



### 9.3. OUT OF BAND EMISSIONS

#### RULE PART(S)

FCC: §2.1051, and §96.41(e)

#### LIMITS

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

#### TEST PROCEDURE

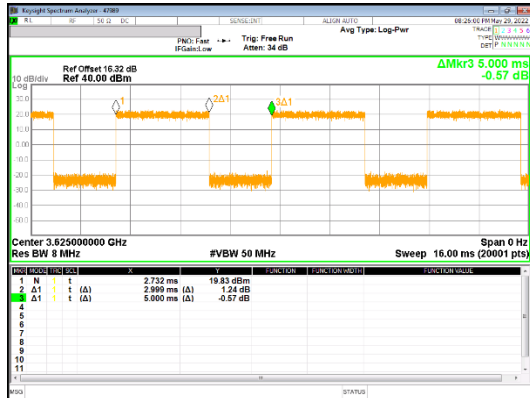
Per KDB 971168 D01 Power Meas License Digital Systems v03r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

- a) Set the RBW = 100kHz for emission below 1GHz and 1MHz for emissions above 1GHz  
A. (Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW  $\geq 3 \times$  RBW
- c) Sweep time = auto couple;
- d) Detector = RMS;
- e) Ensure that the number of measurement points = Max (40001);
- f) Trace mode = Average(TDD);

**NOTE1**

For LTE B48 CSE (Gate trigger off):  
 RF Path Loss: 16.36 dB & DCF 2.2 dB:  $10\log(3/5)$   
 Measure offset: 16.36 dB+2.2 dB = 18.58 dB



**NOTE2**

For NR n48 CSE (Gate trigger off):  
 RF Path Loss: 16.36 dB & DCF 2.2 dB:  $10\log(1/5)$   
 Measure offset: 16.36 dB+7 dB = 23.36 dB



**NOTE3**

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

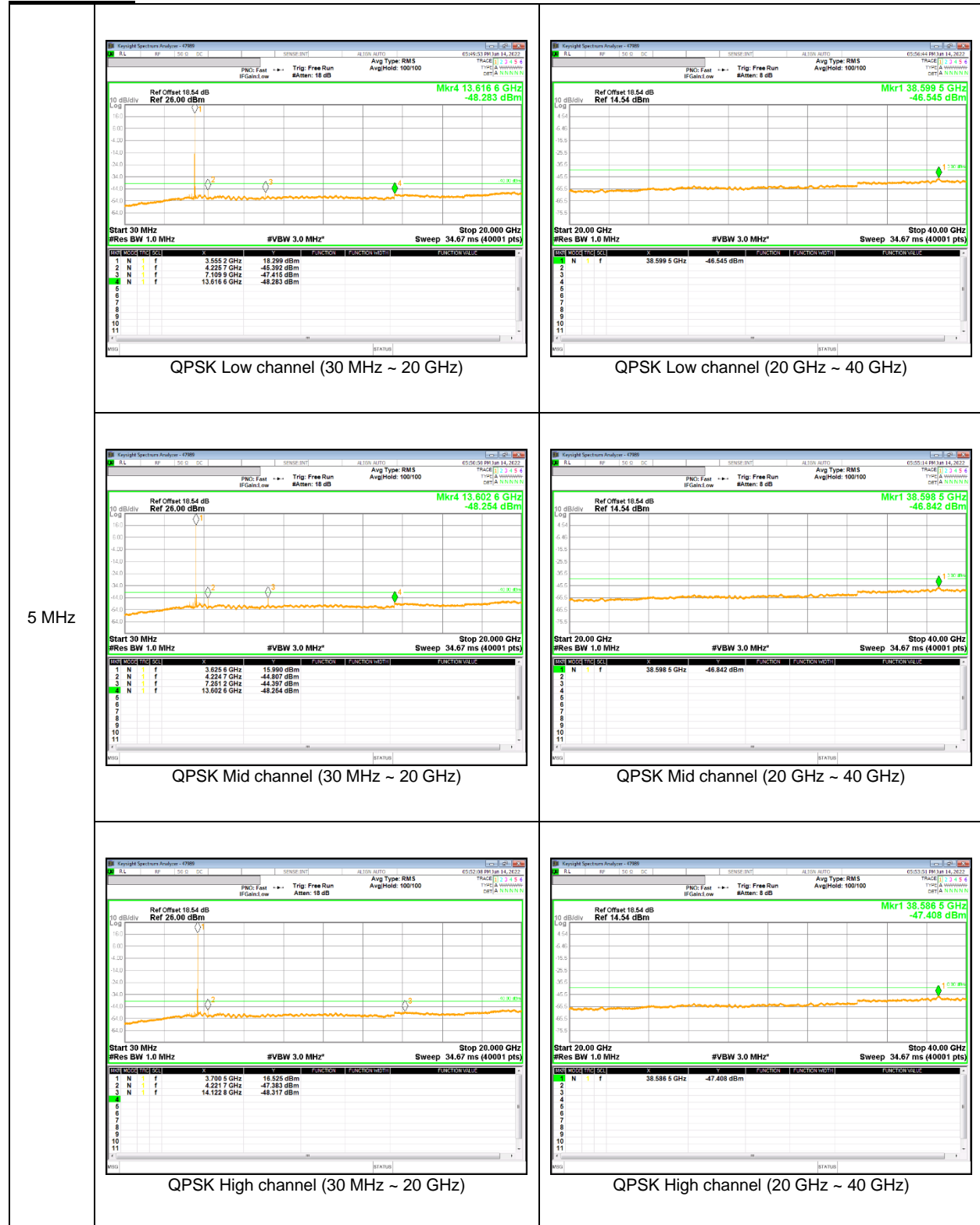
**NOTE4**

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.

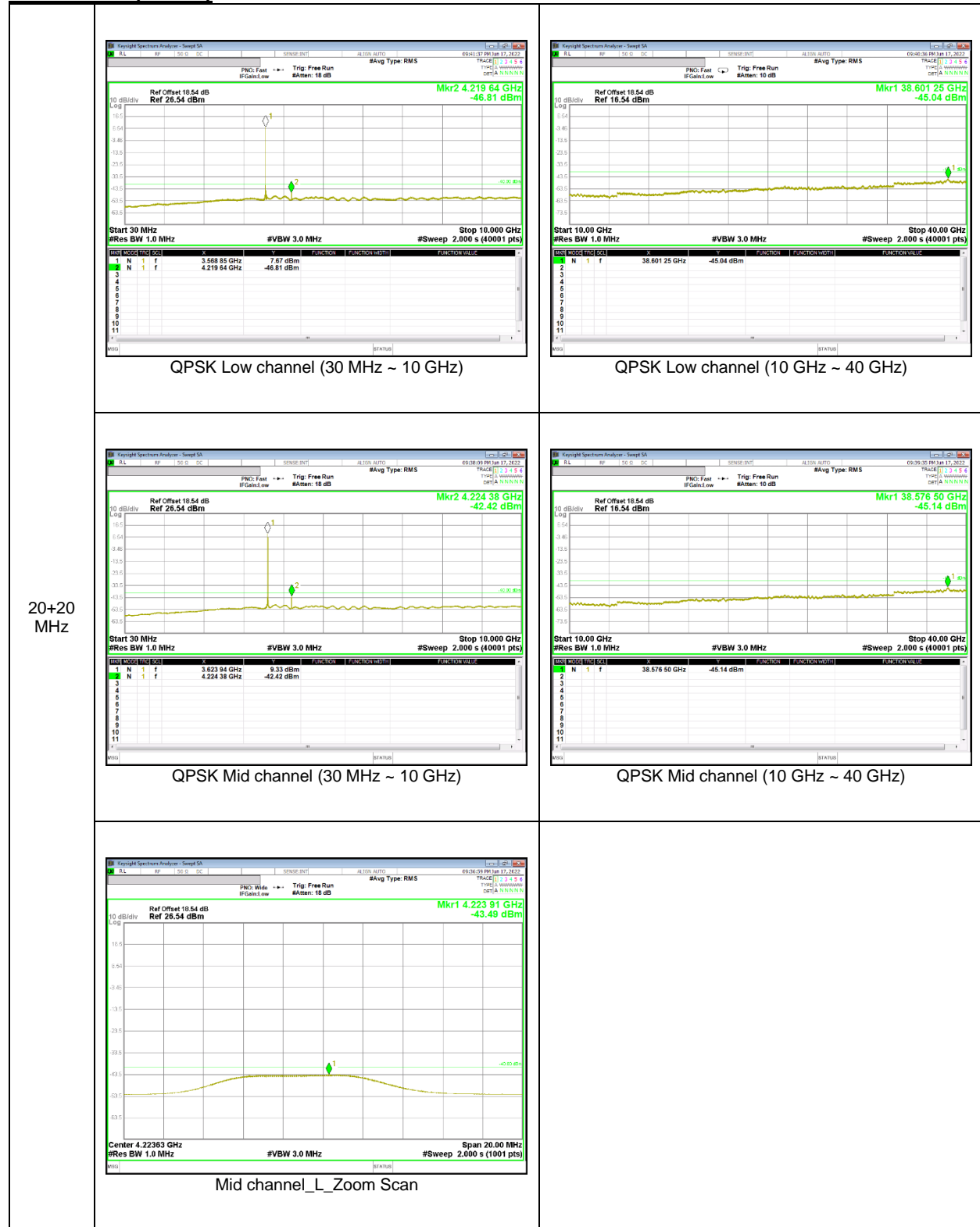
**RESULTS**

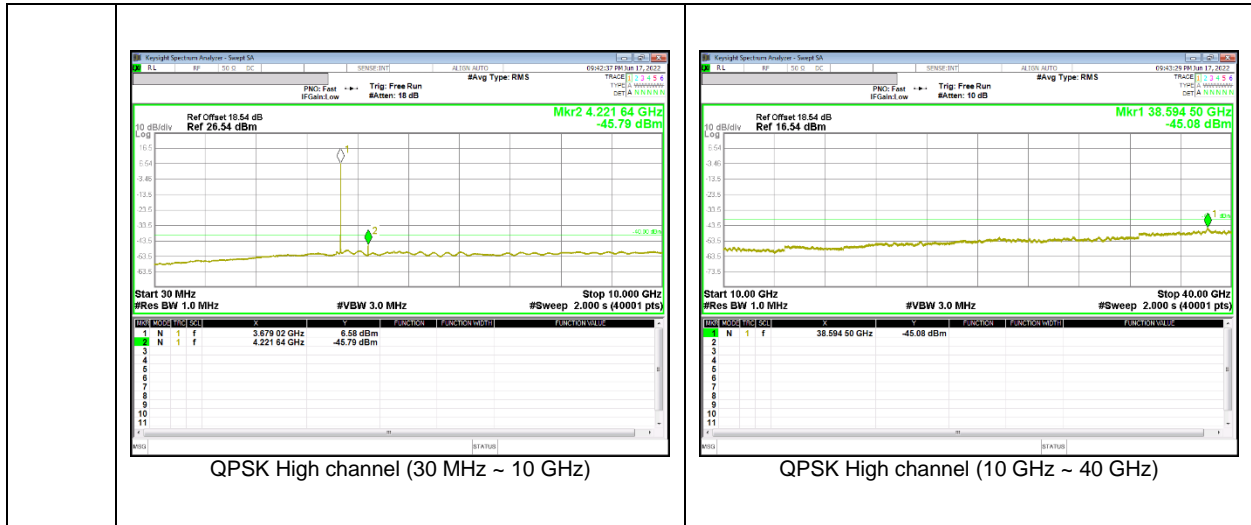
See the following pages.

**LTE Band 48**



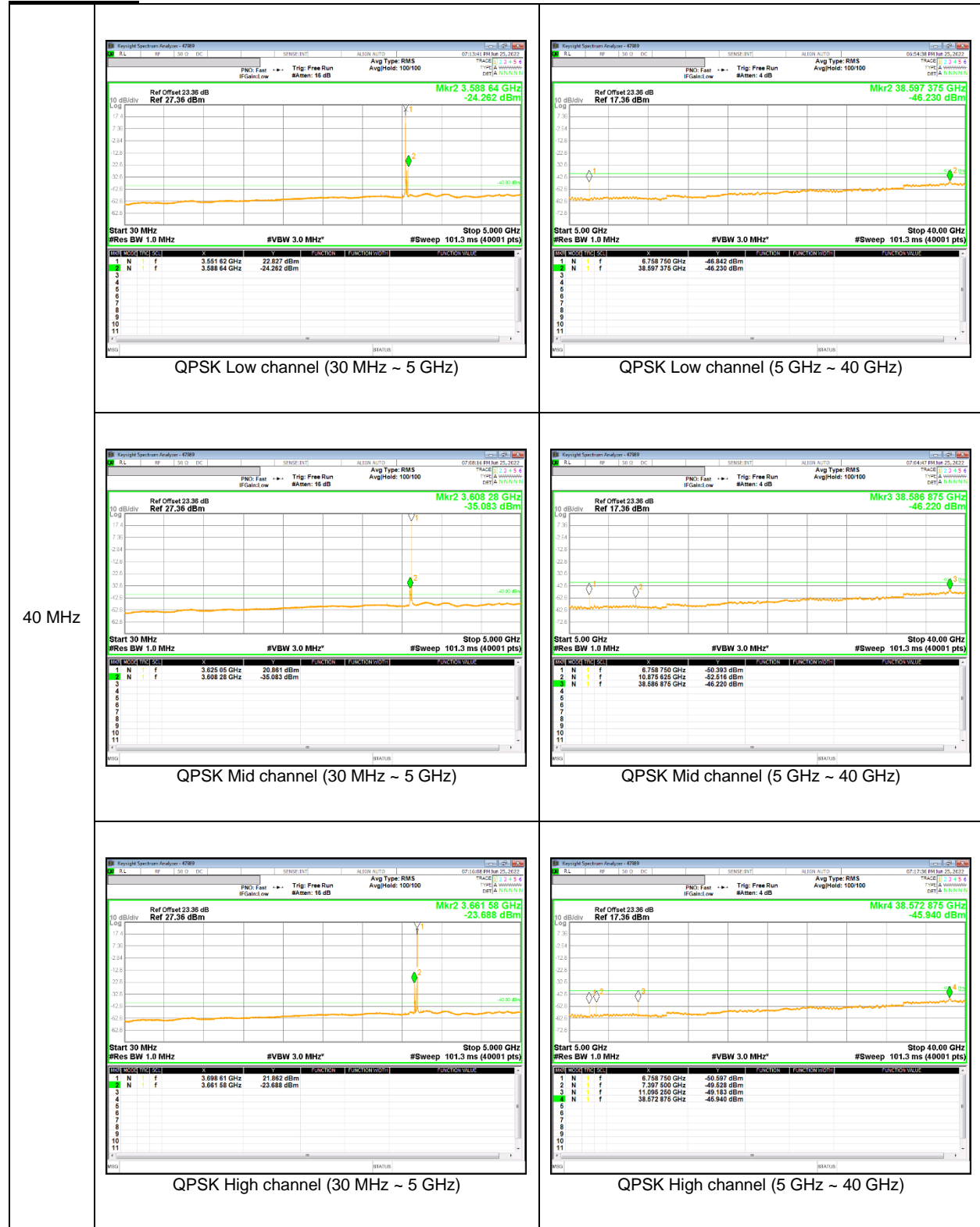
**LTE Band 48(UL CA)**







NR Band n48



## **9.4. FREQUENCY STABILITY**

### **RULE PART(S)**

FCC: §2.1055

### **LIMITS**

For Part 96, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### **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)

**LTE Band 48(Lowest Frequency: 16QAM / Highest Frequency: 16QAM)**

Limit		3550	3700	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3550.2535	3699.7411		
Extreme (50C)		3550.2535	3699.7411	15.1	0.004
Extreme (40C)		3550.2535	3699.7411	12.5	0.003
Extreme (30C)		3550.2535	3699.7411	12.8	0.004
Extreme (10C)		3550.2535	3699.7411	13.8	0.004
Extreme (0C)		3550.2535	3699.7411	13.8	0.004
Extreme (-10C)		3550.2535	3699.7411	11.9	0.003
Extreme (-20C)		3550.2535	3699.7411	13.6	0.004
Extreme (-30C)		3550.2535	3699.7411	14.5	0.004
20C	15%	3550.2535	3699.7411	4.5	0.001
	-15%	3550.2535	3699.7411	6.2	0.002
	End Point	3550.2535	3699.7411	7.1	0.002

**NR Band n48(Lowest Frequency: QPSK / Highest Frequency: QPSK)**

Limit		3550	3700	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3550.6991	3699.2981		
Extreme (50C)		3550.6991	3699.2981	16.1	0.004
Extreme (40C)		3550.6991	3699.2981	13.1	0.004
Extreme (30C)		3550.6991	3699.2981	12.8	0.004
Extreme (10C)		3550.6991	3699.2981	13.1	0.004
Extreme (0C)		3550.6991	3699.2981	13.5	0.004
Extreme (-10C)		3550.6991	3699.2981	11.9	0.003
Extreme (-20C)		3550.6991	3699.2981	11.6	0.003
Extreme (-30C)		3550.6991	3699.2981	11.7	0.003
20C	15%	3550.6991	3699.2981	9.9	0.003
	-15%	3550.6991	3699.2981	10.4	0.003
	End Point	3550.6991	3699.2981	10.1	0.003

## **9.5. END USER DEVICE(CBSD PROTOCOL)**

### **RULE PART(S)**

FCC: §96.47

### **LIMITS**

End user devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSU, including the frequencies and power limits for their operation.

An end user device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSU.

### **TEST PROCEDURE**

Per KDB 940660 D01 Part 96 CBRS Eqpt v03

### **RESULTS**

Not performed.

Please refer to LTE B48 test report(Report number: HCT-RF-2206-FC026)

Please refer to NR n48 test report(Report number: 1M2206130072-01.A3L)

## 9.6. RADIATED POWER (ERP & EIRP)

### RULE PART(S)

FCC: §96.41(b)

### LIMITS

FCC: §96.41(b)

(b) Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table.

Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a

### 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;
- e) Detector = rms;
- f) Ensure that the number of measurement points  $\geq 2 \times$  span/RBW;
- g) Trace mode = Average;

### TEST RESULTS

RF Output Power(total power) EIRP results meets Maximum EIRP limit ( 23 dBm/10MHz) of End User Device.

**NOTE1**

LTE Band 48 A-MPR is implemented in this EUT per the A-MPR specification in 3GPP TS 36.101 (Table 6.2.4-22). Conducted output power verification data are shown Appendix A. Also only Emission mask test item were performed A-MPR condition. Also only Emission mask test item were performed A-MPR condition (Especially 15MHz, 20MHz Channel Bandwidth).

LTE Band 48C A-MPR is implemented in this EUT per the A-MPR specification in 3GPP TS 36.101 (Table 6.2.4A,10-1, Table 6.2.4A,10-2). Conducted output power verification data are shown Appendix A. Also only Emission mask test item were performed A-MPR condition. Also only Emission mask test item were performed A-MPR condition (Especially 15MHz, 20MHz Channel Bandwidth).

NR Band n48 A-MPR is implemented in this EUT per the A-MPR specification in 3GPP TS 36.101 (Table 6.2.4-22). Conducted output power verification data are shown Appendix A. Also only Emission mask test item were performed A-MPR condition. Also only Emission mask test item were performed A-MPR condition (Especially 20MHz, 40MHz Channel Bandwidth).

**NOTE2**

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.

**RESULTS**

See the following pages

### 9.6.1. ERP/EIRP Results

#### LTE Band 48

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	3552.50	16.85	V	6.40	10.97	21.42	138.68	23.00	-1.58	1/0
		3625.00	15.99	V	6.48	10.88	20.39	109.40	23.00	-2.61	1/24
		3697.50	16.11	V	6.54	10.72	20.29	106.91	23.00	-2.71	1/24
	16-QAM	3552.50	16.18	V	6.40	10.97	20.75	118.85	23.00	-2.25	1/24
		3625.00	15.70	V	6.48	10.88	20.10	102.33	23.00	-2.90	1/24
		3697.50	15.63	V	6.54	10.72	19.81	95.72	23.00	-3.19	1/24
10	QPSK	3555.00	16.16	V	6.41	10.96	20.71	117.76	23.00	-2.29	1/0
		3625.00	16.97	V	6.48	10.88	21.37	137.09	23.00	-1.63	1/0
		3695.00	16.41	V	6.54	10.72	20.59	114.55	23.00	-2.41	1/25
	16-QAM	3555.00	13.96	V	6.41	10.96	18.51	70.96	23.00	-4.49	1/0
		3625.00	16.92	V	6.48	10.88	21.32	135.52	23.00	-1.68	1/49
		3695.00	15.85	V	6.54	10.72	20.03	100.69	23.00	-2.97	1/0
15	QPSK	3557.50	14.12	V	6.40	10.96	18.68	73.79	23.00	-4.32	1/0
		3625.00	16.31	V	6.48	10.88	20.71	117.76	23.00	-2.29	1/74
		3692.50	12.49	V	6.53	10.73	16.69	46.67	23.00	-6.31	1/37
	16-QAM	3557.50	13.44	V	6.40	10.96	18.00	63.10	23.00	-5.00	1/37
		3625.00	15.44	V	6.48	10.88	19.84	96.38	23.00	-3.16	1/74
		3692.50	11.86	V	6.53	10.73	16.06	40.36	23.00	-6.94	1/74
20	QPSK	3560.00	14.33	V	6.41	10.96	18.88	77.27	23.00	-4.12	1/0
		3625.00	16.46	V	6.48	10.88	20.86	121.90	23.00	-2.14	1/99
		3690.00	12.71	V	6.53	10.74	16.92	49.20	23.00	-6.08	1/99
	16-QAM	3560.00	13.41	V	6.41	10.96	17.96	62.52	23.00	-5.04	1/0
		3625.00	15.71	V	6.48	10.88	20.11	102.57	23.00	-2.89	1/99
		3690.00	12.02	V	6.53	10.74	16.23	41.98	23.00	-6.77	1/99

#### NR Band n48

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	3555.00	16.78	V	6.41	10.74	21.11	129.18	23.00	-1.89	1/13
		3625.00	14.42	V	6.48	10.83	18.77	75.32	23.00	-4.23	1/1
		3695.00	14.51	V	6.54	10.82	18.79	75.76	23.00	-4.21	1/1
	16-QAM	3555.00	16.21	V	6.41	10.74	20.54	113.29	23.00	-2.46	1/1
		3625.00	13.95	V	6.48	10.83	18.30	67.63	23.00	-4.70	1/1
		3695.00	14.02	V	6.54	10.82	18.30	67.58	23.00	-4.70	1/1
20	QPSK	3560.00	16.38	V	6.41	10.74	20.71	117.87	23.00	-2.29	1/1
		3625.00	14.31	V	6.48	10.83	18.66	73.47	23.00	-4.34	1/1
		3690.00	14.47	V	6.53	10.82	18.76	75.19	23.00	-4.24	1/49
	16-QAM	3560.00	16.02	V	6.41	10.74	20.35	108.46	23.00	-2.65	1/1
		3625.00	14.14	V	6.48	10.83	18.49	70.70	23.00	-4.51	1/1
		3690.00	13.85	V	6.53	10.82	18.14	65.22	23.00	-4.86	1/49
40	QPSK	3570.00	16.38	V	6.41	10.76	20.73	118.25	23.00	-2.27	1/1
		3625.00	14.67	V	6.48	10.83	19.02	79.77	23.00	-3.98	1/1
		3680.00	14.42	V	6.52	10.83	18.72	74.52	23.00	-4.28	1/104
	16-QAM	3570.00	16.07	V	6.41	10.76	20.41	109.96	23.00	-2.59	1/1
		3625.00	13.99	V	6.48	10.83	18.34	68.16	23.00	-4.66	1/1
		3680.00	13.77	V	6.52	10.83	18.08	64.24	23.00	-4.92	1/104

**NR Band n48(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	3555.00	1.73	H	6.41	10.74	6.05	4.03	23.00	-16.95
	3624.99	2.27	H	6.48	10.83	6.62	4.59	23.00	-16.38
	3694.98	1.31	H	6.54	10.82	5.59	3.62	23.00	-17.41
20	3560.01								
	3624.99								
	3690.00								
40	3570.00								
	3624.99								
	3679.98								

**NR Band n48(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	3555.00	11.87	H	6.41	10.74	16.19	41.59	23.00	-6.81
	3624.99	11.49	H	6.48	10.83	15.84	38.37	23.00	-7.16
	3694.98	11.27	V	6.54	10.82	15.55	35.89	23.00	-7.45
20	3560.01								
	3624.99								
	3690.00								
40	3570.00								
	3624.99								
	3679.98								

**NR Band n48(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	3555.00	6.53	V	6.41	10.74	10.86	12.19	23.00	-12.14
	3624.99	7.00	V	6.48	10.83	11.35	13.64	23.00	-11.65
	3694.98	7.13	V	6.54	10.82	11.41	13.85	23.00	-11.59
20	3560.01								
	3624.99								
	3690.00								
40	3570.00								
	3624.99								
	3679.98								



## 9.7. FIELD STRENGTH OF SPURIOUS RADIATION

### RULE PART(S)

FCC: §2.1053 and §96.41(e)

### LIMIT

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

### 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) Sweep time = auto couple;
- d) Detector = rms;
- e) Ensure that the number of measurement points  $\geq$  span/RBW;
- f) Trace mode = Average;

### 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 band.

### 9.7.1. SPURIOUS RADIATION PLOTS

#### LTE Band 48

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/22/2022							
		<b>Test Engineer:</b>	19568							
		<b>Configuration:</b>	EUT / AC Adapter, Earphone, Y-Position							
		<b>Location:</b>	Chamber 1							
		<b>Mode:</b>	LTE_QPSK Band 48 Harmonics, 10MHz Bandwidth							
		<b>Test Voltage:</b>	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	
10MHz QPSK										
Low Ch, 3555MHz										
7110.00	-23.0	V	3.0	44.7	1.0	-66.7	-40.0	-26.7		
10665.00	-15.9	V	3.0	42.8	1.0	-57.7	-40.0	-17.7		
14220.00	-18.7	V	3.0	45.1	1.0	-62.8	-40.0	-22.8		
7110.00	-23.5	H	3.0	44.7	1.0	-67.2	-40.0	-27.2		
10665.00	-15.8	H	3.0	42.8	1.0	-57.6	-40.0	-17.6		
14220.00	-18.6	H	3.0	45.1	1.0	-62.7	-40.0	-22.7		
Mid Ch, 3625MHz										
7250.00	-18.0	V	3.0	44.6	1.0	-61.6	-40.0	-21.6		
10875.00	-20.9	V	3.0	42.9	1.0	-62.7	-40.0	-22.7		
14500.00	-19.2	V	3.0	45.3	1.0	-63.5	-40.0	-23.5		
7250.00	-20.2	H	3.0	44.6	1.0	-63.8	-40.0	-23.8		
10875.00	-20.9	H	3.0	42.9	1.0	-62.8	-40.0	-22.8		
14500.00	-19.0	H	3.0	45.3	1.0	-63.3	-40.0	-23.3		
High Ch, 3695MHz										
7390.00	-22.2	V	3.0	44.6	1.0	-65.8	-40.0	-25.8		
11085.00	-18.4	V	3.0	42.9	1.0	-60.4	-40.0	-20.4		
14780.00	-17.8	V	3.0	45.6	1.0	-62.4	-40.0	-22.4		
7390.00	-22.1	H	3.0	44.6	1.0	-65.7	-40.0	-25.7		
11085.00	-18.9	H	3.0	42.9	1.0	-60.9	-40.0	-20.9		
14780.00	-17.7	H	3.0	45.6	1.0	-62.2	-40.0	-22.2		

**LTE Band 48(UL CA)**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/21/2022							
		<b>Test Engineer:</b>	19568							
		<b>Configuration:</b>	EUT / AC Adapter / Earphone, Z-Position							
		<b>Location:</b>	Chamber 2							
		<b>Mode:</b>	LTE_QPSK Band 48 Harmonics, 20MHz Bandwidth							
		<b>Test Voltage:</b>	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	
20+20 MHz QPSK										
Low Ch, PCC : 3560MHz SCC : 3579.8MHz										
7139.80	-22.1	V	3.0	42.9	1.0	-63.9	-40.0	-23.9		
10709.70	-18.9	V	3.0	41.4	1.0	-59.3	-40.0	-19.3		
14279.60	-15.8	V	3.0	43.5	1.0	-58.3	-40.0	-18.3		
7139.80	-21.8	H	3.0	42.9	1.0	-63.7	-40.0	-23.7		
10709.70	-18.8	H	3.0	41.4	1.0	-59.2	-40.0	-19.2		
14279.60	-15.6	H	3.0	43.5	1.0	-58.1	-40.0	-18.1		
Mid Ch, PCC : 3615.1MHz SCC : 3634.9MHz										
7250.00	-20.9	V	3.0	42.8	1.0	-62.7	-40.0	-22.7		
10875.00	-19.0	V	3.0	41.5	1.0	-59.5	-40.0	-19.5		
14500.00	-15.8	V	3.0	43.6	1.0	-58.4	-40.0	-18.4		
7250.00	-20.9	H	3.0	42.8	1.0	-62.7	-40.0	-22.7		
10875.00	-19.0	H	3.0	41.5	1.0	-59.5	-40.0	-19.5		
14500.00	-15.6	H	3.0	43.6	1.0	-58.2	-40.0	-18.2		
High Ch, PCC : 3670.2MHz SCC : 3690MHz										
7360.20	-21.4	V	3.0	42.8	1.0	-63.2	-40.0	-23.2		
11040.30	-18.0	V	3.0	41.6	1.0	-58.6	-40.0	-18.6		
14720.40	-15.3	V	3.0	43.7	1.0	-58.0	-40.0	-18.0		
7360.20	-21.1	H	3.0	42.8	1.0	-62.8	-40.0	-22.8		
11040.30	-18.0	H	3.0	41.6	1.0	-58.5	-40.0	-18.5		
14720.40	-15.1	H	3.0	43.7	1.0	-57.9	-40.0	-17.9		

**NR Band n48**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/27/2022							
		<b>Test Engineer:</b>	25770							
		<b>Configuration:</b>	EUT / AC Adapter, Earphone, Z-Position							
		<b>Location:</b>	Chamber 1							
		<b>Mode:</b>	5G NR_QPSK NR n48 Harmonics, 40MHz Bandwidth							
		<b>Test Voltage:</b>	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	
40MHz										
QPSK										
Low Ch, 3570MHz										
7140.00	-13.5	V	3.0	44.7	1.0	-57.2	-40.0	-17.2		
10710.00	-15.6	V	3.0	42.8	1.0	-57.4	-40.0	-17.4		
14280.00	-14.2	V	3.0	45.1	1.0	-58.4	-40.0	-18.4		
7140.00	-17.0	H	3.0	44.7	1.0	-60.7	-40.0	-20.7		
10710.00	-15.8	H	3.0	42.8	1.0	-57.6	-40.0	-17.6		
14280.00	-13.8	H	3.0	45.1	1.0	-58.0	-40.0	-18.0		
Mid Ch, 3624.99MHz										
7249.98	-15.0	V	3.0	44.6	1.0	-58.7	-40.0	-18.7		
10874.97	-15.6	V	3.0	42.9	1.0	-57.5	-40.0	-17.5		
14499.96	-14.9	V	3.0	45.3	1.0	-59.2	-40.0	-19.2		
7249.98	-17.7	H	3.0	44.6	1.0	-61.4	-40.0	-21.4		
10874.97	-16.2	H	3.0	42.9	1.0	-58.1	-40.0	-18.1		
14499.96	-14.0	H	3.0	45.3	1.0	-58.3	-40.0	-18.3		
High Ch, 3679.98 MHz										
7359.96	-18.3	V	3.0	44.6	1.0	-61.9	-40.0	-21.9		
11039.94	-16.6	V	3.0	42.9	1.0	-58.6	-40.0	-18.6		
14719.92	-14.8	V	3.0	45.5	1.0	-59.3	-40.0	-19.3		
7359.96	-22.1	H	3.0	44.6	1.0	-65.6	-40.0	-25.6		
11039.94	-16.1	H	3.0	42.9	1.0	-58.0	-40.0	-18.0		
14719.92	-14.5	H	3.0	45.5	1.0	-59.0	-40.0	-19.0		

**NR Band n48(SRS1)**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/22/2022							
		<b>Test Engineer:</b>	19568							
		<b>Configuration:</b>	EUT / AC Adapter, Earphone, Z-Position							
		<b>Location:</b>	Chamber 1							
		<b>Mode:</b>	5G NR n48 Harmonics, 10MHz Bandwidth							
		<b>Test Voltage:</b>	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	
10MHz										
Low Ch, 3555MHz										
7110.00	-20.3	V	3.0	44.7	1.0	-64.0	-40.0	-24.0		
10665.00	-18.5	V	3.0	42.8	1.0	-60.3	-40.0	-20.3		
14220.00	-16.7	V	3.0	45.1	1.0	-60.8	-40.0	-20.8		
7110.00	-20.4	H	3.0	44.7	1.0	-64.1	-40.0	-24.1		
10665.00	-18.5	H	3.0	42.8	1.0	-60.3	-40.0	-20.3		
14220.00	-16.5	H	3.0	45.1	1.0	-60.6	-40.0	-20.6		
Mid Ch, 3624.99MHz										
7249.98	-20.1	V	3.0	44.6	1.0	-63.7	-40.0	-23.7		
10874.97	-18.1	V	3.0	42.9	1.0	-60.0	-40.0	-20.0		
14499.96	-16.8	V	3.0	45.3	1.0	-61.2	-40.0	-21.2		
7249.98	-20.2	H	3.0	44.6	1.0	-63.8	-40.0	-23.8		
10874.97	-18.3	H	3.0	42.9	1.0	-60.2	-40.0	-20.2		
14499.96	-16.9	H	3.0	45.3	1.0	-61.2	-40.0	-21.2		
High Ch, 3694.98MHz										
7389.96	-19.9	V	3.0	44.6	1.0	-63.5	-40.0	-23.5		
11084.94	-18.9	V	3.0	42.9	1.0	-60.8	-40.0	-20.8		
14779.92	-16.4	V	3.0	45.6	1.0	-61.0	-40.0	-21.0		
7389.96	-20.0	H	3.0	44.6	1.0	-63.6	-40.0	-23.6		
11084.94	-18.8	H	3.0	42.9	1.0	-60.8	-40.0	-20.8		
14779.92	-16.3	H	3.0	45.6	1.0	-60.8	-40.0	-20.8		

**NR Band n48(SRS2)**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/22/2022							
		<b>Test Engineer:</b>	19568							
		<b>Configuration:</b>	EUT / AC Adapter, Earphone, Y-Position							
		<b>Location:</b>	Chamber 1							
		<b>Mode:</b>	5G NR n48 Harmonics, 10MHz Bandwidth							
		<b>Test Voltage:</b>	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	
10MHz										
Low Ch, 3555MHz										
7110.00	-20.2	V	3.0	44.7	1.0	-63.9	-40.0	-23.9		
10665.00	-18.5	V	3.0	42.8	1.0	-60.3	-40.0	-20.3		
14220.00	-16.7	V	3.0	45.1	1.0	-60.8	-40.0	-20.8		
7110.00	-20.5	H	3.0	44.7	1.0	-64.2	-40.0	-24.2		
10665.00	-18.6	H	3.0	42.8	1.0	-60.4	-40.0	-20.4		
14220.00	-16.6	H	3.0	45.1	1.0	-60.7	-40.0	-20.7		
Mid Ch, 3624.99MHz										
7249.98	-20.2	V	3.0	44.6	1.0	-63.8	-40.0	-23.8		
10874.97	-18.3	V	3.0	42.9	1.0	-60.1	-40.0	-20.1		
14499.96	-17.1	V	3.0	45.3	1.0	-61.4	-40.0	-21.4		
7249.98	-20.4	H	3.0	44.6	1.0	-64.0	-40.0	-24.0		
10874.97	-18.3	H	3.0	42.9	1.0	-60.1	-40.0	-20.1		
14499.96	-16.9	H	3.0	45.3	1.0	-61.2	-40.0	-21.2		
High Ch, 3695MHz										
7390.00	-20.0	V	3.0	44.6	1.0	-63.5	-40.0	-23.5		
11085.00	-18.8	V	3.0	42.9	1.0	-60.8	-40.0	-20.8		
14780.00	-16.5	V	3.0	45.6	1.0	-61.0	-40.0	-21.0		
7390.00	-20.0	H	3.0	44.6	1.0	-63.5	-40.0	-23.5		
11085.00	-19.0	H	3.0	42.9	1.0	-60.9	-40.0	-20.9		
14780.00	-16.5	H	3.0	45.6	1.0	-61.1	-40.0	-21.1		

**NR Band n48(SRS3)**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		<b>Company:</b>	Samsung							
		<b>Project #:</b>	4790379967							
		<b>Date:</b>	6/22/2022							
		<b>Test Engineer:</b>	19568							
		<b>Configuration:</b>	EUT / AC Adapter, Earphone, Y-Position							
		<b>Location:</b>	Chamber 1							
		<b>Mode:</b>	5G NR n48 Harmonics, 10MHz Bandwidth							
		<b>Test Voltage:</b>	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	
10MHz										
Low Ch, 3555MHz										
7110.00	-20.2	V	3.0	44.7	1.0	-63.9	-40.0	-23.9		
10665.00	-18.1	V	3.0	42.8	1.0	-59.9	-40.0	-19.9		
14220.00	-16.3	V	3.0	45.1	1.0	-60.4	-40.0	-20.4		
7110.00	-20.2	H	3.0	44.7	1.0	-63.9	-40.0	-23.9		
10665.00	-18.5	H	3.0	42.8	1.0	-60.3	-40.0	-20.3		
14220.00	-16.5	H	3.0	45.1	1.0	-60.6	-40.0	-20.6		
Mid Ch, 3624.99MHz										
7249.98	-20.3	V	3.0	44.6	1.0	-63.9	-40.0	-23.9		
10874.97	-18.0	V	3.0	42.9	1.0	-59.9	-40.0	-19.9		
14499.96	-17.2	V	3.0	45.3	1.0	-61.5	-40.0	-21.5		
7249.98	-20.3	H	3.0	44.6	1.0	-63.9	-40.0	-23.9		
10874.97	-18.2	H	3.0	42.9	1.0	-60.0	-40.0	-20.0		
14499.96	-17.0	H	3.0	45.3	1.0	-61.3	-40.0	-21.3		
High Ch, 3694.98MHz										
7389.96	-19.8	V	3.0	44.6	1.0	-63.3	-40.0	-23.3		
11084.94	-18.5	V	3.0	42.9	1.0	-60.5	-40.0	-20.5		
14779.92	-16.3	V	3.0	45.6	1.0	-60.9	-40.0	-20.9		
7389.96	-20.0	H	3.0	44.6	1.0	-63.5	-40.0	-23.5		
11084.94	-18.7	H	3.0	42.9	1.0	-60.7	-40.0	-20.7		
14779.92	-16.1	H	3.0	45.6	1.0	-60.7	-40.0	-20.7		

**END OF TEST REPORT**