



# STA PERFORMANCE TEST REPORT

VENDOR NAME  
COMPANY NAME  
[VENDOR@EMAIL.COM](mailto:VENDOR@EMAIL.COM)

DEVICE AND TEST PLAN INFORMATION	
Device Under Test (DUT)	Device NAME
Test Specification/Suite	STA Performance, Version Test Script 1.34,
UNH-IOL Test ID	555555
This testing pertains to a set of standard requirements, put forth in revision 0.4 of the IOL 802.11 Station Performance Test Suite.	

CONTACT INFORMATION		
Testing Completed by	Tester Name	<a href="mailto:tester@iol.unh.edu">tester@iol.unh.edu</a>
Report Created by	Initial Reviewer	<a href="mailto:initialreviewer@iol.unh.edu">initialreviewer@iol.unh.edu</a>
Report Reviewed by	Final Reviewer	<a href="mailto:finalreviewer@iol.unh.edu">finalreviewer@iol.unh.edu</a>

Please use Adobe Acrobat to validate the authenticity of this document.



## SUMMARY OF RESULTS

The following table contains a summary of results other than PASS. The definition of result types can be found in the [Result Key](#).

TEST NUMBER & LABEL	RESULTS
No non-passing results were uncovered during testing.	

## TESTING NOTES

NOTES
Testing notes here.



## REVISION HISTORY

The following table contains a revision history for this report.

REVISION	DATE	AUTHOR	EXPLANATION
1.0	1/24/2024 3:13:12 PM	Report Author	Report explanation for this revision.

## DEVICE UNDER TEST AND INITIALIZATION INFORMATION

The following table contains the state of the DUT during testing.

COMPONENT	DESCRIPTION
NAME	Device NAME
MODEL	Device MODEL
MAKE	Device MAKE
SERIAL NUMBER	Device SERIAL NUMBER
FIRMWARE VERSION	Device FIRMWARE VERSION



## TEST TOOL AND ENVIRONMENT INFORMATION

The following table contains the test tool and test suite versions used during testing.

TOOL	Version
Test Tool	Test Sentinel-REL:2.1.0.16096 Build:b1eac80aa IR



## TESTBED DEVICES

The following tables contain devices from the UNH-IOL testbed used during testing.

quadAtten	
TYPE	WIRELESS_ATTENUATOR
IOL ID	26190
MODEL	quadAtten
MAKE	octoScope, Inc.
SERIAL NUMBER	QA-90613-12
FIRMWARE VERSION	3.2.25

quadAtten	
TYPE	WIRELESS_ATTENUATOR
IOL ID	26155
MODEL	quadAtten
MAKE	octoScope, Inc.
SERIAL NUMBER	QA70717-36
FIRMWARE VERSION	3.2.22

quadAtten	
TYPE	WIRELESS_ATTENUATOR
IOL ID	26156
MODEL	quadAtten
MAKE	octoScope, Inc.



quadAtten	
TYPE	WIRELESS_ATTENUATOR
IOL ID	27808
MODEL	quadAtten
MAKE	octoScope, Inc.
SERIAL NUMBER	QA-10118-13
FIRMWARE VERSION	3.2.25

OB-quadAtten-90	
TYPE	WIRELESS_ATTENUATOR
IOL ID	29468
MODEL	OB-quadAtten-90
MAKE	octoScope, Inc.
FIRMWARE VERSION	3.2.25
SERIAL NUMBER	QA-20928-21

MPE	
TYPE	WIRELESS_ATTENUATOR
IOL ID	26157
MODEL	MPE
MAKE	octoScope, Inc.
FIRMWARE VERSION	3.2.22
SERIAL NUMBER	MPE270422-02



Turntable	
TYPE	WIRELESS_TURNTABLE
IOL ID	26158
MODEL	Turntable
MAKE	octoScope, Inc.
SERIAL NUMBER	TT70126-14
FIRMWARE VERSION	3.2.25

Pal-6	
TYPE	WIRELESS_AP
IOL ID	26188
MODEL	Pal-6
MAKE	octoScope, Inc.
SERIAL NUMBER	PAL6-91220-92
FIRMWARE VERSION	20210215-093827-pal6-v11.2.1.1 : 20220131-071319-pal6e-21q4



## RESULTS

The following table contains all results from testing. Detailed test results including observed behaviors can be found in the [Detailed Test Results](#).

TEST NUMBER & LABEL	RESULTS
2.1 - Maximum Throughput Test	<b>PASS</b>
2.2 - Bidirectional Throughput Test	<b>PASS</b>
3.1 - Range Versus Rate Test	<b>PASS</b>
3.2 - Spatial Consistency Test	<b>PASS</b>
4.1 - Long Term Stability	<b>PASS</b>





## DETAILED TEST RESULTS

2.1 - Maximum Throughput Test	PARTS	RESULTS
		<b>PASS</b>

Throughput (Mbps)				RSSI	
Required DL	Observed DL	Required UL	Observed UL	Downlink	Uplink
1	170.857	1	129.680	-49	-49

Summary		
Downlink throughput must reach at least 1 Mbps.	Reported: 170.857 Mbps	Pass
Uplink throughput must reach at least 1 Mbps.	Reported: 129.68 Mbps	Pass



2.2 - Bidirectional Throughput Test	PARTS	RESULTS
		PASS

Qualifying Measurements				
Attenuation (dB)	Baseline TCP Throughput		Baseline RSSI	
	Downlink	Uplink	Downlink	Uplink
0	181.222	79.339	-35	-36
20	100.539	80.397	-56	-56
40	68.724	57.401	-74	-75

Measurements							
Attenuation (dB)	UDP Throughput (Mbps)		Percent Throughput Lost (PTL)			RSSI	
	Downlink	Uplink	Maximum lowered	AI-	Downlink		Uplink
0	81.55	35.692	0.01%		0.000%	0.000%	-35
20	45.243	36.171	0.01%		0.000%	0.000%	-56
40	30.926	25.835	0.01%		0.000%	0.000%	-75



0 dB Metrics		
The uplink baseline TCP throughput shall be greater than 0.	Reported: 79.339	Pass
The downlink baseline TCP throughput shall be greater than 0.	Reported: 181.222	Pass
Uplink PTL shall not exceed 0.01.	Reported: 0	Pass
Downlink PTL shall not exceed 0.01.	Reported: 0	Pass

20 dB Metrics		
The uplink baseline TCP throughput shall be greater than 0.	Reported: 80.397	Pass
The downlink baseline TCP throughput shall be greater than 0.	Reported: 100.539	Pass
Uplink PTL shall not exceed 0.01.	Reported: 0	Pass
Downlink PTL shall not exceed 0.01.	Reported: 0	Pass

40 dB Metrics		
The uplink baseline TCP throughput shall be greater than 0.	Reported: 57.401	Pass
The downlink baseline TCP throughput shall be greater than 0.	Reported: 68.724	Pass
Uplink PTL shall not exceed 0.01.	Reported: 0	Pass
Downlink PTL shall not exceed 0.01.	Reported: 0	Pass

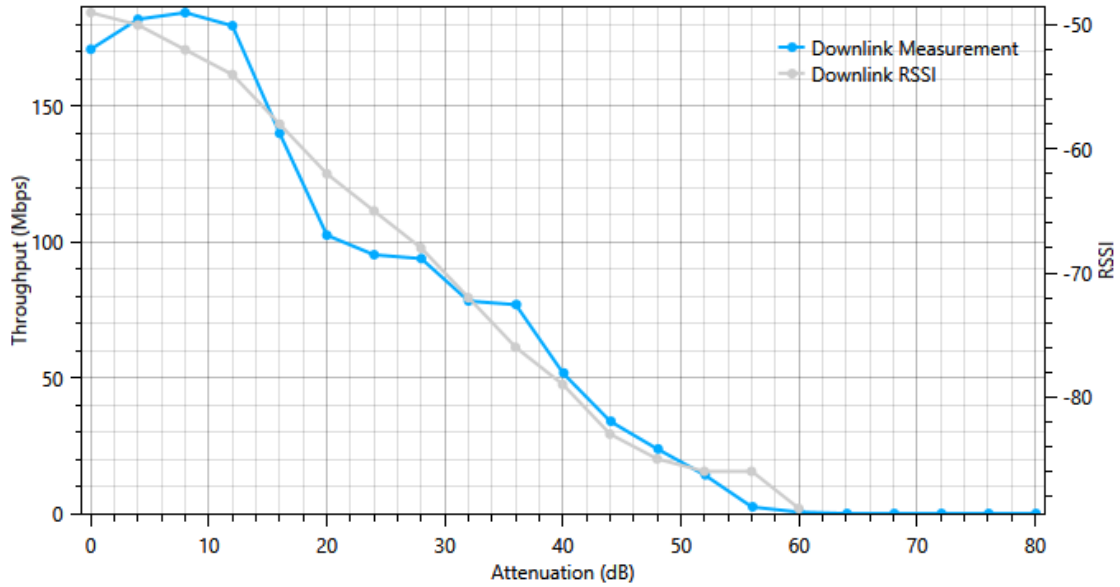


3.1 - Range Versus Rate Test	PARTS	RESULTS
		PASS
OBSERVED BEHAVIOR & ADDITIONAL COMMENTS		
A non-standard ending attenuation of 80 dB was used for this test section.		

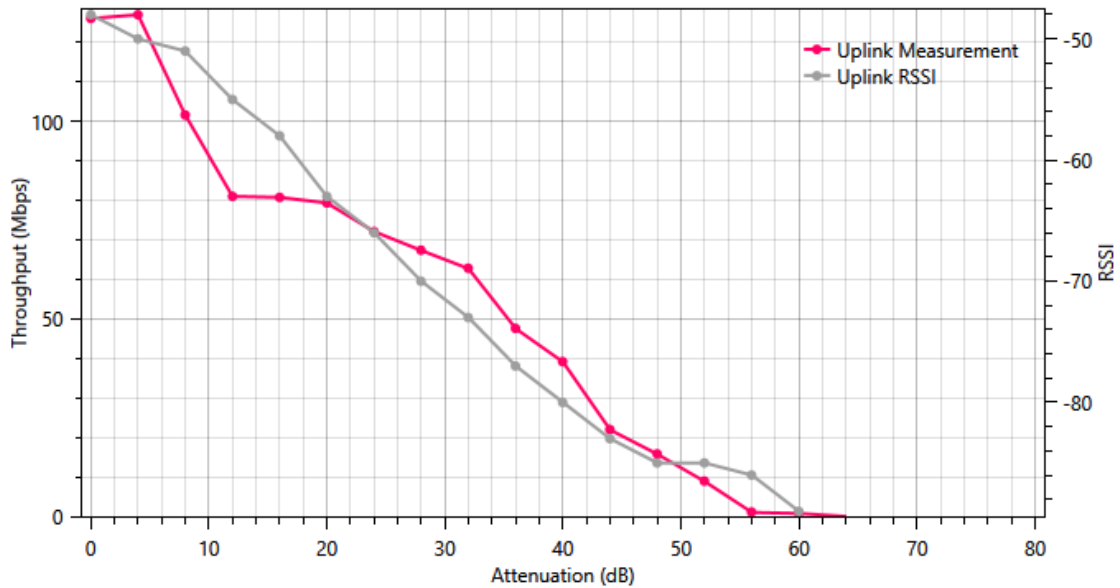
Attenuation (dB)	Downlink (Mbps)		Uplink (Mbps)		RSSI	
	Required	Observed	Required	Observed	Downlink	Uplink
0	TBD	170.901	TBD	126.023	-49	-48
4	TBD	181.953	TBD	126.982	-50	-50
8	TBD	184.402	TBD	101.61	-52	-51
12	TBD	179.57	TBD	81.021	-54	-55
16	TBD	139.975	TBD	80.758	-58	-58
20	TBD	102.46	TBD	79.341	-62	-63
24	TBD	95.254	TBD	72.101	-65	-66
28	TBD	93.848	TBD	67.312	-68	-70
32	TBD	78.236	TBD	62.721	-72	-73
36	TBD	76.905	TBD	47.522	-76	-77
40	TBD	51.716	TBD	39.092	-79	-80
44	TBD	33.958	TBD	21.907	-83	-83
48	TBD	23.756	TBD	15.758	-85	-85
52	TBD	14.226	TBD	8.871	-86	-85
56	TBD	2.454	TBD	1.031	-86	-86
60	TBD	0.526	TBD	0.777	-89	-89
64	TBD	N/A	TBD	N/A	N/A	N/A
68	TBD	N/A	TBD	N/A	N/A	N/A
72	TBD	N/A	TBD	N/A	N/A	N/A
76	TBD	N/A	TBD	N/A	N/A	N/A
80	TBD	N/A	TBD	N/A	N/A	N/A



### Range Vs Rate Downlink



### Range Vs Rate Uplink





Summary		
The DUT SHALL NOT fail more than 2 test points.	Reported: 0	Pass

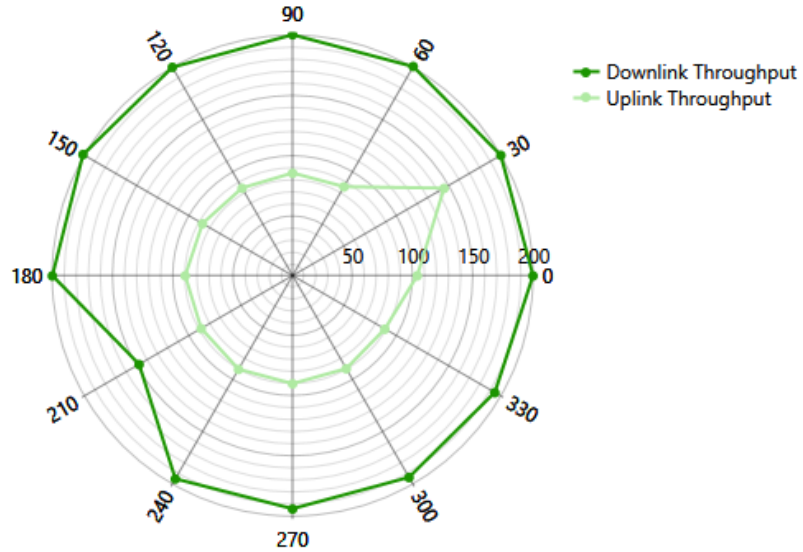


3.2 - Spatial Consistency Test	PARTS	RESULTS
		PASS

Attenuation: 0 dB						
Rotation (deg)	Downlink (Mbps)		Uplink (Mbps)		RSSI	
	Required	Observed	Required	Observed	Downlink	Uplink
0	N/A	199.314	N/A	103.332	-53	-46
30	N/A	199.306	N/A	145.015	-54	-53
60	N/A	200.013	N/A	85.118	-47	-45
90	N/A	199.544	N/A	85.036	-42	-42
120	N/A	199.306	N/A	83.812	-38	-38
150	N/A	200.551	N/A	86.237	-39	-39
180	N/A	199.12	N/A	88.989	-39	-39
210	N/A	146.894	N/A	87.491	-43	-43
240	N/A	194.349	N/A	89.55	-31	-30
270	N/A	193.192	N/A	89.479	-31	-31
300	N/A	192.962	N/A	88.974	-32	-32
330	N/A	193.545	N/A	88.296	-34	-33
<b>Average</b>	<b>N/A</b>	193.175	<b>N/A</b>	200.533	<b>N/A</b>	<b>N/A</b>
<b>Minimum</b>	<b>N/A</b>	146.894	<b>N/A</b>	83.812	<b>N/A</b>	<b>N/A</b>
<b>Variation</b>	<b>N/A</b>	0.2396	<b>N/A</b>	0.2396	<b>N/A</b>	<b>N/A</b>



**0dB Spatial Consistency DL/UL**  
 Angle (Rotation Degrees) | Magnitude (Throughput Mbps)



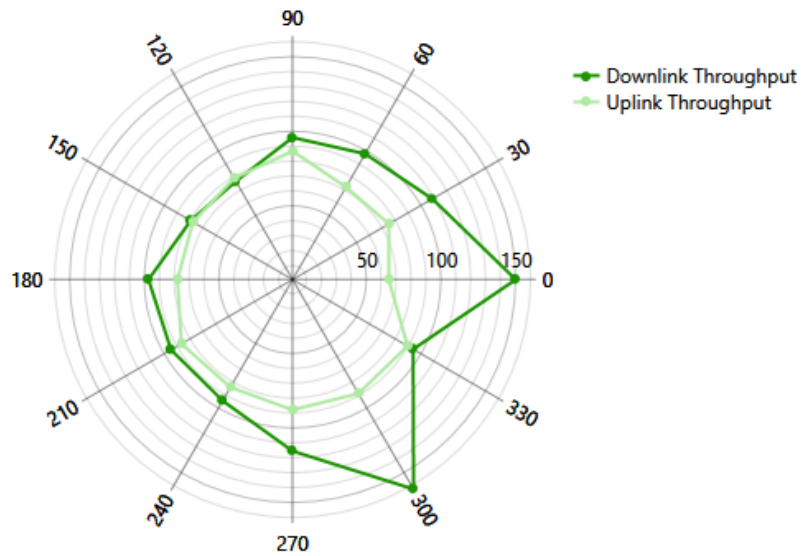
Attenuation: 20 dB						
Rotation (deg)	Downlink (Mbps)		Uplink (Mbps)		RSSI	
	Required	Observed	Required	Observed	Downlink	Uplink
0	N/A	149.643	N/A	64.491	-59	-59
30	N/A	108.267	N/A	74.61	-67	-67
60	N/A	97.374	N/A	71.607	-69	-69
90	N/A	95.235	N/A	86.14	-62	-62
120	N/A	76.107	N/A	78.42	-66	-66
150	N/A	78.934	N/A	77.162	-63	-63
180	N/A	96.614	N/A	77.192	-63	-63
210	N/A	94.148	N/A	86.12	-51	-51
240	N/A	93.777	N/A	83.359	-48	-48





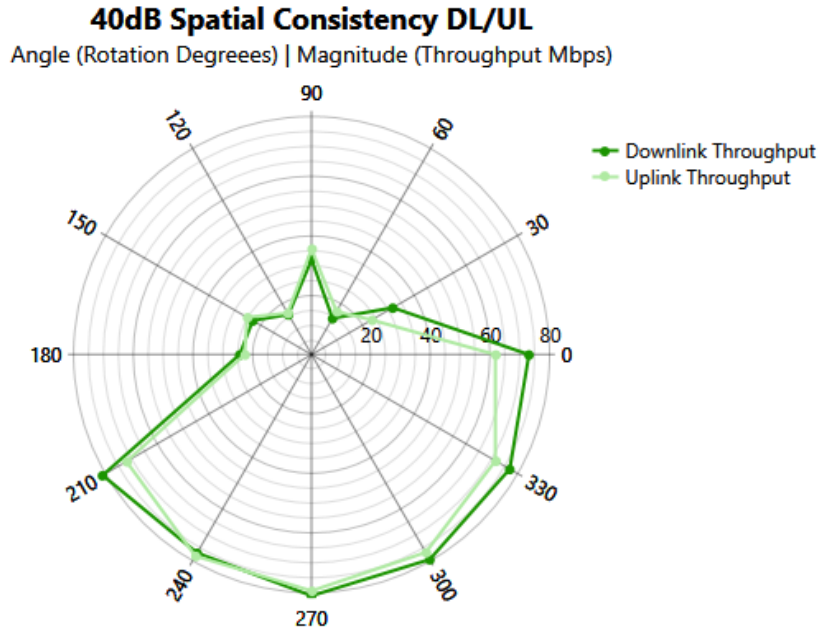
270	N/A	114.981	N/A	87.346	-47	-48
300	N/A	162.229	N/A	88.255	-48	-48
330	N/A	93.336	N/A	89.023	-50	-50
<b>Average</b>	<b>N/A</b>	105.054	<b>N/A</b>	112.472	<b>N/A</b>	<b>N/A</b>
<b>Minimum</b>	<b>N/A</b>	76.107	<b>N/A</b>	64.491	<b>N/A</b>	<b>N/A</b>
<b>Variation</b>	<b>N/A</b>	0.2755	<b>N/A</b>	0.2755	<b>N/A</b>	<b>N/A</b>

**20dB Spatial Consistency DL/UL**  
 Angle (Rotation Degrees) | Magnitude (Throughput Mbps)





Attenuation: 40 dB						
Rotation (deg)	Downlink (Mbps)		Uplink (Mbps)		RSSI	
	Required	Observed	Required	Observed	Downlink	Uplink
0	N/A	72.812	N/A	61.564	-76	-77
30	N/A	31.414	N/A	23.243	-82	-82
60	N/A	14.031	N/A	16.679	-86	-86
90	N/A	31.825	N/A	35.307	-79	-80
120	N/A	15.499	N/A	16.054	-85	-85
150	N/A	22.77	N/A	24.972	-84	-83
180	N/A	24.085	N/A	22.451	-85	-86
210	N/A	80.852	N/A	71.576	-70	-71
240	N/A	76.674	N/A	77.885	-67	-68
270	N/A	80.781	N/A	79.123	-68	-69
300	N/A	79.191	N/A	76.49	-68	-68
330	N/A	76.637	N/A	71.114	-70	-71
<b>Average</b>	<b>N/A</b>	50.548	<b>N/A</b>	56.474	<b>N/A</b>	<b>N/A</b>
<b>Minimum</b>	<b>N/A</b>	14.031	<b>N/A</b>	16.054	<b>N/A</b>	<b>N/A</b>
<b>Variation</b>	<b>N/A</b>	0.7224	<b>N/A</b>	0.7224	<b>N/A</b>	<b>N/A</b>



Summary		
At 0 dB attenuation, the DUT SHALL NOT fail more than two points.	Reported: 0 points failed	Pass
At 20 dB attenuation, the DUT SHALL NOT fail more than two points.	Reported: 0 points failed	Pass
At 40 dB attenuation, the DUT SHALL NOT fail more than two points.	Reported: 0 points failed	Pass



4.1 - Long Term Stability	PARTS	RESULTS
		PASS

Baseline Measurements		
Time (Minutes)	TCP Throughput (Mbps)	Rssi
2.00	170.683	-36

Interval	Run Time (Minutes)	Throughput (Mbps)		Packets		Percent Throughput Lost (PTL)		RSSI
		Target	Observed	Sent	Lost	Maximum	Observed	
Iteration 1	15.00	76.807	76.826	5968898	0	0.001%	0.000%	-37
Iteration 2	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-41
Iteration 3	15.00	76.807	76.779	5958606	0	0.001%	0.000%	-41
Iteration 4	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-40
Iteration 5	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-41
Iteration 6	15.00	76.807	76.814	5967460	0	0.001%	0.000%	-41
Iteration 7	15.00	76.807	76.811	5967238	0	0.001%	0.000%	-41
Iteration 8	15.00	76.807	76.807	5966877	0	0.001%	0.000%	-41
Iteration 9	15.00	76.807	76.807	5967051	0	0.001%	0.000%	-39
Iteration 10	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-41
Iteration 11	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-41
Iteration 12	15.00	76.807	76.810	5966767	0	0.001%	0.000%	-41
Iteration 13	15.00	76.807	76.807	5967395	0	0.001%	0.000%	-41
Iteration 14	15.00	76.807	76.807	5967422	0	0.001%	0.000%	-37
Iteration 15	15.00	76.807	76.806	5967375	0	0.001%	0.000%	-37
Iteration 16	15.00	76.807	76.807	5967582	0	0.001%	0.000%	-37



Summary		
For each iteration, the packet error rate SHALL NOT exceed 0.01	Reported: 0 iterations failed	Pass



## APPENDICES

### APPENDIX 1: RESULT KEY

The following table contains possible results and their meanings.

RESULT	MEANING	INTERPRETATION
<b>PASS</b>	Pass	The Device Under Test (DUT) was observed to exhibit conformant behavior.
<b>FAIL</b>	Fail	The Device Under Test (DUT) was observed to exhibit non-conformant behavior.
<b>RTC</b>	Refer to Comments	From the observations, a valid pass or fail was not determined. An additional explanation of the situation is included.
<b>WARN</b>	Warning	The DUT was observed to exhibit behavior that is not recommended.
<b>N/S</b>	Not Supported	The Device Under Test (DUT) was not observed to support the necessary functionality required to perform these tests or the requirement is optional and not supported by this device.
<b>N/T</b>	Not Tested	This test was not performed and therefore this is not a complete test report. Please see the comments for additional reasons.
<b>N/A</b>	Not Applicable	This test does not apply to the device type or is not applicable to the testing program selected.
<b>INFO</b>	Informative	Test is designed for informational purposes only. The results may help ensure the interoperability of the DUT, but are not standards requirements.



## APPENDIX 2: DIGITAL SIGNATURE INFORMATION

This document was created using an Adobe digital signature. A digital signature helps to ensure the authenticity of the document, but only in this digital format. For information on how to verify this document's integrity proceed to the following site:

<http://www.iol.unh.edu/certifyDoc/>

If the document status still indicates "Validity of author NOT confirmed", then please contact the UNH-IOL to confirm the document's authenticity.