Professional installation warning

This device is point-to-multi-point device. The general user should not attempt to install or change settings, it needs to be installed by a qualified personal who has RF exposure and related rule knowledge or technology. The device for operation in the band 5150–5250 MHz is only for indoor and outdoor use, band 5725~5850 MHz for outdoor & indoor use.

The installation position and output power does not exceed the limit set forth in US Rule CFR 47 part 15 section 15.247 & 15.407. If violate the rule, could lead to serious federal penalty.

Use PIFA type antenna specifications. One antenna model name is 6525A0042300 with peak gain 4.1dBi and 2.9 dBi for 2.4GHz; 4.2 dBi and 4.1dBi for 5725-5850MHz. Other type antenna model name is 6525A0041300 with peak gain 4.4dBi and 3.6dBi for 5150-5250MHz. Only use manufacturer approved antenna type of antennas.

Federal Communication Commission Interference Statement

Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

RF exposure statements

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body or nearby persons.

Applicant: Datto, Inc.
Address: 101 Merritt 7 Norwalk, CT 06851, United States
TEL: 2038227722

RED Compliance Statement

EU Countries Intended for Use

The ETSI version of this device is intended for home and office(5150-5350MHz) use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

Canadian Compliance Statement

This product meets the applicable Innovation, Science and Economic Development Canada technical specifications.

Ce produit repond aux specifications techniques applicables a l'innovation, Science et Developpement economique Canada.

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

1) This device may not cause interference, and

2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes :

1) l'appareil ne doit pas produire de brouillage;

2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. Declaration d'exposition aux radiations:

Cet equipement est conforme aux limites d'exposition aux rayonnements IC etablies pour un environnement non controle. Cet equipement doit etre installe et utilise avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

Le fonctionnement sur la bande 5150–5250 MHz est limite a une utilisation interieure uniquement.

Tune-up Range:

<For indoor use>

Antenna	Mode	Frequency/Band	Rate/RB/Modulation	Tune-up tolerance (dBm)
				Max
WLAN_MIMO_BF OFF	IEEE 802.11b	2.4GHz	1M	27.3
	IEEE 802.11g	2412	6M	22
		2437		27
		2462		22.3
	IEEE 802.11n 2.4GHz 20MHz (256QAM)	2412	13M	22
		2437		27
		2462		21.5
	IEEE 802.11n 2.4GHz 40MHz (256QAM)	2422	27M	20
		2437		22.6
		2452		19.9
	IEEE 802.11a	5180-5240	6M	23.3
		5745-5825		23
	IEEE 802.11ac 5GHz 20MHz	5180-5240	13M	23.5
		5745-5825		22.8
	IEEE 802.11ac 5GHz 40MHz	5190-5230	27M	23.3
		5755-5795		23.3
	IEEE 802.11ac 5GHz 80MHz	5210	58.6M	20.1
		5775		22.9
WLAN_MIMO_BF ON	IEEE 802.11b	2.4GHz	1M	23.9
	IEEE 802.11g	2412	6M	18.8
		2437		23.7
		2462		19.1
	IEEE 802.11n 2.4GHz 20MHz (256QAM)	2412	13M	18.6
		2437		23.6
		2462		18.1
	IEEE 802.11n 2.4GHz 40MHz (256QAM)	2422	27M	16.9
		2437		19.2
		2452		16.8
	IEEE 802.11a	5180-5240	6M	20.3
		5745-5825		19.8
	IEEE 802.11ac 5GHz 20MHz	5180-5240	13M	20.3
		5745-5825		19.7
	IEEE 802.11ac 5GHz 40MHz	5190-5230	27M	19.8
		5755-5795		19.8
	IEEE 802.11ac 5GHz 80MHz	5210	58.6M	17
		5775		19.4

<For outdoor use>

Antenna	Mode	Frequency/Band	Rate/RB/Modulation	Tune-up tolerance (dBm)
				Max
WLAN_MIMO_BF OFF	IEEE 802.11a	5180-5240	6M	13.9
	IEEE 802.11ac 5GHz 20MHz	5180-5240	13M	13.8
	IEEE 802.11ac 5GHz 40MHz	5190-5230	27M	14.1
	IEEE 802.11ac 5GHz 80MHz	5210	58.6M	14
WLAN_MIMO_BF ON	IEEE 802.11a	5180-5240	6M	10.7
	IEEE 802.11ac 5GHz 20MHz	5180-5240	13M	10.4
	IEEE 802.11ac 5GHz 40MHz	5190-5230	27M	10.9
	IEEE 802.11ac 5GHz 80MHz	5210	58.6M	10.5

A62 Antenna Testing Report

Senao Networks, Inc.

Customer	OM		
Project	A62		
Product Description	1. 2.4 GHz / 5 GHz Dual Band Antenna *2 2. 5 GHz Dual Band Antenna *2		
Report Date	2018/08/27	Prepare by	Tennyson
Report Version	A03	Checked by	Mark
Request Form No.	-	Approved by	Mark

Revision History

Revision	Description	Date
A01	1. Antenna V0.1 testing performance [mount on Mainboard V0.1]	2017/08/15
A02	1. Add Antenna 2D gain pattern	2018/03/23
A03	1. Add Antenna1/3 raw data	2018/03/27

Purpose:

This report is to show the test results of antennas for A62 project.

Contents:

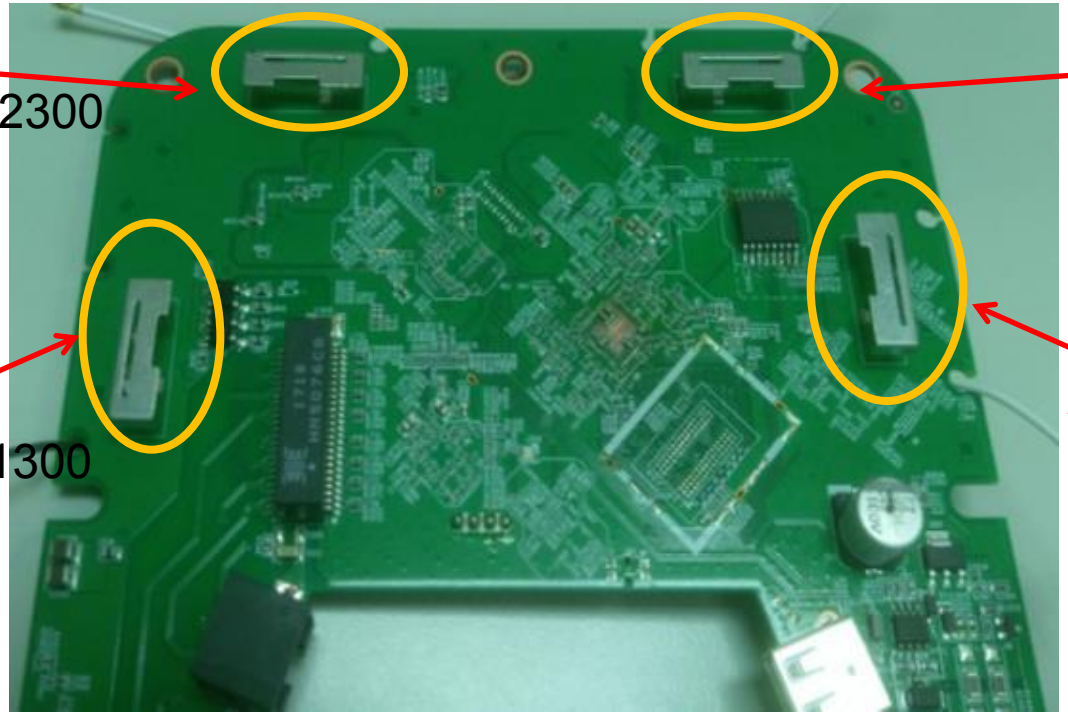
1. Antenna information
2. Test Results
   - Matching circuit / VSWR
   - Isolation
   - Gain Pattern

Meets the requirements of kdb789033 D02 H 1 (b)

Antenna Information

Ant2:2/5G
PN:6525A0042300

Ant3:5G
PN:6525A0041300



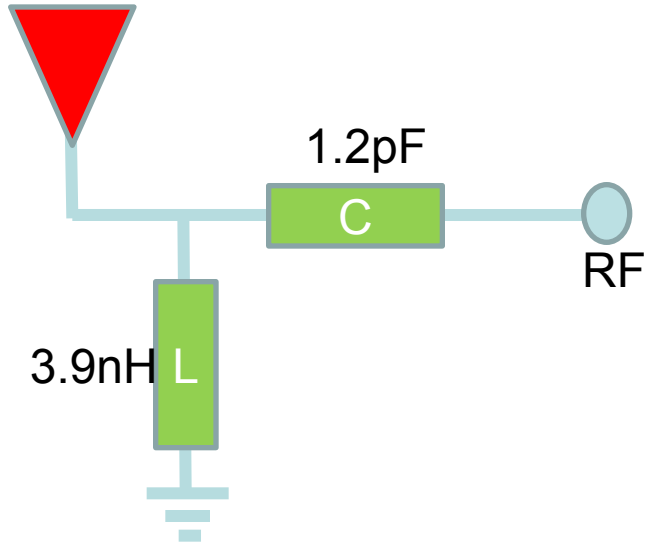
Ant1:5G
PN:6525A0041300

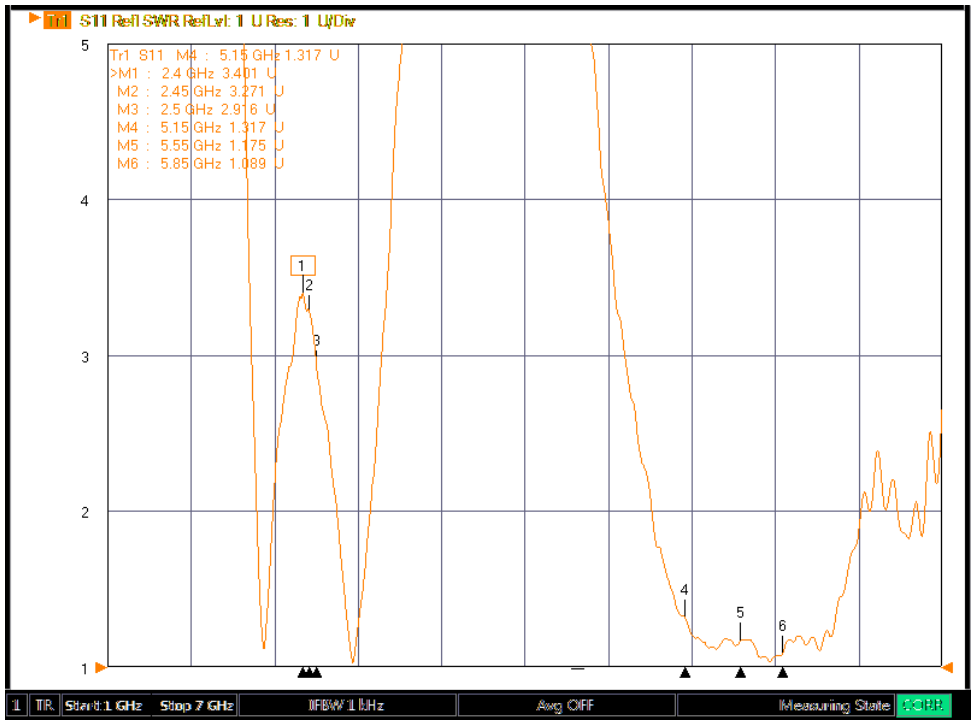
Ant4:2/5G
PN:6525A0042300

Antenna No.	1	2	3	4
Frequency (MHz)	5150 ~ 5850	2400 ~ 2500 /5150 ~ 5850	5150 ~ 5850	2400 ~ 2500 /5150 ~ 5850
Peak Gain (dBi)	4.5	4.1/4.2	4.4	2.9/4.4
VSWR	<2			
Isolation (dB)	<-20			
Dimension (mm)	21.7*7.2*7mm			

Ant1 matching circuit / VSWR

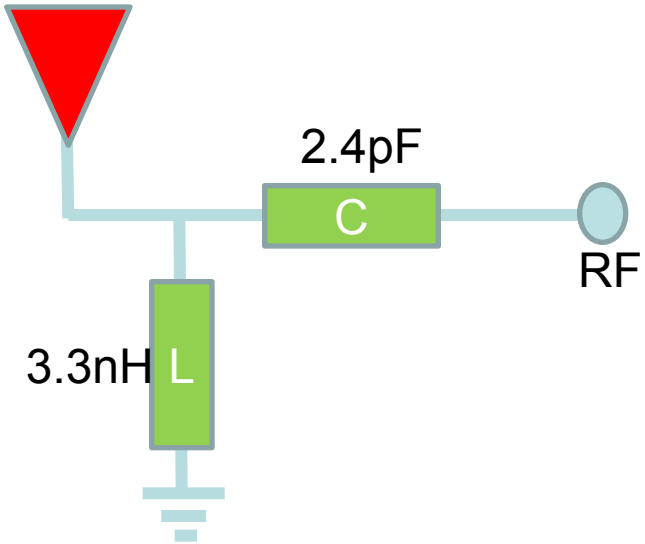
PN:6525A0041300

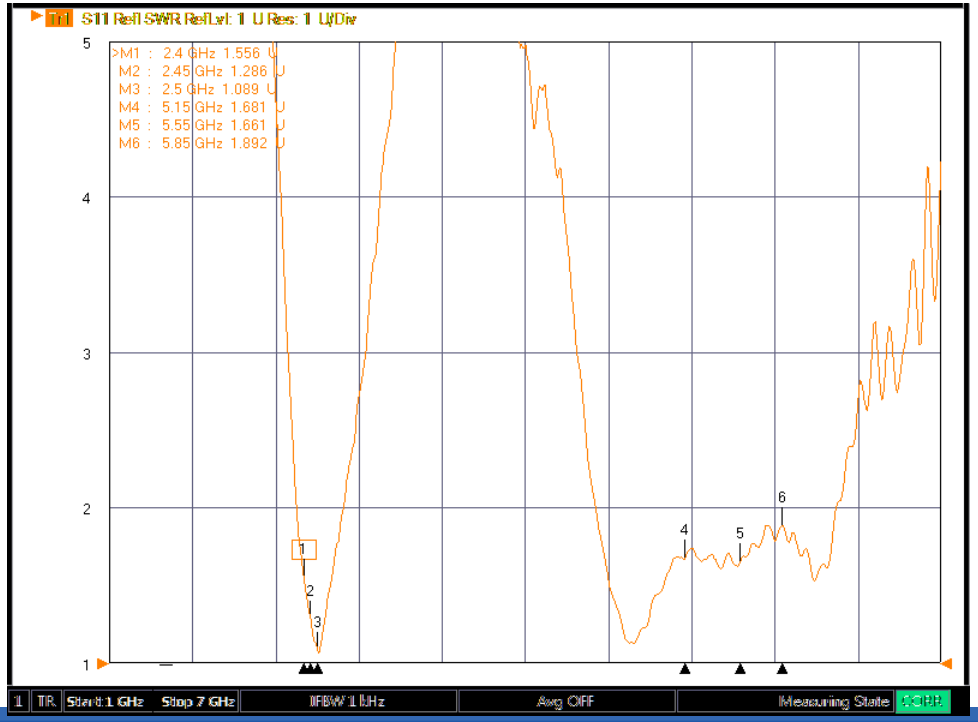




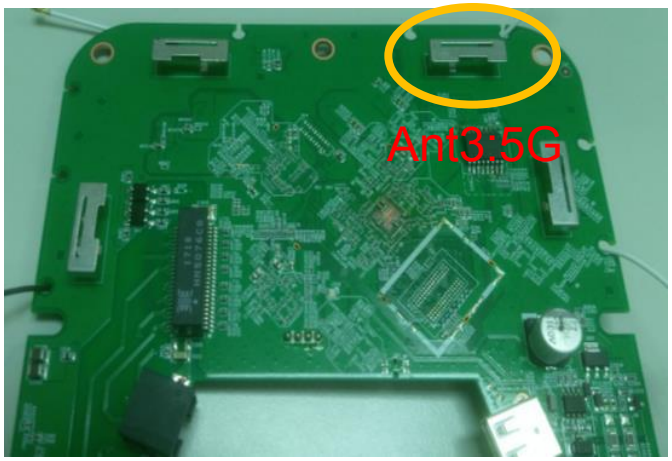
Ant2 matching circuit / VSWR

PN:6525A0042300

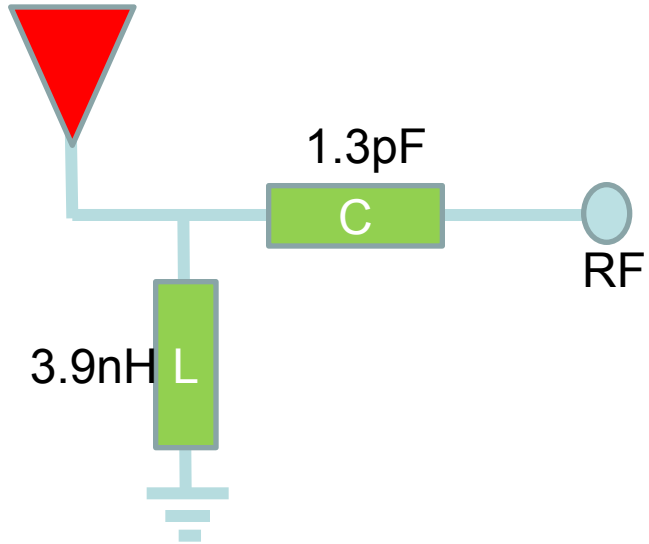


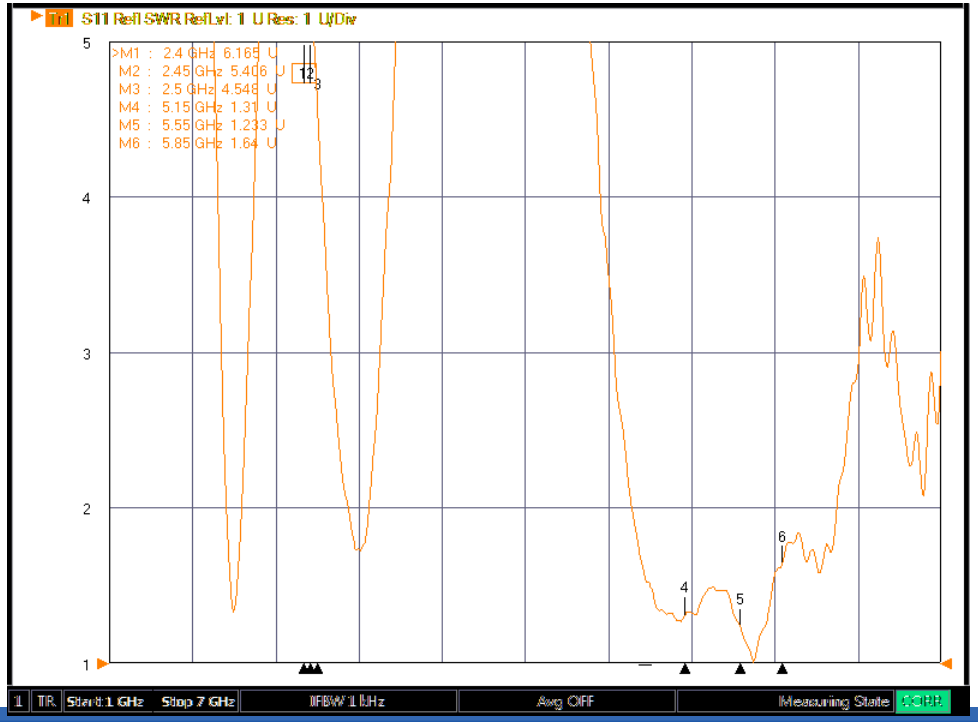


Ant3 matching circuit / VSWR

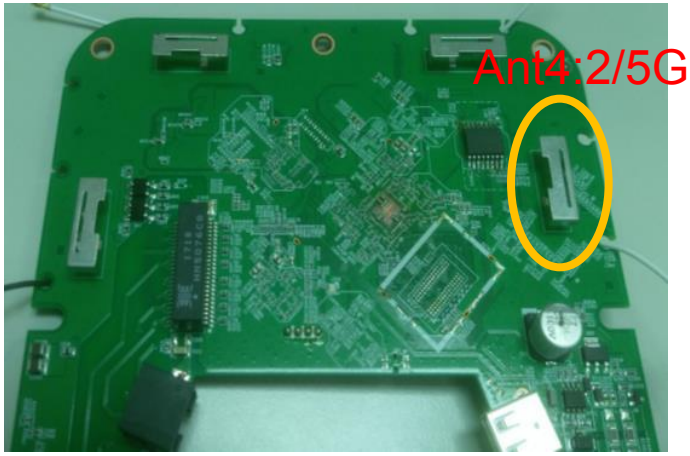


PN:6525A0041300





Ant4 matching circuit / VSWR



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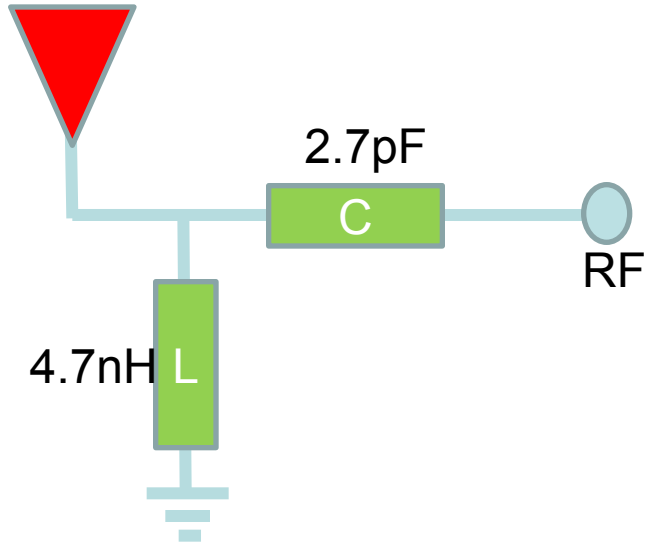
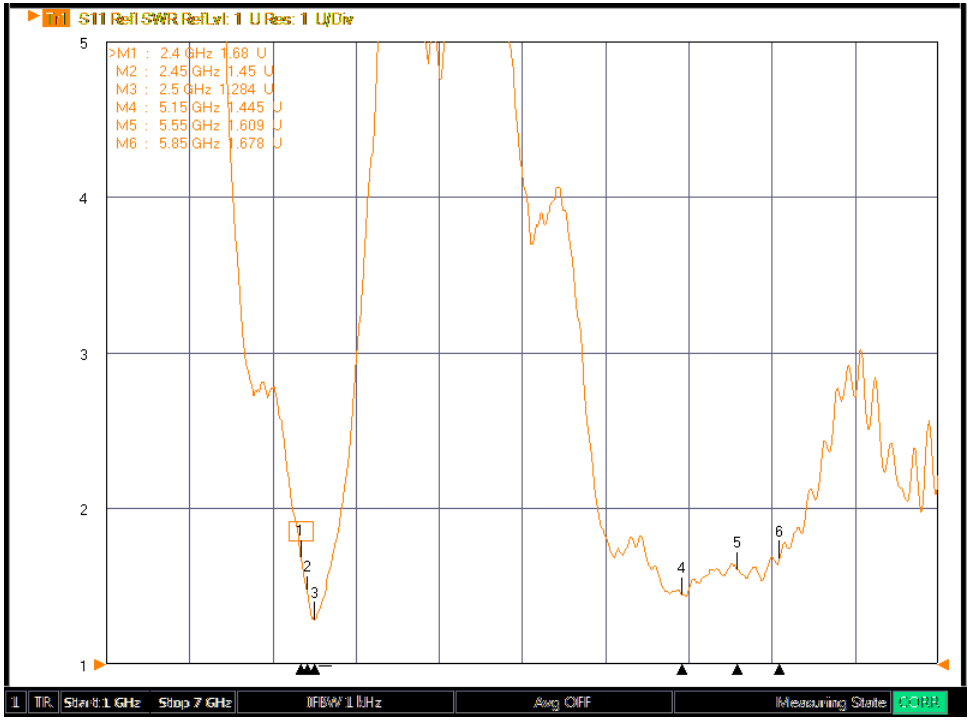
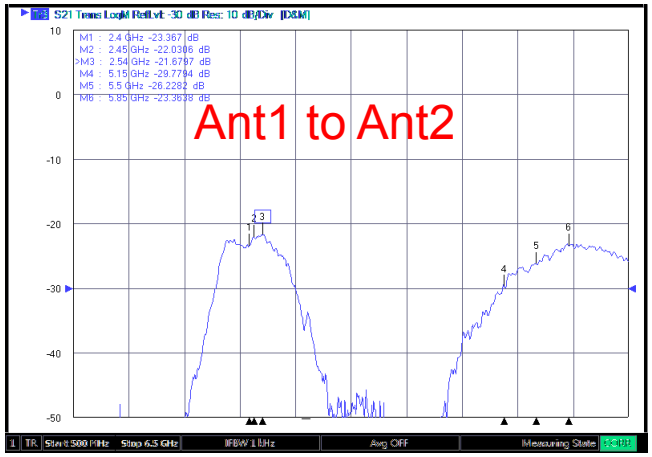
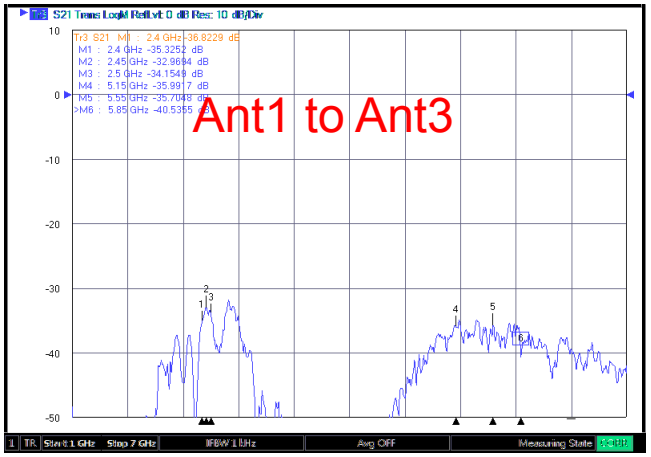
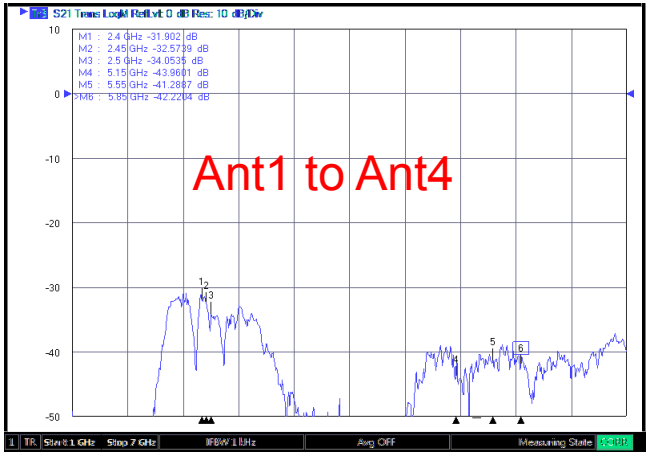




Isolation-2

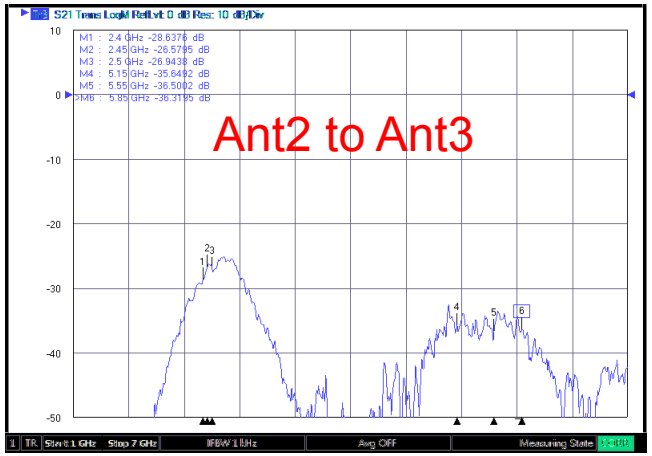


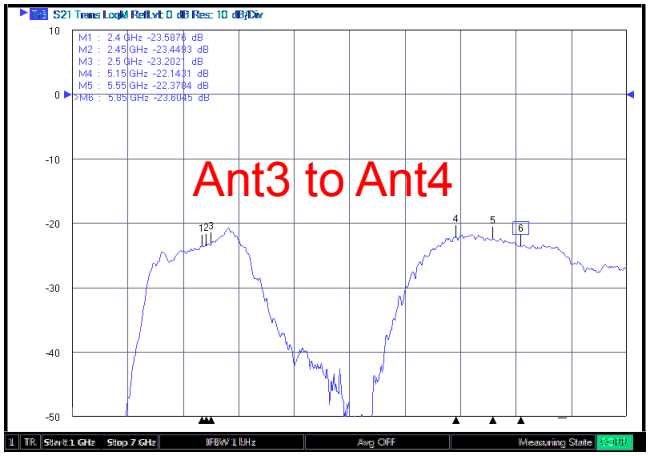




Frequency (MHz)	2400	2450	2500	5150	5550	5850
Ant1 to Ant2	-23.3	-22.0	-21.6	-29.7	-26.2	-23.3
Ant1 to Ant3	-35.3	-32.9	-34.0	35.9	-35.7	-40.5
Ant1 to Ant4	-31.9	-32.5	-34.0	-43.9	-41.2	-42.2

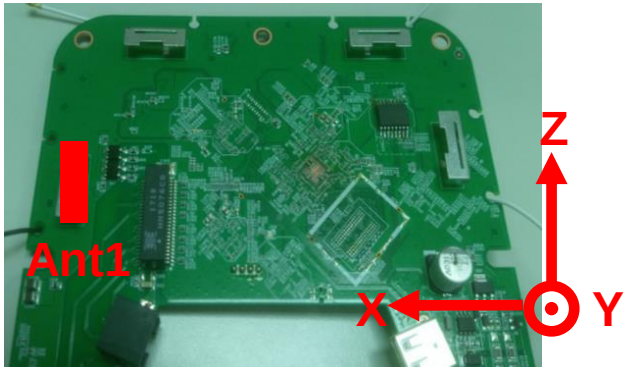
Isolation-2

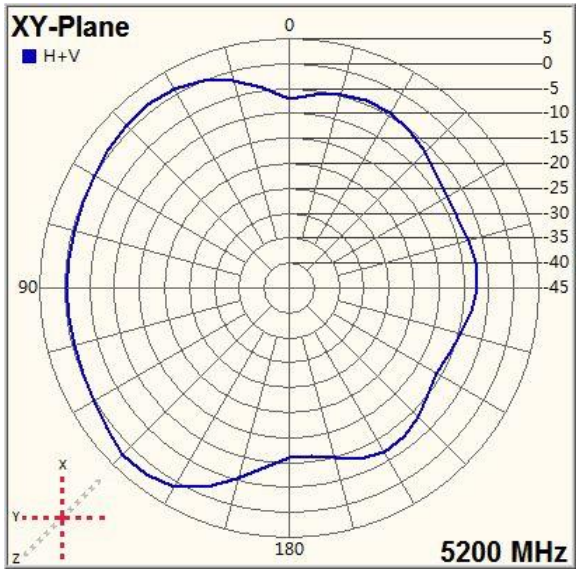


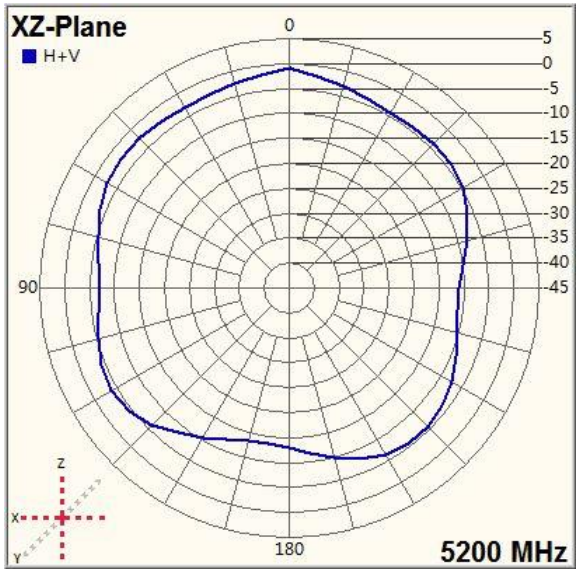


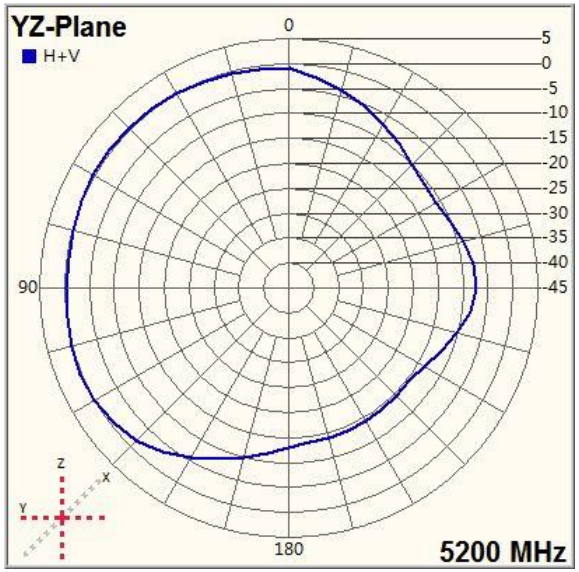
Frequency (MHz)	2400	2450	2500	5150	5550	5850
Ant2 to Ant3	-28.6	-26.5	-26.9	-35.6	-36.5	-36.3
Ant2 to Ant4	-31.1	-35.5	-41.0	-34.1	-36.0	-39.2
Ant3 to Ant4	-23.5	-23.4	-23.2	-22.1	-22.3	-23.6

Ant_1 2D Gain Pattern @ 5200MHz



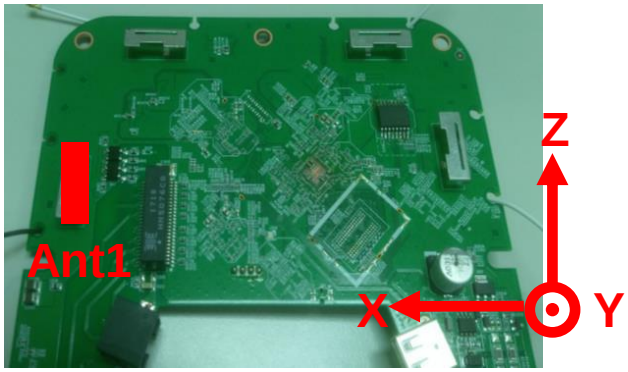


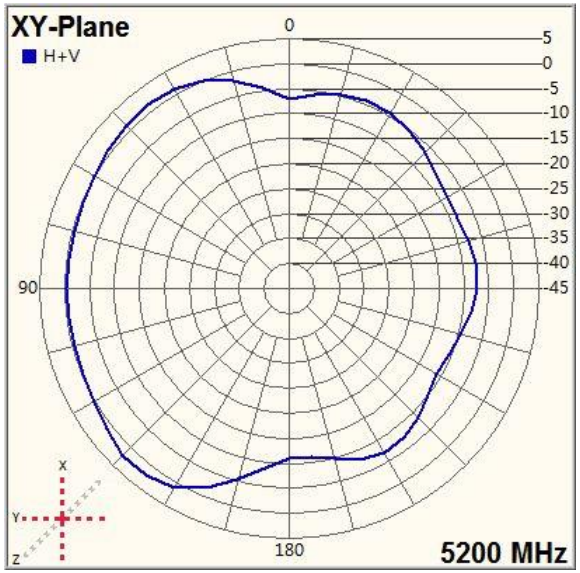


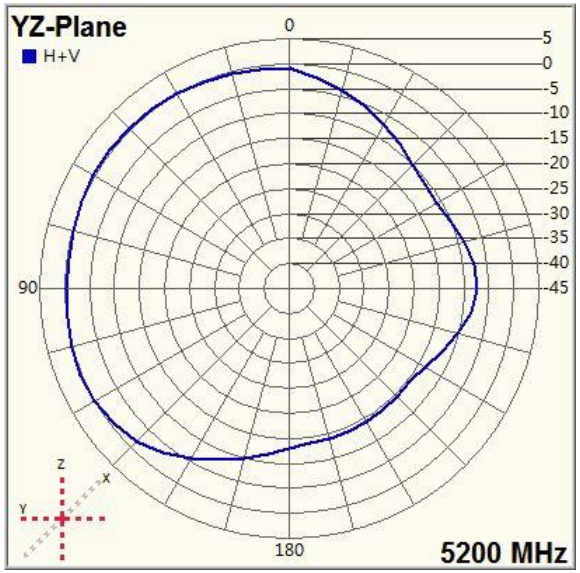


Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Peak Gain (dBi)	3.2	3.6	3.6	3.1	3.8	4.5	3.8	3.9	3.7
Efficiency(%)	51.5	56.9	51.5	56.1	58.5	55.9	59.5	55.4	54.7

Ant_1 2D Gain Pattern(raw data) @ 5200MHz

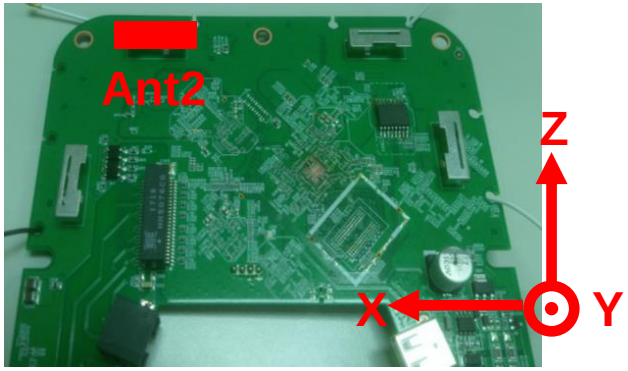


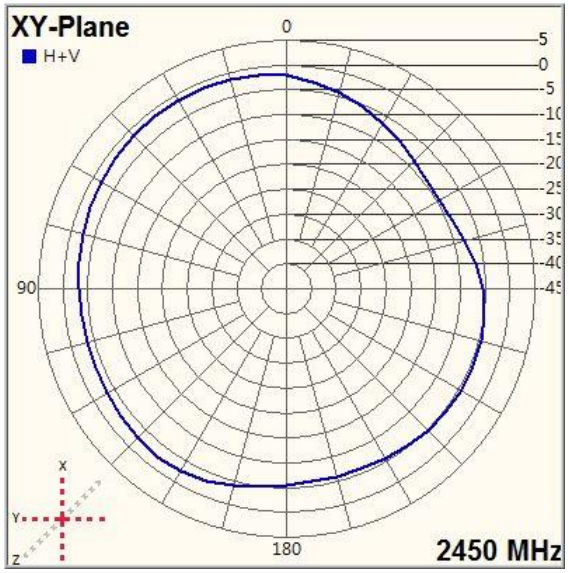


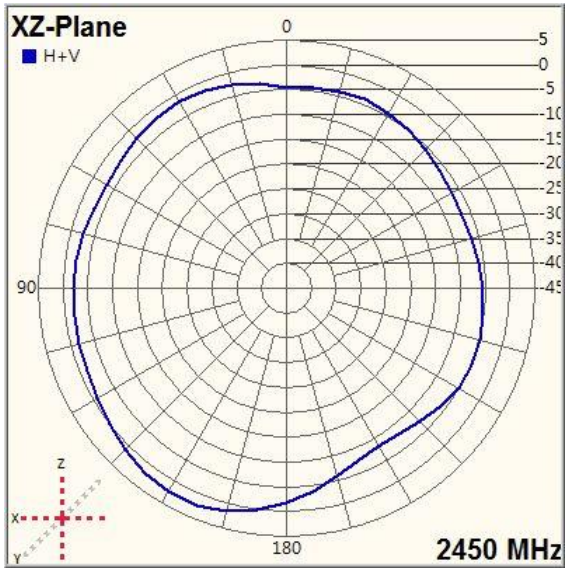


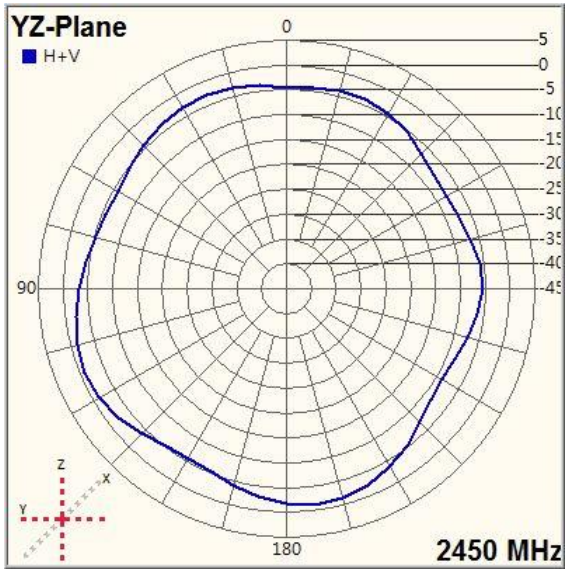
Degree (°)	0	30	60	90	120	150	180	210	240	270	300	330	360
XY-Gain (dBi)	-7.1	1.1	0.0	-0.4	0.2	1.1	-10.9	-7.0	-10.8	-7.3	-8.5	-4.5	-7.1
YZ-Gain (dBi)	-1.0	-0.1	0.4	-0.4	0.2	-5.6	-13.0	-14.1	-13.6	-7.3	-10.8	-7.1	-1.0

Ant_2 2D Gain Pattern @ 2450MHz



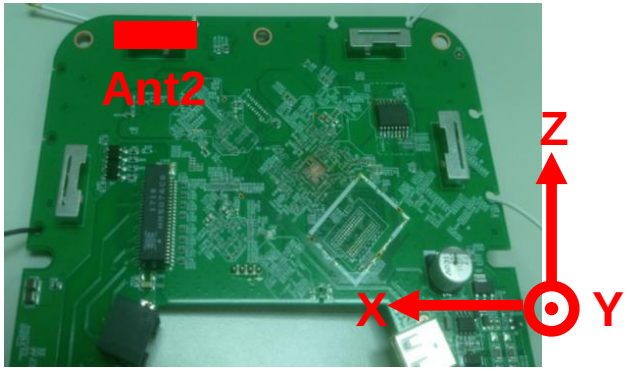


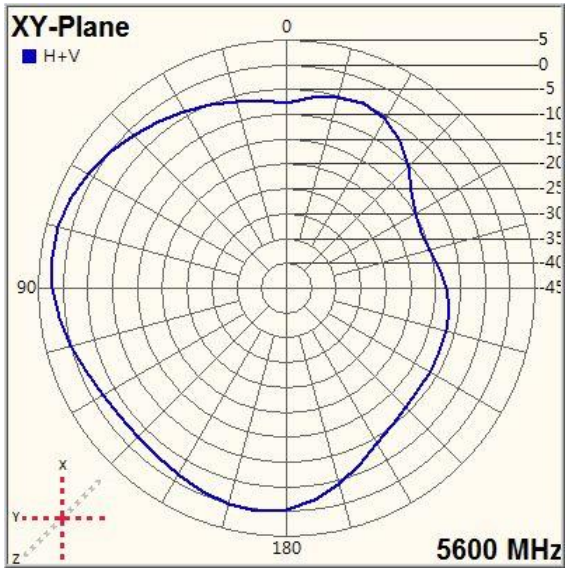


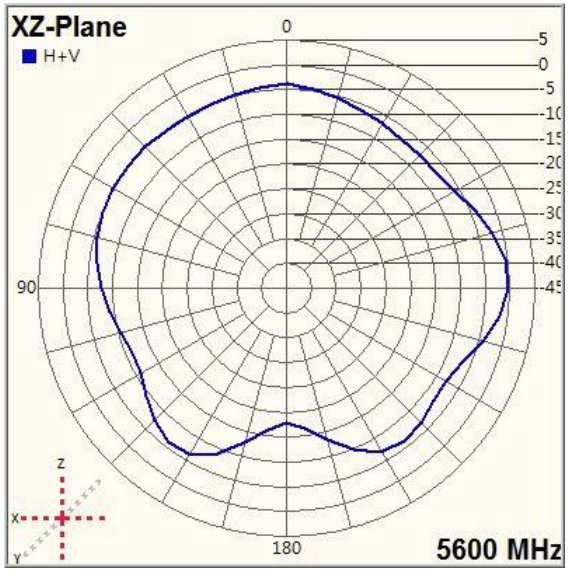


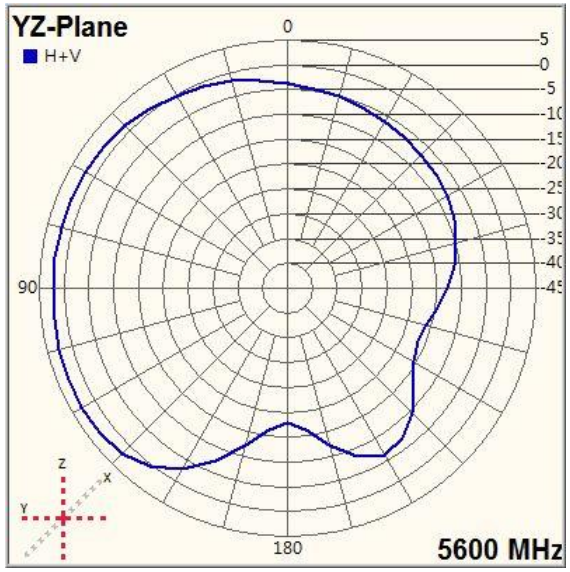
Frequency (MHz)	2400	2450	2500
Peak Gain (dBi)	3.5	3.9	4.1
Efficiency(%)	64.4	66.8	68.8

Ant_2 2D Gain Pattern @ 5600MHz



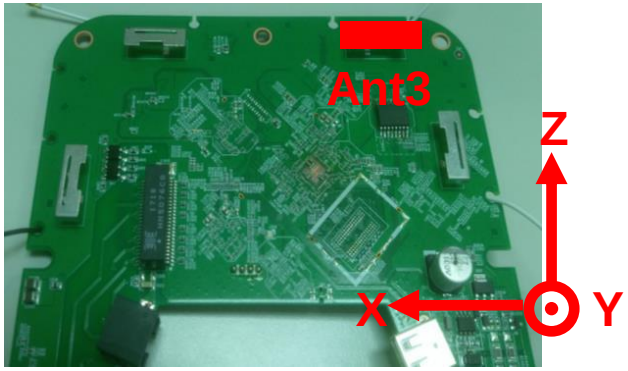


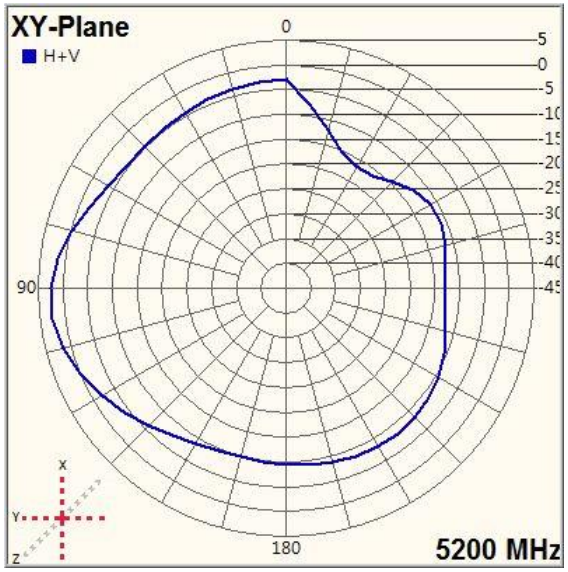


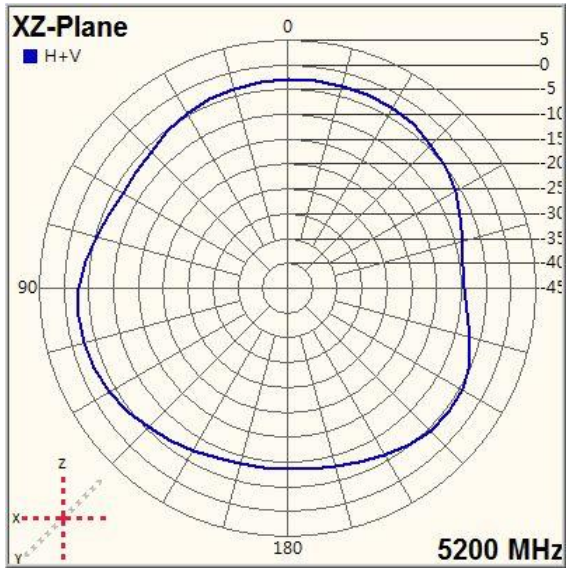


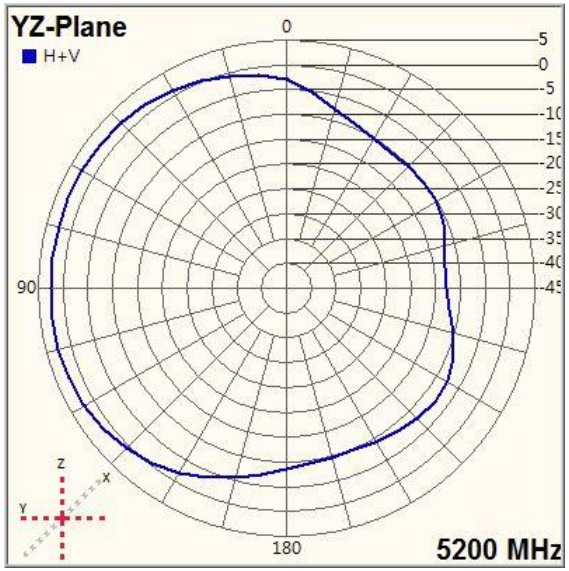
Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Peak Gain (dBi)	4.0	3.9	3.8	4.0	3.4	3.8	4.2	3.5	4.1
Efficiency(%)	59.2	57.0	55.4	62.8	59.2	59.4	55.9	54.5	57.8

Ant_3 2D Gain Pattern @ 5200MHz



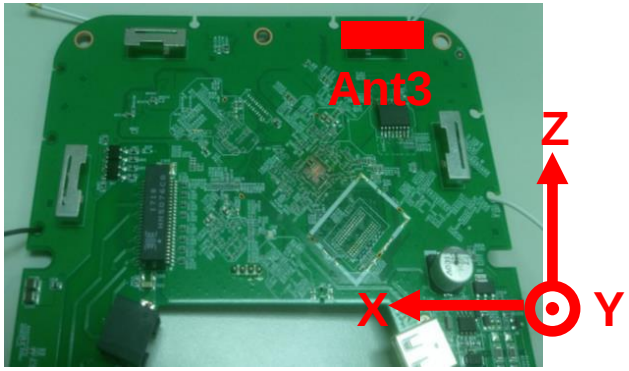


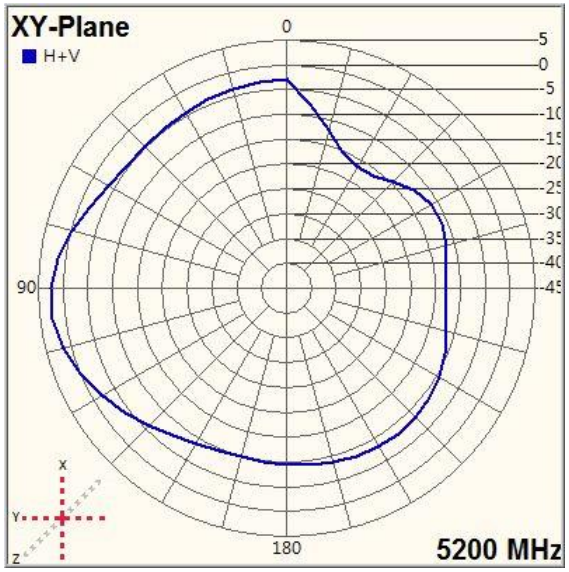


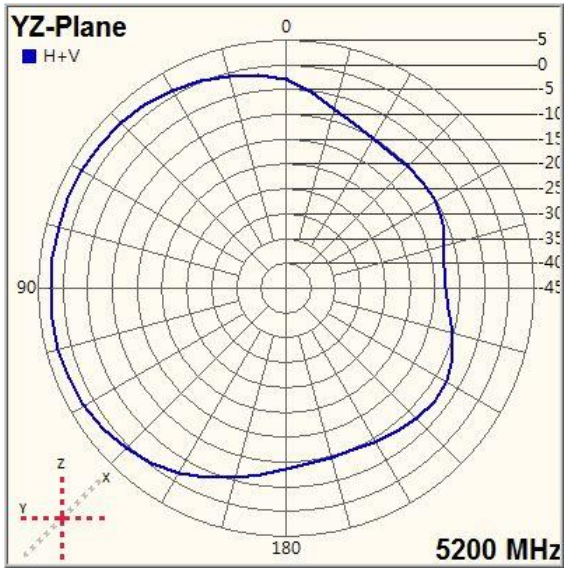


Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Peak Gain (dBi)	4.4	4.4	3.5	3.6	3.5	4.2	3.8	3.4	3.3
Efficiency(%)	58.8	56.0	57.3	52.1	58.4	62.2	61.9	56.8	55.6

Ant_3 2D Gain Pattern(raw data) @ 5200MHz

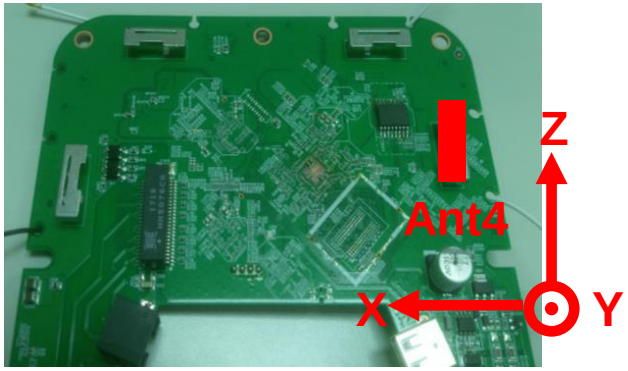


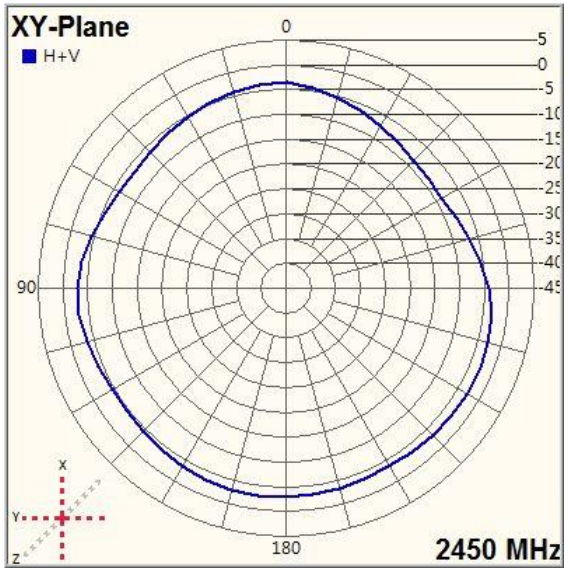


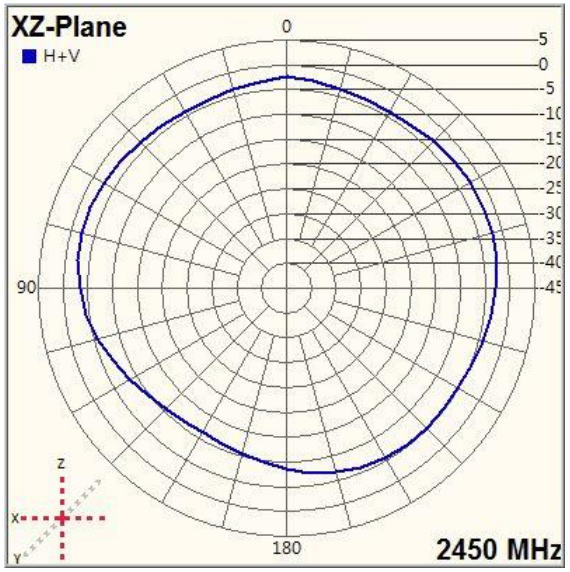


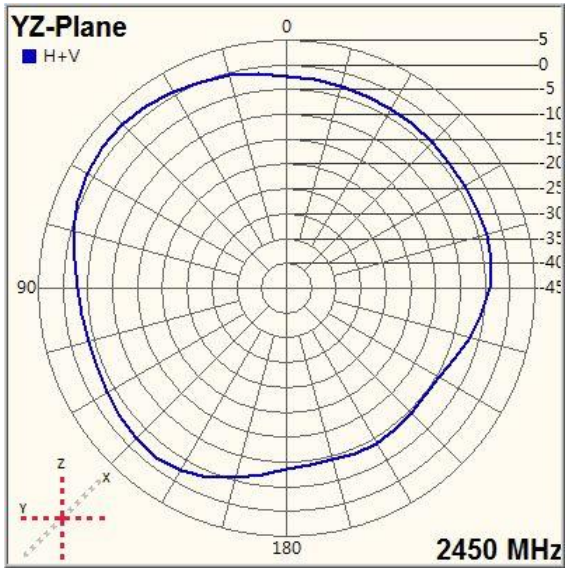
Degree (°)	0	30	60	90	120	150	180	210	240	270	300	330	360
XY-Gain (dBi)	-3.0	-4.1	-3.7	2.4	-1.9	-8.9	-9.4	-8.1	-9.4	-12.9	-11.3	-16.7	-3.0
YZ-Gain (dBi)	-2.8	1.0	2.5	2.4	2.2	-2.1	-8.4	-9.3	-7.5	-12.9	-10.2	-10.2	-2.8

Ant_4 2D Gain Pattern @ 2450MHz



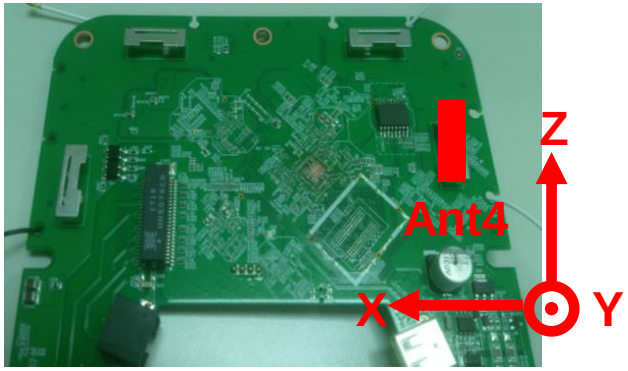


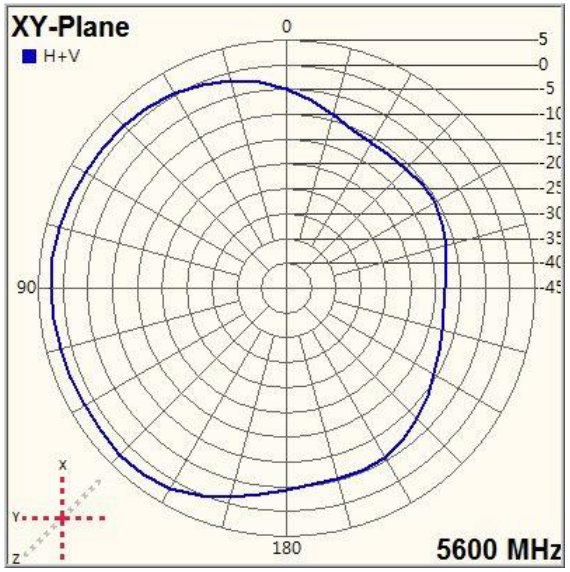


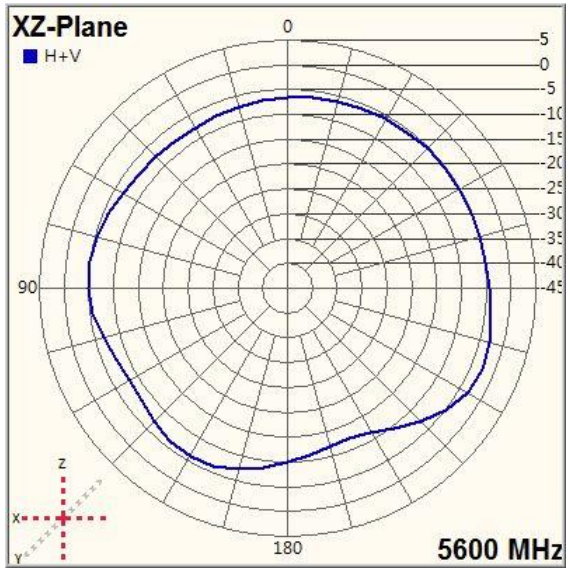


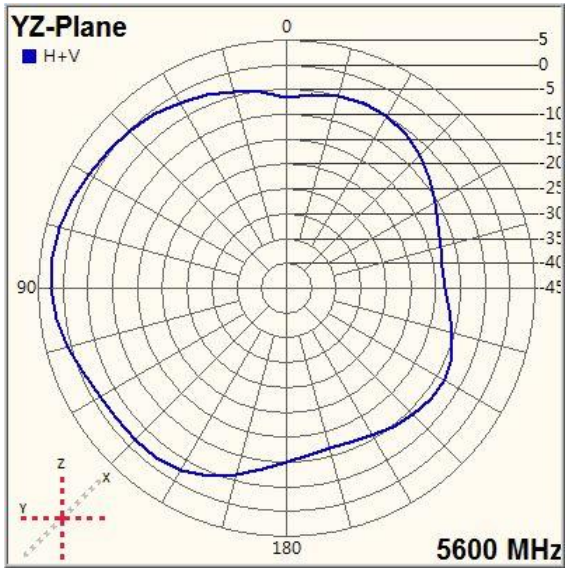
Frequency (MHz)	2400	2450	2500
Peak Gain (dBi)	2.9	2.8	2.7
Efficiency(%)	58.0	64.4	62.2

Ant_4 2D Gain Pattern @ 5600MHz









Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Peak Gain (dBi)	4.4	3.5	3.6	3.8	3.3	3.5	3.9	3.1	3.0
Efficiency(%)	67.7	60.6	57.8	57.2	61.2	62.9	55.7	54.1	55.5