

FCC Part 15.231

TEST REPORT

For

Oro Technology Co., Ltd.

3F., No. 29, Gongyequ 21st Rd., Nantun Dist., Taichung City 408, Taiwan

FCC ID: W55W41011B2

Report Type:
Original Report

Product Type:
Tire Pressure Monitoring System

Report Producer : Jojo Lu

Report Number : RLK260601004RF02

Report Date : 2026/07/15

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	Oro Technology Co., Ltd.
	3F., No. 29, Gongyequ 21st Rd., Nantun Dist., Taichung City 408 , Taiwan
Manufacturer	Oro Technology Co., Ltd.
	3F., No. 29, Gongyequ 21st Rd., Nantun Dist., Taichung City 408 , Taiwan
Brand(Trade) Name	ORO
Product (Equipment)	Tire Pressure Monitoring System
Main Model Name	W410-A
Frequency Range	433.92 MHz
Modulation Type	FSK
Number of Channels	1 Channel
Operation Type	Automatically activated transmitter
Power Operation (Voltage Range)	3Vdc from battery
Received Date	2026/06/22
Date of Test	2026/06/24 ~ 2026/07/01

*All measurement and test data in this report was gathered from production sample serial number:

RLK260601004 -01 (Assigned by BACL, Linkou Laboratory).

1.2 Objective

This report is prepared on behalf of Oro Technology Co., Ltd.. All test measurements were performed according to ANSI C63.10-2020.

1.3 Related Submittal(s)/Grant(s)

N/A

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

1.5 Statement

Decision Rule: No, (The test results do not include MU judgment)

The measurement results in this report were performed at Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification. Bay Area Compliance Laboratories Corp. (Linkou Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

1.6 Measurement Uncertainty

Parameter		Uncertainty
AC Mains		±3.01 (dB)
Occupied Bandwidth		±1.97 (%)
Temperature		±1.73 (°C)
Humidity		±0.92 (%)
Emissions, radiated	9 kHz~30 MHz	±3.15 (dB)
	30 MHz~1 GHz	±3.42 (dB)
	1 GHz~18 GHz	±5.12 (dB)

1.7 Environmental Conditions

Test Item	Test Date	Temperature (°C)	Relative Humidity (%)	Test Engineer
AC Line Conducted Emissions	N/A	N/A	N/A	N/A
Radiated Spurious Emissions	2026/06/30~2026/07/01	27~28	42~44	Yue
Deactivation Test	2026/06/24	25.3	41	Alan
Emissions Bandwidth	2026/06/24	25.3	41	Alan

1.8 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou Laboratory) to collect test data is located on

☒ No.6, Wende 2nd Rd, Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

Bay Area Compliance Laboratories Corp. (Linkou Laboratory) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) by Mutual Recognition Agreement (MRA). The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database. The FCC Registration No.: 0027578244. Designation No.: TW1119. The Test Firm Registration No.: 311381.

2 System Test Configuration

2.1 Description of Test Configuration

Channel list:

Channel	Frequency (MHz)
1	433.92

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 EUT Exercise Software

N/A

2.4 Test Mode

After three-axis comparison using Pre-scan, the worst result in this case was the Z-axis.

The EUT was tested in engineering mode with fixed RF output power.

The reported results represent the maximum available output power.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number
Coin battery	maxell	CR2050HR

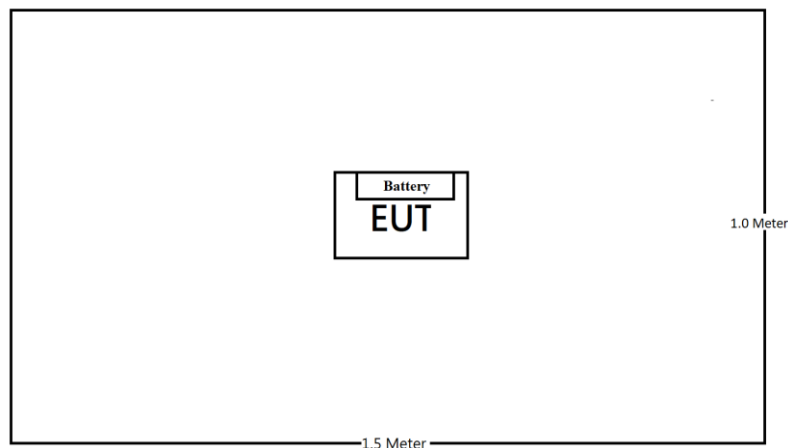
2.6 External Cable List and Details

N/A

2.7 Block Diagram of Test Setup

See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:



3 Summary of Test Results

FCC Rules	Description of Test	Results
§15.203	Antenna Requirement	Compliance
§15.207(a)	Conducted Emissions	Not Applicable ^{Note}
§15.205, §15.209, §15.231(e)	Radiated Emissions	Compliance
§15.231(e)	Transmission Duration / Deactivation	Compliance
§15.231(c)	20dB Emission Bandwidth	Compliance

Note : The subject sample is only employing battery power for operation. Therefore, this test is not applicable.

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Room (966-A)					
Bilog Antenna & 6 dB Attenuator	SUNOL SCIENCES & EMCI	JB3 & N-6-06	A111513 & AT-N0668	2026/04/27	2027/04/27
Active Loop Antenna	ETS-Lindgren	6502	0001-3322	2026/04/16	2027/04/16
Horn Antenna	ETS-Lindgren	3115	109141	2025/08/22	2026/08/22
30M-18GHz Preamplifier	A.H. Systems	PAM-0118P	470	2026/03/25	2027/03/25
ESR EMI Test Receiver	Rohde & Schwarz	ESR3	102448	2025/10/02	2026/10/02
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	1321.3008K40-101940-YY	2025/12/18	2026/12/18
Microflex Cable (1m)	UTiFLEX	UFB205A-0-0360-000000	W6103	2025/08/01	2026/08/01
Microflex Cable (2m)	EMCI	EMCI06-SM-SM-2000	180515	2025/08/01	2026/08/01
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	MFR 64639 232490-001	2025/08/01	2026/08/01
Software	AUDIX	E3 V9	E3LK-01	N.C.R	N.C.R
Conducted Room					
Signal and Spectrum Analyzer (with B21)	Rohde & Schwarz	FSV40	101938	2025/12/03	2026/12/03

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements

5 FCC §15.203 – Antenna Requirements

5.1 Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

5.2 Antenna Connected Construction

Antenna type	Brand	Model	Gain(dBi)	Impedance
Monopole	ORO	M02AN00012	-20.87dBi	50Ω

Note :

1. The antenna is permanently attached to the EUT and is not user-replaceable.
2. Please refer to the antenna specification for detailed information.

Result: Compliant.

6 FCC §15.207(a) – AC Line Conducted Emissions

6.1 Applicable Standard

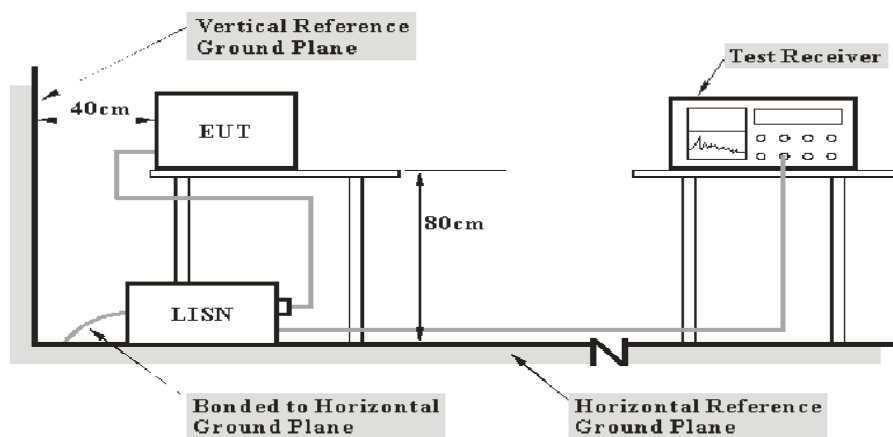
According to FCC §15.207(a)

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 1}
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

6.2 EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 30 cm from other units and other metal planes support units.

The EUT setup was configured in accordance with ANSI C63.10-2020 measurement procedure. The applicable limit is FCC §15.207(a).

6.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

6.4 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

6.5 Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

6.6 Test Results

The subject sample is only employing battery power for operation. Therefore, this test is not applicable.

7 FCC §15.205, §15.209, §15.231(e) – Radiated Emissions

7.1 Applicable Standard

FCC §15.205, §15.209, §15.231 (e)

According to FCC §15.231(e), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66 – 40.70	1000	100
70 – 130	500	50
130 – 174	500~1500**	50~150**
174 – 260	1500	150
260 – 470	1500~5000**	150~500**
Above 470	5000	500

** : Linear interpolations.

「Fundamental limit ($\mu\text{V/m}$) = $16.6667 \times f(\text{MHz}) - 2833.3333$ 」

「Spurious limit ($\mu\text{V/m}$) = Fundamental limit ($\mu\text{V/m}$) / 10」

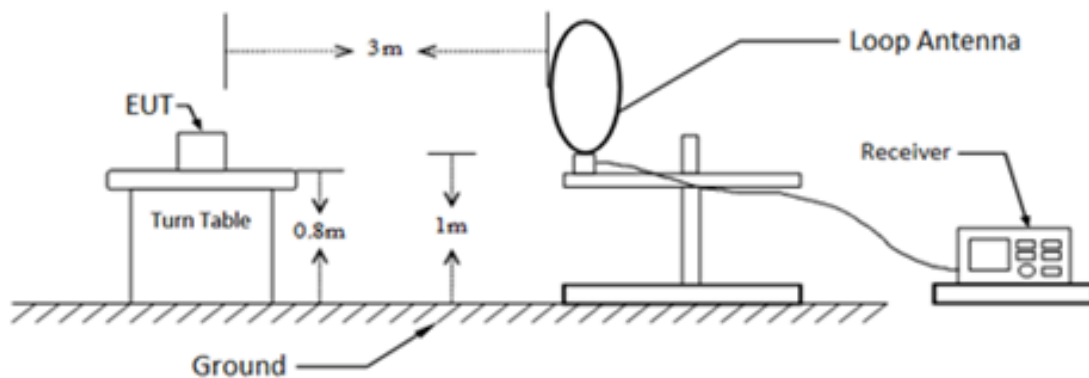
「Fundamental limit ($\text{dB}\mu\text{V/m}$) = $20 \log$ Fundamental limit ($\mu\text{V/m}$)」

「Spurious limit ($\text{dB}\mu\text{V/m}$) = Fundamental limit ($\text{dB}\mu\text{V/m}$) - 20 dB」

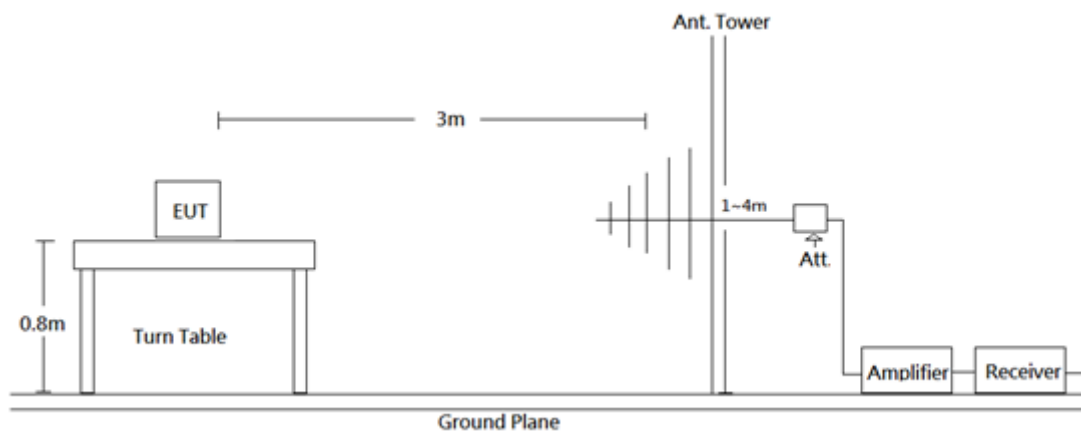
- (1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
- (2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.
- (3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

7.2 EUT Setup

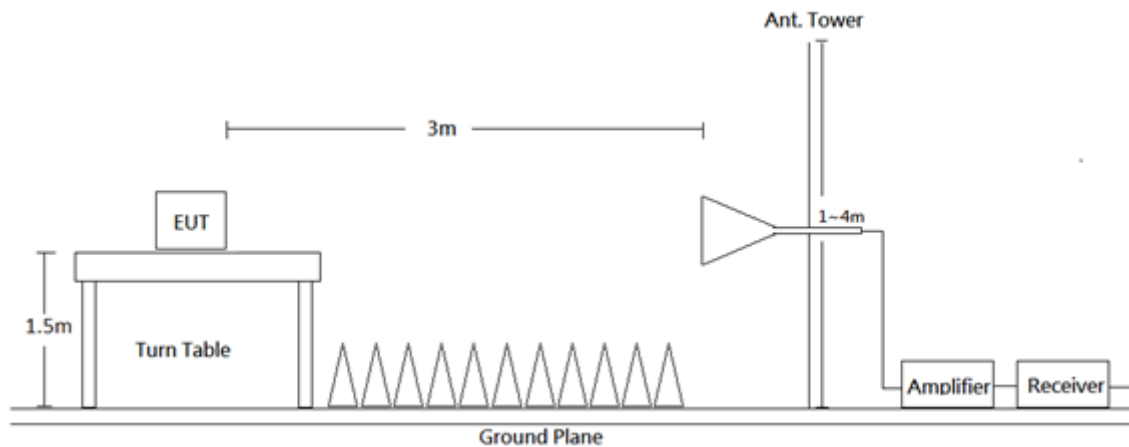
9 kHz to 30 MHz:



Below 1 GHz:



Above 1 GHz:



Radiated emission tests were performed at a 3 m test distance, using the setup in accordance with ANSI C63.10-2020. The specification used was the FCC Part 15.209 and FCC 15.231 Limits.

7.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10-2020.

Frequency Range	RBW	VBW	Detector
9 kHz to 150 kHz	200 Hz	1 kHz	Average/QP
150 kHz to 30 MHz	9 kHz	30 kHz	Average/QP
30-1000 MHz	100 kHz	300 kHz	Peak/QP
Above 1 GHz	1 MHz	3 MHz	Peak/Average

Peak / Average, as applicable under §15.209 and §15.35

7.4 Test Procedure

The EUT was pre-scanned in three orthogonal axes. The turntable was rotated 0° to 360°. For 30 MHz to 1 GHz and above 1 GHz, both horizontal and vertical polarizations were investigated. For 9 kHz to 30 MHz, the loop antenna orientations were investigated.

7.5 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

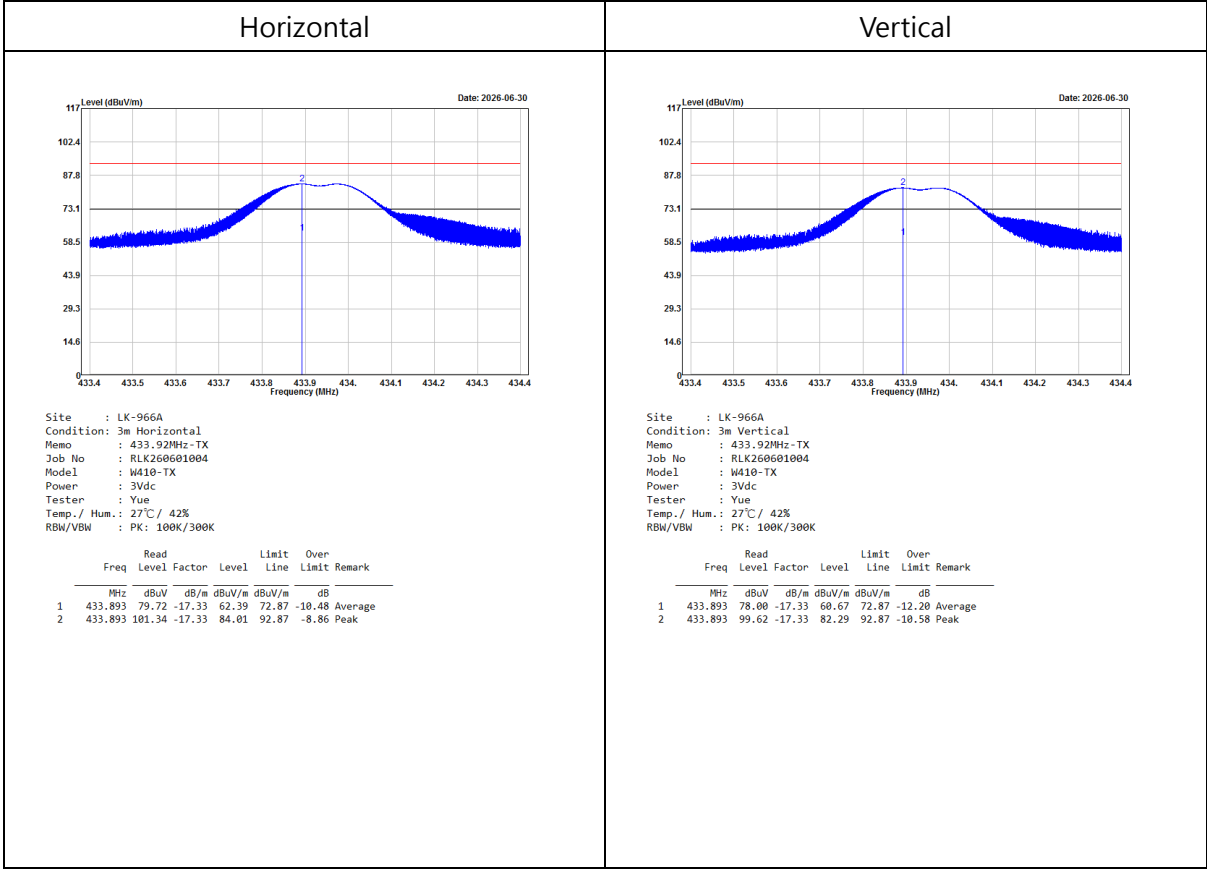
The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\begin{aligned}\text{Margin} &= \text{Result} - \text{Limit} \\ \text{Result} &= \text{Reading} + \text{Correct Factor}\end{aligned}$$

7.6 Test Results

Fundamental:

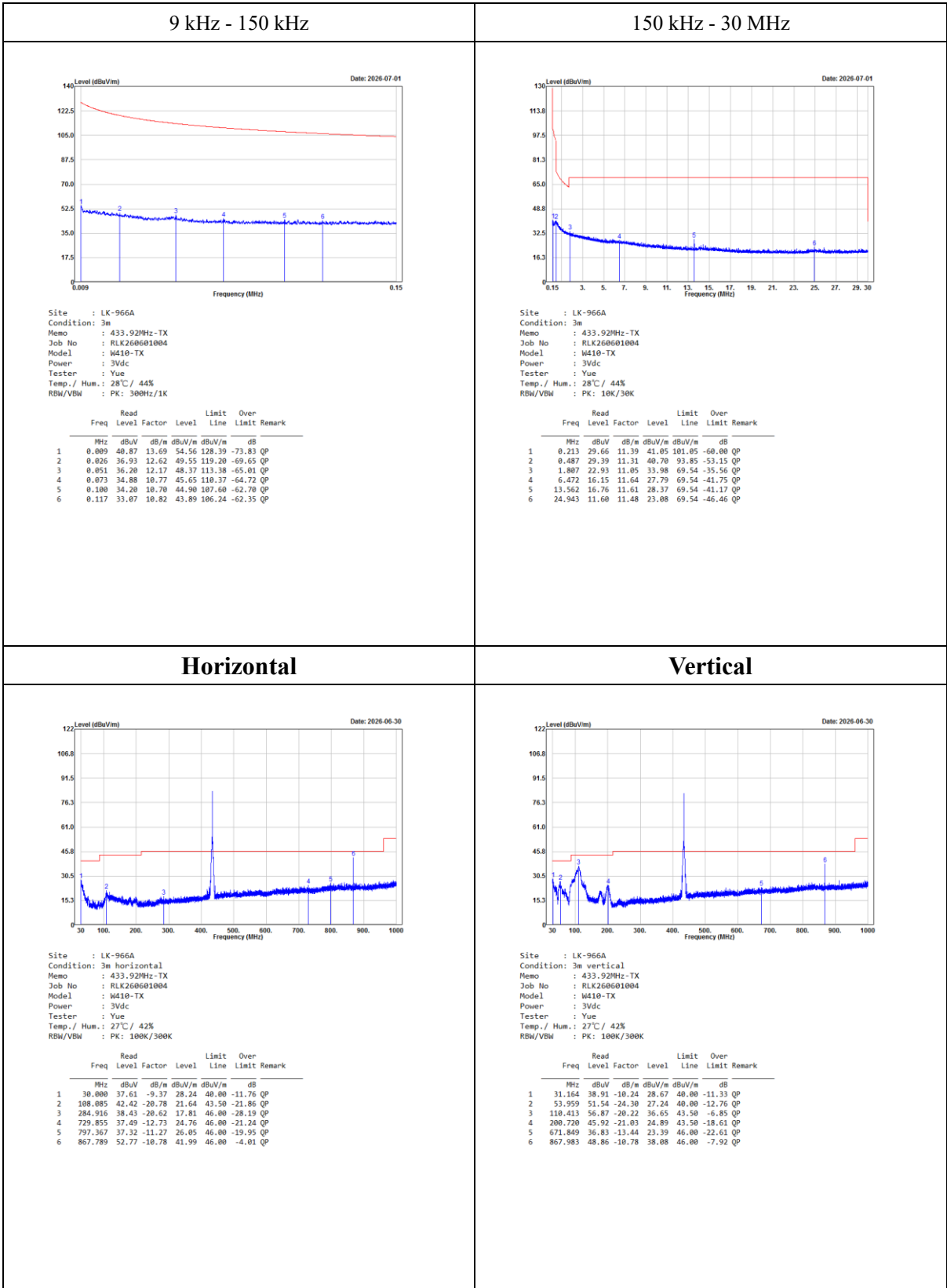
(Pre-scan with three orthogonal axis, and worse case as Z axis.)



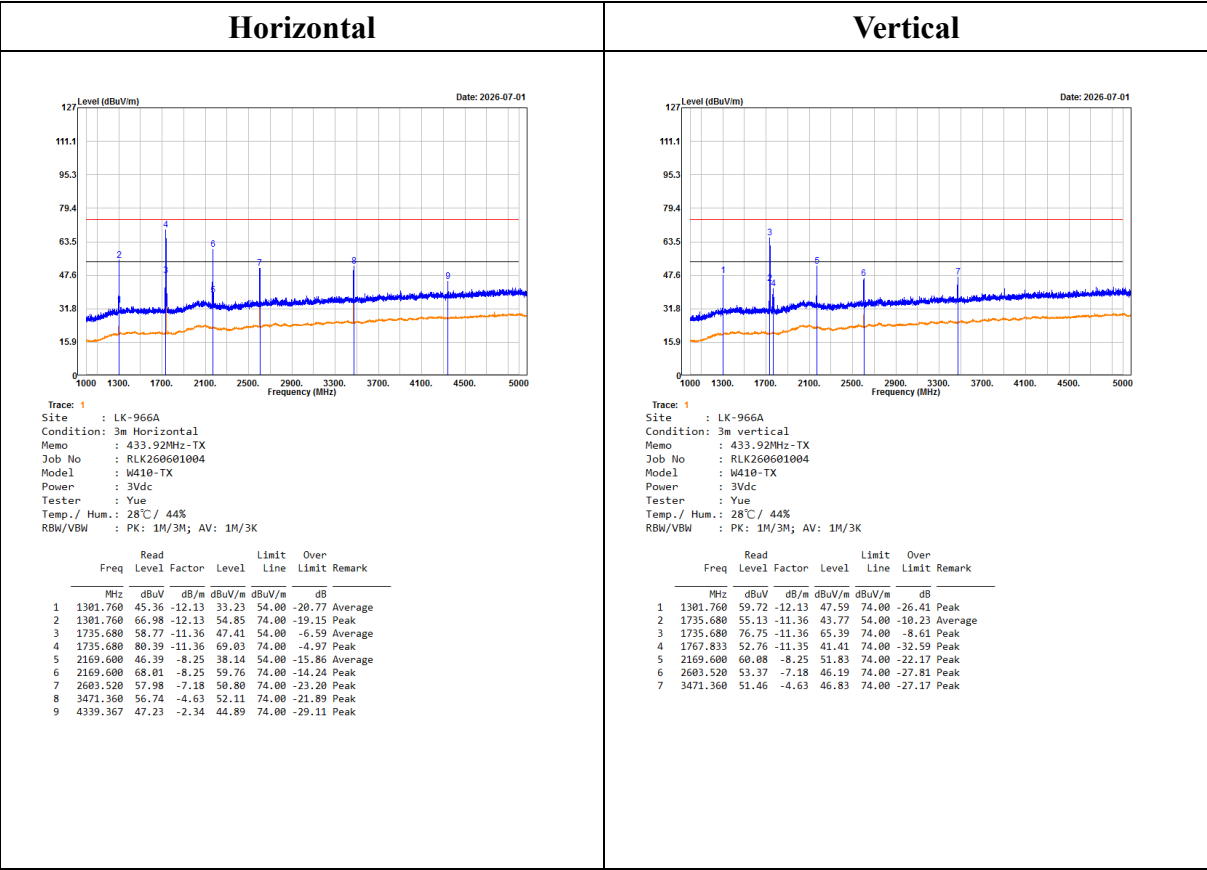
Note : Average value= Peak value+ Duty cycle correction factor

Below 1GHz

(Pre-scan using three directional polarities, worst case as parallel.)



Above 1GHz

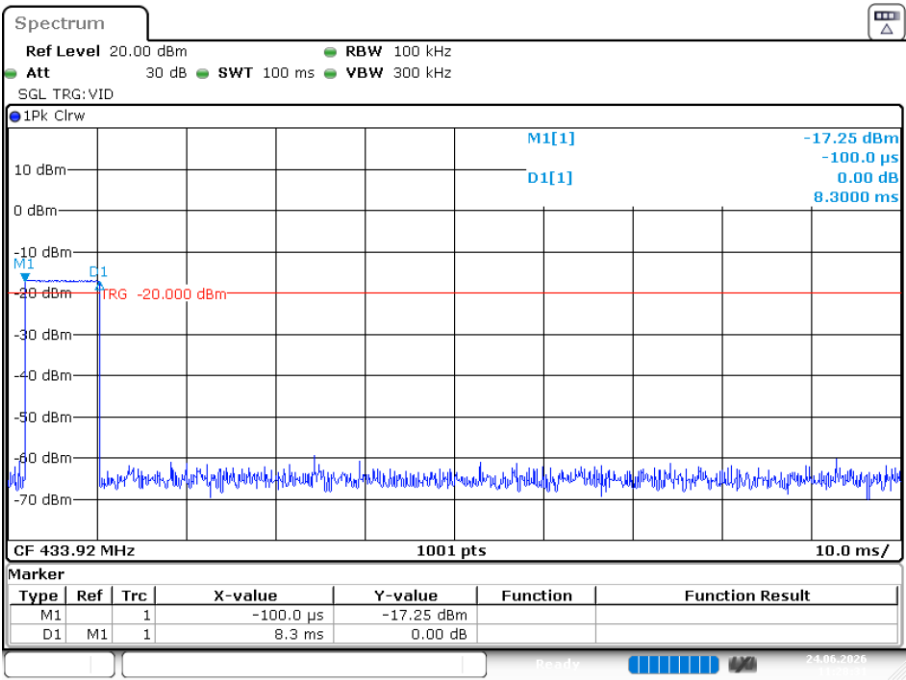


Note : Average value= Peak value+ Duty cycle correction factor

Duty Cycle

Mode (MHz)	Total On Time (ms)	Period (ms)	Duty cycle correction factor (dB)
433.92	8.3	100	-21.62

Note:
1. *Duty cycle correction factor = 20log(Total on time/ Period)*



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8 FCC §15.231(e) – Deactivation Testing

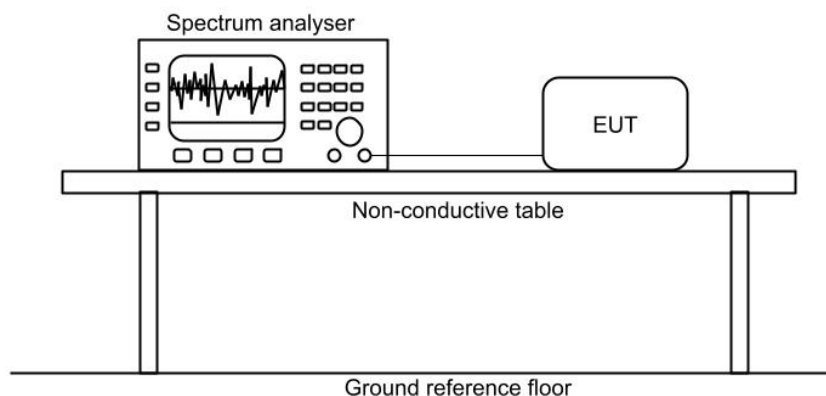
8.1 Applicable Standard

Per FCC §15.231(e), In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

8.2 Test Procedure

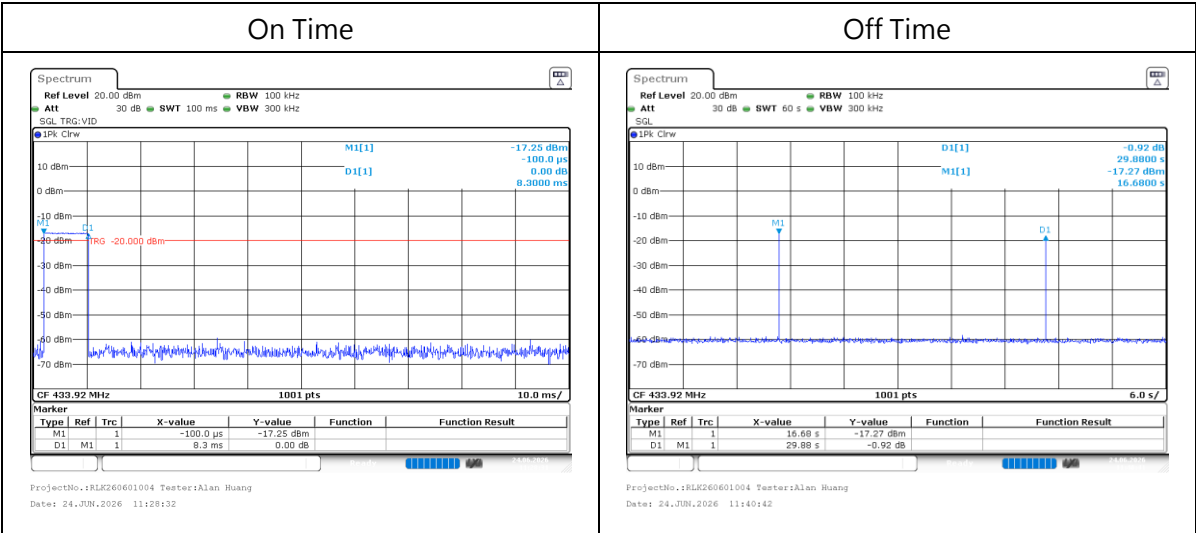
1. With the EUT's antenna attached, the waveform was received by the test antenna which was connected to the spectrum analyzer.
2. Set center frequency of spectrum analyzer=operating frequency.
3. Set the spectrum analyzer as RBW = 100 kHz, VBW = 300 kHz, Span = 0 Hz.
4. Repeat above procedures until all frequency measured was complete.
5. Trigger the analyzer from an automatically generated transmission under each normal operating state. Measure the duration of the complete transmission group and the silent interval to the next transmission group. Verify $T_{on} \leq 1 \text{ s}$ and $T_{off} \geq \max(30 \times T_{on}, 10 \text{ s})$

8.3 Test Setup Diagram



8.4 Test Results

On Time (ms)	On Time Limit (s)	Off Time (s)	Off Time Limit (s)	Result
8.3	≤ 1	29.88	≥ 0.249 and ≥ 10	Compliance



9 FCC §15.231(c) – 20 dB Emission Bandwidth Testing

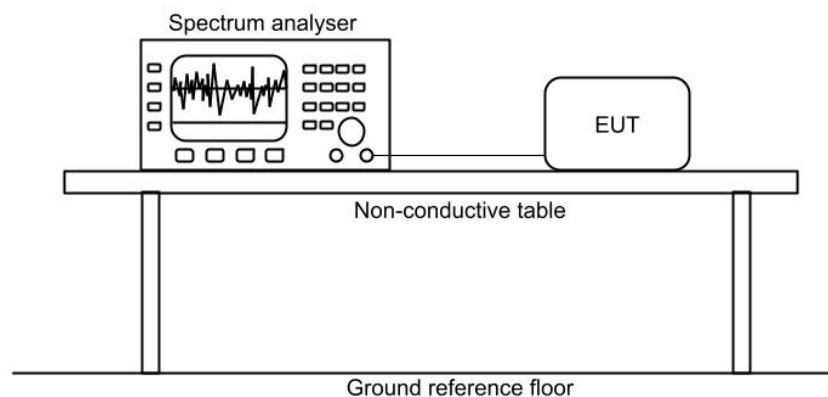
9.1 Applicable Standard

Per 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

9.2 Test Procedure

With the EUT's antenna attached, the waveform was received by the test antenna which was connected to the spectrum analyzer. The 20 dB bandwidth was measured from the modulated carrier.

9.3 Test Setup Diagram

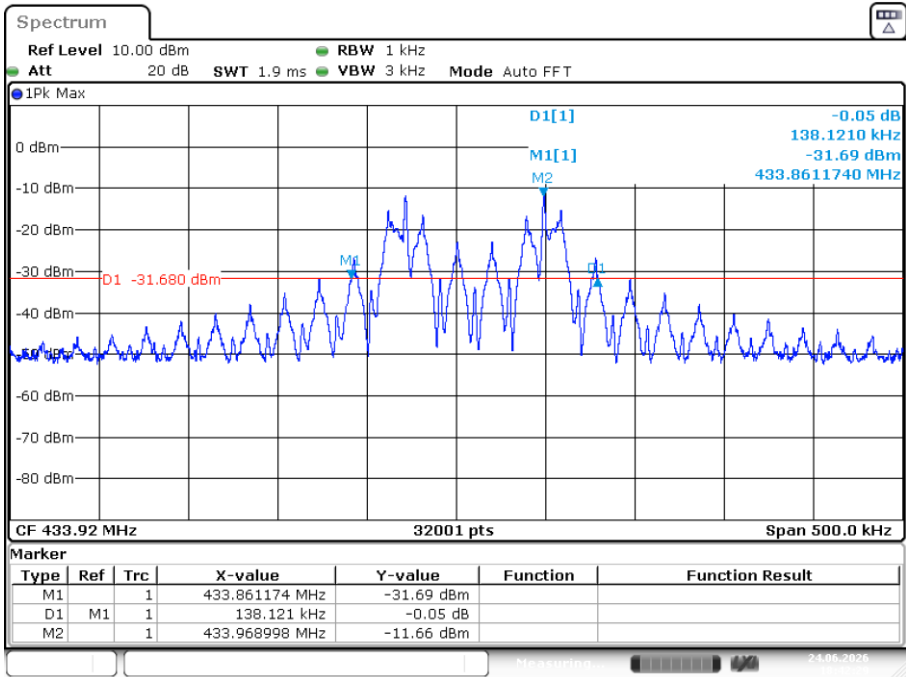


1.1 Test Results

Frequency (MHz)	20 dB Emission Bandwidth (kHz)	Limit (kHz)	Result
433.92	138.121	1084.8	Compliance

Note: Limit = 0.25% * Center Frequency = 0.25% * 433.92 MHz = 1084.8 kHz

20 dB Emission Bandwidth



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***** END OF REPORT *****