

# TEST REPORT

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The tests reported herein have been performed in accordance with its terms of accreditation.

**Test Report No.** : LR500111912B  
**Issue Date** : December 24, 2019  
**Applied Standard** : FCC Part 15, Subpart B  
**Trade Name** : Alien Technology Asia  
**FCC ID.** : 2AVEQWMU2000  
**Equipment Name** : RFID Reader  
**Model Name** : WMU2000  
**Serial Number** : Identification

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.



## Revision history

Revision	Date of issue	Test report No.	Description
0	24.12.2019	LR500111912B	Initial

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## LTA Certification

### Applicant / Manufacture

Company name : Alien Technology Asia  
Address : RM# 908, 909, 1008, Star Valley, 99, Digital-ro, 9-gil, Gumcheon-gu, Seoul, Korea  
Telephone / Facsimile : +82-70-7012-1363

### Factory

Company name : Wissenmeer  
Address : #1023, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, Korea

### Equipment Under Test (EUT)

FCC ID. : 2AVEQWMU2000  
Equipment Name : RFID Reader  
Model name : WMU2000  
Serial number : Identification  
Intended environment : Industrial area  
Date of receipt : November 01, 2019  
EUT condition : Pre-production, not damaged  
Test Mode : Charging mode (Cradle), PDA Communication mode  
Interface ports : DC IN, DC IN #1 ~ #2, Connect  
Power rating : DC 7.2 V  
Test Voltage : AC 120 V, 60 Hz

### Model Description

- NONE

### Model Specification

- NONE

\*\*\* To be continued next page \*\*\*

## LTA Certification –cont.-

### Test Performed

Test started & completed : November 25 – 28, 2019  
Location : LTA Co., Ltd.

### Test Specification

Purpose of the test : Compliance test to the following standard  
Applied standard : FCC Part 15, Subpart B  
Classification : Class A  
Deviations from Standard Test Method : N/A

### Test Results

Measurement	Results*	Test method
Conducted disturbance	Complies	ANSI C 63.4-2014
Radiated disturbance	Complies	ANSI C 63.4-2014

\* : The compliance statement is based on nominal value only.

### Modification performed by the lab.:

- N.A  
- We were performed the test according to LTA procedure LTA-QI-04.

### Laboratory's Certificate

Report number : LR500111912B  
Issue date : December 24, 2019

This test report is issued under the authority of:

The test was supervised by:



Young Kyu Shin, Technical Manager



Joo Hyung Cho, Test Engineer

The results in this report apply only to the sample(s) tested.

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## General information's

### Purpose

This document is based on the Electromagnetic Interference (EMI) tests performed on the “WMU2000”. The measurements were performed according to the measurement procedure described in ANSI C 63.4-2014. The tests were carried out in order to confirm whether the electromagnetic emissions from the EUT (Equipment Under Test), are within the Class A limits defined in FCC Part 15, Subpart B- “Section 15.107- Conducted limits” and “Section 15.109-Radiated emission limits”.

### Test Performed

Company name : **LTA Co., Ltd.**  
Address : 34, Songju-ro 236Beon-gil, Yangji-myeon, Cheoin-gu Yongin-si, Gyeonggi-do 449-822, Korea  
Telephone : +82-31-323-6008  
Facsimile : +82-31-323-6010

### Measurement uncertainty

Conducted disturbance	(0.15 to 30 MHz) :	$\pm 2.80$ [dB] (k=2)
Radiated disturbance	(30 to 1,000 MHz) :	H : $\pm 4.84$ [dB] (k=2) V : $\pm 5.00$ [dB] (k=2)
	(1 GHz to 6 GHz) :	H : $\pm 5.97$ [dB] (k=2) V : $\pm 5.96$ [dB] (k=2)
	(6 GHz to 18 GHz) :	H : $\pm 6.20$ [dB] (k=2) V : $\pm 6.20$ [dB] (k=2)

The coverage factor k=2 yields approx. a 95% level of confidence for near-normal distribution typical of most measurement results.

### 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	2020-09-30	ECT accredited Lab.
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2021-04-11	FCC CAB
		C-4948,	2020-09-10	
VCCI	JAPAN	T-2416,	2020-09-10	VCCI registration
		R-4483(10 m),	2020-10-15	
		G-10847	2022-06-13	
IC	CANADA	5799A	2021-06-16	IC filing
KOLAS	KOREA	NO.KT551	2021-08-20	KOLAS accredited Lab.

## 1- Brief Information

### 1-1 Test Summary

Parameter	Applied Standard	Status (note 1)
<b>I. Emission</b>		
Conducted disturbance	FCC Part 15.107	C
Radiated disturbance	FCC Part 15.109	C
Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable		
* The data in this test report are traceable to the national or international standards.		

Frequency range to be scanned:

0.15 MHz - 30 MHz as conducted measurement

30 MHz to 5<sup>th</sup> 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

### 1-2 Test mode of the EUT

The tests have been conducted with the following operational mode(s) of the EUT.

Name of mode in the report

Charging mode (Cradle), PDA Communication mode

### 1-3 Modification

-NONE

### 1-4 Speciality

- The Skylark (FCC ID: 2AVEQSKYLARK) described in the Charging mode test consists of peripheral devices of the WMU200.

#### 1-4 List of EUT and accessory

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
RFID Reader	WMU2000	N/A	Wissenmeer	—
Cradle	N/A	N/A	N/A	—
Adapter	FJ-SW20260505000	N/A	SHENZHEN FUJIA APPLIANCE CO., LTD.	—
Battery	7.2V, 3350mAh Li-ion Battery	WMBT0319380480	N/A	7.2V, 3350mAh

ACCESSORY / Charging mode (Cradle)				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Battery	7.2V, 3350mAh Li-ion Battery	N/A	N/A	—
PDA	Skylark	N/A	Wissenmeer	—

/ PDA Communication mode				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Battery	7.2V, 3350mAh Li-ion Battery	N/A	N/A	—
RFID Tag	N/A	N/A	N/A	—
PDA	Skylark	N/A	Wissenmeer	—

#### 1-5 Cable List / Charging mode (Cradle)

Cable List						
From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	DC IN	Battery #1	DC OUT	-	-	-
	DC OUT	PDA	DC IN	-	-	-
Battery #1	DC IN	Cradle	DC OUT #1	-	-	-
Battery #2	DC IN	Cradle	DC OUT #2	-	-	-
Cradle	DC IN	Adapter	DC OUT	1.2	1.2	Plastic
Adapter	AC IN	AC Power Source	3 Pin AC Line	1.1	1.1	Plastic

#### / PDA Communication mode

Cable List						
From		To		Length (m)	Shielding	
Type	I/O Port	Type	I/O Port		Cable	backshell
EUT	DC IN	Battery	DC OUT	-	-	-
	Connect	PDA	Connect	-	-	-
RFID Tag	-	-	-	-	-	-

## 2- Test Site Description

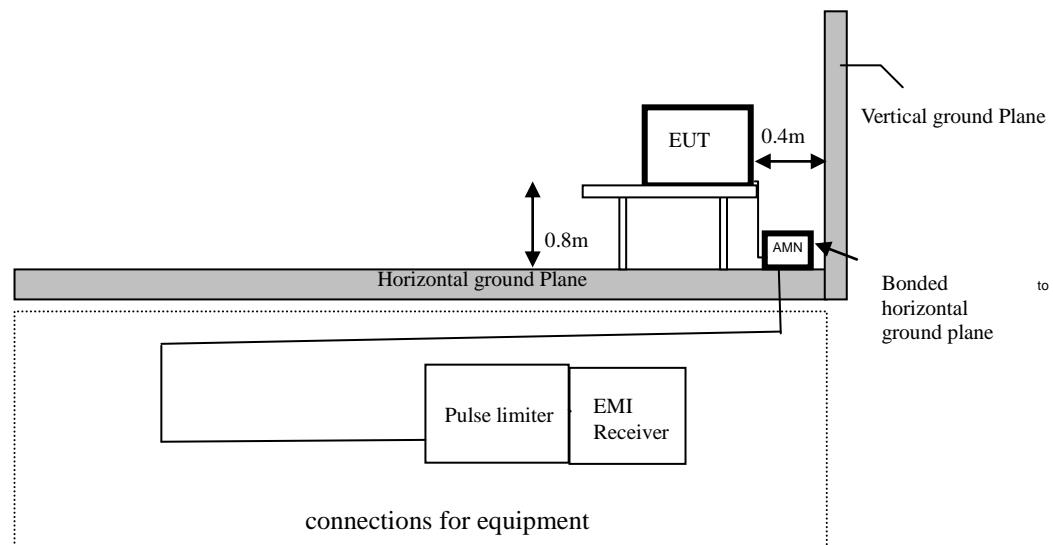
### 1-Facility

All the testing facilities are periodically serviced as a daily check for equipment and cables systems, an every 6 months facility check for the facilities and a monthly check and annual calibration for testing equipment according to ISO/IEC 17025. All the testing facilities are used as the same specifications shown below. There are descriptions both for radiated disturbance measurement and conducted disturbance measurement conformed by ANSI C 63.4-2014.

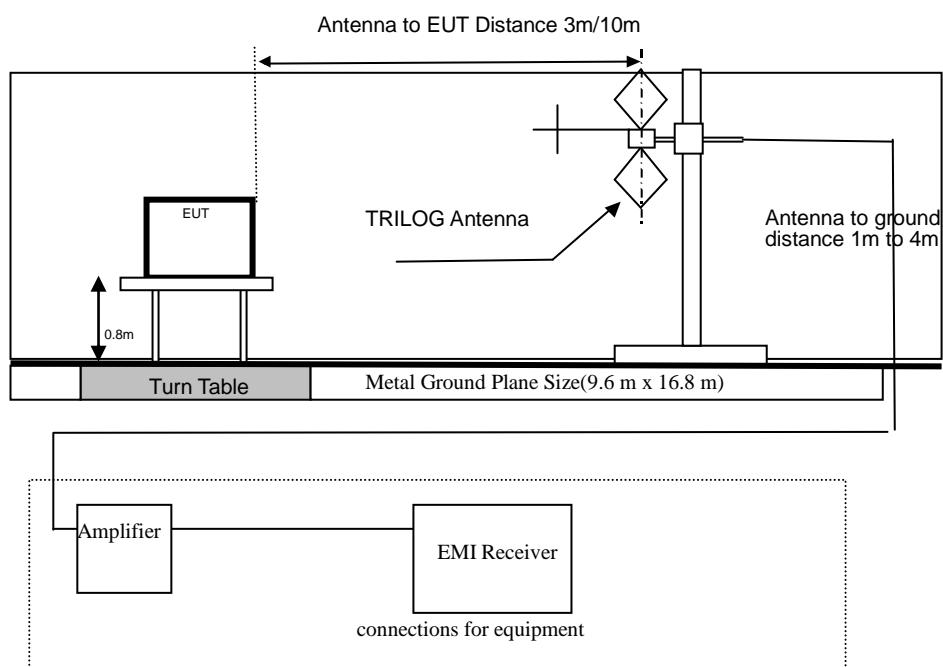
The NSA measurement of the 10 m chamber was performed on February 05, 2018 according to ANSI C 63.4:2014

The SVSWR measurement of the 10 m chamber was performed on February 03, 2018 according to ANSI C 63.4:2014

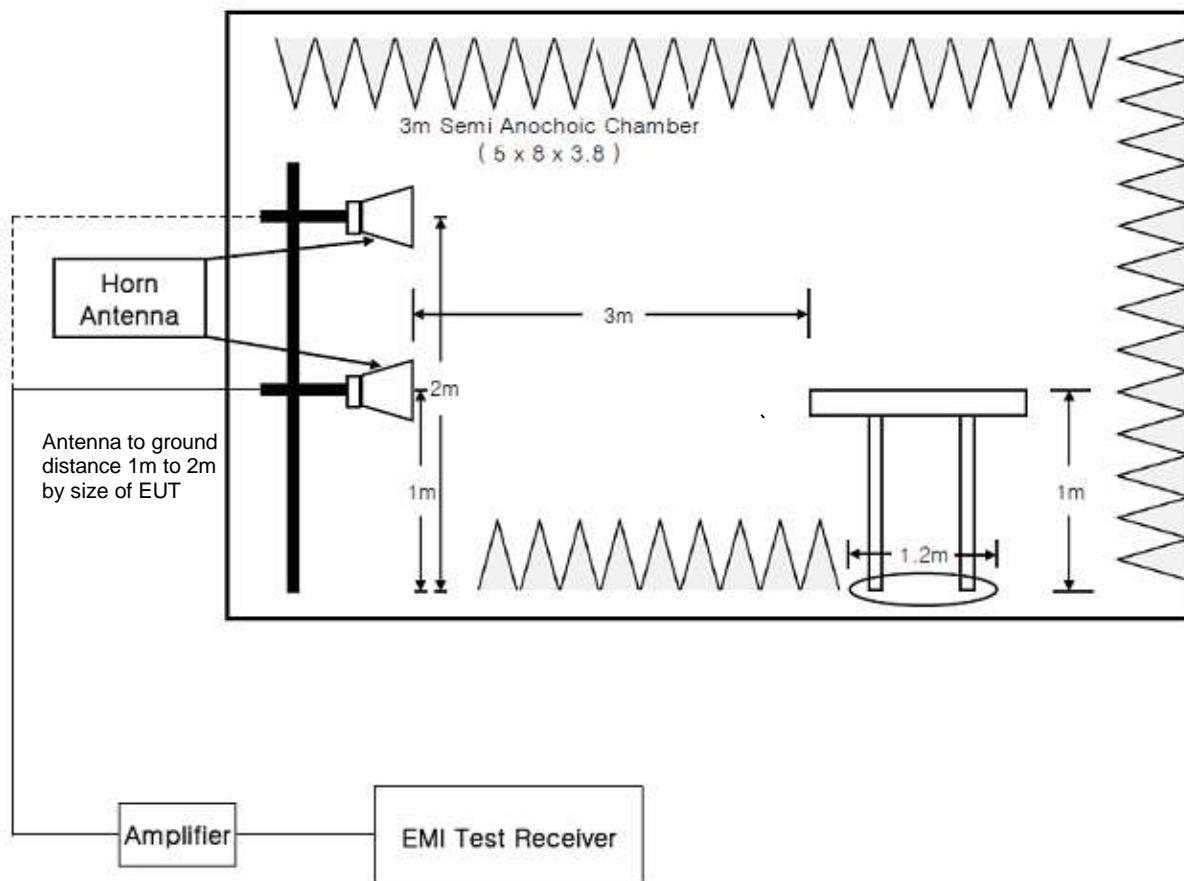
### 2-1 Conducted Disturbance Measurement



### 2-2 Radiated Disturbance Measurement – Below 1 GHz



### 2-3 Radiated Disturbance Measurement – Above 1GHz



### 3- Test Procedure

#### 3-1 Conducted Disturbance Measurements

- The measurement is carried out on an open site with horizontal and metallic ground plane.
- An AMN(Artificial Mains Network) with a nominal impedance ( $50 \Omega/50 \mu\text{H}$ ) as defined in ANSI C 63.4-2014., shall be utilized.
- The AMN is grounded on a horizontal metal ground plane.
- Measurement is carried out using an EMI receiver with quasi-peak detectors and average detector.  
(Refer to the List of test equipment used for the test.)
- The shortest distance between the EUT and the AMN is 0.8 m.
- The EUT is placed on the non-conducting table with 0.8 m height.
- A remote switch is used for changing phases between Line (L) and Neutral (N).
- Refer to "Brief Information"(page 7-10) about details of the EUT and configuration of the cables.
  
- Measurement is carried out as manual operation.
  - detecting the maximized emission level using the maxhold function after setting the spectrum analyzer bandwidth 1 kHz and the frequency range from 150 kHz to 1 MHz , 1 MHz to 5 MHz and 5 MHz to 30 MHz.
  - searching the maximum frequency point of the disturbance wave in each frequency range.
  - reading the disturbance level of quasi-peak, average and Line (L) and Neutral (N) in 9 kHz bandwidth by the EMI receiver.
  - calculating the measurement result with the following formula or equation.  
(Result = Reading + Cor.F.(LISN Factor + Cable Loss + Pulse Limiter)  
(ex)  $= 13.23 \text{ dB}\mu\text{V} + (9.63 \text{ dB} + 0.01 \text{ dB} + 9.86 \text{ dB})$   
 $= 32.73 \text{ dB}\mu\text{V}$

### 3-2 Radiated Disturbance Measurements – Below 1GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m/10 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1m and 4m in height above the ground.
- The EUT is placed on the non-conducting table with 0.8 m height on the turntable.
- Measurements are carried out using a EMI test receiver with peak detectors (100 kHz bandwidth) and an EMI receiver with quasi-peak detectors (120 kHz bandwidth).
- Refer to the list of test equipment used for the test.
- TRILOG antenna are used as wideband antenna.
- The TRILOG antenna is used in the frequency range of 30 MHz to 1 000 MHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 7-10) about details of the EUT and configuration of the cables.
- Measurement is carried out by a LTA operator as manual operation.
  - searching for some of High disturbance frequency points than the other points with the following settings; bandwidth 100 kHz, frequency range 10 MHz between 30 MHz and 300 MHz and frequency range 50 MHz between 300 MHz and 1 GHz.
  - searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
  - setting the height of the antenna with the maximum level of the disturbance wave from 1m to 4m.
  - reading the disturbance level by the EMI receiver with quasi-peak detectors (120 kHz bandwidth) according to ANSI C 63.4-2014.
  - measuring to vertical and horizontal polarization.
  - calculating the measurement result with the following formula or equation:  
(Result = Reading +Cor.F (antenna factor + cable loss – PreAmp Gain)  
(ex) = 50.6 dB $\mu$ V/m + (11.08 dB(1/m) + 1.31 dB -27.32 dB)  
= 35.67 dB $\mu$ V/m

### 3-3 Radiated Disturbance Measurements – Above 1GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1m and 4 m in height above the ground.
- The EUT is placed on the non-conducting table with 1 m height on the turntable.
- Measurements are carried out using a EMI test receiver with peak detectors (1 MHz bandwidth) and an EMI receiver with peak and average detectors(1 MHz bandwidth).
- Refer to the list of test equipment used for the test.
- HORN antenna are used as wideband antenna.
- The HORN antenna is used in the frequency range of 1 GHz to 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 7-10) about details of the EUT and configuration of the cables.
- Measurement is carried out by a LTA operator as manual operation.
  - searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
  - setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m
  - reading the disturbance level by the EMI receiver with peak and average detectors (1 MHz bandwidth) according to ANSI C 63.4-2014.
  - measuring to vertical and horizontal polarization.
  - calculating the measurement result with the following formula or equation:  
(Result = Reading +Cor.F (antenna factor + cable loss – PreAmp Gain)  
(ex)      = 35.9 dB $\mu$ V/m + (23.92 dB(1/m) + 7.01 dB - 38.33 dB)  
              = 28.5 dB $\mu$ V/m

## 4- List of Equipment Used For the Tests

### Conducted emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2020.07.04	1 year
<input checked="" type="checkbox"/>	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2020.03.16	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	100378	2020.09.05	1 year
<input type="checkbox"/>	LISN	ESH3-Z6	Rohde & Schwarz	101468	2020.09.05	1 year
<input checked="" type="checkbox"/>	LISN(main)	ENV216	Rohde & Schwarz	101222	2020.09.06	1 year
<input type="checkbox"/>	LISN(sub)	LT32C/10	AFJ	32031518210	2020.09.05	1 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

### Radiated Emission – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
<input checked="" type="checkbox"/>	Amplifier (25 dB)	8447D	HP	2944A07684	2020.03.16	1 year
<input type="checkbox"/>	BILOG Antenna	VULB9160	SCHWARZBECK	3237	2021.05.09 (KOLAS)	2 year
<input checked="" type="checkbox"/>	BILOG Antenna	VULB9160	SCHWARZBECK	3237	2021.04.17 (RRA)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

### Radiated Emission – Above 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESU	Rohde & Schwarz	100092	2020.09.05	1 year
<input checked="" type="checkbox"/>	Amplifier	8449B	HP	3008A00671	2020.09.05	1 year
<input type="checkbox"/>	Amplifier	PAM-840A	COM-POWER	461314	2020.03.18	1 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	133350	2020.05.10	2 year
<input type="checkbox"/>	HORN ANTENNA	3116B	ETS	81109	2020.05.10	2 year
<input type="checkbox"/>	HORN ANTENNA	3115	ETS	00055005	2021.03.26 (KOLAS)	2 year
<input checked="" type="checkbox"/>	HORN ANTENNA	3115	ETS	00055005	2021.04.17 (RRA)	2 year
<input checked="" type="checkbox"/>	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

## 5- EMISSION

### 5-1 Conducted Disturbance Measurements

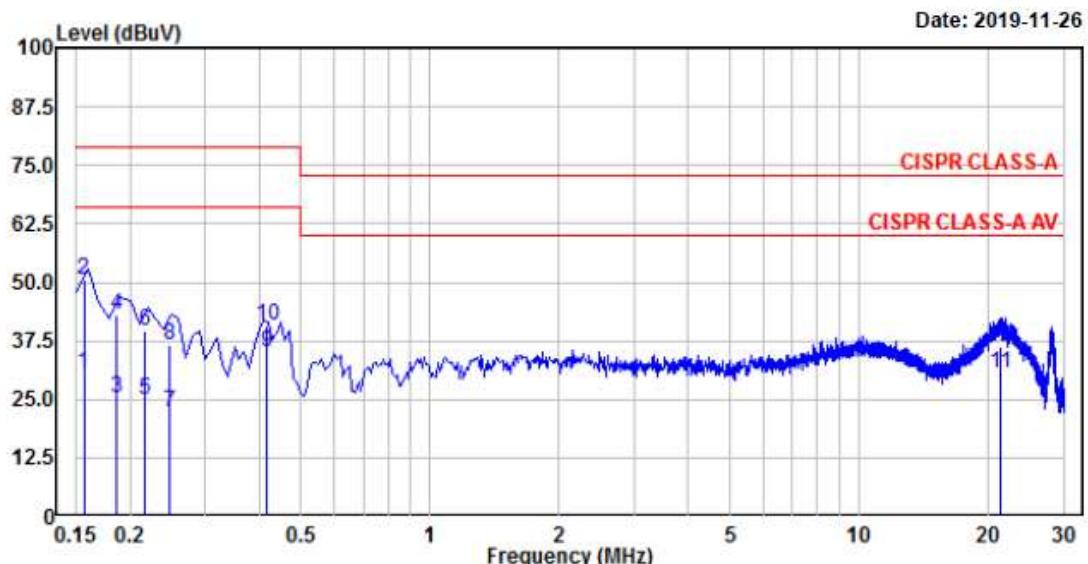
(LINE)



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EUT /Model No. : Skylark, WMU2000  
Test Mode : Charging mode (Cradle)  
Temp./ Humi. : 24 'C / 40 % R.H.

Phase : Line  
Test Power : 120 V / 60 Hz  
Test Engineer : CHO J H



No.	Freq MHz	RD QP dB $\mu$ V	RD AV dB $\mu$ V	C.F dB	Result QP dB $\mu$ V	Result AV dB $\mu$ V	Limit QP dB $\mu$ V	Limit AV dB $\mu$ V	Margin QP dB	Margin AV dB	Phase
2.	0.156	31.28	11.05	19.43	50.71	30.48	79.00	66.00	28.29	35.52	Line
4.	0.186	23.70	5.89	19.44	43.14	25.33	79.00	66.00	35.86	40.67	Line
6.	0.217	20.16	5.56	19.44	39.60	25.00	79.00	66.00	39.40	41.00	Line
8.	0.248	16.98	2.93	19.45	36.43	22.38	79.00	66.00	42.57	43.62	Line
10.	0.418	21.35	15.71	19.45	40.80	35.16	79.00	66.00	38.20	30.84	Line
12.	21.264	16.32	10.77	19.92	36.24	30.69	73.00	60.00	36.76	29.31	Line

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

-Continue

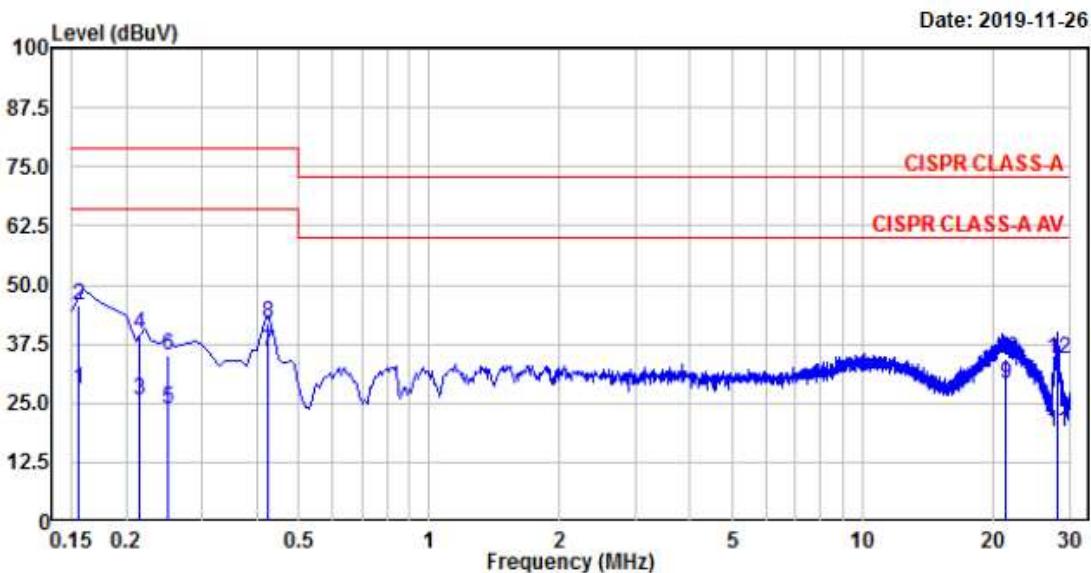
(NEUTRAL)



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EUT /Model No. : Skylark, WMU2000  
Test Mode : Charging mode (Cradle)  
Temp./ Humi. : 24 'C / 40 % R.H.

Phase : Neutral  
Test Power : 120 V / 60 Hz  
Test Engineer : CHO J H



No.	Freq MHz	RD QP dB $\mu$ V	RD AV dB $\mu$ V	C.F dB	Result QP dB $\mu$ V	Result AV dB $\mu$ V	Limit QP dB $\mu$ V	Limit AV dB $\mu$ V	Margin QP dB	Margin AV dB	Phase
2.	0.156	26.30	8.48	19.49	45.79	27.97	79.00	66.00	33.21	38.03	neutral
4.	0.214	20.17	6.27	19.49	39.66	25.76	79.00	66.00	39.34	40.24	neutral
6.	0.250	15.58	4.21	19.50	35.08	23.71	79.00	66.00	43.92	42.29	neutral
8.	0.426	22.57	16.49	19.50	42.07	35.99	79.00	66.00	36.93	30.01	neutral
10.	21.364	14.55	9.08	19.98	34.53	29.06	73.00	60.00	38.47	30.94	neutral
12.	28.031	14.09	-1.05	20.10	34.19	19.05	73.00	60.00	38.81	40.95	neutral

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

## 5-2 Radiated Disturbance Measurements

MODE : Charging mode (Cradle)

(Below 1 GHz) / V



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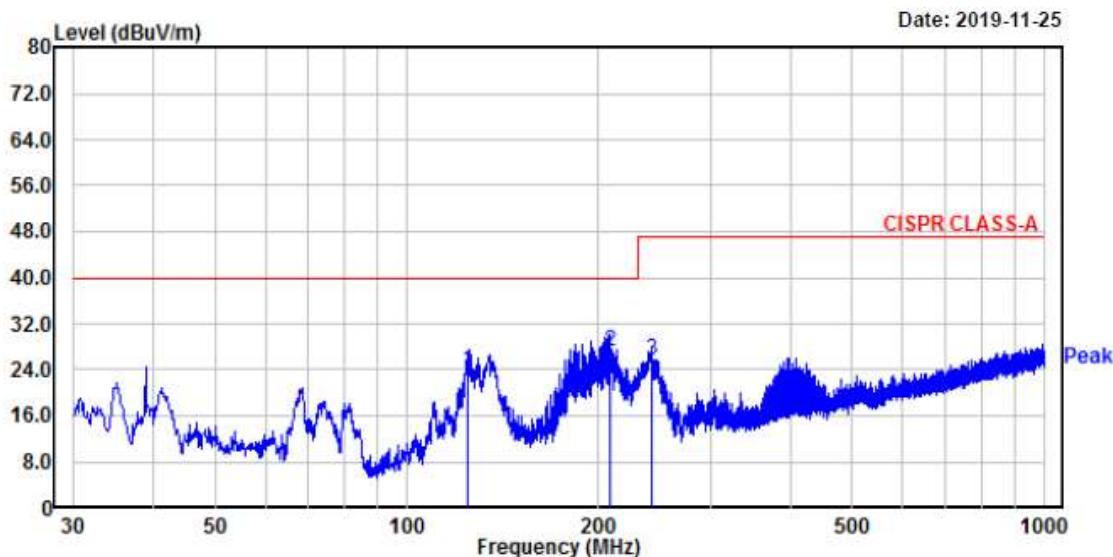
EUT/Model No.: Skylark, WMU2000

Temp/Humi: 24 'C / 41 % R.H.

Test Mode : Charging mode (Cradle)

Tested by: CHO J H

Power : AC 120 V / 60 Hz



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB	cm	deg	
1.	124.94	38.04	-14.20	23.84	40.00	16.16	100	73	vertical
2.	208.12	42.31	-15.19	27.12	40.00	12.88	100	190	vertical
3.	242.07	38.85	-13.20	25.65	47.00	21.35	100	0	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

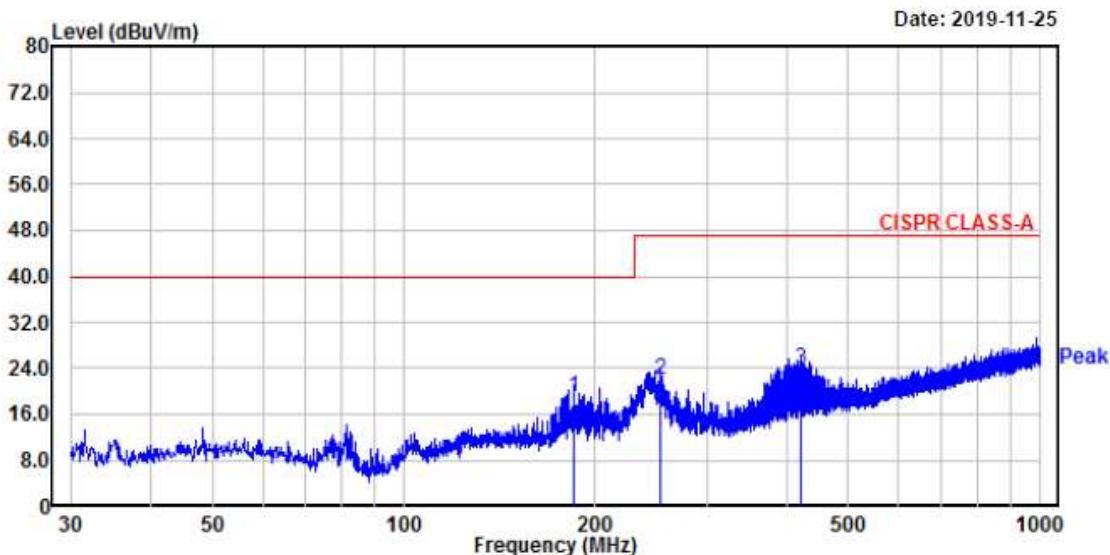
-Continue

MODE : Charging mode (Cradle)  
(Below 1 GHz) / H



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[www.ltalab.com](http://www.ltalab.com)

EUT/Model No.: Skylark, WMU2000 Temp/Humi: 24 'C / 41 % R.H.  
-----  
Test Mode : Charging mode (Cradle) Tested by: CHO J H  
-----  
Power : AC 120 V / 60 Hz



No.	Freq MHz	Reading dB $\mu$ V	C.F dB	Result QP dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle deg	Polarity
1.	184.84	33.48	-14.38	19.10	40.00	20.90	400	285	horizontal
2.	253.10	34.56	-12.62	21.94	47.00	25.06	400	319	horizontal
3.	422.24	32.42	-8.42	24.00	47.00	23.00	100	280	horizontal

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

**MODE : PDA Communication mode**
**(Below 1 GHz) / V**


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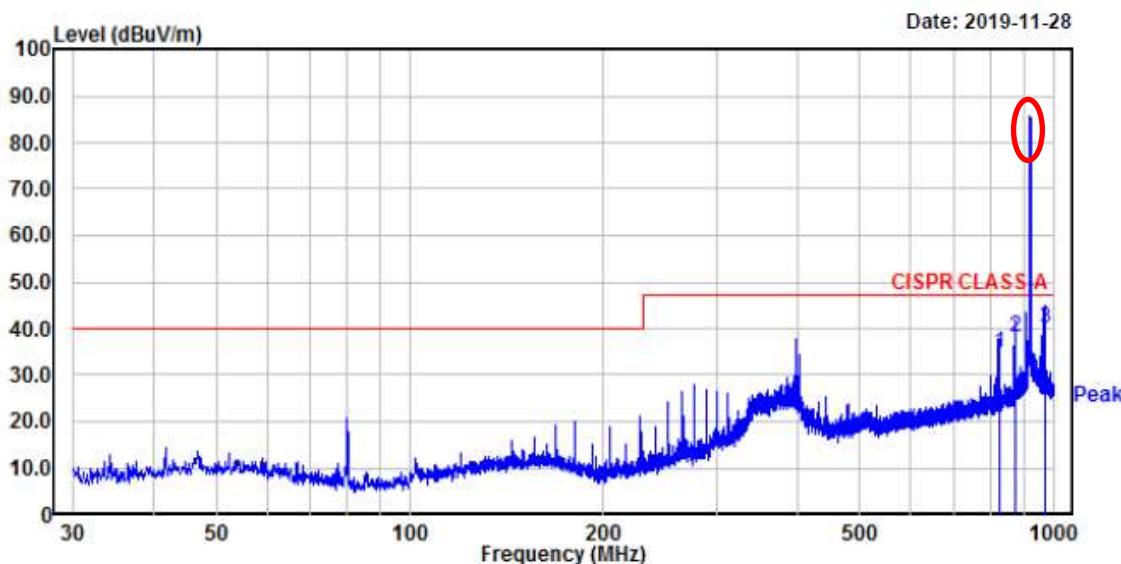
EUT/Model No.: WMU2000

Temp/Humi: 23 'C / 42 % R.H.

Test Mode : PDA Communication mode

Tested by: CHO J H

Power : DC 7.2 V



No.	Freq	Reading	C.F	Result QP	Limit	Margin	Height	Angle	Polarity
	MHz	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB	cm	deg	
1.	824.31	35.36	-0.48	34.88	47.00	12.12	190	360	vertical
2.	871.11	37.77	0.21	37.98	47.00	9.02	400	124	vertical
3.	968.35	38.24	1.59	39.83	47.00	7.17	190	360	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

※ (902 ~ 928) MHz is EUT's fundamental frequency.

-Continue

MODE : PDA Communication mode

(Below 1 GHz) / H



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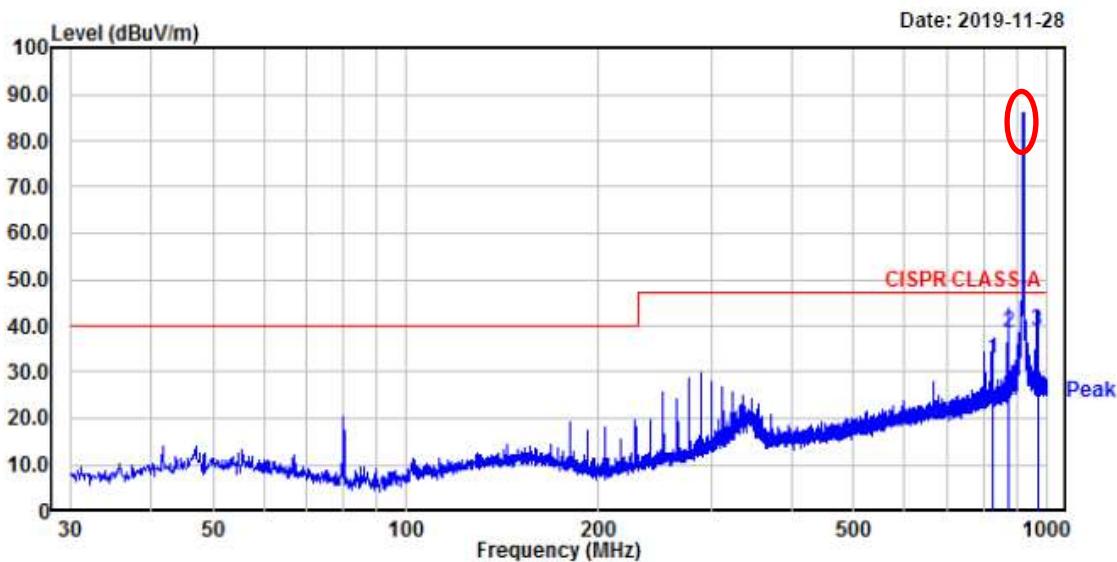
EUT/Model No.: WMU2000

Temp/Humi: 23 'C / 42 % R.H.

Test Mode : PDA Communication mode

Tested by: CHO J H

Power : DC 7.2 V



No.	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB	cm	deg	
1.	822.01	33.25	-0.52	32.73	47.00	14.27	103	333	horizontal
2.	870.51	38.45	0.18	38.63	47.00	8.37	100	213	horizontal
3.	967.14	37.47	1.58	39.05	47.00	7.95	100	39	horizontal

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

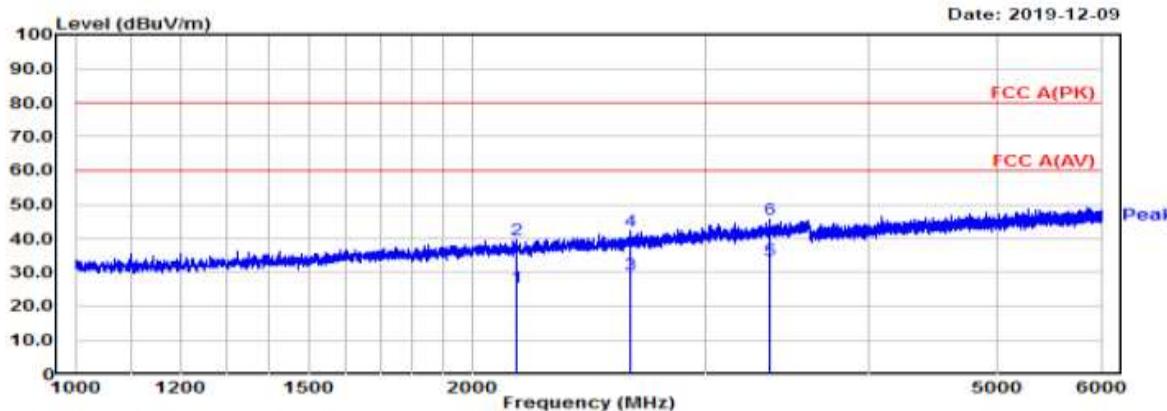
※ (902 ~ 928) MHz is EUT's fundamental frequency.

-Continue

**MODE : Charging mode (Cradle)**

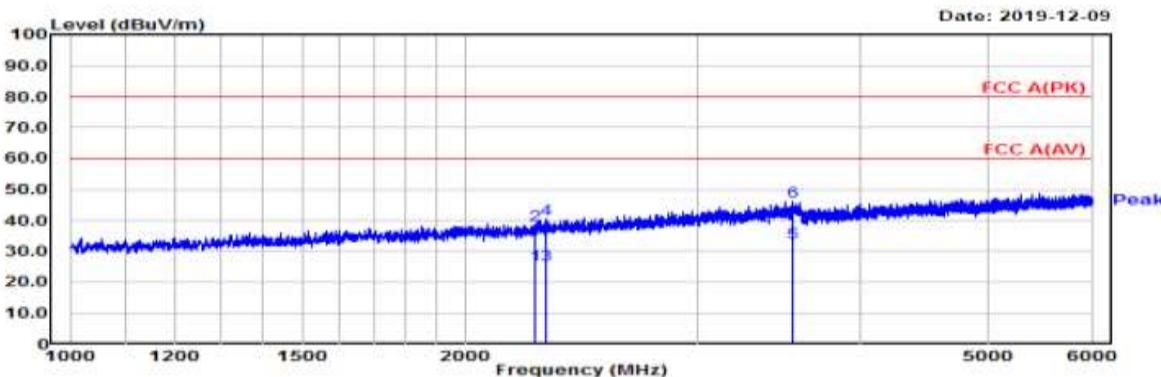
**(Above 1GHz) / V**

**EUT/Model No.:** Skylark, WMU2000 **Temp/Humi:** 22 'C / 38 % R.H.  
**Test Mode :** Charging mode (Cradle) **Tested by:** CHO J H  
**Power :** AC 120 V / 60 Hz



**(Above 1GHz) / H**

**EUT/Model No.:** Skylark, WMU2000 **Temp/Humi:** 22 'C / 38 % R.H.  
**Test Mode :** Charging mode (Cradle) **Tested by:** CHO J H  
**Power :** AC 120 V / 60 Hz



**Manufacture :** Wissenmeer **Test Date** **Temp. :** **Humidity :** **Distance :**  
**Model :** Skylark, WMU2000 **2019-12-09** **[°C]** **[%]** **(m)**  
**TEST mode :** Charging mode (Cradle)

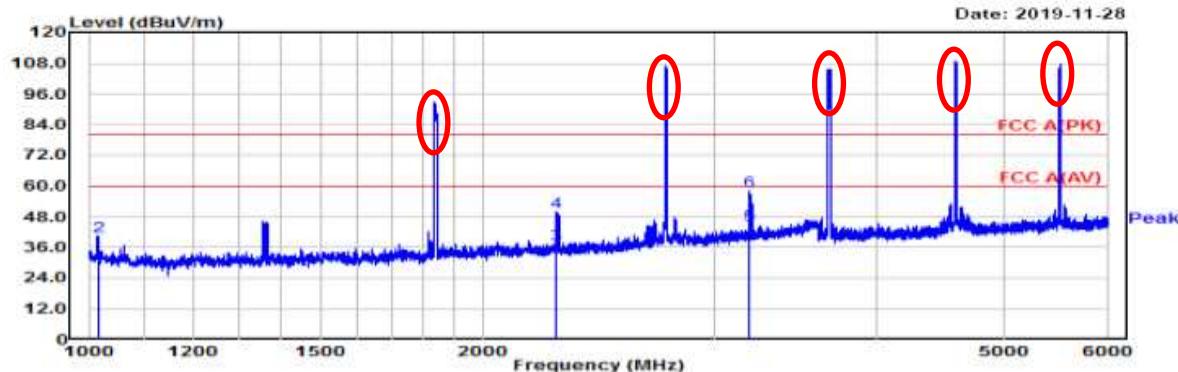
Frequency MHz	Reading(PK) dBuV	Reading(AV) dBuV	C.F dB	Result(PK) dBuV/m	Result(AV) dBuV/m	Limit(PK) dBuV/m	Limit(AV) dBuV/m	Margin(PK) dB	Margin(AV) dB	Height cm	Angle deg	Polarity H/V
2258.75	26.20	26.20	1.44	27.64	27.64	80.00	60.00	52.36	32.36	100	332	H
2301.25	25.89	25.89	1.69	27.58	27.58	80.00	60.00	52.42	32.42	100	251	H
3511.25	27.01	27.01	8.04	35.05	35.05	80.00	60.00	44.95	24.95	100	360	H
2156.25	40.69	26.69	0.85	41.54	27.54	80.00	60.00	38.46	32.46	100	209	V
2635.63	40.85	27.85	3.54	44.39	31.39	80.00	60.00	35.61	28.61	100	300	V
3360.00	40.48	28.48	7.09	47.57	35.57	80.00	60.00	32.43	24.43	100	0	V

-Continue

### MODE : PDA Communication mode

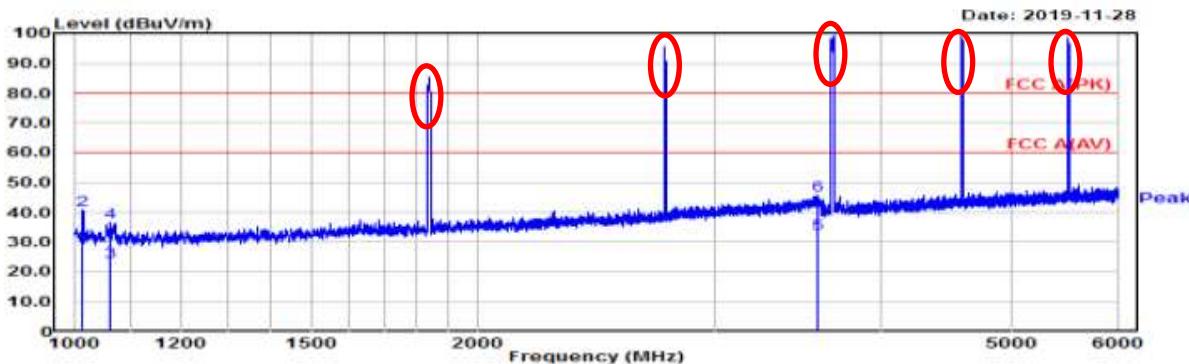
#### (Above 1GHz) / V

**EUT/Model No.:** WMU2000 **Temp/Humi:** 23 °C / 42 % R.H.  
**Test Mode :** PDA Communication mode **Tested by:** CHO J H  
**Power :** DC 7.2 V



#### (Above 1GHz) / H

**EUT/Model No.:** WMU2000 **Temp/Humi:** 23 °C / 42 % R.H.  
**Test Mode :** PDA Communication mode **Tested by:** CHO J H  
**Power :** DC 7.2 V



**Manufacture :** Wissenmeer **Test Date :** 2019-11-28 **Temp. :** 23.00 °C **Humidity :** 42.00 % **Distance :** 3.8 m  
**Model :** WMU2000 **TEST mode :** PDA Communication mode

Frequency MHz	Reading(PK) dBuV	Reading(AV) dBuV	C.F dB	Result(PK) dBuV/m	Result(AV) dBuV/m	Limit(PK) dBuV/m	Limit(AV) dBuV/m	Margin(PK) dB	Margin(AV) dB	Height cm	Angle deg	Polarity
1013.13	36.53	36.53	-6.64	29.89	29.89	80.00	60.00	50.11	30.11	100	267	H
1063.75	31.95	31.95	-6.35	25.60	25.60	80.00	60.00	54.40	34.40	100	188	H
3585.63	27.41	27.41	7.39	34.80	34.80	80.00	60.00	45.20	25.20	100	95	H
1014.38	49.60	36.60	-7.15	42.45	29.45	80.00	60.00	37.55	30.55	100	14	V
2275.00	50.68	37.68	1.32	52.00	39.00	80.00	60.00	28.00	21.00	100	130	V
3189.38	53.24	40.24	6.85	60.09	47.09	80.00	60.00	19.91	12.91	100	268	V

※ (1,804 ~ 1,856), (2,706 ~ 2,784), (3,608 ~ 3,712), (4,510 ~ 4,640), (5,412 ~ 5,568) is EUT's Harmonic frequency.

## Conclusions

Product models "**WMU2000**" meets all of the Class A requirements of the FCC Part 15, Subpart B. Limits of radio disturbance characteristics of ITE).

(Refer to Test Specification and Test Results in the "LTA certification", page 4 and 5)

- The highest internal source of an EUT is higher than 108 MHz, the measurement shall be made up to 6 GHz.

(The highest internal source of an EUT : 928 MHz)