SILEX TECHNOLOGY, INC.

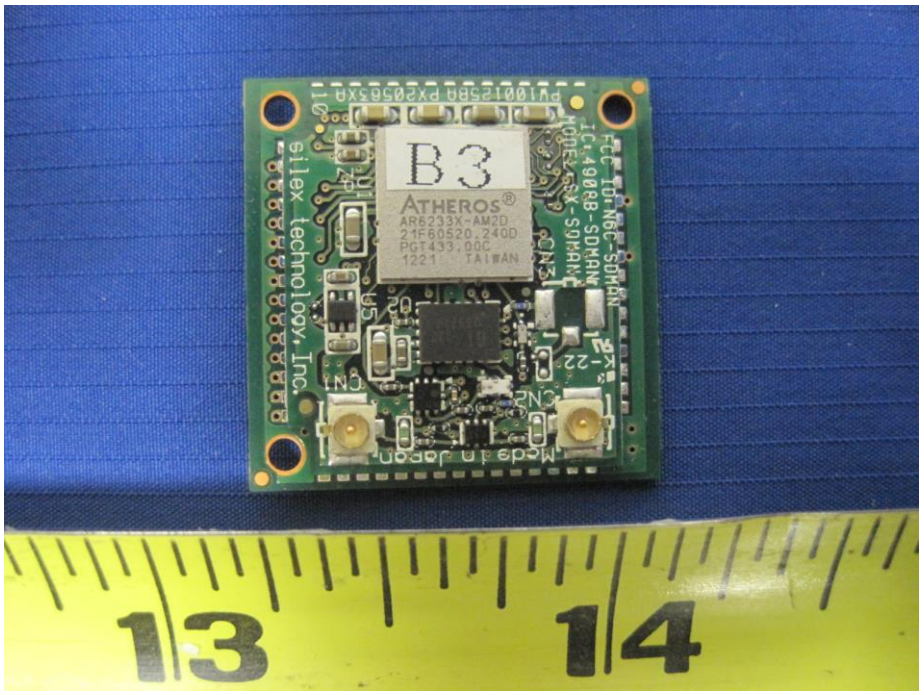
SDIO WIRELESS MODULE

Model: SX-SDMAN

May 16th, 2013

Report No.: SL13032601-SLX--003_ (FCC_15.407)_DFS Rev1.0

(This report supersedes: SL13032601-SLX--003_ (FCC_15.407)_DFS)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:	
David Zhang	
David Zhang Compliance Engineer	Choon Sian Ooi Engineering Reviewer

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Test result presented in this test report is applicable to the representative sample only.

DFS Test Report

To: FCC 15.407: 2012; RSS 210 Issue 8

SIEMIC, INC.
Accessing global markets

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

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Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF , Telecom
HongKong	OFTA (US002)	RF , Telecom

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1 Executive Summary & EUT information

The purpose of this test programme was to demonstrate compliance of the FCC certified radio module, SDIO Wireless Module (FCC ID: N6C-SDMAN), from Silex Technology, Inc., and Model: SX-SDMAN, with operation at additional 5470-5725MHz band, against the current Stipulated Standards with Dynamic Freqeuncy Selection requirement. The SDIO Wireless Module operating at 5470-5725MHz band has demonstrated compliance with the FCC 15.407:2012 and RSS 210 Issue 8:2010.

Customer information

Applicant Name	:	Silex Technology, Inc.
Applicant Address	:	SDIO Wireless Module
Manufacturer Name	:	Silex Technology, Inc.
Manufacturer Address	:	2-3-1 Hikaridai, Seika-cho, Kyoto, Japan 619-0237

Test Site information

Lab performing tests	:	SIEMIC Laboratories
Lab Address	:	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	:	881796
IC Test Site No.	:	4842D-2
VCCI Test Site No.	:	A0133

2 EUT INFO & TECHNICAL DETAILS

EUT Information

EUT Description

Product Name	:	SDIO Wireless Module
Model No.	:	SX-SDMAN
Trade Name	:	Silex
Serial No.	:	**012F91**
Input Power	:	3.3VDC
Power Adapter Manu/Model	:	N/A
Power Adapter SN	:	N/A
Hardware version	:	N/A
Software version	:	N/A
Date of EUT received	:	Apr 23rd, 2013
Equipment Class/ Category	:	UNII
Clock Frequencies	:	26 MHz
Port/Connectors	:	SDIO
FCC ID	:	N6C-SDMAN
IC ID	:	4908B-SDMAN
Measured conducted RF output Power	:	802.11a: 12.315dBm 802.11n-20MHz: 13.123dBm 802.11n-40MHz: 10.844dBm

Radio Description

Radio Manu	Silex Technologies, Inc.
Radio Model	SX-SDMAN
Radio Module SN	012F91

Spec for Radio -

Radio Type	802.11b	802.11g	802.11a	802.11n-20M	802.11n-40M
Operating Frequency	2412-2462MHz	2412-2462MHz	5180-5320MHz 5470-5725MHz 5725-5825MHz	2412-2462MHz 5180-5320MHz 5470-5725MHz 5725-5825MHz	5190-5310MHz 5510-5670MHz 5755-5795MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	20MHz	5MHz(2.4GHz), 20MHz (5GHz)	40MHz
Number of Channels	11	11	21	11(2.4GH) 21 (5GHz)	7 (2.4GH) 9 (5GHz)
Antenna Type	Embedded antenna: Ethertronics Sleeve antenna: Sansei				
Antenna Gain	Embedded antenna: 2.0 dBi (2.4GHz), 2.5 dBi (5GHz) Sleeve antenna: 1.0 dBi (2.4GHz), 1.1 dBi (5GHz)				
Antenna Connector Type	U.FL connector				

Radio Type	Bluetooth (Ver4.0+EDR/LE dual mode)
Operating Frequency	2402MHz-2480MHz
Modulation	FHSS
Channel Spacing	1MHz (BDR, EDR), 2MHz (LE)
Antenna Type	Embedded antenna: Ethertronics
Antenna Gain	Embedded antenna: 2.0 dBi (2.4GHz), 2.5 dBi (5GHz)
Antenna Connector Type	U.FL connector

EUT test modes/configuration Description

Mode	Note
802.11a (11a)	24Mbps, PN9
802.11n-20MHz (11n-20)	MCS1 (Long GI), PN9
802.11n-40MHz (11n-40)	MCS3 (Long GI), PN9

Note:

1. Testing purpose for current report is PCII to add the 5.4GHz band only. The worst case test modes were reference to original FCC test report (report number: 32IE0154-HO-01-C-R1).
2. Power setting for 5.4GHz band are:

   802.11a : 14 dBm
   802.11n-20MHz: 14 dBm
   802.11n-40MHz: 14 dBm

Test Item	Operating mode	Tested antenna port	Test Date	Test frequencies
Dynamic frequency selection (DFS)	802.11n-20, 802.11n-40	CN2 port	04/25/2013	5580MHz(802.11n-20) 5550MHz(802.11n-40)

Note:

1. Testing purpose for current report is PCII to add the 5.4GHz band only. The test port selection was reference to original FCC test report (report number: 32IE0154-HO-01-C-R1). The port CN2 was used for measurement due to higher output power (CN2 is TX1 port)
2. EUT has 2 TX ports but they're TX diversity, only one port will be chosen at single moment. They don't transmit simultaneously.

Supporting Equipment/Software and cabling Description

Supporting Equipment

Index	Supporting Equipment Description	Model	Serial No.	Manu	Note
1	SDIO Wireless Module	SX-SDMAN	012F91	Silex	EUT
2	Embedded antenna	1000418	001	Ethertronics	EUT
3	Embedded antenna	1000418	002	Ethertronics	EUT
4	Sleeve antenna	ANTB98-061A0	001	Sansei Denki	EUT
5	Sleeve antenna	ANTB98-061A0	002	Sansei Denki	EUT
6	Jig board	-	-	Silex	-
7	AC Adaptor	US115-05	B06-0024850	Unifive	-
8	Wireless AP	AIR-AP1142N-A-K9 v08	FTX1708K8MM	Cisco	-

Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
RF cable1	Embedded Ant	Ant port	EUT	Ant port (CN1)	0.1	Yes	-
RF cable2	Embedded Ant	Ant port	EUT	Ant port (CN2)	0.1	Yes	-
RF cable3	Sleeve Ant	Ant port	EUT	Ant port (CN1)	0.12	Yes	-
RF cable4	Sleeve Ant	Ant port	EUT	Ant port (CN2)	0.12	Yes	-

Test Software Description

Test Item	Software	Description
Radiated & conducted Testing	TTE test software	Set the EUT to different modulation and channel

3 REPORT REVISION HISTORY

Report No.	Report Version	Description	Issue Date
SL13032601-SLX--003_ (FCC_15.407)_DFS Rev1.0	Original	None	04/24/2013

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All Testing has been performed according to below product classification:

UNII Device

Test Results Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Dynamic Frequency Selection (DFS)	FCC	15.407 (h)(2)(b)(iii)	FCC	905462 5 GHz UNII DFS Compliance Procedures	☒ Pass
	IC	RSS 210 (A9.3)	IC	-	☐ N/A

5 Measurement Uncertainty

Test Item	Frequency Range	Description	Uncertainty
Dynamic frequency selection (DFS)	30MHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2	±1.5dB

6 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 Dynamic Frequency Selection (DFS)

6.1.1 General introduction

Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

DFS Response requirement values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the 99% power bandwidth See Note 3.
Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows: • For the Short pulse radar Test Signals this instant is the end of the *Burst*. • For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated. • For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission. Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required facilitating *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.	

Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms

1. Short Pulse Radar Test Waveforms

Rada r Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

2. Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

1) The transmission period for the Long Pulse Radar test signal is 12 seconds. 2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst_Count. 3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.

2) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.

3) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.

4) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.

5) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The s9tart time for each Burst is chosen independently.

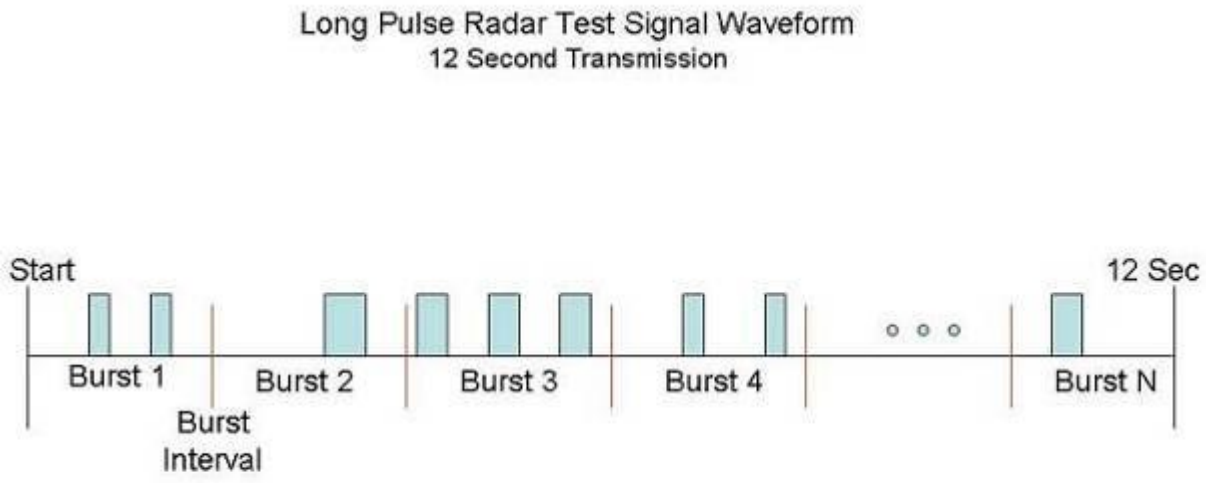
A representative example of a Long Pulse radar test waveform:

1) The total test signal length is 12 seconds. 2) 8 Bursts are randomly generated for the Burst Count. 3) Burst 1 has 2 randomly generated pulses. 4) The pulse width (for both pulses) is randomly selected to be 75 microseconds. 5) The PRI is randomly selected to be at 1213 microseconds. 6) Bursts 2 through 8 are generated using steps 3 – 5. 7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

3. Frequency Hopping Radar Type

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

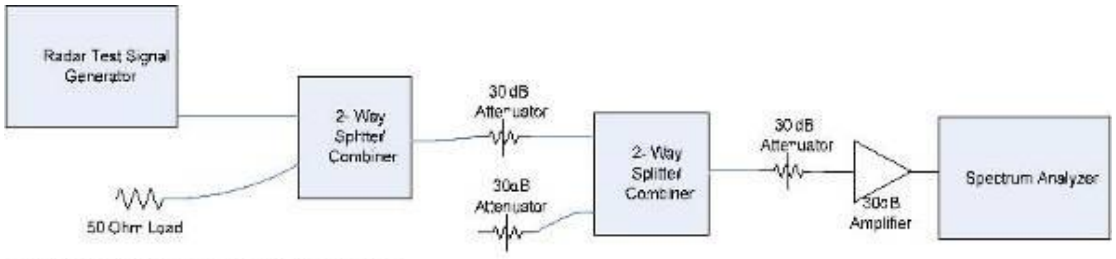
For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected 1 from the hopping sequence defined by the following algorithm:



The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

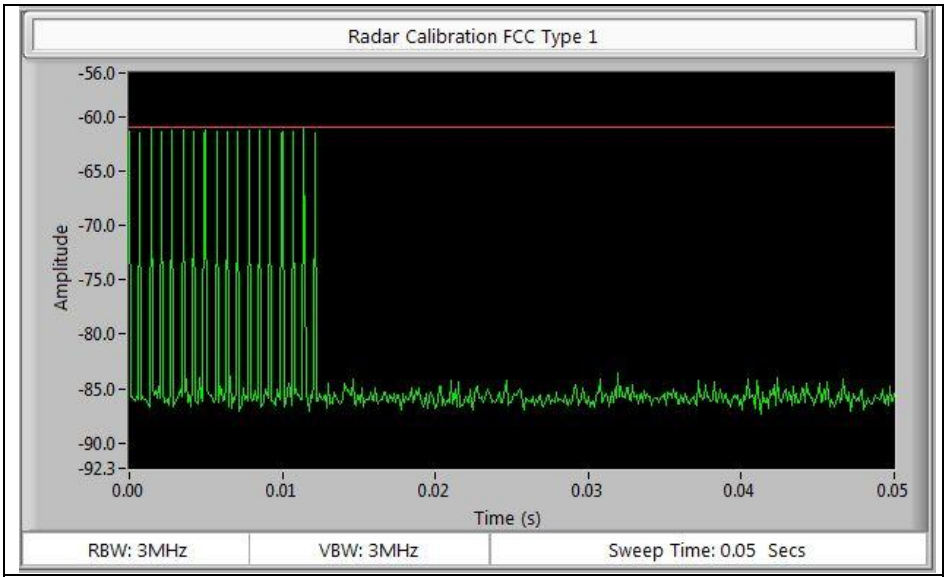
6.1.2 Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.

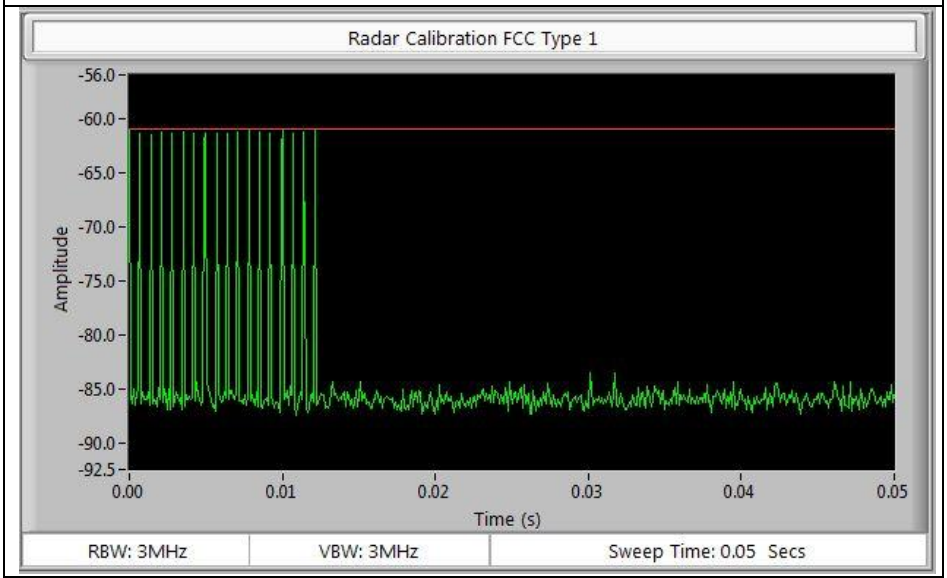


Conducted Calibration Setup

Test Plots



5470MHz to 5725MHz bands – Radar Type 1 @ 5580MHz



5470MHz to 5725MHz bands – Radar Type 1 @ 5510MHz

6.1.3 Test Procedure

In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

These tests define how the following DFS parameters are verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time, and Non-Occupancy Period.

The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1dB (-61dBm) is generated on the Operating Channel of the U-NII device.

UUT operating as a Client Device will associate with the (Master) at Mid Channel. DFS testing while the system is performing a FTP file transfer of a Zebra proprietary 50MB label file representing the biggest label file a customer could send over WIFI to the printers. The data rates will be adjusted to allow for the highest channel loading possible in theory by the system, up to a maximum loading of 22%. The 22% is based on the expected channel loading of a typical 802.11n radio link while running an FTP for transfer of the label file. The 50MB file was set to continuously transferring after transfer duration 60seconds end as lopping process.

At time T0 the Radar Waveform generator sends a Burst of pulses for each of the radar types at -61dBm.

Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time results to the limits defined in the DFS Response requirement values table.

Channel Closing Transmission Time- Measurement

A type 1 waveform was introduced to the EUT and the Spectrum Analyzer sweep time was set to 1s for monitoring and capturing the plot. A LabView program was created to collect trace data and capturing the plot. The program will calculate the channel closing time base on the spectrum analyzer result. The result will be calculated based on FCC procedure.

C= N*Dwell

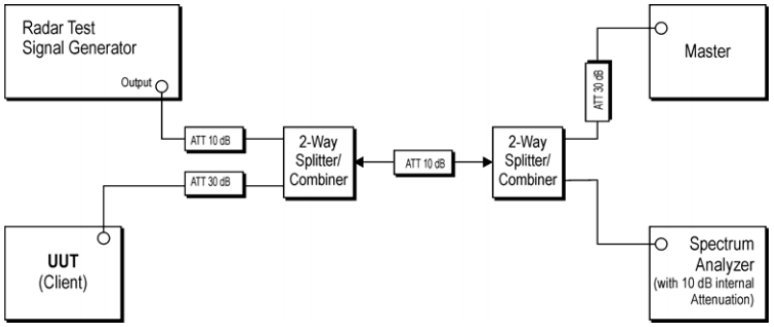
C is the closing time, N is the number of spectrum analyzer sampling bins showing a U-NII transmission and dwell is the dwell time per bin.

Dwell= S/B

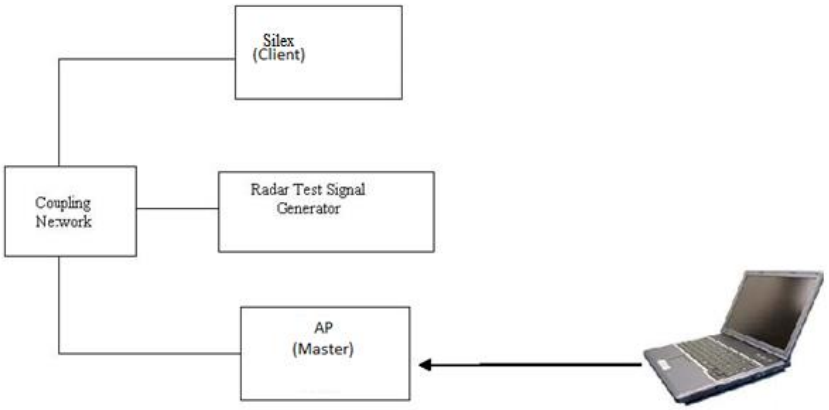
Where Dwell is the dwell time per spectrum analyzer sampling bin, S is the sweep time and B is the number 0f spectrum analyzer sampling bins.

6.1.4 DFS Test Setup

Test Setup Block Diagram



EUT Setup Configuration



The radio was set at the center channel frequency of tested Channel.
A FCC approved Master device (FCC ID: LDK102070) AP was used to link with Intermec mobile computer client device.

For the frequency bands 5470MHz to 5725MHz the master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

Minimum Antenna gain of 1.1 dBi ;

Radar receive signal level=-64dBm + minimum antenna gain +1dB

=-61.9dBm

6.1.5 DFS Test Results

6.1.5.1 Channel Closing Transmission Time

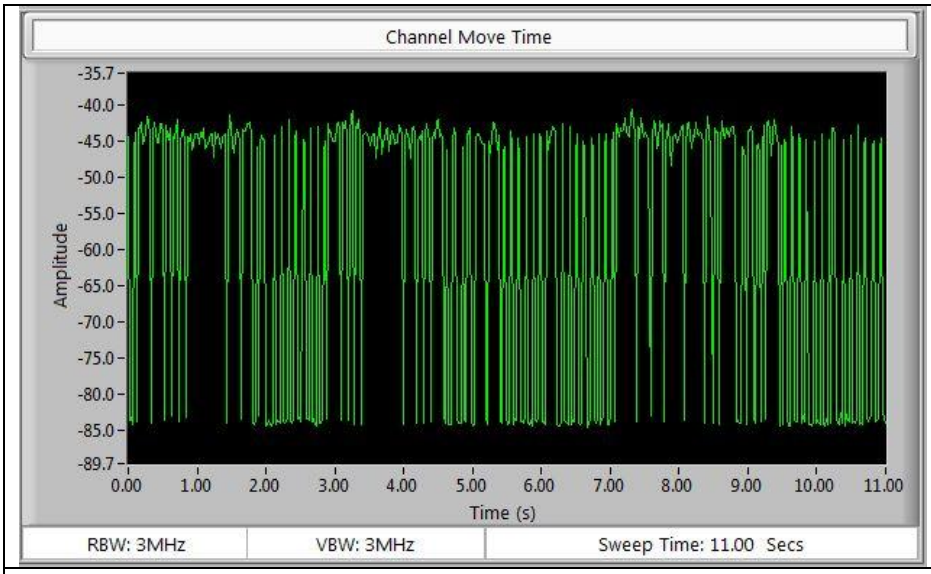
Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407 (h)(2)(b)(iii) RSS 210 (A9.3)	a)	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes1 and 2	☒
Test Setup	See section 6.8.4		
Test Procedure	See section 6.8.3		
Test Date	04/25/2013	Environmental condition	Temperature 21oC Relative Humidity 46% Atmospheric Pressure 1019mbar
Remark	**Note 1:** The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows: - For the Short Pulse Radar Test Signals this instant is the end of the Burst. - For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated. - For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform. **Note 2:** The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between		
Result	☒ Pass ☐ Fail		

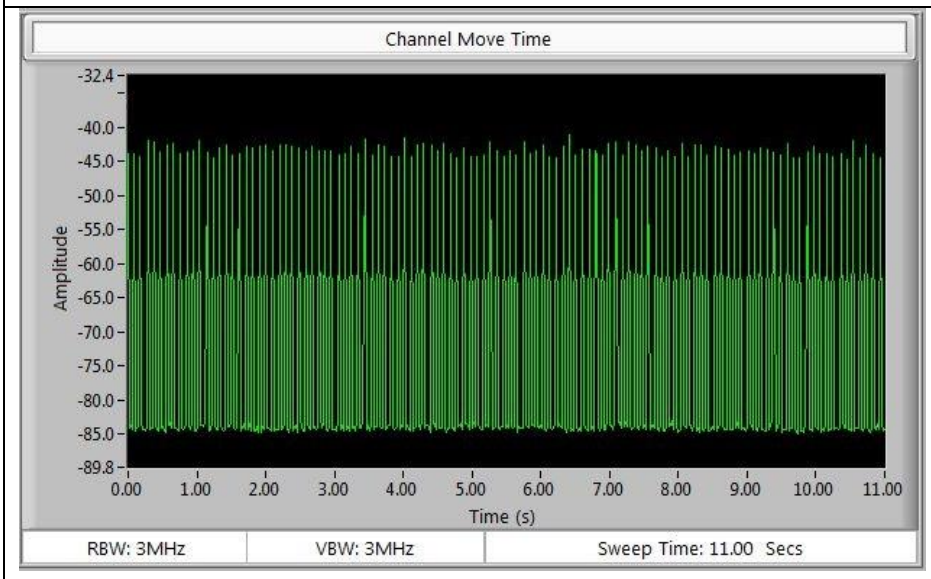
Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Plots for AP and client with/ without traffic for 802.11n-20MHz

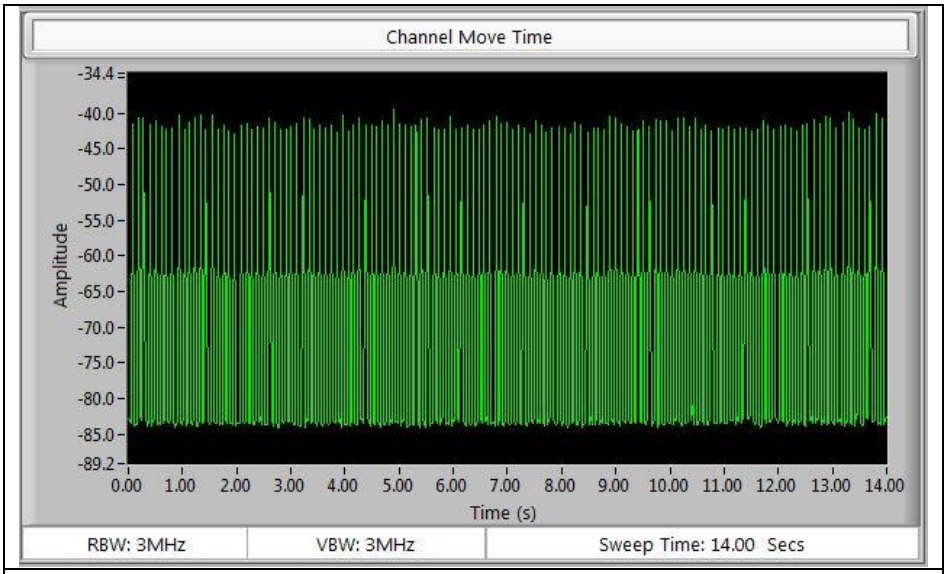


AP signal without traffic -802.11n-20MHz-5580MHz-CN2 Port

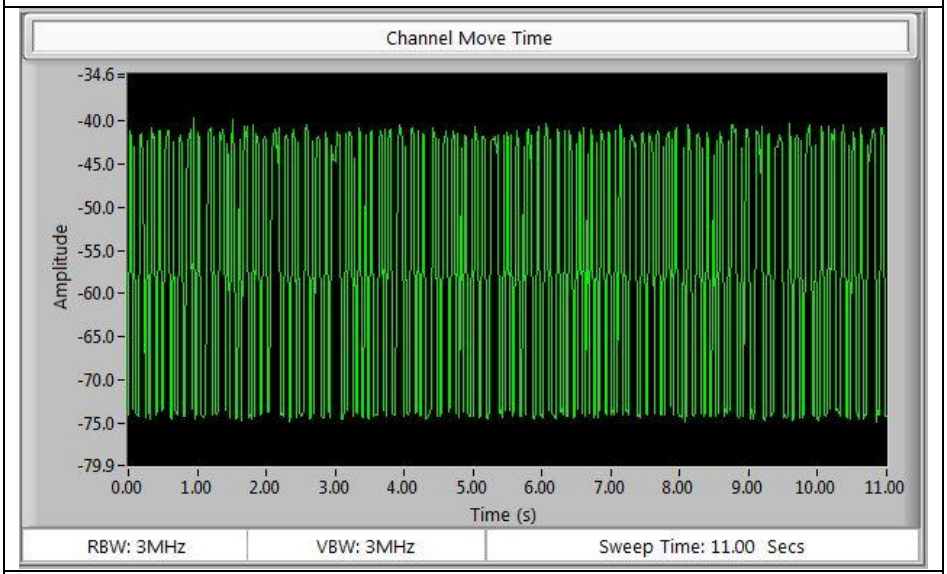


Client signal with traffic -802.11n-20MHz-5580MHz-CN2 Port

Plots for AP and client with/ without traffic for 802.11n-40MHz

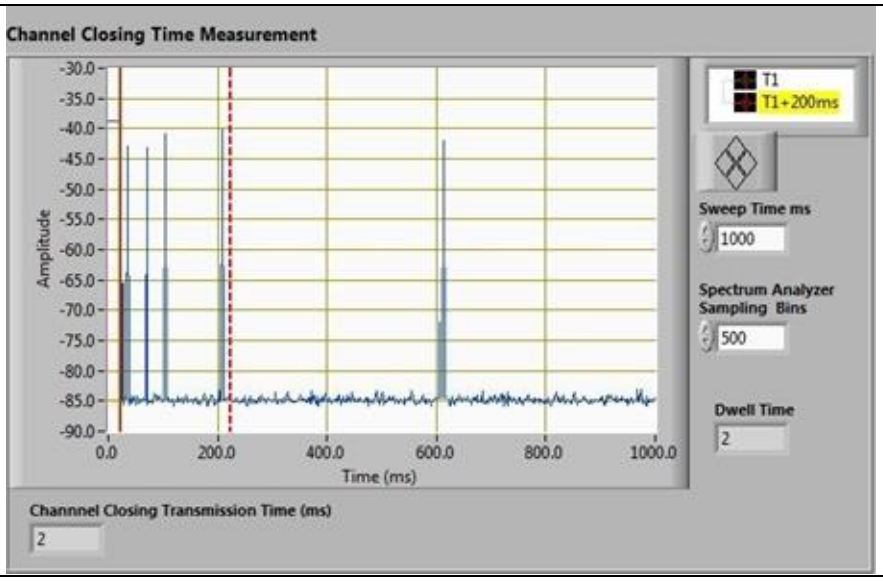


AP signal without traffic -802.11n-40MHz-5550MHz-CN2 Port

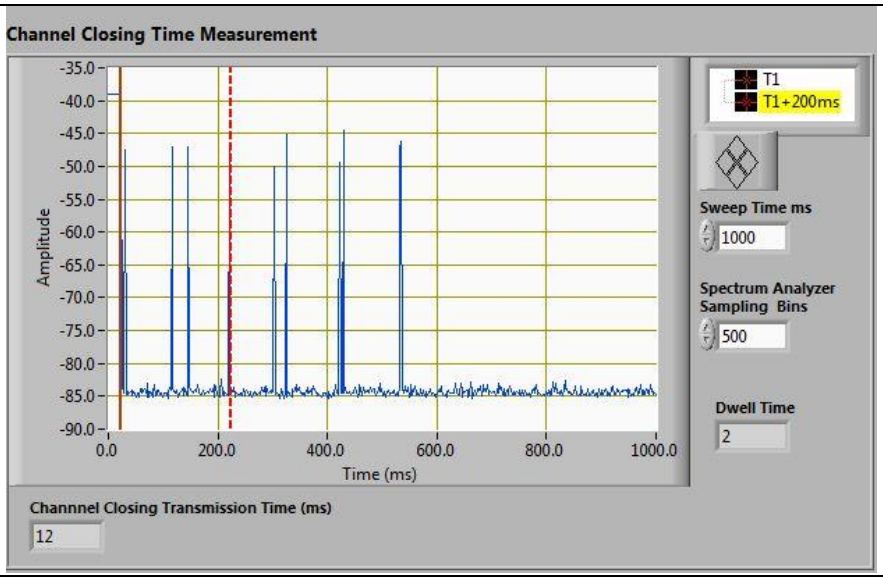


Client signal with traffic -802.11n-40MHz-5550MHz-CN2 Port

Plots for Channel closing time



CH Closing time -802.11n-20MHz-5580MHz-CN2 Port



CH Closing time -802.11n-40MHz-5550MHz-CN2 Port

6.1.5.2 Channel Move Time

Requirement(s):

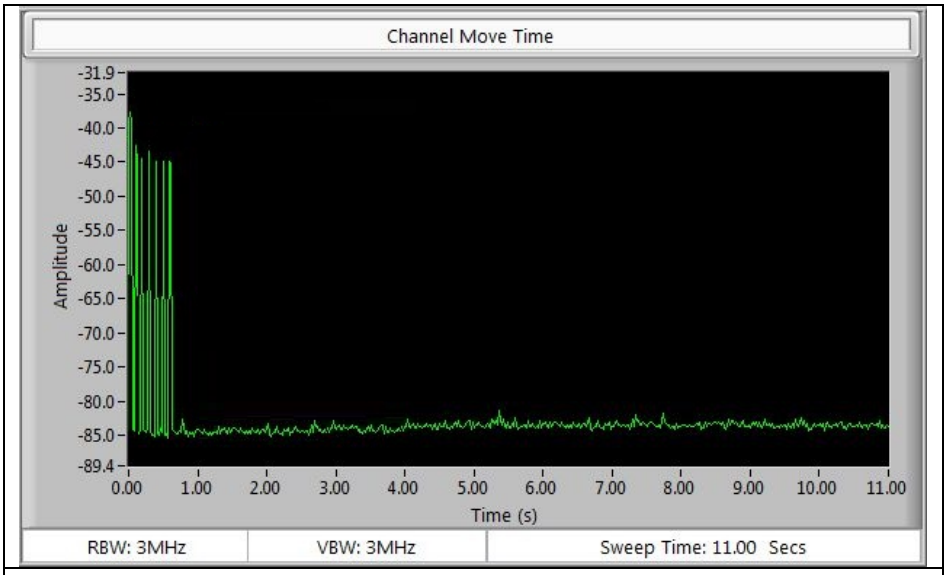
Spec	Item	Requirement	Applicable
§ 15.407 (h)(2)(b)(iii) RSS 210 (A9.3)	a)	10 Seconds	☒

Test Setup	See section 6.8.4			
Test Procedure	See section 6.8.3			
Test Date	04/25/2013	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	21oC 46% 1019mbar
Remark	NONE			
Result	☒ Pass ☐ Fail			

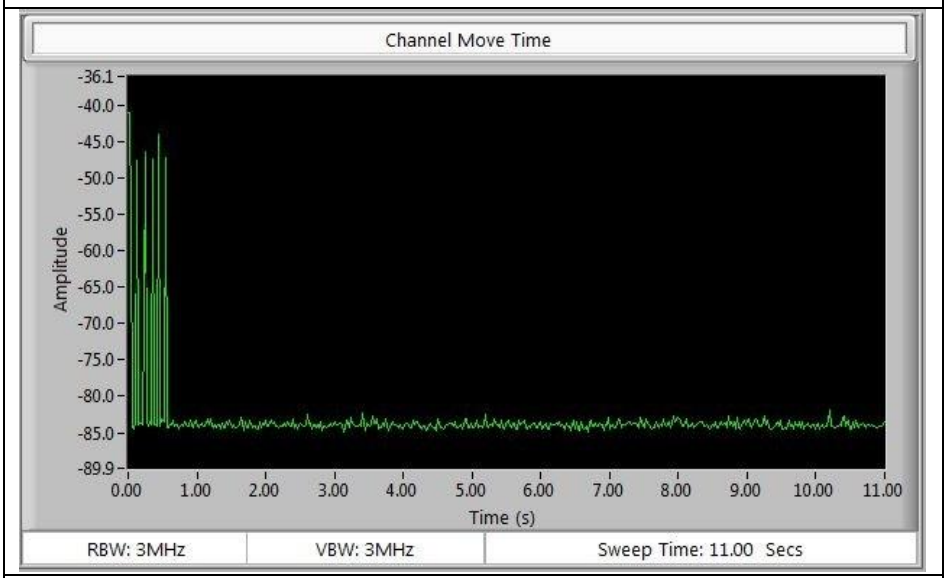
Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Plots for Channel move time



CH move time -802.11n-20MHz-5580MHz-CN2 Port



CH move time -802.11n-40MHz-5550MHz-CN2 Port

6.1.5.3 Non-occupancy period

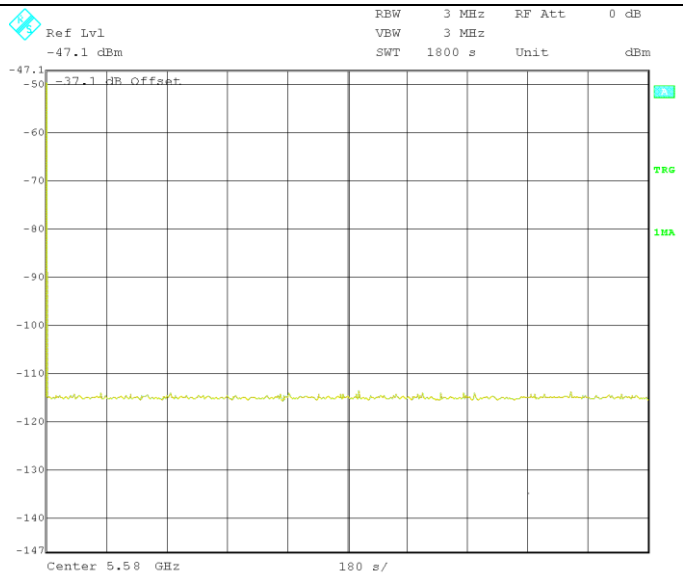
Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407 (h)(2)(b)(iii) RSS 210 (A9.3)	a)	Minimum 30 minutes	☒
Test Setup	See section 6.8.4		
Test Procedure	See section 6.8.3		
Test Date	04/24/2013	Environmental condition	Temperature 21oC Relative Humidity 46% Atmospheric Pressure 1019mbar
Remark	NONE		
Result	☒ Pass ☐ Fail		

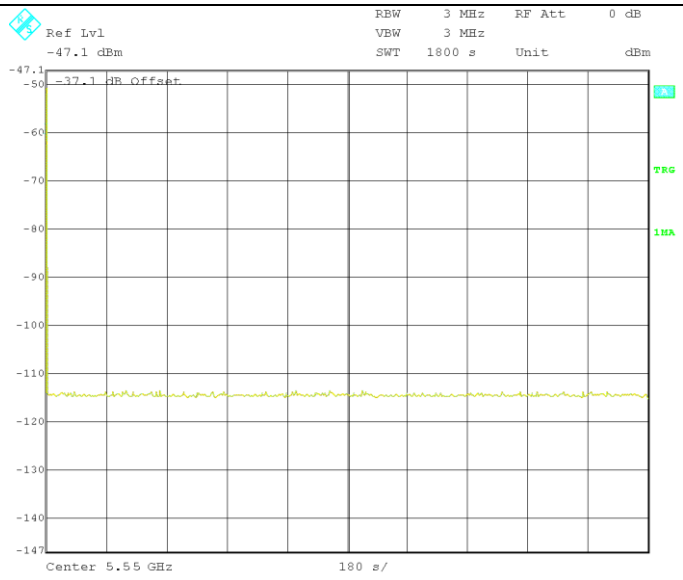
Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Plots for Non-occupancy period



Non-occupancy period -802.11n-20MHz-5580MHz-CN2 Port



Non-occupancy period -802.11n-40MHz-5550MHz-CN2 Port

Annex A. TEST INSTRUMENT & METHOD

Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Model	Serial #	Calibration Date	Calibration Due	Calibrate Cycle
DFS					
R&S EMI Test Receiver	ESIB 40	100179	4/20/2013	4/20/2014	1 year
Dual Channels Arbitrary Waveform Generator (Tabor Electronics Ltd)	WWW-1072	207593	6/4/2012	6/4/2013	1 year
Synthesized Signal Generator (Agilent/HP)	HP8665B	3744A01304	5/14/2012	5/14/2013	1 year
Splitter/Combiner (Mini-Circuit)	ZFSC-2-9G+	S F030000719	N/A	N/A	N/A
Splitter/Combiner (Mini-Circuit)	ZFSC-2-9G+	S F030000718	N/A	N/A	N/A

Note: Functional Verification

Annex B USER MANUAL, BLOCK & CIRCUIT DIAGRAM

Please see attachment

Annex C SIEMIC ACCREDITATION

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		**Radio & Telecommunications Terminal Equipment:** EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
HongKong OFCA		**(Phase II)** OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		**Radio:** Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		**Radio** : A1. Terminal equipment for purpose of calling **Telecom** : B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		**EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI**EMS:** KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measuremet
Australia CAB Regocnition		**EMC:** AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2