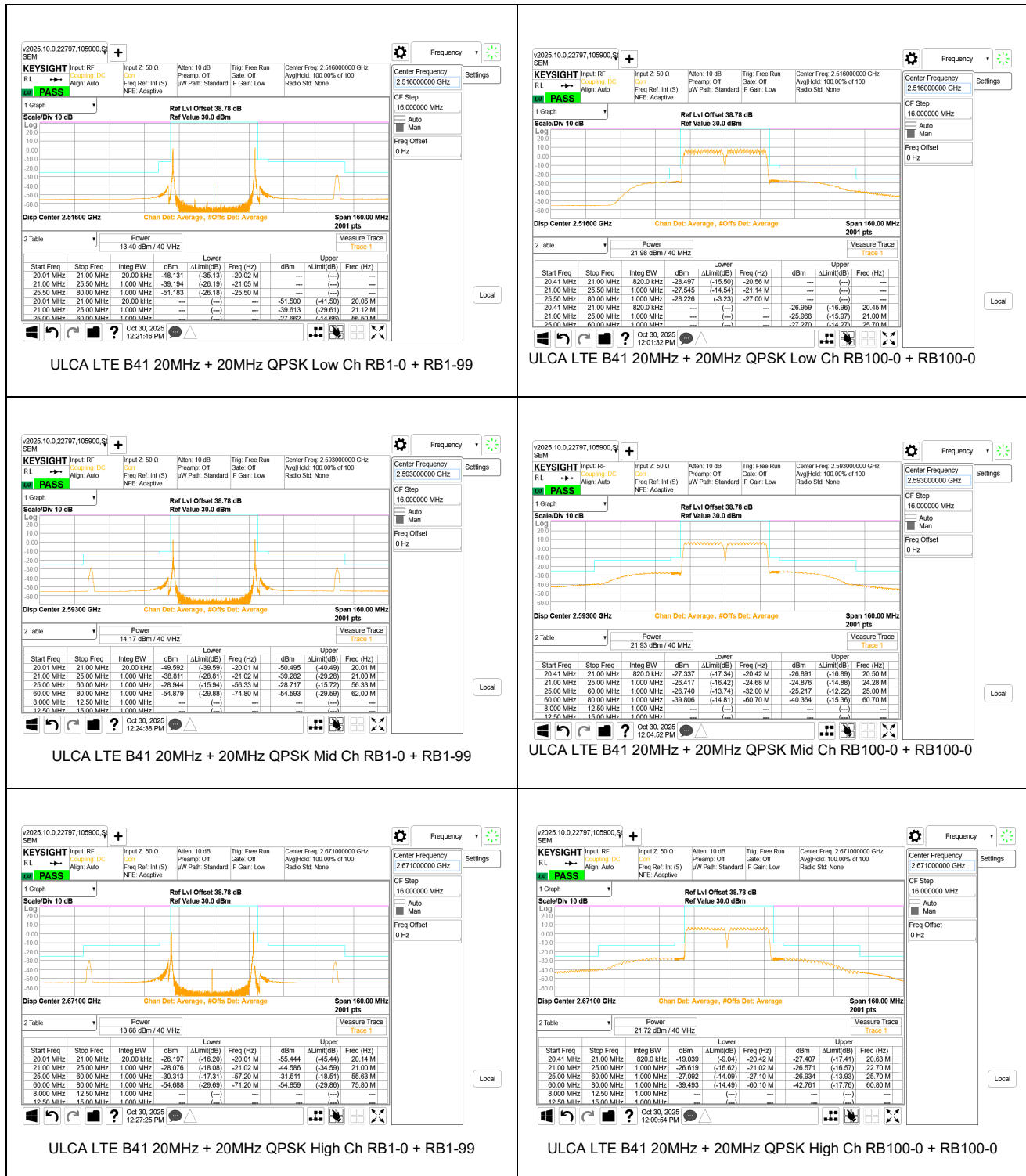








8.2.3. ULCA LTE BAND 41 (FCC)



8.3. OUT OF BAND EMISSIONS

LIMITS

FCC: §27.53 (m)

The minimum permissible attenuation level of any spurious emissions is $55 + 10 \log (P)$ dB where transmitting power (P) in Watts.

RSS199§5.6

The minimum permissible attenuation level of any spurious emissions is $55 + 10 \log (P)$ dB where transmitting power (P) in Watts.

TEST PROCEDURE

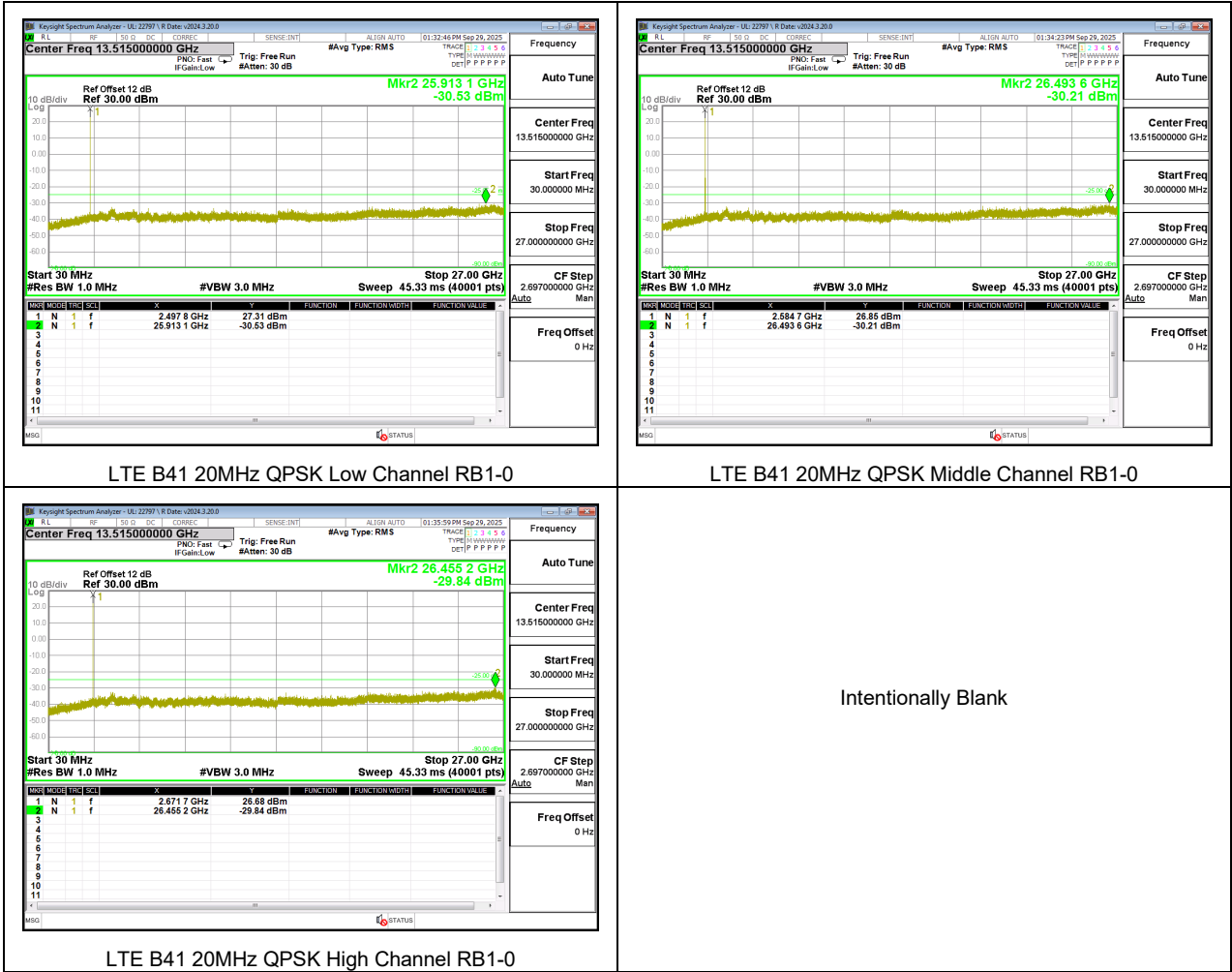
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case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

For each out of band emissions measurement:

- Set display line at -25dBm according to the band Limit
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst-case set RBW/VBW to 1MHz/3MHz)

RESULTS

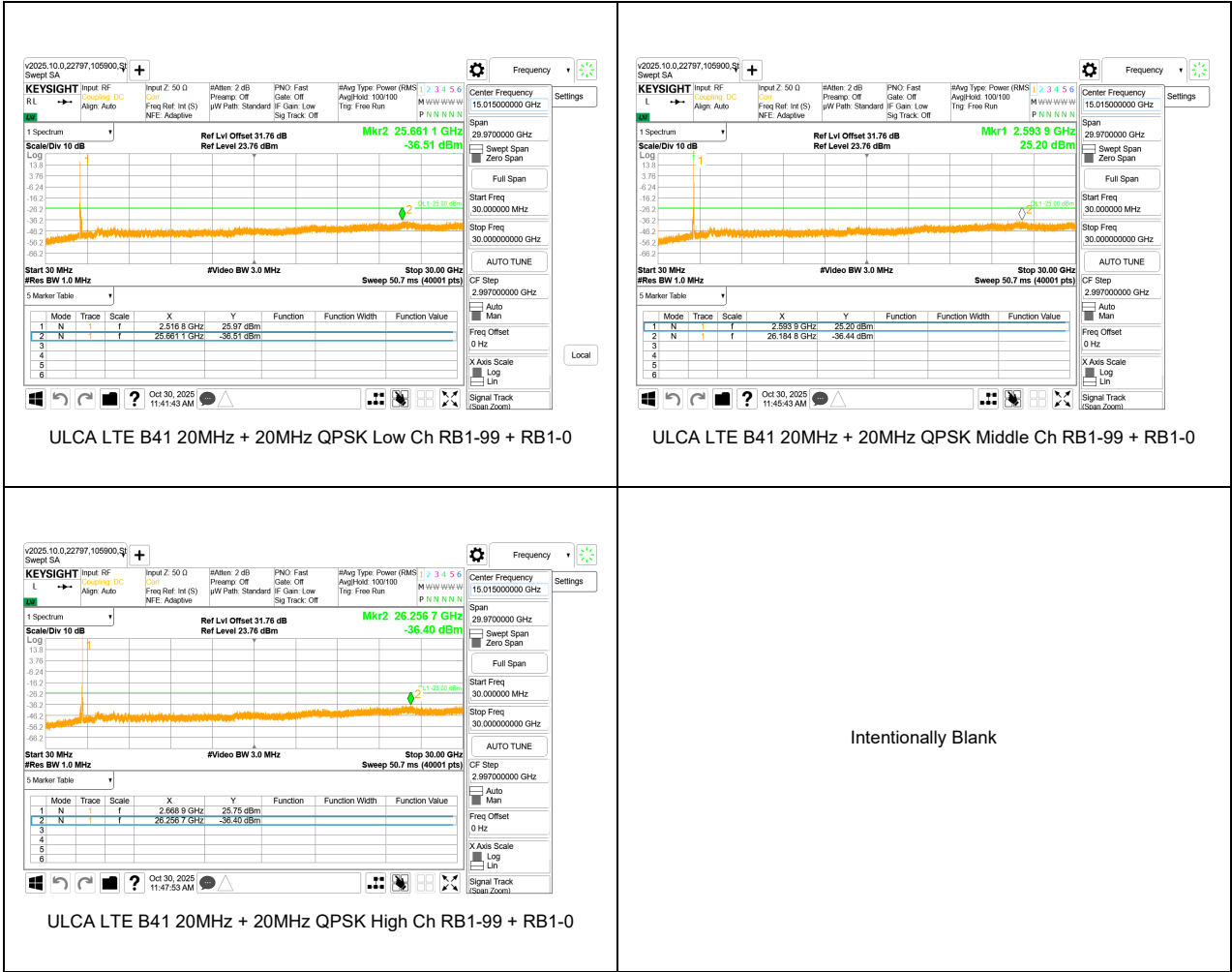
8.3.1. LTE BAND 41 (FCC)



8.3.2. 5G NR n41 (FCC)



8.3.3. ULCA LTE BAND 41 (FCC)



8.4. FREQUENCY STABILITY

LIMITS

FCC: §27.54

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

ISED: RSS199§5.4

Frequency Stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30°C to +50°C
- Voltage = (85% - 100%)

Normal, 3.89VDC

End Voltage, 3.69VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

RESULTS

8.4.1. LTE B41 (QPSK 20MHz BANDWIDTH, FCC)

Test Engineer ID:	105900; 22797	Test Date:	2025-10-8 - 2025-10-22
-------------------	---------------	------------	------------------------

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	2496.8625	2689.1388			
Extreme (50°C)		2496.8625	2689.1387	-6.92	-0.003	Yes
Extreme (40°C)		2496.8625	2689.1387	-5.91	-0.002	Yes
Extreme (30°C)		2496.8625	2689.1387	-7.21	-0.003	Yes
Extreme (10°C)		2496.8625	2689.1387	-4.97	-0.002	Yes
Extreme (0°C)		2496.8625	2689.1387	-5.36	-0.002	Yes
Extreme (-10°C)		2496.8625	2689.1387	-4.85	-0.002	Yes
Extreme (-20°C)		2496.8625	2689.1387	-4.27	-0.002	Yes
Extreme (-30°C)		2496.8625	2689.1388	6.23	0.002	Yes
20°C	End Point Voltage	2496.8625	2689.1387	-5.21	-0.002	Yes

8.4.2. 5G NR n41 (BPSK 100MHz BANDWIDTH, FCC)

Test Engineer ID:	105900; 22797	Test Date:	2025-10-8 - 2025-10-22
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Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	2497.3540	2688.4500			
Extreme (50°C)		2497.3540	2688.4500	-16.3	-0.006	Yes
Extreme (40°C)		2497.3540	2688.4500	-13.8	-0.005	Yes
Extreme (30°C)		2497.3540	2688.4500	-5.9	-0.002	Yes
Extreme (10°C)		2497.3540	2688.4500	-6.1	-0.002	Yes
Extreme (0°C)		2497.3540	2688.4500	2.8	0.001	Yes
Extreme (-10°C)		2497.3540	2688.4500	-15.5	-0.006	Yes
Extreme (-20°C)		2497.3540	2688.4500	-12.9	-0.005	Yes
Extreme (-30°C)		2497.3540	2688.4500	-14.4	-0.006	Yes
20°C	End Point Voltage	2497.3540	2688.4500	-16.9	-0.007	Yes

8.4.3. ULCA LTE BAND 41 (QPSK 20MHz + 20MHz BANDWIDTH, FCC)

Test Engineer ID:	105900; 22797	Test Date:	2025-10-8 - 2025-10-22
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Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	2496.8350	2689.1900			
Extreme (50°C)		2496.8350	2689.1900	33.82	0.013	Yes
Extreme (40°C)		2496.8350	2689.1900	36.76	0.014	Yes
Extreme (30°C)		2496.8350	2689.1900	33.41	0.013	Yes
Extreme (10°C)		2496.8350	2689.1900	13.95	0.005	Yes
Extreme (0°C)		2496.8350	2689.1900	-19.75	-0.008	Yes
Extreme (-10°C)		2496.8350	2689.1900	-36.97	-0.014	Yes
Extreme (-20°C)		2496.8350	2689.1900	-41.79	-0.016	Yes
Extreme (-30°C)		2496.8350	2689.1900	-36.5	-0.014	Yes
20°C	End Point Voltage	2496.8350	2689.1900	13.43	0.005	Yes

8.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

ISED: RSS199§5.5

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

The worst-case antenna port for conducted power shown in section 6.4. was used to measure as the worst case; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average power ratio criteria.

8.5.1. LTE BAND 41 (FCC)

Test Engineer ID:	33499	Test Date:	10-10-25 thru 10/22/2025
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
LTE Band 41	5MHz	2593.0	25	0	QPSK	26.37	21.43	4.94
					16QAM	26.76	20.44	6.32
	10MHz		50	0	QPSK	26.57	21.47	5.10
					16QAM	26.85	20.46	6.39
	15MHz		75	0	QPSK	26.61	21.43	5.18
					16QAM	26.93	20.43	6.50
	20MHz		100	0	QPSK	26.73	21.45	5.28
					16QAM	26.94	20.49	6.45
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

8.5.2. 5G NR n41 (FCC)

Test Engineer ID:	33499	Test Date:	10-10-25 thru 10/22/2025
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
5G NR n41	10MHz	2593.0	24	0	BPSK	28.48	20.91	7.57
					16QAM	28.33	19.76	8.57
	15MHz		36	0	BPSK	28.92	19.56	9.36
					16QAM	29.34	18.36	10.98
	20MHz		50	0	BPSK	28.70	20.12	8.58
					16QAM	28.80	18.55	10.25
	25MHz		64	0	BPSK	29.21	20.52	8.69
					16QAM	28.65	18.82	9.83
	30MHz		75	0	BPSK	28.46	20.83	7.63
					16QAM	29.09	19.19	9.90
	35MHz		90	0	BPSK	29.36	24.80	4.56
					16QAM	29.28	22.63	6.65
	40MHz		100	0	BPSK	28.40	20.42	7.98
					16QAM	29.16	19.70	9.46
	45MHz		108	0	BPSK	29.36	24.92	4.45
					16QAM	29.34	22.69	6.65
	50MHz		128	0	BPSK	29.35	24.33	5.02
					16QAM	29.16	22.45	6.71
	60MHz		162	0	BPSK	28.35	24.06	4.29
					16QAM	28.90	22.44	6.45
	70MHz		180	0	BPSK	28.32	24.08	4.24
					16QAM	29.00	22.59	6.41
	80MHz		216	0	BPSK	28.40	24.07	4.32
					16QAM	28.90	22.45	6.46
	90MHz		243	0	BPSK	28.42	24.53	3.89
					16QAM	28.79	23.38	5.41
	100MHz		270	0	BPSK	28.53	24.39	4.14
					16QAM	29.03	23.52	5.52
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

8.5.3. ULCA LTE BAND 41 (FCC)

Test Engineer ID:	33499	Test Date:	10-10-25 thru 10/22/2025
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Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
ULCA LTE Band 41 (FCC)	5MHz / 20MHz	2583.8	2595.5	QPSK	26.24	21.14	5.10
				16QAM	26.67	20.40	6.27
	20MHz / 5MHz	2590.5	2602.2	QPSK	26.71	21.43	5.28
				16QAM	26.84	20.42	6.42
	10MHz / 20MHz	2583.6	2598.0	QPSK	26.47	21.39	5.08
				16QAM	26.69	20.35	6.34
	20MHz / 10MHz	2588.1	2602.5	QPSK	26.57	21.31	5.26
				16QAM	26.84	20.39	6.45
	15MHz / 15MHz	2585.5	2600.5	QPSK	26.54	21.28	5.26
				16QAM	26.37	21.23	5.14
	15MHz / 20MHz	2583.3	2600.4	QPSK	26.43	21.22	5.21
				16QAM	26.36	21.20	5.16
	20MHz / 15MHz	2585.6	2602.7	QPSK	26.55	21.28	5.27
				16QAM	26.75	20.30	6.45
	20MHz / 20MHz	2583.1	2602.9	QPSK	26.52	21.30	5.22
				16QAM	26.45	21.33	5.12
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, the radiated emissions is measured directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement.

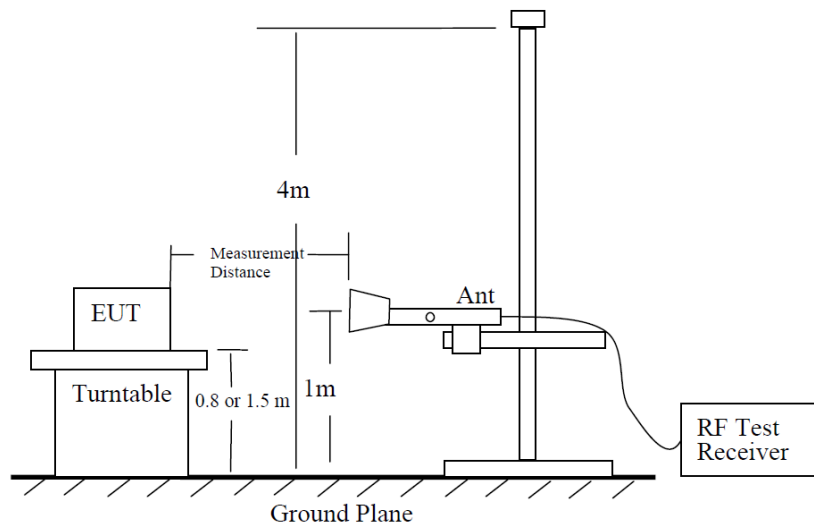


Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

Radiated Power Measurement Calculation According to ANSI C63.26-2015

- a) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$
- b) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$
- c) $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8;$ where D is the measurement distance (in the far field region) in m.
- d) $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8;$ where D is the measurement distance (in the far field region) in m.

So, from d)

The measuring distance is usually at 3m, then $20 \cdot \log(3) = 9.5424$

Then, $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

9.1. EFFECTIVE RADIATED POWER ERP/EIRP

RULE PART(S)

FCC: 27.50 (h) (2)
ISED: RSS199§5.5

LIMITS

FCC: 27.50 (h) - Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

ISED: RSS199§5.5 - The maximum output power of the equipment shall comply with the limits referred as the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

Subscriber equipment other than fixed subscriber equipment shall not exceed an e.i.r.p of 2W per channel bandwidth

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

$$\text{ERP/EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

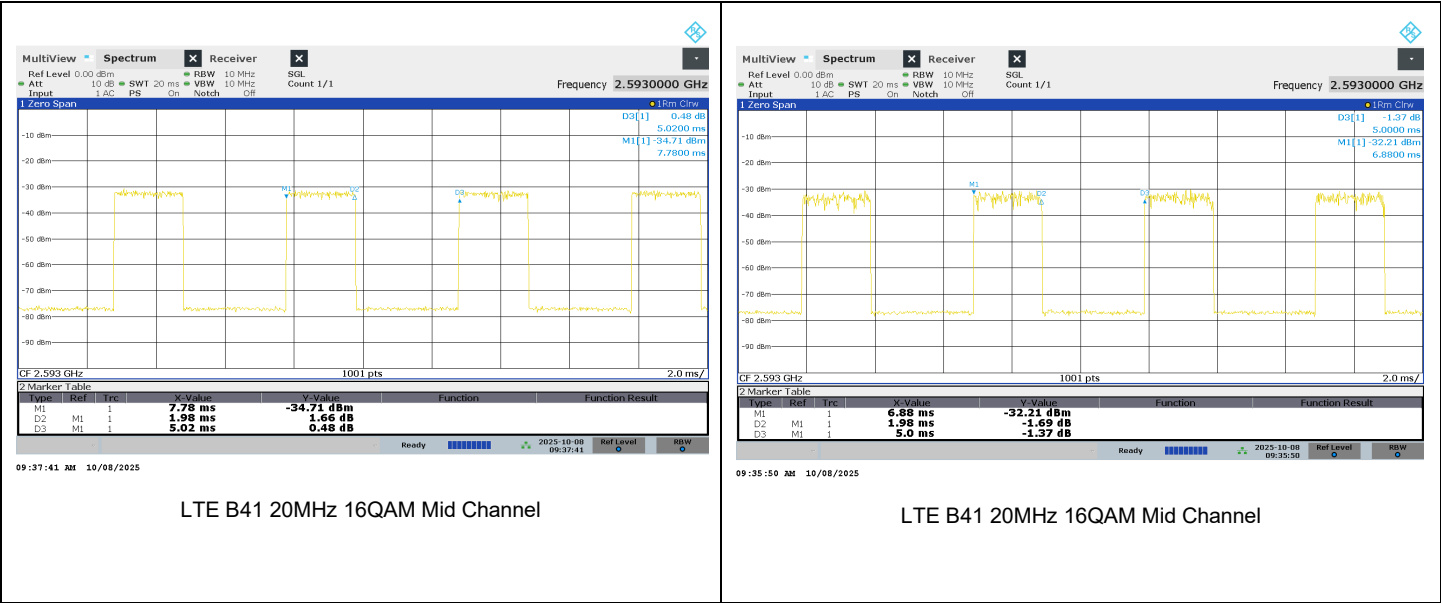
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

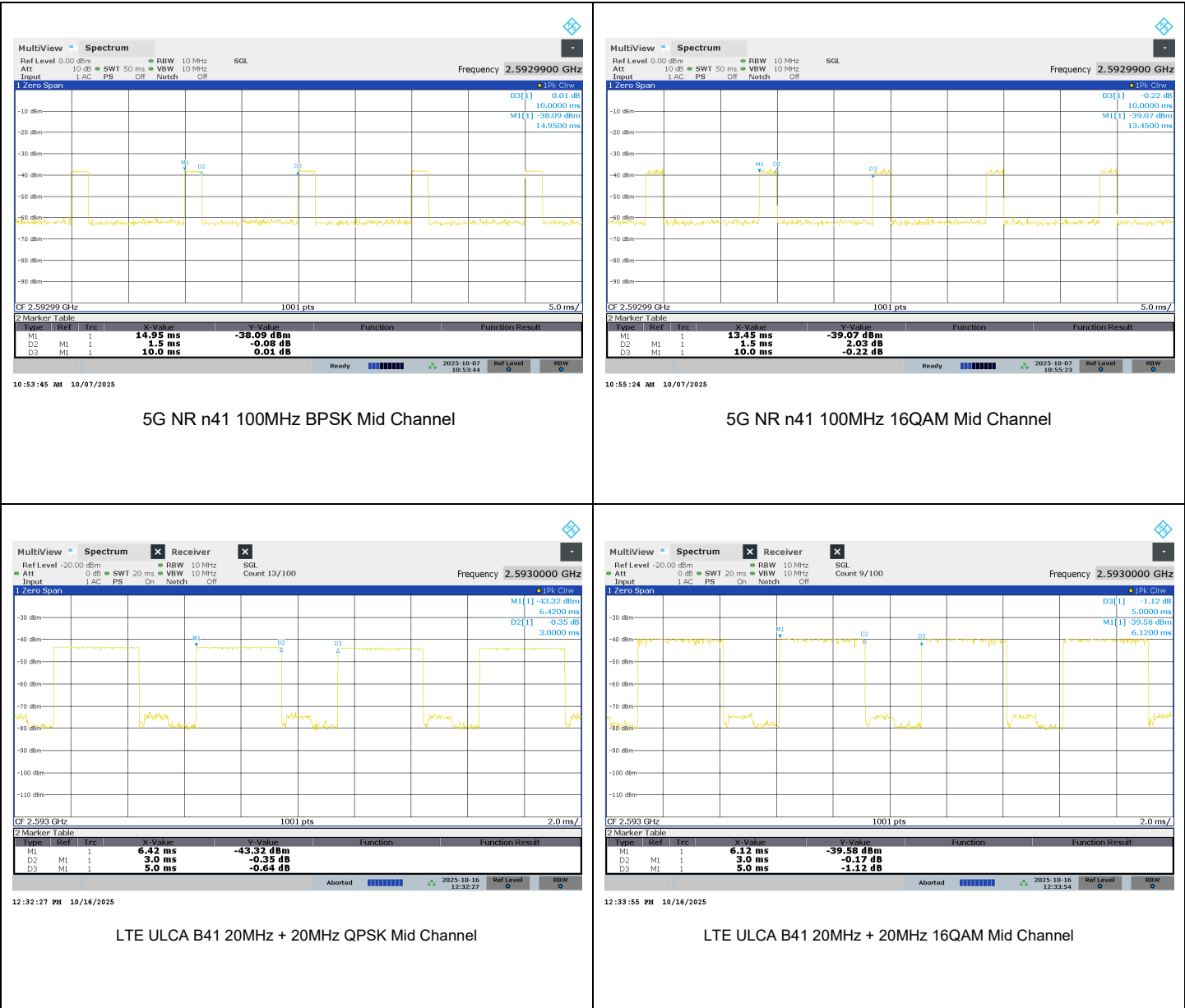
For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

TEST RESULTS

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
Config 0 - Ant F						
LTE B41 - QPSK	1.980	5.020	0.394	39.44	4.04	0.505
LTE B41 - 16QAM	1.980	5.000	0.396	39.60	4.02	0.505
GNR FR1 n41 - BPSK	1.500	10.000	0.150	15.00	8.24	0.667
GNR FR1 n41 - 16QAM	1.500	10.000	0.150	15.00	8.24	0.667
LTE ULCA B41 - QPSK	3.000	5.000	0.600	60.00	2.22	0.333
LTE ULCA B41 - 16QAM	3.000	5.000	0.600	60.00	2.22	0.333





9.1.1. LTE BAND 41 FCC 20MHz BW

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 20MHz, LTE B41,QPSK							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	18.35	H	9.02	5.21	4.04	18.58	33.01	-14.43	RB1-0
2593.00	13.68	V	9.02	5.21	4.04	13.91	33.01	-19.10	RB1-0
2593.00	19.65	H	9.02	5.21	4.04	19.88	33.01	-13.13	RB1-50
2593.00	16.75	V	9.02	5.21	4.04	16.98	33.01	-16.03	RB1-50
2593.00	16.74	H	9.02	5.21	4.04	16.97	33.01	-16.04	RB1-99
2593.00	13.31	V	9.02	5.21	4.04	13.54	33.01	-19.47	RB1-99
Rev. 10.17.25									

CONFIG 0, QPSK

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 20MHz, LTE B41,16QAM							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	17.49	H	9.02	5.21	4.02	17.70	33.01	-15.31	RB1-0
2593.00	12.75	V	9.02	5.21	4.02	12.96	33.01	-20.05	RB1-0
2593.00	13.57	H	9.02	5.21	4.02	13.78	33.01	-19.23	RB1-50
2593.00	18.37	V	9.02	5.21	4.02	18.58	33.01	-14.43	RB1-50
2593.00	15.89	H	9.02	5.21	4.02	16.10	33.01	-16.91	RB1-99
2593.00	12.45	V	9.02	5.21	4.02	12.66	33.01	-20.35	RB1-99
Rev. 10.17.25									

CONFIG 0, 16QAM

**High Frequency Substitution Measurement
UL Morrisville Chamber 4**

Company: RFSL
Project #: 15980274
Date: 10/15/25 - 12/23/25
Test Engineer: 19289
Configuration: EUT Only
Mode: TX, 20MHz, LTE B41,QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	13.73	H	9.02	5.21	4.04	13.96	33.01	-19.05	RB1-0
2593.00	18.31	V	9.02	5.21	4.04	18.54	33.01	-14.47	RB1-0
2593.00	14.27	H	9.02	5.21	4.04	14.50	33.01	-18.51	RB1-50
2593.00	18.64	V	9.02	5.21	4.04	18.87	33.01	-14.14	RB1-50
2593.00	17.85	H	9.02	5.21	4.04	18.08	33.01	-14.93	RB1-99
2593.00	13.44	V	9.02	5.21	4.04	13.67	33.01	-19.34	RB1-99

Rev. 10.17.25

CONFIG 1, QPSK

**High Frequency Substitution Measurement
UL Morrisville Chamber 4**

Company: RFSL
Project #: 15980274
Date: 10/15/25 - 12/23/25
Test Engineer: 19289
Configuration: EUT Only
Mode: TX, 20MHz, LTE B41,16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	12.95	H	9.02	5.21	4.02	13.16	33.01	-19.85	RB1-0
2593.00	17.08	V	9.02	5.21	4.02	17.29	33.01	-15.72	RB1-0
2593.00	13.46	H	9.02	5.21	4.02	13.67	33.01	-19.34	RB1-50
2593.00	17.85	V	9.02	5.21	4.02	18.06	33.01	-14.95	RB1-50
2593.00	18.36	H	9.02	5.21	4.02	18.57	33.01	-14.44	RB1-99
2593.00	12.79	V	9.02	5.21	4.02	13.00	33.01	-20.01	RB1-99

Rev. 10.17.25

CONFIG 1, 16QAM

9.1.2. LTE BAND 41 FCC WC BW

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 15MHz, LTE B41,QPSK							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	19.87	H	9.02	5.21	4.04	20.10	33.01	-12.91	RB1-0
Rev. 10.17.25									
CONFIG 0									

9.1.3. 5G NR n41FCC 100MHz BW

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274.0							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 100MHz FR1 n41, BPSK							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2592.99	19.79	H	9.02	5.21	8.24	24.22	33.01	-8.79	RB1-1
2592.99	12.60	V	9.02	5.21	8.24	17.03	33.01	-15.98	RB1-1
2592.99	17.54	H	9.02	5.21	8.24	21.97	33.01	-11.04	RB1-137
2592.99	13.11	V	9.02	5.21	8.24	17.54	33.01	-15.47	RB1-137
2592.99	16.70	H	9.02	5.21	8.24	21.13	33.01	-11.88	RB1-271
2592.99	12.96	V	9.02	5.21	8.24	17.39	33.01	-15.62	RB1-271
Rev. 10.17.25									

CONFIG 0, BPSK

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274.0							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 100MHz FR1 n41, 16QAM							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2592.99	18.13	H	9.02	5.21	8.24	22.56	33.01	-10.45	RB1-1
2592.99	11.27	V	9.02	5.21	8.24	15.70	33.01	-17.31	RB1-1
2592.99	16.07	H	9.02	5.21	8.24	20.50	33.01	-12.51	RB1-137
2592.99	11.70	V	9.02	5.21	8.24	16.13	33.01	-16.88	RB1-137
2592.99	15.31	H	9.02	5.21	8.24	19.74	33.01	-13.27	RB1-271
2592.99	11.67	V	9.02	5.21	8.24	16.10	33.01	-16.91	RB1-271
Rev. 10.17.25									

CONFIG 0, 16QAM

**High Frequency Substitution Measurement
UL Morrisville Chamber 4**

Company: RFSL
Project #: 15980274
Date: 10/15/25 - 12/23/25
Test Engineer: 19289
Configuration: EUT Only
Mode: TX, 100MHz FR1 n41, BPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2592.99	18.16	H	9.02	5.21	8.24	22.59	33.01	-10.42	RB1-1
2592.99	17.17	V	9.02	5.21	8.24	21.60	33.01	-11.41	RB1-1
2592.99	19.10	H	9.02	5.21	8.24	23.53	33.01	-9.48	RB1-137
2592.99	11.56	V	9.02	5.21	8.24	15.99	33.01	-17.02	RB1-137
2592.99	18.05	H	9.02	5.21	8.24	22.48	33.01	-10.53	RB1-271
2592.99	11.48	V	9.02	5.21	8.24	15.91	33.01	-17.10	RB1-271

Rev. 10.17.25

CONFIG 1, BPSK

**High Frequency Substitution Measurement
UL Morrisville Chamber 4**

Company: RFSL
Project #: 15980274
Date: 10/15/25 - 12/23/25
Test Engineer: 19289
Configuration: EUT Only
Mode: TX, 100MHz FR1 n41, 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2592.99	17.27	H	9.02	5.21	8.24	21.70	33.01	-11.31	RB1-1
2592.99	14.77	V	9.02	5.21	8.24	19.20	33.01	-13.81	RB1-1
2592.99	17.98	H	9.02	5.21	8.24	22.41	33.01	-10.60	RB1-137
2592.99	10.42	V	9.02	5.21	8.24	14.85	33.01	-18.16	RB1-137
2592.99	16.97	H	9.02	5.21	8.24	21.40	33.01	-11.61	RB1-271
2592.99	10.45	V	9.02	5.21	8.24	14.88	33.01	-18.13	RB1-271

Rev. 10.17.25

CONFIG 1, 16QAM

9.1.4. 5G NR n41FCC WC BW

High Frequency Substitution Measurement UL Morrisville Chamber 4									
Company:		RFSL							
Project #:		15980274.0							
Date:		10/15/25 - 12/23/25							
Test Engineer:		19289							
Configuration:		EUT Only							
Mode:		TX, 40MHz FR1 n41, BPSK							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2592.99	20.69	H	9.02	5.21	8.24	25.12	33.01	-7.89	RB1-1
Rev. 10.17.25									
CONFIG 0									

9.1.5. LTE ULCA BAND 41FCC

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: RFSL
Project #: 15980274.0
Date: 2025-09-28 thru 2025-10-28
Test Engineer: 19289.0
Configuration: EUT Only
Mode: ULCA B41, 20M+20M

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	22.60	H	9.02	5.21	2.22	21.01	33.01	-12.00	PCC_RB1-99/SCC_1-0
2593.00	15.52	V	9.02	5.21	2.22	13.93	33.01	-19.08	PCC_RB1-99/SCC_1-0

Rev. 10.17.25

CONFIG 0, QPSK

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: RFSL
Project #: 15980274.0
Date: 2025-09-28 thru 2025-10-28
Test Engineer: 19289.0
Configuration: EUT Only
Mode: ULCA B41 20M+20M

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	17.83	H	9.02	5.21	2.22	16.24	33.01	-16.77	PCC_RB1-99/SCC_1-0
2593.00	14.89	V	9.02	5.21	2.22	13.30	33.01	-19.71	PCC_RB1-99/SCC_1-0

Rev. 10.17.25

CONFIG 0, 16QAM

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: RFSL
Project #: 15980274.0
Date: 2025-09-28 thru 2025-10-28
Test Engineer: 19289.0
Configuration: EUT Only
Mode: ULCA B41 20M+20M

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	19.68	H	9.02	5.21	2.22	18.09	33.01	-14.92	PCC_RB1-99/SCC_1-0
2593.00	13.19	V	9.02	5.21	2.22	11.60	33.01	-21.41	PCC_RB1-99/SCC_1-0

Rev. 10.17.25

CONFIG 1, QPSK

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: RFSL
Project #: 15980274.0
Date: 2025-09-28 thru 2025-10-28
Test Engineer: 19289.0
Configuration: EUT Only
Mode: ULCA B41 20M+20M

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	RB Size-Offset
2593.00	16.20	H	9.02	5.21	2.22	14.61	33.01	-18.40	PCC_RB1-99/SCC_1-0
2593.00	13.49	V	9.02	5.21	2.22	11.90	33.01	-21.11	PCC_RB1-99/SCC_1-0

Rev. 10.17.25

CONFIG 1, 16QAM

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

LIMITS

FCC: §27.53 (m)

At least $55 + 10 \log (P)$ 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.

ISED: RSS199§5.6

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the tables below.

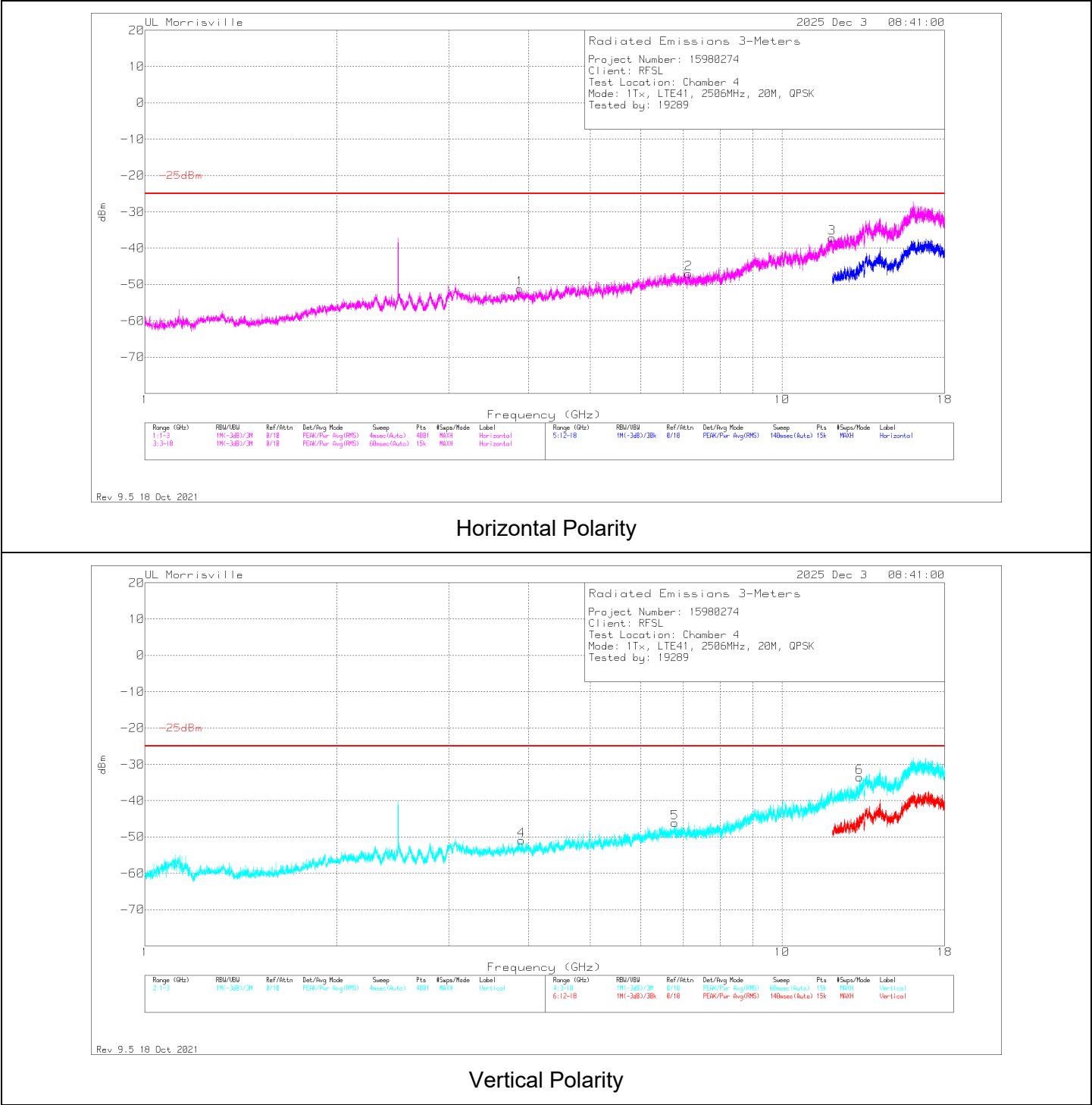
Table 5: Unwanted emission limits for subscriber equipment other than fixed subscriber equipment	
Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limits
0-1	-10 dBm/(2% of OB*)
1-5	-10 dBm/MHz
5-X**	-13 dBm/MHz
≥ X	-25 dBm/MHz

*OB is the occupied bandwidth

** X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

In addition to complying with the limits in table 5, subscriber equipment other than fixed subscriber equipment shall not exceed -13 dBm/MHz on all frequencies between 2490.5 MHz and 2496 MHz, and -25 dBm/MHz at or below 2490.5 MHz

Example Plot



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-25dBm	Margin (dB)	Azimuth (Degr)	Height (cm)	Polarity
1	3.876	-63.93	Pk	33.4	-33.1	11.8	.6	-51.23	-25	-26.23	0-360	100	H
4	3.902	-63.79	Pk	33.4	-32.7	11.8	.4	-50.89	-25	-25.89	0-360	300	V
5	6.794	-65.93	Pk	35.4	-27.8	11.8	.4	-46.13	-25	-21.13	0-360	200	V
2	7.13	-67.96	Pk	35.5	-26.9	11.8	.5	-47.06	-25	-22.06	0-360	100	H
3	11.979	-66.92	Pk	38.6	-21.6	11.8	.9	-37.22	-25	-12.22	0-360	200	H
6	13.231	-66.56	Pk	38.9	-18.3	11.8	.6	-33.56	-25	-8.56	0-360	300	V

TEST PROCEDURE

KDB 971168 D01 /D02

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz

RESULTS

9.2.1. LTE BAND 41 (FCC)

LTE BAND 41 (QPSK 20.0MHZ BANDWIDTH, Config 0)

Project #:	15980274
Date:	2025-12-03
Test Engineer:	19289
Configuration:	EUT Only
Mode	20MHz LTE41 QPSK
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	88761 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2506MHz										
3.876	-63.93	Pk	33.4	-33.1	11.8	.6	-51.23	-25	-26.23	H
3.902	-63.79	Pk	33.4	-32.7	11.8	.4	-50.89	-25	-25.89	V
6.794	-65.93	Pk	35.4	-27.8	11.8	.4	-46.13	-25	-21.13	V
7.13	-67.96	Pk	35.5	-26.9	11.8	.5	-47.06	-25	-22.06	H
11.979	-66.92	Pk	38.6	-21.6	11.8	.9	-37.22	-25	-12.22	H
13.231	-66.56	Pk	38.9	-18.3	11.8	.6	-33.56	-25	-8.56	V
Mid Channel, 2593MHz										
4.671	-65.06	Pk	34.2	-31.6	11.8	.2	-50.46	-25	-25.46	H
4.719	-64.72	Pk	34	-31.9	11.8	.8	-50.02	-25	-25.02	V
7.132	-65.83	Pk	35.5	-27	11.8	.5	-45.03	-25	-20.03	H
9.057	-65.5	Pk	36	-23.6	11.8	.7	-40.6	-25	-15.6	V
13.603	-63.93	Pk	38.6	-19.5	11.8	.5	-32.53	-25	-7.53	H
13.715	-66.43	Pk	38.5	-17.5	11.8	.6	-33.03	-25	-8.03	V
High Channel, 2680MHz										
4.722	-64.04	Pk	34	-31.8	11.8	.8	-49.24	-25	-24.24	H
4.786	-64.04	Pk	33.9	-31.7	11.8	.3	-49.74	-25	-24.74	V
8.013	-63.82	Pk	35.7	-27.9	11.8	.3	-43.92	-25	-18.92	H
9.079	-65.86	Pk	36	-24.3	11.8	.5	-41.86	-25	-16.86	V
14.247	-67.76	Pk	38.8	-14.9	11.8	.8	-31.26	-25	-6.26	V
14.25	-68.24	Pk	38.8	-14.5	11.8	.8	-31.34	-25	-6.34	H

LTE BAND 41 (QPSK 20.0MHZ BANDWIDTH, Config 1)

Project #:	15980274
Date:	2025-11-25 ; 2025-12-02
Test Engineer:	19289
Configuration:	EUT Only
Mode	LTE41, 20MHz QPSK
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	88761 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2506MHz											
4.73	-64.27	Pk	34	-32	11.8	.8	-49.67	-25	-24.67	V	4.73
5.158	-65.04	Pk	34.1	-30.8	11.8	.7	-49.24	-25	-24.24	H	5.158
8.83	-66.74	Pk	36	-23.7	11.8	.5	-42.14	-25	-17.14	V	8.83
9.055	-66.44	Pk	36	-23.5	11.8	.7	-41.44	-25	-16.44	H	9.055
13.675	-63.71	Pk	38.5	-19.6	11.8	.7	-32.31	-25	-7.31	V	13.675
14.249	-68.73	Pk	38.8	-14.3	11.8	.8	-31.63	-25	-6.63	H	14.249
Mid Channel, 2593MHz											
4.63	-62.69	Pk	34.2	-32.1	11.8	.5	-48.29	-25	-23.29	H	4.63
4.797	-63.83	Pk	33.9	-31.9	11.8	.3	-49.73	-25	-24.73	V	4.797
8.809	-67.39	Pk	35.9	-25	11.8	.4	-44.29	-25	-19.29	H	8.809
9.05	-66.54	Pk	36	-23.9	11.8	.7	-41.94	-25	-16.94	V	9.05
14.247	-67.87	Pk	38.8	-14.9	11.8	.8	-31.37	-25	-6.37	H	14.247
14.278	-66.28	Pk	38.8	-16.6	11.8	.7	-31.58	-25	-6.58	V	14.278
High Channel, 2680MHz											
4.988	-64.68	Pk	33.9	-31.2	11.8	.7	-49.48	-25	-24.48	H	
4.992	-64.38	Pk	33.9	-31.5	11.8	.8	-49.38	-25	-24.38	V	
7.834	-66.84	Pk	35.7	-28.1	11.8	.5	-46.94	-25	-21.94	H	
7.847	-66.29	Pk	35.7	-27.6	11.8	.3	-46.09	-25	-21.09	V	
12.535	-66.35	Pk	38.9	-20	11.8	.9	-34.75	-25	-9.75	H	
13.599	-64.09	Pk	38.6	-19.8	11.8	.5	-32.99	-25	-7.99	V	

9.2.2. 5G NR n41 (FCC)

5G NR n41 (BPSK 100.0MHZ BANDWIDTH, Config 0)

Project #:	15980274
Date:	2025-12-04
Test Engineer:	19289
Configuration:	EUT Only
Mode	FR1 n41, 100MHz BPSK
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	206211 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2546MHz										
4.628	-63.31	Pk	34.2	-32.1	11.8	.6	-48.81	-25	-23.81	V
4.629	-64.7	Pk	34.2	-32.1	11.8	.5	-50.3	-25	-25.3	H
8.98	-65.32	Pk	36	-24.9	11.8	.5	-41.92	-25	-16.92	H
9.048	-65.87	Pk	36	-24.1	11.8	.7	-41.47	-25	-16.47	V
13.714	-66.29	Pk	38.5	-17.5	11.8	.6	-32.89	-25	-7.89	H
13.715	-66.22	Pk	38.5	-17.5	11.8	.6	-32.82	-25	-7.82	V
Mid Channel, 2593MHz										
4.705	-64.24	Pk	34.1	-31.9	11.8	.7	-49.54	-25	-24.54	V
4.712	-63.64	Pk	34.1	-32	11.8	.8	-48.94	-25	-23.94	H
9.032	-66.76	Pk	36	-24.6	11.8	.8	-42.76	-25	-17.76	H
9.053	-66.02	Pk	36	-23.6	11.8	.7	-41.12	-25	-16.12	V
13.692	-64.97	Pk	38.5	-18.9	11.8	.8	-32.77	-25	-7.77	H
13.717	-66.5	Pk	38.5	-17.7	11.8	.6	-33.3	-25	-8.3	V
High Channel, 2640MHz										
4.99	-64.34	Pk	33.9	-31.3	11.8	.8	-49.14	-25	-24.14	H
5.169	-65.03	Pk	34.1	-30.9	11.8	.6	-49.43	-25	-24.43	V
9.052	-66.63	Pk	36	-23.7	11.8	.7	-41.83	-25	-16.83	H
9.055	-66.6	Pk	36	-23.5	11.8	.7	-41.6	-25	-16.6	V
14.25	-68.01	Pk	38.8	-14.5	11.8	.8	-31.11	-25	-6.11	H
14.25	-68.03	Pk	38.8	-14.5	11.8	.8	-31.13	-25	-6.13	V

5G NR n41 (BPSK 100.0MHZ BANDWIDTH, Config 1)

Project #:	15980274
Date:	2025-12-05
Test Engineer:	19289
Configuration:	EUT Only
Mode	FR1 n41, 100MHz BPSK
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	206211 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2546MHz										
4.719	-64.1	Pk	34	-31.9	11.8	.8	-49.4	-25	-24.4	H
4.793	-64.32	Pk	33.9	-31.5	11.8	.3	-49.82	-25	-24.82	V
9.105	-66	Pk	36	-24	11.8	.3	-41.9	-25	-16.9	V
9.107	-66.53	Pk	36	-23.8	11.8	.3	-42.23	-25	-17.23	H
14.249	-68.67	Pk	38.8	-14.3	11.8	.8	-31.57	-25	-6.57	V
14.251	-67.95	Pk	38.8	-14.7	11.8	.8	-31.25	-25	-6.25	H
Mid Channel, 2593MHz										
5.096	-63.99	Pk	34.2	-32	11.8	.5	-49.49	-25	-24.49	H
5.56	-64.9	Pk	34.4	-30.8	11.8	.7	-48.8	-25	-23.8	V
9.059	-66.93	Pk	36	-23.8	11.8	.7	-42.23	-25	-17.23	V
9.108	-66.85	Pk	36	-23.8	11.8	.3	-42.55	-25	-17.55	H
14.25	-68.08	Pk	38.8	-14.5	11.8	.8	-31.18	-25	-6.18	V
14.269	-67.84	Pk	38.8	-15.5	11.8	.8	-31.94	-25	-6.94	H
High Channel, 2640MHz										
4.985	-65.25	Pk	33.9	-31	11.8	.7	-49.85	-25	-24.85	H
4.985	-64.77	Pk	33.9	-31	11.8	.7	-49.37	-25	-24.37	V
8.834	-66.76	Pk	36	-24.4	11.8	.5	-42.86	-25	-17.86	H
9.054	-67.26	Pk	36	-23.5	11.8	.7	-42.26	-25	-17.26	V
13.385	-65.5	Pk	38.9	-18.4	11.8	.6	-32.6	-25	-7.6	H
13.431	-65.96	Pk	38.8	-18.3	11.8	.5	-33.16	-25	-8.16	V

9.2.3. ULCA LTE BAND 41 (FCC)

ULCA LTE BAND 41 (QPSK 20.0MHZ + 20.0MHZ BANDWIDTH, Config 0)

Project #:	15980274
Date:	2025-10-16
Test Engineer:	112113 / 11993
Configuration:	EUT only
Mode	LTE Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	206211 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
4.617000	-64.94	Pk	34.2	-32.5	11.8	0.7	-50.74	-25	-25.74	H
4.622000	-63.88	Pk	34.2	-32.3	11.8	0.7	-49.48	-25	-24.48	V
6.680000	-67.26	Pk	35.5	-28.1	11.8	0.4	-47.66	-25	-22.66	V
6.687000	-67.27	Pk	35.5	-28.0	11.8	0.4	-47.57	-25	-22.57	H
8.931000	-65.02	Pk	36.0	-25.5	11.8	0.5	-42.22	-25	-17.22	V
8.933000	-67.19	Pk	36.0	-25.6	11.8	0.5	-44.49	-25	-19.49	H
Mid Channel, 2583.1MHz + 2602.9MHz										
4.146000	-65.56	Pk	33.4	-32.4	11.8	0.3	-52.46	-25	-27.46	H
4.149000	-65.28	Pk	33.4	-32.5	11.8	0.4	-52.18	-25	-27.18	V
5.764000	-65.56	Pk	34.5	-30.1	11.8	0.4	-48.96	-25	-23.96	V
5.768000	-67.23	Pk	34.5	-30.3	11.8	0.4	-50.83	-25	-25.83	H
8.205000	-67.43	Pk	35.7	-26.9	11.8	0.5	-46.33	-25	-21.33	H
8.205000	-67.26	Pk	35.7	-26.9	11.8	0.5	-46.16	-25	-21.16	V
High Channel, 2660.2MHz + 2680MHz										
3.969000	-65.15	Pk	33.4	-32.6	11.8	0.4	-52.15	-25	-27.15	V
3.975000	-65.37	Pk	33.4	-32.5	11.8	0.4	-52.27	-25	-27.27	H
5.945000	-67.63	Pk	35.1	-28.9	11.8	0.5	-49.13	-25	-24.13	V
5.951000	-67.04	Pk	35.1	-29.1	11.8	0.5	-48.74	-25	-23.74	H
8.440000	-66.97	Pk	35.8	-26.8	11.8	0.5	-45.67	-25	-20.67	V
8.448000	-68.02	Pk	35.8	-26.3	11.8	0.5	-46.22	-25	-21.22	H

ULCA LTE BAND 41 (QPSK 20.0MHZ + 20.0MHZ BANDWIDTH, Config 1)

Project #:	15980274
Date:	2025-10-16
Test Engineer:	112113 / 11993
Configuration:	EUT only
Mode	LTE Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBm)	Det	206211 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	Limit (dBm)	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
4.173000	-65.97	Pk	33.4	-32.0	11.8	0.6	-52.17	-25	-27.17	V
4.174000	-65.85	Pk	33.4	-32.0	11.8	0.6	-52.05	-25	-27.05	H
5.936000	-66.55	Pk	35.0	-29.1	11.8	0.4	-48.45	-25	-23.45	H
5.939000	-67.00	Pk	35.1	-29.0	11.8	0.5	-48.60	-25	-23.60	V
9.106000	-66.64	Pk	36.0	-23.9	11.8	0.3	-42.44	-25	-17.44	H
9.106000	-64.84	Pk	36.0	-23.9	11.8	0.3	-40.64	-25	-15.64	V
Mid Channel, 2583.1MHz + 2602.9MHz										
4.626000	-64.50	Pk	34.2	-32.2	11.8	0.6	-50.10	-25	-25.10	V
4.633000	-64.60	Pk	34.2	-32.3	11.8	0.5	-50.40	-25	-25.40	H
6.683000	-66.81	Pk	35.5	-27.8	11.8	0.4	-46.91	-25	-21.91	H
6.686000	-67.48	Pk	35.5	-28.0	11.8	0.4	-47.78	-25	-22.78	V
8.825000	-67.25	Pk	36.0	-24.3	11.8	0.4	-43.35	-25	-18.35	H
8.830000	-65.89	Pk	36.0	-23.7	11.8	0.5	-41.29	-25	-16.29	V
High Channel, 2660.2MHz + 2680MHz										
4.705000	-65.80	Pk	34.1	-31.9	11.8	0.7	-51.10	-25	-26.10	H
4.715000	-64.49	Pk	34.0	-32.0	11.8	0.8	-49.89	-25	-24.89	V
6.767000	-67.90	Pk	35.5	-26.8	11.8	0.4	-47.00	-25	-22.00	H
6.771000	-67.82	Pk	35.5	-27.2	11.8	0.4	-47.32	-25	-22.32	V
8.499000	-67.18	Pk	35.7	-25.7	11.8	0.5	-44.88	-25	-19.88	H
8.504000	-67.77	Pk	35.7	-25.8	11.8	0.5	-45.57	-25	-20.57	V

10. SETUP PHOTOS

Refer to R15980274-EP1c for setup photos.

END OF REPORT