

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

**Applicant:** Channel Well Technology Co., Ltd  
No.222, Sec. 2, Nankan Rd., Lujhu Township, Taoyuan  
County 338, Taiwan, R. O. C

**Product Name:** Wireless Charger

**Brand Name:** CWT

**Model No.:** WTM1B15

**Model Difference:** N/A

**FCC ID:** 2AC3UWTM1B15

**Report Number:** ER/2020/30155

**FCC Rule Part** Part 15C

**Issue Date:** Oct. 23, 2020

**Date of Test:** Jun. 17, 2020 ~ Jul. 17, 2020, Oct. 23, 2020

**Date of EUT Received:** Apr. 23, 2020

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15C.

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

Approved By:

Jazz Huang

Jazz Huang / Asst. Supervisor



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## Revision History

| Report Number | Revision | Description | Issue Date    | Remark                    |
|---------------|----------|-------------|---------------|---------------------------|
| ER/2020/30155 | Rev.00   | Original.   | Oct. 23, 2020 | Revised By: Violetta Tang |
|               |          |             |               |                           |

**Note:**

## 1、Disclaimer

Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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## 1 GENERAL INFORMATION

### 1.1 Product Description

|                   |                        |                                               |
|-------------------|------------------------|-----------------------------------------------|
| Product Name:     | Wireless Charger       |                                               |
| Brand Name:       | CWT                    |                                               |
| Model No.:        | WTM1B15                |                                               |
| Model Difference: | N/A                    |                                               |
| Hardware Version: | N/A                    |                                               |
| Software Version: | N/A                    |                                               |
| Power Supply:     | 19V from AC/DC Adapter |                                               |
|                   | Adapter:               | Model No.: HKA12019063-6C, Supplier: HuntKey. |

### WPC

|                     |                      |
|---------------------|----------------------|
| Operating Frequency | 127kHz               |
| Transmit Power      | < 80.11dBuV/m at 3m. |
| Number of Channels  | 1                    |
| Antenna Type        | Coil Antenna         |
| Modulation Type     | ASK                  |

This report complies with FCC regulatory radio rule with respect to WPC that operates on 127 kHz.

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## 1.2 Test Methodology

FCC Part 15, Subpart C

ANSI C63.10:2013

Note: All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702)

No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

FCC Designation number: TW0027

## 1.4 Special Accessories

There is no special accessory used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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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. For emission measurements above 1 GHz, the table height shall be 1.5 m. 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 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

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

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

- Remark:
1. Emission level in dBuV/m =  $20 \log (\mu\text{V/m})$
  2. Measurement was performed at an antenna to the closed point of EUT distance of 3 meters.
  3. Distance extrapolation factor =  $40 \log (\text{required distance} / \text{test distance})$  (dB);
  4. The measurement was undertaken in closer distance at 3m, where extrapolation factor is offset to convert the limit of the measurement.  
 $\text{Ex. } 20 * \log(30) + 40 * \log(30/3) = 69.54 \text{ dBuV/m}$
  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.

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## 2.4 Configuration of Tested System

Fig. 2-1 Conduction & Radiated Emission Test Setup Configuration

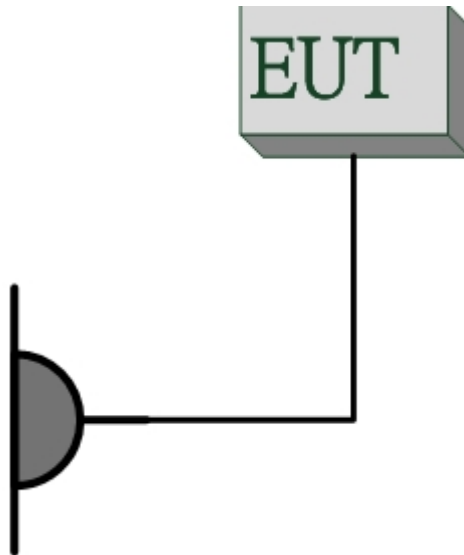


Table 2-1 Equipment Used in Tested System

| Item | Equipment         | Mfr/Brand | Model/Type No. | Series No. | Data Cable | Power Cord |
|------|-------------------|-----------|----------------|------------|------------|------------|
| 1.   | WPC Test Software | N/A       | N/A            | 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 |
| §15.215 (c) | 20 dB OCCUPIED BANDWIDTH                      | Compliant |
| §15.203     | Antenna Requirement                           | Compliant |

### 4 DESCRIPTION OF TEST MODES

The EUT stay in continuous transmitting mode. The frequency 127 kHz is the default channel to test, where it is the only manipulative channel as this application supports.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode), the worst case H position was reported.

The data rate as the lowest supported is selected while tests are conducted.

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## 5 MEASUREMENT UNCERTAINTY

| Test Items                       | Uncertainty             |
|----------------------------------|-------------------------|
| AC Power Line Conducted Emission | +/- 2.586 dB            |
| Frequency Stability              | +/- 123.36 Hz           |
| 20 dB OCCUPIED BANDWIDTH         | +/- 123.36 Hz           |
| Temperature                      | +/- 0.8 °C              |
| Humidity                         | +/- 4.7 %               |
| DC / AC Power Source             | DC= +/- 1%, AC=+/- 0.2% |

| Radiated Spurious Emission Measurement Uncertainty |                            |
|----------------------------------------------------|----------------------------|
| Polarization: Vertical                             | 9kHz~30MHz: +/-2.3dB       |
|                                                    | 30MHz - 180MHz: +/- 3.37dB |
|                                                    | 180MHz -417MHz: +/- 3.19dB |
|                                                    | 0.417GHz-1GHz: +/- 3.19dB  |
|                                                    | 1GHz - 18GHz: +/- 4.04dB   |
|                                                    | 18GHz - 40GHz: +/- 4.04dB  |
| Polarization: Horizontal                           | 9kHz~30MHz: +/-2.3dB       |
|                                                    | 30MHz - 167MHz: +/- 4.22dB |
|                                                    | 167MHz -500MHz: +/- 3.44dB |
|                                                    | 0.5GHz-1GHz: +/- 3.39dB    |
|                                                    | 1GHz - 18GHz: +/- 4.08dB   |
|                                                    | 18GHz - 40GHz: +/- 4.08dB  |

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 6 CONDUCTED EMISSIONS TEST

### 6.1 Limitation

#### Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

| Frequency range<br>MHz                                                                                                                                                              | Limits<br>dB (uV) |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------|
|                                                                                                                                                                                     | 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       |
| <b>Note</b><br>1.The lower limit shall apply at the transition frequencies<br>2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. |                   |          |

| Frequency range<br>MHz                                                                                    | Limits<br>dB (uV)                                                 |                                                                   |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
|                                                                                                           | Quasi-peak                                                        | Average                                                           |
| 0.009 to 0.050                                                                                            | 110                                                               | --                                                                |
| 0.050 to 0.1485                                                                                           | 90<br>Decreasing linearly with<br>logarithm of frequency to<br>80 | --                                                                |
| 0.1485 to 0.5                                                                                             | 66<br>Decreasing linearly with<br>logarithm of frequency to<br>56 | 56<br>Decreasing linearly with<br>logarithm of frequency to<br>46 |
| 0.50 to 5                                                                                                 | 56                                                                | 46                                                                |
| 5 to 30                                                                                                   | 60                                                                | 50                                                                |
| <b>Note</b><br>The mains terminal disturbance limits for a 100/110 V rated system are under consideration |                                                                   |                                                                   |

### 6.2 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Sweep frequency starting from 150 kHz to 30 MHz for phase L1.
4. Repeating the measurement as lists above for phase neutral.

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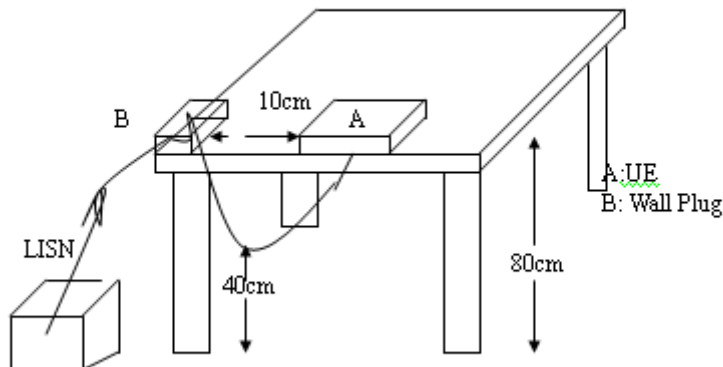
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### 6.3 Test SET-UP (Block Diagram of Configuration)



### 6.4 Measurement Equipment Used:

| Conducted Emission Test Site |             |               |                    |            |            |
|------------------------------|-------------|---------------|--------------------|------------|------------|
| EQUIPMENT TYPE               | MFR         | MODEL NUMBER  | SERIAL NUMBER      | LAST CAL.  | CAL DUE.   |
| EMI Test Receiver            | R&S         | ESCI 7        | 100759             | 07/04/2019 | 07/03/2020 |
| LISN                         | SCHWARZBECK | NSLK 8127     | 8127-465           | 04/09/2020 | 04/08/2021 |
| Coaxial Cables               | N/A         | Coaxial Cable | 161207             | 12/07/2019 | 12/06/2020 |
| Test Software                | audix       | e3            | Ver. 6.11-20180413 | N.C.R      | N.C.R      |

Note: N.C.R refers to Not Calibrated Required.

### 6.5 Measurement Result:

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

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

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :ER-2020-30155

Test Date :2020-06-17

Test Mode :WPC

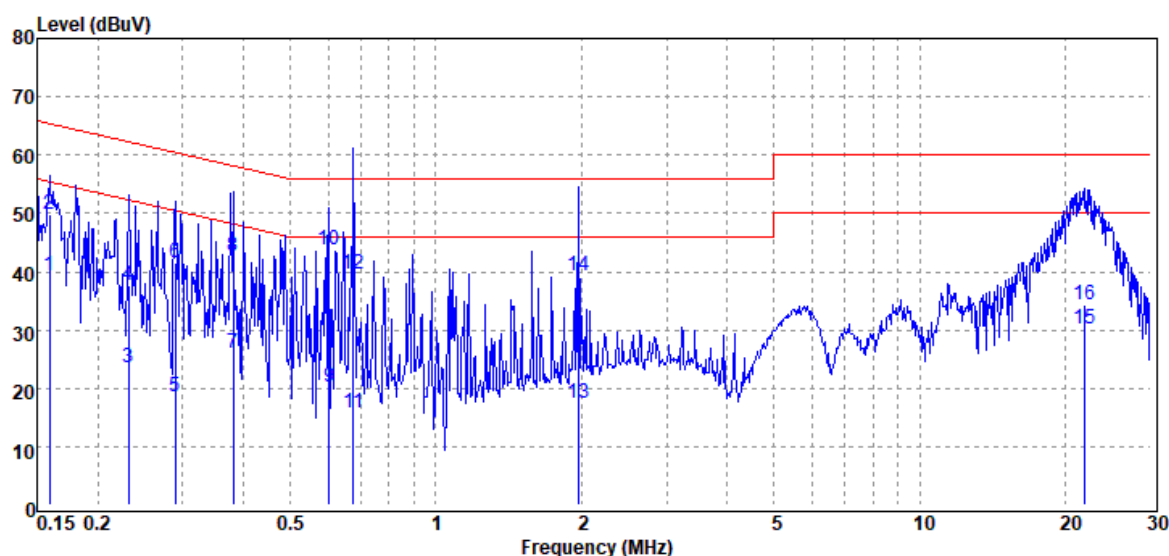
Temp./Humi. :26.0/58

Power :AC 120V/60Hz

Engineer :Nick

Probe :L

:



| 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 |
|--------------|------------------------------|-----------------------------------|--------------|----------------------|---------------|--------------|
| 0.16         | Average                      | 37.20                             | 2.14         | 39.34                | 55.52         | -16.18       |
| 0.16         | QP                           | 47.70                             | 2.14         | 49.84                | 65.52         | -15.68       |
| 0.23         | Average                      | 21.34                             | 2.14         | 23.48                | 52.39         | -28.91       |
| 0.23         | QP                           | 35.60                             | 2.14         | 37.74                | 62.39         | -24.65       |
| 0.29         | Average                      | 16.30                             | 2.15         | 18.45                | 50.54         | -32.09       |
| 0.29         | QP                           | 39.40                             | 2.15         | 41.55                | 60.54         | -18.99       |
| 0.38         | Average                      | 23.80                             | 2.15         | 25.95                | 48.25         | -22.30       |
| 0.38         | QP                           | 40.50                             | 2.15         | 42.65                | 58.25         | -15.60       |
| 0.60         | Average                      | 18.00                             | 2.16         | 20.16                | 46.00         | -25.84       |
| 0.60         | QP                           | 41.70                             | 2.16         | 43.86                | 56.00         | -12.14       |
| 0.68         | Average                      | 13.70                             | 2.17         | 15.87                | 46.00         | -30.13       |
| 0.68         | QP                           | 37.30                             | 2.17         | 39.47                | 56.00         | -16.53       |
| 1.97         | Average                      | 15.20                             | 2.26         | 17.46                | 46.00         | -28.54       |
| 1.97         | QP                           | 37.00                             | 2.26         | 39.26                | 56.00         | -16.74       |
| 21.95        | Average                      | 26.90                             | 3.16         | 30.06                | 50.00         | -19.94       |

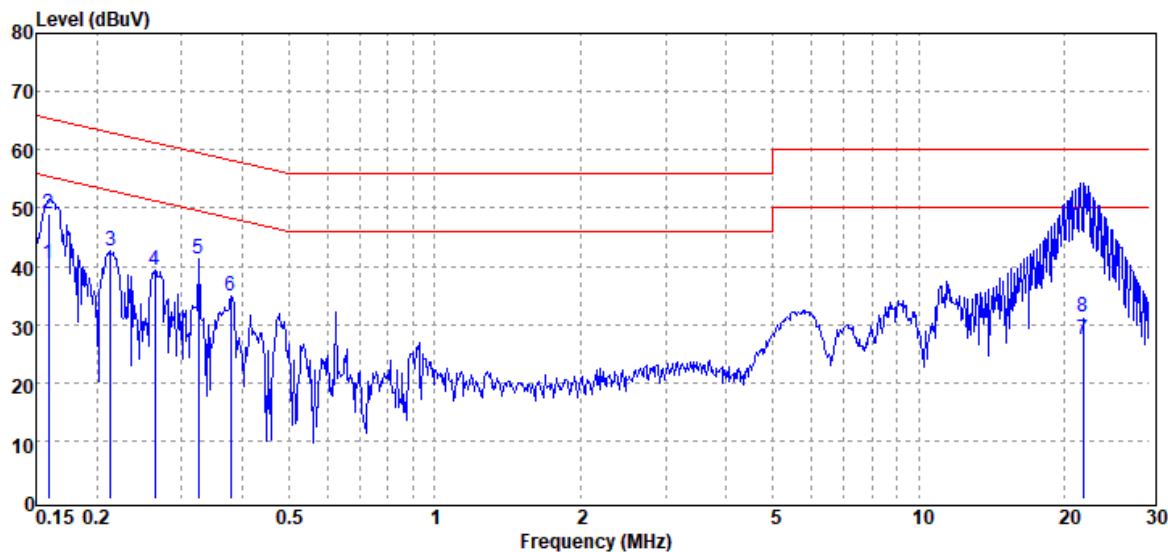
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Report Number :ER-2020-30155  
Test Mode :WPC  
Power :AC 120V/60Hz  
Probe :N

Test Date :2020-06-17  
Temp./Humi. :26.0/58  
Engineer :Nick



| Freq. | Detector | Spectrum      | Factor | Actual | Limit | Margin |
|-------|----------|---------------|--------|--------|-------|--------|
| MHz   | Mode     | Reading Level |        | FS     |       |        |
|       | PK/QP/AV | dBμV          | dB     | dBμV   | dBμV  | dB     |
| 0.16  | Average  | 38.10         | 2.21   | 40.31  | 55.52 | -15.21 |
| 0.16  | QP       | 46.80         | 2.21   | 49.01  | 65.52 | -16.51 |
| 0.21  | Peak     | 40.42         | 2.21   | 42.63  | 63.05 | -20.42 |
| 0.26  | Peak     | 37.12         | 2.21   | 39.33  | 61.29 | -21.96 |
| 0.33  | Peak     | 39.03         | 2.21   | 41.24  | 59.57 | -18.33 |
| 0.38  | Peak     | 32.71         | 2.21   | 34.92  | 58.30 | -23.38 |
| 21.83 | Average  | 24.20         | 3.12   | 27.32  | 50.00 | -22.68 |
| 21.83 | QP       | 28.10         | 3.12   | 31.22  | 60.00 | -28.78 |

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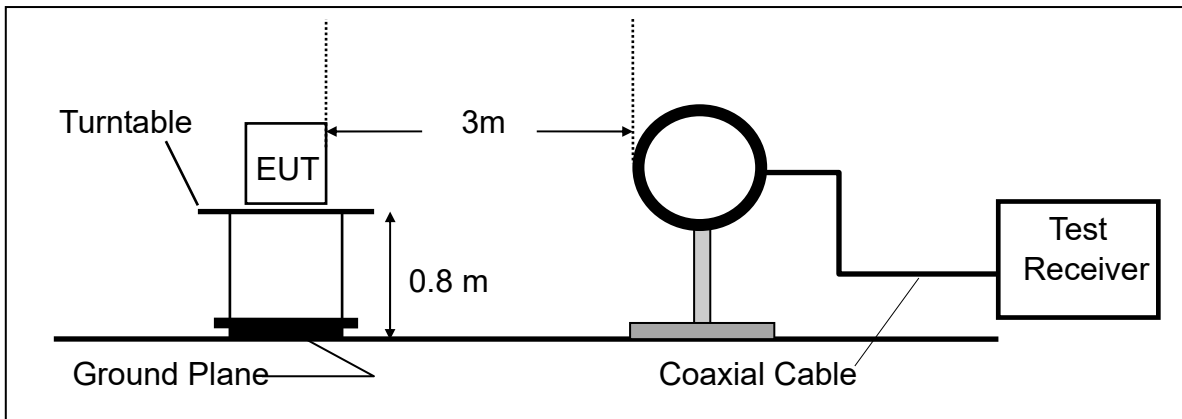
## 7 RADIATED EMISSION TEST

### 7.1 Measurement Procedure

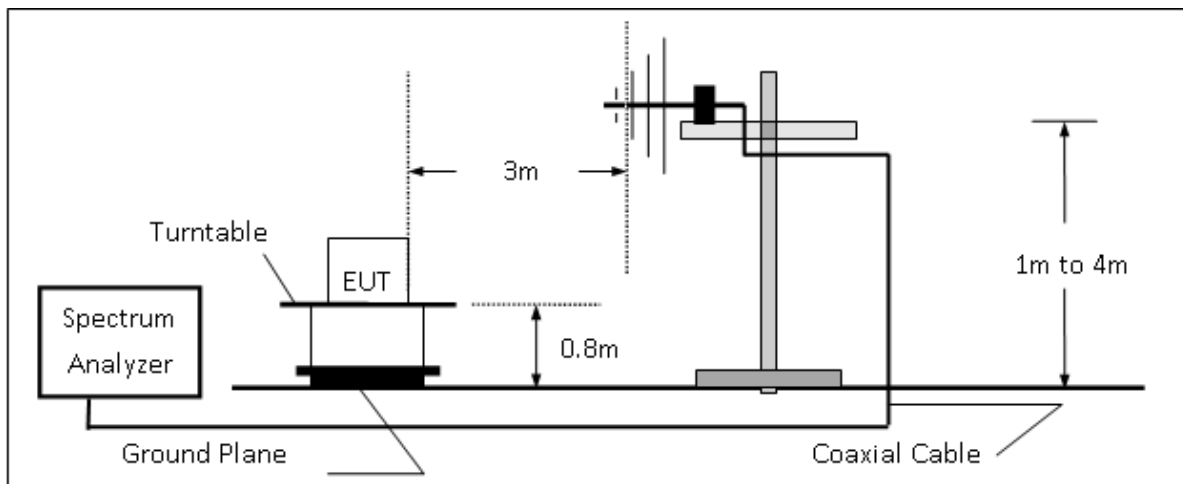
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

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

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



#### (B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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### 7.3 Measurement Equipment Used:

| EQUIPMENT TYPE        | MFR          | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
|-----------------------|--------------|--------------|---------------|------------|------------|
| Bi-log Antenna        | SCHWAZBECK   | VULB9168     | 378           | 01/03/2020 | 01/02/2021 |
| 3m Site NSA           | SGS          | 966 chamber  | N/A           | 01/02/2020 | 01/01/2021 |
| Loop Antenna          | ETS.LINDGREN | 6502         | 148045        | 10/15/2019 | 10/14/2020 |
| PXA Spectrum Analyzer | Agilent      | N9030A       | MY53120760    | 04/21/2020 | 04/20/2021 |
| EMI Test Receiver     | R&S          | ESCI 7       | 1166.5950.07  | 07/04/2019 | 07/03/2020 |
| Pre-Amplifier         | HP           | 8447D        | 2944A07676    | 01/02/2020 | 01/01/2021 |
| Low Loss Cable        | Huber Suhner | 966 RX       | 9             | 01/02/2020 | 01/01/2021 |

### 7.4 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       |                                            |

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## 7.5 Field Strength of Fundamental Emission

### 7.5.1 Limit

#### Below 30MHz

| Frequency (MHz) | Limit ( $\mu\text{V/m}$ ) | Measurement distance (meters) | Remark           |
|-----------------|---------------------------|-------------------------------|------------------|
| 0.009-0.490     | 2400/F(kHz)               | 300                           | Quasi-Peak Value |
| 0.490-1.705     | 24000/F(kHz)              | 30                            | Quasi-Peak Value |
| 1.705-30.0      | 30                        | 30                            | Quasi-Peak Value |

#### Above 30MHz

| Frequency (MHz) | Limit ( $\text{dB}\mu\text{V/m}$ @3m) | Remark           |
|-----------------|---------------------------------------|------------------|
| 30-88           | 40                                    | Quasi-Peak Value |
| 88-216          | 43.5                                  | Quasi-Peak Value |
| 216-960         | 46                                    | Quasi-Peak Value |
| Above 960       | 54                                    | Quasi-Peak Value |
| Above 1GHz      | 54                                    | Average Value    |
|                 | 74                                    | Peak Value       |

#### Note:

- The measurement was undertaken in closer distance at 3m, where extrapolation factor is offset to convert the limit of the measurement.  $\text{Ex. } 20 \cdot \log(30) + 40 \cdot \log(30/3) = 69.54 \text{ dB}\mu\text{V/m}$
- The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
- Actual FS( $\text{dB}\mu\text{V/m}$ ) = Spectrum. Reading level( $\text{dB}\mu\text{V}$ ) + Factor( $\text{dB}$ )  
Factor( $\text{dB}$ ) = Antenna Factor( $\text{dB}\mu\text{V/m}$ ) + Cable Loss( $\text{dB}$ ) – Pre\_Amplifier Gain( $\text{dB}$ )

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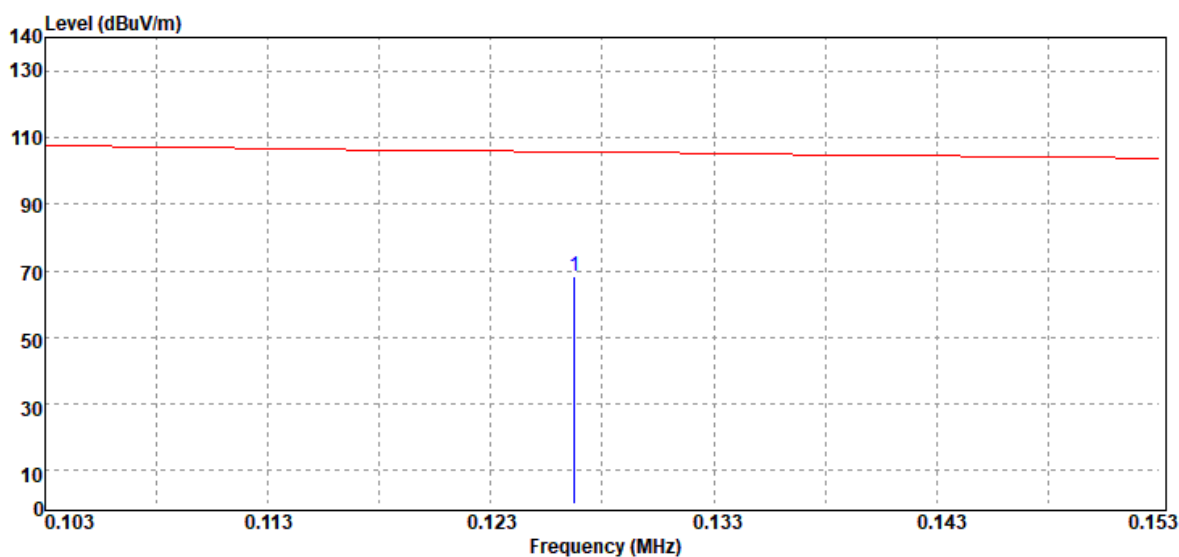
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## 7.5.2 Below 30 MHz test result

Report Number :ER-2020-30155  
Operation Mode :WPC  
Test Frequency :127 KHz  
Test Mode :Main  
EUT Pol :H Plane

Test Date :2020-06-17  
Temp./Humi. :25.2/63  
Antenna Pol. :VERTICAL  
Engineer :Nick



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 0.12675      | Peak                         | 57.77                             | 10.51        | 68.28                  | 105.55                 | -37.27       |

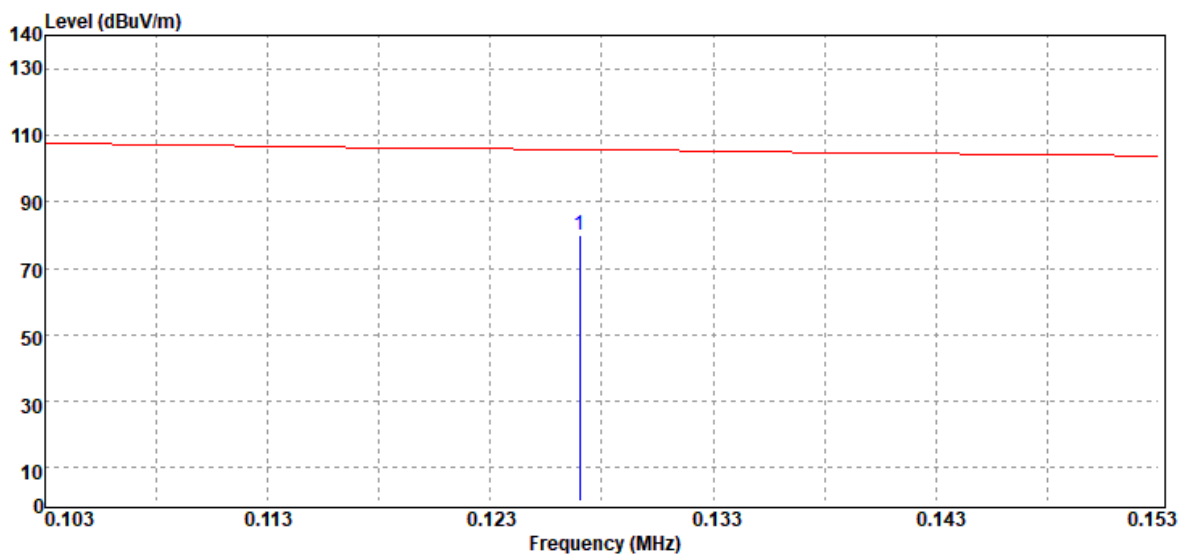
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Report Number :ER-2020-30155  
Operation Mode :WPC  
Test Frequency :127 KHz  
Test Mode :Main  
EUT Pol :H Plane

Test Date :2020-06-17  
Temp./Humi. :25.2/63  
Antenna Pol. :HORIZONTAL  
Engineer :Nick



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 0.127        | Peak                         | 69.60                             | 10.51        | 80.11                  | 105.53                 | -25.42       |

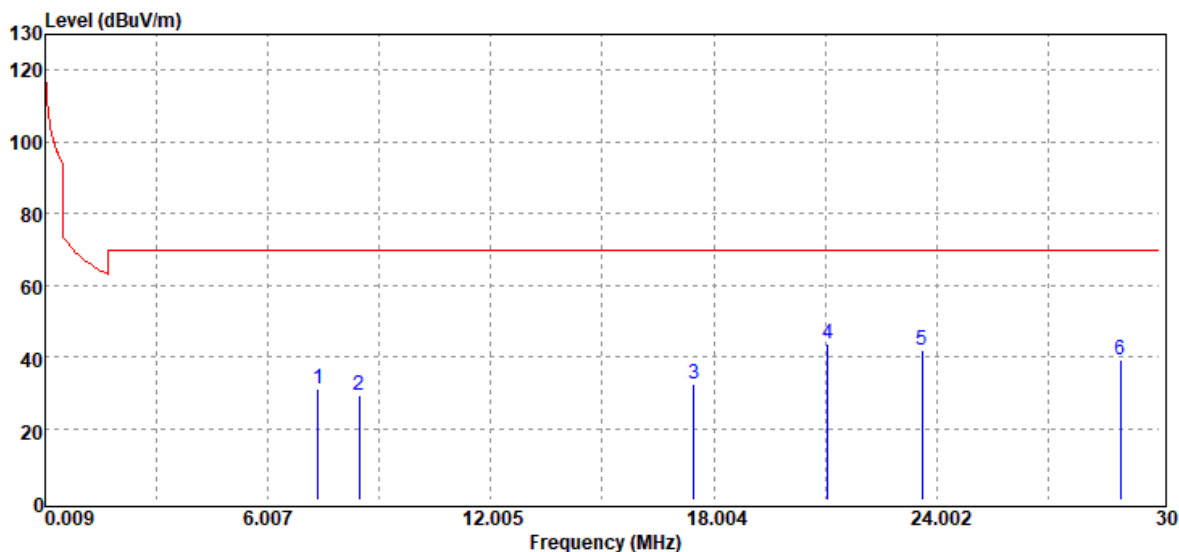
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Report Number :ER-2020-30155  
Operation Mode :WPC  
Test Frequency :127 KHz  
Test Mode :Tx  
EUT Pol :H Plane

Test Date :2020-06-17  
Temp./Humi. :25.2/63  
Antenna Pol. :VERTICAL  
Engineer :Nick



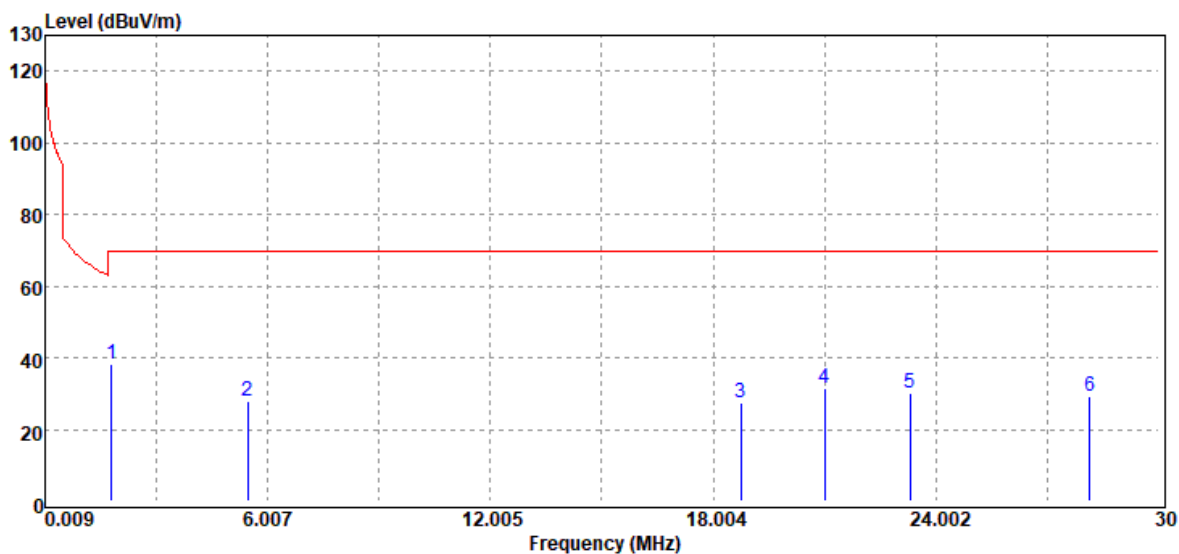
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 7.36         | Peak                         | 19.28                             | 11.67        | 30.95                  | 69.54                  | -38.59       |
| 8.47         | Peak                         | 17.40                             | 11.84        | 29.24                  | 69.54                  | -40.30       |
| 17.46        | Peak                         | 21.42                             | 11.10        | 32.52                  | 69.54                  | -37.02       |
| 21.06        | Peak                         | 33.18                             | 10.60        | 43.78                  | 69.54                  | -25.76       |
| 23.61        | Peak                         | 31.71                             | 9.99         | 41.70                  | 69.54                  | -27.84       |
| 28.95        | Peak                         | 30.43                             | 8.89         | 39.32                  | 69.54                  | -30.22       |

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Report Number :ER-2020-30155  
Operation Mode :WPC  
Test Frequency :127 KHz  
Test Mode :Tx  
EUT Pol :H Plane

Test Date :2020-06-17  
Temp./Humi. :25.2/63  
Antenna Pol. :HORIZONTAL  
Engineer :Nick


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 1.81         | Peak                         | 26.80                             | 11.28        | 38.08                  | 69.54                  | -31.46       |
| 5.47         | Peak                         | 16.66                             | 11.30        | 27.96                  | 69.54                  | -41.58       |
| 18.75        | Peak                         | 16.28                             | 10.98        | 27.26                  | 69.54                  | -42.28       |
| 21.00        | Peak                         | 20.67                             | 10.61        | 31.28                  | 69.54                  | -38.26       |
| 23.31        | Peak                         | 20.16                             | 10.06        | 30.22                  | 69.54                  | -39.32       |
| 28.14        | Peak                         | 20.04                             | 9.05         | 29.09                  | 69.54                  | -40.45       |

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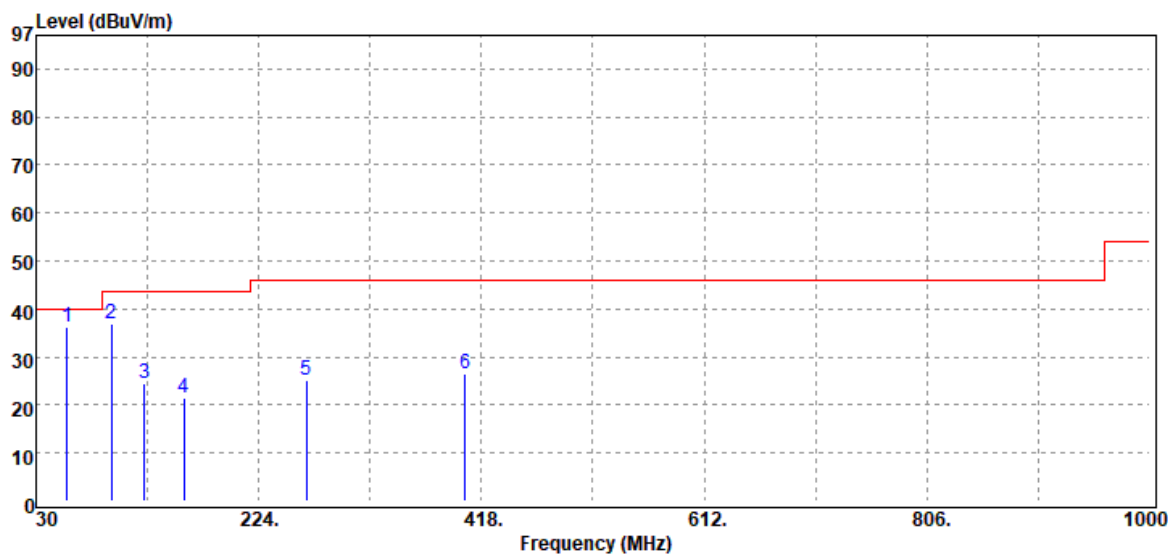
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## 7.5.3 Above 30MHz test result

Report Number :ER-2020-30155  
 Operation Mode :WPC  
 Test Frequency :127 KHz  
 Test Mode :Tx  
 EUT Pol :H Plane

Test Date :2020-06-17  
 Temp./Humi. :25.2/63  
 Antenna Pol. :VERTICAL  
 Engineer :Nick



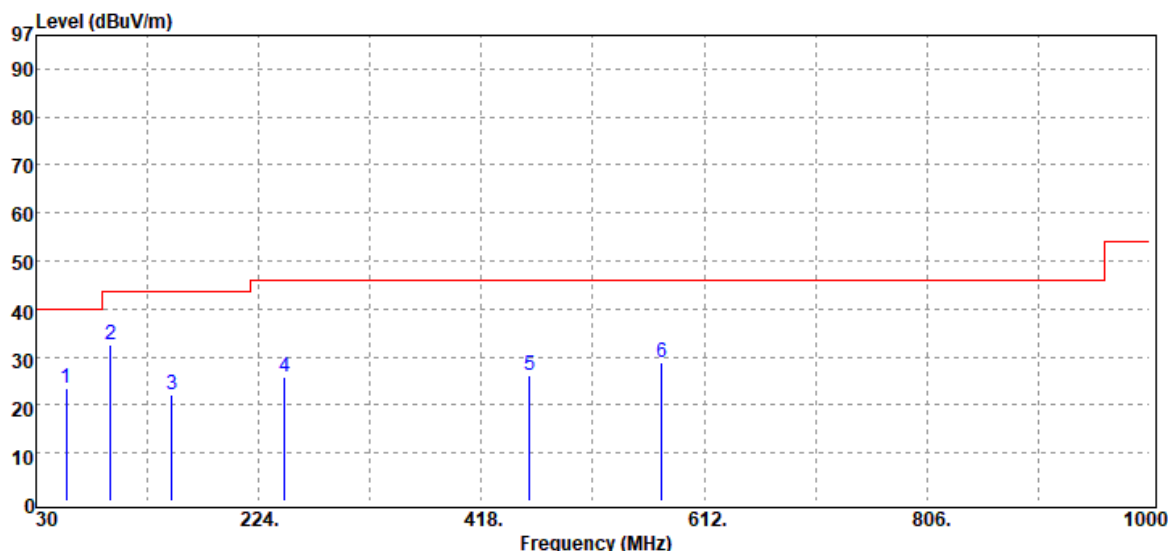
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 57.16        | Peak                         | 44.91                             | -8.53        | 36.38                  | 40.00                  | -3.62        |
| 95.96        | Peak                         | 50.69                             | -13.72       | 36.97                  | 43.50                  | -6.53        |
| 124.09       | Peak                         | 33.84                             | -9.30        | 24.54                  | 43.50                  | -18.96       |
| 159.01       | Peak                         | 28.94                             | -7.34        | 21.60                  | 43.50                  | -21.90       |
| 265.71       | Peak                         | 32.59                             | -7.25        | 25.34                  | 46.00                  | -20.66       |
| 403.45       | Peak                         | 30.85                             | -4.37        | 26.48                  | 46.00                  | -19.52       |

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Report Number :ER-2020-30155  
Operation Mode :WPC  
Test Frequency :127 KHz  
Test Mode :Tx  
EUT Pol :H Plane

Test Date :2020-06-17  
Temp./Humi. :25.2/63  
Antenna Pol. :HORIZONTAL  
Engineer :Nick


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 56.19        | Peak                         | 31.96                             | -8.51        | 23.45                  | 40.00                  | -16.55       |
| 94.99        | Peak                         | 46.35                             | -13.83       | 32.52                  | 43.50                  | -10.98       |
| 148.34       | Peak                         | 29.62                             | -7.41        | 22.21                  | 43.50                  | -21.29       |
| 246.31       | Peak                         | 33.91                             | -7.99        | 25.92                  | 46.00                  | -20.08       |
| 459.71       | Peak                         | 28.62                             | -2.39        | 26.23                  | 46.00                  | -19.77       |
| 575.14       | Peak                         | 29.18                             | -0.47        | 28.71                  | 46.00                  | -17.29       |

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## 8 20 dB OCCUPIED BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable:

§2.1049 & §15.215 (c)

### 8.2 Limit:

None

### 8.3 Test Set-up

Refer to section 7.2 in this report

### 8.4 Measurement Procedure

20dB bandwidth

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set the EUT stay in continuous transmitting mode.
3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a channel  
The domain al IF filter bandwidth (3dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto;  
Detector function = peak
4. Set SPA trace 1 Max hold, then view.

### 8.5 Measurement Equipment Used:

| EQUIPMENT TYPE        | MFR           | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
|-----------------------|---------------|--------------|---------------|------------|------------|
| Loop Antenna          | ETS.LINDGREN  | 6502         | 143303        | 04/28/2020 | 04/27/2021 |
| EXA Spectrum Analyzer | Agilent       | N9010A       | MY50420195    | 05/06/2020 | 05/05/2021 |
| DC Block              | Mini-Circuits | BLK-18-S+    | 1             | 01/02/2020 | 01/01/2021 |

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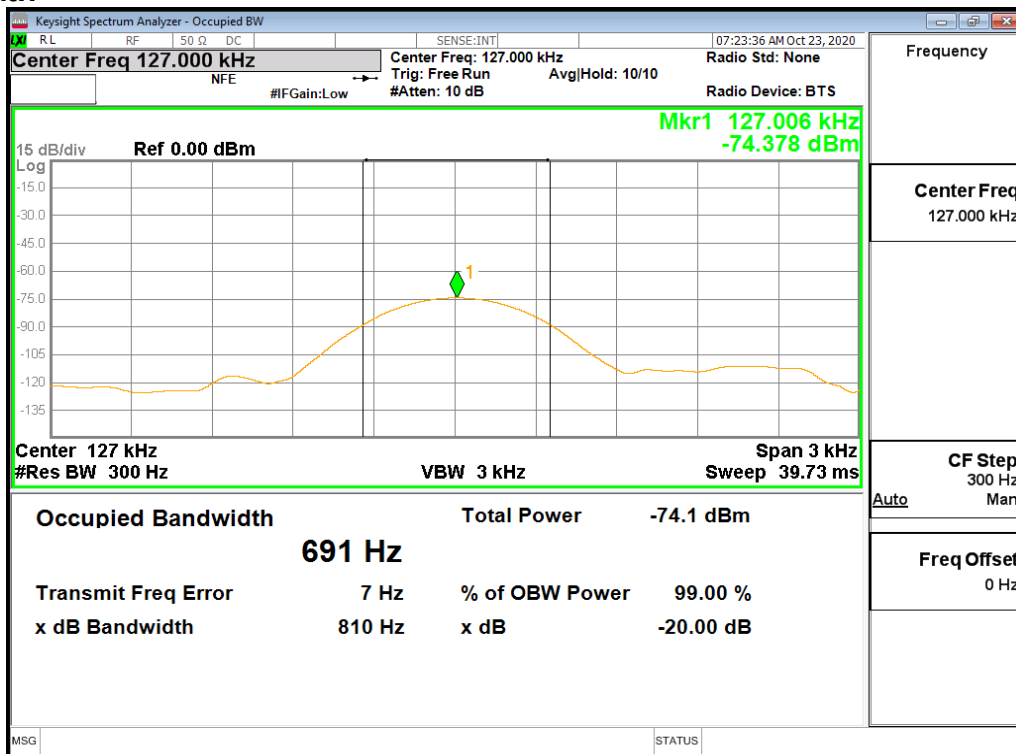
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## 8.6 Measurement Result

### -20dB Bandwidth



|                |                |
|----------------|----------------|
| 20dB Bandwidth | Limit          |
| 810 Hz         | No requirement |

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## 9 ANTENNA REQUIREMENT

### 9.1 Standard Applicable:

For intentional device, according to §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.

### 9.2 Antenna Connected Construction:

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo and antenna spec. for details.

*~ End of Report ~*

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