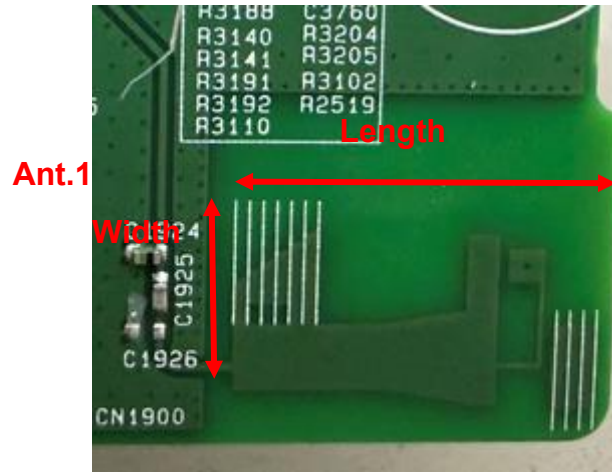


Antenna Information

Item	Contents	
Antenna Type	Ant.1 Ant.2 Ant.3	PCB Pattern Antenna
Antenna peak gain	Ant.1	BT&BLE: 2 402 MHz ~ 2 480 MHz: 3.90 dBi WLAN5: 5 180 MHz ~ 5 240 MHz: 2.80 dBi 5 745 MHz ~ 5 805 MHz: 0.40 dBi
	Ant.2	BT&BLE: 2 402 MHz ~ 2 480 MHz: 2.70 dBi WLAN5: 5 180 MHz ~ 5 240 MHz: 2.00 dBi 5 745 MHz ~ 5 805 MHz: 3.70 dBi
	Ant.3	WLAN2: 2 412 MHz ~ 2 462 MHz: -0.20 dBi WLAN5: 5 180 MHz ~ 5 240 MHz: 3.90 dBi 5 745 MHz ~ 5 805 MHz: 2.00 dBi
Manufacturer / Model name	Ant.1 Ant.2 Ant.3	Hanwha NxMD Corp. / Connect S
Address of manufacturer	Ant.1 Ant.2 Ant.3	20, Pangyoyeok-ro 241beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Test Laboratory	Ant.1 Ant.2 Ant.3	Hanwha NxMD Corp.
Internal PCB Pattern Antenna	Length	9 mm
	Width	6.5 mm

Model name: DCSA0ZZZGX

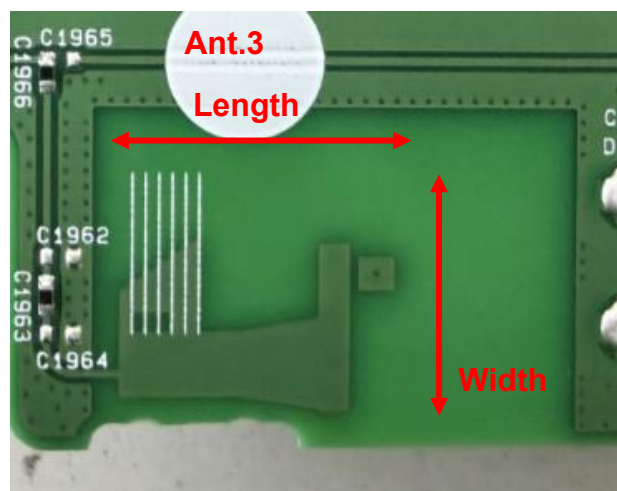
PCB Pattern Antenna_Ant.1



PCB Pattern Antenna_Ant.2



PCB Pattern Antenna_Ant.3



Bluetooth Pattern Antenna Datasheet

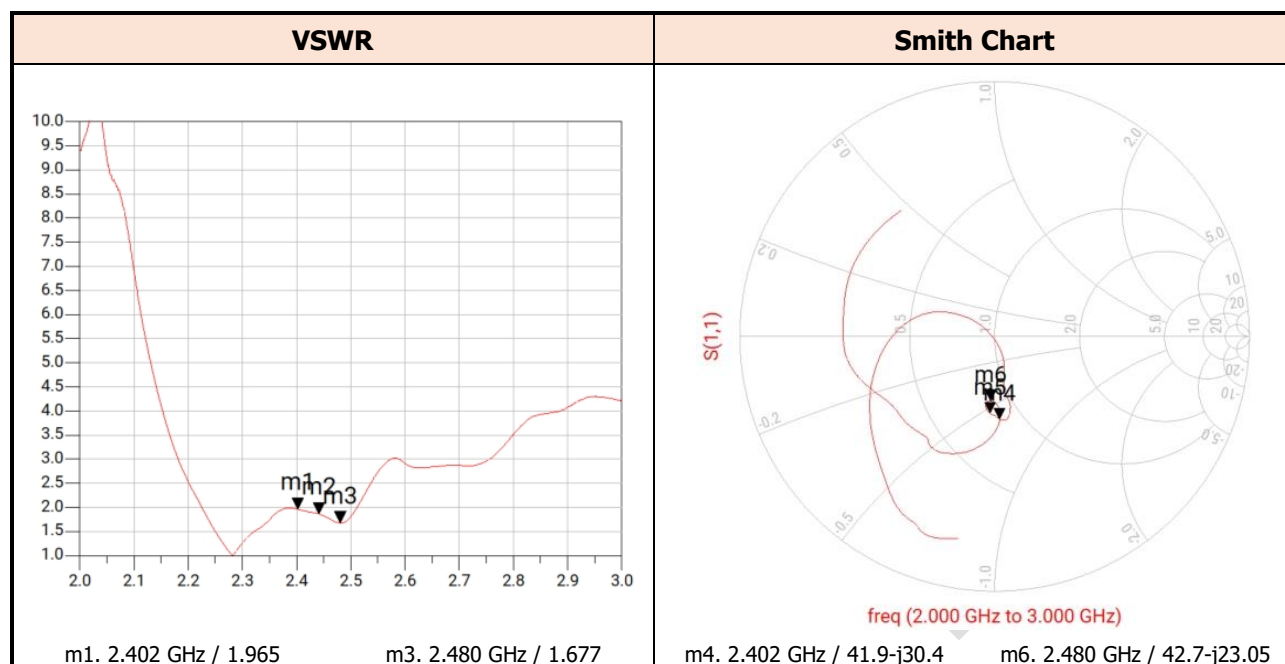
REV 1.0

Model: Connect S

Model	Connect S : ANT1 Chip#1 Bluetooth
Frequency	2402 ~ 2480MHz
Test Date	2025. 11. 25
Tester	Youngpyo Lee

3 Antenna Electrical Characteristics

3.1 VSWR



3.2 Antenna Peak Gain Table

Band (GHz)	Frequency (MHz)	Peak Gain (dBi)		
		Vertical	Horizontal	Total
2.402 ~ 2.480	2402	-0.5	2.0	3.9
	2441	-1.3	1.2	3.1
	2480	-2.0	-0.1	2.1

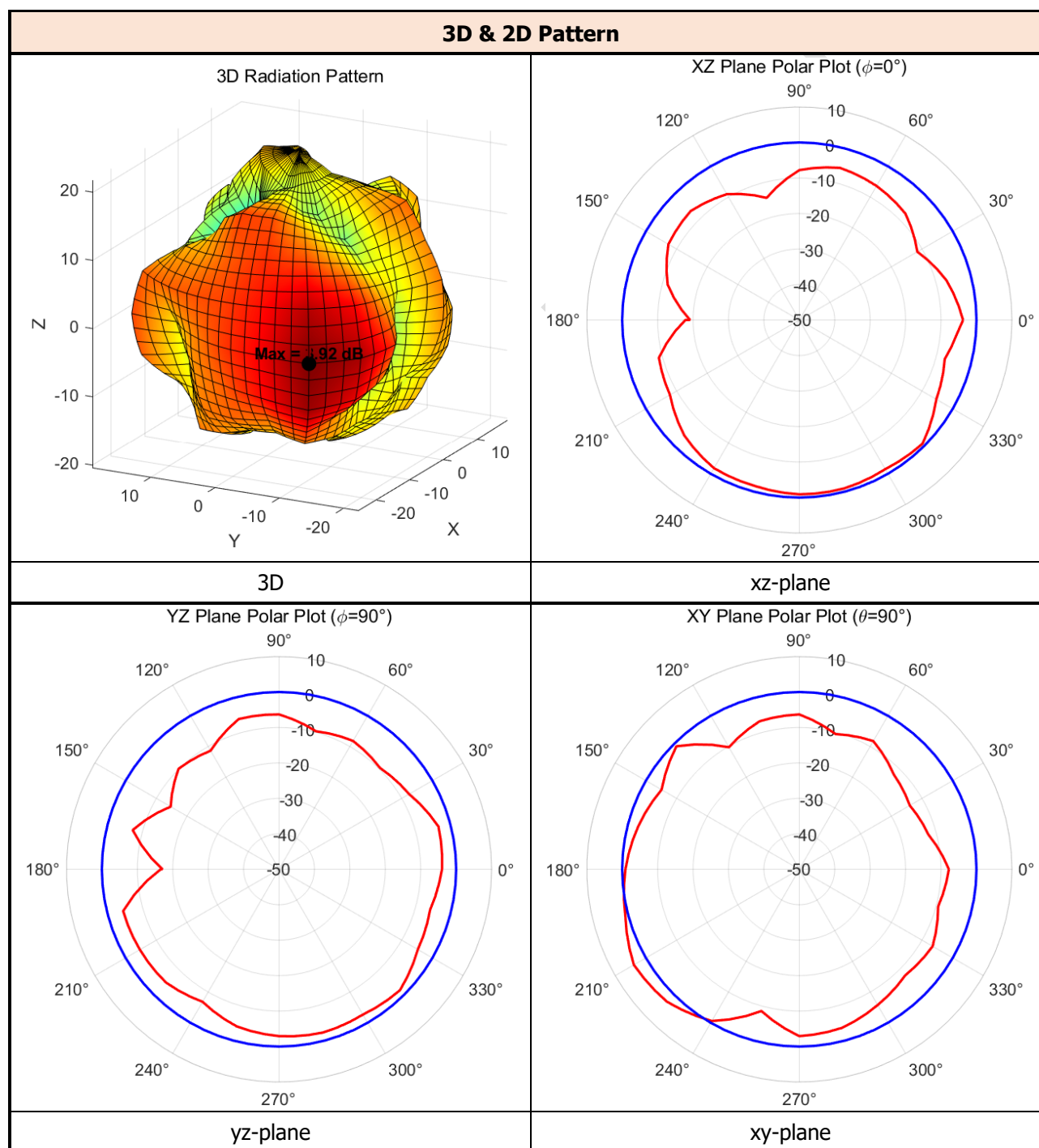
3.3 Antenna Passive Radiation test result

Freq. [MHz]	Eff. [%]	Average Gain			Max Gain				
		Ver.	Hor.	Total	Ver.	Hor.	Total	θ	ϕ
		[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[Deg]	[Deg]
2402	32.9	-8.0	-7.6	-4.8	-0.5	2.0	3.9	90	210
2441	27.7	-8.7	-8.5	-5.6	-1.3	1.2	3.1	90	210
2480	22.7	-9.6	-9.3	-6.4	-2.0	-0.1	2.1	90	210

4 Radiation Pattern

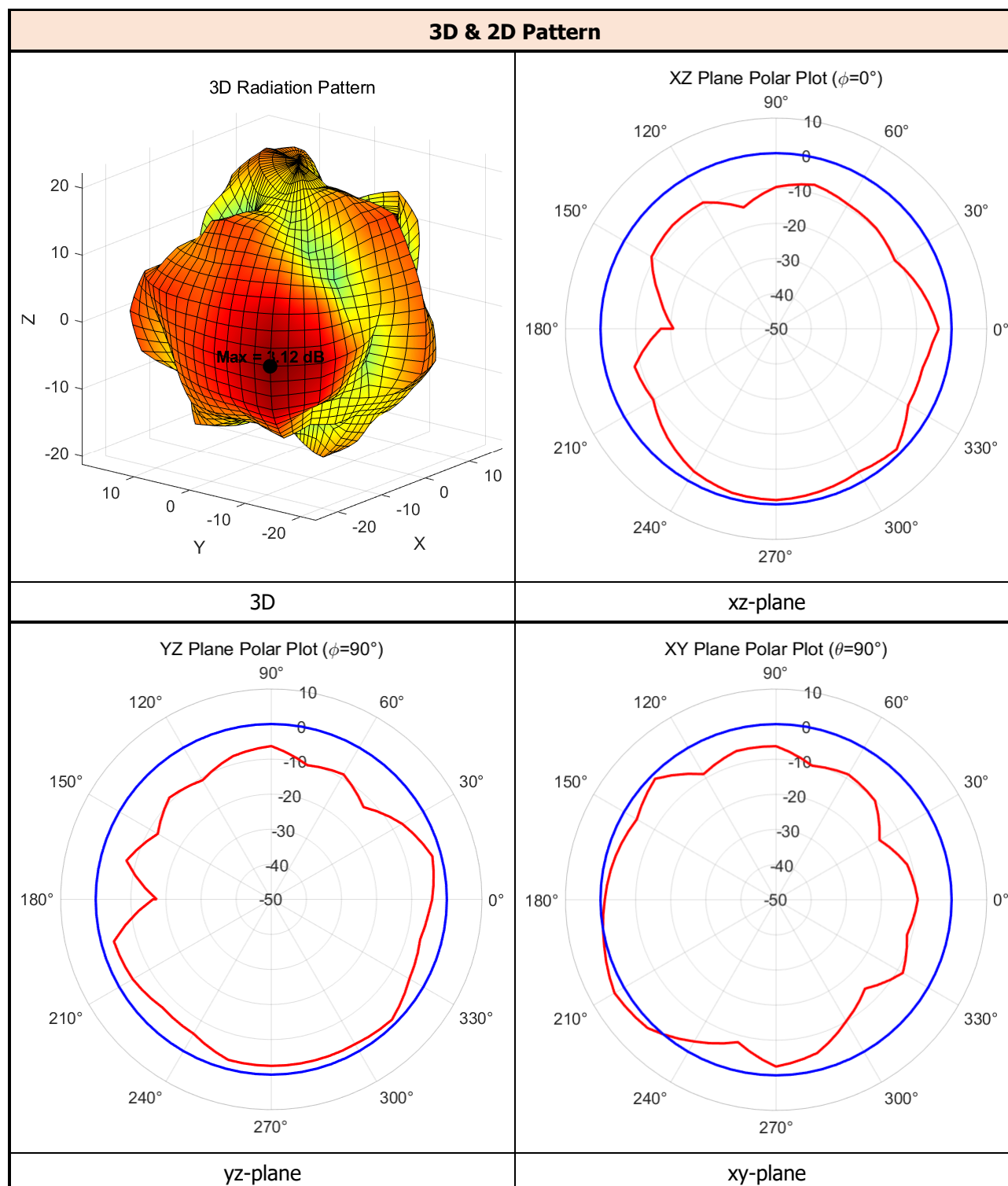
4.1 Pattern @ 2402 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2402	-0.5	2.0	3.9



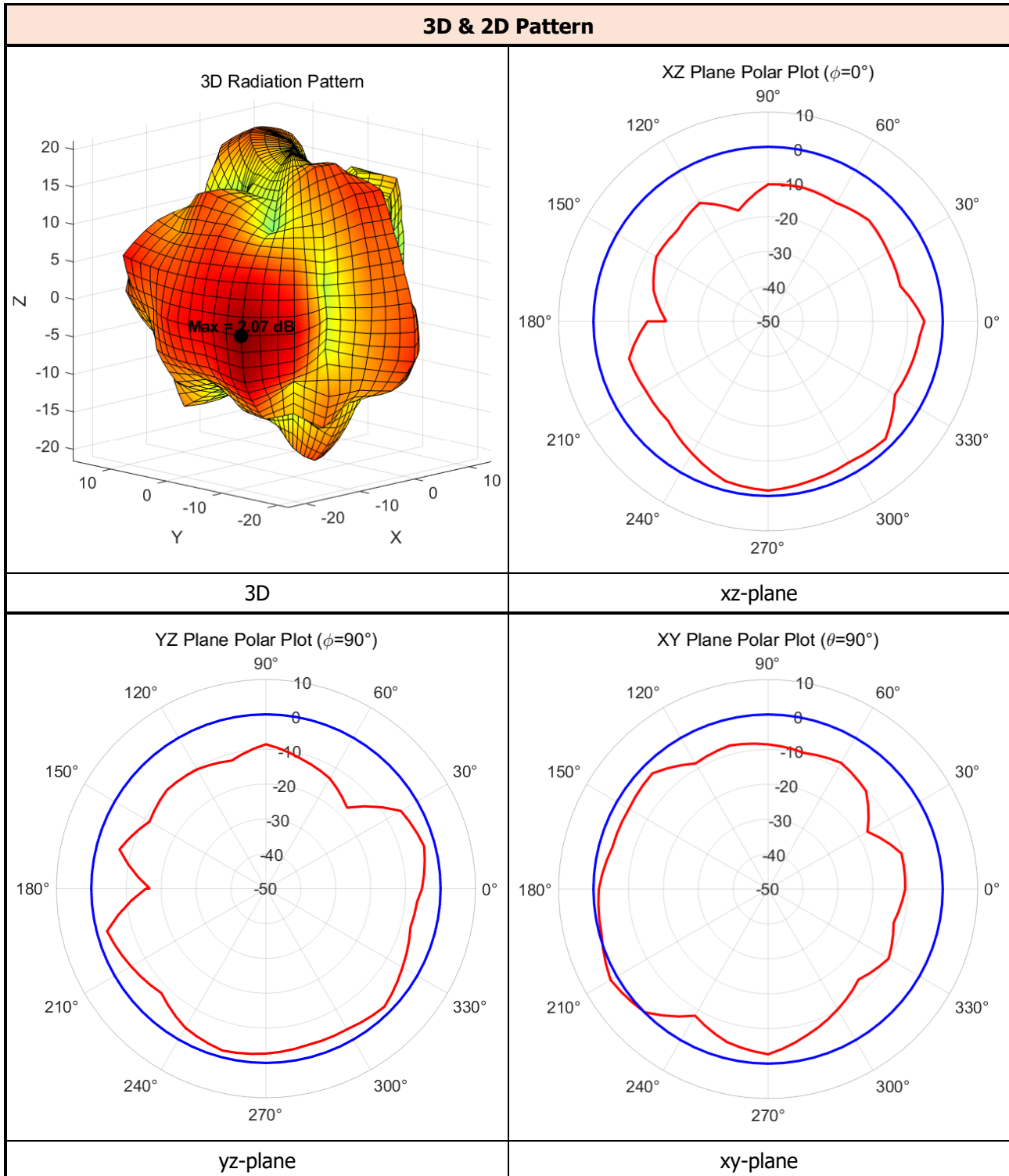
4.2 Pattern @ 2441 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2441	-1.3	1.2	3.1



4.3 Pattern @ 2480 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2480	-2.0	-0.1	2.1



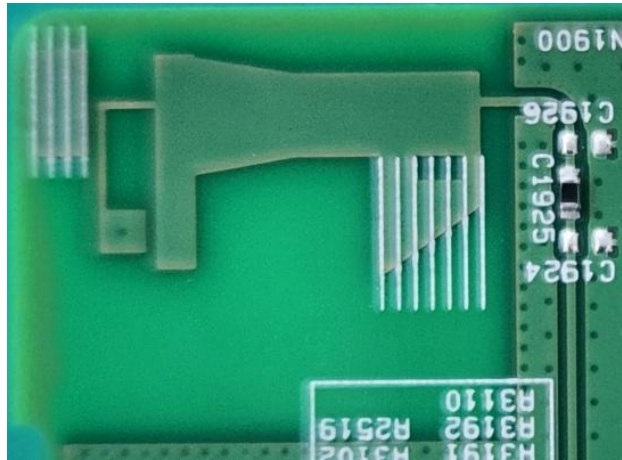
WiFi Chip#0 Core1 Antenna Datasheet

REV 1.0

Model: Connect S

Model	Connect S : ANT1 WiFi Chip#0 Core1
Frequency	5180 ~ 5825MHz
Test Date	2025. 12. 15
Tester	Youngpyo Lee

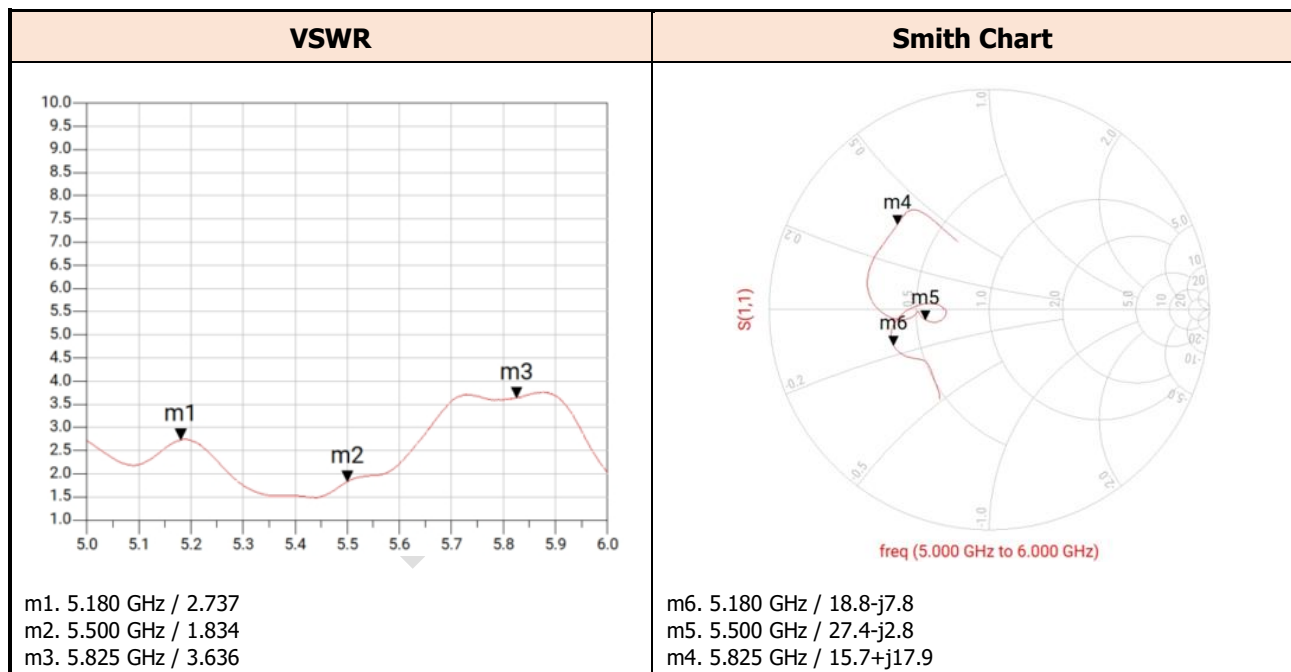
2 Antenna Information



[Connect S ANT1 : WLAN Chip#0 5G Core1 Antenna]

3 Antenna Electrical Characteristics

3.1 VSWR



3.2 Antenna Peak Gain Table

Band (GHz)	Frequency (MHz)	Peak Gain (dBi)		
		Vertical	Horizontal	Total
5.150 ~ 5.250	5200	-0.9	0.3	2.8
5.250 ~ 5.350	5320	1.8	1.0	3.1
5.470 ~ 5.725	5500	-0.3	1.8	3.6
5.725 ~ 5.825	5745	-1.6	0.3	0.4

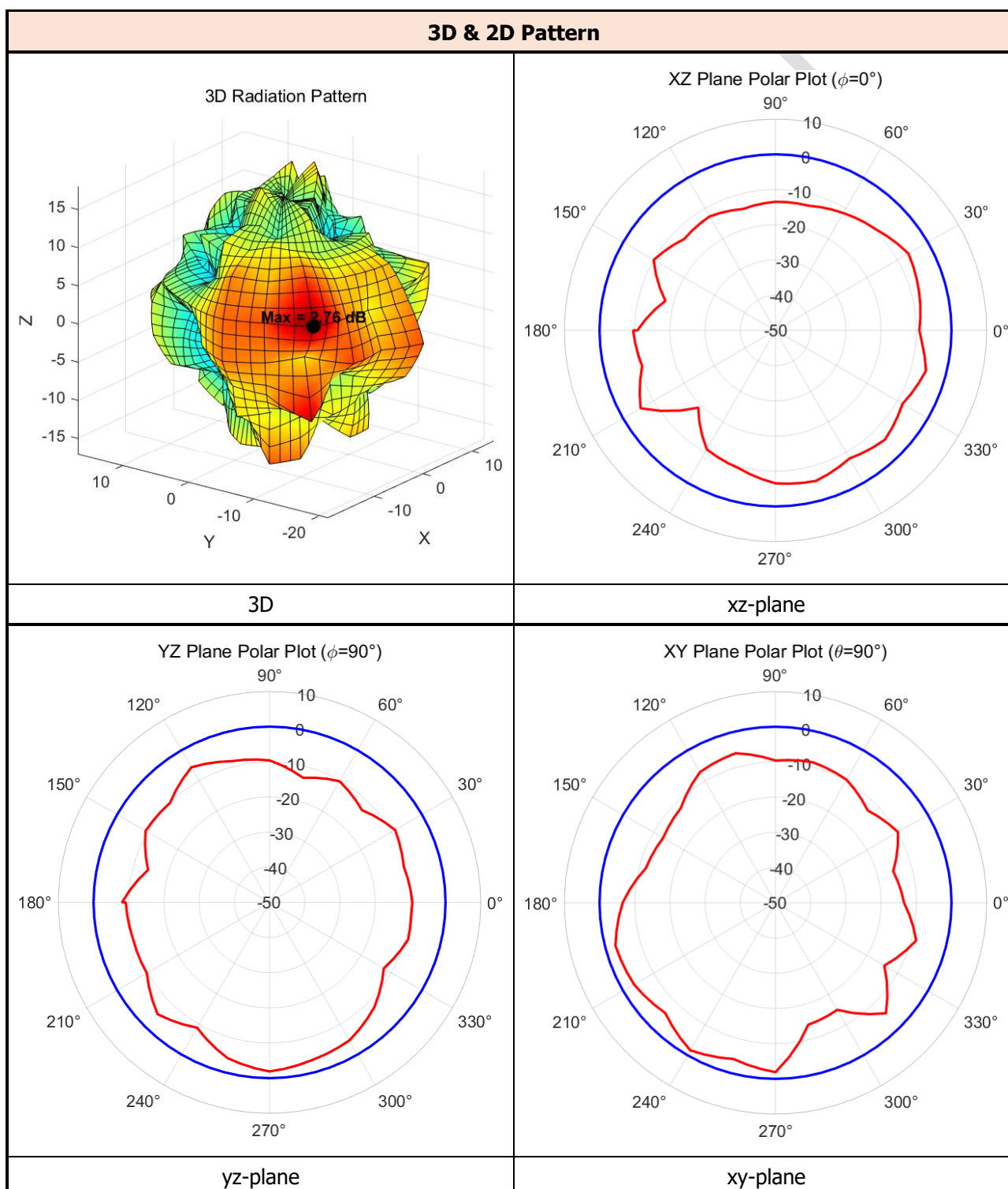
3.3 Antenna Passive Radiation test result

Freq. [MHz]	Eff. [%]	Average Gain			Max Gain				
		Ver.	Hor.	Total	Ver.	Hor.	Total	θ	φ
		[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[Deg]	[Deg]
5180	17.4	-11.1	-10.1	-7.6	-1.1	0.5	2.7	75	225
5200	17.4	-11.1	-10.1	-7.6	-0.9	0.3	2.8	75	225
5220	17.3	-11.1	-10.2	-7.6	-1.1	0.3	2.5	75	225
5240	17.4	-10.9	-10.3	-7.6	-1.2	0.3	2.4	75	225
5260	27.2	-8.3	-9.0	-5.7	0.9	0.3	2.4	135	210
5280	28.1	-8.2	-8.9	-5.5	1.4	0.2	2.8	135	210
5300	29.5	-8.0	-8.7	-5.3	1.5	0.3	2.9	135	210
5320	32.8	-7.5	-8.2	-4.8	1.8	1.0	3.1	135	210
5500	30.4	-7.8	-8.6	-5.2	-0.3	1.8	3.6	75	225
5520	28.1	-8.2	-8.9	-5.5	-1.0	1.8	3.5	75	225
5540	25.1	-8.7	-9.3	-6.0	-2.1	1.4	3.0	75	225
5560	24.0	-9.0	-9.4	-6.2	-2.4	1.2	2.8	75	225
5580	23.4	-9.2	-9.4	-6.3	-2.3	1.5	2.8	75	225
5600	20.9	-9.7	-9.9	-6.8	-2.4	1.3	2.3	75	225
5620	18.9	-10.1	-10.4	-7.2	-2.6	1.1	1.7	75	225
5640	17.5	-10.2	-10.9	-7.6	-2.4	0.7	1.2	75	225
5660	16.6	-10.3	-11.3	-7.8	-2.2	0.4	0.8	75	225
5680	16.5	-10.4	-11.4	-7.8	-1.8	0.1	0.5	75	225
5700	17.8	-10.2	-10.9	-7.5	-1.6	0.4	0.7	75	225
5720	17.7	-10.3	-10.8	-7.5	-1.7	0.6	0.7	75	225
5745	17.9	-10.4	-10.6	-7.5	-1.6	0.3	0.4	75	225
5765	16.1	-10.9	-11.0	-7.9	-1.9	-0.5	-0.5	75	225
5785	15.7	-11.1	-11.0	-8.0	-2.7	-1.1	-1.0	75	225
5805	14.6	-11.4	-11.3	-8.3	-2.6	-2.0	-1.6	120	255
5825	14.2	-11.6	-11.4	-8.5	-2.4	-1.6	-1.0	105	255

4 Radiation Pattern

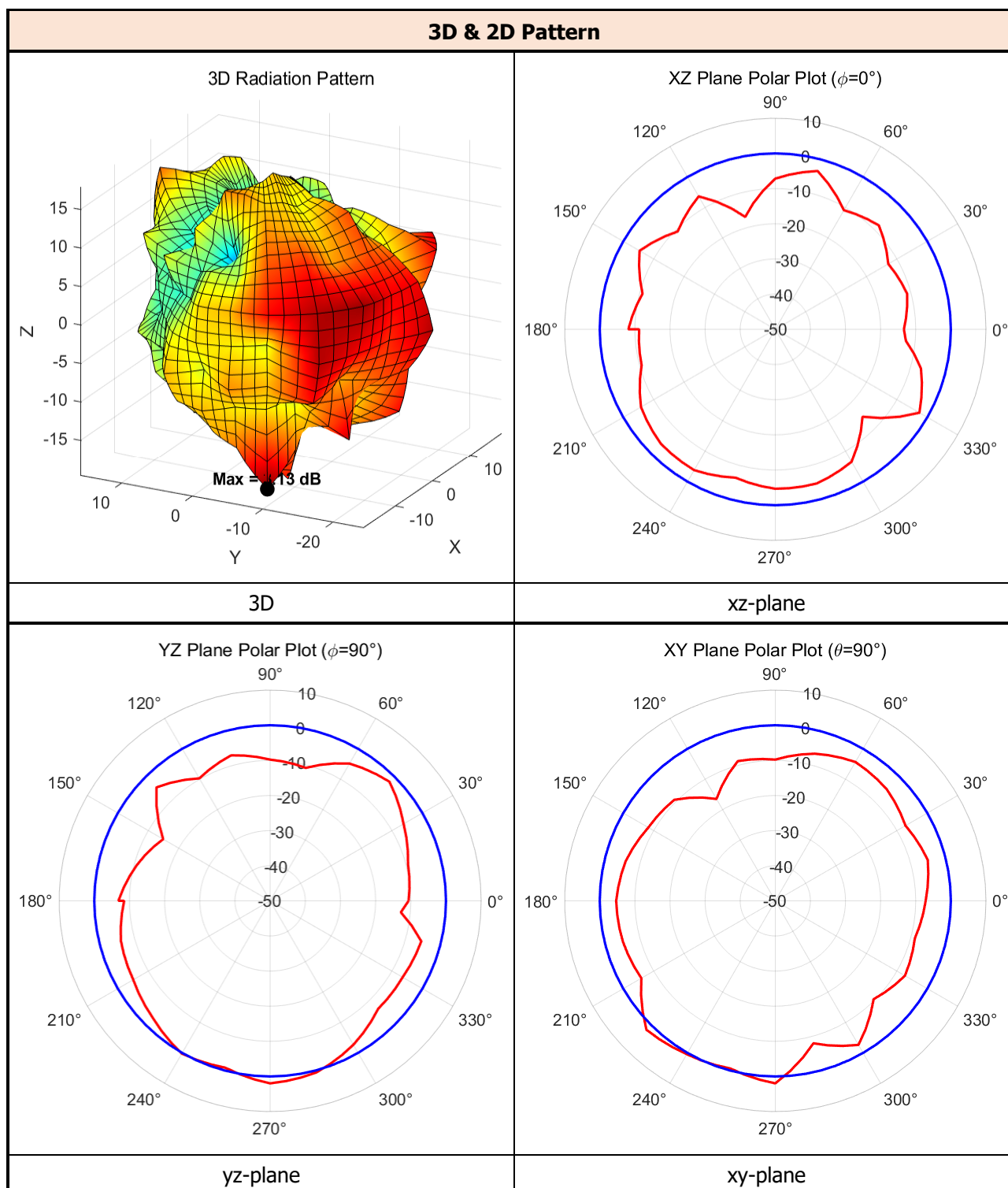
4.1 Pattern @ 5200 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5200	-0.9	0.3	2.8



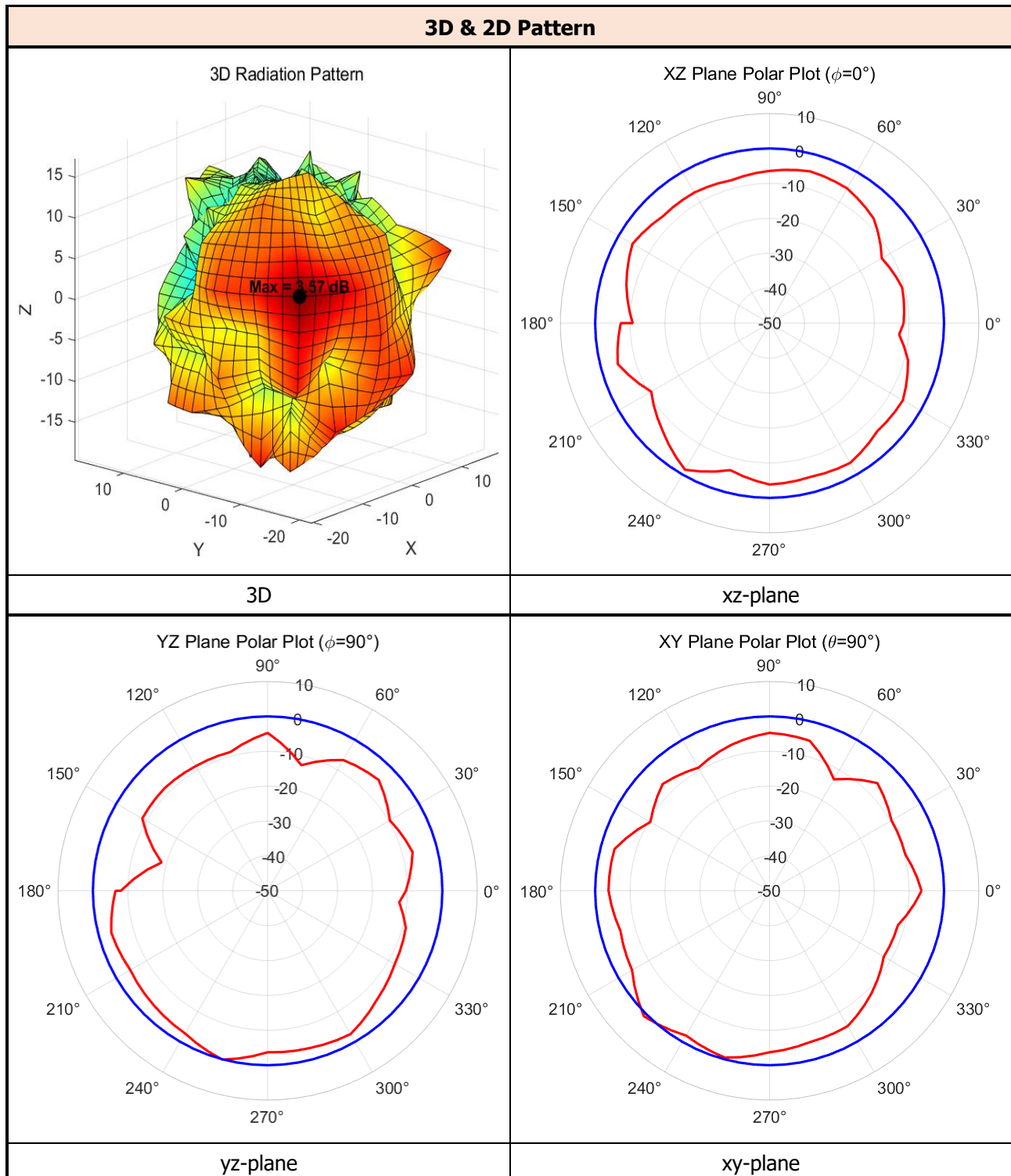
4.2 Pattern @ 5320 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5320	1.8	1.0	3.1



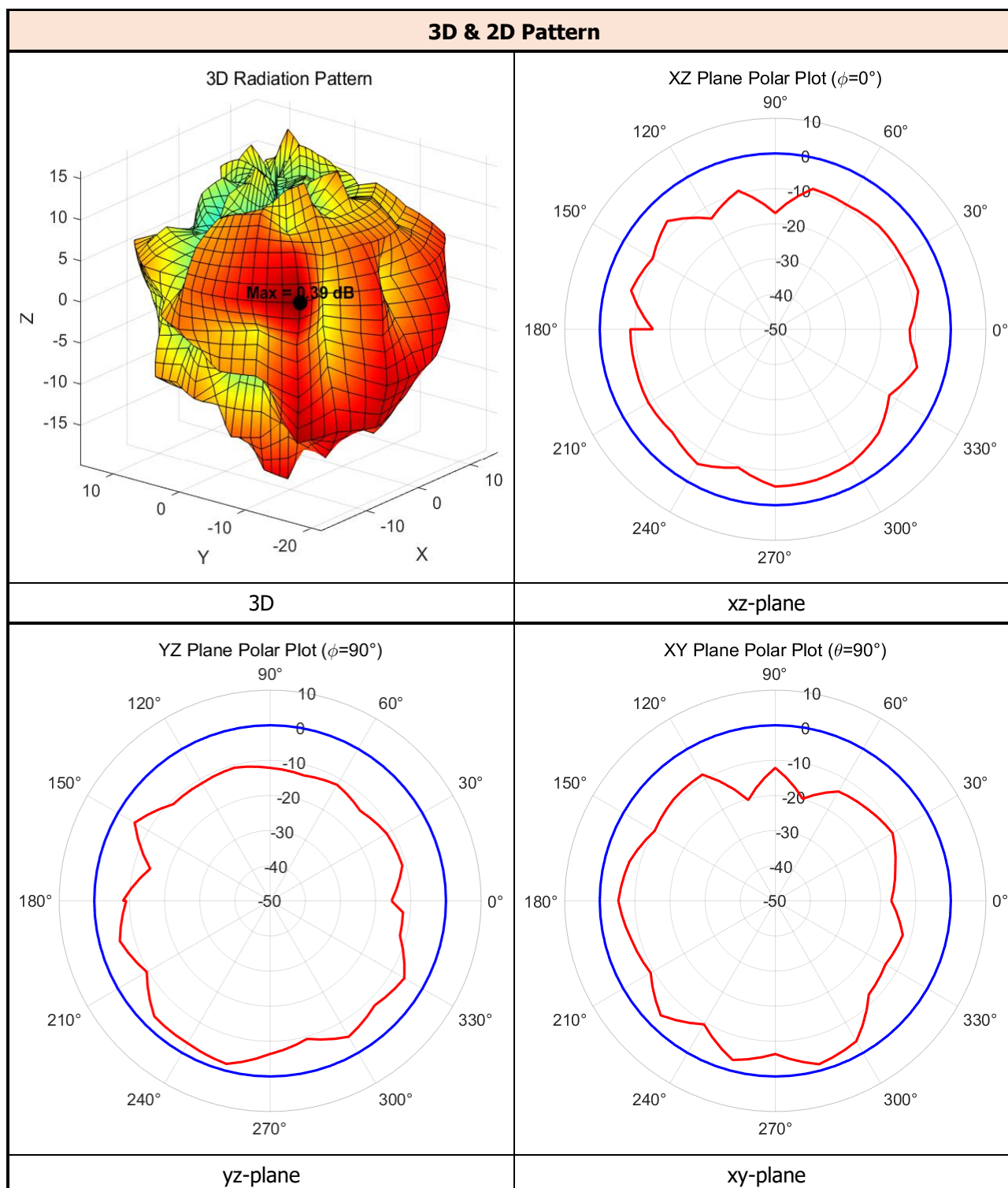
4.3 Pattern @ 5500 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5500	-0.3	1.8	3.6



4.4 Pattern @ 5745 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5745	-1.6	0.3	0.4



Bluetooth Pattern Antenna Datasheet

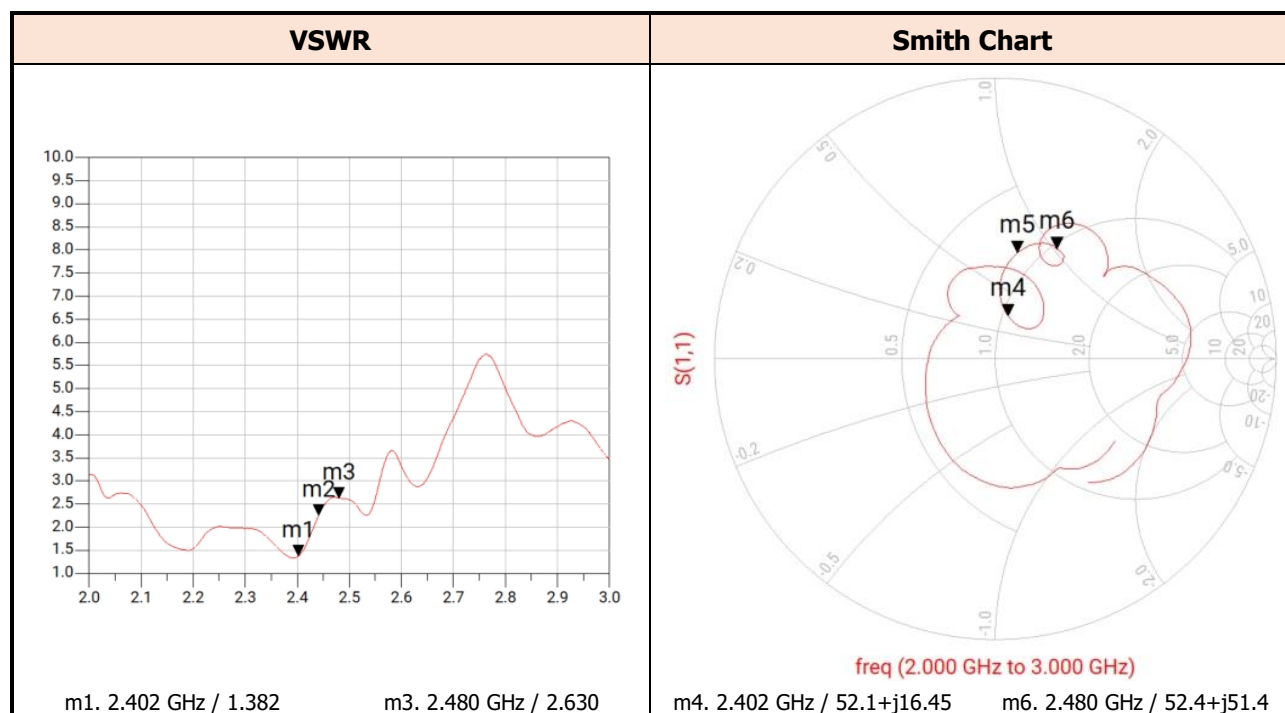
REV 1.0

Model: Connect S

Model	Connect S : ANT2 Chip#0 Bluetooth
Frequency	2402 ~ 2480MHz
Test Date	2025. 11. 25
Tester	Youngpyo Lee

3 Antenna Electrical Characteristics

3.1 VSWR



3.2 Antenna Peak Gain Table

Band (GHz)	Frequency (MHz)	Peak Gain (dBi)		
		Vertical	Horizontal	Total
2.402 ~ 2.480	2402	-2.2	2.1	2.7
	2441	-2.6	2.0	2.6
	2480	-3.3	0.2	0.6

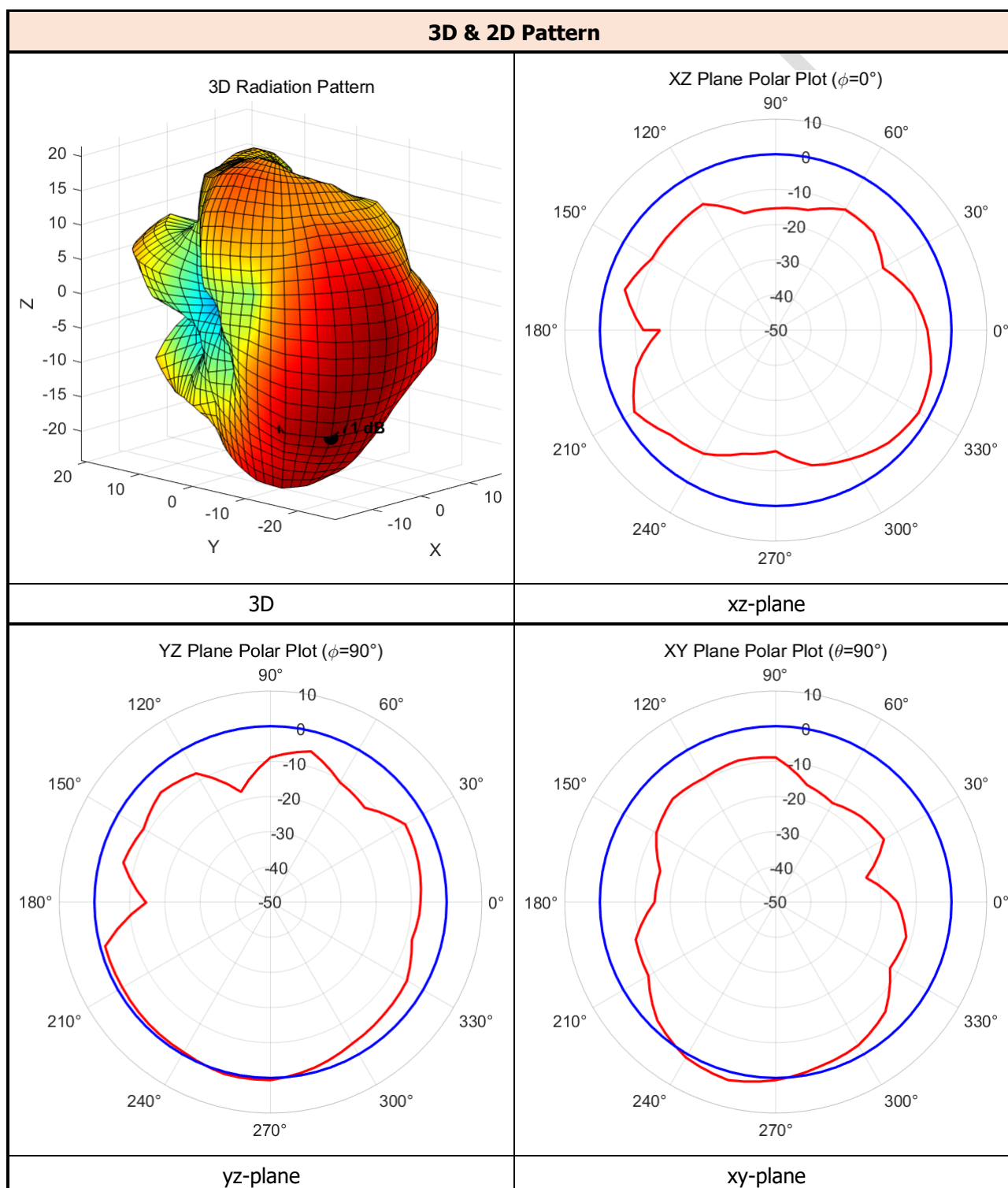
3.3 Antenna Passive Radiation test result

Freq. [MHz]	Eff. [%]	Average Gain			Max Gain				
		Ver.	Hor.	Total	Ver.	Hor.	Total	θ	φ
		[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[Deg]	[Deg]
2402	31.0	-9.1	-7.3	-5.1	-2.2	2.1	2.7	120	240
2441	29.1	-9.6	-7.4	-5.4	-2.6	2.0	2.6	120	240
2480	23.6	-10.6	-8.3	-6.3	-3.3	0.2	0.6	120	240

4 Radiation Pattern

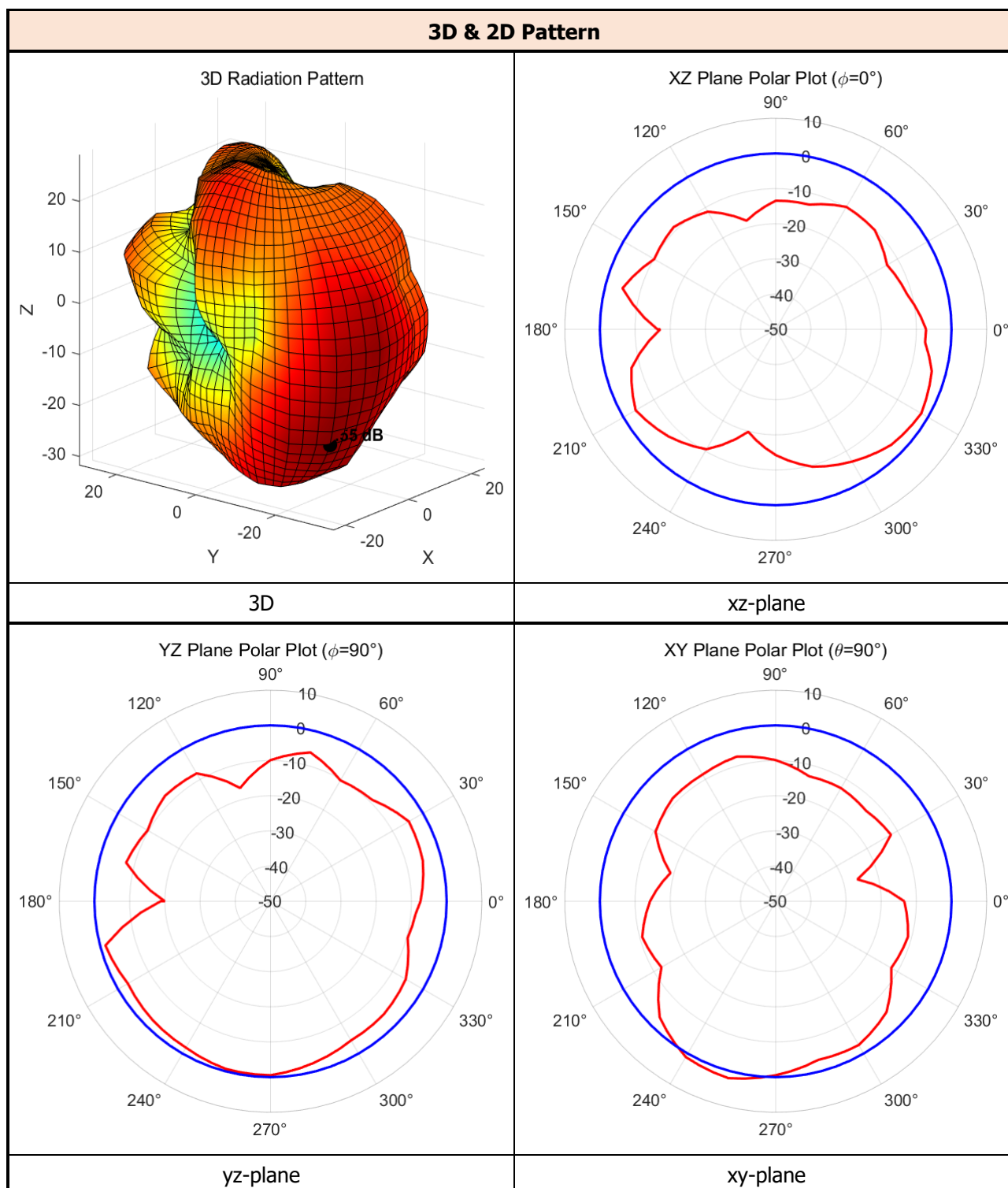
4.1 Pattern @ 2402 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2402	-2.2	2.1	2.7



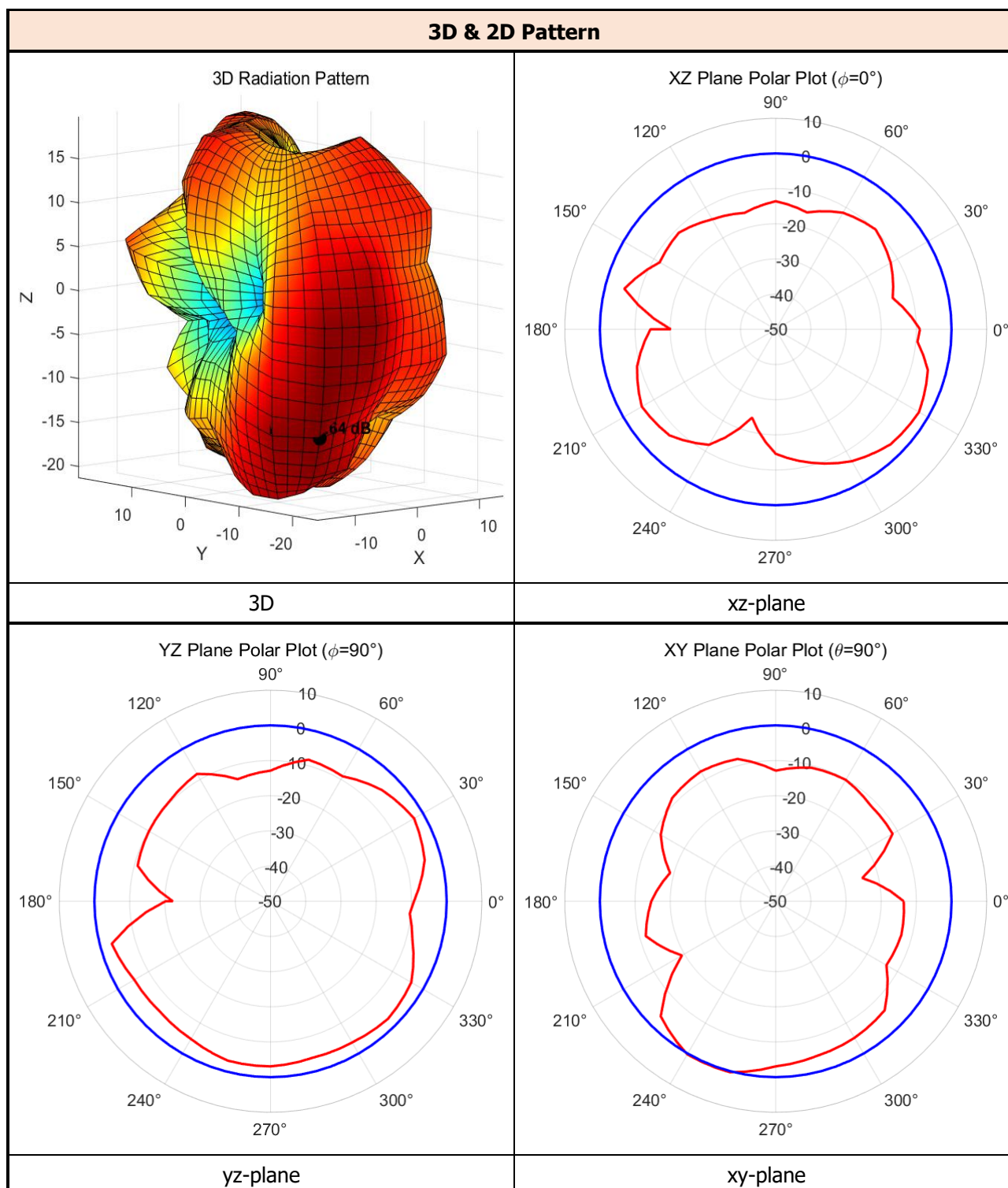
4.2 Pattern @ 2441 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2441	-2.6	2.0	2.6



4.3 Pattern @ 2480 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2480	-3.3	0.2	0.6



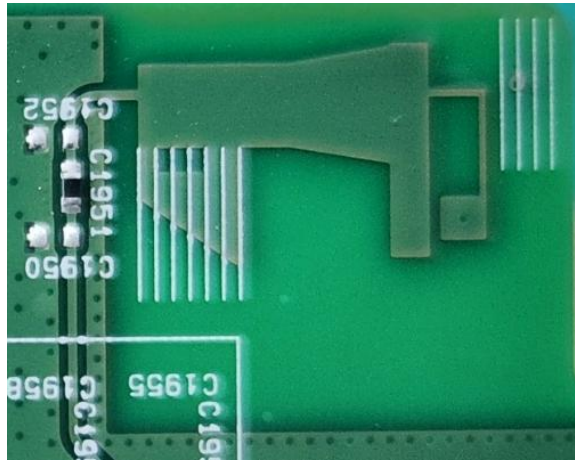
WiFi Chip#0 Core0 Antenna Datasheet

REV 1.0

Model: Connect S

Model	Connect S : ANT2 WiFi Chip#0 Core0
Frequency	5180 ~ 5825MHz
Test Date	2025. 12. 15
Tester	Youngpyo Lee

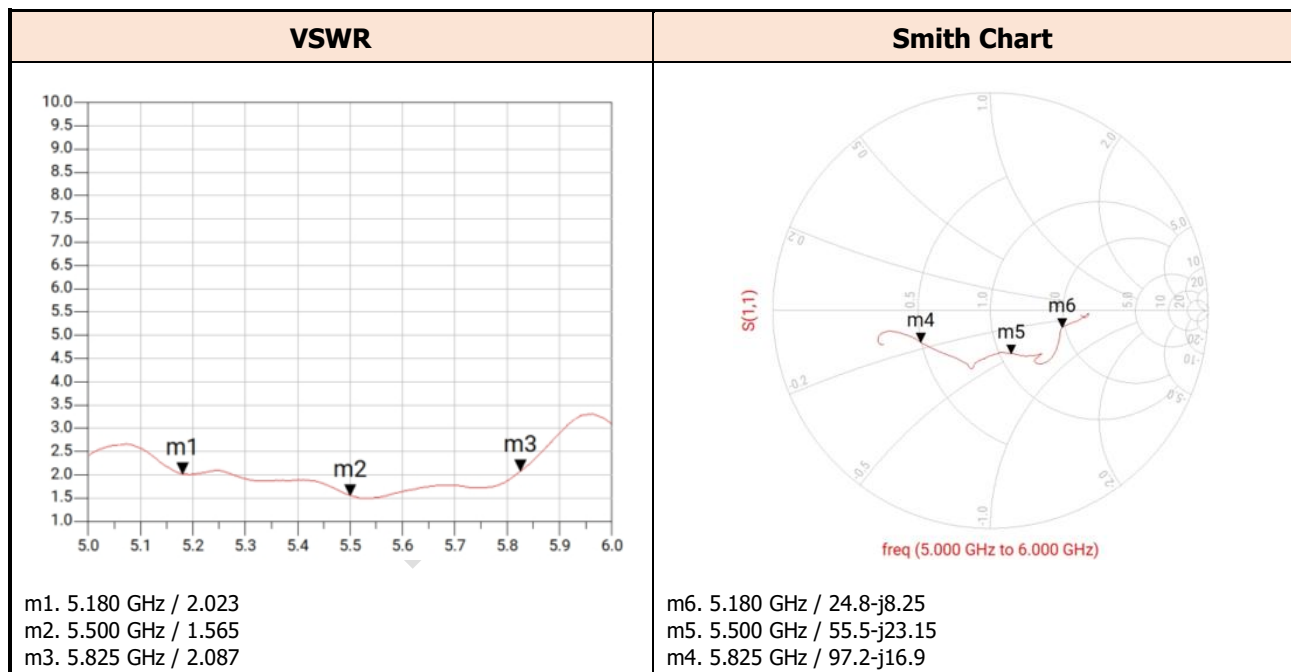
2 Antenna Information



[Connect S ANT2 : WLAN Chip#0 5G Core0 Antenna]

3 Antenna Electrical Characteristics

3.1 VSWR



3.2 Antenna Peak Gain Table

Band (GHz)	Frequency (MHz)	Peak Gain (dBi)		
		Vertical	Horizontal	Total
5.150 ~ 5.250	5180	2.0	-4.0	2.0
5.250 ~ 5.350	5320	1.9	-3.5	1.9
5.470 ~ 5.725	5720	3.6	-3.0	3.7
5.725 ~ 5.825	5765	3.6	-3.1	3.7

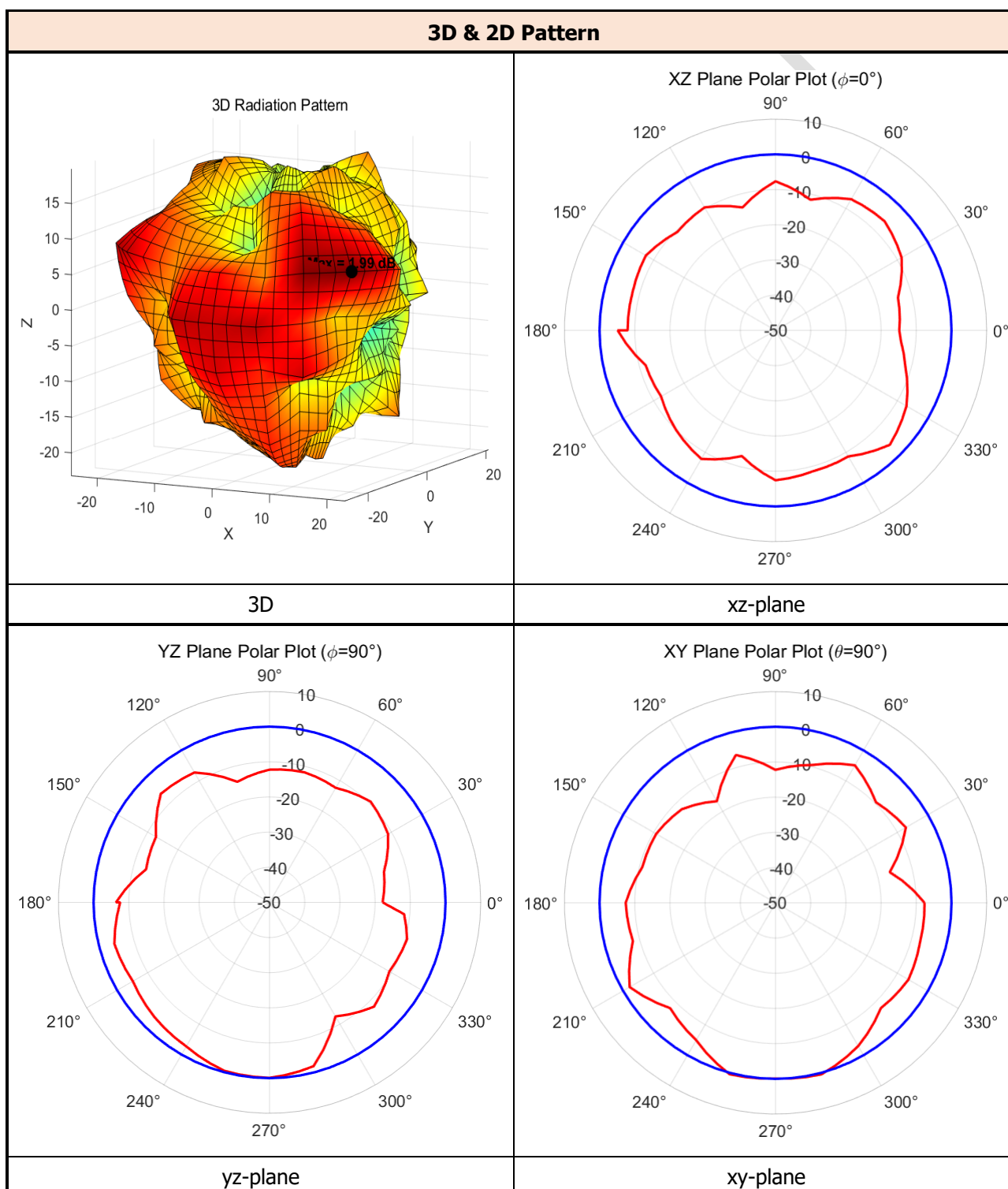
3.3 Antenna Passive Radiation test result

Freq. [MHz]	Eff. [%]	Average Gain			Max Gain				
		Ver.	Hor.	Total	Ver.	Hor.	Total	θ	φ
		[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[Deg]	[Deg]
5180	23.4	-8.0	-11.2	-6.3	2.0	-4.0	2.0	75	315
5200	23.6	-8.0	-11.2	-6.3	1.7	-3.8	1.8	75	300
5220	23.7	-7.9	-11.2	-6.2	1.3	-3.8	1.9	75	300
5240	23.8	-7.9	-11.2	-6.2	1.3	-3.5	1.9	75	300
5260	24.8	-7.7	-11.0	-6.1	1.5	-3.4	1.9	75	300
5280	25.6	-7.6	-10.9	-5.9	1.5	-3.4	1.7	75	300
5300	25.4	-7.6	-10.9	-5.9	1.5	-3.2	1.6	90	285
5320	26.3	-7.4	-10.9	-5.8	1.9	-3.5	1.9	90	285
5500	33.0	-6.3	-10.2	-4.8	2.9	-2.2	2.9	75	330
5520	34.3	-6.1	-10.0	-4.7	3.2	-1.8	3.3	75	330
5540	35.3	-6.1	-9.8	-4.5	3.3	-1.8	3.4	75	330
5560	36.8	-5.9	-9.5	-4.3	3.4	-1.1	3.5	75	330
5580	38.1	-5.7	-9.4	-4.2	3.3	-0.5	3.4	75	330
5600	37.2	-5.8	-9.6	-4.3	2.8	-0.7	2.9	75	330
5620	35.7	-5.9	-9.9	-4.5	2.4	-1.4	2.5	75	330
5640	35.1	-5.9	-10.2	-4.5	2.5	-1.2	2.6	75	330
5660	33.6	-6.1	-10.5	-4.7	2.7	-1.4	2.8	75	330
5680	33.8	-6.0	-10.7	-4.7	3.1	-1.8	3.2	75	330
5700	34.2	-5.9	-10.8	-4.7	3.5	-2.3	3.5	75	330
5720	34.4	-5.8	-10.9	-4.6	3.6	-3.0	3.7	75	330
5745	34.3	-6.1	-10.2	-4.6	3.5	-2.9	3.6	90	255
5765	34.5	-6.0	-10.2	-4.6	3.6	-3.1	3.7	90	255
5785	35.2	-5.9	-10.2	-4.5	3.5	-3.3	3.6	90	255
5805	35.8	-5.8	-10.2	-4.5	3.4	-2.7	3.5	90	255
5825	34.6	-6.0	-10.3	-4.6	3.0	-2.4	3.1	90	255

4 Radiation Pattern

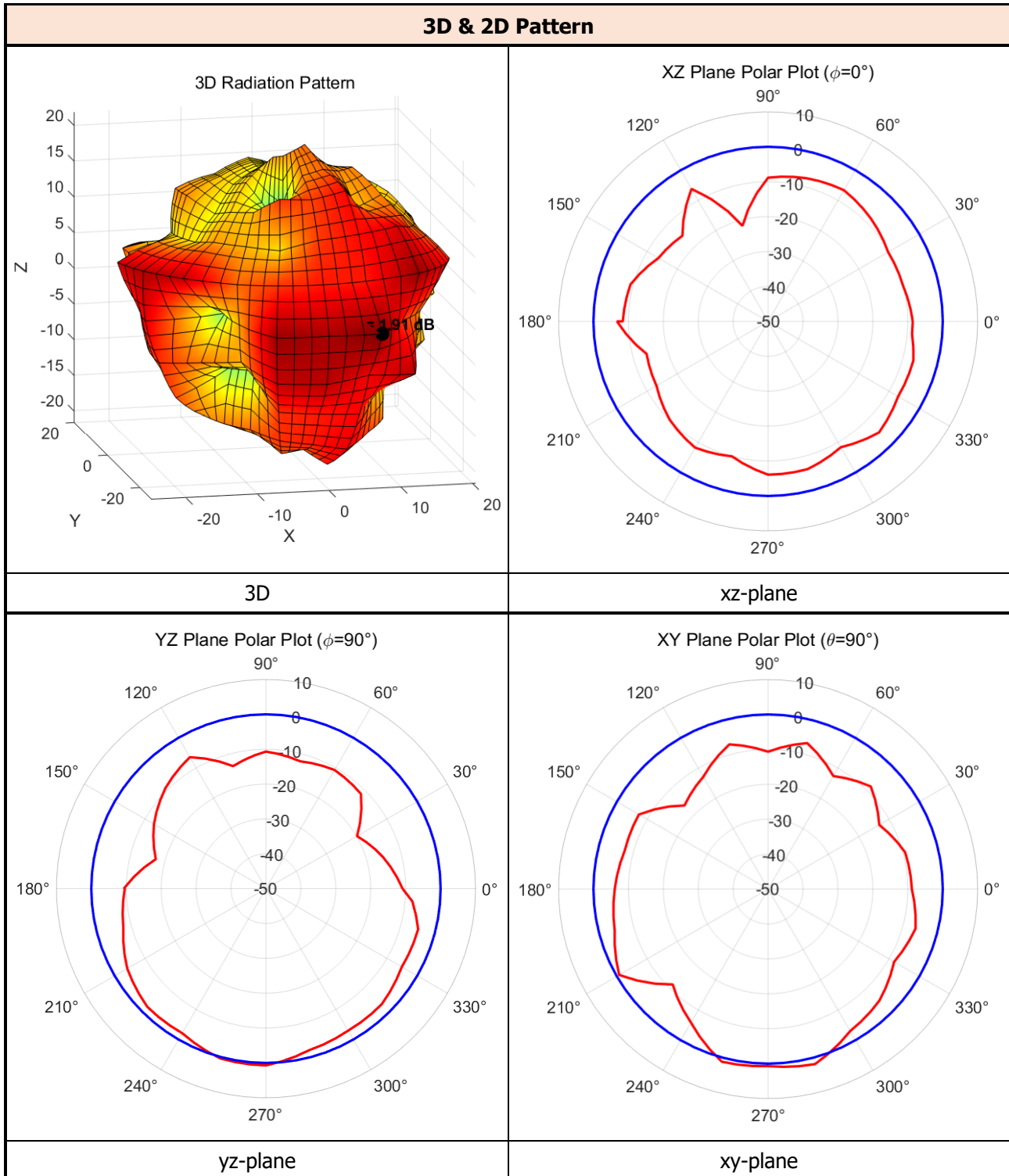
4.1 Pattern @ 5180 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5180	2.0	-4.0	2.0



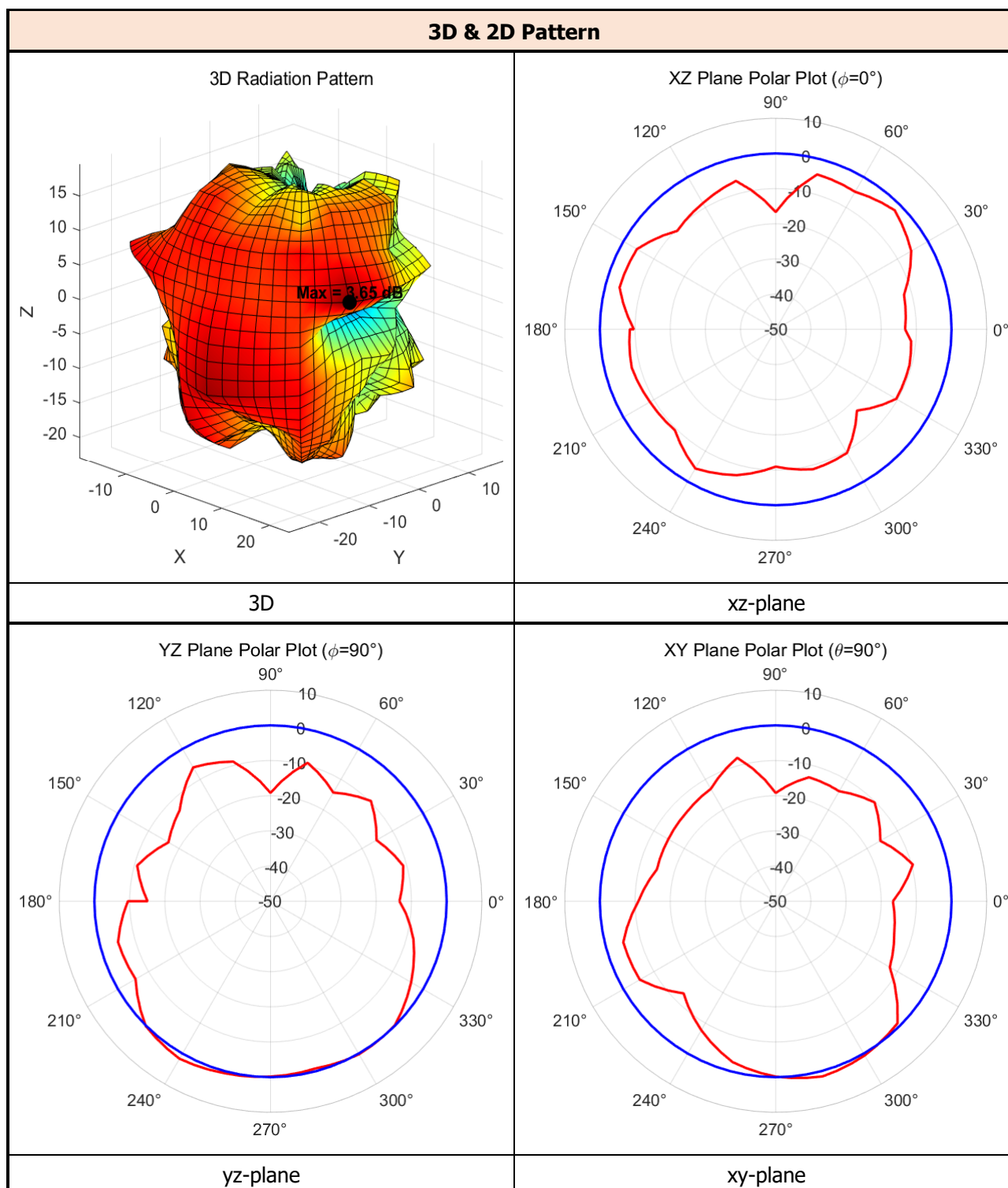
4.2 Pattern @ 5320 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5320	1.9	-3.5	1.9



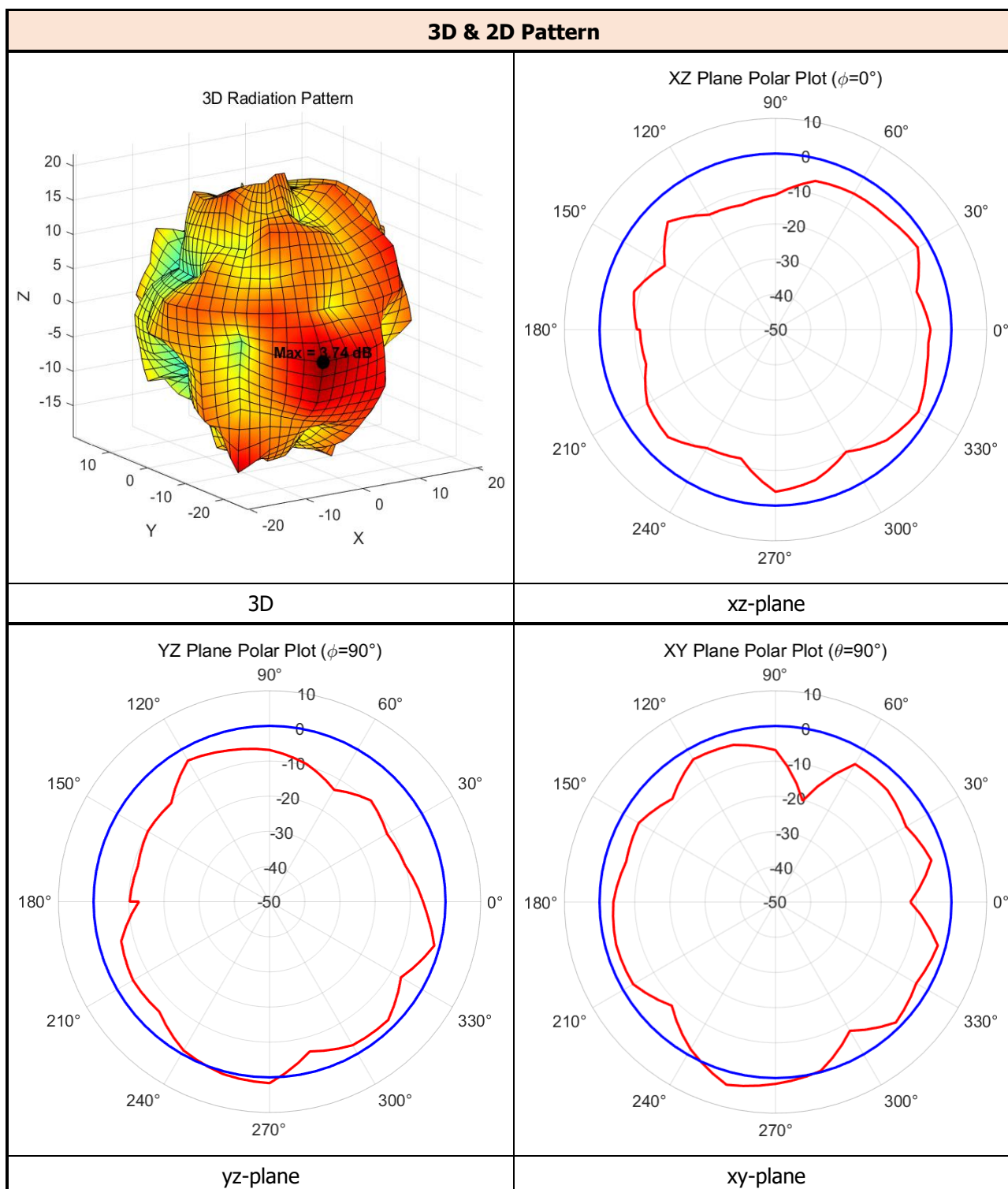
4.3 Pattern @ 5720 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5720	3.6	-3.0	3.7



4.4 Pattern @ 5765 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5765	3.6	-3.1	3.7



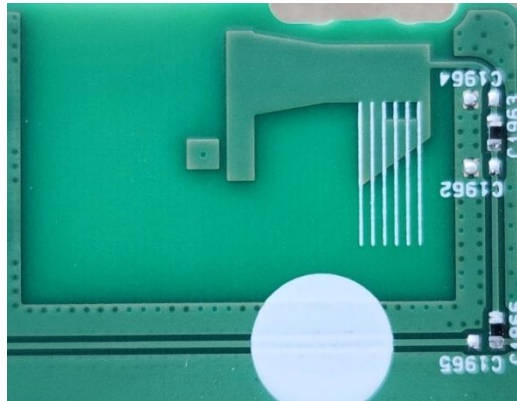
WiFi Chip#1 Core0 Antenna Datasheet

REV 1.0

Model: Connect S

Model	Connect S : ANT3 WiFi Chip#1 Core0
Frequency	2412 ~ 2472MHz 5180 ~ 5825MHz
Test Date	2025. 11. 25
Tester	Youngpyo Lee

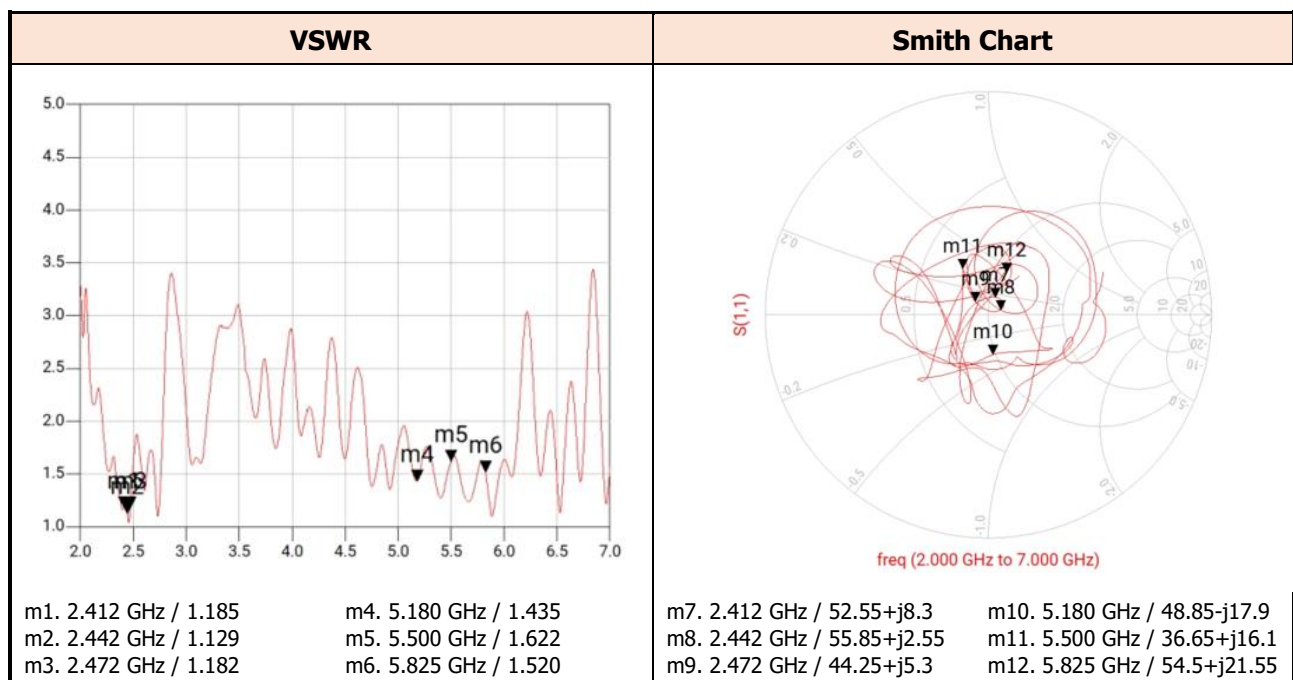
2 Antenna Information



[Connect S ANT3 : WLAN Chip#1 2.4G & 5G Core0 Antenna]

3 Antenna Electrical Characteristics

3.1 VSWR



3.2 Antenna Peak Gain Table

Band (GHz)	Frequency (MHz)	Peak Gain (dBi)		
		Vertical	Horizontal	Total
2.412 ~ 2.472	2412	-2.6	-0.4	-0.2
5.150 ~ 5.250	5220	3.6	-2.5	3.9
5.250 ~ 5.350	5260	3.9	-2.9	4.0
5.470 ~ 5.725	5500	4.4	0.1	4.4
5.725 ~ 5.825	5765	2.0	-1.8	2.0

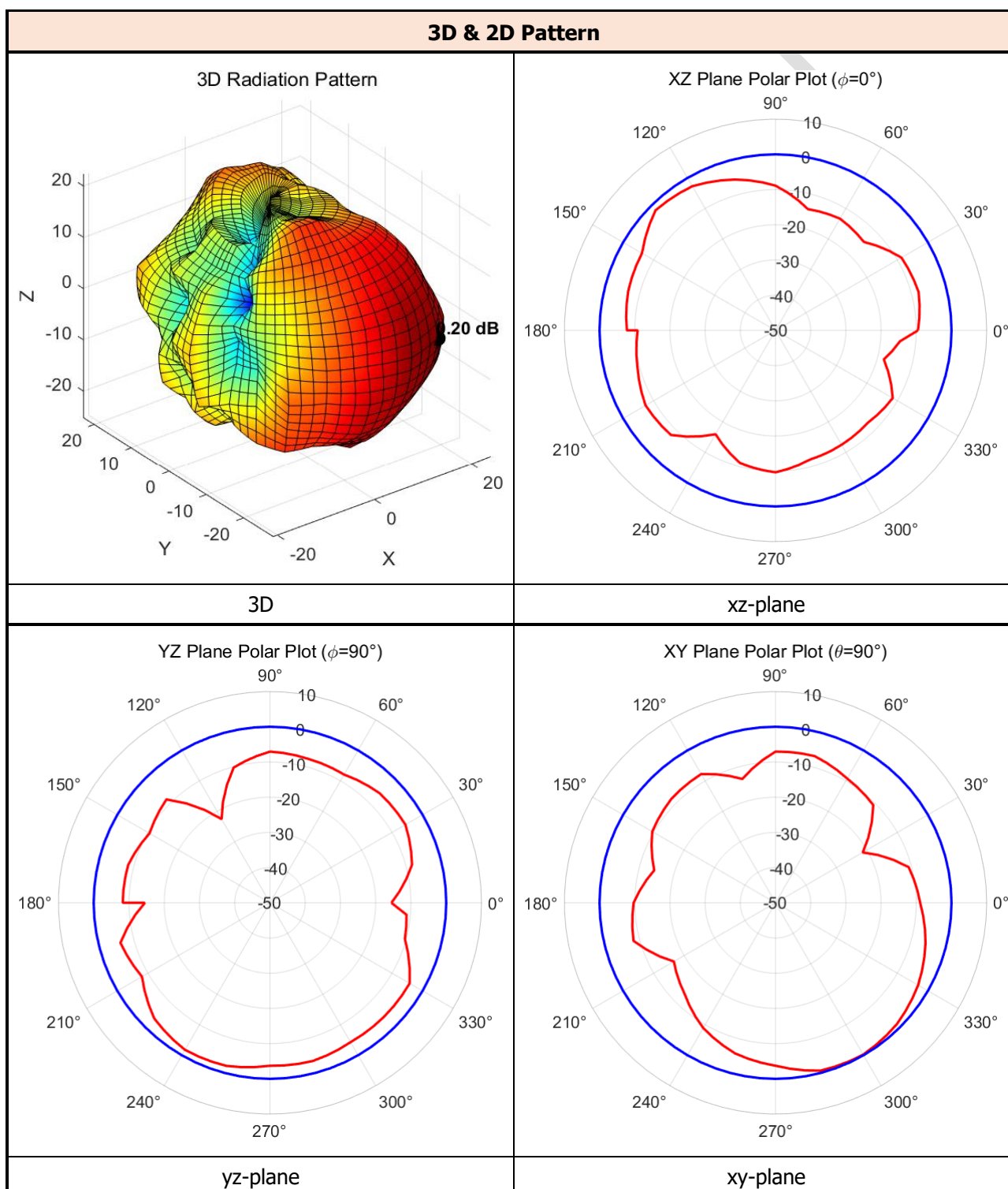
3.3 Antenna Passive Radiation test result

Freq. [MHz]	Eff. [%]	Average Gain			Max Gain				
		Ver.	Hor.	Total	Ver.	Hor.	Total	θ	φ
		[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[dBi]	[Deg]	[Deg]
2412	22.0	-10.9	-8.6	-6.6	-2.6	-0.4	-0.2	90	300
2442	20.0	-10.7	-9.4	-7.0	-2.7	-0.6	-0.5	90	300
2472	18.6	-10.9	-9.8	-7.3	-3.1	-2.3	-1.8	150	330
5180	21.5	-9.1	-10.4	-6.7	3.2	-3.0	3.4	75	240
5200	21.0	-9.1	-10.6	-6.8	3.4	-2.5	3.7	75	240
5220	20.7	-9.1	-10.7	-6.8	3.6	-2.5	3.9	75	240
5240	20.0	-9.2	-11.0	-7.0	3.6	-2.7	3.8	75	240
5260	20.7	-8.9	-11.1	-6.8	3.9	-2.9	4.0	75	240
5280	21.2	-8.7	-11.2	-6.7	3.9	-3.9	4.0	75	240
5300	21.5	-8.5	-11.4	-6.7	3.8	-4.0	3.9	75	240
5320	23.2	-8.1	-11.1	-6.3	3.8	-3.4	3.9	75	240
5500	26.1	-7.7	-10.4	-5.8	4.4	0.1	4.4	75	255
5520	25.6	-7.8	-10.5	-5.9	4.1	0.0	4.2	75	255
5540	24.8	-8.0	-10.5	-6.1	3.7	-0.3	3.7	75	255
5560	25.6	-7.9	-10.3	-5.9	3.7	0.1	3.7	75	240
5580	25.8	-7.9	-10.1	-5.9	3.6	0.4	3.6	75	240
5600	24.8	-8.2	-10.2	-6.1	3.3	0.2	3.3	75	240
5620	22.9	-8.6	-10.5	-6.4	2.9	-0.2	3.0	75	240
5640	22.4	-8.7	-10.5	-6.5	2.8	-0.6	2.8	75	240
5660	21.0	-9.0	-10.7	-6.8	2.4	-1.6	2.5	75	240
5680	20.6	-9.2	-10.7	-6.9	2.1	-2.2	2.2	75	240
5700	20.7	-9.2	-10.7	-6.8	2.0	-1.9	2.1	75	240
5720	20.1	-9.3	-10.8	-7.0	1.7	-2.1	1.8	75	240
5745	20.3	-9.3	-10.7	-6.9	1.7	-2.0	1.8	75	240
5765	20.1	-9.3	-10.8	-7.0	2.0	-1.8	2.0	75	240
5785	20.4	-9.2	-10.8	-6.9	1.8	-1.8	1.9	75	240
5805	20.0	-9.3	-10.8	-7.0	1.5	-1.7	1.5	75	240
5825	19.3	-9.5	-11.0	-7.2	1.1	-2.0	1.1	75	240

4 Radiation Pattern

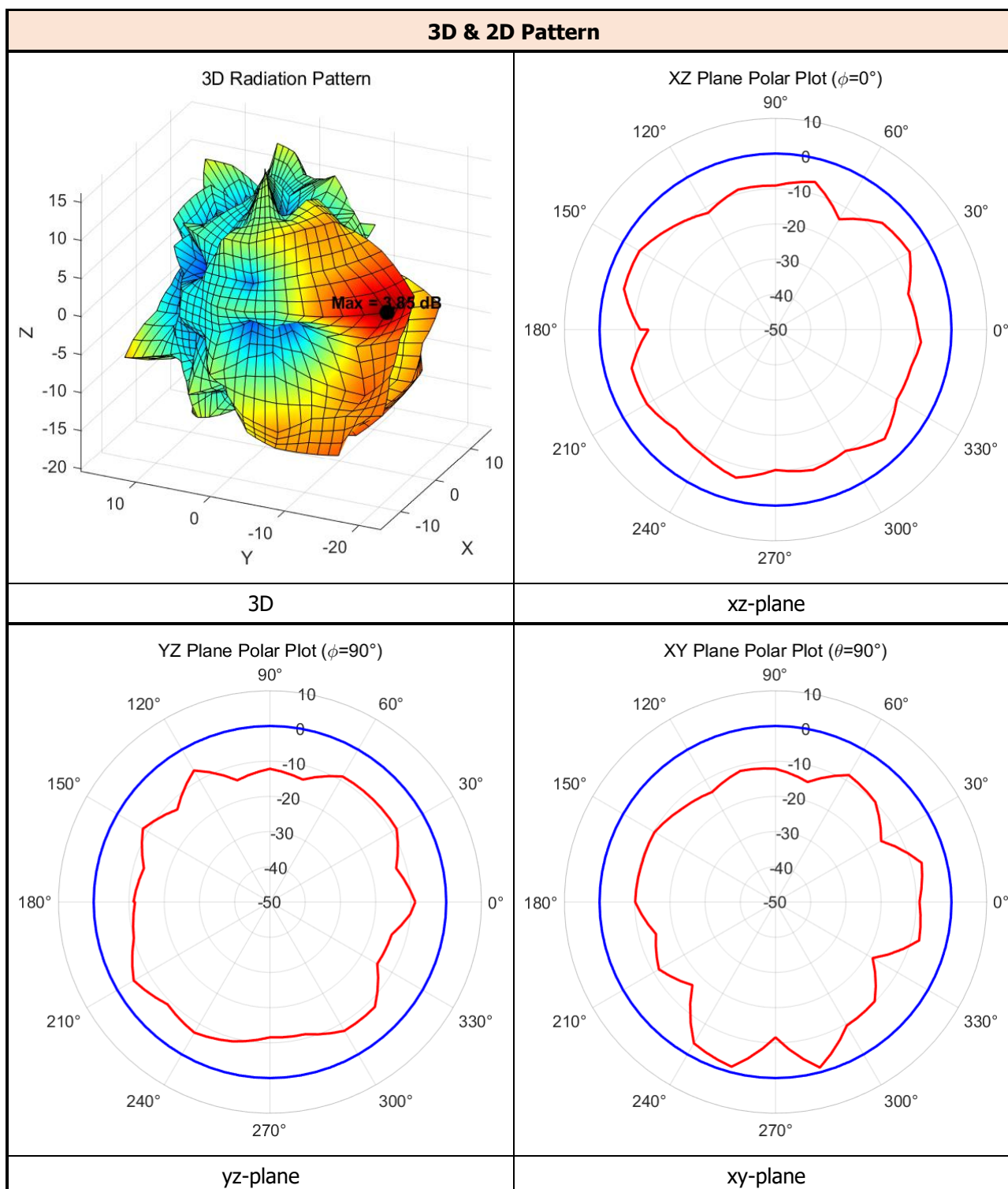
4.1 Pattern @ 2412 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
2412	-2.6	-0.4	-0.2



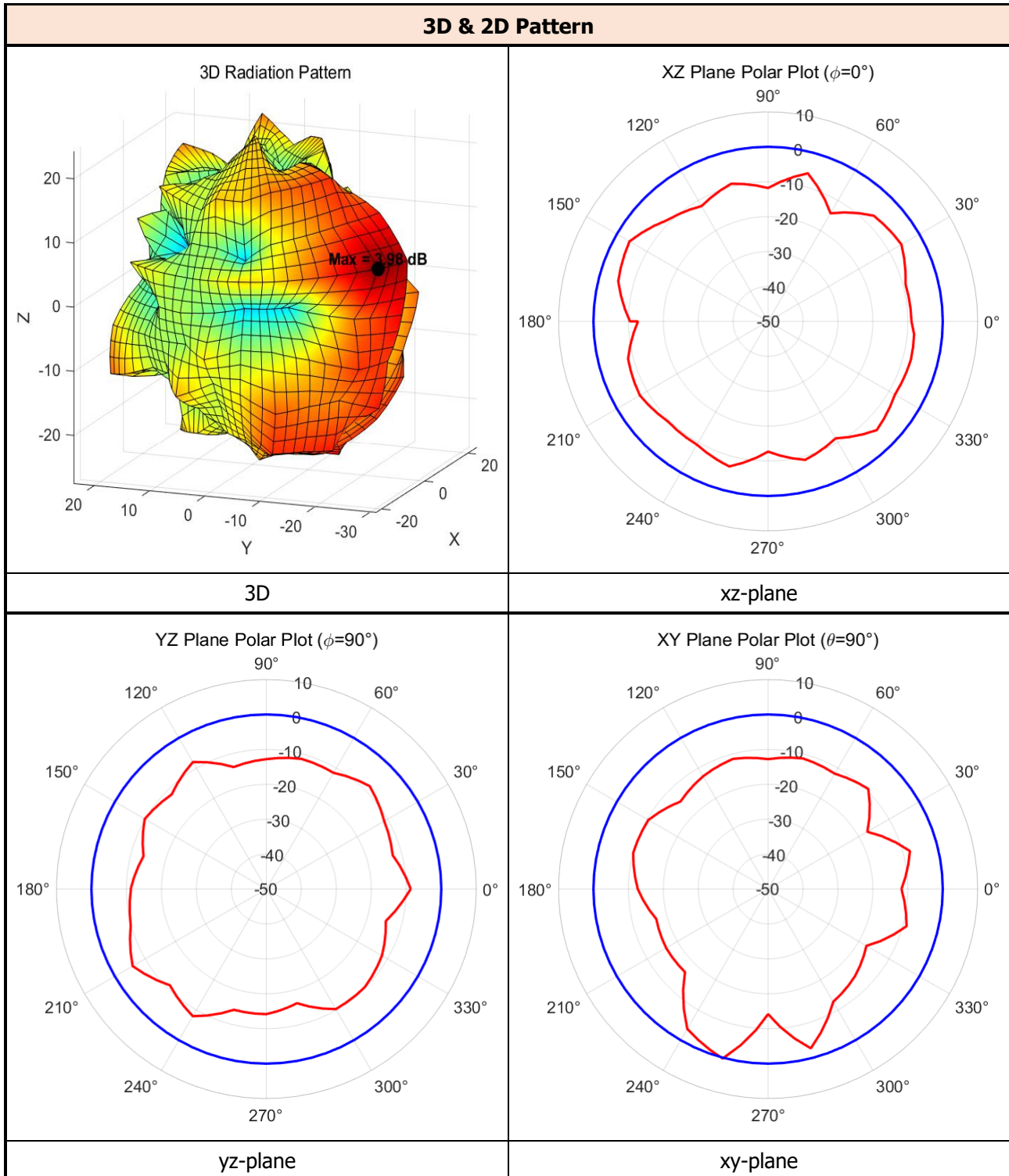
4.2 Pattern @ 5220 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5220	3.6	-2.5	3.9



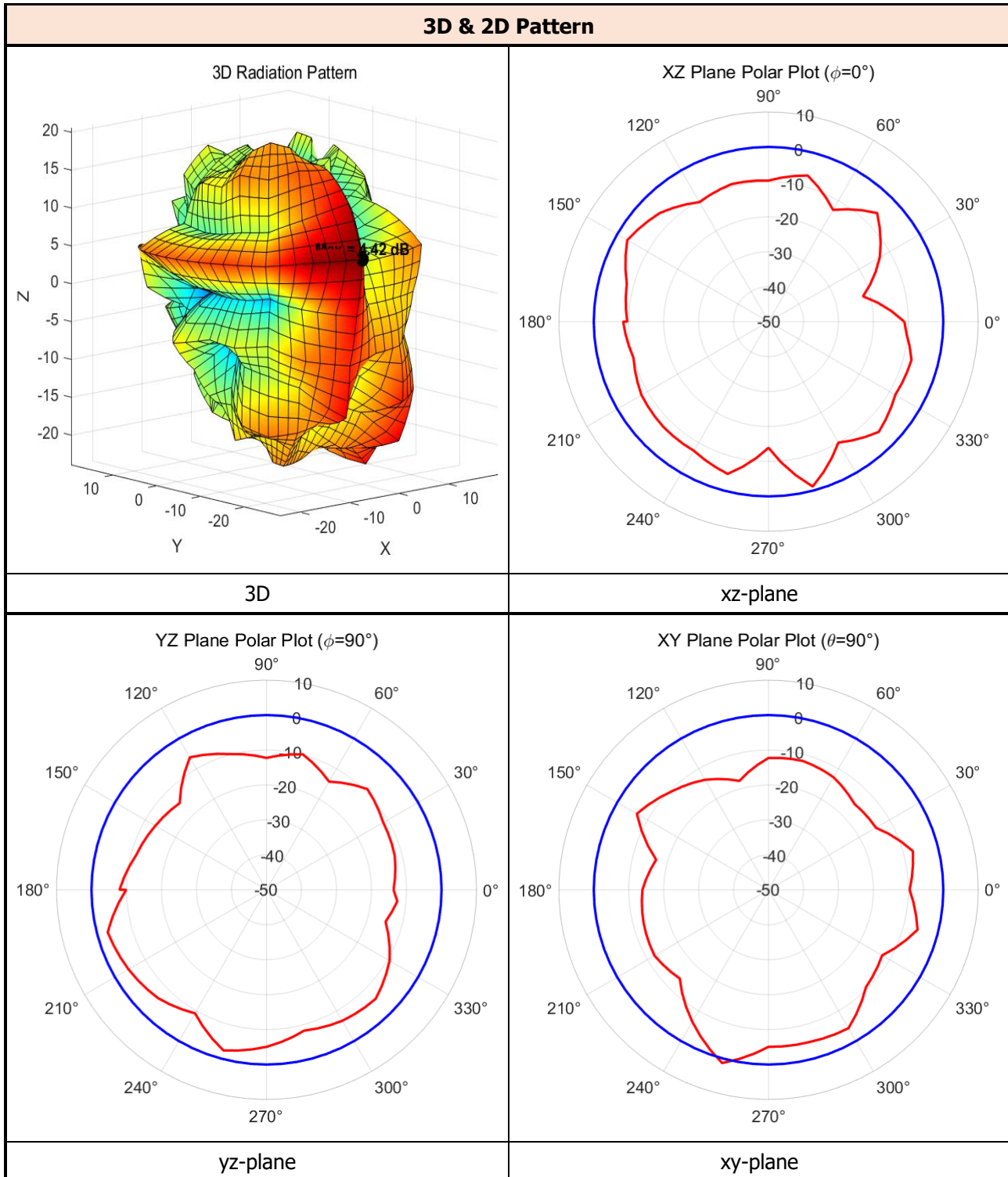
4.3 Pattern @ 5260 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5260	3.9	-2.9	4.0



4.4 Pattern @ 5500 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5500	4.4	0.1	4.4



4.5 Pattern @ 5765 MHz

Frequency (MHz)	Peak Gain (dBi)		
	Vertical	Horizontal	Total
5765	2.0	-1.8	2.0

