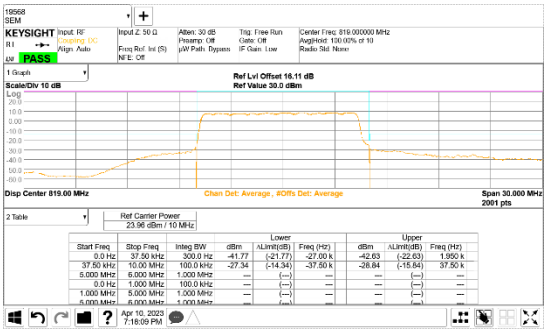
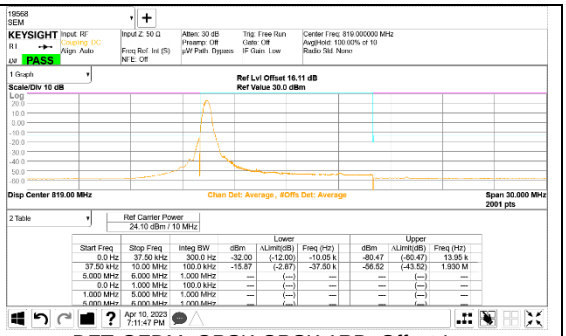
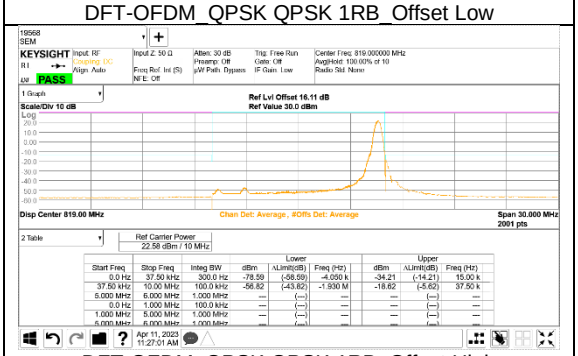
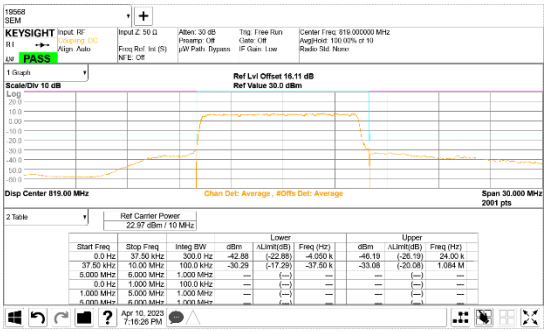
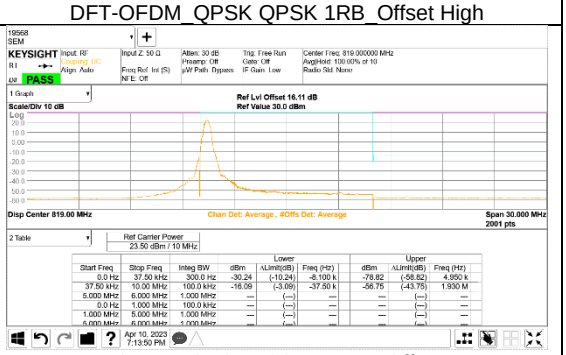
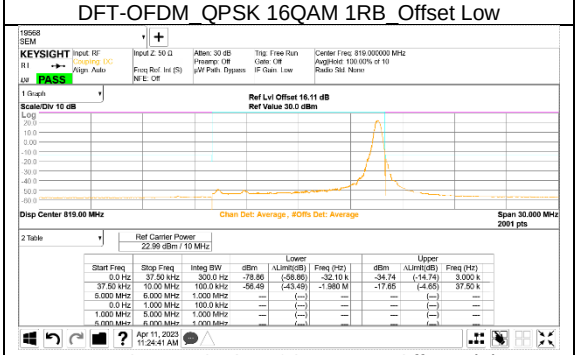
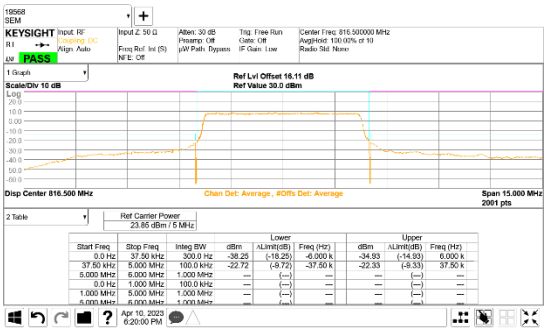
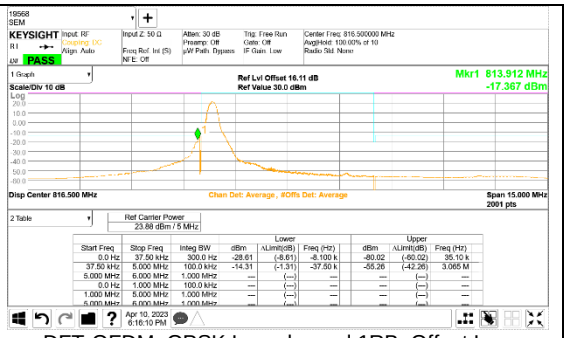
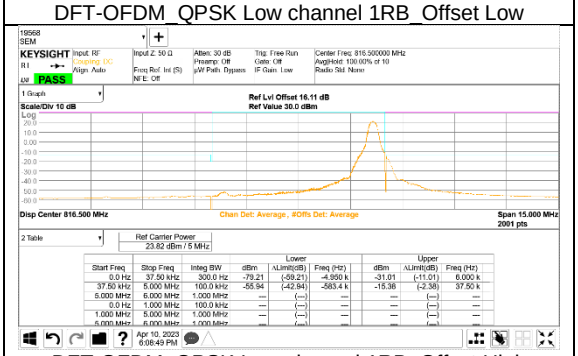
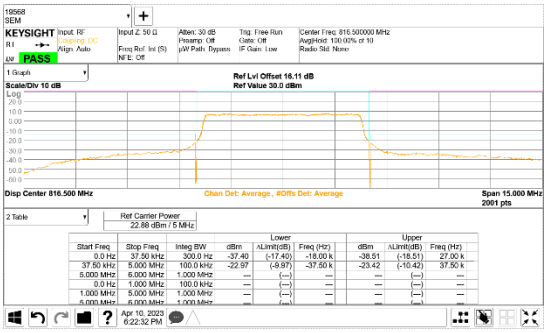
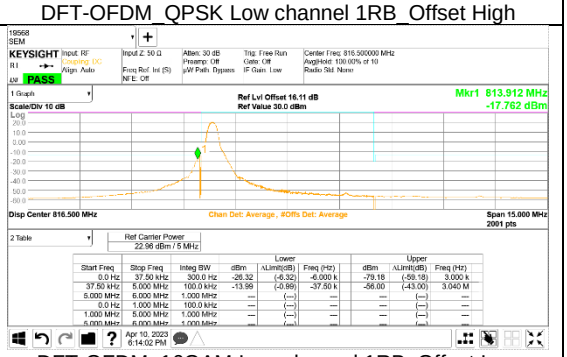
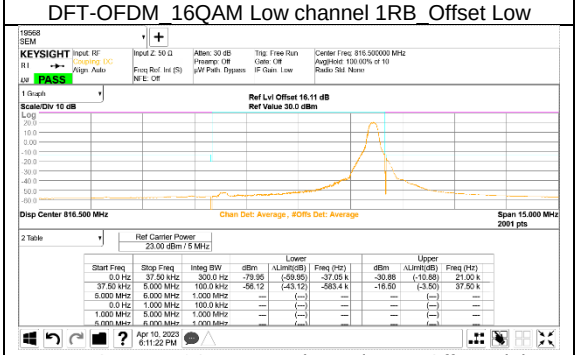
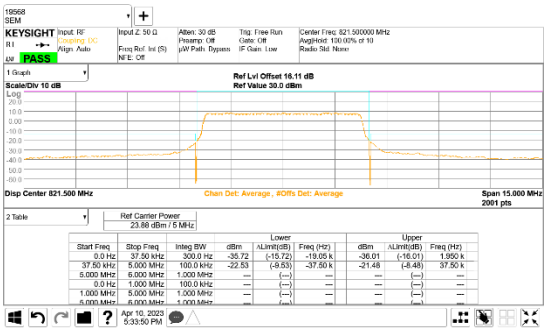
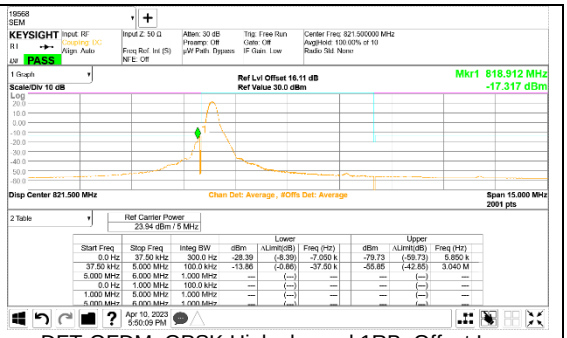
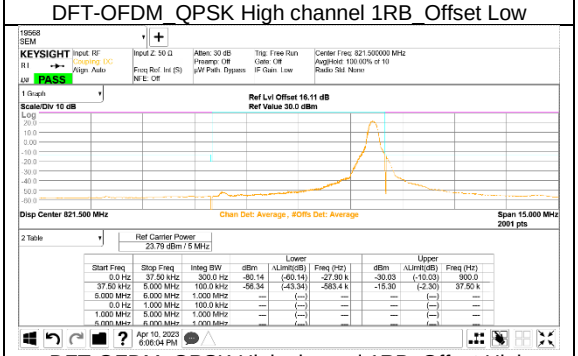
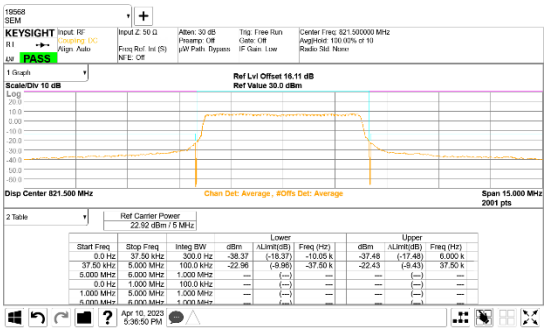
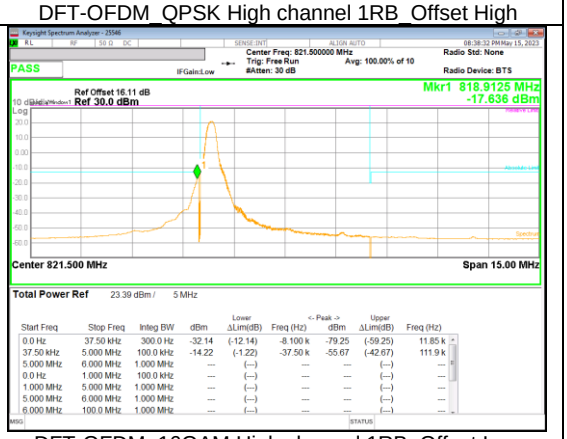
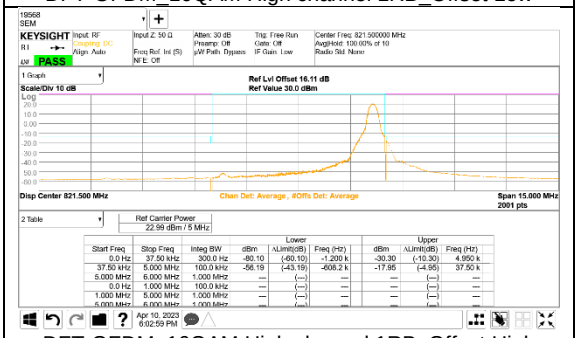
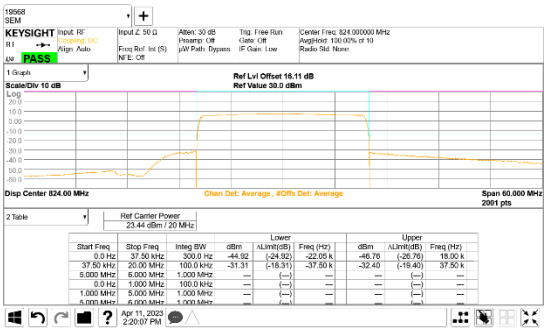
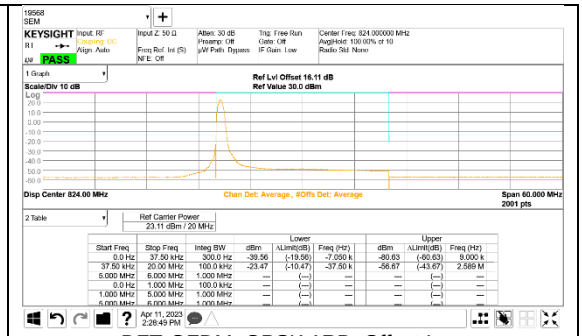
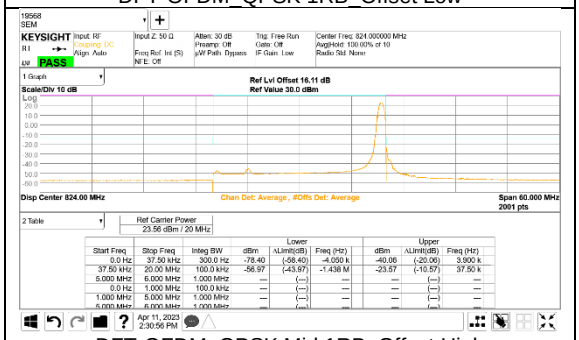
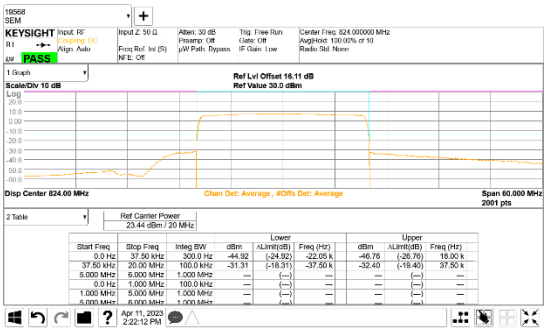
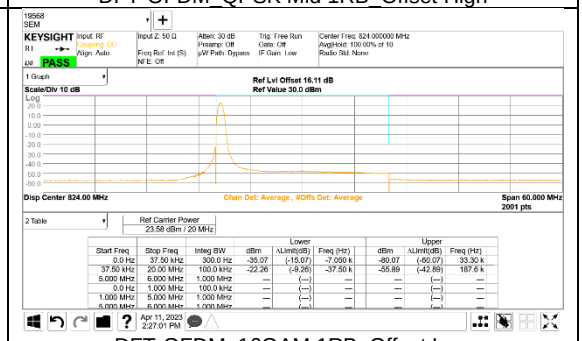
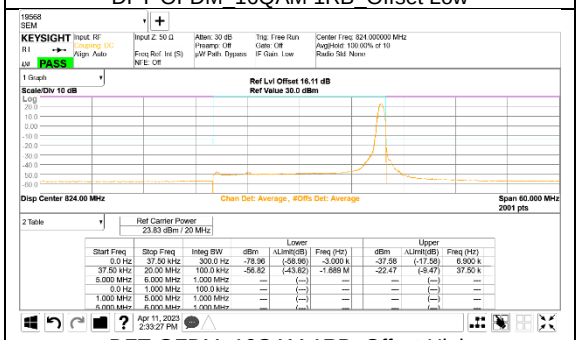
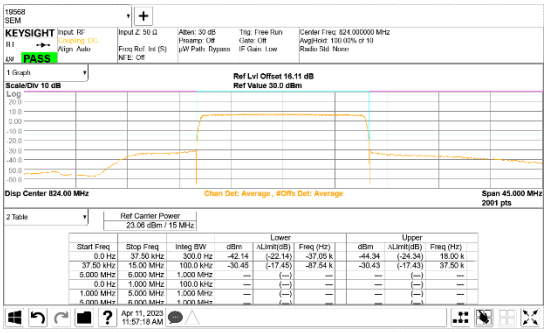
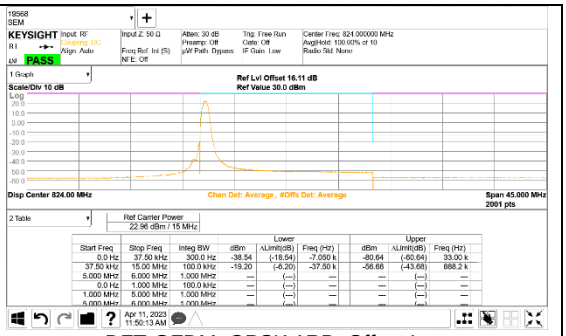
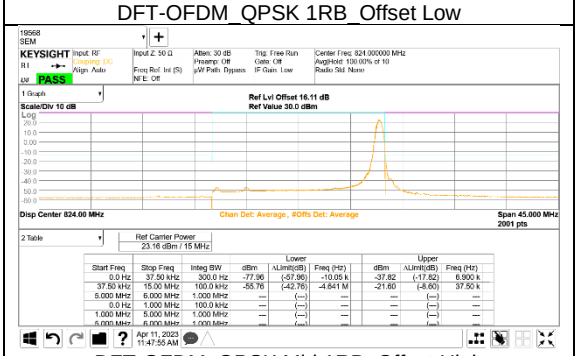
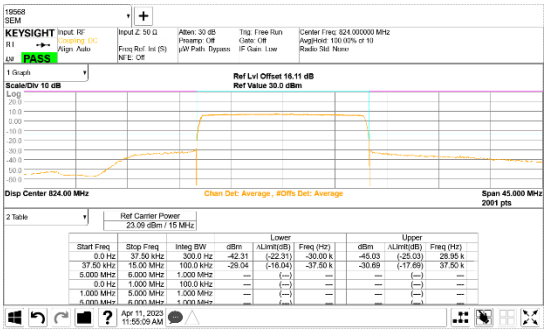
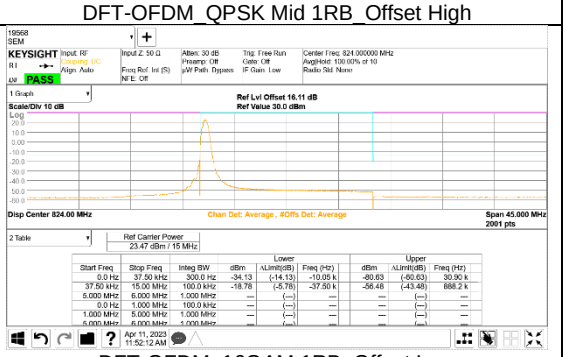
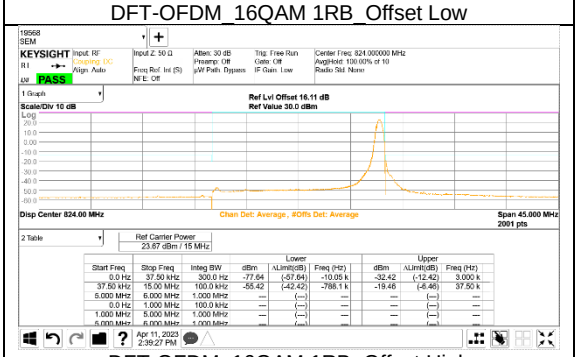
10MHz	 DFT-OFDM_QPSK QPSK FRB	 DFT-OFDM_QPSK QPSK 1RB_Offset Low
		 DFT-OFDM_QPSK QPSK 1RB_Offset High
	 DFT-OFDM_QPSK 16QAM FRB	 DFT-OFDM_QPSK 16QAM 1RB_Offset Low
		 DFT-OFDM_QPSK 16QAM 1RB_Offset High

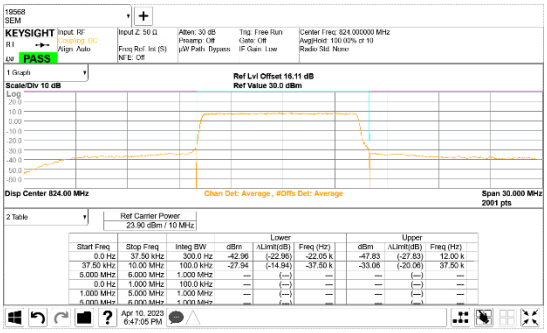
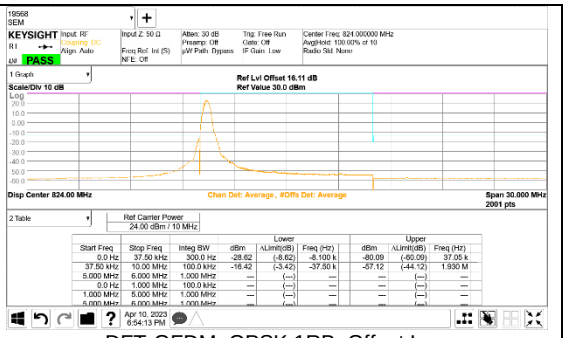
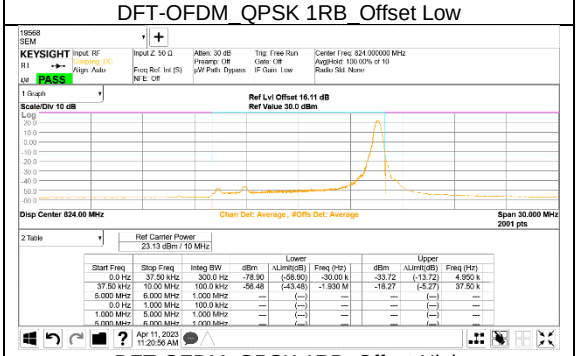
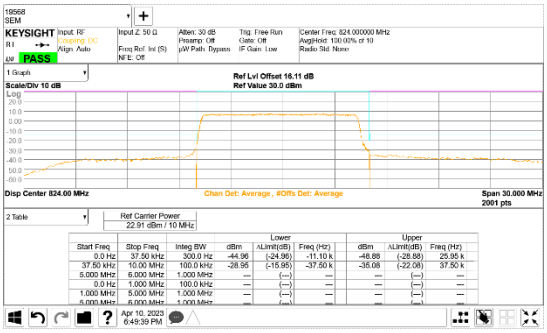
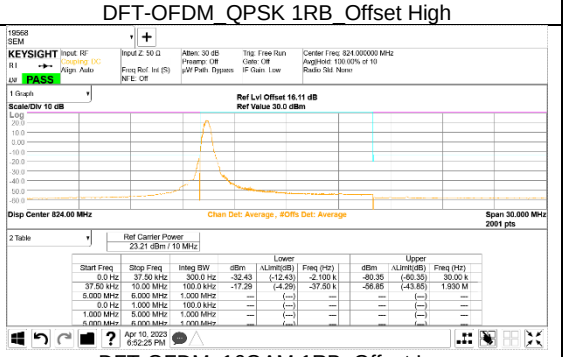
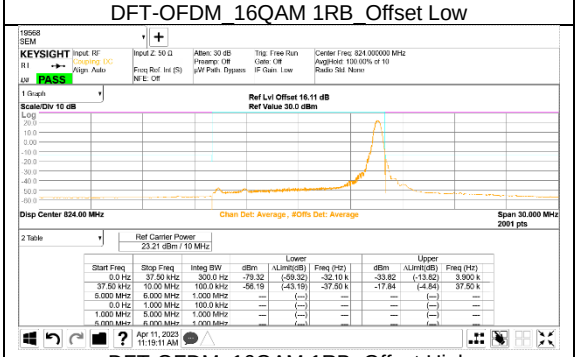
5MHz	 DFT-OFDM_QPSK Low channel FRB	 DFT-OFDM_QPSK Low channel 1RB_Offset Low  DFT-OFDM_QPSK Low channel 1RB_Offset High
	 DFT-OFDM_16QAM Low channel FRB	 DFT-OFDM_16QAM Low channel 1RB_Offset Low  DFT-OFDM_16QAM Low channel 1RB_Offset High

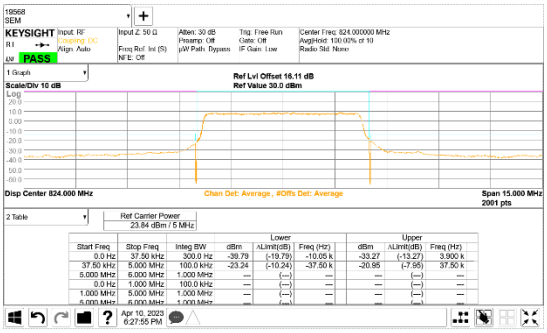
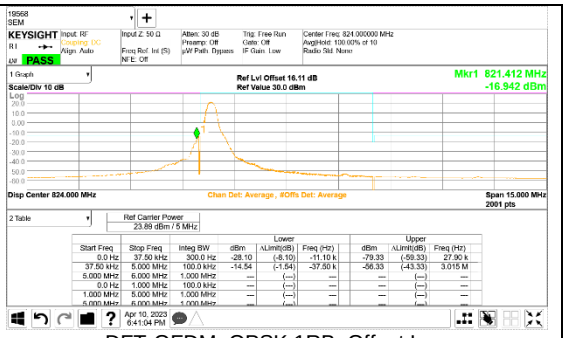
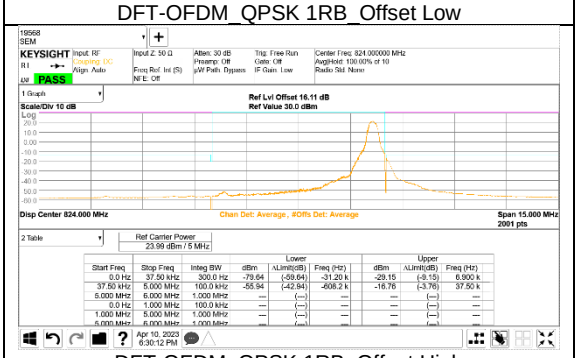
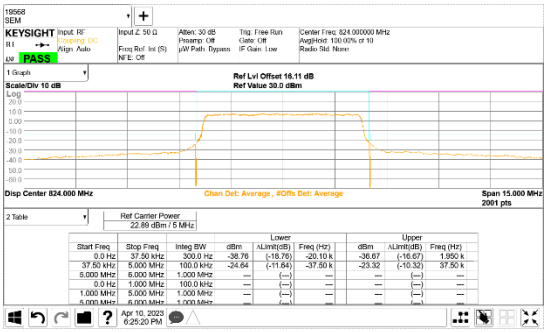
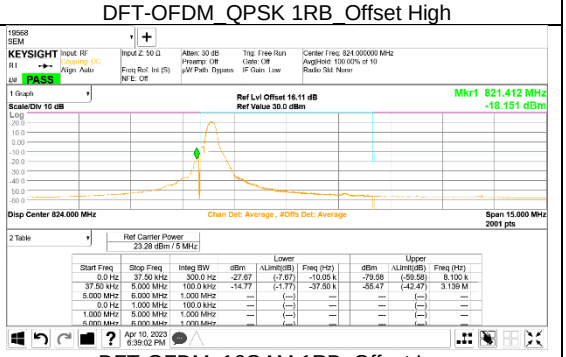
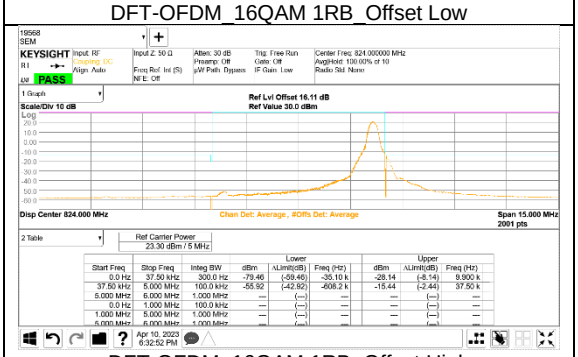
5MHz	 DFT-OFDM_QPSK High channel FRB	 DFT-OFDM_QPSK High channel 1RB_Offset Low
		 DFT-OFDM_QPSK High channel 1RB_Offset High
	 DFT-OFDM_16QAM High channel FRB	 DFT-OFDM_16QAM High channel 1RB_Offset Low
		 DFT-OFDM_16QAM High channel 1RB_Offset High

NR Band n26 (Straddle)

20MHz	 DFT-OFDM_QPSK FRB	 DFT-OFDM_QPSK 1RB_Offset Low
		 DFT-OFDM_QPSK Mid 1RB_Offset High
	 DFT-OFDM_16QAM FRB	 DFT-OFDM_16QAM 1RB_Offset Low
		 DFT-OFDM_16QAM 1RB_Offset High

15MHz	 DFT-OFDM_QPSK FRB	 DFT-OFDM_QPSK 1RB_Offset Low
		 DFT-OFDM_QPSK Mid 1RB_Offset High
	 DFT-OFDM_16QAM FRB	 DFT-OFDM_16QAM 1RB_Offset Low
		 DFT-OFDM_16QAM 1RB_Offset High

10MHz	 DFT-OFDM_QPSK FRB	 DFT-OFDM_QPSK 1RB_Offset Low
		 DFT-OFDM_QPSK 1RB_Offset High
	 DFT-OFDM_16QAM FRB	 DFT-OFDM_16QAM 1RB_Offset Low
		 DFT-OFDM_16QAM 1RB_Offset High

5MHz	 DFT-OFDM_QPSK FRB	 DFT-OFDM_QPSK 1RB_Offset Low
		 DFT-OFDM_QPSK 1RB_Offset High
	 DFT-OFDM_16QAM FRB	 DFT-OFDM_16QAM 1RB_Offset Low
		 DFT-OFDM_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 + 10Log_{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 and 1 MHz for emissions above 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

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

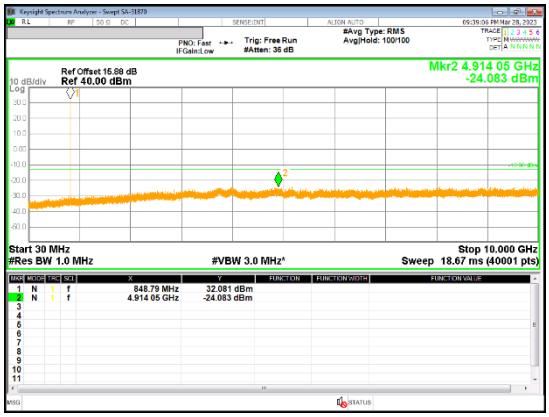
Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

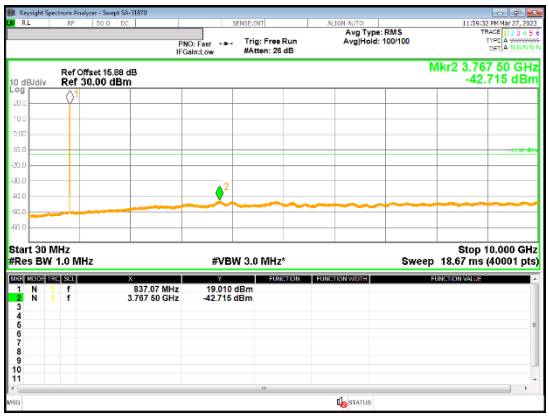
See the following pages.

8.5.1. OUT OF BAND EMISSIONS RESULT

GSM 850

GPRS	 Low channel	 Mid channel
	 High channel	

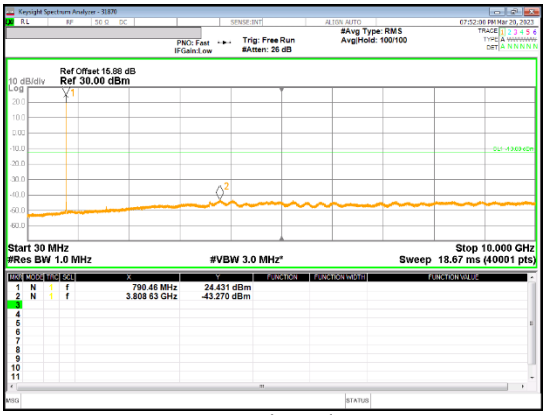
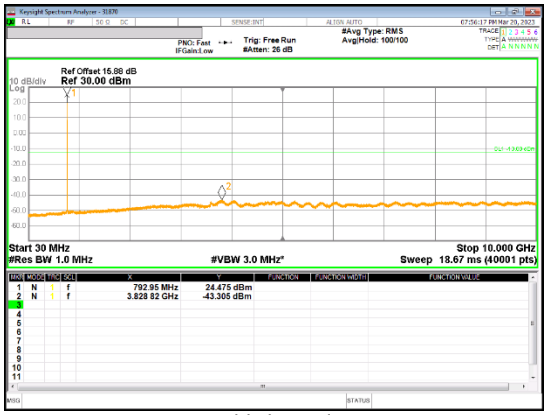
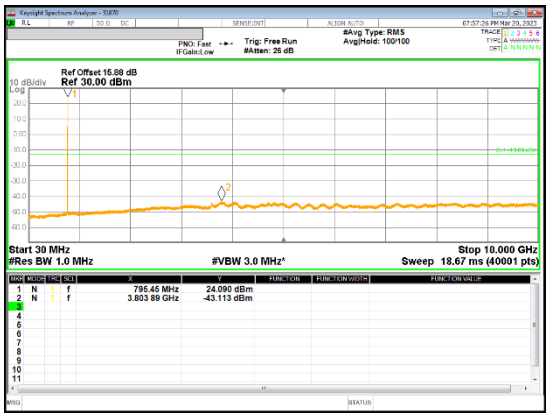
WCDMA Band 5

REL99	 Low channel	 Mid channel
	 High channel	

LTE Band 5B (UL CA)

5+3 MHz QPSK	 Low channel	 Mid channel
	 High channel	

LTE Band 14

5 MHz QPSK	 Low channel	 Mid channel
	 High channel	

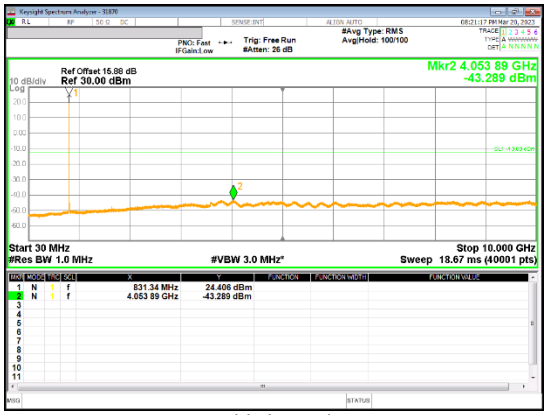
LTE Band 26(Part 90)

10 MHz QPSK	 Low channel

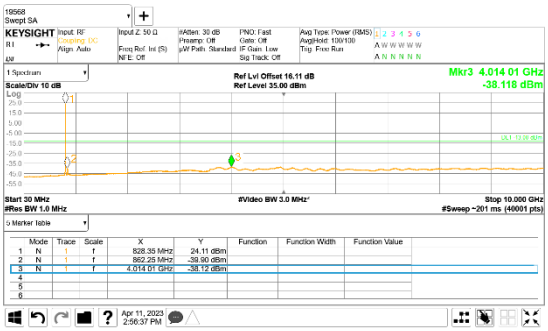
LTE Band 26 (Straddle)

1.4 MHz QPSK	 Straddle channel

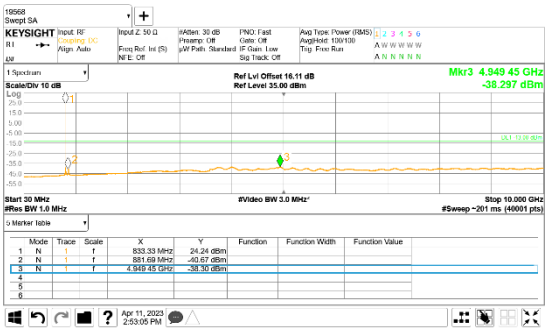
LTE Band 26 (Part 22)

5 MHz QPSK	 Low channel	 Mid channel
	 High channel	

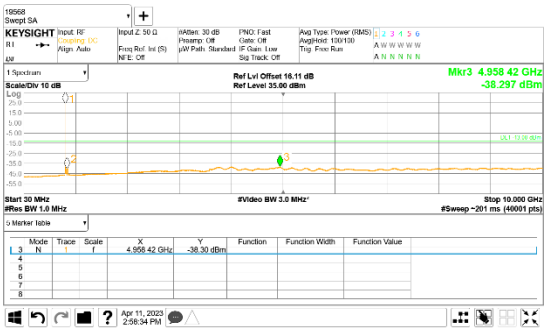
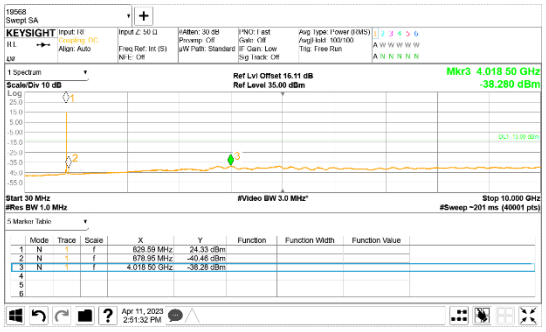
NR Band n26(Part 90)

15 MHz QPSK	 DFT-OFDM_Mid channel

NR Band n26 (Straddle)

15 MHz QPSK	 DFT-OFDM_Straddle channel

NR Band n26 (Part 22)

20 MHz QPSK	 DFT-OFDM_Low channel	 DFT-OFDM_Mid 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 section 9.1.1 OBW results)

RESULTS

See the following pages.

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8.6.1. FREQUENCY STABILITY RESULTS

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

Test Date	2023-03-15
Test Engineer	19568

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	824.20000504	0.001	848.80000443	0.001	2.5
3.88	40	824.20000453	0.002	848.80000493	0.000	2.5
3.88	30	824.20000497	0.001	848.80000410	0.001	2.5
3.88	***20***	***824.20000620***	***0.000***	***848.80000511***	***0.000***	***2.5***
3.88	10	824.20000648	0.000	848.80000594	-0.001	2.5
3.88	0	824.20000797	-0.002	848.80000664	-0.002	2.5
3.88	-10	824.20000687	-0.001	848.80000672	-0.002	2.5
3.88	-20	824.20000732	-0.001	848.80000676	-0.002	2.5
3.88	-30	824.20000703	-0.001	848.80000686	-0.002	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***	**824.20000620**	***0***	**848.80000511**	***0***	***2.5***
4.45	20	824.20002981	-0.029	848.80002945	-0.029	2.5
3.70	20	824.20003229	-0.032	848.80003301	-0.033	2.5

WCDMA Band 5

Test Date	2023-03-21
Test Engineer	19568

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	826.40002090	0.000	846.60001762	0.010	2.5
3.88	40	826.40001609	0.006	846.60001499	0.013	2.5
3.88	30	826.40001754	0.004	846.60001904	0.008	2.5
3.88	***20***	***826.40002119***	***0.000***	***846.60002609***	***0.000***	***2.5***
3.88	10	826.40001886	0.003	846.60002514	0.001	2.5
3.88	0	826.40001382	0.009	846.60001709	0.011	2.5
3.88	-10	826.40001588	0.006	846.60001194	0.017	2.5
3.88	-20	826.40001793	0.004	846.60002109	0.006	2.5
3.88	-30	826.40002250	-0.002	846.60001919	0.008	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***	**826.40002119**	***0***	**846.60002609**	***0***	***2.5***
4.45	20	826.40000276	0.022	846.60000343	0.027	2.5
3.70	20	826.40000272	0.022	846.60000335	0.027	2.5

LTE Band 14 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2023-03-31
Test Engineer	19568

Limit		788	798	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	788.2465	797.7479		
Extreme (50C)		788.2465	797.7479	16.6	0.021
Extreme (40C)		788.2465	797.7479	18.7	0.024
Extreme (30C)		788.2465	797.7479	21.0	0.026
Extreme (10C)		788.2465	797.7479	13.5	0.017
Extreme (0C)		788.2465	797.7479	11.4	0.014
Extreme (-10C)		788.2465	797.7479	13.9	0.018
Extreme (-20C)		788.2465	797.7479	16.8	0.021
Extreme (-30C)		788.2465	797.7479	18.5	0.023
20C	15%	788.2465	797.7479	4.4	0.006
	-15%	788.2465	797.7479	4.2	0.005
	End Point	788.2465	797.7479	4.3	0.005

LTE Band 26

Test Date	2023-03-28
Test Engineer	19568

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	814.70000482	0.001	848.30000458	0.002	2.5
3.88	40	814.70000420	0.002	848.30000510	0.001	2.5
3.88	30	814.70000453	0.001	848.30000429	0.002	2.5
3.88	***20***	***814.70000565***	***0.000***	***848.30000613***	***0.000***	***2.5***
3.88	10	814.70000582	0.000	848.30000617	0.000	2.5
3.88	0	814.70000720	-0.002	848.30000689	-0.001	2.5
3.88	-10	814.70000599	0.000	848.30000699	-0.001	2.5
3.88	-20	814.70000633	-0.001	848.30000705	-0.001	2.5
3.88	-30	814.70000593	0.000	848.30000717	-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***	**814.70000565**	***0***	**848.30000613**	***0***	***2.5***
4.45	20	814.70000514	0.001	848.30000555	0.001	2.5
3.70	20	814.70000493	0.001	848.30000478	0.002	2.5

NR Band n26

Test Date	2023-04-13
Test Engineer	47989

Reference Frequency : Low Channel 816.5 MHz / High Channel 846.5 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2041.250 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	816.50000264	-0.002	846.50000285	-0.001	2.5
3.88	40	816.50000308	-0.002	846.50000272	-0.001	2.5
3.88	30	816.50000284	-0.002	846.50000268	0.000	2.5
3.88	***20***	***816.50000114***	***0.000***	***846.50000226***	***0.000***	***2.5***
3.88	10	816.50000209	-0.001	846.50000261	0.000	2.5
3.88	0	816.50000265	-0.002	846.50000296	-0.001	2.5
3.88	-10	816.50000213	-0.001	846.50000175	0.001	2.5
3.88	-20	816.50000167	-0.001	846.50000282	-0.001	2.5
3.88	-30	816.50000321	-0.003	846.50000376	-0.002	2.5

Reference Frequency : Low Channel 816.5 MHz / High Channel 846.5 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2041.250 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***	**816.50000114**	***0***	**846.50000226**	***0***	***2.5***
4.45	20	816.50001945	-0.022	846.50002042	-0.021	2.5
3.70	20	816.50002258	-0.026	846.50002135	-0.023	2.5

9. RADIATED RESULTS

9.1. RADIATED POWER (ERP)

RULE PART(S)

FCC: §2.1046, §22.913, §90.542 and §90.635

LIMITS

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

90.542(a)(7) - Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

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 Results

GSM (ANT A+B)

Band	Mode	f (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	31.86	H	3.01	-1.03	27.82	605.34	38.50	-10.68
		836.60	31.29	H	3.03	-0.97	27.29	535.80	38.50	-11.21
		848.80	31.71	H	3.05	-0.91	27.75	595.66	38.50	-10.75
	EGPRS	824.20	27.30	H	3.01	-1.03	23.26	211.84	38.50	-15.24
		836.60	27.01	H	3.03	-0.97	23.01	199.99	38.50	-15.49
		848.80	27.21	H	3.05	-0.91	23.25	211.35	38.50	-15.25

GSM (ANT A)

Band	Mode	f (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	26.49	V	3.01	-1.03	22.46	176.20	38.50	-16.04
		836.60	26.98	V	3.03	-0.97	22.98	198.61	38.50	-15.52
		848.80	22.44	H	3.05	-0.91	18.48	70.47	38.50	-20.02
	EGPRS	824.20	22.78	V	3.01	-1.03	18.75	74.99	38.50	-19.75
		836.60	18.96	H	3.03	-0.97	14.96	31.33	38.50	-23.54
		848.80	18.35	H	3.05	-0.91	14.39	27.48	38.50	-24.11

WCDMA (ANT A+B)

Band	Mode	f (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	24.74	H	3.01	-1.02	20.71	117.76	38.50	-17.79
		836.60	24.34	H	3.03	-0.97	20.34	108.14	38.50	-18.16
		846.60	24.58	H	3.05	-0.92	20.62	115.35	38.50	-17.88
	HSDPA	826.40	23.88	H	3.01	-1.02	19.85	96.61	38.50	-18.65
		836.60	23.08	H	3.03	-0.97	19.08	80.91	38.50	-19.42
		846.60	23.46	H	3.05	-0.92	19.50	89.13	38.50	-19.00

WCDMA (ANT A)

Band	Mode	f (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	19.92	V	3.01	-1.02	15.89	38.82	38.50	-22.61
		836.60	20.84	V	3.03	-0.97	16.84	48.31	38.50	-21.66
		846.60	21.37	V	3.05	-0.92	17.40	54.95	38.50	-21.10
	HSDPA	826.40	19.77	V	3.01	-1.02	15.74	37.50	38.50	-22.76
		836.60	20.67	V	3.03	-0.97	16.67	46.45	38.50	-21.83
		846.60	20.53	V	3.05	-0.92	16.56	45.29	38.50	-21.94

LTE Band 14 (ANT A+B)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	790.50	22.60	H	2.95	-1.17	18.48	70.47	34.77	-16.29	1/12
		793.00	22.07	H	2.95	-1.16	17.95	62.37	34.77	-16.82	1/12
		795.50	21.95	H	2.96	-1.16	17.83	60.67	34.77	-16.94	1/12
	16-QAM	790.50	21.53	H	2.95	-1.17	17.41	55.08	34.77	-17.36	1/12
		793.00	20.92	H	2.95	-1.16	16.80	47.86	34.77	-17.97	1/12
		795.50	20.94	H	2.96	-1.16	16.82	48.08	34.77	-17.95	1/12
10	QPSK	793.00	21.85	H	2.95	-1.16	17.73	59.29	34.77	-17.04	1/49
	16-QAM	793.00	20.76	H	2.95	-1.16	16.64	46.13	34.77	-18.13	1/49

LTE Band 14 (ANT A)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	790.50	24.27	V	2.95	-1.17	20.15	103.51	34.77	-14.62	1/12
		793.00	24.01	V	2.95	-1.16	19.90	97.72	34.77	-14.87	1/12
		795.50	23.82	V	2.96	-1.16	19.70	93.33	34.77	-15.07	1/12
	16-QAM	790.50	23.32	V	2.95	-1.17	19.20	83.18	34.77	-15.57	1/12
		793.00	22.76	V	2.95	-1.16	18.65	73.28	34.77	-16.12	1/12
		795.50	22.58	V	2.96	-1.16	18.46	70.15	34.77	-16.31	1/12
10	QPSK	793.00	23.26	V	2.95	-1.16	19.15	82.22	34.77	-15.62	1/49
	16-QAM	793.00	22.18	V	2.95	-1.16	18.07	64.12	34.77	-16.70	1/49

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LTE Band 26 (ANT A+B)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	814.70	22.71	H	2.99	-1.08	18.64	73.11	50.00	-19.86	1/3
		823.30	23.27	H	3.01	-1.03	19.23	83.75	50.00	-19.27	1/5
		824.70	23.37	H	3.01	-1.03	19.33	85.70	38.50	-19.17	1/3
		831.50	23.79	H	3.02	-0.99	19.77	94.84	38.50	-18.73	1/3
		848.30	23.07	H	3.05	-0.91	19.11	81.47	38.50	-19.39	1/3
	16-QAM	814.70	21.69	H	2.99	-1.08	17.62	57.81	50.00	-20.88	1/3
		823.30	22.03	H	3.01	-1.03	17.99	62.95	50.00	-20.51	1/0
		824.70	22.46	H	3.01	-1.03	18.42	69.50	38.50	-20.08	1/0
		831.50	22.82	H	3.02	-0.99	18.80	75.86	38.50	-19.70	1/0
		848.30	22.14	H	3.05	-0.91	18.18	65.77	38.50	-20.32	1/3
3	QPSK	815.50	22.79	H	2.99	-1.07	18.73	74.64	50.00	-19.77	1/8
		822.50	23.39	H	3.01	-1.04	19.34	85.90	50.00	-19.16	1/8
		825.50	23.61	H	3.01	-1.02	19.58	90.78	38.50	-18.92	1/8
		831.50	23.82	H	3.02	-0.99	19.80	95.50	38.50	-18.70	1/8
		847.50	23.58	H	3.05	-0.91	19.61	91.41	38.50	-18.89	1/8
	16-QAM	815.50	21.48	H	2.99	-1.07	17.42	55.21	50.00	-21.08	1/0
		822.50	22.27	H	3.01	-1.04	18.22	66.37	50.00	-20.28	1/8
		825.50	22.56	H	3.01	-1.02	18.53	71.29	38.50	-19.97	1/8
		831.50	22.74	H	3.02	-0.99	18.72	74.47	38.50	-19.78	1/8
		847.50	22.51	H	3.05	-0.91	18.54	71.45	38.50	-19.96	1/8
5	QPSK	816.50	22.95	H	3.00	-1.07	18.88	77.27	50.00	-19.62	1/12
		821.50	22.99	H	3.01	-1.04	18.94	78.34	50.00	-19.56	1/0
		826.50	23.74	H	3.01	-1.02	19.71	93.54	38.50	-18.79	1/12
		831.50	23.68	H	3.02	-0.99	19.66	92.47	38.50	-18.84	1/12
		846.50	23.53	H	3.05	-0.92	19.57	90.57	38.50	-18.93	1/12
	16-QAM	816.50	21.97	H	3.00	-1.07	17.90	61.66	50.00	-20.60	1/12
		821.50	22.09	H	3.01	-1.04	18.04	63.68	50.00	-20.46	1/12
		826.50	22.50	H	3.01	-1.02	18.47	70.31	38.50	-20.03	1/12
		831.50	22.61	H	3.02	-0.99	18.59	72.28	38.50	-19.91	1/12
		846.50	22.47	H	3.05	-0.92	18.51	70.96	38.50	-19.99	1/12
10	QPSK	819.00	22.72	H	3.00	-1.06	18.67	73.62	50.00	-19.83	1/0
		829.00	23.45	H	3.02	-1.01	19.42	87.50	38.50	-19.08	1/0
		831.50	23.77	H	3.02	-0.99	19.75	94.41	38.50	-18.75	1/25
		844.00	23.73	H	3.04	-0.93	19.75	94.41	38.50	-18.75	1/25
	16-QAM	819.00	21.78	H	3.00	-1.06	17.73	59.29	50.00	-20.77	1/25
		829.00	22.60	H	3.02	-1.01	18.57	71.94	38.50	-19.93	1/0
		831.50	22.87	H	3.02	-0.99	18.85	76.74	38.50	-19.65	1/25
		844.00	22.67	H	3.04	-0.93	18.69	73.96	38.50	-19.81	1/25
15	QPSK	821.50	22.48	H	3.01	-1.04	18.43	69.66	50.00	-20.07	1/0
		831.50	23.44	H	3.02	-0.99	19.42	87.50	38.50	-19.08	1/37
		841.50	23.51	H	3.04	-0.94	19.53	89.74	38.50	-18.97	1/74
	16-QAM	821.50	21.46	H	3.01	-1.04	17.41	55.08	50.00	-21.09	1/0
		831.50	22.37	H	3.02	-0.99	18.35	68.39	38.50	-20.15	1/0
		841.50	22.54	H	3.04	-0.94	18.56	71.78	38.50	-19.94	1/74

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	824.00	23.28	H	3.01	-1.03	19.24	83.95	38.50	-19.26	1/5
	16-QAM		22.21	H	3.01	-1.03	18.17	65.61	38.50	-20.33	1/0
3	QPSK		23.59	H	3.01	-1.03	19.55	90.16	38.50	-18.95	1/8
	16-QAM		22.52	H	3.01	-1.03	18.48	70.47	38.50	-20.02	1/8
5	QPSK		23.56	H	3.01	-1.03	19.52	89.54	38.50	-18.98	1/0
	16-QAM		22.39	H	3.01	-1.03	18.35	68.39	38.50	-20.15	1/12
10	QPSK		23.45	H	3.01	-1.03	19.41	87.22	38.50	-19.09	1/25
	16-QAM		22.27	H	3.01	-1.03	18.23	66.53	38.50	-20.27	1/0
15	QPSK		22.77	H	3.01	-1.03	18.73	18.73	38.50	-19.77	1/0
	16-QAM		21.98	H	3.01	-1.03	17.94	62.23	38.50	-20.56	1/37

LTE Band 26 (ANT A)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	814.70	20.38	V	2.99	-1.08	16.31	42.76	50.00	-33.69	1/3
		823.30	21.40	V	3.01	-1.03	17.36	54.45	50.00	-32.64	1/5
		824.70	21.32	V	3.01	-1.03	17.28	53.46	38.50	-21.22	1/3
		831.50	22.13	V	3.02	-0.99	18.11	64.71	38.50	-20.39	1/3
		848.30	21.46	V	3.05	-0.91	17.50	56.23	38.50	-21.00	1/3
	16-QAM	814.70	19.28	V	2.99	-1.08	15.21	33.19	50.00	-34.79	1/3
		823.30	20.30	V	3.01	-1.03	16.26	42.27	50.00	-33.74	1/0
		824.70	20.28	V	3.01	-1.03	16.24	42.07	38.50	-22.26	1/0
		831.50	21.00	V	3.02	-0.99	16.98	49.89	38.50	-21.52	1/0
		848.30	20.41	V	3.05	-0.91	16.45	44.16	38.50	-22.05	1/3
3	QPSK	815.50	20.73	V	2.99	-1.07	16.66	46.34	50.00	-33.34	1/8
		822.50	20.86	V	3.01	-1.04	16.81	47.97	50.00	-33.19	1/8
		825.50	21.48	V	3.01	-1.02	17.45	55.59	38.50	-21.05	1/8
		831.50	22.43	V	3.02	-0.99	18.41	69.34	38.50	-20.09	1/8
		847.50	21.99	V	3.05	-0.91	18.03	63.53	38.50	-20.47	1/8
	16-QAM	815.50	19.36	V	2.99	-1.07	15.29	33.81	50.00	-34.71	1/0
		822.50	19.77	V	3.01	-1.04	15.72	37.33	50.00	-34.28	1/8
		825.50	20.31	V	3.01	-1.02	16.28	42.46	38.50	-22.22	1/8
		831.50	21.52	V	3.02	-0.99	17.50	56.23	38.50	-21.00	1/8
		847.50	21.00	V	3.05	-0.91	17.04	50.58	38.50	-21.46	1/8
5	QPSK	816.50	20.60	V	3.00	-1.07	16.53	44.98	50.00	-33.47	1/12
		821.50	21.03	V	3.01	-1.04	16.98	49.89	50.00	-33.02	1/0
		826.50	21.78	V	3.01	-1.02	17.75	59.57	38.50	-20.75	1/12
		831.50	22.44	V	3.02	-0.99	18.42	69.50	38.50	-20.08	1/12
		846.50	21.95	V	3.05	-0.92	17.98	62.81	38.50	-20.52	1/12
	16-QAM	816.50	19.45	V	3.00	-1.07	15.38	34.51	50.00	-34.62	1/12
		821.50	19.80	V	3.01	-1.04	15.75	37.58	50.00	-34.25	1/12
		826.50	20.81	V	3.01	-1.02	16.78	47.64	38.50	-21.72	1/12
		831.50	21.55	V	3.02	-0.99	17.53	56.62	38.50	-20.97	1/12
		846.50	20.91	V	3.05	-0.92	16.94	49.43	38.50	-21.56	1/12
10	QPSK	819.00	20.71	V	3.00	-1.06	16.66	46.34	50.00	-33.34	1/0
		829.00	22.16	V	3.02	-1.01	18.14	65.16	38.50	-20.36	1/0
		831.50	22.54	V	3.02	-0.99	18.52	71.12	38.50	-19.98	1/25
		844.00	22.48	V	3.04	-0.93	18.50	70.79	38.50	-20.00	1/25
	16-QAM	819.00	19.80	V	3.00	-1.06	15.75	37.58	50.00	-34.25	1/25
		829.00	21.09	V	3.02	-1.01	17.07	50.93	38.50	-21.43	1/0
		831.50	21.33	V	3.02	-0.99	17.31	53.83	38.50	-21.19	1/25
		844.00	21.40	V	3.04	-0.93	17.43	55.34	38.50	-21.07	1/25
15	QPSK	821.50	20.81	V	3.01	-1.04	16.76	47.42	50.00	-33.24	1/0
		831.50	22.53	V	3.02	-0.99	18.51	70.96	38.50	-19.99	1/37
		841.50	22.07	V	3.04	-0.94	18.09	64.42	38.50	-20.41	1/74
	16-QAM	821.50	19.79	V	3.01	-1.04	15.74	37.50	50.00	-34.26	1/0
		831.50	21.44	V	3.02	-0.99	17.42	55.21	38.50	-21.08	1/0
		841.50	21.15	V	3.04	-0.94	17.17	52.12	38.50	-21.33	1/74

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	824.00	21.07	V	3.01	-1.03	17.03	50.47	38.50	-21.47	1/5
	16-QAM		20.07	V	3.01	-1.03	16.03	40.09	38.50	-22.47	1/0
3	QPSK		21.01	V	3.01	-1.03	16.97	49.77	38.50	-21.53	1/8
	16-QAM		20.04	V	3.01	-1.03	16.00	39.81	38.50	-22.50	1/8
5	QPSK		21.31	V	3.01	-1.03	17.27	53.33	38.50	-21.23	1/0
	16-QAM		20.13	V	3.01	-1.03	16.09	40.64	38.50	-22.41	1/12
10	QPSK		21.13	V	3.01	-1.03	17.09	51.17	38.50	-21.41	1/25
	16-QAM		20.16	V	3.01	-1.03	16.12	40.93	38.50	-22.38	1/0
15	QPSK		20.98	V	3.01	-1.03	16.94	49.43	38.50	-21.56	1/0
	16-QAM		20.03	V	3.01	-1.03	15.99	39.72	38.50	-22.51	1/37

NR Band n26 (ANT A+B)

DFT-OFDM

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	816.50	23.80	H	3.00	-1.07	19.73	93.97	50.00	-30.27	1/13
		821.50	24.16	H	3.01	-1.04	20.11	102.57	50.00	-29.89	1/13
		826.50	24.28	H	3.01	-1.02	20.25	105.93	38.50	-18.25	1/23
		831.50	24.17	H	3.02	-0.99	20.15	103.51	38.50	-18.35	1/23
		846.50	24.33	H	3.05	-0.92	20.37	108.89	38.50	-18.13	1/1
	16-QAM	816.50	22.80	H	3.00	-1.07	18.73	74.64	50.00	-31.27	1/13
		821.50	23.21	H	3.01	-1.04	19.16	82.41	50.00	-30.84	1/13
		826.50	23.38	H	3.01	-1.02	19.35	86.10	38.50	-19.15	1/23
		831.50	23.21	H	3.02	-0.99	19.19	82.99	38.50	-19.31	1/23
		846.50	23.22	H	3.05	-0.92	19.26	84.33	38.50	-19.24	1/1
10	QPSK	819.00	23.65	H	3.00	-1.06	19.60	91.20	50.00	-30.40	1/26
		829.00	23.53	H	3.02	-1.01	19.50	89.13	38.50	-19.00	1/26
		831.50	24.34	H	3.02	-0.99	20.32	107.65	38.50	-18.18	1/26
		844.00	24.06	H	3.04	-0.93	20.08	101.86	38.50	-18.42	1/26
	16-QAM	819.00	22.57	H	3.00	-1.06	18.52	71.12	50.00	-31.48	1/26
		829.00	22.61	H	3.02	-1.01	18.58	72.11	38.50	-19.92	1/26
		831.50	23.25	H	3.02	-0.99	19.23	83.75	38.50	-19.27	1/26
		844.00	22.58	H	3.04	-0.93	18.60	72.44	38.50	-19.90	1/26
15	QPSK	821.50	23.76	H	3.01	-1.04	19.71	93.54	50.00	-30.29	1/77
		831.50	24.43	H	3.02	-0.99	20.41	109.90	38.50	-18.09	1/40
		841.50	24.13	H	3.04	-0.94	20.15	103.51	38.50	-18.35	1/1
	16-QAM	821.50	22.72	H	3.01	-1.04	18.67	73.62	50.00	-31.33	1/77
		831.50	23.45	H	3.02	-0.99	19.43	87.70	38.50	-19.07	1/40
		841.50	23.09	H	3.04	-0.94	19.11	81.47	38.50	-19.39	1/1
20	QPSK	834.00	23.89	H	3.01	-1.03	19.85	96.61	38.50	-18.65	1/53
		839.00	24.12	H	3.03	-0.98	20.12	102.80	38.50	-18.38	1/1
	16-QAM	834.00	22.61	H	3.01	-1.03	18.57	71.94	38.50	-19.93	1/53
		839.00	22.90	H	3.03	-0.98	18.90	77.62	38.50	-19.60	1/1

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	824.00	24.26	H	3.01	-1.03	20.22	105.20	38.50	-18.28	1/23
	16-QAM		23.28	H	3.01	-1.03	19.24	83.95	38.50	-19.26	1/23
10	QPSK		23.90	H	3.01	-1.03	19.86	96.83	38.50	-18.64	1/50
	16-QAM		22.75	H	3.01	-1.03	18.71	74.30	38.50	-19.79	1/50
15	QPSK		24.02	H	3.01	-1.03	19.98	99.54	38.50	-18.52	1/40
	16-QAM		22.69	H	3.01	-1.03	18.65	73.28	38.50	-19.85	1/40
20	QPSK		23.89	H	3.01	-1.03	19.85	96.61	38.50	-18.65	1/104
	16-QAM		23.34	H	3.03	-0.96	19.35	86.10	38.50	-19.15	1/104

NR Band n26 (ANT A)

DFT-OFDM

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	816.50	19.79	V	3.00	-1.07	15.72	37.33	50.00	-34.28	1/13
		821.50	20.19	V	3.01	-1.04	16.14	41.11	50.00	-33.86	1/13
		826.50	20.33	V	3.01	-1.02	16.30	42.66	38.50	-22.20	1/23
		831.50	21.50	V	3.02	-0.99	17.48	55.98	38.50	-21.02	1/23
		846.50	21.98	V	3.05	-0.92	18.01	63.24	38.50	-20.49	1/1
	16-QAM	816.50	18.80	V	3.00	-1.07	14.73	29.72	50.00	-35.27	1/13
		821.50	19.18	V	3.01	-1.04	15.13	32.58	50.00	-34.87	1/13
		826.50	19.36	V	3.01	-1.02	15.33	34.12	38.50	-23.17	1/23
		831.50	20.39	V	3.02	-0.99	16.37	43.35	38.50	-22.13	1/23
		846.50	20.94	V	3.05	-0.92	16.97	49.77	38.50	-21.53	1/1
10	QPSK	819.00	19.90	V	3.00	-1.06	15.85	38.46	50.00	-34.15	1/26
		829.00	20.59	V	3.02	-1.01	16.56	45.29	38.50	-21.94	1/26
		831.50	21.89	V	3.02	-0.99	17.87	61.24	38.50	-20.63	1/26
		844.00	22.09	V	3.04	-0.93	18.11	64.71	38.50	-20.39	1/26
	16-QAM	819.00	18.96	V	3.00	-1.06	14.91	30.97	50.00	-35.09	1/26
		829.00	19.85	V	3.02	-1.01	15.82	38.19	38.50	-22.68	1/26
		831.50	20.52	V	3.02	-0.99	16.50	44.67	38.50	-22.00	1/26
		844.00	21.06	V	3.04	-0.93	17.08	51.05	38.50	-21.42	1/26
15	QPSK	821.50	19.96	V	3.01	-1.04	15.91	38.99	50.00	-34.09	1/77
		831.50	21.53	V	3.02	-0.99	17.51	56.36	38.50	-20.99	1/40
		841.50	21.09	V	3.04	-0.94	17.11	51.40	38.50	-21.39	1/1
	16-QAM	821.50	18.97	V	3.01	-1.04	14.92	31.05	50.00	-35.08	1/77
		831.50	20.77	V	3.02	-0.99	16.75	47.32	38.50	-21.75	1/40
		841.50	20.44	V	3.04	-0.94	16.46	44.26	38.50	-22.04	1/1
20	QPSK	834.00	21.03	V	3.03	-0.98	17.02	50.35	38.50	-21.48	1/53
		839.00	20.80	V	3.03	-0.96	16.81	47.97	38.50	-21.69	1/1
	16-QAM	834.00	20.13	V	3.03	-0.98	16.12	40.93	38.50	-22.38	1/53
		839.00	19.83	V	3.03	-0.96	15.84	38.37	38.50	-22.66	1/1

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	824.00	20.11	V	3.01	-1.03	16.07	40.46	38.50	-22.43	1/23
	16-QAM		19.08	V	3.01	-1.03	15.04	31.92	38.50	-23.46	1/23
10	QPSK		20.04	V	3.01	-1.03	16.00	39.81	38.50	-22.50	1/50
	16-QAM		19.19	V	3.01	-1.03	15.15	32.73	38.50	-23.35	1/50
15	QPSK		19.96	V	3.01	-1.03	15.92	39.08	38.50	-22.58	1/40
	16-QAM		18.97	V	3.01	-1.03	14.93	31.12	38.50	-23.57	1/40
20	QPSK		20.99	V	3.01	-1.03	16.95	49.55	38.50	-21.55	1/104
	16-QAM		19.79	V	3.01	-1.03	15.75	37.58	38.50	-22.75	1/104

RADIATIED SPURIOUS EMISSION

RULE PART(S)

FCC: §2.1053, §22.917, §90.543 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 90.543(c)
On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the mean output power (P) by at least 43 + 10log (P) dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz

Part 90.543(f)
For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

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 and 1 MHz for emissions above 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);

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NOTE1

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.

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9.1.2. SPURIOUS RADIATION PLOTS

GSM850

GPRS

ANT A+B

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

Company: Samsung
Project #: 4790748041
Date: 2023-04-27
Test Engineer: 24542
Configuration: EUT / AC Adapter, Y-Position, HF
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	-12.7	V	3.0	46.4	1.0	-58.1	-13.0	-45.1	
2472.60	4.9	V	3.0	46.9	1.0	-40.9	-13.0	-27.9	
3296.80	-5.4	V	3.0	46.6	1.0	-51.0	-13.0	-38.0	
1648.40	-11.5	H	3.0	46.4	1.0	-57.0	-13.0	-44.0	
2472.60	6.3	H	3.0	46.9	1.0	-39.6	-13.0	-26.6	
3296.80	-5.1	H	3.0	46.6	1.0	-50.7	-13.0	-37.7	
Mid Ch, 836.6MHz									
1673.20	-11.4	V	3.0	46.4	1.0	-56.8	-13.0	-43.8	
2509.80	4.4	V	3.0	46.9	1.0	-41.5	-13.0	-28.5	
3346.40	-8.2	V	3.0	46.6	1.0	-53.7	-13.0	-40.7	
1673.20	-11.8	H	3.0	46.4	1.0	-57.3	-13.0	-44.3	
2509.80	9.2	H	3.0	46.9	1.0	-36.7	-13.0	-23.7	
3346.40	-8.0	H	3.0	46.6	1.0	-53.5	-13.0	-40.5	
High Ch, 848.8MHz									
1697.60	-10.0	V	3.0	46.5	1.0	-55.4	-13.0	-42.4	
2546.40	3.0	V	3.0	46.9	1.0	-42.9	-13.0	-29.9	
3395.20	-7.8	V	3.0	46.5	1.0	-53.3	-13.0	-40.3	
1697.60	-12.0	H	3.0	46.5	1.0	-57.4	-13.0	-44.4	
2546.40	5.0	H	3.0	46.9	1.0	-40.9	-13.0	-27.9	
3395.20	-7.7	H	3.0	46.5	1.0	-53.2	-13.0	-40.2	

GPRS

ANT A

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

Company: Samsung
Project #: 4790748041
Date: 2023-03-27
Test Engineer: 26087
Configuration: EUT / X-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	-12.0	V	3.0	46.4	1.0	-57.5	-13.0	-44.5	
2472.60	4.1	V	3.0	46.9	1.0	-41.8	-13.0	-28.8	
3296.80	-8.2	V	3.0	46.6	1.0	-53.8	-13.0	-40.8	
1648.40	-13.0	H	3.0	46.4	1.0	-58.5	-13.0	-45.5	
2472.60	5.5	H	3.0	46.9	1.0	-40.4	-13.0	-27.4	
3296.80	-8.2	H	3.0	46.6	1.0	-53.8	-13.0	-40.8	
Mid Ch, 836.6MHz									
1673.20	-11.0	V	3.0	46.4	1.0	-56.5	-13.0	-43.5	
2509.80	4.9	V	3.0	46.9	1.0	-41.0	-13.0	-28.0	
3346.40	-6.1	V	3.0	46.6	1.0	-51.7	-13.0	-38.7	
1673.20	-12.4	H	3.0	46.4	1.0	-57.9	-13.0	-44.9	
2509.80	8.8	H	3.0	46.9	1.0	-37.1	-13.0	-24.1	
3346.40	-5.4	H	3.0	46.6	1.0	-51.0	-13.0	-38.0	
High Ch, 848.8MHz									
1697.60	-10.8	V	3.0	46.5	1.0	-56.3	-13.0	-43.3	
2546.40	5.8	V	3.0	46.9	1.0	-40.1	-13.0	-27.1	
3395.20	-7.8	V	3.0	46.5	1.0	-53.3	-13.0	-40.3	
1697.60	-10.8	H	3.0	46.5	1.0	-56.3	-13.0	-43.3	
2546.40	10.0	H	3.0	46.9	1.0	-35.9	-13.0	-22.9	
3395.20	-7.8	H	3.0	46.5	1.0	-53.3	-13.0	-40.3	

WCDMA Band 5

REL99

ANT A+B

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

Company: Samsung
Project #: 4790748041
Date: 2023-04-27
Test Engineer: 24542
Configuration: EUT / AC Adapter, X-Position, HF
Location: Chamber 1
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	-14.3	V	3.0	46.4	1.0	-59.7	-13.0	-46.7	
2479.20	-4.9	V	3.0	46.9	1.0	-50.7	-13.0	-37.7	
3305.60	-9.5	V	3.0	46.6	1.0	-55.1	-13.0	-42.1	
1652.80	-15.5	H	3.0	46.4	1.0	-60.9	-13.0	-47.9	
2479.20	-4.1	H	3.0	46.9	1.0	-50.0	-13.0	-37.0	
3305.60	-9.3	H	3.0	46.6	1.0	-54.9	-13.0	-41.9	
Mid Ch, 836.6MHz									
1673.20	-14.2	V	3.0	46.4	1.0	-59.6	-13.0	-46.6	
2509.80	-3.9	V	3.0	46.9	1.0	-49.8	-13.0	-36.8	
3346.40	-9.3	V	3.0	46.6	1.0	-54.9	-13.0	-41.9	
1673.20	-15.3	H	3.0	46.4	1.0	-60.8	-13.0	-47.8	
2509.80	-1.4	H	3.0	46.9	1.0	-47.3	-13.0	-34.3	
3346.40	-9.0	H	3.0	46.6	1.0	-54.6	-13.0	-41.6	
High Ch, 846.6MHz									
1693.20	-14.3	V	3.0	46.5	1.0	-59.8	-13.0	-46.8	
2539.80	-6.6	V	3.0	46.9	1.0	-52.5	-13.0	-39.5	
3386.40	-9.0	V	3.0	46.5	1.0	-54.5	-13.0	-41.5	
1693.20	-15.2	H	3.0	46.5	1.0	-60.6	-13.0	-47.6	
2539.80	-5.3	H	3.0	46.9	1.0	-51.2	-13.0	-38.2	
3386.40	-8.8	H	3.0	46.5	1.0	-54.3	-13.0	-41.3	

REL99

ANT A

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

Company: Samsung
Project #: 4790748041
Date: 2023-03-27
Test Engineer: 26087
Configuration: EUT / Y-Position, FF
Location: Chamber 1
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	-14.4	V	3.0	46.4	1.0	-59.8	-13.0	-46.8	
2479.20	-8.5	V	3.0	46.9	1.0	-54.4	-13.0	-41.4	
3305.60	-9.4	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1652.80	-15.4	H	3.0	46.4	1.0	-60.9	-13.0	-47.9	
2479.20	-8.0	H	3.0	46.9	1.0	-53.8	-13.0	-40.8	
3305.60	-9.4	H	3.0	46.6	1.0	-55.1	-13.0	-42.1	
Mid Ch, 836.6MHz									
1673.20	-14.3	V	3.0	46.4	1.0	-59.7	-13.0	-46.7	
2509.80	-6.0	V	3.0	46.9	1.0	-51.9	-13.0	-38.9	
3346.40	-9.3	V	3.0	46.6	1.0	-54.8	-13.0	-41.8	
1673.20	-15.4	H	3.0	46.4	1.0	-60.8	-13.0	-47.8	
2509.80	-8.8	H	3.0	46.9	1.0	-54.7	-13.0	-41.7	
3346.40	-9.1	H	3.0	46.6	1.0	-54.6	-13.0	-41.6	
High Ch, 846.6MHz									
1693.20	-13.6	V	3.0	46.5	1.0	-59.1	-13.0	-46.1	
2539.80	-5.1	V	3.0	46.9	1.0	-51.0	-13.0	-38.0	
3386.40	-8.9	V	3.0	46.5	1.0	-54.4	-13.0	-41.4	
1693.20	-15.3	H	3.0	46.5	1.0	-60.8	-13.0	-47.8	
2539.80	-7.2	H	3.0	46.9	1.0	-53.1	-13.0	-40.1	
3386.40	-8.9	H	3.0	46.5	1.0	-54.4	-13.0	-41.4	

LTE Band 5B (UL CA)

5+3 MHz
QPSK
ANT A+B

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-04
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position, Open
Location: Chamber 2
Mode: LTE_QPSK Band 5 Uplink CA Harmonics, 5MHz_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
Low Ch, PCC : 826.5 MHz SCC : 830.4MHz									
1657.90	-15.2	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2486.85	-12.4	V	3.0	41.3	1.0	-52.7	-13.0	-39.7	
3315.80	-9.3	V	3.0	42.1	1.0	-50.3	-13.0	-37.3	
1657.90	-15.9	H	3.0	40.7	1.0	-55.5	-13.0	-42.5	
2486.85	-12.5	H	3.0	41.3	1.0	-52.8	-13.0	-39.8	
3315.80	-9.4	H	3.0	42.1	1.0	-50.5	-13.0	-37.5	
Mid Ch, PCC : 835MHz SCC : 838.9MHz									
1674.90	-15.1	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2512.35	-9.5	V	3.0	41.3	1.0	-49.8	-13.0	-36.8	
3349.80	-9.5	V	3.0	42.1	1.0	-50.6	-13.0	-37.6	
1674.90	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2512.35	-1.3	H	3.0	41.3	1.0	-41.6	-13.0	-28.6	
3349.80	-9.7	H	3.0	42.1	1.0	-50.7	-13.0	-37.7	
High Ch, PCC : 843.6MHz SCC : 847.5MHz									
1692.10	-15.0	V	3.0	40.7	1.0	-54.7	-13.0	-41.7	
2538.15	-12.2	V	3.0	41.4	1.0	-52.6	-13.0	-39.6	
3384.20	-9.4	V	3.0	42.1	1.0	-50.5	-13.0	-37.5	
1692.10	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2538.15	-12.2	H	3.0	41.4	1.0	-52.6	-13.0	-39.6	
3384.20	-9.5	H	3.0	42.1	1.0	-50.5	-13.0	-37.5	

5+3 MHz
QPSK
ANT A

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-11
Test Engineer: 25770
Configuration: EUT / AC Adapter, Z-Position, FF
Location: Chamber 2
Mode: LTE_QPSK Band 5 Uplink CA Harmonics, 5MHz_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
Low Ch, PCC : 826.5 MHz SCC : 830.4MHz									
1657.90	-15.1	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2486.85	-12.3	V	3.0	41.3	1.0	-52.6	-13.0	-39.6	
3315.80	-9.8	V	3.0	42.1	1.0	-50.8	-13.0	-37.8	
1657.90	-15.8	H	3.0	40.7	1.0	-55.5	-13.0	-42.5	
2486.85	-12.6	H	3.0	41.3	1.0	-52.9	-13.0	-39.9	
3315.80	-10.0	H	3.0	42.1	1.0	-51.1	-13.0	-38.1	
Mid Ch, PCC : 835MHz SCC : 838.9MHz									
1674.90	-15.2	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2512.35	-12.4	V	3.0	41.3	1.0	-52.7	-13.0	-39.7	
3349.80	-9.4	V	3.0	42.1	1.0	-50.5	-13.0	-37.5	
1674.90	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2512.35	-12.4	H	3.0	41.3	1.0	-52.7	-13.0	-39.7	
3349.80	-9.7	H	3.0	42.1	1.0	-50.8	-13.0	-37.8	
High Ch, PCC : 843.6MHz SCC : 847.5MHz									
1692.10	-15.0	V	3.0	40.7	1.0	-54.7	-13.0	-41.7	
2538.15	-12.1	V	3.0	41.4	1.0	-52.5	-13.0	-39.5	
3384.20	-9.3	V	3.0	42.1	1.0	-50.4	-13.0	-37.4	
1692.10	-15.6	H	3.0	40.7	1.0	-55.3	-13.0	-42.3	
2538.15	-12.3	H	3.0	41.4	1.0	-52.7	-13.0	-39.7	
3384.20	-9.5	H	3.0	42.1	1.0	-50.5	-13.0	-37.5	

LTE Band 14

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

Company: Samsung
Project #: 4790748041
Date: 2023-04-25
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position, FF
Location: Chamber 2
Mode: LTE_QPSK Band 14 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, 790.5MHz									
1581.00	-27.4	V	3.0	40.7	1.0	-67.1	-13.0	-54.1	
2371.50	-10.4	V	3.0	41.1	1.0	-50.5	-13.0	-37.5	
3162.00	-9.9	V	3.0	42.0	1.0	-50.9	-13.0	-37.9	
1581.00	-25.6	H	3.0	40.7	1.0	-65.3	-13.0	-52.3	
2371.50	-7.9	H	3.0	41.1	1.0	-48.0	-13.0	-35.0	
3162.00	-10.1	H	3.0	42.0	1.0	-51.1	-13.0	-38.1	
Mid Ch, 793MHz									
1586.00	-30.3	V	3.0	40.7	1.0	-70.0	-13.0	-57.0	
2379.00	-11.0	V	3.0	41.2	1.0	-51.1	-13.0	-38.1	
3172.00	-10.1	V	3.0	42.0	1.0	-51.1	-13.0	-38.1	
1586.00	-31.0	H	3.0	40.7	1.0	-70.7	-13.0	-57.7	
2379.00	-6.2	H	3.0	41.2	1.0	-46.4	-13.0	-33.4	
3172.00	-10.1	H	3.0	42.0	1.0	-51.2	-13.0	-38.2	
High Ch, 795.5MHz									
1591.00	-27.9	V	3.0	40.7	1.0	-67.5	-13.0	-54.5	
2386.50	-9.8	V	3.0	41.2	1.0	-49.9	-13.0	-36.9	
3182.00	-9.9	V	3.0	42.0	1.0	-51.0	-13.0	-38.0	
1591.00	-25.3	H	3.0	40.7	1.0	-65.0	-13.0	-52.0	
2386.50	-8.3	H	3.0	41.2	1.0	-48.5	-13.0	-35.5	
3182.00	-10.2	H	3.0	42.0	1.0	-51.3	-13.0	-38.3	

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

Company: Samsung
Project #: 4790748041
Date: 2023-03-24
Test Engineer: 24542
Configuration: EUT / AC Adapter, Y-Position, FF
Location: Chamber 1
Mode: LTE_QPSK Band 14 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, 790.5MHz									
1581.00	-11.4	V	3.0	46.4	1.0	-56.8	-13.0	-43.8	
2371.50	1.5	V	3.0	46.8	1.0	-44.3	-13.0	-31.3	
3162.00	-9.7	V	3.0	46.8	1.0	-55.5	-13.0	-42.5	
1581.00	-11.6	H	3.0	46.4	1.0	-57.0	-13.0	-44.0	
2371.50	3.5	H	3.0	46.8	1.0	-42.4	-13.0	-29.4	
3162.00	-9.7	H	3.0	46.8	1.0	-55.5	-13.0	-42.5	
Mid Ch, 793MHz									
1586.00	-12.4	V	3.0	46.4	1.0	-57.8	-13.0	-44.8	
2379.00	-2.2	V	3.0	46.9	1.0	-48.1	-13.0	-35.1	
3172.00	-9.7	V	3.0	46.8	1.0	-55.5	-13.0	-42.5	
1586.00	-11.5	H	3.0	46.4	1.0	-56.8	-13.0	-43.8	
2379.00	1.6	H	3.0	46.9	1.0	-44.2	-13.0	-31.2	
3172.00	-9.6	H	3.0	46.8	1.0	-55.4	-13.0	-42.4	
High Ch, 795.5MHz									
1591.00	-12.6	V	3.0	46.4	1.0	-58.0	-13.0	-45.0	
2386.50	-0.5	V	3.0	46.9	1.0	-46.4	-13.0	-33.4	
3182.00	-9.8	V	3.0	46.8	1.0	-55.6	-13.0	-42.6	
1591.00	-12.3	H	3.0	46.4	1.0	-57.7	-13.0	-44.7	
2386.50	1.8	H	3.0	46.9	1.0	-44.0	-13.0	-31.0	
3182.00	-9.7	H	3.0	46.8	1.0	-55.4	-13.0	-42.4	

LTE Band 26 (Part 90)

3 MHz
QPSK
ANT A+B

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-03
Test Engineer: 25770
Configuration: EUT / AC Adapter, Y-Position, HF
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
Low Ch, 815.5MHz									
1631.00	-15.2	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2446.50	-11.6	V	3.0	41.3	1.0	-51.9	-13.0	-38.9	
3262.00	-10.0	V	3.0	42.1	1.0	-51.0	-13.0	-38.0	
1631.00	-15.9	H	3.0	40.7	1.0	-55.5	-13.0	-42.5	
2446.50	-10.9	H	3.0	41.3	1.0	-51.1	-13.0	-38.1	
3262.00	-10.2	H	3.0	42.1	1.0	-51.3	-13.0	-38.3	
Mid Ch, 822.5MHz									
1645.00	-15.1	V	3.0	40.7	1.0	-54.8	-13.0	-41.8	
2467.50	-11.7	V	3.0	41.3	1.0	-52.0	-13.0	-39.0	
3290.00	-9.9	V	3.0	42.1	1.0	-50.9	-13.0	-37.9	
1645.00	-15.7	H	3.0	40.7	1.0	-55.4	-13.0	-42.4	
2467.50	-11.2	H	3.0	41.3	1.0	-51.4	-13.0	-38.4	
3290.00	-10.1	H	3.0	42.1	1.0	-51.1	-13.0	-38.1	

1.4 MHz
QPSK
ANT A

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

Company: Samsung
Project #: 4790748041
Date: 2023-03-28
Test Engineer: 26087
Configuration: EUT / Z-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	-14.6	V	3.0	46.4	1.0	-60.0	-13.0	-47.0	
2444.10	-1.5	V	3.0	46.9	1.0	-47.4	-13.0	-34.4	
3258.80	-9.5	V	3.0	46.7	1.0	-55.2	-13.0	-42.2	
1629.40	-15.6	H	3.0	46.4	1.0	-61.0	-13.0	-48.0	
2444.10	-3.9	H	3.0	46.9	1.0	-49.7	-13.0	-36.7	
3258.80	-9.3	H	3.0	46.7	1.0	-55.0	-13.0	-42.0	
Mid Ch, 823.3MHz									
1646.60	-14.5	V	3.0	46.4	1.0	-59.9	-13.0	-46.9	
2469.90	-0.6	V	3.0	46.9	1.0	-46.5	-13.0	-33.5	
3293.20	-9.5	V	3.0	46.6	1.0	-55.1	-13.0	-42.1	
1646.60	-16.3	H	3.0	46.4	1.0	-61.7	-13.0	-48.7	
2469.90	-2.3	H	3.0	46.9	1.0	-48.2	-13.0	-35.2	
3293.20	-9.3	H	3.0	46.6	1.0	-55.0	-13.0	-42.0	

LTE Band 26 (Straddle)

3 MHz

QPSK

ANT A+B

TT

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

Company:	Samsung
Project #:	4790748041
Date:	2023-05-03
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Y-Position, HF
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, 824MHz									
1648.00	-15.0	V	3.0	40.7	1.0	-54.6	-13.0	-41.6	
2472.00	-11.9	V	3.0	41.3	1.0	-52.2	-13.0	-39.2	
3296.00	-12.3	V	3.0	42.1	1.0	-53.4	-13.0	-40.4	
1648.00	-15.8	H	3.0	40.7	1.0	-55.5	-13.0	-42.5	
2472.00	-11.6	H	3.0	41.3	1.0	-51.9	-13.0	-38.9	
3296.00	-12.6	H	3.0	42.1	1.0	-53.6	-13.0	-40.6	

5 MHz

QPSK

ANT A

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

Company:	Samsung
Project #:	4790748041
Date:	2023-03-28
Test Engineer:	26087
Configuration:	EUT / Z-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	-14.4	V	3.0	46.4	1.0	-59.8	-13.0	-46.8	
2472.00	-1.4	V	3.0	46.9	1.0	-47.3	-13.0	-34.3	
3296.00	-9.6	V	3.0	46.6	1.0	-55.2	-13.0	-42.2	
1648.00	-15.6	H	3.0	46.4	1.0	-61.0	-13.0	-48.0	
2472.00	-2.5	H	3.0	46.9	1.0	-48.3	-13.0	-35.3	
3296.00	-9.4	H	3.0	46.6	1.0	-55.0	-13.0	-42.0	

LTE Band 26 (Part 22)

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-03
Test Engineer: 25770
Configuration: EUT / Adapter, Y-Position, HF
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 3MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

3 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, 815.5MHz									
1631.00	-15.2	V	3.0	40.7	1.0	-54.9	-13.0	-41.9	
2446.50	-12.2	V	3.0	41.3	1.0	-52.5	-13.0	-39.5	
3262.00	-10.0	V	3.0	42.1	1.0	-51.0	-13.0	-38.0	
1631.00	-16.0	H	3.0	40.7	1.0	-55.6	-13.0	-42.6	
2446.50	-12.0	H	3.0	41.3	1.0	-52.2	-13.0	-39.2	
3262.00	-10.2	H	3.0	42.1	1.0	-51.2	-13.0	-38.2	
Mid Ch, 831.5MHz									
1663.00	-15.0	V	3.0	40.7	1.0	-54.7	-13.0	-41.7	
2494.50	-7.7	V	3.0	41.3	1.0	-48.0	-13.0	-35.0	
3326.00	-9.8	V	3.0	42.1	1.0	-50.8	-13.0	-37.8	
1663.00	-15.8	H	3.0	40.7	1.0	-55.5	-13.0	-42.5	
2494.50	-8.7	H	3.0	41.3	1.0	-49.0	-13.0	-36.0	
3326.00	-9.9	H	3.0	42.1	1.0	-50.9	-13.0	-37.9	
High Ch, 847.5MHz									
1695.00	-15.0	V	3.0	40.7	1.0	-54.6	-13.0	-41.6	
2542.50	-11.5	V	3.0	41.4	1.0	-51.9	-13.0	-38.9	
3390.00	-9.2	V	3.0	42.1	1.0	-50.3	-13.0	-37.3	
1695.00	-15.5	H	3.0	40.7	1.0	-55.2	-13.0	-42.2	
2542.50	-11.1	H	3.0	41.4	1.0	-51.5	-13.0	-38.5	
3390.00	-9.4	H	3.0	42.1	1.0	-50.5	-13.0	-37.5	

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

Company: Samsung
Project #: 4790748041
Date: 2023-03-28
Test Engineer: 26087
Configuration: EUT / Z-Position, FF
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 10MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

10 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, 829MHz									
1658.00	-14.4	V	3.0	46.4	1.0	-59.8	-13.0	-46.8	
2487.00	-0.3	V	3.0	46.9	1.0	-46.2	-13.0	-33.2	
3316.00	-9.4	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1658.00	-15.3	H	3.0	46.4	1.0	-60.8	-13.0	-47.8	
2487.00	0.0	H	3.0	46.9	1.0	-45.9	-13.0	-32.9	
3316.00	-9.1	H	3.0	46.6	1.0	-54.7	-13.0	-41.7	
Mid Ch, 831.5MHz									
1663.00	-14.4	V	3.0	46.4	1.0	-59.8	-13.0	-46.8	
2494.50	1.8	V	3.0	46.9	1.0	-44.0	-13.0	-31.0	
3326.00	-9.4	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1663.00	-15.4	H	3.0	46.4	1.0	-60.9	-13.0	-47.9	
2494.50	1.9	H	3.0	46.9	1.0	-44.0	-13.0	-31.0	
3326.00	-9.1	H	3.0	46.6	1.0	-54.7	-13.0	-41.7	
High Ch, 844MHz									
1688.00	-14.3	V	3.0	46.5	1.0	-59.7	-13.0	-46.7	
2532.00	0.6	V	3.0	46.9	1.0	-45.3	-13.0	-32.3	
3376.00	-9.2	V	3.0	46.5	1.0	-54.7	-13.0	-41.7	
1688.00	-15.3	H	3.0	46.5	1.0	-60.8	-13.0	-47.8	
2532.00	2.7	H	3.0	46.9	1.0	-43.2	-13.0	-30.2	
3376.00	-8.8	H	3.0	46.5	1.0	-54.3	-13.0	-41.3	

NR Band n26 (Part 90) (ANT A+B)

5 MHz
DFT-OFDM
QPSK
ANT A+B

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-01
Test Engineer: 24542
Configuration: EUT / AC Adapter, Y-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	-12.4	V	3.0	46.4	1.0	-57.8	-13.0	-44.8	
2449.50	-0.6	V	3.0	46.9	1.0	-46.5	-13.0	-33.5	
3266.00	-9.4	V	3.0	46.7	1.0	-55.1	-13.0	-42.1	
1633.00	-13.9	H	3.0	46.4	1.0	-59.3	-13.0	-46.3	
2449.50	-3.7	H	3.0	46.9	1.0	-49.6	-13.0	-36.6	
3266.00	-9.2	H	3.0	46.7	1.0	-54.9	-13.0	-41.9	
Mid Ch, 821.5MHz									
1643.00	-13.7	V	3.0	46.4	1.0	-59.1	-13.0	-46.1	
2464.50	-3.6	V	3.0	46.9	1.0	-49.4	-13.0	-36.4	
3286.00	-9.5	V	3.0	46.6	1.0	-55.1	-13.0	-42.1	
1643.00	-14.2	H	3.0	46.4	1.0	-59.7	-13.0	-46.7	
2464.50	-2.4	H	3.0	46.9	1.0	-48.3	-13.0	-35.3	
3286.00	-9.3	H	3.0	46.6	1.0	-55.0	-13.0	-42.0	

5 MHz
DFT-OFDM
QPSK
ANT A

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

Company: Samsung
Project #: 4790748041
Date: 2023-05-26
Test Engineer: 24542
Configuration: EUT / AC Adapter, Z-Position, FF
Location: Chamber 2
Mode: 5G NR_QPSK NR n26 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	40.7	1.0	-54.5	-13.0	-41.5	
2449.50	-11.7	V	3.0	41.3	1.0	-52.0	-13.0	-39.0	
3266.00	-10.1	V	3.0	42.1	1.0	-51.1	-13.0	-38.1	
1633.00	-15.3	H	3.0	40.7	1.0	-55.0	-13.0	-42.0	
2449.50	-12.0	H	3.0	41.3	1.0	-52.3	-13.0	-39.3	
3266.00	-10.3	H	3.0	42.1	1.0	-51.3	-13.0	-38.3	
Mid Ch, 821.5MHz									
1643.00	-14.6	V	3.0	40.7	1.0	-54.3	-13.0	-41.3	
2464.50	-11.7	V	3.0	41.3	1.0	-52.0	-13.0	-39.0	
3286.00	-10.0	V	3.0	42.1	1.0	-51.1	-13.0	-38.1	
1643.00	-15.4	H	3.0	40.7	1.0	-55.1	-13.0	-42.1	
2464.50	-11.9	H	3.0	41.3	1.0	-52.2	-13.0	-39.2	
3286.00	-10.2	H	3.0	42.1	1.0	-51.3	-13.0	-38.3	

NR Band n26 (Straddle)

5 MHz

DFT-OFDM

QPSK

ANT A+B

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

Company:	Samsung
Project #:	4790748041
Date:	2023-05-01
Test Engineer:	24542
Configuration:	EUT / AC Adapter, Y-Position, HF
Location:	Chamber 1
Mode:	5G NR_QPSK NR n26 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	-11.9	V	3.0	46.4	1.0	-57.4	-13.0	-44.4	
2472.00	1.1	V	3.0	46.9	1.0	-44.8	-13.0	-31.8	
3296.00	-9.5	V	3.0	46.6	1.0	-55.1	-13.0	-42.1	
1648.00	-14.1	H	3.0	46.4	1.0	-59.5	-13.0	-46.5	
2472.00	2.5	H	3.0	46.9	1.0	-43.4	-13.0	-30.4	
3296.00	-9.1	H	3.0	46.6	1.0	-54.7	-13.0	-41.7	

20 MHz

DFT-OFDM

QPSK

ANT A

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

Company:	Samsung
Project #:	4790748041
Date:	2023-04-13
Test Engineer:	19568
Configuration:	EUT / AC Adapter, Z-Position, FF
Location:	Chamber 1
Mode:	5G NR_QPSK NR n26 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, 824MHz									
1648.00	-14.5	V	3.0	46.4	1.0	-59.9	-13.0	-46.9	
2472.00	-10.2	V	3.0	46.9	1.0	-56.1	-13.0	-43.1	
3296.00	-7.4	V	3.0	46.6	1.0	-53.0	-13.0	-40.0	
1648.00	-15.5	H	3.0	46.4	1.0	-60.9	-13.0	-47.9	
2472.00	-9.3	H	3.0	46.9	1.0	-55.2	-13.0	-42.2	
3296.00	-9.4	H	3.0	46.6	1.0	-55.1	-13.0	-42.1	

NR Band n26 (Part 22)

15 MHz
DFT-OFDM
QPSK
ANT A+B

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

Company:	Samsung
Project #:	4790748041
Date:	2023-05-03
Test Engineer:	24542
Configuration:	EUT / AC Adapter, Y-Position, HF
Location:	Chamber 1
Mode:	5G NR_QPSK NR n26 Harmonics, 15MHz 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, 831.5MHz									
1663.00	-13.8	V	3.0	46.4	1.0	-59.2	-13.0	-46.2	
2494.50	1.0	V	3.0	46.9	1.0	-44.9	-13.0	-31.9	
3326.00	-9.2	V	3.0	46.6	1.0	-54.8	-13.0	-41.8	
1663.00	-13.9	H	3.0	46.4	1.0	-59.3	-13.0	-46.3	
2494.50	-0.3	H	3.0	46.9	1.0	-46.1	-13.0	-33.1	
3326.00	-9.1	H	3.0	46.6	1.0	-54.7	-13.0	-41.7	
High Ch, 841.5MHz									
1683.00	-13.1	V	3.0	46.5	1.0	-58.6	-13.0	-45.6	
2524.50	2.4	V	3.0	46.9	1.0	-43.5	-13.0	-30.5	
3366.00	-8.9	V	3.0	46.5	1.0	-54.4	-13.0	-41.4	
1683.00	-12.9	H	3.0	46.5	1.0	-58.3	-13.0	-45.3	
2524.50	2.3	H	3.0	46.9	1.0	-43.6	-13.0	-30.6	
3366.00	-8.7	H	3.0	46.5	1.0	-54.2	-13.0	-41.2	

10 MHz
DFT-OFDM
QPSK
ANT A

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

Company:	Samsung
Project #:	4790748041
Date:	2023-04-12
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Z-Position, FF
Location:	Chamber 1
Mode:	5G NR_QPSK NR n26 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	-11.1	V	3.0	46.4	1.0	-56.6	-13.0	-43.6	
2487.00	-0.7	V	3.0	46.9	1.0	-46.5	-13.0	-33.5	
3316.00	-9.3	V	3.0	46.6	1.0	-54.9	-13.0	-41.9	
1658.00	-13.4	H	3.0	46.4	1.0	-58.8	-13.0	-45.8	
2487.00	-1.6	H	3.0	46.9	1.0	-47.5	-13.0	-34.5	
3316.00	-9.2	H	3.0	46.6	1.0	-54.8	-13.0	-41.8	
Mid Ch, 831.5MHz									
1663.00	-13.9	V	3.0	46.4	1.0	-59.4	-13.0	-46.4	
2494.50	-6.4	V	3.0	46.9	1.0	-52.3	-13.0	-39.3	
3326.00	-9.4	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1663.00	-15.1	H	3.0	46.4	1.0	-60.5	-13.0	-47.5	
2494.50	-4.9	H	3.0	46.9	1.0	-50.7	-13.0	-37.7	
3326.00	-9.2	H	3.0	46.6	1.0	-54.8	-13.0	-41.8	
High Ch, 844MHz									
1688.00	-11.5	V	3.0	46.5	1.0	-57.0	-13.0	-44.0	
2532.00	2.6	V	3.0	46.9	1.0	-43.3	-13.0	-30.3	
3376.00	-9.1	V	3.0	46.5	1.0	-54.6	-13.0	-41.6	
1688.00	-13.8	H	3.0	46.5	1.0	-59.2	-13.0	-46.2	
2532.00	1.9	H	3.0	46.9	1.0	-44.0	-13.0	-31.0	
3376.00	-8.9	H	3.0	46.5	1.0	-54.4	-13.0	-41.4	

END OF REPORT