**Report No.:** DDT-R23013005-2E01

**Issued Date:** Mar. 22, 2023

# FCC AND ISED CERTIFICATION TEST REPORT

## FOR

| | | |
|---|---|---|
| **Applicant** | **:** | Globe Electric Company Inc. |
| **Address** | **:** | 150 Oneida, Montreal, Quebec, Canada, H9R 1A8 |
| **Equipment under Test** | **:** | Remote control |
| **Model No.** | **:** | GL031TX |
| **Trade Mark** | **:** | Globe |
| **FCC ID** | **:** | 2AQUQGL031TX |
| **IC** | **:** | 8290A-GL031TX |
| **Manufacturer** | **:** | Globe Electric Company Inc. |
| **Address** | **:** | 150 Oneida, Montreal, Quebec, Canada, H9R 1A8 |


**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

**Add.:** No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

**Tel.:** +86-0769-38826678, **E-mail:** ddt@dgddt.com, http://www.dgddt.com


REPORT

# Table of Contents

# Test Report Declare

| | | |
|---|---|---|
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| **Address** | : | 150 Oneida, Montreal, Quebec, Canada, H9R 1A8 |

**Test Standard Used:**

FCC Rules and Regulations Part 15 Subpart C, RSS-210 Issue 10 December 2019, Amendment (April 2020).

**Test procedure used:**

ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021).

**We Declare:**

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC&ISED standards.**

| | | | |
|---|---|---|---|
| **Report No:** | DDT-R23013005-2E01 | | |
| **Date of Receipt:** | Mar. 20, 2023 | **Date of Test:** | Mar. 20, 2023 ~ Mar. 22, 2023 |

***Prepared By:*** ***Approved By:***

Bobo Chen

***Bobo Chen/Engineer*** ***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

# Revision History

| Rev. | Revisions | Issue Date | Revised By |
|---|---|---|---|
| --- | Initial issue | Mar. 22, 2023 | |
| | | | |

# 1. Summary of Test Results

| The EUT have been tested according to the applicable standards as referenced below. | | |
|---|---|---|
| **Description of Test Item** | **Standard** | **Results** |
| 20 dB Bandwidth and 99% Bandwidth | FCC Part 15: 15.215<br>ANSI C63.10:2013<br>RSS-210 Issue 10<br>RSS-Gen Issue 5 | Pass |
| Radiated Emission | FCC Part 15: 15.209<br>FCC Part 15: 15.249<br>ANSI C63.10:2013<br>RSS-210 Issue 10<br>RSS-Gen Issue 5 | Pass |
| Band Edge Compliance | FCC Part 15: 15.205<br>FCC Part 15: 15.249<br>ANSI C63.10:2013<br>RSS-210 Issue 10<br>RSS-Gen Issue 5 | Pass |
| Power Line Conducted Emission | FCC Part 15: 15.207<br>ANSI C63.10:2013<br>RSS-Gen Issue 5 | N/A |
| Antenna Requirement | FCC Part 15: 15.203<br>RSS-Gen Issue 5 clause 6.8 | Pass |

# 2. General Test Information

## 2.1. Description of EUT

| | | |
|---|---|---|
| EUT Name | : | Remote control |
| Model Number | : | GL031TX |
| EUT function description | : | Please reference user manual of this device |
| Power Supply | : | DC 3.0V |
| Radio Specification | : | 2.4GHz Wireless |
| Operation Frequency | : | 2420 MHz - 2470 MHz |
| Modulation | : | GFSK |
| Antenna | : | -0.58 dBi |
| Sample Number | : | S23013005-01 |

Note: EUT is the abbreviation of equipment under test.

| Operation Frequency 2420 - 2470MHz | | | | | |
|---|---|---|---|---|---|
| Frequency | 2420 MHz | Frequency | 2450 MHz | Frequency | 2470 MHz |
| Note.<br>In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency and the highest frequency were selected to perform the test. | | | | | |

| Tested mode, information | | |
|---|---|---|
| Mode | Setting Tx Power | Frequency (MHz) |
| GFSK Tx mode | / | 2420 |
| | / | 2450 |
| | / | 2470 |

## 2.2. Accessories of EUT

| Accessories | Manufacturer | Model number | Description |
|---|---|---|---|
| 4-light LED track | Globe | N/A | N/A |

## 2.3. Assistant equipment used for test

| Assistant equipment | Manufacturer | Model number | EMC Compliance | SN |
|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A |

## 2.4. Block diagram of EUT configuration for test

EUT

## 2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature range: | 21-25 ℃ |
| Humidity range: | 40-75% |
| Pressure range: | 86-106 kPa |

## 2.6. Deviations of test standard

No deviation.

## 2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

## 2.8. Measurement uncertainty

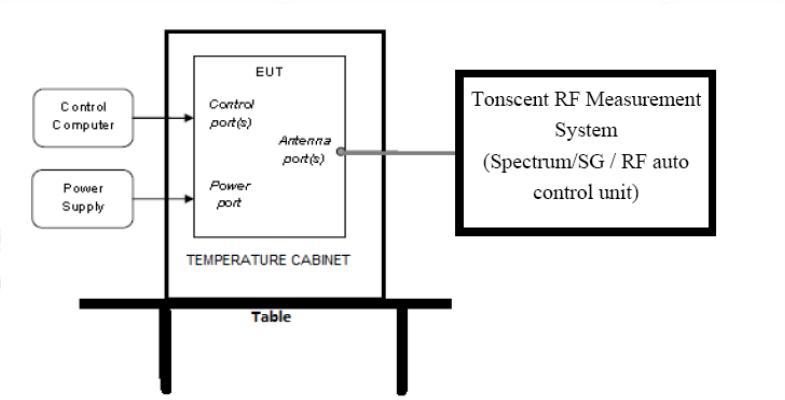
| Test Item | Uncertainty |
|---|---|
| Bandwidth | 1.1% |
| Peak Output Power (Conducted) (Spectrum analyzer) | 0.86 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.38 dB (3.6 GHz ≤ f < 8 GHz) |
| Peak Output Power (Conducted) (Power Sensor) | 0.74 dB |
| Power Spectral Density | 0.74 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.38 dB (3.6 GHz ≤ f < 8 GHz) |
| Frequencies Stability | $6.7 \times 10^{-8}$ (Antenna couple method) |
| | $5.5 \times 10^{-8}$ (Conducted method) |
| Conducted spurious emissions | 0.86 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.40 dB (3.6 GHz ≤ f < 8 GHz) |
| | 1.66 dB (8 GHz ≤ f < 26.5 GHz) |
| Uncertainty for radio frequency (RBW < 20 kHz) | $3 \times 10^{-8}$ |
| Temperature | 0.4 ℃ |
| Humidity | 2 % |
| Uncertainty for Radiation Emission test (9 kHz – 30 MHz) | 3.44 dB |
| Uncertainty for Radiation Emission test (30 MHz - 1 GHz) | 4.70 dB (Antenna Polarize: V) |
| | 4.84 dB (Antenna Polarize: H) |
| Uncertainty for Radiation Emission test (1 GHz - 40 GHz) | 4.10 dB (1 - 6 GHz) |
| | 4.40 dB (6 GHz - 18 GHz) |
| | 3.54 dB (18 GHz - 26 GHz) |
| | 4.30 dB (26 GHz - 40 GHz) |
| Uncertainty for Power line conduction emission test | 3.34dB (150KHz-30MHz) |
| | 3.72dB (9KHz-150KHz) |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. | |

# 3. Equipment Used During Test

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| **☒RF Connected Test (Tonscend RF Measurement System 3#)** | | | | | |
| Signal &Spectrum analyzer | R&S | FSV3044 | 101173 | Apr. 13, 2022 | 1 Year |
| **☒Radiation 3#chamber** | | | | | |
| EMI Test Receiver | R&S | ESU26 | 100472 | May 19, 2022 | 1 Year |
| Spectrum analyzer | Agilent | E4447A | MY50180031 | May 17, 2022 | 1 Year |
| Active Loop antenna | Schwarzbeck | FMZB-1519 | 1519-038 | Sep. 29, 2022 | 1 Year |
| Trilog Broadband Antenna | Schwarzbeck | VULB 9163 | 01429 | Jul. 22, 2022 | 1 Year |
| Double Ridged Horn Antenna | Schwarzbeck | BBHA9120 D | 02468 | Sep. 29, 2022 | 1 Year |
| Broad Band Horn Antenna | Schwarzbeck | BBHA 9170 | 790 | May 06, 2022 | 1 Year |
| Pre-amplifier | COM-POWER | PAM-118A | 18040084 | Aug.17, 2022 | 1 Year |
| Pre-amplifier | COM-POWER | PAM-840A | 461369 | Apr. 11, 2022 | 1 Year |
| RE Cable | N/A | W23.02 CP1-X2 + W23.09 AP1-X8+ JCT26S-NJ-NJ-1.5M+ JCT26S-NJ-NJ-1.5M | 4.5M+8M+1.5M+1.5M | Aug.17, 2022 | 1 Year |
| RF Cable | Yuhu Technology | JCTB810-NJ-NJ-9M | 21123964 | May. 19, 2022 | 1 Year |
| RF Cable | Yuhu Technology | ZT26S-SMAJ-SMAJ-1M | 21073466 | Aug.17, 2022 | 1 Year |
| Test software | Tonscend | JS32-RE | V 5.0.0.1 | N/A | N/A |
| Test software | Audix | E3 | V 6.1.1.1 | N/A | N/A |

# 4. 20 dB Bandwidth and 99% Bandwidth

## 4.1. Block diagram of test setup




## 4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

## 4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

| | |
|---|---|
| RBW: | 1%-5% of the OBW |
| VBW: | approximately three times RBW |
| Detector Mode: | Peak |
| Sweep time: | auto |
| Trace mode | Max hold |

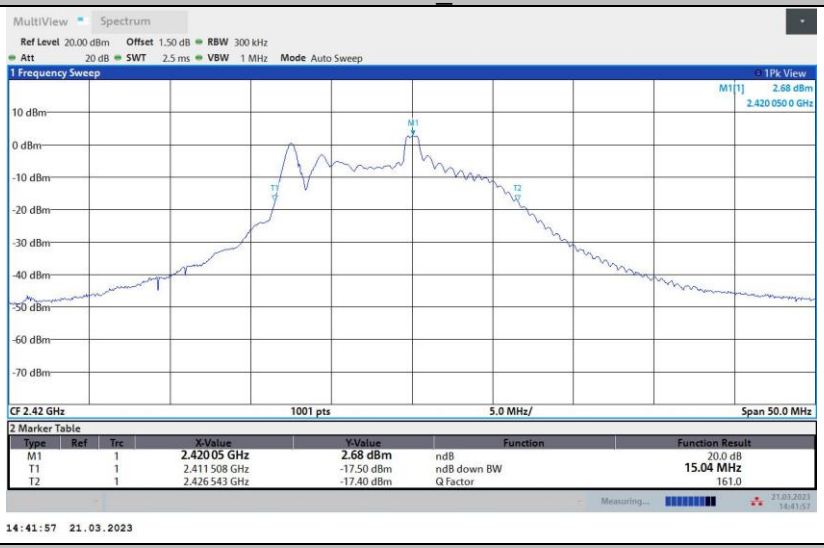
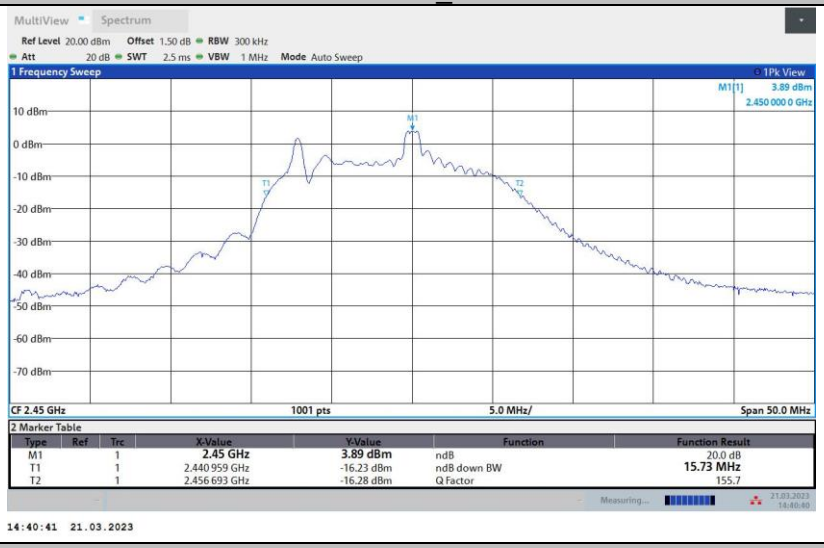
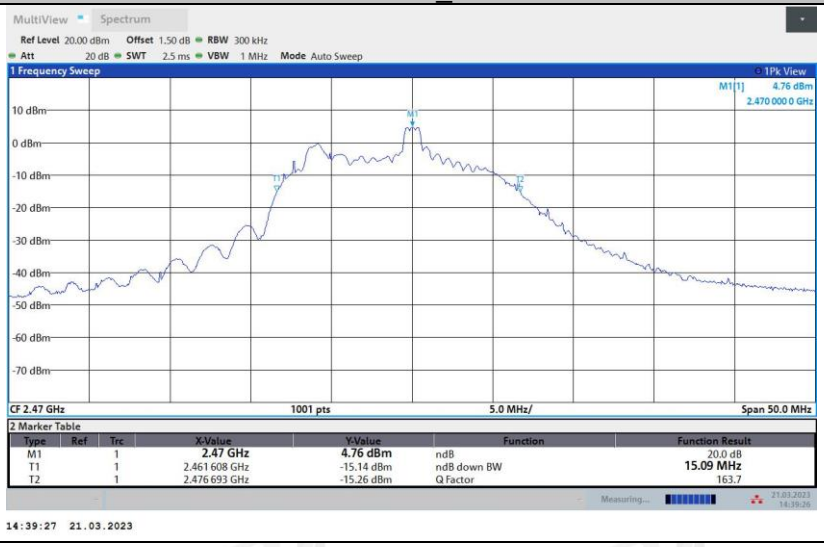
(3) Allow the trace to stabilize, measure the 20 dB and 99% bandwidth of signal.

## 4.4. Test result

| Test Mode | Freq. (MHz) | 20 dB bandwidth Result (MHz) | 99% bandwidth Result (MHz) | Verdict |
|---|---|---|---|---|
| GFSK Tx mode | 2420 | 15.04 | 15.12 | Pass |
| | 2450 | 15.73 | 15.88 | Pass |
| | 2470 | 15.09 | 15.19 | Pass |

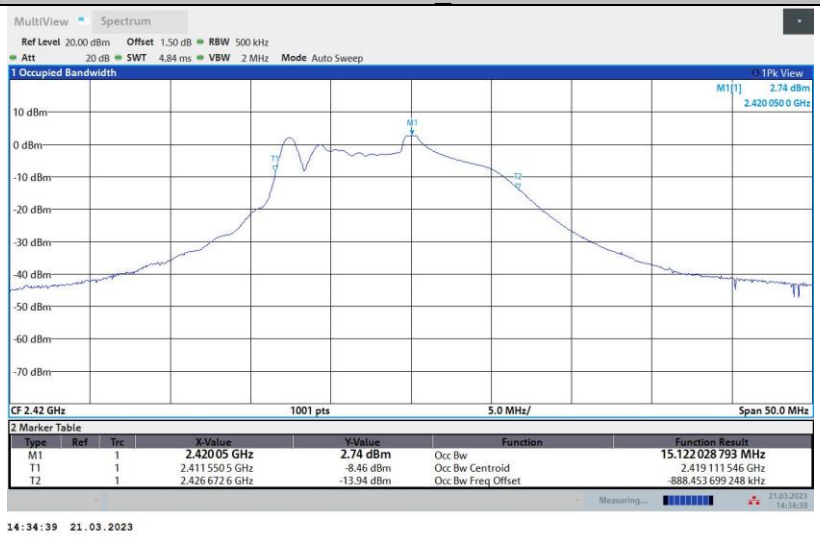
## 4.5. Original test data

20dB bandwidth:

| GFSK Tx mode_2420 MHz |
|---|
|  |
| GFSK Tx mode_2450 MHz |
|  |
| GFSK Tx mode_2470 MHz |
|  |

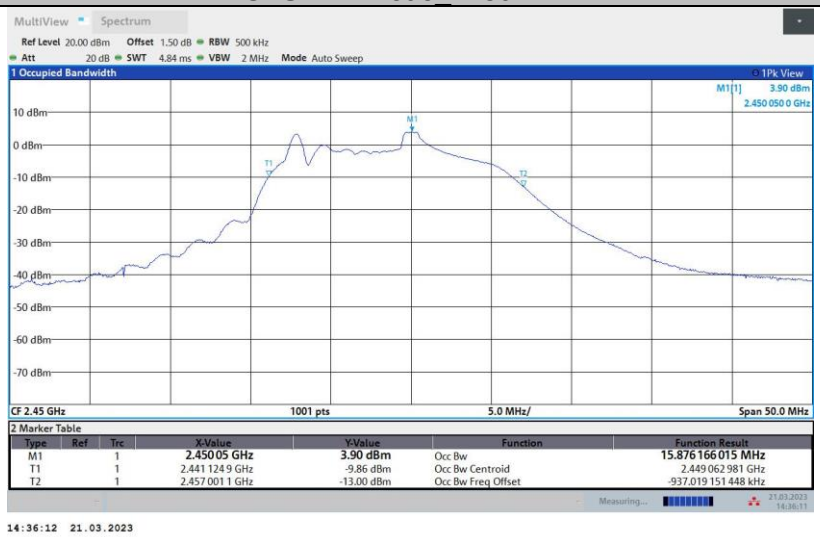
99% bandwidth:

GFSK Tx mode_2420 MHz



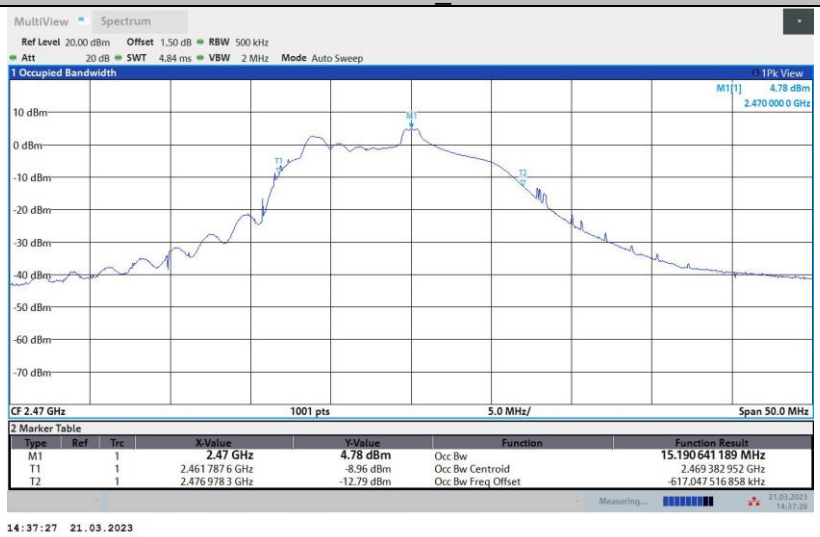

14:34:39 21.03.2023

GFSK Tx mode_2450 MHz




14:36:12 21.03.2023

GFSK Tx mode_2470 MHz

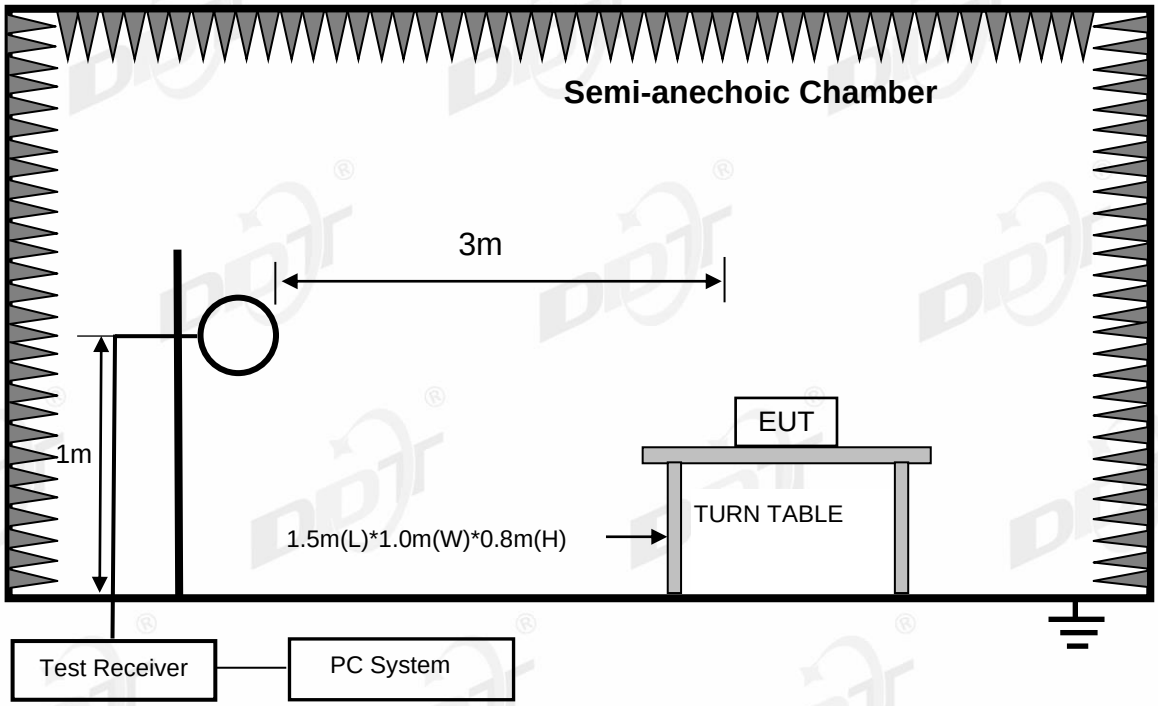



14:37:27 21.03.2023

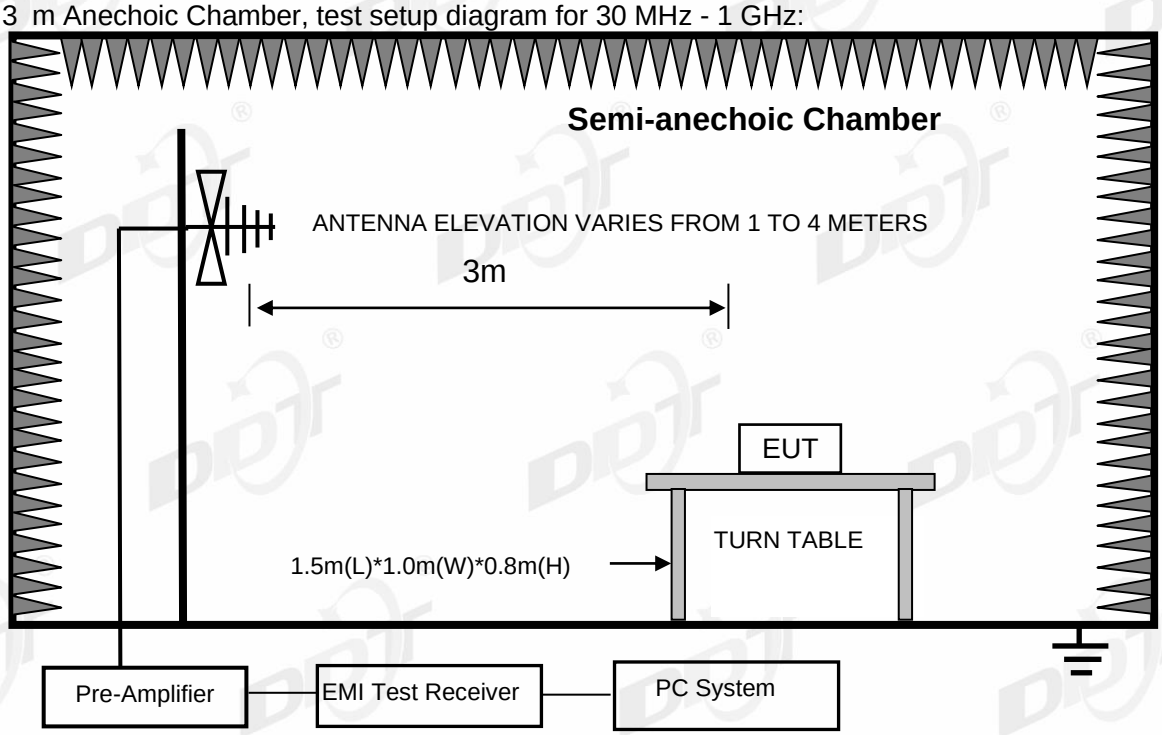
# 5. Radiated Emission

## 5.1. Block diagram of test setup

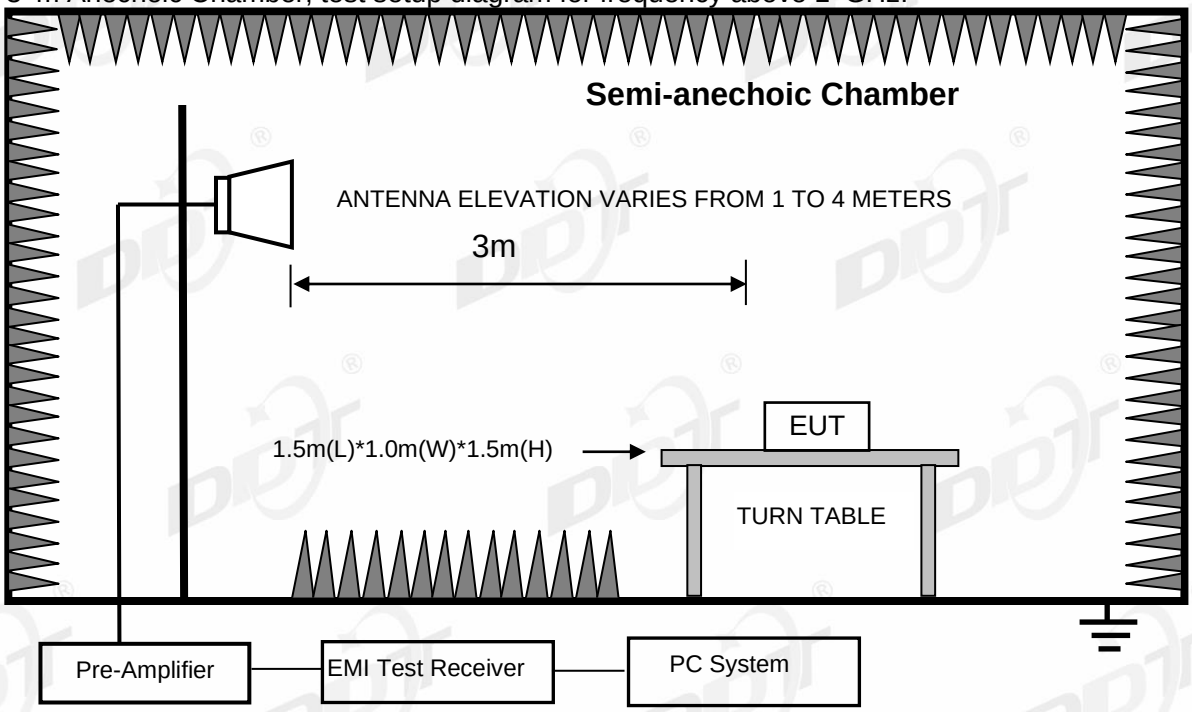
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:




In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:




Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

## 5.2. Limit

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMIT | |
|---|---|---|---|
| | | μV/m | dB(μV)/m |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| 960 ~ 1000 | 3 | 500 | 54.0 |
| Above 1000 MHz | 3 | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) | |
| Field Strength of Fundamental emission for 2.4GHz -2.4835GHz | 3 | 94.0 dB(μV)/m (Average)<br>114.0 dB(μV)/m (Peak) | |
| Field Strength of Harmonics | 3 | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) | |

Remark:

(1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz, radiated emission limits in these three bands are based on measurements employing an average detector.

## 5.3. Test procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.

(2) Setup EUT and assistant system according clause 2.3

(3) Test antenna was located 3 m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.

(a) Change work frequency or channel of device if practicable.

(b) Change modulation type of device if practicable.

(c) Change power supply range from 85% to 115% of the rated supply voltage

(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions

(4) Spectrum frequency from 9 kHz to 40 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.

(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(6) For emissions from 30 MHz to 1 GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.

(7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; according ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

(8) For fundamental frequency test, set spectrum analyzer’s RBW = 3 MHz, VBW = 10 MHz. Peak detector for PK, according ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

## 5.4. Test result

**Pass. (See below detailed test result)**

All the emissions except fundamental emission from 9 kHz to 40 GHz were comply with 15.209 limit.

Note1: According exploratory test no any obvious emission was detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

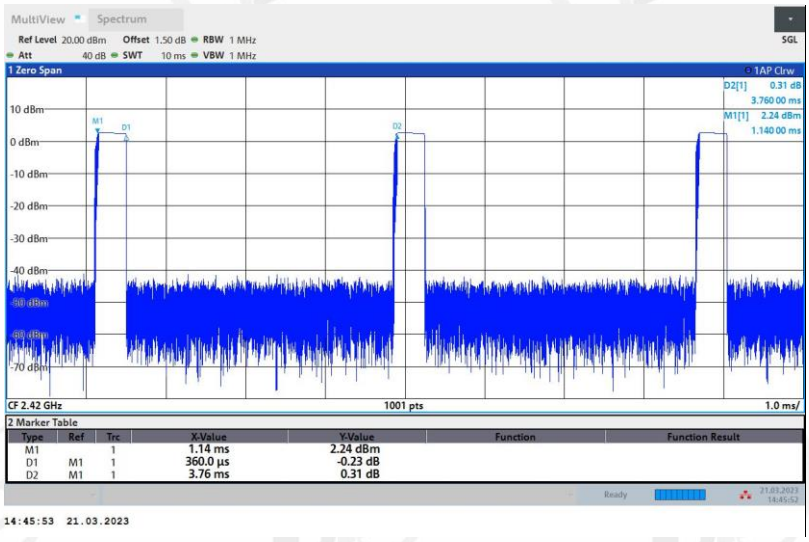
## Field Strength of the Fundamental Signal

| Frequency (MHz) | PK Level (dBuV/m) | PK Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|
| 2420 | 107.34 | 114.00 | -6.66 | Horizontal |
| 2450 | 108.84 | 114.00 | -5.16 | Horizontal |
| 2470 | 108.95 | 114.00 | -5.05 | Horizontal |
| 2420 | 92.63 | 114.00 | -21.37 | Vertical |
| 2450 | 91.94 | 114.00 | -22.06 | Vertical |
| 2470 | 92.09 | 114.00 | -21.91 | Vertical |

| Frequency (MHz) | AV Level (dBuV/m) | AV Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|
| 2420 | 88.01 | 94.00 | -5.99 | Horizontal |
| 2450 | 89.51 | 94.00 | -4.49 | Horizontal |
| 2470 | 89.62 | 94.00 | -4.38 | Horizontal |
| 2420 | 73.30 | 94.00 | -20.7 | Vertical |
| 2450 | 72.61 | 94.00 | -21.39 | Vertical |
| 2470 | 72.76 | 94.00 | -21.24 | Vertical |

Note 1: Final level = Reading + Cable Loss + Antenna Factor + AMP
Note 2: Average value=Peak value + PDCF, since the PDCF<-20dB, so the Average value is complied with the AV limit.

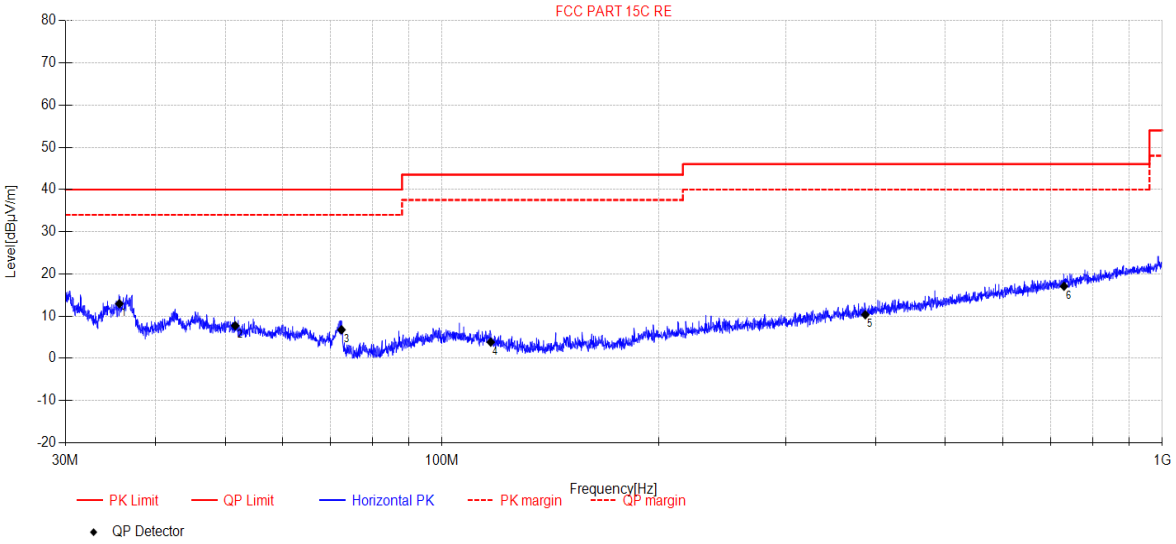
| **Average value:** | |
|---|---|
| Calculate Formula: | Average value=Peak value + PDCF |
| | PDCF=20 log(Duty cycle) |
| | Duty cycle= T on time / T period |
| Test data: | T on time =0.36*30ms |
| | T period =100ms |
| | PDCF=-19.33 |



## Radiated Emission test (below 1 GHz)

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC BELOW 1G\20230320-194844_H | | |
| **Memo**: | 2420MHz | | |

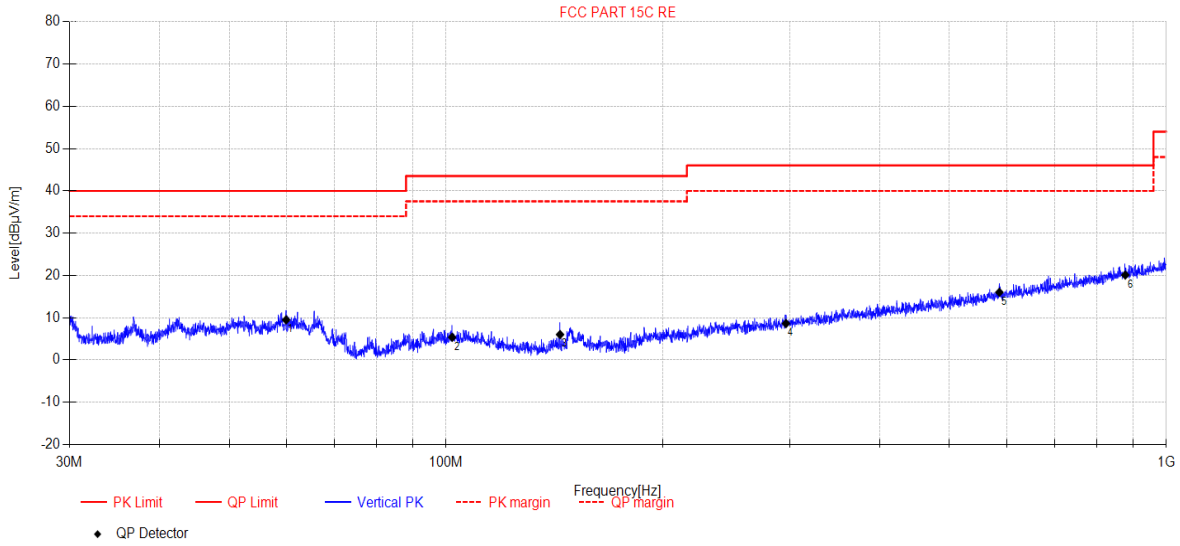



| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV/m]** | **Antenna Factor [dB]** | **Cable Loss [dB]** | **AMP [dB]** | **Result [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 35.65 | 33.49 | 11.09 | 0.66 | -32.29 | 12.95 | 40.00 | 27.05 | QP | Horizontal |
| 2 | 51.62 | 26.15 | 13.04 | 0.83 | -32.28 | 7.74 | 40.00 | 32.26 | QP | Horizontal |
| 3 | 72.53 | 30.22 | 7.74 | 1.08 | -32.26 | 6.78 | 40.00 | 33.22 | QP | Horizontal |
| 4 | 116.84 | 25.23 | 9.33 | 1.50 | -32.22 | 3.84 | 43.50 | 39.66 | QP | Horizontal |
| 5 | 386.98 | 24.74 | 15.14 | 2.81 | -32.35 | 10.34 | 46.00 | 35.66 | QP | Horizontal |
| 6 | 730.43 | 25.59 | 20.41 | 3.92 | -32.84 | 17.08 | 46.00 | 28.92 | QP | Horizontal |

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC BELOW 1G\20230320-194931_V | | |
| **Memo**: | 2420MHz | | |

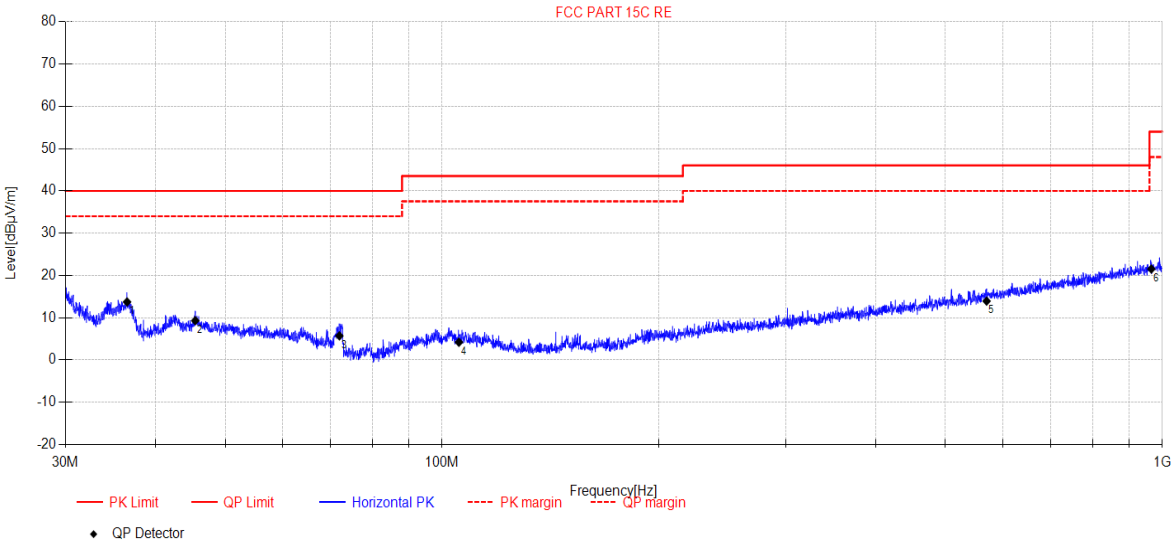



| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV/m]** | **Antenna Factor [dB]** | **Cable Loss [dB]** | **AMP [dB]** | **Result [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 59.98 | 28.94 | 11.90 | 0.93 | -32.27 | 9.50 | 40.00 | 30.50 | QP | Vertical |
| 2 | 101.98 | 25.2 | 11.00 | 1.41 | -32.24 | 5.37 | 43.50 | 38.13 | QP | Vertical |
| 3 | 143.99 | 29.15 | 7.40 | 1.66 | -32.19 | 6.02 | 43.50 | 37.48 | QP | Vertical |
| 4 | 296.46 | 25.36 | 13.16 | 2.42 | -32.31 | 8.63 | 46.00 | 37.37 | QP | Vertical |
| 5 | 586.49 | 26.79 | 18.43 | 3.49 | -32.69 | 16.02 | 46.00 | 29.98 | QP | Vertical |
| 6 | 877.11 | 25.79 | 22.30 | 4.37 | -32.36 | 20.10 | 46.00 | 25.90 | QP | Vertical |

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC BELOW 1G\20230320-195037_H | | |
| **Memo**: | 2450MHz | | |



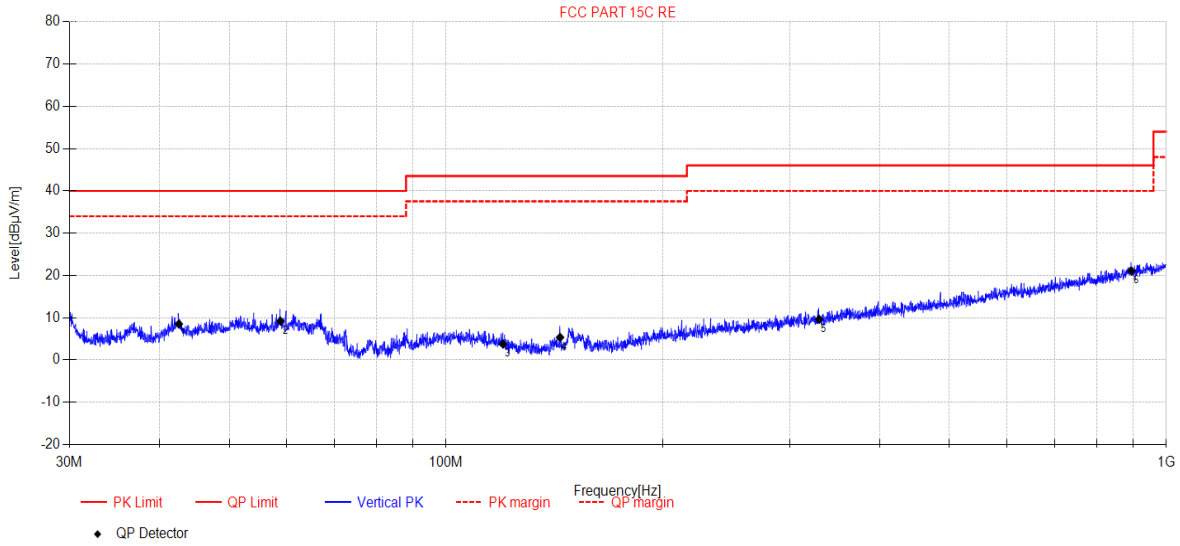

**Final Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36.53 | 33.99 | 11.36 | 0.67 | -32.29 | 13.73 | 40.00 | 26.27 | QP | Horizontal |
| 2 | 45.44 | 27.8 | 13.04 | 0.76 | -32.28 | 9.32 | 40.00 | 30.68 | QP | Horizontal |
| 3 | 72.02 | 29.01 | 7.89 | 1.07 | -32.26 | 5.71 | 40.00 | 34.29 | QP | Horizontal |
| 4 | 105.54 | 24.11 | 10.90 | 1.43 | -32.23 | 4.21 | 43.50 | 39.29 | QP | Horizontal |
| 5 | 570.27 | 24.98 | 18.20 | 3.42 | -32.66 | 13.94 | 46.00 | 32.06 | QP | Horizontal |
| 6 | 965.55 | 25.59 | 22.80 | 4.59 | -31.46 | 21.52 | 54.00 | 32.48 | QP | Horizontal |

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC BELOW 1G\20230320-195124_V | | |
| **Memo**: | 2450MHz | | |

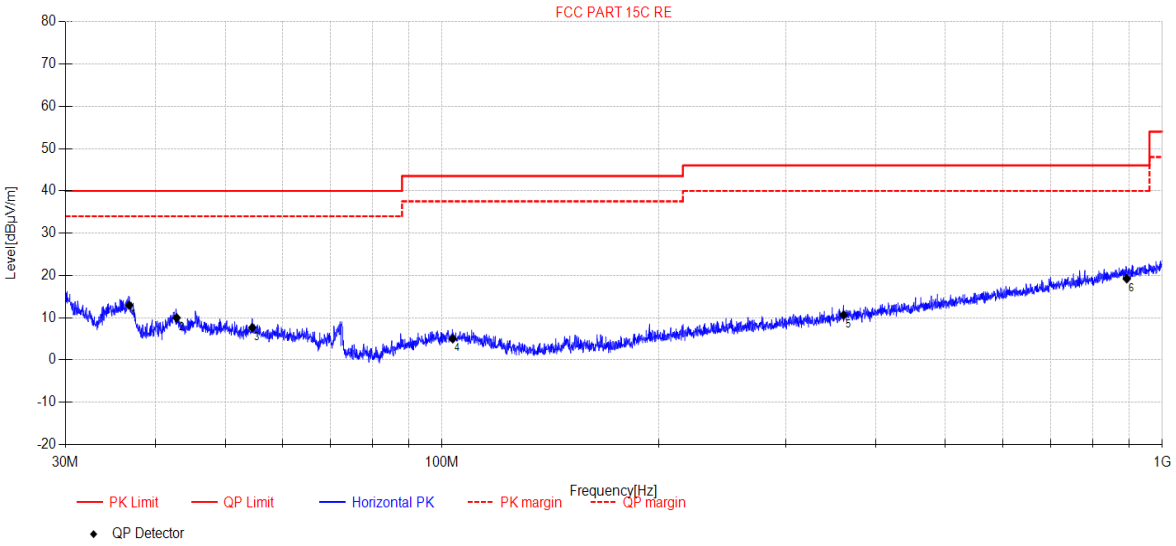



| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV/m]** | **Antenna Factor [dB]** | **Cable Loss [dB]** | **AMP [dB]** | **Result [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 42.57 | 27.46 | 12.61 | 0.73 | -32.28 | 8.52 | 40.00 | 31.48 | QP | Vertical |
| 2 | 58.89 | 28.45 | 12.11 | 0.91 | -32.27 | 9.20 | 40.00 | 30.80 | QP | Vertical |
| 3 | 119.99 | 25.77 | 8.70 | 1.52 | -32.22 | 3.77 | 43.50 | 39.73 | QP | Vertical |
| 4 | 143.99 | 28.48 | 7.40 | 1.66 | -32.19 | 5.35 | 43.50 | 38.15 | QP | Vertical |
| 5 | 329.57 | 25.31 | 14.09 | 2.56 | -32.33 | 9.63 | 46.00 | 36.37 | QP | Vertical |
| 6 | 894.50 | 26.51 | 22.40 | 4.41 | -32.26 | 21.06 | 46.00 | 24.94 | QP | Vertical |

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC BELOW 1G\20230320-194651_H | | |
| **Memo**: | 2470MHz | | |



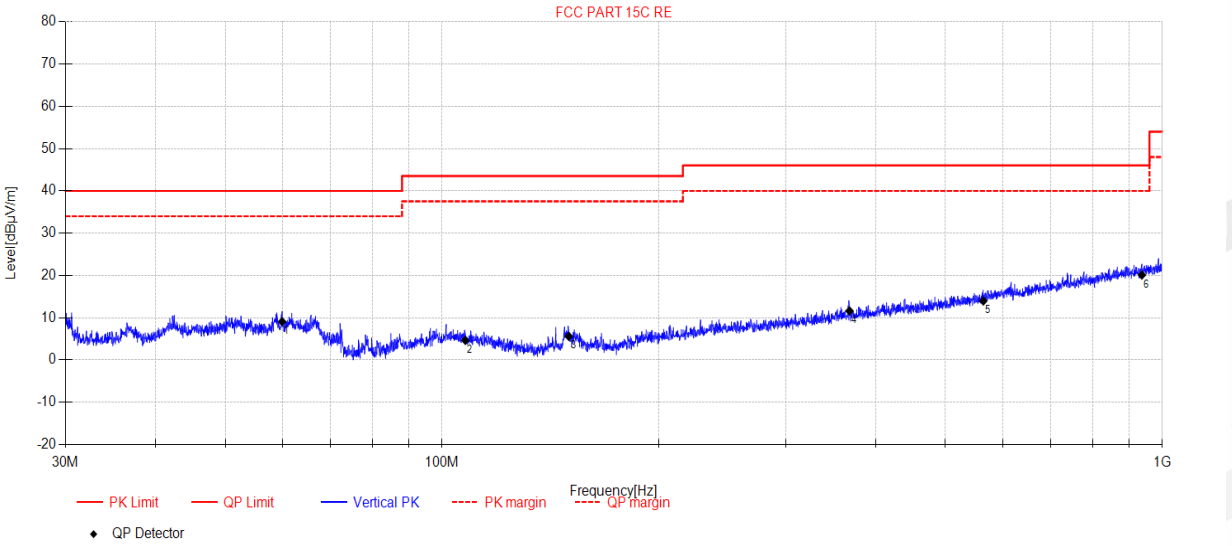

**Final Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36.79 | 33.12 | 11.44 | 0.67 | -32.29 | 12.94 | 40.00 | 27.06 | QP | Horizontal |
| 2 | 42.81 | 28.86 | 12.66 | 0.74 | -32.28 | 9.98 | 40.00 | 30.02 | QP | Horizontal |
| 3 | 54.52 | 26.33 | 12.75 | 0.86 | -32.28 | 7.66 | 40.00 | 32.34 | QP | Horizontal |
| 4 | 103.49 | 24.83 | 11.00 | 1.42 | -32.24 | 5.01 | 43.50 | 38.49 | QP | Horizontal |
| 5 | 361.03 | 25.5 | 14.80 | 2.70 | -32.34 | 10.66 | 46.00 | 35.34 | QP | Horizontal |
| 6 | 892.62 | 24.67 | 22.40 | 4.41 | -32.27 | 19.21 | 46.00 | 26.79 | QP | Horizontal |

Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E 64000032\FCC BELOW 1G\20230320-194751_V | | |
| **Memo**: | 2470MHz | | |




| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV/m]** | **Antenna Factor [dB]** | **Cable Loss [dB]** | **AMP [dB]** | **Result [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 59.98 | 28.51 | 11.90 | 0.93 | -32.27 | 9.07 | 40.00 | 30.93 | QP | Vertical |
| 2 | 107.71 | 24.7 | 10.73 | 1.45 | -32.23 | 4.65 | 43.50 | 38.85 | QP | Vertical |
| 3 | 149.96 | 28.59 | 7.50 | 1.70 | -32.18 | 5.61 | 43.50 | 37.89 | QP | Vertical |
| 4 | 367.93 | 26.37 | 14.86 | 2.73 | -32.35 | 11.61 | 46.00 | 34.39 | QP | Vertical |
| 5 | 564.31 | 25.22 | 17.99 | 3.40 | -32.65 | 13.96 | 46.00 | 32.04 | QP | Vertical |
| 6 | 936.87 | 24.77 | 22.60 | 4.53 | -31.80 | 20.10 | 46.00 | 25.90 | QP | Vertical |

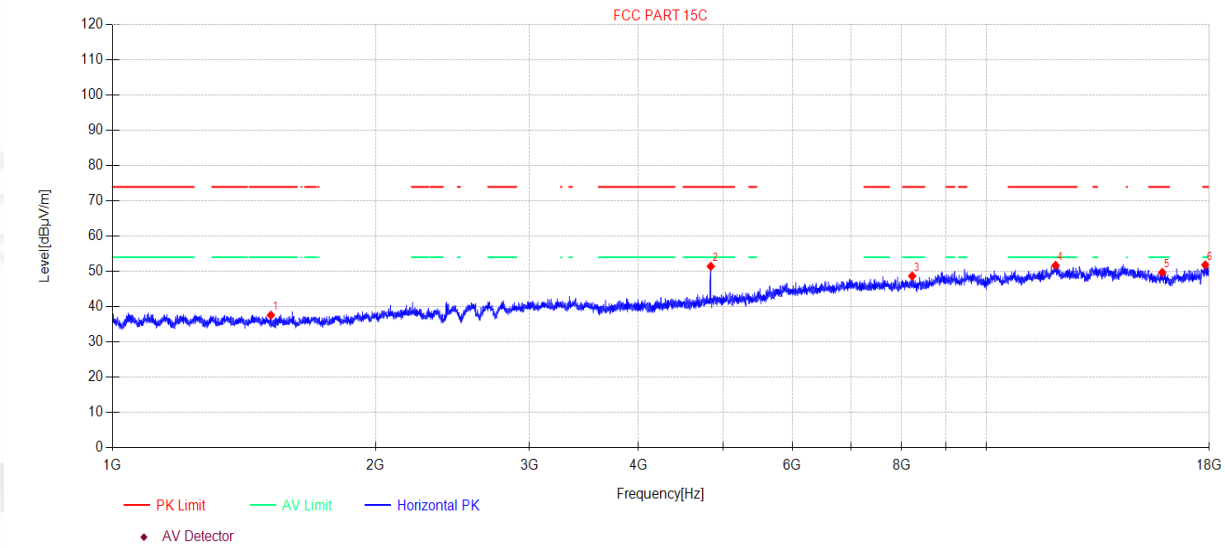
Note:
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

## Radiated Emission test (above 1 GHz)

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\7 | | |
| **Memo**: | 2420MHz | | |

**Test Graph**




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1518.34 | 47.50 | 3.60 | 25.46 | -38.98 | 37.58 | 74.00 | 36.42 | PK | Horizontal |
| 2 | 4839.59 | 54.13 | 6.00 | 32.46 | -41.15 | 51.44 | 74.00 | 22.56 | PK | Horizontal |
| 3 | 8227.22 | 45.15 | 7.07 | 37.10 | -40.64 | 48.68 | 74.00 | 25.32 | PK | Horizontal |
| 4 | 12006.78 | 43.30 | 8.39 | 38.91 | -38.91 | 51.69 | 74.00 | 22.31 | PK | Horizontal |
| 5 | 15901.08 | 41.70 | 10.22 | 38.10 | -40.33 | 49.69 | 74.00 | 24.31 | PK | Horizontal |
| 6 | 17813.69 | 40.11 | 11.75 | 40.60 | -40.63 | 51.83 | 74.00 | 22.17 | PK | Horizontal |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

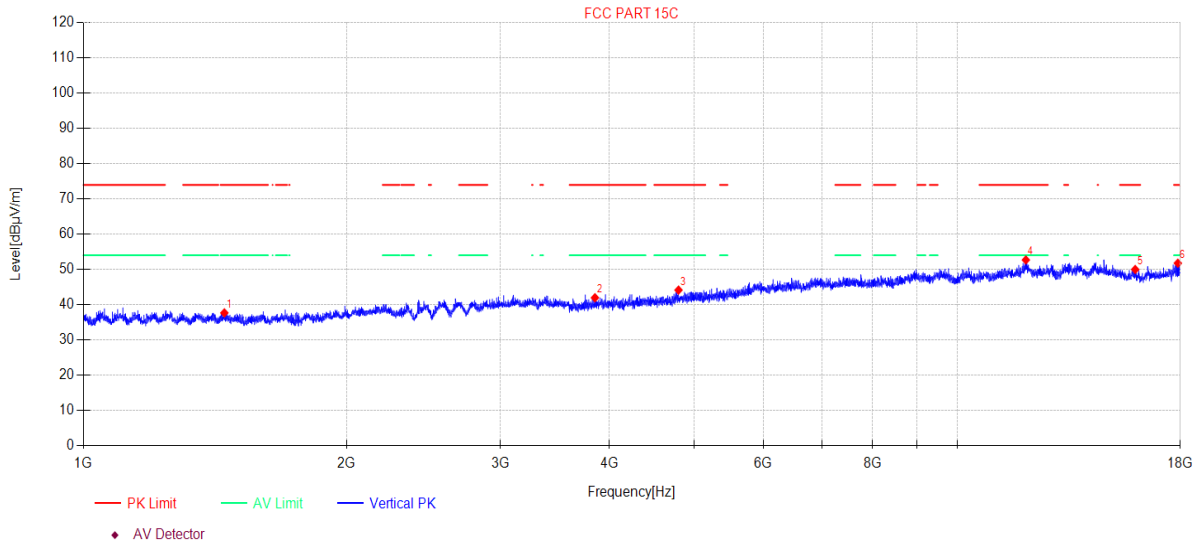
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\8

**Memo**: 2420MHz

**Test Graph**




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 1449.73 | 47.45 | 3.49 | 25.60 | -38.87 | 37.67 | 74.00 | 36.33 | PK | Vertical |
| 2 | 3849.47 | 47.22 | 5.65 | 30.40 | -41.31 | 41.96 | 74.00 | 32.04 | PK | Vertical |
| 3 | 4797.81 | 47.01 | 5.99 | 32.29 | -41.16 | 44.13 | 74.00 | 29.87 | PK | Vertical |
| 4 | 11982.51 | 44.36 | 8.37 | 38.88 | -38.93 | 52.68 | 74.00 | 21.32 | PK | Vertical |
| 5 | 15984.02 | 42.19 | 10.25 | 37.93 | -40.39 | 49.98 | 74.00 | 24.02 | PK | Vertical |
| 6 | 17885.92 | 39.46 | 11.85 | 41.10 | -40.65 | 51.76 | 74.00 | 22.24 | PK | Vertical |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

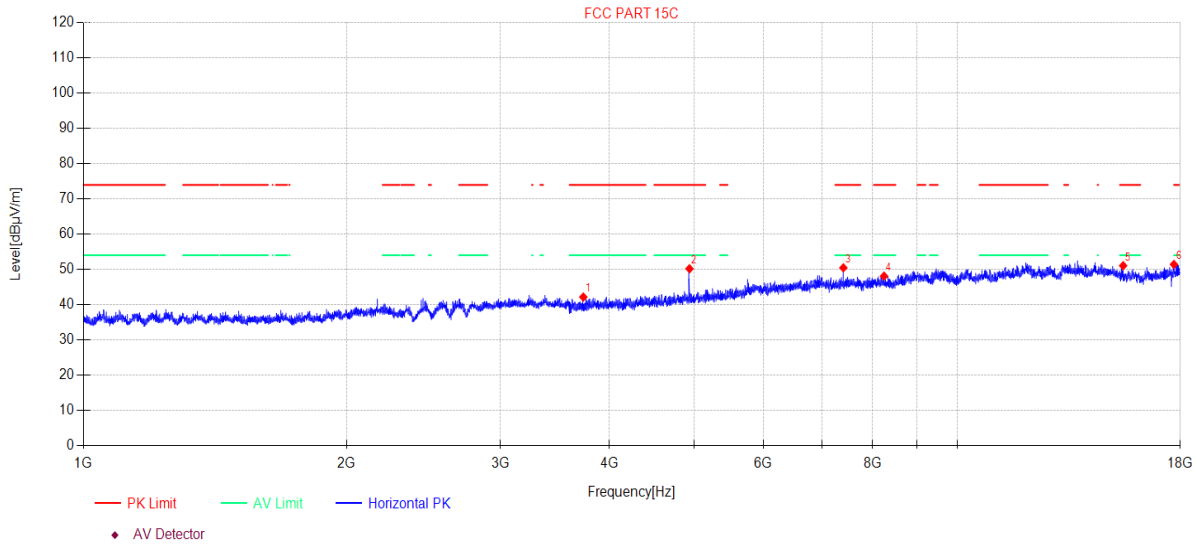
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\9

**Memo**: 2450MHz

**Test Graph**



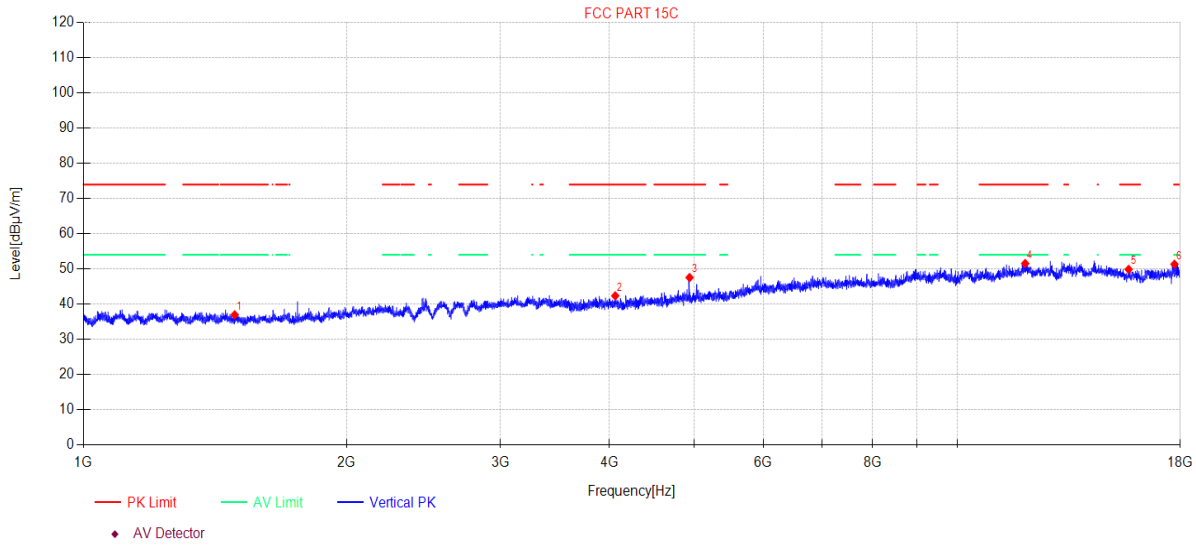

| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 3733.33 | 47.73 | 5.59 | 30.07 | -41.24 | 42.15 | 74.00 | 31.85 | PK | Horizontal |
| 2 | 4938.49 | 52.53 | 6.03 | 32.75 | -41.12 | 50.19 | 74.00 | 23.81 | PK | Horizontal |
| 3 | 7407.84 | 47.78 | 7.17 | 36.50 | -41.00 | 50.45 | 74.00 | 23.55 | PK | Horizontal |
| 4 | 8246.27 | 44.52 | 7.07 | 37.10 | -40.61 | 48.08 | 74.00 | 25.92 | PK | Horizontal |
| 5 | 15483.86 | 42.45 | 10.03 | 38.62 | -40.04 | 51.06 | 74.00 | 22.94 | PK | Horizontal |
| 6 | 17700.79 | 40.58 | 11.60 | 39.81 | -40.58 | 51.41 | 74.00 | 22.59 | PK | Horizontal |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\10 | | |
| **Memo**: | 2450MHz | | |

**Test Graph**




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1489.65 | 46.82 | 3.55 | 25.52 | -38.93 | 36.96 | 74.00 | 37.04 | PK | Vertical |
| 2 | 4060.89 | 47.16 | 5.75 | 30.82 | -41.38 | 42.35 | 74.00 | 31.65 | PK | Vertical |
| 3 | 4939.92 | 49.88 | 6.03 | 32.76 | -41.12 | 47.55 | 74.00 | 26.45 | PK | Vertical |
| 4 | 11961.75 | 43.27 | 8.37 | 38.86 | -38.96 | 51.54 | 74.00 | 22.46 | PK | Vertical |
| 5 | 15709.24 | 41.65 | 10.13 | 38.29 | -40.20 | 49.87 | 74.00 | 24.13 | PK | Vertical |
| 6 | 17726.39 | 40.31 | 11.63 | 39.98 | -40.59 | 51.33 | 74.00 | 22.67 | PK | Vertical |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

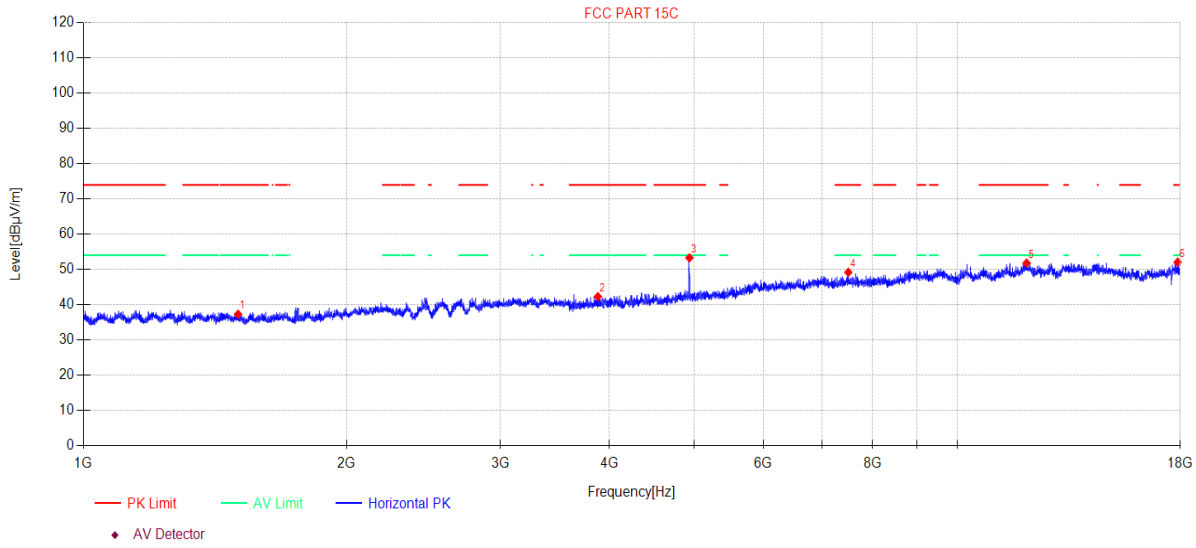
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\5

**Memo**: 2470MHz

**Test Graph**




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 1503.06 | 47.15 | 3.58 | 25.49 | -38.95 | 37.27 | 74.00 | 36.73 | PK | Horizontal |
| 2 | 3879.62 | 47.47 | 5.66 | 30.46 | -41.33 | 42.26 | 74.00 | 31.74 | PK | Horizontal |
| 3 | 4937.06 | 55.63 | 6.03 | 32.75 | -41.12 | 53.29 | 74.00 | 20.71 | PK | Horizontal |
| 4 | 7504.81 | 46.62 | 7.15 | 36.40 | -41.00 | 49.17 | 74.00 | 24.83 | PK | Horizontal |
| 5 | 12006.78 | 43.40 | 8.39 | 38.91 | -38.91 | 51.79 | 74.00 | 22.21 | PK | Horizontal |
| 6 | 17875.58 | 39.86 | 11.83 | 41.03 | -40.65 | 52.07 | 74.00 | 21.93 | PK | Horizontal |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

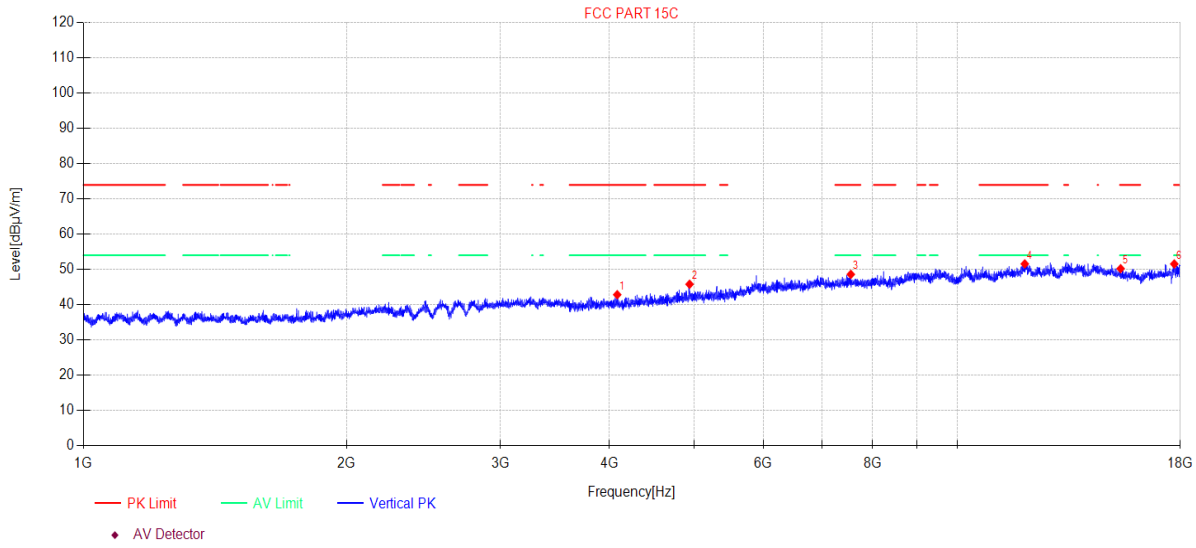
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\6

**Memo**: 2470MHz

**Test Graph**

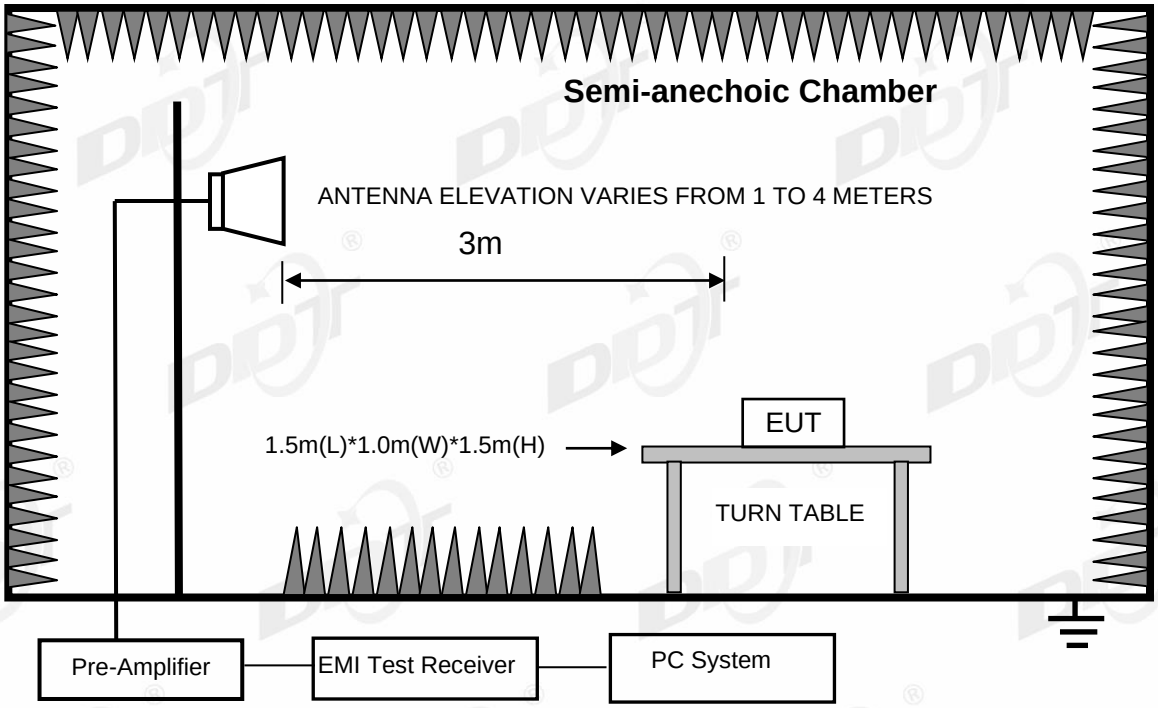



| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 4082.07 | 47.58 | 5.76 | 30.86 | -41.38 | 42.82 | 74.00 | 31.18 | PK | Vertical |
| 2 | 4939.92 | 48.12 | 6.03 | 32.76 | -41.12 | 45.79 | 74.00 | 28.21 | PK | Vertical |
| 3 | 7554.86 | 46.05 | 7.14 | 36.40 | -41.00 | 48.59 | 74.00 | 25.41 | PK | Vertical |
| 4 | 11947.93 | 43.33 | 8.36 | 38.85 | -38.98 | 51.56 | 74.00 | 22.44 | PK | Vertical |
| 5 | 15381.28 | 41.47 | 9.99 | 38.72 | -39.97 | 50.21 | 74.00 | 23.79 | PK | Vertical |
| 6 | 17716.14 | 40.60 | 11.62 | 39.91 | -40.59 | 51.54 | 74.00 | 22.46 | PK | Vertical |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# 6. Band Edge Compliance

## 6.1. Block diagram of test setup




## 6.2. Limit

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.

## 6.3. Test procedure

Same with clause 8.3 except change investigated frequency range from 2310MHz to 2430MHz and 2460MHz to 2500MHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

## 6.4. Test result

**Pass. (See below detailed test result)**

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

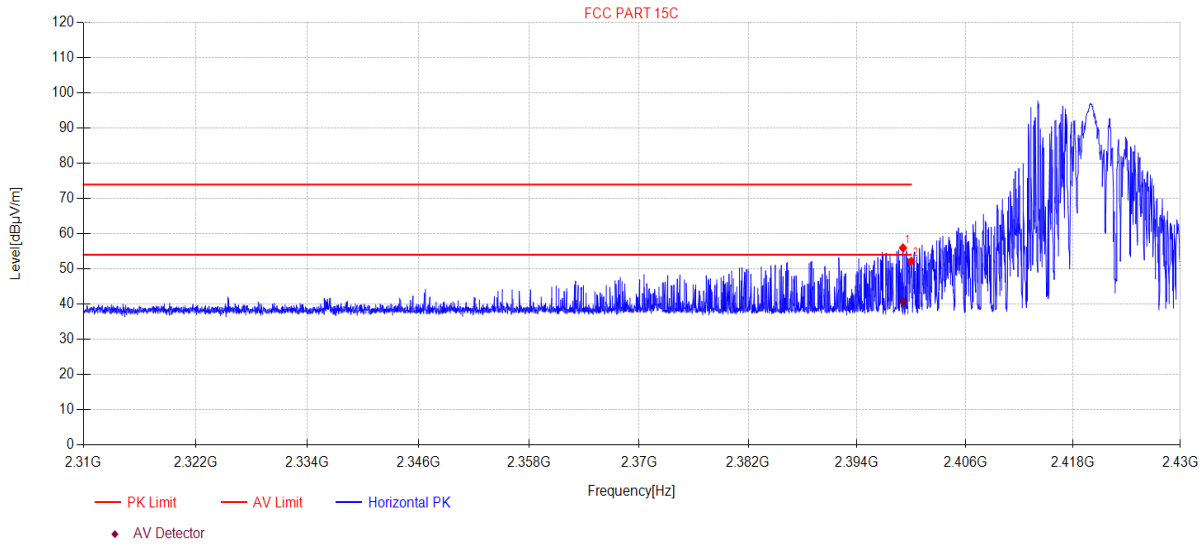
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\1

**Memo**: 2420MHz

**Test Graph**




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 2399.09 | 64.81 | 3.79 | 27.50 | -40.14 | 55.96 | 74.00 | 18.04 | PK | Horizontal |
| 2 | 2400.00 | 61.04 | 3.79 | 27.50 | -40.14 | 52.19 | 74.00 | 21.81 | PK | Horizontal |

| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 2399.09 | 49.51 | 3.79 | 27.50 | -40.14 | 40.66 | 54.00 | 13.34 | AV | Horizontal |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

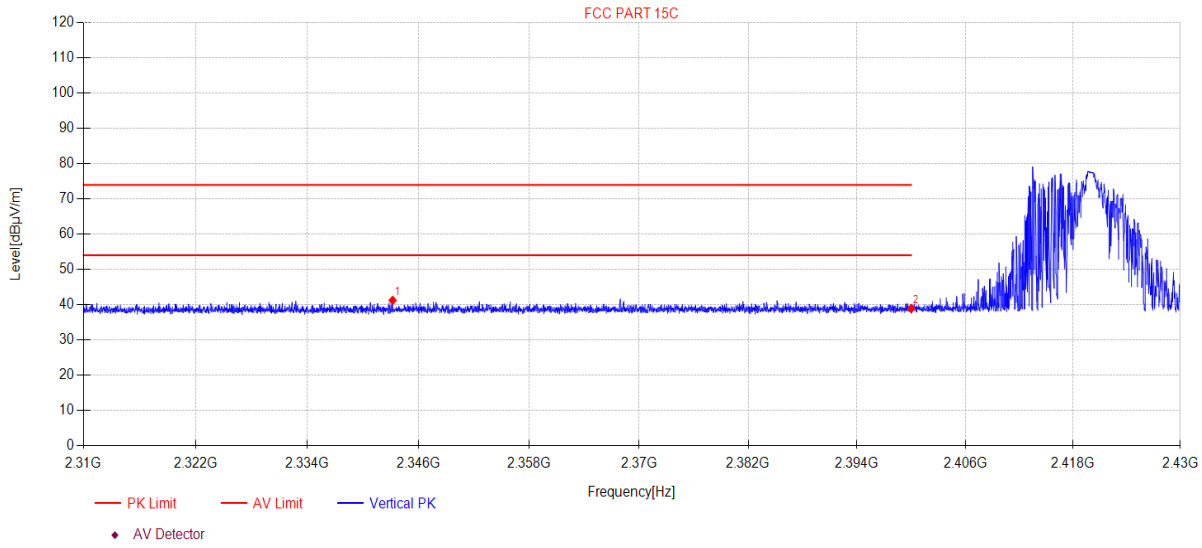
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\2

**Memo**: 2420MHz

**Test Graph**



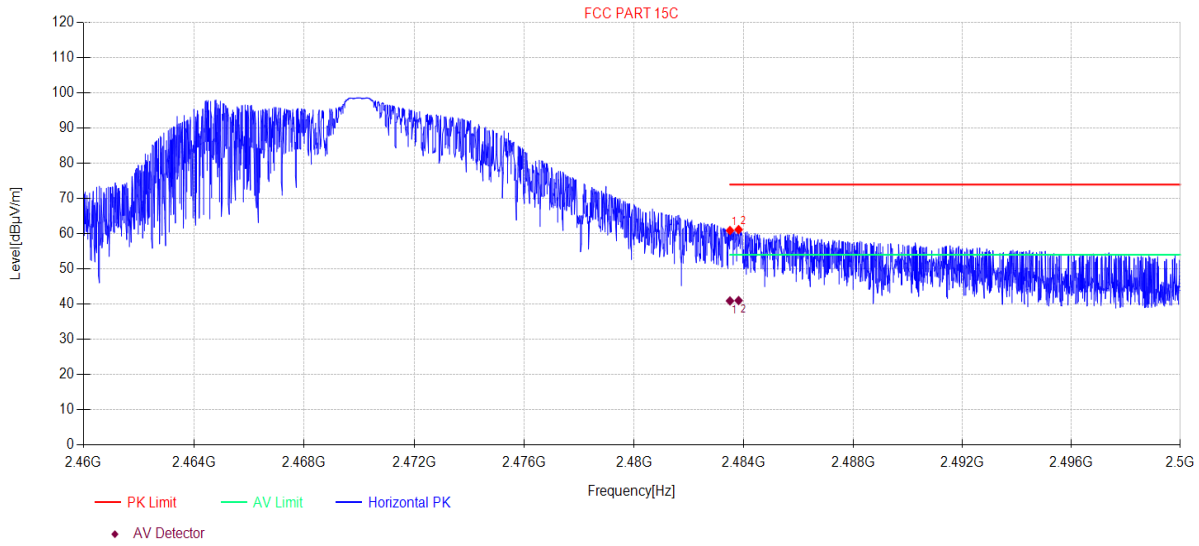

| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 2343.22 | 50.18 | 3.73 | 27.39 | -40.08 | 41.22 | 74.00 | 32.78 | PK | Vertical |
| 2 | 2400.00 | 47.76 | 3.79 | 27.50 | -40.14 | 38.91 | 74.00 | 35.09 | PK | Vertical |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

| | | | |
|---|---|---|---|
| **Test Date**: | 2023-03-20 | **Tested By**: | Bairong |
| **EUT**: | Remote control | **Model Number**: | GL031TX |
| **Test Mode**: | Tx mode | **Power Supply**: | Battery |
| **Condition**: | Temp:22.2°C;Humi:53.0% | **Test Site**: | DDT 3# Chamber |
| **File Path**: | d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\3 | | |
| **Memo**: | 2470MHz | | |

**Test Graph**




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV]** | **Cable Loss [dB]** | **Antenna Factor [dB]** | **AMP [dB]** | **Level [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 2483.50 | 69.53 | 3.88 | 27.73 | -40.23 | 60.91 | 74.00 | 13.09 | PK | Horizontal |
| 2 | 2483.82 | 69.77 | 3.88 | 27.74 | -40.23 | 61.16 | 74.00 | 12.84 | PK | Horizontal |

| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **NO.** | **Freq. [MHz]** | **Reading [dBµV/m]** | **Cable Loss [dB]** | **Antenna Factor [dB]** | **AMP [dB]** | **Level [dBµV/m]** | **Limit [dBµV/m]** | **Margin [dB]** | **Detector** | **Polarity** |
| 1 | 2483.50 | 48.63 | 3.88 | 27.73 | -40.23 | 40.91 | 54.00 | 13.09 | AV | Horizontal |
| 2 | 2483.82 | 49.62 | 3.88 | 27.74 | -40.23 | 41.01 | 54.00 | 12.99 | AV | Horizontal |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date**: 2023-03-20 **Tested By**: Bairong

**EUT**: Remote control **Model Number**: GL031TX

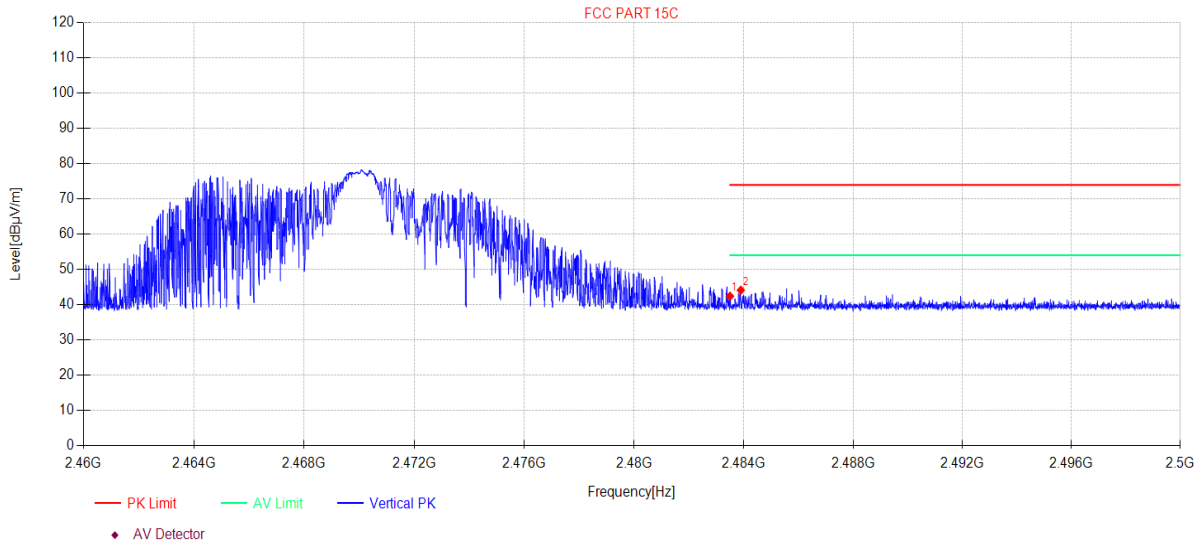
**Test Mode**: Tx mode **Power Supply**: Battery

**Condition**: Temp:22.2°C;Humi:53.0% **Test Site**: DDT 3# Chamber

**File Path**: d:\ts\2023 report date\Q23013005-1E GL031TX\FCC ABOVE 1G\4

**Memo**: 2470MHz

**Test Graph**

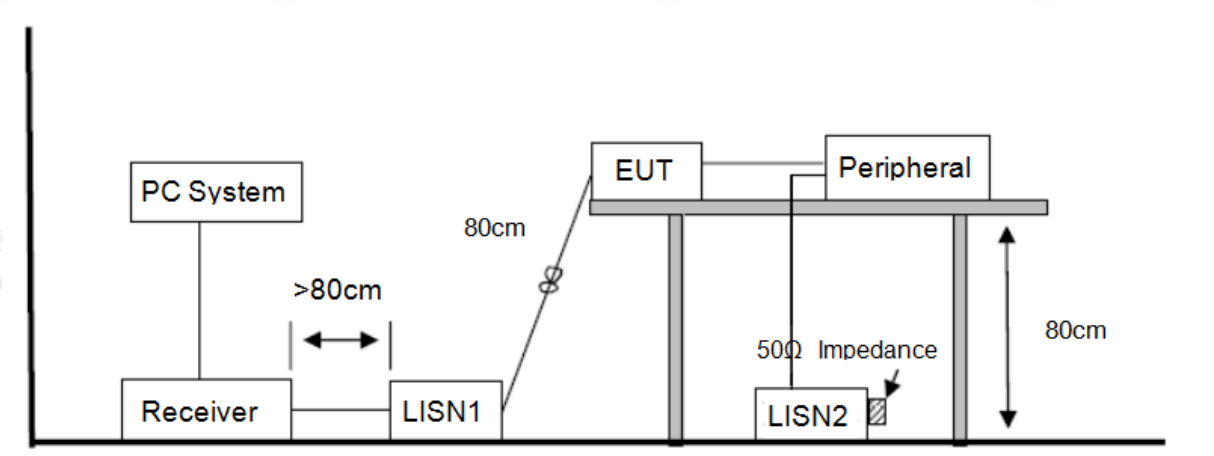



| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Cable Loss [dB] | Antenna Factor [dB] | AMP [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 2483.50 | 51.01 | 3.88 | 27.73 | -40.23 | 42.39 | 74.00 | 31.61 | PK | Vertical |
| 2 | 2483.90 | 52.71 | 3.88 | 27.74 | -40.23 | 44.10 | 74.00 | 29.90 | PK | Vertical |

Note:
1. Level = Reading + Cable Loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# 7. Power Line Conducted Emission

## 7.1. Block diagram of test setup




## 7.2. Power line conducted emission limits

| Frequency | Quasi-Peak Level dB(μV) | Average Level dB(μV) |
|---|---|---|
| 150 kHz ~ 500 kHz | 66 ~ 56* | 56 ~ 46* |
| 500 kHz ~ 5 MHz | 56 | 46 |
| 5 MHz ~ 30 MHz | 60 | 50 |

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

## 7.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80 cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 7.1 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.
The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

## 7.4. Test result

Not Applicable, since the EUT is only battery-operated device.

# 8. Antenna Requirements

## 8.1. Limit

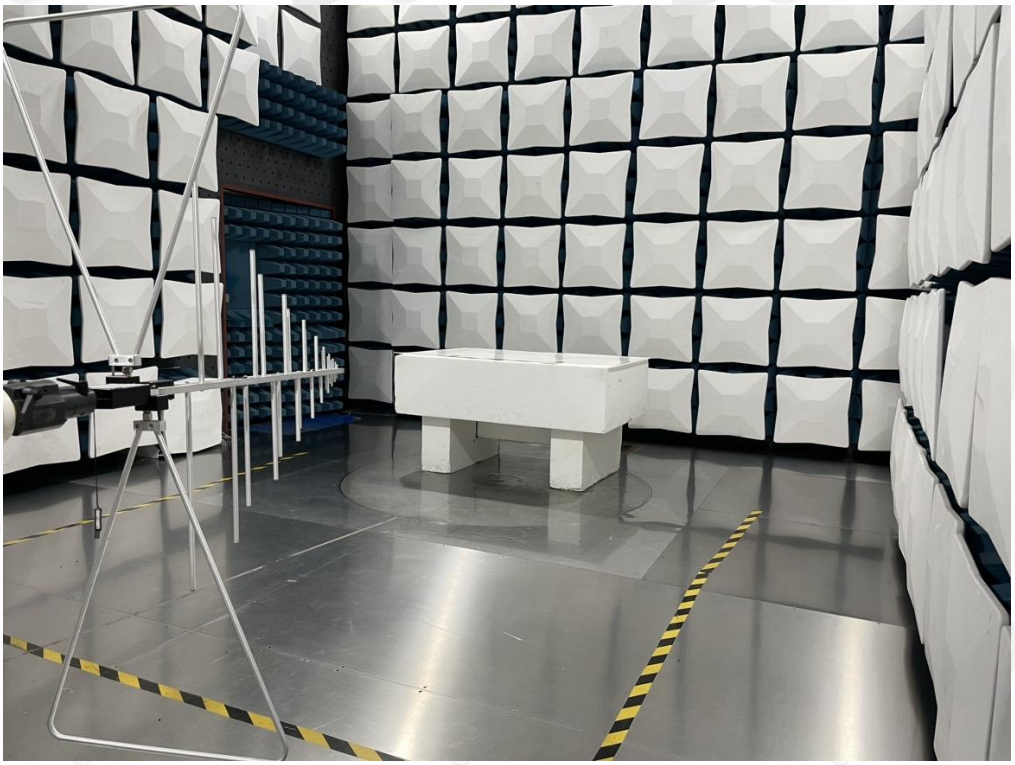
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

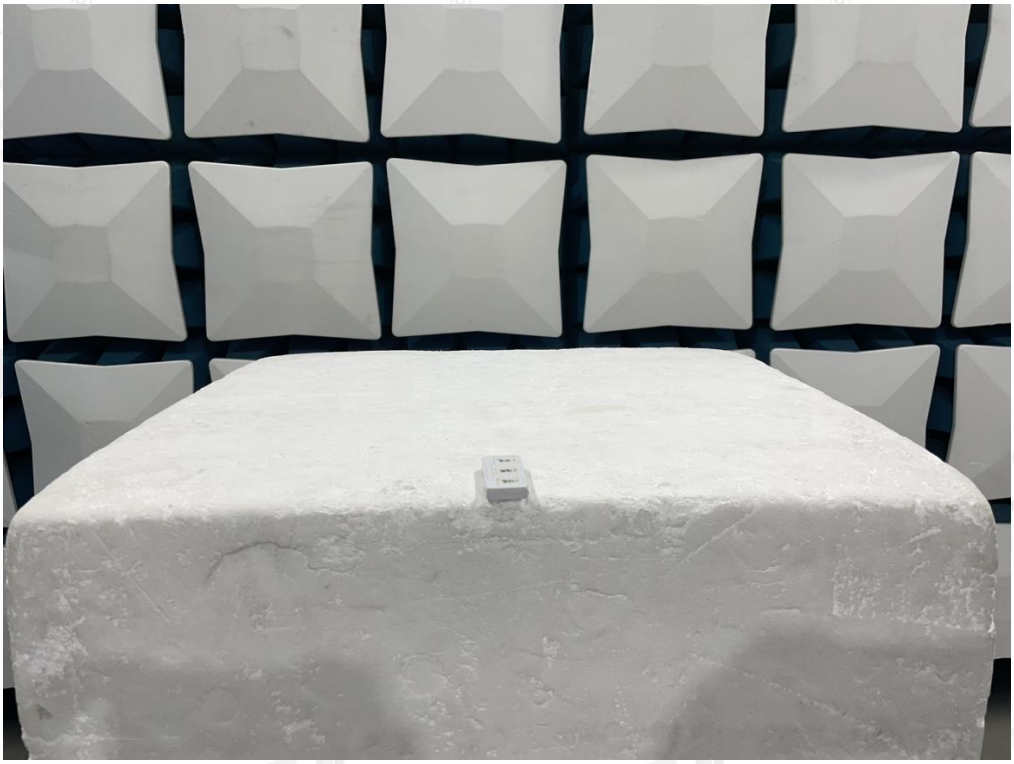
For intentional device, according to RSS-Gen issue 5 section 6.8.
The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

## 8.2. Result

The antenna used for this product is PCB antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is -0.58 dBi.

# 9. Test Setup Photograph





# 10. Photos of the EUT

Please refer to appendix I.

**END OF REPORT**