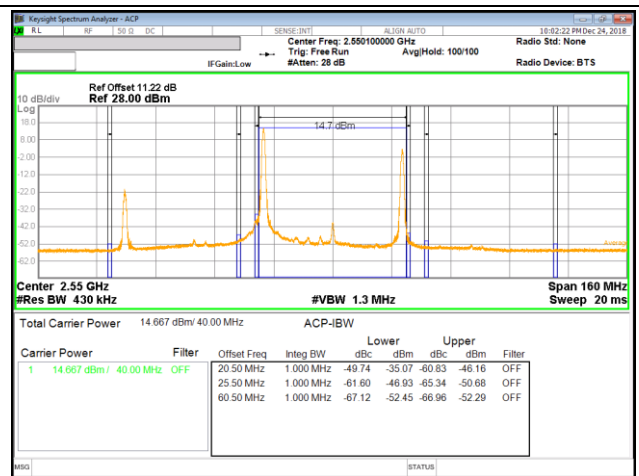
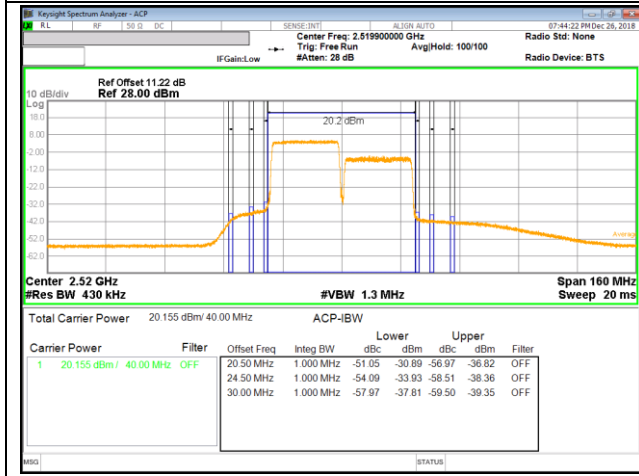


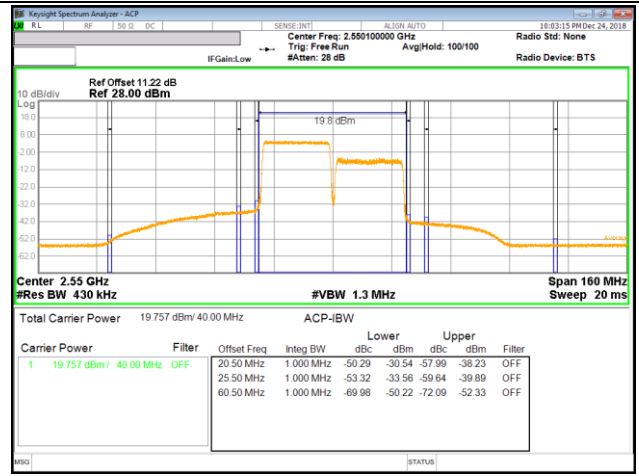
LTE B7 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



LTE B7 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99

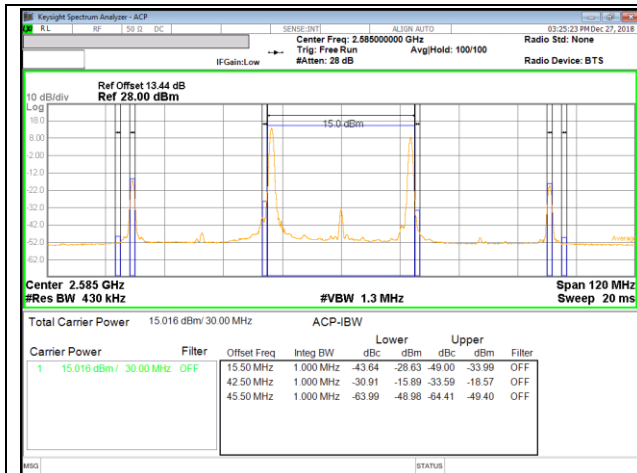


LTE B7 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0

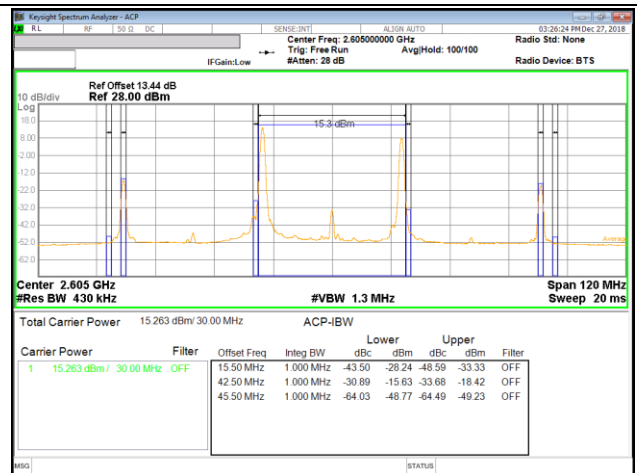


LTE B7 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

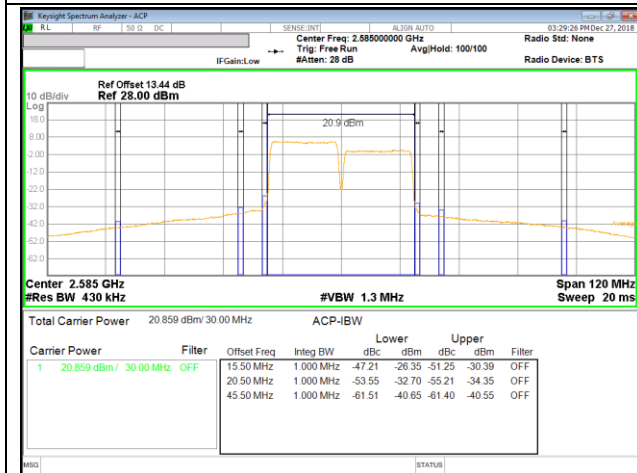
LTE Band 38C(UL CA)



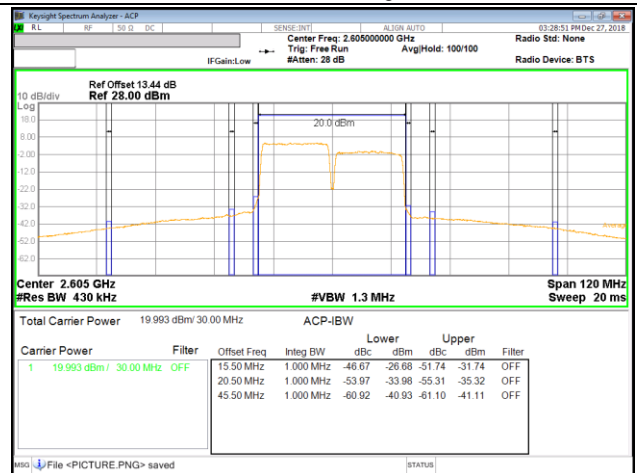
LTE B38 15MHz + 15MHz QPSK Low Ch RB1-0 + RB1-74



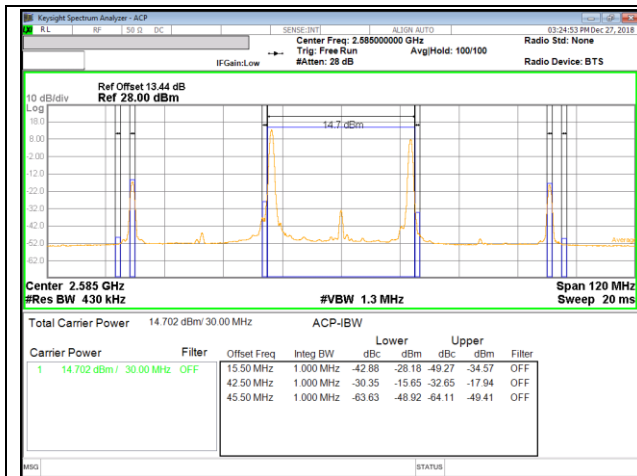
LTE B38 15MHz + 15MHz QPSK High Ch RB1-0 + RB1-74



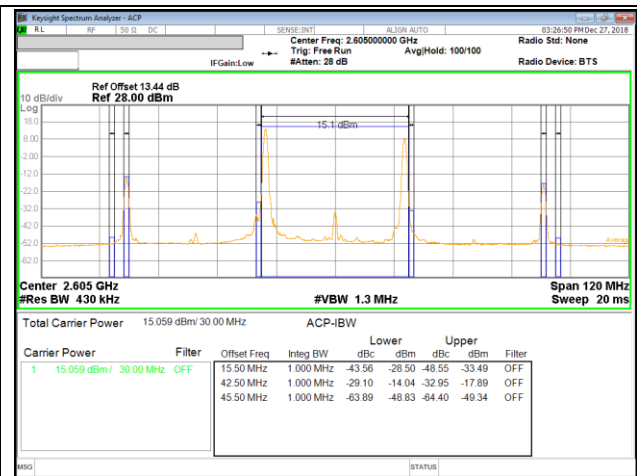
LTE B38 15MHz + 15MHz QPSK Low Ch RB75-0 + RB75-0



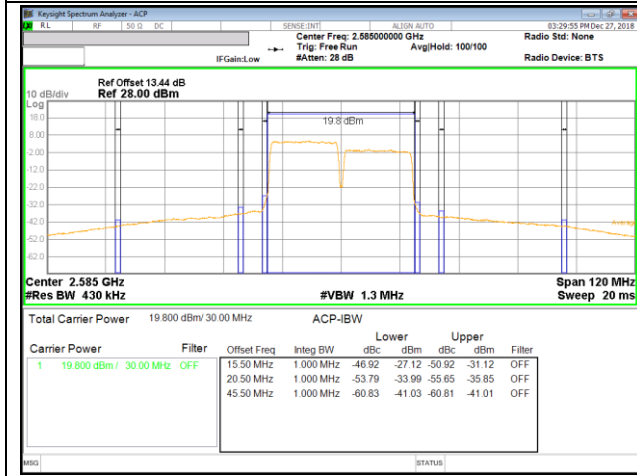
LTE B38 15MHz + 15MHz QPSK High Ch RB75-0 + RB75-0



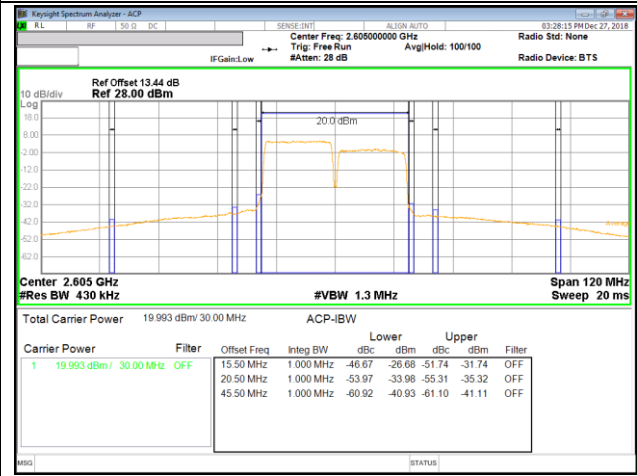
LTE B38 15MHz + 15MHz 16QAM Low Ch RB1-0 + RB1-74



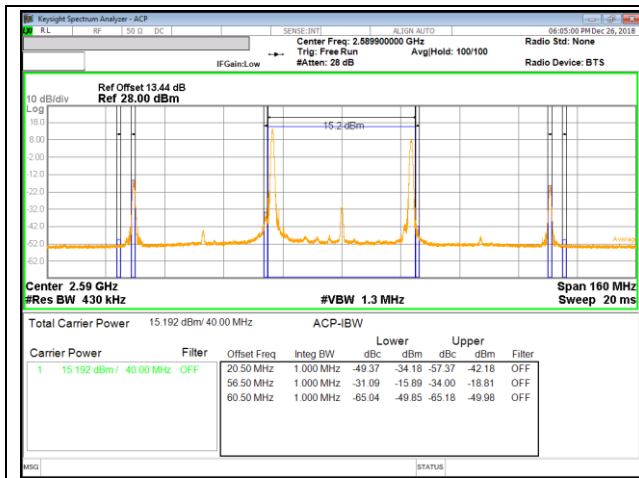
LTE B38 15MHz + 15MHz 16QAM High Ch RB1-0 + RB1-74



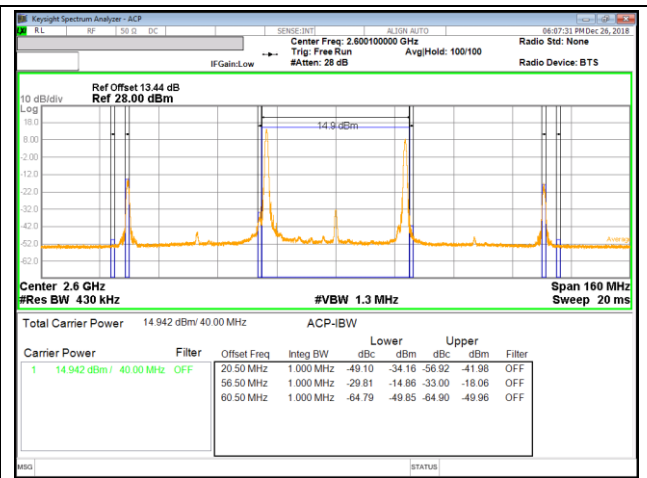
LTE B38 15MHz + 15MHz 16QAM Low Ch RB75-0 + RB75-0



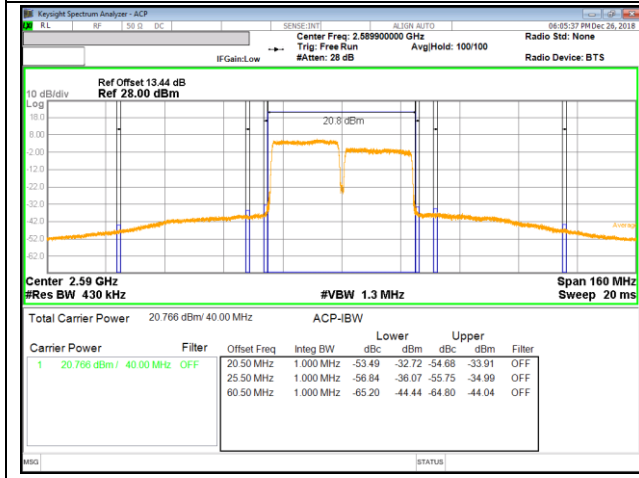
LTE B38 15MHz + 15MHz 16QAM High Ch RB75-0 + RB75-0



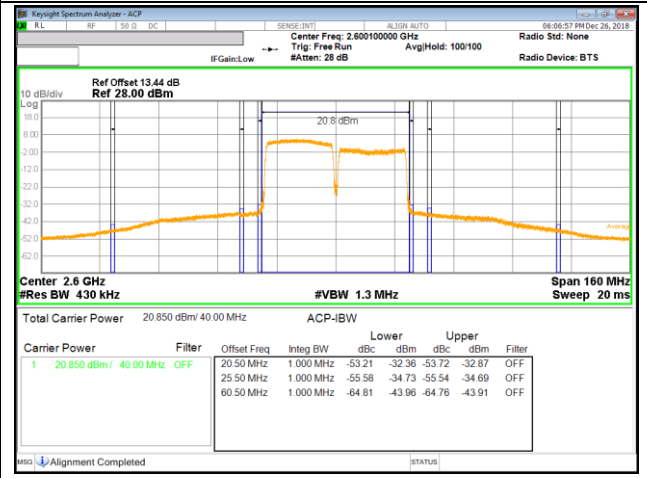
LTE B38 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



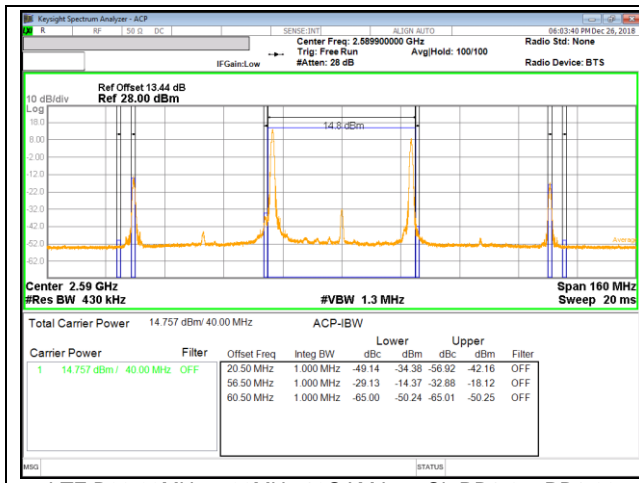
LTE B38 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



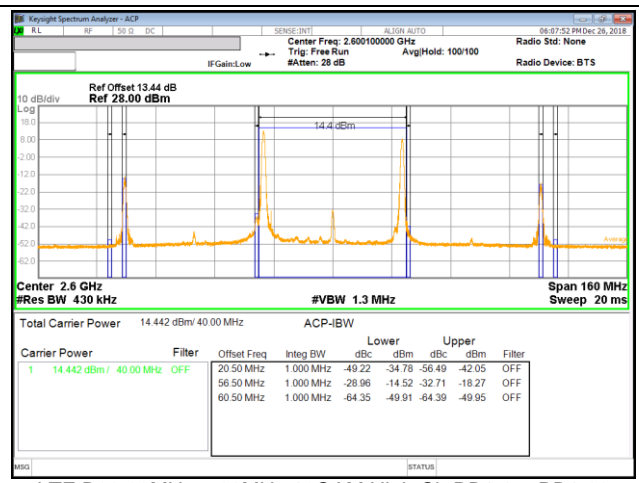
LTE B38 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



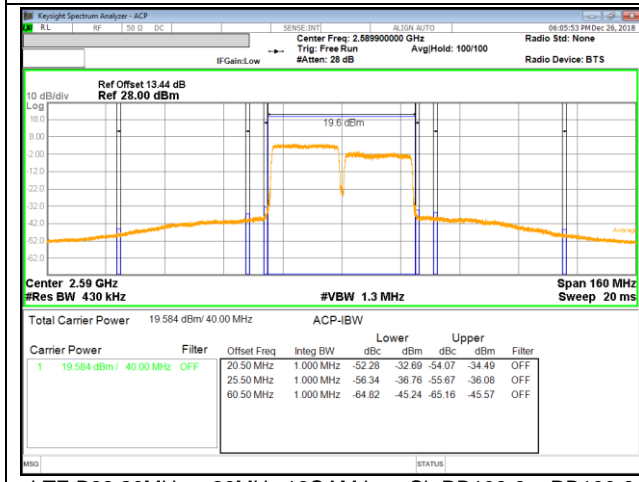
LTE B38 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0



LTE B38 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



LTE B38 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



LTE B38 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



LTE B38 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

7.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §27.53

LIMITS

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 than $43 + 10 \log (P)$ 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 $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace mode = average(LTE Band 7), Maxhold(LTE Band 38);

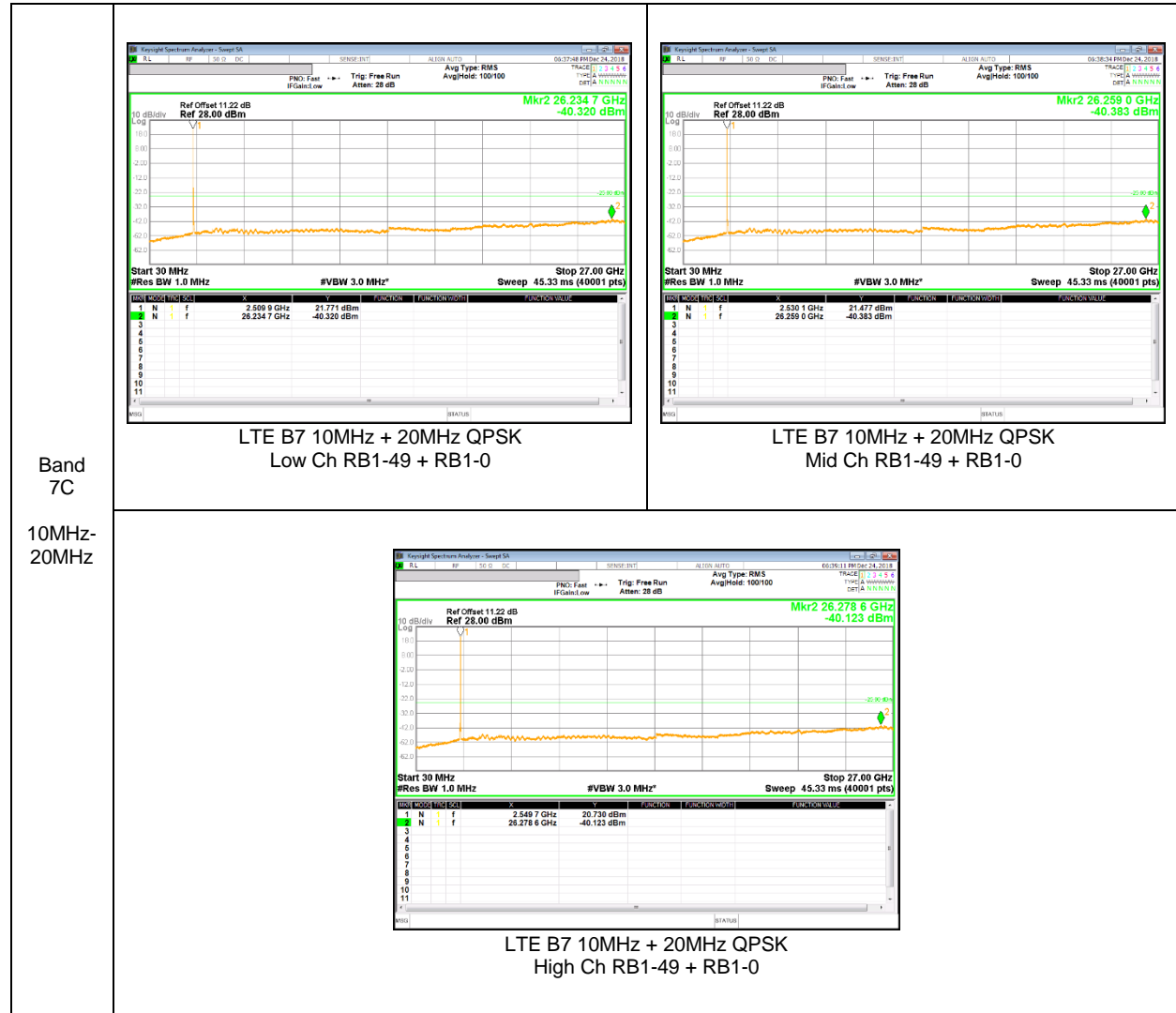
RESULTS

See the following pages.

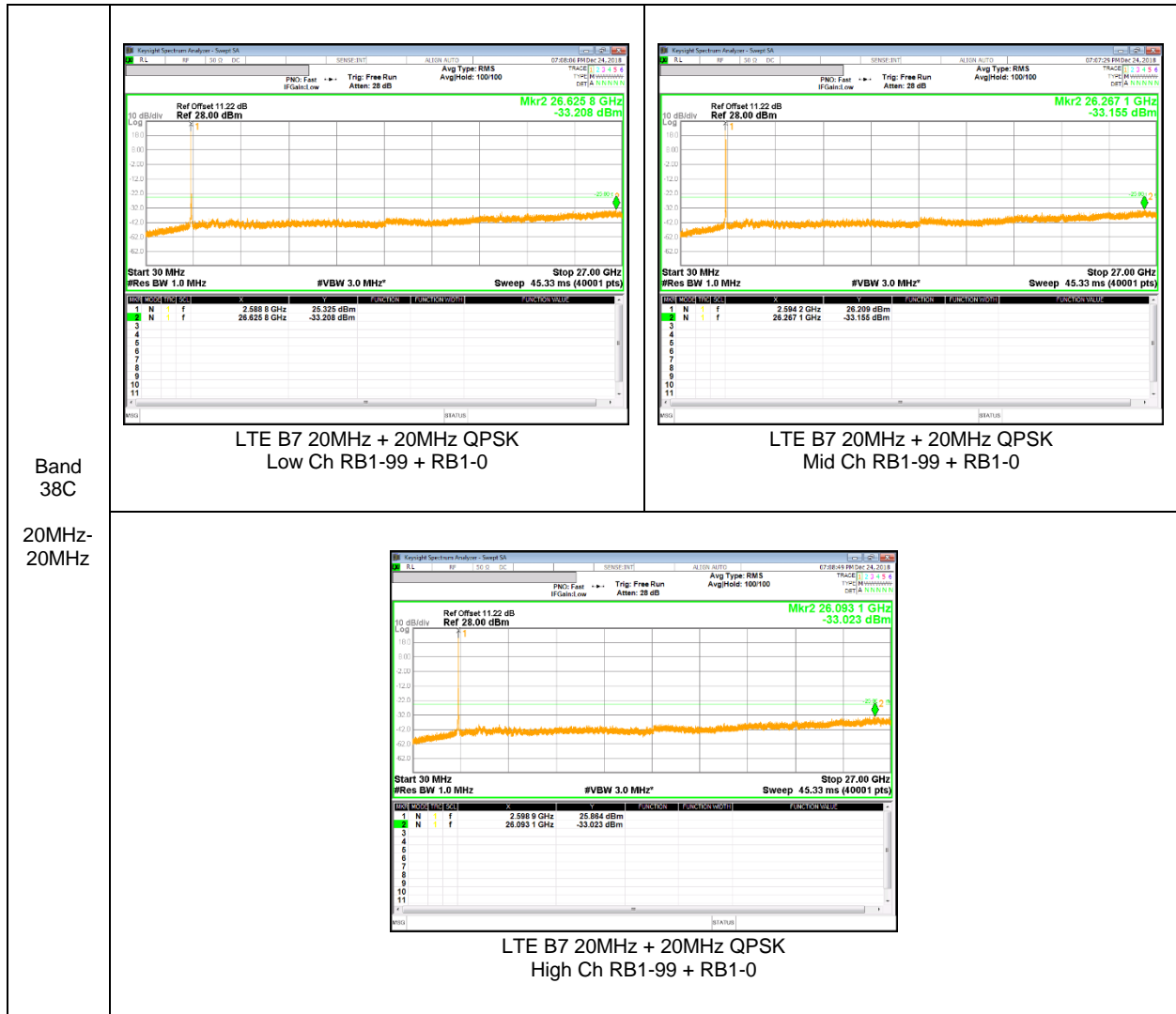
NOTE : Please refer to section 5.5 for bandwidth and RB setting about LTE bands.

7.3.1. OUT OF BAND EMISSIONS RESULT

LTE Band 7C(UL CA)



LTE Band 38C(UL CA)



8. RADIATED TEST RESULTS

8.1. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §27.53

LIMIT

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 than $43 + 10 \log (P)$ 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

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03r01

For peak power measurement with a ESU40:

- a) Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points \geq span/RBW;
- g) Trace mode = average(LTE Band 7C), Maxhold(LTE Band 38C);;

RESULTS

See the following pages.

NOTE : Please refer to section 5.5 for bandwidth and RB setting about LTE bands.

8.1.1. SPURIOUS RADIATION PLOTS

LTE Band 7C

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company:	Samsung								
		Project #:	4788725460								
		Date:	2018-12-26								
		Test Engineer:	45585								
		Configuration:	EUT / AC Adapter / Earphone, Z-Position								
		Location:	Chamber 1								
		Mode:	LTE_QPSK_ULCA Band 7 Harmonics, 10MHz/20MHz Bandwidth								
LTE Band 7C 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, 2510MHz										
		5020.00	-13.4	V	3.0	43.8	1.0	-56.2	-25.0	-31.2	
		7530.00	-11.8	V	3.0	42.4	1.0	-53.3	-25.0	-28.3	
		10040.00	2.4	V	3.0	40.6	1.0	-37.2	-25.0	-12.2	
		5020.00	-13.2	H	3.0	43.8	1.0	-56.0	-25.0	-31.0	
		7530.00	-11.0	H	3.0	42.4	1.0	-52.5	-25.0	-27.5	
		10040.00	9.9	H	3.0	40.6	1.0	-29.6	-25.0	-4.6	
	Mid Ch, 2530MHz										
		5060.00	-12.8	V	3.0	43.8	1.0	-55.6	-25.0	-30.6	
		7590.00	-12.8	V	3.0	42.4	1.0	-54.2	-25.0	-29.2	
		10120.00	0.8	V	3.0	40.6	1.0	-38.8	-25.0	-13.8	
		5060.00	-13.1	H	3.0	43.8	1.0	-55.9	-25.0	-30.9	
		7590.00	-12.7	H	3.0	42.4	1.0	-54.1	-25.0	-29.1	
		10120.00	5.5	H	3.0	40.6	1.0	-34.1	-25.0	-9.1	
	High Ch, 2550MHz										
		5100.00	-12.2	V	3.0	43.8	1.0	-55.0	-25.0	-30.0	
		7650.00	-11.5	V	3.0	42.4	1.0	-52.9	-25.0	-27.9	
		10200.00	-2.5	V	3.0	40.6	1.0	-42.1	-25.0	-17.1	
		5100.00	-13.7	H	3.0	43.8	1.0	-56.4	-25.0	-31.4	
		7650.00	-12.6	H	3.0	42.4	1.0	-54.0	-25.0	-29.0	
		10200.00	2.4	H	3.0	40.6	1.0	-37.2	-25.0	-12.2	

LTE Band 38C

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		Samsung								
Project #:		4788725460								
Date:		2018-12-26								
Test Engineer:		45585								
Configuration:		EUT / AC Adapter / Earphone, Z-Position								
Location:		Chamber 1								
Mode:		LTE_QPSK_ULCA Band 38 Hamonics, 20MHz/20MHz Bandwidth								
LTE Band 38C 20MHz - 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, 2590MHz									
	5180.00	-1.4	V	3.0	43.8	1.0	-44.2	-25.0	-19.2	
	7770.00	-8.7	V	3.0	42.3	1.0	-50.0	-25.0	-25.0	
	10360.00	-5.7	V	3.0	40.7	1.0	-45.3	-25.0	-20.3	
	5180.00	-12.3	H	3.0	43.8	1.0	-55.0	-25.0	-30.0	
	7770.00	-8.7	H	3.0	42.3	1.0	-50.0	-25.0	-25.0	
	10360.00	-4.0	H	3.0	40.7	1.0	-43.6	-25.0	-18.6	
	Mid Ch, 2595MHz									
	5190.00	-2.2	V	3.0	43.8	1.0	-45.0	-25.0	-20.0	
	7785.00	-9.1	V	3.0	42.3	1.0	-50.4	-25.0	-25.4	
	10380.00	-6.2	V	3.0	40.7	1.0	-45.9	-25.0	-20.9	
	5190.00	-8.2	H	3.0	43.8	1.0	-51.0	-25.0	-26.0	
	7785.00	-9.2	H	3.0	42.3	1.0	-50.6	-25.0	-25.6	
	10380.00	-2.4	H	3.0	40.7	1.0	-42.1	-25.0	-17.1	
	High Ch, 2600MHz									
	5200.00	-5.7	V	3.0	43.8	1.0	-48.4	-25.0	-23.4	
	7800.00	-7.3	V	3.0	42.3	1.0	-48.6	-25.0	-23.6	
	10400.00	0.0	V	3.0	40.7	1.0	-39.6	-25.0	-14.6	
	5200.00	-10.2	H	3.0	43.8	1.0	-53.0	-25.0	-28.0	
	7800.00	-10.1	H	3.0	42.3	1.0	-51.4	-25.0	-26.4	
	10400.00	3.0	H	3.0	40.7	1.0	-36.7	-25.0	-11.7	