




## Product Specification

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# **Remove K1 Wire ANTENNA (ARTS-EKWW-113)**







**Confidential**

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	Description <b>Remove K1 Wire Antenna Product Specification</b>			
	Specification No. <b>ARTS-EKWW-113</b>	Customer. <b>(주)에셀티</b>	Rev. <b>1.0</b>	Date <b>Oct. 10, 2017.</b>


# ANTENNA APPROVAL

Product Name	Wire - ANTENNA
Model Name / Freq.	Remove K1 / Wi-Fi 2.4GHz
Antenna PART No.	<b>ARTS-EKWW-113</b>
Customer PART No.	
Customer	<b>(주)에셀티</b>
Supplier	<b>아트시그널</b>

RF PART		ME PART		QA PART	
Submitted	Approval	Submitted	Approval	Submitted	Approval
					




이 문서는 아트시그널에서 대외비로 발행 되었으며, 아트시그널의 사전 허가 없이 이 서류의 일부분 또는 전체를 재 발행 하지 않는다. 여기서 포함하고 있는 정보는 아트시그널의 소유이며, 제출된 목적 이외의 용도나 아트시그널의 사전 허가 없이 일부 또는 전체가 공개되지 않는다.

 <b>ART SIGNAL</b> Antenna Total Solution	Description			
	<b>Remove K1 Wire Antenna Product Specification</b>			
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	<b>ARTS-EKWW-113</b>	<b>(주)에셀티</b>	<b>1.0</b>	<b>Oct. 10, 2017.</b>

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## 1 Log of Changes

NO	Date	Mark	Changes	Remark	Rev.
1	2017.10.10.		PRODUCT Approval		1.0
2					
3					
4					
5					
6					
7					

## 2 PART NUMBER LIST

No.	PART NO.	Color & Appearance	ART-SIGNAL Antenna Product Number	Remark
1	Remove K1		ARTS-EKWW-113	
2				
3				
4				
5				
6				

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### 3 Product Description & Terminology

#### 3.1 Description

This is the product specification of Internal Antenna applied to Dongle type Set.

#### 3.2 Product Number

ART SIGNAL Antenna Part Number : **ARTS-EKWW-113**

#### 3.3 Unit, Definitions & Abbreviations

SI unit will be used, unless any specialties are announced

Tx	Transmit Band
Rx	Receive Band
PCB	Printed Circuit Board
VSWR	Voltage Standing Wave Ratio
dBi	Antenna gain in dB relative to a isotropic antenna
Room Temperature	+20 ± 3°C
CW	Clock Wise
g	Acceleration of gravity 9.82 m/s <sup>2</sup>
RH	Relative Humidity
gf / kgf	Gram weight ( 1gf=980.665dyn) / Kilogram weight ( 1kgf=9.80665N)
Ph	Potential of hydrogen
F	Force
T	Torque

#### 3.4 Co-ordinates System

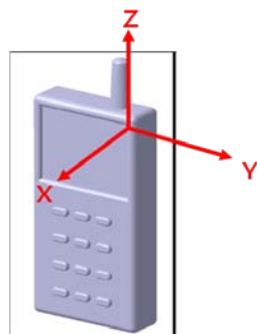



Figure 3.4.1 Coordinate within the Handset

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## 4 Electrical Properties

### 4.1 Frequency Band

Service		Frequency
Wi-Fi	(MHz)	2400~2485

### 4.2 Impedance

#### 4.2.1 Nominal Impedance

-  $R = 50\Omega$


#### 4.2.2 Measuring Method

By using Network analyzer , connect the antenna-installed handset to the reflection Point of Analyzer and measure the impedance value within the designated frequency band. Testing is corresponded to the figure 4.2.1



Figure 4.2.1 Test by network analyzer

### 4.4 V.S.W.R

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Impedance Matching optimization is performed under the below mentioned environment.

#### 4.4.1 Free Space Environment

Service(MHz)		2400	2485
Mode			
VSWR	<b>TEST DATA</b>	<b>3.19</b>	<b>1.24</b>
	<b>SPEC</b>	<b>3.69</b>	<b>1.74</b>

#### 4.4.2 Measuring Method

Connect(soldering) 50Ω copper cable to the 50Ω spot in handset. To minimize the loss of transmission, copper cable is used.

Including PCB, the handset shouldn't be different from the one, which will be used for mass production.

Specification should be the same for all frequency bands. Free space means that handset is put on the surface of no conducting plastic


#### 4.5 Directive ness

Omni-directional

#### 4.6 Gain

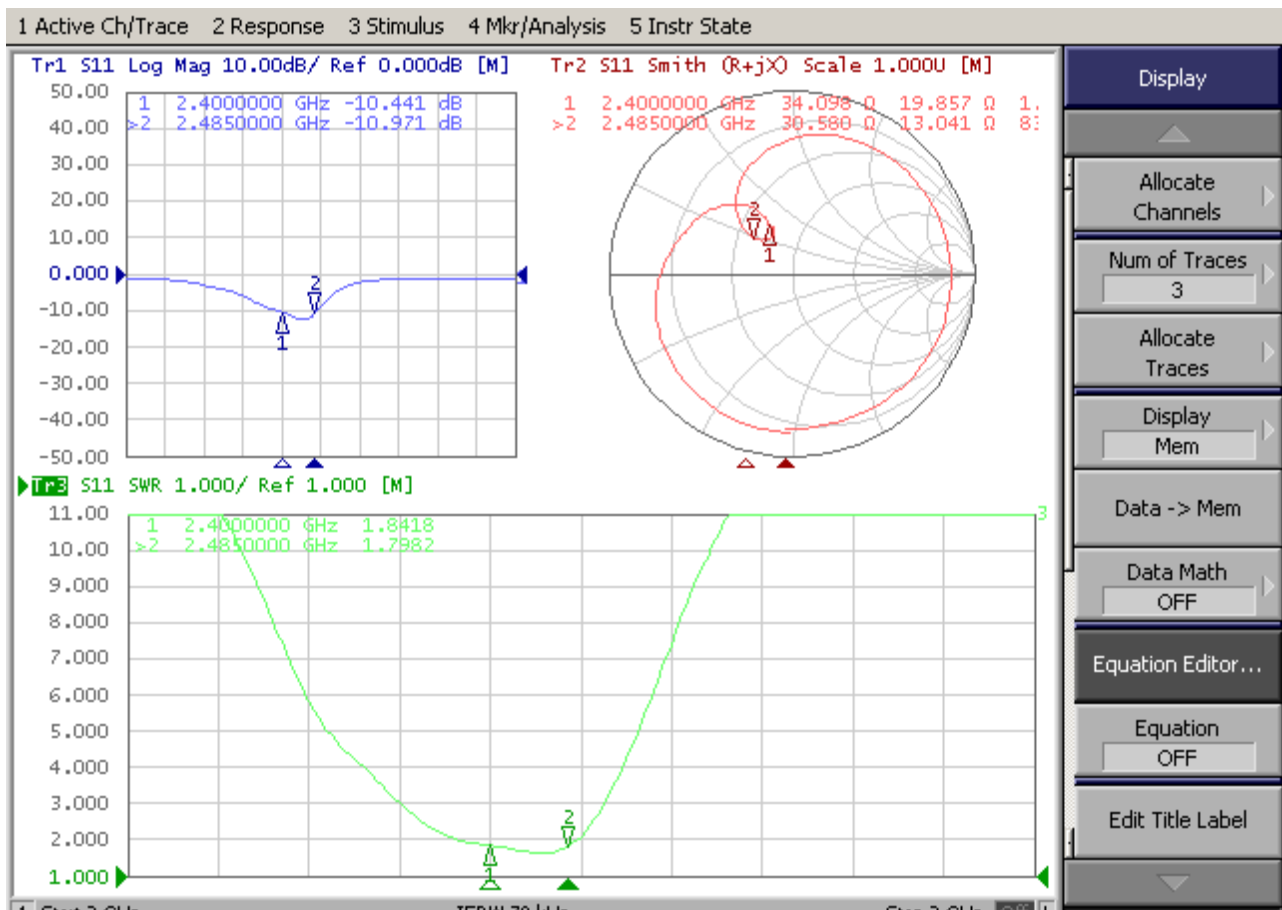
##### 4.6.1 Free Space

Service Mode(dBi)	ANT				
Freq.(MHz)	2400	2420	2440	2460	2485
PEAK	0.39	0.36	0.70	.0.60	0.26
AVG	-2.86	-2.85	-2.25	-2.34	-3.33
SPEC	-3.36	-3.35	-2.75	-2.84	-3.83


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## 5 Electric Efficiency

### 5.1 ANT- VSWR





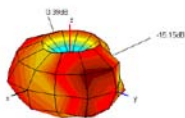
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ARTS-EKWW-113	(주)에셀티	1.0	Oct. 10, 2017.	

## 5.2 Radiation Pattern (XY-Plane)

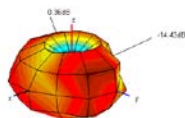
	1	2	3	4	5
Frequency [MHz]	2400	2420	2440	2460	2485
Efficiency [dB]	-2.86	-2.85	-2.25	-2.34	-3.33
Efficiency [%]	51.8	51.9	59.5	58.3	46.5
TRG <sub>θ</sub> [dB]	-6.51	-6.11	-5.05	-4.72	-5.22
Gain <sub>θ Peak</sub> [dB]	-2.12	-1.59	-0.07	0.59	0.25
Gain <sub>θ Min</sub> [dB]	-16.32	-16.92	-18.35	-21.33	-27.25
TRG <sub>φ</sub> [dB]	-5.31	-5.62	-5.49	-6.09	-7.85
Gain <sub>φ Peak</sub> [dB]	0.07	-0.27	-0.12	-0.73	-2.72
Gain <sub>φ Min</sub> [dB]	-27.51	-35.64	-40.60	-29.05	-35.00
UHRG [dB]	-5.56	-5.73	-5.29	-5.51	-6.68
UHRG/TRG [%]	53.6	51.5	49.7	48.2	46.2
H-Plane	-6.66	-6.37	-5.51	-5.37	-6.02
E1-Plane, AVG [dB]	-6.75	-6.28	-5.05	-4.55	-4.85
E2-Plane, AVG [dB]	-6.78	-6.56	-5.63	-5.38	-6.04
Peak Gain [dB]	0.39	0.36	0.70	0.60	0.26
Directivity [dB]	3.25	3.21	2.96	2.94	3.58
Minimum Gain [dB]	-15.15	-14.43	-13.77	-13.66	-13.27

### 3D GAIN (H/E1/E2-plane)

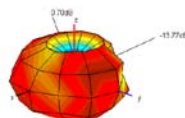
2400



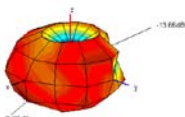
2420



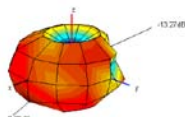
2440



2460



2485



No.	Date	Revision notes	Approved
1	2017.01.14.	1'st Sample	H.C.Jung
2	2017.06.17.	2'nd Sample	H.C.Jung

The drawing illustrates the geometry of a wire antenna. The side view shows a horizontal arm with a 118° bend, a vertical section of 3.1, and a base of 1.4. The top view shows a horizontal arm with a 5.4 width and a 0.6 offset. The perspective view shows the antenna's profile with dimensions 20.7, 10.67, 10.35, 4, and 1.4. A small detail view shows the end connector with a 2.8 width and a 1.4 offset.