

FCC REPORT

Applicant: Shenzhen Aratek Biometrics Technology Co., Ltd.

Address of Applicant: 2F, T2-A Building, ShenZhen Software Park, South Area, Hi-Tech Park, Shenzhen, Guangdong, China

Equipment Under Test (EUT)

Product Name: BA8200-T, BA8200

Model No.: BA8200-T, BA8200

FCC ID: 2AGUJBA8200

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 15 Jun., 2020

Date of Test: 16 Jun., to 08 Sep., 2020

Date of report issued: 09 Sep., 2020

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

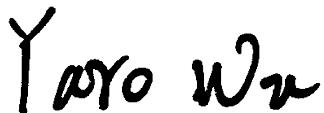
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This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | 09 Sep., 2020 | Original |
| | | |
| | | |
| | | |
| | | |

Tested by:



Yao Wu

Test Engineer

Date:

09 Sep., 2020

Reviewed by:



Winner Zhang

Project Engineer

Date:

09 Sep., 2020

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4 Test Summary

| Test Item | Section in CFR 47 | Result |
|--|-------------------|--------|
| Conducted Emission | Part 15.107 | Pass |
| Radiated Emission | Part 15.109 | Pass |
| Remark: | | |
| 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: The EUT not applicable of the test item. | | |
| Test Method: | ANSI C63.4:2014 | |

5 General Information

5.1 Client Information

| | |
|-------------------------|---|
| Applicant: | Shenzhen Aratek Biometrics Technology Co., Ltd. |
| Address: | 2F, T2-A Building, Shenzhen Software Park, South Area, Hi-Tech Park, Shenzhen, Guangdong, China |
| Manufacturer/ Factory : | Aratek Biometrics Technology Co., Ltd. |
| Address: | 2F, T2-A Building, Shenzhen Software Park, South Area, Hi-Tech Park, Shenzhen, Guangdong, China |

5.2 General Description of E.U.T.

| Product Name: | BA8200-T, BA8200 | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|--|--|------------------------------|-------------------------------------|-------------------------------------|---------------------|-----------------------------|-----------------------|----------------------------|---------------------|-----------------------------------|------------------|-----------------------|--|---------------------|-------------------------------------|---------------------|------------------|-------------------------|--|------------------------------|-------------------------------------|-------------------------------------|
| Model No.: | BA8200-T, BA8200 | | | | | | | | | | | | | | | | | | | | | | |
| AC adapter: | Model: 2K36WG-1200300W2 Input: AC100-240V, 50/60Hz, 0.8A Output: DC 12.0V, 3A | | | | | | | | | | | | | | | | | | | | | | |
| Remark: | The No.: BA8200-T and BA8200 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference that BA8200 only has facial recognition and RFID. However, BA8200-T contains facial recognition, fingerprint module, RFID and temperature module | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Item⁽¹⁾</th> <th>Model Number⁽²⁾</th> <th>Camera⁽³⁾</th> <th>Fingerprint⁽⁴⁾</th> <th>RFID⁽⁵⁾</th> <th>Temperature module⁽⁶⁾</th> </tr> </thead> <tbody> <tr> <td>1⁽¹⁾</td> <td>BA8200⁽²⁾</td> <td>1080P Dual HDR Camera with fill light, 105dB wide dynamic⁽³⁾</td> <td>None⁽⁴⁾</td> <td>ISO14443 A/B, MIFARE⁽⁵⁾</td> <td>None⁽⁶⁾</td> </tr> <tr> <td>2⁽¹⁾</td> <td>BA8200-T⁽²⁾</td> <td>1080P Dual HDR Camera with fill light, 105dB wide dynamic⁽³⁾</td> <td>Optical Press⁽⁴⁾</td> <td>ISO14443 A/B, MIFARE⁽⁵⁾</td> <td>Infrared Temp Module⁽⁶⁾</td> </tr> </tbody> </table> <p>We pre-scanned the BA8200-T and BA8200, and found that the BA8200-T is in worse condition, so the report only reflects the worse mode data</p> | | | | | Item ⁽¹⁾ | Model Number ⁽²⁾ | Camera ⁽³⁾ | Fingerprint ⁽⁴⁾ | RFID ⁽⁵⁾ | Temperature module ⁽⁶⁾ | 1 ⁽¹⁾ | BA8200 ⁽²⁾ | 1080P Dual HDR Camera with fill light, 105dB wide dynamic ⁽³⁾ | None ⁽⁴⁾ | ISO14443 A/B, MIFARE ⁽⁵⁾ | None ⁽⁶⁾ | 2 ⁽¹⁾ | BA8200-T ⁽²⁾ | 1080P Dual HDR Camera with fill light, 105dB wide dynamic ⁽³⁾ | Optical Press ⁽⁴⁾ | ISO14443 A/B, MIFARE ⁽⁵⁾ | Infrared Temp Module ⁽⁶⁾ |
| Item ⁽¹⁾ | Model Number ⁽²⁾ | Camera ⁽³⁾ | Fingerprint ⁽⁴⁾ | RFID ⁽⁵⁾ | Temperature module ⁽⁶⁾ | | | | | | | | | | | | | | | | | | |
| 1 ⁽¹⁾ | BA8200 ⁽²⁾ | 1080P Dual HDR Camera with fill light, 105dB wide dynamic ⁽³⁾ | None ⁽⁴⁾ | ISO14443 A/B, MIFARE ⁽⁵⁾ | None ⁽⁶⁾ | | | | | | | | | | | | | | | | | | |
| 2 ⁽¹⁾ | BA8200-T ⁽²⁾ | 1080P Dual HDR Camera with fill light, 105dB wide dynamic ⁽³⁾ | Optical Press ⁽⁴⁾ | ISO14443 A/B, MIFARE ⁽⁵⁾ | Infrared Temp Module ⁽⁶⁾ | | | | | | | | | | | | | | | | | | |
| Test Sample Condition: | The test samples were provided in good working order with no visible defects. | | | | | | | | | | | | | | | | | | | | | | |

5.3 Test Mode

| Operating mode | Detail description |
|----------------|--|
| Scanning mode | Keep the EUT in Camera Open and Scanning mode (Worst case) |
| Lan mode | Keep the EUT in Lan link mode |

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

5.4 Measurement Uncertainty

| Parameters | Expanded Uncertainty |
|-------------------------------------|----------------------|
| Conducted Emission (9kHz ~ 30MHz) | ±1.60 dB (k=2) |
| Radiated Emission (9kHz ~ 30MHz) | ±3.12 dB (k=2) |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.32 dB (k=2) |
| Radiated Emission (1GHz ~ 18GHz) | ±5.16 dB (k=2) |
| Radiated Emission (18GHz ~ 40GHz) | ±3.20 dB (k=2) |

5.5 Description of Support Units

| Manufacturer | Description | Model | Serial Number | FCC ID/DoC |
|--------------|-------------|-------|---------------|------------|
| LENOVO | Laptop | SL510 | 2847A65 | DoC |

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 Description of Cable Used

| Cable Type | Description | Length | From | To |
|------------|-------------|--------|------|-----|
| N/A | N/A | N/A | N/A | N/A |

5.8 Additions to, deviations, or exclusions from the method

No

5.9 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.10 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

5.11 Test Instruments list

| Radiated Emission: | | | | | |
|--------------------|-----------------|---------------|--------------------|----------------------|--------------------------|
| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC | SAEMC | 9m*6m*6m | 966 | 07-22-2017 | 07-21-2020 |
| Loop Antenna | SCHWARZBECK | FMZB1519B | 00044 | 03-07-2020 | 03-06-2021 |
| BiConiLog Antenna | SCHWARZBECK | VULB9163 | 497 | 03-07-2020 | 03-06-2021 |
| Horn Antenna | SCHWARZBECK | BBHA9120D | 916 | 03-07-2020 | 03-06-2021 |
| Horn Antenna | SCHWARZBECK | BBHA9120D | 1805 | 06-22-2017 | 06-21-2020 |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | | 06-21-2020 | 06-20-2023 |
| EMI Test Software | AUDIX | E3 | Version: 6.110919b | | |
| Pre-amplifier | HP | 8447D | 2944A09358 | 03-07-2020 | 03-06-2021 |
| Pre-amplifier | CD | PAP-1G18 | 11804 | 03-07-2020 | 03-06-2021 |
| Spectrum analyzer | Rohde & Schwarz | FSP30 | 101454 | 03-05-2020 | 03-04-2021 |
| Spectrum analyzer | Rohde & Schwarz | FSP40 | 100363 | 11-18-2019 | 11-17-2020 |
| EMI Test Receiver | Rohde & Schwarz | ESRP7 | 101070 | 03-05-2020 | 03-04-2021 |
| Cable | ZDECL | Z108-NJ-NJ-81 | 1608458 | 03-07-2020 | 03-06-2021 |
| Cable | MICRO-COAX | MFR64639 | K10742-5 | 03-07-2020 | 03-06-2021 |
| Cable | SUHNER | SUCOFLEX100 | 58193/4PE | 03-07-2020 | 03-06-2021 |

| Conducted Emission: | | | | | |
|---------------------|-----------------|------------|--------------------|----------------------|--------------------------|
| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101189 | 03-05-2020 | 03-04-2021 |
| Pulse Limiter | SCHWARZBECK | OSRAM 2306 | 9731 | 03-05-2020 | 03-04-2021 |
| LISN | CHASE | MN2050D | 1447 | 03-05-2020 | 03-04-2021 |
| LISN | Rohde & Schwarz | ESH3-Z5 | 8438621/010 | 07-21-2017 | 07-20-2020 |
| Cable | HP | 10503A | N/A | 03-05-2020 | 03-04-2021 |
| EMI Test Software | AUDIX | E3 | Version: 6.110919b | | |

6 Test results and Measurement Data

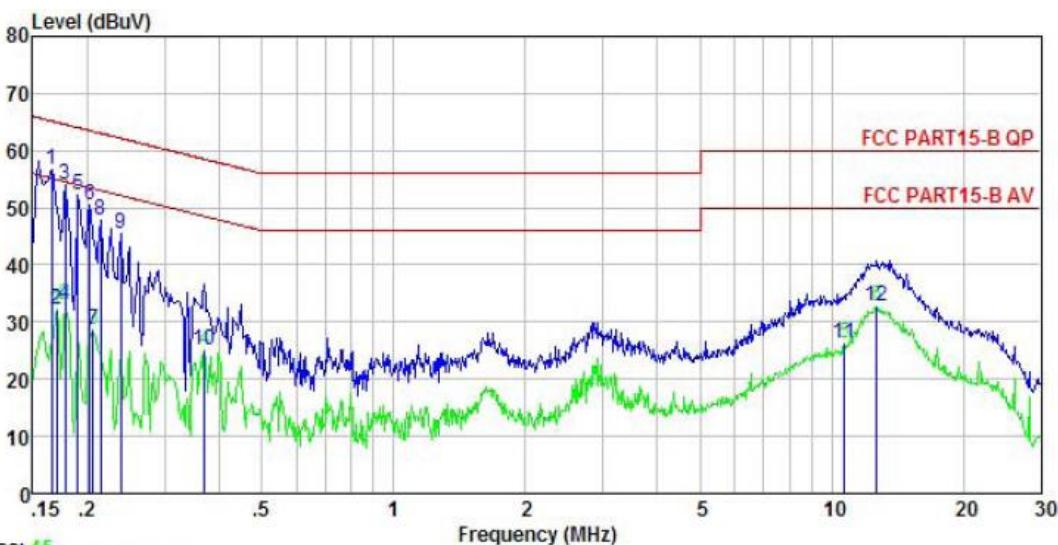
6.1 Conducted Emission

| | | | |
|--|---|------------|--------------------|
| Test Requirement: | FCC Part 15 B Section 15.107 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Class / Severity: | Class B | | |
| Receiver setup: | RBW=9kHz, VBW=30kHz | | |
| Limit: | Frequency range (MHz) | | Limit (dB μ V) |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 0.5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | | |
| Test setup: | <p>Reference Plane</p> <p>LISN</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>Test table/Insulation plane</p> <p>EMI Receiver</p> <p>Filter</p> <p>AC power</p> <p>40cm</p> <p>80cm</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p> | | |
| Test procedure | <ol style="list-style-type: none"> The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). They provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4(latest version) on conducted measurement. | | |
| Test Instruments: | Refer to section 5.11 for details | | |
| Test mode: | Refer to section 5.3 for details | | |
| Test results: | Pass | | |

Measurement data:

| Product name: | BA820-T | | | Product model: | BA820-T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------|-----------------------|----------------------|-----------------------|------------------------|-----------------------|---------------------|---------|-------------|-----------------------|----------------------|---------------------|---------------|-----------------------|---------------------|--------|---|-------|-------|-------|-------|-------|-------|-------|----|---|-------|-------|-------|-------|-------|-------|--------|----|---|-------|-------|-------|-------|-------|-------|--------|---------|---|-------|-------|-------|-------|-------|-------|--------|----|---|-------|-------|-------|-------|-------|-------|--------|---------|---|-------|-------|-------|-------|-------|-------|--------|----|---|-------|-------|-------|-------|-------|-------|--------|----|---|-------|-------|-------|-------|-------|-------|--------|----|---|-------|-------|-------|-------|-------|-------|--------|---------|----|-------|-------|-------|-------|-------|-------|--------|---------|----|--------|-------|-------|-------|-------|-------|--------|---------|----|--------|-------|-------|-------|-------|-------|--------|---------|
| Test by: | Yaro | | | Test mode: | Scanning mode | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test frequency: | 150 kHz ~ 30 MHz | | | Phase: | Line | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test voltage: | AC 120 V/60 Hz | | | Environment: | Temp: 22.5°C Huni: 55% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Level (dBuV)</p> <p>FCC PART15-B QP</p> <p>FCC PART15-B AV</p> <p>Trace: 47</p> <p>Frequency (MHz)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th></th> <th>Freq MHz</th> <th>Read Level dBuV</th> <th>LISN Factor dB</th> <th>Cable Loss dB</th> <th>Level dBuV</th> <th>Limit Line dBuV</th> <th>Over Limit dB</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.158</td> <td>47.53</td> <td>-0.57</td> <td>10.77</td> <td>57.66</td> <td>65.56</td> <td>-7.90</td> <td>QP</td> </tr> <tr> <td>2</td> <td>0.170</td> <td>44.81</td> <td>-0.58</td> <td>10.77</td> <td>54.90</td> <td>64.94</td> <td>-10.04</td> <td>QP</td> </tr> <tr> <td>3</td> <td>0.170</td> <td>23.47</td> <td>-0.58</td> <td>10.77</td> <td>33.56</td> <td>54.94</td> <td>-21.38</td> <td>Average</td> </tr> <tr> <td>4</td> <td>0.182</td> <td>42.86</td> <td>-0.58</td> <td>10.77</td> <td>52.93</td> <td>64.42</td> <td>-11.49</td> <td>QP</td> </tr> <tr> <td>5</td> <td>0.182</td> <td>23.30</td> <td>-0.58</td> <td>10.77</td> <td>33.37</td> <td>54.42</td> <td>-21.05</td> <td>Average</td> </tr> <tr> <td>6</td> <td>0.194</td> <td>41.08</td> <td>-0.59</td> <td>10.76</td> <td>51.10</td> <td>63.84</td> <td>-12.74</td> <td>QP</td> </tr> <tr> <td>7</td> <td>0.206</td> <td>39.76</td> <td>-0.59</td> <td>10.76</td> <td>49.76</td> <td>63.36</td> <td>-13.60</td> <td>QP</td> </tr> <tr> <td>8</td> <td>0.230</td> <td>36.47</td> <td>-0.58</td> <td>10.75</td> <td>46.44</td> <td>62.44</td> <td>-16.00</td> <td>QP</td> </tr> <tr> <td>9</td> <td>0.365</td> <td>20.41</td> <td>-0.50</td> <td>10.73</td> <td>30.85</td> <td>48.61</td> <td>-17.76</td> <td>Average</td> </tr> <tr> <td>10</td> <td>0.393</td> <td>17.42</td> <td>-0.48</td> <td>10.72</td> <td>28.04</td> <td>47.99</td> <td>-19.95</td> <td>Average</td> </tr> <tr> <td>11</td> <td>12.060</td> <td>18.77</td> <td>-0.71</td> <td>10.92</td> <td>31.69</td> <td>50.00</td> <td>-18.31</td> <td>Average</td> </tr> <tr> <td>12</td> <td>13.408</td> <td>19.02</td> <td>-0.70</td> <td>10.91</td> <td>32.38</td> <td>50.00</td> <td>-17.62</td> <td>Average</td> </tr> </tbody> </table> | | | | | | | | | Freq MHz | Read Level dBuV | LISN Factor dB | Cable Loss dB | Level dBuV | Limit Line dBuV | Over Limit dB | Remark | 1 | 0.158 | 47.53 | -0.57 | 10.77 | 57.66 | 65.56 | -7.90 | QP | 2 | 0.170 | 44.81 | -0.58 | 10.77 | 54.90 | 64.94 | -10.04 | QP | 3 | 0.170 | 23.47 | -0.58 | 10.77 | 33.56 | 54.94 | -21.38 | Average | 4 | 0.182 | 42.86 | -0.58 | 10.77 | 52.93 | 64.42 | -11.49 | QP | 5 | 0.182 | 23.30 | -0.58 | 10.77 | 33.37 | 54.42 | -21.05 | Average | 6 | 0.194 | 41.08 | -0.59 | 10.76 | 51.10 | 63.84 | -12.74 | QP | 7 | 0.206 | 39.76 | -0.59 | 10.76 | 49.76 | 63.36 | -13.60 | QP | 8 | 0.230 | 36.47 | -0.58 | 10.75 | 46.44 | 62.44 | -16.00 | QP | 9 | 0.365 | 20.41 | -0.50 | 10.73 | 30.85 | 48.61 | -17.76 | Average | 10 | 0.393 | 17.42 | -0.48 | 10.72 | 28.04 | 47.99 | -19.95 | Average | 11 | 12.060 | 18.77 | -0.71 | 10.92 | 31.69 | 50.00 | -18.31 | Average | 12 | 13.408 | 19.02 | -0.70 | 10.91 | 32.38 | 50.00 | -17.62 | Average |
| | Freq MHz | Read Level dBuV | LISN Factor dB | Cable Loss dB | Level dBuV | Limit Line dBuV | Over Limit dB | Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.158 | 47.53 | -0.57 | 10.77 | 57.66 | 65.56 | -7.90 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0.170 | 44.81 | -0.58 | 10.77 | 54.90 | 64.94 | -10.04 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 0.170 | 23.47 | -0.58 | 10.77 | 33.56 | 54.94 | -21.38 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 0.182 | 42.86 | -0.58 | 10.77 | 52.93 | 64.42 | -11.49 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 0.182 | 23.30 | -0.58 | 10.77 | 33.37 | 54.42 | -21.05 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 0.194 | 41.08 | -0.59 | 10.76 | 51.10 | 63.84 | -12.74 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 0.206 | 39.76 | -0.59 | 10.76 | 49.76 | 63.36 | -13.60 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 0.230 | 36.47 | -0.58 | 10.75 | 46.44 | 62.44 | -16.00 | QP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 0.365 | 20.41 | -0.50 | 10.73 | 30.85 | 48.61 | -17.76 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 0.393 | 17.42 | -0.48 | 10.72 | 28.04 | 47.99 | -19.95 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 12.060 | 18.77 | -0.71 | 10.92 | 31.69 | 50.00 | -18.31 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 13.408 | 19.02 | -0.70 | 10.91 | 32.38 | 50.00 | -17.62 | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Notes:</p> <ol style="list-style-type: none"> An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission. Final Level =Receiver Read level + LISN Factor + Cable Loss. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|------------------------|------------------|-----------------------|------------------------|
| Product name: | BA8200-T | Product model: | BA820-T |
| Test by: | Yaro | Test mode: | Scanning mode |
| Test frequency: | 150 kHz ~ 30 MHz | Phase: | Neutral |
| Test voltage: | AC 120 V/60 Hz | Environment: | Temp: 22.5°C Huni: 55% |



| Freq MHz | Read Level dBuV | LISN Factor dB | Cable Loss dB | Level dBuV | Limit Line dBuV | Over Limit dB | Over Limit Remark |
|-------------|-----------------------|----------------------|---------------------|---------------|-----------------------|---------------------|-------------------------|
| | MHz | dBuV | dB | dBuV | dBuV | dB | |
| 1 | 0.166 | 46.45 | -0.68 | 10.77 | 56.55 | 65.16 | -8.61 QP |
| 2 | 0.170 | 22.04 | -0.68 | 10.77 | 32.14 | 54.94 | -22.80 Average |
| 3 | 0.178 | 43.93 | -0.68 | 10.77 | 54.02 | 64.59 | -10.57 QP |
| 4 | 0.178 | 22.85 | -0.68 | 10.77 | 32.94 | 54.59 | -21.65 Average |
| 5 | 0.190 | 42.11 | -0.67 | 10.76 | 52.20 | 64.02 | -11.82 QP |
| 6 | 0.202 | 40.53 | -0.67 | 10.76 | 50.62 | 63.54 | -12.92 QP |
| 7 | 0.206 | 18.51 | -0.67 | 10.76 | 28.60 | 53.36 | -24.76 Average |
| 8 | 0.214 | 37.87 | -0.67 | 10.76 | 47.96 | 63.05 | -15.09 QP |
| 9 | 0.238 | 35.49 | -0.67 | 10.75 | 45.57 | 62.17 | -16.60 QP |
| 10 | 0.369 | 15.09 | -0.64 | 10.73 | 25.14 | 48.52 | -23.38 Average |
| 11 | 10.676 | 14.40 | -0.79 | 10.93 | 26.22 | 50.00 | -23.78 Average |
| 12 | 12.649 | 20.32 | -0.80 | 10.92 | 32.84 | 50.00 | -17.16 Average |

Notes:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Receiver Read level + LISN Factor + Cable Loss.

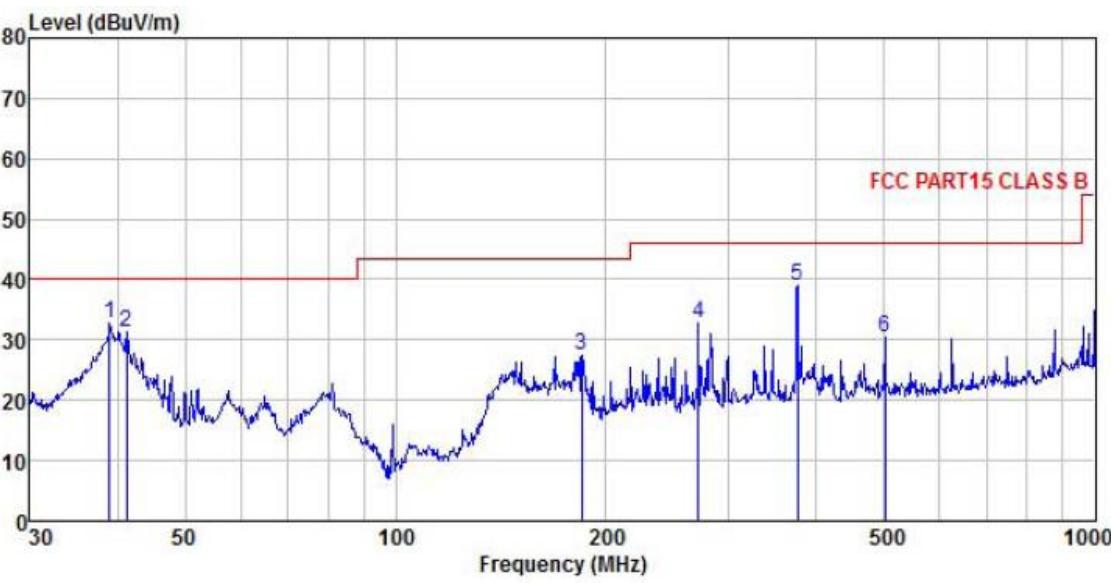
6.2 Radiated Emission

| | | | | | | | | | | | | | | |
|-----------------------|--|--------------------|--------|------------------|------------------|--|--|--|--|--|--|--|--|--|
| Test Requirement: | FCC Part 15 B Section 15.109 | | | | | | | | | | | | | |
| Test Frequency Range: | 30MHz to 5th harmonic of the highest frequency | | | | | | | | | | | | | |
| Test site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | | | | | | | | | | | | |
| Receiver setup: | Frequency | Detector | RBW | VBW | Remark | | | | | | | | | |
| | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value | | | | | | | | | |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value | | | | | | | | | |
| Limit: | RMS | 1MHz | 3MHz | Average Value | | | | | | | | | | |
| | Frequency | Limit (dBuV/m @3m) | | Remark | | | | | | | | | | |
| | 30MHz-88MHz | 40.0 | | Quasi-peak Value | | | | | | | | | | |
| | 88MHz-216MHz | 43.5 | | Quasi-peak Value | | | | | | | | | | |
| | 216MHz-960MHz | 46.0 | | Quasi-peak Value | | | | | | | | | | |
| | 960MHz-1GHz | 54.0 | | Quasi-peak Value | | | | | | | | | | |
| Test setup: | Above 1GHz | | | | | | | | | | | | | |
| | Below 1GHz | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Test Procedure: | <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height 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. | | | | | | | | | | | | | |

| | |
|-------------------|--|
| | <ol style="list-style-type: none">4. 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.5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. |
| Test Instruments: | Refer to section 5.11 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |
| Remark: | All of the observed value above 6GHz were the noise floor , which were not recorded |

Measurement Data:**Below 1GHz:**

| | | | | | |
|------------------------|----------------|--|-----------------------|----------------------|--|
| Product Name: | BA8200-T | | Product Model: | BA8200-T | |
| Test By: | Yaro | | Test mode: | Scanning mode | |
| Test Frequency: | 30 MHz ~ 1 GHz | | Polarization: | Vertical | |
| Test Voltage: | AC 120/60Hz | | Environment: | Temp: 24°C Huni: 57% | |

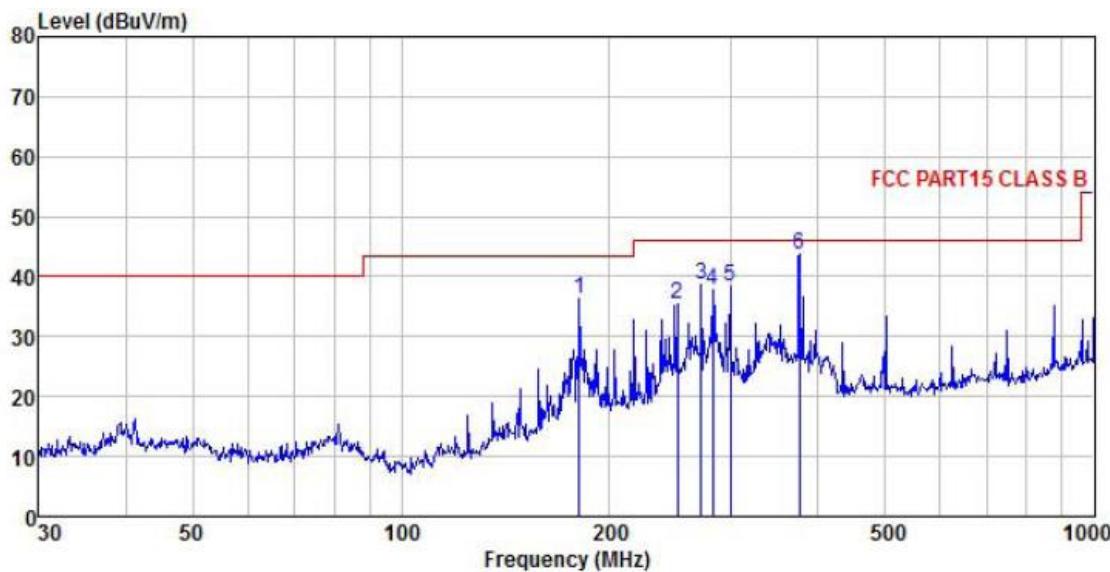


| Freq | ReadAntenna Level | Antenna Factor | Cable Loss | Aux Factor | Preamplifier Factor | Limit Level | Line Limit | Over Limit | Remark |
|------|-------------------|----------------|------------|------------|---------------------|-------------|------------|------------|-----------|
| MHz | dBuV | dB/m | dB | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 39.024 | 49.46 | 12.76 | 0.35 | 0.00 | 29.91 | 32.66 | 40.00 | -7.34 QP |
| 2 | 41.277 | 48.11 | 12.83 | 0.36 | 0.00 | 29.89 | 31.41 | 40.00 | -8.59 QP |
| 3 | 184.490 | 38.59 | 17.16 | 0.69 | 0.00 | 28.94 | 27.50 | 43.50 | -16.00 QP |
| 4 | 271.325 | 41.89 | 18.59 | 0.82 | 0.00 | 28.50 | 32.80 | 46.00 | -13.20 QP |
| 5 | 375.939 | 47.81 | 18.96 | 0.96 | 0.00 | 28.68 | 39.05 | 46.00 | -6.95 QP |
| 6 | 501.179 | 39.00 | 19.41 | 1.10 | 0.00 | 28.96 | 30.55 | 46.00 | -15.45 QP |

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

| | | | |
|------------------------|----------------|-----------------------|----------------------|
| Product Name: | BA8200-T | Product Model: | BA8200-T |
| Test By: | Yaro | Test mode: | Scanning mode |
| Test Frequency: | 30 MHz ~ 1 GHz | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 24°C Huni: 57% |



| Freq | Read Level | Antenna Factor | Cable Loss | Aux Factor | Preamplifier Factor | Limit Level | Over Line | Over Limit | Remark |
|------|------------|----------------|------------|------------|---------------------|-------------|-----------|------------|-----------|
| MHz | dBuV | dB/m | dB | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 180.649 | 47.57 | 16.94 | 0.68 | 0.00 | 28.97 | 36.22 | 43.50 | -7.28 QP |
| 2 | 250.301 | 44.80 | 18.50 | 0.78 | 0.00 | 28.54 | 35.54 | 46.00 | -10.46 QP |
| 3 | 271.325 | 47.68 | 18.59 | 0.82 | 0.00 | 28.50 | 38.59 | 46.00 | -7.41 QP |
| 4 | 281.995 | 46.81 | 18.63 | 0.84 | 0.00 | 28.48 | 37.80 | 46.00 | -8.20 QP |
| 5 | 298.268 | 47.29 | 18.69 | 0.86 | 0.00 | 28.45 | 38.39 | 46.00 | -7.61 QP |
| 6 | 375.939 | 52.60 | 18.96 | 0.96 | 0.00 | 28.68 | 43.84 | 46.00 | -2.16 QP |

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

Above 1GHz:

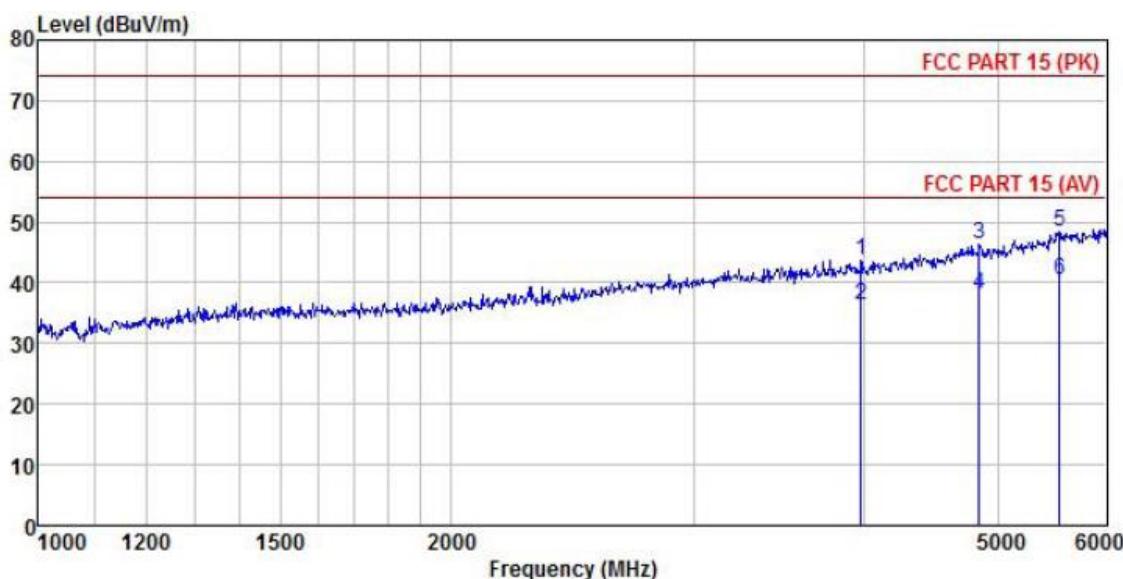
| | | | | | |
|------------------------|---------------|--|-----------------------|----------------------|--|
| Product Name: | BA8200 | | Product Model: | BA8200 | |
| Test By: | Yaro | | Test mode: | Scanning mode | |
| Test Frequency: | 1 GHz ~ 6 GHz | | Polarization: | Vertical | |
| Test Voltage: | AC 120/60Hz | | Environment: | Temp: 24°C Huni: 57% | |

| Freq | ReadAntenna Level | Cable Factor | Aux Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|------------|-------------------|--------------|----------|---------------|-------|------------|------------|----------------|
| MHz | dBuV | dB/m | dB | dB | dB | dBuV/m | dBuV/m | dB |
| 1 3659.161 | 48.27 | 28.90 | 5.46 | 2.20 | 41.62 | 43.21 | 74.00 | -30.79 Peak |
| 2 3659.161 | 40.66 | 28.90 | 5.46 | 2.20 | 41.62 | 35.60 | 54.00 | -18.40 Average |
| 3 5006.774 | 48.53 | 31.20 | 6.56 | 2.50 | 41.88 | 46.91 | 74.00 | -27.09 Peak |
| 4 5006.774 | 40.41 | 31.20 | 6.56 | 2.50 | 41.88 | 38.79 | 54.00 | -15.21 Average |
| 5 5555.085 | 48.18 | 32.32 | 7.02 | 2.66 | 41.81 | 48.37 | 74.00 | -25.63 Peak |
| 6 5555.085 | 40.37 | 32.32 | 7.02 | 2.66 | 41.81 | 40.56 | 54.00 | -13.44 Average |

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | | |
|------------------------|---------------|-----------------------|----------------------|
| Product Name: | BA8200-T | Product Model: | BA8200-T |
| Test By: | Yaro | Test mode: | Scanning mode |
| Test Frequency: | 1 GHz ~ 6 GHz | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 24°C Huni: 57% |



| Freq MHz | Read | Antenna | Cable | Aux | Preamp | Limit Line dB | Over Line Limit dB | Remark |
|-------------|-------------|---------------|------------------------|------------------|------------------|---------------------|-----------------------------|----------------|
| | Freq MHz | Level dBuV | Antenna Factor dB/m | Cable Loss dB | Aux Factor dB | | | |
| 1 3973.530 | 48.36 | 29.26 | 5.74 | 2.20 | 41.81 | 43.75 | 74.00 | -30.25 Peak |
| 2 3973.530 | 40.98 | 29.26 | 5.74 | 2.20 | 41.81 | 36.37 | 54.00 | -17.63 Average |
| 3 4847.873 | 48.41 | 30.87 | 6.43 | 2.46 | 41.83 | 46.34 | 74.00 | -27.66 Peak |
| 4 4847.873 | 40.16 | 30.87 | 6.43 | 2.46 | 41.83 | 38.09 | 54.00 | -15.91 Average |
| 5 5545.141 | 48.23 | 32.32 | 7.02 | 2.66 | 41.81 | 48.42 | 74.00 | -25.58 Peak |
| 6 5545.141 | 40.23 | 32.32 | 7.02 | 2.66 | 41.81 | 40.42 | 54.00 | -13.58 Average |

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss+ Aux Factor – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.