



### 9.3. OUT OF BAND EMISSIONS

#### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

#### LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

Part 27.53:

(c)(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB.

(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  $43 + 10 \log (P)$  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.

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**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 (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(FDD), Max hold(TDD);

**NOTE**

5GNR: All waveforms(CP-OFDM vs DFT-OFDM) were investigated to determine the worst case configuration. All mode of operation were investigated and the worst case configuration results are reported in tis section

**RESULTS**

See the following pages.

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

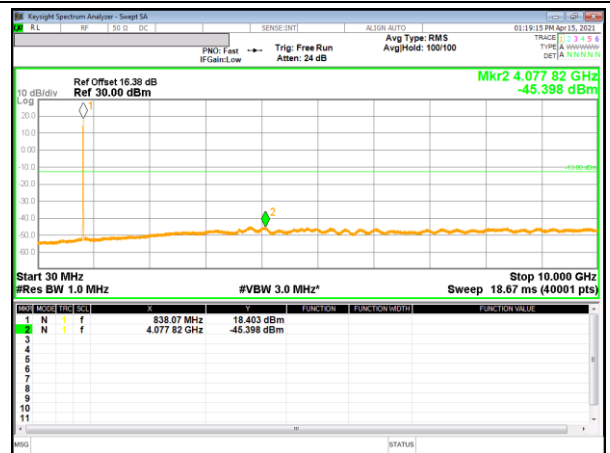
### 9.3.1. OUT OF BAND EMISSIONS RESULT

#### WCDMA

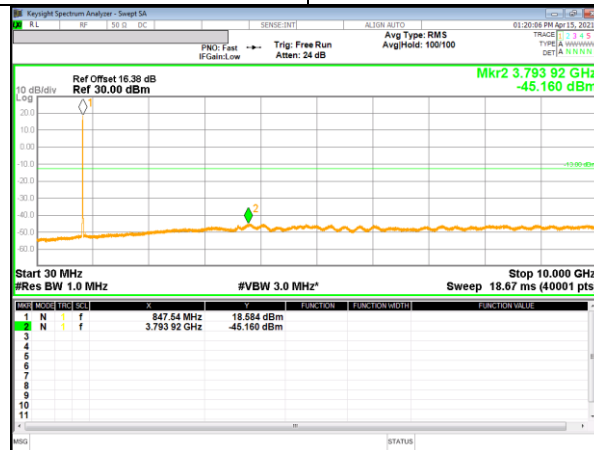
B5 REL99



Low channel

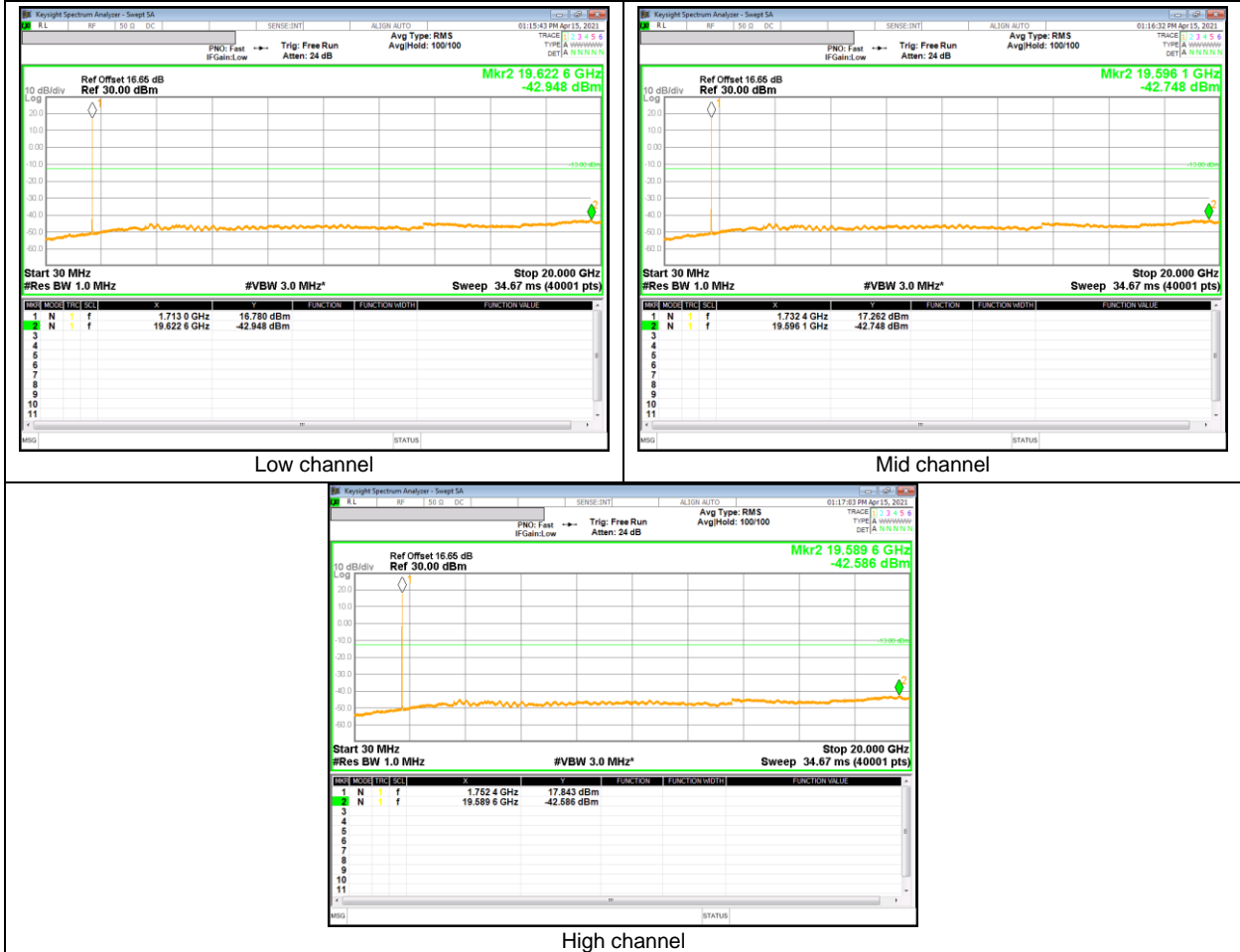


Mid channel



High channel

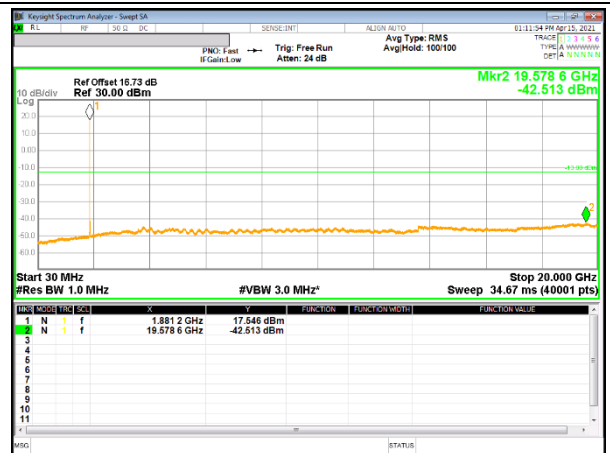
B4 REL99



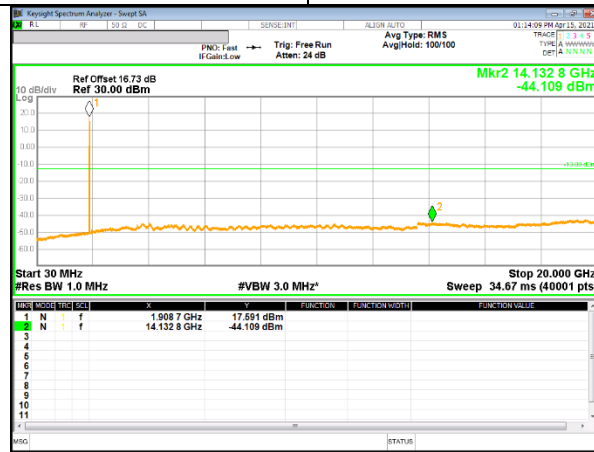
B2 REL99



Low channel



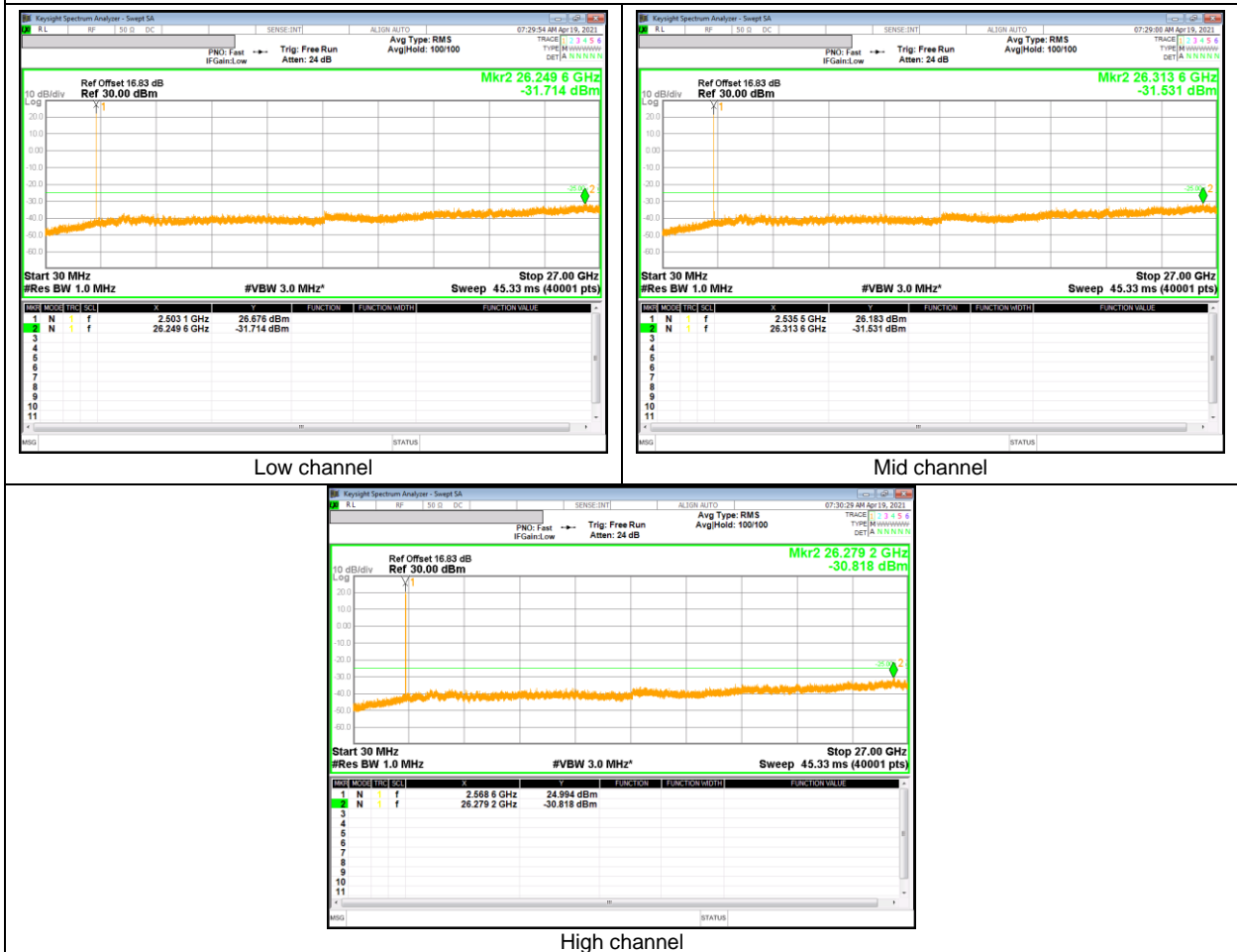
Mid channel



High channel

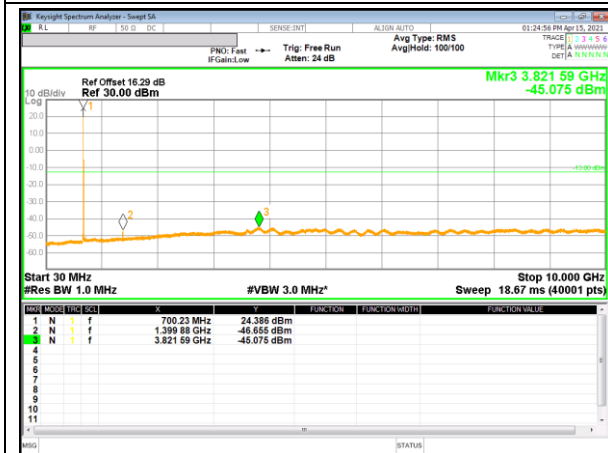
**LTE Band 7**

5 MHz QPSK

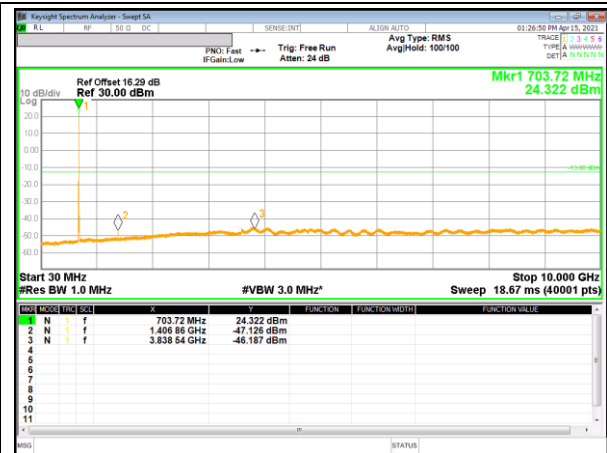


**LTE Band 12**

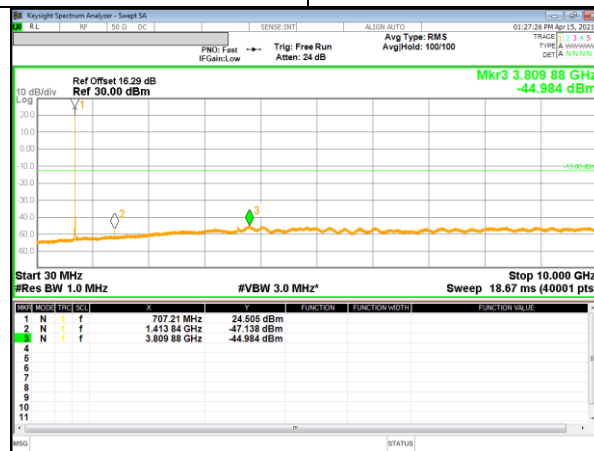
10 MHz QPSK



Low channel



Mid channel

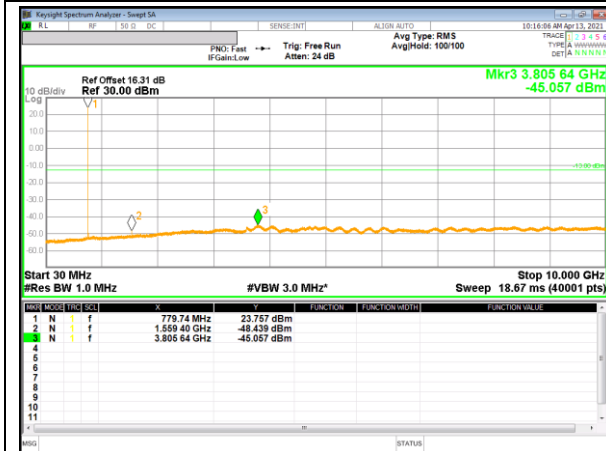


High channel

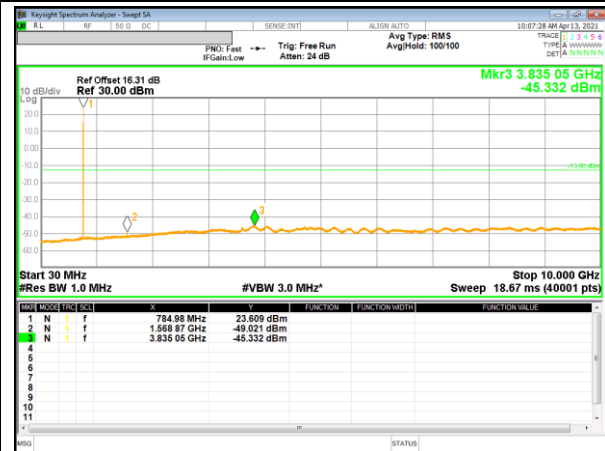


**LTE Band 13**

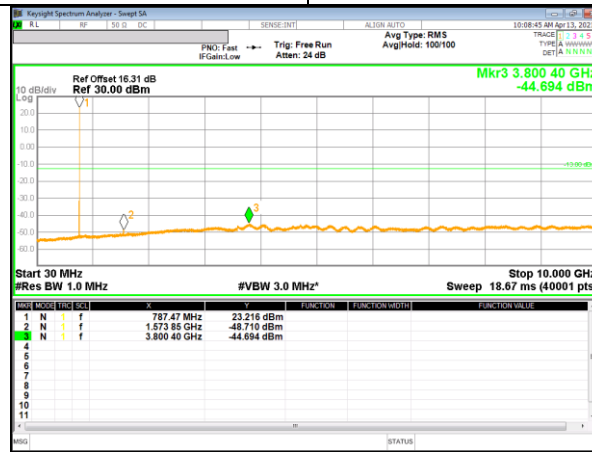
5 MHz QPSK



Low channel



Mid channel



High channel

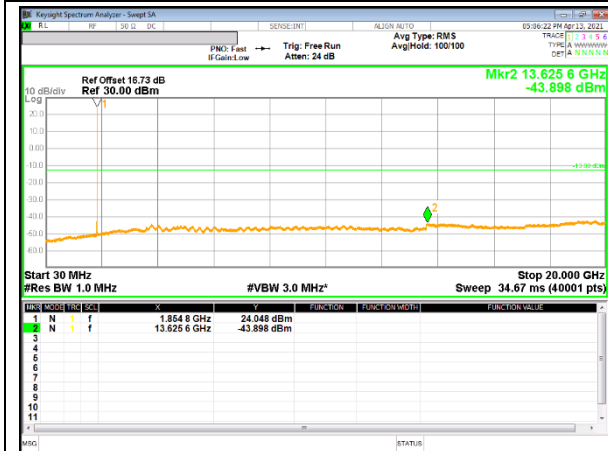
**LTE Band 14**

5 MHz QPSK

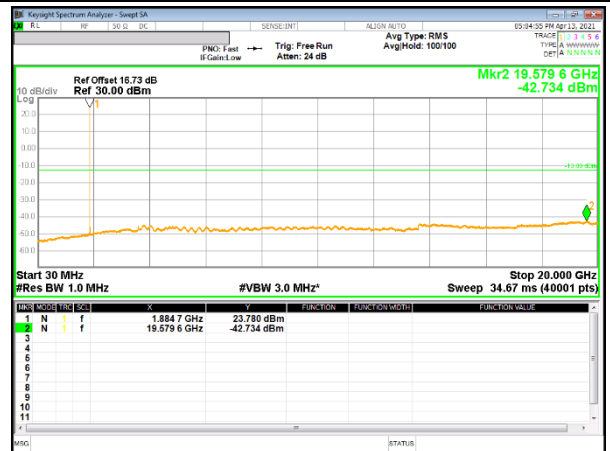


**LTE Band 25**

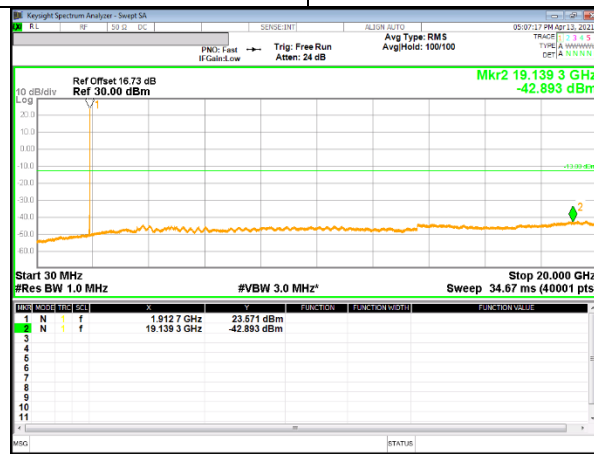
5 MHz QPSK



Low channel

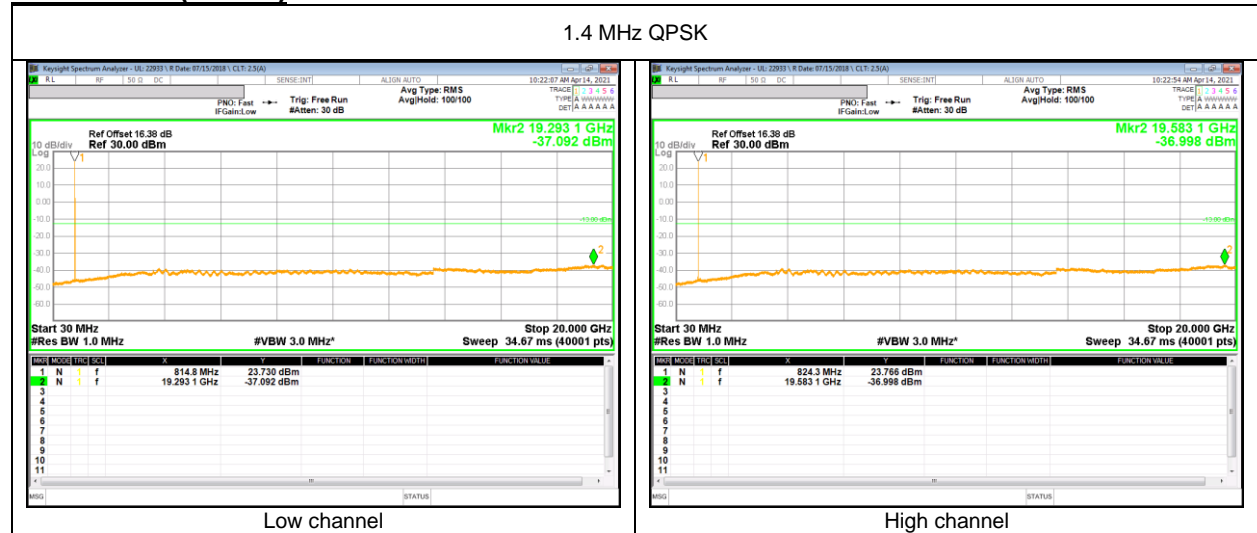


Mid channel

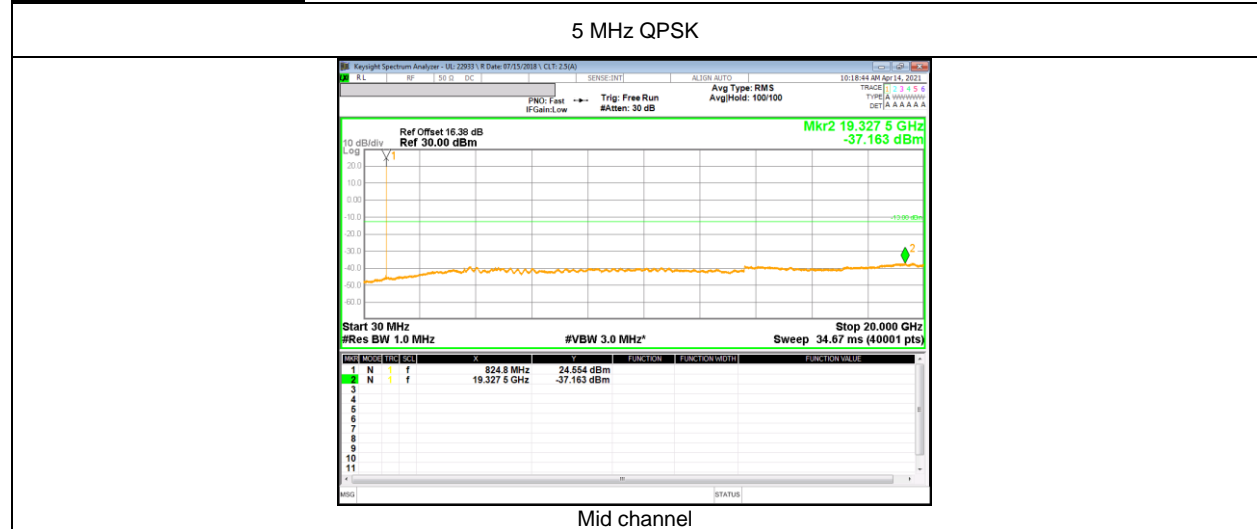


High channel

**LTE Band 26 (Part 90)**

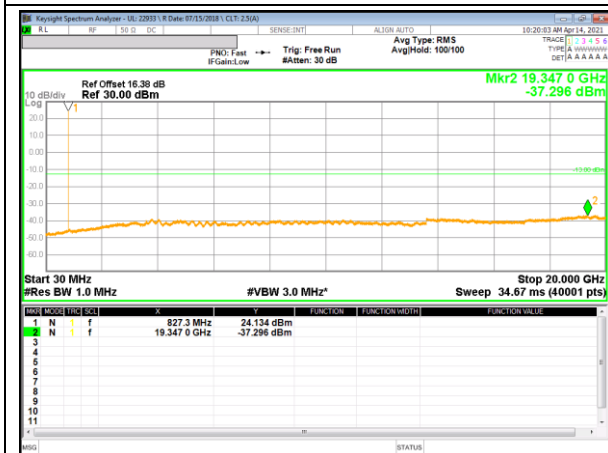


**LTE Band 26 (Straddle)**

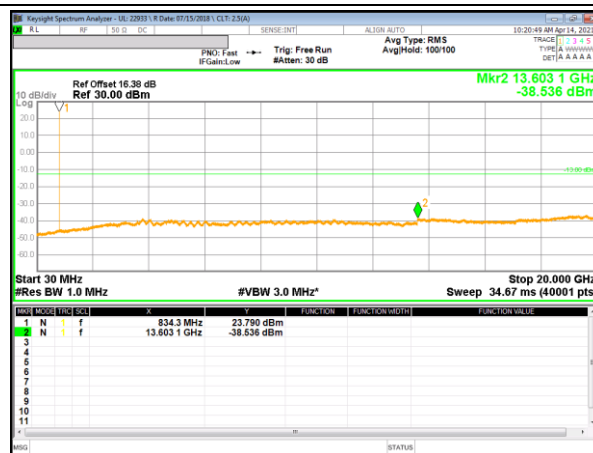


**LTE Band 26 (Part 22)**

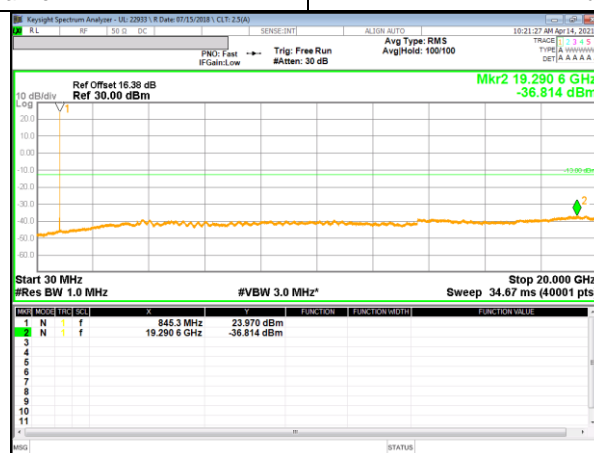
5 MHz QPSK



Low channel



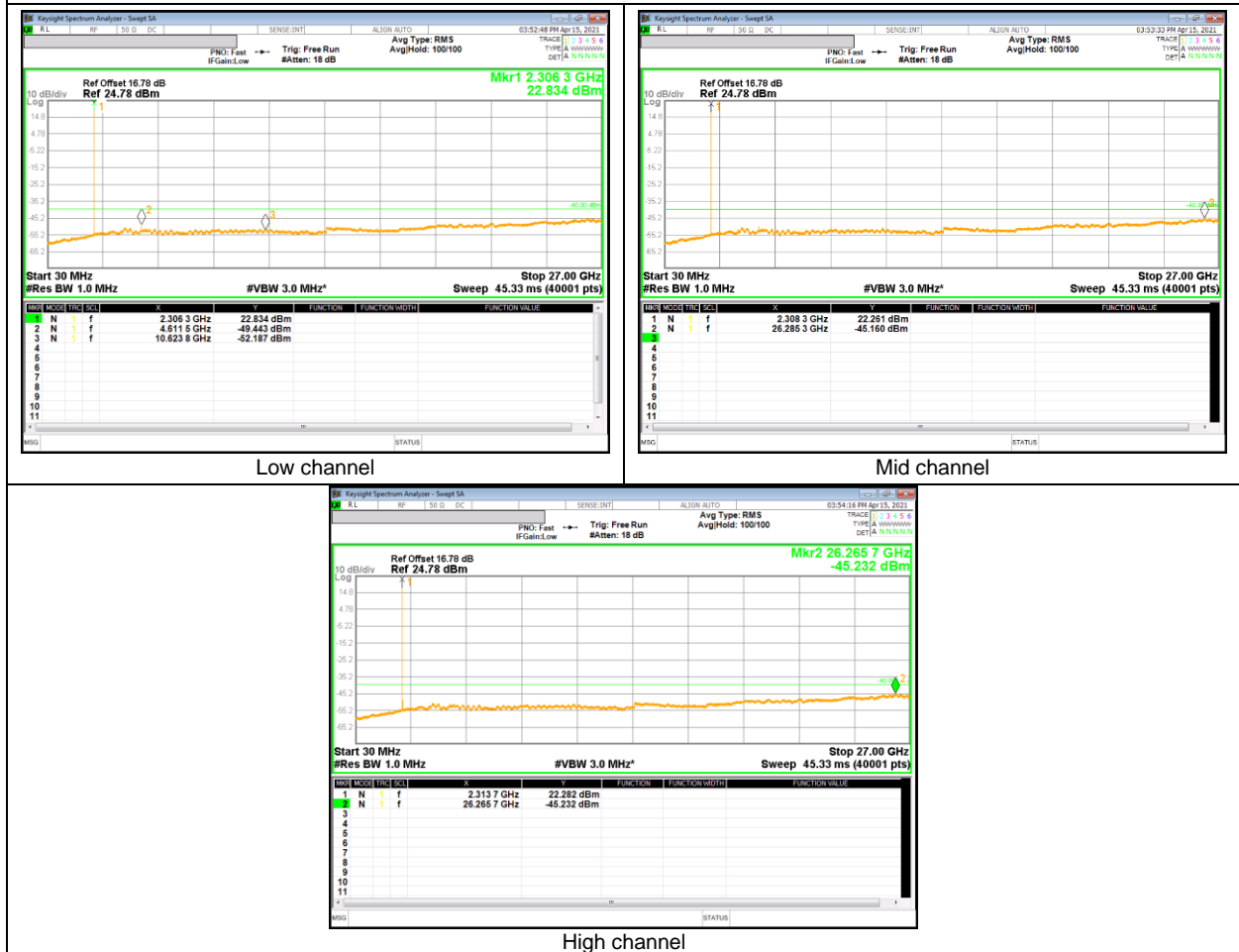
Mid channel



High channel

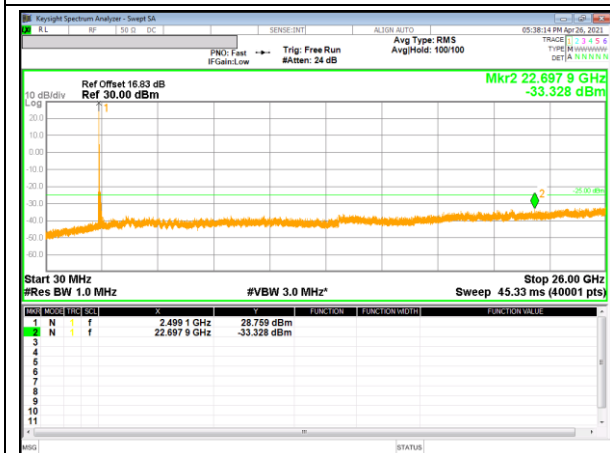
**LTE Band 30**

5 MHz QPSK

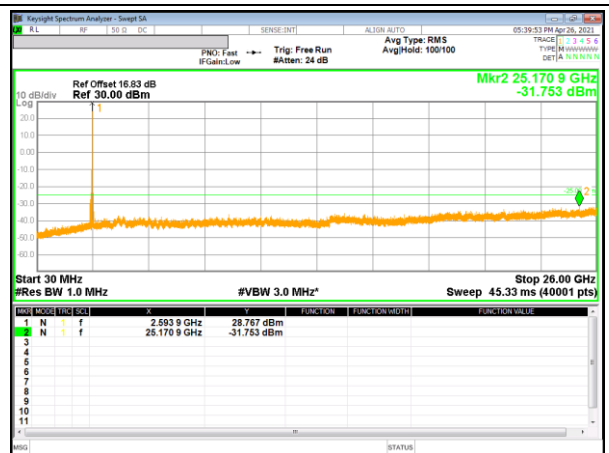


**LTE Band 41 (PC2)**

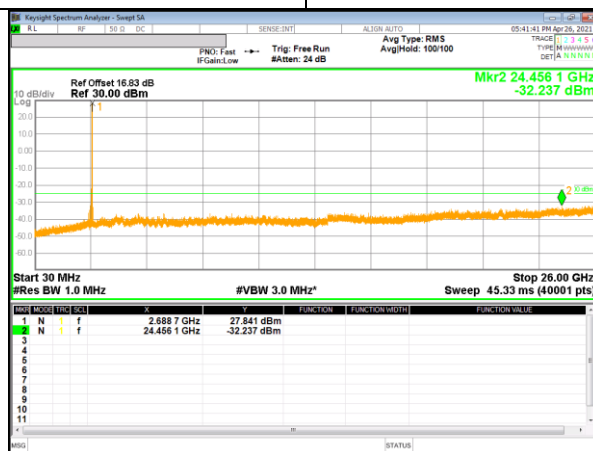
5 MHz QPSK



Low channel



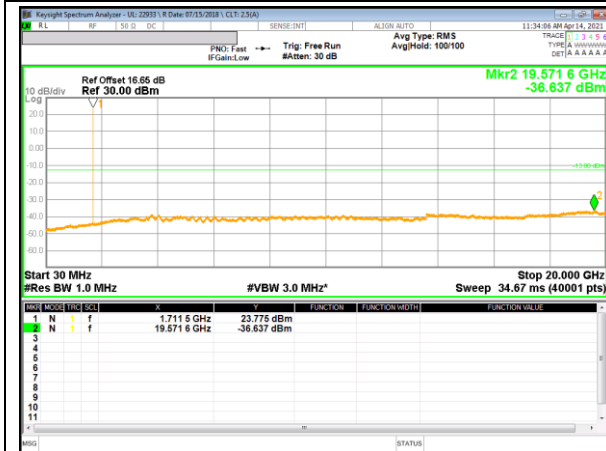
Mid channel



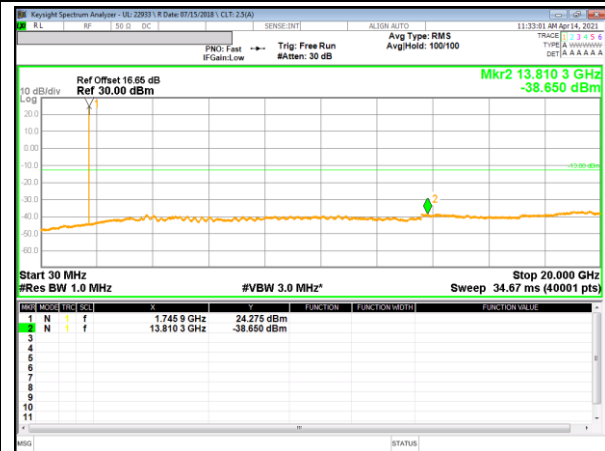
High channel

**LTE Band 66**

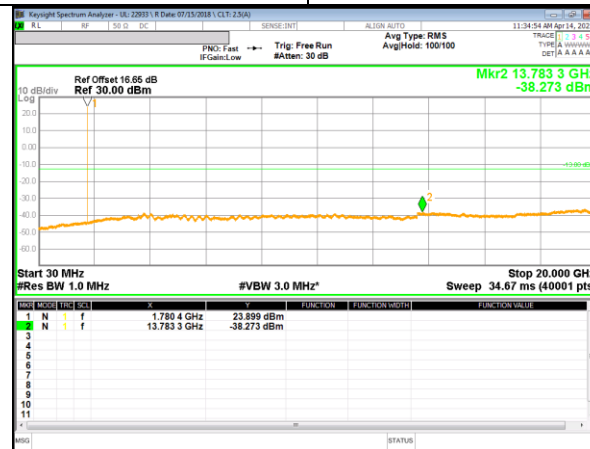
5 MHz QPSK



Low channel



Mid channel

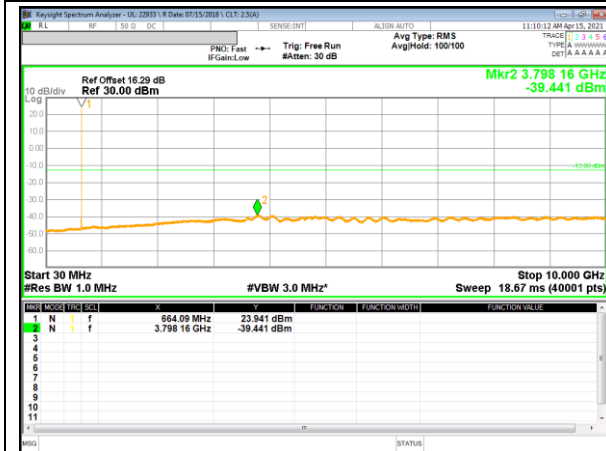


High channel

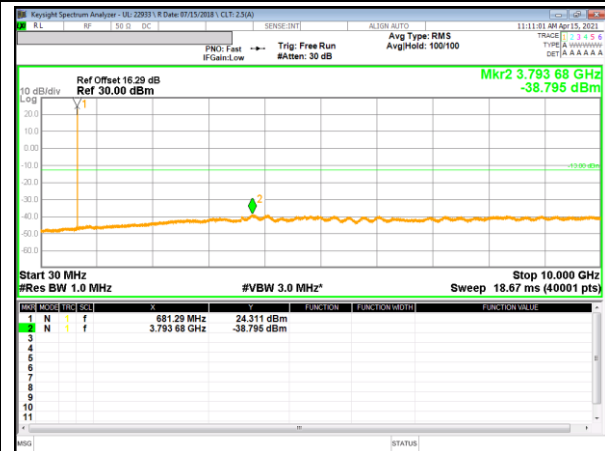


**LTE Band 71**

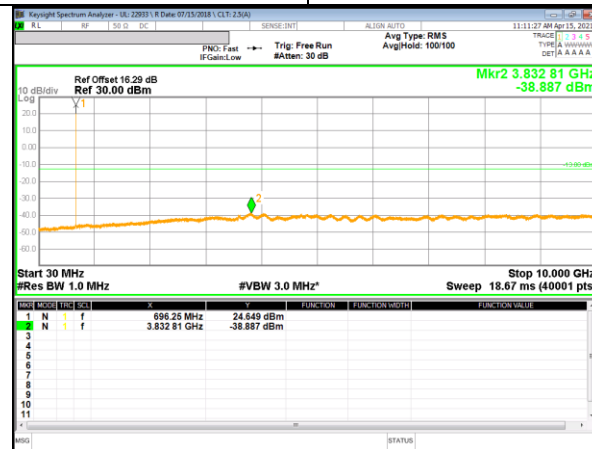
5 MHz QPSK



Low channel



Mid channel



High channel

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**LTE Band 2**

LTE Band 2(Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 4**

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 5**

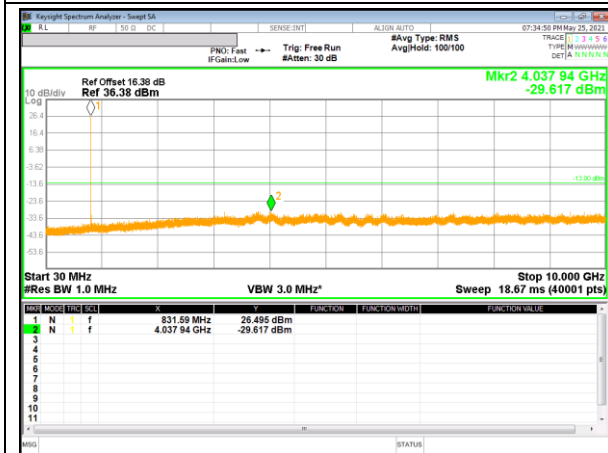
LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band41(PC3)**

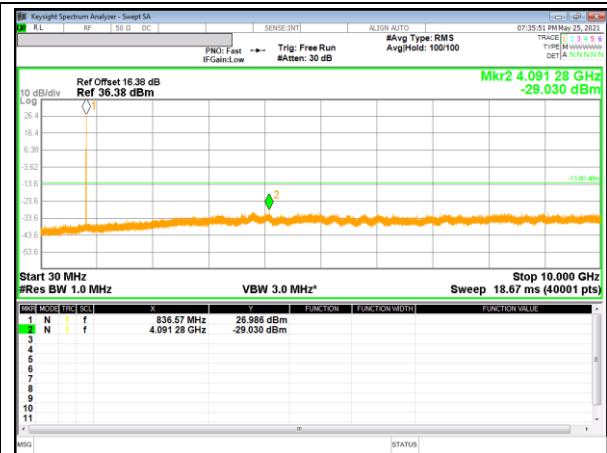
LTE Band 41(PC3, Frequency range : 2496-2690 MHz) is covered by LTE Band 41(PC2) (Frequency range: 2496-2690 MHz) due to same frequency range, same channel bandwidth and maximum tune-up limit is higher than LTE Band41(PC3).

**NR Band 5**

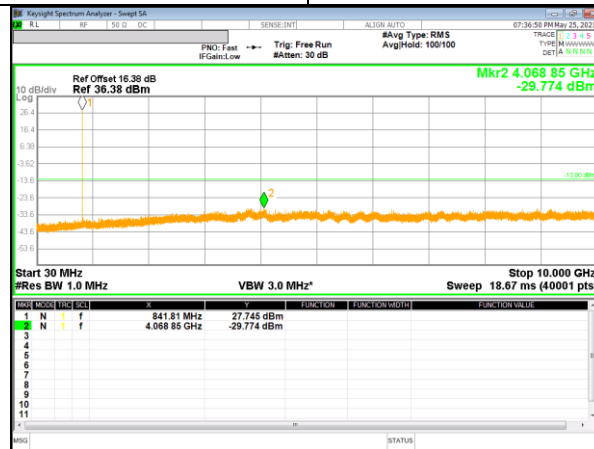
15 MHz QPSK



Low channel



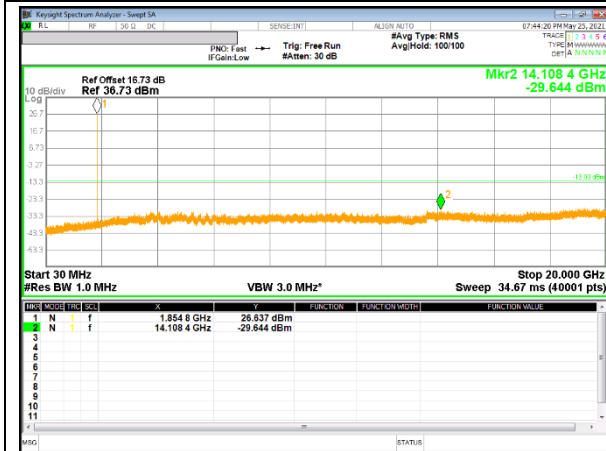
Mid channel



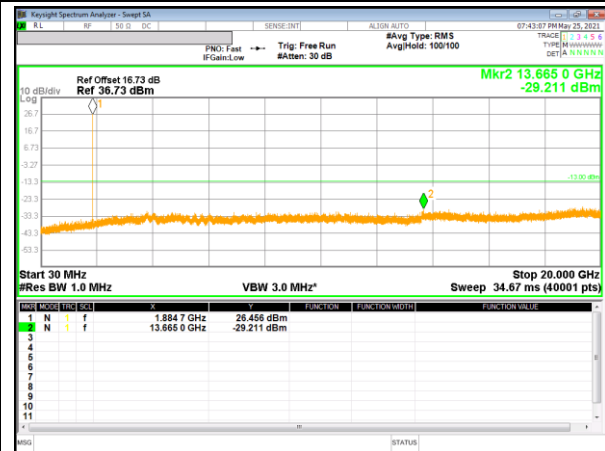
High channel

**NR Band 25**

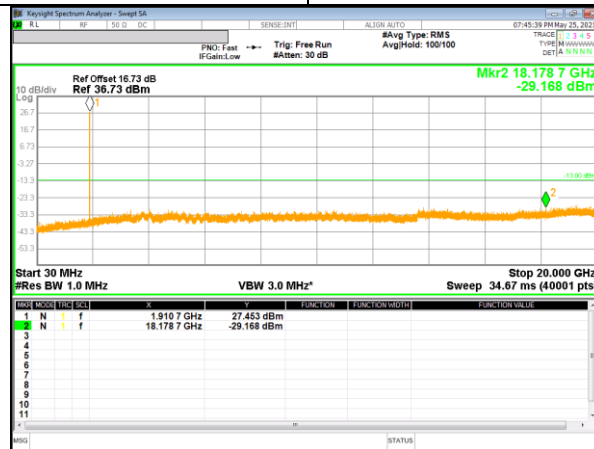
5 MHz QPSK



Low channel



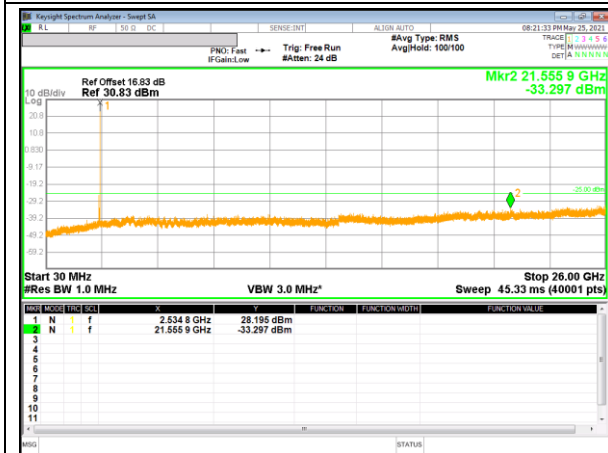
Mid channel



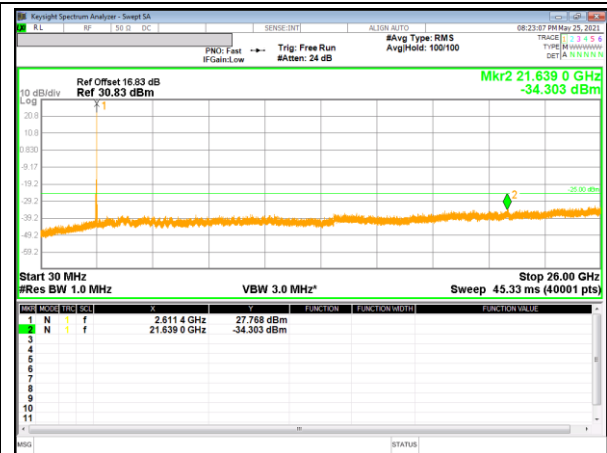
High channel

**NR Band 41**

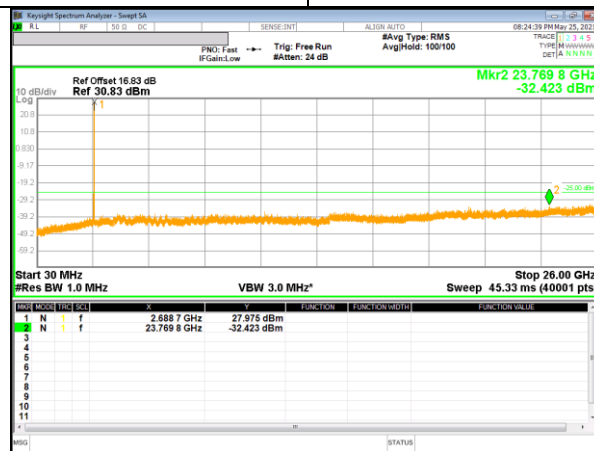
40 MHz QPSK



Low channel



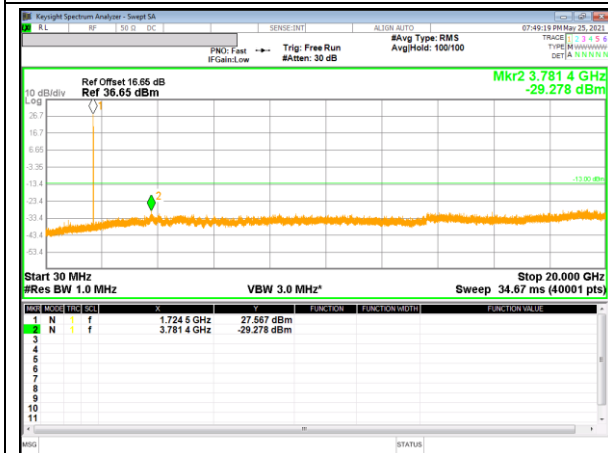
Mid channel



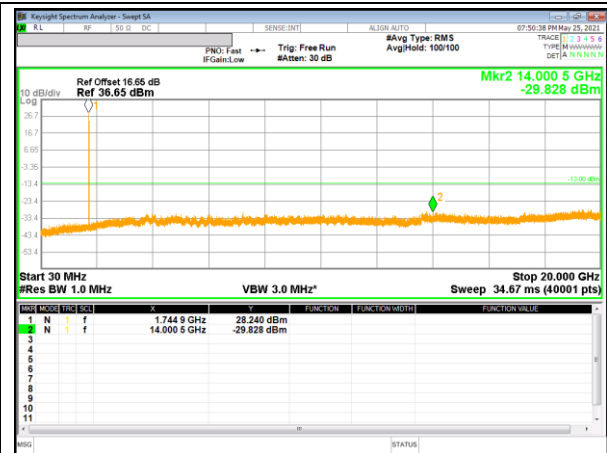
High channel

**NR Band 66**

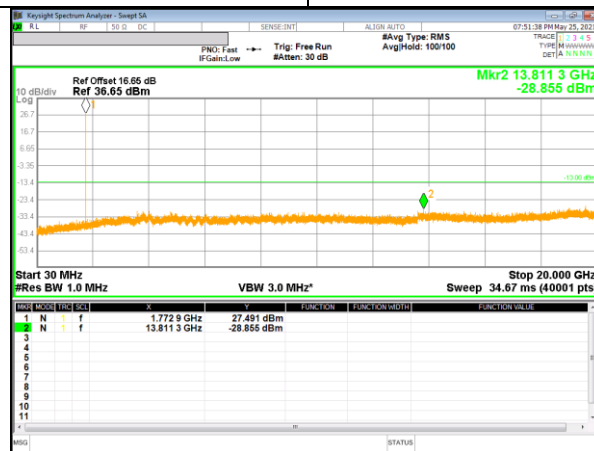
15 MHz QPSK



Low channel



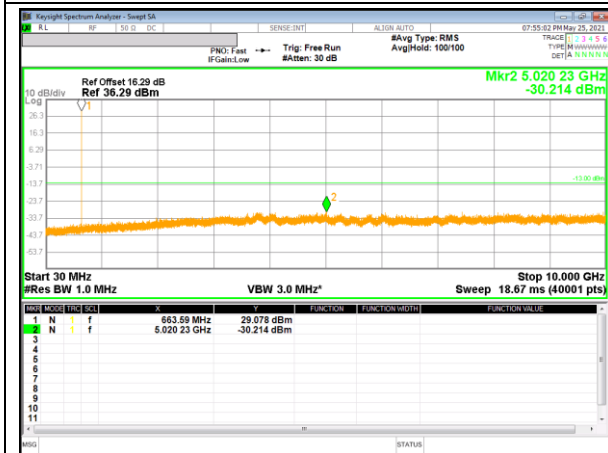
Mid channel



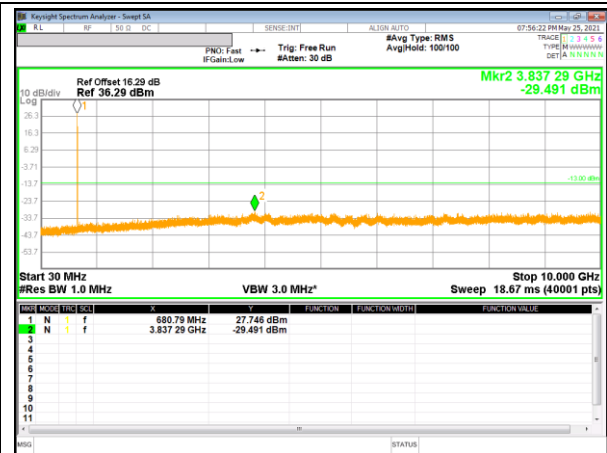
High channel

**NR Band 71**

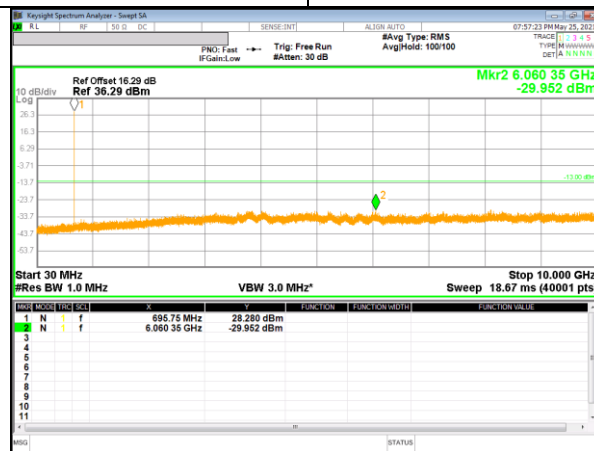
5 MHz QPSK



Low channel



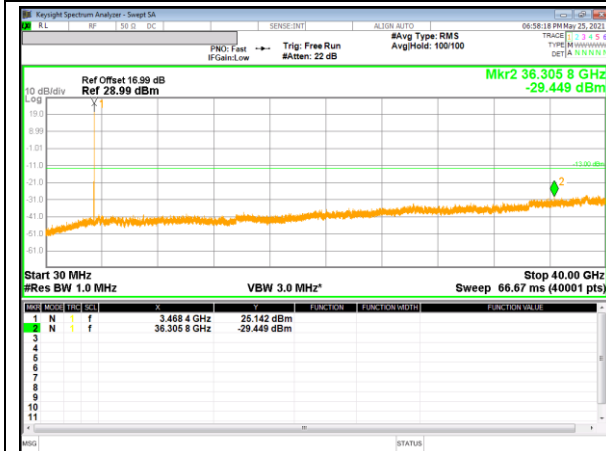
Mid channel



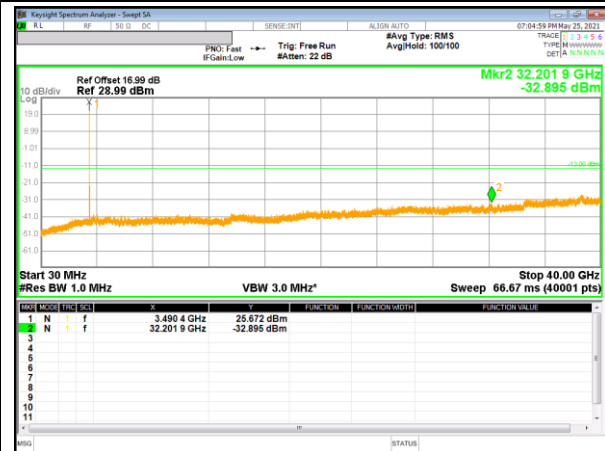
High channel

**NR Band 77 (Lower)**

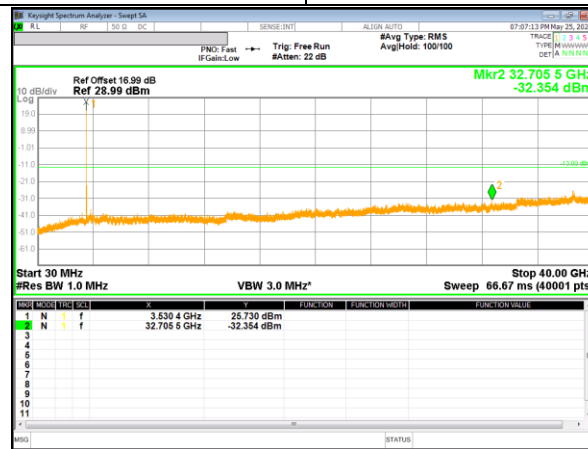
20 MHz QPSK



Low channel



Mid channel



High channel



**NR Band 77 (Upper)**



**5G NR Band 2**

5G NR Band 2(Frequency range: 1850-1910 MHz) is covered by 5G NR Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

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## 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  $\pm 2.5$  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  $\pm 2.5$  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

#### 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]		
3.85	50	826.40003895	-0.025	846.60003433	-0.018	2.5	
3.85	40	826.40003421	-0.019	846.60003580	-0.019	2.5	
3.85	30	826.40003170	-0.016	846.60003425	-0.018	2.5	
<b>3.85</b>	<b>20</b>	<b>826.40001843</b>	<b>0.000</b>	<b>846.60001941</b>	<b>0.000</b>	<b>2.5</b>	
3.85	10	826.40001950	-0.001	846.60001802	0.002	2.5	
3.85	0	826.40005171	-0.040	846.60005080	-0.037	2.5	
3.85	-10	826.40004921	-0.037	846.60005152	-0.038	2.5	
3.85	-20	826.40001569	0.003	846.60002347	-0.005	2.5	
3.85	-30	826.40002003	-0.002	846.60002709	-0.009	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]		
3.85	20	826.40001843	0	846.60001941	0	2.5	
4.40	20	826.40003060	-0.015	846.60003140	-0.014	2.5	
3.65	20	826.40002870	-0.012	846.60002960	-0.012	2.5	

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

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1712.4000	1754.6800		
Extreme (50C)		1712.4000	1754.6800	47.7	0.028
Extreme (40C)		1712.4001	1754.6801	51.0	0.029
Extreme (30C)		1712.4000	1754.6800	43.6	0.025
Extreme (10C)		1712.4000	1754.6800	46.9	0.027
Extreme (0C)		1712.4001	1754.6801	60.8	0.035
Extreme (-10C)		1712.4000	1754.6800	24.3	0.014
Extreme (-20C)		1712.4000	1754.6800	29.1	0.017
Extreme (-30C)		1712.4000	1754.6800	17.7	0.010
20C		15%	1712.4000	1754.6800	48.5
	-15%	1712.4001	1754.6800	33.7	0.019
	End Point	1712.4000	1754.6800	40.6	0.023

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

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	1850.3263	1909.6781		
Extreme (50C)		1850.3263	1909.6781	27.7	0.015
Extreme (40C)		1850.3263	1909.6781	26.0	0.014
Extreme (30C)		1850.3263	1909.6781	29.4	0.016
Extreme (10C)		1850.3263	1909.6781	38.0	0.020
Extreme (0C)		1850.3263	1909.6781	56.6	0.030
Extreme (-10C)		1850.3263	1909.6781	21.3	0.011
Extreme (-20C)		1850.3263	1909.6781	16.0	0.008
Extreme (-30C)		1850.3263	1909.6781	22.1	0.012
20C		15%	1850.3263	1909.6781	22.4
	-15%	1850.3263	1909.6781	28.6	0.015
	End Point	1850.3263	1909.6781	30.5	0.016

**LTE Band 7(Lowest Frequency: 16QAM / Highest Frequency: QPSK)**

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2500.2561	2569.7451		
Extreme (50C)		2500.2561	2569.7451	33.2	0.013
Extreme (40C)		2500.2561	2569.7451	9.3	0.004
Extreme (30C)		2500.2561	2569.7451	7.5	0.003
Extreme (10C)		2500.2561	2569.7451	33.6	0.013
Extreme (0C)		2500.2561	2569.7451	21.7	0.009
Extreme (-10C)		2500.2561	2569.7451	16.9	0.007
Extreme (-20C)		2500.2561	2569.7451	6.3	0.002
Extreme (-30C)		2500.2561	2569.7451	10.3	0.004
20C		15%	2500.2561	2569.7451	28.4
	-15%	2500.2561	2569.7451	18.5	0.007
	End Point	2500.2561	2569.7451	20.6	0.008

**LTE Band 12 (Lowest Frequency: QPSK / 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	699.1579	715.8442		
Extreme (50C)		699.1579	715.8442	22.7	0.032
Extreme (40C)		699.1579	715.8442	9.5	0.013
Extreme (30C)		699.1579	715.8442	8.7	0.012
Extreme (10C)		699.1579	715.8442	21.6	0.031
Extreme (0C)		699.1579	715.8442	5.2	0.007
Extreme (-10C)		699.1579	715.8442	15.4	0.022
Extreme (-20C)		699.1579	715.8442	6.5	0.009
Extreme (-30C)		699.1579	715.8442	4.8	0.007
20C	15%	699.1579	715.8442	18.4	0.026
	-15%	699.1579	715.8442	20.6	0.029
	End Point	699.1579	715.8442	21.2	0.030

**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	777.2607	786.7471		
Extreme (50C)		777.2607	786.7471	20.8	0.027
Extreme (40C)		777.2607	786.7471	21.5	0.027
Extreme (30C)		777.2607	786.7471	15.7	0.020
Extreme (10C)		777.2607	786.7471	15.8	0.020
Extreme (0C)		777.2607	786.7471	16.2	0.021
Extreme (-10C)		777.2607	786.7471	22.2	0.028
Extreme (-20C)		777.2607	786.7471	15.2	0.019
Extreme (-30C)		777.2607	786.7471	31.2	0.040
20C	15%	777.2607	786.7471	17.7	0.023
	-15%	777.2607	786.7471	20.4	0.026
	End Point	777.2607	786.7471	15.6	0.020

**LTE Band 14 (Lowest Frequency:QPSK / Highest Frequency: QPSK)**

Limit		788	798	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	788.2465	797.7440		
Extreme (50C)		788.2465	797.7440	17.8	0.022
Extreme (40C)		788.2465	797.7440	18.7	0.024
Extreme (30C)		788.2465	797.7440	17.3	0.022
Extreme (10C)		788.2465	797.7440	16.8	0.021
Extreme (0C)		788.2465	797.7440	14.8	0.019
Extreme (-10C)		788.2465	797.7440	19.3	0.024
Extreme (-20C)		788.2465	797.7440	13.2	0.017
Extreme (-30C)		788.2465	797.7440	9.2	0.012
20C	15%	788.2465	797.7440	18.4	0.023
	-15%	788.2465	797.7440	17.6	0.022
	End Point	788.2465	797.7440	16.9	0.021

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

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1567	1914.8445		
Extreme (50C)		1850.1567	1914.8445	23.1	0.012
Extreme (40C)		1850.1567	1914.8445	37.3	0.020
Extreme (30C)		1850.1567	1914.8445	12.0	0.006
Extreme (10C)		1850.1567	1914.8445	22.3	0.012
Extreme (0C)		1850.1567	1914.8445	25.3	0.013
Extreme (-10C)		1850.1567	1914.8445	37.6	0.020
Extreme (-20C)		1850.1567	1914.8445	21.1	0.011
Extreme (-30C)		1850.1567	1914.8445	11.2	0.006
20C	15%	1850.1567	1914.8445	22.6	0.012
	-15%	1850.1567	1914.8445	24.7	0.013
	End Point	1850.1567	1914.8445	23.3	0.012

**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]		
3.85	50	814.70002543	-0.005	848.30002685	0.000	2.5	
3.85	40	814.70002011	0.002	848.30001996	0.008	2.5	
3.85	30	814.70002315	-0.002	848.30002925	-0.003	2.5	
<b>3.85</b>	<b>20</b>	<b>814.70002148</b>	<b>0.000</b>	<b>848.30002643</b>	<b>0.000</b>	<b>2.5</b>	
3.85	10	814.70001390	0.009	848.30002651	0.000	2.5	
3.85	0	814.70001705	0.005	848.30001695	0.011	2.5	
3.85	-10	814.70004641	-0.031	848.30003937	-0.015	2.5	
3.85	-20	814.70001868	0.003	848.30002768	-0.001	2.5	
3.85	-30	814.70001516	0.008	848.30001690	0.011	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]		
3.85	20	814.70002148	0	848.30002643	0	2.5	
4.40	20	814.70001830	0.004	848.30001720	0.011	2.5	
3.65	20	814.70001940	0.003	848.30002050	0.007	2.5	

**LTE Band 30 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)**

Limit		2305	2315	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	2305.2533	2314.7464		
Extreme (50C)		2305.2533	2314.7464	17.9	0.008
Extreme (40C)		2305.2533	2314.7464	6.7	0.003
Extreme (30C)		2305.2533	2314.7464	6.6	0.003
Extreme (10C)		2305.2533	2314.7464	27.4	0.012
Extreme (0C)		2305.2533	2314.7464	19.4	0.008
Extreme (-10C)		2305.2533	2314.7464	30.6	0.013
Extreme (-20C)		2305.2533	2314.7464	28.0	0.012
Extreme (-30C)		2305.2533	2314.7464	21.0	0.009
20C		15%	2305.2533	2314.7464	20.6
	-15%	2305.2533	2314.7464	24.4	0.011
	End Point	2305.2533	2314.7464	21.7	0.009

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

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.2512	2689.7440		
Extreme (50C)		2496.2513	2689.7440	51.6	0.020
Extreme (40C)		2496.2512	2689.7440	41.4	0.016
Extreme (30C)		2496.2512	2689.7440	39.5	0.015
Extreme (10C)		2496.2512	2689.7440	29.8	0.011
Extreme (0C)		2496.2512	2689.7440	40.6	0.016
Extreme (-10C)		2496.2512	2689.7440	38.2	0.015
Extreme (-20C)		2496.2512	2689.7440	36.1	0.014
Extreme (-30C)		2496.2512	2689.7440	24.0	0.009
20C	15%	2496.2513	2689.7440	42.5	0.016
	-15%	2496.2512	2689.7440	38.8	0.015
	End Point	2496.2512	2689.7440	41.7	0.016

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

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1544	1779.8426		
Extreme (50C)		1710.1545	1779.8427	51.7	0.030
Extreme (40C)		1710.1544	1779.8426	14.7	0.008
Extreme (30C)		1710.1544	1779.8426	18.0	0.010
Extreme (10C)		1710.1544	1779.8426	24.4	0.014
Extreme (0C)		1710.1544	1779.8426	17.1	0.010
Extreme (-10C)		1710.1544	1779.8426	43.3	0.025
Extreme (-20C)		1710.1544	1779.8426	20.1	0.012
Extreme (-30C)		1710.1544	1779.8426	22.3	0.013
20C	15%	1710.1545	1779.8426	42.5	0.024
	-15%	1710.1544	1779.8426	41.7	0.024
	End Point	1710.1544	1779.8426	36.8	0.021



**LTE Band 71 (Lowest Frequency: QPSK / Highest Frequency: QPSK)**

Limit		663	698	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	663.2503	697.7463		
Extreme (50C)		663.2503	697.7463	17.3	0.025
Extreme (40C)		663.2503	697.7463	21.4	0.032
Extreme (30C)		663.2503	697.7463	17.4	0.026
Extreme (10C)		663.2503	697.7463	27.0	0.040
Extreme (0C)		663.2503	697.7463	20.0	0.029
Extreme (-10C)		663.2503	697.7463	13.8	0.020
Extreme (-20C)		663.2503	697.7463	14.6	0.021
Extreme (-30C)		663.2503	697.7463	5.3	0.008
20C	15%	663.2503	697.7463	25.7	0.038
	-15%	663.2503	697.7463	21.4	0.031
	End Point	663.2503	697.7463	22.5	0.033

**5G NR Band 41 SCS 30kHz (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	2497.0550	2688.9450		
Extreme (50C)		2497.0551	2688.9451	52.8	0.020
Extreme (40C)		2497.0550	2688.9450	30.5	0.012
Extreme (30C)		2497.0550	2688.9450	44.7	0.017
Extreme (10C)		2497.0551	2688.9451	60.7	0.023
Extreme (0C)		2497.0550	2688.9450	44.5	0.017
Extreme (-10C)		2497.0550	2688.9450	38.1	0.015
Extreme (-20C)		2497.0550	2688.9450	26.9	0.010
Extreme (-30C)		2497.0551	2688.9451	51.1	0.020
20C	15%	2497.0551	2688.9450	43.3	0.017
	-15%	2497.0550	2688.9450	39.1	0.015
	End Point	2497.0550	2688.9450	33.3	0.013

**5G NR Band 77 SCS 30kHz (Lowest Frequency: QPSK / Highest Frequency: QPSK)**

Limit		3450	3550	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3451.0700	3548.9350		
Extreme (50C)		3451.0700	3548.9350	42.6	0.012
Extreme (40C)		3451.0701	3548.9351	54.7	0.016
Extreme (30C)		3451.0700	3548.9350	36.4	0.010
Extreme (10C)		3451.0701	3548.9351	66.1	0.019
Extreme (0C)		3451.0700	3548.9350	42.2	0.012
Extreme (-10C)		3451.0700	3548.9350	36.9	0.011
Extreme (-20C)		3451.0700	3548.9350	24.8	0.007
Extreme (-30C)		3451.0700	3548.9350	48.0	0.014
20C	15%	3451.0700	3548.9350	38.6	0.011
	-15%	3451.0701	3548.9350	41.7	0.012
	End Point	3451.0700	3548.9351	53.9	0.015

Limit		3700	3980	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3701.0600	3978.9450		
Extreme (50C)		3701.0600	3978.9450	35.6	0.009
Extreme (40C)		3701.0600	3978.9450	32.9	0.009
Extreme (30C)		3701.0600	3978.9450	45.1	0.012
Extreme (10C)		3701.0601	3978.9451	63.3	0.016
Extreme (0C)		3701.0600	3978.9450	41.8	0.011
Extreme (-10C)		3701.0600	3978.9450	48.9	0.013
Extreme (-20C)		3701.0601	3978.9451	55.7	0.015
Extreme (-30C)		3701.0600	3978.9450	31.7	0.008
20C	15%	3701.0600	3978.9450	49.5	0.013
	-15%	3701.0600	3978.9451	60.1	0.016
	End Point	3701.0600	3978.9450	47.2	0.012

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**LTE Band 2**

LTE Band 2(Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 4**

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 5**

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band41(PC3)**

LTE Band 41(PC3, Frequency range : 2496-2690 MHz) is covered by LTE Band 41(PC2) (Frequency range: 2496-2690 MHz) due to same frequency range, same channel bandwidth and maximum tune-up limit is higher than LTE Band41(PC3).

**NR Band 5 (SCS 15kHz)**

NR Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 5 (Frequency range: 824-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**NR Band 25 (SCS 15kHz)**

NR Band 25 (Frequency range: 1850-1915 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**NR Band 66 (SCS 15kHz)**

NR Band 66 (Frequency range: 1710-1780 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**NR Band 71 (SCS 15kHz)**

NR Band 71 (Frequency range: 663-698 MHz) is covered by LTE Band 71 (Frequency range: 663-698 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

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## 9.5. RADIATED POWER (ERP & EIRP)

### RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50, §27.53 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:

(a)(3) Mobile and portable stations. (i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

(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.

(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band 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.

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

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

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**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 = max hold(GSM, WCDMA), average(LTE);

**NOTE**

5GNR: All waveforms(CP-OFDM vs DFT-OFDM) were investigated to determine the worst case configuration. All mode of operation were investigated and the worst case configuration results are reported in tis section.

**TEST RESULTS**

**9.5.1. ERP/EIRP Results**

**WCDMA**

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	REL99	4132	826.4	20.93	123.88
		4183	836.6	<b>22.80</b>	<b>190.55</b>
		4233	846.6	22.76	188.80
	HSDPA	4132	826.4	20.02	100.46
		4183	836.6	21.80	151.36
		4233	846.6	<b>21.84</b>	<b>152.76</b>
Band 4	REL99	1312	1712.4	<b>23.40</b>	<b>218.78</b>
		1413	1732.6	23.18	207.97
		1513	1752.6	23.03	200.91
	HSDPA	1312	1712.4	<b>22.46</b>	<b>176.20</b>
		1413	1732.6	22.42	174.58
		1513	1752.6	22.08	161.44
Band 2	REL99	9262	1852.4	23.44	220.80
		9400	1880.0	23.62	230.14
		9538	1907.6	<b>23.68</b>	<b>233.35</b>
	HSDPA	9262	1852.4	22.32	170.61
		9400	1880.0	22.06	160.69
		9538	1907.6	<b>22.40</b>	<b>173.78</b>

**LTE Band 7**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 7	20	QPSK	1/0	2510.0	23.61	229.61
			1/99	2535.0	23.96	248.89
			1/0	2560.0	<b>24.80</b>	<b>302.00</b>
		16QAM	1/0	2510.0	22.38	172.98
			1/99	2535.0	23.06	202.30
			1/99	2560.0	<b>23.82</b>	<b>240.99</b>
	15	QPSK	1/0	2507.5	23.53	225.42
			1/74	2535.0	24.23	264.85
			1/0	2562.5	<b>24.96</b>	<b>313.33</b>
		16QAM	1/0	2507.5	22.44	175.39
			1/74	2535.0	23.25	211.35
			1/0	2562.5	<b>23.90</b>	<b>245.47</b>
	10	QPSK	1/0	2505.0	23.52	224.91
			1/0	2535.0	24.52	283.14
			1/0	2565.0	<b>25.20</b>	<b>331.13</b>
		16QAM	1/0	2505.0	22.60	181.97
			1/0	2535.0	23.67	232.81
			1/49	2565.0	<b>24.23</b>	<b>264.85</b>
	5	QPSK	1/0	2502.5	24.14	259.42
			1/12	2535.0	24.54	284.45
			1/0	2567.5	<b>25.03</b>	<b>318.42</b>
		16QAM	1/0	2502.5	22.92	195.88
			1/24	2535.0	23.48	222.84
			1/24	2567.5	<b>24.21</b>	<b>263.63</b>

**LTE Band 12**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 12	10	QPSK	1/0	704.0	20.74	118.58
			1/0	707.5	21.15	130.32
			1/0	711.0	<b>21.16</b>	<b>130.62</b>
		16QAM	1/0	704.0	19.82	95.94
			1/0	707.5	<b>20.07</b>	<b>101.62</b>
			1/0	711.0	19.92	98.17
	5	QPSK	1/12	701.5	20.77	119.40
			1/12	707.5	21.24	133.05
			1/0	713.5	<b>21.47</b>	<b>140.28</b>
		16QAM	1/0	701.5	19.24	83.95
			1/12	707.5	20.06	101.39
			1/0	713.5	<b>20.25</b>	<b>105.93</b>
	3	QPSK	1/0	700.5	20.75	118.85
			1/8	707.5	20.98	125.31
			1/0	714.5	<b>21.94</b>	<b>156.31</b>
		16QAM	1/14	700.5	19.84	96.38
			1/0	707.5	20.18	104.23
			1/0	714.5	<b>20.89</b>	<b>122.74</b>
	1.4	QPSK	1/3	699.7	20.39	109.40
			1/0	707.5	20.52	112.72
			1/3	715.3	<b>21.46</b>	<b>139.96</b>
16QAM		1/3	699.7	19.72	93.76	
		1/3	707.5	20.22	105.20	
		1/3	715.3	<b>20.54</b>	<b>113.24</b>	

**LTE Band 13**

Band	BW [MHz]	Mode	RB size / RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 13	10	QPSK	1/49	782.0	<b>21.49</b>	<b>140.93</b>
		16QAM	1/49	782.0	20.50	112.20
	5	QPSK	1/12	779.5	21.18	131.22
			1/24	782.0	21.71	148.25
			1/24	784.5	<b>21.82</b>	<b>152.05</b>
		16QAM	1/12	779.5	20.30	107.15
			1/24	782.0	20.14	103.28
	1/24	784.5	<b>20.79</b>	<b>119.95</b>		

**LTE Band 14**

Band	BW [MHz]	Mode	RB size / RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 14	10	QPSK	1/49	793.0	<b>20.36</b>	<b>108.64</b>
		16QAM	1/49	793.0	19.52	89.54
	5	QPSK	1/0	790.5	<b>20.53</b>	<b>112.98</b>
			1/24	793.0	20.38	109.14
			1/12	795.5	20.36	108.64
		16QAM	1/0	790.5	19.59	90.99
			1/24	793.0	<b>19.72</b>	<b>93.76</b>
	1/24	795.5	19.56	90.36		

**LTE Band 25**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 25	20	QPSK	1/99	1860.0	25.46	351.56
			1/0	1882.5	<b>25.53</b>	<b>357.27</b>
			1/99	1905.0	24.83	304.09
		16QAM	1/0	1860.0	<b>25.17</b>	<b>328.85</b>
			1/99	1882.5	23.43	220.29
			1/99	1905.0	23.77	238.23
	15	QPSK	1/37	1857.5	<b>25.01</b>	<b>316.96</b>
			1/74	1882.5	24.79	301.30
			1/74	1907.5	24.77	299.92
		16QAM	1/37	1857.5	<b>24.13</b>	<b>258.82</b>
			1/74	1882.5	23.61	229.61
			1/74	1907.5	23.65	231.74
	10	QPSK	1/25	1855.0	25.37	344.35
			1/25	1882.5	<b>25.62</b>	<b>364.75</b>
			1/0	1910.0	24.89	308.32
		16QAM	1/25	1855.0	24.44	277.97
			1/25	1882.5	<b>24.54</b>	<b>284.45</b>
			1/0	1910.0	23.86	243.22
	5	QPSK	1/24	1852.5	<b>25.64</b>	<b>366.44</b>
			1/24	1882.5	25.06	320.63
			1/12	1912.5	24.91	309.74
		16QAM	1/24	1852.5	<b>24.81</b>	<b>302.69</b>
			1/24	1882.5	23.66	232.27
			1/12	1912.5	24.02	252.35
	3	QPSK	1/14	1851.5	<b>25.73</b>	<b>374.11</b>
			1/14	1882.5	24.86	306.20
			1/0	1913.5	24.79	301.30
		16QAM	1/14	1851.5	<b>24.69</b>	<b>294.44</b>
			1/14	1882.5	23.65	231.74
			1/0	1913.5	23.73	236.05
1.4	QPSK	1/5	1850.7	<b>25.53</b>	<b>357.27</b>	
		1/3	1882.5	24.85	305.49	
		1/0	1914.3	24.63	290.40	
	16QAM	1/3	1850.7	<b>24.58</b>	<b>287.08</b>	
		1/3	1882.5	23.74	236.59	
		1/3	1914.3	23.53	225.42	



**LTE Band 26**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP/EIRP			
					[dBm]	[mW]		
Band 26	15	QPSK	1/0	821.5	23.02	200.45		
			1/74	831.5	23.44	220.80		
			1/0	841.5	<b>24.78</b>	<b>300.61</b>		
		16QAM	1/0	821.5	22.37	172.58		
			1/74	831.5	22.44	175.39		
			1/0	841.5	<b>23.62</b>	<b>230.14</b>		
	10	QPSK	1/25	819.0	23.53	225.42		
			1/0	829.0	<b>23.89</b>	<b>244.91</b>		
			1/49	831.5	23.74	236.59		
			1/0	844.0	25.00	316.23		
		16QAM	1/0	819.0	22.48	177.01		
			1/0	829.0	<b>22.90</b>	<b>194.98</b>		
			1/25	831.5	22.81	190.99		
			1/0	844.0	24.32	270.40		
			5	QPSK	1/12	816.5	23.55	226.46
					1/12	821.5	<b>23.60</b>	<b>229.09</b>
	1/12	826.5			23.41	219.28		
	1/24	831.5			23.93	247.17		
	16QAM	1/0		846.5	24.91	309.74		
		1/24		816.5	22.51	178.24		
		1/12		821.5	22.59	181.55		
		1/12		826.5	<b>22.87</b>	<b>193.64</b>		
		1/24		831.5	23.26	211.84		
		1/0		846.5	23.90	245.47		
	3	QPSK	1/0	815.5	22.85	192.75		
			1/8	822.5	23.33	215.28		
			1/8	825.5	<b>23.83</b>	<b>241.55</b>		
			1/14	831.5	24.07	255.27		
			1/0	847.5	25.09	322.85		
		16QAM	1/14	815.5	21.98	157.76		
			1/0	822.5	21.47	140.28		
			1/8	825.5	<b>23.08</b>	<b>203.24</b>		
			1/14	831.5	22.75	188.36		
			1/0	847.5	24.06	254.68		
	1.4	QPSK	1/0	814.7	22.41	174.18		
			1/3	823.3	23.13	205.59		
			1/3	824.7	<b>23.47</b>	<b>222.33</b>		
			1/5	831.5	23.93	247.17		
			1/3	848.3	24.37	273.53		
		16QAM	1/3	814.7	21.67	146.89		
			1/3	823.3	22.06	160.69		
			1/3	824.7	<b>22.88</b>	<b>194.09</b>		
1/3			831.5	22.79	190.11			
1/3			848.3	23.24	210.86			

**LTE Band 26 (Straddle)**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP/EIRP	
					[dBm]	[mW]
Band 26 Straddle	15	QPSK	1/0	824	23.12	205.12
		16QAM	1/0		22.43	174.98
	10	QPSK	1/0	824	23.44	220.56
		16QAM	1/0		22.69	185.58
	5	QPSK	1/12	824	23.59	228.31
		16QAM	1/12		22.62	182.61
	3	QPSK	1/0	824	23.66	232.02
		16QAM	1/8		22.72	186.86
	1.4	QPSK	1/3	824	23.62	229.89
		16QAM	1/3		22.68	185.15

**LTE Band 30**

Band	BW [MHz]	Mode	RB size / RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 30	10	QPSK	1/0	2310.0	<b>22.28</b>	<b>169.04</b>
		16QAM	1/0	2310.0	21.42	138.68
	5	QPSK	1/0	2307.5	22.18	165.20
			1/0	2310.0	<b>22.29</b>	<b>169.43</b>
		1/0	2312.5	22.23	167.11	
		16QAM	1/0	2307.5	<b>21.65</b>	<b>146.22</b>
			1/12	2310.0	21.37	137.09
		1/12	2312.5	21.33	135.83	

**LTE Band 41(PC2)**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 41	20	QPSK	1/99	2506.0	27.26	532.11
			1/49	2593.0	<b>28.95</b>	<b>785.24</b>
			1/49	2680.0	28.86	769.13
		16QAM	1/99	2506.0	26.95	495.45
			1/49	2593.0	28.31	677.64
			1/49	2680.0	<b>28.60</b>	<b>724.44</b>
	15	QPSK	1/37	2503.5	26.95	495.45
			1/37	2593.0	28.90	776.25
			1/37	2682.5	<b>29.13</b>	<b>818.46</b>
		16QAM	1/37	2503.5	26.58	454.99
			1/37	2593.0	28.76	751.62
			1/37	2682.5	<b>29.21</b>	<b>833.68</b>
	10	QPSK	1/25	2501.0	26.86	485.29
			1/25	2593.0	29.09	810.96
			1/25	2685.0	<b>29.36</b>	<b>862.98</b>
		16QAM	1/25	2501.0	26.69	466.66
			1/25	2593.0	28.59	722.77
			1/25	2685.0	<b>28.79</b>	<b>756.83</b>
	5	QPSK	1/12	2498.5	27.12	515.23
			1/12	2593.0	28.84	765.60
			1/12	2687.5	<b>29.68</b>	<b>928.97</b>
		16QAM	1/12	2498.5	26.84	483.06
			1/0	2593.0	28.34	682.34
			1/12	2687.5	<b>29.49</b>	<b>889.20</b>

**LTE Band 66**

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 66	20	QPSK	1/49	1720.0	<b>25.15</b>	<b>327.34</b>
			1/49	1745.0	24.43	277.33
			1/49	1770.0	24.23	264.85
		16QAM	1/49	1720.0	<b>24.02</b>	<b>252.35</b>
			1/49	1745.0	23.22	209.89
			1/0	1770.0	23.63	230.67
	15	QPSK	1/37	1717.5	<b>25.26</b>	<b>335.74</b>
			1/37	1747.5	24.62	289.73
			1/37	1772.5	24.36	272.90
		16QAM	1/37	1717.5	<b>24.26</b>	<b>266.69</b>
			1/74	1747.5	23.39	218.27
			1/37	1772.5	23.32	214.78
	10	QPSK	1/25	1715.0	<b>25.41</b>	<b>347.54</b>
			1/25	1745.0	24.85	305.49
			1/25	1775.0	24.79	301.30
		16QAM	1/25	1715.0	<b>24.20</b>	<b>263.03</b>
			1/25	1745.0	23.96	248.89
			1/25	1775.0	23.64	231.21
	5	QPSK	1/12	1712.5	<b>25.42</b>	<b>348.34</b>
			1/12	1745.0	24.93	311.17
			1/0	1777.5	24.57	286.42
		16QAM	1/24	1712.5	<b>24.03</b>	<b>252.93</b>
			1/12	1745.0	23.91	246.04
			1/24	1777.5	23.11	204.64
	3	QPSK	1/0	1711.5	<b>25.09</b>	<b>322.85</b>
			1/14	1745.0	24.95	312.61
			1/8	1778.5	24.81	302.69
		16QAM	1/0	1711.5	<b>23.99</b>	<b>250.61</b>
			1/8	1745.0	23.54	225.94
			1/0	1778.5	23.51	224.39
	1.4	QPSK	1/3	1710.7	25.22	332.66
			1/3	1745.0	<b>25.73</b>	<b>374.11</b>
			1/3	1779.3	24.26	266.69
		16QAM	1/3	1710.7	<b>24.02</b>	<b>252.35</b>
			1/3	1745.0	23.40	218.78
			1/3	1779.3	23.25	211.35

**LTE Band 71**

Band	BW [MHz]	Mode	RB Size/	f [MHz]	ERP / EIRP	
			RB Offset		[dBm]	[mW]
Band 71	20	QPSK	1/99	673.0	18.26	66.99
			1/0	680.5	<b>18.32</b>	<b>67.92</b>
			1/0	688.0	18.14	65.16
		16QAM	1/99	673.0	<b>17.40</b>	<b>54.95</b>
			1/0	680.5	17.37	54.58
			1/0	688.0	17.25	53.09
	15	QPSK	1/74	670.5	17.59	57.41
			1/37	680.5	17.99	62.95
			1/0	690.5	<b>18.10</b>	<b>64.57</b>
		16QAM	1/0	670.5	17.06	50.82
			1/0	680.5	<b>17.29</b>	<b>53.58</b>
			1/0	690.5	17.06	50.82
	10	QPSK	1/0	668.0	17.94	62.23
			1/0	680.5	<b>18.38</b>	<b>68.87</b>
			1/25	693.0	16.63	46.03
		16QAM	1/49	668.0	16.99	50.00
			1/0	680.5	<b>17.21</b>	<b>52.60</b>
			1/0	693.0	16.59	45.60
	5	QPSK	1/0	665.5	16.59	45.60
			1/12	680.5	19.08	80.91
1/24			695.5	<b>19.96</b>	<b>99.08</b>	
16QAM		1/12	665.5	15.51	35.56	
		1/12	680.5	18.66	73.45	
		1/12	695.5	<b>18.85</b>	<b>76.74</b>	

**LTE Band 2**

LTE Band 2(Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 4**

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band 5**

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

**LTE Band41(PC3)**

LTE Band 41(PC3, Frequency range : 2496-2690 MHz) is covered by LTE Band 41(PC2) (Frequency range: 2496-2690 MHz) due to same frequency range, same channel bandwidth and maximum tune-up limit is higher than LTE Band41(PC3).

**NR Band 5**

Band	BW [MHz]	Modulation	Mode	RB Size/	f [MHz]	ERP / EIRP	
				RB Offset		[dBm]	[mW]
n5	20	DFT-s OFDM	QPSK	1/53	834.0	<b>22.34</b>	<b>171.40</b>
				1/53	836.5	22.30	169.82
				1/53	839.0	22.08	161.44
			16QAM	1/53	834.0	<b>21.74</b>	<b>149.28</b>
				1/53	836.5	21.73	148.94
				1/53	839.0	21.68	147.23
	15	DFT-s OFDM	QPSK	1/40	831.5	<b>22.06</b>	<b>160.69</b>
				1/40	836.5	21.91	155.24
				1/40	841.5	21.56	143.22
			16QAM	1/40	831.5	<b>21.61</b>	<b>144.88</b>
				1/40	836.5	21.59	144.21
				1/40	841.5	21.28	134.28
	10	DFT-s OFDM	QPSK	1/26	829.0	21.70	<b>147.91</b>
				1/26	836.5	<b>21.90</b>	<b>154.88</b>
				1/26	844.0	21.20	131.83
			16QAM	1/26	829.0	21.20	131.83
				1/26	836.5	<b>21.33</b>	<b>135.83</b>
				1/26	844.0	20.42	110.15
	5	DFT-s OFDM	QPSK	1/1	826.5	21.57	143.55
				1/23	836.5	<b>22.17</b>	<b>164.82</b>
1/13				846.5	20.74	118.58	
16QAM			1/1	826.5	20.86	121.90	
			1/23	836.5	<b>21.46</b>	<b>139.96</b>	
			1/13	846.5	20.13	103.04	

**NR Band 25**

Band	BW [MHz]	Modulation	Mode	RB Size/	f [MHz]	ERP / EIRP	
				RB Offset		[dBm]	[mW]
n25	20	DFT-s OFDM	QPSK	1/1	1860.0	<b>25.93</b>	<b>391.74</b>
				1/1	1882.5	25.77	377.57
				1/1	1905.0	25.26	335.74
			16QAM	1/1	1860.0	<b>24.98</b>	<b>314.77</b>
				1/1	1882.5	24.56	285.76
				1/1	1905.0	24.29	268.53
	15	DFT-s OFDM	QPSK	1/40	1857.5	<b>25.16</b>	<b>328.10</b>
				1/1	1882.5	24.96	313.33
				1/1	1907.5	24.70	295.12
			16QAM	1/40	1857.5	23.53	225.42
				1/1	1882.5	<b>23.89</b>	<b>244.91</b>
				1/1	1907.5	23.45	221.31
	10	DFT-s OFDM	QPSK	1/50	1855.0	25.08	<b>322.11</b>
				1/26	1882.5	25.83	382.82
				1/50	1910.0	<b>25.94</b>	<b>392.64</b>
			16QAM	1/50	1855.0	23.97	249.46
				1/26	1882.5	24.83	304.09
				1/50	1910.0	<b>24.97</b>	<b>314.05</b>
	5	DFT-s OFDM	QPSK	1/23	1852.5	25.33	341.19
				1/23	1882.5	<b>25.90</b>	<b>389.05</b>
1/1				1912.5	24.96	313.33	
16QAM			1/23	1852.5	24.16	260.62	
			1/23	1882.5	<b>24.76</b>	<b>299.23</b>	
			1/1	1912.5	23.54	225.94	

**NR Band 41**

Band	BW [MHz]	Modulation	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
						[dBm]	[mW]
n41	100	DFT-s OFDM	QPSK	1/137	2546.0	25.43	349.14
				1/1	2593.0	<b>26.56</b>	<b>452.90</b>
				1/137	2640.0	26.05	402.72
			16QAM	1/137	2546.0	24.98	314.77
				1/1	2593.0	<b>26.30</b>	<b>426.58</b>
				1/137	2640.0	25.47	352.37
	90	DFT-s OFDM	QPSK	1/123	2541.0	25.16	328.10
				1/123	2593.0	<b>26.77</b>	<b>475.34</b>
				1/243	2645.0	24.30	269.15
			16QAM	1/123	2541.0	24.71	295.80
				1/123	2593.0	<b>26.26</b>	<b>422.67</b>
				1/243	2645.0	23.59	228.56
	80	DFT-s OFDM	QPSK	1/215	2536.0	25.87	386.37
				1/109	2593.0	<b>26.62</b>	<b>459.20</b>
				1/215	2650.0	24.32	270.40
			16QAM	1/215	2536.0	25.65	367.28
				1/109	2593.0	<b>26.15</b>	<b>412.10</b>
				1/215	2650.0	23.74	236.59
	60	DFT-s OFDM	QPSK	1/160	2526.0	25.53	357.27
				1/81	2593.0	<b>26.50</b>	<b>446.68</b>
				1/81	2660.0	25.45	350.75
			16QAM	1/160	2526.0	24.64	291.07
				1/81	2593.0	<b>26.03</b>	<b>400.87</b>
				1/81	2660.0	24.70	295.12
	50	DFT-s OFDM	QPSK	1/131	2521.0	25.42	348.34
				1/67	2593.0	<b>26.62</b>	<b>459.20</b>
				1/131	2665.0	24.48	280.54
			16QAM	1/131	2521.0	24.54	284.45
				1/67	2593.0	<b>26.07</b>	<b>404.58</b>
				1/131	2665.0	23.90	245.47
	40	DFT-s OFDM	QPSK	1/104	2516.0	23.24	210.86
				1/53	2593.0	<b>25.78</b>	<b>378.44</b>
				1/104	2670.0	23.65	231.74
			16QAM	1/104	2516.0	23.24	210.86
				1/53	2593.0	<b>25.78</b>	<b>378.44</b>
				1/104	2670.0	23.65	231.74
	30	DFT-s OFDM	QPSK	1/76	2511.0	24.60	288.40
				1/1	2593.0	<b>27.10</b>	<b>512.86</b>
				1/76	2675.0	25.69	370.68
			16QAM	1/76	2511.0	24.01	251.77
				1/1	2593.0	<b>26.97</b>	<b>497.74</b>
				1/76	2675.0	25.23	333.43
	20	DFT-s OFDM	QPSK	1/49	2506.0	24.79	301.30
				1/49	2593.0	<b>26.60</b>	<b>457.09</b>
				1/1	2680.0	25.45	350.75
			16QAM	1/49	2506.0	24.14	259.42
				1/49	2593.0	<b>25.91</b>	<b>389.94</b>
				1/1	2680.0	25.33	341.19

**NR Band 66**

Band	BW [MHz]	Modulation	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
						[dBm]	[mW]
n66	40	DFT-s OFDM	QPSK	1/108	1730.0	<b>26.13</b>	<b>410.20</b>
				1/108	1745.0	25.59	362.24
				1/108	1760.0	25.97	395.37
			16QAM	1/108	1730.0	24.64	291.07
				1/108	1745.0	24.53	283.79
				1/108	1760.0	<b>25.05</b>	<b>319.89</b>
	30	DFT-s OFDM	QPSK	1/80	1725.0	25.93	391.74
				1/80	1745.0	25.45	350.75
				1/80	1765.0	<b>25.99</b>	<b>397.19</b>
			16QAM	1/80	1725.0	<b>25.04</b>	<b>319.15</b>
				1/80	1745.0	24.44	277.97
				1/80	1765.0	24.98	314.77
	20	DFT-s OFDM	QPSK	1/104	1720.0	<b>25.73</b>	<b>374.11</b>
				1/53	1745.0	25.59	362.24
				1/53	1770.0	24.51	282.49
			16QAM	1/104	1720.0	24.28	267.92
				1/53	1745.0	<b>24.56</b>	<b>285.76</b>
				1/53	1770.0	23.28	212.81
	15	DFT-s OFDM	QPSK	1/77	1717.5	<b>25.91</b>	<b>389.94</b>
				1/40	1745.0	25.35	342.77
				1/40	1772.5	24.38	274.16
			16QAM	1/77	1717.5	24.69	294.44
				1/40	1745.0	<b>25.12</b>	<b>325.09</b>
				1/40	1772.5	23.45	221.31
	10	DFT-s OFDM	QPSK	1/50	1715.0	<b>25.88</b>	<b>387.26</b>
				1/50	1745.0	25.35	<b>342.77</b>
				1/1	1775.0	24.44	277.97
			16QAM	1/50	1715.0	24.44	277.97
				1/50	1745.0	<b>24.52</b>	<b>283.14</b>
				1/1	1775.0	23.61	229.61
5	DFT-s OFDM	QPSK	1/13	1712.5	24.87	306.90	
			1/13	1745.0	<b>25.57</b>	<b>360.58</b>	
			1/13	1777.5	24.91	309.74	
		16QAM	1/13	1712.5	24.12	258.23	
			1/13	1745.0	<b>24.35</b>	<b>272.27</b>	
			1/13	1777.5	23.50	223.87	

**NR Band 71**

Band	BW [MHz]	Modulation	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
						[dBm]	[mW]
n71	20	DFT-s OFDM	QPSK	1/53	673.0	20.71	117.76
				1/53	680.5	<b>20.90</b>	<b>123.03</b>
				1/53	688.0	20.30	107.15
			16QAM	1/53	673.0	19.37	86.50
				1/53	680.5	<b>19.79</b>	<b>95.28</b>
				1/53	688.0	19.40	87.10
	15	DFT-s OFDM	QPSK	1/40	670.5	20.46	111.17
				1/77	680.5	<b>20.78</b>	<b>119.67</b>
				1/40	690.5	19.43	87.70
			16QAM	1/40	670.5	19.20	83.18
				1/77	680.5	<b>19.37</b>	<b>86.50</b>
				1/40	690.5	18.36	68.55
	10	DFT-s OFDM	QPSK	1/1	668.0	20.07	<b>101.62</b>
				1/26	680.5	<b>21.07</b>	<b>127.94</b>
				1/50	693.0	19.67	92.68
			16QAM	1/1	668.0	18.78	75.51
				1/26	680.5	<b>20.01</b>	<b>100.23</b>
				1/50	693.0	18.65	73.28
	5	DFT-s OFDM	QPSK	1/1	665.5	19.95	98.86
				1/13	680.5	<b>20.90</b>	<b>123.03</b>
				1/13	695.5	19.59	90.99
			16QAM	1/1	665.5	18.58	72.11
				1/13	680.5	<b>19.71</b>	<b>93.54</b>
				1/13	695.5	18.61	72.61



**NR Band 77(Lower)**

Band	BW [MHz]	Modulation	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
						[dBm]	[mW]
n77	100	DFT-s OFDM	QPSK	1/137	3499.98	<b>26.27</b>	<b>423.64</b>
			16QAM	1/137	3499.98	<b>25.41</b>	<b>347.54</b>
	90	DFT-s OFDM	QPSK	1/123	3495.00	25.96	394.46
				1/123	3499.98	<b>26.31</b>	<b>427.56</b>
				1/123	3504.99	26.23	419.76
			16QAM	1/123	3495.00	25.64	366.44
				1/123	3499.98	25.73	374.11
				1/123	3504.99	<b>25.82</b>	<b>381.94</b>
	80	DFT-s OFDM	QPSK	1/109	3490.02	26.26	422.67
				1/109	3499.98	<b>26.31</b>	<b>427.56</b>
				1/109	3510.00	25.90	389.05
			16QAM	1/109	3490.02	<b>25.96</b>	<b>394.46</b>
				1/109	3499.98	25.60	363.08
				1/109	3510.00	25.18	329.61
	60	DFT-s OFDM	QPSK	1/160	3480.00	25.54	358.10
				1/81	3499.98	25.80	380.19
				1/1	3519.99	<b>26.42</b>	<b>438.53</b>
			16QAM	1/160	3480.00	25.03	318.42
				1/81	3499.98	25.27	336.51
				1/1	3519.99	<b>26.07</b>	<b>404.58</b>
	50	DFT-s OFDM	QPSK	1/131	3475.02	25.34	341.98
				1/1	3499.98	<b>26.74</b>	<b>472.06</b>
				1/1	3525.00	26.12	409.26
			16QAM	1/131	3475.02	24.77	299.92
				1/1	3499.98	<b>26.00</b>	<b>398.11</b>
				1/1	3525.00	25.70	371.54
	40	DFT-s OFDM	QPSK	1/104	3470.01	25.90	389.05
				1/1	3499.98	<b>26.64</b>	<b>461.32</b>
				1/1	3529.98	26.30	426.58
			16QAM	1/104	3470.01	25.37	344.35
				1/1	3499.98	<b>25.97</b>	<b>395.37</b>
				1/1	3529.98	25.76	376.70
	20	DFT-s OFDM	QPSK	1/49	3460.02	<b>26.59</b>	<b>456.04</b>
				1/1	3499.98	26.29	425.60
				1/1	3540.00	25.41	347.54
			16QAM	1/49	3460.02	25.74	374.97
				1/1	3499.98	<b>26.07</b>	<b>404.58</b>
				1/1	3540.00	24.72	296.48

**NR Band 77(Upper)**

Band	BW [MHz]	Modulation	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
						[dBm]	[mW]
n77	100	DFT-s OFDM	QPSK	1/137	3750.00	<b>25.75</b>	<b>375.84</b>
				1/1	3840.00	25.01	316.96
				1/271	3930.00	22.55	179.89
			16QAM	1/137	3750.00	<b>25.51</b>	<b>355.63</b>
				1/1	3840.00	24.75	298.54
				1/271	3930.00	22.11	162.55
	90	DFT-s OFDM	QPSK	1/123	3745.02	<b>25.83</b>	<b>382.82</b>
				1/1	3840.00	25.16	328.10
				1/243	3934.98	22.47	176.60
			16QAM	1/123	3745.02	<b>25.48</b>	<b>353.18</b>
				1/1	3840.00	24.97	314.05
				1/243	3934.98	22.01	158.85
	80	DFT-s OFDM	QPSK	1/109	3740.01	<b>25.67</b>	<b>368.98</b>
				1/1	3840.00	25.16	328.10
				1/215	3939.99	21.86	153.46
			16QAM	1/109	3740.01	<b>25.22</b>	<b>332.66</b>
				1/1	3840.00	24.78	300.61
				1/215	3939.99	21.32	135.52
	60	DFT-s OFDM	QPSK	1/160	3730.02	25.01	316.96
				1/1	3840.00	<b>25.29</b>	<b>338.06</b>
				1/81	3949.98	23.05	201.84
			16QAM	1/160	3730.02	24.52	283.14
				1/1	3840.00	<b>25.09</b>	<b>322.85</b>
				1/81	3949.98	22.30	169.82
	50	DFT-s OFDM	QPSK	1/131	3725.01	24.95	312.61
				1/1	3840.00	<b>25.07</b>	<b>321.37</b>
				1/1	3954.99	22.98	198.61
			16QAM	1/131	3725.01	24.60	288.40
				1/1	3840.00	<b>24.78</b>	<b>300.61</b>
				1/1	3954.99	22.51	178.24
40	DFT-s OFDM	QPSK	1/104	3720.00	<b>25.19</b>	<b>330.37</b>	
			1/1	3840.00	25.07	321.37	
			1/1	3960.00	22.86	193.20	
		16QAM	1/104	3720.00	24.62	289.73	
			1/1	3840.00	<b>24.75</b>	<b>298.54</b>	
			1/1	3960.00	22.14	163.68	
20	DFT-s OFDM	QPSK	1/49	3710.01	<b>25.25</b>	<b>334.97</b>	
			1/1	3840.00	24.44	277.97	
			1/1	3969.99	22.39	173.38	
		16QAM	1/49	3710.01	<b>24.69</b>	<b>294.44</b>	
			1/1	3840.00	24.30	269.15	
			1/1	3969.99	21.82	152.05	

**9.5.2. ERP/EIRP DATA**

**WCDMA**

Band 5 REL99	<p><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p>Company: Samsung                  Project #: 4789867826                  Date: 2021-04-13                  Test Engineer: 20882                  Configuration: EUT, Y-Position                  Location: Chamber 2                  Mode: Rel99 Band 5 Fundamentals</p> <p><u>Test Equipment:</u>                  Receiving: VULB9163-749, and Chamber 2 SMA Cables                  Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>826.40</td> <td>24.92</td> <td>V</td> <td>3.0</td> <td>-0.9</td> <td>20.93</td> <td>38.5</td> <td>-17.6</td> <td></td> </tr> <tr> <td>826.40</td> <td>18.22</td> <td>H</td> <td>3.0</td> <td>-0.9</td> <td>14.23</td> <td>38.5</td> <td>-24.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>26.76</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>22.80</td> <td>38.5</td> <td>-15.7</td> <td></td> </tr> <tr> <td>836.60</td> <td>18.19</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>14.23</td> <td>38.5</td> <td>-24.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>846.60</td> <td>26.71</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>22.76</td> <td>38.5</td> <td>-15.7</td> <td></td> </tr> <tr> <td>846.60</td> <td>18.96</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>15.01</td> <td>38.5</td> <td>-23.5</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									826.40	24.92	V	3.0	-0.9	20.93	38.5	-17.6		826.40	18.22	H	3.0	-0.9	14.23	38.5	-24.3		Mid Ch									836.60	26.76	V	3.1	-0.9	22.80	38.5	-15.7		836.60	18.19	H	3.1	-0.9	14.23	38.5	-24.3		High Ch									846.60	26.71	V	3.1	-0.9	22.76	38.5	-15.7		846.60	18.96	H	3.1	-0.9	15.01	38.5	-23.5	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																		
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Band 4 REL99	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-13  <b>Test Engineer:</b> 20882  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> Rel99 Band 4 Fundamentals                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.40	16.08	V	4.4	9.6	21.30	30.0	-8.7	
	1712.40	18.18	H	4.4	9.6	23.40	30.0	-6.6	
	Mid Ch								
	1732.60	16.13	V	4.4	9.6	21.38	30.0	-8.6	
	1732.60	17.93	H	4.4	9.6	23.18	30.0	-6.8	
	High Ch								
	1752.60	16.85	V	4.4	9.7	22.14	30.0	-7.9	
	1752.60	17.74	H	4.4	9.7	23.03	30.0	-7.0	
Band 4 HSDPA	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-13  <b>Test Engineer:</b> 20882  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> HSDPA Band 4 Fundamentals                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.40	15.08	V	4.4	9.6	20.30	30.0	-9.7	
	1712.40	17.24	H	4.4	9.6	22.46	30.0	-7.5	
	Mid Ch								
	1732.60	15.11	V	4.4	9.6	20.36	30.0	-9.6	
	1732.60	17.17	H	4.4	9.6	22.42	30.0	-7.6	
	High Ch								
	1752.60	15.89	V	4.4	9.7	21.18	30.0	-8.8	
	1752.60	16.79	H	4.4	9.7	22.08	30.0	-7.9	

Band 2 REL99	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																										
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-12  <b>Test Engineer:</b> 20882  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> Rel99 Band 2 Fundamentals                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1852.40</td> <td>17.39</td> <td>V</td> <td>4.5</td> <td>9.6</td> <td>22.47</td> <td>33.0</td> <td>-10.5</td> <td></td> </tr> <tr> <td>1852.40</td> <td>18.36</td> <td>H</td> <td>4.5</td> <td>9.6</td> <td>23.44</td> <td>33.0</td> <td>-9.6</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1880.00</td> <td>16.57</td> <td>V</td> <td>4.6</td> <td>9.4</td> <td>21.36</td> <td>33.0</td> <td>-11.6</td> <td></td> </tr> <tr> <td>1880.00</td> <td>18.83</td> <td>H</td> <td>4.6</td> <td>9.4</td> <td>23.62</td> <td>33.0</td> <td>-9.4</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1907.60</td> <td>17.83</td> <td>V</td> <td>4.6</td> <td>9.1</td> <td>22.32</td> <td>33.0</td> <td>-10.7</td> <td></td> </tr> <tr> <td>1907.60</td> <td>19.19</td> <td>H</td> <td>4.6</td> <td>9.1</td> <td>23.68</td> <td>33.0</td> <td>-9.3</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									1852.40	17.39	V	4.5	9.6	22.47	33.0	-10.5		1852.40	18.36	H	4.5	9.6	23.44	33.0	-9.6		<b>Mid Ch</b>									1880.00	16.57	V	4.6	9.4	21.36	33.0	-11.6		1880.00	18.83	H	4.6	9.4	23.62	33.0	-9.4		<b>High Ch</b>									1907.60	17.83	V	4.6	9.1	22.32	33.0	-10.7		1907.60	19.19	H	4.6	9.1	23.68	33.0	-9.3	
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**LTE Band 7**

20MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-05  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p>								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	2510.00	18.70	V	5.3	10.2	23.58	33.0	-9.4	
	2510.00	18.72	H	5.3	10.2	23.61	33.0	-9.4	
	Mid Ch								
	2535.00	18.52	V	5.3	10.1	23.34	33.0	-9.7	
	2535.00	19.14	H	5.3	10.1	23.96	33.0	-9.0	
	High Ch								
	2560.00	18.50	V	5.4	10.1	23.26	33.0	-9.7	
	2560.00	20.04	H	5.4	10.1	24.80	33.0	-8.2	
20MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-05  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p>								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	2510.00	17.42	V	5.3	10.2	22.30	33.0	-10.7	
	2510.00	17.49	H	5.3	10.2	22.38	33.0	-10.6	
	Mid Ch								
	2535.00	17.58	V	5.3	10.1	22.40	33.0	-10.6	
	2535.00	18.24	H	5.3	10.1	23.06	33.0	-9.9	
	High Ch								
	2560.00	17.59	V	5.4	10.1	22.35	33.0	-10.6	
	2560.00	19.06	H	5.4	10.1	23.82	33.0	-9.2	

15MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																									
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-05  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_QPSK Band 7 Fundamentals, 15MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>2507.50</td> <td>18.44</td> <td>V</td> <td>5.3</td> <td>10.2</td> <td>23.34</td> <td>33.0</td> <td>-9.7</td> <td></td> </tr> <tr> <td>2507.50</td> <td>18.63</td> <td>H</td> <td>5.3</td> <td>10.2</td> <td>23.53</td> <td>33.0</td> <td>-9.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>2535.00</td> <td>18.71</td> <td>V</td> <td>5.3</td> <td>10.1</td> <td>23.53</td> <td>33.0</td> <td>-9.5</td> <td></td> </tr> <tr> <td>2535.00</td> <td>19.41</td> <td>H</td> <td>5.3</td> <td>10.1</td> <td>24.23</td> <td>33.0</td> <td>-8.8</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>2562.50</td> <td>18.63</td> <td>V</td> <td>5.4</td> <td>10.1</td> <td>23.39</td> <td>33.0</td> <td>-9.6</td> <td></td> </tr> <tr> <td>2562.50</td> <td>20.20</td> <td>H</td> <td>5.4</td> <td>10.1</td> <td>24.96</td> <td>33.0</td> <td>-8.0</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									2507.50	18.44	V	5.3	10.2	23.34	33.0	-9.7		2507.50	18.63	H	5.3	10.2	23.53	33.0	-9.5		Mid Ch									2535.00	18.71	V	5.3	10.1	23.53	33.0	-9.5		2535.00	19.41	H	5.3	10.1	24.23	33.0	-8.8		High Ch									2562.50	18.63	V	5.4	10.1	23.39	33.0	-9.6		2562.50	20.20	H	5.4	10.1	24.96	33.0	-8.0
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**LTE Band 12**

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	Low Ch								
	701.50	17.39	V	2.8	-1.1	13.53	34.8	-21.2	
	701.50	24.63	H	2.8	-1.1	20.77	34.8	-14.0	
	Mid Ch								
	707.50	17.94	V	2.8	-1.1	14.07	34.8	-20.7	
	707.50	25.11	H	2.8	-1.1	21.24	34.8	-13.5	
	High Ch								
	713.50	18.43	V	2.8	-1.1	14.55	34.8	-20.2	
	713.50	25.36	H	2.8	-1.1	21.47	34.8	-13.3	
5MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
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	Low Ch								
	701.50	16.14	V	2.8	-1.1	12.28	34.8	-22.5	
	701.50	23.10	H	2.8	-1.1	19.24	34.8	-15.5	
	Mid Ch								
	707.50	17.31	V	2.8	-1.1	13.44	34.8	-21.3	
	707.50	23.93	H	2.8	-1.1	20.06	34.8	-14.7	
	High Ch								
	713.50	17.85	V	2.8	-1.1	13.97	34.8	-20.8	
	713.50	24.14	H	2.8	-1.1	20.25	34.8	-14.5	

3MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																									
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	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-07  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>699.70</td> <td>15.58</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>11.72</td> <td>34.8</td> <td>-23.1</td> <td></td> </tr> <tr> <td>699.70</td> <td>23.58</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>19.72</td> <td>34.8</td> <td>-15.1</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>707.50</td> <td>16.58</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>12.71</td> <td>34.8</td> <td>-22.1</td> <td></td> </tr> <tr> <td>707.50</td> <td>24.09</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>20.22</td> <td>34.8</td> <td>-14.6</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>715.30</td> <td>17.30</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>13.41</td> <td>34.8</td> <td>-21.4</td> <td></td> </tr> <tr> <td>715.30</td> <td>24.43</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>20.54</td> <td>34.8</td> <td>-14.2</td> <td></td> </tr> </tbody> </table>								f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									699.70	15.58	V	2.8	-1.1	11.72	34.8	-23.1		699.70	23.58	H	2.8	-1.1	19.72	34.8	-15.1		<b>Mid Ch</b>									707.50	16.58	V	2.8	-1.1	12.71	34.8	-22.1		707.50	24.09	H	2.8	-1.1	20.22	34.8	-14.6		<b>High Ch</b>									715.30	17.30	V	2.8	-1.1	13.41	34.8	-21.4		715.30	24.43	H	2.8	-1.1	20.54	34.8	-14.2
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**LTE Band 13**

10MHz QPSK	<p><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p><b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-15  <b>Test Engineer:</b> 20882  <b>Configuration:</b> EUT, Y-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth</p> <p><b>Test Equipment:</b>  <b>Receiving:</b> VULB9163-749, and Chamber 2 SMA Cables  <b>Substitution:</b> Dipole 3121_DB4, 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.00</td> <td>25.51</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>21.49</td> <td>34.8</td> <td>-13.3</td> <td></td> </tr> <tr> <td>782.00</td> <td>17.56</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>13.54</td> <td>34.8</td> <td>-21.2</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									782.00	25.51	V	3.0	-1.1	21.49	34.8	-13.3		782.00	17.56	H	3.0	-1.1	13.54	34.8	-21.2	
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5MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-09  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Y-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	779.50	25.19	V	3.0	-1.1	21.18	34.8	-13.6	
	779.50	18.26	H	3.0	-1.1	14.25	34.8	-20.5	
	Mid Ch								
	782.00	25.73	V	3.0	-1.1	21.71	34.8	-13.1	
	782.00	17.66	H	3.0	-1.1	13.64	34.8	-21.1	
	High Ch								
	784.50	25.83	V	3.0	-1.1	21.82	34.8	-13.0	
	784.50	17.42	H	3.0	-1.1	13.40	34.8	-21.4	
5MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-09  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Y-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	779.50	24.31	V	3.0	-1.1	20.30	34.8	-14.5	
	779.50	17.10	H	3.0	-1.1	13.09	34.8	-21.7	
	Mid Ch								
	782.00	24.16	V	3.0	-1.1	20.14	34.8	-14.6	
	782.00	16.07	H	3.0	-1.1	12.05	34.8	-22.7	
	High Ch								
	784.50	24.80	V	3.0	-1.1	20.79	34.8	-14.0	
	784.50	16.50	H	3.0	-1.1	12.48	34.8	-22.3	

**LTE Band 14**

10MHz QPSK	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p>Company: Saumsung                  Project #: 4789867826                  Date: 2021-04-08                  Test Engineer: 22943                  Configuration: EUT, Z-Position                  Location: Chamber 1                  Mode: LTE_QPSK Band 14 Fundamentals, 10MHz Bandwidth</p> <p><u>Test Equipment:</u>                  Receiving: VULB9163-750, and Chamber 1 SMA Cables                  Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>793.00</td> <td>24.40</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>20.36</td> <td>34.8</td> <td>-14.4</td> <td></td> </tr> <tr> <td>793.00</td> <td>23.55</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>19.52</td> <td>34.8</td> <td>-15.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									793.00	0.00	V	3.0	-1.1	0.00	34.8	0.0		793.00	0.00	H	3.0	-1.1	0.00	34.8	0.0		Mid Ch									793.00	24.40	V	3.0	-1.1	20.36	34.8	-14.4		793.00	23.55	H	3.0	-1.1	19.52	34.8	-15.3		High Ch									793.00	0.00	V	3.0	-1.1	0.00	34.8	0.0		793.00	0.00	H	3.0	-1.1	0.00	34.8	0.0	
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10MHz 16QAM	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p>Company: Samsung                  Project #: 4789867826                  Date: 2021-04-08                  Test Engineer: 22943                  Configuration: EUT                  Location: Chamber 1                  Mode: LTE_16QAM Band 14 Fundamentals, 10MHz Bandwidth</p> <p><u>Test Equipment:</u>                  Receiving: VULB9163-750, and Chamber 1 SMA Cables                  Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>793.00</td> <td>23.56</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>19.52</td> <td>34.8</td> <td>-15.2</td> <td></td> </tr> <tr> <td>793.00</td> <td>22.38</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>18.35</td> <td>34.8</td> <td>-16.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>V</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> <tr> <td>793.00</td> <td>0.00</td> <td>H</td> <td>3.0</td> <td>-1.1</td> <td>0.00</td> <td>34.8</td> <td>0.0</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									793.00	0.00	V	3.0	-1.1	0.00	34.8	0.0		793.00	0.00	H	3.0	-1.1	0.00	34.8	0.0		Mid Ch									793.00	23.56	V	3.0	-1.1	19.52	34.8	-15.2		793.00	22.38	H	3.0	-1.1	18.35	34.8	-16.4		High Ch									793.00	0.00	V	3.0	-1.1	0.00	34.8	0.0		793.00	0.00	H	3.0	-1.1	0.00	34.8	0.0	
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5MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-08  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 14 Fundamentals, 5MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	790.50	24.56	V	3.0	-1.1	20.53	34.8	-14.2	
	790.50	23.51	H	3.0	-1.1	19.48	34.8	-15.3	
	Mid Ch								
	793.00	24.42	V	3.0	-1.1	20.38	34.8	-14.4	
	793.00	23.31	H	3.0	-1.1	19.28	34.8	-15.5	
	High Ch								
	795.50	24.40	V	3.0	-1.1	20.36	34.8	-14.4	
	795.50	23.72	H	3.0	-1.1	19.68	34.8	-15.1	
5MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-08  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 14 Fundamentals, 5MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	790.50	23.62	V	3.0	-1.1	19.59	34.8	-15.2	
	790.50	22.50	H	3.0	-1.1	18.47	34.8	-16.3	
	Mid Ch								
	793.00	23.76	V	3.0	-1.1	19.72	34.8	-15.0	
	793.00	22.74	H	3.0	-1.1	18.71	34.8	-16.1	
	High Ch								
	795.50	23.60	V	3.0	-1.1	19.56	34.8	-15.2	
	795.50	22.83	H	3.0	-1.1	18.79	34.8	-16.0	

**LTE Band 25**

20MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789867826 Date: 2021-04-08 Test Engineer: 20890 Configuration: EUT / Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth  <u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	1860.00	17.70	V	4.6	9.5	22.68	33.0	-10.3	
	1860.00	20.49	H	4.6	9.5	25.46	33.0	-7.5	
	Mid Ch								
	1882.50	18.33	V	4.6	9.4	23.12	33.0	-9.9	
	1882.50	20.74	H	4.6	9.4	25.53	33.0	-7.5	
	High Ch								
	1905.00	18.25	V	4.6	9.2	22.83	33.0	-10.2	
	1905.00	20.25	H	4.6	9.2	24.83	33.0	-8.2	
20MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789867826 Date: 2021-04-08 Test Engineer: 20890 Configuration: EUT / Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth  <u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	1860.00	15.96	V	4.6	9.5	20.94	33.0	-12.1	
	1860.00	20.20	H	4.6	9.5	25.17	33.0	-7.8	
	Mid Ch								
	1882.50	15.71	V	4.6	9.4	20.50	33.0	-12.5	
	1882.50	18.64	H	4.6	9.4	23.43	33.0	-9.6	
	High Ch								
	1905.00	17.30	V	4.6	9.2	21.88	33.0	-11.1	
	1905.00	19.19	H	4.6	9.2	23.77	33.0	-9.2	

15MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-08  <b>Test Engineer:</b> 20890  <b>Configuration:</b> EUT / Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                      Substitution: Horn 3115[00167211], 8.5m SMA-type Cable                 </p>								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	<b>Low Ch</b>								
	1857.50	16.96	V	4.5	9.5	21.96	33.0	-11.0	
	1857.50	20.01	H	4.5	9.5	25.01	33.0	-8.0	
	<b>Mid Ch</b>								
	1882.50	17.20	V	4.6	9.4	21.99	33.0	-11.0	
	1882.50	20.00	H	4.6	9.4	24.79	33.0	-8.2	
	<b>High Ch</b>								
	1907.50	18.17	V	4.6	9.2	22.71	33.0	-10.3	
	1907.50	20.23	H	4.6	9.2	24.77	33.0	-8.2	
15MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-08  <b>Test Engineer:</b> 20890  <b>Configuration:</b> EUT / Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                      Substitution: Horn 3115[00167211], 8.5m SMA-type Cable                 </p>								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	<b>Low Ch</b>								
	1857.50	16.07	V	4.5	9.5	21.07	33.0	-11.9	
	1857.50	19.13	H	4.5	9.5	24.13	33.0	-8.9	
	<b>Mid Ch</b>								
	1882.50	16.03	V	4.6	9.4	20.82	33.0	-12.2	
	1882.50	18.82	H	4.6	9.4	23.61	33.0	-9.4	
	<b>High Ch</b>								
	1907.50	17.08	V	4.6	9.2	21.62	33.0	-11.4	
	1907.50	19.11	H	4.6	9.2	23.65	33.0	-9.3	

10MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																																
	<p>Company: Samsung                  Project #: 4789867826                  Date: 2021-04-08                  Test Engineer: 20890                  Configuration: EUT / Z-Position                  Location: Chamber 1                  Mode: LTE_QPSK Band 25 Fundamentals, 10MHz Bandwidth</p> <p><u>Test Equipment:</u>                  Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                  Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1855.00</td> <td>16.75</td> <td>V</td> <td>4.5</td> <td>9.6</td> <td>21.77</td> <td>33.0</td> <td>-11.2</td> <td></td> </tr> <tr> <td>1855.00</td> <td>20.35</td> <td>H</td> <td>4.5</td> <td>9.6</td> <td>25.37</td> <td>33.0</td> <td>-7.6</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1882.50</td> <td>17.44</td> <td>V</td> <td>4.6</td> <td>9.4</td> <td>22.23</td> <td>33.0</td> <td>-10.8</td> <td></td> </tr> <tr> <td>1882.50</td> <td>20.83</td> <td>H</td> <td>4.6</td> <td>9.4</td> <td>25.62</td> <td>33.0</td> <td>-7.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1910.00</td> <td>18.45</td> <td>V</td> <td>4.6</td> <td>9.1</td> <td>22.97</td> <td>33.0</td> <td>-10.0</td> <td></td> </tr> <tr> <td>1910.00</td> <td>20.38</td> <td>H</td> <td>4.6</td> <td>9.1</td> <td>24.89</td> <td>33.0</td> <td>-8.1</td> <td></td> </tr> </tbody> </table>								f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1855.00	16.75	V	4.5	9.6	21.77	33.0	-11.2		1855.00	20.35	H	4.5	9.6	25.37	33.0	-7.6		Mid Ch									1882.50	17.44	V	4.6	9.4	22.23	33.0	-10.8		1882.50	20.83	H	4.6	9.4	25.62	33.0	-7.4		High Ch									1910.00	18.45	V	4.6	9.1	22.97	33.0	-10.0		1910.00	20.38	H	4.6	9.1	24.89	33.0	-8.1
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5MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789867826 Date: 2021-04-07 Test Engineer: 22943 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth  <u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	1852.50	16.47	V	4.5	9.6	21.51	33.0	-11.5	
	1852.50	20.59	H	4.5	9.6	25.64	33.0	-7.4	
	Mid Ch								
	1882.50	17.70	V	4.6	9.4	22.49	33.0	-10.5	
	1882.50	20.27	H	4.6	9.4	25.06	33.0	-7.9	
	High Ch								
	1912.50	17.60	V	4.6	9.1	22.08	33.0	-10.9	
	1912.50	20.42	H	4.6	9.1	24.91	33.0	-8.1	
5MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789867826 Date: 2021-04-07 Test Engineer: 22943 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth  <u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	<b>f</b>	<b>SG reading</b>	<b>Ant. Pol.</b>	<b>Cable Loss</b>	<b>Antenna Gain</b>	<b>EIRP</b>	<b>Limit</b>	<b>Delta</b>	<b>Notes</b>
	<b>MHz</b>	<b>(dBm)</b>	<b>(H/V)</b>	<b>(dB)</b>	<b>(dBi)</b>	<b>(dBm)</b>	<b>(dBm)</b>	<b>(dB)</b>	
	Low Ch								
	1852.50	15.47	V	4.5	9.6	20.51	33.0	-12.5	
	1852.50	19.76	H	4.5	9.6	24.81	33.0	-8.2	
	Mid Ch								
	1882.50	15.25	V	4.6	9.4	20.04	33.0	-13.0	
	1882.50	18.87	H	4.6	9.4	23.66	33.0	-9.3	
	High Ch								
	1912.50	16.82	V	4.6	9.1	21.30	33.0	-11.7	
	1912.50	19.53	H	4.6	9.1	24.02	33.0	-9.0	

3MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-07  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 25 Fundamentals, 3MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                      Substitution: Horn 3115[00167211], 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1851.50	16.18	V	4.5	9.6	21.23	33.0	-11.8	
	1851.50	20.68	H	4.5	9.6	25.73	33.0	-7.3	
	Mid Ch								
	1882.50	16.99	V	4.6	9.4	21.78	33.0	-11.2	
	1882.50	20.07	H	4.6	9.4	24.86	33.0	-8.1	
	High Ch								
	1913.50	17.51	V	4.6	9.1	21.97	33.0	-11.0	
	1913.50	20.32	H	4.6	9.1	24.79	33.0	-8.2	
3MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-07  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 25 Fundamentals, 3MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                      Substitution: Horn 3115[00167211], 8.5m SMA-type Cable                 </p>								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1851.50	15.06	V	4.5	9.6	20.11	33.0	-12.9	
	1851.50	19.64	H	4.5	9.6	24.69	33.0	-8.3	
	Mid Ch								
	1882.50	15.99	V	4.6	9.4	20.78	33.0	-12.2	
	1882.50	18.86	H	4.6	9.4	23.65	33.0	-9.3	
	High Ch								
	1913.50	16.34	V	4.6	9.1	20.80	33.0	-12.2	
	1913.50	19.26	H	4.6	9.1	23.73	33.0	-9.3	

1.4MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																									
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**LTE Band 26 (Part 90)**

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**LTE Band 26 (Straddle & Part 22)**

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	Straddle Ch								
	824.00	27.43	V	3.0	-1.0	23.44	38.5	-15.1	
	824.00	18.99	H	3.0	-1.0	14.99	38.5	-23.5	
	Low Ch								
	829.00	27.88	V	3.1	-0.9	23.89	38.5	-14.6	
	829.00	18.55	H	3.1	-0.9	14.56	38.5	-23.9	
	Mid Ch								
	831.50	27.72	V	3.1	-0.9	23.74	38.5	-14.8	
	831.50	18.20	H	3.1	-0.9	14.22	38.5	-24.3	
	High Ch								
	844.00	28.95	V	3.1	-0.9	25.00	38.5	-13.5	
	844.00	19.66	H	3.1	-0.9	15.71	38.5	-22.8	
10MHz  16QAM	<b>Company:</b> Samsung <b>Project #:</b> 4789867826 <b>Date:</b> 2021-04-13 <b>Test Engineer:</b> 20881 <b>Configuration:</b> EUT, Y-Position <b>Location:</b> Chamber 2 <b>Mode:</b> LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth								
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	Straddle Ch								
	824.00	26.68	V	3.0	-1.0	22.69	38.5	-15.8	
	824.00	18.54	H	3.0	-1.0	14.54	38.5	-24.0	
	Low Ch								
	829.00	26.89	V	3.1	-0.9	22.90	38.5	-15.6	
	829.00	17.61	H	3.1	-0.9	13.62	38.5	-24.9	
	Mid Ch								
	831.50	26.79	V	3.1	-0.9	22.81	38.5	-15.7	
	831.50	17.07	H	3.1	-0.9	13.09	38.5	-25.4	
	High Ch								
	844.00	28.27	V	3.1	-0.9	24.32	38.5	-14.2	
	844.00	18.84	H	3.1	-0.9	14.89	38.5	-23.6	

5MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																																																												
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Low Ch																																																																																																																													
825.50	27.82	V	3.0	-0.9	23.83	38.5	-14.7																																																																																																																						
825.50	18.83	H	3.0	-0.9	14.84	38.5	-23.7																																																																																																																						
Mid Ch																																																																																																																													
831.50	28.05	V	3.1	-0.9	24.07	38.5	-14.4																																																																																																																						
831.50	18.18	H	3.1	-0.9	14.20	38.5	-24.3																																																																																																																						
High Ch																																																																																																																													
847.50	29.03	V	3.1	-0.9	25.09	38.5	-13.4																																																																																																																						
847.50	19.97	H	3.1	-0.9	16.03	38.5	-22.5																																																																																																																						
3MHz  16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																																																												
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-13  <b>Test Engineer:</b> 20881  <b>Configuration:</b> EUT, Y-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-749, and Chamber 2 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Straddle Ch</td> </tr> <tr> <td>824.00</td> <td>26.71</td> <td>V</td> <td>3.0</td> <td>-1.0</td> <td>22.72</td> <td>38.5</td> <td>-15.8</td> <td></td> </tr> <tr> <td>824.00</td> <td>18.03</td> <td>H</td> <td>3.0</td> <td>-1.0</td> <td>14.03</td> <td>38.5</td> <td>-24.5</td> <td></td> </tr> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>825.50</td> <td>27.07</td> <td>V</td> <td>3.0</td> <td>-0.9</td> <td>23.08</td> <td>38.5</td> <td>-15.4</td> <td></td> </tr> <tr> <td>825.50</td> <td>18.14</td> <td>H</td> <td>3.0</td> <td>-0.9</td> <td>14.15</td> <td>38.5</td> <td>-24.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>831.50</td> <td>26.73</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>22.75</td> <td>38.5</td> <td>-15.7</td> <td></td> </tr> <tr> <td>831.50</td> <td>17.23</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>13.25</td> <td>38.5</td> <td>-25.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>847.50</td> <td>28.00</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>24.06</td> <td>38.5</td> <td>-14.4</td> <td></td> </tr> <tr> <td>847.50</td> <td>18.70</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>14.76</td> <td>38.5</td> <td>-23.7</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Straddle Ch									824.00	26.71	V	3.0	-1.0	22.72	38.5	-15.8		824.00	18.03	H	3.0	-1.0	14.03	38.5	-24.5		Low Ch									825.50	27.07	V	3.0	-0.9	23.08	38.5	-15.4		825.50	18.14	H	3.0	-0.9	14.15	38.5	-24.3		Mid Ch									831.50	26.73	V	3.1	-0.9	22.75	38.5	-15.7		831.50	17.23	H	3.1	-0.9	13.25	38.5	-25.3		High Ch									847.50	28.00	V	3.1	-0.9	24.06	38.5	-14.4		847.50	18.70	H	3.1	-0.9	14.76	38.5	-23.7
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831.50	26.73	V	3.1	-0.9	22.75	38.5	-15.7																																																																																																																						
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		UL Verification Services, Inc. High Frequency Substitution Measurement							
1.4MHz  QPSK	Company: Samsung Project #: 4789867826 Date: 2021-04-13 Test Engineer: 20881 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth  <u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Straddle Ch								
	824.00	27.61	V	3.0	-1.0	23.62	38.5	-14.9	
	824.00	18.94	H	3.0	-1.0	14.94	38.5	-23.6	
	Low Ch								
	824.70	27.47	V	3.0	-1.0	23.47	38.5	-15.0	
	824.70	18.94	H	3.0	-1.0	14.94	38.5	-23.6	
	Mid Ch								
	831.50	27.91	V	3.1	-0.9	23.93	38.5	-14.6	
	831.50	18.05	H	3.1	-0.9	14.07	38.5	-24.4	
	High Ch								
	848.30	28.31	V	3.1	-0.9	24.37	38.5	-14.1	
	848.30	19.66	H	3.1	-0.9	15.72	38.5	-22.8	
1.4MHz  16QAM	Company: Samsung Project #: 4789867826 Date: 2021-04-13 Test Engineer: 20881 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth  <u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Straddle Ch								
	824.00	26.67	V	3.0	-1.0	22.68	38.5	-15.8	
	824.00	17.88	H	3.0	-1.0	13.88	38.5	-24.6	
	Low Ch								
	824.70	26.88	V	3.0	-1.0	22.88	38.5	-15.6	
	824.70	18.15	H	3.0	-1.0	14.15	38.5	-24.3	
	Mid Ch								
	831.50	26.77	V	3.1	-0.9	22.79	38.5	-15.7	
	831.50	17.10	H	3.1	-0.9	13.12	38.5	-25.4	
	High Ch								
	848.30	27.18	V	3.1	-0.9	23.24	38.5	-15.3	
	848.30	18.56	H	3.1	-0.9	14.62	38.5	-23.9	

**LTE Band 30**

10MHz QPSK	<p><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p><b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-21  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 30 Fundamentals, 10MHz Bandwidth</p> <p><b>Test Equipment:</b>                  Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                  Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2310.00</td> <td>17.20</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>22.01</td> <td>24.0</td> <td>-2.0</td> <td></td> </tr> <tr> <td>2310.00</td> <td>17.48</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>22.28</td> <td>24.0</td> <td>-1.7</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									2310.00	17.20	V	5.1	9.9	22.01	24.0	-2.0		2310.00	17.48	H	5.1	9.9	22.28	24.0	-1.7	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																												
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f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																													
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5MHz QPSK	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p><b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-21  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK Band 30 Fundamentals, 5MHz Bandwidth</p> <p><b>Test Equipment:</b>                  Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                  Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>2307.50</td> <td>17.34</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>22.14</td> <td>24.0</td> <td>-1.9</td> <td></td> </tr> <tr> <td>2307.50</td> <td>17.39</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>22.18</td> <td>24.0</td> <td>-1.8</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>2310.00</td> <td>17.34</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>22.15</td> <td>24.0</td> <td>-1.9</td> <td></td> </tr> <tr> <td>2310.00</td> <td>17.49</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>22.29</td> <td>24.0</td> <td>-1.7</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>2312.50</td> <td>17.36</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>22.17</td> <td>24.0</td> <td>-1.8</td> <td></td> </tr> <tr> <td>2312.50</td> <td>17.42</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>22.23</td> <td>24.0</td> <td>-1.8</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									2307.50	17.34	V	5.1	9.9	22.14	24.0	-1.9		2307.50	17.39	H	5.1	9.9	22.18	24.0	-1.8		<b>Mid Ch</b>									2310.00	17.34	V	5.1	9.9	22.15	24.0	-1.9		2310.00	17.49	H	5.1	9.9	22.29	24.0	-1.7		<b>High Ch</b>									2312.50	17.36	V	5.1	9.9	22.17	24.0	-1.8		2312.50	17.42	H	5.1	9.9	22.23	24.0	-1.8	
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5MHz 16QAM	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p><b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-21  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAM Band 30 Fundamentals, 5MHz Bandwidth</p> <p><b>Test Equipment:</b>                  Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                  Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>2311.10</td> <td>16.39</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>21.20</td> <td>24.0</td> <td>-2.8</td> <td></td> </tr> <tr> <td>2311.10</td> <td>16.84</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>21.65</td> <td>24.0</td> <td>-2.4</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>2310.00</td> <td>16.29</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>21.10</td> <td>24.0</td> <td>-2.9</td> <td></td> </tr> <tr> <td>2310.00</td> <td>16.57</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>21.37</td> <td>24.0</td> <td>-2.6</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>2308.90</td> <td>16.54</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>21.33</td> <td>24.0</td> <td>-2.7</td> <td></td> </tr> <tr> <td>2308.90</td> <td>16.38</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>21.18</td> <td>24.0</td> <td>-2.8</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									2311.10	16.39	V	5.1	9.9	21.20	24.0	-2.8		2311.10	16.84	H	5.1	9.9	21.65	24.0	-2.4		<b>Mid Ch</b>									2310.00	16.29	V	5.1	9.9	21.10	24.0	-2.9		2310.00	16.57	H	5.1	9.9	21.37	24.0	-2.6		<b>High Ch</b>									2308.90	16.54	V	5.1	9.9	21.33	24.0	-2.7		2308.90	16.38	H	5.1	9.9	21.18	24.0	-2.8	
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**LTE Band 41(PC2)**

20MHz QPSK	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p>Company: Samsung                  Project #: 4789867826                  Date: 2021-04-27                  Test Engineer: 20882                  Configuration: EUT, X-Position                  Location: Chamber 1                  Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth</p> <p><u>Test Equipment:</u>                  Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                  Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>2506.00</td> <td>22.39</td> <td>V</td> <td>5.3</td> <td>10.2</td> <td>27.26</td> <td>33.0</td> <td>-5.7</td> <td></td> </tr> <tr> <td>2506.00</td> <td>21.98</td> <td>H</td> <td>5.3</td> <td>10.2</td> <td>26.86</td> <td>33.0</td> <td>-6.1</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>2593.00</td> <td>22.55</td> <td>V</td> <td>5.4</td> <td>10.0</td> <td>27.21</td> <td>33.0</td> <td>-5.8</td> <td></td> </tr> <tr> <td>2593.00</td> <td>24.30</td> <td>H</td> <td>5.4</td> <td>10.0</td> <td>28.95</td> <td>33.0</td> <td>-4.0</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>2680.00</td> <td>24.29</td> <td>V</td> <td>5.5</td> <td>10.1</td> <td>28.86</td> <td>33.0</td> <td>-4.1</td> <td></td> </tr> <tr> <td>2680.00</td> <td>21.96</td> <td>H</td> <td>5.5</td> <td>10.1</td> <td>26.53</td> <td>33.0</td> <td>-6.5</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									2506.00	22.39	V	5.3	10.2	27.26	33.0	-5.7		2506.00	21.98	H	5.3	10.2	26.86	33.0	-6.1		<b>Mid Ch</b>									2593.00	22.55	V	5.4	10.0	27.21	33.0	-5.8		2593.00	24.30	H	5.4	10.0	28.95	33.0	-4.0		<b>High Ch</b>									2680.00	24.29	V	5.5	10.1	28.86	33.0	-4.1		2680.00	21.96	H	5.5	10.1	26.53	33.0	-6.5	
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**LTE Band 66**

20MHz QPSK	<p style="text-align: center;"><b>UL Verification Services, Inc.</b>  <b>High Frequency Substitution Measurement</b></p> <p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-07  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, X-Position  <b>Location:</b> Chamber 2  <b>Mode:</b> LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables                      Substitution: Horn 3115[00161451], 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>1720.00</td> <td>18.32</td> <td>V</td> <td>4.4</td> <td>9.6</td> <td>23.56</td> <td>30.0</td> <td>-6.4</td> <td></td> </tr> <tr> <td>1720.00</td> <td>19.92</td> <td>H</td> <td>4.4</td> <td>9.6</td> <td>25.15</td> <td>30.0</td> <td>-4.8</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>1745.00</td> <td>18.79</td> <td>V</td> <td>4.4</td> <td>9.7</td> <td>24.07</td> <td>30.0</td> <td>-5.9</td> <td></td> </tr> <tr> <td>1745.00</td> <td>19.15</td> <td>H</td> <td>4.4</td> <td>9.7</td> <td>24.43</td> <td>30.0</td> <td>-5.6</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>1770.00</td> <td>17.51</td> <td>V</td> <td>4.4</td> <td>9.7</td> <td>22.78</td> <td>30.0</td> <td>-7.2</td> <td></td> </tr> <tr> <td>1770.00</td> <td>18.95</td> <td>H</td> <td>4.4</td> <td>9.7</td> <td>24.23</td> <td>30.0</td> <td>-5.8</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									1720.00	18.32	V	4.4	9.6	23.56	30.0	-6.4		1720.00	19.92	H	4.4	9.6	25.15	30.0	-4.8		<b>Mid Ch</b>									1745.00	18.79	V	4.4	9.7	24.07	30.0	-5.9		1745.00	19.15	H	4.4	9.7	24.43	30.0	-5.6		<b>High Ch</b>									1770.00	17.51	V	4.4	9.7	22.78	30.0	-7.2		1770.00	18.95	H	4.4	9.7	24.23	30.0	-5.8	
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**LTE Band 71**

20MHz  QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																									
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**NR Band 5**

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	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-26  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Y-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_16QAMNR n5 Fundamentals, 5MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: VULB9163-750, and Chamber 1 SMA Cables                      Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9"><b>Low Ch</b></td> </tr> <tr> <td>826.50</td> <td>24.85</td> <td>V</td> <td>3.0</td> <td>-0.9</td> <td>20.86</td> <td>38.5</td> <td>-17.6</td> <td></td> </tr> <tr> <td>826.50</td> <td>16.60</td> <td>H</td> <td>3.0</td> <td>-0.9</td> <td>12.61</td> <td>38.5</td> <td>-25.9</td> <td></td> </tr> <tr> <td colspan="9"><b>Mid Ch</b></td> </tr> <tr> <td>836.50</td> <td>25.43</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>21.46</td> <td>38.5</td> <td>-17.0</td> <td></td> </tr> <tr> <td>836.50</td> <td>17.12</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>13.15</td> <td>38.5</td> <td>-25.4</td> <td></td> </tr> <tr> <td colspan="9"><b>High Ch</b></td> </tr> <tr> <td>846.50</td> <td>24.07</td> <td>V</td> <td>3.1</td> <td>-0.9</td> <td>20.13</td> <td>38.5</td> <td>-18.4</td> <td></td> </tr> <tr> <td>846.50</td> <td>16.70</td> <td>H</td> <td>3.1</td> <td>-0.9</td> <td>12.76</td> <td>38.5</td> <td>-25.7</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	<b>Low Ch</b>									826.50	24.85	V	3.0	-0.9	20.86	38.5	-17.6		826.50	16.60	H	3.0	-0.9	12.61	38.5	-25.9		<b>Mid Ch</b>									836.50	25.43	V	3.1	-0.9	21.46	38.5	-17.0		836.50	17.12	H	3.1	-0.9	13.15	38.5	-25.4		<b>High Ch</b>									846.50	24.07	V	3.1	-0.9	20.13	38.5	-18.4		846.50	16.70	H	3.1	-0.9	12.76	38.5	-25.7
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**NR Band 25**

20MHz DFT-s QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																									
	<p> <b>Company:</b> Samsung  <b>Project #:</b> 4789867826  <b>Date:</b> 2021-04-30  <b>Test Engineer:</b> 22943  <b>Configuration:</b> EUT, Z-Position  <b>Location:</b> Chamber 1  <b>Mode:</b> LTE_QPSK NR n25 Fundamentals, 20MHz Bandwidth                 </p> <p> <b>Test Equipment:</b>                      Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables                      Substitution: Horn 3115[00167211], 8.5m SMA-type Cable                 </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1860.00</td> <td>17.12</td> <td>V</td> <td>4.6</td> <td>9.5</td> <td>22.10</td> <td>33.0</td> <td>-10.9</td> <td></td> </tr> <tr> <td>1860.00</td> <td>20.96</td> <td>H</td> <td>4.6</td> <td>9.5</td> <td>25.93</td> <td>33.0</td> <td>-7.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1882.50</td> <td>16.96</td> <td>V</td> <td>4.6</td> <td>9.4</td> <td>21.75</td> <td>33.0</td> <td>-11.2</td> <td></td> </tr> <tr> <td>1882.50</td> <td>20.98</td> <td>H</td> <td>4.6</td> <td>9.4</td> <td>25.77</td> <td>33.0</td> <td>-7.2</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1905.00</td> <td>16.95</td> <td>V</td> <td>4.6</td> <td>9.2</td> <td>21.53</td> <td>33.0</td> <td>-11.5</td> <td></td> </tr> <tr> <td>1905.00</td> <td>20.68</td> <td>H</td> <td>4.6</td> <td>9.2</td> <td>25.26</td> <td>33.0</td> <td>-7.7</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1860.00	17.12	V	4.6	9.5	22.10	33.0	-10.9		1860.00	20.96	H	4.6	9.5	25.93	33.0	-7.1		Mid Ch									1882.50	16.96	V	4.6	9.4	21.75	33.0	-11.2		1882.50	20.98	H	4.6	9.4	25.77	33.0	-7.2		High Ch									1905.00	16.95	V	4.6	9.2	21.53	33.0	-11.5		1905.00	20.68	H	4.6	9.2	25.26	33.0	-7.7
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15MHz DFT-s QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789867826 <b>Date:</b> 2021-04-30 <b>Test Engineer:</b> 22943 <b>Configuration:</b> EUT, Z-Position <b>Location:</b> Chamber 1 <b>Mode:</b> LTE_QPSK NR n25 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1857.50	17.06	V	4.5	9.5	22.06	33.0	-10.9	
	1857.50	20.16	H	4.5	9.5	25.16	33.0	-7.8	
	Mid Ch								
	1882.50	16.59	V	4.6	9.4	21.38	33.0	-11.6	
	1882.50	20.17	H	4.6	9.4	24.96	33.0	-8.0	
High Ch									
1907.50	15.63	V	4.6	9.2	20.17	33.0	-12.8		
1907.50	20.16	H	4.6	9.2	24.70	33.0	-8.3		
15MHz DFT-s 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789867826 <b>Date:</b> 2021-04-30 <b>Test Engineer:</b> 22943 <b>Configuration:</b> EUT, Z-Position <b>Location:</b> Chamber 1 <b>Mode:</b> LTE_16QAMNR n25 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1857.50	16.08	V	4.5	9.5	21.08	33.0	-11.9	
	1857.50	18.53	H	4.5	9.5	23.53	33.0	-9.5	
	Mid Ch								
	1882.50	15.68	V	4.6	9.4	20.47	33.0	-12.5	
	1882.50	19.10	H	4.6	9.4	23.89	33.0	-9.1	
High Ch									
1907.50	14.73	V	4.6	9.2	19.27	33.0	-13.7		
1907.50	18.91	H	4.6	9.2	23.45	33.0	-9.5		