



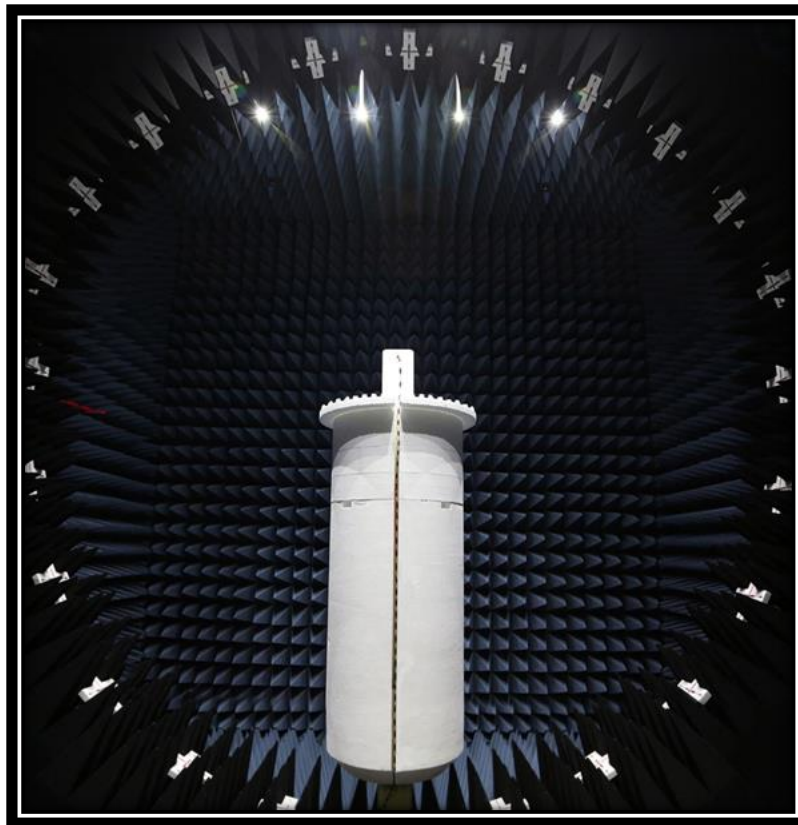
element

Kymeta Corp.

Skeletor

Antenna Pattern Measurements

Report: KYME0080.0 Rev. 2, Issue Date: June 30, 2023



Approved by:

Eric Brandon, Department Manager

This report must not be used to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government. This Report shall not be reproduced, except in full without written approval of the laboratory.

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Added antenna information to the product description page.	6-15-2023	5
02	Updated photos on the product description page	6-30-2023	5

ACCREDITATIONS AND AUTHORIZATIONS



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

[California](#)

[Minnesota](#)

[Oregon](#)

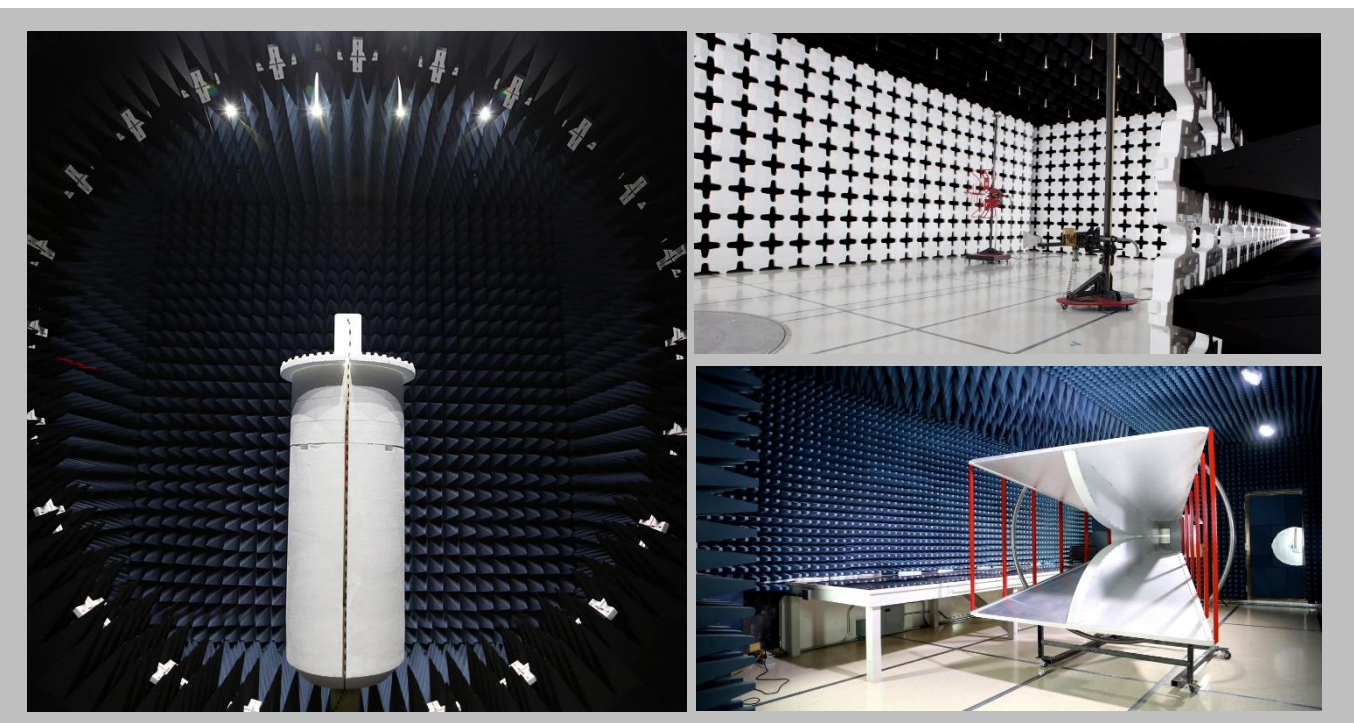
[Texas](#)

[Washington](#)

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Kymeta Corp.
Address:	12034 134 th Court NE, Suite 102
City, State, Zip:	Redmond, WA 98052
Test Requested By:	Dean Busch
EUT:	Skeletor
First Date of Test:	April 28, 2020
Last Date of Test:	April 28, 2020
Receipt Date of Samples:	April 28, 2020
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

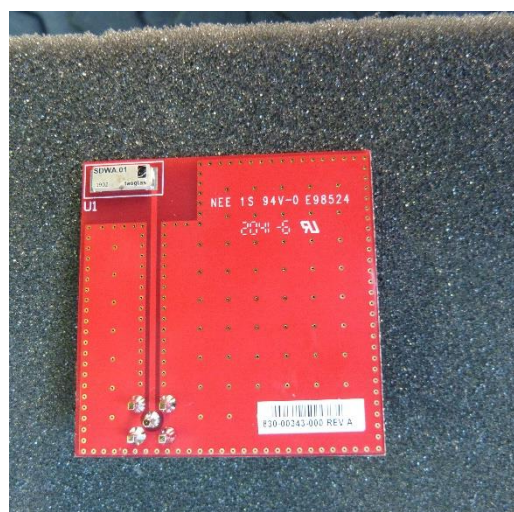
Information Provided by the Party Requesting the Test

Functional Description of the EUT:
WiFi Module
Testing Objective:
To obtain polar plot measurements

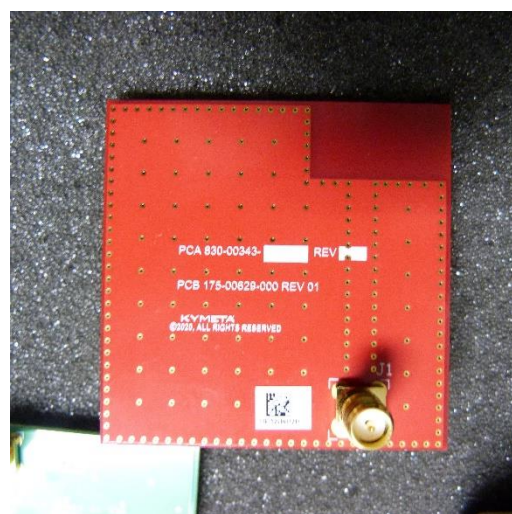
ANTENNA INFORMATION

Manufacturer	Type	Model	Serial Number
ethertronics	Dual-Band 2.4/5GHz Wi-Fi Ceramic SMD Antenna	SDWA.01	11819201017247

FRONT



BACK



MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-04-28	Polar Plots	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POLAR PLOTS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

WiFi antenna #1: 2400, 2450, 2500, 5150, 5500, 5850 MHz

WiFi antenna #3: 2400, 2450, 2500, 5150, 5500, 5850 MHz

CONFIGURATIONS INVESTIGATED

KYME0041 - 1

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2020-02-25	24 mo
Generator - Signal	Agilent	N5183A	TID	2019-04-24	24 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2019-11-18	12 mo
Antenna - Double Ridge	EMCO	3115	AHC	2018-07-02	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	2019-12-13	12 mo

TEST DESCRIPTION

Measurements were performed in a semi-anechoic chamber at a 3 m distance. To simulate free space, the ground plane was covered with RF absorbing cones. The reference antenna and EUT were placed on a block of 1.8 m low permittivity foam.

A signal generator was connected to the reference antenna with a low loss RF cable. To minimize the influence of the RF cable in the radiating pattern, the cable was lined with snap on ferrites at a separating distance of 10 cm.

A CW tone was then provided to the reference antenna and reference scan was then collected at the frequencies noted in this test report.

Using the same test setup, the AUT was placed into the chamber. If an RF patch cable was provided by the manufacturer an additional offset factored into the final value.

A polar plot was then collected at the antenna height of maximum field strength. This plot was then compared to the reference antenna scan. Using the antenna gain (dBi) of the reference antenna the absolute gain of the AUT was calculated.

SUMMARY OF RESULTS:

WiFi Antenna #1									
AUT Elevation (deg)	Pk Gain (dBi)			Avg Gain (dBi)			3 dB BW (deg)		
	-15	0	15	-15	0	15	-15	0	15
F (MHz)									
2400	1.79	1.59	2.39	-5.1	-4.98	-4.44	32	39	15
2450	0.84	1.24	1.44	-5.09	-4.47	-4.37	40	53	40
2500	1.28	1.88	1.78	-5.35	-4.07	-3.89	60	37	19
5150	0.96	2.86	0.56	-6.56	-6.37	-7.27	50	9	37
5500	1.53	1.93	0.73	-7.14	-7.09	-6.51	26	10	37
5850	1.43	2.53	0.83	-6.82	-9.02	-7.75	21	9	28

WiFi Antenna #3									
AUT Elevation (deg)	Pk Gain (dBi)			Avg Gain (dBi)			3 dB BW (deg)		
	-15	0	15	-15	0	15	-15	0	15
F (MHz)									
2400	N/A	2.09	N/A	N/A	-4.03	N/A	N/A	15	N/A
2450		2.44			-4.32			23	
2500		3.18			-4.72			21	
5150		1.36			-6.86			10	
5500		3.03			-7.4			7	
5850		1.93			-8.9			9	

POLAR PLOTS

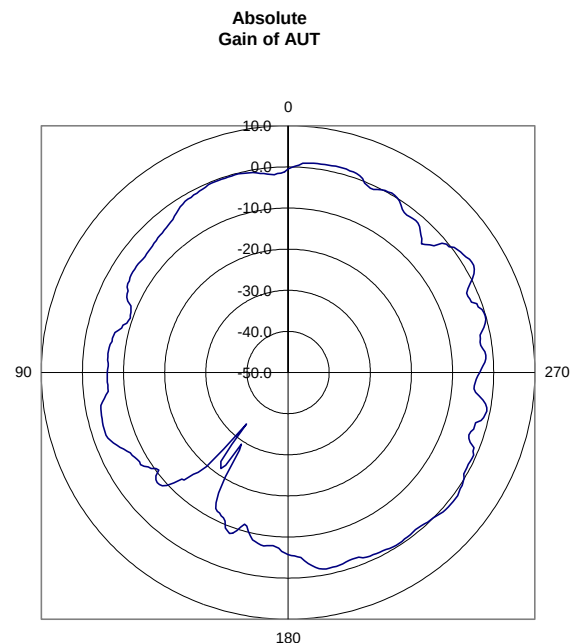
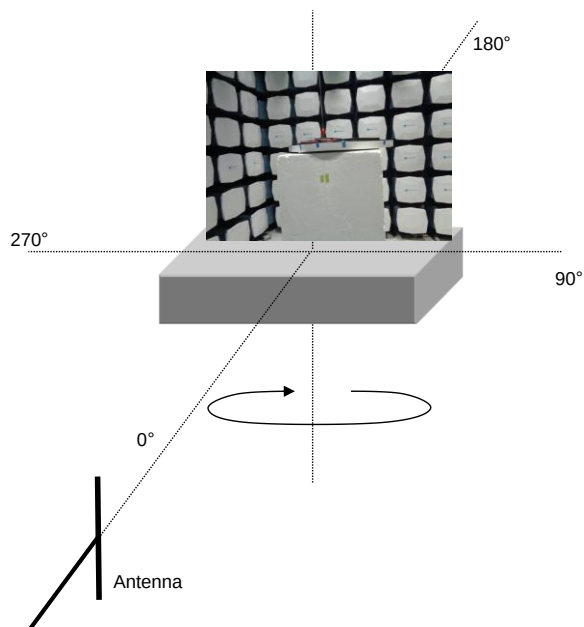


EmiR5 2020.04.20.0

PSA-ESCI 2020.04.03.0

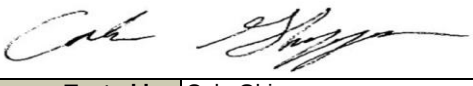
Work Order:	KYME0041	Date:	2020-04-28		
Project:	None	Temperature:	22.5 °C		
Job Site:	EV01	Humidity:	41.8% RH		
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	Tested by:	Cole Ghizzone
EUT:	Antenna				
Configuration:	1				
Customer:	Kymeta Corp.				
Attendees:	Tom Shafer				
EUT Power:	N/A				
Operating Mode:	2400MHz, Wifi #3				
Deviations:	None				
Comments:	X-Y, 2.A.1, Wifi #3				

Frequency	2400	Absolute Gain of Reference Antenna (dBi)	10.19
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.87
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.77
Maximum Absolute Gain of AUT (dBi)	2.09	Difference (Reference Antenna - AUT) (dB)	8.10
Average Absolute Gain of AUT (dBi)	-4.03	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.68
3 dB Beamwidth	15°		

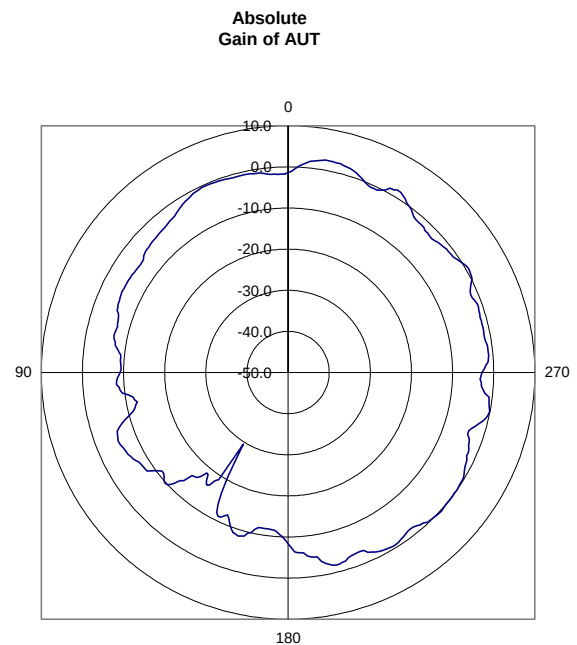
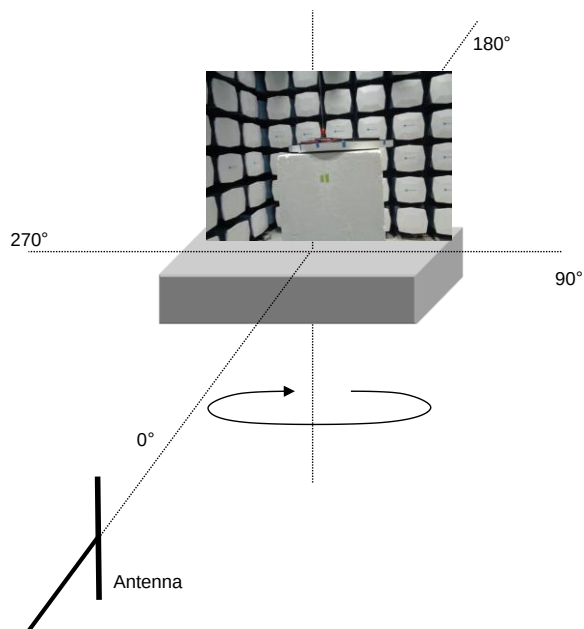


POLAR PLOTS



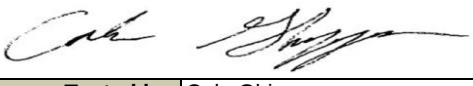
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2450MHz, Wifi #3			
Deviations:	None			
Comments:	X-Y, 2.A.2, Wifi #3			

Frequency	2450	Absolute Gain of Reference Antenna (dBi)	10.24
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.90
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	102.10
Maximum Absolute Gain of AUT (dBi)	2.44	Difference (Reference Antenna - AUT) (dB)	7.80
Average Absolute Gain of AUT (dBi)	-4.32	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.66
3 dB Beamwidth	23°		

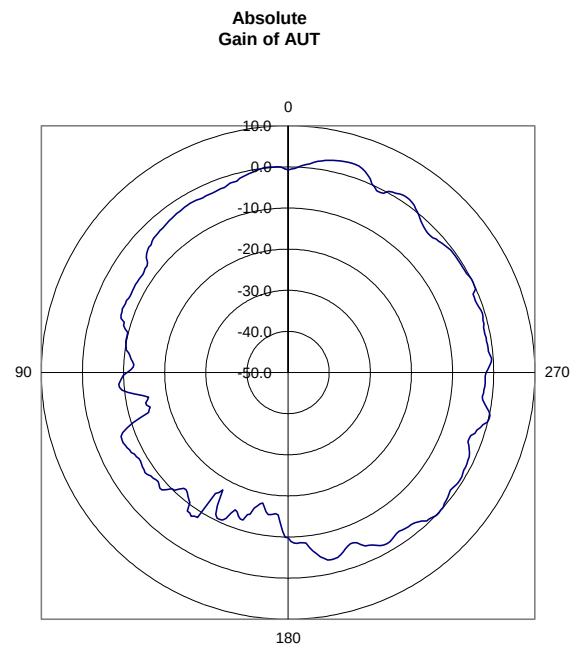
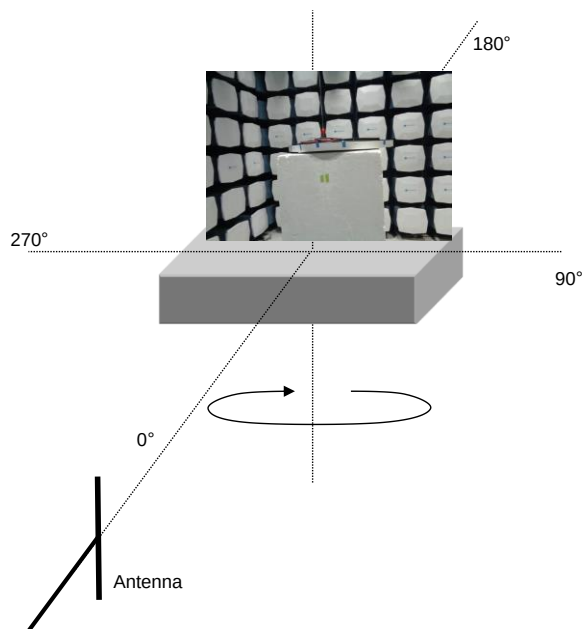


POLAR PLOTS



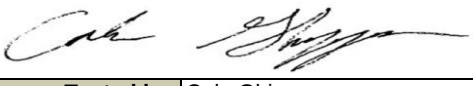
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2500MHz, Wifi #3			
Deviations:	None			
Comments:	X-Y, 2.A.3, Wifi #3			

Frequency	2500	Absolute Gain of Reference Antenna (dBi)	10.28
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.60
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	102.50
Maximum Absolute Gain of AUT (dBi)	3.18	Difference (Reference Antenna - AUT) (dB)	7.10
Average Absolute Gain of AUT (dBi)	-4.72	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.32
3 dB Beamwidth	21°		

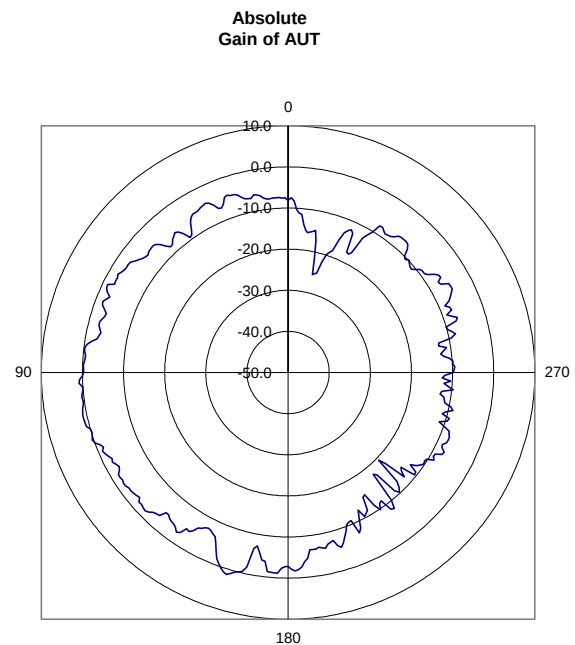
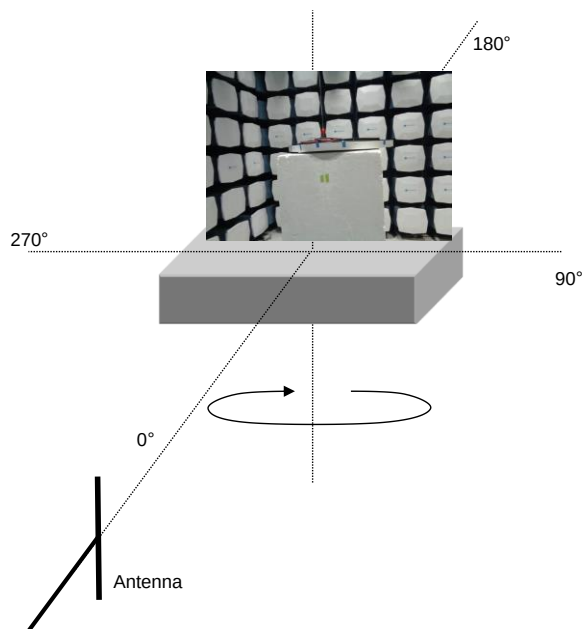


POLAR PLOTS



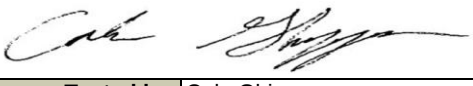
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5150MHz, Wifi #3			
Deviations:	None			
Comments:	X-Y, 2.A.4, Wifi #3			

Frequency	5150	Absolute Gain of Reference Antenna (dBi)	11.66
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	110.20
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.90
Maximum Absolute Gain of AUT (dBi)	1.36	Difference (Reference Antenna - AUT) (dB)	10.30
Average Absolute Gain of AUT (dBi)	-6.86	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.54
3 dB Beamwidth	10°		

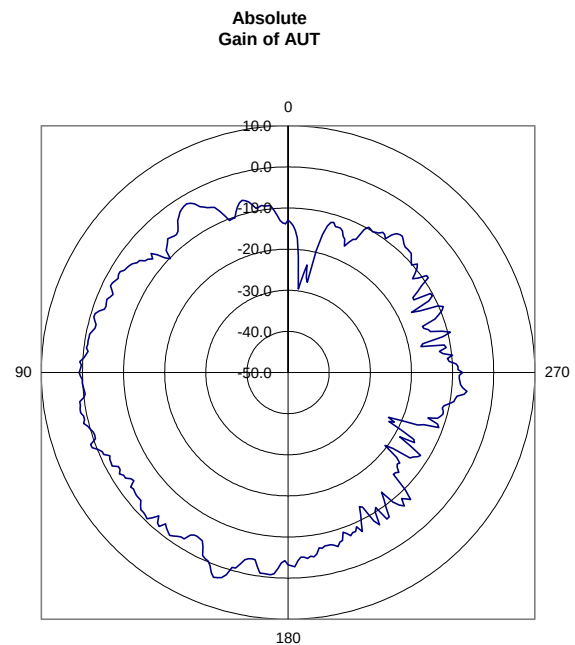
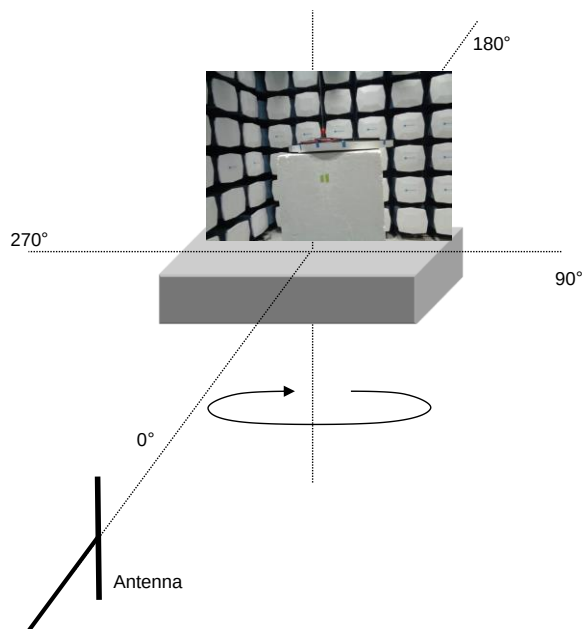


POLAR PLOTS



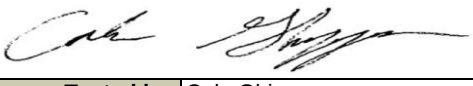
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5500MHz, Wifi #3			
Deviations:	None			
Comments:	X-Y, 2.A.5, Wifi #3			

Frequency	5500	Absolute Gain of Reference Antenna (dBi)	11.23
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	108.73
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.53
Maximum Absolute Gain of AUT (dBi)	3.03	Difference (Reference Antenna - AUT) (dB)	8.20
Average Absolute Gain of AUT (dBi)	-7.40	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	97.50
3 dB Beamwidth	7°		

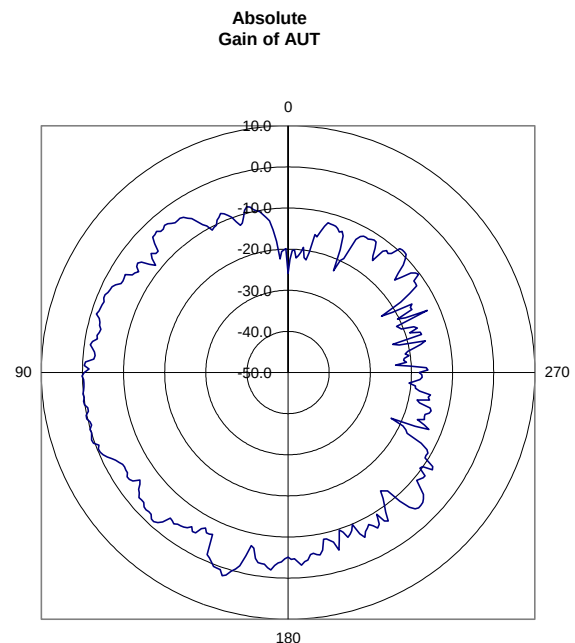
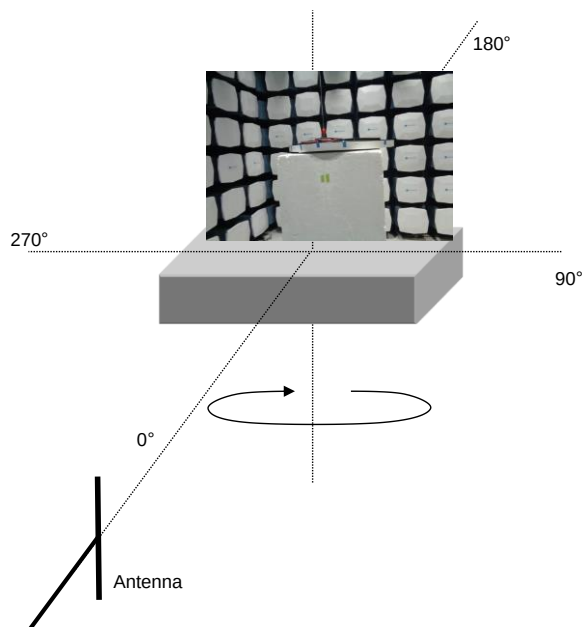


POLAR PLOTS



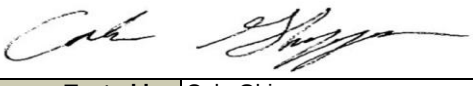
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5850MHz, Wifi #3			
Deviations:	None			
Comments:	X-Y, 2.A.6, Wifi #3			

Frequency	5850	Absolute Gain of Reference Antenna (dBi)	11.03
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.43
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.33
Maximum Absolute Gain of AUT (dBi)	1.93	Difference (Reference Antenna - AUT) (dB)	9.10
Average Absolute Gain of AUT (dBi)	-8.90	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.40
3 dB Beamwidth	9°		

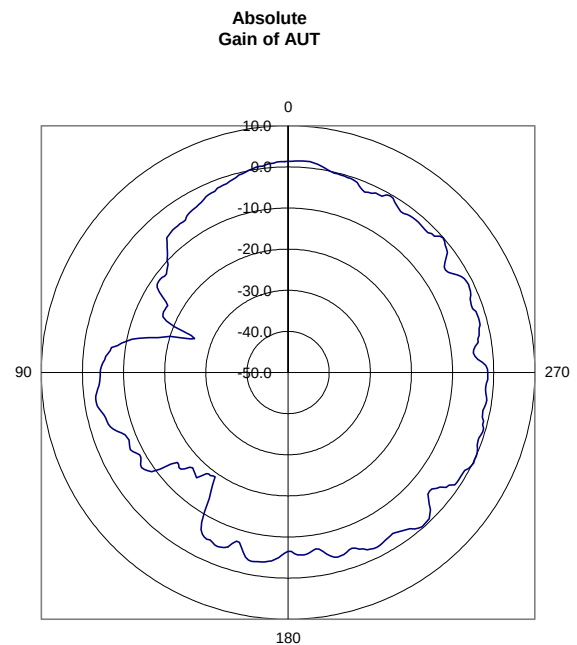
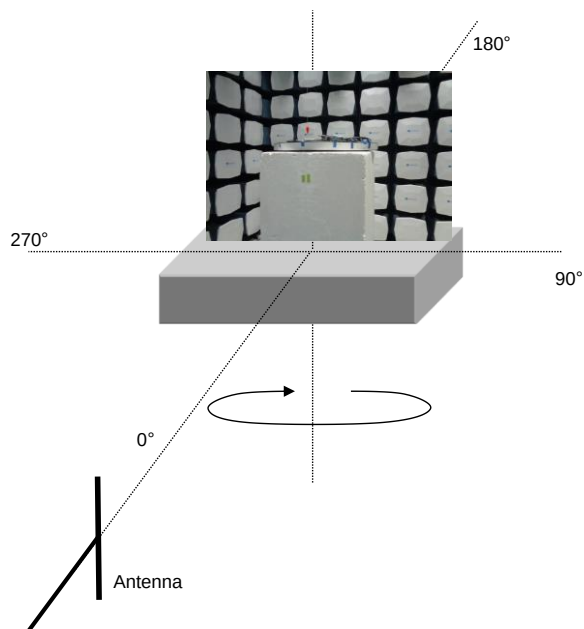


POLAR PLOTS



Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
Tested by: Cole Ghizzone				
EUT:	Antenna			
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2400MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 2.A.1, Wifi #1			

Frequency	2400	Absolute Gain of Reference Antenna (dBi)	10.19
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.87
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.27
Maximum Absolute Gain of AUT (dBi)	1.59	Difference (Reference Antenna - AUT) (dB)	8.60
Average Absolute Gain of AUT (dBi)	-4.98	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.68
3 dB Beamwidth	39°		



POLAR PLOTS

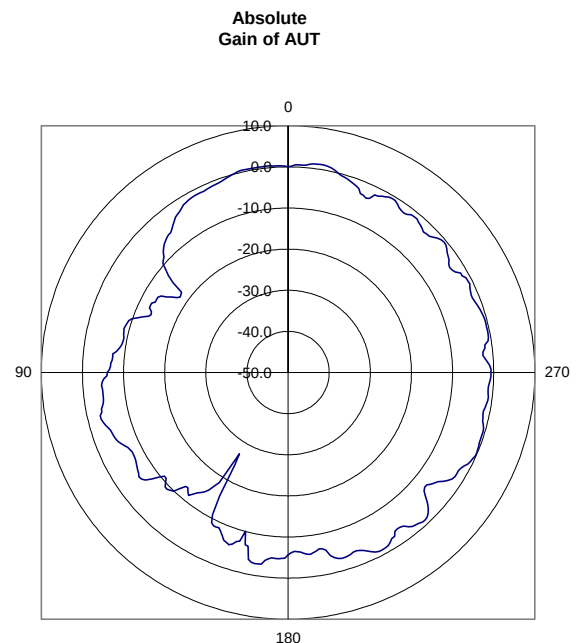
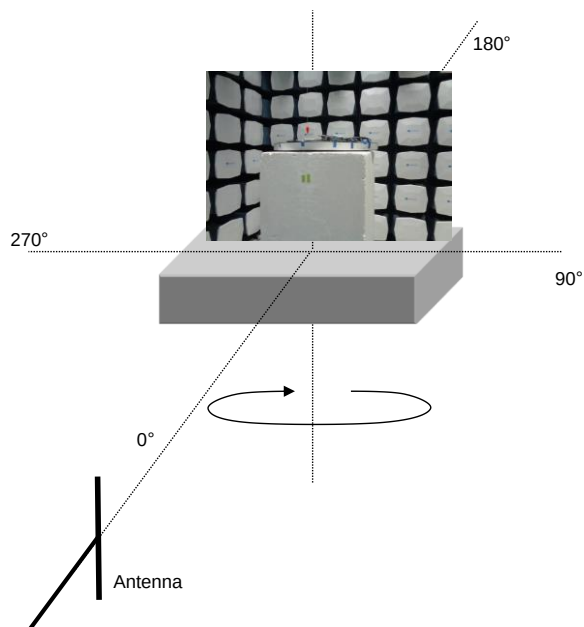


EmiR5 2020.04.20.0

PSA-ESCI 2020.04.03.0

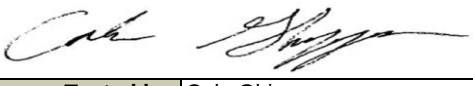
Work Order:	KYME0041	Date:	2020-04-28		
Project:	None	Temperature:	22.6 °C		
Job Site:	EV01	Humidity:	42.3% RH		
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	Tested by:	Cole Ghizzone
EUT:	Antenna				
Configuration:	1				
Customer:	Kymeta Corp.				
Attendees:	Tom Shafer				
EUT Power:	N/A				
Operating Mode:	2450MHz, Wifi #1				
Deviations:	None				
Comments:	X-Y, 2.A.2, Wifi #1				

Frequency	2450	Absolute Gain of Reference Antenna (dBi)	10.24
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.90
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.90
Maximum Absolute Gain of AUT (dBi)	1.24	Difference (Reference Antenna - AUT) (dB)	9.00
Average Absolute Gain of AUT (dBi)	-4.47	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.66
3 dB Beamwidth	53°		

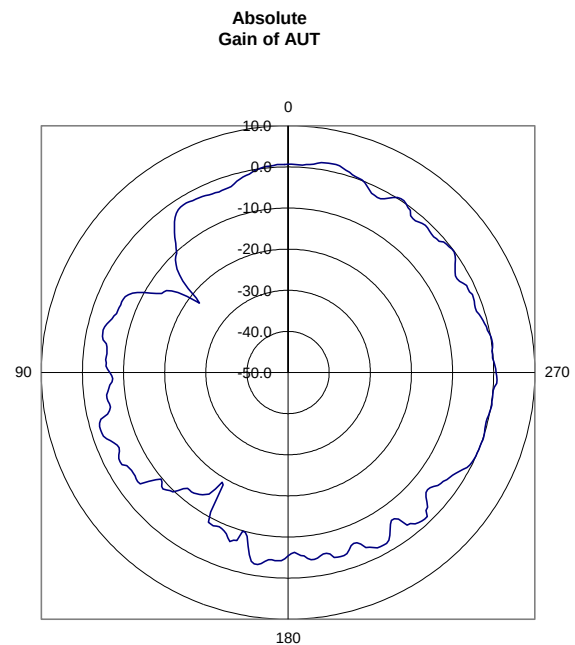
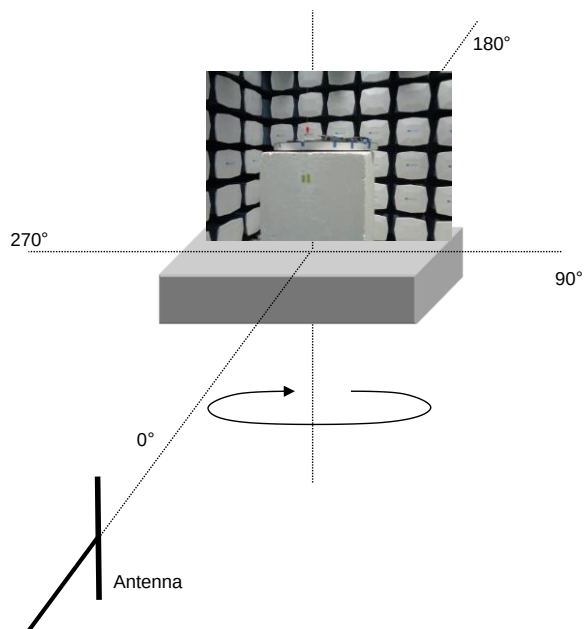


POLAR PLOTS



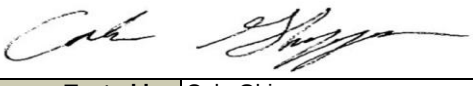
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2500MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 2.A.3, Wifi #1			

Frequency	2500	Absolute Gain of Reference Antenna (dBi)	10.28
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.60
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.20
Maximum Absolute Gain of AUT (dBi)	1.88	Difference (Reference Antenna - AUT) (dB)	8.40
Average Absolute Gain of AUT (dBi)	-4.07	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.32
3 dB Beamwidth	37°		

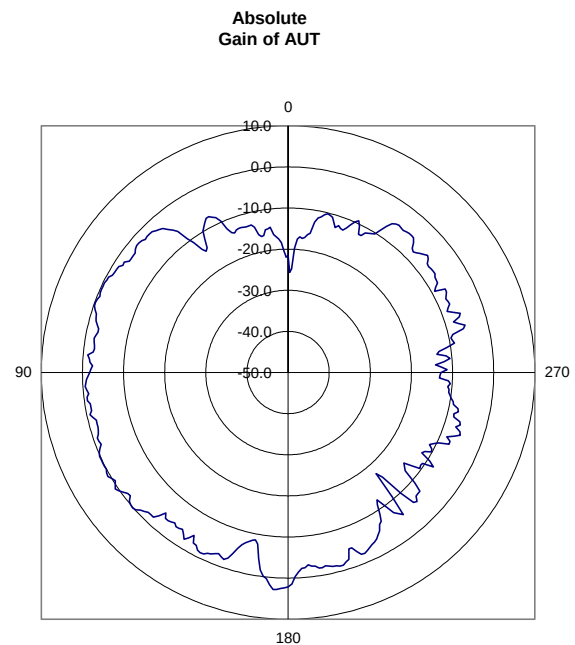
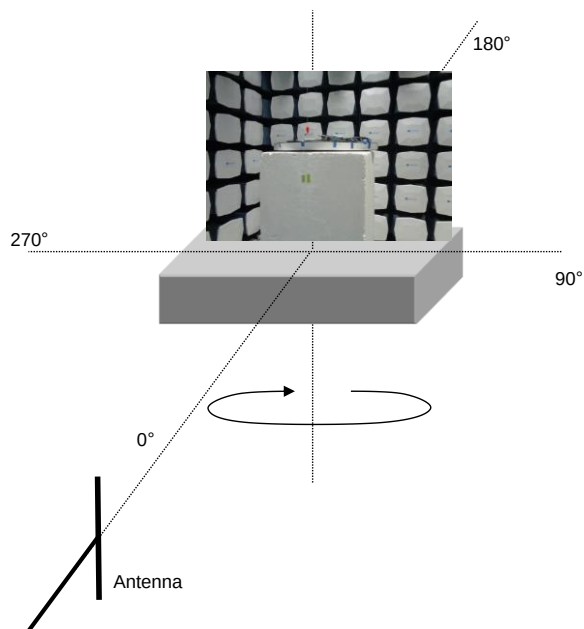


POLAR PLOTS



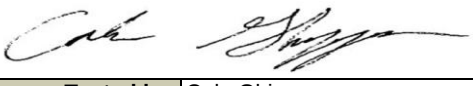
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5150MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 2.A.4, Wifi #1			

Frequency	5150	Absolute Gain of Reference Antenna (dBi)	11.66
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	110.20
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.40
Maximum Absolute Gain of AUT (dBi)	2.86	Difference (Reference Antenna - AUT) (dB)	8.80
Average Absolute Gain of AUT (dBi)	-6.37	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.54
3 dB Beamwidth	9°		

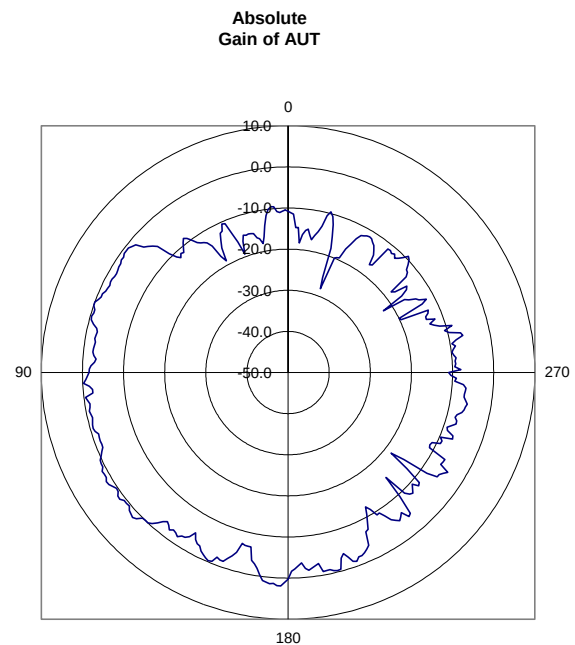
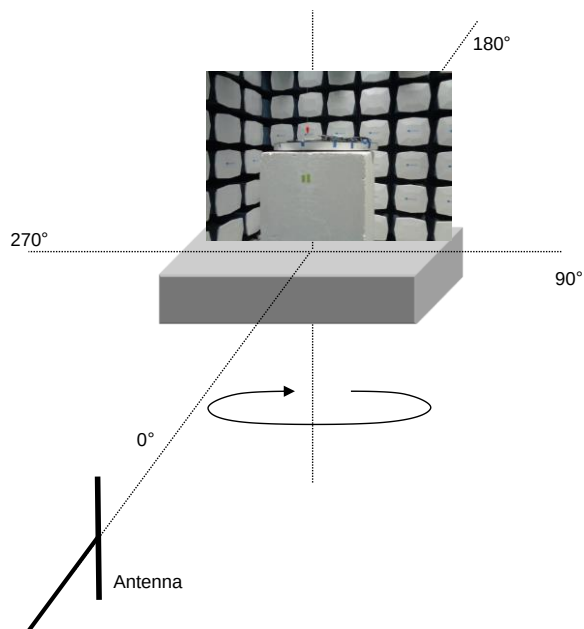


POLAR PLOTS



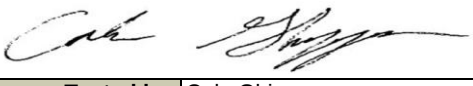
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5500MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 2.A.5, Wifi #1			

Frequency	5500	Absolute Gain of Reference Antenna (dBi)	11.23
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	108.73
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.43
Maximum Absolute Gain of AUT (dBi)	1.93	Difference (Reference Antenna - AUT) (dB)	9.30
Average Absolute Gain of AUT (dBi)	-7.09	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	97.50
3 dB Beamwidth	10°		

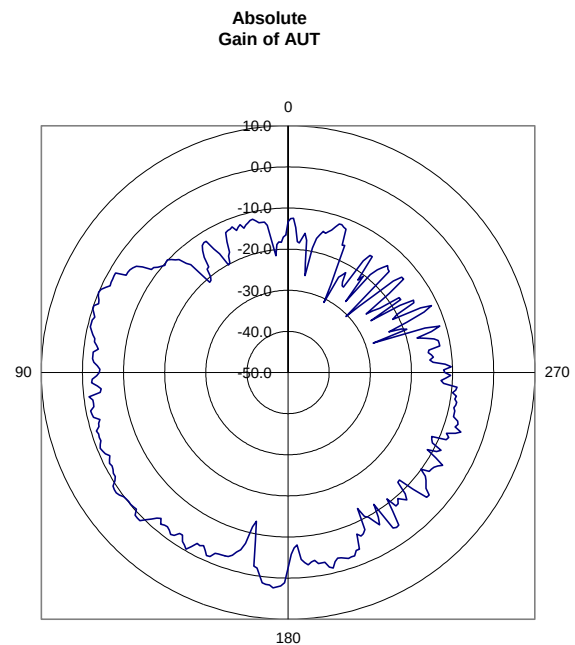
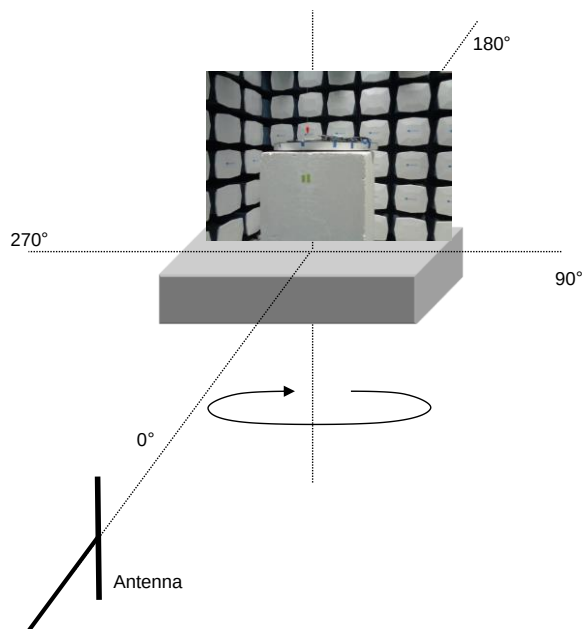


POLAR PLOTS



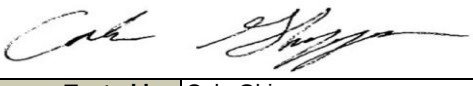
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5850MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 2.A.6, Wifi #1			

Frequency	5850	Absolute Gain of Reference Antenna (dBi)	11.03
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.43
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.93
Maximum Absolute Gain of AUT (dBi)	2.53	Difference (Reference Antenna - AUT) (dB)	8.50
Average Absolute Gain of AUT (dBi)	-9.02	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.40
3 dB Beamwidth	9°		

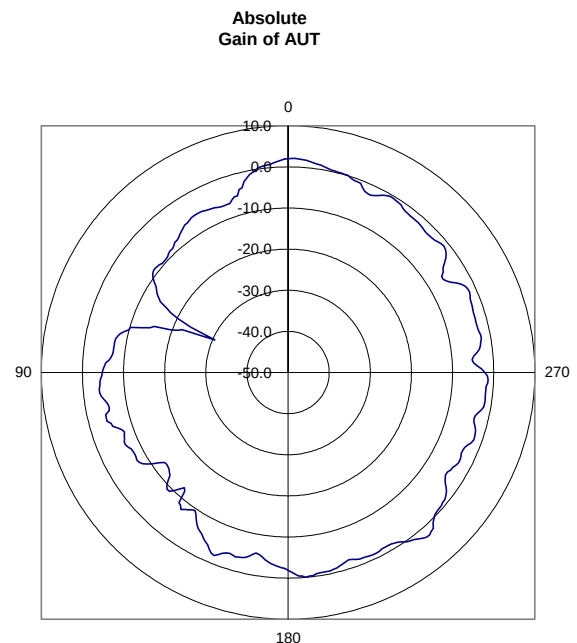
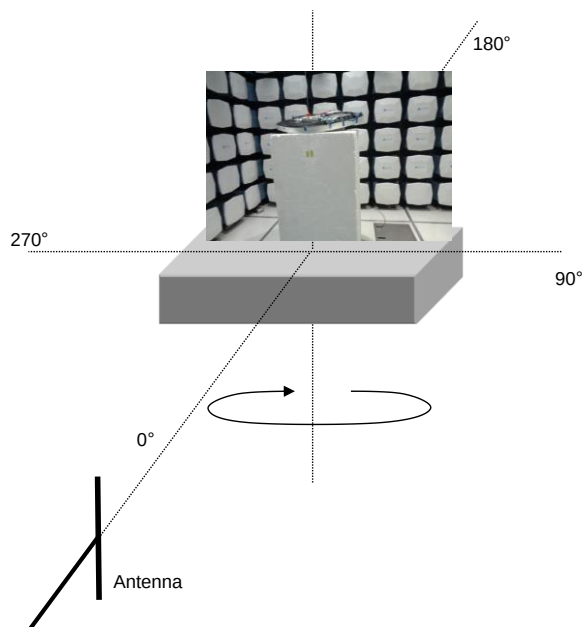


POLAR PLOTS



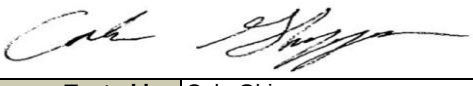
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2400MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	2400	Absolute Gain of Reference Antenna (dBi)	10.19
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.87
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	102.07
Maximum Absolute Gain of AUT (dBi)	2.39	Difference (Reference Antenna - AUT) (dB)	7.80
Average Absolute Gain of AUT (dBi)	-4.44	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.68
3 dB Beamwidth	15°		

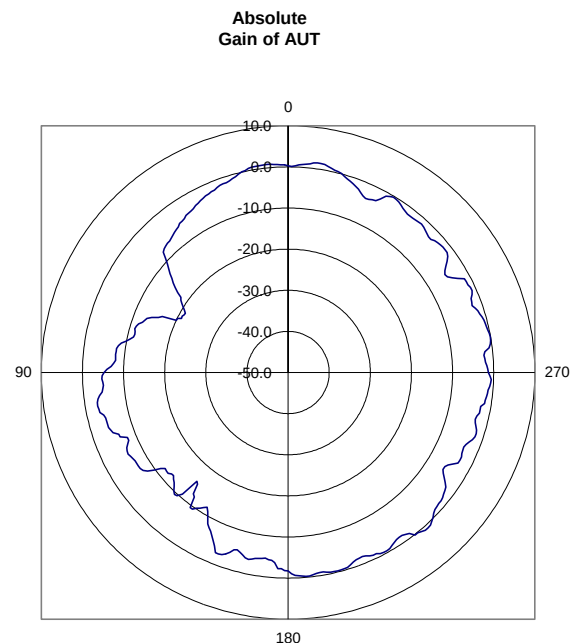
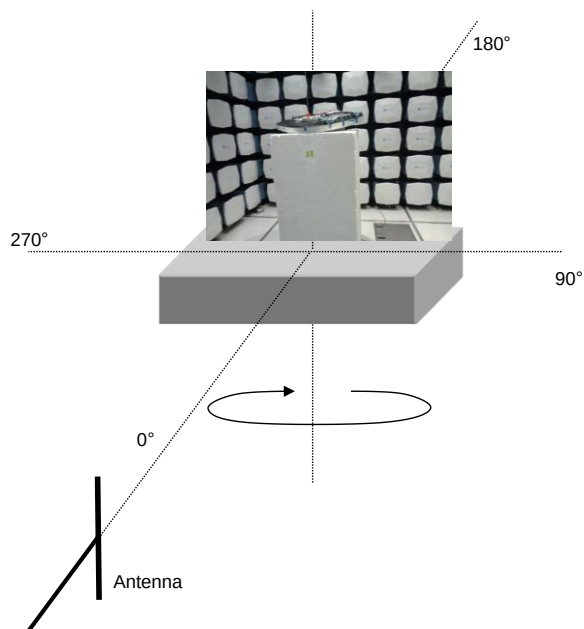


POLAR PLOTS



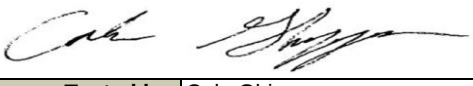
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2450MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	2450	Absolute Gain of Reference Antenna (dBi)	10.24
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.90
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.10
Maximum Absolute Gain of AUT (dBi)	1.44	Difference (Reference Antenna - AUT) (dB)	8.80
Average Absolute Gain of AUT (dBi)	-4.37	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.66
3 dB Beamwidth	40°		

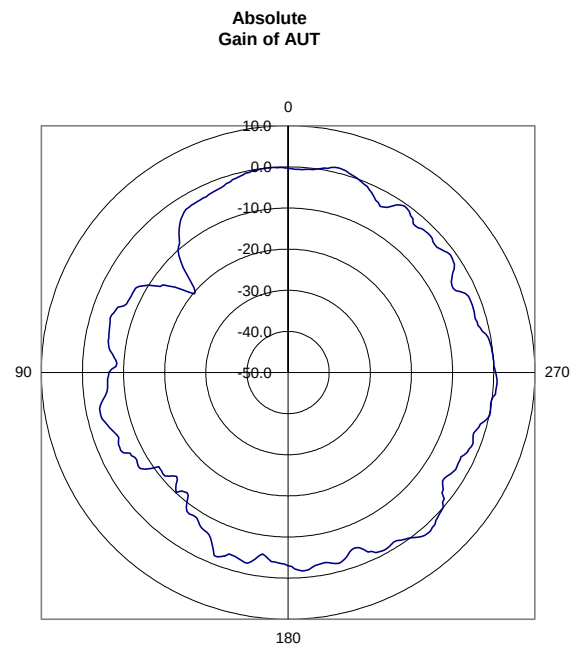
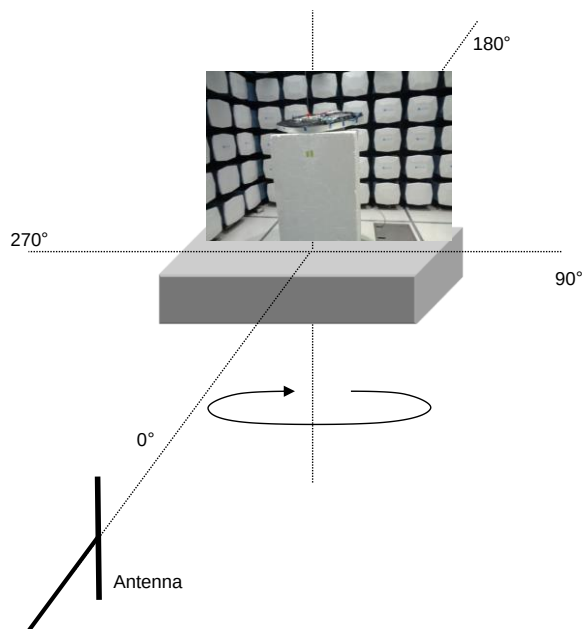


POLAR PLOTS



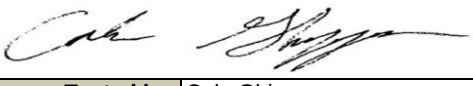
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2500MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	2500	Absolute Gain of Reference Antenna (dBi)	10.28
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.60
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.10
Maximum Absolute Gain of AUT (dBi)	1.78	Difference (Reference Antenna - AUT) (dB)	8.50
Average Absolute Gain of AUT (dBi)	-3.89	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.32
3 dB Beamwidth	19°		

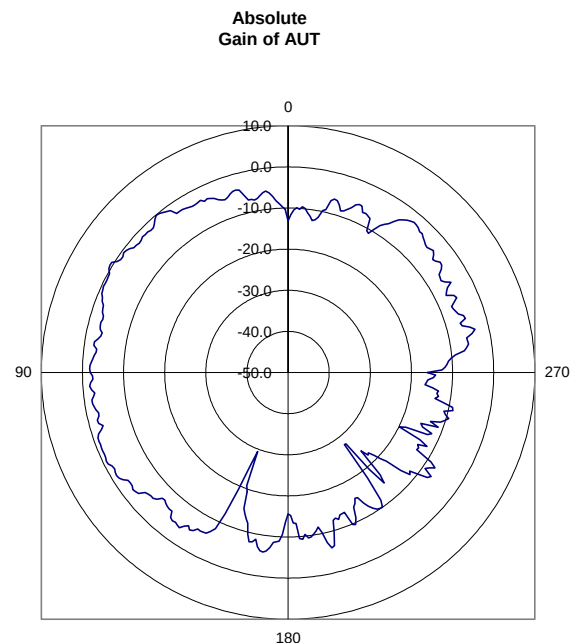
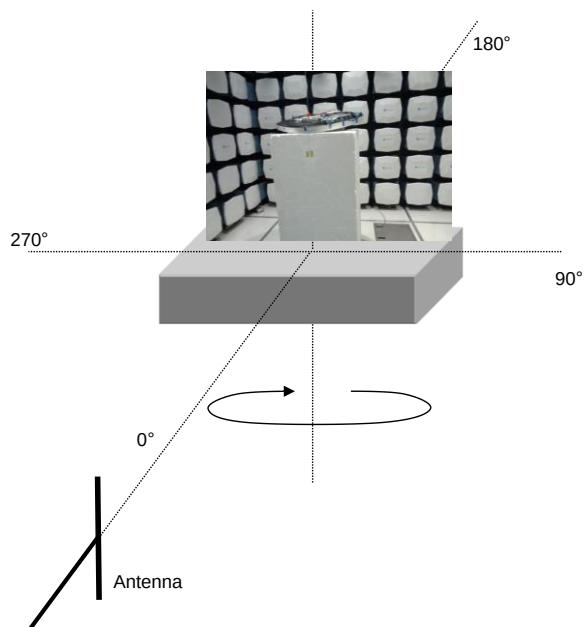


POLAR PLOTS



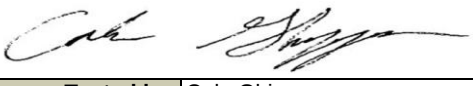
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5150MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	5150	Absolute Gain of Reference Antenna (dBi)	11.66
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	110.20
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.10
Maximum Absolute Gain of AUT (dBi)	0.56	Difference (Reference Antenna - AUT) (dB)	11.10
Average Absolute Gain of AUT (dBi)	-7.24	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.54
3 dB Beamwidth	37°		

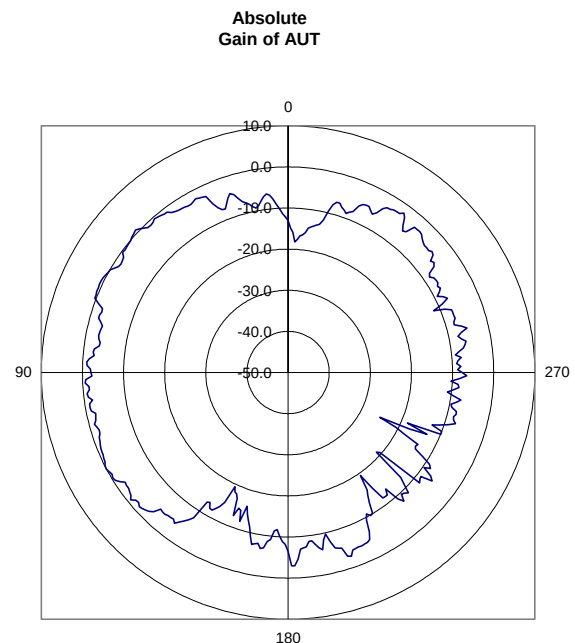
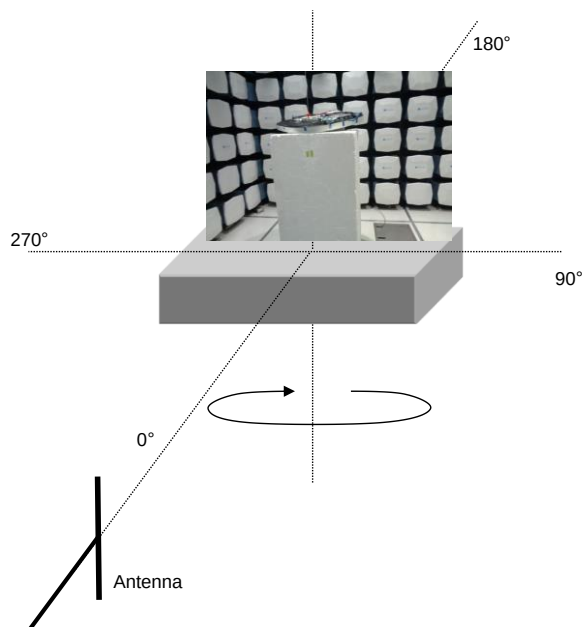


POLAR PLOTS



Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5500MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	5500	Absolute Gain of Reference Antenna (dBi)	11.23
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	108.73
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	98.23
Maximum Absolute Gain of AUT (dBi)	0.73	Difference (Reference Antenna - AUT) (dB)	10.50
Average Absolute Gain of AUT (dBi)	-6.51	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	97.50
3 dB Beamwidth	37°		

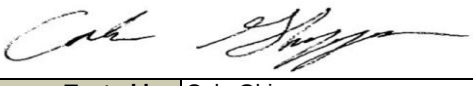


POLAR PLOTS

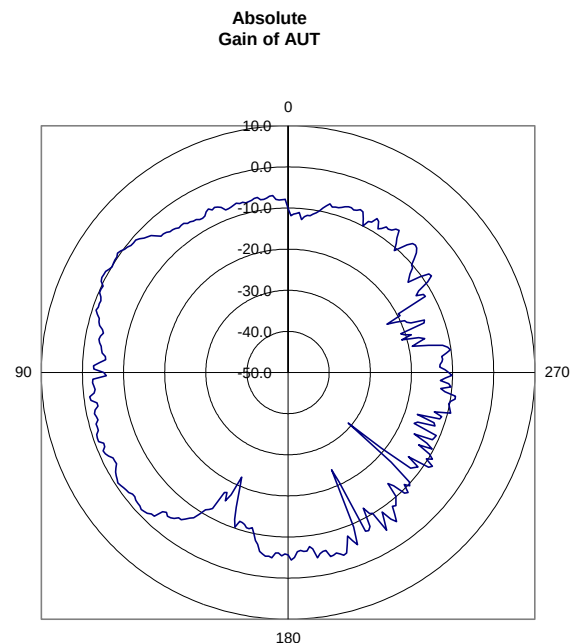
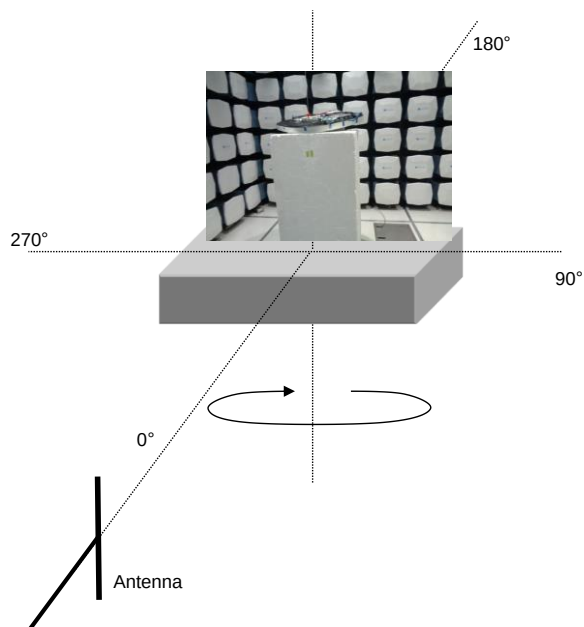


EmiR5 2020.04.20.0

PSA-ESCI 2020.04.03.0

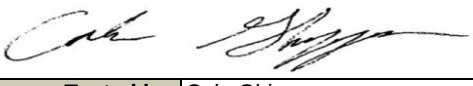
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT:	Antenna			Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5850MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 6.A.1, Wifi #1. AUT Elevation = +15 deg			

Frequency	5850	Absolute Gain of Reference Antenna (dBi)	11.03
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.43
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.23
Maximum Absolute Gain of AUT (dBi)	0.83	Difference (Reference Antenna - AUT) (dB)	10.20
Average Absolute Gain of AUT (dBi)	-7.75	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.40
3 dB Beamwidth	28°		

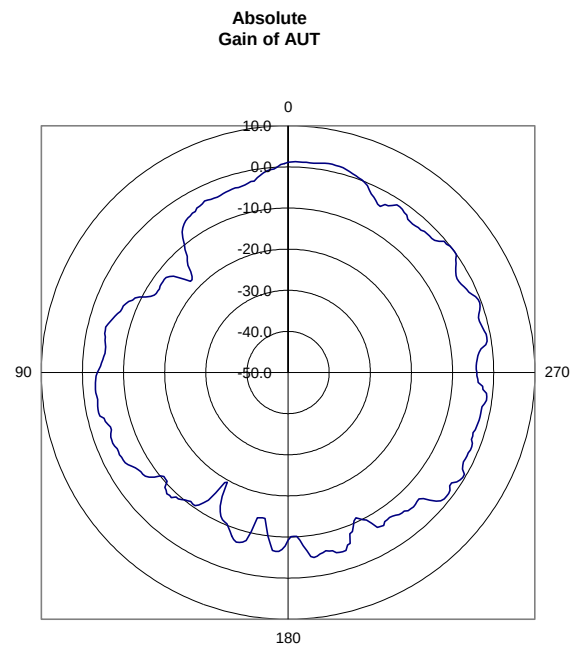
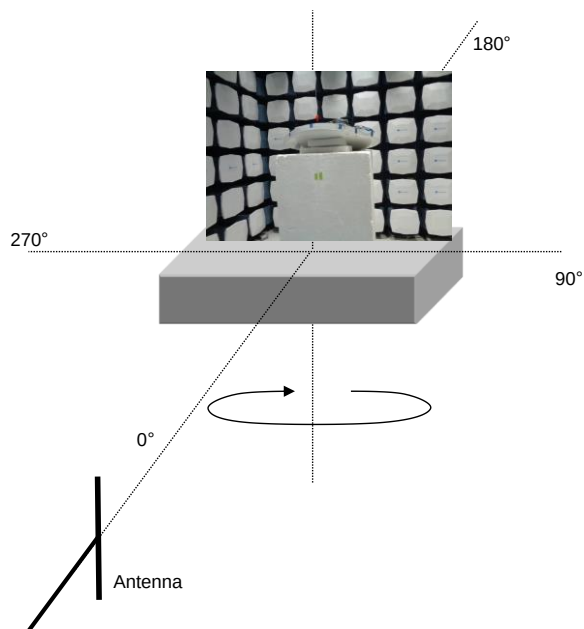


POLAR PLOTS



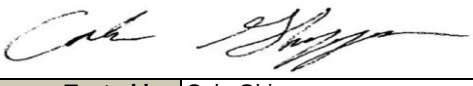
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2400MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg			

Frequency	2400	Absolute Gain of Reference Antenna (dBi)	10.19
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.87
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	101.47
Maximum Absolute Gain of AUT (dBi)	1.79	Difference (Reference Antenna - AUT) (dB)	8.40
Average Absolute Gain of AUT (dBi)	-5.10	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.68
3 dB Beamwidth	32°		

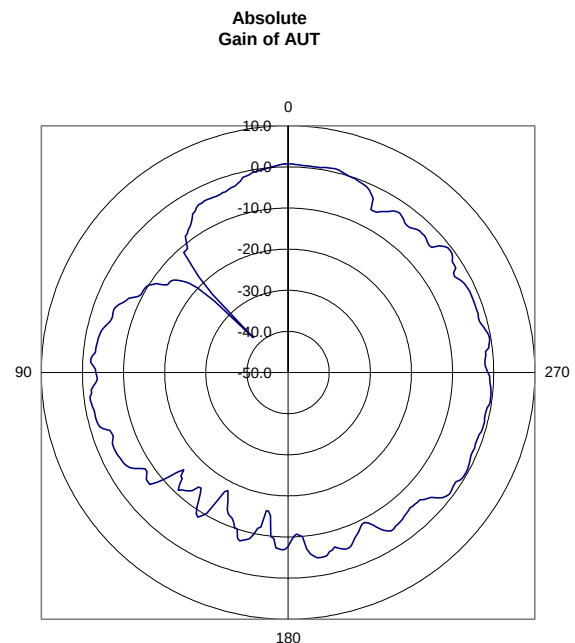
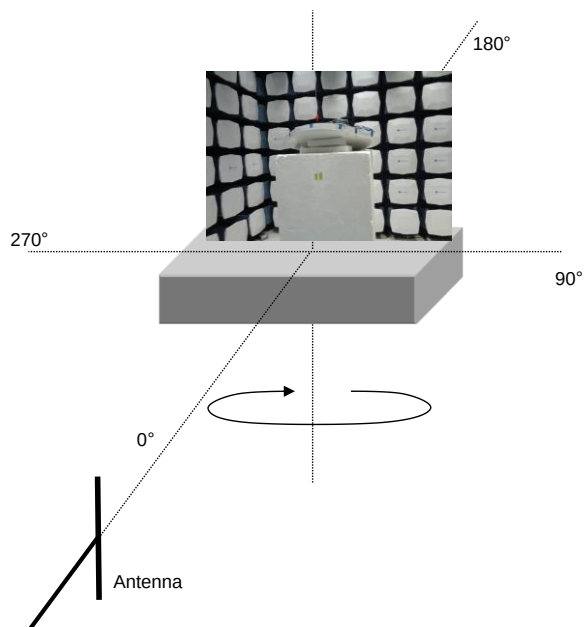


POLAR PLOTS



Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	2450MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg			

Frequency	2450	Absolute Gain of Reference Antenna (dBi)	10.24
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.90
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.50
Maximum Absolute Gain of AUT (dBi)	0.84	Difference (Reference Antenna - AUT) (dB)	9.40
Average Absolute Gain of AUT (dBi)	-5.09	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.66
3 dB Beamwidth	40°		



POLAR PLOTS

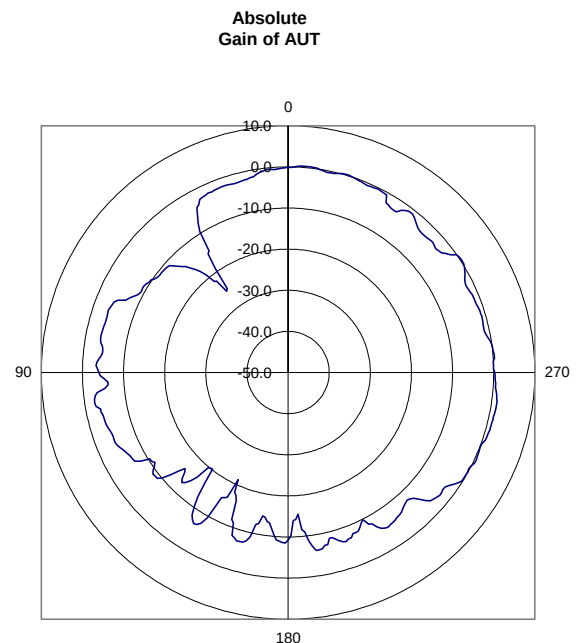
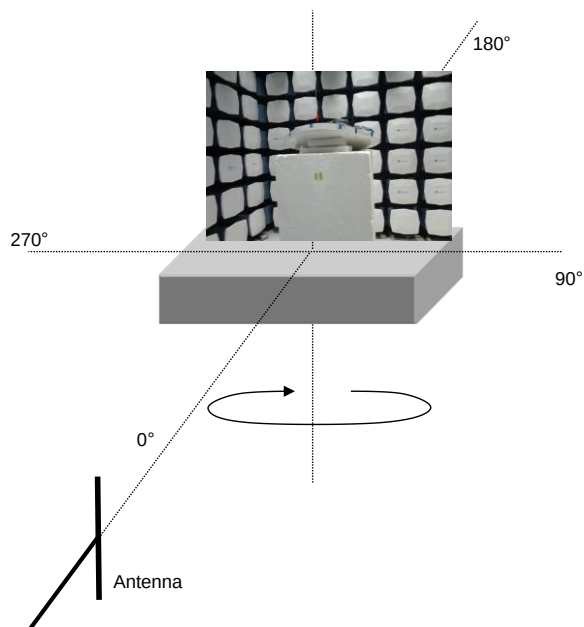


EmiR5 2020.04.20.0

PSA-ESCI 2020.04.03.0

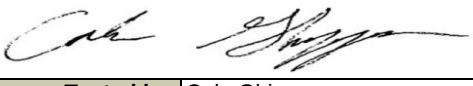
Work Order:	KYME0041	Date:	2020-04-28		
Project:	None	Temperature:	22.6 °C		
Job Site:	EV01	Humidity:	42.3% RH		
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	Tested by:	Cole Ghizzone
EUT:	Antenna				
Configuration:	1				
Customer:	Kymeta Corp.				
Attendees:	Tom Shafer				
EUT Power:	N/A				
Operating Mode:	2500MHz, Wifi #1				
Deviations:	None				
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg				

Frequency	2500	Absolute Gain of Reference Antenna (dBi)	10.28
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.60
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	100.60
Maximum Absolute Gain of AUT (dBi)	1.28	Difference (Reference Antenna - AUT) (dB)	9.00
Average Absolute Gain of AUT (dBi)	-5.35	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	99.32
3 dB Beamwidth	60°		

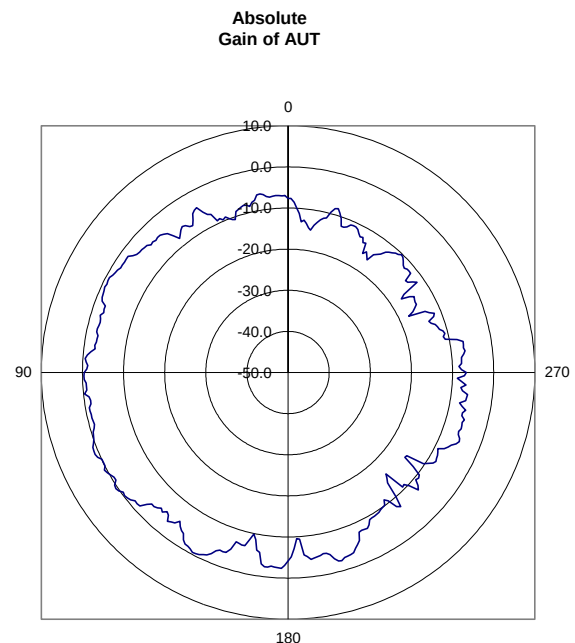
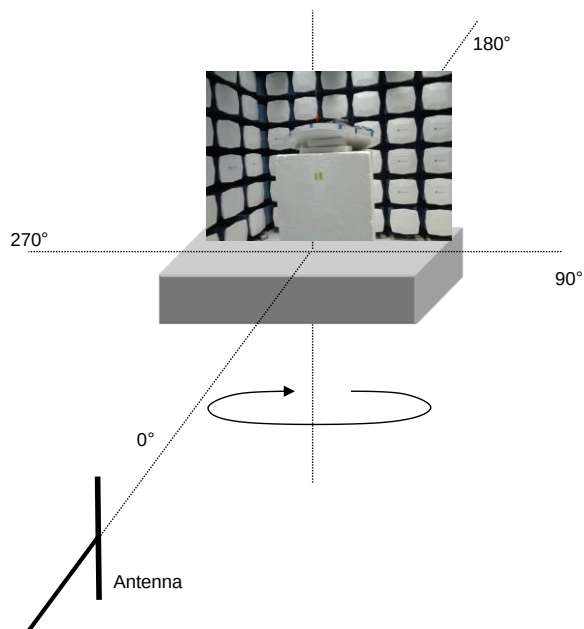


POLAR PLOTS



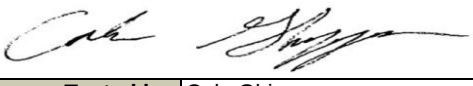
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5150MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg			

Frequency	5150	Absolute Gain of Reference Antenna (dBi)	11.66
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	110.20
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.50
Maximum Absolute Gain of AUT (dBi)	0.96	Difference (Reference Antenna - AUT) (dB)	10.70
Average Absolute Gain of AUT (dBi)	-6.56	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.54
3 dB Beamwidth	50°		

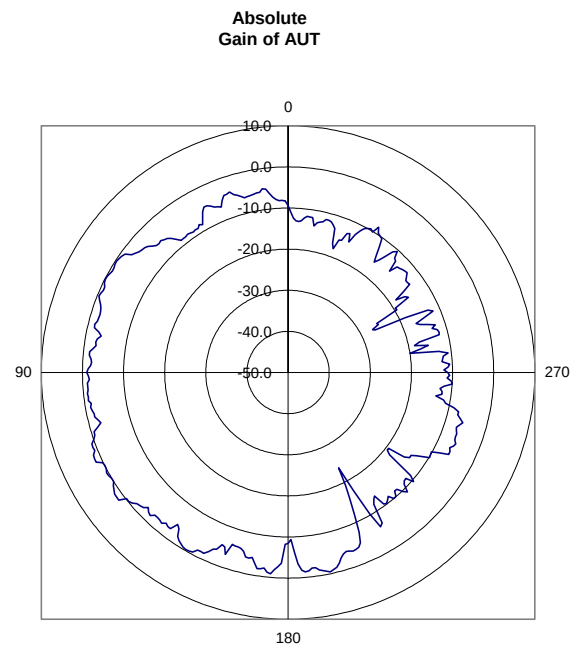
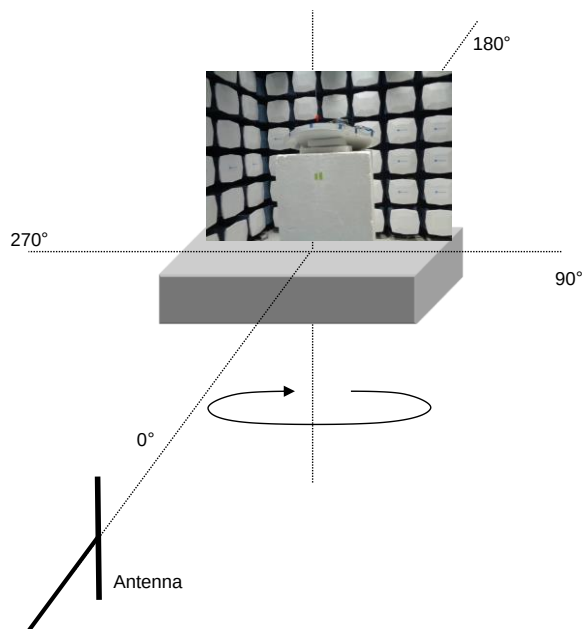


POLAR PLOTS



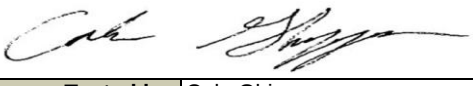
Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5500MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg			

Frequency	5500	Absolute Gain of Reference Antenna (dBi)	11.23
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	108.73
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.03
Maximum Absolute Gain of AUT (dBi)	1.53	Difference (Reference Antenna - AUT) (dB)	9.70
Average Absolute Gain of AUT (dBi)	-7.14	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	97.50
3 dB Beamwidth	26°		

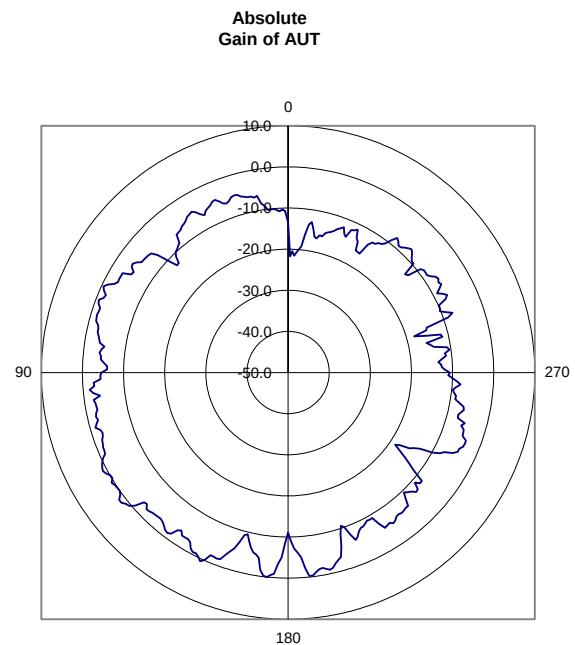
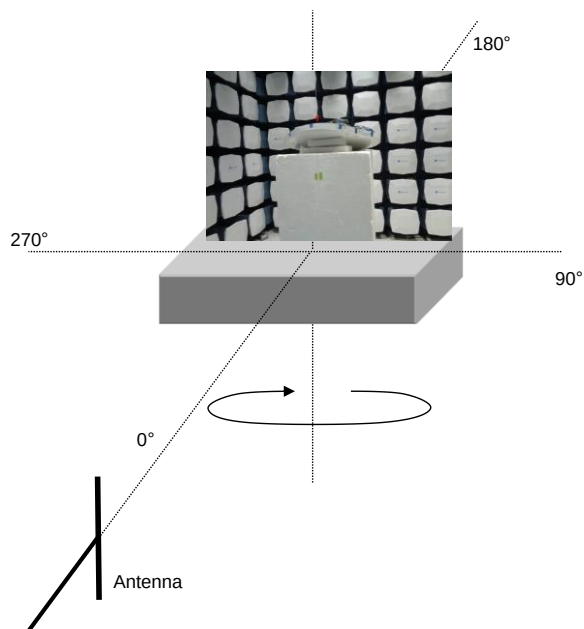


POLAR PLOTS



Work Order:	KYME0041	Date:	2020-04-28	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	Skeletor	Barometric Pres.:	1026 mbar	
EUT: Antenna				Tested by: Cole Ghizzone
Configuration:	1			
Customer:	Kymeta Corp.			
Attendees:	Tom Shafer			
EUT Power:	N/A			
Operating Mode:	5850MHz, Wifi #1			
Deviations:	None			
Comments:	X-Y, 4.A.1, Wifi #1, AUT Elevation = -15 deg			

Frequency	5850	Absolute Gain of Reference Antenna (dBi)	11.03
Measurement Antenna Polarity	Vertical	Reference Antenna Relative Gain Max (dBuV/m)	109.43
Antenna Under Test (AUT) Polarity	Vertical	AUT Relative Gain Max (dBuV/m)	99.83
Maximum Absolute Gain of AUT (dBi)	1.43	Difference (Reference Antenna - AUT) (dB)	9.60
Average Absolute Gain of AUT (dBi)	-6.82	AUT Setup Loss (dB)	0
		Correction Factor (Convert Relative to Absolute Gain) (dB)	98.40
3 dB Beamwidth	21°		



End of Test Report