



Engineering Test Report No. 2600005-04

Report Date	September 21, 2026	
Manufacturer Name	Caterpillar Inc	
Manufacturer Address	100 NE Adams St Peoria, IL 61629	
Equipment Under Test Model No.	5G Telematics Radio PL645	
Date Received	July 14, 2026	
Test Dates	July 14, 2026 – August 22, 2026	
Specifications	FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 Innovation, Science, and Economic Development Canada, RSS-GEN Innovation, Science, and Economic Development Canada, RSS-247	
Test Facility	Elite Electronic Engineering, Inc. 1516 Centre Circle, Downers Grove, IL 60515	FCC Reg. Number: 269750 IC Reg. Number: 2987A CAB Identifier: US0107
Signature	 	
Tested by	Javier Cardenas	Tylar Jozefczyk
Signature		
Approved by	Raymond J. Klouda, Registered Professional Engineer of Illinois – 44894	
PO Number	SBJA83479	

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1. Report Revision History

Revision	Date	Description
–	21 SEP 2026	Initial Release of Engineering Test Report No. 2600005-04

2. Introduction

2.1. Scope of Tests

This document presents the results of a series of RF emissions tests that were performed on the Caterpillar Inc 5G Telematics Radio to determine compliance with the radiated emission requirements with new antennae options (hereinafter referred to as the Equipment Under Test (EUT)). The EUTs were manufactured and submitted for testing by Caterpillar Inc located in Peoria, IL.

2.2. Purpose

The test series was performed to determine if the EUT meets the RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, §15.247 for a Digital Modulation intentional radiator operating within the 2400 – 2483.5MHz band.

The test series was also performed to determine if the EUT meets the RF emission requirements of the Innovation, Science, and Economic Development Canada Radio Standards Specification RSS-Gen and RSS-247 for a Digital Modulation intentional radiator operating within the 2400 – 2483.5MHz band.

Testing was performed in accordance with ANSI C63.10-2020+Cor. 1:2023+C63.10a:2024.

2.3. Identification of the EUT

The EUTs were identified as follows:

EUT Identification	
EUT #1	
Equipment Under Test Description	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Software/Firmware Version	Linux Version: v6.17.4-10-g85617921cf35 OS Release: Buildroot 2025.08.1 (pkg83003) NAD Project Rev.: WCM598EGLBTR02A08M8G_OCPU_F02_02.001
Device Type	Digitally Modulated Transmission Device
Band of Operation	2400 – 2483.5MHz
Modulation Type	1 Mbit/s, 2 Mbit/s
Antenna Type	Metal Stamp PIFA
Conducted Output Power	4.57mW (6.6dBm)
EIRP	0.0098W (9.93dBm)
EUT #2	
Equipment Under Test Description	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.904-13
Serial No.	260619016008008D (Internal Antenna)
Software/Firmware Version	Linux Version: v6.17.4-10-g85617921cf35 OS Release: Buildroot 2025.08.1 (pkg83003) NAD Project Rev.: WCM598EGLBTR02A08M8G_OCPU_F02_02.001
Device Type	Digitally Modulated Transmission Device
Band of Operation	2400 – 2483.5MHz
Modulation Type	1 Mbit/s, 2 Mbit/s
Antenna Type	Chip
Conducted Output Power	4.57mW (6.6dBm)
EIRP	0.007W (8.60dBm)

3. Power Input

The EUT was powered by 12VDC from a twisted pair, 1 meter, harness.

4. Grounding

The EUT was not connected to ground.

5. Support Equipment

The EUT was submitted for testing along with the following support equipment:

Description	Model #	S/N
Support EUT	PL645	260619016002008D

6. Interconnect Leads

The following interconnect cables were submitted with the EUT:

Item	Description
RS485	Connected EUT and Support EUT to Support Laptop

7. Modifications Made to the EUT

No modifications were made to the EUT during the testing.

8. Modes of Operation

The unit was programmed to transmit in one of the following modes:

Mode	Description
BLE 1Mbps	- 2402MHz
	- 2440MHz
BLE 2Mbps	- 2480MHz

9. Test Specifications

The tests were performed to selected portions of, and in accordance with, the test specifications.

- Federal Communications Commission "Code of Federal Regulations", Title 47, Chapter I, Subchapter A, Part 15, Subpart C – "Intentional Radiators"
- KDB 558074 D01 v05r02, April 2, 2019 – "Guidance For Compliance Measurements On Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules"
- Radio Standard Specification RSS-Gen Issue 6 – "General Requirements for Compliance of Radio Apparatus"
- Radio Standard Specification RSS-247 Issue 4 – "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices"
- ANSI C63.10-2020+Cor. 1:2023+C63.10a:2024 – "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"

10. Test Plan

No test plan was provided. Instructions were provided by personnel from Caterpillar Inc and used in conjunction with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247, Innovation, Science, and Economic Development Canada, RSS-247, and ANSI C63.10-2020+Cor.

1:2023+C63.10a:2024 specifications.

11. Deviation, Additions to, or Exclusions from Test Specifications

There were no deviations, additions to, or exclusions from the test specifications during this test series.

12. Laboratory Conditions

The ambient parameters of the laboratory during testing were as follows:

Ambient Parameters	Value
Temperature	24.5°C
Relative Humidity	40%
Atmospheric Pressure	1017mb

13. Summary

The following EMC tests were performed, and the results are shown below:

Test Description	Requirements	Test Method	Result
Maximum Peak Conducted Output Power	FCC 15.247 ISED RSS-247	ANSI C63.10:2020	Conforms
Effective Isotropic Radiated Power (EIRP)	FCC 15.247 ISED RSS-247	ANSI C63.10:2020	Conforms
Transmitter Radiated Emissions	FCC 15.247 ISED RSS-247	ANSI C63.10:2020	Conforms

14. Sample Calculations

For Radiated Emissions:

The resultant field strength (FS) is a summation in decibels (dB) of the receiver meter reading (MTR), the antenna correction factor (AF), and the cable loss factor (CF). If an external preamplifier is used, the total is reduced by its gain (-PA). If a distance correction (DC) is required, it is added to the total.

$$\text{Formula 1: FS (dB}\mu\text{V/m)} = \text{MTR (dB}\mu\text{V)} + \text{AF (dB/m)} + \text{CF (dB)} + (-\text{PA (dB)}) + \text{DC (dB)}$$

To convert the Field Strength dB μ V/m term to μ V/m, the dB μ V/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in μ V/m terms.

$$\text{Formula 2: FS (}\mu\text{V/m)} = \text{AntiLog} [(\text{FS (dB}\mu\text{V/m)})/20]$$

For Effective Isotropic Radiated Power::

The resultant effective radiated power was derived from the Field Strength intensity (dB μ V/m at 3m with the following equation:

$$\text{EIRP (dBm)} = \text{E Field Strength (dB}\mu\text{V/m)} + 95.3$$

15. Statement of Conformity

The Caterpillar Inc 5G Telematics Radio (Model No. PL645, Serial No. 260623016003008D (External Antenna)) did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247.

Additionally, the Caterpillar Inc (Model No. PL645, Serial No. 260619016008008D (Internal Antenna)) did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247.

16. Certification

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247 test specifications. The data presented in this test report pertains to the EUT as received by the customer on the test date specified. Any electrical or mechanical modifications made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

17. Photographs of EUT





18. Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW10	Preamplifier	Planar	PE2-35-120-5R0-10-12-SFF	PL11685/1241	1-18GHz	3/18/2026	3/18/2027
NTA2	BILOG ANTENNA	TESEQ	6112D	28040	25-2000MHz	6/21/2024	8/23/2026
NWQ1	Double Ridged Waveguide (3M)	ETS-Lindgren	3117	66655	1-18GHz	7/13/2026	7/13/2028
NWV0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3119	164466	400MHZ-6GHZ	NOTE 1	
R29F	3M ANECHOIC CHAMBER NSA	EMC TEST SYSTEMS	3M ANECHOIC		30MHZ-18GHZ	6/1/2025	6/1/2027
RBG3	EMI Analyzer	Rohde & Schwarz	ESW44	101592	2HZ-44GHZ	4/10/2026	4/10/2027
SMA57	POWER SUPPLY	VOLTEQ	HY3030EX	220401514	30V/30A	NOTE 1	
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	
XPQ4	HIGH PASS FILTER	K&L MICROWAVE	11SH10-4800/X20000-O/O	1	4.8-20GHZ	9/16/2025	9/16/2027
XPQ6	FILTER	K&L MICROWAVE	11SH10-9000/U2000-O/O	2	5000-5800 MHZ	9/16/2025	9/16/2027

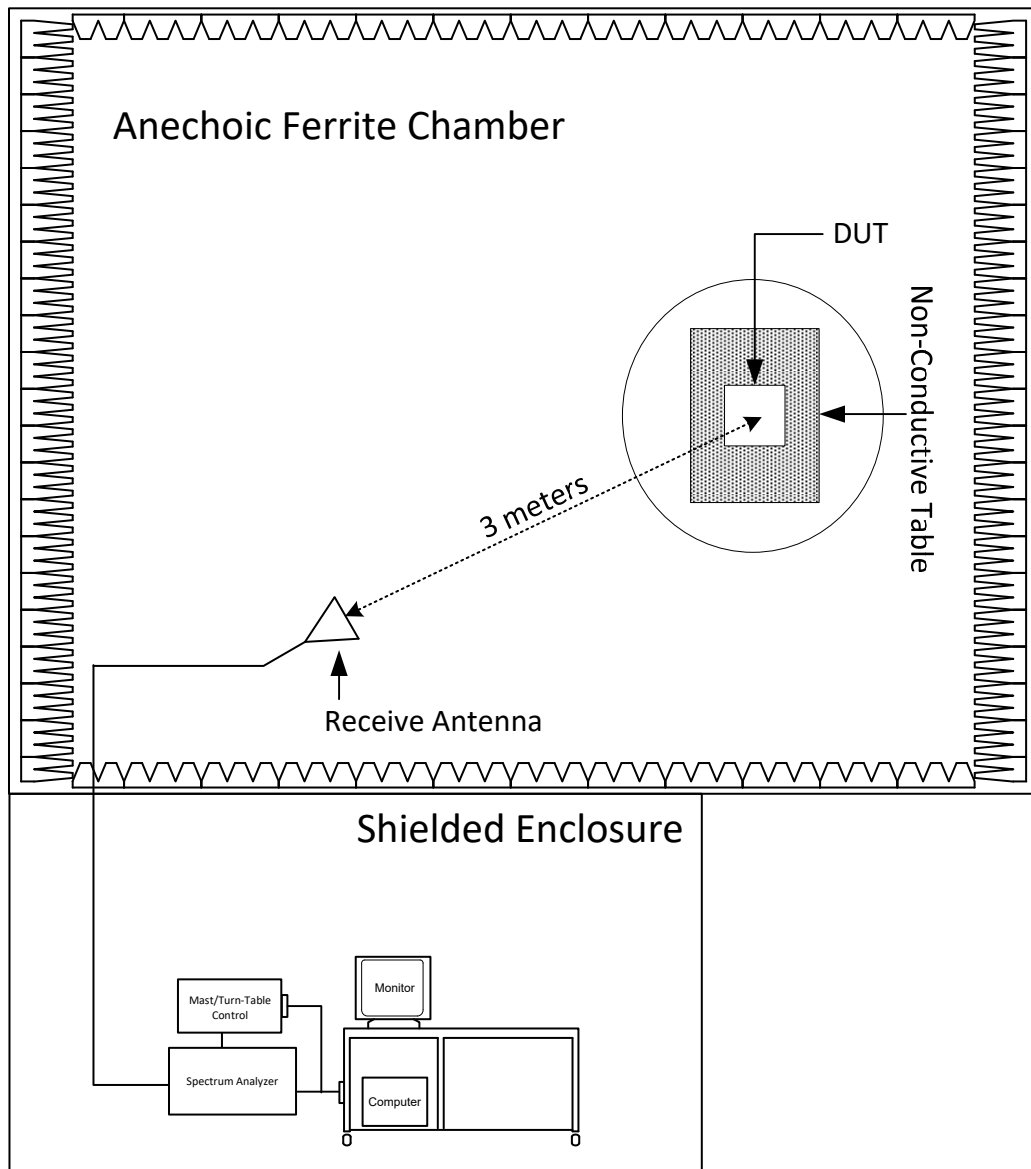
N/A: Not Applicable

I/O: Initial Only

CNR: Calibration Not Required

NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

19. Block Diagram of Test Setup



Radiated Measurements Test Setup

20. Maximum Peak Conducted Output Power

EUT Information	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13, 7620.002.904-13
Serial No.	260623016003008D (External Antenna), 260619016008008D (Internal Antenna)
Mode	BLE 1Mbps, BLE 2Mbps

Test Setup Details	
Setup Format	Tabletop
Height of Support	N/A
Measurement Method	Antenna Port Conducted
Type of Test Site	Elite Test Bench
Test Site Used	N/A
Notes	None

Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
RF Output Power, Conducted	± 0.349 dB
Temperature	$\pm 0.165^{\circ}\text{C}$
Humidity	$\pm 1.7\%$ RH
DC and Low Frequency Voltages	± 0.115 Volts

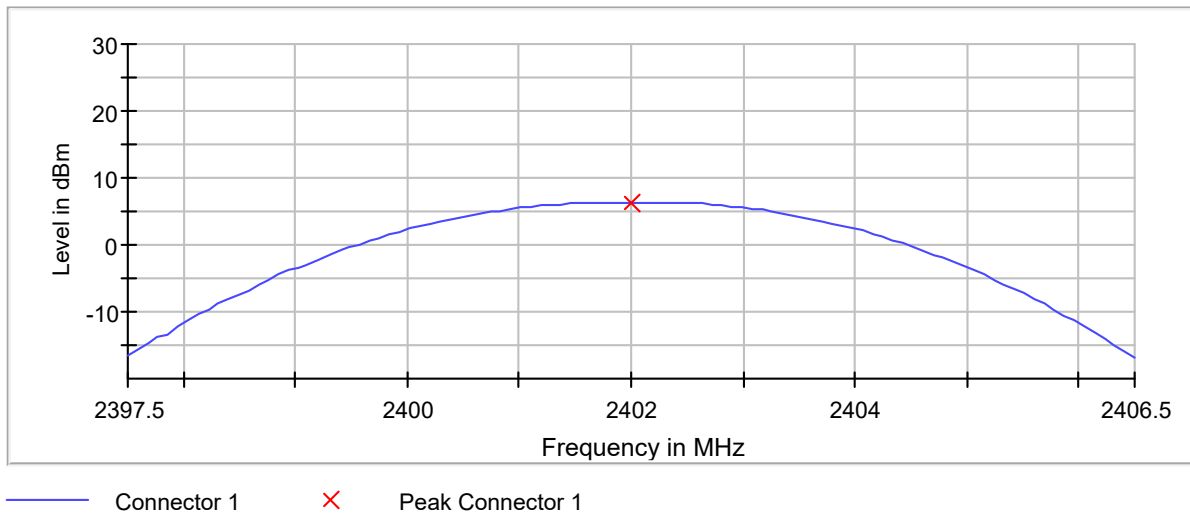
Requirements
Per FCC 15.247(b)(3) and ISSED RSS-247 Section 5.4(d), for systems using digital modulation, the maximum peak conducted output power shall not exceed 1W.

Procedure
C63.10-2020 Section 11.9.1.1: a) The following settings were employed on the EMI Test Receiver: - Center Frequency = Transmit Frequency of the EUT - RBW = $\geq$ DTS Bandwidth - VBW = $\geq 3 \times$ RBW - Span = $\geq 3 \times$ RBW - Sweep Time = Auto couple - Detector Mode = Max Peak - Trace Mode = Max Hold b) Allow the trace to stabilize. c) Use the peak marker function to determine the peak amplitude level.

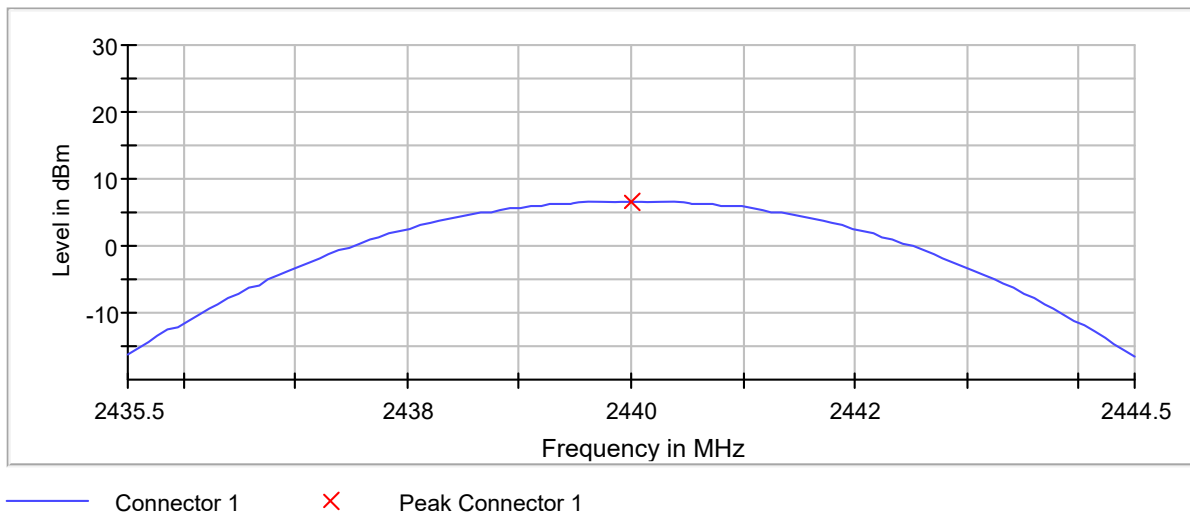
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 1Mbps
Date Tested	July 21, 2026
Result	Output Power = 4.57mW (6.6dBm)
Notes	None

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402	6.3	30.0	PASS
2440	6.6	30.0	PASS
2480	5.7	30.0	PASS

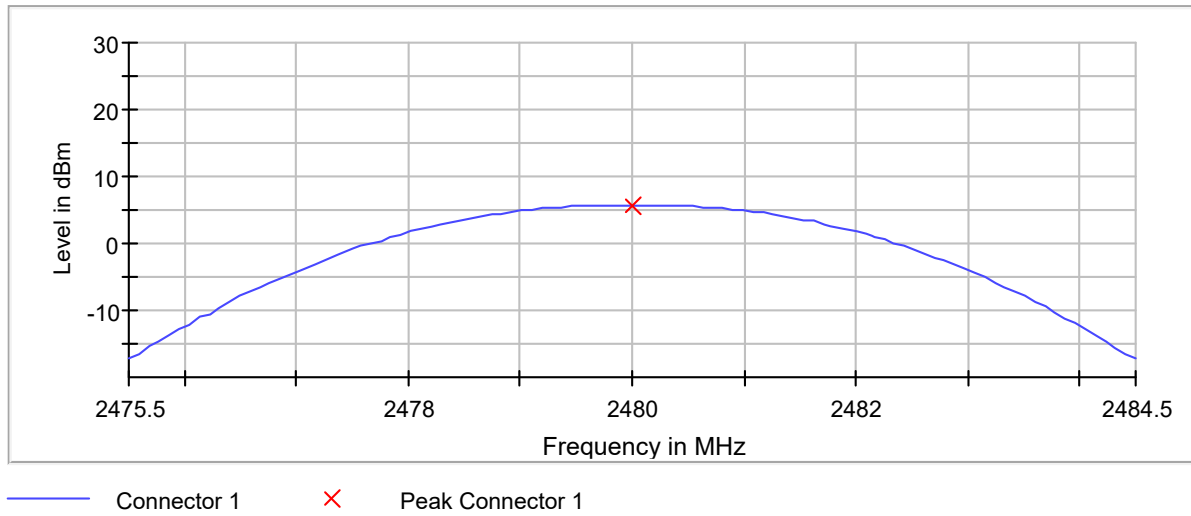
Peak Power



Peak Power



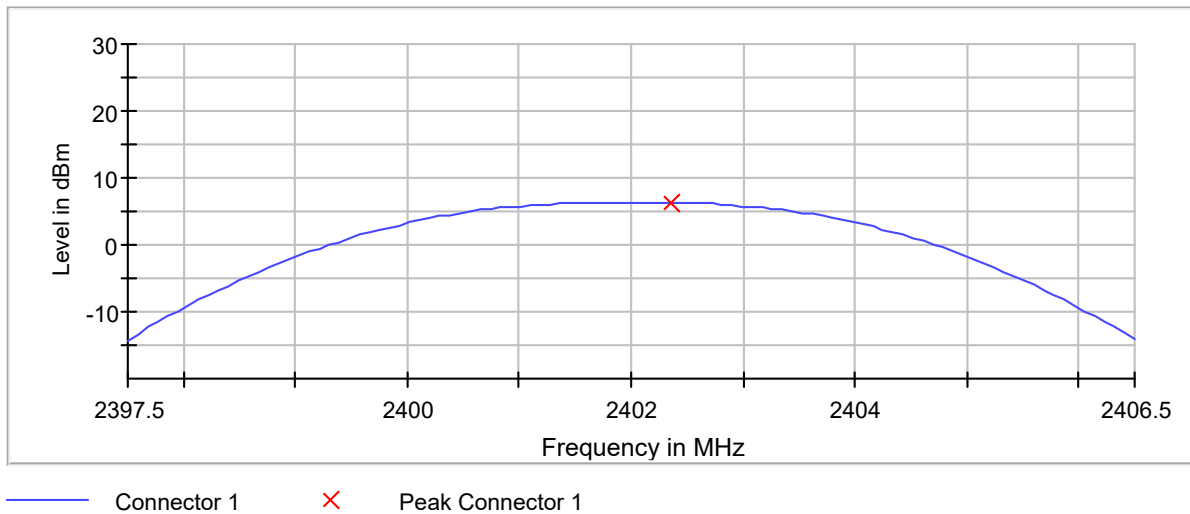
Peak Power



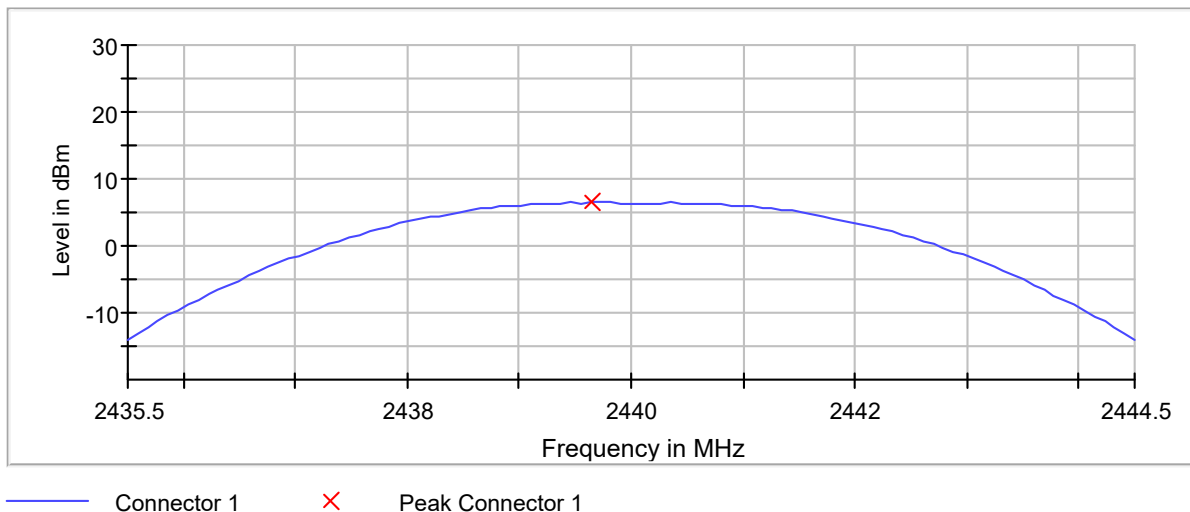
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 2Mbps
Date Tested	July 21, 2026
Result	Output Power = 4.37mW (6.4dBm)
Notes	None

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402	6.2	30.0	PASS
2440	6.4	30.0	PASS
2480	5.6	30.0	PASS

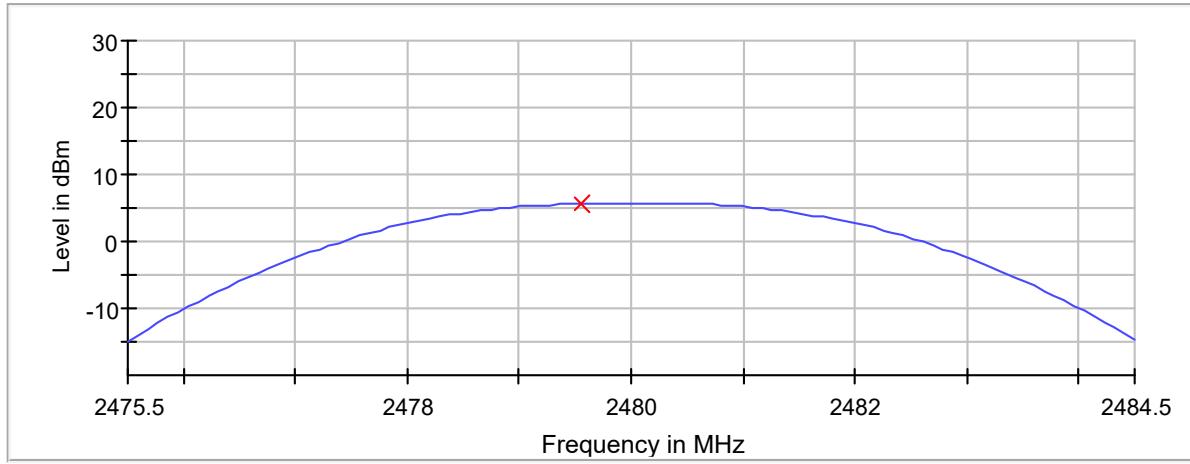
Peak Power



Peak Power



Peak Power



— Connector 1 X Peak Connector 1

21. Effective Isotropic Radiated Power (EIRP)

EUT Information	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13, 7620.002.904-13
Serial No.	260623016003008D (External Antenna), 260619016008008D (Internal Antenna)
Mode	BLE 1Mbps, BLE 2Mbps

Test Setup Details	
Setup Format	Tabletop
Height of Support	N/A
Measurement Method	Radiated
Type of Test Site	Semi-Anechoic Chamber
Test Site Used	R29F
Antenna Type Used	Double-ridged waveguide (or equivalent)
Notes	None

Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1

Requirements
The output power shall not exceed 4W (36dBm).

Procedure
The EUT was placed on the non-conductive stand and set to transmit. A double ridged waveguide antenna was placed at a test distance of 3 meters from the EUT. The resolution bandwidth (RBW) of the spectrum analyzer was set to greater than the 6dB bandwidth. The EUT was maximized for worst case emissions (or maximum output power) at the measuring antenna. The maximum meter reading was recorded. The peak power output was measured for the low, middle, and high channels.

Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 1Mbps
Result	Max EIRP = 0.0098W (9.93dBm)
Notes	None

Freq (MHz)	Ant Pol	Wide BW Meter Reading (dBμV)	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total (dBμV/m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2402.00	H	66.81	2.61	32.04	0.00	101.46	6.16	36.00	-29.84
	V	70.58	2.61	32.04	0.00	105.23	9.93	36.00	-26.07
2440.00	H	65.60	2.64	32.19	0.00	100.43	5.13	36.00	-30.87
	V	70.05	2.64	32.19	0.00	104.88	9.58	36.00	-26.42
2480.00	H	66.09	2.66	32.28	0.00	101.03	5.73	36.00	-30.27
	V	70.03	2.66	32.28	0.00	104.97	9.67	36.00	-26.33

Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.904-13
Serial No.	260619016008008D (Internal Antenna)
Mode	BLE 1Mbps
Result	Max EIRP = 0.007W (8.60dBm)
Notes	None

Freq (MHz)	Ant Pol	Wide BW Meter Reading (dBμV)	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total (dBμV/m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2402.00	H	69.25	2.61	32.04	0.00	103.90	8.60	36.00	-27.40
	V	68.89	2.61	32.04	0.00	103.54	8.24	36.00	-27.76
2440.00	H	68.81	2.64	32.19	0.00	103.64	8.34	36.00	-27.66
	V	68.54	2.64	32.19	0.00	103.37	8.07	36.00	-27.93
2480.00	H	68.45	2.66	32.28	0.00	103.39	8.09	36.00	-27.91
	V	68.88	2.66	32.28	0.00	103.82	8.52	36.00	-27.48

22. Transmitter Radiated Emissions

EUT Information	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13, 7620.002.904-13
Serial No.	260623016003008D (External Antenna), 260619016008008D (Internal Antenna)
Modes	BLE 1Mbps

Test Setup Details	
Setup Format	Tabletop
Height of Support	N/A
Measurement Method	Radiated
Type of Test Site	Semi-Anechoic Chamber
Test Site Used	R29F
Antenna Types Used	Below 1GHz: Bilog (or equivalent) 1 – 18GHz: Double-ridged waveguide (or equivalent) Above 18GHz: Horn (or equivalent)
Notes	None

Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1
Radiated disturbance (electric field strength on an open area test site or alternative test site) (6 GHz – 18 GHz)	3.2
Radiated disturbance (electric field strength on an open area test site or alternative test site) (18 GHz – 26.5 GHz)	3.3

Procedure

Radiated measurements were performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

Preliminary radiated emissions tests were performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 26.5GHz was investigated using a peak detector function.

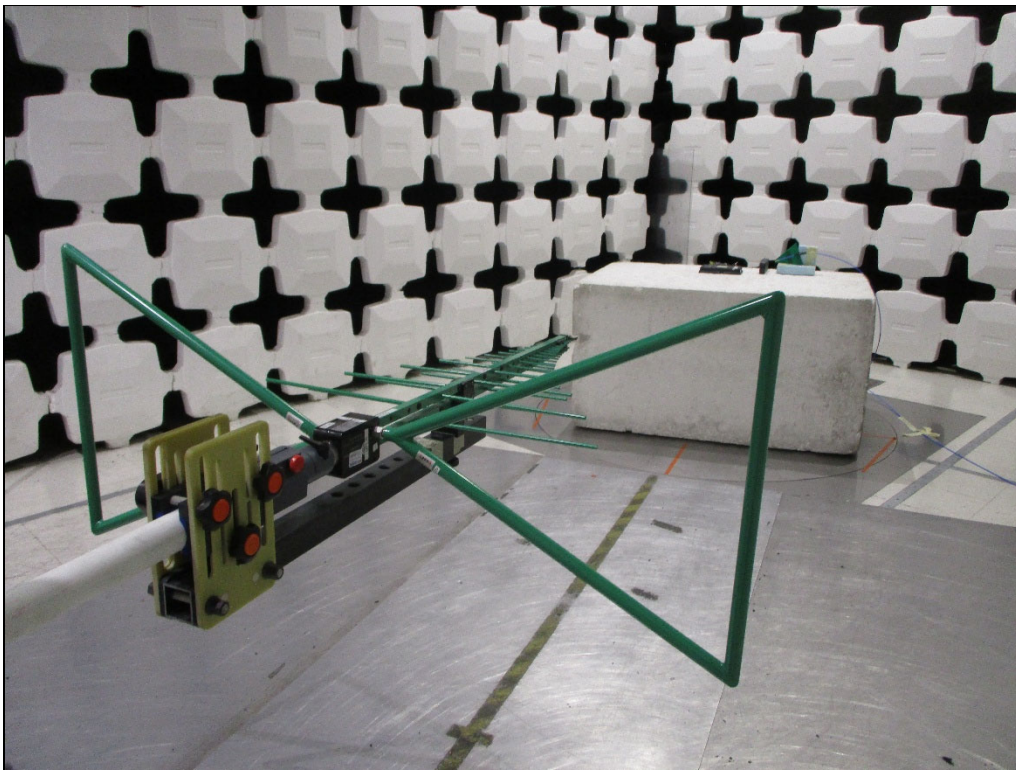
The final open field emission tests were then manually performed over the frequency range of 1 – 18GHz.

1) For all harmonics not in the restricted bands, the following procedure was used:

- a) The field strength of the fundamental was measured using a double ridged waveguide antenna positioned at a 3 meter distance from the EUT. The EUT was placed on a 1.5 meter high non-conductive stand. A peak detector with a resolution bandwidth of 100kHz was used on the spectrum analyzer.
- b) Step (a) was repeated for measuring the field strengths of all harmonics not in the restricted band.
- c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when measuring the fundamental emissions and the spurious emissions:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer, the measuring antenna was not raised or lowered to ensure maximized readings. Instead, the EUT was rotated through all axis to ensure the maximum readings were recorded for the EUT.
- d) All harmonics not in the restricted bands must be at least 20dB below levels measured at the fundamental. However, attenuation below the general limits specified in §15.209(a) is not required.

2) For all emissions in the restricted bands, the following procedure was used:

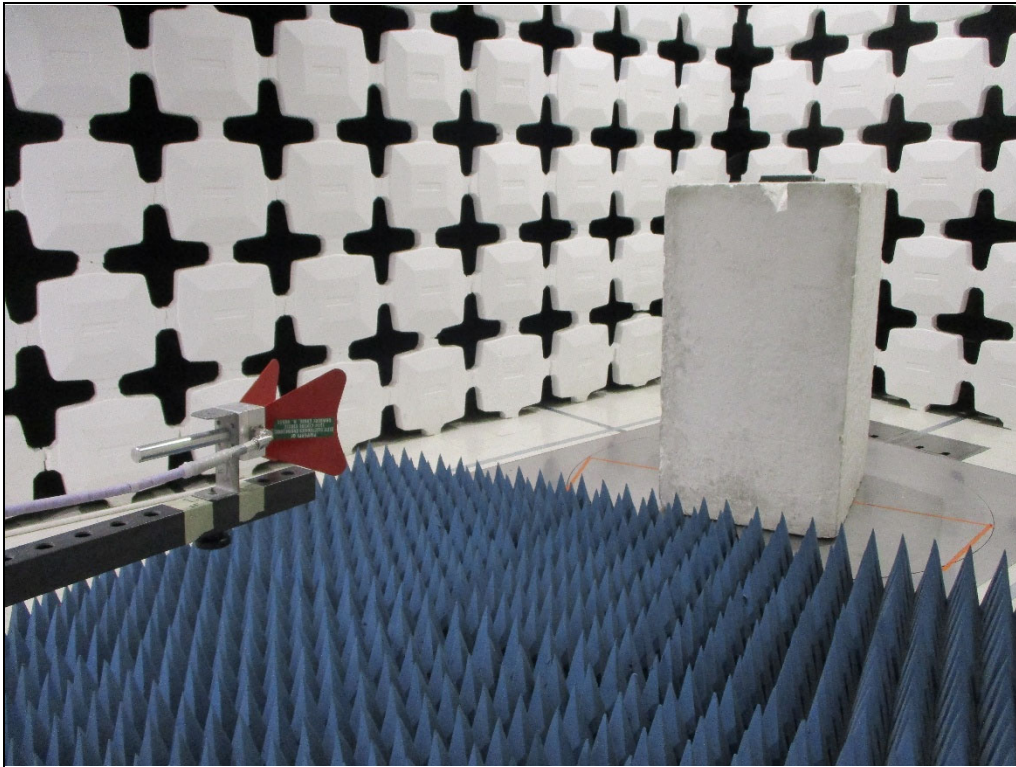
- a) The field strengths of all emissions above 1GHz were measured using a double-ridged waveguide antenna positioned at a 3 meter distance from the EUT. The EUT was placed on a 1.5 meter high non-conductive stand. A peak detector with a resolution bandwidth of 1MHz was used on the spectrum analyzer.
- b) To ensure that maximum or worst case emission levels were measured, all sub steps in Step (1)(c) were followed.
- c) For all radiated emissions measurements above 1GHz, the peak readings must comply with the §15.35(b) limits. §15.35(b) states that when average radiated emissions measurements are specified, there also is a limit on the peak level of the radiated emissions. The limit on the peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. Therefore, all peak readings above 1GHz must be no greater than 20dB above the limits specified in §15.209(a).
- d) Lastly, for all radiated emissions measurements above 1GHz, the resolution bandwidth (RBW) was set to 1MHz with the video bandwidth (VBW) set to $\geq 3 \times \text{RBW}$. The detector was set to power averaging (rms). Averaging type was set to power. Sweep time was set to auto and a trace average of at least 100 traces was performed. The measurement was recorded and compared to the limit specified in §15.209(a).



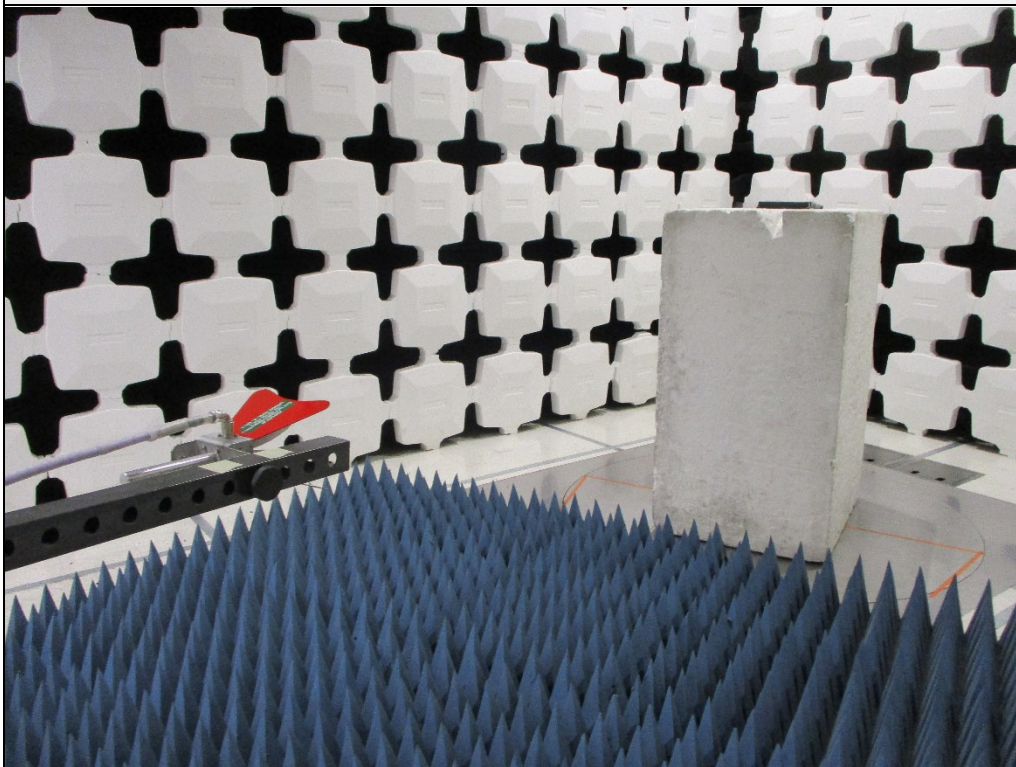
Test Setup for Radiated Spurious Emissions: 30MHz to 1GHz, Horizontal Polarization



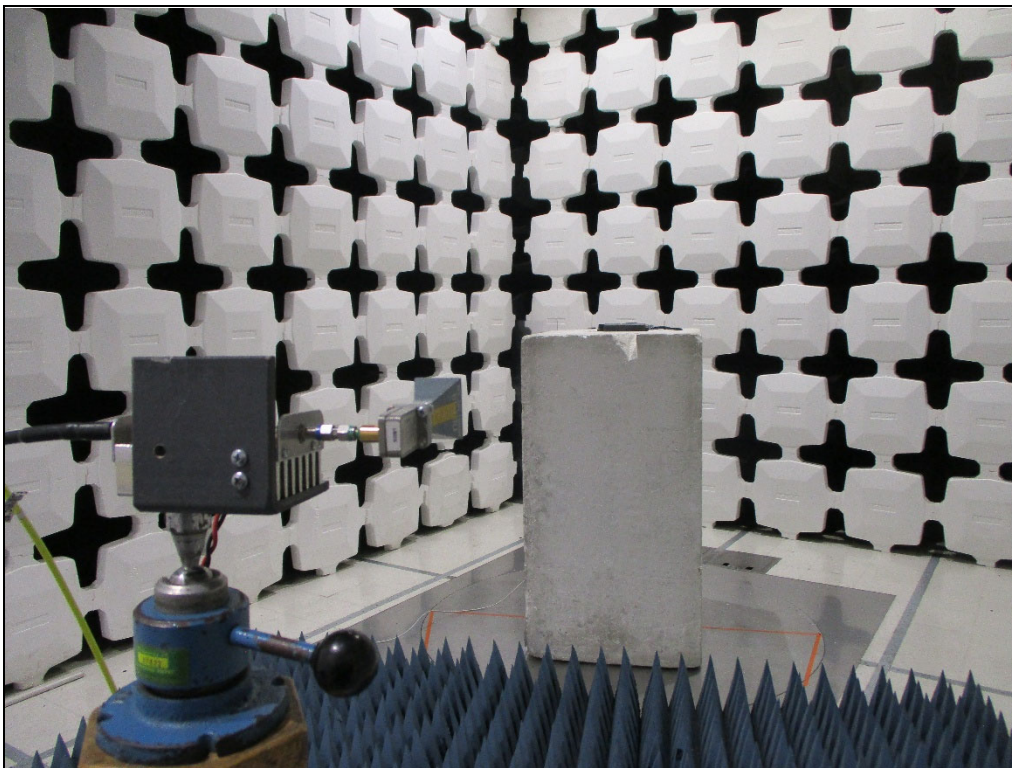
Test Setup for Radiated Spurious Emissions: 30MHz to 1GHz, Vertical Polarization



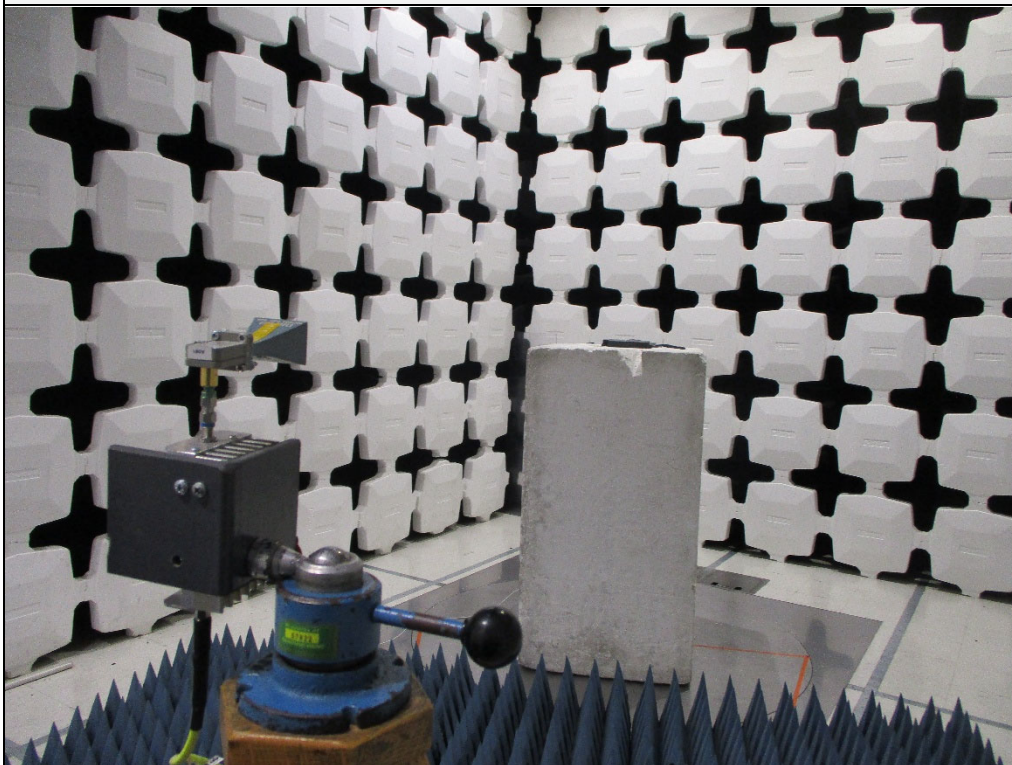
Test Setup for Radiated Spurious Emissions: 1GHz to 18GHz, Horizontal Polarization



Test Setup for Radiated Spurious Emissions: 1GHz to 18GHz, Vertical Polarization

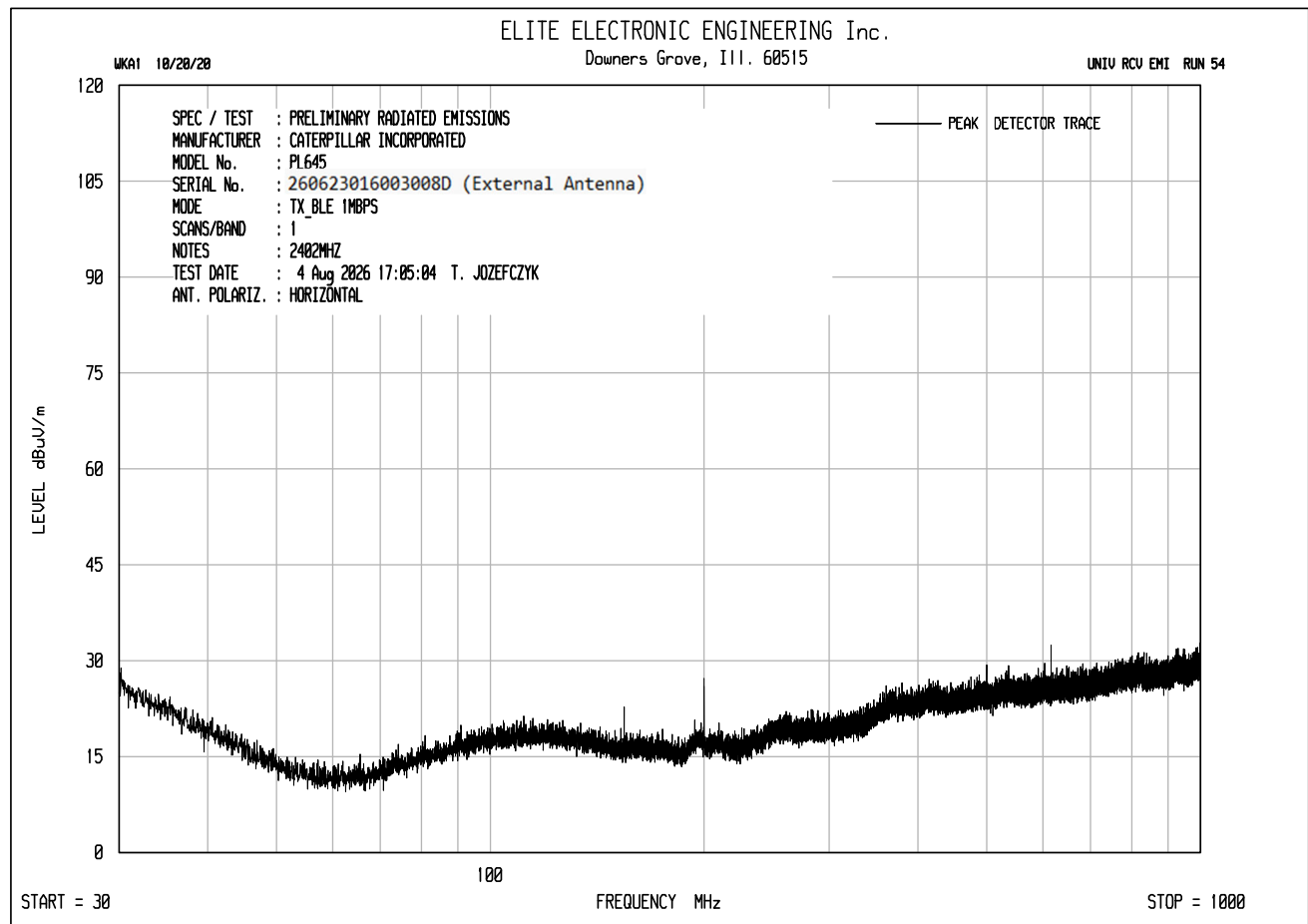


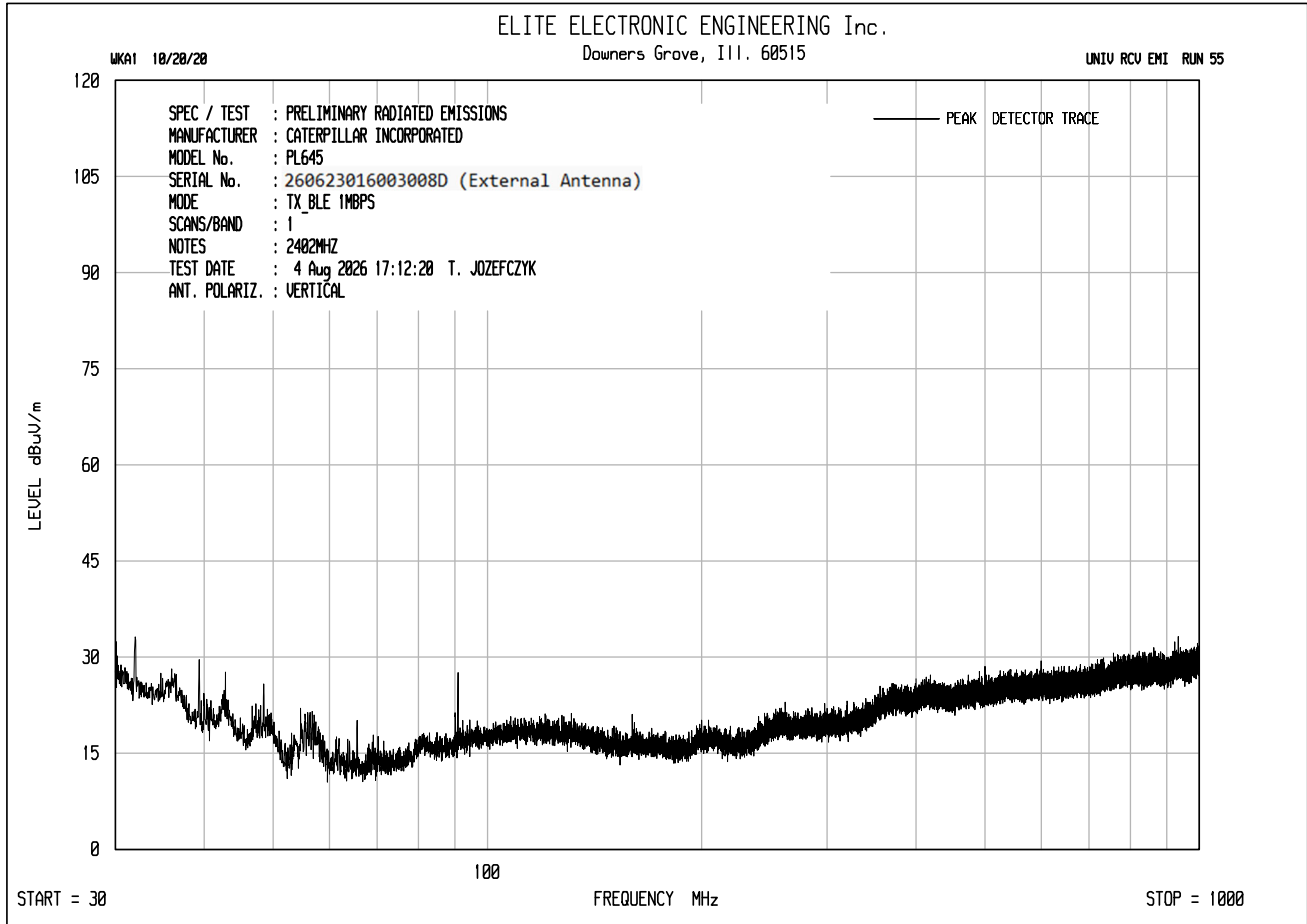
Test Setup for Radiated Spurious Emissions: 18GHz to 26.5GHz, Horizontal Polarization

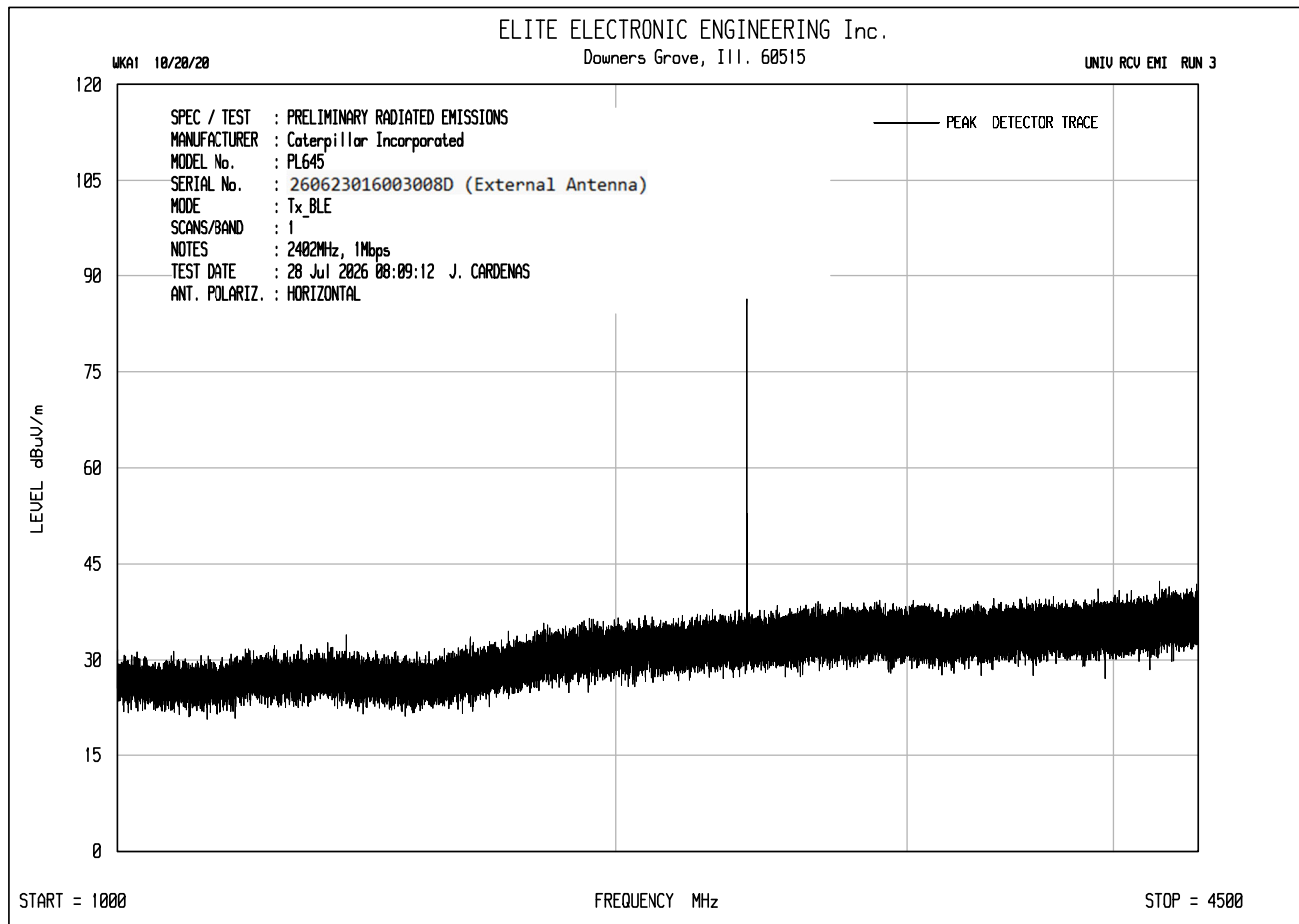


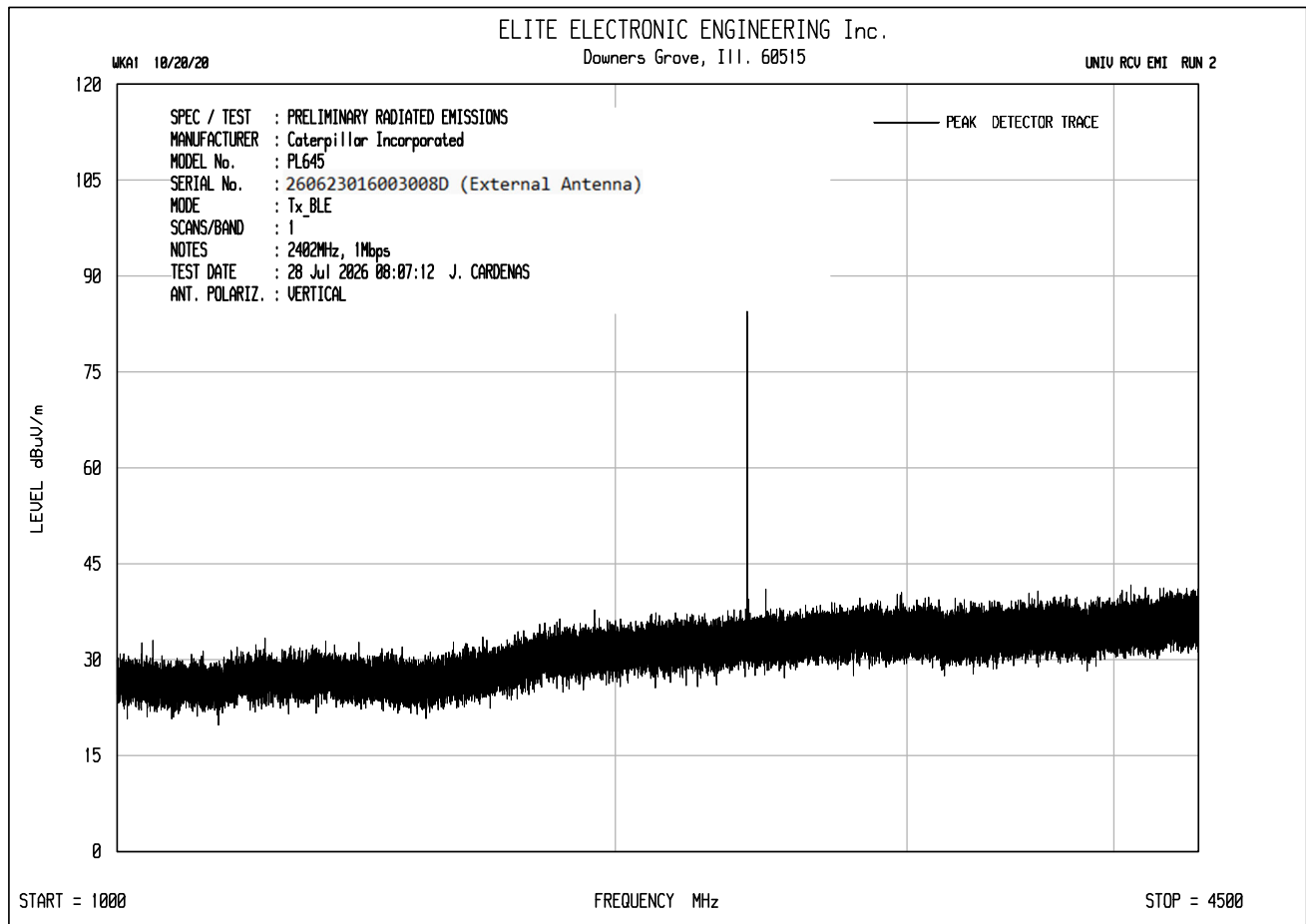
Test Setup for Radiated Spurious Emissions: 18GHz to 26.5GHz, Vertical Polarization

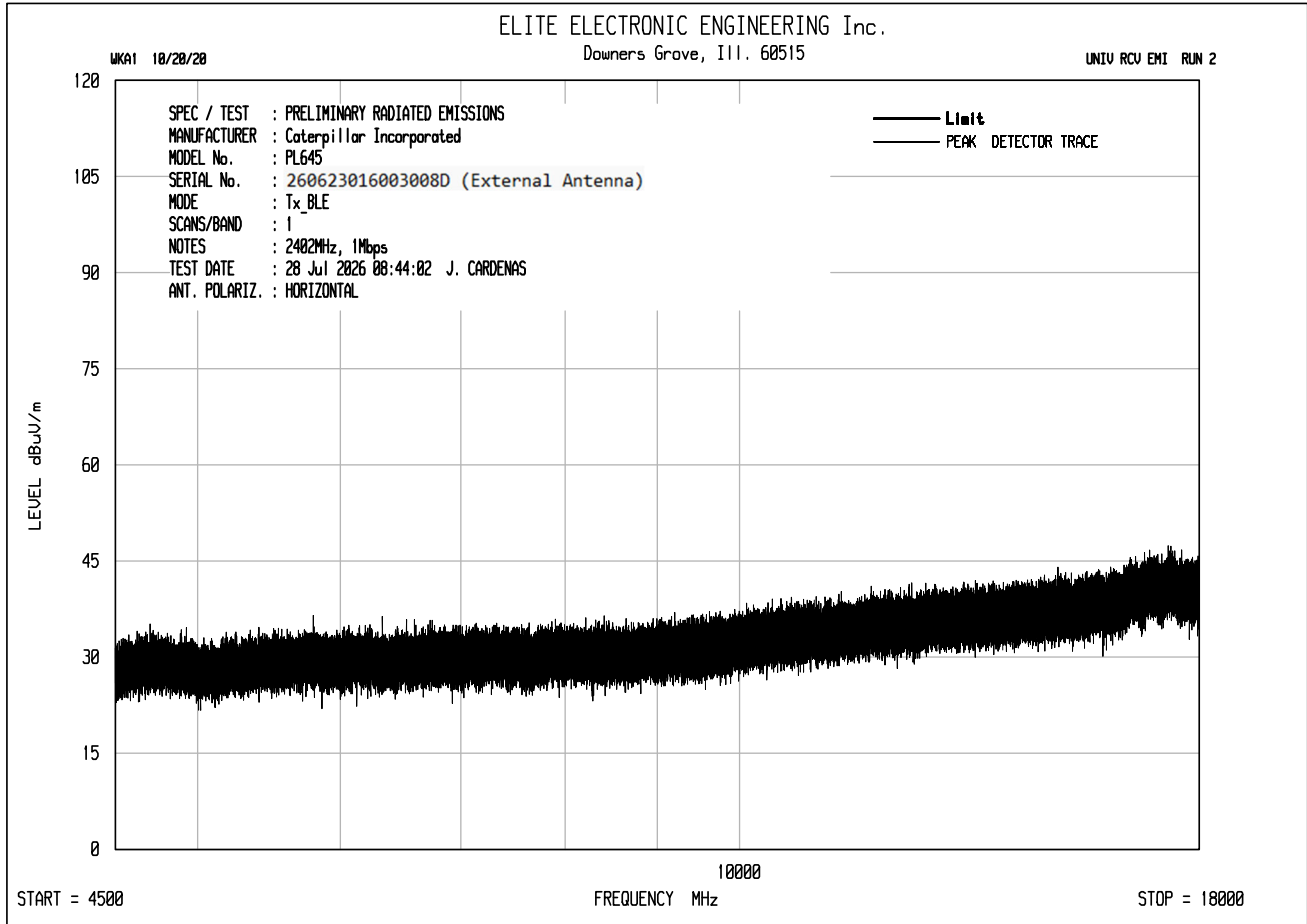
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 1Mbps
Frequency Tested	2402MHz
Notes	None

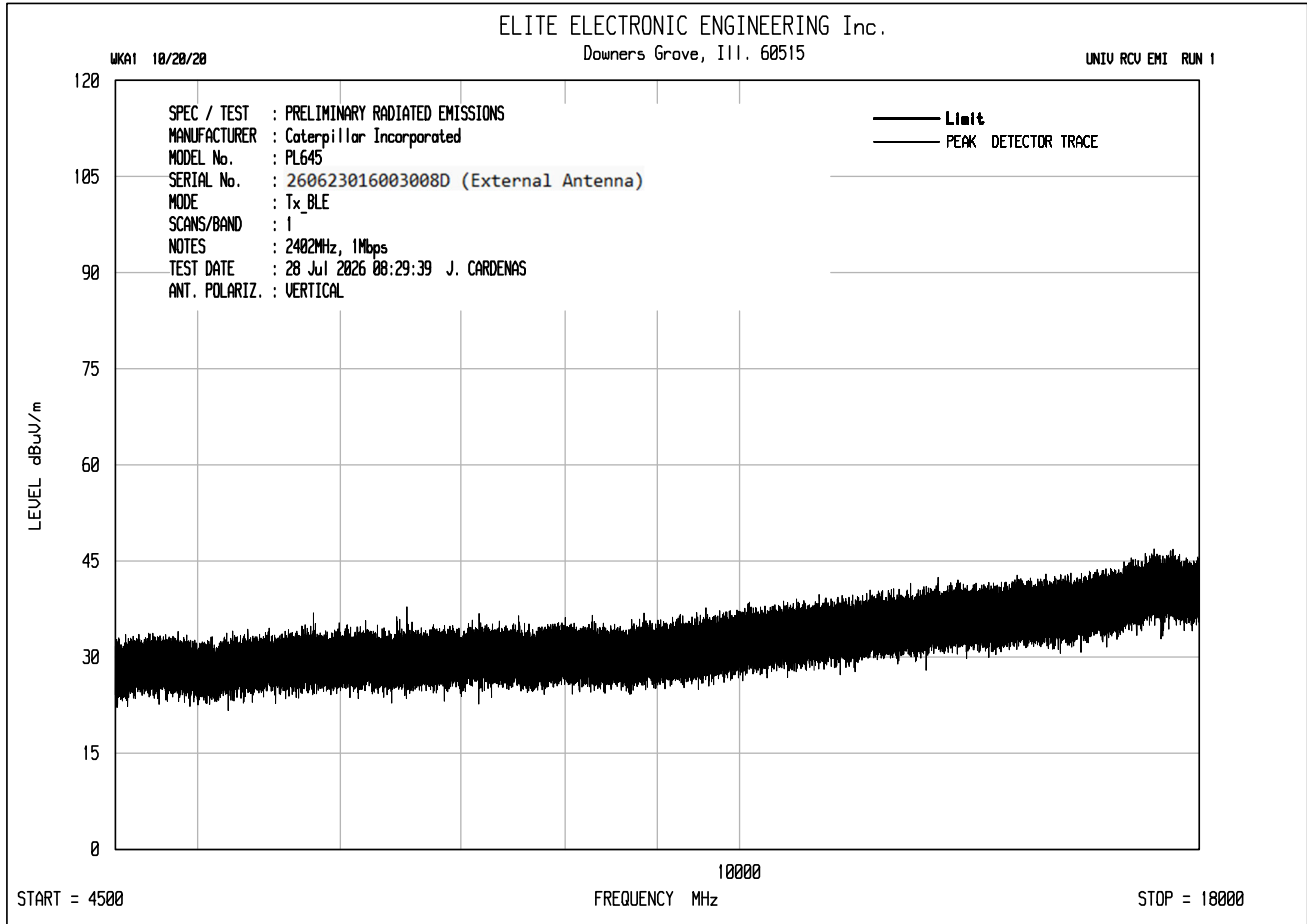


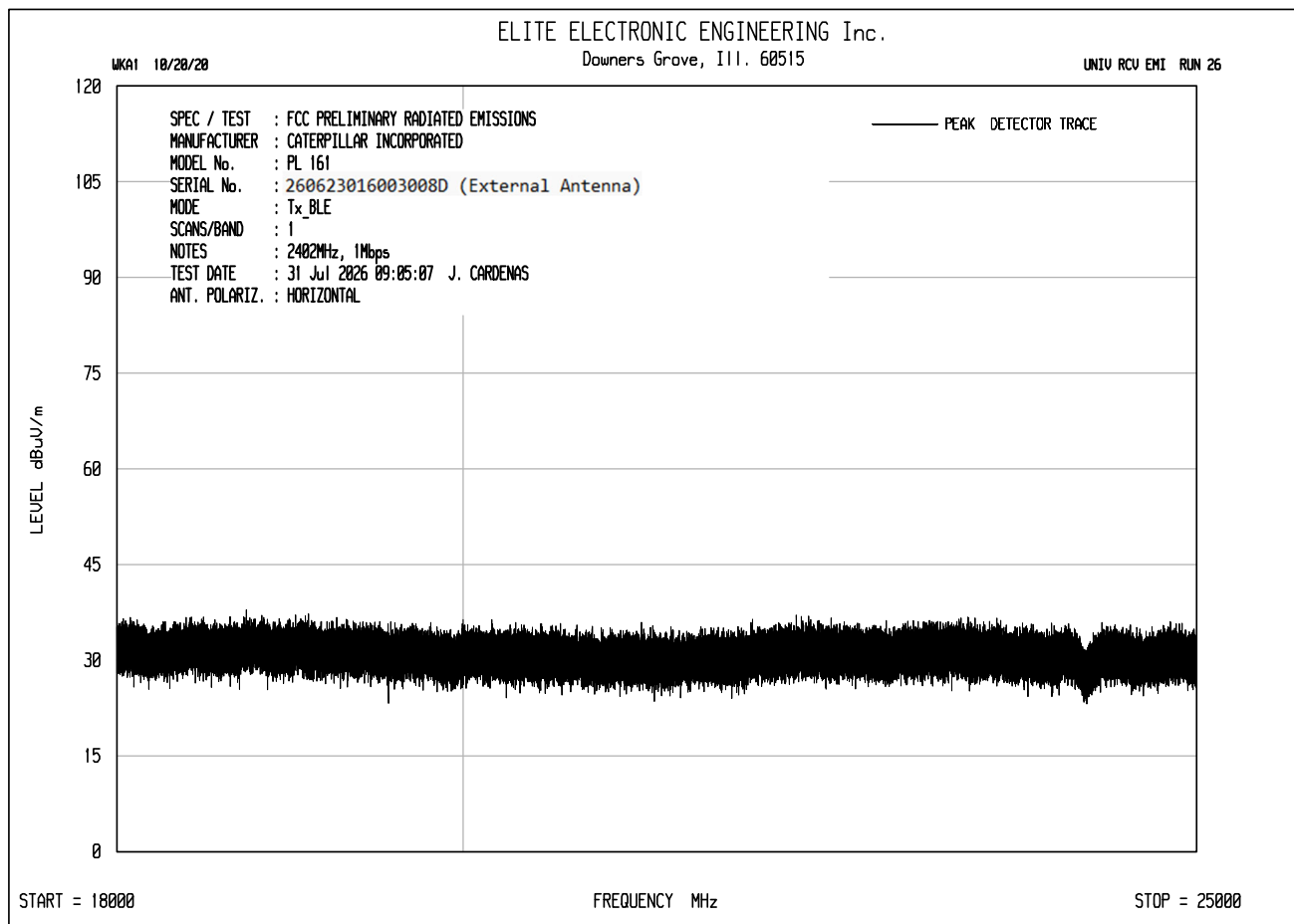


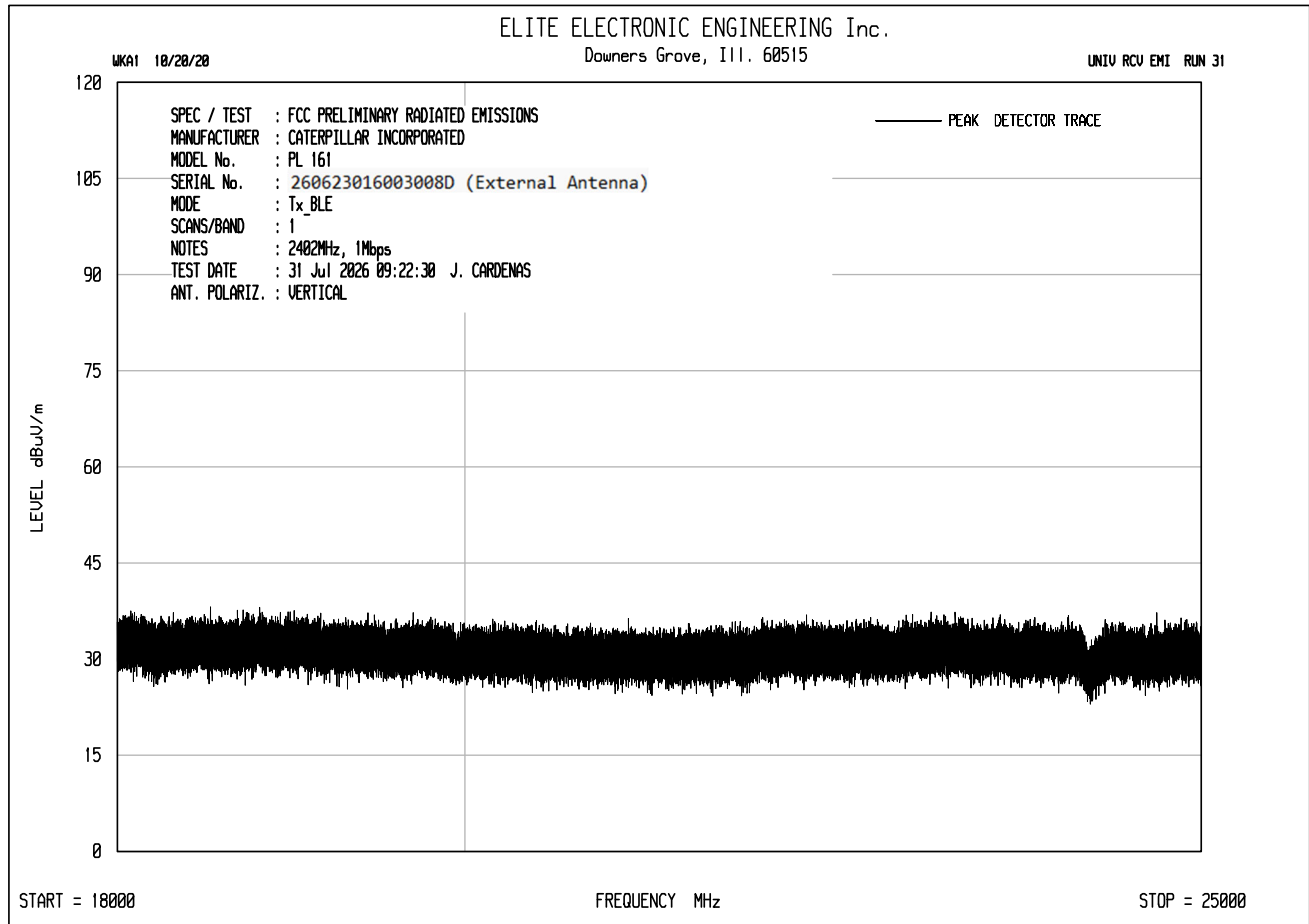








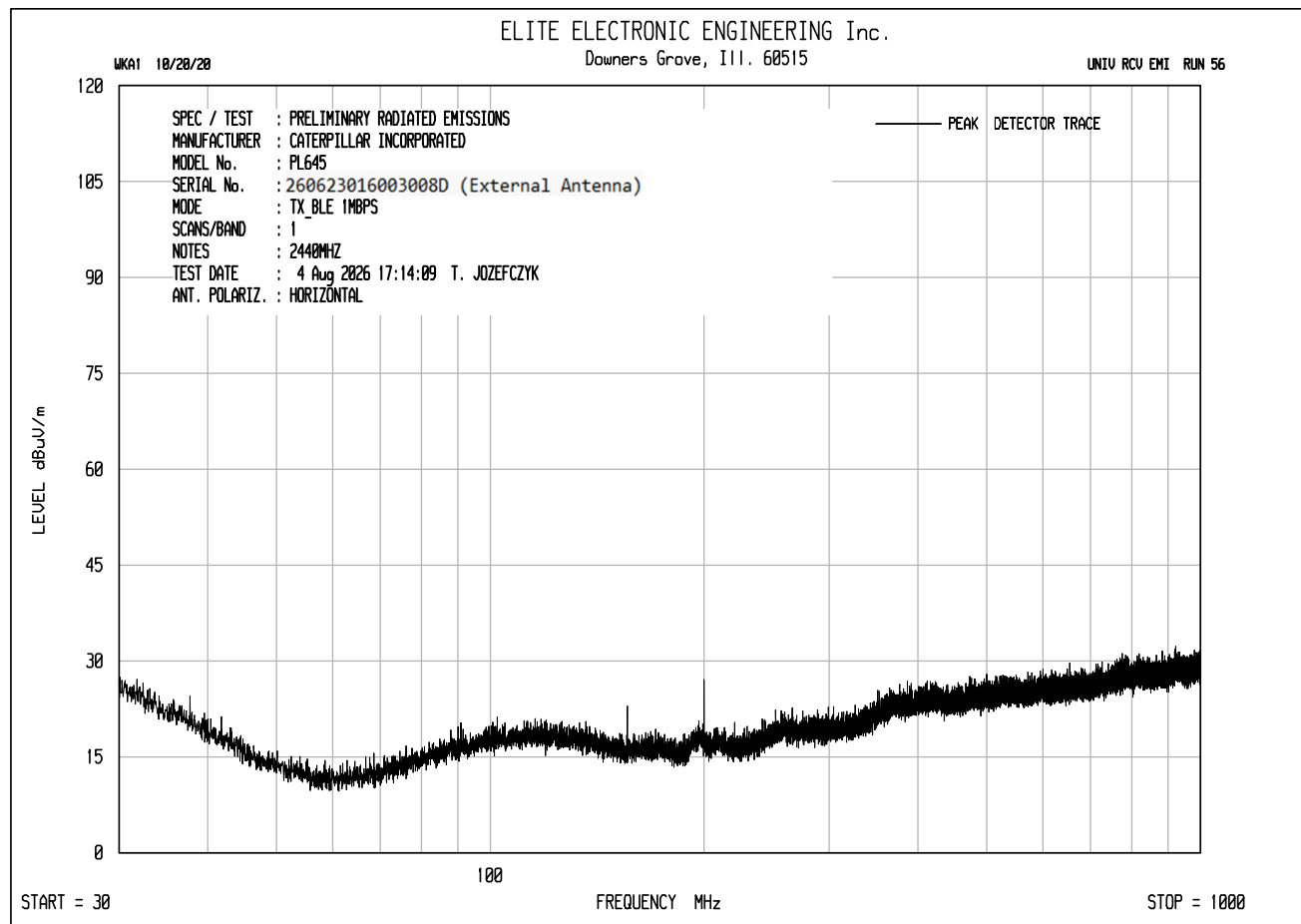


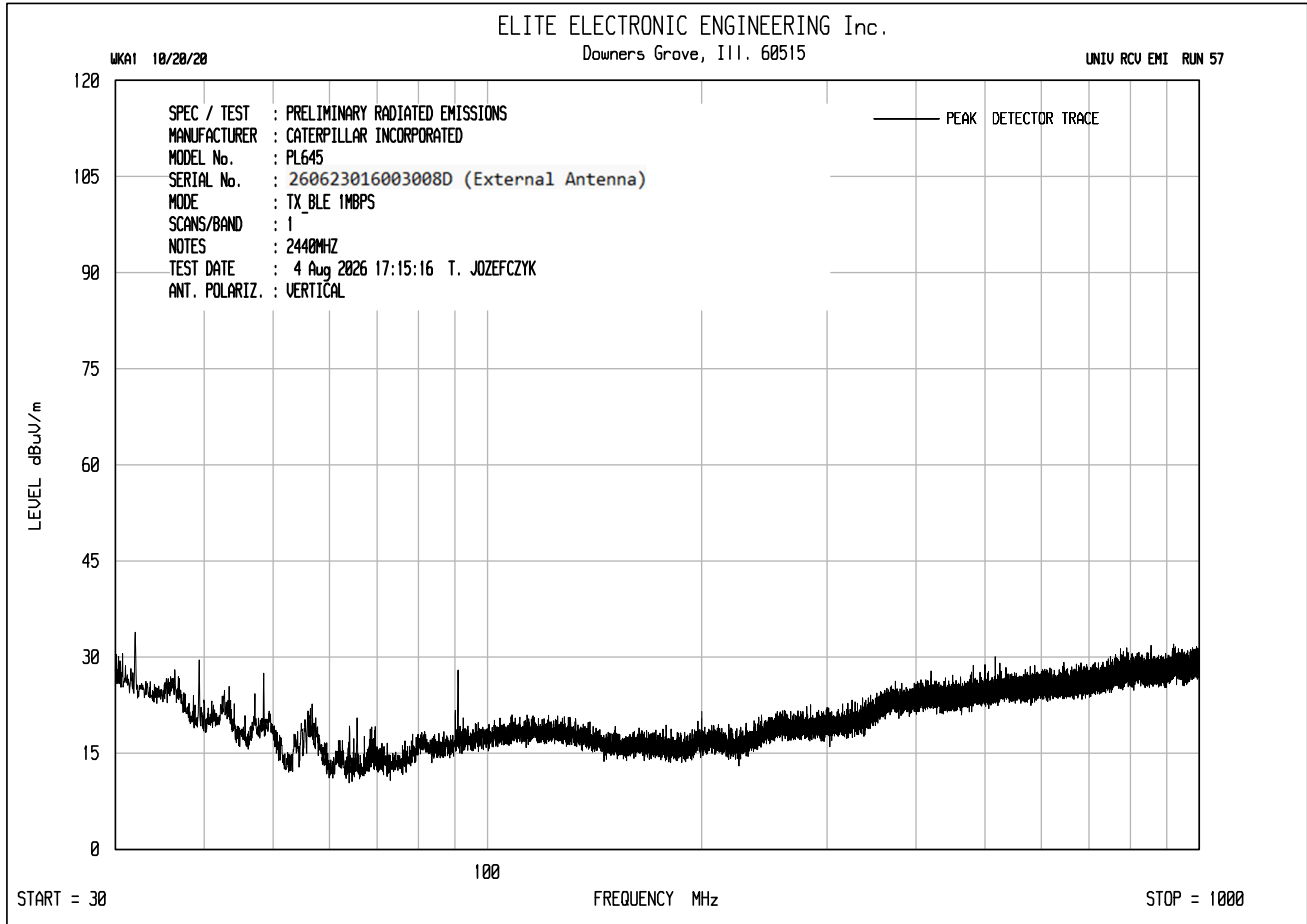


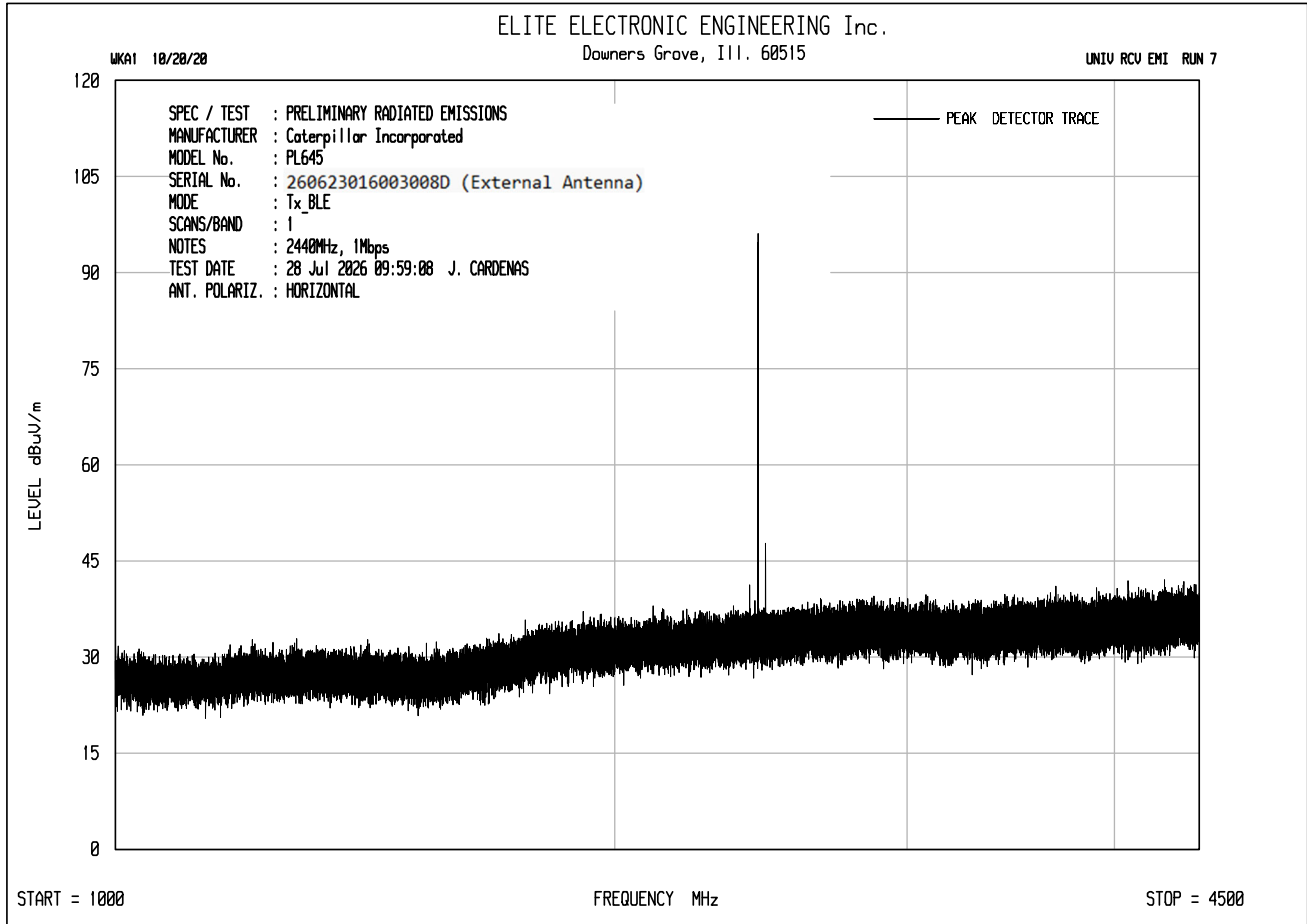
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBμV/m)	Peak Total at 3m (μV/m)	Peak Limit at 3m (μV/m)	Margin (dB)
4804.00	H	49.86	*	3.68	34.41	-40.44	47.50	237.21	5000.00	-26.48
	V	48.55	*	3.68	34.41	-40.44	46.19	204.00	5000.00	-27.79

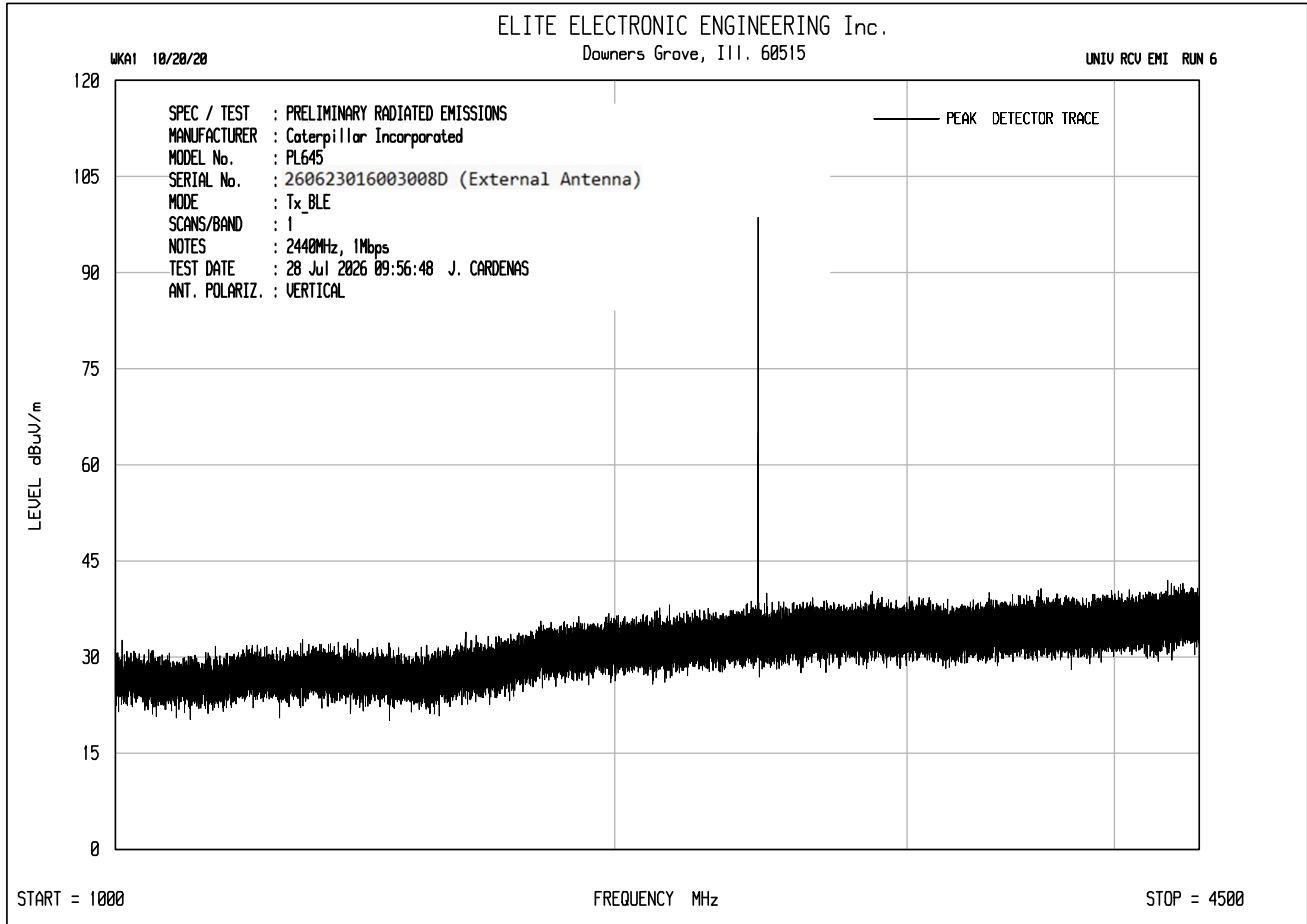
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBμV/m)	Average Total at 3m (μV/m)	Average Limit at 3m (μV/m)	Margin (dB)
4804.00	H	38.33	*	3.68	34.41	-40.44	0.00	35.97	62.90	500.00	-18.01
	V	38.59	*	3.68	34.41	-40.44	0.00	36.23	64.81	500.00	-17.75

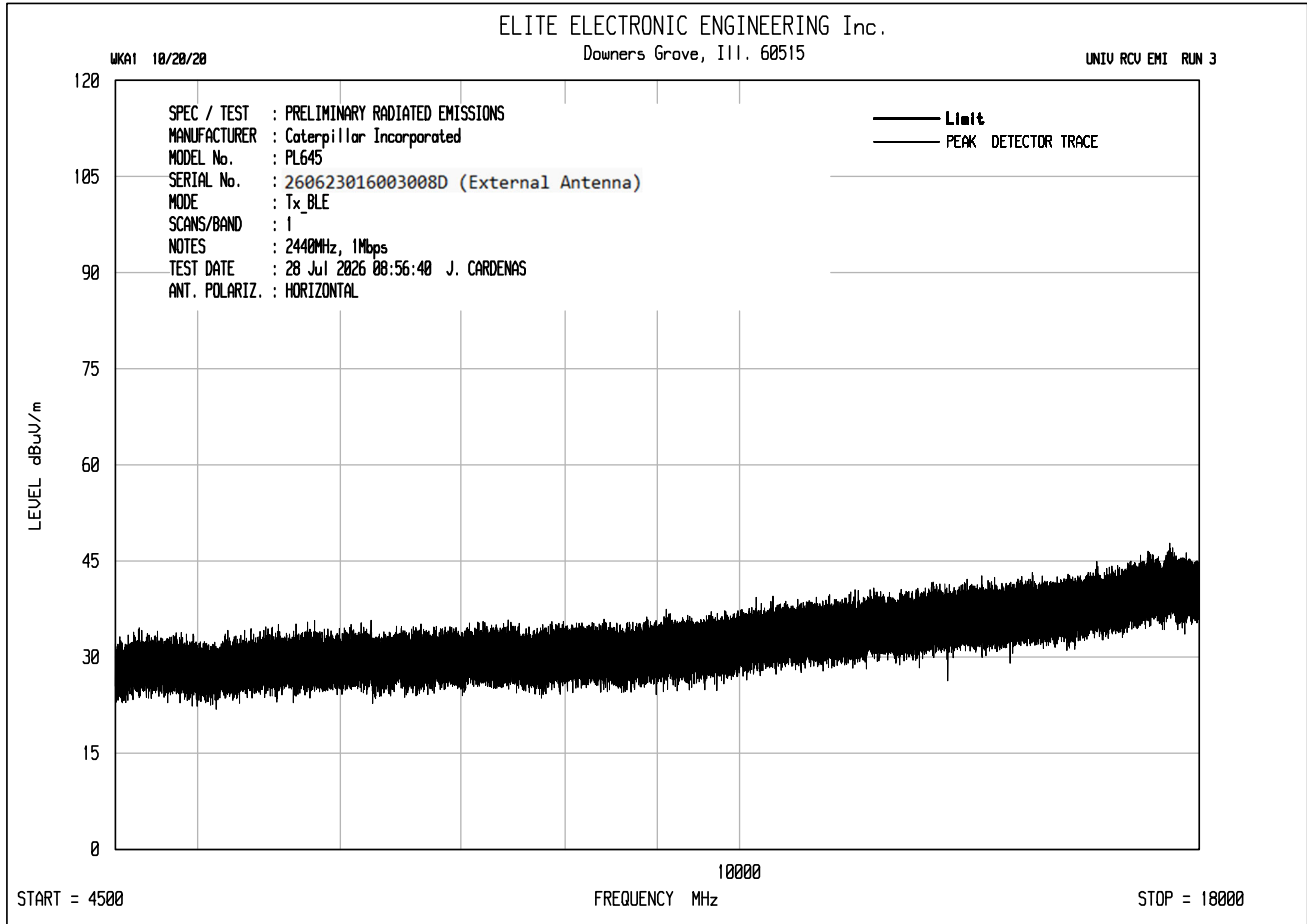
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 1Mbps
Frequency Tested	2440MHz
Notes	None

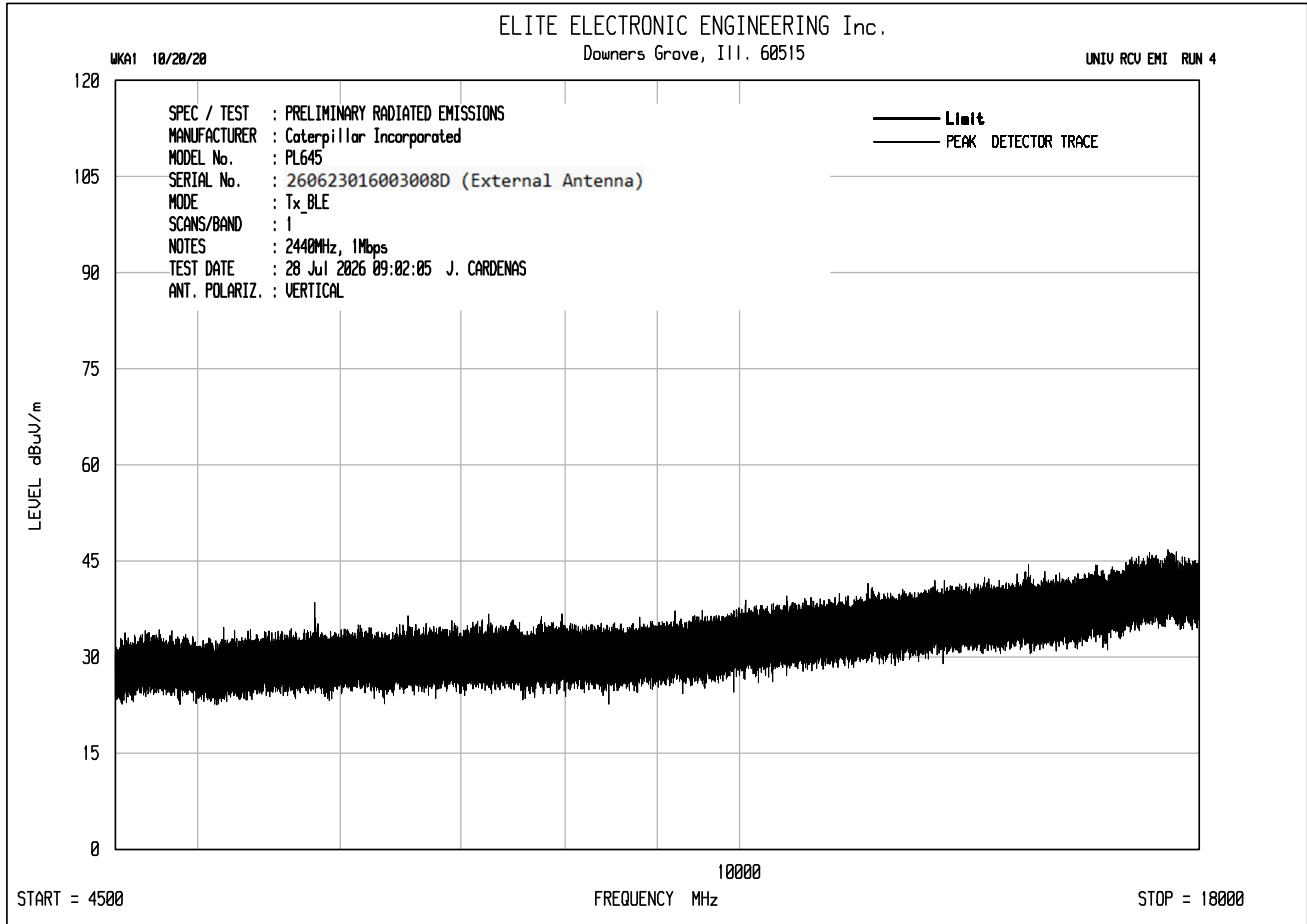


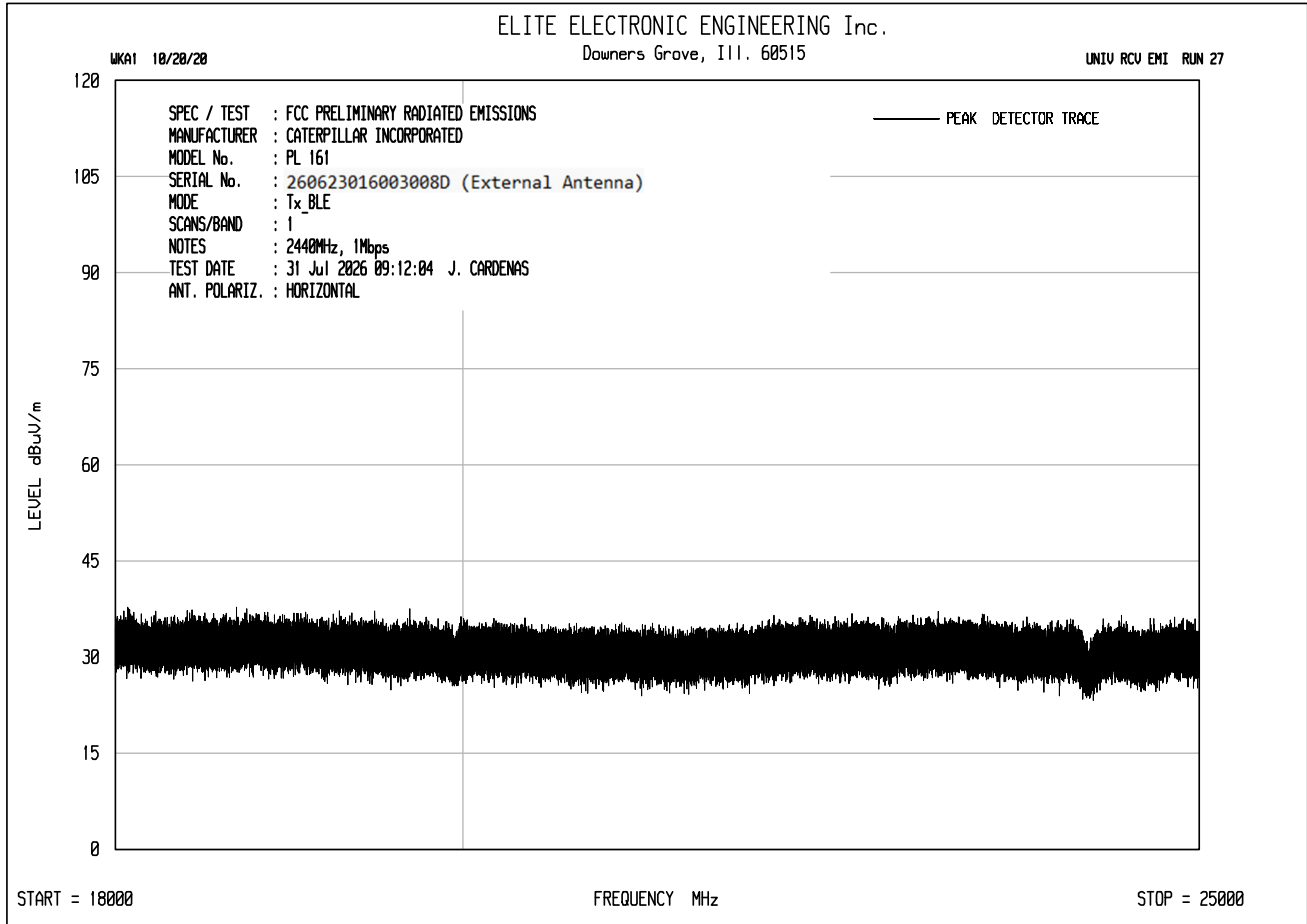


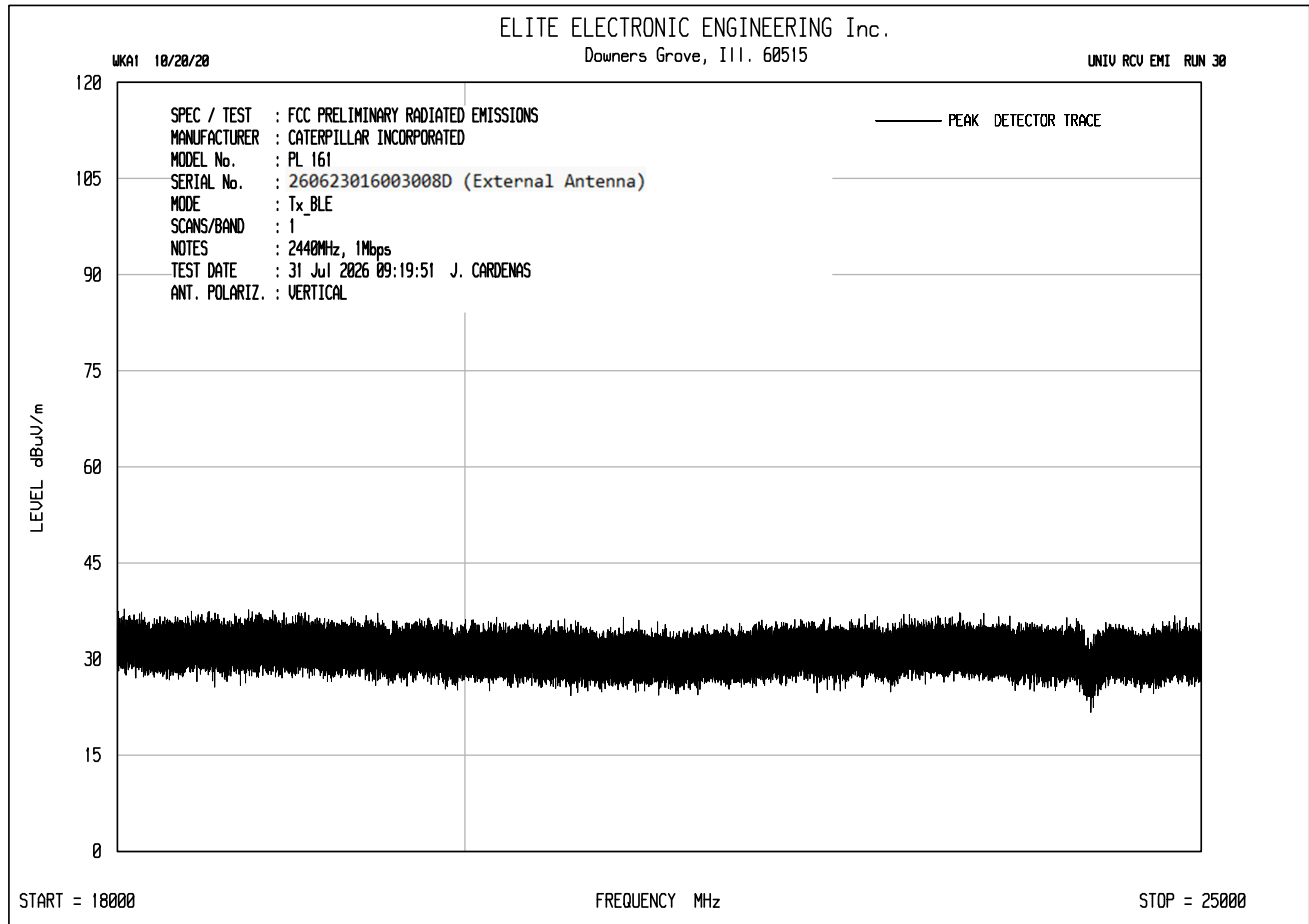








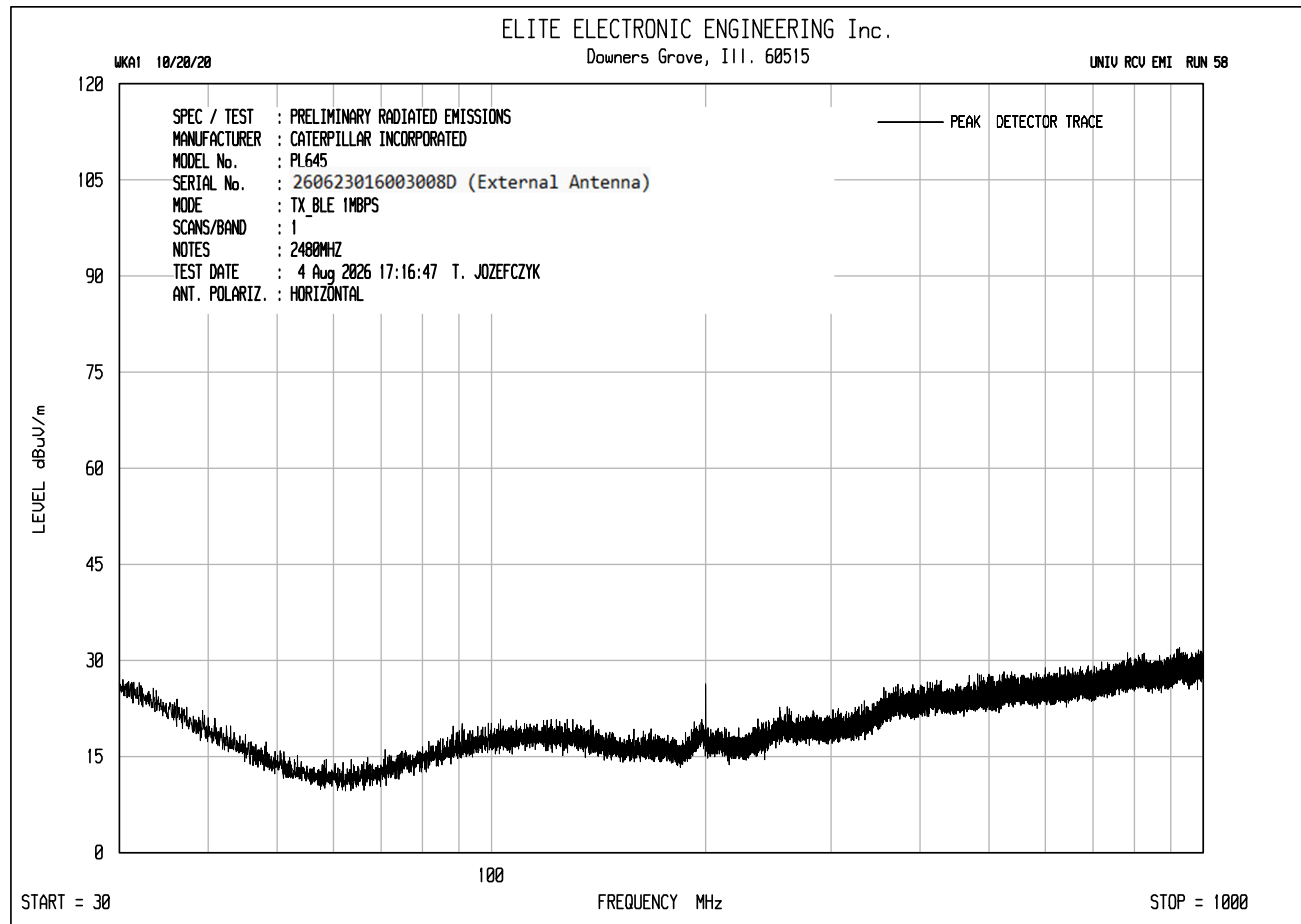


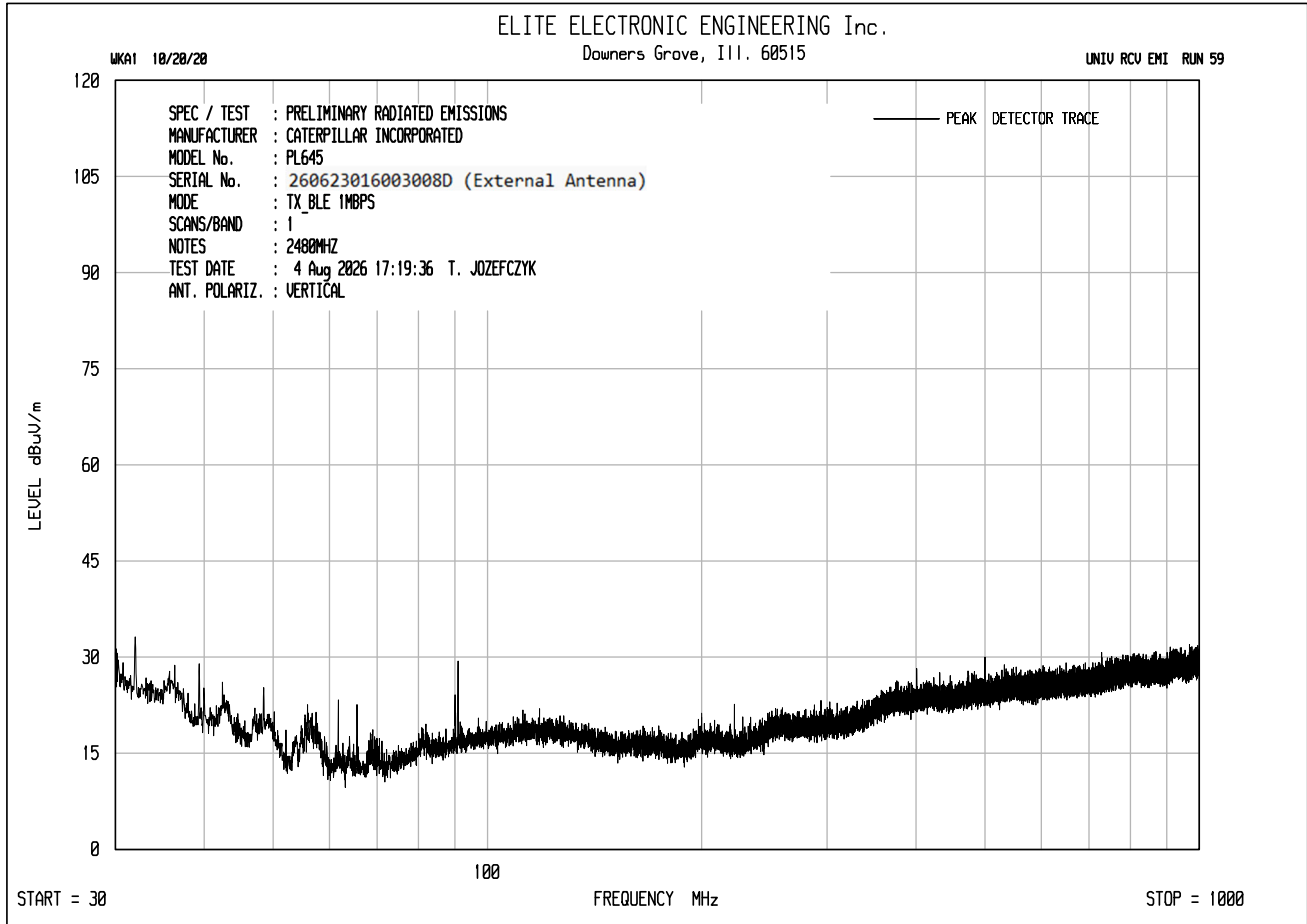


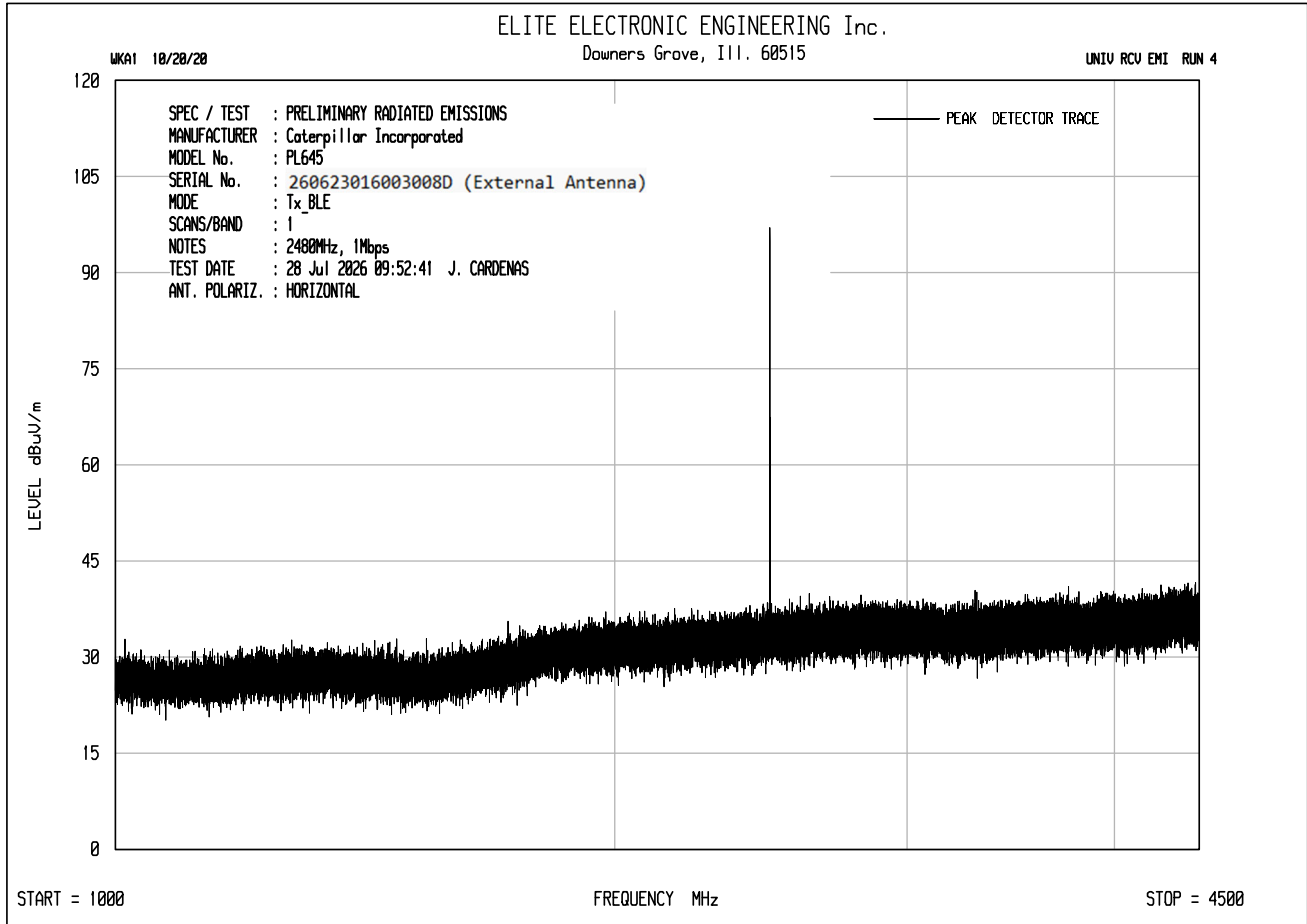
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBμV/m)	Peak Total at 3m (μV/m)	Peak Limit at 3m (μV/m)	Margin (dB)
4880.00	H	49.78	*	3.70	34.53	-40.45	47.57	238.96	5000.00	-26.41
	V	48.53	*	3.70	34.53	-40.45	46.32	206.93	5000.00	-27.66
7320.00	H	47.76	*	4.69	35.77	-40.89	47.32	232.31	5000.00	-26.66
	V	48.44	*	4.69	35.77	-40.89	48.00	251.23	5000.00	-25.98

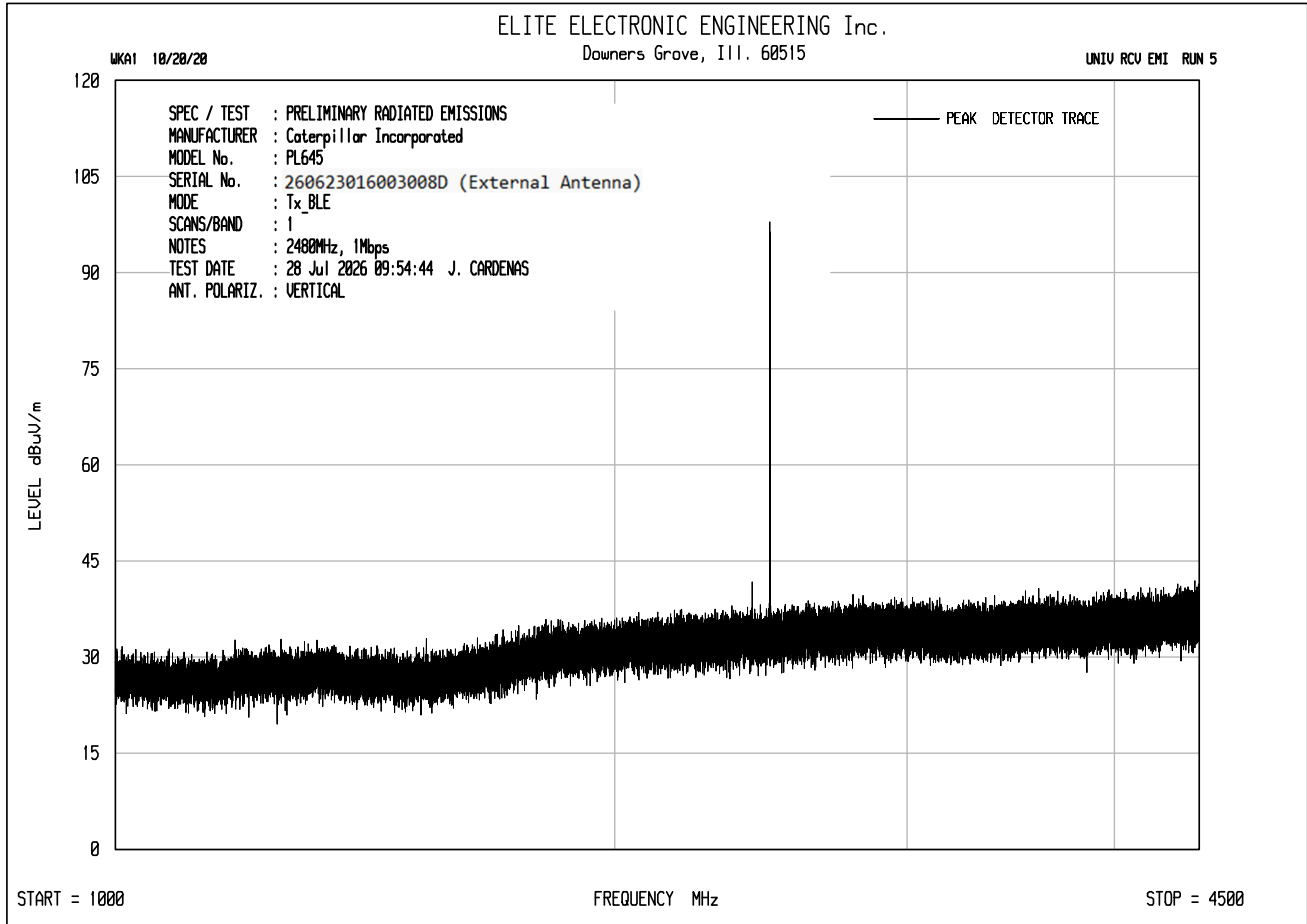
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBμV/m)	Average Total at 3m (μV/m)	Average Limit at 3m (μV/m)	Margin (dB)
4880.00	H	37.77	*	3.70	34.53	-40.45	0.00	35.56	59.96	500.00	-18.42
	V	37.78	*	3.70	34.53	-40.45	0.00	35.57	60.02	500.00	-18.41
7320.00	H	37.90	*	4.69	35.77	-40.89	0.00	37.46	74.66	500.00	-16.52
	V	37.00	*	4.69	35.77	-40.89	0.00	36.56	67.31	500.00	-17.42

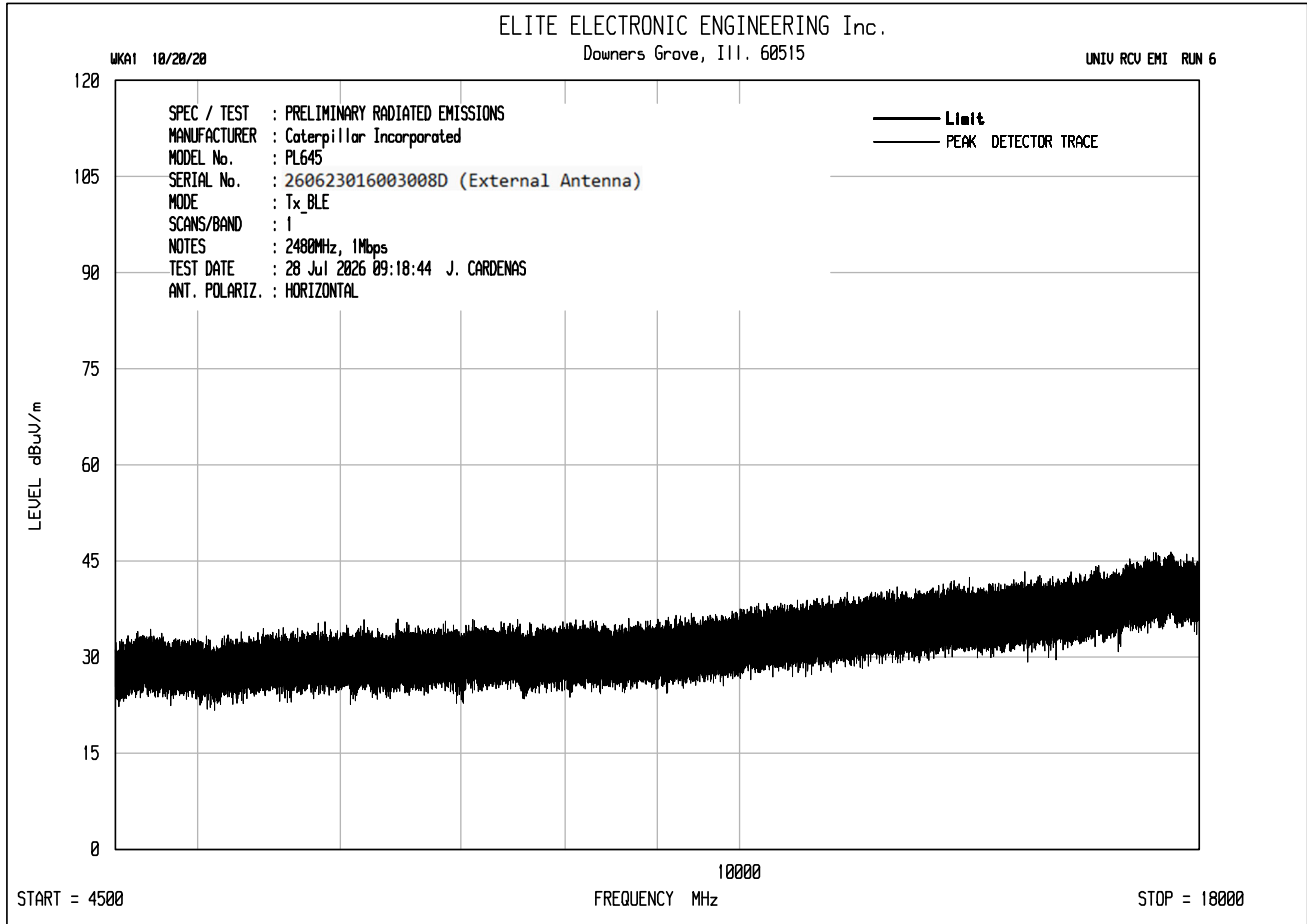
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.905-13
Serial No.	260623016003008D (External Antenna)
Mode	BLE 1Mbps
Frequency Tested	2480MHz
Notes	None

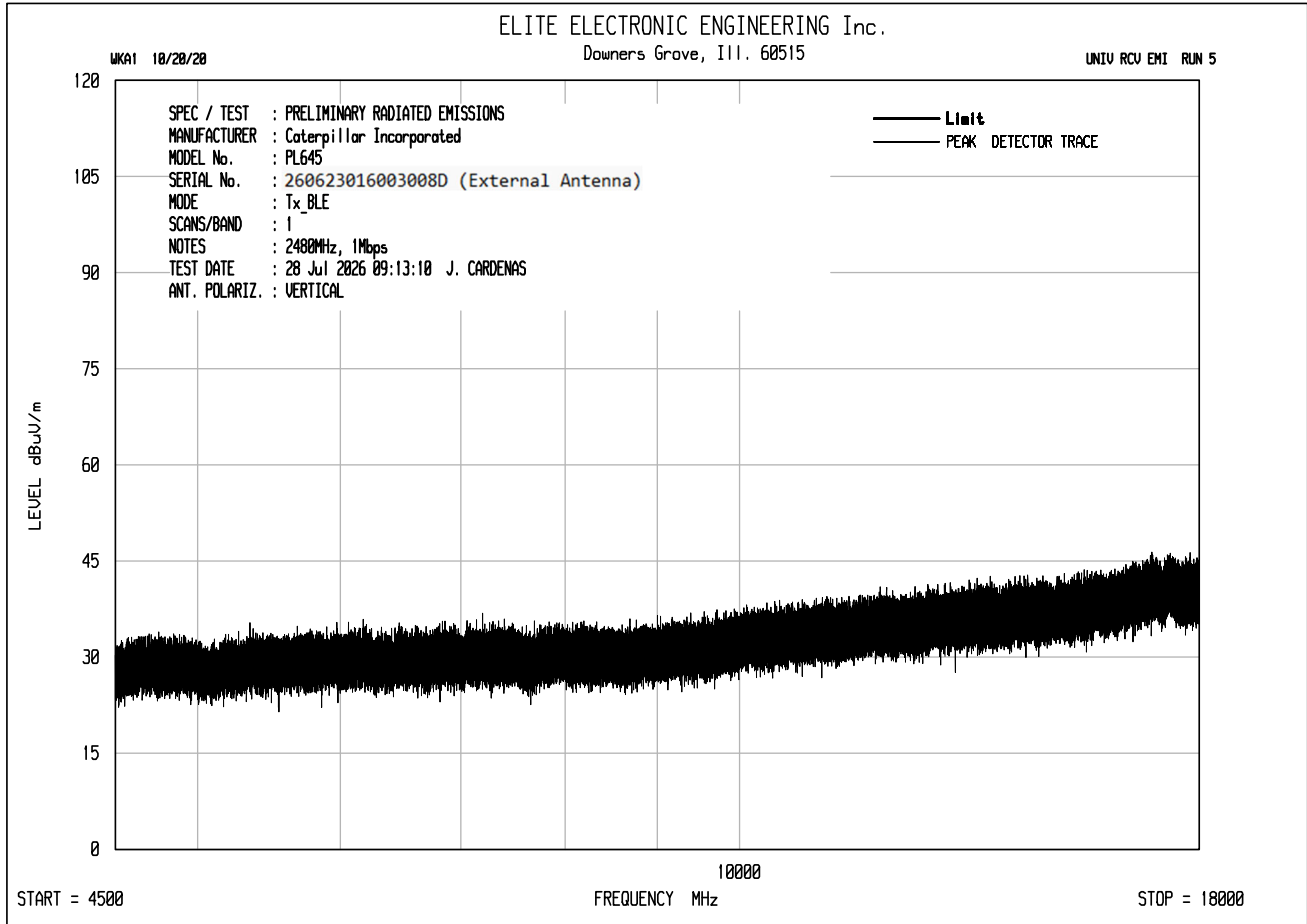


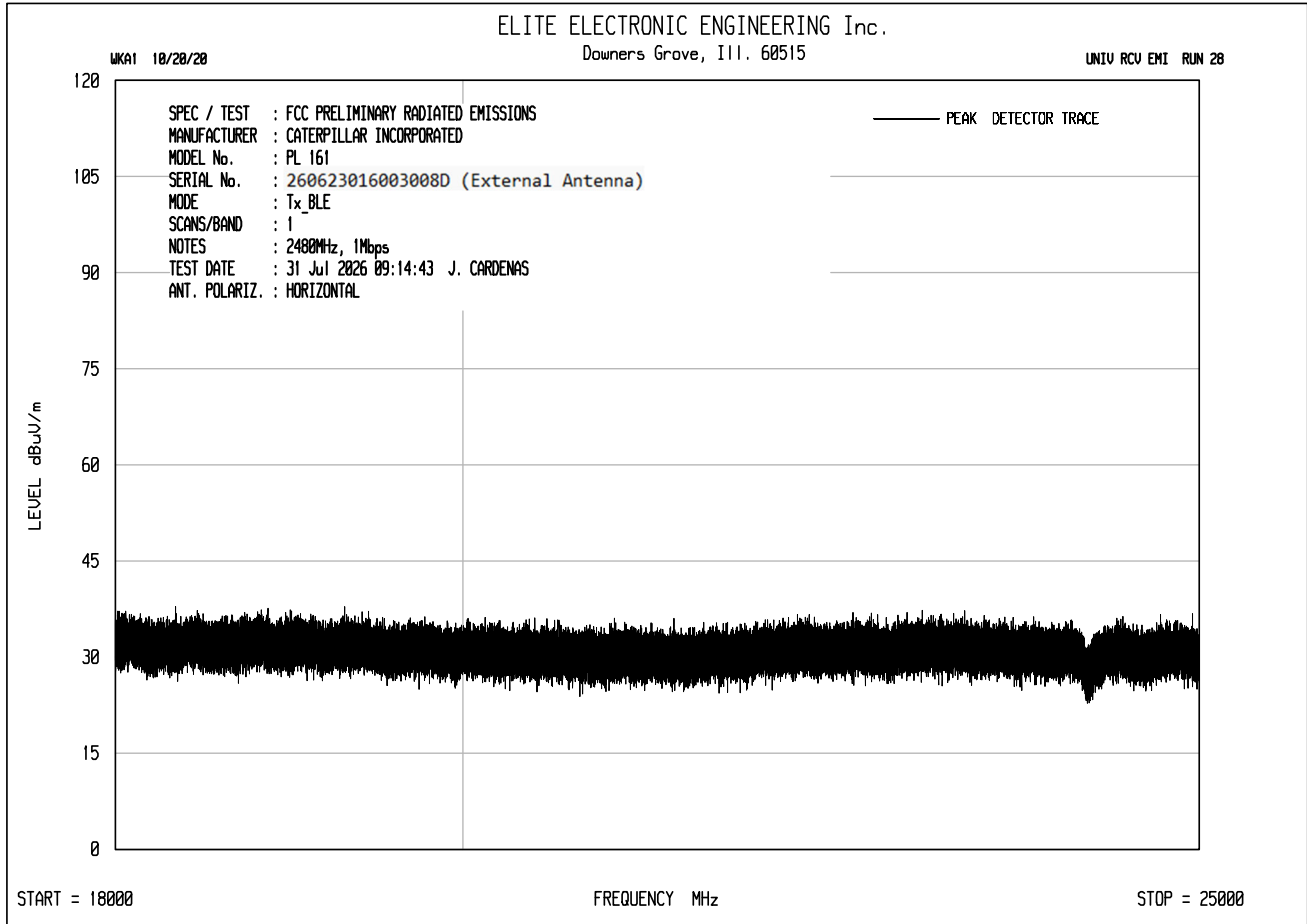


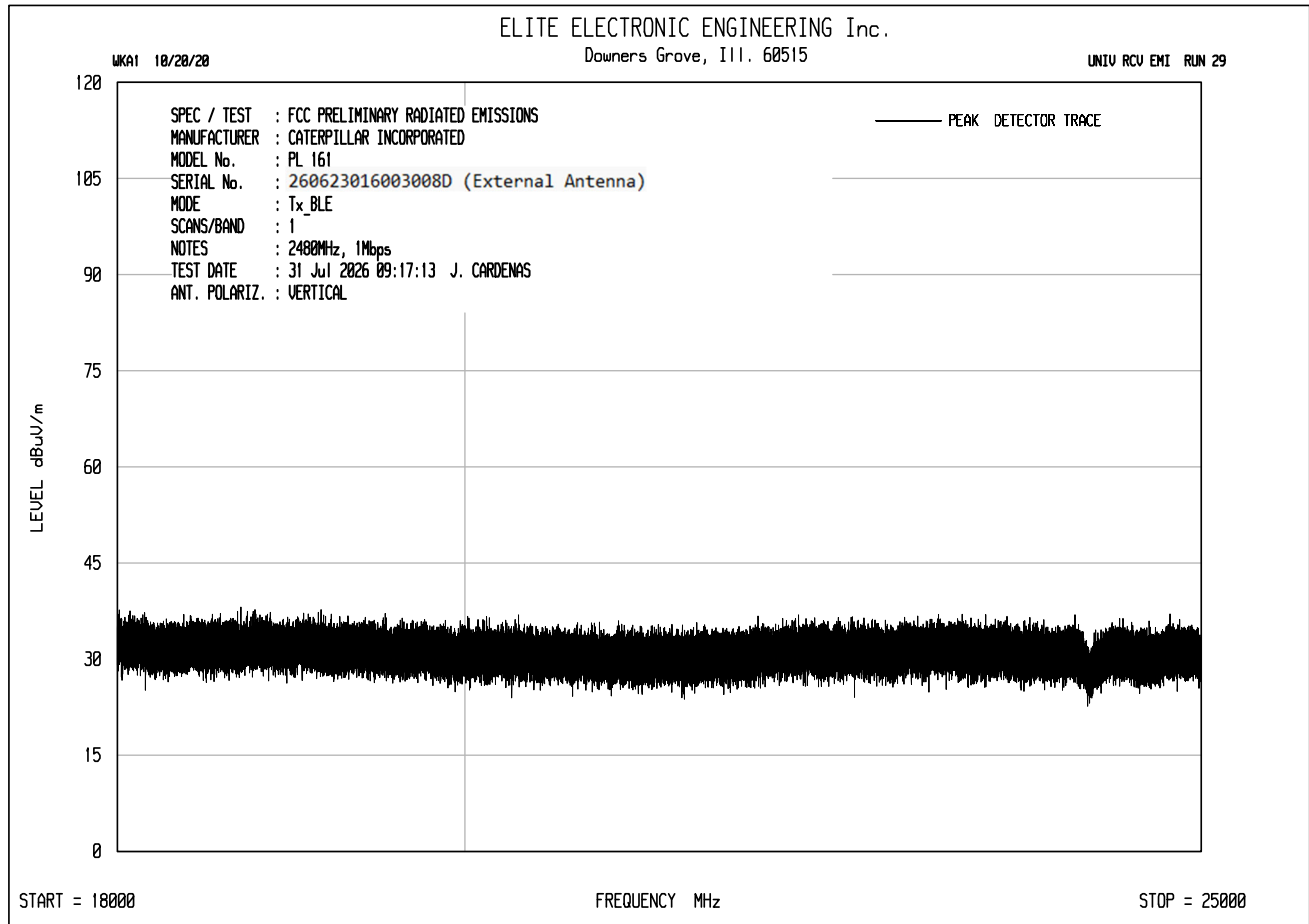








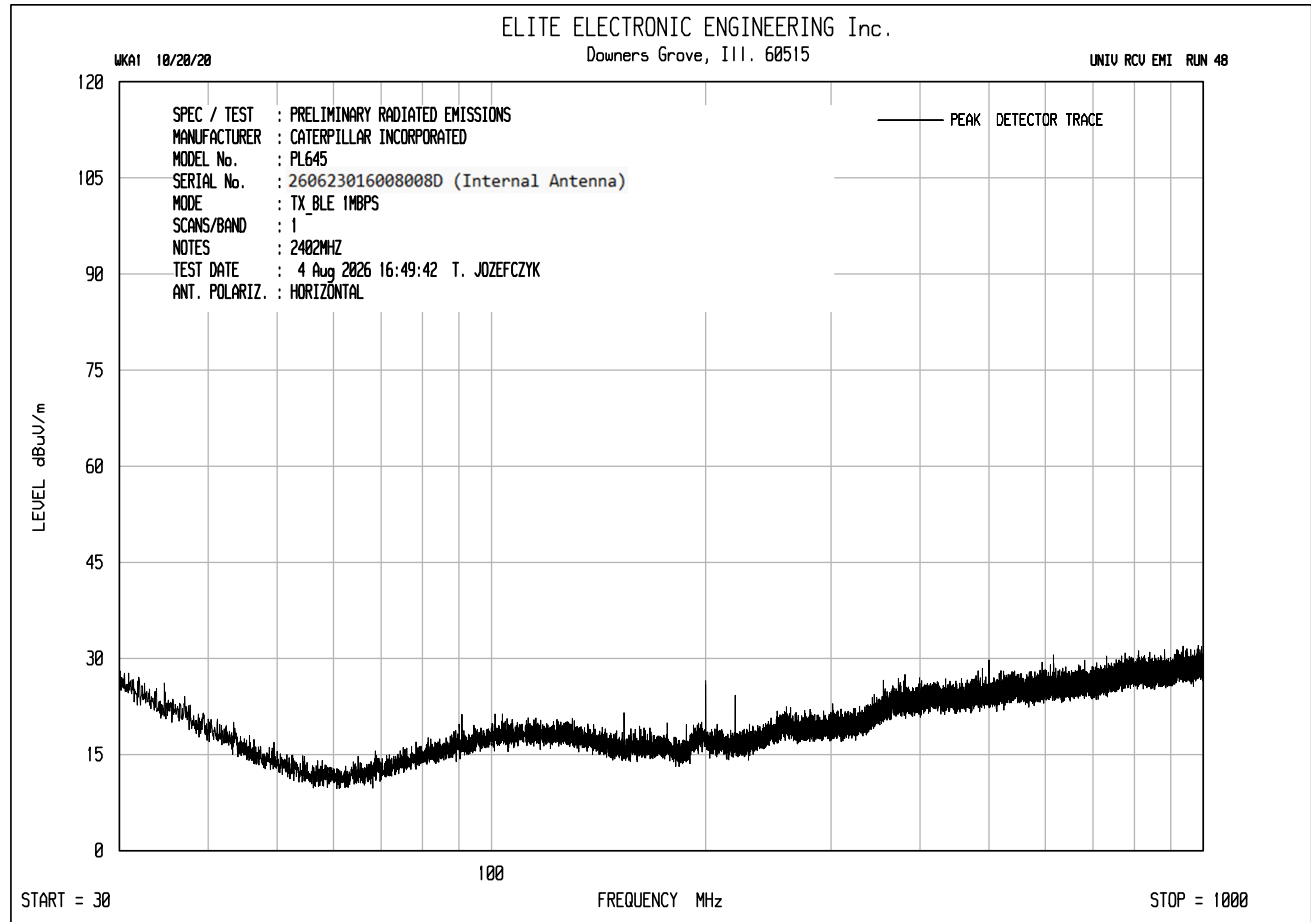


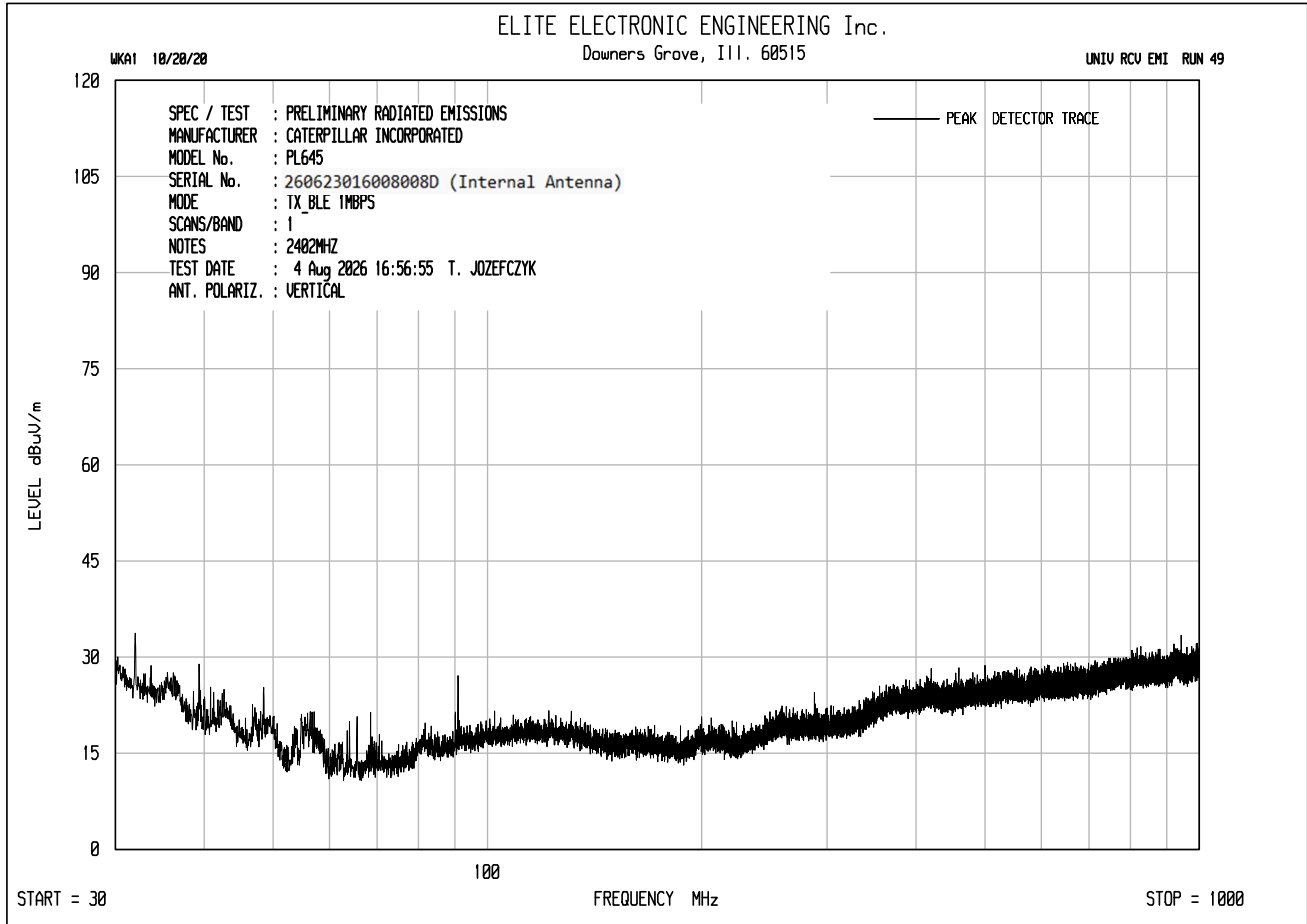


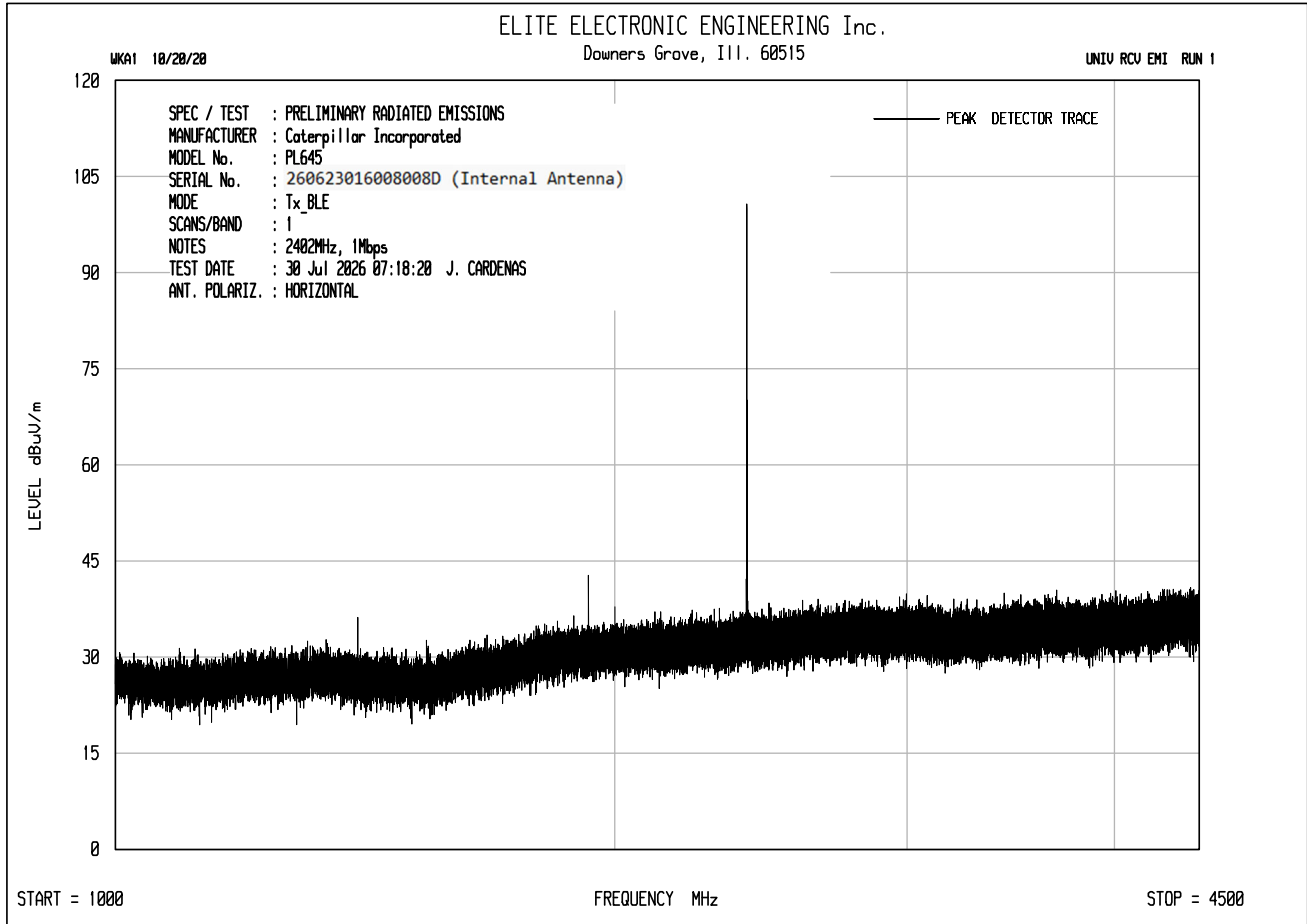
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBμV/m)	Peak Total at 3m (μV/m)	Peak Limit at 3m (μV/m)	Margin (dB)
4960.00	H	48.84	*	3.73	34.80	-40.46	46.90	221.35	5000.00	-27.08
	V	48.56	*	3.73	34.80	-40.46	46.62	214.32	5000.00	-27.36
7440.00	H	47.90	*	4.73	35.74	-40.89	47.49	236.91	5000.00	-26.49
	V	48.11	*	4.73	35.74	-40.89	47.70	242.70	5000.00	-26.28

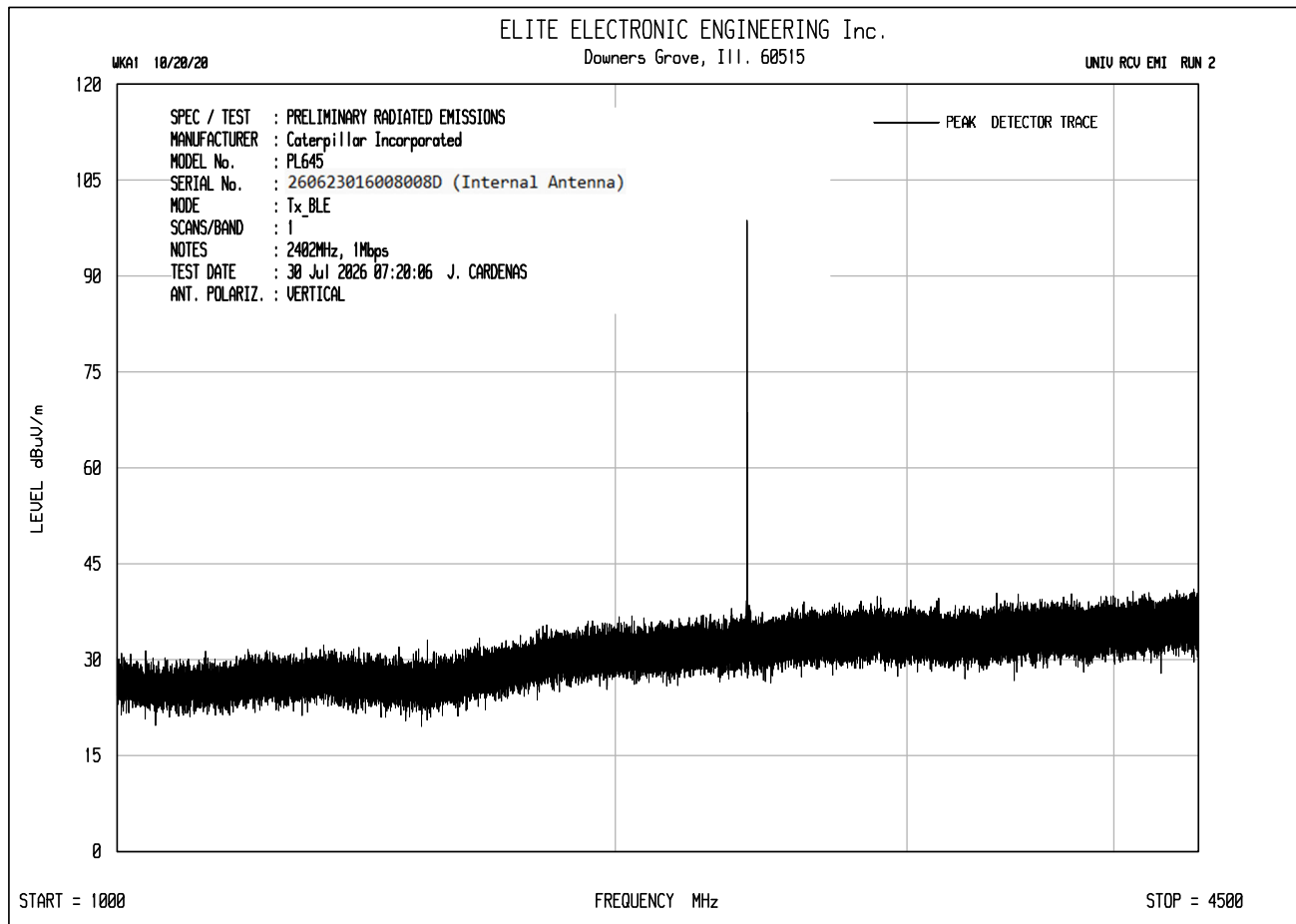
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBμV/m)	Average Total at 3m (μV/m)	Average Limit at 3m (μV/m)	Margin (dB)
4960.00	H	37.15	*	3.73	34.80	-40.46	0.00	35.21	57.62	500.00	-18.77
	V	37.34	*	3.73	34.80	-40.46	0.00	35.40	58.89	500.00	-18.58
7440.00	H	37.58	*	4.73	35.74	-40.89	0.00	37.17	72.21	500.00	-16.81
	V	37.81	*	4.73	35.74	-40.89	0.00	37.40	74.14	500.00	-16.58

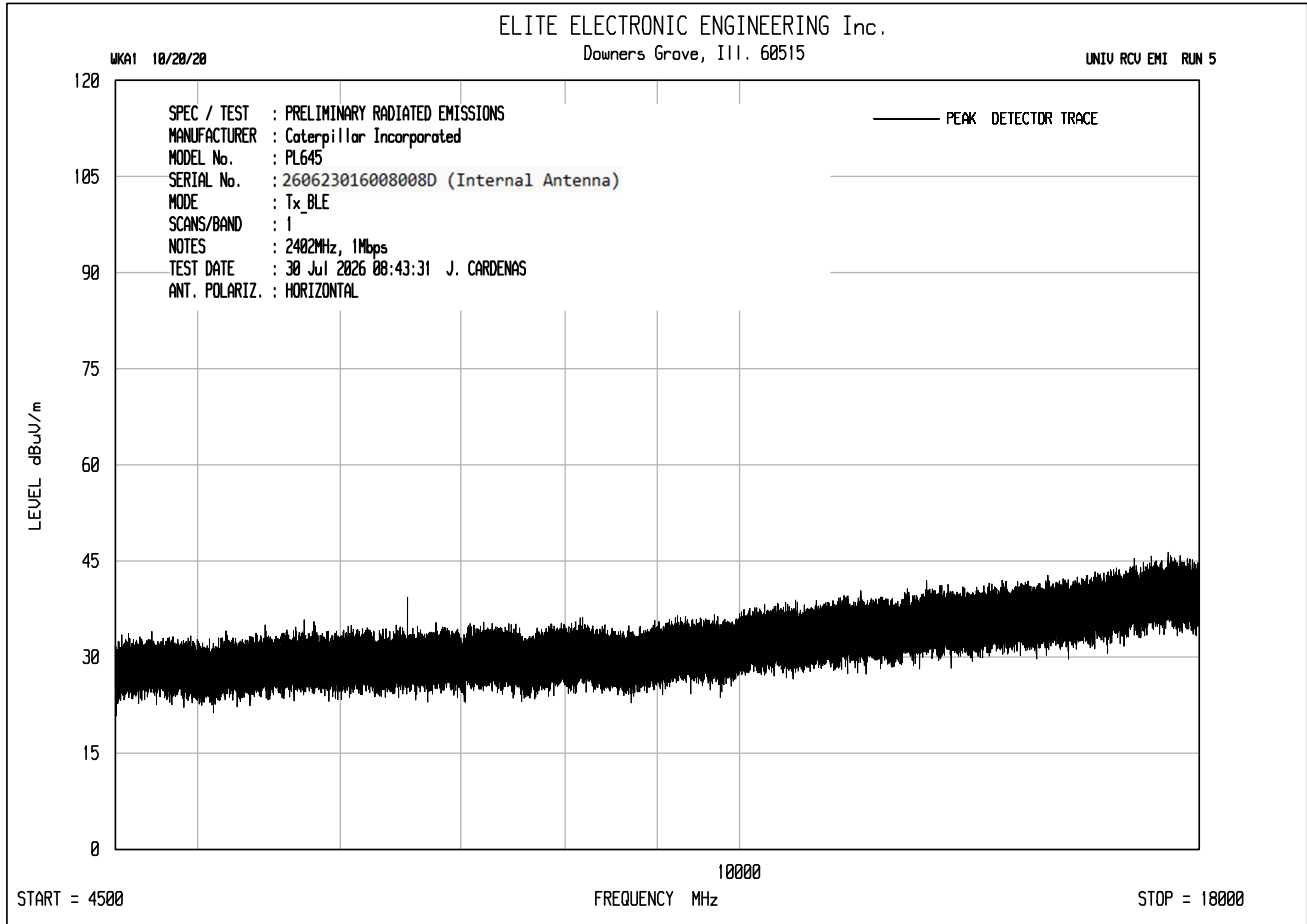
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.904-13
Serial No.	260619016008008D (Internal Antenna)
Mode	BLE 1Mbps
Frequency Tested	2402MHz
Notes	None

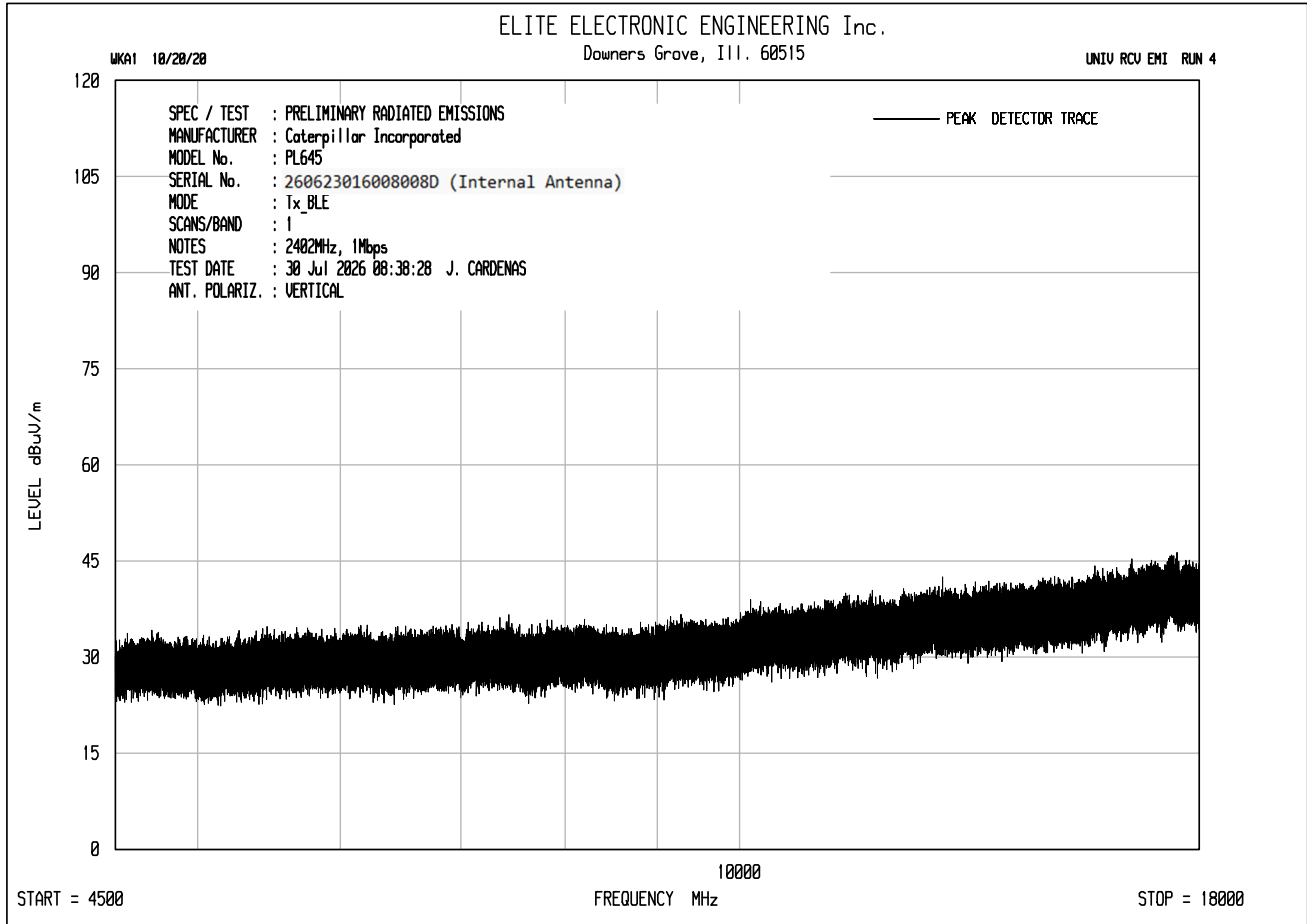


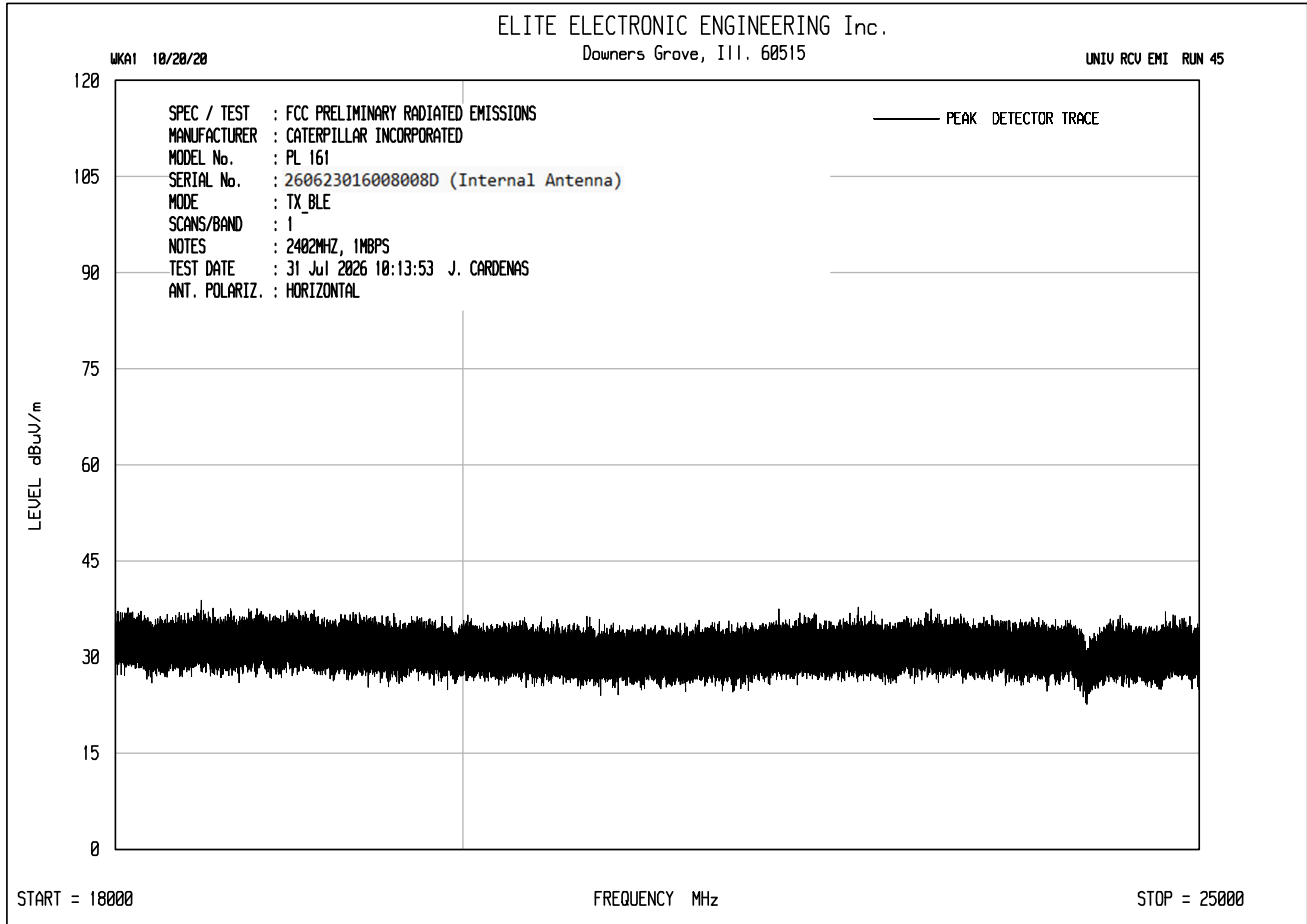


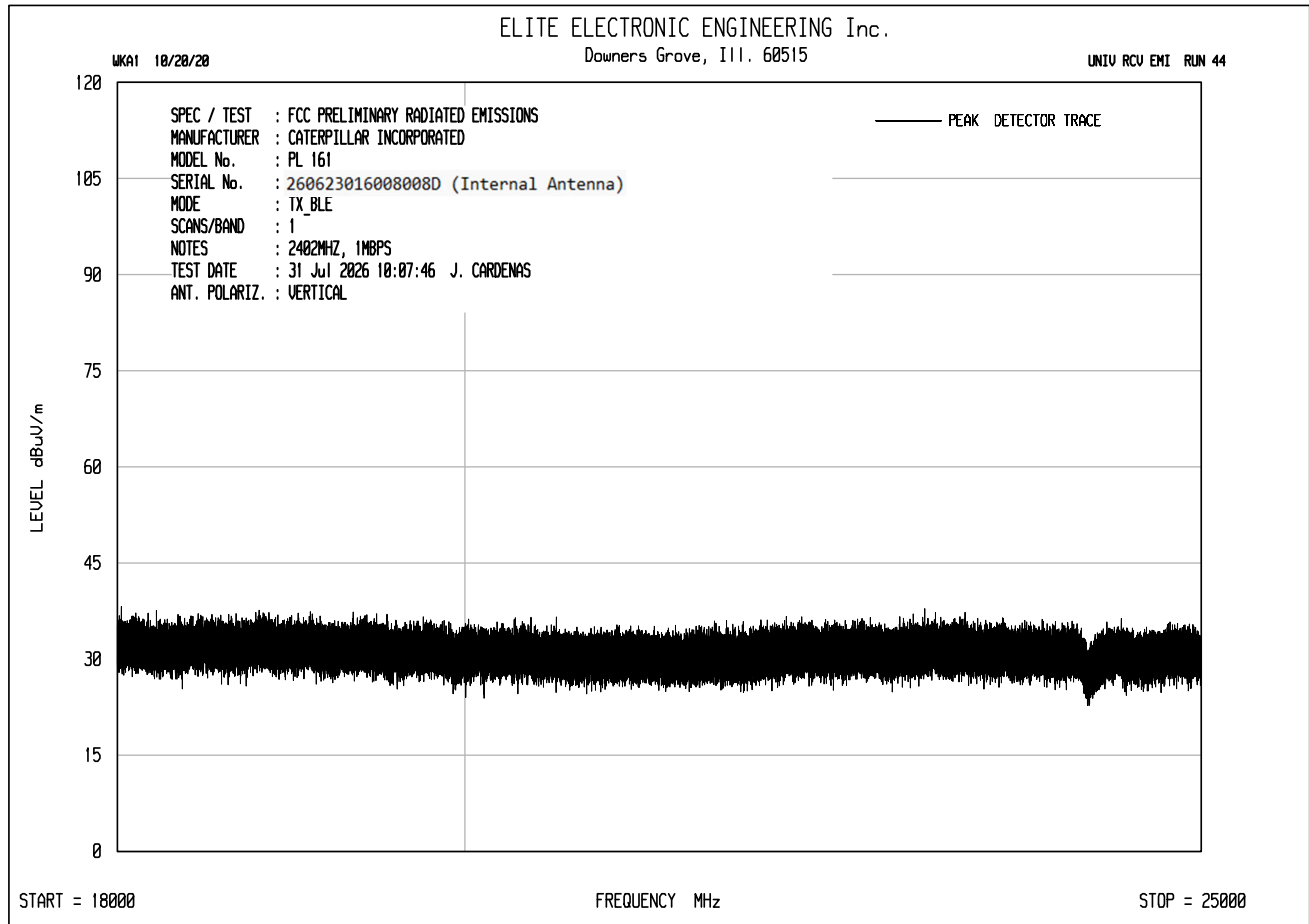








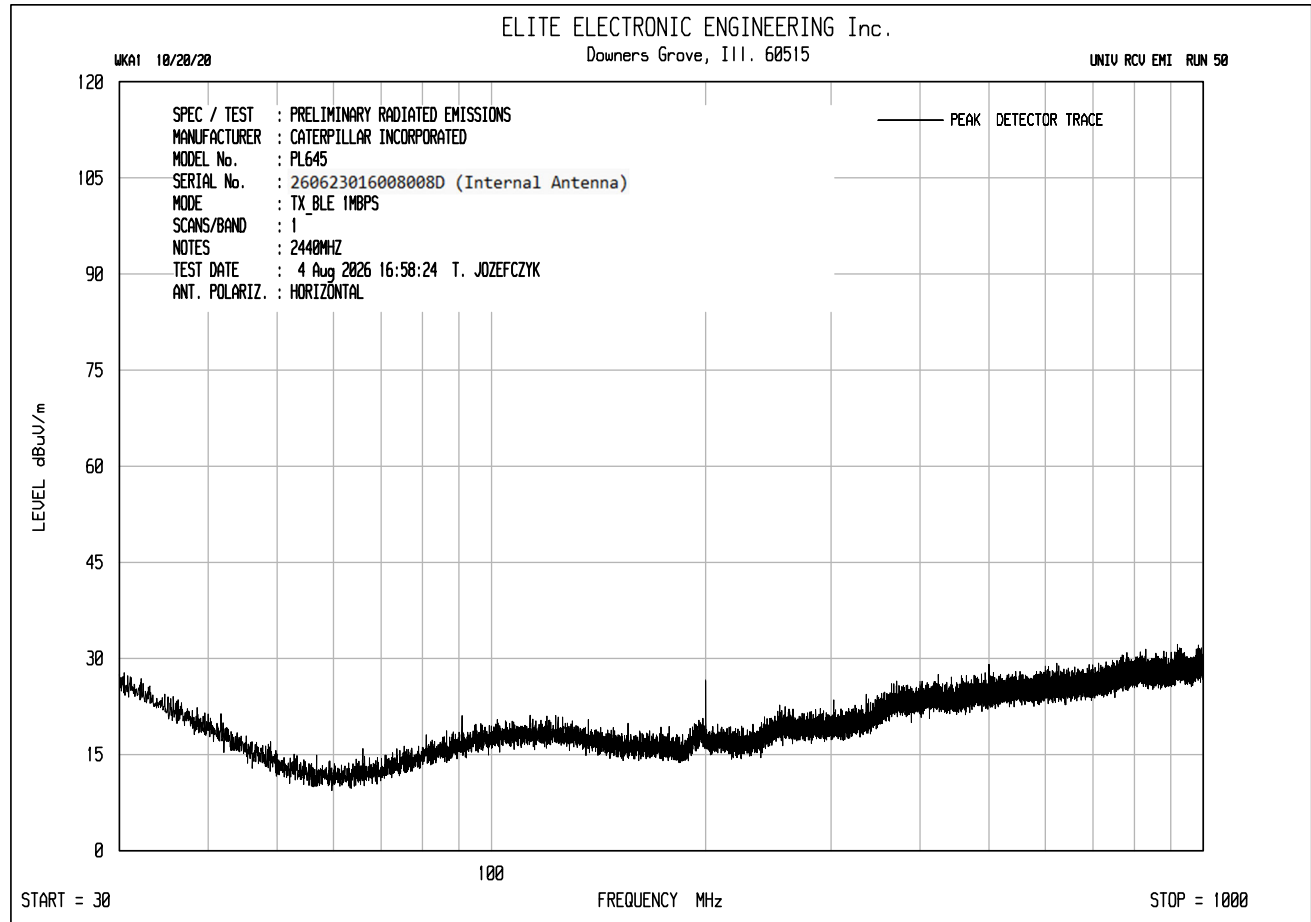


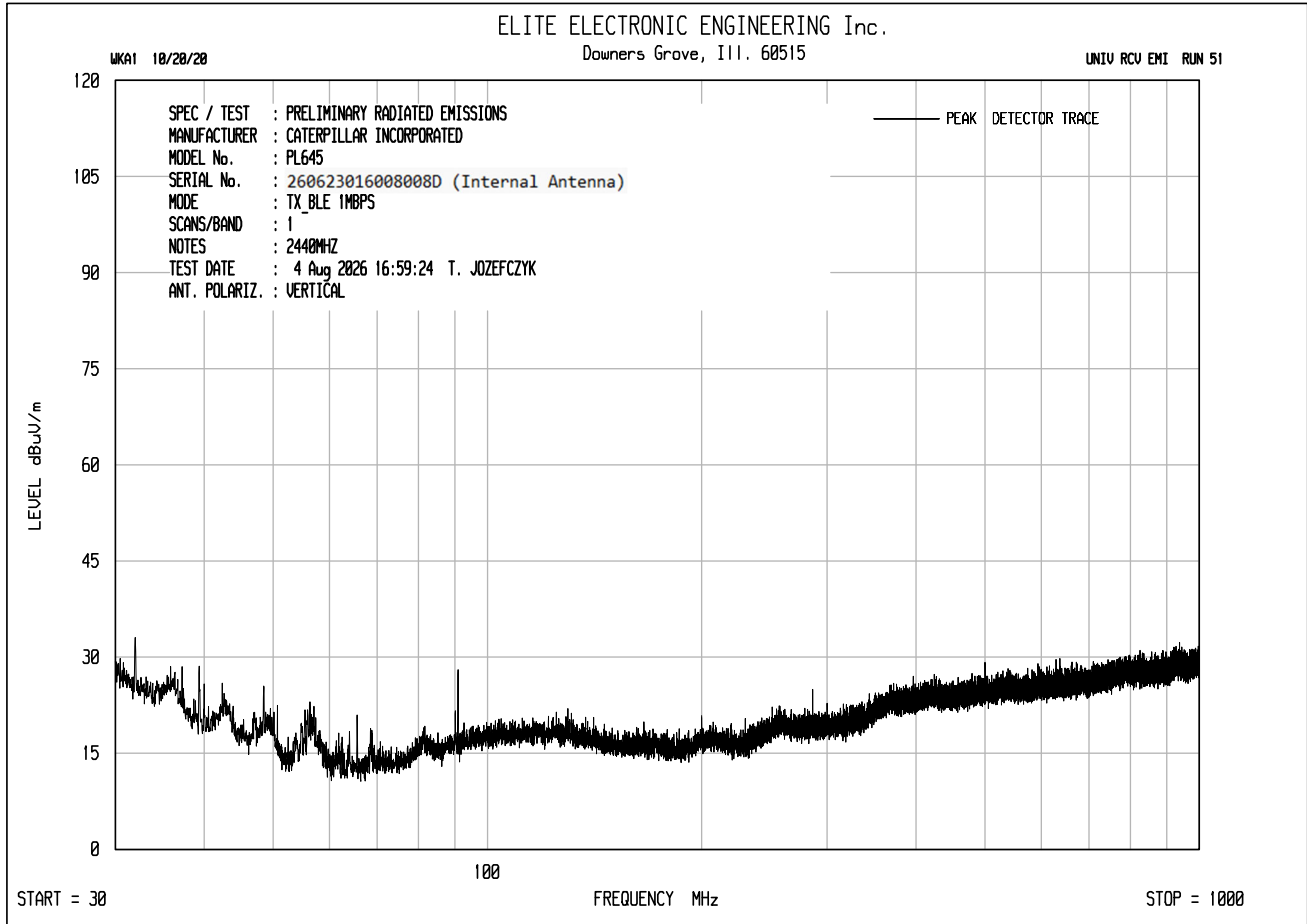


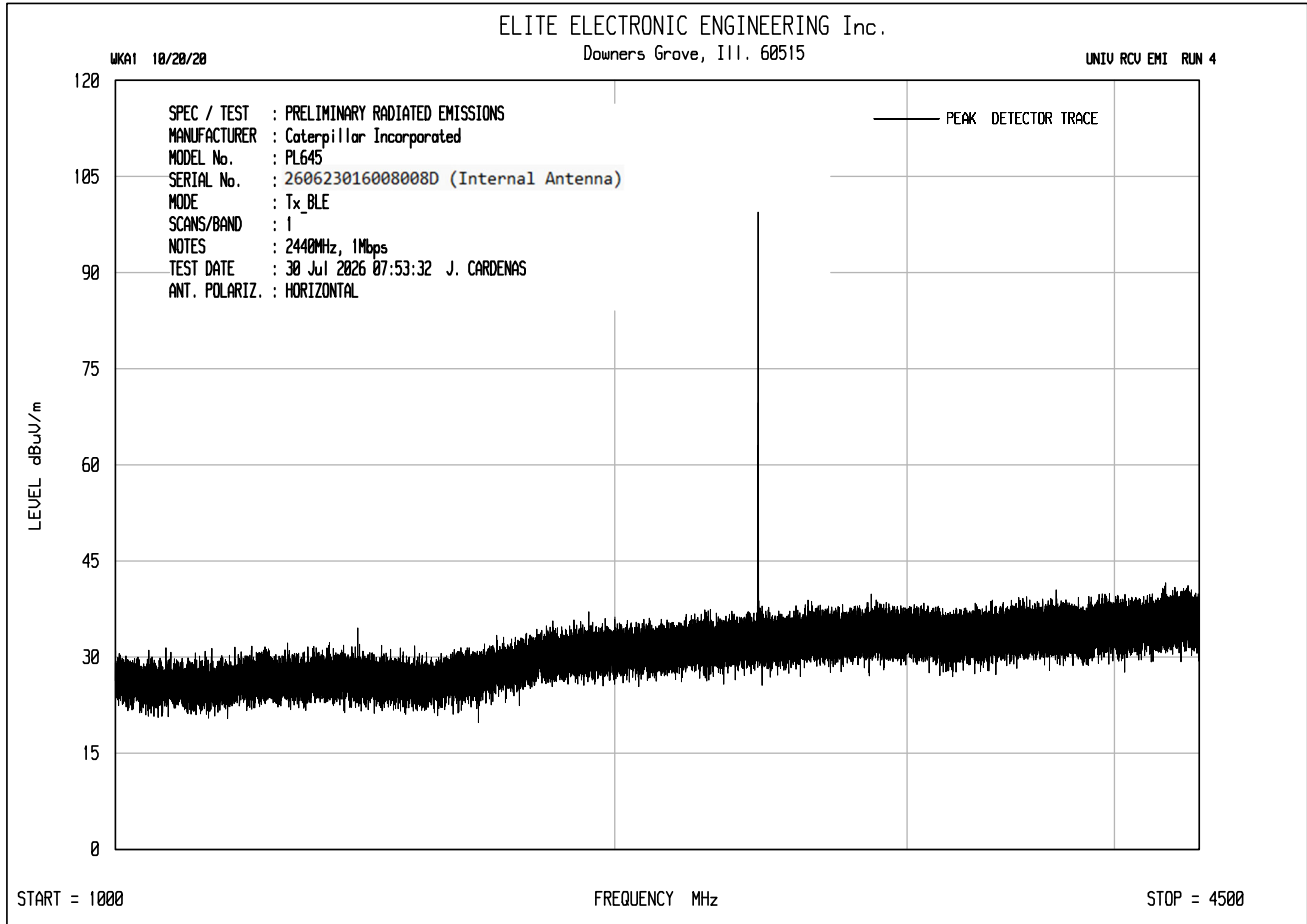
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBμV/m)	Peak Total at 3m (μV/m)	Peak Limit at 3m (μV/m)	Margin (dB)
4804.00	H	49.16	*	3.68	34.41	-40.44	46.80	218.85	5000.00	-27.18
	V	49.90	*	3.68	34.41	-40.44	47.54	238.31	5000.00	-26.44

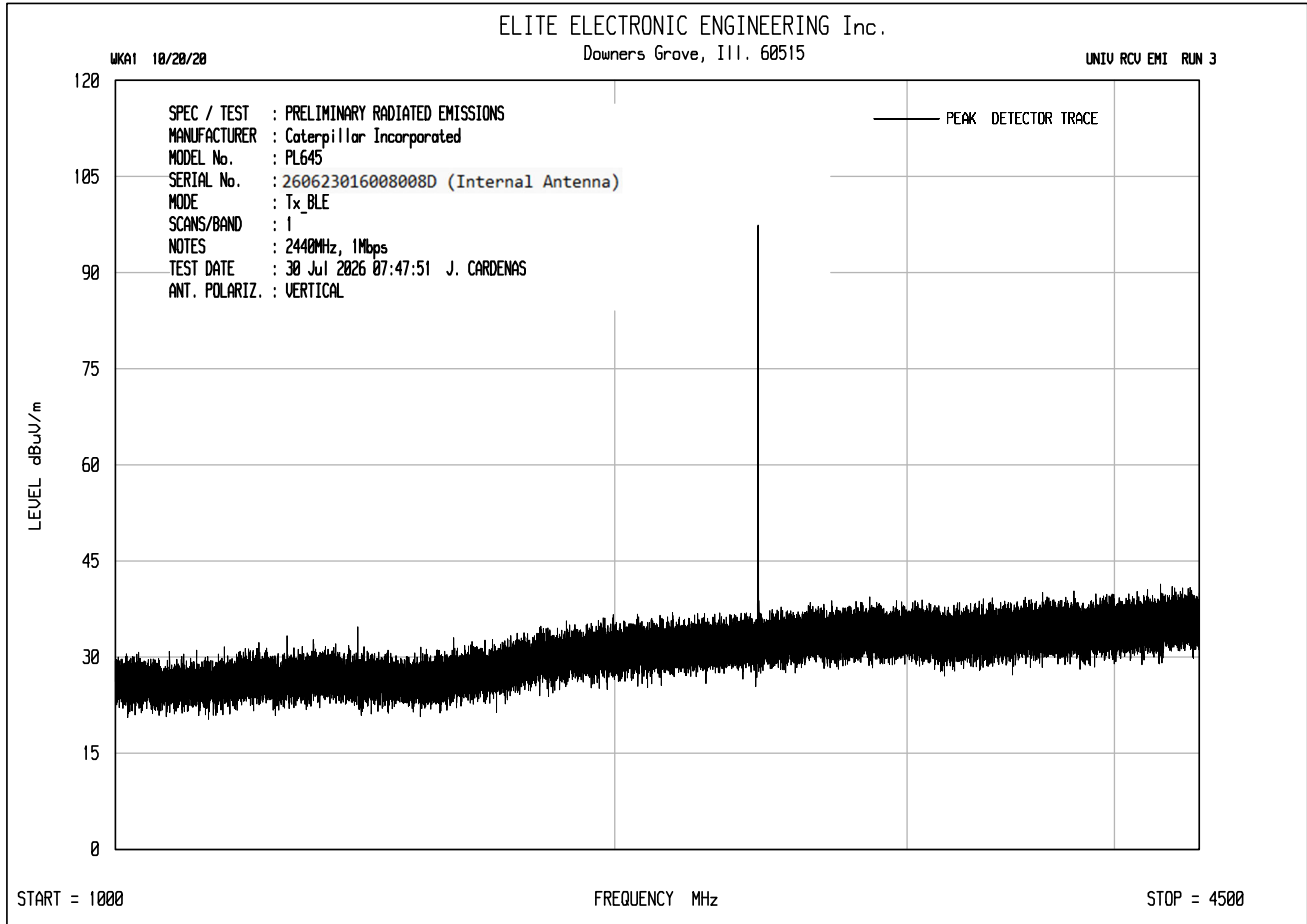
Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBμV/m)	Average Total at 3m (μV/m)	Average Limit at 3m (μV/m)	Margin (dB)
4804.00	H	38.27	*	3.68	34.41	-40.44	0.00	35.91	62.47	500.00	-18.07
	V	38.13	*	3.68	34.41	-40.44	0.00	35.77	61.47	500.00	-18.21

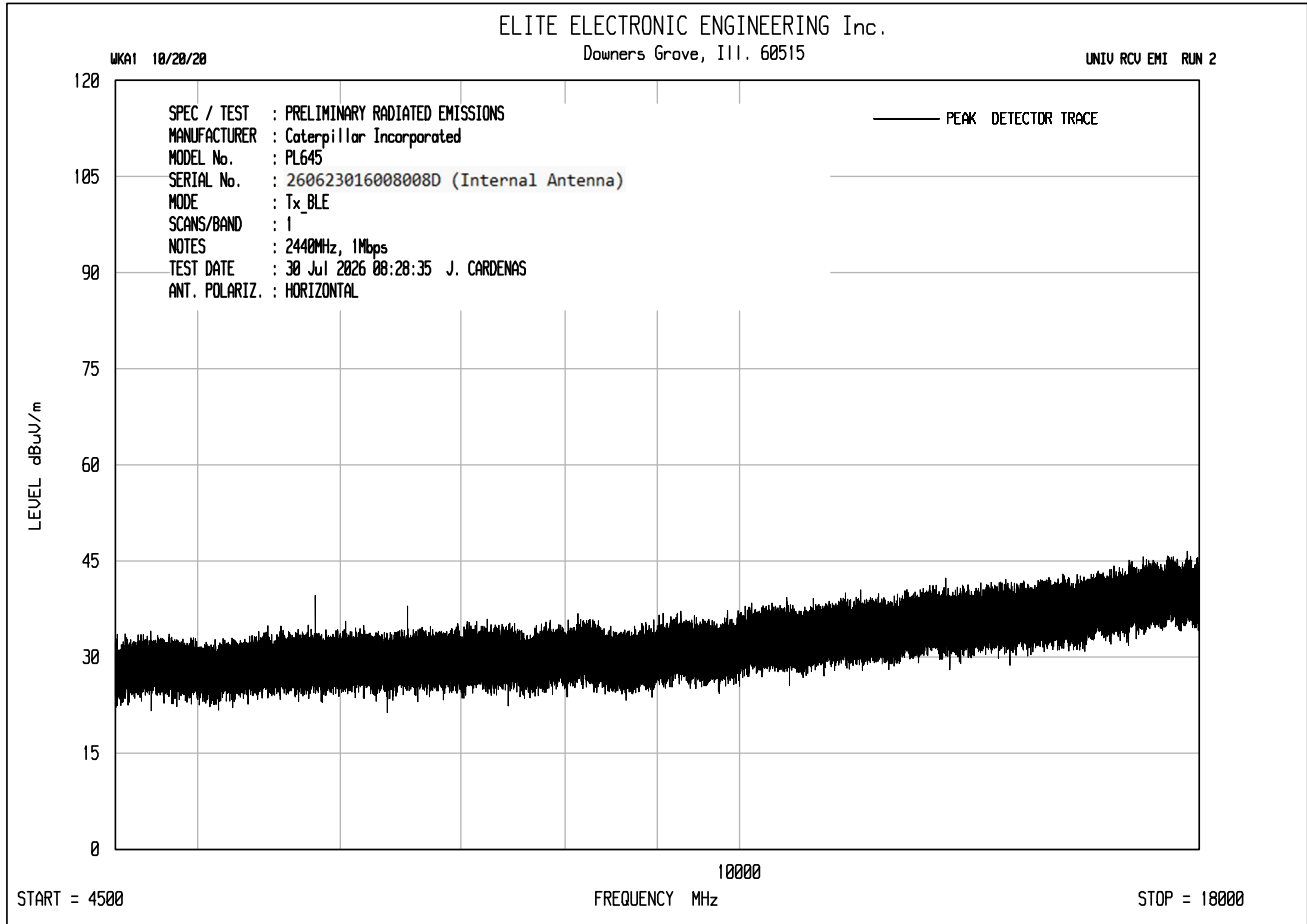
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.904-13
Serial No.	260619016008008D (Internal Antenna)
Mode	BLE 1Mbps
Frequency Tested	2440MHz
Notes	None

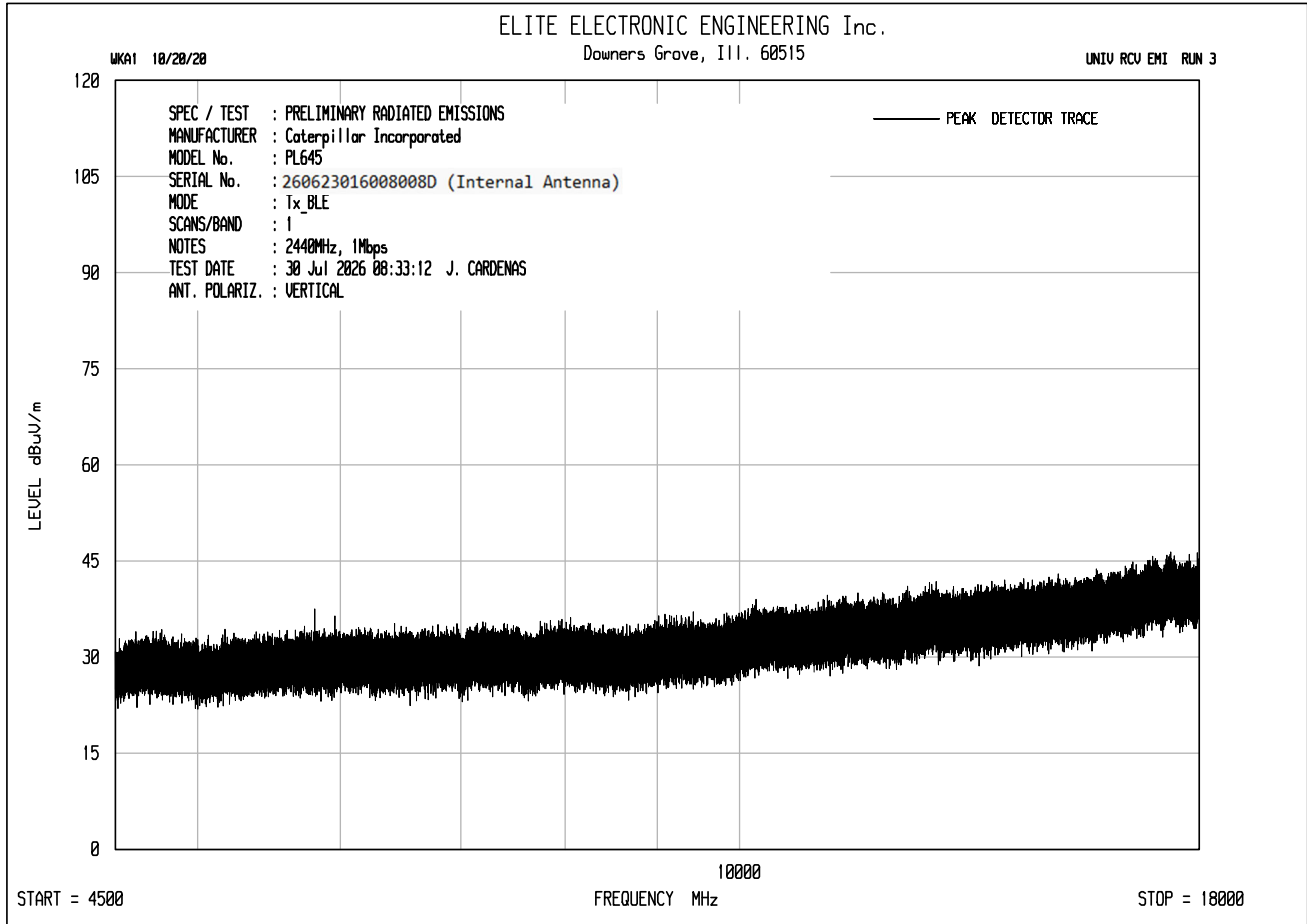


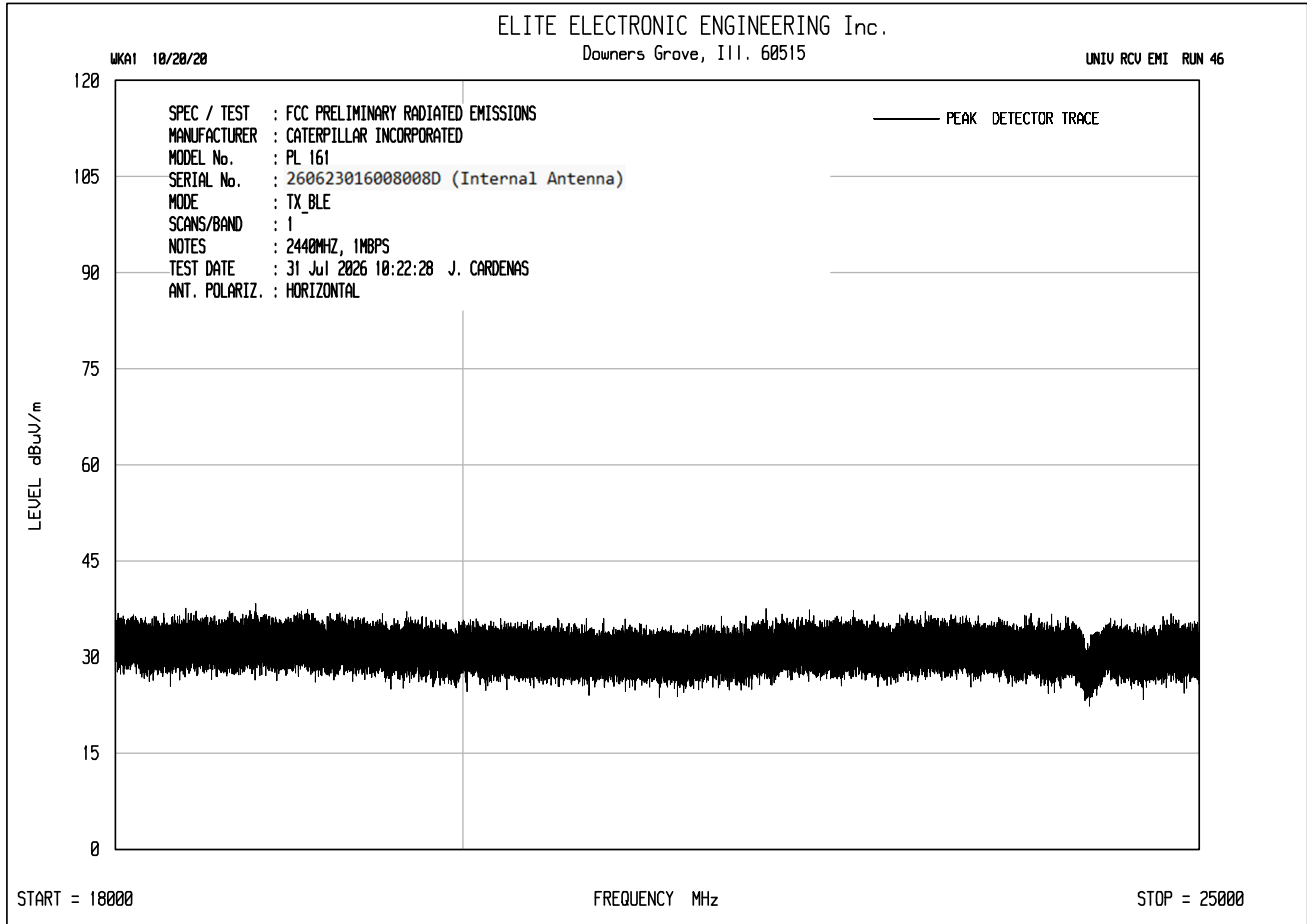


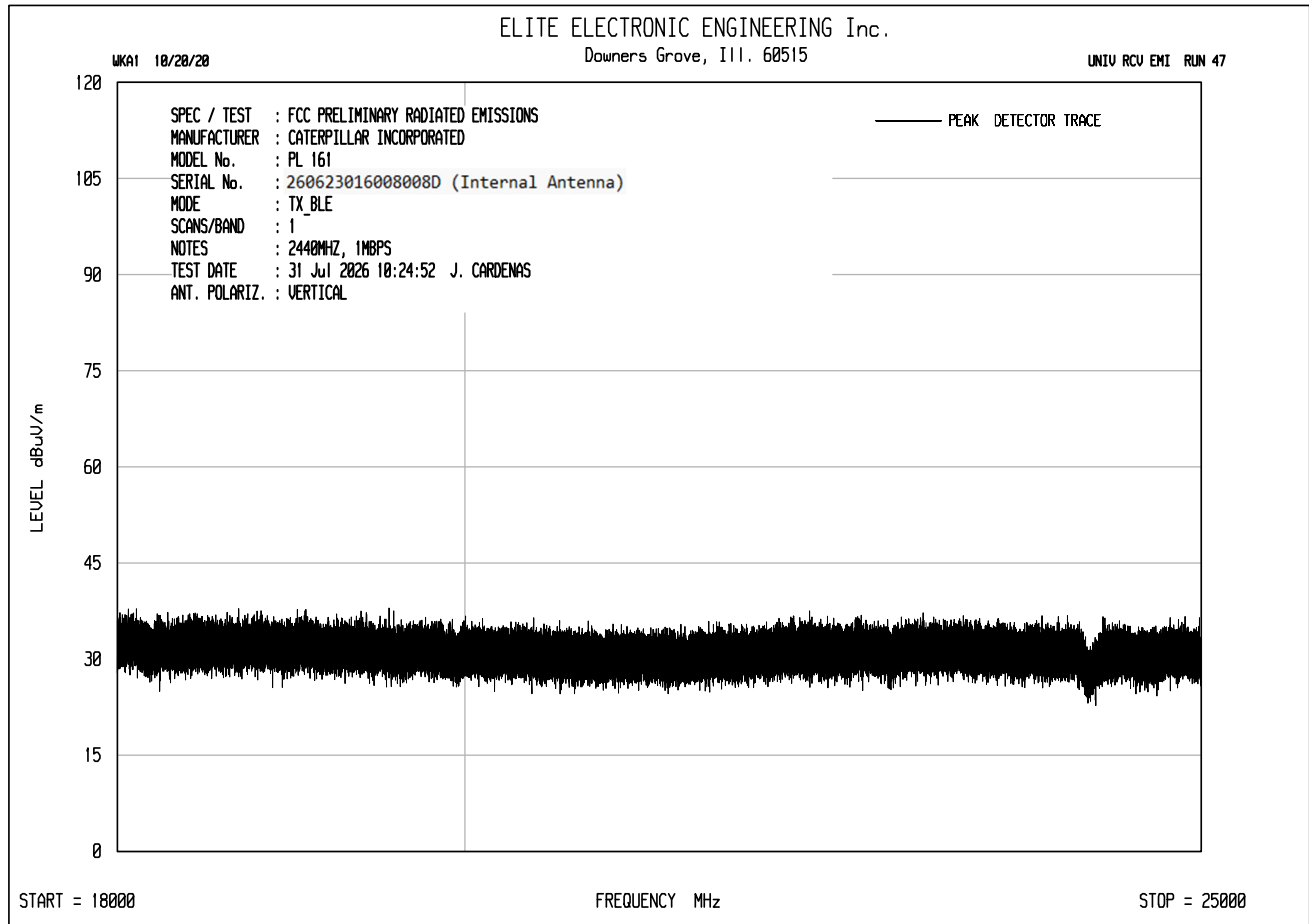








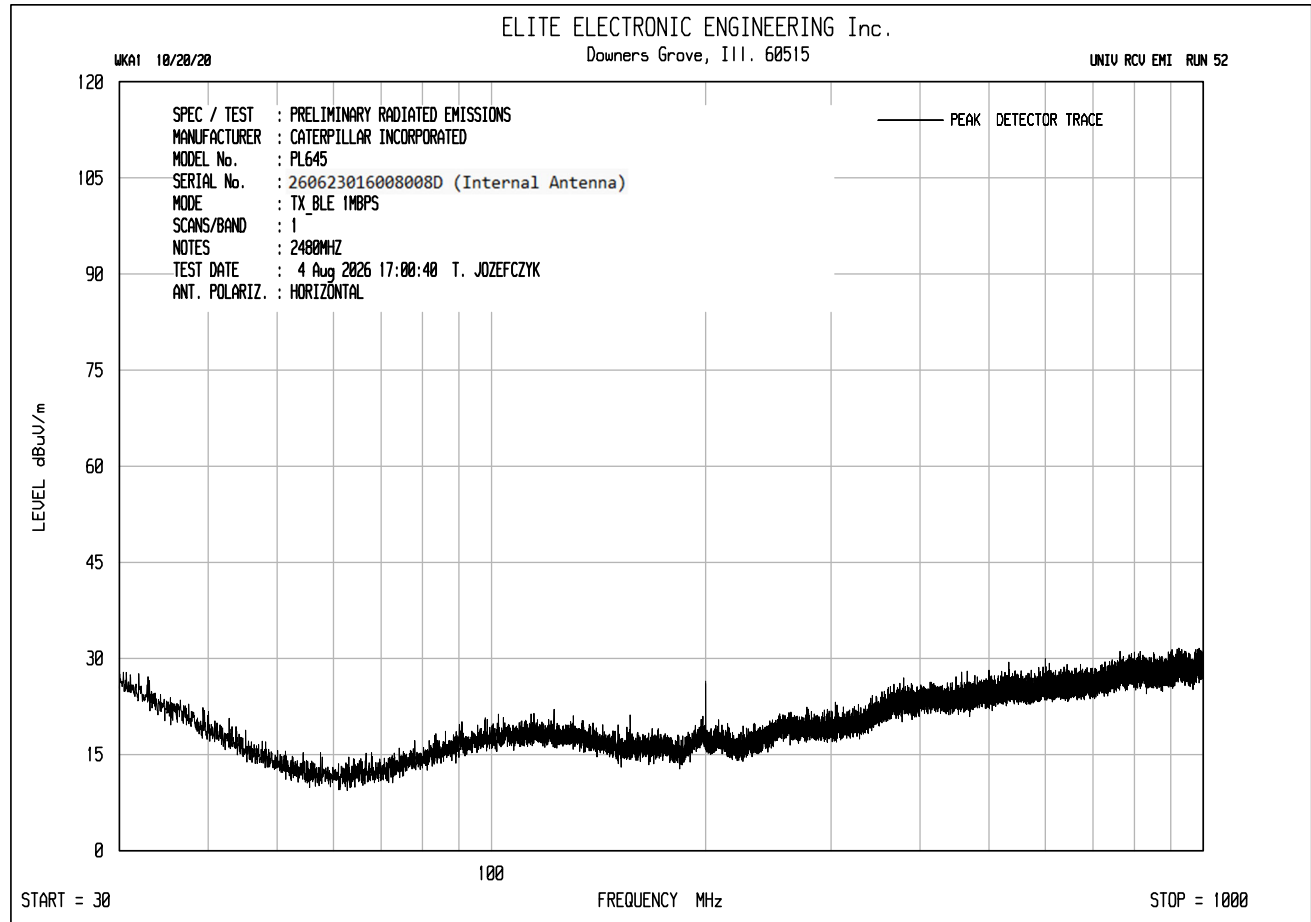


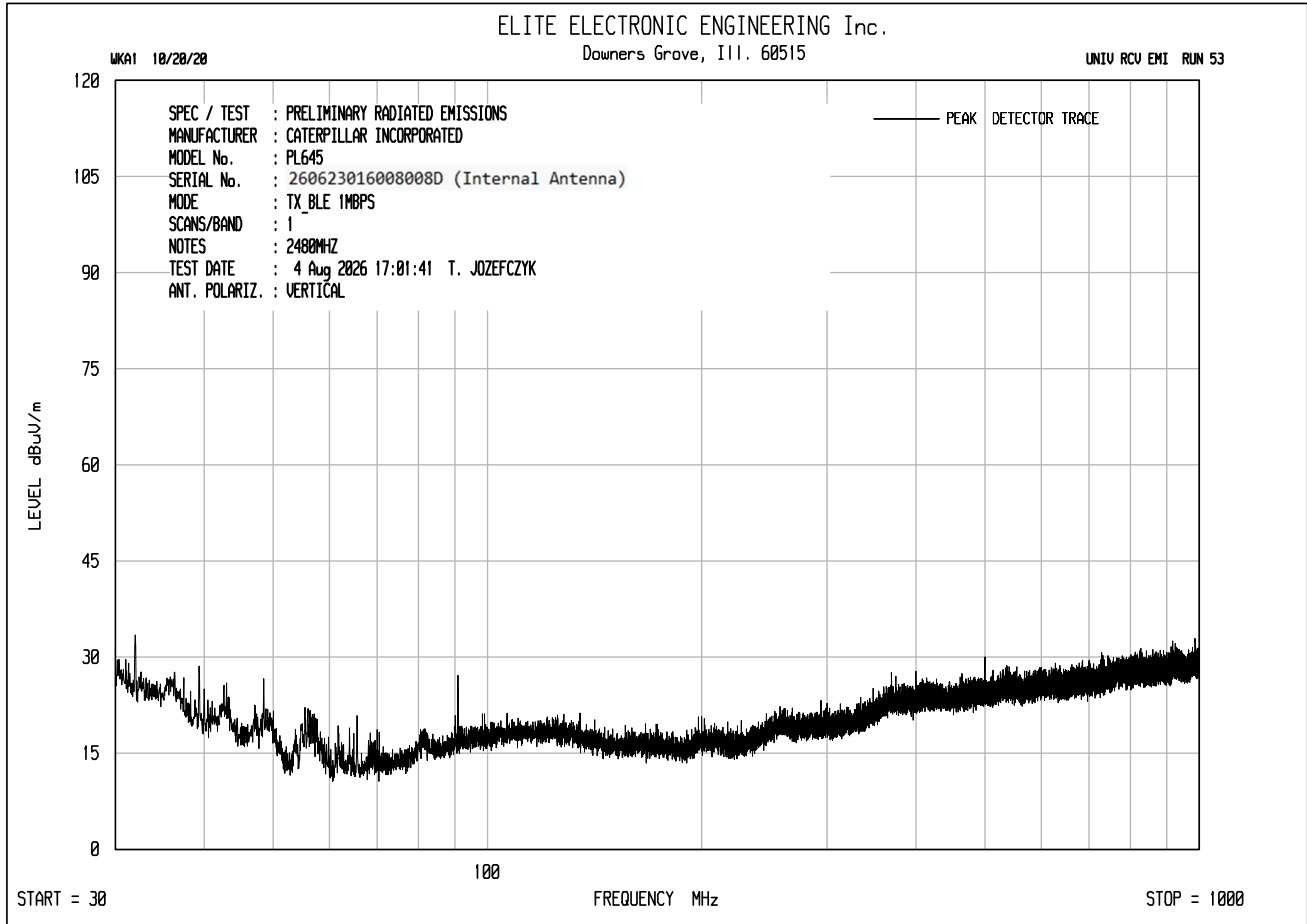


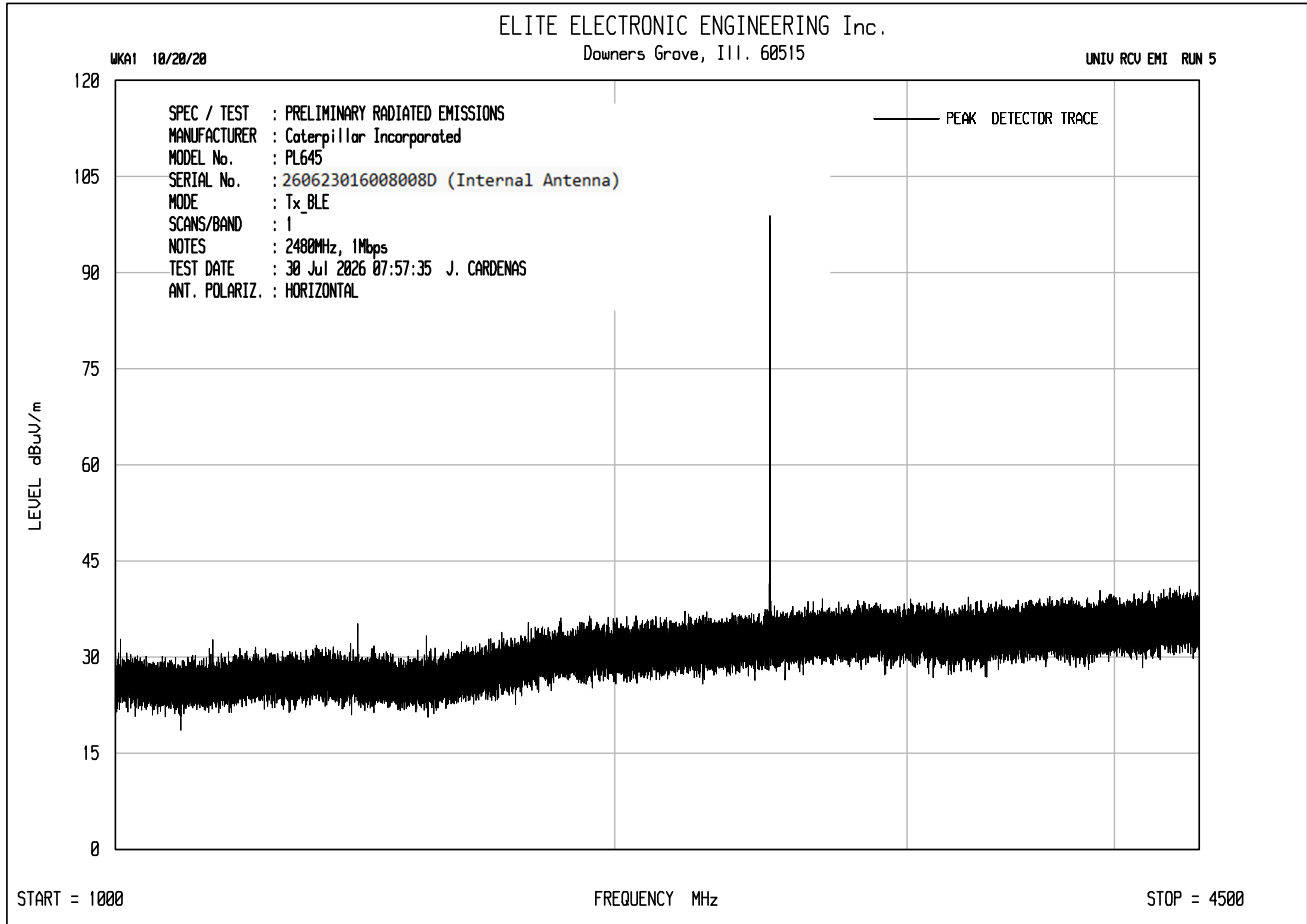
Freq (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBµV/m)	Peak Total at 3m (µV/m)	Peak Limit at 3m (µV/m)	Margin (dB)
4880.00	H	49.29	*	3.70	34.53	-40.45	47.08	225.85	5000.00	-26.90
	V	48.76	*	3.70	34.53	-40.45	46.55	212.48	5000.00	-27.43
7320.00	H	49.23	*	4.69	35.77	-40.89	48.79	275.15	5000.00	-25.19
	V	48.77	*	4.69	35.77	-40.89	48.33	260.96	5000.00	-25.65

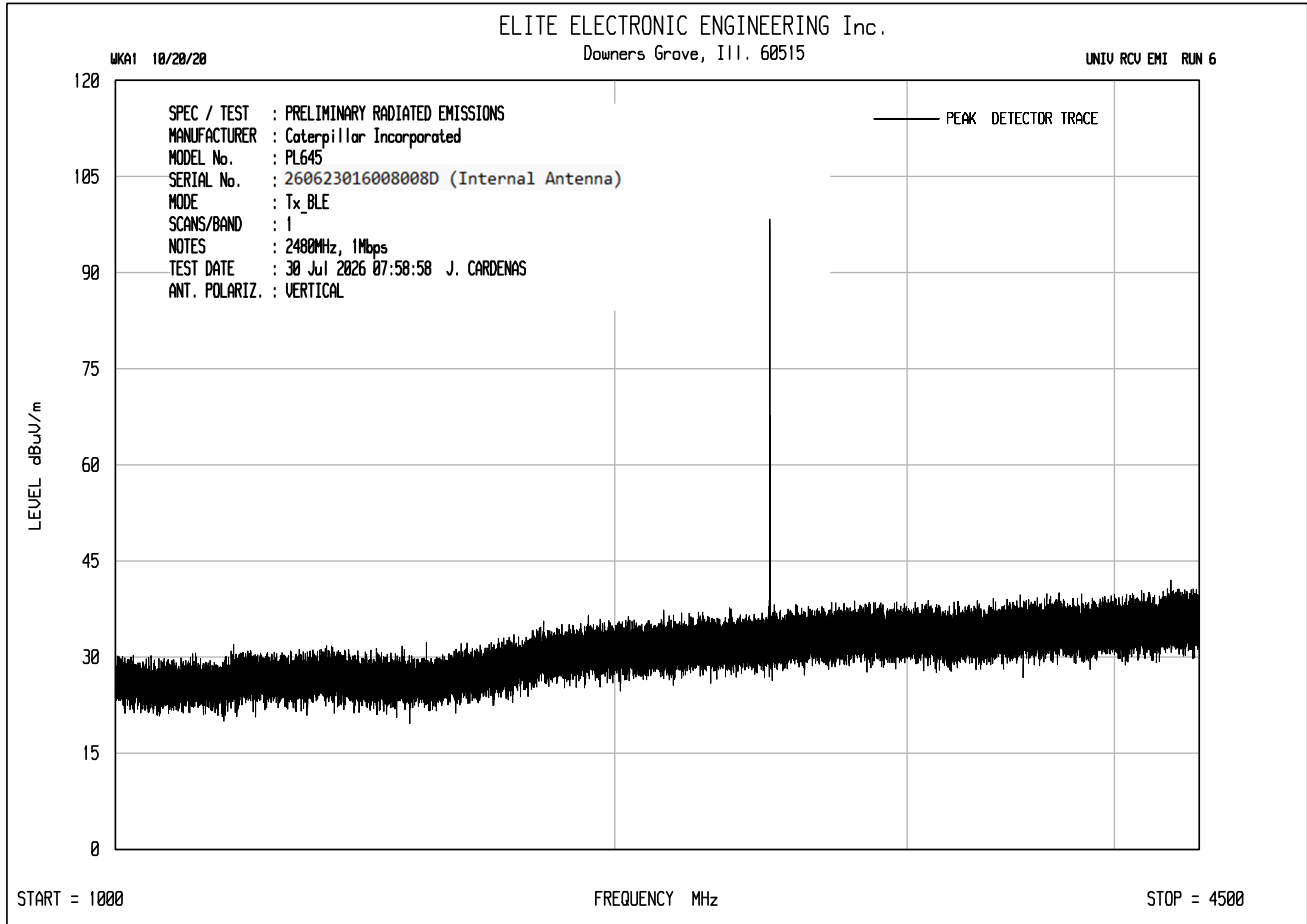
Freq (MHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBµV/m)	Average Total at 3m (µV/m)	Average Limit at 3m (µV/m)	Margin (dB)
4880.00	H	37.80	*	3.70	34.53	-40.45	0.00	35.59	60.16	500.00	-18.39
	V	38.00	*	3.70	34.53	-40.45	0.00	35.79	61.56	500.00	-18.19
7320.00	H	37.87	*	4.69	35.77	-40.89	0.00	37.43	74.40	500.00	-16.55
	V	37.72	*	4.69	35.77	-40.89	0.00	37.28	73.13	500.00	-16.70

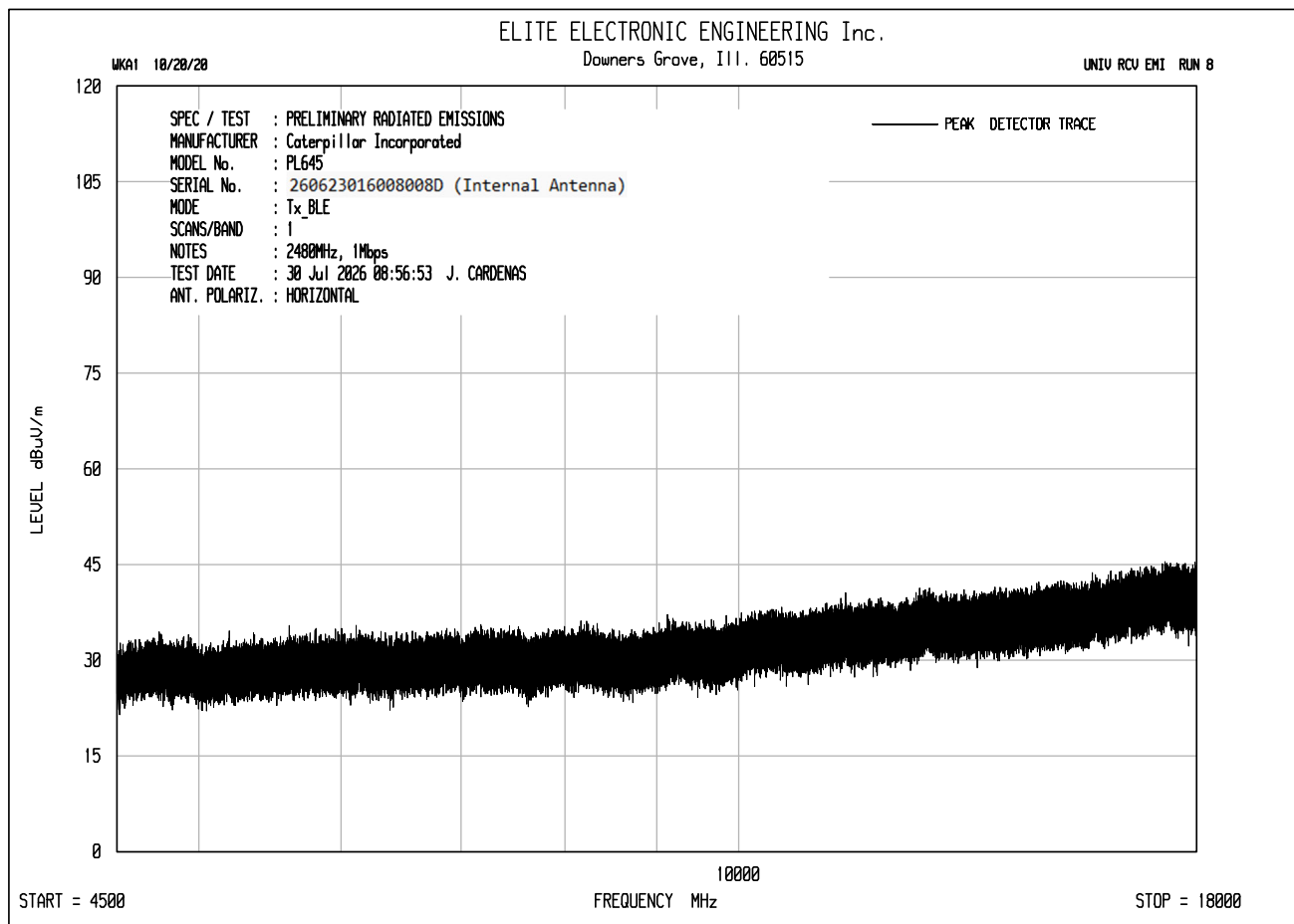
Test Details	
Manufacturer	Caterpillar Inc
Equipment Under Test	5G Telematics Radio
Model No.	PL645
Part No.	7620.002.904-13
Serial No.	260619016008008D (Internal Antenna)
Mode	BLE 1Mbps
Frequency Tested	2480MHz
Notes	None

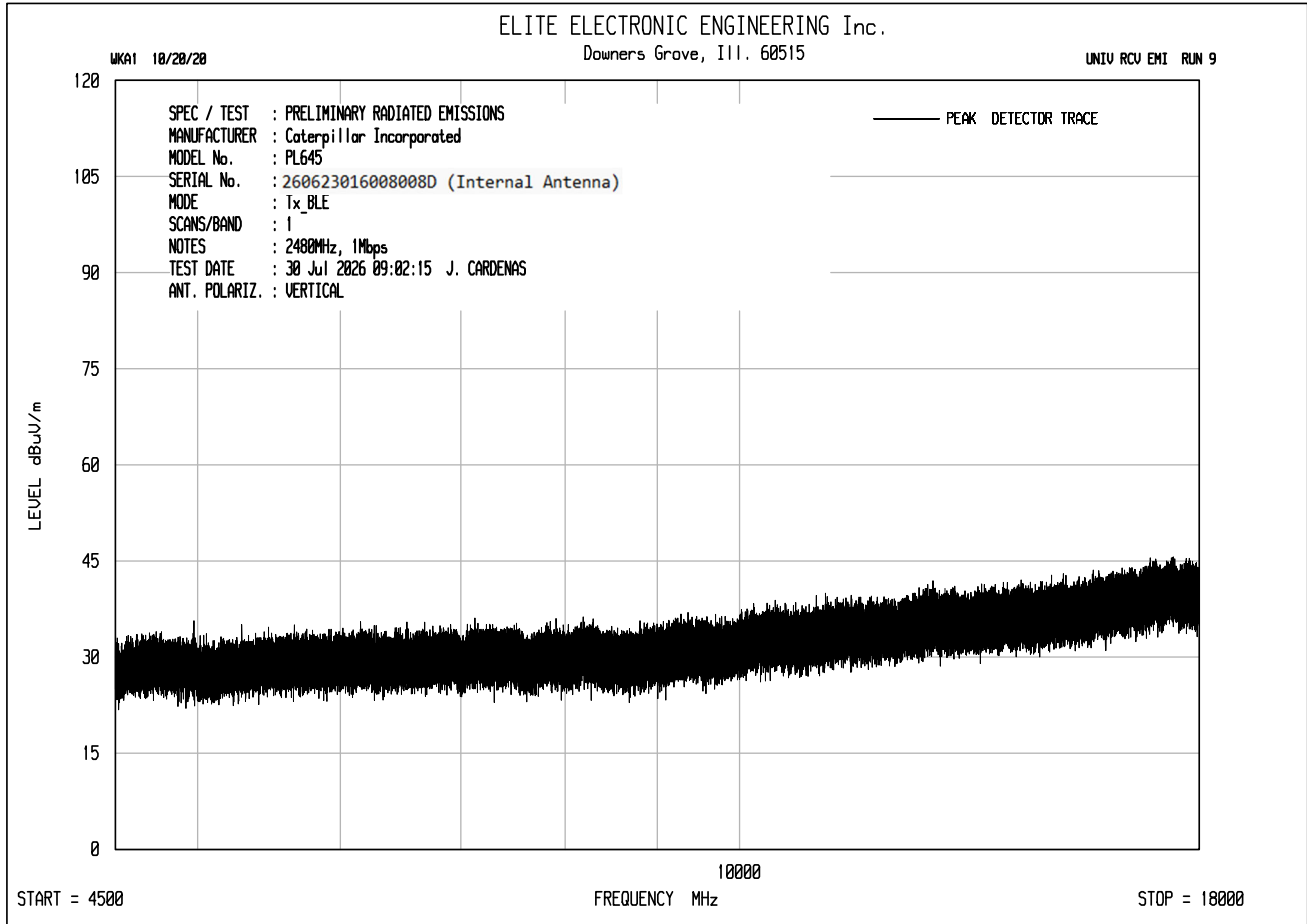


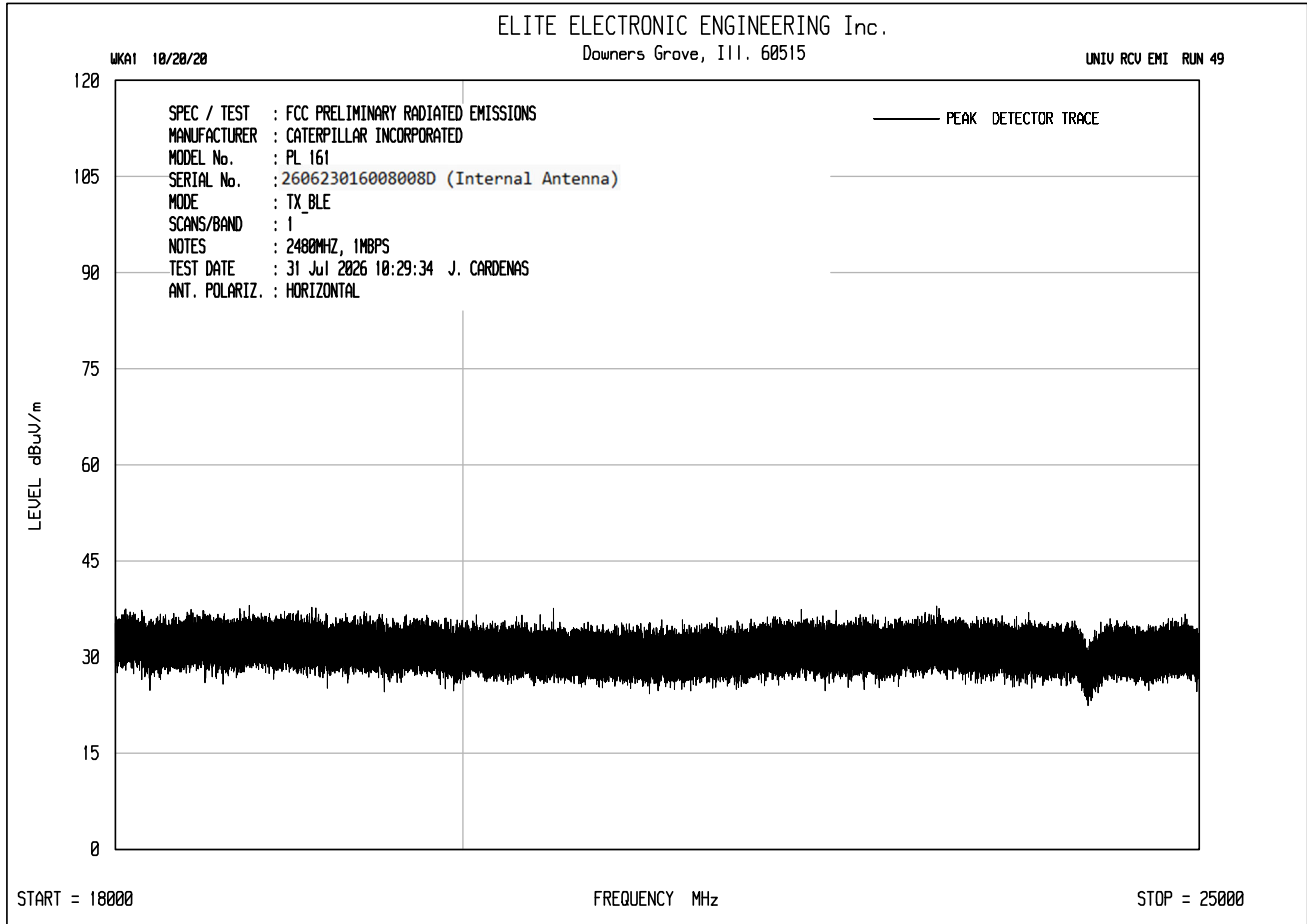


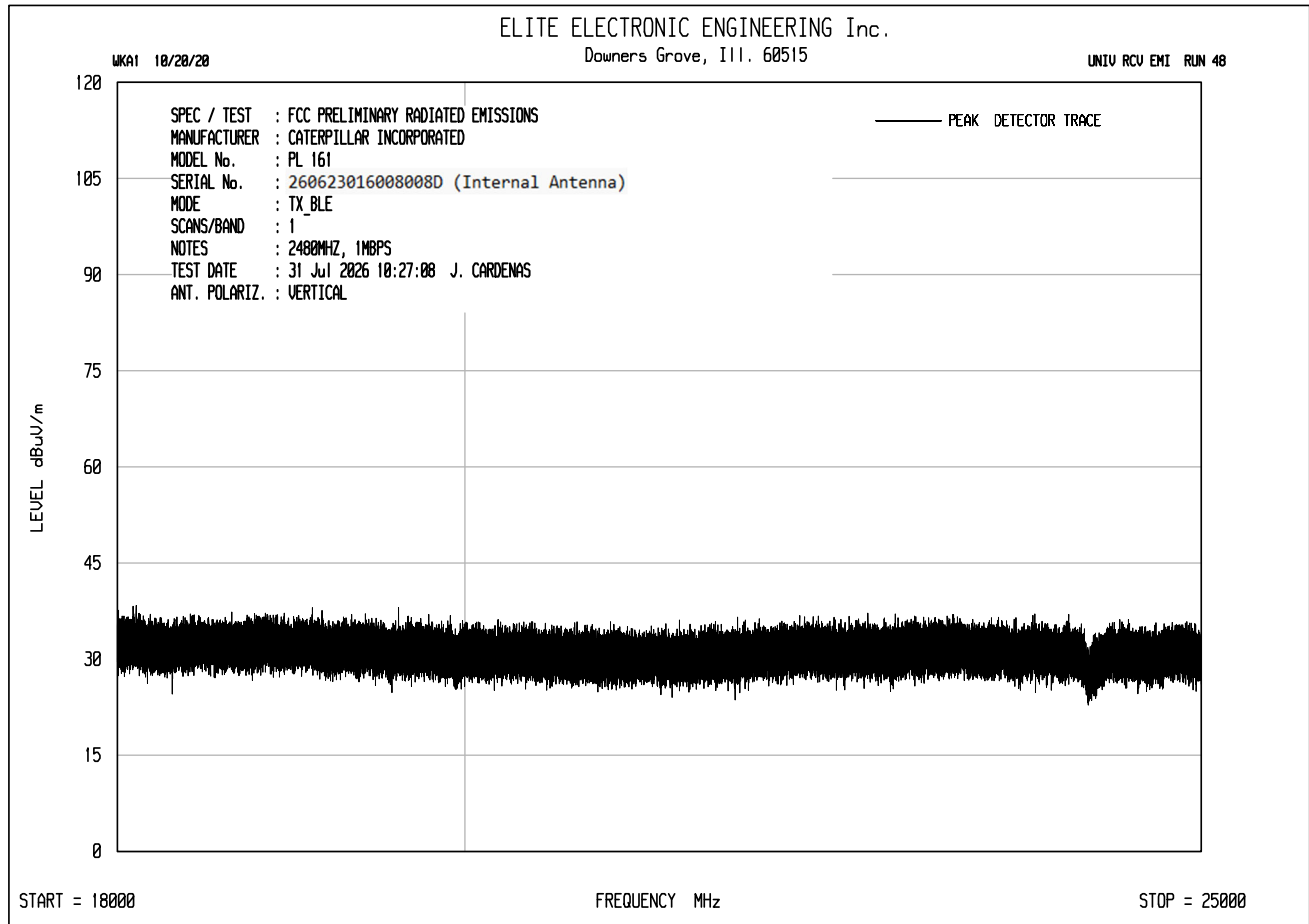












Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	Cable Factor (dB)	Antenna Factor (dB/m)	Pre Amp (dB)	Peak Total at 3m (dBμV/m)	Peak Total at 3m (μV/m)	Peak Limit at 3m (μV/m)	Margin (dB)
4960.00	H	48.85	*	3.73	34.80	-40.46	46.91	221.60	5000.00	-27.07
	V	48.68	*	3.73	34.80	-40.46	46.74	217.31	5000.00	-27.24
7440.00	H	49.10	*	4.73	35.74	-40.89	48.69	272.01	5000.00	-25.29
	V	48.41	*	4.73	35.74	-40.89	48.00	251.23	5000.00	-25.98

Freq (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle Factor (dB)	Average Total at 3m (dBμV/m)	Average Total at 3m (μV/m)	Average Limit at 3m (μV/m)	Margin (dB)
4960.00	H	38.08	*	3.73	34.80	-40.46	0.00	36.14	64.13	500.00	-17.84
	V	37.60	*	3.73	34.80	-40.46	0.00	35.66	60.68	500.00	-18.32
7440.00	H	37.85	*	4.73	35.74	-40.89	0.00	37.44	74.49	500.00	-16.54
	V	37.92	*	4.73	35.74	-40.89	0.00	37.51	75.09	500.00	-16.47