

TEST REPORT

Report No.: BCTC2105219408E

Applicant: ZAGG Inc.

Product Name: Bluetooth Keyboard

Model/Type Ref.: ZKB102RBB41

Tested Date: 2021-05-19 to 2021-05-26

Issued Date: 2021-05-26

Shenzhen BCTGRTesting Co., Ltd.



No.: BCTC/RF-EMC-005 Page 1 of 31 Edition (A.3



FCC ID: QTG-ZKPRB

Product Name: Bluetooth Keyboard

Trademark: ZAGG

Model/Type Ref.: ZKB102RBB41 ZKB109RBB41

Prepared For: ZAGG Inc.

Address: 910 West Legacy Center Way, Midvale Utah 84047, United

States

Manufacturer: ZAGG Inc.

Address: 910 West Legacy Center Way, Midvale Utah 84047, United

States

Prepared By: Shenzhen BCTC Testing Co., Ltd.

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Shenzhen, Guangdong, China

Sample Received Date: 2021-05-19

Sample tested Date: 2021-05-19 to 2021-05-26

Issue Date: 2021-05-26

Report No.: BCTC2105219408E

FCC Part15.247

Test Standards ANSI C63.10-2013

Test Results PASS

Remark: This is Bluetooth BLE radio test report.

Tested by:

Willem Wong

Willem Wang/Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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(Note: N/A means not applicable)

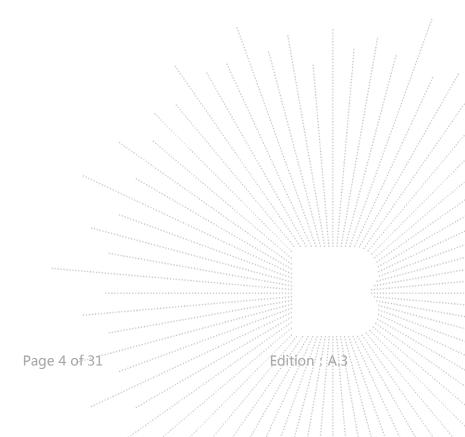
No.: BCTC/RF-EMC-005



1. VERSION

No.: BCTC/RF-EMC-005

| Report No. | Issue Date | Description | Approved |
|-----------------|------------|-------------|----------|
| BCTC2105219408E | 2021-05-26 | Original | Valid |
| | | | |





2. TEST SUMMARY

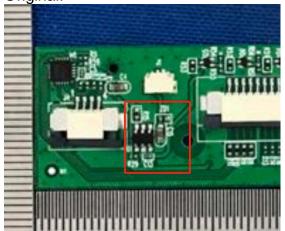
The Product has been tested according to the following specifications:

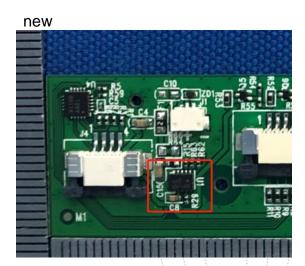
| No. | Test Parameter | Clause No | Results |
|-----|---------------------|--------------|---------|
| 1 | Conducted emissions | 15.207 | PASS |
| 2 | Radiated Emissions | 15.209 | PASS |

Remark: Based on the following changes in the product, the RF chip remains unchanged. So the report is only updated Conducted emissions and Radiated Emissions for the original report (BCTC2004001065E) $_{\circ}$

Changes: 1. The new product charging IC adds battery temperature monitoring function.

Original:





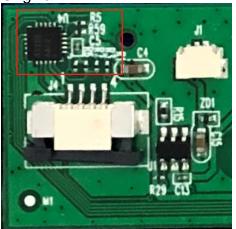
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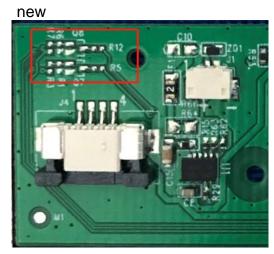


2. The new product delete AW IC (The AW IC only controls the brightness of the indicator LED) $\,$

Original:



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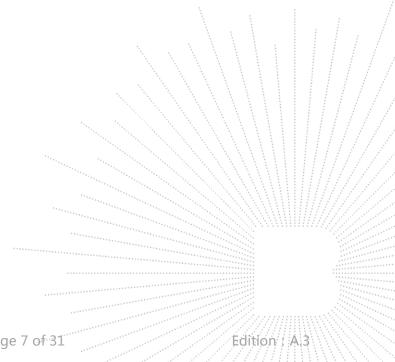
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3. **MEASUREMENT UNCERTAINTY**

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| No. | Item | Uncertainty |
|-----|-------------------------------------|-------------|
| 1 | humidity uncertainty | U=5.3% |
| 2 | Temperature uncertainty | U=0.59℃ |
| 3 | Conducted Emission (150kHz-30MHz) | U=3.2dB |
| 4 | Radiated disturbance(30MHz-1000MHz) | U=4.8dB |
| 5 | Radiated disturbance(1GHz-6GHz) | U=4.9dB |
| 6 | Radiated disturbance(1GHz-18GHz) | U=5.0dB |



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4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model/Type Ref.: ZKB102RBB41

ZKB109RBB41

Model differences: All the model are the same circuit and RF module, except model

names and appearance. See the Note 1.

Bluetooth Version: BT 5.0
Hardware Version: V1.0
Software Version: V1.0

Operation Frequency: Bluetooth: 2402-2480MHz

Type of Modulation: Bluetooth: GFSK

Antenna installation: Bluetooth: PCB antenna

Antenna Gain: Bluetooth:1.87dBi

Ratings: DC 3.7V from Battery

DC 5V from Adapter

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Note 1:

Model: ZKB102RBB41

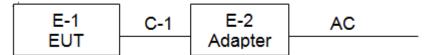




4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission

E-1 EUT

4.3 Support Equipment

| No. | Device Type | Brand | Model | Series No. | Data Cable | Power Cord |
|-----|-----------------------|-------|-------------|------------|------------|------------|
| E-1 | Bluetooth Keyboard | ZAGG | ZKB102RBB41 | N/A | EUT | E-1 |
| E-2 | Adapter | N/A | BCTC001 | N/A | Auxiliary | E-2 |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|---------------------|
| C-1 | NO | NO | 0.4M | DC cable unshielded |

Notes:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



4.4 Channel List

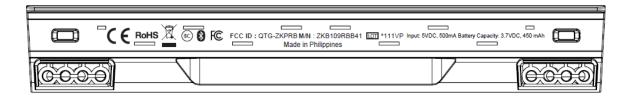
| Channel List | | | | | |
|--------------|--------------------|---------|--------------------|---------|--------------------|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 01 | 2402 | 11 | 2422 | 21 | 2442 |
| 02 | 2404 | 12 | 2424 | 22 | 2444 |
| 03 | 2406 | 13 | 2426 | 23 | 2446 |
| ~ | ~ | ~ | ~ | ~ | ~ |
| 09 | 2418 | 19 | 2438 | 39 | 2478 |
| 10 | 2420 | 20 | 2440 | 40 | 2480 |

4.5 Test Mode

| Test | Test mode | Low | Middle | High |
|------|---|---------|---------|----------|
| mode | rest mode | channel | channel | channel |
| 1 | Link mode(conducted emission and Radiated emission) | | | nission) |

4.6 Copy of marking plate







5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

| Conducted emissions Test | | | | | |
|--------------------------|--------------|----------|----------------|---------------|---------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Receiver | R&S | ESR3 | 102075 | Jun. 08, 2020 | Jun. 07, 2021 |
| LISN | R&S | ENV216 | 101375 | Jun. 04, 2020 | Jun. 03, 2021 |
| ISN | HPX | ISN T800 | S1509001 | Jun. 04, 2020 | Jun. 03, 2021 |
| Software | Frad | EZ-EMC | EMC-CON 3A1 | \ | \ |

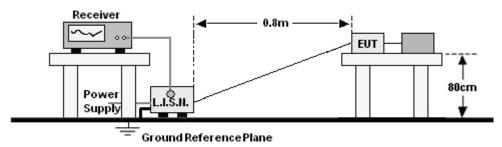
| | Radiated emissions Test (966 chamber) | | | | | |
|--------------------------------|---------------------------------------|---------------|------------------|---------------|---------------|--|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. | |
| 966 chamber | ChengYu | 966 Room | 966 | Jun. 06. 2020 | Jun. 05, 2023 | |
| Receiver | R&S | ESR3 | 102075 | Jun. 08, 2020 | Jun. 07, 2021 | |
| Receiver | R&S | ESRP | 101154 | Jun. 08, 2020 | Jun. 07, 2021 | |
| Amplifier | Schwarzbeck | BBV9718 | 9718-309 | Jun. 04, 2020 | Jun. 03, 2021 | |
| Amplifier | Schwarzbeck | BBV9744 | 9744-0037 | Jun. 04, 2020 | Jun. 03, 2021 | |
| TRILOG Broadband Antenna | schwarzbeck | VULB 9163 | VULB9163- 942 | Jun. 08, 2020 | Jun. 07, 2021 | |
| Horn Antenna | SCHWARZBE CK | BBHA9120 D | 1201 | Jun. 10, 2020 | Jun. 09, 2021 | |
| Software | Frad | EZ-EMC | FA-03A2 RE | | | |

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6. CONDUCTED EMISSIONS

6.1 Block Diagram Of Test Setup



6.2 Limit

| FREQUENCY (MHz) | Limit (dBuV) | | |
|---------------------|--------------|-----------|--|
| TREGOLINGT (IVITIZ) | Quas-peak | Average | |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * | |
| 0.50 -5.0 | 56.00 | 46.00 | |
| 5.0 -30.0 | 60.00 | 50.00 | |

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

| Setting | | |
|----------|--|--|
| 10 dB | | |
| 0.15 MHz | | |
| 30 MHz | | |
| 9 kHz | | |
| | | |

- a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 EUT operating Conditions

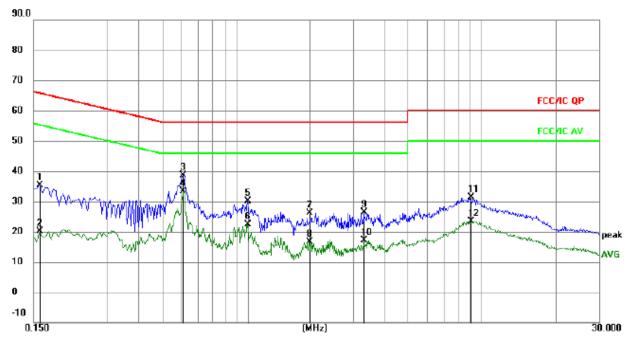
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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6.5 Test Result

| Temperature: | 26 ℃ | Relative Humidity: | 54% |
|----------------|--------------|--------------------|--------|
| Pressure: | 101kPa | Phase : | L |
| Test Voltage : | AC 120V/60Hz | Test Mode: | Mode 1 |
| Test Model | ZKB102RBB41 | | |

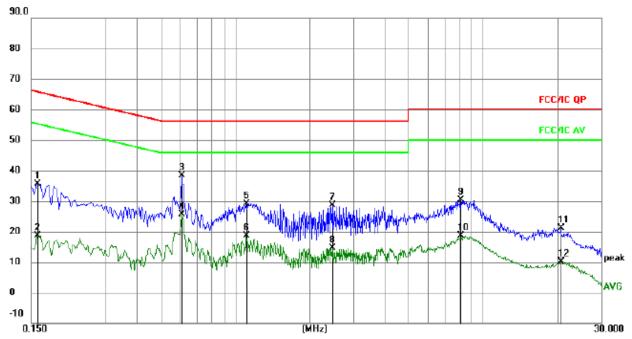


- 1. All readings are Quasi-Peak and Average values.
- 2. Factor = Insertion Loss + Cable Loss.

| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|---------|--------|------------------|-------------------|------------------|-------|--------|----------|
| | MHz | | dB | dBu∀ | dBu∀ | dB | Detector |
| 1 | 0.1590 | 25.92 | 9.51 | 35.43 | 65.52 | -30.09 | QP |
| 2 | 0.1590 | 10.57 | 9.51 | 20.08 | 55.52 | -35.44 | AVG |
| 3 | 0.6090 | 28.73 | 9.97 | 38.70 | 56.00 | -17.30 | QP |
| 4 * | 0.6090 | 23.36 | 9.97 | 33.33 | 46.00 | -12.67 | AVG |
| 5 | 1.1130 | 20.55 | 9.57 | 30.12 | 56.00 | -25.88 | QP |
| 6 | 1.1130 | 12.85 | 9.57 | 22.42 | 46.00 | -23.58 | AVG |
| 7 | 1.9860 | 16.48 | 9.59 | 26.07 | 56.00 | -29.93 | QP |
| 8 | 1.9860 | 7.15 | 9.59 | 16.74 | 46.00 | -29.26 | AVG |
| 9 | 3.3225 | 16.67 | 9.68 | 26.35 | 56.00 | -29.65 | QP |
| 10 | 3.3225 | 7.42 | 9.68 | 17.10 | 46.00 | -28.90 | AVG |
| 11 | 9.0510 | 21.59 | 9.70 | 31.29 | 60.00 | -28.71 | QP |
| 12 | 9.0510 | 13.76 | 9.70 | 23.46 | 50.00 | -26.54 | AVG |



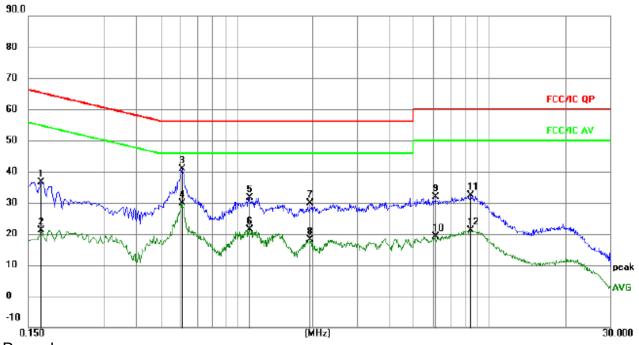
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
|----------------|--------------|--------------------|--------|
| Pressure: | 101kPa | Phase : | N |
| Test Voltage : | AC 120V/60Hz | Test Mode: | Mode 1 |
| Test Model | ZKB102RBB41 | | |



- All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.

| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|---------|---------|------------------|-------------------|------------------|-------|--------|----------|
| | MHz | | dB | dBu∀ | dBu∀ | dB | Detector |
| 1 | 0.1582 | 26.16 | 9.51 | 35.67 | 65.56 | -29.89 | QP |
| 2 | 0.1582 | 9.15 | 9.51 | 18.66 | 55.56 | -36.90 | AVG |
| 3 * | 0.6075 | 28.43 | 9.97 | 38.40 | 56.00 | -17.60 | QP |
| 4 | 0.6075 | 15.66 | 9.97 | 25.63 | 46.00 | -20.37 | AVG |
| 5 | 1.1056 | 19.63 | 9.57 | 29.20 | 56.00 | -26.80 | QP |
| 6 | 1.1056 | 9.15 | 9.57 | 18.72 | 46.00 | -27.28 | AVG |
| 7 | 2.4736 | 19.05 | 9.62 | 28.67 | 56.00 | -27.33 | QP |
| 8 | 2.4736 | 4.99 | 9.62 | 14.61 | 46.00 | -31.39 | AVG |
| 9 | 8.1053 | 20.73 | 9.71 | 30.44 | 60.00 | -29.56 | QP |
| 10 | 8.1053 | 8.86 | 9.71 | 18.57 | 50.00 | -31.43 | AVG |
| 11 | 20.5944 | 11.33 | 9.78 | 21.11 | 60.00 | -38.89 | QP |
| 12 | 20.5944 | 0.34 | 9.78 | 10.12 | 50.00 | -39.88 | AVG |

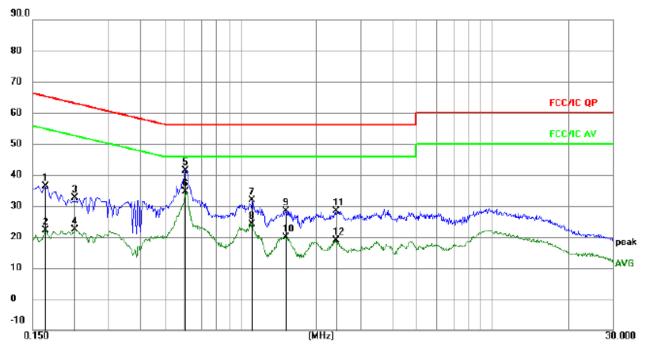
| Temperature: | 26 ℃ | Relative Humidity: | 54% |
|----------------|--------------|--------------------|--------|
| Pressure: | 101kPa | Phase : | L |
| Test Voltage : | AC 120V/60Hz | Test Mode: | Mode 1 |
| Test Model | ZKB109RBB41 | | |



- All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.

| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|---------|--------|------------------|-------------------|------------------|-------|--------|----------|
| | MHz | | dB | dBu∀ | dBu∀ | dB | Detector |
| 1 | 0.1680 | 27.07 | 9.50 | 36.57 | 65.06 | -28.49 | QP |
| 2 | 0.1680 | 11.71 | 9.50 | 21.21 | 55.06 | -33.85 | AVG |
| 3 * | 0.6090 | 30.85 | 9.97 | 40.82 | 56.00 | -15.18 | QP |
| 4 | 0.6090 | 19.84 | 9.97 | 29.81 | 46.00 | -16.19 | AVG |
| 5 | 1.1174 | 22.07 | 9.57 | 31.64 | 56.00 | -24.36 | QP |
| 6 | 1.1174 | 11.91 | 9.57 | 21.48 | 46.00 | -24.52 | AVG |
| 7 | 1.9590 | 20.20 | 9.59 | 29.79 | 56.00 | -26.21 | QP |
| 8 | 1.9590 | 8.42 | 9.59 | 18.01 | 46.00 | -27.99 | AVG |
| 9 | 6.1485 | 22.08 | 9.75 | 31.83 | 60.00 | -28.17 | QP |
| 10 | 6.1485 | 9.34 | 9.75 | 19.09 | 50.00 | -30.91 | AVG |
| 11 | 8.4075 | 22.64 | 9.71 | 32.35 | 60.00 | -27.65 | QP |
| 12 | 8.4075 | 11.49 | 9.71 | 21.20 | 50.00 | -28.80 | AVG |

| Temperature: | 26 ℃ | Relative Humidity: | 54% |
|----------------|--------------|--------------------|--------|
| Pressure: | 101kPa | Phase : | N |
| Test Voltage : | AC 120V/60Hz | Test Mode: | Mode 1 |
| Test Model | ZKB109RBB41 | | |



- All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.

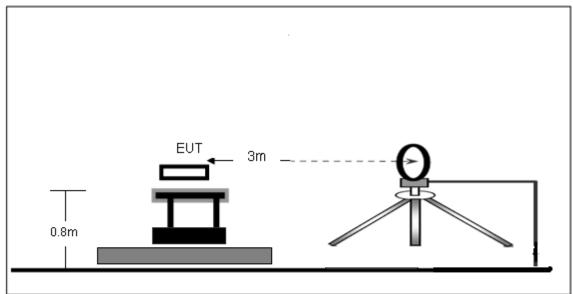
| No. Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|---------|--------|------------------|-------------------|------------------|-------|--------|----------|
| | MHz | | dB | dBuV | dBu∀ | dB | Detector |
| 1 | 0.1677 | 26.77 | 9.50 | 36.27 | 65.07 | -28.80 | QP |
| 2 | 0.1677 | 12.67 | 9.50 | 22.17 | 55.07 | -32.90 | AVG |
| 3 | 0.2208 | 23.25 | 9.48 | 32.73 | 62.79 | -30.06 | QP |
| 4 | 0.2208 | 12.82 | 9.48 | 22.30 | 52.79 | -30.49 | AVG |
| 5 | 0.6043 | 31.48 | 9.98 | 41.46 | 56.00 | -14.54 | QP |
| 6 * | 0.6043 | 24.58 | 9.98 | 34.56 | 46.00 | -11.44 | AVG |
| 7 | 1.1114 | 22.30 | 9.57 | 31.87 | 56.00 | -24.13 | QP |
| 8 | 1.1114 | 14.52 | 9.57 | 24.09 | 46.00 | -21.91 | AVG |
| 9 | 1.5033 | 18.91 | 9.58 | 28.49 | 56.00 | -27.51 | QP |
| 10 | 1.5033 | 10.31 | 9.58 | 19.89 | 46.00 | -26.11 | AVG |
| 11 | 2.3836 | 18.74 | 9.62 | 28.36 | 56.00 | -27.64 | QP |
| 12 | 2.3836 | 9.36 | 9.62 | 18.98 | 46.00 | -27.02 | AVG |



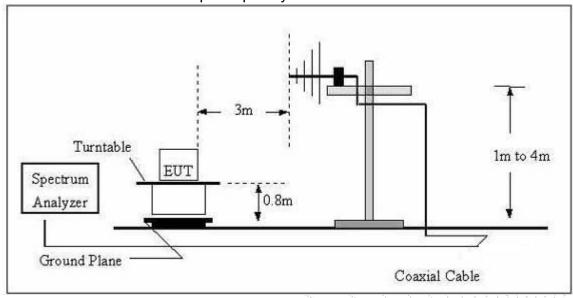
7. RADIATED EMISSIONS

7.1 Block Diagram Of Test Setup

(A) Radiated Emission Test-Up Frequency Below 30MHz



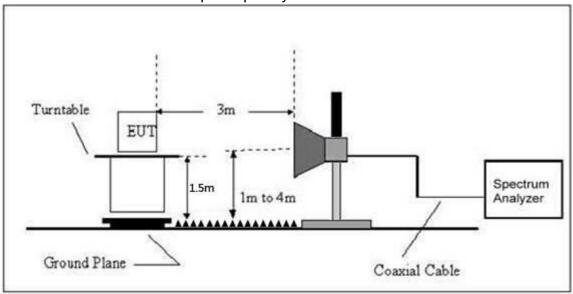
(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



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(C) Radiated Emission Test-Up Frequency Above 1GHz



7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequency | Field Strength | Distance | Field Strength Limit at 3m Distance | | |
|---------------|----------------|----------|-------------------------------------|--------------------------------------|--|
| (MHz) | uV/m | (m) | uV/m | dBuV/m | |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | 20log ^{(2400/F(kHz))} + 80 | |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | 20log ^{(24000/F(kHz))} + 40 | |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | 20log ⁽³⁰⁾ + 40 | |
| 30 ~ 88 | 100 | 3 | 100 | 20log ⁽¹⁰⁰⁾ | |
| 88 ~ 216 | 150 | 3 | 150 | 20log ⁽¹⁵⁰⁾ | |
| 216 ~ 960 | 200 | 3 | 200 \ \ \ | 20log ⁽²⁰⁰⁾ | |
| Above 960 | 500 | 3 | 500 | 20log ⁽⁵⁰⁰⁾ | |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENC Y (MHz) | Limit (dBuV/ | (m) (at 3M) |
|---------------------|--------------|-------------|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

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FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

| Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz) | Range (MHz) |
|--|---|
| Below 1.705 | 30 |
| 1.705 – 108 | 1000 |
| 108 – 500 | 2000 |
| 500 – 1000 | 5000 |
| Above 1000 | 5 th harmonic of the highest frequency or 40 GHz, whichever is lower |

7.3 Test procedure

| Receiver Parameter | Setting |
|--------------------|-------------------|
| Attenuation | Auto |
| 9kHz~150kHz | RBW 200Hz for QP |
| 150kHz~30MHz | RBW 9kHz for QP |
| 30MHz~1000MHz | RBW 120kHz for QP |

| Spectrum Parameter | Setting | | |
|--------------------|--|--|--|
| 1-25GHz | RBW 1 MHz /VBW 1 MHz for Peak, RBW 1 MHz / VBW 10Hz for Average | | |

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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f. 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.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

Above 1GHz test procedure as below:

- a.The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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.
- d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g.Test the EUT in the lowest channel, the Highest channel.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

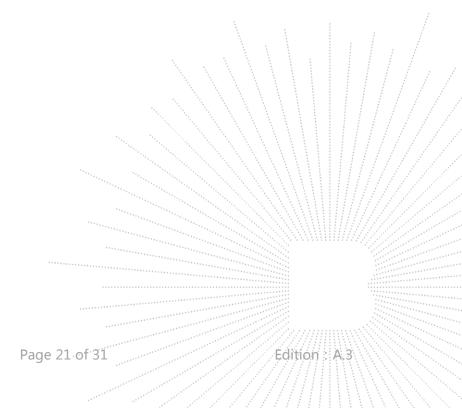
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7.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.





7.5 Test Result

Below 30MHz

| Temperature: | 26℃ | Relative Humidtity: | 54% |
|--------------|---------|---------------------|---------|
| Pressure: | 101 kPa | Test Voltage: | DC 3.7V |
| Test Mode: | Mode 1 | Polarization: | |

| Freq. | Reading | Limit | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB) | P/F |
| | | | | PASS |
| | | | | PASS |

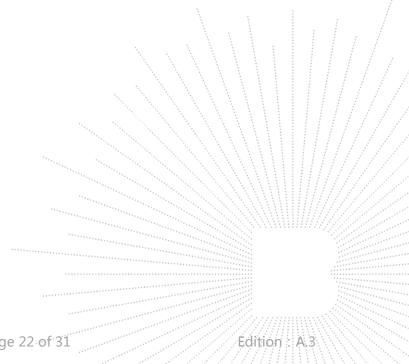
Note:

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The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

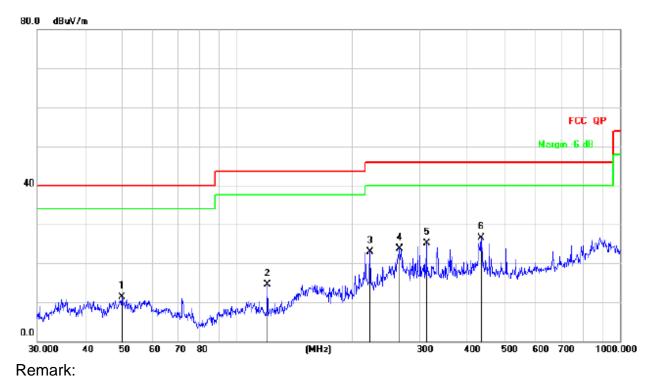
Limit line = specific limits(dBuv) + distance extrapolation factor.





Between 30MHz - 1GHz

| Temperature: | 26℃ | Relative Humidtity: | 54% |
|--------------|-------------|---------------------|------------|
| Pressure: | 101 kPa | Test Voltage: | DC 3.7V |
| Test Mode: | Mode 1 | Polarization: | Horizontal |
| Test Model: | ZKB102RBB41 | | |



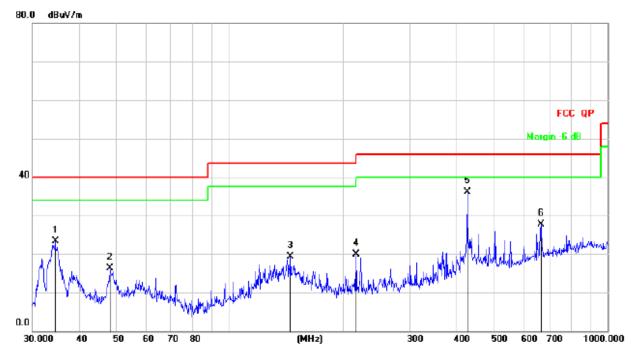
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|-----|----------|------------------|-------------------|------------------|-------|--------|----------|
| | | MHz | dBu∀ | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 50.0566 | 25.40 | -14.08 | 11.32 | 40.00 | -28.68 | QP |
| 2 | 1 | 19.8556 | 31.35 | -16.76 | 14.59 | 43.50 | -28.91 | QP |
| 3 | 2 | 222.1698 | 37.66 | -14.80 | 22.86 | 46.00 | -23.14 | QP |
| 4 | 2 | 265.6757 | 37.46 | -13.66 | 23.80 | 46.00 | -22.20 | QP |
| 5 | 3 | 312.1794 | 37.16 | -12.08 | 25.08 | 46.00 | -20.92 | QP |
| 6 | * 4 | 34.0651 | 35.39 | -8.96 | 26.43 | 46.00 | -19.57 | QP |

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| Temperature: | 26℃ | Relative Humidtity: | 54% |
|--------------|-------------|---------------------|----------|
| Pressure: | 101 hPa | Test Voltage: | DC 3.7V |
| Test Mode: | Mode 1 | Polarization : | Vertical |
| Test Model: | ZKB102RBB41 | | |

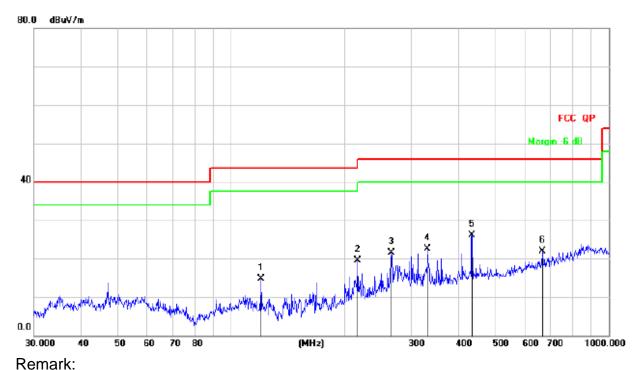


Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

| No. | Mk | . Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|----|----------|------------------|-------------------|------------------|-------|--------|----------|
| | | MHz | dBu∀ | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 34.5173 | 38.83 | -15.58 | 23.25 | 40.00 | -16.75 | QP |
| 2 | | 48.1626 | 30.60 | -14.24 | 16.36 | 40.00 | -23.64 | QP |
| 3 | | 144.8418 | 37.67 | -18.38 | 19.29 | 43.50 | -24.21 | QP |
| 4 | | 216.0240 | 34.78 | -14.93 | 19.85 | 46.00 | -26.15 | QP |
| 5 | * | 425.0280 | 45.21 | -9.15 | 36.06 | 46.00 | -9.94 | QP |
| 6 | | 668.1423 | 31.71 | -4.07 | 27.64 | 46.00 | -18.36 | QP |



| Temperature: | 26℃ | Relative Humidtity: | 54% |
|--------------|-------------|---------------------|------------|
| Pressure: | 101 kPa | Test Voltage: | DC 3.7V |
| Test Mode: | Mode 1 | Polarization : | Horizontal |
| Test Model: | ZKB109RBB41 | | |



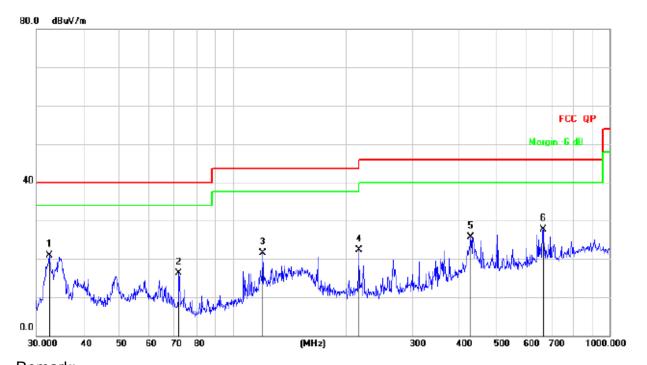
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk | . Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|----|----------|------------------|-------------------|------------------|-------|--------|----------|
| | | MHz | dBu∨ | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 119.8556 | 31.37 | -16.76 | 14.61 | 43.50 | -28.89 | QP |
| 2 | | 216.0240 | 34.34 | -14.93 | 19.41 | 46.00 | -26.59 | QP |
| 3 | | 265.6757 | 35.08 | -13.66 | 21.42 | 46.00 | -24.58 | QP |
| 4 | | 331.3546 | 34.00 | -11.57 | 22.43 | 46.00 | -23.57 | QP |
| 5 | * | 434.0651 | 35.16 | -8.96 | 26.20 | 46.00 | -19.80 | QP |
| 6 | | 668.1423 | 25.97 | -4.07 | 21.90 | 46.00 | -24.10 | QP |

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| Temperature: | 26℃ | Relative Humidtity: | 54% |
|--------------|-------------|---------------------|----------|
| Pressure: | 101 hPa | Test Voltage: | DC 3.7V |
| Test Mode: | Mode 1 | Polarization: | Vertical |
| Test Model: | ZKB109RBB41 | | |



Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

| No. | Mk | . Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | |
|-----|----|----------|------------------|-------------------|------------------|-------|--------|----------|
| | | MHz | dBu∀ | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 32.5198 | 36.74 | -15.81 | 20.93 | 40.00 | -19.07 | QP |
| 2 | | 71.8320 | 33.98 | -17.66 | 16.32 | 40.00 | -23.68 | QP |
| 3 | | 119.8556 | 38.26 | -16.76 | 21.50 | 43.50 | -22.00 | QP |
| 4 | | 216.0240 | 37.29 | -14.93 | 22.36 | 46.00 | -23.64 | QP |
| 5 | | 428.0193 | 34.80 | -9.09 | 25.71 | 46.00 | -20.29 | QP |
| 6 | * | 668.1423 | 31.86 | -4.07 | 27.79 | 46.00 | -18.21 | QP |

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8. EUT PHOTOGRAPHS

Model: ZKB102RBB41

EUT Photo 1



EUT Photo 2



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EUT Photo 3



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9. EUT TEST SETUP PHOTOGRAPHS

Conducted emissions





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Radiated emission

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STATEMENT

- 1. The equipment lists are traceable to the national reference standards.
- 2. The test report can not be partially copied unless prior written approval is issued from our lab.
- 3. The test report is invalid without stamp of laboratory.
- 4. The test report is invalid without signature of person(s) testing and authorizing.
- 5. The test process and test result is only related to the Unit Under Test.
- 6. The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

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E-Mail: bctc@bctc-lab.com.cn

**** END ****

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