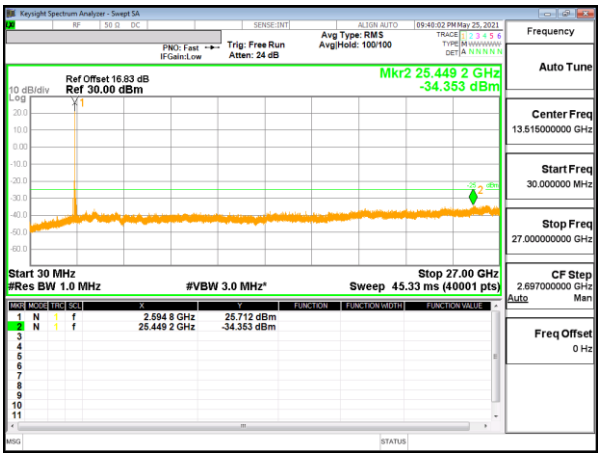
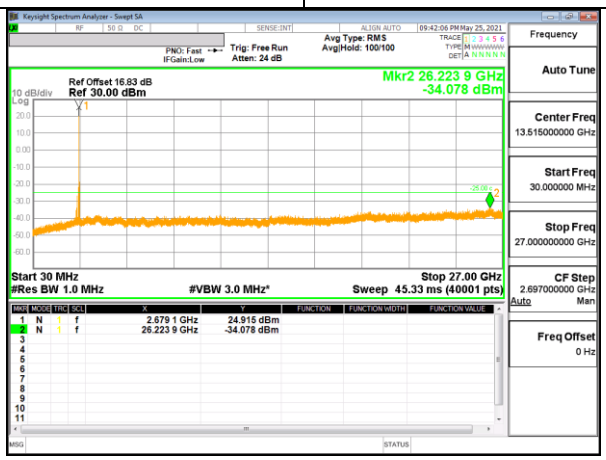
LTE Band 41C (UL CA)

15 + 10 MHz QPSK

Low channel



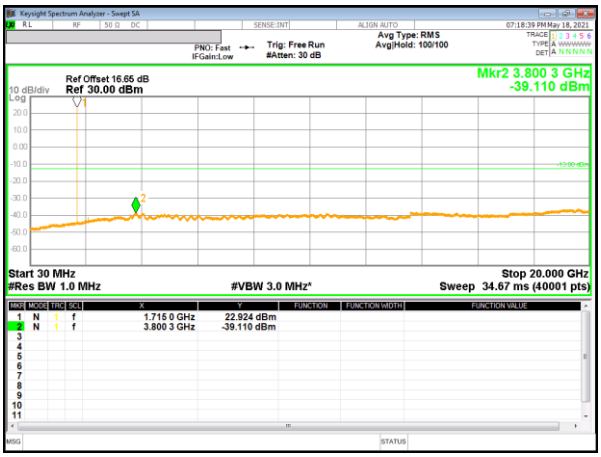
Mid channel



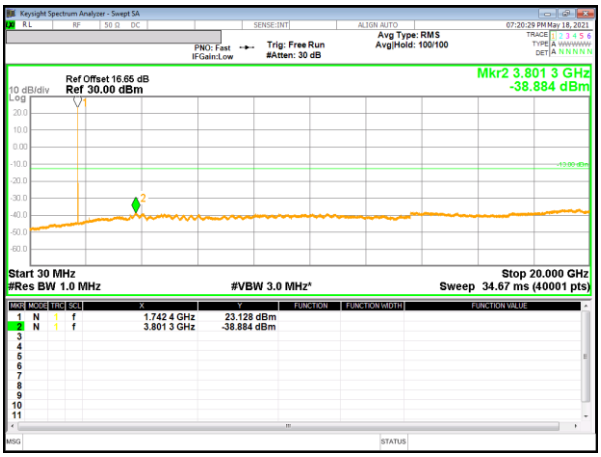
High channel

LTE Band 66B (UL CA)

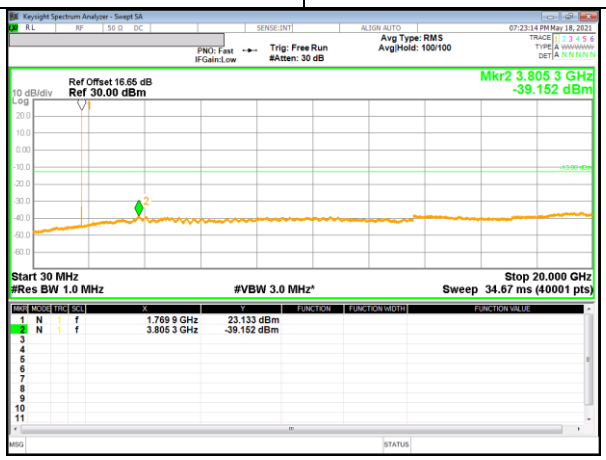
5 + 10 MHz QPSK



Low channel



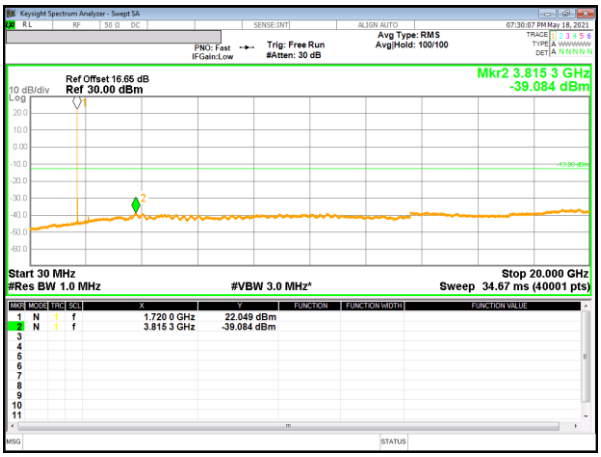
Mid channel



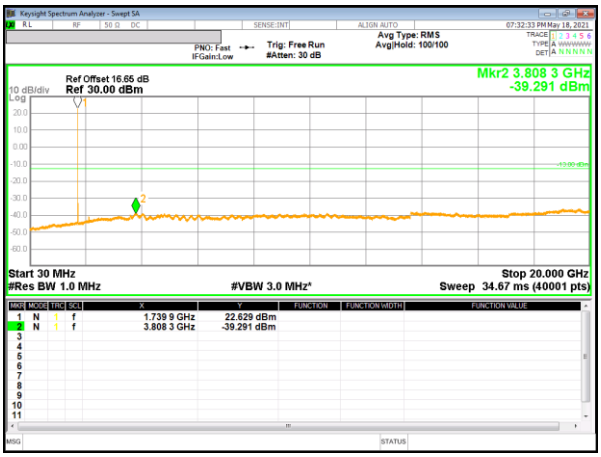
High channel

LTE Band 66C (UL CA)

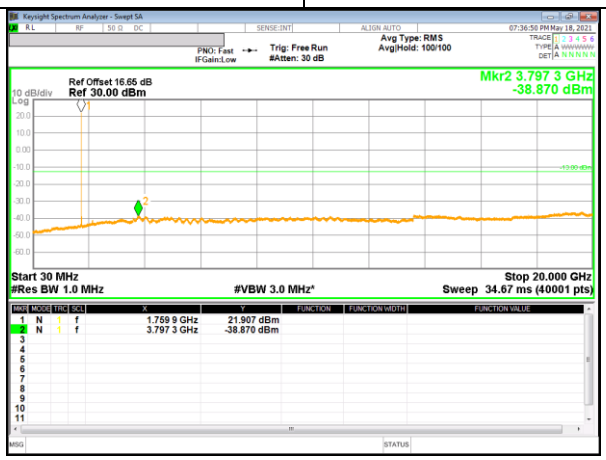
10 + 20 MHz QPSK



Low channel



Mid channel



High channel

9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917 and §27.53

LIMITS

Part 22.917(a) & Part 27.53(h) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53:
(m) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

a) Set the RBW = 100kHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)

b) Set VBW ≥ 3 × RBW

c) Sweep time = auto couple;

d) Detector = RMS;

e) Ensure that the number of measurement points = Max (40001);

f) Trace mode = Average(FDD), Max hold(TDD);

9.1.1. SPURIOUS RADIATION

LTE Band 5B (UL CA)

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4789867826
Date: 2021-05-20
Test Engineer: 20882
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 5 Uplink CA Harmonics, 5MHz_3MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

5MHz + 3MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, PCC : 826.5MHz SCC : 830.4MHz									
1657.90	-15.7	V	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2486.85	-12.9	V	3.0	41.3	1.0	-53.3	-13.0	-40.3	
3315.80	-10.3	V	3.0	42.1	1.0	-51.3	-13.0	-38.3	
1657.90	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2486.85	-12.5	H	3.0	41.3	1.0	-52.8	-13.0	-39.8	
3315.80	-10.2	H	3.0	42.1	1.0	-51.2	-13.0	-38.2	
Mid Ch, PCC : 835MHz SCC : 838.9MHz									
1674.90	-15.5	V	3.0	40.7	1.0	-55.2	-13.0	-42.2	
2512.35	-12.7	V	3.0	41.4	1.0	-53.1	-13.0	-40.1	
3349.80	-10.1	V	3.0	42.1	1.0	-51.1	-13.0	-38.1	
1674.90	-15.2	H	3.0	40.7	1.0	-54.9	-13.0	-41.9	
2512.35	-12.3	H	3.0	41.4	1.0	-52.7	-13.0	-39.7	
3349.80	-10.1	H	3.0	42.1	1.0	-51.2	-13.0	-38.2	
High Ch, PCC : 843.5MHz SCC : 847.4MHz									
1691.90	-15.6	V	3.0	40.7	1.0	-55.3	-13.0	-42.3	
2537.85	-12.6	V	3.0	41.4	1.0	-53.0	-13.0	-40.0	
3383.80	-9.9	V	3.0	42.1	1.0	-51.0	-13.0	-38.0	
1691.90	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2537.85	-12.4	H	3.0	41.4	1.0	-52.8	-13.0	-39.8	
3383.80	-9.8	H	3.0	42.1	1.0	-50.9	-13.0	-37.9	

LTE Band 41C (UL CA)

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4789867826
Date: 2021-05-24
Test Engineer: 19568
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 2
Mode: LTE_QPSK Band 41 Uplink CA Harmonics, 15MHz_10MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

15MHz + 10MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, PCC : 2503.5MHz SCC : 2515.5MHz									
5021.50	-7.2	V	3.0	42.8	1.0	-49.0	-25.0	-24.0	
7532.25	-4.0	V	3.0	42.4	1.0	-45.5	-25.0	-20.5	
10043.00	-0.7	V	3.0	40.9	1.0	-40.6	-25.0	-15.6	
5021.50	-3.8	H	3.0	42.8	1.0	-45.6	-25.0	-20.6	
7532.25	-4.0	H	3.0	42.4	1.0	-45.4	-25.0	-20.4	
10043.00	-0.6	H	3.0	40.9	1.0	-40.4	-25.0	-15.4	
Mid Ch, PCC : 2588.1MHz SCC : 2600.1MHz									
5190.70	-8.0	V	3.0	42.8	1.0	-49.8	-25.0	-24.8	
7786.05	-4.8	V	3.0	42.3	1.0	-46.1	-25.0	-21.1	
10381.40	0.7	V	3.0	41.0	1.0	-39.3	-25.0	-14.3	
5190.70	-7.6	H	3.0	42.8	1.0	-49.4	-25.0	-24.4	
7786.05	-4.7	H	3.0	42.3	1.0	-46.0	-25.0	-21.0	
10381.40	0.8	H	3.0	41.0	1.0	-39.2	-25.0	-14.2	
High Ch, PCC : 2672.7MHz SCC : 2684.7MHz									
5359.90	-7.4	V	3.0	42.9	1.0	-49.2	-25.0	-24.2	
8039.85	-4.3	V	3.0	42.2	1.0	-45.5	-25.0	-20.5	
10719.80	0.5	V	3.0	41.2	1.0	-39.6	-25.0	-14.6	
5359.90	-6.8	H	3.0	42.9	1.0	-48.7	-25.0	-23.7	
8039.85	-4.5	H	3.0	42.2	1.0	-45.7	-25.0	-20.7	
10719.80	0.5	H	3.0	41.2	1.0	-39.7	-25.0	-14.7	

LTE Band 66B (UL CA)

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4789867826
Date: 2021-05-21
Test Engineer: 20882
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Uplink CA Harmonics, 5MHz_10MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

5MHz + 10MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, PCC : 1712.8MHz SCC : 1720MHz									
3430.30	-9.6	V	3.0	42.1	1.0	-50.7	-13.0	-37.7	
5145.45	-9.2	V	3.0	42.8	1.0	-51.0	-13.0	-38.0	
6860.60	-6.3	V	3.0	42.7	1.0	-48.0	-13.0	-35.0	
3430.30	-9.6	H	3.0	42.1	1.0	-50.6	-13.0	-37.6	
5145.45	-8.7	H	3.0	42.8	1.0	-50.5	-13.0	-37.5	
6860.60	-6.6	H	3.0	42.7	1.0	-48.4	-13.0	-35.4	
Mid Ch, PCC : 1740.3MHz SCC : 1747.5MHz									
3485.30	-9.2	V	3.0	42.1	1.0	-50.3	-13.0	-37.3	
5227.95	-9.0	V	3.0	42.8	1.0	-50.8	-13.0	-37.8	
6970.60	-6.5	V	3.0	42.7	1.0	-48.2	-13.0	-35.2	
3485.30	-9.1	H	3.0	42.1	1.0	-50.2	-13.0	-37.2	
5227.95	-8.7	H	3.0	42.8	1.0	-50.5	-13.0	-37.5	
6970.60	-6.3	H	3.0	42.7	1.0	-48.0	-13.0	-35.0	
High Ch, PCC : 1767.8MHz SCC : 1775MHz									
3540.30	-8.7	V	3.0	42.1	1.0	-49.7	-13.0	-36.7	
5310.45	-8.6	V	3.0	42.9	1.0	-50.5	-13.0	-37.5	
7080.60	-6.5	V	3.0	42.7	1.0	-48.1	-13.0	-35.1	
3540.30	-8.7	H	3.0	42.1	1.0	-49.7	-13.0	-36.7	
5310.45	-8.4	H	3.0	42.9	1.0	-50.3	-13.0	-37.3	
7080.60	-6.5	H	3.0	42.7	1.0	-48.2	-13.0	-35.2	

LTE Band 66C (UL CA)

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4789867826
Date: 2021-05-21
Test Engineer: 20882
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Uplink CA Harmonics, 10MHz_20MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

10MHz + 20MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, PCC : 1715.5MHz SCC : 1729.9MHz									
3440.40	-9.7	V	3.0	42.1	1.0	-50.8	-13.0	-37.8	
5160.60	-7.1	V	3.0	42.8	1.0	-48.9	-13.0	-35.9	
6880.80	-6.3	V	3.0	42.7	1.0	-48.1	-13.0	-35.1	
3440.40	-9.5	H	3.0	42.1	1.0	-50.6	-13.0	-37.6	
5160.60	-8.5	H	3.0	42.8	1.0	-50.3	-13.0	-37.3	
6880.80	-6.4	H	3.0	42.7	1.0	-48.1	-13.0	-35.1	
Mid Ch, PCC : 1735.6MHz SCC : 1750MHz									
3480.60	-9.2	V	3.0	42.1	1.0	-50.2	-13.0	-37.2	
5220.90	-8.8	V	3.0	42.8	1.0	-50.7	-13.0	-37.7	
6961.20	-6.4	V	3.0	42.7	1.0	-48.2	-13.0	-35.2	
3480.60	-8.9	H	3.0	42.1	1.0	-50.0	-13.0	-37.0	
5220.90	-8.3	H	3.0	42.8	1.0	-50.2	-13.0	-37.2	
6961.20	-6.5	H	3.0	42.7	1.0	-48.3	-13.0	-35.3	
High Ch, PCC : 1755.6MHz SCC : 1770MHz									
3520.60	-8.2	V	3.0	42.1	1.0	-49.3	-13.0	-36.3	
5280.90	-8.7	V	3.0	42.9	1.0	-50.5	-13.0	-37.5	
7041.20	-6.1	V	3.0	42.7	1.0	-47.8	-13.0	-34.8	
3520.60	-8.3	H	3.0	42.1	1.0	-49.3	-13.0	-36.3	
5280.90	-8.2	H	3.0	42.9	1.0	-50.0	-13.0	-37.0	
7041.20	-6.3	H	3.0	42.7	1.0	-48.0	-13.0	-35.0	

END OF TEST REPORT