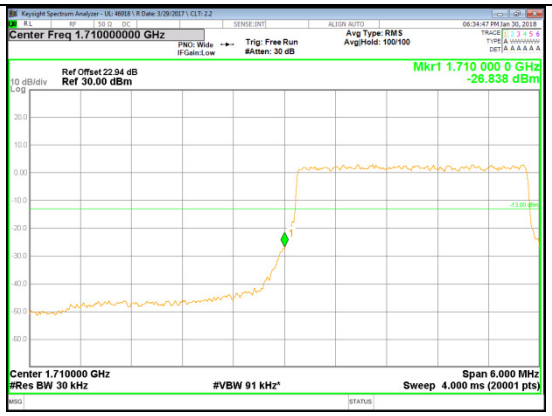
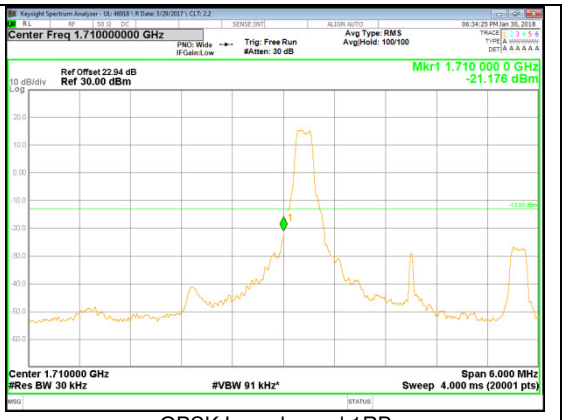
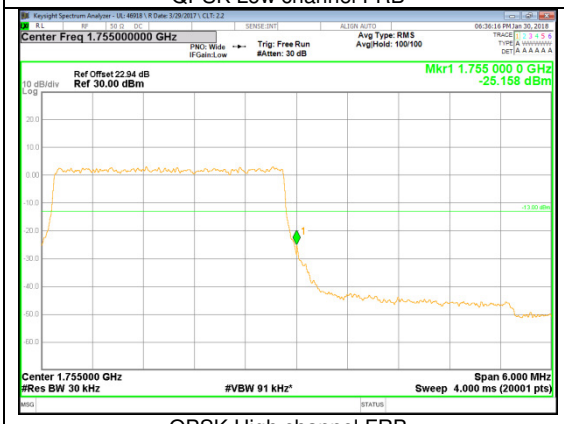
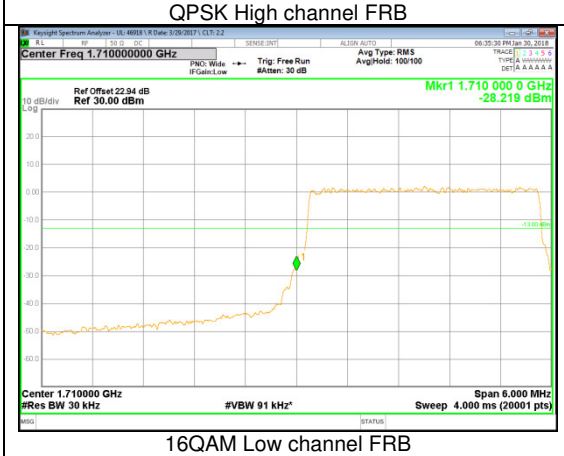
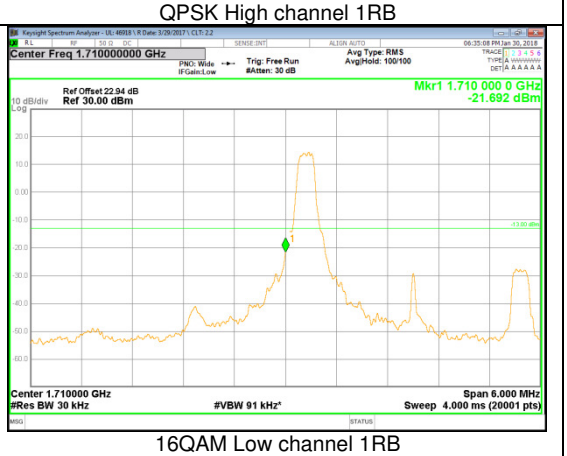
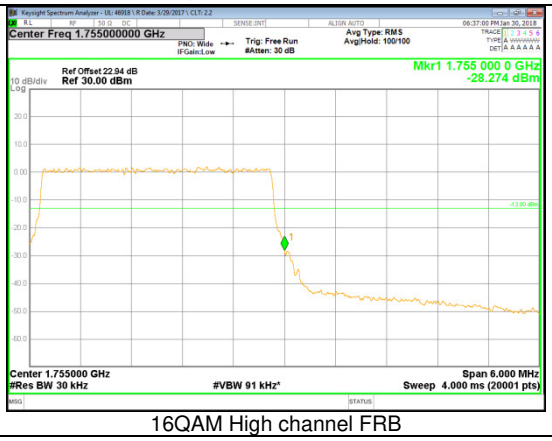
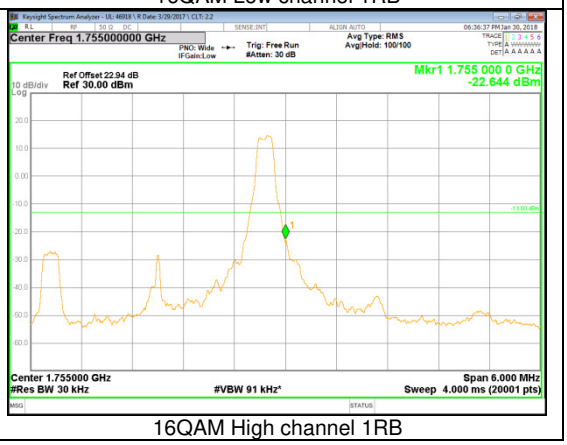
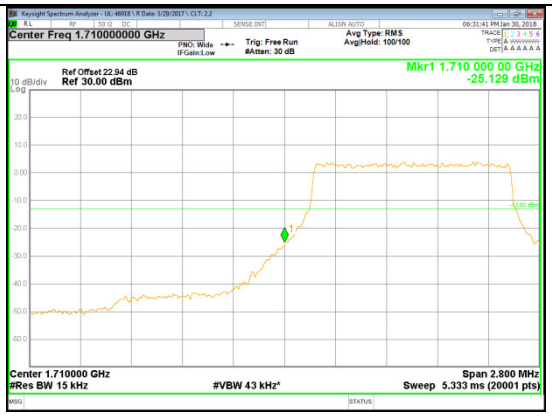
Band 4 3MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

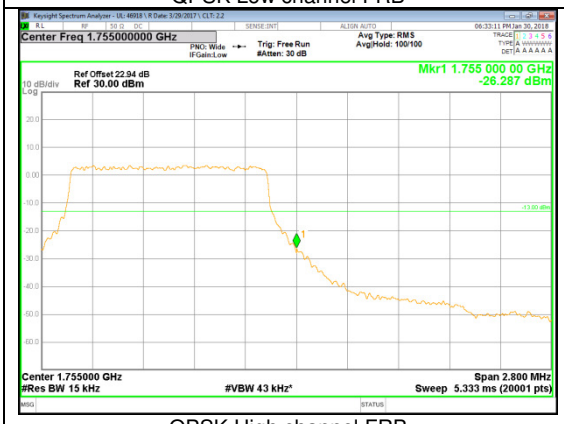
Band 4

1.4MHz



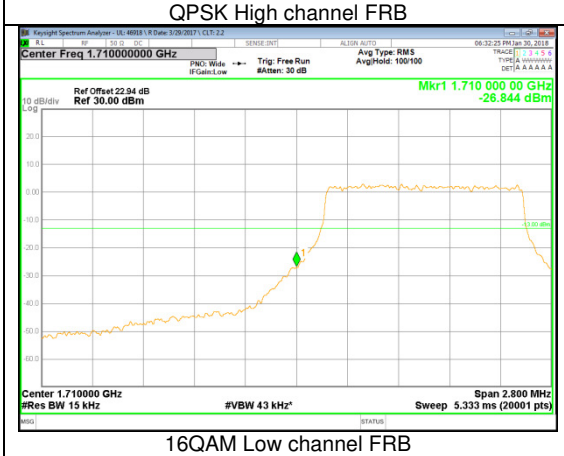
QPSK Low channel FRB

QPSK Low channel 1RB

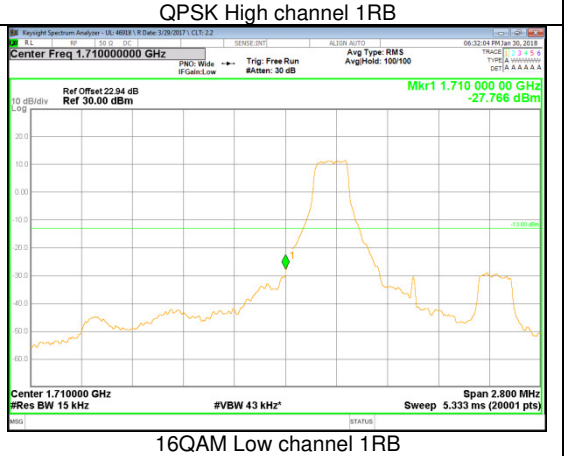


QPSK High channel FRB

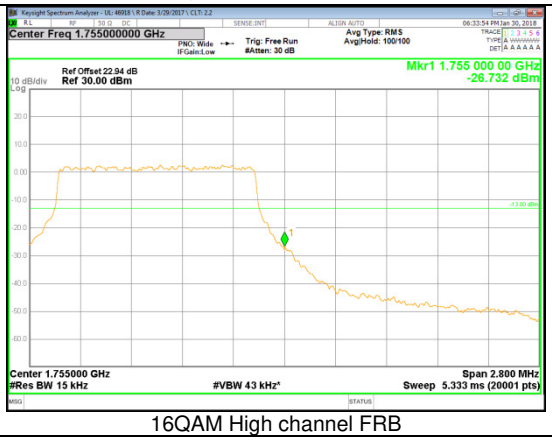
QPSK High channel 1RB



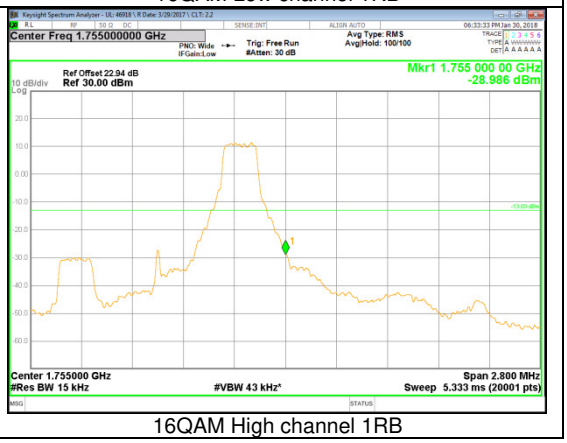
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



16QAM High channel 1RB

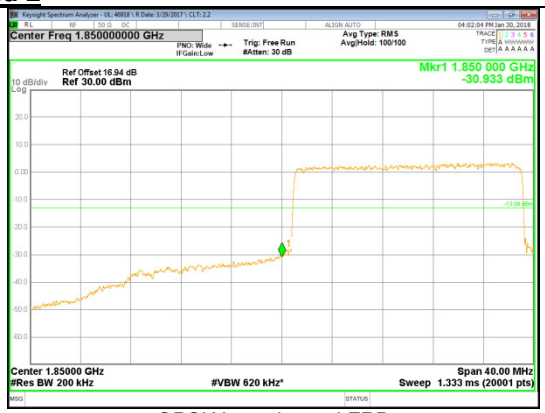
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

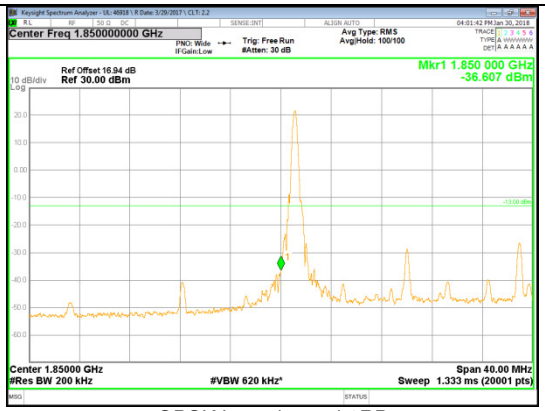
LTE Band 2

Band 2

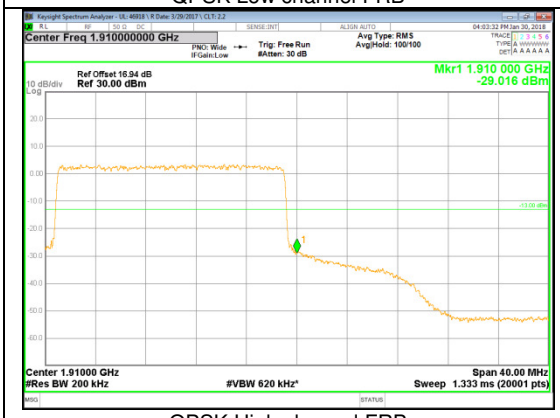
20MHz



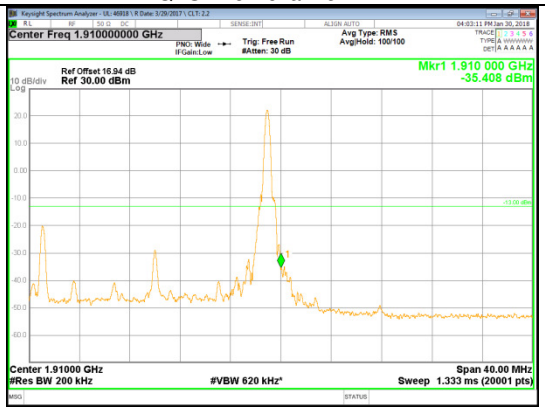
QPSK Low channel FRB



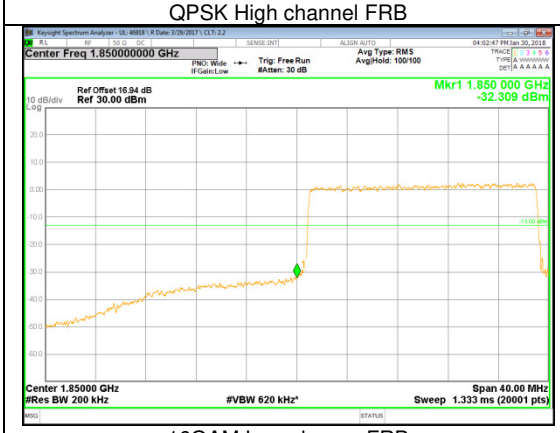
QPSK Low channel 1RB



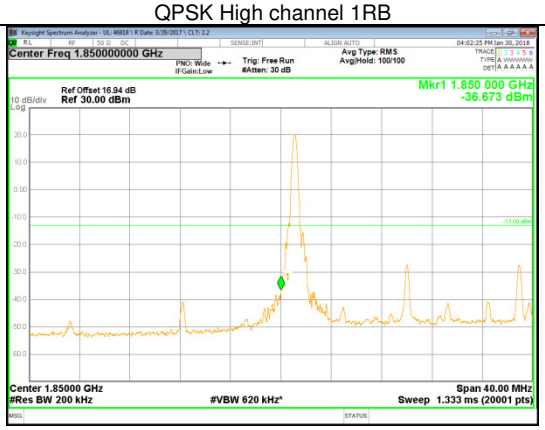
QPSK High channel FRB



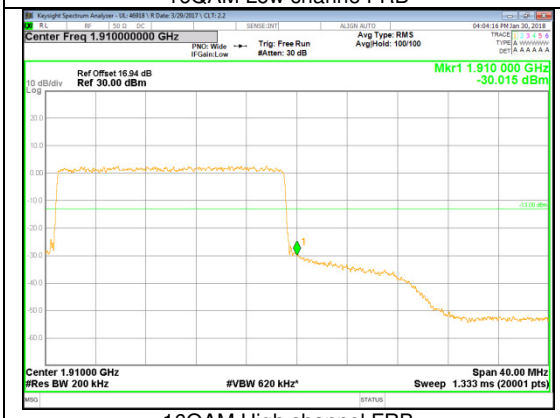
QPSK High channel 1RB



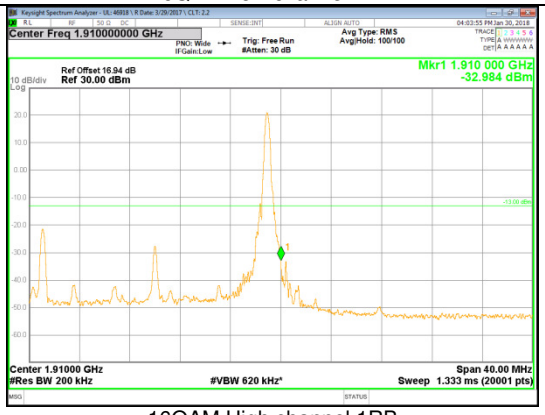
16QAM Low channe FRB



16QAM Low channel 1RB



16QAM High channel FRB



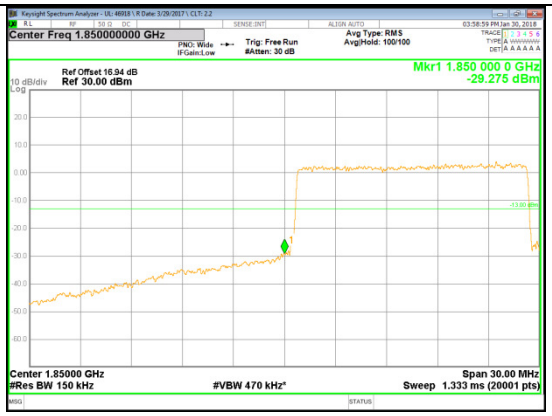
16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

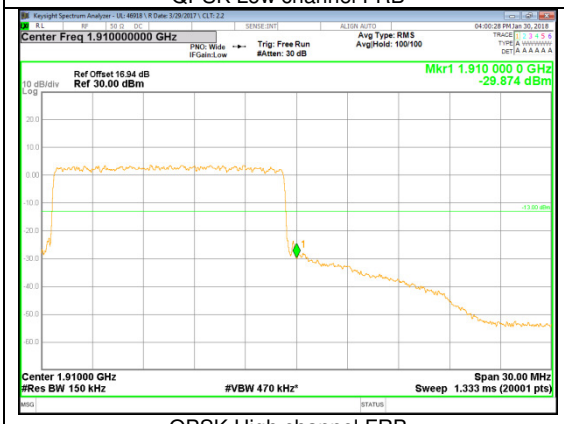
Band 2

15MHz



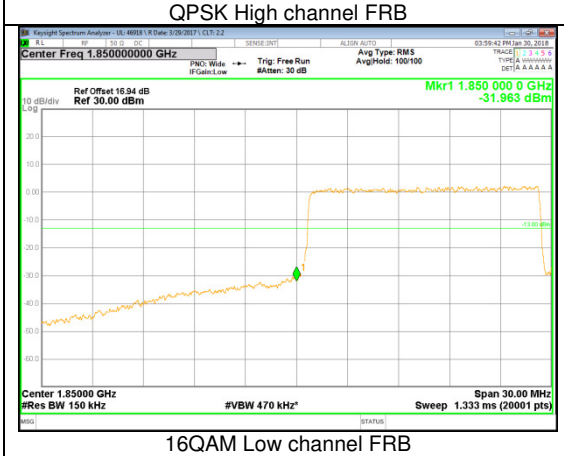
QPSK Low channel FRB

QPSK Low channel 1RB

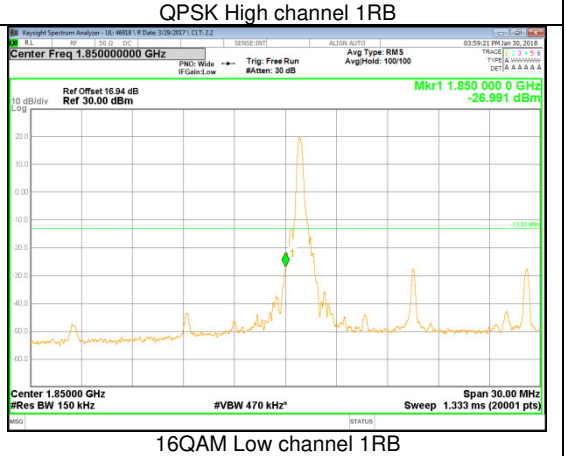


QPSK High channel FRB

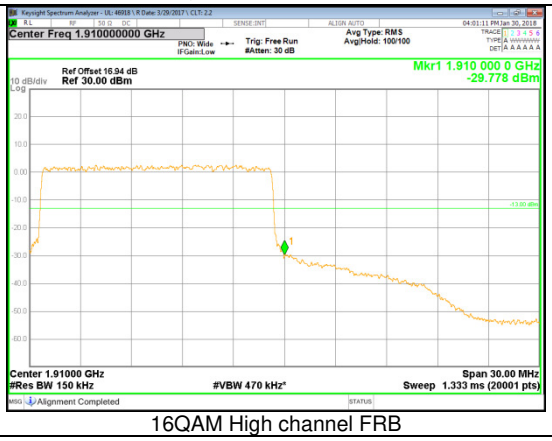
QPSK High channel 1RB



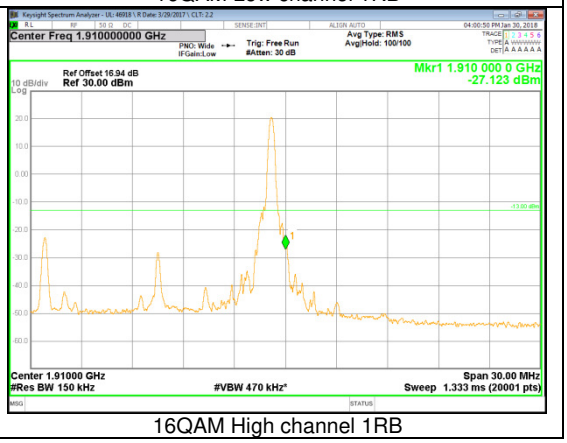
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



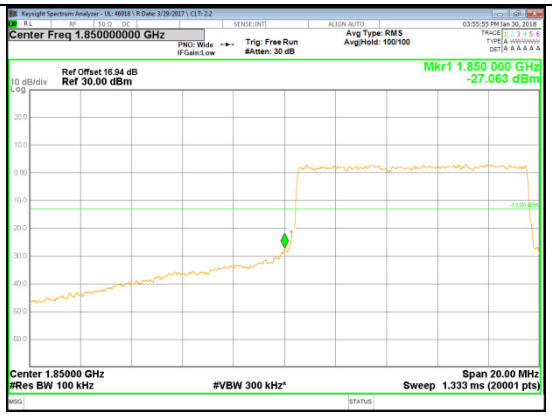
16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

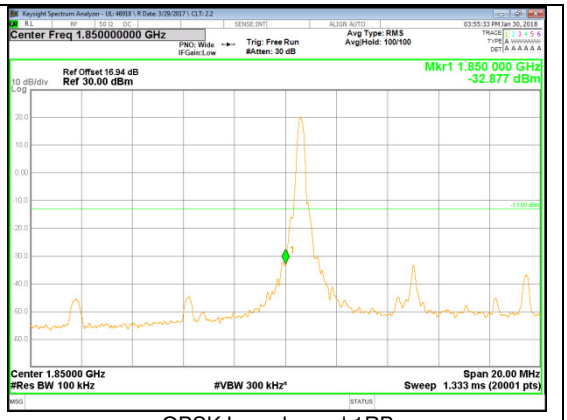
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Band 2

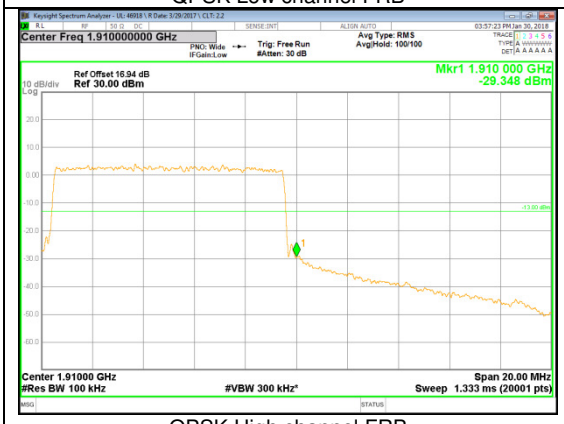
10MHz



QPSK Low channel FRB

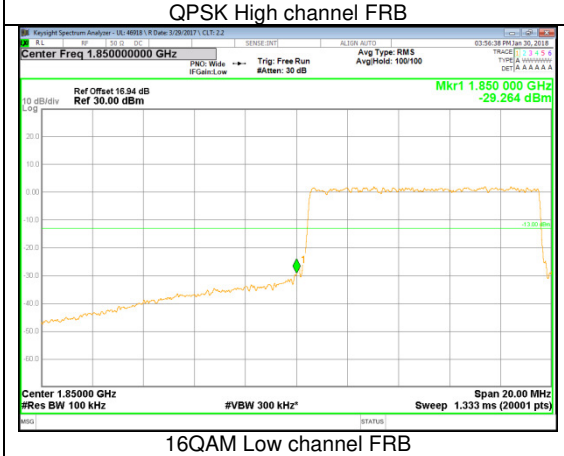


QPSK Low channel 1RB

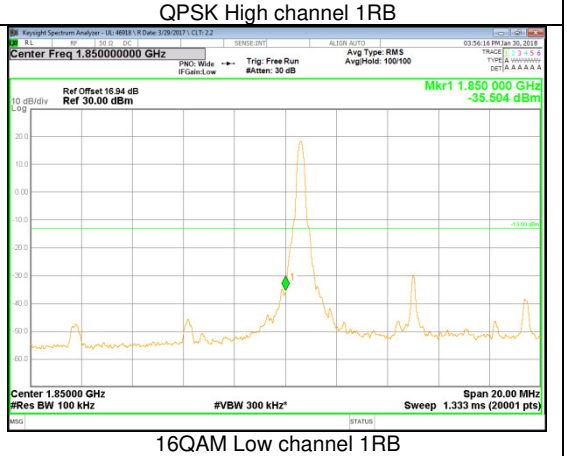


QPSK High channel FRB

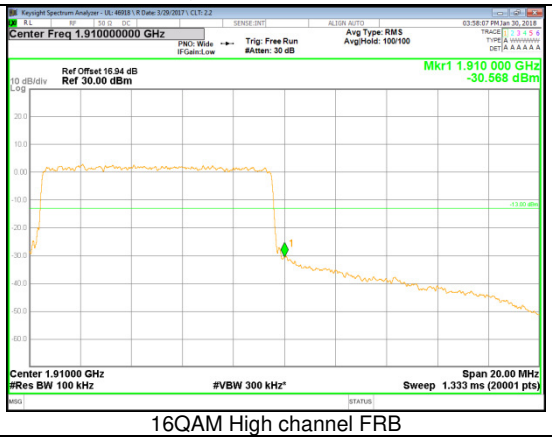
QPSK High channel 1RB



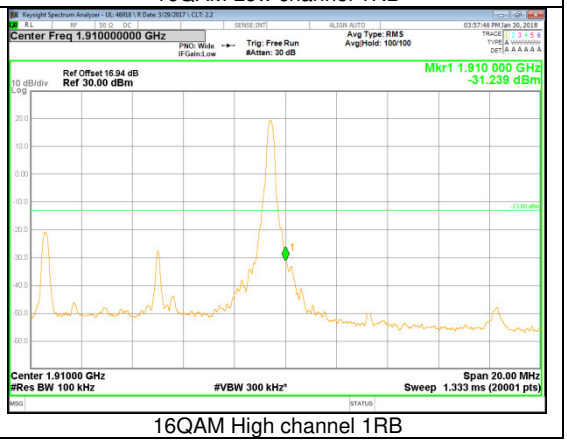
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



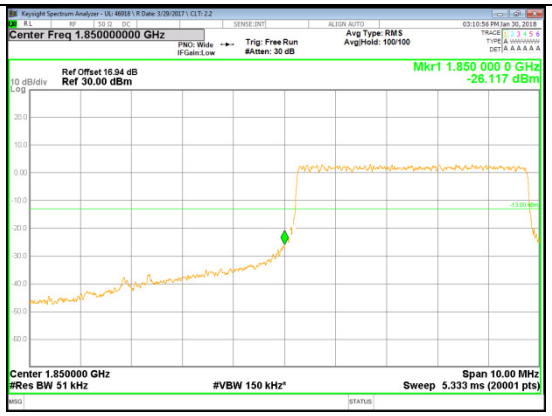
16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

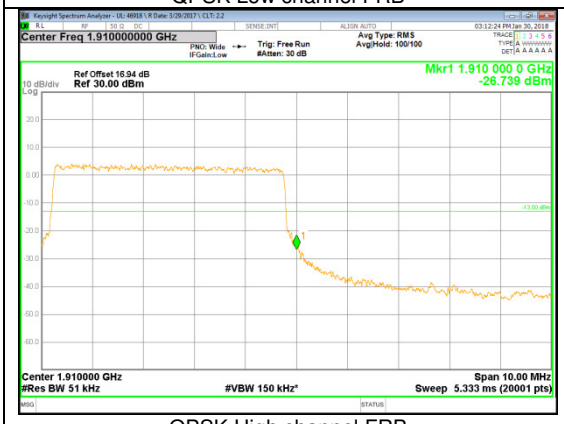
Band 2

5MHz



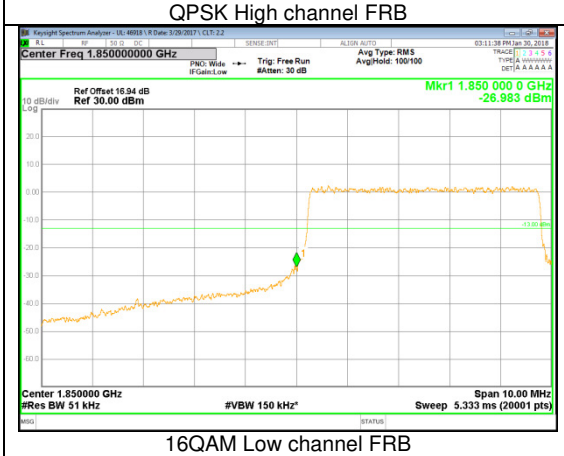
QPSK Low channel FRB

QPSK Low channel 1RB

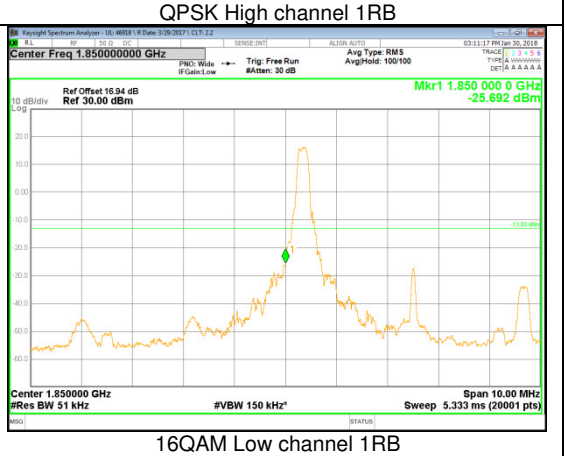


QPSK High channel FRB

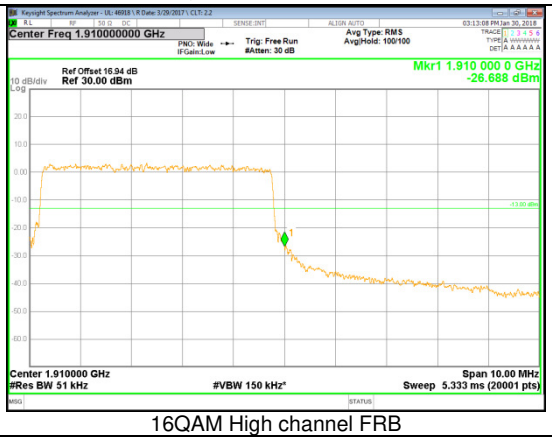
QPSK High channel 1RB



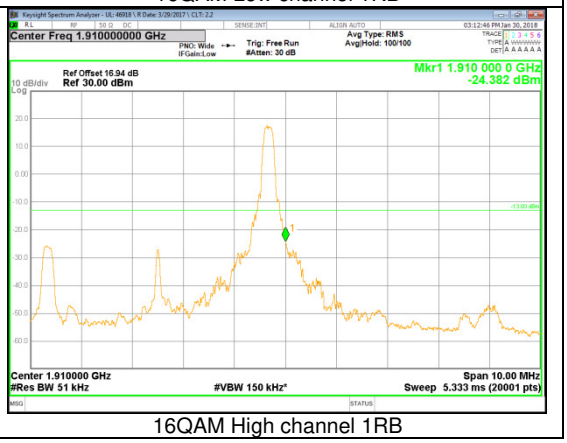
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



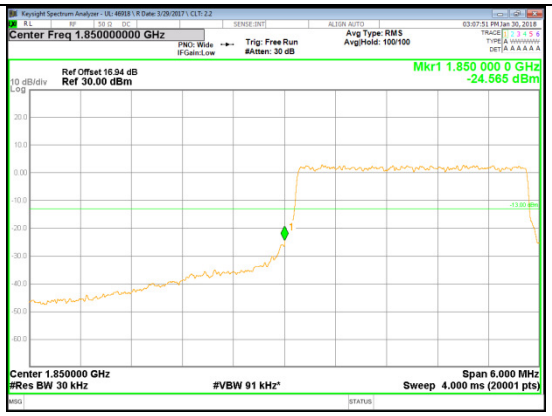
16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

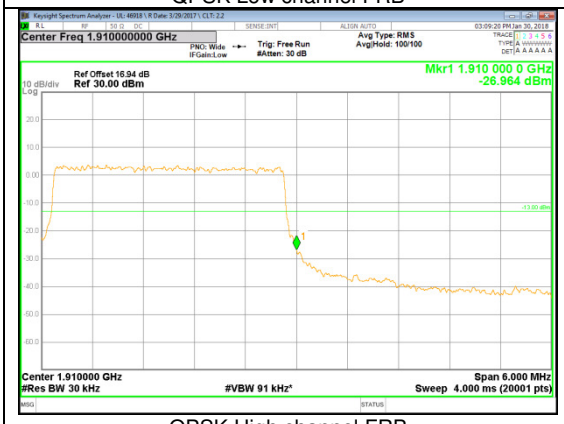
Band 2

3MHz



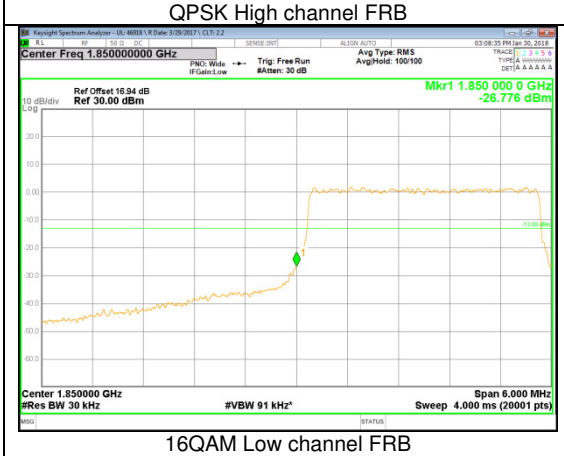
QPSK Low channel FRB

QPSK Low channel 1RB

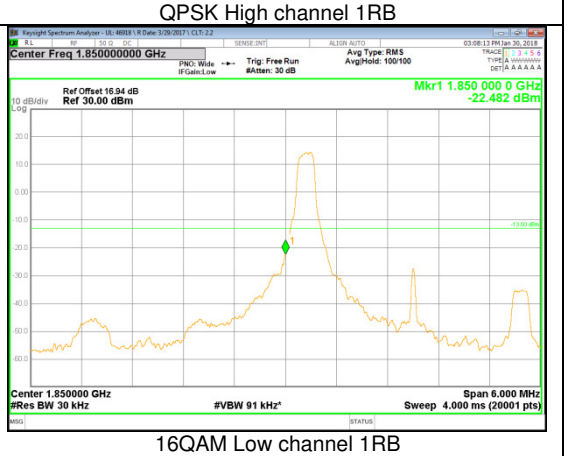


QPSK High channel FRB

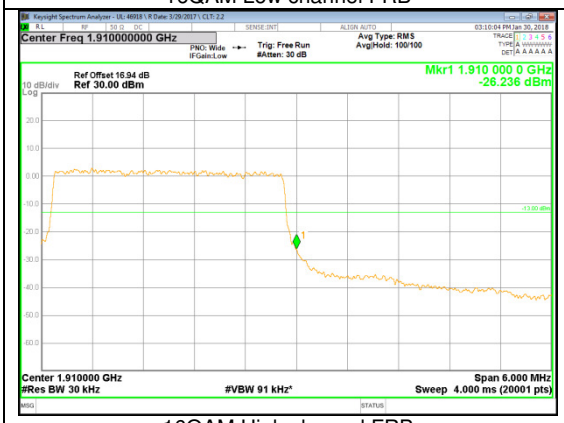
QPSK High channel 1RB



16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB

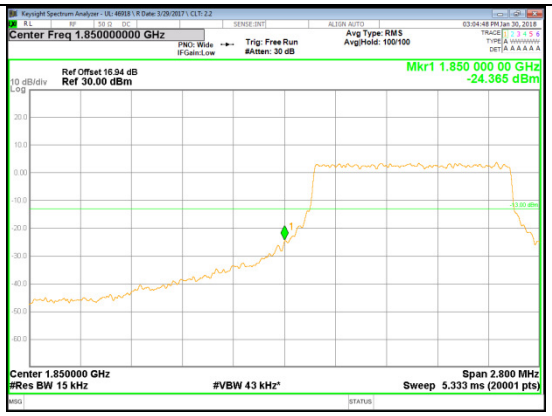
16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

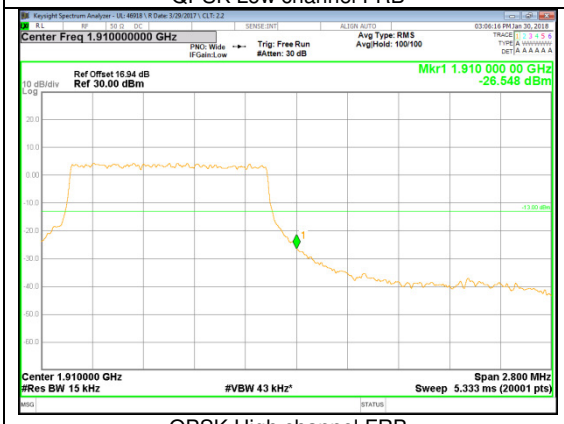
Band 2

1.4MHz



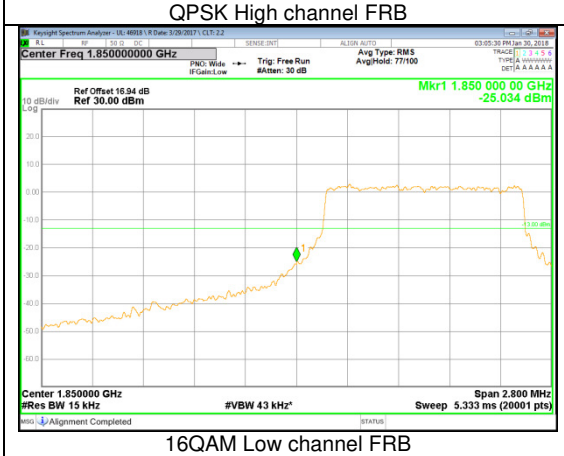
QPSK Low channel FRB

QPSK Low channel 1RB

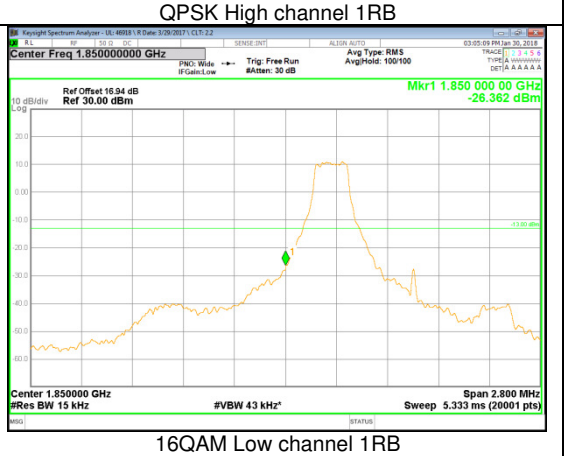


QPSK High channel FRB

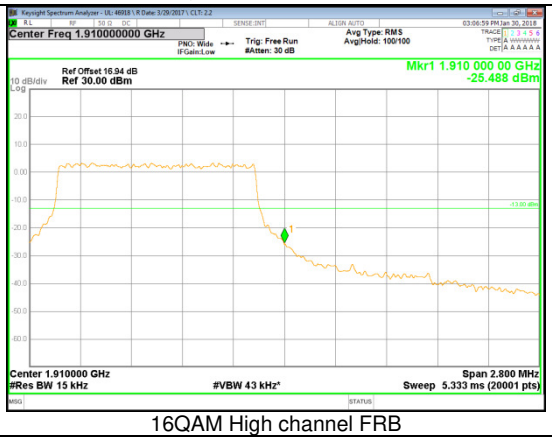
QPSK High channel 1RB



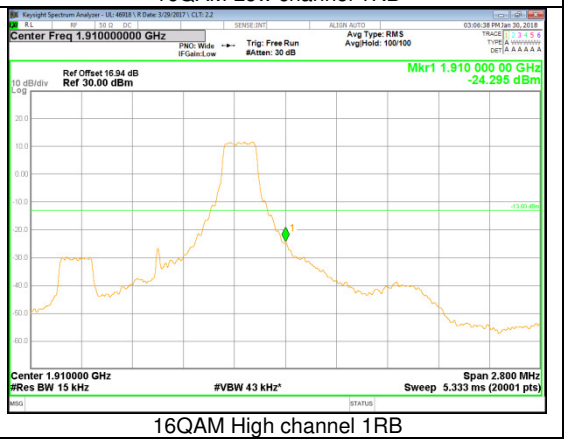
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



16QAM High channel 1RB

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §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.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03
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) Set span ≥ 1.5 times the OBW;

d) Sweep time = auto couple;

e) Detector = peak;

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

g) Trace mode = max hold;

RESULTS

GSM

Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
GSM850	GPRS	824.2	-23.03	-13.00
		836.6	-22.25	
		848.8	-22.24	
	EGPRS	824.2	-22.56	
		836.6	-23.26	
		848.8	-23.11	
GSM1900	GPRS	1850.2	-21.97	
		1880.0	-22.79	
		1909.8	-22.71	
	EGPRS	1850.2	-22.11	
		1880.0	-22.64	
		1909.8	-22.61	

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

WCDMA

Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
Band 5	REL99	826.4	-32.99	-13.00
		836.6	-32.27	
		846.6	-32.18	
	HSDPA	826.4	-33.05	
		836.6	-33.08	
		846.6	-32.94	
Band 4	REL99	1712.4	-31.53	
		1732.6	-32.46	
		1752.6	-32.61	
	HSDPA	1712.4	-32.52	
		1732.6	-31.83	
		1752.6	-32.69	
Band 2	REL99	1852.4	-31.93	
		1880.0	-31.56	
		1907.6	-32.23	
	HSDPA	1852.4	-33.21	
		1880.0	-32.32	
		1907.6	-33.19	

LTE 17

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
10 MHz	QPSK	709.0	-31.01	-13.00
		710.0	-30.46	
		711.0	-31.57	
	16QAM	709.0	-30.11	
		710.0	-31.41	
		711.0	-31.24	
5 MHz	QPSK	706.5	-30.57	
		710.0	-30.98	
		713.5	-30.44	
	16QAM	706.5	-31.25	
		710.0	-31.17	
		713.5	-29.98	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LTE 5

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
10 MHz	QPSK	829.0	-30.57	-13.00
		836.5	-30.76	
		844.0	-31.58	
	16QAM	829.0	-31.49	
		836.5	-31.13	
		844.0	-31.32	
5 MHz	QPSK	826.5	-31.26	
		836.5	-31.10	
		846.5	-30.58	
	16QAM	826.5	-30.59	
		836.5	-30.76	
		846.5	-31.23	
3 MHz	QPSK	825.5	-31.31	
		836.5	-31.09	
		847.5	-31.62	
	16QAM	825.5	-30.78	
		836.5	-30.69	
		847.5	-31.42	
1.4 MHz	QPSK	824.7	-30.94	
		836.5	-30.99	
		848.3	-30.96	
	16QAM	824.7	-30.99	
		836.5	-31.41	
		848.3	-30.54	

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LTE 4

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
20 MHz	QPSK	1720.0	-28.24	-13.00
		1732.5	-28.27	
		1745.0	-28.50	
	16QAM	1720.0	-28.11	
		1732.5	-27.93	
		1745.0	-26.88	
15 MHz	QPSK	1717.5	-28.03	
		1732.5	-28.47	
		1747.5	-27.80	
	16QAM	1717.5	-27.78	
		1732.5	-28.30	
		1747.5	-28.14	
10 MHz	QPSK	1715.0	-27.85	
		1732.5	-28.32	
		1750.0	-28.72	
	16QAM	1715.0	-28.27	
		1732.5	-28.12	
		1750.0	-28.50	
5 MHz	QPSK	1712.5	-28.01	
		1732.5	-28.13	
		1752.5	-28.28	
	16QAM	1712.5	-27.78	
		1732.5	-28.03	
		1752.5	-28.69	
3 MHz	QPSK	1711.5	-28.18	
		1732.5	-28.12	
		1753.5	-28.07	
	16QAM	1711.5	-27.79	
		1732.5	-28.18	
		1753.5	-28.21	
1.4 MHz	QPSK	1710.7	-28.70	
		1732.5	-28.26	
		1754.3	-28.40	
	16QAM	1710.7	-28.16	
		1732.5	-28.02	
		1754.3	-28.29	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LTE 2

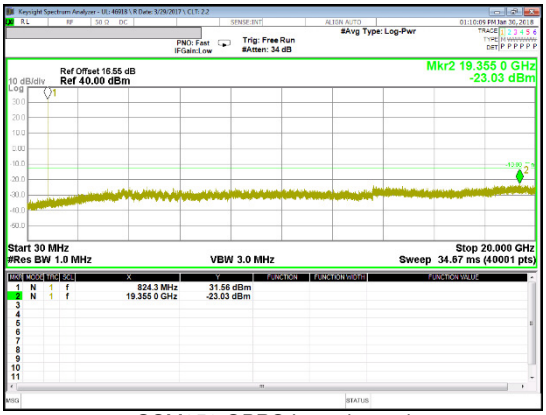
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
20 MHz	QPSK	1860.0	-27.81	-13.00
		1880.0	-28.75	
		1900.0	-28.61	
	16QAM	1860.0	-28.80	
		1880.0	-28.07	
		1900.0	-28.25	
15 MHz	QPSK	1857.5	-28.56	
		1880.0	-28.85	
		1902.5	-27.72	
	16QAM	1857.5	-28.55	
		1880.0	-28.06	
		1902.5	-28.64	
10 MHz	QPSK	1855.0	-29.00	
		1880.0	-28.87	
		1905.0	-27.99	
	16QAM	1855.0	-29.09	
		1880.0	-28.67	
		1905.0	-28.73	
5 MHz	QPSK	1852.5	-27.64	
		1880.0	-28.73	
		1907.5	-28.93	
	16QAM	1852.5	-28.46	
		1880.0	-28.80	
		1907.5	-28.59	
3 MHz	QPSK	1851.5	-28.65	
		1880.0	-28.14	
		1908.5	-28.81	
	16QAM	1851.5	-28.71	
		1880.0	-27.94	
		1908.5	-28.37	
1.4 MHz	QPSK	1850.7	-28.78	
		1880.0	-28.47	
		1909.3	-28.35	
	16QAM	1850.7	-27.78	
		1880.0	-28.65	
		1909.3	-28.11	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

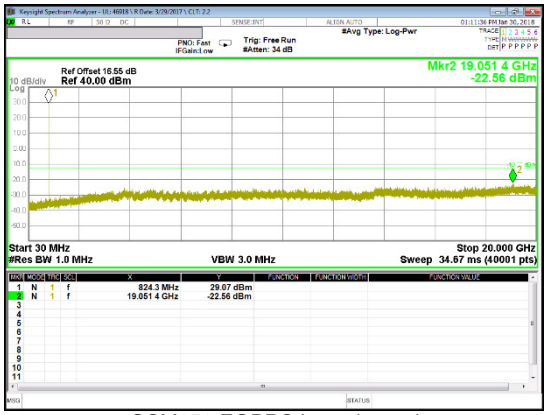
9.3.1. OUT OF BAND EMISSIONS PLOTS

GSM 850

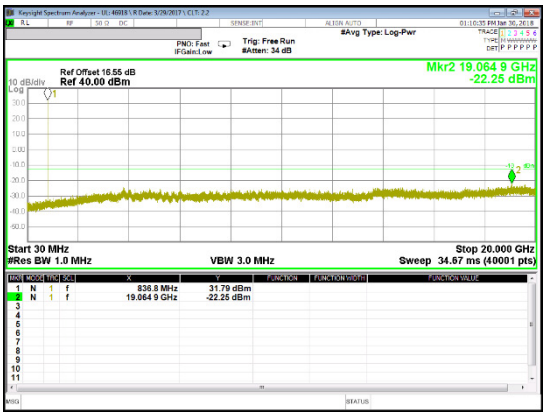
GSM 850



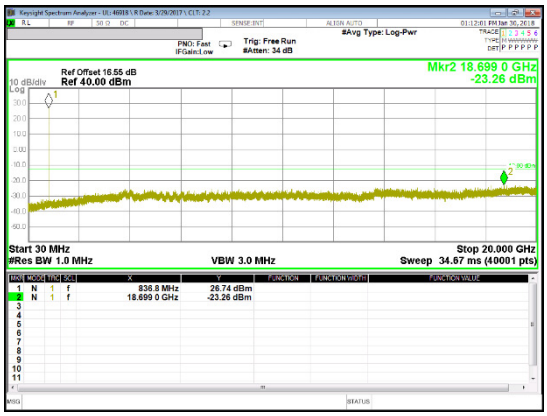
GSM850 GPRS Low channel



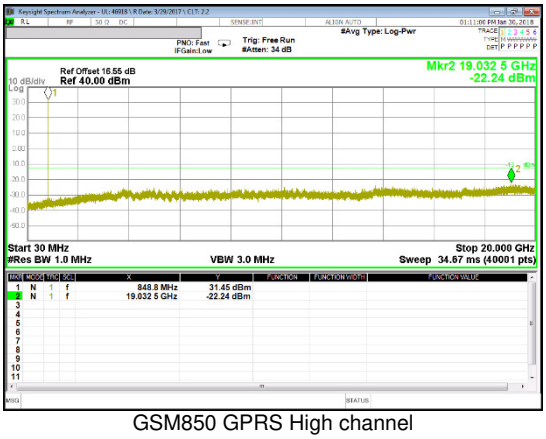
GSM850 EGPRS Low channel



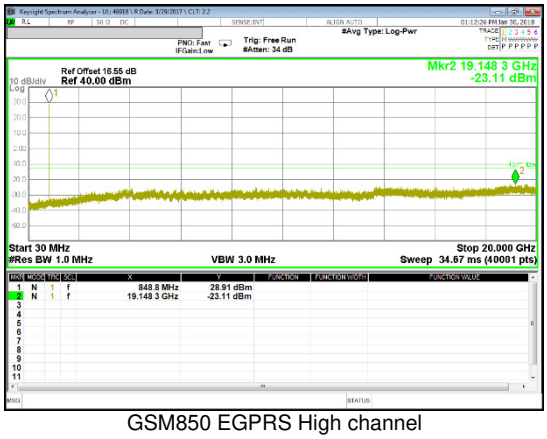
GSM850 GPRS Mid channel



GSM850 EGPRS Mid channel



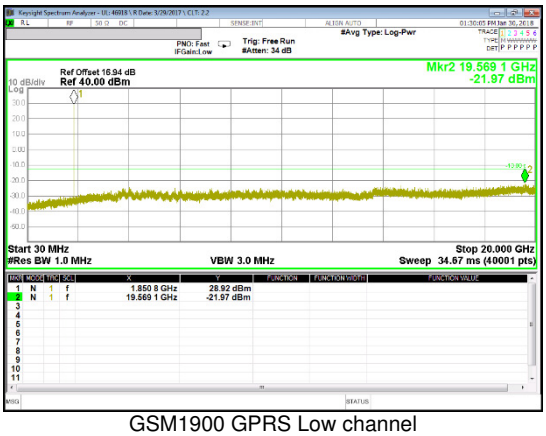
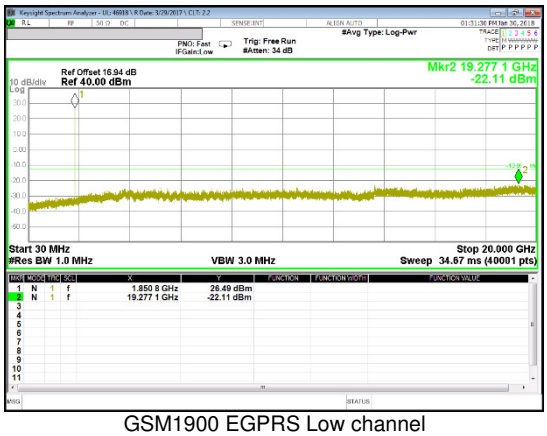
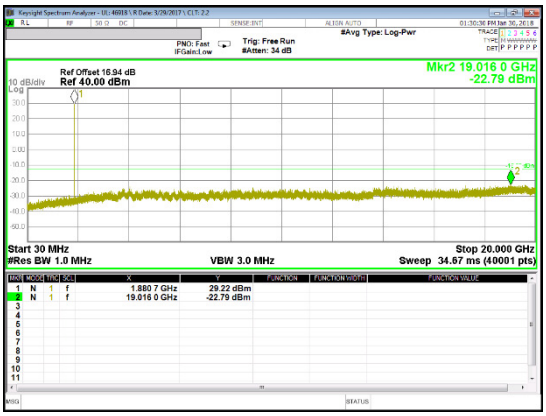
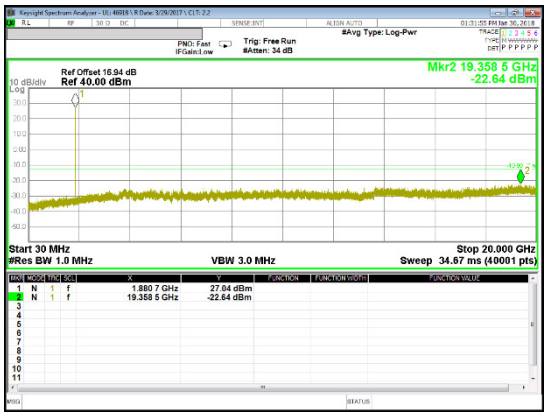
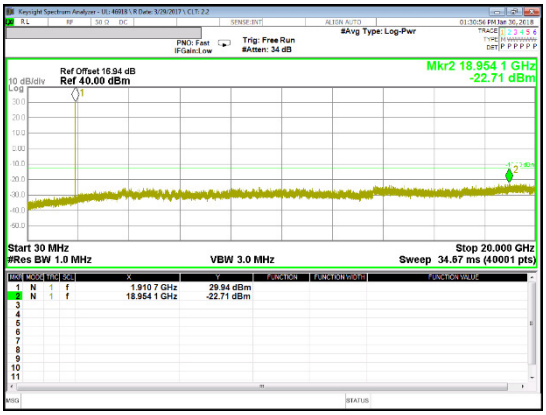
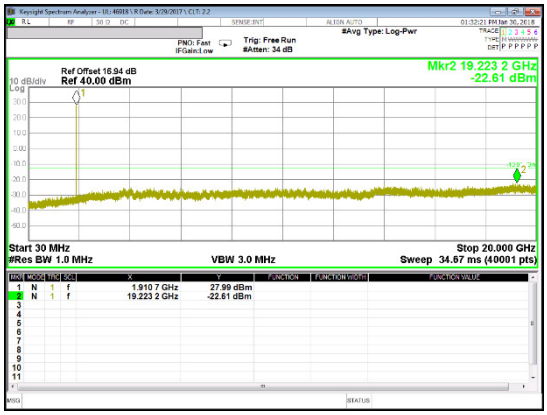
GSM850 GPRS High channel



GSM850 EGPRS High channel

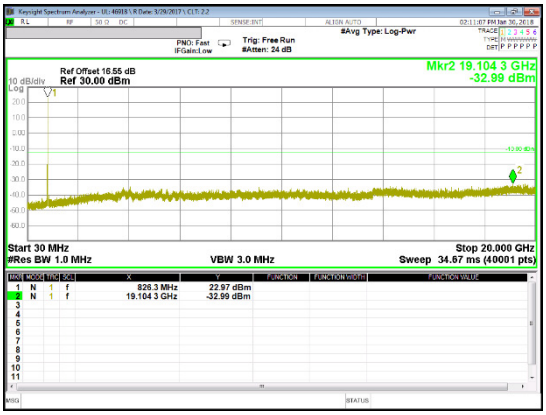
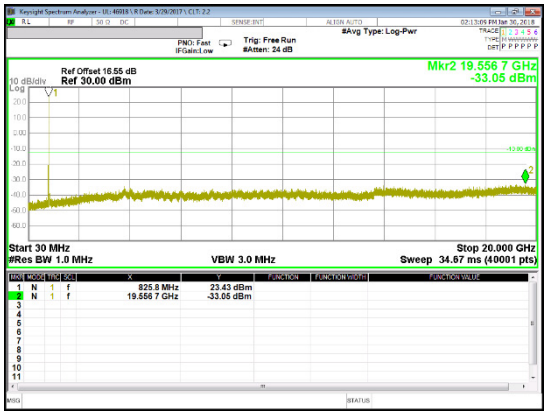
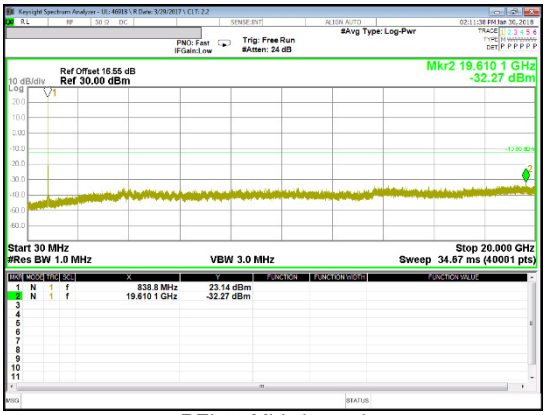
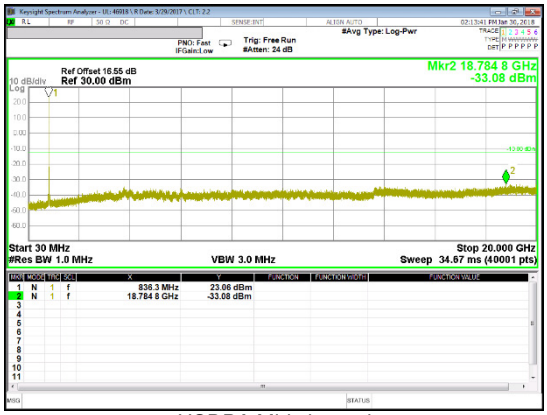
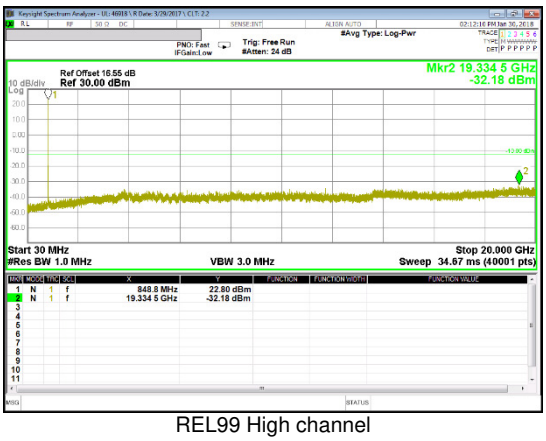
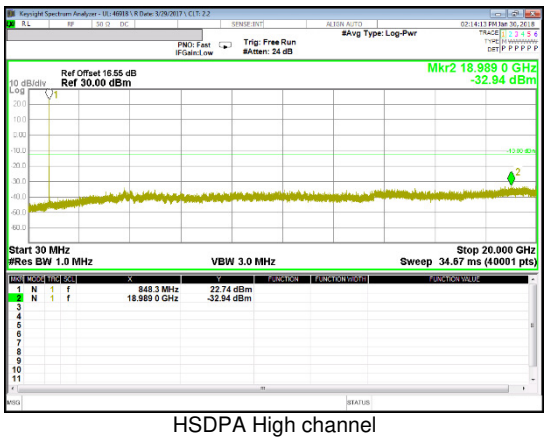
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

GSM 1900

GSM 1900	 GSM1900 GPRS Low channel	 GSM1900 EGPRS Low channel
	 GSM1900 GPRS Mid channel	 GSM1900 EGPRS Mid channel
	 GSM1900 GPRS High channel	 GSM1900 EGPRS High channel

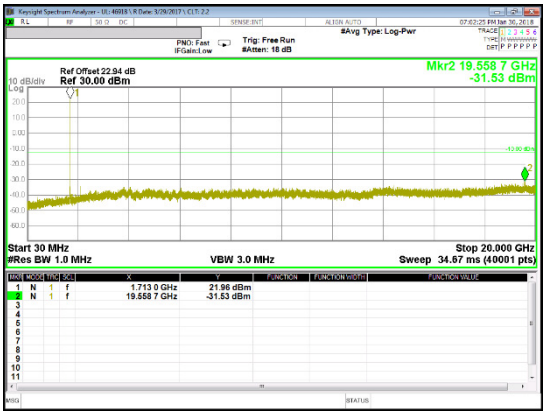
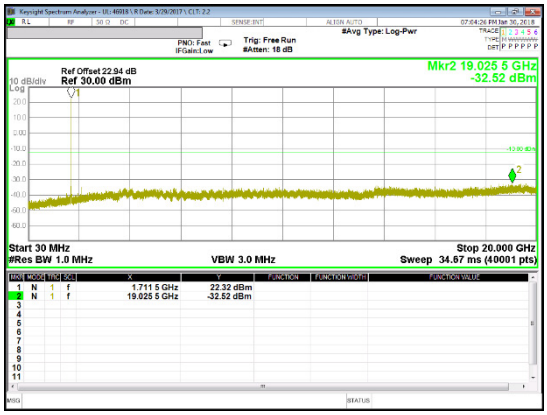
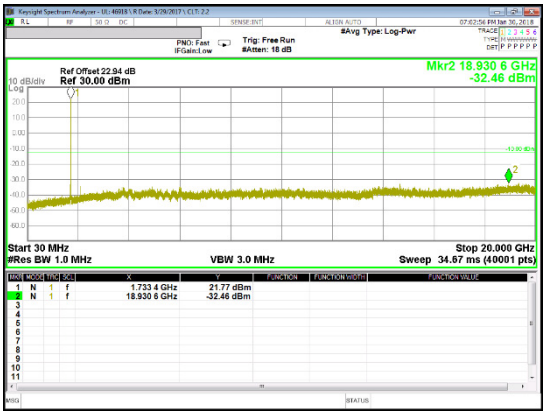
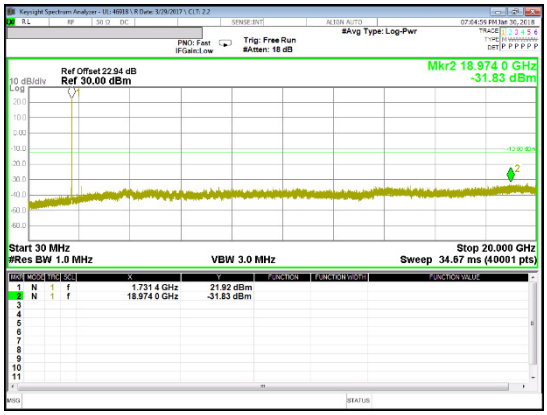
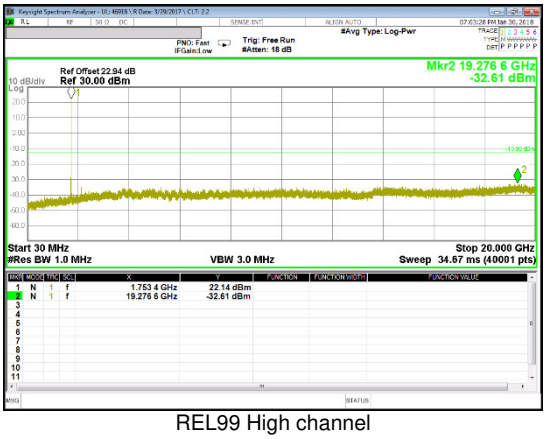
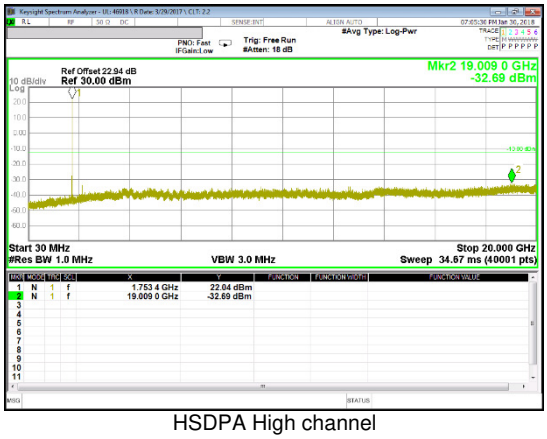
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

WCDMA Band 5

Band 5	 REL99 Low channel	 HSDPA Low channel
	 REL99 Mid channel	 HSDPA Mid channel
	 REL99 High channel	 HSDPA High channel

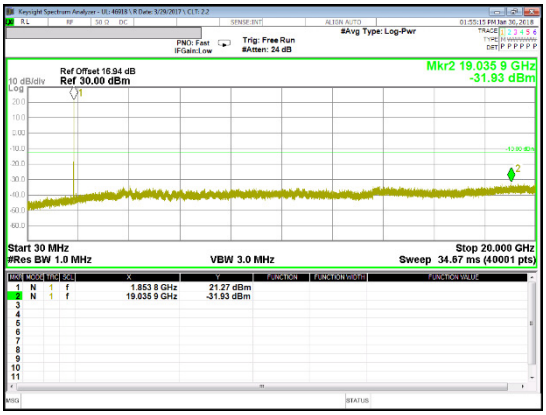
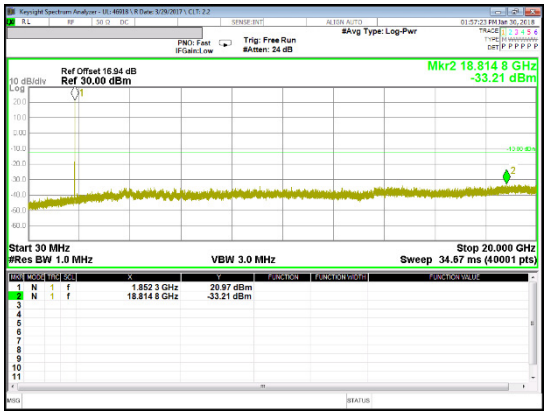
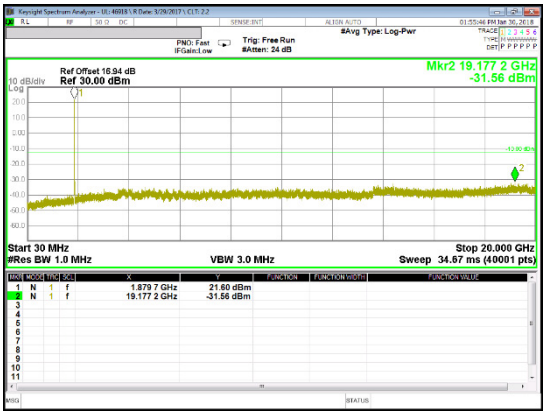
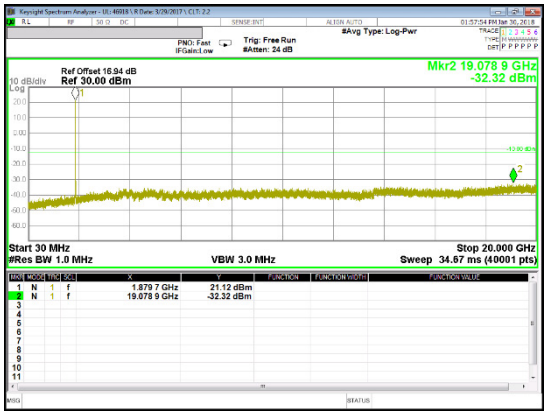
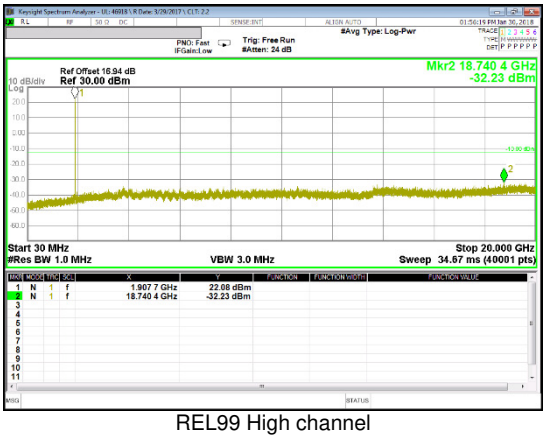
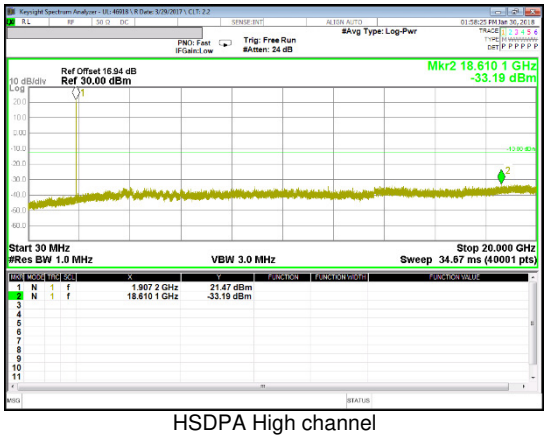
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

WCDMA Band 4

Band 4	 REL99 Low channel	 HSDPA Low channel
	 REL99 Mid channel	 HSDPA Mid channel
	 REL99 High channel	 HSDPA High channel

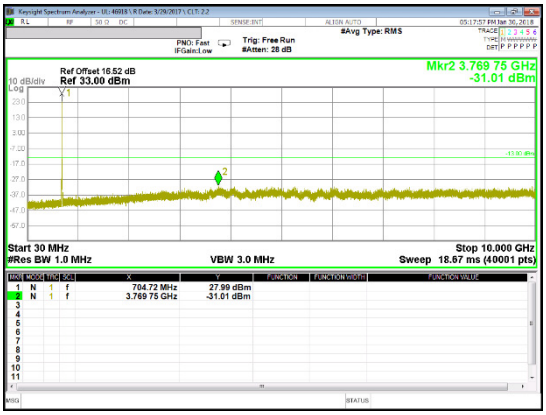
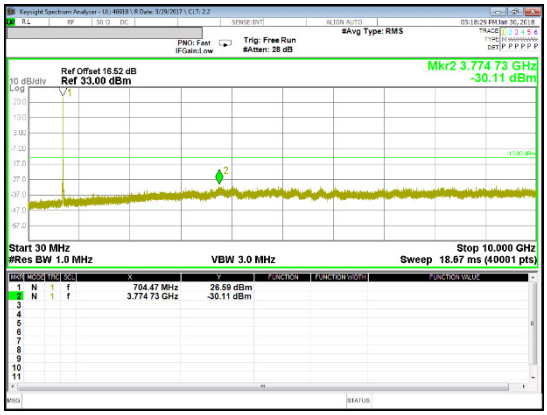
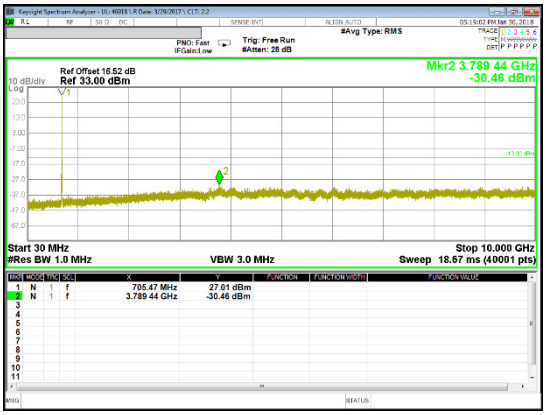
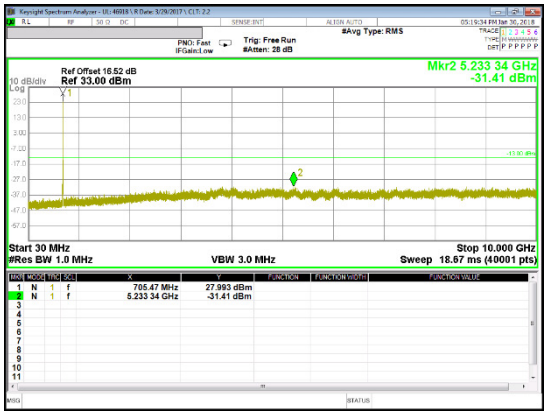
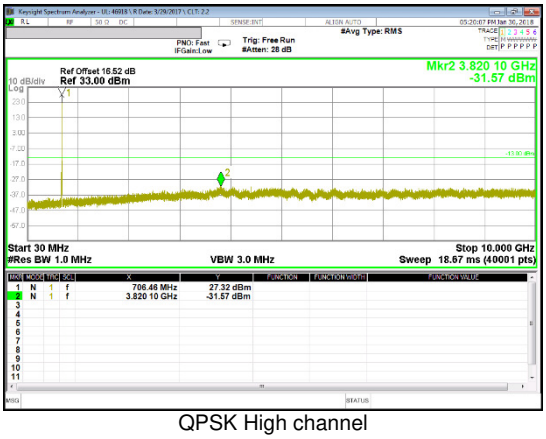
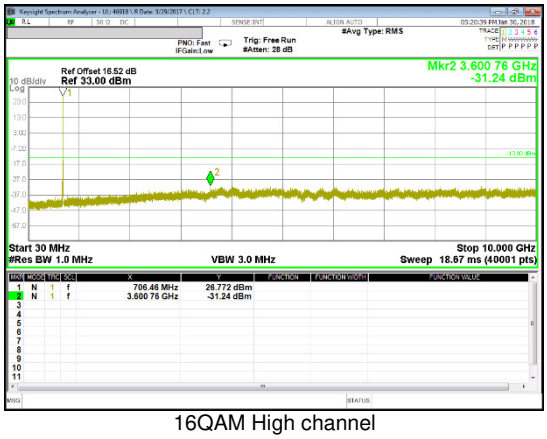
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

WCDMA Band 2

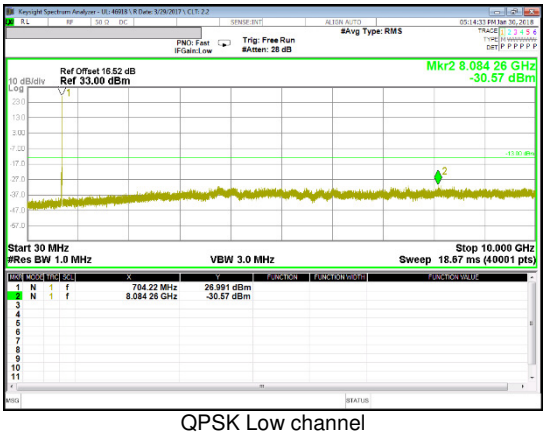
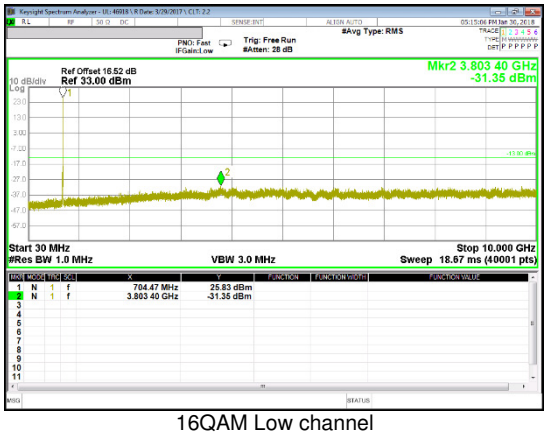
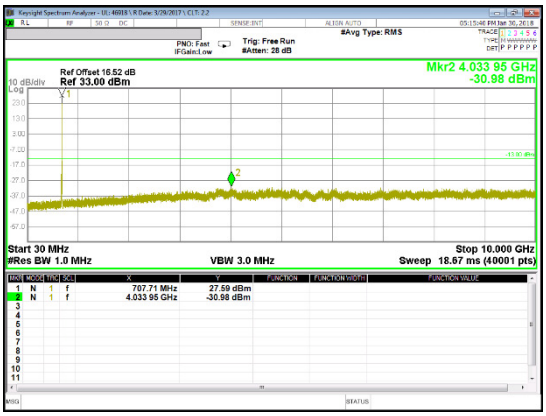
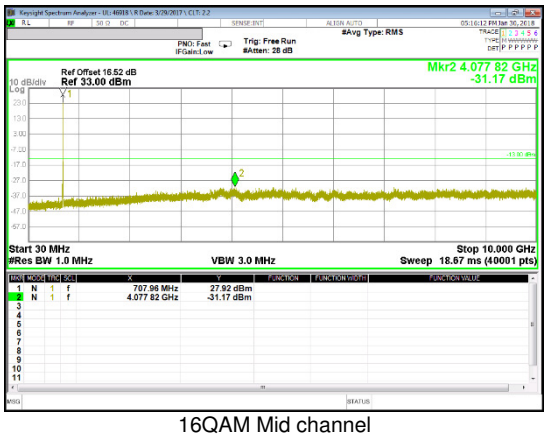
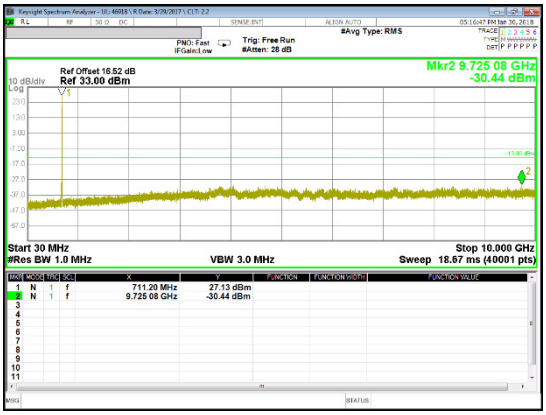
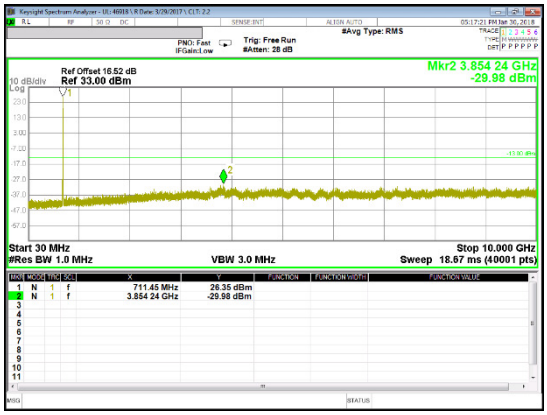
Band 2	 REL99 Low channel	 HSDPA Low channel
	 REL99 Mid channel	 HSDPA Mid channel
	 REL99 High channel	 HSDPA High channel

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LTE Band 17

Band 17 10MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Band 17 5MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.