

	ectrum Analyzer - Swe										- d <b>-</b>
L <mark>X/</mark> RL	RF 50 Ω	DC CORRE	EC ):Fast ↔→→	SEN		#Avg Typ	ALIGN AUTO e: RMS	TYPE	1 2 3 4 5 6	Fr	equency
10 dB/div	Ref 20.00 d	IFGa	in:Low	Atten: 30			ΔMk	r1 -27.96	5 MHz .40 dB		Auto Tun
10.0											enter Fre 3500000 G⊢
-10.0		12 huruhu praubin	hyphololohy							2.448	Start Fre 500000 G⊦
-20.0	, M		- h	h						2.518	Stop Fre 500000 G⊦
-40.0				14 14 14	m.m.w.Xa	and find and	dilate all fillence and	MuhalWanaputa	مانية معرفان	7 <u>Auto</u>	CF Ste .000000 MF Ma
60.0					ar tê kirê kirê dew. De sêrde	anta fronte de la constante	alan ya kata kataka	endeliden a alemát, mai	al dailed from the party of the second s	i	F <b>req Offs</b> 0 I
	48350 GHz							Span 70	.00 MHz	Log	Scale Typ
Res BW	100 kHz		#VBW	1.0 MHz				.000 ms (2	001 pts)		
SG							STATUS				

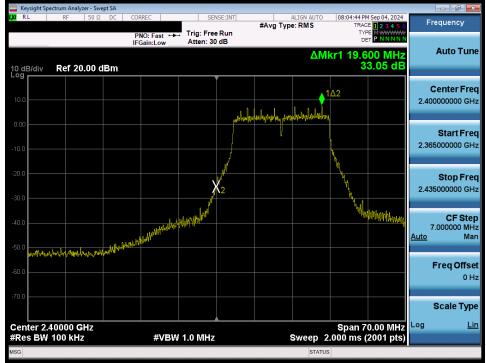
Plot 7-58. Band Edge Plot (802.11g - Ch. 12) MIMO ANT1



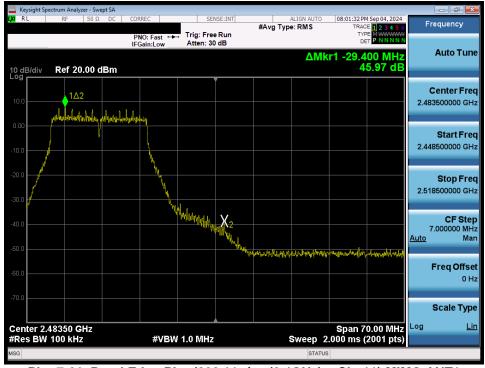
Plot 7-59. Band Edge Plot (802.11g - Ch. 13) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Daga 54 at 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 54 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		





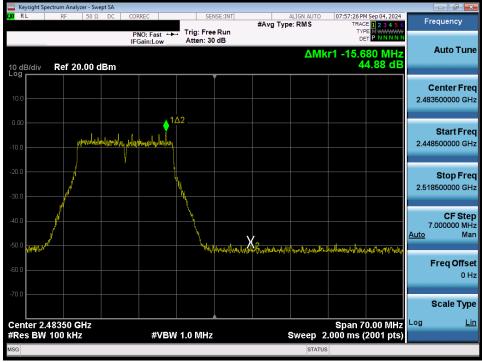
Plot 7-60. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 1) MIMO ANT1



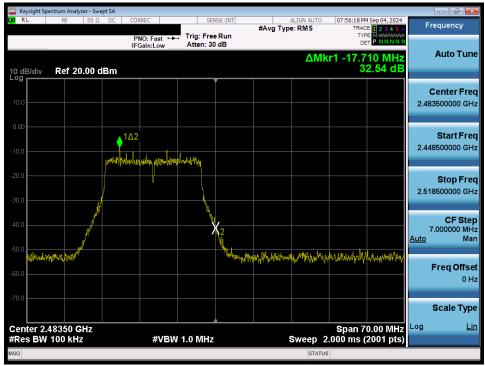
Plot 7-61. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 11) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage FE of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 55 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		





Plot 7-62. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 12) MIMO ANT1



Plot 7-63. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 13) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage FC of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 56 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		





Plot 7-64. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 1) MIMO ANT1



Plot 7-65. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 2) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 57 of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 57 of 92		
© 2024 ELEMENT	•		V11.1 08/28/2023		



	ectrum Analyzer - Sw									- 6 2
XI RL	RF 50 Ω		NO: Fast		NSE:INT SOUF	#Avg Typ	ALIGN AUTO e: RMS	TRAC	E 1 2 3 4 5 6 E M WWWW T P N N N N N	Frequency
10 dB/div	Ref 20.00	IF	Gain:Low	Atten: 30			ΔM	(r1 -33.0		Auto Tun
	∆2	neverberry								Center Fre 2.483500000 G⊦
		Aleden Le. X								Start Fre 2.448500000 G⊦
20.0		× 1	u.							<b>Stop Fre</b> 2.518500000 GH
40.0			Wy ANNAL	Mind when the second	K. Z. MANAN					CF Ste 7.000000 Mi <u>Auto</u> Ma
50.0					^	Altry manufations of	yringen Malerek	erthetelanthanenthan	alfartus na bit	Freq Offs 0 H
70.0										Scale Typ
	48350 GHz 100 kHz		#VBW	1.0 MHz			Sweep 2	ا Span 7 () 2.000 ms	0.00 MHz 2001 pts)	Log <u>L</u>
SG							STATU	-		

Plot 7-66. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 10) MIMO ANT1



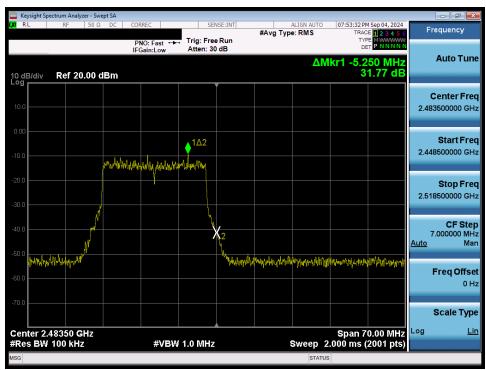
Plot 7-67. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 11) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 59 of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 58 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		



🔤 Keysight Spectrum An										
<b>X</b> IRL RF		PNO: Fast	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TRACE	Sep 04, 2024 <b>1</b> 2 3 4 5 6 MWWWWWW P N N N N N	Fi	requency
10 dB/div Ref 2	20.00 dBm	IFGain:Low	Atten: 30	dB		ΔMk	r1 -18.2	.,		Auto Tun
10.0										Center Free 3500000 GH
-10.0	Unitro Marilia / Sugar	12 dWww.dlkapinethetrap							2.44	<b>Start Fre</b> 8500000 GH
-20.0			h						2.51	<b>Stop Fre</b> 8500000 GH
-40.0			N N	Xa					Auto	CF Ste 7.000000 M⊢ Ma
-60.0			Unik	nton and and	halmundupuha	begMdA.pHost	njundun	akarah <u>a</u> ndhala		Freq Offse 0 H
-70.0									Log	Scale Typ
Center 2.48350 #Res BW 100 kl		#VBW	1.0 MHz			Sweep 2	3 Span ( 2) 000 ms.	2.00 191112	Log	Li
MSG						STATUS				

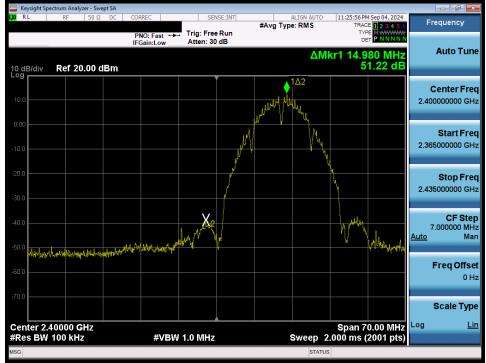
Plot 7-68. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 12) MIMO ANT1



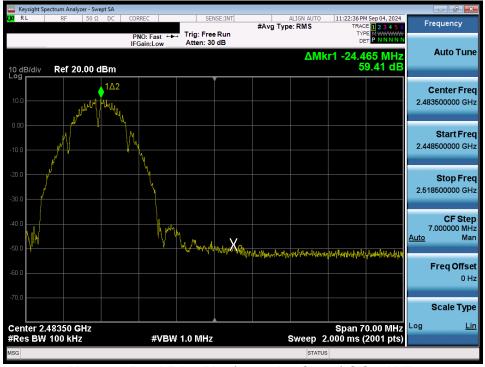
Plot 7-69. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 13) MIMO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 50 of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 59 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		









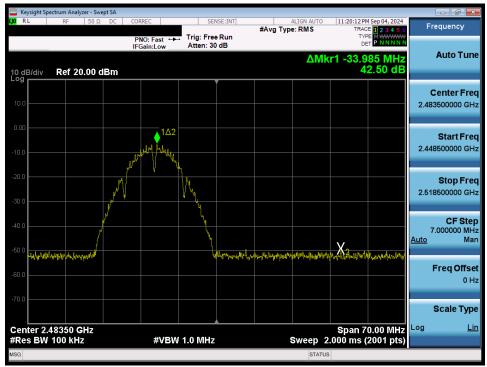
Plot 7-71. Band Edge Plot (802.11b – Ch. 11) SISO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:			
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 60 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		



	pectrum Analyzer -									
<mark>XI</mark> RL	RF 50	Ω DC	CORREC PNO: Fast ↔ IEGain:Low			#Avg Typ	ALIGN AUTO e: RMS	11:20:42 PM Se TRACE TYPE DET		Frequency
10 dB/div	Ref 20.00	dBm	IFGam:Low	Atten. ot			ΔMI	kr1 -20.440 48.9	) MHz 97 dB	Auto Tur
10.0			1Δ2							Center Fre 2.483500000 GH
10.00		الململين.	huluuuuu							<b>Start Fr</b> 2.448500000 G
20.0 30.0										<b>Stop Fr</b> 2.518500000 G
40.0	navena de			2014 date	X	1		al water the stand of the		CF Sto 7.000000 M <u>Auto</u> M
60.0	all and a			- Alterday	asan dan dan dan dan	allune,linnin alline	and an and a second	an which first and the second	and and the	<b>Freq Offs</b> 0
	.48350 GHz 100 kHz		#VBW	1.0 MHz			Sween	Span 70.0 2.000 ms (20	0 MHz	Scale Tyj Log <u>l</u>
SG	1010-11112		<i>"</i> 0 2 M				STATU		or pt3/	

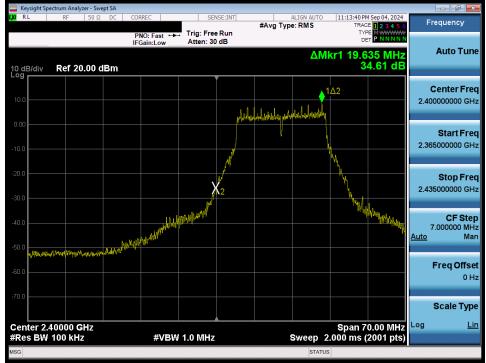
Plot 7-72. Band Edge Plot (802.11b - Ch. 12) SISO ANT2

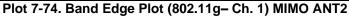


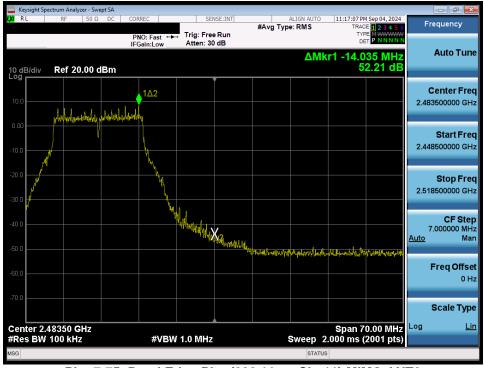
Plot 7-73. Band Edge Plot (802.11b - Ch. 13) SISO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage 61 of 02		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 61 of 92		
© 2024 ELEMENT			V11.1 08/28/2023		









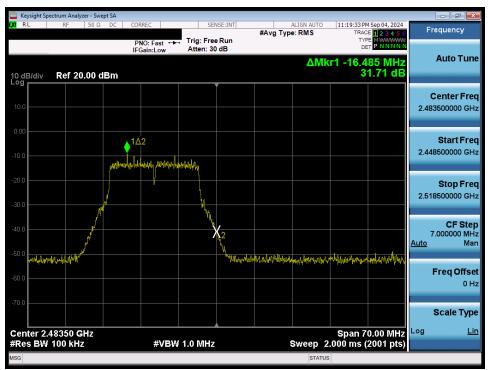
Plot 7-75. Band Edge Plot (802.11g – Ch. 11) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 62 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 62 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	



	ectrum Analyzer - Swept						
L <mark>XI</mark> RL	RF 50 Ω	DC CORREC	SENSI	#Avg	ALIGN AUTO Type: RMS	11:18:33 PM Sep 04, 2024 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div	Ref 20.00 dB	IFGain:Low	Atten: 30 d		ΔΜ	r1 -41.930 MHz 45.07 dB	Auto Tune
10.0							Center Free 2.483500000 GH
-10.0	ybolmand	1∆2					<b>Start Fre</b> 2.448500000 GH
-20.0	J. N.	· •	N				<b>Stop Fre</b> 2.518500000 GH
-40.0	en de la companya de la compa		N. Normality	1. Look ad and a star	o area la di stara i	and some start of the	CF Ste 7.000000 MH <u>Auto</u> Ma
-60.0				andala i che e dodal danada	a Mandumberton Loberton	ala a hera din karala di kara d	Freq Offso 0 ⊦
Center 2	48350 GHz					Span 70.00 MHz	Scale Typ
#Res BW		#VBW	1.0 MHz		Sweep 2	2.000 ms (2001 pts)	
MSG					STATUS	3	

Plot 7-76. Band Edge Plot (802.11g - Ch. 12) MIMO ANT2



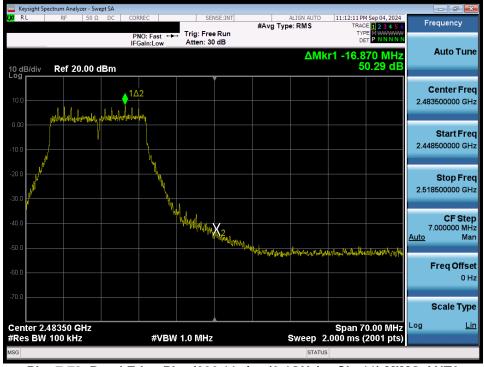
Plot 7-77. Band Edge Plot (802.11g - Ch. 13) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dege 62 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 63 of 92
© 2024 ELEMENT	*		V11.1 08/28/2023









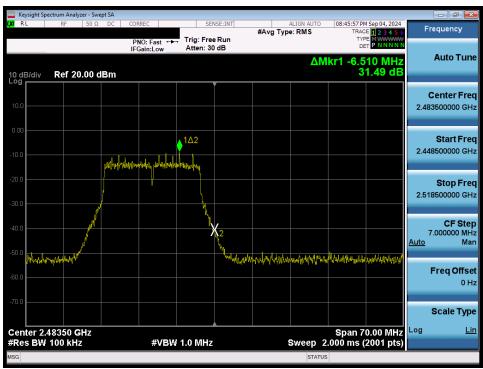
Plot 7-79. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 11) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 64 of 92	
© 2024 ELEMENT			V11.1 08/28/2023	



	ectrum Analyzer - Swe									
L <mark>X/</mark> RL	RF 50 Ω	DC CORRE		SEN	SE:INT	#Avg Typ	ALIGN AUTO e: RMS	08:46:47 PM Sep TRACE TYPE	2 3 4 5 6	Frequency
10 dB/div	Ref 20.00 d	IFGai		Atten: 30			ΔMk	r1 -40.810	MHz 5 dB	Auto Tu
10.0			▲ 1∆2							<b>Center Fr</b> 2.483500000 G
-10.0	provinsk	yanan yahawa	hunimentory							<b>Start Fr</b> 2.448500000 G
-20.0	A A A A A A A A A A A A A A A A A A A									<b>Stop Fr</b> 2.518500000 G
-40.0	ph A			N N N N N N N N N N N N N N N N N N N	AMEL Provide	l Mersen Arthlemare	hannal the the the the	p <sup>ar</sup> norma, no soo ya maa ka k		<b>CF St</b> 7.000000 M <u>Auto</u> M
-60.0						ale a fister of the state of	and a second	to an of a straight of a st		Freq Offs 0
Center 2.4	48350 GHz							Span 70.0	0 1911 12	Scale Ty
#Res BW	100 KHZ		#VBW 1.	UTWIHZ			Sweep 2	.000 ms (200	T pts)	

Plot 7-80. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 12) MIMO ANT2



Plot 7-81. Band Edge Plot (802.11n/ac (2.4GHz) - Ch. 13) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage (E ef 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 65 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	





Plot 7-82. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 1) MIMO ANT2



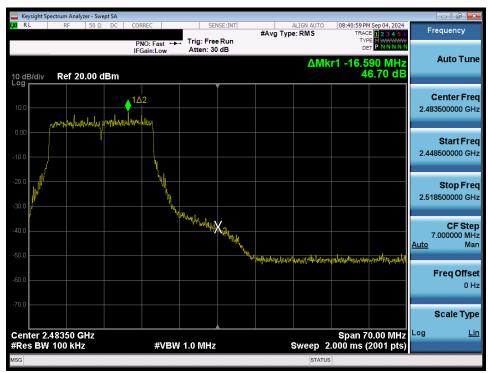
Plot 7-83. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 2) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 66 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 66 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	



	ectrum Analyzer - Sw										
XI RL	RF 50 Ω		NO: Fast ↔		NSE:INT SOU	#Avg Typ	ALIGN AUTO	TRAC	M Oct 25, 2024	Fre	equency
10 dB/div	Ref 20.00	I	Gain:Low	Atten: 30			ΔMI	kr1 -19.9	50 MHz 2.99 dB		Auto Tun
10.0	whore the grant all the grant	<u>1∆2</u>									enter Fre 500000 GH
0.00 <b>1927 101</b>	Alayan in a second from									2.448	Start Fre
20.0										2.518	<b>Stop Fre</b> 500000 GH
40.0			"IJuker verter der der	Mall Hall	X <sub>2</sub>					7. <u>Auto</u>	CF Ste 000000 MF Ma
50.0						mantana	nonnutudud	in the providence of the second se	yturnan yn llaffardir ffi	F	F <b>req Offs</b> 0 F
70.0	49350 04-							Chor 2		Log	Scale Typ
	48350 GHz 100 kHz		#VBW	/ 1.0 MHz			Sweep	span / 2.000 ms (	0.00 WILLS		_
SG							STATU				

Plot 7-84. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 10) MIMO ANT2



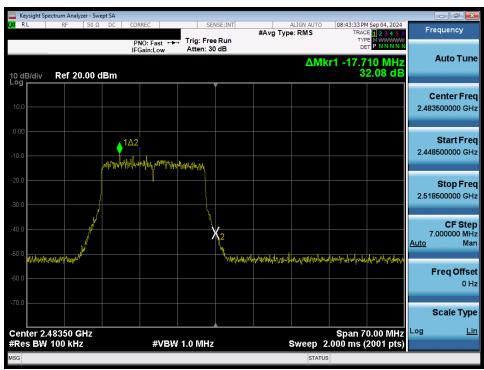
Plot 7-85. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 11) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 67 of 00	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 67 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	



	rum Analyzer - Swept SA									- 0 ×
LXU RL	RF 50 Ω DC	PNO: Fast	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TYPE	Sep 04, 2024 <b>1 2 3 4 5 6</b> MWWWWW P NNNNN	Fre	quency
10 dB/div Log	Ref 20.00 dBn	IFGain:Low	Atten: 30	dB		ΔMk	r1 -40.63			Auto Tune
10.0										enter Fred 500000 GH
-10.0	1D:	2 wilw wilwood milledured								Start Free 500000 GH
-20.0			M.							<b>Stop Fre</b> 500000 GH
-40.0						Xa	antheration		7.0 <u>Auto</u>	CF Ste 000000 MH Ma
-60.0			. Addw	inderval,rog∏klisti	nadirik kanali ka	41°440148749549549	nikuyaji persi ya seka ni	<sup>  </sup> <sup>  </sup>	F	req Offse 0 H
-70.0 Center 2.48	2350 CH2						Span 70		S	cale Type
#Res BW 1		#VBW	1.0 MHz			Sweep 2	5pan 70 .000 ms (2	.00 191112		
MSG						STATUS				

Plot 7-86. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 12) MIMO ANT2



Plot 7-87. Band Edge Plot (802.11ax/be (2.4GHz) - Ch. 13) MIMO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 68 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023



## 7.6 Conducted Spurious Emissions

#### **Test Overview and Limit**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. For the following out of band conducted spurious emissions plots, the EUT was investigated in all available data rates for "b", "g", "n", "ax" modes. The worst-case spurious emissions for the 2.4GHz band were found while transmitting in "b" mode at 1 Mbps and are shown in the plots below.

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 11.11.3 of ANSI C63.10-2013.

#### Test Procedure Used

ANSI C63.10-2013 - Section 11.11.3

#### **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

#### Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMS938B		MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:			
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 69 of 92		
© 2024 ELEMENT	-		V11.1 08/28/2023		



#### Test Notes

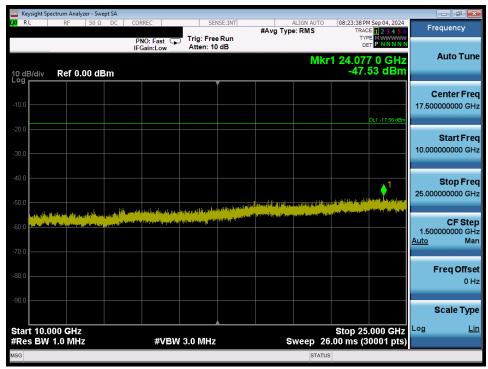
- 1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
- 2. The display line shown in the following plots denotes the limit at N/AdB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be N/AdB below the level of the fundamental in a 1MHz bandwidth.
- 3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 70 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 70 of 92	
© 2024 ELEMENT	*		V11.1 08/28/2023	



	rum Analyzer - Swep										- 0
LXU RL	RF 50 Ω	P	RREC NO:Fast 🖵 Gain:Low			#Avg Typ	ALIGN AUTO e: RMS	TRA TY	M Sep 04, 2024 CE 1 2 3 4 5 6 (PE M WWWWW ET P N N N N N	Fre	quency
10 dB/div	Ref 20.00 dl		Gain:Low	Atten: 30	uв		Μ	lkr1 3.84 -33	3 9 GHz 20 dBm		Auto Tun
10.0											<b>enter Fre</b> 000000 GH
-10.0											Start Fre 000000 M⊦
-20.0									DL1 -17.56 dBm	10.000	<b>Stop Fre</b> 000000 GH
-40.0	tana akao matang akao matang katao na k					n fra fra na georga (19) River Minester y an An	and Park	an de la graftera per de sent nomen de sentencia de la comi	thursting proceedings as	997. <u>Auto</u>	CF Ste 000000 MH Ma
-60.0										F	req Offs 0 I
-70.0											Scale Typ
Start 30 MH #Res BW 1.			#VBW	3.0 MHz		s	weep 1	Stop 10 8.00 ms (3	).000 GHz 30001 pts)	Log	L
isg 🧼 Points	changed; all tr	aces clear	ed				STAT	US			

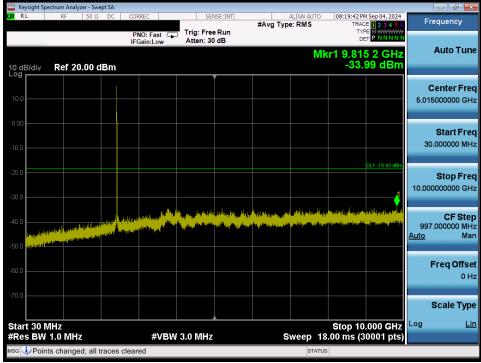
Plot 7-88. Conducted Spurious Plot (802.11b - Ch. 1) SISO ANT1



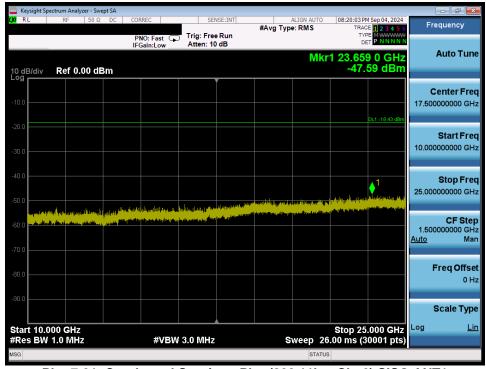
Plot 7-89. Conducted Spurious Plot (802.11b - Ch. 1) SISO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Daga 71 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 71 of 92	
© 2024 ELEMENT			V11.1 08/28/2023	





Plot 7-90. Conducted Spurious Plot (802.11b - Ch. 6) SISO ANT1



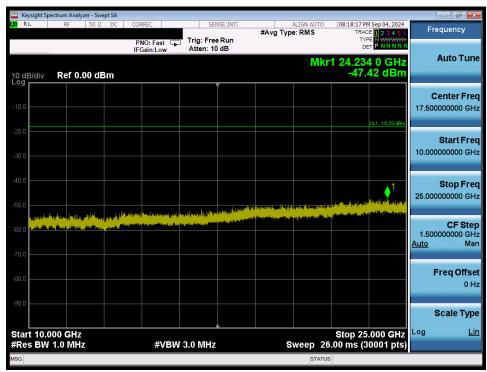
Plot 7-91. Conducted Spurious Plot (802.11b - Ch. 6) SISO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 72 of 92	
© 2024 ELEMENT			V11.1 08/28/2023	



	ectrum Analyzer - Sw								
<mark>u</mark> rl	RF 50 Ω	DRREC PNO: Fast 🖵 FGain:Low			#Avg Typ	ALIGN AUTO e: RMS	TRA	M Sep 04, 2024 CE 123456 PE MWWWWW ET PNNNNN	Frequency
0 dB/div	Ref 20.00	-Gain:Low	Atten: ou			Μ	lkr1 9.68 -33.	3 3 GHz 96 dBm	Auto Tun
- <b>og</b> 10.0			,						Center Fre 5.015000000 G⊢
10.00									Start Fre 30.000000 M⊦
30.0								DL1 -18.25 dBm	Stop Fre 10.000000000 GF
40.0 djurjetni 50.0 <mark>a. a. a</mark>	n for the second se			an Nan Syptemati San San Synthesis	<sup>in</sup> Californi (M.C.) na sta <sup>19</sup> Saliforni (M.C.) na sta 19 Saliforni (M.C.)		ار هیرانی دارد داری الاری) محمد این داشتن با می	the sector of th	CF Ste 997.000000 MH Auto Ma
60.0									Freq Offs 0 F
70.0							Otom-14		Scale Typ
Start 30 N Res BW		#VBW	3.0 MHz		s		8.00 ms (:	.000 9112	
ISG						STAT	US		

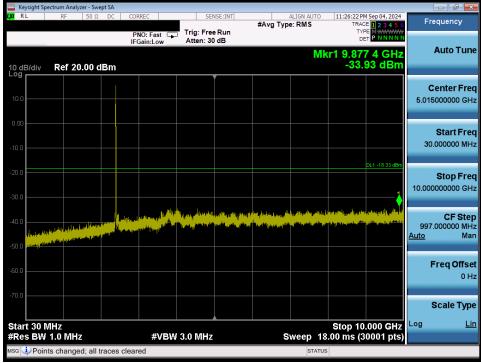
Plot 7-92. Conducted Spurious Plot (802.11b - Ch. 11) SISO ANT1



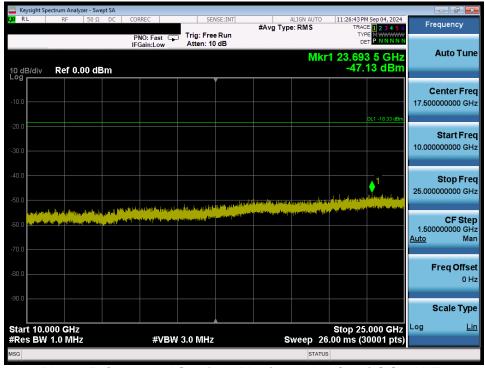
Plot 7-93. Conducted Spurious Plot (802.11b - Ch. 11) SISO ANT1

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 73 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	





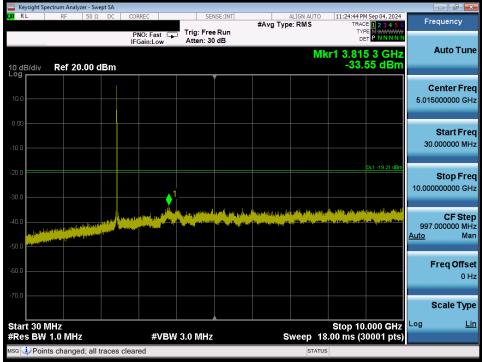
Plot 7-94. Conducted Spurious Plot (802.11b - Ch. 1) SISO ANT2



Plot 7-95. Conducted Spurious Plot (802.11b - Ch. 1) SISO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 74 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	





Plot 7-96. Conducted Spurious Plot (802.11b - Ch. 6) SISO ANT2



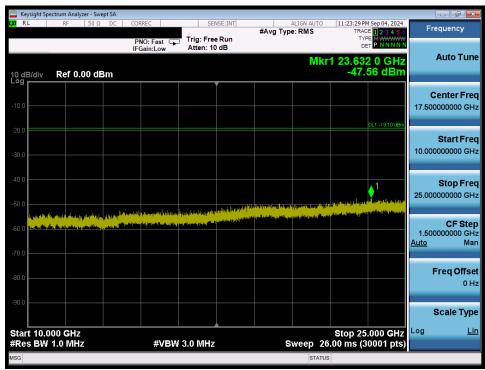
Plot 7-97. Conducted Spurious Plot (802.11b - Ch. 6) SISO ANT2

FCC ID: A3LSMS938B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 75 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 75 of 92
© 2024 ELEMENT			V11.1 08/28/2023



	ectrum Analyzer - Sw								
LXU RL	RF 50 Ω	PNO: Fast			#Avg Typ	ALIGN AUTO e: RMS	TRAI	M Sep 04, 2024 CE 123456 PE MWWWWW ET P N N N N N	Frequency
10 dB/div	Ref 20.00 c	IFGain:Low	Attent	ub		N	lkr1 9.77 -33.	6 3 GHz 79 dBm	Auto Tun
10.0									Center Fre 5.015000000 G⊢
-10.0									Start Fre 30.000000 M⊦
-20.0								DL1 -19.10 dBm	<b>Stop Fre</b> 10.000000000 GF
-40.0						a <mark>dheadhann</mark> Tairigeann	ng faile na fiing finn an fi	g beginne geel forgen blef lint des settes <sub>a</sub> ministry set finite sta	CF Ste 997.000000 MH <u>Auto</u> Ma
60.0									Freq Offs 0 I
-70.0	ЛНг						Stop 10	.000 GHz	Scale Typ
Res BW		#VBW	3.0 MHz		s	weep '	18.00 ms (3	0001 pts)	

Plot 7-98. Conducted Spurious Plot (802.11b - Ch. 11) SISO ANT2



Plot 7-99. Conducted Spurious Plot (802.11b - Ch. 11) SISO ANT2

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:		
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 76 of 92	
© 2024 ELEMENT	•		V11.1 08/28/2023	



## 7.7 Radiated Emission Measurements

#### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in FCC §15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown FCC §15.209 and RSS-Gen (8.9).

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-25. Radiated Limits

#### **Test Procedures Used**

ANSI C63.10-2013 – Section 6.6.4.3

#### Test Settings – Above 1GHz

#### **Average Field Strength Measurements**

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = power average (RMS)
- 5. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span}$ \RBW)
- 6. Sweep time = auto
- 7. Trace (RMS) averaging was performed over at least 100 traces

FCC ID: A3LSMS938B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Daga 77 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 77 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023



#### Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

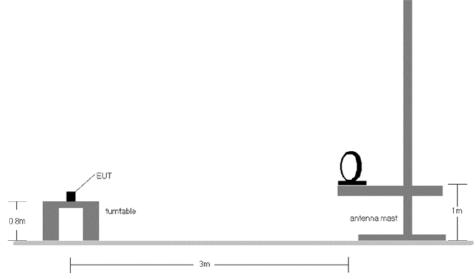
#### Test Settings - Below 1GHz

#### **Quasi-Peak Field Strength Measurements**

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 120kHz (for emissions from 30MHz 1GHz)
- 3. Detector = quasi-peak
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

#### Test Setup

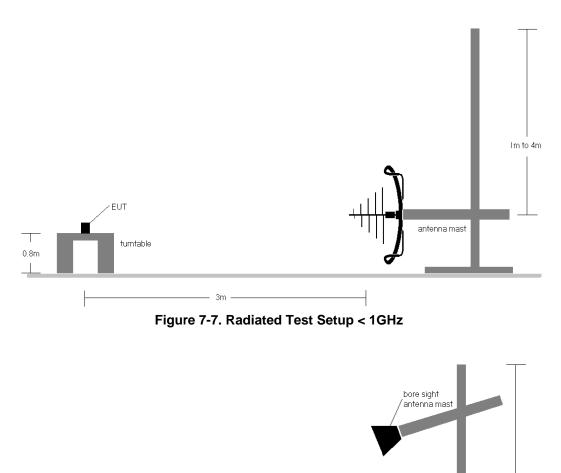
The EUT and measurement equipment were set up as shown in the diagram below.

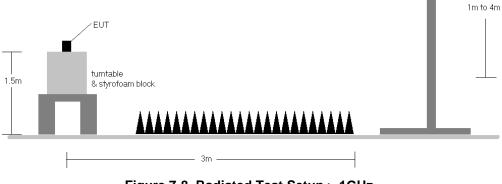


#### Figure 7-6. Radiated Test Setup < 30MHz

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 70 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 78 of 92
© 2024 ELEMENT		·	V11.1 08/28/2023







#### Figure 7-8. Radiated Test Setup > 1GHz

#### Test Notes

- The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of ANSI C63.10-2013 Section 11.3 were not used to evaluate this device for compliance to radiated limits. All radiated spurious emissions levels were measured in a radiated test setup.
- 2. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limits shown in §15.209.

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 70 of 00
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 79 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023



- 3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- 4. This unit was tested with its standard battery.
- 5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
- 6. 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.
- 7. wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
- 8. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 9. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst-case results during the transmitter spurious emissions testing.
- 10. No spurious emissions were detected within 20dB of the limit below 30MHz.
- 11. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
- 12. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

#### Sample Calculations

#### **Determining Spurious Emissions Levels**

- Field Strength Level [dBμV\\m] = Analyzer Level [dBm] + 107 + AFCL [dB\\m]
- AFCL [dB\\m] = Antenna Factor [dB\\m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level  $[dB\mu V | m]$  Limit  $[dB\mu V | m]$

#### Radiated Band Edge Measurement Offset

• The amplitude offset shown in the radiated restricted band edge plots in Section 7.7 was calculated using the formula:

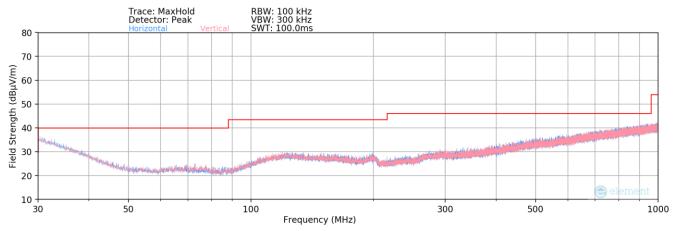
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

FCC ID: A3LSMS938B		MEASUREMENT REPORT		
Test Report S/N:	Test Dates:	EUT Type:	Dage 80 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 80 of 92	
© 2024 ELEMENT	·	•	V11.1 08/28/2023	

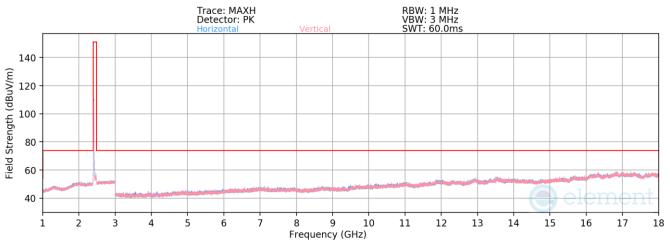
Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without written permission from Element. If you have any questions about this or have an inquiry about obtaining additional rights to this report or assembly of contents thereof, please contact ct.info@element.com.

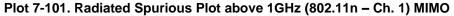


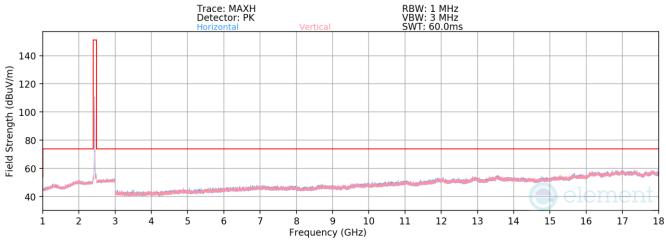
## 7.7.1 Radiated Spurious Emission Measurements

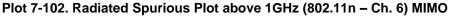






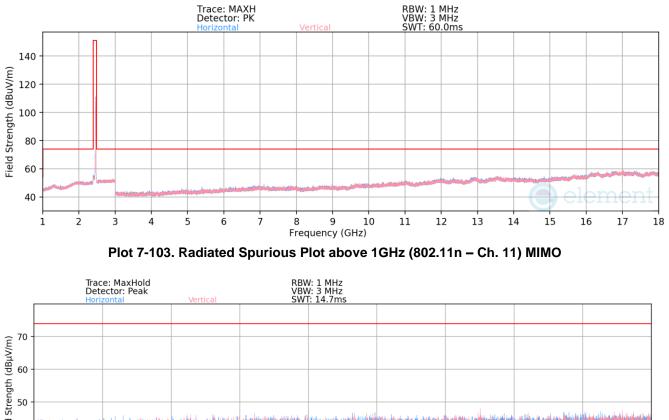


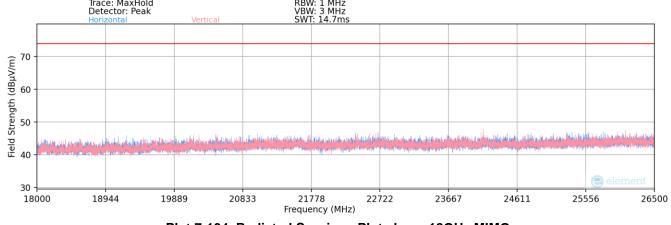




FCC ID: A3LSMS938B		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dege 81 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 81 of 92
© 2024 ELEMENT			V11.1 08/28/2023







Plot 7-104. Radiated Spurious Plot above 18GHz MIMO

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 82 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023



Worst Case Mode:	802.11n
Worst Case Transfer Rate:	1 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	1

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Avg	Н	291	290	-77.89	7.73	36.84	53.98	-17.14
4824.00	Peak	Н	291	290	-68.87	7.73	45.86	73.98	-28.12
12060.00	Avg	Н	-	-	-82.64	17.04	41.40	53.98	-12.58
12060.00	Peak	Н	-	-	-70.98	17.04	53.06	73.98	-20.92

Table 7-26. Radiated Measurements MIMO

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel: 802.11n 1 Mbps 3 Meters 2437MHz 6

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Avg	Н	273	288	-77.85	7.88	37.03	53.98	-16.95
4874.00	Peak	Н	273	288	-68.53	7.88	46.35	73.98	-27.63
7311.00	Avg	Н	-	-	-81.64	10.82	36.18	53.98	-17.80
7311.00	Peak	Н	-	-	-70.56	10.82	47.26	73.98	-26.72
12185.00	Avg	Н	-	-	-82.41	16.53	41.12	53.98	-12.86
12185.00	Peak	Н	-	-	-71.01	16.53	52.52	73.98	-21.46

Table 7-27. Radiated Measurements MIMO

FCC ID: A3LSMS938B		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	EUT Type:	Dage 92 of 92
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 83 of 92
© 2024 ELEMENT	-		V11.1 08/28/2023



Worst Case Mode:	802.11n
Worst Case Transfer Rate:	1 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Avg	Н	270	288	-77.40	7.62	37.22	53.98	-16.76
4924.00	Peak	Н	270	288	-68.79	7.62	45.83	73.98	-28.15
7386.00	Avg	Н	-	-	-81.73	10.90	36.17	53.98	-17.81
7386.00	Peak	Н	-	-	-70.15	10.90	47.75	73.98	-26.23
12310.00	Avg	Н	-	-	-83.09	17.74	41.65	53.98	-12.33
12310.00	Peak	Н	-	-	-71.71	17.74	53.03	73.98	-20.95

Table 7-28. Radiated Measurements MIMO

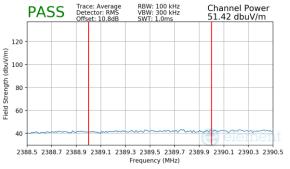
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 84 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023



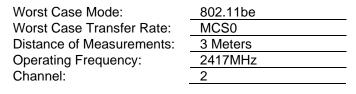
## 7.7.2 MIMO Radiated Restricted Band Edge Measurements

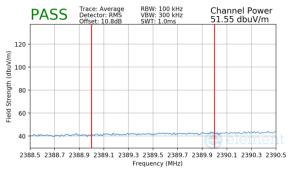
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	1

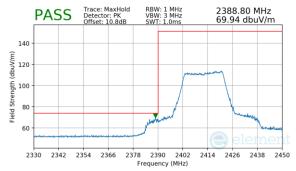


Plot 7-105. Radiated Restricted Lower Band Edge Measurement (Average)

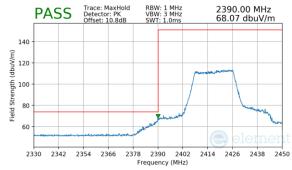




Plot 7-107. Radiated Restricted Lower Band Edge Measurement (Average)



Plot 7-106. Radiated Restricted Lower Band Edge Measurement (Peak)

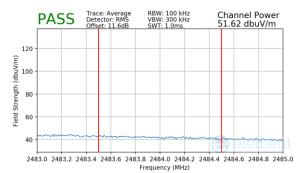


Plot 7-108. Radiated Restricted Lower Band Edge Measurement (Peak)

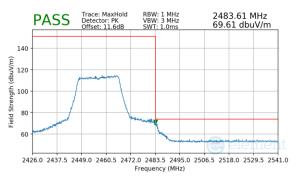
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 85 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 85 of 92
© 2024 ELEMENT			V11.1 08/28/2023



Worst Case Mode:802.11acWorst Case Transfer Rate:MCS0Distance of Measurements:3 MetersOperating Frequency:2457MHzChannel:10





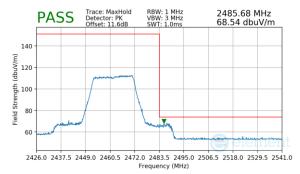




Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11





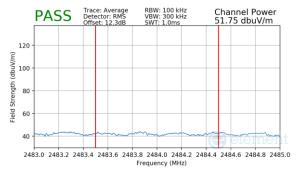


Plot 7-112. Radiated Restricted Upper Band Edge Measurement (Peak)

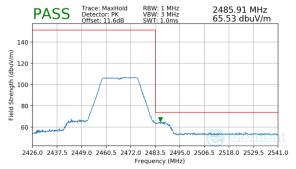
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 86 of 92
© 2024 ELEMENT			V11.1 08/28/2023



Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	2467MHz
Channel:	12

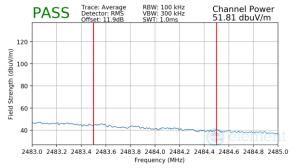


Plot 7-113. Radiated Restricted Upper Band Edge Measurement (Average)

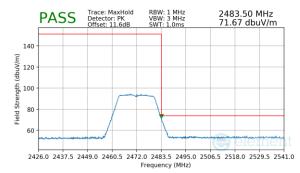




Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	2472MHz
Channel:	13
-	



Plot 7-115. Radiated Restricted Upper Band Edge Measurement (Average)



Plot 7-116. Radiated Restricted Upper Band Edge Measurement (Peak)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 87 of 92
© 2024 ELEMENT			V11.1 08/28/2023



## 7.8 Line-Conducted Test Data

#### Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

# All conducted emissions must not exceed the limits shown in the table below per §15.207 and RSS-Gen (8.8).

Frequency of emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-29. Conducted Limits

\*Decreases with the logarithm of the frequency.

#### **Test Procedures Used**

ANSI C63.10-2013, Section 6.2

#### **Test Settings**

#### **Quasi-Peak Field Strength Measurements**

- 1. Analyzer center frequency was set to the frequency of the spurious emission of interest
- 2. RBW = 9kHz (for emissions from 150kHz 30MHz)
- 3. Detector = quasi-peak
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

#### Average Field Strength Measurements

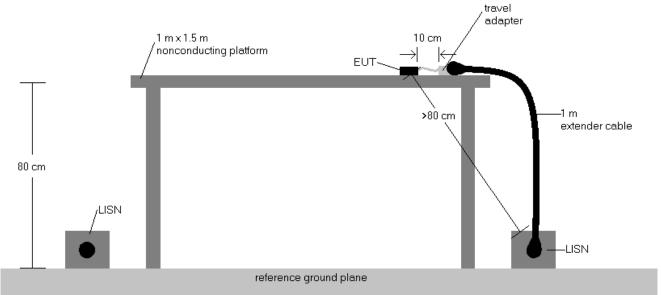
- 1. Analyzer center frequency was set to the frequency of the spurious emission of interest
- 2. RBW = 9kHz (for emissions from 150kHz 30MHz)
- 3. Detector = RMS
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dege 80 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 88 of 92	
© 2024 ELEMENT	·		V11.1 08/28/2023	



### Test Setup

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



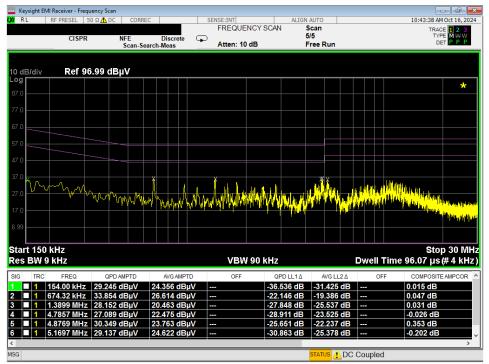


#### Test Notes

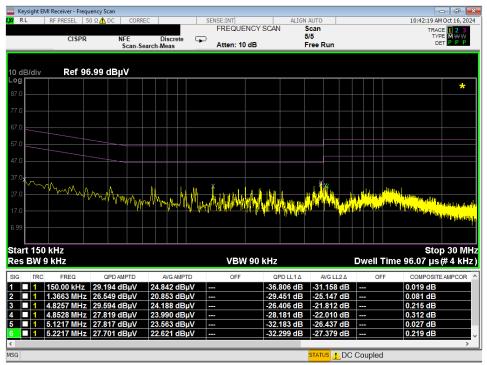
- All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
- 2. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen(8.8).
- 3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- 4. QP\\AV Level (dB $\mu$ V) = QP\\AV Analyzer\\Receiver Level (dB $\mu$ V) + Corr. (dB)
- 5. Margin (dB) = QP\\AV Limit (dB $\mu$ V) QP\\AV Level (dB $\mu$ V)
- 6. Traces shown in plot are made using a peak detector.
- 7. Deviations to the Specifications: None.

FCC ID: A3LSMS938B		MEASUREMENT REPORT	
Test Report S/N:	Test Dates:	Test Dates: EUT Type:	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 89 of 92
© 2024 ELEMENT		·	V11.1 08/28/2023





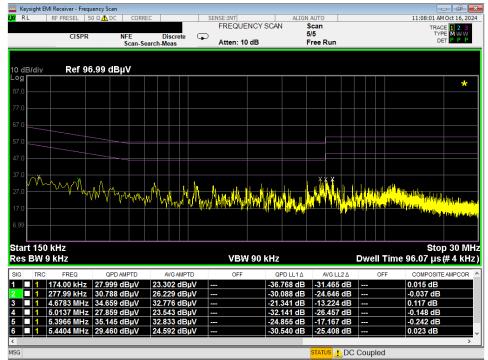
Plot 7-117. Line Conducted Plot with 802.11b (L1)



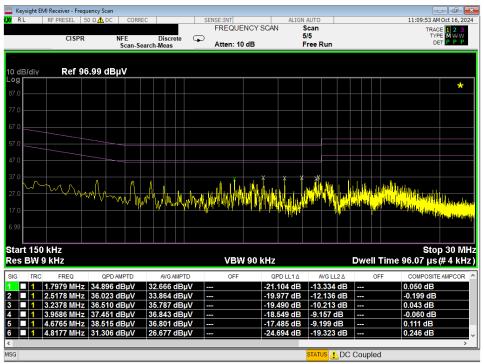
Plot 7-118. Line Conducted Plot with 802.11b (N)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 00 of 02
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 90 of 92
© 2024 ELEMENT	•		V11.1 08/28/2023





Plot 7-119. Line Conducted Plot with 802.11b (L1) - WCP



Plot 7-120. Line Conducted Plot with 802.11b (N) - WCP

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage 01 of 02	
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 91 of 92	
© 2024 ELEMENT			V11.1 08/28/2023	



## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS938B** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules.

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 92 of 92
1M2408260069-15.A3L	09/03/2024 - 11/07/2024	Portable Handset	Page 92 01 92
© 2024 ELEMENT V11.1 08/28/2023			