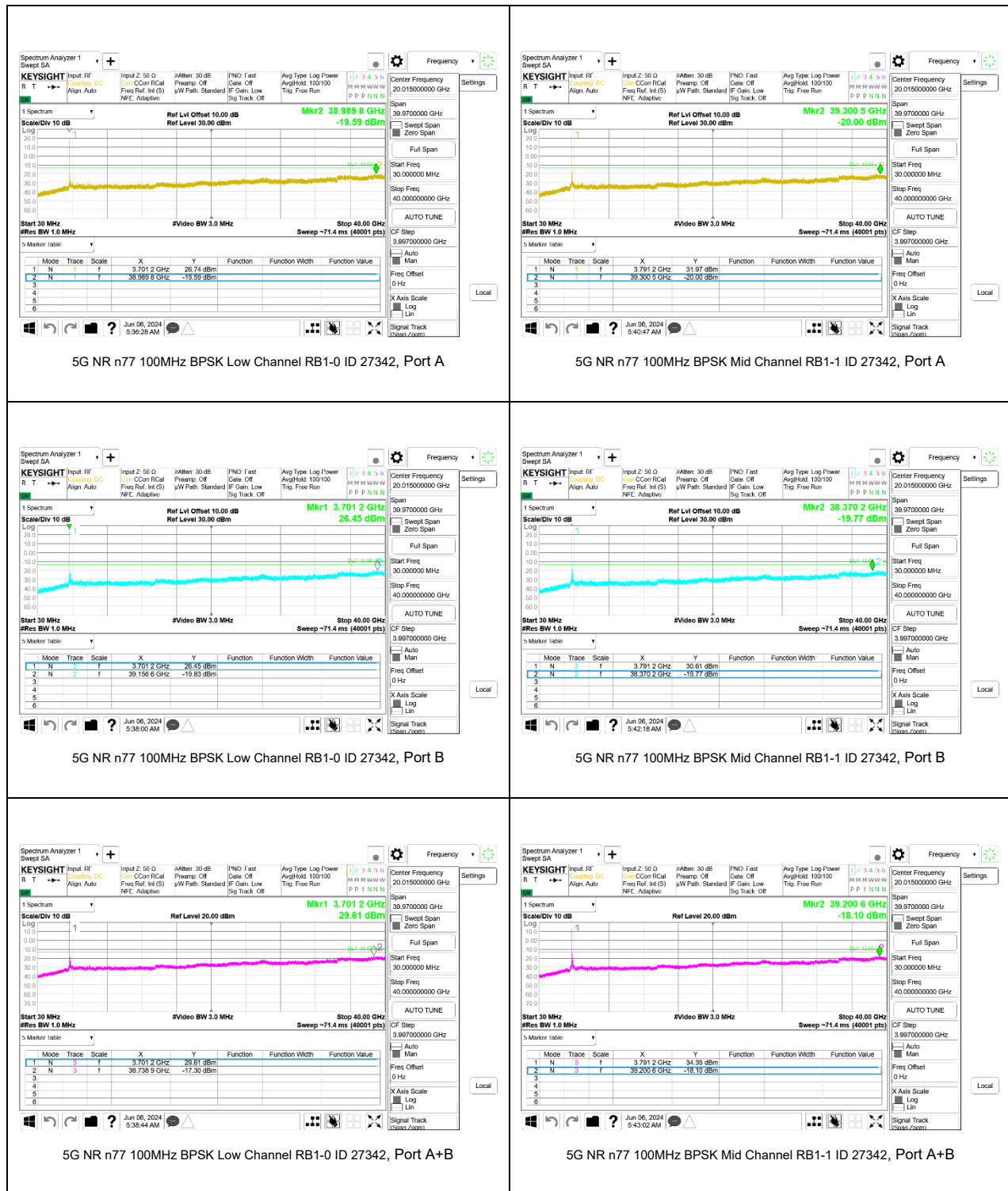
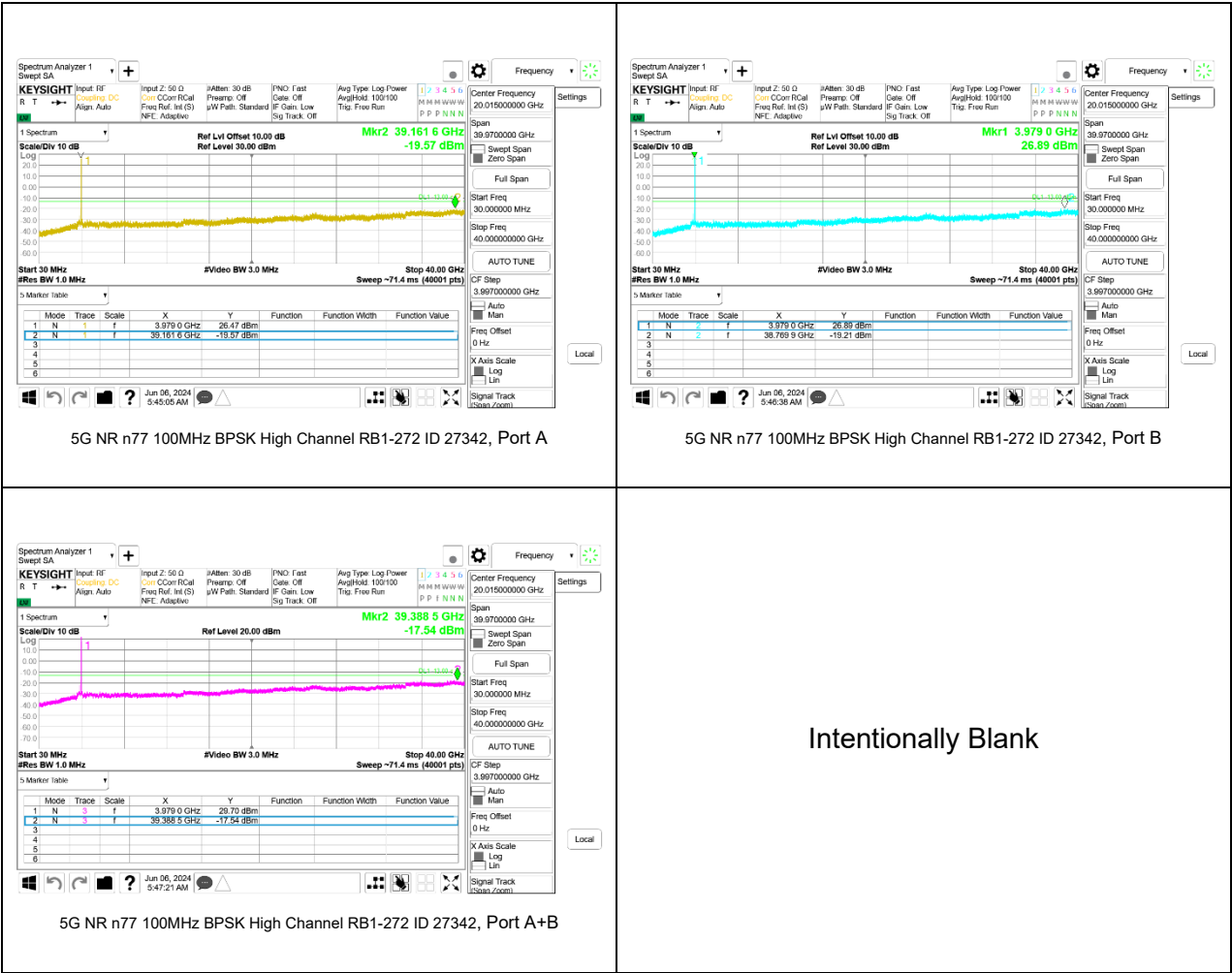






9.4. FREQUENCY STABILITY

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 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

See the following pages.

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:	39004	Test Date:	2024-01-12
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5G NR n41 BPSK (100MHz BANDWIDTH)

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2546	2640		0	
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	2497.1054	2687.7619			
Extreme (50°C)		2497.1054	2687.7619	-1.63	-0.001	Yes
Extreme (40°C)		2497.1054	2687.7619	-1.88	-0.001	Yes
Extreme (30°C)		2497.1054	2687.7619	-2.55	-0.001	Yes
Extreme (10°C)		2497.1054	2687.7619	-1.34	-0.001	Yes
Extreme (0°C)		2497.1054	2687.7619	-2.06	-0.001	Yes
Extreme (-10°C)		2497.1054	2687.7619	-2.01	-0.001	Yes
Extreme (-20°C)		2497.1054	2687.7619	-2.72	-0.001	Yes
Extreme (-30°C)		2497.1054	2687.7619	-2.68	-0.001	Yes
20°C	15%	2497.1054	2687.7619	-2.01	-0.001	Yes
	-15%	2497.1054	2687.7619	-3.62	-0.001	Yes
	End Point Voltage	2497.1054	2687.7619	-1.5	-0.001	Yes

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:	27342	Test Date:	2024-02-15
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5G NR n77a FCC BPSK (100MHz BANDWIDTH)

Band	77	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3500	3500			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3451.1755	3547.7559			
Extreme (50°C)		3451.1755	3547.7559	2.85	0.001	Yes
Extreme (40°C)		3451.1755	3547.7559	-3.03	-0.001	Yes
Extreme (30°C)		3451.1755	3547.7559	2.01	0.001	Yes
Extreme (10°C)		3451.1755	3547.7559	1.05	0.000	Yes
Extreme (0°C)		3451.1755	3547.7559	-2.69	-0.001	Yes
Extreme (-10°C)		3451.1755	3547.7559	-1.88	-0.001	Yes
Extreme (-20°C)		3451.1755	3547.7559	2.69	0.001	Yes
Extreme (-30°C)		3451.1755	3547.7559	-1.1	0.000	Yes
20°C	15%	3451.1755	3547.7559	-2.77	-0.001	Yes
	-15%	3451.1755	3547.7559	-2.1	-0.001	Yes
	End Point Voltage	3451.1755	3547.7559	-1.22	0.000	Yes

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:	27342	Test Date:	2024-02-15
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5G NR n77c FCC BPSK (100MHz BANDWIDTH)

Band	77	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3750	3930			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3701.1312	3977.7546			
Extreme (50°C)		3701.1312	3977.7546	2.63	0.001	Yes
Extreme (40°C)		3701.1312	3977.7546	2.48	0.001	Yes
Extreme (30°C)		3701.1312	3977.7546	2.68	0.001	Yes
Extreme (10°C)		3701.1312	3977.7546	2.26	0.001	Yes
Extreme (0°C)		3701.1313	3977.7546	5.25	0.001	Yes
Extreme (-10°C)		3701.1312	3977.7546	2.67	0.001	Yes
Extreme (-20°C)		3701.1313	3977.7546	5.79	0.002	Yes
Extreme (-30°C)		3701.1312	3977.7546	2.59	0.001	Yes
20°C	15%	3701.1312	3977.7546	2.78	0.001	Yes
	-15%	3701.1312	3977.7546	-2.64	-0.001	Yes
	End Point Voltage	3701.1312	3977.7546	-1.89	0.000	Yes

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.

9.5.1. 5G NR n41

Test Engineer ID:	27342	Test Date:	2024-02-13
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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 Band n41	10MHz	2593.0	24	0	BPSK	34.15	27.15	7.00
					16QAM	34.15	27.15	7.00
	15MHz		36	0	BPSK	32.99	28.76	4.23
					16QAM	33.79	27.1	6.69
	20MHz		50	0	BPSK	32.67	28.63	4.04
					16QAM	33.26	26.97	6.29
	30MHz		75	0	BPSK	32.31	28.67	3.64
					16QAM	33.02	27.05	5.97
	40MHz		100	0	BPSK	32.15	28.66	3.49
					16QAM	32.56	26.97	5.59
	50MHz		128	0	BPSK	31.87	28.5	3.37
					16QAM	32.25	26.85	5.40
	60MHz		162	0	BPSK	31.79	28.42	3.37
					16QAM	31.75	26.67	5.08
	70MHz		180	0	BPSK	31.75	28.43	3.32
					16QAM	31.84	26.7	5.14
	80MHz		216	0	BPSK	31.43	28.46	2.97
					16QAM	31.69	26.61	5.08
	90MHz		243	0	BPSK	31.26	28.37	2.89
					16QAM	31.23	26.5	4.73
	100MHz		270	0	BPSK	30.97	28.41	2.56
					16QAM	31.54	26.6	4.94
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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

Test Engineer ID:		27342	Test Date:		2024-02-15			
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	33.76	29.36	4.40
					16QAM	34.66	27.78	6.88
	15MHz		36	0	BPSK	33.87	29.52	4.35
					16QAM	34.77	27.91	6.86
	20MHz		50	0	BPSK	33.92	29.53	4.39
					16QAM	34.94	28.05	6.89
	30MHz		75	0	BPSK	39.91	29.57	10.34
					16QAM	34.98	28.07	6.91
	40MHz		100	0	BPSK	33.88	29.58	4.30
					16QAM	34.70	27.9	6.80
	50MHz		128	0	BPSK	33.38	29.29	4.09
					16QAM	34.52	27.73	6.79
	60MHz		162	0	BPSK	33.38	29.28	4.10
					16QAM	34.30	27.67	6.63
	70MHz		180	0	BPSK	33.40	29.26	4.14
					16QAM	34.40	27.65	6.75
	80MHz		216	0	BPSK	32.97	29.16	3.81
					16QAM	33.86	27.64	6.22
	90MHz		243	0	BPSK	32.75	29.16	3.59
					16QAM	33.71	27.49	6.22
	100MHz		270	0	BPSK	32.46	29.16	3.30
					16QAM	33.42	27.38	6.04
Duty Cycle Correction Factor (dB) =								
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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

Test Engineer ID:		27342	Test Date:		2024-02-15			
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	33.72	29.33	4.39
					16QAM	34.63	27.77	6.86
	15MHz		36	0	BPSK	33.83	29.42	4.41
					16QAM	34.72	27.94	6.78
	20MHz		50	0	BPSK	33.70	29.44	4.26
					16QAM	34.72	27.82	6.90
	40MHz		100	0	BPSK	33.76	29.52	4.24
					16QAM	34.26	27.42	6.84
	50MHz		128	0	BPSK	33.39	29.32	4.07
					16QAM	33.88	27.34	6.54
	60MHz		162	0	BPSK	33.39	29.25	4.14
					16QAM	33.95	27.41	6.54
	70MHz		180	0	BPSK	33.33	29.14	4.19
					16QAM	34.18	27.44	6.74
	80MHz		216	0	BPSK	32.89	29.13	3.76
					16QAM	33.62	27.42	6.20
	90MHz		243	0	BPSK	32.59	29.07	3.52
					16QAM	33.39	27.3	6.09
	100MHz		270	0	BPSK	32.42	29.12	3.30
					16QAM	33.31	27.32	5.99
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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.

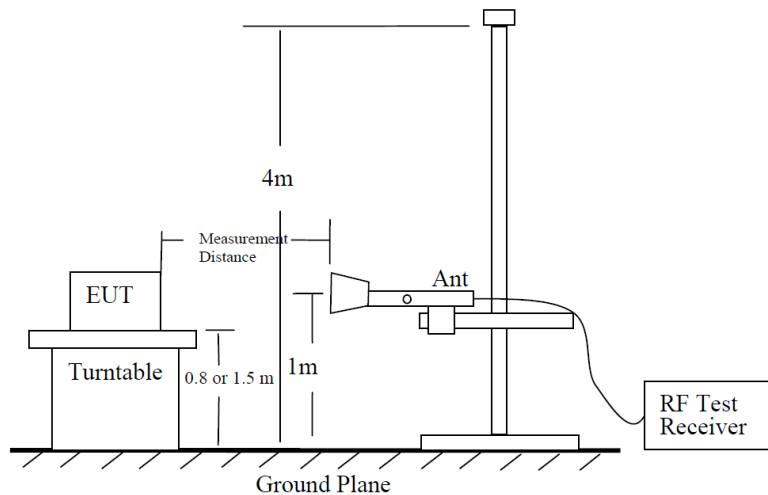


Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

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

- a) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$
- 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.

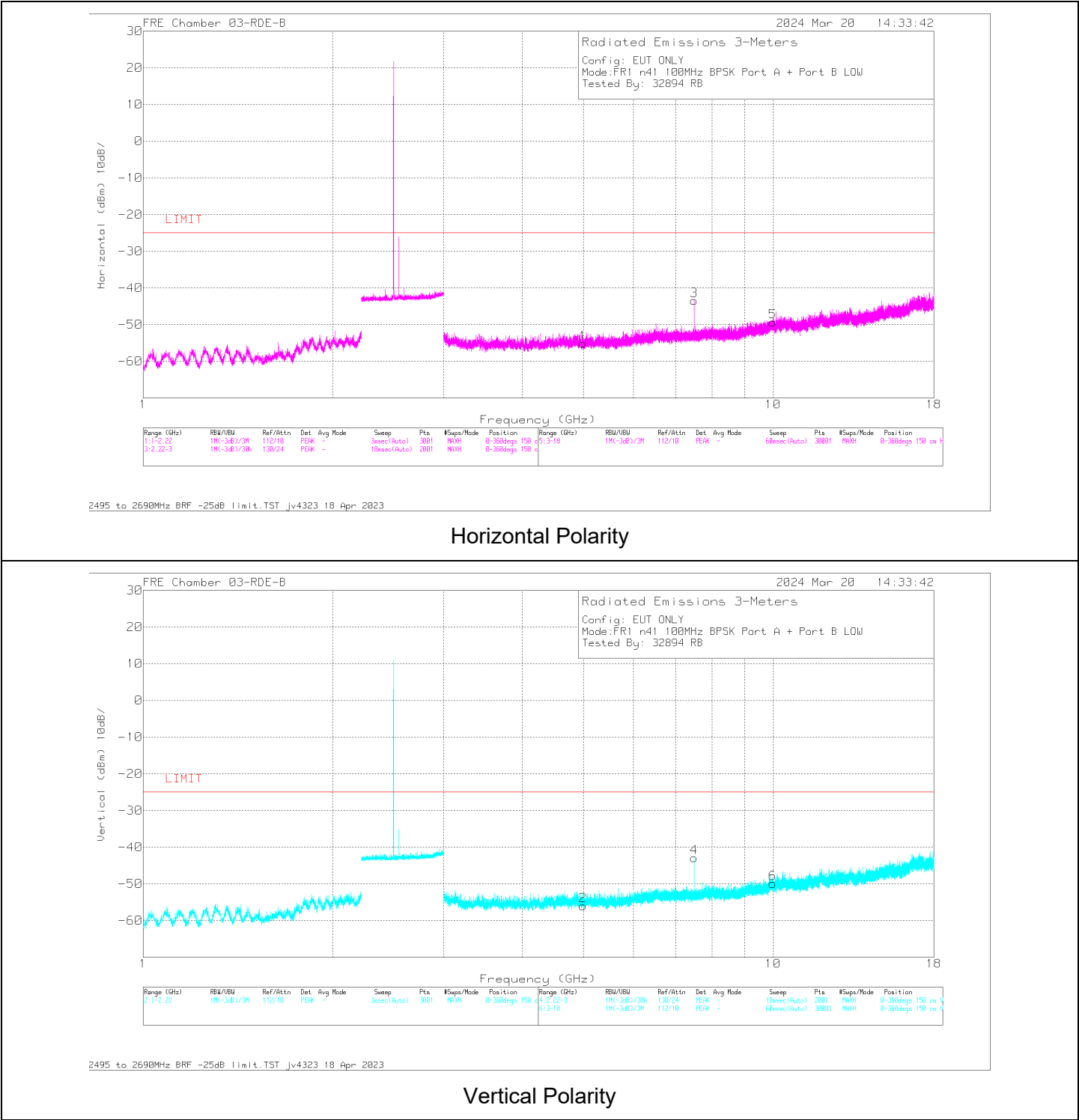
So, from d)

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.

Example Plot



Trace Markers

Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4.992000	55.26	Pk	34.1	-95.2	-49.3	-55.14	-25	-30.14	H
4.992000	54.44	Pk	34.1	-95.2	-49.3	-55.96	-25	-30.96	V
7.491000	63.96	Pk	35.9	-95.2	-48.1	-43.44	-25	-18.44	H
7.491000	64.53	Pk	35.9	-95.2	-48.1	-42.87	-25	-17.87	V
9.984000	56.41	Pk	37.5	-95.2	-48.0	-49.29	-25	-24.29	H
9.984000	55.80	Pk	37.5	-95.2	-48.0	-49.90	-25	-24.90	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

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

10.1.1. 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 #:	14982436
Date:	3/20/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	3-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz									
4.992000	55.26	Pk	34.1	-95.2	-49.3	-55.14	-25	-30.14	H
4.992000	54.44	Pk	34.1	-95.2	-49.3	-55.96	-25	-30.96	V
7.491000	63.96	Pk	35.9	-95.2	-48.1	-43.44	-25	-18.44	H
7.491000	64.53	Pk	35.9	-95.2	-48.1	-42.87	-25	-17.87	V
9.984000	56.41	Pk	37.5	-95.2	-48.0	-49.29	-25	-24.29	H
9.984000	55.80	Pk	37.5	-95.2	-48.0	-49.90	-25	-24.90	V
Mid Channel, 2593MHz									
5.086000	55.63	Pk	34.2	-95.2	-49.6	-54.97	-25	-29.97	H
5.086000	55.26	Pk	34.2	-95.2	-49.6	-55.34	-25	-30.34	V
7.629000	54.81	Pk	35.9	-95.2	-48.3	-52.79	-25	-27.79	H
7.629000	54.56	Pk	35.9	-95.2	-48.3	-53.04	-25	-28.04	V
10.172000	55.91	Pk	37.6	-95.2	-48.5	-50.19	-25	-25.19	H
10.172000	56.67	Pk	37.6	-95.2	-48.5	-49.43	-25	-24.43	V
High Channel, 2640MHz									
5.180000	55.21	Pk	34.4	-95.2	-49.3	-54.89	-25	-29.89	H
5.180000	56.98	Pk	34.4	-95.2	-49.3	-53.12	-25	-28.12	V
7.773000	61.49	Pk	36.0	-95.2	-47.4	-45.11	-25	-20.11	H
7.773000	69.97	Pk	36.0	-95.2	-47.4	-36.63	-25	-11.63	V
10.360000	54.33	Pk	37.8	-95.2	-48.1	-51.17	-25	-26.17	H
10.360000	57.11	Pk	37.8	-95.2	-48.1	-48.39	-25	-23.39	V

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 #:	14982436
Date:	3/21/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n41 100MHz BPSK MIMO
Chamber #:	03-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2546MHz									
4.992000	54.56	Pk	33.9	-95.2	-47.52	-54.26	-25	-29.26	H
4.992000	53.55	Pk	33.9	-95.2	-47.52	-55.27	-25	-30.27	V
7.488000	52.61	Pk	35.7	-95.2	-45.40	-52.29	-25	-27.29	H
7.488000	52.27	Pk	35.7	-95.2	-45.40	-52.63	-25	-27.63	V
9.984000	52.99	Pk	37.2	-95.2	-45.87	-50.88	-25	-25.88	H
9.984000	53.35	Pk	37.2	-95.2	-45.87	-50.52	-25	-25.52	V
Mid Channel, 2593MHz									
5.086000	53.72	Pk	33.9	-95.2	-47.97	-55.55	-25	-30.55	H
5.086000	54.82	Pk	33.9	-95.2	-47.97	-54.45	-25	-29.45	V
7.632000	55.78	Pk	35.7	-95.2	-45.86	-49.58	-25	-24.58	H
7.632000	61.54	Pk	35.7	-95.2	-45.86	-43.82	-25	-18.82	V
10.172000	53.48	Pk	37.5	-95.2	-45.51	-49.73	-25	-24.73	H
10.172000	54.18	Pk	37.5	-95.2	-45.51	-49.03	-25	-24.03	V
High Channel, 2640MHz									
5.180000	53.55	Pk	34.1	-95.2	-47.36	-54.91	-25	-29.91	H
5.180000	55.33	Pk	34.1	-95.2	-47.36	-53.13	-25	-28.13	V
7.770000	52.73	Pk	35.8	-95.2	-45.16	-51.83	-25	-26.83	H
7.770000	52.96	Pk	35.8	-95.2	-45.16	-51.60	-25	-26.60	V
10.360000	53.67	Pk	37.5	-95.2	-45.32	-49.35	-25	-24.35	H
10.360000	53.36	Pk	37.5	-95.2	-45.32	-49.66	-25	-24.66	V

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 #:	14982436
Date:	2024-07-02
Test Engineer:	28567
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										
5.091563	37.26	Pk	34.1	.5	-95.2	-30.86	-54.20	-25	-29.20	V
5.092500	38.19	Pk	34.1	.5	-95.2	-30.90	-53.31	-25	-28.31	H
7.639688	32.46	Pk	35.7	.4	-95.2	-27.00	-53.64	-25	-28.64	H
7.639688	33.74	Pk	35.7	.4	-95.2	-27.00	-52.36	-25	-27.36	V
10.181719	33.74	Pk	37.4	.7	-95.2	-24.97	-48.33	-25	-23.33	V
10.183594	33.26	Pk	37.4	.7	-95.2	-24.90	-48.74	-25	-23.74	H
Mid Channel, 2593MHz										
5.185781	36.72	Pk	34.2	.4	-95.2	-30.32	-54.20	-25	-29.20	V
5.188125	36.18	Pk	34.2	.4	-95.2	-30.31	-54.73	-25	-29.73	H
7.777500	33.16	Pk	35.8	.5	-95.2	-27.00	-52.74	-25	-27.74	H
7.779844	34.00	Pk	35.8	.5	-95.2	-27.08	-51.98	-25	-26.98	V
10.370625	31.27	Pk	37.5	.5	-95.2	-24.84	-50.77	-25	-25.77	V
10.372500	33.20	Pk	37.5	.5	-95.2	-24.90	-48.90	-25	-23.90	H
High Channel, 2640MHz										
5.280938	36.49	Pk	34.4	.6	-95.2	-30.59	-54.39	-25	-29.39	H
5.280938	35.92	Pk	34.4	.6	-95.2	-30.59	-54.87	-25	-29.87	V
7.920000	33.99	Pk	35.8	.3	-95.2	-26.30	-51.41	-25	-26.41	V
7.921875	34.23	Pk	35.8	.3	-95.2	-26.40	-51.27	-25	-26.27	H
10.559063	32.49	Pk	37.6	.7	-95.2	-24.70	-49.2	-25	-24.2	H
10.559063	31.52	Pk	37.6	.7	-95.2	-24.70	-50.08	-25	-25.08	V

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 #:	14982436
Date:	2024-07-03
Test Engineer:	28567
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										
5.092500	39.90	Pk	34.1	.5	-95.2	-30.90	-51.60	-25	-26.60	H
5.093438	37.82	Pk	34.1	.5	-95.2	-30.86	-53.64	-25	-28.64	V
7.629375	34.34	Pk	35.7	.4	-95.2	-27.06	-51.82	-25	-26.82	H
7.638750	33.03	Pk	35.7	.4	-95.2	-27.00	-53.07	-25	-28.07	V
10.177969	32.78	Pk	37.3	.7	-95.2	-25.00	-49.42	-25	-24.42	H
10.177969	32.78	Pk	37.3	.7	-95.2	-25.00	-49.42	-25	-24.42	V
Mid Channel, 2593MHz										
5.184844	38.02	Pk	34.2	.4	-95.2	-30.40	-52.98	-25	-27.98	V
5.186719	38.16	Pk	34.2	.4	-95.2	-30.37	-52.81	-25	-27.81	H
7.777969	34.14	Pk	35.8	.5	-95.2	-27.00	-51.76	-25	-26.76	H
7.779844	34.76	Pk	35.8	.5	-95.2	-27.08	-51.22	-25	-26.22	V
10.372500	31.73	Pk	37.5	.5	-95.2	-24.90	-50.37	-25	-25.37	H
10.372500	31.59	Pk	37.5	.5	-95.2	-24.90	-50.51	-25	-25.51	V
High Channel, 2640MHz										
5.280000	36.62	Pk	34.4	.5	-95.2	-30.50	-54.18	-25	-29.18	H
5.280000	35.98	Pk	34.4	.5	-95.2	-30.50	-54.82	-25	-29.82	V
7.916250	33.54	Pk	35.8	.4	-95.2	-26.30	-51.76	-25	-26.76	H
7.920938	33.56	Pk	35.8	.3	-95.2	-26.39	-51.93	-25	-26.93	V
10.552031	31.87	Pk	37.6	.7	-95.2	-24.70	-49.73	-25	-24.73	V
10.562344	32.78	Pk	37.6	.7	-95.2	-24.60	-48.72	-25	-23.72	H

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 #:	14982436
Date:	3/20/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	03-RDE-B

Frequency (GHz)	Meter Reading (dBuV)	Det	230300 ACF (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz									
6.899869	46.87	Pk	35.7	-95.2	-47.3	-59.93	-13	-46.93	H
6.899869	46.71	Pk	35.7	-95.2	-47.3	-60.09	-13	-47.09	V
10.349938	48.42	Pk	37.8	-95.2	-47.9	-56.88	-13	-43.88	H
10.349938	48.25	Pk	37.8	-95.2	-47.9	-57.05	-13	-44.05	V
13.800007	48.05	Pk	38.6	-95.2	-47	-55.55	-13	-42.55	H
13.800007	47.57	Pk	38.6	-95.2	-47	-56.03	-13	-43.03	V

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

LIMITS

FCC: §27.53

(1) 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 #:	14982436
Date:	3/21/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	03-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.399951	53.58	Pk	35.6	-95.2	-45.49	-51.51	-13	-38.51	H
7.399951	52.8	Pk	35.6	-95.2	-45.49	-52.29	-13	-39.29	V
11.100066	51.6	Pk	37.7	-95.2	-44.03	-49.93	-13	-36.93	H
11.100066	51.43	Pk	37.7	-95.2	-44.03	-50.10	-13	-37.10	V
14.800181	52.5	Pk	39.4	-95.2	-42.85	-46.15	-13	-33.15	H
14.800181	50.49	Pk	39.4	-95.2	-42.85	-48.16	-13	-35.16	V
Mid Channel, 3840MHz									
7.579997	54.39	Pk	36.0	-95.2	-48.0	-52.81	-13	-39.81	H
7.579997	55.71	Pk	36.0	-95.2	-48.0	-51.49	-13	-38.49	V
11.370136	54.90	Pk	38.1	-95.2	-46.8	-49.00	-13	-36.00	H
11.370136	55.14	Pk	38.1	-95.2	-46.8	-48.76	-13	-35.76	V
15.159876	54.80	Pk	39.8	-95.2	-47.0	-47.60	-13	-34.60	H
15.159876	55.95	Pk	39.8	-95.2	-47.0	-46.45	-13	-33.45	V
High Channel, 3930MHz									
7.760044	53.94	Pk	36.0	-95.2	-48.2	-53.46	-13	-40.46	H
7.760044	54.10	Pk	36.0	-95.2	-48.2	-53.30	-13	-40.30	V
11.642994	57.81	Pk	38.3	-95.2	-46.5	-45.59	-13	-32.59	H
11.642994	58.68	Pk	38.3	-95.2	-46.5	-44.72	-13	-31.72	V
15.519969	55.80	Pk	40.0	-95.2	-47.1	-46.50	-13	-33.50	H
15.519969	54.81	Pk	40.0	-95.2	-47.1	-47.49	-13	-34.49	V

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 #:	14982436
Date:	3/21/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	03-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz									
6.899869	44.52	Pk	35.7	-95.2	-45.99	-60.97	-13	-47.97	H
6.899869	45.18	Pk	35.7	-95.2	-45.99	-60.31	-13	-47.31	V
10.349938	45.34	Pk	37.5	-95.2	-45.42	-57.78	-13	-44.78	H
10.349938	45.46	Pk	37.5	-95.2	-45.42	-57.66	-13	-44.66	V
13.800007	44.95	Pk	38.6	-95.2	-43.03	-54.68	-13	-41.68	H
13.800007	44.71	Pk	38.6	-95.2	-43.03	-54.92	-13	-41.92	V

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

LIMITS

FCC: §27.53

(1) 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 #:	14982436
Date:	3/21/2024
Test Engineer:	32894
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	03-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.399951	52.20	Pk	35.6	-95.2	-45.49	-52.89	-13	-39.89	H
7.399951	52.03	Pk	35.6	-95.2	-45.49	-53.06	-13	-40.06	V
11.100464	52.57	Pk	37.7	-95.2	-44.03	-48.96	-13	-35.96	H
11.100464	50.73	Pk	37.7	-95.2	-44.03	-50.8	-13	-37.8	V
14.800181	51.68	Pk	39.4	-95.2	-42.85	-46.97	-13	-33.97	H
14.800181	52.37	Pk	39.4	-95.2	-42.85	-46.28	-13	-33.28	V
Mid Channel, 3840MHz									
7.579997	51.85	Pk	35.7	-95.2	-45.17	-52.82	-13	-39.82	H
7.579997	53.36	Pk	35.7	-95.2	-45.17	-51.31	-13	-38.31	V
11.370136	52.18	Pk	37.7	-95.2	-43.84	-49.16	-13	-36.16	H
11.370136	51.97	Pk	37.7	-95.2	-43.84	-49.37	-13	-36.37	V
15.160274	49.56	Pk	39.8	-95.2	-40.86	-46.7	-13	-33.7	H
15.160274	49.99	Pk	39.8	-95.2	-40.86	-46.27	-13	-33.27	V
High Channel, 3930MHz									
7.760044	52.74	Pk	35.7	-95.2	-45.79	-52.55	-13	-39.55	H
7.760044	53.80	Pk	35.7	-95.2	-45.79	-51.49	-13	-38.49	V
11.640205	50.07	Pk	38.0	-95.2	-43.35	-50.48	-13	-37.48	H
11.640205	50.71	Pk	38.0	-95.2	-43.35	-49.84	-13	-36.84	V
15.520367	51.22	Pk	40.2	-95.2	-40.24	-44.02	-13	-31.02	H
15.520367	50.37	Pk	40.2	-95.2	-40.24	-44.87	-13	-31.87	V

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 #:	14982436
Date:	2024-07-03
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)	T1792 3400- 3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Mid Channel, 3500MHz										
6.999797	25.95	Pk	35.6	.5	-95.2	-18.90	-52.05	-13	-39.05	H
6.999797	24.44	Pk	35.6	.5	-95.2	-18.90	-53.56	-13	-40.56	V
10.500122	21.95	Pk	37.9	.6	-95.2	-15.29	-50.04	-13	-37.04	H
10.500122	21.18	Pk	37.9	.6	-95.2	-15.29	-50.81	-13	-37.81	V
14.000447	21.54	Pk	39.0	.7	-95.2	-13.20	-47.16	-13	-34.16	H
14.000447	23.07	Pk	39.0	.7	-95.2	-13.20	-45.63	-13	-32.63	V

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

LIMITS

FCC: §27.53
(1) 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 #:	14982436
Date:	2024-07-03
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	26.76	Pk	35.7	-95.2	-17.1	-49.84	-13	-36.84	H
7.500500	28.29	Pk	35.7	-95.2	-17.1	-48.31	-13	-35.31	V
11.250000	27.19	Pk	37.8	-95.2	-14.0	-44.21	-13	-31.21	H
11.250000	26.46	Pk	37.8	-95.2	-14.0	-44.94	-13	-31.94	V
15.000500	28.50	Pk	39.9	-95.2	-12.95	-39.75	-13	-26.75	H
15.000500	27.56	Pk	39.9	-95.2	-12.95	-40.69	-13	-27.69	V
Mid Channel, 3840MHz									
7.680500	29.13	Pk	35.8	-95.2	-17.1	-47.37	-13	-34.37	H
7.680500	28.14	Pk	35.8	-95.2	-17.1	-48.36	-13	-35.36	V
11.520500	27.39	Pk	37.9	-95.2	-14.6	-44.51	-13	-31.51	H
11.520500	27.18	Pk	37.9	-95.2	-14.6	-44.72	-13	-31.72	V
15.360000	27.30	Pk	40.2	-95.2	-13.2	-40.90	-13	-27.90	H
15.360000	25.83	Pk	40.2	-95.2	-13.2	-42.37	-13	-29.37	V
High Channel, 3930MHz									
7.860500	28.54	Pk	35.8	-95.2	-17.7	-48.56	-13	-35.56	H
7.860500	27.74	Pk	35.8	-95.2	-17.7	-49.36	-13	-36.36	V
11.790500	26.9	Pk	38.3	-95.2	-13.95	-43.95	-13	-30.95	H
11.790500	27.94	Pk	38.3	-95.2	-13.95	-42.91	-13	-29.91	V
15.720500	26.61	Pk	40.5	-95.2	-12.35	-40.44	-13	-27.44	H
15.720500	27.24	Pk	40.5	-95.2	-12.35	-39.81	-13	-26.81	V

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 #:	14982436
Date:	2024-07-03
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										
7.061925	28.19	Pk	35.6	.8	-95.2	-27.30	-57.91	-13	-44.91	V
7.068534	29.54	Pk	35.6	.7	-95.2	-27.20	-56.56	-13	-43.56	H
10.505409	25.99	Pk	37.6	.6	-95.2	-24.44	-55.45	-13	-42.45	V
10.53405	26.71	Pk	37.6	.6	-95.2	-24.70	-54.99	-13	-41.99	H
14.022478	24.04	Pk	38.8	.7	-95.2	-20.45	-52.11	-13	-39.11	H
14.099147	23.59	Pk	38.9	.7	-95.2	-20.27	-52.28	-13	-39.28	V

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

LIMITS

FCC: §27.53
(1) 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 #:	14982436
Date:	2024-07-03
Test Engineer:	45258
Configuration:	EUT Only
Mode	5G NR n77 100MHz BPSK MIMO
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3750MHz									
7.500000	28.87	Pk	35.7	-95.2	-17.10	-47.73	-13	-34.73	H
7.500000	27.23	Pk	35.7	-95.2	-17.10	-49.37	-13	-36.37	V
11.250500	26.47	Pk	37.8	-95.2	-14.05	-44.98	-13	-31.98	H
11.250500	27.08	Pk	37.8	-95.2	-14.05	-44.37	-13	-31.37	V
15.000000	26.37	Pk	39.9	-95.2	-12.90	-41.83	-13	-28.83	H
15.000000	25.61	Pk	39.9	-95.2	-12.90	-42.59	-13	-29.59	V
Mid Channel, 3840MHz									
7.680000	28.24	Pk	35.8	-95.2	-17.1	-48.26	-13	-35.26	H
7.680000	28.52	Pk	35.8	-95.2	-17.1	-47.98	-13	-34.98	V
11.520500	26.94	Pk	37.9	-95.2	-14.6	-44.96	-13	-31.96	H
11.520500	28.03	Pk	37.9	-95.2	-14.6	-43.87	-13	-30.87	V
15.360500	26.40	Pk	40.2	-95.2	-13.2	-41.80	-13	-28.80	H
15.360500	26.48	Pk	40.2	-95.2	-13.2	-41.72	-13	-28.72	V
High Channel, 3930MHz									
7.860500	28.88	Pk	35.8	-95.2	-17.7	-48.22	-13	-35.22	H
7.860500	28.48	Pk	35.8	-95.2	-17.7	-48.62	-13	-35.62	V
11.790000	29.19	Pk	38.3	-95.2	-14.0	-41.71	-13	-28.71	H
11.790000	27.55	Pk	38.3	-95.2	-14.0	-43.35	-13	-30.35	V
15.720000	28.49	Pk	40.5	-95.2	-12.3	-38.51	-13	-25.51	H
15.720000	27.01	Pk	40.5	-95.2	-12.3	-39.99	-13	-26.99	V

11. SETUP PHOTOS

Please refer to 14982436-EP1V1 for setup photos.

END OF REPORT