ART SIGNAL
Antenna Total Solution

Product Specification

Remove K1
Wire ANTENNA
(ARTS-EKWW-113)

Confidential

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ANTENNA APPROVAL

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

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

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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				

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℃
CW	Clock Wise
g	Acceleration of gravity 9.82 m/s²
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

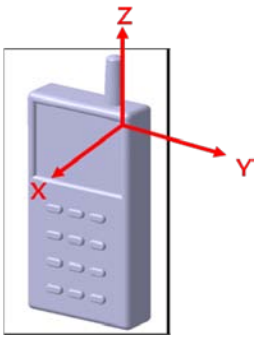


Figure 3.4.1 Coordinate within the Handset

4 Electrical Properties

4.1 Frequency Band

Service		Frequency
Wi-Fi	(MHz)	2400~2485

4.2 Impedance

4.2.1 Nominal Impedance

- R = 50Ω

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

Impedance Matching optimization is performed under the below mentioned environment.

4.4.1 Free Space Environment

Mode \ Service(MHz)		2400	2485
VSWR	TEST DATA	3.19	1.24
	SPEC	3.69	1.74

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

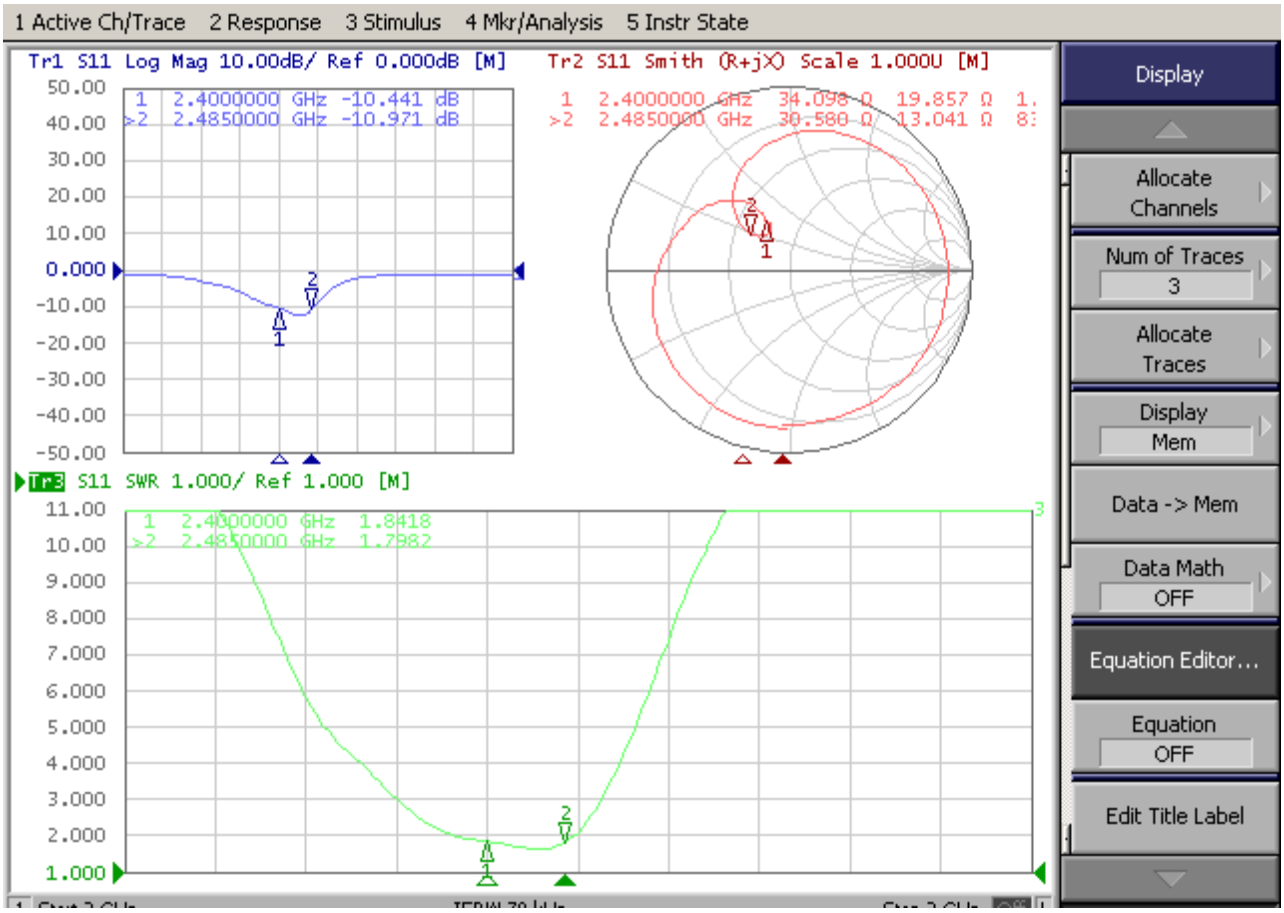
4.6 Gain

4.6.1 Free Space

Mode(dBi) \ Service	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**

5 Electric Efficiency

5.1 ANT- VSWR

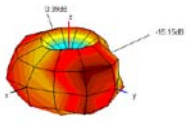


5.2 Radiation Pattern (XY-Plane)

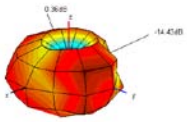
	1	2	3	4	5
Frequency [MHz]	**2400**	**2420**	**2440**	**2460**	**2485**
Efficiency [dB]	**-2.86**	**-2.85**	**-2.25**	**-2.34**	**-3.33**
Efficiency [%]	**51.8**	**51.9**	**59.5**	**58.3**	**46.5**
TRG$_\theta$ [dB]	-6.51	-6.11	-5.05	-4.72	-5.22
Gain$_{\theta\,Peak}$ [dB]	-2.12	-1.59	-0.07	0.59	0.25
Gain$_{\theta\,Min}$ [dB]	-16.32	-16.92	-18.35	-21.33	-27.25
TRG$_\varphi$ [dB]	-5.31	-5.62	-5.49	-6.09	-7.85
Gain$_{\varphi\,Peak}$ [dB]	0.07	-0.27	-0.12	-0.73	-2.72
Gain$_{\varphi\,Min}$ [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



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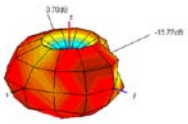

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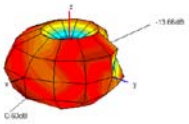
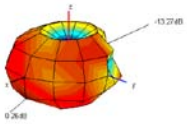


2485



6. Mechanical Drawing