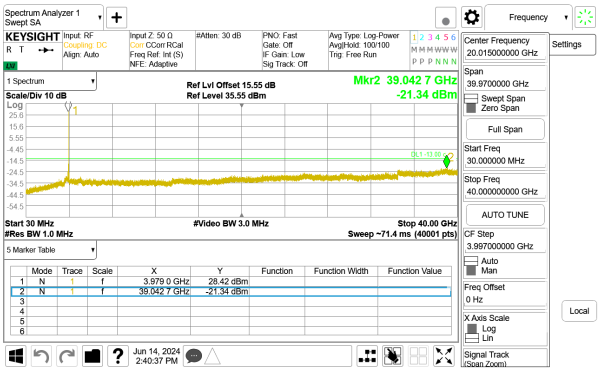
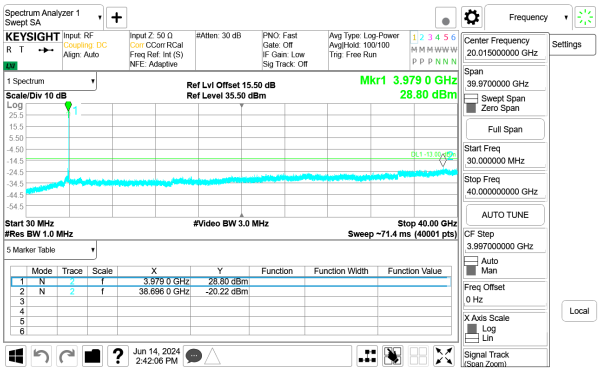
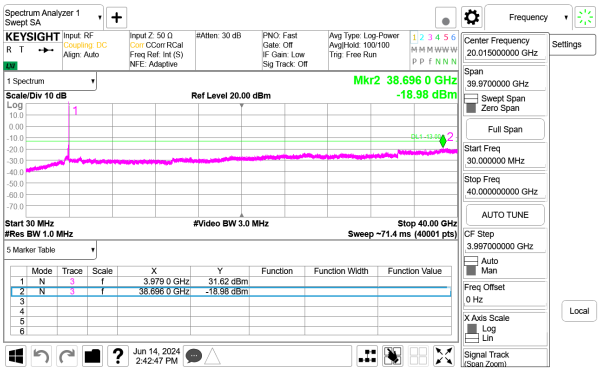


5G NR n77 100MHz BPSK High Channel RB1-272 Port A, ID: 28774



5G NR n77 100MHz BPSK High Channel RB1-272 Port B, ID: 28774



5G NR n77 100MHz BPSK High Channel RB1-272 Port A+B, ID: 28774

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9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
  End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC is reached.

Frequency Stability vs Voltage:

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

RESULTS

See the following pages.

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9.4.1. 5G NR n41

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:		Test Date:	Click or tap to enter a date.

5G NR n41 BPSK (100MHz BANDWIDTH)

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690		0	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	2497.1621	2687.7552			
Extreme (50°C)		2497.1621	2687.7552	-5.78	-0.002	Yes
Extreme (40°C)		2497.1621	2687.7552	-5.95	-0.002	Yes
Extreme (30°C)		2497.1621	2687.7552	-6.45	-0.002	Yes
Extreme (10°C)		2497.1621	2687.7552	-6.86	-0.003	Yes
Extreme (0°C)		2497.1621	2687.7552	-7.07	-0.003	Yes
Extreme (-10°C)		2497.1621	2687.7552	-6.64	-0.003	Yes
Extreme (-20°C)		2497.1621	2687.7552	-6.44	-0.002	Yes
Extreme (-30°C)		2497.1621	2687.7552	-5.67	-0.002	Yes
20°C	15%	2497.1621	2687.7552	-6.37	-0.002	Yes
	-15%	2497.1621	2687.7552	-7.38	-0.003	Yes
	End Point Voltage	2497.1621	2687.7552	-6.87	-0.003	Yes

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9.4.2. 5G NR n77 (FCC Part 27 3450-3550MHz)

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:		Test Date:	Click or tap to enter a date.

5G NR n77a FCC BPSK (100MHz BANDWIDTH)

Band	77	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3450	3550			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	3451.1788	3547.7203			
Extreme (50°C)		3451.1788	3547.7203	-7.31	-0.002	Yes
Extreme (40°C)		3451.1788	3547.7203	-6.96	-0.002	Yes
Extreme (30°C)		3451.1788	3547.7203	-8.13	-0.002	Yes
Extreme (10°C)		3451.1788	3547.7203	-6.61	-0.002	Yes
Extreme (0°C)		3451.1788	3547.7203	-8.97	-0.003	Yes
Extreme (-10°C)		3451.1788	3547.7203	-9.89	-0.003	Yes
Extreme (-20°C)		3451.1788	3547.7203	-9.5	-0.003	Yes
Extreme (-30°C)		3451.1788	3547.7203	-9.51	-0.003	Yes
20°C	15%	3451.1788	3547.7203	-8.65	-0.002	Yes
	-15%	3451.1788	3547.7203	-8.36	-0.002	Yes
	End Point Voltage	3451.1788	3547.7203	-5.98	-0.002	Yes

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9.4.3. 5G NR n77 (FCC Part 27 3700-3980MHz)

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:		Test Date:	Click or tap to enter a date.

5G NR n77c FCC BPSK (100MHz BANDWIDTH)

Band	77	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3700	3980			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	3701.0882	3977.7834			
Extreme (50°C)		3701.0882	3977.7834	-3.61	-0.001	Yes
Extreme (40°C)		3701.0882	3977.7834	-3.97	-0.001	Yes
Extreme (30°C)		3701.0882	3977.7834	-3.87	-0.001	Yes
Extreme (10°C)		3701.0882	3977.7834	-3.11	-0.001	Yes
Extreme (0°C)		3701.0882	3977.7834	-3.95	-0.001	Yes
Extreme (-10°C)		3701.0882	3977.7834	-4.01	-0.001	Yes
Extreme (-20°C)		3701.0882	3977.7834	-4.34	-0.001	Yes
Extreme (-30°C)		3701.0882	3977.7834	-3.32	-0.001	Yes
20°C	15%	3701.0882	3977.7834	-4.25	-0.001	Yes
	-15%	3701.0882	3977.7834	-4.58	-0.001	Yes
	End Point Voltage	3701.0882	3977.7834	-4.38	-0.001	Yes

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9.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

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

Antennas 2 and 7 were used to measure as the worst case for n41 and n77 respectively; 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.

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9.5.1. 5G NR n41

Test Engineer ID:	27342	Test Date:	2024-04-02

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
5G NR Band n41	10MHz	2593.0	24	0	BPSK	32.98	29.57	3.41
					16QAM	33.09	27.74	5.35
	15MHz		36	0	BPSK	32.67	29.53	3.14
					16QAM	33.38	28.00	5.38
	20MHz		50	0	BPSK	32.82	29.68	3.14
					16QAM	33.43	28.08	5.35
	30MHz		75	0	BPSK	32.46	29.27	3.19
					16QAM	33.26	27.84	5.42
	40MHz		100	0	BPSK	32.66	29.60	3.06
					16QAM	33.40	28.08	5.32
	50MHz		128	0	BPSK	32.10	28.78	3.32
					16QAM	33.24	27.60	5.64
	60MHz		162	0	BPSK	32.81	29.55	3.26
					16QAM	33.59	28.22	5.37
	70MHz		180	0	BPSK	32.70	29.20	3.50
					16QAM	33.37	27.74	5.63
	80MHz		216	0	BPSK	33.12	29.47	3.65
					16QAM	33.74	28.29	5.45
	90MHz		243	0	BPSK	32.70	29.59	3.11
					16QAM	33.20	27.85	5.35
	100MHz		270	0	BPSK	32.26	29.17	3.09
					16QAM	33.23	27.94	5.29
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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9.5.2. 5G NR n77 (FCC Part 27 3450-3550MHz)

Test Engineer ID:	27342	Test Date:	2024-04-11

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band n77	10MHz	3500.0	24	0	BPSK	33.54	29.07	4.47
					16QAM	34.42	27.53	6.89
	15MHz		36	0	BPSK	33.76	29.34	4.42
					16QAM	34.56	27.73	6.83
	20MHz		50	0	BPSK	33.60	29.31	4.29
					16QAM	34.72	27.82	6.90
	30MHz		75	0	BPSK	33.35	29.04	4.31
					16QAM	34.67	27.73	6.94
	40MHz		100	0	BPSK	33.43	29.19	4.24
					16QAM	34.57	27.67	6.90
	50MHz		128	0	BPSK	33.10	29.07	4.03
					16QAM	33.97	27.52	6.45
	60MHz		162	0	BPSK	33.03	29.08	3.95
					16QAM	34.09	27.65	6.44
	70MHz		180	0	BPSK	33.17	29.11	4.06
					16QAM	34.13	27.52	6.61
	80MHz		216	0	BPSK	32.89	29.18	3.71
					16QAM	33.59	27.54	6.05
	90MHz		243	0	BPSK	32.57	29.06	3.51
					16QAM	33.39	27.49	5.90
	100MHz		270	0	BPSK	32.36	29.07	3.29
					16QAM	33.31	27.41	5.90
Duty Cycle Correction Factor (dB) =			0.00					

Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor

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9.5.3. 5G NR n77 (FCC Part 27 3700-3980MHz)

Test Engineer ID:	27342	Test Date:	2024-04-11

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band n77	10MHz	3840.0	24	0	BPSK	33.64	29.22	4.42
					16QAM	34.62	27.97	6.65
	15MHz		36	0	BPSK	33.83	29.46	4.37
					16QAM	34.77	27.99	6.78
	20MHz		50	0	BPSK	33.76	29.47	4.29
					16QAM	34.81	27.98	6.83
	40MHz		100	0	BPSK	33.29	29.09	4.20
					16QAM	34.51	27.64	6.87
	50MHz		128	0	BPSK	32.93	28.93	4.00
					16QAM	33.90	27.40	6.50
	60MHz		162	0	BPSK	32.97	28.92	4.05
					16QAM	33.85	27.33	6.52
	70MHz		180	0	BPSK	32.98	28.87	4.11
					16QAM	34.02	27.30	6.72
	80MHz		216	0	BPSK	32.45	28.81	3.64
					16QAM	33.33	27.27	6.06
	90MHz		243	0	BPSK	32.24	28.78	3.46
					16QAM	33.24	27.14	6.10
	100MHz		270	0	BPSK	32.05	28.80	3.25
					16QAM	32.98	27.11	5.87
Duty Cycle Correction Factor (dB) =			0.00					

Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor

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10. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions 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 method.

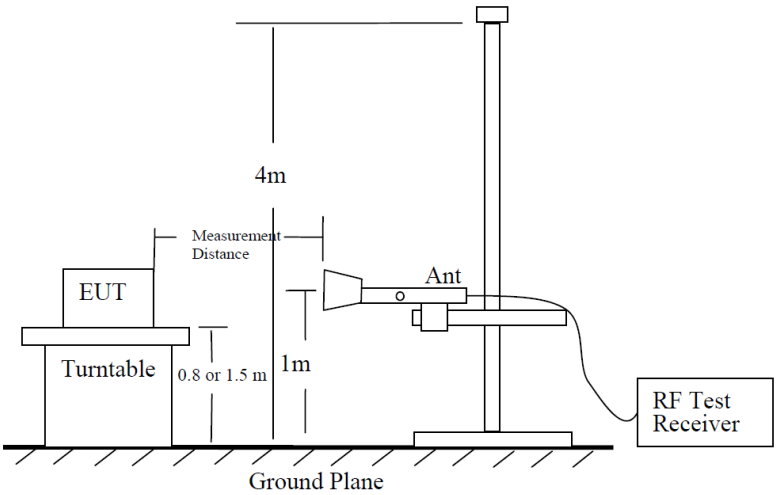

Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

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

a) E (dBμV/m) = Measured amplitude level (dBμV) + Cable Loss (dB) + Antenna Factor (dB/m).

b) E (dBμV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

c) E (dBμV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

d) EIRP (dBm) = E (dBμV/m) + 20log(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*Log(3)=9.5424

Then, EIRP (dBm) = E (dBμV/m) + 9.5424 − 104.8 = E (dBμV/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.

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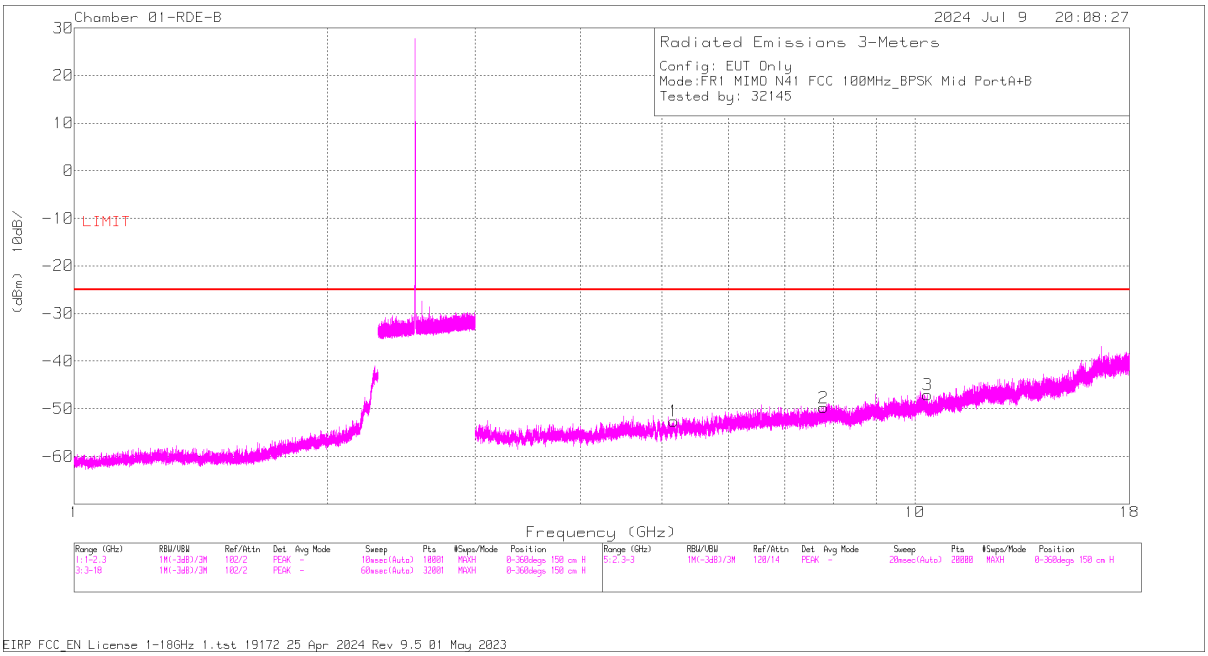
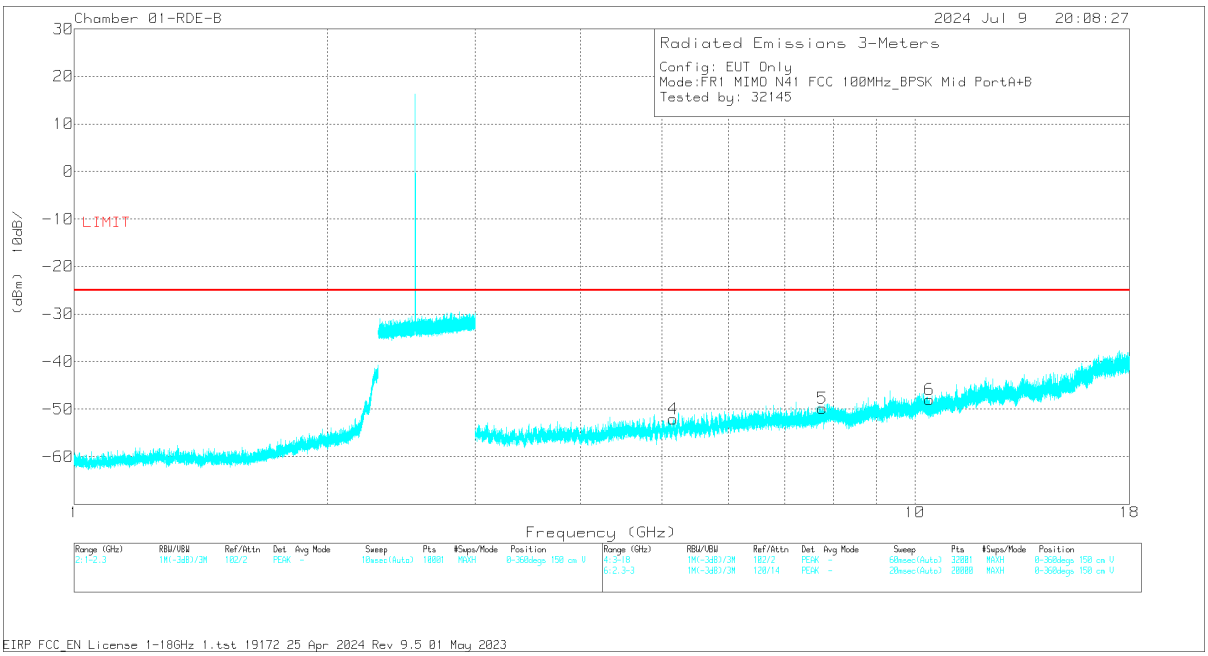
Example Plot



Horizontal Polarity



Vertical Polarity

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Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	155051 BRF 2495-2690MHz (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4	5.154844	39.12	Pk	34.2	.6	-95.2	-30.77	-52.05	-25	-27.05	V
1	5.164219	38.49	Pk	34.2	.5	-95.2	-30.62	-52.63	-25	-27.63	H
5	7.761797	35.88	Pk	35.8	.5	-95.2	-26.82	-49.84	-25	-24.84	V
2	7.786875	36.23	Pk	35.8	.4	-95.2	-27.00	-49.77	-25	-24.77	H
3	10.348125	35.03	Pk	37.5	.4	-95.2	-24.79	-47.06	-25	-22.06	H
6	10.402969	34.09	Pk	37.5	.6	-95.2	-25.00	-48.01	-25	-23.01	V

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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

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2+1

10.1.1. 5G NR n41

LIMITS

FCC: §27.53 (m)

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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.

BPSK 5G NR n41 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	3-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	155051 BRF 2495-2690MHz (dBm)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz										
5.107031	38.64	Pk	34.1	.7	-95.2	-30.7	-52.46	-25	-27.46	H
5.138438	37.91	Pk	34.2	.7	-95.2	-30.6	-52.99	-25	-27.99	V
7.654219	35.99	Pk	35.7	.5	-95.2	-27.1	-50.09	-25	-25.09	H
7.682344	35.30	Pk	35.8	.4	-95.2	-26.8	-50.50	-25	-25.50	V
10.208906	34.50	Pk	37.4	.5	-95.2	-24.9	-47.70	-25	-22.70	H
10.249219	34.93	Pk	37.4	.6	-95.2	-25.1	-47.37	-25	-22.37	V
Mid Channel, 2593MHz										
5.154844	39.12	Pk	34.2	.6	-95.2	-30.77	-52.05	-25	-27.05	V
5.164219	38.49	Pk	34.2	.5	-95.2	-30.62	-52.63	-25	-27.63	H
7.761797	35.88	Pk	35.8	.5	-95.2	-26.82	-49.84	-25	-24.84	V
7.786875	36.23	Pk	35.8	.4	-95.2	-27.00	-49.77	-25	-24.77	H
10.348125	35.03	Pk	37.5	.4	-95.2	-24.79	-47.06	-25	-22.06	H
10.402969	34.09	Pk	37.5	.6	-95.2	-25.00	-48.01	-25	-23.01	V
High Channel, 2640MHz										
5.270625	37.40	Pk	34.4	.3	-95.2	-30.40	-53.50	-25	-28.50	V
5.293594	38.26	Pk	34.4	.8	-95.2	-30.60	-52.34	-25	-27.34	H
7.900313	36.14	Pk	35.8	.6	-95.2	-26.47	-49.13	-25	-24.13	V
7.902656	36.12	Pk	35.8	.6	-95.2	-26.43	-49.11	-25	-24.11	H
10.550156	34.22	Pk	37.6	.7	-95.2	-24.70	-47.38	-25	-22.38	V
10.550625	34.28	Pk	37.6	.7	-95.2	-24.70	-47.32	-25	-22.32	H

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10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2+3

10.2.1. 5G NR n41

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.

BPSK 5G NR n41 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-04
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	155051 BRF 2495-2690MHz (dBm)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz										
5.069063	38.33	Pk	34.1	.7	-95.2	-30.90	-52.97	-25	-27.97	V
5.088281	39.85	Pk	34.1	.5	-95.2	-30.83	-51.58	-25	-26.58	H
7.622344	35.67	Pk	35.7	.4	-95.2	-27.13	-50.56	-25	-25.56	V
7.634063	36.59	Pk	35.7	.4	-95.2	-27.19	-49.70	-25	-24.70	H
10.158281	34.54	Pk	37.3	.5	-95.2	-24.83	-47.69	-25	-22.69	H
10.19625	35.13	Pk	37.4	.6	-95.2	-24.98	-47.05	-25	-22.05	V
Mid Channel, 2593MHz										
5.160000	38.95	Pk	34.2	.6	-95.2	-30.70	-52.15	-25	-27.15	V
5.169375	39.70	Pk	34.2	.5	-95.2	-30.60	-51.4	-25	-26.40	H
7.796719	36.14	Pk	35.8	.4	-95.2	-26.93	-49.79	-25	-24.79	H
7.802813	36.53	Pk	35.8	.4	-95.2	-27.00	-49.47	-25	-24.47	V
10.222969	35.00	Pk	37.4	.6	-95.2	-24.80	-47.00	-25	-22.00	H
10.223438	34.45	Pk	37.4	.6	-95.2	-24.80	-47.55	-25	-22.55	V
High Channel, 2640MHz										
5.254219	38.16	Pk	34.4	.4	-95.2	-30.40	-52.64	-25	-27.64	H
5.2575	38.56	Pk	34.4	.3	-95.2	-30.35	-52.29	-25	-27.29	V
7.873594	36.97	Pk	35.8	.5	-95.2	-26.54	-48.47	-25	-23.47	V
7.883906	36.11	Pk	35.8	.5	-95.2	-26.60	-49.39	-25	-24.39	H
10.530469	34.44	Pk	37.6	.4	-95.2	-24.65	-47.41	-25	-22.41	V
10.545469	34.30	Pk	37.6	.6	-95.2	-24.65	-47.35	-25	-22.35	H

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10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4+1

10.3.1. 5G NR n41

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.

BPSK 5G NR n41 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-03
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	155051 BRF 2495-2690MHz (dBm)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz										
5.046094	38.52	Pk	34.1	.5	-95.2	-30.8	-52.88	-25	-27.88	H
5.058281	39.11	Pk	34.1	.7	-95.2	-30.7	-51.99	-25	-26.99	V
7.597031	35.6	Pk	35.7	.5	-95.2	-27.2	-50.60	-25	-25.60	V
7.609688	35.84	Pk	35.7	.5	-95.2	-27.3	-50.46	-25	-25.46	H
10.16625	35.07	Pk	37.3	.6	-95.2	-24.9	-47.13	-25	-22.13	H
10.196719	34.62	Pk	37.4	.6	-95.2	-24.9	-47.51	-25	-22.51	V
Mid Channel, 2593MHz										
3.009844	42.86	Pk	32.9	1.6	-95.2	-34.42	-52.26	-25	-27.26	V
5.172656	38.64	Pk	34.2	.5	-95.2	-30.43	-52.29	-25	-27.29	H
5.173594	39.22	Pk	34.2	.5	-95.2	-30.40	-51.68	-25	-26.68	V
7.782188	36.41	Pk	35.8	.5	-95.2	-27.04	-49.53	-25	-24.53	H
7.807500	35.74	Pk	35.8	.5	-95.2	-26.95	-50.11	-25	-25.11	V
10.387500	34.11	Pk	37.5	.5	-95.2	-25.00	-48.09	-25	-23.09	H
High Channel, 2640MHz										
5.231719	38.82	Pk	34.3	1	-95.2	-30.63	-51.71	-25	-26.71	H
5.237344	38.95	Pk	34.3	.9	-95.2	-30.63	-51.68	-25	-26.68	V
7.950938	36.71	Pk	35.8	.5	-95.2	-26.41	-48.60	-25	-23.60	H
7.960781	36.92	Pk	35.8	.5	-95.2	-26.38	-48.36	-25	-23.36	V
10.575469	35.11	Pk	37.6	.5	-95.2	-24.50	-46.49	-25	-21.49	H
10.582031	33.53	Pk	37.6	.5	-95.2	-24.40	-47.97	-25	-22.97	V

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10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4+3

10.4.1. 5G NR n41

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.

BPSK 5G NR n41 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-05
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	155051 BRF 2495-2690MHz (dBm)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz										
5.085469	39.85	Pk	34.1	.5	-95.2	-30.90	-51.65	-25	-26.65	H
5.098125	39.60	Pk	34.1	.6	-95.2	-30.71	-51.61	-25	-26.61	V
7.679063	35.71	Pk	35.8	.5	-95.2	-26.71	-49.90	-25	-24.90	H
7.693125	36.06	Pk	35.8	.4	-95.2	-26.80	-49.74	-25	-24.74	V
10.134844	35.00	Pk	37.3	.5	-95.2	-24.72	-47.12	-25	-22.12	V
10.140000	35.03	Pk	37.3	.5	-95.2	-24.70	-47.07	-25	-22.07	H
Mid Channel, 2593MHz										
5.159531	39.66	Pk	34.2	.6	-95.2	-30.75	-51.49	-25	-26.49	V
5.177813	39.50	Pk	34.2	.5	-95.2	-30.44	-51.44	-25	-26.44	H
7.762031	35.99	Pk	35.8	.5	-95.2	-26.81	-49.72	-25	-24.72	H
7.770469	36.11	Pk	35.8	.5	-95.2	-27.00	-49.79	-25	-24.79	V
10.360781	33.73	Pk	37.5	.4	-95.2	-24.90	-48.47	-25	-23.47	H
10.380000	33.42	Pk	37.5	.5	-95.2	-24.90	-48.68	-25	-23.68	V
High Channel, 2640MHz										
5.241563	38.55	Pk	34.3	.8	-95.2	-30.50	-52.05	-25	-27.05	V
5.248594	40.05	Pk	34.4	.5	-95.2	-30.40	-50.65	-25	-25.65	H
7.956563	36.28	Pk	35.8	.5	-95.2	-26.36	-48.98	-25	-23.98	H
7.996406	36.72	Pk	35.8	.5	-95.2	-26.54	-48.72	-25	-23.72	V
10.550156	34.17	Pk	37.6	.7	-95.2	-24.70	-47.43	-25	-22.43	H
10.562813	32.90	Pk	37.6	.6	-95.2	-24.60	-48.70	-25	-23.70	V

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10.5. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 7+8

10.5.1. 5G NR n77A (FCC Part 27 3450-3550MHz)

LIMITS

FCC: §27.53
Emission limits
(n) 3.45 GHz Service. The following emission limits apply to stations transmitting in the 3450-3550 MHz band:
(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz										
7.018303	30.24	Pk	35.6	.4	-95.2	-27.3	-56.26	-13	-43.26	H
7.031081	30.17	Pk	35.6	.6	-95.2	-27.2	-56.04	-13	-43.04	V
10.482938	28.66	Pk	37.5	.6	-95.2	-24.8	-53.24	-13	-40.24	V
10.486022	29.93	Pk	37.6	.6	-95.2	-24.7	-51.77	-13	-38.77	H
14.054203	25.61	Pk	38.9	.8	-95.2	-20.6	-50.45	-13	-37.45	H
14.105756	25.43	Pk	38.9	.7	-95.2	-20.1	-50.27	-13	-37.27	V

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10.5.2. 5G NR n77 (FCC Part 27 3700-3980MHz)

LIMITS

FCC: §27.53
(I) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.527000	34.93	Pk	35.6	-95.2	-26.8	-51.47	-13	-38.47	H
7.535000	35.42	Pk	35.6	-95.2	-26.6	-50.78	-13	-37.78	V
11.234500	33.11	Pk	37.9	-95.2	-22.6	-46.74	-13	-33.74	H
11.238500	32.48	Pk	37.9	-95.2	-22.5	-47.32	-13	-34.32	V
15.080500	30.77	Pk	39.6	-95.2	-19.4	-44.23	-13	-31.23	H
15.139000	30.59	Pk	39.7	-95.2	-18.9	-43.81	-13	-30.81	V
Mid Channel, 3840MHz									
7.638500	35.12	Pk	35.7	-95.2	-26.1	-50.48	-13	-37.48	V
7.645500	35.30	Pk	35.7	-95.2	-26.2	-50.40	-13	-37.40	H
11.546500	32.58	Pk	38.2	-95.2	-22.0	-46.37	-13	-33.37	H
11.559500	31.90	Pk	38.3	-95.2	-21.9	-46.85	-13	-33.85	V
15.354000	30.02	Pk	40.0	-95.2	-19.4	-44.58	-13	-31.58	V
15.369500	31.23	Pk	40.1	-95.2	-19.3	-43.17	-13	-30.17	H
High Channel, 3930MHz									
7.864000	35.17	Pk	35.8	-95.2	-26.4	-50.63	-13	-37.63	V
7.869000	35.32	Pk	35.8	-95.2	-26.4	-50.48	-13	-37.48	H
11.751000	30.92	Pk	38.6	-95.2	-21.1	-46.78	-13	-33.78	V
11.767000	31.11	Pk	38.6	-95.2	-21.2	-46.69	-13	-33.69	H
15.734500	31.49	Pk	40.6	-95.2	-18.4	-41.46	-13	-28.46	H
15.796000	30.97	Pk	40.7	-95.2	-18.5	-42.03	-13	-29.03	V

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10.6. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 9+4

10.6.1. 5G NR n77A (FCC Part 27 3450-3550MHz)

LIMITS

FCC: §27.53
Emission limits
(n) 3.45 GHz Service. The following emission limits apply to stations transmitting in the 3450-3550 MHz band:
(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz										
7.070297	30.64	Pk	35.6	.7	-95.2	-27.2	-55.46	-13	-42.46	H
7.076025	30.20	Pk	35.6	.6	-95.2	-27.2	-56.00	-13	-43.00	V
10.486903	28.95	Pk	37.6	.6	-95.2	-24.7	-52.75	-13	-39.75	H
10.49175	29.14	Pk	37.6	.6	-95.2	-24.7	-52.56	-13	-39.56	V
13.985906	26.27	Pk	38.8	.7	-95.2	-20.11	-49.54	-13	-36.54	H
14.007497	25.76	Pk	38.9	.7	-95.2	-20.6	-50.44	-13	-37.44	V

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10.6.2. 5G NR n77 (FCC Part 27 3700-3980MHz)

LIMITS

FCC: §27.53
(I) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.509000	34.94	Pk	35.6	-95.2	-26.8	-51.46	-13	-38.46	V
7.532500	35.75	Pk	35.6	-95.2	-26.7	-50.55	-13	-37.55	H
11.160500	31.98	Pk	37.9	-95.2	-22.6	-47.87	-13	-34.87	V
11.188000	32.45	Pk	37.9	-95.2	-22.5	-47.35	-13	-34.35	H
14.966000	30.71	Pk	39.5	-95.2	-18.8	-43.79	-13	-30.79	V
15.005500	32.02	Pk	39.6	-95.2	-19.5	-43.03	-13	-30.03	H
Mid Channel, 3840MHz									
7.657500	35.45	Pk	35.7	-95.2	-26.15	-50.20	-13	-37.20	V
7.666500	35.94	Pk	35.7	-95.2	-26.3	-49.831	-13	-36.81	H
11.496000	33.15	Pk	38.2	-95.2	-22.1	-45.95	-13	-32.95	V
11.515500	33.06	Pk	38.2	-95.2	-21.9	-45.79	-13	-32.79	H
15.367000	31.44	Pk	40.1	-95.2	-19.4	-43.06	-13	-30.06	H
15.418000	31.25	Pk	40.2	-95.2	-18.8	-42.55	-13	-29.55	V
High Channel, 3930MHz									
7.876000	35.35	Pk	35.8	-95.2	-26.4	-50.45	-13	-37.45	H
7.882500	35.77	Pk	35.8	-95.2	-26.4	-49.98	-13	-36.98	V
11.746500	31.53	Pk	38.5	-95.2	-21.1	-46.22	-13	-33.22	V
11.786500	31.53	Pk	38.6	-95.2	-21.3	-46.37	-13	-33.37	H
15.744000	30.09	Pk	40.6	-95.2	-18.3	-42.81	-13	-29.81	V
15.745000	30.71	Pk	40.6	-95.2	-18.5	-42.39	-13	-29.39	H

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10.7. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 7+4

10.7.1. 5G NR n77A (FCC Part 27 3450-3550MHz)

LIMITS

FCC: §27.53
Emission limits
(n) 3.45 GHz Service. The following emission limits apply to stations transmitting in the 3450-3550 MHz band:
(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-08
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz										
7.019625	29.44	Pk	35.6	.4	-95.2	-27.3	-57.06	-13	-44.06	V
7.040775	30.10	Pk	35.6	.8	-95.2	-27.3	-55.98	-13	-42.98	H
10.485581	28.89	Pk	37.6	.6	-95.2	-24.7	-52.85	-13	-39.85	V
10.503206	28.61	Pk	37.6	.6	-95.2	-24.5	-52.89	-13	-39.89	H
13.98855	25.32	Pk	38.8	.7	-95.2	-20.3	-50.68	-13	-37.68	H
14.026003	25.06	Pk	38.9	.7	-95.2	-20.5	-51.04	-13	-38.04	V

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10.7.2. 5G NR n77 (FCC Part 27 3700-3980MHz)

LIMITS

FCC: §27.53
(I) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	45258
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.500000	27.42	Pk	35.7	-95.2	-17.1	-49.18	-13	-36.18	H
7.500000	27.33	Pk	35.7	-95.2	-17.1	-49.27	-13	-36.27	V
11.250000	26.28	Pk	37.8	-95.2	-14.0	-45.12	-13	-32.12	H
11.250000	27.42	Pk	37.8	-95.2	-14.0	-43.98	-13	-30.98	V
15.000000	27.15	Pk	39.9	-95.2	-12.9	-41.05	-13	-28.05	H
15.000000	26.68	Pk	39.9	-95.2	-12.9	-41.52	-13	-28.52	V
Mid Channel, 3840MHz									
7.680000	28.27	Pk	35.8	-95.2	-17.1	-48.23	-13	-35.23	H
7.680000	29.29	Pk	35.8	-95.2	-17.1	-47.21	-13	-34.21	V
11.520500	29.76	Pk	37.9	-95.2	-14.6	-42.14	-13	-29.14	H
11.520500	27.59	Pk	37.9	-95.2	-14.6	-44.31	-13	-31.31	V
15.360000	27.45	Pk	40.2	-95.2	-13.2	-40.75	-13	-27.75	H
15.360000	26.24	Pk	40.2	-95.2	-13.2	-41.96	-13	-28.96	V
High Channel, 3930MHz									
7.860000	28.34	Pk	35.8	-95.2	-17.7	-48.76	-13	-35.76	H
7.860000	30.29	Pk	35.8	-95.2	-17.7	-46.81	-13	-33.81	V
11.789500	26.86	Pk	38.3	-95.2	-14.0	-44.04	-13	-31.04	H
11.789500	27.87	Pk	38.3	-95.2	-14.0	-43.03	-13	-30.03	V
15.720000	27.94	Pk	40.5	-95.2	-12.3	-39.06	-13	-26.06	H
15.720000	26.84	Pk	40.5	-95.2	-12.3	-40.16	-13	-27.16	V

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10.8. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 9+8

10.8.1. 5G NR n77A (FCC Part 27 3450-3550MHz)

LIMITS

FCC: §27.53
Emission limits
(n) 3.45 GHz Service. The following emission limits apply to stations transmitting in the 3450-3550 MHz band:
(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-08
Test Engineer:	32145
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	226671 ACF (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz										
6.995831	30.77	Pk	35.6	.5	-95.2	-27.3	-55.63	-13	-42.63	H
6.997594	30.20	Pk	35.6	.5	-95.2	-27.3	-56.20	-13	-43.20	V
10.447247	27.63	Pk	37.5	.6	-95.2	-24.7	-54.19	-13	-41.19	V
10.500563	27.73	Pk	37.6	.6	-95.2	-24.5	-53.77	-13	-40.77	H
14.037900	25.23	Pk	38.9	.8	-95.2	-20.6	-50.86	-13	-37.86	H
14.057288	26.04	Pk	38.9	.8	-95.2	-20.5	-49.93	-13	-36.93	V

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10.8.2. 5G NR n77 (FCC Part 27 3700-3980MHz)

LIMITS

FCC: §27.53
(I) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

BPSK 5G NR n77 (100.0MHZ BANDWIDTH)

Project #:	14982479
Date:	2024-07-09
Test Engineer:	45258
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.500500	28.04	Pk	35.7	-95.2	-17.1	-48.56	-13	-35.56	H
7.500500	29.78	Pk	35.7	-95.2	-17.1	-46.82	-13	-33.82	V
11.250500	26.33	Pk	37.8	-95.2	-14.1	-45.12	-13	-32.12	H
11.250500	27.47	Pk	37.8	-95.2	-14.1	-43.98	-13	-30.98	V
15.000000	27.53	Pk	39.9	-95.2	-12.9	-40.67	-13	-27.67	H
15.000000	26.63	Pk	39.9	-95.2	-12.9	-41.57	-13	-28.57	V
Mid Channel, 3840MHz									
7.680000	28.29	Pk	35.8	-95.2	-17.1	-48.21	-13	-35.21	H
7.680000	29.25	Pk	35.8	-95.2	-17.1	-47.25	-13	-34.25	V
11.520500	27.70	Pk	37.9	-95.2	-14.6	-44.20	-13	-31.20	H
11.520500	26.21	Pk	37.9	-95.2	-14.6	-45.69	-13	-32.69	V
15.360500	26.77	Pk	40.2	-95.2	-13.2	-41.43	-13	-28.43	H
15.360500	27.33	Pk	40.2	-95.2	-13.2	-40.87	-13	-27.87	V
High Channel, 3930MHz									
7.860	28.92	Pk	35.8	-95.2	-17.7	-48.18	-13	-35.18	H
7.86	27.47	Pk	35.8	-95.2	-17.7	-49.63	-13	-36.63	V
11.791	27.04	Pk	38.3	-95.2	-13.9	-43.76	-13	-30.76	H
11.791	27.93	Pk	38.3	-95.2	-13.9	-42.87	-13	-29.87	V
15.72	26.95	Pk	40.5	-95.2	-12.3	-40.05	-13	-27.05	H
15.72	27.66	Pk	40.5	-95.2	-12.3	-39.34	-13	-26.34	V

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
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11. SETUP PHOTOS

Please refer to 14982479-EP1V1 for setup photos.

END OF REPORT

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
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