

EMC TEST REPORT



Standard(s):

**47 CFR FCC Part 15.519
RSS 220, Issue 1, 2009, Am1:2018**

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

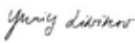
**Product: 3M™ Scott™ XD PASS Alarm (UWB)
Model(s): 201846-02**

**Company Name:
3M Company**

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

**Report Number: HRE202510498-2
Report Issue Date: February 10, 2026**

Report Prepared by:

Signature: 
**Yuriy Litvinov
Lead EMC Engineer**

**Tested by:
3M Company, Hardgoods Regulatory Engineering Laboratory
410 E. Fillmore Avenue, Building 76
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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 15.519(b) RSS-220 (2.0)	UWB Bandwidth (10 dB Bandwidth)	pass	
4.2	FCC Part 15.519(a)(1) RSS-220 (5.3.1(b))	Cessation Time	pass	
4.3	FCC Part 15.519(e) RSS-220, (5.3.1 (g))	Peak Power Radiated Emissions	pass	
4.4	FCC Part 15.519(d)(c) RSS-220(5.3.1 (c)/(d))	Transmitter Radiated Emissions and Spurious Emissions	pass	
4.5	FCC Part 15.207/ RSS-Gen (8.8)	Conducted Emissions	N/A	

Note:	Sensor Module is battery operated.
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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:	6489.6 MHz			
Channel No.:	CH5			
Modulation Type:	Burst Position Modulation (BPSK)			
FCC Classification:	Ultra-Wideband Transmitter (UWB)			
Maximum Field Strength Rating:	50dBuV@3m(-47.4 dBm EIRP)			
Antenna Type and Antenna Assembly Gain (MOD1000 and UWB RF2):	☐ External	☒ Integral PCB Antenna	☒ Dedicated	
	☒ 4.16dBi/6200MHz	☒ Declared	☐ 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		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			
	UWB Channel	Frequency MHz	Data Rate	Modulation
1	5	6489.6	850kbts/s	BPM/BPSK
2	5	6489.6	6.8mbits/s	BPM/BPSK
3	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.			

4.0 Test Conditions and Results

4.1	10dB Bandwidth		
		Laboratory Ambient Temperature:	23°C
		Relative Humidity:	48%
		Atmospheric Pressure:	1011 mbars
Reference Standard(s):	☒ ANSI C63.10:2020, Section 10.1 ☒ FCC Part 15.519/RSS 220 ☒ KDB 558074	Measurement Point ☒ Conducted ☐ Radiated	
Frequency Range:	☒ 6489.6 MHz ☐	RBW = 1MHz VBW ≥ 3 x RBW	
UWB Bandwidth Limit:	☐ ≥ 0.2 (Fractional Bandwidth)		
	☒ ≥ 500MHz (10dB UWB)		
Nominal Voltage:	☐ 120VAC ☒ 9VDC		
Test Personnel:	Jayden Alstad <i>J.A.</i>		Date: 01/21/2026

Note:	10dB BW was checked for both antenna polarizations, The worst case is reported. BW measurements were performed @2m distance.
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Pol.	Ant	CH/ mbit/s	Highest Radiated Emission F _M (MHz)	10dB Upper Boundary, F _H (MHz)	10 dB Lower Boundary, F _L (MHz)	Center Frequency, F _C = (F _H + F _L)/2 (MHz)	10dB UBW F _H – F _L (MHz)	Limit
H	MOD	5/0.85	6490	6742	6220	6481	522	>500
H	MOD	5/6.8	6455	6756	6250	6503	506	>500
H	RF2	5/0.85	6334	6741	6202	6471.5	539	>500
H	RF2	5/6.8	6334	6728	6205	6466.5	523	>500



11:39:51 AM 01/26/2026

UWB MOD1000 Antenna 10dB BW CH5 0.85mbit/s



12:14:55 PM 01/26/2026

UWB MOD1000 Antenna 10dB BW CH5 6.8mbit/s



12:29:56 PM 01/26/2026

UWB RF2 Antenna 10dB BW CH5 0.85mbit/s



12:34:09 PM 01/26/2026

UWB RF2 Antenna 10dB BW CH5 6.8mbit/s

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4.2	Peak Power Radiated Emissions		
Method:	Measurements were performed with UWB broadband 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 10.3.5 ☒ FCC Part 15.519/RSS 220 ☒	Measurement Point ☐ Conducted ☒ Radiated	
Frequency Range:	☒ 6489.6 MHz ☐		
Antenna Gain:	4.16dBi		
EIRP Limit:	☐ 0 dBm/50MHz ☒ -14dBm/10MHz (81.2dBμV/m/10MHz)	RBW = 10MHz VBW ≥ 3 x RBW	
Nominal Voltage:	☐ 120VAC ☒ 9VDC		
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>	Date: 02/05/2026	

Note:	$\text{EIRP Limit (dBm)} = \text{EIRP}_{50\text{MHz}} + 20\log 10 \text{ MHz}/50 \text{ MHz} = 0 \text{ dBm} + (-14 \text{ dB}) = -14\text{dBm (81.2dBuV@3m)}$ Worst case combinations are reported for each antenna.
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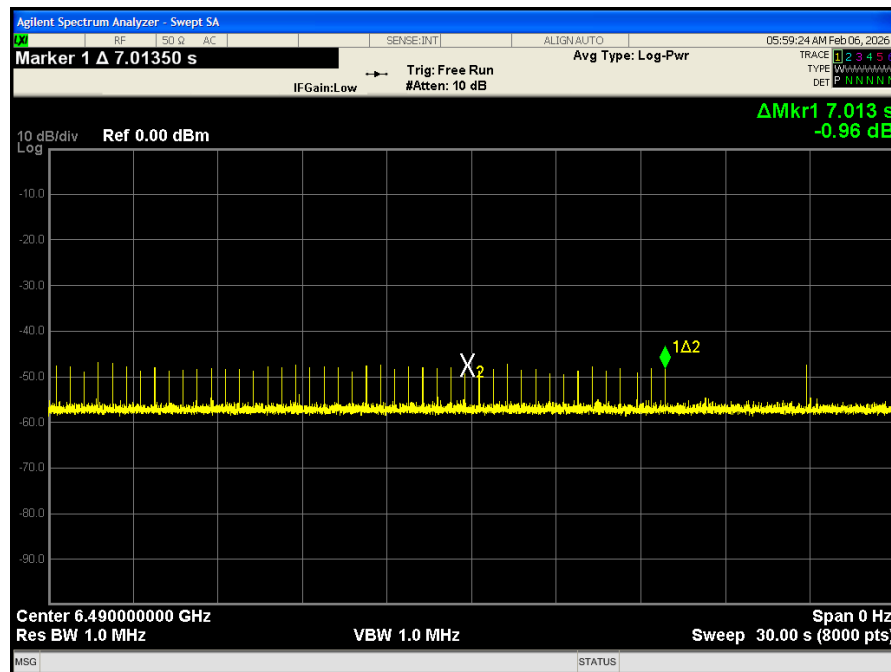


Pol	Frequency (MHz)	Peak dB μ V/m	Total CF dB	Net PK @3m dB μ V/m	Peak Limit dB μ V/m	Peak Margin dB	Comments
V	6489.5	74.7	-1.9	72.8	81.2	-8.5	CH5, RF2, 850kb
H	6489.5	74.6	-1.9	72.7	81.2	-8.5	CH5, RF2, 850kb
V	6489.5	74.9	-1.2	73.7	81.2	-7.5	CH5, MOD1000, 850kb
H	6489.5	74.4	-1.2	73.2	81.2	-8.0	CH5, MOD1000, 850kb
V	6412.0	69.3	-1.2	68.1	81.2	-13.1	CH5, RF2, 6.8Mb
H	6489.6	71.6	-1.2	70.4	81.2	-10.8	CH5, RF2, 6.8Mb
V	6360.5	74.6	-1.9	72.7	81.2	-8.5	CH5, MOD1000, 6.8Mb
H	6360.5	75.7	-1.9	73.8	81.2	-7.5	CH5, MOD1000, 6.8Mb
Notes:		Net Reading (dBuV) = Reading (dB μ V) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB)					
		UWB CH5					

Pol	Frequency (MHz)	AVG dB μ V/m	Total CF dB	Net AVG @3m dB μ V/m	AVG Limit dB μ V/m	AVG Margin dB	Comments
V	6489.5	45.0	-1.9	43.1	54	-10.93	CH5, RF2, 850kb
H	6489.5	43.6	-1.9	41.7	54	-12.35	CH5, RF2, 850kb
V	6489.5	43.8	-1.2	42.6	54	-11.41	CH5, MOD1000, 850kb
H	6489.5	45.2	-1.2	44.0	54	-10.05	CH5, MOD1000, 850kb
V	6412.0	32.7	-1.2	31.5	54	-22.54	CH5, RF2, 6.8Mb
H	6489.6	37.1	-1.2	35.9	54	-18.15	CH5, RF2, 6.8Mb
V	6360.5	32.6	-1.9	30.7	54	-23.29	CH5, MOD1000, 6.8Mb
H	6360.5	33.0	-1.9	31.1	54	-22.95	CH5, MOD1000, 6.8Mb
Notes:		Net Reading (dBuV) = Reading (dB μ V) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB)					
		UWB CH5 RBW1MHz/VBW10Hz					

4.3	Cessation Time		
Method:	Measurements were performed with UWB broadband 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 10.3.5 ☒ FCC Part 15.519/RSS 220 ☒	Measurement Point ☐ Conducted ☒ Radiated	
Frequency Range:	☒ 6489.6 MHz		
EIRP Limit:	☒ Transmission shall cease in less than 10s ☐	7.01sec	
Nominal Voltage:		☐ 120VAC ☒ 9VDC	
Test Personnel:	Yuriy Litvinov <i>Yuriy Litvinov</i>		Date: 02/06/2026

Note:	X2 represents the EUT for UWB stop receiving, and 1Δ2 shows the EUT for UWB cease transmitting.
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4.3	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 10.2&10.3 ☒ FCC Part 15.519/RSS 220 ☐		Measurement Distance		
			☒ 3 Meters ☐		
Frequency Range:	☒ 30 MHz to 1 GHz		RBW = 100KHz, VBW ≥ 3 x RBW		
	☒ 1 GHz to 40 GHz		RBW = 1MHz, VBW ≥ 3 x RBW		
	☒ 1.164GHz to 1.610 GHz		RBW = 1KHz, VBW ≥ 3 x RBW		
Nominal Voltage:	☐ 120VAC ☒ 9VDC				
Test Personnel:	Jayden Alstad <i>J.A.</i>			Date: 02/09/2026	
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
Limits –15.519(c)(d)					
960-1610		20		3	pass
1610-1990		32		3	pass
1990-3100		34		3	pass
3100-10600		54		3	pass
Above 10600		34		3	pass
1164-1240		10		3	pass
1559-1610		10		3	pass
RSS 220, 5.2.1(d)					
960-1610		20		3	pass
1610-4075		25.2		3	pass
4075-10600		54		3	pass
Above 10600		44		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. $EIRP\ (dB\mu V/m) = EIRP\ (dBm) + 95.3$ Worst case radiated emissions were tested at CH5@850kbits No radiated spurious emissions were detected above 10.6GHz

FCC Part 15.519(c) - Radiated Emissions in restricted band

Frequency (MHz)	Pol.	QP Reading dBμV/m	Total CF dB	Net at 3 m dBμV/m	Limit (dBμV/m)	Margin dB
141.62	H	4	17.7	21.7	43.5	-21.8
234.35	H	9	16	25.1	46	-20.9
349.28	H	6.3	19.8	26.1	46	-19.9
547.1	V	2.9	24.3	27.2	46	-18.8
Notes:	Net Reading (dBuV) = Reading (dBuV) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB) CH5. MOD1000 Antenna 850kbps					

[illegible]

FCC Part 15.510(d) Radiated Emissions in 1164 – 1240 MHz and 1559 – 1610 MHz

[illegible]

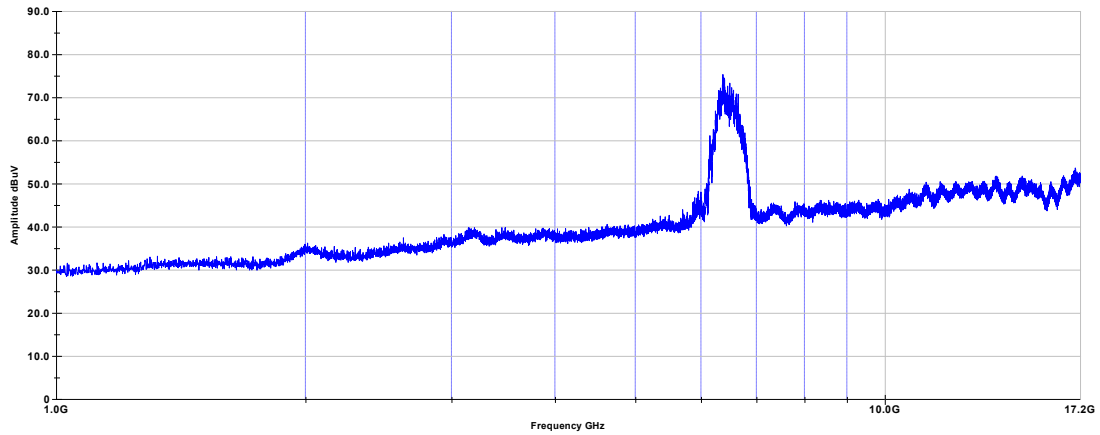


3M Company

Radiated Emissions Prescan

FCC Part 15, 1GHz-18GHz, Vertical (Preamp)

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



UWB, CH5 MOD1000 Antenna, 850kbps

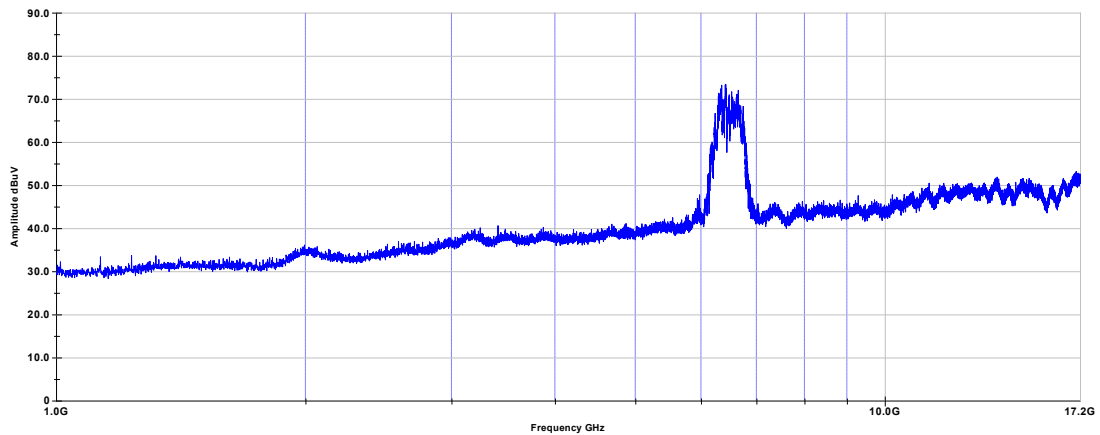


3M Company

Radiated Emissions Prescan

FCC Part 15, 1GHz-18GHz, Horizontal (Preamp)

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



UWB, CH5 MOD1000 Antenna, 850kbps

FCC Part 15.519(c) - Radiated Emissions in restricted band

Frequency (MHz)	Pol.	QP Reading dBμV/m	Total CF dB	Net at 3 m dBμV/m	Limit (dBμV/m)	Margin dB
142.91	H	6.9	18	24.9	43.5	-18.6
233.96	H	9.4	16	25.4	46	-20.6
350.3	H	6.7	19.8	26.5	46	-19.5
568.42	H	2.8	24.9	27.7	46	-18.3
Notes:	Net Reading (dBuV) = Reading (dBμV) + Antenna CF(dB)+Cable CF(dB) – Amp Gain(dB) CH5, RF2 Antenna 850kbits					

[illegible]

FCC Part 15.510(d)(4) Radiated Emissions in 1164 – 1240 MHz and 1559 – 1610 MHz

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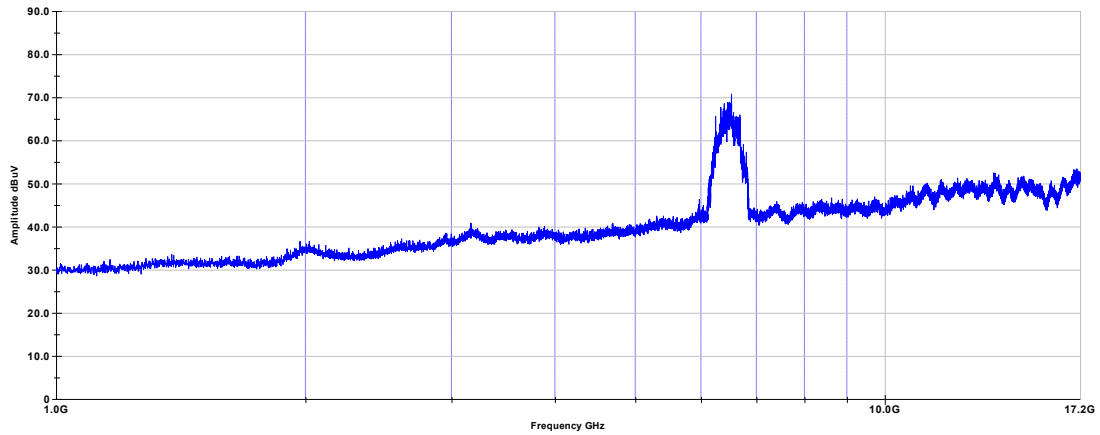


3M Company

Radiated Emissions Prescan

FCC Part 15, 1GHz-18GHz, Vertical (Preamp)

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



UWB, CH5 RF2 Antenna, 850kbps

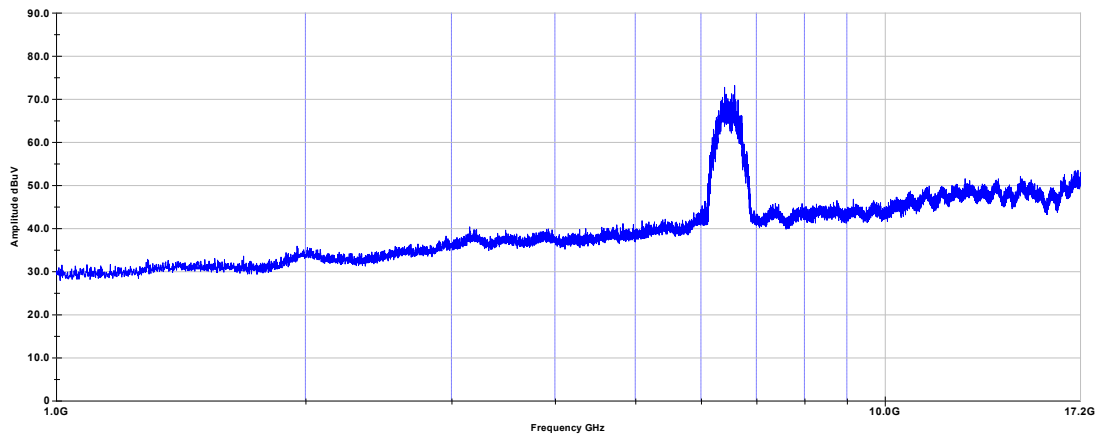


3M Company

Radiated Emissions Prescan

FCC Part 15, 1GHz-18GHz, Horizontal (Preamp)

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



UWB, CH5 RF2 Antenna, 850kbps

4.4	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	02/10/2026	HRE202510498-2	Original Issue