TEST SUMMARY

Tests performed at:

dB Technology (Cambridge) Ltd
Radio Test Site
Twentypence Road,
Cottenham,
Cambridge
U.K.
CB24 8PS
Tel: 01954 251974
Web: www.dbtechnology.co.uk

This is not a formal report that has been fully vetted by a senior engineer. The data within this document acts only as a summary of testing performed to date and may not be complete. It may not contain sufficient information to verify full compliance with the standards noted overleaf. It is likely that the results included within this document cover only in part the requirements of the standards listed. The results may be investigative in nature and therefore will note failures as well as compliance.

Please note that there is no reference to EUT configuration provided by this summary unless individually noted under specific tests.

dB Technology can only report on the specific unit(s) tested at its site. The responsibility for extrapolating this data to a product line lies solely with the manufacturer.

Test Summary (not part of formal report)

Table of Contents

1 Test Results

Basic test result data is shown in the following sections.

Test Summary (not part of formal report)

1.1 Radiated Emissions - Substitution -STP8X038 Antenna Patterns

EUT	
Company:	Sepura Limited
Product:	STP8X

1.1.1 Requirements

EN303 758 (Spurious Emissions only)

Test	Port	Method	Limit	PASS/FAIL	*Notes*
Tx Radiated Emissions	enclosure	EN 303 758 Section 7.3.2.3	EN 303 758 (Tx) Section 7.3.3.1 Table 10b		

1.1.2 Exploratory Tests

Exploratory tests were performed to identify the conditions that produce the highest emissions.

The most significant plots obtained during the exploratory tests are listed below. These plots are shown towards the end of this report.

1.1.3 Exploratory Tests Plot List

Plot List:				
Reference	**Op. Mode**	**Mod. State**	**C'fig**	**Title**

1.1.4 Final Tests

Final tests were performed under the conditions found during exploratory tests to give the highest emissions. Final measurements are shown in the results section below:

Test Summary (not part of formal report)

1.1.5 Results

Radiated Emissions Results (Substitution Method) - Correction Factors												#Ref00
Limit:	0 #internal reference = 0											
Date: 18/10/2023	*Test Engineer: Stephen Browning*											
Configuration: 1	*Operating Mode: 1*				*Modification State: 0*							
Notes	**Freq. MHz**	**Fact Set**	**Sub'n Ant Gain dBi**	**Dist-ance (m)**	**Ant. *Pol.***	**Output Level of EUT dBm**	**Sig Gen Level Sub'n Ant dBm**	**Rec'vr Level Sub'n Ant dBuV**		**Gain CF dB**	**Margin dB**
	380	1	-1.1	10	v	14.97	-5.97	62.0		**-84.0**	
	397	1	-0.6	10	v	14.96	-6.01	61.0		**-82.6**	
	405	1	-0.5	10	v	14.95	-5.97	60.7		**-82.1**	
	410	1	-0.4	10	v	14.96	-5.99	60.0		**-81.3**	
	414	1	-0.3	10	v	14.95	-6.03	61.0		**-82.3**	
	420	1	-0.3	10	v	14.95	-6.02	59.5		**-80.8**	
	430	1	-0.1	10	v	14.96	-6.00	60.1		**-81.2**	

Notes:	
	Factors for Antennas with TW Band radios.

Test Summary (not part of formal report)

1.1.6 Test Equipment

Test Equipment				
Ref:	**Description:**	**S/N:**	**Cal. Date**	**Cal Interval (Months)**
PB05	Omega iTHP-W-6 Wand Probe	-	23/07/2023	18
PB06	Omega ITHP-5-DB9 Industrial Probe	-	07/09/2023	18
PB12	Omega iTHP-W-6 Wand Probe	W233888-1747-219	07/09/2023	18
R20	R&S ESR3 EMI Test Receiver	102463	06/10/2023	12
A39	Schwarzbeck VULP 9118A Log Periodic	581	23/07/2021	36
OATS6	OATS - 10m NSA compliant_ANSI C63.4:2014 / EN55016-1-4:2019	006	16/07/2021	36
SG9	HP 8648C 9kHz-3.2GHz Signal Generator	3847A05254	01/12/2022	12
PM6	Marconi 6960B RF Power Meter	236923/003	26/10/2022	12
PS10	Marconi 6910 RF Power Sensor (-30dBm / +20dBm) 10MHz to 20GHz	5009	26/10/2022	12
A30	Schwarzbeck MiniBicon (30MHz to 1GHz)	9115-180	22/07/2021	36
SW001	dBEmissionsV3_190808		Not Req.	_
CBL134	RG214 - 25m N-N	CBL134	09/05/2023	12
Correction Factors				
CF1:A30_dBi_21A.txt				

1.1.7 *EUT Status*

Modifications	#Ref00
0	Original unmodified unit.

Operating Modes	#Ref00
1	Transmit Mode on frequency as specified in individual test records.
2	Receive/Standby on frequency as specified in individual test records.

Test Summary (not part of formal report)

Configuration	#Ref00
1	Radio powered from detachable battery pack and connected to Remote Speaker Microphone.
2	Standalone radio powered from detachable battery pack.

Test Summary (not part of formal report)

1.2 Radiated Emissions - Substitution - STP8X040 Antenna Patterns

EUT	
Company:	Sepura Limited
Product:	STP8X

1.2.1 Requirements

EN303 758 (Spurious Emissions only)

Test	Port	Method	Limit	PASS/FAIL	*Notes*
Tx Radiated Emissions	enclosure	EN 303 758 Section 7.3.2.3	EN 303 758 (Tx) Section 7.3.3.1 Table 10b		

1.2.2 Exploratory Tests

Exploratory tests were performed to identify the conditions that produce the highest emissions.

The most significant plots obtained during the exploratory tests are listed below. These plots are shown towards the end of this report.

1.2.3 Exploratory Tests Plot List

Plot List:				
Reference	**Op. Mode**	**Mod. State**	**C'fig**	**Title**

1.2.4 Final Tests

Final tests were performed under the conditions found during exploratory tests to give the highest emissions. Final measurements are shown in the results section below:

Test Summary (not part of formal report)

1.2.5 Results

Radiated Emissions Results (Substitution Method) - Correction Factors												#Ref00
Limit:	0 #internal reference = 0											
Date: 18/10/2023	*Test Engineer: Stephen Browning*											
Configuration: 1	*Operating Mode: 1*				*Modification State: 0*							
Notes	**Freq. MHz**	**Fact Set**	**Sub'n Ant Gain dBi**	**Dist-ance (m)**	**Ant. *Pol.***	**Output Level of EUT dBm**	**Sig Gen Level Sub'n Ant dBm**	**Rec'vr Level Sub'n Ant dBuV**		**Gain CF dB**	**Margin dB**	
	407	1	-0.4	10	v	14.86	-5.98	60.3		**-81.6**		
	410	1	-0.4	10	v	14.86	-5.99	60.0		**-81.2**		
	410.5	1	-0.4	10	v	14.85	-5.99	60.0		**-81.2**		
	414	1	-0.3	10	v	14.84	-6.03	61.0		**-82.2**		
	418.5	1	-0.3	10	v	14.84	-6.03	59.6		**-80.7**		
	420	1	-0.3	10	v	14.83	-6.02	59.5		**-80.6**		
	430	1	-0.1	10	v	14.84	-6.00	60.1		**-81.1**		

Notes:	
	Factors for antennas used with UW Band radios.

Test Summary (not part of formal report)

1.2.6 Test Equipment

Test Equipment				
Ref:	**Description:**	**S/N:**	**Cal. Date**	**Cal Interval (Months)**
PB05	Omega iTHP-W-6 Wand Probe	-	23/07/2023	18
PB06	Omega ITHP-5-DB9 Industrial Probe	-	07/09/2023	18
PB12	Omega iTHP-W-6 Wand Probe	W233888-1747-219	07/09/2023	18
R20	R&S ESR3 EMI Test Receiver	102463	06/10/2023	12
A39	Schwarzbeck VULP 9118A Log Periodic	581	23/07/2021	36
OATS6	OATS - 10m NSA compliant_ANSI C63.4:2014 / EN55016-1-4:2019	006	16/07/2021	36
SG9	HP 8648C 9kHz-3.2GHz Signal Generator	3847A05254	01/12/2022	12
PM6	Marconi 6960B RF Power Meter	236923/003	26/10/2022	12
PS10	Marconi 6910 RF Power Sensor (-30dBm / +20dBm) 10MHz to 20GHz	5009	26/10/2022	12
A30	Schwarzbeck MiniBicon (30MHz to 1GHz)	9115-180	22/07/2021	36
SW001	dBEmissionsV3_190808		Not Req.	_
CBL134	RG214 - 25m N-N	CBL134	09/05/2023	12
Correction Factors				
CF1:A30_dBi_21A.txt				

1.2.7 *EUT Status*

Modifications	#Ref00
0	Original unmodified unit.

Operating Modes	#Ref00
1	Transmit Mode on frequency as specified in individual test records.
2	Receive/Standby on frequency as specified in individual test records.

Test Summary (not part of formal report)

Configuration	#Ref00
1	Radio powered from detachable battery pack and connected to Remote Speaker Microphone.
2	Standalone radio powered from detachable battery pack.

Test Summary (not part of formal report)

1.3 Radiated Emissions - Substitution - STP8X040 HF Antenna Patterns

EUT	
Company:	Sepura Limited
Product:	STP8X

1.3.1 Requirements

EN303 758 (Spurious Emissions only)

Test	Port	Method	Limit	PASS/FAIL	*Notes*
Tx Radiated Emissions	enclosure	EN 303 758 Section 7.3.2.3	EN 303 758 (Tx) Section 7.3.3.1 Table 10b		

1.3.2 Exploratory Tests

Exploratory tests were performed to identify the conditions that produce the highest emissions.

The most significant plots obtained during the exploratory tests are listed below. These plots are shown towards the end of this report.

1.3.3 Exploratory Tests Plot List

Plot List:				
Reference	Op. Mode	Mod. State	C'fig	Title

1.3.4 Final Tests

Final tests were performed under the conditions found during exploratory tests to give the highest emissions. Final measurements are shown in the results section below:

Test Summary (not part of formal report)

1.3.5 Results

Radiated Emissions Results (Substitution Method) - Correction Factors											#Ref00
Limit:	0 #internal reference = 0										
Date: 18/10/2023	*Test Engineer: Stephen Browning*										
Configuration: 1	*Operating Mode: 1*		*Modification State: 0*								
Notes	**Freq. MHz**	**Fact Set**	**Sub'n Ant Gain dBi**	**Dist-ance (m)**	**Ant. *Pol.***	**Output Level of EUT dBm**	**Sig Gen Level Sub'n Ant dBm**	**Rec'vr Level Sub'n Ant dBuV**		**Gain CF dB**	**Margin dB**
	450	1	-0.2	10	v	14.83	-6.1	60.9		**-81.9**	
	460	1	-0.2	10	v	14.83	-6.1	60.7		**-81.8**	
	470	1	-0.2	10	v	14.82	-6.1	60.6		**-81.7**	

Notes:	
	Factors for high frequency Antenna used with UW band radio.

Test Summary (not part of formal report)

1.3.6 Test Equipment

Test Equipment				
Ref:	**Description:**	**S/N:**	**Cal. Date**	**Cal Interval (Months)**
PB05	Omega iTHP-W-6 Wand Probe	-	23/07/2023	18
PB06	Omega ITHP-5-DB9 Industrial Probe	-	07/09/2023	18
PB12	Omega iTHP-W-6 Wand Probe	W233888-1747-219	07/09/2023	18
R20	R&S ESR3 EMI Test Receiver	102463	06/10/2023	12
A39	Schwarzbeck VULP 9118A Log Periodic	581	23/07/2021	36
OATS6	OATS - 10m NSA compliant_ANSI C63.4:2014 / EN55016-1-4:2019	006	16/07/2021	36
SG9	HP 8648C 9kHz-3.2GHz Signal Generator	3847A05254	01/12/2022	12
PM6	Marconi 6960B RF Power Meter	236923/003	26/10/2022	12
PS10	Marconi 6910 RF Power Sensor (-30dBm / +20dBm) 10MHz to 20GHz	5009	26/10/2022	12
A30	Schwarzbeck MiniBicon (30MHz to 1GHz)	9115-180	22/07/2021	36
SW001	dBEmissionsV3_190808		Not Req.	_
CBL134	RG214 - 25m N-N	CBL134	09/05/2023	12
Correction Factors				
CF1:A30_dBi_21A.txt				

1.3.7 *EUT Status*

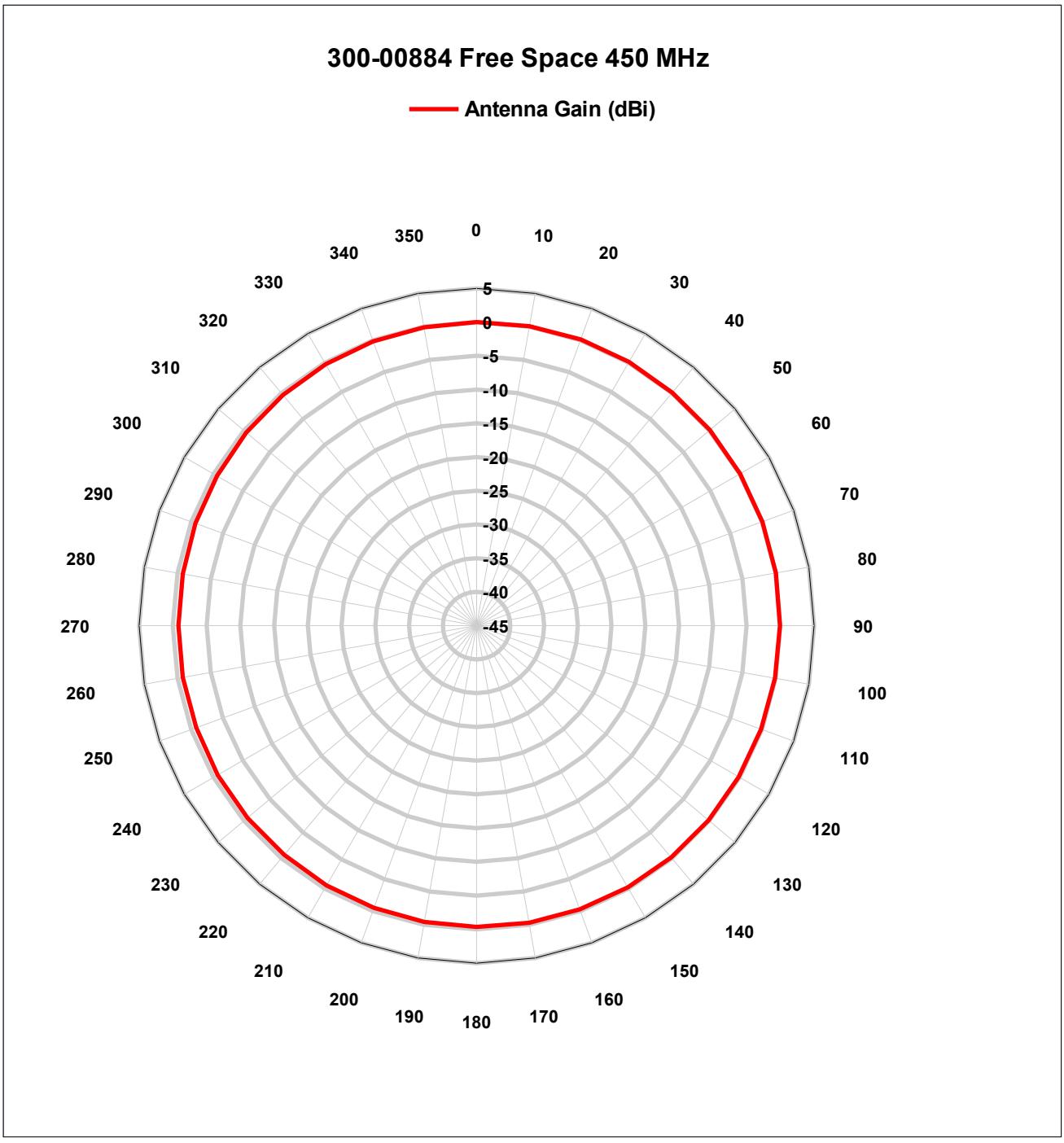
Modifications	#Ref00
0	Original unmodified unit.

Operating Modes	#Ref00
1	Transmit Mode on frequency as specified in individual test records.
2	Receive/Standby on frequency as specified in individual test records.

Test Summary (not part of formal report)

Configuration	#Ref00
1	Radio powered from detachable battery pack and connected to Remote Speaker Microphone.
2	Standalone radio powered from detachable battery pack.

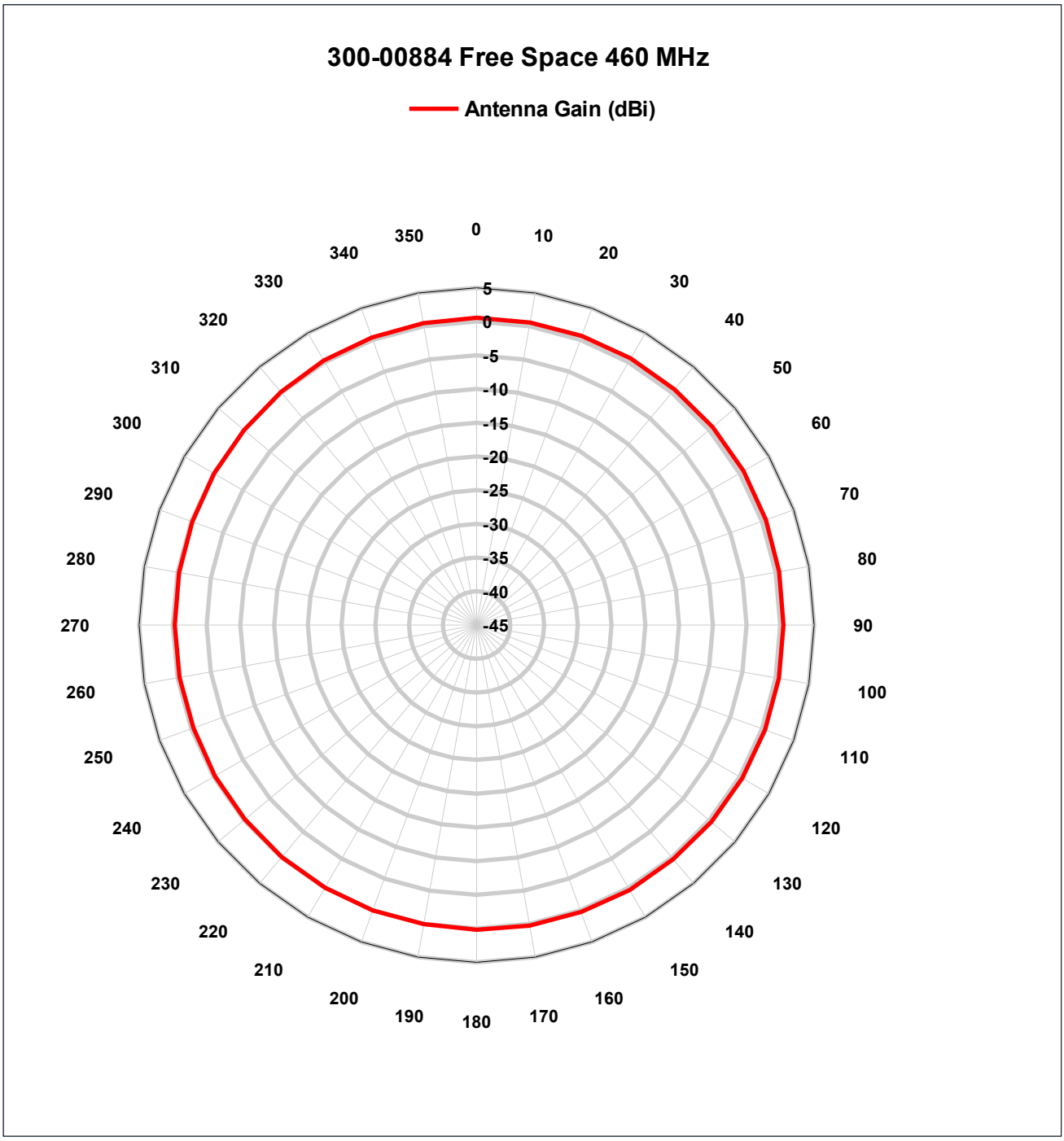
2 Polar Plots : STP8X040 HF



	MAX	MIN	AVG
Antenna Gain (dBi)	0.14	-0.81	-0.28

2.1 300-00884 Free Space 450 MHz

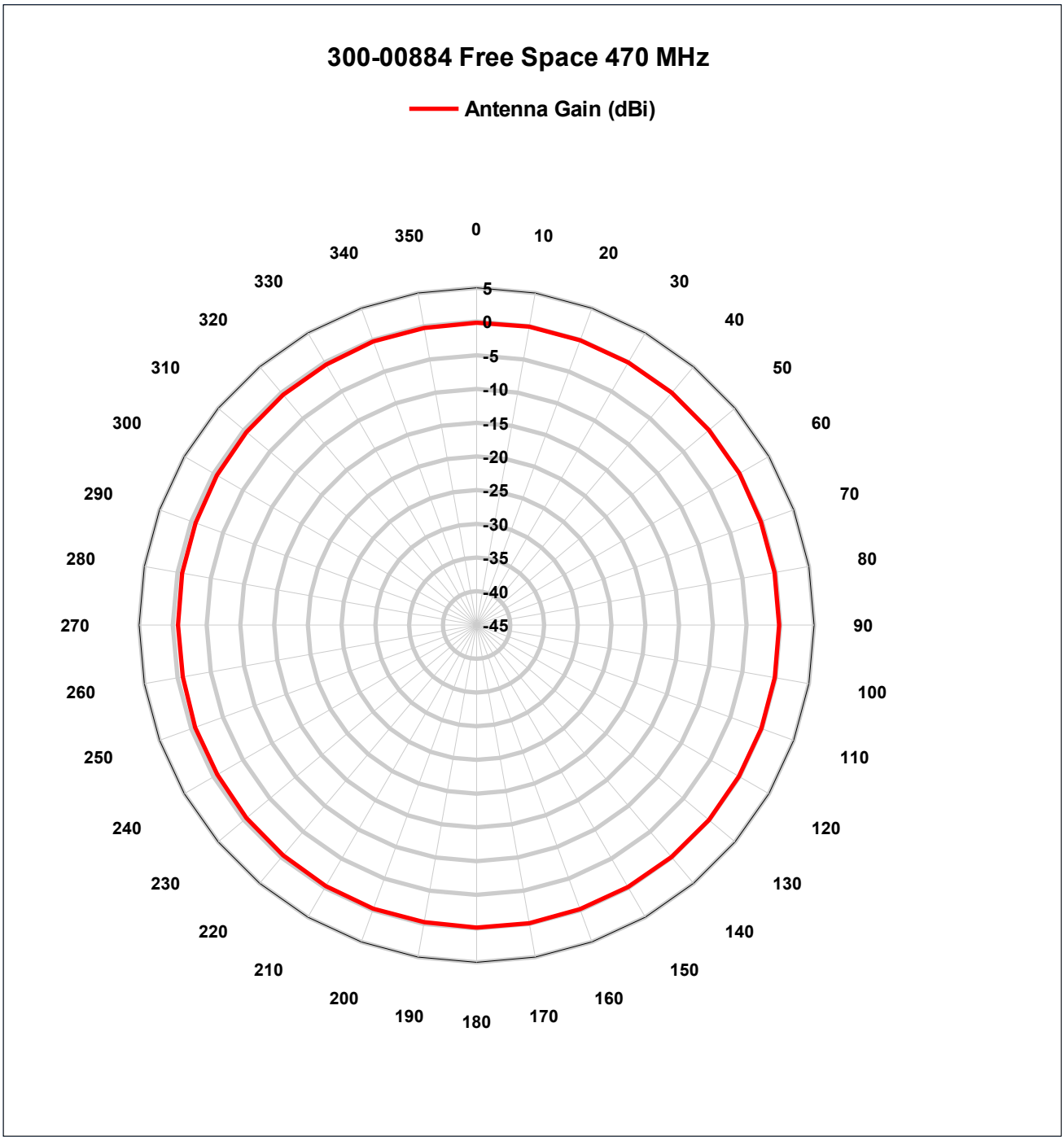
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.67	-0.35	0.25

2.2 300-00884 Free Space 460 MHz

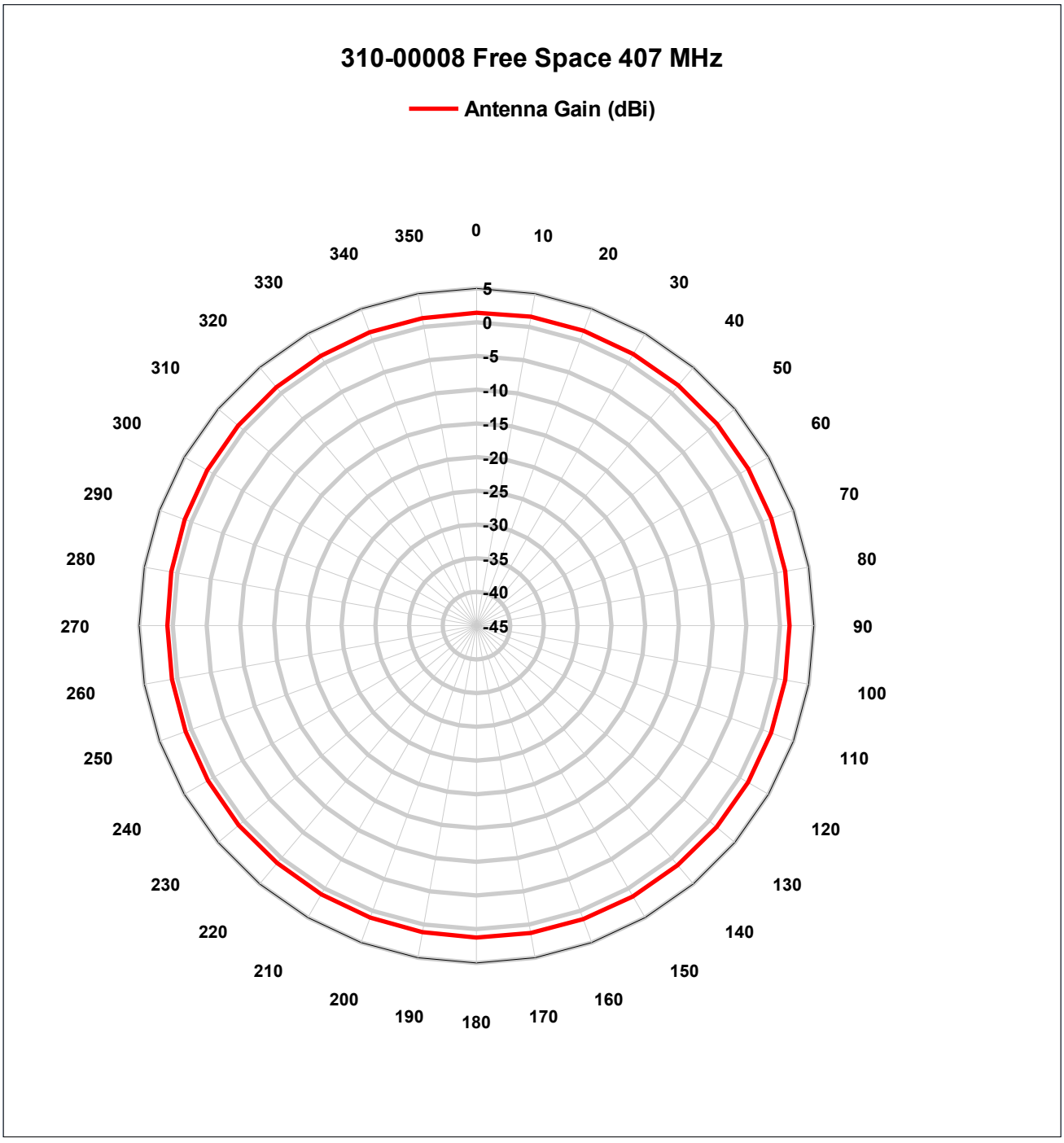
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	-0.02	-0.78	-0.28

2.3 300-00884 Free Space 470 MHz

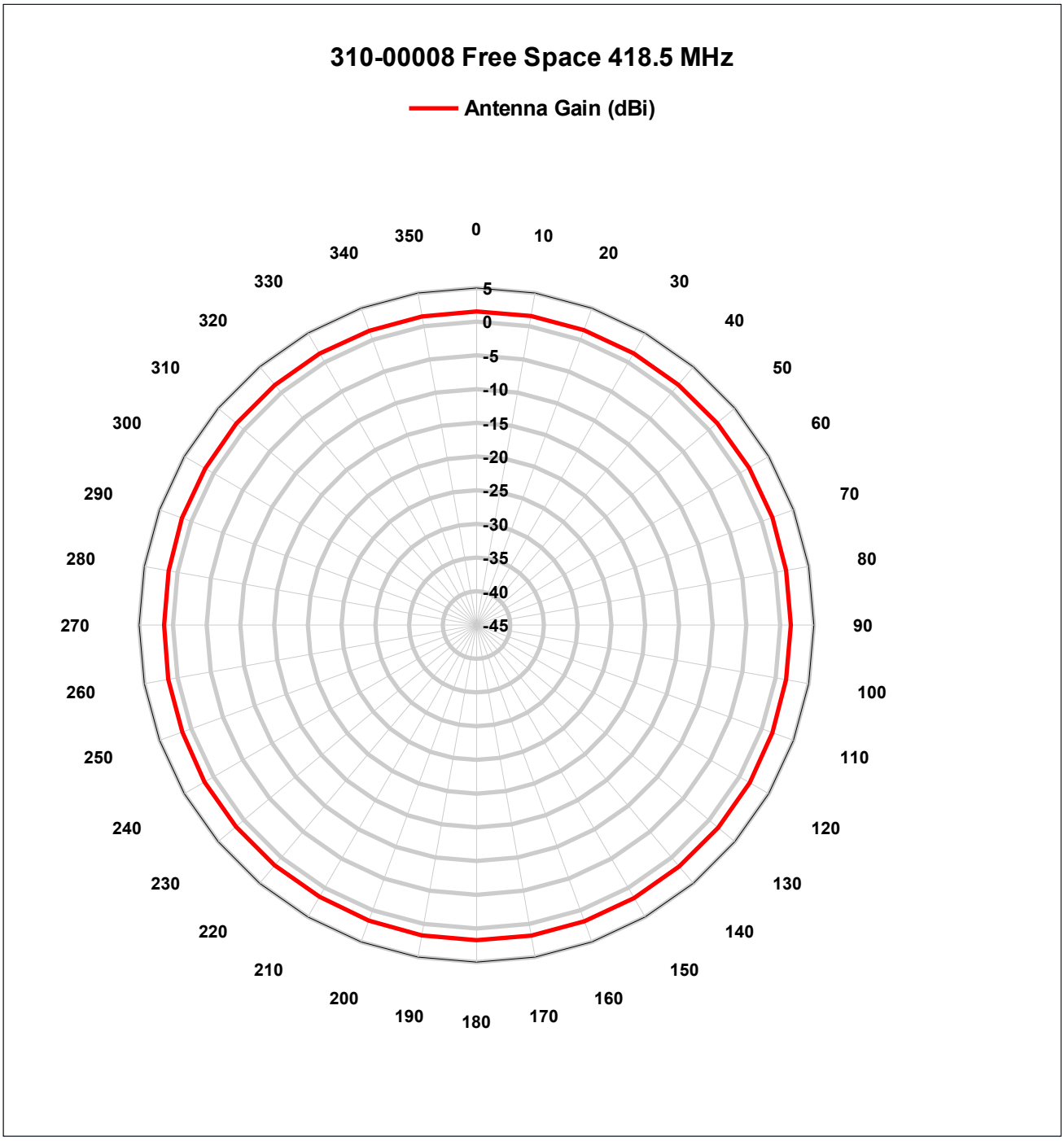
3 Polar plots - STP8X040



	MAX	MIN	AVG
Antenna Gain (dBi)	1.56	0.82	1.26

3.1 310-00008 Free Space 407 MHz

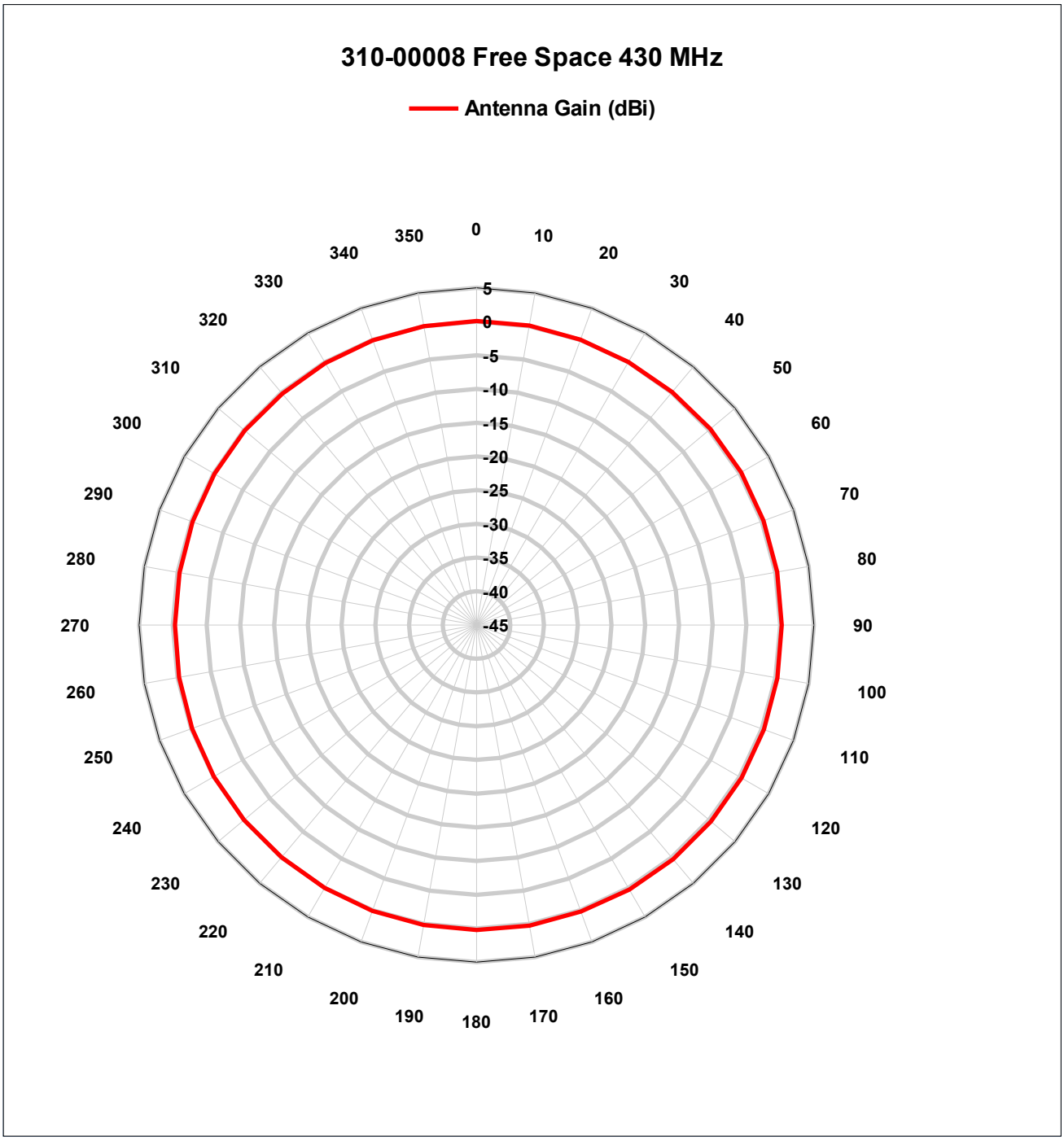
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	1.77	1.29	1.57

3.2 310-00008 Free Space 418.5 MHz

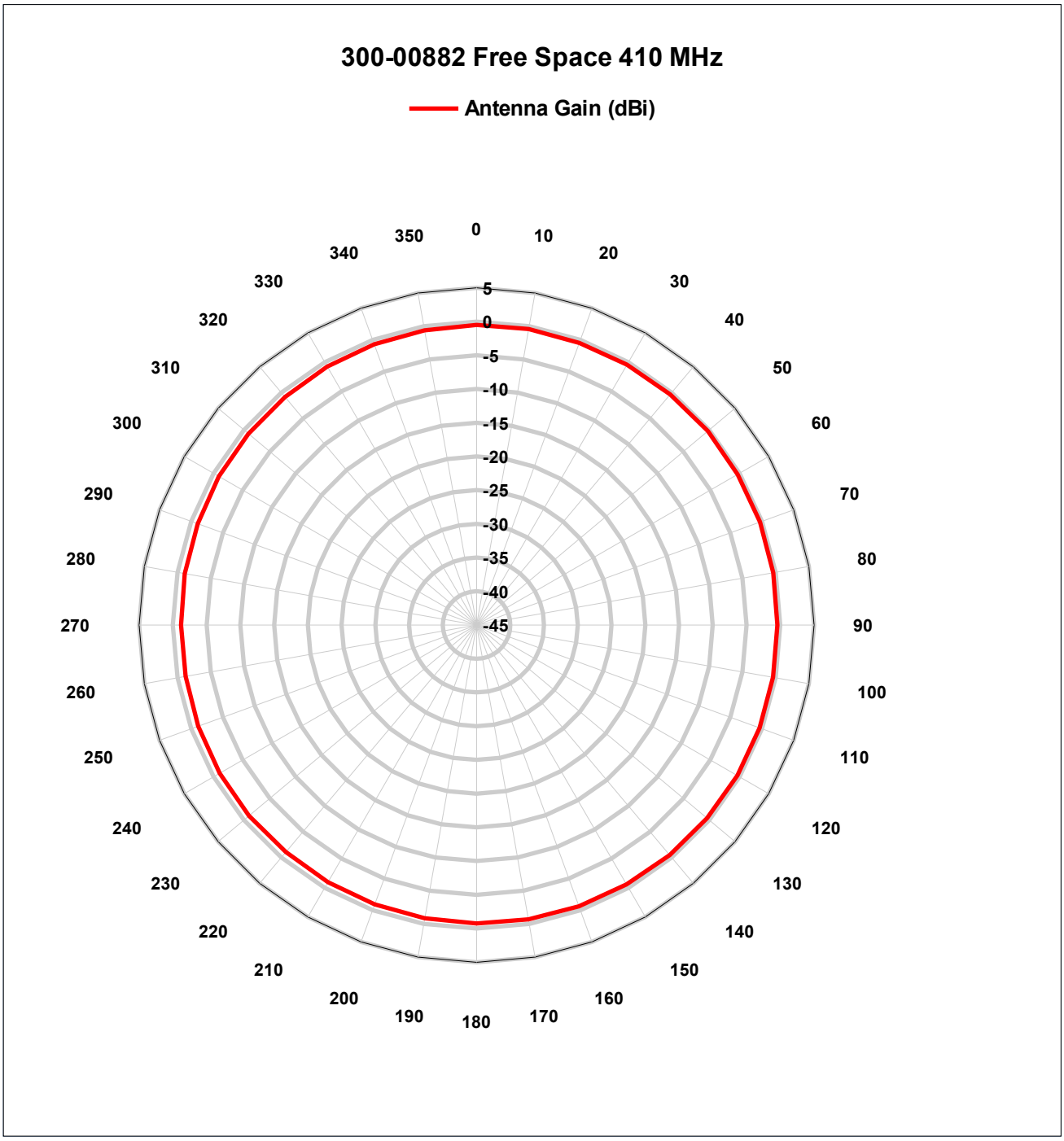
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.36	-0.32	0.08

3.3 310-00008 Free Space 430 MHz

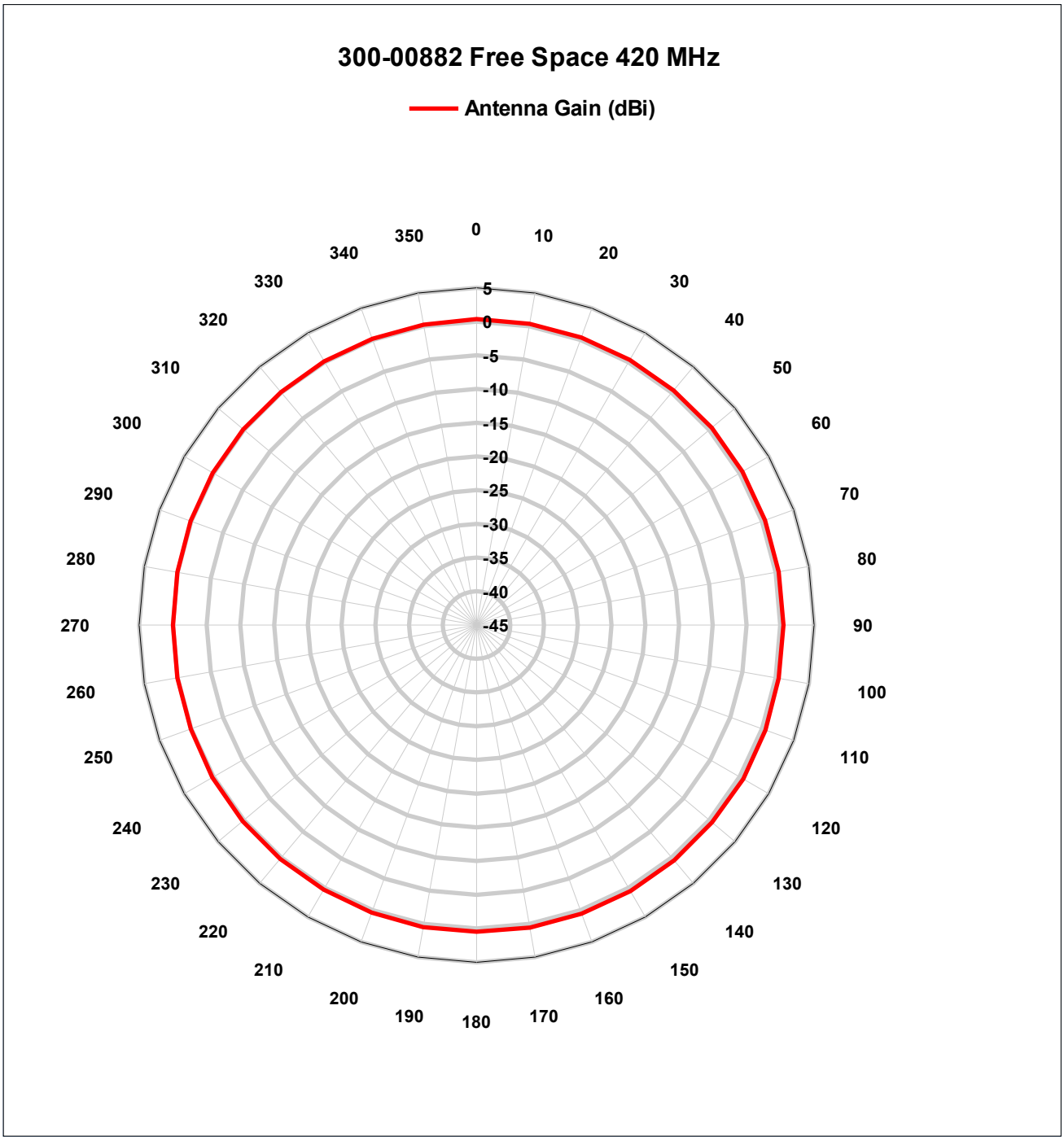
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	-0.26	-1.23	-0.68

3.4 300-00882 Free Space 410 MHz

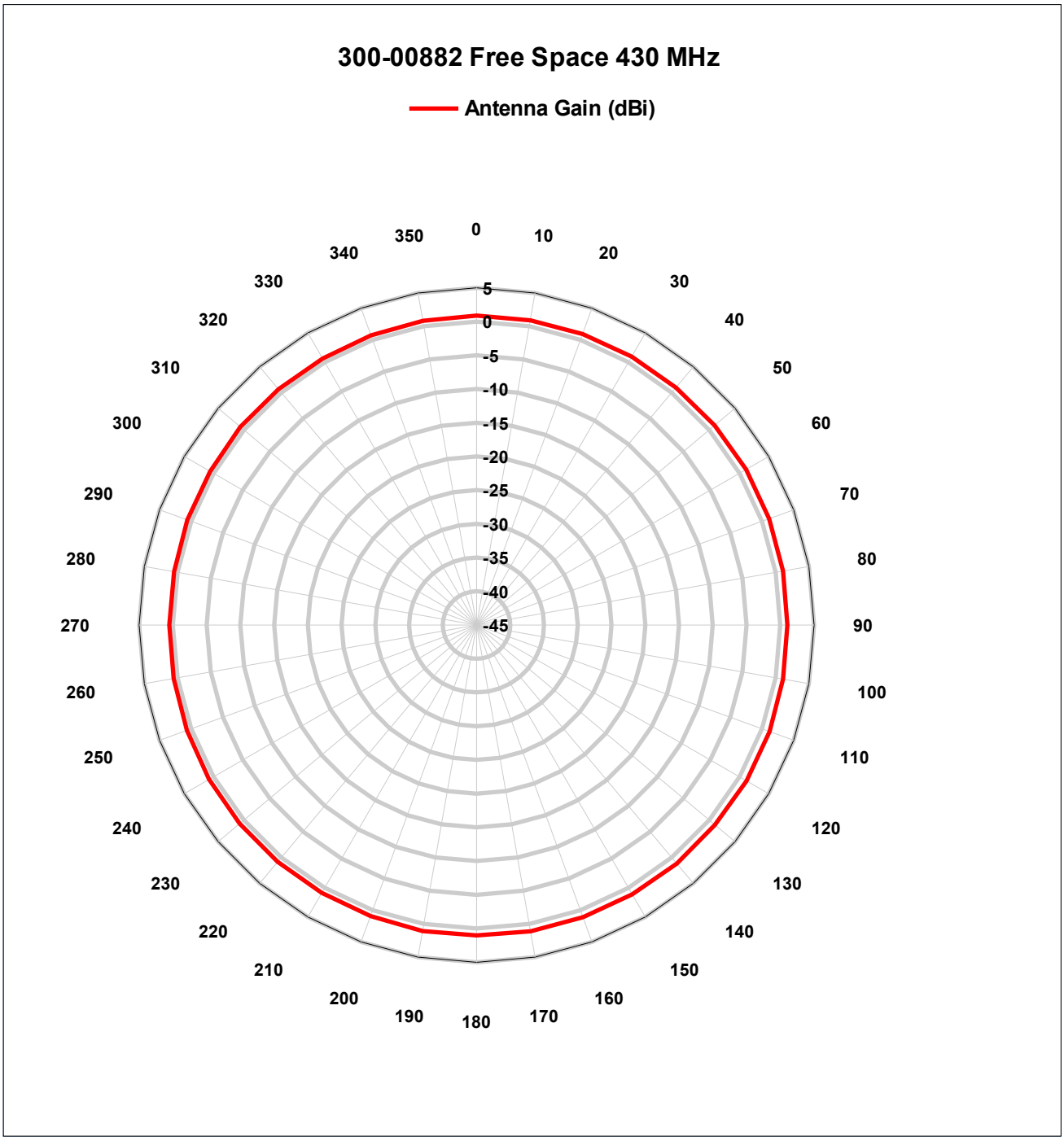
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.64	-0.02	0.34

3.5 300-00882 Free Space 420 MHz

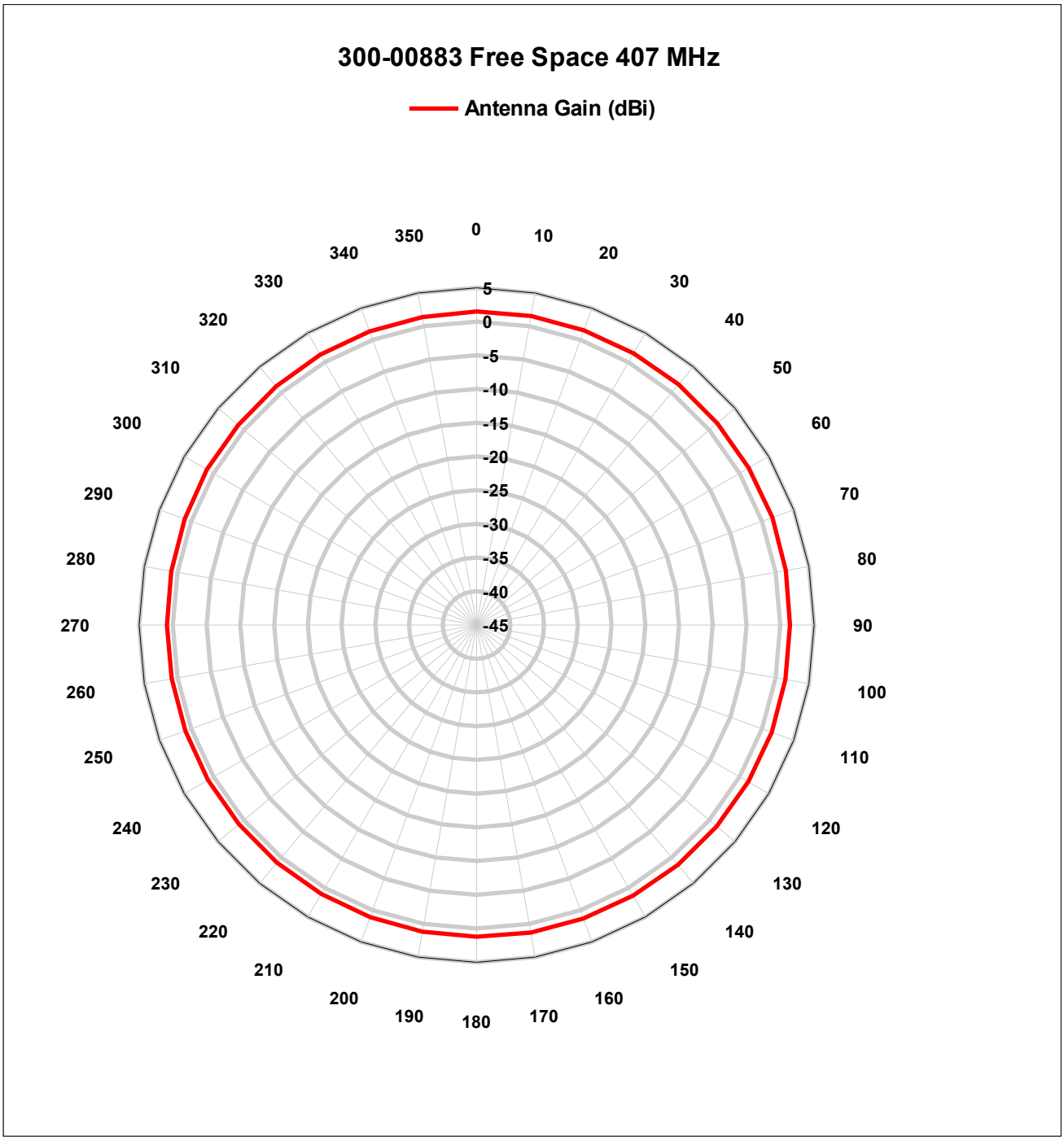
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	1.22	0.51	0.91

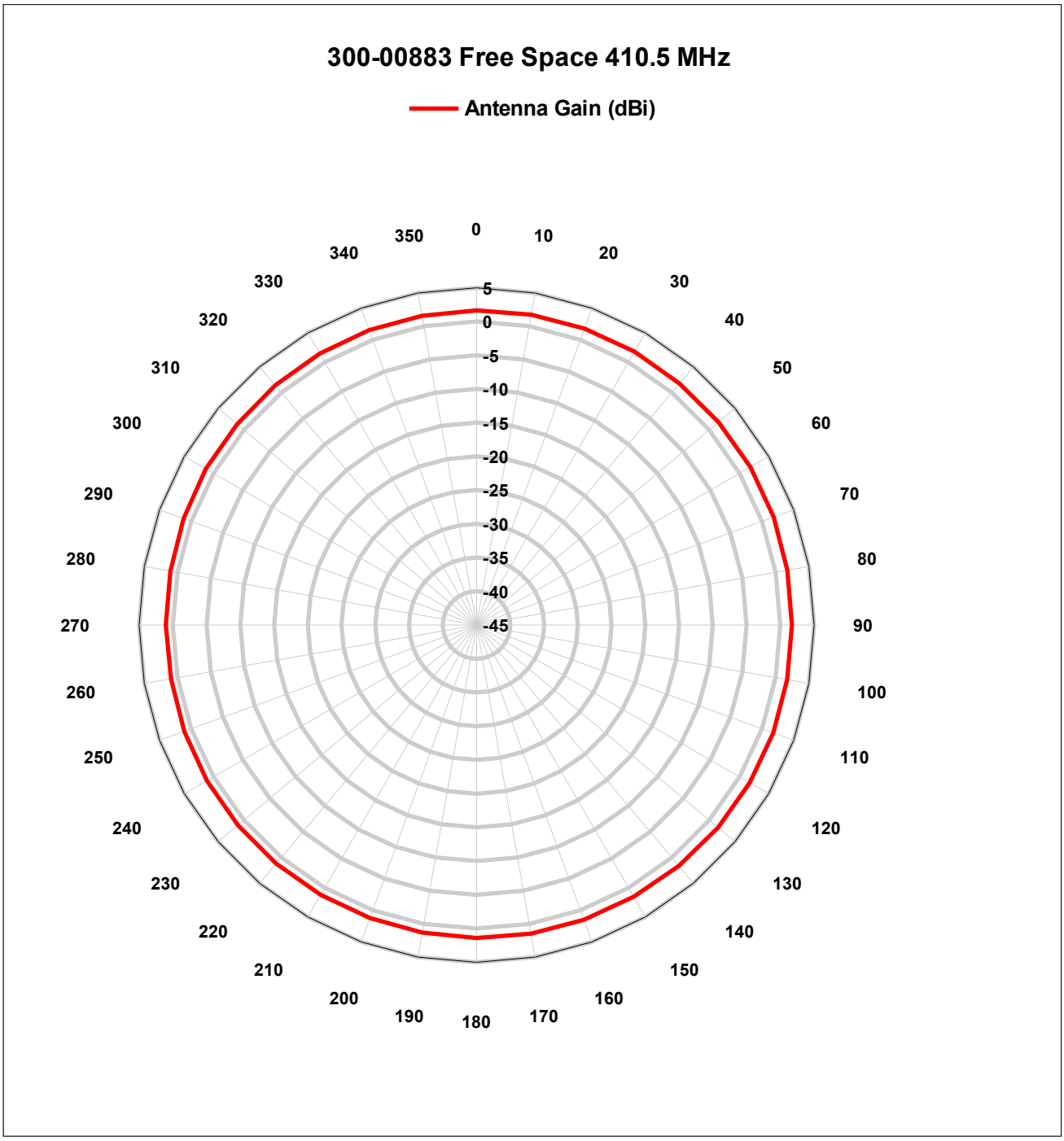
3.6 300-00882 Free Space 430 MHz

Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	1.65	0.87	1.29

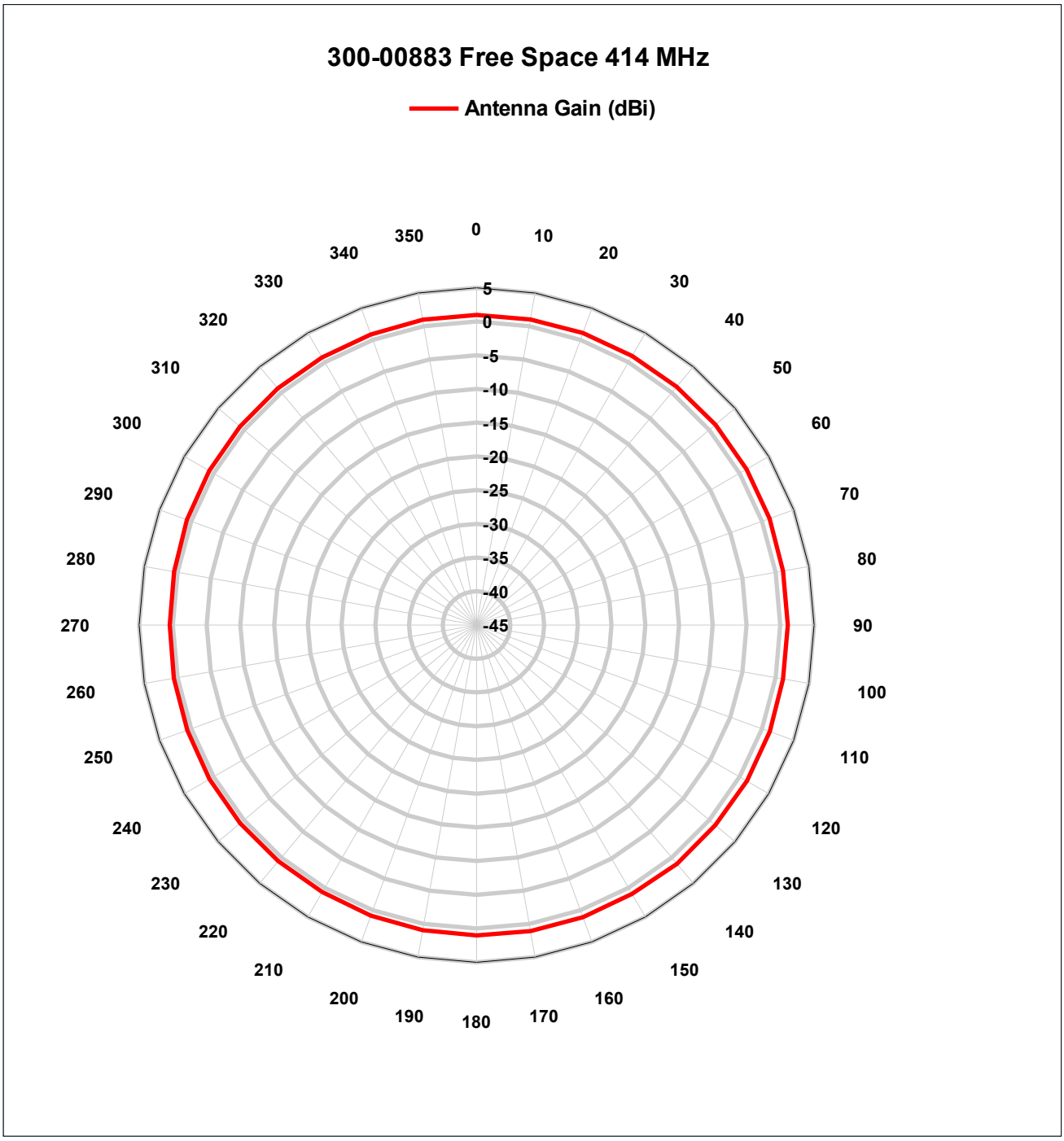
3.7 300-00883 Free Space 407 MHz



	MAX	MIN	AVG
Antenna Gain (dBi)	1.86	0.98	1.49

3.8 300-00883 Free Space 410.5 MHz

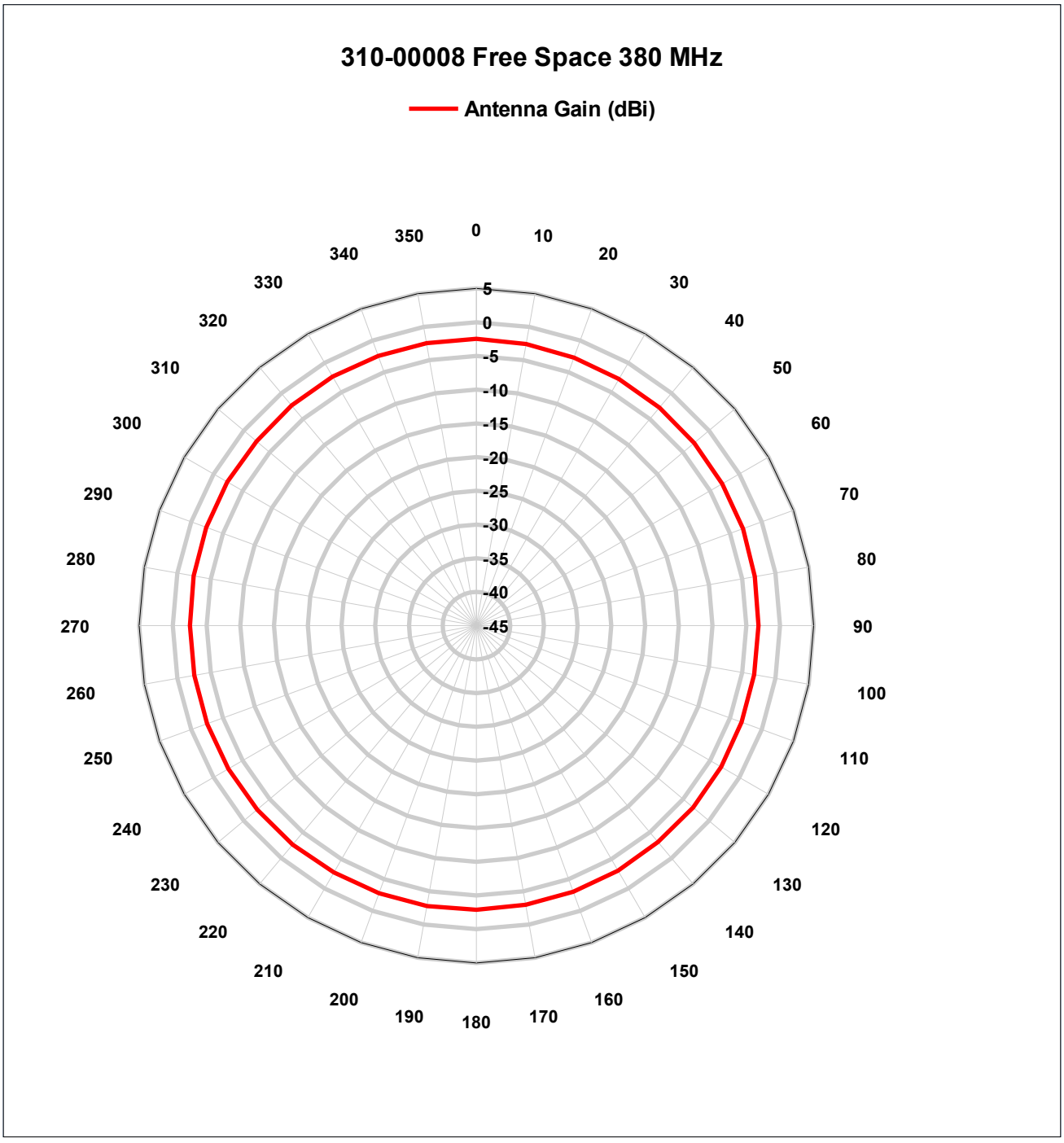
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	1.25	0.47	0.94

3.9 300-00883 Free Space 414 MHz

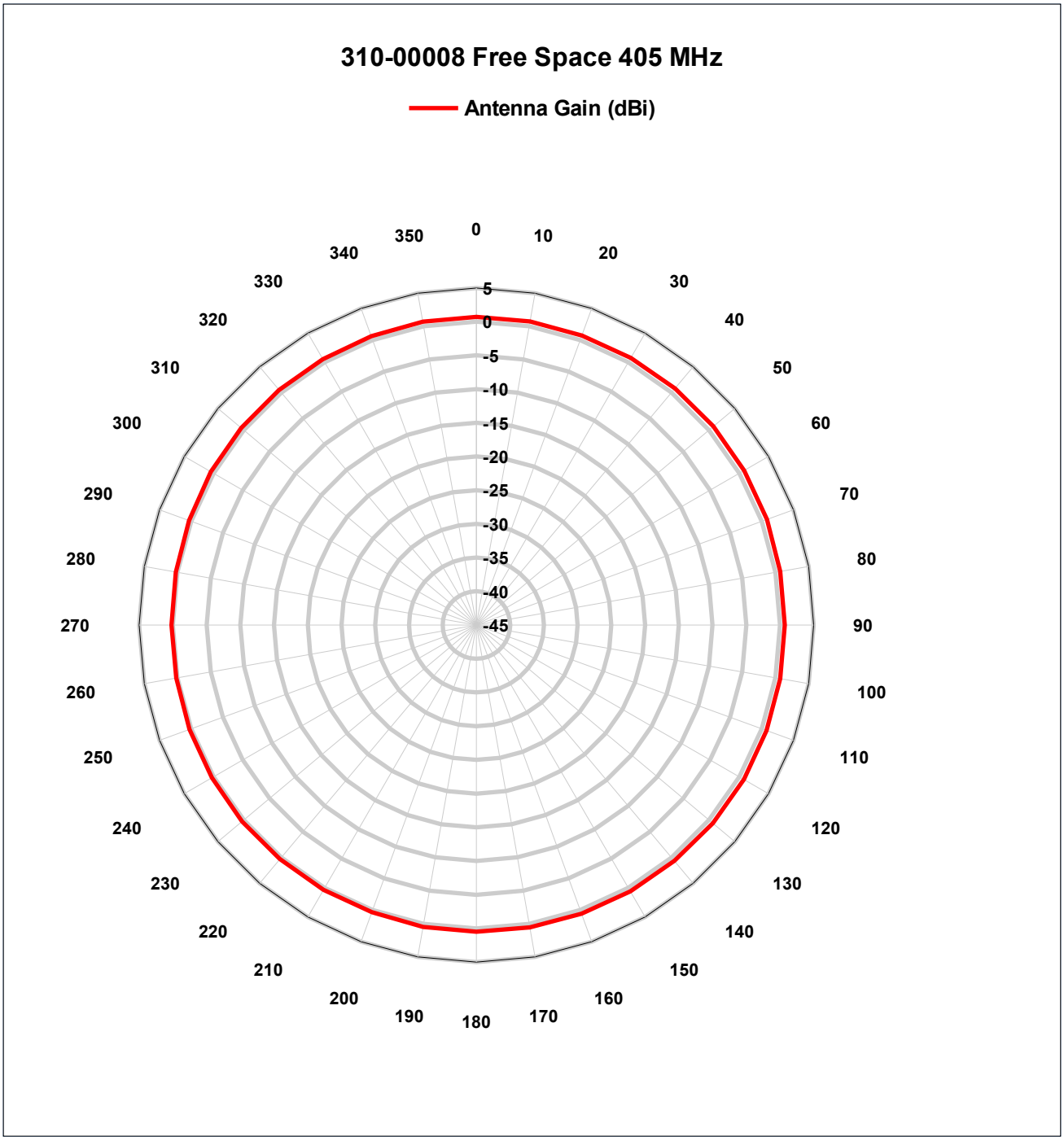
4 Polar Plots - STP8X038



	MAX	MIN	AVG
Antenna Gain (dBi)	-2.34	-3.19	-2.73

4.1 310-00008 Free Space 380 MHz

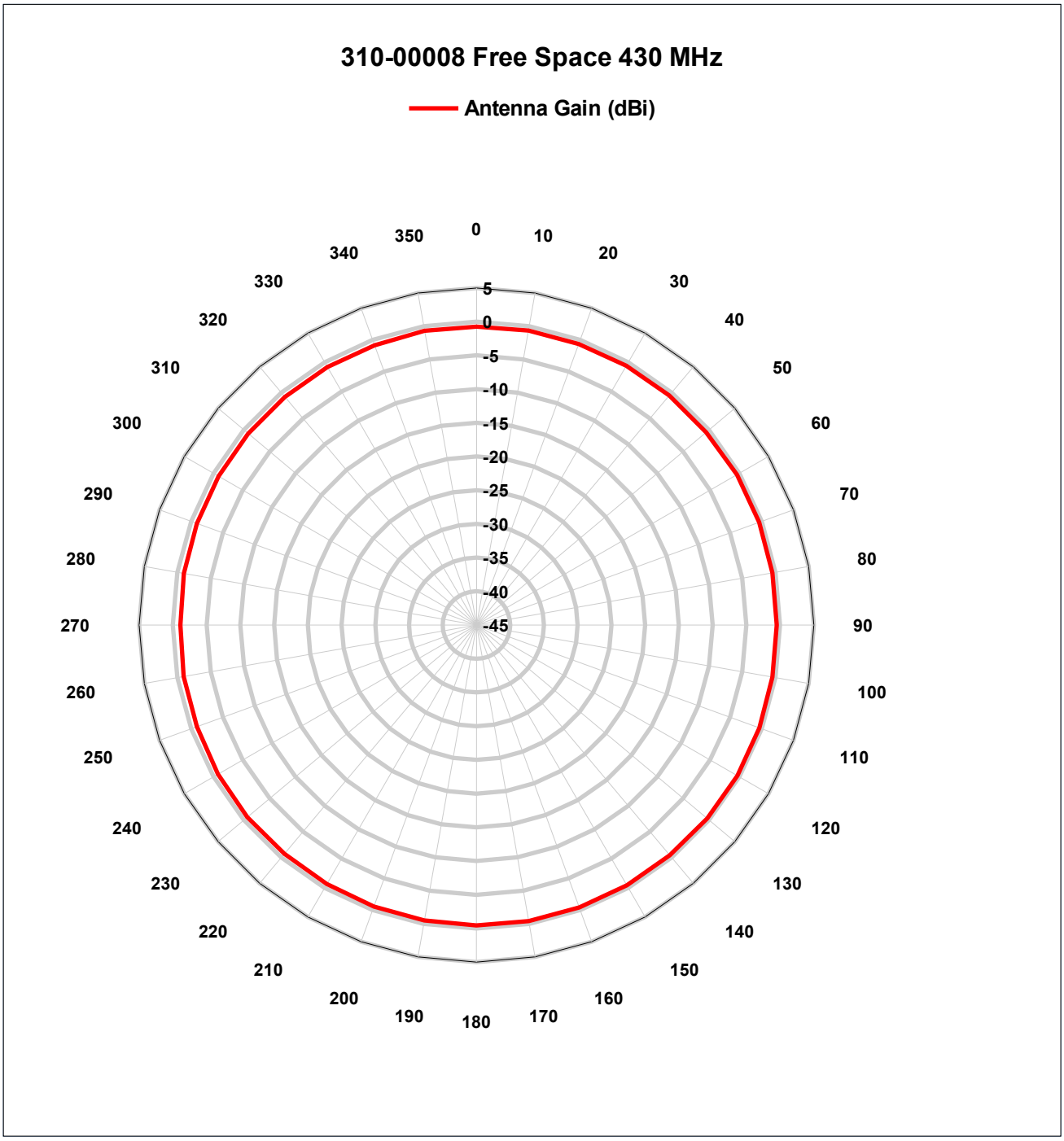
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.85	0.18	0.57

4.2 310-00008 Free Space 405 MHz

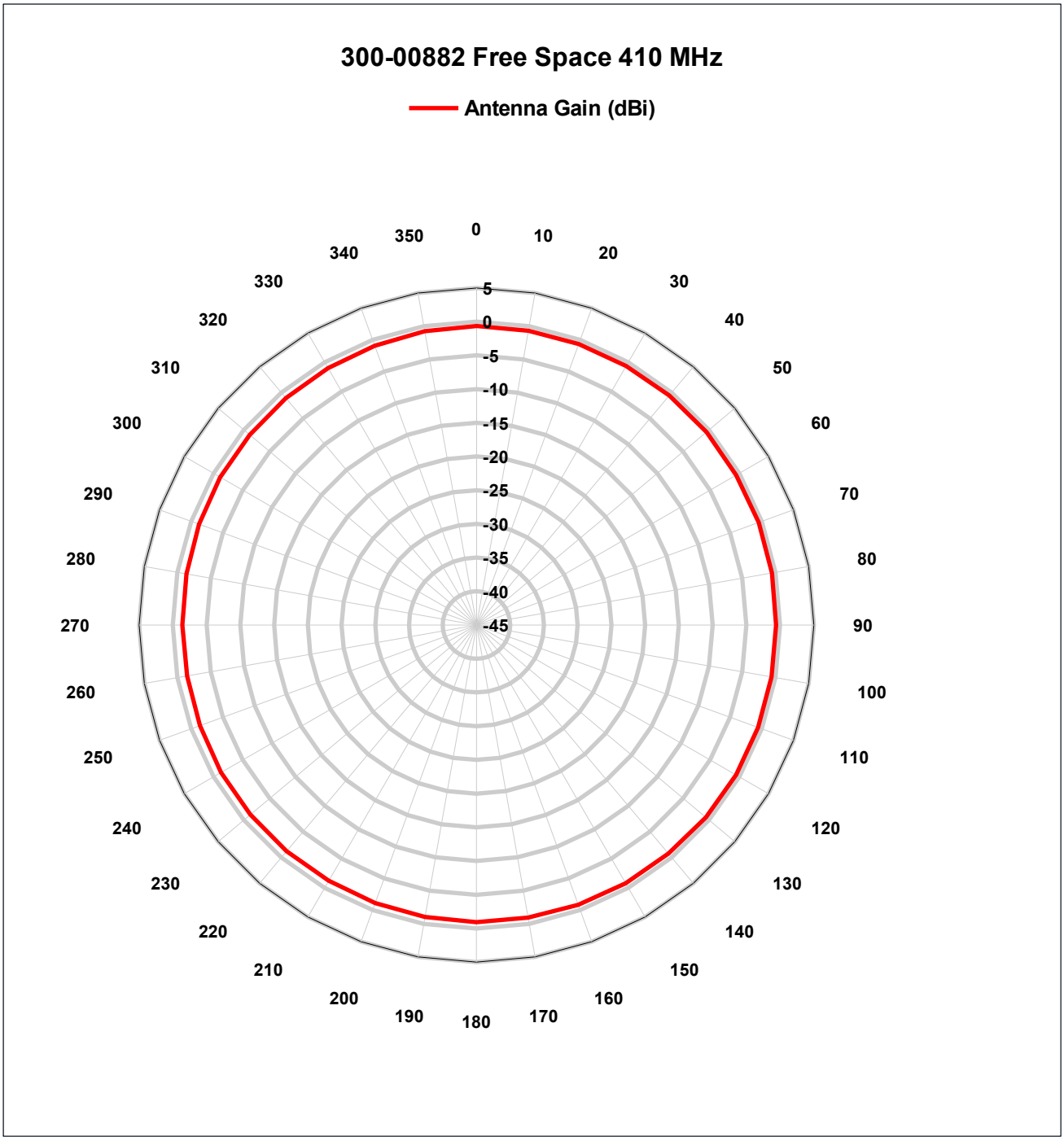
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	-0.31	-1.10	-0.62

4.3 310-00008 Free Space 430 MHz

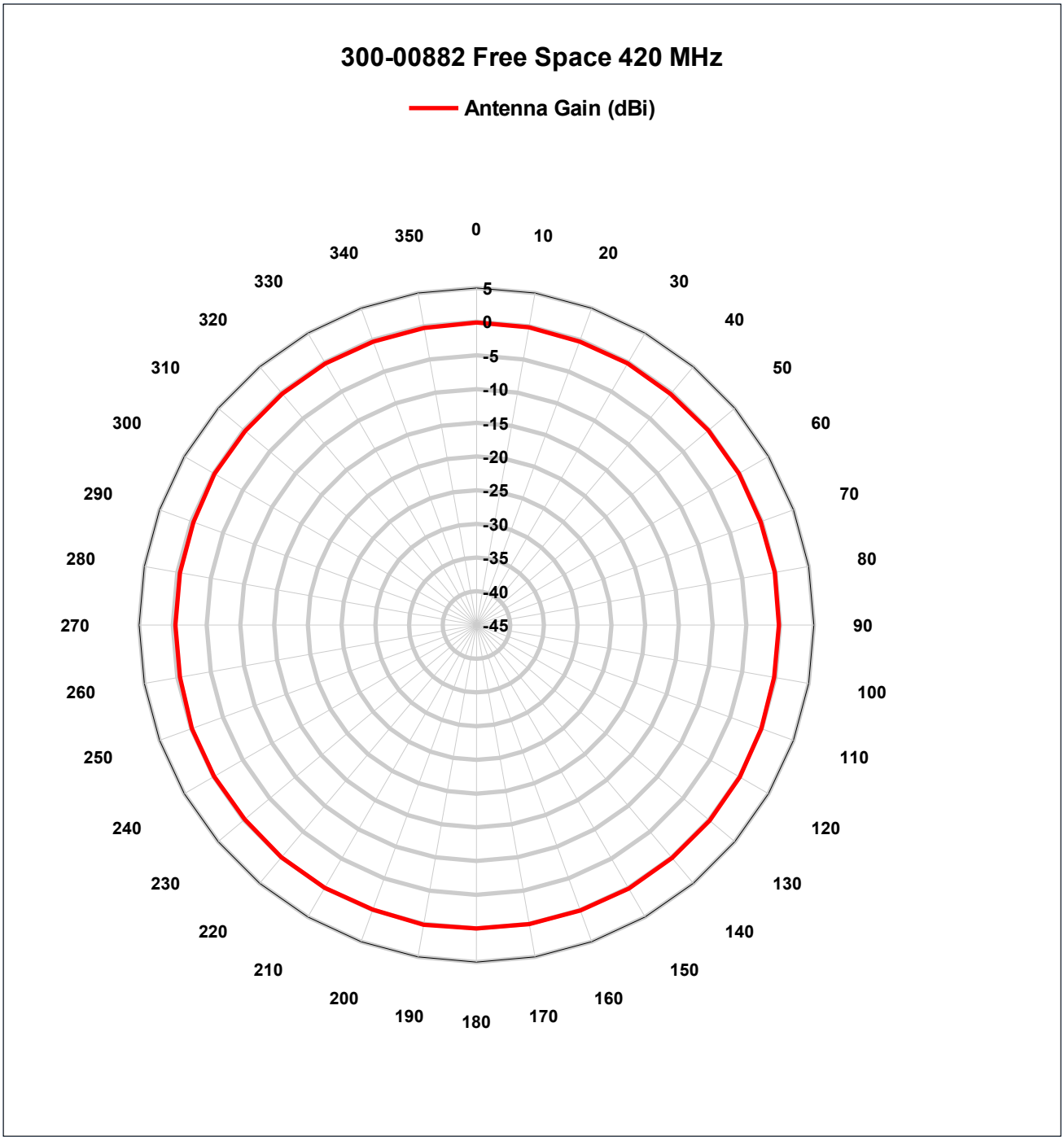
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	-0.48	-1.45	-0.88

4.4 300-00882 Free Space 410 MHz

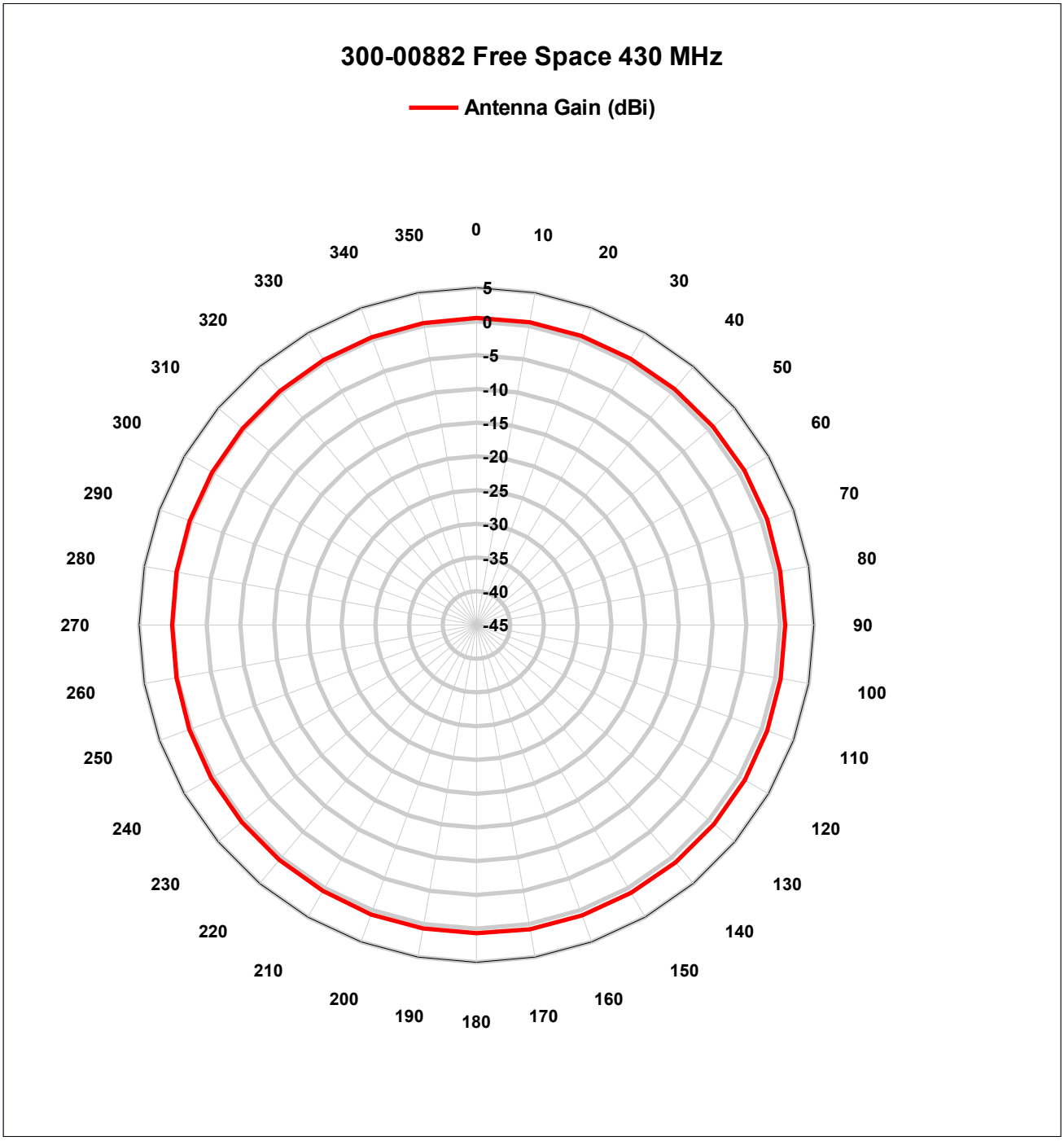
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.15	-0.39	-0.12

4.5 300-00882 Free Space 420 MHz

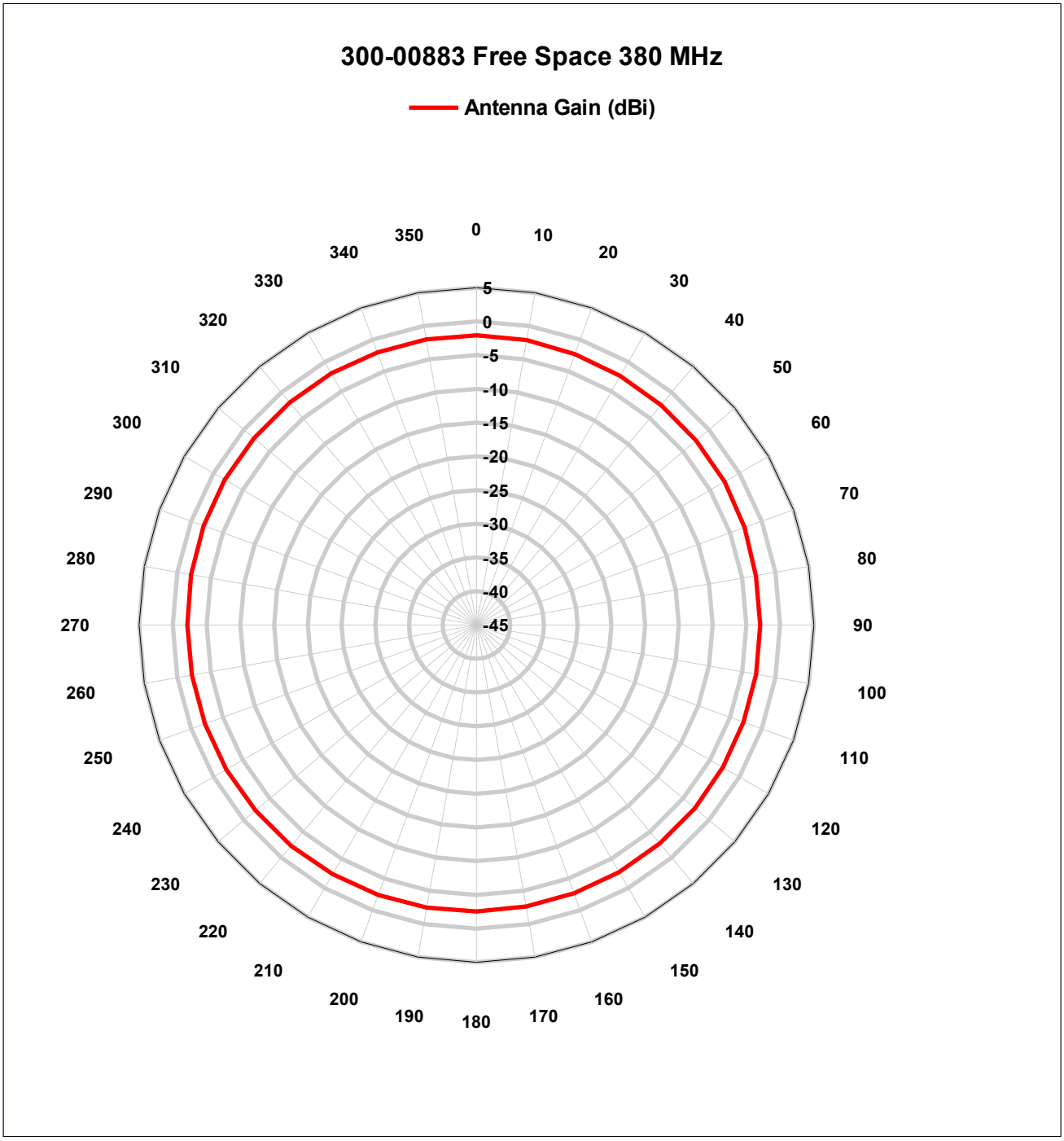
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.95	0.11	0.58

4.6 300-00882 Free Space 430 MHz

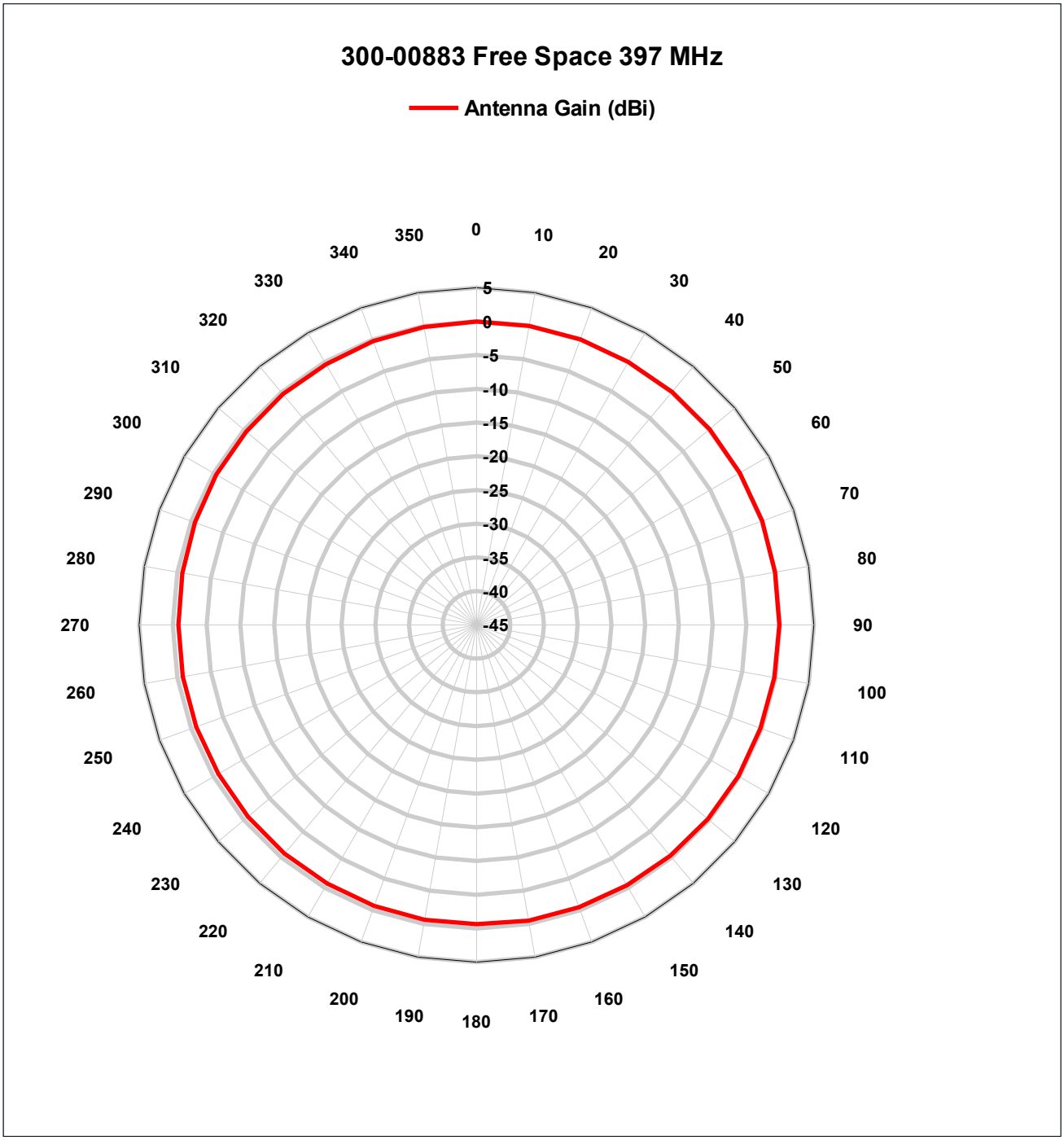
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	-1.93	-2.94	-2.37

4.7 300-00883 Free Space 380 MHz

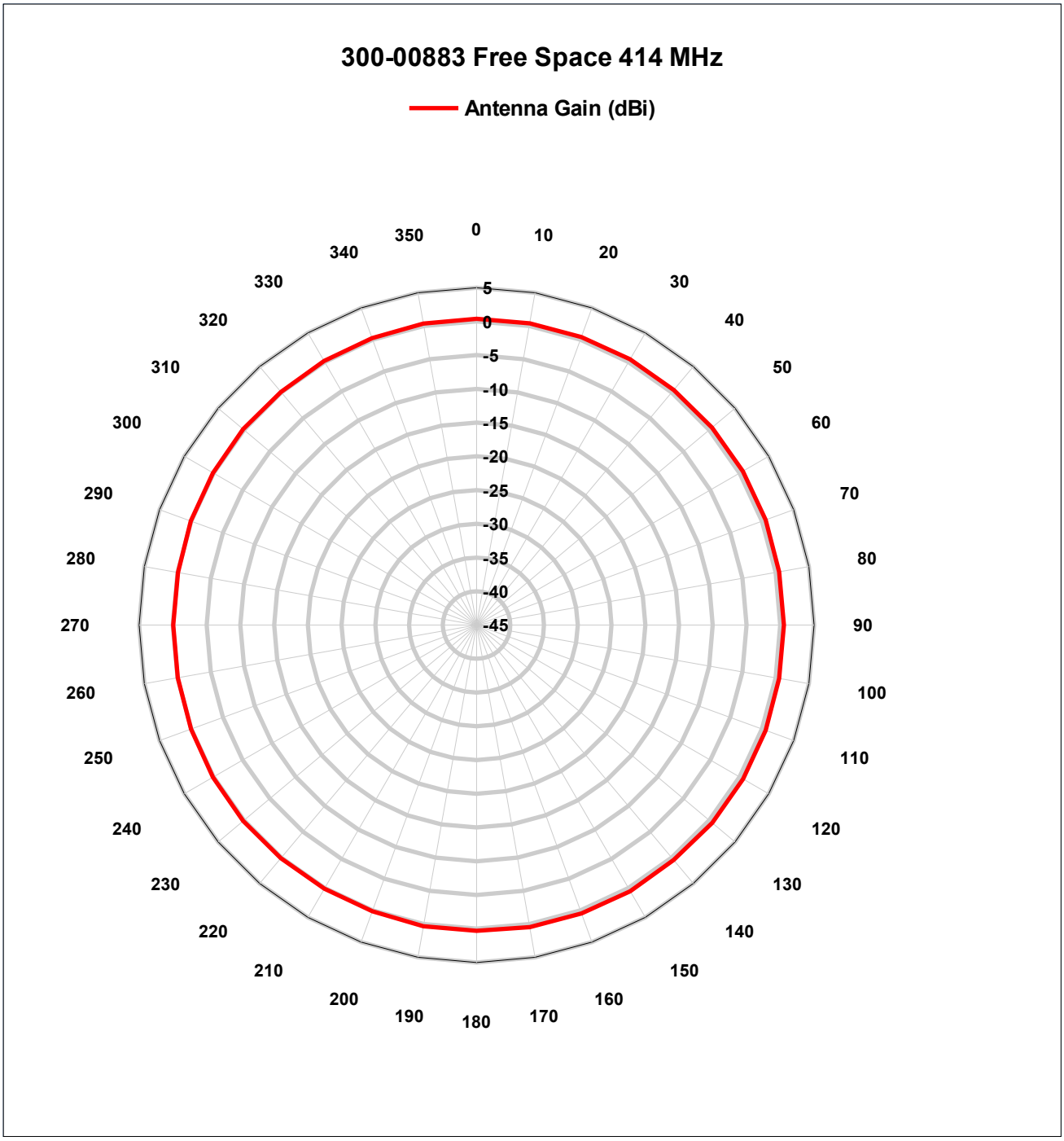
Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.10	-0.84	-0.35

4.8 300-00883 Free Space 397 MHz

Test Summary (not part of formal report)



	MAX	MIN	AVG
Antenna Gain (dBi)	0.62	-0.08	0.32

4.9 300-00883 Free Space 414 MHz

Photos

The following pages show various photographs taken during the testing.

