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TESTING
NVLAP LAB CODE: 100275-0

Spectrum Allocation Server- Citizens Band Radio Service Device Conformity Assessment Test Report

Test Standards

**CBRSA-TS-9001 V1.0.0, March 20, 2018
WINNF-TS-0122 Version V1.0.0, December 19, 2017**

Client

**Nokia Solutions and Networks, OY
2000 Lucent Lane
Naperville, Illinois 60563**

Product Evaluated

**Flexi Zone Multiband Indoor Pico BTS CBRS Band 48 Module (MBI-B48)
FCC ID: 2AD8UFW2QADPM01**

**GPCL Project Number:
2018-0130**

**Report Number:
TR-2018-0130-CBRS -SAS**

**Date Issued:
3/5/2019**

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Table of Contents

1. SYSTEM INFORMATION AND REQUIREMENTS	5
1.1 INTRODUCTION	6
1.2 PURPOSE AND SCOPE	6
1.3 EUT DESCRIPTION	6
1.4 TEST RATIONAL	7
1.4.1 <i>Test Requirements</i>	7
1.5 REFERENCE DOCUMENTS, TEST SPECIFICATIONS & PROCEDURES.....	8
1.5.1 <i>Reference Documents</i>	8
1.5.2 <i>Test Specifications</i>	8
1.5.3 <i>Procedures</i>	8
1.5.4 <i>MEASUREMENT UNCERTAINTY</i>	9
1.6 PRODUCT EQUIPAGE.....	9
1.6.1 <i>System Interconnect Block Diagram</i>	9
1.7 EXECUTIVE SUMMARY	10
2. DETAILED RESULTS	11
2.1 CBSD REGISTRATION PROCESS.....	11
2.1.1 <i>WINNF.FT.C.REG.1</i>	11
2.1.2 <i>WINNF.FT.C.REG.3</i>	11
2.1.3 <i>WINNF.FT.C.REG.5</i>	11
2.1.4 <i>WINNF.FT.C.REG.7</i>	11
2.1.5 <i>WINNF.FT.C.REG.8</i>	11
2.1.6 <i>WINNF.FT.C.REG.10</i>	11
2.1.7 <i>WINNF.FT.C.REG.12</i>	11
2.1.8 <i>WINNF.FT.C.REG.14</i>	11
2.1.9 <i>WINNF.FT.C.REG.16</i>	11
2.1.10 <i>WINNF.FT.C.REG.18</i>	12
2.1.11 <i>WINNF.FT.C.REG.20</i>	12
2.2 CBSD SPECTRUM INQUIRY PROCESS.....	12
2.2.1 <i>Successful response from SAS Test Harness</i>	12
2.2.2 <i>Successful spectrum Inquiry response from SAS</i>	12
2.3 CBSD SPECTRUM GRANT PROCESS.....	12
2.3.1 <i>WINNF.FT.D.GRA.1</i>	12
2.3.2 <i>WINNF.FT.C.GRA.2</i>	12
2.4 CBSD HEART BEAT PROCESS.....	13
2.4.1 <i>WINNF.FT.C.HBT.1</i>	13
2.4.2 <i>WINNF.FT.C.HBT.3</i>	13
2.4.3 <i>WINNF.FT.C.HBT.4</i>	13
2.4.4 <i>WINNF.FT.C.HBT.5</i>	13
2.4.5 <i>WINNF.FT.C.HBT.6</i>	13
2.4.6 <i>WINNF.FT.C.HBT.7</i>	13
2.4.7 <i>WINNF.FT.C.HBT.9</i>	13
2.4.8 <i>WINNF.FT.C.HBT.10</i>	13

2.4.9	WINNF.FT.C.HBT.11	13
2.5	CBSD MEASUREMENT REPORT	14
2.5.1	WINNF.FT.C.MES.1	14
2.5.2	WINNF.FT.C.MES.3	14
2.5.3	WINNF.FT.C.MES.4	14
2.6	CBSD RELINQUISHMENT PROCESS	14
2.6.1	WINNF.FT.C.RLQ.1	14
2.6.2	WINNF.FT.C.RLQ.3	14
2.6.3	WINNF.FT.C.RLQ.5	14
2.7	CBSD DEREGISTRATION PROCESS	14
2.7.1	WINNF.FT.C.DRG.1	14
2.7.2	WINNF.FT.C.DRG.3	14
2.7.3	WINNF.FT.C.DRG.5	14
2.8	CBSD SECURITY VALIDATION	15
2.8.1	WINNF.FT.C.SCS.1	15
2.8.2	WINNF.FT.C.SCS.2	15
2.8.3	WINNF.FT.C.SCS.3	15
2.8.4	WINNF.FT.C.SCS.4	15
2.8.5	WINNF.FT.C.SCS.5	15
2.9	SAS-CBSD/DP INTERFACE PERFORMANCE TEST SPECIFICATIONS	15
2.10	CBSD RF POWER MEASUREMENT	16
2.10.1	WINNF.PT.C.HBT	16
3.	LIST OF TEST EQUIPMENT	17
4.	NVLAP CERTIFICATE OF ACCREDITATION	18

Revisions

Date	Revision	Section	Change
7/30/2018	0		Initial Release
10/2/2018	1		FCC TCB Requested changes.
3/5/2019	2		FCC TCB Requested changes.

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1. System Information and Requirements

Company Name	Nokia Solutions and Networks, OY 2000 Lucent Lane Naperville, Illinois 60563 Attention: Terry P. Schwenk
FCC ID: / Grant Date	FCC ID: 2AD8UFW2QADPM01
Product Name	Flexi Zone Multiband Indoor Pico BTS CBRS Band 48
Model Name	FW2QADPM01
Part No	474336A.X11
GPCL Project Number / PRI#	2018-0130 / PRI20183540
Serial Numbers	S/N: EB172710091
Test Standard(s)	<ul style="list-style-type: none"> • CBRSA-TS-9001 V1.0.0, March 20, 2018 • WINNF-TS-0122 Version V1.0.0, December 19, 2017 • KDB 940660 D01 Part 96 CBRS Equipment v01
Reference(s)	<ul style="list-style-type: none"> • 47 CFR FCC Part 2 and Part 96 • ANSI C63.26 (2015) • ANSI C63.4 (2014)
Measurement Procedure(s):	FCC-WINN-SAS and FCC-IC-0B
Winn Forum SAS test harness	Version: 1.0.0.2
Frequency Band	CBRS (Tx/Rx: 3550-3700 MHz), E-UTRAN Band 48
Technology	LTE-TDD: 10M0F9W, 15M0F9W, 20M0F9W
Test Frequency Range	3550 – 3700 MHz
Operation Mode(s)	2 x 0.25W MIMO
Submission Type	Initial Filing for Product Certification under Part 96 (Category A CBSD)
FCC Part 15 Subpart B	Compliance with Class B
Test Date	June 12, 2018 – June 28, 2018
Test Laboratory	Nokia Global Product Compliance Laboratory 600-700 Mountain Avenue, Rm 5B-108 Murray Hill, New Jersey 07974-0636 USA NVLAP Lab Code: 100275-0 FCC Registration Number: 395774 Designation Number: US5302 ,

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Product Engineer(s):

Ronald Remy

Test Engineer (s):

W. Steve Majkowski, Raymond J. Johnson

Report copies and other information not contained in this report are held by either the product engineer or in an identified file at the Global Product Compliance Laboratory in Murray-Hill, NJ.

1.1 Introduction

This Spectrum Access Server (SAS) Conformity Assessment Report applies to the **Nokia Flexi Zone (FZ) Multiband Indoor (MBI) Pico BTS CBRS (FZ MBI)** with Long Term Evolution (LTE) Technology (PRI04781), hereinafter referred to as the Equipment Under Test (EUT) or the **Citizens Broadband Radio Service Device (CBSD)**.

The EUT operates in the **Citizens Broadband Radio Service (CBRS)** domestic 3550-3700 MHz band (3.5 GHz Band), i.e., E-UTRAN band 48, with TDD-LTE technologies. It is a Nokia designed product and is designed with TDD_LTE technology with capability for 10, 15 and 20 MHz carrier bandwidths.

This professionally installed Category A CBSD uses the protocol developed by WInnForum. The testing herein demonstrates compliance to WInnForum Standards™ Interface Specifications, and affirm that the device will conform to the communications security methods used by the SAS. The testing performed herein uses the SAS emulator developed by Wireless Innovation Forum (“WInnForum”) to demonstrate compliance.

The demonstration of compliance to the WInnForum Interface Specification must use a test lab that has been recognized by WInnForum. Nokia’s Global Product Compliance Laboratory is the first US accredited WInnForum CBRS Approved Lab and is a CBRS Alliance Authorized Test Lab

The RF output of this CBSD has a maximum power is 0.25 W (24.0 dBm) per transmit port with 2x MIMO operation for one or two carriers. Total power for two ports is 0.5 W (27.0 dBm). The RF performance of the product is documented in the separate Part 96 Radio Filing Test Report.

1.2 Purpose and Scope

The purpose of this document is to documents the digital interface conformance and operational interaction between the SAS and the CBSD.

This test data required for qualifying the EUT CBDS in compliance with FCC Part 96 requirements for certification under FCC Part 2, measured in accordance with the procedures set out in Section 2.1033 (c) (14) of the Rules and per KDB Publication 940660 D01.

1.3 EUT Description

The **Flexi Zone Multiband Indoor Pico BTS (FZ MBI)** is a small cell that is a small cell optimized for an indoor environment. The hardware platform supports LTE-TDD full throughput capability of 10, 15, or 20 MHz LTE carriers with 2x2 MIMO (LTE main and diversity transmit). The physical transport interface is optimized for IP-based transport solutions. The FZ MBI supports varying transmit power up to 250 mW per antenna branch

The **Flexi Zone Multiband Indoor Pico BTS (FZ MBI)** is being filed under **FCC ID: 2AD8UFW2QADPM01** for **CBRS operation in Band 48 under 47CFR Part 96**. The physical transport interface is optimized for IP-based transport solutions.

1.4 Test Rational

The SAS interface design is compliant to WInnForum hardware of the CBSD / FZ MBI-Band 48 is identical to that of the previously certified Band 48 product.

The testing herein demonstrates compliance to WInnForum Standards™ Interface Specifications, and affirm that the device will conform to the communications security methods used by the SAS. The testing performed herein uses the SAS emulator developed by Wireless Innovation Forum (“WInnForum”) to demonstrate compliance.

The demonstration of compliance to the WInnForum Interface Specification must use a test lab that has been recognized by WInnForum. Nokia’s Global Product Compliance Laboratory is the first accredited WInnForum CBRS Approved Lab in the USA and is a CBRS Alliance Authorized Test Lab

The operation of the CBSD product with the SAS evaluation is evaluated herein.

1.4.1 Test Requirements

The test requirements are described in CFR47 Part 2 and WInnForum Standards™ Each required measurement is listed below:

WINNF-TS-0122	Paragraph 6.1	CBSD Registration Process
WINNF-TS-0122	Paragraph 6.2	CBSD Spectrum Inquiry Process
WINNF-TS-0122	Paragraph 6.3	CBSD Spectrum Grant Process
WINNF-TS-0122	Paragraph 6.4	CBSD Heart Beat Process
WINNF-TS-0122	Paragraph 6.5	CBSD Measurement Report
WINNF-TS-0122	Paragraph 6.6	CBSD Relinquishment Process
WINNF-TS-0122	Paragraph 6.7	CBSD Deregistration Process
WINNF-TS-0122	Paragraph 6.8	CBSD Security Validation
WINNF-TS-0122	Paragraph 7	SAS-CBSD/DP Interface Performance Test Specifications
WINNF-TS-0122	Paragraph 7.1	CBSD RF Power Measurement

Section 2.1046
 Section 2.1047

RF Power Output
 Modulation Characteristics

1.5 Reference Documents, Test Specifications & Procedures

A list of the applicable documents is provided herein.

1.5.1 Reference Documents

A list of the applicable documents is provided herein:

- ETSI TS 136 104 V13.5.0 (2016-10) LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 13.5.0 Release 13)

1.5.2 Test Specifications

- CBRS Alliance Certification Test Plan, CBRSA-TS-9001 V1.0.0, 20 March 2018
- Working Document WINNF-TS-0122, Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT), Version V1.0.0, 19 December 2017
- Code of Federal Regulations 47, Federal Communications Commission Part 96, Subpart E – Citizens Broadband Radio Services.
- KDB 940660 D01 (Current Version) – Certification and Test Procedures for Citizens Broadband Radio Service Devices Authorized under Part 96 of The Rules, DR01 (Currently in Draft Version)
- KDB 971168 D01 (Current Version) - Measurement Guidance for Certification of Licensed Digital Transmitters

1.5.3 Procedures

1. GPCL Procedure FCC-WINN-SAS, Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT) Test Procedure
2. GPCL Procedure FCC-IC-OB, Power measurement, Occupied Bandwidth, & Modulation Test Procedure
3. ANSI C63.26 (2015) entitled: “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services”, American National Standards Institute, Institute of Electrical and Electronic Engineers, Inc., New York, NY 10017-2394, USA.

1.5.4 MEASUREMENT UNCERTAINTY

The results of the calculations to estimate uncertainties for the several test methods and standards are shown in the Table below. These are the worst-case values.

Worst-Case Estimated Measurement Uncertainties

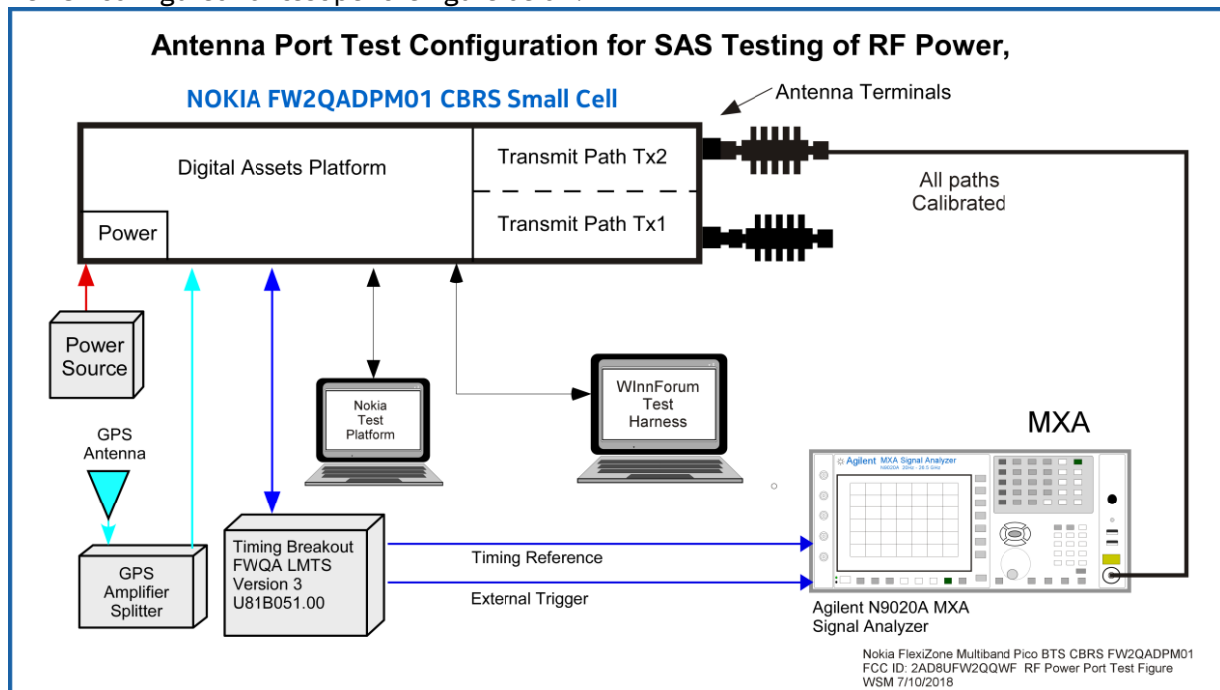
Standard, Method or Procedure	Condition	Frequency MHz	Expanded Uncertainty (k=2)
a. Classical Emissions, (e.g., ANSI C63.4, C63.26, CISPR 11, 14, 22, etc., using ESHS 30, AR-6 Semi-Anechoic Chamber	Conducted Emissions	10 – 10,000	±3.5 dB

Antenna Port Test	Signal Bandwidth	Frequency Range	Expanded Uncertainty (k=2), Amplitude
Occupied Bandwidth, Edge of Band, Conducted Spurious Emissions	10 Hz 100 Hz 10 kHz to 1 MHz 1MHz	9 kHz to 20 MHz 20 MHz to 1 GHz 1 GHz to 10 GHz 10 GHz to 40 GHz:	1.78 dB
RF Power with Power Meter	10 Hz to 20 MHz	50 MHz to 18 GHz	0.5 dB

1.6 Product Equipage

1.6.1 System Interconnect Block Diagram

The EUT configured for test per the figure below.



1.7 Executive Summary

RESULTS:

1. **COMPLIES** - Passed all applicable tests.
2. **N/A** – Not Applicable.
3. **NT** – Not Tested.

WINNF-TS-0122	Paragraph 6.1	CBSD Registration Process	Date Tested	Result
WINNF-TS-0122	Paragraph 6.2	CBSD Spectrum Inquiry Process	6/13/18	Complies
WINNF-TS-0122	Paragraph 6.3	CBSD Spectrum Grant Process	6/13/18	Complies
WINNF-TS-0122	Paragraph 6.4	CBSD Heart Beat Process	6/13-15/18	Complies
WINNF-TS-0122	Paragraph 6.5	CBSD Measurement Report	6/15/18	Complies
WINNF-TS-0122	Paragraph 6.6	CBSD Relinquishment Process	6/18/18	Complies
WINNF-TS-0122	Paragraph 6.7	CBSD Deregistration Process	6/18/18	Complies
WINNF-TS-0122	Paragraph 6.8	CBSD Security Validation	6/20/18	Complies
WINNF-TS-0122	Paragraph 7	SAS-CBSD/DP Interface Performance Test Specifications	Not Tested	NT
WINNF-TS-0122	Paragraph 7.1	CBSD RF Power Measurement	6/20-27/18	Complies

2. Detailed Results

The results of the individual test cases are detailed in below. Documentation of specific data items follow.
 Pass / Fail, NT= Not Tested, N/A = Not Applicable

2.1 CBSD Registration Process

2.1.1 WINNF.FT.C.REG.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Multi-Step registration	Pass	WINNF.FT.C.REG.1_2018-06-25T23.43.19Z	FSW_Screenshot_REG1

2.1.2 WINNF.FT.C.REG.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Single-Step registration for Category A CBSD	N/A		This product requires CPI.

2.1.3 WINNF.FT.C.REG.5

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Single-Step registration for CBSD with CPI signed data	N/A		Multi step REG required.

2.1.4 WINNF.FT.C.REG.7

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Registration due to change of an installation parameter	Pass	WINNF.FT.C.REG.7_2018-06-26T00.56.08Z	FSW_Screenshot_REG7

2.1.5 WINNF.FT.C.REG.8

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Missing Required parameters (responseCode 102)	Pass	WINNF.FT.C.REG.8_2018-06-13T16.53.42Z	FSW_Screenshot_REG8

2.1.6 WINNF.FT.C.REG.10

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Pending registration (responseCode 200)	Pass	WINNF.FT.C.REG.10_2018-06-26T01.21.54Z	

2.1.7 WINNF.FT.C.REG.12

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Invalid parameter (responseCode 103)	Pass	WINNF.FT.C.REG.12_2018-06-26T01.25.25Z	REG 12-14

2.1.8 WINNF.FT.C.REG.14

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Blacklisted CBSD (responseCode 101)	Pass	WINNF.FT.C.REG.14_2018-06-26T01.27.19Z	REG 12-14

2.1.9 WINNF.FT.C.REG.16

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Unsupported SAS protocol version (responseCode 100)	Pass	WINNF.FT.C.REG.16_2018-06-26T01.29.53Z	FSW_Screenshot_REG16

2.1.10 WINNF.FT.C.REG.18

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Group Error (responseCode 201)	Pass	WINNF.FT.C.REG.18_2018-06-26T01.32.46Z	FSW_Screenshot_REG18

2.1.11 WINNF.FT.C.REG.20

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Category A CBSD location update	NT	N/A	N/A for CPI

2.2 CBSD Spectrum Inquiry Process

2.2.1 Successful response from SAS Test Harness

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful response from SAS Test Harness (6.2.4.1)	NT	N/A	N/A for CBSD

2.2.2 Successful spectrum Inquiry response from SAS

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful spectrum Inquiry response from SAS (6.2.4.1.1)	NT	N/A	N/A for CBSD

2.3 CBSD Spectrum Grant Process

2.3.1 WINNF.FT.D.GRA.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Unsuccessful Grant responseCode=400 (INTERFERENCE)	Pass	WINNF.FT.C.GRA.1_2018-06-26T01.37.53Z	FSW_Screenshot_GRA1

2.3.2 WINNF.FT.C.GRA.2

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	Pass	WINNF.FT.C.GRA.2_2018-06-26T01.42.34Z	FSW_Screenshot_GRA2

2.4 CBSD Heart Beat Process

2.4.1 WINNF.FT.C.HBT.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat Success Case (first Heartbeat Response)	Pass	WINNF.FT.C.HBT.1_2018-06-25T23.01.43Z	FSW_Screenshot_HBT1

2.4.2 WINNF.FT.C.HBT.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat responseCode=105 (DEREGISTER)	Pass	WINNF.FT.C.HBT.3_2018-06-26T02.00.37Z	FSW_Screenshot_HBT3

2.4.3 WINNF.FT.C.HBT.4

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat responseCode=500 (TERMINATED_GRANT)	Pass	WINNF.FT.C.HBT.4_2018-06-26T19.31.49Z	FSW_Screenshot_HBT4

2.4.4 WINNF.FT.C.HBT.5

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	Pass	WINNF.FT.C.HBT.5_2018-06-26T02.49.30Z	FSW_Screenshot_HBT5

2.4.5 WINNF.FT.C.HBT.6

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	Pass	WINNF.FT.C.HBT.6_2018-06-26T19.58.16Z	FSW_Screenshot_HBT6

2.4.6 WINNF.FT.C.HBT.7

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	Pass	WINNF.FT.C.HBT.7_2018-06-26T03.59.33Z	

2.4.7 WINNF.FT.C.HBT.9

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat Response Absent (First Heartbeat)	Pass	WINNF.FT.C.HBT.9_2018-06-26T04.05.59Z	

2.4.8 WINNF.FT.C.HBT.10

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat Response Absent (Subsequent Heartbeat)	Pass	WINNF.FT.C.HBT.10_2018-06-26T21.23.31Z	FSW_ScreenShot_HBT10

2.4.9 WINNF.FT.C.HBT.11

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful Grant Renewal in Heartbeat Test Case	Pass	WINNF.FT.C.HBT.11_2018-06-26T21.39.55Z	FSW_ScreenShot_HBT11

2.5 CBSD Measurement Report

2.5.1 WINNF.FT.C.MES.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Registration Response contains measReportConfig	Pass	WINNF.FT.C.MES.1_2018-06-26T23.31.56Z	#2, 5 & 7 all met in detail.

2.5.2 WINNF.FT.C.MES.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Grant Response contains measReportConfig	NT		N/A

2.5.3 WINNF.FT.C.MES.4

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Heartbeat Response contains measReportConfig	NT		N/A

2.6 CBSD Relinquishment Process

2.6.1 WINNF.FT.C.RLQ.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful Relinquishment	Pass	WINNF.FT.C.RLQ.1_2018-06-27T00.25.15Z	Condition. #2 N/A as trigger stops all Messages and Tx RF

2.6.2 WINNF.FT.C.RLQ.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Unsuccessful Relinquishment, responseCode=102	Pass	WINNF.FT.C.RLQ.3_2018-06-27T22.31.25Z	Tx off 4.4 sec after trigger

2.6.3 WINNF.FT.C.RLQ.5

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Unsuccessful Relinquishment, responseCode=103	Pass	WINNF.FT.C.RLQ.5_2018-06-27T22.41.42Z	Tx off 2.64 sec after trigger

2.7 CBSD Deregistration Process

2.7.1 WINNF.FT.C.DRG.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful Deregistration	Pass	WINNF.FT.C.DRG.1_2018-06-27T22.56.40Z	#1, #2 met, #3 N/A after trigger. Tx off @ 2.5 sec. after Trigger, #6 Pass

2.7.2 WINNF.FT.C.DRG.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Deregistration responseCode=102	Fail	WINNF.FT.C.DRG.3_2018-06-28T00.00.31Z	Tx off @ 2.7 sec after trig

2.7.3 WINNF.FT.C.DRG.5

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Deregistration responseCode=103	Pass	WINNF.FT.C.DRG.5_2018-06-27T23.53.17Z	Tx off @ 2.7 sec after trig

2.8 CBSD Security Validation

2.8.1 WINNF.FT.C.SCS.1

Test Case Title	Result P/F / (NT)	Log File Name	Comment
Successful TLS connection between UUT and SAS Test Harness	Pass	WINNF.FT.C.SCS1_w-REG.1_2018-06-28T20.25.40Z Wireshark_MBI_SCS.1_using_REG.1.pcapng	Pass, No Tx

2.8.2 WINNF.FT.C.SCS.2

Test Case Title	Result P/F / (NT)	Log File Name	Comment
TLS failure due to revoked certificate	Pass	WINNF.FT.C.SCS2_w-REG.1_2018-06-28T20.55.31Z Wireshark_MBI_SCS.2_using_REG.1	Pass, No Tx

2.8.3 WINNF.FT.C.SCS.3

Test Case Title	Result P/F / (NT)	Log File Name	Comment
TLS failure due to expired server certificate	Pass	WINNF.FT.C.SCS3_w-REG.1_2018-06-28T21.20.06Z Wireshark_MBI_SCS.3_using_REG.1	Pass, No Tx

2.8.4 WINNF.FT.C.SCS.4

Test Case Title	Result P/F / (NT)	Log File Name	Comment
TLS failure when SAS Test Harness certificate is issued by unknown CA	Pass	WINNF.FT.C.SCS4_w-REG.1_2018-06-28T21.29.22Z Wireshark_MBI_SCS.4_using_REG.1	Pass, No Tx

2.8.5 WINNF.FT.C.SCS.5

Test Case Title	Result P/F / (NT)	Log File Name	Comment
TLS failure when certificate at the SAS Test Harness is corrupted	Pass	WINNF.FT.C.SCS5_w-REG.1_2018-06-28T21.48.48Z Wireshark_MBI_SCS.5_using_REG.1	Pass, No Tx

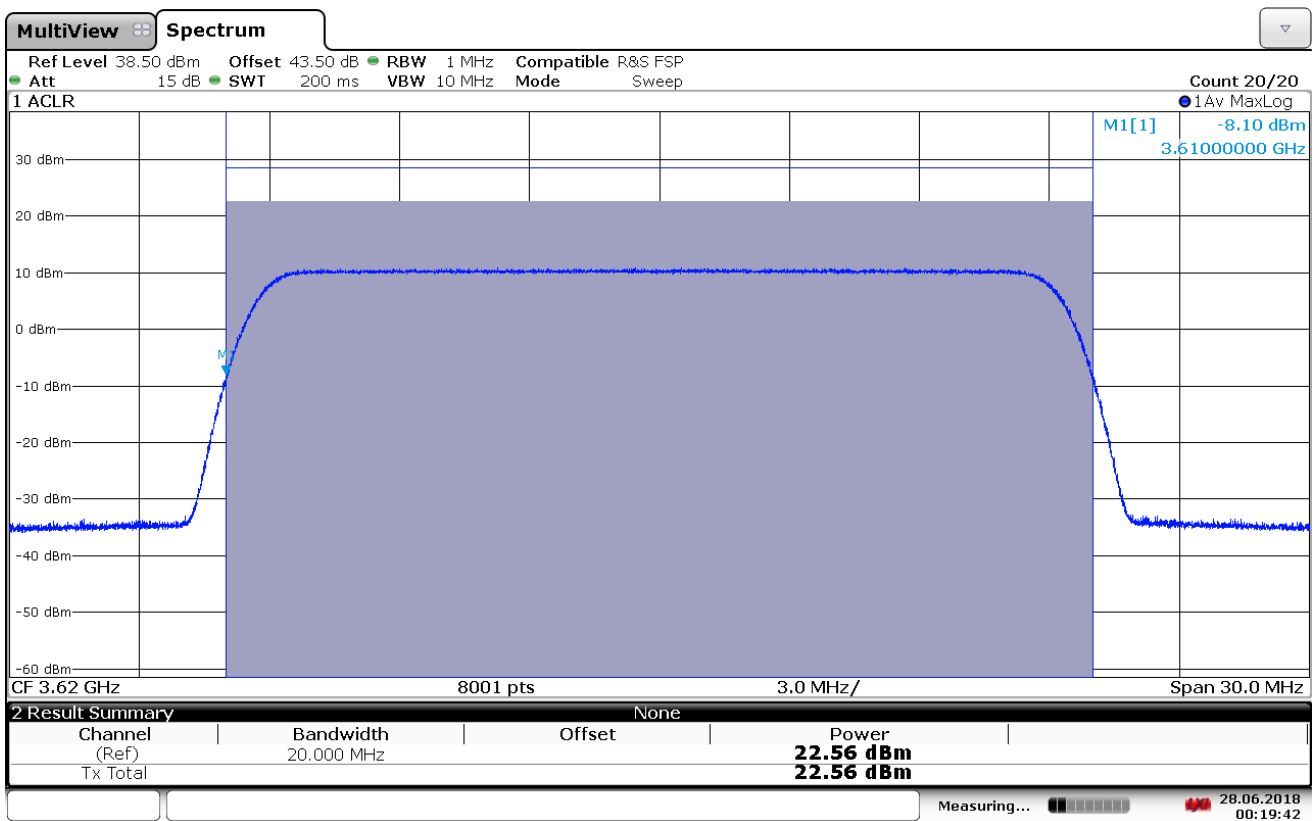
2.9 SAS-CBSD/DP Interface Performance Test Specifications

Not Tested

2.10 CBSD RF Power Measurement

2.10.1 WINNF.PT.C.HBT

Test Case Title	Result P/F / (NT)	Log File Name	Comment or Plot Data Reference
UUT RF Transmit Power Measurement	Pass	WINNF.PT.C.HBT.1_2018-06-27T21.30.37Z FSW_MaxPwr_24dBm_result_22-73dBm_2018-06-28_00-19-42	TX1 = 22.56 dBm/20 MHz 22.56 dBm/20MHz x 2 carriers = 22.56 dBm/10MHz 22.56 dBm/10MHz + 6dBi Gain = 28.56 dBm/10MHz EIRP ≤ 30 dBm/10MHz Limit PASS



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3. List of Test Equipment

The Equipment used for performance of the tests results are listed below.

Asset ID Manufacturer Type Description Model Serial Calibration Date Calibration Due Calibration Type Status

Asset ID ^	Manufacturer	Type	Description	Model	Serial	Calibration Date	Calibration Due
P339	Control Company	Electronic Stopwatch		1051	181179959	2018-05-12	2020-05-12
E950	Agilent Technologies	Power Meter	P-Series	N1921A	MY45101984	2018-03-29	2020-03-29
E949	Agilent Technologies	Power Sensor	-35 - +20 dBm 50 MHz -18 GHz	N1921A	MY45242502	2018-04-02	2020-04-02
E1260	Rohde & Schwarz	Spectrum Analyzer	10 Hz-67 GHz	FSW67	104007	2018-02-12	2020-02-12
P324	Extech	Data Logger	Pres/Humidity/Temp Data Logger	SD700	Q679346	2016-06-26	2018-06-26
GPCL-LAP-231	Lenova	Thinkpad	GPCL-LAP-231	T530	PK-290GF	N/A	N/A
FWQA-LMTS	Nokia	Trigger Buffer	Timing Trigger buffer	FWQA-LMTS U81B051.00	EC163610199	N/A	N/A

4. nVLAP Certificate of Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100275-0

Nokia, Global Product Compliance Lab
Murray Hill, NJ

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Electromagnetic Compatibility & Telecommunications

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2017-08-17 through 2018-09-30
Effective Dates




For the National Voluntary Laboratory Accreditation Program