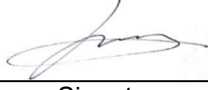
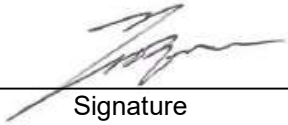


# FCC & ISCED CERTIFICATION TEST REPORT

**Project Number** : EA1912C-014  
**Test Report Number** : TR-W1912-007  
**Type of Equipment** : Digital Door Lock  
**Model Name** : CDL-210P  
**FCC ID** : CCECDL-210P  
**ISED Canada ID** : 22254-CDL210P  
**Multiple Model Name** : N/A  
**Applicant** : COMMAX Co., Ltd.  
**Address** : 494 Dunchon-Daero, Jungwon-Gu, Seongnam-si, Gyeonggi-do,  
South Korea  
**Manufacturer** : COMMAX Co., Ltd.  
**Address** : 494 Dunchon-Daero, Jungwon-Gu, Seongnam-si, Gyeonggi-do,  
South Korea  
**Regulation** : FCC Part 15 Subpart C Section 15.225, ISCED RSS-210 Issue9  
**Total page of Report** : 18 Pages  
**Date of Receipt** : 2019-11-12  
**Date of Issue** : 2019-12-16  
**Test Result** : PASS

This test report only contains the result of a single test of the sample supplied for the examination.  
 It is not a generally valid assessment of the features of the respective products of the mass-production.

|             |                                     |                                                                                      |            |
|-------------|-------------------------------------|--------------------------------------------------------------------------------------|------------|
| Prepared by | Song, In-yong / Senior Engineer     |  | 2019-12-16 |
|             |                                     | Signature                                                                            | Date       |
| Reviewed by | Choi, Yeong-min / Technical Manager |  | 2019-12-16 |
|             |                                     | Signature                                                                            | Date       |

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### Release Control Record

| Issue Report No. | Issued Date | Details/Revisions |
|------------------|-------------|-------------------|
| TR-W1912-007     | 2019-12-16  | Initial Release   |
| -                | -           | -                 |

## 1. TEST SUMMARY

### 1.1 Regulations and results

The sample submitted for evaluation (Referred to below as the EUT) has been tested in accordance with the following regulations or standards.

| FCC Reference Section               | ISED Reference Section | Description                                                                                                             | P | F | N.T. | Note   |
|-------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------|---|---|------|--------|
| 15.205,<br>15.209(a)<br>& 15.225(d) | RSS-210 B.6            | Radiated Spurious Emissions                                                                                             | P |   |      |        |
| 15.207                              | RSS GEN 8.8            | AC Power-line Conducted Emissions                                                                                       |   |   | N.T. | Note 1 |
| 15.225(a)                           | RSS-210 B.6            | Field strength within the band (13.553-13.567) MHz                                                                      | P |   |      |        |
| 15.225(b) &<br>15.225(c)            | RSS-210 B.6            | Field strength within the band (13.410-13.553) MHz and (13.567-13.710) MHz, (13.110-13.410) MHz and (13.710-14.010) MHz | P |   |      |        |
| 15.225(e)                           | RSS-210 B.6            | Frequency Tolerance of Carrier Signal                                                                                   | P |   |      |        |
| 15.215                              | RSS GEN 6.6            | 20 dB Bandwidth,<br>99 % Bandwidth                                                                                      | P |   |      |        |

#### Remark:

P means Passed

F means Failed

N.T. means Not Tested

**Note1.** The EUT shall be operated by battery only. (used manganese dry cell as type AA)

### 1.2 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC Part 15 Subpart C Section 15.225, RGG-Gen and RSS-210

### 1.3 Test Methodology

The tests mentioned in clause 1.1 in this test report were performed according to FCC CFR 47 Part 2, CFR 47 Part 15, ANSI C63.10-2013, and RSS-Gen.

### 1.4 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

## 1.5 Test Facility

The measurement facilities are located at 135-60 Gyeongchung-daero, Gonjam-eup, Gwangju-si, Gyeonggi-do 12813, Korea. Our test facilities are accredited as a Conformity Assessment Body (CAB) by the FCC and ISED Canada, designated by the RRA (National Radio Research Agency), and accredited by KOLAS (Korea Laboratory Accreditation Scheme) in Korea and approved by TUV Rheinland, TUV SÜD and Korean Register of Shipping according to the requirement of ISO/IEC 17025.

| Laboratory Qualification                   | Registration No.            | Mark                                                                                  |
|--------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------|
| FCC                                        | KR0160                      |    |
| ISED Canada                                | 12721A                      |    |
| RRA                                        | KR0160                      |    |
| TUV Rheinland                              | UA 50314109-0002            |   |
| TUV SÜD                                    | CARAT 094465 0004<br>Rev.00 |  |
| Korean Agency for Technology and Standards | KT733                       |  |
| KOREAN REGISTER OF SHIPPING                | PCT40841-TL001              |  |

Remark. This report is not related to KOLAS accreditation and relevant regulation.

## 2. EUT (Equipment Under Test) INFORMATION

### 2.1 General Description

The COMMAX Co., Ltd., Model CDL-210P (referred to as the EUT in this report) is a Digital Door Lock. The EUT is a device for transferring RFID (13.56 MHz) signal to an RFID TAG through wireless communication. The product specification described herein was obtained from product data sheet or user's manual. The EUT contains FCC and ISSED approved ZigBee Modules.

|                                    |                                                                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Operating Frequency                | ZigBee: 2 405 MHz to 2 480 MHz<br>RFID: 13.56 MHz                                                                             |
| Contained ZigBee Module in the EUT | Model: CMX-ZG03<br>Modular Type: Single Modular<br>Manufacturer: COMMAX Co., Ltd.<br>FCC ID: CCECMX-ZG03<br>IC: 22254-CMXZG03 |
| Kind of Class                      | DXX- Part 15 Low Power Communication Device Transmitter                                                                       |
| Modulation Types                   | ASK                                                                                                                           |
| Generated or used Freq. in EUT     | 32.768 kHz, 13.56 MHz, 32 MHz                                                                                                 |
| Type of Antenna                    | <input checked="" type="checkbox"/> Integrated Type <input type="checkbox"/> Dedicated Type<br>PCB Pattern Antenna            |
| Operating Temperature              | -20 °C ~ + 70 °C                                                                                                              |
| Normal Test Voltage                | DC 6.0 V                                                                                                                      |
| Electrical Rating                  | DC 6.0 V                                                                                                                      |
| External Port(s)                   | N/A                                                                                                                           |
| Test SW Version                    | N/A                                                                                                                           |
| Software Version                   | V 1.0                                                                                                                         |
| Hardware Version                   | V 1.0                                                                                                                         |

### 2.2 Additional Model

None

### 3. TEST CONDITION

#### 3.1 Equipment Used During Test

The following peripheral devices and/or interface cables were connected during the measurement:

| Description             | Model No. | Serial No. | Manufacturer.    |
|-------------------------|-----------|------------|------------------|
| Digital Door Lock (EUT) | CDL-210P  | N/A        | COMMAX Co., Ltd. |

#### 3.2 Mode of operation during the test

For continuous transmitting modulation signal, press the password registration button on EUT and then insert AA battery acc. to the manufacturer's guidance. The used modulation type for the testing is ASK (13.56 MHz)

For continuous transmitting un-modulated signal, just insert AA battery in EUT acc. to the manufacturer's guidance.

#### 3.3 Preliminary Testing for Worst case configuration

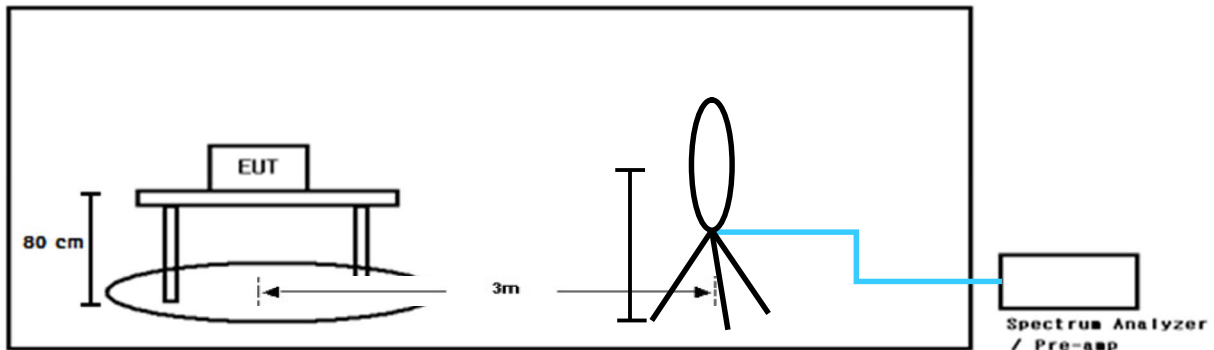
For finding worst case configuration and operating mode, preliminary testing was performed and radiated emission and conducted emission tests were performed with the EUT set to transmit and receive at the channel with the highest output power as worst case scenario. Since the EUT is a fixed type device, all spurious emission tests were performed in one axis direction.

##### 3.3.1 Test Channel and Frequency

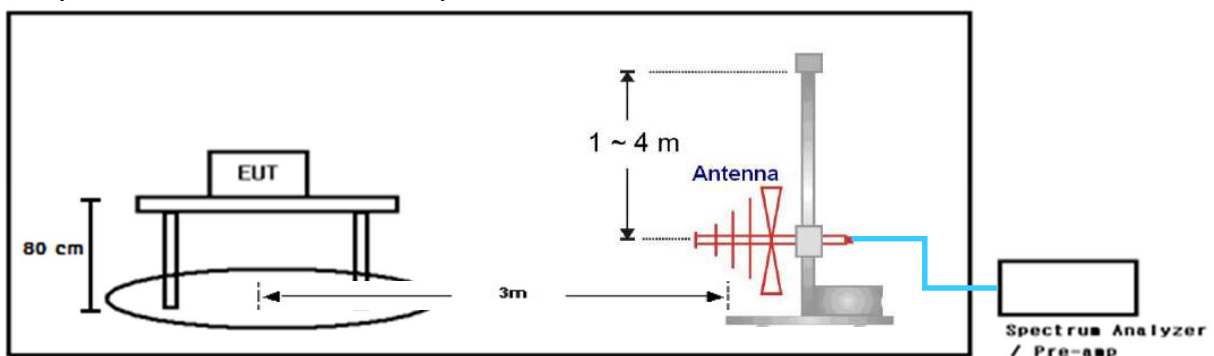
| Test Channel   | Channel | Frequency |
|----------------|---------|-----------|
| Center Channel | -       | 13.56 MHz |

### 3.4 Test Setup Drawing

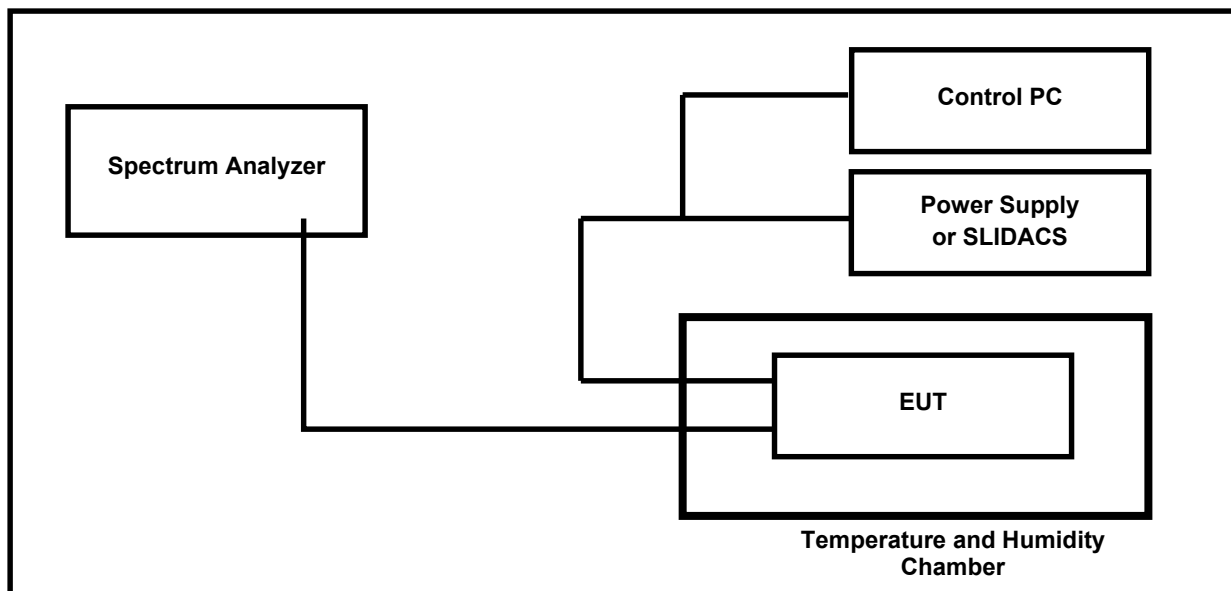
(Radiated Test below 30 MHz)



(Radiated Test below 1 GHz)



(Frequency Tolerance of Carrier Signal Test)



### 3.5 EUT Modifications

- No EMC Relevant Modifications were performed by this test laboratory.

## 4. ANTENNA REQUIREMENT

According to FCC CFR 47 Part 15 section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provision of this section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31 (d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

### 4.1 Conclusion

The EUT has an integral PCB loop antenna, so there is no consideration of replacement by the user.

## 5. TEST RESULT

### 5.1 Radiated emissions

#### 5.1.1 Regulation

Acc. to section 15.225, 15.209 and RSS-210 Annex B.6, following table shall be applied.

| Frequency<br>(MHz) | Field strength limit<br>( $\mu\text{V/m}$ ) @ 30 m | Field strength limit<br>(dB $\mu\text{V/m}$ ) @ 30 m | Field strength limit<br>(dB $\mu\text{V/m}$ ) @ 3 m |
|--------------------|----------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|
| 13.110 – 13.410    | 106                                                | 40.5                                                 | 80.5                                                |
| 13.410 – 13.553    | 334                                                | 50.5                                                 | 90.5                                                |
| 13.553 – 13.567    | 15,848                                             | 84.0                                                 | 124.0                                               |
| 13.567 – 13.710    | 334                                                | 50.5                                                 | 90.5                                                |
| 13.710 – 14.010    | 106                                                | 40.5                                                 | 80.5                                                |

| Frequency<br>(MHz) | Field strength limit<br>( $\mu\text{V/m}$ ) | Field strength limit<br>(dB $\mu\text{V/m}$ ) | Measurement<br>Distance (m) |
|--------------------|---------------------------------------------|-----------------------------------------------|-----------------------------|
| 0.009 – 0.490      | $2400/F$ (kHz) = 266.7 – 4.9                | 48.5 – 13.8                                   | 300                         |
| 0.490 – 1.705      | $24000/F$ (kHz) = 49.0 – 14.1               | 33.8 - 23.0                                   | 30                          |
| 1.705 – 30.0       | 30                                          | 29.5                                          | 30                          |
| 30 – 88            | 100                                         | 40.0                                          | 3                           |
| 88 - 216           | 150                                         | 43.5                                          | 3                           |
| 216 - 960          | 200                                         | 46.0                                          | 3                           |
| Above 960          | 500                                         | 54.0                                          | 3                           |

**Note:** The emission limits shown in the above table are based on measurement instrumentation employing a CISPR quasi-peak detector. For the frequency bands (9 – 90) kHz, (110 – 490) kHz and above 1000 MHz, the radiated emission limits are based on measurements employing an average detector.

### 5.1.2 Method of Measurement

The preliminary radiated emission test was performed using the procedure in ANSI C63.10 2013 to determine the worse operating conditions. The radiated emissions measurements were performed on the 10 m Semi Anechoic Chamber

#### Radiated Emissions Test, 9 kHz to 30 MHz (Magnetic Field Test)

For frequencies from 150 kHz to 30 MHz measurements were made of the magnetic H field. The EUT was placed on the top of the 0.8-meter height, 1 × 1.5 meter non-metallic table. The measuring antenna is an electrically screened loop antenna. Emissions from the EUT are maximized by adjusting the orientation of the Loop antenna and rotating the EUT on the turntable. Manipulating the system cables also maximizes EUT emissions if applicable. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.

#### Radiated Emissions Test, below 1 000 MHz

The frequency spectrum from 30 MHz to 1 000 MHz was scanned and maximum emission levels maximized at each frequency recorded. The system rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna. The EUT is situated in three orthogonal planes(if appropriate)

### 5.1.3 Test Site Requirement for KDB 414788 D01

Acc. to KDB 414788 D01 Radiated Test Site v01r01, Semi Anechoic Chamber (SAC) shall be verified test results below 30 MHz with Open Area Test Site (OATS), so we compared test results between the measurements from our SAC and an OATS and found test results almost same, so we **declare test result for below 30 MHz from our SAC is valid and met the requirement acc. to KDB 414788 D01 Radiated Test Site v01r01.**

### 5.1.4 Measurement Uncertainty

Measurement uncertainties were not taken into account and following uncertainty levels have been estimated for tests performed on the apparatus. The measurement uncertainties are given with at least 95 % confidence.

| Frequency Range | Uncertainty | Frequency Range | Uncertainty |
|-----------------|-------------|-----------------|-------------|
| 9 kHz ~ 30 MHz  | ± 2.6 dB    | 30 MHz ~ 1 GHz  | ± 4.5 dB    |

### 5.1.5 Sample Calculated Example

At 80 MHz

Limit = 40.0 dBuV/m

Result(dBuV/m) = Receiver Reading (dBuV) + Antenna Factor (dB/m) - Corr. Factor (dB) = 30

Where, Corr. Factor (dB) = Pre-amplifier (dB) – Cable loss (dB)

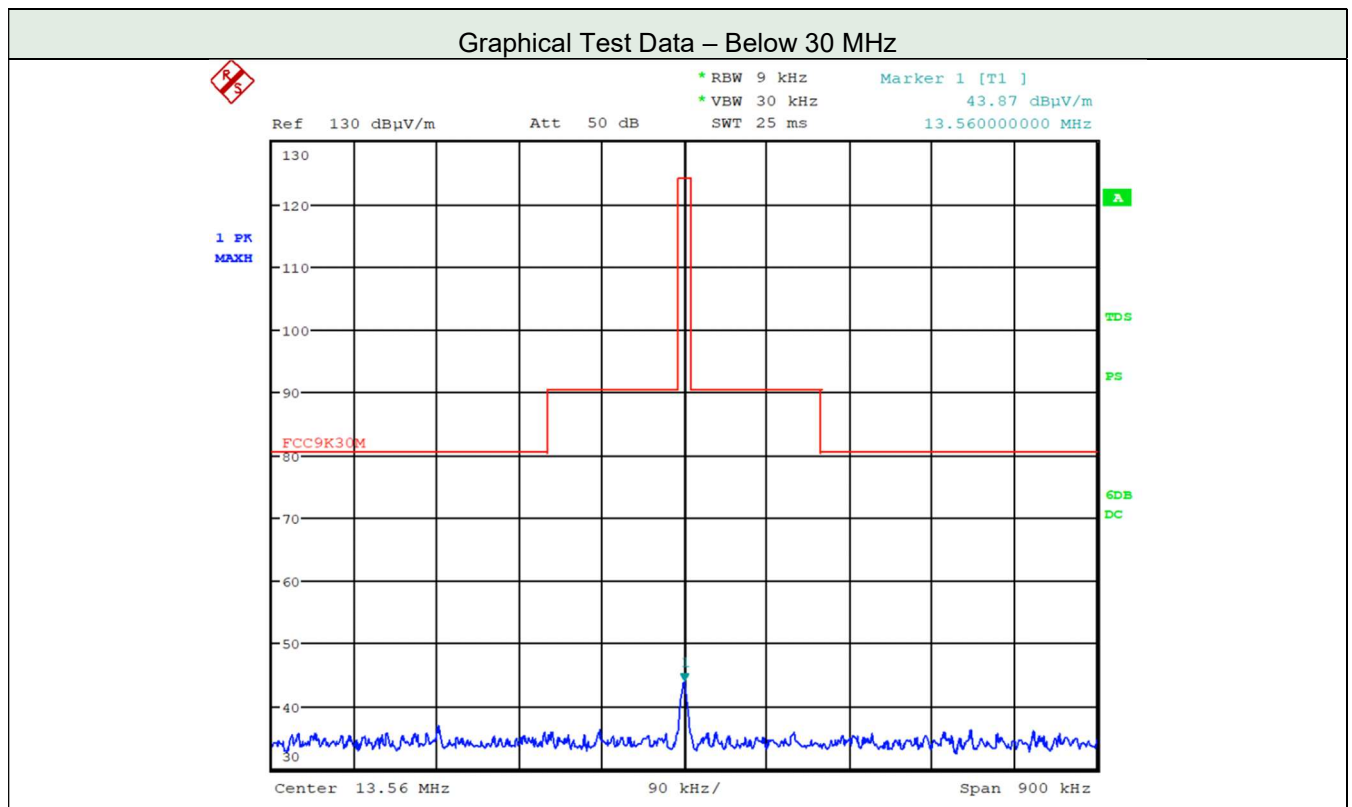
Margin = Limit – Result = 40 – 30 = 10

so the EUT has 10.0 dB margin at 80 MHz

### 5.1.6 Test Data

|                                    |               |                   |                     |                                                                                                 |                      |  |
|------------------------------------|---------------|-------------------|---------------------|-------------------------------------------------------------------------------------------------|----------------------|--|
| Date of Test                       | 2019-12-11    | Temperature       | (21.3 ± 2.7) °C     |                                                                                                 |                      |  |
|                                    |               | Relative humidity | (45.1 ± 5.9) % R.H. |                                                                                                 |                      |  |
| <b>Measurement Frequency Range</b> |               | 9 kHz ~ 1 GHz     |                     |                                                                                                 |                      |  |
| <b>Test Result</b>                 | <b>PASS</b>   | Tested By         |                     | Do-heon Kim  |                      |  |
| Frequency range                    | Detector Mode | Resolution BW     | Video BW            | Video Filtering                                                                                 | Measurement distance |  |
| Below 30 MHz                       | Peak or Q.P.  | 9 kHz             | 30 kHz              | -                                                                                               | 3 m                  |  |
| 30 MHz ~ 1 000 MHz                 | Peak or Q.P.  | 100 kHz           | 300 kHz             | -                                                                                               | 3 m                  |  |

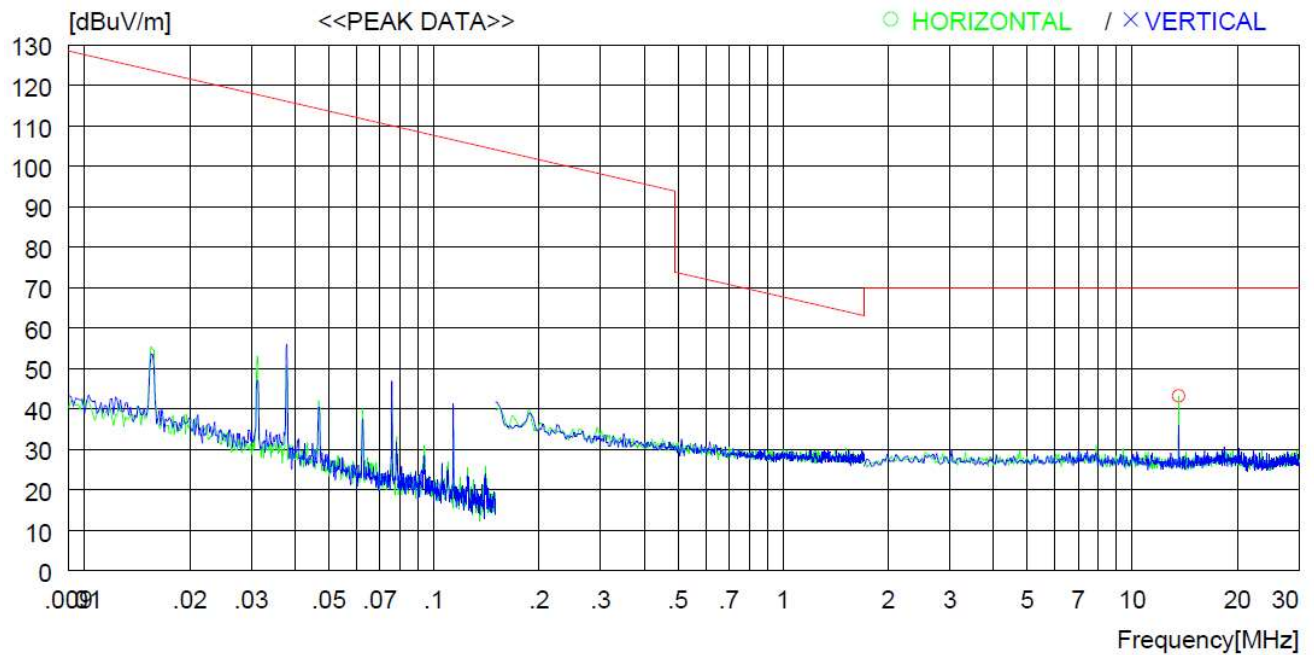
#### 5.1.6.1 Test Data below 30 MHz



**Tabulated Test Data under 15.225(a), (b)&(c)**

| Frequency (MHz) | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Azimuth (Degree) |
|-----------------|---------------|------|-----------------|----------------|-------------|-------------|------------------|
| 13.56           | Peak          | H    | 43.87           | 124.00         | 80.13       | 0           | 168              |

### Graphical Test Data – Below 30 MHz



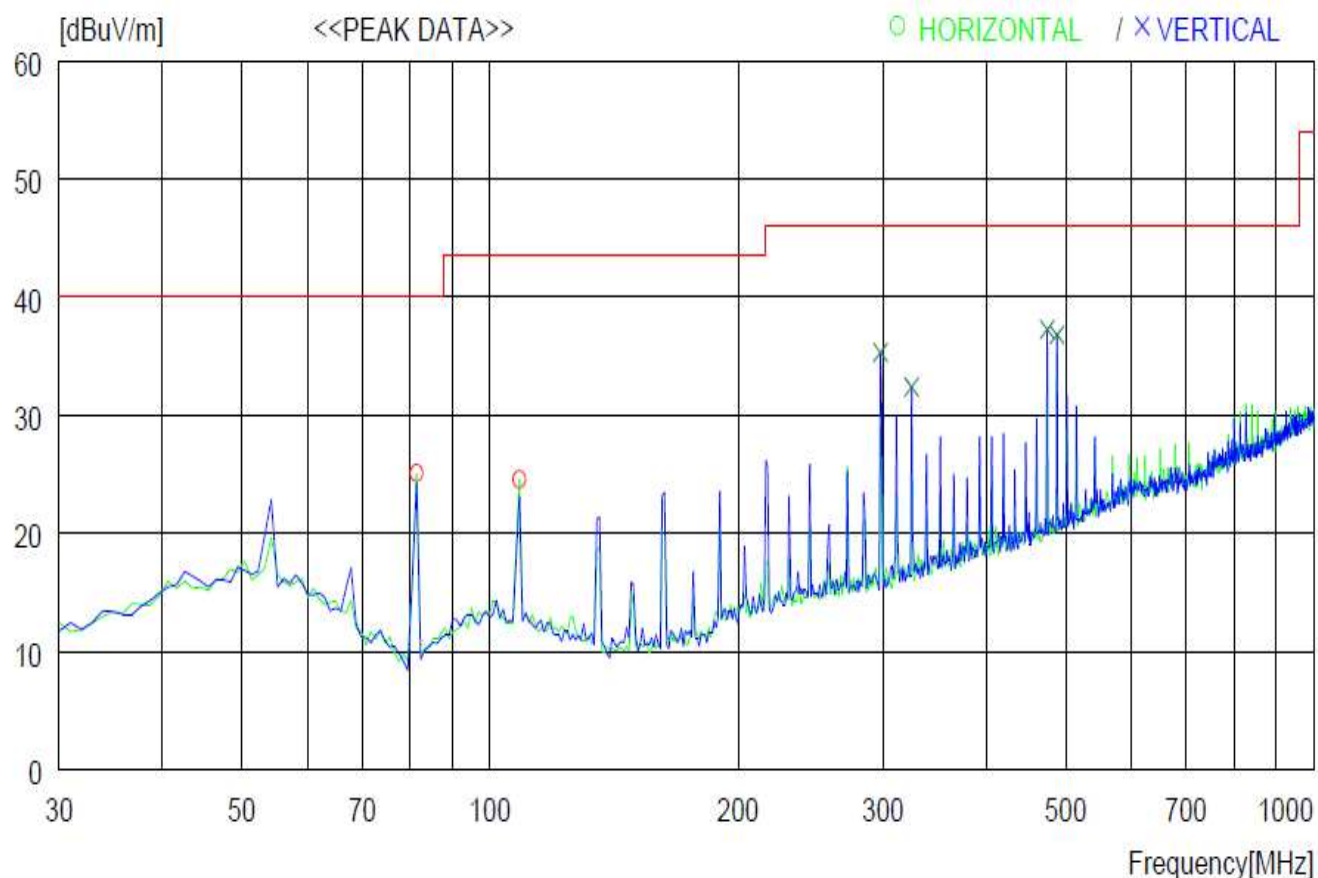
### Tabulated Test Data under 15.225(d), 15.209

| Frequency<br>(MHz) | Receiver<br>Reading<br>(dBuV) | Detector<br>Mode | Pol. | Ant.<br>Factor<br>(dB/m) | Corr.<br>Factor(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Azimuth<br>(Degree) |
|--------------------|-------------------------------|------------------|------|--------------------------|---------------------|--------------------|-------------------|----------------|----------------|---------------------|
|--------------------|-------------------------------|------------------|------|--------------------------|---------------------|--------------------|-------------------|----------------|----------------|---------------------|

\* Spurious emissions that 20 dB below the limits didn't be recorded

## 5.1.6.2 Test Data from 30 MHz to 1 GHz

Graphical Test Data – Below 1 000 MHz



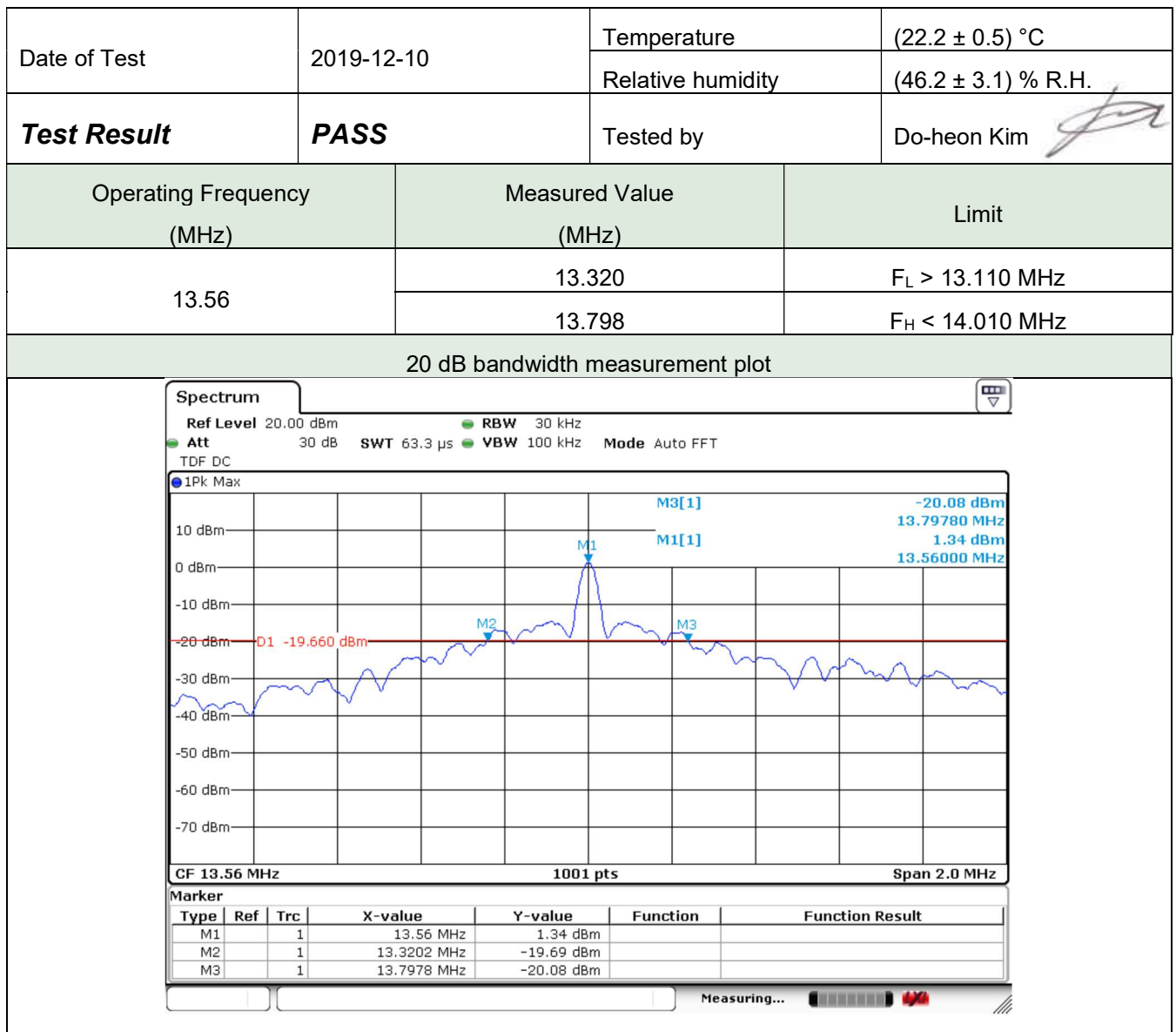
| No.                    | FREQ<br>[MHz] | READING<br>[dBuV] | ANT<br>PEAK FACTOR<br>[dB] | LOSS<br>[dB] | GAIN<br>[dB] | RESULT<br>[dBuV/m] | LIMIT<br>[dBuV/m] | MARGIN<br>[dB] | ANTENNA<br>[cm] | TABLE<br>[DEG] |
|------------------------|---------------|-------------------|----------------------------|--------------|--------------|--------------------|-------------------|----------------|-----------------|----------------|
| ----- Horizontal ----- |               |                   |                            |              |              |                    |                   |                |                 |                |
| 1                      | 81.410        | 42.6              | 7.4                        | 7.7          | 32.6         | 25.1               | 40.0              | 14.9           | 200             | 64             |
| 2                      | 108.570       | 38.7              | 10.5                       | 8.0          | 32.6         | 24.6               | 43.5              | 18.9           | 300             | 359            |
| ----- Vertical -----   |               |                   |                            |              |              |                    |                   |                |                 |                |
| 3                      | 297.720       | 45.1              | 13.2                       | 9.6          | 32.6         | 35.3               | 46.0              | 10.7           | 200             | 2              |
| 4                      | 324.880       | 41.4              | 13.8                       | 9.8          | 32.6         | 32.4               | 46.0              | 13.6           | 200             | 359            |
| 5                      | 474.261       | 42.5              | 16.9                       | 10.6         | 32.7         | 37.3               | 46.0              | 8.7            | 100             | 347            |
| 6                      | 487.841       | 41.7              | 17.1                       | 10.7         | 32.7         | 36.8               | 46.0              | 9.2            | 100             | 0              |

## 5.2 20 dB bandwidth

### 5.2.1 Method of Measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution is set to 30 kHz, and peak detection was used. The 20 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 20 dB.

### 5.2.2 Test Data



Note:  $F_L$  : Lowest frequency at 20 dB bandwidth

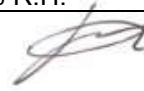
$F_H$  : Highest frequency at 20 dB bandwidth

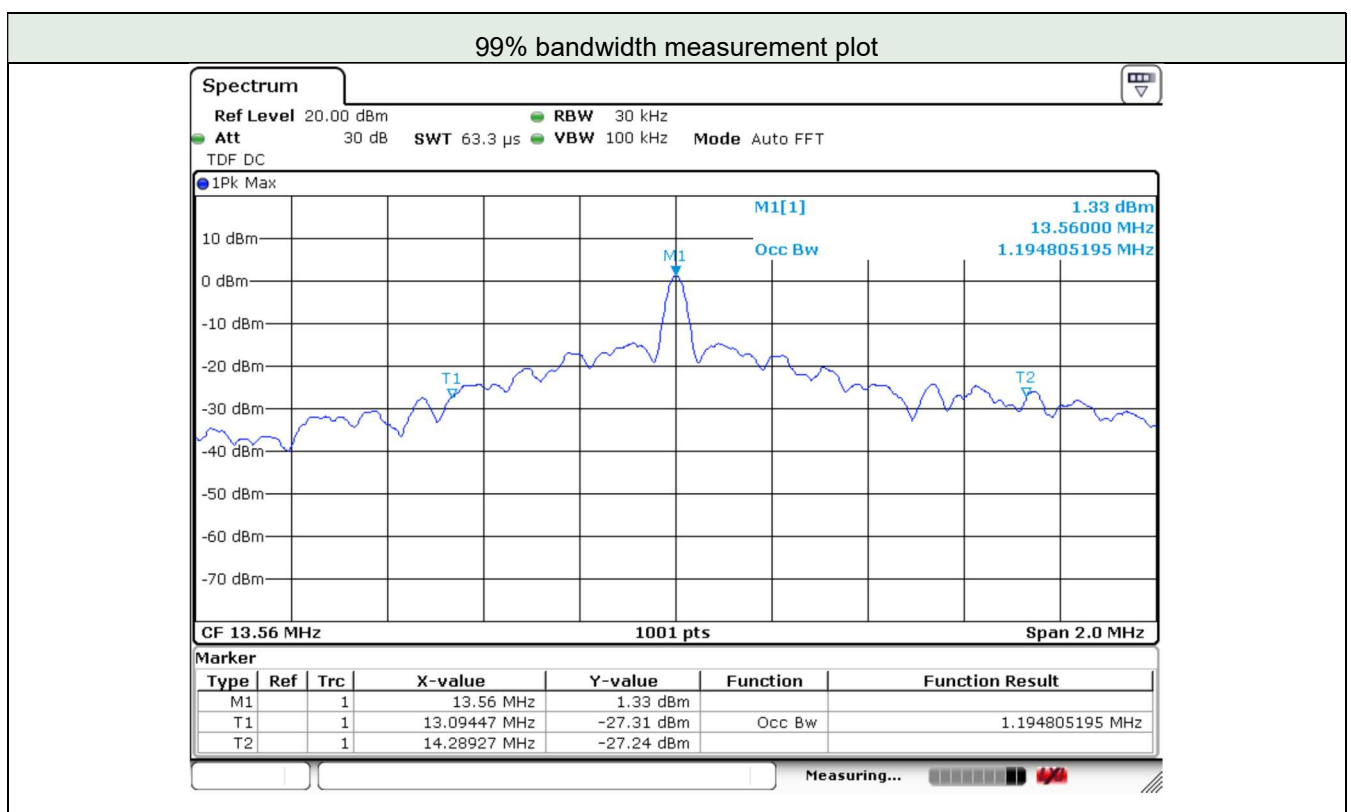
## 5.3 99% Power bandwidth

### 5.3.1 Method of Measurement

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.

### 5.3.2 Test Data

| Date of Test                 | 2019-12-10              | Temperature       | (20.5 ± 0.5) °C                                                                                 |
|------------------------------|-------------------------|-------------------|-------------------------------------------------------------------------------------------------|
|                              |                         | Relative humidity | (46.2 ± 3.1) % R.H.                                                                             |
| <b>Test Result</b>           | <b>PASS</b>             | Tested by         | Do-heon Kim  |
| Operating Frequency<br>(MHz) | Measured Value<br>(MHz) | Limit             |                                                                                                 |
| 13.56                        | 1.20                    | -                 |                                                                                                 |



## 5.4 Frequency tolerance of carrier signal

### 5.3.1 Regulation

#### FCC 47CFR15-15.225(e) and RSS-210 Annex B.6

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery-operated equipment, the equipment tests shall be performed using a new battery.

### 5.3.2 Method of Measurement

The EUT output was connected to the spectrum analyzer through an attenuator. Turn EUT off and set chamber temperature to -20 °C and then allow sufficient time (approximately 20 to 30 minutes after chamber reach the assigned temperature) for EUT to stabilize. Turn on EUT and measured EUT operating frequency and turn off the EUT after the measurement. The temperature was raised 10 °C step from -20 °C to +50 °C. Repeat above method for frequency measurement every 10 °C step and then record all measured frequencies on each temperature step. An external DC power supply was connected to the input of the EUT. The voltage of EUT set to 115 % of the nominal value and then was reduced to 85 % of nominal voltage. The output frequency was recorded at each step.

### 5.3.3 Test Data

|                                                                   |              |                                              |          |            |          |                   |          |                                                                                                   |          |
|-------------------------------------------------------------------|--------------|----------------------------------------------|----------|------------|----------|-------------------|----------|---------------------------------------------------------------------------------------------------|----------|
| Date of Test                                                      |              | 2019-12-10                                   |          |            |          | Temperature       |          | (22.2 ± 0.5) °C                                                                                   |          |
|                                                                   |              |                                              |          |            |          | Relative humidity |          | (46.2 ± 3.1) % R.H.                                                                               |          |
| <b>Test Result</b>                                                |              | <b>PASS</b>                                  |          |            |          | Tested by         |          | Do-heon Kim  |          |
| Carrier Frequency: 13.560 000 MHz, <b>LIMIT: within ±1 356 Hz</b> |              |                                              |          |            |          |                   |          |                                                                                                   |          |
| Temp.<br>(°C)                                                     | Volt.<br>(V) | Carrier Frequency Measured with Time Elapsed |          |            |          |                   |          |                                                                                                   |          |
|                                                                   |              | Start Up                                     |          | 2 minutes  |          | 5 minutes         |          | 10 minutes                                                                                        |          |
|                                                                   |              | (MHz)                                        | Err (Hz) | (MHz)      | Err (Hz) | (MHz)             | Err (Hz) | (MHz)                                                                                             | Err (Hz) |
| +50                                                               | 6.00         | 13.559 961                                   | 39       | 13.559 956 | 44       | 13.559 951        | 49       | 13.559 940                                                                                        | 60       |
| +40                                                               | 6.00         | 13.559 992                                   | 8        | 13.559 988 | 12       | 13.559 980        | 20       | 13.559 967                                                                                        | 33       |
| +30                                                               | 6.00         | 13.560 007                                   | -7       | 13.560 005 | -5       | 13.560 002        | -2       | 13.559 997                                                                                        | 3        |
| +20                                                               | 6.90         | 13.560 017                                   | -17      | 13.560 017 | -17      | 13.560 014        | -14      | 13.560 012                                                                                        | -12      |
|                                                                   | 6.00         | 13.560 018                                   | -18      | 13.560 016 | -16      | 13.560 014        | -14      | 13.560 010                                                                                        | -10      |
|                                                                   | 5.10         | 13.560 018                                   | -18      | 13.560 016 | -16      | 13.560 015        | -15      | 13.560 008                                                                                        | -8       |
| +10                                                               | 6.00         | 13.560 013                                   | -13      | 13.560 015 | -15      | 13.560 016        | -16      | 13.560 018                                                                                        | -18      |
| 0                                                                 | 6.00         | 13.560 004                                   | -4       | 13.560 006 | -6       | 13.560 008        | -8       | 13.560 011                                                                                        | -11      |
| -10                                                               | 6.00         | 13.560 006                                   | -6       | 13.560 005 | -5       | 13.560 003        | -3       | 13.560 003                                                                                        | -3       |
| -20                                                               | 6.00         | 13.560 019                                   | -19      | 13.560 018 | -18      | 13.560 016        | -16      | 13.560 009                                                                                        | -9       |

## Appendix I – Test Instrumentation

| Description                    | Model No.    | Serial No.                | Manufacturer.     | Due for Cal. Date | Cal. Interval |
|--------------------------------|--------------|---------------------------|-------------------|-------------------|---------------|
| Signal Analyzer                | FSV 13       | 101243                    | Rohde & Schwarz   | 2020-01-18        | 1 Y           |
| Attenuator                     | 10 dB        | ENG-1                     | Rohde & Schwarz   | 2020-01-18        | 1 Y           |
| Temperature & Humidity Chamber | PR-3KP       | 14004209                  | Espec             | 2020-07-26        | 1 Y           |
| DC Power Supply                | E3610A       | MY40005644                | AGILENT           | 2020-04-22        | 1 Y           |
| Test Receiver                  | ESU 26       | 100303                    | Rohde & Schwarz   | 2020-01-18        | 1 Y           |
| Loop Antenna                   | HFH2-Z2      | 100341                    | Rohde & Schwarz   | 2021-04-22        | 2 Y           |
| TRILOG Broadband Antenna       | VULB9163     | 9163.799                  | Schwarzbeck       | 2021-11-12        | 2 Y           |
| Attenuator                     | 6dB          | 272.4110.50               | Rohde & Schwarz   | 2020-01-18        | 1 Y           |
| Pre-Amplifier                  | 310N         | 344015                    | Sonoma Instrument | 2020-01-18        | 1 Y           |
| Turn Table                     | DT3000-3t    | 1310814                   | INNCO SYSTEM      | N/A               | N/A           |
| Antenna Master                 | MA4000-EP    | 4600814                   | INNCO SYSTEM      | N/A               | N/A           |
| Antenna Master                 | MA4000-XP-ET | -                         | INNCO SYSTEM      | N/A               | N/A           |
| Camera Controller              | HDCon4102    | 6531445048                | PONTIS            | N/A               | N/A           |
| CO3000 Controller              | Co3000-4Port | CO3000/806/<br>34130814/L | INNCO SYSTEM      | N/A               | N/A           |
| CO3000 Controller              | Co3000-4Port | CO3000/807/<br>34130814/L | INNCO SYSTEM      | N/A               | N/A           |

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