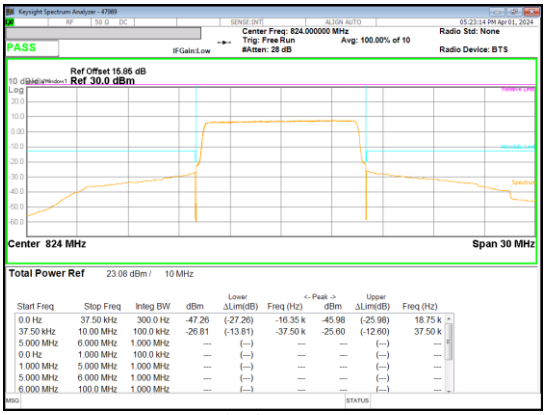
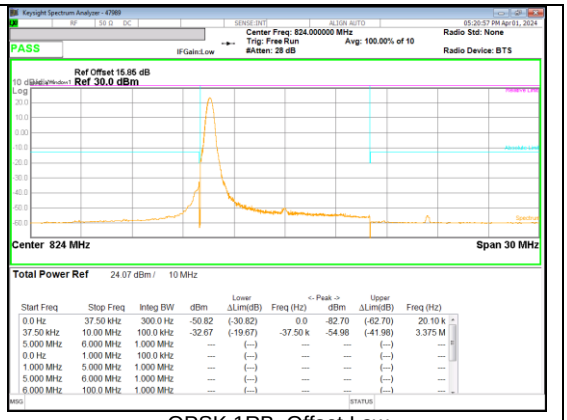
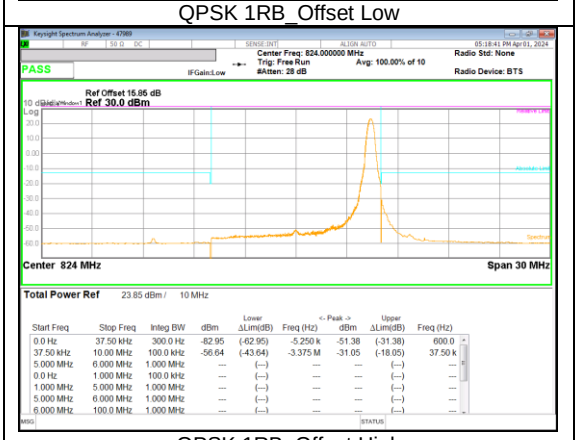
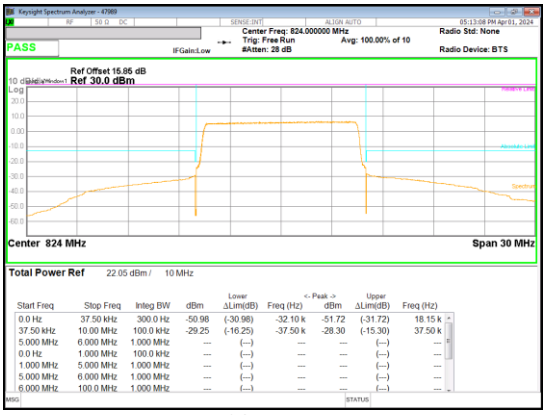
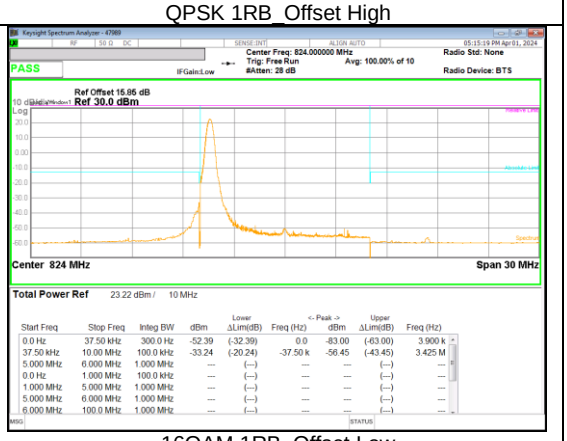
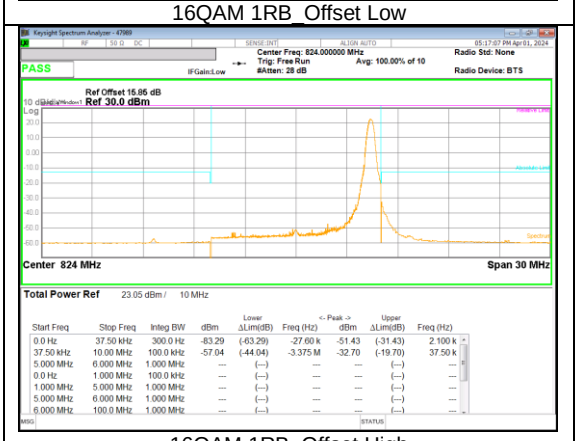
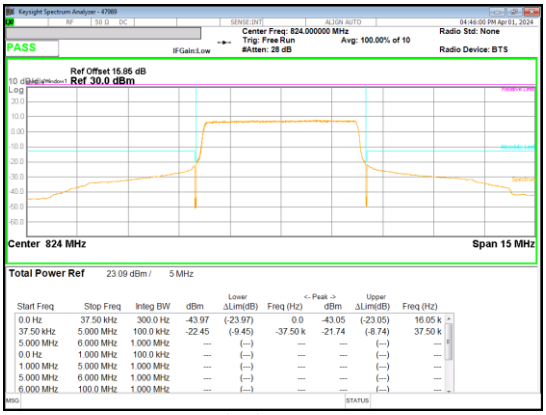
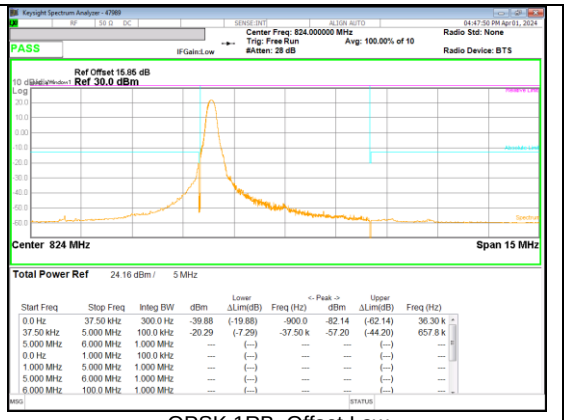
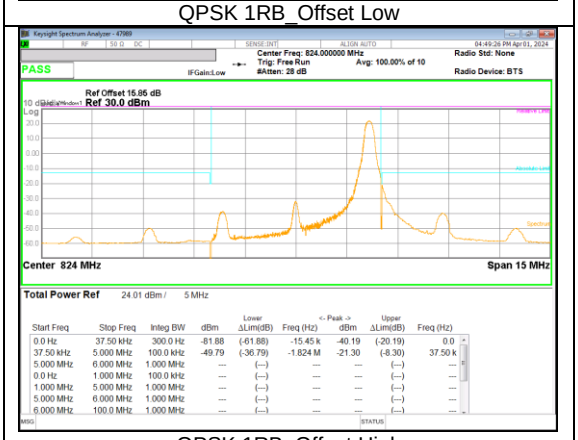
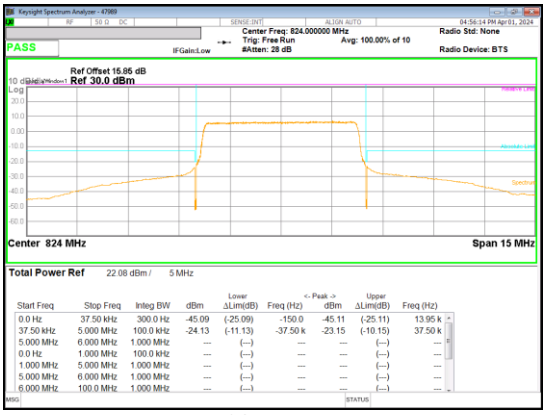
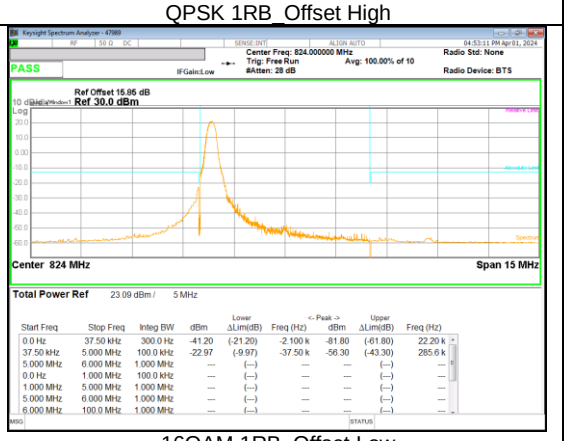
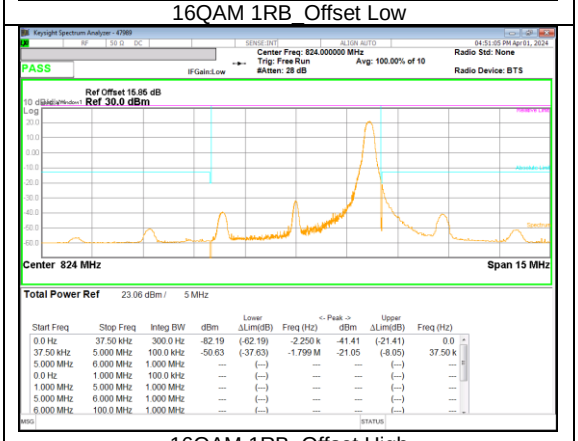
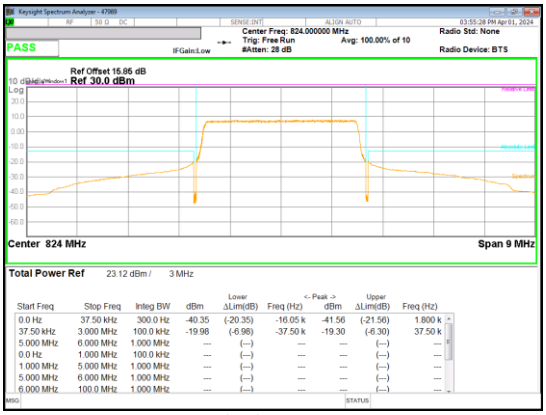
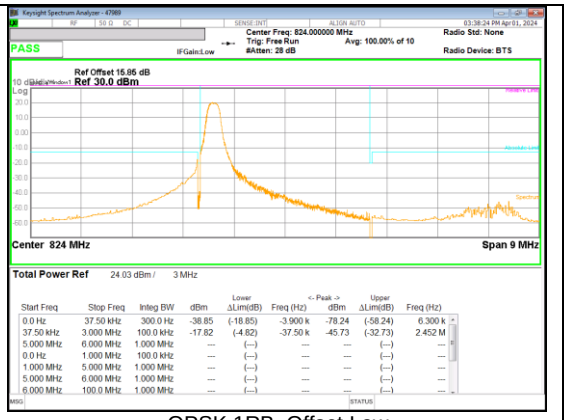
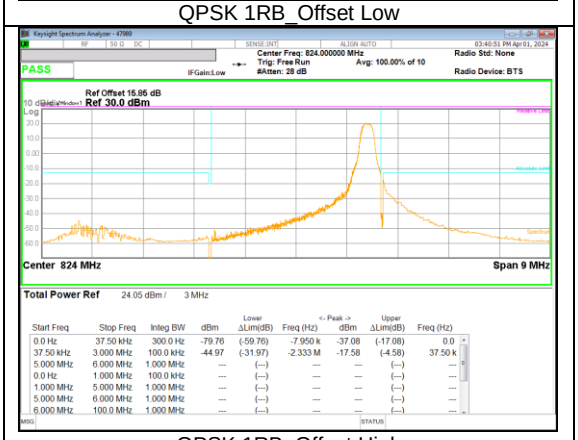
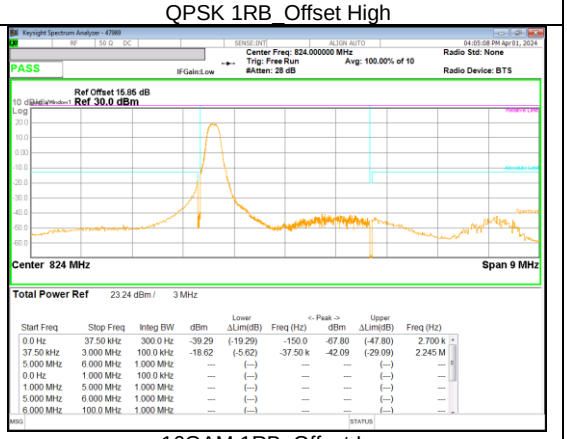
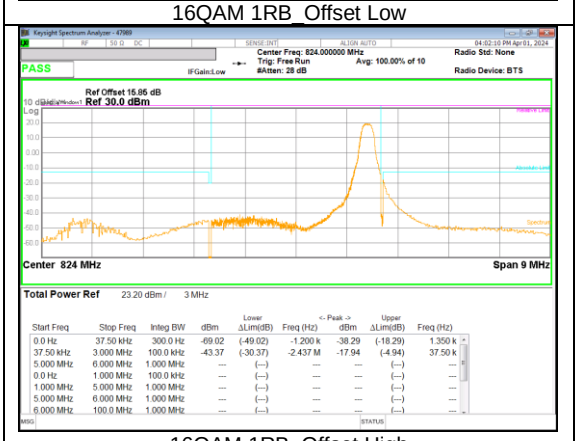
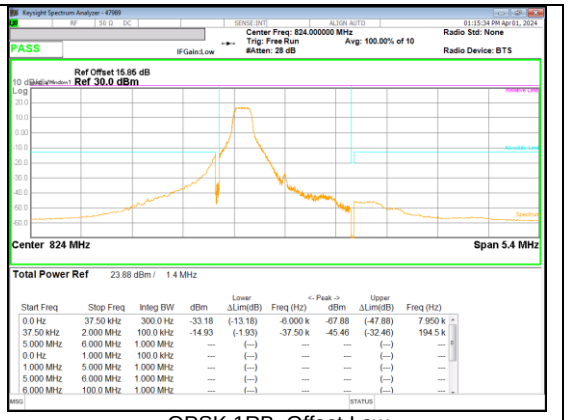
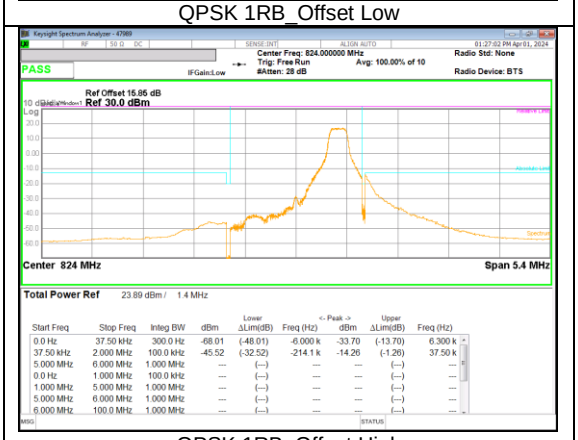
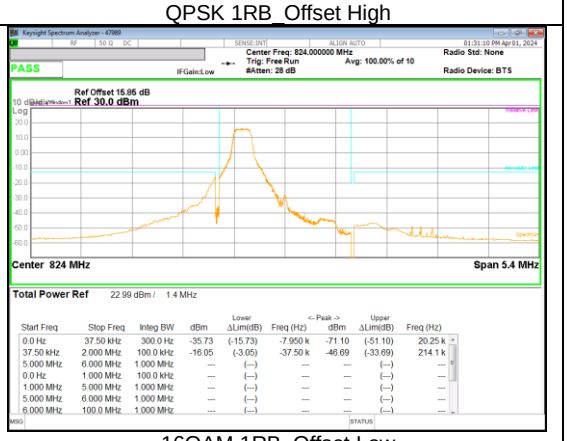
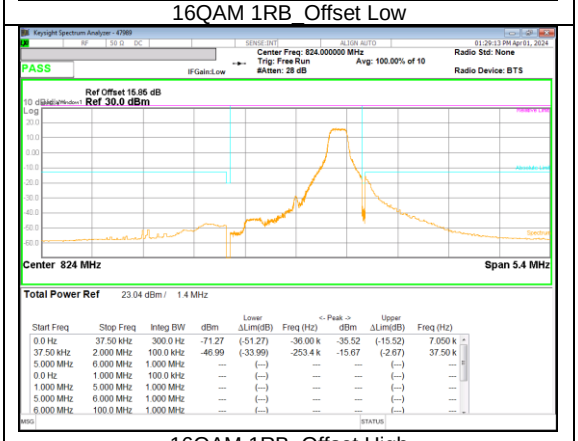
10MHz	 QPSK FRB	 QPSK 1RB_Offset Low
		 QPSK 1RB_Offset High
	 16QAM FRB	 16QAM 1RB_Offset Low
		 16QAM 1RB_Offset High

5MHz	 QPSK FRB	 QPSK 1RB_Offset Low
		 QPSK 1RB_Offset High
	 16QAM FRB	 16QAM 1RB_Offset Low
		 16QAM 1RB_Offset High

3MHz	 QPSK FRB	 QPSK 1RB_Offset Low
		 QPSK 1RB_Offset High
	 16QAM FRB	 16QAM 1RB_Offset Low
		 16QAM 1RB_Offset High

1.4MHz	 QPSK FRB	 QPSK 1RB_Offset Low
		 QPSK 1RB_Offset High
	 16QAM FRB	 16QAM 1RB_Offset Low
		 16QAM 1RB_Offset High

8.5. CONDUCTED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917 and §90.691

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 90.691(a):
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\text{Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.(NOTE : Use 100kHz reference bandwidth)

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

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 = 100 kHz for emission below 1 GHz.
   (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 = rms;
f) Ensure that the number of measurement points = Max (40001);
g) Trace mode = average(WCDMA, LTE, 5G NR), Max hold(GSM);

NOTE1

GSM : It was tested at GPRS as worst case (the highst output power and density).
UMTS: It was tested at REL 99 as worst case (the highst output power and density).
LTE: It was tested at 1RB QPSK as worst case (the highst output power and density).
5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) 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.

NOTE2

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

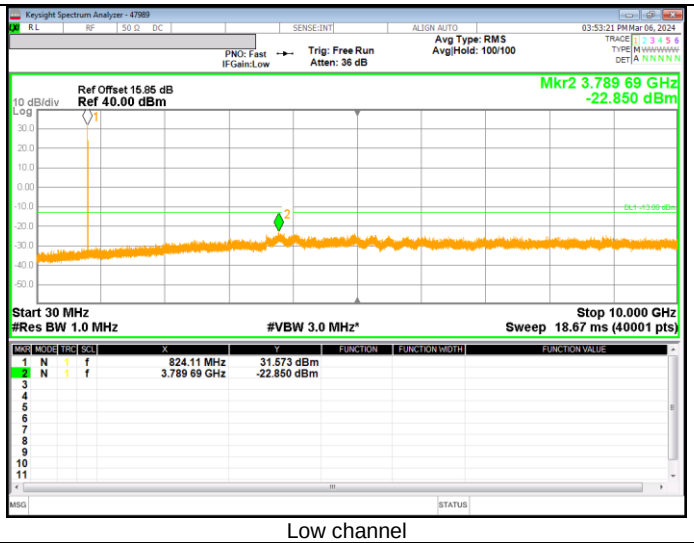
See the following pages.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_22/90(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

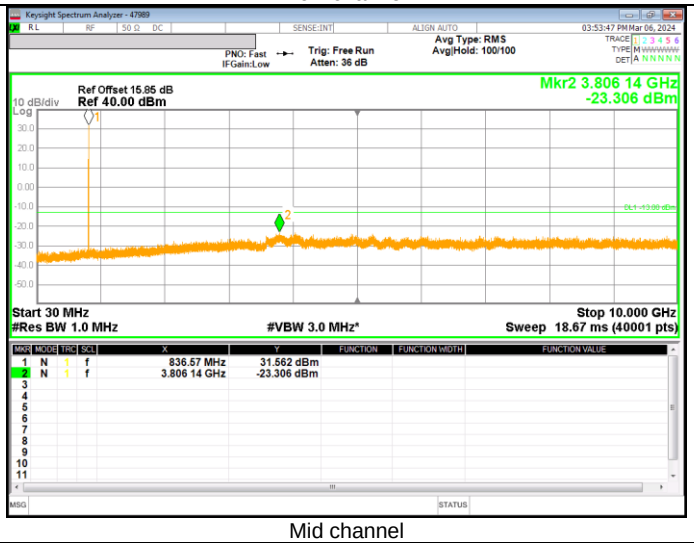
8.5.1. OUT OF BAND EMISSIONS RESULT

GSM 850

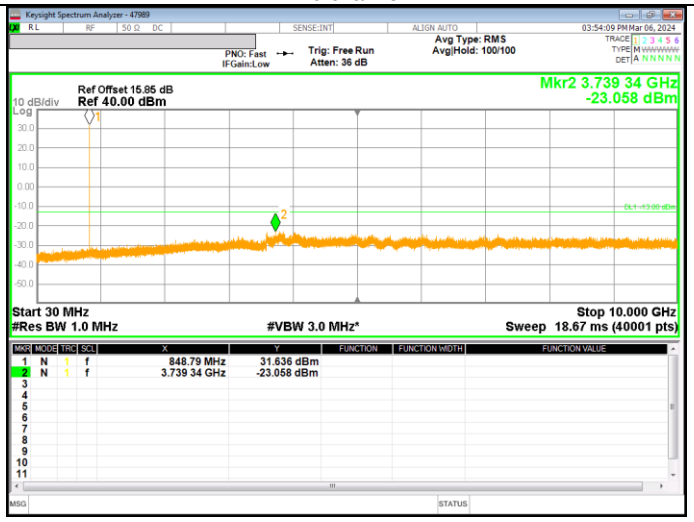
GPRS



Low channel



Mid channel

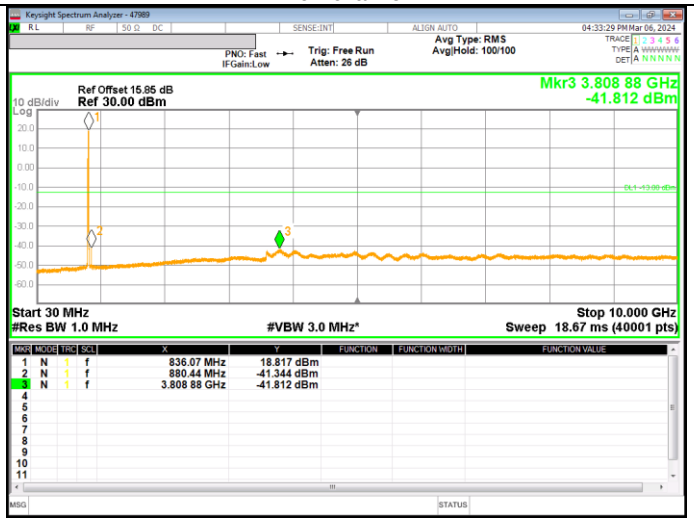


High channel

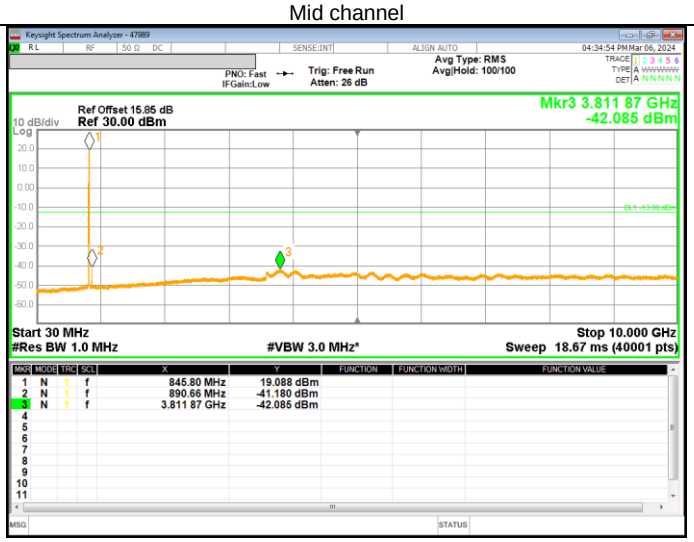
WCDMA Band 5

REL 99

Low channel



Mid channel

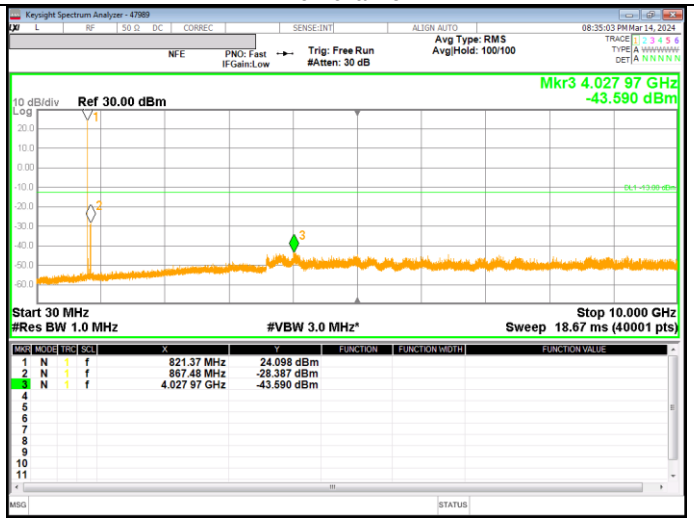


High channel

LTE Band 26 (Part 90)

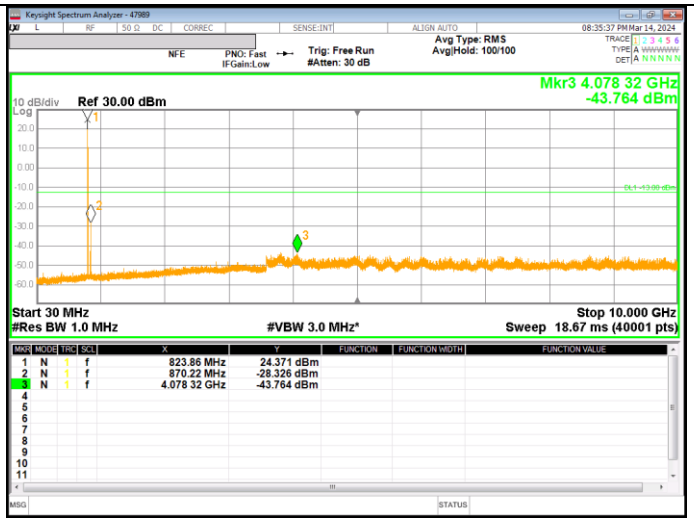
5MHz QPSK

Low channel



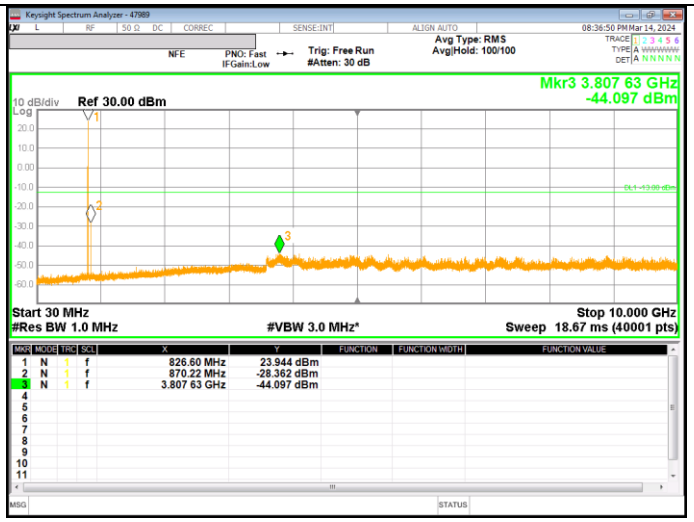
Mid channel

LTE Band 26 (Straddle)

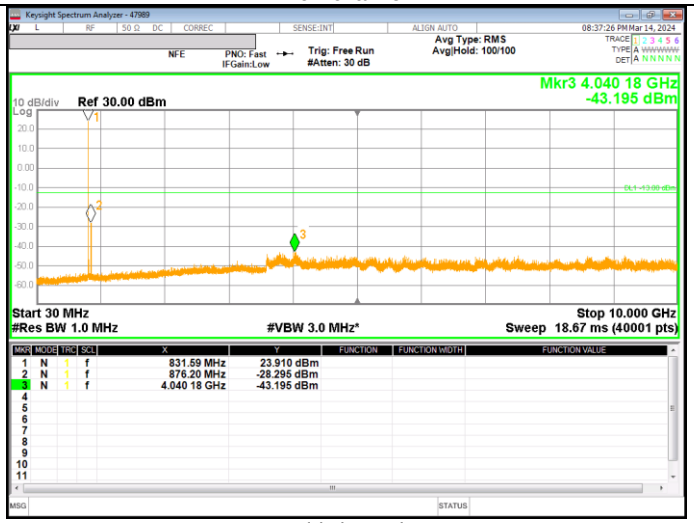
5MHz QPSK

Mid channel

LTE Band 26 (Part 22)

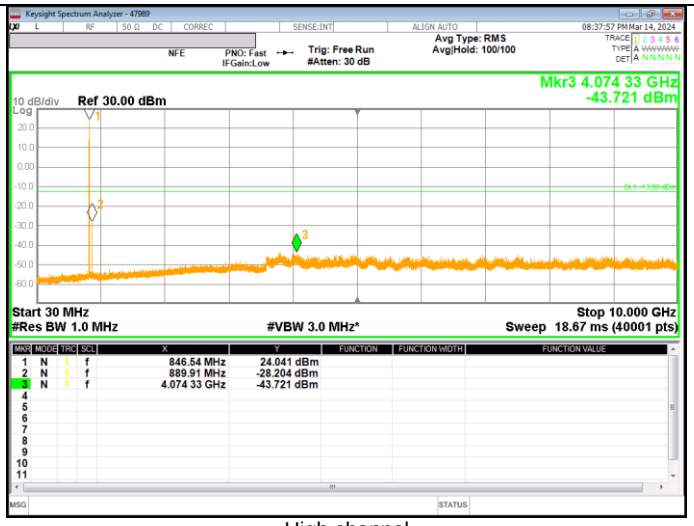
5MHz QPSK



Low channel

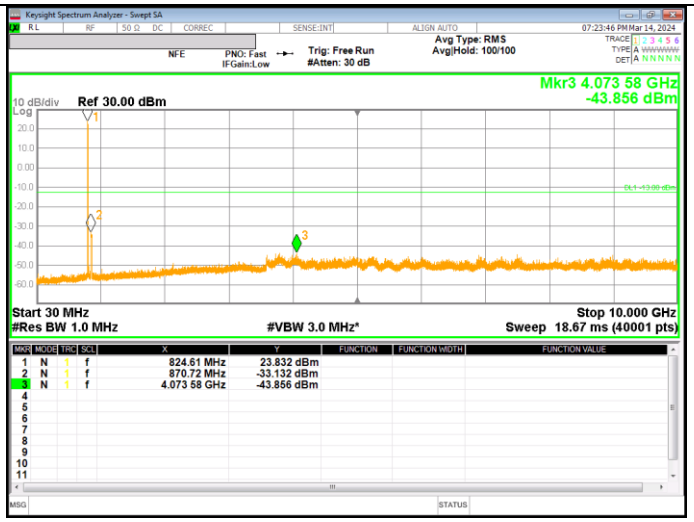
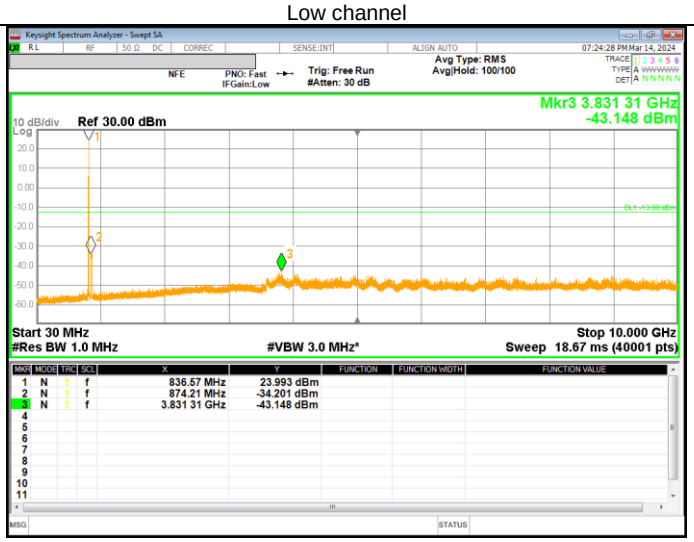
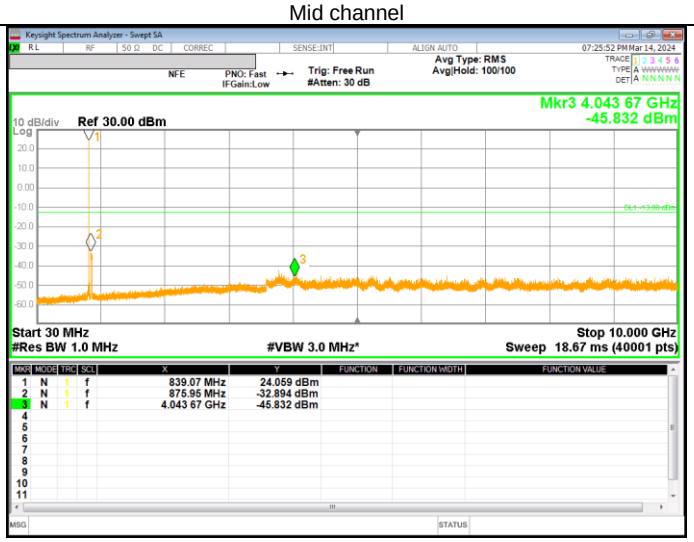


Mid channel



High channel

NR Band n5

20MHz QPSK_DFT-s_OFDM

Low channel

Mid channel

High channel

8.6. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355 and §90.213

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§90.213 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

NOTE

Test were performed each lowest or highest frequency on the modulation condition of more wide bandwidth.(Please refer to OBW results)

RESULTS

See the following pages.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_22/90(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

8.6.1. FREQUENCY STABILITY RESULT

GSM 850, Channel 128/251, Frequency 824.2/848.8 MHz

Test Date	2024-02-26
Test Engineer	47989

Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2060.500 Hz		High Channel	2122.000 Hz	
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	824.20002467	0.004	848.80002810	0.001	2.5
3.88	40	824.20002474	0.004	848.80002729	0.002	2.5
3.88	30	824.20002687	0.001	848.80002874	0.000	2.5
3.88	***20***	***824.20002774***	***0.000***	***848.80002878***	***0.000***	***2.5***
3.88	10	824.20002833	-0.001	848.80002980	-0.001	2.5
3.88	0	824.20003385	-0.007	848.80003186	-0.004	2.5
3.88	-10	824.20003097	-0.004	848.80003194	-0.004	2.5
3.88	-20	824.20003126	-0.004	848.80003293	-0.005	2.5
3.88	-30	824.20003283	-0.006	848.80003363	-0.006	2.5

Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2060.500 Hz		High Channel	2122.000 Hz	
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**824.20002774**	***0***	**848.80002878**	***0***	***2.5***
4.45	20	824.20002516	0.003	848.80002499	0.004	2.5
3.70	20	824.20002375	0.005	848.80002502	0.004	2.5

WCDMA Band 5

Test Date	2024-02-29
Test Engineer	47989

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.000 Hz		High Channel	2116.500 Hz	
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	826.40000316	-0.001	846.60000285	0.000	2.5
3.88	40	826.40000279	0.000	846.60000244	0.000	2.5
3.88	30	826.40000238	0.000	846.60000341	-0.001	2.5
3.88	***20***	***826.40000265***	***0.000***	***846.60000285***	***0.000***	***2.5***
3.88	10	826.40000369	-0.001	846.60000392	-0.001	2.5
3.88	0	826.40000294	0.000	846.60000407	-0.001	2.5
3.88	-10	826.40000271	0.000	846.60000438	-0.002	2.5
3.88	-20	826.40000401	-0.002	846.60000454	-0.002	2.5
3.88	-30	826.40000446	-0.002	846.60000416	-0.002	2.5

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.000 Hz		High Channel	2116.500 Hz	
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**826.40000265**	***0***	**846.60000285**	***0***	***2.5***
4.45	20	826.40000387	-0.001	846.60000439	-0.002	2.5
3.70	20	826.40000395	-0.002	846.60000411	-0.001	2.5

LTE Band 26

Test Date	2021-03-08
Test Engineer	47989

Reference Frequency : Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2036.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	814.70001289	-0.006	848.30001457	-0.011	2.5
3.88	40	814.70001430	-0.007	848.30001527	-0.011	2.5
3.88	30	814.70000589	0.003	848.30000803	-0.003	2.5
3.88	***20***	***814.70000835***	***0.000***	***848.30000558***	***0.000***	***2.5***
3.88	10	814.70000790	0.001	848.30000580	0.000	2.5
3.88	0	814.70001271	-0.005	848.30000692	-0.002	2.5
3.88	-10	814.70001972	-0.014	848.30000604	-0.001	2.5
3.88	-20	814.70000727	0.001	848.30000704	-0.002	2.5
3.88	-30	814.70000759	0.001	848.30000604	-0.001	2.5

Reference Frequency : Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2036.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**814.70000835**	***0***	**848.30000558**	***0***	***2.5***
4.45	20	814.70000567	0.003	848.30000497	0.001	2.5
3.70	20	814.70001295	-0.006	848.30000979	-0.005	2.5

NR Band n5

Test Date	2024-03-13
Test Engineer	47989

Reference Frequency : Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	826.50001283	-0.002	846.50001258	-0.002	2.5
3.88	40	826.50001147	-0.001	846.50001336	-0.002	2.5
3.88	30	826.50001287	-0.002	846.50001341	-0.002	2.5
3.88	***20***	***826.50001095***	***0.000***	***846.50001131***	***0.000***	***2.5***
3.88	10	826.50001158	-0.001	846.50001276	-0.002	2.5
3.88	0	826.50001143	-0.001	846.50001215	-0.001	2.5
3.88	-10	826.50001221	-0.002	846.50001206	-0.001	2.5
3.88	-20	826.50001177	-0.001	846.50001115	0.000	2.5
3.88	-30	826.50001241	-0.002	846.50001193	-0.001	2.5

Reference Frequency : Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [ºC]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**826.50001095**	***0***	**846.50001131**	***0***	***2.5***
4.45	20	826.50000471	0.008	846.50000290	0.010	2.5
3.70	20	826.50000456	0.008	846.50000351	0.009	2.5

9. RADIATED RESULTS

9.1. RADIATED POWER (ERP)

RULE PART(S)

FCC: §2.1046, §22.913 and §90.635

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20dBw).

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.17; ESU40 setting reference to 971168 D01 v03r01

For radiated output power measurement with a ESU40:

a) Set the RBW ≥ OBW;
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 2 x RBW;
d) Sweep time = auto couple or 1 second;
e) Detector = rms;
f) Ensure that the number of measurement points ≥ span/RBW;
g) Trace mode = max hold(GSM, WCDMA), average(LTE, 5G NR);

TEST RESULTS

See the following pages.

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9.1.1. ERP RESULT

GSM (ANT A+B)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	31.07	V	3.01	-1.03	27.03	504.66	38.50	-11.47
		836.60	32.44	V	3.03	-0.97	28.44	698.23	38.50	-10.06
		848.80	31.34	V	3.05	-0.91	27.38	547.02	38.50	-11.12
	EGPRS	824.20	26.04	V	3.01	-1.03	22.00	158.49	38.50	-16.50
		836.60	25.80	V	3.03	-0.97	21.80	151.36	38.50	-16.70
		848.80	25.88	V	3.05	-0.91	21.92	155.60	38.50	-16.58

GSM (ANT A)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	28.85	V	3.01	-1.03	24.81	302.69	38.50	-13.69
		836.60	27.74	V	3.03	-0.97	23.74	236.59	38.50	-14.76
		848.80	26.73	V	3.05	-0.91	22.77	189.23	38.50	-15.73
	EGPRS	824.20	24.27	V	3.01	-1.03	20.23	105.44	38.50	-18.27
		836.60	23.14	V	3.03	-0.97	19.14	82.04	38.50	-19.36
		848.80	21.76	V	3.05	-0.91	17.80	60.26	38.50	-20.70

GSM (ANT D)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	30.07	V	3.01	-1.03	26.03	400.87	38.50	-12.47
		836.60	29.90	V	3.03	-0.97	25.90	389.05	38.50	-12.60
		848.80	28.61	V	3.05	-0.91	24.65	291.74	38.50	-13.85
	EGPRS	824.20	25.43	V	3.01	-1.03	21.39	137.72	38.50	-17.11
		836.60	25.13	V	3.03	-0.97	21.13	129.72	38.50	-17.37
		848.80	23.97	V	3.05	-0.91	20.01	100.23	38.50	-18.49

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WCDMA (ANT A+B)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	24.20	V	3.01	-1.02	20.17	103.99	38.50	-18.33
		836.60	24.48	V	3.03	-0.97	20.48	111.69	38.50	-18.02
		846.60	24.24	V	3.05	-0.92	20.27	106.41	38.50	-18.23
	HSDPA	826.40	23.28	V	3.01	-1.02	19.25	84.14	38.50	-19.25
		836.60	23.54	V	3.03	-0.97	19.54	89.95	38.50	-18.96
		846.60	23.40	V	3.05	-0.92	19.43	87.70	38.50	-19.07

WCDMA (ANT A)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	20.84	V	3.01	-1.02	16.81	47.97	38.50	-21.69
		836.60	21.09	V	3.03	-0.97	17.09	51.17	38.50	-21.41
		846.60	20.39	V	3.05	-0.92	16.42	43.85	38.50	-22.08
	HSDPA	826.40	19.21	V	3.01	-1.02	15.18	32.96	38.50	-23.32
		836.60	19.42	V	3.03	-0.97	15.42	34.83	38.50	-23.08
		846.60	18.90	V	3.05	-0.92	14.93	31.12	38.50	-23.57

WCDMA (ANT D)

Band	Mode	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	22.36	V	3.01	-1.02	18.33	68.08	38.50	-20.17
		836.60	22.93	V	3.03	-0.97	18.93	78.16	38.50	-19.57
		846.60	22.16	V	3.05	-0.92	18.19	65.92	38.50	-20.31
	HSDPA	826.40	20.53	V	3.01	-1.02	16.50	44.67	38.50	-22.00
		836.60	21.31	V	3.03	-0.97	17.31	53.83	38.50	-21.19
		846.60	20.15	V	3.05	-0.92	16.18	41.50	38.50	-22.32

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LTE Band 26 (ANT A+B)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
15	QPSK	821.50	23.59	H	3.01	-1.04	19.55	90.16	50.00	-30.45	1/37
		824.00	23.92	H	3.01	-1.03	19.88	97.27	38.50	-18.62	1/0
		831.50	24.15	H	3.02	-0.99	20.14	103.28	38.50	-18.36	1/0
		836.50	24.21	H	3.03	-0.97	20.21	104.95	38.50	-18.29	1/0
		841.50	24.24	H	3.04	-0.94	20.26	106.17	38.50	-18.24	1/0
	16-QAM	821.50	22.71	H	3.01	-1.04	18.67	73.62	50.00	-31.33	1/37
		824.00	22.94	H	3.01	-1.03	18.90	77.62	38.50	-19.60	1/0
		831.50	23.19	H	3.02	-0.99	19.18	82.79	38.50	-19.32	1/37
		836.50	23.37	H	3.03	-0.97	19.37	86.50	38.50	-19.13	1/0
		841.50	23.15	H	3.04	-0.94	19.17	82.60	38.50	-19.33	1/37
10	QPSK	819.00	23.50	H	3.00	-1.06	19.45	88.10	50.00	-30.55	1/49
		824.00	23.91	H	3.01	-1.03	19.87	97.05	38.50	-18.63	1/0
		829.00	24.15	H	3.02	-1.01	20.13	103.04	38.50	-18.37	1/25
		831.50	24.16	H	3.02	-0.99	20.15	103.51	38.50	-18.35	1/0
		844.00	23.56	H	3.04	-0.93	19.59	90.99	38.50	-18.91	1/25
	16-QAM	819.00	22.61	H	3.00	-1.06	18.56	71.78	50.00	-31.44	1/49
		824.00	23.11	H	3.01	-1.03	19.07	80.72	38.50	-19.43	1/25
		829.00	23.21	H	3.02	-1.01	19.19	82.99	38.50	-19.31	1/25
		831.50	23.34	H	3.02	-0.99	19.33	85.70	38.50	-19.17	1/25
		844.00	22.96	H	3.04	-0.93	18.99	79.25	38.50	-19.51	1/25
5	QPSK	816.50	23.50	H	3.00	-1.07	19.44	87.90	50.00	-30.10	1/12
		821.50	23.94	H	3.01	-1.04	19.90	97.72	50.00	-29.98	1/12
		824.00	24.06	H	3.01	-1.03	20.02	100.46	38.50	-18.55	1/12
		826.50	23.99	H	3.01	-1.02	19.95	98.86	38.50	-18.02	1/12
		831.50	24.49	H	3.02	-0.99	20.48	111.69	38.50	-18.69	1/12
		846.50	23.77	H	3.05	-0.92	19.81	95.72	38.50	-20.20	1/12
	16-QAM	816.50	22.36	H	3.00	-1.07	18.30	67.61	50.00	-31.26	1/12
		821.50	22.78	H	3.01	-1.04	18.74	74.82	50.00	-31.19	1/12
		824.00	22.87	H	3.00	-1.07	18.81	76.03	38.50	-19.57	1/24
		826.50	22.95	H	3.02	-0.99	18.93	78.16	38.50	-19.12	1/12
		831.50	23.34	H	3.05	-0.92	19.38	86.70	38.50	-19.58	1/12
		846.50	22.88	H	3.05	-0.91	18.92	77.98	38.50	-19.58	1/12
3	QPSK	815.50	23.44	H	2.99	-1.07	19.37	86.50	50.00	-30.63	1/8
		822.50	23.77	H	3.01	-1.04	19.73	93.97	50.00	-30.27	1/0
		824.00	24.14	H	3.01	-1.03	20.10	102.33	38.50	-18.40	1/8
		825.50	24.26	H	3.01	-1.02	20.22	105.20	38.50	-18.28	1/8
		831.50	24.29	H	3.02	-0.99	20.28	106.66	38.50	-18.22	1/8
		847.50	23.44	H	3.05	-0.91	19.48	88.72	38.50	-19.02	1/8
	16-QAM	815.50	22.29	H	2.99	-1.07	18.22	66.37	50.00	-31.78	1/8
		822.50	22.62	H	3.01	-1.04	18.58	72.11	50.00	-31.42	1/8
		824.00	22.98	H	3.01	-1.03	18.94	78.34	38.50	-19.56	1/8
		825.50	22.88	H	3.01	-1.02	18.84	76.56	38.50	-19.66	1/0
		831.50	23.27	H	3.02	-0.99	19.26	84.33	38.50	-19.24	1/8
		847.50	22.37	H	3.05	-0.91	18.41	69.34	38.50	-20.09	1/8
1.4	QPSK	814.70	23.22	H	2.99	-1.08	19.15	82.22	50.00	-30.85	1/3
		823.30	23.92	H	3.01	-1.03	19.88	97.27	50.00	-30.12	1/3
		824.00	23.85	H	3.01	-1.03	19.81	95.72	38.50	-18.69	1/3
		824.70	24.00	H	3.01	-1.03	19.97	99.31	38.50	-18.53	1/0
		831.50	24.23	H	3.02	-0.99	20.22	105.20	38.50	-18.28	1/3
		848.30	23.45	H	3.05	-0.91	19.49	88.92	38.50	-19.01	1/3
	16-QAM	814.70	22.17	H	2.99	-1.08	18.10	64.57	50.00	-31.90	1/3
		823.30	22.47	H	3.01	-1.03	18.43	69.66	50.00	-31.57	1/5
		824.00	23.07	H	3.01	-1.03	19.03	79.98	38.50	-19.47	1/0
		824.70	23.07	H	3.01	-1.03	19.04	80.17	38.50	-19.46	1/5
		831.50	23.10	H	3.02	-0.99	19.09	81.10	38.50	-19.41	1/3
		848.30	22.30	H	3.05	-0.91	18.34	68.23	38.50	-20.16	1/3

LTE Band 26 (ANT A)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
15	QPSK	821.50	19.57	V	3.01	-1.04	15.52	35.65	50.00	-34.48	1/37
		824.00	20.11	V	3.01	-1.03	16.07	40.46	38.50	-22.43	1/0
		831.50	20.73	V	3.02	-0.99	16.72	46.99	38.50	-21.78	1/0
		836.50	20.93	V	3.03	-0.97	16.93	49.32	38.50	-21.57	1/0
		841.50	20.67	V	3.04	-0.94	16.69	46.67	38.50	-21.81	1/0
	16-QAM	821.50	18.53	V	3.01	-1.04	14.48	28.05	50.00	-35.52	1/37
		824.00	19.03	V	3.01	-1.03	14.99	31.55	38.50	-23.51	1/0
		831.50	19.68	V	3.02	-0.99	15.67	36.90	38.50	-22.83	1/37
		836.50	19.97	V	3.03	-0.97	15.97	39.54	38.50	-22.53	1/0
		841.50	19.67	V	3.04	-0.94	15.69	37.07	38.50	-22.81	1/37
10	QPSK	819.00	19.56	V	3.00	-1.06	15.51	35.56	50.00	-34.49	1/49
		824.00	20.16	V	3.01	-1.03	16.12	40.93	38.50	-22.38	1/0
		829.00	20.54	V	3.02	-1.01	16.52	44.87	38.50	-21.98	1/25
		831.50	20.52	V	3.02	-0.99	16.51	44.77	38.50	-21.99	1/0
		844.00	20.32	V	3.04	-0.93	16.35	43.15	38.50	-22.15	1/25
	16-QAM	819.00	18.48	V	3.00	-1.06	14.43	27.73	50.00	-35.57	1/49
		824.00	19.24	V	3.01	-1.03	15.20	33.11	38.50	-23.30	1/25
		829.00	19.41	V	3.02	-1.01	15.39	34.59	38.50	-23.11	1/25
		831.50	19.51	V	3.02	-0.99	15.50	35.48	38.50	-23.00	1/25
		844.00	19.32	V	3.04	-0.93	15.35	34.28	38.50	-23.15	1/25
5	QPSK	816.50	19.36	V	3.00	-1.07	15.30	33.88	50.00	-34.19	1/12
		821.50	19.86	V	3.01	-1.04	15.81	38.11	50.00	-33.57	1/12
		824.00	20.47	V	3.01	-1.03	16.43	43.95	38.50	-21.90	1/12
		826.50	20.63	V	3.01	-1.02	16.60	45.71	38.50	-21.33	1/12
		831.50	21.18	V	3.02	-0.99	17.17	52.12	38.50	-22.32	1/12
		846.50	20.15	V	3.05	-0.92	16.18	41.50	38.50	-24.40	1/12
	16-QAM	816.50	18.16	V	3.00	-1.07	14.10	25.70	50.00	-35.25	1/12
		821.50	18.80	V	3.01	-1.04	14.75	29.85	50.00	-34.92	1/12
		824.00	19.12	V	3.01	-1.03	15.08	32.21	38.50	-22.98	1/24
		826.50	19.55	V	3.01	-1.02	15.52	35.65	38.50	-22.33	1/12
		831.50	20.18	V	3.02	-0.99	16.17	41.40	38.50	-23.41	1/12
		846.50	19.06	V	3.05	-0.92	15.09	32.28	38.50	-23.41	1/12
3	QPSK	815.50	19.14	V	2.99	-1.07	15.07	32.14	50.00	-34.93	1/8
		822.50	19.95	V	3.01	-1.04	15.90	38.90	50.00	-34.10	1/0
		824.00	20.44	V	3.01	-1.03	16.40	43.65	38.50	-22.10	1/8
		825.50	20.42	V	3.01	-1.02	16.39	43.55	38.50	-22.11	1/8
		831.50	21.04	V	3.02	-0.99	17.03	50.47	38.50	-21.47	1/8
		847.50	19.85	V	3.05	-0.91	15.89	38.82	38.50	-22.61	1/8
	16-QAM	815.50	18.25	V	2.99	-1.07	14.18	26.18	50.00	-35.82	1/8
		822.50	18.92	V	3.01	-1.04	14.87	30.69	50.00	-35.13	1/8
		824.00	19.29	V	3.01	-1.03	15.25	33.50	38.50	-23.25	1/8
		825.50	19.49	V	3.01	-1.02	15.46	35.16	38.50	-23.04	1/0
		831.50	20.18	V	3.02	-0.99	16.17	41.40	38.50	-22.33	1/8
		847.50	18.89	V	3.05	-0.91	14.93	31.12	38.50	-23.57	1/8
1.4	QPSK	814.70	19.26	V	2.99	-1.08	15.19	33.04	50.00	-34.81	1/3
		823.30	19.97	V	3.01	-1.03	15.93	39.17	50.00	-34.07	1/3
		824.00	20.28	V	3.01	-1.03	16.24	42.07	38.50	-22.26	1/3
		824.70	20.13	V	3.01	-1.03	16.10	40.74	38.50	-22.40	1/0
		831.50	20.62	V	3.02	-0.99	16.61	45.81	38.50	-21.89	1/3
		848.30	18.65	V	3.05	-0.91	14.69	29.44	38.50	-23.81	1/3
	16-QAM	814.70	18.30	V	2.99	-1.08	14.23	26.49	50.00	-35.77	1/3
		823.30	18.88	V	3.01	-1.03	14.84	30.48	50.00	-35.16	1/5
		824.00	19.06	V	3.01	-1.03	15.02	31.77	38.50	-23.48	1/0
		824.70	19.06	V	3.01	-1.03	15.03	31.84	38.50	-23.47	1/5
		831.50	19.74	V	3.02	-0.99	15.73	37.41	38.50	-22.77	1/3
		848.30	17.54	V	3.05	-0.91	13.58	22.80	38.50	-24.92	1/3

LTE Band 26 (ANT D)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
15	QPSK	821.50	20.28	V	3.01	-1.04	16.23	41.98	50.00	-33.77	1/37
		824.00	20.54	V	3.01	-1.03	16.50	44.67	38.50	-22.00	1/37
		831.50	20.97	V	3.02	-0.99	16.96	49.66	38.50	-21.54	1/0
		836.50	21.32	V	3.03	-0.97	17.32	53.95	38.50	-21.18	1/37
		841.50	21.07	V	3.04	-0.94	17.09	51.17	38.50	-21.41	1/0
	16-QAM	821.50	19.46	V	3.01	-1.04	15.41	34.75	50.00	-34.59	1/37
		824.00	19.56	V	3.01	-1.03	15.52	35.65	38.50	-22.98	1/0
		831.50	19.95	V	3.02	-0.99	15.94	39.26	38.50	-22.56	1/0
		836.50	20.40	V	3.03	-0.97	16.40	43.65	38.50	-22.10	1/37
		841.50	20.07	V	3.04	-0.94	16.09	40.64	38.50	-22.41	1/37
10	QPSK	819.00	20.24	V	3.00	-1.06	16.19	41.59	50.00	-33.81	1/49
		824.00	20.77	V	3.01	-1.03	16.73	47.10	38.50	-21.77	1/49
		829.00	20.58	V	3.02	-1.01	16.56	45.29	38.50	-21.94	1/0
		831.50	21.34	V	3.02	-0.99	17.33	54.08	38.50	-21.17	1/25
		844.00	20.88	V	3.04	-0.93	16.91	49.09	38.50	-21.59	1/0
	16-QAM	819.00	19.28	V	3.00	-1.06	15.23	33.34	50.00	-34.77	1/25
		824.00	19.59	V	3.01	-1.03	15.55	35.89	38.50	-22.95	1/0
		829.00	19.73	V	3.02	-1.01	15.71	37.24	38.50	-22.79	1/0
		831.50	20.66	V	3.02	-0.99	16.65	46.24	38.50	-21.85	1/25
		844.00	20.00	V	3.04	-0.93	16.03	40.09	38.50	-22.47	1/0
5	QPSK	816.50	20.33	V	3.00	-1.07	16.27	42.36	50.00	-33.48	1/12
		821.50	20.57	V	3.01	-1.04	16.52	44.87	50.00	-33.41	1/12
		824.00	20.63	V	3.01	-1.03	16.59	45.60	38.50	-21.95	1/12
		826.50	20.58	V	3.01	-1.02	16.55	45.19	38.50	-21.03	1/0
		831.50	21.48	V	3.02	-0.99	17.47	55.85	38.50	-21.82	1/0
		846.50	20.65	V	3.05	-0.92	16.68	46.56	38.50	-23.07	1/0
	16-QAM	816.50	19.49	V	3.00	-1.07	15.43	34.91	50.00	-34.46	1/0
		821.50	19.59	V	3.01	-1.04	15.54	35.81	50.00	-34.11	1/0
		824.00	19.93	V	3.01	-1.03	15.89	38.82	38.50	-22.77	1/12
		826.50	19.76	V	3.01	-1.02	15.73	37.41	38.50	-21.62	1/0
		831.50	20.89	V	3.02	-0.99	16.88	48.75	38.50	-22.38	1/12
		846.50	20.09	V	3.05	-0.92	16.12	40.93	38.50	-22.38	1/12
3	QPSK	815.50	20.26	V	2.99	-1.07	16.19	41.59	50.00	-33.81	1/8
		822.50	20.47	V	3.01	-1.04	16.42	43.85	50.00	-33.58	1/8
		824.00	20.71	V	3.01	-1.03	16.67	46.45	38.50	-21.83	1/8
		825.50	20.47	V	3.01	-1.02	16.44	44.06	38.50	-22.06	1/14
		831.50	21.45	V	3.02	-0.99	17.44	55.46	38.50	-21.06	1/8
		847.50	20.55	V	3.05	-0.91	16.59	45.60	38.50	-21.91	1/8
	16-QAM	815.50	19.48	V	2.99	-1.07	15.41	34.75	50.00	-34.59	1/8
		822.50	19.53	V	3.01	-1.04	15.48	35.32	50.00	-34.52	1/8
		824.00	19.91	V	3.01	-1.03	15.87	38.64	38.50	-22.63	1/8
		825.50	19.80	V	3.01	-1.02	15.77	37.76	38.50	-22.73	1/8
		831.50	20.94	V	3.02	-0.99	16.93	49.32	38.50	-21.57	1/8
		847.50	19.78	V	3.05	-0.91	15.82	38.19	38.50	-22.68	1/8
1.4	QPSK	814.70	20.18	V	2.99	-1.08	16.11	40.83	50.00	-33.89	1/3
		823.30	20.46	V	3.01	-1.03	16.42	43.85	50.00	-33.58	1/3
		824.00	20.57	V	3.01	-1.03	16.53	44.98	38.50	-21.97	1/5
		824.70	20.39	V	3.01	-1.03	16.36	43.25	38.50	-22.14	1/3
		831.50	21.41	V	3.02	-0.99	17.40	54.95	38.50	-21.10	1/3
		848.30	20.45	V	3.05	-0.91	16.49	44.57	38.50	-22.01	1/3
	16-QAM	814.70	19.20	V	2.99	-1.08	15.13	32.58	50.00	-34.87	1/3
		823.30	19.50	V	3.01	-1.03	15.46	35.16	50.00	-34.54	1/5
		824.00	19.69	V	3.01	-1.03	15.65	36.73	38.50	-22.85	1/3
		824.70	19.38	V	3.01	-1.03	15.35	34.28	38.50	-23.15	1/5
		831.50	20.74	V	3.02	-0.99	16.73	47.10	38.50	-21.77	1/3
		848.30	19.50	V	3.05	-0.91	15.54	35.81	38.50	-22.96	1/3

NR Band n5 (DFT-OFDM) (ANT A+B)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	834.00	23.40	V	3.03	-0.98	19.39	86.90	38.50	-19.11	1/1
		836.50	23.35	V	3.03	-0.97	19.35	86.10	38.50	-19.15	1/53
		839.00	23.57	V	3.03	-0.96	19.58	90.78	38.50	-18.92	1/1
	16-QAM	834.00	22.33	V	3.03	-0.98	18.32	67.92	38.50	-20.18	1/1
		836.50	22.31	V	3.03	-0.97	18.31	67.76	38.50	-20.19	1/1
		839.00	22.27	V	3.03	-0.96	18.28	67.30	38.50	-20.22	1/1
15	QPSK	831.50	23.19	V	3.02	-0.99	19.18	82.79	38.50	-19.32	1/1
		836.50	23.50	V	3.03	-0.97	19.50	89.13	38.50	-19.00	1/1
		841.50	23.97	V	3.04	-0.94	19.99	99.77	38.50	-18.51	1/1
	16-QAM	831.50	22.03	V	3.02	-0.99	18.02	63.39	38.50	-20.48	1/1
		836.50	22.32	V	3.03	-0.97	18.32	67.92	38.50	-20.18	1/1
		841.50	22.76	V	3.04	-0.94	18.78	75.51	38.50	-19.72	1/1
10	QPSK	829.00	23.10	V	3.02	-1.01	19.08	80.91	38.50	-19.42	1/1
		836.50	23.68	V	3.03	-0.97	19.68	92.90	38.50	-18.82	1/1
		844.00	23.57	V	3.04	-0.93	19.60	91.20	38.50	-18.90	1/50
	16-QAM	829.00	22.03	V	3.02	-1.01	18.01	63.24	38.50	-20.49	1/1
		836.50	22.55	V	3.03	-0.97	18.55	71.61	38.50	-19.95	1/1
		844.00	22.47	V	3.04	-0.93	18.50	70.79	38.50	-20.00	1/26
5	QPSK	826.50	22.98	V	3.01	-1.02	18.95	78.52	38.50	-19.55	1/1
		836.50	23.38	V	3.03	-0.97	19.38	86.70	38.50	-19.12	1/1
		846.50	23.39	V	3.05	-0.92	19.42	87.50	38.50	-19.08	1/23
	16-QAM	826.50	21.70	V	3.01	-1.02	17.67	58.48	38.50	-20.83	1/1
		836.50	22.22	V	3.03	-0.97	18.22	66.37	38.50	-20.28	1/1
		846.50	22.34	V	3.05	-0.92	18.37	68.71	38.50	-20.13	1/1

NR Band n5 (DFT-OFDM) (ANT A)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	834.00	18.37	V	3.03	-0.98	14.36	27.29	38.50	-24.14	1/1
		836.50	18.36	V	3.03	-0.97	14.36	27.29	38.50	-24.14	1/53
		839.00	18.16	V	3.03	-0.96	14.17	26.12	38.50	-24.33	1/1
	16-QAM	834.00	17.26	V	3.03	-0.98	13.25	21.13	38.50	-25.25	1/1
		836.50	17.17	V	3.03	-0.97	13.17	20.75	38.50	-25.33	1/1
		839.00	17.44	V	3.03	-0.96	13.45	22.13	38.50	-25.05	1/1
15	QPSK	831.50	18.30	V	3.02	-0.99	14.29	26.85	38.50	-24.21	1/1
		836.50	18.03	V	3.03	-0.97	14.03	25.29	38.50	-24.47	1/1
		841.50	18.16	V	3.04	-0.94	14.18	26.18	38.50	-24.32	1/1
	16-QAM	831.50	17.21	V	3.02	-0.99	13.20	20.89	38.50	-25.30	1/1
		836.50	16.86	V	3.03	-0.97	12.86	19.32	38.50	-25.64	1/1
		841.50	17.09	V	3.04	-0.94	13.11	20.46	38.50	-25.39	1/1
10	QPSK	829.00	18.13	V	3.02	-1.01	14.11	25.76	38.50	-24.39	1/1
		836.50	18.57	V	3.03	-0.97	14.57	28.64	38.50	-23.93	1/1
		844.00	18.02	V	3.04	-0.93	14.05	25.41	38.50	-24.45	1/50
	16-QAM	829.00	17.20	V	3.02	-1.01	13.18	20.80	38.50	-25.32	1/1
		836.50	17.05	V	3.03	-0.97	13.05	20.18	38.50	-25.45	1/1
		844.00	17.12	V	3.04	-0.93	13.15	20.65	38.50	-25.35	1/26
5	QPSK	826.50	18.15	V	3.01	-1.02	14.12	25.82	38.50	-24.38	1/1
		836.50	18.17	V	3.03	-0.97	14.17	26.12	38.50	-24.33	1/1
		846.50	17.75	V	3.05	-0.92	13.78	23.88	38.50	-24.72	1/23
	16-QAM	826.50	17.11	V	3.01	-1.02	13.08	20.32	38.50	-25.42	1/1
		836.50	16.88	V	3.03	-0.97	12.88	19.41	38.50	-25.62	1/1
		846.50	16.62	V	3.05	-0.92	12.65	18.41	38.50	-25.85	1/1

NR Band n5 (DFT-OFDM) (ANT D)

BW (MHz)	Modulation	Frequency (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	834.00	21.67	V	3.03	-0.98	17.66	58.34	38.50	-20.84	1/1
		836.50	21.32	V	3.03	-0.97	17.32	53.95	38.50	-21.18	1/1
		839.00	21.89	V	3.03	-0.96	17.90	61.66	38.50	-20.60	1/1
	16-QAM	834.00	21.11	V	3.03	-0.98	17.10	51.29	38.50	-21.40	1/1
		836.50	20.31	V	3.03	-0.97	16.31	42.76	38.50	-22.19	1/1
		839.00	20.57	V	3.03	-0.96	16.58	45.50	38.50	-21.92	1/1
15	QPSK	831.50	21.65	V	3.02	-0.99	17.64	58.08	38.50	-20.86	1/1
		836.50	21.21	V	3.03	-0.97	17.21	52.60	38.50	-21.29	1/1
		841.50	21.51	V	3.04	-0.94	17.53	56.62	38.50	-20.97	1/1
	16-QAM	831.50	21.18	V	3.02	-0.99	17.17	52.12	38.50	-21.33	1/1
		836.50	20.32	V	3.03	-0.97	16.32	42.85	38.50	-22.18	1/1
		841.50	20.35	V	3.04	-0.94	16.37	43.35	38.50	-22.13	1/1
10	QPSK	829.00	21.56	V	3.02	-1.01	17.54	56.75	38.50	-20.96	1/1
		836.50	21.08	V	3.03	-0.97	17.08	51.05	38.50	-21.42	1/1
		844.00	21.10	V	3.04	-0.93	17.13	51.64	38.50	-21.37	1/50
	16-QAM	829.00	20.97	V	3.02	-1.01	16.95	49.55	38.50	-21.55	1/1
		836.50	20.13	V	3.03	-0.97	16.13	41.02	38.50	-22.37	1/1
		844.00	19.89	V	3.04	-0.93	15.92	39.08	38.50	-22.58	1/50
5	QPSK	826.50	21.39	V	3.01	-1.02	17.36	54.45	38.50	-21.14	1/1
		836.50	21.09	V	3.03	-0.97	17.09	51.17	38.50	-21.41	1/1
		846.50	20.90	V	3.05	-0.92	16.93	49.32	38.50	-21.57	1/13
	16-QAM	826.50	20.90	V	3.01	-1.02	16.87	48.64	38.50	-21.63	1/1
		836.50	20.26	V	3.03	-0.97	16.26	42.27	38.50	-22.24	1/1
		846.50	19.71	V	3.05	-0.92	15.74	37.50	38.50	-22.76	1/23

9.2. RADIATIED SPURIOUS EMISSION

RULE PART(S)

FCC: §2.1053, §22.917 and §90.691

LIMIT

Part 22.917(a)
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 90.691(a):
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\text{Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.(NOTE : Use 100kHz reference bandwidth)

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

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 1 GHz.
b) Set VBW ≥ 3 × 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 ≥ span/RBW;
g) Trace mode = average(WCDMA, LTE, 5G NR), Maxhold(GSM);

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_22/90(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

NOTE1

GSM : It was tested at GPRS as worst case (the highst output power and density).
UMTS: It was tested at REL 99 as worst case (the highst output power and density).
LTE: It was tested at 1RB QPSK as worst case (the highst output power and density).
5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations (π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) 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.

NOTE2

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

See the following pages.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_22/90(05)
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9.2.1. SPURIOUS RADIATION RESULT

GSM850

GPRS

ANT A+B

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-04
Test Engineer:	28183
Configuration:	EUT / AC Adapter, Z-Position, Open
Location:	Chamber 2
Mode:	GPRS 850 MHz Harmonics
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-12.6	V	3.0	40.8	1.0	-52.4	-13.0	-39.4	
2472.60	-1.1	V	3.0	41.4	1.0	-41.5	-13.0	-28.5	
3296.80	-8.2	V	3.0	42.2	1.0	-49.4	-13.0	-36.4	
1648.40	-13.9	H	3.0	40.8	1.0	-53.8	-13.0	-40.8	
2472.60	-0.7	H	3.0	41.4	1.0	-41.1	-13.0	-28.1	
3296.80	-7.9	H	3.0	42.2	1.0	-49.1	-13.0	-36.1	
Mid Ch, 836.6MHz									
1673.20	-13.1	V	3.0	40.8	1.0	-52.9	-13.0	-39.9	
2509.80	3.5	V	3.0	41.5	1.0	-36.9	-13.0	-23.9	
3346.40	-7.7	V	3.0	42.2	1.0	-48.9	-13.0	-35.9	
1673.20	-13.6	H	3.0	40.8	1.0	-53.4	-13.0	-40.4	
2509.80	5.0	H	3.0	41.5	1.0	-35.5	-13.0	-22.5	
3346.40	-7.3	H	3.0	42.2	1.0	-48.5	-13.0	-35.5	
High Ch, 848.8MHz									
1697.60	-12.0	V	3.0	40.8	1.0	-51.8	-13.0	-38.8	
2546.40	-4.5	V	3.0	41.5	1.0	-45.1	-13.0	-32.1	
3395.20	-7.4	V	3.0	42.2	1.0	-48.6	-13.0	-35.6	
1697.60	-13.2	H	3.0	40.8	1.0	-53.0	-13.0	-40.0	
2546.40	-0.5	H	3.0	41.5	1.0	-41.0	-13.0	-28.0	
3395.20	-7.2	H	3.0	42.2	1.0	-48.4	-13.0	-35.4	

GPRS

ANT A

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-14
Test Engineer:	26087
Configuration:	EUT / Z-Position, FF
Location:	Chamber 1
Mode:	GPRS 850 MHz Harmonics
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-6.8	V	3.0	43.3	1.0	-49.1	-13.0	-36.1	
2472.60	5.5	V	3.0	43.6	1.0	-37.1	-13.0	-24.1	
3296.80	-5.4	V	3.0	43.9	1.0	-48.3	-13.0	-35.3	
1648.40	-10.3	H	3.0	43.3	1.0	-52.6	-13.0	-39.6	
2472.60	6.5	H	3.0	43.6	1.0	-36.1	-13.0	-23.1	
3296.80	-5.3	H	3.0	43.9	1.0	-48.2	-13.0	-35.2	
Mid Ch, 836.6MHz									
1673.20	-8.2	V	3.0	43.3	1.0	-50.5	-13.0	-37.5	
2509.80	6.0	V	3.0	43.6	1.0	-36.5	-13.0	-23.5	
3346.40	-5.0	V	3.0	43.9	1.0	-47.9	-13.0	-34.9	
1673.20	-11.7	H	3.0	43.3	1.0	-54.0	-13.0	-41.0	
2509.80	9.5	H	3.0	43.6	1.0	-33.1	-13.0	-20.1	
3346.40	-4.9	H	3.0	43.9	1.0	-47.8	-13.0	-34.8	
High Ch, 848.8MHz									
1697.60	-7.2	V	3.0	43.3	1.0	-49.5	-13.0	-36.5	
2546.40	6.1	V	3.0	43.6	1.0	-36.5	-13.0	-23.5	
3395.20	-4.5	V	3.0	44.0	1.0	-47.5	-13.0	-34.5	
1697.60	-10.1	H	3.0	43.3	1.0	-52.5	-13.0	-39.5	
2546.40	7.3	H	3.0	43.6	1.0	-35.3	-13.0	-22.3	
3395.20	-4.5	H	3.0	44.0	1.0	-47.4	-13.0	-34.4	

GPRS

ANT D

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

Company: Samsung
Project #: 4791196626
Date: 2024-04-30
Test Engineer: 28775
Configuration: EUT / AC Adapter, Z-Position, HF
Location: Chamber 2
Mode: GPRS 850 MHz Harmonics
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-13.5	V	3.0	40.8	1.0	-53.4	-13.0	-40.4	
2472.60	-0.5	V	3.0	41.4	1.0	-40.9	-13.0	-27.9	
3296.80	-4.1	V	3.0	42.2	1.0	-45.3	-13.0	-32.3	
4121.00	-7.0	V	3.0	42.3	1.0	-48.3	-13.0	-35.3	
4945.20	-6.3	V	3.0	42.9	1.0	-48.2	-13.0	-35.2	
1648.40	-14.5	H	3.0	40.8	1.0	-54.4	-13.0	-41.4	
2472.60	0.2	H	3.0	41.4	1.0	-40.2	-13.0	-27.2	
3296.80	-6.9	H	3.0	42.2	1.0	-48.1	-13.0	-35.1	
4121.00	-7.5	H	3.0	42.3	1.0	-48.8	-13.0	-35.8	
4945.20	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2	
Mid Ch, 836.6MHz									
1673.20	-13.3	V	3.0	40.8	1.0	-53.1	-13.0	-40.1	
2509.80	-3.4	V	3.0	41.5	1.0	-43.9	-13.0	-30.9	
3346.40	-7.5	V	3.0	42.2	1.0	-48.7	-13.0	-35.7	
4183.00	-9.1	V	3.0	42.3	1.0	-50.5	-13.0	-37.5	
5019.60	-7.6	V	3.0	42.9	1.0	-49.6	-13.0	-36.6	
1673.20	-14.5	H	3.0	40.8	1.0	-54.3	-13.0	-41.3	
2509.80	-0.3	H	3.0	41.5	1.0	-40.8	-13.0	-27.8	
3346.40	-6.9	H	3.0	42.2	1.0	-48.1	-13.0	-35.1	
4183.00	-8.9	H	3.0	42.3	1.0	-50.3	-13.0	-37.3	
5019.60	-7.7	H	3.0	42.9	1.0	-49.6	-13.0	-36.6	
High Ch, 848.8MHz									
1697.60	-13.7	V	3.0	40.8	1.0	-53.5	-13.0	-40.5	
2546.40	-2.7	V	3.0	41.5	1.0	-43.3	-13.0	-30.3	
3395.20	-7.6	V	3.0	42.2	1.0	-48.8	-13.0	-35.8	
4244.00	-8.3	V	3.0	42.4	1.0	-49.7	-13.0	-36.7	
5092.80	-7.7	V	3.0	42.9	1.0	-49.7	-13.0	-36.7	
1697.60	-14.6	H	3.0	40.8	1.0	-54.4	-13.0	-41.4	
2546.40	0.0	H	3.0	41.5	1.0	-40.6	-13.0	-27.6	
3395.20	-6.9	H	3.0	42.2	1.0	-48.1	-13.0	-35.1	
4244.00	-8.7	H	3.0	42.4	1.0	-50.1	-13.0	-37.1	
5092.80	-7.8	H	3.0	42.9	1.0	-49.7	-13.0	-36.7	

WCDMA Band 5

REL99
ANT A+B

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

Company: Samsung
Project #: 4791196626
Date: 2024-03-05
Test Engineer: 28183
Configuration: EUT / AC Adapter, Z-Position, Open
Location: Chamber 2
Mode: Rel99 Band 5 Harmonics
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1652.80	-14.9	V	3.0	40.8	1.0	-54.7	-13.0	-41.7	
2479.20	-9.9	V	3.0	41.4	1.0	-50.3	-13.0	-37.3	
3305.60	-9.1	V	3.0	42.2	1.0	-50.3	-13.0	-37.3	
1652.80	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
2479.20	-9.4	H	3.0	41.4	1.0	-49.8	-13.0	-36.8	
3305.60	-8.8	H	3.0	42.2	1.0	-50.0	-13.0	-37.0	
Mid Ch, 836.6MHz									
1673.20	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2509.80	-10.6	V	3.0	41.5	1.0	-51.0	-13.0	-38.0	
3346.40	-8.6	V	3.0	42.2	1.0	-49.8	-13.0	-36.8	
1673.20	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
2509.80	-10.2	H	3.0	41.5	1.0	-50.7	-13.0	-37.7	
3346.40	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4	
High Ch, 846.6MHz									
1693.20	-14.7	V	3.0	40.8	1.0	-54.5	-13.0	-41.5	
2539.80	-9.9	V	3.0	41.5	1.0	-50.4	-13.0	-37.4	
3386.40	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1693.20	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2539.80	-7.6	H	3.0	41.5	1.0	-48.2	-13.0	-35.2	
3386.40	-8.3	H	3.0	42.2	1.0	-49.5	-13.0	-36.5	

REL99
ANT A

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

Company: Samsung
Project #: 4791196626
Date: 2024-03-18
Test Engineer: 28183
Configuration: EUT / AC Adapter, Z-Position, FF
Location: Chamber 2
Mode: Rel99 Band 5 Harmonics
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1652.80	-14.9	V	3.0	40.8	1.0	-54.7	-13.0	-41.7	
2479.20	-11.6	V	3.0	41.4	1.0	-52.1	-13.0	-39.1	
3305.60	-9.2	V	3.0	42.2	1.0	-50.4	-13.0	-37.4	
1652.80	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
2479.20	-11.4	H	3.0	41.4	1.0	-51.9	-13.0	-38.9	
3305.60	-8.6	H	3.0	42.2	1.0	-49.8	-13.0	-36.8	
Mid Ch, 836.6MHz									
1673.20	-14.9	V	3.0	40.8	1.0	-54.7	-13.0	-41.7	
2509.80	-11.5	V	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3346.40	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1673.20	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2509.80	-11.5	H	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3346.40	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4	
High Ch, 846.6MHz									
1693.20	-14.7	V	3.0	40.8	1.0	-54.5	-13.0	-41.5	
2539.80	-11.4	V	3.0	41.5	1.0	-51.9	-13.0	-38.9	
3386.40	-8.6	V	3.0	42.2	1.0	-49.8	-13.0	-36.8	
1693.20	-15.6	H	3.0	40.8	1.0	-55.4	-13.0	-42.4	
2539.80	-11.2	H	3.0	41.5	1.0	-51.8	-13.0	-38.8	
3386.40	-8.3	H	3.0	42.2	1.0	-49.5	-13.0	-36.5	

REL99

ANT D

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

Company: Samsung
Project #: 4791196626
Date: 2024-04-29
Test Engineer: 28183
Configuration: EUT / AC Adapter, Z-Position, Open
Location: Chamber 2
Mode: Rel99 Band 5 Harmonics
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1652.80	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2479.20	-11.4	V	3.0	41.4	1.0	-51.9	-13.0	-38.9	
3305.60	-9.1	V	3.0	42.2	1.0	-50.3	-13.0	-37.3	
1652.80	-15.9	H	3.0	40.8	1.0	-55.7	-13.0	-42.7	
2479.20	-11.6	H	3.0	41.4	1.0	-52.0	-13.0	-39.0	
3305.60	-8.7	H	3.0	42.2	1.0	-49.9	-13.0	-36.9	
Mid Ch, 836.6MHz									
1673.20	-14.7	V	3.0	40.8	1.0	-54.5	-13.0	-41.5	
2509.80	-11.5	V	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3346.40	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1673.20	-15.6	H	3.0	40.8	1.0	-55.4	-13.0	-42.4	
2509.80	-11.5	H	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3346.40	-8.3	H	3.0	42.2	1.0	-49.5	-13.0	-36.5	
High Ch, 846.6MHz									
1693.20	-14.6	V	3.0	40.8	1.0	-54.4	-13.0	-41.4	
2539.80	-11.4	V	3.0	41.5	1.0	-51.9	-13.0	-38.9	
3386.40	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1693.20	-15.6	H	3.0	40.8	1.0	-55.4	-13.0	-42.4	
2539.80	-11.2	H	3.0	41.5	1.0	-51.7	-13.0	-38.7	
3386.40	-8.3	H	3.0	42.2	1.0	-49.5	-13.0	-36.5	

LTE Band 26 (Part 90)

5 MHz
QPSK
ANT A+B

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-08
Test Engineer:	28183
Configuration:	EUT / AC Adapter, X-Position, Open
Location:	Chamber 2
Mode:	LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-14.8	V	3.0	40.8	1.0	-54.7	-13.0	-41.7	
2449.50	-8.6	V	3.0	41.4	1.0	-49.0	-13.0	-36.0	
3266.00	-9.3	V	3.0	42.2	1.0	-50.5	-13.0	-37.5	
1633.00	-15.4	H	3.0	40.8	1.0	-55.2	-13.0	-42.2	
2449.50	-6.6	H	3.0	41.4	1.0	-47.0	-13.0	-34.0	
3266.00	-8.7	H	3.0	42.2	1.0	-49.9	-13.0	-36.9	
Mid Ch, 821.5MHz									
1643.00	-14.4	V	3.0	40.8	1.0	-54.2	-13.0	-41.2	
2464.50	-11.4	V	3.0	41.4	1.0	-51.8	-13.0	-38.8	
3286.00	-9.1	V	3.0	42.2	1.0	-50.3	-13.0	-37.3	
1643.00	-14.7	H	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2464.50	-11.1	H	3.0	41.4	1.0	-51.5	-13.0	-38.5	
3286.00	-8.7	H	3.0	42.2	1.0	-49.9	-13.0	-36.9	

1.4 MHz
QPSK
ANT A

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-13
Test Engineer:	26087
Configuration:	EUT / AC Adapter, X-Position, FF
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7MHz									
1629.40	-15.2	V	3.0	43.3	1.0	-57.5	-13.0	-44.5	
2444.10	-11.2	V	3.0	43.6	1.0	-53.7	-13.0	-40.7	
3258.80	-9.4	V	3.0	43.9	1.0	-52.3	-13.0	-39.3	
1629.40	-15.8	H	3.0	43.3	1.0	-58.1	-13.0	-45.1	
2444.10	-12.2	H	3.0	43.6	1.0	-54.7	-13.0	-41.7	
3258.80	-9.3	H	3.0	43.9	1.0	-52.1	-13.0	-39.1	
Mid Ch, 823.3MHz									
1646.60	-15.2	V	3.0	43.3	1.0	-57.5	-13.0	-44.5	
2469.90	-10.6	V	3.0	43.6	1.0	-53.2	-13.0	-40.2	
3293.20	-9.5	V	3.0	43.9	1.0	-52.4	-13.0	-39.4	
1646.60	-16.2	H	3.0	43.3	1.0	-58.5	-13.0	-45.5	
2469.90	-11.6	H	3.0	43.6	1.0	-54.2	-13.0	-41.2	
3293.20	-9.2	H	3.0	43.9	1.0	-52.1	-13.0	-39.1	

5 MHz

QPSK

ANT D

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

Company:	Samsung
Project #:	4791196626
Date:	2024-04-29
Test Engineer:	24542
Configuration:	EUT / AC Adapter, Z-Position, HF
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-14.9	V	3.0	43.3	1.0	-57.2	-13.0	-44.2	
2449.50	-12.5	V	3.0	43.6	1.0	-55.1	-13.0	-42.1	
3266.00	-10.2	V	3.0	43.9	1.0	-53.1	-13.0	-40.1	
1633.00	-16.6	H	3.0	43.3	1.0	-58.9	-13.0	-45.9	
2449.50	-12.9	H	3.0	43.6	1.0	-55.5	-13.0	-42.5	
3266.00	-10.1	H	3.0	43.9	1.0	-52.9	-13.0	-39.9	
Mid Ch, 821.5MHz									
1643.00	-15.0	V	3.0	43.3	1.0	-57.3	-13.0	-44.3	
2464.50	-12.3	V	3.0	43.6	1.0	-54.9	-13.0	-41.9	
3286.00	-10.0	V	3.0	43.9	1.0	-52.9	-13.0	-39.9	
1643.00	-16.6	H	3.0	43.3	1.0	-58.9	-13.0	-45.9	
2464.50	-12.8	H	3.0	43.6	1.0	-55.4	-13.0	-42.4	
3286.00	-9.7	H	3.0	43.9	1.0	-52.6	-13.0	-39.6	

LTE Band 26 (Straddle)

3 MHz

QPSK

ANT A+B

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-08
Test Engineer:	28183
Configuration:	EUT / AC Adapter, X-Position, Open
Location:	Chamber 2
Mode:	LTE_QPSK Band 26 Harmonics, 3MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Straddle Ch, 824 MHz									
1648.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2472.00	-7.2	V	3.0	41.4	1.0	-47.6	-13.0	-34.6	
3296.00	-9.3	V	3.0	42.2	1.0	-50.5	-13.0	-37.5	
1648.00	-15.0	H	3.0	40.8	1.0	-54.9	-13.0	-41.9	
2472.00	-3.2	H	3.0	41.4	1.0	-43.6	-13.0	-30.6	
3296.00	-8.8	H	3.0	42.2	1.0	-50.0	-13.0	-37.0	

5 MHz

QPSK

ANT A

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-13
Test Engineer:	26087
Configuration:	EUT / AC Adapter, X-Position, FF
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Straddle Ch, 824MHz									
1648.00	-15.2	V	3.0	43.3	1.0	-57.5	-13.0	-44.5	
2472.00	-10.6	V	3.0	43.6	1.0	-53.2	-13.0	-40.2	
3296.00	-9.5	V	3.0	43.9	1.0	-52.4	-13.0	-39.4	
1648.00	-15.9	H	3.0	43.3	1.0	-58.2	-13.0	-45.2	
2472.00	-11.4	H	3.0	43.6	1.0	-54.0	-13.0	-41.0	
3296.00	-9.2	H	3.0	43.9	1.0	-52.1	-13.0	-39.1	

10 MHz

QPSK

ANT D

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

Company:	Samsung
Project #:	4791196626
Date:	2024-04-29
Test Engineer:	24542
Configuration:	EUT / AC Adapter, Z-Position, HF
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 10MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 824MHz									
1648.00	-14.9	V	3.0	43.3	1.0	-57.2	-13.0	-44.2	
2472.00	-12.4	V	3.0	43.6	1.0	-55.0	-13.0	-42.0	
3296.00	-10.0	V	3.0	43.9	1.0	-52.9	-13.0	-39.9	
1648.00	-16.7	H	3.0	43.3	1.0	-59.0	-13.0	-46.0	
2472.00	-12.6	H	3.0	43.6	1.0	-55.1	-13.0	-42.1	
3296.00	-9.5	H	3.0	43.9	1.0	-52.4	-13.0	-39.4	

LTE Band 26 (Part 22)

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

Company: Samsung
Project #: 4791196626
Date: 2024-03-07
Test Engineer: 28183
Configuration: EUT / AC Adapter, X-Position, Open
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

5 MHz
QPSK
ANT A+B

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-16.4	V	3.0	40.8	1.0	-56.2	-13.0	-43.2	
2449.50	-8.2	V	3.0	41.4	1.0	-48.6	-13.0	-35.6	
3266.00	-9.3	V	3.0	42.2	1.0	-50.5	-13.0	-37.5	
1633.00	-17.4	H	3.0	40.8	1.0	-57.2	-13.0	-44.2	
2449.50	-5.8	H	3.0	41.4	1.0	-46.2	-13.0	-33.2	
3266.00	-8.5	H	3.0	42.2	1.0	-49.7	-13.0	-36.7	
Mid Ch, 831.5MHz									
1663.00	-14.7	V	3.0	40.8	1.0	-54.5	-13.0	-41.5	
2494.50	-4.7	V	3.0	41.5	1.0	-45.1	-13.0	-32.1	
3326.00	-8.9	V	3.0	42.2	1.0	-50.1	-13.0	-37.1	
1663.00	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2494.50	-0.7	H	3.0	41.5	1.0	-41.2	-13.0	-28.2	
3326.00	-8.4	H	3.0	42.2	1.0	-49.6	-13.0	-36.6	
High Ch, 846.5MHz									
1693.00	-14.4	V	3.0	40.8	1.0	-54.2	-13.0	-41.2	
2539.50	-5.6	V	3.0	41.5	1.0	-46.1	-13.0	-33.1	
3386.00	-8.8	V	3.0	42.2	1.0	-50.0	-13.0	-37.0	
1693.00	-14.9	H	3.0	40.8	1.0	-54.7	-13.0	-41.7	
2539.50	-1.6	H	3.0	41.5	1.0	-42.1	-13.0	-29.1	
3386.00	-8.4	H	3.0	42.2	1.0	-49.6	-13.0	-36.6	

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

Company: Samsung
Project #: 4791196626
Date: 2024-03-13
Test Engineer: 26087
Configuration: EUT / AC Adapter, X-Position, FF
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

5 MHz
QPSK
ANT A

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-15.2	V	3.0	43.3	1.0	-57.6	-13.0	-44.6	
2449.50	-11.0	V	3.0	43.6	1.0	-53.5	-13.0	-40.5	
3266.00	-9.3	V	3.0	43.9	1.0	-52.2	-13.0	-39.2	
1633.00	-15.9	H	3.0	43.3	1.0	-58.3	-13.0	-45.3	
2449.50	-12.0	H	3.0	43.6	1.0	-54.5	-13.0	-41.5	
3266.00	-9.2	H	3.0	43.9	1.0	-52.1	-13.0	-39.1	
Mid Ch, 831.5MHz									
1663.00	-15.1	V	3.0	43.3	1.0	-57.4	-13.0	-44.4	
2494.50	-10.2	V	3.0	43.6	1.0	-52.7	-13.0	-39.7	
3326.00	-9.3	V	3.0	43.9	1.0	-52.2	-13.0	-39.2	
1663.00	-15.9	H	3.0	43.3	1.0	-58.2	-13.0	-45.2	
2494.50	-10.1	H	3.0	43.6	1.0	-52.7	-13.0	-39.7	
3326.00	-9.1	H	3.0	43.9	1.0	-52.0	-13.0	-39.0	
High Ch, 846.5MHz									
1693.00	-13.9	V	3.0	43.3	1.0	-56.2	-13.0	-43.2	
2539.50	-11.3	V	3.0	43.6	1.0	-53.9	-13.0	-40.9	
3386.00	-8.9	V	3.0	44.0	1.0	-51.9	-13.0	-38.9	
1693.00	-14.9	H	3.0	43.3	1.0	-57.2	-13.0	-44.2	
2539.50	-11.2	H	3.0	43.6	1.0	-53.8	-13.0	-40.8	
3386.00	-8.5	H	3.0	44.0	1.0	-51.5	-13.0	-38.5	

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

Company:	Samsung
Project #:	4791196626
Date:	2024-04-29
Test Engineer:	24542
Configuration:	EUT / AC Adapter, Z-Position, HF
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

5 MHz
QPSK
ANT D

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5MHz									
1653.00	-15.1	V	3.0	43.3	1.0	-57.4	-13.0	-44.4	
2479.50	-12.5	V	3.0	43.6	1.0	-55.1	-13.0	-42.1	
3306.00	-9.9	V	3.0	43.9	1.0	-52.8	-13.0	-39.8	
1653.00	-16.5	H	3.0	43.3	1.0	-58.8	-13.0	-45.8	
2479.50	-12.6	H	3.0	43.6	1.0	-55.2	-13.0	-42.2	
3306.00	-9.6	H	3.0	43.9	1.0	-52.5	-13.0	-39.5	
Mid Ch, 831.5MHz									
1663.00	-14.4	V	3.0	43.3	1.0	-56.7	-13.0	-43.7	
2494.50	-12.5	V	3.0	43.6	1.0	-55.1	-13.0	-42.1	
3326.00	-10.0	V	3.0	43.9	1.0	-53.0	-13.0	-40.0	
1663.00	-16.5	H	3.0	43.3	1.0	-58.9	-13.0	-45.9	
2494.50	-12.8	H	3.0	43.6	1.0	-55.4	-13.0	-42.4	
3326.00	-9.8	H	3.0	43.9	1.0	-52.7	-13.0	-39.7	
High Ch, 846.5MHz									
1693.00	-12.3	V	3.0	43.3	1.0	-54.6	-13.0	-41.6	
2539.50	-12.3	V	3.0	43.6	1.0	-54.9	-13.0	-41.9	
3386.00	-9.6	V	3.0	44.0	1.0	-52.5	-13.0	-39.5	
1693.00	-16.2	H	3.0	43.3	1.0	-58.5	-13.0	-45.5	
2539.50	-12.8	H	3.0	43.6	1.0	-55.4	-13.0	-42.4	
3386.00	-9.3	H	3.0	44.0	1.0	-52.3	-13.0	-39.3	

NR Band n5

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

Company:	Samsung
Project #:	4791196626
Date:	2024-03-13
Test Engineer:	28755
Configuration:	EUT / AC Adapter, X-Position, Open
Location:	Chamber 2
Mode:	5G NR_QPSK NR n5 Harmonics, 15MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

15 MHz

DFT-OFDM

QPSK

ANT A+B

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 831.5MHz									
1663.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2494.50	-3.9	V	3.0	41.5	1.0	-44.3	-13.0	-31.3	
3326.00	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1663.00	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2494.50	-4.6	H	3.0	41.5	1.0	-45.0	-13.0	-32.0	
3326.00	-8.3	H	3.0	42.2	1.0	-49.5	-13.0	-36.5	
Mid Ch, 836.5MHz									
1673.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2509.50	-3.7	V	3.0	41.5	1.0	-44.2	-13.0	-31.2	
3346.00	-8.9	V	3.0	42.2	1.0	-50.1	-13.0	-37.1	
1673.00	-15.6	H	3.0	40.8	1.0	-55.4	-13.0	-42.4	
2509.50	-5.5	H	3.0	41.5	1.0	-46.0	-13.0	-33.0	
3346.00	-8.5	H	3.0	42.2	1.0	-49.7	-13.0	-36.7	
High Ch, 841.5MHz									
1683.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2524.50	-2.5	V	3.0	41.5	1.0	-43.0	-13.0	-30.0	
3366.00	-8.7	V	3.0	42.2	1.0	-49.9	-13.0	-36.9	
1683.00	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2524.50	-2.9	H	3.0	41.5	1.0	-43.5	-13.0	-30.5	
3366.00	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4	

10 MHz

DFT-OFDM

QPSK

ANT A

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

Company: Samsung
Project #: 4791196626
Date: 2024-03-17
Test Engineer: 26087
Configuration: EUT / AC Adapter, Y-Position, FF
Location: Chamber 1
Mode: 5G NR_QPSK NR n5 Harmonics, 10MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829MHz									
1658.00	-15.1	V	3.0	43.3	1.0	-57.4	-13.0	-44.4	
2487.00	-11.1	V	3.0	43.6	1.0	-53.6	-13.0	-40.6	
3316.00	-9.3	V	3.0	43.9	1.0	-52.2	-13.0	-39.2	
1658.00	-16.4	H	3.0	43.3	1.0	-58.7	-13.0	-45.7	
2487.00	-12.1	H	3.0	43.6	1.0	-54.7	-13.0	-41.7	
3316.00	-9.2	H	3.0	43.9	1.0	-52.1	-13.0	-39.1	
Mid Ch, 836.5MHz									
1673.00	-15.0	V	3.0	43.3	1.0	-57.3	-13.0	-44.3	
2509.50	-9.0	V	3.0	43.6	1.0	-51.6	-13.0	-38.6	
3346.00	-9.2	V	3.0	43.9	1.0	-52.1	-13.0	-39.1	
4182.50	-7.9	V	3.0	44.3	1.0	-51.2	-13.0	-38.2	
5019.00	-7.0	V	3.0	44.8	1.0	-50.8	-13.0	-37.8	
1673.00	-16.3	H	3.0	43.3	1.0	-58.7	-13.0	-45.7	
2509.50	-11.5	H	3.0	43.6	1.0	-54.1	-13.0	-41.1	
3346.00	-9.0	H	3.0	43.9	1.0	-51.9	-13.0	-38.9	
4182.50	-7.7	H	3.0	44.3	1.0	-51.1	-13.0	-38.1	
5019.00	-7.0	H	3.0	44.8	1.0	-50.8	-13.0	-37.8	
High Ch, 844MHz									
1688.00	-14.9	V	3.0	43.3	1.0	-57.2	-13.0	-44.2	
2532.00	-11.3	V	3.0	43.6	1.0	-53.9	-13.0	-40.9	
3376.00	-9.0	V	3.0	44.0	1.0	-52.0	-13.0	-39.0	
4220.00	-7.7	V	3.0	44.4	1.0	-51.1	-13.0	-38.1	
5064.00	-6.7	V	3.0	44.8	1.0	-50.5	-13.0	-37.5	
1688.00	-15.7	H	3.0	43.3	1.0	-58.0	-13.0	-45.0	
2532.00	-11.8	H	3.0	43.6	1.0	-54.4	-13.0	-41.4	
3376.00	-8.7	H	3.0	44.0	1.0	-51.6	-13.0	-38.6	
4220.00	-7.7	H	3.0	44.4	1.0	-51.0	-13.0	-38.0	
5064.00	-6.8	H	3.0	44.8	1.0	-50.5	-13.0	-37.5	

20 MHz

DFT-OFDM

QPSK

ANT D

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

Company: Samsung
Project #: 4791196575
Date: 2024-04-30
Test Engineer: 28775
Configuration: EUT / AC Adapter, Z-Position, Open
Location: Chamber 2
Mode: 5G NR_QPSK NR n5 Harmonics, 20MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 834MHz									
1668.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2502.00	-11.6	V	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3336.00	-9.2	V	3.0	42.2	1.0	-50.4	-13.0	-37.4	
1668.00	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
2502.00	-11.4	H	3.0	41.5	1.0	-51.8	-13.0	-38.8	
3336.00	-8.8	H	3.0	42.2	1.0	-50.0	-13.0	-37.0	
Mid Ch, 836.5MHz									
1673.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2509.50	-11.5	V	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3346.00	-9.1	V	3.0	42.2	1.0	-50.3	-13.0	-37.3	
1673.00	-15.8	H	3.0	40.8	1.0	-55.6	-13.0	-42.6	
2509.50	-11.4	H	3.0	41.5	1.0	-51.8	-13.0	-38.8	
3346.00	-8.7	H	3.0	42.2	1.0	-49.9	-13.0	-36.9	
High Ch, 839MHz									
1678.00	-14.8	V	3.0	40.8	1.0	-54.6	-13.0	-41.6	
2517.00	-11.5	V	3.0	41.5	1.0	-52.0	-13.0	-39.0	
3356.00	-8.8	V	3.0	42.2	1.0	-50.0	-13.0	-37.0	
1678.00	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5	
2517.00	-11.3	H	3.0	41.5	1.0	-51.8	-13.0	-38.8	
3356.00	-8.6	H	3.0	42.2	1.0	-49.8	-13.0	-36.8	

END OF REPORT

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