



# Spot Check Evaluation

FCC ID : UZ7EM45B1  
EQUIPMENT : Enterprise Mobile  
BRAND NAME : Zebra  
MODEL NAME : EM45B1  
APPLICANT : Zebra Technologies Corporation  
3 Overlook Point, Lincolnshire, IL 60069 USA  
MANUFACTURER : Zebra Technologies Corporation  
3 Overlook Point, Lincolnshire, IL 60069 USA  
STANDARD : 47 CFR Part 22(H), 24(E), 27(L), 27(H), 27(F), 27(M),  
27(N), 27(O), 27(Q), 90(S)  
47 CFR Part 15 Subpart C §15.247  
47 CFR Part 15 Subpart C §15.225  
47 CFR Part 15 Subpart E §15.407

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



**Sporton International Inc. (Kunshan)**

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People's Republic of China



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION             | ISSUED DATE   |
|--------------|---------|-------------------------|---------------|
| FG460508-02I | Rev. 01 | Initial issue of report | Feb. 13, 2025 |
|              |         |                         |               |
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# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature |                                                                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment       | Enterprise Mobile                                                                                                                                   |
| Brand Name      | Zebra                                                                                                                                               |
| Model Name      | EM45B1                                                                                                                                              |
| FCC ID          | UZ7EM45B1                                                                                                                                           |
| IMEI Code       | Conducted: 350332150060484<br>Conduction: 350332150060096/350332150064049<br>Radiation: 350332150060260/350332150063959<br>CBP/DFS: 350332150060575 |
| HW Version      | DV                                                                                                                                                  |
| SW Version      | 14-24-09.00-UG-U00-PRD-ATH-04                                                                                                                       |
| MFD             | 09DEC24                                                                                                                                             |
| EUT Stage       | Identical Prototype                                                                                                                                 |

| Specification of Accessory |            |       |             |                |
|----------------------------|------------|-------|-------------|----------------|
| Battery                    | Brand Name | Zebra | Model       | BT-000501      |
|                            |            |       | Part Number | BT-000501-2000 |

| Supported Unit used in test configuration and system |            |       |             |                    |
|------------------------------------------------------|------------|-------|-------------|--------------------|
| AC Adapter 1<br>(Type C Wall Charger 1)              | Brand Name | Zebra | Model       | SAWA-102-22520A    |
|                                                      |            |       | Part Number | PWR-WUA5V45W1US    |
| AC Adapter 2<br>(Type A Wall Charger 2)              | Brand Name | Zebra | Model       | SAWA-65-20005A     |
|                                                      |            |       | Part Number | PWR-WUA5V12W0US    |
| Earphone 1<br>(Wired headset USB-C)                  | Brand Name | Zebra | Part Number | HDST-USBC-PTT1-01  |
| Earphone 2<br>(Rugged Bluetooth Headset)             | Brand Name | Zebra | Part Number | HS3100-OTH         |
| Earphone 3<br>(3.5mm PTT Headset)                    | Brand Name | Zebra | Part Number | HDST-35MM-PTT1-02  |
| Earphone 4<br>(Rugged Headset)                       | Brand Name | Zebra | Part Number | HS2100-OTH         |
| 3.5mm to 3.5mm audio connector                       | Brand Name | Zebra | Part Number | CBL-HS2100-3MS1-01 |
| Type C-Audio Cable<br>(Type C to 3.5mm)              | Brand Name | Zebra | Part Number | ADP-USBC-35MM1-01  |
| USB Cable 1<br>(USB-C to C Cable)                    | Brand Name | Zebra | Part Number | CBL-EC5X-USBC3A-01 |
| USB Cable 2<br>(USB-A to C Cable)                    | Brand Name | Zebra | Part Number | CBL-TC5X-USBC2A-01 |
| EM45 Protective Case                                 | Brand Name | Zebra | Part Number | SG-EM45EXO2-01     |

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.3 Testing Site

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

|                           |                                                                                                                                                |                            |                                       |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International Inc. (Kunshan)                                                                                                           |                            |                                       |
| <b>Test Site Location</b> | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                        | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | TH01-KS<br>CO01-KS<br>DFS01-KS<br>03CH02-KS<br>03CH04-KS<br>03CH06-KS                                                                          | CN1257                     | 314309                                |

## 1.4 Test Software

| Item | Site      | Manufacturer | Name                                 | Version       |
|------|-----------|--------------|--------------------------------------|---------------|
| 1.   | TH01-KS   | Tonscend     | JS1120-3 test system<br>China_210602 | 3.3.10        |
| 2.   | 03CH02-KS | AUDIX        | E3                                   | 6.2009-8-24al |
| 3.   | 03CH04-KS | AUDIX        | E3                                   | 210616        |
| 4.   | 03CH06-KS | AUDIX        | E3                                   | 210616        |
| 5.   | DFS01-KS  | Sporton      | Test Tools                           | 1.0           |
| 6.   | CO01-KS   | AUDIX        | E3                                   | 6.2009-8-24   |

## 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC KDB 484596 D01 Referencing Test Data v02r03
- ♦ 47 CFR Part 22(H), 24(E), 27(L), 27(H), 27(F), 27(M), 27(N), 27(O), 27(Q), 90(S)
- ♦ ANSI C63.10-2013
- ♦ ANSI C63.26-2015
- ♦ 47 CFR Part 15 Subpart C §15.225
- ♦ 47 CFR Part 15 Subpart C §15.247
- ♦ 47 CFR Part 15 Subpart E §15.407



## **2 Re-use of Measured Data**

### **2.1 Introduction Section**

This application re-uses data collected on a similar device. The subject device of this application (Model: EM45B1, FCC ID: UZ7EM45B1) is electrically identical to the reference device (Model: EM45B2, FCC ID: UZ7EM45B2) for the portions of the circuitry corresponding to the data being re-used, following the FCC KDB 484596 D01 Referencing Test Data v02r03.

ECR Data Referencing Inquiry has been approved by FCC, and the data referencing and spot check test plan includes RF/EMC, the details are presented in section 2.3 of this report, and for SAR Reference detail, please refer to FCC SAR report FA460508-02.

The criteria set in section 3 of KDB 484596 D01 v02r03 is followed to determine whether the data referencing is justified. For SAR, the higher between the referenced value and the spot check value is used to determine compliance in both standalone and simultaneous transmission conditions.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: UZ7EM45B1.

### **2.2 Model Difference Information**

The **main** difference between FCC ID: UZ7EM45B2 and FCC ID: UZ7EM45B1 is as below:

- Removed RFID function.
- Antenna 1 removed WWAN TX function, keep supported Low bands and Middle bands RX function.

Other differences and all the details of similarity and difference can be found in the confidential documents (UZ7EM45B1 Operational Description of Product Equality Declaration).



## 2.3 Reference detail Section:

| Rule Part      | Equipment Class | Frequency Band (MHz)                                                  | Reference FCC ID (Parent) | Reference on test | Reference Title                                  | FCC ID Filling (Variant) | Test on the variant | Data Referencing (Y/N) |
|----------------|-----------------|-----------------------------------------------------------------------|---------------------------|-------------------|--------------------------------------------------|--------------------------|---------------------|------------------------|
| 15C            | DSS (BR/EDR)    | 2400~2483.5                                                           | UZ7EM45B2                 | Full test         | FR460508A                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | DTS (BLE)       | 2400~2483.5                                                           | UZ7EM45B2                 | Full test         | FR460508B                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | DTS (WLAN)      | 2400~2483.5                                                           | UZ7EM45B2                 | Full test         | FR460508C                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | DXX (NFC)       | 13.56                                                                 | UZ7EM45B2                 | Full test         | FR460508D                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
| 15E            | U-NII           | 5180~5240                                                             | UZ7EM45B2                 | Full test         | FR460508E                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                |                 | 5260~5320                                                             | UZ7EM45B2                 | Full test         | FR460508E                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                |                 | 5500~5720                                                             | UZ7EM45B2                 | Full test         | FR460508E                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                |                 | 5745~5825                                                             | UZ7EM45B2                 | Full test         | FR460508E                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                |                 | 5260~5320<br>5500~5720                                                | UZ7EM45B2                 | Full test         | FZ460508                                         | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | 6CD             | 5925~7125                                                             | UZ7EM45B2                 | Full test         | FR460508G<br>FR460508H                           | UZ7EM45B1                | Spot check          | Y, All test items      |
| 22, 24, 27, 90 | PCE (GSM)       | GSM 850/1900                                                          | UZ7EM45B2                 | Full test         | FG460508A                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | PCE (WCDMA)     | Band II, IV, V                                                        | UZ7EM45B2                 | Full test         | FG460508A                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | PCE (LTE)       | B2/4/5/7/13/17/26/38/<br>41/42/66/71<br>ULCA 5B/7C/38C<br>41C/66B/66C | UZ7EM45B2                 | Full test         | FG460508B<br>FG460508C<br>FG460508D<br>FG460508F | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | PCE (LTE)       | B26 (90S)                                                             | UZ7EM45B2                 | Full test         | FG460508E                                        | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | PCE (NR)        | n2/n5/n7/n26/<br>n38/n41/n66/<br>n71/n77/n78                          | UZ7EM45B2                 | Full test         | FG460508G<br>FG460508H<br>FG460508J<br>FG460508K | UZ7EM45B1                | Spot check          | Y, All test items      |
|                | PCE (NR)        | n26 (90S)                                                             | UZ7EM45B2                 | Full test         | FG460508I                                        | UZ7EM45B1                | Spot check          | Y, All test items      |

Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit

## 2.4 Spot Check Verification Data Section

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation  $d_{dB}$  from the reference data no larger than 3 dB:

$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad (1)$$

$V_{dB}$ , the variant spot-check level

$R_{dB}$ , the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data  $R_{dB}$  is from the compliance threshold  $C_{dB}$  (also expressed in dB), for the particular test under consideration. In this case, if  $M_{dB} = |C_{dB} - R_{dB}|$  is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation  $d_{dB}$  from the reference data satisfies the following condition:

$$d_{dB} = |V_{dB} - R_{dB}| \leq (3 + M_{dB} / 20) \text{ dB}, \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad (2)$$

$$d_{dB} = |V_{dB} - R_{dB}| = 6 \text{ dB}, \text{ for } M_{dB} > 60 \text{ dB}$$

where “| |” is the absolute value of the measured quantity.

When using the option in eq. (2),  $d_{dB}$  increases linearly from 3 dB to 6 dB.



Summary for spot check for each rule entry and technology is listed as below:

| Mode             | Test Item                                          | UZ7EM45B2<br>Parent<br>Worst mode<br>Test Result | UZ7EM45B1<br>Variant<br>Check Test<br>Result | Deviation<br>(dB) | Deviation<br>Limit<br>(dB) |
|------------------|----------------------------------------------------|--------------------------------------------------|----------------------------------------------|-------------------|----------------------------|
| BT 1Mbps (CH00)  | Number of Channels                                 | 79                                               | 79                                           | 0                 | 3                          |
|                  | Hopping Channel Separation                         | 1.135                                            | 0.996                                        | 0.139             | 3                          |
|                  | Dwell Time of Each Channel                         | 0.31                                             | 0.31                                         | 0                 | 3                          |
|                  | 20dB Bandwidth                                     | 0.94                                             | 0.95                                         | 0.01              | 3                          |
|                  | 99% Bandwidth                                      | 0.851                                            | 0.89                                         | 0.039             | 3                          |
|                  | Conducted Band Edges                               | -41.78                                           | -43.72                                       | 1.94              | 3                          |
|                  | Conducted Spurious Emission                        | -44.27                                           | -46.4                                        | 2.13              | 3                          |
| BT 1Mbps (CH00)  | Radiated Band Edges and Radiated Spurious Emission | 56.93                                            | 55.71                                        | 1.22              | 3                          |
| BT               | AC Conducted Emission                              | 14.81                                            | 13.96                                        | 0.85              | 3                          |
| BLE 1Mbps (CH39) | 6dB Bandwidth                                      | 0.68                                             | 0.69                                         | 0.01              | 3                          |
|                  | 99% Bandwidth                                      | 1.027                                            | 1.035                                        | 0.008             | 3                          |
|                  | Power Spectral Density                             | -5.44                                            | -6.6                                         | 1.16              | 3                          |
|                  | Conducted Band Edges                               |                                                  |                                              |                   |                            |



|                                  |                                           |          |         |        |   |
|----------------------------------|-------------------------------------------|----------|---------|--------|---|
| WIFI 6G<br>(802.11ax HE20 Ch233) | Radiated Band Edges and Spurious Emission | 66.90    | 67.00   | 0.1    | 3 |
| WIFI 6G                          | AC Conducted Emission                     | 14.72    | 16.18   | 1.46   | 3 |
| NFC                              | 20dB Spectrum Bandwidth                   | 2.48     | 2.49    | 0.01   | 3 |
|                                  | 99% OBW Spectrum Bandwidth                | 2.11     | 2.11    | 0      | 3 |
|                                  | Frequency Stability                       | -21.3496 | -22.382 | 1.0324 | 3 |
|                                  | Field Strength of Fundamental Emissions   | 60.61    | 60.41   | 0.2    | 3 |
|                                  | Radiated Spurious Emissions               | 36.17    | 36.86   | 0.69   | 3 |
|                                  | AC Conducted Emission                     | 14.22    | 16.01   | 1.79   | 3 |

| Mode                    | Test Item                           | UZ7EM45B2<br>Parent<br>Worst mode<br>Test Result | UZ7EM45B1<br>Variant<br>Check Test<br>Result | Deviation<br>(dB) | Deviation<br>Limit<br>(dB) |
|-------------------------|-------------------------------------|--------------------------------------------------|----------------------------------------------|-------------------|----------------------------|
| Part 27F<br>LTE Band 13 | Radiated Spurious Emission          | -62.22                                           | -61.76                                       | 0.46              | 3                          |
| Part27O_N77             | Equivalent Isotropic Radiated Power | 26.23                                            | 25.90                                        | 0.33              | 3                          |
|                         | Peak-to-Average Ratio               | 5.24                                             | 5.04                                         | 0.2               | 3                          |
|                         | Occupied Bandwidth                  | 57.948                                           | 57.853                                       |                   |                            |



|  |                    |       |       |      |   |
|--|--------------------|-------|-------|------|---|
|  | 11n HT40, 5.8GHz   | 20.36 | 20.28 | 0.08 | 3 |
|  | 11ac VHT40, 5.2GHz | 20.82 | 20.76 | 0.06 | 3 |
|  | 11ac VHT40, 5.3GHz | 20.77 | 20.56 | 0.21 | 3 |
|  | 11ac VHT40, 5.5GHz | 20.67 | 20.62 | 0.05 | 3 |
|  | 11ac VHT40, 5.8GHz | 20.42 | 20.32 | 0.10 | 3 |
|  | 11ax HE40, 5.2GHz  | 20.86 | 20.81 | 0.05 | 3 |
|  | 11ax HE40, 5.3GHz  | 20.83 | 20.61 | 0.22 | 3 |
|  | 11ax HE40, 5.5GHz  | 20.73 | 20.68 | 0.05 | 3 |
|  | 11ax HE40, 5.8GHz  | 20.48 | 20.36 | 0.12 | 3 |
|  | 11ac VHT80, 5.2GHz | 20.07 | 19.99 | 0.08 | 3 |
|  | 11ac VHT80, 5.3GHz | 20.14 | 19.91 | 0.23 | 3 |
|  | 11ac VHT80, 5.5GHz | 20.32 | 20.08 | 0.24 | 3 |
|  | 11ac VHT80, 5.8GHz | 20.17 | 20.10 | 0.07 | 3 |
|  | 11ax HE80, 5.2GHz  | 20.12 | 20.05 |      |   |



## Conducted power for Licensed bands

| Test Item                   | Mode      | UZ7EM45B2<br>Parent<br>Worst mode Test<br>Result | UZ7EM45B1<br>Variant<br>Check Test<br>Result | Deviation<br>(dB) | Deviation<br>Limit<br>(dB) |
|-----------------------------|-----------|--------------------------------------------------|----------------------------------------------|-------------------|----------------------------|
| Conducted<br>Power<br>(dBm) | GSM 850   | 32.32                                            | 32.3                                         | 0.02              | 3                          |
|                             | GSM 1900  | 29.07                                            | 28.82                                        | 0.25              | 3                          |
|                             | WCDMA 850 | 23.02                                            | 22.87                                        | 0.15              | 3                          |
|                             | WCDMA1900 | 22.91                                            | 22.64                                        | 0.27              | 3                          |
|                             | WCDMA1700 | 22.79                                            | 22.75                                        | 0.04              | 3                          |
|                             | LTE B2    | 22.84                                            | 22.78                                        | 0.06              | 3                          |
|                             | LTE B4    | 22.89                                            | 22.45                                        | 0.44              | 3                          |
|                             | LTE B5    | 22.84                                            | 22.71                                        | 0.13              | 3                          |
|                             | LTE B5B   | 22.84                                            | 22.77                                        | 0.07              | 3                          |
|                             | LTE B13   | 22.78                                            | 22.63                                        | 0.15              | 3                          |
|                             | LTE B17   | 22.75                                            | 22.56                                        | 0.19              | 3                          |
|                             | LTE B26H  | 23.04                                            | 22.72                                        | 0.32              | 3                          |
|                             | LTE B26L  | 22.80                                            | 22.75                                        |                   |                            |









| U-NII-6 MIMO |           |     |     |             |            |                  |        |                                        |        |       |          |        |                  |                        |            |               |        |
|--------------|-----------|-----|-----|-------------|------------|------------------|--------|----------------------------------------|--------|-------|----------|--------|------------------|------------------------|------------|---------------|--------|
| Mod.         | Data Rate | NTX | CH. | Freq. (MHz) | RU Config. | Duty Factor (dB) |        | Conducted Power with duty factor (dBm) |        |       | DG (dBi) |        | EIRP Power (dBm) | EIRP Power Limit (dBm) | Pass /Fail | Power Setting |        |
|              |           |     |     |             |            | Ant 8            | Ant 10 | Ant 8                                  | Ant 10 | SUM   | Ant 8    | Ant 10 |                  |                        |            | Ant 8         | Ant 10 |
| HE20         | MCS0      | 2   | 105 | 6475        | Full       | 0.00             | 0.00   | 8.47                                   | 7.91   | 11.21 | 0.75     |        | 11.96            | 24.00                  | Pass       | 8.5           |        |
| HE40         | MCS0      | 2   | 107 | 6485        | Full       | 0.00             | 0.00   | 11.09                                  | 10.01  | 13.59 | 0.75     |        | 14.34            | 24.00                  | Pass       | 11            |        |
| HE80         | MCS0      | 2   |     |             |            |                  |        |                                        |        |       |          |        |                  |                        |            |               |        |



&lt;standard client &gt;

&lt;SISO mode&gt;

| U-NII-5 SISO |           |     |     |             |                  |        |                                        |        |          |        |                  |        |                        |            |               |        |
|--------------|-----------|-----|-----|-------------|------------------|--------|----------------------------------------|--------|----------|--------|------------------|--------|------------------------|------------|---------------|--------|
| Mod.         | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) |        | Conducted Power with duty factor (dBm) |        | DG (dBi) |        | EIRP Power (dBm) |        | EIRP Power Limit (dBm) | Pass /Fail | Power Setting |        |
|              |           |     |     |             | Ant 8            | Ant 10 | Ant 8                                  | Ant 10 | Ant 8    | Ant 10 | Ant 8            | Ant 10 |                        |            | Ant 8         | Ant 10 |
| 11a          | 6Mbps     | 1   | 001 | 5955        | 0.03             | 0.04   | 14.19                                  | 14.13  | 0.35     | -0.85  | 14.54            | 13.28  | 30.00                  | Pass       | 14            |        |

| U-NII-5 SISO |  |  |  |
|--------------|--|--|--|
|--------------|--|--|--|





**Conclusion:**

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. All spot check test data are shown within expected level compliant to limit line.

We are using power and ERP/EIRP measurements from the original parent model reports to list on the grant.

The same detection mechanism/software/antenna gain is used in the variant of DFS. Hence, all test cases refer to parent report.

We confirm that the test data referencing policy of FCC KDB 484596 D01 Referencing Test Data v02r03 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.





|          |                 |           |     |              |     |               |     |                |
|----------|-----------------|-----------|-----|--------------|-----|---------------|-----|----------------|
| Combiner | MTJ Cooperation | MTJ7114-M | N/A | 0.5GHz~18GHz | NCR | Nov. 05, 2024 | NCR | DFS (DFS01-KS) |
|----------|-----------------|-----------|-----|--------------|-----|---------------|-----|----------------|

NCR: No Calibration Required

**For NFC:**

| Instrument        | Manufacturer | Model No. | Serial No.   | Characteristics      | Calibration Date | Test Date       | Due Date      | Remark                |
|-------------------|--------------|-----------|--------------|----------------------|------------------|-----------------|---------------|-----------------------|
| EMI Test Receiver | R&S          | ESR7      | 101403       | 9kHz~7GHz;Ma x 30dBm | Oct. 11, 2024    | Oct. 24, 2024   | Oct. 10, 2025 | Radiation (03CH02-KS) |
| Loop Antenna      | R&S          | HFH2-Z2E  | 101125       | 9kHz~30MHz           | Sep. 08, 2024    | Oct. 24, 2024   | Sep. 07, 2025 | Radiation (03CH02-KS) |
| Bilog Antenna     | TeseQ        | CBL6111D  | 59915        | 30MHz-1GHz           | Aug. 18, 2024    | Oct. 24, 2024   | Aug. 17, 2025 | Radiation (03CH02-KS) |
| AC Power Source   | Chroma       | 61601     | 616010002473 | N/A                  | NCR              | Oct. 24, 2024   | NCR           | Radiation (03CH02-KS) |
| Turn Table        | MF           | MF7802    | N/A          | 0~360 degree         | NCR              | Oct. 24, 2024   | NCR           | Radiation (03CH02-KS) |
| Antenna Mast      | MF           | MF7802    | N/A          | 1 m~4 m              | NCR              | Oct. 24, 2024</ |               |                       |



## For WWAN Bands:

| Instrument                     | Manufacturer | Model No.  | Serial No.  | Characteristics         | Calibration Date | Test Date     | Due Date      | Remark                |
|--------------------------------|--------------|------------|-------------|-------------------------|------------------|---------------|---------------|-----------------------|
| Spectrum Analyzer              | R&S          | FSV40      | 101040      | 10Hz~40GHz              | Oct. 10, 2024    | Nov. 04, 2024 | Oct. 09, 2025 | Conducted (TH01-KS)   |
| Power divider                  | STI          | STI08-0055 | -           | 0.5~40GHz               | NCR              | Nov. 04, 2024 | NCR           | Conducted (TH01-KS)   |
| Temperature & humidity chamber | Hongzhan     | LP-150U    | H2014011440 | -40~+150°C<br>20%~95%RH | Jul. 05, 2023    | Nov. 04, 2024 | Jul. 04, 2024 | Conducted (TH01-KS)   |
| EXA Spectrum Analyzer          | Keysight     | N9010A     | MY55370528  | 10Hz~44G, MAX 30dB      | Oct. 11, 2024    | Oct. 20, 2024 | Oct. 10, 2025 | Radiation (03CH04-KS) |
| Bilog Antenna                  | TeseQ        | CBL6111D   | 44483       | 30MHz~1GHz              | Dec. 06, 2023    | Oct. 20, 2024 | Dec. 05, 2024 | Radiation (03CH04-KS) |
| Double Ridge Horn Antenna      | ETS-Lindgren | 3117       | 00227860    | 1GHz~18GHz              | Aug. 16, 2024    | Oct. 20, 2024 | Aug. 15, 2025 | Radiation (03CH04-KS) |
| SHF-EHF Horn                   | Com-power    | AH-840     | 101070      | 18GHz~40GHz             | Jan. 27, 2024    | Oct.          |               |                       |

## 4 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

### Uncertainty of Conducted Measurement (BT/WIFI2.4G/5G)

| Test Item                              | Uncertainty |
|----------------------------------------|-------------|
| Conducted Spurious Emission & Bandedge | ±2.22 dB    |
| Occupied Channel Bandwidth             | ±0.1%       |
| Conducted Power                        | ±0.50 dB    |
| Conducted Power Spectral Density       | ±0.90 dB    |
| Frequency                              | ±0.04 ppm   |

### Uncertainty of Conducted Measurement(WIFI 6G)

| Test Item                              | Uncertainty |
|----------------------------------------|-------------|
| Conducted Spurious Emission & Bandedge | ±2.22 dB    |
| Occupied Channel Bandwidth             | ±0.1%       |
| Conducted Power                        | ±0.50 dB    |
| Conducted Power Spectral Density       | ±0.90 dB    |
| Frequency                              | 0.04ppm     |
| Conducted Generated signal Levels      | ±0.56 dB    |
| Conducted Time                         | 0.54%       |

### Uncertainty of Conducted Measurement(NFC)

| Test Item                  | Uncertainty |
|----------------------------|-------------|
| Occupied Channel Bandwidth | ±0.1%       |
| Frequency</                |             |

**Uncertainty of Conducted Measurement (WWAN)**

| Test Item                              | Uncertainty |
|----------------------------------------|-------------|
| Conducted Spurious Emission & Bandedge | ±2.22 dB    |
| Occupied Channel Bandwidth             | ±0.1%       |
| Conducted Power                        | ±0.50 dB    |
| Peak to Average Ratio                  | ±0.46 dB    |
| Frequency Stability                    | ±0.04 ppm   |

**Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)**

|                                                                     |         |
|---------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 2.84 dB |
|---------------------------------------------------------------------|---------|

03CH06-KS(BT/WIF):

**Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)**

|                                                                     |        |
|---------------------------------------------------------------------|--------|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 3.30dB |
|---------------------------------------------------------------------|--------|

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

|                                                                     |        |
|---------------------------------------------------------------------|--------|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 6.08dB |
|---------------------------------------------------------------------|--------|

**Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)**

|                                                                     |        |
|---------------------------------------------------------------------|--------|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 5.18dB |
|---------------------------------------------------------------------|--------|



03CH04-KS(WWAN):

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.83 dB |
|-------------------------------------------------------------------------|---------|

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.83 dB |
|-------------------------------------------------------------------------|---------|

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.82 dB |
|-------------------------------------------------------------------------|---------|

----- THE END -----



## **Appendix B. Reference Report**



# FCC RF Test Report

FCC ID : UZ7EM45B2  
EQUIPMENT : Enterprise Mobile  
BRAND NAME : Zebra  
MODEL NAME : EM45B2  
APPLICANT : Zebra Technologies Corporation  
3 Overlook Point, Lincolnshire, IL 60069 USA  
MANUFACTURER : Zebra Technologies Corporation  
3 Overlook Point, Lincolnshire, IL 60069 USA  
STANDARD : 47 CFR Part 2, and 90(S)  
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)  
TEST DATE(S) : Jul. 08, 2024 ~ Aug. 12, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



**Sporton International Inc. (Kunshan)**

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China





REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FG460508I  | Rev. 01 | Initial issue of report | Sep. 11, 2024 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |



## SUMMARY OF TEST RESULT

| Report Section | FCC Rule           | Description                                      | Limit                               | Result | Remark                                    |
|----------------|--------------------|--------------------------------------------------|-------------------------------------|--------|-------------------------------------------|
| 3.1            | §2.1046            | Conducted Output Power                           | —                                   | PASS   | -                                         |
| 3.2            | §2.1049<br>§90.209 | Occupied Bandwidth and<br>26dB Bandwidth         | —                                   | PASS   | -                                         |
| 3.3            | §2.1051<br>§90.691 | Emission masks –<br>In-band emissions            | $< 50+10\log_{10}(P[\text{Watts}])$ | PASS   | -                                         |
| 3.4            | §2.1051<br>§90.691 | Emission masks –<br>Out of band emissions        | $< 43+10\log_{10}(P[\text{Watts}])$ | PASS   | -                                         |
| 3.5            | §2.1053<br>§90.691 | Field Strength of Spurious<br>Radiation          | $< 43+10\log_{10}(P[\text{Watts}])$ | PASS   | Under limit<br>46.85 dB at<br>2448.00 MHz |
| 3.6            | §2.1055<br>§90.213 | Frequency Stability for<br>Temperature & Voltage | $< 2.5 \text{ ppm}$                 | PASS   | -                                         |

**Conformity Assessment Condition:**

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

**Disclaimer:**

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.





## 1.6 Test Software

| Item | Site      | Manufacture | Name                                 | Version |
|------|-----------|-------------|--------------------------------------|---------|
| 1.   | TH01-KS   | Tonscend    | JS1120-3 test system<br>China_210602 | 3.3.10  |
| 2.   | 03CH04-KS | AUDIX       | E3                                   | 210616  |

## 1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2, 90(S)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



## 2 Test Configuration of Equipment Under Test

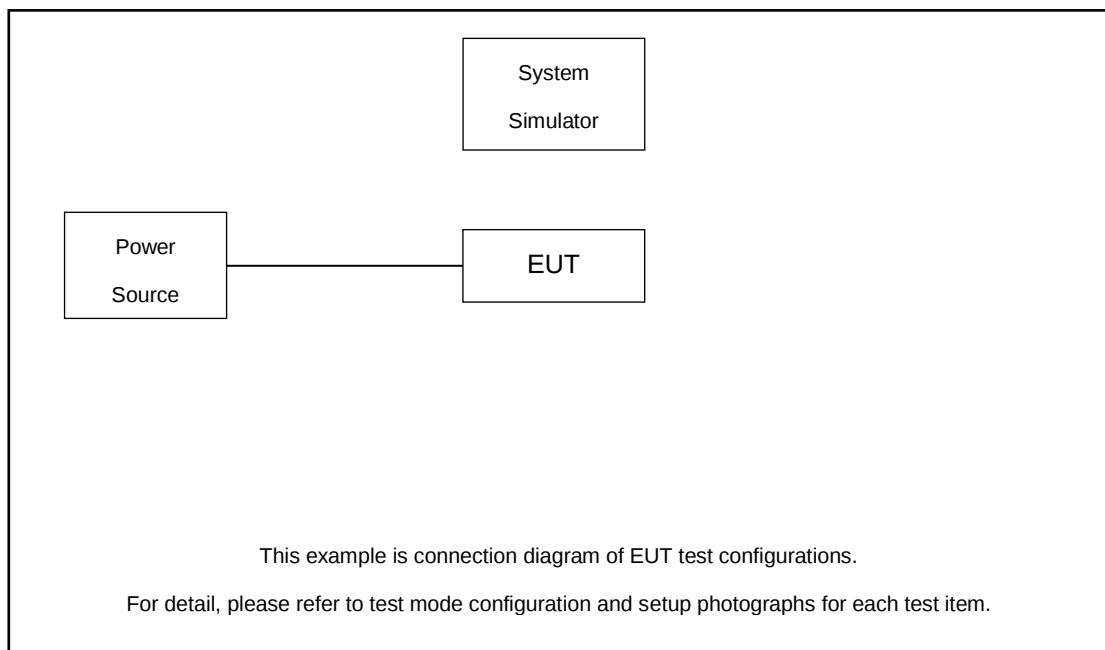
### 2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X Plane).

Frequency range investigated for radiated emission is 30 MHz to 9000 MHz.

| Test Items                       | Band | Bandwidth (MHz) |    |    |    | Modulation |      |       |       |        | RB # |      |      | Test Channel |   |   |
|----------------------------------|------|-----------------|----|----|----|------------|------|-------|-------|--------|------|------|------|--------------|---|---|
|                                  |      | 5               | 10 | 15 | 20 | PI/2 BPSK  | QPSK | 16QAM | 64QAM | 256QAM | 1    | Half | Full | L            | M | H |
| Max. Output Power                | n26  | v               | v  | v  | v  | v          | v    | v     | v     | v      | v    |      | v    | v            | v | v |
| 26dB and 99% Bandwidth           | n26  | v               | v  | v  | v  |            | v    | v     | v     | v      |      |      | v    |              | v |   |
| Emission masks In-band emissions | n26  | v               |    |    |    | v          | v    |       |       |        | v    |      | v    | v            |   |   |

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

| Item | Equipment       | Trade Name | Model No. | FCC ID | Data Cable | Power Cord        |
|------|-----------------|------------|-----------|--------|------------|-------------------|
| 1.   | DC Power Supply | GW         | GPS-3030D | N/A    | N/A        | Unshielded, 1.8 m |
| 2.   | Base Station    | Anritsu    | MT8821    | N/A    | N/A        | Unshielded, 1.8 m |

## 2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss.

*Offset = RF cable loss.*

The following shows an offset computation example with RF cable loss 4.8 dB attenuator.



## 2.5 Frequency List of Low/Middle/High Channels

| 5G NR n26 Channel and Frequency List |                        |        |        |         |
|--------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                             | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10                                   | Channel                | -      | 163800 | -       |
|                                      | Frequency              | -      | 819    | -       |
| 5                                    | Channel                | 163300 | 163800 | 164300  |
|                                      | Frequency              | 816.5  | 819    | 821.5   |

| 5G NR n26 Cross-rule Channel and Frequency List |                        |   |        |   |
|-------------------------------------------------|------------------------|---|--------|---|
| BW [MHz]                                        | Channel/Frequency(MHz) | - | Middle | - |
| 20                                              | Channel                | - | 164800 | - |
|                                                 | Frequency              | - | 824    | - |
| 15                                              | Channel                | - | 164300 | - |
|                                                 | Frequency              | - | 821.5  | - |

### 3 Test Result

#### 3.1 Conducted Output Power Measurement

##### 3.1.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

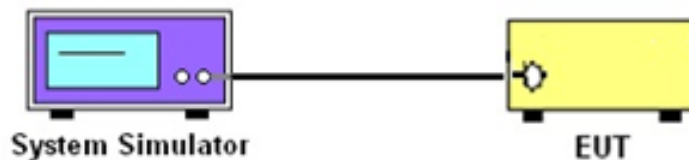
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

##### 3.1.4 Test Setup



##### 3.1.5 Test Result of Conducted Output Power

Please refer to Appendix A.

## 3.2 99% Occupied Bandwidth and 26dB Bandwidth Measurement

### 3.2.1 Description of (Occupied) Bandwidth Limitations Measurement

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

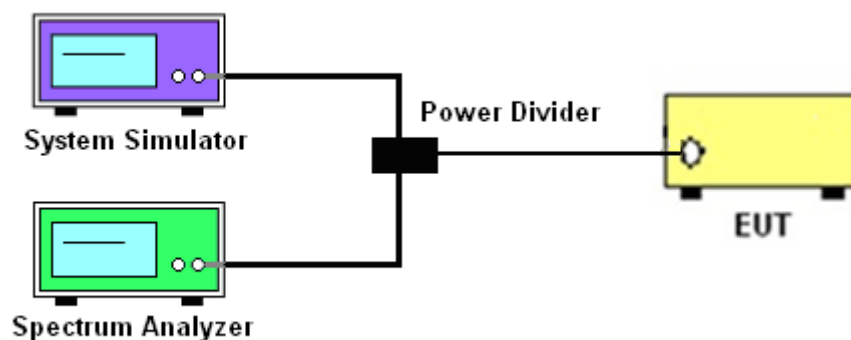
### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF power with full RB sizes were measured.

### 3.2.4 Test Setup

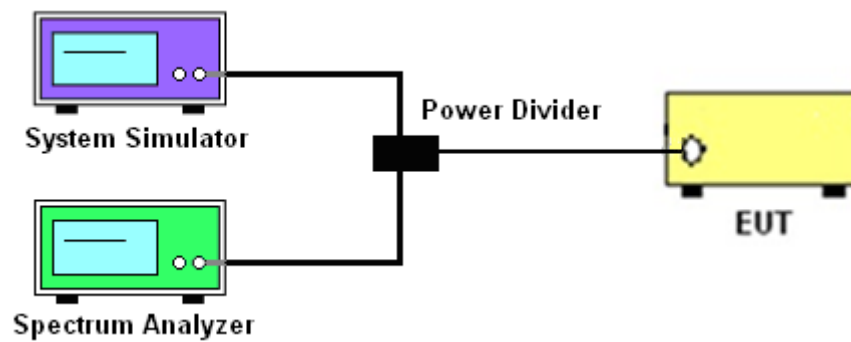


### 3.2.5 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth

Please refer to Appendix A.



### 3.3.4 Test Setup



### 3.3.5 Test Result (Plots) of Conducted Emissions Mask

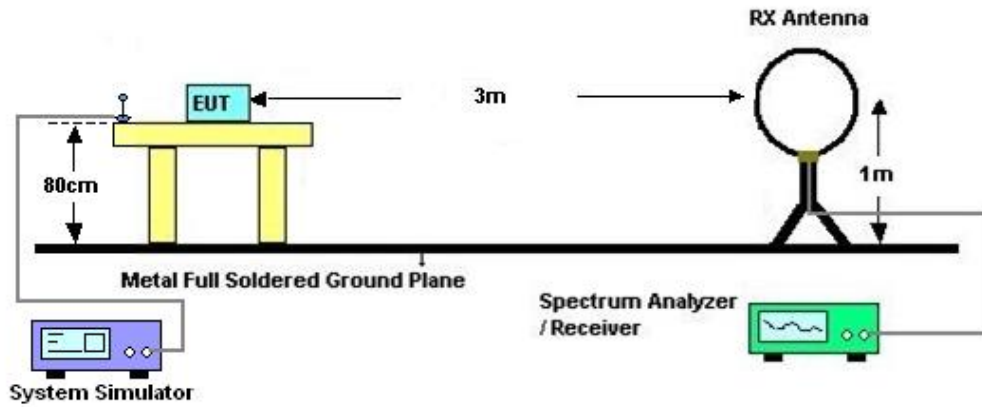
Please refer to Appendix A.



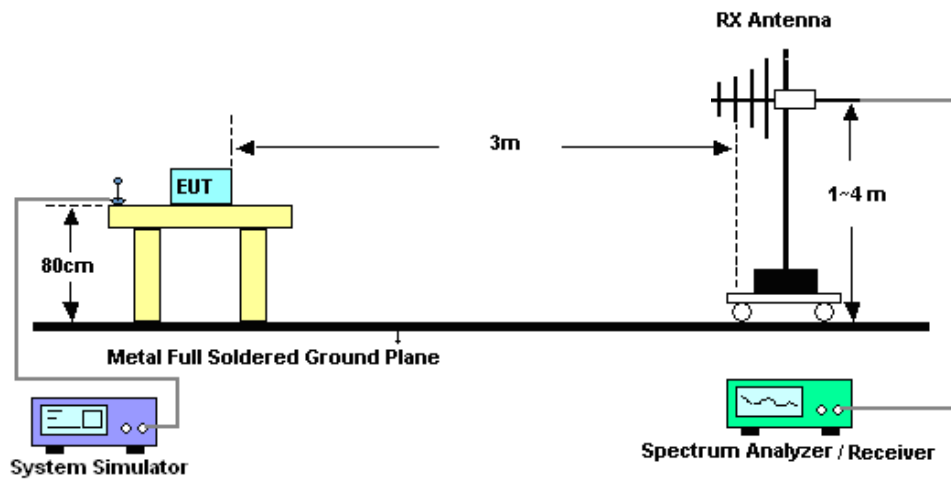


### 3.5.4 Test Setup

For radiated test from 30MHz



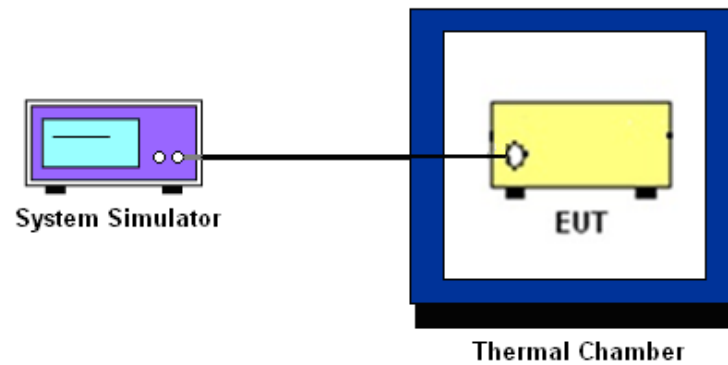
For radiated test from 30MHz to 1GHz







### 3.6.5 Test Setup



### 3.6.6 Test Result of Temperature Variation

Please refer to Appendix A.







## Appendix A. Test Results of Conducted Test

|                 |            |                     |         |
|-----------------|------------|---------------------|---------|
| Test Engineer : | Simle Wang | Temperature :       | 22~23°C |
|                 |            | Relative Humidity : | 40~42%  |

































