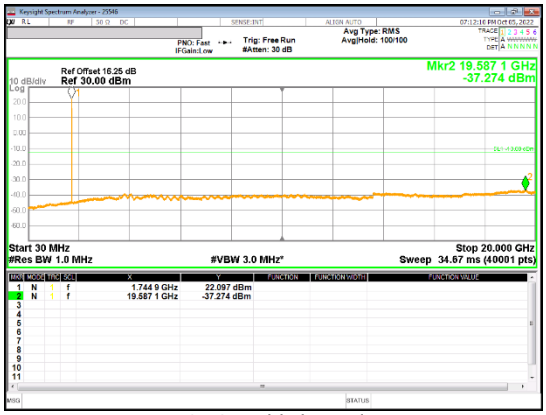
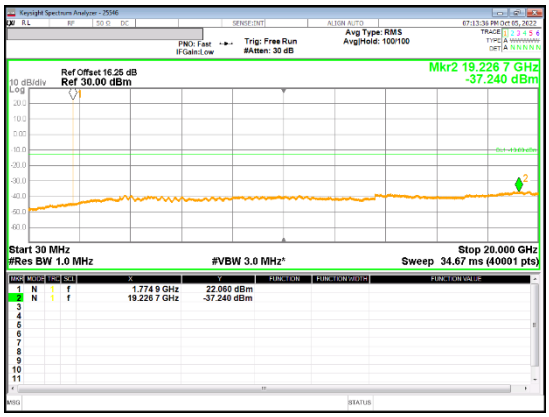
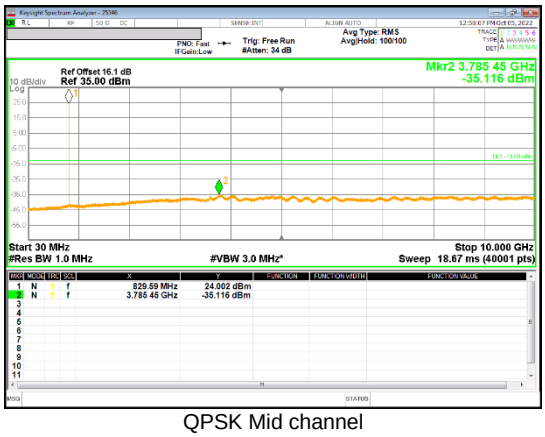
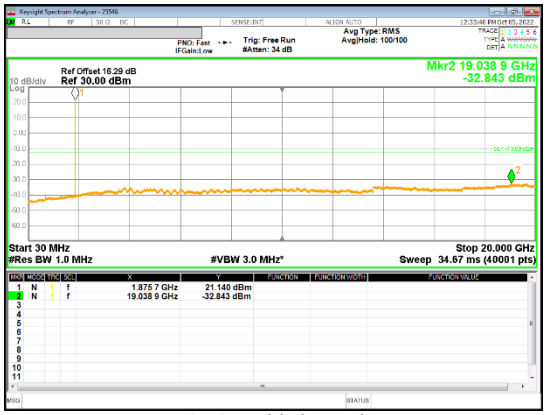
LTE Band 66

10 MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

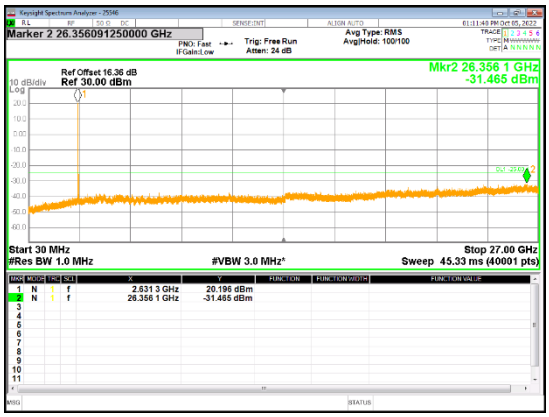
NR Band n5

15 MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

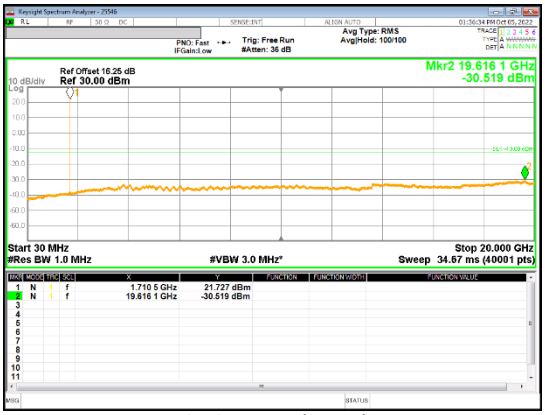
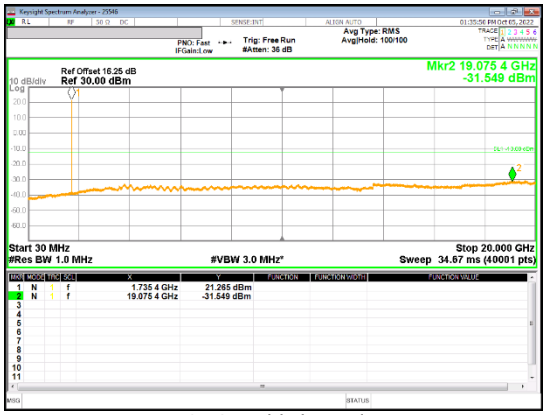
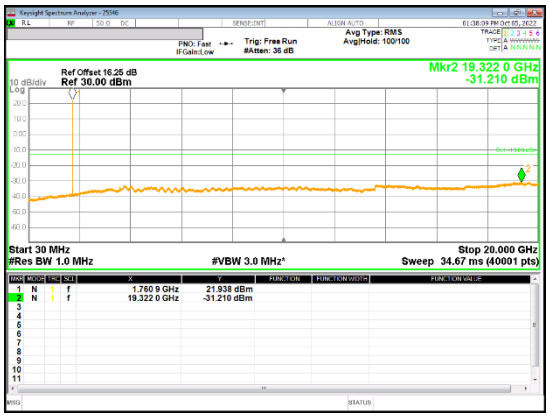
NR Band n25

15 MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

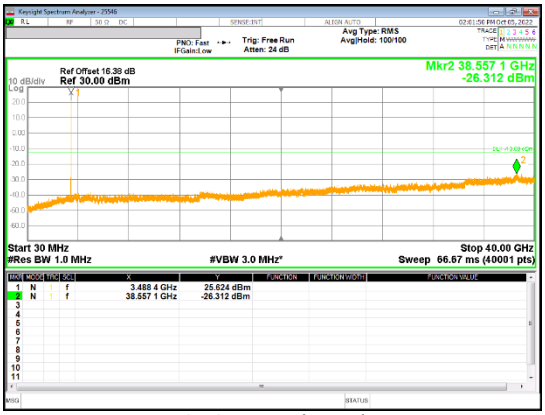
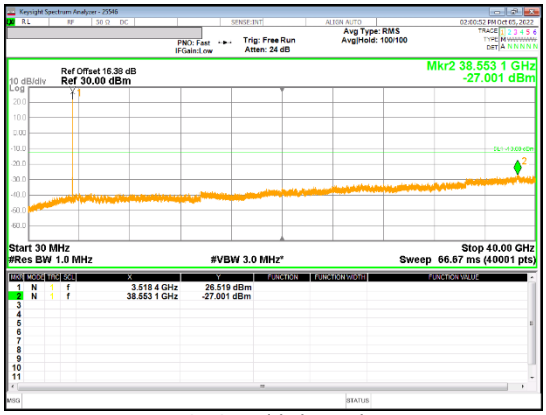
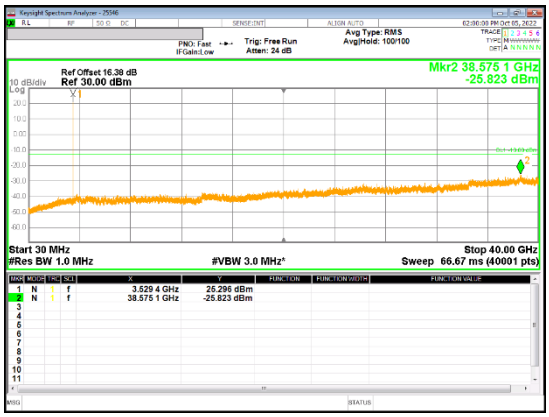
NR Band n41

40 MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

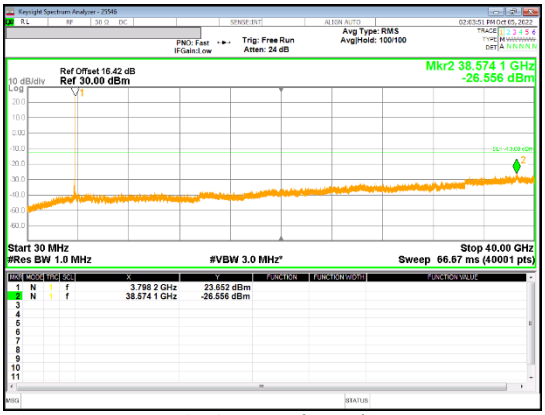
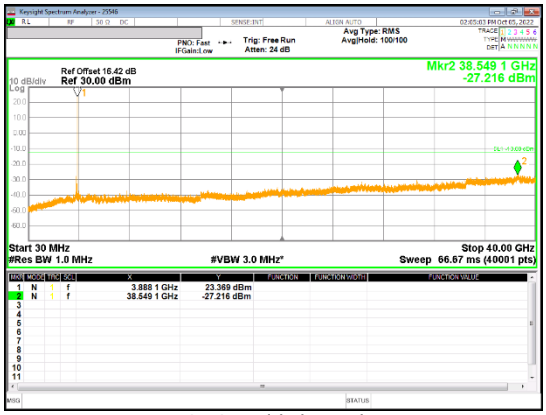
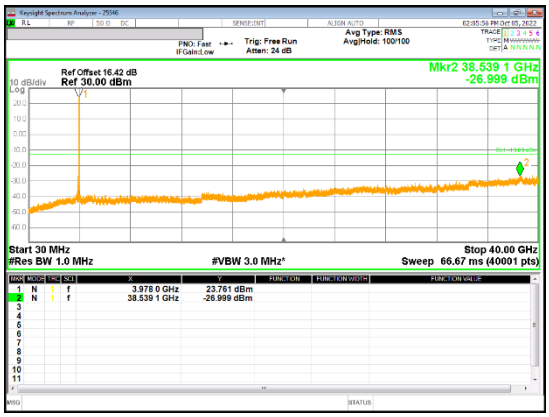
NR Band n66

20 MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

NR Band n77 (3450 – 3550 MHz)

40MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

NR Band n77 (3700 – 3980 MHz)

100MHz	 QPSK Low channel	 QPSK Mid channel
	 QPSK High channel	

9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235,§27.54 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.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

§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

RESULTS

See the following pages.

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)

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27/90(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

9.4.1. FREQUENCY STABILITY RESULTS

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

Test Date	2022-09-01
Test Engineer	25546

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 [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	824.20004023	0.002	848.80003845	0.003	2.5
3.88	40	824.20003926	0.003	848.80003532	0.006	2.5
3.88	30	824.20004136	0.001	848.80004512	-0.005	2.5
3.88	***20***	***824.20004208***	***0.000***	***848.80004081***	***0.000***	***2.5***
3.88	10	824.20003468	0.009	848.80003741	0.004	2.5
3.88	0	824.20004233	0.000	848.80004029	0.001	2.5
3.88	-10	824.20003842	0.004	848.80003924	0.002	2.5
3.88	-20	824.20004152	0.001	848.80004298	-0.003	2.5
3.88	-30	824.20003865	0.004	848.80003625	0.005	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 [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**824.20004208**	***0***	**848.80004081**	***0***	***2.5***
4.40	20	824.20003990	0.003	848.80003893	0.002	2.5
3.70	20	824.20004249	0.000	848.80004300	-0.003	2.5

GSM 1900, Channel 512/810, Frequency 1850.0/1910.0 MHz (Lowest Frequency:GPRS / Highest Frequency: EGPRS)

Test Date	2022-09-01
Test Engineer	25546

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.0778	1909.9219		
Extreme (50C)		1850.0779	1909.9220	56.3	0.030
Extreme (40C)		1850.0779	1909.9220	48.4	0.026
Extreme (30C)		1850.0779	1909.9220	45.7	0.024
Extreme (10C)		1850.0779	1909.9220	42.8	0.023
Extreme (0C)		1850.0779	1909.9220	43.3	0.023
Extreme (-10C)		1850.0779	1909.9220	49.4	0.026
Extreme (-20C)		1850.0779	1909.9220	51.0	0.027
Extreme (-30C)		1850.0779	1909.9220	52.5	0.028
20C	15%	1850.0779	1909.9220	42.1	0.022
	-15%	1850.0779	1909.9220	49.1	0.026
	End Point	1850.0779	1909.9220	55.8	0.030

WCDMA Band 5

Test Date	2022-09-05
Test Engineer	25546

Limit: +- 2.5 ppm =	Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC 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	826.40002342	-0.005	846.60001538	0.010	2.5
3.88	40	826.40001765	0.002	846.60001873	0.006	2.5
3.88	30	826.40001964	0.000	846.60002143	0.003	2.5
3.88	***20***	***826.40001948***	***0.000***	***846.60002381***	***0.000***	***2.5***
3.88	10	826.40002321	-0.005	846.60002116	0.003	2.5
3.88	0	826.40001746	0.002	846.60001643	0.009	2.5
3.88	-10	826.40001954	0.000	846.60002295	0.001	2.5
3.88	-20	826.40002012	-0.001	846.60002342	0.000	2.5
3.88	-30	826.40001965	0.000	846.60002069	0.004	2.5

Limit: +- 2.5 ppm =	Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC 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***	**826.40001948**	***0***	**846.60002381**	***0***	***2.5***
4.40	20	826.40000919	0.012	846.60000511	0.022	2.5
3.70	20	826.40001050	0.011	846.60000543	0.022	2.5

WCDMA Band 4 (Lowest Frequency: HSDPA/ Highest Frequency: HSDPA)

Test Date	2022-09-02
Test Engineer	25546

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.3209	1754.6817		
Extreme (50C)		1710.3209	1754.6817	32.5	0.019
Extreme (40C)		1710.3209	1754.6817	30.3	0.017
Extreme (30C)		1710.3209	1754.6817	29.5	0.017
Extreme (10C)		1710.3209	1754.6817	33.5	0.019
Extreme (0C)		1710.3209	1754.6817	35.8	0.021
Extreme (-10C)		1710.3209	1754.6817	29.6	0.017
Extreme (-20C)		1710.3209	1754.6817	32.2	0.019
Extreme (-30C)		1710.3209	1754.6817	33.5	0.019
20C	15%	1710.3209	1754.6817	21.9	0.013
	-15%	1710.3209	1754.6817	20.9	0.012
	End Point	1710.3209	1754.6817	22.5	0.013

WCDMA Band 2 (Lowest Frequency: HSDPA / Highest Frequency: Rel99)

Test Date	2022-09-02
Test Engineer	25546

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.3219	1909.6705		
Extreme (50C)		1850.3219	1909.6705	30.3	0.016
Extreme (40C)		1850.3219	1909.6705	35.5	0.019
Extreme (30C)		1850.3219	1909.6705	29.5	0.016
Extreme (10C)		1850.3219	1909.6705	25.7	0.014
Extreme (0C)		1850.3219	1909.6705	31.9	0.017
Extreme (-10C)		1850.3219	1909.6705	33.4	0.018
Extreme (-20C)		1850.3219	1909.6705	32.4	0.017
Extreme (-30C)		1850.3219	1909.6705	27.7	0.015
20C	15%	1850.3219	1909.6705	15.1	0.008
	-15%	1850.3219	1909.6705	21.5	0.011
	End Point	1850.3219	1909.6705	24.5	0.013

LTE Band 5

Test Date	2022-09-05
Test Engineer	25546

Limit: +- 2.5 ppm =	Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC Low Channel 2061.750 Hz			High Channel 2120.750 Hz		
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	824.70002069	0.001	848.30002169	0.003	2.5
3.88	40	824.70003522	-0.017	848.30002115	0.003	2.5
3.88	30	824.70003591	-0.017	848.30002505	-0.001	2.5
3.88	***20***	***824.70002154***	***0.000***	***848.30002410***	***0.000***	***2.5***
3.88	10	824.70001928	0.003	848.30002907	-0.006	2.5
3.88	0	824.70003452	-0.016	848.30002997	-0.007	2.5
3.88	-10	824.70003207	-0.013	848.30002588	-0.002	2.5
3.88	-20	824.70001806	0.004	848.30001954	0.005	2.5
3.88	-30	824.70001760	0.005	848.30002211	0.002	2.5

Limit: +- 2.5 ppm =	Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC Low Channel 2061.750 Hz			High Channel 2120.750 Hz		
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**824.70001680**	***0***	**848.30000845**	***0***	***2.5***
4.40	20	824.70001061	0.008	848.30002839	-0.024	2.5
3.70	20	824.70002649	-0.012	#VALUE!	#VALUE!	2.5

LTE Band 12 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2022-09-06
Test Engineer	25546

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.1548	715.8457		
Extreme (50C)		699.1548	715.8457	23.3	0.033
Extreme (40C)		699.1548	715.8457	25.5	0.036
Extreme (30C)		699.1548	715.8457	22.2	0.031
Extreme (10C)		699.1548	715.8457	19.6	0.028
Extreme (0C)		699.1548	715.8457	22.8	0.032
Extreme (-10C)		699.1548	715.8457	23.6	0.033
Extreme (-20C)		699.1548	715.8457	21.5	0.030
Extreme (-30C)		699.1548	715.8457	22.9	0.032
20C	15%	699.1548	715.8457	15.4	0.022
	-15%	699.1548	715.8457	20.3	0.029
	End Point	699.1548	715.8457	23.7	0.033

LTE Band 13 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2022-09-06
Test Engineer	25546

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	777.2550	786.7481		
Extreme (50C)		777.2550	786.7481	12.4	0.016
Extreme (40C)		777.2550	786.7481	16.5	0.021
Extreme (30C)		777.2550	786.7481	17.6	0.023
Extreme (10C)		777.2550	786.7481	15.4	0.020
Extreme (0C)		777.2550	786.7481	13.7	0.017
Extreme (-10C)		777.2550	786.7481	15.5	0.020
Extreme (-20C)		777.2550	786.7481	16.6	0.021
Extreme (-30C)		777.2550	786.7481	18.6	0.024
20C	15%	777.2550	786.7481	6.1	0.008
	-15%	777.2550	786.7481	9.0	0.011
	End Point	777.2550	786.7481	9.8	0.013

LTE Band 25 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2022-09-07
Test Engineer	25546

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1517	1914.8465		
Extreme (50C)		1850.1517	1914.8465	35.7	0.019
Extreme (40C)		1850.1517	1914.8465	38.5	0.020
Extreme (30C)		1850.1517	1914.8465	32.7	0.017
Extreme (10C)		1850.1517	1914.8465	33.5	0.018
Extreme (0C)		1850.1517	1914.8465	30.1	0.016
Extreme (-10C)		1850.1517	1914.8465	29.4	0.016
Extreme (-20C)		1850.1517	1914.8465	28.9	0.015
Extreme (-30C)		1850.1517	1914.8465	31.3	0.017
20C	15%	1850.1517	1914.8465	27.3	0.014
	-15%	1850.1517	1914.8465	16.4	0.009
	End Point	1850.1517	1914.8465	23.8	0.013

LTE Band 26

Test Date	2022-09-07
Test Engineer	25546

Limit: +- 2.5 ppm =	Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC					
	Low Channel 2036.750 Hz			High Channel 2120.750 Hz		
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	814.70002365	-0.001	848.30002534	0.000	2.5
3.88	40	814.70002832	-0.007	848.30002759	-0.002	2.5
3.88	30	814.70003213	-0.012	848.30003065	-0.006	2.5
3.88	***20***	***814.70002245***	***0.000***	***848.30002574***	***0.000***	***2.5***
3.88	10	814.70002332	-0.001	848.30002049	0.006	2.5
3.88	0	814.70001935	0.004	848.30002336	0.003	2.5
3.88	-10	814.70002045	0.002	848.30001974	0.007	2.5
3.88	-20	814.70002164	0.001	848.30001905	0.008	2.5
3.88	-30	814.70002530	-0.003	848.30002432	0.002	2.5

Limit: +- 2.5 ppm =	Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC					
	Low Channel 2036.750 Hz			High Channel 2120.750 Hz		
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	**814.70002245**	***0***	**848.30002574**	***0***	***2.5***
4.40	20	814.70002065	0.002	848.30002225	0.004	2.5
3.70	20	814.70002311	-0.001	848.30002333	0.003	2.5

LTE Band 41(PC2) (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2022-09-08
Test Engineer	25546

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.2575	2689.7508		
Extreme (50C)		2496.2575	2689.7508	30.5	0.012
Extreme (40C)		2496.2575	2689.7508	25.5	0.010
Extreme (30C)		2496.2575	2689.7508	27.7	0.011
Extreme (10C)		2496.2575	2689.7508	29.0	0.011
Extreme (0C)		2496.2575	2689.7508	30.4	0.012
Extreme (-10C)		2496.2575	2689.7508	31.4	0.012
Extreme (-20C)		2496.2575	2689.7508	30.7	0.012
Extreme (-30C)		2496.2575	2689.7508	28.8	0.011
20C	15%	2496.2575	2689.7508	18.0	0.007
	-15%	2496.2575	2689.7508	16.0	0.006
	End Point	2496.2575	2689.7508	15.9	0.006

LTE Band 66 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2022-09-08
Test Engineer	25546

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1542	1779.8411		
Extreme (50C)		1710.1542	1779.8411	33.5	0.019
Extreme (40C)		1710.1542	1779.8411	36.0	0.021
Extreme (30C)		1710.1542	1779.8411	37.5	0.021
Extreme (10C)		1710.1542	1779.8411	35.1	0.020
Extreme (0C)		1710.1542	1779.8411	34.0	0.019
Extreme (-10C)		1710.1542	1779.8411	30.7	0.018
Extreme (-20C)		1710.1542	1779.8411	31.5	0.018
Extreme (-30C)		1710.1542	1779.8411	32.7	0.019
20C	15%	1710.1542	1779.8411	25.7	0.015
	-15%	1710.1542	1779.8411	24.9	0.014
	End Point	1710.1542	1779.8411	29.9	0.017

5G NR Band n5

Test Date	2022-09-12
Test Engineer	25546

Limit: +- 2.5 ppm =	Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC Low Channel 2066.250 Hz			High Channel 2116.250 Hz		
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	826.50002346	0.010	846.50003068	0.002	2.5
3.88	40	826.50002864	0.004	846.50002641	0.007	2.5
3.88	30	826.50002169	0.012	846.50002974	0.003	2.5
3.88	***20***	***826.50003197***	***0.000***	***846.50003269***	***0.000***	***2.5***
3.88	10	826.50002665	0.006	846.50002812	0.005	2.5
3.88	0	826.50002943	0.003	846.50003365	-0.001	2.5
3.88	-10	826.50003542	-0.004	846.50003247	0.000	2.5
3.88	-20	826.50003269	-0.001	846.50003009	0.003	2.5
3.88	-30	826.50003370	-0.002	846.50003187	0.001	2.5

Limit: +- 2.5 ppm =	Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20ºC Low Channel 2066.250 Hz			High Channel 2116.250 Hz		
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	***20***	***826.50003197***	***0***	***846.50003269***	***0***	***2.5***
4.40	20	826.50001123	0.025	846.50002549	0.009	2.5
3.70	20	826.50002558	0.008	846.50000772	0.029	2.5

5G NR Band n25 (Lowest Frequency:16QAM / Highest Frequency: 16QAM)

Test Date	2022-09-13
Test Engineer	25546

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.2466	1914.7501		
Extreme (50C)		1850.2466	1914.7501	23.7	0.013
Extreme (40C)		1850.2466	1914.7501	29.4	0.016
Extreme (30C)		1850.2466	1914.7501	31.7	0.017
Extreme (10C)		1850.2466	1914.7501	28.6	0.015
Extreme (0C)		1850.2466	1914.7501	29.5	0.016
Extreme (-10C)		1850.2466	1914.7501	33.8	0.018
Extreme (-20C)		1850.2466	1914.7501	30.5	0.016
Extreme (-30C)		1850.2466	1914.7501	31.9	0.017
20C	15%	1850.2466	1914.7501	25.5	0.014
	-15%	1850.2466	1914.7501	17.5	0.009
	End Point	1850.2466	1914.7501	14.3	0.008

5G NR Band n41 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2022-09-13
Test Engineer	25546

Normal (20C)		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2501.6945	2684.3126		
Extreme (50C)		2501.6945	2684.3126	16.7	0.006
Extreme (40C)		2501.6945	2684.3126	19.5	0.008
Extreme (30C)		2501.6945	2684.3126	23.0	0.009
Extreme (10C)		2501.6945	2684.3126	24.6	0.009
Extreme (0C)		2501.6945	2684.3126	22.5	0.009
Extreme (-10C)		2501.6945	2684.3126	23.1	0.009
Extreme (-20C)		2501.6945	2684.3126	25.1	0.010
Extreme (-30C)		2501.6945	2684.3126	24.3	0.009
20C	15%	2501.6945	2684.3126	20.1	0.008
	-15%	2501.6945	2684.3126	18.9	0.007
	End Point	2501.6945	2684.3126	18.0	0.007

5G NR Band n66 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	9/14/2022
Test Engineer	25546

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.2534	1779.7412		
Extreme (50C)		1710.2534	1779.7412	36.0	0.021
Extreme (40C)		1710.2534	1779.7412	37.4	0.021
Extreme (30C)		1710.2534	1779.7412	35.1	0.020
Extreme (10C)		1710.2534	1779.7412	30.5	0.017
Extreme (0C)		1710.2534	1779.7412	29.6	0.017
Extreme (-10C)		1710.2534	1779.7412	31.3	0.018
Extreme (-20C)		1710.2534	1779.7412	28.7	0.016
Extreme (-30C)		1710.2534	1779.7412	28.0	0.016
20C	15%	1710.2534	1779.7412	23.2	0.013
	-15%	1710.2534	1779.7412	24.6	0.014
	End Point	1710.2534	1779.7412	27.8	0.016

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NR Band n77 (Lowest Frequency:16QAM / Highest Frequency: QPSK)

Test Date	2022-09-14
Test Engineer	25546

Limit		3450	3550	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3455.6863	3544.3148		
Extreme (50C)		3455.6863	3544.3148	27.7	0.008
Extreme (40C)		3455.6863	3544.3148	27.0	0.008
Extreme (30C)		3455.6863	3544.3148	26.4	0.008
Extreme (10C)		3455.6863	3544.3148	23.9	0.007
Extreme (0C)		3455.6863	3544.3148	24.0	0.007
Extreme (-10C)		3455.6863	3544.3148	26.7	0.008
Extreme (-20C)		3455.6863	3544.3148	35.2	0.010
Extreme (-30C)		3455.6863	3544.3148	32.7	0.009
20C	15%	3455.6863	3544.3148	22.7	0.006
	-15%	3455.6863	3544.3148	24.1	0.007
	End Point	3455.6863	3544.3148	24.0	0.007

Test Date	2022-09-15
Test Engineer	25546

Limit		3700	3980	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3700.8865	3979.1275		
Extreme (50C)		3700.8865	3979.1275	29.0	0.008
Extreme (40C)		3700.8865	3979.1275	26.7	0.007
Extreme (30C)		3700.8865	3979.1275	29.4	0.008
Extreme (10C)		3700.8865	3979.1275	32.1	0.008
Extreme (0C)		3700.8865	3979.1275	33.6	0.009
Extreme (-10C)		3700.8865	3979.1275	35.4	0.009
Extreme (-20C)		3700.8865	3979.1275	36.9	0.010
Extreme (-30C)		3700.8865	3979.1275	30.9	0.008
20C	15%	3700.8865	3979.1275	23.3	0.006
	-15%	3700.8865	3979.1275	24.4	0.006
	End Point	3700.8865	3979.1275	24.3	0.006

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9.5. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50, and §90.635

LIMITS

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

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50:

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

(h) The following power limits shall apply in the BRS and EBS:

(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

(j)(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

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.

9.5.1. ERP/EIRP Results

GSM

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	29.25	V	3.11	-0.82	25.32	340.41	38.50	-13.18
		824.20	32.43	H	3.11	-0.82	28.51	709.58	38.50	-9.99
		836.60	27.35	V	3.13	-0.93	23.29	213.30	38.50	-15.21
		836.60	31.77	H	3.13	-0.93	27.71	590.20	38.50	-10.79
		848.80	25.27	V	3.15	-1.04	21.08	128.23	38.50	-17.42
		848.80	31.60	H	3.15	-1.04	27.41	550.81	38.50	-11.09
	EGPRS	824.20	24.88	V	3.11	-0.82	20.95	124.45	38.50	-17.55
		824.20	27.49	H	3.11	-0.82	23.57	227.51	38.50	-14.93
		836.60	22.42	V	3.13	-0.93	18.36	68.55	38.50	-20.14
		836.60	27.03	H	3.13	-0.93	22.97	198.15	38.50	-15.53
		848.80	20.24	V	3.15	-1.04	16.05	40.27	38.50	-22.45
		848.80	26.58	H	3.15	-1.04	22.39	173.38	38.50	-16.11

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
GSM 1900	GPRS	1850.20	12.76	V	4.62	9.52	17.66	58.34	33.00	-15.34
		1850.20	23.72	H	4.62	9.52	28.62	727.78	33.00	-4.38
		1880.00	12.63	V	4.65	9.29	17.26	53.21	33.00	-15.74
		1880.00	25.69	H	4.65	9.29	30.33	1078.95	33.00	-2.67
		1909.80	10.33	V	4.68	9.00	14.65	29.17	33.00	-18.35
		1909.80	27.17	H	4.68	9.00	31.49	1409.29	33.00	-1.51
	EGPRS	1850.20	10.23	V	4.62	9.52	15.13	32.58	33.00	-17.87
		1850.20	20.63	H	4.62	9.52	25.53	357.27	33.00	-7.47
		1880.00	9.61	V	4.65	9.29	14.24	26.55	33.00	-18.76
		1880.00	22.60	H	4.65	9.29	27.24	529.66	33.00	-5.76
		1909.80	7.06	V	4.68	9.00	11.38	13.74	33.00	-21.62
		1909.80	23.45	H	4.68	9.00	27.77	598.41	33.00	-5.23

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WCDMA

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	20.68	V	3.11	-0.84	16.73	47.10	38.50	-21.77
		826.40	23.67	H	3.11	-0.84	19.73	93.97	38.50	-18.77
		836.60	19.43	V	3.13	-0.93	15.37	34.43	38.50	-23.13
		836.60	23.98	H	3.13	-0.93	19.92	98.17	38.50	-18.58
		846.60	17.53	V	3.14	-1.02	13.37	21.73	38.50	-25.13
		846.60	23.55	H	3.14	-1.02	19.39	86.90	38.50	-19.11
	HSDPA	826.40	18.76	V	3.11	-0.84	14.81	30.27	38.50	-23.69
		826.40	21.85	H	3.11	-0.84	17.91	61.80	38.50	-20.59
		836.60	17.74	V	3.13	-0.93	13.68	23.33	38.50	-24.82
		836.60	21.64	H	3.13	-0.93	17.58	57.28	38.50	-20.92
		846.60	15.88	V	3.14	-1.02	11.72	14.86	38.50	-26.78
		846.60	21.21	H	3.14	-1.02	17.05	50.70	38.50	-21.45

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 4	REL99	1712.40	20.16	V	4.44	9.51	25.23	333.43	30.00	-4.77
		1712.40	13.56	H	4.44	9.51	18.63	72.95	30.00	-11.37
		1732.60	20.04	V	4.46	9.60	25.18	329.61	30.00	-4.82
		1732.60	13.10	H	4.46	9.60	18.24	66.68	30.00	-11.76
		1752.60	19.87	V	4.48	9.68	25.07	321.37	30.00	-4.93
		1752.60	12.15	H	4.48	9.68	17.35	54.33	30.00	-12.65
	HSDPA	1712.40	18.25	V	4.44	9.51	23.32	214.78	30.00	-6.68
		1712.40	11.65	H	4.44	9.51	16.72	46.99	30.00	-13.28
		1732.60	17.11	V	4.46	9.60	22.25	167.88	30.00	-7.75
		1732.60	10.83	H	4.46	9.60	15.97	39.54	30.00	-14.03
		1752.60	16.80	V	4.48	9.68	22.00	158.49	30.00	-8.00
		1752.60	10.27	H	4.48	9.68	15.47	35.24	30.00	-14.53

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 2	REL99	1852.40	7.71	V	4.62	9.51	12.59	18.16	33.00	-20.41
		1852.40	18.54	H	4.62	9.51	23.43	220.29	33.00	-9.57
		1880.00	7.22	V	4.65	9.29	11.85	15.31	33.00	-21.15
		1880.00	20.20	H	4.65	9.29	24.84	304.79	33.00	-8.16
		1907.60	5.92	V	4.68	9.03	10.26	10.62	33.00	-22.74
		1907.60	21.27	H	4.68	9.03	25.61	363.92	33.00	-7.39
	HSDPA	1852.40	6.73	V	4.62	9.51	11.61	14.49	33.00	-21.39
		1852.40	17.53	H	4.62	9.51	22.42	174.58	33.00	-10.58
		1880.00	6.30	V	4.65	9.29	10.93	12.39	33.00	-22.07
		1880.00	19.35	H	4.65	9.29	23.99	250.61	33.00	-9.01
		1907.60	4.80	V	4.68	9.03	9.14	8.20	33.00	-23.86
		1907.60	20.35	H	4.68	9.03	24.69	294.44	33.00	-8.31

LTE Band 5

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	824.70	24.05	H	3.11	-0.82	20.12	102.80	38.50	-18.38	1/3
		836.50	23.49	H	3.13	-0.93	19.43	87.70	38.50	-19.07	1/3
		848.30	22.73	H	3.15	-1.03	18.54	71.45	38.50	-19.96	1/3
	16-QAM	824.70	20.99	H	3.11	-0.82	17.06	50.82	38.50	-21.44	1/5
		836.50	22.38	H	3.13	-0.93	18.32	67.92	38.50	-20.18	1/3
		848.30	21.65	H	3.15	-1.03	17.46	55.72	38.50	-21.04	1/3
3	QPSK	825.50	23.78	H	3.10	-0.83	19.85	96.61	38.50	-18.65	1/8
		836.50	23.28	H	3.13	-0.93	19.22	83.56	38.50	-19.28	1/8
		847.50	22.52	H	3.15	-1.03	18.34	68.23	38.50	-20.16	1/8
	16-QAM	825.50	22.59	H	3.10	-0.83	18.66	73.45	38.50	-19.84	1/8
		836.50	22.32	H	3.13	-0.93	18.26	66.99	38.50	-20.24	1/8
		847.50	21.65	H	3.15	-1.03	17.47	55.85	38.50	-21.03	1/8
5	QPSK	826.50	23.93	H	3.11	-0.84	19.98	99.54	38.50	-18.52	1/12
		836.50	23.65	H	3.13	-0.93	19.59	90.99	38.50	-18.91	1/12
		846.50	22.83	H	3.14	-1.02	18.67	73.62	38.50	-19.83	1/12
	16-QAM	826.50	22.80	H	3.11	-0.84	18.85	76.74	38.50	-19.65	1/12
		836.50	22.39	H	3.13	-0.93	18.33	68.08	38.50	-20.17	1/12
		846.50	21.77	H	3.14	-1.02	17.61	57.68	38.50	-20.89	1/12
10	QPSK	829.00	23.76	H	3.11	-0.86	19.78	95.06	38.50	-18.72	1/0
		836.50	23.80	H	3.13	-0.93	19.74	94.19	38.50	-18.76	1/0
		844.00	22.88	H	3.14	-1.00	18.74	74.82	38.50	-19.76	1/0
	16-QAM	829.00	22.44	H	3.11	-0.86	18.46	70.15	38.50	-20.04	1/25
		836.50	22.41	H	3.13	-0.93	18.35	68.39	38.50	-20.15	1/0
		844.00	21.76	H	3.14	-1.00	17.62	57.81	38.50	-20.88	1/0

LTE Band 12

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	699.70	22.88	H	2.87	-0.80	19.21	83.37	34.77	-15.56	1/3
		707.50	22.33	H	2.89	-0.79	18.66	73.45	34.77	-16.11	1/3
		715.30	21.31	H	2.90	-0.77	17.64	58.08	34.77	-17.13	1/3
	16-QAM	699.70	21.90	H	2.87	-0.80	18.23	66.53	34.77	-16.54	1/3
		707.50	21.09	H	2.89	-0.79	17.42	55.21	34.77	-17.35	1/3
		715.30	20.38	H	2.90	-0.77	16.71	46.88	34.77	-18.06	1/0
3	QPSK	700.50	22.77	H	2.88	-0.80	19.10	81.28	34.77	-15.67	1/8
		707.50	22.42	H	2.89	-0.79	18.75	74.99	34.77	-16.02	1/8
		714.50	21.46	H	2.90	-0.77	17.79	60.12	34.77	-16.98	1/8
	16-QAM	700.50	22.03	H	2.88	-0.80	18.36	68.55	34.77	-16.41	1/8
		707.50	21.25	H	2.89	-0.79	17.58	57.28	34.77	-17.19	1/8
		714.50	20.50	H	2.90	-0.77	16.83	48.19	34.77	-17.94	1/8
5	QPSK	701.50	22.78	H	2.88	-0.80	19.10	81.28	34.77	-15.67	1/12
		707.50	22.36	H	2.89	-0.79	18.69	73.96	34.77	-16.08	1/12
		713.50	21.96	H	2.90	-0.77	18.28	67.30	34.77	-16.49	1/12
	16-QAM	701.50	21.63	H	2.88	-0.80	17.95	62.37	34.77	-16.82	1/12
		707.50	21.16	H	2.89	-0.79	17.49	56.10	34.77	-17.28	1/12
		713.50	20.45	H	2.90	-0.77	16.77	47.53	34.77	-18.00	1/12
10	QPSK	704.00	22.71	H	2.88	-0.79	19.04	80.17	34.77	-15.73	1/25
		707.50	21.92	H	2.89	-0.79	18.25	66.83	34.77	-16.52	1/49
		711.00	21.83	H	2.89	-0.78	18.15	65.31	34.77	-16.62	1/49
	16-QAM	704.00	21.66	H	2.88	-0.79	17.99	62.95	34.77	-16.78	1/49
		707.50	20.89	H	2.89	-0.79	17.22	52.72	34.77	-17.55	1/49
		711.00	20.81	H	2.89	-0.78	17.13	51.64	34.77	-17.64	1/49

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LTE Band 13

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	779.50	23.56	H	3.02	-0.64	19.90	97.77	34.77	-14.87	1/12
		782.00	23.04	H	3.02	-0.64	19.38	86.78	34.77	-15.39	1/12
		784.50	22.75	H	3.04	-0.63	19.08	81.00	34.77	-15.69	1/12
	16-QAM	779.50	22.32	H	3.02	-0.64	18.66	73.48	34.77	-16.11	1/12
		782.00	21.89	H	3.02	-0.64	18.23	66.59	34.77	-16.54	1/12
		784.50	21.92	H	3.04	-0.63	18.25	66.91	34.77	-16.52	1/12
10	QPSK	782.00	23.16	H	3.02	-0.64	19.50	89.22	34.77	-15.27	1/49
	16-QAM	782.00	22.26	H	3.02	-0.64	18.60	72.52	34.77	-16.17	1/49

LTE Band 25

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	1850.70	17.18	H	4.62	9.52	22.08	161.44	33.00	-10.92	1/3
		1882.50	19.56	H	4.65	9.27	24.17	261.22	33.00	-8.83	1/5
		1914.30	19.16	H	4.70	8.94	23.40	218.78	33.00	-9.60	1/5
	16-QAM	1850.70	16.41	H	4.62	9.52	21.31	135.21	33.00	-11.69	1/3
		1882.50	18.65	H	4.65	9.27	23.26	211.84	33.00	-9.74	1/3
		1914.30	18.01	H	4.70	8.94	22.25	167.88	33.00	-10.75	1/3
3	QPSK	1851.50	17.61	H	4.62	9.51	22.49	177.42	33.00	-10.51	1/8
		1882.50	19.68	H	4.65	9.27	24.29	268.53	33.00	-8.71	1/8
		1913.50	19.11	H	4.69	8.95	23.36	216.77	33.00	-9.64	1/8
	16-QAM	1851.50	16.43	H	4.62	9.51	21.31	135.21	33.00	-11.69	1/8
		1882.50	18.67	H	4.65	9.27	23.28	212.81	33.00	-9.72	1/8
		1913.50	18.14	H	4.69	8.95	22.39	173.38	33.00	-10.61	1/8
5	QPSK	1852.50	17.54	H	4.62	9.50	22.42	174.58	33.00	-10.58	1/12
		1882.50	19.59	H	4.65	9.27	24.20	263.03	33.00	-8.80	1/12
		1912.50	19.52	H	4.69	8.96	23.79	239.33	33.00	-9.21	1/12
	16-QAM	1852.50	16.62	H	4.62	9.50	21.50	141.25	33.00	-11.50	1/12
		1882.50	18.69	H	4.65	9.27	23.30	213.80	33.00	-9.70	1/12
		1912.50	18.60	H	4.69	8.96	22.87	193.64	33.00	-10.13	1/12
10	QPSK	1855.00	17.71	H	4.62	9.48	22.57	180.72	33.00	-10.43	1/25
		1882.50	19.69	H	4.65	9.27	24.30	269.15	33.00	-8.70	1/25
		1910.00	20.52	H	4.68	8.99	24.84	304.79	33.00	-8.16	1/25
	16-QAM	1855.00	16.63	H	4.62	9.48	21.49	140.93	33.00	-11.51	1/0
		1882.50	18.75	H	4.65	9.27	23.36	216.77	33.00	-9.64	1/49
		1910.00	19.51	H	4.68	8.99	23.83	241.55	33.00	-9.17	1/25
15	QPSK	1857.50	17.47	H	4.63	9.47	22.31	170.22	33.00	-10.69	1/0
		1882.50	19.47	H	4.65	9.27	24.08	255.86	33.00	-8.92	1/0
		1907.50	20.29	H	4.69	9.03	24.64	291.07	33.00	-8.36	1/37
	16-QAM	1857.50	16.49	H	4.63	9.47	21.33	135.83	33.00	-11.67	1/0
		1882.50	18.34	H	4.65	9.27	22.95	197.24	33.00	-10.05	1/0
		1907.50	19.45	H	4.69	9.03	23.80	239.88	33.00	-9.20	1/37
20	QPSK	1860.00	17.51	H	4.63	9.45	22.33	171.00	33.00	-10.67	1/0
		1882.50	19.10	H	4.65	9.27	23.71	234.96	33.00	-9.29	1/0
		1905.00	20.40	H	4.68	9.06	24.78	300.61	33.00	-8.22	1/99
	16-QAM	1860.00	16.51	H	4.63	9.45	21.33	135.83	33.00	-11.67	1/0
		1882.50	18.17	H	4.65	9.27	22.78	189.67	33.00	-10.22	1/0
		1905.00	19.38	H	4.68	9.06	23.76	237.68	33.00	-9.24	1/49

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LTE Band 26

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	814.70	24.33	H	3.09	-0.73	20.51	112.46	50.00	-29.49	1/3
		823.30	23.53	H	3.10	-0.81	19.62	91.62	50.00	-30.38	1/3
		824.70	23.92	H	3.11	-0.82	19.99	99.77	38.50	-18.51	1/3
		831.50	23.05	H	3.11	-0.88	19.05	80.35	38.50	-19.45	1/3
		848.30	22.00	H	3.15	-1.03	17.82	60.53	38.50	-20.68	1/5
	16-QAM	814.70	23.16	H	3.09	-0.73	19.34	85.90	50.00	-30.66	1/3
		822.50	22.49	H	3.10	-0.81	18.58	72.11	50.00	-31.42	1/3
		824.70	22.74	H	3.11	-0.82	18.81	76.03	38.50	-19.69	1/3
		831.50	22.09	H	3.11	-0.88	18.09	64.42	38.50	-20.41	1/3
		848.30	21.01	H	3.15	-1.03	16.83	48.19	38.50	-21.67	1/5
3	QPSK	815.50	24.28	H	3.08	-0.74	20.46	111.17	50.00	-29.54	1/8
		822.50	23.87	H	3.10	-0.80	19.96	99.08	50.00	-30.04	1/8
		825.50	23.67	H	3.10	-0.83	19.73	93.97	38.50	-18.77	1/8
		831.50	23.54	H	3.11	-0.88	19.54	89.95	38.50	-18.96	1/8
		847.50	22.72	H	3.15	-1.03	18.54	71.45	38.50	-19.96	1/8
	16-QAM	815.50	23.13	H	3.08	-0.74	19.31	85.31	50.00	-30.69	1/8
		822.50	23.04	H	3.10	-0.79	19.14	82.04	50.00	-30.86	1/8
		825.50	22.68	H	3.10	-0.83	18.74	74.82	38.50	-19.76	1/8
		831.50	22.54	H	3.11	-0.88	18.54	71.45	38.50	-19.96	1/8
		847.50	21.57	H	3.15	-1.03	17.39	54.83	38.50	-21.11	1/8
5	QPSK	816.50	24.10	H	3.09	-0.75	20.26	106.17	50.00	-29.74	1/12
		821.50	23.91	H	3.10	-0.79	20.01	100.23	50.00	-29.99	1/12
		826.50	23.88	H	3.11	-0.84	19.93	98.40	38.50	-18.57	1/12
		831.50	23.58	H	3.11	-0.88	19.58	90.78	38.50	-18.92	1/12
		846.50	22.79	H	3.14	-1.02	18.63	72.95	38.50	-19.87	1/12
	16-QAM	816.50	23.20	H	3.09	-0.75	19.36	86.30	50.00	-30.64	1/12
		821.50	23.02	H	3.11	-0.88	19.02	79.80	50.00	-30.98	1/12
		826.50	22.70	H	3.11	-0.84	18.75	74.99	38.50	-19.75	1/12
		831.50	22.43	H	3.11	-0.88	18.43	69.66	38.50	-20.07	1/12
		846.50	21.59	H	3.14	-1.02	17.43	55.34	38.50	-21.07	1/0
10	QPSK	819.00	24.25	H	3.09	-0.77	20.38	109.14	50.00	-29.62	1/0
		829.00	23.70	H	3.11	-0.86	19.72	93.76	38.50	-18.78	1/0
		831.50	23.57	H	3.11	-0.88	19.57	90.57	38.50	-18.93	1/0
		844.00	23.33	H	3.14	-1.00	19.19	82.99	38.50	-19.31	1/0
	16-QAM	819.00	23.36	H	3.09	-0.77	19.49	88.92	50.00	-30.51	1/0
		829.00	22.49	H	3.11	-0.86	18.51	70.96	38.50	-19.99	1/0
		831.50	22.59	H	3.11	-0.88	18.59	72.28	38.50	-19.91	1/0
		844.00	22.27	H	3.14	-1.00	18.13	65.01	38.50	-20.37	1/0
15	QPSK	821.50	23.93	H	3.10	-0.79	20.03	100.69	50.00	-29.97	1/0
		831.50	23.56	H	3.11	-0.88	19.56	90.36	38.50	-18.94	1/0
		841.50	23.30	H	3.13	-0.97	19.19	82.99	38.50	-19.31	1/0
	16-QAM	821.50	22.91	H	3.10	-0.79	19.01	79.62	50.00	-30.99	1/0
		831.50	22.40	H	3.11	-0.88	18.40	69.18	38.50	-20.10	1/0
		841.50	22.25	H	3.13	-0.97	18.14	65.16	38.50	-20.36	1/0

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain #REF!	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	824.00	23.33	H	3.10	-0.82	19.41	87.30	38.50	-19.09	1/5
	16-QAM		22.16	H	3.10	-0.82	18.24	66.68	38.50	-20.26	1/5
3	QPSK		23.50	H	3.10	-0.82	19.58	90.78	38.50	-18.92	1/8
	16-QAM		22.52	H	3.10	-0.82	18.60	72.44	38.50	-19.90	1/0
5	QPSK		23.75	H	3.10	-0.82	19.83	96.16	38.50	-18.67	1/12
	16-QAM		22.53	H	3.10	-0.82	18.61	72.61	38.50	-19.89	1/24
10	QPSK		23.77	H	3.10	-0.82	19.85	96.61	38.50	-18.65	1/0
	16-QAM		22.74	H	3.10	-0.82	18.82	76.21	38.50	-19.68	1/0
15	QPSK		23.65	H	3.10	-0.82	19.73	93.97	38.50	-18.77	1/0
	16-QAM		22.54	H	3.10	-0.82	18.62	72.78	38.50	-19.88	1/0

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LTE Band 41(PC2)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	2498.50	19.12	H	5.36	10.18	23.93	247.17	33.00	-9.07	1/0
		2593.00	20.06	H	5.47	10.03	24.62	289.73	33.00	-8.38	1/0
		2687.50	21.22	H	5.57	10.05	25.71	372.39	33.00	-7.29	1/0
	16-QAM	2498.50	18.37	H	5.36	10.18	23.18	207.97	33.00	-9.82	1/12
		2593.00	19.25	H	5.47	10.03	23.81	240.44	33.00	-9.19	1/12
		2687.50	20.60	H	5.57	10.05	25.09	322.85	33.00	-7.91	1/0
10	QPSK	2501.00	19.38	H	5.38	10.17	24.17	261.22	33.00	-8.83	1/25
		2593.00	20.33	H	5.47	10.03	24.89	308.32	33.00	-8.11	1/25
		2685.00	21.35	H	5.56	10.05	25.85	384.59	33.00	-7.15	1/0
	16-QAM	2501.00	18.64	H	5.38	10.17	23.43	220.29	33.00	-9.57	1/25
		2593.00	19.03	H	5.47	10.03	23.59	228.56	33.00	-9.41	1/49
		2685.00	20.60	H	5.56	10.05	25.10	323.59	33.00	-7.90	1/0
15	QPSK	2503.50	19.85	H	5.37	10.17	24.65	291.74	33.00	-8.35	1/74
		2593.00	20.02	H	5.47	10.03	24.58	287.08	33.00	-8.42	1/74
		2682.50	21.46	H	5.56	10.05	25.95	393.55	33.00	-7.05	1/0
	16-QAM	2503.50	19.10	H	5.37	10.17	23.90	245.47	33.00	-9.10	1/74
		2593.00	19.25	H	5.47	10.03	23.81	240.44	33.00	-9.19	1/74
		2682.50	20.77	H	5.56	10.05	25.26	335.74	33.00	-7.74	1/0
20	QPSK	2506.00	20.00	H	5.37	10.16	24.79	301.30	33.00	-8.21	1/99
		2593.00	20.15	H	5.47	10.03	24.71	295.80	33.00	-8.29	1/99
		2680.00	21.61	H	5.56	10.05	26.10	407.38	33.00	-6.90	1/0
	16-QAM	2506.00	18.88	H	5.37	10.16	23.67	232.81	33.00	-9.33	1/49
		2593.00	19.47	H	5.47	10.03	24.03	252.93	33.00	-8.97	1/49
		2680.00	20.86	H	5.56	10.05	25.35	342.77	33.00	-7.65	1/0

LTE Band 66

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
1.4	QPSK	1710.70	18.63	V	4.43	9.50	23.70	234.42	30.00	-6.30	1/3
		1745.00	18.12	V	4.47	9.66	23.30	213.80	30.00	-6.70	1/3
		1779.30	17.11	V	4.52	9.68	22.27	168.66	30.00	-7.73	1/5
	16-QAM	1710.70	17.74	V	4.43	9.50	22.81	190.99	30.00	-7.19	1/3
		1745.00	17.10	V	4.47	9.66	22.28	169.04	30.00	-7.72	1/5
		1779.30	16.19	V	4.52	9.68	21.35	136.46	30.00	-8.65	1/3
3	QPSK	1711.50	18.60	V	4.44	9.51	23.67	232.81	30.00	-6.33	1/8
		1745.00	17.97	V	4.47	9.66	23.15	206.54	30.00	-6.85	1/8
		1778.50	17.36	V	4.52	9.68	22.52	178.65	30.00	-7.48	1/8
	16-QAM	1711.50	17.70	V	4.44	9.51	22.77	189.23	30.00	-7.23	1/8
		1745.00	17.14	V	4.47	9.66	22.32	170.61	30.00	-7.68	1/8
		1778.50	16.38	V	4.52	9.68	21.54	142.56	30.00	-8.46	1/8
5	QPSK	1712.50	18.63	V	4.44	9.51	23.71	234.96	30.00	-6.29	1/12
		1745.00	18.11	V	4.47	9.66	23.29	213.30	30.00	-6.71	1/12
		1777.50	17.38	V	4.52	9.68	22.54	179.47	30.00	-7.46	1/12
	16-QAM	1712.50	17.81	V	4.44	9.51	22.89	194.54	30.00	-7.11	1/12
		1745.00	17.14	V	4.47	9.66	22.32	170.61	30.00	-7.68	1/12
		1777.50	16.44	V	4.52	9.68	21.60	144.54	30.00	-8.40	1/12
10	QPSK	1715.00	18.42	V	4.44	9.52	23.51	224.39	30.00	-6.49	1/49
		1745.00	18.11	V	4.47	9.66	23.29	213.30	30.00	-6.71	1/25
		1775.00	17.32	V	4.51	9.68	22.49	177.42	30.00	-7.51	1/25
	16-QAM	1715.00	17.51	V	4.44	9.52	22.60	181.97	30.00	-7.40	1/49
		1745.00	17.18	V	4.47	9.66	22.36	172.19	30.00	-7.64	1/25
		1775.00	16.15	V	4.51	9.68	21.32	135.52	30.00	-8.68	1/49
15	QPSK	1717.50	18.21	V	4.44	9.53	23.30	213.80	30.00	-6.70	1/74
		1745.00	17.77	V	4.47	9.66	22.95	197.24	30.00	-7.05	1/37
		1772.50	17.31	V	4.51	9.68	22.48	177.01	30.00	-7.52	1/37
	16-QAM	1717.50	17.25	V	4.44	9.53	22.34	171.40	30.00	-7.66	1/74
		1745.00	16.84	V	4.47	9.66	22.02	159.22	30.00	-7.98	1/37
		1772.50	16.42	V	4.51	9.68	21.59	144.21	30.00	-8.41	1/37
20	QPSK	1720.00	18.39	V	4.44	9.55	23.49	223.36	30.00	-6.51	1/99
		1745.00	18.01	V	4.47	9.66	23.19	208.45	30.00	-6.81	1/49
		1770.00	17.93	V	4.51	9.68	23.11	204.64	30.00	-6.89	1/0
	16-QAM	1720.00	17.48	V	4.44	9.55	22.58	181.13	30.00	-7.42	1/99
		1745.00	17.11	V	4.47	9.66	22.29	169.43	30.00	-7.71	1/49
		1770.00	16.91	V	4.51	9.68	22.09	161.81	30.00	-7.91	1/49

5G NR n5

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	826.50	25.29	V	3.11	-0.84	21.34	136.14	38.50	-17.16	1/1
		836.50	24.10	V	3.13	-0.93	20.04	100.93	38.50	-18.46	1/1
		846.50	23.53	V	3.14	-1.02	19.36	86.30	38.50	-19.14	1/1
	16-QAM	826.50	23.82	V	3.11	-0.84	19.87	97.05	38.50	-18.63	1/1
		836.50	22.59	V	3.13	-0.93	18.53	71.29	38.50	-19.97	1/1
		846.50	22.37	V	3.14	-1.02	18.20	66.07	38.50	-20.30	1/1
10	QPSK	829.00	25.28	V	3.11	-0.86	21.31	135.21	38.50	-17.19	1/1
		836.50	23.63	V	3.13	-0.93	19.57	90.57	38.50	-18.93	1/1
		844.00	23.52	V	3.14	-1.00	19.38	86.70	38.50	-19.12	1/1
	16-QAM	829.00	23.99	V	3.11	-0.86	20.02	100.46	38.50	-18.48	1/1
		836.50	22.40	V	3.13	-0.93	18.34	68.23	38.50	-20.16	1/1
		844.00	22.01	V	3.14	-1.00	17.87	61.24	38.50	-20.63	1/1
15	QPSK	831.50	25.35	V	3.11	-0.88	21.35	136.46	38.50	-17.15	1/1
		836.50	23.67	V	3.13	-0.93	19.61	91.41	38.50	-18.89	1/1
		841.50	23.53	V	3.13	-0.97	19.42	87.50	38.50	-19.08	1/1
	16-QAM	831.50	24.43	V	3.11	-0.88	20.43	110.41	38.50	-18.07	1/1
		836.50	22.58	V	3.13	-0.93	18.52	71.12	38.50	-19.98	1/1
		841.50	22.56	V	3.13	-0.97	18.45	69.98	38.50	-20.05	1/1
20	QPSK	834.00	24.14	V	3.12	-0.91	20.11	102.57	38.50	-18.39	1/1
		836.50	23.62	V	3.13	-0.93	19.56	90.36	38.50	-18.94	1/1
		839.00	23.35	V	3.13	-0.95	19.26	84.33	38.50	-19.24	1/1
	16-QAM	834.00	22.89	V	3.12	-0.91	18.86	76.91	38.50	-19.64	1/1
		836.50	22.72	V	3.13	-0.93	18.66	73.45	38.50	-19.84	1/1
		839.00	22.32	V	3.13	-0.95	18.23	66.53	38.50	-20.27	1/1

5G NR n25

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	1852.50	17.10	H	4.62	9.50	21.98	157.76	33.00	-11.02	1/23
		1882.50	18.84	H	4.65	9.27	23.45	221.31	33.00	-9.55	1/1
		1912.50	19.50	H	4.69	8.96	23.77	238.23	33.00	-9.23	1/1
	16-QAM	1852.50	16.03	H	4.62	9.50	20.91	123.31	33.00	-12.09	1/23
		1882.50	17.84	H	4.65	9.27	22.45	175.79	33.00	-10.55	1/1
		1912.50	18.56	H	4.69	8.96	22.83	191.87	33.00	-10.17	1/1
10	QPSK	1855.00	17.33	H	4.62	9.48	22.19	165.58	33.00	-10.81	1/26
		1882.50	18.77	H	4.65	9.27	23.38	217.77	33.00	-9.62	1/26
		1910.00	19.73	H	4.68	8.99	24.05	254.10	33.00	-8.95	1/26
	16-QAM	1855.00	16.27	H	4.62	9.48	21.13	129.72	33.00	-11.87	1/26
		1882.50	17.73	H	4.65	9.27	22.34	171.40	33.00	-10.66	1/26
		1910.00	18.75	H	4.68	8.99	23.07	202.77	33.00	-9.93	1/26
15	QPSK	1857.50	17.33	H	4.63	9.47	22.17	164.82	33.00	-10.83	1/40
		1882.50	18.63	H	4.65	9.27	23.24	210.86	33.00	-9.76	1/1
		1907.50	20.02	H	4.69	9.03	24.37	273.53	33.00	-8.63	1/40
	16-QAM	1857.50	16.33	H	4.63	9.47	21.17	130.92	33.00	-11.83	1/40
		1882.50	17.79	H	4.65	9.27	22.40	173.78	33.00	-10.60	1/1
		1907.50	18.95	H	4.69	9.03	23.30	213.80	33.00	-9.70	1/40
20	QPSK	1860.00	17.39	H	4.63	9.45	22.21	166.34	33.00	-10.79	1/104
		1882.50	18.73	H	4.65	9.27	23.34	215.77	33.00	-9.66	1/104
		1905.00	19.85	H	4.68	9.06	24.23	264.85	33.00	-8.77	1/1
	16-QAM	1860.00	15.75	H	4.63	9.45	20.57	114.02	33.00	-12.43	1/1
		1882.50	17.84	H	4.65	9.27	22.45	175.79	33.00	-10.55	1/1
		1905.00	18.81	H	4.68	9.06	23.19	208.45	33.00	-9.81	1/1

5G NR n41

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	2501.01	16.41	H	5.38	10.00	21.03	126.77	33.00	-11.97	1/1
		2592.99	16.20	H	5.47	9.91	20.64	115.88	33.00	-12.36	1/1
		2685.00	16.77	H	5.56	9.87	21.09	128.53	33.00	-11.91	1/12
	16-QAM	2501.01	15.62	H	5.38	10.00	20.24	105.68	33.00	-12.76	1/1
		2592.99	15.14	H	5.47	9.91	19.58	90.78	33.00	-13.42	1/1
		2685.00	16.08	H	5.56	9.87	20.40	109.65	33.00	-12.60	1/12
15	QPSK	2503.51	16.59	H	5.37	9.99	21.21	132.13	33.00	-11.79	1/1
		2592.99	16.45	H	5.47	9.91	20.89	122.74	33.00	-12.11	1/1
		2682.50	17.02	H	5.56	9.87	21.34	136.14	33.00	-11.66	1/36
	16-QAM	2503.51	15.74	H	5.37	9.99	20.36	108.64	33.00	-12.64	1/1
		2592.99	15.55	H	5.47	9.91	19.99	99.77	33.00	-13.01	1/1
		2682.50	16.05	H	5.56	9.87	20.37	108.89	33.00	-12.63	1/36
20	QPSK	2506.01	16.61	H	5.37	9.99	21.23	132.74	33.00	-11.77	1/1
		2592.99	17.42	H	5.47	9.91	21.86	153.46	33.00	-11.14	1/1
		2680.00	17.14	H	5.56	9.87	21.46	139.96	33.00	-11.54	1/49
	16-QAM	2506.01	15.90	H	5.37	9.99	20.52	112.72	33.00	-12.48	1/1
		2592.99	16.73	H	5.47	9.91	21.17	130.92	33.00	-11.83	1/1
		2680.00	16.21	H	5.56	9.87	20.53	112.98	33.00	-12.47	1/49
30	QPSK	2511.01	16.68	H	5.39	9.98	21.27	133.97	33.00	-11.73	1/1
		2592.99	17.68	H	5.47	9.91	22.12	162.93	33.00	-10.88	1/76
		2675.00	17.33	H	5.56	9.87	21.64	145.88	33.00	-11.36	1/76
	16-QAM	2511.01	15.91	H	5.39	9.98	20.50	112.20	33.00	-12.50	1/1
		2592.99	16.81	H	5.47	9.91	21.25	133.35	33.00	-11.75	1/76
		2675.00	16.48	H	5.56	9.87	20.79	119.95	33.00	-12.21	1/76
40	QPSK	2516.01	16.73	H	5.38	9.97	21.32	135.52	33.00	-11.68	1/1
		2592.99	17.72	H	5.47	9.91	22.16	164.44	33.00	-10.84	1/104
		2670.00	17.29	H	5.55	9.87	21.62	145.21	33.00	-11.38	1/104
	16-QAM	2516.01	15.80	H	5.38	9.97	20.39	109.40	33.00	-12.61	1/1
		2592.99	16.86	H	5.47	9.91	21.30	134.90	33.00	-11.70	1/104
		2670.00	16.40	H	5.55	9.87	20.73	118.30	33.00	-12.27	1/104
50	QPSK	2521.01	17.17	H	5.40	9.96	21.74	149.28	33.00	-11.26	1/67
		2592.99	17.55	H	5.47	9.91	21.99	158.12	33.00	-11.01	1/131
		2665.00	16.93	H	5.55	9.87	21.25	133.35	33.00	-11.75	1/131
	16-QAM	2521.01	16.37	H	5.40	9.96	20.94	124.17	33.00	-12.06	1/67
		2592.99	16.56	H	5.47	9.91	21.00	125.89	33.00	-12.00	1/131
		2665.00	16.17	H	5.55	9.87	20.49	111.94	33.00	-12.51	1/131
60	QPSK	2526.01	17.53	H	5.38	9.95	22.10	162.18	33.00	-10.90	1/81
		2592.99	18.06	H	5.47	9.91	22.50	177.83	33.00	-10.50	1/81
		2660.00	17.41	H	5.56	9.87	21.72	148.59	33.00	-11.28	1/1
	16-QAM	2526.01	16.54	H	5.38	9.95	21.11	129.12	33.00	-11.89	1/81
		2592.99	17.03	H	5.47	9.91	21.47	140.28	33.00	-11.53	1/81
		2660.00	16.64	H	5.56	9.87	20.95	124.45	33.00	-12.05	1/1
70	QPSK	2531.01	16.74	H	5.39	9.94	21.29	134.59	33.00	-11.71	1/1
		2592.99	16.89	H	5.47	9.91	21.33	135.83	33.00	-11.67	1/1
		2655.00	16.81	H	5.54	9.87	21.14	130.02	33.00	-11.86	1/1
	16-QAM	2531.01	15.91	H	5.39	9.94	20.46	111.17	33.00	-12.54	1/1
		2592.99	15.88	H	5.47	9.91	20.32	107.65	33.00	-12.68	1/1
		2655.00	15.76	H	5.54	9.87	20.08	101.86	33.00	-12.92	1/1
80	QPSK	2536.01	16.95	H	5.41	9.93	21.48	140.60	33.00	-11.52	1/1
		2592.99	17.52	H	5.47	9.91	21.96	157.04	33.00	-11.04	1/215
		2650.00	16.65	H	5.53	9.87	20.99	125.60	33.00	-12.01	1/215
	16-QAM	2536.01	15.95	H	5.41	9.93	20.48	111.69	33.00	-12.52	1/1
		2592.99	16.49	H	5.47	9.91	20.93	123.88	33.00	-12.07	1/215
		2650.00	15.94	H	5.53	9.87	20.28	106.66	33.00	-12.72	1/215
90	QPSK	2541.01	17.02	H	5.43	9.92	21.52	141.91	33.00	-11.48	1/1
		2592.99	17.56	H	5.47	9.91	22.00	158.49	33.00	-11.00	1/243
		2645.00	16.86	H	5.53	9.87	21.20	131.83	33.00	-11.80	1/243
	16-QAM	2541.01	16.32	H	5.43	9.92	20.82	120.78	33.00	-12.18	1/1
		2592.99	16.69	H	5.47	9.91	21.13	129.72	33.00	-11.87	1/243
		2645.00	16.05	H	5.53	9.87	20.39	109.40	33.00	-12.61	1/243
100	QPSK	2546.01	17.13	H	5.42	9.91	21.62	145.21	33.00	-11.38	1/1
		2592.99	17.40	H	5.47	9.91	21.84	152.76	33.00	-11.16	1/271
		2640.00	16.84	H	5.52	9.88	21.20	131.83	33.00	-11.80	1/271
	16-QAM	2546.01	16.36	H	5.42	9.91	20.85	121.62	33.00	-12.15	1/271
		2592.99	16.48	H	5.47	9.91	20.92	123.59	33.00	-12.08	1/1
		2640.00	16.05	H	5.52	9.88	20.41	109.90	33.00	-12.59	1/271

5G NR n41(SRS1)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	2501.01								
	2592.99								
	2685.00								
15	2503.51								
	2592.99								
	2682.50								
20	2506.01								
	2592.99								
	2680.00								
30	2511.01								
	2592.99								
	2675.00								
40	2516.01	11.76	H	5.38	9.97	16.35	43.15	33.00	-16.65
	2592.99	12.18	H	5.47	9.91	16.62	45.92	33.00	-16.38
	2670.00	12.65	H	5.55	9.87	16.98	49.89	33.00	-16.02
50	2521.01								
	2592.99								
	2665.00								
60	2526.01								
	2592.99								
	2660.00								
70	2530.01								
	2592.99								
	2655.00								
80	2536.01								
	2592.99								
	2650.00								
90	2541.01								
	2592.99								
	2645.00								
100	2546.01								
	2592.99								
	2640.00								

5G NR n41(SRS2)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	2501.01								
	2592.99								
	2685.00								
15	2503.51								
	2592.99								
	2682.50								
20	2506.01	9.75	H	5.37	9.99	14.37	27.35	33.00	-18.63
	2592.99	9.88	H	5.47	9.91	14.32	27.04	33.00	-18.68
	2680.00	10.84	H	5.56	9.87	15.15	32.73	33.00	-17.85
30	2511.01								
	2592.99								
	2675.00								
40	2516.01								
	2592.99								
	2670.00								
50	2521.01								
	2592.99								
	2665.00								
60	2526.01								
	2592.99								
	2660.00								
70	2530.01								
	2592.99								
	2655.00								
80	2536.01								
	2592.99								
	2650.00								
90	2541.01								
	2592.99								
	2645.00								
100	2546.01								
	2592.99								
	2640.00								

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5G NR n41(SRS3)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	2501.01	3.63	V	5.38	10.00	8.25	6.68	33.00	-24.75
	2592.99	6.72	H	5.47	9.91	11.17	13.09	33.00	-21.83
	2685.00	1.05	H	5.56	9.87	5.36	3.44	33.00	-27.64
15	2503.51								
	2592.99								
	2682.50								
20	2506.01								
	2592.99								
	2680.00								
30	2511.01								
	2592.99								
	2675.00								
40	2516.01								
	2592.99								
	2670.00								
50	2521.01								
	2592.99								
	2665.00								
60	2526.01								
	2592.99								
	2660.00								
70	2530.01								
	2592.99								
	2655.00								
80	2536.01								
	2592.99								
	2650.00								
90	2541.01								
	2592.99								
	2645.00								
100	2546.01								
	2592.99								
	2640.00								

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5G NR n66(Main1 Ant)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	1712.50	17.34	V	4.44	9.51	22.42	174.58	30.00	-7.58	1/13
		1745.00	17.44	V	4.47	9.66	22.63	183.23	30.00	-7.37	1/1
		1777.50	16.68	V	4.52	9.68	21.84	152.76	30.00	-8.16	1/1
	16-QAM	1712.50	16.23	V	4.44	9.51	21.31	135.21	30.00	-8.69	1/13
		1745.00	16.54	V	4.47	9.66	21.73	148.94	30.00	-8.27	1/1
		1777.50	15.73	V	4.52	9.68	20.89	122.74	30.00	-9.11	1/1
10	QPSK	1715.00	17.54	V	4.44	9.52	22.63	183.23	30.00	-7.37	1/50
		1745.00	17.47	V	4.47	9.66	22.66	184.50	30.00	-7.34	1/26
		1775.00	16.94	V	4.51	9.68	22.11	162.55	30.00	-7.89	1/1
	16-QAM	1715.00	16.47	V	4.44	9.52	21.56	143.22	30.00	-8.44	1/50
		1745.00	16.60	V	4.47	9.66	21.78	150.66	30.00	-8.22	1/26
		1775.00	16.09	V	4.51	9.68	21.26	133.66	30.00	-8.74	1/1
15	QPSK	1717.50	17.56	V	4.44	9.53	22.65	184.08	30.00	-7.35	1/77
		1745.00	17.78	V	4.47	9.66	22.96	197.70	30.00	-7.04	1/1
		1772.50	16.55	V	4.51	9.68	21.72	148.59	30.00	-8.28	1/77
	16-QAM	1717.50	16.83	V	4.44	9.53	21.92	155.60	30.00	-8.08	1/77
		1745.00	16.76	V	4.47	9.66	21.94	156.31	30.00	-8.06	1/1
		1772.50	15.65	V	4.51	9.68	20.82	120.78	30.00	-9.18	1/77
20	QPSK	1720.00	18.08	V	4.44	9.55	23.18	207.97	30.00	-6.82	1/1
		1745.00	17.73	V	4.47	9.66	22.91	195.43	30.00	-7.09	1/1
		1770.00	16.57	V	4.51	9.68	21.75	149.62	30.00	-8.25	1/104
	16-QAM	1720.00	16.94	V	4.44	9.55	22.04	159.96	30.00	-7.96	1/1
		1745.00	16.72	V	4.47	9.66	21.90	154.88	30.00	-8.10	1/1
		1770.00	15.81	V	4.51	9.68	20.99	125.60	30.00	-9.01	1/1

5G NR n66(Sub2 Ant)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK										
	16-QAM										
10	QPSK	1715.00	15.21	V	4.44	9.52	20.30	107.15	30.00	-9.70	1/26
		1745.00	15.49	V	4.47	9.66	20.67	116.68	30.00	-9.33	1/26
		1775.00	14.92	V	4.51	9.68	20.09	102.09	30.00	-9.91	1/26
	16-QAM	1715.00	14.17	V	4.44	9.52	19.26	84.33	30.00	-10.74	1/26
		1745.00	14.48	V	4.47	9.66	19.66	92.47	30.00	-10.34	1/26
		1775.00	13.91	V	4.51	9.68	19.08	80.91	30.00	-10.92	1/26
15	QPSK										
	16-QAM										
20	QPSK										
	16-QAM										

5G NR n77 (3450 ~ 3550 MHz)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	3455.01	20.32	H	6.31	10.61	24.63	290.40	30.00	-5.37	1/22
		3499.98	20.62	H	6.36	10.67	24.93	311.17	30.00	-5.07	1/1
		3544.98	21.08	H	6.39	10.75	25.43	349.14	30.00	-4.57	1/22
	16-QAM	3455.01	19.32	H	6.31	10.61	23.63	230.67	30.00	-6.37	1/22
		3499.98	19.77	H	6.36	10.67	24.08	255.86	30.00	-5.92	1/1
		3544.98	20.14	H	6.39	10.75	24.49	281.19	30.00	-5.51	1/22
15	QPSK	3457.50	20.51	H	6.31	10.62	24.81	302.69	30.00	-5.19	1/36
		3499.98	21.27	H	6.36	10.67	25.58	361.41	30.00	-4.42	1/36
		3542.49	21.35	H	6.39	10.75	25.70	371.54	30.00	-4.30	1/19
	16-QAM	3457.50	19.52	H	6.31	10.62	23.82	240.99	30.00	-6.18	1/36
		3499.98	20.33	H	6.36	10.67	24.64	291.07	30.00	-5.36	1/36
		3542.49	20.22	H	6.39	10.75	24.57	286.42	30.00	-5.43	1/19
20	QPSK	3460.01	20.33	H	6.32	10.62	24.63	290.40	30.00	-5.37	1/1
		3499.98	21.05	H	6.36	10.67	25.36	343.56	30.00	-4.64	1/49
		3540.00	21.56	H	6.38	10.74	25.93	391.74	30.00	-4.07	1/1
	16-QAM	3460.01	19.45	H	6.32	10.62	23.75	237.14	30.00	-6.25	1/1
		3499.98	20.24	H	6.36	10.67	24.55	285.10	30.00	-5.45	1/49
		3540.00	20.54	H	6.38	10.74	24.91	309.74	30.00	-5.09	1/1
30	QPSK	3465.00	20.79	H	6.32	10.63	25.09	322.85	30.00	-4.91	1/76
		3499.98	20.64	H	6.36	10.67	24.95	312.61	30.00	-5.05	1/1
		3535.02	18.91	H	6.38	10.73	23.26	211.84	30.00	-6.74	1/1
	16-QAM	3465.00	20.06	H	6.32	10.63	24.36	272.90	30.00	-5.64	1/76
		3499.98	20.05	H	6.36	10.67	24.36	272.90	30.00	-5.64	1/1
		3535.02	18.01	H	6.38	10.73	22.36	172.19	30.00	-7.64	1/1
40	QPSK	3470.01	20.55	H	6.33	10.63	24.85	305.49	30.00	-5.15	1/104
		3499.98	21.64	H	6.36	10.67	25.95	393.55	30.00	-4.05	1/104
		3529.98	21.27	H	6.38	10.72	25.62	364.75	30.00	-4.38	1/53
	16-QAM	3470.01	19.57	H	6.33	10.63	23.87	243.78	30.00	-6.13	1/104
		3499.98	20.61	H	6.36	10.67	24.92	310.46	30.00	-5.08	1/104
		3529.98	20.52	H	6.38	10.72	24.87	306.90	30.00	-5.13	1/53
50	QPSK	3480.00	21.00	H	6.34	10.65	25.30	338.84	30.00	-4.70	1/131
		3499.98	20.44	H	6.36	10.67	24.75	298.54	30.00	-5.25	1/1
		3519.99	20.90	H	6.38	10.71	25.23	333.43	30.00	-4.77	1/1
	16-QAM	3480.00	19.98	H	6.34	10.65	24.28	267.92	30.00	-5.72	1/131
		3499.98	19.57	H	6.36	10.67	23.88	244.34	30.00	-6.12	1/1
		3519.99	19.98	H	6.38	10.71	24.31	269.77	30.00	-5.69	1/1
60	QPSK	3480.00	20.70	H	6.34	10.65	25.00	316.23	30.00	-5.00	1/81
		3499.98	20.75	H	6.36	10.67	25.06	320.63	30.00	-4.94	1/81
		3519.99	21.20	H	6.38	10.71	25.53	357.27	30.00	-4.47	1/81
	16-QAM	3480.00	19.56	H	6.34	10.65	23.56	226.99	30.00	-6.14	1/81
		3499.98	19.63	H	6.36	10.67	23.94	247.74	30.00	-6.06	1/81
		3519.99	20.26	H	6.38	10.71	24.59	287.74	30.00	-5.41	1/81
70	QPSK	3485.01	20.38	H	6.34	10.65	24.68	293.76	30.00	-5.32	1/109
		3499.98	20.69	H	6.36	10.67	25.00	316.23	30.00	-5.00	1/109
		3514.98	20.36	H	6.37	10.70	24.68	293.76	30.00	-5.32	1/1
	16-QAM	3485.01	19.24	H	6.34	10.65	23.54	225.94	30.00	-6.46	1/109
		3499.98	19.84	H	6.36	10.67	24.15	260.02	30.00	-5.85	1/109
		3514.98	19.41	H	6.37	10.70	23.73	236.05	30.00	-6.27	1/1
80	QPSK	3490.02	21.42	H	6.35	10.66	25.73	374.11	30.00	-4.27	1/215
		3499.98	20.96	H	6.36	10.67	25.27	336.51	30.00	-4.73	1/109
		3510.00	21.20	H	6.37	10.69	25.52	356.45	30.00	-4.48	1/109
	16-QAM	3490.02	20.37	H	6.35	10.66	24.68	293.76	30.00	-5.32	1/215
		3499.98	20.06	H	6.36	10.67	24.37	273.53	30.00	-5.63	1/109
		3510.00	20.20	H	6.37	10.69	24.52	283.14	30.00	-5.48	1/109
90	QPSK	3495.00	20.76	H	6.35	10.66	25.07	321.37	30.00	-4.93	1/123
		3499.98	20.84	H	6.36	10.67	25.15	327.34	30.00	-4.85	1/123
		3504.99	21.02	H	6.37	10.68	25.33	341.19	30.00	-4.67	1/123
	16-QAM	3495.00	19.87	H	6.35	10.66	24.18	261.82	30.00	-5.82	1/123
		3499.98	19.87	H	6.36	10.67	24.18	261.82	30.00	-5.82	1/123
		3504.99	20.12	H	6.37	10.68	24.43	277.33	30.00	-5.57	1/123
100	QPSK	3499.98	20.96	H	6.36	10.67	25.27	336.51	30.00	-4.73	1/137
	16-QAM	3499.98	19.98	H	6.36	10.67	24.29	268.53	30.00	-5.71	1/271

5G NR n77 (3450 ~ 3550 MHz, SRS1)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01								
	3499.98								
	3544.98								
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
30	3465.00	14.21	H	6.32	10.63	18.51	70.96	30.00	-11.49
	3499.98	12.60	H	6.36	10.67	16.91	49.09	30.00	-13.09
	3535.02	11.79	H	6.38	10.73	16.14	41.11	30.00	-13.86
40	3470.01								
	3499.98								
	3529.98								
50	3475.02								
	3499.98								
	3525.00								
60	3480.00								
	3499.98								
	3519.99								
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77 (3450 ~ 3550 MHz, SRS2)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01								
	3499.98								
	3544.98								
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
30	3465.00	12.74	H	6.32	10.63	17.04	50.58	30.00	-12.96
	3499.98	11.57	H	6.36	10.67	15.88	38.73	30.00	-14.12
	3535.02	10.67	H	6.38	10.73	15.02	31.77	30.00	-14.98
40	3470.01								
	3499.98								
	3529.98								
50	3475.02								
	3499.98								
	3525.00								
60	3480.00								
	3499.98								
	3519.99								
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77 (3450 ~ 3550 MHz, SRS3)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01								
	3499.98								
	3544.98								
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
30	3465.00	11.66	V	6.32	10.63	15.96	39.45	30.00	-14.04
	3499.98	11.58	V	6.36	10.67	15.89	38.82	30.00	-14.11
	3535.02	10.68	V	6.38	10.73	15.03	31.84	30.00	-14.97
40	3470.01								
	3499.98								
	3529.98								
50	3475.02								
	3499.98								
	3525.00								
60	3480.00								
	3499.98								
	3519.99								
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77 (3700 ~ 3980 MHz)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	3705.00	18.86	V	6.54	10.74	23.07	202.77	30.00	-6.93	1/22
		3840.00	19.85	V	6.65	10.58	23.77	238.23	30.00	-6.23	1/12
		3975.00	17.85	V	6.77	10.46	21.54	142.56	30.00	-8.46	1/22
	16-QAM	3705.00	17.90	V	6.54	10.74	22.11	162.55	30.00	-7.89	1/22
		3840.00	18.90	V	6.65	10.58	22.82	191.43	30.00	-7.18	1/12
		3975.00	17.03	V	6.77	10.46	20.72	118.03	30.00	-9.28	1/22
15	QPSK	3707.52	18.77	V	6.55	10.74	22.96	197.70	30.00	-7.04	1/1
		3840.00	19.88	V	6.65	10.58	23.80	239.88	30.00	-6.20	1/36
		3972.48	17.94	V	6.78	10.46	21.63	145.55	30.00	-8.37	1/1
	16-QAM	3707.52	17.87	V	6.55	10.74	22.06	160.69	30.00	-7.94	1/1
		3840.00	18.97	V	6.65	10.58	22.89	194.54	30.00	-7.11	1/36
		3972.48	17.06	V	6.78	10.46	20.75	118.85	30.00	-9.25	1/1
20	QPSK	3710.01	19.26	V	6.55	10.74	23.45	221.31	30.00	-6.55	1/49
		3840.00	19.58	V	6.65	10.58	23.50	223.87	30.00	-6.50	1/49
		3969.99	17.63	V	6.77	10.46	21.32	135.52	30.00	-8.68	1/49
	16-QAM	3710.01	18.34	V	6.55	10.74	22.53	179.06	30.00	-7.47	1/49
		3840.00	18.77	V	6.65	10.58	22.69	185.78	30.00	-7.31	1/49
		3969.99	16.75	V	6.77	10.46	20.44	110.66	30.00	-9.56	1/49
30	QPSK	3715.02	19.32	V	6.55	10.73	23.51	224.39	30.00	-6.49	1/76
		3840.00	19.87	V	6.65	10.58	23.79	239.33	30.00	-6.21	1/39
		3964.98	18.99	V	6.77	10.46	22.68	185.35	30.00	-7.32	1/1
	16-QAM	3715.02	18.34	V	6.55	10.73	22.53	179.06	30.00	-7.47	1/76
		3840.00	18.99	V	6.65	10.58	22.91	195.43	30.00	-7.09	1/39
		3964.98	18.01	V	6.77	10.46	21.70	147.91	30.00	-8.30	1/1
40	QPSK	3720.02	19.56	V	6.55	10.73	23.73	236.05	30.00	-6.27	1/104
		3840.00	20.23	V	6.65	10.58	24.15	260.02	30.00	-5.85	1/104
		3960.00	19.21	V	6.77	10.47	22.90	194.98	30.00	-7.10	1/1
	16-QAM	3720.02	18.58	V	6.55	10.73	22.75	188.36	30.00	-7.25	1/104
		3840.00	19.30	V	6.65	10.58	23.22	209.89	30.00	-6.78	1/104
		3960.00	18.19	V	6.77	10.47	21.88	154.17	30.00	-8.12	1/1
50	QPSK	3725.01	19.69	V	6.56	10.72	23.85	242.66	30.00	-6.15	1/131
		3840.00	20.08	V	6.65	10.58	24.00	251.19	30.00	-6.00	1/131
		3954.99	18.29	V	6.75	10.47	22.01	158.85	30.00	-7.99	1/67
	16-QAM	3725.01	18.77	V	6.56	10.72	22.93	196.34	30.00	-7.07	1/131
		3840.00	19.14	V	6.65	10.58	23.06	202.30	30.00	-6.94	1/67
		3954.99	17.19	V	6.75	10.47	20.91	123.31	30.00	-9.09	1/67
60	QPSK	3730.02	19.90	V	6.56	10.72	24.05	254.10	30.00	-5.95	1/160
		3840.00	19.91	V	6.65	10.58	23.83	241.55	30.00	-6.17	1/81
		3949.98	18.64	V	6.75	10.47	22.36	172.19	30.00	-7.64	1/81
	16-QAM	3730.02	18.89	V	6.56	10.72	23.04	201.37	30.00	-6.96	1/160
		3840.00	19.00	V	6.65	10.58	22.92	195.88	30.00	-7.08	1/81
		3949.98	17.56	V	6.75	10.47	21.28	134.28	30.00	-8.72	1/81
70	QPSK	3735.00	19.21	V	6.57	10.71	23.35	216.27	30.00	-6.65	1/109
		3840.00	19.04	V	6.65	10.58	22.96	197.70	30.00	-7.04	1/188
		3945.00	18.41	V	6.75	10.47	22.13	163.31	30.00	-7.87	1/109
	16-QAM	3735.00	18.36	V	6.57	10.71	22.50	177.83	30.00	-7.50	1/109
		3840.00	18.08	V	6.65	10.58	22.00	158.49	30.00	-8.00	1/188
		3945.00	17.47	V	6.75	10.47	21.19	131.52	30.00	-8.81	1/109
80	QPSK	3740.01	19.82	V	6.58	10.70	23.95	248.31	30.00	-6.05	1/215
		3840.00	19.97	V	6.65	10.58	23.89	244.91	30.00	-6.11	1/215
		3939.99	18.71	V	6.74	10.47	22.44	175.39	30.00	-7.56	1/109
	16-QAM	3740.01	18.88	V	6.58	10.70	23.01	199.99	30.00	-6.99	1/215
		3840.00	19.07	V	6.65	10.58	22.99	199.07	30.00	-7.01	1/215
		3939.99	17.68	V	6.74	10.47	21.41	138.36	30.00	-8.59	1/109
90	QPSK	3745.02	19.77	V	6.57	10.70	23.90	245.47	30.00	-6.10	1/243
		3840.00	19.89	V	6.65	10.58	23.81	240.44	30.00	-6.19	1/243
		3934.98	17.24	V	6.75	10.48	20.97	125.03	30.00	-9.03	1/243
	16-QAM	3745.02	18.77	V	6.57	10.70	22.90	194.98	30.00	-7.10	1/243
		3840.00	18.93	V	6.65	10.58	22.85	192.75	30.00	-7.15	1/243
		3934.98	16.38	V	6.75	10.48	20.11	102.57	30.00	-9.89	1/243
100	QPSK	3750.00	20.11	V	6.58	10.69	24.23	264.85	30.00	-5.77	1/271
		3840.00	19.83	V	6.65	10.58	23.75	237.14	30.00	-6.25	1/271
		3930.00	17.98	V	6.75	10.48	21.71	148.25	30.00	-8.29	1/271
	16-QAM	3750.00	19.09	V	6.58	10.69	23.21	209.41	30.00	-6.79	1/137
		3840.00	18.96	V	6.65	10.58	22.88	194.09	30.00	-7.12	1/271
		3930.00	16.99	V	6.75	10.48	20.72	118.03	30.00	-9.28	1/271

5G NR n77 (3700 ~ 3980 MHz, SRS1)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3705.00								
	3840.00								
	3975.00								
15	3707.52								
	3840.00								
	3972.48								
20	3710.01								
	3840.00								
	3969.99								
30	3715.02								
	3840.00								
	3964.98								
40	3720.00	11.90	H	6.55	10.73	16.07	40.46	30.00	-13.93
	3840.00	10.51	H	6.65	10.58	14.43	27.73	30.00	-15.57
	3960.00	8.90	H	6.77	10.47	12.60	18.20	30.00	-17.40
50	3725.01								
	3840.00								
	3954.99								
60	3730.02								
	3840.00								
	3949.98								
70	3735.02								
	3840.00								
	3944.98								
80	3740.01								
	3840.00								
	3939.99								
90	3745.02								
	3840.00								
	3934.98								
100	3750.00								
	3840.00								
	3930.00								

5G NR n77 (3700 ~ 3980 MHz, SRS2)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3705.00								
	3840.00								
	3975.00								
15	3707.52								
	3840.00								
	3972.48								
20	3710.01								
	3840.00								
	3969.99								
30	3715.02	9.59	H	6.55	10.73	13.78	23.88	30.00	-16.22
	3840.00	9.20	H	6.65	10.58	13.12	20.51	30.00	-16.88
	3964.98	8.71	H	6.77	10.46	12.40	17.38	30.00	-17.60
40	3720.00								
	3840.00								
	3960.00								
50	3725.01								
	3840.00								
	3954.99								
60	3730.02								
	3840.00								
	3949.98								
70	3735.02								
	3840.00								
	3944.98								
80	3740.01								
	3840.00								
	3939.99								
90	3745.02								
	3840.00								
	3934.98								
100	3750.00								
	3840.00								
	3930.00								

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27/90(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

5G NR n77 (3700 ~ 3980 MHz, SRS3)

f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
3705.00								
3840.00								
3975.00								
3707.52								
3840.00								
3972.48								
3710.01								
3840.00								
3969.99								
3715.02	10.08	H	6.55	10.73	14.27	26.73	30.00	-15.73
3840.00	11.18	H	6.65	10.58	15.10	32.36	30.00	-14.90
3964.98	11.34	H	6.77	10.46	15.03	31.84	30.00	-14.97
3720.00								
3840.00								
3960.00								
3725.01								
3840.00								
3954.99								
3730.02								
3840.00								
3949.98								
3735.02								
3840.00								
3944.98								
3740.01								
3840.00								
3939.99								
3745.02								
3840.00								
3934.98								
3750.00								
3840.00								
3930.00								

9.6. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27. 53 and §90.691

LIMIT

Part 22.917(a) & Part 24.238(a) & Part 27.53(h) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53:
(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}$ (P) dB.

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

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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 1GHz and 1MHz for emissions above 1GHz
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 FDD, 5G NR FDD), Maxhold(GSM, LTE TDD, 5G NR TDD);

RESULTS

See the following pages.

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.

9.6.1. SPURIOUS RADIATION PLOTS

GSM850

GSM850

GPRS

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

Company: Samsung
Project #: 4790541040
Date: 9/8/2022
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position
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	-9.0	V	3.0	45.6	1.0	-53.7	-13.0	-40.7	
2472.60	-6.4	V	3.0	45.4	1.0	-50.8	-13.0	-37.8	
3296.80	-4.7	V	3.0	45.7	1.0	-49.3	-13.0	-36.3	
1648.40	-9.2	H	3.0	45.6	1.0	-53.8	-13.0	-40.8	
2472.60	-6.3	H	3.0	45.4	1.0	-50.7	-13.0	-37.7	
3296.80	-4.4	H	3.0	45.7	1.0	-49.1	-13.0	-36.1	
Mid Ch, 836.6MHz									
1673.20	-10.3	V	3.0	45.6	1.0	-54.9	-13.0	-41.9	
2509.80	-5.0	V	3.0	45.5	1.0	-49.5	-13.0	-36.5	
3346.40	-4.6	V	3.0	45.7	1.0	-49.3	-13.0	-36.3	
1673.20	-7.0	H	3.0	45.6	1.0	-51.6	-13.0	-38.6	
2509.80	-2.9	H	3.0	45.5	1.0	-47.4	-13.0	-34.4	
3346.40	-3.9	H	3.0	45.7	1.0	-48.6	-13.0	-35.6	
High Ch, 848.8MHz									
1697.60	-9.8	V	3.0	45.6	1.0	-54.4	-13.0	-41.4	
2546.40	-4.2	V	3.0	45.5	1.0	-48.7	-13.0	-35.7	
3395.20	-3.8	V	3.0	45.7	1.0	-48.5	-13.0	-35.5	
1697.60	-10.1	H	3.0	45.6	1.0	-54.6	-13.0	-41.6	
2546.40	-1.3	H	3.0	45.5	1.0	-45.8	-13.0	-32.8	
3395.20	-4.4	H	3.0	45.7	1.0	-49.1	-13.0	-36.1	

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

Company:	Samsung
Project #:	4790541040
Date:	9/8/2022
Test Engineer:	25770
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	EGPRS 850 MHz Harmonics
Test Votage:	AC 120 V, 60 Hz

GSM850

EGPRS

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	-10.0	V	3.0	45.6	1.0	-54.6	-13.0	-41.6	
2472.60	-6.6	V	3.0	45.4	1.0	-51.1	-13.0	-38.1	
3296.80	-4.6	V	3.0	45.7	1.0	-49.2	-13.0	-36.2	
1648.40	-11.3	H	3.0	45.6	1.0	-55.9	-13.0	-42.9	
2472.60	-6.7	H	3.0	45.4	1.0	-51.2	-13.0	-38.2	
3296.80	-4.3	H	3.0	45.7	1.0	-49.0	-13.0	-36.0	
Mid Ch, 836.6MHz									
1673.20	-10.0	V	3.0	45.6	1.0	-54.6	-13.0	-41.6	
2509.80	-5.5	V	3.0	45.5	1.0	-50.0	-13.0	-37.0	
3346.40	-4.2	V	3.0	45.7	1.0	-48.8	-13.0	-35.8	
1673.20	-10.1	H	3.0	45.6	1.0	-54.7	-13.0	-41.7	
2509.80	-5.1	H	3.0	45.5	1.0	-49.5	-13.0	-36.5	
3346.40	-4.3	H	3.0	45.7	1.0	-49.0	-13.0	-36.0	
High Ch, 848.8MHz									
1697.60	-10.2	V	3.0	45.6	1.0	-54.8	-13.0	-41.8	
2546.40	-4.1	V	3.0	45.5	1.0	-48.6	-13.0	-35.6	
3395.20	-3.7	V	3.0	45.7	1.0	-48.4	-13.0	-35.4	
1697.60	-10.9	H	3.0	45.6	1.0	-55.5	-13.0	-42.5	
2546.40	-2.3	H	3.0	45.5	1.0	-46.8	-13.0	-33.8	
3395.20	-4.2	H	3.0	45.7	1.0	-48.9	-13.0	-35.9	

GSM1900

GSM1900

GPRS

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

Company: Samsung
Project #: 4790541040
Date: 9/13/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 1
Mode: GPRS 1900 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, 1850.2MHz									
3700.40	-8.0	V	3.0	45.8	1.0	-52.8	-13.0	-39.8	
5550.60	-2.9	V	3.0	45.7	1.0	-47.6	-13.0	-34.6	
7400.80	-2.9	V	3.0	44.6	1.0	-46.5	-13.0	-33.5	
3700.40	-8.4	H	3.0	45.8	1.0	-53.3	-13.0	-40.3	
5550.60	-1.3	H	3.0	45.7	1.0	-46.1	-13.0	-33.1	
7400.80	-2.4	H	3.0	44.6	1.0	-46.0	-13.0	-33.0	
Mid Ch, 1880MHz									
3760.00	-8.0	V	3.0	45.8	1.0	-52.8	-13.0	-39.8	
5640.00	-1.6	V	3.0	45.7	1.0	-46.3	-13.0	-33.3	
7520.00	-2.8	V	3.0	44.5	1.0	-46.3	-13.0	-33.3	
3760.00	-8.2	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5640.00	1.3	H	3.0	45.7	1.0	-43.5	-13.0	-30.5	
7520.00	-2.6	H	3.0	44.5	1.0	-46.1	-13.0	-33.1	
High Ch, 1909.8MHz									
3819.60	-8.1	V	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5729.40	-0.6	V	3.0	45.7	1.0	-45.3	-13.0	-32.3	
7639.20	-2.6	V	3.0	44.4	1.0	-46.0	-13.0	-33.0	
3819.60	-8.1	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5729.40	0.2	H	3.0	45.7	1.0	-44.6	-13.0	-31.6	
7639.20	-2.9	H	3.0	44.4	1.0	-46.3	-13.0	-33.3	

GSM1900

EGPRS

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

Company: Samsung
Project #: 4790541040
Date: 9/14/2022
Test Engineer: 25546
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 1
Mode: EGPRS 1900 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, 1850.2MHz									
3700.40	-8.4	V	3.0	45.8	1.0	-53.2	-13.0	-40.2	
5550.60	-4.4	V	3.0	45.7	1.0	-49.2	-13.0	-36.2	
7400.80	-3.1	V	3.0	44.6	1.0	-46.6	-13.0	-33.6	
3700.40	-8.4	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
5550.60	-3.4	H	3.0	45.7	1.0	-48.2	-13.0	-35.2	
7400.80	-3.0	H	3.0	44.6	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1880MHz									
3760.00	-8.0	V	3.0	45.8	1.0	-52.8	-13.0	-39.8	
5640.00	-4.2	V	3.0	45.7	1.0	-49.0	-13.0	-36.0	
7520.00	-3.0	V	3.0	44.5	1.0	-46.5	-13.0	-33.5	
3760.00	-8.0	H	3.0	45.8	1.0	-52.9	-13.0	-39.9	
5640.00	-2.1	H	3.0	45.7	1.0	-46.9	-13.0	-33.9	
7520.00	-2.8	H	3.0	44.5	1.0	-46.3	-13.0	-33.3	
High Ch, 1909.8MHz									
3819.60	-8.1	V	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5729.40	-1.8	V	3.0	45.7	1.0	-46.5	-13.0	-33.5	
7639.20	-3.1	V	3.0	44.4	1.0	-46.5	-13.0	-33.5	
3819.60	-8.1	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5729.40	-1.9	H	3.0	45.7	1.0	-46.6	-13.0	-33.6	
7639.20	-2.8	H	3.0	44.4	1.0	-46.3	-13.0	-33.3	

WCDMA Band 5

Band 5 REL99

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

Company: Samsung
Project #: 4790541040
Date: 2022-09-08
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position
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	-15.6	V	3.0	45.6	1.0	-60.2	-13.0	-47.2	
2479.20	-12.5	V	3.0	45.5	1.0	-57.0	-13.0	-44.0	
3305.60	-9.9	V	3.0	45.7	1.0	-54.6	-13.0	-41.6	
1652.80	-16.6	H	3.0	45.6	1.0	-61.2	-13.0	-48.2	
2479.20	-12.9	H	3.0	45.5	1.0	-57.3	-13.0	-44.3	
3305.60	-9.8	H	3.0	45.7	1.0	-54.5	-13.0	-41.5	
Mid Ch, 836.6MHz									
1673.20	-15.6	V	3.0	45.6	1.0	-60.2	-13.0	-47.2	
2509.80	-12.7	V	3.0	45.5	1.0	-57.2	-13.0	-44.2	
3346.40	-10.1	V	3.0	45.7	1.0	-54.7	-13.0	-41.7	
1673.20	-16.0	H	3.0	45.6	1.0	-60.6	-13.0	-47.6	
2509.80	-12.8	H	3.0	45.5	1.0	-57.3	-13.0	-44.3	
3346.40	-9.7	H	3.0	45.7	1.0	-54.4	-13.0	-41.4	
High Ch, 846.6MHz									
1693.20	-15.3	V	3.0	45.6	1.0	-59.9	-13.0	-46.9	
2539.80	-12.4	V	3.0	45.5	1.0	-56.9	-13.0	-43.9	
3386.40	-9.7	V	3.0	45.7	1.0	-54.4	-13.0	-41.4	
1693.20	-16.0	H	3.0	45.6	1.0	-60.6	-13.0	-47.6	
2539.80	-12.4	H	3.0	45.5	1.0	-56.8	-13.0	-43.8	
3386.40	-9.7	H	3.0	45.7	1.0	-54.4	-13.0	-41.4	

Band 5 HSDPA

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

Company: Samsung
Project #: 4790541040
Date: 2022-09-08
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: HSDPA 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	-10.6	V	3.0	45.6	1.0	-55.3	-13.0	-42.3	
2479.20	-7.2	V	3.0	45.5	1.0	-51.7	-13.0	-38.7	
3305.60	-4.2	V	3.0	45.7	1.0	-48.9	-13.0	-35.9	
1652.80	-11.0	H	3.0	45.6	1.0	-55.6	-13.0	-42.6	
2479.20	-6.9	H	3.0	45.5	1.0	-51.3	-13.0	-38.3	
3305.60	-4.6	H	3.0	45.7	1.0	-49.3	-13.0	-36.3	
Mid Ch, 836.6MHz									
1673.20	-9.9	V	3.0	45.6	1.0	-54.5	-13.0	-41.5	
2509.80	-6.4	V	3.0	45.5	1.0	-50.8	-13.0	-37.8	
3346.40	-4.4	V	3.0	45.7	1.0	-49.1	-13.0	-36.1	
1673.20	-11.1	H	3.0	45.6	1.0	-55.7	-13.0	-42.7	
2509.80	-6.8	H	3.0	45.5	1.0	-51.3	-13.0	-38.3	
3346.40	-4.1	H	3.0	45.7	1.0	-48.8	-13.0	-35.8	
High Ch, 846.6MHz									
1693.20	-9.2	V	3.0	45.6	1.0	-53.8	-13.0	-40.8	
2539.80	-6.7	V	3.0	45.5	1.0	-51.1	-13.0	-38.1	
3386.40	-4.6	V	3.0	45.7	1.0	-49.3	-13.0	-36.3	
1693.20	-11.3	H	3.0	45.6	1.0	-55.8	-13.0	-42.8	
2539.80	-7.0	H	3.0	45.5	1.0	-51.5	-13.0	-38.5	
3386.40	-4.3	H	3.0	45.7	1.0	-49.0	-13.0	-36.0	

WCDMA Band 4

Band 4 REL99

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

Company: Samsung
Project #: 4790541040
Date: 9/13/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: Rel99 Band 4 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, 1712.4MHz									
3424.80	-9.1	V	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5137.20	-9.2	V	3.0	45.8	1.0	-54.0	-13.0	-41.0	
6849.60	-6.1	V	3.0	44.9	1.0	-50.0	-13.0	-37.0	
3424.80	-9.1	H	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5137.20	-9.1	H	3.0	45.8	1.0	-53.9	-13.0	-40.9	
6849.60	-6.2	H	3.0	44.9	1.0	-50.1	-13.0	-37.1	
Mid Ch, 1732.6MHz									
3465.20	-8.8	V	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5197.80	-8.9	V	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6930.40	-5.8	V	3.0	44.8	1.0	-49.7	-13.0	-36.7	
3465.20	-8.9	H	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5197.80	-8.9	H	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6930.40	-6.0	H	3.0	44.8	1.0	-49.9	-13.0	-36.9	
High Ch, 1752.6MHz									
3505.20	-8.7	V	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5257.80	-8.8	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
7010.40	-6.0	V	3.0	44.8	1.0	-49.8	-13.0	-36.8	
3505.20	-8.8	H	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5257.80	-8.7	H	3.0	45.8	1.0	-53.5	-13.0	-40.5	
7010.40	-6.1	H	3.0	44.8	1.0	-49.9	-13.0	-36.9	

Band 4 HSDPA

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

Company: Samsung
Project #: 4790541040
Date: 9/13/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: HSDPA Band 4 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, 1712.4MHz									
3424.80	-9.0	V	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5137.20	-9.2	V	3.0	45.8	1.0	-54.0	-13.0	-41.0	
6849.60	-6.0	V	3.0	44.9	1.0	-49.9	-13.0	-36.9	
3424.80	-9.1	H	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5137.20	-9.2	H	3.0	45.8	1.0	-54.0	-13.0	-41.0	
6849.60	-6.2	H	3.0	44.9	1.0	-50.1	-13.0	-37.1	
Mid Ch, 1732.6MHz									
3465.20	-8.8	V	3.0	45.7	1.0	-53.6	-13.0	-40.6	
5197.80	-8.9	V	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6930.40	-5.9	V	3.0	44.8	1.0	-49.7	-13.0	-36.7	
3465.20	-8.9	H	3.0	45.7	1.0	-53.6	-13.0	-40.6	
5197.80	-8.9	H	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6930.40	-5.9	H	3.0	44.8	1.0	-49.7	-13.0	-36.7	
High Ch, 1752.6MHz									
3505.20	-8.6	V	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5257.80	-8.8	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
7010.40	-5.9	V	3.0	44.8	1.0	-49.7	-13.0	-36.7	
3505.20	-8.8	H	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5257.80	-8.7	H	3.0	45.8	1.0	-53.5	-13.0	-40.5	
7010.40	-6.1	H	3.0	44.8	1.0	-49.9	-13.0	-36.9	

WCDMA Band 2

Band 2 REL99

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

Company: Samsung
Project #: 4790541040
Date: 9/13/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: Rel99 Band 2 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, 1852.4MHz									
3704.80	-11.0	V	3.0	45.8	1.0	-55.8	-13.0	-42.8	
5557.20	-8.2	V	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-5.8	V	3.0	44.6	1.0	-49.4	-13.0	-36.4	
3704.80	-11.0	H	3.0	45.8	1.0	-55.8	-13.0	-42.8	
5557.20	-8.3	H	3.0	45.7	1.0	-53.0	-13.0	-40.0	
7409.60	-5.9	H	3.0	44.6	1.0	-49.4	-13.0	-36.4	
Mid Ch, 1880MHz									
3760.00	-10.8	V	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5640.00	-7.9	V	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7520.00	-5.9	V	3.0	44.5	1.0	-49.4	-13.0	-36.4	
3760.00	-10.8	H	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5640.00	-7.9	H	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7520.00	-6.0	H	3.0	44.5	1.0	-49.5	-13.0	-36.5	
High Ch, 1907.6MHz									
3815.20	-10.8	V	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5722.80	-7.9	V	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7630.40	-5.7	V	3.0	44.4	1.0	-49.1	-13.0	-36.1	
3815.20	-10.8	H	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5722.80	-8.0	H	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7630.40	-5.8	H	3.0	44.4	1.0	-49.2	-13.0	-36.2	

Band 2 HSDPA

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

Company: Samsung
Project #: 4790541040
Date: 9/13/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: HSDPA Band 2 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, 1852.4MHz									
3704.80	-11.0	V	3.0	45.8	1.0	-55.8	-13.0	-42.8	
5557.20	-8.2	V	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-5.8	V	3.0	44.6	1.0	-49.3	-13.0	-36.3	
3704.80	-11.0	H	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5557.20	-8.2	H	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-5.9	H	3.0	44.6	1.0	-49.4	-13.0	-36.4	
Mid Ch, 1880MHz									
3760.00	-10.8	V	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5640.00	-7.9	V	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	-6.0	V	3.0	44.5	1.0	-49.5	-13.0	-36.5	
3760.00	-10.9	H	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5640.00	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	-6.0	H	3.0	44.5	1.0	-49.5	-13.0	-36.5	
High Ch, 1907.6MHz									
3815.20	-10.8	V	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5722.80	-7.9	V	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7630.40	-5.7	V	3.0	44.4	1.0	-49.2	-13.0	-36.2	
3815.20	-10.8	H	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5722.80	-8.0	H	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7630.40	-5.8	H	3.0	44.4	1.0	-49.2	-13.0	-36.2	

LTE Band 5

LTE Band 5

1.4MHz

QPSK

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

Company: Samsung
Project #: 4790541040
Date: 9/15/2022
Test Engineer: 25770
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 5 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, 824.7MHz									
1649.40	-15.6	V	3.0	45.6	1.0	-60.2	-13.0	-47.2	
2474.10	-12.2	V	3.0	45.4	1.0	-56.7	-13.0	-43.7	
3298.80	-9.8	V	3.0	45.7	1.0	-54.5	-13.0	-41.5	
1649.40	-16.6	H	3.0	45.6	1.0	-61.2	-13.0	-48.2	
2474.10	-12.8	H	3.0	45.4	1.0	-57.2	-13.0	-44.2	
3298.80	-9.8	H	3.0	45.7	1.0	-54.5	-13.0	-41.5	
Mid Ch, 836.5MHz									
1673.00	-15.7	V	3.0	45.6	1.0	-60.3	-13.0	-47.3	
2509.50	-12.3	V	3.0	45.5	1.0	-56.8	-13.0	-43.8	
3346.00	-9.7	V	3.0	45.7	1.0	-54.4	-13.0	-41.4	
1673.00	-16.6	H	3.0	45.6	1.0	-61.2	-13.0	-48.2	
2509.50	-12.8	H	3.0	45.5	1.0	-57.2	-13.0	-44.2	
3346.00	-9.8	H	3.0	45.7	1.0	-54.5	-13.0	-41.5	
High Ch, 848.3MHz									
1696.60	-15.5	V	3.0	45.6	1.0	-60.1	-13.0	-47.1	
2544.90	-12.2	V	3.0	45.5	1.0	-56.7	-13.0	-43.7	
3393.20	-9.5	V	3.0	45.7	1.0	-54.2	-13.0	-41.2	
1696.60	-16.5	H	3.0	45.6	1.0	-61.0	-13.0	-48.0	
2544.90	-12.6	H	3.0	45.5	1.0	-57.1	-13.0	-44.1	
3393.20	-9.5	H	3.0	45.7	1.0	-54.2	-13.0	-41.2	

LTE Band 12

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

Company:	Samsung
Project #:	4790541040
Date:	9/15/2022
Test Engineer:	25770
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

LTE Band 12

1.4MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 699.7MHz									
1399.40	-17.2	V	3.0	45.8	1.0	-62.0	-13.0	-49.0	
2099.10	-13.6	V	3.0	45.4	1.0	-57.9	-13.0	-44.9	
2798.80	-11.3	V	3.0	45.5	1.0	-55.8	-13.0	-42.8	
1399.40	-18.0	H	3.0	45.8	1.0	-62.8	-13.0	-49.8	
2099.10	-14.5	H	3.0	45.4	1.0	-58.8	-13.0	-45.8	
2798.80	-11.5	H	3.0	45.5	1.0	-56.0	-13.0	-43.0	
Mid Ch, 707.5MHz									
1415.00	-17.1	V	3.0	45.8	1.0	-61.9	-13.0	-48.9	
2122.50	-13.5	V	3.0	45.4	1.0	-57.9	-13.0	-44.9	
2830.00	-11.2	V	3.0	45.5	1.0	-55.8	-13.0	-42.8	
1415.00	-18.0	H	3.0	45.8	1.0	-62.8	-13.0	-49.8	
2122.50	-14.4	H	3.0	45.4	1.0	-58.8	-13.0	-45.8	
2830.00	-11.3	H	3.0	45.5	1.0	-55.9	-13.0	-42.9	
High Ch, 715.3MHz									
1430.60	-17.0	V	3.0	45.8	1.0	-61.8	-13.0	-48.8	
2145.90	-13.4	V	3.0	45.4	1.0	-57.8	-13.0	-44.8	
2861.20	-11.0	V	3.0	45.5	1.0	-55.6	-13.0	-42.6	
1430.60	-17.9	H	3.0	45.8	1.0	-62.7	-13.0	-49.7	
2145.90	-14.3	H	3.0	45.4	1.0	-58.7	-13.0	-45.7	
2861.20	-11.1	H	3.0	45.5	1.0	-55.6	-13.0	-42.6	

LTE Band 13

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

Company:	Samsung
Project #:	4790541040
Date:	2022-09-15
Test Engineer:	25770
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 13 Harmonics, 5MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

LTE Band 13

5MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 779.5MHz									
1559.00	-16.2	V	3.0	45.7	1.0	-60.9	-40.0	-20.9	
2338.50	-12.6	V	3.0	45.4	1.0	-57.1	-13.0	-44.1	
3118.00	-10.5	V	3.0	45.6	1.0	-55.1	-13.0	-42.1	
1559.00	-17.2	H	3.0	45.7	1.0	-61.9	-40.0	-21.9	
2338.50	-13.2	H	3.0	45.4	1.0	-57.7	-13.0	-44.7	
3118.00	-10.5	H	3.0	45.6	1.0	-55.2	-13.0	-42.2	
Mid Ch, 782MHz									
1564.00	-16.1	V	3.0	45.7	1.0	-60.8	-40.0	-20.8	
2346.00	-12.5	V	3.0	45.4	1.0	-56.9	-13.0	-43.9	
3128.00	-10.5	V	3.0	45.6	1.0	-55.1	-13.0	-42.1	
1564.00	-17.1	H	3.0	45.7	1.0	-61.8	-40.0	-21.8	
2346.00	-13.2	H	3.0	45.4	1.0	-57.7	-13.0	-44.7	
3128.00	-10.4	H	3.0	45.6	1.0	-55.1	-13.0	-42.1	
High Ch, 784.5MHz									
1569.00	-16.2	V	3.0	45.7	1.0	-60.9	-40.0	-20.9	
2353.50	-12.6	V	3.0	45.4	1.0	-57.0	-13.0	-44.0	
3138.00	-10.4	V	3.0	45.6	1.0	-55.0	-13.0	-42.0	
1569.00	-17.1	H	3.0	45.7	1.0	-61.8	-40.0	-21.8	
2353.50	-13.2	H	3.0	45.4	1.0	-57.6	-13.0	-44.6	
3138.00	-10.4	H	3.0	45.6	1.0	-55.0	-13.0	-42.0	

LTE Band 25

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

Company:	Samsung
Project #:	4790541040
Date:	9/15/2022
Test Engineer:	25570
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 25 Harmonics, 10MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

LTE Band 25

10 MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855MHz									
3710.00	-11.1	V	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5565.00	-8.1	V	3.0	45.7	1.0	-52.8	-13.0	-39.8	
7420.00	-5.8	V	3.0	44.5	1.0	-49.4	-13.0	-36.4	
3710.00	-11.1	H	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5565.00	-8.2	H	3.0	45.7	1.0	-53.0	-13.0	-40.0	
7420.00	-5.9	H	3.0	44.5	1.0	-49.5	-13.0	-36.5	
Mid Ch, 1882.5MHz									
3765.00	-11.0	V	3.0	45.8	1.0	-55.8	-13.0	-42.8	
5647.50	-7.9	V	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7530.00	-5.9	V	3.0	44.5	1.0	-49.4	-13.0	-36.4	
3765.00	-10.9	H	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5647.50	-8.0	H	3.0	45.7	1.0	-52.8	-13.0	-39.8	
7530.00	-5.9	H	3.0	44.5	1.0	-49.4	-13.0	-36.4	
High Ch, 1910MHz									
3820.00	-11.0	V	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5730.00	-7.8	V	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7640.00	-5.7	V	3.0	44.4	1.0	-49.1	-13.0	-36.1	
3820.00	-11.7	H	3.0	45.8	1.0	-56.6	-13.0	-43.6	
5730.00	-7.8	H	3.0	45.7	1.0	-52.5	-13.0	-39.5	
7640.00	-5.8	H	3.0	44.4	1.0	-49.2	-13.0	-36.2	

LTE Band 26 (Part 90)

LTE Band 26

1.4 MHz

QPSK

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-04
Test Engineer:	51078
Configuration:	EUT / AC Adapter, X-Position
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	-14.3	V	3.0	46.4	1.0	-59.7	-13.0	-46.7	
2444.10	-11.6	V	3.0	46.9	1.0	-57.5	-13.0	-44.5	
3258.80	-9.5	V	3.0	46.7	1.0	-55.2	-13.0	-42.2	
1629.40	-14.8	H	3.0	46.4	1.0	-60.2	-13.0	-47.2	
2444.10	-12.2	H	3.0	46.9	1.0	-58.1	-13.0	-45.1	
3258.80	-9.6	H	3.0	46.7	1.0	-55.2	-13.0	-42.2	
Mid Ch, 823.3MHz									
1646.60	-14.4	V	3.0	46.4	1.0	-59.9	-13.0	-46.9	
2469.90	-11.6	V	3.0	46.9	1.0	-57.5	-13.0	-44.5	
3293.20	-9.4	V	3.0	46.6	1.0	-55.1	-13.0	-42.1	
1646.60	-14.8	H	3.0	46.4	1.0	-60.2	-13.0	-47.2	
2469.90	-12.1	H	3.0	46.9	1.0	-58.0	-13.0	-45.0	
3293.20	-9.5	H	3.0	46.6	1.0	-55.2	-13.0	-42.2	

LTE Band 26 (Straddle)

LTE Band 26

10 MHz

QPSK

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-04
Test Engineer:	51078
Configuration:	EUT / AC Adapter, X-Position
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
Straddle Ch, 824MHz									
1648.00	-14.7	V	3.0	46.4	1.0	-60.1	-13.0	-47.1	
2472.00	-11.6	V	3.0	46.9	1.0	-57.5	-13.0	-44.5	
3296.00	-9.4	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1648.00	-15.8	H	3.0	46.4	1.0	-61.2	-13.0	-48.2	
2472.00	-12.1	H	3.0	46.9	1.0	-58.0	-13.0	-45.0	
3296.00	-9.5	H	3.0	46.6	1.0	-55.1	-13.0	-42.1	

LTE Band 26 (Part 22)

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-04
Test Engineer:	51078
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

LTE Band 26

1.4 MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7MHz									
1629.40	-14.8	V	3.0	46.4	1.0	-60.3	-13.0	-47.3	
2444.10	-11.6	V	3.0	46.9	1.0	-57.5	-13.0	-44.5	
3258.80	-9.5	V	3.0	46.7	1.0	-55.2	-13.0	-42.2	
1629.40	-15.8	H	3.0	46.4	1.0	-61.2	-13.0	-48.2	
2444.10	-12.0	H	3.0	46.9	1.0	-57.9	-13.0	-44.9	
3258.80	-9.5	H	3.0	46.7	1.0	-55.1	-13.0	-42.1	
Mid Ch, 831.5MHz									
1663.00	-14.7	V	3.0	46.4	1.0	-60.1	-13.0	-47.1	
2494.50	-11.4	V	3.0	46.9	1.0	-57.3	-13.0	-44.3	
3326.00	-9.3	V	3.0	46.6	1.0	-54.9	-13.0	-41.9	
1663.00	-15.6	H	3.0	46.4	1.0	-61.0	-13.0	-48.0	
2494.50	-12.0	H	3.0	46.9	1.0	-57.9	-13.0	-44.9	
3326.00	-9.3	H	3.0	46.6	1.0	-54.9	-13.0	-41.9	
High Ch, 848.3MHz									
1696.60	-14.5	V	3.0	46.5	1.0	-60.0	-13.0	-47.0	
2544.90	-11.5	V	3.0	46.9	1.0	-57.4	-13.0	-44.4	
3393.20	-8.9	V	3.0	46.5	1.0	-54.4	-13.0	-41.4	
1696.60	-15.4	H	3.0	46.5	1.0	-60.9	-13.0	-47.9	
2544.90	-12.0	H	3.0	46.9	1.0	-57.9	-13.0	-44.9	
3393.20	-9.0	H	3.0	46.5	1.0	-54.5	-13.0	-41.5	

LTE Band 41(PC2)

LTE Band 41(PC2)

20 MHz

QPSK

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-04
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Y-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 41 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, 2506MHz									
5012.00	-13.0	V	3.0	46.2	1.0	-58.3	-25.0	-33.3	
7518.00	-11.0	V	3.0	45.5	1.0	-55.6	-25.0	-30.6	
10024.00	-6.9	V	3.0	45.6	1.0	-51.4	-25.0	-26.4	
5012.00	-13.1	H	3.0	46.2	1.0	-58.4	-25.0	-33.4	
7518.00	-8.8	H	3.0	45.5	1.0	-53.3	-25.0	-28.3	
10024.00	-7.9	H	3.0	45.6	1.0	-52.4	-25.0	-27.4	
Mid Ch, 2593MHz									
5186.00	-21.2	V	3.0	46.1	1.0	-66.3	-25.0	-41.3	
7779.00	-8.8	V	3.0	45.6	1.0	-53.4	-25.0	-28.4	
10372.00	-12.1	V	3.0	45.9	1.0	-57.0	-25.0	-32.0	
5186.00	-21.3	H	3.0	46.1	1.0	-66.4	-25.0	-41.4	
7779.00	-9.6	H	3.0	45.6	1.0	-54.2	-25.0	-29.2	
10372.00	-12.0	H	3.0	45.9	1.0	-56.9	-25.0	-31.9	
High Ch, 2680MHz									
5360.00	-13.0	V	3.0	45.9	1.0	-57.9	-25.0	-32.9	
8040.00	-2.1	V	3.0	45.6	1.0	-46.7	-25.0	-21.7	
10720.00	-6.6	V	3.0	46.2	1.0	-51.8	-25.0	-26.8	
5360.00	-12.7	H	3.0	45.9	1.0	-57.7	-25.0	-32.7	
8040.00	-5.9	H	3.0	45.6	1.0	-50.5	-25.0	-25.5	
10720.00	-7.7	H	3.0	46.2	1.0	-52.9	-25.0	-27.9	

LTE Band 66

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

Company: Samsung
Project #: 4790541040
Date: 9/16/2022
Test Engineer: 25570
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: LTE_QPSK Band 66 Harmonics, 10MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

LTE Band 66

10 MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715MHz									
3430.00	-9.0	V	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5145.00	-9.3	V	3.0	45.8	1.0	-54.1	-13.0	-41.1	
6860.00	-6.0	V	3.0	44.9	1.0	-49.9	-13.0	-36.9	
3430.00	-9.1	H	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5145.00	-9.1	H	3.0	45.8	1.0	-53.9	-13.0	-40.9	
6860.00	-6.1	H	3.0	44.9	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1745MHz									
3490.00	-8.7	V	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5235.00	-8.7	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6980.00	-6.1	V	3.0	44.8	1.0	-49.9	-13.0	-36.9	
3490.00	-8.8	H	3.0	45.7	1.0	-53.6	-13.0	-40.6	
5235.00	-8.7	H	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6980.00	-6.2	H	3.0	44.8	1.0	-50.0	-13.0	-37.0	
High Ch, 1775MHz									
3550.00	-8.2	V	3.0	45.8	1.0	-52.9	-13.0	-39.9	
5325.00	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3	
7100.00	-5.8	V	3.0	44.7	1.0	-49.5	-13.0	-36.5	
3550.00	-8.2	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5325.00	-8.5	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
7100.00	-5.9	H	3.0	44.7	1.0	-49.6	-13.0	-36.6	

NR Band n5

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-05
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Z-Position
Location:	Chamber 1
Mode:	5G NR_QPSK NR n5 Harmonics, 15MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

15MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 831.5MHz									
1663.00	-14.7	V	3.0	46.4	1.0	-60.2	-13.0	-47.2	
2494.50	-11.4	V	3.0	46.9	1.0	-57.3	-13.0	-44.3	
3326.00	-9.5	V	3.0	46.6	1.0	-55.0	-13.0	-42.0	
1663.00	-15.7	H	3.0	46.4	1.0	-61.1	-13.0	-48.1	
2494.50	-12.1	H	3.0	46.9	1.0	-58.0	-13.0	-45.0	
3326.00	-9.4	H	3.0	46.6	1.0	-55.0	-13.0	-42.0	
Mid Ch, 836.5MHz									
1673.00	-14.7	V	3.0	46.4	1.0	-60.1	-13.0	-47.1	
2509.50	-11.6	V	3.0	46.9	1.0	-57.5	-13.0	-44.5	
3346.00	-9.3	V	3.0	46.6	1.0	-54.9	-13.0	-41.9	
1673.00	-15.7	H	3.0	46.4	1.0	-61.1	-13.0	-48.1	
2509.50	-12.0	H	3.0	46.9	1.0	-57.9	-13.0	-44.9	
3346.00	-9.4	H	3.0	46.6	1.0	-54.9	-13.0	-41.9	
High Ch, 841.5MHz									
1683.00	-14.2	V	3.0	46.5	1.0	-59.7	-13.0	-46.7	
2524.50	-11.4	V	3.0	46.9	1.0	-57.3	-13.0	-44.3	
3366.00	-9.1	V	3.0	46.5	1.0	-54.6	-13.0	-41.6	
1683.00	-15.5	H	3.0	46.5	1.0	-61.0	-13.0	-48.0	
2524.50	-12.0	H	3.0	46.9	1.0	-57.9	-13.0	-44.9	
3366.00	-9.2	H	3.0	46.5	1.0	-54.7	-13.0	-41.7	

NR Band n25

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

Company: Samsung
Project #: 4790541040
Date: 9/16/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: 5G NR_QPSK NR n25 Harmonics, 15MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

15 MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3715.00	-10.9	V	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5572.50	-8.1	V	3.0	45.7	1.0	-52.8	-13.0	-39.8	
7430.00	-5.5	V	3.0	44.5	1.0	-49.1	-13.0	-36.1	
3715.00	-10.7	H	3.0	45.8	1.0	-55.5	-13.0	-42.5	
5572.50	-8.1	H	3.0	45.7	1.0	-52.8	-13.0	-39.8	
7430.00	-5.7	H	3.0	44.5	1.0	-49.2	-13.0	-36.2	
Mid Ch, 1882.5MHz									
3765.00	-10.6	V	3.0	45.8	1.0	-55.4	-13.0	-42.4	
5647.50	-7.6	V	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7530.00	-5.8	V	3.0	44.5	1.0	-49.3	-13.0	-36.3	
3765.00	-11.0	H	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5647.50	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7530.00	-5.6	H	3.0	44.5	1.0	-49.1	-13.0	-36.1	
High Ch, 1907.5MHz									
3815.00	-10.5	V	3.0	45.8	1.0	-55.4	-13.0	-42.4	
5722.50	-7.7	V	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7630.00	-5.6	V	3.0	44.4	1.0	-49.1	-13.0	-36.1	
3815.00	-10.6	H	3.0	45.8	1.0	-55.5	-13.0	-42.5	
5722.50	-7.6	H	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7630.00	-5.6	H	3.0	44.4	1.0	-49.0	-13.0	-36.0	

NR Band n41

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-05
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Y-Position
Location:	Chamber 1
Mode:	5G NR_QPSK NR n41 Harmonics, 60MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

NR n41

40MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2526.01MHz									
5052.02	-15.5	V	3.0	46.2	1.0	-60.7	-25.0	-35.7	
7578.03	-0.8	V	3.0	45.5	1.0	-45.3	-25.0	-20.3	
10104.04	-9.7	V	3.0	45.6	1.0	-54.3	-25.0	-29.3	
5052.02	-15.3	H	3.0	46.2	1.0	-60.5	-25.0	-35.5	
7578.03	2.0	H	3.0	45.5	1.0	-42.6	-25.0	-17.6	
10104.04	-10.0	H	3.0	45.6	1.0	-54.6	-25.0	-29.6	
Mid Ch, 2592.99MHz									
5185.98	-13.2	V	3.0	46.1	1.0	-58.3	-25.0	-33.3	
7778.97	-1.8	V	3.0	45.6	1.0	-46.4	-25.0	-21.4	
10371.96	-7.9	V	3.0	45.9	1.0	-52.7	-25.0	-27.7	
5185.98	-13.9	H	3.0	46.1	1.0	-59.0	-25.0	-34.0	
7778.97	1.0	H	3.0	45.6	1.0	-43.6	-25.0	-18.6	
10371.96	-7.9	H	3.0	45.9	1.0	-52.8	-25.0	-27.8	
High Ch, 2660MHz									
5320.00	-15.1	V	3.0	46.0	1.0	-60.1	-25.0	-35.1	
7980.00	-13.5	V	3.0	45.6	1.0	-58.0	-25.0	-33.0	
10640.00	-9.3	V	3.0	46.1	1.0	-54.4	-25.0	-29.4	
5320.00	-15.0	H	3.0	46.0	1.0	-60.0	-25.0	-35.0	
7980.00	-13.7	H	3.0	45.6	1.0	-58.3	-25.0	-33.3	
10640.00	-9.2	H	3.0	46.1	1.0	-54.3	-25.0	-29.3	

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-13
Test Engineer:	25770
Configuration:	EUT / AC Adapter, Y-Position
Location:	Chamber 1
Mode:	5G NR_n41 Harmonics, 40MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

NR n41

SRS1

40MHz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2516.01MHz									
5032.02	-16.9	V	3.0	46.2	1.0	-62.1	-25.0	-37.1	
7548.03	-15.3	V	3.0	45.5	1.0	-59.8	-25.0	-34.8	
10064.04	-11.1	V	3.0	45.6	1.0	-55.7	-25.0	-30.7	
12580.05	-9.2	V	3.0	47.1	1.0	-55.3	-25.0	-30.3	
15096.06	-9.9	V	3.0	46.1	1.0	-55.0	-25.0	-30.0	
5032.02	-16.7	H	3.0	46.2	1.0	-61.9	-25.0	-36.9	
7548.03	-15.3	H	3.0	45.5	1.0	-59.9	-25.0	-34.9	
10064.04	-11.3	H	3.0	45.6	1.0	-55.9	-25.0	-30.9	
12580.05	-8.9	H	3.0	47.1	1.0	-55.0	-25.0	-30.0	
15096.06	-9.9	H	3.0	46.1	1.0	-55.0	-25.0	-30.0	
Mid Ch, 2592.99MHz									
5185.98	-16.8	V	3.0	46.1	1.0	-61.9	-25.0	-36.9	
7778.97	-14.8	V	3.0	45.6	1.0	-59.4	-25.0	-34.4	
10371.96	-10.8	V	3.0	45.9	1.0	-55.7	-25.0	-30.7	
12964.95	-9.4	V	3.0	46.9	1.0	-55.4	-25.0	-30.4	
15557.94	-9.5	V	3.0	45.9	1.0	-54.3	-25.0	-29.3	
5185.98	-16.7	H	3.0	46.1	1.0	-61.7	-25.0	-36.7	
7778.97	-10.6	H	3.0	45.6	1.0	-55.2	-25.0	-30.2	
10371.96	-11.0	H	3.0	45.9	1.0	-55.8	-25.0	-30.8	
12964.95	-9.6	H	3.0	46.9	1.0	-55.5	-25.0	-30.5	
15557.94	-9.4	H	3.0	45.9	1.0	-54.3	-25.0	-29.3	
High Ch, 2670MHz									
5340.00	-14.5	V	3.0	45.9	1.0	-59.5	-25.0	-34.5	
8010.00	-15.0	V	3.0	45.6	1.0	-59.6	-25.0	-34.6	
10680.00	-10.8	V	3.0	46.1	1.0	-55.9	-25.0	-30.9	
13350.00	-10.0	V	3.0	46.8	1.0	-55.7	-25.0	-30.7	
16020.00	-9.0	V	3.0	45.6	1.0	-53.6	-25.0	-28.6	
5340.00	-15.7	H	3.0	45.9	1.0	-60.6	-25.0	-35.6	
8010.00	-15.0	H	3.0	45.6	1.0	-59.6	-25.0	-34.6	
10680.00	-10.6	H	3.0	46.1	1.0	-55.7	-25.0	-30.7	
13350.00	-9.9	H	3.0	46.8	1.0	-55.7	-25.0	-30.7	
16020.00	-8.9	H	3.0	45.6	1.0	-53.6	-25.0	-28.6	

NR n41
SRS2
20MHz

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-13
Test Engineer: 25770
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 1
Mode: 5G NR_n41 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, 2506.01MHz									
5012.02	-15.6	V	3.0	46.2	1.0	-60.8	-25.0	-35.8	
7518.03	-15.2	V	3.0	45.5	1.0	-59.8	-25.0	-34.8	
10024.04	-10.9	V	3.0	45.6	1.0	-55.4	-25.0	-30.4	
5012.02	-13.0	H	3.0	46.2	1.0	-58.2	-25.0	-33.2	
7518.03	-15.3	H	3.0	45.5	1.0	-59.8	-25.0	-34.8	
10024.04	-11.1	H	3.0	45.6	1.0	-55.7	-25.0	-30.7	
Mid Ch, 2592.99MHz									
5185.98	-16.2	V	3.0	46.1	1.0	-61.3	-25.0	-36.3	
7778.97	-14.7	V	3.0	45.6	1.0	-59.3	-25.0	-34.3	
10371.96	-10.7	V	3.0	45.9	1.0	-55.6	-25.0	-30.6	
5185.98	-13.8	H	3.0	46.1	1.0	-58.9	-25.0	-33.9	
7778.97	-14.6	H	3.0	45.6	1.0	-59.1	-25.0	-34.1	
10371.96	-10.7	H	3.0	45.9	1.0	-55.6	-25.0	-30.6	
High Ch, 2680MHz									
5360.00	-15.6	V	3.0	45.9	1.0	-60.5	-25.0	-35.5	
8040.00	-15.1	V	3.0	45.6	1.0	-59.6	-25.0	-34.6	
10720.00	-10.6	V	3.0	46.2	1.0	-55.8	-25.0	-30.8	
5360.00	-13.1	H	3.0	45.9	1.0	-58.1	-25.0	-33.1	
8040.00	-14.7	H	3.0	45.6	1.0	-59.3	-25.0	-34.3	
10720.00	-10.6	H	3.0	46.2	1.0	-55.8	-25.0	-30.8	

NR n41
SRS3
10MHz

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-12
Test Engineer: 25546
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 1
Mode: 5G NR_n41 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, 2501.01MHz									
5002.02	-9.2	V	3.0	46.2	1.0	-54.4	-25.0	-29.4	
7503.03	-15.1	V	3.0	45.5	1.0	-59.6	-25.0	-34.6	
10004.04	-11.1	V	3.0	45.6	1.0	-55.6	-25.0	-30.6	
5002.02	-9.9	H	3.0	46.2	1.0	-55.2	-25.0	-30.2	
7503.03	-15.0	H	3.0	45.5	1.0	-59.5	-25.0	-34.5	
10004.04	-11.2	H	3.0	45.6	1.0	-55.8	-25.0	-30.8	
Mid Ch, 2592.99MHz									
5185.98	-16.0	V	3.0	46.1	1.0	-61.1	-25.0	-36.1	
7778.97	-14.8	V	3.0	45.6	1.0	-59.4	-25.0	-34.4	
10371.96	-10.7	V	3.0	45.9	1.0	-55.6	-25.0	-30.6	
5185.98	-15.5	H	3.0	46.1	1.0	-60.6	-25.0	-35.6	
7778.97	-14.8	H	3.0	45.6	1.0	-59.3	-25.0	-34.3	
10371.96	-10.7	H	3.0	45.9	1.0	-55.6	-25.0	-30.6	
High Ch, 2685MHz									
5370.00	-15.9	V	3.0	45.9	1.0	-60.8	-25.0	-35.8	
8055.00	-15.1	V	3.0	45.6	1.0	-59.7	-25.0	-34.7	
10740.00	-9.9	V	3.0	46.2	1.0	-55.1	-25.0	-30.1	
5370.00	-14.6	H	3.0	45.9	1.0	-59.6	-25.0	-34.6	
8055.00	-15.1	H	3.0	45.6	1.0	-59.7	-25.0	-34.7	
10740.00	-10.4	H	3.0	46.2	1.0	-55.6	-25.0	-30.6	

NR Band n66

NR n66
Main1 Ant
20 MHz
QPSK

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

Company: Samsung
Project #: 4790541040
Date: 9/16/2022
Test Engineer: 19568
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: 5G NR_QPSK NR n66 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, 1720MHz									
3440.00	-9.1	V	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5160.00	-8.9	V	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6880.00	-5.8	V	3.0	44.9	1.0	-49.7	-13.0	-36.7	
3440.00	-9.0	H	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5160.00	-9.0	H	3.0	45.8	1.0	-53.8	-13.0	-40.8	
6880.00	-5.9	H	3.0	44.9	1.0	-49.8	-13.0	-36.8	
Mid Ch, 1745MHz									
3490.00	-8.7	V	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5235.00	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4	
6980.00	-6.0	V	3.0	44.8	1.0	-49.8	-13.0	-36.8	
3490.00	-8.6	H	3.0	45.7	1.0	-53.3	-13.0	-40.3	
5235.00	-8.6	H	3.0	45.8	1.0	-53.4	-13.0	-40.4	
6980.00	-5.9	H	3.0	44.8	1.0	-49.7	-13.0	-36.7	
High Ch, 1770MHz									
3540.00	-8.3	V	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5310.00	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4	
7080.00	-5.6	V	3.0	44.7	1.0	-49.4	-13.0	-36.4	
3540.00	-8.5	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
5310.00	-8.3	H	3.0	45.8	1.0	-53.1	-13.0	-40.1	
7080.00	-5.7	H	3.0	44.7	1.0	-49.4	-13.0	-36.4	

NR n66
Sub2 Ant
10 MHz
QPSK

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-19
Test Engineer: 25770
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: 5G NR_QPSK NR n66 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, 1715MHz									
3430.00	-8.5	V	3.0	46.4	1.0	-53.9	-13.0	-40.9	
5145.00	-4.5	V	3.0	46.1	1.0	-49.6	-13.0	-36.6	
6860.00	-5.5	V	3.0	45.5	1.0	-50.0	-13.0	-37.0	
3430.00	-8.4	H	3.0	46.4	1.0	-53.8	-13.0	-40.8	
5145.00	-3.1	H	3.0	46.1	1.0	-48.2	-13.0	-35.2	
6860.00	-5.5	H	3.0	45.5	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1745MHz									
3490.00	-8.2	V	3.0	46.3	1.0	-53.6	-13.0	-40.6	
5235.00	-5.3	V	3.0	46.0	1.0	-50.4	-13.0	-37.4	
6980.00	-5.6	V	3.0	45.5	1.0	-50.1	-13.0	-37.1	
3490.00	-8.3	H	3.0	46.3	1.0	-53.6	-13.0	-40.6	
5235.00	-3.2	H	3.0	46.0	1.0	-48.2	-13.0	-35.2	
6980.00	-5.7	H	3.0	45.5	1.0	-50.1	-13.0	-37.1	
High Ch, 1775MHz									
3550.00	-7.9	V	3.0	46.3	1.0	-53.1	-13.0	-40.1	
5325.00	-6.9	V	3.0	46.0	1.0	-51.9	-13.0	-38.9	
7100.00	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
3550.00	-7.9	H	3.0	46.3	1.0	-53.2	-13.0	-40.2	
5325.00	-6.0	H	3.0	46.0	1.0	-51.0	-13.0	-38.0	
7100.00	-5.4	H	3.0	45.5	1.0	-49.9	-13.0	-36.9	

NR Band n77 (3450 – 3550 MHz)

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

Company:	Samsung
Project #:	4790541040
Date:	9/28/2022
Test Engineer:	51078
Configuration:	EUT / AC Adapter, Z-Position
Location:	Chamber 1
Mode:	5G NR_QPSK NR n77 LO Harmonics, 40MHz Bandwidth
Test Votage:	AC 120 V, 60 Hz

NR n77

40MHz

QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 3470.01MHz									
6940.00	-2.7	V	3.0	44.8	1.0	-46.6	-13.0	-33.6	
10410.00	3.1	V	3.0	42.7	1.0	-38.7	-13.0	-25.7	
13880.00	5.3	V	3.0	44.8	1.0	-38.5	-13.0	-25.5	
6940.00	-3.0	H	3.0	44.8	1.0	-46.9	-13.0	-33.9	
10410.00	2.5	H	3.0	42.7	1.0	-39.2	-13.0	-26.2	
13880.00	5.1	H	3.0	44.8	1.0	-38.7	-13.0	-25.7	
Mid Ch, 3499.98MHz									
6999.96	-3.4	V	3.0	44.8	1.0	-47.2	-13.0	-34.2	
10499.94	2.8	V	3.0	42.7	1.0	-39.0	-13.0	-26.0	
13999.92	5.3	V	3.0	44.9	1.0	-38.6	-13.0	-25.6	
6999.96	-3.0	H	3.0	44.8	1.0	-46.8	-13.0	-33.8	
10499.94	3.0	H	3.0	42.7	1.0	-38.8	-13.0	-25.8	
13999.92	5.4	H	3.0	44.9	1.0	-38.5	-13.0	-25.5	
High Ch, 3529.98MHz									
7058.00	-3.2	V	3.0	44.7	1.0	-46.9	-13.0	-33.9	
10587.00	2.7	V	3.0	42.8	1.0	-39.1	-13.0	-26.1	
14116.00	5.2	V	3.0	45.0	1.0	-38.8	-13.0	-25.8	
7058.00	-3.3	H	3.0	44.7	1.0	-47.1	-13.0	-34.1	
10587.00	2.9	H	3.0	42.8	1.0	-38.9	-13.0	-25.9	
14116.00	5.3	H	3.0	45.0	1.0	-38.7	-13.0	-25.7	

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-07
Test Engineer: 51078
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: 5G NR_n77 LO Harmonics, 30MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

NR n77
SRS1
30MHz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 3465MHz									
6930.00	-5.5	V	3.0	45.5	1.0	-50.0	-13.0	-37.0	
10395.00	0.3	V	3.0	45.9	1.0	-44.6	-13.0	-31.6	
13860.00	2.5	V	3.0	46.6	1.0	-43.1	-13.0	-30.1	
6930.00	-5.6	H	3.0	45.5	1.0	-50.1	-13.0	-37.1	
10395.00	0.2	H	3.0	45.9	1.0	-44.7	-13.0	-31.7	
13860.00	2.8	H	3.0	46.6	1.0	-42.8	-13.0	-29.8	
Mid Ch, 3499.98MHz									
6999.96	-5.5	V	3.0	45.5	1.0	-50.0	-13.0	-37.0	
10499.94	0.4	V	3.0	46.0	1.0	-44.6	-13.0	-31.6	
13999.92	2.6	V	3.0	46.5	1.0	-42.9	-13.0	-29.9	
6999.96	-5.8	H	3.0	45.5	1.0	-50.3	-13.0	-37.3	
10499.94	0.2	H	3.0	46.0	1.0	-44.8	-13.0	-31.8	
13999.92	2.8	H	3.0	46.5	1.0	-42.7	-13.0	-29.7	
High Ch, 3535.02MHz									
7070.04	-5.4	V	3.0	45.5	1.0	-49.9	-13.0	-36.9	
10605.06	0.6	V	3.0	46.1	1.0	-44.5	-13.0	-31.5	
14140.08	2.4	V	3.0	46.5	1.0	-43.1	-13.0	-30.1	
7070.04	-5.5	H	3.0	45.5	1.0	-50.0	-13.0	-37.0	
10605.06	0.5	H	3.0	46.1	1.0	-44.6	-13.0	-31.6	
14140.08	2.6	H	3.0	46.5	1.0	-42.9	-13.0	-29.9	

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-07
Test Engineer: 51078
Configuration: EUT / AC Adapter, Z-Position
Location: Chamber 1
Mode: 5G NR_n77 LO Harmonics, 30MHz Bandwidth
Test Votage: AC 120 V, 60 Hz

NR n77
SRS2
30MHz

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 3465MHz									
6930.00	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
10395.00	0.4	V	3.0	45.9	1.0	-44.5	-13.0	-31.5	
13860.00	2.6	V	3.0	46.6	1.0	-43.0	-13.0	-30.0	
6930.00	-5.4	H	3.0	45.5	1.0	-49.8	-13.0	-36.8	
10395.00	0.3	H	3.0	45.9	1.0	-44.6	-13.0	-31.6	
13860.00	2.8	H	3.0	46.6	1.0	-42.8	-13.0	-29.8	
Mid Ch, 3499.98MHz									
6999.96	-5.6	V	3.0	45.5	1.0	-50.1	-13.0	-37.1	
10499.94	0.3	V	3.0	46.0	1.0	-44.7	-13.0	-31.7	
13999.92	2.7	V	3.0	46.5	1.0	-42.8	-13.0	-29.8	
6999.96	-5.7	H	3.0	45.5	1.0	-50.2	-13.0	-37.2	
10499.94	0.2	H	3.0	46.0	1.0	-44.8	-13.0	-31.8	
13999.92	2.9	H	3.0	46.5	1.0	-42.7	-13.0	-29.7	
High Ch, 3535.02MHz									
7070.04	-5.4	V	3.0	45.5	1.0	-49.9	-13.0	-36.9	
10605.06	0.5	V	3.0	46.1	1.0	-44.5	-13.0	-31.5	
14140.08	2.7	V	3.0	46.5	1.0	-42.7	-13.0	-29.7	
7070.04	-5.4	H	3.0	45.5	1.0	-49.9	-13.0	-36.9	
10605.06	0.5	H	3.0	46.1	1.0	-44.5	-13.0	-31.5	
14140.08	2.9	H	3.0	46.5	1.0	-42.6	-13.0	-29.6	

NR n77

SRS3

30 MHz

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-07
Test Engineer:	51078
Configuration:	EUT / AC Adapter, X-Position
Location:	Chamber 1
Mode:	5G NR_n77 LO Harmonics, 30MHz 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, 3465MHz									
6930.00	-5.2	V	3.0	45.5	1.0	-49.7	-13.0	-36.7	
10395.00	0.4	V	3.0	45.9	1.0	-44.5	-13.0	-31.5	
13860.00	2.6	V	3.0	46.6	1.0	-43.0	-13.0	-30.0	
6930.00	-5.4	H	3.0	45.5	1.0	-49.9	-13.0	-36.9	
10395.00	0.3	H	3.0	45.9	1.0	-44.6	-13.0	-31.6	
13860.00	2.8	H	3.0	46.6	1.0	-42.8	-13.0	-29.8	
Mid Ch, 3499.98MHz									
6999.96	-5.6	V	3.0	45.5	1.0	-50.1	-13.0	-37.1	
10499.94	0.4	V	3.0	46.0	1.0	-44.6	-13.0	-31.6	
13999.92	2.6	V	3.0	46.5	1.0	-42.9	-13.0	-29.9	
6999.96	-5.7	H	3.0	45.5	1.0	-50.2	-13.0	-37.2	
10499.94	0.2	H	3.0	46.0	1.0	-44.7	-13.0	-31.7	
13999.92	2.7	H	3.0	46.5	1.0	-42.8	-13.0	-29.8	
High Ch, 3535.02MHz									
7070.04	-5.4	V	3.0	45.5	1.0	-49.9	-13.0	-36.9	
10605.06	0.5	V	3.0	46.1	1.0	-44.6	-13.0	-31.6	
14140.08	2.6	V	3.0	46.5	1.0	-42.8	-13.0	-29.8	
7070.04	-5.5	H	3.0	45.5	1.0	-50.0	-13.0	-37.0	
10605.06	0.4	H	3.0	46.1	1.0	-44.7	-13.0	-31.7	
14140.08	2.8	H	3.0	46.5	1.0	-42.7	-13.0	-29.7	

NR Band n77(3700 – 3980 MHz)

NR n77
100MHz
QPSK

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

Company: Samsung
Project #: 4790541040
Date: 9/28/2022
Test Engineer: 51078
Configuration: EUT / AC Adapter, Y-Position
Location: Chamber 1
Mode: 5G NR_QPSK NR n77 UP Harmonics, 100MHz 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, 3750MHz									
7500.00	-2.9	V	3.0	44.5	1.0	-46.4	-13.0	-33.4	
11250.00	4.4	V	3.0	43.0	1.0	-37.6	-13.0	-24.6	
15000.00	5.6	V	3.0	45.7	1.0	-39.2	-13.0	-26.2	
7500.00	-2.9	H	3.0	44.5	1.0	-46.4	-13.0	-33.4	
11250.00	4.1	H	3.0	43.0	1.0	-37.9	-13.0	-24.9	
15000.00	6.0	H	3.0	45.7	1.0	-38.7	-13.0	-25.7	
Mid Ch, 3840MHz									
7680.00	-2.8	V	3.0	44.4	1.0	-46.2	-13.0	-33.2	
11520.00	4.0	V	3.0	43.1	1.0	-38.1	-13.0	-25.1	
15360.00	6.3	V	3.0	45.0	1.0	-37.7	-13.0	-24.7	
7680.00	-3.0	H	3.0	44.4	1.0	-46.5	-13.0	-33.5	
11520.00	4.0	H	3.0	43.1	1.0	-38.1	-13.0	-25.1	
15360.00	6.5	H	3.0	45.0	1.0	-37.5	-13.0	-24.5	
High Ch, 3930MHz									
7860.00	-3.1	V	3.0	44.3	1.0	-46.5	-13.0	-33.5	
11790.00	4.4	V	3.0	43.2	1.0	-37.8	-13.0	-24.8	
15720.00	6.7	V	3.0	44.2	1.0	-36.5	-13.0	-23.5	
7860.00	-3.0	H	3.0	44.3	1.0	-46.3	-13.0	-33.3	
11790.00	4.8	H	3.0	43.2	1.0	-37.4	-13.0	-24.4	
15720.00	6.6	H	3.0	44.2	1.0	-36.6	-13.0	-23.6	

NR n77
SRS1
40 MHz

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

Company: Samsung
Project #: 4790541040
Date: 2022-10-07
Test Engineer: 51078
Configuration: EUT / AC Adapter, X-Position
Location: Chamber 1
Mode: 5G NR_n77 UP Harmonics, 40MHz 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, 3720.02MHz									
7440.04	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
11160.06	1.2	V	3.0	46.6	1.0	-44.4	-13.0	-31.4	
14880.08	3.4	V	3.0	46.2	1.0	-41.8	-13.0	-28.8	
7440.04	-5.4	H	3.0	45.5	1.0	-49.9	-13.0	-36.9	
11160.06	1.1	H	3.0	46.6	1.0	-44.5	-13.0	-31.5	
14880.08	3.6	H	3.0	46.2	1.0	-41.6	-13.0	-28.6	
Mid Ch, 3840MHz									
7680.00	-5.2	V	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11520.00	1.6	V	3.0	46.9	1.0	-44.2	-13.0	-31.2	
15360.00	3.8	V	3.0	46.0	1.0	-41.2	-13.0	-28.2	
7680.00	-5.2	H	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11520.00	1.7	H	3.0	46.9	1.0	-44.1	-13.0	-31.1	
15360.00	3.9	H	3.0	46.0	1.0	-41.0	-13.0	-28.0	
High Ch, 3960MHz									
7920.00	-5.2	V	3.0	45.6	1.0	-49.7	-13.0	-36.7	
11880.00	2.2	V	3.0	47.2	1.0	-44.0	-13.0	-31.0	
15840.00	4.2	V	3.0	45.7	1.0	-40.5	-13.0	-27.5	
7920.00	-5.1	H	3.0	45.6	1.0	-49.7	-13.0	-36.7	
11880.00	2.4	H	3.0	47.2	1.0	-43.8	-13.0	-30.8	
15840.00	4.1	H	3.0	45.7	1.0	-40.6	-13.0	-27.6	

NR n77

SRS2

30 MHz

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-07
Test Engineer:	51078
Configuration:	EUT / AC Adapter, Z-Position
Location:	Chamber 1
Mode:	5G NR_n77 UP Harmonics, 30MHz 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, 3715.02MHz									
7430.00	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
11145.00	1.0	V	3.0	46.5	1.0	-44.5	-13.0	-31.5	
14860.00	3.4	V	3.0	46.2	1.0	-41.8	-13.0	-28.8	
7430.00	-5.4	H	3.0	45.5	1.0	-49.9	-13.0	-36.9	
11145.00	1.2	H	3.0	46.5	1.0	-44.4	-13.0	-31.4	
14860.00	3.5	H	3.0	46.2	1.0	-41.7	-13.0	-28.7	
Mid Ch, 3840MHz									
7680.00	-5.2	V	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11520.00	1.8	V	3.0	46.9	1.0	-44.1	-13.0	-31.1	
15360.00	3.8	V	3.0	46.0	1.0	-41.2	-13.0	-28.2	
7680.00	-5.3	H	3.0	45.6	1.0	-49.9	-13.0	-36.9	
11520.00	1.9	H	3.0	46.9	1.0	-44.0	-13.0	-31.0	
15360.00	3.9	H	3.0	46.0	1.0	-41.0	-13.0	-28.0	
High Ch, 3964.98MHz									
7929.96	-5.2	V	3.0	45.6	1.0	-49.7	-13.0	-36.7	
11894.94	2.2	V	3.0	47.2	1.0	-44.0	-13.0	-31.0	
15859.92	4.3	V	3.0	45.7	1.0	-40.4	-13.0	-27.4	
7929.96	-5.2	H	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11894.94	2.3	H	3.0	47.2	1.0	-43.9	-13.0	-30.9	
15859.92	4.2	H	3.0	45.7	1.0	-40.5	-13.0	-27.5	

NR n77

SRS3

30 MHz

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

Company:	Samsung
Project #:	4790541040
Date:	2022-10-07
Test Engineer:	51078
Configuration:	EUT / AC Adapter, Z-Position
Location:	Chamber 1
Mode:	5G NR_n77 UP Harmonics, 30MHz 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, 3715.02MHz									
7430.04	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
11145.06	1.0	V	3.0	46.5	1.0	-44.5	-13.0	-31.5	
14860.08	3.5	V	3.0	46.2	1.0	-41.7	-13.0	-28.7	
7430.04	-5.3	H	3.0	45.5	1.0	-49.8	-13.0	-36.8	
11145.06	1.0	H	3.0	46.5	1.0	-44.5	-13.0	-31.5	
14860.08	3.6	H	3.0	46.2	1.0	-41.6	-13.0	-28.6	
Mid Ch, 3840MHz									
7680.00	-5.4	V	3.0	45.6	1.0	-49.9	-13.0	-36.9	
11520.00	1.7	V	3.0	46.9	1.0	-44.2	-13.0	-31.2	
15360.00	3.8	V	3.0	46.0	1.0	-41.1	-13.0	-28.1	
7680.00	-5.3	H	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11520.00	1.9	H	3.0	46.9	1.0	-44.0	-13.0	-31.0	
15360.00	3.8	H	3.0	46.0	1.0	-41.1	-13.0	-28.1	
High Ch, 3964.98MHz									
7929.96	-5.2	V	3.0	45.6	1.0	-49.8	-13.0	-36.8	
11894.94	2.2	V	3.0	47.2	1.0	-44.0	-13.0	-31.0	
15859.92	4.3	V	3.0	45.7	1.0	-40.4	-13.0	-27.4	
7929.96	-5.1	H	3.0	45.6	1.0	-49.7	-13.0	-36.7	
11894.94	2.4	H	3.0	47.2	1.0	-43.8	-13.0	-30.8	
15859.92	4.3	H	3.0	45.7	1.0	-40.4	-13.0	-27.4	

END OF REPORT