

## Report on the RF Testing of:

KYOCERA Corporation  
Mobile Phone, Model: EB1055  
FCC ID: JOYEB1055

In accordance with FCC Part 15 Subpart C  
(15.225)

Prepared for: KYOCERA Corporation  
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## COMMERCIAL-IN-CONFIDENCE

Document Number: JPD-TR-20196-0

### SIGNATURE

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| Hiroaki Suzuki | Deputy Manager of RF Group | Approved Signatory | 01 OCT 2020 |

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### EXECUTIVE SUMMARY – Result: Complied

A sample of this product was tested and the result above was confirmed in accordance with FCC Part 15 Subpart C (15.225).



Certificate #3686.03

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## 1 Summary of Test

### 1.1 Modification history of the test report

| Document Number | Modification History | Issue Date              |
|-----------------|----------------------|-------------------------|
| JPD-TR-20196-0  | First Issue          | Refer to the cover page |

### 1.2 Standards

CFR47 FCC Part 15 Subpart C (15.225)

### 1.3 Test methods

ANSI C63.10-2013

### 1.4 Deviation from standards

None

### 1.5 List of applied test(s) of the EUT

| Test item section                | Test item                                  | Condition | Result | Remark |
|----------------------------------|--|-----------|--------|--------|
| 2.1049<br>RSS-Gen 6.7            | Occupied Bandwidth                         | Conducted | PASS   | -      |
| 15.209<br>15.225<br>(a)(b)(c)(d) | Operation within the band 13.110-14.010MHz | Radiated  | PASS   | -      |
| 15.209<br>15.225 (d)             | Transmitter Radiated Spurious Emissions    | Radiated  | PASS   | -      |
| 15.225 (e)                       | Frequency Tolerance                        | Conducted | PASS   | -      |
| 15.207                           | AC Power Line Conducted Emissions          | Conducted | PASS   | -      |

### 1.6 Test information

None

### 1.7 Test set up

Table-top

### 1.8 Test period

3-September-2020 - 10-September-2020

## 2 Equipment Under Test

### 2.1 EUT information

|                            |   |
|----------------------------|---|
| Applicant                  | KYOCERA Corporation<br>Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi,<br>Kanagawa, Japan<br>Phone: +81-45-943-6253 Fax: +81-45-943-6314 |
| Equipment Under Test (EUT) | Mobile Phone  |
| Model number               | EB1055  |
| Serial number              | N/A   |
| Trade name                 | Kyocera   |
| Number of sample(s)        | 1   |
| EUT condition              | Pre-Production  |
| Power rating               | Battery: DC 3.85 V  |
| Size                       | (W) 76.0 × (D) 8.7 × (H) 162.0 mm   |
| Environment                | Indoor and Outdoor use  |
| Terminal limitation        | -20 °C to 60 °C   |
| Hardware version           | DMT1  |
| Software version           | 0.020SI.0020.a  |
| Firmware version           | Not applicable  |
| RF Specification           |   |
| Frequency range            | 13.56MHz  |
| Modulation method          | ASK   |
| Antenna type               | Loop antenna  |

### 2.2 Modification to the EUT

The table below details modifications made to the EUT during the test project.

| Modification State                | Description of Modification  | Modification fitted by | Date of Modification |
|-----------------------------------|------------------------------|------------------------|----------------------|
| Model: EB1055, Serial Number: N/A |                              |                        |                      |
| 0                                 | As supplied by the applicant | Not Applicable         | Not Applicable       |



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## **2.3 Variation of family model(s)**

### **2.3.1 List of family model(s)**

Not applicable

### **2.3.2 Reason for selection of EUT**

Not applicable

## **2.4 Operating mode**

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.

The worst emission was found in Z-axis and the worst case recorded.

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

## **2.5 Operating flow**

[Tx mode]

- i) NFC test program setup to the Software
- ii) Start test mode

### 3 Configuration of Equipment

Numbers assigned to equipment on the diagram in “3.3 System configuration” correspond to the list in “3.1 Equipment used” and “3.2 Cable(s) used”.

Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

#### 3.1 Equipment used

| No. | Equipment    | Company | Model No. | Serial No. | FCC ID/DoC | Comment |
|-----|--------------|---------|-----------|------------|------------|---------|
| 1   | Mobile Phone | KYOCERA | EB1055    | N/A        | JOYEB1055  | EUT     |
| 2   | AC Adapter   | KDDI    | 0301PQA   | N/A        | N/A        | *       |

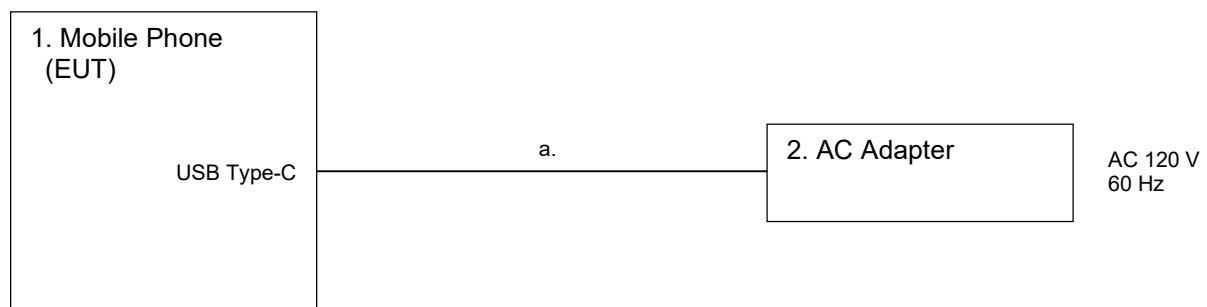
\*:AC power line Conducted Emission Test.

#### 3.2 Cable(s) used

| No. | Equipment                  | Length[m] | Shield | Connector | Comment |
|-----|----------------------------|-----------|--------|-----------|---------|
| a   | USB cable (for AC Adapter) | 1.0       | Yes    | Metal     | *       |

\*:AC power line Conducted Emission Test.

#### 3.3 System configuration



## 4 Test Result

### 4.1 Occupied Bandwidth

#### 4.1.1 Measurement procedure

##### [FCC 2.1049, RSS-Gen 6.7]

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to approach 1% of the selected span or less than 1%. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

The spectrum analyzer is set to;

- RBW=1kHz, VBW=3kHz, Span=100kHz, Sweep=auto, Detector=Peak, Trace mode = max hold.

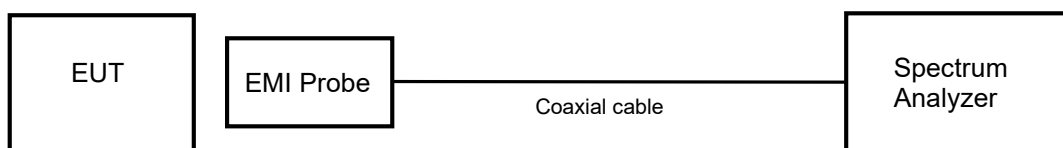
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



#### 4.1.2 Limit

None

#### 4.1.3 Measurement result

Date : 10-September-2020

Temperature : 23.3 [°C]

Humidity : 56.8 [%]

Test place : Shielded room No.4

Test engineer :

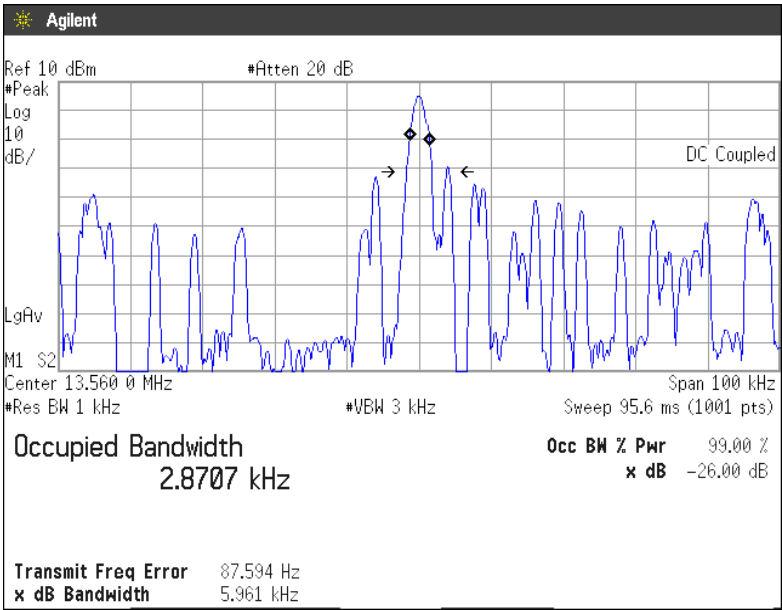
Chiaki Kanno

| Frequency<br>(MHz) | Occupied Bandwidth<br>(kHz) |
|--------------------|-----------------------------|
| 13.56              | 2.8707                      |



Japan

4.1.4 Trace data





## 4.2 Operation within the band 13.110-14.010MHz

### 4.2.1 Measurement procedure

#### [FCC 15.209, 15.225 (a)(b)(c)(d)]

Test was applied by following conditions.

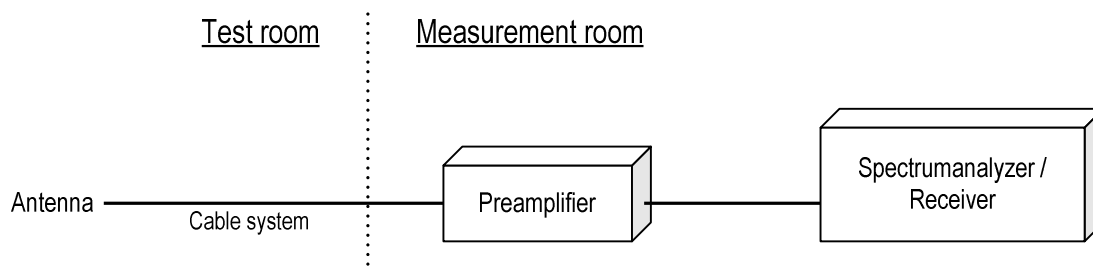
|                   |   |   |
|-------------------|---|---|
| Test method       | : | ANSI C63.10                                   |
| Frequency range   | : | 13.110MHz to 14.010MHz                        |
| Test place        | : | 3m Semi-anechoic chamber                      |
| EUT was placed on | : | Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m |
| Antenna distance  | : | 3m  |

Test receiver setting

|             |   |            |
|-------------|---|------------|
| - Detector  | : | Quasi-peak |
| - Bandwidth | : | 9kHz       |

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements frequency range 13.110MHz to 14.010MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



### 4.2.2 Calculation method

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level

#### 4.2.3 Limit

- (a) The field strength of any emissions within the band 13.553-13.567MHz shall not exceed 15,848uV/m at 30m.
- (b) Within the band 13.410-13.553MHz and 13.567-13.710MHz, the field strength of any emissions shall not exceed 334uV/m at 30m.
- (c) Within the band 13.110-13.410MHz and 13.710-14.010MHz, the field strength of any emissions shall not exceed 106uV/m at 30m.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010MHz and shall not exceed the general radiated emission limits in FCC 15.209.

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. Measurements were corrected to 30m using  $40\log(3/30) = -40.0\text{dB}$

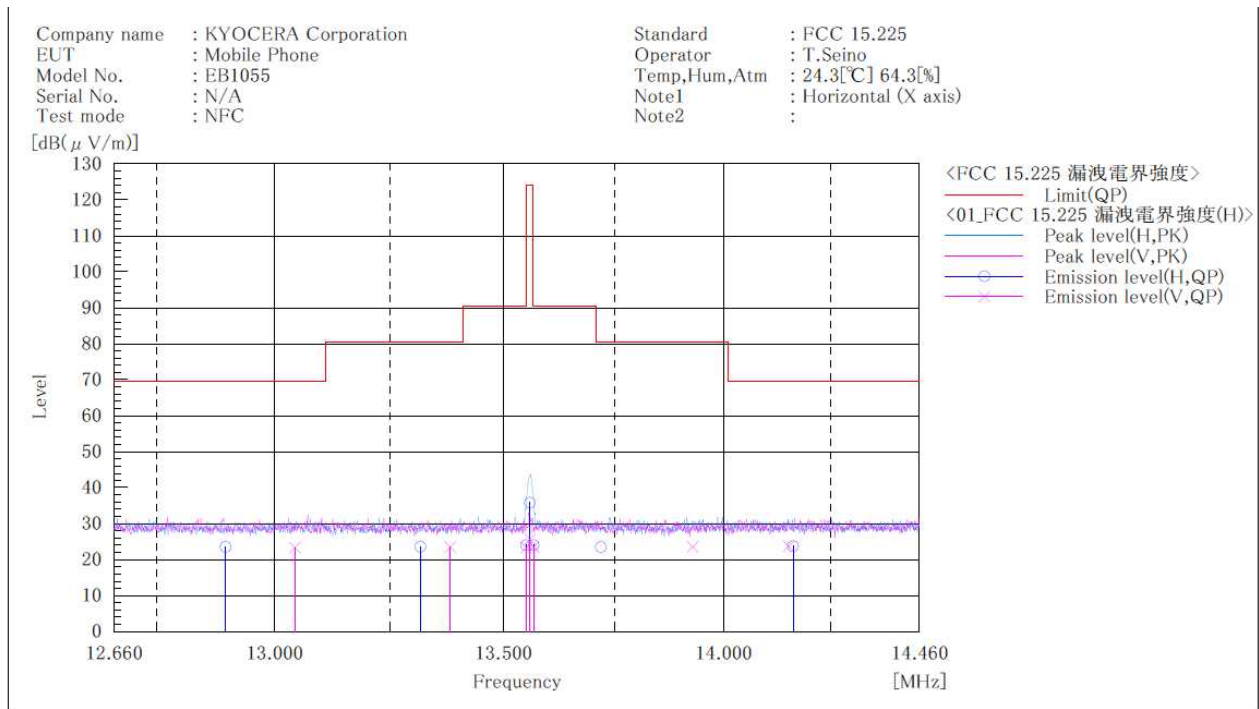
#### 4.2.4 Test data

Date : 3-September-2020  
 Temperature : 24.3 [°C]  
 Humidity : 64.3 [%]  
 Test place : Shielded room No.4

Test engineer : Tadahiro Seino

| Frequency range (MHz) | Frequency (MHz) | Level                   |                          | Limit (dBuV/m) | Margin (dB) | Result |
|-----------------------|-----------------|-------------------------|--------------------------|----------------|-------------|--------|
|                       |                 | Measured at 3m (dBuV/m) | Measured at 30m (dBuV/m) |                |             |        |
| 13.553-13.567         | 13.560          | 53.1                    | 13.1                     | 84.0           | 70.9        | PASS   |
| 13.41-13.553          | 13.552          | 36.6                    | -3.4                     | 50.5           | 53.9        | PASS   |
| 13.567-13.71          | 13.568          | 36.5                    | -3.5                     | 50.5           | 54.0        | PASS   |
| 13.11-13.41           | 13.317          | 30.5                    | -9.5                     | 40.5           | 50.0        | PASS   |
| 13.71-14.01           | 13.842          | 30.5                    | -9.5                     | 40.5           | 50.0        | PASS   |
| 12.66-13.11           | 12.896          | 30.5                    | -9.5                     | 29.5           | 39.0        | PASS   |
| 14.01-14.46           | 14.213          | 30.5                    | -9.5                     | 29.5           | 39.0        | PASS   |

## 4.2.5 Trace data

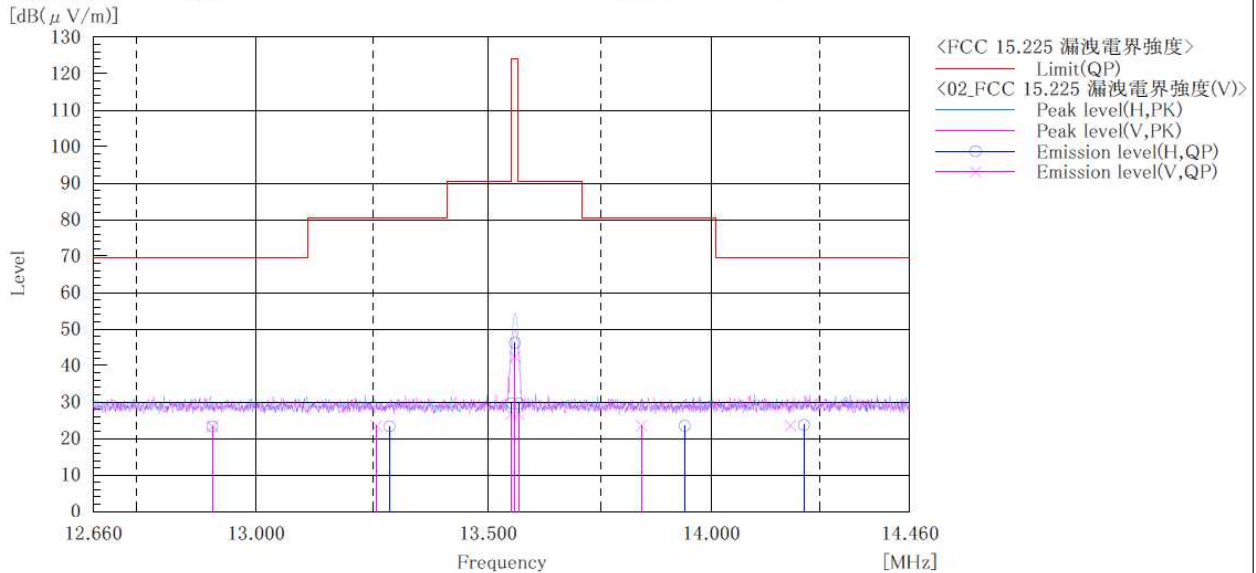


### Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB(μV)] | c. f<br>[dB(1/m)] | Result<br>QP<br>[dB(μV/m)] | Limit<br>QP<br>[dB(μV/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[°] |
|-----|--------------------|-----|---------------------------|-------------------|----------------------------|---------------------------|----------------------|----------------|--------------|
| 1   | 13.560             | V   | 32.6                      | -6.9              | 25.7                       | 124.0                     | 98.3                 | 100.0          | 275.0        |
| 2   | 13.552             | V   | 30.3                      | -6.9              | 23.4                       | 90.5                      | 67.1                 | 100.0          | 275.0        |
| 3   | 13.568             | V   | 30.4                      | -6.9              | 23.5                       | 90.5                      | 67.0                 | 100.0          | 275.0        |
| 4   | 13.383             | V   | 30.4                      | -6.9              | 23.5                       | 80.5                      | 57.0                 | 100.0          | 336.0        |
| 5   | 13.929             | V   | 30.5                      | -6.9              | 23.6                       | 80.5                      | 56.9                 | 100.0          | 10.0         |
| 6   | 13.044             | V   | 30.4                      | -7.0              | 23.4                       | 69.5                      | 46.1                 | 100.0          | 330.0        |
| 7   | 14.151             | V   | 30.5                      | -6.8              | 23.7                       | 69.5                      | 45.8                 | 100.0          | 349.0        |
| 8   | 13.560             | H   | 42.7                      | -6.9              | 35.8                       | 124.0                     | 88.2                 | 100.0          | 350.0        |
| 9   | 13.552             | H   | 30.9                      | -6.9              | 24.0                       | 90.5                      | 66.5                 | 100.0          | 350.0        |
| 10  | 13.568             | H   | 30.9                      | -6.9              | 24.0                       | 90.5                      | 66.5                 | 100.0          | 350.0        |
| 11  | 13.317             | H   | 30.5                      | -6.9              | 23.6                       | 80.5                      | 56.9                 | 100.0          | 12.0         |
| 12  | 13.720             | H   | 30.4                      | -6.9              | 23.5                       | 80.5                      | 57.0                 | 100.0          | 350.0        |
| 13  | 12.896             | H   | 30.5                      | -7.0              | 23.5                       | 69.5                      | 46.0                 | 100.0          | 56.0         |
| 14  | 14.162             | H   | 30.5                      | -6.8              | 23.7                       | 69.5                      | 45.8                 | 100.0          | 99.0         |

Company name : KYOCERA Corporation  
 EUT : Mobile Phone  
 Model No. : EB1055  
 Serial No. : N/A  
 Test mode : NFC

Standard : FCC 15.225  
 Operator : T.Seino  
 Temp,Hum,Atm : 24.3[°C] 64.3[%]  
 Note1 : Vertical (Z axis)  
 Note2 :



## Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB( $\mu$ V)] | c. f<br>[dB(1/m)] | Result<br>QP<br>[dB( $\mu$ V/m)] | Limit<br>QP<br>[dB( $\mu$ V/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[°] |
|-----|--------------------|-----|---------------------------------|-------------------|----------------------------------|---------------------------------|----------------------|----------------|--------------|
| 1   | 13.560             | V   | 49.3                            | -6.9              | 42.4                             | 124.0                           | 81.6                 | 100.0          | 90.0         |
| 2   | 13.552             | V   | 33.7                            | -6.9              | 26.8                             | 90.5                            | 63.7                 | 100.0          | 90.0         |
| 3   | 13.568             | V   | 33.6                            | -6.9              | 26.7                             | 90.5                            | 63.8                 | 100.0          | 90.0         |
| 4   | 13.258             | V   | 30.4                            | -6.9              | 23.5                             | 80.5                            | 57.0                 | 100.0          | 15.0         |
| 5   | 13.842             | V   | 30.5                            | -6.9              | 23.6                             | 80.5                            | 56.9                 | 100.0          | 336.0        |
| 6   | 12.908             | V   | 30.4                            | -7.0              | 23.4                             | 69.5                            | 46.1                 | 100.0          | 114.0        |
| 7   | 14.182             | V   | 30.4                            | -6.8              | 23.6                             | 69.5                            | 45.9                 | 100.0          | 288.0        |
| 8   | 13.560             | H   | 53.1                            | -6.9              | 46.2                             | 124.0                           | 77.8                 | 100.0          | 180.0        |
| 9   | 13.552             | H   | 36.6                            | -6.9              | 29.7                             | 90.5                            | 60.8                 | 100.0          | 180.0        |
| 10  | 13.568             | H   | 36.5                            | -6.9              | 29.6                             | 90.5                            | 60.9                 | 100.0          | 180.0        |
| 11  | 13.286             | H   | 30.3                            | -6.9              | 23.4                             | 80.5                            | 57.1                 | 100.0          | 35.0         |
| 12  | 13.940             | H   | 30.4                            | -6.9              | 23.5                             | 80.5                            | 57.0                 | 100.0          | 232.0        |
| 13  | 12.908             | H   | 30.4                            | -7.0              | 23.4                             | 69.5                            | 46.1                 | 100.0          | 165.0        |
| 14  | 14.213             | H   | 30.5                            | -6.8              | 23.7                             | 69.5                            | 45.8                 | 100.0          | 0.0          |

## 4.3 Radiated Emissions

### 4.3.1 Measurement procedure

#### [FCC 15.209, 15.225 (d)]

Test was applied by following conditions.

|                   |   |
|-------------------|---|
| Test method       | : ANSI C63.10                                   |
| Frequency range   | : 9kHz to 30MHz                                 |
| Test place        | : 3m Semi-anechoic chamber                      |
| EUT was placed on | : Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m |
| Antenna distance  | : 3m  |

#### Test receiver setting

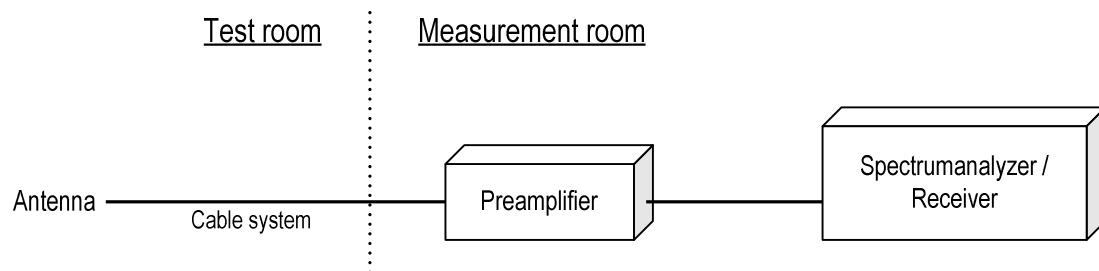
|             |   |
|-------------|---|
| - Detector  | : Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak |
| - Bandwidth | : 200Hz, 9kHz                                     |

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site.

Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 30MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

#### - Test configuration



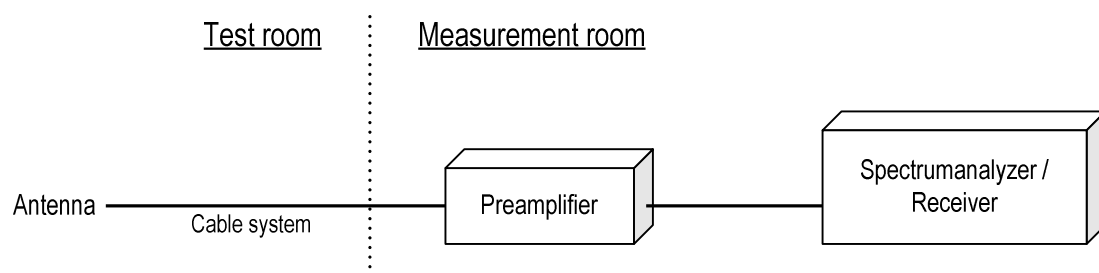
Test was applied by following conditions.

|                   |   |
|-------------------|---|
| Test method       | : ANSI C63.10                                   |
| Frequency range   | : 30MHz to 1000MHz                              |
| Test place        | : 3m Semi-anechoic chamber                      |
| EUT was placed on | : Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m |
| Antenna distance  | : 3m  |

|                       |              |
|-----------------------|--------------|
| Test receiver setting |              |
| - Detector            | : Quasi-peak |
| - Bandwidth           | : 120kHz     |

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 1000MHz were performed with test receiver in above setting. In order to find the maximum emissions, antenna is adjusted between 1m and 4m in height and varied its polarization (horizontal and vertical), and EUT azimuth was also varied by rotating turntable 0 to 360 degrees. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

#### - Test configuration



#### 4.3.2 Calculation method

[9kHz to 150kHz]

Emission level = Reading + (Ant. factor + Cable system loss )

Margin = Limit – Emission level

[150kHz to 1000MHz]

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level

### 4.3.3 Limit

| Frequency<br>[MHz] | Field strength  |               | Distance<br>[m] |
|--------------------|-----------------|---------------|-----------------|
|                    | [uV/m]          | [dBuV/m]      |                 |
| 0.009-0.490        | 2400 / F [kHz]  | 20logE [uV/m] | 300             |
| 0.490-1.705        | 24000 / F [kHz] | 20logE [uV/m] | 30              |
| 1.705-30           | 30              | 29.5          | 30              |
| 30-88              | 100             | 40.0          | 3               |
| 88-216             | 150             | 43.5          | 3               |
| 216-960            | 200             | 46.0          | 3               |
| Above 960          | 500             | 54.0          | 3               |

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. Measurements were corrected to 300m using  $40\log (3/300) = -80.0\text{dB}$   
Measurements were corrected to 30m using  $40\log (3/30) = -40.0\text{dB}$

#### 4.3.4 Test data

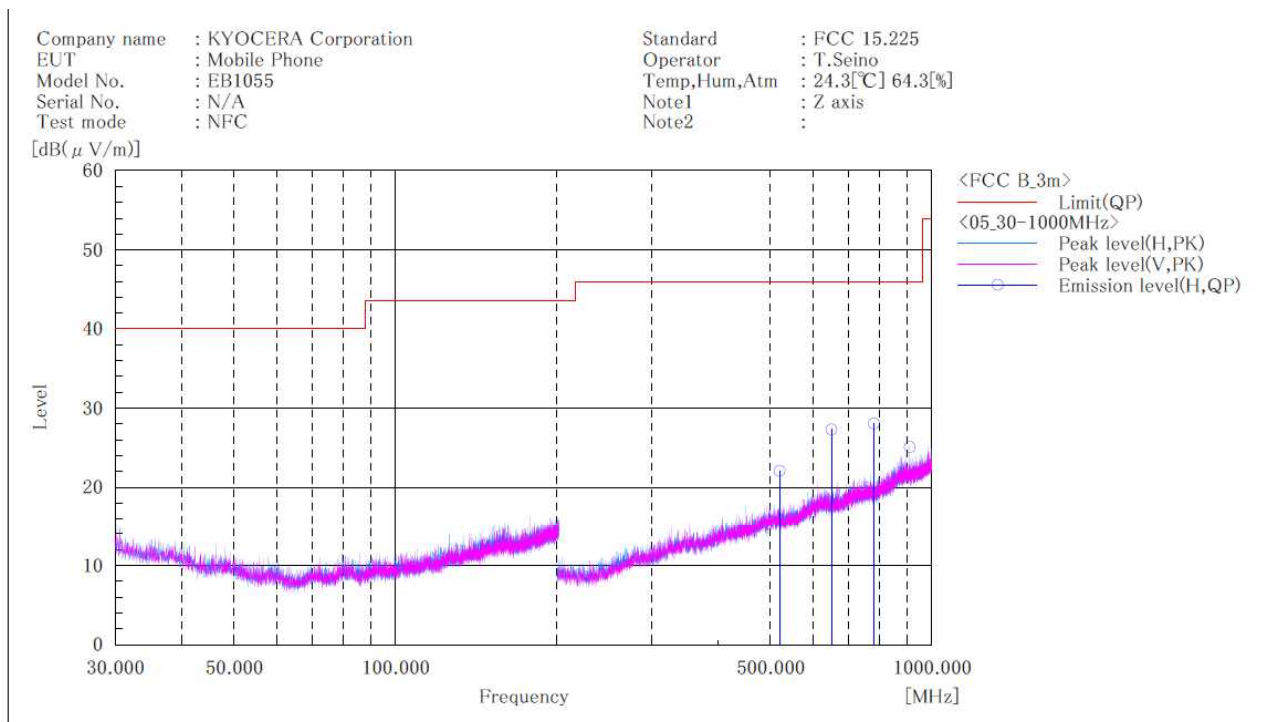
Date : 3-September-2020  
 Temperature : 24.3 [°C]  
 Humidity : 64.3 [%]  
 Test place : 3m Semi-anechoic chamber

Test engineer :  
 Tadahiro Seino

#### [9kHz to 30MHz]

| Frequency (MHz) | Reading [dBuV] At 3m | c.f [dB(1/m)] | Result [dBuV/m] At 3m | Result [dBuV/m] At 30m | Limit [dBuV/m] At 30m | Margin (dB) | Result |
|-----------------|----------------------|---------------|-----------------------|------------------------|-----------------------|-------------|--------|
| 27.12           | 29.0                 | -5.2          | 23.8                  | -16.2                  | 29.5                  | 45.7        | PASS   |

#### [30MHz to 1000MHz]



#### Final Result

| No. | Frequency (P) | Reading QP | c.f       | Result QP  | Limit QP   | Margin QP | Height | Angle |
|-----|---------------|------------|-----------|------------|------------|-----------|--------|-------|
|     | [MHz]         | [dB(μV)]   | [dB(1/m)] | [dB(μV/m)] | [dB(μV/m)] | [dB]      | [cm]   | [°]   |
| 1   | 520.010       | H 31.3     | -9.2      | 22.1       | 46.0       | 23.9      | 170.0  | 0.0   |
| 2   | 650.002       | H 34.5     | -7.2      | 27.3       | 46.0       | 18.7      | 132.0  | 0.0   |
| 3   | 780.030       | H 33.8     | -5.7      | 28.1       | 46.0       | 17.9      | 108.0  | 0.0   |
| 4   | 910.003       | H 28.0     | -2.9      | 25.1       | 46.0       | 20.9      | 100.0  | 0.0   |



#### 4.4 Frequency Tolerance

##### 4.4.1 Measurement procedure

###### [FCC 15.205 (e)]

The EUT was placed of an inside of an constant temperature chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channels center frequency was recorded.

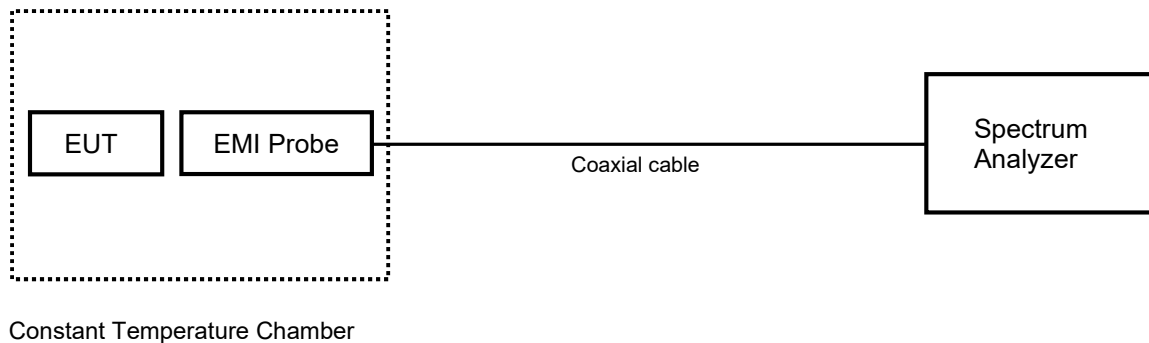
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



##### 4.4.2 Limit

The Frequency tolerance of the carrier signal shall be maintained within +/- 0.01% over a temperature variation of -30 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

**4.4.3 Test data**

Date : 10-September-2020  
 Temperature : 23.3 [°C]  
 Humidity : 56.8 [%]  
 Test place : Shielded room No.4

Test engineer : Chiaki Kanno

| Reference Frequency: EUT Channel 13.56MHz at 20°C                  |             |                                  |                               |                                |                             |                                |                             |                                 |                              |           |        |
|--|-------------|----------------------------------|-------------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|---------------------------------|------------------------------|-----------|--------|
| Limit: $\pm 0.01\% = \pm 100\text{ppm} = \pm 0.00135603\text{MHz}$ |             |                                  |                               |                                |                             |                                |                             |                                 |                              |           |        |
| Power Supply   | Temperature | Measurements Frequency (startup) | Frequency Tolerance (startup) | Measurements Frequency (2mins) | Frequency Tolerance (2mins) | Measurements Frequency (5mins) | Frequency Tolerance (5mins) | Measurements Frequency (10mins) | Frequency Tolerance (10mins) | Limit     | Result |
| [V]  | [°C]        | [MHz]                            | [ppm]                         | [MHz]                          | [ppm]                       | [MHz]                          | [ppm]                       | [MHz]                           | [ppm]                        | [ppm]     |        |
| 3.85   | 50          | 13.559920                        | -5.900                        | 13.560230                      | 16.962                      | 13.560260                      | 19.174                      | 13.560240                       | 17.699                       | $\pm 100$ | PASS   |
|  | 40          | 13.559915                        | -6.268                        | 13.560255                      | 18.805                      | 13.560240                      | 17.699                      | 13.560235                       | 17.330                       |           |        |
|  | 30          | 13.559915                        | -6.268                        | 13.560245                      | 18.068                      | 13.560235                      | 17.330                      | 13.560250                       | 18.437                       |           |        |
|  | 20          | 13.560000                        | -                             | 13.560250                      | 18.437                      | 13.560255                      | 18.805                      | 13.560260                       | 19.174                       |           |        |
|  | 10          | 13.559955                        | -3.319                        | 13.560265                      | 19.543                      | 13.560260                      | 19.174                      | 13.560255                       | 18.805                       |           |        |
|  | 0           | 13.559940                        | -4.425                        | 13.560280                      | 20.649                      | 13.560255                      | 18.805                      | 13.560275                       | 20.280                       |           |        |
|  | -10         | 13.559990                        | -0.737                        | 13.560260                      | 19.174                      | 13.560285                      | 21.018                      | 13.560290                       | 21.386                       |           |        |
|  | -20         | 13.560025                        | 1.844                         | 13.560230                      | 16.962                      | 13.560230                      | 16.962                      | 13.560245                       | 18.068                       |           |        |
|  | -30         | 13.560030                        | 2.212                         | 13.560230                      | 16.962                      | 13.560235                      | 17.330                      | 13.560215                       | 15.855                       |           |        |
| 3.42   | 20          | 13.559950                        | -3.687                        | 13.560246                      | 18.142                      | 13.560240                      | 17.699                      | 13.560245                       | 18.068                       |           |        |
| 4.18   | 20          | 13.559960                        | -2.950                        | 13.560250                      | 18.437                      | 13.560255                      | 18.805                      | 13.560255                       | 18.805                       |           |        |

Note. Frequency Tolerance (ppm) = (Measurements Frequency (MHz) – Reference Frequency (MHz)) / Reference Frequency (MHz) x 1000000

The primary power supply voltage rating of this EUT is 85% to 115%

## 4.5 AC Power Line Conducted Emissions

### 4.5.1 Measurement procedure

#### [FCC 15.207]

Test was applied by following conditions.

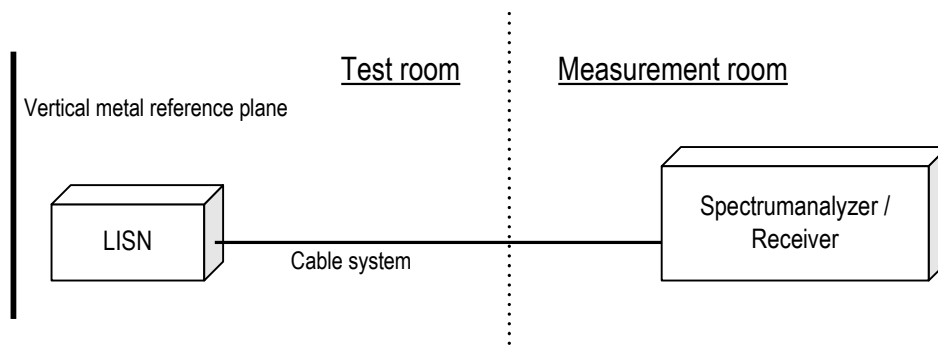
|                                |  |
|--------------------------------|--|
| Test method                    | : ANSI C63.10                                |
| Frequency range                | : 0.15 MHz to 30 MHz                         |
| Test place                     | : 3 m Semi-anechoic chamber                  |
| EUT was placed on              | : FRP table / (W)2.0 m × (D)1.0 m × (H)0.8 m |
| Vertical Metal Reference Plane | : (W)2.0 m × (H)2.0 m 0.4 m away from EUT    |
| Test receiver setting          |  |
| - Detector                     | : Quasi-peak, Average                        |
| - Bandwidth                    | : 9 kHz                                      |

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.

LISN for peripheral is terminated in 50Ω.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

#### - Test configuration



#### 4.5.2 Calculation method

Emission level = Reading + (LISN. Factor + Cable system loss)

Margin = Limit – Emission level

Example:

Limit @ 6.770 MHz : 60.0 dB $\mu$ V(Quasi-peak)

: 50.0 dB $\mu$ V(Average)

(Quasi peak) Reading = 41.2 dB $\mu$ V c.f = 10.3 dB

Emission level = 41.2 + 10.3 = 51.5 dB $\mu$ V

Margin = 60.0 – 51.5 = 8.5 dB

(Average) Reading = 35.0 dB $\mu$ V c.f = 10.3 dB

Emission level = 35.0 + 10.3 = 45.3 dB $\mu$ V

Margin = 50.0 – 45.3 = 4.7 dB

#### 4.5.3 Limit

| Frequency<br>[MHz] | Limit           |                 |
|--------------------|-----------------|-----------------|
|                    | QP [dB $\mu$ V] | AV [dB $\mu$ V] |
| 0.15-0.5           | 66-56*          | 56-46*          |
| 0.5-5              | 56              | 46              |
| 5-30               | 60              | 50              |

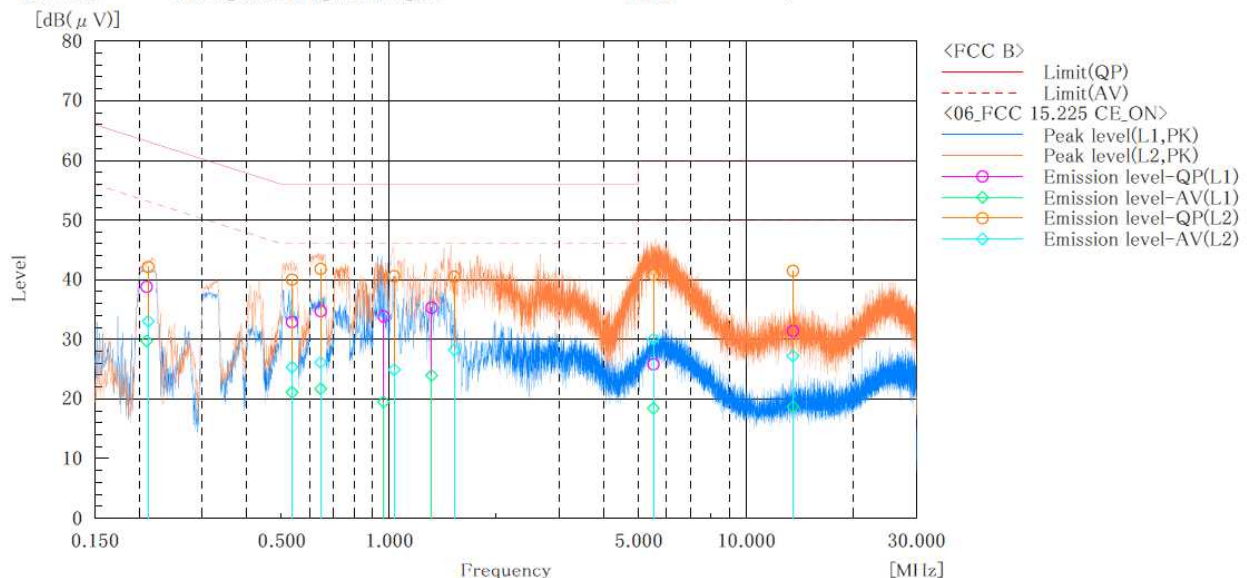
\*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

#### 4.5.4 Test data

##### [Transmit ON]

Company name : KYOCERA Corporation  
 EUT : Mobile Phone  
 Model No. : EB1055  
 Serial No. : N/A  
 Test mode : NFC\_13.56MHz\_Transmit\_ON

Standard : FCC Part15 Subpart C (15.225)  
 Operator : T.Seino  
 Temp,Hum,Atm : 24.3[°C] 64.3[%]  
 Note1 :  
 Note2 :



##### Final Result

###### --- L1 Phase ---

| No. | Frequency<br>[MHz] | Reading<br>QP<br>[dB(μV)] | Reading<br>AV<br>[dB(μV)] | c.f<br>[dB] | Result<br>QP<br>[dB(μV)] | Result<br>AV<br>[dB(μV)] | Limit<br>QP<br>[dB(μV)] | Limit<br>AV<br>[dB(μV)] | Margin<br>QP<br>[dB] | Margin<br>AV<br>[dB] |
|-----|--------------------|---------------------------|---------------------------|-------------|--------------------------|--------------------------|-------------------------|-------------------------|----------------------|----------------------|
| 1   | 0.210              | 28.4                      | 19.3                      | 10.4        | 38.8                     | 29.7                     | 63.2                    | 53.2                    | 24.4                 | 23.5                 |
| 2   | 0.536              | 22.5                      | 10.7                      | 10.4        | 32.9                     | 21.1                     | 56.0                    | 46.0                    | 23.1                 | 24.9                 |
| 3   | 0.645              | 24.3                      | 11.3                      | 10.4        | 34.7                     | 21.7                     | 56.0                    | 46.0                    | 21.3                 | 24.3                 |
| 4   | 0.969              | 23.4                      | 9.1                       | 10.4        | 33.8                     | 19.5                     | 56.0                    | 46.0                    | 22.2                 | 26.5                 |
| 5   | 1.319              | 24.9                      | 13.5                      | 10.4        | 35.3                     | 23.9                     | 56.0                    | 46.0                    | 20.7                 | 22.1                 |
| 6   | 5.516              | 15.1                      | 7.7                       | 10.7        | 25.8                     | 18.4                     | 60.0                    | 50.0                    | 34.2                 | 31.6                 |
| 7   | 13.560             | 20.0                      | 7.3                       | 11.4        | 31.4                     | 18.7                     | 60.0                    | 50.0                    | 28.6                 | 31.3                 |

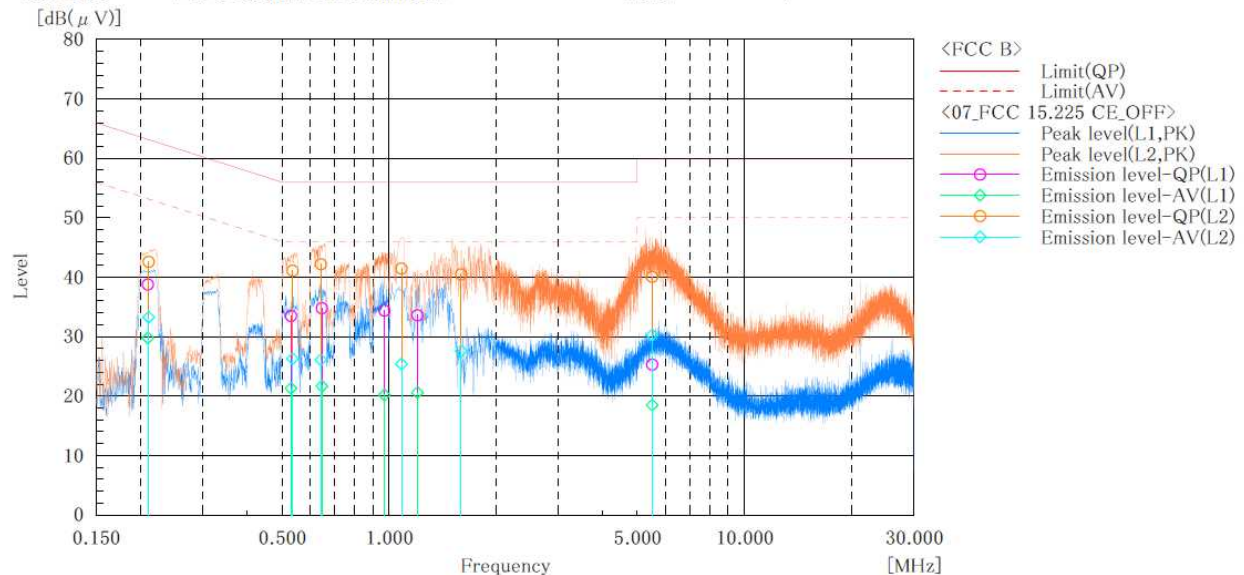
###### --- L2 Phase ---

| No. | Frequency<br>[MHz] | Reading<br>QP<br>[dB(μV)] | Reading<br>AV<br>[dB(μV)] | c.f<br>[dB] | Result<br>QP<br>[dB(μV)] | Result<br>AV<br>[dB(μV)] | Limit<br>QP<br>[dB(μV)] | Limit<br>AV<br>[dB(μV)] | Margin<br>QP<br>[dB] | Margin<br>AV<br>[dB] |
|-----|--------------------|---------------------------|---------------------------|-------------|--------------------------|--------------------------|-------------------------|-------------------------|----------------------|----------------------|
| 1   | 0.212              | 31.7                      | 22.6                      | 10.4        | 42.1                     | 33.0                     | 63.1                    | 53.1                    | 21.0                 | 20.1                 |
| 2   | 0.536              | 29.6                      | 14.9                      | 10.4        | 40.0                     | 25.3                     | 56.0                    | 46.0                    | 16.0                 | 20.7                 |
| 3   | 0.645              | 31.4                      | 15.7                      | 10.4        | 41.8                     | 26.1                     | 56.0                    | 46.0                    | 14.2                 | 19.9                 |
| 4   | 1.036              | 30.2                      | 14.5                      | 10.4        | 40.6                     | 24.9                     | 56.0                    | 46.0                    | 15.4                 | 21.1                 |
| 5   | 1.527              | 30.1                      | 17.8                      | 10.4        | 40.5                     | 28.2                     | 56.0                    | 46.0                    | 15.5                 | 17.8                 |
| 6   | 5.508              | 30.1                      | 19.3                      | 10.7        | 40.8                     | 30.0                     | 60.0                    | 50.0                    | 19.2                 | 20.0                 |
| 7   | 13.560             | 30.0                      | 15.7                      | 11.5        | 41.5                     | 27.2                     | 60.0                    | 50.0                    | 18.5                 | 22.8                 |

**[Transmit OFF]**

Company name : KYOCERA Corporation  
 EUT : Mobile Phone  
 Model No. : EB1055  
 Serial No. : N/A  
 Test mode : NFC\_13.56MHz\_Transmit\_OFF

Standard : FCC Part15 Subpart C (15.225)  
 Operator : T.Seino  
 Temp,Hum,Atm : 24.3[°C] 64.3[%]  
 Note1 :  
 Note2 :

**Final Result****--- L1 Phase ---**

| No. | Frequency<br>[MHz] | Reading<br>QP<br>[dB(μV)] | Reading<br>AV<br>[dB(μV)] | c. f<br>[dB] | Result<br>QP<br>[dB(μV)] | Result<br>AV<br>[dB(μV)] | Limit<br>QP<br>[dB(μV)] | Limit<br>AV<br>[dB(μV)] | Margin<br>QP<br>[dB] | Margin<br>AV<br>[dB] |
|-----|--------------------|---------------------------|---------------------------|--------------|--------------------------|--------------------------|-------------------------|-------------------------|----------------------|----------------------|
| 1   | 0.210              | 28.4                      | 19.4                      | 10.4         | 38.8                     | 29.8                     | 63.2                    | 53.2                    | 24.4                 | 23.4                 |
| 2   | 0.531              | 23.1                      | 10.9                      | 10.4         | 33.5                     | 21.3                     | 56.0                    | 46.0                    | 22.5                 | 24.7                 |
| 3   | 0.648              | 24.4                      | 11.3                      | 10.4         | 34.8                     | 21.7                     | 56.0                    | 46.0                    | 21.2                 | 24.3                 |
| 4   | 0.971              | 24.0                      | 9.8                       | 10.4         | 34.4                     | 20.2                     | 56.0                    | 46.0                    | 21.6                 | 25.8                 |
| 5   | 1.204              | 23.2                      | 10.2                      | 10.4         | 33.6                     | 20.6                     | 56.0                    | 46.0                    | 22.4                 | 25.4                 |
| 6   | 5.504              | 14.6                      | 7.8                       | 10.7         | 25.3                     | 18.5                     | 60.0                    | 50.0                    | 34.7                 | 31.5                 |

**--- L2 Phase ---**

| No. | Frequency<br>[MHz] | Reading<br>QP<br>[dB(μV)] | Reading<br>AV<br>[dB(μV)] | c. f<br>[dB] | Result<br>QP<br>[dB(μV)] | Result<br>AV<br>[dB(μV)] | Limit<br>QP<br>[dB(μV)] | Limit<br>AV<br>[dB(μV)] | Margin<br>QP<br>[dB] | Margin<br>AV<br>[dB] |
|-----|--------------------|---------------------------|---------------------------|--------------|--------------------------|--------------------------|-------------------------|-------------------------|----------------------|----------------------|
| 1   | 0.211              | 32.2                      | 22.9                      | 10.4         | 42.6                     | 33.3                     | 63.2                    | 53.2                    | 20.6                 | 19.9                 |
| 2   | 0.536              | 30.7                      | 15.9                      | 10.4         | 41.1                     | 26.3                     | 56.0                    | 46.0                    | 14.9                 | 19.7                 |
| 3   | 0.644              | 31.8                      | 15.7                      | 10.4         | 42.2                     | 26.1                     | 56.0                    | 46.0                    | 13.8                 | 19.9                 |
| 4   | 1.085              | 31.1                      | 15.0                      | 10.4         | 41.5                     | 25.4                     | 56.0                    | 46.0                    | 14.5                 | 20.6                 |
| 5   | 1.596              | 30.1                      | 17.2                      | 10.4         | 40.5                     | 27.6                     | 56.0                    | 46.0                    | 15.5                 | 18.4                 |
| 6   | 5.506              | 29.4                      | 19.6                      | 10.7         | 40.1                     | 30.3                     | 60.0                    | 50.0                    | 19.9                 | 19.7                 |



Japan

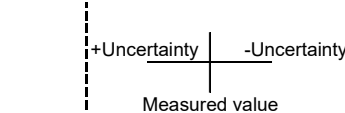
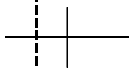
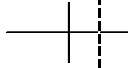
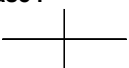
## **5 Antenna requirement**

According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

## 6 Measurement Uncertainty

Expanded uncertainties stated are calculated with a coverage Factor  $k=2$ .  
Please note that these results are not taken into account when measurement uncertainty considerations contained in ETSI TR 100 028 Parts 1 and 2 determining compliance or non-compliance with test result.

| Test item                                  | Measurement uncertainty  |
|--|--------------------------|
| Conducted emission, AMN (9 kHz – 150 kHz)  | $\pm 3.8$ dB             |
| Conducted emission, AMN (150 kHz – 30 MHz) | $\pm 3.4$ dB             |
| Radiated emission (9 kHz – 30 MHz)         | $\pm 3.9$ dB             |
| Radiated emission (30 MHz – 1000 MHz)      | $\pm 4.9$ dB             |
| Radiated emission (1 GHz – 6 GHz)          | $\pm 4.6$ dB             |
| Radiated emission (6 GHz – 18 GHz)         | $\pm 4.9$ dB             |
| Radiated emission (18 GHz – 40 GHz)        | $\pm 5.8$ dB             |
| Radio Frequency                            | $\pm 1.4 \times 10^{-8}$ |
| RF power, conducted                        | $\pm 0.6$ dB             |
| Temperature                                | $\pm 0.6$ °C             |
| Humidity                                   | $\pm 1.2$ %              |
| Voltage (DC)                               | $\pm 0.4$ %              |
| Voltage (AC, <10kHz)                       | $\pm 0.2$ %              |

| Judge | Measured value and standard limit value  |  |
|-------|--|--|
| PASS  | <div> <div>Standard limit value</div> <div> <div>Case1</div>  </div> <div>Even if it takes uncertainty into consideration, a standard limit value is fulfilled.</div> </div>  |  |
|       | <div> <div>Case2</div>  </div> <div>Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.</div>  |  |
| FAIL  | <div> <div>Case3</div>  </div> <div>Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.</div> |  |
|       | <div> <div>Case4</div>  </div> <div>Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.</div>  |  |



## 7 Laboratory Information

Testing was performed and the report was issued at:

**TÜV SÜD Japan Ltd. Yonezawa Testing Center**

Address: 5-4149-7 Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan  
Phone: +81-238-28-2881  
Fax: +81-238-28-2888

**Accreditation and Registration**

A2LA

Certificate #3686.03

VLAC

Accreditation No.: VLAC-013

BSMI

Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

Innovation, Science and Economic Development Canada  
ISED#: 4224A

VCCI Council

| Registration number | Expiration date |
|---------------------|-----------------|
| A-0166              | 03-July-2021    |

## Appendix A. Test Equipment

### Antenna port conducted test

| Equipment                        | Company              | Model No.      | Serial No. | Cal. Due    | Cal. Date   |
|----------------------------------|----------------------|----------------|------------|-------------|-------------|
| Spectrum analyzer                | Agilent Technologies | E4440A         | US44302655 | 31-Aug-2020 | 05-Aug-2019 |
| Microwave cable                  | SUHNER               | SUCOFLEX102/2m | 31648      | 19-Aug-2021 | 20-Aug-2020 |
| EMI Probe                        | ANRITSU              | MA2601C        | N/A(1753)  | 17-Oct-2020 | 18-Oct-2019 |
| Temperature and humidity chamber | ESPEC                | PL1KP          | 14007261   | 01-Sep-2021 | 02-Sep-2020 |

### Radiated emission

| Equipment                 | Company              | Model No.        | Serial No.     | Cal. Due    | Cal. Date   |
|---------------------------|----------------------|------------------|----------------|-------------|-------------|
| EMI Receiver              | ROHDE&SCHWARZ        | ESCI             | 100765         | 25-Sep-2020 | 26-Sep-2019 |
| Spectrum analyzer         | Agilent Technologies | E4440A           | US40420937     | 25-Oct-2020 | 26-Oct-2019 |
| Preamplifier              | SONOMA               | 310              | 372170         | 25-Sep-2020 | 26-Sep-2019 |
| Loop antenna              | ROHDE&SCHWARZ        | HFH2-Z2          | 100515         | 14-Apr-2021 | 15-Apr-2020 |
| Attenuator                | TDC                  | TAT-43B-06       | N/A(S209)      | 12-Jul-2021 | 13-Jul-2020 |
| Biconical antenna         | Schwarzbeck          | VHBB9124/BBA9106 | 1344           | 31-Dec-2020 | 4-Dec-2019  |
| Log periodic antenna      | Schwarzbeck          | VUSLP9111B       | 344            | 3-Apr-2021  | 4-Apr-2020  |
| Attenuator                | TAMAGAWA.ELEC        | CFA-01/6dB       | N/A(S466)      | 1-Oct-2020  | 2-Oct-2019  |
| Attenuator                | TAMAGAWA.ELEC        | CFA-10/3dB       | N/A(S503)      | 19-Jul-2021 | 20-Jul-2020 |
| Microwave cable           | HUBER+SUHNER         | SUCOFLEX104/9m   | MY30037/4      | 7-Jan-2021  | 8-Jan-2020  |
|                           |                      | SUCOFLEX104/1m   | my24610/4      | 7-Jan-2021  | 8-Jan-2020  |
|                           |                      | SUCOFLEX104/1.5m | MY19309/4      | 7-Jan-2021  | 8-Jan-2020  |
|                           |                      | SUCOFLEX104/7m   | 41625/6        | 7-Jan-2021  | 8-Jan-2020  |
| PC                        | DELL                 | DIMENSION E521   | 75465BX        | N/A         | N/A         |
| Software                  | TOYO Corporation     | EP5/RE-AJ        | 0611193/V5.6.0 | N/A         | N/A         |
| 3m Semi an-echoic Chamber | TOKIN                | N/A              | N/A(9002-NSA)  | 28-May-2021 | 29-May-2020 |

### Conducted emission at mains port

| Equipment                            | Company                         | Model No.   | Serial No.      | Cal. Due    | Cal. Date   |
|--------------------------------------|---------------------------------|-------------|-----------------|-------------|-------------|
| EMI Receiver                         | ROHDE&SCHWARZ                   | ESCI        | 100765          | 24-Sep-2020 | 25-Sep-2019 |
| Attenuator                           | HUBER+SUHNER                    | 6810.01.A   | N/A (S411)      | 7-Jan-2021  | 8-Jan-2020  |
| Line impedance stabilization network | Kyoritsu Electrical Works, Ltd. | KNW-407F2   | 12-17-110-2     | 2-Jun-2021  | 3-Jun-2020  |
| Coaxial cable                        | FUJIKURA                        | 5D-2W/4m    | N/A (S350)      | 7-Jan-2021  | 8-Jan-2020  |
| Coaxial cable                        | FUJIKURA                        | 5D-2W/1m    | N/A (S193)      | 7-Jan-2021  | 8-Jan-2020  |
| Coaxial cable                        | HUBER+SUHNER                    | RG214/U/10m | N/A (S194)      | 7-Jan-2021  | 8-Jan-2020  |
| PC                                   | DELL                            | DIMENSION   | 75465BX         | N/A         | N/A         |
| Software                             | TOYO Corporation                | EP5/CE-AJ   | 0611193/V5.4.11 | N/A         | N/A         |

\*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.