



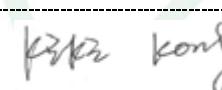
TEST REPORT

Report No.: **CHTEW20050095** Report verification : 
Project No.: **SHT2003028703EW**
FCC ID: **2AWCE-ZFT3**
Applicant's name: **Zenfox Limited**
Address.....: ROOM F, 8/F, WANG CHEONG BUILDING, NO.251
RECLAMATION STREET, KOWLOON, HONGKONG.
Manufacturer.....: Zenfox Limited
Address.....: ROOM F, 8/F, WANG CHEONG BUILDING, NO.251
RECLAMATION STREET, KOWLOON, HONGKONG.
Test item description: **Car Dash Camera**
Trade Mark: Zenfox
Model/Type reference.....: T3
Listed Model(s): -
Standard: **47 CFR FCC Part 15 Subpart B**
Date of receipt of test sample.....: Mar.30, 2020
Date of testing.....: Mar.30, 2020- May 21, 2020
Date of issue.....: May 22, 2020
Result.....: **Pass**

Compiled by

(position+printed name+signature) ..: File administrators Echo Wei 

Supervised by

(position+printed name+signature) ..: Project Engineer Kiki Kong 

Approved by

(position+printed name+signature) ..: RF Manager Hans Hu 

Testing Laboratory Name: **Shenzhen Huatongwei International Inspection Co., Ltd.**

Address.....: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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The test report merely corresponds to the test sample.

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1. **TEST STANDARDS AND REPORT VERSION**

1.1. **Test Standards**

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B - Unintentional Radiators](#)

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

1.2. **Report version information**

| Revision No. | Date of issue | Description |
|--------------|---------------|-------------|
| N/A | 2020-05-22 | Original |
| | | |
| | | |
| | | |
| | | |

2. **TEST DESCRIPTION**

| Test Item | Section in CFR 47 | Result | Test Engineer |
|---------------------|-------------------|--------|---------------|
| Conducted Emissions | 15.107(a) | PASS | Jianquan Wu |
| Radiated Emissions | 15.109(a) | PASS | Quanhai Deng |

Note: The measurement uncertainty is not included in the test result.

3. **SUMMARY**

3.1. Client Information

| | |
|---------------|--|
| Applicant: | Zenfox Limited |
| Address: | ROOM F, 8/F, WANG CHEONG BUILDING, NO.251 RECLAMATION STREET, KOWLOON, HONGKONG. |
| Manufacturer: | Zenfox Limited |
| Address: | ROOM F, 8/F, WANG CHEONG BUILDING, NO.251 RECLAMATION STREET, KOWLOON, HONGKONG. |

3.2. Product Description

| | |
|----------------------|-------------------|
| Name of EUT: | Car Dash Camera |
| Trade Mark: | Zenfox |
| Model No.: | T3 |
| Listed Model(s) | - |
| Power supply: | DC 5V |
| Adapter information: | - |
| Hardware version: | T820_M15_V1.0_MPS |
| Software version: | Zenfox_T3_V1.0 |

3.3. EUT operation mode

| | |
|--------------|--|
| Test mode O1 | insert the SD card to EUT, and the EUT connect the camera recording, EUT power by adapter |
| Test mode O2 | insert the SD card to EUT, and the EUT connect the camera recording, EUT power by Car charging |

NOTE:Pre-scan above all test mode, found test mode O1 which it was worse case mode, so only show the test data for worse case mode on the test report.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 762235.

IC-Registration No.: 5377A

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

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

| | |
|--------------------|-------------|
| Temperature: | 15~35°C |
| Relative Humidity: | 30~60 % |
| Air Pressure: | 950~1050mba |

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

| Test | Range | Measurement Uncertainty | Notes |
|-----------------------|------------|-------------------------|-------|
| Radiated Emissions | 30~1000MHz | 4.90 dB | (1) |
| Radiated Emissions | 1~18GHz | 4.96 dB | (1) |
| Conducted Disturbance | 0.15~30MHz | 3.02 dB | (1) |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

| ● Conducted Emission | | | | | | | |
|----------------------|---------------------|--------------------|---------------|-----------------|---------------|---------------------------|---------------------------|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Shielded Room | Albatross projects | HTWE0114 | N/A | N/A | 2018/09/28 | 2023/09/27 |
| ● | EMI Test Receiver | R&S | HTWE0111 | ESCI | 101247 | 2019/10/26 | 2020/10/25 |
| ● | Artificial Mains | SCHWARZBECK | HTWE0113 | NNLK 8121 | 573 | 2019/10/23 | 2020/10/22 |
| ● | Pulse Limiter | R&S | HTWE0033 | ESH3-Z2 | 100499 | 2019/10/23 | 2020/10/22 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0113-02 | ENVIROFLE X_142 | EF-NM-BNCM-2M | 2019/10/23 | 2020/10/22 |
| ● | Test Software | R&S | N/A | ES-K1 | N/A | N/A | N/A |

| ● Radiated emission-6th test site | | | | | | | |
|-----------------------------------|-------------------------|--------------------|---------------|--------------|------------|---------------------------|---------------------------|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Semi-Anechoic Chamber | Albatross projects | HTWE0127 | SAC-3m-02 | C11121 | 2018/09/30 | 2021/09/29 |
| ● | EMI Test Receiver | R&S | HTWE0099 | ESCI | 100900 | 2019/10/26 | 2020/10/25 |
| ● | Loop Antenna | R&S | HTWE0170 | HFH2-Z2 | 100020 | 2018/04/02 | 2021/04/01 |
| ● | Ultra-Broadband Antenna | SCHWARZBECK | HTWE0123 | VULB9163 | 538 | 2018/04/04 | 2021/04/03 |
| ● | Pre-Amplifier | SCHWARZBECK | HTWE0295 | BBV 9742 | N/A | 2019/11/14 | 2020/11/13 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0062-01 | N/A | N/A | 2019/08/21 | 2020/08/20 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0062-02 | SUCOFLEX 104 | 501184/4 | 2019/05/27 | 2020/05/26 |
| ● | Test Software | R&S | N/A | ES-K1 | N/A | N/A | N/A |

| ● Radiated emission-7th test site | | | | | | | |
|-----------------------------------|-------------------------|--------------------|---------------|-------------------|-------------|---------------------------|---------------------------|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Semi-Anechoic Chamber | Albatross projects | HTWE0122 | SAC-3m-01 | N/A | 2018/09/27 | 2021/09/26 |
| ● | Spectrum Analyzer | R&S | HTWE0098 | FSP40 | 100597 | 2019/10/26 | 2020/10/25 |
| ● | Horn Antenna | SCHWARZBECK | HTWE0126 | 9120D | 1011 | 2020/04/01 | 2023/03/31 |
| ● | Horn Antenna | SCHWARZBECK | HTWE0103 | BBHA9170 | 25841 | 2018/10/11 | 2021/10/10 |
| ● | Broadband Horn Antenna | SCHWARZBECK | HTWE0103 | BBHA9170 | BBHA9170472 | 2018/10/11 | 2021/10/11 |
| ● | Pre-amplifier | CD | HTWE0071 | PAP-0102 | 12004 | 2019/11/14 | 2020/11/13 |
| ● | Broadband Pre-amplifier | SCHWARZBECK | HTWE0201 | BBV 9718 | 9718-248 | 2019/05/23 | 2020/05/22 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-01 | 6m 18GHz S Serisa | N/A | 2020/05/10 | 2021/05/09 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-02 | 6m 3GHz RG Serisa | N/A | 2020/05/10 | 2021/05/09 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-03 | 6m 3GHz RG Serisa | N/A | 2020/05/10 | 2021/05/09 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-04 | 6m 3GHz RG Serisa | N/A | 2020/05/10 | 2021/05/09 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0121-01 | 6m 18GHz S Serisa | N/A | 2020/05/10 | 2021/05/09 |
| ● | Test Software | Audix | N/A | E3 | N/A | N/A | N/A |

5. TEST CONDITIONS AND RESULTS

5.1. Conducted Emissions Test

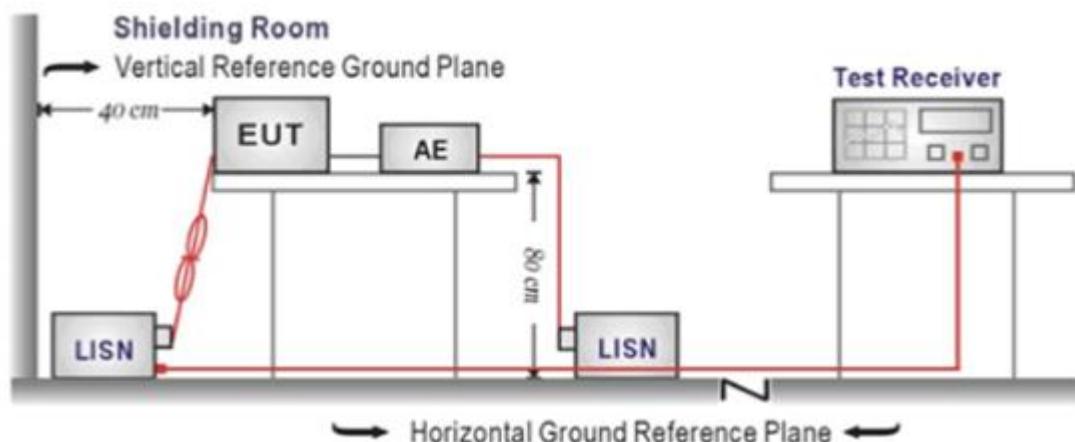
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

| Frequency range (MHz) | Limit (dBuV) | |
|-----------------------|--------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

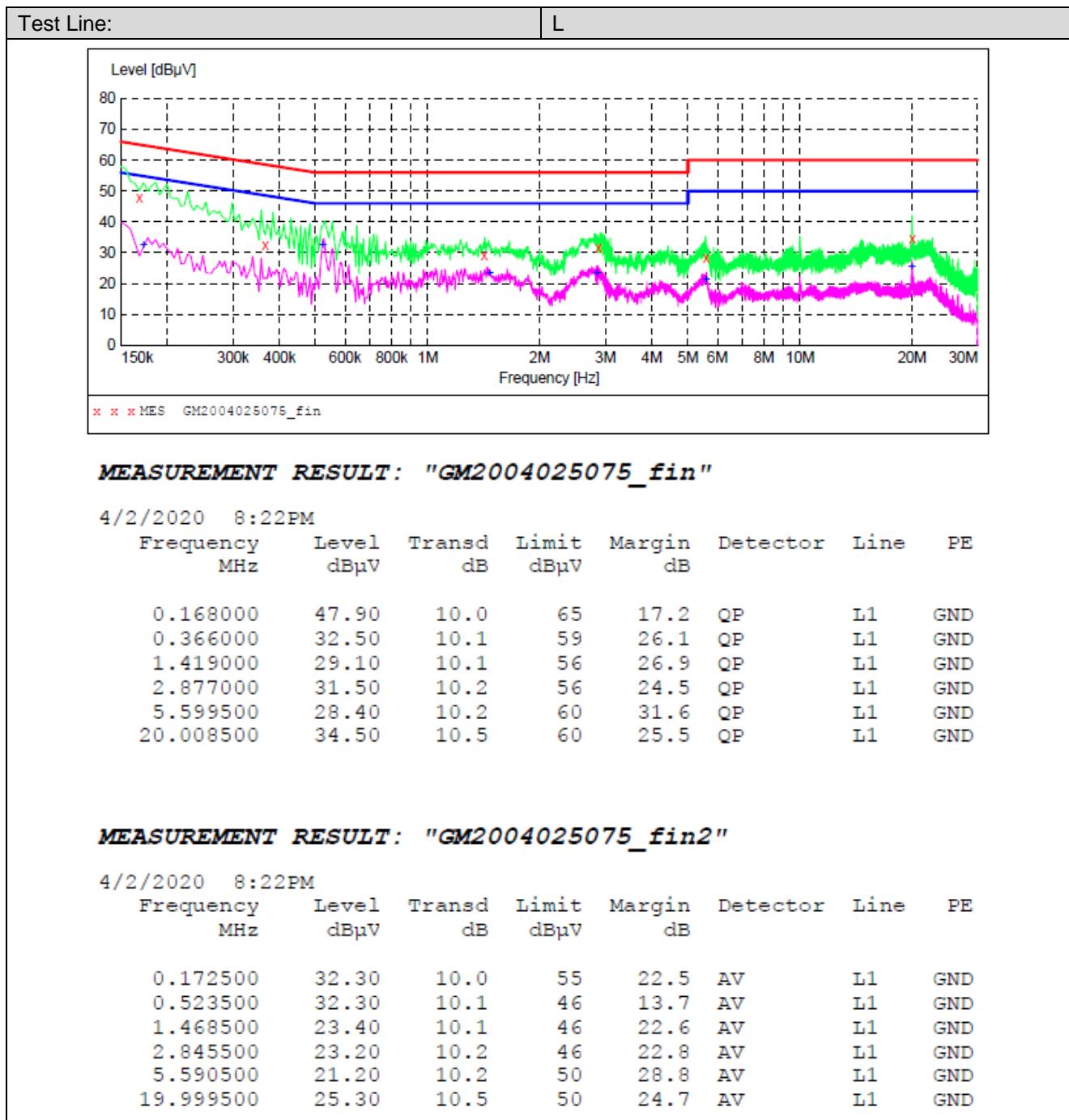
1. The EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

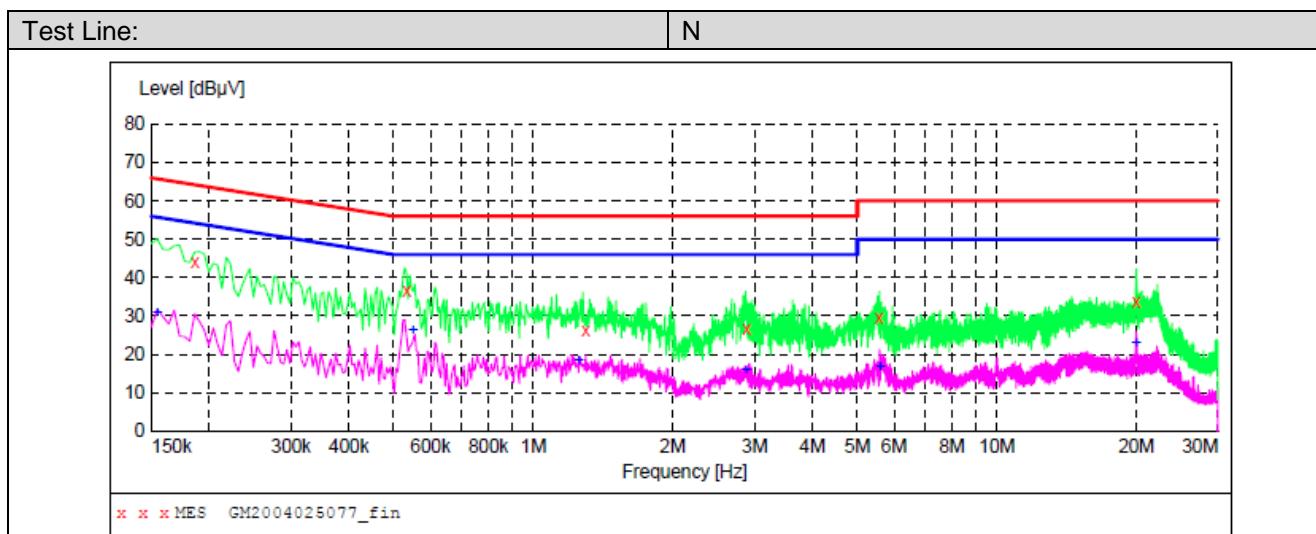
TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable





MEASUREMENT RESULT: "GM2004025077_fin"

4/2/2020 8:27PM

| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Detector | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|----------|------|-----|
| 0.186000 | 43.90 | 10.0 | 64 | 20.3 | QP | N | GND |
| 0.532500 | 36.60 | 10.1 | 56 | 19.4 | QP | N | GND |
| 1.297500 | 26.30 | 10.1 | 56 | 29.7 | QP | N | GND |
| 2.886000 | 26.70 | 10.2 | 56 | 29.3 | QP | N | GND |
| 5.559000 | 29.60 | 10.2 | 60 | 30.4 | QP | N | GND |
| 20.004000 | 33.50 | 10.5 | 60 | 26.5 | QP | N | GND |

MEASUREMENT RESULT: "GM2004025077_fin2"

4/2/2020 8:27PM

| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Detector | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|----------|------|-----|
| 0.154500 | 30.90 | 10.0 | 56 | 24.9 | AV | N | GND |
| 0.550500 | 26.30 | 10.1 | 46 | 19.7 | AV | N | GND |
| 1.252500 | 18.40 | 10.1 | 46 | 27.6 | AV | N | GND |
| 2.872500 | 15.70 | 10.2 | 46 | 30.3 | AV | N | GND |
| 5.599500 | 16.50 | 10.2 | 50 | 33.5 | AV | N | GND |
| 19.990500 | 23.10 | 10.5 | 50 | 26.9 | AV | N | GND |

5.2. Radiated Emissions Test

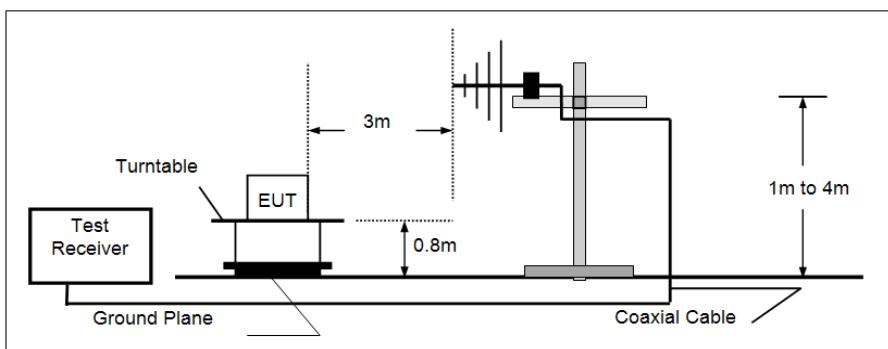
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.109

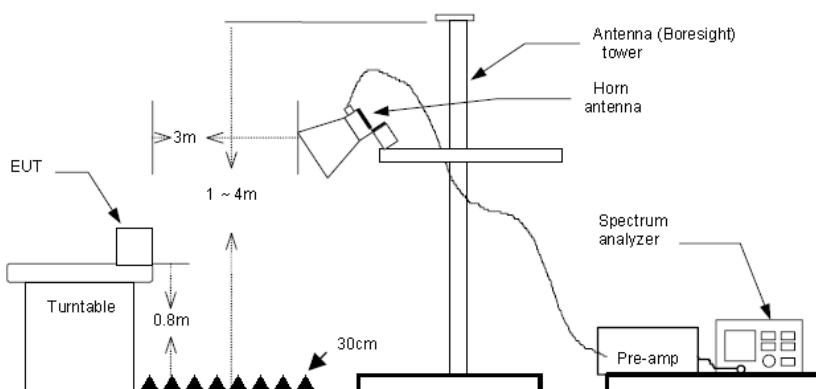
| Frequency | Limit (dBuV/m @3m) | Value |
|---------------|--------------------|------------|
| 30MHz-88MHz | 40.00 | Quasi-peak |
| 88MHz-216MHz | 43.50 | Quasi-peak |
| 216MHz-960MHz | 46.00 | Quasi-peak |
| 960MHz-1GHz | 54.00 | Quasi-peak |
| Above 1GHz | 54.00 | Average |
| | 74.00 | Peak |

TEST CONFIGURATION

- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.4:2014.
2. The EUT is placed on a turn table which is 0.8 meter above ground.
3. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
4. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
5. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
6. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - (3) From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

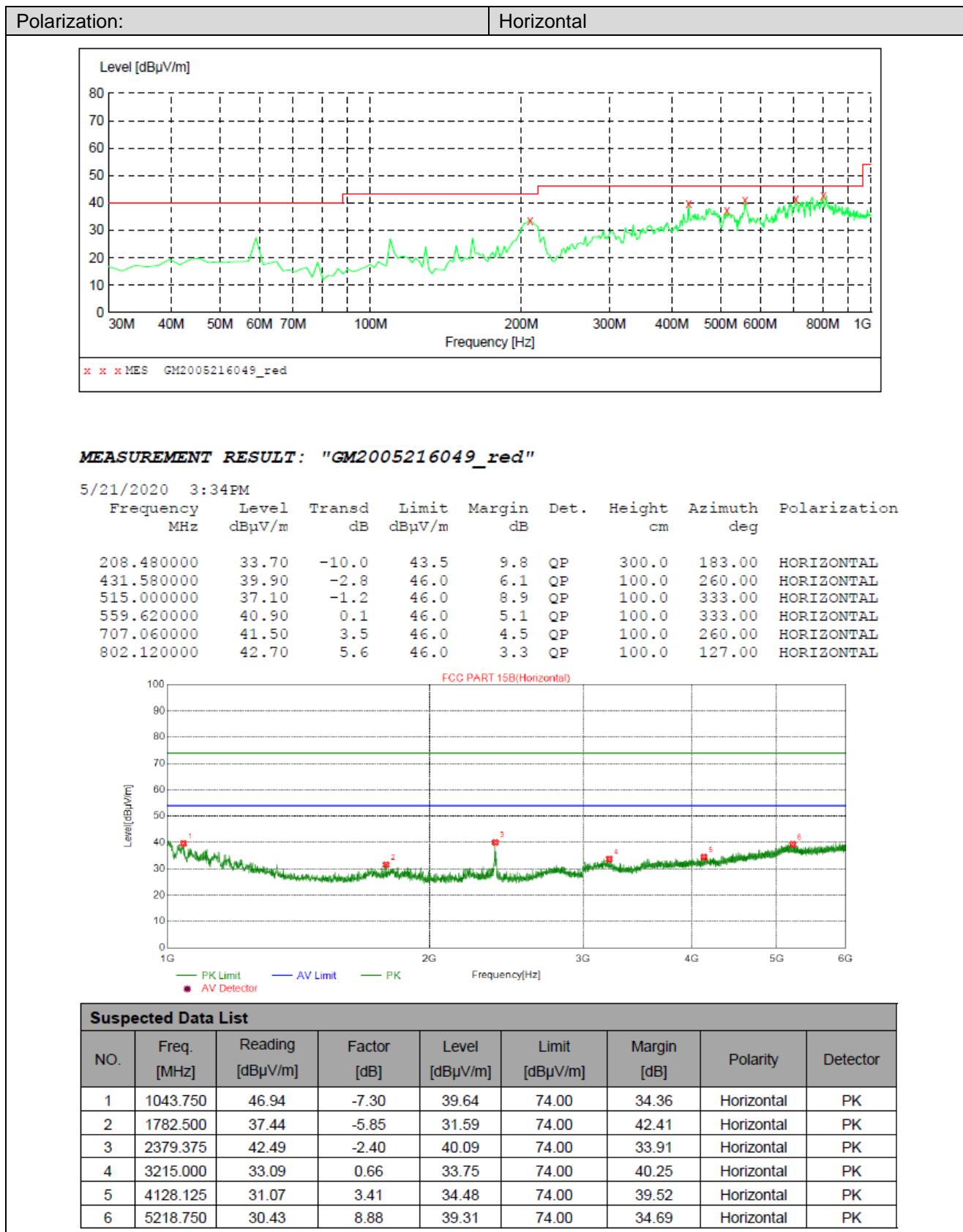
TEST MODE:

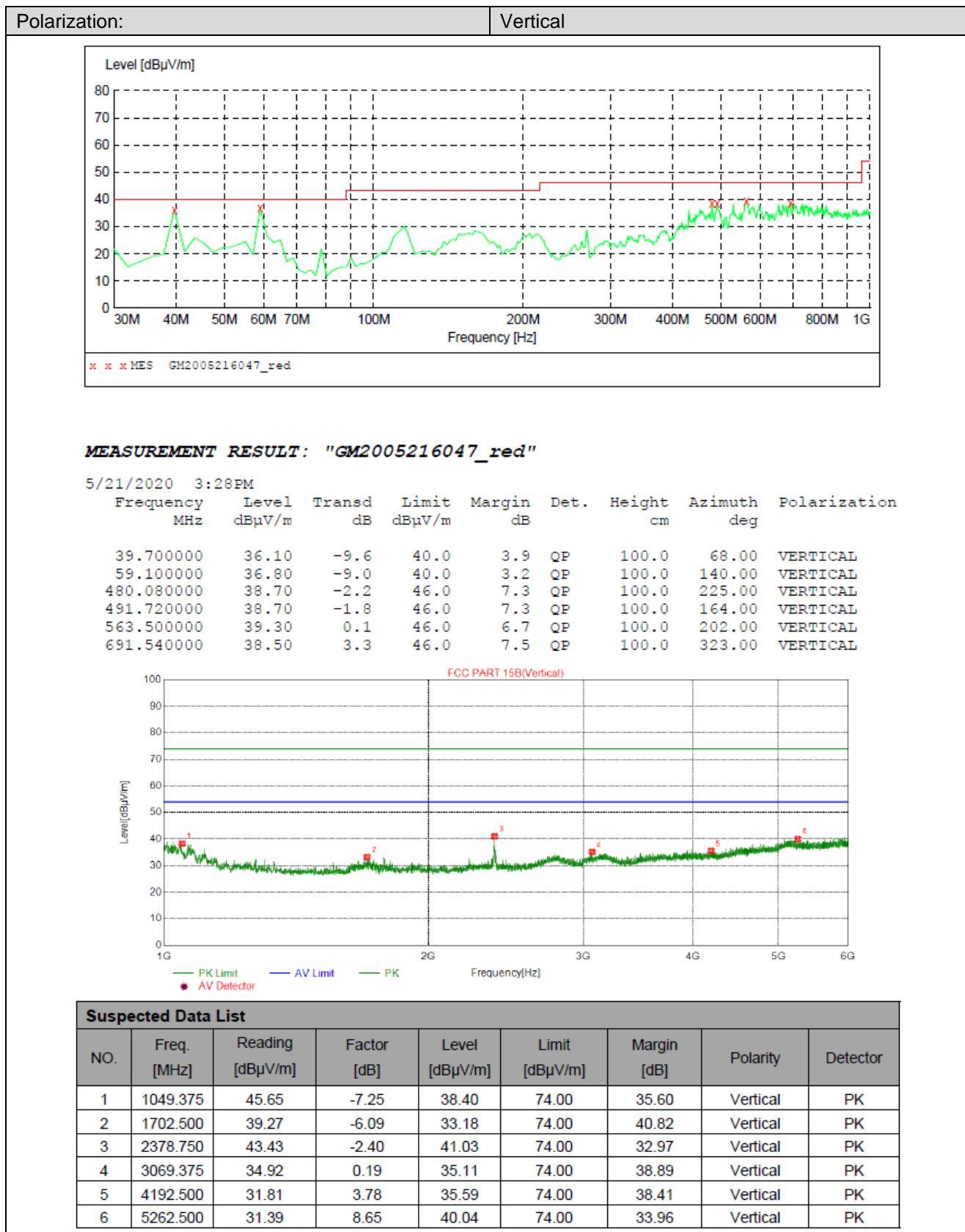
Please refer to the clause 3.3

TEST RESULTS

Passed **Not Applicable**

Note: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
The emission levels of frequency above 6GHz are very lower than limit and not show in test report.





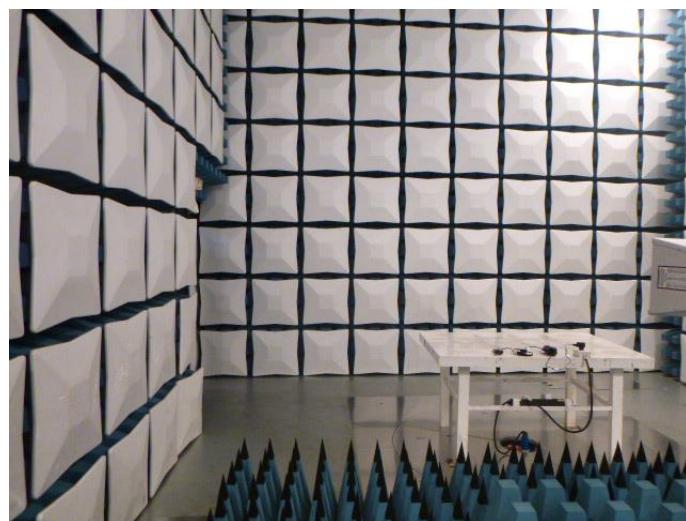
6. TEST SETUP PHOTOS OF THE EUT

Conducted Emissions



Radiated Emissions





7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Reference to the test report No.: CHTEW20050093

-----End of Report-----