



Test Report for u-blox AG Report No. EX0652-1 Issue 2



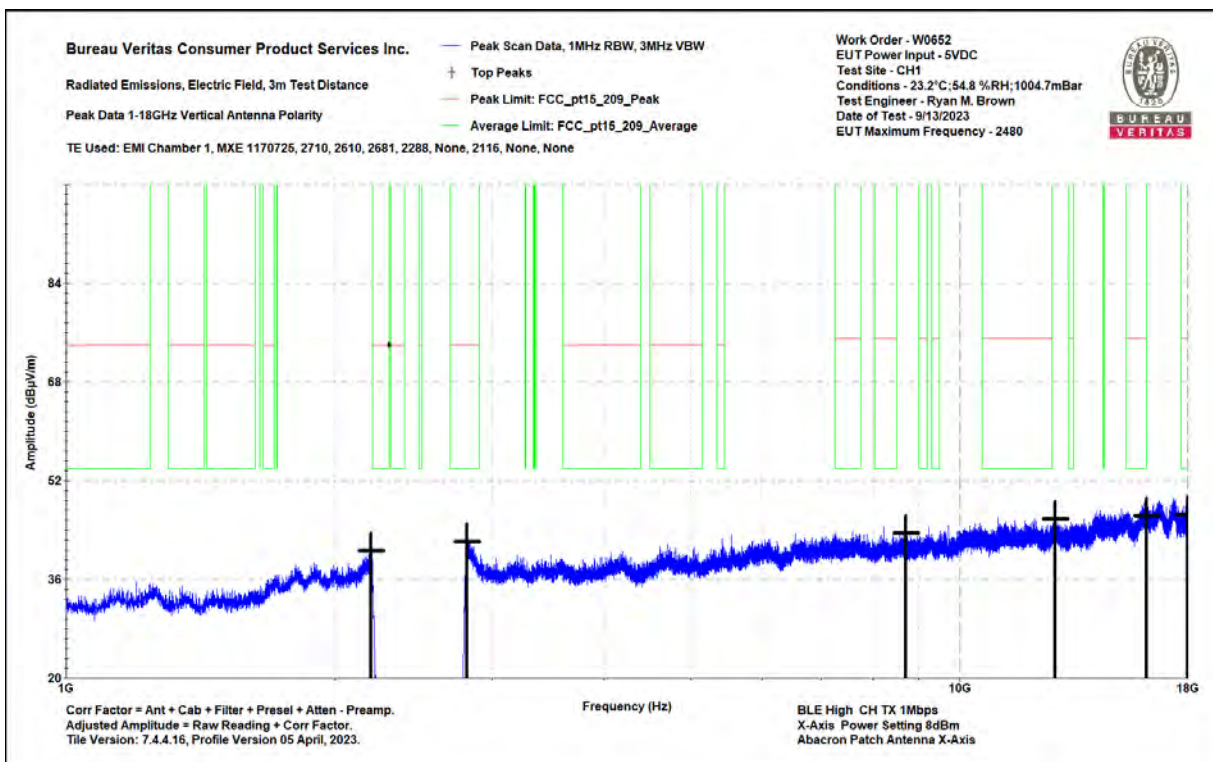
NORA-W300 with Abracon Patch Antenna

High CH, 1Mbps, Module axis: X, External antenna axis: X

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 1-18GHz	Test Site - CH1
Notes:	Conditions - 23.2°C;54.8 %RH;1004.7mBar
BLE High CH TX 1Mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/13/2023
Abracon Patch Antenna X-Axis	

Frequency (MHz)	Raw Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_20_9_Peak (dBµV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_20_9_Average (dBµV/m)	Margin to Average Limit (dB)	Average Limit Test Result (Pass/Fail)	Average Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2807.1	28.4	13.8	42.2	74	-31.8	PASS		54	-11.8	PASS		300	220
16198.42	23.9	22.4	46.3	74	-27.7	PASS		54	-7.7	PASS		100	220
17999.58	21.2	25.3	46.5	74	-27.5	PASS	-27.5	54	-7.5	PASS	-7.5	100	184

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

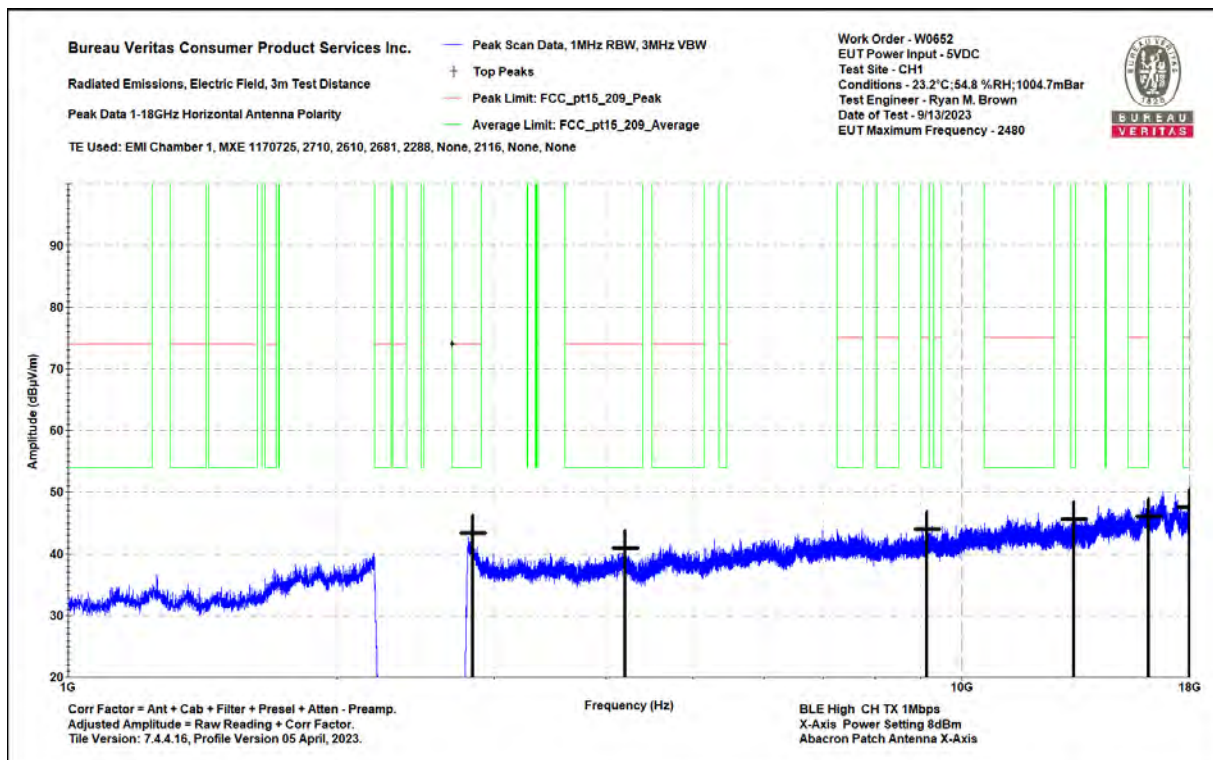


Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 1-18GHz
Notes:
BLE High CH TX 1Mbps
X-Axis Power Setting 8dBm
Abacron Patch Antenna X-Axis

Work Order - W0652
EUT Power Input - 5VDC
Test Site - CH1
Conditions - 23.2°C;54.8 %RH;1004.7mBar
Test Engineer - Ryan M. Brown
Date of Test - 9/13/2023

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2834.72	30.7	12.7	43.4	74	-30.6	PASS		54	-10.6	PASS		100	183
4205.77	30.5	10.5	41	74	-33	PASS		54	-13	PASS		100	296
9147.67	29.5	14.5	44	74	-30	PASS		54	-10	PASS		200	170
13362.83	26.4	19.3	45.7	74	-28.3	PASS		54	-8.3	PASS		100	183
17999.15	22.2	25.3	47.5	74	-26.5	PASS	-26.5	54	-6.5	PASS	-6.5	100	146

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

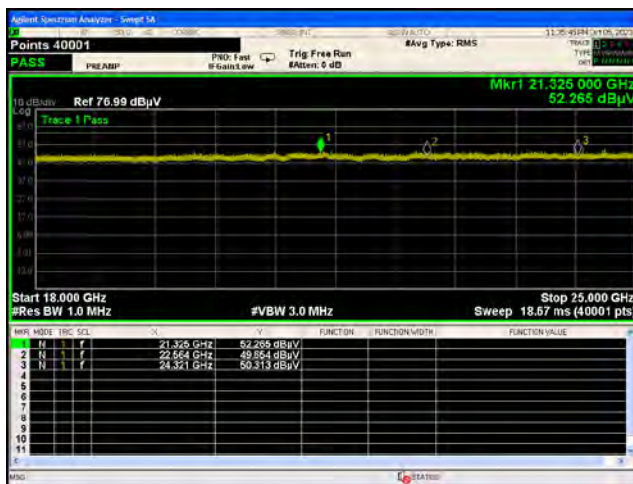


Radiated Emissions Table

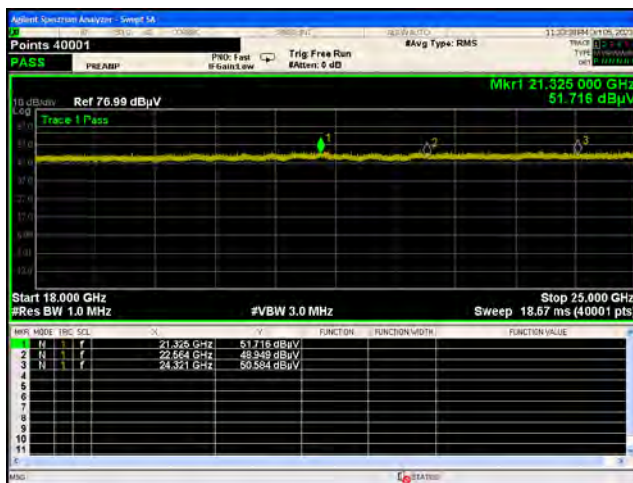
Date: 05-Oct-23		Company: U-Blox							Work Order: X0652					
Engineer: Ryan M. Brown		EUT Desc: NORA-W300 With Abracon Patch Antenna							EUT Operating Voltage/Frequency: 5VDC					
Temp: 22.5		Humidity: 55%							Pressure: 1014					
Frequency Range: 18-25GHz									Measurement Distance: 1 m					
Notes: High CH									EUT Max Freq: 2480					
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	21325.0	35.965	36.0	0.0	5.5	10.8	52.3	52.3	83.5	-31.2	Pass	63.5	-11.2	Pass
V	22564.0	33.254	33.3	0.0	5.2	11.2	49.7	49.7	83.5	-33.8	Pass	63.5	-13.8	Pass
V	24321.0	33.713	33.7	0.0	5.0	11.6	50.3	50.3	83.5	-33.2	Pass	63.5	-13.2	Pass
H	21325.0	35.416	35.4	0.0	5.5	10.8	51.7	51.7	83.5	-31.8	Pass	63.5	-11.8	Pass
H	22564.0	32.549	32.5	0.0	5.2	11.2	48.9	48.9	83.5	-34.6	Pass	63.5	-14.6	Pass
H	24321.0	33.984	34.0	0.0	5.0	11.6	50.6	50.6	83.5	-32.9	Pass	63.5	-12.9	Pass
Table Result:		Pass		by		-11.2 dB		Worst Freq:		21325.0 MHz				
Test Site: EMI Chamber 1		Cable 1: Asset #2690							Cable 2: ---			Cable 3: ---		
Analyzer: 2093		Preamp: None							Antenna: 2709			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.226														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
Copyright Curtis-Straus LLC 2000														

18-25GHz Data Table

Note: Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



18-25GHz Vertical Plot



18-25GHz Horizontal Plot

Bureau Veritas Consumer Product
Services Inc.

One Distribution Center Circle, #1
Littleton, MA

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Test Report for u-blox AG Report No. EX0652-1 Issue 2



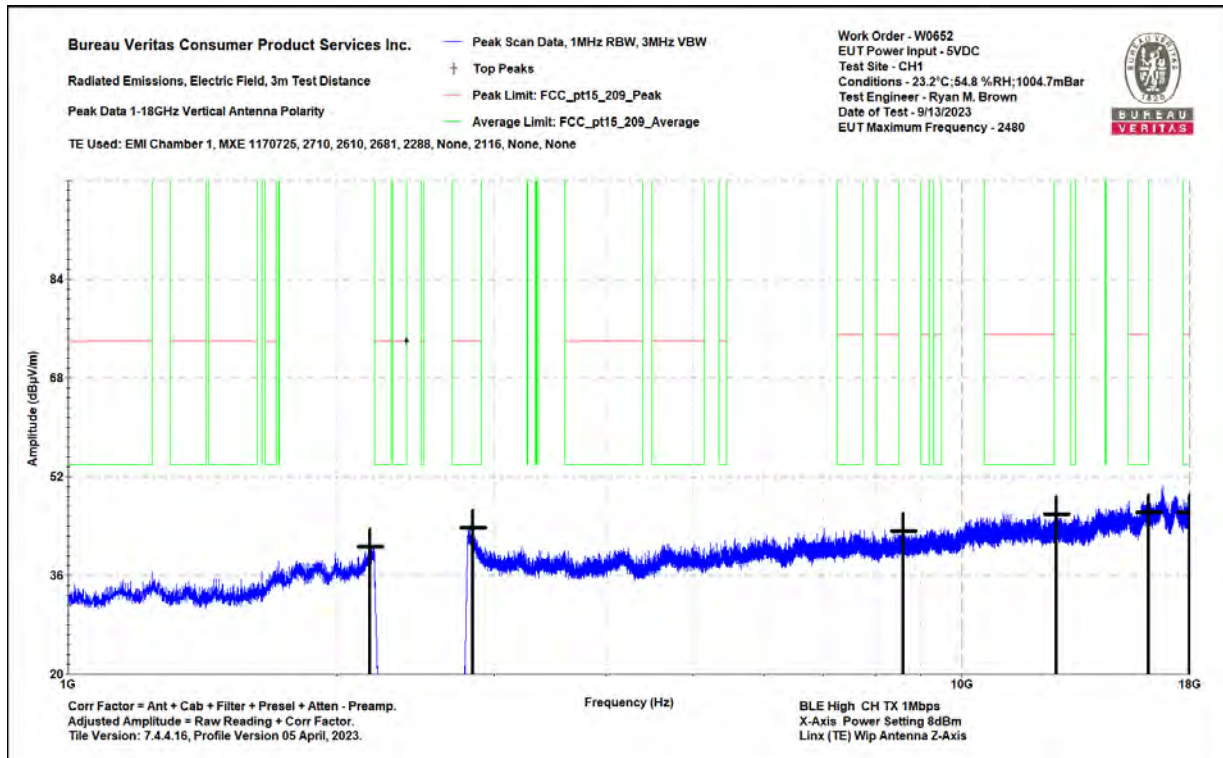
NORA-W300 with Linx (TE) Whip Antenna

High CH, 1Mbps, Module axis: X, External antenna axis: Z

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 1-18GHz	Test Site - CH1
Notes:	Conditions - 23.2°C;54.8 %RH;1004.7mBar
BLE High CH TX 1Mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/13/2023
Linx (TE) Wip Antenna Z-Axis	

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Average Limit (dB)	Average Limit Test Result (Pass/Fail)	Average Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2839.4	31.2	12.5	43.8	74	-30.2	PASS		54	-10.2	PASS		100	221
18000	20.9	25.3	46.3	74	-27.7	PASS	-27.7	54	-7.7	PASS	-7.7	200	20

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

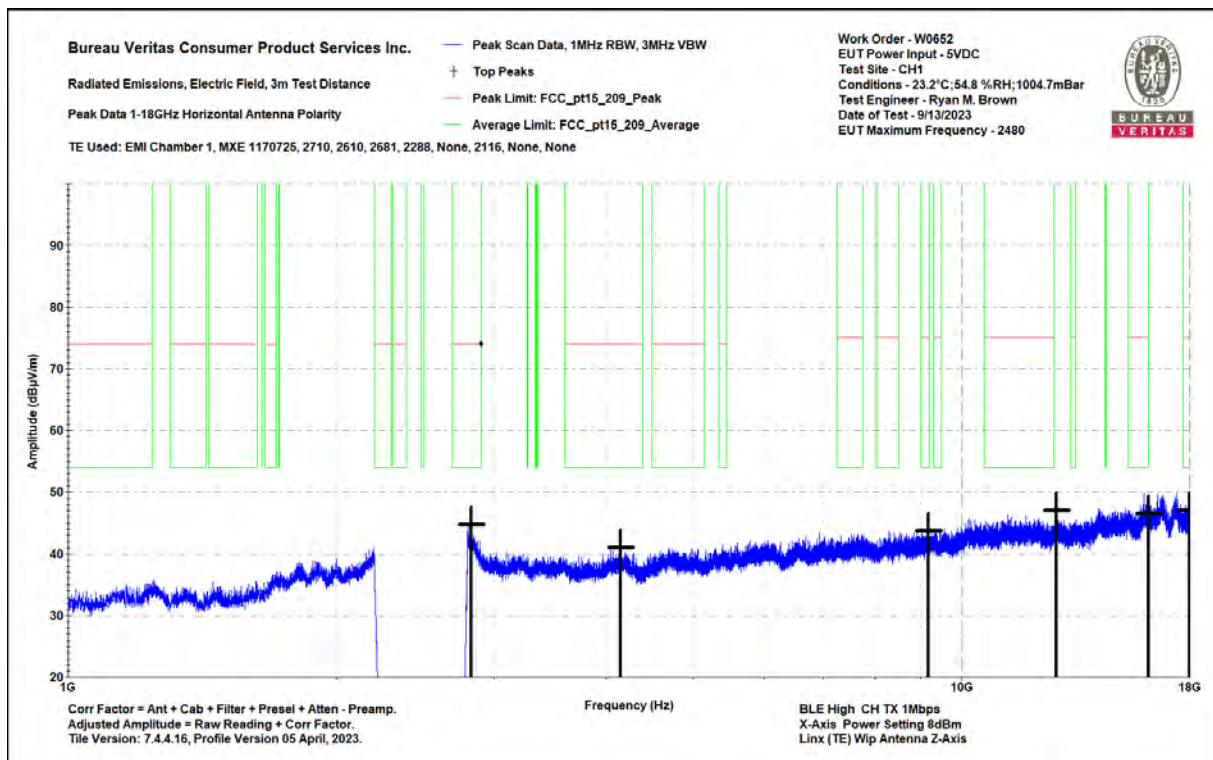


Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 1-18GHz
Notes:
BLE High CH TX 1Mbps
X-Axis Power Setting 8dBm
Linx (TE) Wip Antenna Z-Axis

Work Order - W0652
EUT Power Input - 5VDC
Test Site - CH1
Conditions - 23.2°C; 54.8 %RH; 1004.7mBar
Test Engineer - Ryan M. Brown
Date of Test - 9/13/2023

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2824.1	31.6	13.1	44.7	74	-29.3	PASS		54	-9.3	PASS		100	108
4152.23	30.8	10.2	41	74	-33	PASS		54	-13	PASS		200	171
9179.98	29.2	14.5	43.8	74	-30.2	PASS		54	-10.2	PASS		300	182
16197.58	24.2	22.4	46.6	74	-27.4	PASS		54	-7.4	PASS		200	18
18000	21.7	25.3	47	74	-27	PASS	-27	54	-7	PASS	-7	300	69

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

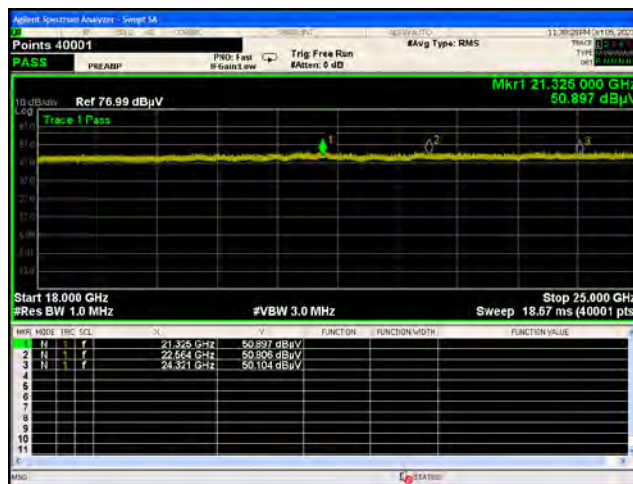


Radiated Emissions Table

Date: 05-Oct-23		Company: U-Blox							Work Order: X0652					
Engineer: Ryan M. Brown		EUT Desc: NORA-W300 With Linx (TE) Whip Antenna							EUT Operating Voltage/Frequency: 5VDC					
Temp: 22.5		Humidity: 55%							Pressure: 1014					
Frequency Range: 18-25GHz									Measurement Distance: 1 m					
Notes: High CH									EUT Max Freq: 2480					
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	21325.0	34.597	34.6	0.0	5.5	10.8	50.9	50.9	83.5	-32.6	Pass	63.5	-12.6	Pass
V	22564.0	34.406	34.4	0.0	5.2	11.2	50.8	50.8	83.5	-32.7	Pass	63.5	-12.7	Pass
V	24321.0	33.504	33.5	0.0	5.0	11.6	50.1	50.1	83.5	-33.4	Pass	63.5	-13.4	Pass
H	21325.0	35.595	35.6	0.0	5.5	10.8	51.9	51.9	83.5	-31.6	Pass	63.5	-11.6	Pass
H	22564.0	35.031	35.0	0.0	5.2	11.2	51.4	51.4	83.5	-32.1	Pass	63.5	-12.1	Pass
H	24321.0	34.848	34.8	0.0	5.0	11.6	51.4	51.4	83.5	-32.1	Pass	63.5	-12.1	Pass
Table Result:		Pass		by		-11.6 dB		Worst Freq:		21325.0 MHz				
Test Site: EMI Chamber 1		Cable 1: Asset #2690							Cable 2: ---			Cable 3: ---		
Analyzer: 2093		Preamp: None							Antenna: 2709			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.226														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
Copyright Curtis-Straus LLC 2000														

18-25GHz Data Table

Note: Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



18-25GHz Vertical Plot



18-25GHz Horizontal Plot

Bureau Veritas Consumer Product
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Test Report for u-blox AG Report No. EX0652-1 Issue 2



NORA-W300 with Yageo Patch Antenna

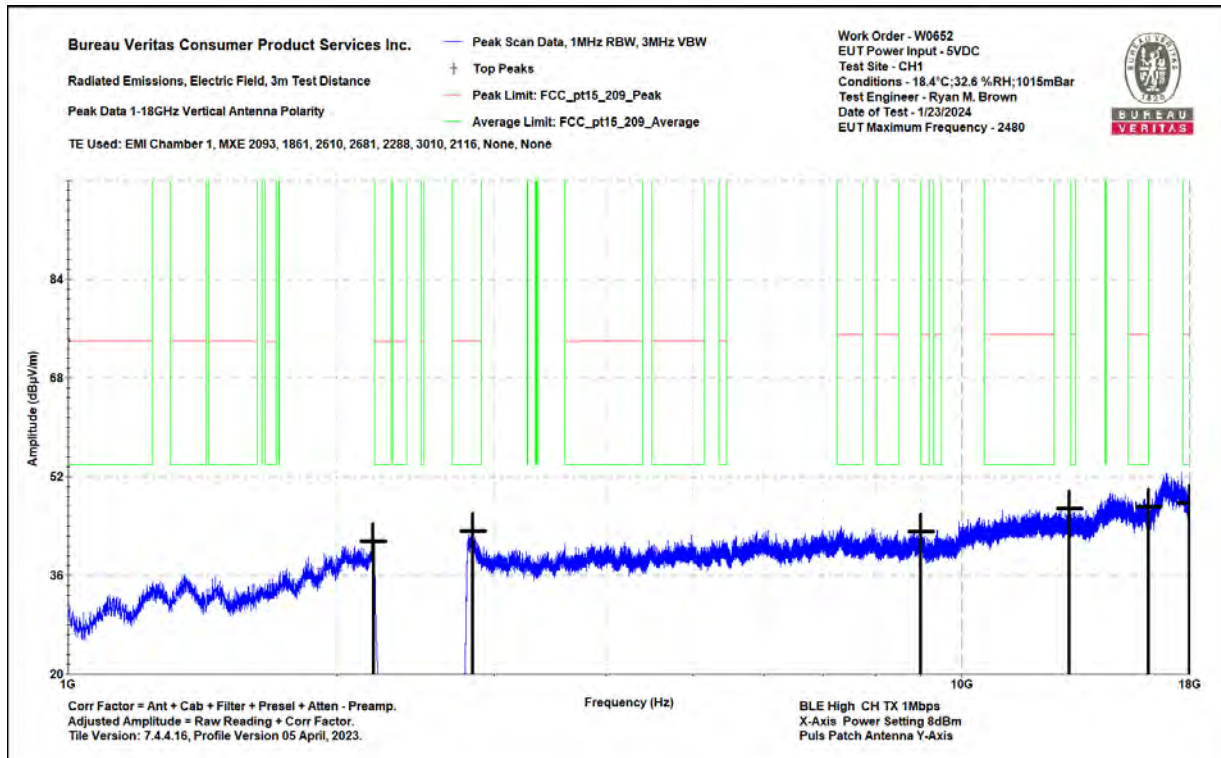
High CH, 1Mbps, Module axis: X, External antenna axis: Y

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Vertical 1-18GHz
Notes:
BLE High CH TX 1Mbps
X-Axis Power Setting 8dBm
Puls Patch Antenna Y-Axis

Work Order - W0652
EUT Power Input - 5VDC
Test Site - CH1
Conditions - 18.4°C;32.6 %RH;1015mBar
Test Engineer - Ryan M. Brown
Date of Test - 1/23/2024

Frequency (MHz)	Raw Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Margin to Average Limit (dB)	Average Limit Test Result (Pass/Fail)	Average Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2838.13	48.9	-5.7	43.2	74	-30.8	PASS		54	-10.8	PASS		300	292
17998.72	34.1	13.7	47.8	74	-26.2	PASS	-27.2	54	-6.2	PASS	-6.2	100	256

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



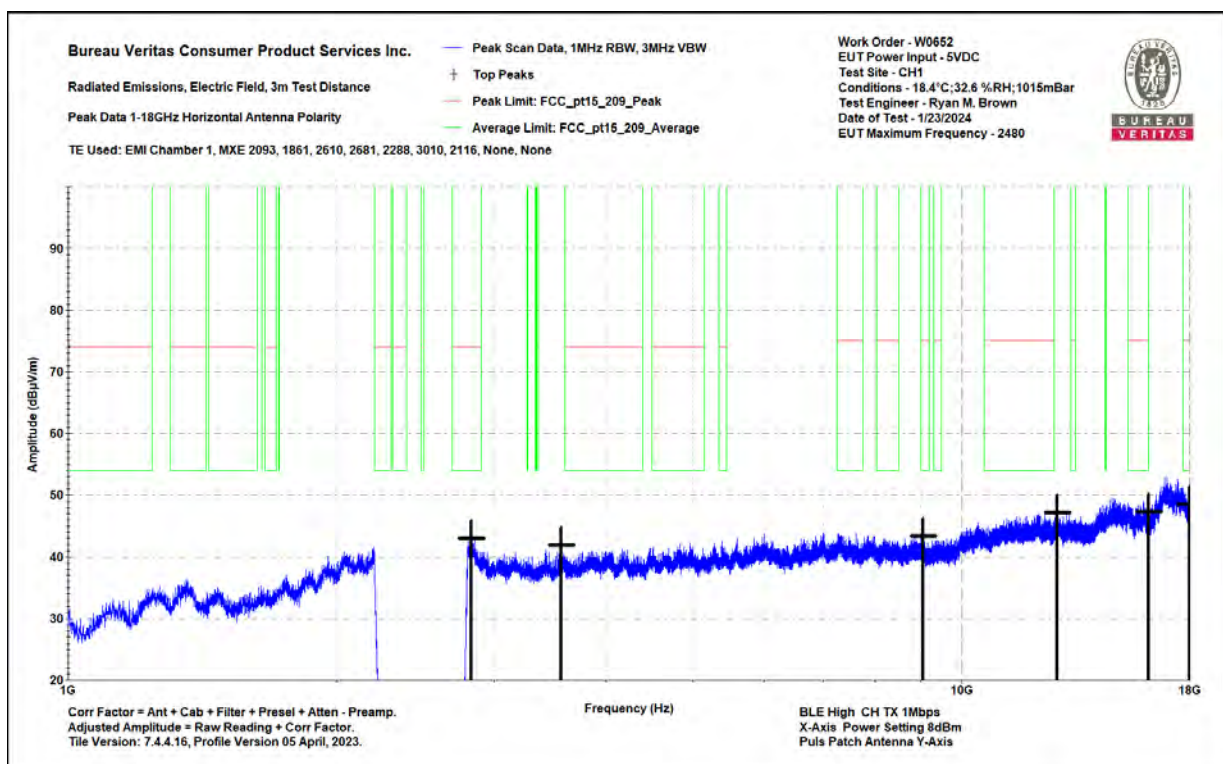
Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Horizontal 1-18GHz	Test Site - CH1
Notes:	Conditions - 18.4°C;32.6 %RH;1015mBar
BLE High CH TX 1Mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 1/23/2024
Puls Patch Antenna Y-Axis	

Frequency (MHz)	Raw Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Margin to Peak Limit (dB)	Peak Limit Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2825.38	48.1	-5.1	43.1	74	-30.9	PASS		54	-10.9	PASS		300	0
9056.73	42.7	0.6	43.3	74	-30.7	PASS		54	-10.7	PASS		100	294
18000	34.9	13.7	48.6	74	-25.4	PASS	-26.4	54	-5.4	PASS		200	98

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot

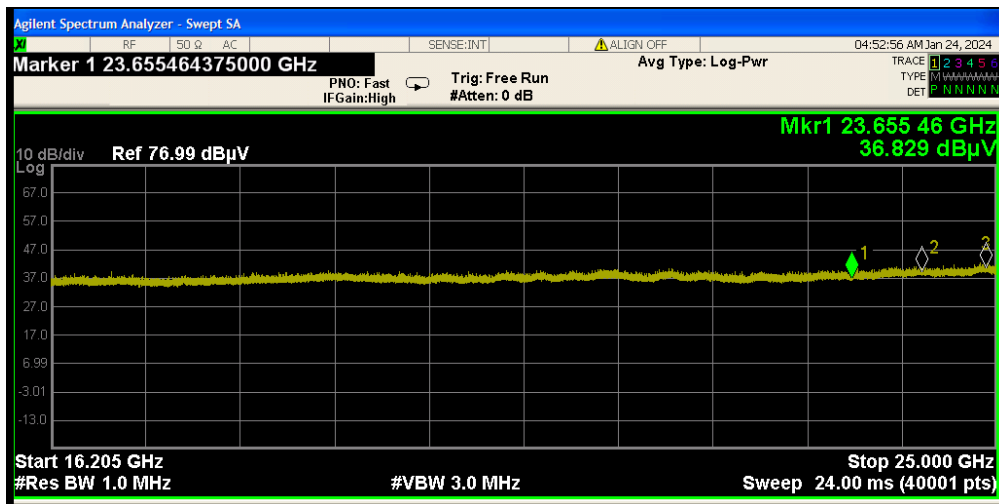


Test Report for u-blox AG Report No. EX0652-1 Issue 2

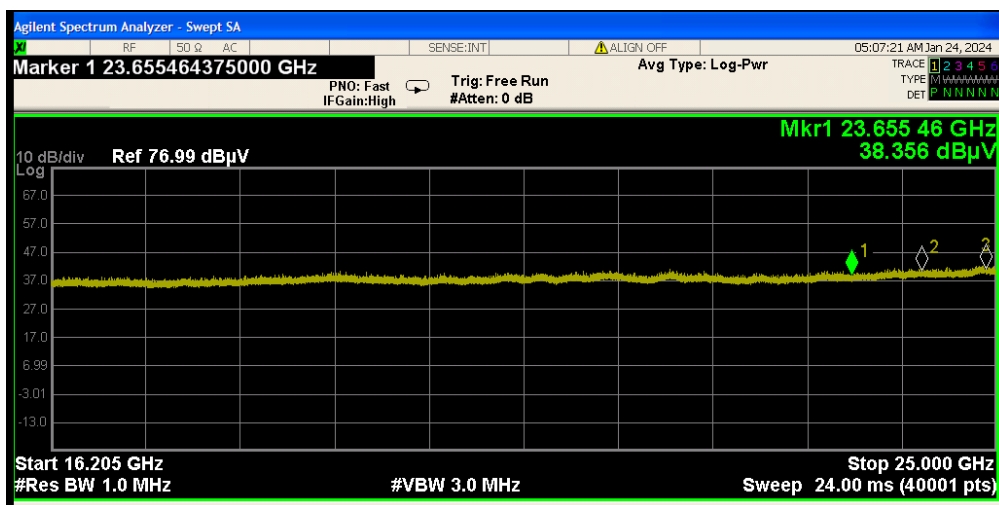


Radiated Emissions Table														
Date: 24-Jan-24			Company: U-Blox						Work Order: X0652					
Engineer: Ryan M. Brown			EUT Desc: NORA-W300 With Yageo Patch Antenna						EUT Operating Voltage/Frequency: 5VDC					
Temp: Temp: 20.2			Humidity: 35.2			Pressure: 1016			Measurement Distance: 1 m					
Frequency Range: 18-25GHz									EUT Max Freq: 2480					
Notes: High CH														
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	23655.46	36.829	36.8	0.0	5.5	10.8	53.1	53.1	83.5	-30.4	Pass	63.5	-10.4	Pass
V	24300.14	38.75	38.8	0.0	5.2	11.2	55.2	55.2	83.5	-28.4	Pass	63.5	-8.3	Pass
V	24900.18	40.245	40.2	0.0	5.0	11.6	56.8	56.8	83.5	-26.7	Pass	63.5	-6.7	Pass
H	23.655.46	38.356	38.4	0.0	5.5	10.8	54.7	54.7	83.5	-28.8	Pass	63.5	-8.8	Pass
H	24300.14	39.356	39.4	0.0	5.2	11.2	55.8	55.8	83.5	-27.7	Pass	63.5	-7.7	Pass
H	24900.18	40.613	40.6	0.0	5.0	11.6	57.2	57.2	83.5	-26.3	Pass	63.5	-6.3	Pass
Table Result: Pass by -6.3 dB Worst Freq: 24900.18 MHz														
Test Site: EMI Chamber 1			Cable 1: Asset #2690						Cable 2: ---			Cable 3: ---		
Analyzer: 2093			Preamp: None						Antenna: 2709			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.226														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
Copyright Curtis-Straus LLC 2000														

18-25GHz Data Table



18-25GHz Vertical Plot



18-25GHz Horizontal Plot

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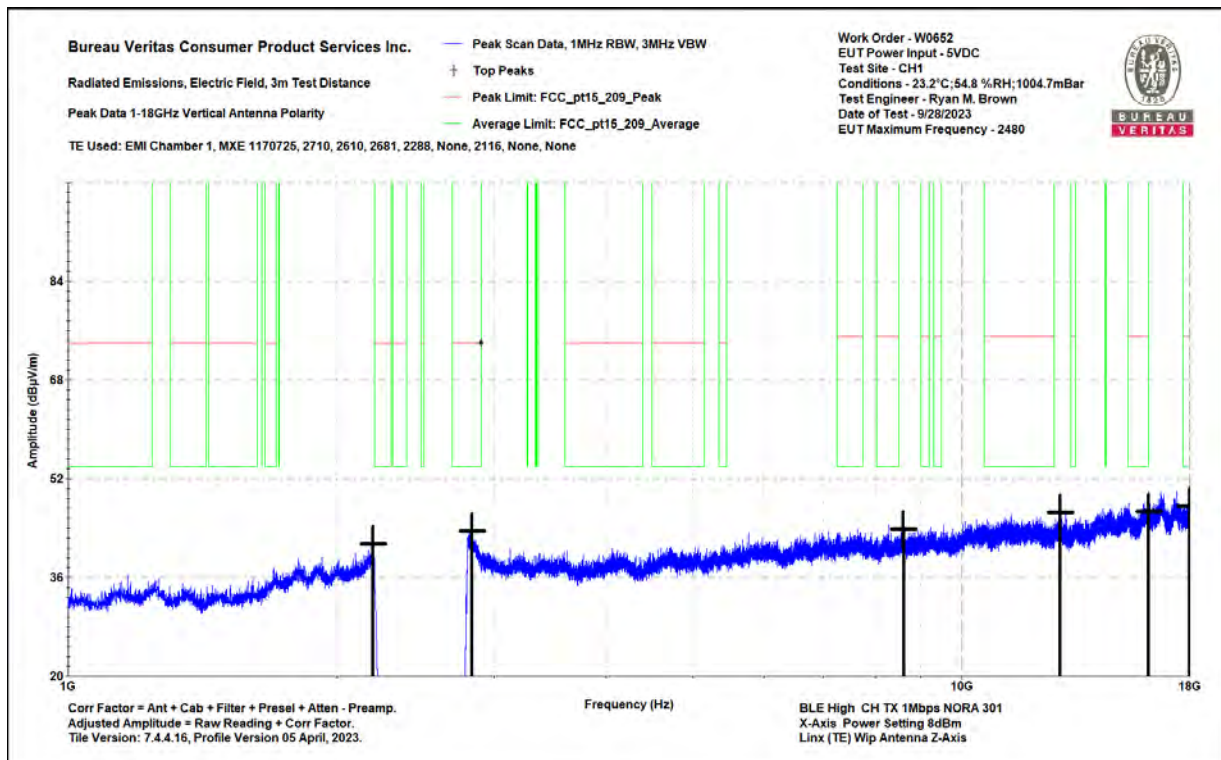
NORA-W301 with Linx (TE) Whip Antenna

High CH, 1Mbps, Module axis: X, External antenna axis: Z

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 1-18GHz	Test Site - CH1
Notes:	Conditions - 23.2°C;54.8 %RH;1004.7mBar
BLE High CH TX 1Mbps NORA 301	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/28/2023
Linx (TE) Wip Antenna Z-Axis	

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Average Limit (dB)	Average Limit Test Result (Pass/Fail)	Average Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2830.05	30.7	12.9	43.6	74	-30.4	PASS		54	-10.4	PASS		200	155
17998.72	22.2	25.3	47.6	74	-26.4	PASS	-26.4	54	-6.4	PASS	-6.4	100	129

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

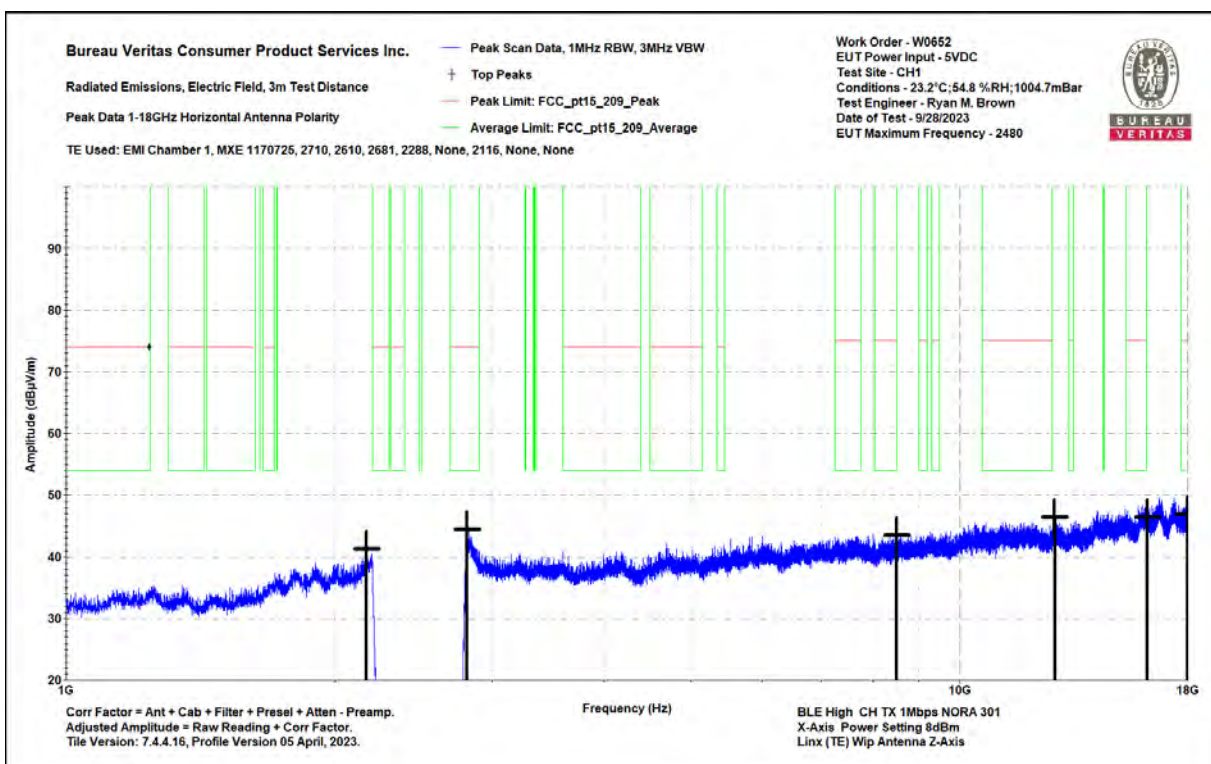


Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 1-18GHz
Notes:
BLE High CH TX 1Mbps NORA 301
X-Axis Power Setting 8dBm
Linx (TE) Wip Antenna Z-Axis

Work Order - W0652
EUT Power Input - 5VDC
Test Site - CH1
Conditions - 23.2°C;54.8 %RH;1004.7mBar
Test Engineer - Ryan M. Brown
Date of Test - 9/28/2023

Frequency (MHz)	Raw Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Margin to Peak Limit (dB)	Peak Limit Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2809.22	30.8	13.7	44.5	74	-29.5	PASS		54	-9.5	PASS		200	220
17999.15	21.6	25.3	46.9	74	-27.1	PASS	-27.1	54	-7.1	PASS	-7.1	300	62

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

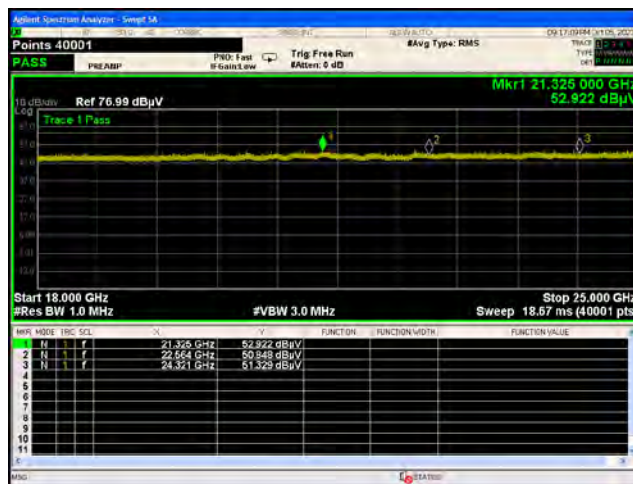


Radiated Emissions Table

Date: 05-Oct-23		Company: U-Blox						Work Order: X0652						
Engineer: Ryan M. Brown		EUT Desc: NORA-W301 With Linx (TE) Whip Antenna						EUT Operating Voltage/Frequency: 5VDC						
Temp: 22.5		Humidity: 55%						Pressure: 1014						
Frequency Range: 18-25GHz								Measurement Distance: 1 m						
Notes: High CH								EUT Max Freq: 2480						
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	21325.0	36.622	36.6	0.0	5.5	10.8	52.9	52.9	83.5	-30.6	Pass	63.5	-10.6	Pass
V	22564.0	34.448	34.4	0.0	5.2	11.2	50.8	50.8	83.5	-32.7	Pass	63.5	-12.7	Pass
V	24321.0	34.729	34.7	0.0	5.0	11.6	51.3	51.3	83.5	-32.2	Pass	63.5	-12.2	Pass
H	21325.0	36.418	36.4	0.0	5.5	10.8	52.7	52.7	83.5	-30.8	Pass	63.5	-10.8	Pass
H	22564.0	35.901	35.9	0.0	5.2	11.2	52.3	52.3	83.5	-31.2	Pass	63.5	-11.2	Pass
H	24321.0	35.494	35.5	0.0	5.0	11.6	52.1	52.1	83.5	-31.4	Pass	63.5	-11.4	Pass
Table Result:		Pass		by		-10.6 dB		Worst Freq:		21325.0 MHz				
Test Site: EMI Chamber 1		Cable 1: Asset #2690						Cable 2: ---			Cable 3: ---			
Analyzer: 2093		Preamp: None						Antenna: 2709			Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.226														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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18-25GHz Data Table

Note: Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



18-25GHz Vertical Plot



18-25GHz Horizontal Plot

Bureau Veritas Consumer Product
Services Inc.

One Distribution Center Circle, #1
Littleton, MA

Tel.: (978) 486-8880
Fax: (978) 486-8828



Test Report for u-blox AG Report No. EX0652-1 Issue 2



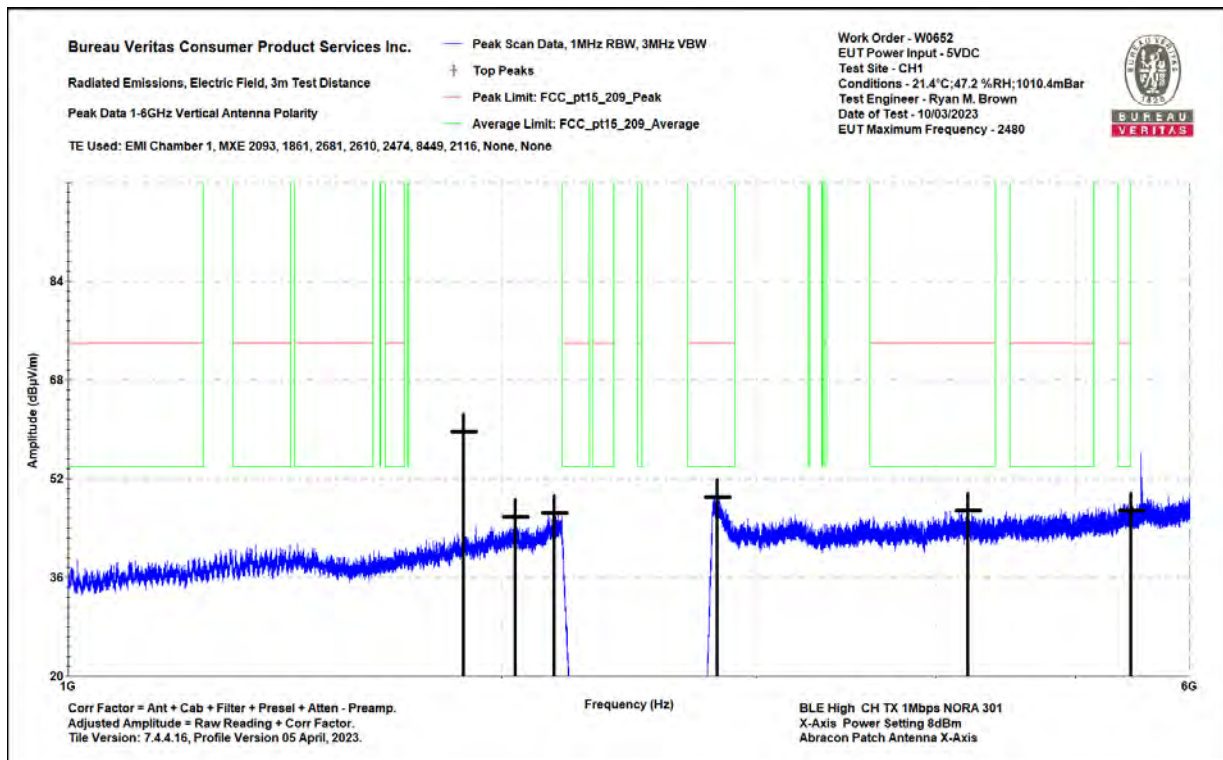
NORA-W301 with Abracon Patch Antenna

High CH, 1Mbps, Module axis: X, External antenna axis: X

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 1-6GHz	Test Site - CH1
Notes:	Conditions - 21.4°C; 47.2 %RH; 1010.4mBar
BLE High CH TX 1Mbps NORA 301	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 10/03/2023
Abracon Patch Antenna X-Axis	

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Average Limit (dB)	Average Limit Test Result (Pass/Fail)	Average Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2822.25	46.1	2.9	49	74	-25	PASS	-25	54	-5	PASS	-5	300	144
4210.25	45.5	1.4	46.8	74	-27.2	PASS		54	-7.2	PASS		200	209

1-6GHz Vertical Data Table



1-6GHz Vertical Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Horizontal 1-6GHz

Notes:

BLE High CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

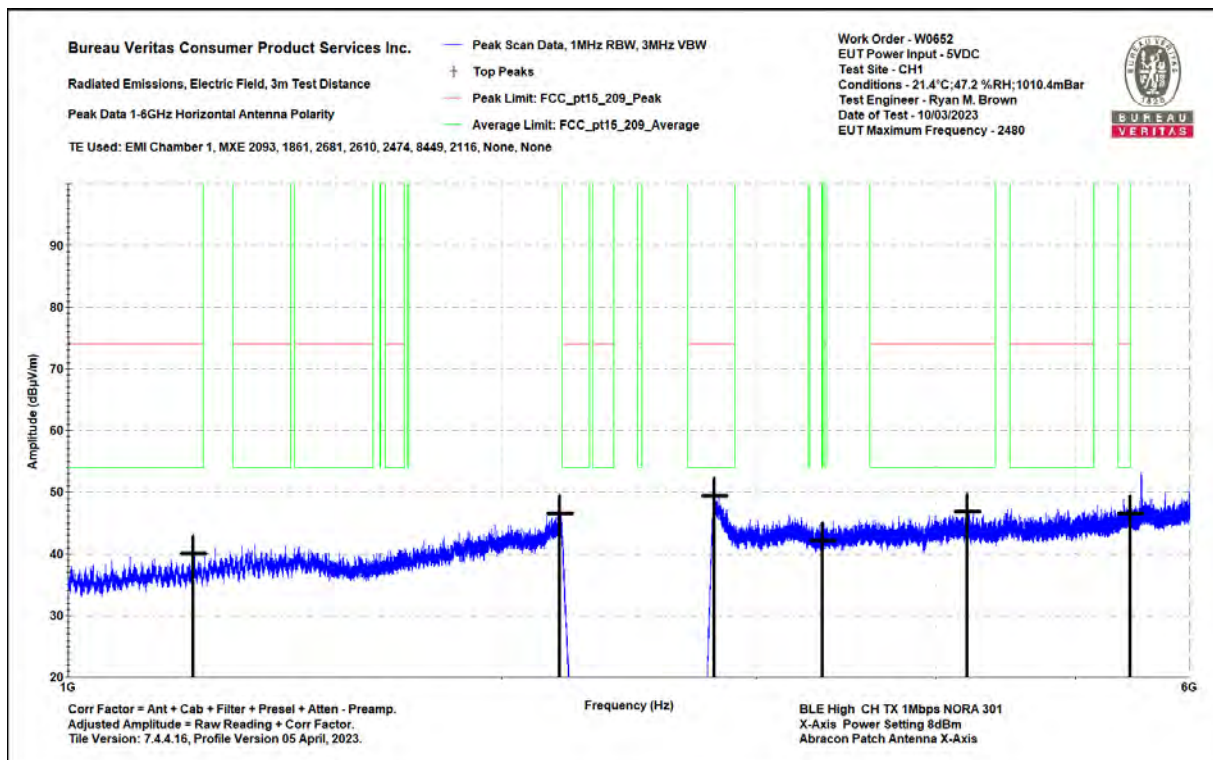
Conditions - 21.4°C;47.2 %RH;1010.4mBar

Test Engineer - Ryan M. Brown

Test Engineer - Ryan M. Brown

Frequency (MHz)	Raw Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Margin to Peak Limit (dB)	Peak Limit Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1221	48.2	-8.2	40	74	-34	PASS		54	-14	PASS		300	106
2805.63	45.6	3.8	49.4	74	-24.6	PASS	-24.6	54	-4.6	PASS	-4.6	200	283
3339	43.2	-1.1	42.1	74	-31.9	PASS		54	-11.9	PASS		200	22
4207.38	45.5	1.4	46.9	74	-27.1	PASS		54	-7.1	PASS		100	296
5460	43.7	2.9	46.6	74	-27.4	PASS		54	-7.4	PASS		200	22

1-6GHz Horizontal Data Table



1-6GHz Horizontal Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

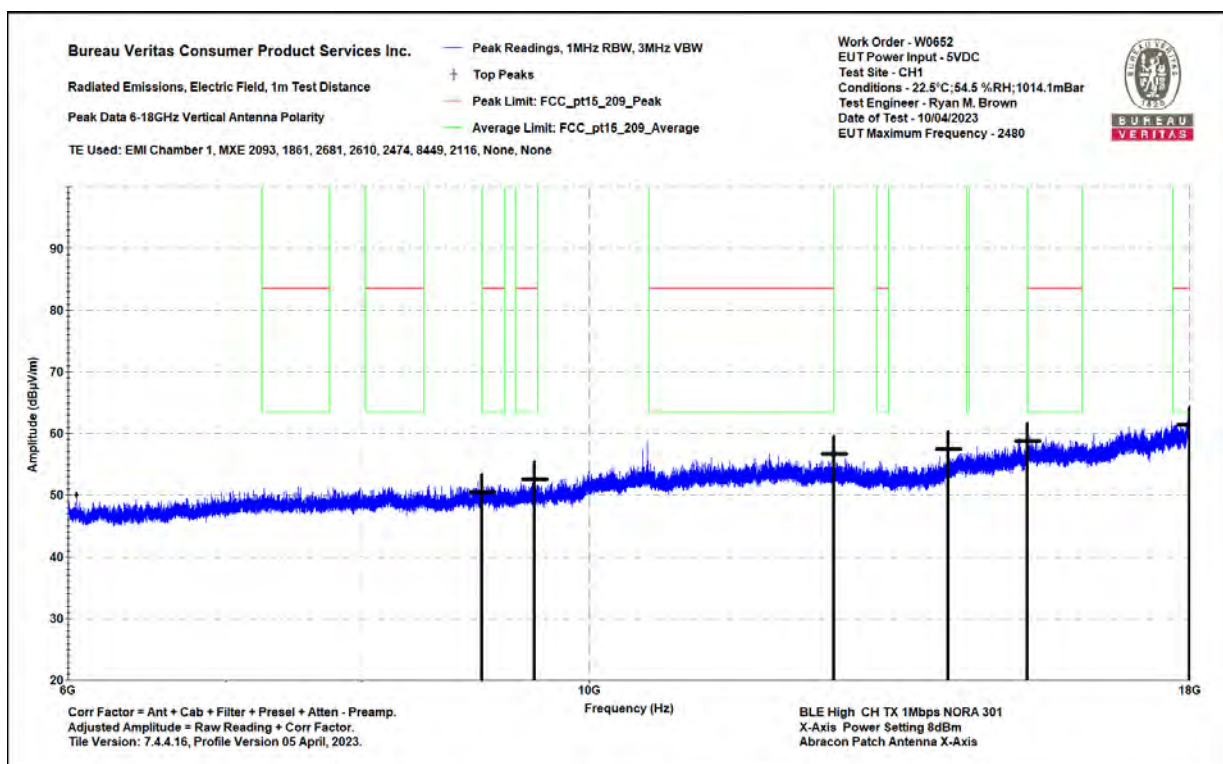


Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
Top Peaks Vertical 6-18GHz
Notes:
BLE High CH TX 1Mbps NORA 301
X-Axis Power Setting 8dBm
Abracon Patch Antenna X-Axis

Work Order - W0652
EUT Power Input - 5VDC
Test Site - CH1
Conditions - 22.5°C; 54.5 %RH; 1014.1mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/04/2023

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Avg Limit (dB)	Avg Limit Test Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
9475.2	46.8	5.8	52.6	83.5	-30.9	PASS		63.5	-10.9	PASS		175	315
15350.7	46.5	12.2	58.7	83.5	-24.8	PASS		63.5	-4.8	PASS		175	19
18000	45.2	16.2	61.3	83.5	-22.2	PASS	-22.2	63.5	-2.2	PASS	-2.2	150	0

6-18GHz Vertical Data Table



6-18GHz Vertical Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 1m Distance

Top Peaks Horizontal 6-18GHz

Notes:

BLE High CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

Abracon Patch Antenna X-Axis

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

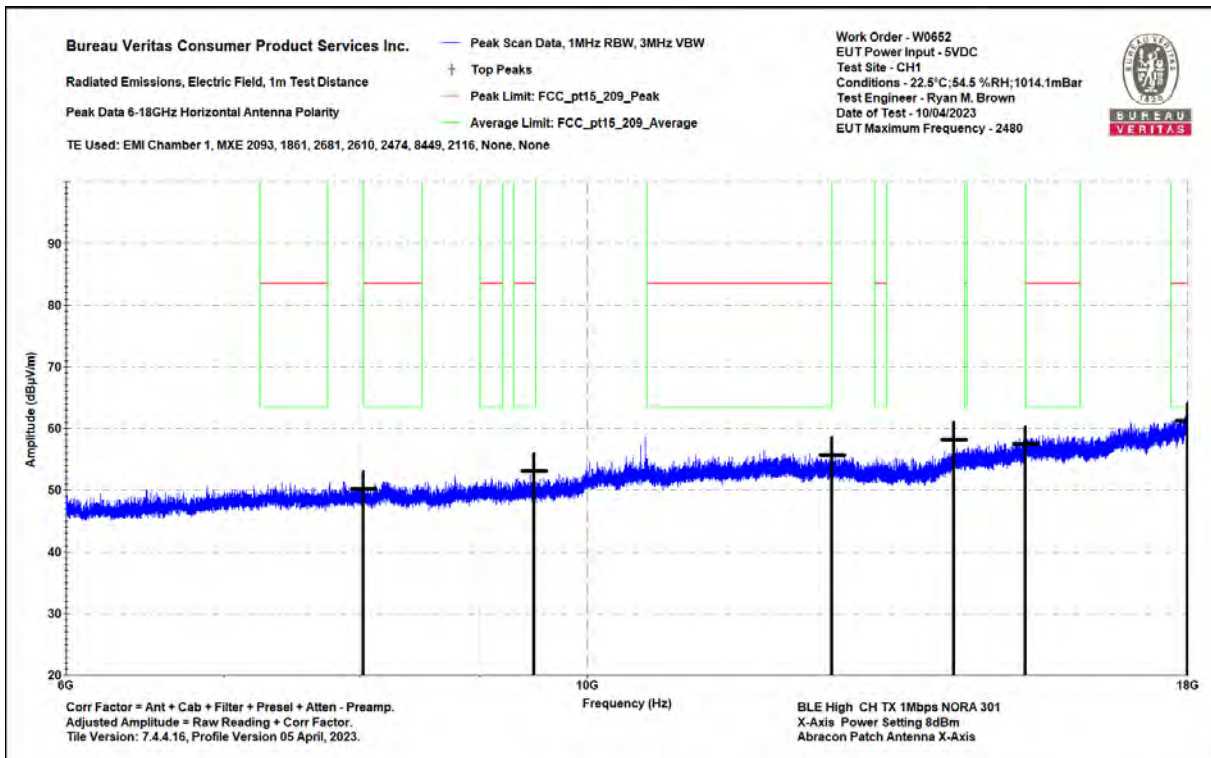
Conditions - 22.5°C;54.5 %RH;1014.1mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/04/2023

Frequency (MHz)	Raw Peak Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_209_Peak (dBμV/m)	Margin to Peak Limit (dB)	Peak Limit Test Results (Pass/Fail)	Peak Limit Worst Margin (dB)	Av Lim: FCC_pt15_209_Average (dBμV/m)	Margin to Avg Limit (dB)	Avg Limit Test Results (Pass/Fail)	Avg Limit Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
8025	44.8	5.3	50.1	83.5	-33.4	PASS		63.5	-13.4	PASS		175	315
9484.8	47.3	5.8	53.1	83.5	-30.4	PASS		63.5	-10.4	PASS		100	296
15351.9	45.2	12.2	57.4	83.5	-26.1	PASS		63.5	-6.1	PASS		150	70
18000	45.1	16.2	61.2	83.5	-22.3	PASS	-22.3	63.5	-2.3	PASS	-2.3	100	69

6-18GHz Horizontal Data Table



6-18GHz Horizontal Plot



Test Report for u-blox AG Report No. EX0652-1 Issue 2

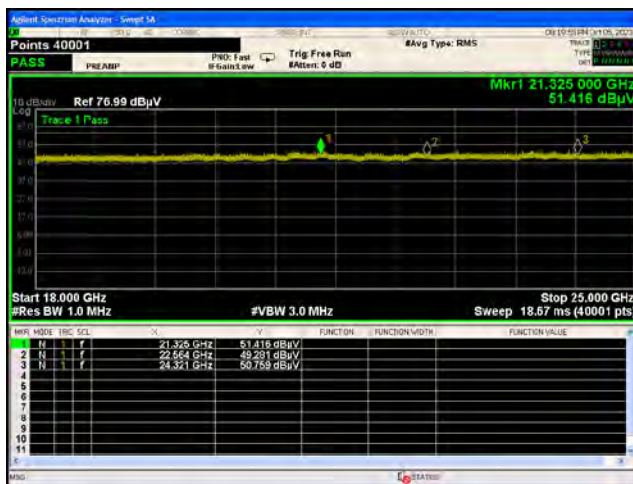


Radiated Emissions Table

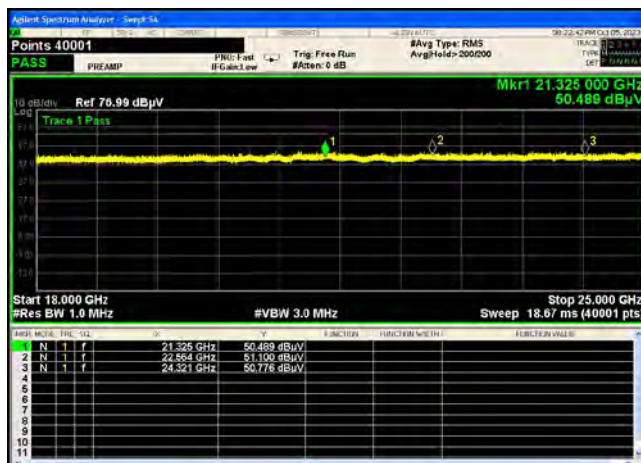
Date: 05-Oct-23		Company: U-Blox							Work Order: X0652					
Engineer: Ryan M. Brown		EUT Desc: NORA-W301 With Abracon Patch Antenna							EUT Operating Voltage/Frequency: 5VDC					
Temp: 22.5		Humidity: 55%							Pressure: 1014					
Frequency Range: 18-25GHz									Measurement Distance: 1 m					
Notes: High CH									EUT Max Freq: 2480					
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
V	21325.0	35.116	35.1	0.0	5.5	10.8	51.4	51.4	83.5	-32.1	Pass	63.5	-12.1	Pass
V	22564.0	32.881	32.9	0.0	5.2	11.2	49.3	49.3	83.5	-34.2	Pass	63.5	-14.2	Pass
V	24321.0	34.159	34.2	0.0	5.0	11.6	50.8	50.8	83.5	-32.7	Pass	63.5	-12.7	Pass
H	21325.0	34.189	34.2	0.0	5.5	10.8	50.5	50.5	83.5	-33.0	Pass	63.5	-13.0	Pass
H	22564.0	34.7	34.7	0.0	5.2	11.2	51.1	51.1	83.5	-32.4	Pass	63.5	-12.4	Pass
H	24321.0	34.176	34.2	0.0	5.0	11.6	50.8	50.8	83.5	-32.7	Pass	63.5	-12.7	Pass
Table Result:		Pass		by		-12.1 dB		Worst Freq:		21325.0 MHz				
Test Site: EMI Chamber 1		Cable 1: Asset #2690							Cable 2: ---			Cable 3: ---		
Analyzer: 2093		Preamp: None							Antenna: 2709			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.226														
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														
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18-25GHz Data Table

Note: Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



18-25GHz Vertical Plot



18-25GHz Horizontal Plot

Bureau Veritas Consumer Product
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Test Report for u-blox AG
Report No. EX0652-1 Issue 2



Radiated Band-edges:

NORA-W306

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20265 GHz	49.58	74.00	24.42	H	146.557	156.878	34.40	FCC_15.209
2.25065 GHz	50.41	74.00	23.59	H	302.843	200	34.54	FCC_15.209
2.3214 GHz	48.56	74.00	25.44	H	152.243	222.507	34.32	FCC_15.209
2.3899 GHz	48.96	74.00	25.04	H	124.414	100	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20265 GHz	36.91	54.00	17.09	H	146.557	162.85	34.40	FCC_15.209
2.25065 GHz	36.76	54.00	17.24	H	302.843	116.367	34.54	FCC_15.209
2.3214 GHz	34.94	54.00	19.06	H	152.243	246.428	34.32	FCC_15.209
2.3899 GHz	35.51	54.00	18.49	H	124.414	100	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20265 GHz	50.85	74.00	23.15	V	171	261.9	34.40	FCC_15.209
2.24865 GHz	51.45	74.00	22.55	V	327.843	372.517	34.54	FCC_15.209
2.2739 GHz	48.40	74.00	25.60	V	158.229	130.865	34.47	FCC_15.209
2.3899 GHz	49.25	74.00	24.75	V	360	317.408	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20265 GHz	38.49	54.00	15.51	V	171	321.1	34.40	FCC_15.209
2.24865 GHz	38.58	54.00	15.42	V	327.843	289.303	34.54	FCC_15.209
2.2739 GHz	32.81	54.00	21.19	V	158.229	100	34.47	FCC_15.209
2.3899 GHz	33.29	54.00	20.71	V	360	378.733	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.624499 GHz	54.09	74.00	19.91	H	130.9	114.943	35.99	FCC_15.209
2.483499 GHz	49.49	74.00	24.51	H	155.964	178.959	35.00	FCC_15.209
2.769999 GHz	50.68	74.00	23.32	H	333.335	100	36.06	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.624499 GHz	43.50	54.00	10.50	H	130.9	100.286	35.99	FCC_15.209
2.483499 GHz	35.19	54.00	18.81	H	155.964	100	35.00	FCC_15.209
2.769999 GHz	36.44	54.00	17.56	H	333.335	100	36.06	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483499 GHz	48.36	74.00	25.64	V	322.811	124.353	35.00	FCC_15.209
2.681249 GHz	50.04	74.00	23.96	V	0	307.041	36.00	FCC_15.209
2.769999 GHz	51.99	74.00	22.01	V	220.922	307.4	36.06	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483499 GHz	33.61	54.00	20.39	V	322.811	157.582	35.00	FCC_15.209
2.681249 GHz	34.66	54.00	19.34	V	0	319.1	36.00	FCC_15.209
2.769999 GHz	38.66	54.00	15.34	V	220.922	314.312	36.06	FCC_15.209

Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2015 GHz	51.09	74.00	22.91	H	229.931	138.611	34.40	FCC_15.209
2.25225 GHz	48.35	74.00	25.65	H	241.127	137.63	34.54	FCC_15.209
2.39025 GHz	50.38	74.00	23.62	H	32.094	111.638	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	36.85	54.00	17.15	H	229.931	138.611	34.40	FCC_15.209
2.2515 GHz	33.82	54.00	20.18	H	241.127	119.368	34.54	FCC_15.209
2.3905 GHz	34.09	54.00	19.91	H	32.094	154.889	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.204 GHz	51.11	74.00	22.89	V	347.693	320.265	34.40	FCC_15.209
2.2515 GHz	50.88	74.00	23.12	V	319.965	356.327	34.54	FCC_15.209
2.3895 GHz	48.05	74.00	25.95	V	205.534	178.768	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	36.60	54.00	17.40	V	347.693	325.986	34.40	FCC_15.209
2.2515 GHz	35.43	54.00	18.57	V	319.965	216.046	34.54	FCC_15.209
2.3905 GHz	32.70	54.00	21.30	V	205.534	168.865	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	55.16	74.00	18.84	H	259.472	283.236	35.00	FCC_15.209
2.62475 GHz	52.66	74.00	21.34	H	145.6	154.246	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	40.62	54.00	13.38	H	259.472	283.236	35.00	FCC_15.209
2.6245 GHz	38.57	54.00	15.43	H	145.6	100	35.98	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	51.11	74.00	22.89	V	317.672	340.883	35.00	FCC_15.209
2.624 GHz	51.87	74.00	22.13	V	228.731	123.732	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	36.33	54.00	17.67	V	317.672	344.365	35.00	FCC_15.209
2.6245 GHz	36.11	54.00	17.89	V	228.731	111.884	35.98	FCC_15.209

NORA-W300 with Abracon Patch Antenna

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.203 GHz	52.59	74.00	21.41	H	360	104.238	34.40	FCC_15.209
2.24925 GHz	49.18	74.00	24.82	H	72.726	200	34.54	FCC_15.209
2.32175 GHz	51.68	74.00	22.32	H	282.345	127.367	34.32	FCC_15.209
2.39025 GHz	50.79	74.00	23.21	H	293.303	152.919	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	42.20	54.00	11.80	H	360	100	34.40	FCC_15.209
2.249 GHz	35.35	54.00	18.65	H	72.726	200	34.54	FCC_15.209
2.32175 GHz	41.50	54.00	12.50	H	282.345	145.104	34.32	FCC_15.209
2.39025 GHz	37.88	54.00	16.12	H	293.303	179.47	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	49.77	74.00	24.23	V	317.632	357.682	34.40	FCC_15.209
2.251 GHz	50.77	74.00	23.23	V	360	392.371	34.54	FCC_15.209
2.39025 GHz	49.28	74.00	24.72	V	249.386	100.003	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	37.19	54.00	16.81	V	317.632	264.594	34.40	FCC_15.209
2.25075 GHz	37.13	54.00	16.87	V	360	400	34.54	FCC_15.209
2.39025 GHz	34.76	54.00	19.24	V	249.386	100	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	53.14	74.00	20.86	H	279.464	190.5	35.00	FCC_15.209
2.6245 GHz	54.87	74.00	19.13	H	290.644	154.578	35.99	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	37.81	54.00	16.19	H	279.464	190.5	35.00	FCC_15.209
2.6245 GHz	45.60	54.00	8.40	H	290.644	158.633	35.99	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	50.57	74.00	23.43	V	1.293	282.091	35.00	FCC_15.209
2.624 GHz	53.05	74.00	20.95	V	55.584	333.951	35.98	FCC_15.209
2.79825 GHz	50.88	74.00	23.12	V	276.354	140.454	36.00	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.8 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	34.93	54.00	19.07	V	1.293	386.009	35.00	FCC_15.209
2.6245 GHz	41.57	54.00	12.43	V	55.584	263.683	35.98	FCC_15.209
2.79925 GHz	35.66	54.00	18.34	V	276.354	100	36.00	FCC_15.209



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Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	52.05	74.00	21.95	H	160.402	240.988	34.40	FCC_15.209
2.32175 GHz	51.52	74.00	22.48	H	287.397	194.613	34.32	FCC_15.209
2.39025 GHz	50.95	74.00	23.05	H	289.295	122.524	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	38.08	54.00	15.92	H	160.402	243.412	34.40	FCC_15.209
2.32175 GHz	38.74	54.00	15.26	H	287.397	212.344	34.32	FCC_15.209
2.39025 GHz	36.27	54.00	17.73	H	289.295	178.97	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	51.52	74.00	22.48	V	360	170.803	34.40	FCC_15.209
2.3895 GHz	48.59	74.00	25.41	V	22.579	151.73	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	37.75	54.00	16.25	V	360	260.736	34.40	FCC_15.209
2.3905 GHz	32.70	54.00	21.30	V	22.579	140.722	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	56.55	74.00	17.45	H	105.146	100	35.00	FCC_15.209
2.62475 GHz	53.90	74.00	20.10	H	103.433	135.754	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	42.33	54.00	11.67	H	105.146	100.41	35.00	FCC_15.209
2.6245 GHz	41.28	54.00	12.72	H	103.433	100	35.98	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	50.39	74.00	23.61	V	271.116	242.597	35.00	FCC_15.209
2.624 GHz	51.92	74.00	22.08	V	247.31	120.789	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	35.48	54.00	18.52	V	271.116	245.034	35.00	FCC_15.209
2.62475 GHz	38.13	54.00	15.87	V	247.31	100.751	35.98	FCC_15.209



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NORA-W300 with Linx (TE) Whip Antenna

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.203 GHz	50.40	74.00	23.60	H	194.325	157.343	34.40	FCC_15.209
2.24825 GHz	49.08	74.00	24.92	H	175.73	200	34.54	FCC_15.209
2.39025 GHz	51.10	74.00	22.90	H	86.819	141.132	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	38.76	54.00	15.24	H	194.325	157.343	34.40	FCC_15.209
2.249 GHz	35.32	54.00	18.68	H	175.73	139.711	34.54	FCC_15.209
2.39025 GHz	37.56	54.00	16.44	H	86.819	170.078	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	51.13	74.00	22.87	V	124.387	200	34.40	FCC_15.209
2.251 GHz	50.97	74.00	23.03	V	233.926	195.4	34.54	FCC_15.209
2.3895 GHz	48.71	74.00	25.29	V	72.756	300	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	39.68	54.00	14.32	V	124.387	150.7	34.40	FCC_15.209
2.25075 GHz	37.64	54.00	16.36	V	233.926	195.4	34.54	FCC_15.209
2.39025 GHz	34.21	54.00	19.79	V	72.756	152.085	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	54.50	74.00	19.50	H	103.69	193.188	35.00	FCC_15.209
2.624 GHz	55.43	74.00	18.57	H	95.548	281.965	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	39.89	54.00	14.11	H	103.69	186.65	35.00	FCC_15.209
2.6245 GHz	47.48	54.00	6.52	H	95.548	214.647	35.98	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	50.02	74.00	23.98	V	330.566	100	35.00	FCC_15.209
2.62475 GHz	52.83	74.00	21.17	V	60.655	196.138	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	35.73	54.00	18.27	V	330.566	134.033	35.00	FCC_15.209
2.6245 GHz	41.65	54.00	12.35	V	60.655	175.106	35.98	FCC_15.209

Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.203 GHz	52.06	74.00	21.94	H	344.329	261.917	34.40	FCC_15.209
2.39025 GHz	49.45	74.00	24.55	H	57.943	217.767	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.203 GHz	38.13	54.00	15.87	H	344.329	128.985	34.40	FCC_15.209
2.39025 GHz	34.79	54.00	19.21	H	57.943	221.433	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	50.68	74.00	23.32	V	274.023	399.815	34.40	FCC_15.209
2.39025 GHz	50.05	74.00	23.95	V	320.473	121.389	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	36.48	54.00	17.52	V	274.023	339.86	34.40	FCC_15.209
2.39025 GHz	33.98	54.00	20.02	V	320.473	105.375	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	57.69	74.00	16.31	H	110.053	226.311	35.00	FCC_15.209
2.62425 GHz	55.08	74.00	18.92	H	103.095	100	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	44.30	54.00	9.70	H	110.053	118.788	35.00	FCC_15.209
2.62425 GHz	43.75	54.00	10.25	H	103.095	145.674	35.98	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	52.71	74.00	21.29	V	349.963	147.433	35.00	FCC_15.209
2.62475 GHz	51.96	74.00	22.04	V	348.337	128.868	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	38.64	54.00	15.36	V	349.963	106.9	35.00	FCC_15.209
2.62475 GHz	38.34	54.00	15.66	V	348.337	132.273	35.98	FCC_15.209



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NORA-W300 with Yageo Patch Antenna

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	50.75	74.00	23.25	H	321.929	366.911	34.40	FCC_15.209
2.39025 GHz	50.22	74.00	23.78	H	286.5	100.078	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.203 GHz	39.19	54.00	14.81	H	321.929	353.333	34.40	FCC_15.209
2.39025 GHz	37.20	54.00	16.80	H	286.5	100	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20325 GHz	50.62	74.00	23.38	V	107.36	209.847	34.40	FCC_15.209
2.39025 GHz	48.75	74.00	25.25	V	277.491	108.513	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	38.50	54.00	15.50	V	107.36	205.141	34.40	FCC_15.209
2.39025 GHz	34.34	54.00	19.66	V	277.491	200	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	52.64	74.00	21.36	H	284.682	100.138	35.00	FCC_15.209
2.624 GHz	53.38	74.00	20.62	H	277.915	136.575	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	37.90	54.00	16.10	H	284.682	145.659	35.00	FCC_15.209
2.6245 GHz	43.69	54.00	10.31	H	277.915	164.143	35.98	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.484 GHz	48.83	74.00	25.17	V	66.446	117.044	35.00	FCC_15.209
2.624 GHz	55.05	74.00	18.95	V	258.316	100	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	34.16	54.00	19.84	V	66.446	100	35.00	FCC_15.209
2.6245 GHz	45.75	54.00	8.25	V	258.316	180.827	35.98	FCC_15.209

Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	50.90	74.00	23.10	H	308.567	102.967	34.40	FCC_15.209
2.3895 GHz	50.72	74.00	23.28	H	277.014	189.362	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	36.49	54.00	17.51	H	308.567	143.8	34.40	FCC_15.209
2.39025 GHz	34.93	54.00	19.07	H	277.014	163.42	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2025 GHz	35.93	74.00	23.82	V	92.235	148.194	34.40	FCC_15.209
2.3895 GHz	48.20	74.00	25.80	V	80.889	131.362	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.202 GHz	35.93	54.00	18.07	V	92.235	148.194	34.40	FCC_15.209
2.3895 GHz	33.28	54.00	20.72	V	80.889	140.535	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	56.22	74.00	17.78	H	280.326	154.548	35.00	FCC_15.209
2.6245 GHz	53.70	74.00	20.30	H	290.416	147.1	35.99	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	42.11	54.00	11.89	H	280.326	151	35.00	FCC_15.209
2.6245 GHz	40.71	54.00	13.29	H	290.416	147.1	35.99	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	51.57	74.00	22.43	V	220.73	194.782	35.00	FCC_15.209
2.624 GHz	52.55	74.00	21.45	V	262.127	270.649	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	37.54	54.00	16.46	V	220.73	211.712	35.00	FCC_15.209
2.6245 GHz	39.11	54.00	14.89	V	262.127	274.354	35.98	FCC_15.209



Test Report for u-blox AG
Report No. EX0652-1 Issue 2



NORA-W301 with Abracon Patch Antenna

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	49.19	74.00	24.81	H	36.253	100.175	34.40	FCC_15.209
2.3905 GHz	48.84	74.00	25.16	H	109.084	143.49	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	36.48	54.00	17.52	H	36.253	100.025	34.40	FCC_15.209
2.3905 GHz	35.25	54.00	18.75	H	109.084	100	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	50.47	74.00	23.53	V	45.86	190.951	34.40	FCC_15.209
2.3895 GHz	48.89	74.00	25.11	V	74.484	268.433	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	38.45	54.00	15.55	V	45.86	185.441	34.40	FCC_15.209
2.3905 GHz	33.66	54.00	20.34	V	74.484	289.689	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	54.66	74.00	19.34	H	98.827	151.877	35.00	FCC_15.209
2.6245 GHz	54.79	74.00	19.21	H	112.503	184.111	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	39.15	54.00	14.85	H	98.827	100	35.00	FCC_15.209
2.6245 GHz	45.40	54.00	8.60	H	112.503	147.605	35.98	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	49.39	74.00	24.61	V	131.307	100.019	35.00	FCC_15.209
2.624 GHz	50.94	74.00	23.06	V	232.566	200	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	33.99	54.00	20.01	V	131.307	100.092	35.00	FCC_15.209
2.6245 GHz	36.95	54.00	17.05	V	232.566	162.022	35.98	FCC_15.209

Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2015 GHz	50.29	74.00	23.71	H	186.063	100	34.40	FCC_15.209
2.3895 GHz	50.24	74.00	23.76	H	109.715	172.736	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	36.20	54.00	17.80	H	186.063	300	34.40	FCC_15.209
2.3905 GHz	34.33	54.00	19.67	H	109.715	172.736	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2015 GHz	49.39	74.00	24.61	V	141.069	108.025	34.40	FCC_15.209
2.39025 GHz	48.96	74.00	25.04	V	270.337	375.4	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	34.98	54.00	19.02	V	141.069	100	34.40	FCC_15.209
2.3905 GHz	33.48	54.00	20.52	V	270.337	295.1	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	57.78	74.00	16.22	H	113.693	127.706	35.00	FCC_15.209
2.625 GHz	54.13	74.00	19.87	H	92.41	120.047	35.99	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	44.16	54.00	9.84	H	113.693	123.981	35.00	FCC_15.209
2.6245 GHz	42.12	54.00	11.88	H	92.41	100	35.99	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	54.57	74.00	19.43	V	0	351.418	35.00	FCC_15.209
2.62425 GHz	51.77	74.00	22.23	V	336.23	287.325	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	38.79	54.00	15.21	V	0	341.741	35.00	FCC_15.209
2.62425 GHz	37.14	54.00	16.86	V	336.23	278.3	35.98	FCC_15.209



Test Report for u-blox AG
Report No. EX0652-1 Issue 2



NORA-W301 with Linx (TE) Whip Antenna

Low-Ch_Horz_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	49.38	74.00	24.62	H	61.616	107.2	34.40	FCC_15.209
2.39025 GHz	50.80	74.00	23.20	H	74.207	199.989	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	34.79	54.00	19.21	H	61.616	155.1	34.40	FCC_15.209
2.3905 GHz	36.27	54.00	17.73	H	74.207	152.678	34.42	FCC_15.209

Low-Ch_Vert_1Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	53.70	74.00	20.30	V	78.56	150.573	34.40	FCC_15.209
2.3905 GHz	49.05	74.00	24.95	V	327.244	191.445	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	43.64	54.00	10.36	V	78.56	147.022	34.40	FCC_15.209
2.3905 GHz	34.36	54.00	19.64	V	327.244	129.178	34.42	FCC_15.209

High-Ch_Horz_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	54.75	74.00	19.25	H	72.305	132.962	35.00	FCC_15.209
2.6245 GHz	55.93	74.00	18.07	H	65.635	162.664	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	40.08	54.00	13.92	H	72.305	136.538	35.00	FCC_15.209
2.6245 GHz	47.59	54.00	6.41	H	65.635	162.664	35.98	FCC_15.209

High-Ch_Vert_1Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	51.43	74.00	22.57	V	348.766	103.6	35.00	FCC_15.209
2.62475 GHz	51.86	74.00	22.14	V	239.332	172.057	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	35.35	54.00	18.65	V	348.766	103.6	35.00	FCC_15.209
2.6245 GHz	39.23	54.00	14.77	V	239.332	147.897	35.98	FCC_15.209



Test Report for u-blox AG Report No. EX0652-1 Issue 2



Low-Ch_Horz_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	51.20	74.00	22.80	H	359.416	244.761	34.40	FCC_15.209
2.39025 GHz	50.07	74.00	23.93	H	94.457	172.205	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20275 GHz	37.42	54.00	16.58	H	359.416	244.761	34.40	FCC_15.209
2.3905 GHz	35.12	54.00	18.88	H	94.457	169.049	34.42	FCC_15.209

Low-Ch_Vert_2Mbps

Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	37.13	54.00	16.87	V	101.728	100	34.40	FCC_15.209
2.3895 GHz	48.95	74.00	25.05	V	216.408	280.309	34.42	FCC_15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	37.13	54.00	16.87	V	101.728	100	34.40	FCC_15.209
2.3905 GHz	33.48	54.00	20.52	V	216.408	243.044	34.42	FCC_15.209

High-Ch_Horz_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	57.83	74.00	16.17	H	74.131	134	35.00	FCC_15.209
2.6245 GHz	54.53	74.00	19.47	H	76.055	200	35.99	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	44.57	54.00	9.43	H	74.131	134	35.00	FCC_15.209
2.6245 GHz	43.30	54.00	10.70	H	76.055	159.2	35.99	FCC_15.209

High-Ch_Vert_2Mbps

Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

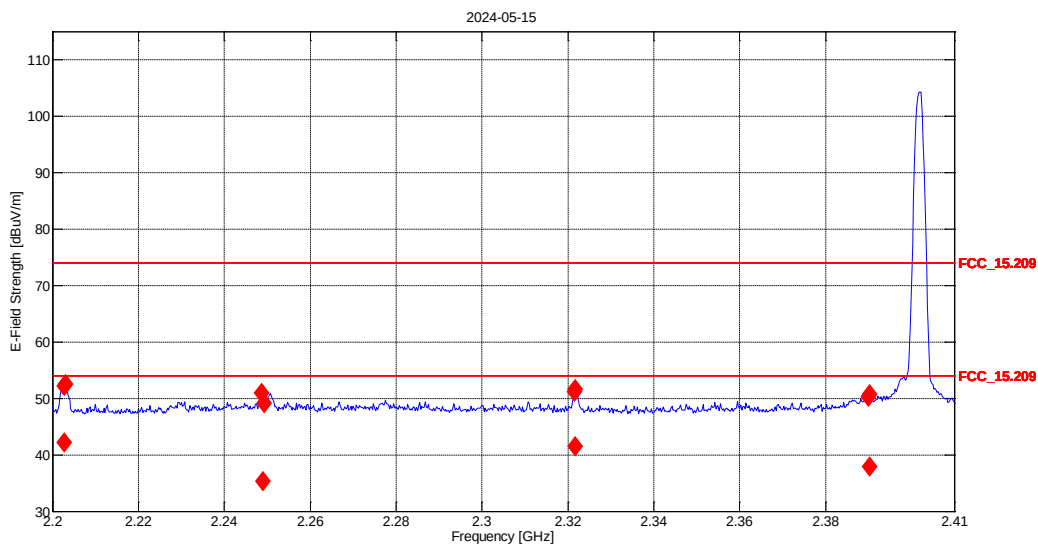
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	53.48	74.00	20.52	V	11.086	100	35.00	FCC_15.209
2.62475 GHz	52.30	74.00	21.70	V	32.094	155.851	35.99	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

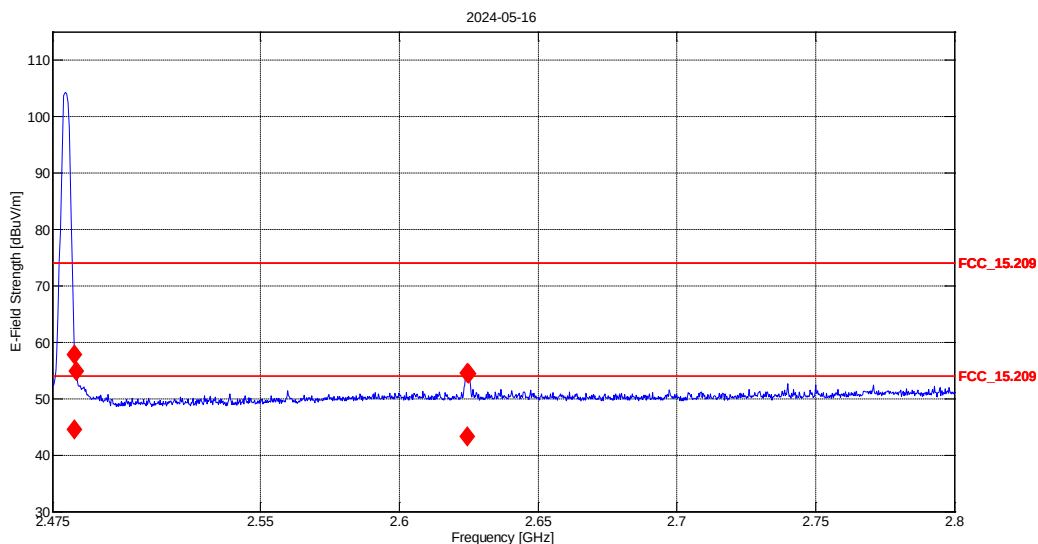
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	39.08	54.00	14.92	V	11.086	128.681	35.00	FCC_15.209
2.62475 GHz	37.90	54.00	16.10	V	32.094	121.384	35.99	FCC_15.209

Worst-Case Plots

Low band-edge (W300 with Abracon Patch, Low-Ch_Horz_1Mbps)



High band-edge (W301 with Linx (TE) Whip, High-Ch_Horz_2Mbps)



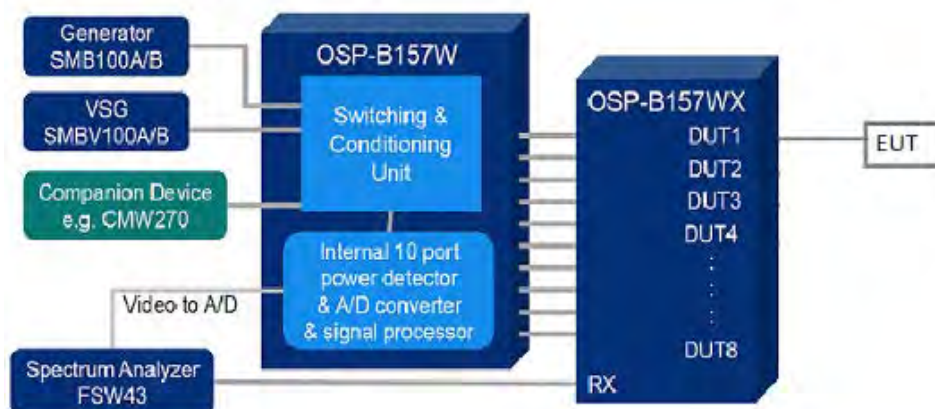
4.3 6dB CHANNEL BANDWIDTH & 99% OBW

4.3.1 LIMITS

The minimum 6 dB bandwidth shall be 500 kHz.

4.3.2 TEST SETUP

SCHEMATIC RF-CABLING



4.3.3 TEST EQUIPMENT USED

For tests on Sep 7, 2023

Equipment	Manufacturer	Asset No.	Model No.	Serial No.	Last Cal.	Next Cal.
Cable	Carlisle	2595	UTIFLEX		1/17/2023	1/17/2024
Signal Analyzer	Rohde-Schwarz	2200	FSV 40	101551	10/11/2022	10/11/2023
OSP-B157W8	Rohde-Schwarz	2558	OSP_B157W8	100955	8/26/2021	2/26/2024
30dB 20W Atten	API Weinschel Inc.	2121	89-30-11	703	2/13/23	2/13/24

For tests on Nov 8, 2023 and Nov 30, 2023

Equipment	Manufacturer	Asset No.	Model No.	Serial No.	Last Cal.	Next Cal.
Cable	Carlisle	2595	UTIFLEX		1/17/2023	1/17/2024
Signal Analyzer	Rohde-Schwarz	2200	FSV 40	101551	10/9/2023	10/9/2024
OSP-B157W8	Rohde-Schwarz	2558	OSP_B157W8	100955	8/26/2021	2/26/2024
30dB 20W Atten	API Weinschel Inc.	2121	89-30-11	703	2/13/23	2/13/24

4.3.4 TEST PROCEDURES

6dB CHANNEL BANDWIDTH

a. Set RBW = 100 kHz.

- b. Set the video bandwidth (VBW) ≥ 3 RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Sweep = auto couple.
- f. Allow the trace to stabilize.
- g. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% OBW

- a. The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d. Step a) through step c) might require iteration to adjust within the specified range.
- e. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

4.3.5 DEVIATIONS

No deviations from the standard.

4.3.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

4.3.7 TEST RESULTS

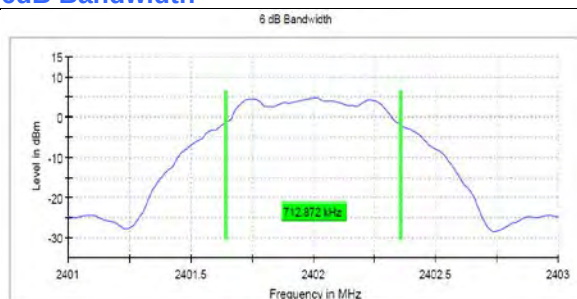
BLE (GFSK) 1Mbps

Test dates: 9/7/2023 for 6dB BW and 11/8/2023 for 99% OBW

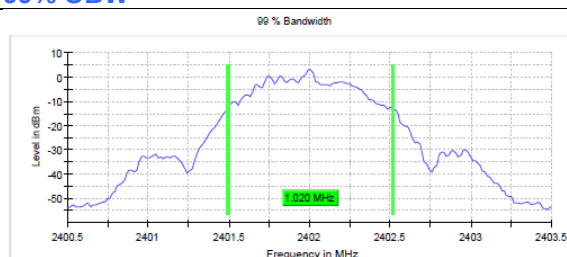
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	99% OBW (MHz)	PASS / FAIL
0	2402	0.712872	1.020000	Pass
19	2440	0.693070	1.020000	Pass
39	2480	0.712872	1.020000	Pass

CH0

6dB Bandwidth



99% OBW



Measurement

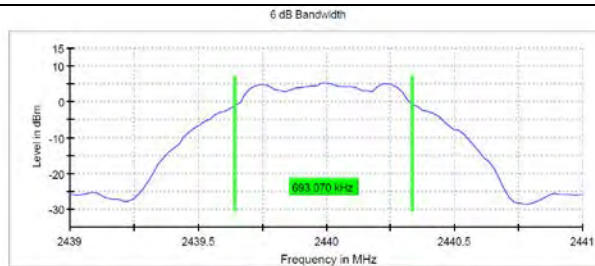
Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.35 dB	0.50 dB

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40050 GHz	2.40050 GHz
Stop Frequency	2.40350 GHz	2.40350 GHz
Span	3.000 MHz	3.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 100.000 kHz
SweepPoints	200	~ 200
SweepTime	63.151 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	8 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.15 dB	0.30 dB

CH19

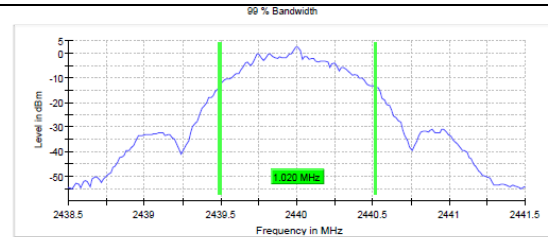
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.04 dB	0.50 dB

99% OBW

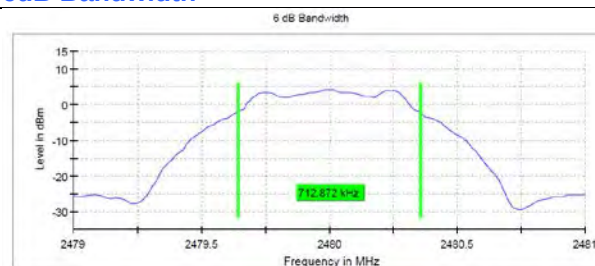


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43850 GHz	2.43850 GHz
Stop Frequency	2.44150 GHz	2.44150 GHz
Span	3.000 MHz	3.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 100.000 kHz
SweepPoints	200	~ 200
SweepTime	63.151 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.05 dB	0.30 dB

CH39

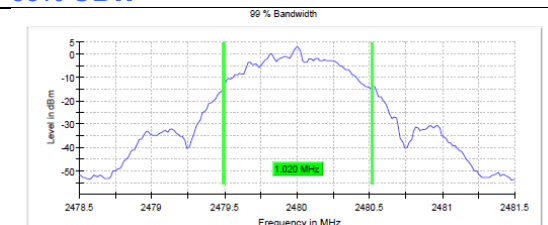
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.03 dB	0.50 dB

99% OBW



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47850 GHz	2.47850 GHz
Stop Frequency	2.48150 GHz	2.48150 GHz
Span	3.000 MHz	3.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 100.000 kHz
SweepPoints	200	~ 200
SweepTime	63.151 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	9 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.06 dB	0.30 dB

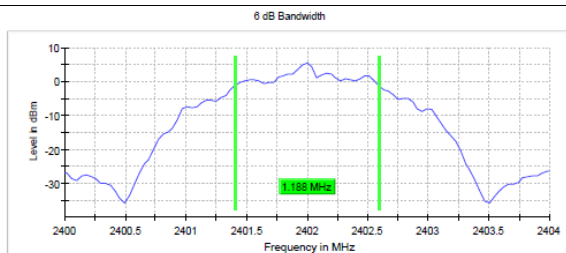
BLE (GFSK) 2Mbps

Test date: 11/30/2023

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	99% OBW (MHz)	PASS / FAIL
0	2402	1.188118	2.057057	PASS
19	2440	1.029703	2.057057	PASS
39	2480	1.188118	2.042042	PASS

CH0

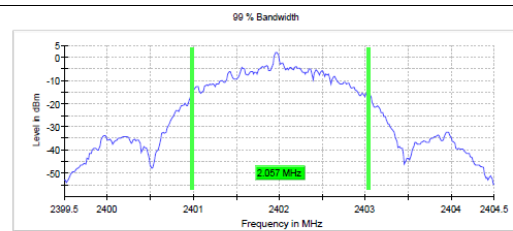
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
SweepTime	18.338 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	24 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.05 dB

99% OBW

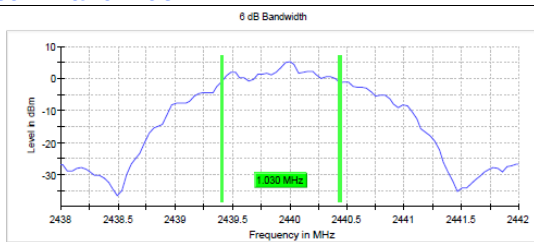


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39950 GHz	2.39950 GHz
Stop Frequency	2.40450 GHz	2.40450 GHz
Span	5.000 MHz	5.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 80.000 kHz
SweepPoints	333	~ 333
SweepTime	63.218 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	12 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.02 dB	0.05 dB

CH19

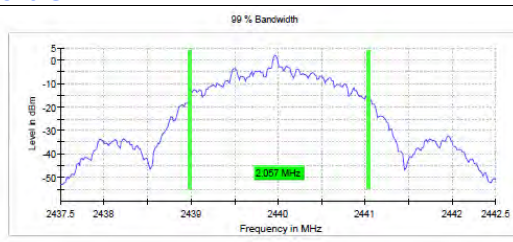
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
SweepTime	18.338 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	29 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.00 dB	0.05 dB

99% OBW

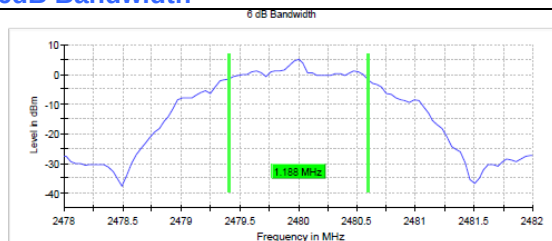


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43750 GHz	2.43750 GHz
Stop Frequency	2.44250 GHz	2.44250 GHz
Span	5.000 MHz	5.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 80.000 kHz
SweepPoints	333	~ 333
SweepTime	63.218 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	18 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.02 dB	0.05 dB

CH39

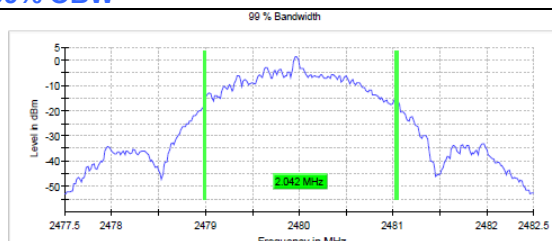
6dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
SweepTime	18.538 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	31 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.04 dB	0.05 dB

99% OBW



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47750 GHz	2.47750 GHz
Stop Frequency	2.48250 GHz	2.48250 GHz
Span	5.000 MHz	5.000 MHz
RBW	30.000 kHz	~ 30.000 kHz
VBW	100.000 kHz	~ 30.000 kHz
SweepPoints	333	~ 333
SweepTime	63.218 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.05 dB	0.05 dB
Run	16 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.02 dB	0.05 dB



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.4.2 TEST SETUP

Refer to section 4.3.2.

4.4.3 TEST EQUIPMENT USED

Refer to section 4.3.3.

4.4.4 TEST PROCEDURES

Peak conducted output power was measured in accordance with ANSI C63.10 - 2013 Section 11.9.1.1 (RBW $\geq$ DTS bandwidth).

4.4.5 DEVIATIONS

No deviations from the standard.

4.4.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications

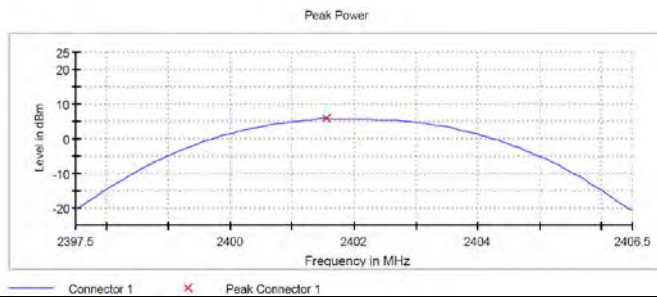
4.4.7 TEST RESULTS

BLE (GFSK) 1Mbps

Test date: 9/7/2023

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	LIMIT (dBm)	PASS/FAIL
0	2402	5.8	3.80	30	PASS
19	2440	6.4	4.37	30	PASS
39	2480	5.2	3.31	30	PASS

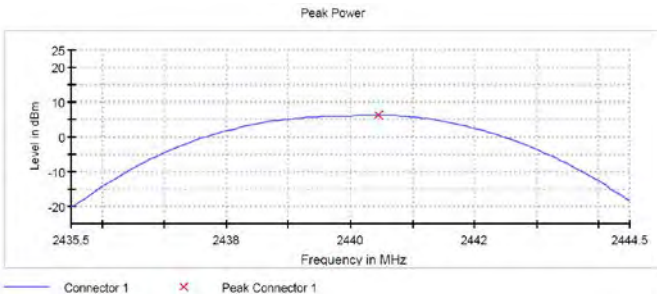
CH0



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39750 GHz	2.39750 GHz
Stop Frequency	2.40650 GHz	2.40650 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	>= 3.000 MHz
VBW	10.000 MHz	>= 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

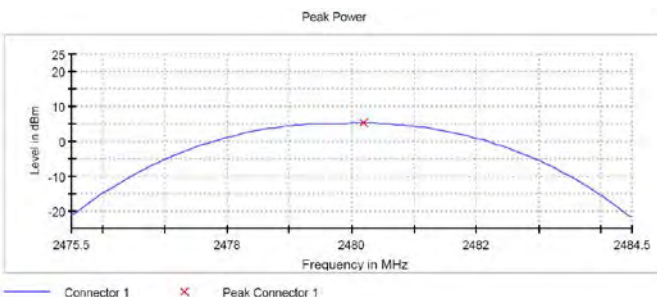
CH19



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43550 GHz	2.43550 GHz
Stop Frequency	2.44450 GHz	2.44450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	>= 3.000 MHz
VBW	10.000 MHz	>= 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.03 dB	0.50 dB

CH39



Measurement

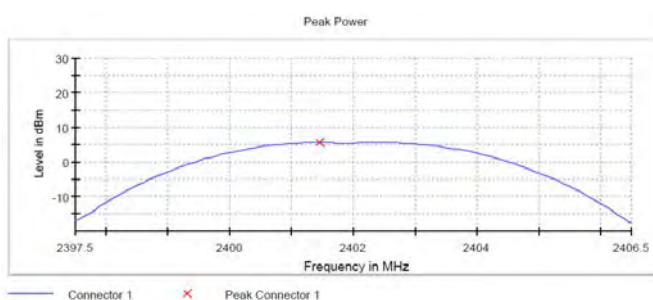
Setting	Instrument Value	Target Value
Start Frequency	2.47550 GHz	2.47550 GHz
Stop Frequency	2.48450 GHz	2.48450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	>= 3.000 MHz
VBW	10.000 MHz	>= 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.08 dB	0.50 dB

BLE (GFSK) 2Mbps

Test date: 9/7/2023

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	LIMIT (dBm)	PASS/FAIL
0	2402	5.7	3.72	30	PASS
19	2440	5.7	3.72	30	PASS
39	2480	5.2	3.31	30	PASS

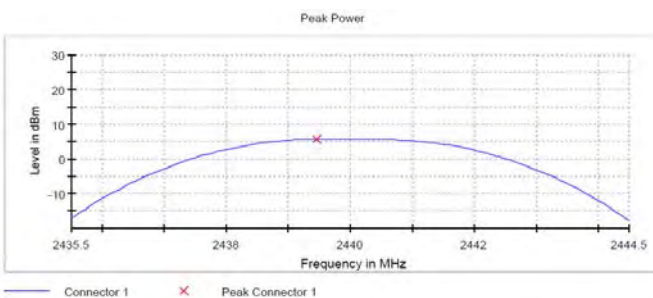
CH0



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39750 GHz	2.39750 GHz
Stop Frequency	2.40650 GHz	2.40650 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	≥ 3.000 MHz
VBW	10.000 MHz	≥ 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.10 dB	0.50 dB

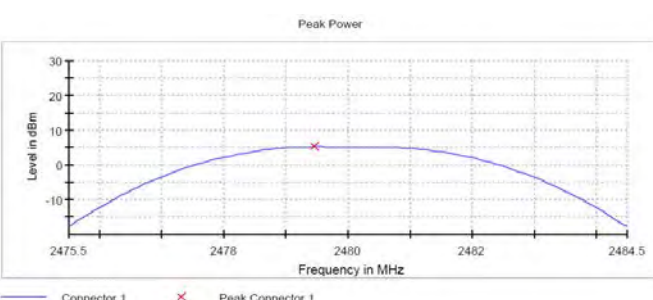
CH19



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43550 GHz	2.43550 GHz
Stop Frequency	2.44450 GHz	2.44450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	≥ 3.000 MHz
VBW	10.000 MHz	≥ 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.03 dB	0.50 dB

CH39



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47550 GHz	2.47550 GHz
Stop Frequency	2.48450 GHz	2.48450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	≥ 3.000 MHz
VBW	10.000 MHz	≥ 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

4.5 POWER SPECTRAL DENSITY

4.5.1 LIMITS

The limit for Power Spectral Density is 8dBm/3kHz.

4.5.2 TEST SETUP

Refer to section 4.3.2.

4.5.3 TEST EQUIPMENT USED

Refer to section 4.3.3.

4.5.4 TEST PROCEDURES

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 10 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

4.5.5 DEVIATIONS

No deviations from the standard.

4.5.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

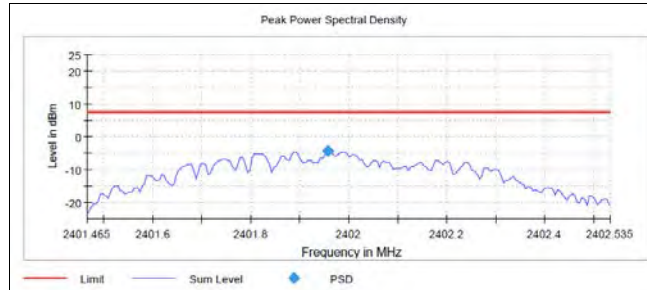
4.5.7 TEST RESULTS

BLE (GFSK) 1Mbps

Test date: 9/7/2023

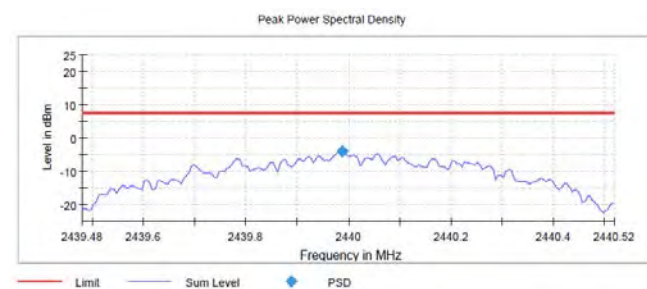
Channel	FREQ. (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
0	2402	-4.31	8	PASS
19	2440	-4.01	8	PASS
39	2480	-4.49	8	PASS

CH0



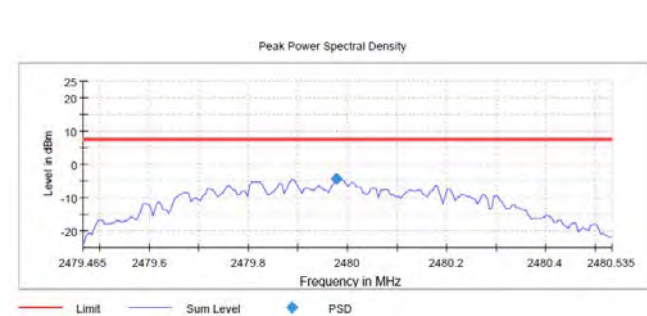
Setting	Instrument Value	Target Value
Start Frequency	2.40147 GHz	2.40147 GHz
Stop Frequency	2.40253 GHz	2.40253 GHz
Span	1.068 MHz	1.068 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	214	~ 214
SweepTime	1.070 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.03 dB	0.50 dB

CH19



Setting	Instrument Value	Target Value
Start Frequency	2.43948 GHz	2.43948 GHz
Stop Frequency	2.44052 GHz	2.44052 GHz
Span	1.040 MHz	1.040 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	208	~ 208
SweepTime	1.040 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.12 dB	0.50 dB

CH39



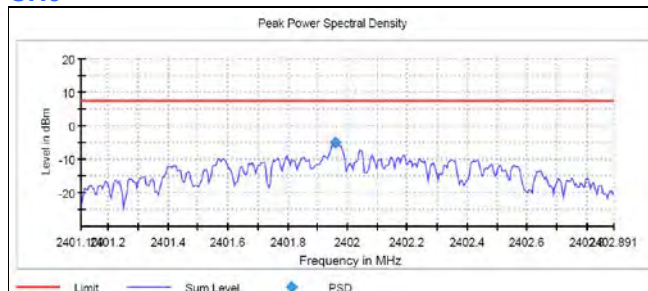
Setting	Instrument Value	Target Value
Start Frequency	2.47947 GHz	2.47947 GHz
Stop Frequency	2.48053 GHz	2.48053 GHz
Span	1.068 MHz	1.068 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	214	~ 214
SweepTime	1.070 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.17 dB	0.50 dB

BLE (GFSK) 2Mbps

Test date: 11/30/2023

Channel	FREQ. (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
0	2402	-4.91	8	PASS
19	2440	-4.36	8	PASS
39	2480	-6.03	8	PASS

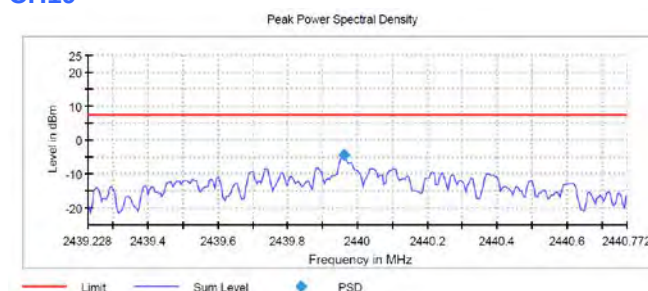
CH0



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40111 GHz	2.40111 GHz
Stop Frequency	2.40289 GHz	2.40289 GHz
Span	1.782 MHz	1.782 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	356	~ 356
SweepTime	1.790 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.37 dB	0.50 dB

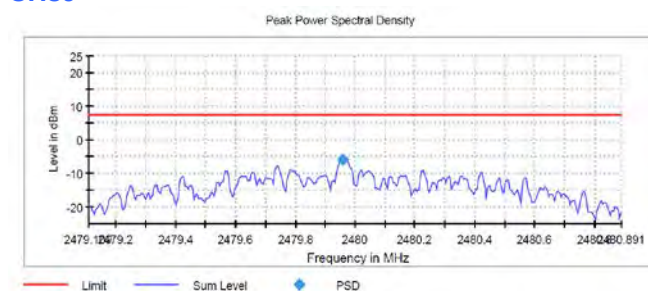
CH19



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43923 GHz	2.43923 GHz
Stop Frequency	2.44077 GHz	2.44077 GHz
Span	1.545 MHz	1.545 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	309	~ 309
SweepTime	1.550 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.16 dB	0.50 dB

CH39



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47911 GHz	2.47911 GHz
Stop Frequency	2.48089 GHz	2.48089 GHz
Span	1.782 MHz	1.782 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	356	~ 356
SweepTime	1.790 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.08 dB	0.50 dB

4.6 CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGES

4.6.1 LIMITS

20dB below the highest emission level in the operating band (in 100kHz RBW).

4.6.2 TEST SETUP

Refer to section 4.3.2.

4.6.3 TEST EQUIPMENT USED

Refer to section 4.3.3.

4.6.4 TEST PROCEDURES

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATIONS

No deviations from the standard.

4.6.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.

4.6.7 TEST RESULTS

BLE (GFSK) 1Mbps Conducted Spurious Emissions:

Test date: 9/7/2023

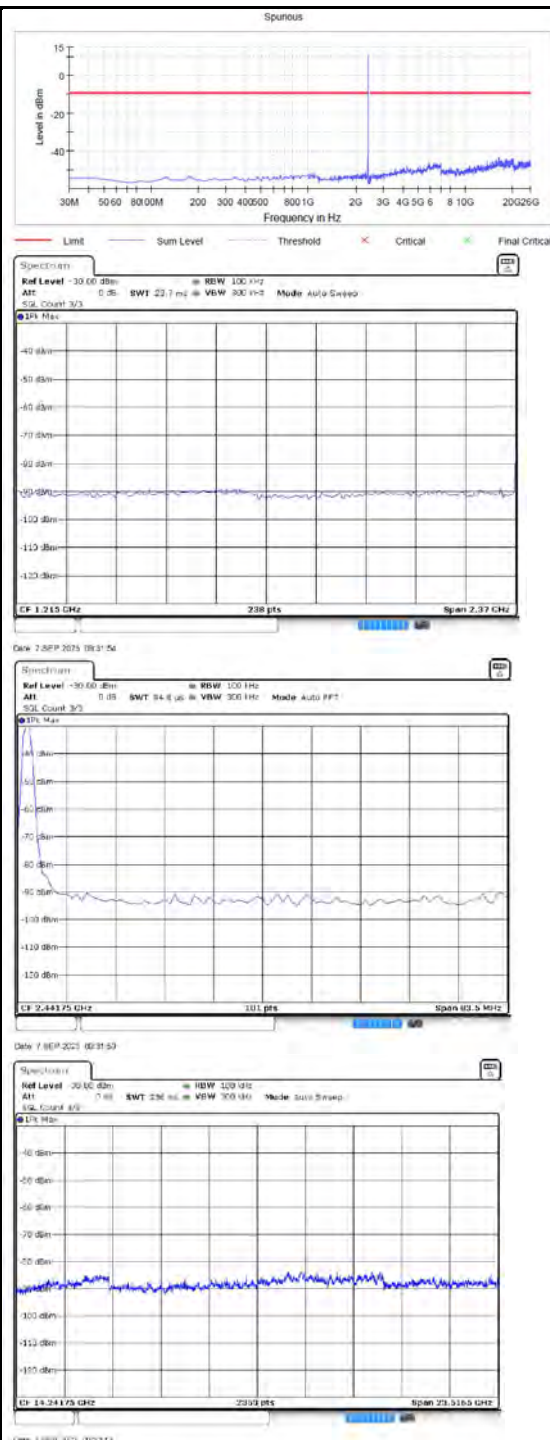
CH 0

Inband Peak

Frequency (MHz)	Level (dBm)
2402.066832	10.6

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2395.021008	-38.0	28.6	-9.4
16360.533680	-43.8	34.4	-9.4
19798.560030	-43.9	34.4	-9.4
19868.519868	-44.0	34.5	-9.4
16370.527943	-44.1	34.6	-9.4
18139.512431	-44.2	34.8	-9.4
20238.307586	-44.2	34.8	-9.4
16410.504994	-44.3	34.8	-9.4
16380.522206	-44.3	34.8	-9.4
16350.539418	-44.3	34.8	-9.4
25625.215151	-44.3	34.9	-9.4
16390.516468	-44.4	35.0	-9.4
20308.267425	-44.4	35.0	-9.4
15760.877922	-44.4	35.0	-9.4
16340.545155	-44.5	35.0	-9.4



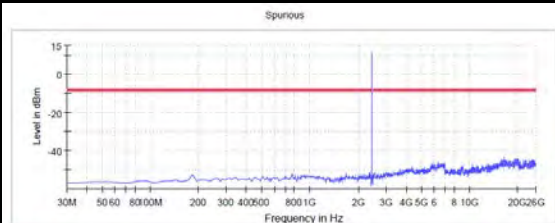
CH 19

Inband Peak

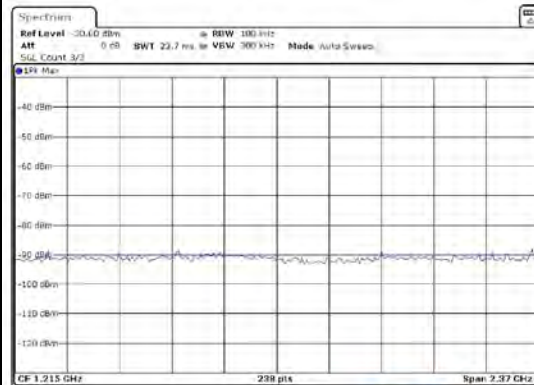
Frequency (MHz)	Level (dBm)
2440.096535	11.6

Pre Measurements

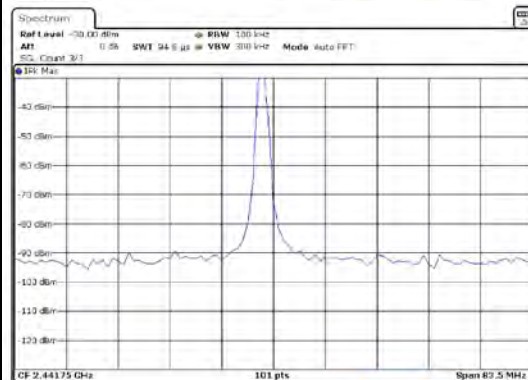
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
16400.510731	-43.3	34.9	-8.4
16370.527943	-43.8	35.4	-8.4
16510.447620	-43.9	35.5	-8.4
16520.441883	-43.9	35.5	-8.4
19218.892796	-44.1	35.7	-8.4
16380.522206	-44.2	35.8	-8.4
16390.516468	-44.4	36.0	-8.4
24515.851997	-44.4	36.0	-8.4
16410.504994	-44.4	36.0	-8.4
19828.542818	-44.5	36.1	-8.4
20128.370697	-44.7	36.3	-8.4
19488.737888	-44.7	36.3	-8.4
16460.476307	-44.7	36.3	-8.4
19478.743625	-44.7	36.3	-8.4
16740.315661	-44.8	36.4	-8.4



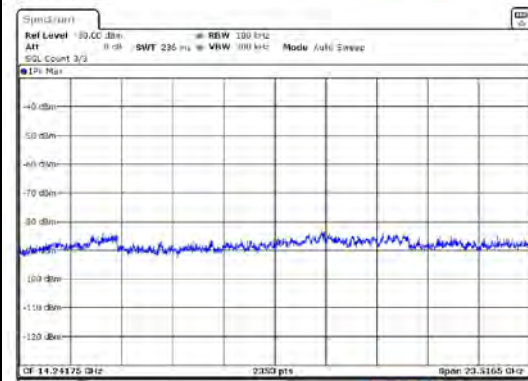
Limit Sum Level Threshold Critical Final Critical



Date: 7 SEP 2023 09:35:06



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Date: 7 SEP 2023 09:35:20

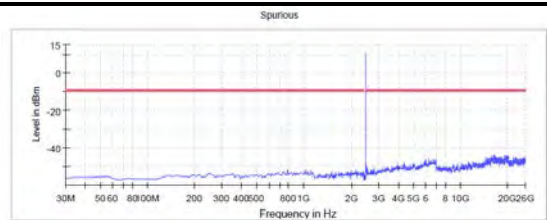
CH 39

Inband Peak

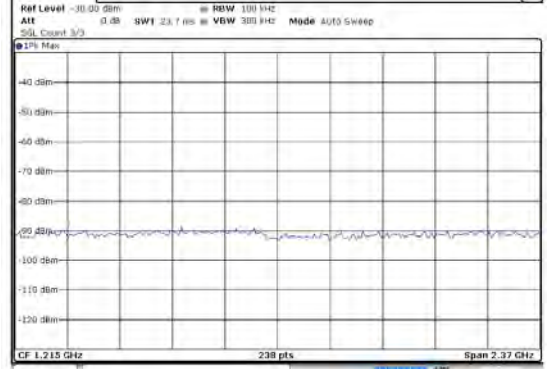
Frequency (MHz)	Level (dBm)
2479.779703	10.7

Pre Measurements

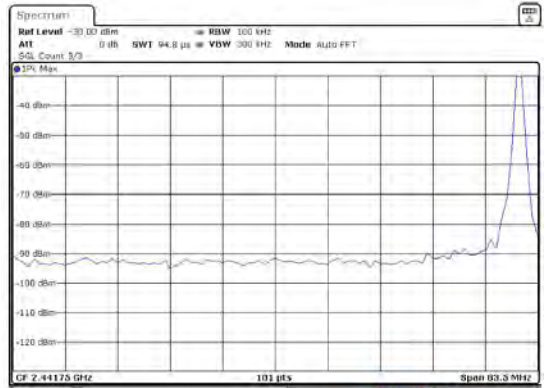
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
16400.510731	-43.4	34.0	-9.3
16380.522206	-43.4	34.0	-9.3
16370.527943	-43.7	34.3	-9.3
15760.877922	-44.0	34.7	-9.3
19828.542818	-44.1	34.8	-9.3
16500.453357	-44.1	34.8	-9.3
19138.938695	-44.1	34.8	-9.3
16430.493519	-44.2	34.9	-9.3
19158.927221	-44.3	35.0	-9.3
16410.504994	-44.3	35.0	-9.3
19188.910008	-44.3	35.0	-9.3
15820.843498	-44.4	35.0	-9.3
16440.487782	-44.4	35.1	-9.3
19468.749363	-44.5	35.1	-9.3
19718.605929	-44.6	35.2	-9.3



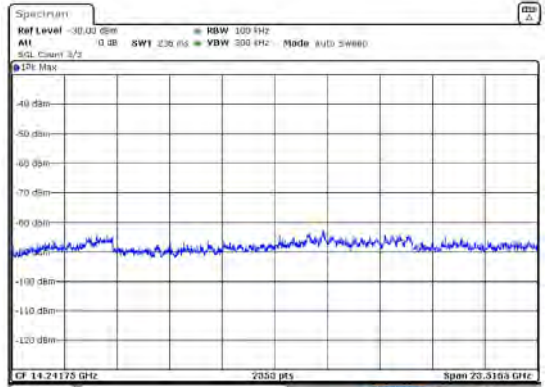
Legend: Limit (red line), Sum Level (blue line), Threshold (pink line), Critical (red X), Final Critical (green X).



Date: 7 SEP 2023 09:38:16



Date: 7 SEP 2023 09:39:21



Date: 7 SEP 2023 09:39:36

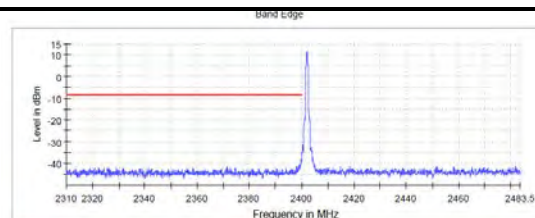
BLE (GFSK) 1Mbps Conducted Band-edge:

Test date: 9/7/2023

CH 0

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-37.1	28.4	-8.7	PASS
2399.625000	-38.2	29.5	-8.7	PASS
2399.675000	-38.2	29.6	-8.7	PASS
2399.775000	-38.4	29.7	-8.7	PASS
2399.825000	-38.6	29.9	-8.7	PASS
2399.725000	-38.7	30.1	-8.7	PASS
2399.525000	-38.9	30.2	-8.7	PASS
2399.575000	-39.0	30.3	-8.7	PASS
2399.925000	-39.1	30.4	-8.7	PASS
2399.875000	-39.6	30.9	-8.7	PASS
2399.475000	-39.7	31.0	-8.7	PASS
2398.975000	-40.2	31.5	-8.7	PASS
2399.275000	-40.7	32.0	-8.7	PASS
2398.925000	-40.8	32.1	-8.7	PASS
2399.325000	-40.9	32.2	-8.7	PASS



Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

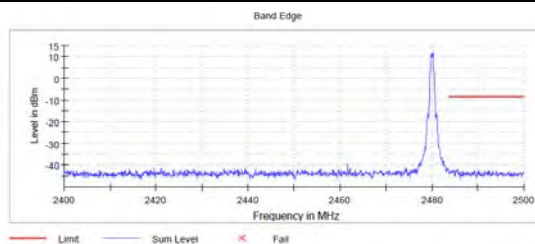
Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

CH 39

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2485.475000	-41.8	33.2	-8.6	PASS
2485.525000	-42.3	33.6	-8.6	PASS
2485.175000	-42.3	33.7	-8.6	PASS
2485.425000	-42.3	33.7	-8.6	PASS
2489.075000	-42.4	33.8	-8.6	PASS
2484.725000	-42.4	33.8	-8.6	PASS
2492.425000	-42.4	33.8	-8.6	PASS
2492.475000	-42.5	33.9	-8.6	PASS
2489.125000	-42.6	34.0	-8.6	PASS
2485.375000	-42.6	34.0	-8.6	PASS
2483.525000	-42.6	34.0	-8.6	PASS
2485.275000	-42.7	34.0	-8.6	PASS
2490.225000	-42.7	34.1	-8.6	PASS
2490.175000	-42.7	34.1	-8.6	PASS
2484.325000	-42.8	34.2	-8.6	PASS



Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.19 dB	0.50 dB

Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.48350 GHz	2.48350 GHz
Stop Frequency	2.50000 GHz	2.50000 GHz
Span	16.500 MHz	16.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
SweepTime	18.945 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

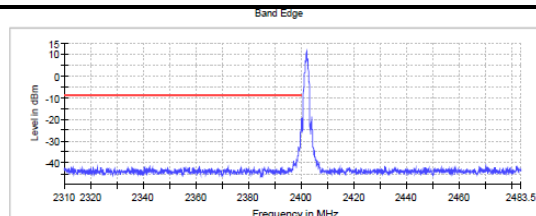
BLE (GFSK) 2Mbps Conducted Band-edge:

Test date: 9/7/2023

CH 0

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-19.4	10.6	-8.8	PASS
2399.925000	-20.1	11.3	-8.8	PASS
2399.875000	-23.1	14.3	-8.8	PASS
2399.825000	-25.0	16.2	-8.8	PASS
2399.775000	-26.0	17.2	-8.8	PASS
2399.725000	-27.8	19.0	-8.8	PASS
2399.675000	-30.1	21.3	-8.8	PASS
2399.525000	-32.0	23.2	-8.8	PASS
2399.575000	-32.1	23.3	-8.8	PASS
2399.625000	-32.2	23.4	-8.8	PASS
2399.475000	-32.6	23.8	-8.8	PASS
2398.975000	-32.6	23.8	-8.8	PASS
2399.025000	-32.7	23.9	-8.8	PASS
2398.925000	-33.1	24.3	-8.8	PASS
2399.075000	-33.1	24.3	-8.8	PASS



Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	8 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.39 dB	0.50 dB

Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.01 dB	0.50 dB