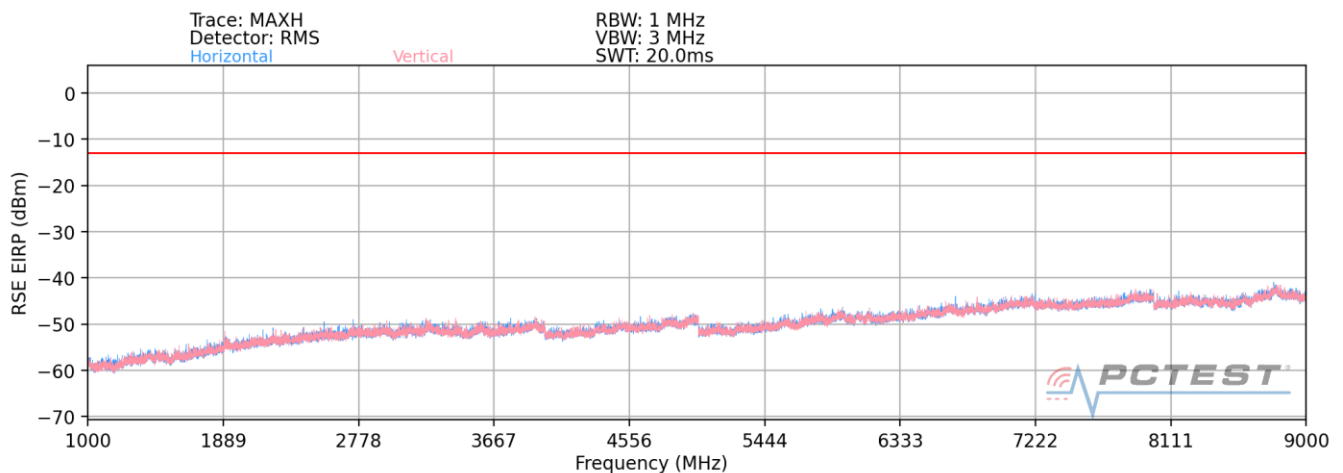
ULCA LTE Band 5



Plot 7-110. Radiated Spurious Plot (ULCA LTE Band 5 – Low Channel) – Open

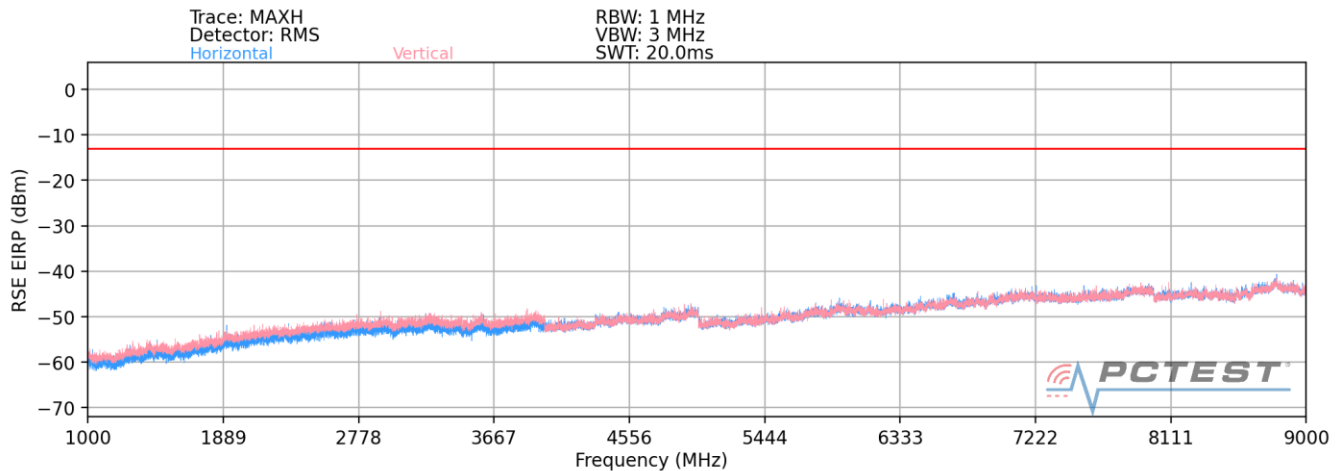


Plot 7-111. Radiated Spurious Plot (ULCA LTE Band 5 – Low Channel) – Closed



Plot 7-112. Radiated Spurious Plot (ULCA LTE Band 5 – High Channel) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-113. Radiated Spurious Plot (ULCA LTE Band 5 – High Channel) – Closed

PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	829.0
PCC RB / Offset:	1 / 49
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	838.9
SCC 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]
1658.0	H	-	-	-78.41	1.07	29.66	-65.60	-13.00	-52.60
2487.0	H	-	-	-79.05	5.39	33.34	-61.92	-13.00	-48.92
3316.0	H	-	-	-79.70	6.84	34.14	-61.12	-13.00	-48.12

Table 7-11. Radiated Spurious Data (ULCA LTE Band 5 – Low Channel) – Open

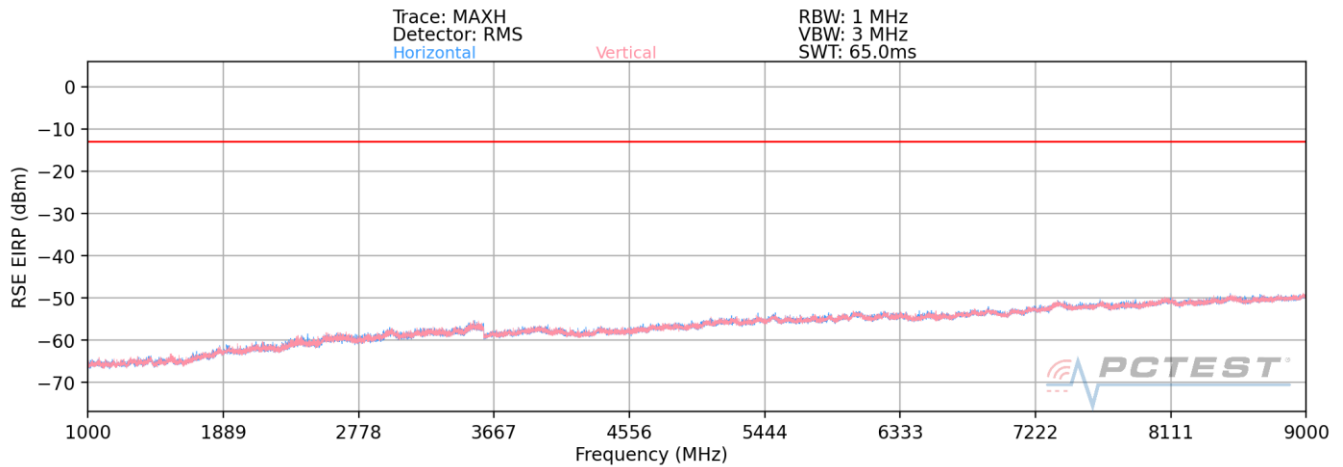
PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	844.0
PCC RB / Offset:	1 / 0
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	834.1
SCC RB / Offset:	1 / 49

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]
1688.0	H	-	-	-78.43	1.41	29.98	-65.28	-13.00	-52.28
2532.0	H	-	-	-78.98	5.84	33.86	-61.40	-13.00	-48.40
3376.0	H	-	-	-80.10	7.09	33.99	-61.26	-13.00	-48.26

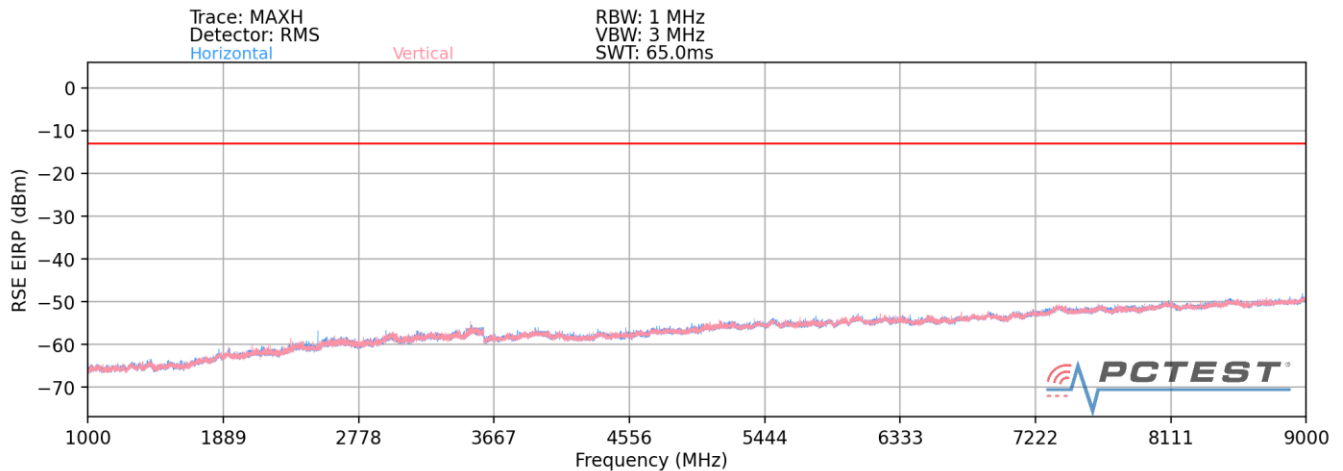
Table 7-12. Radiated Spurious Data (ULCA LTE Band 5 – High Channel) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n5



Plot 7-114. Radiated Spurious Plot (NR Band n5) – Open



Plot 7-115. Radiated Spurious Plot (NR Band n5) – Closed

Bandwidth (MHz):	20
Frequency (MHz):	834.0
RB / Offset:	1 / 53
Mode:	SA

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]
1668.0	H	-	-	-77.32	-5.47	24.21	-71.05	-13.00	-58.05
2502.0	H	-	-	-77.01	-2.60	27.39	-67.86	-13.00	-54.86

Table 7-13. Radiated Spurious Data (NR Band n5 – Low Channel) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53
Mode:	SA




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]
1673.0	H	-	-	-77.26	-5.40	24.34	-70.92	-13.00	-57.92
2509.5	H	-	-	-77.04	-2.54	27.42	-67.84	-13.00	-54.84

Table 7-14. Radiated Spurious Data (NR Band n5 – Mid Channel) – Open

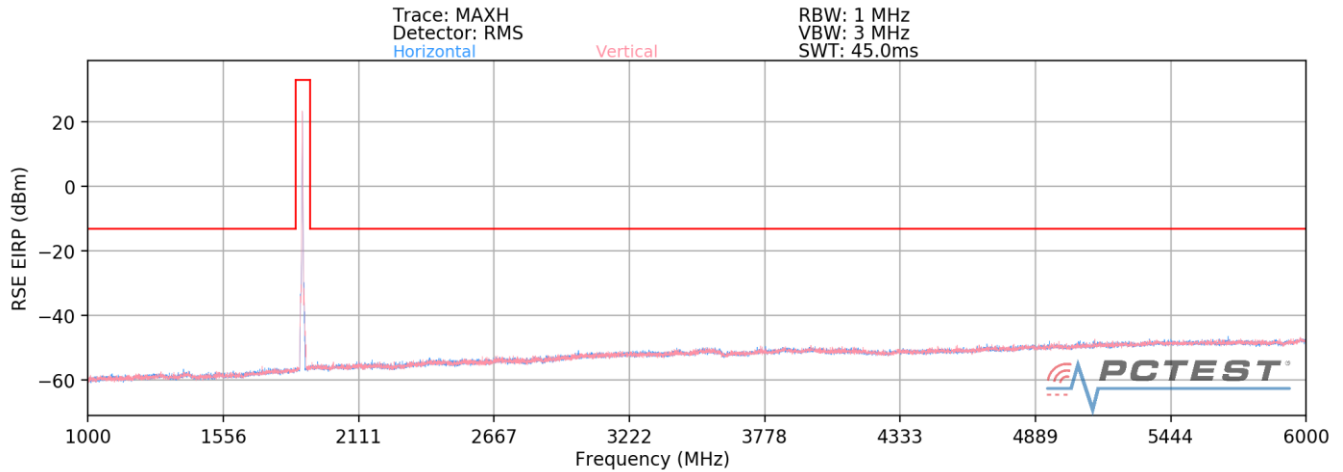
Bandwidth (MHz):	20
Frequency (MHz):	839.0
RB / Offset:	1 / 53
Mode:	SA

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]
1678.0	H	-	-	-77.27	-5.33	24.40	-70.86	-13.00	-57.86
2517.0	H	-	-	-77.18	-2.33	27.49	-67.76	-13.00	-54.76

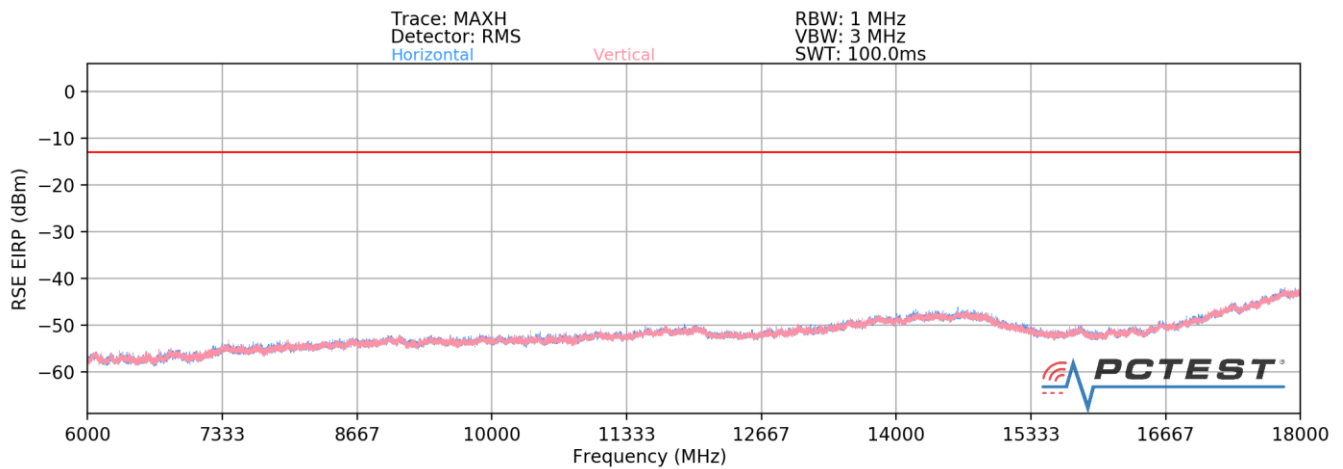
Table 7-15. Radiated Spurious Data (NR Band n5 – High Channel) – Open

FCC ID: A3LSMF711U	 PCTEST Proud to be part of 	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n5 – B2



Plot 7-116. Radiated Spurious Plot (NR Band n5 – B2 – 1-6 GHz) – Open



Plot 7-117. Radiated Spurious Plot (NR Band n5 – B2 – 6-18 GHz) – Open

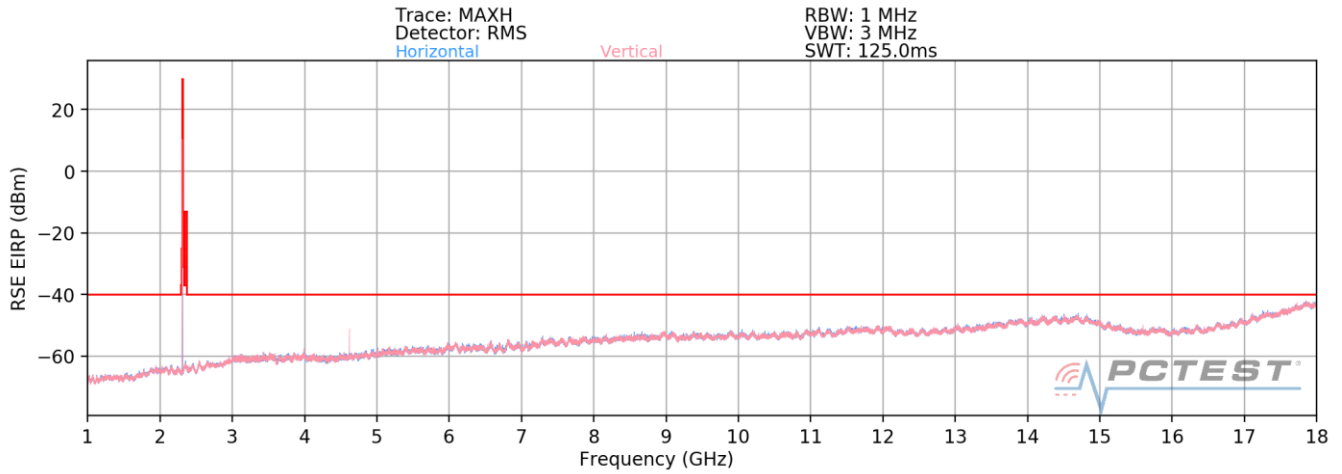
Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53
Mode:	EN-DC
Anchor Band:	B2

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]
1250.5	H	-	-	-76.95	2.24	32.29	-62.97	-13.00	-49.97
2294.0	H	-	-	-77.30	5.79	35.49	-59.76	-13.00	-46.76
2923.5	H	-	-	-77.54	8.27	37.73	-57.53	-13.00	-44.53

Table 7-16. Radiated Spurious Data (NR Band n5 – B2) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n5 – B30



Plot 7-118. Radiated Spurious Plot (NR Band n5 – B30 – 1-18 GHz) – Open

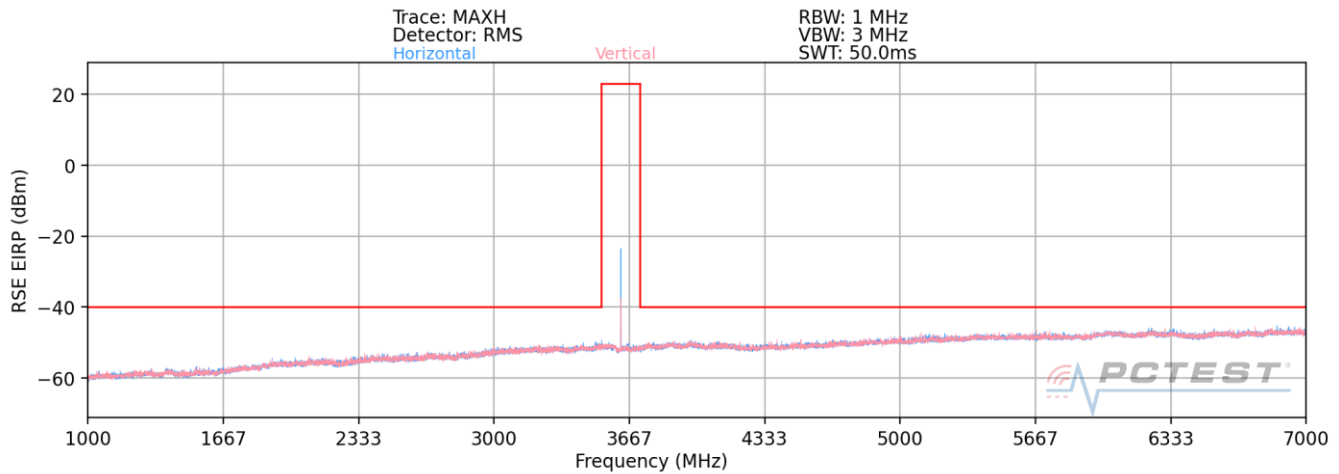
Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53
Mode:	EN-DC
Anchor Band:	B30

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]
2110.5	V	-	-	-77.58	5.95	35.37	-59.89	-40.00	-19.89
4620.0	V	146	20	-73.69	12.29	45.60	-49.66	-40.00	-9.66
5057.5	V	-	-	-79.19	13.75	41.56	-53.69	-40.00	-13.69
5257.0	V	-	-	-79.20	14.41	42.21	-53.05	-40.00	-13.05

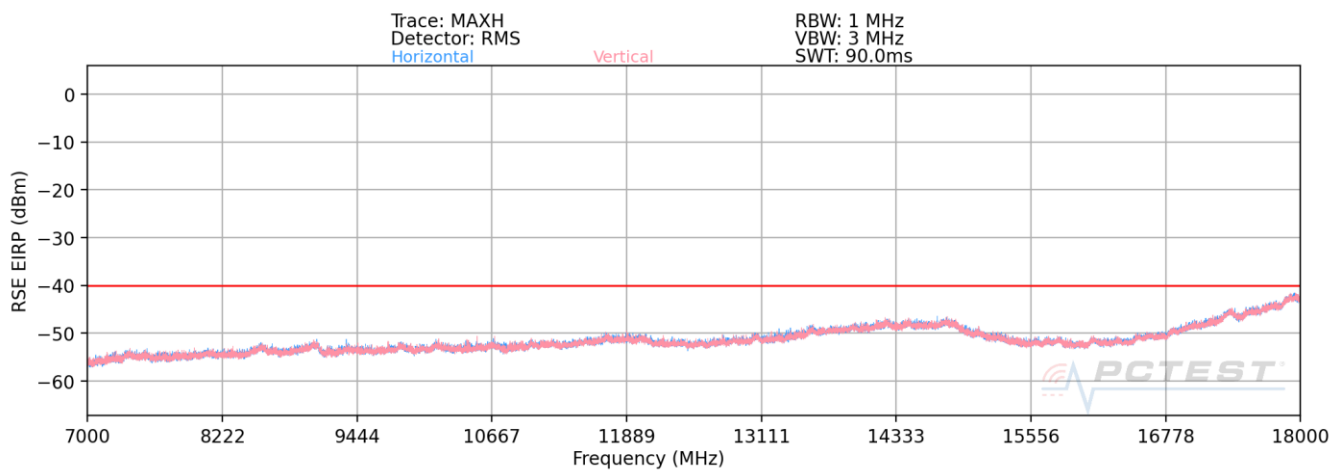
Table 7-17. Radiated Spurious Data (NR Band n5 – B30) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n5 – B48



Plot 7-119. Radiated Spurious Plot (NR Band n5 – B48 – 1-7 GHz) – Open



Plot 7-120. Radiated Spurious Plot (NR Band n5 – B48 – 7-18 GHz) – Open

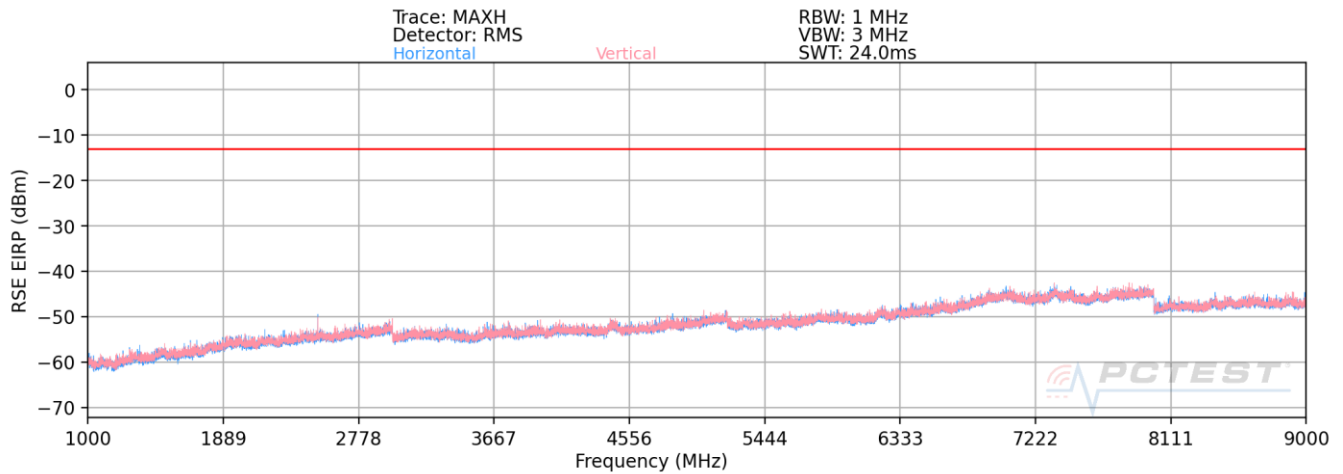
Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 53
Mode:	EN-DC
Anchor Band:	B48

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]
1952.0	H	-	-	-77.59	5.61	35.02	-60.24	-40.00	-20.24
4740.5	H	-	-	-78.58	12.30	40.72	-54.54	-40.00	-14.54
6413.5	H	-	-	-79.68	15.22	42.54	-52.72	-40.00	-12.72

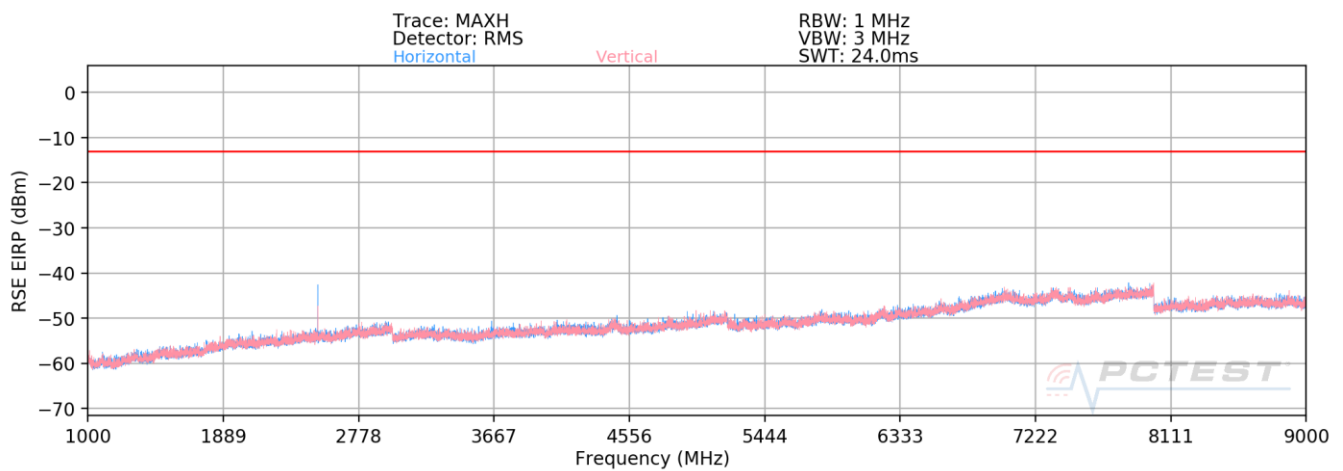
Table 7-18. Radiated Spurious Data (NR Band n5 – B48) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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GSM/GPRS Cell



Plot 7-121. Radiated Spurious Plot (GPRS Cell) – Open



Plot 7-122. Radiated Spurious Plot (GPRS Cell) – Closed

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]
1648.4	H	385	164	-66.56	-0.16	40.28	-54.98	-13.00	-41.98
2472.6	H	390	164	-58.15	3.45	52.30	-42.96	-13.00	-29.96
3296.8	H	-	-	-68.54	4.18	42.64	-52.61	-13.00	-39.61
4121.0	H	-	-	-69.23	5.81	43.58	-51.67	-13.00	-38.67
4945.2	H	-	-	-69.39	7.09	44.70	-50.56	-13.00	-37.56

Table 7-19. Radiated Spurious Data (GPRS Cell – Low Channel) – Closed

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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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]
1673.2	H	-	-	-67.52	-0.23	39.25	-56.01	-13.00	-43.01
2509.8	H	101	262	-59.17	3.55	51.38	-43.88	-13.00	-30.88
3346.4	H	-	-	-69.62	5.04	42.42	-52.83	-13.00	-39.83
4183.0	H	125	140	-67.50	5.76	45.26	-50.00	-13.00	-37.00
5019.6	H	-	-	-69.99	6.47	43.48	-51.78	-13.00	-38.78
5856.2	H	-	-	-71.28	8.80	44.52	-50.73	-13.00	-37.73
6692.8	H	-	-	-71.46	10.34	45.88	-49.38	-13.00	-36.38

Table 7-20. Radiated Spurious Data (GPRS Cell – Mid Channel) – Closed

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]
1697.6	H	287	209	-66.65	0.02	40.37	-54.88	-13.00	-41.88
2546.4	H	279	195	-58.56	3.49	51.93	-43.32	-13.00	-30.32
3395.2	H	-	-	-69.32	4.77	42.45	-52.81	-13.00	-39.81
4244.0	H	-	-	-70.11	5.65	42.54	-52.72	-13.00	-39.72
5092.8	H	-	-	-69.99	7.32	44.33	-50.93	-13.00	-37.93

Table 7-21. Radiated Spurious Data (GPRS Cell – High Channel) – Closed

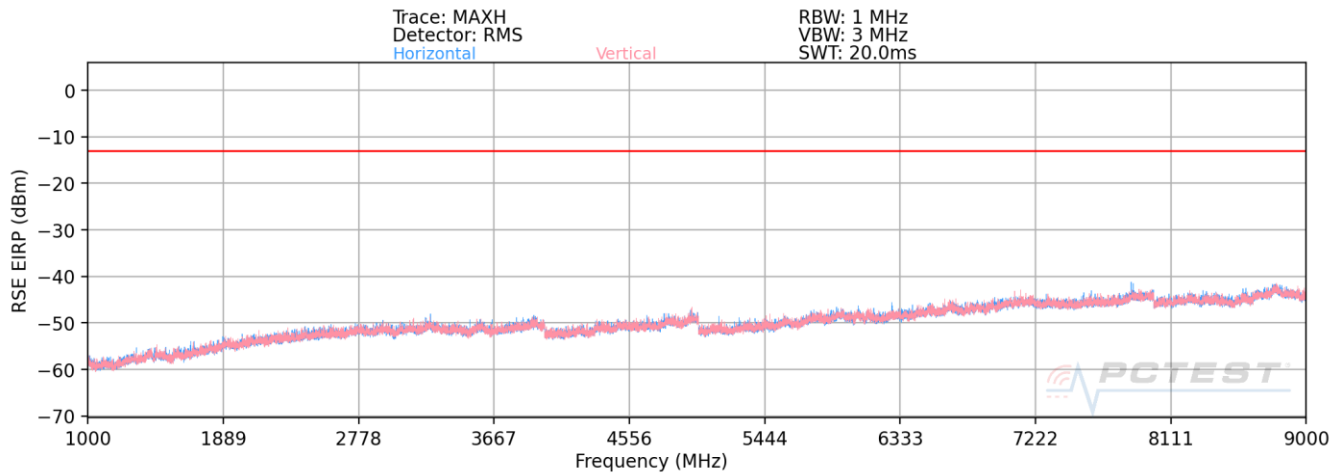
Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

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]
1648.4	V	100	281	-65.97	-0.16	40.87	-54.39	-13.00	-41.39
2472.6	V	109	290	-66.09	3.45	44.36	-50.90	-13.00	-37.90
3296.8	V	-	-	-68.70	4.18	42.48	-52.77	-13.00	-39.77
4121.0	V	-	-	-69.44	5.81	43.37	-51.88	-13.00	-38.88
4945.2	V	-	-	-69.80	7.09	44.29	-50.97	-13.00	-37.97

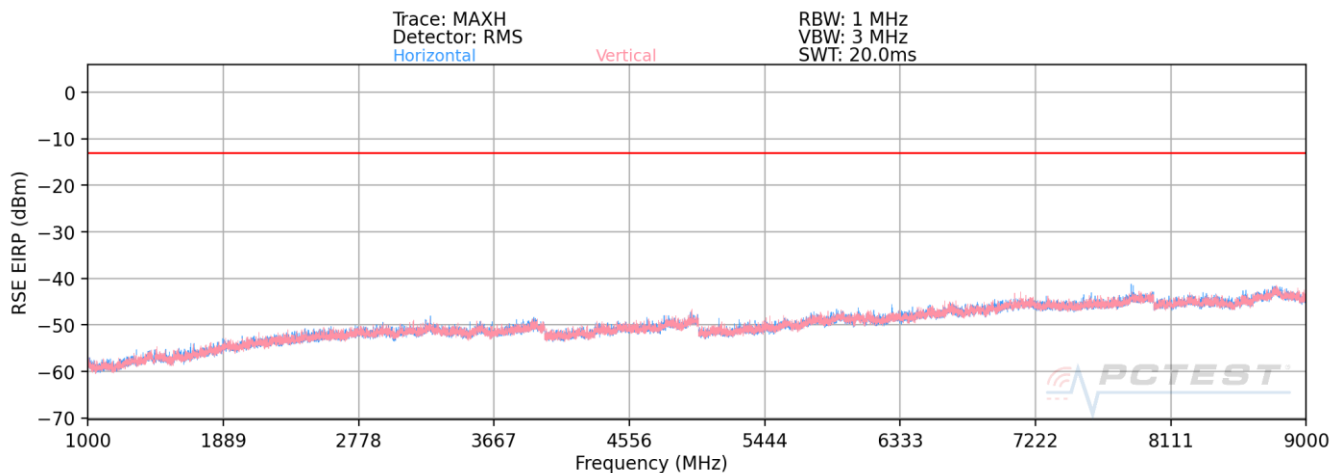
Table 7-22. Radiated Spurious Data with WCP (GPRS Cell) – Closed

FCC ID: A3LSMF711U	 PART 22 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104070032-02.A3L	Test Dates: 4/07/2021 – 6/08/2021	EUT Type: Portable Handset
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WCDMA Cell



Plot 7-123. Radiated Spurious Plot (WCDMA Cell) – Open



Plot 7-124. Radiated Spurious Plot (WCDMA Cell) – Closed

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]
1652.8	H	-	-	-77.99	1.02	30.03	-65.22	-13.00	-52.22
2479.2	H	-	-	-78.35	5.34	33.99	-61.26	-13.00	-48.26
3305.6	H	-	-	-78.77	7.21	35.44	-59.82	-13.00	-46.82

Table 7-23. Radiated Spurious Data (WCDMA Cell – Low Channel) – Open



FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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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]
1673.2	H	-	-	-77.85	1.17	30.32	-64.94	-13.00	-51.94
2509.8	H	-	-	-78.32	5.23	33.91	-61.34	-13.00	-48.34
3346.4	H	-	-	-79.00	7.12	35.12	-60.14	-13.00	-47.14

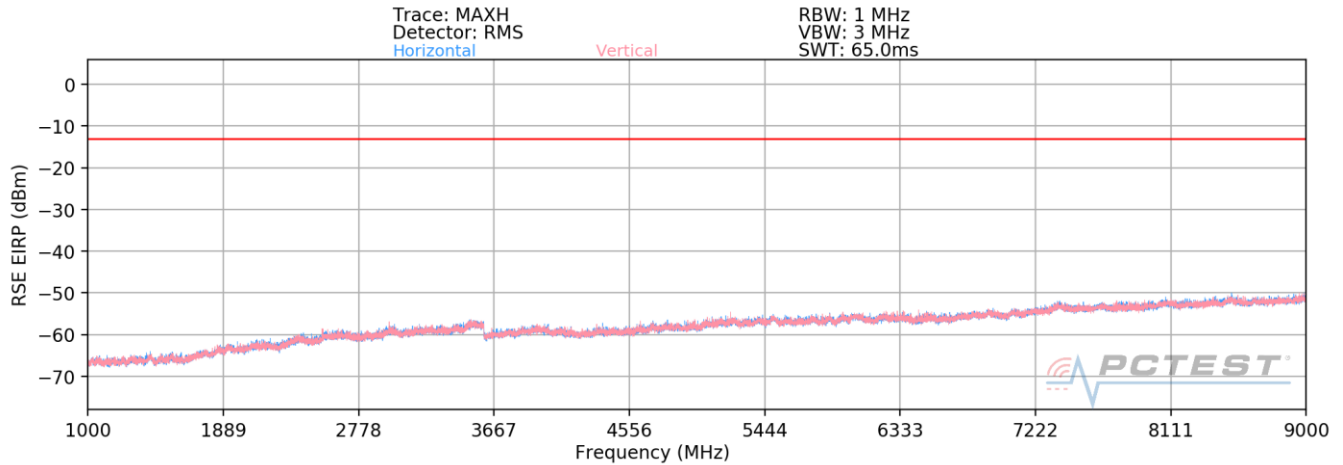
Table 7-24. Radiated Spurious Data (WCDMA Cell – Mid Channel) – Open

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]
1693.2	H	-	-	-77.73	1.62	30.89	-64.36	-13.00	-51.36
2539.8	H	-	-	-78.19	5.77	34.58	-60.68	-13.00	-47.68
3386.4	H	-	-	-78.87	7.12	35.25	-60.01	-13.00	-47.01

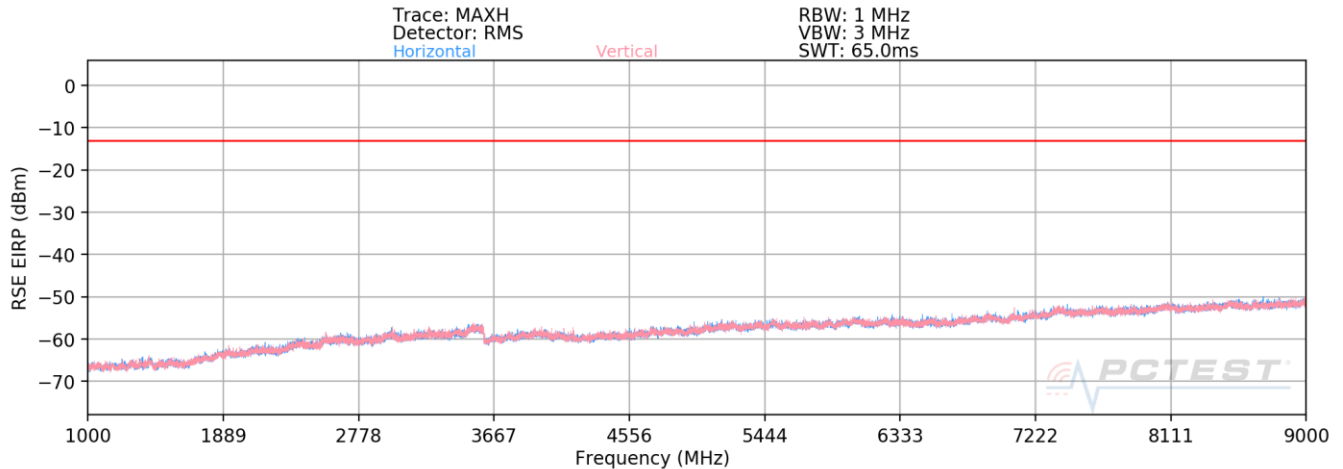
Table 7-25. Radiated Spurious Data (WCDMA Cell – High Channel) – Open

FCC ID: A3LSMF711U	 PART 22 MEASUREMENT REPORT 	Approved by: Technical Manager
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CDMA Cell



Plot 7-125. Radiated Spurious Plot (CDMA Cell) – Open



Plot 7-126. Radiated Spurious Plot (CDMA Cell) – Closed

Mode:	CDMA
Channel:	1013
Frequency (MHz):	824.7

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]
1649.40	V	-	-	-76.62	-5.66	24.72	-70.54	-13.00	-57.54
2474.10	V	-	-	-76.86	-2.32	27.82	-67.44	-13.00	-54.44
3298.80	V	-	-	-77.73	0.66	29.93	-65.32	-13.00	-52.32
4123.50	V	-	-	-78.05	1.95	30.90	-64.36	-13.00	-51.36

Table 7-26. Radiated Spurious Data (CDMA Cell – Low Channel) – Open

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Mode:	CDMA
Channel:	384
Frequency (MHz):	836.52



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]
1673.04	V	-	-	-76.69	-5.40	24.91	-70.35	-13.00	-57.35
2509.56	V	-	-	-76.79	-2.54	27.67	-67.59	-13.00	-54.59
3346.08	V	-	-	-77.41	0.30	29.89	-65.36	-13.00	-52.36
4182.60	V	-	-	-78.25	2.02	30.77	-64.49	-13.00	-51.49

Table 7-27. Radiated Spurious Data (CDMA Cell – Mid Channel) – Open

Mode:	CDMA
Channel:	777
Frequency (MHz):	848.31

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]
1696.62	V	-	-	-76.87	-5.03	25.10	-70.16	-13.00	-57.16
2544.93	V	-	-	-77.26	-1.30	28.44	-66.82	-13.00	-53.82
3393.24	V	-	-	-77.31	0.43	30.12	-65.13	-13.00	-52.13
4241.55	V	-	-	-78.51	1.88	30.37	-64.89	-13.00	-51.89

Table 7-28. Radiated Spurious Data (CDMA Cell – High Channel) – Open

FCC ID: A3LSMF711U	 PCTEST <small>Proud to be part of element</small>	PART 22 MEASUREMENT REPORT		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.

For Part 22 and RSS-132, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

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

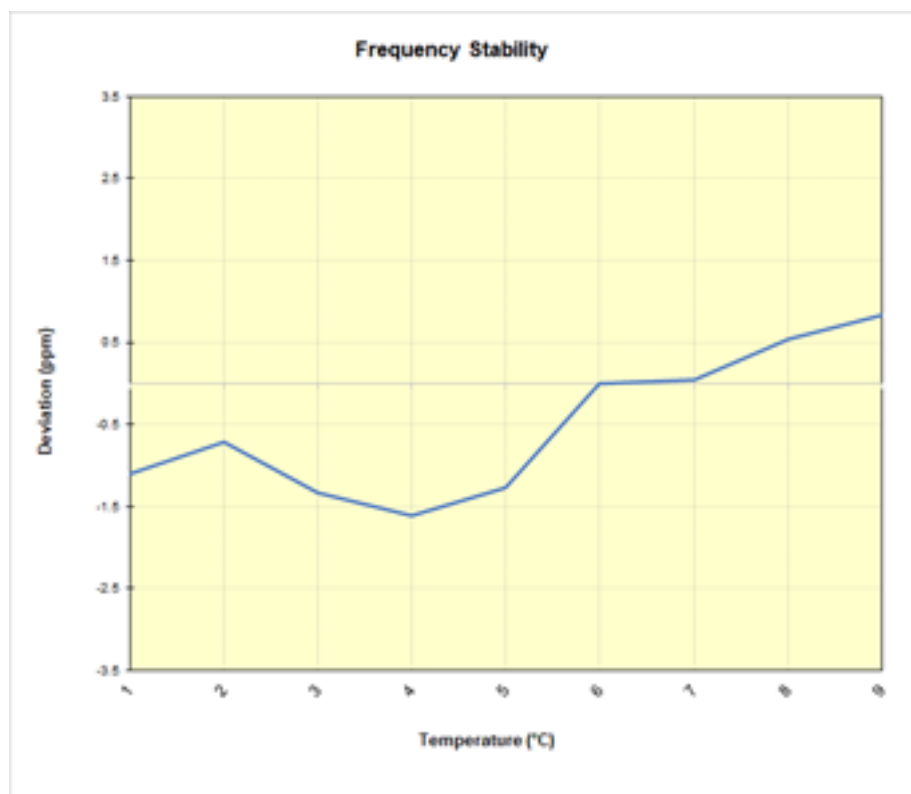
FCC ID: A3LSMF711U	 PART 22 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104070032-02.A3L	Test Dates: 4/07/2021 – 6/08/2021	EUT Type: Portable Handset
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LTE Band 26/5

Operating Frequency (Hz):	836,500,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	831,499,589	-915	-0.0001101
		- 20	831,499,917	-587	-0.0000706
		- 10	831,499,393	-1,111	-0.0001336
		0	831,499,162	-1,342	-0.0001614
		+ 10	831,499,448	-1,056	-0.0001270
		+ 20 (Ref)	831,500,504	0	0.0000000
		+ 30	831,500,544	40	0.0000049
		+ 40	831,500,958	454	0.0000545
		+ 50	831,501,197	693	0.0000834
Battery Endpoint	3.36	+ 20	831,499,608	-896	-0.0001077

Table 7-29. LTE Band 26/5 Frequency Stability Data



Plot 7-127. LTE Band 26/5 Frequency Stability Chart

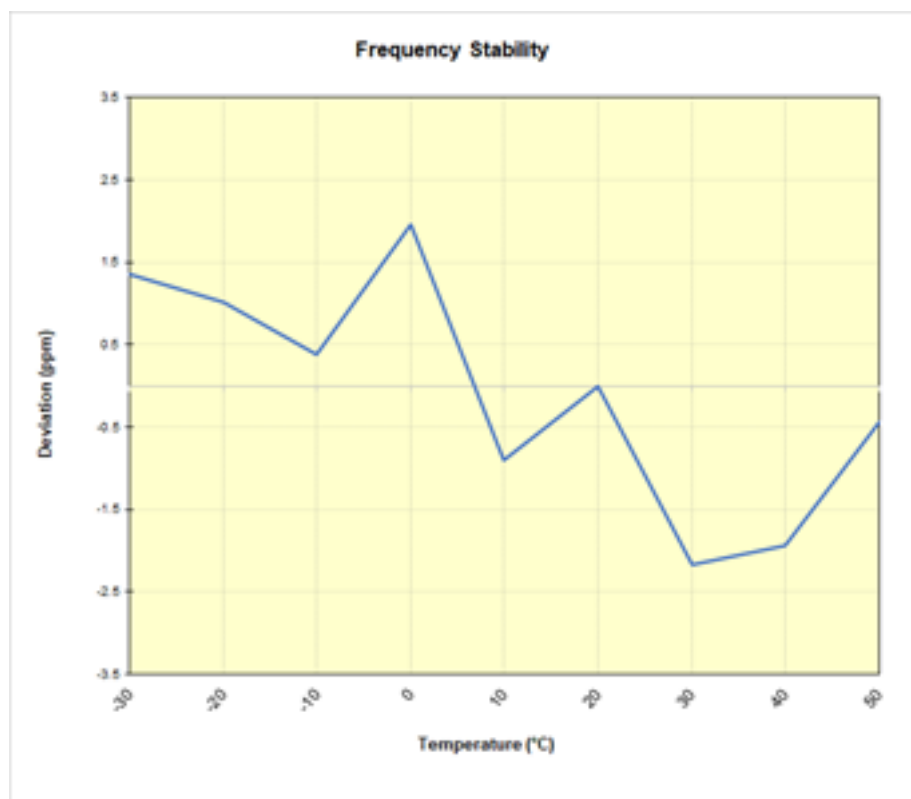
FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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NR Band n5

Operating Frequency (Hz):	836,500,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	836,574,057	1,132	0.0001353
		- 20	836,573,781	856	0.0001023
		- 10	836,573,240	315	0.0000377
		0	836,574,565	1,640	0.0001960
		+ 10	836,572,171	-754	-0.0000902
		+ 20 (Ref)	836,572,925	0	0.0000000
		+ 30	836,571,111	-1,814	-0.0002169
		+ 40	836,571,305	-1,620	-0.0001936
		+ 50	836,572,558	-367	-0.0000439
Battery Endpoint	3.36	+ 20	836,573,119	194	0.0000231

Table 7-30. NR Band n5 Frequency Stability Data



Plot 7-128. NR Band n5 Frequency Stability Chart

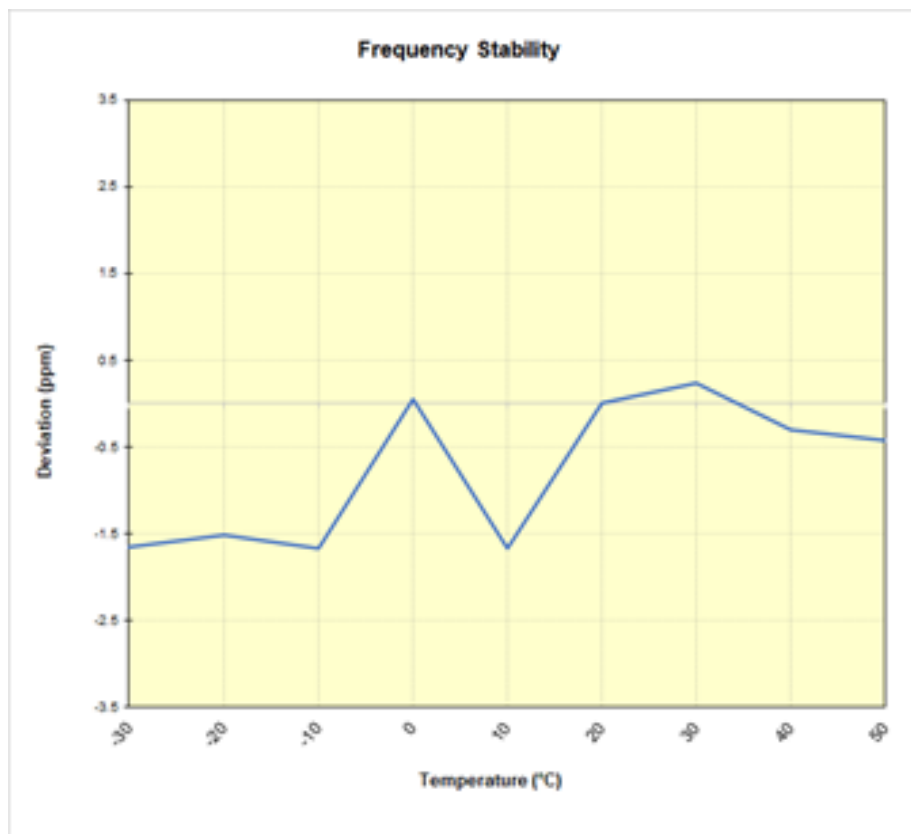
FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104070032-02.A3L	Test Dates: 4/07/2021 – 6/08/2021	EUT Type: Portable Handset		Page 100 of 104

GSM/GPRS Cellular

Operating Frequency (Hz):	836,600,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	836,604,863	-1,388	-0.0001659
		- 20	836,604,979	-1,272	-0.0001521
		- 10	836,604,850	-1,402	-0.0001676
		0	836,606,289	37	0.0000045
		+ 10	836,604,859	-1,393	-0.0001665
		+ 20 (Ref)	836,606,252	0	0.0000000
		+ 30	836,606,446	195	0.0000233
		+ 40	836,606,003	-249	-0.0000297
		+ 50	836,605,893	-359	-0.0000429
Battery Endpoint	3.36	+ 20	836,605,810	-442	-0.0000528

Table 7-31. GSM/GPRS Cell Frequency Stability Data



Plot 7-129. GSM/GPRS Cell Frequency Stability Chart

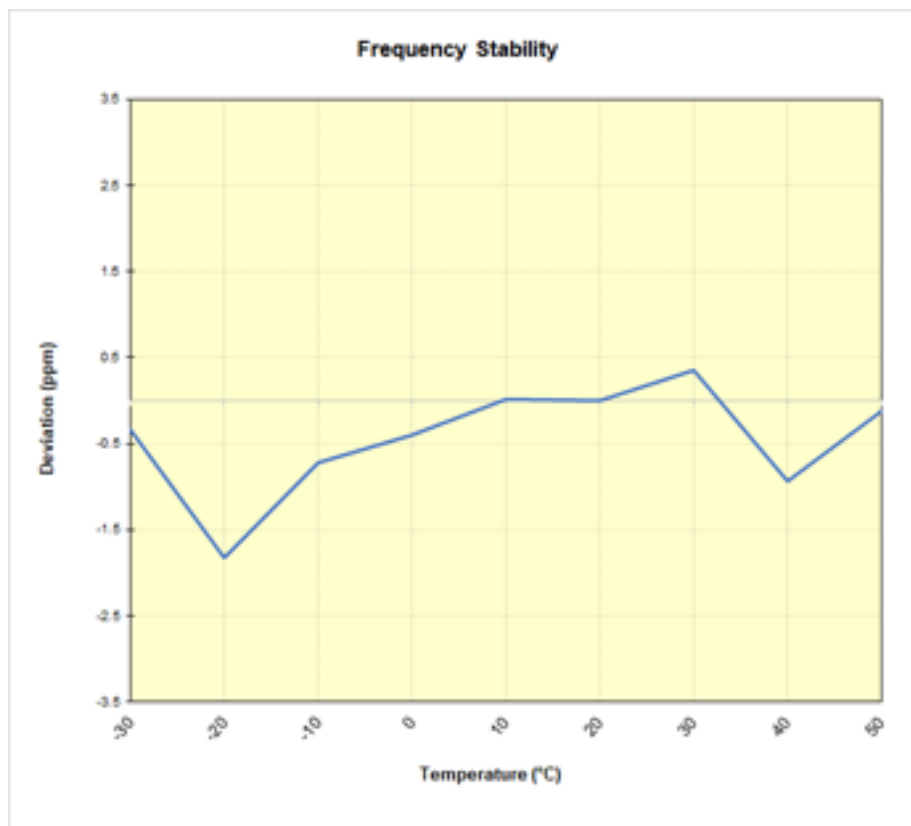
FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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WCDMA Cellular

Operating Frequency (Hz):	836,600,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	836,598,230	-286	-0.0000342
		- 20	836,596,988	-1,528	-0.0001827
		- 10	836,597,913	-604	-0.0000722
		0	836,598,176	-341	-0.0000407
		+ 10	836,598,530	13	0.0000016
		+ 20 (Ref)	836,598,517	0	0.0000000
		+ 30	836,598,816	299	0.0000358
		+ 40	836,597,738	-778	-0.0000931
		+ 50	836,598,416	-101	-0.0000121
Battery Endpoint	3.36	+ 20	836,598,147	-369	-0.0000442

Table 7-32. WCDMA Cell Frequency Stability Data



Plot 7-130. WCDMA Cell Frequency Stability Chart

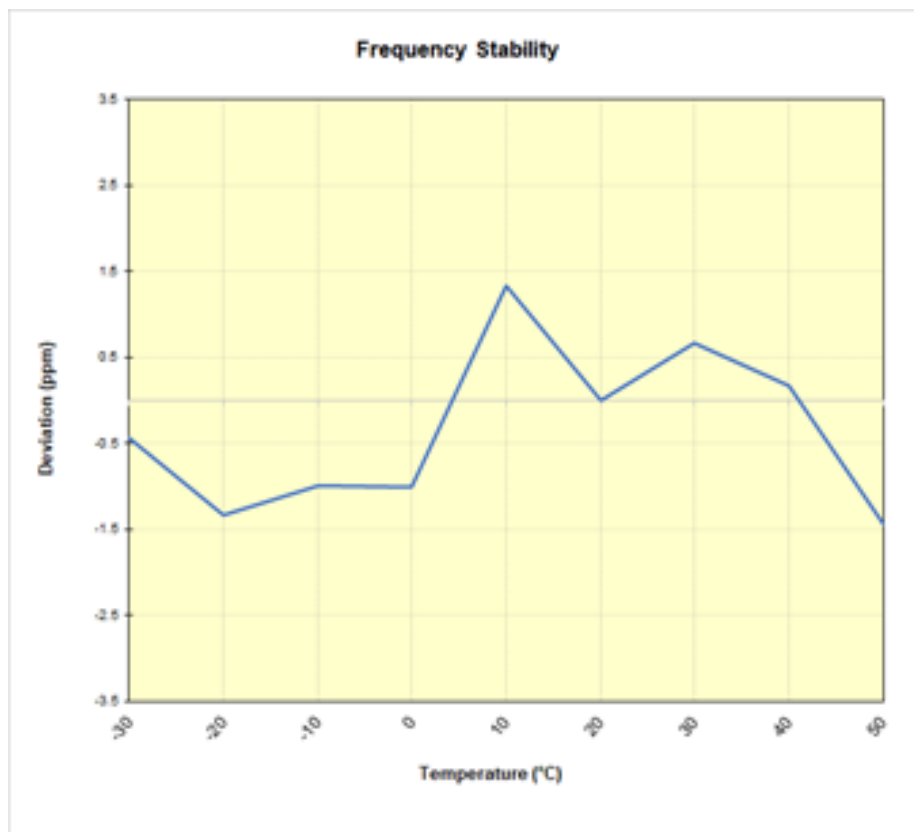
FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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CDMA Cellular

Operating Frequency (Hz):	836,520,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	836,518,362	-358	-0.0000428
		- 20	836,517,601	-1,119	-0.0001338
		- 10	836,517,893	-827	-0.0000989
		0	836,517,882	-839	-0.0001003
		+ 10	836,519,841	1,120	0.0001339
		+ 20 (Ref)	836,518,720	0	0.0000000
		+ 30	836,519,282	561	0.0000671
		+ 40	836,518,859	138	0.0000165
		+ 50	836,517,509	-1,211	-0.0001448
Battery Endpoint	3.36	+ 20	836,518,328	-393	-0.0000470

Table 7-33. CDMA Cell Frequency Stability Data






Plot 7-131. CDMA Cell Frequency Stability Chart

FCC ID: A3LSMF711U	PCTEST Proud to be part of element	PART 22 MEASUREMENT REPORT	SAMSUNG	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: A3LSMF711U** complies with all the requirements of Part 22 of the FCC rules.

FCC ID: A3LSMF711U	 PCTEST Proud to be part of  element	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2104070032-02.A3L	Test Dates: 4/07/2021 – 6/08/2021	EUT Type: Portable Handset		Page 104 of 104