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VERITAS**

FCC TEST REPORT

Report No.: ARFR-ESH-P19122002B-3
Product: Smart Camera
Test Model: SC211-WE2
Received: Dec.20, 2019
ISSUED: Jan.11,2020

Applicant: Hangzhou Tuya Information Technology Co., Ltd
Address: Room701, Building3, More Center,No.87 GuDun Road,
Hangzhou, Zhejiang, China

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation
Lab Location: No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

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1. TEST PROGRAM

PRODUCT: Smart Camera
TEST MODEL: SC211-WE2
APPLICANT: Hangzhou Tuya Information Technology Co., Ltd
TESTED: Dec.20, 2019 to Jan.09,2020
STANDARDS: 47 CFR FCC Part15, Subpart B, Class B
ANSI C63.4:2014

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

Prepared by : Will YAN , Date: Jan.11,2020

Will YAN
Project Engineer

Approved by : Daniel SUN , Date: Jan.11,2020

Daniel SUN
RF Supervisor



2. Summary of Test Procedure and Test Results

| EMISSION (47 CFR FCC Part15, Subpart B) | | |
|---|-------------------------------------|--------------------------------|
| Test Item | Normative References | Test Result |
| Conducted Emission | 47 CFR FCC Part15, Subpart B 15.107 | Meets the Class B requirements |
| Radiated Emission | 47 CFR FCC Part15, Subpart B 15.109 | Meets the Class B requirements |

Special Comment: All tests were performed on 120Vac 60Hz.



3. Test Configuration of Equipment under Test

3.1 Manufacturer information

Manufacturer : Hangzhou Tuya Information Technology Co., Ltd

Address : Room701, Building3, More Center, No.87 GuDun Road, Hangzhou, Zhejiang,
China

3.2 Feature of Equipment under Test

| | |
|--------------------------|--|
| Product Name: | Smart Camera |
| Test Model: | SC211-WE2 |
| EUT Power Rating: | 5VDC/2A with adaptor 100-240V~,50/60Hz |

Note: 1.Please refer to user manual.

3.3 Description of support units

| NO. | PRODUCT | BRAND | MODEL NO. |
|-----|--------------|-------|-----------|
| 1 | Mobile Phone | Vivo | -- |
| 2 | Cable | -- | -- |



3.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

| Measurement | | Value |
|---------------------|---------------|--------------|
| Conducted emissions | | 2.55 dB |
| Radiated emissions | 30 MHz ~ 1GHz | 3.22 dB |
| | Above 1GHz | 2.89 dB |



4 Test of Conducted Emission

4.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.107)

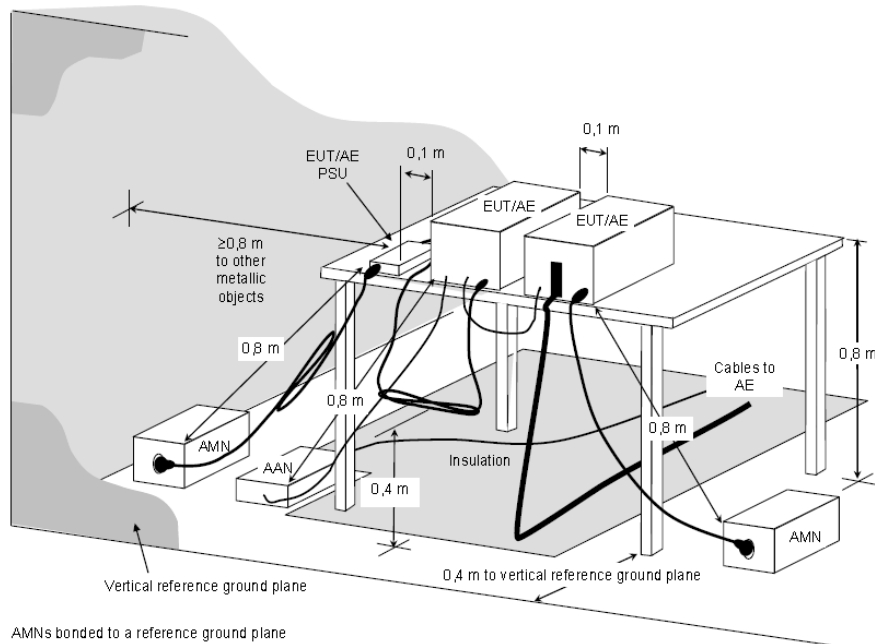
| FREQUENCY (MHz) | Class A (dB μ V) | | Class B (dB μ V) | |
|-----------------|----------------------|---------|----------------------|---------|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 79 | 66 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 73 | 60 | 56 | 46 |
| 5.0 - 30.0 | 73 | 60 | 60 | 50 |

- NOTES:**
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.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2 Test Procedures

1. The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
2. Connect EUT to the power mains through a Artificial Mains Network (AMN).
3. All the support units are connecting to the other AMN.
4. The AMN provides 50 ohm coupling impedance for the measuring instrument.
5. The CISPR states that a 50 ohm, 50 micro-Henry AMN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched
8. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup



NOTE The 0,8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be ≥0,8 m.

**Figure D.2 – Example measurement arrangement for table-top EUT
(Conducted emission measurement – alternative 1)**



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4.4 Measurement Equipment

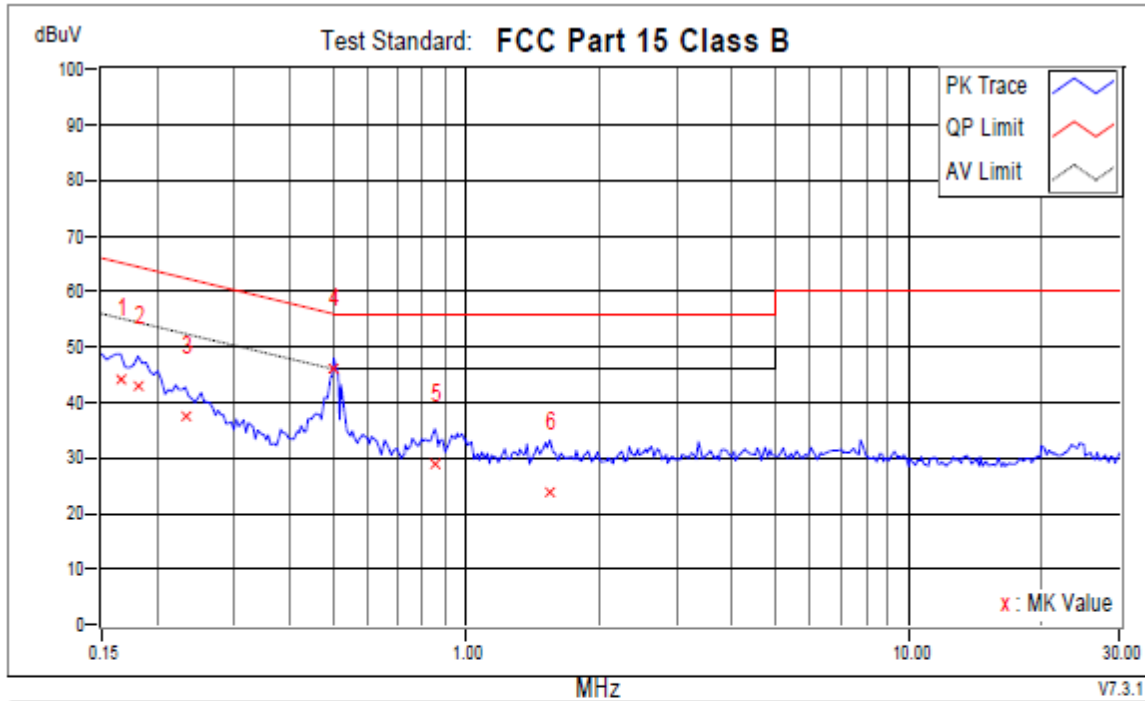
| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|----------------------------------|-----------------|------------|------------------|
| Test Receiver ROHDE & SCHWARZ | ESCS30 | E1R1001 | Mar.04, 2020 |
| LISN ROHDE & SCHWARZ | ENV216 | E1L1011 | Jul.17, 2020 |
| Software ADT | ADT_Cond_V7.3.0 | N/A | N/A |



4.5 Test Result and Data

a. Conducted Emission Test Data

Phase: LINE



| No. | Frequency MHz | Corr. Factor dB | Reading dBuV | | Emission dBuV | | Limit dBuV | | Margins dB | | Notes |
|-----|------------------|-----------------------|-----------------|-------|------------------|-------|---------------|-------|---------------|--------|-------|
| | | | QP | AV | QP | AV | QP | AV | QP | AV | |
| 1 | 0.16564 | 9.85 | 34.35 | 14.30 | 44.20 | 24.15 | 65.18 | 55.18 | -20.98 | -31.03 | |
| 2 | 0.18128 | 9.85 | 32.97 | 13.30 | 42.82 | 23.15 | 64.43 | 54.43 | -21.60 | -31.27 | |
| 3 | 0.23211 | 9.81 | 27.58 | 12.72 | 37.39 | 22.53 | 62.37 | 52.37 | -24.99 | -29.85 | |
| +4 | 0.50190 | 9.72 | 36.22 | 24.74 | 45.94 | 34.46 | 56.00 | 46.00 | -10.06 | -11.54 | |
| 5 | 0.84989 | 9.59 | 19.21 | 6.37 | 28.80 | 15.96 | 56.00 | 46.00 | -27.20 | -30.04 | |
| 6 | 1.54740 | 9.69 | 13.99 | 0.04 | 23.68 | 9.73 | 56.00 | 46.00 | -32.32 | -36.27 | |

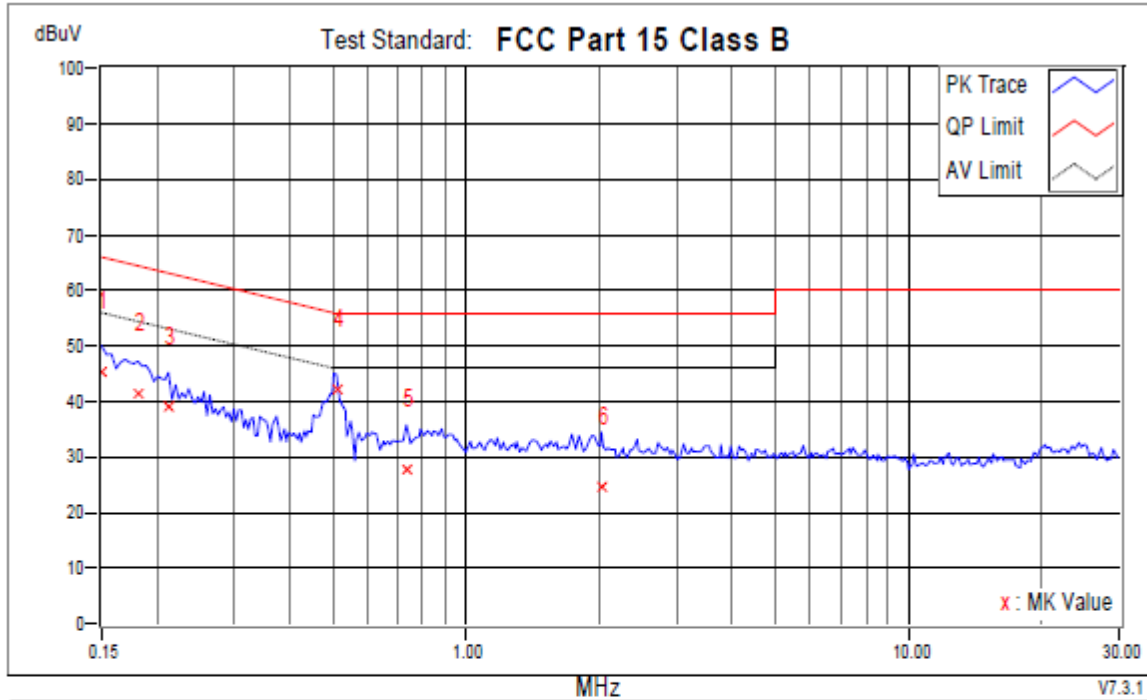
REMARKS:

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.



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Phase: NEUTRAL



| No. | Frequency MHz | Corr. Factor dB | Reading dBuV | | Emission dBuV | | Limit dBuV | | Margins dB | | Notes |
|-----|------------------|-----------------------|-----------------|-------|------------------|-------|---------------|-------|---------------|--------|-------|
| | | | QP | AV | QP | AV | QP | AV | QP | AV | |
| 1 | 0.15000 | 9.85 | 35.63 | 18.58 | 45.48 | 28.43 | 66.00 | 56.00 | -20.52 | -27.57 | |
| 2 | 0.18128 | 9.82 | 31.67 | 15.03 | 41.49 | 24.85 | 64.43 | 54.43 | -22.94 | -29.58 | |
| 3 | 0.21256 | 9.81 | 29.13 | 14.25 | 38.94 | 24.06 | 63.10 | 53.10 | -24.17 | -29.05 | |
| +4 | 0.50972 | 9.84 | 32.50 | 24.98 | 42.34 | 34.82 | 56.00 | 46.00 | -13.66 | -11.18 | |
| 5 | 0.73259 | 9.84 | 17.90 | 10.66 | 27.74 | 20.50 | 56.00 | 46.00 | -28.26 | -25.50 | |
| 6 | 2.02051 | 9.94 | 14.67 | 6.25 | 24.61 | 16.19 | 56.00 | 46.00 | -31.39 | -29.81 | |

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.



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4.6 Test Photographs





5 Test of Radiated Emission

5.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.109)

FOR FREQUENCY BELOW 1000 MHz

| FREQUENCY (MHz) | Class A (at 10m) | | Class B (at 3m) | |
|-----------------|------------------|--------------------------|-----------------|--------------------------|
| | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |
| 30 – 88 | 90 | 39.1 | 100 | 40.0 |
| 88 – 216 | 150 | 43.5 | 150 | 43.5 |
| 216 – 960 | 210 | 46.4 | 200 | 46.0 |
| 960 – 1000 | 300 | 49.5 | 500 | 54.0 |

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

| FREQUENCY (MHz) | Class A ($\text{dB}\mu\text{V/m}$) (at 3m) | | Class B ($\text{dB}\mu\text{V/m}$) (at 3m) | |
|-----------------|--|---------|--|---------|
| | PEAK | AVERAGE | PEAK | AVERAGE |
| Above 1000 | 80.0 | 60.0 | 74.0 | 54.0 |

- Note:**
1. The lower limit shall apply at the transition frequencies.
 2. Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$).
 3. All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



5.4 Measurement Equipment

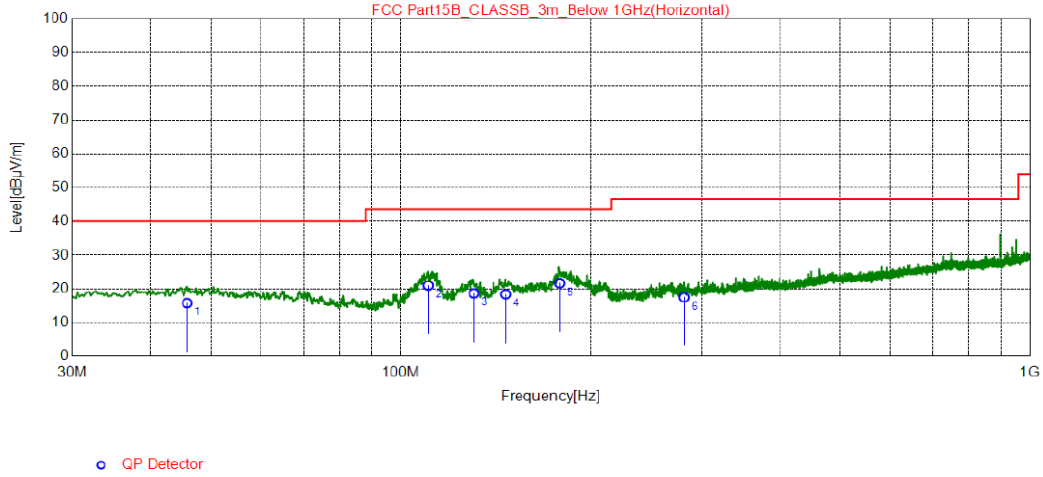
| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|--|-------------|------------|------------------|
| EMI Test Spectrum ROHDE & SCHWARZ | ESR7 | E1R1005 | Dec.01, 2020 |
| Spectrum Analyzer Keysight | N9030B | E1S1003 | Jul.22, 2020 |
| Broad-Band Antenna Schwarzbeck | VULB9168 | E1A1012 | Aug.25, 2020 |
| Double Riaged Vroadband Horn Antenna Schwarzbeck | BBHA9120D | E1A1017 | Jan.26, 2020 |
| Preamplifier Agilent | 8447D | E1A2001 | Oct.13, 2020 |
| Preamplifier Agilent | EMC051845SE | E1A2009 | Jul.18, 2020 |



5.5 Test Result and Data (30MHz ~ 1GHz)

Position: Horizontal

Test Graph



| NO. | Freq. [MHz] | QP Reading [dB µ V/m] | Factor [dB] | QP Value [dB µ V/m] | QP Limit [dB µ V/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
|-----|-------------|-----------------------|-------------|---------------------|---------------------|----------------|-------------|-----------|------------|
| 1 | 45.71 | 25.38 | -9.60 | 15.78 | 40.00 | 24.22 | 200 | 110 | Horizontal |
| 2 | 110.5 | 33.07 | -12.07 | 21.00 | 43.50 | 22.50 | 200 | 51 | Horizontal |
| 3 | 130.6 | 29.36 | -10.70 | 18.66 | 43.50 | 24.84 | 200 | 79 | Horizontal |
| 4 | 146.7 | 27.98 | -9.58 | 18.40 | 43.50 | 25.10 | 200 | 92 | Horizontal |
| 5 | 178.7 | 32.91 | -11.24 | 21.67 | 43.50 | 21.83 | 200 | 278 | Horizontal |
| 6 | 282.2 | 27.11 | -9.64 | 17.47 | 46.50 | 29.03 | 100 | 309 | Horizontal |

REMARKS:

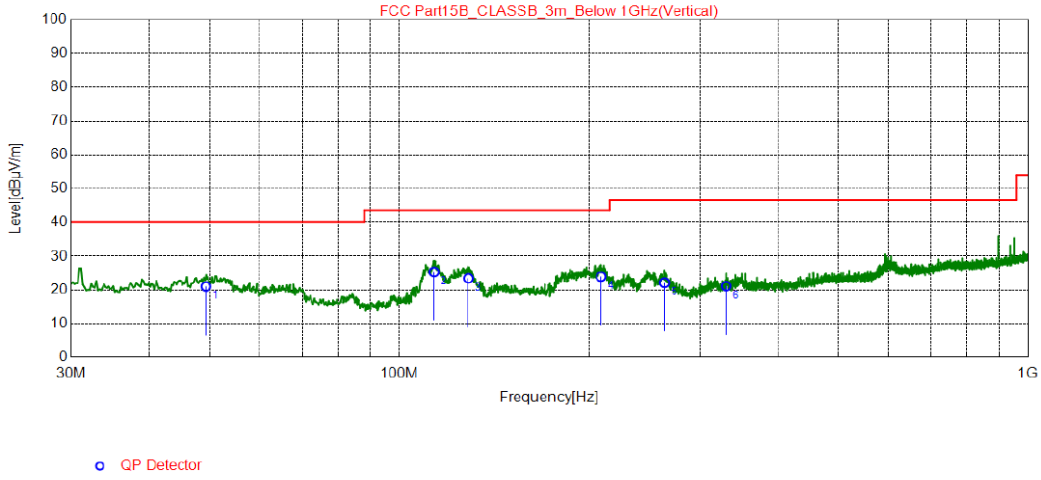
1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value.
4. Factor = Antenna Factor + Amplifier Factor + Cable loss.
5. QP value = Factor + Reading Value.



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Position: Vertical

Test Graph



| NO. | Freq. [MHz] | QP Reading [dB µ V/m] | Factor [dB] | QP Value [dB µ V/m] | QP Limit [dB µ V/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
|-----|-------------|-----------------------|-------------|---------------------|---------------------|----------------|-------------|-----------|----------|
| 1 | 49.20 | 30.67 | -9.68 | 20.99 | 40.00 | 19.01 | 100 | 287 | Vertical |
| 2 | 113.4 | 37.23 | -11.96 | 25.27 | 43.50 | 18.23 | 100 | 51 | Vertical |
| 3 | 128.7 | 34.25 | -10.87 | 23.38 | 43.50 | 20.12 | 100 | 149 | Vertical |
| 4 | 209.2 | 35.83 | -11.95 | 23.88 | 43.50 | 19.62 | 100 | 120 | Vertical |
| 5 | 263.9 | 32.12 | -10.01 | 22.11 | 46.50 | 24.39 | 100 | 120 | Vertical |
| 6 | 330.8 | 29.93 | -8.82 | 21.11 | 46.50 | 25.39 | 100 | 105 | Vertical |

REMARKS:

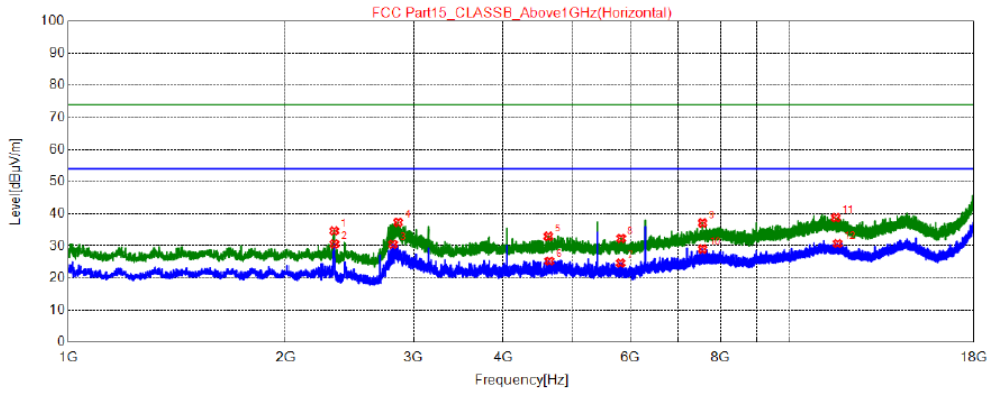
1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.



5.6 Test Result and Data (1GHz ~ 18GHz)

Position: Horizontal

Test Graph



★ AV Detector

| NO. | Freq. [MHz] | Reading [dBuV/m] | Level [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity | Detector |
|-----|-------------|------------------|----------------|----------------|-------------|-------------|-----------|------------|----------|
| 1 | 2330.2500 | 50.75 | 34.66 | 74.00 | 39.34 | 100 | 299 | Horizontal | PK |
| 2 | 2331.9500 | 46.65 | 30.56 | 54.00 | 23.44 | 100 | 299 | Horizontal | AV |
| 3 | 2810.5000 | 45.33 | 30.45 | 54.00 | 23.55 | 100 | 174 | Horizontal | AV |
| 4 | 2858.9500 | 52.11 | 37.36 | 74.00 | 36.64 | 100 | 299 | Horizontal | PK |
| 5 | 4619.3000 | 42.92 | 32.93 | 74.00 | 41.07 | 100 | 330 | Horizontal | PK |
| 6 | 4634.6000 | 35.17 | 25.23 | 54.00 | 28.77 | 100 | 330 | Horizontal | AV |
| 7 | 5816.9500 | 32.96 | 24.65 | 54.00 | 29.35 | 100 | 174 | Horizontal | AV |
| 8 | 5826.3000 | 40.60 | 32.28 | 74.00 | 41.72 | 100 | 360 | Horizontal | PK |
| 9 | 7557.7500 | 40.91 | 37.18 | 74.00 | 36.82 | 100 | 267 | Horizontal | PK |
| 10 | 7558.6000 | 32.70 | 28.97 | 54.00 | 25.03 | 100 | 236 | Horizontal | AV |
| 11 | 11570.6000 | 37.30 | 38.83 | 74.00 | 35.17 | 100 | 267 | Horizontal | PK |
| 12 | 11633.5000 | 29.31 | 30.71 | 54.00 | 23.29 | 100 | 360 | Horizontal | AV |

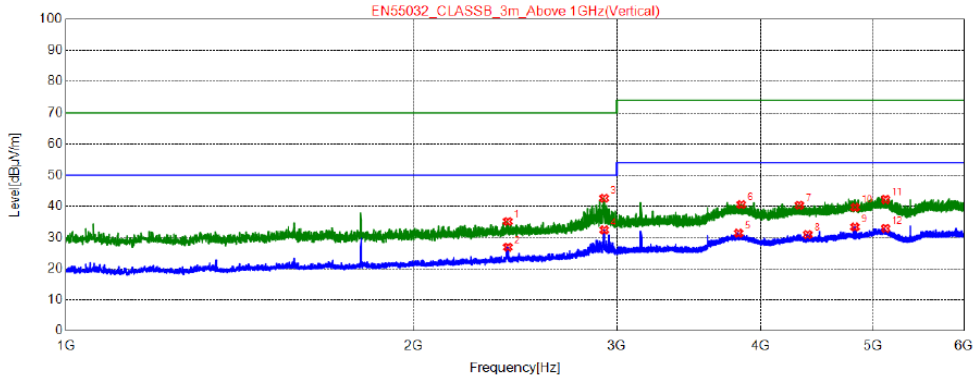
REMARKS:

- 1. The emission levels of other frequencies were very low against the limit.
- 2. Margin = Limit –Level



Position: Vertical

Test Graph



○ QP Detector ★ AV Detector

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity | Detector |
|-----|----------------|---------------------|-------------------|-------------------|----------------|----------------|--------------|----------|----------|
| 1 | 2412.5000 | 51.12 | 35.20 | 70.00 | 34.80 | 100 | 306 | Vertical | PK |
| 2 | 2413.0000 | 42.79 | 26.87 | 50.00 | 23.13 | 100 | 306 | Vertical | AV |
| 3 | 2925.0000 | 57.21 | 42.64 | 70.00 | 27.36 | 100 | 340 | Vertical | PK |
| 4 | 2926.0000 | 47.06 | 32.49 | 50.00 | 17.51 | 100 | 340 | Vertical | AV |
| 5 | 3825.5000 | 43.41 | 31.45 | 54.00 | 22.55 | 100 | 17 | Vertical | AV |
| 6 | 3847.0000 | 52.53 | 40.62 | 74.00 | 33.38 | 100 | 68 | Vertical | PK |
| 7 | 4320.0000 | 51.16 | 40.40 | 74.00 | 33.60 | 100 | 356 | Vertical | PK |
| 8 | 4393.0000 | 41.55 | 31.00 | 54.00 | 23.00 | 100 | 170 | Vertical | AV |
| 9 | 4827.5000 | 42.84 | 33.45 | 54.00 | 20.55 | 100 | 340 | Vertical | AV |
| 10 | 4829.0000 | 49.12 | 39.73 | 74.00 | 34.27 | 100 | 153 | Vertical | PK |
| 11 | 5132.0000 | 51.28 | 42.24 | 74.00 | 31.76 | 100 | 221 | Vertical | PK |
| 12 | 5132.5000 | 42.02 | 32.98 | 54.00 | 21.02 | 100 | 221 | Vertical | AV |

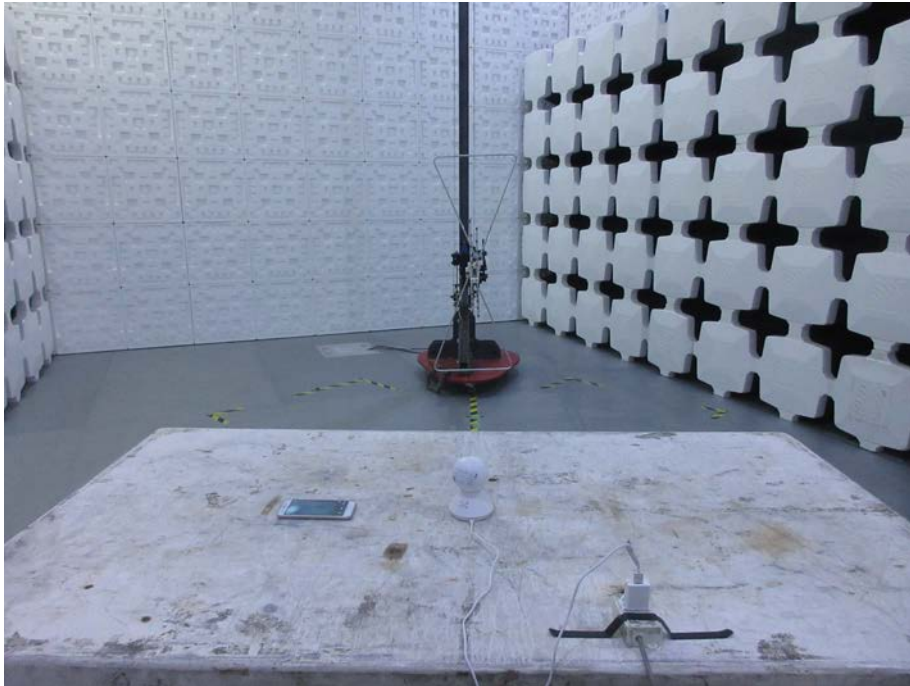
REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit –Level



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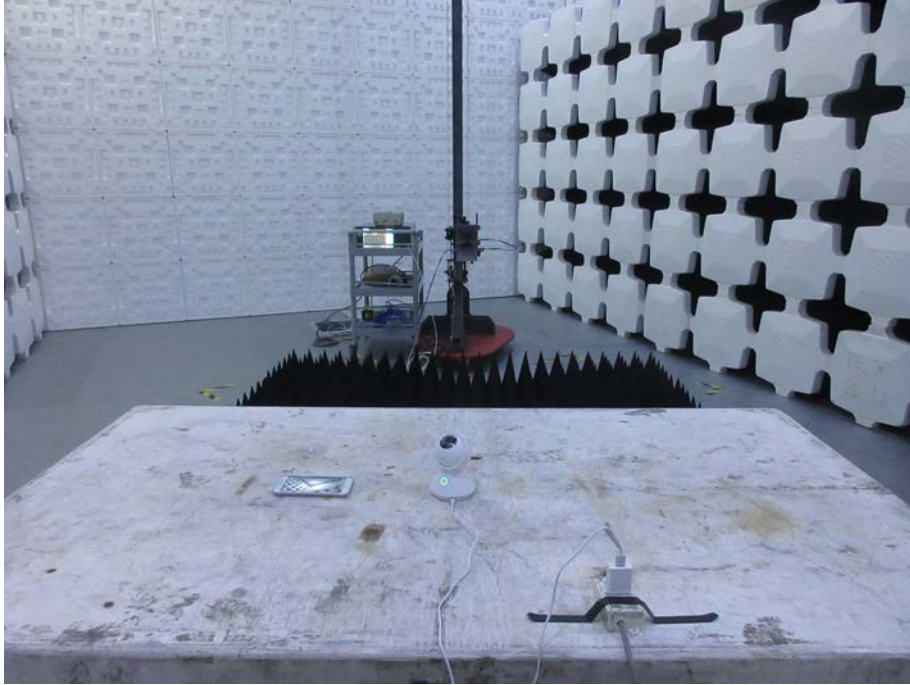
5.7 Test Photographs (30MHz ~ 1000MHz)





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5.8 Test Photographs (1000MHz ~ 18000MHz)





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6 Photographs of EUT



--- END ---