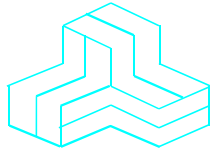


ENGINEERING TEST REPORT



ATEQ VT18 TPMS Tool
Model: VT18
FCC ID: 2AK5Y-VT18

Applicant:

Control Technology China Co., LTD
No. 98, Jianpeng Road
Jiuting Town, Songjiang District
Shanghai 201615
China

In Accordance With
FCC Part 15, Subpart C, Section 15.249
Low Power Transmitters Operating in the Frequency Band 2400-2483.5 MHz

UltraTech's File No.: 26ATEQ019_FCC15C249

This Test report is Issued under the Authority of
Tri M. Luu
Vice President of Engineering
UltraTech Group of Labs

Date: April 23, 2026

Report Prepared by: Dan Huynh

Tested by: Angus Au

Issued Date: April 23, 2026

Test Dates:
March 2-30, 2026

- The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.
- This report must not be used by the client to claim product endorsement by any agency of the US Government.
- This test report shall not be reproduced, except in full, without a written approval from UltraTech

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com



Lab Code: 0685



APEC TEL CA0001



1309



CA 0001/2049



AT-1945



SL2-IN-E-1119R



Korea KCC-RRR
CA0001

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.249
Title:	Code of Federal Regulations (CFR), Title 47 Telecommunication, Part 15, Subpart C Intentional Radiators
Purpose of Test:	Equipment Certification for FCC Part 15C.
Test Procedures:	- ANSI C63.4 - ANSI C63.10
Environmental Classification:	Commercial, industrial or business environment

1.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

1.3. NORMATIVE REFERENCES

Publication	Year	Title
FCC 47 CFR 15	2025	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15 – Radio Frequency Devices
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz
ANSI C63.10	2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

Applicant	
Name:	Control Technology China Co., LTD
Address:	No. 98, Jianpeng Road Jiuting Town, Songjiang District Shanghai 201615 China

Manufacturer	
Name:	Control Technology China Co., LTD
Address:	No. 98, Jianpeng Road Jiuting Town, Songjiang District Shanghai 201615 China

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	Control Technology China Co., LTD
Product Name:	ATEQ VT18 TPMS Tool
Model Name or Number:	VT18
Serial Number:	Test sample
Type of Equipment:	Part 15 Low Power Communication Device Transmitter
Input Power Supply Type:	Li-ion battery / External USB AC Adapter or PC USB Port
Primary User Functions of EUT:	Handheld TPMS (Tire Pressure Monitoring System) diagnostic tool for passenger vehicles.

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Portable
Intended Operating Environment:	[x] Commercial, industrial or business environment [] Residential environment
Power Supply Requirement:	5V DC
Operating Frequency Range:	2450 MHz
RF Output Power Rating:	91.09 dBμV/m at 3m distance
20 dB Bandwidth:	312.500 kHz
Modulation Type:	OOK
Antenna Connector Type:	Integral

The EUT contained an integrated certified ESPRESSIF SYSTEMS (SHANGHAI) CO., LTD Wi-Fi & Bluetooth Internet of Things Module (FCC ID: 2AC7Z-ESPC3WROOM). The module test data were leveraged in this filing.

2.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	USB-C — Charging and data communication	1	USB Type-C	Min. 2 m; shielded (data) / non-shielded (charge)

2.5. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

- 1) J&S AC Adapter, M/N: JS-SW1260502000UN

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 °C
Humidity:	45 to 58%
Pressure:	102 kPa
Power input source:	120 VAC via AC/DC Adapter

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	The EUT was configured for continuous transmission for the duration of testing.
Special Test Software:	N/A
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT was tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment.

Transmitter Test Signals:	
Frequency Band(s):	2450 MHz
Test Frequency(ies):	2450 MHz
Transmitter Wanted Output Test Signals:	
• RF Power Output (measured maximum output power):	91.09 dBμV/m at 3m distance
• Normal Test Modulation:	OOK
• Modulating signal source:	Internal

EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. TEST LAB AND LOCATION

Company Name:	Ultratech Engineering labs Inc.	
Address:	3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4 Tel.: (905) 829-1570 Fax.: (905) 829-8050 Website: www.ultratech-labs.com ,	
Test Site/Company Number:	FCC	ISED
	MRA: APEC TEL Designation no. CA0001 FRN: 0003781366	Company No.: 2049A CAB Identifier: CA0001

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.207(a)	Power Line Conducted Emissions	Yes
15.215(c)	20 dB Bandwidth	Yes
15.249(a), 15.209, 15.205	Transmitter Radiated Emissions, Harmonic Emissions	Yes

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

EXHIBIT 5. TEST DATA

5.1. POWER LINE CONDUCTED EMISSIONS [§15.207(a)]

5.1.1. Limit(s)

The equipment shall meet the limits of the following table:

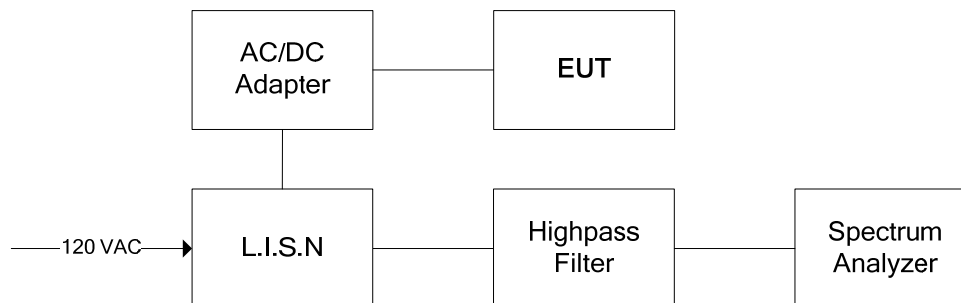
Frequency of emission (MHz)	Conducted Limits (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases linearly with the logarithm of the frequency

5.1.2. Method of Measurements

ANSI C63.4

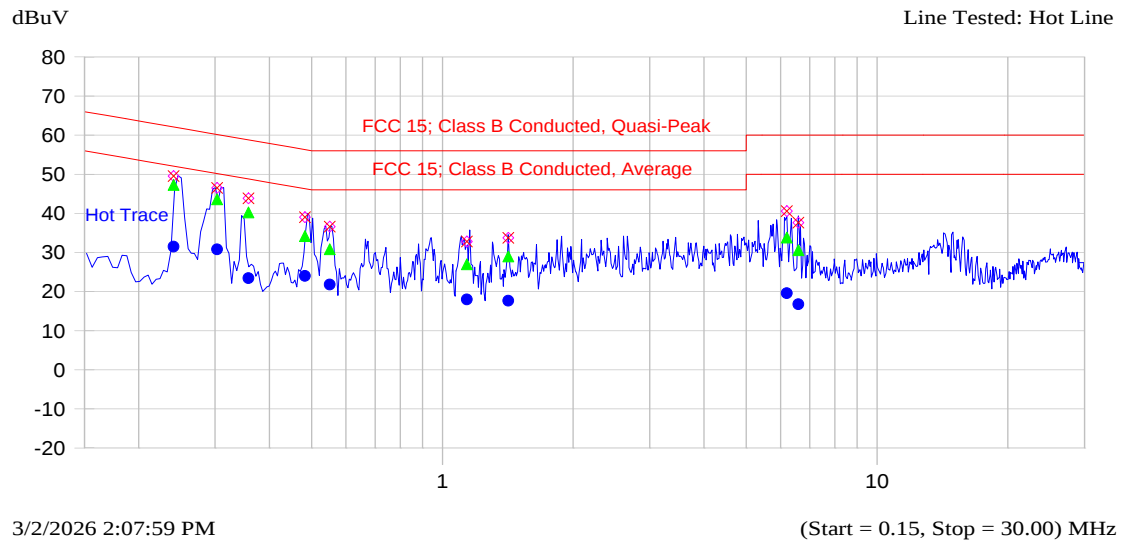
5.1.3. Test Arrangement



5.1.4. Test Data

Plot 5.1.4.1. Power Line Conducted Emissions
Line Voltage 120 VAC, Line Tested: Hot

Current Graph

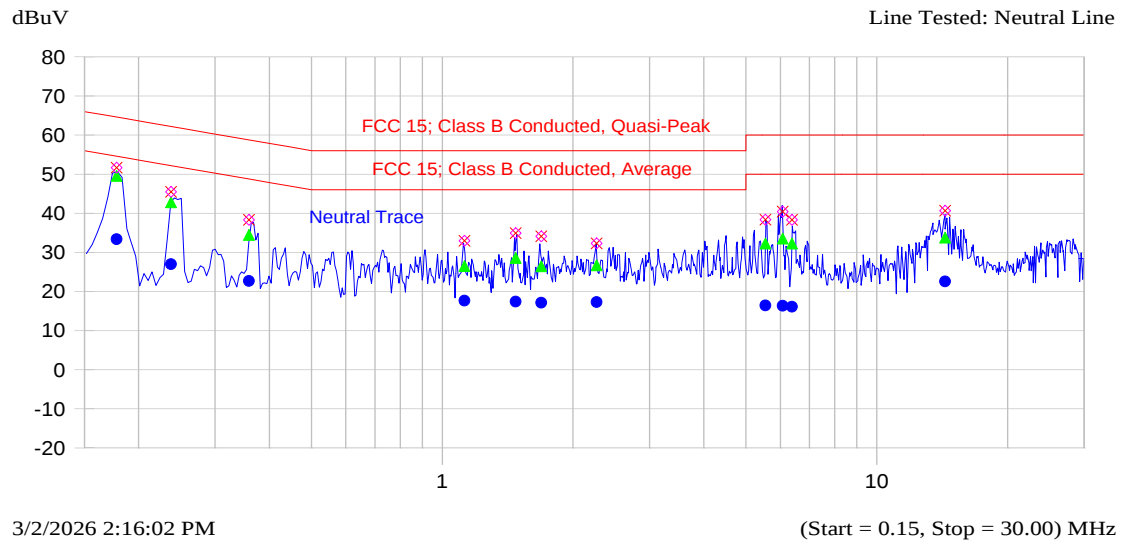


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.241	49.5	47.3	-14.8	31.5	-20.6	Hot Trace
0.303	46.5	43.6	-16.5	30.8	-19.4	Hot Trace
0.358	43.8	40.2	-18.6	23.4	-25.4	Hot Trace
0.483	39.0	34.2	-22.1	24.0	-22.3	Hot Trace
0.550	36.6	30.8	-25.2	21.8	-24.2	Hot Trace
1.138	32.8	27.0	-29.0	18.0	-28.0	Hot Trace
1.418	33.7	29.0	-27.0	17.6	-28.4	Hot Trace
6.200	40.6	33.8	-26.2	19.6	-30.4	Hot Trace
6.592	37.6	30.6	-29.4	16.8	-33.2	Hot Trace

Plot 5.1.4.2. Power Line Conducted Emissions
Line Voltage 120 VAC, Line Tested: Neutral

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.178	51.6	49.5	-15.0	33.4	-21.2	Neutral Trace
0.238	45.5	42.8	-19.4	27.0	-25.2	Neutral Trace
0.359	38.3	34.5	-24.3	22.7	-26.1	Neutral Trace
1.124	33.0	26.5	-29.5	17.7	-28.3	Neutral Trace
1.474	34.9	28.6	-27.4	17.4	-28.6	Neutral Trace
1.690	34.1	26.4	-29.6	17.2	-28.8	Neutral Trace
2.264	32.3	26.7	-29.3	17.3	-28.7	Neutral Trace
5.542	38.4	32.3	-27.7	16.4	-33.6	Neutral Trace
6.071	40.4	33.5	-26.5	16.3	-33.7	Neutral Trace
6.378	38.3	32.3	-27.7	16.1	-33.9	Neutral Trace
14.354	40.6	33.8	-26.2	22.6	-27.4	Neutral Trace

5.2. 20 dB BANDWIDTH [47 CFR 15.215(c)]

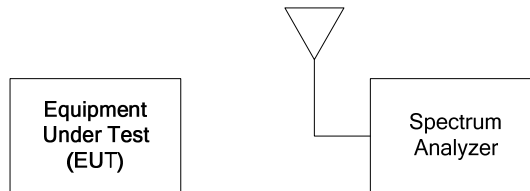
5.2.1. Limits

The 20 dB bandwidth must be contained within the frequency band designated in the rule.

5.2.2. Method of Measurements

The transmitter output was loosely coupled to the spectrum analyzer through a receiving antenna and the bandwidth of the fundamental frequency was measured with the spectrum analyzer with the resolution bandwidth of the spectrum analyzer set per ANSI 63.4

5.2.3. Test Arrangement

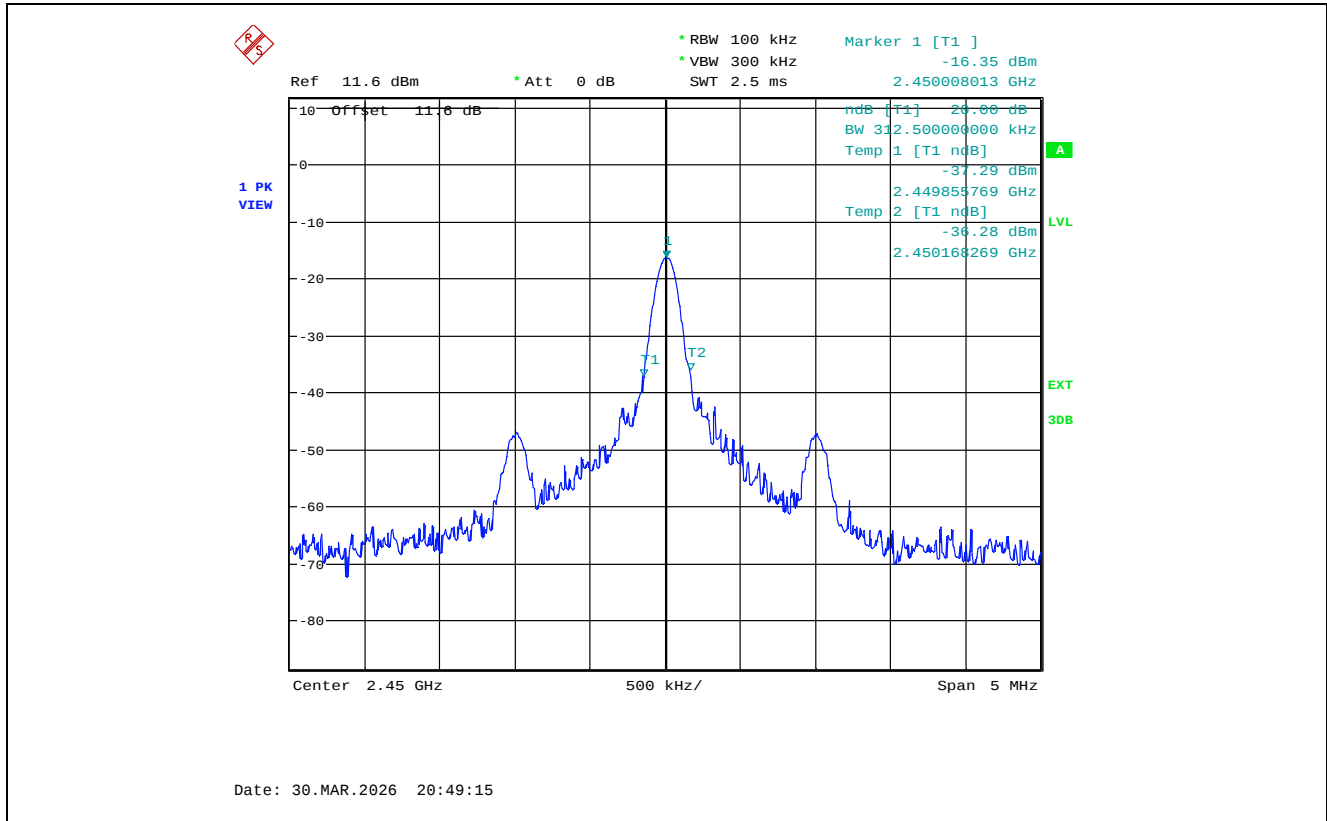


5.2.4. Test Data

Channel Frequency	20 dB Bandwidth	99 %Occupied Bandwidth
2450 MHz	312.500 kHz	296.474 kHz

See the following plot for details.

Plot 5.2.4.1. 20 dB Bandwidth, Fc: 2450 MHz



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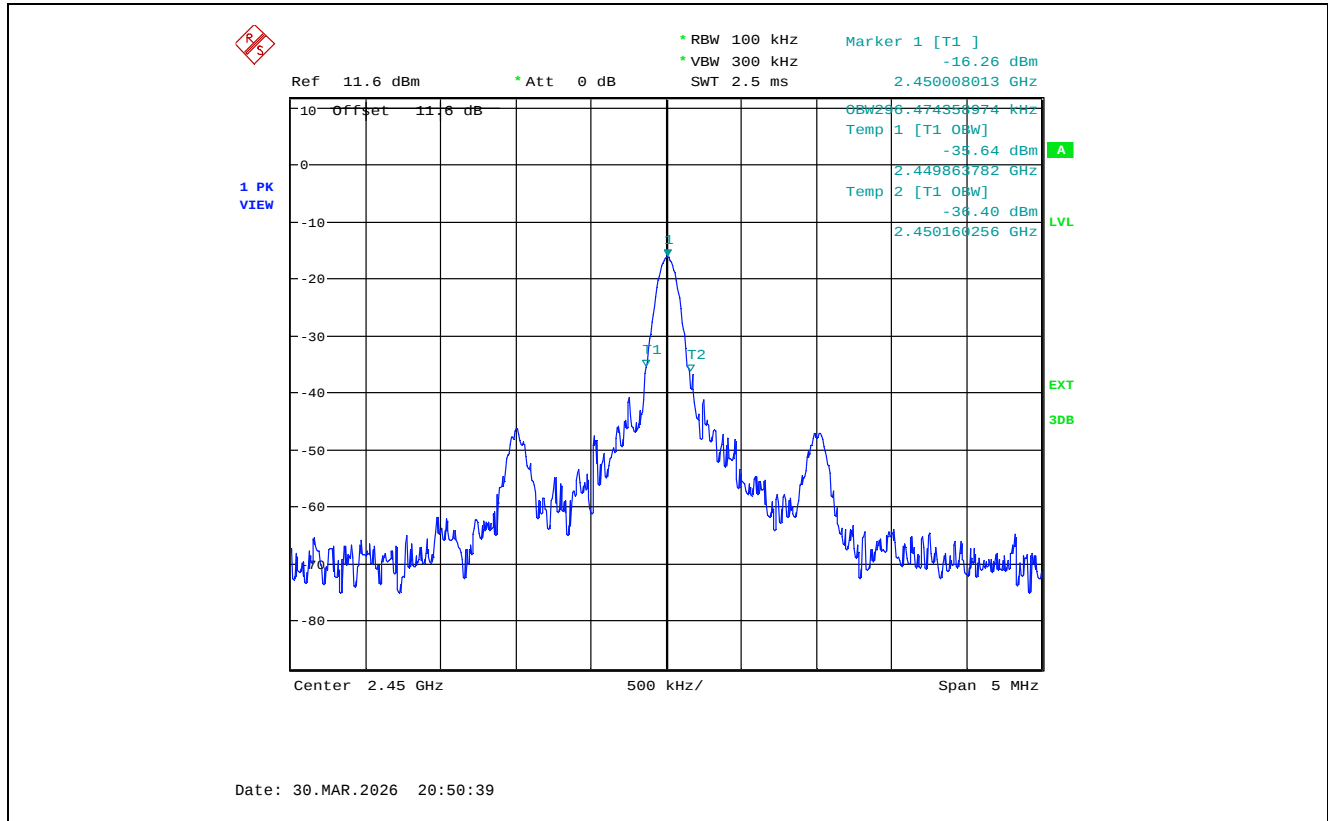
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 26ATEQ019_FCC15C249

April 23, 2026

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Plot 5.2.4.2. 99% Occupied Bandwidth, Fc: 2450 MHz



5.3. FUNDAMENTAL FIELD STRENGTH AND HARMONIC/SPURIOUS EMISSIONS [47 CFR 15.249(a), 15.209 & 15.205]

5.3.1. Limits

(a) The Field Strength of emissions from intentional radiators operated within 2400–2483.5 MHz band shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
2400-2483.5 MHz	50	500

(c) Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

(e) As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

§15.209 Radiated emission limits; general requirements

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., [§§ 15.231](#) and [15.241](#).

The fundamental frequency shall not fall within any restricted frequency band specified in 15.205. All rf other emissions that fall in the restricted bands shall not exceed the general radiated emission limits specified in at 15.209(a).

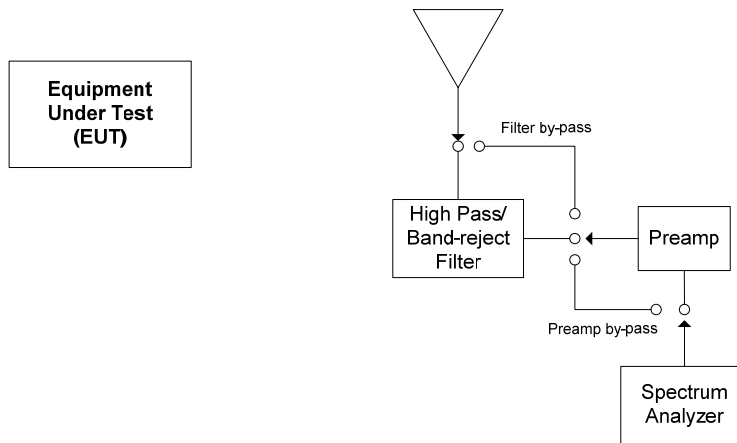
§15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6.
13.36-13.41			

5.3.2. Method of Measurements

Refer to ANSI C63.4 for measurement methods.

5.3.3. Test Arrangement



5.3.4. Test Data

The emissions were scanned from 30 MHz to 10th harmonic of the highest fundamental frequency and all significant emissions were recorded.

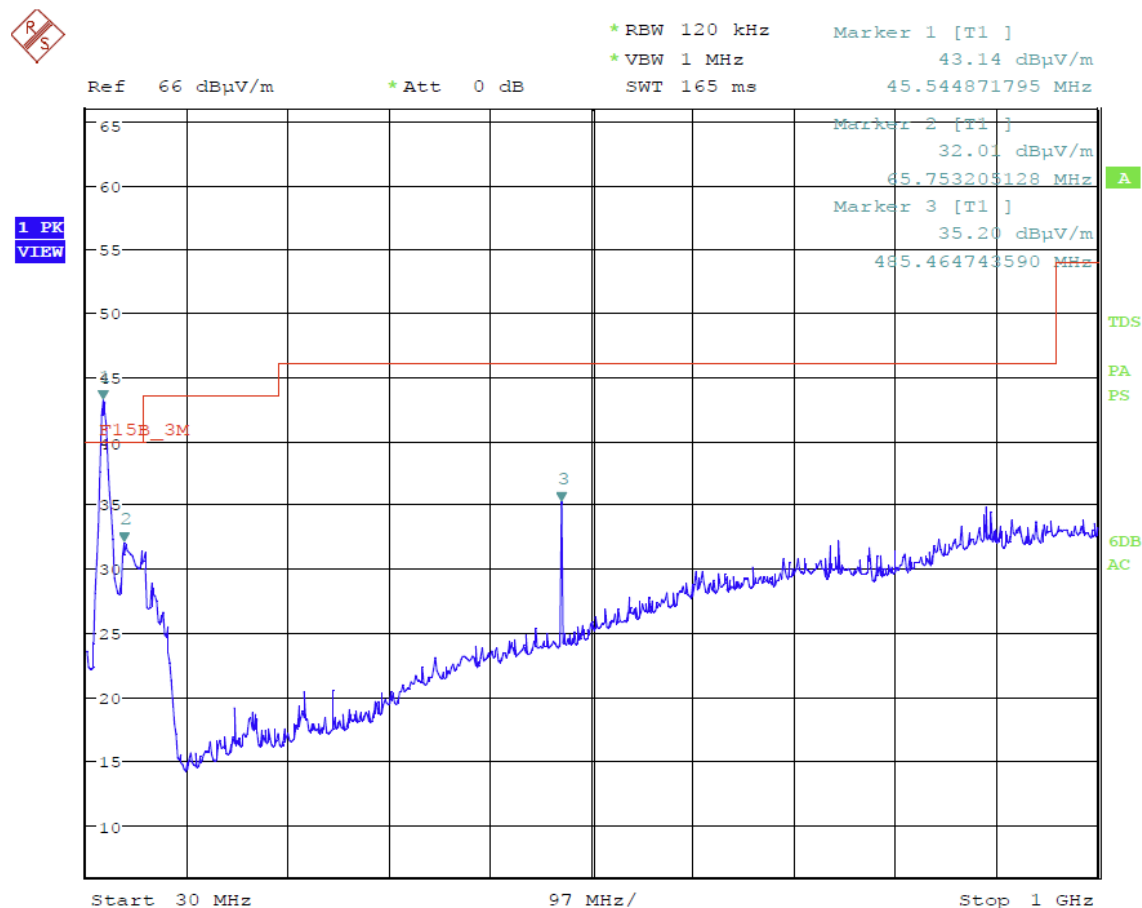
5.3.4.1. Spectral Plots

Measurement Antenna Position: Vertical Polarization at 3m

Test Frequency Range: 30 MHz to 1 GHz

Sweep Settings Screen A

Center Frequency	515.000000 MHz	Ref Level	66.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	970.000000 MHz	Ref Position	100.000 %
Start Frequency	30.000000 MHz	Level Range	60.000 dB
Stop Frequency	1.000000 GHz	RF Att	0.000 dB
RBW	120.000000 kHz		
VBW	1.000000 MHz	X-Axis	LIN
Sweep Time	165.00 ms	Y-Axis	LOG



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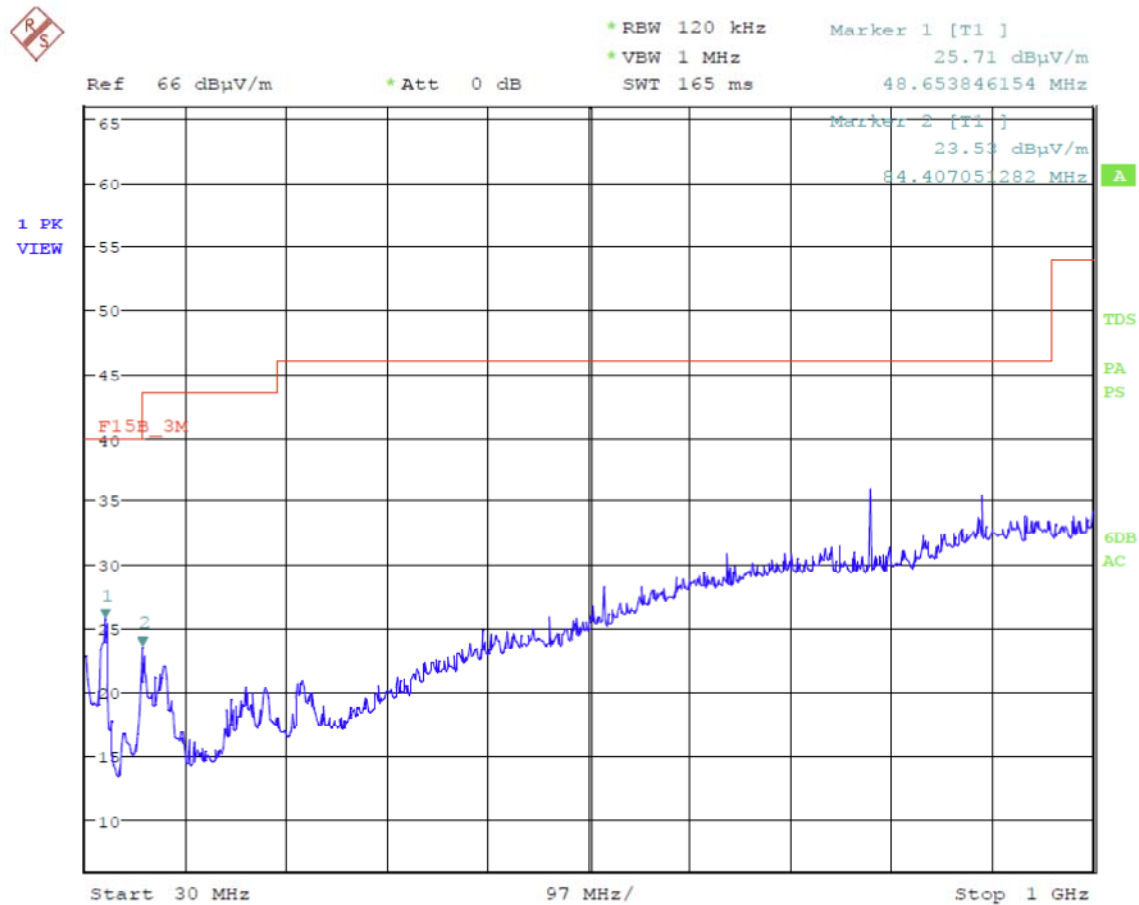
April 23, 2026

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Measurement Antenna Position: Horizontal Polarization at 3m
Test Frequency Range: 30 MHz to 1 GHz

Sweep Settings Screen A

Center Frequency	515.000000 MHz	Ref Level	66.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	970.000000 MHz	Ref Position	100.000 %
Start Frequency	30.000000 MHz	Level Range	60.000 dB
Stop Frequency	1.000000 GHz	RF Att	0.000 dB
RBW	120.000000 kHz		
VBW	1.000000 MHz	X-Axis	LIN
Sweep Time	165.00 ms	Y-Axis	LOG



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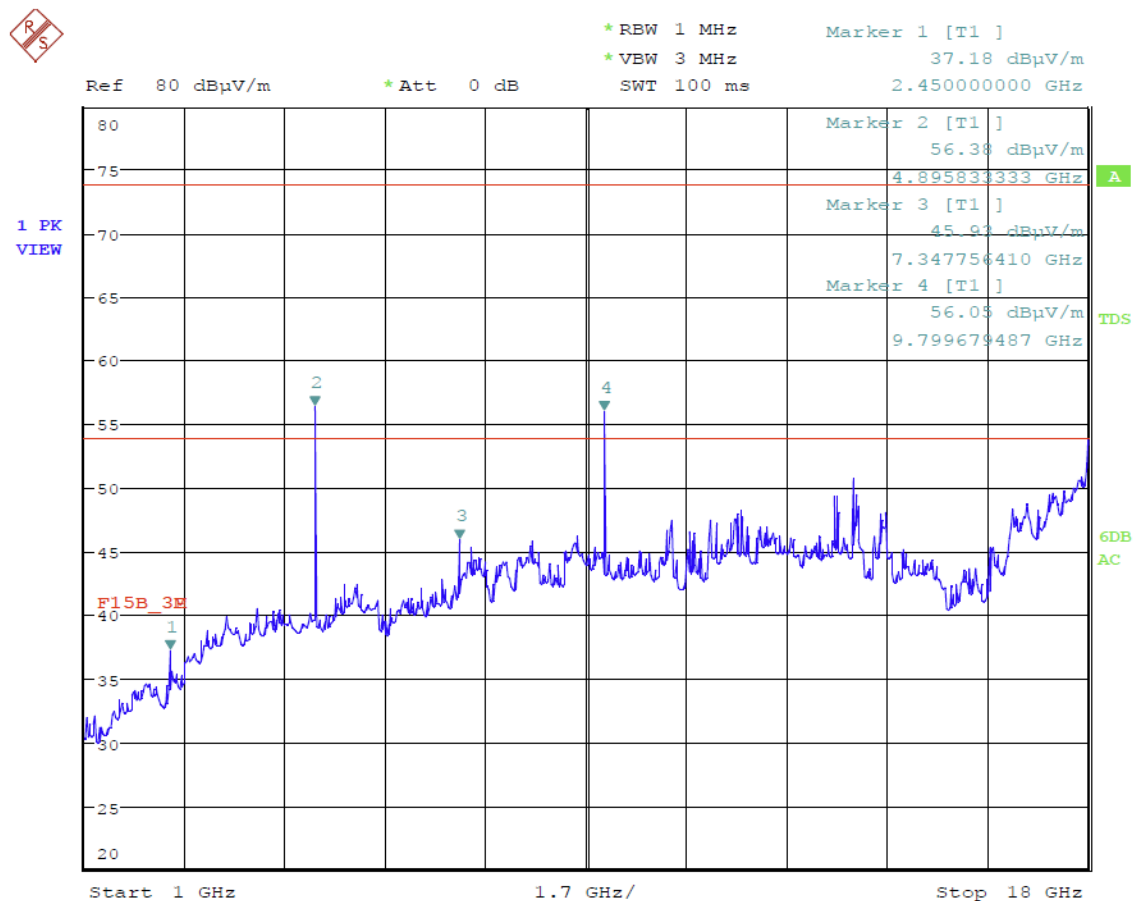
File #: 26ATEQ019_FCC15C249
April 23, 2026

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Measurement Antenna Position: Vertical Polarization at 3m
Test Frequency Range: 1 GHz to 18 GHz

Sweep Settings Screen A

Center Frequency	9.500000 GHz	Ref Level	80.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	17.000000 GHz	Ref Position	100.000 %
Start Frequency	1.000000 GHz	Level Range	60.000 dB
Stop Frequency	18.000000 GHz	RF Att	0.000 dB
RBW	1.000000 MHz		
VBW	3.000000 MHz	X-Axis	LIN
Sweep Time	100.00 ms	Y-Axis	LOG



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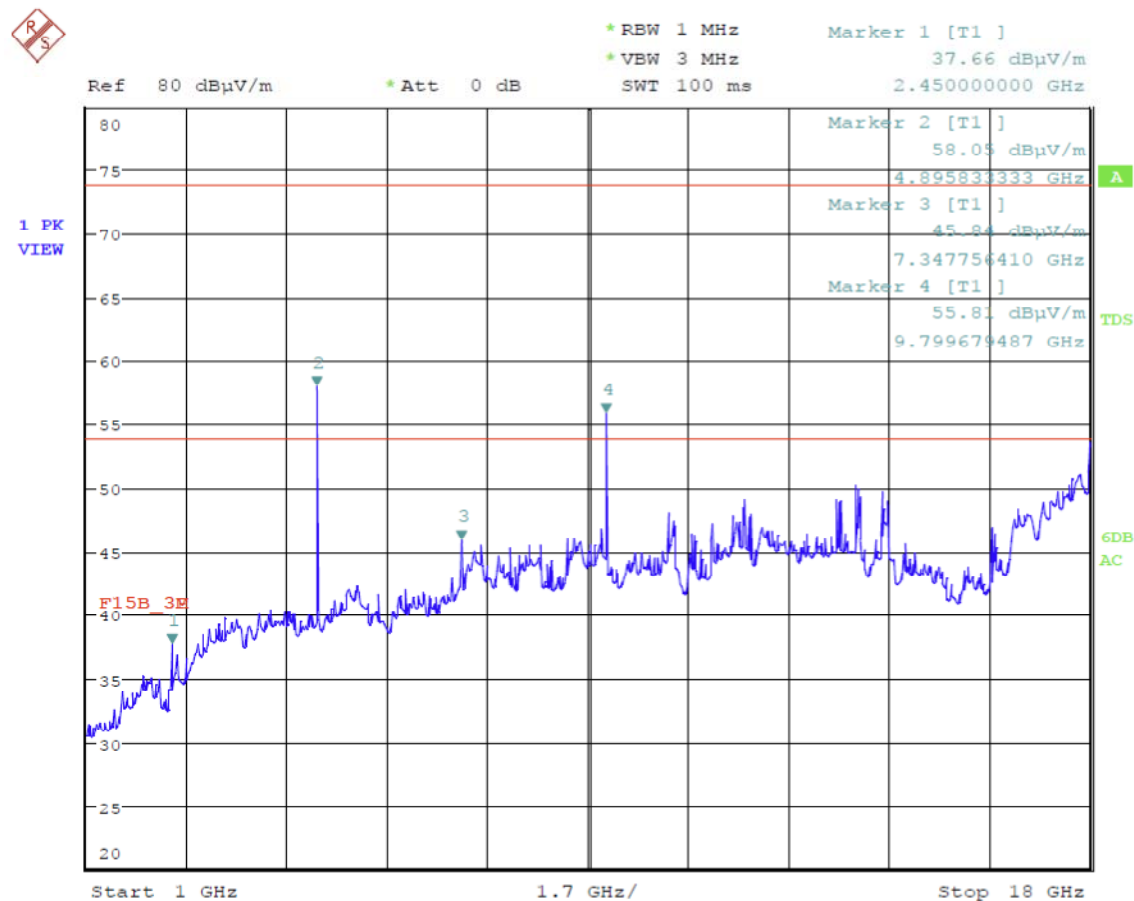
April 23, 2026

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Measurement Antenna Position: Horizontal Polarization at 3m
Test Frequency Range: 1 GHz to 18 GHz

Sweep Settings Screen A

Center Frequency	9.500000 GHz	Ref Level	80.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	17.000000 GHz	Ref Position	100.000 %
Start Frequency	1.000000 GHz	Level Range	60.000 dB
Stop Frequency	18.000000 GHz	RF Att	0.000 dB
RBW	1.000000 MHz		
VBW	3.000000 MHz	X-Axis	LIN
Sweep Time	100.00 ms	Y-Axis	LOG



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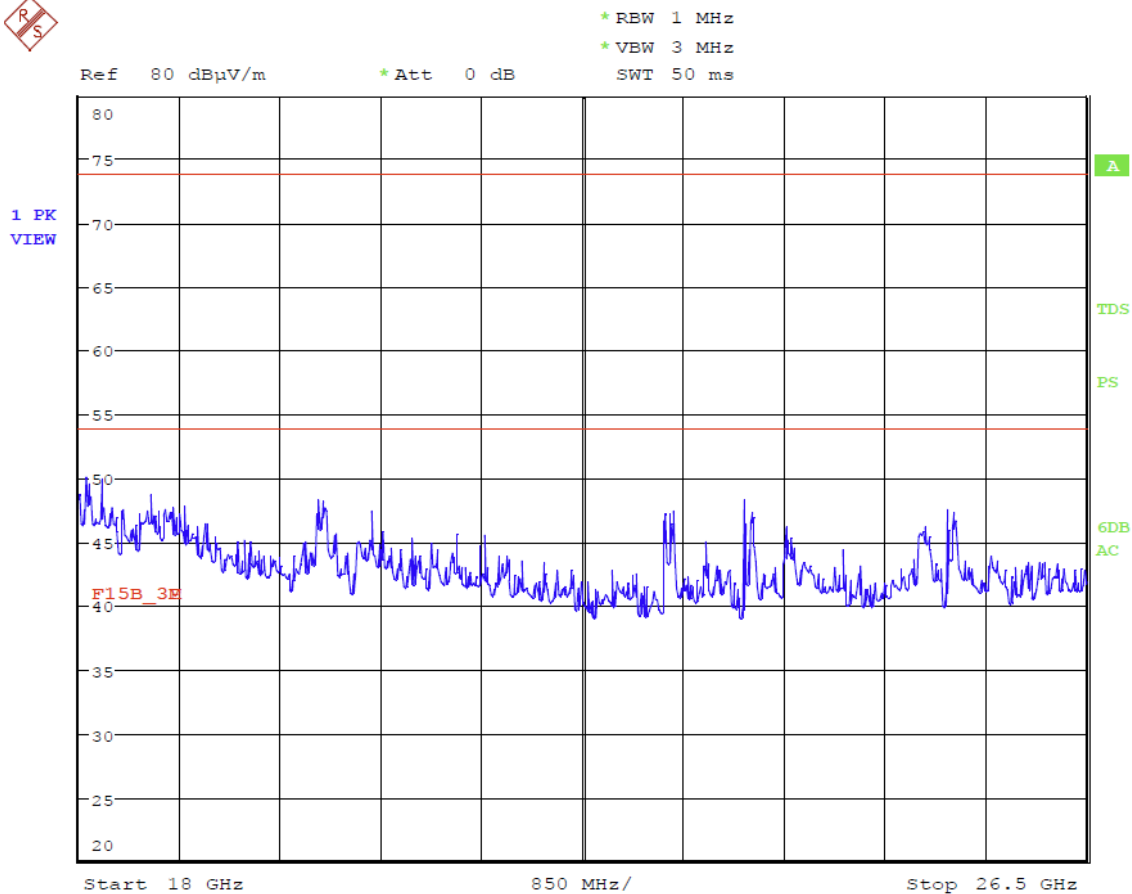
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Measurement Antenna Position: Vertical Polarization at 3m

Test Frequency Range: 18 GHz to 26.5 GHz

Sweep Settings Screen A

Center Frequency	22.250000 GHz	Ref Level	80.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	8.500000 GHz	Ref Position	100.000 %
Start Frequency	18.000000 GHz	Level Range	60.000 dB
Stop Frequency	26.500000 GHz	RF Att	0.000 dB
RBW	1.000000 MHz		
VBW	3.000000 MHz	X-Axis	LIN
Sweep Time	50.00 ms	Y-Axis	LOG



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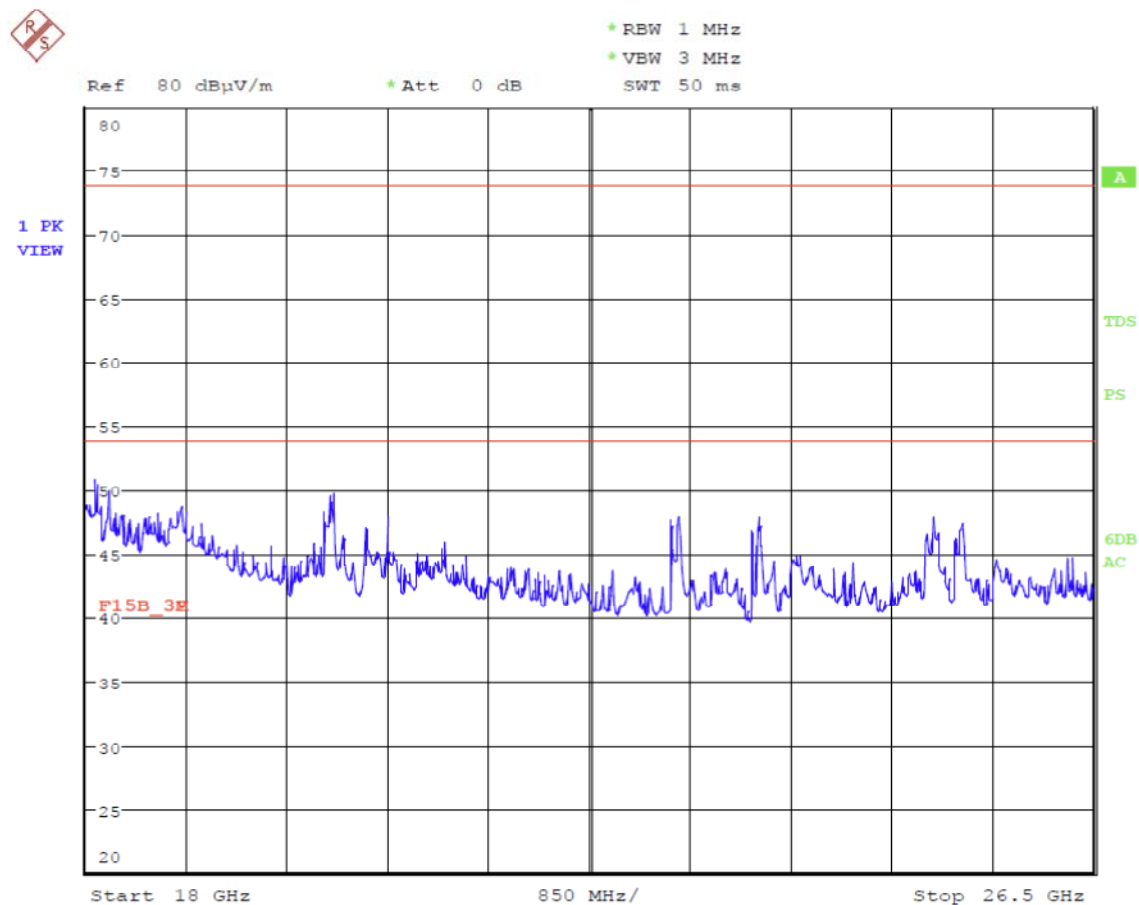
April 23, 2026

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Measurement Antenna Position: Horizontal Polarization at 3m
Test Frequency Range: 18 GHz to 26.5 GHz

Sweep Settings Screen A

Center Frequency	22.250000 GHz	Ref Level	80.000 dBμV/m
Frequency Offset	0.000000 Hz	Ref Level Offset	0.000 dB
Span	8.500000 GHz	Ref Position	100.000 %
Start Frequency	18.000000 GHz	Level Range	60.000 dB
Stop Frequency	26.500000 GHz	RF Att	0.000 dB
RBW	1.000000 MHz		
VBW	3.000000 MHz	X-Axis	LIN
Sweep Time	50.00 ms	Y-Axis	LOG



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File #: 26ATEQ019_FCC15C249

April 23, 2026

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.3.4.2. Tabular Data

Remarks: - The measuring receiver shall be tuned over the frequency range of 30 MHz to the 10th harmonic of the highest fundamental frequency. - All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded. - In the restricted band per §15.205: 15.209 (a) limits applied - Outside the restricted band per § 15.205: § 15.249 (d) limits or § 15.209 (a) applied, whichever is the lesser attenuation. - Field strength limit of the fundamental at 2450 MHz = $20 \log (50000) = 94 \text{ dB}\mu\text{V/m}$ - Harmonic emissions limit is $54.0 \text{ dB}\mu\text{V/m}$. - Duty Cycle: measured maximum duty cycle is 28.31 %. - The peak-average correction factor = -10.96 dB. See Section 5.3.4.3 for details.						
Frequency (MHz)	Peak E-Field @3m (dBμV/m)	*QP/Average E-Field @3m (dBμV/m)	Antenna Plane (H/V)	Field Strength Limit of Fundamental/Harmonic (dBμV/m)	Field Strength Limit of § 15.209 (dBμV/m)	Margin (dB)
2450.00	93.03	82.07	V	94.0	--	-11.9
2450.00	102.05	91.09	H	94.0	--	-2.9
4900.00	62.95	51.99	V	54.0	54.0	-2.0
4900.00	64.32	53.36	H	54.0	54.0	-0.6
7350.00	51.05	40.09	V	54.0	54.0	-13.9
7350.00	52.64	41.68	H	54.0	54.0	-12.3
9800.00	54.10	43.14	V	54.0	54.0	-10.8
9800.00	53.17	42.21	H	54.0	54.0	-11.8
12250.00	47.76	36.80	V	54.0	54.0	-17.2
12250.00	47.93	36.97	H	54.0	54.0	-17.0

*QP for frequencies below or equal to 1000 MHz; Average for frequencies above 1000 MHz.

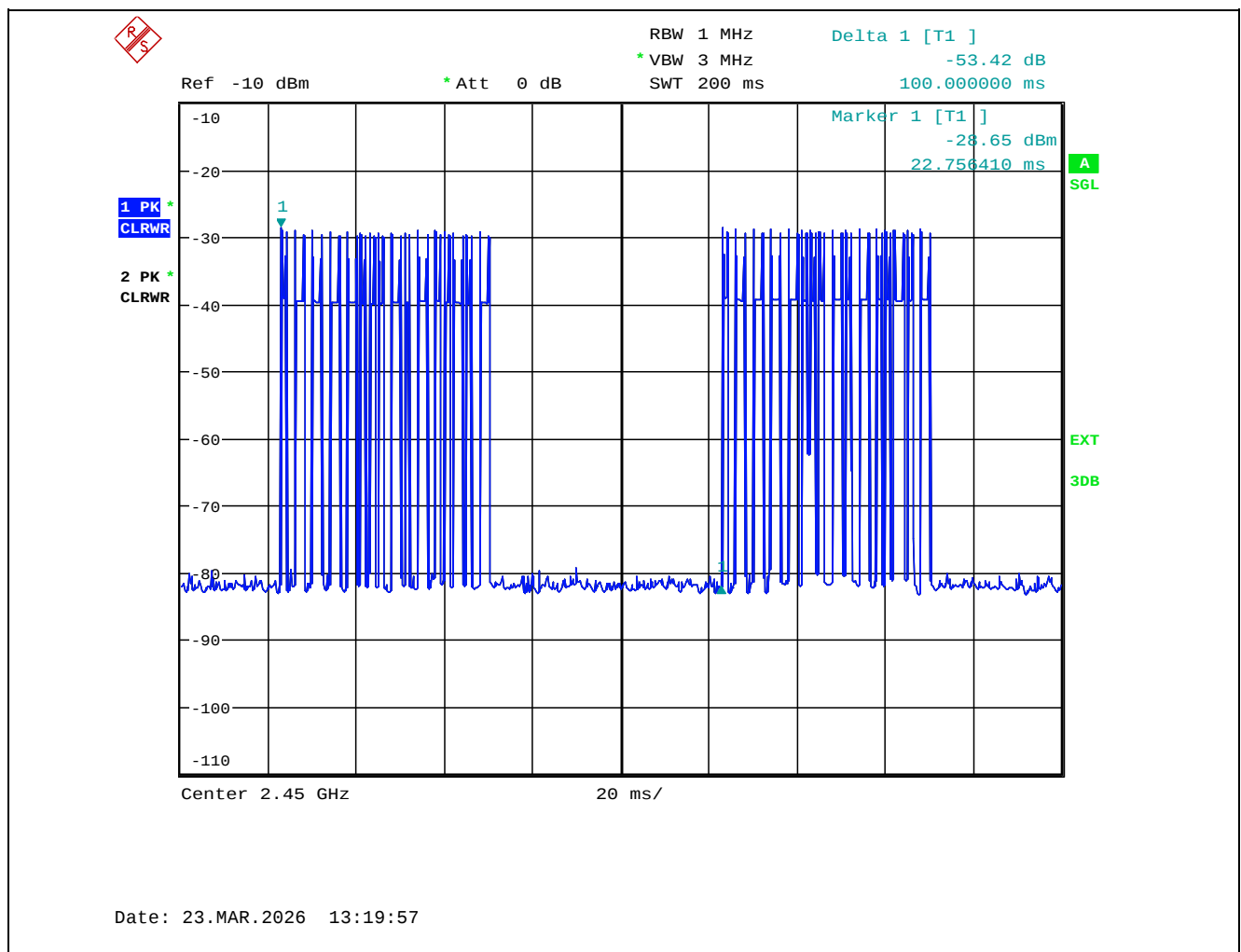
5.3.4.3. Duty-Cycle Correction Factor

The duty cycle correction factor is the total “on time” divided by the period of the pulse train (or 100 ms).

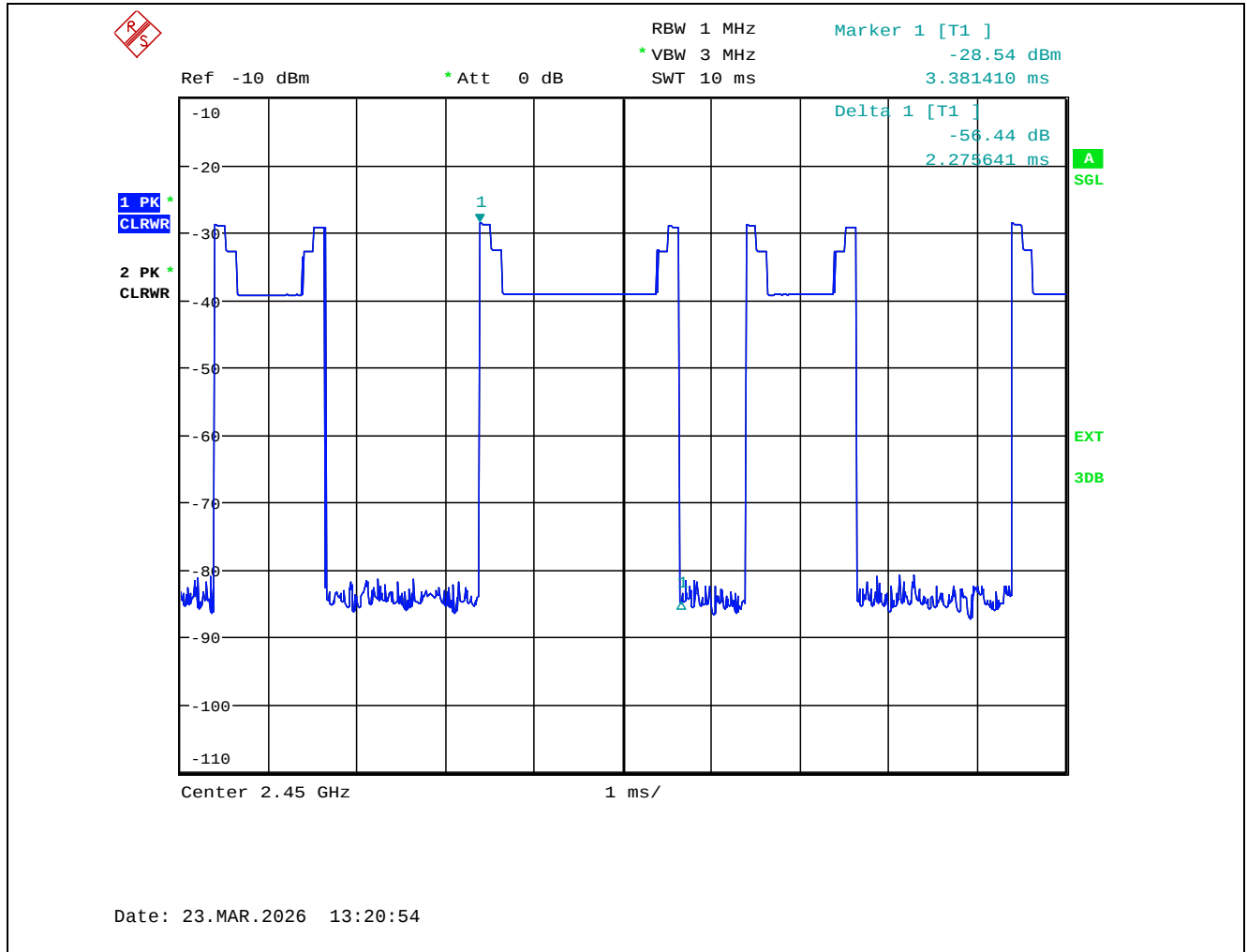
Computation of duty-cycle correction factor

Sub-Pulse	Duration (ms)	Number of pulses	Sub-Pulse “On Time” (ms)
1	2.2726	8	18.1808
2	1.2660	8	10.1280
		TOTAL ON TIME:	28.3088
Duty cycle correction factor:		$20 \cdot \log(T_{ON}/\text{Period}) = 20 \cdot \log(28.3088 \text{ ms} / 100 \text{ ms}) = -10.96 \text{ dB}$	

Plot 5.3.4.3.1. Duty Cycle (Pulse Train)



Plot 5.3.4.3.2. Duty Cycle (Pulse 1: 2.2726 ms)



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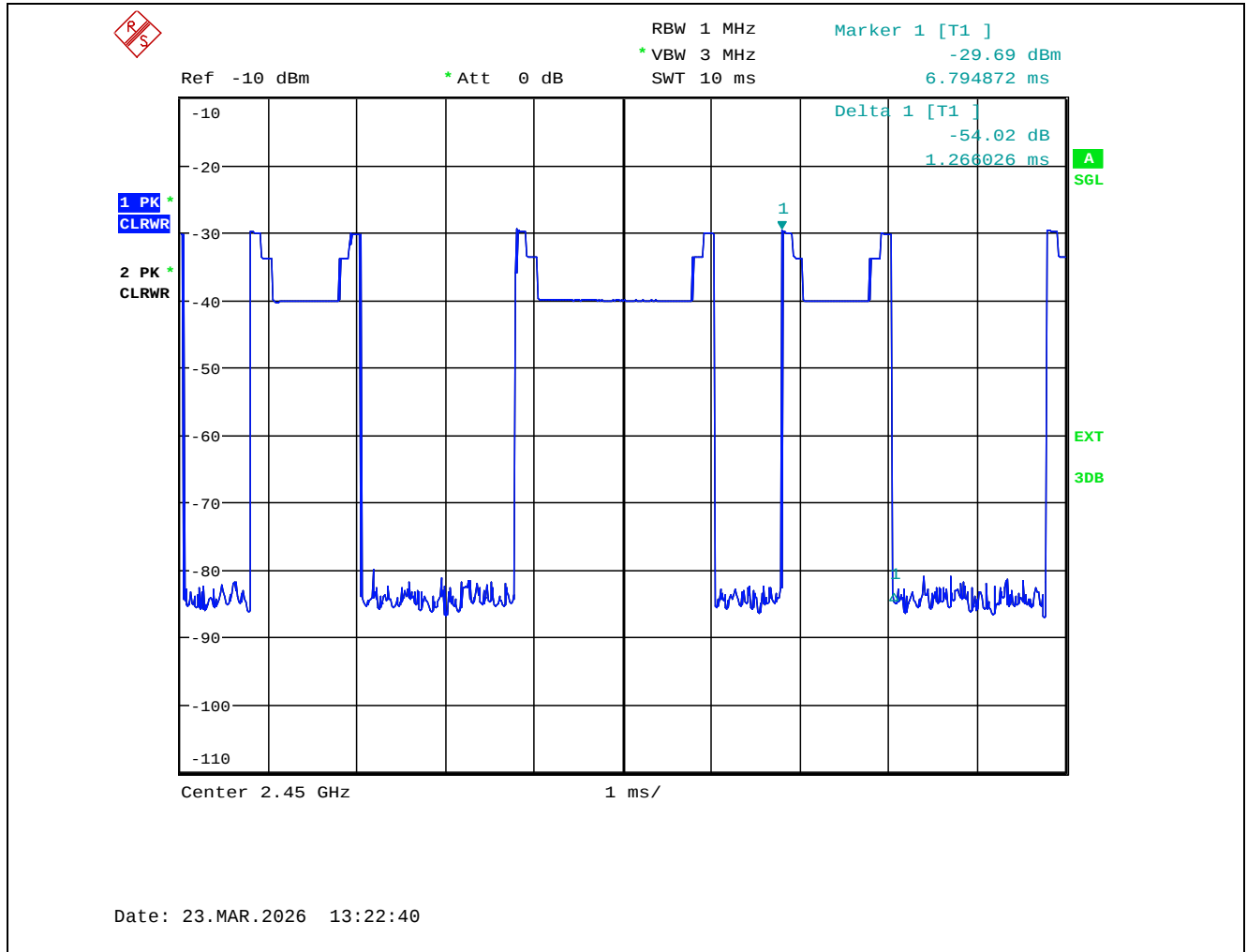
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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Plot 5.3.4.3.3. Duty Cycle (Pulse 2: 1.2660 ms)



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Plot 5.3.4.3.4. Duty Cycle (8 Pulse1 and 8 Pulse 2)

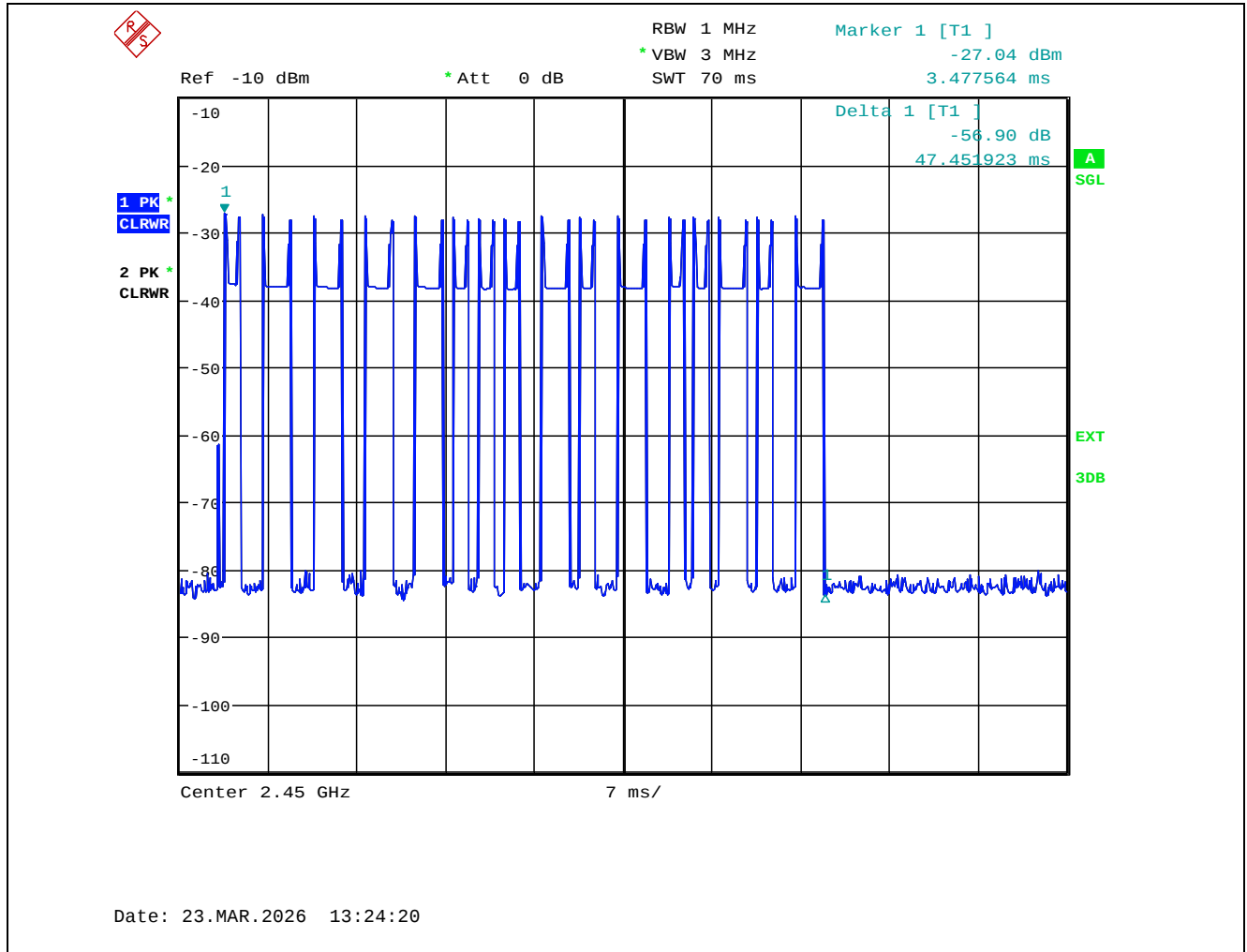


EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Hewlett Packard	8593EM	3710A00223	9 kHz–26.5 GHz	02 Sep 2026
High Pass Filter	Rohde & Schwarz	EZ-25	100064	Cut off 150kHz	29 Oct 2026
LISN	EMCO	3825/2	8907-1531	9 kHz–30 MHz	07 Apr 2027
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20Hz-40GHz	15 Sep 2026
Pre-amplifier	Com-Power	PAM-118A	551052	500MHz-18GHz	03 Oct 2026
Pre-amplifier	Com-Power	PAM-840A	18050002	18GHz-40GHz	16 Jan 2027
Loop Antenna	EMCO	6502	9104-2611	10kHz-30MHz	13 Jun 2026
Biconilog Antenna	EMCO	3142B	1575	26MHz-3000MHz	12 Nov 2026
Horn Antenna	EMCO	3115	9911-5955	1GHz-18GHz	18 Feb 2027
Horn Antenna	ETS	3160-09	118385	18GHz-26.5GHz	14 Feb 2027
Band-reject Filter	Micro-Tronics	BRM50701	105	Cut off 2400-2500 MHz	See Note 1
High Pass Filter	K & L	11SH10-3000/T18000	4	Cut off 3000MHz	See Note 1
Note 1: Internal Verification/Calibration check					

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EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

Test Description	Expanded Uncertainty, K=2 for 95% Confidence Level
Power Line Conducted Emissions	± 2.62 dB
Radiated Emissions	± 2.68 dB (10 kHz - 30 MHz)
	± 4.30 dB (30 MHz - 1 GHz)
	± 3.11 dB (18 GHz - 26.5 GHz)
Bandwidth	± 2 Hz

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