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TEST REPORT

Report No.: CHTEW20060142 Report Verification:

Project No...... SHT2006021401EW

FCC ID.....: IN2TX50

Applicant's name.....: Hunter Fan Company

United States 38016

Manufacturer...... Shenzhen H&T lintelligent Control CO., Ltd.

Address...... H&T Industrial Park,No.18 BaoShan Road,Tian Liao

Community, Guangming new

district, Shenzhen, Guangdong, China 518132

Test item description: Remote Control for Ceiling Fan

Trade Mark Hunter

Model/Type reference..... K6019-05

Standard: FCC CFR Title 47 Part 15 Subpart C Section 15.231

Date of receipt of test sample........... Jun.12, 2020

Date of testing...... Jun.12, 2020- Jun.24, 2020

Date of issue...... Jun.28, 2020

Result...... PASS

Compiled by

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

Tianliao, Gongming, Shenzhen, China

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The test report merely correspond 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:

- FCC Rules Part 15.231(a): Periodic operation in the band 40.66–40.70 MHz and above 70 MHz.
- ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

1.2. Report version

| Revision No. | Date of issue | Description |
|--------------|---------------|-------------|
| N/A | 2020-06-28 | Original |
| | | |
| | | |
| | | |
| | | |

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2. TEST DESCRIPTION

| Report clause | Test Items | Standard Requirement | Result |
|---------------|--|-------------------------|--------|
| 5.1 | Antenna Requirement | 15.203 | PASS |
| 5.2 | AC Conducted Emission | 15.207 | N/A |
| 5.3 | 20dB Bandwidth | 15.231(c) | PASS |
| 5.4 | 99% Occupied Bandwidth | - | PASS*1 |
| 5.5 | Transmission time | 15.231(a)(1) | PASS |
| 5.6 | Duty cycle corrected factor | - | PASS*1 |
| 5.7 | Field strength of the Fundamental signal | 15.231(b) | PASS |
| 5.8 | Radiated Spurious Emission | 15.231(b)/15.205/15.209 | PASS |

Note:

The measurement uncertainty is not included in the test result.

 ^{*1:} No requirement on standard, only report these test data.

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3. **SUMMARY**

3.1. Client Information

| Applicant: | Hunter Fan Company | |
|---|--|--|
| Address: | 7130 Goodlett Farms Pkwy, Suite 400, Memphis, Tennessee, United States 38016 | |
| Manufacturer: Shenzhen H&T lintelligent Control CO., Ltd. | | |
| Address: | H&T Industrial Park,No.18 BaoShan Road,Tian Liao Community,Guangming new district,Shenzhen,Guangdong,China 518132 | |

3.2. Product Description

| Name of EUT: | Remote Control for Ceiling Fan |
|-------------------|--|
| Trade Mark: | Hunter |
| Model No.: | K6019-05 |
| Listed Model(s): | K5579-02,K6019-08,K6266-06,K6266-07,K6266-08 |
| Power supply: | DC 3V |
| Hardware version: | V04 |
| Software version: | V02 |

3.3. Radio Specification Description

| Operation frequency: | 433.92MHz |
|----------------------|-----------|
| Modulation: | ASK |
| Channel number: | 1 |

3.4. Testing Laboratory Information

| Laboratory Name | Shenzhen Huatongwei International Inspection Co., Ltd. | | |
|---------------------|--|----------------------|--|
| Laboratory Location | 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China | | |
| | Туре | Accreditation Number | |
| | CNAS | L1225 | |
| Qualifications | A2LA | 3902.01 | |
| | FCC | 762235 | |
| | Canada | 5377A | |

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4. TEST CONFIGURATION

4.1. Test frequency list

According to section ANSI C63.10 section 5.6.1,

Measurements of unlicensed wireless devices shall be performed and, if required, reported for each band in which the EUT can be operated with the device operating at the number of frequencies in each band specified in Table 4

Table 4—Number of frequencies to be tested

| Frequency range in which device operates | Number of frequencies | Location in frequency range of operation |
|--|-----------------------|--|
| 1 MHz or less | 1 | Middle |
| 1 MHz to 10 MHz | 2 | 1 near top and 1 near bottom |
| More than 10 MHz | 3 | 1 near top, 1 near middle, and 1 near bottom |

So test frequency as follow:

| Channel | Frequency (MHz) |
|-----------------|-----------------|
| CH _M | 433.92 |

4.2. Test mode

For RF test items

The engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions:

The EUT was set to connect with large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit.

The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

4.3. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

| Wheth | Whether support unit is used? | | | | |
|-------|-------------------------------|------------|-----------|--------|------------|
| ✓ | ✓ No | | | | |
| Item | Equipement | Trade Name | Model No. | FCC ID | Power cord |
| 1 | | | | | |
| 2 | | | | | |

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4.4. Testing environmental condition

| Туре | Requirement | Actual |
|--------------------|--------------|----------|
| Temperature: | 15~35°C | 25°C |
| Relative Humidity: | 25~75% | 50% |
| Air Pressure: | 860~1060mbar | 1000mbar |

4.5. Measurement uncertainty

| Test Item | Measurement Uncertainty |
|--------------------------------------|-------------------------|
| AC Conducted Emission (150kHz~30MHz) | 3.02 dB |
| Radiated Emission (30MHz~1000MHz | 4.90 dB |
| Radiated Emissions (1GHz~25GHz) | 4.96 dB |
| Peak Output Power | 0.51 dB |
| Power Spectral Density | 0.51 dB |
| Conducted Spurious Emission | 0.51 dB |
| 6dB Bandwidth | 70 Hz |

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

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4.6. Equipment 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 | HTWE0119 | VULB9163 | 546 | 2018/04/04 | 2021/04/03 | | | |
| • | Pre-Amplifer | 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 | 2020/05/27 | 2021/05/26 | | | |
| • | Test Software | R&S | N/A | ES-K1 | N/A | N/A | N/A | | | |

| • | Radiated emis | sion-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 | 2021/10/10 |
| • | Pre-amplifier | CD | HTWE0071 | PAP-0102 | 12004 | 2019/11/14 | 2020/11/13 |
| • | Broadband Pre- amplifier | SCHWARZBECK | HTWE0201 | BBV 9718 | 9718-248 | 2020/05/23 | 2021/05/22 |
| • | 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 |

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| • | RF Conducted Method | | | | | | | | | |
|------|------------------------------|--------------|-----------|------------|------------------------------|------------------------------|--|--|--|--|
| Used | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) | | | | |
| • | Signal and spectrum Analyzer | R&S | FSV40 | 100048 | 2019/10/26 | 2020/10/25 | | | | |
| • | Spectrum Analyzer | Agilent | N9020A | MY50510187 | 2019/10/26 | 2020/10/25 | | | | |
| • | Power Meter | Anritsu | ML249A | N/A | 2019/10/26 | 2020/10/25 | | | | |
| 0 | Radio communication tester | R&S | CMW500 | 137688-Lv | 2019/10/26 | 2020/10/25 | | | | |

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5. TEST CONDITIONS AND RESULTS

5.1. Antenna Requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

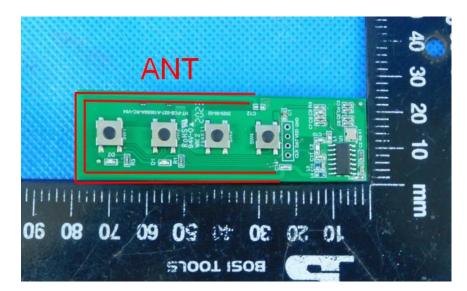
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responseble party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

TEST RESULT

| \square | Passed | ☐ Not Applicable |
|-------------|---------------------|------------------|
| \triangle | rass c u | ■ Not Applicable |

The antenna type is a PCB antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.

I



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5.2. AC Conducted Emission

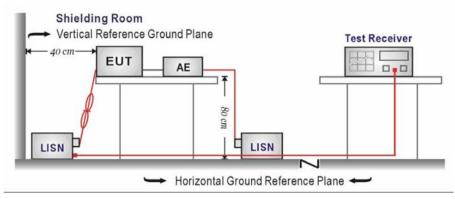
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

| Fragues ou range (MHz) | Limit (dBuV) | | | | |
|------------------------|--------------|-----------|--|--|--|
| Frequency range (MHz) | 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 C63.10 requirements.
- 2. The EUT was placed on a platform 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 impedances stabilization network (LISN). The LISN provides a 50 ohm /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 4.2

TEST RESULT

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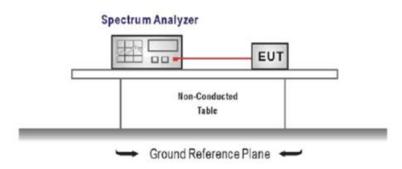
5.3. 20dB bandwidth

LIMIT

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900 MHz.

For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

TEST CONFIGURATION



TEST PROCEDURE

- 1. Connect the antenna port(s) to the spectrum analyzer input.
- Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency = channel center frequency

Span= approximately 2 to 3 times the 20 dB bandwidth

RBW = 100 kHz, VBW ≥ 3 × RBW

Sweep time= auto couple

Detector = Peak

Trace mode = max hold

- 3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
- 4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

TEST MODE:

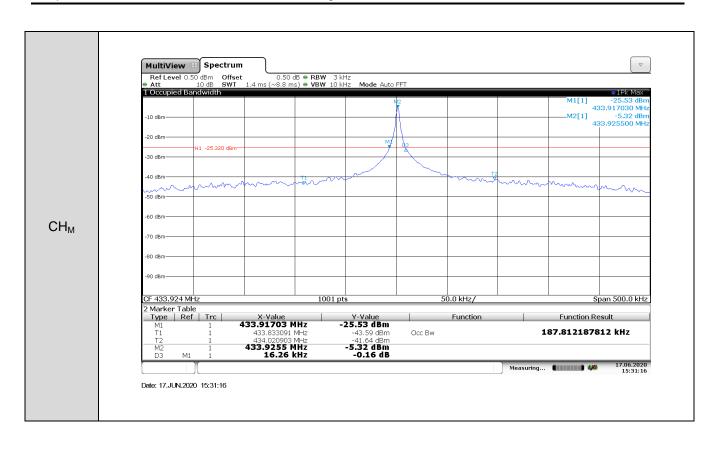
Please refer to the clause 4.2

TEST RESULT

| Test Channel | 20dB Bandwidth (kHz) | Limit (kHz) | Result |
|-----------------|-------------------------|----------------|--------|
| CH _M | 16.26 | 1084.8 | Pass |

NOTE:Limit=0.25%*Center Frequency-0.25%*433.92MHz=1084.8kHZ

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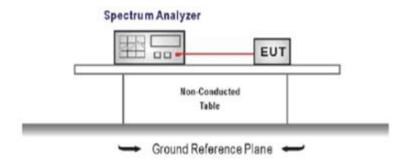
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5.4. 99% Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

- 1. Connect the antenna port(s) to the spectrum analyzer input.
- Configure the spectrum analyzer as shown below (enter all losses between the transmitter output andthe spectrum analyzer).

Center Frequency =channel center frequency

Span≥1.5 x OBW

RBW = 1%~5%OBW

VBW ≥ 3 × RBW

Sweep time= auto couple

Detector = Peak

Trace mode = max hold

3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.

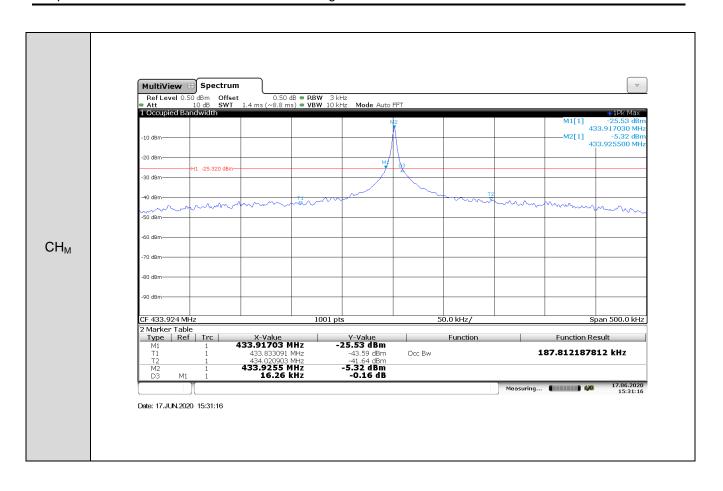
TEST MODE:

Please refer to the clause 4.2

TEST RESULT

| Test Channel | 99% Occupied Bandwidth (kHz) | Limit (kHz) | Result |
|-----------------|------------------------------|----------------|--------|
| CH _M | 187.81 | - | Pass |

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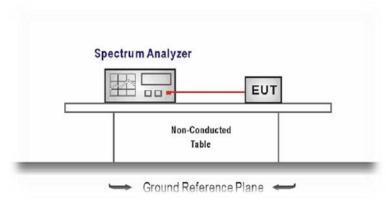
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5.5. Transmission Time

LIMIT

A manually operated transmitter shall employ a switch that will auto-matically deactivate the transmitter within not more than 5 seconds of being released.

TEST CONFIGURATION



TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- 3. Use the following spectrum analyzer settings:

Frequency=Center carrier frequency

RBW=100kHz, VBW=300kHz, Span= zero,

Sweep time= 10second, Detector function = peak, Trace = single

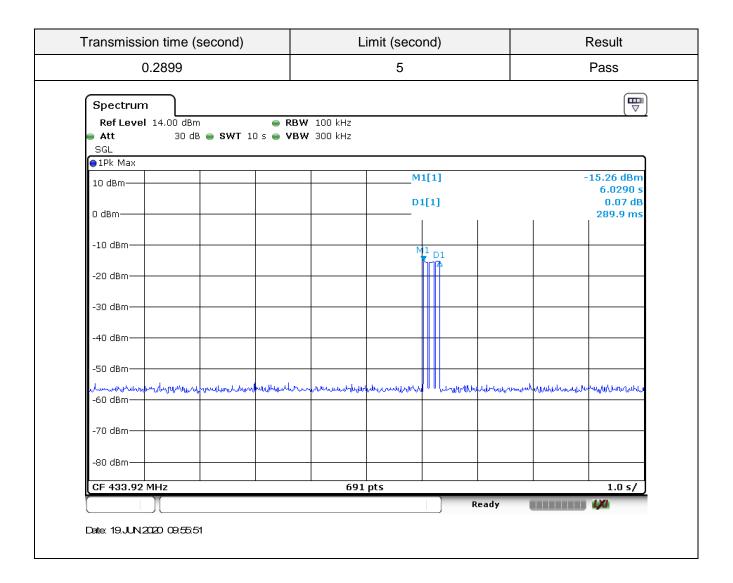
4. Measure and record the results in the test report.

TEST MODE:

Please refer to the clause 4.2

TEST RESULTS

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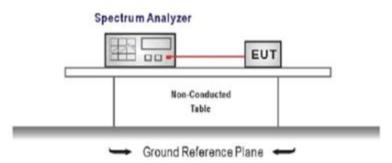
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5.6. Duty Cycle Corrected Factor

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

- The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- 3. Use the following spectrum analyzer settings:
 - Span=zero span, Frequency=centered channel, RBW= 1MHz, VBW ≥ RBW
 - Sweep time=as necessary to capture the entire dwell time,
 - Detector function = peak, Trigger mode
- 4. Measure and record the duty cycle data

TEST MODE:

Please refer to the clause 4.2

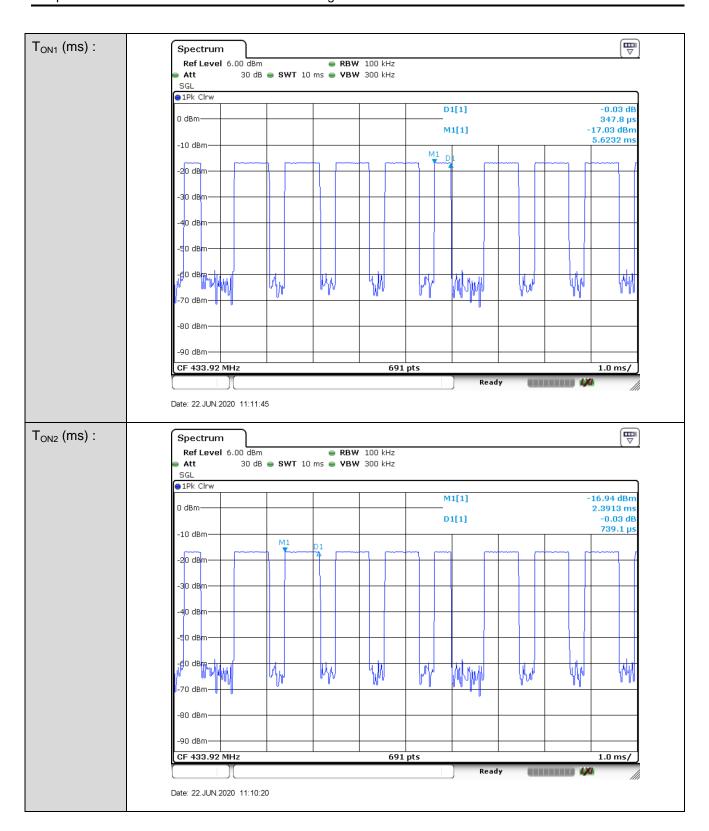
TEST RESULTS

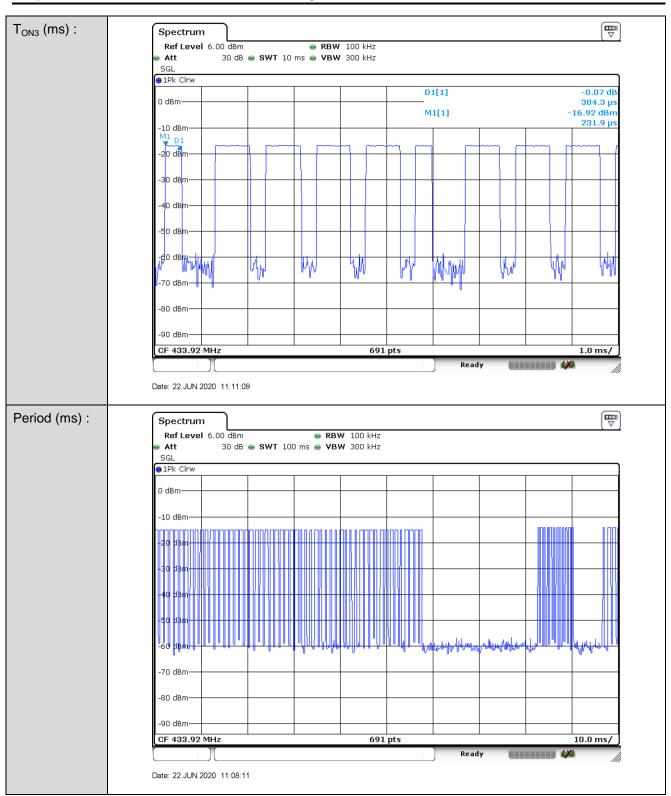
TEST DATA:

| T _{ON1} (ms) : | 0.3478 |
|------------------------------|--|
| T _{ON1} number | 8 |
| T _{ON2} (ms) : | 0.7391 |
| T _{ON2} number | 42 |
| T _{ON3} (ms) : | 0.3043 |
| T _{ON3} number | 12 |
| Period (ms) : | 100 |
| Duty Cycle : | =(0.3478*8+0.7391*42+0.3043*12)/100=0.37 |
| Duty Cycle Corrected Factor: | =20*log(0.37)=-8.64 |

Note:

- 1) Duty cycle= Ton1* T_{ON1} number +Ton2* T_{ON2} number+ Ton3* T_{ON3} number / Tperiod
- 2) Duty Cycle Corrected Factor/DCCF=20*log (Duty Cycle)





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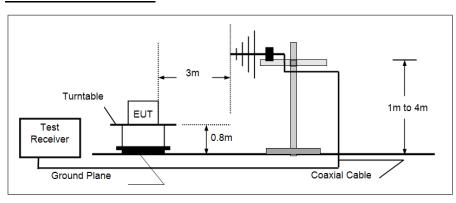
5.7. Radiated field strength of the fundamental signal

LIMIT

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emissions (microvolts/meter) |
|-----------------------------|--|---|
| 40.66-40.70 | 2,250 | 225 |
| 70-130 | 1,250 | 125 |
| 130-174 | ¹ 1,250 to 3,750 | ¹ 125 to 375 |
| 174-260 | 3,750 | 375 |
| 260-470 | ¹ 3,750 to 12,500 | ¹ 375 to 1,250 |
| Above 470 | 12,500 | 1,250 |

¹Linear interpolations.

TEST CONFIGURATION



TEST PROCEDURE

- 1. The EUT was setup and tested according to ANSI C63.10.
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1GHz, The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
 - a) Span shall wide enough to fully capture the emission being measured;
 - b) RBW=120 kHz, VBW=300 kHz, 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 guasi-peak detector and reported.

TEST MODE:

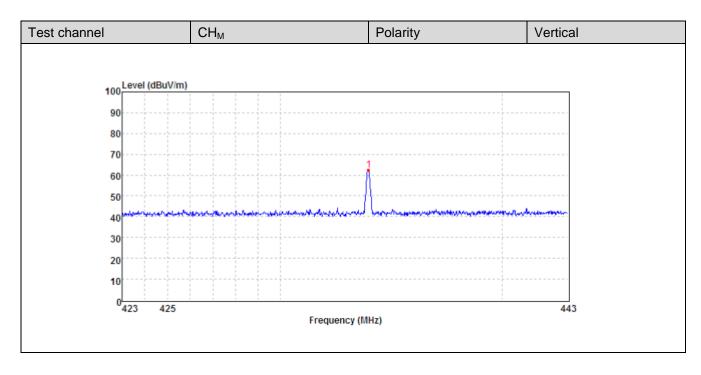
Please refer to the clause 4.2

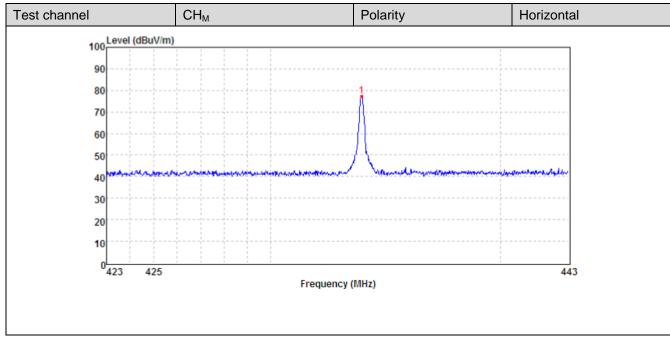
TEST RESULTS

Note:

- Level= Reading + Factor; Factor = Antenna Factor + Cable Loss Preamp Factor
- Margin = Limit Level

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| | Fundamental of Peak | | | | | | | | |
|-----|---------------------|---------------------|----------------|-------------------|-------------------|----------------|------------|----------|--|
| No. | Freq. [MHz] | Reading [dBµV/m] | Factor [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | |
| 1 | 433.92 | 38.08 | 24.3 | 62.38 | 100.80 | 38.42 | Vertical | PK | |
| 2 | 433.92 | 53.05 | 24.3 | 77.35 | 100.80 | 23.45 | Horizontal | PK | |

| | Fundamental of Average | | | | | | | | |
|-----|------------------------|----------------------|--------------|-------------------|-------------------|----------------|------------|----------|--|
| No. | Freq. [MHz] | PK level [dBµV/m] | DCCF [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | |
| 1 | 433.92 | 62.38 | -8.64 | 53.74 | 80.80 | 27.06 | Vertical | AV | |
| 2 | 433.92 | 77.35 | -8.64 | 68.71 | 80.80 | 12.09 | Horizontal | AV | |

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5.8. Radiated Spurious Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.231(b)

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emissions (microvolts/meter) |
|-----------------------------|--|---|
| 40.66-40.70 | 2,250 | 225 |
| 70-130 | 1,250 | 125 |
| 130-174 | ¹ 1,250 to 3,750 | ¹ 125 to 375 |
| 174-260 | 3,750 | 375 |
| 260-470 | ¹ 3,750 to 12,500 | ¹ 375 to 1,250 |
| Above 470 | 12,500 | 1,250 |

FCC CFR Title 47 Part 15 Subpart C Section 15.209

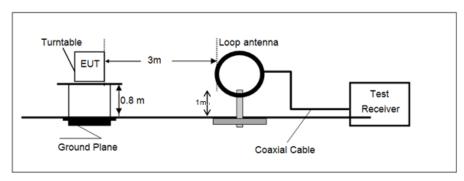
| Frequency | Limit (dBuV/m) | Value |
|----------------------|-------------------|------------|
| 0.009 MHz ~0.49 MHz | 2400/F(kHz) @300m | Quasi-peak |
| 0.49 MHz ~ 1.705 MHz | 24000/F(kHz) @30m | Quasi-peak |
| 1.705 MHz ~30 MHz | 30 @30m | Quasi-peak |

Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3) = Limit dBuV/m @300m +80, Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3) = Limit dBuV/m @30m + 40.

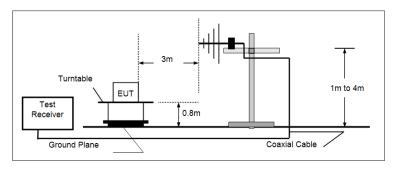
| Frequency | Limit (dBuV/m @3m) | Value |
|---------------|--------------------|------------|
| 30MHz~88MHz | 40.00 | Quasi-peak |
| 88MHz~216MHz | 43.50 | Quasi-peak |
| 216MHz~960MHz | 46.00 | Quasi-peak |
| 960MHz~1GHz | 54.00 | Quasi-peak |
| Above 1GHz | 54.00 | Average |
| Above IGHZ | 74.00 |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

TEST CONFIGURATION

→ 9 kHz ~ 30 MHz

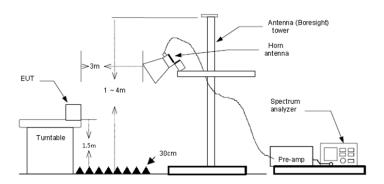


> 30 MHz ~ 1 GHz



Above 1 GHz

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TEST PROCEDURE

- 1. The EUT was setup and tested according to ANSI C63.10.
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
 - a) Span shall wide enough to fully capture the emission being measured;
 - b) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, 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.

 Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

For average measurement:

Average level = Peak level - DCCF

TEST MODE:

Please refer to the clause 4.2

TEST RESULT

Note:

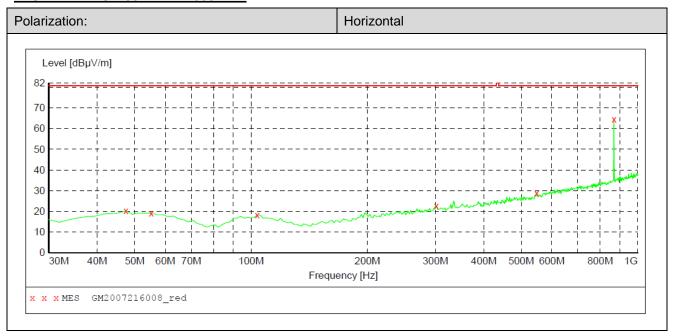
- 1) Level= Reading + Factor/Transd; Factor/Transd = Antenna Factor+ Cable Loss- Preamp Factor
- 2) Margin = Limit Level
- Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

TEST DATA FOR 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

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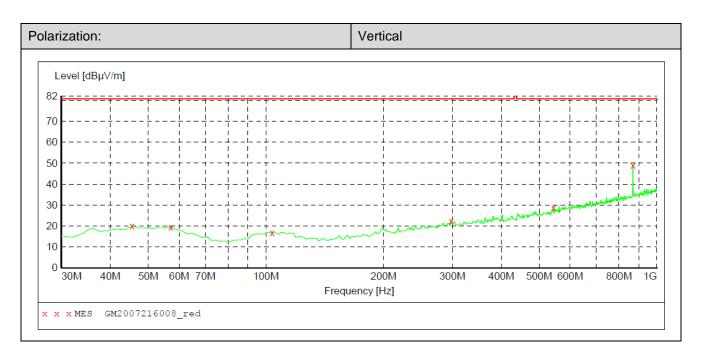
TEST DATA FOR 30 MHz ~ 1000 MHz



| | Spurious Emission of Peak | | | | | | | | | |
|-----|---------------------------|-------------------|-------------|-------------------|-------------|------------|----------|--|--|--|
| No. | Freq. [MHz] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | | | |
| 1 | 47.46 | 19.70 | -8.3 | 80.80 | 61.10 | Horizontal | PK | | | |
| 2 | 55.22 | 18.70 | -8.1 | 80.80 | 62.10 | Horizontal | PK | | | |
| 3 | 103.72 | 17.70 | -9.9 | 80.80 | 63.10 | Horizontal | PK | | | |
| 4 | 301.60 | 22.00 | -6.2 | 80.80 | 58.80 | Horizontal | PK | | | |
| 5 | 547.98 | 28.00 | 0.4 | 80.80 | 52.80 | Horizontal | PK | | | |
| 6 | 868.08 | 63.10 | 7.2 | 80.80 | 17.70 | Horizontal | PK | | | |

| | Spurious Emission of Average | | | | | | | | | |
|-----|------------------------------|----------------------|--------------|-------------------|-------------------|----------------|------------|----------|--|--|
| No. | Freq. [MHz] | PK level [dBµV/m] | DCCF [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | | |
| 1 | 47.46 | 19.70 | -8.64 | 11.06 | 60.80 | 49.74 | Horizontal | AV | | |
| 2 | 55.22 | 18.70 | -8.64 | 10.06 | 60.80 | 50.74 | Horizontal | AV | | |
| 3 | 103.72 | 17.70 | -8.64 | 9.06 | 60.80 | 51.74 | Horizontal | AV | | |
| 4 | 301.60 | 22.00 | -8.64 | 13.36 | 60.80 | 47.44 | Horizontal | AV | | |
| 5 | 547.98 | 28.00 | -8.64 | 19.36 | 60.80 | 41.44 | Horizontal | AV | | |
| 6 | 868.08 | 63.10 | -8.64 | 54.46 | 60.80 | 6.34 | Horizontal | AV | | |

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| | Spurious Emission of Peak | | | | | | | | | |
|-----|---------------------------|-------------------|-------------|-------------------|-------------|----------|----------|--|--|--|
| No. | Freq. [MHz] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | | | |
| 1 | 45.52 | 19.60 | -8.2 | 80.80 | 61.20 | Vertical | PK | | | |
| 2 | 57.16 | 19.00 | -8.5 | 80.80 | 61.80 | Vertical | PK | | | |
| 3 | 103.72 | 16.50 | -9.9 | 80.80 | 64.30 | Vertical | PK | | | |
| 4 | 297.72 | 21.90 | -6.2 | 80.80 | 58.90 | Vertical | PK | | | |
| 5 | 544.10 | 28.20 | 0.2 | 80.80 | 52.60 | Vertical | PK | | | |
| 6 | 868.08 | 47.70 | 7.2 | 80.80 | 33.10 | Vertical | PK | | | |

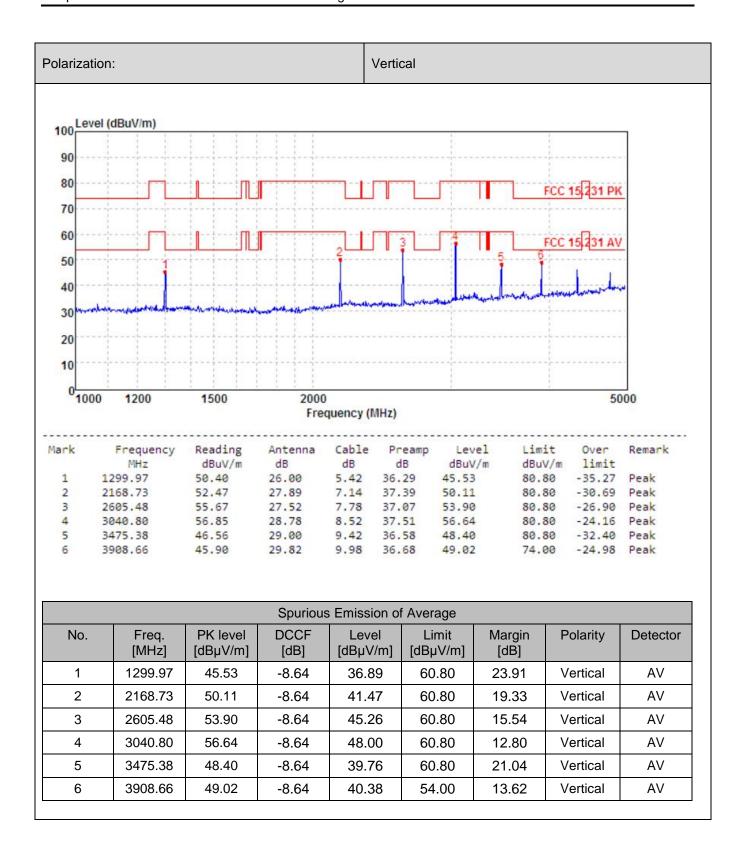
| Spurious Emission of Average | | | | | | | | | |
|------------------------------|----------------|----------------------|--------------|-------------------|-------------------|----------------|----------|----------|--|
| No. | Freq. [MHz] | PK level [dBµV/m] | DCCF [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector | |
| 1 | 45.52 | 19.60 | -8.64 | 10.96 | 60.80 | 49.84 | Vertical | AV | |
| 2 | 57.16 | 19.00 | -8.64 | 10.36 | 60.80 | 50.44 | Vertical | AV | |
| 3 | 103.72 | 16.50 | -8.64 | 7.86 | 60.80 | 52.94 | Vertical | AV | |
| 4 | 297.72 | 21.90 | -8.64 | 13.26 | 60.80 | 47.54 | Vertical | AV | |
| 5 | 544.10 | 28.20 | -8.64 | 19.56 | 60.80 | 41.24 | Vertical | AV | |
| 6 | 868.08 | 47.70 | -8.64 | 39.06 | 60.80 | 21.74 | Vertical | AV | |

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TEST DATA FOR 1 GHz ~ 5 GHz

| olarizati | on: | | | Hori | zontal | | | |
|-----------|------------------------------|------------------------|--|-----------------------|------------------------|-----------------|----------------------------|--------------------|
| | | | | | | | | |
| 100 Le | evel (dBuV/m) | : : : | | | | | ! | \neg |
| 90 | | | | | | | | |
| 80 | | | - | | | | 500 45 da4 D | |
| 70 | | | | | | | FCC 15 231 P | <u>K</u> |
| 60 | | | | | 3 4 | | | |
| - | | | 4 | 2 | | j | FCC 15 231 A | <u>v</u> |
| 50 | | | | | | | | |
| 40 | | | 1, 1 | | | minus and house | تاسيم سياسه بهيهاب | ri _e gi |
| 30 🚜 | and a military of the second | hypertherna and defend | A CONTRACTOR OF THE PARTY OF TH | سيوبغ بمعيوده المعارس | Mary Mary Mary Mary | | | |
| 20 | | | | | | | | |
| 10 | | | | | | | | |
| 0 | | | 1 1 1 1 | | ! | | | |
| 10 | 000 1200 | 1500 | 200 Fre | 0 equency (MH | z) | | 5 | 0000 |
| Mark | Frequency | | Antenna | | | | mit Over | Remark |
| 1 | MHz 1302.06 | dBuV/m 57.01 | dB 26.01 | dB 5.42 3 | dB dE 6.30 52. | | 8uV/m limit 4.00 -21.86 | |
| 2 | 2168.73 | 55.68 | 27.89 | 7.14 | 7.39 53. | 32 80 | .80 -27.48 | Peak |
| 3 | 2605.48 | 63.84 | 27.52 | | 7.07 62. | | .80 -18.73 | |
| 4 5 | 3040.80 3475.38 | 59.65 54.64 | 28.78 29.00 | | 37.51 59. 36.58 56. | |).80 -21.36).80 -24.32 | |
| 6 | 4339.71 | 47.88 | 30.46 | | 36.21 52. | | .00 -21.16 | |
| | | | | | | | | |
| | | | Spurious | Emission of | of Average | | | |
| No. | Freq. [MHz] | PK level [dBµV/m] | DCCF [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Polarity | Detector |
| 1 | 1302.06 | 52.14 | -8.64 | 43.50 | 54.00 | 10.50 | Horizontal | AV |
| 2 | 2168.73 | 53.32 | -8.64 | 44.68 | 60.80 | 16.12 | Horizontal | AV |
| 3 | 2605.48 | 62.07 | -8.64 | 53.43 | 60.80 | 7.37 | Horizontal | AV |
| 4 | 3040.80 | 59.44 | -8.64 | 50.80 | 60.80 | 10.00 | Horizontal | AV |
| 5 | 3475.38 | 56.48 | -8.64 | 47.84 | 60.80 | 12.96 | Horizontal | AV |
| 6 | 4339.71 | 52.84 | -8.64 | 44.20 | 54.00 | 9.80 | Horizontal | AV |

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6. TEST SETUP PHOTOS

Radiated Emission







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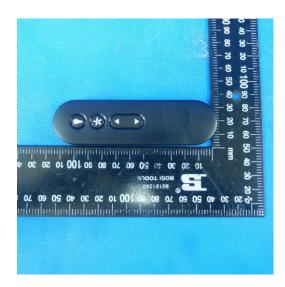


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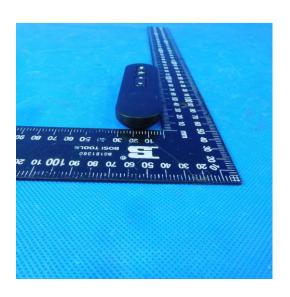
7. EXTERANAL AND INTERNAL PHOTOS

External Photos

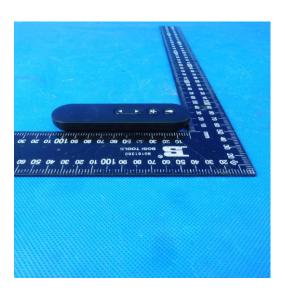
K5579-02

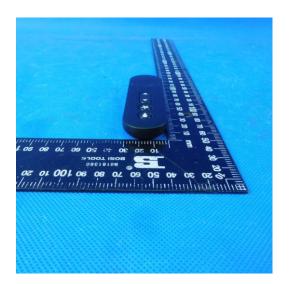






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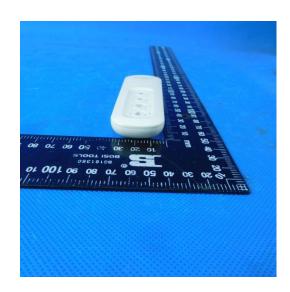


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K6019-05&K6019-08

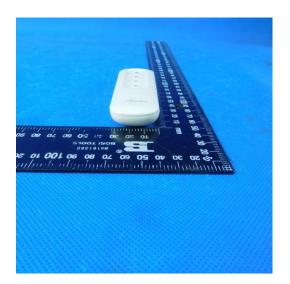


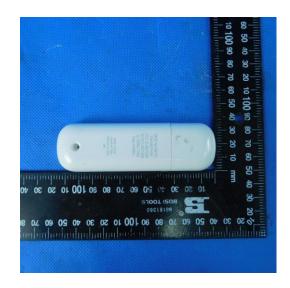


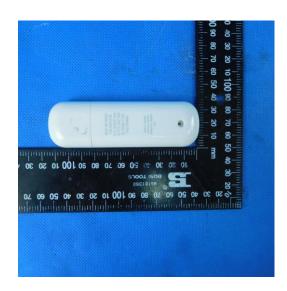


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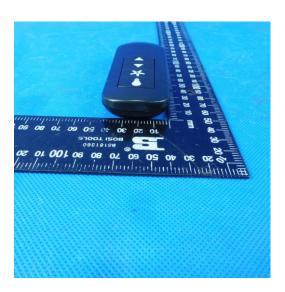


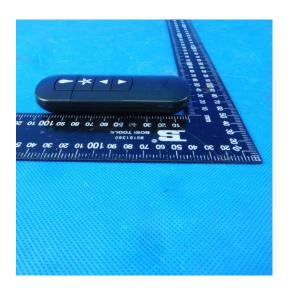
K6266-06&K6266-07&K6266-08

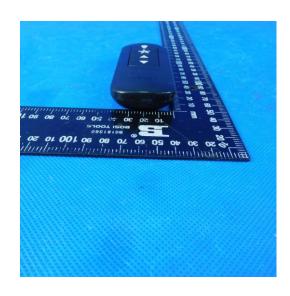




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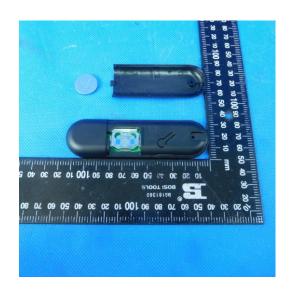




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Internal Photos

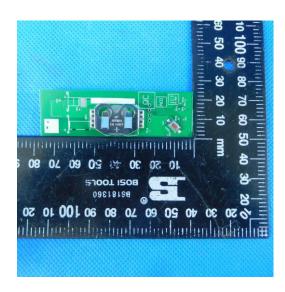
K5579-02

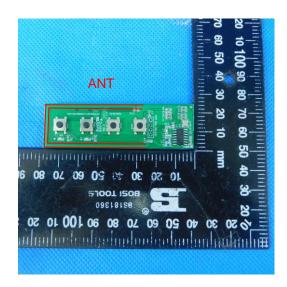






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K6019-05&K6019-08

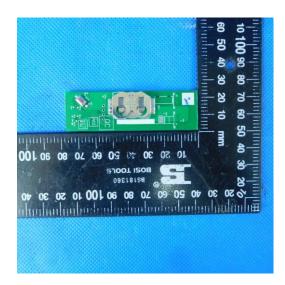


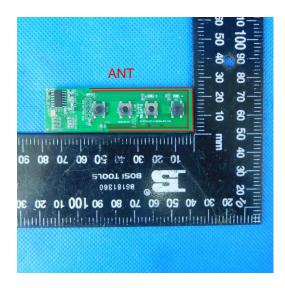




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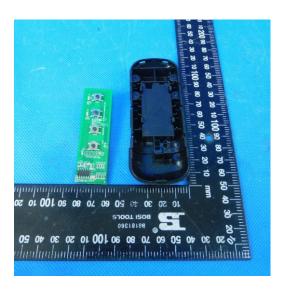


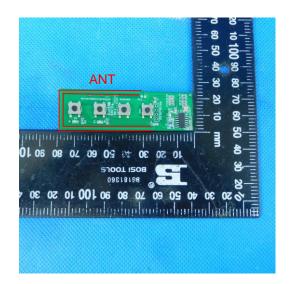
K6266-06&K6266-07&K6266-08

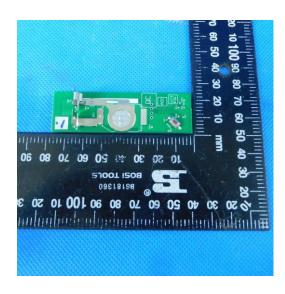




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-----End of Report-----