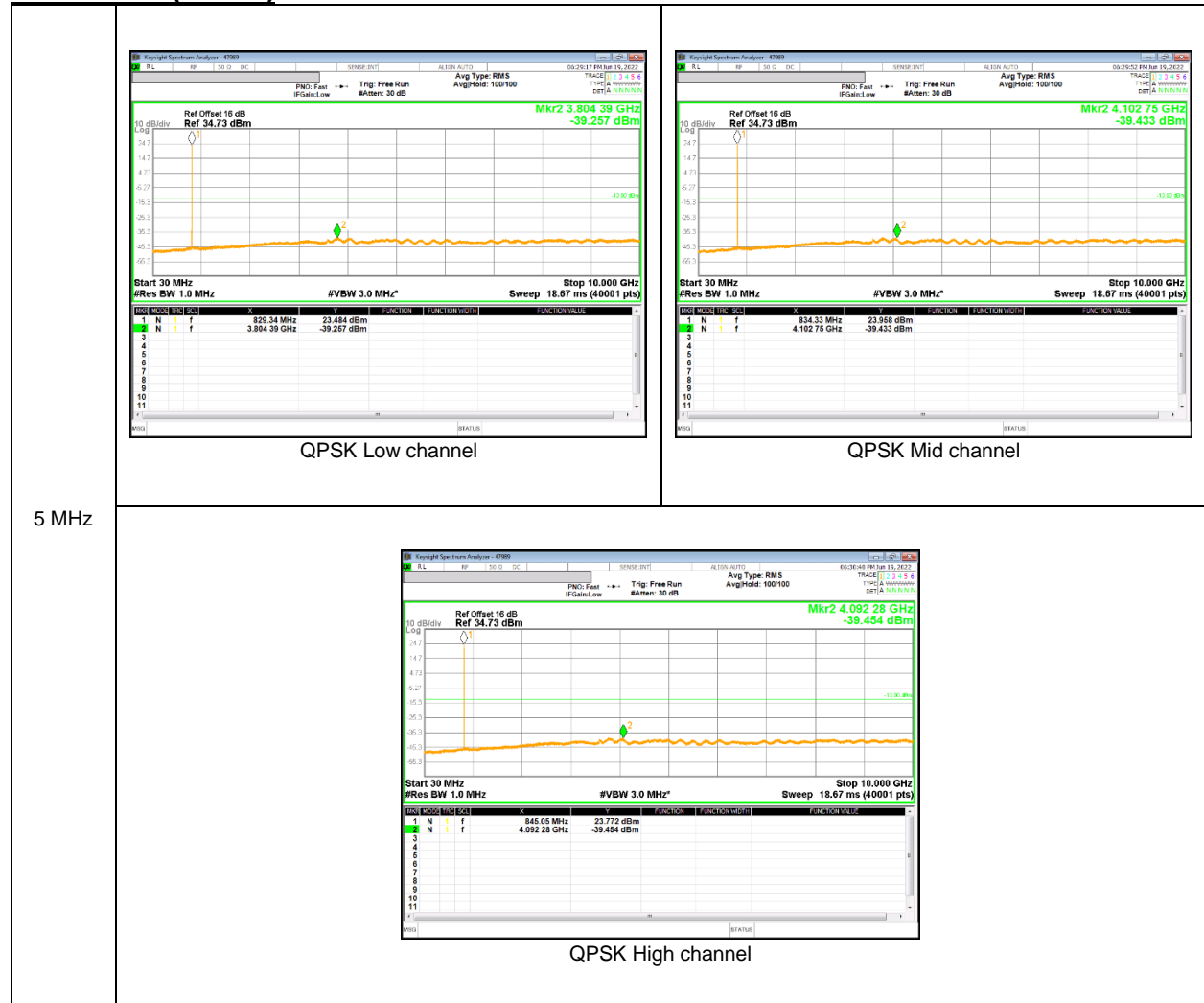
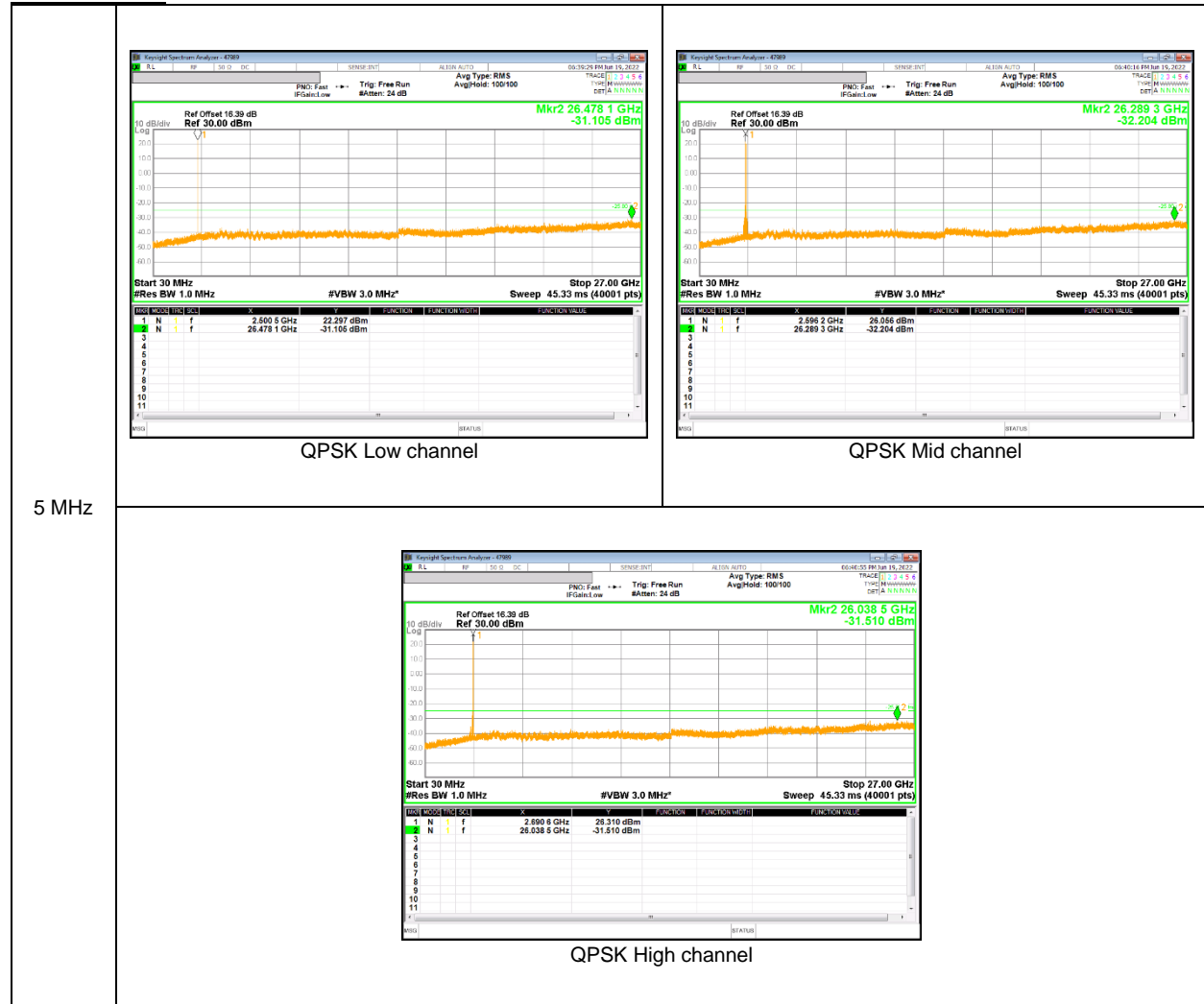


LTE Band 26 (Part 22)



LTE Band 41



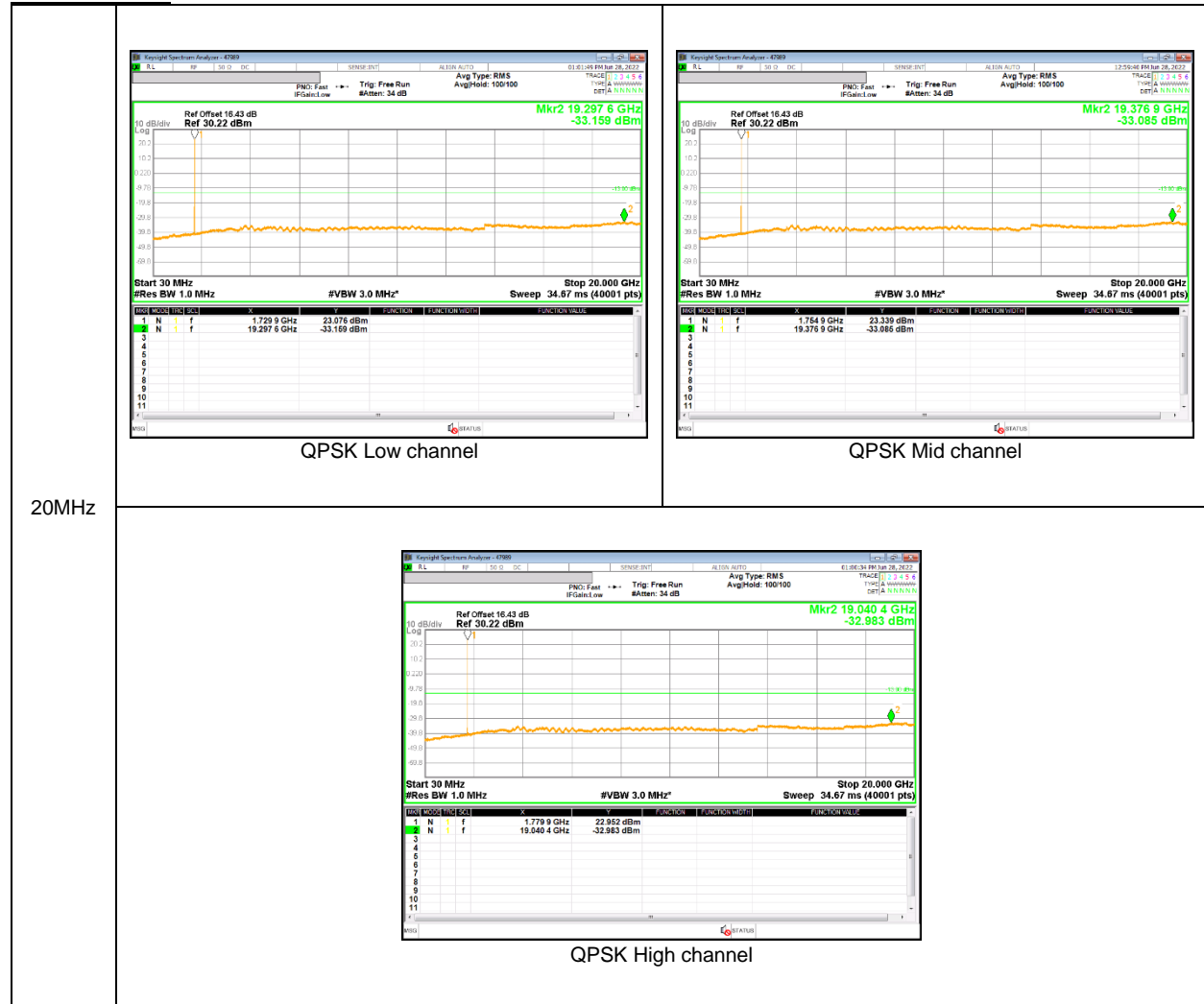
LTE Band 66



NR Band n5



NR Band n66



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)

9.4.1. FREQUENCY STABILITY RESULTS

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

Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2060.500	Hz	High Channel	2122.000	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse					Limit [ppm]
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	50	824.20002987	-0.001	848.80002888	0.004	2.5	
3.86	40	824.20001965	0.012	848.80002865	0.004	2.5	
3.86	30	824.20003026	-0.001	848.80002864	0.004	2.5	
3.86	20	824.20002933	0.000	848.80003236	0.000	2.5	
3.86	10	824.20003002	-0.001	848.80002866	0.004	2.5	
3.86	0	824.20002866	0.001	848.80002905	0.004	2.5	
3.86	-10	824.20003155	-0.003	848.80002974	0.003	2.5	
3.86	-20	824.20002965	0.000	848.80002930	0.004	2.5	
3.86	-30	824.20003364	-0.005	848.80003342	-0.001	2.5	

Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2060.500	Hz	High Channel	2122.000	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse					Limit [ppm]
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	20	824.20002933	0	848.80003236	0	2.5	
4.40	20	824.20002760	0.002	848.80002680	0.007	2.5	
3.75	20	824.20002580	0.004	848.80002475	0.009	2.5	

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

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	1850.0813	1909.9253		
Extreme (50C)		1850.0814	1909.9253	38.6	0.021
Extreme (40C)		1850.0814	1909.9253	35.5	0.019
Extreme (30C)		1850.0814	1909.9253	38.4	0.020
Extreme (10C)		1850.0814	1909.9253	36.4	0.019
Extreme (0C)		1850.0814	1909.9253	37.5	0.020
Extreme (-10C)		1850.0814	1909.9253	34.5	0.018
Extreme (-20C)		1850.0814	1909.9253	32.5	0.017
Extreme (-30C)		1850.0814	1909.9253	30.5	0.016
20C		15%	1850.0814	1909.9253	28.5
	-15%	1850.0814	1909.9253	31.5	0.017
	End Point	1850.0814	1909.9253	27.5	0.015

WCDMA Band 5

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2066.000	Hz	High Channel	2116.500	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]	
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	50	826.40001250	-0.002	846.60001044	0.002	2.5	
3.86	40	826.40000750	0.004	846.60000888	0.004	2.5	
3.86	30	826.40000684	0.005	846.60000765	0.006	2.5	
3.86	20	826.40001065	0.000	846.60001254	0.000	2.5	
3.86	10	826.40001150	-0.001	846.60001345	-0.001	2.5	
3.86	0	826.40000735	0.004	846.60000865	0.005	2.5	
3.86	-10	826.40000723	0.004	846.60001148	0.001	2.5	
3.86	-20	826.40000698	0.004	846.60000944	0.004	2.5	
3.86	-30	826.40000726	0.004	846.60001048	0.002	2.5	

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2066.000	Hz	High Channel	2116.500	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]	
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	20	826.40001065	0	846.60001254	0	2.5	
4.40	20	826.40000674	0.005	846.60000465	0.009	2.5	
3.75	20	826.40000455	0.007	846.60000652	0.007	2.5	

WCDMA Band 4 (Lowest Frequency: HSDPA / Highest Frequency: REL99)

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1710.3208	1754.6758		
Extreme (50C)		1710.3208	1754.6758	33.2	0.019
Extreme (40C)		1710.3208	1754.6758	30.5	0.018
Extreme (30C)		1710.3208	1754.6758	27.4	0.016
Extreme (10C)		1710.3208	1754.6758	36.4	0.021
Extreme (0C)		1710.3208	1754.6758	30.7	0.018
Extreme (-10C)		1710.3208	1754.6758	32.8	0.019
Extreme (-20C)		1710.3208	1754.6758	28.5	0.016
Extreme (-30C)		1710.3208	1754.6758	29.7	0.017
20C	15%	1710.3208	1754.6758	20.4	0.012
	-15%	1710.3208	1754.6758	22.4	0.013
	End Point	1710.3208	1754.6758	19.2	0.011

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

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	1850.3196	1909.6794		
Extreme (50C)		1850.3196	1909.6794	20.6	0.011
Extreme (40C)		1850.3196	1909.6794	22.4	0.012
Extreme (30C)		1850.3196	1909.6794	23.4	0.012
Extreme (10C)		1850.3196	1909.6794	19.5	0.010
Extreme (0C)		1850.3196	1909.6794	20.2	0.011
Extreme (-10C)		1850.3196	1909.6794	19.4	0.010
Extreme (-20C)		1850.3196	1909.6794	18.5	0.010
Extreme (-30C)		1850.3196	1909.6794	21.0	0.011
20C		15%	1850.3196	1909.6794	12.4
	-15%	1850.3196	1909.6794	15.8	0.008
	End Point	1850.3196	1909.6794	11.5	0.006

LTE Band 2 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

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	1850.1586	1909.8468		
Extreme (50C)		1850.1586	1909.8468	15.4	0.008
Extreme (40C)		1850.1586	1909.8468	13.3	0.007
Extreme (30C)		1850.1586	1909.8468	11.4	0.006
Extreme (10C)		1850.1586	1909.8468	15.7	0.008
Extreme (0C)		1850.1586	1909.8468	11.0	0.006
Extreme (-10C)		1850.1586	1909.8468	12.3	0.007
Extreme (-20C)		1850.1586	1909.8468	14.7	0.008
Extreme (-30C)		1850.1586	1909.8468	15.5	0.008
20C		15%	1850.1586	1909.8468	17.3
	-15%	1850.1586	1909.8468	18.1	0.010
	End Point	1850.1586	1909.8468	11.2	0.006

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

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	699.1584	715.8470		
Extreme (50C)		699.1584	715.8470	28.5	0.040
Extreme (40C)		699.1584	715.8470	26.7	0.038
Extreme (30C)		699.1584	715.8470	30.5	0.043
Extreme (10C)		699.1584	715.8470	31.4	0.044
Extreme (0C)		699.1584	715.8470	29.8	0.042
Extreme (-10C)		699.1584	715.8470	28.4	0.040
Extreme (-20C)		699.1584	715.8470	29.4	0.042
Extreme (-30C)		699.1584	715.8470	30.2	0.043
20C	15%	699.1584	715.8470	11.6	0.016
	-15%	699.1584	715.8470	7.7	0.011
	End Point	699.1584	715.8470	8.5	0.012

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

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	777.2506	786.7424		
Extreme (50C)		777.2506	786.7424	8.3	0.011
Extreme (40C)		777.2506	786.7424	8.4	0.011
Extreme (30C)		777.2506	786.7424	8.5	0.011
Extreme (10C)		777.2506	786.7424	10.5	0.013
Extreme (0C)		777.2506	786.7424	11.3	0.014
Extreme (-10C)		777.2506	786.7424	9.6	0.012
Extreme (-20C)		777.2506	786.7424	8.5	0.011
Extreme (-30C)		777.2506	786.7424	7.6	0.010
20C	15%	777.2506	786.7424	3.7	0.005
	-15%	777.2506	786.7424	4.7	0.006
	End Point	777.2506	786.7424	3.5	0.004

LTE Band 26

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2036.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse					Limit [ppm]
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.88	50	814.70000850	-0.001	848.30000777	0.008	2.5	
3.88	40	814.70001069	-0.004	848.30000665	0.009	2.5	
3.88	30	814.70000849	-0.001	848.30001365	0.001	2.5	
3.88	20	814.70000765	0.000	848.30001432	0.000	2.5	
3.88	10	814.70000685	0.001	848.30001117	0.004	2.5	
3.88	0	814.70000811	-0.001	848.30001048	0.005	2.5	
3.88	-10	814.70000916	-0.002	848.30000730	0.008	2.5	
3.88	-20	814.70001267	-0.006	848.30000874	0.007	2.5	
3.88	-30	814.70001037	-0.003	848.30000642	0.009	2.5	

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2036.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse					Limit [ppm]
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	20	814.70000765	0	848.30001432	0	2.5	
4.40	20	814.70001337	-0.007	848.30001611	-0.002	2.5	
3.75	20	814.70001290	-0.006	848.30001041	0.005	2.5	

LTE Band 41 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

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	2496.2517	2689.7452		
Extreme (50C)		2496.2517	2689.7452	16.8	0.006
Extreme (40C)		2496.2517	2689.7452	16.5	0.006
Extreme (30C)		2496.2517	2689.7452	19.4	0.007
Extreme (10C)		2496.2517	2689.7452	18.5	0.007
Extreme (0C)		2496.2517	2689.7452	17.7	0.007
Extreme (-10C)		2496.2517	2689.7452	15.3	0.006
Extreme (-20C)		2496.2517	2689.7452	18.4	0.007
Extreme (-30C)		2496.2517	2689.7452	15.8	0.006
20C	15%	2496.2517	2689.7452	10.4	0.004
	-15%	2496.2517	2689.7452	11.5	0.004
	End Point	2496.2517	2689.7452	8.7	0.003

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

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	1710.6995	1779.3005	13.4	0.008
Extreme (50C)		1710.6995	1779.3006		
Extreme (40C)		1710.6995	1779.3006		
Extreme (30C)		1710.6995	1779.3006		
Extreme (10C)		1710.6995	1779.3006		
Extreme (0C)		1710.6995	1779.3006		
Extreme (-10C)		1710.6995	1779.3006		
Extreme (-20C)		1710.6995	1779.3006		
Extreme (-30C)		1710.6995	1779.3006		
20C		15%	1710.6995		
	-15%	1710.6995	1779.3006	8.0	0.005
	End Point	1710.6995	1779.3006	7.4	0.004

5G NR Band n5

Reference Frequency : NR n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20°C							
Limit: +- 2.5 ppm =		Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]	
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.88	50	826.50001953	-0.003	846.50002242	-0.004	2.5	
3.88	40	826.50002063	-0.005	846.50001842	0.000	2.5	
3.88	30	826.50002162	-0.006	846.50002063	-0.002	2.5	
3.88	20	826.50001684	0.000	846.50001865	0.000	2.5	
3.88	10	826.50001365	0.004	846.50001565	0.004	2.5	
3.88	0	826.50002140	-0.006	846.50001533	0.004	2.5	
3.88	-10	826.50001642	0.001	846.50001935	-0.001	2.5	
3.88	-20	826.50001365	0.004	846.50001665	0.002	2.5	
3.88	-30	826.50001132	0.007	846.50001075	0.009	2.5	

Reference Frequency : NR n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20°C							
Limit: +- 2.5 ppm =		Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]	
		Low Channel		High Channel			
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.86	20	826.50001684	0	846.50001865	0	2.5	
4.40	20	826.50000698	0.012	846.50001365	0.006	2.5	
3.75	20	826.50000743	0.011	846.50001642	0.003	2.5	

5G NR Band n66 (Lowest Frequency: 16QAM / Highest Frequency: 64QAM)

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	1710.6995	1779.3005		
Extreme (50C)		1710.6995	1779.3006	23.5	0.013
Extreme (40C)		1710.6995	1779.3006	21.5	0.012
Extreme (30C)		1710.6995	1779.3006	19.2	0.011
Extreme (10C)		1710.6995	1779.3006	20.4	0.012
Extreme (0C)		1710.6995	1779.3006	17.3	0.010
Extreme (-10C)		1710.6995	1779.3006	18.5	0.011
Extreme (-20C)		1710.6995	1779.3006	20.7	0.012
Extreme (-30C)		1710.6995	1779.3006	23.2	0.013
20C	15%	1710.6995	1779.3006	10.8	0.006
	-15%	1710.6995	1779.3006	10.7	0.006
	End Point	1710.6995	1779.3006	9.5	0.005

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.

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

TEST RESULTS

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	32.30	V	3.11	-0.82	28.38	688.65	38.50	-10.12
		824.20	19.68	H	3.11	-0.82	15.76	37.67	38.50	-22.74
		836.60	33.10	V	3.13	-0.93	29.04	801.68	38.50	-9.46
		836.60	21.14	H	3.13	-0.93	17.09	51.17	38.50	-21.41
		848.80	32.98	V	3.15	-1.04	28.79	756.83	38.50	-9.71
	848.80	19.23	H	3.15	-1.04	15.04	31.92	38.50	-23.46	
	EGPRS	824.20	29.24	V	3.11	-0.82	25.32	340.41	38.50	-13.18
		824.20	17.15	H	3.11	-0.82	13.23	21.04	38.50	-25.27
		836.60	30.10	V	3.13	-0.93	26.01	399.02	38.50	-12.46
		836.60	17.72	H	3.13	-0.93	13.67	23.28	38.50	-24.83
848.80		29.78	V	3.15	-1.04	25.59	362.24	38.50	-12.91	
848.80	16.57	H	3.15	-1.04	12.38	17.30	38.50	-26.12		

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	24.93	V	4.62	9.60	29.91	979.49	33.00	-3.09
		1850.20	16.29	H	4.62	9.60	21.27	133.97	33.00	-11.73
		1880.00	25.15	V	4.65	9.39	29.88	972.75	33.00	-3.12
		1880.00	18.49	H	4.65	9.39	23.23	210.38	33.00	-9.77
		1909.80	25.49	V	4.68	9.13	29.94	986.28	33.00	-3.06
		1909.80	21.09	H	4.68	9.13	25.53	357.27	33.00	-7.47
	EGPRS	1850.20	23.03	V	4.62	9.60	28.01	632.41	33.00	-4.99
		1850.20	15.50	H	4.62	9.60	20.48	111.69	33.00	-12.52
		1880.00	23.42	V	4.65	9.39	28.15	653.13	33.00	-4.85
		1880.00	17.02	H	4.65	9.39	21.76	149.97	33.00	-11.24
		1909.80	22.70	V	4.68	9.13	27.15	518.80	33.00	-5.85
		1909.80	18.10	H	4.68	9.13	22.54	179.47	33.00	-10.46

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	24.12	V	3.11	-0.84	20.18	104.23	38.50	-18.32
		826.40	10.08	H	3.11	-0.84	6.14	4.11	38.50	-32.36
		836.60	24.46	V	3.13	-0.93	20.40	109.65	38.50	-18.10
		836.60	13.32	H	3.13	-0.93	9.27	8.45	38.50	-29.23
		846.60	24.67	V	3.14	-1.02	20.51	112.46	38.50	-17.99
	846.60	10.05	H	3.14	-1.02	5.89	3.88	38.50	-32.61	
	HSDPA	826.40	23.12	V	3.11	-0.84	19.18	82.79	38.50	-19.32
		826.40	9.16	H	3.11	-0.84	5.22	3.33	38.50	-33.28
		836.60	22.66	V	3.13	-0.93	18.60	72.44	38.50	-19.90
		836.60	9.31	H	3.13	-0.93	5.26	3.36	38.50	-33.24
846.60		23.65	V	3.14	-1.02	19.49	88.92	38.50	-19.01	
846.60	9.49	H	3.14	-1.02	5.33	3.41	38.50	-33.17		

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	3.69	V	4.44	9.57	8.83	7.64	30.00	-21.17
		1712.40	18.66	H	4.44	9.57	23.79	239.33	30.00	-6.21
		1732.60	2.81	V	4.46	9.64	7.98	6.28	30.00	-22.02
		1732.60	18.41	H	4.46	9.64	23.59	228.56	30.00	-6.41
		1752.60	1.92	V	4.48	9.69	7.13	5.16	30.00	-22.87
	1752.60	17.79	H	4.48	9.69	23.00	199.53	30.00	-7.00	
	HSDPA	1712.40	2.61	V	4.44	9.57	7.75	5.96	30.00	-22.25
		1712.40	17.40	H	4.44	9.57	22.53	179.06	30.00	-7.47
		1732.60	1.78	V	4.46	9.64	6.95	4.95	30.00	-23.05
		1732.60	17.69	H	4.46	9.64	22.87	193.64	30.00	-7.13
1752.60		1.11	V	4.48	9.69	6.32	4.29	30.00	-23.68	
1752.60	16.26	H	4.48	9.69	21.42	138.68	30.00	-8.53		

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	19.76	V	4.62	9.58	24.72	296.48	33.00	-8.28
		1852.40	11.95	H	4.62	9.58	16.92	49.20	33.00	-16.08
		1880.00	20.23	V	4.65	9.39	24.96	313.33	33.00	-8.04
		1880.00	20.21	H	4.65	9.39	24.95	312.61	33.00	-8.05
		1907.60	19.81	V	4.68	9.15	24.28	267.92	33.00	-8.72
	1907.60	15.96	H	4.68	9.15	20.42	110.15	33.00	-12.58	
	HSDPA	1852.40	18.36	V	4.62	9.58	23.32	214.78	33.00	-9.68
		1852.40	10.71	H	4.62	9.58	15.68	36.98	33.00	-17.32
		1880.00	18.97	V	4.65	9.39	23.70	234.42	33.00	-9.30
		1880.00	12.97	H	4.65	9.39	17.71	59.02	33.00	-15.29
1907.60		18.37	V	4.68	9.15	22.84	192.31	33.00	-10.16	
1907.60	14.85	H	4.68	9.15	19.31	85.31	33.00	-13.69		

LTE Band 2(Main 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
1.4	QPSK	1850.70	18.74	V	4.62	9.60	23.72	235.50	33.00	-9.28	1/3
		1880.00	19.38	V	4.65	9.39	24.11	257.63	33.00	-8.89	1/3
		1909.30	18.71	V	4.68	9.13	23.15	206.54	33.00	-9.84	1/3
	16-QAM	1850.70	17.91	V	4.62	9.60	22.89	194.54	33.00	-10.11	1/5
		1880.00	18.65	V	4.65	9.39	23.38	217.77	33.00	-9.62	1/5
		1909.30	17.88	V	4.68	9.13	22.33	171.00	33.00	-10.67	1/3
3	QPSK	1851.50	18.97	V	4.62	9.59	23.93	247.17	33.00	-9.07	1/0
		1880.00	19.61	V	4.65	9.39	24.34	271.64	33.00	-8.66	1/8
		1908.50	19.04	V	4.68	9.14	23.50	223.87	33.00	-9.50	1/0
	16-QAM	1851.50	18.00	V	4.62	9.59	22.96	197.70	33.00	-10.04	1/0
		1880.00	18.68	V	4.65	9.39	23.41	219.28	33.00	-9.59	1/0
		1908.50	18.25	V	4.68	9.14	22.71	186.64	33.00	-10.29	1/0
5	QPSK	1852.50	18.91	V	4.62	9.58	23.88	244.34	33.00	-9.12	1/24
		1880.00	19.55	V	4.65	9.39	24.28	267.92	33.00	-8.72	1/24
		1907.50	18.93	V	4.69	9.15	23.40	218.78	33.00	-9.60	1/24
	16-QAM	1852.50	17.92	V	4.62	9.58	22.89	194.54	33.00	-10.11	1/24
		1880.00	18.83	V	4.65	9.39	23.56	226.99	33.00	-9.44	1/24
		1907.50	18.30	V	4.69	9.15	22.77	189.23	33.00	-10.23	1/0
10	QPSK	1855.00	18.94	V	4.62	9.56	23.88	244.34	33.00	-9.12	1/49
		1880.00	19.43	V	4.65	9.39	24.16	260.62	33.00	-8.84	1/49
		1905.00	19.00	V	4.68	9.18	23.50	223.87	33.00	-9.50	1/0
	16-QAM	1855.00	18.06	V	4.62	9.56	23.00	199.53	33.00	-10.00	1/25
		1880.00	18.50	V	4.65	9.39	23.23	210.38	33.00	-9.77	1/0
		1905.00	18.00	V	4.68	9.18	22.50	177.83	33.00	-10.50	1/0
15	QPSK	1857.50	19.14	V	4.63	9.55	24.06	254.68	33.00	-8.94	1/74
		1880.00	19.23	V	4.65	9.39	23.96	248.89	33.00	-9.04	1/74
		1902.50	19.02	V	4.68	9.21	23.56	226.99	33.00	-9.44	1/0
	16-QAM	1857.50	18.47	V	4.63	9.55	23.39	218.27	33.00	-9.61	1/74
		1880.00	18.56	V	4.65	9.39	23.29	213.30	33.00	-9.71	1/74
		1902.50	17.90	V	4.68	9.21	22.44	175.39	33.00	-10.56	1/0
20	QPSK	1860.00	18.79	V	4.63	9.53	23.69	233.88	33.00	-9.31	1/99
		1880.00	19.74	V	4.65	9.39	24.47	279.90	33.00	-8.53	1/99
		1900.00	18.98	V	4.67	9.24	23.55	226.46	33.00	-9.45	1/0
	16-QAM	1860.00	17.96	V	4.63	9.53	22.86	193.20	33.00	-10.14	1/99
		1880.00	18.94	V	4.65	9.39	23.67	232.81	33.00	-9.33	1/99
		1900.00	18.40	V	4.67	9.24	22.97	198.15	33.00	-10.03	1/0

LTE Band 2(Sub 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
1.4	QPSK	1850.70									
		1880.00									
		1909.30									
	16-QAM	1850.70									
		1880.00									
		1909.30									
3	QPSK	1851.50									
		1880.00									
		1908.50									
	16-QAM	1851.50									
		1880.00									
		1908.50									
5	QPSK	1852.50									
		1880.00									
		1907.50									
	16-QAM	1852.50									
		1880.00									
		1907.50									
10	QPSK	1855.00									
		1880.00									
		1905.00									
	16-QAM	1855.00									
		1880.00									
		1905.00									
15	QPSK	1857.50									
		1880.00									
		1902.50									
	16-QAM	1857.50									
		1880.00									
		1902.50									
20	QPSK	1860.00	13.26	V	4.63	9.53	18.16	65.46	33.00	-14.84	1/0
		1880.00	13.00	V	4.65	9.39	17.73	59.29	33.00	-15.27	1/0
		1900.00	12.87	V	4.67	9.24	17.44	55.46	33.00	-15.56	1/0
	16-QAM	1860.00	12.34	V	4.63	9.53	17.24	52.97	33.00	-15.76	1/0
		1880.00	12.41	V	4.65	9.39	17.14	51.76	33.00	-15.86	1/99
		1900.00	12.38	V	4.67	9.24	16.95	49.55	33.00	-16.05	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	21.70	H	2.87	-0.80	18.02	63.45	34.77	-16.75	1/3
		707.50	21.16	H	2.89	-0.79	17.49	56.09	34.77	-17.28	1/3
		715.30	22.35	H	2.90	-0.77	18.68	73.82	34.77	-16.09	1/3
	16-QAM	699.70	20.34	H	2.87	-0.80	16.66	46.39	34.77	-18.11	1/3
		707.50	20.01	H	2.89	-0.79	16.34	43.04	34.77	-18.43	1/3
		715.30	21.25	H	2.90	-0.77	17.58	57.30	34.77	-17.19	1/3
3	QPSK	700.50	21.55	H	2.88	-0.80	17.88	61.31	34.77	-16.89	1/0
		707.50	20.92	H	2.89	-0.79	17.25	53.07	34.77	-17.52	1/0
		714.50	22.61	H	2.90	-0.77	18.94	78.32	34.77	-15.83	1/0
	16-QAM	700.50	20.56	H	2.88	-0.80	16.89	48.81	34.77	-17.88	1/0
		707.50	20.31	H	2.89	-0.79	16.64	46.12	34.77	-18.13	1/0
		714.50	21.69	H	2.90	-0.77	18.02	63.37	34.77	-16.75	1/0
5	QPSK	701.50	21.34	H	2.88	-0.80	17.67	58.43	34.77	-17.10	1/24
		707.50	20.57	H	2.89	-0.79	16.90	48.96	34.77	-17.87	1/24
		713.50	22.68	H	2.90	-0.77	19.00	79.49	34.77	-15.77	1/0
	16-QAM	701.50	20.42	H	2.88	-0.80	16.75	47.28	34.77	-18.02	1/24
		707.50	20.02	H	2.89	-0.79	16.35	43.14	34.77	-18.42	1/24
		713.50	21.45	H	2.90	-0.77	17.77	59.88	34.77	-17.00	1/0
10	QPSK	704.00	20.99	H	2.88	-0.79	17.32	53.95	34.77	-17.45	1/25
		707.50	20.96	H	2.89	-0.79	17.29	53.56	34.77	-17.48	1/25
		711.00	22.52	H	2.89	-0.78	18.85	76.70	34.77	-15.92	1/25
	16-QAM	704.00	20.09	H	2.88	-0.79	16.42	43.85	34.77	-18.35	1/25
		707.50	20.33	H	2.89	-0.79	16.66	46.33	34.77	-18.11	1/25
		711.00	21.32	H	2.89	-0.78	17.65	58.18	34.77	-17.12	1/25

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	23.99	V	3.02	-0.64	20.33	107.89	34.77	-14.44	1/12
		782.00	24.26	V	3.02	-0.64	20.60	114.82	34.77	-14.17	1/0
		784.50	24.11	V	3.04	-0.63	20.44	110.66	34.77	-14.33	1/0
	16-QAM	779.50	23.52	V	3.02	-0.64	19.86	96.83	34.77	-14.91	1/12
		782.00	23.45	V	3.02	-0.64	19.79	95.28	34.77	-14.98	1/0
		784.50	23.28	V	3.04	-0.63	19.61	91.41	34.77	-15.16	1/0
10	QPSK	782.00	24.55	V	3.02	-0.64	20.89	122.74	34.77	-13.88	1/0
	16-QAM	782.00	24.02	V	3.02	-0.64	20.36	108.64	34.77	-14.41	1/0

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	23.64	V	3.09	-0.73	19.83	96.06	50.00	-30.17	1/3		
		823.30	24.48	V	3.10	-0.81	20.58	114.18	50.00	-29.42	1/3		
		824.70	24.49	V	3.11	-0.82	20.56	113.76	38.50	-17.94	1/3		
		831.50	24.42	V	3.11	-0.88	20.42	110.15	38.50	-18.08	1/3		
		848.30	24.10	V	3.15	-1.03	19.92	98.17	38.50	-18.58	1/3		
	16-QAM	814.70	23.38	V	3.09	-0.73	19.57	90.48	50.00	-30.43	1/3		
		823.30	23.43	V	3.10	-0.81	19.53	89.66	50.00	-30.47	1/3		
		824.70	23.24	V	3.11	-0.82	19.31	85.31	38.50	-19.19	1/3		
		831.50	23.28	V	3.11	-0.88	19.28	84.72	38.50	-19.22	1/3		
		848.30	23.14	V	3.15	-1.03	18.96	78.70	38.50	-19.54	1/3		
3	QPSK	815.50	22.68	V	3.08	-0.74	18.86	76.86	50.00	-31.14	1/0		
		822.50	24.13	V	3.10	-0.80	20.23	105.36	50.00	-29.77	1/8		
		825.50	24.65	V	3.10	-0.83	20.72	118.03	38.50	-17.78	1/14		
		831.50	24.09	V	3.11	-0.88	20.09	102.09	38.50	-18.41	1/14		
		847.50	24.05	V	3.15	-1.03	19.87	97.05	38.50	-18.63	1/0		
	16-QAM	815.50	21.88	V	3.08	-0.74	18.06	63.93	50.00	-31.94	1/0		
		822.50	22.92	V	3.10	-0.80	19.02	79.74	50.00	-30.98	1/8		
		825.50	23.56	V	3.10	-0.83	19.63	91.83	38.50	-18.87	1/14		
		831.50	23.04	V	3.11	-0.88	19.04	80.17	38.50	-19.46	1/14		
		847.50	22.68	V	3.15	-1.03	18.50	70.79	38.50	-20.00	1/0		
5	QPSK	816.50	22.74	V	3.09	-0.75	18.90	77.69	50.00	-31.10	1/0		
		821.50	23.96	V	3.10	-0.79	20.06	101.47	50.00	-29.94	1/24		
		826.50	25.14	V	3.11	-0.84	21.19	131.52	38.50	-17.31	1/24		
		831.50	25.13	V	3.11	-0.88	21.13	129.72	38.50	-17.37	1/24		
		846.50	25.43	V	3.14	-1.02	21.27	133.97	38.50	-17.23	1/0		
	16-QAM	816.50	22.43	V	3.09	-0.75	18.59	72.33	50.00	-31.41	1/0		
		821.50	22.95	V	3.10	-0.79	19.05	80.42	50.00	-30.95	1/24		
		826.50	23.89	V	3.11	-0.84	19.94	98.63	38.50	-18.56	1/0		
		831.50	23.39	V	3.11	-0.88	19.39	86.90	38.50	-19.11	1/24		
		846.50	23.45	V	3.14	-1.02	19.29	84.92	38.50	-19.21	1/12		
10	QPSK	819.00	23.01	V	3.09	-0.77	19.15	82.13	50.00	-30.85	1/0		
		829.00	23.90	V	3.11	-0.86	19.93	98.40	38.50	-18.57	1/49		
		831.50	24.36	V	3.11	-0.88	20.36	108.64	38.50	-18.14	1/49		
		844.00	23.95	V	3.14	-1.00	19.81	95.72	38.50	-18.69	1/25		
	16-QAM	819.00	23.02	V	3.09	-0.77	19.16	82.32	50.00	-30.84	1/0		
		829.00	23.08	V	3.11	-0.86	19.11	81.47	38.50	-19.39	1/49		
		831.50	23.25	V	3.11	-0.88	19.25	84.14	38.50	-19.25	1/0		
		844.00	23.55	V	3.14	-1.00	19.41	87.30	38.50	-19.09	1/0		
		15	QPSK	821.50	23.06	V	3.10	-0.79	19.16	82.48	50.00	-30.84	1/0
				831.50	24.31	V	3.11	-0.88	20.31	107.40	38.50	-18.19	1/74
841.50	24.23			V	3.13	-0.97	20.12	102.80	38.50	-18.38	1/37		
16-QAM	821.50		22.72	V	3.10	-0.79	18.82	76.27	50.00	-31.18	1/0		
	831.50		23.42	V	3.11	-0.88	19.42	87.50	38.50	-19.08	1/74		
	841.50		23.71	V	3.13	-0.97	19.60	91.20	38.50	-18.90	1/0		

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	824.00	24.12	V	3.10	-0.82	20.20	104.71	38.50	-18.30	1/3
	16-QAM		23.12	V	3.10	-0.82	19.20	83.18	38.50	-19.30	1/3
3	QPSK		24.00	V	3.10	-0.82	20.08	101.86	38.50	-18.42	1/14
	16-QAM		23.13	V	3.10	-0.82	19.21	83.37	38.50	-19.29	1/14
5	QPSK		24.86	V	3.10	-0.82	20.94	124.17	38.50	-17.56	1/24
	16-QAM		22.73	V	3.10	-0.82	18.81	76.03	38.50	-19.7	1/24
10	QPSK		23.21	V	3.10	-0.82	19.29	84.92	38.50	-19.21	1/49
	16-QAM		22.35	V	3.10	-0.82	18.43	69.66	38.50	-20.07	1/49
15	QPSK		23.67	V	3.10	-0.82	19.75	94.41	38.50	-18.75	1/74
	16-QAM		22.61	V	3.10	-0.82	18.69	73.96	38.50	-19.81	1/74

LTE Band 41

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	18.25	H	5.36	10.18	23.06	202.30	33.00	-9.94	1/0
		2593.00	19.56	H	5.47	10.03	24.12	258.23	33.00	-8.88	1/0
		2687.50	19.04	H	5.57	10.05	23.53	225.42	33.00	-9.47	1/24
	16-QAM	2498.50	17.55	H	5.36	10.18	22.36	172.19	33.00	-10.64	1/24
		2593.00	19.07	H	5.47	10.03	22.63	183.23	33.00	-9.37	1/24
		2687.50	18.24	H	5.57	10.05	22.73	187.50	33.00	-10.27	1/24
10	QPSK	2501.00	18.21	H	5.38	10.17	23.00	199.53	33.00	-10.00	1/
		2593.00	19.56	H	5.47	10.03	24.12	258.23	33.00	-8.88	1/0
		2685.00	18.59	H	5.56	10.05	23.09	203.70	33.00	-9.91	1/49
	16-QAM	2501.00	17.61	H	5.38	10.17	22.40	173.78	33.00	-10.60	1/0
		2593.00	18.58	H	5.47	10.03	23.14	206.06	33.00	-9.86	1/0
		2685.00	17.80	H	5.56	10.05	22.30	169.82	33.00	-10.70	1/0
15	QPSK	2503.50	18.17	H	5.37	10.17	22.97	198.15	33.00	-10.03	1/0
		2593.00	19.22	H	5.47	10.03	23.78	238.78	33.00	-9.22	1/0
		2682.50	18.36	H	5.56	10.05	22.85	192.75	33.00	-10.15	1/74
	16-QAM	2503.50	17.46	H	5.37	10.17	22.26	168.27	33.00	-10.74	1/0
		2593.00	18.45	H	5.47	10.03	23.01	199.99	33.00	-9.99	1/0
		2682.50	17.47	H	5.56	10.05	21.96	157.04	33.00	-11.04	1/74
20	QPSK	2506.00	18.42	H	5.37	10.16	23.21	209.41	33.00	-9.79	1/0
		2593.00	19.64	H	5.47	10.03	24.20	263.03	33.00	-8.80	1/0
		2680.00	19.02	H	5.56	10.05	23.51	224.39	33.00	-9.49	1/99
	16-QAM	2506.00	17.70	H	5.37	10.16	22.49	177.42	33.00	-10.51	1/0
		2593.00	18.87	H	5.47	10.03	23.43	220.29	33.00	-9.57	1/0
		2680.00	18.22	H	5.56	10.05	22.71	186.64	33.00	-10.29	1/99

LTE Band 66(Main 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
1.4	QPSK	1710.70	17.49	H	4.43	9.57	22.63	183.23	30.00	-7.37	1/3
		1745.00	16.73	H	4.47	9.68	21.93	155.96	30.00	-8.07	1/3
		1779.30	16.62	H	4.52	9.70	21.81	151.71	30.00	-8.19	1/3
	16-QAM	1710.70	16.86	H	4.43	9.57	22.00	158.49	30.00	-8.00	1/3
		1745.00	15.97	H	4.47	9.68	21.17	130.92	30.00	-8.83	1/3
		1779.30	15.93	H	4.52	9.70	21.12	129.42	30.00	-8.88	1/3
3	QPSK	1711.50	17.80	H	4.44	9.57	22.94	196.79	30.00	-7.06	1/14
		1745.00	16.68	H	4.47	9.68	21.88	154.17	30.00	-8.12	1/14
		1778.50	16.61	H	4.52	9.70	21.79	151.01	30.00	-8.21	1/14
	16-QAM	1711.50	17.26	H	4.44	9.57	22.40	173.78	30.00	-7.60	1/14
		1745.00	16.03	H	4.47	9.68	21.23	132.74	30.00	-8.77	1/0
		1778.50	15.97	H	4.52	9.70	21.15	130.32	30.00	-8.85	1/14
5	QPSK	1712.50	18.06	H	4.44	9.57	23.20	208.93	30.00	-6.80	1/24
		1745.00	16.73	H	4.47	9.68	21.93	155.96	30.00	-8.07	1/24
		1777.50	16.83	H	4.52	9.70	22.01	158.85	30.00	-7.99	1/0
	16-QAM	1712.50	17.27	H	4.44	9.57	22.41	174.18	30.00	-7.59	1/12
		1745.00	15.91	H	4.47	9.68	21.11	129.12	30.00	-8.89	1/24
		1777.50	16.15	H	4.52	9.70	21.30	134.90	30.00	-8.67	1/24
10	QPSK	1715.00	18.05	H	4.44	9.58	23.20	208.93	30.00	-6.80	1/49
		1745.00	16.79	H	4.47	9.68	21.99	158.12	30.00	-8.01	1/0
		1775.00	16.72	H	4.51	9.70	21.91	155.24	30.00	-8.09	1/0
	16-QAM	1715.00	17.23	H	4.44	9.58	22.38	172.98	30.00	-7.62	1/49
		1745.00	15.78	H	4.47	9.68	20.98	125.31	30.00	-9.02	1/25
		1775.00	16.01	H	4.51	9.70	21.20	131.83	30.00	-8.80	1/0
15	QPSK	1717.50	17.81	H	4.44	9.59	22.96	197.70	30.00	-7.04	1/74
		1745.00	16.29	H	4.47	9.68	21.49	140.93	30.00	-8.51	1/37
		1772.50	16.88	H	4.51	9.70	22.07	161.06	30.00	-7.93	1/0
	16-QAM	1717.50	17.04	H	4.44	9.59	22.19	165.58	30.00	-7.81	1/74
		1745.00	15.37	H	4.47	9.68	20.57	114.02	30.00	-9.43	1/37
		1772.50	15.73	H	4.51	9.70	20.92	123.59	30.00	-9.08	1/37
20	QPSK	1720.00	17.70	H	4.44	9.60	22.86	193.20	30.00	-7.14	1/99
		1745.00	16.19	H	4.47	9.68	21.39	137.72	30.00	-8.61	1/0
		1770.00	16.81	H	4.51	9.70	22.00	158.49	30.00	-8.00	1/0
	16-QAM	1720.00	16.96	H	4.44	9.60	22.12	162.93	30.00	-7.88	1/99
		1745.00	15.52	H	4.47	9.68	20.72	118.03	30.00	-9.28	1/0
		1770.00	15.77	H	4.51	9.70	20.96	124.74	30.00	-9.04	1/0

LTE Band 66(Sub 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	
1.4	QPSK	1710.70										
		1745.00										
		1779.30										
	16-QAM	1710.70										
		1745.00										
		1779.30										
3	QPSK	1711.50										
		1745.00										
		1778.50										
	16-QAM	1711.50										
		1745.00										
		1778.50										
5	QPSK	1712.50										
		1745.00										
		1777.50										
	16-QAM	1712.50										
		1745.00										
		1777.50										
10	QPSK	1715.00										
		1745.00										
		1775.00										
	16-QAM	1715.00										
		1745.00										
		1775.00										
15	QPSK	1717.50										
		1745.00										
		1772.50										
	16-QAM	1717.50										
		1745.00										
		1772.50										
20	QPSK	1720.00	13.00	V	4.44	9.60	18.16	65.46	30.00	-11.60	1/99	
		1745.00	14.95	V	4.47	9.68	20.15	103.51	30.00	-11.66	1/99	
		1770.00	16.56	V	4.51	9.70	21.76	149.97	30.00	-12.88	1/0	
	16-QAM	1720.00	11.88	V	4.44	9.60	17.04	50.58	30.00	-12.62	1/99	
		1745.00	13.91	V	4.47	9.68	19.11	81.47	30.00	-12.21	1/99	
		1770.00	15.28	V	4.51	9.70	20.48	111.69	30.00	-13.92	1/0	

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	24.23	V	3.11	-0.84	20.28	77.45	38.50	-18.22	1/1
		836.50	24.28	V	3.13	-0.93	20.22	78.89	38.50	-18.28	1/13
		846.50	24.24	V	3.14	-1.02	20.08	123.03	38.50	-18.42	1/1
	16-QAM	826.50	23.13	V	3.11	-0.84	19.18	82.79	38.50	-19.32	1/1
		836.50	22.95	V	3.13	-0.93	18.89	77.45	38.50	-19.61	1/13
		846.50	23.13	V	3.14	-1.02	18.97	78.89	38.50	-19.53	1/1
10	QPSK	829.00	24.87	V	3.11	-0.86	20.90	123.03	38.50	-17.60	1/26
		836.50	24.57	V	3.13	-0.93	20.51	112.46	38.50	-17.99	1/26
		844.00	24.92	V	3.14	-1.00	20.78	119.67	38.50	-17.72	1/26
	16-QAM	829.00	23.97	V	3.11	-0.86	20.00	100.00	38.50	-18.50	1/26
		836.50	23.36	V	3.13	-0.93	19.30	85.11	38.50	-19.20	1/26
		844.00	23.81	V	3.14	-1.00	19.67	92.68	38.50	-18.83	1/26
15	QPSK	831.50	24.94	V	3.11	-0.88	20.94	124.17	38.50	-17.56	1/77
		836.50	24.94	V	3.13	-0.93	20.88	122.46	38.50	-17.62	1/77
		841.50	25.19	V	3.13	-0.97	21.08	128.23	38.50	-17.42	1/77
	16-QAM	831.50	23.84	V	3.11	-0.88	19.84	96.38	38.50	-18.66	1/77
		836.50	23.96	V	3.13	-0.93	19.90	97.72	38.50	-18.60	1/77
		841.50	24.27	V	3.13	-0.97	20.16	103.75	38.50	-18.34	1/77
20	QPSK	834.00	25.48	V	3.12	-0.91	21.45	139.64	38.50	-17.05	1/53
		836.50	25.70	V	3.13	-0.93	21.64	145.88	38.50	-16.86	1/53
		839.00	24.80	V	3.13	-0.95	20.72	118.03	38.50	-17.78	1/53
	16-QAM	834.00	24.38	V	3.12	-0.91	20.35	108.39	38.50	-18.15	1/53
		836.50	24.34	V	3.13	-0.93	20.28	106.66	38.50	-18.22	1/53
		839.00	23.71	V	3.13	-0.95	19.63	91.83	38.50	-18.87	1/53

5G NR n66(Main Ant)

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	1712.50	16.25	V	4.44	9.57	21.39	137.72	30.00	-8.61	1/1
		1745.00	16.69	V	4.47	9.68	21.89	154.53	30.00	-8.11	1/13
		1777.50	16.96	V	4.52	9.70	22.14	163.68	30.00	-7.86	1/13
	16-QAM	1712.50	15.15	V	4.44	9.57	20.29	106.91	30.00	-9.71	1/1
		1745.00	15.18	V	4.47	9.68	20.38	109.14	30.00	-9.62	1/13
		1777.50	15.84	V	4.52	9.70	21.02	126.47	30.00	-8.98	1/13
10	QPSK	1715.00	15.75	V	4.44	9.58	20.90	123.03	30.00	-9.10	1/50
		1745.00	16.19	V	4.47	9.68	21.39	137.72	30.00	-8.61	1/50
		1775.00	17.08	V	4.51	9.70	22.27	168.66	30.00	-7.73	1/26
	16-QAM	1715.00	15.95	V	4.44	9.58	21.10	128.82	30.00	-8.90	1/50
		1745.00	15.59	V	4.47	9.68	20.79	119.95	30.00	-9.21	1/50
		1775.00	16.07	V	4.51	9.70	21.26	133.66	30.00	-8.74	1/26
15	QPSK	1717.50	15.89	V	4.44	9.59	21.04	127.06	30.00	-8.96	1/77
		1745.00	16.29	V	4.47	9.68	21.49	140.93	30.00	-8.51	1/77
		1772.50	16.89	V	4.51	9.70	22.08	161.44	30.00	-7.92	1/77
	16-QAM	1717.50	14.89	V	4.44	9.59	20.04	100.93	30.00	-9.96	1/77
		1745.00	15.30	V	4.47	9.68	20.50	112.20	30.00	-9.50	1/77
		1772.50	15.49	V	4.51	9.70	20.68	116.95	30.00	-9.32	1/77
20	QPSK	1720.00	16.45	V	4.44	9.60	21.61	144.88	30.00	-8.39	1/104
		1745.00	17.00	V	4.47	9.68	22.20	165.96	30.00	-7.80	1/104
		1770.00	15.79	V	4.51	9.70	20.99	125.60	30.00	-9.01	1/104
	16-QAM	1720.00	15.75	V	4.44	9.60	20.91	123.31	30.00	-9.09	1/104
		1745.00	16.22	V	4.47	9.68	21.42	138.68	30.00	-8.58	1/104
		1770.00	14.79	V	4.51	9.70	19.99	99.77	30.00	-10.01	1/1

5G NR n66(Sub Ant)

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	1712.50									
		1745.00									
		1777.50									
	16-QAM	1712.50									
		1745.00									
		1777.50									
10	QPSK	1715.00									
		1745.00									
		1775.00									
	16-QAM	1715.00									
		1745.00									
		1775.00									
15	QPSK	1717.50									
		1745.00									
		1772.50									
	16-QAM	1717.50									
		1745.00									
		1772.50									
20	QPSK	1720.00	13.00	V	4.44	9.60	18.16	65.46	30.00	-11.84	1/104
		1745.00	14.95	V	4.47	9.68	20.15	103.51	30.00	-9.85	1/104
		1770.00	16.56	V	4.51	9.70	21.76	149.97	30.00	-8.24	1/104
	16-QAM	1720.00	11.88	V	4.44	9.60	17.04	50.58	30.00	-12.96	1/1
		1745.00	13.91	V	4.47	9.68	19.11	81.47	30.00	-10.89	1/53
		1770.00	15.28	V	4.51	9.70	20.48	111.69	30.00	-9.52	1/53

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 than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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 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 $43 + 10 \log_{10}(P)$ 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 $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points \geq span/RBW;
- g) Trace mode = average(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 ($\pi/2$ 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

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/16/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Earphone, X-Position							
Location:		Chamber 2							
Mode:		GPRS 850 MHz Harmonics							
Test Votage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-10.3	V	3.0	40.9	1.0	-50.2	-13.0	-37.2	
2472.60	-8.3	V	3.0	41.5	1.0	-48.8	-13.0	-35.8	
3296.80									
3296.80	-10.7	V	3.0	42.3	1.0	-52.0	-13.0	-39.0	
1648.40	-9.7	H	3.0	40.9	1.0	-49.6	-13.0	-36.6	
2472.60	-6.7	H	3.0	41.5	1.0	-47.3	-13.0	-34.3	
3296.80	-12.0	H	3.0	42.3	1.0	-53.3	-13.0	-40.3	
Mid Ch, 836.6MHz									
1673.20	-10.4	V	3.0	40.9	1.0	-50.3	-13.0	-37.3	
2509.80	-5.5	V	3.0	41.6	1.0	-46.1	-13.0	-33.1	
3346.40	-10.5	V	3.0	42.3	1.0	-51.8	-13.0	-38.8	
1673.20	-8.3	H	3.0	40.9	1.0	-48.2	-13.0	-35.2	
2509.80	-3.7	H	3.0	41.6	1.0	-44.3	-13.0	-31.3	
3346.40	-11.8	H	3.0	42.3	1.0	-53.1	-13.0	-40.1	
High Ch, 848.8MHz									
1697.60	-10.2	V	3.0	40.9	1.0	-50.1	-13.0	-37.1	
2546.40	-9.7	V	3.0	41.6	1.0	-50.3	-13.0	-37.3	
3395.20	-3.2	V	3.0	42.3	1.0	-44.5	-13.0	-31.5	
1697.60	-10.3	H	3.0	40.9	1.0	-50.3	-13.0	-37.3	
2546.40	-1.4	H	3.0	41.6	1.0	-42.1	-13.0	-29.1	
3395.20	-11.9	H	3.0	42.3	1.0	-53.2	-13.0	-40.2	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/15/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Earphone, X-Position							
Location:		Chamber 2							
Mode:		EGPRS 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	-10.6	V	3.0	40.9	1.0	-50.5	-13.0	-37.5	
2472.60	-7.7	V	3.0	41.5	1.0	-48.3	-13.0	-35.3	
3296.80									
3296.80	-11.0	V	3.0	42.3	1.0	-52.3	-13.0	-39.3	
1648.40	-9.3	H	3.0	40.9	1.0	-49.2	-13.0	-36.2	
2472.60	-5.9	H	3.0	41.5	1.0	-46.4	-13.0	-33.4	
3296.80	-10.5	H	3.0	42.3	1.0	-51.8	-13.0	-38.8	
Mid Ch, 836.6MHz									
1673.20	-10.1	V	3.0	40.9	1.0	-50.0	-13.0	-37.0	
2509.80	-5.8	V	3.0	41.6	1.0	-46.4	-13.0	-33.4	
3346.40	-11.3	V	3.0	42.3	1.0	-52.6	-13.0	-39.6	
1673.20	-11.6	H	3.0	40.9	1.0	-51.6	-13.0	-38.6	
2509.80	-4.1	H	3.0	41.6	1.0	-44.7	-13.0	-31.7	
3346.40	-11.4	H	3.0	42.3	1.0	-52.7	-13.0	-39.7	
High Ch, 848.8MHz									
1697.60	-11.3	V	3.0	40.9	1.0	-51.3	-13.0	-38.3	
2546.40	-4.2	V	3.0	41.6	1.0	-44.8	-13.0	-31.8	
3395.20	-11.4	V	3.0	42.3	1.0	-52.7	-13.0	-39.7	
1697.60	-10.6	H	3.0	40.9	1.0	-50.5	-13.0	-37.5	
2546.40	-1.8	H	3.0	41.6	1.0	-42.5	-13.0	-29.5	
3395.20	-12.1	H	3.0	42.3	1.0	-53.4	-13.0	-40.4	

GSM1900

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/15/2022							
Test Engineer:		25770							
Configuration:		EUT / Z-Position							
Location:		Chamber 1							
Mode:		GPRS 1900 MHz Harmonics							
Test Voltage:		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	6.7	V	3.0	45.8	1.0	-38.1	-13.0	-25.1	
5550.60	5.4	V	3.0	45.7	1.0	-39.4	-13.0	-26.4	
7400.80	11.6	V	3.0	44.6	1.0	-31.9	-13.0	-18.9	
3700.40	1.9	H	3.0	45.8	1.0	-42.9	-13.0	-29.9	
5550.60	5.4	H	3.0	45.7	1.0	-39.4	-13.0	-26.4	
7400.80	23.2	H	3.0	44.6	1.0	-20.3	-13.0	-7.3	
Mid Ch, 1880MHz									
3760.00	5.5	V	3.0	45.8	1.0	-39.3	-13.0	-26.3	
5640.00	5.3	V	3.0	45.7	1.0	-39.4	-13.0	-26.4	
7520.00	17.6	V	3.0	44.5	1.0	-25.9	-13.0	-12.9	
3760.00	8.6	H	3.0	45.8	1.0	-36.3	-13.0	-23.3	
5640.00	6.4	H	3.0	45.7	1.0	-38.3	-13.0	-25.3	
7520.00	23.6	H	3.0	44.5	1.0	-19.9	-13.0	-6.9	
High Ch, 1909.8MHz									
3819.60	2.4	V	3.0	45.8	1.0	-42.4	-13.0	-29.4	
5729.40	5.5	V	3.0	45.7	1.0	-39.2	-13.0	-26.2	
7639.20	17.3	V	3.0	44.4	1.0	-26.1	-13.0	-13.1	
3819.60	5.7	H	3.0	45.8	1.0	-39.1	-13.0	-26.1	
5729.40	7.3	H	3.0	45.7	1.0	-37.5	-13.0	-24.5	
7639.20	22.0	H	3.0	44.4	1.0	-21.4	-13.0	-8.4	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/15/2022							
Test Engineer:		25770							
Configuration:		EUT / Z-Position							
Location:		Chamber 1							
Mode:		EGPRS 1900 MHz Harmonics							
Test Voltage:		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	2.4	V	3.0	45.8	1.0	-42.4	-13.0	-29.4	
5550.60	4.8	V	3.0	45.7	1.0	-39.9	-13.0	-26.9	
7400.80	14.6	V	3.0	44.6	1.0	-28.9	-13.0	-15.9	
3700.40	2.1	H	3.0	45.8	1.0	-42.8	-13.0	-29.8	
5550.60	4.2	H	3.0	45.7	1.0	-40.5	-13.0	-27.5	
7400.80	22.8	H	3.0	44.6	1.0	-20.7	-13.0	-7.7	
Mid Ch, 1880MHz									
3760.00	2.3	V	3.0	45.8	1.0	-42.6	-13.0	-29.6	
5640.00	4.4	V	3.0	45.7	1.0	-40.3	-13.0	-27.3	
7520.00	18.6	V	3.0	44.5	1.0	-24.9	-13.0	-11.9	
3760.00	6.6	H	3.0	45.8	1.0	-38.2	-13.0	-25.2	
5640.00	5.4	H	3.0	45.7	1.0	-39.4	-13.0	-26.4	
7520.00	21.9	H	3.0	44.5	1.0	-21.6	-13.0	-8.6	
High Ch, 1909.8MHz									
3819.60	2.1	V	3.0	45.8	1.0	-42.8	-13.0	-29.8	
5729.40	4.9	V	3.0	45.7	1.0	-39.8	-13.0	-26.8	
7639.20	17.1	V	3.0	44.4	1.0	-26.3	-13.0	-13.3	
3819.60	4.1	H	3.0	45.8	1.0	-40.7	-13.0	-27.7	
5729.40	4.8	H	3.0	45.7	1.0	-39.9	-13.0	-26.9	
7639.20	18.2	H	3.0	44.4	1.0	-25.3	-13.0	-12.3	

WCDMA Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/16/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Earphone, Z-Position							
Location:		Chamber 2							
Mode:		Rel99 Band 5 Harmonics							
Test Voltage:		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	-16.7	V	3.0	40.9	1.0	-56.6	-13.0	-43.6	
2479.20	-9.1	V	3.0	41.6	1.0	-49.6	-13.0	-36.6	
3305.60	-5.8	V	3.0	42.3	1.0	-47.1	-13.0	-34.1	
1652.80	-17.2	H	3.0	40.9	1.0	-57.1	-13.0	-44.1	
2479.20	-9.4	H	3.0	41.6	1.0	-49.9	-13.0	-36.9	
3305.60	-6.3	H	3.0	42.3	1.0	-47.6	-13.0	-34.6	
Mid Ch, 836.6MHz									
1673.20	-16.9	V	3.0	40.9	1.0	-56.8	-13.0	-43.8	
2509.80	-8.9	V	3.0	41.6	1.0	-49.5	-13.0	-36.5	
3346.40	-5.9	V	3.0	42.3	1.0	-47.2	-13.0	-34.2	
1673.20	-12.1	H	3.0	40.9	1.0	-52.0	-13.0	-39.0	
2509.80	-9.4	H	3.0	41.6	1.0	-50.0	-13.0	-37.0	
3346.40	-5.8	H	3.0	42.3	1.0	-47.1	-13.0	-34.1	
High Ch, 846.6MHz									
1693.20	-16.5	V	3.0	40.9	1.0	-56.4	-13.0	-43.4	
2539.80	-8.8	V	3.0	41.6	1.0	-49.4	-13.0	-36.4	
3386.40	-5.9	V	3.0	42.3	1.0	-47.2	-13.0	-34.2	
1693.20	-17.3	H	3.0	40.9	1.0	-57.2	-13.0	-44.2	
2539.80	-9.3	H	3.0	41.6	1.0	-50.0	-13.0	-37.0	
3386.40	-6.0	H	3.0	42.3	1.0	-47.3	-13.0	-34.3	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/16/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Earphone, Z-Position							
Location:		Chamber 2							
Mode:		HSDPA Band 5 Harmonics							
Test Voltage:		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	-17.9	V	3.0	40.9	1.0	-57.8	-13.0	-44.8	
2479.20	-9.0	V	3.0	41.6	1.0	-49.6	-13.0	-36.6	
3305.60	-6.0	V	3.0	42.3	1.0	-47.3	-13.0	-34.3	
1652.80	-13.2	H	3.0	40.9	1.0	-53.1	-13.0	-40.1	
2479.20	-9.2	H	3.0	41.6	1.0	-49.8	-13.0	-36.8	
3305.60	-6.0	H	3.0	42.3	1.0	-47.3	-13.0	-34.3	
Mid Ch, 836.6MHz									
1673.20	-17.9	V	3.0	40.9	1.0	-57.8	-13.0	-44.8	
2509.80	-8.9	V	3.0	41.6	1.0	-49.5	-13.0	-36.5	
3346.40	-5.7	V	3.0	42.3	1.0	-47.0	-13.0	-34.0	
1673.20	-17.4	H	3.0	40.9	1.0	-57.4	-13.0	-44.4	
2509.80	-9.2	H	3.0	41.6	1.0	-49.8	-13.0	-36.8	
3346.40	-5.6	H	3.0	42.3	1.0	-46.9	-13.0	-33.9	
High Ch, 846.6MHz									
1693.20	-17.6	V	3.0	40.9	1.0	-57.5	-13.0	-44.5	
2539.80	-8.8	V	3.0	41.6	1.0	-49.4	-13.0	-36.4	
3386.40	-5.7	V	3.0	42.3	1.0	-47.0	-13.0	-34.0	
1693.20	-18.3	H	3.0	40.9	1.0	-58.2	-13.0	-45.2	
2539.80	-9.2	H	3.0	41.6	1.0	-49.8	-13.0	-36.8	
3386.40	-5.6	H	3.0	42.3	1.0	-46.9	-13.0	-33.9	

WCDMA Band 4

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Band 4 REL99		Company:		Samsung							
		Project #:		4790406782							
		Date:		6/29/2022							
		Test Engineer:		25770							
		Configuration:		EUT / AC Adapter / Earphone, Z-Position							
		Location:		Chamber 1							
		Mode:		Rel99 Band 4 Harmonics							
		Test Voltage:		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	-4.9	V	3.0	45.7	1.0	-49.6	-13.0	-36.6			
5137.20	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3			
6849.60	-2.4	V	3.0	44.9	1.0	-46.3	-13.0	-33.3			
3424.80	-4.4	H	3.0	45.7	1.0	-49.1	-13.0	-36.1			
5137.20	-8.6	H	3.0	45.8	1.0	-53.4	-13.0	-40.4			
6849.60	4.3	H	3.0	44.9	1.0	-39.6	-13.0	-26.6			
Mid Ch, 1732.6MHz											
3465.20	-5.0	V	3.0	45.7	1.0	-49.7	-13.0	-36.7			
5197.80	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4			
6930.40	0.5	V	3.0	44.8	1.0	-43.3	-13.0	-30.3			
3465.20	-5.1	H	3.0	45.7	1.0	-49.8	-13.0	-36.8			
5197.80	-8.9	H	3.0	45.8	1.0	-53.7	-13.0	-40.7			
6930.40	5.8	H	3.0	44.8	1.0	-38.0	-13.0	-25.0			
High Ch, 1752.6MHz											
3505.20	-8.7	V	3.0	45.7	1.0	-53.4	-13.0	-40.4			
5257.80	-8.1	V	3.0	45.8	1.0	-52.9	-13.0	-39.9			
7010.40	-0.9	V	3.0	44.8	1.0	-44.7	-13.0	-31.7			
3505.20	-8.7	H	3.0	45.7	1.0	-53.5	-13.0	-40.5			
5257.80	-8.0	H	3.0	45.8	1.0	-52.8	-13.0	-39.8			
7010.40	3.6	H	3.0	44.8	1.0	-40.2	-13.0	-27.2			
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Band 4 HSDPA		Company:		Samsung							
		Project #:		4790406782							
		Date:		6/29/2022							
		Test Engineer:		25770							
		Configuration:		EUT / Z-Position							
		Location:		Chamber 1							
		Mode:		HSDPA Band 4 Harmonics							
		Test Voltage:		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	-5.9	V	3.0	45.7	1.0	-50.6	-13.0	-37.6			
5137.20	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3			
6849.60	-3.3	V	3.0	44.9	1.0	-47.3	-13.0	-34.3			
3424.80	-5.4	H	3.0	45.7	1.0	-50.1	-13.0	-37.1			
5137.20	-8.5	H	3.0	45.8	1.0	-53.3	-13.0	-40.3			
6849.60	3.4	H	3.0	44.9	1.0	-40.5	-13.0	-27.5			
Mid Ch, 1732.6MHz											
3465.20	-6.1	V	3.0	45.7	1.0	-50.8	-13.0	-37.8			
5197.80	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3			
6930.40	-0.6	V	3.0	44.8	1.0	-44.4	-13.0	-31.4			
3465.20	-6.0	H	3.0	45.7	1.0	-50.8	-13.0	-37.8			
5197.80	-9.8	H	3.0	45.8	1.0	-54.6	-13.0	-41.6			
6930.40	4.9	H	3.0	44.8	1.0	-38.9	-13.0	-25.9			
High Ch, 1752.6MHz											
3505.20	-9.9	V	3.0	45.7	1.0	-54.6	-13.0	-41.6			
5257.80	-7.1	V	3.0	45.8	1.0	-51.9	-13.0	-38.9			
7010.40	-1.6	V	3.0	44.8	1.0	-45.4	-13.0	-32.4			
3505.20	-9.2	H	3.0	45.7	1.0	-54.0	-13.0	-41.0			
5257.80	-8.1	H	3.0	45.8	1.0	-52.9	-13.0	-39.9			
7010.40	2.8	H	3.0	44.8	1.0	-40.9	-13.0	-27.9			

WCDMA Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/16/2022							
Test Engineer:		25770							
Configuration:		EUT / Y-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 2 Harmonics							
Test Voltage:		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	-10.9	V	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5557.20	-7.6	V	3.0	45.7	1.0	-52.3	-13.0	-39.3	
7409.60	3.5	V	3.0	44.6	1.0	-40.0	-13.0	-27.0	
3704.80	-9.5	H	3.0	45.8	1.0	-54.3	-13.0	-41.3	
5557.20	-7.6	H	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7409.60	-0.7	H	3.0	44.6	1.0	-44.3	-13.0	-31.3	
Mid Ch, 1880MHz									
3760.00	-10.5	V	3.0	45.8	1.0	-55.3	-13.0	-42.3	
5640.00	-7.1	V	3.0	45.7	1.0	-51.8	-13.0	-38.8	
7520.00	1.6	V	3.0	44.5	1.0	-41.9	-13.0	-28.9	
3760.00	-9.9	H	3.0	45.8	1.0	-54.7	-13.0	-41.7	
5640.00	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	1.9	H	3.0	44.5	1.0	-41.6	-13.0	-28.6	
High Ch, 1907.6MHz									
3815.20	-10.2	V	3.0	45.8	1.0	-55.0	-13.0	-42.0	
5722.80	-6.4	V	3.0	45.7	1.0	-51.2	-13.0	-38.2	
7630.40	1.7	V	3.0	44.4	1.0	-41.7	-13.0	-28.7	
3815.20	-10.7	H	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5722.80	-7.7	H	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7630.40	-1.0	H	3.0	44.4	1.0	-44.5	-13.0	-31.5	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/17/2022							
Test Engineer:		25770							
Configuration:		EUT / Y-Position							
Location:		Chamber 1							
Mode:		HSDPA Band 2 Harmonics							
Test Voltage:		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	-10.9	V	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5557.20	-7.6	V	3.0	45.7	1.0	-52.3	-13.0	-39.3	
7409.60	1.6	V	3.0	44.6	1.0	-42.0	-13.0	-29.0	
3704.80	-10.2	H	3.0	45.8	1.0	-55.0	-13.0	-42.0	
5557.20	-7.8	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7409.60	-4.3	H	3.0	44.6	1.0	-47.8	-13.0	-34.8	
Mid Ch, 1880MHz									
3760.00	-7.9	V	3.0	45.8	1.0	-52.7	-13.0	-39.7	
5640.00	-8.0	V	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7520.00	-1.5	V	3.0	44.5	1.0	-45.0	-13.0	-32.0	
3760.00	-7.7	H	3.0	45.8	1.0	-52.5	-13.0	-39.5	
5640.00	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	-2.1	H	3.0	44.5	1.0	-45.6	-13.0	-32.6	
High Ch, 1907.6MHz									
3815.20	-10.6	V	3.0	45.8	1.0	-55.4	-13.0	-42.4	
5722.80	-7.2	V	3.0	45.7	1.0	-51.9	-13.0	-38.9	
7630.40	-0.6	V	3.0	44.4	1.0	-44.1	-13.0	-31.1	
3815.20	-10.8	H	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5722.80	-6.9	H	3.0	45.7	1.0	-51.7	-13.0	-38.7	
7630.40	-4.8	H	3.0	44.4	1.0	-48.2	-13.0	-35.2	

LTE Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company: Samsung Project #: 4790406782 Date: 6/30/2022 Test Engineer: 255770 Configuration: EUT / AC Adapter, Z-position Location: Chamber 1 Mode: LTE_QPSK Band 2 Harmonics, 20MHz Bandwidth Test Voltage: 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, 1860MHz									
3720.00	-8.3	V	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5580.00	-7.0	V	3.0	45.7	1.0	-51.7	-13.0	-38.7	
7440.00	4.1	V	3.0	44.5	1.0	-39.5	-13.0	-26.5	
3720.00	-5.7	H	3.0	45.8	1.0	-50.5	-13.0	-37.5	
5580.00	-4.3	H	3.0	45.7	1.0	-49.0	-13.0	-36.0	
7440.00	12.6	H	3.0	44.5	1.0	-30.9	-13.0	-17.9	
Mid Ch, 1880MHz									
3760.00	-8.3	V	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5640.00	-7.3	V	3.0	45.7	1.0	-52.1	-13.0	-39.1	
7520.00	6.6	V	3.0	44.5	1.0	-36.9	-13.0	-23.9	
3760.00	-5.8	H	3.0	45.8	1.0	-50.6	-13.0	-37.6	
5640.00	-5.1	H	3.0	45.7	1.0	-49.9	-13.0	-36.9	
7520.00	13.0	H	3.0	44.5	1.0	-30.5	-13.0	-17.5	
High Ch, 1900MHz									
3800.00	-8.6	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
5700.00	-6.4	V	3.0	45.7	1.0	-51.1	-13.0	-38.1	
7600.00	7.7	V	3.0	44.5	1.0	-35.7	-13.0	-22.7	
3800.00	-9.1	H	3.0	45.8	1.0	-54.0	-13.0	-41.0	
5700.00	-2.6	H	3.0	45.7	1.0	-47.3	-13.0	-34.3	
7600.00	12.6	H	3.0	44.5	1.0	-30.8	-13.0	-17.8	
UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company: Samsung Project #: 4790406782 Date: 6/20/2022 Test Engineer: 26087 Configuration: EUT / Earphone, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Harmonics, 10MHz Bandwidth Test Voltage: 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, 1855MHz									
3710.00	-2.3	V	3.0	45.8	1.0	-47.1	-13.0	-34.1	
5565.00	-4.0	V	3.0	45.7	1.0	-48.8	-13.0	-35.8	
7420.00	-1.4	V	3.0	44.5	1.0	-44.9	-13.0	-31.9	
3710.00	1.8	H	3.0	45.8	1.0	-43.0	-13.0	-30.0	
5565.00	-4.2	H	3.0	45.7	1.0	-48.9	-13.0	-35.9	
7420.00	-2.0	H	3.0	44.5	1.0	-45.5	-13.0	-32.5	
Mid Ch, 1880MHz									
3760.00	-4.3	V	3.0	45.8	1.0	-49.1	-13.0	-36.1	
5640.00	-3.8	V	3.0	45.7	1.0	-48.6	-13.0	-35.6	
7520.00	-1.8	V	3.0	44.5	1.0	-45.3	-13.0	-32.3	
3760.00	-0.5	H	3.0	45.8	1.0	-45.3	-13.0	-32.3	
5640.00	-3.7	H	3.0	45.7	1.0	-48.4	-13.0	-35.4	
7520.00	-1.9	H	3.0	44.5	1.0	-45.4	-13.0	-32.4	
High Ch, 1905MHz									
3810.00	-2.7	V	3.0	45.8	1.0	-47.6	-13.0	-34.6	
5715.00	-3.6	V	3.0	45.7	1.0	-48.3	-13.0	-35.3	
7620.00	-1.4	V	3.0	44.4	1.0	-44.8	-13.0	-31.8	
3810.00	-1.1	H	3.0	45.8	1.0	-46.0	-13.0	-33.0	
5715.00	-3.5	H	3.0	45.7	1.0	-48.3	-13.0	-35.3	
7620.00	-1.4	H	3.0	44.4	1.0	-44.8	-13.0	-31.8	

LTE Band 12

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/30/2022							
Test Engineer:		19568							
Configuration:		EUT / AC Adapter / Earphone, X-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth							
Test Voltage:		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, 704MHz									
1408.00	-17.0	V	3.0	41.0	1.0	-57.0	-13.0	-44.0	
2112.00	-14.5	V	3.0	41.0	1.0	-54.6	-13.0	-41.6	
2816.00	-11.9	V	3.0	42.0	1.0	-52.9	-13.0	-39.9	
1408.00	-17.7	H	3.0	41.0	1.0	-57.6	-13.0	-44.6	
2112.00	-14.8	H	3.0	41.0	1.0	-54.8	-13.0	-41.8	
2816.00	-12.1	H	3.0	42.0	1.0	-53.1	-13.0	-40.1	
Mid Ch, 707.5MHz									
1415.00	-16.4	V	3.0	41.0	1.0	-56.4	-13.0	-43.4	
2122.50	-14.4	V	3.0	41.0	1.0	-54.4	-13.0	-41.4	
2830.00	-11.9	V	3.0	42.0	1.0	-52.9	-13.0	-39.9	
1415.00	-17.7	H	3.0	41.0	1.0	-57.7	-13.0	-44.7	
2122.50	-15.0	H	3.0	41.0	1.0	-55.0	-13.0	-42.0	
2830.00	-12.0	H	3.0	42.0	1.0	-53.0	-13.0	-40.0	
High Ch, 711MHz									
1422.00	-16.9	V	3.0	41.0	1.0	-56.9	-13.0	-43.9	
2133.00	-14.4	V	3.0	41.1	1.0	-54.5	-13.0	-41.5	
2844.00	-11.8	V	3.0	42.1	1.0	-52.8	-13.0	-39.8	
1422.00	-17.7	H	3.0	41.0	1.0	-57.6	-13.0	-44.6	
2133.00	-14.8	H	3.0	41.1	1.0	-54.9	-13.0	-41.9	
2844.00	-11.9	H	3.0	42.1	1.0	-52.9	-13.0	-39.9	

LTE Band 13

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/16/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Earphone, X-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 13 Harmonics, 10MHz Bandwidth							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 782MHz									
1564.00	-16.4	V	3.0	40.9	1.0	-56.4	-13.0	-43.4	
2346.00	-13.5	V	3.0	41.4	1.0	-53.9	-13.0	-40.9	
3128.00	-10.7	V	3.0	42.3	1.0	-52.0	-13.0	-39.0	
1564.00	-17.2	H	3.0	40.9	1.0	-57.1	-13.0	-44.1	
2346.00	-13.4	H	3.0	41.4	1.0	-53.8	-13.0	-40.8	
3128.00	-10.6	H	3.0	42.3	1.0	-51.9	-13.0	-38.9	

LTE Band 26 (Part 90 & Straddle)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 26 5 MHz QPSK		Company: Samsung Project #: 4790406782 Date: 6/20/2022 Test Engineer: 19568 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Straddle Ch, 824MHz									
		1648.00	-15.2	V	3.0	40.9	1.0	-55.1	-13.0	-42.1	
		2472.00	-13.2	V	3.0	41.5	1.0	-53.8	-13.0	-40.8	
		3296.00	-10.1	V	3.0	42.3	1.0	-51.4	-13.0	-38.4	
		1648.00	-16.8	H	3.0	40.9	1.0	-56.7	-13.0	-43.7	
2472.00	-13.6	H	3.0	41.5	1.0	-54.1	-13.0	-41.1			
3296.00	-10.1	H	3.0	42.3	1.0	-51.4	-13.0	-38.4			

LTE Band 26 (Part 22)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 26 5MHz QPSK		Company: Samsung Project #: 4790406782 Date: 6/20/2022 Test Engineer: 19568 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth Test Voltage: 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, 826.5MHz									
		1653.00	-15.5	V	3.0	40.9	1.0	-55.5	-13.0	-42.5	
		2479.50	-13.2	V	3.0	41.6	1.0	-53.7	-13.0	-40.7	
		3306.00	-10.3	V	3.0	42.3	1.0	-51.6	-13.0	-38.6	
		1653.00	-16.8	H	3.0	40.9	1.0	-56.7	-13.0	-43.7	
2479.50	-13.6	H	3.0	41.6	1.0	-54.1	-13.0	-41.1			
3306.00	-10.3	H	3.0	42.3	1.0	-51.6	-13.0	-38.6			
Mid Ch, 831.5MHz											
1663.00	-15.3	V	3.0	40.9	1.0	-55.2	-13.0	-42.2			
2494.50	-13.0	V	3.0	41.6	1.0	-53.6	-13.0	-40.6			
3326.00	-11.2	V	3.0	42.3	1.0	-52.5	-13.0	-39.5			
1663.00	-16.6	H	3.0	40.9	1.0	-56.5	-13.0	-43.5			
2494.50	-13.3	H	3.0	41.6	1.0	-53.9	-13.0	-40.9			
3326.00	-10.1	H	3.0	42.3	1.0	-51.4	-13.0	-38.4			
High Ch, 846.5MHz											
1693.00	-15.4	V	3.0	40.9	1.0	-55.3	-13.0	-42.3			
2539.50	-13.0	V	3.0	41.6	1.0	-53.7	-13.0	-40.7			
3386.00	-10.0	V	3.0	42.3	1.0	-51.3	-13.0	-38.3			
1693.00	-16.6	H	3.0	40.9	1.0	-56.5	-13.0	-43.5			
2539.50	-13.2	H	3.0	41.6	1.0	-53.8	-13.0	-40.8			
3386.00	-10.9	H	3.0	42.3	1.0	-52.2	-13.0	-39.2			

LTE Band 41

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/14/2022							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter / Earphone, X-Position							
Location:		Chamber 1							
Mode:		LTE_QPSK Band 41 Harmonics, 5MHz Bandwidth							
Test Votage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2498.5MHz									
4997.00	-16.2	V	3.0	45.8	1.0	-61.0	-25.0	-36.0	
7495.50	1.3	V	3.0	44.5	1.0	-42.2	-25.0	-17.2	
9994.00	-10.1	V	3.0	42.6	1.0	-51.7	-25.0	-26.7	
4997.00	-16.1	H	3.0	45.8	1.0	-60.9	-25.0	-35.9	
7495.50	-4.5	H	3.0	44.5	1.0	-48.0	-25.0	-23.0	
9994.00	-11.6	H	3.0	42.6	1.0	-53.2	-25.0	-28.2	
Mid Ch, 2593MHz									
5186.00	-14.9	V	3.0	45.8	1.0	-59.7	-25.0	-34.7	
7779.00	-0.8	V	3.0	44.4	1.0	-44.1	-25.0	-19.1	
10372.00	-10.2	V	3.0	42.7	1.0	-51.9	-25.0	-26.9	
5186.00	-15.6	H	3.0	45.8	1.0	-60.4	-25.0	-35.4	
7779.00	-8.0	H	3.0	44.4	1.0	-51.3	-25.0	-26.3	
10372.00	-11.5	H	3.0	42.7	1.0	-53.2	-25.0	-28.2	
High Ch, 2687.5MHz									
5375.00	-12.5	V	3.0	45.8	1.0	-57.2	-25.0	-32.2	
8062.50	3.5	V	3.0	44.2	1.0	-39.7	-25.0	-14.7	
10750.00	-4.6	V	3.0	42.8	1.0	-46.5	-25.0	-21.5	
5375.00	-13.1	H	3.0	45.8	1.0	-57.9	-25.0	-32.9	
8062.50	-5.1	H	3.0	44.2	1.0	-48.3	-25.0	-23.3	
10750.00	-7.2	H	3.0	42.8	1.0	-49.0	-25.0	-24.0	

LTE
Band 41

5MHz

QPSK

LTE Band 66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/29/2022							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter / Earphone, Z-Position							
Location:		Chamber 1							
Mode:		LTE_QPSK Band 66 Harmonics, 20MHz Bandwidth							
Test Voltage:		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	0.7	V	3.0	45.7	1.0	-44.0	-13.0	-31.0	
5160.00	-8.9	V	3.0	45.8	1.0	-53.7	-13.0	-40.7	
6880.00	4.6	V	3.0	44.9	1.0	-39.2	-13.0	-26.2	
8600.00	-2.0	V	3.0	43.8	1.0	-44.9	-13.0	-31.9	
10320.00	0.1	V	3.0	42.7	1.0	-41.5	-13.0	-28.5	
3440.00	1.0	H	3.0	45.7	1.0	-43.8	-13.0	-30.8	
5160.00	-8.8	H	3.0	45.8	1.0	-53.6	-13.0	-40.6	
6880.00	13.7	H	3.0	44.9	1.0	-30.1	-13.0	-17.1	
8600.00	5.2	H	3.0	43.8	1.0	-37.6	-13.0	-24.6	
10320.00	0.0	H	3.0	42.7	1.0	-41.6	-13.0	-28.6	
Mid Ch, 1745MHz									
3490.00	1.4	V	3.0	45.7	1.0	-43.3	-13.0	-30.3	
5235.00	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4	
6980.00	7.1	V	3.0	44.8	1.0	-36.7	-13.0	-23.7	
8725.00	-4.3	V	3.0	43.7	1.0	-47.1	-13.0	-34.1	
10470.00	0.1	V	3.0	42.7	1.0	-41.6	-13.0	-28.6	
3490.00	4.0	H	3.0	45.7	1.0	-40.7	-13.0	-27.7	
5235.00	-8.4	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
6980.00	14.8	H	3.0	44.8	1.0	-29.0	-13.0	-16.0	
8725.00	3.2	H	3.0	43.7	1.0	-39.5	-13.0	-26.5	
10470.00	0.3	H	3.0	42.7	1.0	-41.4	-13.0	-28.4	
High Ch, 1770MHz									
3540.00	-8.3	V	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5310.00	-8.2	V	3.0	45.8	1.0	-53.0	-13.0	-40.0	
7080.00	9.3	V	3.0	44.7	1.0	-34.4	-13.0	-21.4	
8850.00	-5.1	V	3.0	43.6	1.0	-47.8	-13.0	-34.8	
10620.00	0.7	V	3.0	42.8	1.0	-41.1	-13.0	-28.1	
3540.00	-7.6	H	3.0	45.8	1.0	-52.3	-13.0	-39.3	
5310.00	-8.2	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
7080.00	15.8	H	3.0	44.7	1.0	-27.9	-13.0	-14.9	
8850.00	0.2	H	3.0	43.6	1.0	-42.4	-13.0	-29.4	
10620.00	0.9	H	3.0	42.8	1.0	-40.9	-13.0	-27.9	

LTE
 Band 66
 Main Ant
 20 MHz
 QPSK

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 66 Sub Ant 20 MHz QPSK		Company:		Samsung							
		Project #:		4790406782							
		Date:		6/23/2022							
		Test Engineer:		19568							
		Configuration:		EUT / AC Adapter, Earphone, Z-Position							
		Location:		Chamber 1							
		Mode:		LTE_QPSK Band 66 Harmonics, 20MHz Bandwidth							
Test Voltage:		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	2.1	V	3.0	45.7	1.0	-42.6	-13.0	-29.6	
		5160.00	-9.0	V	3.0	45.8	1.0	-53.8	-13.0	-40.8	
		6880.00	-5.7	V	3.0	44.9	1.0	-49.6	-13.0	-36.6	
		3440.00	5.2	H	3.0	45.7	1.0	-39.5	-13.0	-26.5	
		5160.00	-9.1	H	3.0	45.8	1.0	-53.9	-13.0	-40.9	
		6880.00	-5.9	H	3.0	44.9	1.0	-49.8	-13.0	-36.8	
Mid Ch, 1745MHz											
		3490.00	4.1	V	3.0	45.7	1.0	-40.7	-13.0	-27.7	
		5235.00	-7.5	V	3.0	45.8	1.0	-52.3	-13.0	-39.3	
		6980.00	-5.7	V	3.0	44.8	1.0	-49.5	-13.0	-36.5	
		3490.00	2.9	H	3.0	45.7	1.0	-41.8	-13.0	-28.8	
		5235.00	-8.5	H	3.0	45.8	1.0	-53.3	-13.0	-40.3	
		6980.00	-6.3	H	3.0	44.8	1.0	-50.1	-13.0	-37.1	
High Ch, 1770MHz											
		3540.00	5.9	V	3.0	45.8	1.0	-38.9	-13.0	-25.9	
		5310.00	-8.4	V	3.0	45.8	1.0	-53.2	-13.0	-40.2	
		7080.00	-5.7	V	3.0	44.7	1.0	-49.4	-13.0	-36.4	
		3540.00	5.8	H	3.0	45.8	1.0	-39.0	-13.0	-26.0	
		5310.00	-8.5	H	3.0	45.8	1.0	-53.3	-13.0	-40.3	
		7080.00	-5.4	H	3.0	44.7	1.0	-49.1	-13.0	-36.1	

NR Band n5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/20/2022							
Test Engineer:		19568							
Configuration:		EUT / AC Adapter, Earphone, Y-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n5 Harmonics, 10MHz Bandwidth							
Test Votage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829MHz									
1658.00	-10.9	V	3.0	45.6	1.0	-55.5	-13.0	-42.5	
2487.00	-11.6	V	3.0	45.5	1.0	-56.1	-13.0	-43.1	
3316.00	-9.4	V	3.0	45.7	1.0	-54.1	-13.0	-41.1	
1658.00	-10.8	H	3.0	45.6	1.0	-55.4	-13.0	-42.4	
2487.00	-12.0	H	3.0	45.5	1.0	-56.5	-13.0	-43.5	
3316.00	-9.4	H	3.0	45.7	1.0	-54.1	-13.0	-41.1	
Mid Ch, 836.5MHz									
1673.00	-9.1	V	3.0	45.6	1.0	-53.7	-13.0	-40.7	
2509.50	-11.8	V	3.0	45.5	1.0	-56.2	-13.0	-43.2	
3346.00	-9.5	V	3.0	45.7	1.0	-54.2	-13.0	-41.2	
1673.00	-12.0	H	3.0	45.6	1.0	-56.6	-13.0	-43.6	
2509.50	-12.6	H	3.0	45.5	1.0	-57.1	-13.0	-44.1	
3346.00	-9.5	H	3.0	45.7	1.0	-54.2	-13.0	-41.2	
High Ch, 844MHz									
1688.00	-11.4	V	3.0	45.6	1.0	-56.0	-13.0	-43.0	
2532.00	-11.9	V	3.0	45.5	1.0	-56.4	-13.0	-43.4	
3376.00	-9.5	V	3.0	45.7	1.0	-54.2	-13.0	-41.2	
1688.00	-11.8	H	3.0	45.6	1.0	-56.4	-13.0	-43.4	
2532.00	-12.5	H	3.0	45.5	1.0	-57.0	-13.0	-44.0	
3376.00	-9.2	H	3.0	45.7	1.0	-53.9	-13.0	-40.9	

NR n5
10 MHz
BPSK

NR Band n66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/29/2022							
Test Engineer:		19568							
Configuration:		EUT / AC Adapter / Earphone, Z-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n66 Harmonics, 5MHz Bandwidth							
Test Voltage:		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, 1712.5MHz									
3425.00	0.7	V	3.0	45.7	1.0	-44.1	-13.0	-31.1	
5137.50	-9.1	V	3.0	45.8	1.0	-53.9	-13.0	-40.9	
6850.00	3.7	V	3.0	44.9	1.0	-40.2	-13.0	-27.2	
8562.50	-4.1	V	3.0	43.8	1.0	-47.0	-13.0	-34.0	
10275.00	-0.4	V	3.0	42.7	1.0	-42.0	-13.0	-29.0	
3425.00	1.0	H	3.0	45.7	1.0	-43.7	-13.0	-30.7	
5137.50	-8.2	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
6850.00	7.9	H	3.0	44.9	1.0	-36.0	-13.0	-23.0	
8562.50	0.5	H	3.0	43.8	1.0	-42.3	-13.0	-29.3	
10275.00	-0.3	H	3.0	42.7	1.0	-42.0	-13.0	-29.0	
Mid Ch, 1745MHz									
3490.00	1.7	V	3.0	45.7	1.0	-43.1	-13.0	-30.1	
5235.00	-8.7	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6980.00	3.4	V	3.0	44.8	1.0	-40.4	-13.0	-27.4	
8725.00	-4.8	V	3.0	43.7	1.0	-47.5	-13.0	-34.5	
10470.00	-0.2	V	3.0	42.7	1.0	-42.0	-13.0	-29.0	
3490.00	5.4	H	3.0	45.7	1.0	-39.4	-13.0	-26.4	
5235.00	-7.3	H	3.0	45.8	1.0	-52.1	-13.0	-39.1	
6980.00	10.5	H	3.0	44.8	1.0	-33.2	-13.0	-20.2	
8725.00	-1.3	H	3.0	43.7	1.0	-44.1	-13.0	-31.1	
10470.00	0.0	H	3.0	42.7	1.0	-41.7	-13.0	-28.7	
High Ch, 1777.5MHz									
3555.00	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3	
5332.50	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4	
7110.00	7.2	V	3.0	44.7	1.0	-36.5	-13.0	-23.5	
8887.50	-5.0	V	3.0	43.6	1.0	-47.6	-13.0	-34.6	
10665.00	0.4	V	3.0	42.8	1.0	-41.4	-13.0	-28.4	
3555.00	-7.8	H	3.0	45.8	1.0	-52.6	-13.0	-39.6	
5332.50	-7.8	H	3.0	45.8	1.0	-52.6	-13.0	-39.6	
7110.00	8.9	H	3.0	44.7	1.0	-34.8	-13.0	-21.8	
8887.50	-1.7	H	3.0	43.6	1.0	-44.3	-13.0	-31.3	
10665.00	0.3	H	3.0	42.8	1.0	-41.5	-13.0	-28.5	

NR n66
Main Ant
5 MHz
QPSK

UL Verification Services, Inc.									
Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406782							
Date:		6/20/2022							
Test Engineer:		19568							
Configuration:		EUT / Earphone, X-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n66 Harmonics, 20MHz Bandwidth							
Test Voltage:		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)	
NR n66									
Sub Ant									
20 MHz									
QPSK									
Low Ch, 1720MHz									
3440.00	-9.7	V	3.0	45.7	1.0	-54.4	-13.0	-41.4	
5160.00	-9.7	V	3.0	45.8	1.0	-54.5	-13.0	-41.5	
6880.00	7.0	V	3.0	44.9	1.0	-36.9	-13.0	-23.9	
3440.00	-9.7	H	3.0	45.7	1.0	-54.4	-13.0	-41.4	
5160.00	-9.3	H	3.0	45.8	1.0	-54.1	-13.0	-41.1	
6880.00	3.4	H	3.0	44.9	1.0	-40.4	-13.0	-27.4	
Mid Ch, 1745MHz									
3490.00	-9.1	V	3.0	45.7	1.0	-53.8	-13.0	-40.8	
5235.00	-9.4	V	3.0	45.8	1.0	-54.2	-13.0	-41.2	
6980.00	0.0	V	3.0	44.8	1.0	-43.8	-13.0	-30.8	
3490.00	-9.1	H	3.0	45.7	1.0	-53.9	-13.0	-40.9	
5235.00	-9.2	H	3.0	45.8	1.0	-54.0	-13.0	-41.0	
6980.00	-0.1	H	3.0	44.8	1.0	-43.9	-13.0	-30.9	
High Ch, 1770MHz									
3540.00	-8.3	V	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5310.00	-9.3	V	3.0	45.8	1.0	-54.1	-13.0	-41.1	
7080.00	0.7	V	3.0	44.7	1.0	-43.1	-13.0	-30.1	
3540.00	-8.5	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
5310.00	-8.9	H	3.0	45.8	1.0	-53.6	-13.0	-40.6	
7080.00	0.4	H	3.0	44.7	1.0	-43.3	-13.0	-30.3	

END OF REPORT