

NORTHWEST EMC

Summit Semiconductor LLC

Athena4XD (extended distance)

FCC 2.1093:2015

802.11a Radio

Report # FOCU0214.3 Rev. 1



NVLAP Lab Code: 200630-0

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CERTIFICATE OF EVALUATION

Last Date of Evaluation: November 18, 2015
Summit Semiconductor LLC
Model: Athena4XD (extended distance)

Radio Equipment Evaluation

Standards

Specification	Method
FCC 2.1093:2015	447498 D01 General RF Exposure Guidance v06

Results

Method Clause	Test Description	Applied	Results	Comments
4.3	SAR Test Exclusion	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Don Facteau, IS Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
01	Deleted R105 from the EUT name	8/17/2016	1, 2, 6
01	Duty Cycle information has been updated	8/17/2016	7

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 - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

MSIP / 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

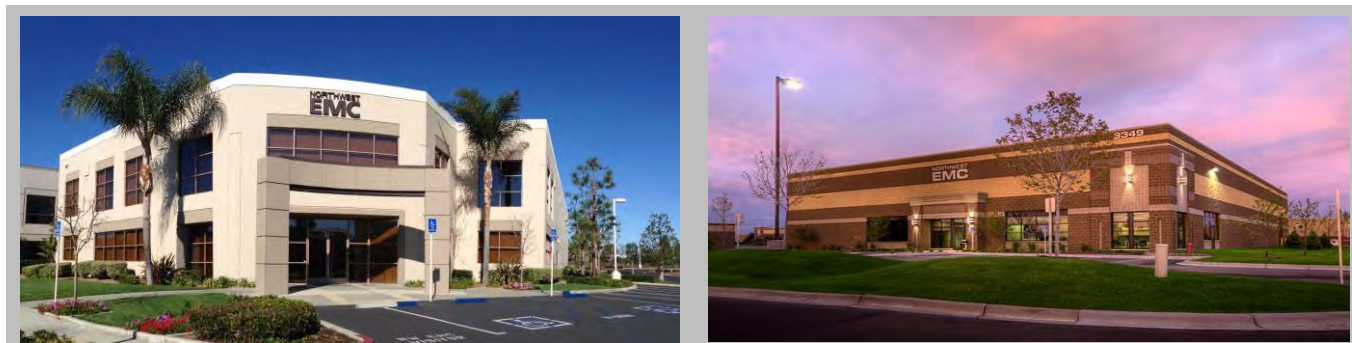
MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

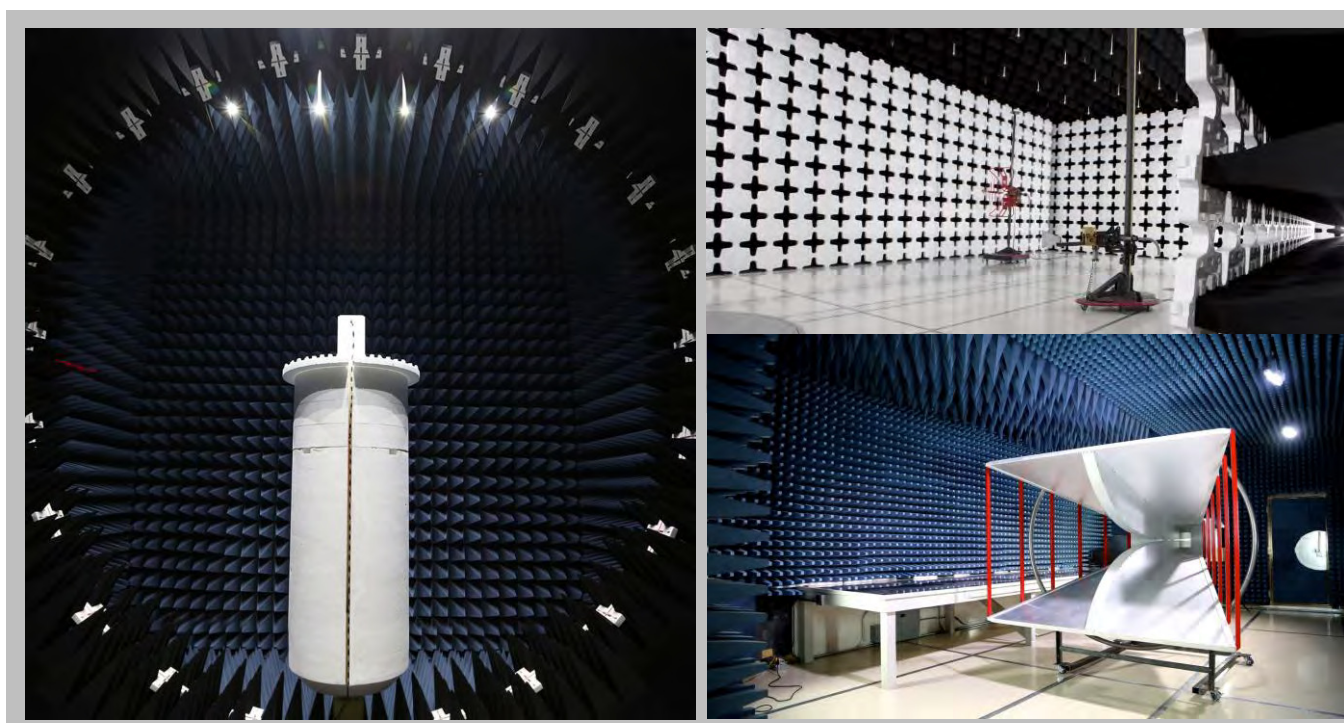
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>
<http://gsi.nist.gov/global/docs/cabs/designations.html>

FACILITIES



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy 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 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



PRODUCT DESCRIPTION

Client and Equipment Under Evaluation (EUT) Information

Company Name:	Summit Semiconductor LLC
Address:	20575 NW Von Neumann Dr., Suite 100
City, State, Zip:	Beaverton, OR 97006
Test Requested By:	Kenneth Boehlke
Model:	Athena4XD (extended distance)
Evaluation Date:	November 18, 2015

Information Provided by the Party Requesting the Evaluation

Functional Description of the EUT:
UNII client radio module with 4 identical SISO ports. The Athena may be battery powered or it can be AC powered with an adapter, or battery charged via an AC adapter.
Objective:
To demonstrate compliance with FCC requirements for RF exposure for 2.1093 portable devices.

SAR TEST EXCLUSION

OVERVIEW

The device is excluded from SAR evaluation and therefore deemed compliant with FCC RF exposure requirements as described below:

COMPLIANCE WITH FCC KDB 447498 D01 General RF Exposure Guidance v06

KDB 447498 D01 General RF Exposure Guidance v06, Section 4.3.1(a)

“For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,
where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz*
- Power and distance are rounded to the nearest mW and mm before calculation*
- The result is rounded to one decimal place for comparison*
- 3.0 and 7.5 are referred to as the numeric thresholds in the step b below*

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1f) is applied to determine SAR test exclusion.”

METHOD OF EVALUATION

Ken Boehlke, Principle Engineer at Summit Semiconductor attests that the minimum spacing between the antenna and the body is 10 mm. Regarding the maximum duty cycle he explained:

“All normal operating modes of the transmitter were measured. The maximum duty cycle is 0.91%. It is not possible to exceed this value.”

The SAR Test Exclusion Threshold is summarized in the following table:

The result of the calculation is well below the exclusion threshold of 3.0, therefore the unit is excluded from SAR evaluation and deemed compliant with FCC RF exposure requirements.

Transmit Frequency (GHz)	Test Separation (mm)	Output Power (mW)	Duty Cycle	Exclusion Threshold	Specification
5.24	10	169.8	0.0091	0.35	≤ 3.0
5.58		141.3		0.30	
5.785		204.2		0.45	