

## NR Band n77 (DoD Band) – Ant F



Plot 7 63. Lower ACP Plot (NR Band n77 (DoD) - 10MHz CP-OFDM-QPSK - Full RB - Ant F)



Plot 7-60. Upper ACP Plot (NR Band n77 (DoD) - 10MHz CP-OFDM-QPSK – Full RB – Ant F)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 62 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 63 01 110
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Mode	Bandwidth	Channel	Test Case	Level	Limit	Margin
mode	Banawiath		1001 0400	[dBm]	[dBm]	[dB]
NR-n77PC2	100MHz	Low	Band Edge	-30.46	-13	-20.76
DoD Band		High	Band Edge	-35.19	-13	-22.13
NR-n77PC2		Low	Band Edge	-36.64	-13	-22.08
C Band		High	Band Edge	-34.14	-13	-18.21

Table 7-13. Conducted Band Edge Test Results – Ant C

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 64 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 04 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 (DoD Band) – Ant C



Plot 7-61. Lower ACP Plot (NR Band n77 (DoD) - 100MHz CP-OFDM-QPSK - Full RB - Ant C)



Plot 7-62. Upper ACP Plot (NR Band n77 (DoD) - 100MHz CP-OFDM-QPSK - Full RB - Ant C)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 65 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 65 01 110
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## NR Band n77 – Ant C



Plot 7-63. Lower ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK - Full RB - Ant C)



Plot 7-64. Upper ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK - Full RB - Ant C)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 66 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 00 01 110
© 2023 ELEMENT			V3.0 1/6/2022



Mode	Bandwidth	Channel	Tost Caso	Level	Limit	Margin
MOUE Balluwic		Chaimer	1031 0430	[dBm]	[dBm]	[dB]
NR-n77PC2	100MHz	Low	Band Edge	-28.87	-13	-20.76
DoD Band		High	Band Edge	-30.94	-13	-22.13
NR-n77PC2	100MHz	Low	Band Edge	-34.12	-13	-22.08
C Band		High	Band Edge	-29.27	-13	-18.21

Table 7-14. Conducted Band Edge Test Results – Ant I

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 67 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 07 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 (DoD Band) – Ant I



pectrum Analyzer 1 purious Emissions Ö + Frequency Input Z: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off Atten: 36 dB Trig: Free Run µW Path: Standard Gate: LO IF Gain: Low KEYSIGHT Input: RF Center Freq: 3.500010000 GHz Center Frequency Settings Align: Auto 3.500010000 GHz PASS CF Step 25.000000 MHz 3 All Range Graph 7 Scale/Div 10.0 dB Ref Value 30.00 dBm Auto Man Freq Offset Start 3.425 GHz Stop 3.675 GHz 4 All Range Table Measure Trace Trace Тгасе Туре Trace Average (Active) ∆Limit -23.11 dB -22.30 dB -20.56 dB -17.94 dB 
 e
 Start Freq
 Stop Freq
 RBW
 Frequency
 Amplitude

 1
 3.4250 GHz
 3.5500 GHz
 3.5500 GHz
 3.5510 GHz
 3.544375000 GHz
 2.888 dBm

 2
 3.5500 GHz
 3.5510 GHz
 3.3561 GHz
 3.59040000 GHz
 3.3561 GHz
 3.59040000 GHz
 3.364 dBm

 4
 3.5550 GHz
 3.6750 GHz
 1.000 MHz
 3.590400000 GHz
 -30.94 dBm
Spur Range Local う C I ? Jun 28, 2023 (デ  $\blacksquare$  $\mathbf{X}$ 

Plot 7-66. Upper ACP Plot (NR Band n77 (DoD) - 100MHz CP-OFDM-QPSK - Full RB - Ant I)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 68 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 68 of 110	
© 2023 ELEMENT			V3.0 1/6/2022	



## NR Band n77 – Ant I





Plot 7-68. Upper ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK - Full RB - Ant I)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 60 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 69 of 110	
© 2023 ELEMENT			V3.0 1/6/2022	



Mode	Bandwidth	Channel	Test Case	Level	Limit	Margin
		•		[dBm]	[dBm]	[dB]
NR-n77PC2	100MHz	Low	Band Edge	-31.24	-13	-20.76
DoD Band		High	Band Edge	-31.51	-13	-22.13
NR-n77PC2		Low	Band Edge	-36.50	-13	-22.08
C Band		High	Band Edge	-34.78	-13	-18.21

Table 7-15. Conducted Band Edge Test Results – Ant D

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 70 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 70 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 (DoD Band) – Ant D





Plot 7-70. Upper ACP Plot (NR Band n77 (DoD) - 100MHz CP-OFDM-QPSK - Full RB - Ant D)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 71 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage / 101 110
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## NR Band n77 – Ant D



pectrum Analyzer 1 purious Emissions + Ö Frequency Input Z: 50 Ω Corrections: O Trig: Free Run Gate: LO IF Gain: Low Center Freq: 3.930000000 GHz Radio Std: None Atten: 36 dB KEYSIGHT Input: RF Center Frequency 3.930000000 GHz Corrections: On Freq Ref: Int (S) NFE: Off Settings + Align: Auto PASS CF Step 3 All Range Graph ۷ 25.000000 MHz Ref Value 30.00 dBm Scale/Div 10.0 dB Auto Man Freq Offset Start 3.855 GHz Stop 4.105 GHz 4 All Range Table Measure Trace Trace 1 Trace Average (Active) Тгасе Туре 
 e
 Start Freq
 Stop Freq
 RBW
 Frequency
 Amplitude

 1
 3.8550 GHz
 3.9800 GHz
 1.000 MHz
 3.897250000 GHz
 -1.048 dBm

 2
 3.9800 GHz
 3.9810 GHz
 3.0801 GHz
 3.9805 GHz
 -38.69 dBm

 3
 3.9810 GHz
 3.9805 GHz
 3.9805 GHz
 -38.69 dBm
 -38.69 dBm

 4
 3.9850 GHz
 4.1050 GHz
 1.000 MHz
 3.988000000 GHz
 -31.78 dBm
∆Limit Spur Range ALIMIT -27.05 dB -25.69 dB -24.12 dB -21.78 dB E 5 C 2 Jun 21, 2023 5:28:03 PM  $\mathbf{X}$ 

Plot 7-72. Upper ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK - Full RB - Ant D)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 72 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 72 01 110
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## 7.6 Peak-Average Ratio

## **Test Overview**

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

### The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

### Test Procedure Used

ANSI C63.26-2015 - Section 5.2.3.4

### Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW ≥ OBW or specified reference bandwidth
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-5. Test Instrument & Measurement Setup

### Test Notes

For the QAM modulations, 256QAM was found to have the worst-case peak-to-average ratio so it is the only QAM measurement included in this section.

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Da
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 73 of 110
© 2023 ELEMENT	•		V3.0 1/6/2022



Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
		π/2 BPSK	26.26	4.42	13.0	-8.52
	100MHz	QPSK	23.75	6.91	13.0	-6.03
		256QAM	20.26	8.39	13.0	-4.58
		π/2 BPSK	26.27	4.10	13.0	-9.04
	90MHz	QPSK	23.77	6.85	13.0	-5.95
		256QAM	20.26	8.47	13.0	-4.50
		π/2 BPSK	26.26	4.39	13.0	-9.00
	80MHz	QPSK	23.70	6.98	13.0	-6.09
		256QAM	20.19	8.26	13.0	-4.64
		π/2 BPSK	26.27	4.34	13.0	-8.61
	70MHz	QPSK	23.70	7.00	13.0	-5.84
		256QAM	20.24	8.30	13.0	-4.58
		π/2 BPSK	26.47	3.90	13.0	-9.24
	60MHz	QPSK	23.90	7.32	13.0	-5.80
		256QAM	20.39	8.38	13.0	-4.57
ND	50MHz	π/2 BPSK	26.43	4.12	13.0	-8.91
NK-		QPSK	23.88	6.69	13.0	-6.03
1171 02		256QAM	20.35	8.57	13.0	-4.41
	40MHz	π/2 BPSK	26.26	3.91	13.0	-9.13
		QPSK	23.67	7.30	13.0	-6.12
		256QAM	20.12	8.28	13.0	-4.70
		π/2 BPSK	26.22	4.15	13.0	-9.11
	30MHz	QPSK	23.67	7.23	13.0	-6.10
		256QAM	20.29	8.34	13.0	-4.60
		π/2 BPSK	26.05	4.18	13.0	-9.09
	20MHz	QPSK	23.59	7.04	13.0	-6.09
		256QAM	20.01	8.36	13.0	-4.58
		π/2 BPSK	25.93	4.21	13.0	-8.96
	15MHz	QPSK	23.45	6.78	13.0	-5.89
		256QAM	19.96	8.21	13.0	-4.70
		π/2 BPSK	25.70	4.25	13.0	-8.82
	10MHz	QPSK	23.21	6.92	13.0	-5.65
		256QAM	19.69	7.95	13.0	-4.92

Table 7-16. PAR Test Results – Ant F – C Band

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 74 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 74 01 110
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## NR Band n77 – Ant F





Plot 7-74. PAR Plot (NR Band n77 - 100MHz CP-OFDM QPSK - Full RB - Ant F)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 75 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 75 01 110
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Plot 7-75. PAR Plot (NR Band n77 - 100MHz CP-OFDM 256-QAM - Full RB - Ant F)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 76 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 70 01 110
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Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
		π/2 BPSK	26.44	4.02	13.0	-8.97
	100MHz	QPSK	23.98	7.22	13.0	-5.97
		256QAM	20.45	8.25	13.0	-4.36
		π/2 BPSK	26.44	4.05	13.0	-8.81
	90MHz	QPSK	23.94	7.23	13.0	-6.03
		256QAM	20.47	8.31	13.0	-4.27
		π/2 BPSK	26.36	4.08	13.0	-8.88
	80MHz	QPSK	23.94	7.24	13.0	-5.89
		256QAM	20.41	8.20	13.0	-4.26
		π/2 BPSK	26.41	4.22	13.0	-8.53
	70MHz	QPSK	23.94	7.25	13.0	-5.93
		256QAM	20.42	8.26	13.0	-4.17
		π/2 BPSK	26.59	4.10	13.0	-8.89
	60MHz	QPSK	24.90	7.00	13.0	-5.67
		256QAM	20.59	8.21	13.0	-4.31
NR-	50MHz	π/2 BPSK	26.56	3.77	13.0	-8.88
n77PC2		QPSK	24.07	7.02	13.0	-5.85
DoD Band		256QAM	20.53	8.40	13.0	-4.02
	40MHz	π/2 BPSK	26.83	4.12	13.0	-8.90
		QPSK	24.34	6.83	13.0	-6.03
		256QAM	20.83	8.13	13.0	-4.31
		π/2 BPSK	26.82	4.08	13.0	-9.11
	30MHz	QPSK	24.30	6.85	13.0	-6.14
		256QAM	20.79	8.21	13.0	-4.23
		π/2 BPSK	26.65	4.13	13.0	-9.09
	20MHz	QPSK	24.15	6.79	13.0	-6.02
,		256QAM	20.63	8.24	13.0	-9.04
		π/2 BPSK	26.63	3.73	13.0	-9.09
	15MHz	QPSK	24.12	6.95	13.0	-6.31
		256QAM	20.59	8.15	13.0	-4.49
		π/2 BPSK	26.38	3.99	13.0	-9.00
	10MHz	QPSK	23.90	7.16	13.0	-5.87
		256QAM	20.38	7.96	13.0	-4.68

Table 7-17. PAR Test Results – AntF – DoD Band

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 77 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage // 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 (DoD Band) - Ant F



Plot 7-76. PAR Plot (NR Band n77 (DoD) - 100MHz DFT-s-OFDM BPSK - Full RB - Ant F)



Plot 7-77. PAR Plot (NR Band n77 (DoD) - 100MHz CP-OFDM QPSK - Full RB – Ant F)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 79 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 70 01 110
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Plot 7-78. PAR Plot (NR Band n77 (DoD) - 100MHz CP-OFDM 256-QAM - Full RB - Ant F)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 79 01 110
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## 7.7 Radiated Power (EIRP)

## **Test Overview**

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

### Test Procedures Used

ANSI C63.26-2015 - Section 5.2.4.4

### Test Settings

- Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration.
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize.

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 90 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage of 01 110
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### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-6. Radiated Test Setup >1GHz

### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 91 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage of 01 110
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3750.00	н	148	191	7.01	1 / 68	15.69	22.70	0.186	30.00	-7.30
	π/2 BPSK	3840.00	Н	117	191	7.15	1 / 136	15.37	22.52	0.179	30.00	-7.48
물	π/2 BPSK	3930.00	Н	137	190	7.39	1 / 68	16.32	23.71	0.235	30.00	-6.29
2 0	QPSK	3750.00	H	148	191	7.01	1 / 68	15.80	22.81	0.191	30.00	-7.19
⊨ ¥	QPSK	3840.00	н	117	191	7.15	1/204	15.58	22.73	0.188	30.00	-7.27
	16-QAM	3930.00	н	137	190	7.39	1/68	15.83	23.22	0.242	30.00	-6.78
	π/2 BPSK	3745.02	Н	148	191	7.00	1 / 122	15.62	22.62	0.183	30.00	-7.38
	π/2 BPSK	3840.00	Н	117	191	7.15	1 / 122	15.26	22.41	0.174	30.00	-7.59
보	π/2 BPSK	3934.98	Н	137	190	7.40	1 / 122	16.31	23.71	0.235	30.00	-6.29
2	QPSK	3745.02	Н	148	191	7.00	1 / 122	15.76	22.76	0.189	30.00	-7.24
6	QPSK	3840.00	н	117	191	7.15	1 / 122	15.44	22.59	0.182	30.00	-7.41
	16-QAM	3934.98	Н	137	190	7.40	1/122	15.75	23.15	0.240	30.00	-6.85
	π/2 BPSK	3740.01	Н	148	191	6.99	1 / 108	15.75	22.73	0.188	30.00	-7.27
	π/2 BPSK	3840.00	Н	117	191	7.15	1/1	15.23	22.38	0.173	30.00	-7.62
보	π/2 BPSK	3939.99	Н	137	190	7.41	1/1	16.16	23.57	0.228	30.00	-6.43
2	QPSK	3740.01	Н	148	191	6.99	1 / 108	15.87	22.85	0.193	30.00	-7.15
õ	QPSK	3840.00	н	117	191	7.15	1/1	15.42	22.57	0.181	30.00	-7.43
	16-QAM	3939.99	н	137	190	7.41	1/1	15.63	23.04	0.244	30.00	-6.96
	π/2 BPSK	3735.00	н	148	191	6.97	1 / 94	15.66	22.63	0.183	30.00	-7.37
	π/2 BPSK	3840.00	Н	117	191	7.15	1/1	15.21	22.36	0.172	30.00	-7.64
Ĩ	π/2 BPSK	3945.00	Н	137	190	7.42	1/1	16.15	23.57	0.228	30.00	-6.43
≥	QPSK	3735.00	н	148	191	6.97	1/94	15.82	22.79	0.190	30.00	-7.21
~	OPSK	3945.00	н	117	191	7.15	1/1	15.43	22.00	0.181	30.00	-7.42
	16-QAM	3945.00	н	137	190	7.42	1/1	15.64	23.06	0.202	30.00	-6.94
	π/2 BPSK	3730.02	Н	148	191	6.96	1/1	15.80	22.75	0.189	30.00	-7.25
	π/2 BPSK	3840.00	Н	117	191	7.15	1 / 81	15.34	22.49	0.178	30.00	-7.51
Ŧ	π/2 BPSK	3949.98	н	137	190	7.43	1 / 160	16.27	23.69	0.234	30.00	-6.31
2	QPSK	3730.02	н	148	191	6.96	1/1	15.90	22.85	0.193	30.00	-7.15
9	OPSK	3949.98	н	137	190	7.43	1/160	16.48	22.00	0.185	30.00	-6.10
	16-QAM	3949.98	Н	137	190	7.43	1 / 160	15.72	23.14	0.206	30.00	-6.86
	π/2 BPSK	3725.01	Н	148	191	6.94	1/1	15.80	22.74	0.188	30.00	-7.26
N	π/2 BPSK	3840.00	Н	117	191	7.15	1 / 131	15.39	22.54	0.180	30.00	-7.46
HW	OPSK	3954.99	H	137	190	6.94	1/131	15.49	23.92	0.247	30.00	-6.08
20	QPSK	3840.00	н	117	191	7.15	1 / 131	15.58	22.73	0.188	30.00	-7.27
	QPSK	3954.99	Н	137	190	7.43	1 / 131	16.77	24.20	0.263	30.00	-5.80
	16-QAM	3954.99	Н	137	190	7.43	1 / 131	15.92	23.35	0.216	30.00	-6.65
	π/2 BPSK π/2 BPSK	3720.00	н	148	191	6.93 7.15	1/1	15.16	23.08	0.203	30.00	-6.92
₽	π/2 BPSK	3960.00	н	137	190	7.44	1 / 104	16.78	24.22	0.264	30.00	-5.78
ž	QPSK	3720.00	н	148	191	6.93	1/1	16.30	23.22	0.210	30.00	-6.78
6	QPSK	3840.00	Н	117	191	7.15	1/1	15.88	23.03	0.201	30.00	-6.97
	QPSK	3960.00	н	137	190	7.44	1 / 104	16.94	24.38	0.274	30.00	-5.62
	16-QAM	3960.00	н	137	190	6.91	1 / 104	16.16	23.60	0.229	30.00	-6.40
	π/2 BPSK	3840.00	н	140	191	7.15	1/1	15.57	22.33	0.187	30.00	-7.28
보	π/2 BPSK	3964.98	н	137	190	7.45	1 / 76	16.73	24.18	0.262	30.00	-5.82
Ξ	QPSK	3715.02	Н	148	191	6.91	1 / 76	16.18	23.09	0.204	30.00	-6.91
30	QPSK	3840.00	Н	117	191	7.15	1/1	15.81	22.96	0.198	30.00	-7.04
	QPSK 16-OAM	3964.98	н	137	190	7.45	1 / 76	16.94	24.39	0.275	30.00	-5.61
	π/2 BPSK	3710.01	Н	148	191	6.90	1/49	16.01	22.91	0.196	30.00	-7.09
	π/2 BPSK	3840.00	н	117	191	7.15	1/1	15.37	22.52	0.179	30.00	-7.48
£	π/2 BPSK	3969.99	н	137	190	7.46	1 / 49	16.53	23.99	0.251	30.00	-6.01
2	QPSK	3710.01	Н	148	191	6.90	1 / 49	16.15	23.05	0.202	30.00	-6.95
Ñ	QPSK	3840.00	н	117	191	7.15	1/1	15.60	22.75	0.189	30.00	-7.25
	16-QAM	3969.99	н	137	190	7.46	1/49	15.99	23.45	0.203	30.00	-6.55
	π/2 BPSK	3707.52	Н	148	191	6.89	1/1	16.00	22.89	0.195	30.00	-7.11
	π/2 BPSK	3840.00	Н	117	191	7.15	1/1	15.48	22.63	0.183	30.00	-7.37
Ĩ.	π/2 BPSK	3972.48	Н	137	190	7.46	1/36	16.55	24.01	0.252	30.00	-5.99
2	QPSK	3707.52	н	148	191	6.89	1/1	16.13	23.02	0.201	30.00	-6.98
	QPSK	3972.48	н	137	190	7.46	1/36	16.81	24.27	0.267	30.00	-5.73
	16-QAM	3972.48	Н	137	190	7.46	1 / 36	16.06	23.52	0.225	30.00	-6.48
	π/2 BPSK	3705.00	Н	148	191	6.89	1 / 22	15.75	22.63	0.183	30.00	-7.37
	π/2 BPSK	3840.00	Н	117	191	7.15	1/12	15.37	22.52	0.179	30.00	-7.48
Ť	OPSK	3705.00	н	137	190	6.89	1/22	15.32	23.79	0.239	30.00	-0.21
9	QPSK	3840.00	н	117	191	7.15	1 / 12	15.49	22.64	0.184	30.00	-7.36
	QPSK	3975.00	н	137	190	7.47	1 / 22	16.60	24.07	0.255	30.00	-5.93
400 000	16-QAM	3975.00	н	137	190	7.47	1/22	15.76	23.23	0.210	30.00	-6.77
TUU MHZ	UPSK (UP-OFDM)	3930.00	н	137	190	7.39	1 / 68	14.64	22.03	U.160	30.00	-7.97

### Table 7-2. EIRP Data (NR Band n77 – Ant F)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 92 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Page 82 01 110	
© 2022 ELEMENT			V/2 0 4/6/2022



Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3750.00	Н	102	38	7.01	1 / 68	15.70	22.71	0.187	30.00	-7.29
	π/2 BPSK	3840.00	Н	105	36	7.15	1/1	15.07	22.22	0.167	30.00	-7.78
Ŧ	π/2 BPSK	3930.00	Н	114	34	7.39	1 / 136	15.63	23.02	0.201	30.00	-6.98
	QPSK	3750.00	Н	102	38	7.01	1 / 68	15.62	22.63	0.183	30.00	-7.37
2	QPSK	3840.00	Н	105	36	7.15	1 / 136	15.26	22.41	0.174	30.00	-7.59
100	QPSK	3930.00	Н	114	34	7.39	1 / 136	15.83	23.22	0.210	30.00	-6.78
	16-QAM	3750.00	Н	102	38	7.01	1 / 136	15.19	22.20	0.166	30.00	-7.80
	16-QAM	3840.00	Н	105	36	7.15	1 / 136	14.81	21.96	0.157	30.00	-8.04
	16-QAM	3930.00	Н	114	34	7.39	1 / 136	15.38	22.77	0.189	30.00	-7.23
100 MHz	QPSK (CP-OFDM)	3930.0	Н	114	34	7.39	1 / 136	14.38	21.77	0.150	30.00	-8.23

Table 7-3. EIRP Data (NR Band n77 – Ant C)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3750.00	н	211	315	7.01	1 / 136	17.57	24.58	0.287	30.00	-5.42
	π/2 BPSK	3840.00	Н	210	315	7.15	1 / 136	16.57	23.72	0.236	30.00	-6.28
	π/2 BPSK	3930.00	Н	210	314	7.39	1 / 68	16.40	23.79	0.239	30.00	-6.21
F	QPSK	3750.00	Н	211	315	7.01	1 / 136	17.80	24.81	0.303	30.00	-5.19
2	QPSK	3840.00	Н	210	315	7.15	1 / 136	16.81	23.96	0.249	30.00	-6.04
<u> </u>	QPSK	3930.00	Н	210	314	7.39	1 / 68	16.26	23.65	0.232	30.00	-6.35
	16-QAM	3750.00	Н	211	315	7.01	1 / 136	17.21	24.22	0.265	30.00	-5.78
	16-QAM	3840.00	Н	210	315	7.15	1 / 136	15.96	23.11	0.205	30.00	-6.89
	16-QAM	3930.00	Н	210	314	7.39	1 / 68	15.25	22.64	0.184	30.00	-7.36
100 MHz	QPSK (CP-OFDM)	3840.0	Н	211	315	7.15	1 / 136	16.41	23.56	0.227	30.00	-6.44
				Table 7		ate /ND D	and n77	A m + 1\				

Table 7-4. EIRP Data (NR Band n77 – Ant I)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3750.00	Н	104	30	7.01	1 / 68	11.03	18.04	0.064	30.00	-11.96
	π/2 BPSK	3840.00	Н	102	15	7.15	1 / 260	9.92	17.07	0.051	30.00	-12.93
Ŧ	π/2 BPSK	3930.00	Н	103	30	7.39	1 / 265	11.71	19.10	0.081	30.00	-10.90
	QPSK	3750.00	Н	104	30	7.01	1 / 68	10.93	17.94	0.062	30.00	-12.06
N	QPSK	3840.00	Н	102	15	7.15	1 / 265	10.30	17.45	0.056	30.00	-12.55
100	QPSK	3930.00	Н	103	30	7.39	1 / 265	11.76	19.15	0.082	30.00	-10.85
	16-QAM	3750.00	Н	104	30	7.01	1 / 136	10.56	17.57	0.057	30.00	-12.43
	16-QAM	3840.00	Н	102	15	7.15	1 / 265	9.60	16.75	0.047	30.00	-13.25
	16-QAM	3930.00	Н	103	30	7.39	1 / 204	11.07	18.46	0.070	30.00	-11.54
100 MHz	QPSK (CP-OFDM)	3840.0	н	103	30	7.39	1 / 204	10.30	17.69	0.059	30.00	-12.31

Table 7-5. EIRP Data (NR Band n77 – Ant D)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT						
Test Report S/N:	Test Dates:	EUT Type:	Page 83 of 110					
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 65 01 110					
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3500.01	Н	146	314	6.46	1 / 136	17.96	24.42	0.277	30.00	-5.58
100 MHz	QPSK	3500.01	н	146	314	6.46	1 / 204	18.15	24.61	0.289	30.00	-5.39
	16-QAM	3500.01	Н	146	314	6.46	1 / 204	17.54	24.00	0.251	30.00	-6.00
	π/2 BPSK	3495.00	н	146	314	6.46	1/1	17.85	24.30	0.269	30.00	-5.70
N	TT/2 BPSK	3500.01	н	146	314	6.46	1/243	17.84	24.30	0.269	30.00	-5.70
Η×	QPSK	3495.00	н	146	314	6.46	1/1	18.09	24.54	0.285	30.00	-5.46
6	QPSK	3500.01	Н	146	314	6.46	1 / 243	18.03	24.49	0.281	30.00	-5.51
	QPSK	3504.99	н	146	314	6.47	1 / 243	18.05	24.51	0.283	30.00	-5.49
	16-QAM	3504.99	Н	146	314	6.47	1 / 243	17.34	23.80	0.240	30.00	-6.20
	π/2 BPSK	3490.02	Н	146	314	6.45	1/1	17.88	24.33	0.271	30.00	-5.67
N	π/2 BPSK	3500.01	Н	146	314	6.46	1/1	17.80	24.26	0.267	30.00	-5.74
Ξ	TT/2 BPSK	3510.00	H	146	314	6.47	1/215	17.75	24.22	0.265	30.00	-5.78
s s s s s s s s s s s s s s s s s s s	OPSK	3490.02	п	146	314	6.45	1/1	17.90	24.43	0.276	30.00	-5.57
	QPSK	3510.00	н	146	314	6.47	1/215	17.95	24.42	0.277	30.00	-5.58
	16-QAM	3490.02	H	146	314	6.45	1/1	17.29	23.74	0.237	30.00	-6.26
	π/2 BPSK	3485.01	н	146	314	6.45	1/1	17.87	24.31	0.270	30.00	-5.69
	π/2 BPSK	3500.01	Н	146	314	6.46	1/1	17.75	24.21	0.264	30.00	-5.79
Ŧ	π/2 BPSK	3514.98	Н	146	314	6.47	1 / 187	17.78	24.25	0.266	30.00	-5.75
Σ	QPSK	3485.01	н	146	314	6.45	1/1	18.05	24.49	0.281	30.00	-5.51
×	QPSK	3500.01	Н	146	314	6.46	1/1	17.94	24.40	0.276	30.00	-5.60
	QPSK 16 CAM	3514.98	н	146	314	6.47	1 / 187	17.97	24.44	0.278	30.00	-5.56
		3480.00	н	146	314	6.45	1/1	18.01	23.80	0.240	30.00	-0.20
	π/2 BPSK	3500.01	н	146	314	6.46	1/1	17.89	24.45	0.273	30.00	-5,65
₽	π/2 BPSK	3519.99	н	146	314	6.48	1 / 81	17.91	24.38	0.274	30.00	-5.62
, , , , , , , , , , , , , , , , , , ,	QPSK	3480.00	н	146	314	6.44	1 / 81	18.17	24.61	0.289	30.00	-5.39
60	QPSK	3500.01	н	146	314	6.46	1/1	18.08	24.54	0.285	30.00	-5.46
	QPSK	3519.99	Н	146	314	6.48	1 / 81	18.10	24.57	0.287	30.00	-5.43
	16-QAM	3480.00	н	146	314	6.44	1 / 81	17.46	23.90	0.246	30.00	-6.10
	π/2 BPSK	3475.02	Н	146	314	6.43	1/1	17.99	24.42	0.277	30.00	-5.58
N	π/2 BPSK	3500.01	н	146	314	6.46	1/1	17.92	24.38	0.274	30.00	-5.62
Ξ	TT/2 BPSK	3525.00	Н	146	314	6.48	1/1	17.85	24.32	0.271	30.00	-5.68
0	OPSK	3473.02	н	140	314	6.46	1/1	18.10	24.04	0.291	30.00	-5.30
47	OPSK	3525.00	н	146	314	6.48	1/1	18.04	24.51	0.283	30.00	-5.49
	16-QAM	3475.02	Н	146	314	6.43	1/1	17.47	23.90	0.246	30.00	-6.10
	π/2 BPSK	3470.01	н	146	314	6.43	1/1	18.12	24.54	0.285	30.00	-5.46
	π/2 BPSK	3500.01	Н	146	314	6.46	1 / 104	17.94	24.40	0.276	30.00	-5.60
보	π/2 BPSK	3529.98	н	146	314	6.48	1 / 104	18.02	24.50	0.282	30.00	-5.50
≥ S	QPSK	3470.01	Н	146	314	6.43	1/1	18.25	24.67	0.293	30.00	-5.33
4	QPSK	3500.01	н	146	314	6.46	1 / 104	18.09	24.55	0.285	30.00	-5.45
	QPSK 16-OAM	3529.98	H	146	314	6.48	1/104	18.16	24.64	0.291	30.00	-5.36
	π/2 BPSK	3465.00	н	146	314	6.42	1/1	18.07	24.03	0.233	30.00	-5.51
	π/2 BPSK	3500.01	н	146	314	6.46	1/1	17.90	24.36	0.273	30.00	-5.64
우	π/2 BPSK	3534.99	н	146	314	6.48	1 / 76	18.00	24.48	0.281	30.00	-5.52
Ē	QPSK	3465.00	Н	146	314	6.42	1/1	18.27	24.69	0.295	30.00	-5.31
30	QPSK	3500.01	н	146	314	6.46	1/1	18.06	24.52	0.283	30.00	-5.48
	QPSK	3534.99	Н	146	314	6.48	1 / 76	18.20	24.68	0.294	30.00	-5.32
	16-QAM	3465.00	Н	146	314	6.42	1/1	17.53	23.95	0.249	30.00	-6.05
	π/2 BPSK	3460.02	Н	146	314	6.42	1/49	17.98	24.39	0.275	30.00	-5.61
N	π/2 BPSK	3540.00	н	140	314	6.49	1/49	17.87	24.33	0.271	30.00	-5.68
ΗW	QPSK	3460.02	н	146	314	6.42	1/49	18.11	24.52	0.283	30.00	-5.48
50	QPSK	3500.01	н	146	314	6.46	1/1	18.00	24.46	0.280	30.00	-5.54
	QPSK	3540.00	н	146	314	6.49	1 / 49	17.98	24.46	0.280	30.00	-5.54
	16-QAM	3460.02	Н	146	314	6.42	1 / 49	17.45	23.86	0.243	30.00	-6.14
	π/2 BPSK	3457.50	н	146	314	6.41	1 / 36	17.94	24.35	0.273	30.00	-5.65
N	π/2 BPSK	3500.01	Н	146	314	6.46	1/36	17.86	24.32	0.271	30.00	-5.68
Η̈́	TT/2 BPSK	3542.49	Н	146	314	6.49	1/36	17.91	24.39	0.275	30.00	-5.61
5	OPSK	3500.01	н	146	314	6.46	1/36	18.03	24.49	0.281	30.00	-5.51
	QPSK	3542.49	н	146	314	6.49	1/36	18.09	24.57	0.287	30.00	-5.43
	16-QAM	3500.01	Н	146	314	6.46	1 / 36	17.39	23.85	0.243	30.00	-6.15
	π/2 BPSK	3455.01	н	146	314	6.41	1 / 22	17.80	24.20	0.263	30.00	-5.80
	π/2 BPSK	3500.01	Н	146	314	6.46	1 / 22	17.66	24.12	0.259	30.00	-5.88
¥	π/2 BPSK	3544.98	Н	146	314	6.49	1 / 22	17.73	24.21	0.264	30.00	-5.79
Σ	QPSK	3455.01	Н	146	314	6.41	1 / 22	18.04	24.44	0.278	30.00	-5.56
Ę	QPSK	3500.01	H	146	314	6.46	1/22	17.79	24.25	0.266	30.00	-5.75
	QPSK 16 CANA	3544.98	н	146	314	6.49	1/22	17.87	24.35	0.273	30.00	-5.65
100 MHz		3500.0	н	146	314	6.49	1/22	16.84	23.73	0.236	30.00	-0.27
		5500.0		140	514	0.40	1/204	10.04	20.00	0.214	30.00	-0.70

Table 7-6. EIRP Data (NR Band n77 (DoD) – Ant F)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 94 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Page 84 01 110	
© 2022 ELEMENT			1/2 0 1/6/2022



Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3500.01	н	103	41	6.46	1/1	15.42	21.88	0.154	30.00	-8.12
100 MHz	QPSK	3500.01	Н	103	41	6.46	1 / 270	15.50	21.96	0.157	30.00	-8.04
	16-QAM	3500.01	Н	103	41	6.46	1 / 270	15.09	21.55	0.143	30.00	-8.45
100 MHz	QPSK (CP-OFDM)	3500.0	Н	103	41	6.46	1 / 270	13.83	20.29	0.107	30.00	-9.71

#### Table 7-7. EIRP Data (NR Band n77 (DoD) – Ant C)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	3500.01	Н	316	327	6.46	1 / 136	18.40	24.86	0.307	30.00	-5.14
	QPSK	3500.01	Н	316	327	6.46	1 / 136	18.48	24.94	0.312	30.00	-5.06
	16-QAM	3500.01	Н	316	327	6.46	1 / 136	17.55	24.01	0.252	30.00	-5.99
100 MHz	QPSK (CP-OFDM)	3500.0	н	316	327	6.46	1 / 136	17.78	24.24	0.266	30.00	-5.76

#### Table 7-8. EIRP Data (NR Band n77 (DoD) - Ant I)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	3500.01	Н	102	22	6.46	1/1	11.96	18.42	0.070	30.00	-11.58
100 MHz	QPSK	3500.01	Н	102	22	6.46	1/1	11.84	18.30	0.068	30.00	-11.70
	16-QAM	3500.01	Н	102	22	6.46	1/1	10.92	17.38	0.055	30.00	-12.62
100 MHz	QPSK (CP-OFDM)	3500.0	Н	102	22	6.46	1/1	10.58	17.04	0.051	30.00	-12.96

Table 7-9. EIRP Data (NR Band n77 (DoD) – Ant D)

FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dage 95 of 110	
1M2304260060-09.A3L 05/24/2023 - 07/31/2023		Portable Handset	Page 85 01 110	
© 2023 ELEMENT V3.0 1/6/20				



## 7.8 Radiated Spurious Emissions Measurements

### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

### **Test Procedures Used**

ANSI C63.26-2015 - Section 5.5.4

### **Test Settings**

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\ge$  3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 96 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage of 01 110	
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## Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-8. Test Instrument & Measurement Setup >1 GHz

FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Page 87 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage of 01 110	
© 2023 ELEMENT			V3.0 1/6/2022	



### Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
  - b)  $E(dB\mu V/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m) d) EIRP (dBm) = E(dB\mu V/m) + 20logD 104.8; where D is the measurement distance in meters.$
- 2) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 3) This unit was tested with its standard battery.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.
- 8) Spurious emission in EN-DC Operating mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor) has been checked and was found to not to be the worst case.

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 88 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage of 01 110	
© 2023 ELEMENT V3.0 1/6/2027				



## NR Band n77 – Ant F



FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 90 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 69 01 110	
© 2023 ELEMENT V3.0 1/6/2				







Bandwidth (MHz):	100
Frequency (MHz):	3750.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7500.00	Н	329	10	-70.19	9.72	46.53	-48.73	-13.00	-35.73
11250.00	Н	261	317	-68.71	12.07	50.36	-44.90	-13.00	-31.90
15000.00	Н	138	30	-78.58	14.86	43.28	-51.97	-13.00	-38.97
18750.00	Н	-	-	-58.36	1.87	50.51	-54.29	-13.00	-41.29
22500.00	Н	-	-	-58.89	3.97	52.08	-52.72	-13.00	-39.72
26250.00	Н	-	-	-58.41	4.35	52.93	-51.87	-13.00	-38.87

Table 7-10. Radiated Spurious Data (NR Band n77 – Low Channel – Ant F)

Bandwidth (MHz):	100
Frequency (MHz):	3840.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7680.00	Н	145	107	-70.35	8.49	45.14	-50.12	-13.00	-37.12
11520.00	Н	267	341	-62.95	12.59	56.64	-38.62	-13.00	-25.62
15360.00	Н	267	48	-76.25	14.87	45.62	-49.64	-13.00	-36.64
19200.00	Н	-	-	-59.22	2.25	50.04	-54.76	-13.00	-41.76
23040.00	Н	-	-	-59.40	3.99	51.59	-53.21	-13.00	-40.21
26880.00	Н	-	-	-58.73	4.75	53.02	-51.78	-13.00	-38.78

Table 7-11. Radiated Spurious Data (NR Band n77 - Mid Channel - Ant F)

		PART 27 MEASUREMENT REPORT				
		Technical Manager				
Test Report S/N:	Test Dates:	EUT Type:	Page 90 of 110			
1M2304260060-09.A3L 05/24/2023 - 07/31/2023 Pc		Portable Handset	Fage 90 01 110			
© 2023 ELEMENT V3.0 1/6/20						



Bandwidth (MHz):	100
Frequency (MHz):	3930.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7860.00	Н	292	317	-61.29	8.96	54.67	-40.59	-13.00	-27.59
11790.00	Н	200	334	-77.50	13.13	42.63	-52.63	-13.00	-39.63
15720.00	Н	-	-	-80.08	15.19	42.11	-53.15	-13.00	-40.15
19650.00	Н	-	-	-58.93	2.78	50.86	-53.94	-13.00	-40.94
23580.00	Н	-	-	-59.23	4.00	51.77	-53.03	-13.00	-40.03

Table 7-12. Radiated Spurious Data (NR Band n77 – High Channel – Ant F)

w/ Wireless Charging Pad
100
3840.00
1 / 136
Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7680.00	Н	144	117	-71.03	8.49	44.46	-50.80	-13.00	-37.80
11520.00	Н	145	292	-79.14	12.59	40.45	-54.81	-13.00	-41.81
15360.00	Н	144	64	-76.32	14.87	45.55	-49.71	-13.00	-36.71
19200.00	Н	-	-	-58.49	2.25	50.76	-54.04	-13.00	-41.04
23040.00	Н	-	-	-59.33	3.99	51.65	-53.15	-13.00	-40.15
26880.00	Н	-	-	-58.84	4.75	52.91	-51.89	-13.00	-38.89

Table 7-13. Radiated Spurious Data with WCP (NR Band n77 – Ant F)

FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 01 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 91 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 – Ant C



FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 02 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 92 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-86. Radiated Spurious Plot (NR Band n77 - Ant C)

Bandwidth (MHz):	100
Frequency (MHz):	3750.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7500.00	Н	141	17	-69.59	9.72	47.13	-48.13	-13.00	-35.13
11250.00	Н	-	-	-81.85	12.07	37.22	-58.04	-13.00	-45.04
15000.00	Н	-	-	-77.65	14.86	44.21	-51.04	-13.00	-38.04
18750.00	Н	-	-	-58.27	1.87	50.60	-54.20	-13.00	-41.20

Table 7-14. Radiated Spurious Data (NR Band n77 – Low Channel – Ant C)

Bandwidth (MHz):	100
Frequency (MHz):	3840.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7680.00	Н	136	15	-67.96	9.72	48.76	-46.50	-13.00	-33.50
11520.00	Н	-	-	-81.75	12.07	37.32	-57.94	-13.00	-44.94
15360.00	Н	137	49	-76.01	14.86	45.85	-49.40	-13.00	-36.40
19200.00	н	-	-	-58.91	2.25	50.35	-54.45	-13.00	-41.45
23040.00	Н	-	-	-58.84	3.99	52.15	-52.65	-13.00	-39.65
26880.00	Н	-	-	-58.98	4.75	52.77	-52.03	-13.00	-39.03

Table 7-15. Radiated Spurious Data (NR Band n77 – Mid Channel – Ant C)

FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 02 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 93 of 110	
© 2023 ELEMENT			\/3.0.1/6/2022	



Bandwidth (MHz):	100
Frequency (MHz):	3930.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7860.00	Н	128	76	-63.88	9.72	52.84	-42.42	-13.00	-29.42
11790.00	Н	-	-	-82.07	12.07	37.00	-58.26	-13.00	-45.26
15720.00	Н	136	50	-79.39	14.86	42.47	-52.78	-13.00	-39.78
19650.00	Н	-	-	-58.95	2.78	50.84	-53.96	-13.00	-40.96
23580.00	Н	-	-	-59.18	4.00	51.82	-52.98	-13.00	-39.98
27510.00	Н	-	-	-58.70	4.62	52.92	-51.88	-13.00	-38.88

Table 7-16. Radiated Spurious Data (NR Band n77 – High Channel – Ant C)

FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 04 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 94 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 – Ant I



FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 05 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 95 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-90. Radiated Spurious Plot (NR Band n77 - Ant I)

Bandwidth (MHz):	100
Frequency (MHz):	3750.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7500.00	Н	348	239	-74.51	15.93	48.42	-46.84	-13.00	-33.84
11250.00	Н	141	44	-77.06	21.35	51.29	-43.96	-13.00	-30.96
15000.00	Н	-	-	-83.44	26.20	49.76	-45.50	-13.00	-32.50
18750.00	Н	-	-	-58.16	1.87	50.71	-54.09	-13.00	-41.09
22500.00	Н	-	-	-59.17	3.97	51.80	-53.00	-13.00	-40.00

Table 7-17. Radiated Spurious Data (NR Band n77 – Low Channel – Ant I)

Bandwidth (MHz):	100
Frequency (MHz):	3840.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7680.00	Н	121	2	-72.33	15.91	50.58	-44.68	-13.00	-31.68
11520.00	Н	-	-	-83.53	22.28	45.75	-49.51	-13.00	-36.51
15360.00	Н	-	-	-84.84	27.28	49.44	-45.81	-13.00	-32.81
19200.00	Н	-	-	-59.22	2.25	50.03	-54.77	-13.00	-41.77

Table 7-18. Radiated Spurious Data (NR Band n77 - Mid Channel - Ant I)

FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 06 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 90 01 110
© 2023 ELEMENT			V3.0 1/6/2022



Bandwidth (MHz):	100
Frequency (MHz):	3930.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7860.00	н	330	342	-71.36	15.90	51.54	-43.72	-13.00	-30.72
11790.00	Н	-	-	-83.31	21.45	45.14	-50.12	-13.00	-37.12
15720.00	Н	-	-	-84.80	28.22	50.42	-44.83	-13.00	-31.83
19650.00	Н	-	-	-58.98	2.78	50.80	-54.00	-13.00	-41.00

Table 7-19. Radiated Spurious Data (NR Band n77 – High Channel – Ant I)

FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 07 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 97 01 110
© 2023 ELEMENT			V3.0 1/6/2022



## NR Band n77 – Ant D



FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 08 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 98 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-94. Radiated Spurious Plot (NR Band n77 - Ant D)

Bandwidth (MHz):	100
Frequency (MHz):	3750.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7500.00	Н	254	86	-72.04	15.93	50.89	-44.37	-13.00	-31.37
11250.00	Н	-	-	-83.60	21.35	44.75	-50.50	-13.00	-37.50
15000.00	Н	-	-	-84.94	26.20	48.26	-47.00	-13.00	-34.00

Table 7-20. Radiated Spurious Data (NR Band n77 – Low Channel – Ant D)

Bandwidth (MHz):	100
Frequency (MHz):	3840.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7680.00	Н	252	262	-73.62	15.91	49.29	-45.97	-13.00	-32.97
11520.00	Н	-	-	-83.61	22.28	45.67	-49.59	-13.00	-36.59
15360.00	Н	-	-	-84.74	27.28	49.54	-45.71	-13.00	-32.71

Table 7-21. Radiated Spurious Data (NR Band n77 - Mid Channel - Ant D)

Bandwidth (MHz):	100
Frequency (MHz):	3930.00
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7860.00	Н	290	78	-71.23	15.90	51.67	-43.59	-13.00	-30.59
11790.00	Н	-	-	-83.18	21.45	45.27	-49.99	-13.00	-36.99
15720.00	Н	-	-	-84.52	28.22	50.70	-44.55	-13.00	-31.55

Table 7-22. Radiated Spurious Data (NR Band n77 - High Channel - Ant D)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dogo 00 of 110		
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 99 01 110		
© 2022 ELEMENT			\/2.0.1/6/2022		







FCC ID: A3LSMS711U		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 100 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 100 01 110	
© 2023 ELEMENT			V3.0 1/6/2022	







Bandwidth (MHz):	100
Frequency (MHz):	3500.01
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7000.02	Н	175	318	-64.79	8.71	50.92	-44.34	-13.00	-31.34
10500.03	Н	-	-	-79.96	11.97	39.01	-56.25	-13.00	-43.25
14000.04	Н	142	56	-78.66	15.96	44.30	-50.96	-13.00	-37.96
17500.05	Н	-	-	-79.18	17.31	45.13	-50.13	-13.00	-37.13
21000.06	Н	-	-	-60.48	3.66	50.18	-54.62	-13.00	-41.62
24500.07	Н	-	-	-58.98	4.10	52.12	-52.68	-13.00	-39.68

Table 7-23. Radiated Spurious Data (NR Band n77 (DoD) - Mid Channel - Ant F)

Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	3500.01
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7000.02	Н	140	102	-67.04	8.71	48.67	-46.59	-13.00	-33.59
10500.03	н	216	26	-78.40	11.97	40.57	-54.69	-13.00	-41.69
14000.04	Н	-	-	-79.71	15.96	43.25	-52.01	-13.00	-39.01
17500.05	Н	-	-	-79.32	17.31	44.99	-50.27	-13.00	-37.27
21000.06	Н	-	-	-60.48	3.66	50.18	-54.62	-13.00	-41.62

Table 7-24. Radiated Spurious Data with WCP (NR Band n77 (DoD) - Ant F)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dogo 101 of 110		
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 101 01 110		
© 2023 ELEMENT			V3.0 1/6/2022		







FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 102 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 102 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-102. Radiated Spurious Plot (NR Band n77 (DoD) - Ant C)

Bandwidth (MHz):	100
Frequency (MHz):	3500.01
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7000.02	Н	126	208	-70.22	8.71	45.49	-49.77	-13.00	-36.77
10500.03	Н	317	1	-76.63	11.97	42.34	-52.92	-13.00	-39.92
14000.04	Н	-	-	-81.21	15.96	41.75	-53.51	-13.00	-40.51
17500.05	Н	-	-	-81.10	17.31	43.21	-52.05	-13.00	-39.05
21000.06	Н	-	-	-59.30	3.66	51.36	-53.44	-13.00	-40.44

Table 7-25. Radiated Spurious Data (NR Band n77 (DoD) - Mid Channel - Ant C)

Bandwidth (MHz):	100					
Frequency (MHz):		3500.01				
RB / Offset:		1 / 136				
Mode:		Stand Alone				
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analy Lev [dBi		
191.35	н	-	-	-95.		

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
191.35	Н	-	-	-95.46	18.85	30.39	-67.02	-13.00	-54.02
Table 7.26 Padiated Spurious Data below (CHz (NB Pand p77 (DoD) Ant C)									

Table 7-26. Radiated Spurious Data below 1GHz (NR Band n77 (DoD) – Ant C)

FCC ID: A3LSMS711U		PART 27 MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 102 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023 Portable Handset		Fage 103 01 110	
© 2023 ELEMENT			V3.0 1/6/2022	





Plot 7-105. Radiated Spurious Plot (	(NR Band n77 (DoD) – Ant I)
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FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 104 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 104 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-106. Radiated Spurious Plot (NR Band n77 (DoD) - Ant I)

Bandwidth (MHz):	100
Frequency (MHz):	3500.01
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7000.02	Н	229	345	-72.99	14.74	48.75	-46.50	-13.00	-33.50
10500.03	Н	-	-	-83.22	20.06	43.84	-51.42	-13.00	-38.42
14000.04	Н	-	-	-84.00	25.58	48.58	-46.68	-13.00	-33.68
17500.05	Н	-	-	-84.63	29.23	51.60	-43.66	-13.00	-30.66

Table 7-27. Radiated Spurious Data (NR Band n77 (DoD) - Mid Channel - Ant I)

Mode:	Stand Alone					
RB / Offset:		1 / 136				
Frequency (MHz):	3500.01					
Bandwidth (MHz):	100					

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
389.45	н	-	-	-75.03	-6.23	25.74	-71.67	-13.00	-58.67
Table 7-28 Radiated Spurious Data below 1GHz (NR Band n77 (DoD) – Ant I)									

ble 7-28. Radiated Spurious Data below 1GHz (NR Band n77 (DoD) – Ant I)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 105 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 105 of 110	
© 2023 ELEMENT	•		V3.0 1/6/2022	





Plot 7-109. Radiated Spurious	Plot (NR Band n77	(DoD) – Ant D)
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FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 106 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 100 01 110
© 2023 ELEMENT			V3.0 1/6/2022





Plot 7-110. Radiated Spurious Plot (NR Band n77 (DoD) - Ant D)

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7000.02	Н	291	298	-77.46	14.74	44.28	-50.97	-13.00	-37.97
10500.03	Н	-	-	-83.22	20.06	43.84	-51.42	-13.00	-38.42
14000.04	Н	-	-	-84.16	25.58	48.42	-46.84	-13.00	-33.84
17500.05	Н	-	-	-84.50	29.23	51.73	-43.53	-13.00	-30.53

Table 7-29. Radiated Spurious Data (NR Band n77 (DoD) - Mid Channel - Ant D)

Bandwidth (MHz):	100
Frequency (MHz):	3500.01
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
613.65	н	-	-	-76.50	-2.17	28.33	-69.08	-13.00	-56.08
Table 7-30 Radiated Spurious Data below 1GHz (NR Band n77 (DoD) – Ant D)									

Table 7-30. Radiated Spurious Data below 1GHz (NR Band n77 (DoD) – Ant D)

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 107 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Page 107 of 110	
© 2023 ELEMENT			V3.0 1/6/2022	



## 7.9 Frequency Stability / Temperature Variation

### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### Test Procedure Used

ANSI C63.26-2015 – Section 5.6

### Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

#### Test Notes

None

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 109 of 110	
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 100 01 110	
© 2023 ELEMENT			V3.0.1/6/2022	



# NR Band n77

NR Band n77							
	Operating F	requency (Hz):	3,840,00	0,000	1		
	Ref.	Voltage (VDC):	4.4	3			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	3,840,049,505	3,876	0.0001009		
		- 20	3,840,047,970	2,342	0.0000610		
	/	- 10	3,840,046,552	924	0.0000241		
	/	0	3,840,047,830	2,201	0.0000573		
100 %	4.43	+ 10	3,840,046,127	498	0.0000130		
		+ 20 (Ref)	3,840,045,629	0	0.0000000		
	/	+ 30	3,840,043,072	-2,557	-0.0000666		
		+ 40	3,840,041,580	-4,049	-0.0001054		
	!	+ 50	3,840,040,127	-5,502	-0.0001433		
Battery Endpoint	3.27	+ 20	3,840,045,600	-29	-0.0000007		

Table 7-31. NR Band n77 Frequency Stability Data



Plot 7-111. NR Band n77 Frequency Stability Chart

FCC ID: A3LSMS711U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 100 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 109 01 110
© 2023 ELEMENT	•		V3.0 1/6/2022



## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS711U** complies with all the requirements of Part 27 of the FCC rules.

FCC ID: A3LSMS711U		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 110 of 110
1M2304260060-09.A3L	05/24/2023 - 07/31/2023	Portable Handset	Fage 110 01 110
© 2023 ELEMENT			V3.0 1/6/2022