

**ELECTROMAGNETIC EMISSIONS  
COMPLIANCE REPORT**

**Applicant:** Wacom Co., Ltd.  
2-510-1 Toyonodai, Kazo-shi, Saitama 349-1148 Japan

**Manufacturer:** Wacom Co., Ltd.  
2-510-1 Toyonodai, Kazo-shi, Saitama 349-1148 Japan

**Product Name:** Creative Pen display

**Brand Name:** Wacom

**Model No.:** DTH135, DTH135K0A, DTH135xxxxx (where x may be English Alphabet a to z or digital numeral serial no, 0-9 or blank)

**Model Difference:** The main body (creative pen display) are the same. Packing labels are different for different sales areas.

**Report Number:** TERF2309002337E2

**FCC ID** HV4DTH135

**Date of EUT Received:** September 22, 2023

**Date of Test:** September 23, 2023~October 11, 2023

**Issue Date:** October 23, 2023

Approved By

Arno Hsieh

Arno Hsieh

**We hereby certify that:**

The above equipment was verified by SGS Taiwan Ltd. Central RF Lab. The evaluation in this report is in compliance with FCC Rule Part 2 & Part 15.

The results of this report relate only to the sample identified in this report.

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## Revision History

| Report Number    | Revision | Description | Issue Date       | Revised By | Remark |
|------------------|----------|-------------|------------------|------------|--------|
| TERF2309002337E2 | 00       | Original.   | October 23, 2023 | Susan Lin  |        |
|                  |          |             |                  |            |        |
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|                  |          |             |                  |            |        |
|                  |          |             |                  |            |        |

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received. And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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## 1 GENERAL INFORMATION

### 1.1 Product Description

|                               |                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Product Name:                 | Creative Pen display                                                                                               |
| Brand Name:                   | Wacom                                                                                                              |
| Model No.:                    | DTH135, DTH135K0A, DTH135xxxxx (where x may be English Alphabet a to z or digital numeral serial no, 0-9 or blank) |
| Model Difference:             | The main body (creative pen display) are the same. Packing labels are different for different sales areas.         |
| Hardware Version:             | N/A                                                                                                                |
| Firmware Version:             | olive_v0021_rev2                                                                                                   |
| EUT Series No.:               | 3HHS1N1000152                                                                                                      |
| Power Supply:                 | 5 / 9 / 15 / 20Vdc from Adapter                                                                                    |
| Test Software (Name/Version): | Default                                                                                                            |

### 1.2 RF specification

|                     |                                     |
|---------------------|-------------------------------------|
| Operating Frequency | 531.25 / 562.5 / 593.75 / 666.67kHz |
| Transmit Power      | 8.01 dBuV/m at 3m.                  |
| Number of Channels  | 4                                   |
| Modulation Type     | ASK                                 |
| Antenna Type        | Coil Antenna                        |

**Note:** Antenna information is provided by the applicant.

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### 1.3 Test Methodology

FCC Part 15, Subpart C

ANSI C63.10:2013

### 1.4 Test Facility

| Laboratory                                            | Test Site Address                                                                         | Test Site Name | FCC Designation number | IC CAB identifier |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------|------------------------|-------------------|
| SGS Taiwan Ltd.<br>Central RF Lab.<br>(TAF code 3702) | No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. | SAC 1          | TW0027                 |                   |
|                                                       |                                                                                           | SAC 2          |                        |                   |
|                                                       |                                                                                           | SAC 3          |                        |                   |
|                                                       |                                                                                           | Conduction 1   |                        |                   |
|                                                       |                                                                                           | Conducted 1    |                        |                   |
|                                                       |                                                                                           | Conducted 2    |                        |                   |
|                                                       |                                                                                           | Conducted 3    |                        |                   |
|                                                       |                                                                                           | Conducted 4    |                        |                   |
|                                                       |                                                                                           | Conducted 5    |                        |                   |
|                                                       |                                                                                           | Conducted 6    |                        |                   |
|                                                       | No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333                            | Conduction C   | TW0028                 | TW3702            |
|                                                       |                                                                                           | SAC C          |                        |                   |
|                                                       |                                                                                           | SAC D          |                        |                   |
|                                                       |                                                                                           | SAC G          |                        |                   |
|                                                       |                                                                                           | Conducted A    |                        |                   |
|                                                       |                                                                                           | Conducted B    |                        |                   |
|                                                       |                                                                                           | Conducted C    |                        |                   |
|                                                       |                                                                                           | Conducted D    |                        |                   |
|                                                       |                                                                                           | Conducted E    |                        |                   |
|                                                       |                                                                                           | Conducted F    |                        |                   |
|                                                       |                                                                                           | Conducted G    |                        |                   |

**Note:** Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.

### 1.5 Special Accessories

There is no other accessory attached. This is the worst case condition.

### 1.6 Equipment Modifications

There was no modification incorporated into the EUT.

### 1.7 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The Tx frequency was fixed which was for the purpose of the measurements.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

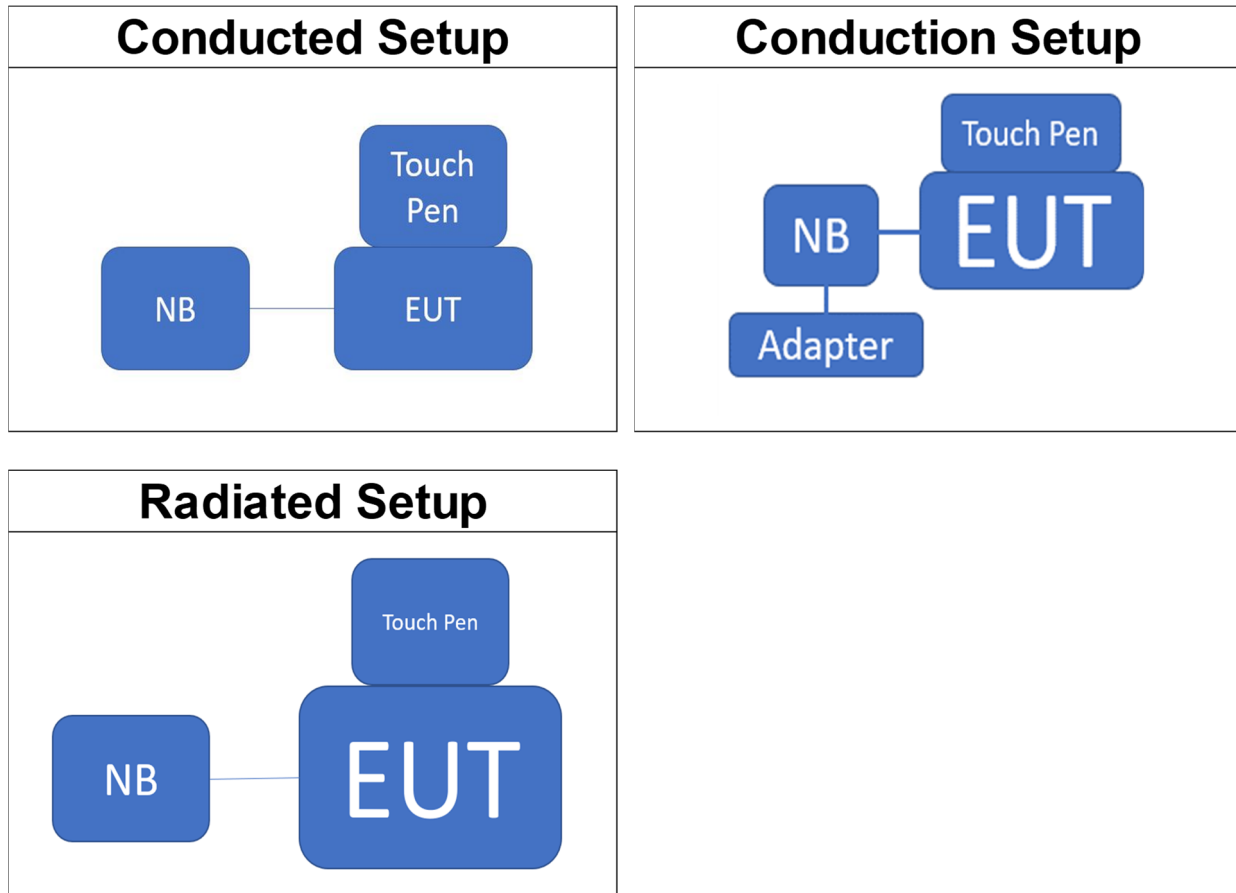
#### 2.3.3 Remarks:

1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of 3 meters.
3. Distance extrapolation factor = 40 log (required distance/ test distance) (dB);

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## 2.4 Test Configuration



## 2.5 Control Unit(s)

| Conducted Emission Test Site: Conducted G |        |              |               |           |          |
|-------------------------------------------|--------|--------------|---------------|-----------|----------|
| EQUIPMENT TYPE                            | MFR    | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Notebook                                  | Lenovo | T14          | P0003332      | N/A       | N/A      |
| Touch Pen                                 | Wacom  | CP-923-03B-2 | N/A           | N/A       | N/A      |
| Touch Pen                                 | Wacom  | ACP-500-01   | N/A           | N/A       | N/A      |

| AC Power-Line Conducted Emission Test Site: Conduction C |        |              |               |           |          |
|----------------------------------------------------------|--------|--------------|---------------|-----------|----------|
| EQUIPMENT TYPE                                           | MFR    | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Notebook                                                 | Lenovo | T14          | P0003332      | N/A       | N/A      |
| Touch Pen                                                | Wacom  | CP-923-03B-2 | N/A           | N/A       | N/A      |
| Touch Pen                                                | Wacom  | ACP-500-01   | N/A           | N/A       | N/A      |

| Radiated Emission Test Site: SAC C |        |              |               |           |          |
|------------------------------------|--------|--------------|---------------|-----------|----------|
| EQUIPMENT TYPE                     | MFR    | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Notebook                           | Lenovo | T14          | P0003332      | N/A       | N/A      |
| Touch Pen                          | Wacom  | CP-923-03B-2 | N/A           | N/A       | N/A      |
| Touch Pen                          | Wacom  | ACP-500-01   | N/A           | N/A       | N/A      |

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### 3 SUMMARY OF TEST RESULTS

| FCC Rules   | Description Of Test                           | Result    |
|-------------|-----------------------------------------------|-----------|
| §15.207     | AC Power Line Conducted Emission              | Compliant |
| §15.209     | Radiated Emission Limits, general requirement | Compliant |
| §15.221(a)  | Fundamental Emission                          | Compliant |
| §15.215 (c) | Emission Bandwidth                            | Compliant |
| §15.203     | Antenna Requirement                           | Compliant |
| §15.205     | Restricted Bands                              | Compliant |

### 4 DESCRIPTION OF TEST MODES

The EUT stay in continuous transmitting mode with default channel to test, where it is the only manipulative channel as this application supports.

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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## 5 MEASUREMENT UNCERTAINTY

| Test Items                       | Uncertainty |
|----------------------------------|-------------|
| AC Power Line Conducted Emission | +/- 2.32 dB |
| Frequency Stability              | +/- 1.53 Hz |
| Emission Bandwidth               | +/- 1.53 Hz |
| Temperature                      | +/- 0.7 °C  |
| Humidity                         | +/- 3 %     |
| DC / AC Power Source             | +/- 1 %     |

| Radiated Spurious Emission Measurement Uncertainty |     |         |                 |
|----------------------------------------------------|-----|---------|-----------------|
| Polarization: Vertical                             | +/- | 2.8 dB  | 9kHz~30MHz      |
|                                                    | +/- | 4.82 dB | 30MHz - 1000MHz |
|                                                    | +/- | 4.37 dB | 1GHz - 18GHz    |
|                                                    | +/- | 4.21 dB | 18GHz - 40GHz   |
| Polarization: Horizontal                           | +/- | 2.8 dB  | 9kHz~30MHz      |
|                                                    | +/- | 4.54 dB | 30MHz - 1000MHz |
|                                                    | +/- | 4.37 dB | 1GHz - 18GHz    |
|                                                    | +/- | 4.21 dB | 18GHz - 40GHz   |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 6 MEASUREMENT EQUIPMENT USED

### 6.1 Emission from AC power line

| AC Power-Line Conducted Emission Test Site: Conduction C |                                |               |                             |            |            |
|----------------------------------------------------------|--------------------------------|---------------|-----------------------------|------------|------------|
| EQUIPMENT TYPE                                           | MFR                            | MODEL NUMBER  | SERIAL NUMBER               | LAST CAL.  | CAL DUE.   |
| LISN                                                     | SCHWARZBECK<br>Mess-Elektronik | NSLK8127      | 973                         | 04/20/2023 | 04/19/2024 |
| EMI Test Receiver                                        | R&S                            | ESCI          | 101342                      | 04/24/2023 | 04/23/2024 |
| Coaxial Cable                                            | EC Lab                         | RF-HY-CAB-250 | RF-HY-CAB-250-01            | 03/27/2023 | 03/26/2024 |
| Pulse Limiter                                            | EC Lab                         | VTSD 9561F-N  | 485                         | 03/27/2023 | 03/26/2024 |
| Test Software                                            | audix                          | e3            | E3 20923 SGS Ver.9<br>( C ) | N.C.R      | N.C.R      |

### 6.2 Emission Bandwidth Measurement

| Conducted Emission Test Site: Conducted G |                        |               |               |            |            |
|-------------------------------------------|------------------------|---------------|---------------|------------|------------|
| EQUIPMENT TYPE                            | MFR                    | MODEL NUMBER  | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
| H-Loop Near Field<br>Antenna              | LANGER EMV-<br>Technik | LF-R 400      | 02-1597       | N.C.R      | N.C.R      |
| Spectrum Analyzer                         | KEYSIGHT               | N9010B        | MY59071570    | 06/15/2023 | 06/14/2024 |
| Attenuator                                | Woken                  | WATT-218FS-10 | RF25          | 11/16/2022 | 11/15/2023 |
| DC Block                                  | MITEQ                  | W70289-5108   | RF159         | 11/16/2022 | 11/15/2023 |

### 6.3 Radiated Measurement

| Radiated Emission Test Site: SAC C |                 |               |                             |            |            |
|------------------------------------|-----------------|---------------|-----------------------------|------------|------------|
| EQUIPMENT TYPE                     | MFR             | MODEL NUMBER  | SERIAL NUMBER               | LAST CAL.  | CAL DUE.   |
| Broadband<br>Antenna               | SCHWARZBECK     | VULB 9168     | 9168-300                    | 11/11/2022 | 11/10/2023 |
| Loop Antenna                       | ETS.LINDGREN    | 6502          | 14303                       | 05/23/2023 | 05/22/2024 |
| 3m Site NSA                        | SGS             | 966 chamber C | N/A                         | 03/02/2023 | 03/01/2024 |
| Spectrum Analyzer                  | KEYSIGHT        | N9010A        | MY57120200                  | 03/29/2023 | 03/28/2024 |
| Test Software                      | audix           | e3            | E3 20923 SGS Ver.9<br>( C ) | N.C.R      | N.C.R      |
| Pre-Amplifier                      | EMC Instruments | EMC330        | 980096                      | 11/16/2022 | 11/15/2023 |
| Attenuator                         | Woken           | WATT-218FS-10 | RF16                        | 11/16/2022 | 11/15/2023 |
| Coaxial Cable                      | Huber Suhner    | RG 214/U      | W22.03                      | 11/16/2022 | 11/15/2023 |

**NOTE:** N.C.R refers to Not Calibrated Required.

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## 7 CONDUCTED EMISSIONS TEST

### 7.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

| Frequency range<br>MHz | Limits<br>(dBuV) |          |
|------------------------|------------------|----------|
|                        | Quasi-peak       | Average  |
| 0.15 to 0.50           | 66 to 56         | 56 to 46 |
| 0.50 to 5              | 56               | 46       |
| 5 to 30                | 60               | 50       |

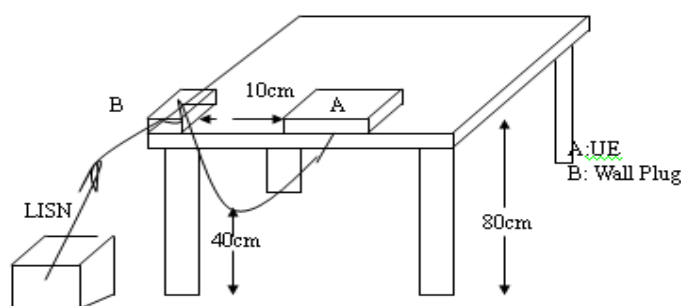
Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 7.2 EUT Setup:

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

### 7.3 Test SET-UP (Block Diagram of Configuration)



### 7.4 Measurement Result:

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closest to the limit.

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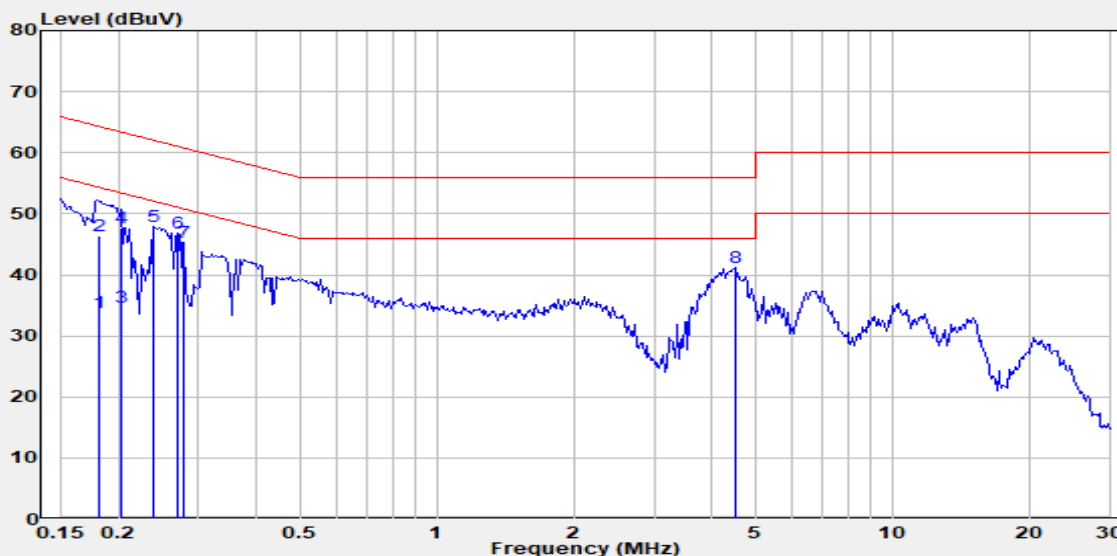
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|               |                   |             |               |
|---------------|-------------------|-------------|---------------|
| Report Number | :TERF2309002337E2 | Test Site   | :Conduction C |
| Test Mode     | :EMR              | Test Date   | :2023-10-11   |
| Power         | :120V/60Hz        | Temp./Humi. | :25.1°C/58%   |
| Probe         | :L1               | Engineer    | :Andy Wang    |
| Note:         | :                 |             |               |

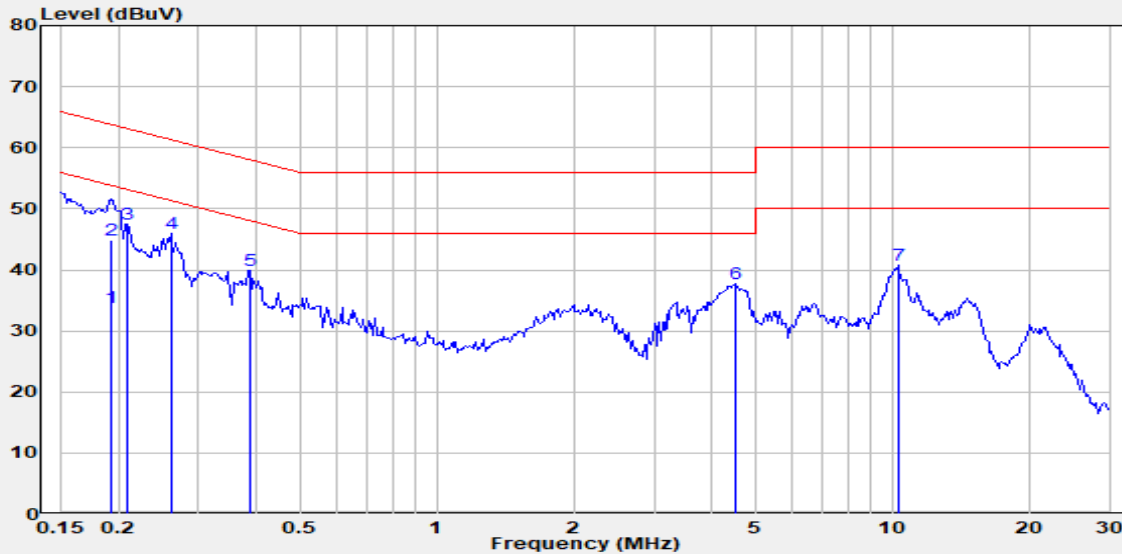


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV | Limit<br>dBμV | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|----------------------|---------------|--------------|
| 0.181        | Average                      | 23.10                             | 10.65        | 33.75                | 54.45         | -20.70       |
| 0.181        | QP                           | 35.80                             | 10.65        | 46.45                | 64.45         | -18.00       |
| 0.202        | Average                      | 24.10                             | 10.65        | 34.75                | 53.53         | -18.78       |
| 0.202        | QP                           | 37.00                             | 10.65        | 47.65                | 63.53         | -15.88       |
| 0.239        | Peak                         | 37.34                             | 10.64        | 47.98                | 62.12         | -14.14       |
| 0.269        | Peak                         | 36.23                             | 10.64        | 46.86                | 61.13         | -14.27       |
| 0.279        | Peak                         | 34.62                             | 10.64        | 45.26                | 60.85         | -15.60       |
| 4.516        | Peak                         | 30.34                             | 10.93        | 41.27                | 56.00         | -14.73       |

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|               |                   |             |               |
|---------------|-------------------|-------------|---------------|
| Report Number | :TERF2309002337E2 | Test Site   | :Conduction C |
| Test Mode     | :EMR              | Test Date   | :2023-10-11   |
| Power         | :120V/60Hz        | Temp./Humi. | :25.1°C/58%   |
| Probe         | :N                | Engineer    | :Andy Wang    |
| Note:         | :                 |             |               |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV | Limit<br>dBμV | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|----------------------|---------------|--------------|
| 0.192        | Average                      | 23.20                             | 10.65        | 33.85                | 53.95         | -20.10       |
| 0.192        | QP                           | 34.30                             | 10.65        | 44.95                | 63.95         | -19.00       |
| 0.209        | Peak                         | 36.91                             | 10.65        | 47.56                | 63.25         | -15.69       |
| 0.260        | Peak                         | 35.23                             | 10.64        | 45.87                | 61.42         | -15.55       |
| 0.388        | Peak                         | 29.35                             | 10.61        | 39.96                | 58.10         | -18.14       |
| 4.516        | Peak                         | 26.83                             | 10.91        | 37.74                | 56.00         | -18.26       |
| 10.292       | Peak                         | 29.77                             | 10.96        | 40.73                | 60.00         | -19.27       |

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## 8 RADIATED EMISSION TEST

### 8.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

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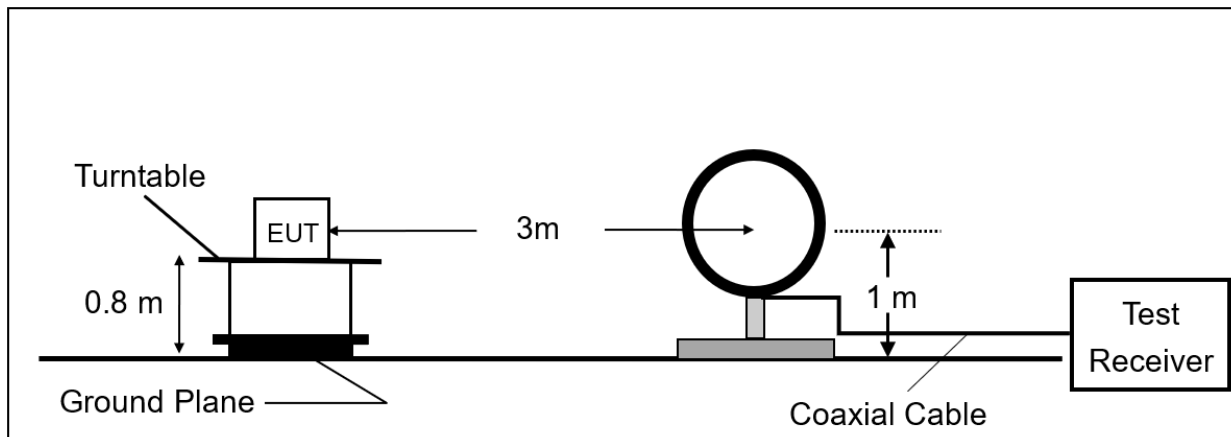
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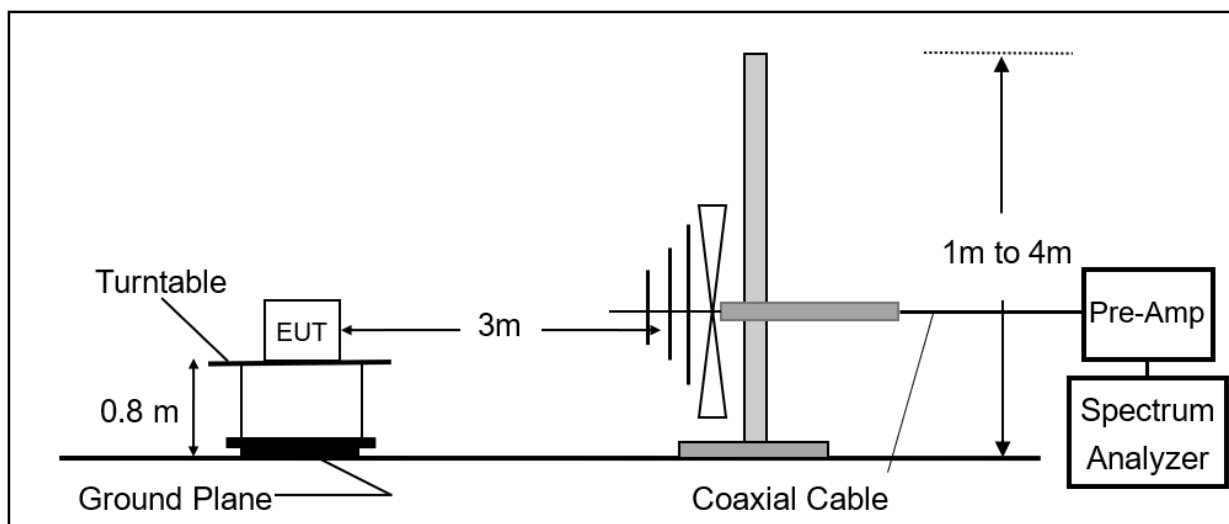
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## 8.2 Test SET-UP (Block Diagram of Configuration)

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



(B) Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



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### 8.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

|                           |                                            |
|---------------------------|--------------------------------------------|
| Where FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| RA = Reading Amplitude    | AG = Amplifier Gain                        |
| AF = Antenna Factor       |                                            |

### 8.4 Field Strength of Fundamental Emission

#### 8.4.1 Limit

##### 1. Carrier 593.75kHz

$$24000/593.75 (\mu V/m \text{ at } 30m) = 40.4210 \mu V/m \text{ at } 30m = 32.13 \text{ dB}\mu V/m \text{ at } 30m$$

The field strength of any emissions appearing outside of operation frequency shall not exceed the general radiated emission limits.

| Frequency (MHz) | Field strength ( $\mu V/m$ ) | Distance (meters) |
|-----------------|------------------------------|-------------------|
| 0.009~0.490     | 2400/F(kHz)                  | 300               |
| 0.490~1.705     | 24000/F(kHz)                 | 30                |
| 1.705-30        | 30                           | 30                |
| 30-88           | 100                          | 3                 |
| 88-216          | 150                          | 3                 |
| 216-960         | 200                          | 3                 |
| Above 960       | 500                          | 3                 |

#### Note:

1. Emission level in  $\text{dB}\mu V/m = 20 \log (\mu V/m)$
2. Distance extrapolation factor =  $40 \log (\text{required distance}/ \text{test distance})$  (dB)
3. The lower limit shall apply at the transition frequencies.
4. The measurement was undertaken in closer distance at 3m, where extrapolation factor is offset to convert the limit of the measurement.
5. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of §15.205.
6. The general radiated emission limits in §15.209 apply for the spurious emission generate from UE, except for the fundamental emission where the respective section specifies otherwise.
7. Actual  $FS(\text{dB}\mu V/m) = \text{Spectrum. Reading level}(\text{dB}\mu V) + \text{Factor}(\text{dB})$

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Below 30 MHz of Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Distance Factor(dB)

Above 30 MHz of Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre\_Amp Gain(dB)

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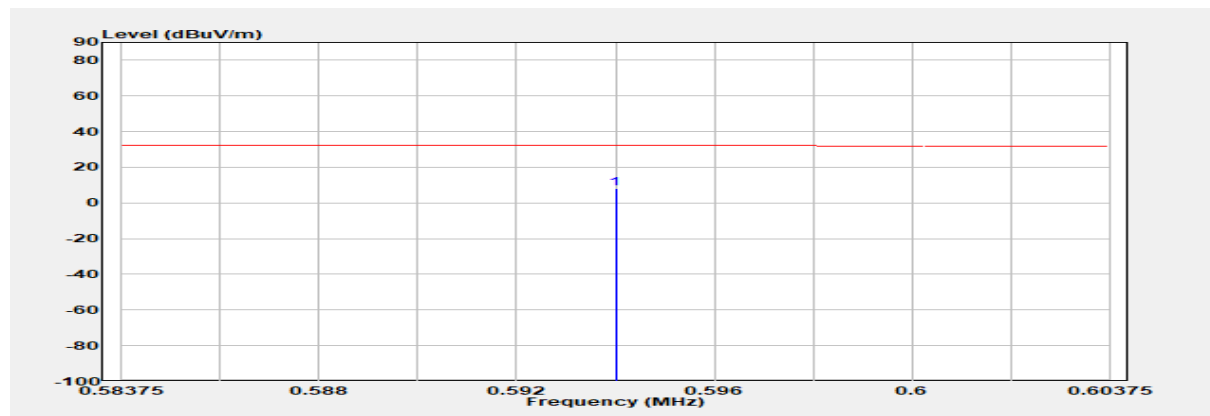
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## 8.5 Field Strength of Fundamental Emission

|                |                   |              |             |
|----------------|-------------------|--------------|-------------|
| Report Number  | :TERF2309002337E2 | Test Site    | :SAC C      |
| Operation Mode | :EMR              | Test Date    | :2023-10-11 |
| Test Frequency | :593.75 kHz       | Temp./Humi.  | :22.8°C/50% |
| Test Mode      | :Main             | Antenna Pol. | :Vertical   |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |



| Freq. | Detector | Spectrum      | Factor | Actual | Limit  | Margin |
|-------|----------|---------------|--------|--------|--------|--------|
| MHz   | Mode     | Reading Level |        |        |        |        |
|       | PK/QP/AV | dBμV          | dB     | dBμV/m | dBμV/m | dB     |
| 0.594 | Peak     | 36.59         | -28.58 | 8.01   | 32.14  | -24.12 |

Actual level = Reading level + Factor

Factor = Antenna factor + cable loss – Pre\_Amplifier Gain – distance factor

Test distance= 3m

For Actual level and limit:

Field strength (dBuV/m) at 300m, within the band 9 kHz - 490 kHz.

Field strength (dBuV/m) at 30m, within the band 490 kHz - 30 MHz.

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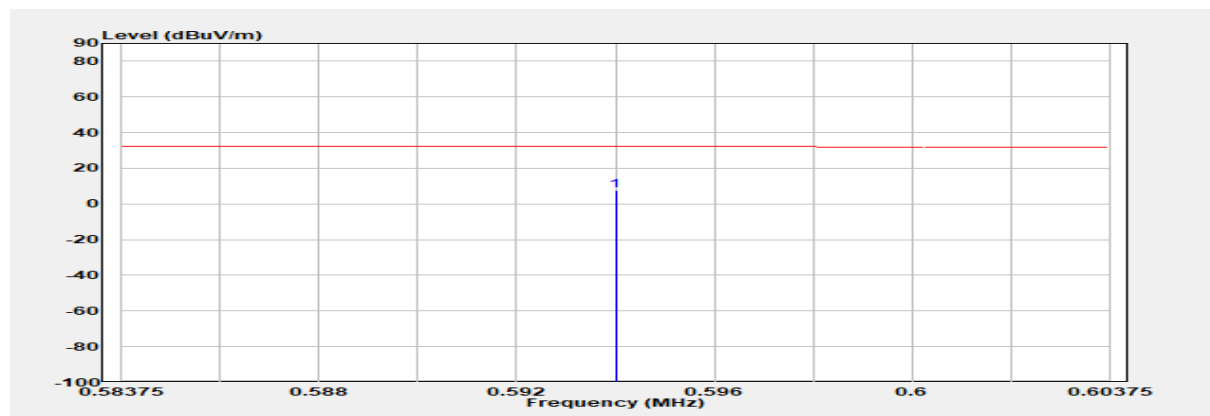
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|                |                   |              |             |
|----------------|-------------------|--------------|-------------|
| Report Number  | :TERF2309002337E2 | Test Site    | :SAC C      |
| Operation Mode | :EMR              | Test Date    | :2023-10-11 |
| Test Frequency | :593.75 kHz       | Temp./Humi.  | :22.8°C/50% |
| Test Mode      | :Main             | Antenna Pol. | :Horizontal |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>dBμV/m | Limit<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------|-----------------|--------------|
| 0.594        | Peak                         | 36.08                             | -28.58       | 7.50             | 32.14           | -24.64       |

Actual level = Reading level + Factor

Factor = Antenna factor + cable loss – Pre\_Amplifier Gain – distance factor

Test distance= 3m

For Actual level and limit:

Field strength (dBuV/m) at 300m, within the band 9 kHz - 490 kHz.

Field strength (dBuV/m) at 30m, within the band 490 kHz - 30 MHz.

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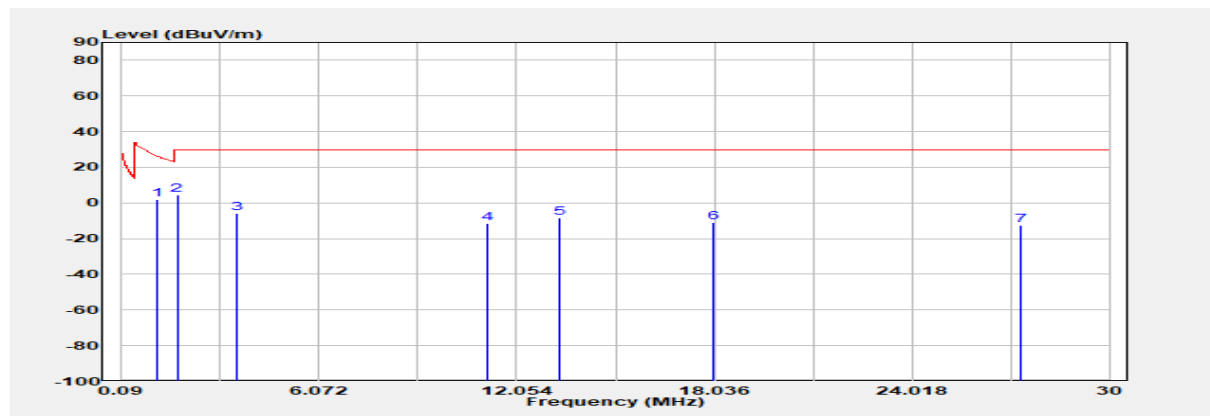
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## 8.6 Radiated Spurious Emission Measurement Result

|                |                   |              |             |
|----------------|-------------------|--------------|-------------|
| Report Number  | :TERF2309002337E2 | Test Site    | :SAC C      |
| Operation Mode | :EMR              | Test Date    | :2023-10-11 |
| Test Frequency | :593.75 kHz       | Temp./Humi.  | :22.8°C/50% |
| Test Mode      | :Tx               | Antenna Pol. | :Vertical   |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |



| Freq.  | Detector | Spectrum      | Factor | Actual | Limit  | Margin |
|--------|----------|---------------|--------|--------|--------|--------|
| MHz    | Mode     | Reading Level |        |        |        |        |
|        | PK/QP/AV | dBuV          | dB     | dBuV/m | dBuV/m | dB     |
| 1.188  | Peak     | 30.46         | -28.61 | 1.84   | 26.11  | -24.27 |
| 1.765  | Peak     | 33.17         | -28.74 | 4.43   | 29.54  | -25.11 |
| 3.560  | Peak     | 23.09         | -28.90 | -5.82  | 29.54  | -35.36 |
| 11.157 | Peak     | 16.40         | -27.98 | -11.58 | 29.54  | -41.12 |
| 13.340 | Peak     | 19.94         | -28.18 | -8.24  | 29.54  | -37.78 |
| 18.006 | Peak     | 17.71         | -28.51 | -10.80 | 29.54  | -40.34 |
| 27.338 | Peak     | 17.79         | -30.07 | -12.28 | 29.54  | -41.82 |

Actual level = Reading level + Factor

Factor = Antenna factor + cable loss – Pre\_Amplifier Gain – distance factor

Test distance= 3m

For Actual level and limit:

Field strength (dBuV/m) at 300m, within the band 9 kHz - 490 kHz.

Field strength (dBuV/m) at 30m, within the band 490 kHz - 30 MHz.

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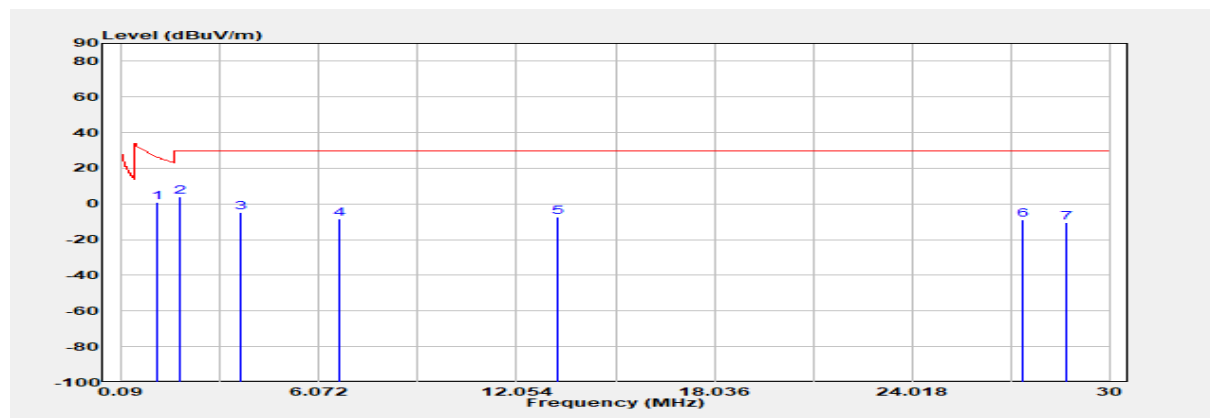
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| Test Mode      | :Tx               | Antenna Pol. | :Horizontal |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>dBμV/m | Limit<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------|-----------------|--------------|
| 1.188        | Peak                         | 29.47                             | -28.61       | 0.86             | 26.11           | -25.25       |
| 1.855        | Peak                         | 32.83                             | -28.75       | 4.07             | 29.54           | -25.47       |
| 3.679        | Peak                         | 24.28                             | -28.90       | -4.62            | 29.54           | -34.16       |
| 6.670        | Peak                         | 20.13                             | -28.46       | -8.33            | 29.54           | -37.87       |
| 13.310       | Peak                         | 20.62                             | -28.18       | -7.55            | 29.54           | -37.09       |
| 27.368       | Peak                         | 21.32                             | -30.07       | -8.76            | 29.54           | -38.30       |
| 28.684       | Peak                         | 19.68                             | -30.28       | -10.61           | 29.54           | -40.15       |

Actual level = Reading level + Factor

Factor = Antenna factor + cable loss – Pre\_Amplifier Gain – distance factor

Test distance= 3m

For Actual level and limit:

Field strength (dBuV/m) at 300m, within the band 9 kHz - 490 kHz.

Field strength (dBuV/m) at 30m, within the band 490 kHz - 30 MHz.

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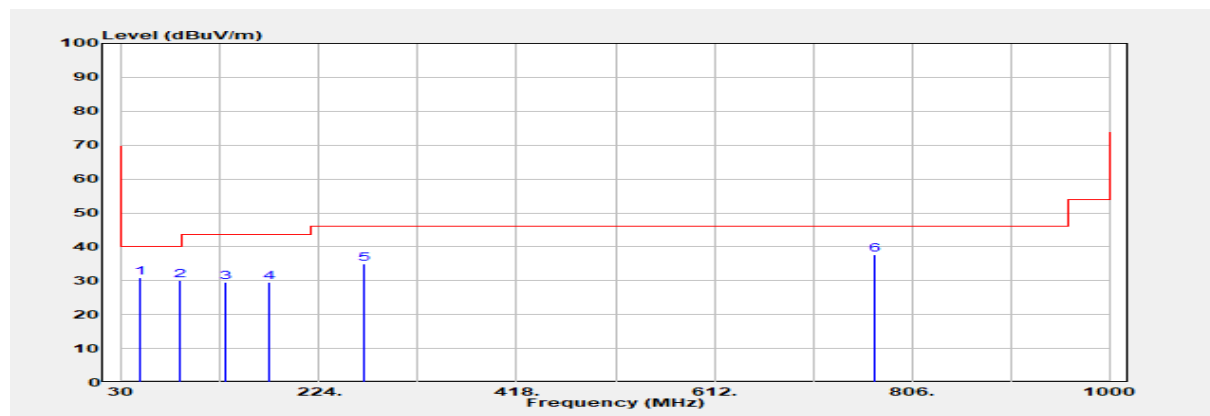
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| Test Mode      | :Tx               | Antenna Pol. | :Vertical   |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |

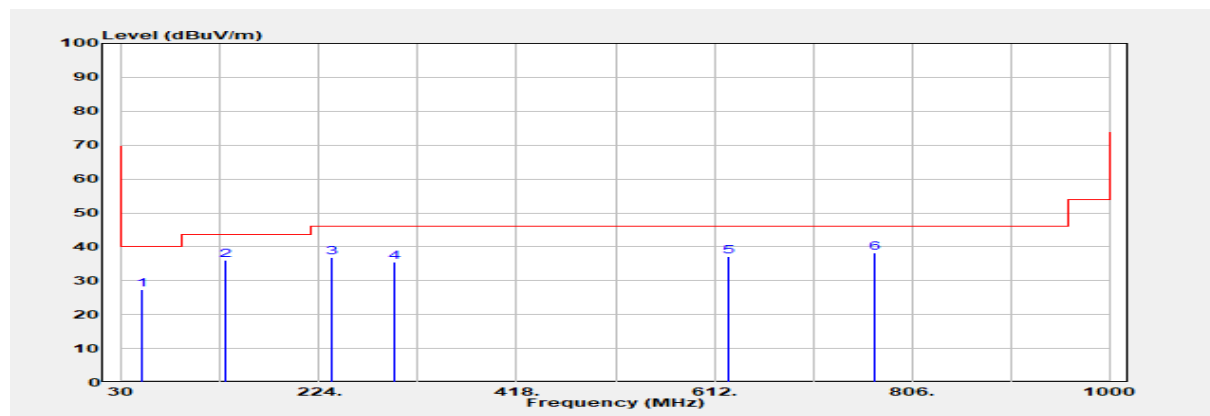


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>dBμV/m | Limit<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------|-----------------|--------------|
| 48.430       | Peak                         | 44.19                             | -13.36       | 30.83            | 40.00           | -9.17        |
| 87.230       | Peak                         | 49.81                             | -19.65       | 30.16            | 40.00           | -9.84        |
| 131.850      | Peak                         | 44.14                             | -14.61       | 29.53            | 43.50           | -13.97       |
| 175.500      | Peak                         | 43.78                             | -14.35       | 29.42            | 43.50           | -14.08       |
| 267.650      | Peak                         | 48.80                             | -13.87       | 34.94            | 46.00           | -11.06       |
| 770.110      | Peak                         | 38.73                             | -1.08        | 37.65            | 46.00           | -8.35        |

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| Test Mode      | :Tx               | Antenna Pol. | :Horizontal |
| EUT Pol        | :E2 Plane         | Engineer     | :Andy Wang  |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>dBμV/m | Limit<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------|-----------------|--------------|
| 49.400       | Peak                         | 40.65                             | -13.34       | 27.31            | 40.00           | -12.69       |
| 131.850      | Peak                         | 50.58                             | -14.61       | 35.97            | 43.50           | -7.53        |
| 235.640      | Peak                         | 51.99                             | -15.12       | 36.87            | 46.00           | -9.13        |
| 297.720      | Peak                         | 48.30                             | -12.67       | 35.62            | 46.00           | -10.38       |
| 625.580      | Peak                         | 41.25                             | -4.21        | 37.05            | 46.00           | -8.95        |
| 770.110      | Peak                         | 39.32                             | -1.08        | 38.24            | 46.00           | -7.76        |

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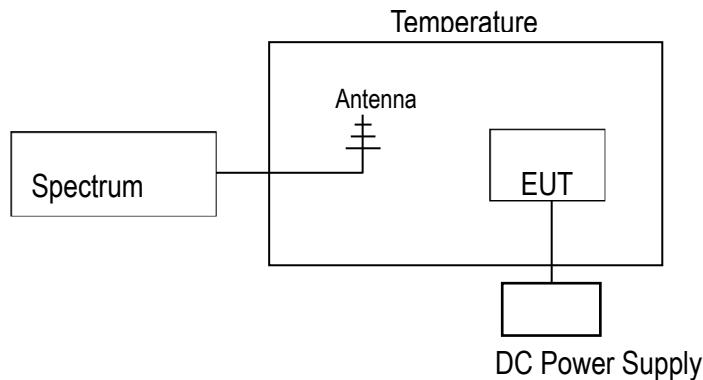
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## 9 EMISSION BANDWIDTH MEASUREMENT

### 9.1 Standard Applicable:

The 20 dB bandwidth shall be specified in operating frequency band.

### 9.2 Test Set-up



### 9.3 Measurement Procedure

1. Placed the EUT on the testing table.
2. Set the EUT under transmission condition continuously at specific channel frequency.
3. The resolution bandwidth of 3 kHz and the video bandwidth of 9 kHz were used.
4. Measured the spectrum width with power higher than 20dB below carrier and Turn on the 99% bandwidth function, max reading.

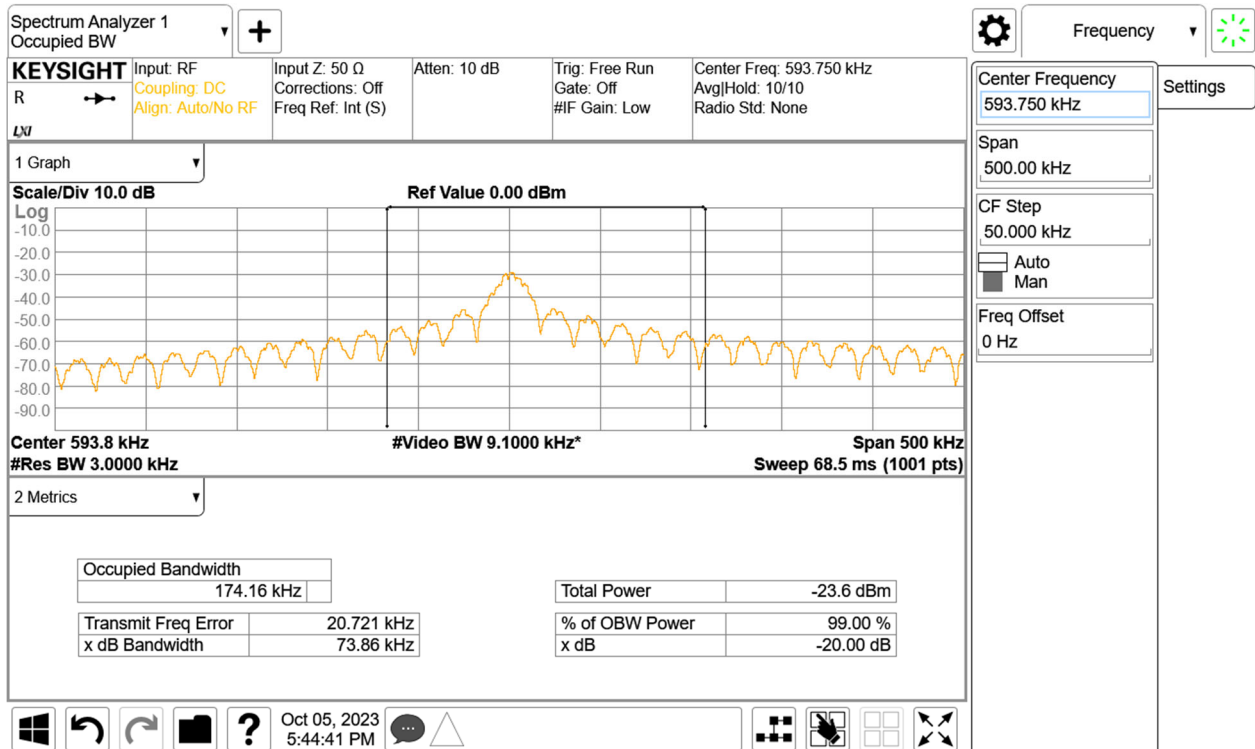
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## 9.4 Measurement Result

| Emission Bandwidth  |
|---------------------|
| 20dB Bandwidth(kHz) |
| 73.86               |



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## 10 ANTENNA REQUIREMENT

### 10.1 Standard Applicable:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 10.2 Antenna Connected Construction:

The antenna complies with this requirement and no consideration of replacement. Please see EUT photo for details.

*~ End of Report ~*

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