



OrthAlign

Lantern Refresh Surgical Assistant (LSA)

FCC 15.247:2026

Bluetooth Radio

Report: ORTH0042.0 Rev. 02, Issue Date: June 26, 2026



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CERTIFICATE OF TEST

Last Date of Test: April 21, 2026
OrthAlign
EUT: Lantern Refresh Surgical Assistant (LSA)

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2026	ANSI C63.10:2020 Cor.1:2023

Guidance

FCC KDB 558074 v05r02:2019

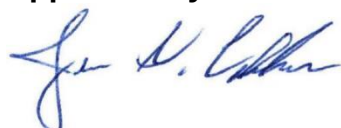
Results

Test Description	Result	Specification Section(s)	Method Section(s)	Comments
Powerline Conducted Emissions	N/A	15.207	6.2	Not required for a battery powered EUT.
Duty Cycle	Pass	KDB 558074 -6.0	11.6	
DTS Bandwidth (6 dB)	Pass	15.247(a)(2), KDB 558074 -8.2	11.8.2	
Occupied Bandwidth (99%)	Pass	KDB 558074 -2.1	6.9.3	
Output Power	Pass	15.247(b)(3), KDB 558074 -8.3.1	11.9.1.1	
Equivalent Isotropic Radiated Power	Pass	15.247(b)(3), KDB 558074 -8.3.1	11.9.1.1	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	11.10.2	
Band Edge Compliance	Pass	15.247(d), KDB 558074 -8.5	11.11	
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 -8.5	11.11	
Radiated Band Edge Emissions	Pass	15.247(d), KDB 558074 -8.6, 8.7	11.12.1, 11.13.2, 6.6	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 -8.6, 8.7	11.12.1, 11.13.2, 6.4, 6.5, 6.6	

Deviations From Test Standards

None

Approved By:



Johnny Candelas, Operations Manager
 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	Added MU for OC07	2026-06-12	6
	Added in Configuration 2	2026-06-12	12
	Revise Duty Cycle Correction Factor	2026-06-12	14-16
02	Change Serial Number on Configuration 2	2026-06-25	12
02	Update Calibration Data on AHB	2026-06-25	14
02	Change limits lines for SRE to 15.209 limits	2026-06-25	45

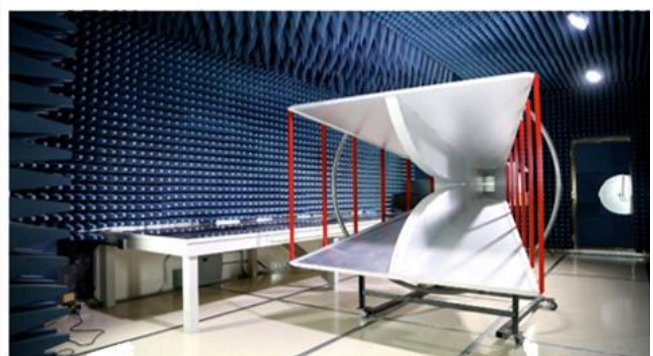
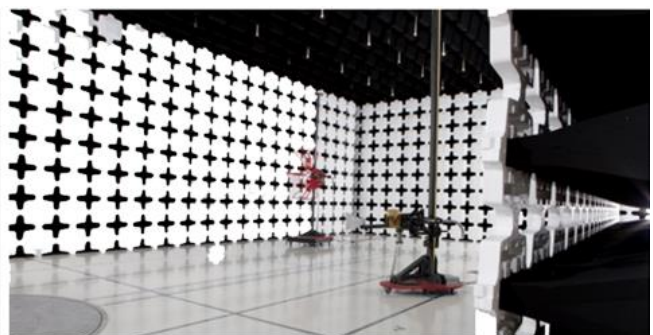
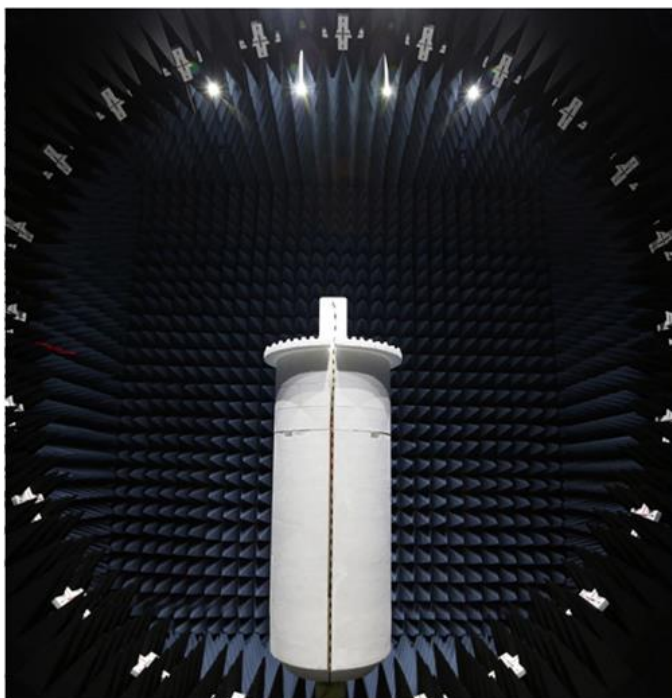
FACILITIES

Testing was performed at the following location(s)

	Location	Labs ⁽¹⁾	Address	A2LA ⁽²⁾	ISED ⁽³⁾	BSMI ⁽⁴⁾	VCCI ⁽⁵⁾	CAB	FDA ⁽⁶⁾
☒	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
☐	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) FDA ASCA No.



MEASUREMENT UNCERTAINTY

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 reported is based on statistical analysis that was performed by the laboratory. 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
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	OC07 (+/-)
9kHz-30MHz	1.8
30MHz-1GHz 3m	4.7
1GHz-6GHz	5.1
6GHz-40GHz	5.1
40GHz-220GHz	4.9

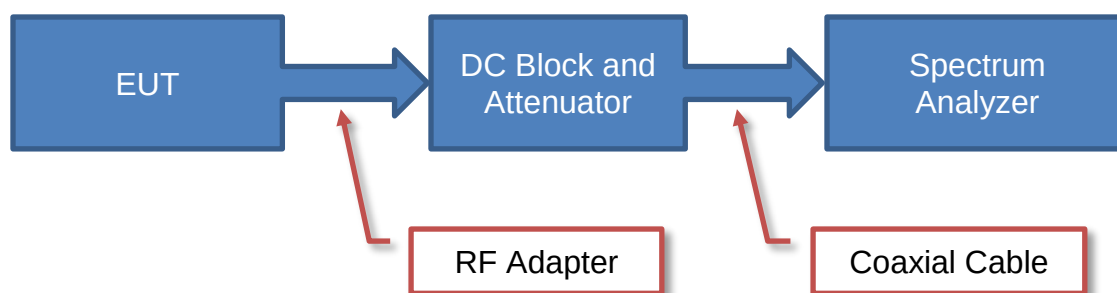
TEST SETUP BLOCK DIAGRAMS

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.

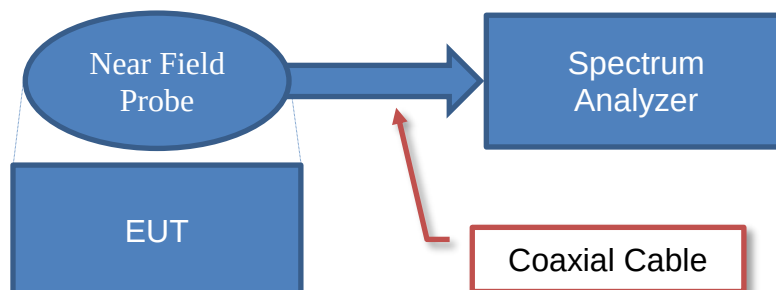
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

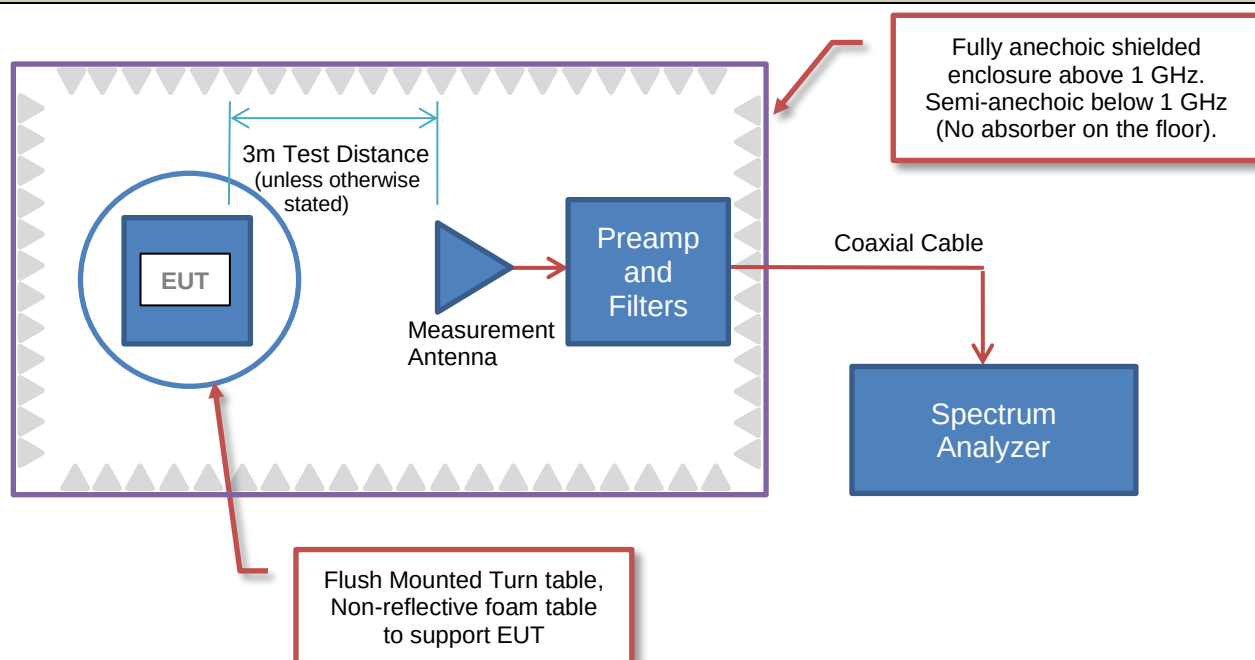


Sample Calculation (logarithmic units)

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			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

Conducted Emissions:

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

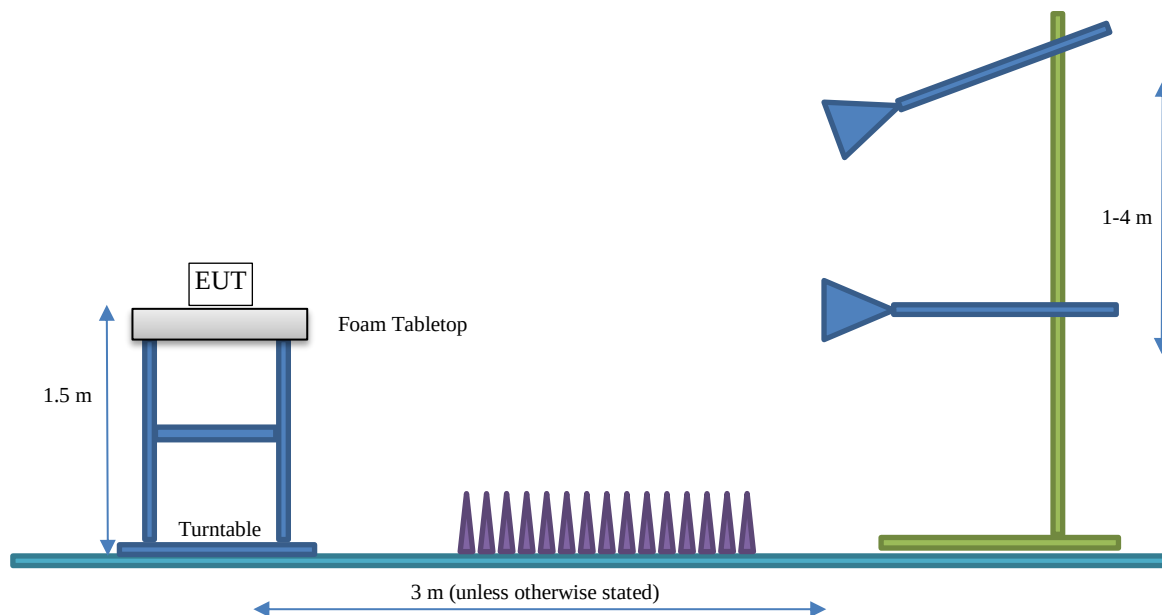
Radiated Power (ERP/EIRP) – Substitution Method:

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:	OrthAlign
Address:	153 Technology Drive, Suite 100
City, State, Zip:	Irvine, CA 92618
Test Requested By:	Larry Varnado
EUT:	Lantern Refresh Surgical Assistant (LSA)
First Date of Test:	April 16, 2026
Last Date of Test:	April 21, 2026
Receipt Date of Samples:	April 16, 2026
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Simple and efficient joint technology for total hip, total knee, revision knee, and partial knee replacements.
Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

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)
FPC Antenna	Pulse/Larsen Antennas	2400 - 2500	4

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

- ☒ Test software settings Software / firmware used for testing: QCAQMSL – QLIB V6.1.174.QPHONEMS
☐ Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types / Data Rates	Type	Channel	Frequency (MHz)	Power Setting
BLE GFSK 1 Mbps	DTS	0 or 37	2402	7
		19 or 17	2440	7
		39	2480	7

CONFIGURATIONS



Configuration ORTH0042-1

Software/Firmware Running During Test	
Description	Version
QCAQMSL	QLIB V6.1.174.QPHONEMS

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Lantern Refresh Surgical Assistant (LSA)	OrthAlign, Inc.	502000-03	2528001

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	M4800	JPC1J72
Ethernet to USB Adapter	SMDYS	N/A	N/A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	1 meter	No	Laptop	Ethernet to USB Adapter
USB	No	10 cm	No	Lantern Refresh Surgical Assistant (LSA)	Ethernet to USB Adapter

Configuration ORTH0042-2

Software/Firmware Running During Test	
Description	Version
QCAQMSL	QLIB V6.1.174.QPHONEMS

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Lantern Refresh Surgical Assistant (LSA)	OrthAlign, Inc.	502000-03	2528025

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	M4800	JPC1J72
Ethernet to USB Adapter	SMDYS	N/A	N/A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	1 meter	No	Laptop	Ethernet to USB Adapter
USB	No	10 cm	No	Lantern Refresh Surgical Assistant (LSA)	Ethernet to USB Adapter

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2026-04-16	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	2026-04-16	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	2026-04-16	DTS Bandwidth (6 dB)	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	2026-04-16	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	2026-04-16	Equivalent Isotropic Radiated 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.
6	2026-04-16	Occupied Bandwidth (99%)	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	2026-04-16	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	2026-04-16	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	2026-04-20	Spurious Radiated 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.
10	2026-04-21	Radiated Band Edge Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

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 in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

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 duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Double Ridge	EMCO	3115	AHB	2024-09-11	2026-09-11
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	2026-03-17	2027-03-17
Cable	ESM Cable Corp.	1-8GHz Cables	OCX	2026-03-17	2027-03-17
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAV	2026-02-27	2027-02-27

DUTY CYCLE

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528001	Date:	2026-04-21
Customer:	OrthAlign	Temperature:	25.3°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	49.1%
Customer Project:	None	Bar. Pressure (PMSL):	1010 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC07
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-1

COMMENTS

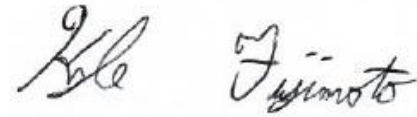
None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

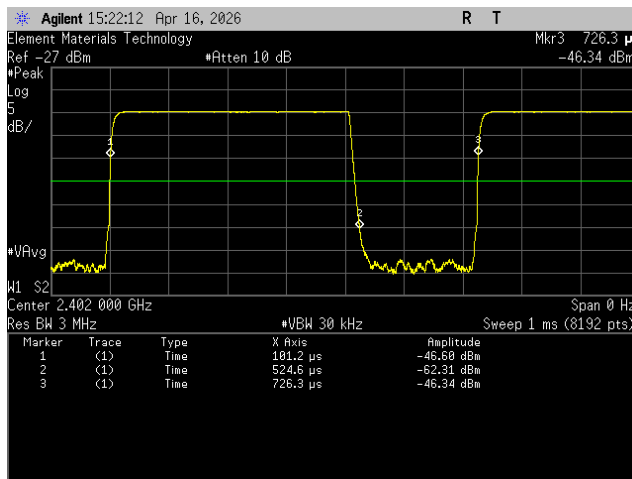


Tested By

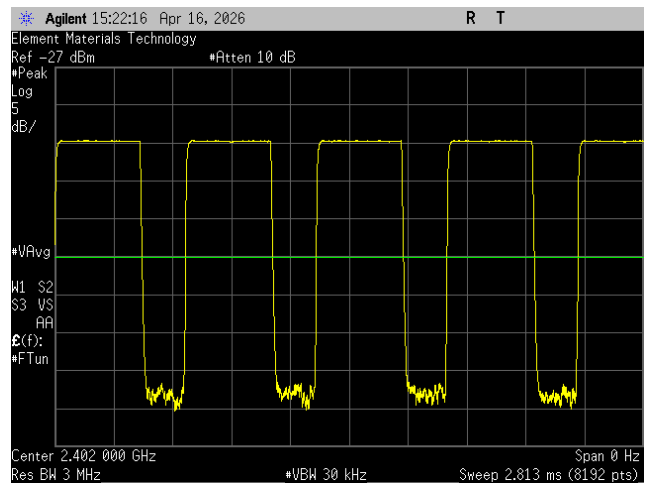
TEST RESULTS

	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A ()	Results
BLE/GFSK 1 Mbps						
Low Channel, 2402 MHz	423.4 us	625.1 us	1.0	67.7	N/A	N/A
	N/A	N/A	5.0	N/A	N/A	N/A
High Channel, 2480 MHz	427.8 us	625 us	1.0	68.4	N/A	N/A
	N/A	N/A	5.0	N/A	N/A	N/A

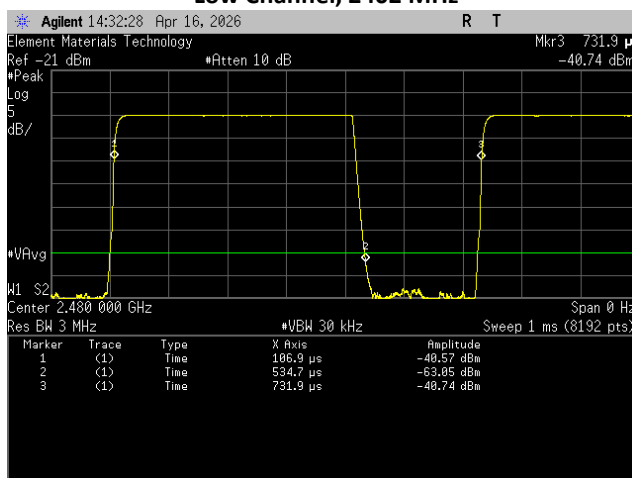
DUTY CYCLE



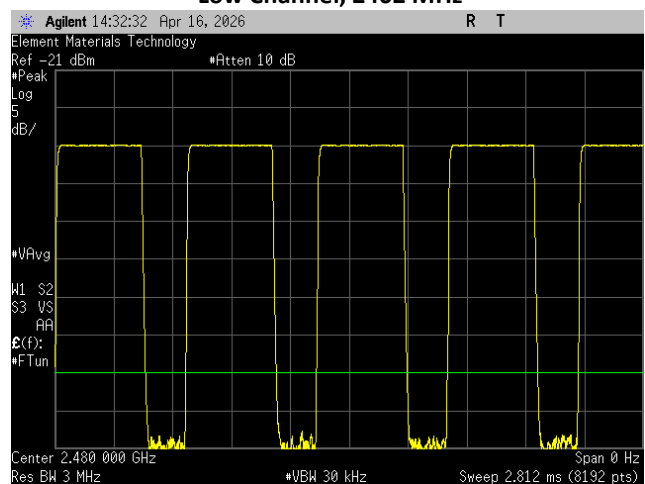
BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

DTS BANDWIDTH (6 dB)

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 the following analyzer settings:

Detector: Peak

Sweep time: Auto

Resolution Bandwidth: 1% to 5% of the OBW but not less than 100 kHz

Video Bandwidth: $\geq 3 * RBW$

Trace: Max Hold

Span: Large enough to capture all products of the modulation process, including the emission skirts.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

DTS BANDWIDTH (6 dB)

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.3%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

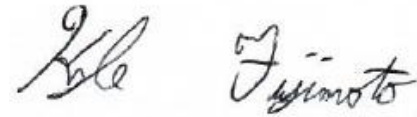
Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

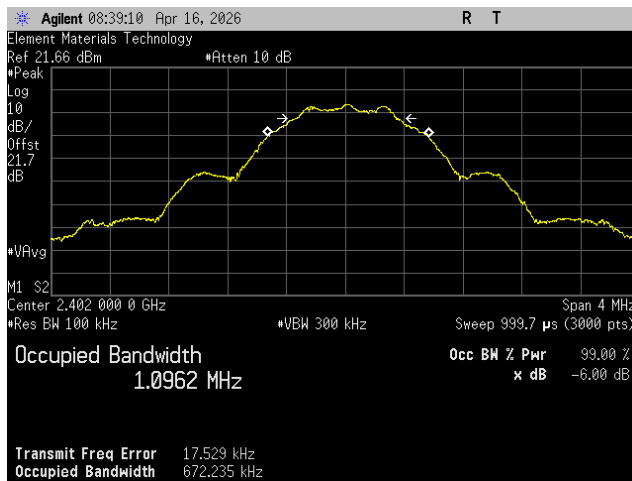


Tested By

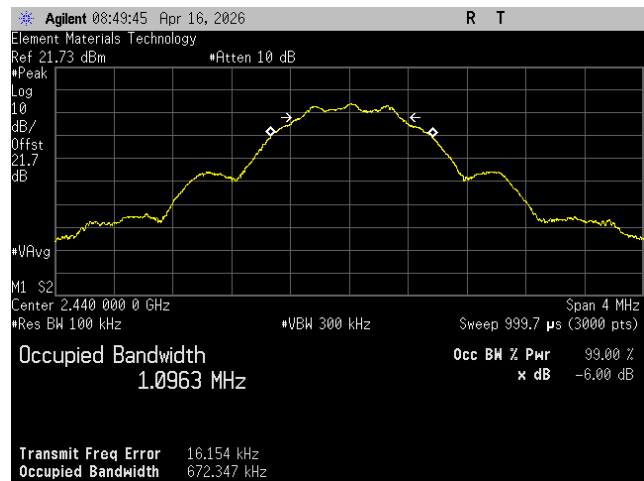
TEST RESULTS

		Value	Limit	Result
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	672.235 kHz	≥ 500 kHz	Pass
	Mid Channel, 2440 MHz	672.347 kHz	≥ 500 kHz	Pass
	High Channel, 2480 MHz	674.042 kHz	≥ 500 kHz	Pass

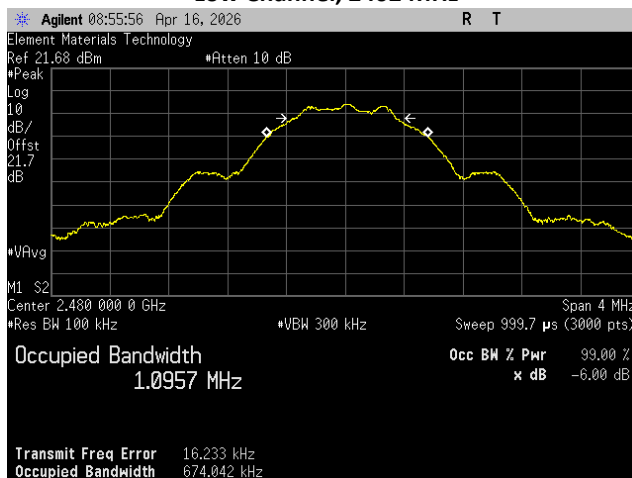
DTS BANDWIDTH (6 dB)



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

OCCUPIED BANDWIDTH (99%)

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 C63.10:2020, 6.9.3, the spectrum analyzer was configured as follows:

Sweep time: Auto

Resolution Bandwidth: 1% to 5% of the OBW

Video Bandwidth: $\geq 3 \times \text{RBW}$

Trace: Max Hold

Span: Large enough to capture all products of the modulation process, including the emission skirts.

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
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

OCCUPIED BANDWIDTH (99%)



EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

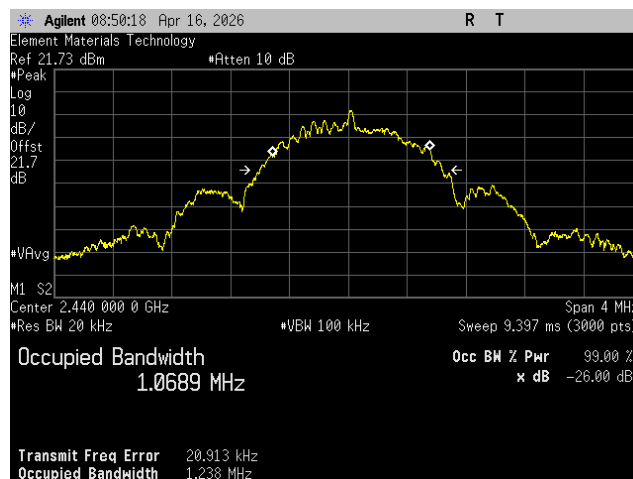
TEST RESULTS

		Frequency	Limit	Result
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	1.062 MHz	N/A	N/A
	Mid Channel, 2440 MHz	1.069 MHz	N/A	N/A
	High Channel, 2480 MHz	1.072 MHz	N/A	N/A

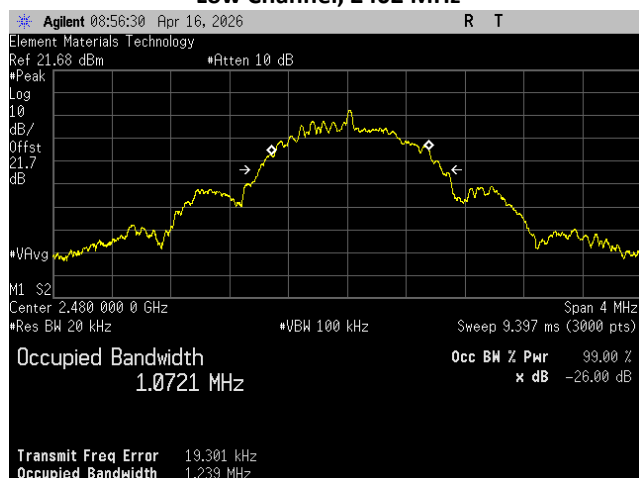
OCCUPIED BANDWIDTH (99%)



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

OUTPUT POWER

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 transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2020 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

Analyzer settings:

Detector: Peak

Sweep time: Auto

Resolution Bandwidth: $\geq$ DTS bandwidth

Video Bandwidth: $\geq 3 * RBW$

Trace: Max Hold

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

OUTPUT POWER

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

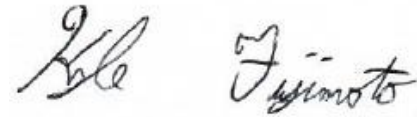
Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

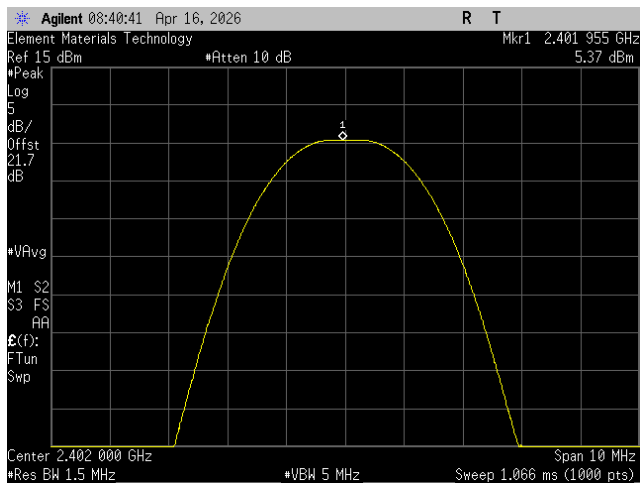


Tested By

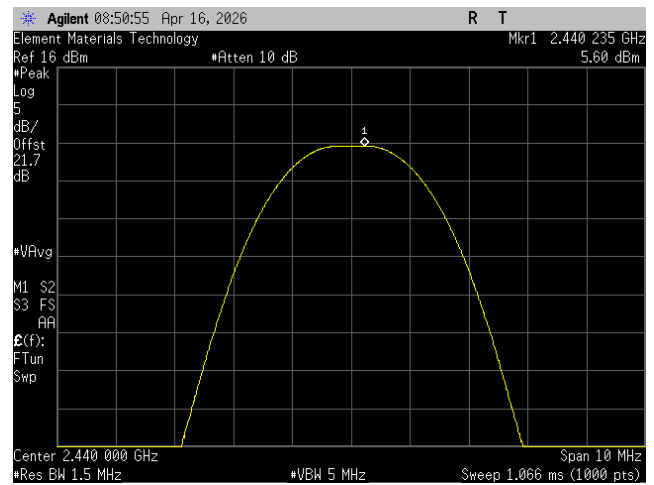
TEST RESULTS

	Out Pwr (dBm)	Limit (dBm)	Result
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	5.37	30	Pass
Mid Channel, 2440 MHz	5.597	30	Pass
High Channel, 2480 MHz	5.85	30	Pass

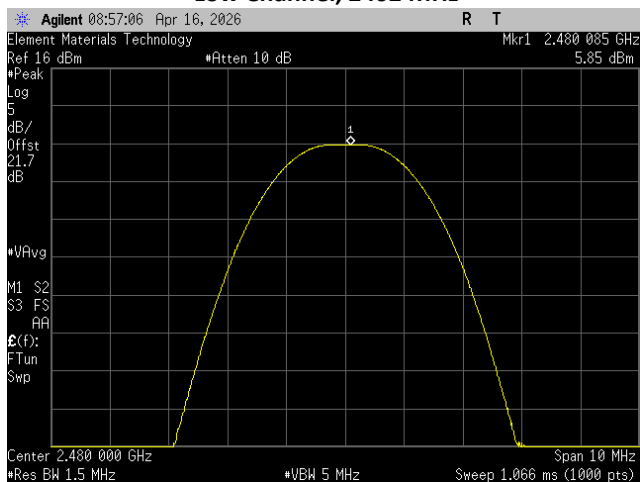
OUTPUT POWER



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

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 transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2020 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

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

Analyzer settings:

Detector: Peak
Sweep time: Auto
Resolution Bandwidth: $\geq$ DTS bandwidth
Video Bandwidth: $\geq 3 * \text{RBW}$
Trace: Max Hold

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

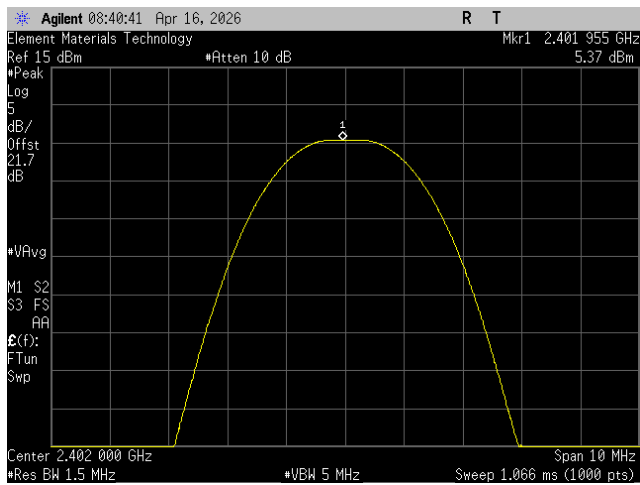
Pass

Tested By

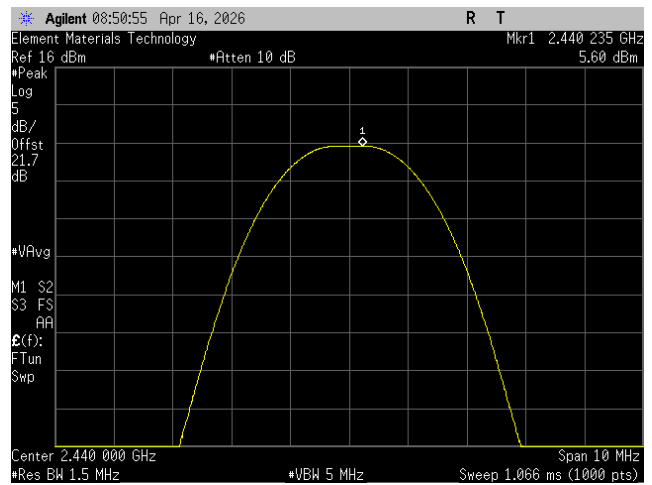
TEST RESULTS

	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps					
Low Channel, 2402 MHz	5.37	4	9.37	36	Pass
Mid Channel, 2440 MHz	5.597	4	9.597	36	Pass
High Channel, 2480 MHz	5.85	4	9.85	36	Pass

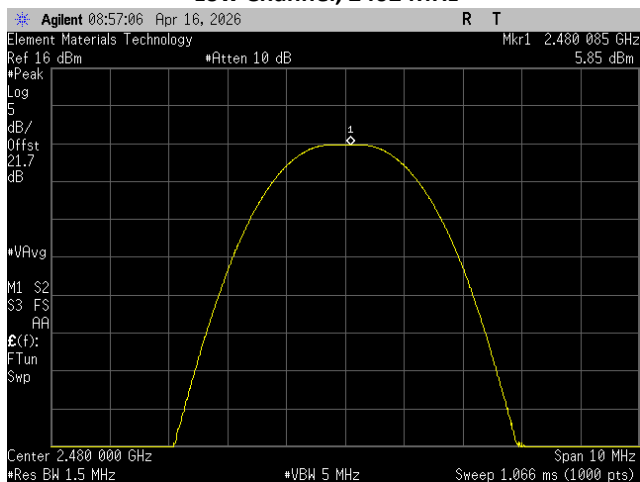
EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

POWER SPECTRAL DENSITY

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 maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

POWER SPECTRAL DENSITY

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

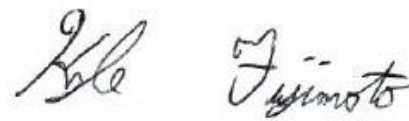
Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

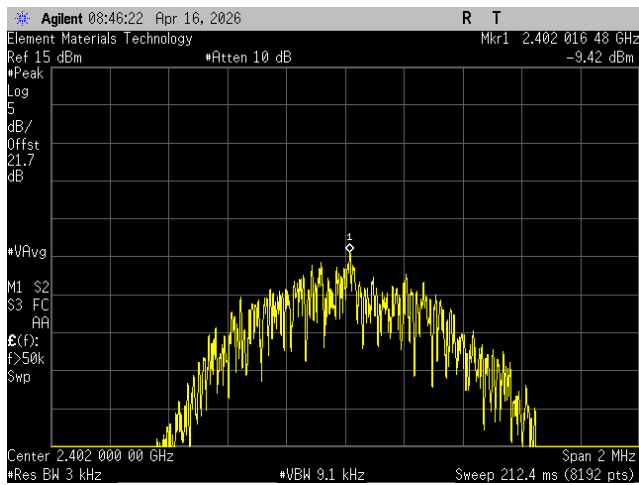


Tested By

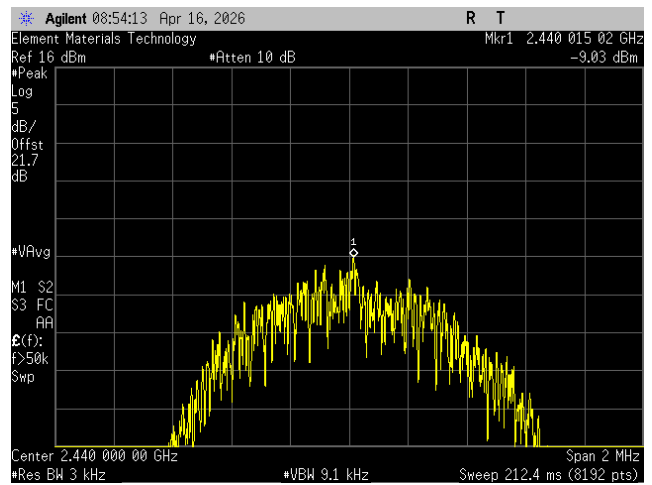
TEST RESULTS

		Value dBm/3kHz	Limit ≤ (dBm/3kHz)	Results
BLE/GFSK 1 Mbps				
	Low Channel, 2402 MHz	-9.424	8	Pass
	Mid Channel, 2440 MHz	-9.028	8	Pass
	High Channel, 2480 MHz	-8.517	8	Pass

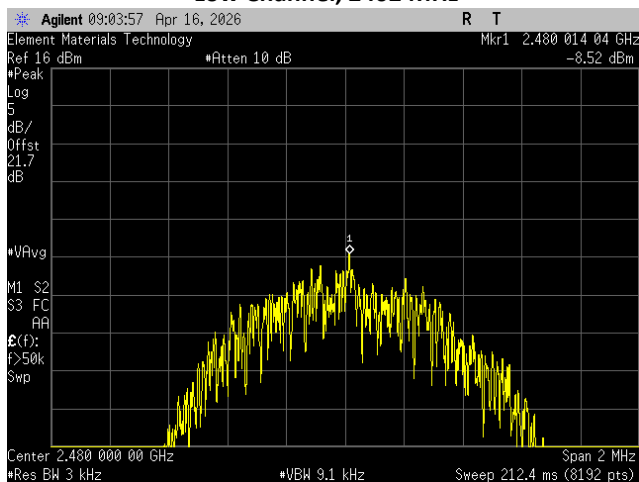
POWER SPECTRAL DENSITY



**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



**BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz**



**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**

BAND EDGE COMPLIANCE

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
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

BAND EDGE COMPLIANCE

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

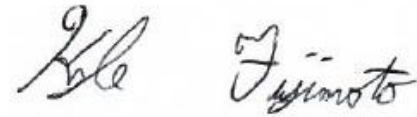
Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

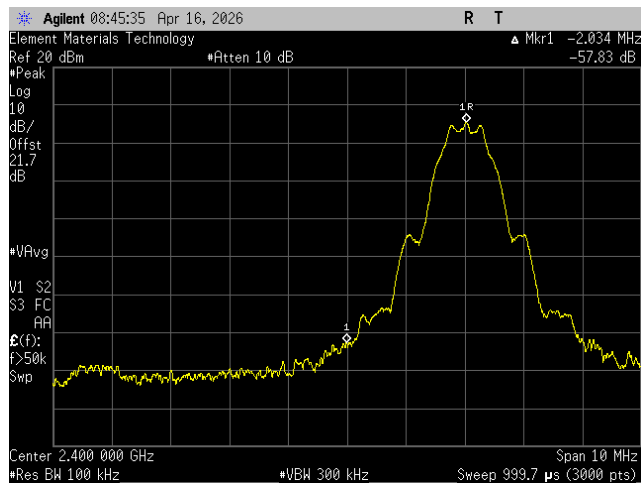


Tested By

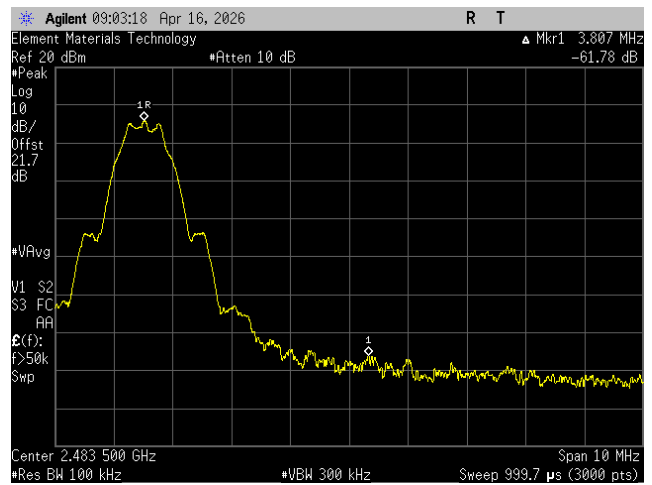
TEST RESULTS

	Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps			
Low Channel, 2402 MHz	-57.83	-20	Pass
High Channel, 2480 MHz	-61.78	-20	Pass

BAND EDGE COMPLIANCE



BLE/GFSK 1 Mbps
Low Channel, 2402 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

SPURIOUS CONDUCTED EMISSIONS

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
Attenuator	Fairview Microwave	SA18H-20	UAZ	2026-03-25	2027-03-25
Block - DC	Aeroflex	INMET 8535	AMO	2025-12-04	2026-12-04
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2025-10-21	2026-10-21
Generator - Signal	Agilent	E8257D	TGU	2023-11-08	2026-11-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06

SPURIOUS CONDUCTED EMISSIONS

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528025	Date:	2026-04-16
Customer:	OrthAlign	Temperature:	20.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	51.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-2

COMMENTS

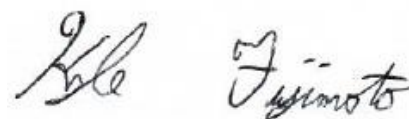
Reference Level Offset includes Cable Loss, Pigtail Loss, 20 dB Attenuator, and DC Block

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

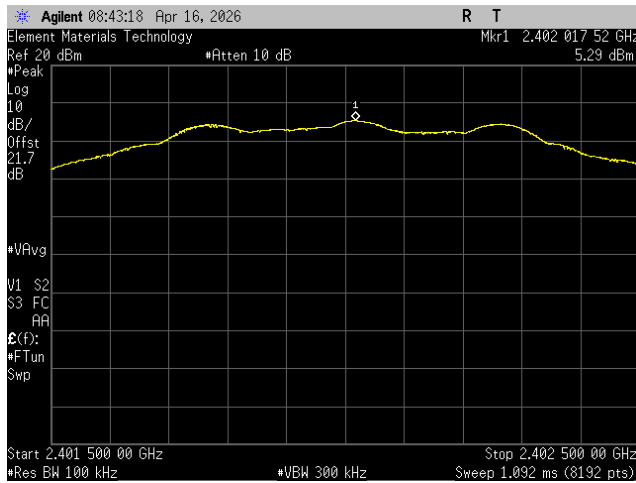


Tested By

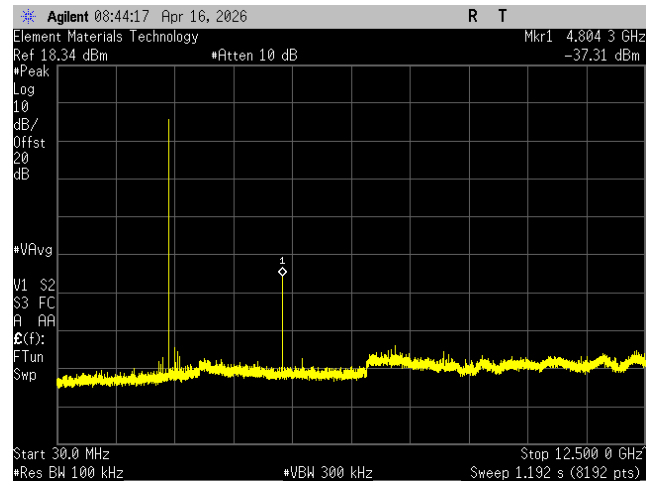
TEST RESULTS

		Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps						
Low Channel, 2402 MHz	Fundamental		2402.02	N/A	N/A	N/A
	30 MHz - 12.5 GHz		4804.3	-42.6	-20	Pass
	12.5 GHz - 25 GHz		21949.4	-58.26	-20	Pass
Mid Channel, 2440 MHz	Fundamental		2440.01	N/A	N/A	N/A
	30 MHz - 12.5 GHz		4880.4	-41.76	-20	Pass
	12.5 GHz - 25 GHz		21842.6	-58.48	-20	Pass
High Channel, 2480 MHz	Fundamental		2480.01	N/A	N/A	N/A
	30 MHz - 12.5 GHz		97	-35.48	-20	Pass
	12.5 GHz - 25 GHz		22517.1	-58.91	-20	Pass

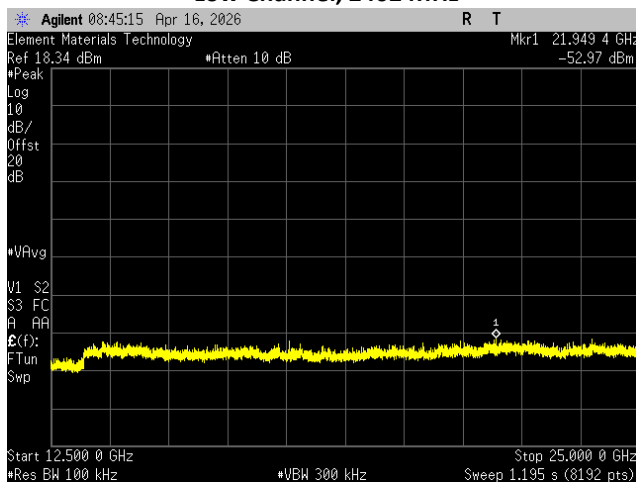
SPURIOUS CONDUCTED EMISSIONS



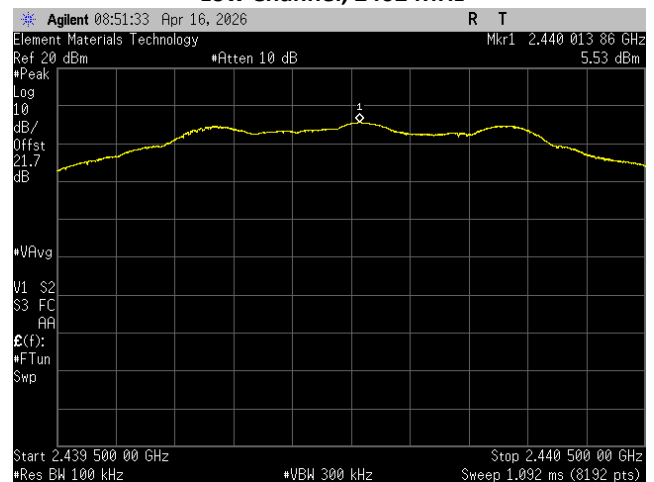
**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



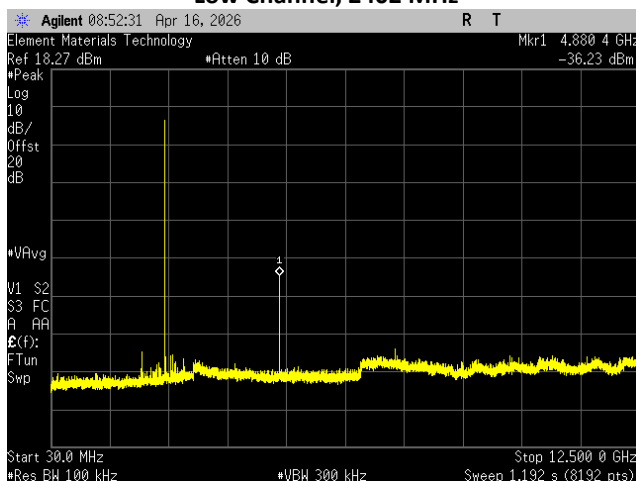
**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



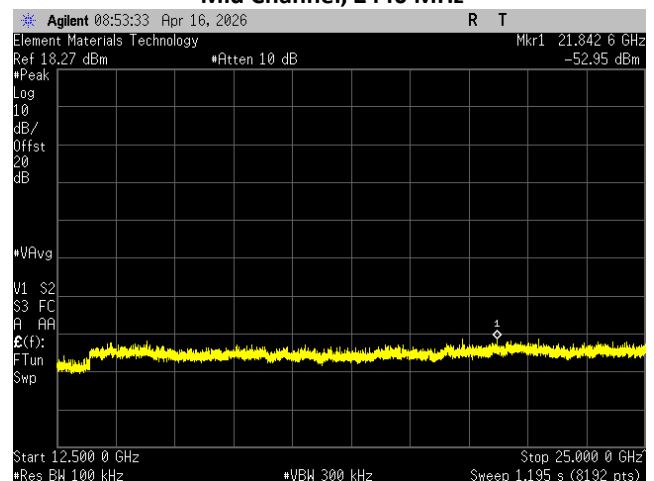
**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



**BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz**

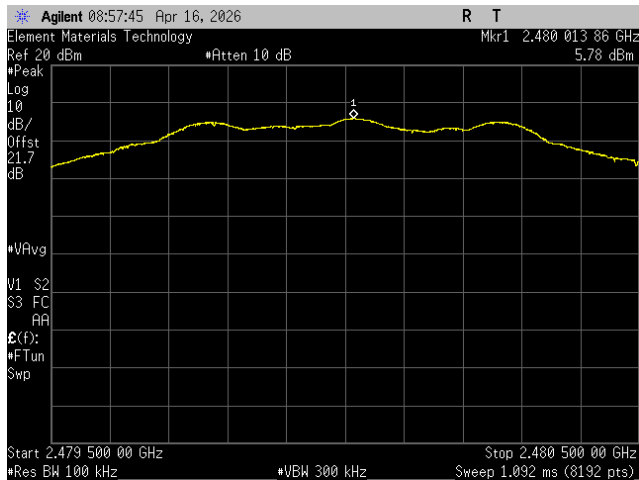


**BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz**

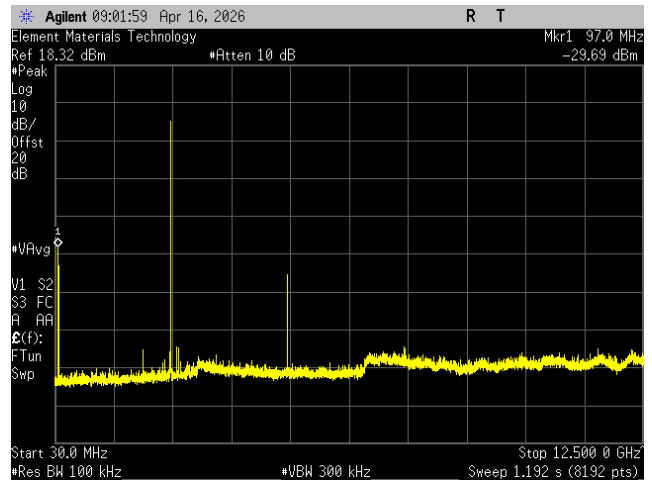


**BLE/GFSK 1 Mbps
Mid Channel, 2440 MHz**

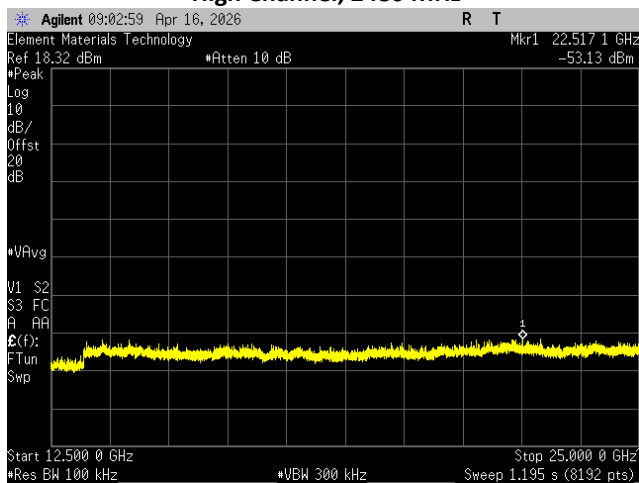
SPURIOUS CONDUCTED EMISSIONS



BLE/GFSK 1 Mbps
High Channel, 2480 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz



BLE/GFSK 1 Mbps
High Channel, 2480 MHz

RADIATED SPURIOUS EMISSIONS RESTRICTED BAND EDGE



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 in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

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.

The 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 attenuation were used (if needed) 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:

PK = Peak Detector
AV = RMS Detector

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 $10 \cdot \log(1/dc)$.

RMS measurements taken for a FHSS radio also may have a duty cycle correction subtracted using the formula $10 \cdot \log(DC)$, where DC is the worst-case dwell time of the radio while in a hopping mode in a 100 ms period.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Double Ridge	EMCO	3115	AHE	2024-09-11	2026-09-11
Cable	ESM Cable Corp.	1-8GHz Cables	OCX	2026-03-17	2027-03-17
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	2026-03-17	2027-03-17
Attenuator	S.M. Electronics	SA18H-10	REN	2025-12-08	2026-12-08
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	2026-02-27	2027-02-27

RADIATED SPURIOUS EMISSIONS RESTRICTED BAND EDGE



EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528001	Date:	2026-04-21
Customer:	OrthAlign	Temperature:	23.8°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	52.8%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC07
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-1

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

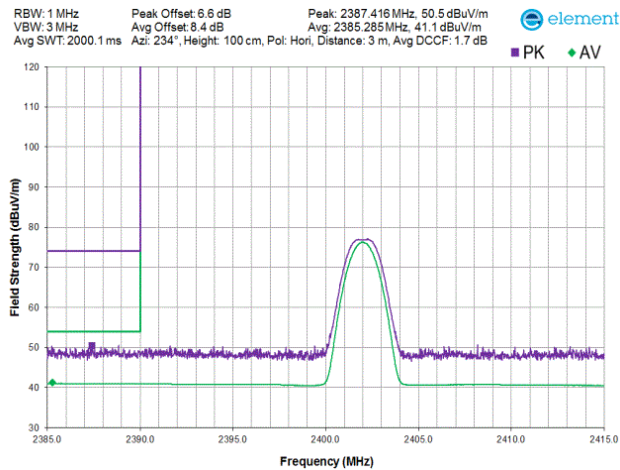
Kyle Fujimoto

Tested By

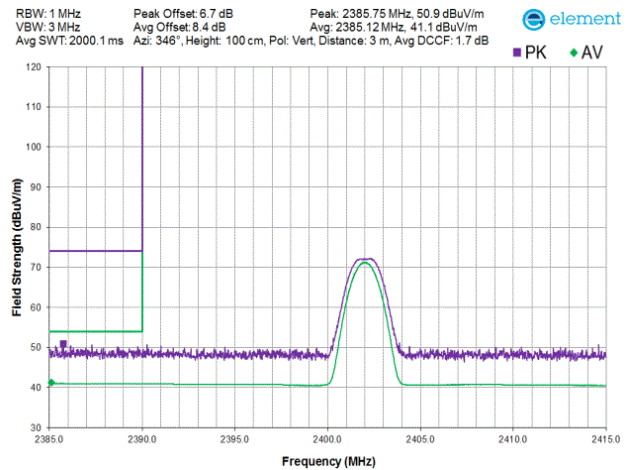
TEST RESULTS

	Frequency (MHz)	PK (dBuV/m) AV (dBuV/m)	PK Lim (dBuV/m) AV Lim (dBuV/m)	Worst Margin (dB)	Pol. (H/V)	EUT Orientation	Results
BLE/GFSK 1 Mbps							
Low Channel, 2402 MHz	2387.416	50.5	74.0	-12.9	H	Horizontal	Pass
	2385.285	41.1	54.0				
	2385.750	50.9	74.0	-12.9	V	Horizontal	Pass
	2385.120	41.1	54.0				
High Channel, 2480 MHz	2484.998	50.2	74.0	-13.9	H	Horizontal	Pass
	2483.503	40.1	54.0				
	2486.774	50.1	74.0	-13.9	V	Horizontal	Pass
	2483.658	40.1	54.0				
	2484.128	49.8	74.0	-13.9	V	Vertical	Pass
	2483.513	40.1	54.0				
	2487.770	50.2	74.0	-13.9	H	Vertical	Pass
	2483.513	40.1	54.0				
	2486.609	50.3	74.0	-13.9	H	on Side	Pass
	2483.503	40.1	54.0				
	2486.684	50.9	74.0	-13.9	V	on Side	Pass
	2483.518	40.1	54.0				

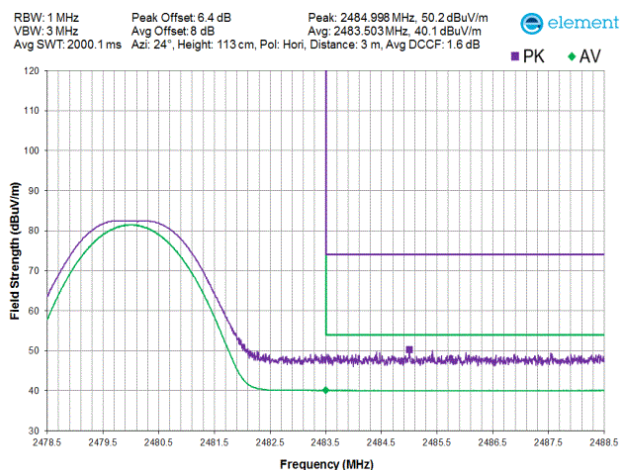
RADIATED SPURIOUS EMISSIONS RESTRICTED BAND EDGE



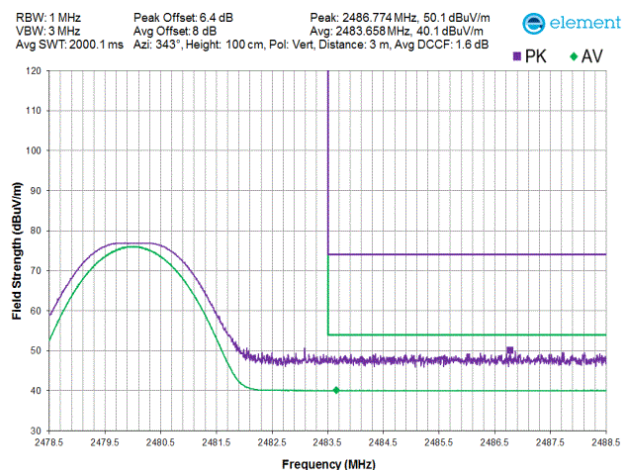
**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



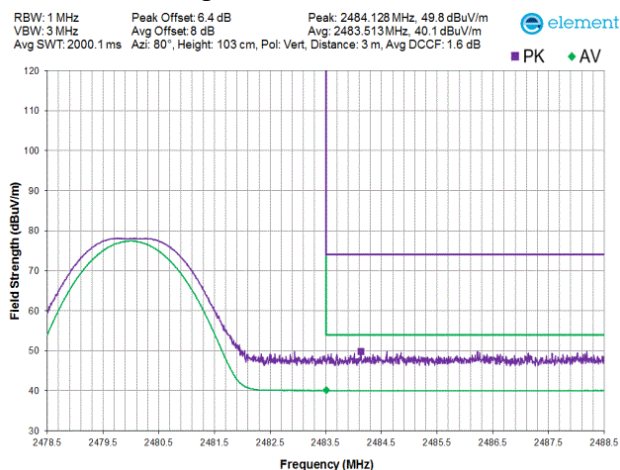
**BLE/GFSK 1 Mbps
Low Channel, 2402 MHz**



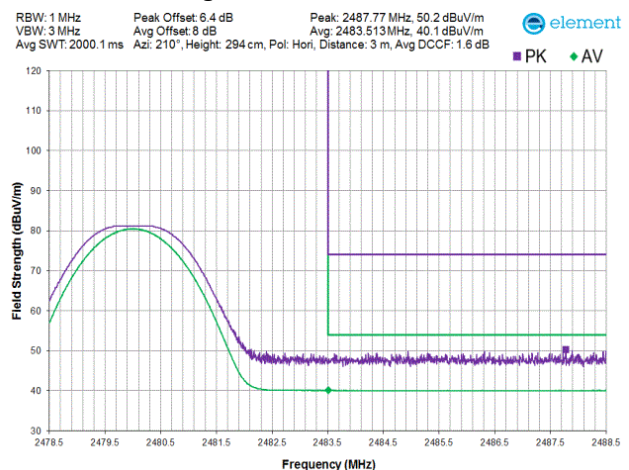
**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**



**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**



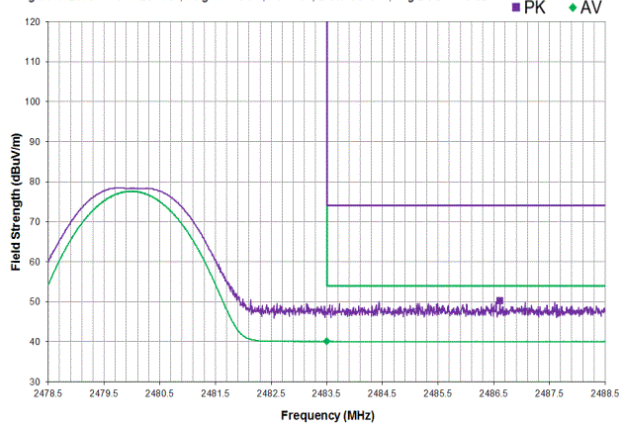
**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**



**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**

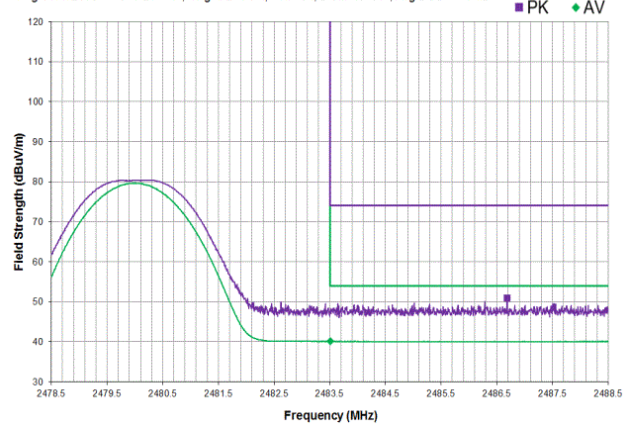
RADIATED SPURIOUS EMISSIONS RESTRICTED BAND EDGE

RBW: 1 MHz Peak Offset: 6.4 dB Peak: 2486.609 MHz, 50.3 dBuV/m
VBW: 3 MHz Avg Offset: 8 dB Avg: 2483.503 MHz, 40.1 dBuV/m
Avg SWT: 2000.1 ms Azi: 350°, Height: 100 cm, Pol: Hori, Distance: 3 m, Avg DCCF: 1.6 dB



**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**

RBW: 1 MHz Peak Offset: 6.4 dB Peak: 2486.684 MHz, 50.9 dBuV/m
VBW: 3 MHz Avg Offset: 8 dB Avg: 2483.518 MHz, 40.1 dBuV/m
Avg SWT: 2000.1 ms Azi: 115°, Height: 245 cm, Pol: Vert, Distance: 3 m, Avg DCCF: 1.6 dB



**BLE/GFSK 1 Mbps
High Channel, 2480 MHz**

SPURIOUS RADIATED EMISSIONS

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. A reference preview scan (pre-scan) is 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 $10 \cdot \log(1/dc)$.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Double Ridge	EMCO	3115	AHE	2024-09-11	2026-09-11
Cable	ESM Cable Corp.	1-8GHz Cables	OCX	2026-03-17	2027-03-17
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	2026-03-17	2027-03-17
Attenuator	S.M. Electronics	SA18H-10	REN	2025-12-08	2026-12-08
Filter - High Pass	Micro-Tronics	HPM50111	HGQ	2025-12-08	2026-12-08
Antenna - Standard Gain	ETS Lindgren	3160-07	AHX	2025-12-02	2026-12-02
Cable	ESM Cable Corp.	8-18GHz Cables	OCY	2026-03-17	2027-03-17
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVL	2026-03-17	2027-03-17
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVP	2026-03-17	2027-03-17
Antenna - Standard Gain	EMCO	3160-08	AHK	2025-12-02	2026-12-02
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXV	2024-08-16	2026-08-16
Cable	Micro-Coax	UFD150A-1-070-200200	OC6	2025-10-20	2026-10-20
Amplifier - Pre-Amplifier	Narda Miteq	LNA-40-18004000-33-5P	AXVA	2026-03-02	2028-03-02
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAV	2026-02-27	2027-02-27
Antenna - Loop	EMCO	6502	AZB	2025-09-23	2027-09-23
Antenna - Biconilog	EMCO	3142B	AXK	2025-12-02	2027-12-02
Cable	ESM Cable Corp.	30-1GHz Cables	OCW	2025-12-08	2026-12-08
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	2025-12-08	2026-12-08
Filter - Low Pass	Micro-Tronics	LPM50004	HGK	2025-12-08	2026-12-08

SPURIOUS RADIATED EMISSIONS

FREQUENCY RANGE INVESTIGATED

9 kHz TO 26500 MHz

POWER INVESTIGATED

4.5 Vdc via Battery

CONFIGURATIONS INVESTIGATED

ORTH0042-1

MODES INVESTIGATED

Transmitting BLE at 2402 MHz, 2440 MHz, and 2480 MHz at 1 Mbit

SPURIOUS RADIATED EMISSIONS

EUT:	Lantern Refresh Surgical Assistant (LSA)	Work Order:	ORTH0042
Serial Number:	2528001	Date:	2026-04-20
Customer:	OrthAlign	Temperature:	21.3°C
Attendees:	Larry Varnado, Kian Gholizadeh	Relative Humidity:	52.3%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mb
Tested By:	Kyle Fujimoto	Job Site:	OC07
Power:	4.5 Vdc via Battery	Configuration:	ORTH0042-1

TEST PARAMETERS

Run #:	60	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

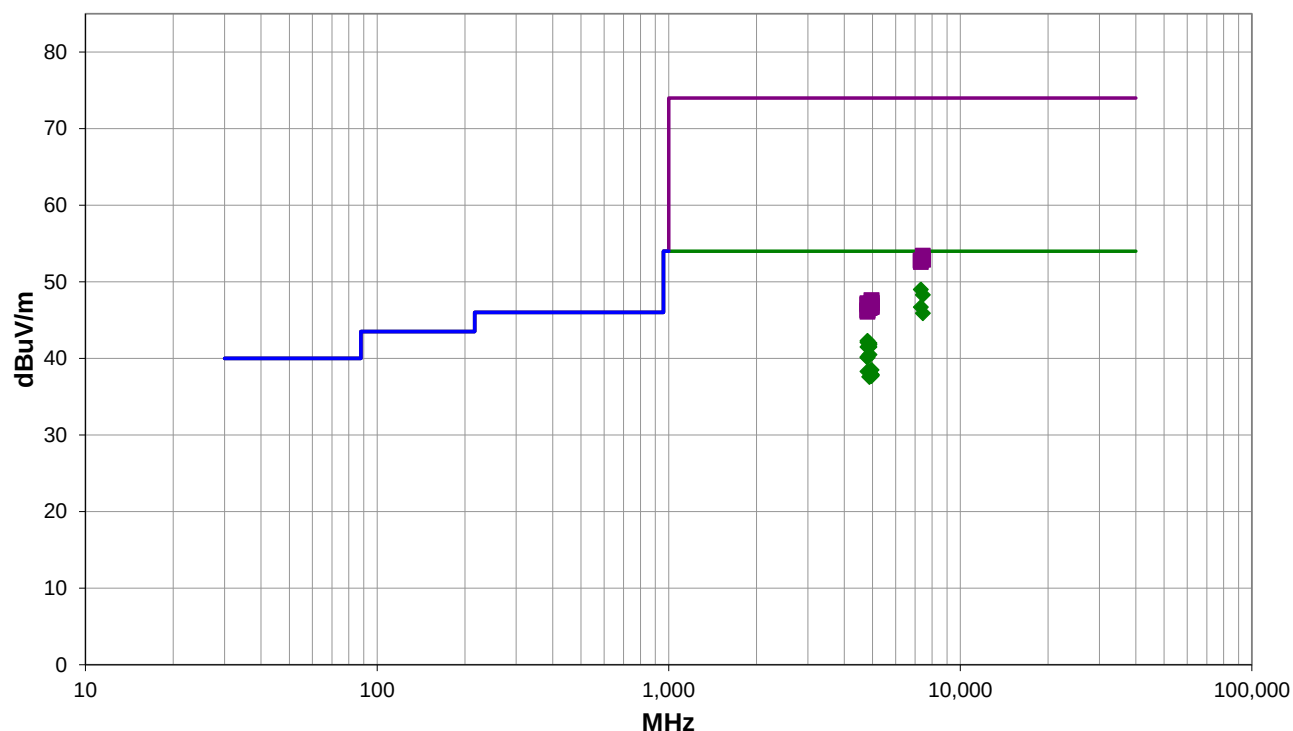
None

EUT OPERATING MODES

Transmitting BLE at 2402 MHz, 2440 MHz, and 2480 MHz at 1 Mbit

DEVIATIONS FROM TEST STANDARD

None



Run #: 60

PK AV QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #60

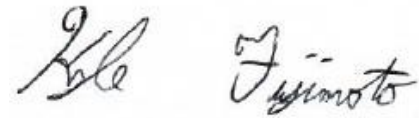
Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7320.533	36.8	10.3	3.23	72.0	1.9	0.0	Horz	AV	0.0	49.0	54.0	-5.0	Tx 2440 MHz, EUT Horiz
7437.542	35.6	10.8	1.05	251.0	1.9	0.0	Horz	AV	0.0	48.3	54.0	-5.7	Tx 2480 MHz, EUT Horiz
7320.942	34.5	10.3	1.31	1.0	1.9	0.0	Vert	AV	0.0	46.7	54.0	-7.3	Tx 2440 MHz, EUT Horiz
7439.158	33.2	10.8	3.11	307.0	1.9	0.0	Vert	AV	0.0	45.9	54.0	-8.1	Tx 2480 MHz, EUT Horiz
4803.808	35.8	4.6	2.28	229.0	1.9	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Tx 2402 MHz, EUT Horiz
4803.617	35.6	4.6	2.12	339.0	1.9	0.0	Horz	AV	0.0	42.1	54.0	-11.9	Tx 2402 MHz, EUT Vert
4878.367	35.2	4.9	1.5	21.0	1.9	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Tx 2440 MHz, EUT on Side
4879.625	35.0	4.9	3.8	30.0	1.9	0.0	Vert	AV	0.0	41.8	54.0	-12.2	Tx 2440 MHz, EUT Vert
4877.808	34.7	4.9	1.5	4.0	1.9	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Tx 2440 MHz, EUT Vert
4804.133	35.0	4.6	1.5	94.0	1.9	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Tx 2402 MHz, EUT on Side
4879.858	33.7	4.9	3.67	18.0	1.9	0.0	Vert	AV	0.0	40.5	54.0	-13.5	Tx 2440 MHz, EUT on Side
4804.233	33.7	4.6	1.5	282.0	1.9	0.0	Vert	AV	0.0	40.2	54.0	-13.8	Tx 2402 MHz, EUT on Side
4803.117	33.6	4.6	1.5	156.0	1.9	0.0	Vert	AV	0.0	40.1	54.0	-13.9	Tx 2402 MHz, EUT Horiz
4959.933	31.4	5.2	1.5	199.0	1.9	0.0	Horz	AV	0.0	38.5	54.0	-15.5	Tx 2480 MHz, EUT Horiz
4803.650	31.8	4.6	4.0	149.0	1.9	0.0	Vert	AV	0.0	38.3	54.0	-15.7	Tx 2402 MHz, EUT Vert
4959.908	30.8	5.2	1.5	166.0	1.9	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Tx 2480 MHz, EUT Vert
4959.892	30.8	5.2	2.31	332.0	1.9	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Tx 2480 MHz, EUT on Side
4959.908	30.7	5.2	1.5	141.0	1.9	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Tx 2480 MHz, EUT on Side
4959.958	30.7	5.2	1.5	183.0	1.9	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Tx 2480 MHz, EUT Vert
4958.958	30.6	5.2	1.78	138.0	1.9	0.0	Vert	AV	0.0	37.7	54.0	-16.3	Tx 2480 MHz, EUT Horiz
4877.692	30.8	4.9	1.5	22.0	1.9	0.0	Vert	AV	0.0	37.6	54.0	-16.4	Tx 2440 MHz, EUT Horiz
4879.483	30.8	4.9	1.5	260.0	1.9	0.0	Horz	AV	0.0	37.6	54.0	-16.4	Tx 2440 MHz, EUT Horiz
7437.950	42.6	10.8	1.05	251.0		0.0	Horz	PK	0.0	53.4	74.0	-20.6	Tx 2480 MHz, EUT Horiz
7441.983	42.0	10.9	3.11	307.0		0.0	Vert	PK	0.0	52.9	74.0	-21.1	Tx 2480 MHz, EUT Horiz
7317.867	42.5	10.3	1.31	1.0		0.0	Vert	PK	0.0	52.8	74.0	-21.2	Tx 2440 MHz, EUT Horiz
7320.483	42.3	10.3	3.23	72.0		0.0	Horz	PK	0.0	52.6	74.0	-21.4	Tx 2440 MHz, EUT Horiz
4960.717	42.4	5.2	1.5	199.0		0.0	Horz	PK	0.0	47.6	74.0	-26.4	Tx 2480 MHz, EUT Horiz
4959.142	42.1	5.2	1.78	138.0		0.0	Vert	PK	0.0	47.3	74.0	-26.7	Tx 2480 MHz, EUT Horiz
4961.467	42.0	5.2	1.5	166.0		0.0	Horz	PK	0.0	47.2	74.0	-26.8	Tx 2480 MHz, EUT Vert
4803.367	42.6	4.6	2.12	339.0		0.0	Horz	PK	0.0	47.2	74.0	-26.8	Tx 2402 MHz, EUT Vert
4802.858	42.5	4.6	4.0	149.0		0.0	Vert	PK	0.0	47.1	74.0	-26.9	Tx 2402 MHz, EUT Vert
4880.533	42.1	4.9	3.8	30.0		0.0	Vert	PK	0.0	47.0	74.0	-27.0	Tx 2440 MHz, EUT Vert
4804.375	42.4	4.6	1.5	156.0		0.0	Vert	PK	0.0	47.0	74.0	-27.0	Tx 2402 MHz, EUT Horiz
4961.717	41.7	5.2	1.5	183.0		0.0	Vert	PK	0.0	46.9	74.0	-27.1	Tx 2480 MHz, EUT Vert
4881.042	42.0	4.9	1.5	4.0		0.0	Horz	PK	0.0	46.9	74.0	-27.1	Tx 2440 MHz, EUT Vert
4877.967	42.0	4.9	3.67	18.0		0.0	Vert	PK	0.0	46.9	74.0	-27.1	Tx 2440 MHz, EUT on Side
4958.325	41.6	5.2	1.5	141.0		0.0	Vert	PK	0.0	46.8	74.0	-27.2	Tx 2480 MHz, EUT on Side
4880.375	41.9	4.9	1.5	21.0		0.0	Horz	PK	0.0	46.8	74.0	-27.2	Tx 2440 MHz, EUT on Side
4959.158	41.5	5.2	1.5	22.0		0.0	Vert	PK	0.0	46.7	74.0	-27.3	Tx 2440 MHz, EUT Horiz
4879.483	41.4	5.2	2.31	332.0		0.0	Horz	PK	0.0	46.6	74.0	-27.4	Tx 2480 MHz, EUT on Side

SPURIOUS RADIATED EMISSIONS

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4880.767	41.7	4.9	1.5	260.0		0.0	Vert	PK	0.0	46.6	74.0	-27.4	Tx 2440 MHz, EUT Horiz
4803.875	41.7	4.6	1.5	94.0		0.0	Horz	PK	0.0	46.3	74.0	-27.7	Tx 2402 MHz, EUT on Side
4802.658	41.7	4.6	1.5	282.0		0.0	Vert	PK	0.0	46.3	74.0	-27.7	Tx 2402 MHz, EUT on Side
4803.808	41.5	4.6	2.28	229.0		0.0	Horz	PK	0.0	46.1	74.0	-27.9	Tx 2402 MHz, EUT Horiz

CONCLUSION

Pass

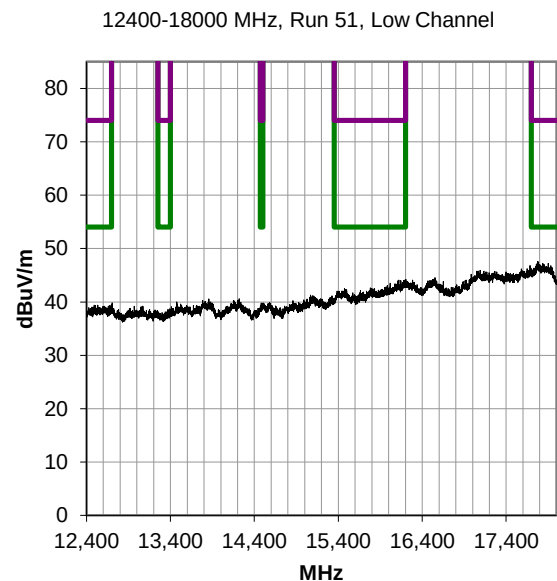
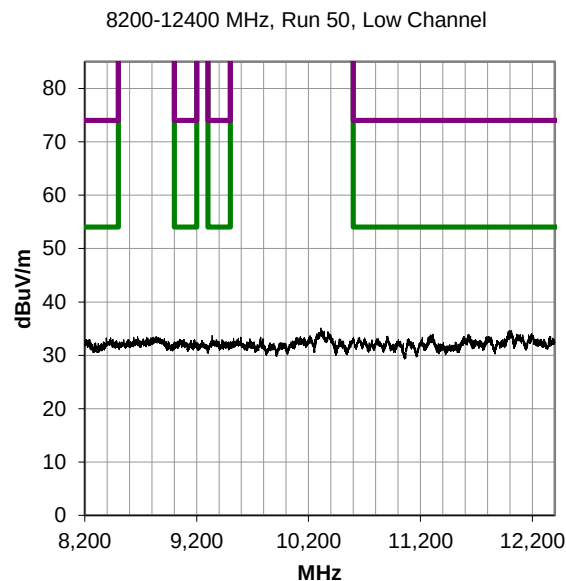
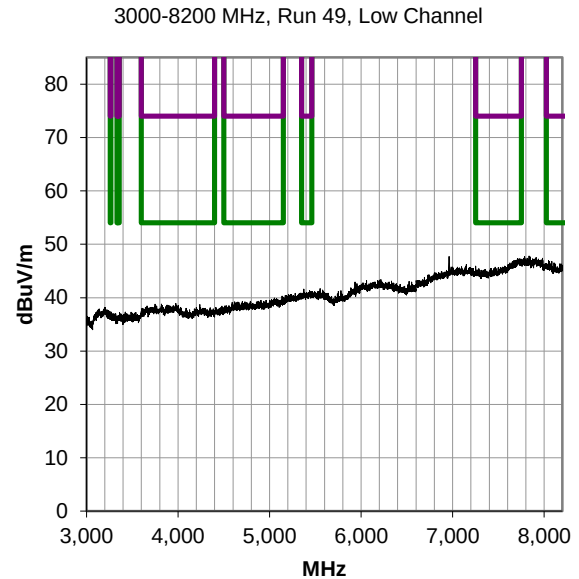
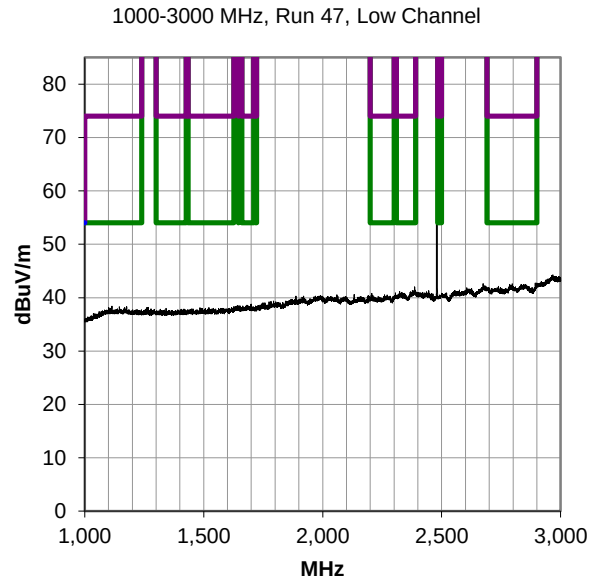


Tested By

SPURIOUS RADIATED EMISSIONS

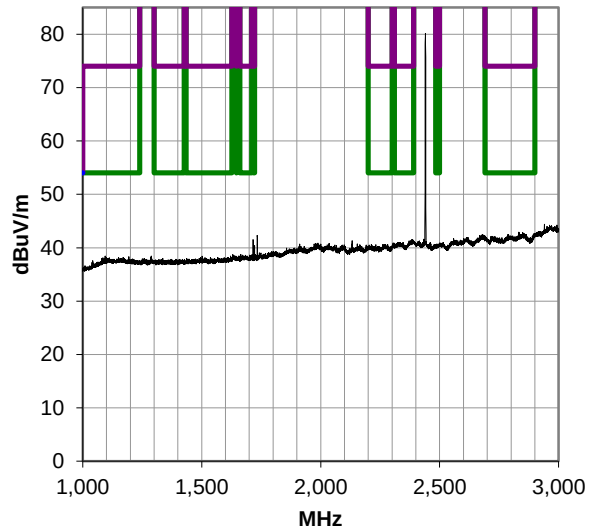
PRESCAN DATA

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.

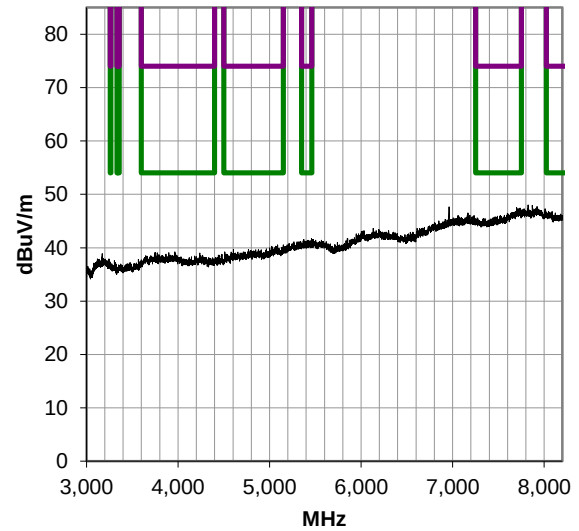


SPURIOUS RADIATED EMISSIONS

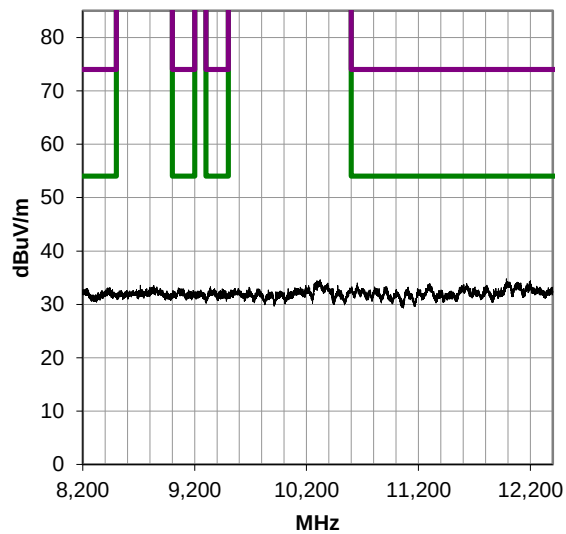
1000-3000 MHz, Run 52, Middle Channel



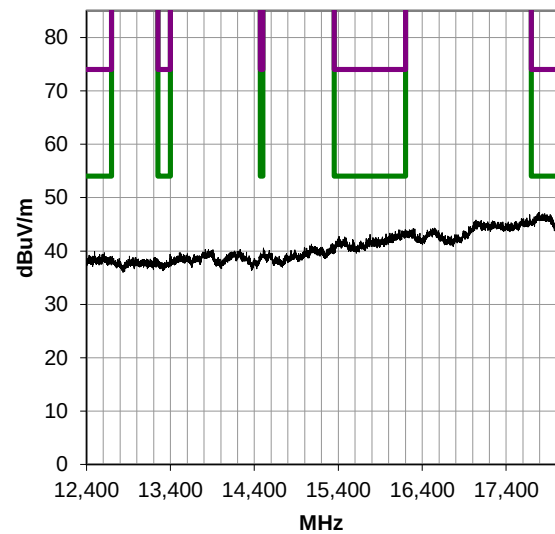
3000-8200 MHz, Run 53, Middle Channel



8200-12400 MHz, Run 54, Middle Channel

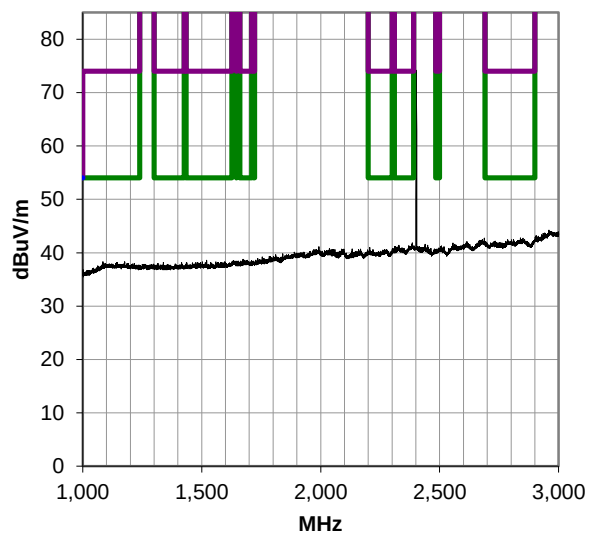


12400-18000 MHz, Run 55, Middle Channel

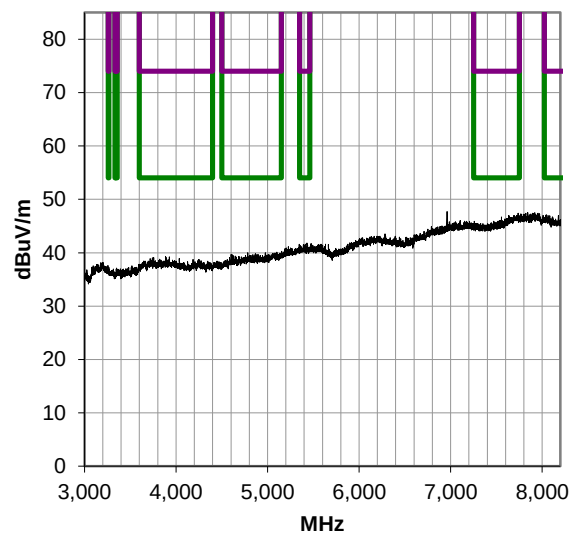


SPURIOUS RADIATED EMISSIONS

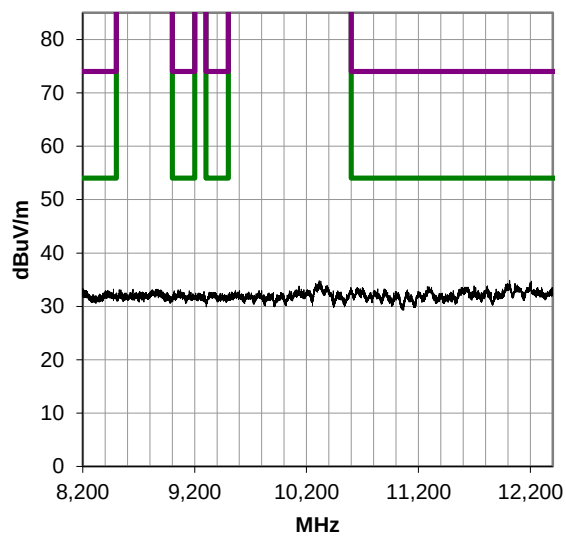
1000-3000 MHz, Run 56, High Channel



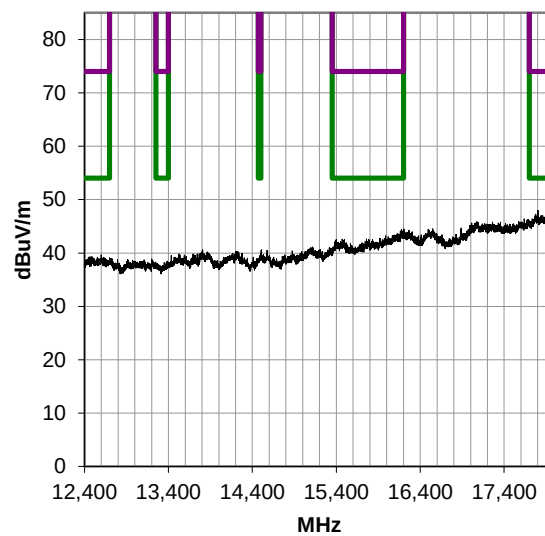
3000-8200 MHz, Run 57, High Channel



8200-12400 MHz, Run 58, High Channel

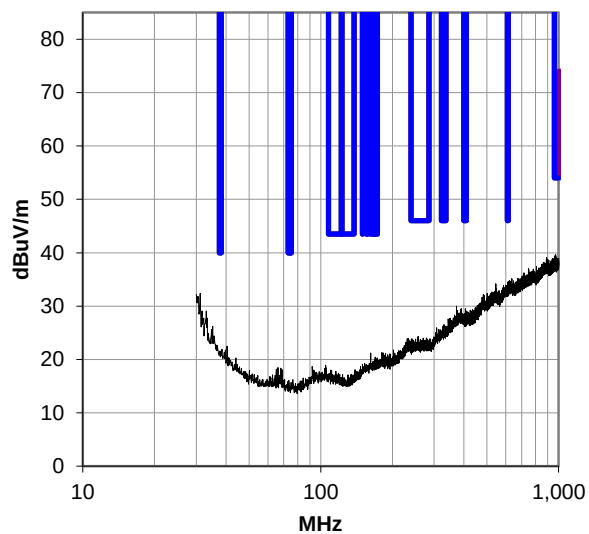


12400-18000 MHz, Run 59, High Channel

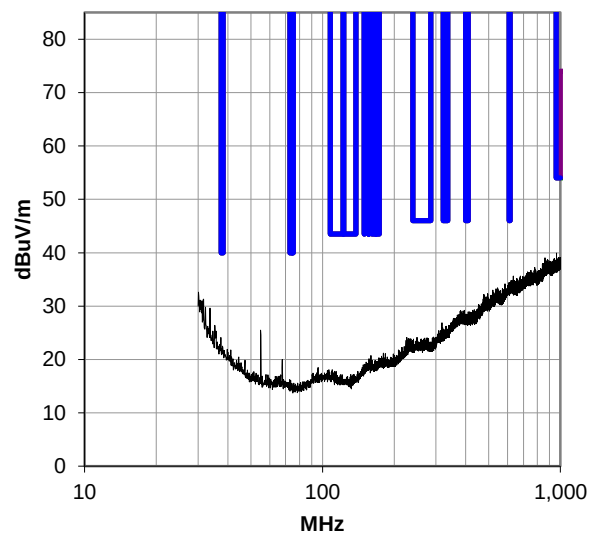


SPURIOUS RADIATED EMISSIONS

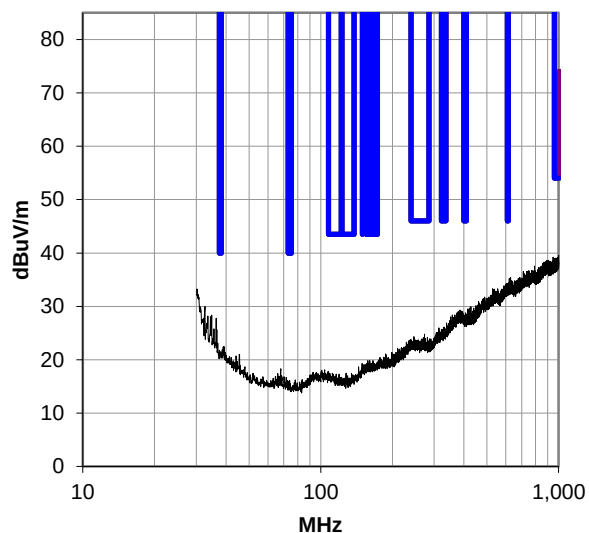
30-1000 MHz, Run 86, Low Channel



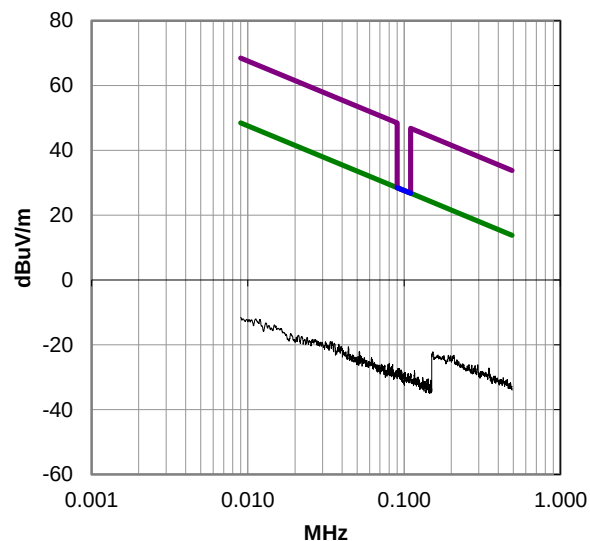
30-1000 MHz, Run 87, Middle Channel



30-1000 MHz, Run 88, High Channel

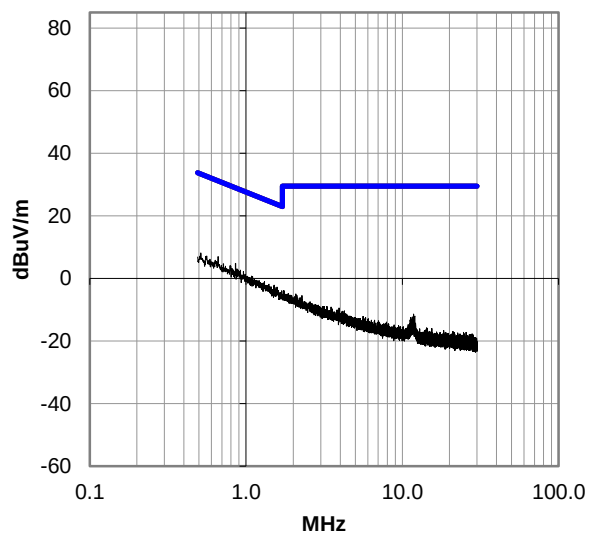


0.009-0.49 MHz, Run 89, Low Channel

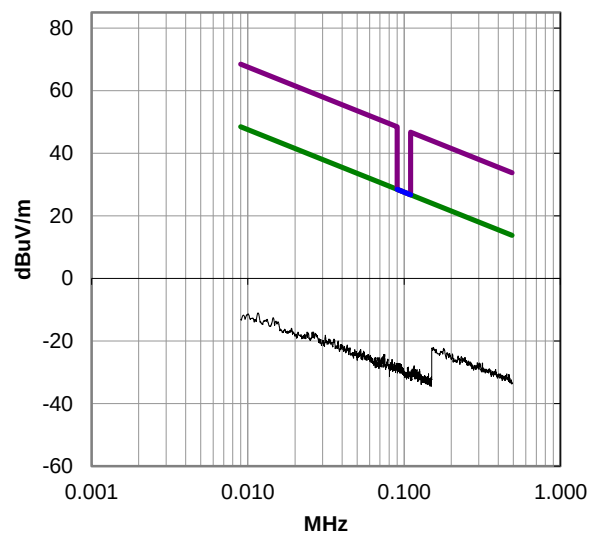


SPURIOUS RADIATED EMISSIONS

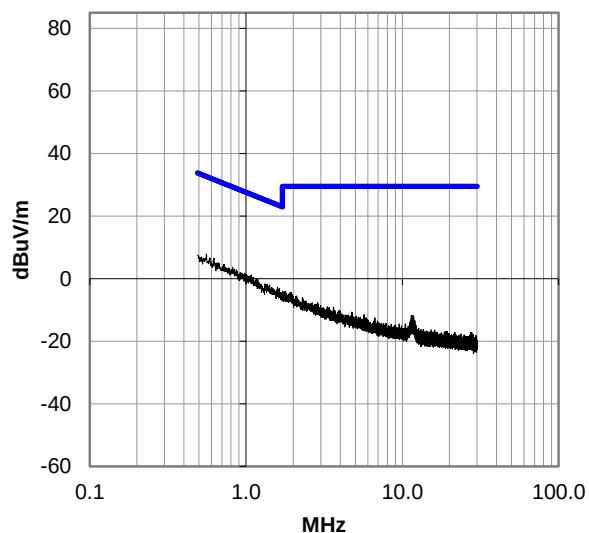
0.49-30 MHz, Run 90, Low Channel



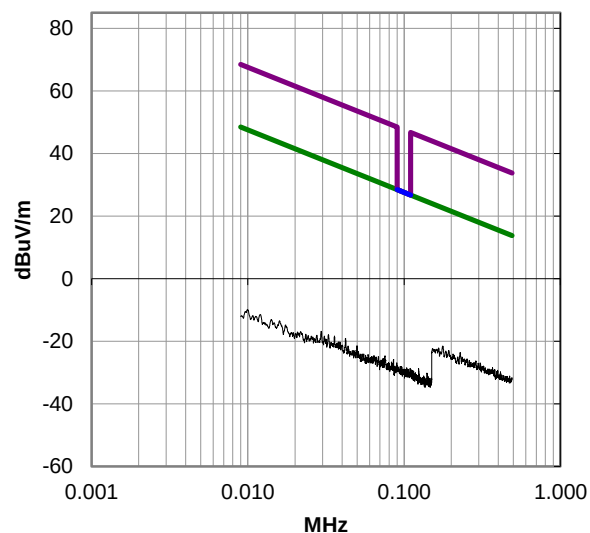
0.009-0.49 MHz, Run 91, Middle Channel



0.49-30 MHz, Run 92, Middle Channel

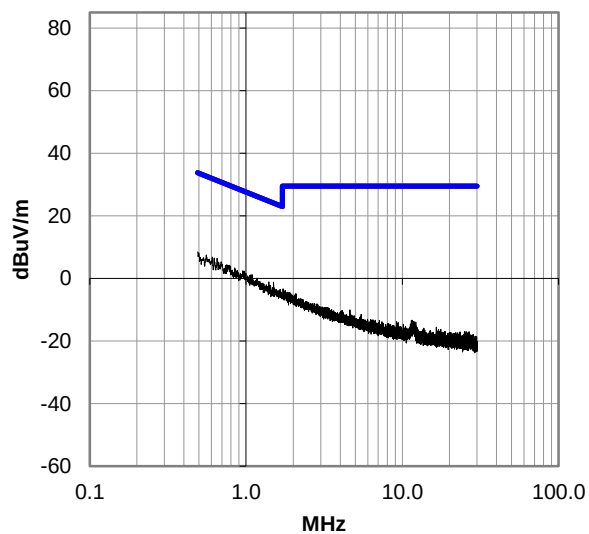


0.009-0.49 MHz, Run 93, High Channel

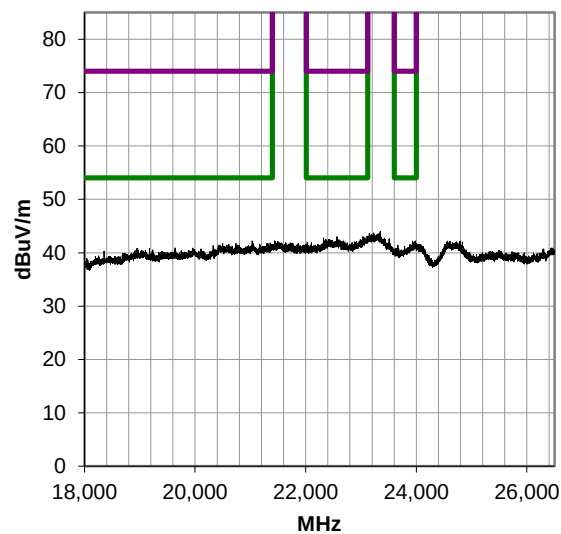


SPURIOUS RADIATED EMISSIONS

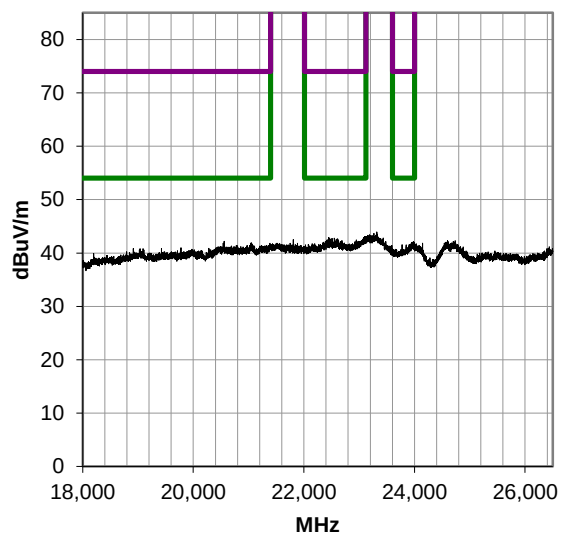
0.49-30 MHz, Run 94, High Channel



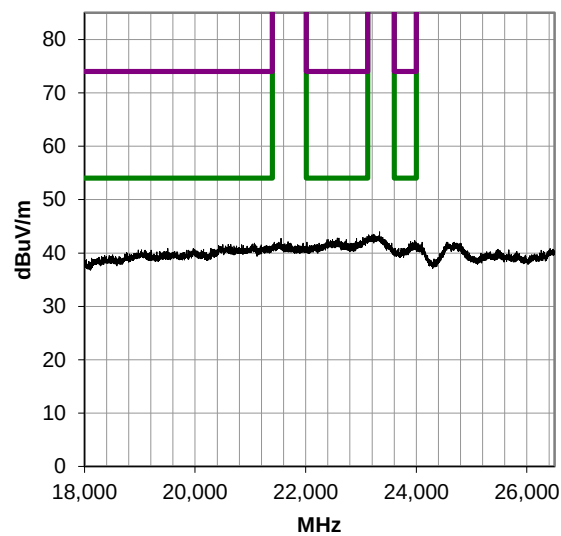
18000-26500 MHz, Run 224, Low Channel



18000-26500 MHz, Run 225, Middle Channel



18000-26500 MHz, Run 226, High Channel



End of Test Report