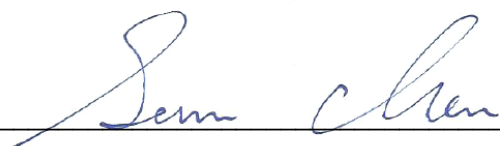


Antenna Composite Gain Test Report

FCC ID	UDX-600201010
Equipment	Cisco Wireless 9176I Series Wi-Fi 7 Access Point, Cisco Wireless 9176D1 Series Wi-Fi 7 Access Point
Brand Name	CISCO
Model Name	CW9176I, CW9176D1
Applicant	Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134 USA
Manufacturer	Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134 USA
Standard	KDB662911 D03 v01
Sample Received	Mar. 07, 2024
Start Test Date	Mar. 11, 2024
Final Test Date	May 16, 2024



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
1. Operation Mode and Antenna Information	4
2. Table for Multiple Listing	7
3. Test Frequency	8
4. Testing Location.....	8
5. Test Facility and Configuration.....	9
6. Reference Calibration	10
7. Test Method	11
8. Measured Values and Calculation of Maximum Gain Positions.....	12
9. Summary of Test Result	25
10. Test Setup	33
11. Test Equipment and Calibration Data	34
12. Test Results	35

History of this test report

[illegible]

1. Operation Mode and Antenna Information

For EUT 1:

Antenna Position	Ant.	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G5GAnt1	1	1	WNC	95XEAK15.GAV	PCB	I-PEX	2.4GHz, 5GHz
2G5GAnt2	2	3	WNC	95XEAK15.GAW	PCB	I-PEX	
2G5GAnt3	3	2	WNC	95XEAK15.GAY	PIFA	I-PEX	
2G5GAnt4	4	4	WNC	95XEAK15.GAX	PIFA	I-PEX	
5GAnt1	1	2	WNC	95XEAK15.GAZ	PCB	I-PEX	5GHz
5GAnt2	2	3	WNC	95XEAK15.GB1	PCB	I-PEX	
5GAnt3	3	1	WNC	95XEAK15.GB2	PIFA	I-PEX	
5GAnt4	4	4	WNC	95XEAK15.GB3	PIFA	I-PEX	
6GAnt1	1	1	WNC	95XEAK15.GB4	PCB	I-PEX	6GHz
6GAnt2	2	2	WNC	95XEAK15.GB5	PCB	I-PEX	
6GAnt3	3	3	WNC	95XEAK15.GB7	PIFA	I-PEX	
6GAnt4	4	4	WNC	95XEAK15.GB6	PIFA	I-PEX	
ScanAnt1	1	2	WNC	95XEAK15.GBB	PIFA	I-PEX	2.4GHz, 5GHz, 6GHz
ScanAnt2	2	1	WNC	95XEAK15.GBA	PIFA	I-PEX	
BLE	3	1	WNC	95XEAK15.GB8	PIFA	I-PEX	Bluetooth and Zigbee

Note:

For Radio 1

2.4GHz and 5GHz Operation Mode (1TX, 2TX, 4TX/4RX)

For 1TX

2G5GAnt1 can be use as transmitting antenna.

For 2TX

2G5GAnt1 and 2G5GAnt3 can be use as transmitting antenna.

2G5GAnt1 and 2G5GAnt3 could transmit simultaneously.

For 4TX/4RX

2G5GAnt1~4 can be used as transmitting/receiving antenna.

2G5GAnt1~4 could transmit/receive simultaneously.

For Radio 2

5GHz Operation Mode (1TX, 2TX, 4TX/4RX)

For 1TX

5GAnt3 can be use as transmitting antenna.

For 2TX

5GAnt1 and 5GAnt3 can be use as transmitting antenna.

5GAnt1 and 5GAnt3 could transmit simultaneously.

For 4TX/4RX

5GAnt1~4 can be used as transmitting/receiving antenna.

5GAnt1~4 could transmit/receive simultaneously.



For Radio 3

6GHz Operation Mode (1TX, 2TX, 4TX/4RX)

For 1TX

6GAnt1 can be use as transmitting antenna.

For 2TX

6GAnt1 and 6GAnt2 can be use as transmitting antenna.

6GAnt1 and 6GAnt2 could transmit simultaneously.

For 4TX/4RX

6GAnt1~4 can be used as transmitting/receiving antenna.

6GAnt1~4 could transmit/receive simultaneously.

For Radio 4

2.4GHz, 5GHz and 6GHz Operation Mode (1TX/2RX)

For 1TX

ScanAnt2 can be use as transmitting antenna.

For 2RX

ScanAnt1 and ScanAnt2 can be use as receiving antenna.

For Radio 5

Bluetooth/Zigbee Operation Mode (1TX/1RX)

Only BLE can be used as transmitting/receiving functions.

For EUT 2:

Antenna Position	Ant.	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G5GAnt1	1	4	WNC	95XPAD15.G20	Dipole	I-PEX	2.4GHz, 5GHz
2G5GAnt2	2	3	WNC	95XPAD15.G21	Dipole	I-PEX	
2G5GAnt3	3	1	WNC	95XPAD15.G22	Dipole	I-PEX	
2G5GAnt4	4	2	WNC	95XPAD15.G23	Dipole	I-PEX	
5GAnt1	1	1	WNC	95XPAD15.G24	Dipole	I-PEX	5GHz
5GAnt2	2	2	WNC	95XPAD15.G24	Dipole	I-PEX	
5GAnt3	3	3	WNC	95XPAD15.G26	Dipole	I-PEX	
5GAnt4	4	4	WNC	95XPAD15.G26	Dipole	I-PEX	
6GAnt1	1	1	WNC	95XPAD15.G28	Dipole	I-PEX	6GHz
6GAnt2	2	3	WNC	95XPAD15.G30	Dipole	I-PEX	
6GAnt3	3	4	WNC	95XPAD15.G31	Dipole	I-PEX	
6GAnt4	4	2	WNC	95XPAD15.G29	Dipole	I-PEX	
ScanAnt1	1	1	WNC	95XPAD15.G34	Dipole	I-PEX	2.4GHz, 5GHz, 6GHz
ScanAnt2	2	2	WNC	95XPAD15.G35	Dipole	I-PEX	
BLE	3	1	WNC	95XPAD15.G32	loop	I-PEX	Bluetooth and Zigbee

Note:

For Radio 1
2.4GHz and 5GHz Operation Mode (1TX, 2TX, 4TX/4RX)
For 1TX

2G5GAnt3 can be use as transmitting antenna.

For 2TX

2G5GAnt3 and 2G5GAnt4 can be use as transmitting antenna.

2G5GAnt3 and 2G5GAnt4 could transmit simultaneously.

For 4TX/4RX

2G5GAnt1~4 can be used as transmitting/receiving antenna.

2G5GAnt1~4 could transmit/receive simultaneously.

For Radio 2
5GHz Operation Mode (1TX, 2TX, 4TX/4RX)
For 1TX

5GAnt1 can be use as transmitting antenna.

For 2TX

5GAnt1 and 5GAnt2 can be use as transmitting antenna.

5GAnt1 and 5GAnt2 could transmit simultaneously.

For 4TX/4RX

5GAnt1~4 can be used as transmitting/receiving antenna.

5GAnt1~4 could transmit/receive simultaneously.

For Radio 3
6GHz Operation Mode (1TX, 2TX, 4TX/4RX)
For 1TX

6GAnt1 can be use as transmitting antenna.

For 2TX

6GAnt1 and 6GAnt4 can be use as transmitting antenna.

6GAnt1 and 6GAnt4 could transmit simultaneously.

For 4TX/4RX

6GAnt1~4 can be used as transmitting/receiving antenna.

6GAnt1~4 could transmit/receive simultaneously.

For Radio 4

2.4GHz, 5GHz and 6GHz Operation Mode (1TX/2RX)

For 1TX

ScanAnt1 can be use as transmitting antenna.

For 2RX

ScanAnt1 and ScanAnt2 can be use as receiving antenna.

For Radio 5

Bluetooth/Zigbee Operation Mode (1TX/1RX)

Only BLE can be used as transmitting/receiving functions.

2. Table for Multiple Listing

The equipment/model names in the following table are identical to each other in all aspects except for the following table:

EUT	Equipment Name	Model Name	SW (Note1)	Description	Accessories
1	Cisco Wireless 9176I Series Wi-Fi 7 Access Point	CW9176I	Cisco	Each model is equipped with different set of antennas.	Bracket 1*1
			Meraki		Bracket 2*1
2	Cisco Wireless 9176D1 Series Wi-Fi 7 Access Point	CW9176D1	Cisco		Bracket 3*1
			Meraki		

Note 1:

SW	Frequencies supported by 320MHz
Cisco	6105, 6265, 6425, 6745 MHz
Meraki	6105, 6265, 6425, 6585, 6745, 6905 MHz

Note 2: The above information was declared by manufacturer.

3. Test Frequency

The listed frequency of each bands are selected to represent each frequency bands

Band [MHz]	Test Frequency [MHz]
2400-2483.5	2450
5150-5250	5200
5250-5350	5300
5470-5725	5600
5725-5850	5785
5850-5895	5885
5925-6425	6175
6425-6525	6475
6525-6875	6695
6875-7125	6995

4. Testing Location

Testing Location		
Sporton International Inc. Hsinhua Laboratory		
☒	HWA YA	ADD : No.13-1 & 14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan R.O.C.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rofy Chen	23.5-24.5 / 45-55	Mar. 11, 2024~ Mar. 13, 2024 (For EUT 1)
		Vivi Jiang	23.5-24.5 / 45-55	Mar. 24, 2024~ May 16, 2024 (For EUT 2)

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

5. Test Facility and Configuration

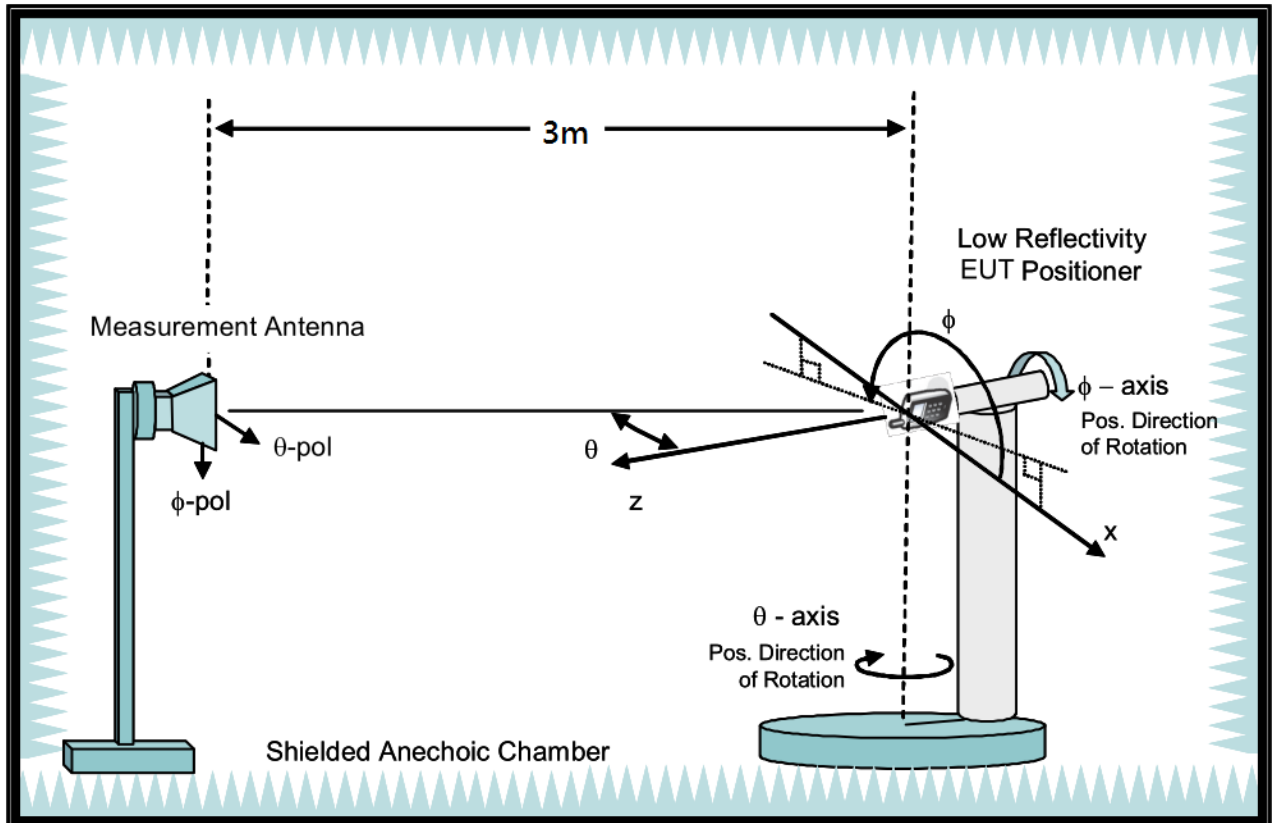
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

Turntable: Multi-axis positioner (Theta and Phi angle).

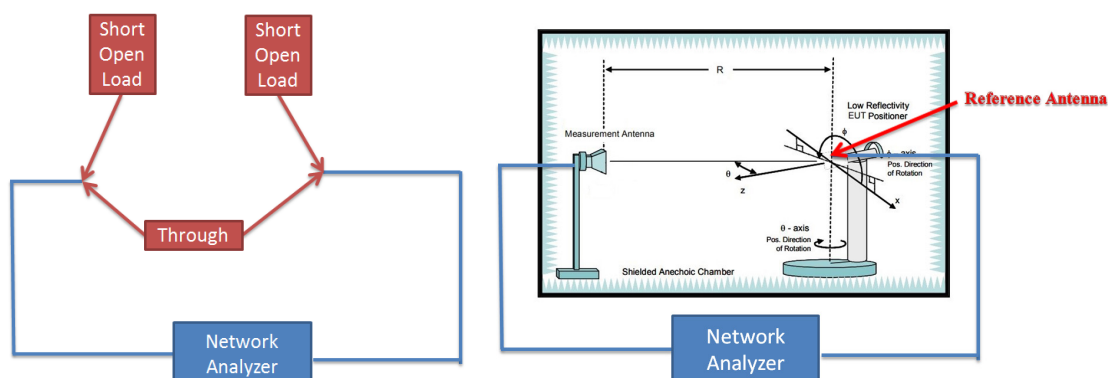
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



6. Reference Calibration

Connected cables to VNA calibration kit and use network analyzer internal function to do calibration. Do short, open and load to each side. Then connect through to both side and calibrate G values. The cable loss is calibrated and set inside the network analyzer.

Measurement Antenna is connected to port1 of Network analyzer and reference antenna connected to port 2 of Network Analyzer. Record G values and used with reference antenna gain to calculate gain factor.



Frequency (MHz)	2400	2450	2500	5150	5200	5300	5600	5750	5800	5900	6000	6500	7000	7200
G(theta) reading (dB)	-33.55	-33.38	-32.91	-32.29	-32.48	-32.25	-32.33	-32.85	-32.67	-33.37	-32.53	-33.75	-34.72	-35.33
G(phi) reading (dB)	-33.11	-32.68	-32.48	-32.45	-32.85	-31.35	-32.76	-32.68	-32.57	-32.81	-32.85	-33.62	-34.33	-35.29
Reference gain (dBi)	10.3	10.3	10.1	11.1	11.3	11.7	12.1	11.5	11.2	11.1	11.3	11	11.1	10.5
Factor(theta) (dB)	43.85	43.68	43.01	43.39	43.78	43.95	44.43	44.35	43.87	44.47	43.83	44.75	45.82	45.83
Factor(phi) (dB)	43.41	42.98	42.58	43.55	44.15	43.05	44.86	44.18	43.77	43.91	44.15	44.62	45.43	45.79

Note:

$$G \text{ reading (dB)} = 20 \cdot \log(V_2/V_1) = 10 \cdot \log(P_2/P_1)$$

V2 is the voltage of VNA port2 is measured, V1 is the voltage of VNA port1 is the reference source.

P2 is the power of VNA port2 is measured, P1 is the power of VNA port1 is the reference source.

$$\text{Factor} = \text{gain factor} + \text{power gain conversion} = (\text{Reference antenna gain}) - (G \text{ reading})$$

7. Test Method

EUT set on multi-axis positioner and adjust EUT's physical center to measurement reference center. Measurement antenna set at phi polarization and 1.5 meter height. Port 1 of Network analyzer connect to antenna 1 of EUT. Record G value every 7.5 degree from 0 to 352.5 degree on Phi angle and 0 to 180 on theta angle of multi-axis positioner. Then set measurement antenna to theta polarization and repeat process. Repeat process to each antenna of EUT.

DG steps:

1. Each Phi and Theta polarization antenna gain are measured for all test angles.
2. Composite Phi and Theta antenna gain are computed, using formula in KDB662911 D01 d) (i) and e) (ii), for all angles.
3. Composite antenna gain are examined for all angles to determine max gain and Phi/Theta position. Max gain and phi/theta position are listed in section 8 tables.

Note: Antenna gain = G reading + factor, The factor of chapter five includes reference antenna gain factor and power gain conversion.

8. Measured Values and Calculation of Maximum Gain Positions

For EUT 1:

For 2G5GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	4.93	-10.61	3.3	-7.1	-12.17
Ant. 3 (dBi)	-2.07	4.86	-5.01	5.23	4.51
DG [1SS] (dBi)	5.13	3.2	3.11	4.1	2.69
Polarization	Phi	Theta	Phi	Theta	Theta
$\Theta(^{\circ})$	45	67.5	75	67.5	60
$\Phi(^{\circ})$	300	97.5	90	112.5	112.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(4.93/20)}$	$10^{(-10.61/20)}$	$10^{(3.3/20)}$	$10^{(-7.1/20)}$	$10^{(-12.17/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-2.07/20)}$	$10^{(4.86/20)}$	$10^{(-5.01/20)}$	$10^{(5.23/20)}$	$10^{(4.51/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.764	0.295	1.462	0.442	0.246
Ant. 3 [$10^{(G/20)}$] value	0.788	1.75	0.562	1.826	1.681
Sum All Antenna [Amax]	2.552	2.045	2.024	2.268	1.927
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	5.13	3.2	3.11	4.1	2.69

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

For 4TX

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	3.88	-10.61	3.3	-7.1	-5.69
Ant. 2 (dBi)	1.52	-15.45	1.98	-15.05	-10.23
Ant. 3 (dBi)	-0.19	4.86	-5.01	5.23	2.06
Ant. 4 (dBi)	-3.08	2.96	-8.05	1.96	2.57
DG [1SS] (dBi)	6.92	5.15	5.29	5.34	4.71
Polarization	Phi	Theta	Phi	Theta	Theta
$\Theta(^{\circ})$	45	67.5	75	67.5	60
$\Phi(^{\circ})$	322.5	97.5	90	112.5	217.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(3.88/20)}$	$10^{(-10.61/20)}$	$10^{(3.3/20)}$	$10^{(-7.1/20)}$	$10^{(-5.69/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(1.52/20)}$	$10^{(-15.45/20)}$	$10^{(1.98/20)}$	$10^{(-15.05/20)}$	$10^{(-10.23/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-0.19/20)}$	$10^{(4.86/20)}$	$10^{(-5.01/20)}$	$10^{(5.23/20)}$	$10^{(2.06/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(-3.08/20)}$	$10^{(2.96/20)}$	$10^{(-8.05/20)}$	$10^{(1.96/20)}$	$10^{(2.57/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.563	0.295	1.462	0.442	0.519
Ant. 2 [$10^{(G/20)}$] value	1.191	0.169	1.256	0.177	0.308
Ant. 3 [$10^{(G/20)}$] value	0.978	1.75	0.562	1.826	1.268
Ant. 4 [$10^{(G/20)}$] value	0.701	1.406	0.396	1.253	1.344
Sum All Antenna [Amax]	4.434	3.62	3.676	3.698	3.439
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.92	5.15	5.29	5.34	4.71

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

For 5GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	2.52	2.27	1.73	2.01
Ant. 3 (dBi)	-2.97	-3.19	-1.48	-4.43
DG [1SS] (dBi)	3.21	2.97	3.28	2.38
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	45	45	45	52.5
$\Phi(^{\circ})$	157.5	45	15	30

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.52/20)}$	$10^{(2.27/20)}$	$10^{(1.73/20)}$	$10^{(2.01/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-2.97/20)}$	$10^{(-3.19/20)}$	$10^{(-1.48/20)}$	$10^{(-4.43/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.337	1.299	1.22	1.26
Ant. 3 [$10^{(G/20)}$] value	0.71	0.693	0.843	0.6
Sum All Antenna [Amax]	2.047	1.991	2.064	1.861
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	3.21	2.97	3.28	2.38

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

**For 4TX****DG_1SS max value position**

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	2.53	1.18	1.17	0.66
Ant. 2 (dBi)	0.18	-1.16	0.84	-0.59
Ant. 3 (dBi)	-3.95	-1.86	-2.3	-3.56
Ant. 4 (dBi)	-3.58	-2.74	-2.11	-2.43
DG [1SS] (dBi)	5.24	5	5.57	4.69
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	45	37.5	37.5	45
$\Phi(^{\circ})$	165	0	7.5	172.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.53/20)}$	$10^{(1.18/20)}$	$10^{(1.17/20)}$	$10^{(0.66/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(0.18/20)}$	$10^{(-1.16/20)}$	$10^{(0.84/20)}$	$10^{(-0.59/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-3.95/20)}$	$10^{(-1.86/20)}$	$10^{(-2.3/20)}$	$10^{(-3.56/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(-3.58/20)}$	$10^{(-2.74/20)}$	$10^{(-2.11/20)}$	$10^{(-2.43/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.338	1.146	1.144	1.079
Ant. 2 [$10^{(G/20)}$] value	1.021	0.875	1.102	0.934
Ant. 3 [$10^{(G/20)}$] value	0.635	0.807	0.767	0.664
Ant. 4 [$10^{(G/20)}$] value	0.662	0.729	0.784	0.756
Sum All Antenna [Amax]	3.656	3.557	3.797	3.433
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	5.24	5	5.57	4.69

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

For 6GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	2.91	4.59	2.35	3.15
Ant. 2 (dBi)	3.81	3.79	3.81	3.66
DG [1SS] (dBi)	6.38	7.21	6.12	6.42
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	60	67.5	67.5	75
$\Phi(^{\circ})$	157.5	82.5	75	112.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.91/20)}$	$10^{(4.59/20)}$	$10^{(2.35/20)}$	$10^{(3.15/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(3.81/20)}$	$10^{(3.79/20)}$	$10^{(3.81/20)}$	$10^{(3.66/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.398	1.696	1.311	1.437
Ant. 2 [$10^{(G/20)}$] value	1.551	1.547	1.551	1.524
Sum All Antenna [Amax]	2.949	3.243	2.861	2.961
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.38	7.21	6.12	6.42

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{1/2/N_{ant}}$

For 4TX

DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	-5.46	3.09	-7.73	2.61
Ant. 2 (dBi)	-8.8	2.45	-9.03	3.73
Ant. 3 (dBi)	4.83	0.84	1.83	0.9
Ant. 4 (dBi)	3.75	-14.03	4.41	-17.76
DG [1SS] (dBi)	6.4	6.14	5.25	6.29
Polarization	Theta	Phi	Theta	Phi
$\Theta(^{\circ})$	67.5	45	60	52.5
$\Phi(^{\circ})$	30	345	30	345

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(-5.46/20)}$	$10^{(3.09/20)}$	$10^{(-7.73/20)}$	$10^{(2.61/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(-8.8/20)}$	$10^{(2.45/20)}$	$10^{(-9.03/20)}$	$10^{(3.73/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(4.83/20)}$	$10^{(0.84/20)}$	$10^{(1.83/20)}$	$10^{(0.9/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(3.75/20)}$	$10^{(-14.03/20)}$	$10^{(4.41/20)}$	$10^{(-17.76/20)}$
Ant. 1 [$10^{(G/20)}$] value	0.533	1.427	0.411	1.351
Ant. 2 [$10^{(G/20)}$] value	0.363	1.326	0.354	1.536
Ant. 3 [$10^{(G/20)}$] value	1.744	1.102	1.235	1.109
Ant. 4 [$10^{(G/20)}$] value	1.54	0.199	1.661	0.129
Sum All Antenna [Amax]	4.18	4.053	3.66	4.125
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.4	6.14	5.25	6.29

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(4.93/20)}$	$10^{(-10.61/20)}$	$10^{(3.3/20)}$	$10^{(-7.1/20)}$	$10^{(-12.17/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-2.07/20)}$	$10^{(4.86/20)}$	$10^{(-5.01/20)}$	$10^{(5.23/20)}$	$10^{(4.51/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.764	0.295	1.462	0.442	0.246
Ant. 3 [$10^{(G/20)}$] value	0.788	1.75	0.562	1.826	1.681
Sum All Antenna [Amax]	2.552	2.045	2.024	2.268	1.927
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	5.13	3.2	3.11	4.1	2.69

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.91/20)}$	$10^{(4.59/20)}$	$10^{(2.35/20)}$	$10^{(3.15/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(3.81/20)}$	$10^{(3.79/20)}$	$10^{(3.81/20)}$	$10^{(3.66/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.398	1.696	1.311	1.437
Ant. 2 [$10^{(G/20)}$] value	1.551	1.547	1.551	1.524
Sum All Antenna [Amax]	2.949	3.243	2.861	2.961
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.38	7.21	6.12	6.42

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

For EUT 2:

For 2G5GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 3 (dBi)	6	5.2	3.67	4.86	3.55
Ant. 4 (dBi)	5.02	0.21	1.58	0.53	2.18
DG [1SS] (dBi)	8.53	6.07	5.7	5.97	5.9
Polarization	Phi	Theta	Phi	Theta	Phi
$\Theta(^{\circ})$	15	7.5	7.5	7.5	15
$\Phi(^{\circ})$	262.5	345	82.5	352.5	90

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 3 [$10^{(G/20)}$]	$10^{(6/20)}$	$10^{(5.2/20)}$	$10^{(3.67/20)}$	$10^{(4.86/20)}$	$10^{(3.55/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(5.02/20)}$	$10^{(0.21/20)}$	$10^{(1.58/20)}$	$10^{(0.53/20)}$	$10^{(2.18/20)}$
Ant. 3 [$10^{(G/20)}$] value	1.995	1.82	1.526	1.75	1.505
Ant. 4 [$10^{(G/20)}$] value	1.782	1.024	1.199	1.063	1.285
Sum All Antenna [Amax]	3.778	2.844	2.725	2.813	2.79
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	8.53	6.07	5.7	5.97	5.9

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^2 / N_{ant}$

For 4TX

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	6.34	1.17	1.42	3.41	1.43
Ant. 2 (dBi)	4.1	2	2.16	3.83	3.65
Ant. 3 (dBi)	4.13	3.89	3.23	3.08	2
Ant. 4 (dBi)	1.03	1.71	2.02	1.5	3.16
DG [1SS] (dBi)	10.12	8.28	8.25	9.02	8.63
Polarization	Phi	Phi	Phi	Phi	Theta
$\Theta(^{\circ})$	22.5	15	15	15	7.5
$\Phi(^{\circ})$	75	270	262.5	0	7.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(6.34/20)}$	$10^{(1.17/20)}$	$10^{(1.42/20)}$	$10^{(3.41/20)}$	$10^{(1.43/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(4.1/20)}$	$10^{(2/20)}$	$10^{(2.16/20)}$	$10^{(3.83/20)}$	$10^{(3.65/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(4.13/20)}$	$10^{(3.89/20)}$	$10^{(3.23/20)}$	$10^{(3.08/20)}$	$10^{(2/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(1.03/20)}$	$10^{(1.71/20)}$	$10^{(2.02/20)}$	$10^{(1.5/20)}$	$10^{(3.16/20)}$
Ant. 1 [$10^{(G/20)}$] value	2.075	1.144	1.178	1.481	1.179
Ant. 2 [$10^{(G/20)}$] value	1.603	1.259	1.282	1.554	1.522
Ant. 3 [$10^{(G/20)}$] value	1.609	1.565	1.45	1.426	1.259
Ant. 4 [$10^{(G/20)}$] value	1.126	1.218	1.262	1.189	1.439
Sum All Antenna [Amax]	6.413	5.186	5.172	5.649	5.399
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	10.12	8.28	8.25	9.02	8.63

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^2 / N_{ant}$

For 5GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	4.85	3.48	4.3	4.12
Ant. 2 (dBi)	2.31	2.94	3.33	3.62
DG [1SS] (dBi)	6.68	6.22	6.84	6.88
Polarization	Theta	Phi	Theta	Theta
$\Theta(^{\circ})$	0	0	0	7.5
$\Phi(^{\circ})$	0	90	7.5	15

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(4.85/20)}$	$10^{(3.48/20)}$	$10^{(4.3/20)}$	$10^{(4.12/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(2.31/20)}$	$10^{(2.94/20)}$	$10^{(3.33/20)}$	$10^{(3.62/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.748	1.493	1.641	1.607
Ant. 2 [$10^{(G/20)}$] value	1.305	1.403	1.467	1.517
Sum All Antenna [Amax]	3.053	2.896	3.108	3.124
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.68	6.22	6.84	6.88

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{1/2/N_{ant}}$

For 4TX

DG_1SS max value position

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	4.85	3.3	4.3	4.59
Ant. 2 (dBi)	2.31	2.53	3.33	2.73
Ant. 3 (dBi)	4.25	4.13	5.04	4.42
Ant. 4 (dBi)	-2.58	0.46	-1.04	1.72
DG [1SS] (dBi)	8.67	8.73	9.22	9.47
Polarization	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	0	0	0	0
$\Phi(^{\circ})$	0	7.5	7.5	7.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(4.85/20)}$	$10^{(3.3/20)}$	$10^{(4.3/20)}$	$10^{(4.59/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(2.31/20)}$	$10^{(2.53/20)}$	$10^{(3.33/20)}$	$10^{(2.73/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(4.25/20)}$	$10^{(4.13/20)}$	$10^{(5.04/20)}$	$10^{(4.42/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(-2.58/20)}$	$10^{(0.46/20)}$	$10^{(-1.04/20)}$	$10^{(1.72/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.748	1.462	1.641	1.696
Ant. 2 [$10^{(G/20)}$] value	1.305	1.338	1.467	1.369
Ant. 3 [$10^{(G/20)}$] value	1.631	1.609	1.786	1.663
Ant. 4 [$10^{(G/20)}$] value	0.743	1.054	0.887	1.219
Sum All Antenna [Amax]	5.427	5.463	5.781	5.948
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	8.67	8.73	9.22	9.47

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

For 6GAnt1~4:

For 2TX

DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	2.54	4.75	6.45	3.73
Ant. 4 (dBi)	4.33	3.39	0.06	3.57
DG [1SS] (dBi)	6.49	7.11	6.84	6.66
Polarization	Phi	Phi	Theta	Phi
$\Theta(^{\circ})$	15	7.5	15	7.5
$\Phi(^{\circ})$	195	187.5	262.5	187.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.54/20)}$	$10^{(4.75/20)}$	$10^{(6.45/20)}$	$10^{(3.73/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(4.33/20)}$	$10^{(3.39/20)}$	$10^{(0.06/20)}$	$10^{(3.57/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.34	1.728	2.101	1.536
Ant. 4 [$10^{(G/20)}$] value	1.646	1.477	1.007	1.508
Sum All Antenna [Amax]	2.986	3.205	3.108	3.045
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.49	7.11	6.84	6.66

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{1/2/N_{ant}}$

For 4TX

DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	2.54	4.8	3.11	2.56
Ant. 2 (dBi)	0.78	3.24	3.62	4.08
Ant. 3 (dBi)	1.09	2.65	2.32	2.4
Ant. 4 (dBi)	4.33	2.77	1.49	2.46
DG [1SS] (dBi)	8.32	9.43	8.69	8.92
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	15	0	15	15
$\Phi(^{\circ})$	195	195	277.5	277.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.54/20)}$	$10^{(4.8/20)}$	$10^{(3.11/20)}$	$10^{(2.56/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(0.78/20)}$	$10^{(3.24/20)}$	$10^{(3.62/20)}$	$10^{(4.08/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(1.09/20)}$	$10^{(2.65/20)}$	$10^{(2.32/20)}$	$10^{(2.4/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(4.33/20)}$	$10^{(2.77/20)}$	$10^{(1.49/20)}$	$10^{(2.46/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.34	1.738	1.431	1.343
Ant. 2 [$10^{(G/20)}$] value	1.094	1.452	1.517	1.6
Ant. 3 [$10^{(G/20)}$] value	1.134	1.357	1.306	1.318
Ant. 4 [$10^{(G/20)}$] value	1.646	1.376	1.187	1.327
Sum All Antenna [Amax]	5.214	5.922	5.441	5.588
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	8.32	9.43	8.69	8.92

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

Directional gain (1SS) = $10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^{2/N_{ant}}$

9. Summary of Test Result

For EUT 1:

For 2G5GAnt1~4:

For 2TX

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.98	2.42	3.3	2.55	2.46
Ant. 3 Max Gain (dBi)	3.95	4.86	5.17	5.23	4.51
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/37.5/285	Phi/60/67.5	Phi/75/90	Phi/82.5/240	Phi/67.5/37.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/15/150	Theta/67.5/97.5	Theta/52.5/24	Theta/67.5/11	Theta/60/112.5
Max Gain (dBi)	4.98	4.86	5.17	5.23	4.51
DG [1SS] (dBi)	5.13	3.2	3.11	4.1	2.69
DG [1SS] (dBi) Revised	5.13	4.86	5.17	5.23	4.51
DG [2SS] (dBi)	4.98	4.86	5.17	5.23	4.51

For 4TX

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.98	2.42	3.3	2.55	2.46
Ant. 2 Max Gain (dBi)	4.38	2.59	2.48	2.11	2.78
Ant. 3 Max Gain (dBi)	3.95	4.86	5.17	5.23	4.51
Ant. 4 Max Gain (dBi)	3.56	3.03	2.66	2.76	3.16
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/37.5/285	Phi/60/67.5	Phi/75/90	Phi/82.5/240	Phi/67.5/37.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/45/67.5	Phi/75/277.5	Phi/60/30	Phi/75/172.5	Phi/75/172.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/15/150	Theta/67.5/97.5	Theta/52.5/24	Theta/67.5/11	Theta/60/112.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/7.5/150	Theta/60/60	Theta/67.5/90	Theta/60/67.5	Theta/37.5/217.5
Max Gain (dBi)	4.98	4.86	5.17	5.23	4.51
DG [1SS] (dBi)	6.92	5.15	5.29	5.34	4.71
DG [2SS] (dBi)	4.98	4.86	5.17	5.23	4.51
DG [4SS] (dBi)	4.98	4.86	5.17	5.23	4.51

For 5GAnt1~4:
For 2TX

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.65	3.3	2.92	2.37
Ant. 3 Max Gain (dBi)	3.63	3.77	3.93	3.91
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/52.5/15	Phi/52.5/157.5	Phi/52.5/150	Phi/67.5/292.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/262.5	Theta/60/120	Theta/67.5/135	Theta/37.5/262.5
Max Gain (dBi)	3.63	3.77	3.93	3.91
DG [1SS] (dBi)	3.21	2.97	3.28	2.38
DG [1SS] (dBi) Revised	3.63	3.77	3.93	3.91
DG [2SS] (dBi)	3.63	3.77	3.93	3.91

For 4TX

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.65	3.3	2.92	2.37
Ant. 2 Max Gain (dBi)	2.18	2.69	3.01	2.91
Ant. 3 Max Gain (dBi)	3.63	3.77	3.93	3.91
Ant. 4 Max Gain (dBi)	4.44	3.9	3.79	3.47
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/52.5/15	Phi/52.5/157.5	Phi/52.5/150	Phi/67.5/292.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/45/105	Phi/60/30	Phi/82.5/300	Phi/82.5/300
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/262.5	Theta/60/120	Theta/67.5/135	Theta/37.5/262.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/67.5/60	Theta/75/262.5	Theta/52.5/52.5	Theta/75/292.5
Max Gain (dBi)	4.44	3.9	3.93	3.91
DG [1SS] (dBi)	5.24	5	5.57	4.69
DG [2SS] (dBi)	4.44	3.9	3.93	3.91
DG [4SS] (dBi)	4.44	3.9	3.93	3.91

For 6GAnt1~4:
For 2TX

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.45	4.72	3.33	3.43
Ant. 2 Max Gain (dBi)	4.22	5.11	4.08	4.61
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/67.5/120	Phi/60/82.5	Phi/67.5/120	Phi/52.5/135
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/60/105	Phi/60/97.5	Phi/75/90	Phi/52.5/352.5
Max Gain (dBi)	4.22	5.11	4.08	4.61
DG [1SS] (dBi)	6.38	7.21	6.12	6.42
DG [2SS] (dBi)	4.22	5.11	4.08	4.61

For 4TX

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.45	4.72	3.33	3.43
Ant. 2 Max Gain (dBi)	4.22	5.11	4.08	4.61
Ant. 3 Max Gain (dBi)	4.83	3.79	3.71	4.53
Ant. 4 Max Gain (dBi)	5.01	4.66	4.66	5.6
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/67.5/120	Phi/60/82.5	Phi/67.5/120	Phi/52.5/135
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/60/105	Phi/60/97.5	Phi/75/90	Phi/52.5/352.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/67.5/30	Theta/52.5/30	Theta/60/135	Theta/60/22.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/67.5/135	Theta/60/30	Theta/67.5/30	Theta/67.5/45
Max Gain (dBi)	5.01	5.11	4.66	5.6
DG [1SS] (dBi)	6.4	6.14	5.25	6.29
DG [2SS] (dBi)	5.01	5.11	4.66	5.6
DG [4SS] (dBi)	5.01	5.11	4.66	5.6

For ScanAnt1~2 (2.4GHz, 5GHz and 6GHz) and BLE Ant3:

Freq(Hz)	2.45G
Ant. 1 Max Gain (dBi)	2.46
Ant. 2 Max Gain (dBi)	2.39
Ant. 3 Max Gain (dBi)	3.58
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/172.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/127.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/15

Freq(Hz)	5.2G	5.3G	5.6G	5.785G	5.885G
Ant. 1 Max Gain (dBi)	2.35	2.62	4.9	3.33	5.38
Ant. 2 Max Gain (dBi)	4.11	4.47	5.67	4.75	5.79
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/240	Theta/75/120	Theta/67.5/120	Theta/82.5/240	Theta/90/240
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/277.5	Theta/67.5/52.5	Theta/60/60	Theta/60/52.5	Theta/82.5/292.5

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	5.53	4.82	4.27	3.16
Ant. 2 Max Gain (dBi)	6.1	4.65	4.58	6.18
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/240	Theta/90/240	Theta/90/240	Theta/82.5/247.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/75/292.5	Theta/75/292.5	Theta/60/82.5	Theta/60/75

Note:

1. Antenna max gain is the max value of each individual antenna through all measurement angles.
2. The max gain is the max value of all antennas.
3. If directional gain (1SS) is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
5. Directional Gain (4SS) = Directional Gain (1SS) – 6dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)

**For EUT 2:****For 2G5GAnt1~4:****For 2TX**

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 3 Max Gain (dBi)	6.72	6.52	5.7	6.41	5.67
Ant. 4 Max Gain (dBi)	6.96	4.06	4.21	4.45	5.47
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/37.5	Theta/15/307.5	Theta/0/142.5	Phi/7.5/52.5	Phi/7.5/45
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/30/187.5	Phi/0/307.5	Theta/22.5/45	Theta/7.5/232.5	Theta/7.5/45
Max Gain (dBi)	6.96	6.52	5.7	6.41	5.67
DG [1SS] (dBi)	8.53	6.07	5.7	5.97	5.9
DG [1SS] (dBi) Revised	8.53	6.52	5.7	6.41	5.9
DG [2SS] (dBi)	6.96	6.52	5.7	6.41	5.67

For 4TX

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	6.7	4.23	4.64	6.01	5.66
Ant. 2 Max Gain (dBi)	6.96	5.45	5.05	5.73	5.61
Ant. 3 Max Gain (dBi)	6.72	6.52	5.7	6.41	5.67
Ant. 4 Max Gain (dBi)	6.96	4.06	4.21	4.45	5.47
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/60	Phi/15/30	Phi/15/45	Phi/15/45	Theta/0/307.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/30/112.5	Phi/15/315	Phi/15/307.5	Phi/15/322.5	Phi/7.5/307.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/37.5	Theta/15/307.5	Theta/0/142.5	Phi/7.5/52.5	Phi/7.5/45
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/30/187.5	Phi/0/307.5	Theta/22.5/45	Theta/7.5/232.5	Theta/7.5/45
Max Gain (dBi)	6.96	6.52	5.7	6.41	5.67
DG [1SS] (dBi)	10.12	8.28	8.25	9.02	8.63
DG [2SS] (dBi)	7.12	6.52	5.7	6.41	5.67
DG [4SS] (dBi)	6.96	6.52	5.7	6.41	5.67

**For 5GAnt1~4:****For 2TX**

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	6.21	5.73	7.11	6.39
Ant. 2 Max Gain (dBi)	4.56	4.46	5.7	6.19
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/330	Theta/15/345	Theta/15/150	Theta/0/337.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/7.5/225	Phi/7.5/300	Theta/15/37.5	Phi/15/142.5
Max Gain (dBi)	6.21	5.73	7.11	6.39
DG [1SS] (dBi)	6.68	6.22	6.84	6.88
DG [1SS] (dBi) Revised	6.68	6.22	7.11	6.88
DG [2SS] (dBi)	6.21	5.73	7.11	6.39

For 4TX

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	6.21	5.73	7.11	6.39
Ant. 2 Max Gain (dBi)	4.56	4.46	5.7	6.19
Ant. 3 Max Gain (dBi)	5.8	5.89	7.2	6.62
Ant. 4 Max Gain (dBi)	3.9	4.02	5.38	5.11
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/330	Theta/15/345	Theta/15/150	Theta/0/337.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/7.5/225	Phi/7.5/300	Theta/15/37.5	Phi/15/142.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/0/330	Theta/7.5/150	Theta/0/322.5	Theta/0/330
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/135	Theta/15/60	Theta/15/60	Phi/0/330
Max Gain (dBi)	6.21	5.89	7.2	6.62
DG [1SS] (dBi)	8.67	8.73	9.22	9.47
DG [2SS] (dBi)	6.21	5.89	7.2	6.62
DG [4SS] (dBi)	6.21	5.89	7.2	6.62

For 6GAnt1~4:
For 2TX

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	5.86	7.14	6.85	6.41
Ant. 4 Max Gain (dBi)	5.54	6.43	5.64	6.44
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/322.5	Phi/22.5/322.5	Theta/15/255	Phi/15/322.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/15/232.5	Phi/15/240	Phi/7.5/217.5	Phi/37.5/60
Max Gain (dBi)	5.86	7.14	6.85	6.44
DG [1SS] (dBi)	6.49	7.11	6.84	6.66
DG [1SS] (dBi) Revised	6.49	7.14	6.85	6.66
DG [2SS] (dBi)	5.86	7.14	6.85	6.44

For 4TX

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	5.86	7.14	6.85	6.41
Ant. 2 Max Gain (dBi)	5.4	6.24	5.99	5.87
Ant. 3 Max Gain (dBi)	5.64	6.22	5.45	6.4
Ant. 4 Max Gain (dBi)	5.54	6.43	5.64	6.44
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/322.5	Phi/22.5/322.5	Theta/15/255	Phi/15/322.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/330	Phi/7.5/240	Theta/15/157.5	Phi/7.5/232.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/67.5	Phi/15/345	Phi/15/337.5	Phi/7.5/322.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/15/232.5	Phi/15/240	Phi/7.5/217.5	Phi/37.5/60
Max Gain (dBi)	5.86	7.14	6.85	6.44
DG [1SS] (dBi)	8.32	9.43	8.69	8.92
DG [2SS] (dBi)	5.86	7.14	6.85	6.44
DG [4SS] (dBi)	5.86	7.14	6.85	6.44

For ScanAnt1~2 (2.4GHz, 5GHz and 6GHz) and BLE Ant3:

Freq(Hz)	2.45G
Scan Ant. 1 Max Gain (dBi)	8.02
Scan Ant. 2 Max Gain (dBi)	8.15
BLE Ant. 3 Max Gain (dBi)	6.92
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/0/225
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/7.5/45
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/15/315

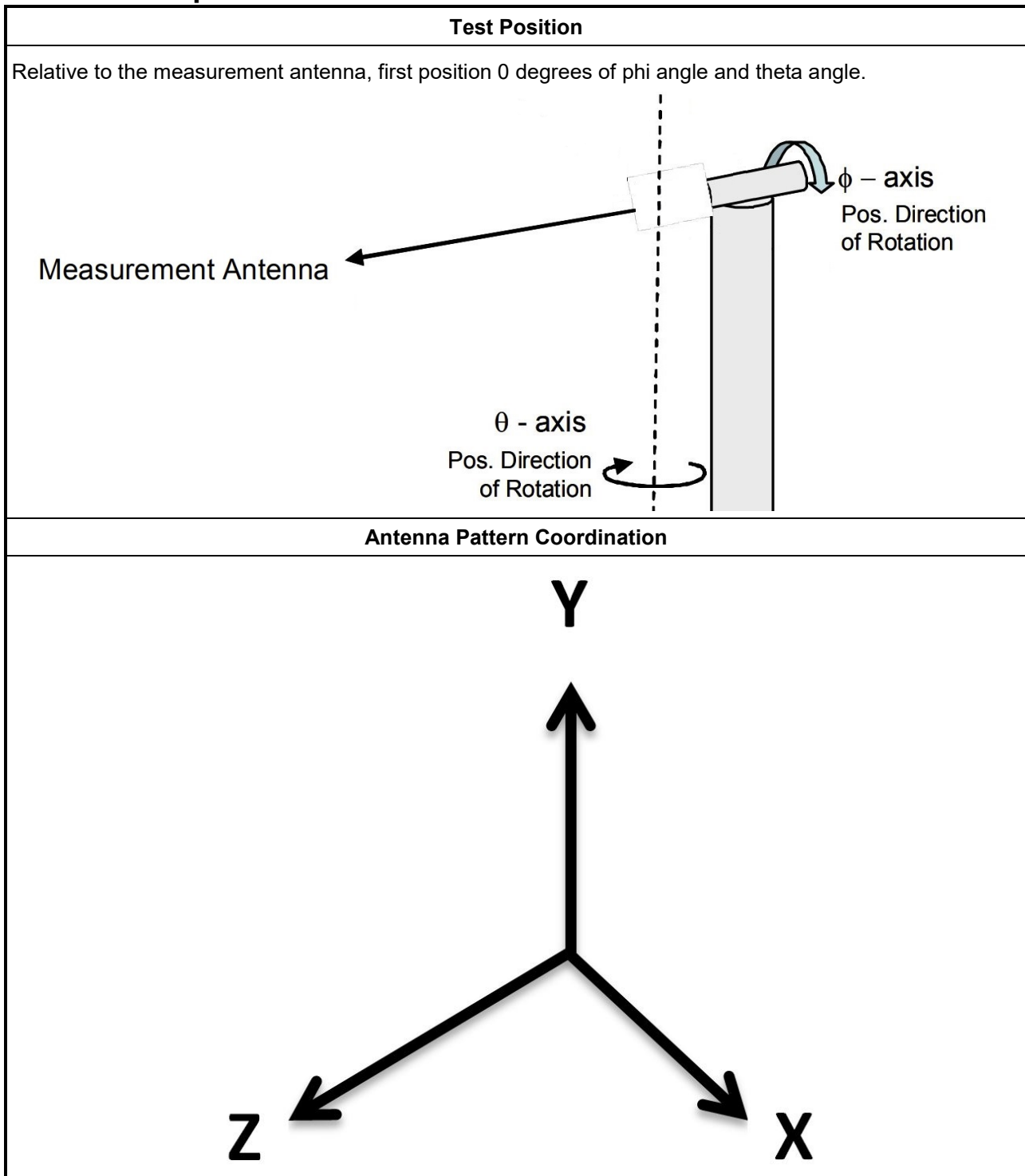
Freq(Hz)	5.2G	5.3G	5.6G	5.785G	5.885G
Scan Ant. 1 Max Gain (dBi)	3.93	4.57	5.47	5.9	5.95
Scan Ant. 2 Max Gain (dBi)	4.82	4.94	4.26	5.26	5.48
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/37.5/120	Theta/15/150	Theta/22.5/135	Theta/22.5/135	Theta/15/127.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/37.5/45	Phi/0/217.5	Theta/15/330	Theta/15/315	Theta/0/142.5

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Scan Ant. 1 Max Gain (dBi)	7.71	7.64	6.98	6.54
Scan Ant. 2 Max Gain (dBi)	6.47	7.73	6.59	6.5
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/30/135	Theta/30/120	Theta/22.5/150	Theta/15/150
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/307.5	Phi/15/45	Phi/15/37.5	Phi/7.5/45

Note:

1. Antenna max gain is the max value of each individual antenna through all measurement angles.
2. The max gain is the max value of all antennas.
3. If directional gain (1SS) is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
5. Directional Gain (4SS) = Directional Gain (1SS) – 6dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)

10. Test Setup



Note:

Photos of Test Position: Please refer to the test photos in the appendix.



11. Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1531	1GHz~18GHz	Dec. 20, 2023	Dec. 19, 2024
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	Jul. 28, 2023	Jul. 27, 2024
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of Radio 1 2.4GHz and 5GHz-2TX (EUT 1).....	Page 36
Appendix B – Radiated Composite Gain of Radio 1 2.4GHz and 5GHz-4TX (EUT 1).....	Page 40
Appendix C – Radiated Composite Gain of Radio 2 5GHz-2TX (EUT 1).....	Page 54
Appendix D – Radiated Composite Gain of Radio 2 5GHz-4TX (EUT 1).....	Page 57
Appendix E – Radiated Composite Gain of Radio 3 6GHz-2TX (EUT 1).....	Page 68
Appendix F – Radiated Composite Gain of Radio 3 6GHz-4TX (EUT 1).....	Page 75
Appendix G – Radiated Composite Gain of Radio 4 2.4GHz, 5GHz, 6GHz and Radio 5 Bluetooth/Zigbee (EUT 1).....	Page 86
Appendix H – Radiated Composite Gain of Radio 1 2.4GHz and 5GHz-2TX (EUT 2).....	Page 97
Appendix I – Radiated Composite Gain of Radio 1 2.4GHz and 5GHz-4TX (EUT 2).....	Page 106
Appendix J – Radiated Composite Gain of Radio 2 5GHz-2TX (EUT 2).....	Page 120
Appendix K – Radiated Composite Gain of Radio 2 5GHz-4TX (EUT 2).....	Page 127
Appendix L – Radiated Composite Gain of Radio 3 6GHz-2TX (EUT 2).....	Page 138
Appendix M – Radiated Composite Gain of Radio 3 6GHz-4TX (EUT 2).....	Page 145
Appendix N – Radiated Composite Gain of Radio 4 2.4GHz, 5GHz, 6GHz and Radio 5 Bluetooth/Zigbee (EUT 2)	Page 156
Appendix O – Antenna Pattern of Radio 1 2.4GHz and 5GHz (EUT 1).....	Page 167
Appendix P – Antenna Pattern of Radio 2 5GHz (EUT 1).....	Page 174
Appendix Q – Antenna Pattern of Radio 3 6GHz (EUT 1).....	Page 180
Appendix R – Antenna Pattern of Radio 4 2.4GHz, 5GHz, 6GHz and Radio 5 Bluetooth/Zigbee (EUT 1).....	Page 186
Appendix S – Antenna Pattern of Radio 1 2.4GHz and 5GHz (EUT 2).....	Page 193
Appendix T – Antenna Pattern of Radio 2 5GHz (EUT 2).....	Page 200
Appendix U – Antenna Pattern of Radio 3 6GHz (EUT 2).....	Page 206
Appendix V – Antenna Pattern of Radio 4 2.4GHz, 5GHz, 6GHz and Radio 5 Bluetooth/Zigbee (EUT 2).....	Page 212
Appendix W – Test Photos.....	Page 219



Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.98	2.42	3.3	2.55	2.46
Ant. 3 Max Gain (dBi)	3.95	4.86	5.17	5.23	4.51
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/37.5/285	Phi/60/67.5	Phi/75/90	Phi/82.5/240	Phi/67.5/37.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Phi/15/150	Theta/67.5/97.5	Theta/52.5/247.5	Theta/67.5/112.5	Theta/60/112.5
Max Gain (dBi)	4.98	4.86	5.17	5.23	4.51
DG [1SS] (dBi)	5.13	3.2	3.11	4.1	2.69
DG [1SS] (dBi) Revised	5.13	4.86	5.17	5.23	4.51
DG [2SS] (dBi)	4.98	4.86	5.17	5.23	4.51



Radiated Composite Gain Data of Radio 1 2.4GHz and 5GHz-2TX (EUT 1)

Appendix A

Θ(60°)	0.28/-0.15	-1.81/-1.34	-0.08/0.54	-1.33/-2.69	-2.25/-2.44	-2.46/-1.77	-0.46/0.85	0.44/-0.38	-0.35/-0.19	0.41/0.4	0.16/-0.57	-1.26/-2.28	-4.03/-3.75	-1.52/-2.21	-2.34/-2.25	-2.87/-2.76	-2.18/-3.37	-3.14/-2.67	-2.85/-2.89
--------	------------	-------------	------------	-------------	-------------	-------------	------------	------------	-------------	----------	------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------



Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.98	2.42	3.3	2.55	2.46
Ant. 2 Max Gain (dBi)	4.38	2.59	2.48	2.11	2.78
Ant. 3 Max Gain (dBi)	3.95	4.86	5.17	5.23	4.51
Ant. 4 Max Gain (dBi)	3.56	3.03	2.66	2.76	3.16
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/37.5/285	Phi/60/67.5	Phi/75/90	Phi/82.5/240	Phi/67.5/37.5
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/45/67.5	Phi/75/277.5	Phi/60/30	Phi/75/172.5	Phi/75/172.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Phi/15/150	Theta/67.5/97.5	Theta/52.5/247.5	Theta/67.5/112.5	Theta/60/112.5
Ant. 4 Polarization/Θ(°)/Φ(°)	Phi/7.5/150	Theta/60/60	Theta/67.5/90	Theta/60/67.5	Theta/37.5/217.5
Max Gain (dBi)	4.98	4.86	5.17	5.23	4.51
DG [1SS] (dBi)	6.92	5.15	5.29	5.34	4.71
DG [2SS] (dBi)	4.98	4.86	5.17	5.23	4.51
DG [4SS] (dBi)	4.98	4.86	5.17	5.23	4.51



Radiated Composite Gain Data of Radio 1 2.4GHz and 5GHz-4TX (EUT 1)

Appendix B

Θ(75°)	2.6/2.63	1.39/1.4	2.64/3.19	2.62/1.84	0.81/0.33	0.43/0.73	1.96/2.52	1.91/2.16	3.02/3.14	2.93/2.99	2.94/3.07	3.88/3.34	3.02/2.64	1.96/0.46	0.75/1.82	1.79/0.39	0.31/0.27	0.64/1.67	0.71/0.25	0.91/2.
--------	----------	----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	---------



Sporton International Inc. Hsinchu Laboratory



Radiated Composite Gain Data of Radio 1 2.4GHz and 5GHz-4TX (EUT 1)

Appendix B

Θ(127.5°)	-18.56/-17.6	-15.79/-13.62	-13.63/-14.46	-18.3/-18.07	-18.89/-18.72	-17.51/-18.41	-15.31/-14.18	-14.4/-12.74	-12.59/-12.84	-13.58/-13.62	-12.48/-14.58	-15.19/-13.14	-11.77/-12.71	-14.65/-12.22	-10.91/-13.91
-----------	--------------	---------------	---------------	--------------	---------------	---------------	---------------	--------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------



Radiated Composite Gain Data of Radio 1 2.4GHz and 5GHz-4TX (EUT 1)

Appendix B

Θ(120°)	-13.01/-10.7	-11.31/-12.65	-10/-8.24	-8.27/-8.53	-5.49/-5.99	-7.58/-10.47	-10.65/-7.04	-4.62/-4.3	-3.57/-5.04	-6.24/-6.01	-6.32/-8.54	-9.11/-7.61	-10.42/-18.5	-15.19/-10.38	-9.29/-11.32	-18.74/-15.99	-16.41/-10.08	-8.6/-7.28
---------	--------------	---------------	-----------	-------------	-------------	--------------	--------------	------------	-------------	-------------	-------------	-------------	--------------	---------------	--------------	---------------	---------------	------------



Radiated Composite Gain Data of Radio 1 2.4GHz and 5GHz-4TX (EUT 1)

Appendix B

Θ(15°)	-18.57/-18.49	-17.92/-14.66	-10.87/-8.24	-5.71/-3.83	-2.69/-1.95	-1.47/-1.51	-1.5/-1.84	-2.2/-2.83	-3.46/-4.08	-5.58/-7.04	-9.28/-11.89	-15.11/-18.32	-18.74/-18.35	-18.7/-16.08	-11.73/-8.35	-5.43/-3.84	-2.68/-2.16	-1.75/-1.2	-
--------	---------------	---------------	--------------	-------------	-------------	-------------	------------	------------	-------------	-------------	--------------	---------------	---------------	--------------	--------------	-------------	-------------	------------	---



Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.65	3.3	2.92	2.37
Ant. 3 Max Gain (dBi)	3.63	3.77	3.93	3.91
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/52.5/15	Phi/52.5/157.5	Phi/52.5/150	Phi/67.5/292.5
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/82.5/262.5	Theta/60/120	Theta/67.5/135	Theta/37.5/262.5
Max Gain (dBi)	3.63	3.77	3.93	3.91
DG [1SS] (dBi)	3.21	2.97	3.28	2.38
DG [1SS] (dBi) Revised	3.63	3.77	3.93	3.91
DG [2SS] (dBi)	3.63	3.77	3.93	3.91



Sporton International Inc. Hsinchu Laboratory



Radiated Composite Gain Data of Radio 2 5GHz-2TX (EUT 1)

Appendix C

Θ(22.5°)	0.57/-0.28	-0.6/-0.27	0.420/0.51	-0.04/-0.97	-2.21/-3.47	-3.58/-3.52	-3.17/-2.48	-2.13/-2.59	-3.45/-3.5	-2.97/-2.63	-2.58/-2.38	-1.95/-1.22	-0.62/-0.96	-1.15/-1.04	-0.74/-0.2	0.270/0.45	0.25/-0.06	-0.93/-2.12	-3.24/-3.93	-4.19/-3.71	-2.96/-2.15	-0.96/-0.09	0.6/0.82	1.29/1.06
Θ(30°)	2.17/1.53	0.480/0.7	0.17/-0.14	0.430/0.91	0.64/-0.4	-0.010/0.8	0.13/-0.26	-1.35/-2.63	-3.07/-3.24	-3.88/-4	-2.62/-0.85													



-

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.65	3.3	2.92	2.37
Ant. 2 Max Gain (dBi)	2.18	2.69	3.01	2.91
Ant. 3 Max Gain (dBi)	3.63	3.77	3.93	3.91
Ant. 4 Max Gain (dBi)	4.44	3.9	3.79	3.47
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/52.5/15	Phi/52.5/157.5	Phi/52.5/150	Phi/67.5/292.5
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/45/105	Phi/60/30	Phi/82.5/300	Phi/82.5/300
Ant. 3 Polarization/Θ(°)/Φ(°)	Theta/82.5/262.5	Theta/60/120	Theta/67.5/135	Theta/37.5/262.5
Ant. 4 Polarization/Θ(°)/Φ(°)	Theta/67.5/60	Theta/75/262.5	Theta/52.5/52.5	Theta/75/292.5
Max Gain (dBi)	4.44	3.9	3.93	3.91
DG [1SS] (dBi)	5.24	5	5.57	4.69
DG [2SS] (dBi)	4.44	3.9	3.93	3.91
DG [4SS] (dBi)	4.44	3.9	3.93	3.91



Sporton International Inc. Hsinchu Laboratory

