

# TEST REPORT

## FCC Part 15C

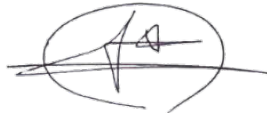
**Equipment under test** Wireless Power Bank  
**Model name** GB-WL3000  
**FCC ID** 2BA5M-GB-WL3000  
**Applicant** HiggsKorea CO.,LTD  
**Manufacturer** DIGIWAY ELECTRONICS CO., LTD  
**Date of test(s)** 2023.03.22 ~ 2023.04.03  
**Date of issue** 2023.06.26

**Issued to****HiggsKorea CO.,LTD**

14059 B-308B, 57-2, Heungan-daero 427beon-gil, Dongan-gu, Anyang-si,  
Gyeonggi-do, South Korea  
Tel: +82-31-687-8771, Fax: +82-31-687-8745

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473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450

| Test and report completed by :                                                      | Report approval by :                                                                 |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| Bong-Seok, Kim<br>Test engineer                                                     | Young-Jun, Cho<br>Technical manager                                                  |

This test report is not related to KS Q ISO/IEC 17025 and KOLAS

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**Revision history**

| Revision | Date of issue | Test report No. | Description |
|----------|---------------|-----------------|-------------|
| -        | 2023.06.26    | KES-RF-23T0089  | Initial     |

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## 1. General information

Applicant HiggsKorea CO.,LTD  
Applicant address 14059 B-308B, 57-2, Heungan-daero 427beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, South Korea  
Test site KES Co., Ltd.  
Test site address ☐ 3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea43  
☒ 473-29, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea  
Test Facility FCC Accreditation Designation No.: KR0100, Registration No.: 444148  
FCC rule part(s): Part 15C  
FCC ID: 2BA5M-GB-WL3000  
Test device serial No. ☒ Production ☐ Pre-production ☐ Engineering

### 1.1. EUT description

Equipment under test Wireless Power Bank  
5 W : 0.127 MHz ~ 0.148 MHz  
Frequency 7.5 W : 0.128 MHz  
10 W : 0.121 MHz ~ 0.138 MHz  
Inductive charging technique Magnetic Induction  
Model: GB-WL3000  
Antenna specification Internal type (Coil antenna)  
Power source DC 3.7 V (Battery)  
S/W Version DHW2204\_WXC\_V1.0  
H/W version GBHW2304\_3000\_V2.03

### 1.2. Test configuration

The **HiggsKorea CO.,LTD / Wireless Power Bank / GB-WL3000 / FCC ID: 2BA5M-GB-WL3000** was tested according to the specification of EUT, the EUT must comply with following standards.

FCC Part 15C  
ANSI C63.10-2013  
KDB 680106 D01 V03

### 1.3. Test frequency

|              |                   | Frequency Range              |
|--------------|-------------------|------------------------------|
| Power source | DC 3.7 V(Battery) | 5 W : 0.127 MHz ~ 0.148 MHz  |
|              |                   | 7.5 W : 0.128 MHz            |
|              |                   | 10 W : 0.121 MHz ~ 0.138 MHz |

#### 1.4. Test mode

| Mode                       | Charging current | Description    |
|----------------------------|------------------|----------------|
| Charging mode<br>With load | 90%              | Using Max load |
|                            | 50%              | Using Mid load |
|                            | 10%              | Using Min load |

#### 1.5. Information about derivative model

N/A

#### 1.6. Accessory information

| Equipment | Manufacturer | Model | Serial No. | Power source |
|-----------|--------------|-------|------------|--------------|
| -         | -            | -     | -          | -            |

#### 1.7. Measurement Uncertainty`

| Test Item                                                                                                                                     |            | Uncertainty                |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------|
| Uncertainty for Conduction emission test                                                                                                      |            | 2.22 dB ( SHIELD ROOM #6 ) |
| Uncertainty for Radiation emission test<br>(include Fundamental emission)                                                                     | Below 1GHz | 4.04 dB ( SAC #6 )         |
|                                                                                                                                               | Above 1GHz | 4.42 dB ( SAC #5 )         |
| Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. |            |                            |

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**2. Summary of tests**

| <b>FCC Part Sections</b> | <b>Parameter</b>           | <b>Test results</b> |
|--------------------------|----------------------------|---------------------|
| 15.209                   | Radiated spurious emission | Pass                |
| 2.1049                   | 20 dB Bandwidth            | Pass                |
| 15.207                   | AC conducted emissions     | Pass                |

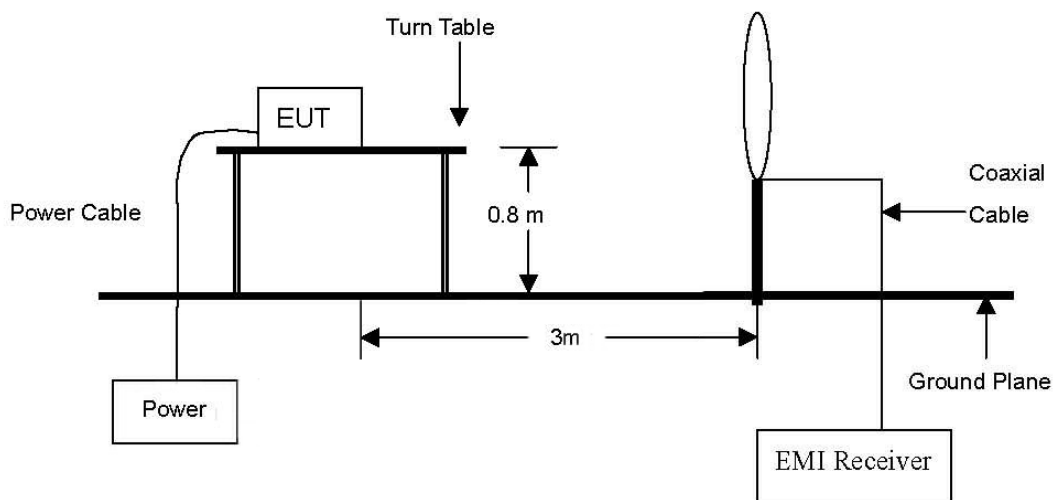
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### 3. Test results

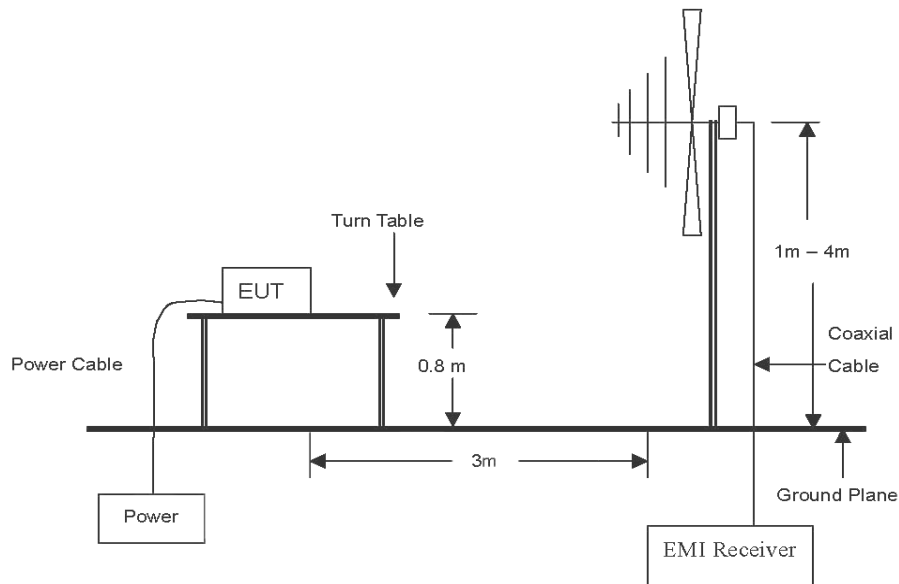
#### 3.1. Radiated spurious emission

##### Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



**Test procedure**

[9 kHz to 30 MHz]

The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular and ground parallel of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Quasi-peak function and specified bandwidth with maximum hold mode.

[30 MHz to 1 GHz]

The height of the measuring antenna was varied between 1 to 4 m and the table was rotated a full revolution in order to obtain maximum values of the electric field intensity.

The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

**Note:**

1. According to exploratory test no any obvious emission were detected from 9 kHz to 30 MHz. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
2. Measurement distance : 3 m.
3. Field strength = Level + Correction factor +  $F_d$
4.  $F_d = 40\log(D_m / D_s)$

Where:

$F_d$  = Distance factor in dB

$D_m$  = Measurement distance in meters

$D_s$  = Specification distance in meters

For 300m:  $40\log(300/3) = 80$  dB for frequency band 0.009 MHz to 0.490 MHz

For 30m:  $40\log(30/3) = 40$  dB for frequency band 0.490 MHz to 30 MHz

5. No significant emissions were found in the 90 - 110kHz restricted band.

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**Limit**

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

| Frequency (MHz) | Distance (Meters) | Radiated ( $\mu\text{V/m}$ ) |
|-----------------|-------------------|------------------------------|
| 0.009 ~ 0.490   | 300               | 2400 / F(kHz)                |
| 0.490 ~ 1.705   | 30                | 24000 / F(kHz)               |
| 1.705 ~ 30.0    | 30                | 30                           |
| 30 ~ 88         | 3                 | 100**                        |
| 88 ~ 216        | 3                 | 150**                        |
| 216 ~ 960       | 3                 | 200**                        |
| Above 960       | 3                 | 500                          |

\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 ~ 72 MHz, 76 ~ 88 MHz, 174 ~ 216 MHz or 470 ~ 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.



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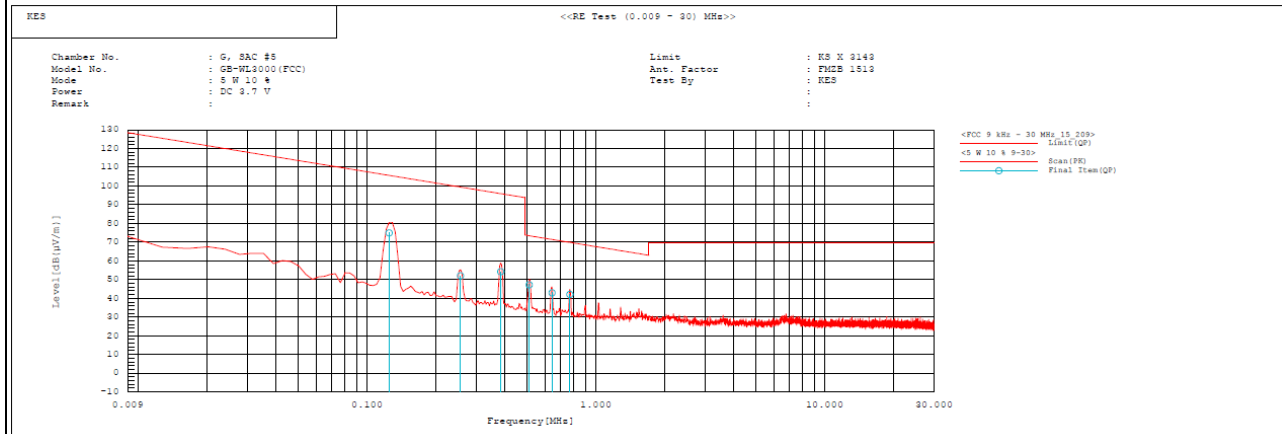
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### Test results (Below 30 MHz)

Mode: 5 W // 10 % charger

Distance of measurement: 3 meter

#### Parallel



#### Final Result

| No. | Frequency | Reading   | c.f        | Result      | Limit       | Margin | Angle | Remark |
|-----|-----------|-----------|------------|-------------|-------------|--------|-------|--------|
|     | [MHz]     | [dB (μV)] | [dB (1/m)] | [dB (μV/m)] | [dB (μV/m)] | [dB]   | [deg] |        |
| 1   | 0.125     | 55.1      | 19.9       | 75.0        | 105.7       | 30.7   | 353.7 |        |
| 2   | 0.256     | 32.4      | 19.7       | 52.1        | 99.4        | 47.3   | 359.9 |        |
| 3   | 0.384     | 34.4      | 19.9       | 54.3        | 95.9        | 41.6   | 353.7 |        |
| 4   | 0.511     | 27.1      | 20.1       | 47.2        | 73.4        | 26.2   | 330.6 |        |
| 5   | 0.643     | 22.6      | 20.4       | 43.0        | 71.4        | 28.4   | 330.6 |        |
| 6   | 0.770     | 21.5      | 20.6       | 42.1        | 69.9        | 27.8   | 359.9 |        |

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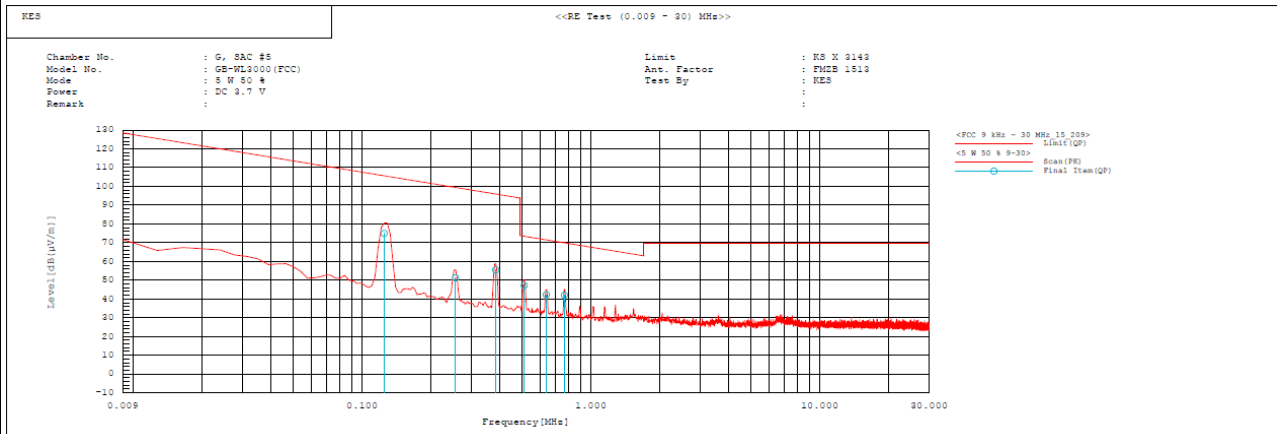
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Mode: 5 W // 50 % charger

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading         | c.f        | Result            | Limit             | Margin     | Angle | Remark |
|-----|-----------|-----------------|------------|-------------------|-------------------|------------|-------|--------|
|     | [MHz]     | QP<br>[dB (μV)] | [dB (1/m)] | QP<br>[dB (μV/m)] | QP<br>[dB (μV/m)] | QP<br>[dB] | [deg] |        |
| 1   | 0.125     | 55.1            | 19.9       | 75.0              | 105.7             | 30.7       | 7.2   |        |
| 2   | 0.256     | 31.6            | 19.7       | 51.3              | 99.4              | 48.1       | 30.2  |        |
| 3   | 0.384     | 35.6            | 19.9       | 55.5              | 95.9              | 40.4       | 7.2   |        |
| 4   | 0.511     | 27.1            | 20.1       | 47.2              | 73.4              | 26.2       | 7.2   |        |
| 5   | 0.639     | 21.9            | 20.4       | 42.3              | 71.5              | 29.2       | 0.0   |        |
| 6   | 0.766     | 21.5            | 20.6       | 42.1              | 69.9              | 27.8       | 0.2   |        |

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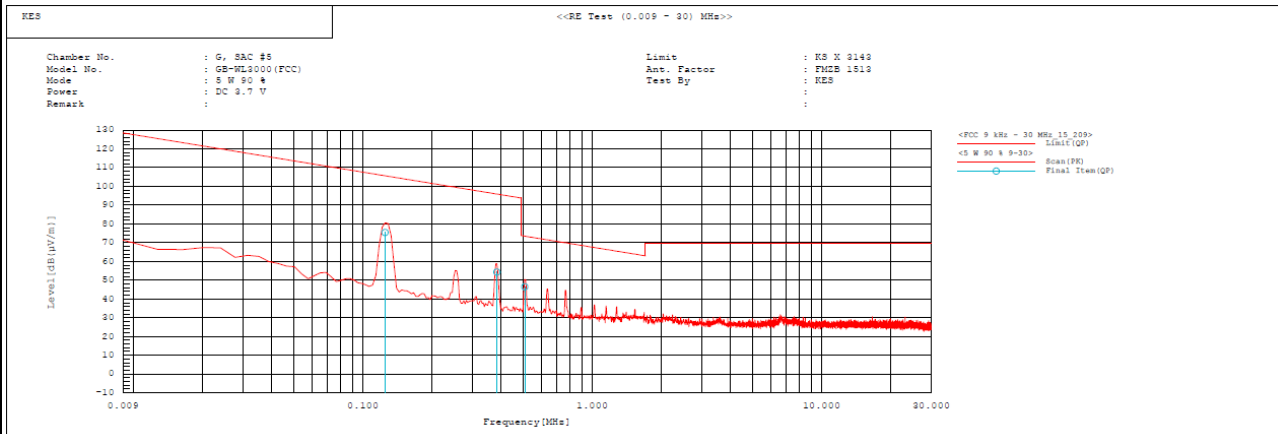
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Mode: 5 W // 90 % charge

Distance of measurement: 3 meter

### Parallel



#### Final Result

| No. | Frequency | Reading         | c.f        | Result            | Limit             | Margin     | Angle | Remark |
|-----|-----------|-----------------|------------|-------------------|-------------------|------------|-------|--------|
|     | [MHz]     | QP<br>[dB (μV)] | [dB (1/m)] | QP<br>[dB (μV/m)] | QP<br>[dB (μV/m)] | QP<br>[dB] | [deg] |        |
| 1   | 0.125     | 55.6            | 19.9       | 75.5              | 105.7             | 30.2       | 0.0   |        |
| 2   | 0.384     | 34.5            | 19.9       | 54.4              | 95.9              | 41.5       | 0.0   |        |
| 3   | 0.508     | 26.4            | 20.1       | 46.5              | 73.5              | 27.0       | 0.0   |        |

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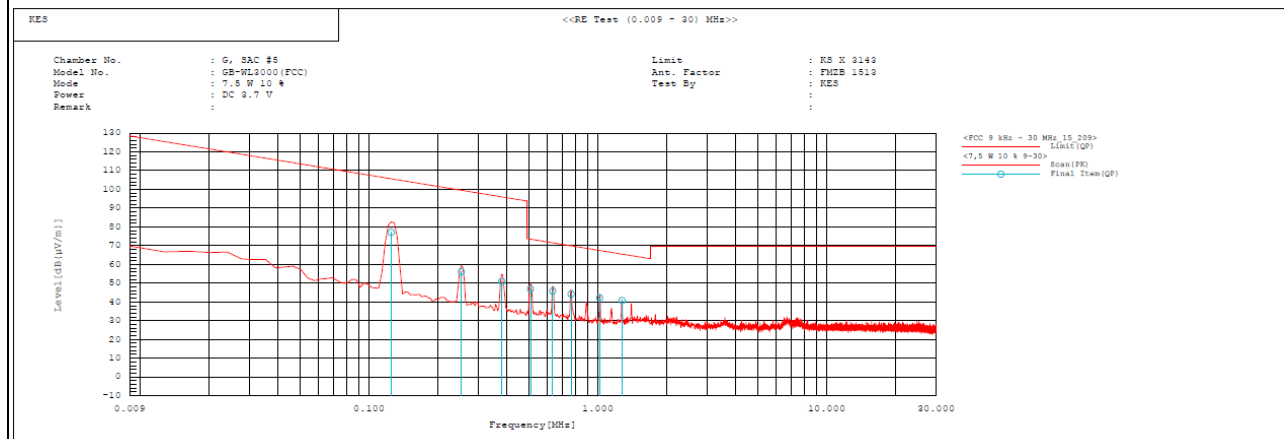
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Mode: 7.5 W // 10 % charger

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading  | c.f        | Result      | Limit       | Margin | Angle | Remark |
|-----|-----------|----------|------------|-------------|-------------|--------|-------|--------|
|     | [MHz]     | [dB(μV)] | [dB (1/m)] | [dB (μV/m)] | [dB (μV/m)] | [dB]   | [deg] |        |
| 1   | 0.125     | 57.2     | 19.9       | 77.1        | 105.7       | 28.6   | 0.0   |        |
| 2   | 0.253     | 36.4     | 19.7       | 56.1        | 99.5        | 43.4   | 310.0 |        |
| 3   | 0.380     | 31.0     | 19.9       | 50.9        | 96.0        | 45.1   | 332.5 |        |
| 4   | 0.508     | 26.8     | 20.1       | 46.9        | 73.5        | 26.6   | 0.0   |        |
| 5   | 0.635     | 25.4     | 20.4       | 45.8        | 71.6        | 25.8   | 0.0   |        |
| 6   | 0.763     | 23.6     | 20.6       | 44.2        | 70.0        | 25.8   | 0.0   |        |
| 7   | 1.017     | 21.4     | 20.9       | 42.3        | 67.5        | 25.2   | 332.5 |        |
| 8   | 1.276     | 19.9     | 20.9       | 40.8        | 65.5        | 24.7   | 0.0   |        |

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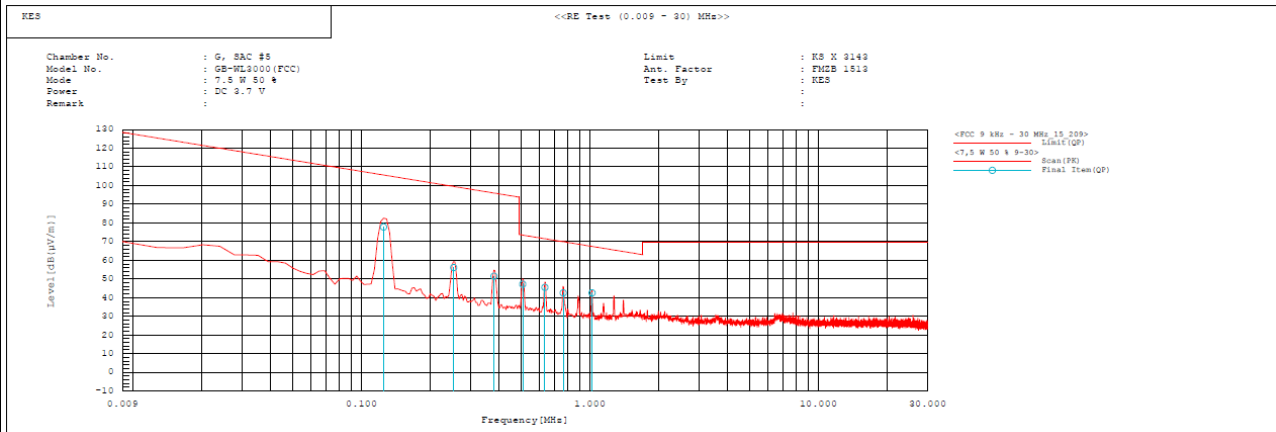
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Mode: 7.5 W // 50 % charger

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency<br>[MHz] | Reading<br>QP<br>[dB(μV)] | c.f<br>[dB(1/m)] | Result<br>QP<br>[dB(μV/m)] | Limit<br>QP<br>[dB(μV/m)] | Margin<br>QP<br>[dB] | Angle<br>[deg] | Remark |
|-----|--------------------|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|--------|
| 1   | 0.125              | 57.9                      | 19.9             | 77.8                       | 105.7                     | 27.9                 | 0.1            |        |
| 2   | 0.253              | 36.4                      | 19.7             | 56.1                       | 99.5                      | 43.4                 | 0.1            |        |
| 3   | 0.380              | 31.6                      | 19.9             | 51.5                       | 96.0                      | 44.5                 | 0.1            |        |
| 4   | 0.508              | 27.1                      | 20.1             | 47.2                       | 73.5                      | 26.3                 | 26.3           |        |
| 5   | 0.635              | 25.1                      | 20.4             | 45.5                       | 71.6                      | 26.1                 | 201.7          |        |
| 6   | 0.763              | 22.0                      | 20.6             | 42.6                       | 70.0                      | 27.4                 | 4.6            |        |
| 7   | 1.021              | 21.7                      | 20.9             | 42.6                       | 67.4                      | 24.8                 | 0.1            |        |

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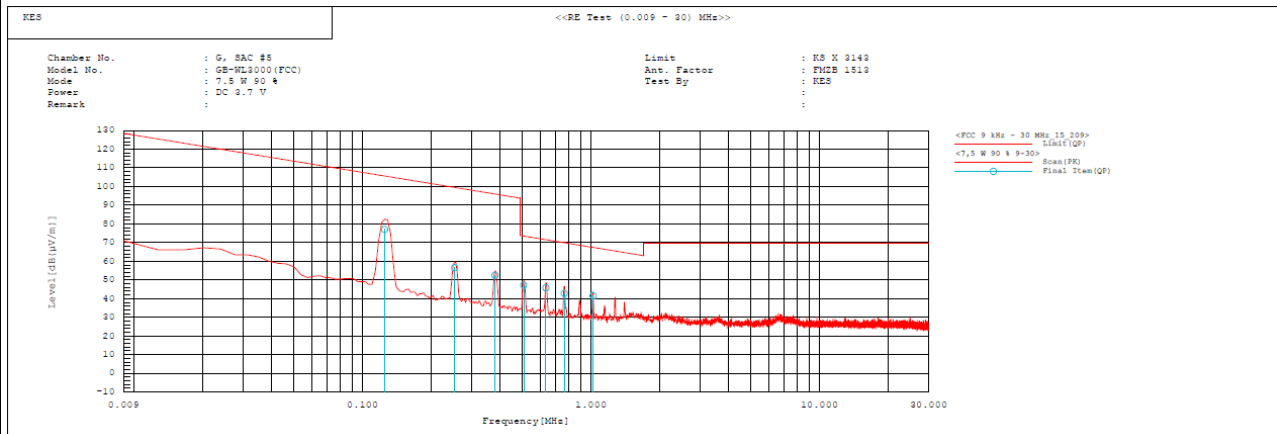
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Mode: 7.5 W // 90 % charge

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading        | c.f       | Result           | Limit            | Margin     | Angle | Remark |
|-----|-----------|----------------|-----------|------------------|------------------|------------|-------|--------|
|     | [MHz]     | QP<br>[dB(μV)] | [dB(1/m)] | QP<br>[dB(μV/m)] | QP<br>[dB(μV/m)] | QP<br>[dB] | [deg] |        |
| 1   | 0.125     | 57.1           | 19.9      | 77.0             | 105.7            | 28.7       | 333.1 |        |
| 2   | 0.253     | 36.9           | 19.7      | 56.6             | 99.5             | 42.9       | 312.7 |        |
| 3   | 0.380     | 32.6           | 19.9      | 52.5             | 96.0             | 43.5       | 359.9 |        |
| 4   | 0.508     | 27.1           | 20.1      | 47.2             | 73.5             | 26.3       | 359.9 |        |
| 5   | 0.635     | 25.4           | 20.4      | 45.8             | 71.6             | 25.8       | 359.9 |        |
| 6   | 0.763     | 22.3           | 20.6      | 42.9             | 70.0             | 27.1       | 353.9 |        |
| 7   | 1.021     | 20.7           | 20.9      | 41.6             | 67.4             | 25.8       | 359.9 |        |

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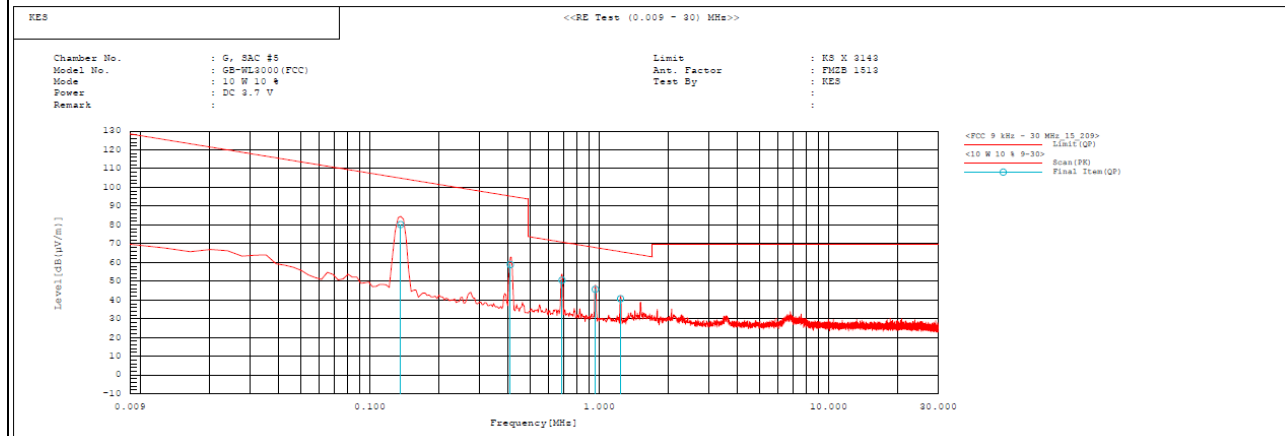
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Mode: 10 W // 10 % charger

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading  | c.f        | Result      | Limit       | Margin | Angle | Remark |
|-----|-----------|----------|------------|-------------|-------------|--------|-------|--------|
|     | [MHz]     | [dB(μV)] | [dB (1/m)] | [dB (μV/m)] | [dB (μV/m)] | [dB]   | [deg] |        |
| 1   | 0.136     | 60.3     | 19.9       | 80.2        | 104.9       | 24.7   | 0.1   |        |
| 2   | 0.410     | 38.9     | 20.0       | 58.9        | 95.3        | 36.4   | 0.1   |        |
| 3   | 0.688     | 30.1     | 20.5       | 50.6        | 70.9        | 20.3   | 5.4   |        |
| 4   | 0.961     | 24.8     | 20.9       | 45.7        | 68.0        | 22.3   | 0.1   |        |
| 5   | 1.239     | 19.8     | 20.9       | 40.7        | 65.8        | 25.1   | 25.5  |        |

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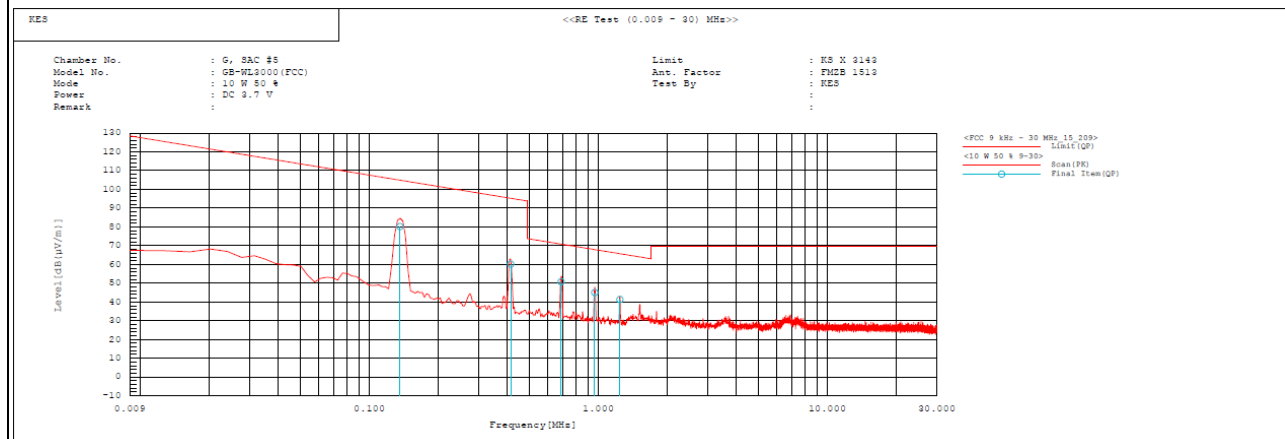
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KES-RF-23T0089  
Page ( 18 ) of ( 34 )

Mode: 10 W // 50 % charger

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading    | c.f         | Result       | Limit        | Margin | Angle | Remark |
|-----|-----------|------------|-------------|--------------|--------------|--------|-------|--------|
|     | [MHz]     | QP         |             | QP           | QP           | QP     |       |        |
|     |           | [dB (μV) ] | [dB (1/m) ] | [dB (μV/m) ] | [dB (μV/m) ] | [dB]   | [deg] |        |
| 1   | 0.136     | 60.3       | 19.9        | 80.2         | 104.9        | 24.7   | 0.0   |        |
| 2   | 0.414     | 40.2       | 20.0        | 60.2         | 95.3         | 35.1   | 0.0   |        |
| 3   | 0.688     | 30.3       | 20.5        | 50.8         | 70.9         | 20.1   | 0.0   |        |
| 4   | 0.965     | 24.1       | 20.9        | 45.0         | 67.9         | 22.9   | 0.0   |        |
| 5   | 1.242     | 20.5       | 20.9        | 41.4         | 65.7         | 24.3   | 0.0   |        |

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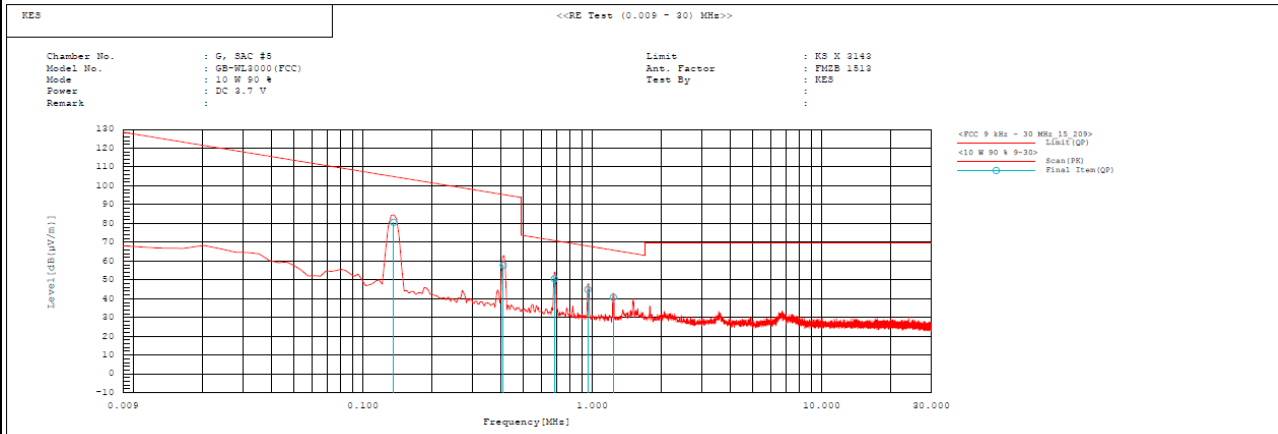
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Mode: 10 W // 90 % charge

Distance of measurement: 3 meter

### Parallel



### Final Result

| No. | Frequency | Reading    | c.f         | Result       | Limit        | Margin | Angle | Remark |
|-----|-----------|------------|-------------|--------------|--------------|--------|-------|--------|
|     | [MHz]     | [dB (μV) ] | [dB (1/m) ] | [dB (μV/m) ] | [dB (μV/m) ] | [dB]   | [deg] |        |
| 1   | 0.136     | 60.7       | 19.9        | 80.6         | 104.9        | 24.3   | 0.0   |        |
| 2   | 0.410     | 37.8       | 20.0        | 57.8         | 95.3         | 37.5   | 8.0   |        |
| 3   | 0.684     | 30.1       | 20.5        | 50.6         | 70.9         | 20.3   | 28.3  |        |
| 4   | 0.957     | 24.0       | 20.9        | 44.9         | 68.0         | 23.1   | 336.6 |        |
| 5   | 1.235     | 19.9       | 20.9        | 40.8         | 65.8         | 25.0   | 8.0   |        |

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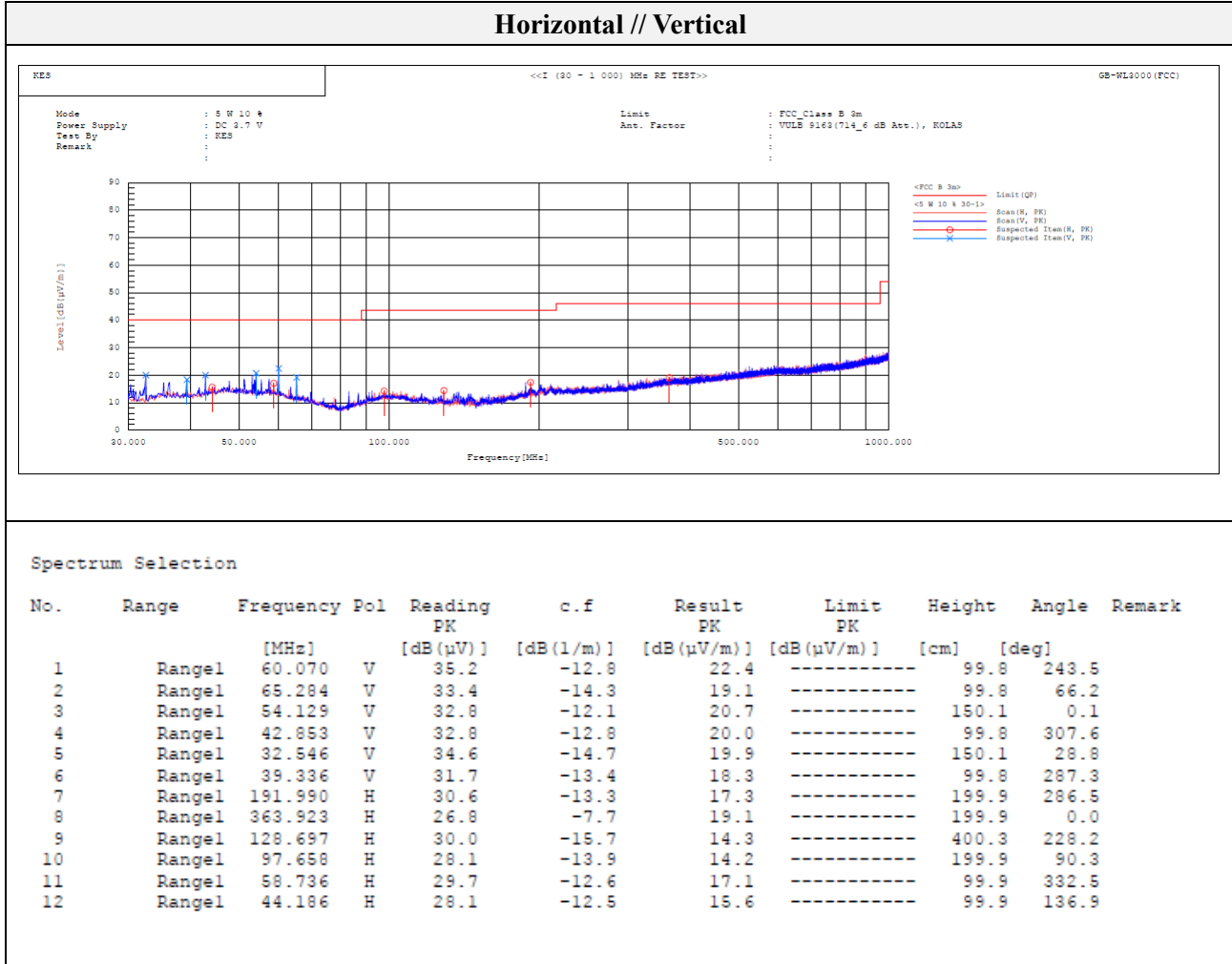
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### Test results (Below 1 000 MHz)

Mode: 5 W // 10 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



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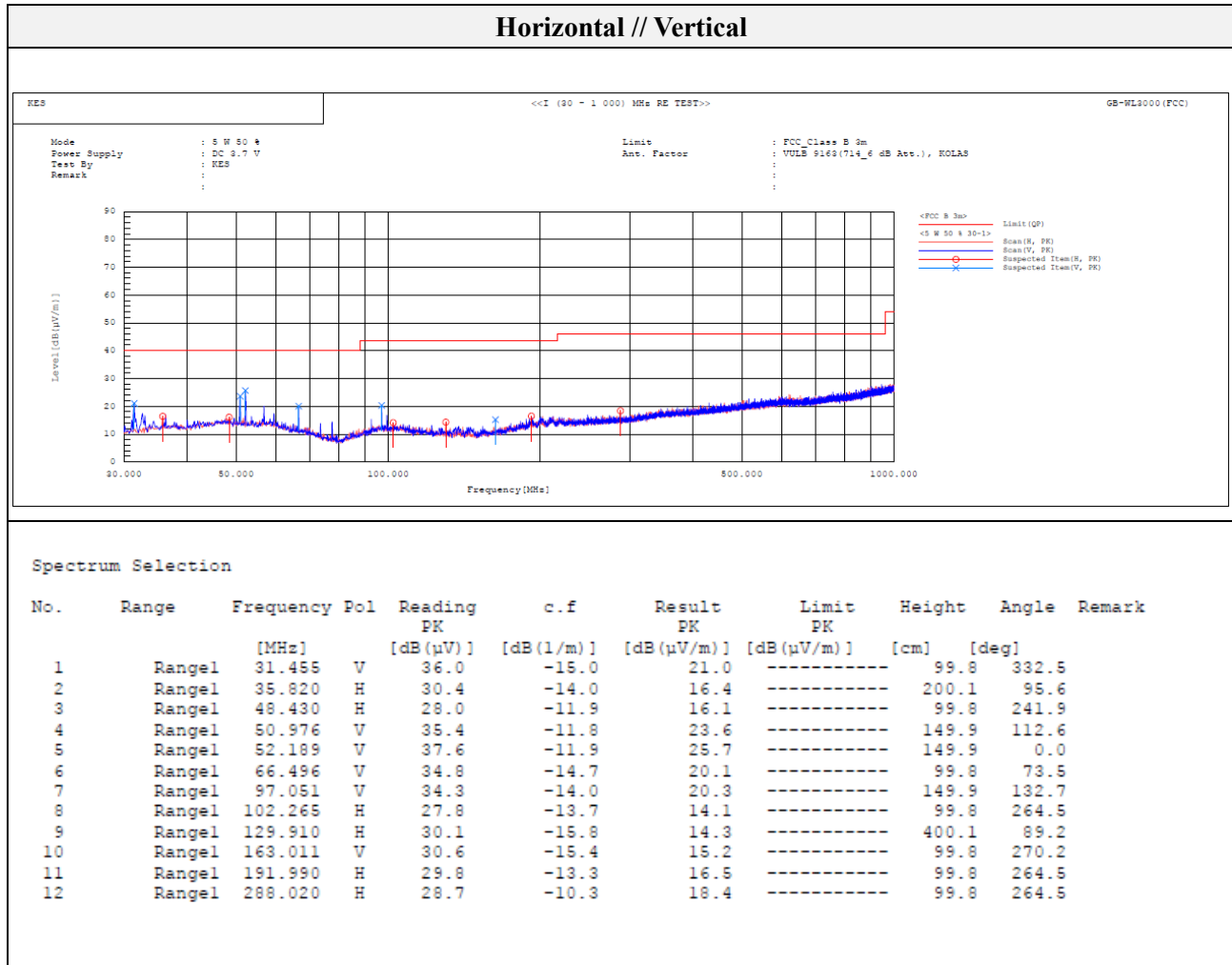
3701, 40, Simin-daero 365beon-gil,  
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Mode: 5 W // 50 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



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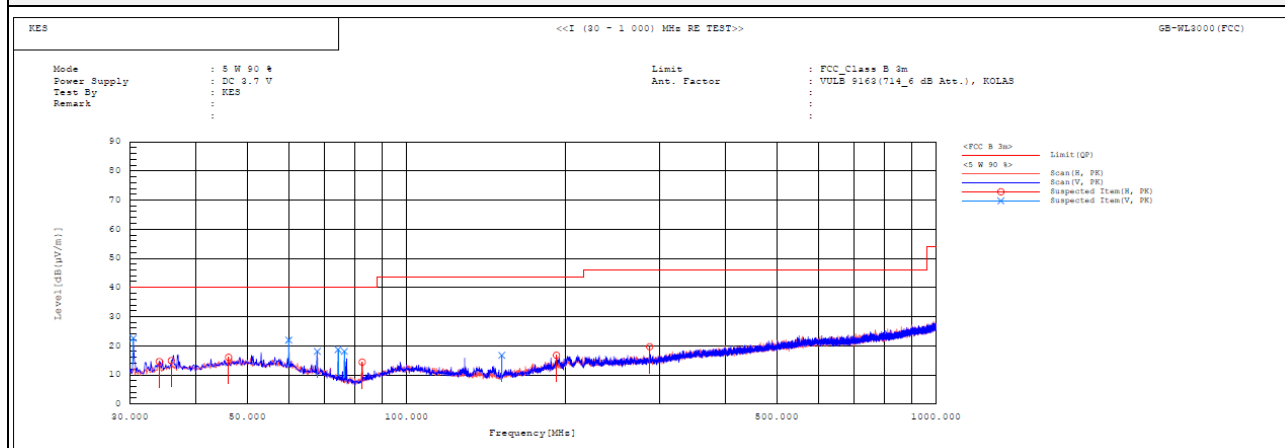
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Mode: 5 W // 90 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



### Spectrum Selection

| No. | Range  | Frequency | Pol | Reading   | c.f        | Result      | Limit       | Height | Angle | Remark |
|-----|--------|-----------|-----|-----------|------------|-------------|-------------|--------|-------|--------|
|     |        | [MHz]     |     | PK        |            | PK          | PK          |        |       |        |
|     |        |           |     | [dB (μV)] | [dB (l/m)] | [dB (μV/m)] | [dB (μV/m)] | [cm]   | [deg] |        |
| 1   | Range1 | 30.485    | V   | 37.8      | -15.2      | 22.6        | -----       | 99.8   | 246.2 |        |
| 2   | Range1 | 34.123    | H   | 28.9      | -14.4      | 14.5        | -----       | 400.2  | 270.2 |        |
| 3   | Range1 | 35.941    | H   | 28.8      | -14.0      | 14.8        | -----       | 99.8   | 206.0 |        |
| 4   | Range1 | 46.126    | H   | 28.2      | -12.2      | 16.0        | -----       | 99.8   | 160.9 |        |
| 5   | Range1 | 59.949    | V   | 34.8      | -12.8      | 22.0        | -----       | 150.1  | 226.9 |        |
| 6   | Range1 | 67.830    | V   | 33.2      | -15.1      | 18.1        | -----       | 150.1  | 0.0   |        |
| 7   | Range1 | 74.256    | V   | 35.5      | -16.9      | 18.6        | -----       | 150.1  | 11.5  |        |
| 8   | Range1 | 76.318    | V   | 35.6      | -17.5      | 18.1        | -----       | 99.8   | 67.6  |        |
| 9   | Range1 | 82.501    | H   | 32.1      | -17.7      | 14.4        | -----       | 199.8  | 349.5 |        |
| 10  | Range1 | 151.371   | V   | 33.0      | -16.4      | 16.6        | -----       | 99.8   | 200.2 |        |
| 11  | Range1 | 191.990   | H   | 30.0      | -13.3      | 16.7        | -----       | 99.8   | 160.9 |        |
| 12  | Range1 | 288.020   | H   | 29.9      | -10.3      | 19.6        | -----       | 99.8   | 119.0 |        |

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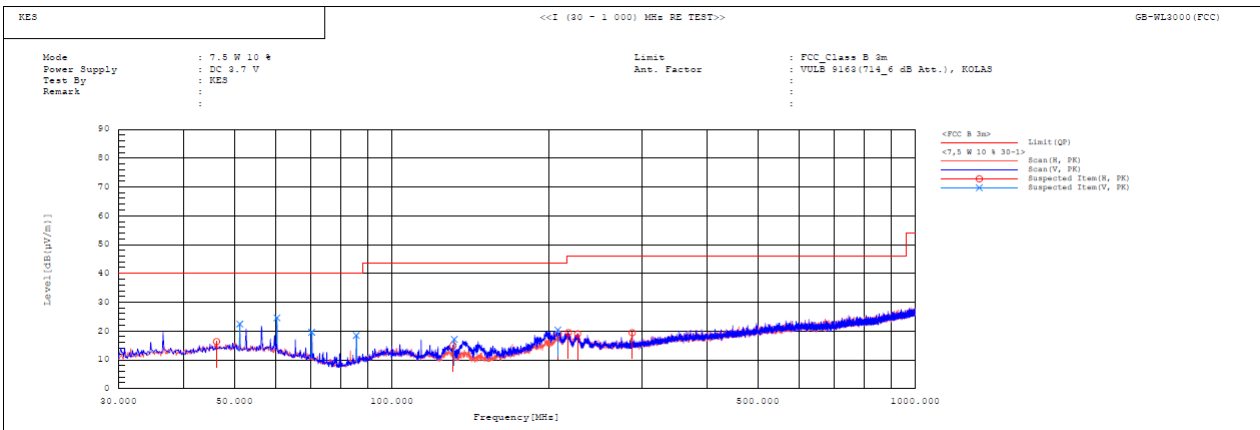
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Mode: 7.5 W // 10 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



### Spectrum Selection

| No. | Range  | Frequency [MHz] | Pol | Reading PK [dB(μV)] | c.f [dB(1/m)] | Result PK [dB(μV/m)] | Limit PK [dB(μV/m)] | Height [cm] | Angle [deg] | Remark |
|-----|--------|-----------------|-----|---------------------|---------------|----------------------|---------------------|-------------|-------------|--------|
| 1   | Rangel | 46.248          | H   | 28.5                | -12.2         | 16.3                 | -----               | 99.9        | 133.7       |        |
| 2   | Rangel | 51.219          | V   | 34.2                | -11.8         | 22.4                 | -----               | 99.8        | 337.2       |        |
| 3   | Rangel | 60.313          | V   | 37.5                | -12.9         | 24.6                 | -----               | 99.8        | 181.1       |        |
| 4   | Rangel | 70.255          | V   | 35.3                | -15.7         | 19.6                 | -----               | 149.8       | 222.7       |        |
| 5   | Rangel | 85.833          | V   | 35.1                | -16.7         | 18.4                 | -----               | 99.8        | 271.3       |        |
| 6   | Rangel | 130.880         | H   | 30.7                | -15.8         | 14.9                 | -----               | 200.2       | 139.9       |        |
| 7   | Rangel | 131.608         | V   | 33.0                | -15.9         | 17.1                 | -----               | 149.8       | 109.2       |        |
| 8   | Rangel | 207.510         | V   | 32.9                | -12.5         | 20.4                 | -----               | 99.8        | 271.3       |        |
| 9   | Rangel | 208.116         | H   | 31.6                | -12.5         | 19.1                 | -----               | 400.3       | 177.7       |        |
| 10  | Rangel | 217.574         | H   | 31.6                | -12.1         | 19.5                 | -----               | 400.3       | 154.6       |        |
| 11  | Rangel | 226.425         | H   | 30.8                | -11.8         | 19.0                 | -----               | 400.3       | 359.9       |        |
| 12  | Rangel | 288.020         | H   | 29.7                | -10.3         | 19.4                 | -----               | 99.9        | 245.3       |        |

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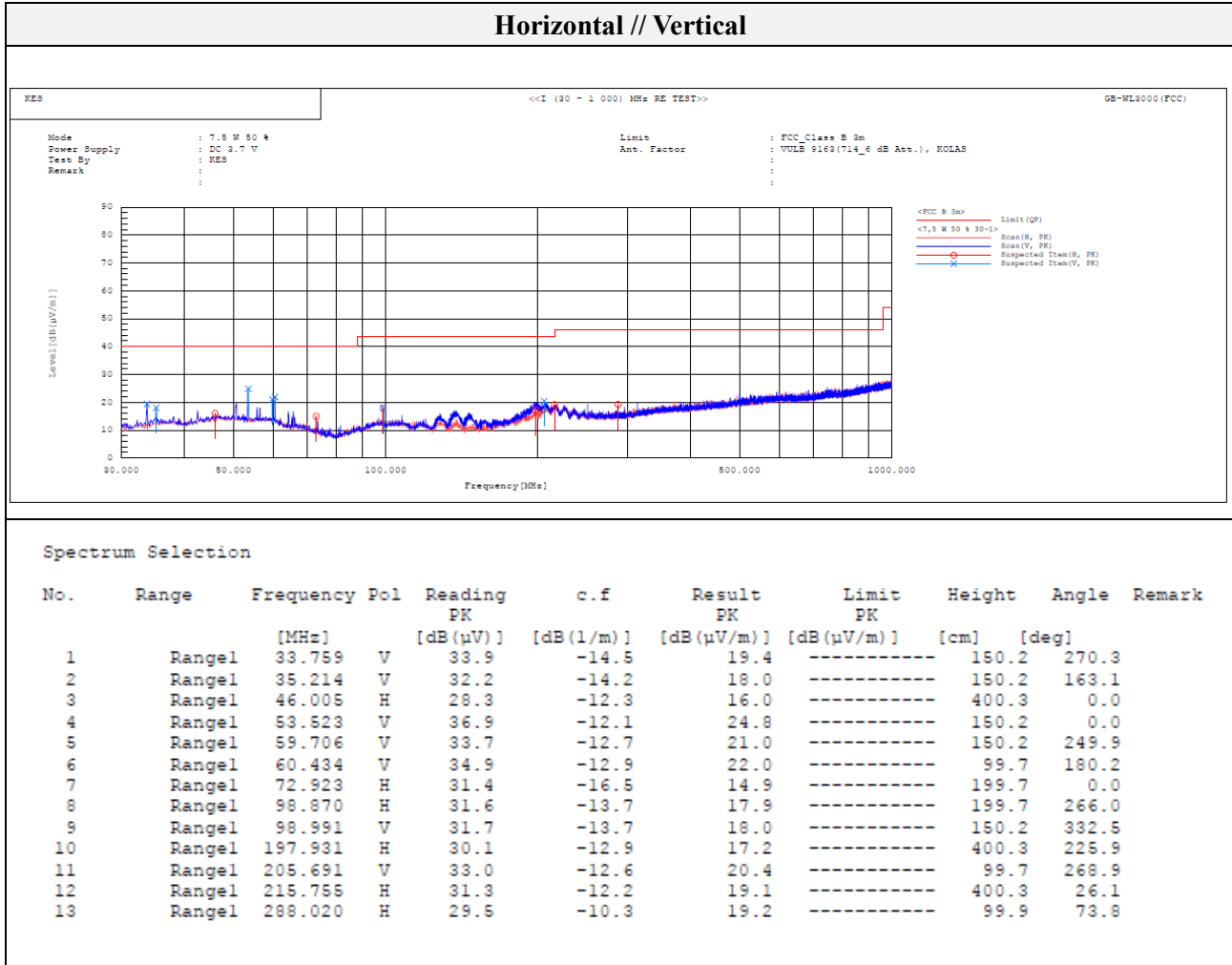
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Mode: 7.5 W // 50 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



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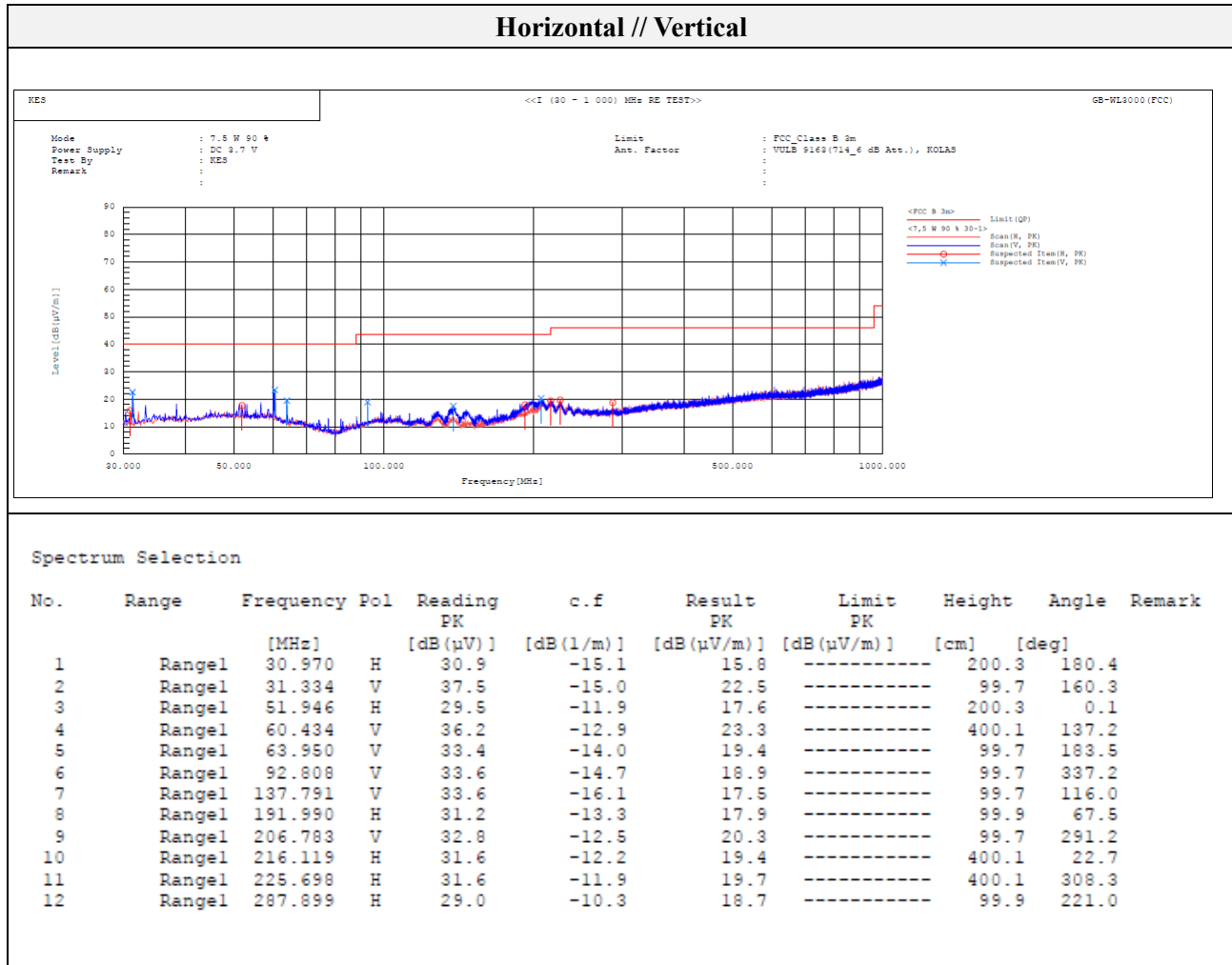
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Mode: 7.5 W // 90 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



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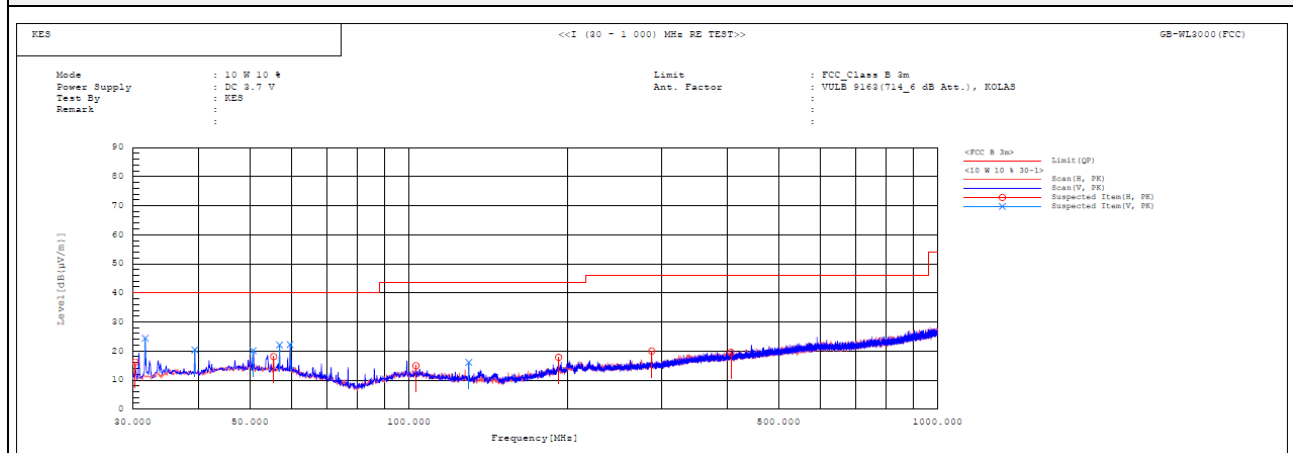
3701, 40, Simin-daero 365beon-gil,  
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Mode: 10 W // 10 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



### Spectrum Selection

| No. | Range  | Frequency [MHz] | Pol | Reading PK [dB(μV)] | c.f [dB(1/m)] | Result PK [dB(μV/m)] | Limit PK [dB(μV/m)] | Height [cm] | Angle [deg] | Remark |
|-----|--------|-----------------|-----|---------------------|---------------|----------------------|---------------------|-------------|-------------|--------|
| 1   | Range1 | 30.364          | H   | 31.4                | -15.2         | 16.2                 | -----               | 400.2       | 73.8        |        |
| 2   | Range1 | 31.698          | V   | 39.3                | -14.9         | 24.4                 | -----               | 99.8        | 244.8       |        |
| 3   | Range1 | 39.336          | V   | 33.7                | -13.4         | 20.3                 | -----               | 99.8        | 22.9        |        |
| 4   | Range1 | 50.734          | V   | 31.9                | -11.8         | 20.1                 | -----               | 150.3       | 0.0         |        |
| 5   | Range1 | 55.463          | H   | 30.4                | -12.3         | 18.1                 | -----               | 400.2       | 314.6       |        |
| 6   | Range1 | 56.918          | V   | 34.5                | -12.4         | 22.1                 | -----               | 99.8        | 222.5       |        |
| 7   | Range1 | 59.585          | V   | 34.9                | -12.7         | 22.2                 | -----               | 150.3       | 332.3       |        |
| 8   | Range1 | 103.114         | H   | 28.7                | -13.8         | 14.9                 | -----               | 199.9       | 359.9       |        |
| 9   | Range1 | 129.789         | V   | 31.9                | -15.8         | 16.1                 | -----               | 99.8        | 333.9       |        |
| 10  | Range1 | 191.990         | H   | 31.1                | -13.3         | 17.8                 | -----               | 199.9       | 69.1        |        |
| 11  | Range1 | 288.020         | H   | 30.3                | -10.3         | 20.0                 | -----               | 99.8        | 137.0       |        |
| 12  | Range1 | 406.481         | H   | 26.6                | -7.1          | 19.5                 | -----               | 400.2       | 229.1       |        |

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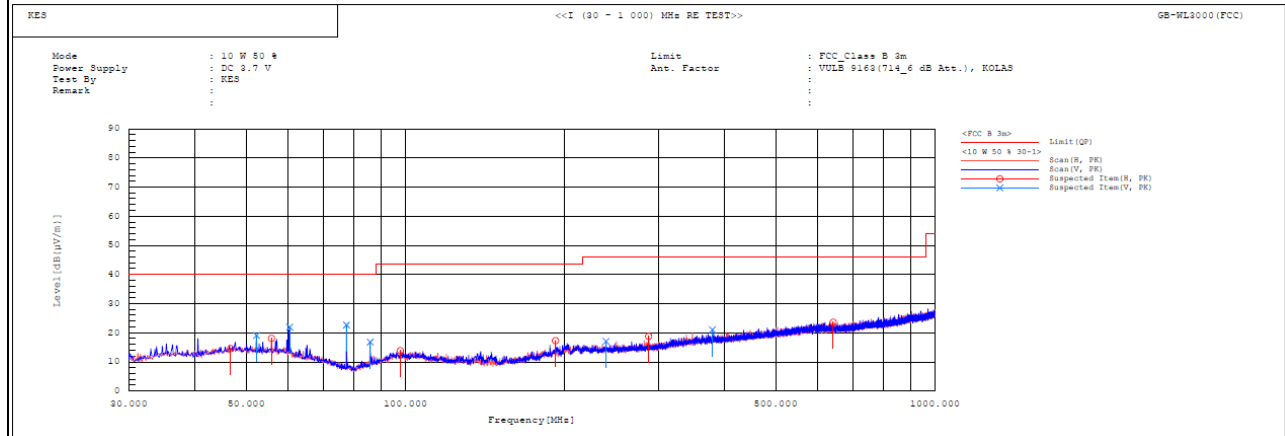
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Mode: 10 W // 50 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



### Spectrum Selection

| No. | Range  | Frequency [MHz] | Pol | Reading PK [dB(μV)] | c.f [dB(l/m)] | Result PK [dB(μV/m)] | Limit PK [dB(μV/m)] | Height [cm] | Angle [deg] | Remark |
|-----|--------|-----------------|-----|---------------------|---------------|----------------------|---------------------|-------------|-------------|--------|
| 1   | Range1 | 46.733          | H   | 26.7                | -12.1         | 14.6                 | -----               | 99.7        | 221.3       |        |
| 2   | Range1 | 52.310          | V   | 31.0                | -11.9         | 19.1                 | -----               | 99.8        | 225.2       |        |
| 3   | Range1 | 55.826          | H   | 30.4                | -12.3         | 18.1                 | -----               | 400.3       | 114.6       |        |
| 4   | Range1 | 60.434          | V   | 34.8                | -12.9         | 21.9                 | -----               | 99.8        | 225.2       |        |
| 5   | Range1 | 77.409          | V   | 40.5                | -17.8         | 22.7                 | -----               | 99.8        | 292.3       |        |
| 6   | Range1 | 85.775          | V   | 33.4                | -16.6         | 16.8                 | -----               | 99.8        | 182.7       |        |
| 7   | Range1 | 97.779          | H   | 27.8                | -13.9         | 13.9                 | -----               | 400.3       | 70.1        |        |
| 8   | Range1 | 191.990         | H   | 30.6                | -13.3         | 17.3                 | -----               | 99.7        | 89.1        |        |
| 9   | Range1 | 239.278         | V   | 28.5                | -11.4         | 17.1                 | -----               | 400.3       | 48.9        |        |
| 10  | Range1 | 288.020         | H   | 29.1                | -10.3         | 18.8                 | -----               | 99.7        | 67.4        |        |
| 11  | Range1 | 379.806         | V   | 28.5                | -7.5          | 21.0                 | -----               | 99.8        | 332.4       |        |
| 12  | Range1 | 642.555         | H   | 27.3                | -3.7          | 23.6                 | -----               | 400.3       | 355.2       |        |

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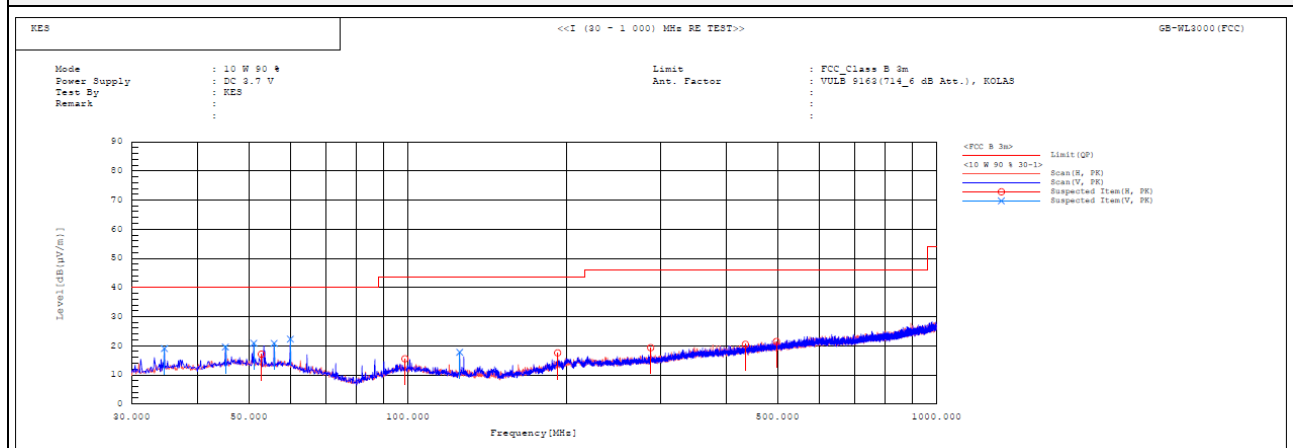
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Mode: 10 W // 90 % charge

Distance of measurement: 3 meter

### Horizontal // Vertical



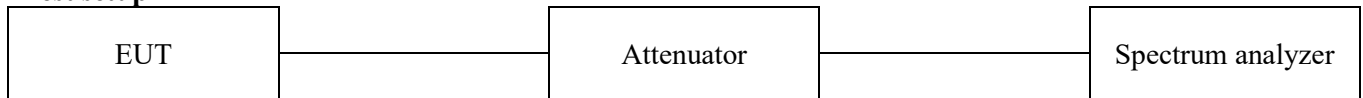
### Spectrum Selection

| No. | Range  | Frequency [MHz] | Pol | Reading PK [dB(μV)] | c.f [dB (1/m)] | Result PK [dB(μV/m)] | Limit PK [dB(μV/m)] | Height [cm] | Angle [deg] | Remark |
|-----|--------|-----------------|-----|---------------------|----------------|----------------------|---------------------|-------------|-------------|--------|
| 1   | Range1 | 34.608          | V   | 33.3                | -14.3          | 19.0                 | -----               | 150.3       | 269.9       |        |
| 2   | Range1 | 45.156          | V   | 31.9                | -12.4          | 19.5                 | -----               | 99.8        | 156.8       |        |
| 3   | Range1 | 51.098          | V   | 32.7                | -11.8          | 20.9                 | -----               | 150.3       | 74.4        |        |
| 4   | Range1 | 52.795          | H   | 29.1                | -12.0          | 17.1                 | -----               | 99.7        | 313.7       |        |
| 5   | Range1 | 55.826          | V   | 33.1                | -12.3          | 20.8                 | -----               | 400.1       | 201.2       |        |
| 6   | Range1 | 59.949          | V   | 35.0                | -12.8          | 22.2                 | -----               | 99.8        | 0.0         |        |
| 7   | Range1 | 98.749          | H   | 29.2                | -13.7          | 15.5                 | -----               | 199.9       | 223.4       |        |
| 8   | Range1 | 125.303         | V   | 33.3                | -15.6          | 17.7                 | -----               | 99.8        | 288.1       |        |
| 9   | Range1 | 191.990         | H   | 30.9                | -13.3          | 17.6                 | -----               | 99.7        | 49.5        |        |
| 10  | Range1 | 288.020         | H   | 29.6                | -10.3          | 19.3                 | -----               | 99.7        | 269.4       |        |
| 11  | Range1 | 435.218         | H   | 27.0                | -6.5           | 20.5                 | -----               | 99.7        | 139.1       |        |
| 12  | Range1 | 498.025         | H   | 26.8                | -5.4           | 21.4                 | -----               | 400.1       | 27.5        |        |

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### 3.2. 20 dB Bandwidth

#### Test setup



#### Test procedures

The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the emission bandwidth. The VBW is set to  $\geq$ RBW. The sweep time is coupled.

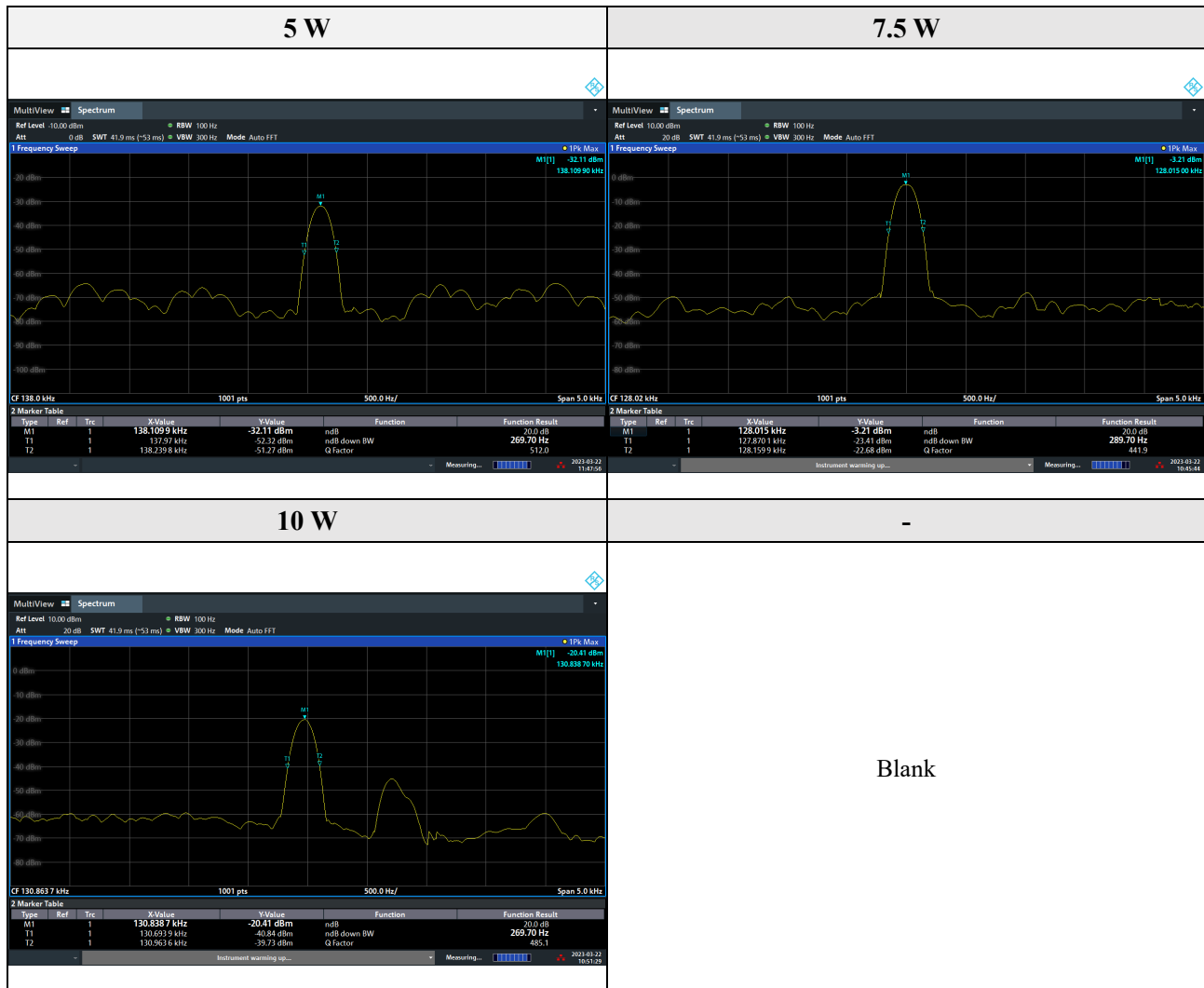
#### Limit

None; for reporting purposes only.



## Test results

| Test Mode | Frequency(MHz) | Measured bandwidth(kHz) |
|-----------|----------------|-------------------------|
| 5 W       | 0.138          | 0.270                   |
| 7.5 W     | 0.128          | 0.290                   |
| 10 W      | 0.131          | 0.270                   |



## Note.

Because the measured signal is CW/CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

### 3.3. AC conducted emissions

#### Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall be on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

| Frequency of Emission (MHz) | Conducted limit (dBμV) |          |
|-----------------------------|------------------------|----------|
|                             | Quasi-peak             | Average  |
| 0.15 – 0.50                 | 66 - 56*               | 56 - 46* |
| 0.50 – 5.00                 | 56                     | 46       |
| 5.00 – 30.0                 | 60                     | 50       |



## Test results

Mode: 10 W // 90 % charge  
(Worst Case)



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Page ( 33 ) of ( 34 )

**Appendix A. Measurement equipment**

| Equipment                    | Manufacturer      | Model       | Serial No. | Calibration interval | Calibration due.         |
|------------------------------|-------------------|-------------|------------|----------------------|--------------------------|
| Spectrum Analyzer            | R&S               | FSV3044     | 101272     | 1 year               | 2024.03.16               |
| SIGNAL GENERATOR             | KEYSIGHT          | N5182B      | MY59100115 | 1 year               | 2023.04.27<br>2024.04.19 |
| Loop Antenna                 | Schwarzbeck       | FMZB1513    | 225        | 2 years              | 2025.01.16               |
| TRILOG-BROADBAND ANTENNA     | VULB9163          | Schwarzbeck | 714        | 2 years              | 2024.04.19               |
| Attenuator                   | HUBER+SUHNER      | 6806.17.A   | -          | 1 year               | 2024.03.21               |
| Amplifier                    | SONOMA INSTRUMENT | 310N        | 186549     | 1 year               | 2024.03.21               |
| EMI Test Receiver            | R&S               | ESU26       | 100517     | 1 year               | 2023.08.01               |
| AC POWER SOURCE/<br>ANALYZER | HP                | 6813A       | 3729A00754 | 1 year               | 2024.01.12               |
| LISN                         | ENV216            | R & S       | 101787     | 1 year               | 2023.11.10               |
| EMI TEST RECEIVER            | ESR3              | R & S       | 101783     | 1 year               | 2023.11.11               |
| PULSE LIMITER                | ESH3-Z2           | R & S       | 101915     | 1 year               | 2023.11.10               |

**Peripheral device**

| Device   | Manufacturer | Model No. | S/N | Note |
|----------|--------------|-----------|-----|------|
| Test Jig | -            | -         | -   | -    |

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