

Dates of Tests: June 04 ~ June 24, 2019
Test Report S/N: LR500111906I
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID.
IC ID
APPLICANT

VA5REJ100-1WAM
7087A-1WREJ100AM
SEGI LIMITED

| | | |
|---------------------------|---|---|
| Equipment Class | : | Security/Remote Control Transmitter (DSC) |
| Manufacturing Description | : | Keyless Entry System |
| Manufacturer | : | SEGI ELECTRONICS CO.,LTD |
| Model name | : | 900R |
| Test Device Serial No.: | : | Identical prototype |
| Rule Part(s) | : | FCC Part 15 Subpart C ; ANSI C-63.10-2013 IC : RSS-210 |
| Frequency Range | : | 433.92 MHz |
| Max. Output Power | : | Max 78.38 dBuV/m – Radiated |
| Date of issue | : | June 24, 2019 |

his test report is issued under the authority of:

JaBeom.Koo

Ja-Beom Koo, Manager

The test was supervised by:

Eun-Hwan Jung

Eun-Hwan Jung, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



NVLAP LAB Code.: 200723-0

Revision History

| Rev | Issue Date | Revisions | Notes |
|-----|------------|--|-------|
| - | - | Initial issue | - |
| V1 | 06/24/2019 | Updated to TCB question | - |
| V2 | 06/24/2019 | Updated to TCB question about the duty cycle | - |

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1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 17159
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

| Agency | Country | Accreditation No. | Validity | Reference |
|--------|---------|-------------------|------------|-----------------------|
| NVLAP | U.S.A | 200723-0 | 2019-09-30 | ECT accredited Lab. |
| RRA | KOREA | KR0049 | - | EMC accredited Lab. |
| FCC | U.S.A | 649054 | 2021-04-11 | FCC CAB |
| VCCI | JAPAN | C-4948, | 2020-09-10 | VCCI registration |
| VCCI | JAPAN | T-2416, | 2020-09-10 | VCCI registration |
| VCCI | JAPAN | R-4483(10 m), | 2020-10-15 | VCCI registration |
| VCCI | JAPAN | G-847 | 2021-12-13 | VCCI registration |
| IC | CANADA | 5799A-1 | 2019-11-07 | IC filing |
| KOLAS | KOREA | NO.551 | 2021-08-20 | KOLAS accredited Lab. |
| NVLAP | U.S.A | 200723-0 | 2021-08-20 | ECT accredited Lab. |

2. Information about test item**2-1 Client & Manufacturer**

Company name : SEGI LIMITED

Address : Unit J2, 4/F, Block 1, Kinho Industrial Building, 14-24 Au Pui Wan Street, Shatin, New Territories, Hongkong

Tel / Fax : TEL No : +82-10-8883-4604 / FAX No : +82-10-8883-4604

2-2 Equipment Under Test (EUT)

Trade name : SEGI LIMITED

Model name : 900R

Serial number : Identical prototype

Date of receipt : June 04, 2019

EUT condition : Pre-production, not damaged

Antenna type : Internal Helical Antenna (Max Gain : -7.6 dBi)

Frequency Range : 433.92 MHz

RF output power : Max 78.38 dBuV/m – Radiated

Number of channels : 1

Type of Modulation : FSK

Power Source : 3.0 Vdc

2-3 Tested frequency

| | LOW | MID | HIGH |
|-----------------|-----|--------|------|
| Frequency (MHz) | | 433.92 | |

2-4 Ancillary Equipment

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

2-5 Operating Mode

| Mode | Remarks ¹⁾ |
|---------------------------------|--|
| Transmitting mode(TX) | <p>* The system was configured in typical fashion (as a user would normally use it) for testing.</p> <p>*1) End users cannot change the settings of the output power of the product.</p> |
| No Modification by the test lab | |

3. Test Report

3.1 Summary of tests

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|---|---|--|----------------|----------|
| Conducted emission | FCC : ANSI C63.10:2013 6 Standard test methods | FCC : Section 15.207 | N/A*1) | N/A | - |
| | IC : RSS-Gen 8.8 | IC : RSS-Gen 8.8 | | | |
| Automatically Deactivate | FCC : ANSI C63.10:2013 6 Standard test methods | FCC :Section 15.231(a)(1) | N/A | Complied a) | Radiated |
| | IC : - | IC : RSS-210 A 1.1 | | | |
| Electric Field Strength of Fundamental Emission | FCC : ANSI C63.10:2013 6 Standard test methods | FCC : Section 15.231(b) | 2.42 dB 433.92MHz Horizomtal PK with Duty factor | Complied b) | Radiated |
| | IC : RSS-Gen 6.13 | IC : RSS-210 A1.2 | | | |
| Electric Field Strength of Fundamental Emission | FCC : ANSI C63.10:2013 6 Standard test methods | FCC : Section 15.205 Section 15.209 Section 15.231(b) | 6.22dB 2603.13 MHz Vertical PK with Duty factor | Complied c) | Radiated |
| | IC : RSS-Gen 6.13 | IC : RSS-210 A1.2, 4.4 RSS-Gen 8.9 | | | |
| -20dB Bandwidth | FCC : ANSI C63.10:2013 6 Standard test methods | FCC : Section 15.231(c) | N/A | Complied d) | Radiated |
| | IC : - | IC : Reference data | | | |

Note:

*1) The test is not applicable since the EUT does not have AC Mains.

a) Refer to APPENDIX 1 (data of Automatically Deactivate)

b)Refer to APPENDIX 1 (data of Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission))

c)Refer to APPENDIX 1 (data of Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission))

d) Refer to APPENDIX 1 (data of -20dB and 99% Occupied Bandwidth)

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.

Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

FCC 15.31 (e)

This test was performed with the New Battery (DC 3.0 V) during the tests. Therefore, the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted by soldering inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

Frequency range to be scanned:

0.15 MHz - 30 MHz as conducted measurement

30 MHz to 5th harmonic of the highest frequency or 40 GHz, whichever is lower as radiated measurement.

Bandwidth:

Measured by the CISPR quasi-peak function Bandwidth is 9 kHz in the frequency 0.15 MHz to 30 MHz and 120 kHz in the frequency 30 MHz to 1,000 MHz.

Measured by the Peak function Bandwidth is 1 MHz in the frequency 1 GHz to 40 GHz.

A sample calculation:

COR. F (correction factor)= Antenna factor + Cable loss- Amp.gain- Distance correction

Emission Level= meter reading + COR.F

3.2 Addition to standard

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|-------------------------------|-----------------|------------------|--------------|----------|----------|
| 99 % Occupied Bandwidth | IC: RSS-Gen 6.7 | IC: RSS-210 A1.3 | N/A | Complied | Radiated |

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.2 Technical Characteristics Test

3.2.1 Radiated emission(Electric Field Strength of Fundamental and Spurious emission)

Procedure:

[For below 30 MHz]

The noise level was checked by moving a search-coil (Loop Antenna) close to the EUT.

[For 30 MHz to 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The measuring antenna height was varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the

maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization.

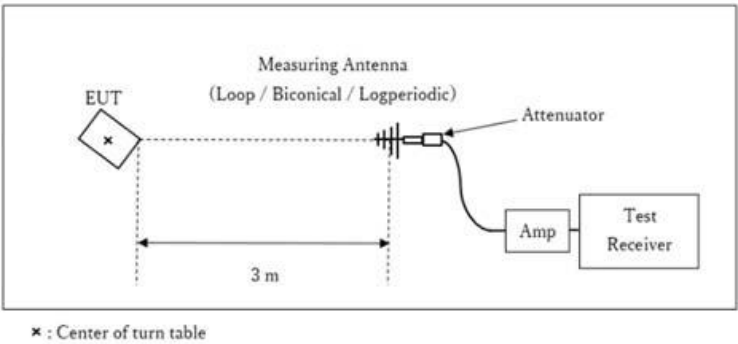
The radiated emission measurements were made with the following detector function of the test receiver / spectrum analyzer.

Test Antennas are used as below;

| Frequency | Below 30 MHz | 30 MHz to 1 GHz | Above 1 GHz |
|--------------|--------------|-----------------|-------------|
| Antenna Type | Loop | TRILOG Antenna | Horn |

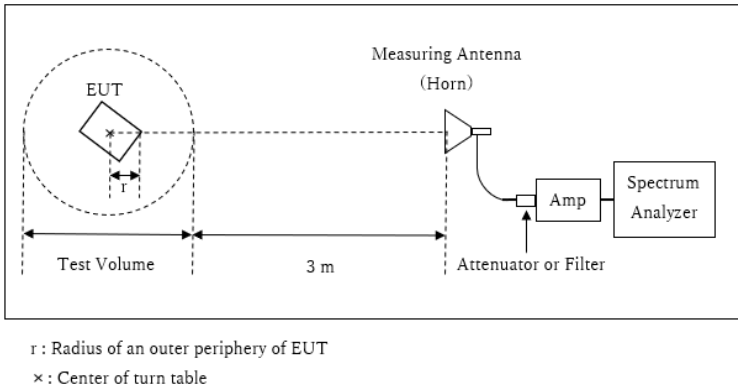
| | From 9 kHz to 90 kHz and From 110 kHz to 150 kHz | From 90 kHz to 110 kHz | From 150 kHz to 490 kHz | From 490 kHz to 30 MHz | From 30 MHz to 1 GHz | Above 1 GHz |
|-------------------|---|------------------------------|-------------------------------|------------------------------|----------------------------|--------------------------------------|
| Dectector Type | Peak | Peak | Peak | Peak | Quasi Peak | Peak and Peak with Duty factor |
| IF Bandwidth | 200 Hz | 200 Hz | 9.0 kHz | 9.0 kHz | 120 kHz | PK: S/A: RBW 1 MHz, VBW: 3 MHz |

Test Setup
Below 1 GHz



Test Distance : 3m

1 GHz ~ 10 GHz



Distance Factor: $20 \times \log (4.0 \text{ m} / 3.0 \text{ m}) = 2.5 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 4.0 \text{ m}$ Test Volume : 2.0 m

(Test Volume has been calibrated based on CISPR 16-1-4.) $r = 0.0 \text{ m}$

* The test was performed with $r = 0.0 \text{ m}$ since EUT is small and it was the rather conservative condition.

-30 MHz or less Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 10m open field test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlated with the one of tests made in an open field site based on KDB 414788.

- The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z, and the position that has the maximum noise was determined.

Noise levels of all the frequencies were measured at the position.

*The result is rounded off to the second decimal place, so some differences might be observed.

*This is the measured data from the worst axis, Y Axis.

| | |
|---------------------|---------------------------|
| Measurement range : | 9 KHz ~ 4.4 GHz |
| Test data : | Test Data section 3.2.3.2 |
| Test result : | Pass |

3.2.2 -20 dB and 99% Occupied Bandwidth

Limit:

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

Procedure:

The test was measured with a spectrum analyzer using a test fixture.

| Test | 20 dB Bandwidth | 99% Occupied Bandwidth |
|-----------------|--|---|
| RBW | 1 to 5% of 20 dB Bandwidth | 1 to 5% of OBW |
| VBW | Tree Times of RBW | Tree Times of RBW |
| Span | Between two times and five times the 20 dB Bandwidth | Enough width to display emission skirts |
| Sweep | Auto | Auto |
| Detector | Peak | Peak |
| Trace | Max hold | Max hold |
| Instrument used | Spectrum Analyzer | Spectrum Analyzer |

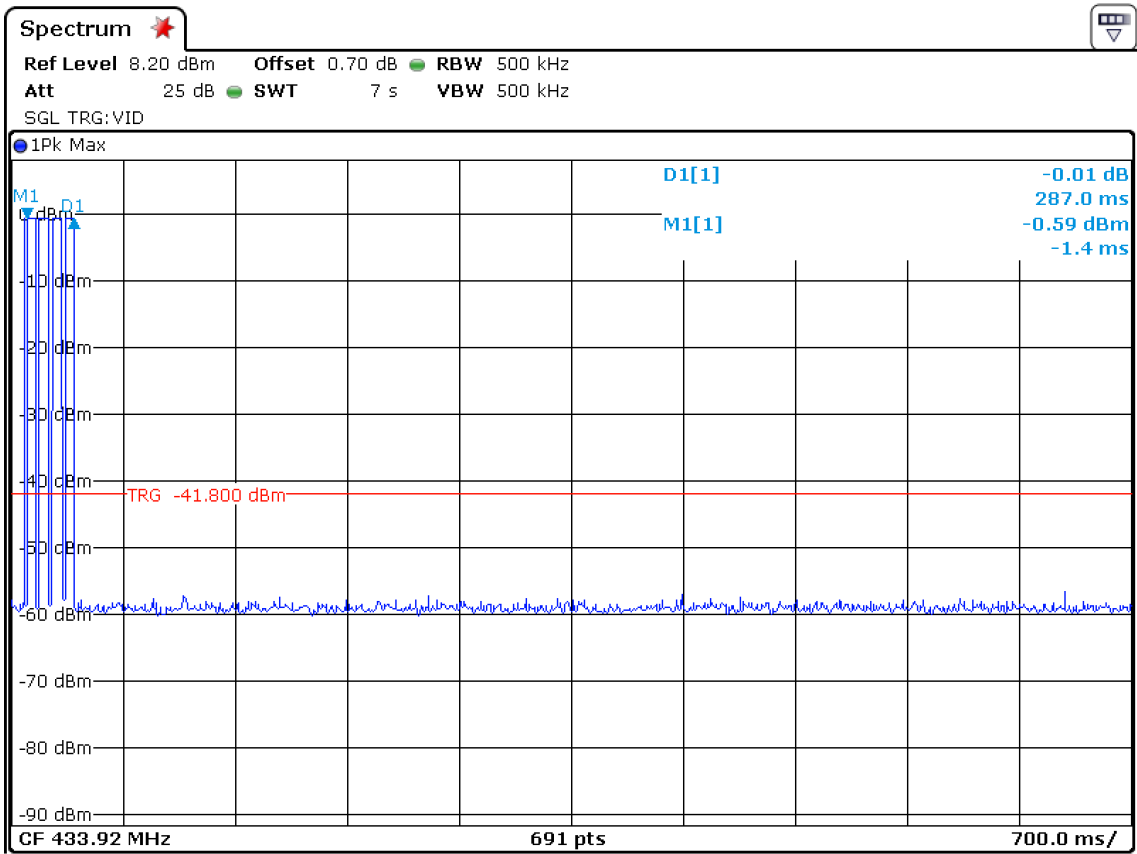
| | |
|-------------|---------------------------|
| Test data | Test Data section 3.2.3.3 |
| Test Result | Pass |

3.2.3 Test Data

3.2.3.1 Automatically deactivate

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

| Time of Transmitting [sec] | Limit [sec] | Result |
|-------------------------------|----------------|--------|
| 0.287 | 5.000 | Pass |



3.2.3.2 Radiated Emission(Electric Field strength of Fundamental and Spurious Emission)

Limit:

FCC §15.205 and §15.209

| 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 §15.231(b)

| Limits for radiated disturbance of an intentional radiator | | |
|--|---|--|
| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emissions (microvolts/meter) |
| 40.66-40.70 | 2,250 | 225 |
| 70-130 | 1,250 | 125 |
| 130-174 | ¹ 1,250 to 3,750 | ¹ 125 to 375 |
| 174-260 | 3,750 | 375 |
| 260-470 | ¹ 3,750 to 12,500 | ¹ 375 to 1,250 |
| Above 470 | 12,500 | 1,250 |

- Fundamental Frequency: 433.92 MHz

- Fundamental Limit: Peak 100.8 dBuV/m / Average 80.8 dBuV/m

- Spurious Emissions Limit: Peak 80.8 dBuV/m / Average 60.8 dBuV/m

Sample calculation:

Result of PK = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1GHz) +Distance factor (above 1 GHz)} - Gain (Amplifier)

Result of PK with Duty factor = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz) +Distance factor (above 1 GHz)} - Gain (Amplifier) + Duty factor (Refer to Duty factor data sheet)

For above 1GHz : Distance Factor: $20 \times \log (4.0 \text{ m}/3.0 \text{ m}) = 2.50 \text{ dB}$

***Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).**

Average measurement : Average result = Peak result (dBuV/m) – Duty Correction Factor (dB)

Duty Correction Factor (dB) = $20 \times \log (\text{On time (in 0.1s)}/0.1) = 20 \times \log (0.03185/0.1) = -9.94 \text{ dB}$

Measurement Data : (9 kHz – 30 MHz)

| Frequency [MHz] | Reading [dBuV/m] | | Pol. | Correction Factor | | Limits [dBuV/m] | | Result [dBuV/m] | | Margin [dB] | |
|---|---------------------|---|------|----------------------|----------------|--------------------|---|--------------------|---|----------------|---|
| | AV / Peak | | | Antenna | Amp.Gain+Cable | AV / Peak | | AV / Peak | | AV / Peak | |
| - | - | - | - | - | - | - | - | - | - | - | - |
| No emissions were detected at a level greater than 20 dB below limit. | | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - |

Measurement Data : (Below 1 GHz)

| Frequency [MHz] | Reading [dBuV/m] | Pol. | C.F [dB] | D.C.F [dB] | Detector | Limits [dBuV/m] | Result [dBuV/m] | Margin [dB] |
|--------------------|---------------------|------|-------------|---------------|----------|--------------------|--------------------|----------------|
| 68.56 | 27.19 | H | -15.15 | N/A | QP | 43.50 | 12.04 | 31.46 |
| 369.74 | 22.41 | H | -9.55 | N/A | QP | 43.50 | 12.86 | 30.64 |
| 433.88* | 96.39 | H | -8.07 | N/A | PK | 100.8 | 88.32 | 12.48 |
| 433.88* | 96.39 | H | -8.07 | -9.94 | AV | 80.8 | 78.38 | 2.42 |
| 867.84 | 32.23 | H | -0.70 | N/A | QP | 60.8 | 31.53 | 29.27 |
| 68.44 | 33.14 | V | -15.13 | N/A | QP | 43.50 | 18.01 | 25.49 |
| 433.88* | 90.31 | V | -8.07 | N/A | PK | 100.8 | 82.24 | 18.56 |
| 433.88* | 90.31 | V | -8.07 | -9.94 | AV | 80.8 | 72.30 | 8.50 |
| 772.78 | 27.66 | V | -1.74 | N/A | QP | 43.50 | 25.92 | 17.58 |
| 970.29 | 26.75 | V | 1.15 | N/A | QP | 43.50 | 27.90 | 15.60 |

* Fundamental

Note 1: C.F (Correction Factor) = Antenna - Amp.Gain + Cable

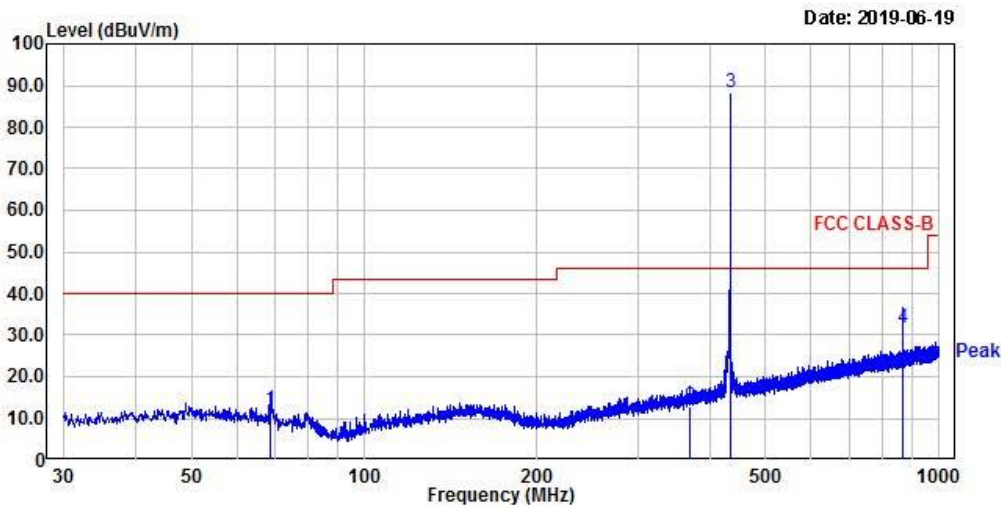
Note 2: D.C.F (Duty correction factor) = 20 x log(Duty Cycle). Please refer to section 3.2.3.4.

- Below 1 GHz (Horizontal)



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

| | | | |
|----------------|------------------|------------|----------|
| EUT/Model No.: | 900R | Temp/Humi: | 24 / 39 |
| Test Mode | : Operating mode | Tested by: | Jung E H |

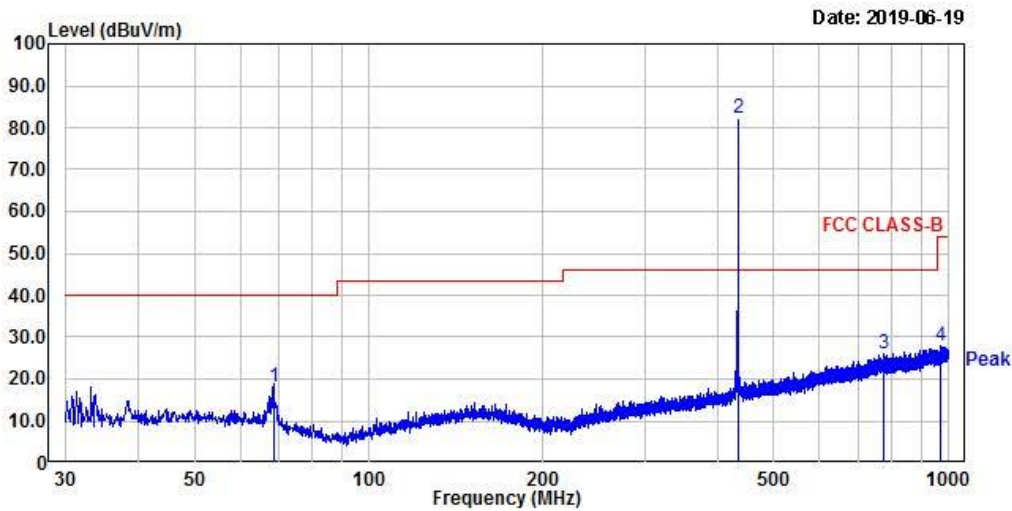


- Below 1 GHz (Vertical)



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Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

| | | | |
|----------------|------------------|------------|----------|
| EUT/Model No.: | 900R | Temp/Humi: | 24 / 39 |
| Test Mode | : Operating mode | Tested by: | Jung E H |



Measurement Data : (Above 1 GHz)

| Frequency [MHz] | Reading [dBuV/m] | Pol. | C.F [dB] | D.C.F [dB] | Detector | Limits [dBuV/m] | Result [dBuV/m] | Margin [dB] |
|--------------------|---------------------|------|-------------|---------------|----------|--------------------|--------------------|----------------|
| 1735.00 | 50.17 | H | -1.90 | -9.94 | AV | 60.80 | 38.32 | 22.48 |
| 1735.00 | 50.17 | H | -1.90 | N/A | PK | 80.80 | 48.28 | 32.52 |
| 2169.38 | 56.39 | H | 1.00 | -9.94 | AV | 60.80 | 47.45 | 13.35 |
| 2169.38 | 56.39 | H | 1.00 | N/A | PK | 80.80 | 57.39 | 23.41 |
| 2603.13 | 61.85 | H | 2.68 | -9.94 | AV | 60.80 | 54.58 | 6.22 |
| 2603.13 | 61.85 | H | 2.68 | N/A | PK | 80.80 | 64.54 | 16.26 |
| 3037.50 | 55.67 | H | 4.92 | -9.94 | AV | 60.80 | 50.65 | 10.15 |
| 3037.50 | 55.67 | H | 4.92 | N/A | PK | 80.80 | 60.59 | 20.21 |
| 3471.25 | 43.96 | H | 7.36 | -9.94 | AV | 60.80 | 41.38 | 19.42 |
| 3471.25 | 43.96 | H | 7.36 | N/A | PK | 80.80 | 51.32 | 29.48 |
| 4339.38* | 42.10 | H | 10.96 | -9.94 | AV | 54.00 | 43.12 | 10.88 |
| 4339.38* | 42.10 | H | 10.96 | N/A | PK | 74.00 | 53.06 | 20.94 |
| 2169.38 | 49.94 | V | 1.00 | -9.94 | AV | 60.80 | 41.00 | 19.80 |
| 2169.38 | 49.94 | V | 1.00 | N/A | PK | 80.80 | 50.94 | 29.86 |
| 3037.50 | 47.13 | V | 4.92 | -9.94 | AV | 60.80 | 42.11 | 18.69 |
| 3037.50 | 47.13 | V | 4.92 | N/A | PK | 80.80 | 52.05 | 28.75 |
| 3471.25 | 41.09 | V | 7.36 | -9.94 | AV | 60.80 | 38.51 | 22.29 |
| 3471.25 | 41.09 | V | 7.36 | N/A | PK | 80.80 | 48.45 | 32.35 |

* Include in the restricted band (15.205)

Note 1: C.F (Correction Factor) = Antenna - Amp.Gain + Cable

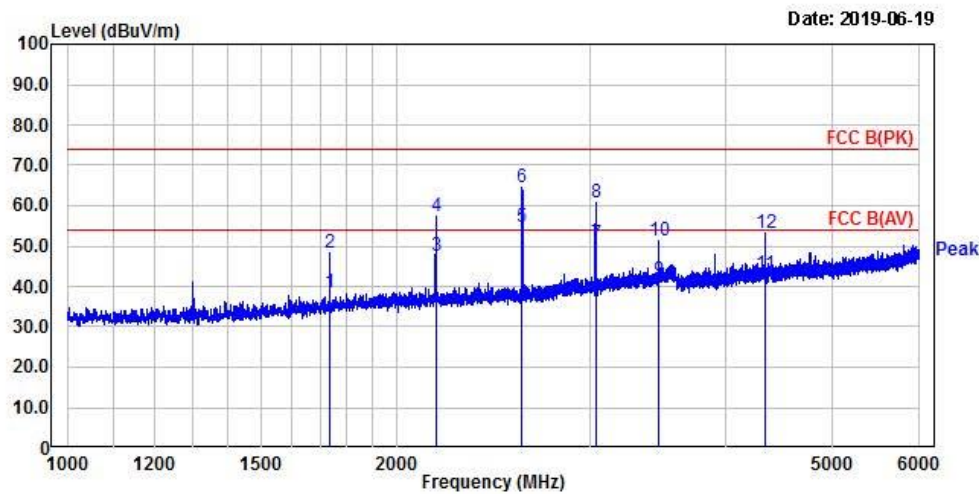
Note 2: D.C.F (Duty correction factor) = $20 \times \log(\text{Duty Cycle})$. Please refer to section 3.2.3.4.

- Above 1GHz (Horizontal)



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Tel : +82-31-3236008,9
Fax : +82-31-3236010
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| | | | |
|----------------|------------------|------------|----------|
| EUT/Model No.: | 900R | Temp/Humi: | 24 / 42 |
| Test Mode | : Operating mode | Tested by: | JUNG E H |

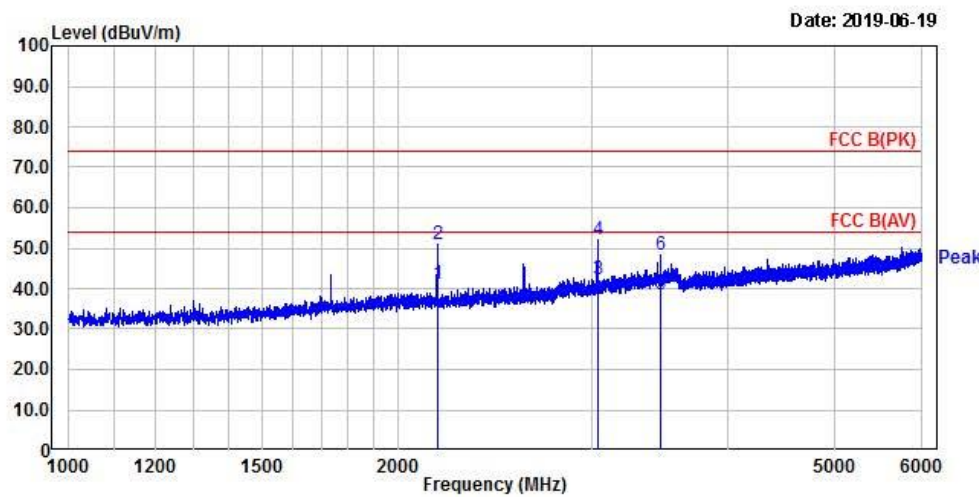


- Above 1GHz (Vertical)



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| | | | |
|----------------|------------------|------------|----------|
| EUT/Model No.: | 900R | Temp/Humi: | 24 / 42 |
| Test Mode | : Operating mode | Tested by: | JUNG E H |



3.2.3.3 -20 dB and 99% Occupied Bandwidth

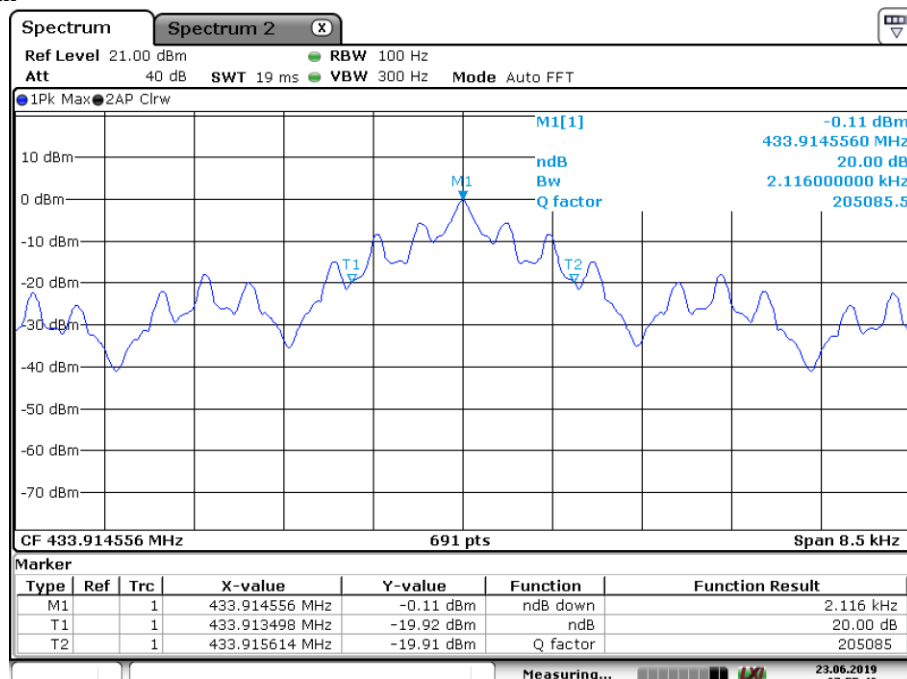
Bandwidth Limit : Fundamental Frequency 433.92 MHz X 0.25 % = 1084.80 KHz

*The above limit was calculated from more stringent nominal frequency.

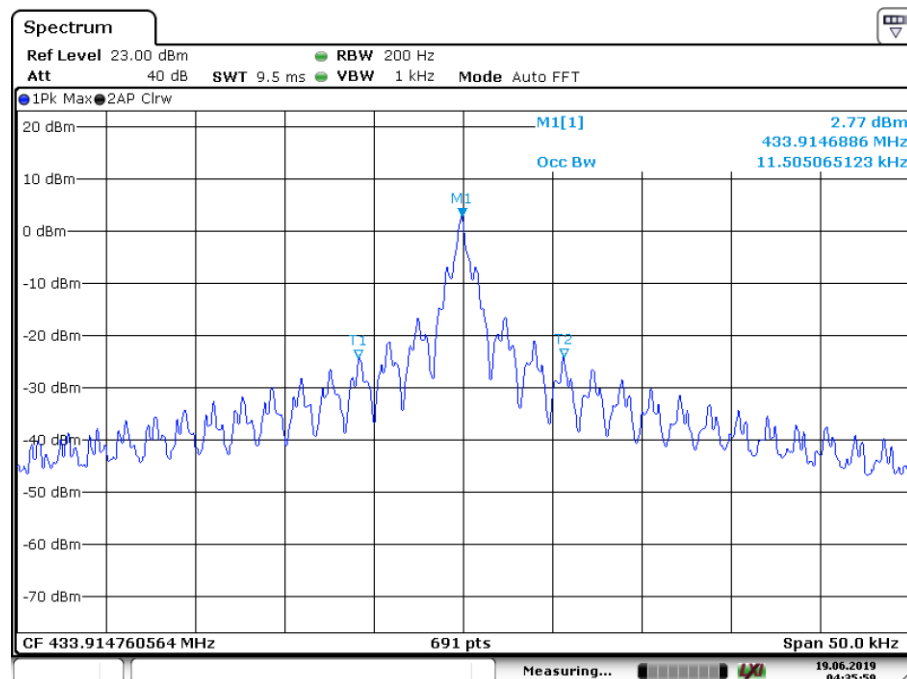
Test result:

| Frequency [MHz] | 20 dB Bandwidth [kHz] | 99 % Bandwidth [kHz] | Limit [kHz] | Result |
|--------------------|--------------------------|-------------------------|----------------|--------|
| 433.92 | 2.116 | 11.505 | 1084.80 | Pass |

- 20dB Bandwidth



- OBW (99%)



3.2.3.4 Duty Cycle

1) Measured Duty Cycle

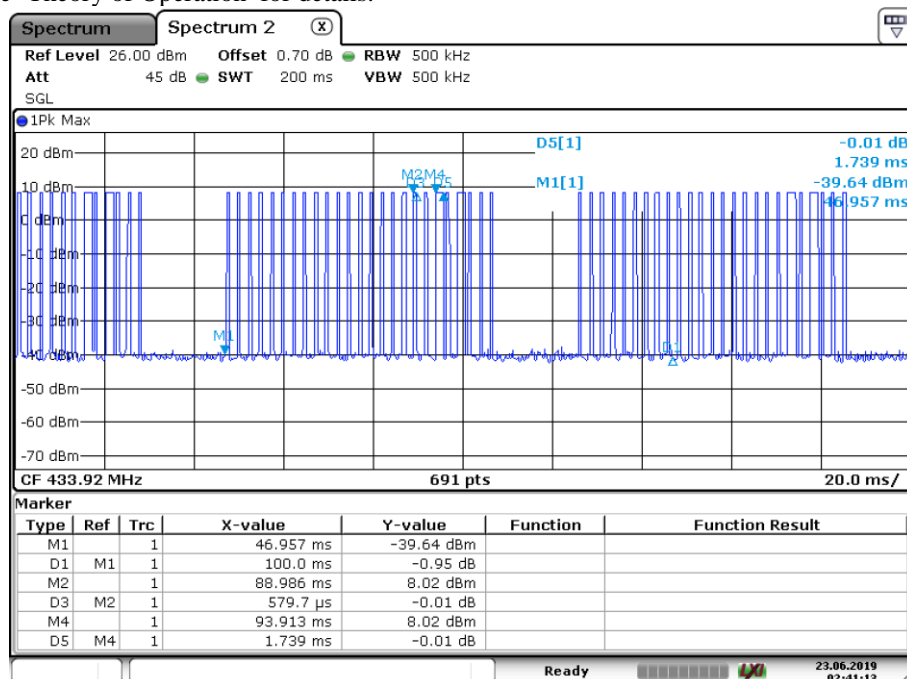
| Type | Times | ON time(One Pulse) | Sum of ON time [ms] | Total ON time [ms] | Duty cycle(in 100ms) [%] |
|------|-------|--------------------|------------------------|-----------------------|-----------------------------|
| A | 23 | 0.580 | 13.340 | 16.82 | 16.82 |
| B | 2 | 1.739 | 3.478 | | |

*1) ON time(in 100ms) = Times * ON time(One Pulse)

*2) Total ON time = Type A's ON time + Type B's ON time

*The test was performed by a button-pressed operation as the worst case.

Please refer to the 'Theory of Operation' for details.



2) Calculation of Duty correction factor

- Declared maximum ON time per 100ms = **31.85 ms** > 16.82 ms

Note: The worst duty cycle has been provide by the manufacturer's operational description.

- Worst Duty Correction Factor

| Worst ON time [ms] | Period [ms] | Duty [On time / Period] | Duty correction factor [dB] |
|-----------------------|----------------|----------------------------|--------------------------------|
| 31.85 | 100 | 0.3185 | -9.94 |

*4) Duty correction factor = $20\log_{10}(\text{ON time} / \text{Period})$

APPENDIX

TEST EQUIPMENT USED FOR TESTS

| | Use | Description | Model No. | Serial No. | Manufacturer | Interval | Nest Cal. Date |
|----|-----|--------------------------------------|------------------|-------------|------------------------|----------|----------------|
| 1 | | Signal Analyzer (9 kHz ~ 30 GHz) | FSV30 | 100757 | R&S | 1 year | 2019-09-07 |
| 2 | | Signal Generator (~3.2 GHz) | 8648C | 3623A02597 | HP | 1 year | 2020-03-20 |
| 3 | | SYNTHESIZED CW GENERATOR | 83711B | US34490456 | HP | 1 year | 2020-03-20 |
| 4 | | Attenuator (3 dB) | 8491A | 37822 | HP | 1 year | 2019-09-07 |
| 5 | | Attenuator (10 dB) | 8491A | 63196 | HP | 1 year | 2019-09-07 |
| 6 | ■ | EMI Test Receiver (~7 GHz) | ESCI7 | 100722 | R&S | 1 year | 2019-09-07 |
| 7 | ■ | RF Amplifier (~1.3 GHz) | 8447D OPT 010 | 2944A07684 | HP | 1 year | 2019-09-07 |
| 8 | ■ | RF Amplifier (1~26.5 GHz) | 8449B | 3008A02126 | HP | 1 year | 2019-03-21 |
| 9 | ■ | Horn Antenna (1~18 GHz) | 3115 | 00114105 | ETS | 2 year | 2020-08-04 |
| 10 | | DRG Horn (Small) | 3116B | 81109 | ETS-Lindgren | 2 year | 2020-03-18 |
| 11 | | DRG Horn (Small) | 3116B | 133350 | ETS-Lindgren | 2 year | 2020-03-18 |
| 12 | ■ | TRILOG Antenna | VULB 9160 | 9160-3237 | SCHWARZBECK | 2 year | 2021-03-20 |
| 13 | | Temp.Humidity Data Logger | SK-L200TH II A | 00801 | SATO | 1 year | 2020-03-20 |
| 14 | | Splitter (SMA) | ZFSC-2-2500 | SF617800326 | Mini-Circuits | - | - |
| 15 | ■ | DC Power Supply | 6674A | 3637A01657 | Agilent | - | - |
| 17 | ■ | Power Meter | EPM-441A | GB32481702 | HP | 1 year | 2020-03-20 |
| 18 | ■ | Power Sensor | 8481A | 3318A94972 | HP | 1 year | 2019-09-07 |
| 19 | | Audio Analyzer | 8903B | 3729A18901 | HP | 1 year | 2019-09-07 |
| 20 | | Modulation Analyzer | 8901B | 3749A05878 | HP | 1 year | 2019-09-07 |
| 21 | | TEMP & HUMIDITY Chamber | YJ-500 | LTAS06041 | JinYoung Tech | 1 year | 2019-09-07 |
| 22 | | Stop Watch | HS-3 | 812Q08R | CASIO | 2 year | 2020-03-18 |
| 23 | | LISN | KNW-407 | 8-1430-1 | Kyoritsu | 1 year | 2019-09-07 |
| 24 | | Two-Lime V-Network | ESH3-Z5 | 893045/017 | R&S | 1 year | 2020-03-18 |
| 25 | | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 106243 | R&S | 1 year | 2020-03-18 |
| 26 | | Highpass Filter | WHKX1.5/15G-10SS | 74 | Wainwright Instruments | 1 year | 2020-03-18 |
| 27 | | Highpass Filter | WHKX3.0/18G-10SS | 118 | Wainwright Instruments | 1 year | 2020-03-18 |
| 28 | | OSP120 BASE UNIT | OSP120 | 101230 | R&S | 1 year | 2020-03-18 |
| 29 | ■ | Signal Generator(100 kHz ~ 40 GHz) | SMB100A03 | 177621 | R&S | 1 year | 2020-03-18 |
| 30 | ■ | Signal Analyzer (10 Hz ~ 40 GHz) | FSV40 | 101367 | R&S | 1 year | 2020-03-18 |
| 31 | ■ | Active Loop Antenna | FMZB 1519 | 1519-031 | SCHWARZBECK | 2 year | 2021-02-26 |