# FCC Test Report

| | |
|---|---|
| **Report No.:** | RFBAOZ-WTW-P22040585-3 |
| **FCC ID:** | 2AUIUWYZECOP |
| **Test Model:** | WYZECOP |
| **Received Date:** | 2022/4/19 |
| **Test Date:** | 2022/5/20 ~ 2022/9/20 |
| **Issued Date:** | 2022/12/26 |
| **Applicant:** | Wyze Labs, Inc |
| **Address:** | 5808 Lake Washington Blvd NE, Ste 300 Kirkland WA United States Of America |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory |
| **Lab Address:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan |
| **Test Location:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan |
| **FCC Registration / Designation Number:** | 723255 / TW2022 |

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

## Table of Contents

## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RFBAOZ-WTW-P22040585-3 | Original release. | 2022/12/26 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | Wyze Battery Cam Pro |
| **Brand:** | WYZE |
| **Test Model:** | WYZECOP |
| **Sample Status:** | Engineering sample |
| **Applicant:** | Wyze Labs, Inc |
| **Test Date:** | 2022/5/20 ~ 2022/9/20 |
| **Standards:** | 47 CFR FCC Part 15, Subpart C (Section 15.249)<br>ANSI C63.10: 2013 |

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** 2022/12/26

Claire Kuan / Specialist

**Approved by :** _____ , **Date:** 2022/12/26

May Chen / Manager

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (SECTION 15.249) | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 15.207 | AC Power Conducted Emission | Pass | Meet the requirement of limit. Minimum passing margin is -11.54 dB at 12.13672 MHz. |
| 15.209<br>15.249<br>15.249 (d) | Radiated Emission Test<br>Band Edge Measurement<br>Limit: 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 15.209 | Pass | Meet the requirement of limit. Minimum passing margin is -3.4 dB at 24250.00 MHz. |
| 15.215 (c) | 20dB Bandwidth | Pass | Meet the requirement of limit |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

Note:
Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expanded Uncertainty (k=2) (±) |
|---|---|---|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz | 1.9 dB |
| Radiated Emissions up to 1 GHz | 9 kHz ~ 30 MHz | 3.1 dB |
| | 30 MHz ~ 1 GHz | 5.4 dB |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz | 5.0 dB |
| | 18 GHz ~ 40 GHz | 5.3 dB |
| | 40 GHz ~ 100 GHz | 5.4 dB |

### 2.2 Modification Record

There were no modifications required for compliance.

## 3 General Information

### 3.1 General Description of EUT

| | |
|---|---|
| Product | Wyze Battery Cam Pro |
| Brand | WYZE |
| Test Model | WYZECOP |
| Status of EUT | Engineering sample |
| Power Supply Rating | 5Vdc from host equipment or 3.7Vdc from battery |
| Modulation Type | FMCW |
| Operating Frequency | 24.00~24.25 GHz |
| Number of Channel | 1 |
| Antenna Type | Refer to Note |
| Antenna Connector | Refer to Note |
| Accessory Device | Refer to Note |
| Cable Supplied | Refer to Note |

Note:

1. The EUT has below radios, as following table:

| Radio 1 | Radio 2 |
|---|---|
| WLAN (2.4GHz / 5GHz / Bluetooth) | 24GHz |

2. Simultaneously transmission condition.

| Condition | Technology | |
|---|---|---|
| 1 | WLAN 2.4GHz | 24GHz |
| 2 | WLAN 5GHz | 24GHz |
| 3 | Bluetooth | 24GHz |
| Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found. | | |

3. The following antennas were provided to the EUT.

| Antenna No. | Antenna Gain(dBi) | Frequency range | Antenna Type | Connector Type | Cable length (cm) |
|---|---|---|---|---|---|
| 1 | 2.43 | 2.4~2.4835GHz | Dipole | ipex(MHF) | 4 |
| | 3.48 | 5.15~5.85GHz | | | |
| 2 | 2 | 24~24.25GHz | Array | none | - |

4. Only radiated measurements are used to show compliance with FCC limits for fundamental and spurious emissions.

5. The EUT uses following accessories.

| Battery | | |
|---|---|---|
| Brand | Model | Specification |
| WYZE | WBAT1 | Power Rating : 3.7V, 6200mAh, 22.94Wh |
| USB Cable | | |
| Brand | Model | Specification |
| NETWORK GIANT LIMITED | A210017 | Signal Line : 0.6m, Shielded |

6. The EUT was pre-tested under the following modes:

| | |
|---|---|
| Pre-Scan: | 1. For AC Power Conducted Emissions items: Laptop/ AC Adapter. Pre-scan these modes and find the worst case as a representative test condition.<br>2. For Unwanted Emissions Below 1GHz items: Battery/ AC Adapter. Only these modes as a representative test condition. |
| Worst Case: | 1. For AC Power Conducted Emissions items the Laptop mode is the worst case of power supply.<br>2. For Unwanted Emissions Below 1GHz items the AC Adapter mode is the worst case of power supply.<br>3. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). |

7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
8. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

### 3.2 Description of Test Modes

Only the worst-case frequency is reported within the supported frequency range.

| Frequency (GHz) |
|---|
| 24.148 |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT CONFIGURE MODE | APPLICABLE TO | | | | DESCRIPTION |
|---|---|---|---|---|---|
| | RE≥1G | RE<1G | PLC | BW | |
| - | √ | √ | √ | √ | - |

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

**PLC:** Power Line Conducted Emission **BW:** 20dB Bandwidth Measurement

**Radiated Emission Test (Above 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| TESTED CHANNEL | MODULATION TYPE |
|---|---|
| 1 | FMCW |

**Radiated Emission Test (Below 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| TESTED CHANNEL | MODULATION TYPE |
|---|---|
| 1 | FMCW |

**Power Line Conducted Emission Test:**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| TESTED CHANNEL | MODULATION TYPE |
|---|---|
| 1 | FMCW |

**20dB Bandwidth Measurement:**

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| TESTED CHANNEL | MODULATION TYPE |
|---|---|
| 1 | FMCW |

## Test Condition:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| RE≥1G | 25deg. C, 65%RH<br>23deg. C, 62%RH | 120Vac, 60Hz (System) | Carter Lin |
| RE<1G | 20deg. C, 70%RH | 120Vac, 60Hz (System) | Ryan Du |
| PLC | 21deg. C, 62%RH | 120Vac, 60Hz (System) | Sampson Chen |
| BW | 25deg. C, 60%RH | 3.7 Vdc | Chilin Lee |

### 3.3 Description of Support Units

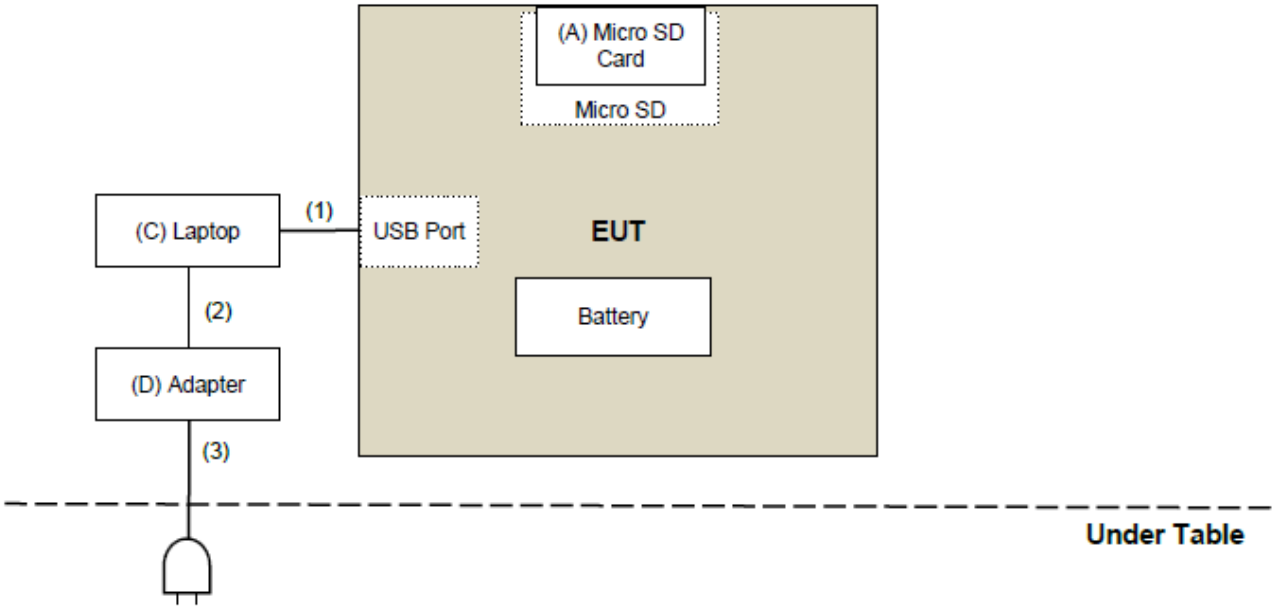
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|---|---|---|---|---|---|---|
| A | Micro SD Card | ADATA | N/A | N/A | N/A | Provided by Lab |
| B | USB Adapter | ASUS | EXA1205UA | N/A | N/A | Provided by Lab |
| C | Laptop | Lenovo | 20U5S01X00 L14 | PF-1ANPYA | N/A | Provided by Lab |
| D | Adapter | Lenovo | ADLX45YLC3D | N/A | N/A | Provided by Lab |

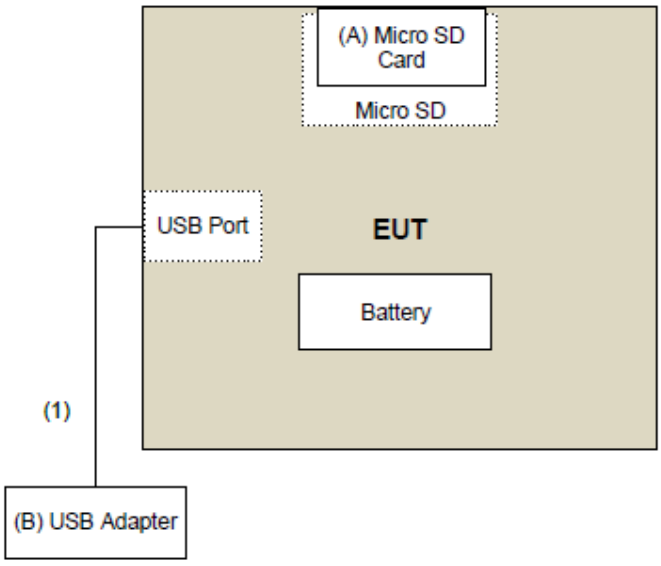
| ID | Cable Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|---|---|---|---|---|---|---|
| 1 | USB Cable | 1 | 0.6 | Yes | 0 | Supplied by applicant |
| 2 | DC Cable | 1 | 1.8 | No | 0 | Provided by Lab |
| 3 | AC Cable | 1 | 1 | No | 0 | Provided by Lab |

### 3.3.1 Configuration of System under Test

For AC Power Conducted Emission test




For Radiated Emission test



## 3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.249)**

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of Harmonics (microvolts/meter) |
|---|---|---|
| 902 ~ 928 MHz | 50 | 500 |
| 2400 ~ 2483.5 MHz | 50 | 500 |
| 5725 ~ 5875 MHz | 50 | 500 |
| 24 ~ 24.25 GHz | 250 | 2500 |

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 as below table, whichever is the lesser attenuation

| Frequencies (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 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

**For below 1GHz test:**

| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|---|---|---|---|
| Spectrum Analyzer KEYSIGHT | N9030B | MY57142938 | 2022/4/26 | 2023/4/25 |
| Test Receiver KEYSIGHT | N9038A | MY59050100 | 2022/6/20 | 2023/6/19 |
| Software | ADT_Radiated_V8.7.08 | NA | NA | NA |
| Antenna Tower & Turn Table Max-Full | MF-7802 | MF780208406 | NA | NA |
| Fix tool for Boresight antenna tower BV | FBA-01 | FBA_SIP01 | NA | NA |
| Pre_Amplifier Agilent | 8447D | 2944A10636 | 2022/3/19 | 2023/3/18 |
| LOOP ANTENNA Electro-Metrics | EM-6879 | 264 | 2022/3/18 | 2023/3/17 |
| RF Coaxial Cable JYEBO | 5D-FB | LOOPCAB-001 | 2022/1/6 | 2023/1/5 |
| RF Coaxial Cable JYEBO | 5D-FB | LOOPCAB-002 | 2022/1/6 | 2023/1/5 |
| Pre_Amplifier Mini-Circuits | ZFL-1000VH2 | QA0838008 | 2021/10/19 | 2022/10/18 |
| Trilog Broadband Antenna Schwarzbeck | VULB 9168 | 9168-361 | 2021/10/26 | 2022/10/25 |
| RF Coaxial Cable COMMATE/PEWC | 8D | 966-4-1 | 2022/3/8 | 2023/3/7 |
| RF Coaxial Cable COMMATE/PEWC | 8D | 966-3-2 | 2022/2/26 | 2023/2/25 |
| RF Coaxial Cable COMMATE/PEWC | 8D | 966-3-3 | 2022/2/26 | 2023/2/25 |
| Fixed attenuator Mini-Circuits | UNAT-5+ | PAD-3m-3-01 | 2021/9/23 | 2022/9/22 |

Note: 1. The test was performed in 966 Chamber No. 3.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/9/19

**For above 1GHz~40GHz test:**

| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|---|---|---|---|
| MXE EMI Receiver(20 Hz to 44 GHz)<br>Keysight | N9038A | MY54450088 | 2021/7/6 | 2022/7/5 |
| Software | ADT_Radiated_V8.7.08 | NA | NA | NA |
| Antenna Tower & Turn Table<br>Max-Full | MF-7802 | MF780208406 | NA | NA |
| Horn Antenna<br>Schwarzbeck | BBHA9120-D | 9120D-406 | 2021/11/14 | 2022/11/13 |
| Pre_Amplifier<br>EMCI | EMC12630SE | 980384 | 2022/1/10 | 2023/1/9 |
| RF Coaxial Cable<br>EMCI | EMC104-SM-SM-1500 | 180504 | 2022/4/25 | 2023/4/24 |
| RF Coaxial Cable<br>EMCI | EMC104-SM-SM-2000 | 180601 | 2021/6/8 | 2022/6/7 |
| RF Cable<br>EMCI | EMC104-SM-SM-6000 | 210201 | 2022/5/10 | 2023/5/9 |
| Fix tool for Boresight antenna tower<br>BV | FBA-01 | FBA_SIP01 | NA | NA |
| Spectrum Analyzer<br>Keysight | N9030A | MY54490679 | 2021/7/9 | 2022/7/8 |
| Pre_Amplifier<br>EMCI | EMC184045SE | 980387 | 2022/1/10 | 2023/1/9 |
| Horn Antenna<br>Schwarzbeck | BBHA 9170 | 9170-739 | 2021/11/14 | 2022/11/13 |
| RF Cable-Frequency range: 1-40GHz<br>EMCI | EMC102-KM-KM-1200 | 160924 | 2022/1/10 | 2023/1/9 |
| RF Coaxial Cable<br>EMCI | EMC-KM-KM-4000 | 200214 | 2022/3/8 | 2023/3/7 |

Note: 1. The test was performed in 966 Chamber No. 3.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/5/20 ~ 2022/5/25

**For above 40GHz test:**

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|---|---|---|---|
| Spectrum Analyzer Keysight | N9030A | MY55330160 | Feb. 14, 2022 | Feb. 13, 2023 |
| Spectrum Analyzer Keysight | N9042B+V3050A | US60360159 | Jan. 12, 2022 | Jan. 11, 2023 |
| PSG analog signal generator (from 250 kHz to 50 GHz) Keysight | E8257D | MY53401987 | June 21, 2022 | June 20, 2023 |
| Antenna_Horn oxe89 QUINSTAR | QWH-QPRR00 | QWH-QPRR00-2 | Feb. 11, 2021 | Feb. 10, 2023 |
| Antenna_Horn Conical Keysight | WR15CH-Conical | RCHO15RL-2 | Feb. 11, 2021 | Feb. 10, 2023 |
| Antenna_Horn Conical Keysight | WR10CH-Conical | RCHO10RL-2 | Feb. 11, 2021 | Feb. 10, 2023 |
| Antenna_Horn Conical Keysight | WR6.5CH-Conical | RCHO6RL-2 | Feb. 11, 2021 | Feb. 10, 2023 |
| Antenna_Horn Conical Keysight | WR5.1CH-Conical | RCHO5RL-2 | Feb. 11, 2021 | Feb. 10, 2023 |
| Antenna_Horn Conical Keysight | WR3.4DH-Diagonal | WR3.4DHR4 5-12 | Feb. 11, 2021 | Feb. 10, 2023 |
| Power Sensor Keysight | U8489A | US60490117 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_up converter VDI | E8257DV10 | SGX647 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_up converter VDI | E8257DV06 | SGX645 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_up converter VDI | E8257DV03 | SGX643 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_down converter VDI | N9029AV06 | SAX723 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_down converter VDI | N9029AV05 | SAX722 | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_down converter VDI | N9029AV03 | SAX721 | Feb. 11, 2021 | Feb. 10, 2023 |
| Power Meter VDI | PM5B | 571V | Feb. 11, 2021 | Feb. 10, 2023 |
| Extension Module_up converter VDI | E8257DV15 | SGX648 | Feb. 11, 2021 | Feb. 10, 2023 |
| Boresight Antenna Tower & Turn Table Max-Full | MF-7802BS | MF780208530 | NA | NA |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 6
4. Tested Date: 2022/5/26

4.1.3 Test Procedures

**For Radiated emission below 30MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

**For Radiated emission 30MHz to 40GHz**

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

**For Radiated emission above 40GHz**

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The distance at which limits are typically specified is 3 meter; however, closer measurement distances may be utilized.

c. Begin handheld measurements with the test antenna (horn) at a distance of 1 meter from the EUT, in a horizontally polarized position. Slowly adjust its position, entirely covering the plane 1 meter from the EUT.

d. Repeat (b) with the horn in a vertically polarized position.

e. If the emission cannot be detected at 1 meter, reduce the RBW in order to increase system sensitivity. Note the value. If the emission still cannot be detected, move the horn closer to the EUT, noting the distance at which a measurement is made.

f. Note the maximum level indicated on the Spectrum Analyzer.

g. Based on the distance at which the measurement was made and the calculated distance to the edge of the far field, determine the appropriate distance attenuation factor. Apply this factor to the calculated field strength in order to determine the equivalent field strength at the distance at which the regulatory limit is specified. Compare to the appropriate limits

h. Repeat (a) - (f) for every emission that must be measured, up through the required frequency range of investigation

**Note:**

1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak and Average detection at frequency above 40GHz.
2. Shorter measurement distances may be used to improve the measurement system's noise floor. As ANSI C63.10 section 9.4 description is based on the measurement in distance of 3 meters, the data obtained at 1-meter distance was extrapolate results to the 3-m distance:

   Test value at 3-meter distance (dBuV)

   = Test value at 1 meter distance (dBuV) + 20log(1/3)(dB)

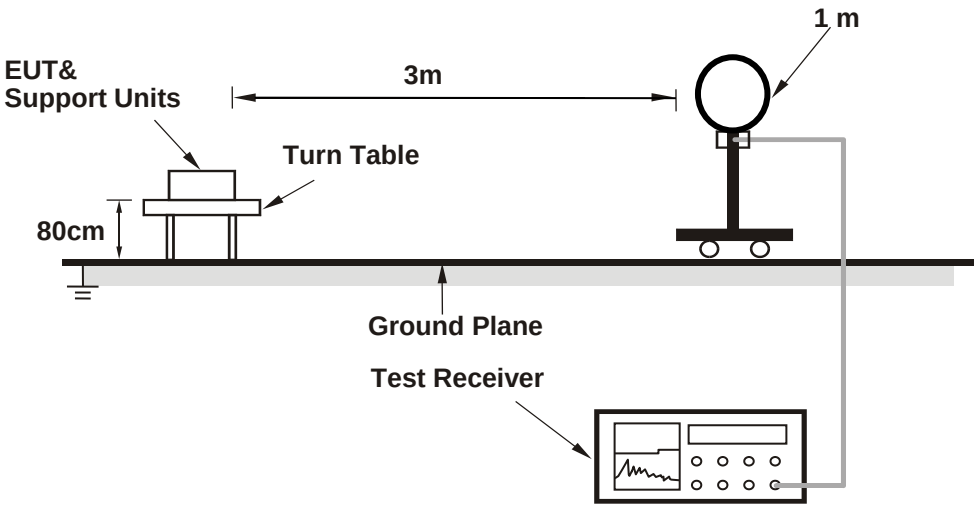
   = Test value at 1 meter distance (dBuV) - 9.5(dB).

4.1.4 Deviation from Test Standard

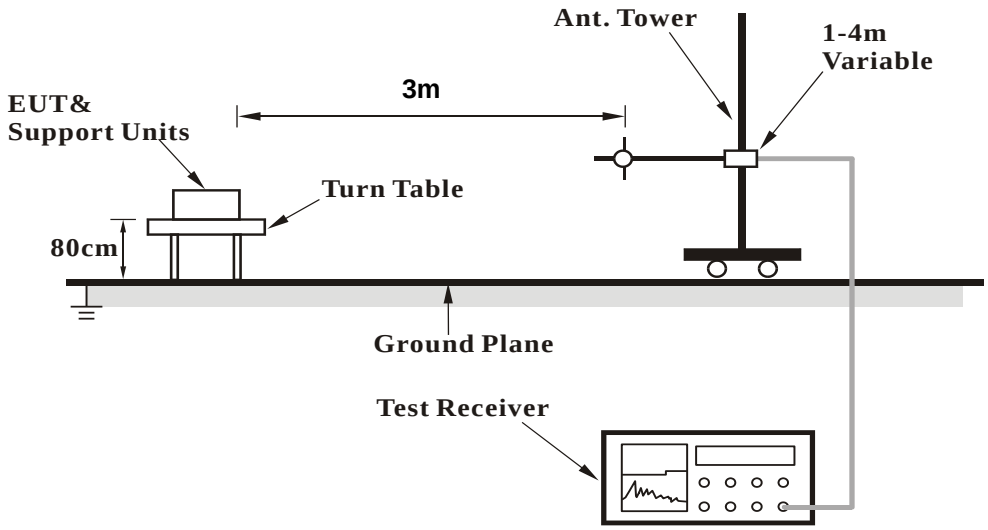
No deviation.

4.1.5 Test Setup

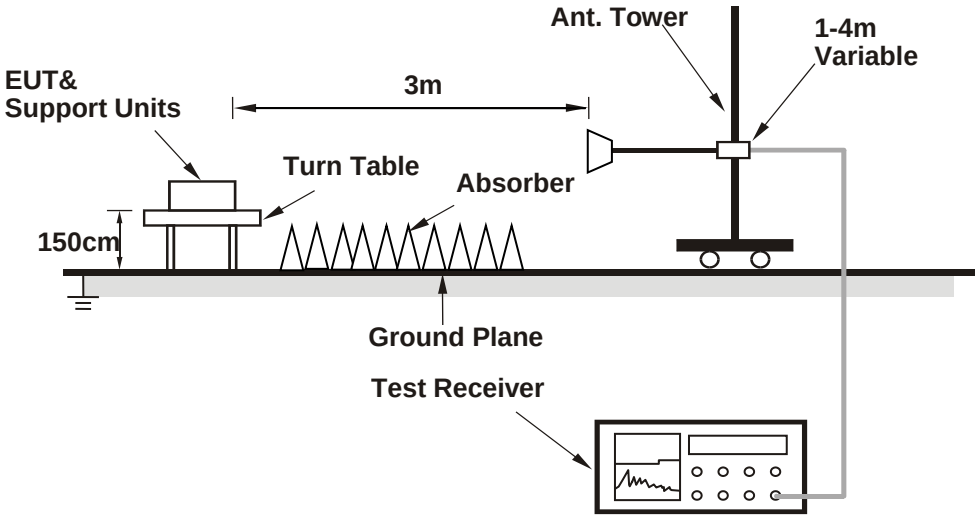
**For Radiated emission below 30MHz**



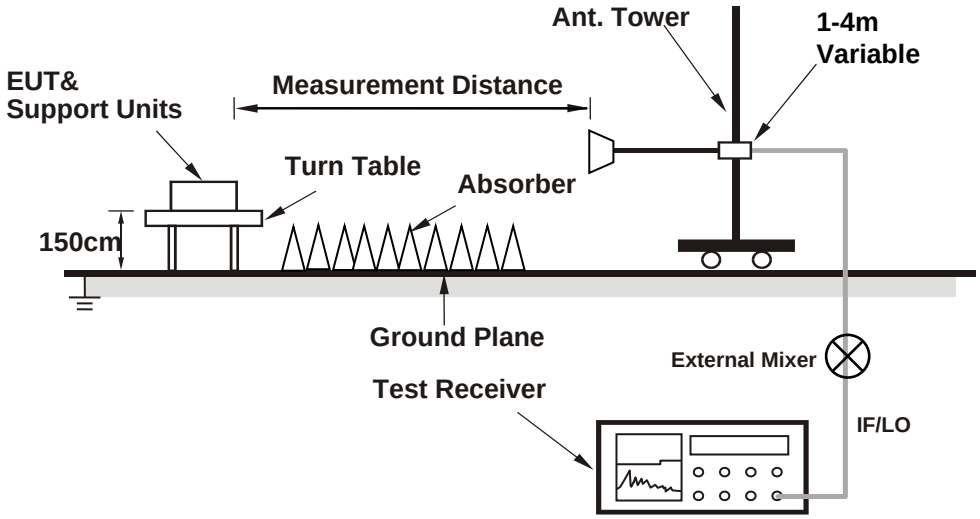

**For Radiated emission 30MHz to 1GHz**



**For Radiated emission 1GHz to 50GHz**




**For Radiated emission above 50GHz**




For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Controlling software (Teraterm-4.77) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

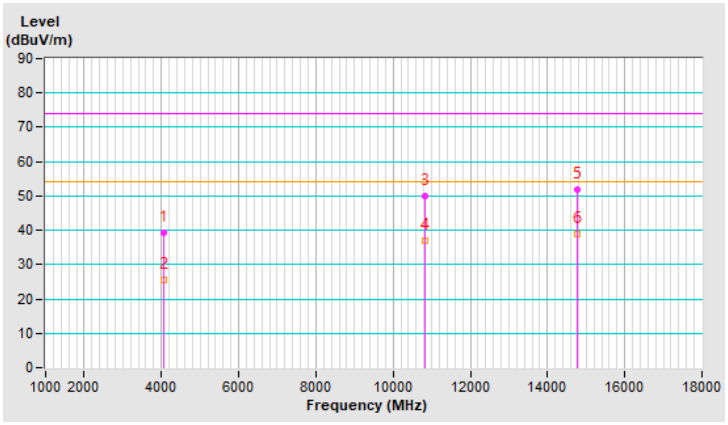
**For 1~18GHz**

| | | | |
|---|---|---|---|
| **RF Mode** | TX | **Frequency** | 24.148 GHz |
| **Frequency Range** | 1 GHz ~ 18 GHz | **Detector Function & Bandwidth** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25°C, 65% RH | **Tested By** | Nelson Teng |

| Antenna Polarity & Test Distance : Horizontal at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **No** | **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Height (m)** | **Table Angle (Degree)** | **Raw Value (dBuV)** | **Correction Factor (dB/m)** |
| 1 | 4072.32 | 39.2 PK | 74.0 | -34.8 | 1.50 H | 249 | 37.0 | 2.2 |
| 2 | 4072.32 | 25.6 AV | 54.0 | -28.4 | 1.50 H | 249 | 23.4 | 2.2 |
| 3 | 10810.70 | 50.1 PK | 74.0 | -23.9 | 2.00 H | 60 | 35.4 | 14.7 |
| 4 | 10810.70 | 37.1 AV | 54.0 | -16.9 | 2.00 H | 60 | 22.4 | 14.7 |
| 5 | 14781.90 | 51.7 PK | 74.0 | -22.3 | 3.50 H | 305 | 34.3 | 17.4 |
| 6 | 14781.90 | 38.9 AV | 54.0 | -15.1 | 3.50 H | 305 | 21.5 | 17.4 |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

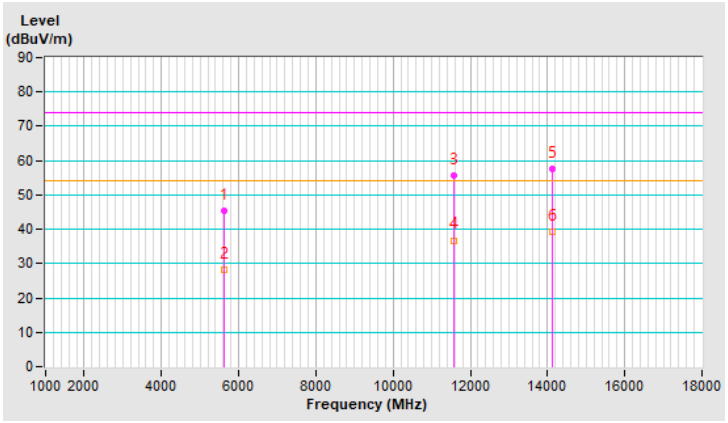


| RF Mode | TX | Frequency | 24.148 GHz |
|---|---|---|---|
| Frequency Range | 1 GHz ~ 18 GHz | Detector Function & Bandwidth | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25°C, 65% RH | Tested By | Nelson Teng |

| Antenna Polarity & Test Distance : Vertical at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 5623.60 | 45.4 PK | 74.0 | -28.6 | 1.50 V | 95 | 40.5 | 4.9 |
| 2 | 5623.60 | 28.2 AV | 54.0 | -25.8 | 1.50 V | 95 | 23.3 | 4.9 |
| 3 | 11590.00 | 55.7 PK | 74.0 | -18.3 | 2.00 V | 188 | 40.6 | 15.1 |
| 4 | 11590.00 | 36.8 AV | 54.0 | -17.2 | 2.00 V | 188 | 21.7 | 15.1 |
| 5 | 14138.20 | 57.6 PK | 74.0 | -16.4 | 1.00 V | 34 | 39.7 | 17.9 |
| 6 | 14138.20 | 39.4 AV | 54.0 | -14.6 | 1.00 V | 34 | 21.5 | 17.9 |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



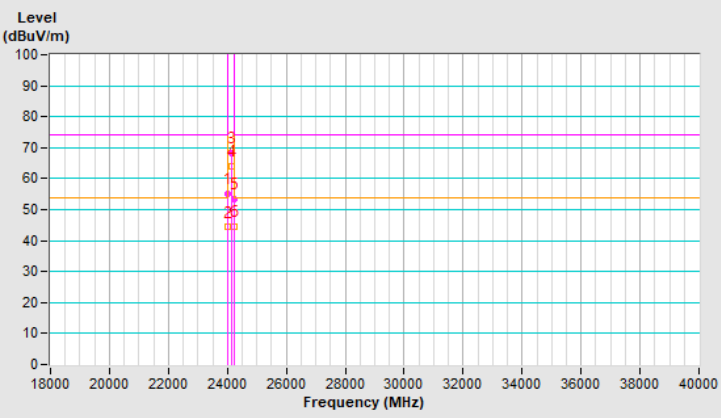
**For 18~40GHz**

| | | | |
|---|---|---|---|
| **RF Mode** | TX | **Frequency** | 24.148 GHz |
| **Frequency Range** | 18 GHz ~ 40 GHz | **Detector Function & Bandwidth** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25°C, 75% RH | **Tested By** | Nelson Teng |

| Antenna Polarity & Test Distance : Horizontal at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **No** | **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Height (m)** | **Table Angle (Degree)** | **Raw Value (dBuV)** | **Correction Factor (dB/m)** |
| 1 | 24000.00 | 55.2 PK | 74.0 | -18.8 | 1.64 H | 0 | 57.9 | -2.7 |
| 2 | 24000.00 | 44.3 AV | 54.0 | -9.7 | 1.64 H | 0 | 47.0 | -2.7 |
| 3 | *24148.00 | 68.4 PK | 127.9 | -59.5 | 1.64 H | 0 | 70.9 | -2.5 |
| 4 | *24148.00 | 64.1 AV | 107.9 | -43.8 | 1.64 H | 0 | 66.6 | -2.5 |
| 5 | 24250.00 | 53.6 PK | 74.0 | -20.4 | 1.64 H | 0 | 55.9 | -2.3 |
| 6 | 24250.00 | 44.6 AV | 54.0 | -9.4 | 1.64 H | 0 | 46.9 | -2.3 |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

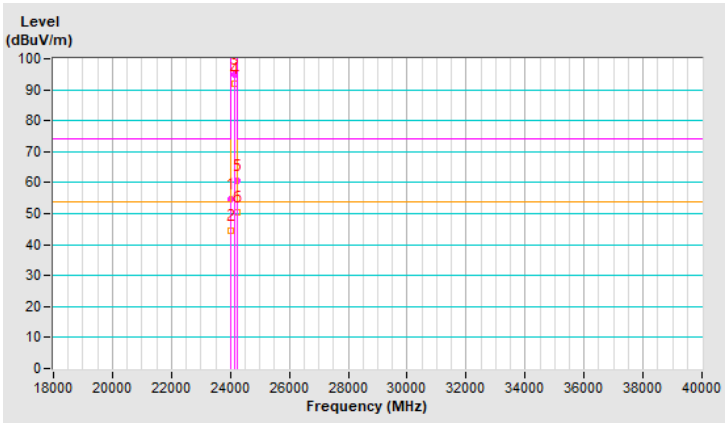


| RF Mode | TX | Frequency | 24.148 GHz |
|---|---|---|---|
| Frequency Range | 18 GHz ~ 40 GHz | Detector Function & Bandwidth | Peak (PK)<br>Average (AV) |
| Environmental Conditions | 25°C, 75% RH | Tested By | Nelson Teng |

| Antenna Polarity & Test Distance : Vertical at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 24000.00 | 54.6 PK | 74.0 | -19.4 | 1.64 V | 0 | 57.3 | -2.7 |
| 2 | 24000.00 | 44.5 AV | 54.0 | -9.5 | 1.64 V | 0 | 47.2 | -2.7 |
| 3 | *24148.00 | 95.0 PK | 127.9 | -32.9 | 1.64 V | 0 | 97.5 | -2.5 |
| 4 | *24148.00 | 91.9 AV | 107.9 | -16.0 | 1.64 V | 0 | 94.4 | -2.5 |
| 5 | 24250.00 | 60.8 PK | 74.0 | -13.2 | 1.64 V | 0 | 63.1 | -2.3 |
| **6** | **24250.00** | **50.6 AV** | **54.0** | **-3.4** | **1.64 V** | **0** | **52.9** | **-2.3** |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.



**For 40~100GHz**

| | | | |
|---|---|---|---|
| **RF Mode** | TX | **Frequency** | 24.148 GHz |
| **Frequency Range** | 40 GHz ~ 100 GHz | **Detector Function & Bandwidth** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25°C, 75% RH | **Tested By** | Carter Lin |

| **Antenna Polarity : Horizontal** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **No.** | **Frequency (GHz)** | **Factor (dB/m)** | **Reading (dBuV)** | **Emission (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Detector** | **Pass/Fail** |
| 1 | 48.30 | 20.94 | 33.89 | 54.83 | 87.9 | -33.072 | Peak | Pass |
| 2 | 48.30 | 20.94 | 16.31 | 37.25 | 67.9 | -30.652 | Average | Pass |
| 3 | 72.44 | -0.44 | 55.05 | 54.61 | 87.9 | -33.292 | Peak | Pass |
| 4 | 72.44 | -0.44 | 37.12 | 36.68 | 67.9 | -31.222 | Average | Pass |
| 5 | 98.32 | 22.47 | 18.04 | 40.51 | 74 | -33.492 | Peak | Pass |
| 6 | 98.32 | 22.47 | 0.35 | 22.82 | 54 | -31.182 | Average | Pass |
| **Antenna Polarity : Vertical** | | | | | | | | |
| **No.** | **Frequency (GHz)** | **Factor (dB/m)** | **Reading (dBuV)** | **Emission (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Detector** | **Pass/Fail** |
| 1 | 48.30 | 20.94 | 33.62 | 54.56 | 87.9 | -33.342 | Peak | Pass |
| 2 | 48.30 | 20.94 | 15.91 | 36.85 | 67.9 | -31.052 | Average | Pass |
| 3 | 72.44 | -0.44 | 54.59 | 54.15 | 87.9 | -33.752 | Peak | Pass |
| 4 | 72.44 | -0.44 | 36.67 | 36.23 | 67.9 | -31.672 | Average | Pass |
| 5 | 98.37 | 22.47 | 17.28 | 39.75 | 74 | -34.252 | Peak | Pass |
| 6 | 98.37 | 22.47 | 0.43 | 22.90 | 54 | -31.102 | Average | Pass |

**REMARKS:**

1. The measured power level is converted to $E_{Meas}$ using the equation:

Emission =Factor+Reading

Factor= ANT Gain to AF - AMP Gain + Cable loss = 38.90-13.53+5.11=30.48+(-9.54)=20.94

Factor = ANT Gain to AF - AMP Gain + VDI loss + Cable loss = 42.24-47.62+10.59+3.89=9.1+(-9.54)=-0.44

Factor = ANT Gain to AF - AMP Gain + VDI loss + Cable loss = 49.23-18.24+11.57+3.43=45.99+(-23.52)=22.47

where:

Measurements made at 1 m

2. Shorter measurement distances may be used to improve the measurement system's noise floor.

As ANSI C63.10 section 9.4 description is based on the measurement in distance of 3 meters,

the data obtained at 1-meter distance was extrapolate results to the 3-m distance:

Test value at 3-meter distance (dBuV) = Test value at 1 meter distance (dBuV) +20log(1/3)(dB)

= Test value at 1 meter distance (dBuV) -9.5(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.

3. The far-field boundary is given in ANSI C63.10 section 9.1 as:

R far field = (2 * D^2) /λ

D is the Largest Antenna Dimension of measurement antenna, including the reflector

λ is the wavelength

| Frequency (GHz) | L (m) | Lambda (m) | R (Far Field) (m) |
|---|---|---|---|
| 40 | 0.03 | 0.0075 | 0.240 |
| 50 | 0.03 | 0.0060 | 0.300 |

| Frequency (GHz) | L (m) | Lambda (m) | R (Far Field) (m) |
|---|---|---|---|
| 50 | 0.025 | 0.0060 | 0.208 |
| 75 | 0.025 | 0.0040 | 0.313 |

| Frequency (GHz) | L (m) | Lambda (m) | R (Far Field) (m) |
|---|---|---|---|
| 75 | 0.018 | 0.0040 | 0.162 |
| 100 | 0.018 | 0.0030 | 0.216 |

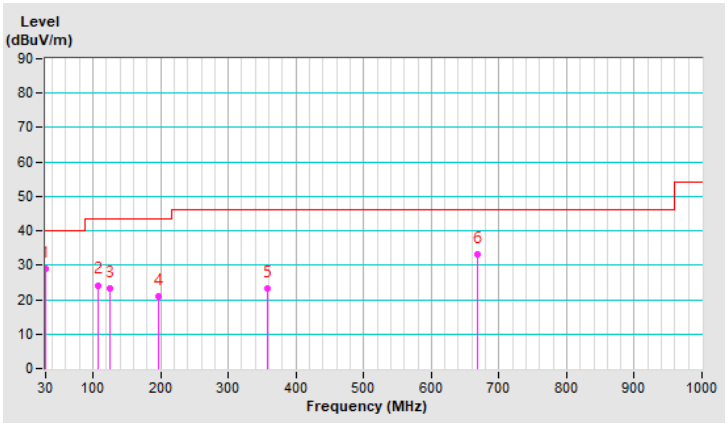
**Below 1GHz Data:**

| RF Mode | TX | Frequency | 24.148 GHz |
|---|---|---|---|
| Frequency Range | 9 kHz ~ 1 GHz | Detector Function & Bandwidth | Quasi-Peak (QP) |
| Environmental Conditions | 20°C, 70% RH | Tested By | Ryan Du |

| Antenna Polarity & Test Distance : Horizontal at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 30.73 | 28.9 QP | 40.0 | -11.1 | 1.00 H | 19 | 38.3 | -9.4 |
| 2 | 108.02 | 24.2 QP | 43.5 | -19.3 | 1.00 H | 53 | 35.4 | -11.2 |
| 3 | 124.49 | 23.2 QP | 43.5 | -20.3 | 1.50 H | 43 | 32.9 | -9.7 |
| 4 | 196.03 | 20.8 QP | 43.5 | -22.7 | 1.00 H | 75 | 32.0 | -11.2 |
| 5 | 358.01 | 23.1 QP | 46.0 | -22.9 | 1.00 H | 63 | 29.4 | -6.3 |
| 6 | 667.55 | 33.3 QP | 46.0 | -12.7 | 2.50 H | 148 | 33.1 | 0.2 |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

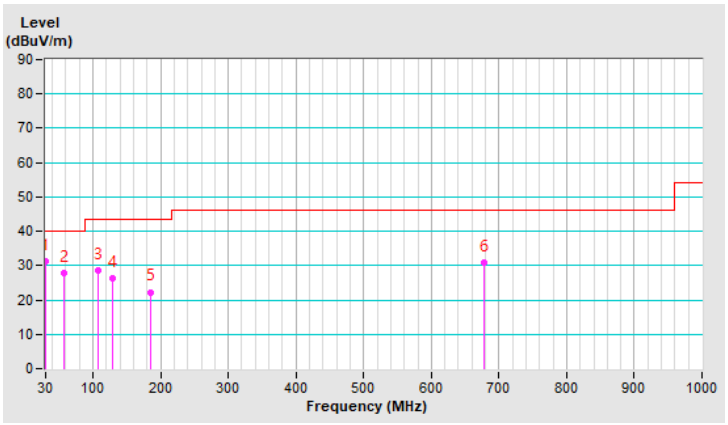


| RF Mode | TX | Frequency | 24.148 GHz |
|---|---|---|---|
| Frequency Range | 9 kHz ~ 1 GHz | Detector Function & Bandwidth | Quasi-Peak (QP) |
| Environmental Conditions | 20°C, 70% RH | Tested By | Ryan Du |

| Antenna Polarity & Test Distance : Vertical at 3 m | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 30.69 | 31.2 QP | 40.0 | -8.8 | 1.00 V | 262 | 40.6 | -9.4 |
| 2 | 57.08 | 27.8 QP | 40.0 | -12.2 | 1.50 V | 56 | 36.5 | -8.7 |
| 3 | 108.08 | 28.6 QP | 43.5 | -14.9 | 1.50 V | 35 | 39.8 | -11.2 |
| 4 | 129.29 | 26.3 QP | 43.5 | -17.2 | 1.50 V | 43 | 35.6 | -9.3 |
| 5 | 186.02 | 22.3 QP | 43.5 | -21.2 | 1.50 V | 28 | 32.7 | -10.4 |
| 6 | 677.52 | 30.9 QP | 46.0 | -15.1 | 1.50 V | 66 | 30.5 | 0.4 |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|---|---|---|---|
| TEST RECEIVER<br>R&S | ESCS 30 | 847124/029 | 2021/10/13 | 2022/10/12 |
| LISN<br>R&S | ESH3-Z5 | 848773/004 | 2021/10/29 | 2022/10/28 |
| 50 ohms Terminator<br>NA | 50 | 3 | 2021/10/27 | 2022/10/26 |
| RF Coaxial Cable<br>JYEBO | 5D-FB | COCCAB-001 | 2022/8/24 | 2023/8/23 |
| Fixed attenuator<br>STI | STI02-2200-10 | 005 | 2022/8/24 | 2023/8/23 |
| Software<br>BVADT | BVADT_Cond_V7.3.7.4 | NA | NA | NA |

Note: 1. The test was performed in Conduction 1.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/9/20

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

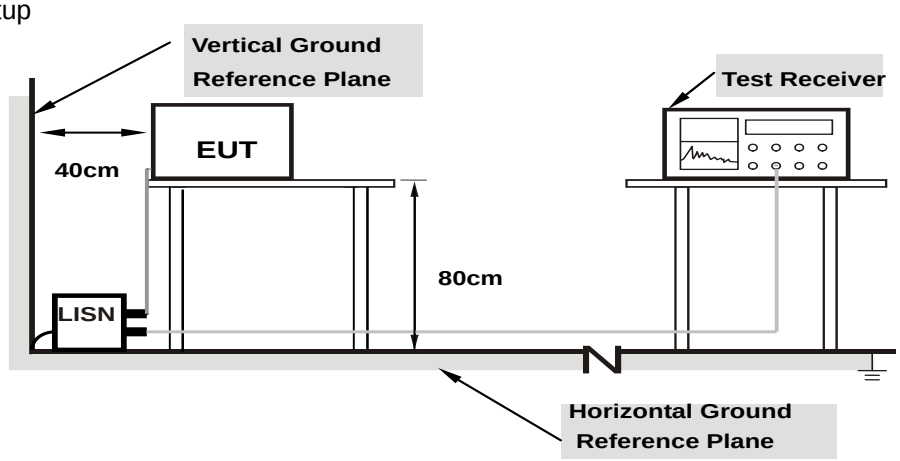
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**Note:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup




**Note: 1.Support units were connected to second LISN.**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

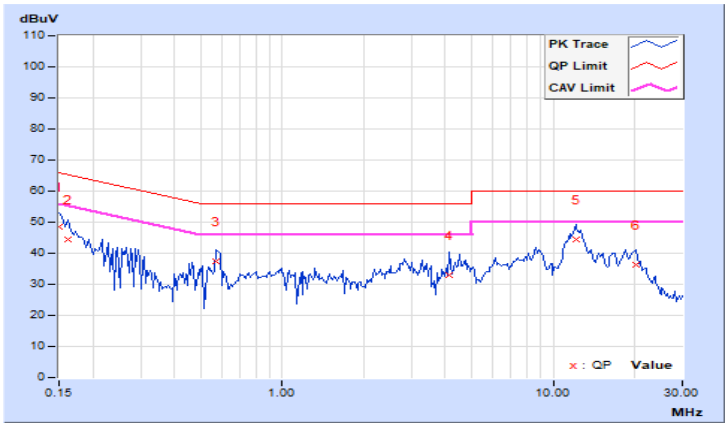
4.2.7 Test Results

| | | | |
|---|---|---|---|
| **RF Mode** | TX | **Frequency** | 24.148 GHz |
| **Frequency Range** | 150 kHz ~ 30 MHz | **Detector Function & Resolution Bandwidth** | Quasi-Peak (QP) / Average (AV), 9 kHz |
| **Environmental Conditions** | 25°C, 75% RH | **Tested By** | Ryan Du |

| **Phase Of Power : Line (L)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **No** | **Frequency (MHz)** | **Correction Factor (dB)** | **Reading Value (dBuV)** | | **Emission Level (dBuV)** | | **Limit (dBuV)** | | **Margin (dB)** | |
| | | | **Q.P.** | **AV.** | **Q.P.** | **AV.** | **Q.P.** | **AV.** | **Q.P.** | **AV.** |
| 1 | 0.15000 | 9.95 | 38.63 | 24.38 | 48.58 | 34.33 | 66.00 | 56.00 | -17.42 | -21.67 |
| 2 | 0.16172 | 9.95 | 34.40 | 20.55 | 44.35 | 30.50 | 65.38 | 55.38 | -21.03 | -24.88 |
| 3 | 0.56797 | 9.97 | 27.49 | 18.13 | 37.46 | 28.10 | 56.00 | 46.00 | -18.54 | -17.90 |
| 4 | 4.12891 | 10.21 | 22.85 | 15.70 | 33.06 | 25.91 | 56.00 | 46.00 | -22.94 | -20.09 |
| **5** | **12.13672** | **10.74** | **33.78** | **27.72** | **44.52** | **38.46** | **60.00** | **50.00** | **-15.48** | **-11.54** |
| 6 | 20.22656 | 11.20 | 24.95 | 20.47 | 36.15 | 31.67 | 60.00 | 50.00 | -23.85 | -18.33 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

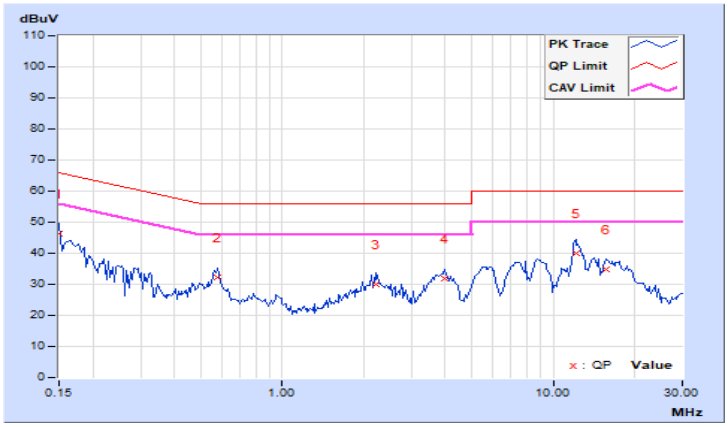


| RF Mode | TX | Frequency | 24.148 GHz |
|---|---|---|---|
| Frequency Range | 150 kHz ~ 30 MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9 kHz |
| Environmental Conditions | 25°C, 75% RH | Tested By | Ryan Du |

| Phase Of Power : Neutral (N) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) | | Emission Level (dBuV) | | Limit (dBuV) | | Margin (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 9.95 | 36.25 | 20.38 | 46.20 | 30.33 | 66.00 | 56.00 | -19.80 | -25.67 |
| 2 | 0.57969 | 9.97 | 22.27 | 17.07 | 32.24 | 27.04 | 56.00 | 46.00 | -23.76 | -18.96 |
| 3 | 2.20703 | 10.07 | 19.81 | 12.96 | 29.88 | 23.03 | 56.00 | 46.00 | -26.12 | -22.97 |
| 4 | 4.00000 | 10.18 | 21.69 | 15.19 | 31.87 | 25.37 | 56.00 | 46.00 | -24.13 | -20.63 |
| 5 | 12.17188 | 10.63 | 29.47 | 23.00 | 40.10 | 33.63 | 60.00 | 50.00 | -19.90 | -16.37 |
| 6 | 15.72656 | 10.79 | 24.00 | 20.06 | 34.79 | 30.85 | 60.00 | 50.00 | -25.21 | -19.15 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 4.3 20dB Bandwidth Measurement

### 4.3.1 Limits of 20dB Bandwidth Measurement

The 20dB bandwidth shall be specified in operating frequency band.

### 4.3.2 Test Instruments

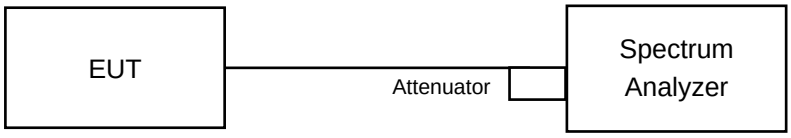
| Description & Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|---|---|---|---|
| Spectrum Analyzer R&S | FSV40 | 101516 | 2022/3/7 | 2023/3/6 |
| Attenuator WOKEN | MDCS18N-10 | MDCS18N-10-01 | 2022/4/5 | 2023/4/4 |
| Software | ADT_RF Test Software V6.6.5.4 | NA | NA | NA |

Note: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/5/26

### 4.3.3 Test Procedure

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3 MHz RBW and 10 MHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### 4.3.4 Test Setup




### 4.3.5 Deviation from Test Standard

No deviation.

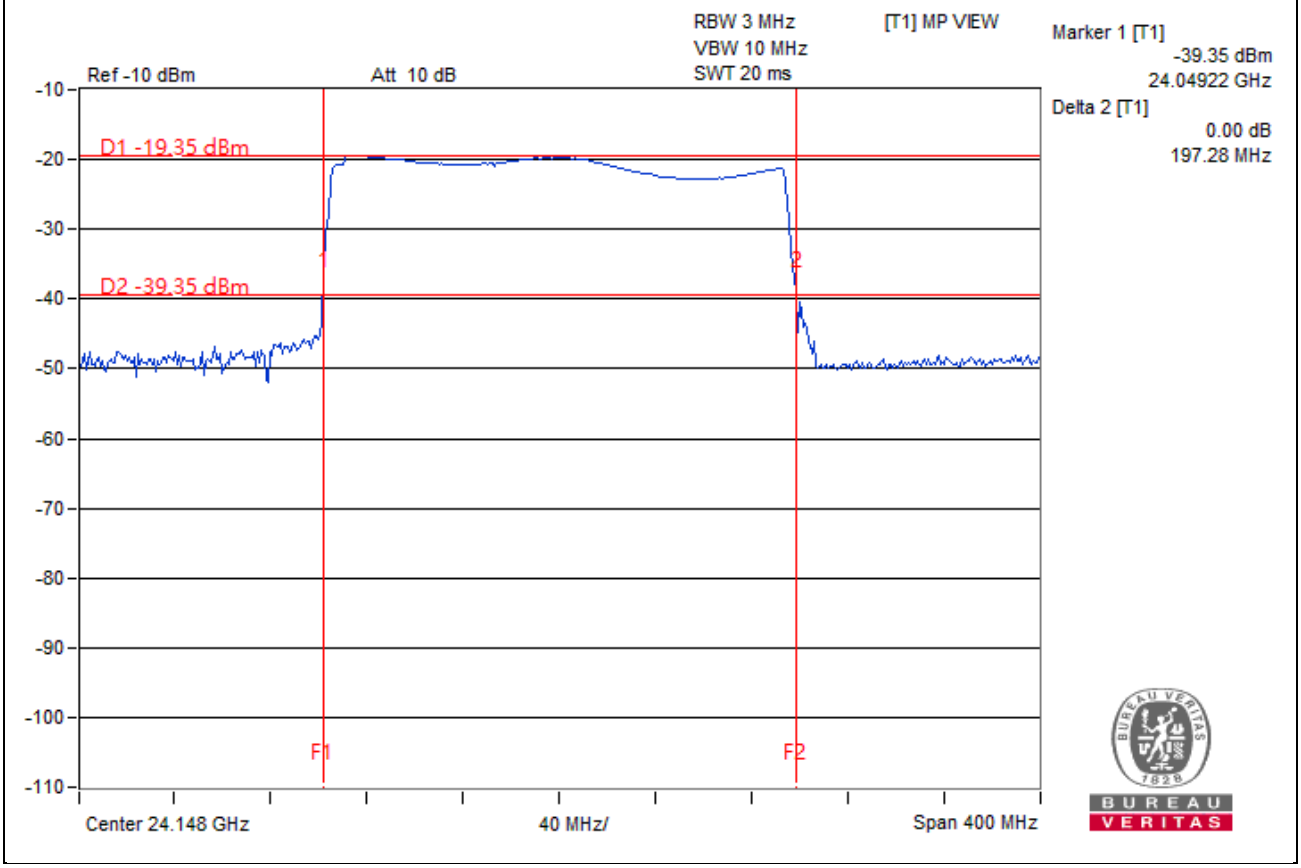
### 4.3.6 EUT Operating Condition

Set the EUT under transmission condition continuously at specific channel frequency.

### 4.3.7 Test Results

| Frequency (GHz) | 20dB Bandwidth (MHz) |
|---|---|
| 24.148 | 197.28 |
| FL ( GHz ) | FH ( GHz ) |
| 24.04922 | 24.2465 |

Spectrum Plot



## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

**Appendix – Information of the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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The address and road map of all our labs can be found in our web site also.

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