



# **CERTIFICATION TEST REPORT**

**Report Number. :** 4790019735-FR3V2

**Applicant :** SEGI LIMITED  
UNIT S, 3-F, HARIBEST INDUSTRIAL BUILDING,  
45-47, AU PUI WAN STREET, SHATIN, NT, HONGKONG

**Model :** 1WS1R-FM

**FCC ID :** VA5REL300-1WFX

**IC :** 7087A-1WREL300FX

**EUT Description :** Keyless Entry System

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C

**Date Of Issue:**

2021-09-06

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ACCREDITED

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**TL-637**

Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u>                 | <u>Revised By</u> |
|-------------|-------------------|----------------------------------|-------------------|
| V1          | 2021-08-30        | Initial issue                    | Hyunsik Yun       |
| V2          | 2021-09-06        | Updated about the TCB's question | Hyunsik Yun       |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SEGI LIMITED  
**EUT DESCRIPTION:** Keyless Entry System  
**MODEL NUMBER:** 1WS1R-FM  
**SERIAL NUMBER:** Identical prototype  
**DATE TESTED:** 2021-07-10 ~ 2021-07-21;

| APPLICABLE STANDARDS                          |              |
|---|--------------|
| STANDARD                                      | TEST RESULTS |
| CFR 47 Part 15 Subpart C<br>RSS-GEN / RSS-210 | Complies     |

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
UL Korea, Ltd. By:



Junwhan Lee  
Suwon Lab Engineer  
UL Korea, Ltd.

Tested By:



Hyunsik Yun  
Suwon Lab Engineer  
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## 2. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.231
3. IC RSS-GEN Issue 5
4. IC RSS-210 Issue 10
5. ANSI C63.10-2013.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 218 Maeyeong-ro                     |           |
|-------------------------------------|-----------|
| <input type="checkbox"/>            | Chamber 1 |
| <input checked="" type="checkbox"/> | Chamber 2 |
| <input type="checkbox"/>            | Chamber 3 |

Used ISED Test Site Reg.(company number): 2324L  
CAB Identifier: KR0161

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 28.9 \text{ dBuV/m} &= 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.01 dB     |
| Radiated Disturbance, 9 kHz to 30 MHz | 1.72 dB     |
| Radiated Disturbance, 30 MHz to 1 GHz | 4.26 dB     |
| Radiated Disturbance, 1 GHz to 18 GHz | 5.90 dB     |

Uncertainty figures are valid to a confidence level of 95%.

### 4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2007.

## 5. EQUIPMENT UNDER TEST

### 5.1. EUT DESCRIPTION

The EUT is a Keyless Entry System and operating under FCC Part 15.231 & RSS-210 Annex A

### 5.2. MAXIMUM FIELD STRENGTH

The transmitter has a maximum fundamental field strength power as follows:

| Frequency [MHz] | Maximum Fundamental field strength Power [dBuV/m] |         |
|-----------------|---|---------|
|                 | PEAK  | AVERAGE |
| 433.92          | 94.64   | 74.64   |

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**The internal antenna was Permanently attached.  
 Therefore this E.U.T Complies with the requirement of §15.203.**

The radio utilizes an internal antenna, with a maximum gain of -9.2 dBi

### 5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission was performed with the EUT set to transmit at the single frequency(433.92 MHz). Power line conducted emission was not performed since this device using un-rechargeable battery.

The fundamental and radiated spurious emission were investigated in three orthogonal orientations X,Y and Z. It was determined that below orientation was worst-case orientation for each antenna.

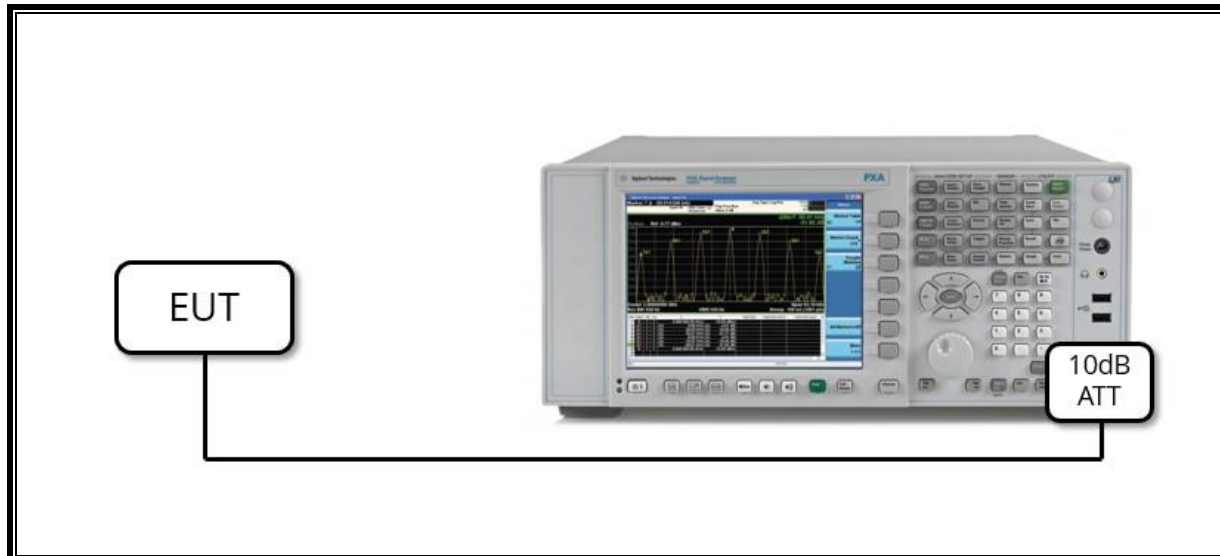
| Antenna                    | Worst Case                      |   |   |
|----------------------------|---------------------------------|---|---|
|                            | X                               | Y | Z |
| Fundamental(433.92MHz)     | -                               | O | - |
| Radiated spurious emission | Please refer to the tested data |   |   |

## 5.5. DESCRIPTION OF TEST SETUP

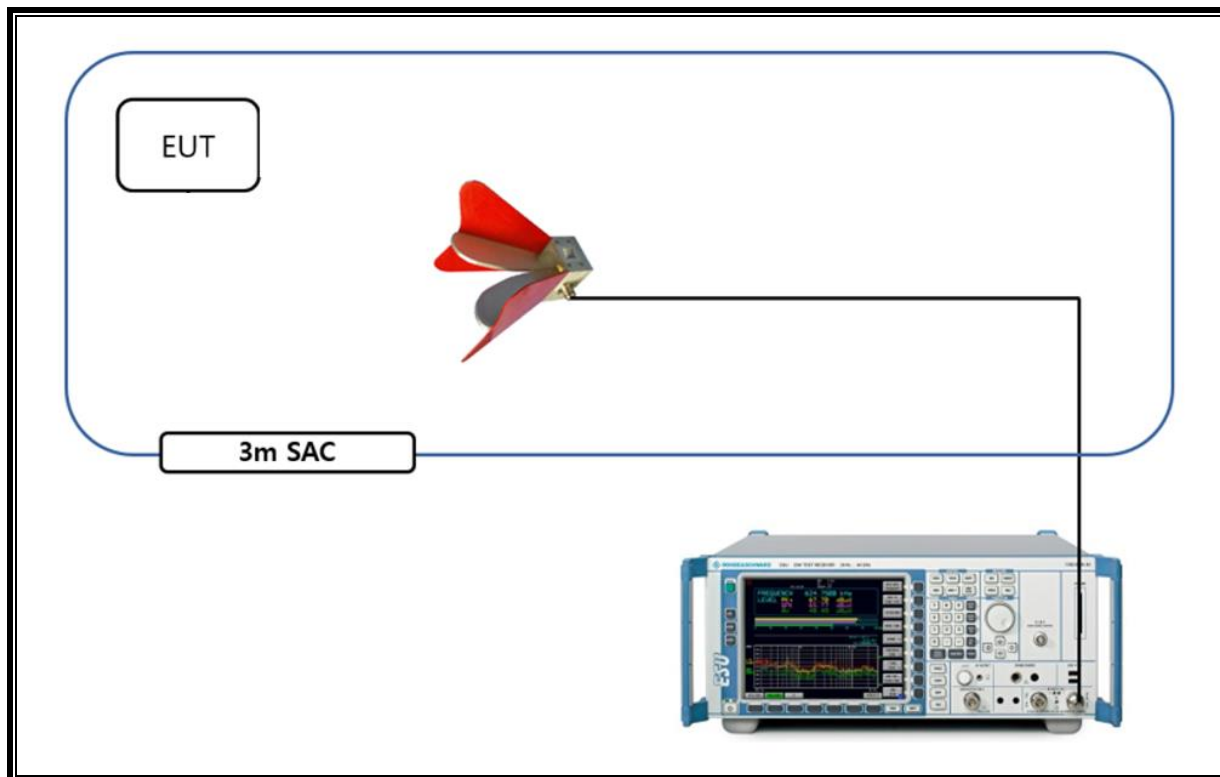
### TEST SETUP

The EUT is a stand-alone unit during the tests.

### SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



### SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)





## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List        |               |                        |            |            |
|----------------------------|---------------|------------------------|------------|------------|
| Description                | Manufacturer  | Model                  | S/N        | Cal Due    |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK   | VULB9163               | 750        | 2022-08-19 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK   | VULB9163               | 749        | 2022-08-13 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK   | VULB9163               | 845        | 2022-08-13 |
| Antenna, Horn, 18 GHz      | ETS           | 3115                   | 00167211   | 2022-07-27 |
| Antenna, Horn, 18 GHz      | ETS           | 3115                   | 00161451   | 2022-08-15 |
| Antenna, Horn, 18 GHz      | ETS           | 3117                   | 00168724   | 2022-07-27 |
| Antenna, Horn, 18 GHz      | ETS           | 3117                   | 00168717   | 2022-08-15 |
| Preamplifier               | ETS           | 3116C-PA               | 00168841   | 2021-08-06 |
| Preamplifier, 18 GHz       | Miteq         | AFS42-00101800-25-S-42 | 1876511    | 2021-08-03 |
| Preamplifier, 18 GHz       | Miteq         | AFS42-00101800-25-S-42 | 1896138    | 2021-08-03 |
| Preamplifier, 18 GHz       | Miteq         | AFS42-00101800-25-S-42 | 2029169    | 2021-08-04 |
| Spectrum Analyzer, 44 GHz  | Agilent / HP  | N9030A                 | MY54490312 | 2021-08-05 |
| Attenuator                 | PASTERNAK     | PE7087-10              | A001       | 2021-08-03 |
| Attenuator                 | PASTERNAK     | PE7087-10              | A008       | 2021-08-03 |
| Attenuator                 | PASTERNAK     | PE7004-10              | 2          | 2021-08-04 |
| Attenuator                 | PASTERNAK     | PE7087-10              | A009       | 2021-08-03 |
| Power Supply               | AGILENT       | E3640A                 | MY54226395 | 2021-08-05 |
| EMI Test Receive, 40 GHz   | R&S           | ESU40                  | 100439     | 2021-08-03 |
| EMI Test Receive, 40 GHz   | R&S           | ESU40                  | 100457     | 2021-08-03 |
| High Pass Filter 1GHz      | Micro-Tronics | HPM50115-02            | G003       | 2021-08-05 |
| Antenna, Loop, 9kHz-30MHz  | R&S           | HFH2-Z2                | 100418     | 2021-10-02 |
| UL Software                |               |                        |            |            |
| Description                | Manufacturer  | Model                  | Version    |            |
| Radiated software          | UL            | UL EMC                 | Ver 9.5    |            |

## 7. SUMMARY TABLE

| FCC Part Section | IC Section             | Test Description   | Test Limit   | Test Condition       | Test Result |
|------------------|------------------------|--|--|----------------------|-------------|
| 15.231 (c)       | -                      | 20dB bandwidth   | no wider than 0.25% of the center frequency for device       | Conducted            | PASS        |
| -                | RSS-210 [A1.3]         | Occupied bandwidth(99%)  | no wider than 0.25% of the center frequency for device       |                      | PASS        |
| 15.231 (a)(1)    | RSS-210 [A1.1]         | Automatically deactivate   | < 5s   |                      | PASS        |
| 15.231 (b)       | RSS-210 [A1.2]         | Field strength of fundamental and spurious emissions                         | Fundamental:<br>< 100.8 dBuV/m(Pk)<br>< 80.8 dBuV/m(Av)      | Radiated             | PASS        |
|                  |                        |  | Spurious emission:<br>< 80.8 dBuV/m(Pk)<br>< 60.8 dBuV/m(Av) |                      |             |
| 15.205, 15.209   | RSS-GEN [8.9] & [8.10] | General field strength limits(restricted bands and radiated emission limits) | Spurious emission:<br>< 74 dBuV/m(Pk)<br>< 54 dBuV/m(Av)     |                      | PASS        |
| 15.207 (a)       | RSS-GEN [8.8]          | AC Power Line conducted emissions  | Section 11   | Power Line conducted | N/P         |

Note. AC Power line conducted emission was not performed since this device using un-rechargeable battery.

## 8. CONDUCTED TEST RESULTS

### 8.1. 99% & 20 dB BANDWIDTH

#### LIMITS

The bandwidth of the emission shall be no wider than 0.25 % of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than

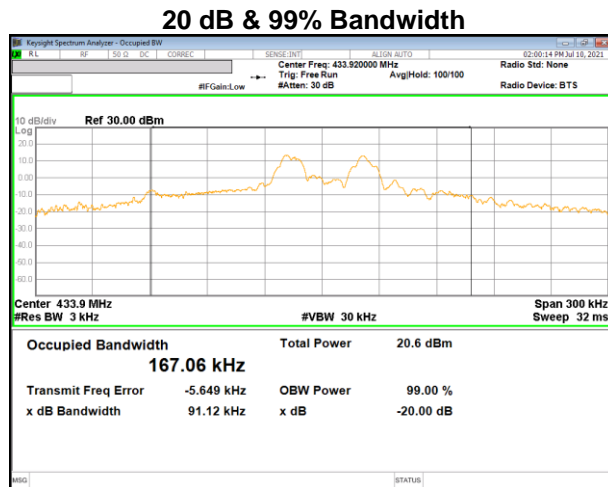
#### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 5% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### RESULTS

| Channel        | Frequency [MHz] | 20 dB Bandwidth [kHz] | 99 % Bandwidth [kHz] | Limit [kHz] |
|----------------|-----------------|-----------------------|----------------------|-------------|
| Single channel | 433.92          | 91.12                 | 167.06               | 1084.80     |

#### 20 dB & 99% BANDWIDTH PLOTS



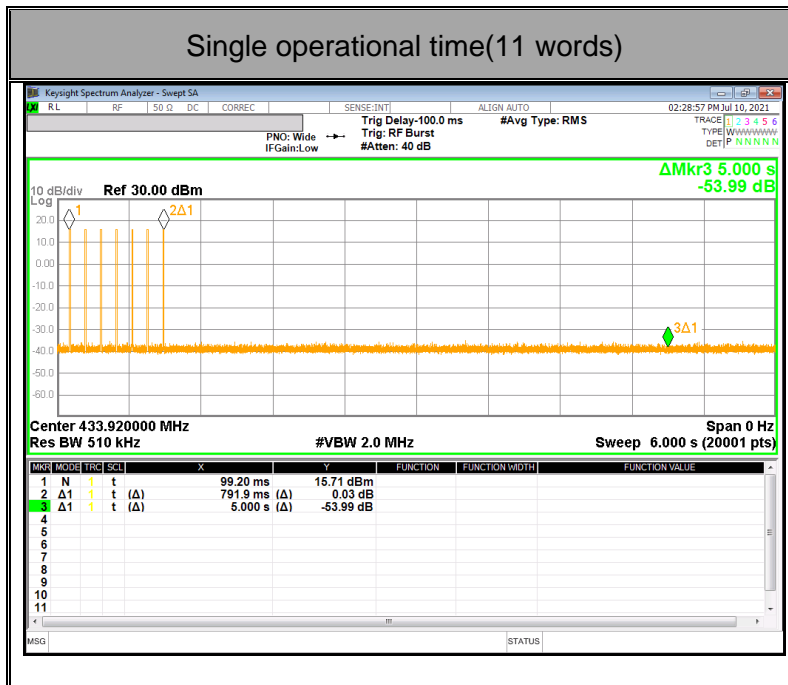
## 8.2. AUTOMATICALLY DEACTIVATE

### LIMITS

FCC §15.231 (a) & RSS-210 Annex A.1.1

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

### RESULTS



| Single operational time[s] | Limit[s] |
|----------------------------|----------|
| 0.792                      | 5        |

## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209, §15.231 (b), RSS-210 Annex A1.2

| Limits for radiated disturbance of an intentional radiator |                 |                          |
|--|-----------------|--------------------------|
| Frequency range (MHz)                                      | Limits (µV/m)   | Measurement Distance (m) |
| 0.009 – 0.490  | 2400 / F (kHz)  | 300                      |
| 0.490 – 1.705  | 24000 / F (kHz) | 30                       |
| 1.705 – 30.0   | 30              | 30                       |
| 30 – 88  | 100**           | 3                        |
| 88 - 216   | 150**           | 3                        |
| 216 – 960  | 200**           | 3                        |
| Above 960  | 500             | 3                        |

\*\* 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. §§ 15.231 and 15.241.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

| MHz               | MHz                 | MHz            | MHz             | GHz          | GHz           |
|-------------------|---------------------|----------------|-----------------|--------------|---------------|
| 0.009 ~ 0.110     | 8.41425 ~ 8.41475   | 108 ~ 121.94   | 1300 ~ 1427     | 4.5 ~ 5.15   | 14.47 ~ 14.5  |
| 0.495 ~ 0.505     | 12.29 ~ 12.293      | 123 ~ 138      | 1435 ~ 1626.5   | 5.35 ~ 5.46  | 15.35 ~ 16.2  |
| 2.1735 ~ 2.1905   | 12.51975 ~ 12.52025 | 149.9 ~ 150.05 | 1645.5 ~ 1646.5 | 7.25 ~ 7.75  | 17.7 ~ 21.4   |
| 4.125 ~ 4.128     | 12.57675 ~ 12.57725 | 156.52475 ~    | 1660 ~ 1710     | 8.025 ~ 8.5  | 22.01 ~ 23.12 |
| 4.17725 ~ 4.17775 | 13.36 ~ 13.41       | 156.52525      | 1718.8 ~ 1722.2 | 9.0 ~ 9.2    | 23.6 ~ 24.0   |
| 4.20725 ~ 4.20775 | 16.42 ~ 16.423      | 156.7 ~ 156.9  | 2200 ~ 2300     | 9.3 ~ 9.5    | 31.2 ~ 31.8   |
| 6.215 ~ 6.218     | 16.69475 ~ 16.69525 | 162.0125 ~     | 2310 ~ 2390     | 10.6 ~ 12.7  | 36.43 ~ 36.5  |
| 6.26775 ~ 6.26825 | 16.80425 ~ 16.80475 | 167.17         | 2483.5 ~ 2500   | 13.25 ~ 13.4 | Above 38.6    |
| 6.31175 ~ 6.31225 | 25.5 ~ 25.67        | 167.72 ~ 173.2 | 2655 ~ 2900     |              |               |
| 8.291 ~ 8.294     | 37.5 ~ 38.25        | 240 ~ 285      | 3260 ~ 3267     |              |               |
| 8.362 ~ 8.366     | 73 ~ 74.6           | 322 ~ 335.4    | 3332 ~ 3339     |              |               |
| 8.37625 ~ 8.38675 | 74.8 ~ 75.2         | 399.90 ~ 410   | 3345.8 ~ 3358   |              |               |
|                   |                     | 608 ~ 614      | 3600 ~ 4400     |              |               |
|                   |                     | 960 ~ 1240     |                 |              |               |

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

| FCC §15.231 & RSS-210 Annex A1.2 |                 |                                      |
|----------------------------------|-----------------|--------------------------------------|
| Fundamental Frequency (MHz)      |                 | Field strength of fundamental (µV/m) |
| For FCC                          | For IC(RSS-Gen) |                                      |
| 40.66-40.70                      | -               | 2,250                                |
| 70-130                           | 70-130          | 1,250                                |
| 130-174                          | 130-174         | 1,250 to 3,750*                      |
| 174-260                          | 174-260         | 3,750                                |
| 260-470                          | 260-470         | 3,750 to 12,500*                     |
| Above 470                        | Above 470       | 12,500                               |

\* Linear interpolation.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz and 150 cm for above 1 GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average calculations.

**Total Average Factor =  $20\log(10\text{ms}/100\text{ms}) = -20 \text{ dB}$   
 (Duration and period are replaced by the customer's declaration)**

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 30MHz to 1GHz is investigated with the transmitter set to 433.92 MHz. (From 1 GHz to 5 GHz, test was performed with the EUT set to transmit at the position with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

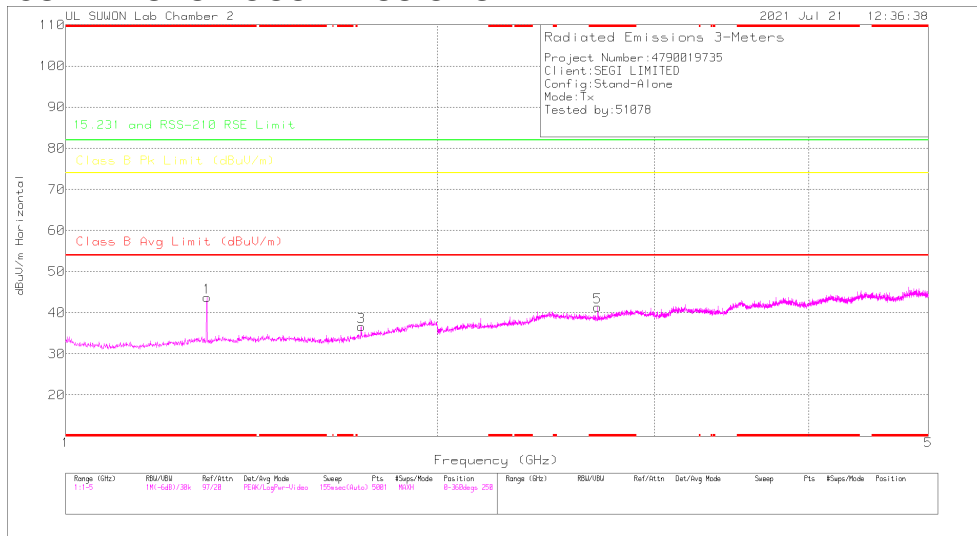
Note : Emission was pre-scanned from 9 kHz to 30 MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor). Per FCC part 15.31(o), test results were not reported.

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

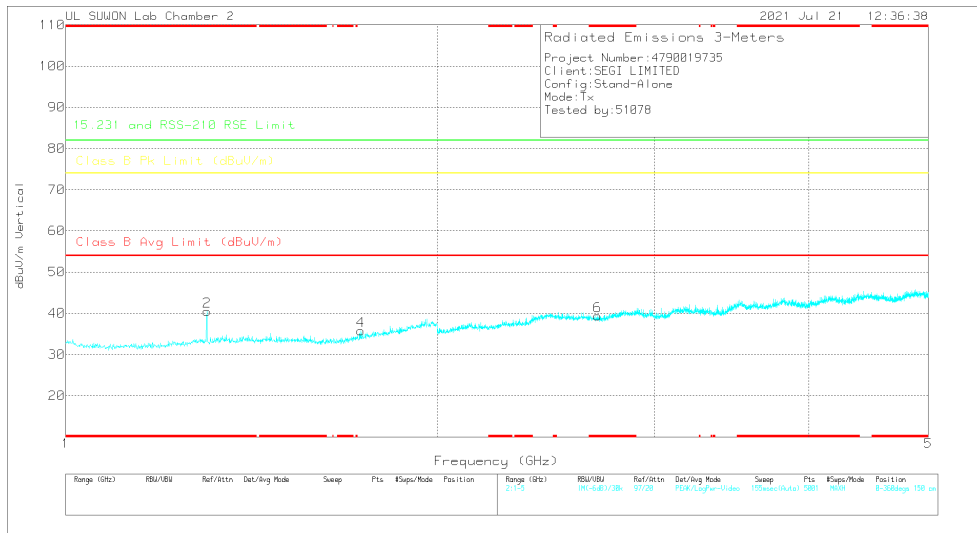
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

## 9.1. TRANSMITTER ABOVE 1 GHz

### HARMONICS AND SPURIOUS EMISSIONS



HORIZONTAL



VERTICAL

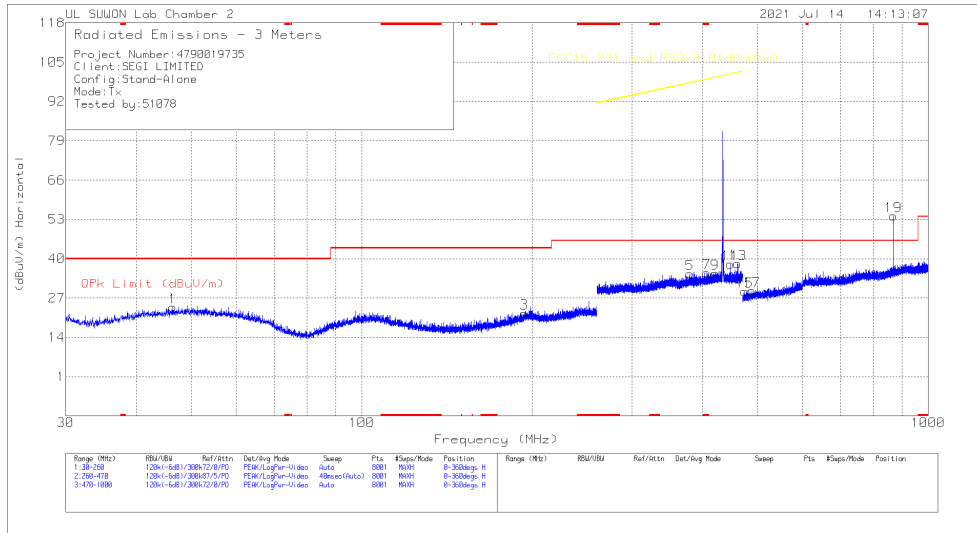
#### Spurious Data

| Freq. [MHz] | Axis | Frequency [GHz] | Reading [dBuV] | Detector Mode | ANT Factor | Loss [dB] | 1GHz HP [dB] | Result [dBuV/m] | AV Limit [dBuV/m] | AV Margin [dB] | PK Limit [dBuV/m] | PK Margin [dB] | Azimuth [Degs] | Height [cm] | Polarity |
|-------------|------|-----------------|----------------|---------------|------------|-----------|--------------|-----------------|-------------------|----------------|-------------------|----------------|----------------|-------------|----------|
| 433.92      | Y    | * 1.30167       | 47.85          | Pk            | 29.50      | -31.90    | 0.70         | 46.15           | -                 | -              | 74.00             | -27.85         | 3              | 329         | H        |
|             |      | * 1.30174       | 46.85          | Pk            | 29.50      | -31.90    | 0.70         | 45.15           | -                 | -              | 74.00             | -28.85         | 288            | 350         | V        |
|             |      | 1.736           | 41.06          | Pk            | 29.00      | -31.20    | 0.70         | 39.56           | -                 | -              | 80.80             | -41.24         | 164            | 137         | H        |
|             |      | 1.736           | 40.01          | Pk            | 29.10      | -31.20    | 0.70         | 38.61           | -                 | -              | 80.80             | -42.19         | 120            | 303         | V        |
|             |      | * 2.70118       | 38.46          | Pk            | 32.20      | -30.10    | 0.70         | 41.26           | -                 | -              | 74.00             | -32.74         | 51             | 393         | H        |
|             |      | * 2.69829       | 36.87          | Pk            | 32.20      | -30.10    | 0.70         | 39.67           | -                 | -              | 74.00             | -34.33         | 260            | 335         | V        |

Note: The average result for the limit band is the value applied with the duty cycle factor (-20dB) to the peak result, and the difference from the peak limit value is 20dB, so it was not listed separately as the same margin.

## 9.2. TRANSMITTER BELOW 1 GHz

### FUNDAMENTAL AND SPURIOUS EMISSIONS



**HORIZONTAL**



**VERTICAL**

### Fundamental Data

| Axis | Frequency [MHz] | Reading [dBuV] | Detector Mode | ANT Factor | Loss [dB] | DC Corr [dB] | Result [dBuV/m] | AV Limit [dBuV/m] | AV Margin [dB] | PK Limit [dBuV/m] | PK Margin [dB] | Azimuth [Degs] | Height [cm] | Polarity |
|------|-----------------|----------------|---------------|------------|-----------|--------------|-----------------|-------------------|----------------|-------------------|----------------|----------------|-------------|----------|
| X    | 433.941         | 67.91          | Pk            | 22.10      | 2.30      | -            | 92.31           | -                 | -              | 100.80            | -8.49          | 263            | 230         | H        |
|      | 433.941         | 67.91          | Pk            | 22.10      | 2.30      | -20.00       | 72.31           | 80.80             | -8.49          | -                 | -              | 263            | 230         | H        |
|      | 433.941         | 60.17          | Pk            | 22.10      | 2.30      | -            | 84.57           | -                 | -              | 100.80            | -16.23         | 349            | 244         | V        |
|      | 433.941         | 60.17          | Pk            | 22.10      | 2.30      | -20.00       | 64.57           | 80.80             | -16.23         | -                 | -              | 349            | 244         | V        |
| Y    | 433.946         | 55.38          | Pk            | 22.10      | 2.30      | -            | 79.78           | -                 | -              | 100.80            | -21.02         | 17             | 229         | H        |
|      | 433.946         | 55.38          | Pk            | 22.10      | 2.30      | -20.00       | 59.78           | 80.80             | -21.02         | -                 | -              | 17             | 229         | H        |
|      | 433.940         | 70.24          | Pk            | 22.10      | 2.30      | -            | 94.64           | -                 | -              | 100.80            | -6.16          | 301            | 115         | V        |
|      | 433.940         | 70.24          | Pk            | 22.10      | 2.30      | -20.00       | 74.64           | 80.80             | -6.16          | -                 | -              | 301            | 115         | V        |
| Z    | 433.897         | 67.47          | Pk            | 22.10      | 2.30      | -            | 91.87           | -                 | -              | 100.80            | -8.93          | 177            | 227         | H        |
|      | 433.897         | 67.47          | Pk            | 22.10      | 2.30      | -20.00       | 71.87           | 80.80             | -8.93          | -                 | -              | 177            | 227         | H        |
|      | 433.941         | 61.39          | Pk            | 22.10      | 2.30      | -            | 85.79           | -                 | -              | 100.80            | -15.01         | 278            | 207         | V        |
|      | 433.941         | 61.39          | Pk            | 22.10      | 2.30      | -20.00       | 65.79           | 80.80             | -15.01         | -                 | -              | 278            | 207         | V        |



**Spurious Data**

| Antenna | Frequency [MHz] | Reading [dBuV] | Detector Mode | ANT Factor | Loss [dB] | DC Corr [dB] | Result [dBuV/m] | QP Limit [dBuV/m] | QP Margin [dB] | PK Limit [dBuV/m] | PK Margin [dB] | Azimuth [Degs] | Height [cm] | Polarity |
|---------|-----------------|----------------|---------------|------------|-----------|--------------|-----------------|-------------------|----------------|-------------------|----------------|----------------|-------------|----------|
| Y       | 46.330          | -2.34          | Qp            | 19.70      | 0.60      | -            | 17.96           | 40.00             | -22.04         | -                 | -              | 112            | 100         | H        |
|         | 46.330          | -2.38          | Qp            | 19.70      | 0.60      | -            | 17.92           | 40.00             | -22.08         | -                 | -              | 131            | 100         | V        |
|         | 193.424         | -1.32          | Qp            | 17.00      | 1.40      | -            | 17.08           | 43.52             | -26.44         | -                 | -              | 83             | 100         | H        |
|         | 193.424         | -1.38          | Qp            | 17.00      | 1.40      | -            | 17.02           | 43.52             | -26.50         | -                 | -              | 161            | 100         | V        |
|         | 379.654         | 10.83          | Pk            | 21.00      | 2.20      | -            | 34.03           | -                 | -              | 80.80             | -46.77         | 80             | 100         | H        |
|         | 379.642         | 15.88          | Pk            | 21.00      | 2.20      | -            | 39.08           | -                 | -              | 80.80             | -41.72         | 301            | 146         | V        |
|         | * 406.657       | -1.57          | Qp            | 21.60      | 2.20      | -            | 22.23           | 46.02             | -23.79         | -                 | -              | 228            | 213         | H        |
|         | * 406.7706      | 19.85          | Qp            | 21.60      | 2.20      | -            | 43.65           | 46.02             | -2.37          | -                 | -              | 254            | 132         | V        |
|         | 420.580         | 12.01          | Pk            | 22.00      | 2.30      | -            | 36.31           | -                 | -              | 80.80             | -44.49         | 331            | 387         | H        |
|         | 420.379         | 20.10          | Pk            | 22.00      | 2.30      | -            | 44.40           | -                 | -              | 80.80             | -36.40         | 246            | 137         | V        |
|         | 447.500         | 15.22          | Pk            | 22.00      | 2.40      | -            | 39.62           | -                 | -              | 80.80             | -41.18         | 28             | 193         | H        |
|         | 447.491         | 22.75          | Pk            | 22.00      | 2.40      | -            | 47.15           | -                 | -              | 80.80             | -33.65         | 297            | 115         | V        |
|         | 460.796         | 11.96          | Pk            | 21.90      | 2.30      | -            | 36.16           | -                 | -              | 80.80             | -44.64         | 58             | 345         | H        |
|         | 461.018         | 23.92          | Pk            | 21.90      | 2.40      | -            | 48.22           | -                 | -              | 80.80             | -32.58         | 145            | 127         | V        |
|         | 474.608         | 7.25           | Pk            | 22.40      | 2.40      | -            | 32.05           | -                 | -              | 80.80             | -48.75         | 30             | 203         | H        |
|         | 474.598         | 15.42          | Pk            | 22.40      | 2.40      | -            | 40.22           | -                 | -              | 80.80             | -40.58         | 15             | 104         | V        |
|         | 488.147         | 7.42           | Pk            | 22.80      | 2.40      | -            | 32.62           | -                 | -              | 80.80             | -48.18         | 47             | 192         | H        |
|         | 488.130         | 8.38           | Pk            | 22.80      | 2.40      | -            | 33.58           | -                 | -              | 80.80             | -47.22         | 322            | 108         | V        |
|         | 867.881         | 25.08          | Pk            | 27.60      | 3.30      | -            | 55.98           | -                 | -              | 80.80             | -24.82         | 185            | 166         | H        |
|         | 867.879         | 20.89          | Pk            | 27.60      | 3.30      | -            | 51.79           | -                 | -              | 80.80             | -29.01         | 290            | 163         | V        |

## 10. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a) & RSS-GEN[8.8]

| Frequency of Emission (MHz) | Conducted Limit (dBuV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15-0.5                    | 66 to 56*              | 56 to 46* |
| 0.5-5                       | 56                     | 46        |
| 5-30                        | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

### RESULTS: N/P

**Note. EUT use Non-rechargeable battery.**

## END OF TEST REPORT