Antenna spec

Antenna size	3x1.3x1.2mm
Freq range	2.4GHz-2.48GHz
VSWR	2 Max
Gain	0dBi max
Inpedance	50ohm
Antenna type	Printed antenna
Polarization	Linear
Max Power	200mW
Operating temp	-20 to +55 deg celcius
Interconnection and cable assembly	Part of the PCB.
Manufacturer:	Cardo System, LTD.
PN:	Side unit antenna
Testing LAB	Hermon labs - https://hermonlabs.com/

Antenna testing laboratory	**Hermon Laboratories Ltd.** 66 Hatachana St., POB 23 **Binyamina** 3055001, Israel **Tester**: Stanislav Sugatov Test Engineer EMC & Radio stanislav.s@hermonlabs.com Phone: +972 4 628 8001

Antenna Horn:	HL2432
Manufacturer:	EMC Test Systems
Model:	3115
Date of Calibration:	12-July-24
Calibration Service Provided:	Hermon Laboratories
Calibration Perioud:	1 year

EXA Signal Analyzer:	HL5376
Manufacturer:	Keysight Technologies
Model:	N9010B
Date of Calibration:	8-Jan-24
Calibration Service Provided:	Hermon Laboratories
Calibration Perioud:	1 year

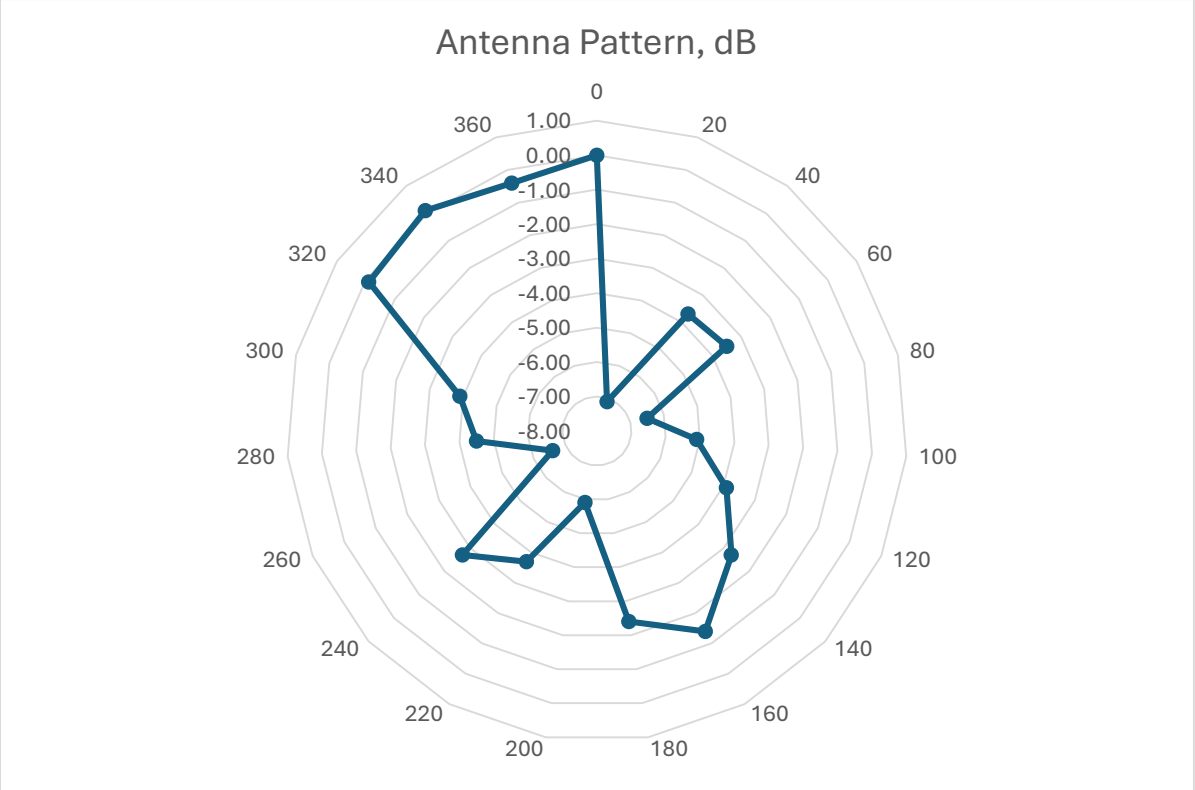
Cable:	HL5668
Manufacturer:	Huber-Suhner
Model:	SF126EA
Date of Calibration:	22-Jun-24
Calibration Service Provided:	Hermon Laboratories
Calibration Perioud:	1 year

Antenna Horn:	HL5673
Manufacturer:	Huber-Suhner
Model:	SF126EA
Date of Calibration:	19-May-24
Calibration Service Provided:	Hermon Laboratories
Calibration Perioud:	1 year

	Name and Title	**Date**	**Signature**
Tested by:	Mr. S. Sugatov, test engineer, EMC & Radio	19-Jan-25	
Reviewed by:	Mrs. S. Peysahov Sheynin, certification specialist, EMC & Radio	18-Jan-25	

2402 MHz vertical poz

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	93.6	-1.04	0.00
20	86.5	-8.14	-7.10
40	89.9	-4.74	-3.70
60	90.1	-4.54	-3.50
80	87.1	-7.54	-6.50
100	88.5	-6.14	-5.10
120	89.7	-4.94	-3.90
140	90.9	-3.74	-2.70
160	92.2	-2.44	-1.40
180	91.2	-3.44	-2.40
200	87.7	-6.94	-5.90
220	89.9	-4.74	-3.70
240	90.9	-3.74	-2.70
260	87	-7.64	-6.60
280	89.1	-5.54	-4.50
300	89.7	-4.94	-3.90
320	93.5	-1.14	-0.10
340	93.7	-0.94	0.10
360	93.2	-1.44	-0.40



Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2480	MHz	
SA reading	103.87	dBuV/m	Substitution
AG, dBi	10.3	dBi	
Cable Loss	3.17	dB	
Antenna polarization Vertical			
Antenna Horn HL 4474			

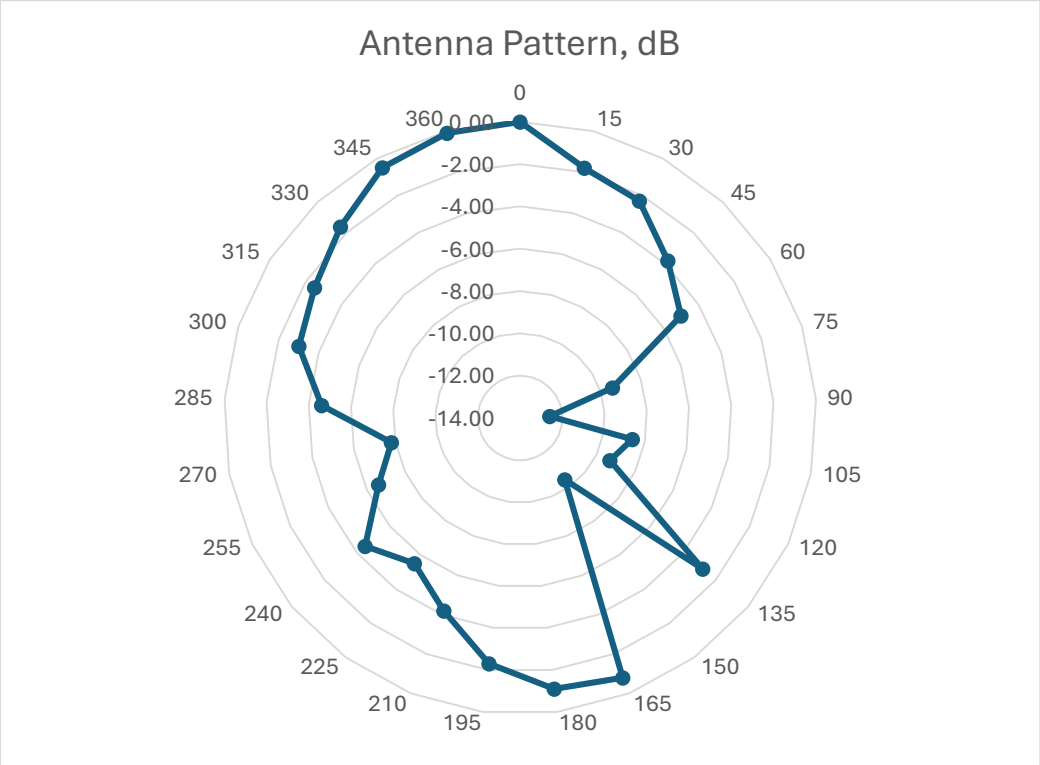
-96.74

Gain measurement calculation:

(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)

2402 MHz Horizontal poz

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	93.8	-0.84	0.00
15	92	-2.64	-1.80
30	91.5	-3.14	-2.30
45	90	-4.64	-3.80
60	88.8	-5.84	-5.00
75	84.4	-10.24	-9.40
90	81.2	-13.44	-12.60
105	85.2	-9.44	-8.60
120	84.5	-10.14	-9.30
135	91	-3.64	-2.80
150	83.4	-11.24	-10.40
165	93	-1.64	-0.80
180	92.7	-1.94	-1.10
195	91.5	-3.14	-2.30
210	89.6	-5.04	-4.20
225	88.3	-6.34	-5.50
240	89.3	-5.34	-4.50
255	87.2	-7.44	-6.60
270	86	-8.64	-7.80
285	89.2	-5.44	-4.60
300	90.8	-3.84	-3.00
315	91.3	-3.34	-2.50
330	92.2	-2.44	-1.60
345	93.3	-1.34	-0.50
360	93.7	-0.94	-0.10



Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2480	MHz	
SA reading	103.87	dBuV/m	Substitution
AG, dBi	10.3	dBi	
Cable Loss	3.17	dB	
Antenna polarization Vertical			
Antenna Horn HL 4474			

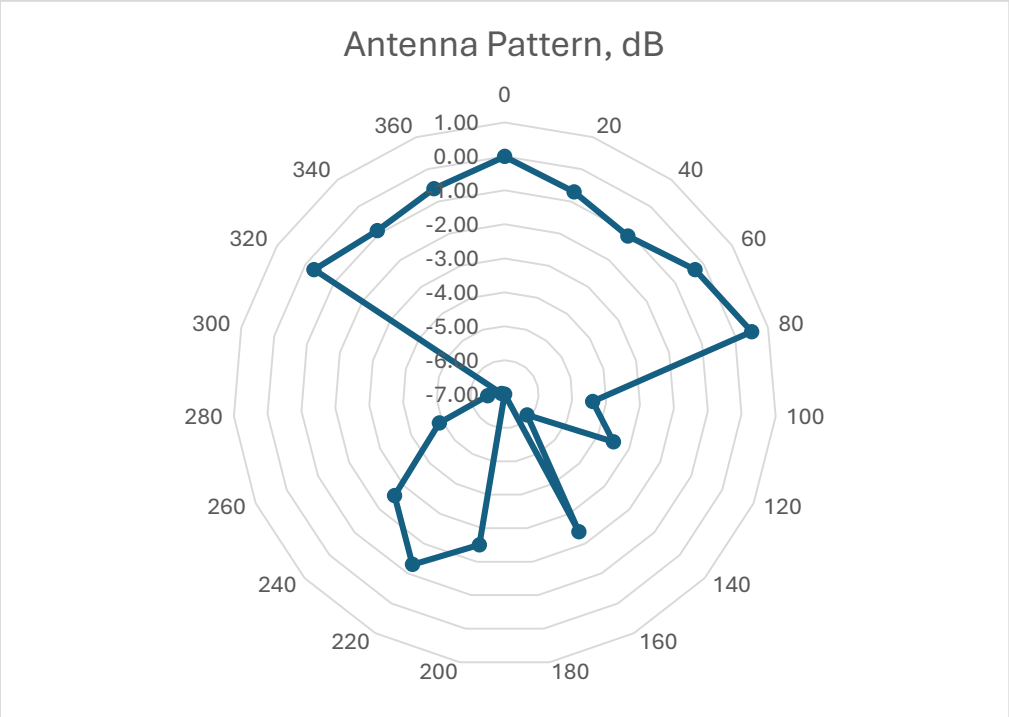
-96.74

Gain measurement calculation:

=-(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)

2440 MHz vertical poz.Y

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	91.6	-3.29	0.00
20	90.9	-3.99	-0.70
40	90.5	-4.39	-1.10
60	91.3	-3.59	-0.30
80	91.1	-2.79	-0.50
100	87.2	-7.69	-4.40
120	88.1	-6.79	-3.50
140	85.5	-9.39	-6.10
160	89.2	-5.69	-2.40
180	84.6	-10.29	-7.00
200	89.1	-5.79	-2.50
220	90.3	-4.59	-1.30
240	89	-5.89	-2.60
260	86.7	-8.19	-4.90
280	85.1	-9.79	-6.50
300	84.7	-10.19	-6.90
320	91.3	-3.59	-0.30
340	90.7	-4.19	-0.90
360	91	-3.89	-0.60



Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2440	MHz	
SA reading	103.5	dBuV/m	Substitution
AG, dBi	10.2	dBi	
Cable Loss	3.12	dB	
Antenna polarization Vertical			
Antenna Horn HL 4474			

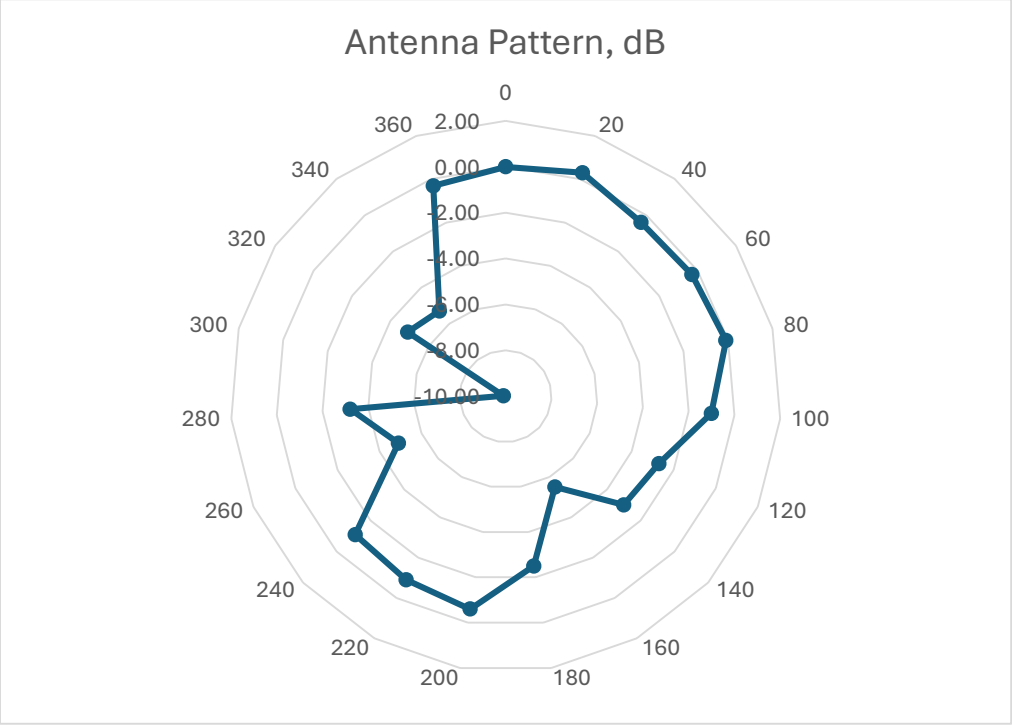
-96.42

Gain measurement calculation:

=-(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)

2440 MHz horizontal poz.Y

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	91.9	-3.35	0.00
20	92.2	-3.05	0.30
40	91.5	-3.75	-0.40
60	91.6	-3.65	-0.30
80	91.8	-3.45	-0.10
100	90.9	-4.35	-1.00
120	89.2	-6.05	-2.70
140	88.9	-6.35	-3.00
160	86.4	-8.85	-5.50
180	89.4	-5.85	-2.50
200	91.3	-3.95	-0.60
220	91	-4.25	-0.90
240	90.8	-4.45	-1.10
260	87	-8.25	-4.90
280	88.7	-6.55	-3.20
300	82	-13.25	-9.90
320	87	-8.25	-4.90
340	86.6	-8.65	-5.30
360	91.6	-3.65	-0.30



Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2440	MHz	
SA reading	103.5	dBuV/m	Substitution
AG, dBi	10.2	dBi	
Cable Loss	3.12	dB	
Antenna polarization Vertical			
Antenna Horn HL 4474			

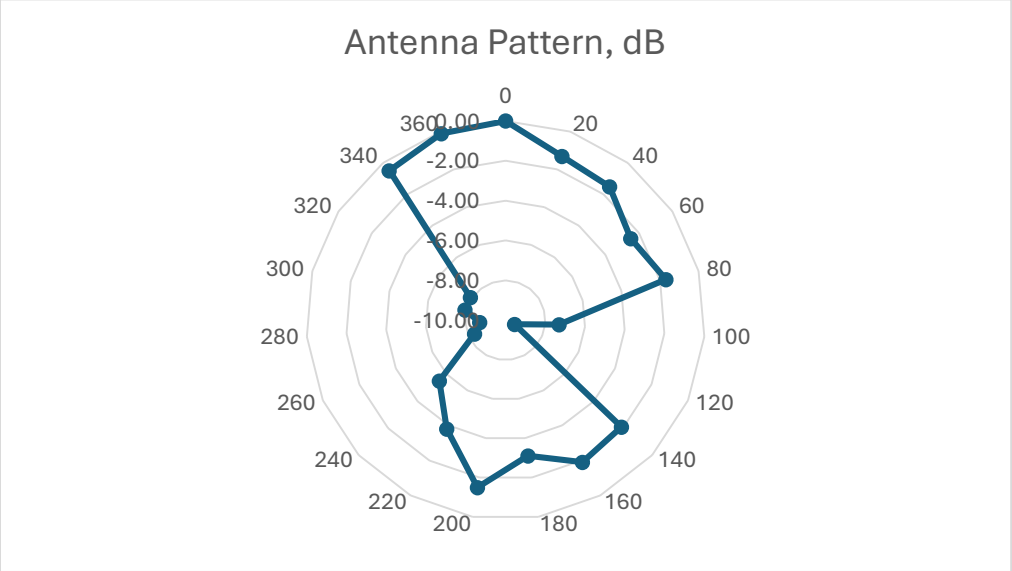
-96.42

Gain measurement calculation:

=-(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)

2480 MHz vertical poz.Y

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	90.5	-4.75	0.00
20	90.1	-4.15	-0.60
40	89.3	-5.95	-1.20
60	88.5	-6.75	-2.00
80	88.5	-6.75	-2.00
100	83.5	-11.75	-7.00
120	81.3	-13.95	-9.20
140	87.9	-7.35	-2.60
160	88.1	-7.15	-2.40
180	87.9	-7.35	-2.60
200	89.5	-5.75	-1.00
220	87.2	-8.05	-3.30
240	85.3	-9.95	-5.20
260	82.7	-12.55	-7.80
280	82.1	-13.15	-8.40
300	82.9	-12.35	-7.60
320	82.3	-12.95	-8.20
340	89.5	-5.75	-1.00
360	90.4	-4.85	-0.10

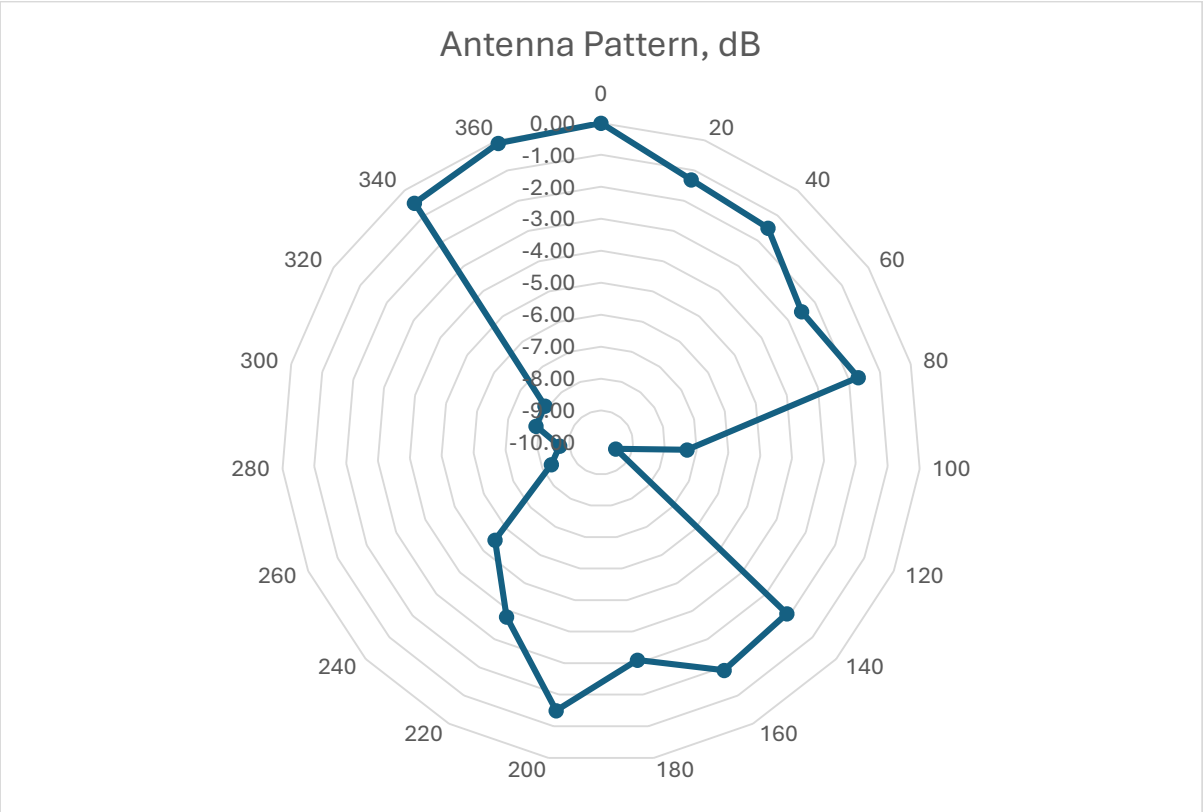


Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2405	MHz	
SA reading	103.2	dBuV/m	Substitution
AG, dBi	9.9	dBi	
Cable Loss	3.09	dB	
Antenna polarization Vertical Antenna Horn HL 4474			

-96.39
Gain measurement calculation:
=-(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)

2480MHz horizontal poz.X

Angle (deg)	Spectrum Analyzer reading (dBuV/m)	EIRP, dBm	Antenna Pattern, dB
0	90.5	-4.75	0.00
20	89.2	-6.05	-1.30
40	89	-6.25	-1.50
60	88	-7.25	-2.50
80	88.8	-6.45	-1.70
100	83.2	-12.05	-7.30
120	81	-14.25	-9.50
140	88.4	-6.85	-2.10
160	88.6	-6.65	-1.90
180	87.4	-7.85	-3.10
200	89	-6.25	-1.50
220	86.7	-8.55	-3.80
240	85	-10.25	-5.50
260	82.2	-13.05	-8.30
280	81.8	-13.45	-8.70
300	82.6	-12.65	-7.90
320	82.6	-12.65	-7.90
340	90	-5.25	-0.50
360	90.4	-4.85	-0.10



Spectrum Analizer Data			
Span	10	MHz	sweep time 20 ms
RBW	1000	kHz	
VBW	3000	kHz	
Ref Level	120	dBuV/m	
SG	0	dBm	
F, MHz	2405	MHz	
SA reading	103.2	dBuV/m	Substitution
AG, dBi	9.9	dBi	
Cable Loss	3.09	dB	
Antenna polarization Vertical			
Antenna Horn HL 4474			

-96.39

Gain measurement calculation:

=-(Refernce SA reading)+(SA reading of Antenna Power)+(Refernce Signal Generator RF Power)+(Ref Antenna gain)-(Refrence Antenna cable loss)