



# RF EXPOSURE REPORT

**Equipment under test** Wireless Charger

**Model name** KWS-220

**FCC ID** 2ACCCKWS-220

**Applicant** KOMATECH Co.,Ltd.

**Manufacturer** KOMATECH Co.,Ltd.

**Date of test(s)** 2014.04.24~04.25



**Date of issue** 2014.05.09

**Issued to**

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### Revision history

Revision	Date of issue	Test report No.	Description
-	2014.05.09	KES-RF-14T0025	Initial



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## 1.0 General information description

<b>Equipment under test</b>	Wireless Charger
<b>Model name</b>	KWS-220
<b>Serial number</b>	N/A
<b>Frequency Range</b>	121 kHz ~150 kHz
<b>Antenna type</b>	Internal type(Coil antenna)
<b>Power source</b>	AC 110 V Adapter
<b>Note</b>	This EUT has separate two charging coils

## 1.1 Test frequency

	<b>Frequency Range</b>
<b>Frequency (kHz)</b>	121 kHz ~150 kHz

## 1.2 Information about variant model

N/A

## 1.3 Device modifications

N/A



#### 1.4. Test facility

C-3701, Simin-daero 365-40, Dongan-gu, Anyang-si, Gyeonggi-do, 431-716, Korea  
473-29, Gayeo-ro, Yeosu-si, Gyeonggi-do, Korea

The open area test site is constructed in conformance with the requirements ANSI C63.4-2003/2009.

#### 1.5. Laboratory accreditations and listings

Country	Agency	Scope of accreditation	Certificate No.
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	343818
KOREA	KC	EMI (10 meter Open Area Test Site and two conducted sites) Radio (3 & 10 meter Open Area Test Sites and one conducted site)	KR0100
CANADA	IC	3 & 10 meter Open Area Test Sites and one conducted site	4769B-1

## 2.0 Environmental evaluation and exposure limit according to FCC CFR 47 Part 1.1307(b), 1.1310

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
(A) Limits for Occupational / Control Exposures				
0.3-3.0	614	1.63	*(100)	6
(B) Limits for General Population/Uncontrolled Exposure				
<b>0.3-1.34</b>	<b>614</b>	<b>1.63</b>	*(100)	30

1. “\*” means Plane-wave equivalent power density

### 2.1 Test mode

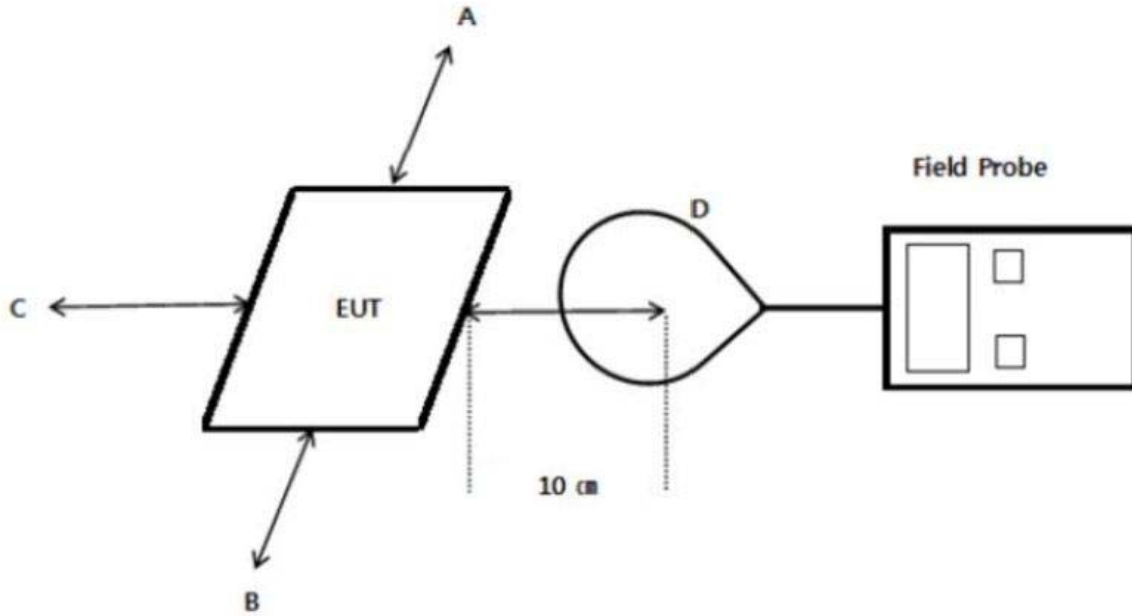
Mode	Description
Charging mode With load	Using Max load
	Using Med load
	Using Min load
Charging mode With Mobile Phone for connecting with Call tester	< 1% of Battery status
	50% of Battery status

-The level of call connecting of GSM850 mode was more than airplane mode, charging with Mobile Phone in standby mode and charging with Mobile Phone turned off mode. So GSM850 mode was selected.

### 2.2 Battery status during charging

< 1% of Battery, 50 % of Battery

## 2.3 Test Setup



1. The test was performed on 360° turn table in anechoic chamber.
2. The probe was placed at distance 10 cm which is between the edge of the charger and the geometric center of the probe.
3. The highest emission level was recorded and compared with limit as soon as measurement of each point ; A, B, C, D were completed.
4. The EUT was measured according to the KDB 680106 D01v02.

### 3.0 Test results

#### 3.1 E-Field Strength at 10 cm from each edges the EUT

Test Mode	Frequency Range(KHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Limits (V/m)
Charging mode With load (Max)	121 kHz ~150 kHz	3.31	2.66	5.32	4.43	614
Charging mode With load (Max)	121 kHz ~150 kHz	2.68	2.40	4.02	3.53	614
Charging mode With load (Max)	121 kHz ~150 kHz	2.44	2.07	3.44	2.80	614
Charging mode With Mobile Phone ( < 1 % of Battery)	121 kHz ~150 kHz	3.12	2.45	4.40	3.46	614
Charging mode With Mobile Phone ( 50 % of Battery)	121 kHz ~150 kHz	3.08	2.43	4.38	3.44	614
Standby mode (Not charging)	121 kHz ~150 kHz	0.86	0.63	0.95	0.92	614

#### 3.2 H-Field Strength at 10 cm from each edges the EUT

Test Mode	Frequency Range(KHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Limits (A/m)
Charging mode With load (Max)	121 kHz ~150 kHz	0.2079	0.2071	0.2119	0.2135	1.63
Charging mode With load (Max)	121 kHz ~150 kHz	0.2063	0.2071	0.2103	0.2079	1.63
Charging mode With load (Max)	121 kHz ~150 kHz	0.2063	0.2063	0.2079	0.2071	1.63
Charging mode With Mobile Phone ( < 1 % of Battery)	121 kHz ~150 kHz	0.2071	0.2111	0.2111	0.2103	1.63
Charging mode With Mobile Phone ( 50 % of Battery)	121 kHz ~150 kHz	0.2079	0.2111	0.2103	0.2111	1.63
Standby mode (Not charging)	121 kHz ~150 kHz	0.2016	0.2048	0.2079	0.2071	1.63



### Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial number	Cal Interval	Calibration due.
Isotropic Electric Field Probe	Amplifer research	FP7003	311520	1 year	2015.03.25
B-Field Probe	Narda	2300/90.10	M-0644	1 year	2014.09.16
Exposure Level Meter	Narda	ELT-400	N-0201	1 year	2014.09.16
Radio Communication Tester	R&S	CMU200	107627	1 year	2014.12.27

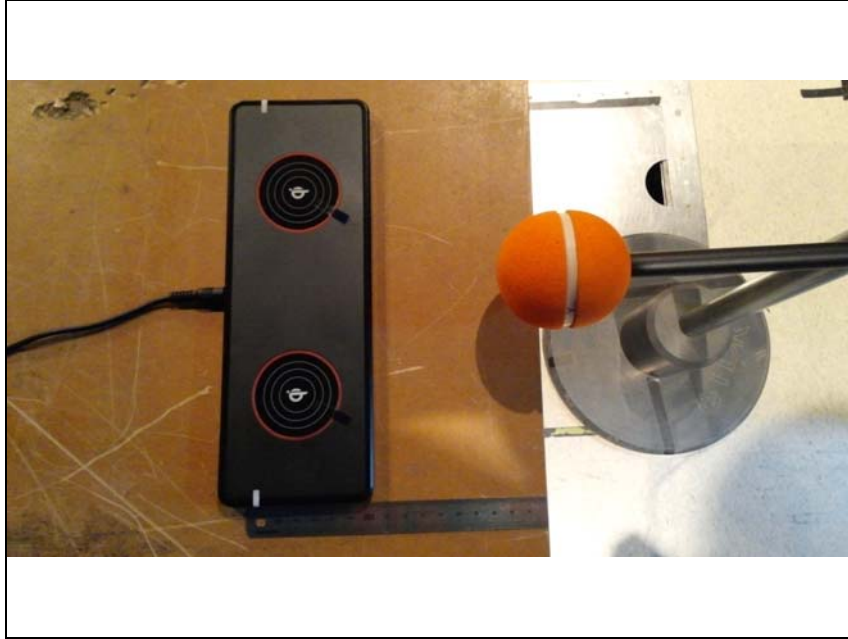
### Peripheral device

Device	Manufacturer	Model No.	Note
Wireless Charging Cover(with load)	KOMATECH Co.,Ltd.	N/A	-
Mobile Phone	SAMSUNG ELECTRONICS CO., LTD.	SHV-210L (FCC ID : A3LSHVE210L)	-
Mobile Phone	SAMSUNG ELECTRONICS CO., LTD.	SHV-E210S (FCC ID : A3LSHVE210S)	-

-The above devices were supported by manufacturer.

## Appendix B. Test setup photo

**Standby Mode (E-Field)**



**Charging Mode with load (E-Field)**

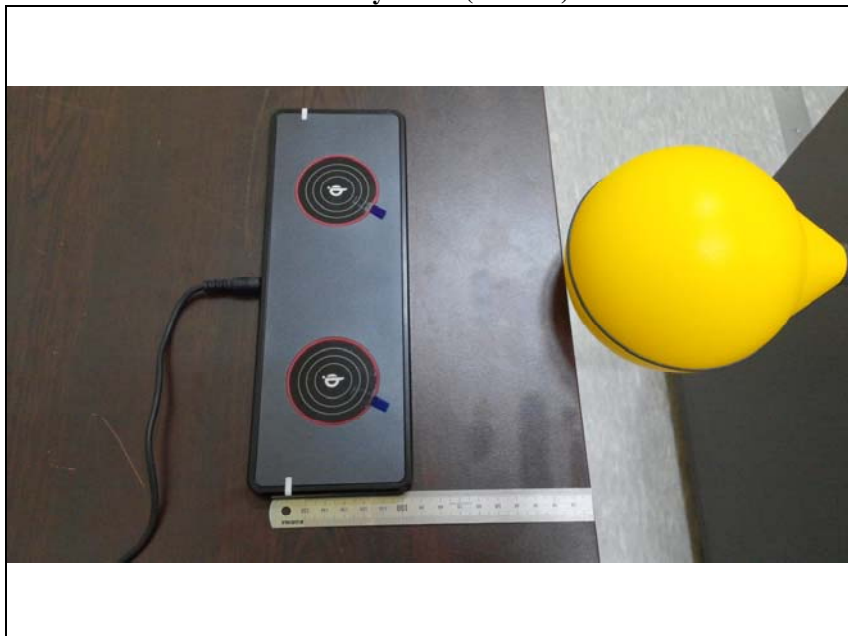


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**Charging Mode with Mobile Phone (E-Field)**



**Standby Mode (H-Field)**



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**Charging Mode with load (H-Field)**



**Charging Mode with Mobile Phone (H-Field)**



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