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EAP115 Antenna R0A Sample Measurement Report

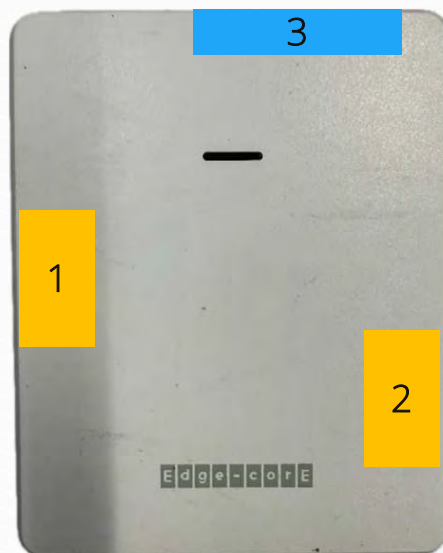
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Antenna Summary

Antenna Passband	DB ANT1&2	BLE ANT3	Requirement	Result
Frequency Range	2.4GHz:2412-2484MHz 5GHz:5180-5825MHz	BLE:2412-2484MHz 5GHz:5180-5825MHz	Standard	--
Return Loss	2.4GHz >9.7dB 5GHz >11.2 dB	BLE >12.6dB	General Criterion	comply
Gain	2.4GHz : 5.1~6.0 dBi 5GHz : 5.3~6.5 dBi	BLE : 2.6~3.1 dBi	Peak gain 4.0dBi in 2.4GHz Band Peak gain 5.0dBi in 5GHz band Peak gain 4.0dBi in BLE band	Partial
Efficiency*	2.4GHz :60~68% 5GHz :72~75%	BLE :48~51%	-	-
Isolation	> -30.9dB ANT1 ↔ ANT2 @2.4GHz Band > -32.8dB ANT1 ↔ ANT2 @5GHz Band > -22.6dB ANT1&2 ↔ ANT3 @BLE Band		> -20dB ANT1 ↔ ANT2 @2.4GHz Band -20dB ANT1 ↔ ANT2 @5GHz Band > -25dB ANT1&2 ↔ ANT3 @BLE	Partial

Antenna Placement & Description



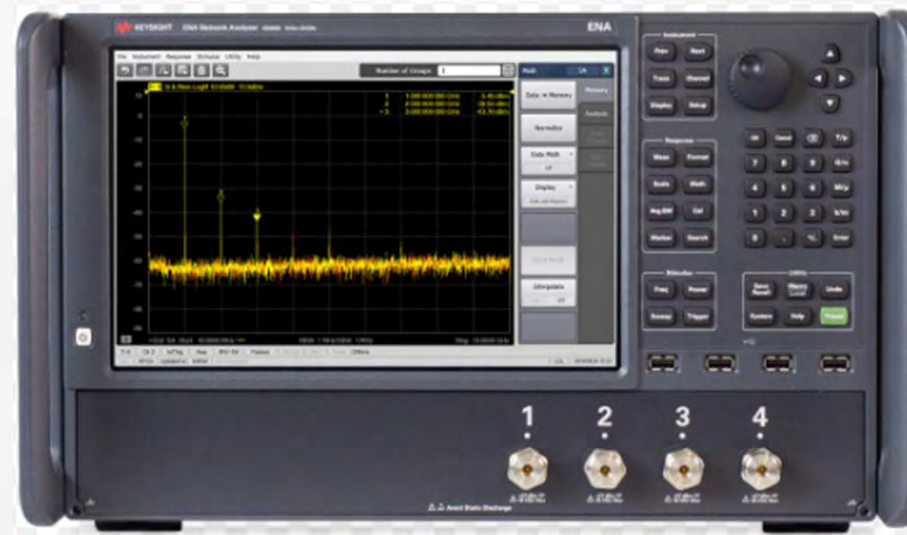
Antenna Description						
Location	Brand	Antenna Type	Model Name	Connector	Gain (dBi)	Modes of Operation
1	ACCTON Technology Corporation	Loop	ARY196-0336-045-00	I-PEX	*Note 1 (Efficiency & Gain Measurement sheet)	WLAN 2/5GHz
2	ACCTON Technology Corporation	Loop	ARY196-0336-046-00	I-PEX		WLAN 2/5GHz
3	ACCTON Technology Corporation	PIFA	ARY196-0336-047-00	I-PEX		Bluetooth, Zigbee

Company name(製造商公司名稱)	Address(製造商地址)
ACCTON Technology Corporation	No.1, Creation Road3, Hsinchu Science Park, Hsinchu 30077,Taiwan, R.O.C

Experimental Return & Isolation

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Due Date
Network Analyzer	Keysight	E5080B	MY59101291	28-May-2025	28-May-2026

Use Keysight network analyzer (E5080B) for measurement



Return Loss Measurement

• ARY196-0336-045-00

• DB ANT1

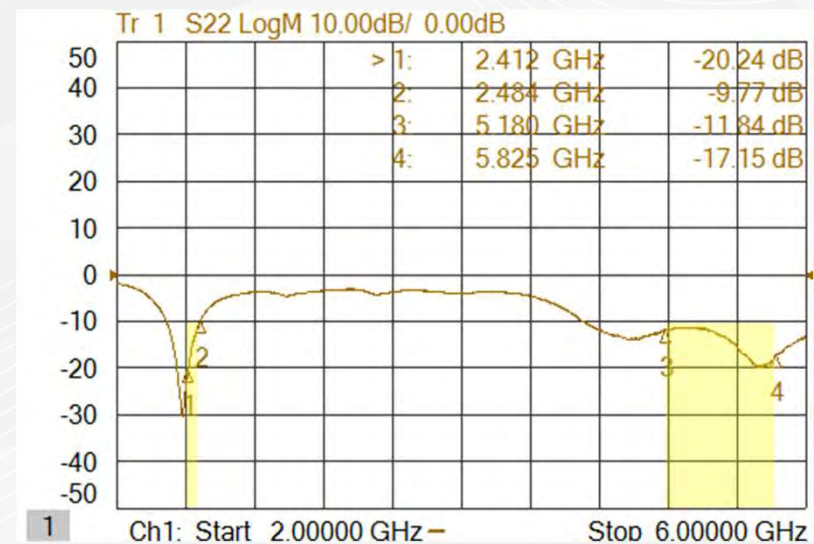
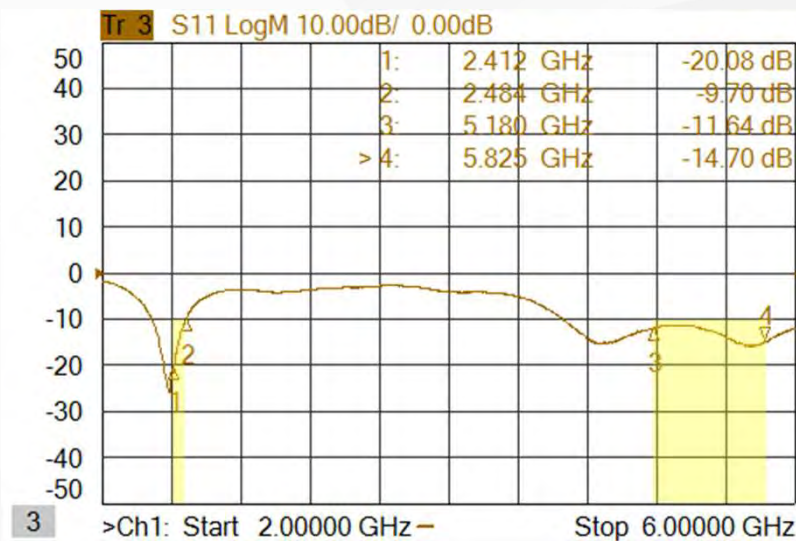
Freq. (MHz)	2412	2484	5180	5825
Return Loss (dB)	-20.0	-9.7	-11.6	-14.7



• ARY196-0336-046-00

• DB ANT2

Freq. (MHz)	2412	2484	5180	5825
Return Loss (dB)	-20.2	-9.7	-11.8	-17.1



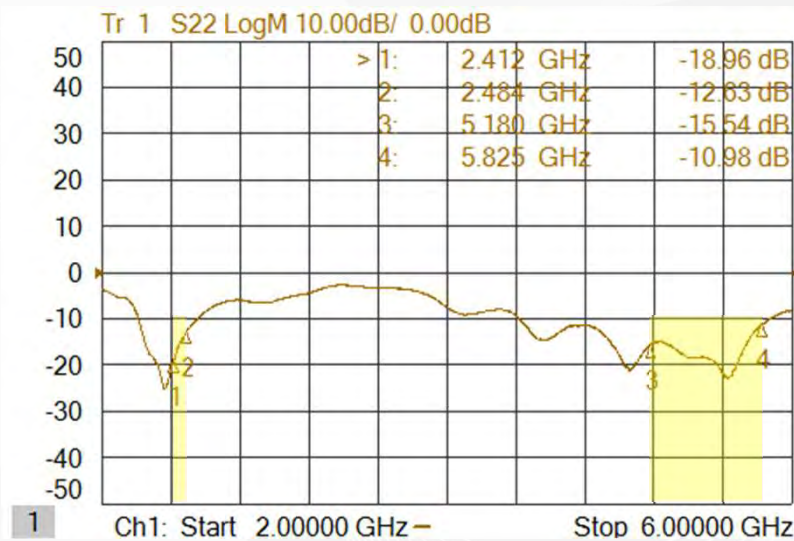
Return Loss Measurement

• ARY196-0336-047-00

• BLE ANT3

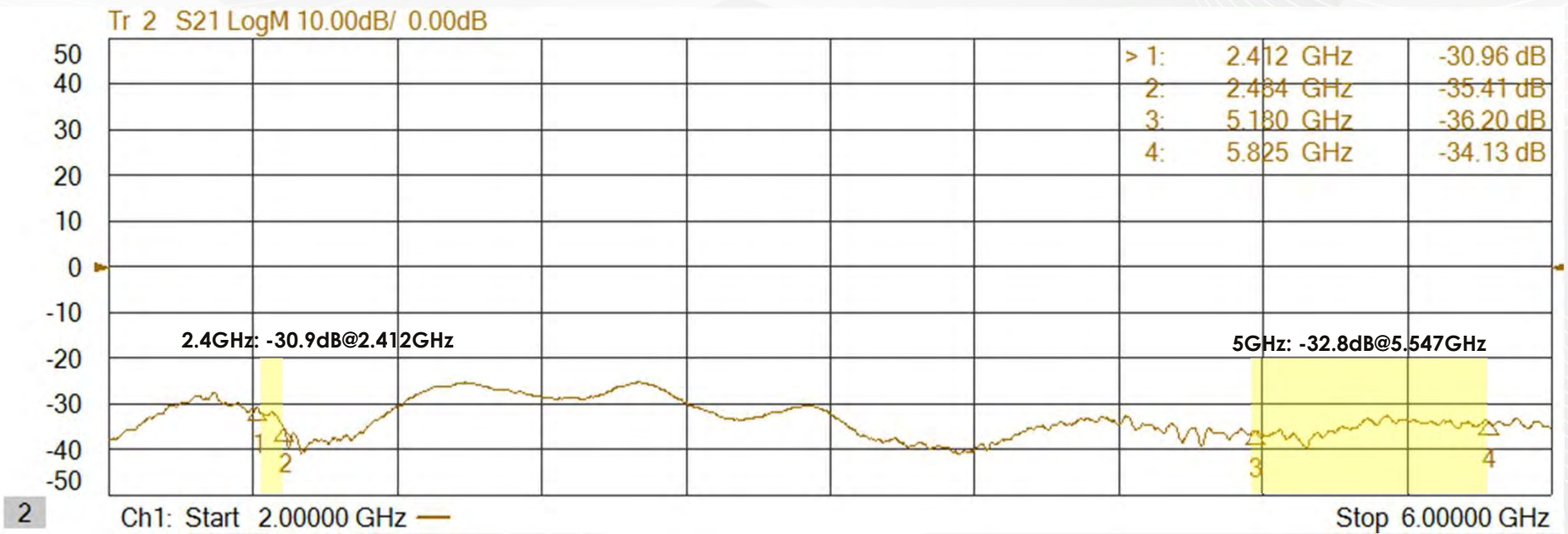


Freq. (MHz)	2412	2484	5180	5825
Return Loss (dB)	-18.9	-12.6	-15.5	-10.9



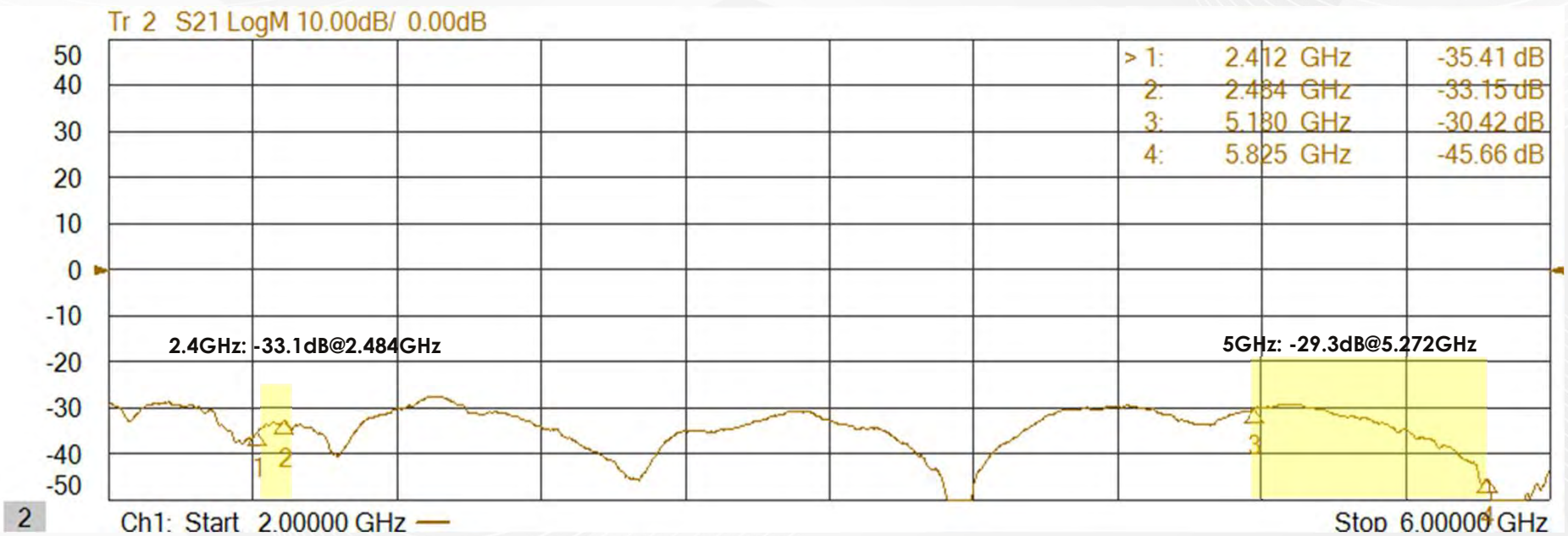
Isolation Measurement

DB ANT1 to DB ANT2



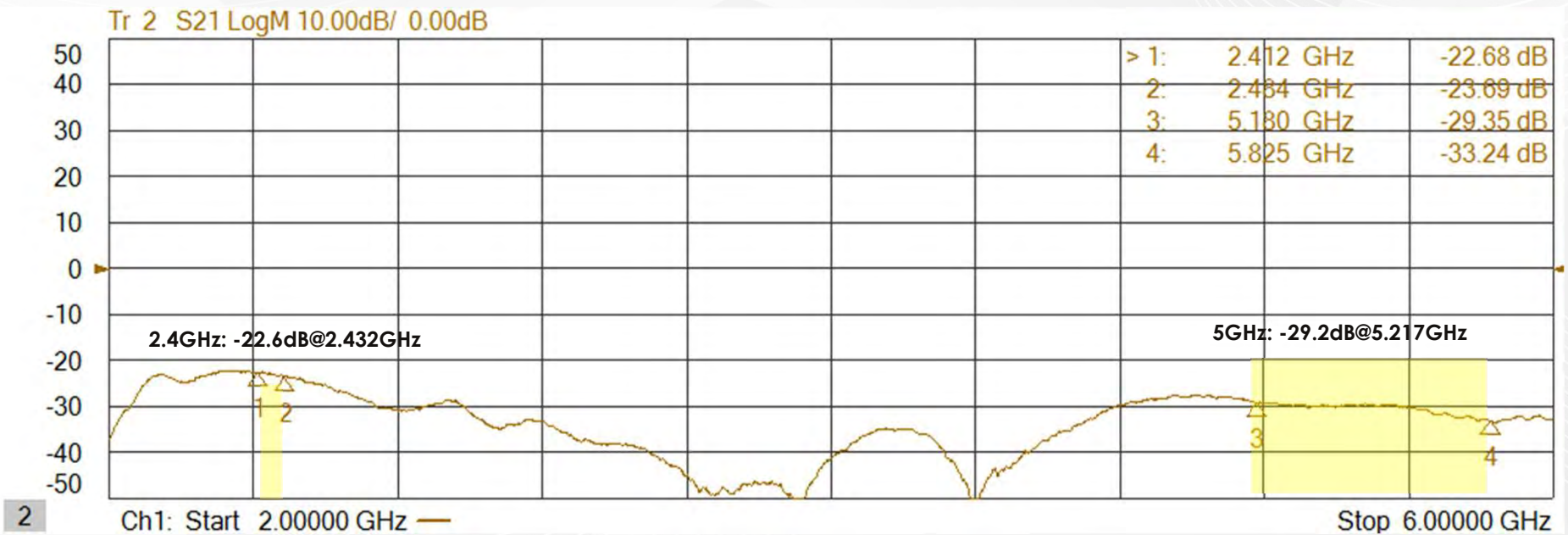
Isolation Measurement

DB ANT1 to BLE ANT3



Isolation Measurement

DB ANT2 to BLE ANT3



Experimental Setup & Coordinate System

Chamber Name: ETS AMS-8500 Rectangular CTIA-Compliant Test Lab

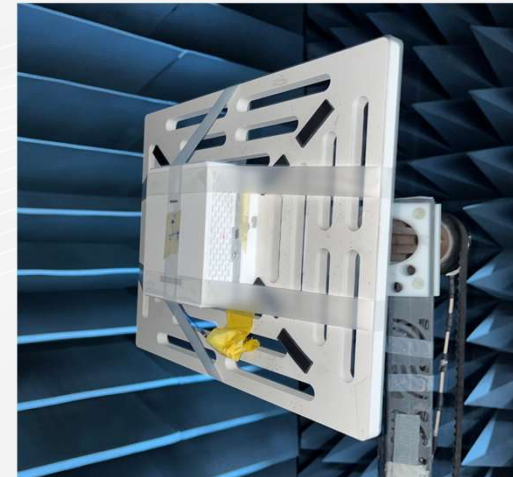
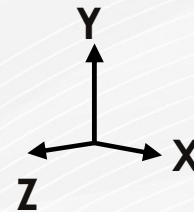
Fully-compliant for CTIA Over-The-Air (OTA) Testing for Wireless Devices

Passive Antenna Measurements

Frequency Range: 600 MHz to 7.125 GHz

Modular High Performance Shielded System

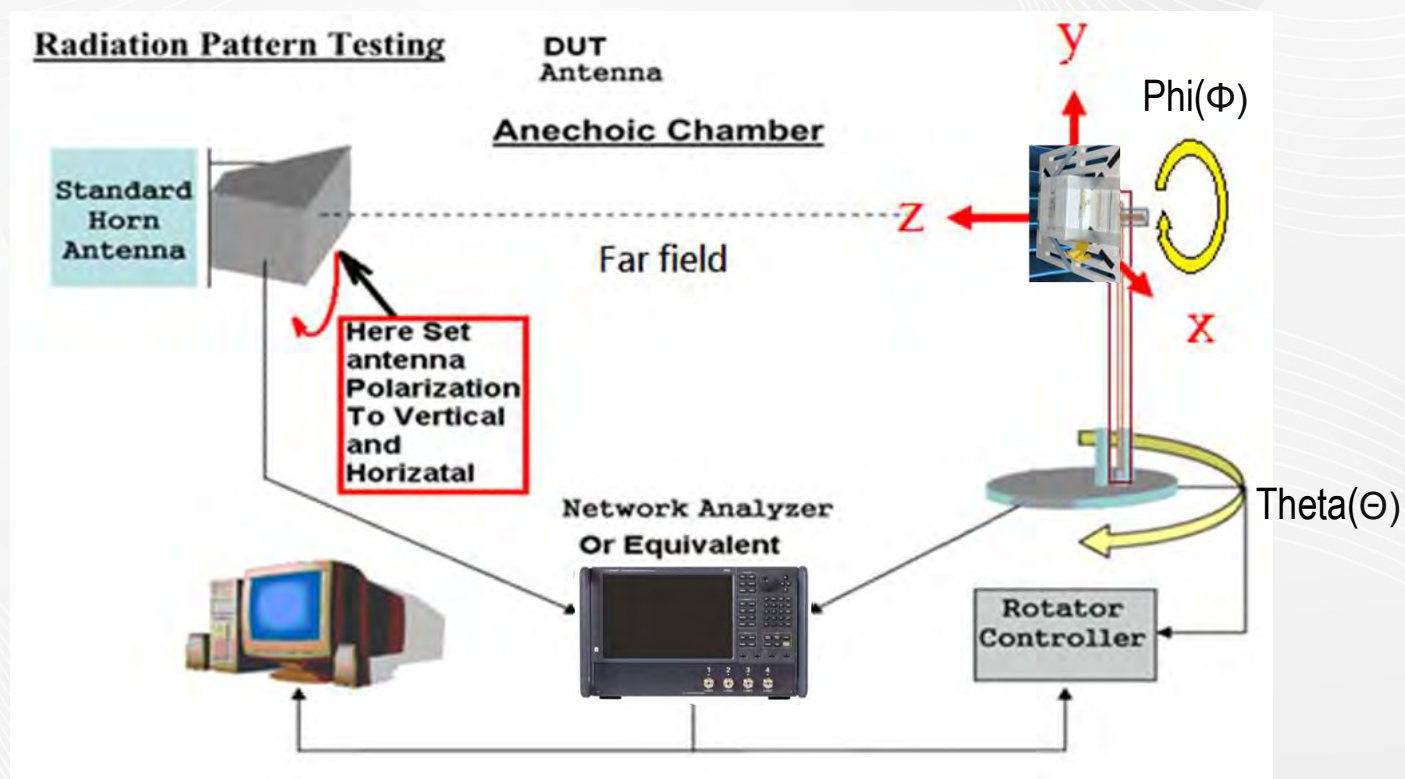
Multi-Axis Positioning System (MAPS) for High Resolution 3D Pattern Testing



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Experimental Setup & Coordinate System

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Due Date
Network Analyzer	Keysight	E5080B	MY59202161	Feb. 17, 2025	Feb. 16, 2026



Efficiency & Gain Measurement^(*Note 1)

(ARY196-0336-045-00)DB ANT 1

Frequency(MHz)	2412	2447	2484	5180	5550	5825
Efficiency(%)	67.1	64.7	60.3	75.5	72.5	72.8
Peak Gain (dBi)	5.7	5.5	5.1	5.8	6.0	5.7
Peak gain at polarization	(Φ) 175°(Θ)25°	(Φ) 180°(Θ)30°	(Φ) 165°(Θ)25°	(Φ) 140°(Θ)5°	(Φ) 300°(Θ)5°	(Φ) 300°(Θ)5°

(ARY196-0336-046-00)DB ANT 2

Frequency(MHz)	2412	2447	2484	5180	5550	5825
Efficiency(%)	68.2	68.5	65.2	73.5	72.1	73.3
Peak Gain (dBi)	5.7	6.0	5.6	5.9	5.2	5.1
Peak gain at polarization	(Φ) 355°(Θ)25°	(Φ) 0°(Θ)25°	(Φ) 0°(Θ)30°	(Φ) 315°(Θ)65°	(Φ) 0°(Θ)30°	(Φ) 300°(Θ)70°

(ARY196-0336-047-00)BLE ANT 3

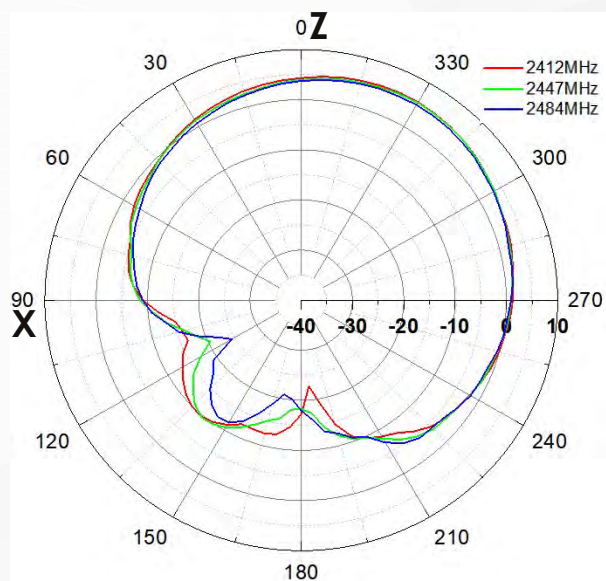
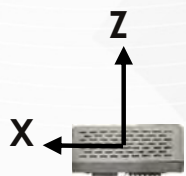
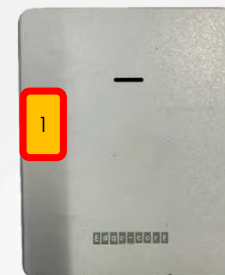
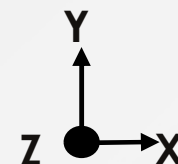
Frequency(MHz)	2412	2447	2484
Efficiency(%)	50.1	51.1	48.3
Peak Gain (dBi)	2.6	3.1	3.1
Peak gain at polarization	(Φ) 100°(Θ)70°	(Φ) 100°(Θ)70°	(Φ) 105°(Θ)70°

※Φ(Phi) ; Θ(Theta)

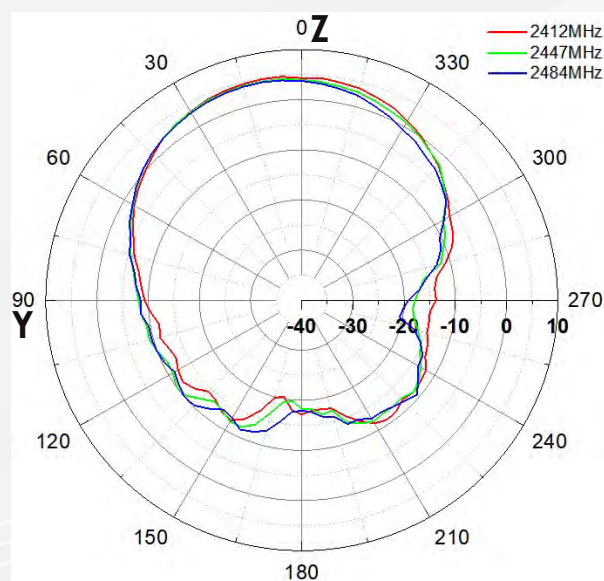
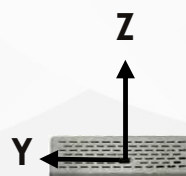
※Peak Gain (G) and directivity (D) are linked by the formula $G = k \times D$, where the antenna effective factor k ($0 \leq k \leq 1$) corresponds to the overall losses of the antenna. Accordingly antenna gain can be calculated by the following formula, where represents antenna losses comprising of all ohm and dielectric losses between the input connector and the outer surface of the radome and the loss due to the impedance mismatch.

2D Radiation Pattern Measurement

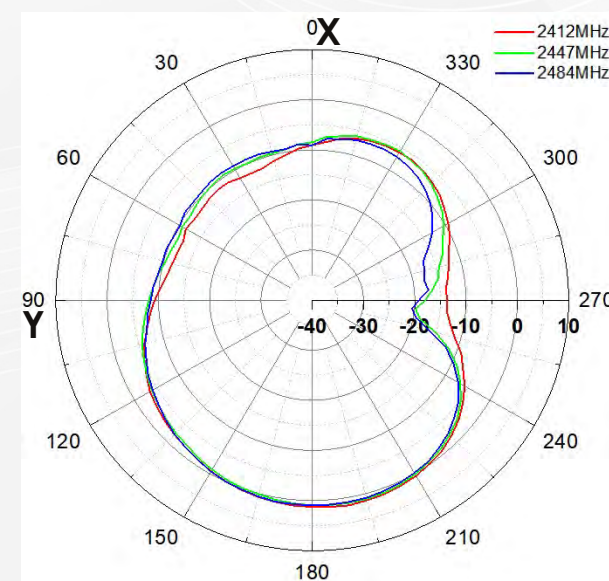
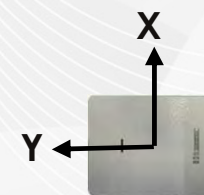
(ARY196-0336-045-00) DB ANT 1
2G Band



Max Gain (dB): 10
Scale: 5dB/Div



Max Gain (dB): 10
Scale: 5dB/Div

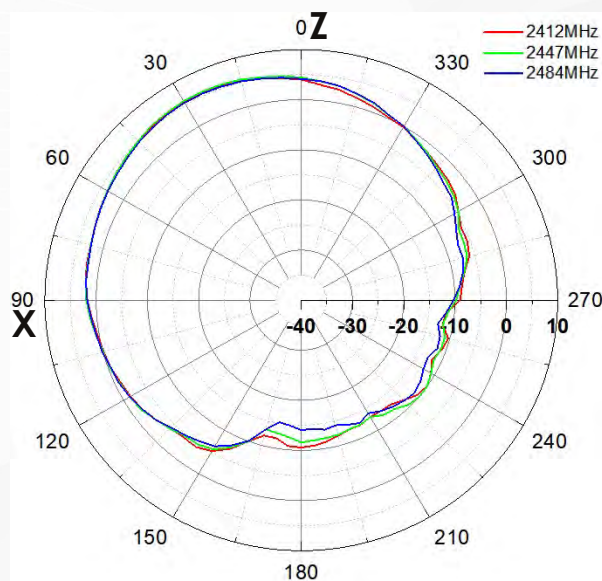
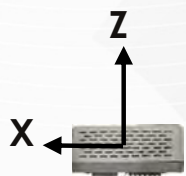
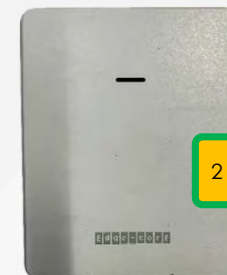
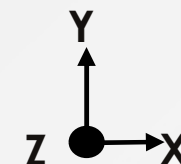


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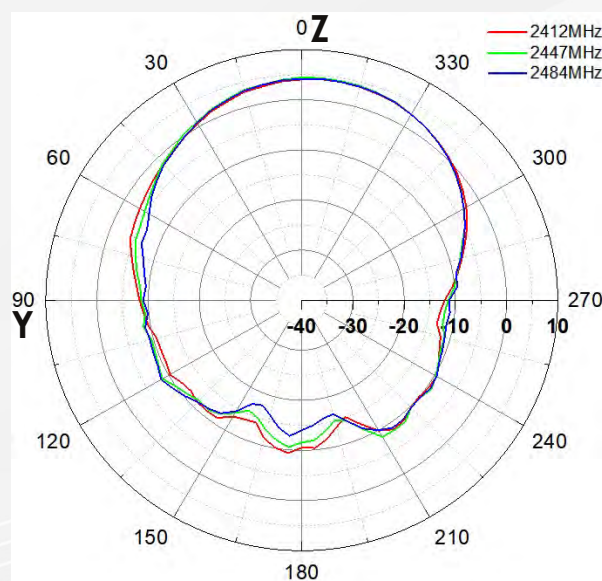
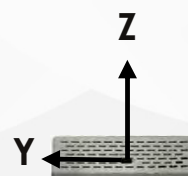
Max Gain (dB): 10
Scale: 5dB/Div

2D Radiation Pattern Measurement

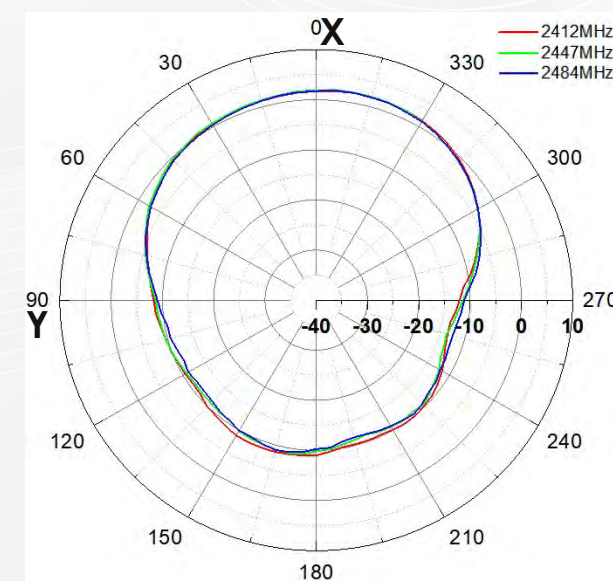
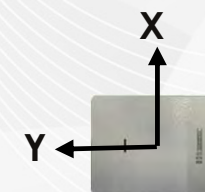
(ARY196-0336-046-00) DB ANT 2
2G Band



Max Gain (dB): 10
Scale: 5dB/Div



Max Gain (dB): 10
Scale: 5dB/Div

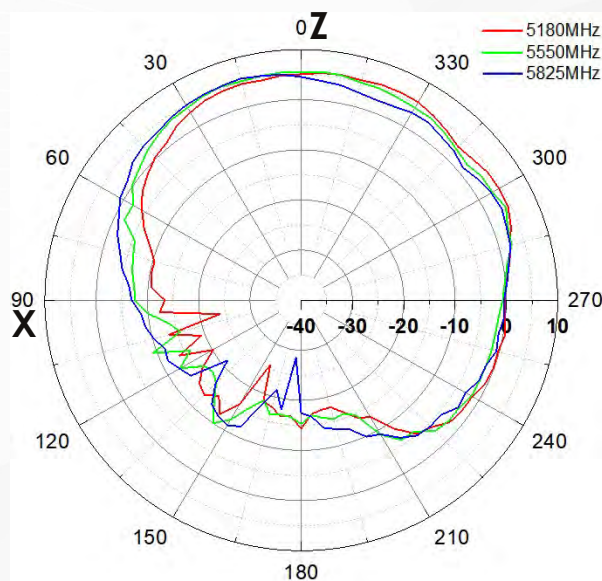
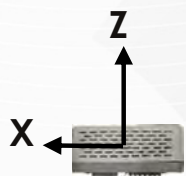
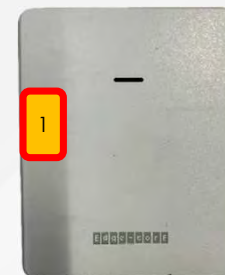
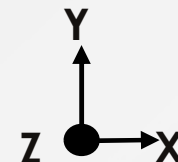


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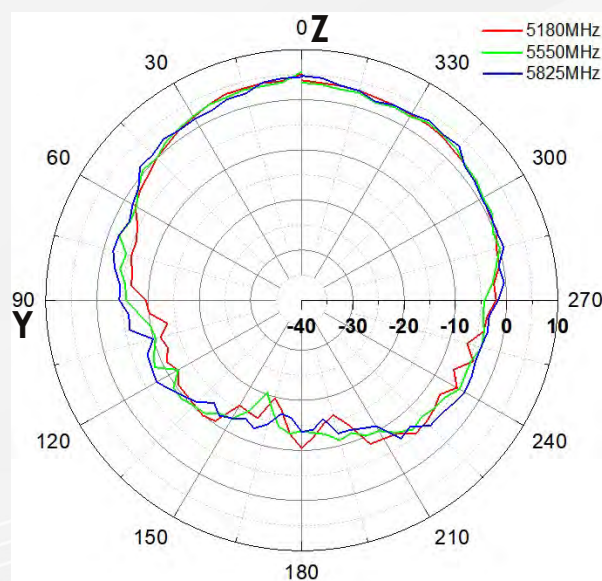
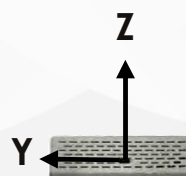
Max Gain (dB): 10
Scale: 5dB/Div

2D Radiation Pattern Measurement

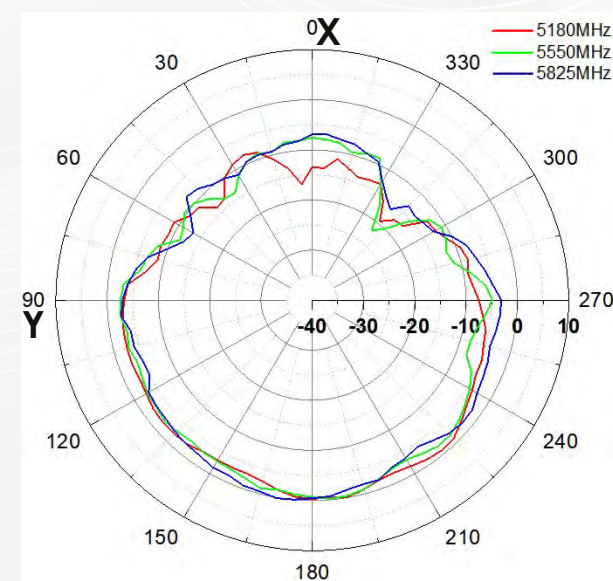
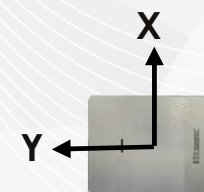
(ARY196-0336-045-00) DB ANT 1
5G Band



Max Gain (dB): 10
Scale: 5dB/Div



Max Gain (dB): 10
Scale: 5dB/Div

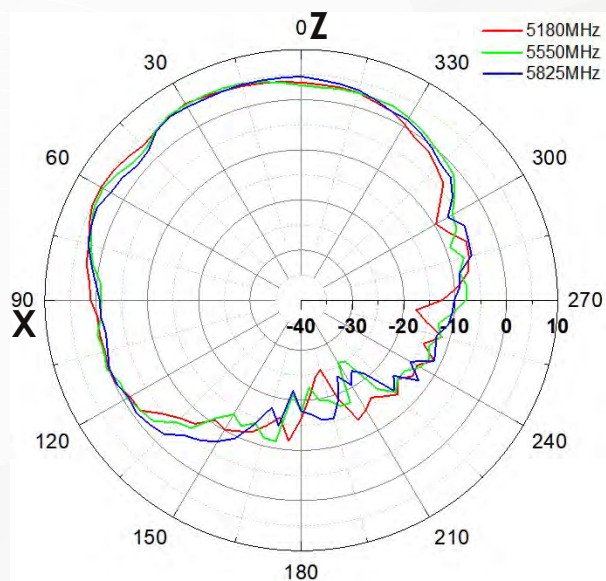
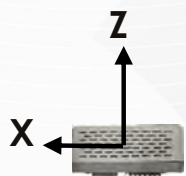
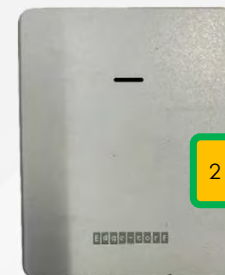
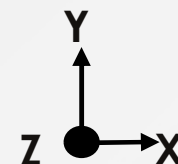


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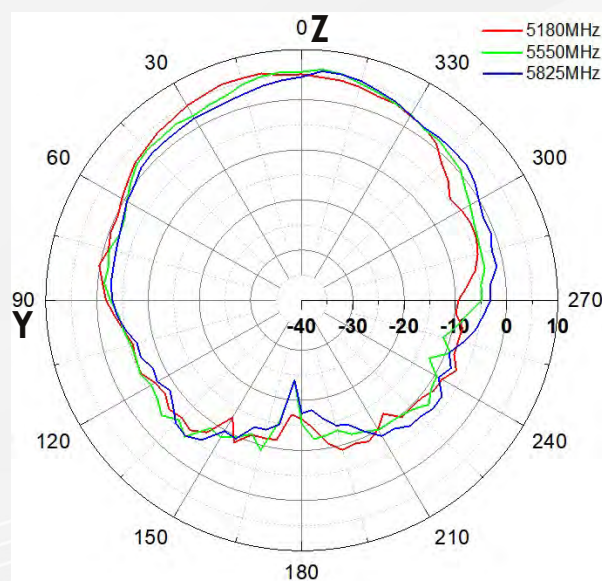
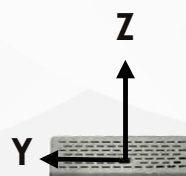
Max Gain (dB): 10
Scale: 5dB/Div

2D Radiation Pattern Measurement

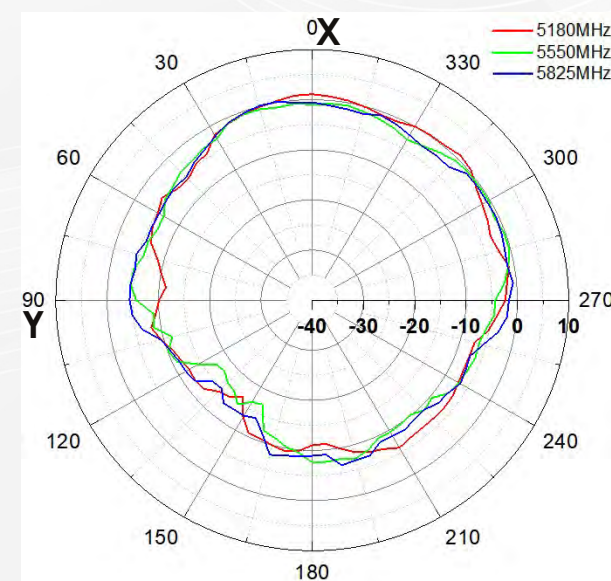
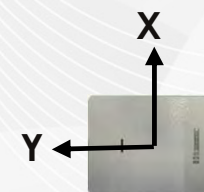
(ARY196-0336-046-00) DB ANT 2
5G Band



Max Gain (dB): 10
Scale: 5dB/Div



Max Gain (dB): 10
Scale: 5dB/Div

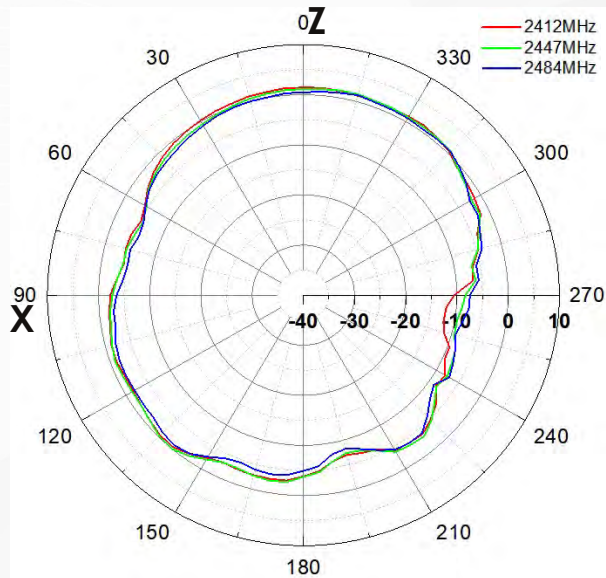
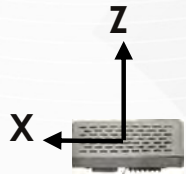
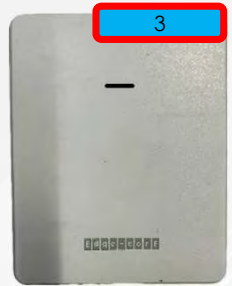


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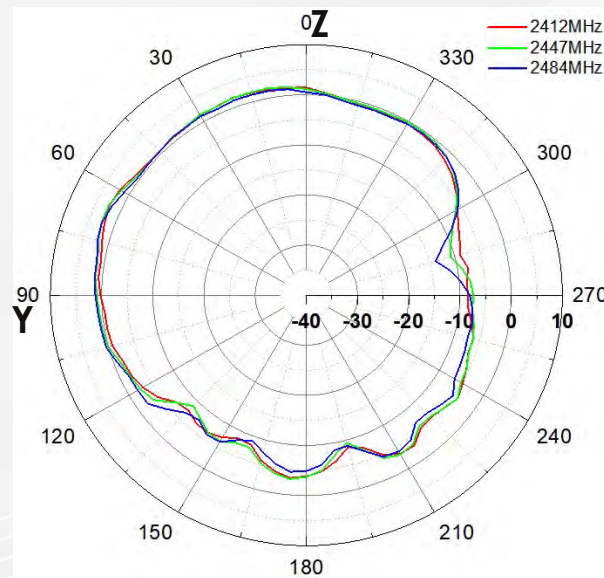
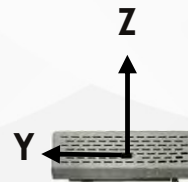
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Scale: 5dB/Div

2D Radiation Pattern Measurement

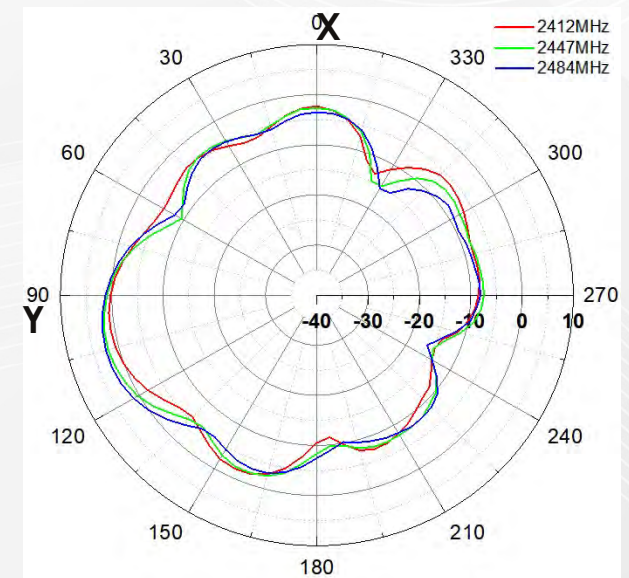
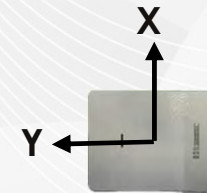
(ARY196-0336-047-00) BLE ANT 3



Max Gain (dB): 10
Scale: 5dB/Div



Max Gain (dB): 10
Scale: 5dB/Div



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Max Gain (dB): 10
Scale: 5dB/Div