

EMC TEST REPORT



Standard(s):

**47 CFR FCC Part 15.247
RSS 247, Issue 4, 2025**

**FCC ID: DGFPD20184602
IC: 458A-PSD20184602**

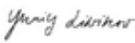
**Product: 3M™ Scott™ XD PASS Alarm (BAN BLE)
Model(s): 201846-02**

**Company Name:
3M Company**

**Address:
Fire & SCBA Solutions
4320 Goldmine Road, Monroe, NC 28110**

**Report Number: HRE202510498-5
Report Issue Date: February 9, 2026**

Report Prepared by:

Signature: 
**Yuriy Litvinov
Lead EMC Engineer**

**Tested by:
3M Company, Hardgoods Regulatory Engineering Laboratory
410 E. Fillmore Avenue, Building 76
St. Paul, Minnesota 55107-1208, USA**



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1.0 Test Summary

Based on the results of our investigation, we have concluded the product tested **comply** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

	Requirement – Test	Test Description	Result	Comments
4.1	FCC Part 15.247(a)(2)/ RSS-247(6.3.1(a))/RSS-Gen (6.7)	DTS Bandwidth	pass	
4.2	FCC Part 15.247(b)(3)/ RSS-247(6.3.2)	Maximum Peak Conducted Output Power	pass	
4.3	FCC Part 15.247(e)/ RSS-247(6.3.1(b))	Maximum Power Spectral Density level	pass	
4.4	FCC Part 15.209 RSS-Gen, 8.9	Radiated Emissions in restricted band	pass	
4.5	FCC Part 15.247(d)/ RSS-247(6.6)	Radiated Emissions in non-restricted band	pass	
4.6	FCC Part 15.247(d)(1)/ RSS-247(6.6)	DTS Band-edge Emissions Measurements	pass	
4.7	FCC Part 15.207/ RSS-Gen (8.8)	Conducted Emissions	N/A	

Note:	
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1.1 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements. The measurement uncertainty figures were calculated and correspond to a coverage factor of k=2, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Radiated emissions 30MHz to 1000MHz	4.9 dB
Radiated emissions 1GHz to 18GHz	4.6 dB
Conducted emissions 150KHz to 30MHz (AMN)	2.7 dB
Conducted emissions 150KHz to 30MHz (AAN)	1.92 dB
RF frequency	$\pm 3 \times 10^{-8}$
RF power, conducted	1.4 dB
RF Power Spectral Density	0.96 dB

1.2 Test Facility

Test Facility Accreditations:	ISO/IEC 17025:2017, NVLAP LAB CODE: 200033-0
	FCC US502
	ISED Canada CAB identifier: US0012



2.0 Equipment Description

2.1	Equipment Under Test			
Description:	Sensor Module Assembly: Electronics control module for battery power, audio (alarm tones), the Integrated Pak-Tracker 2.0 PCBA, Ultra-Wide Band PCBA, data logging, and the motion sensor. Sensor Module contains two antennas (IPT&BFE) controlled by RF Switch.			
Model(s):	201846-02			
Serial number:	N/A			
3M Division:	Personal Safety			
Modifications and Special Measures:	none			
Frequency Range:	2402-2480MHz			
Channel No.:	39			
Modulation Type:	GFSK			
FCC Classification:	Digital Transmission System (DTS)			
Conducted RF Output Power:	0.68dBm (1.17mW)			
Antenna Type and Antenna Assembly Gain:	☐ External	☒ Integral PCB Antenna	☐ Dedicated	
	☒ 4dBi (IPT)	☐ Declared by the Manufacturer	☒ Measured	
Test Deviations or Exclusions	☐ Yes	☒ No		
Rated Power:	Voltage:	☐ 120VAC	☐ 230VAC	☒ 9VDC
	Phase:	☐ 1ph	☐ 3ph	☒ 6 (AA) batteries
	Frequency:	☐ 50Hz	☐ 60Hz	
	Current:	N/A		
Test Dates:	01/05-02/09/2026			
Received Date:	12/12/2025			
Received Conditions:	☐ Poor	☒ Good		
	☒ Prototype	☐ Production		

3.0 EUT Configuration

3.1 System Configuration

No.	Product Type	Manufacturer	Model	Comments
1	EUT	3M	201846-02	
2	Notebook PC	HP	Zbook	Support Equipment
3				

3.2 Input/Output Ports of EUT

No.	Description	Type	Comments
1	Pressure Transducer	12 pin	Bulkhead Mount Circular Connector
2	Sensor Module, Console	11 pin	Bulkhead Mount Circular Connector

3.3 Cables

No.	Description	Type	Length	Shielding	Comments
1	Control Cables	Twisted Pair	1m	Yes	
2					

3.4 Measurement Arrangements of EUT

	Intended Operational Arrangement(s)	Comments
☒	Table-top only	
☐	Floor-standing only	
☐	Floor-standing or table-top	
☒	Other	Body-worn

3.5 Exercising of EUT and Interfaces

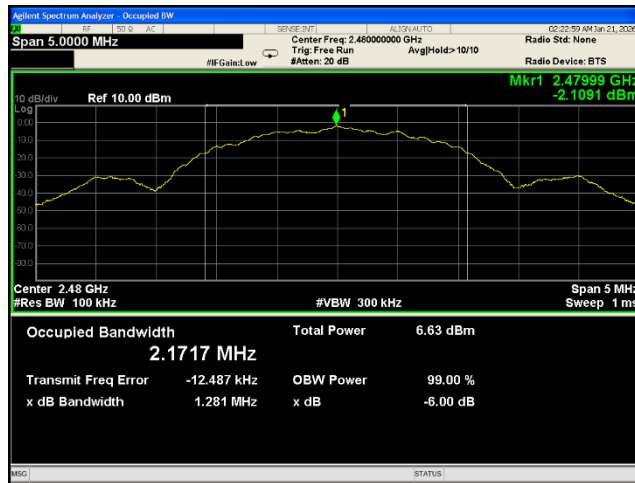
No.	Mode of Operation
1	Transmitting at lowest, middle and highest channels of operation using modulated carrier at each operation mode according to applicable Bluetooth test protocol (Body Area Network -2mbps)
2	Device programming over Python 3.14.0 Terminal Software using SCBA Radio Testing GUI ver. 1.2.0 provided by the manufacturer for continuous transmission of modulated carrier at maximum rated RF output power and Duty Cycle.

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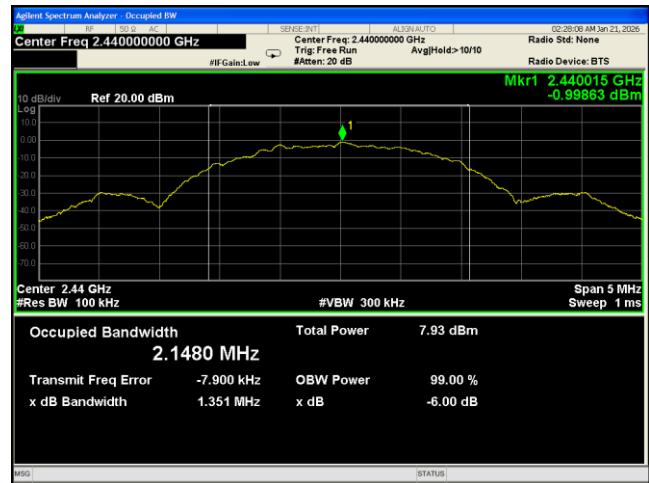
4.0 Test Conditions and Results

4.1	DTS Bandwidth		
	Laboratory Ambient Temperature:	23°C	
	Relative Humidity:	48%	
	Atmospheric Pressure:	1011 mbars	
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.8.2 ☒ FCC Part 15.247/RSS 247 ☒ KDB 558074	Measurement Point ☒ Conducted ☐ Radiated	
Frequency Range:	☒ 2402-2480.0MHz	RBW = 100KHz (FCC Part 15) RBW = 100KHz (RSS-Gen) VBW ≥ 3 x RBW	
Nominal Voltage:		☐ 120VAC ☒ 9VDC	
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>		Date: 01/21/2026

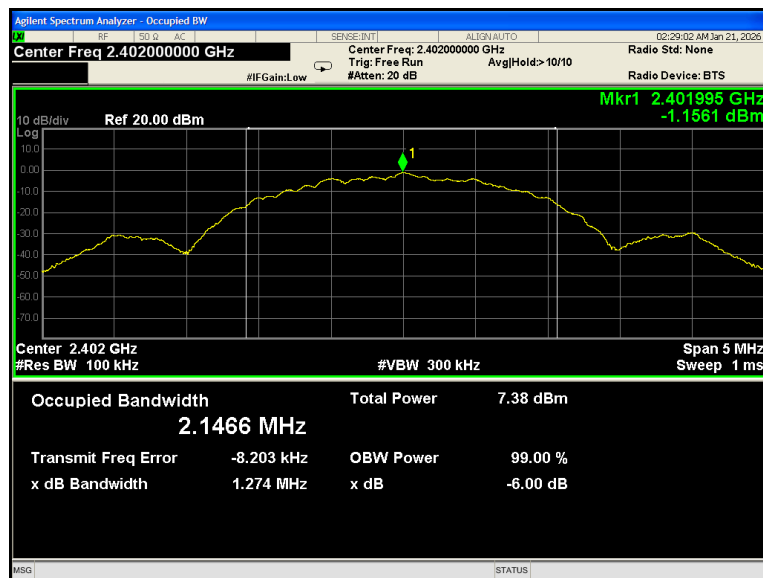
Frequency (MHz)	Data Rate	RSS Gen 99% dB Bandwidth (KHz)	FCC Part 15.247 6 dB Bandwidth (KHz)	6dB OBW Limit (KHz)	Results
2402	2mbps	2171	1281	> 500	pass
2440	2mbps	2148	1351	> 500	pass
2480	2mbps	2146	1274	> 500	pass



OBW – BLE Low Channel



OBW – BLE Mid Channel

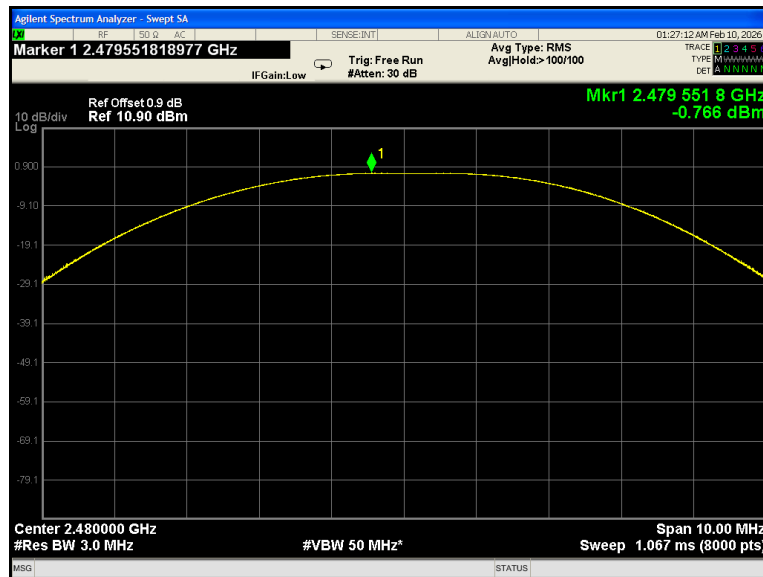
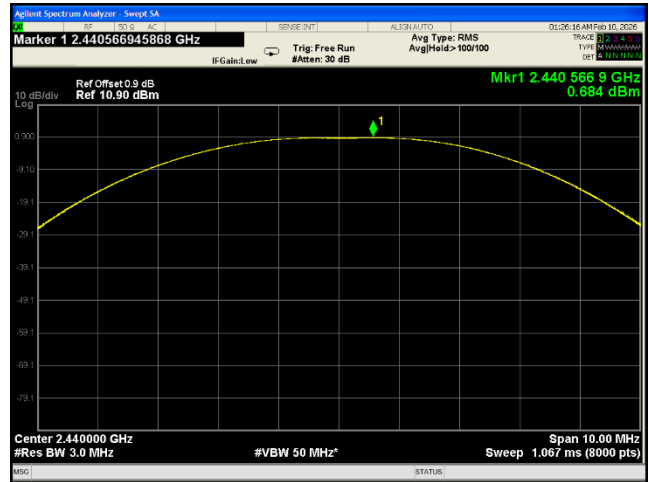
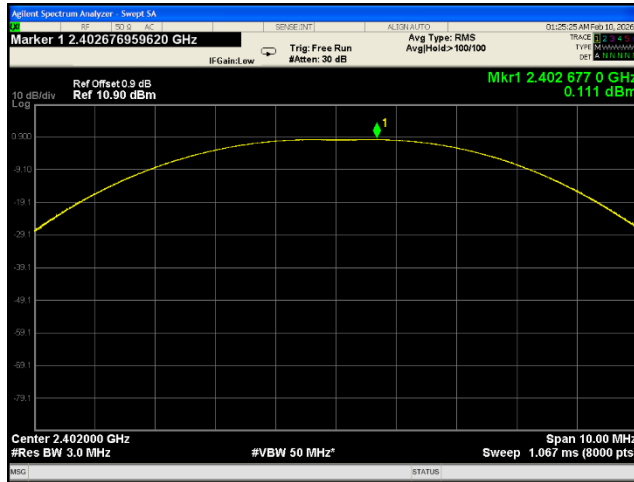


OBW – BLE High Channel

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4.2	Maximum Output Power		
Method:	Measurements was performed with CW carrier at the highest power level at which the transmitter is intended to operate. The analyzer offset was adjusted to compensate for the attenuator and other losses.		
		Laboratory Ambient Temperature:	23°C
		Relative Humidity:	48%
		Atmospheric Pressure:	1011 mbars
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.9 ☒ FCC Part 15.247/RSS 247 ☒ KDB 558074		Measurement Point ☒ Conducted ☐ Radiated
Frequency Range:	☒ 2402-2480.0MHz		
Antenna Gain:	4.0dBi		Maximum Conducted RMS Power:
Limit:	30 dBm		0.68dBm (1.17mW)
Nominal Voltage: ☐ 120VAC ☒ 9VDC			
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>		Date: 02/09/2026

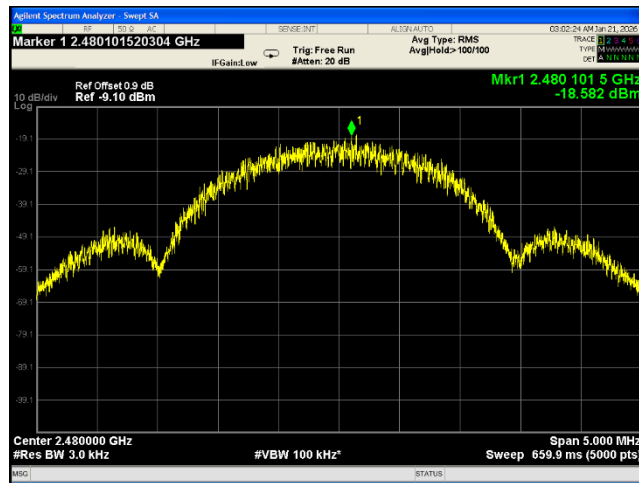
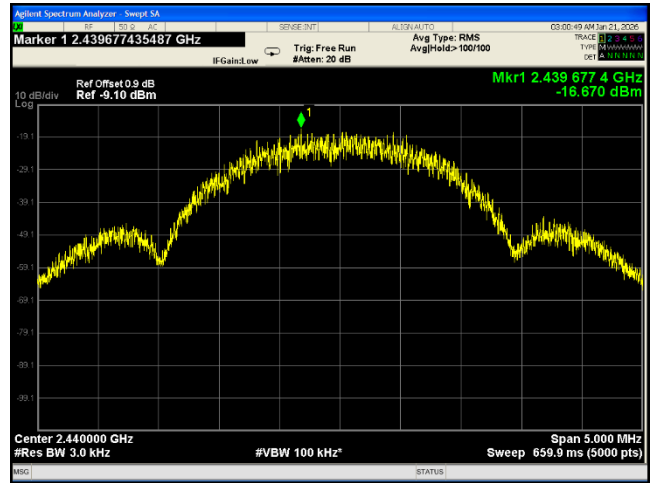
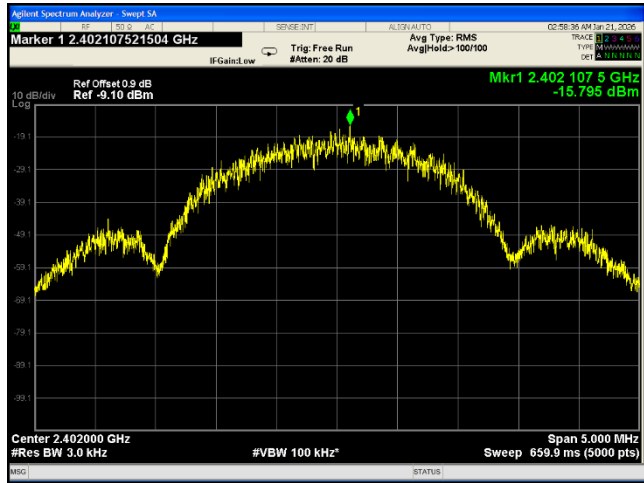
Note:	EIRP (dBm) = Conducted Power (dBm) +Antenna Gain (dBi)= 0.68+4.0=4.68dBm
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Conducted RF Power

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4.3	Maximum Power Spectral Density level		
Method:	Measurements was performed with modulated carrier at the highest power level at which the transmitter is intended to operate. The analyzer offset was adjusted to compensate for the attenuator and other losses.		
	Laboratory Ambient Temperature:	23°C	
	Relative Humidity:	48%	
	Atmospheric Pressure:	1011 mbars	
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.10.2 ☒ FCC Part 15.247/RSS 247 ☒ KDB 558074	Measurement Point ☒ Conducted ☐ Radiated	
Frequency Range:	☒ 2425.0 MHz	PSD Results	
PSD Limit:	8 dBm in any 3KHz band	-15.7dBm	
Nominal Voltage:	☐ 120VAC ☒ 9VDC		
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>	Date: 01/21/2026	



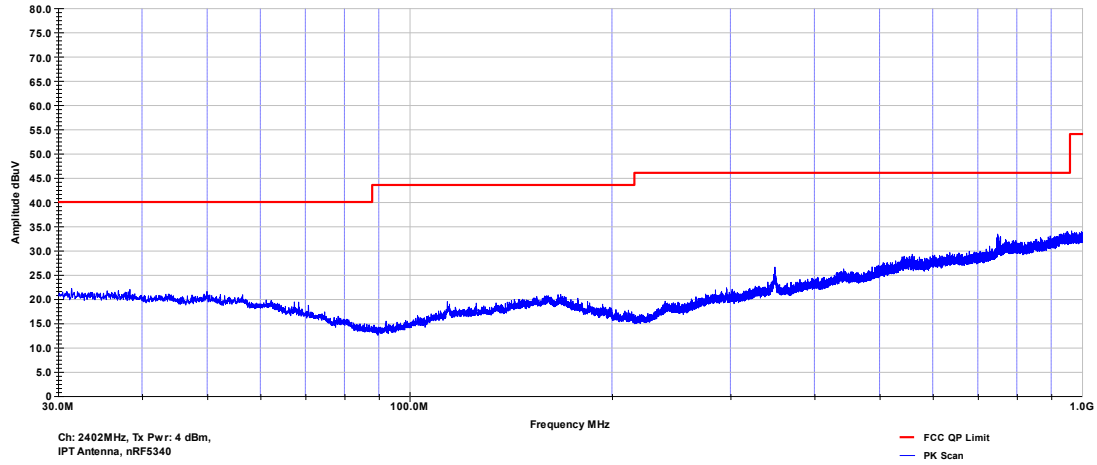
4.4	Radiated Emissions in restricted band				
Method:	Measurements were made in a 3-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4 standards. EUT was rotated through three orthogonal axes to determine which attitude (orientation) and arrangement produces the highest emission relative to the limit; the attitude and device arrangement that produces the highest emission relative to the limit was used in making final radiated emission measurements. Spurious Radiated emissions measurements were performed with external preamp and a high pass filter. Final measurements were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.				
Test Verification: ☒	Laboratory Ambient Temperature:		23°C		
	Relative Humidity:		55%		
	Atmospheric Pressure:		1011 mbars		
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.12.1 ☒ FCC Part 15.205/15.209/RSS Gen (8.9) ☒ KDB 558074		Measurement Distance		
			☒ 3 Meters ☐ 		
Frequency Range:	☒ 30 MHz to 1 GHz		RBW = 100KHz, VBW ≥ 3 x RBW		
	☒ 1 GHz to 25 GHz		RBW = 1MHz, VBW ≥ 3 x RBW		
Nominal Voltage:	☐ 120VAC ☒ 9VDC				
Test Personnel:	Jayden Alstad <i>J.A.</i>			Date: 01/19/2026	
Limits –15.209 and RSS Gen					
Frequency (MHz)	Limit dB (µV/m)			Distance	Results
	Quasi-Peak	Average	Peak		
0.009-0.490		2400/F(KHz)		300	N/A
0.490-1.705	24000/F(KHz)			30	N/A
1.705-30	30			30	N/A
30 to 88	40			3	pass
88 to 216	43.5			3	pass
216 to 960	46			3	pass
Above 960		54	74	3	pass

Modifications:	
Note:	The lower limit applies at the transition frequency. An inverse proportionality factor of 20 dB per decade has been used to normalize the measured data to the specified distance for determining compliance For emission in the restricted bands, the limit of 15.209 was used. There are no emissions were detected in the 15.205 restricted band within 30dB below 15.209 limit adjacent or nearby to 2400-2483.5MHz frequency band during operation at the high channel. No radiated spurious emissions were detected above 18GHz



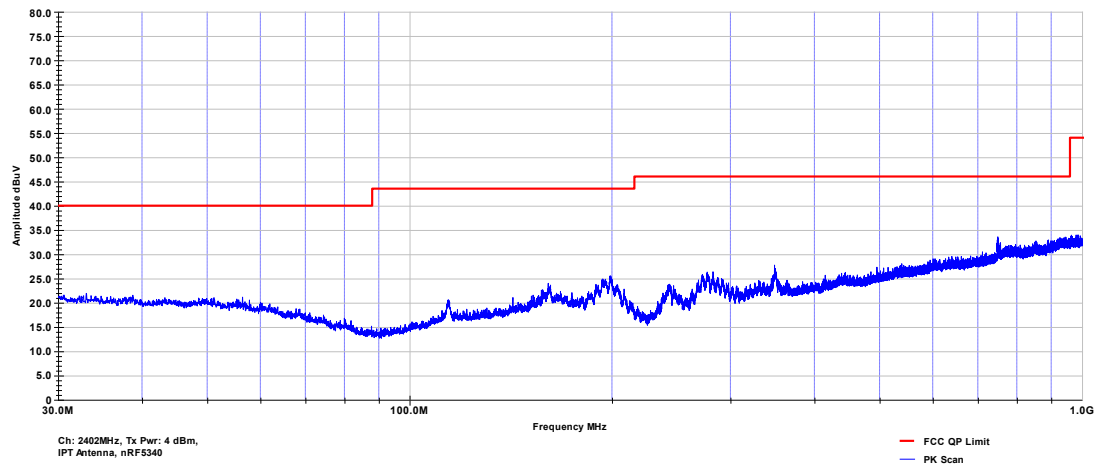
3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Vertical

Project# - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)

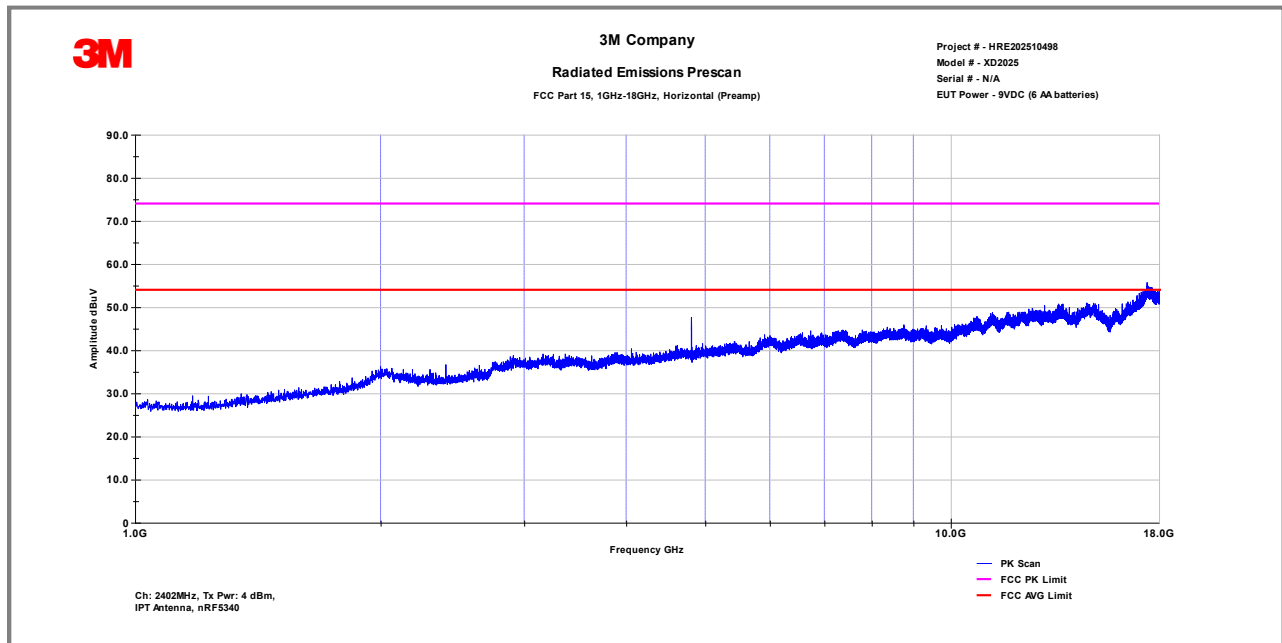
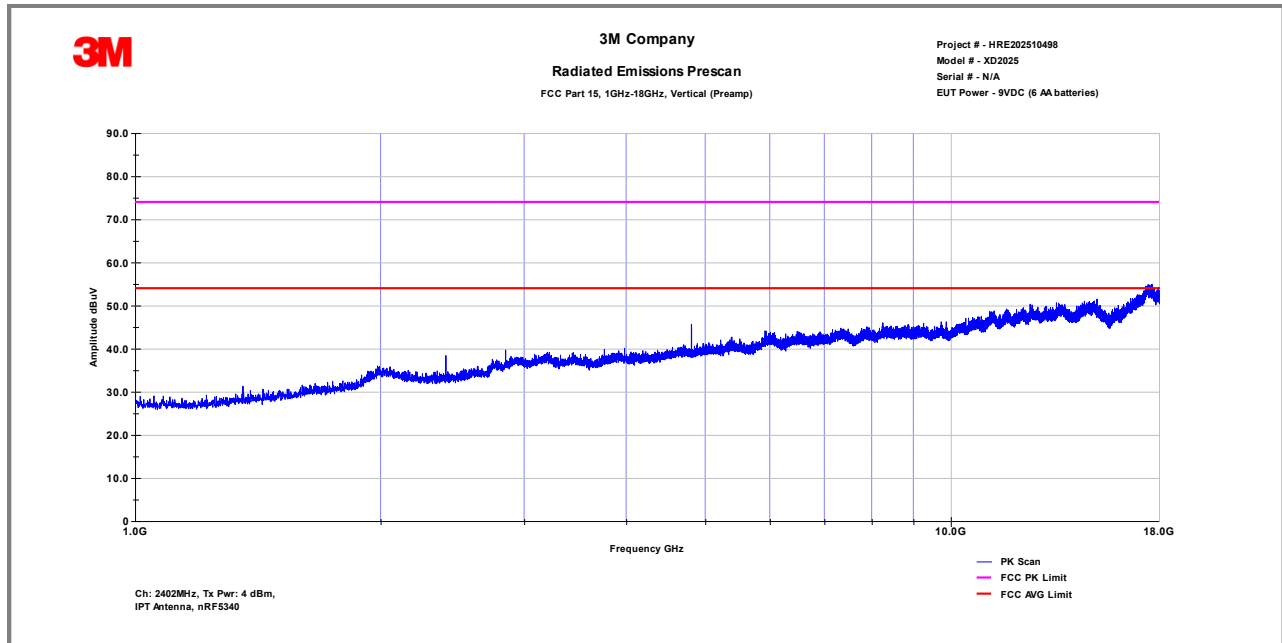


3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Horizontal

Project # - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)



FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, Low Ch.

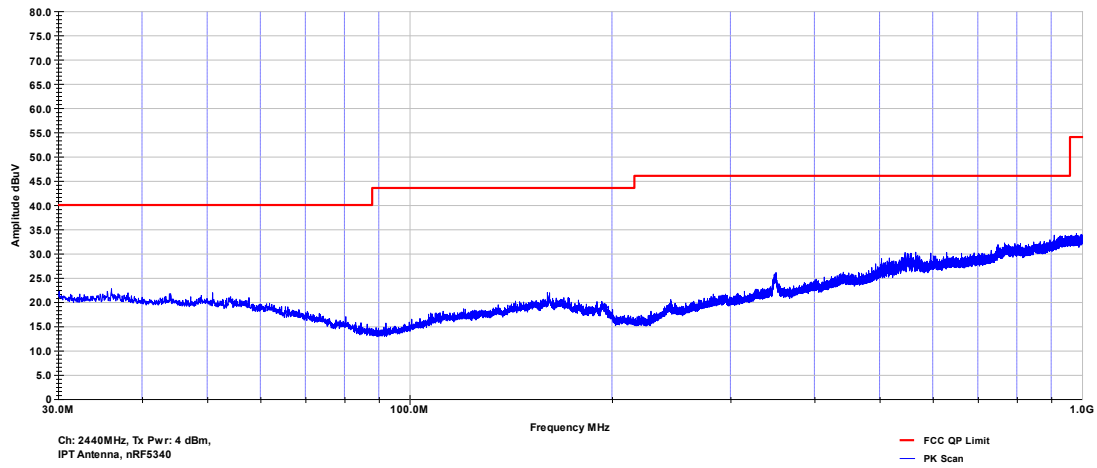


FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, Low Ch.



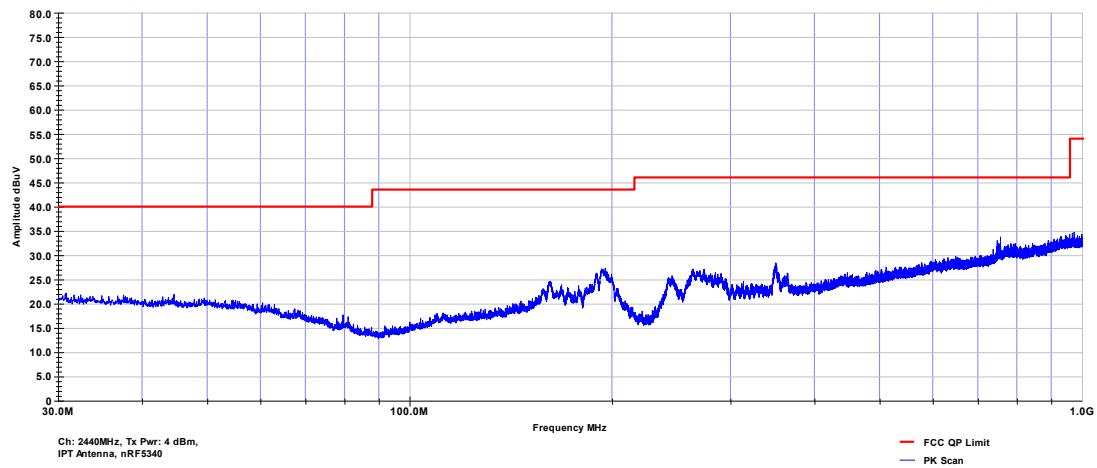
3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Vertical

Project# - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)

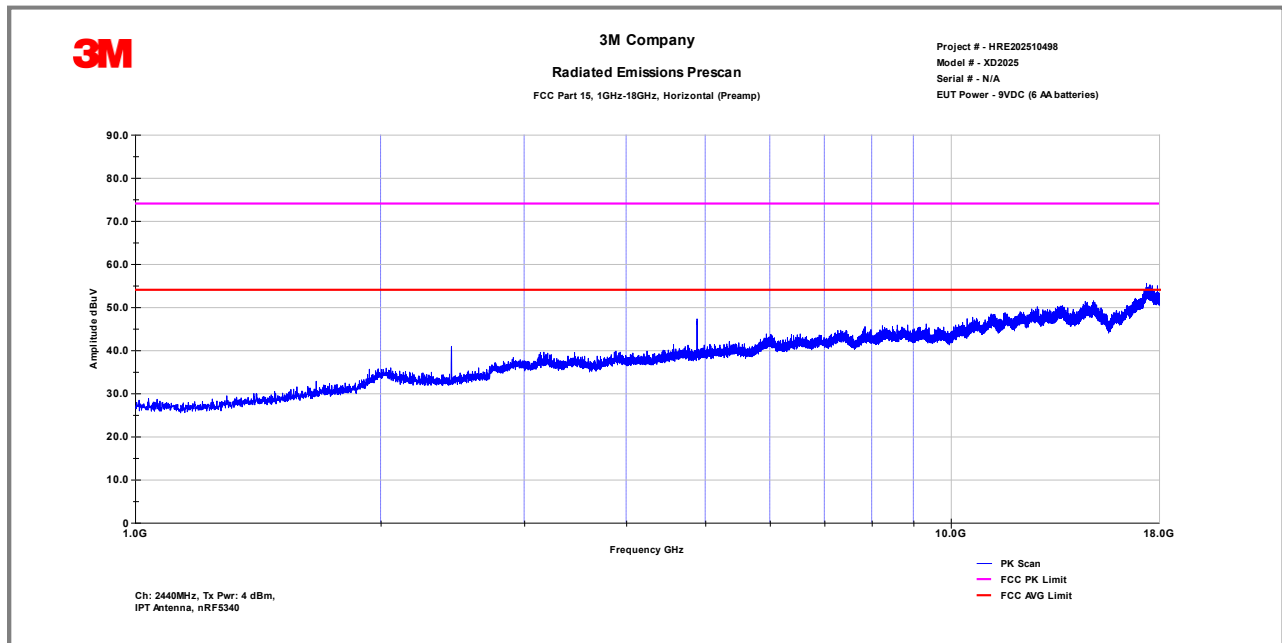
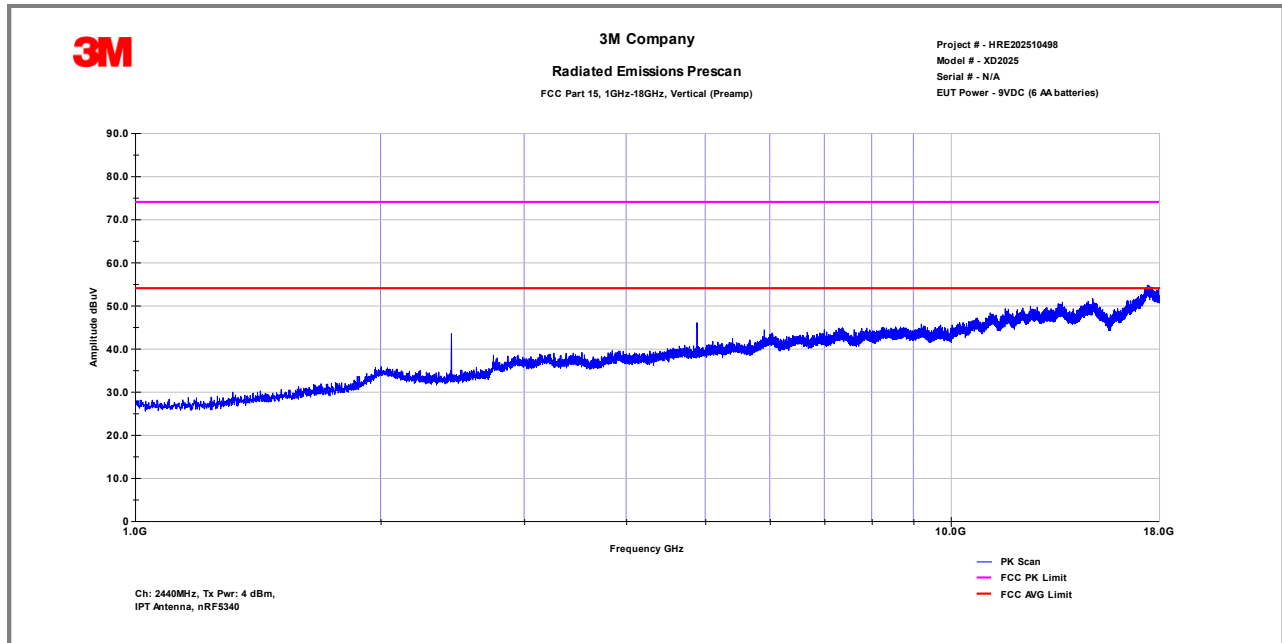


3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Horizontal

Project # - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)



FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, Mid Ch.

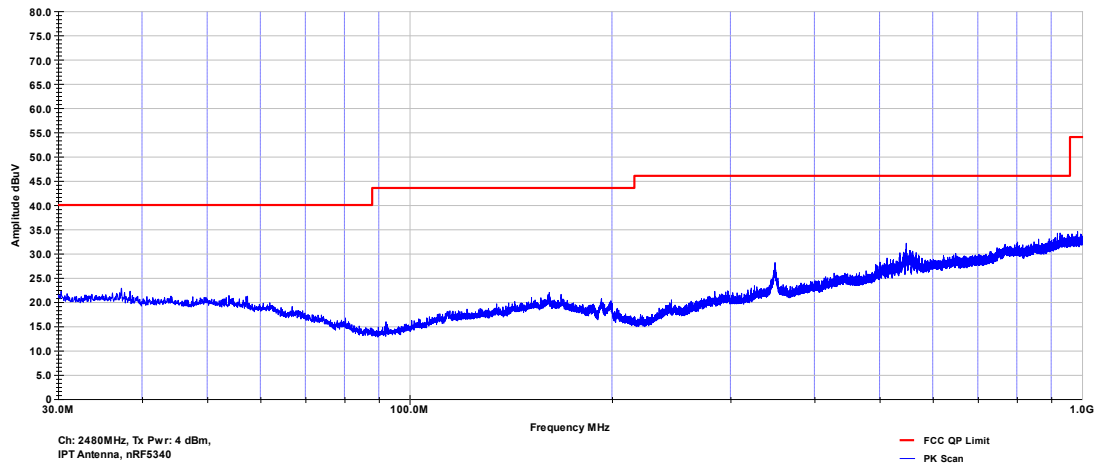


FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, Mid Ch.



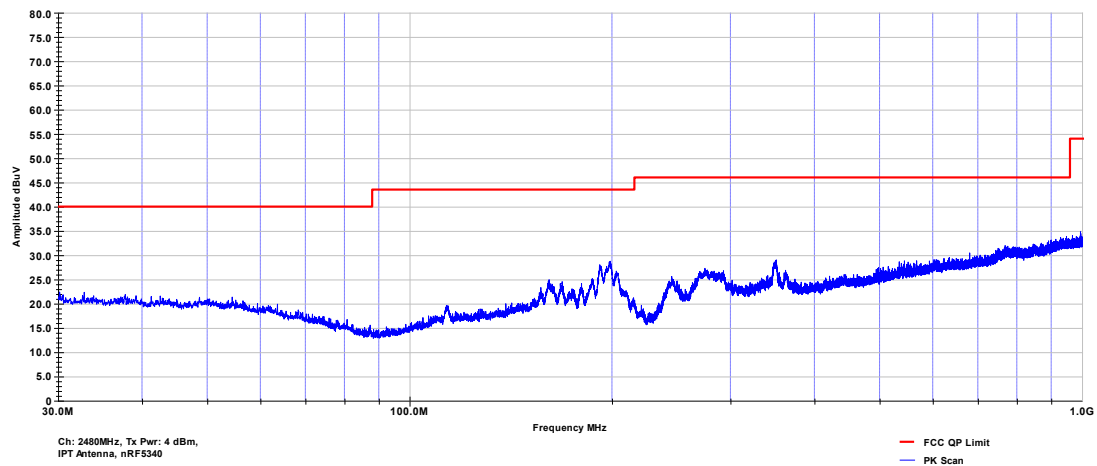
3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Vertical

Project # - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)

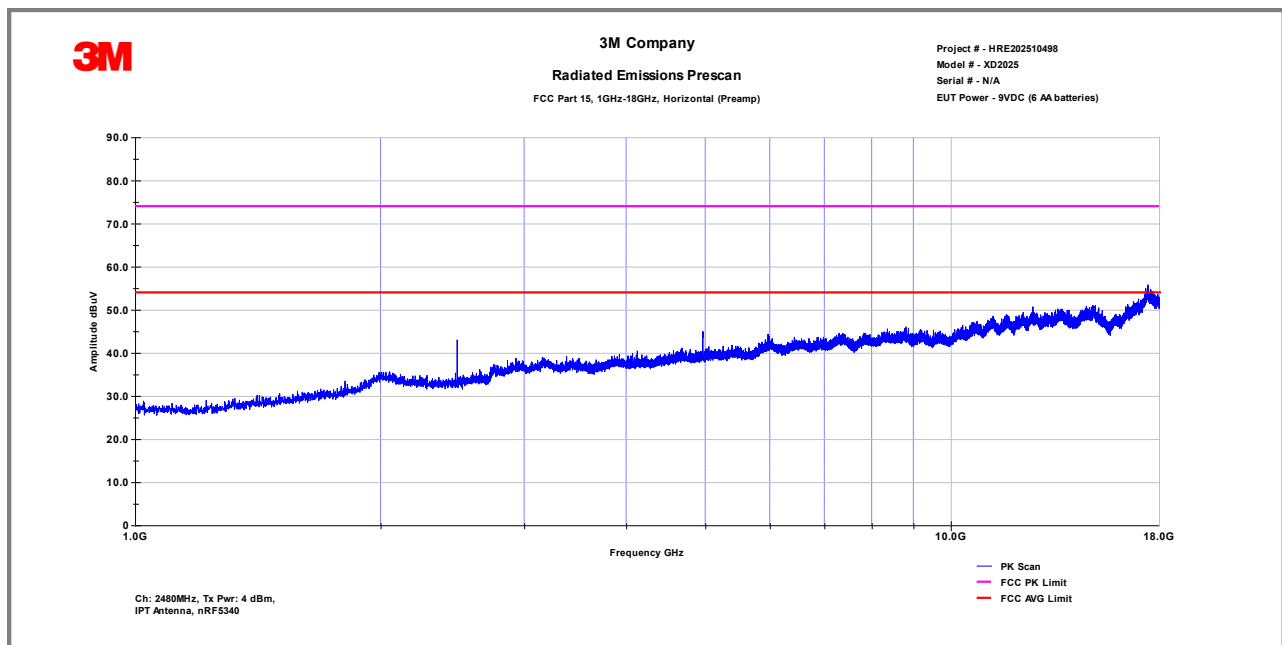
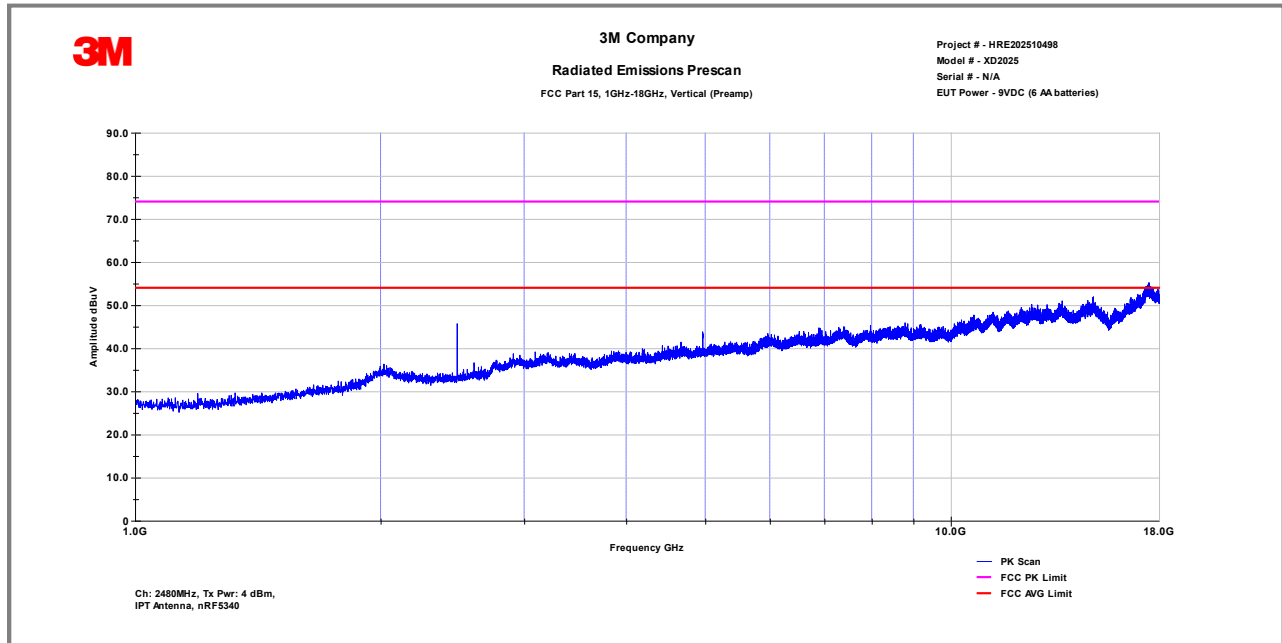


3M Company
Radiated Emissions Pre-scan
 FCC Part 15, Class B, Horizontal

Project # - HRE202510498
 Model # - XD2025
 Serial # - N/A
 EUT Power - 9VDC (6 AA batteries)



FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, High Ch.



FCC Part 15.209 Radiated Emissions in restricted band - IPT Antenna, High Ch.



Tables - Radiated Emissions in restricted band

Frequency (MHz)	Pol.	QP Reading dB μ V/m	Total CF dB	Net at 3 m dB μ V/m	Limit (dB μ V/m)	Margin dB
114.47	H	3.7	15.2	18.9	43.5	-24.6
197.45	H	5	15.1	20	43.5	-23.5
348.41	H	4.3	19.9	24.1	46	-21.9
747.29	H	3.1	28	31	46	-15
Notes:	Net Reading (dB μ V) = Reading (dB μ V) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB) BLE Low Channel – IPT Antenna					

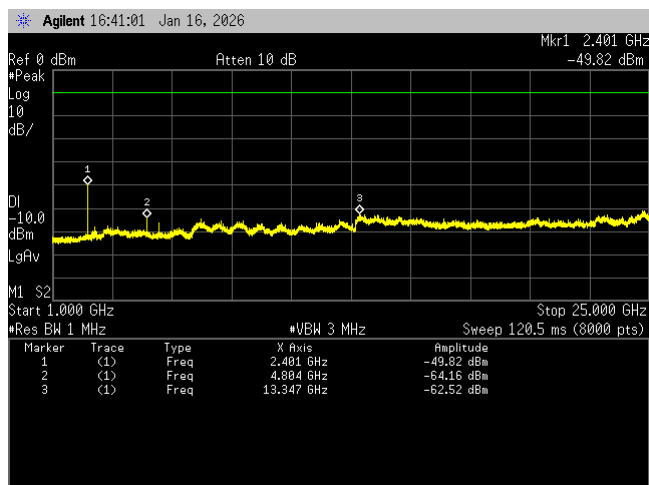
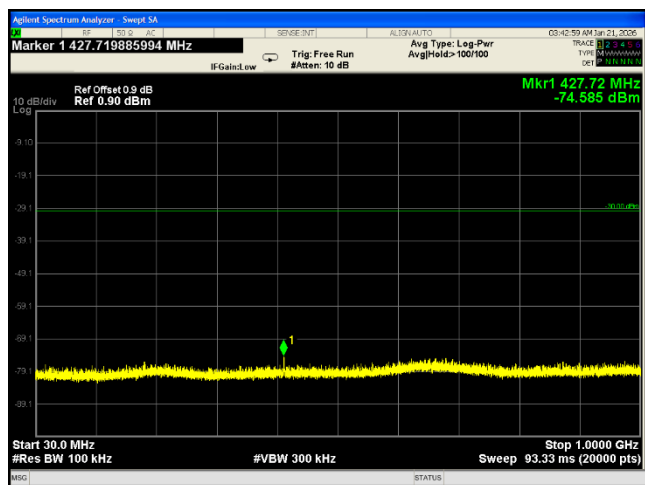
Frequency (MHz)	Pol.	QP Reading dB μ V/m	Total CF dB	Net at 3 m dB μ V/m	Limit (dB μ V/m)	Margin dB
195.08	H	7	15.5	22.5	43.5	-21
348.59	H	3.8	19.8	23.6	46	-22.4
756.11	H	3.3	28.3	31.6	46	-14.4
Notes:	Net Reading (dB μ V) = Reading (dB μ V) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB) BLE Mid Channel – IPT Antenna					

Frequency (MHz)	Pol.	QP Reading dB μ V/m	Total CF dB	Net at 3 m dB μ V/m	Limit (dB μ V/m)	Margin dB
160.39	H	2.8	18.6	21.4	43.5	-22.1
198.47	H	5.6	15	20.6	43.5	-22.9
350.78	H	3.7	19.8	23.5	46	-22.5
547.52	H	3.3	24.3	27.5	46	-18.5
Notes:	Net Reading (dB μ V) = Reading (dB μ V) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB) BLE High Channel – IPT Antenna					

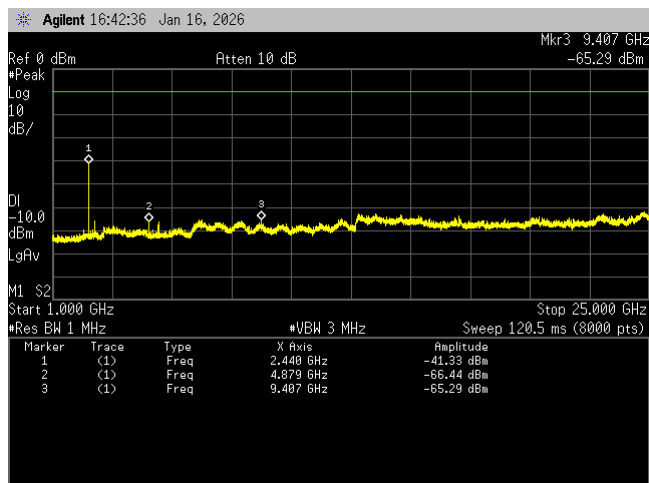
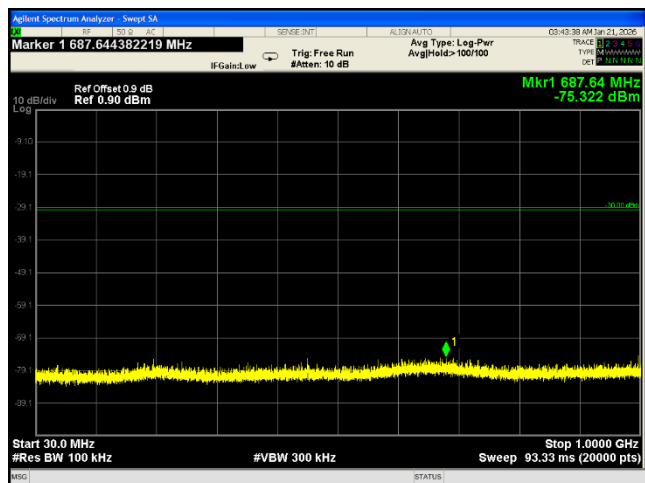
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4.5	Radiated Emissions in non-restricted band		
Method:	The measurements were made with transmitter set to transmit continuously.		
	Laboratory Ambient Temperature:	23°C	
	Relative Humidity:	48%	
	Atmospheric Pressure:	1011 mbars	
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.11 ☒ FCC Part 15.247/RSS 247 ☒ KDB 558074	Measurement Point ☒ Conducted ☐ Radiated	
Frequency Range:	☒ 2402-2480.0 MHz		
In-band power in 100KHz:	☒ 7.84dBm	Results:	
Limit:	☒ -29.5dBm (30dBc below in-band power)	>58dBc	
Nominal Voltage:	☐ 120VAC ☒ 9VDC		
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>	Date: 01/21/2026	

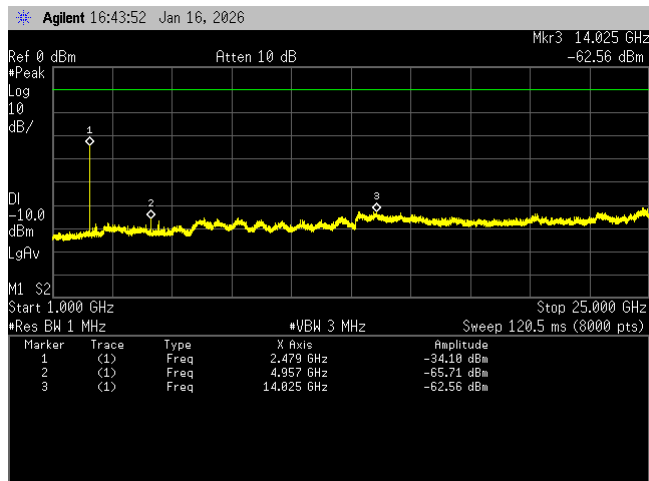
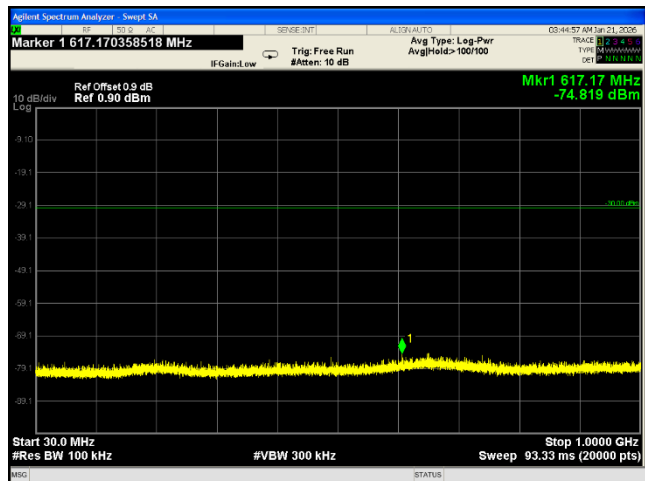
Note:	A notch filter was installed to prevent system overload at 2.4GHz
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Conducted Spurious – Low Ch.



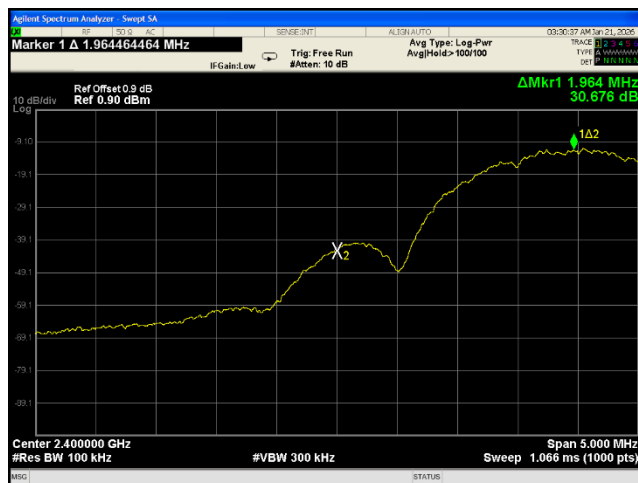
Conducted Spurious – Mid Ch.



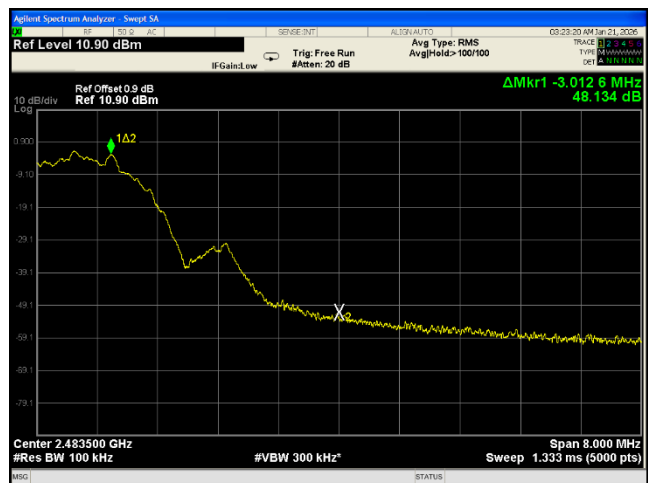
Conducted Spurious- High Ch.



4.6	Band-Edge Compliance		
Method:	The measurements were made with transmitter set to transmit continuously with modulated signal at low and high channels.		
	Laboratory Ambient Temperature:	23°C	
	Relative Humidity:	48%	
	Atmospheric Pressure:	1011 mbars	
Reference Standard(s):	☒ ANSI C63.10:2020, Section 11.13.2 ☒ FCC Part 15.247/RSS 247 ☒ KDB 558074	Measurement Point ☒ Conducted ☐ Radiated	
Frequency Range:	☒ 2402-2480.0MHz		Results
Limit:	☒ >30dBc		Low, 2402 MHz > 30.7dBc High, 2480 MHz > 48.3dBc
Nominal Voltage:	☐ 120VAC ☒ 9VDC		
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>		Date: 01/21/2026

Note:

Band Edge - Low
Center Freq. 2.400GHz



Band Edge - High
Center Freq. 2.4835GHz

4.7	Conducted Emissions Data			
Method:	The AMN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.			
	All power was connected to the system through Artificial Mains Network (AMN). All tested telecommunications lines were connected to an Asymmetric Artificial Network (AAN) and conducted voltage measurements on telecommunications lines were made at the output of the ISN. Where an AAN was not appropriate or available measurements were made using a Capacitive Voltage Probe.			
Test Verification: ☐		Laboratory Ambient Temperature:		
		Relative Humidity:		
		Atmospheric Pressure:		
Reference Standard(s):		☐ RSS Gen/FCC 15.207 ☐ ANSI C63.4:2014 ☐ ANSI C63.10:2020	Measurement Point ☐ Mains ☐ Telecommunication ports ☐	
Nominal Voltage:		☐ 120VAC ☐ 230VAC ☐ VDC		
Test Personnel:			Date:	
Limits – Part 15.207/RSS Gen – AC Mains				
Frequency (MHz)	Limit dB (µV)			
	Quasi-Peak	Average	Result	Comments
0.15 to 0.50	66 to 56	56 to 46	N/A	
0.50 to 5	56	46	N/A	
5 to 30	60	50	N/A	

Modifications:	
Note:	

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5.0	Test Equipment				
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Last Cal. Date	Check
Biconilog Antenna	Schwarzbeck	VULB 9168	9168-1070	10/20/2025	☒
Horn Antenna	A.H. Systems	SAS 571	1010	10/20/2025	☒
Loop Antenna	A.H. Systems	EHA-51B	1213E	10/20/2025	☐
EMI Receiver	Rohde & Schwarz	ESW26	101412	10/20/2025	☒
Signal Analyzer	Agilent	N9000A	MY53031040	10/20/2025	☒
EMI Receiver	Agilent	E4448A	1530975	10/20/2025	☒
LISN	TESEQ	NNB51	1130	10/20/2025	☐
Coaxial Cable	Insulated Wire	2803	CBL2039	10/20/2025	☒
EMC Software	ETS-Lindgren	TILE 7		N/A	☒
Equipment Calibration Interval:		☒ 12 months ☐ 24 months			

6.0	Report revision history		
Revision Level	Date	Report Number	Notes
0	02/09/2026	HRE202510498-4	Original Issue