Backburner Labs Inc.

BAN-1

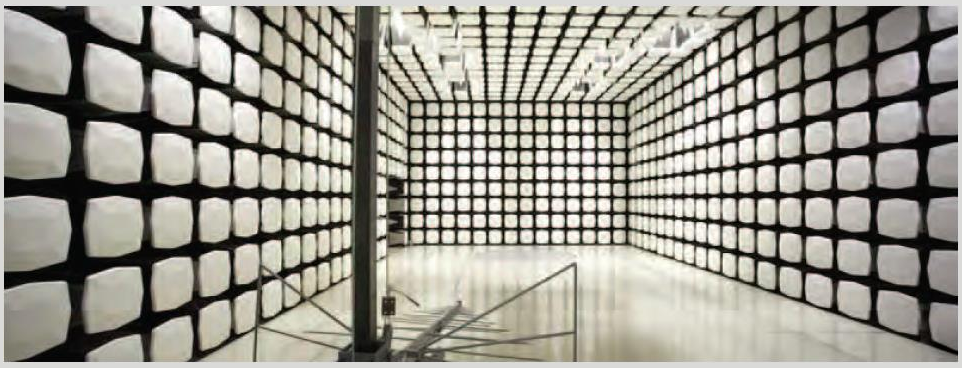
FCC 15.247:2024

RSS-247 Issue 3:2023

RSS-Gen Issue 5:2018+A1:2019+A2:2021

802.11 b SISO Radio

Report: BKBN0001.3 Rev. 1, Issue Date: October 29, 2024



CERT #3310.05

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element
2023.04.17

Section	Page Number

CERTIFICATE OF TEST

Last Date of Test: September 17, 2024
Backburner Labs Inc.
EUT: BAN-1

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	
RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Guidance

FCC KDB 558074 v05r02:2019
Notice 2021 - CEB0001

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	N/A	15.207	RSS-Gen 8.8	6.2	Not included for a C2PC to add a new antenna type
Duty Cycle	Eval	KDB 558074 -6.0	RSS-Gen 3.2	11.6	
DTS Bandwidth	Pass	15.247(a)(2), KDB 558074 -8.2	RSS-247 5.2(a)	11.8.2	
Occupied Bandwidth	Eval	KDB 558074 -2.1	RSS-Gen 6.7	6.9.3	
Output Power	Pass	15.247(b)(3), KDB 558074 -8.3.2	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.2.2.4	
Equivalent Isotropic Radiated Power (EIRP)	Pass	15.247(b)(3), KDB 558074 -8.3.2	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.2.2.4	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	RSS-247 5.2(b)	11.10.5	
Band Edge Compliance	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	RSS-247 5.5, RSS-Gen 6.13, 8.10	11.12.1, 11.13.2, 6.5, 6.6	

Deviations From Test Standards

None

Approved By:

Trevor Buls

Trevor Buls, Principal EMC Engineer
Signed for and on behalf of Element

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Corrected EUT name.	2024-10-29	1, 3, 11, 13, 14, 41, 43, 46
	Updated functional description and testing objective.	2024-10-29	11
	Update COT to reflect Pass for PSD, BED, and SCE.	2024-10-29	3

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

California Minnesota Oregon Texas Washington

FACILITIES

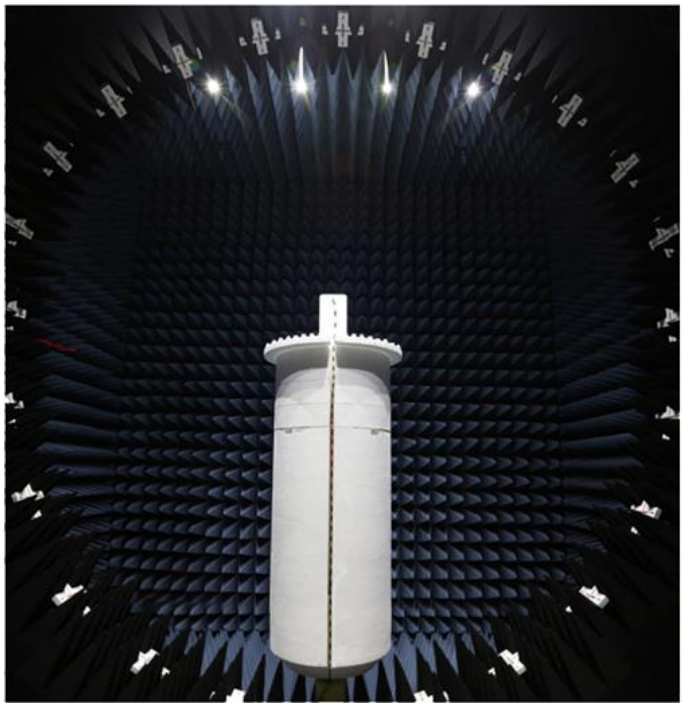
element
2024.08.21

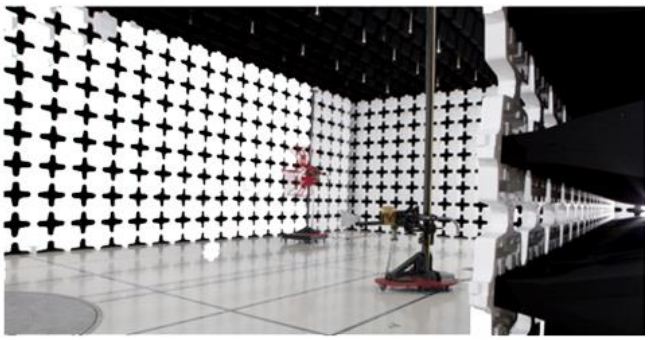
Testing was performed at the following location(s)

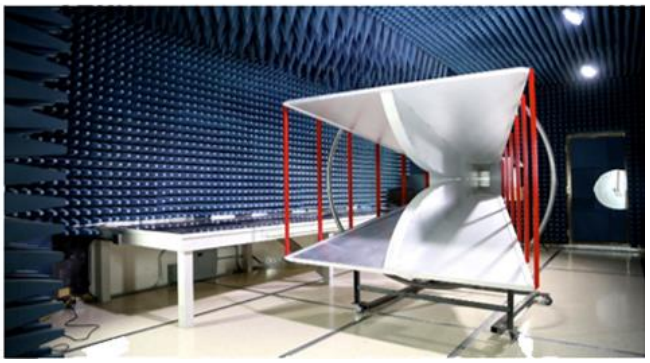
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB (6)	FDA (7)
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☒	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Plano Texas	PT01-15	1701 E Plano Pkwy, Ste 150 Plano, TX 75074 (972) 509-2566	214.19	32637	SL2-IN-E-057R	A-0426	US0054	N/A
☐	Texas	TX01-09	3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	3310.03	2834G	SL2-IN-E-1158R	N/A	US0191	TL-54
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

(1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
(2) A2LA Certificate No.
(3) ISED Company No.
(4) BSMI No.
(5) VCCI Site Filing No.
(6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
(7) FDA ASCA No.







MEASUREMENT UNCERTAINTY

element
MU 2023-09-21

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (k=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7

Field Strength Measurements (dB)

Range	MN05 (+/-)	MN09 (+/-)
10kHz-30MHz	1.8	1.8
30MHz-1GHz 3m	4.6	4.7
1GHz-6GHz	5.1	5.1
6GHz-40GHz	5.2	5.2

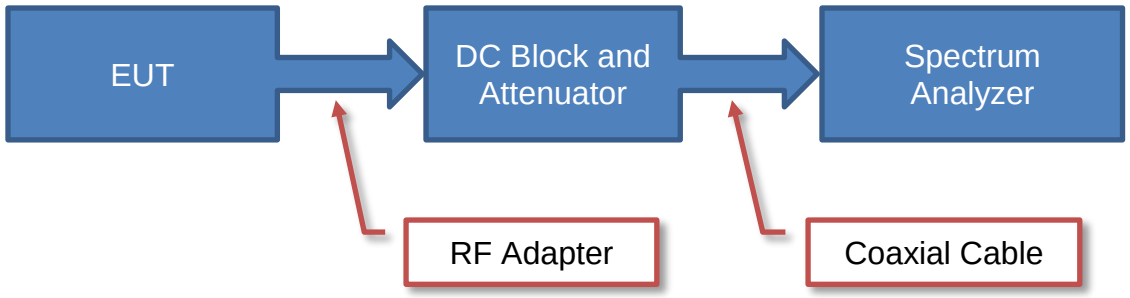
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

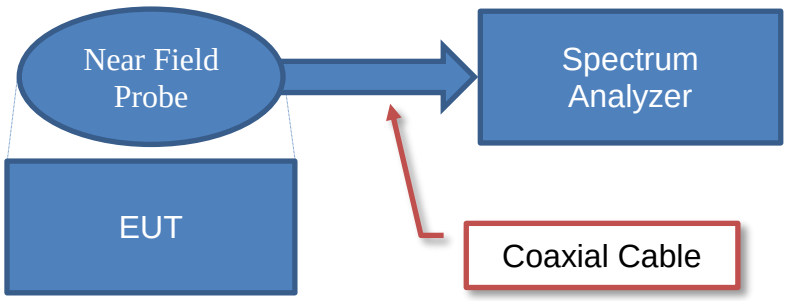
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

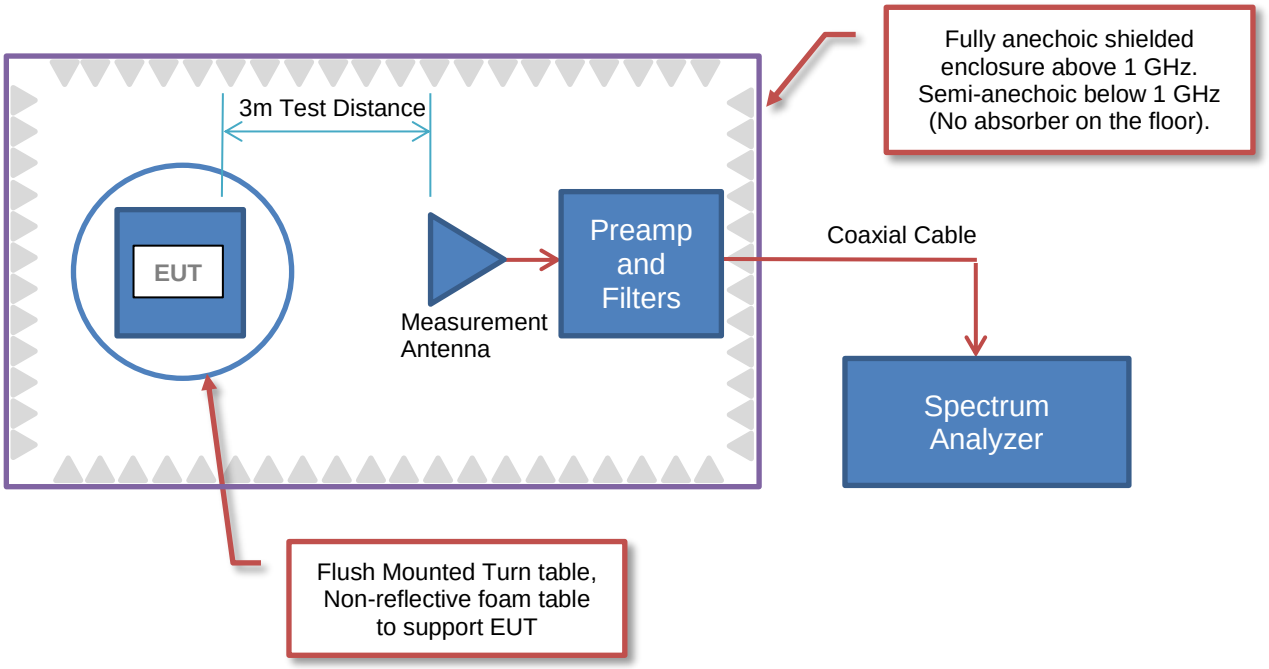


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

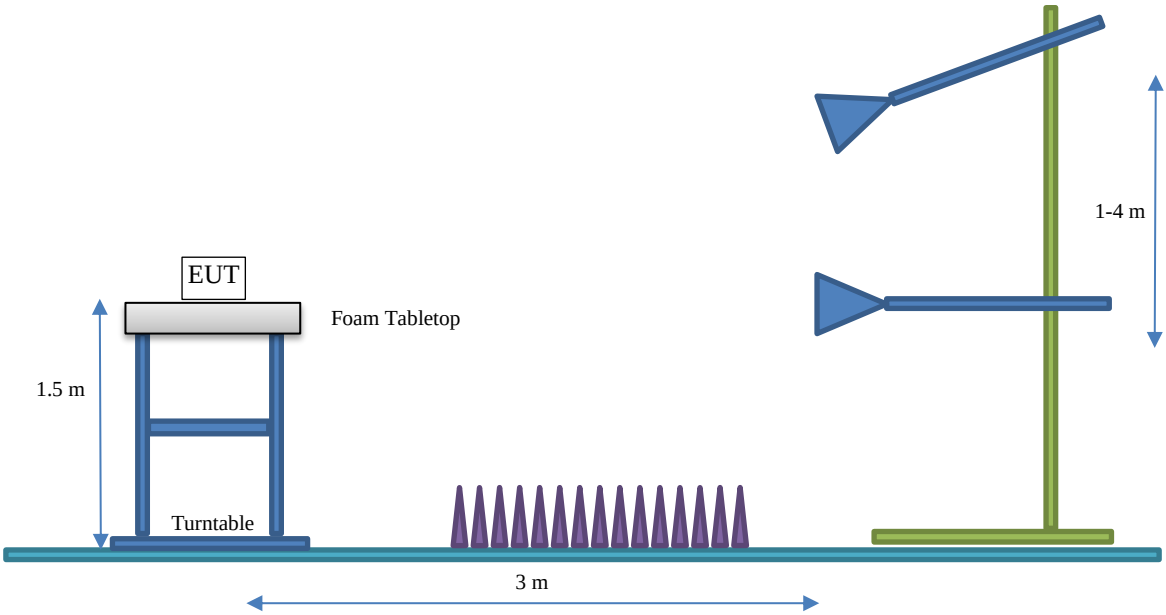
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (dBm ERP/EIRP)
10.0	+	6.0	-	2.15	=	**13.9/16.0**

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Backburner Labs Inc.
Address:	3040 Wilder Street N
City, State, Zip:	St. Paul, MN 55113
Test Requested By:	Tyler Perry
EUT:	BAN-1
First Date of Test:	August 8, 2024
Last Date of Test:	September 17, 2024
Receipt Date of Samples:	August 8, 2024
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The equipment is a 3-node system that is used for timing horse barrel racing at rodeos. Contains Wi-Fi/BT module FCC ID; 2BKES-BANRT-A and IC ID: 32926-BANRTA Wi-Fi radio has been reduced to limited subset of channels and datarates/modulation types. This limited subset includes channels 5, 6, 7, 8, and 9, using the 1 Mbps datarate only.

Testing Objective:
To demonstrate compliance of the 2.4 GHz DTS radio under FCC 15.247/RSS-247 for operation in the 2.4 GHz band.

POWER SETTINGS AND ANTENNAS

The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Taoglas FXP73 Flex PCB Antenna	Taoglas	2400-2483.5	5 dBi
TE Connectivity ANT-2.4-PML-UFL	TE Connectivity	2400-2483.5	2.4 dBi

The EUT was tested using the power settings provided by the manufacturer which were based upon:

☐ Test software settings
☒ Rated power settings

Test Software: ESP RF Test Tool v3.6

Firmware Version: ESP32-S3_RF_Test_bin_v110

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Channel Bandwidths (MHz)	20 MHz Channels	Channel Position*	Frequencies (MHz)	Power Setting (dBm)
1 Mbps (DBPSK)	20	5, 7, 9	Low, Mid, High	2432, 2442, 2452	18

CONFIGURATIONS

Configuration BKBN0001-4

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Taoglas FXP73.07.0100A	Taoglas	FXP73.07.01008	1
Wi-Fi and Bluetooth Module	Espressif Systems	BAN-1	MAC C0:4E:30:3E:C3:08

Peripherals in Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Li-Ion Battery	Jauch	LP906090LH	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Antenna Cable	No	0.1m	No	Taoglas FXP73.07.0100A (with board)	Board
Battery Cable	No	0.4 m	No	Battery	Board

Configuration BKBN0001-5

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
E Connectivity ANT-2.4-PML-UFL	TE Connectivity	2	1
Wi-Fi and Bluetooth Module	Espressif Systems	BAN-1	MAC C0:4E:30:3E:C3:08

Peripherals in Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Li-Ion Battery	Jauch	LP906090LH	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Antenna Cable	No	0.4m	No	E Connectivity ANT-2.4-PML-UFL	Board
Battery Cable	No	0.4 m	No	Battery	Board

CONFIGURATIONS

Configuration BKBN0001-8

Software/Firmware Running During Test	
Description	**Version**
See Power Settings	

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wi-Fi and Bluetooth Module	Espressif Systems	BAN-1	MAC C0:4E:30:3E:C3:08

Peripherals in Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Li-Ion Battery	Jauch	LP906090LH	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Inspiron	CGTKL24

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Battery Cable	No	0.4 m	No	Battery	Board
USB Cable (laptop)	Yes	1.5 m	No	Laptop	Board

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2024-08-19	Spurious Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2024-08-19	Band Edge Compliance	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2024-08-19	DTS Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2024-08-19	Duty Cycle	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2024-08-19	Occupied Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2024-08-19	Equivalent Isotropic Radiated Power (EIRP)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2024-08-19	Output Power	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2024-08-19	Power Spectral Density	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2024-09-17	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

element
2023/09/26

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.

DTS BANDWIDTH (6dB)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The EUT was set to the channels and modes listed in the datasheet.

The 6dB DTS bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

DTS BANDWIDTH (6dB)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.7°C
Attendees:	Tyler Perry	Relative Humidity:	57.8%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

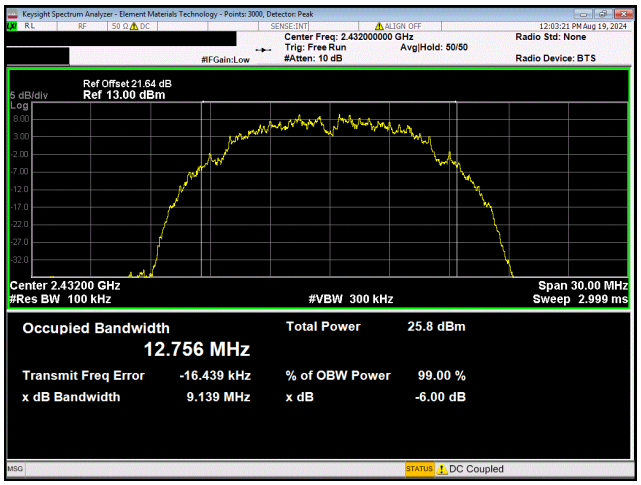
Tested By

TEST RESULTS

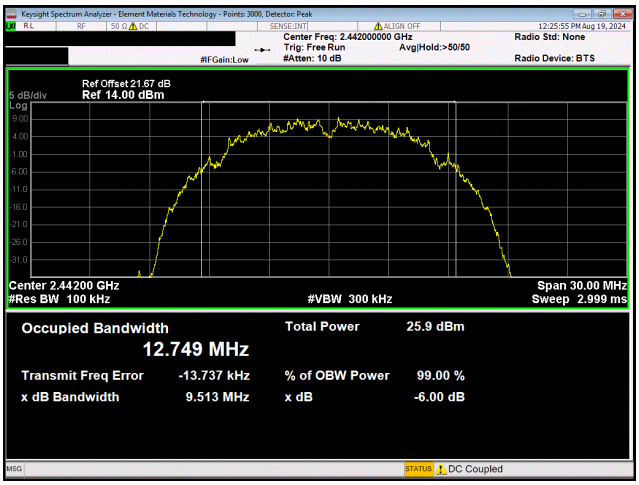
	Value	Limit (>)	Result
20 MHz BW			
Low Channel 5, 2432 MHz			
802.11(b) 1 Mbps	9.139 MHz	500 kHz	Pass
Mid Channel 7, 2442 MHz			
802.11(b) 1 Mbps	9.513 MHz	500 kHz	Pass
High Channel 9, 2452 MHz			
802.11(b) 1 Mbps	9.601 MHz	500 kHz	Pass

DTS BANDWIDTH (6dB)

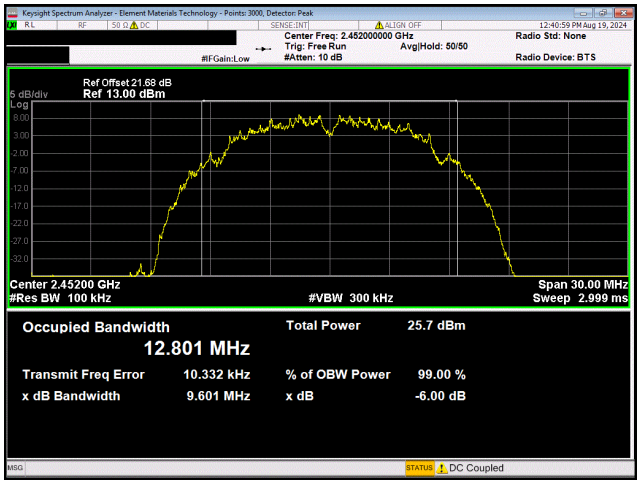
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

Per ANSI C63.10:2013, 6.9.3, the spectrum analyzer was configured as follows:

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.7°C
Attendees:	Tyler Perry	Relative Humidity:	58.3%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

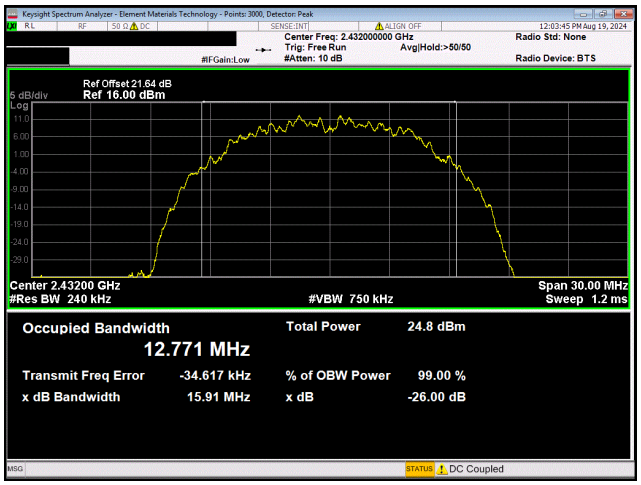
Tested By

TEST RESULTS

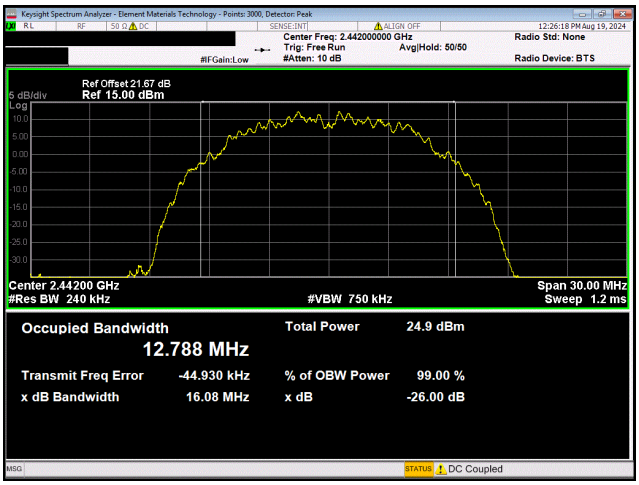
	Value	Limit	Result
20 MHz BW			
Low Channel 5, 2432 MHz			
802.11(b) 1 Mbps	12.771 MHz	N/A	N/A
Mid Channel 7, 2442 MHz			
802.11(b) 1 Mbps	12.788 MHz	N/A	N/A
High Channel 9, 2452 MHz			
802.11(b) 1 Mbps	12.773 MHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)

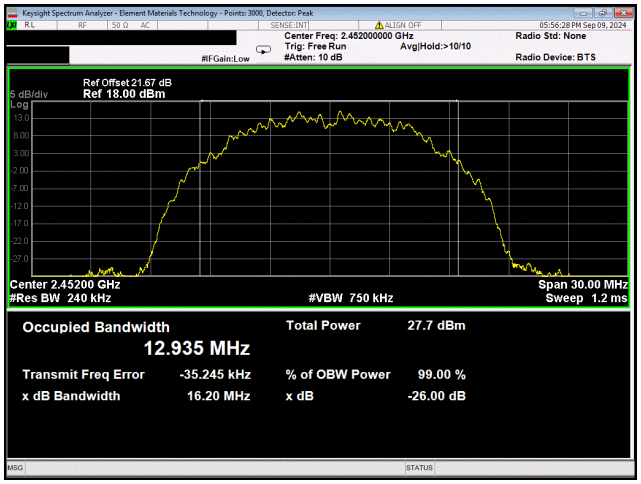
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

OUTPUT POWER

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

OUTPUT POWER

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.6°C
Attendees:	Tyler Perry	Relative Humidity:	58.3%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

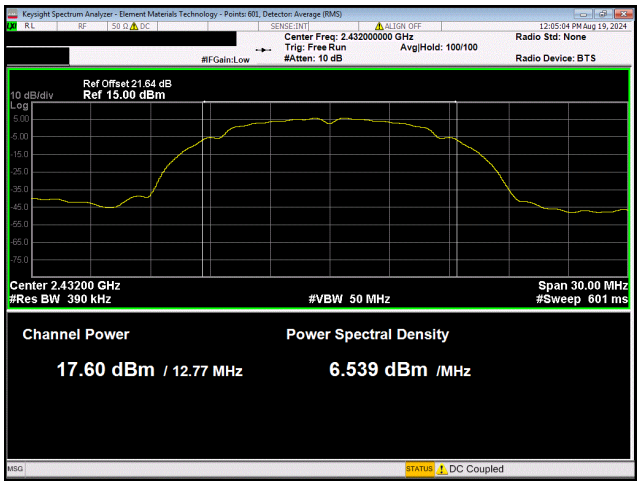
Pass

Tested By

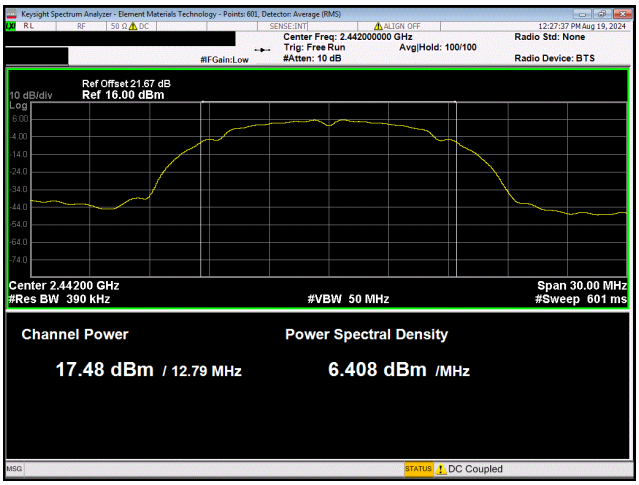
TEST RESULTS

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result
20 MHz BW					
Low Channel 5, 2432 MHz					
802.11(b) 1 Mbps	17.601	0	17.6	30	Pass
Mid Channel 7, 2442 MHz					
802.11(b) 1 Mbps	17.476	0	17.5	30	Pass
High Channel 9, 2452 MHz					
802.11(b) 1 Mbps	17.328	0	17.3	30	Pass

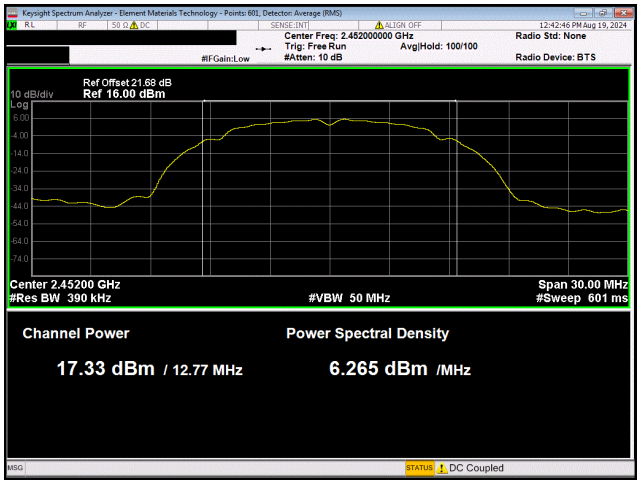
OUTPUT POWER



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.6°C
Attendees:	Tyler Perry	Relative Humidity:	58.4%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
20 MHz BW							
Low Channel 5, 2432 MHz							
802.11(b) 1 Mbps	17.601	0	17.6	5	22.6	36	Pass
Mid Channel 7, 2442 MHz							
802.11(b) 1 Mbps	17.476	0	17.5	5	22.5	36	Pass
High Channel 9, 2452 MHz							
802.11(b) 1 Mbps	17.328	0	17.3	5	22.3	36	Pass

POWER SPECTRAL DENSITY

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The power spectral density was measured using the channels and modes as called out in the following data sheets.

The method AVGPSD-2 in clause 11.10.5 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging and RMS detection across the ON and OFF times of the transmission. The analyzer was configured to the following settings:

Span = at least 1.5 * OBW
RBW = 100 kHz
VBW = 300 kHz
Detector = RMS
Sweep = 601 mS
Points = 601

The peak marker function was used to determine the maximum amplitude level. An additional [10*log(1 / D)], where D is the duty cycle was added to the peak marker to compute the average PSD during the actual transmission time. Per AVGPSD-2, if the measured value does not exceed the limit with a 100 kHz resolution bandwidth, the test is considered a pass.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

POWER SPECTRAL DENSITY

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.8°C
Attendees:	Tyler Perry	Relative Humidity:	59.3%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

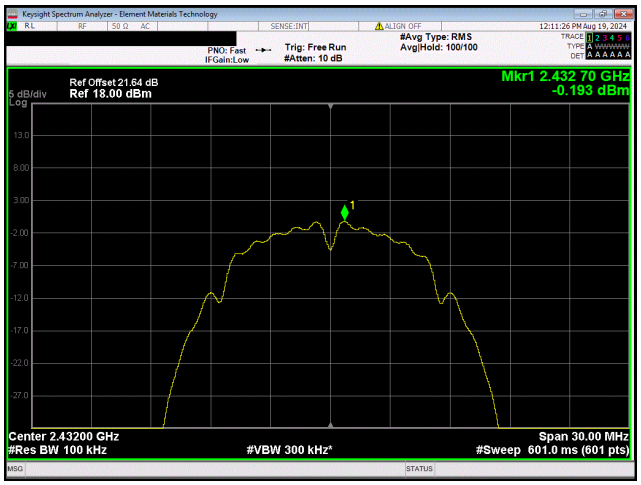
Tested By

TEST RESULTS

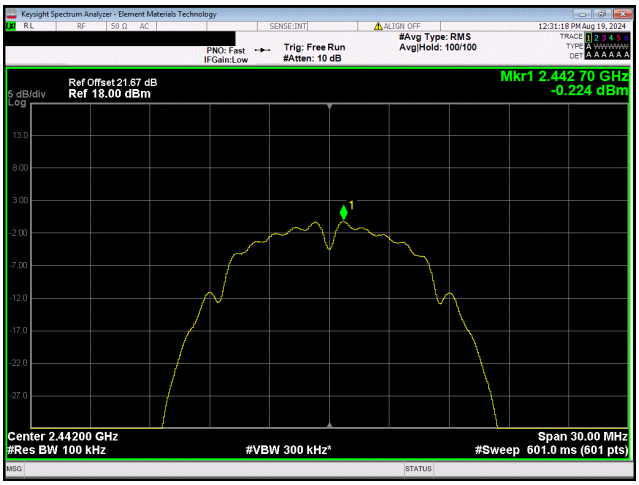
	Value dBm/100kHz		Duty Cycle Factor (dB)	Value dBm/100kHz	Limit ≤ (dBm/3kHz)	Results
20 MHz BW						
Low Channel 5, 2432 MHz						
802.11(b) 1 Mbps	-0.193		0	-0.193	8	Pass
Mid Channel 7, 2442 MHz						
802.11(b) 1 Mbps	-0.224		0	-0.224	8	Pass
High Channel 9, 2452 MHz						
802.11(b) 1 Mbps	-0.319		0	-0.319	8	Pass

POWER SPECTRAL DENSITY

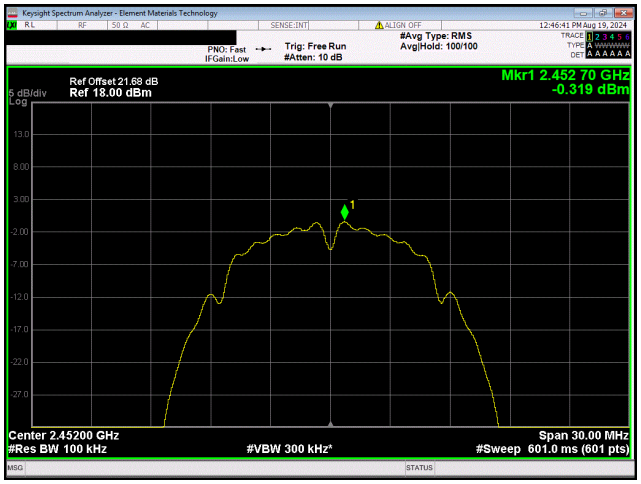
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

BAND EDGE COMPLIANCE

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge. The analyzer screen captures for this test show an example of the emission mask for the test mode also used during the radiated spurious emissions at the restricted band edges test.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

BAND EDGE COMPLIANCE

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.7°C
Attendees:	Tyler Perry	Relative Humidity:	58.8%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

Reference level offset includes measurement cable, attenuator, and DC block.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

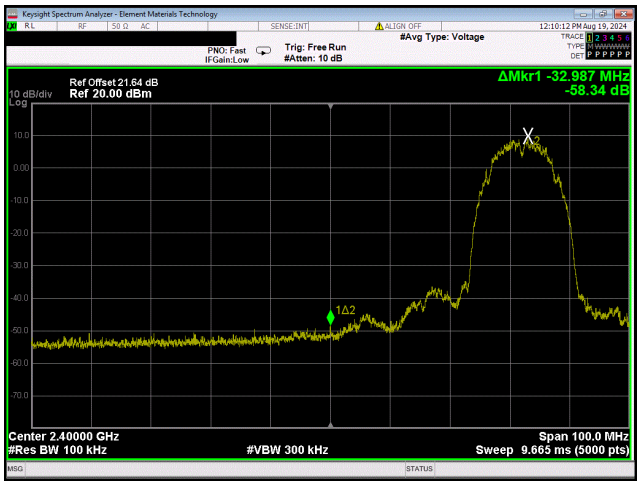
Tested By

TEST RESULTS

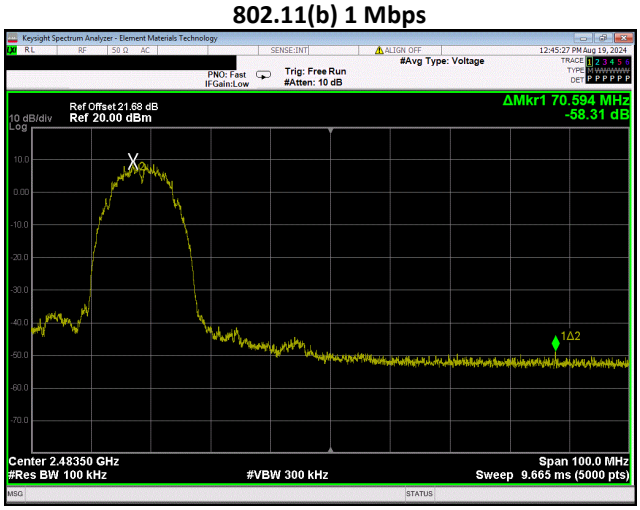
	Value (dBc)	Limit ≤ (dBc)	Result
20 MHz BW			
Low Channel 5, 2432 MHz			
802.11(b) 1 Mbps	-58.34	-30	Pass
High Channel 9, 2452 MHz			
802.11(b) 1 Mbps	-58.31	-30	Pass

BAND EDGE COMPLIANCE

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

SPURIOUS CONDUCTED EMISSIONS

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

The reference level offset for the fundamental screen capture was based on a measured value of the loss between the spectrum analyzer and the EUT which was verified at the time of test. The remaining screen capture(s) use an internal transducer factor on the analyzer to correct the displayed trace based on the cable loss over frequency. The reference level offset for the additional screen capture(s) is then based on the expected attenuator value and any other losses.

Fundamental Offset = Ref Lvl Offset showing measured composite factor of all losses

Remaining Screen capture(s) Offset = “Internal” cable loss factor not shown on screen capture + Ref Lvl Offset showing expected attenuator value and any other losses

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2024-05-22	2025-05-22
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Attenuator	Fairview Microwave	SA4014-20	AQI	2023-09-05	2024-09-05

SPURIOUS CONDUCTED EMISSIONS

element
TbtTx 2024.05.24.1
WTD.2024.01.16.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-19
Customer:	Back Burner Labs	Temperature:	21.6°C
Attendees:	Tyler Perry	Relative Humidity:	58.2%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	3.7VDC Battery	Configuration:	BKBN0001-8

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013
RSS-247 Issue 3:2023	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

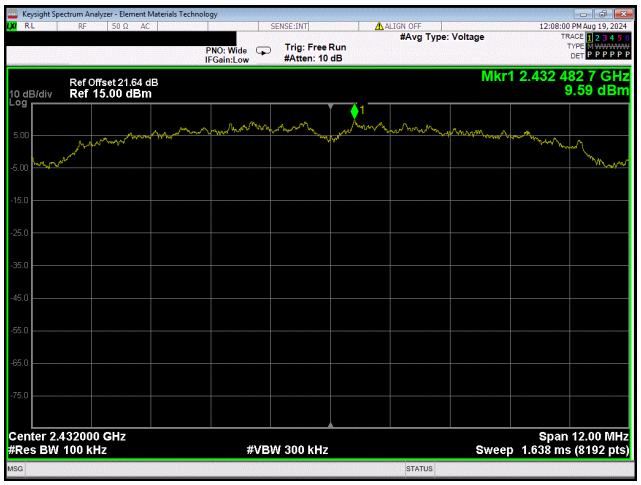
Tested By

TEST RESULTS

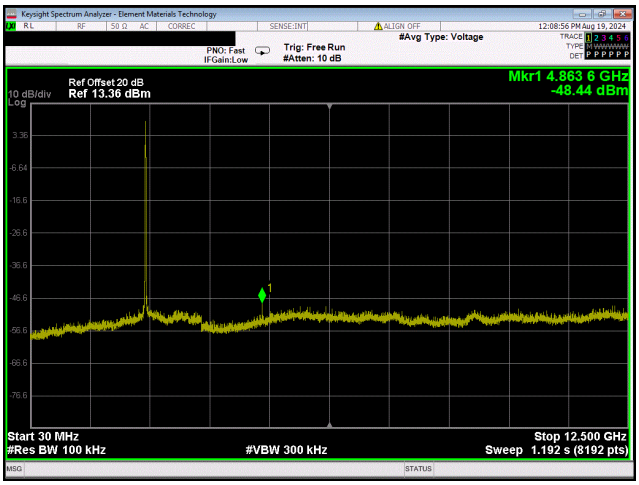
	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
20 MHz BW					
Low Channel 5, 2432 MHz					
802.11(b) 1 Mbps	Fundamental	2432.48	N/A	N/A	N/A
	30 MHz - 12.5 GHz	4863.63	-58.03	-30	Pass
	12.5 GHz - 25 GHz	24409.41	-46.52	-30	Pass
Mid Channel 7, 2442 MHz					
802.11(b) 1 Mbps	Fundamental	2442.49	N/A	N/A	N/A
	30 MHz - 12.5 GHz	6185.07	-58.72	-30	Pass
	12.5 GHz - 25 GHz	24945.06	-46.44	-30	Pass
High Channel 9, 2452 MHz					
802.11(b) 1 Mbps	Fundamental	2452.49	N/A	N/A	N/A
	30 MHz - 12.5 GHz	2572.41	-58.68	-30	Pass
	12.5 GHz - 25 GHz	24919.12	-46.71	-30	Pass

SPURIOUS CONDUCTED EMISSIONS

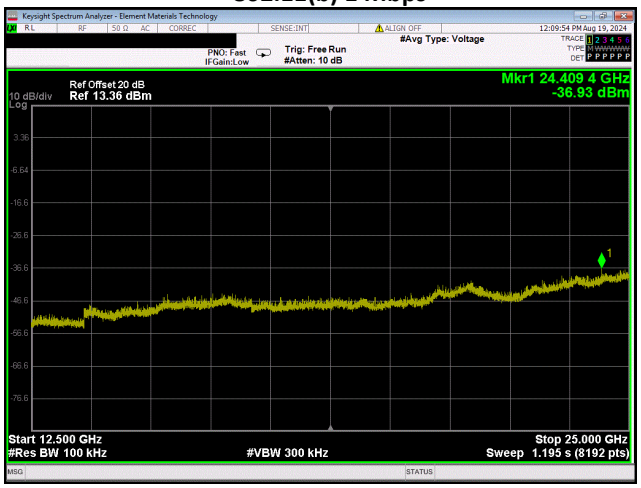
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



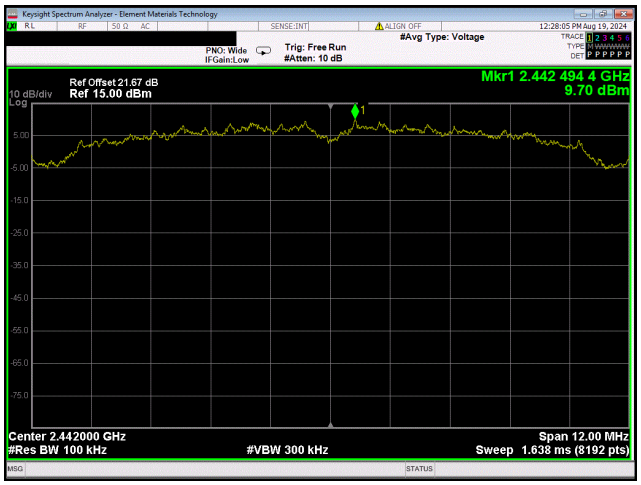
20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps



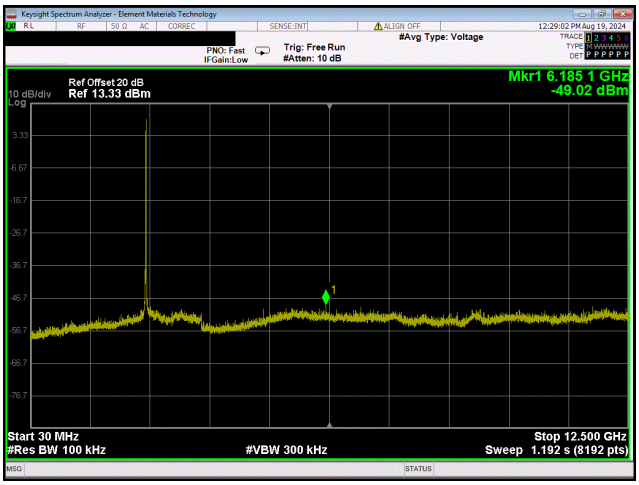
20 MHz BW
Low Channel 5, 2432 MHz
802.11(b) 1 Mbps

SPURIOUS CONDUCTED EMISSIONS

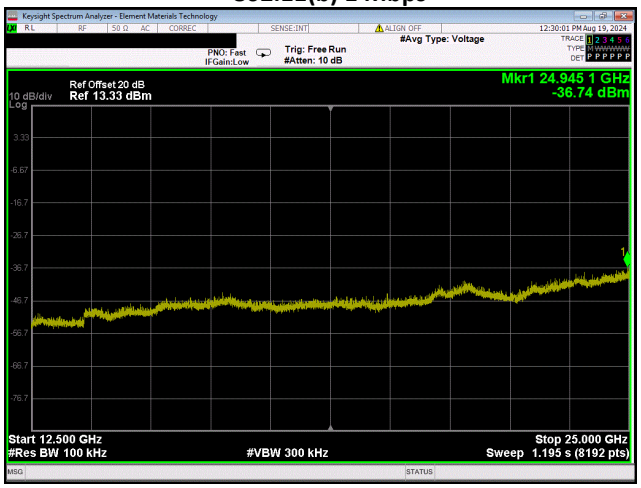
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



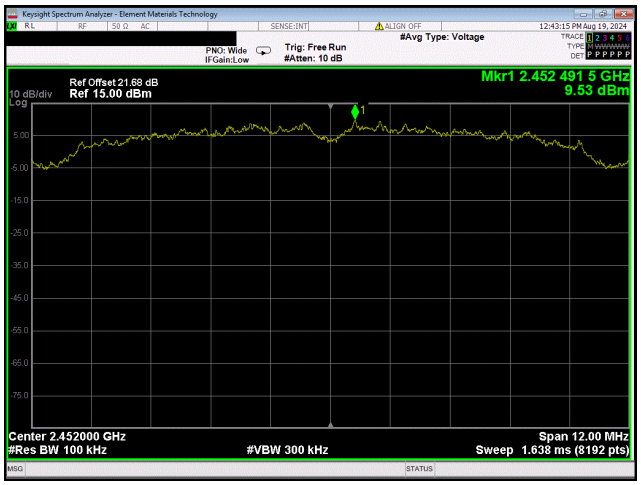
20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps



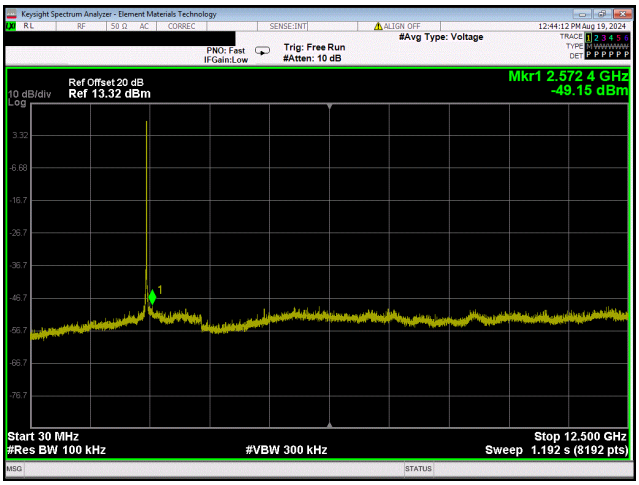
20 MHz BW
Mid Channel 7, 2442 MHz
802.11(b) 1 Mbps

SPURIOUS CONDUCTED EMISSIONS

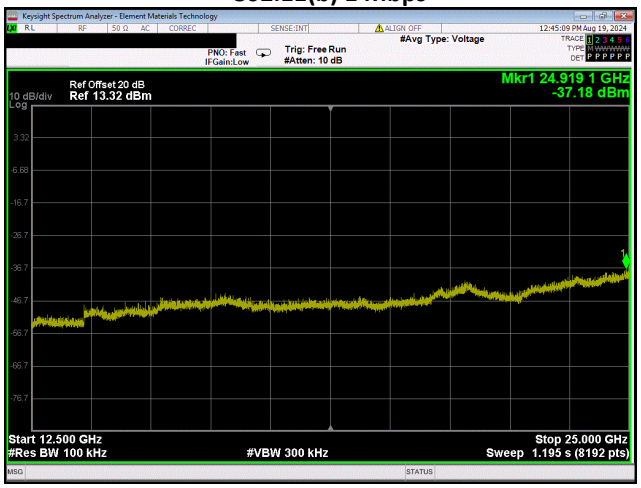
element
TbtTx 2024.05.24.1
WTD.2024.01.16.0



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps



20 MHz BW
High Channel 9, 2452 MHz
802.11(b) 1 Mbps

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*log(1/dc).

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Double Ridge	ETS Lindgren	3115	AJA	2023-09-06	2025-09-06
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2024-01-08	2025-01-08
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2024-01-08	2025-01-08
Attenuator	Fairview Microwave	SA18H-20	VAF	2023-09-11	2024-09-11
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2024-03-13	2025-03-13
Filter - High Pass	Micro-Tronics	HPM50111	LFN	2023-08-23	2024-08-23
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	NCR
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2024-01-28	2025-01-28
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2024-01-08	2025-01-08
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2024-01-08	2025-01-08
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2023-10-02	2025-10-02
Cable	ESM Cable Corp.	Bilog Cables	MNH	2023-10-08	2024-10-08
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2023-10-08	2024-10-08
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2023-08-23	2024-08-23
Antenna - Loop	ETS Lindgren	6502	AOB	2023-06-12	2025-06-12
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2023-09-05	2024-09-05

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2023-09-05	2024-09-05
Filter - High Pass	Micro-Tronics	HPM50111	HFM	2024-09-10	2025-09-10
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2024-01-30	2025-01-30
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	2024-01-30	2025-01-30
Antenna - Double Ridge	ETS Lindgren	3115	AJA	2023-09-06	2025-09-06
Antenna - Standard Gain	ETS-Lindgren	3160-07	AJJ	NCR	NCR
Amplifier - Pre-Amplifier	L-3 Narda-Miteq	AMF-6F-12001800-30-10P	PAP	2024-08-21	2025-08-21
Antenna - Standard Gain	ETS-Lindgren	3160-08	AJP	NCR	NCR
Cable	Element	Double Ridge Guide Horn Cables	MNV	2024-09-10	2025-09-10
Cable	Element	Standard Gain Cable	MNW	2024-09-10	2025-09-10

FREQUENCY RANGE INVESTIGATED

9 kHz TO 26500 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BKBN0001-4
BKBN0001-5

MODES INVESTIGATED

Transmitting WiFi Channels 5, 7 and 9 (2432, 2442 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle
Transmitting WiFi Channels 5, 9 (2432 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-08-09
Customer:	Back Burner Labs	Temperature:	21.7°C
Attendees:	Tyler Perry	Relative Humidity:	55.8%
Customer Project:	None	Bar. Pressure (PMSL):	1018 mb
Tested By:	Marcelo Aguayo	Job Site:	MN05
Power:	Battery	Configuration:	BKBN0001-5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	69	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

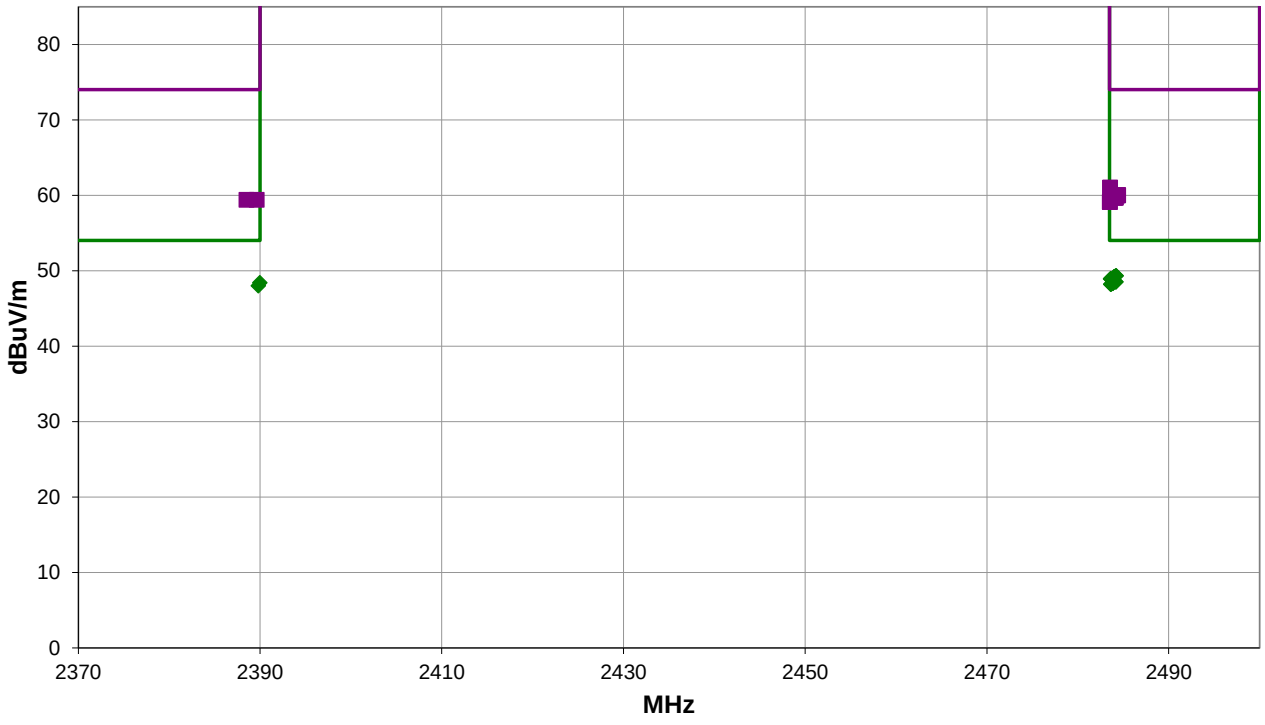
Antenna TE Connectivity ANT-2.4-PML-UFL. Power 18 dBm

EUT OPERATING MODES

Transmitting WiFi Channels 5, 9 (2432 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle

DEVIATIONS FROM TEST STANDARD

None



Run #: 69 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

RESULTS - Run #69

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.217	32.6	-3.3	1.5	178.9	3.0	20.0	Horz	AV	0.0	49.3	54.0	-4.7	EUT Horz, Ch 9 1 Mbps
2484.217	32.6	-3.3	1.5	178.9	3.0	20.0	Horz	AV	0.0	49.3	54.0	-4.7	EUT Horz, Ch 9 1 Mbps
2484.037	32.5	-3.3	1.5	157.9	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	EUT On Side, Ch 9 1 Mbps
2484.037	32.5	-3.3	1.5	157.9	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	EUT On Side, Ch 9 1 Mbps
2483.610	32.2	-3.3	3.1	224.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1	EUT Vert, Ch 9 1 Mbps
2483.610	32.2	-3.3	3.1	224.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1	EUT Vert, Ch 9 1 Mbps
2484.187	31.8	-3.3	3.4	63.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	EUT Horz, Ch 9 1 Mbps
2484.187	31.8	-3.3	3.4	63.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	EUT Horz, Ch 9 1 Mbps
2389.990	32.3	-3.9	1.5	360.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	EUT Horz, Ch 5 1 Mbps
2483.860	31.6	-3.3	3.7	276.9	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Vert, Ch 9 1 Mbps
2483.860	31.6	-3.3	3.7	276.9	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Vert, Ch 9 1 Mbps
2483.657	31.5	-3.3	1.5	344.9	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, Ch 9 1 Mbps
2483.657	31.5	-3.3	1.5	344.9	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, Ch 9 1 Mbps
2389.823	31.9	-3.9	1.5	69.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Horz, Ch 5 1 Mbps
2483.543	44.3	-3.3	1.5	178.9	3.0	20.0	Horz	PK	0.0	61.0	74.0	-13.0	EUT Horz, Ch 9 1 Mbps
2483.543	44.3	-3.3	1.5	178.9	3.0	20.0	Horz	PK	0.0	61.0	74.0	-13.0	EUT Horz, Ch 9 1 Mbps
2484.377	43.3	-3.3	3.1	224.0	3.0	20.0	Vert	PK	0.0	60.0	74.0	-14.0	EUT Vert, Ch 9 1 Mbps
2484.430	43.3	-3.3	1.5	157.9	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	EUT On Side, Ch 9 1 Mbps
2484.377	43.3	-3.3	3.1	224.0	3.0	20.0	Vert	PK	0.0	60.0	74.0	-14.0	EUT Vert, Ch 9 1 Mbps
2484.430	43.3	-3.3	1.5	157.9	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	EUT On Side, Ch 9 1 Mbps
2484.047	43.0	-3.3	1.5	344.9	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT On Side, Ch 9 1 Mbps
2484.170	43.0	-3.3	3.4	63.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Horz, Ch 9 1 Mbps
2484.047	43.0	-3.3	1.5	344.9	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT On Side, Ch 9 1 Mbps
2484.170	43.0	-3.3	3.4	63.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Horz, Ch 9 1 Mbps
2388.493	43.3	-3.9	1.5	69.0	3.0	20.0	Horz	PK	0.0	59.4	74.0	-14.6	EUT Horz, Ch 5 1 Mbps
2389.640	43.3	-3.9	1.5	360.0	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	EUT Horz, Ch 5 1 Mbps
2483.537	42.4	-3.3	3.7	276.9	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Vert, Ch 9 1 Mbps
2483.537	42.4	-3.3	3.7	276.9	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Vert, Ch 9 1 Mbps

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-09-17
Customer:	Back Burner Labs	Temperature:	22.3°C
Attendees:	Tyler Perry	Relative Humidity:	0.557%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Marcelo Aguayo, Arnauld Dedry	Job Site:	MN05
Power:	Battery	Configuration:	BKBN0001-5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	57	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

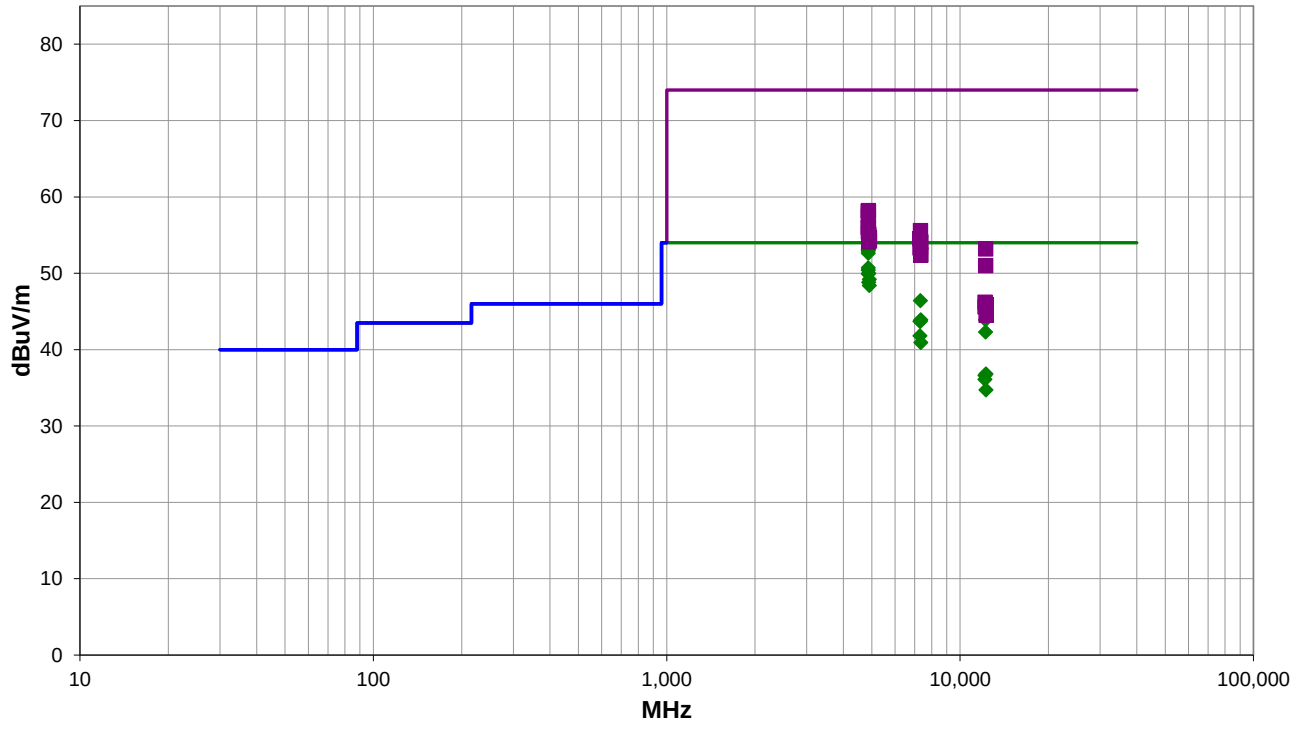
Antenna TE Connectivity ANT-2.4-PML-UFL. Power 18 dBm

EUT OPERATING MODES

Transmitting WiFi Channels 5, 7 and 9 (2432, 2442 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle

DEVIATIONS FROM TEST STANDARD

None



Run #: 57 PK AV QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

RESULTS - Run #57

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4863.940	47.9	5.2	2.8	243.9	3.0	0.0	Horz	AV	0.0	53.1	54.0	-0.9	EUT Horz, Ch 5 1 Mbps
4863.990	47.7	5.2	1.0	275.0	3.0	0.0	Horz	AV	0.0	52.9	54.0	-1.1	EUT On Side, Ch 5 1 Mbps
4863.977	47.4	5.2	2.9	29.0	3.0	0.0	Vert	AV	0.0	52.6	54.0	-1.4	EUT Horz, Ch 5 1 Mbps
4863.990	45.5	5.2	3.1	333.0	3.0	0.0	Horz	AV	0.0	50.7	54.0	-3.3	EUT Vert, Ch 5 1 Mbps
4863.973	45.2	5.2	1.5	171.9	3.0	0.0	Vert	AV	0.0	50.4	54.0	-3.6	EUT On Side, Ch 5 1 Mbps
4883.958	44.7	5.3	2.4	45.9	3.0	0.0	Horz	AV	0.0	50.0	54.0	-4.0	Ch 7, EUT Horz
4863.983	44.7	5.2	1.4	171.9	3.0	0.0	Vert	AV	0.0	49.9	54.0	-4.1	EUT Vert, Ch 5 1 Mbps
4903.930	44.0	5.2	2.3	330.9	3.0	0.0	Horz	AV	0.0	49.2	54.0	-4.8	EUT On Side, Ch 9 1Mbps
4883.950	43.5	5.3	1.5	186.9	3.0	0.0	Vert	AV	0.0	48.8	54.0	-5.2	Ch 7, Eut Vert
4903.953	43.2	5.2	1.5	337.9	3.0	0.0	Vert	AV	0.0	48.4	54.0	-5.6	EUT On Side, Ch 9 1Mbps
7325.017	33.8	12.6	1.9	354.0	3.0	0.0	Vert	AV	0.0	46.4	54.0	-7.6	Ch 7, Eut Vert
7355.017	31.3	12.6	3.6	157.9	3.0	0.0	Vert	AV	0.0	43.9	54.0	-10.1	EUT On Side, Ch 9 1Mbps
12210.590	44.7	-0.8	1.5	29.0	3.0	0.0	Vert	AV	0.0	43.9	54.0	-10.1	Ch 7, EUT Vert
7296.833	31.2	12.5	2.5	160.0	3.0	0.0	Vert	AV	0.0	43.7	54.0	-10.3	EUT On Side, Ch 5 1 Mbps
7324.825	31.1	12.6	3.1	335.0	3.0	0.0	Horz	AV	0.0	43.7	54.0	-10.3	Ch 7, EUT Horz
12209.220	43.1	-0.8	1.6	346.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	CH 7, EUT Horz
7296.153	29.3	12.5	1.5	333.0	3.0	0.0	Horz	AV	0.0	41.8	54.0	-12.2	EUT On Side, Ch 5 1 Mbps
7355.240	28.3	12.6	1.5	207.9	3.0	0.0	Horz	AV	0.0	40.9	54.0	-13.1	EUT On Side, Ch 9 1Mbps
4863.933	53.0	5.2	1.0	275.0	3.0	0.0	Horz	PK	0.0	58.2	74.0	-15.8	EUT On Side, Ch 5 1 Mbps
4863.970	52.9	5.2	2.8	243.9	3.0	0.0	Horz	PK	0.0	58.1	74.0	-15.9	EUT Horz, Ch 5 1 Mbps
4864.090	52.3	5.2	2.9	29.0	3.0	0.0	Vert	PK	0.0	57.5	74.0	-16.5	EUT Horz, Ch 5 1 Mbps
12259.290	37.4	-0.6	2.9	109.0	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	EUT On Side, Ch 9 1Mbps
12160.460	37.8	-1.2	1.9	128.9	3.0	0.0	Horz	AV	0.0	36.6	54.0	-17.4	EUT On Side, Ch 5 1 Mbps
12160.670	37.3	-1.2	3.3	124.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT On Side, Ch 5 1 Mbps
4863.943	50.8	5.2	3.1	333.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	EUT Vert, Ch 5 1 Mbps
4863.800	50.8	5.2	1.5	171.9	3.0	0.0	Vert	PK	0.0	56.0	74.0	-18.0	EUT Vert, Ch 5 1 Mbps
7325.758	43.0	12.6	1.9	354.0	3.0	0.0	Vert	PK	0.0	55.6	74.0	-18.4	Ch 7, Eut Vert
4864.153	50.2	5.2	1.4	171.9	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	EUT On Side, Ch 5 1 Mbps
4883.892	49.8	5.3	2.4	45.9	3.0	0.0	Horz	PK	0.0	55.1	74.0	-18.9	Ch 7, EUT Horz
4903.820	49.5	5.2	2.3	330.9	3.0	0.0	Horz	PK	0.0	54.7	74.0	-19.3	EUT On Side, Ch 9 1Mbps
12259.100	35.3	-0.6	1.8	142.0	3.0	0.0	Vert	AV	0.0	34.7	54.0	-19.3	EUT On Side, Ch 9 1Mbps
7295.200	42.0	12.5	2.5	160.0	3.0	0.0	Vert	PK	0.0	54.5	74.0	-19.5	EUT On Side, Ch 5 1 Mbps
4904.107	49.1	5.2	1.5	337.9	3.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	EUT On Side, Ch 9 1Mbps
7356.083	41.5	12.6	3.6	157.9	3.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	EUT On Side, Ch 9 1Mbps
4883.942	48.8	5.3	1.5	186.9	3.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	Ch 7, Eut Vert
7325.392	40.8	12.6	3.1	335.0	3.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	Ch 7, EUT Horz
7295.550	40.8	12.5	1.5	333.0	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	EUT On Side, Ch 5 1 Mbps
12209.830	54.0	-0.8	1.5	29.0	3.0	0.0	Vert	PK	0.0	53.2	74.0	-20.8	Ch 7, EUT Vert
7355.080	39.8	12.6	1.5	207.9	3.0	0.0	Horz	PK	0.0	52.4	74.0	-21.6	EUT On Side, Ch 9 1Mbps
12209.890	51.8	-0.8	1.6	346.0	3.0	0.0	Horz	PK	0.0	51.0	74.0	-23.0	CH 7, EUT Horz

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12159.500	47.4	-1.2	3.3	124.0	3.0	0.0	Vert	PK	0.0	46.2	74.0	-27.8	EUT On Side, Ch 5 1 Mbps
12259.690	46.5	-0.6	2.9	109.0	3.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	EUT On Side, Ch 9 1Mbps
12159.300	46.8	-1.2	1.9	128.9	3.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	EUT On Side, Ch 5 1 Mbps
12259.890	45.1	-0.6	1.8	142.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5	EUT On Side, Ch 9 1Mbps

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-09-17
Customer:	Back Burner Labs	Temperature:	22.3°C
Attendees:	Tyler Perry	Relative Humidity:	0.557%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Arnauld Dedry	Job Site:	MN05
Power:	Battery	Configuration:	BKBN0001-4

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	210	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

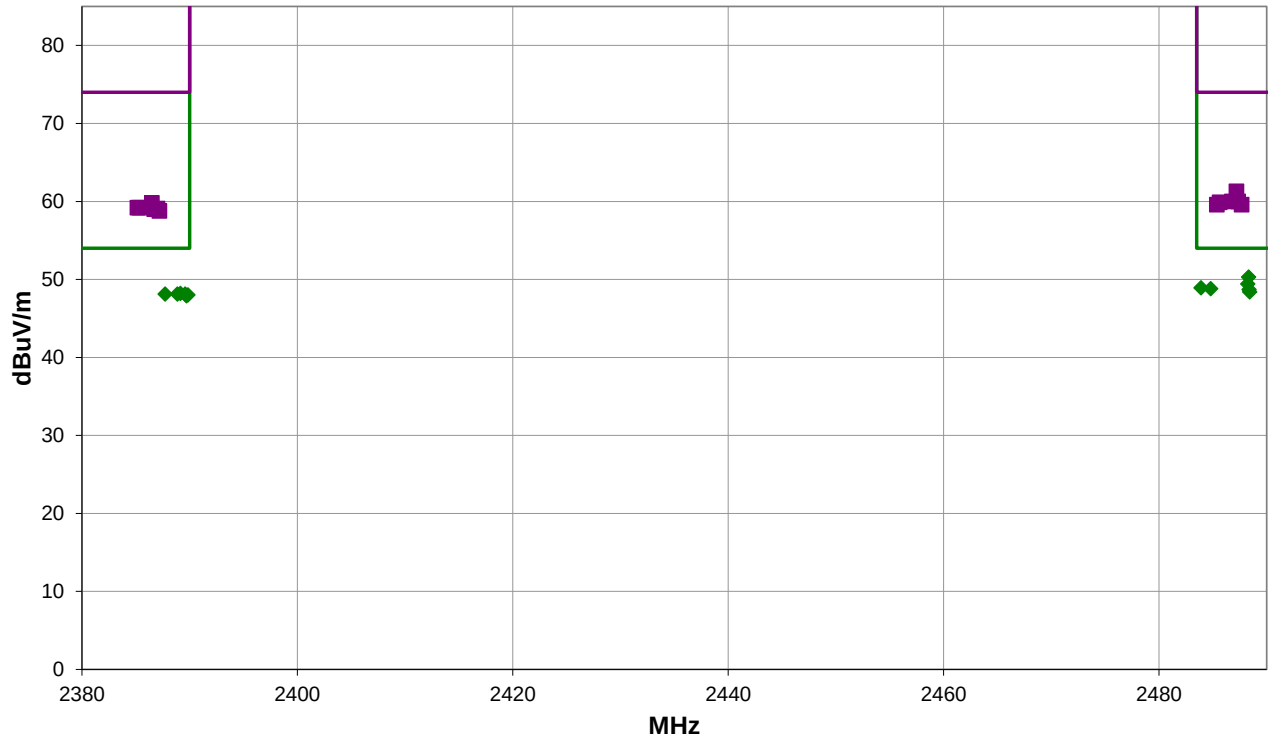
100% Duty Cycle, Taoglas Antenna

EUT OPERATING MODES

Transmitting WiFi Channels 5, 9 (2432 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle

DEVIATIONS FROM TEST STANDARD

None



Run #: 210 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

RESULTS - Run #210

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2488.325	33.6	-3.3	2.7	222.9	3.0	20.0	Horz	AV	0.0	50.3	54.0	-3.7	Ch 9, EUT Horz
2488.250	32.7	-3.3	3.4	44.0	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	Ch 9, EUT On Side
2483.908	32.2	-3.3	1.3	220.0	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	Ch 9, EUT Vert
2484.817	32.1	-3.3	1.5	66.0	3.0	20.0	Vert	AV	0.0	48.8	54.0	-5.2	Ch 9, EUT Vert
2488.375	32.0	-3.3	1.5	26.0	3.0	20.0	Vert	AV	0.0	48.7	54.0	-5.3	Ch 9, EUT Horz
2488.433	31.7	-3.3	1.5	102.9	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	Ch 9, EUT On Side
2389.150	32.2	-4.0	1.5	70.9	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	CH 5, EUT Horz
2389.592	32.1	-4.0	2.5	145.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	CH 5, EUT Vert
2388.867	32.1	-4.0	1.3	264.9	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	CH 5, EUT Vert
2387.725	32.1	-4.0	1.5	308.9	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	CH 5, EUT on side
2389.850	32.0	-4.0	1.5	37.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	CH 5, EUT on side
2389.708	31.9	-4.0	1.5	296.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	CH 5, EUT Horz
2487.200	44.6	-3.3	2.7	222.9	3.0	20.0	Horz	PK	0.0	61.3	74.0	-12.7	Ch 9, EUT Horz
2487.358	43.3	-3.3	3.4	44.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	Ch 9, EUT On Side
2486.767	43.3	-3.3	1.3	220.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	Ch 9, EUT Vert
2485.642	43.2	-3.3	1.5	66.0	3.0	20.0	Vert	PK	0.0	59.9	74.0	-14.1	Ch 9, EUT Vert
2386.492	43.8	-4.0	2.5	145.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	CH 5, EUT Vert
2487.683	42.9	-3.3	1.5	26.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	Ch 9, EUT Horz
2485.375	42.9	-3.3	1.5	102.9	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	Ch 9, EUT On Side
2385.358	43.2	-4.0	1.5	70.9	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	CH 5, EUT Horz
2385.142	43.2	-4.0	1.5	308.9	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	CH 5, EUT on side
2387.000	43.1	-4.0	1.5	37.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	CH 5, EUT on side
2386.708	43.0	-4.0	1.3	264.9	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	CH 5, EUT Vert
2387.192	42.8	-4.0	1.5	296.0	3.0	20.0	Vert	PK	0.0	58.8	74.0	-15.2	CH 5, EUT Horz

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

EUT:	BAN-1	Work Order:	BKBN0001
Serial Number:	MAC C0:4E:30:3E:C3:08	Date:	2024-09-17
Customer:	Back Burner Labs	Temperature:	22.3°C
Attendees:	Tyler Perry	Relative Humidity:	0.557%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Arnauld Dedry	Job Site:	MN05, MN09
Power:	Battery	Configuration:	BKBN0001-4

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	203	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

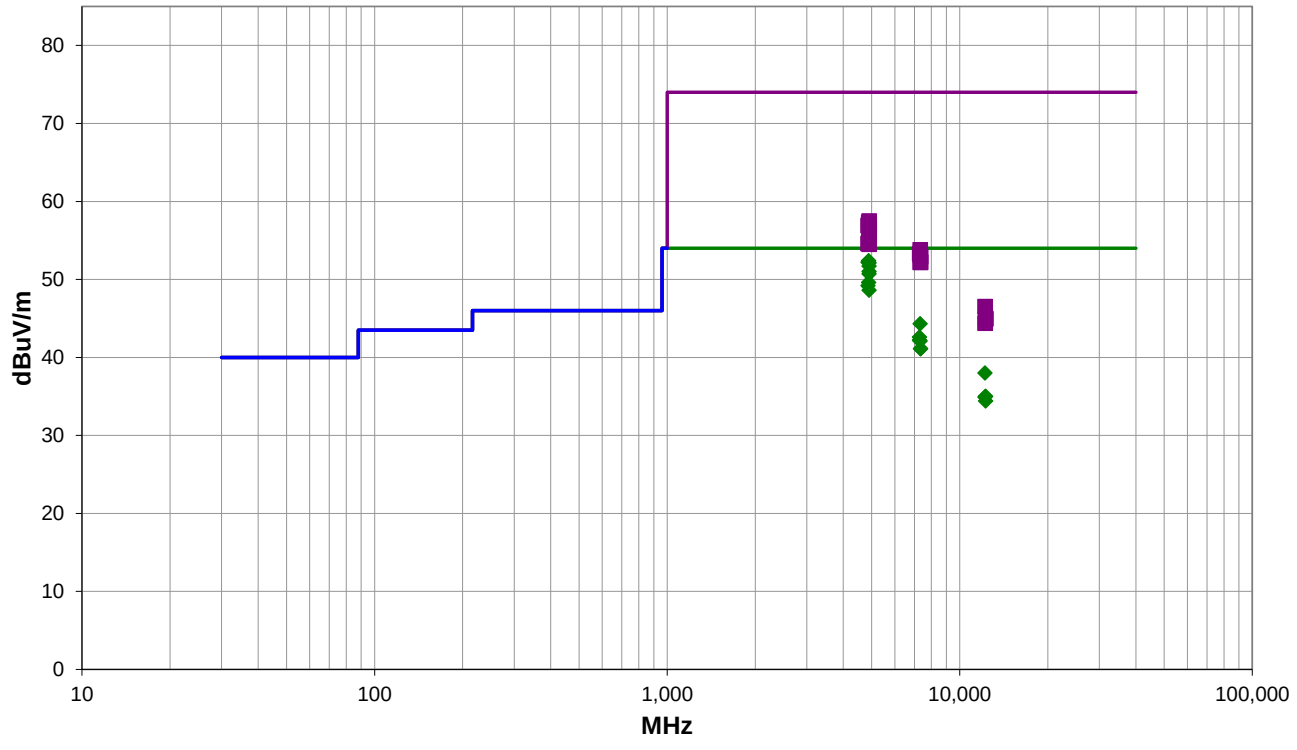
100% Duty Cycle, Taoglas Antenna

EUT OPERATING MODES

Transmitting WiFi Channels 5, 7 and 9 (2432, 2442 and 2452 MHz) 1 Mbps, 20 MHz BW. 100% duty cycle

DEVIATIONS FROM TEST STANDARD

None



Run #: 203 PK AV QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

RESULTS - Run #203

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4883.942	47.1	5.3	1.5	189.0	3.0	0.0	Horz	AV	0.0	52.4	54.0	-1.6	Ch 7, EUT On Side
4863.967	46.9	5.3	3.26	289.0	3.0	0.0	Horz	AV	0.0	52.2	54.0	-1.8	CH 5, EUT Vert
4903.958	46.6	5.5	2.18	205.0	3.0	0.0	Horz	AV	0.0	52.1	54.0	-1.9	EUT Vert, Ch 9, 1 Mbps
4903.958	46.2	5.5	1.36	57.0	3.0	0.0	Vert	AV	0.0	51.7	54.0	-2.3	EUT Vert, Ch 9, 1 Mbps
4903.975	45.5	5.5	1.5	78.0	3.0	0.0	Horz	AV	0.0	51.0	54.0	-3.0	EUT Horz, Ch 9, 1 Mbps
4903.958	45.2	5.5	1.5	62.0	3.0	0.0	Horz	AV	0.0	50.7	54.0	-3.3	EUT On Side, Ch 9, 1 Mbps
4883.975	44.3	5.3	2.2	167.9	3.0	0.0	Vert	AV	0.0	49.6	54.0	-4.4	Ch 7, EUT On Side
4863.975	43.9	5.3	3.83	254.9	3.0	0.0	Vert	AV	0.0	49.2	54.0	-4.8	CH 5, EUT Vert
4903.992	43.1	5.5	1.5	176.0	3.0	0.0	Vert	AV	0.0	48.6	54.0	-5.4	EUT On Side, Ch 9, 1 Mbps
7324.825	31.7	12.6	2.2	166.0	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	Ch 7, EUT On Side
7295.025	30.1	12.5	3.36	128.9	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	CH 5, EUT Vert
7294.800	29.7	12.5	1.5	152.0	3.0	0.0	Vert	AV	0.0	42.2	54.0	-11.8	CH 5, EUT Vert
7324.117	29.5	12.6	1.8	41.9	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9	Ch 7, EUT On Side
7357.117	28.5	12.6	1.5	12.0	3.0	0.0	Horz	AV	0.0	41.1	54.0	-12.9	EUT Vert, Ch 9, 1 Mbps
7354.075	28.5	12.6	1.5	236.0	3.0	0.0	Vert	AV	0.0	41.1	54.0	-12.9	EUT Vert, Ch 9, 1 Mbps
12209.190	38.8	-0.8	1.6	195.0	3.0	0.0	Horz	AV	0.0	38.0	54.0	-16.0	Ch 7, EUT On Side
4904.042	52.0	5.5	2.18	205.0	3.0	0.0	Horz	PK	0.0	57.5	74.0	-16.5	EUT Vert, Ch 9, 1 Mbps
4883.850	52.0	5.3	1.5	189.0	3.0	0.0	Horz	PK	0.0	57.3	74.0	-16.7	Ch 7, EUT On Side
4863.875	51.6	5.3	3.26	289.0	3.0	0.0	Horz	PK	0.0	56.9	74.0	-17.1	CH 5, EUT Vert
4903.967	51.4	5.5	1.36	57.0	3.0	0.0	Vert	PK	0.0	56.9	74.0	-17.1	EUT Vert, Ch 9, 1 Mbps
4904.008	50.9	5.5	1.5	78.0	3.0	0.0	Horz	PK	0.0	56.4	74.0	-17.6	EUT Horz, Ch 9, 1 Mbps
4903.867	50.4	5.5	1.5	62.0	3.0	0.0	Horz	PK	0.0	55.9	74.0	-18.1	EUT On Side, Ch 9, 1 Mbps
12260.530	34.3	0.7	1.76	232.0	3.0	0.0	Horz	AV	0.0	35.0	54.0	-19.0	EUT Vert, Ch 9, 1 Mbps
12209.080	35.7	-0.8	1.8	178.0	3.0	0.0	Vert	AV	0.0	34.9	54.0	-19.1	Ch 7, EUT On Side
4884.008	49.4	5.3	2.2	167.9	3.0	0.0	Vert	PK	0.0	54.7	74.0	-19.3	Ch 7, EUT On Side
4863.917	49.3	5.3	3.83	254.9	3.0	0.0	Vert	PK	0.0	54.6	74.0	-19.4	CH 5, EUT Vert
4903.983	49.0	5.5	1.5	176.0	3.0	0.0	Vert	PK	0.0	54.5	74.0	-19.5	EUT On Side, Ch 9, 1 Mbps
12260.550	33.7	0.7	2.59	184.0	3.0	0.0	Vert	AV	0.0	34.4	54.0	-19.6	EUT Vert, Ch 9, 1 Mbps
7328.250	41.2	12.6	2.2	166.0	3.0	0.0	Horz	PK	0.0	53.8	74.0	-20.2	Ch 7, EUT On Side
7298.500	40.8	12.5	3.36	128.9	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	CH 5, EUT Vert
7296.808	40.8	12.5	1.5	152.0	3.0	0.0	Vert	PK	0.0	53.3	74.0	-20.7	CH 5, EUT Vert
7353.792	40.3	12.6	1.5	236.0	3.0	0.0	Vert	PK	0.0	52.9	74.0	-21.1	EUT Vert, Ch 9, 1 Mbps
7358.150	39.6	12.6	1.5	12.0	3.0	0.0	Horz	PK	0.0	52.2	74.0	-21.8	EUT Vert, Ch 9, 1 Mbps
7327.192	39.6	12.6	1.8	41.9	3.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	Ch 7, EUT On Side
12210.180	47.3	-0.8	1.6	195.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	Ch 7, EUT On Side
12260.250	44.3	0.7	2.59	184.0	3.0	0.0	Vert	PK	0.0	45.0	74.0	-29.0	EUT Vert, Ch 9, 1 Mbps
12260.120	44.2	0.7	1.76	232.0	3.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	EUT Vert, Ch 9, 1 Mbps
12208.310	45.2	-0.8	1.8	178.0	3.0	0.0	Vert	PK	0.0	44.4	74.0	-29.6	Ch 7, EUT On Side

CONCLUSION

SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

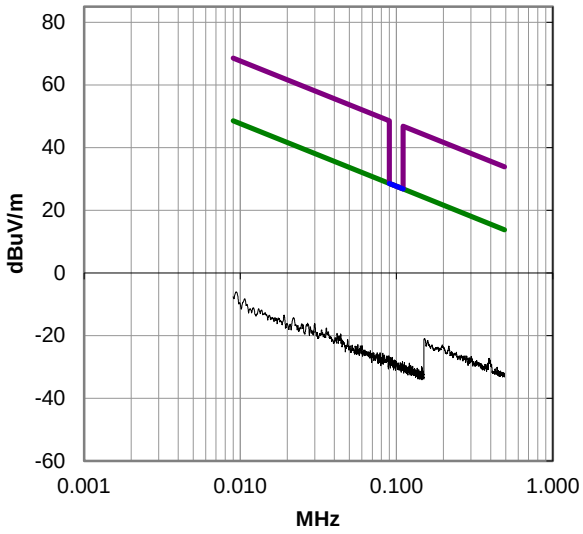
element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

PRESCAN DATA

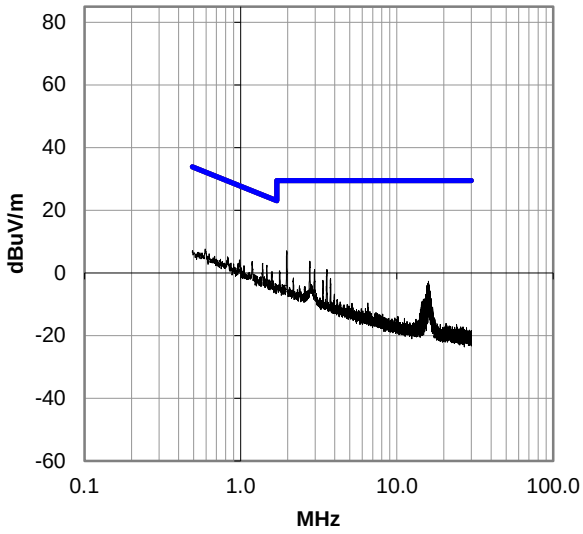
Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

Taoglas Antenna

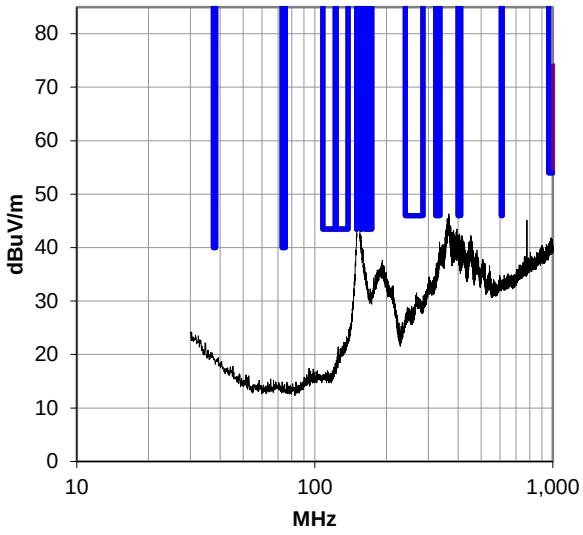
0.009-0.49 MHz, Run 77



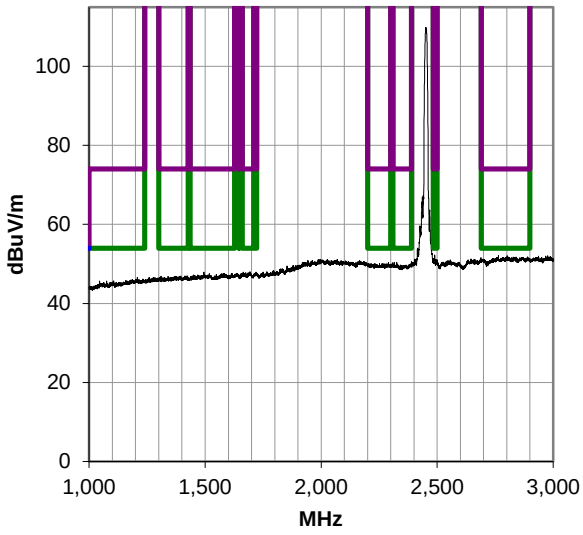
0.49-30 MHz, Run 78



30-1000 MHz, Run 76



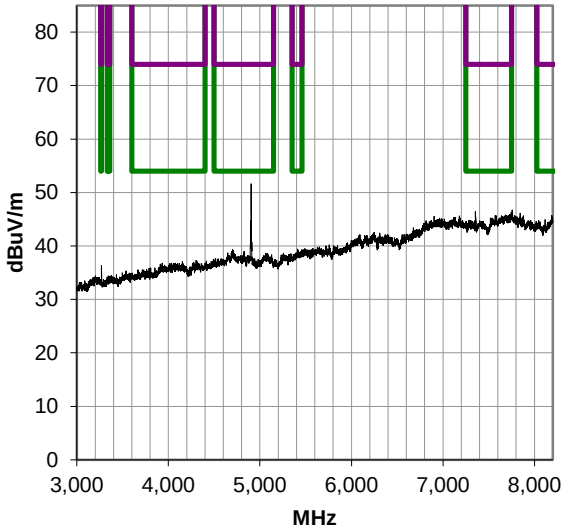
1000-3000 MHz, Run 42



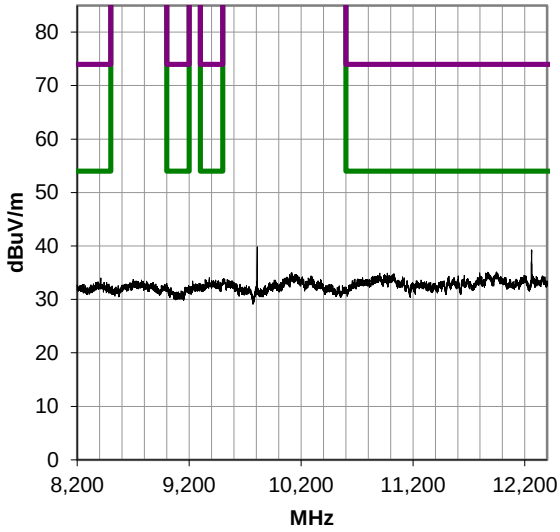
SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

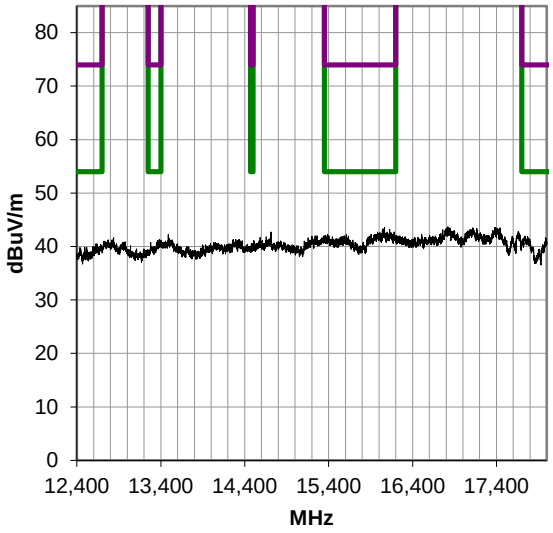
3000-8200 MHz, Run 43



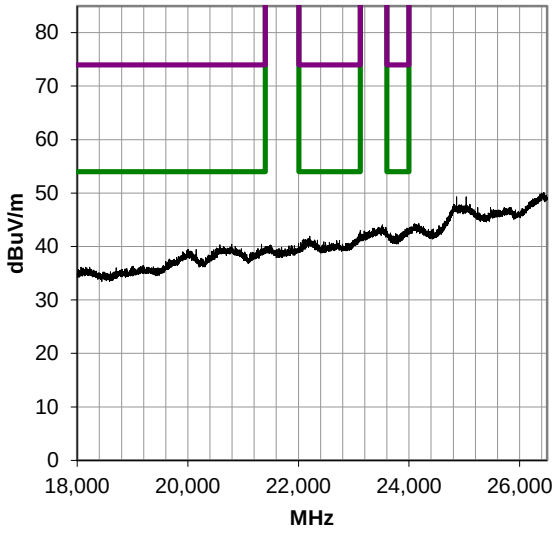
8200-12400 MHz, Run 44



12400-18000 MHz, Run 45



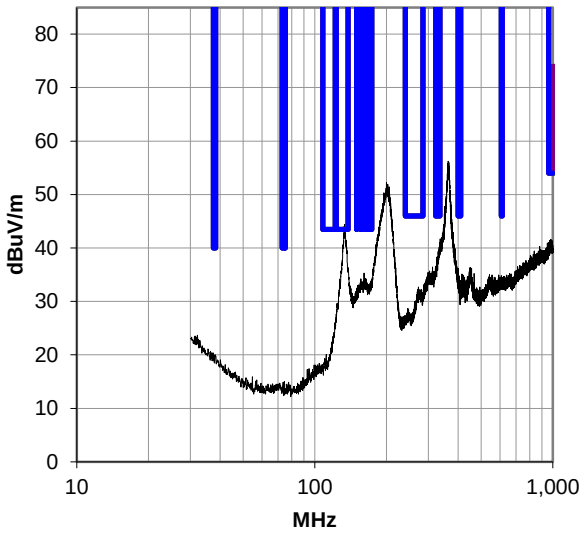
18000-26500 MHz, Run 88



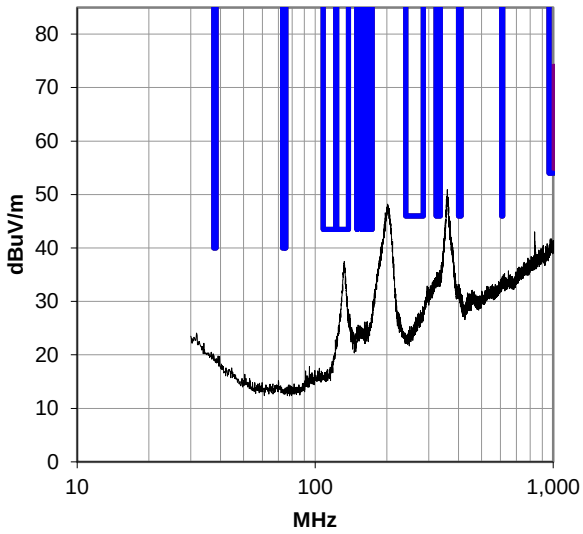
SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

30-1000 MHz, Run 74



30-1000 MHz, Radio Off

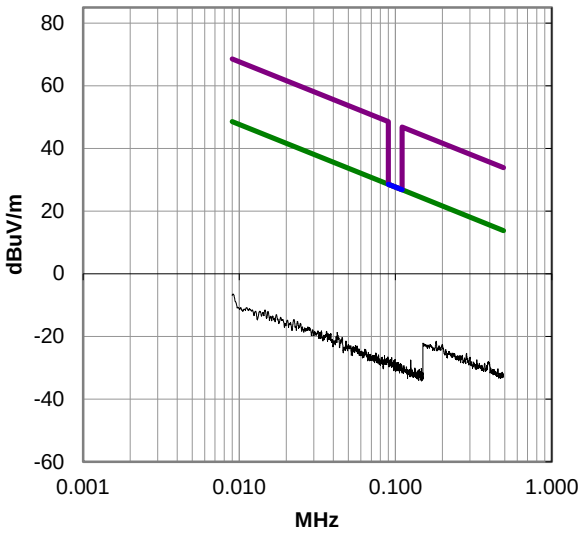


SPURIOUS RADIATED EMISSIONS

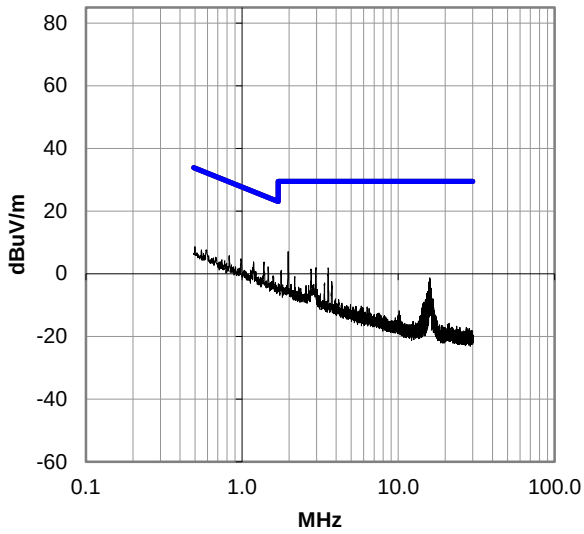
element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

TE Connectivity Antenna

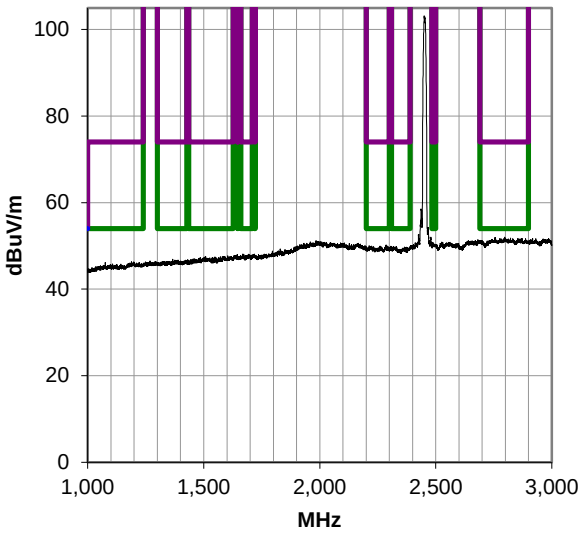
0.009-0.49 MHz, Run 84



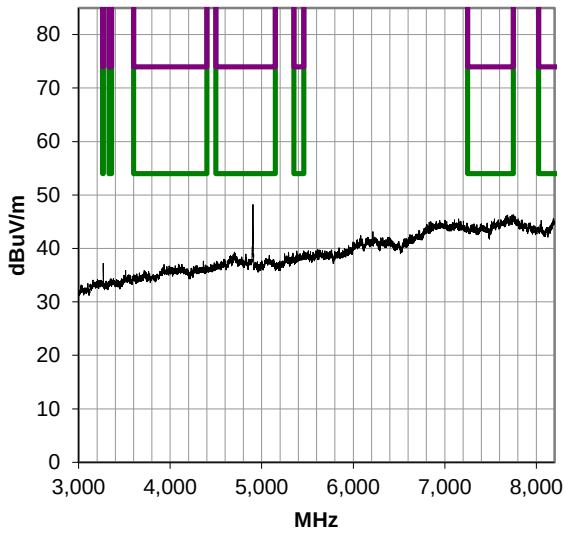
0.49-30 MHz, Run 83



1000-3000 MHz, Run 63



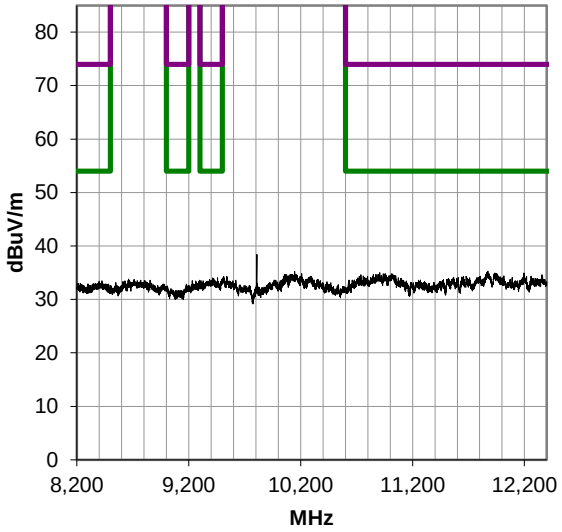
3000-8200 MHz, Run 64



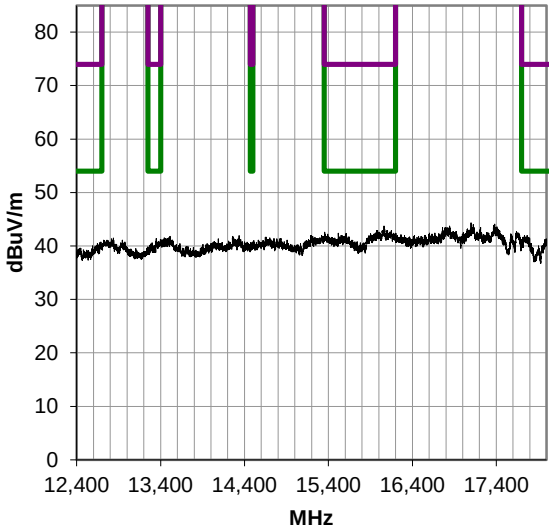
SPURIOUS RADIATED EMISSIONS

element
WTD.2024.01.16.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.12.23.0

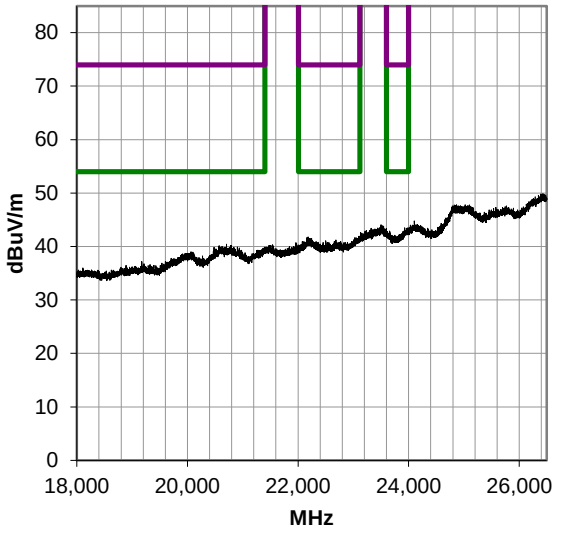
8200-12400 MHz, Run 65



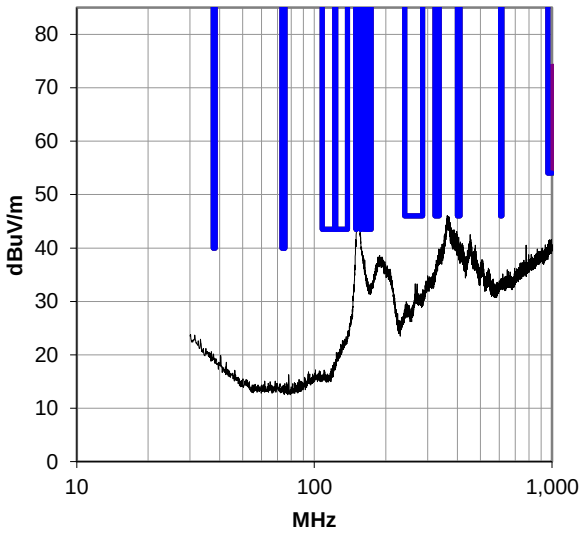
12400-18000 MHz, Run 66



18000-26500 MHz, Run 85



30-1000 MHz, Run 75
Emission near the limit does not fall in a restricted band.



End of Test Report