



SUMMARY PERFORMANCE REPORT

CLIENT / APPLICANT : PALIoT Solutions LLC (Pty) Ltd

CLIENT ADDRESS : 13 Clark St, Shortsville, NY 14548, United States

TEST SAMPLE (AUT) : Falcon IQ 2.0

PART NUMBER : Antenna Test Sample

REPORT TYPE : Antenna Performance Report

REPORT NUMBER : TRP03767-1-26

DATE ISSUED : 10/04/2026

REVISION : 1.0

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DOCUMENT CONTROL

Revision	Date	Author	Change proposal
1.0	10/04/2026	HE Olivier	N/A

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The site and apparatus are constructed in conformance with the requirements of CISPR 16-1-4, EN 50147-1 and other equivalent standards. The laboratory is compliant with the requirements of ISO/IEC 17025.

It is our definite objective to institute long-term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise, and devotion to a certified value structure. Our passion is to grant our clients with the best EMC, RF, Safety & Performance services by knowledgeable and accommodating staff.

Our test site is located at 129 Khai-Appel Street, Montana, Pretoria, South Africa 0186.

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TEST LABORATORY ACCREDITATION CERTIFICATE**CERTIFICATE OF ACCREDITATION**

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

ISERT (PTY) LTD

Co. Reg. No.: 2017/186396/07

Facility Accreditation Number: T0812

is a South African National Accreditation System accredited facility
provided that all conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation,
Annexure "A", bearing the above accreditation number for

EMC, RADIO EQUIPMENT & PERFORMANCE SAFETY TESTING

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a
quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to
use the relevant accreditation symbol to issue facility reports and/or certificates

Ms FS Radebe
Acting Chief Executive Officer

Effective Date: 24 November 2022
Certificate Expires: 23 November 2027



ACRONYMS AND ABBREVIATIONS

AUT	Antenna Under Test
AVE	Average
ARFCN	Absolute Radio Frequency Channel Number
C	Circular
CSE	Conducted Spurious Emissions
CSIR	Council for Scientific and Industrial Research
DCS	Digital Cellular System
E-Fields	Electric Fields
EIRP	Effective isotropic radiated power
ERP	Effective radiated power
EFT	Electrical Fast Transients
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
EUT	Equipment Under Test
FW	Firmware
GPRS	General packet radio service
GSM	Global System for Mobile Communications
HW	Hardware
MS	Mobile Station
NIST	National Institute of Science and Technology
N/A	Not Applicable
NM	Not Measured
OATS	Open Area Test Site
PC	Personal Computer
PK	Peak
Pol	Polarized
QP	Quasi-Peak
RSE	Radiated Spurious Emissions
RED	Radio Equipment Directive
RCSE	Receiver Conducted Spurious Emissions (idle mode)
RMS	Root Mean Square
RRSE	Receiver Radiated Spurious Emissions (idle mode)
RSE	Radiated Spurious Emissions
RF	Radio Frequency
<i>R&TTE</i>	Radio and telecommunications terminal equipment
SANAS	South African National Accreditation System
SRD	Short Range Equipment
TCSE	Transmitted conducted Spurious Emissions (allocated mode)
TRSE	Transmitted Radiated Spurious Emissions (allocated mode)
VH	Voltage High (Maximum)
VL	Voltage Low (minimum)
VN	Voltage Normal
TH	Temperature High (maximum)
TN	Temperature Normal
TL	Temperature Low (Minimum)

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1. PURPOSE

The purpose of this report is to characterize the performance of the PALIoT Solutions LLC Antenna Test Sample Falcon IQ 2.0.

Testing was carried out by HE Olivier on 21/10/2025.

2. REFERENCE STANDARDS

The AUT was partially tested according to the following standards and methods:

- ETSI EN 300 328 V2.2.2 (2019-07): "Wideband Transmission Systems; Data Transmission Equipment operating in the 2.4 GHz Band; Harmonized Standard for Access to Radio Spectrum" clause C.4 "Substitution measurement"

3. SUMMARY OF TEST RESULTS

Table 1: Summary of Peak Gain Results

Test Setup	Frequency (MHz)										
	2402	2410	2416	2424	2434	2442	2450	2458	2466	2474	2480
Peak Gain in free-air (dBi)	0.7	0.9	1.0	0.9	0.6	0.2	0.2	0.0	-0.2	-0.3	-0.1
Peak Gain Inside Wooden Block (dBi)	1.7	1.9	1.8	1.6	1.4	1.2	1.5	1.5	1.2	1.0	1.0

4. EQUIPMENT DESCRIPTION

Table 2: Equipment Under Test Description

Description	Customer declaration
Type of Equipment	Stand-Alone Radio Equipment
Intended Use of Equipment	Portable Outdoor
Operating Frequency Band	2400 MHz to 2483.5 MHz
Antenna Details	PCB Trace Antenna
Enclosure Material	Polycarbonate
Build Status	Pre-Production
Hardware Version	Mk1V0-A

5. MEASURING EQUIPMENT SETUP AND CONFIGURATION

5.1. MEASUREMENT EQUIPMENT

Table 3: Calibration Information of Measurement Equipment

Instrument	Manufacturer	Model	Serial number	Next Cal date
Signal Analyzer	Agilent	EXA N9010A	MY48030451	May 2026
Swept Signal Generator	Agilent	83620B	3844A01375	July 2026
Horn antenna	SZ	D1000A	00006	February 2027
Horn antenna	SZ	D1000A	2023.08001	February 2027
Pre-Amplifier	Adv Microwave	WLA652A	IS0012	April 2026
Coaxial Cable	Mini Circuits	CBL-15FT-NMNM+	46607	September 2026
Coaxial Cable	Mini-Circuits	CBL-2M-SMNM+	47712	November 2026
Coaxial Cable	Mini Circuits	CBL-2M-SMNM+	47710	November 2026
Coaxial Cable	Mini Circuits	CBL-0.5M-SMNM+	68920	November 2026
Coaxial Cable	Mini Circuits	CBL-15FT-NMNM+	52580	November 2026
Multimeter	Fluke	179	40850243	October 2026
Linear DC Power supply	Rigol	DP832A	DP8B244502934	February 2027
Temperature Hygrometer	Flus	ET-951W	2015106449	November 2026
Environmental chamber	Jeiotech	PBV-012	1B097018	November 2026

5.2. MEASUREMENT UNCERTAINTY

ISO / IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions results be included in the test report. The uncertainties were calculated according to TF 100 028 [2] and are based on a 95.45% confidence level (coverage factor $k = 2$).

Table 4: Measurement Uncertainty

Parameter	Range	Test Uncertainty
Radio frequency	9kHz to 26.5GHz	$\pm 22.8\text{Hz}$
Radiated Power (substitution method)	1GHz to 3GHz	$\pm 1.08\text{dB}$
DC voltages	10mV to 600V	$\pm 0.7\%$
Temperature	-20°C to $+85^{\circ}\text{C}$	$\pm 0.9^{\circ}\text{C}$
Humidity	10% to 75%	$\pm 5.0\%$

5.3. MEASUREMENT SETUP

5.3.1. RADIATED SETUP

All radiated measurements were performed inside a CISPR-16 compliant, fully anechoic shielded chamber, with an antenna-to-AUT distance of 3m, represented in the figure below.

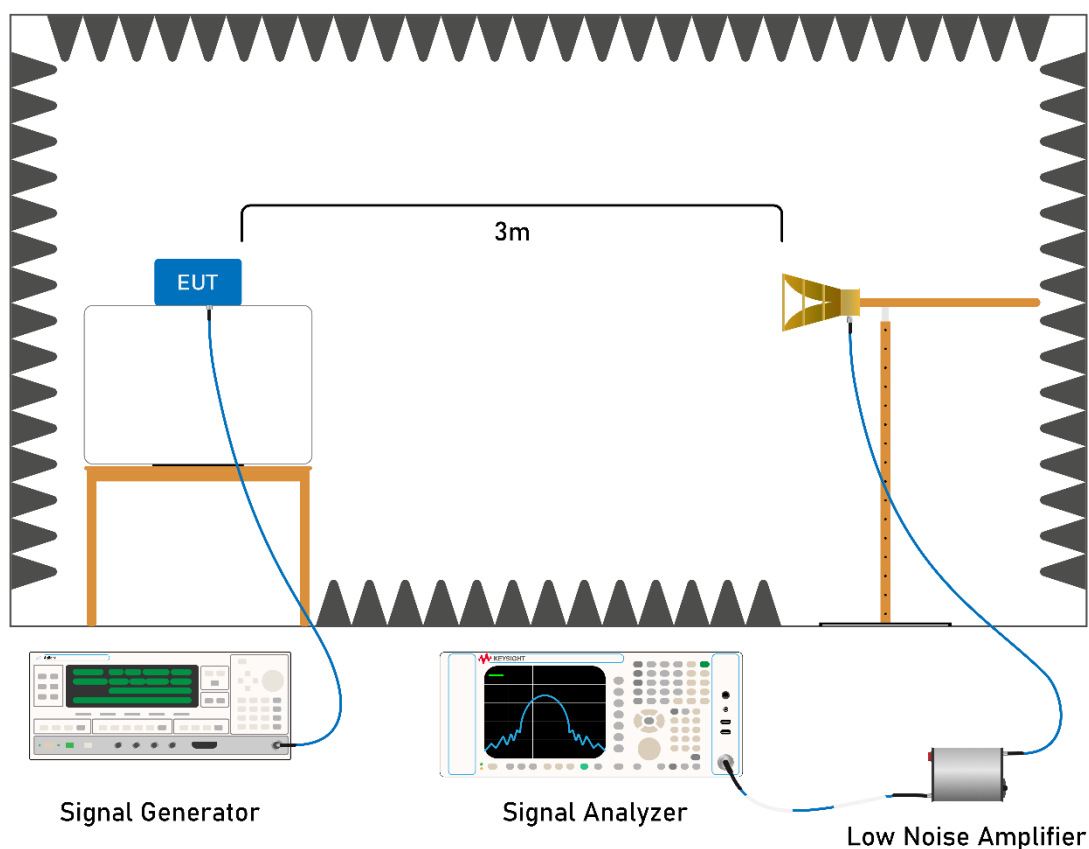


Figure 1: Radiation Pattern Measurement Test setup

5.4. ENVIRONMENTAL CONDITIONS

All measurements were taken under conditions of temperature and humidity listed in the table below.

Table 5: Environmental Conditions during Testing

Condition	Value
Temperature	+23°C to +25°C
Relative Humidity	34% to 36%

6. DETAILS OF ASSESSMENT

6.1. SETUP

Measurements were taken at 3 meters, using a Signal Generator to drive the reference antenna and AUT.

The calibrated reference transmitter antenna was used to determine the absolute reference level at each frequency.

The reference antenna was then substituted with the AUT facing the receiver antenna, with all configurations referenced to the 0° starting point for each measured plane, and the AUT was rotated through a full 360°.

The AUT was initially tested in open air supported by Polystyrene material and then retested after being placed in a wooden block.

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Figures 2 & 3: Radiated Setups of AUT – XY-Plane

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Figures 4 & 5: Radiated Setups of AUT – XZ-Plane

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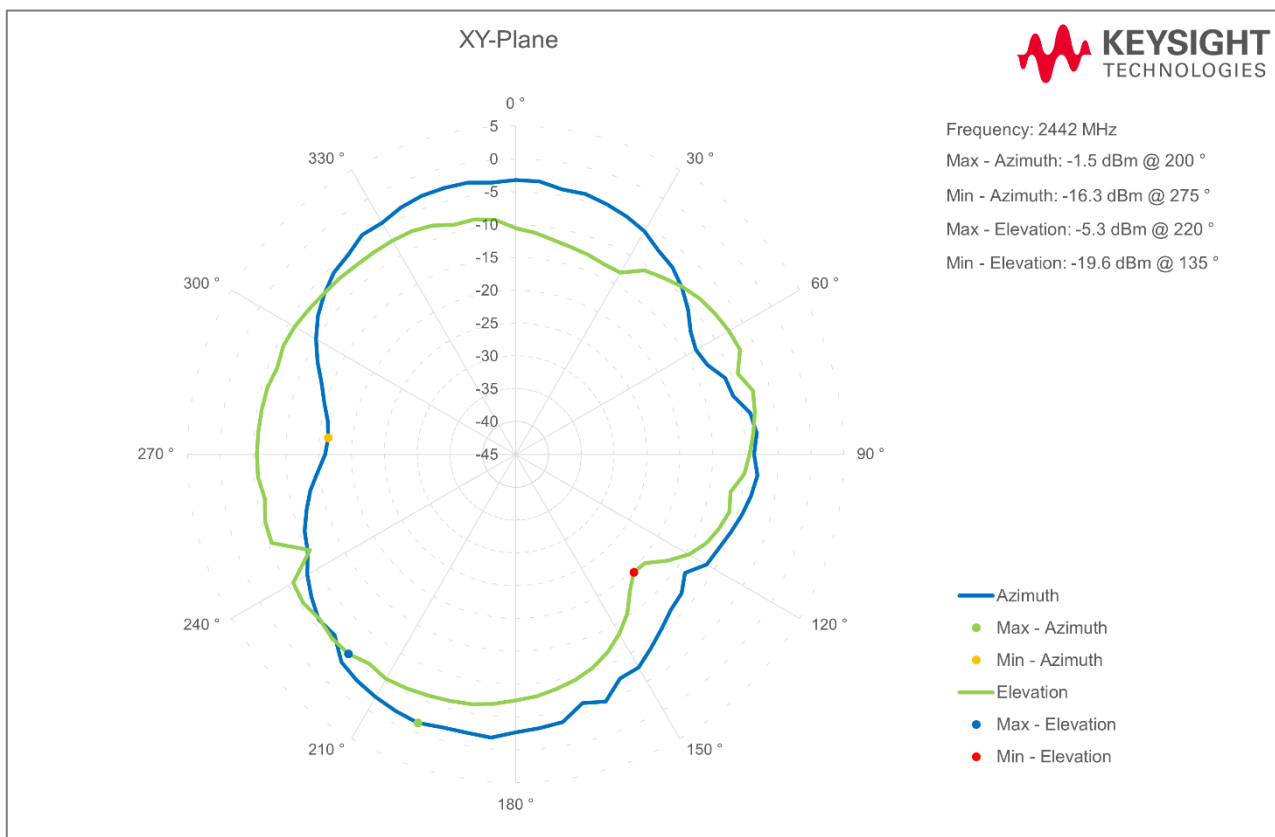
Figures 6 & 7: Radiated Setups of AUT – YZ-Plane

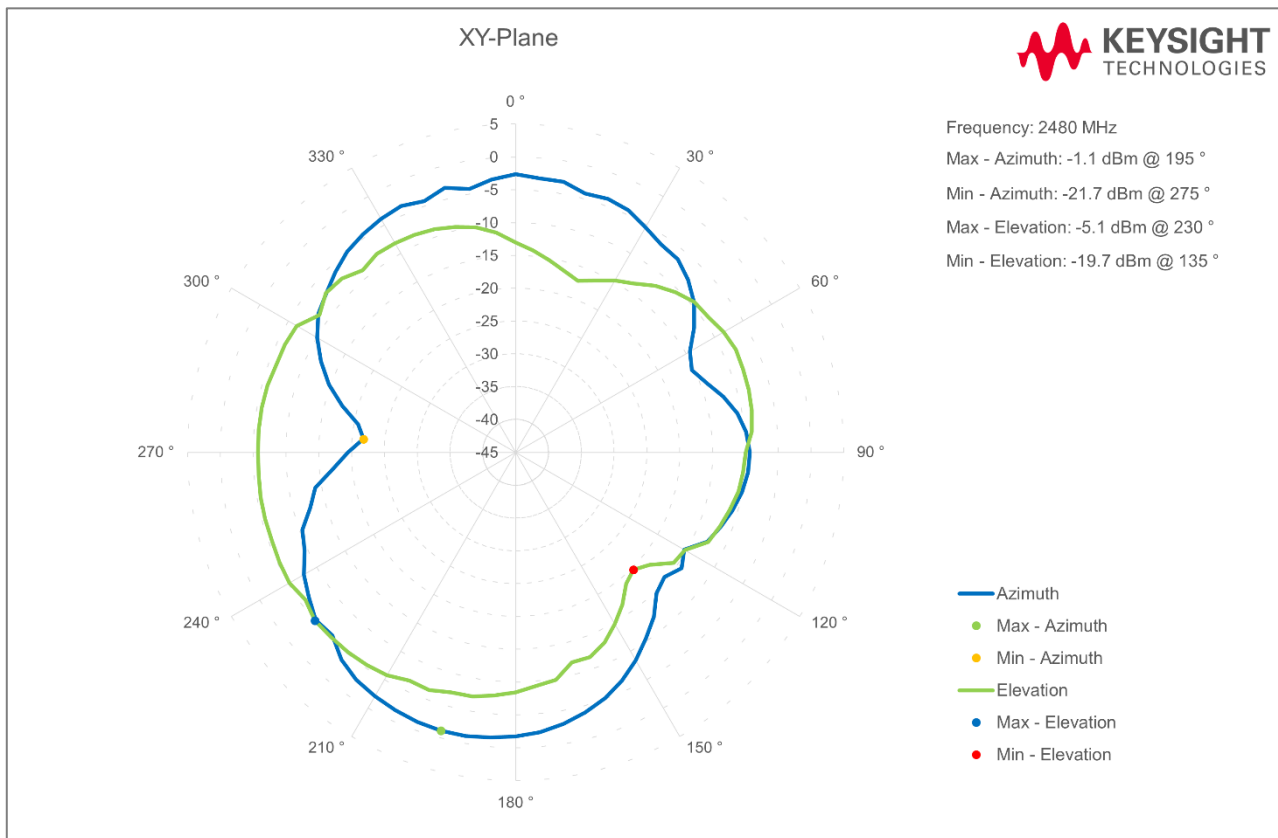
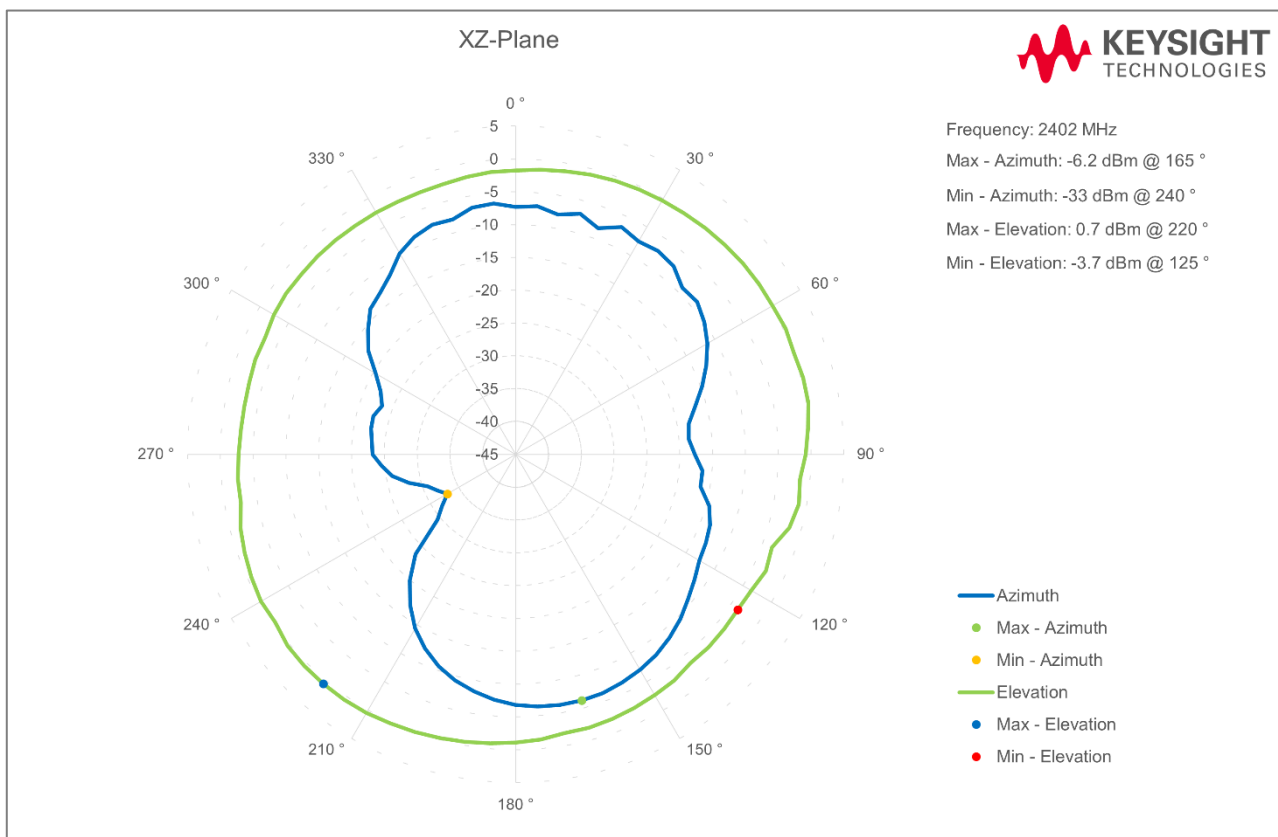
6.2. RESULTS

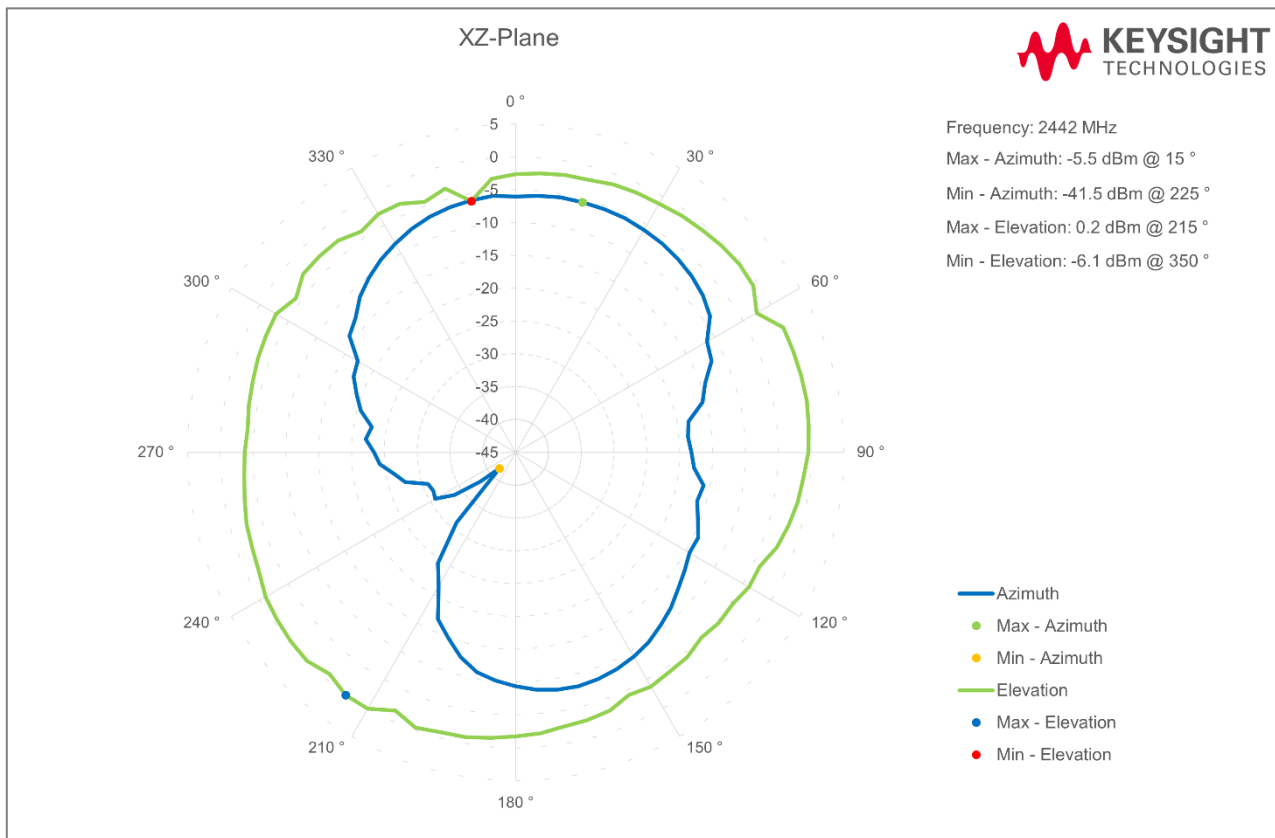
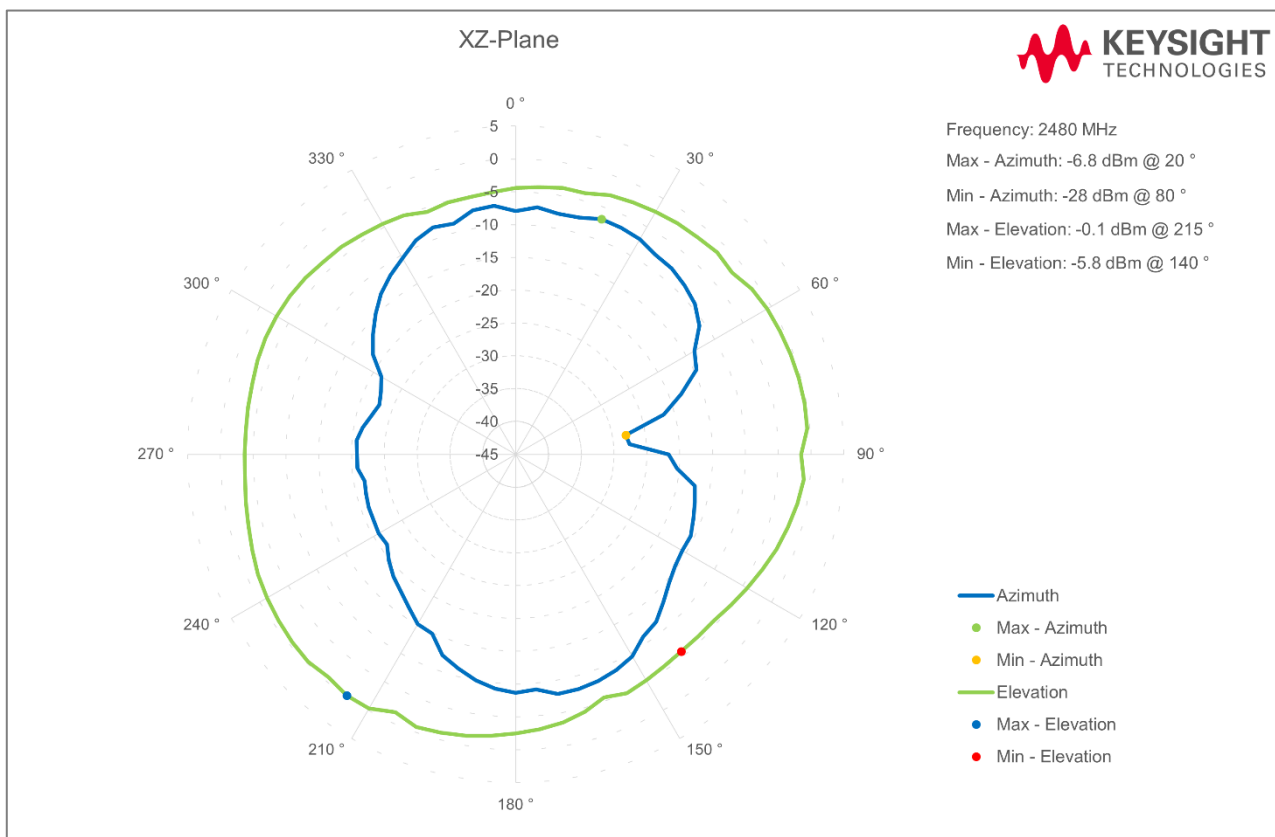
6.2.1. PEAK GAIN – AUT OUTSIDE WOODEN ENCLOSURE

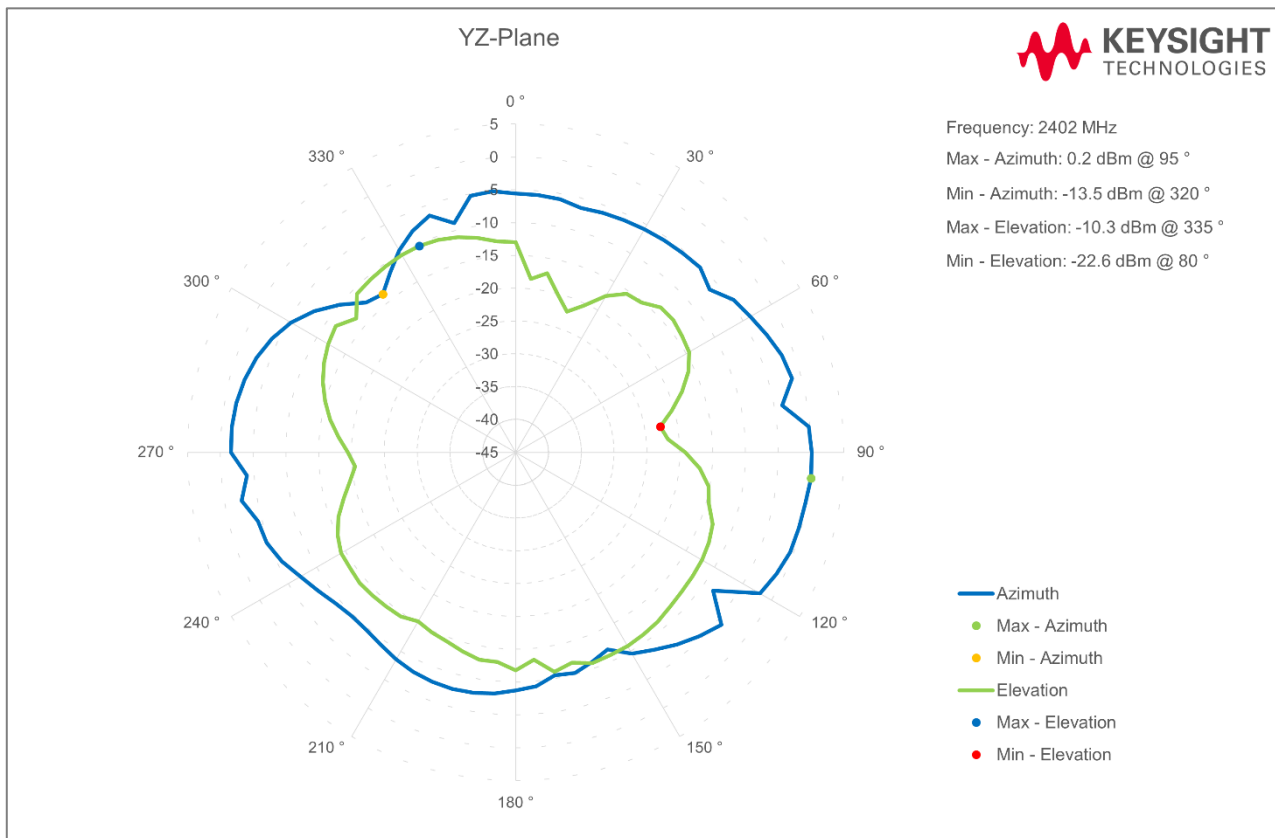
Table 6: Peak Gain Results

Frequency (MHz)	Peak Gain (dBi)					
	XY-Plane		XZ-Plane		YZ-Plane	
	Azimuth	Elevation	Azimuth	Elevation	Azimuth	Elevation
2402	-0.5	-4.4	-6.2	0.7	0.2	-10.3
2442	-1.5	-5.3	-5.5	0.2	-1.1	-10.7
2480	-1.1	-5.1	-6.8	-0.1	-0.6	-10.4

**Figure 8:** Antenna 2D radiation plot – XY-Plane, 2402 MHz**Figure 9:** Antenna 2D radiation plot – XY-Plane, 2442 MHz

**Figure 10:** Antenna 2D radiation plot – XY-Plane, 2480 MHz**Figure 11:** Antenna 2D radiation plot – XZ-Plane, 2402 MHz

**Figure 12:** Antenna 2D radiation plot – XZ-Plane, 2442 MHz**Figure 13:** Antenna 2D radiation plot – XZ-Plane, 2480 MHz

**Figure 14:** Antenna 2D radiation plot – YZ-Plane, 2402 MHz**Figure 15:** Antenna 2D radiation plot – YZ-Plane, 2442 MHz

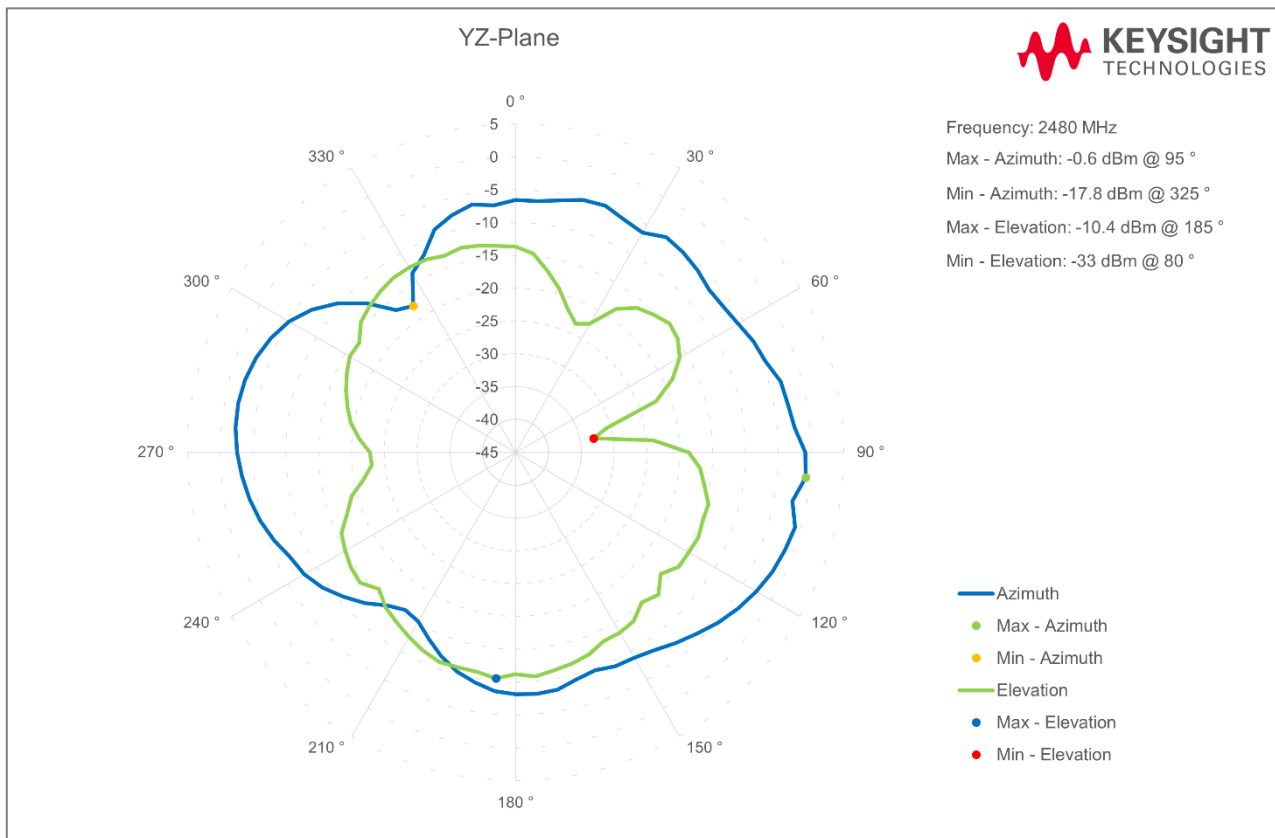


Figure 16: Antenna 2D radiation plot – YZ-Plane, 2480 MHz

6.2.2. PEAK GAIN – AUT INSIDE WOODEN ENCLOSURE

Table 7: Peak Gain Results

Frequency (MHz)	Peak Gain (dBi)					
	XY-Plane		XZ-Plane		YZ-Plane	
	Azimuth	Elevation	Azimuth	Elevation	Azimuth	Elevation
2402	-2.4	-3.8	-7.4	1.7	-0.9	-9.1
2442	-2.8	-3.8	-7.8	1.2	-2.0	-9.0
2480	-4.3	-3.6	-7.6	1.0	-1.8	-11.0

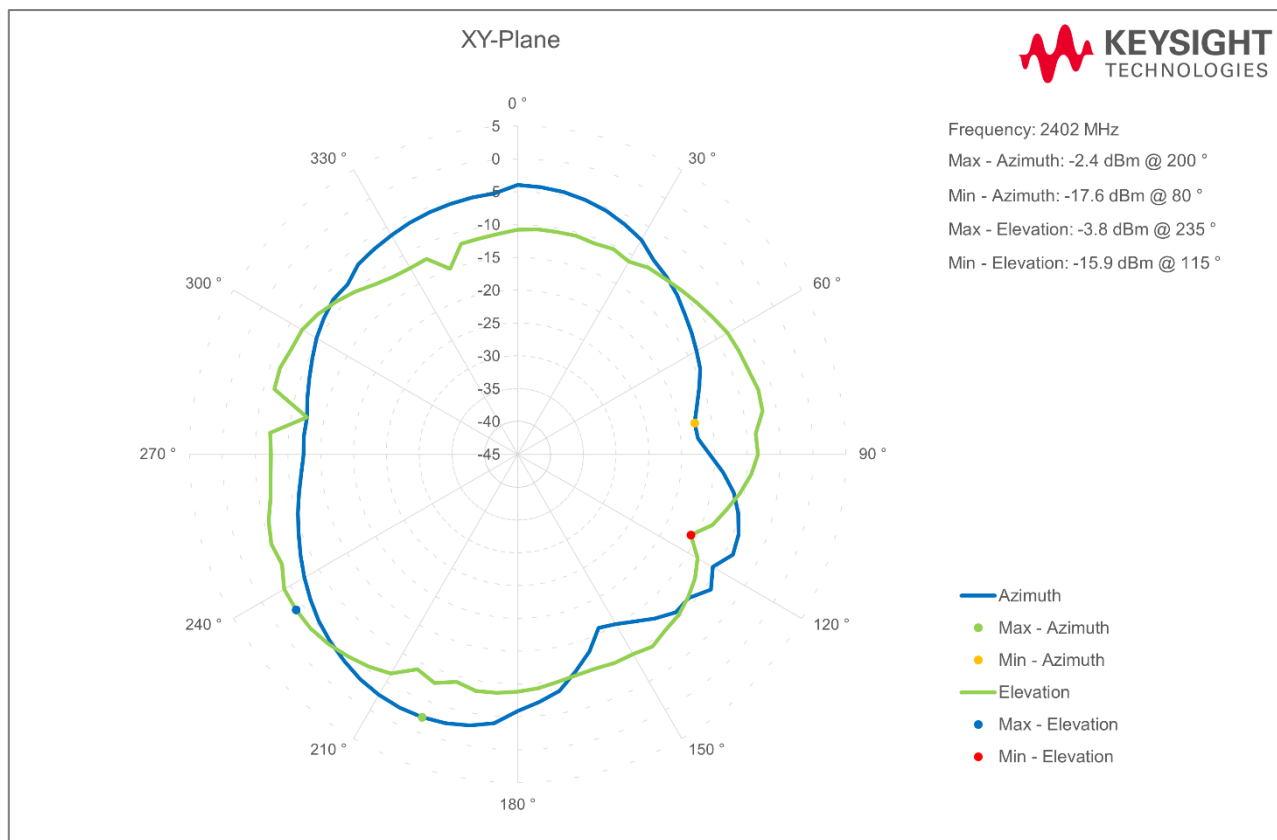
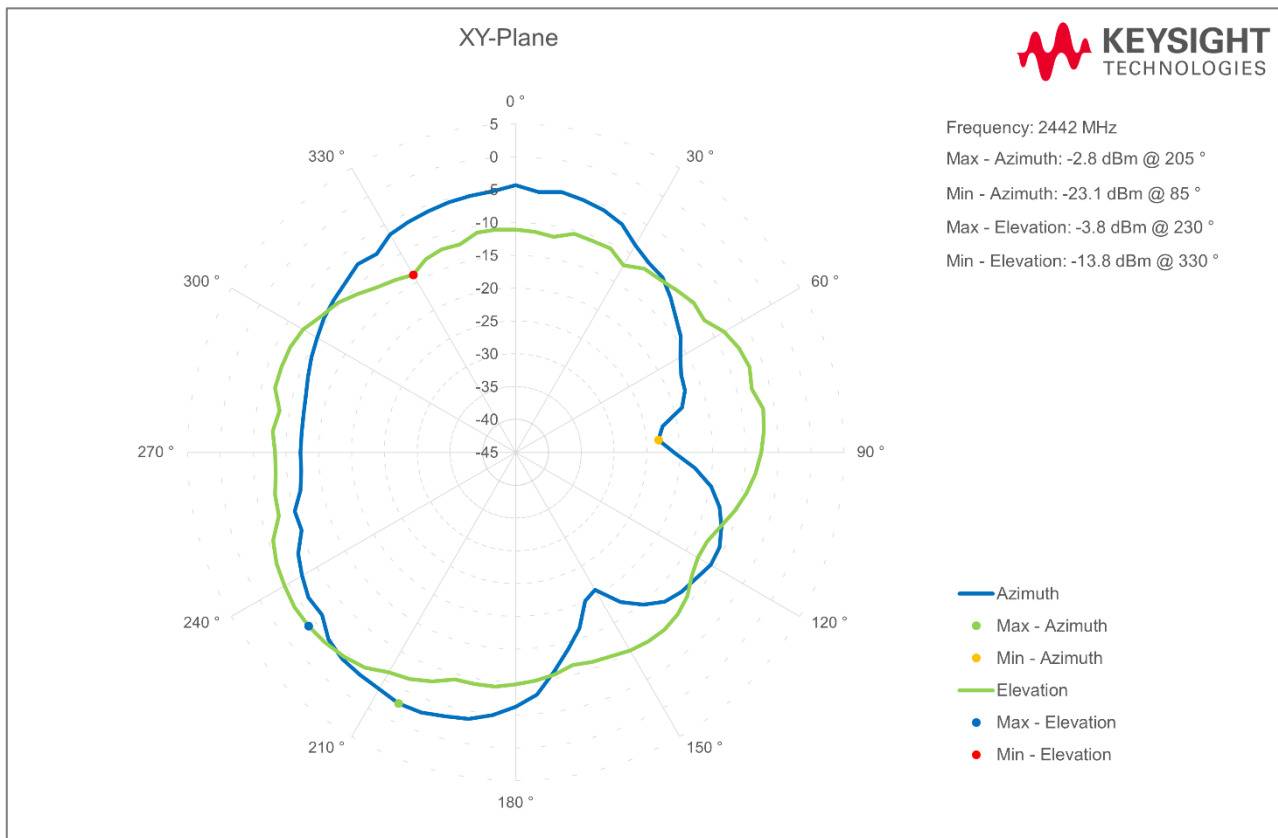
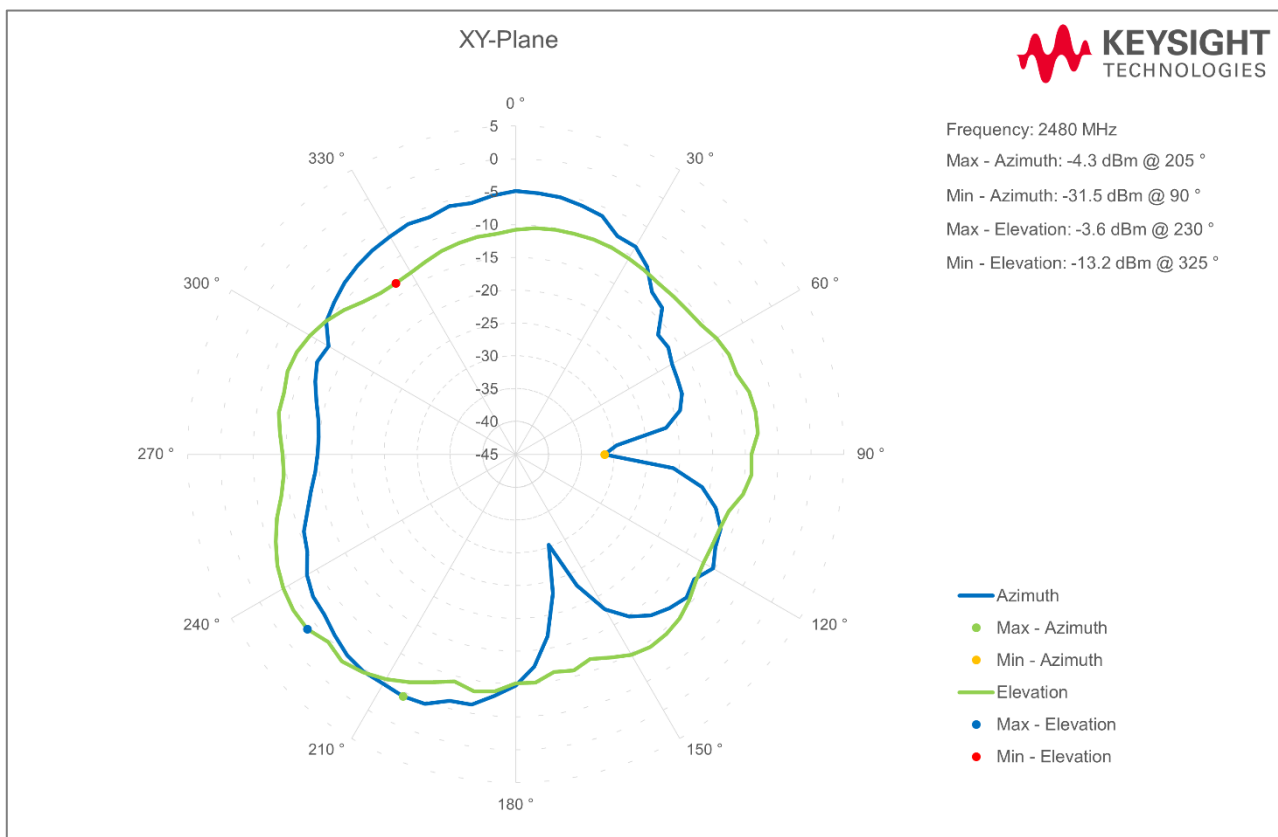
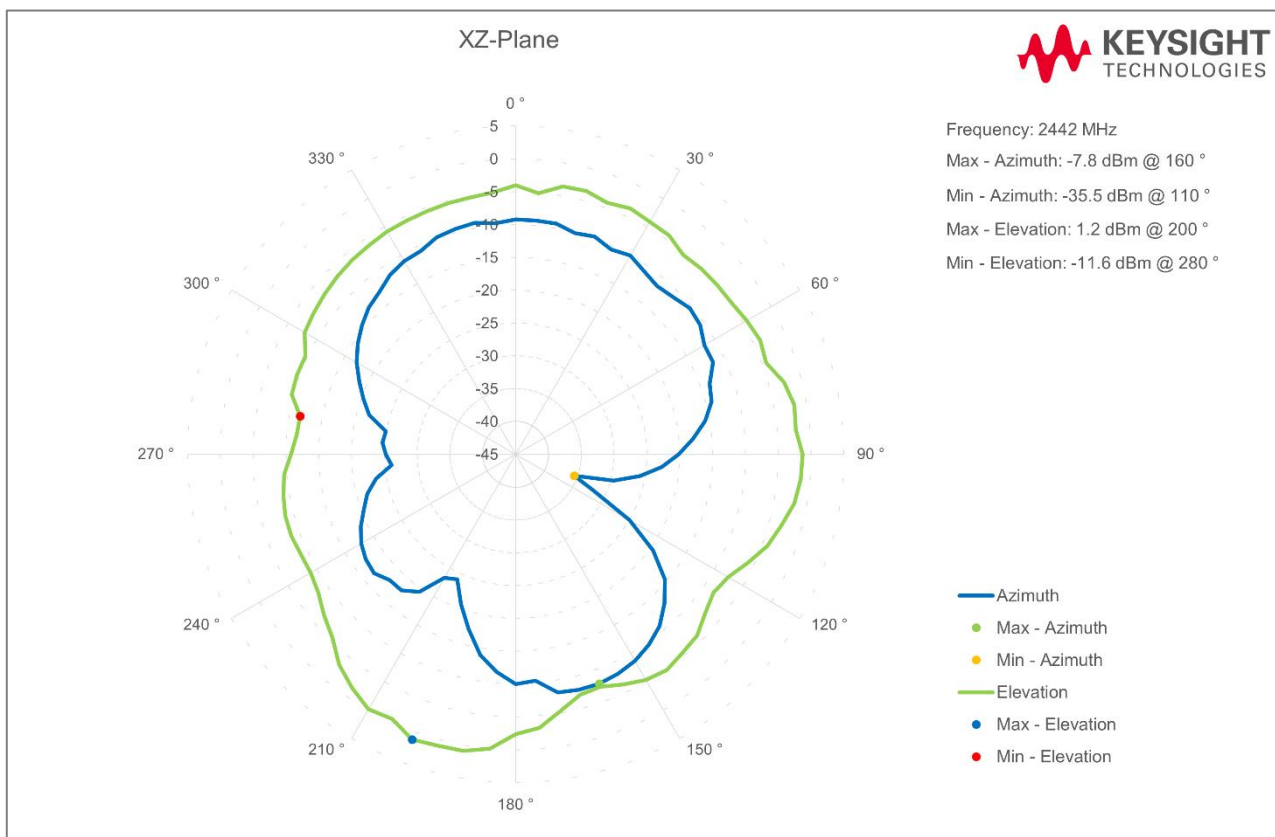
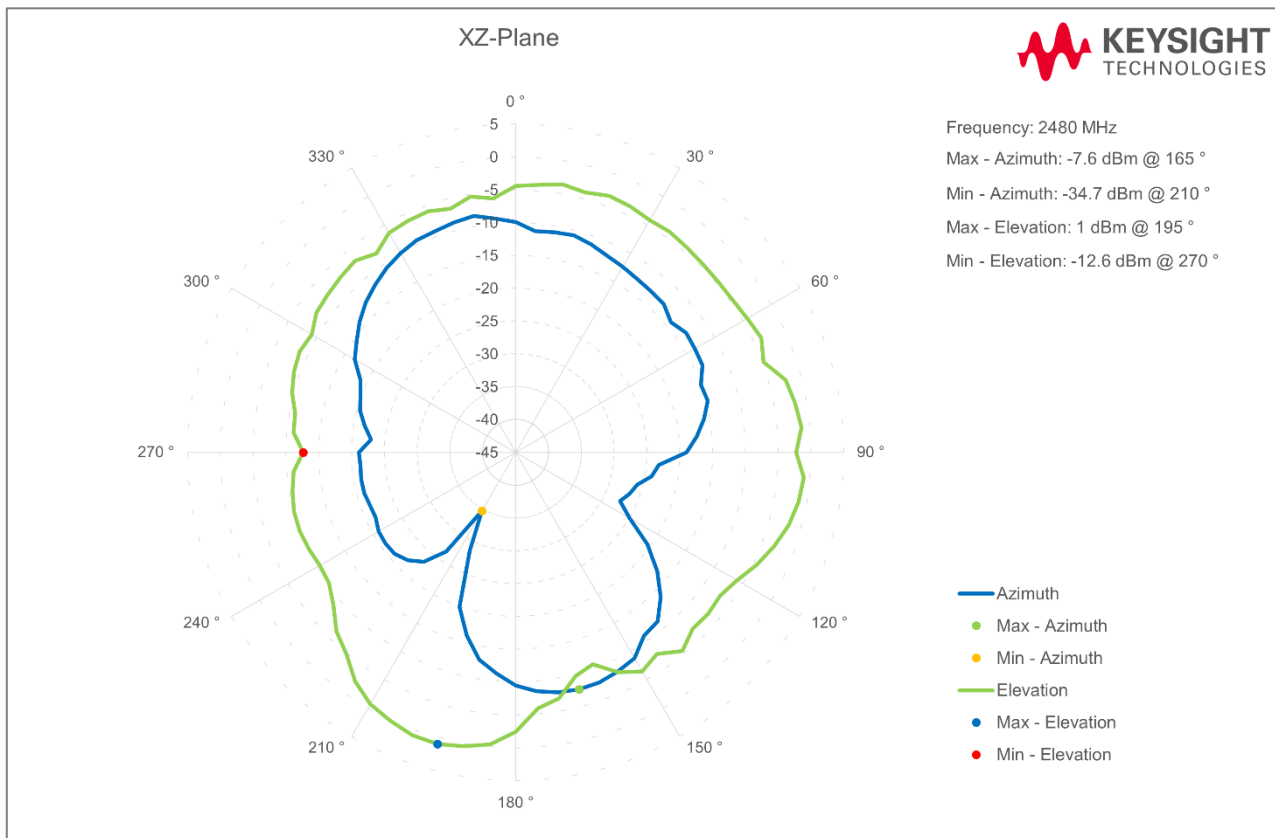
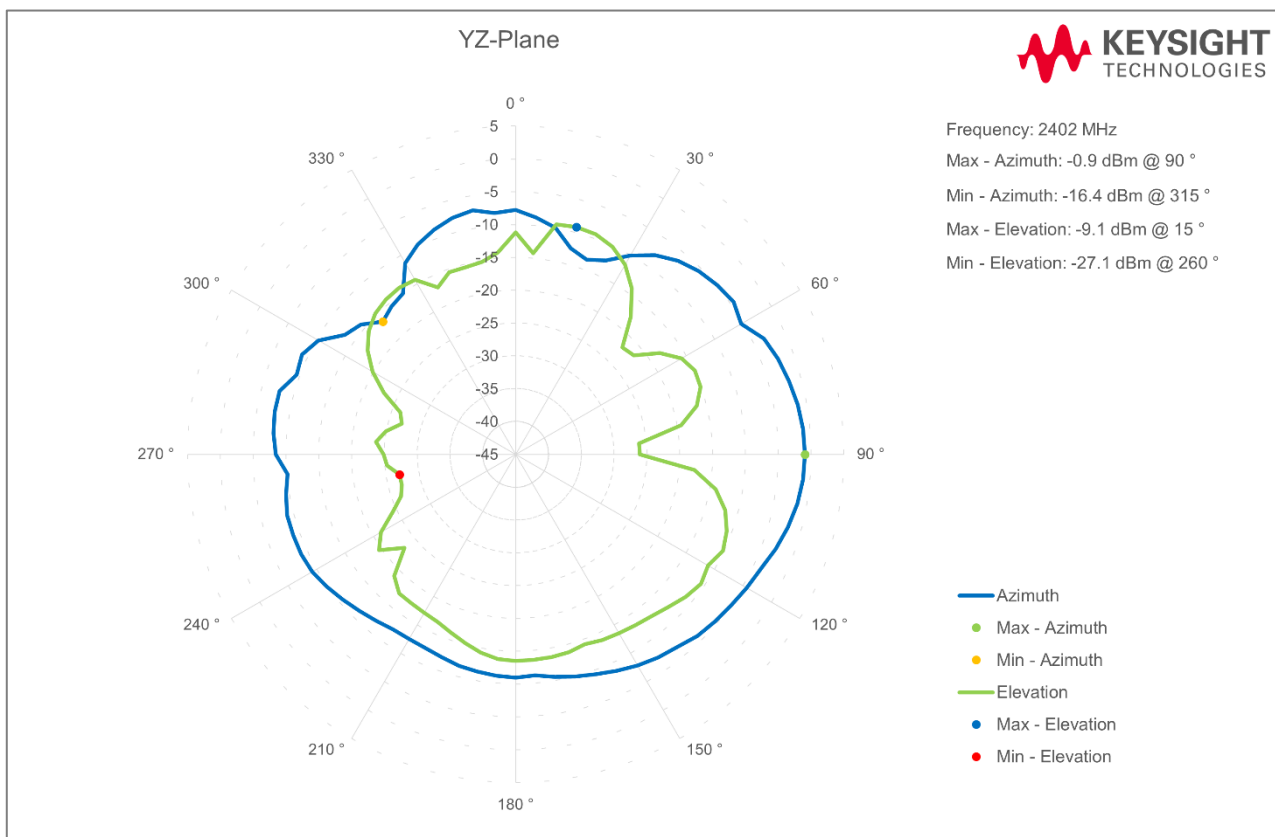
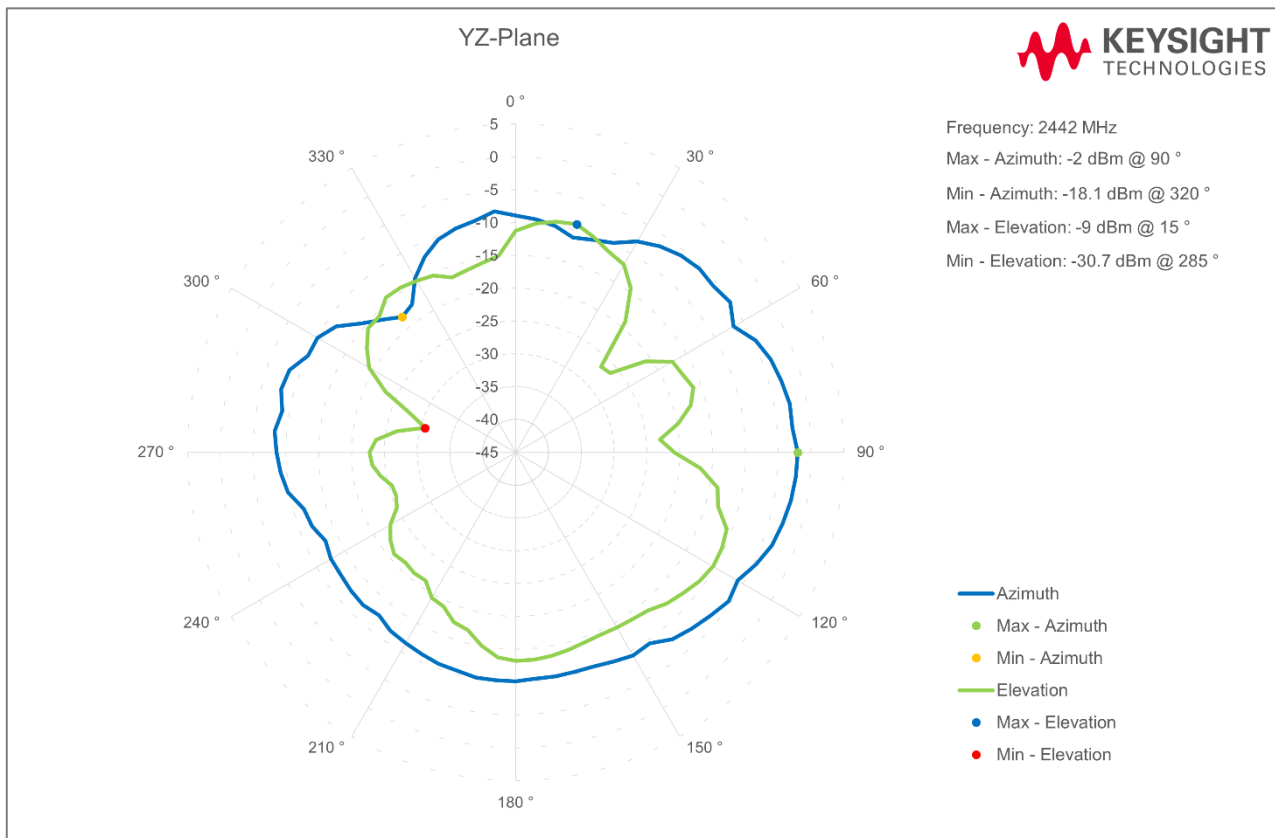
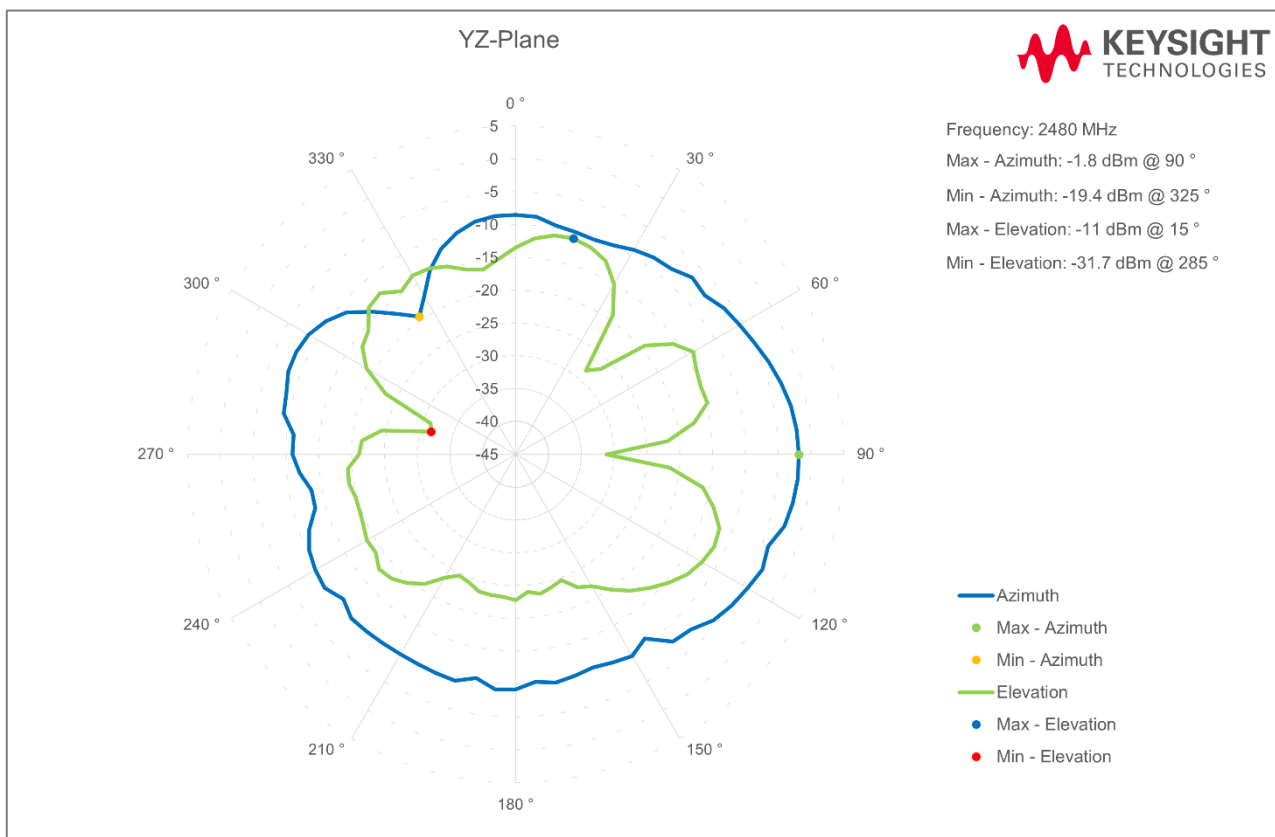


Figure 17: Antenna 2D radiation plot – XY-Plane, 2402 MHz

**Figure 18:** Antenna 2D radiation plot – XY-Plane, 2442 MHz**Figure 19:** Antenna 2D radiation plot – XY-Plane, 2480 MHz

**Figure 20:** Antenna 2D radiation plot – XZ-Plane, 2402 MHz**Figure 21:** Antenna 2D radiation plot – XZ-Plane, 2442 MHz

**Figure 22:** Antenna 2D radiation plot – XZ-Plane, 2480 MHz**Figure 23:** Antenna 2D radiation plot – YZ-Plane, 2402 MHz

**Figure 24:** Antenna 2D radiation plot – YZ-Plane, 2442 MHz**Figure 25:** Antenna 2D radiation plot – YZ-Plane, 2480 MHz

*** END OF REPORT ***