

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

**Applicant:** INVENTEC CORPORATION  
66 Hou-Kang st., Shih-Lin District, Taipei, Taiwan, R.O.C

**Product Name:** All-in-One PC

**Brand Name:** HP

**Model No.:** TPC-I040-27

**Model Difference:** N/A

**Report Number:** E2/2019/C0032

**FCC ID:** DGI-TPC-I040-2701

**FCC Rule Part:** Part 15C

**Issue Date:** Dec. 30, 2019

**Date of Test:** Dec. 06, 2019 ~ Dec. 20, 2019

**Date of EUT Received:** Dec. 06, 2019

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. 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

| Revision | Description | Issue Date    | Remark                  |
|----------|-------------|---------------|-------------------------|
| Rev.00   | Original.   | Dec. 30, 2019 | Revised By: Karen Huang |

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# 1 GENERAL INFORMATION

## 1.1 Product Description

|                   |                            |                                                           |
|-------------------|----------------------------|-----------------------------------------------------------|
| Product Name:     | All-in-One PC              |                                                           |
| Brand Name:       | HP                         |                                                           |
| Model No.:        | TPC-I040-27                |                                                           |
| Model Difference: | N/A                        |                                                           |
| Hardware Version: | N/A                        |                                                           |
| Software Version: | N/A                        |                                                           |
| Power Supply:     | 19.5Vdc from AC/DC Adapter |                                                           |
|                   | Adapter:                   | Model No.: TPN-DA19,<br>Supplier: DELTA ELECTRONICS, INC. |

|                     |                       |
|---------------------|-----------------------|
| Radio Technology:   | WPC                   |
| Operating Frequency | 120~130 kHz           |
| Transmit Power      | -4.67 dBuV/m at 300m. |
| Number of Channels  | 1                     |
| Antenna Type        | Loop Antenna          |
| Modulation Type     | ASK/FSK               |

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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. Electronics & Communication Laboratory No.2, Keji 1st Rd.,  
Guishan District, Taoyuan City, Taiwan 333 (TAF code 0513)

FCC Designation number: TW0002

## 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 according to §15.207. 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.

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- Remark 1. Emission level in dBuV/m= $20 \log (\mu\text{V}/\text{m})$   
:  
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.  
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 Emission test set up configuration

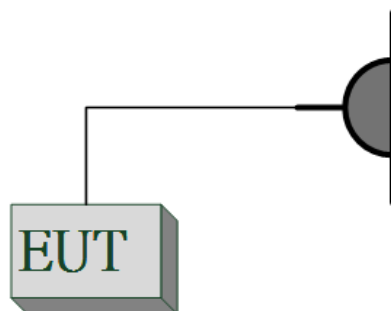


Fig. 2-2 Conduction test set up configuration

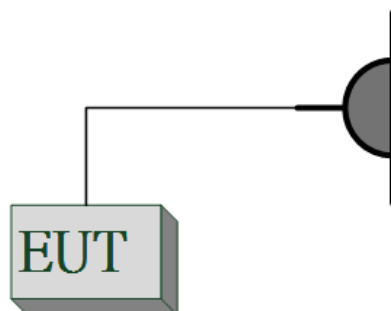


Table 2-1 Equipment Used in Tested System

| 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

#### AC POWER LINE CONDUCTED EMISSION TEST:

| Test Condition | AC Power line conducted emission for line and neutral |
|----------------|-------------------------------------------------------|
| Worst Case     | Operation in normal mode                              |

The EUT stay in continuous transmitting mode. The operating frequency is 120~130kHz, and there is only one 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

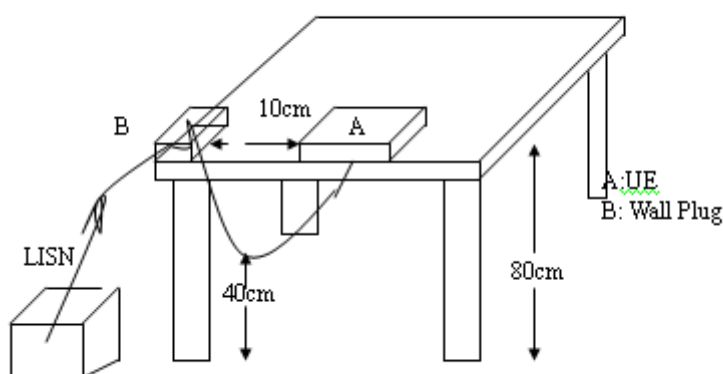
According to section 15.207(a) Conducted Emission Limits is as following.

| 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       |
| Note<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. |                   |          |

### 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.

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



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#### 6.4 Measurement Equipment Used:

| Conducted Emission Test Site |                 |              |               |            |            |
|------------------------------|-----------------|--------------|---------------|------------|------------|
| EQUIPMENT TYPE               | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
| LISN                         | NETZNACHBILDUNG | NSLK8127     | 8127648       | 07/12/2019 | 07/11/2020 |
| EMI Test Receiver            | R&S             | ESCI         | 101300        | 11/14/2019 | 11/13/2020 |

#### 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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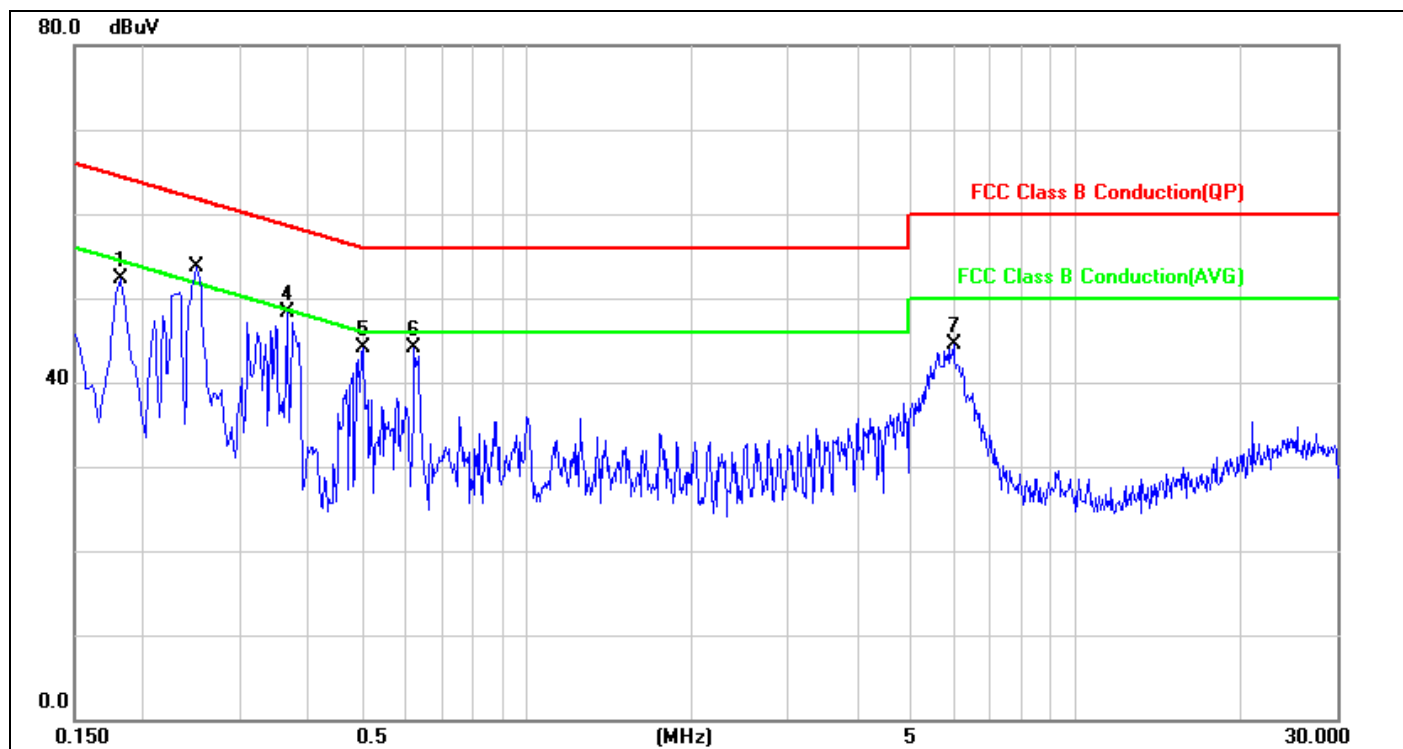
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## AC POWER LINE CONDUCTED EMISSION TEST DATA

|               |               |                    |              |
|---------------|---------------|--------------------|--------------|
| Description:  | Operation     | Date:              | 2019/12/13   |
| Line:         | L1            | Temp.(°C)/Hum.(%): | 23.1(°C)/55% |
| Test Voltage: | AC 120V/60Hz  | Test By:           | Ashton       |
| Report:       | E2/2019/C0032 |                    |              |



| No. | Mk. | Freq.<br>( MHz ) | Reading<br>( dBuV ) | Factor<br>( dB ) | Measurement<br>( dBuV ) | Limit<br>( dBuV ) | Over<br>( dB ) | Detector | Comment |
|-----|-----|------------------|---------------------|------------------|-------------------------|-------------------|----------------|----------|---------|
| 1   |     | 0.1820           | 32.63               | 19.74            | 52.37                   | 64.39             | -12.02         | peak     |         |
| 2   |     | 0.2500           | 34.10               | 19.81            | 53.91                   | 61.76             | -7.85          | QP       |         |
| 3   | *   | 0.2500           | 27.90               | 19.81            | 47.71                   | 51.76             | -4.05          | AVG      |         |
| 4   |     | 0.3660           | 28.46               | 19.88            | 48.34                   | 58.59             | -10.25         | peak     |         |
| 5   |     | 0.5060           | 24.15               | 19.97            | 44.12                   | 56.00             | -11.88         | peak     |         |
| 6   |     | 0.6260           | 24.12               | 19.97            | 44.09                   | 56.00             | -11.91         | peak     |         |
| 7   |     | 6.0180           | 24.35               | 20.15            | 44.50                   | 60.00             | -15.50         | peak     |         |

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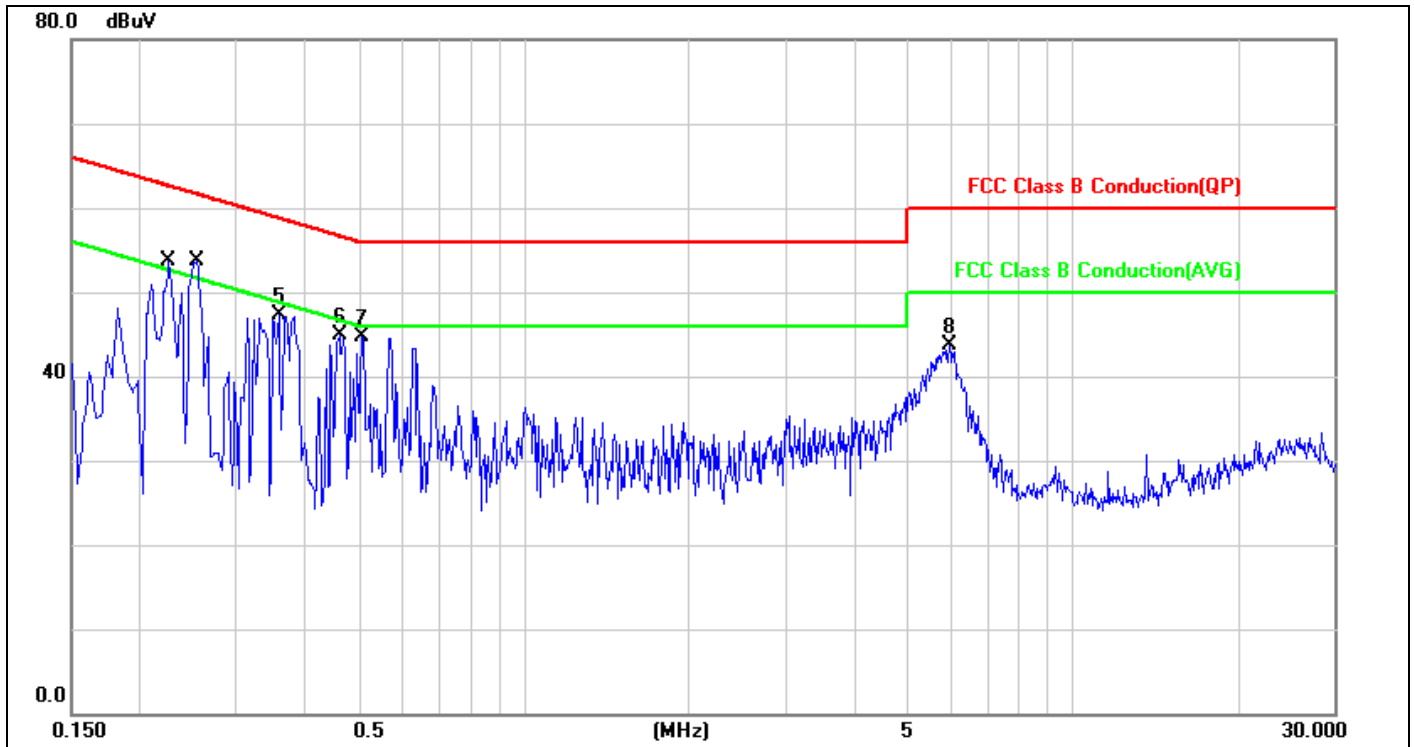
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Description: Operation  
Line: N  
Test Voltage: AC 120V/60Hz  
Report: E2/2019/C0032

Date: 2019/12/13  
Temp.(°C)/Hum.(%): 23.1(°C)/55%  
Test By: Ashton



| No. | Mk. | Freq.<br>( MHz ) | Reading<br>( dBuV ) | Factor<br>( dB ) | Measurement<br>( dBuV ) | Limit<br>( dBuV ) | Over<br>( dB ) | Detector | Comment |
|-----|-----|------------------|---------------------|------------------|-------------------------|-------------------|----------------|----------|---------|
| 1   |     | 0.2260           | 25.20               | 19.80            | 45.00                   | 62.60             | -17.60         | QP       |         |
| 2   |     | 0.2260           | 16.10               | 19.80            | 35.90                   | 52.60             | -16.70         | AVG      |         |
| 3   |     | 0.2540           | 33.80               | 19.82            | 53.62                   | 61.63             | -8.01          | QP       |         |
| 4   | *   | 0.2540           | 27.90               | 19.82            | 47.72                   | 51.63             | -3.91          | AVG      |         |
| 5   |     | 0.3580           | 27.39               | 19.88            | 47.27                   | 58.77             | -11.50         | peak     |         |
| 6   |     | 0.4620           | 24.89               | 19.94            | 44.83                   | 56.66             | -11.83         | peak     |         |
| 7   |     | 0.5100           | 24.67               | 19.97            | 44.64                   | 56.00             | -11.36         | peak     |         |
| 8   |     | 5.9660           | 23.56               | 20.15            | 43.71                   | 60.00             | -16.29         | peak     |         |

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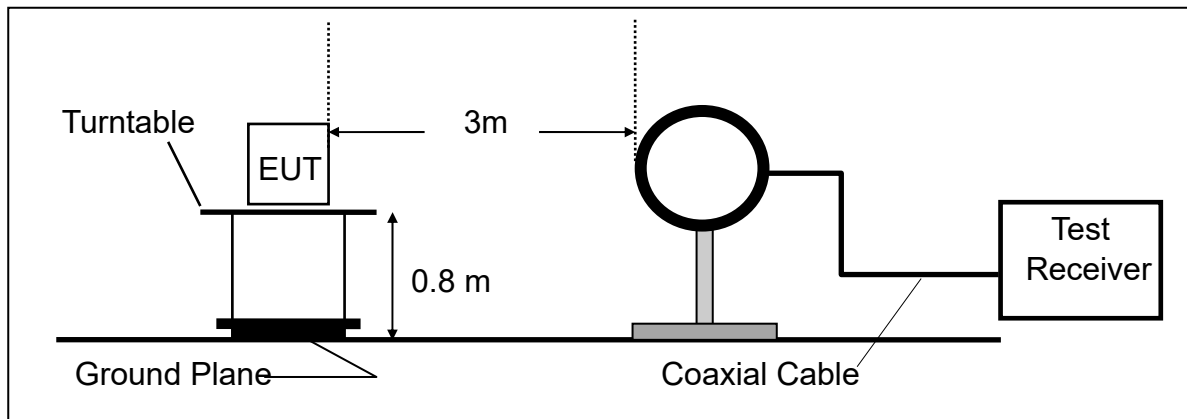
## 7 RADIATED EMISSION TEST

### 7.1 Measurement Procedure

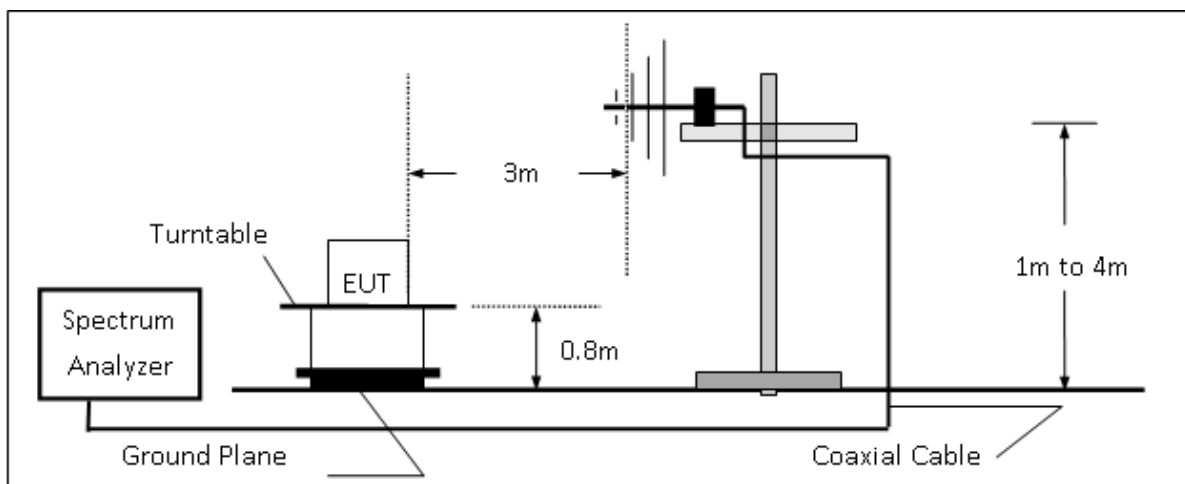
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

### 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:

| SGS 966 Chamber No.C |                 |              |               |            |            |
|----------------------|-----------------|--------------|---------------|------------|------------|
| EQUIPMENT TYPE       | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
| Broadband Antenna    | TESEQ           | CBL 6112D    | 35240         | 09/09/2019 | 09/08/2020 |
| Loop Antenna         | ETS.LINDGREEN   | 6502         | 143303        | 04/25/2019 | 04/24/2020 |
| EMI Test Receiver    | R&S             | ESU 40       | 100363        | 04/15/2019 | 04/14/2020 |
| Pre-Amplifier        | EMC Instruments | EMC330       | 980096        | 11/20/2019 | 11/19/2020 |
| Coaxial Cable        | Huber Suhner    | RG 214/U     | W22.03        | 11/20/2019 | 11/19/2020 |

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## 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       |                                            |

## 7.5 Field Strength of Fundamental Emission

### 7.5.1 Limit

#### Below 30MHz

| Frequency (MHz) | Limit (μV/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 (dBμV/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. Ex.  $20 \cdot \log(30) + 40 \cdot \log(30/3) = 69.54 \text{ dBuV/m}$
- 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(dBμV/m) = Spectrum. Reading level(dBμV) + Factor(dB)  
Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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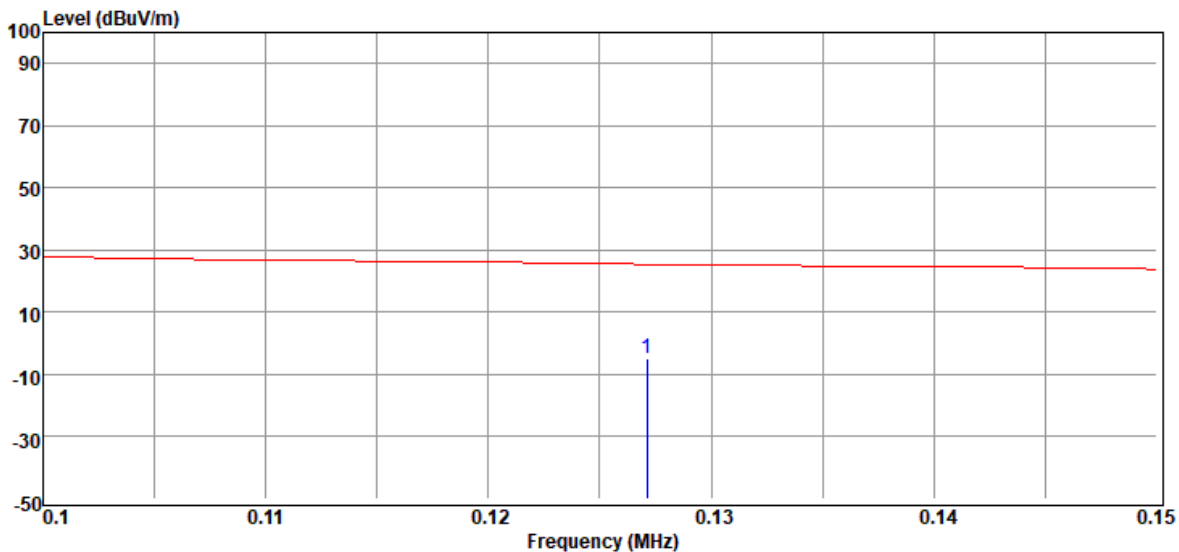
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## 7.5.2 Below 30 MHz test result

Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :Main  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :VERTICAL  
Engineer :Ashton



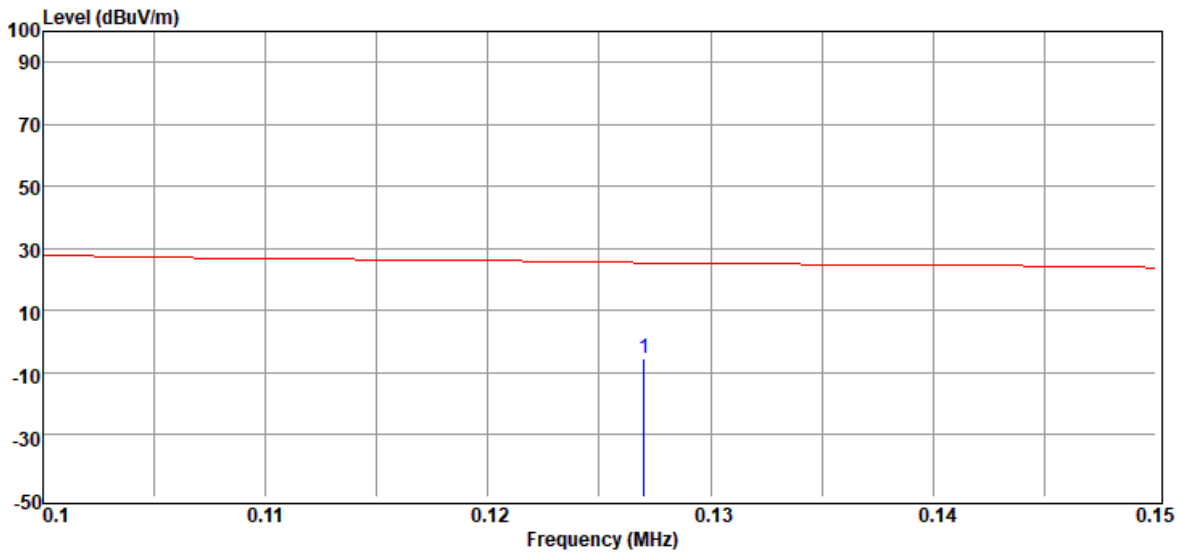
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 0.1271       | Peak                         | 64.70                             | -69.37       | <b>-4.67</b>           | 25.52                    | -30.19       |

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Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :Main  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



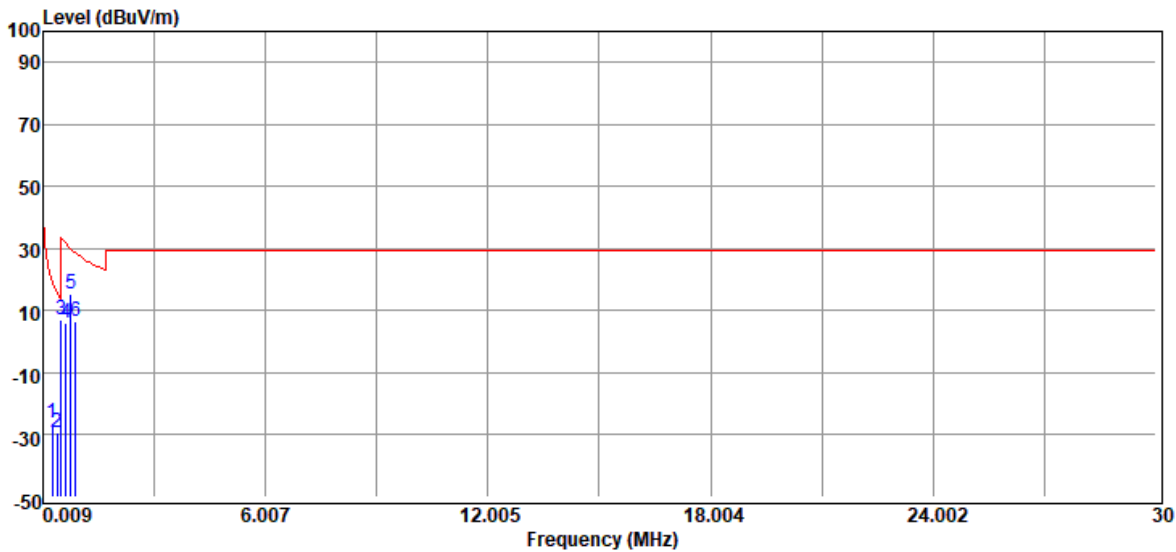
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dB $\mu$ V | Factor<br>dB | Actual<br>FS<br>dB $\mu$ V/m | Limit<br>@300m<br>dB $\mu$ V/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------------|--------------|------------------------------|--------------------------------|--------------|
| 0.1270       | Peak                         | 63.79                                   | -69.37       | -5.58                        | 25.53                          | -31.11       |

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Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :TX  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :VERTICAL  
Engineer :Ashton



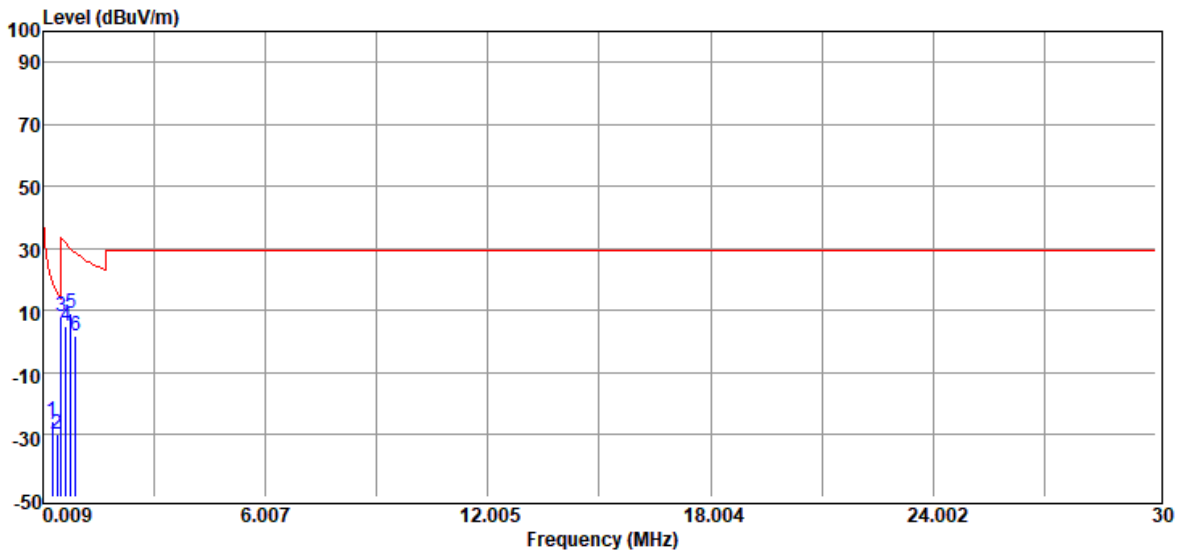
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300/30m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|-----------------------------|--------------|
| 0.25         | Peak                         | 43.12                             | -68.99       | -25.87                 | 19.65                       | -45.52       |
| 0.38         | Peak                         | 39.73                             | -68.81       | -29.08                 | 16.01                       | -45.09       |
| 0.50         | Peak                         | 36.07                             | -28.73       | 7.34                   | 33.62                       | -26.28       |
| 0.63         | Peak                         | 34.89                             | -28.67       | 6.22                   | 31.63                       | -25.41       |
| 0.75         | Peak                         | 44.27                             | -28.62       | 15.65                  | 30.10                       | -14.45       |
| 0.88         | Peak                         | 34.94                             | -28.59       | 6.35                   | 28.72                       | -22.37       |

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Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :TX  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



| 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>@300/30m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|-----------------------------|--------------|
| 0.25         | Peak                         | 43.63                             | -68.99       | -25.36                 | 19.65                       | -45.01       |
| 0.38         | Peak                         | 39.31                             | -68.81       | -29.50                 | 16.01                       | -45.51       |
| 0.50         | Peak                         | 36.71                             | -28.73       | 7.98                   | 33.62                       | -25.64       |
| 0.63         | Peak                         | 33.67                             | -28.67       | 5.00                   | 31.63                       | -26.63       |
| 0.75         | Peak                         | 37.92                             | -28.62       | 9.30                   | 30.10                       | -20.80       |
| 0.88         | Peak                         | 30.49                             | -28.59       | 1.90                   | 28.72                       | -26.82       |

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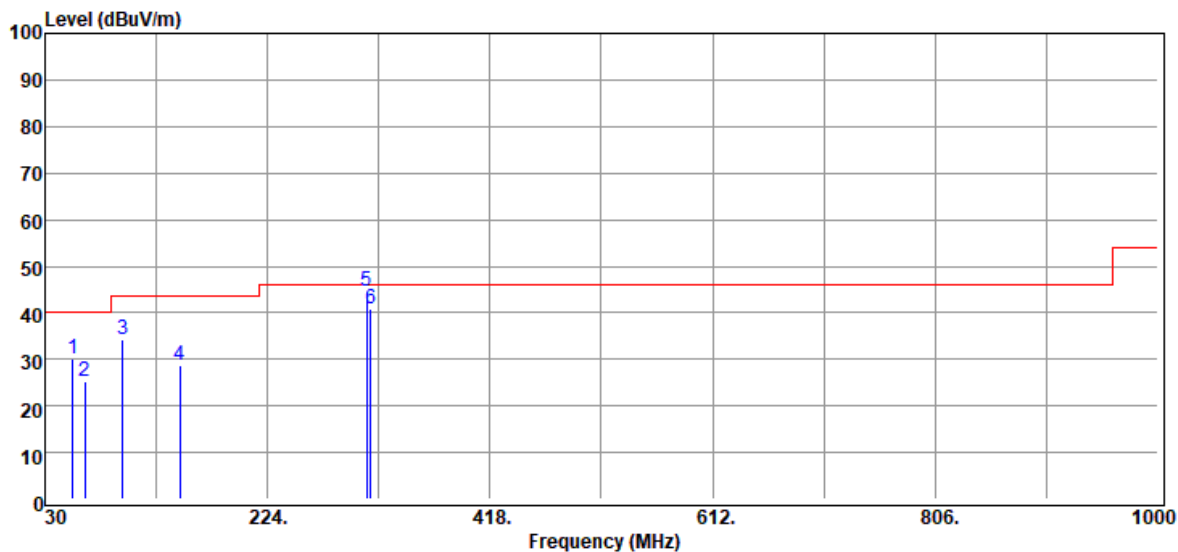
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### 7.5.3 Above 30MHz test result

Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :TX  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :VERTICAL  
Engineer :Ashton



| 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 |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 54.25        | QP                           | 49.51                             | -19.33       | 30.18                  | 40.00                  | -9.82        |
| 64.92        | QP                           | 44.60                             | -19.47       | 25.13                  | 40.00                  | -14.87       |
| 97.67        | Peak                         | 50.39                             | -16.01       | 34.38                  | 43.50                  | -9.12        |
| 147.37       | QP                           | 42.40                             | -13.56       | 28.84                  | 43.50                  | -14.66       |
| 310.33       | QP                           | 54.70                             | -10.22       | 44.48                  | 46.00                  | -1.52        |
| 314.21       | QP                           | 50.90                             | -10.04       | 40.86                  | 46.00                  | -5.14        |

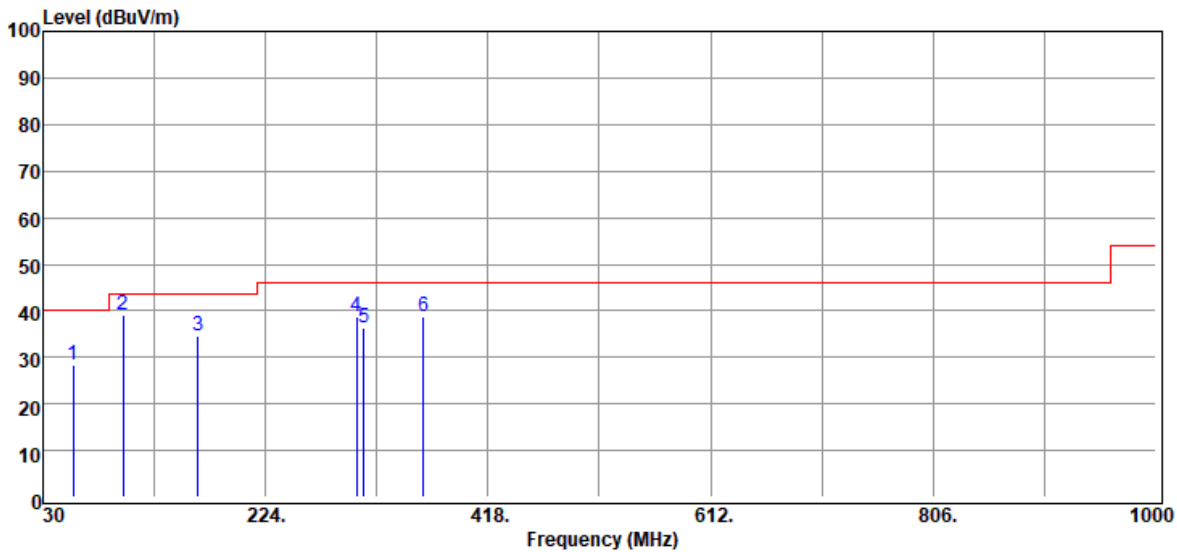
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Report Number :E2/2019/C0032  
Operation Mode :WPC  
Test Channel : 120 kHz~130kHz  
Test Mode :TX  
EUT Pol :H Plan

Test Date :2019-12-11  
Temp./Humi. :22.4/61  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



| 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        | QP                           | 48.41                             | -20.07       | 28.34                  | 40.00                  | -11.66       |
| 99.94        | QP                           | 54.59                             | -15.66       | 38.93                  | 43.50                  | -4.57        |
| 165.07       | QP                           | 49.70                             | -15.10       | 34.60                  | 43.50                  | -8.90        |
| 303.54       | QP                           | 49.11                             | -10.48       | 38.63                  | 46.00                  | -7.37        |
| 309.36       | QP                           | 46.60                             | -10.26       | 36.34                  | 46.00                  | -9.66        |
| 361.74       | Peak                         | 47.69                             | -8.81        | 38.88                  | 46.00                  | -7.12        |

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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 6.2 in this report

### 8.4 Measurement Procedure

20dB bandwidth

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak mode.
2. 20dB Bandwidth the resolution bandwidth of 200 Hz and the video bandwidth of 1 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

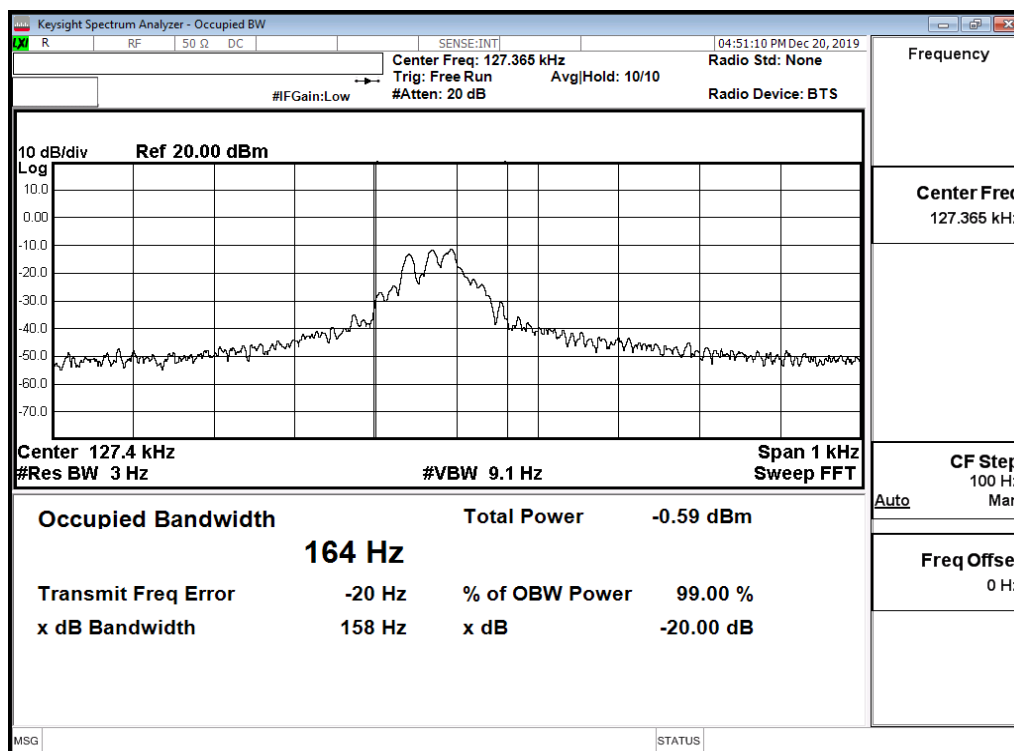
### 8.5 Measurement Equipment Used:

Refer to section 7.3 in this report

### 8.6 Measurement Result

#### -20dB Bandwidth

| 20dB Bandwidth | Limit          |
|----------------|----------------|
| 158Hz          | 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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