



Product Service

**Choose certainty.
Add value.**

Report On

FCC DFS Testing of the
Aava Mobile Oy INARI8-3GAN-1
In accordance with FCC CFR 47 Part 15E and FCC 06-96

COMMERCIAL-IN-CONFIDENCE

FCC ID: 2ABVH-INARI81

Document 75926145 Report 02 Issue 1

April 2014



Product Service

TÜV SÜD Product Service, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100. Website: www.tuv-sud.co.uk

COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC DFS Testing of the
Aava Mobile Oy INARI8-3GAN-1
In accordance with FCC CFR 47 Part 15E and FCC 06-96

Document 75926145 Report 02 Issue 1

April 2014

PREPARED FOR

Aava Mobile Oy
Nahkatehtaankatu 2
90130
Oulu
Finland

PREPARED BY

Natalie Bennett
Senior Administrator, Technical Solutions

APPROVED BY

Simon Bennett
Authorised Signatory

DATED

16 April 2014

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15E and FCC 06-96. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

S Milliken





CONTENTS

Section	Page No
1	REPORT SUMMARY 3
1.1	Introduction 4
1.2	Test Requirements 5
1.3	Brief Summary of Results 6
1.4	Application Form 7
1.5	Product Information 10
1.6	Test Conditions 10
1.7	Deviations from the Standard 10
1.8	Modification Record 10
1.9	DFS Test System 11
2	TEST DETAILS 13
2.1	Calibration of Test Setup 14
2.2	In-Service Monitoring 24
3	TEST EQUIPMENT USED 31
3.1	Test Equipment Used 32
3.2	Support Test Equipment 33
3.3	Measurement Uncertainty 34
4	PHOTOGRAPHS 35
4.1	Test Set-Up Photographs 36
4.2	DFS Test Equipment 36
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 37
5.1	Accreditation, Disclaimers and Copyright 38



Product Service

SECTION 1

REPORT SUMMARY

FCC DFS Testing of the
Aava Mobile Oy INARI8-3GAN-1
In accordance with FCC CFR 47 Part 15E and FCC 06-96



1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC DFS Testing of the Aava Mobile Oy INARI8-3GAN-1 to the requirements of FCC CFR 47 Part 15E and FCC 06-96.

Objective	To perform FCC DFS Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Aava Mobile Oy
Model Number(s)	Inari8-3GAN-C1
Serial Number(s)	IMEI 866274011528092
Hardware Version	Pre-Production
Software Version	Windows 8.1
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15E (2013) FCC 06-96 (2006)
Incoming Release Date	Application Form 11 April 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PMDE143054 17 March 2014
Start of Test	27 March 2014
Finish of Test	8 April 2014
Name of Engineer(s)	S Milliken
Related Document(s)	FCC Public Notice DA 02-2138 (2002); UKAS M3003: Edition 2 (2007); ETSI TR 100 028 (2001)



1.2 TEST REQUIREMENTS

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without DFS	Client With DFS
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client Without DFS	Client With DFS
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes



1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15E and FCC 06-96 is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
802.11(a)				
2.1	NA	Calibration of Test Setup	Pass	
2.2	15.407 (h)(2)(iii)	In-Service Monitoring	Pass	
802.11(n) 20 MHz BW				
2.1	NA	Calibration of Test Setup	Pass	
2.2	15.407 (h)(2)(iii)	In-Service Monitoring	Pass	
802.11(n) 40 MHz BW				
2.1	NA	Calibration of Test Setup	Pass	
2.2	15.407 (h)(2)(iii)	In-Service Monitoring	Pass	



1.4 APPLICATION FORM

EQUIPMENT DESCRIPTION	
Model Name/Number	INARI8-3GAN-1
Part Number	INARI8-3GAN-1
Hardware Version	Pre-Production
Software Version	Windows 8.1
FCC ID	2ABVH-INARI81
Technical Description (Please provide a brief description of the intended use of the equipment)	Windows tablet computer with integrated WLAN and 3G modem.

TYPE OF EQUIPMENT
<input type="checkbox"/> Master
<input type="checkbox"/> Client with Radar Detection
<input checked="" type="checkbox"/> Client without Radar Detection
<input type="checkbox"/> Wi-Fi Direct Support

TRANSMITTER TECHNICAL CHARACTERISTICS	
FREQUENCY CHARACTERISTICS	
<input checked="" type="checkbox"/> 5.150 GHz to 5.250 GHz	
<input checked="" type="checkbox"/> 5.250 GHz to 5.350 GHz	
<input checked="" type="checkbox"/> 5.470 GHz to 5.725 GHz	
<input checked="" type="checkbox"/> 5.725 GHz to 5.825 GHz	
<input type="checkbox"/> Please confirm the EUT does not operate in the frequency band 5600 – 5650 MHz	
<input type="checkbox"/> Off Channel CAC Implemented	
Off Channel CAC within 5600 – 5650 MHz band	hours, (1 – 24)
Off Channel CAC outside 5600 – 5650 MHz band	minutes, (6 – 240)
Note: DFS is not required in the ranges 5.15 – 5.25 GHz and 5.725 – 5.825 GHz	

TRANSMITTER RF POWER CHARACTERISTICS	
Maximum rated transmitter output power as stated by manufacturer	
Conducted Power	12 dBm
Maximum Antenna Gain	1.9 dBi
EIRP	13.9 dBm
Minimum rated transmitter output power as stated by manufacturer (if applicable)	
Conducted Power	12 dBm
Maximum Antenna Gain	1.49 dBi
EIRP	13.49 dBm
Is TPC supported?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If Yes, provide a description of operation.	



POWER SOURCE			
<input type="checkbox"/>	AC mains supply	State voltage	
	AC supply frequency (Hz)	VAC	
<input checked="" type="checkbox"/>	DC supply		
	Nominal voltage	4.2 V Nominal	

SYSTEM ARCHITECTURE			
<input type="checkbox"/>	Frame Based		
<input type="checkbox"/>	IP Based		
<input type="checkbox"/>	Other	If other please state	
<input checked="" type="checkbox"/>	802.11(a)	Receiver Bandwidth:	MHz
<input checked="" type="checkbox"/>	802.11(n) – 20 MHz	Receiver Bandwidth:	MHz
<input checked="" type="checkbox"/>	802.11(n) – 40 MHz	Receiver Bandwidth:	MHz
<input type="checkbox"/>	802.11(ac) – 20 MHz	Receiver Bandwidth:	MHz
<input type="checkbox"/>	802.11(ac) – 40 MHz	Receiver Bandwidth:	MHz
<input type="checkbox"/>	802.11(ac) – 80 MHz	Receiver Bandwidth:	MHz

DECLARATION	
No parameter or information relating to the detected radar waveforms is available or accessible to the end user.	
<input checked="" type="checkbox"/> True	<input type="checkbox"/> False

MISCELLANEOUS (Master Device Only)
Power-on cycle time*
* Time from switching on the UUT to the point at which Channel Availability Check (CAC) commences

UNIFORM SPREADING (Master Device Only)
Describe how the meter provides, on aggregate, uniform channel loading of the spectrum across all channels.



ANTENNA OPTIONS	
Antenna 1	
Antenna Description:	Internal antenna
Antenna Model:	
Antenna Maximum Gain:	1.9 dBi
Antenna Frequency Range:	2.4Ghz
Antenna 2	
Antenna Description:	Internal Antenna
Antenna Model:	
Antenna Maximum Gain:	1.47
Antenna Frequency Range:	5GHz band
Antenna 3	
Antenna Description:	
Antenna Model:	
Antenna Maximum Gain:	
Antenna Frequency Range:	
Antenna 4	
Antenna Description:	
Antenna Model:	
Antenna Maximum Gain:	
Antenna Frequency Range:	
Antenna 5	
Antenna Description:	
Antenna Model:	
Antenna Maximum Gain:	
Antenna Frequency Range:	

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature:  Name: Patrick Lomax
 Position held: Senior Project Manager Date: 11.04.2014



1.5 PRODUCT INFORMATION

1.5.1 Technical Description

The Equipment Under Test (EUT) was a Aava Mobile Oy INARI8-3GAN-1. A full technical description can be found in the manufacturer's documentation.

The EUT is a Client without Radar Detection device.

1.6 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. See individual test clauses.

The EUT was powered from a 120 V AC 60 Hz power supply unit via an AC/DC USB adapter.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

1.7 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.8 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.



1.9 DFS TEST SYSTEM

The DFS system consists of hardware and software. The Hardware uses a PXI chassis with PXI instruments populating the chassis. The instruments used are a Vector Signal Generator, a Digitiser, Frequency References and a Dual Core PC. The measurement and analysis software runs on the PC and controls the instruments within the mainframe via commands on the PXI bus. Various markers are contained within the generated waveforms. The markers are used to trigger the measurement system at the appropriate points. An external trigger is also provided at the SMB output on the Vector Signal Generator which is employed where a Spectrum Analyser is used in place of the Aeroflex Digitiser. These are described within the test procedure for the applicable test.

The Aeroflex DFS software generates the pulses in accordance with FCC 06-96.

Short Pulse Radar Test Waveform (Types 1-4)

The short pulse radar simulation is a conventional amplitude pulse with varying pulse widths, pulse rate intervals (PRI) and number of pulses. General characteristics for these types and number of repetitions required by the standard are as follows:

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses
1	1	1428	18
2	1-5	150-230	23-29
3	6-10	200-500	16-18
4	11-20	200-500	12-16

FCC 06-96 - Table 5 – Short Pulse Radar Test Waveforms

Long Pulse Radar Test Waveform (Type 5)

The long pulse radar simulation is a 12 second concatenated series of chirps, chosen randomly. The general characteristics for type 5 and number of repetitions required by the standard are as follows:

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts
5	50-100	5-20	1000-2000	1-3	8-20



FCC 06-96 - Table 6 – Long Pulse Radar Test Waveform

A Type 5 Radar sequence is constructed in the following way:

- 1) The user provides the required level based on the calibration and the test frequency.
- 2) The Burst_Count, (a number between 8 and 20 inclusive), is chosen representing the number of "bursts" (or waveform segments). Type 5 waveform length is 12 seconds, thus each "burst" length will be $BL = 12 / \text{Burst_Count}$.
- 3) Pulse_Count, a number between 1 and 3 inclusive is chosen for each burst segment (1 through Burst_Count) representing the number of chirped pulses for each burst segment.
- 4) For each burst segment, the following chirp parameters are randomly chosen (all chirped pulses within a given burst segment are the same, whether 1, 2, or 3 chirped pulses are chosen):
 - a) Frequency width (5 MHz to 20 MHz, a linear and symmetrical ramp)
 - b) Pulse period (50 μs to 100 μs)
 - c) Pulse Rate Interval (1 ms to 2 ms, in 1 μs increments)
 - d) The start of the first pulse in a given burst segment is randomly chosen (in 1 μs increments) between 1 μs and [(the total burst length - (total of all pulse periods within a burst) + (the total space between pulses within a burst)]. Or stated otherwise, 1 μs to [(BL - (Pulse_Count * pulse period) + (Pulse_Count - 1) * randomly chosen PRI Interval)].

Frequency Hopping Test Waveform (Type 6)

The frequency hopping radar simulation emits 9 1 μs wide amplitude pulses with a 333 μs PRI spacing on a randomly chosen frequency, hops to another randomly chosen frequency, emits another 9 pulses and then continues this sequence for 100 different frequencies chosen using a pseudo random sequence. General characteristics for type 6 and number of repetitions required by the standard are as follows:

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)
6	1	333	9	0.333	300

FCC 06-96 - Table 7 – Frequency Hopping Radar Test Waveform

The frequency hopping Radar is generated in the following way:

- a) The user inputs the required level based on the calibration and a frequency within the EUT detection bandwidth.
- b) A sequence of 100 numbers, ($n = 1$ to 100), are randomly chosen from between 1 to 475 and then removed from the sequence producing 100 unique random numbers.
- c) Frequency assignments are $5250 \text{ MHz} + n$.
- d) If the list generated from steps (b) and (c) does not include at least one frequency which is between 5250 to 5350 MHz or 5470 to 5725 MHz, the list is regenerated.
- e) Secondly, in order to verify that at least one frequency in the list is at the EUT frequency plus or minus $\frac{1}{2}$ the EUT detection bandwidth (i.e. at least one of the frequencies in the list must conflict with the EUT's operation such that the EUT will attempt to relocate when the sequence is played), the frequency supplied by the user is inserted into the list, replacing one selection.

Using the supplied Aeroflex software, the pulses are automatically generated and the required numbers of trials are created for each Radar Type – except in the case of Radar Type 1 which has no changeable attributes. The pulses are saved as Arbitrary Waveform files which are then selected by the user for use in the scenario being tested.



Product Service

SECTION 2

TEST DETAILS

FCC DFS Testing of the
Aava Mobile Oy INARI8-3GAN-1
In accordance with FCC CFR 47 Part 15E and FCC 06-96



Product Service

2.1 CALIBRATION OF TEST SETUP

2.1.1 Specification Reference

FCC CFR 47 Part 15E and FCC 06-96

2.1.2 Equipment Under Test and Modification State

Inari8-3GAN-C1 S/N: IMEI 866274011528092 - Modification State 0

2.1.3 Date of Test

28 March 2014

2.1.4 Environmental Conditions

Ambient Temperature	21.8°C
Relative Humidity	36.5%



2.1.5 Test Results

802.11(a)

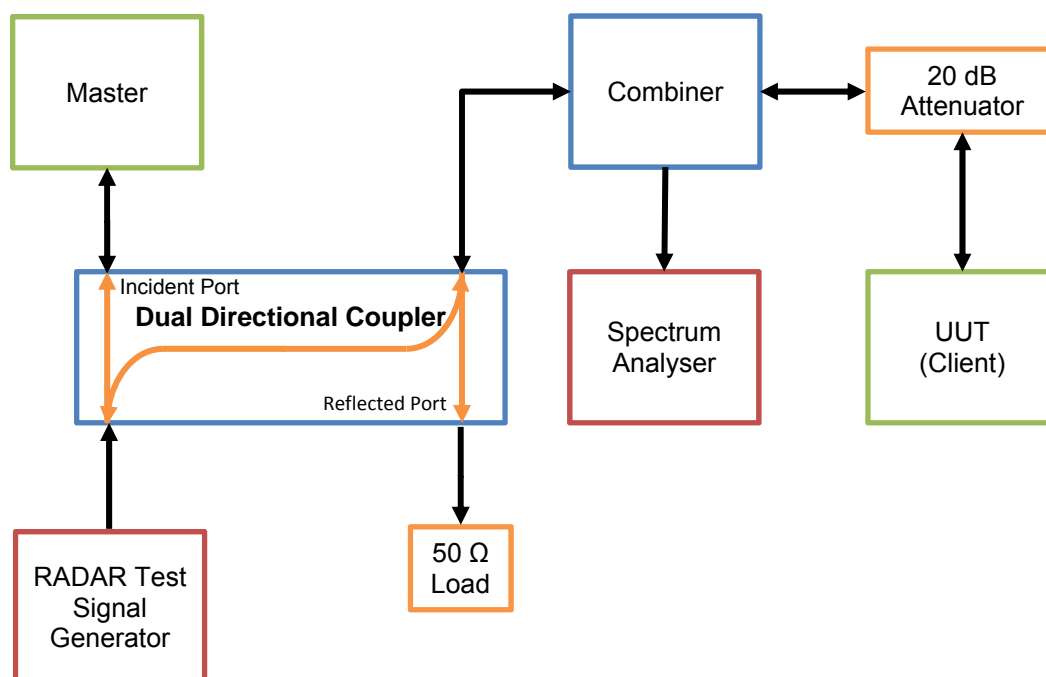
In this test equipment configuration, Radar signals are injected at the Master. The configuration ensures that the Radar pulses are received only by the Master device and not the Client. To calibrate the Radar pulses, the UUT was replaced by a Spectrum Analyser. The required Radar Waveform, (Type 1), was loaded into the Arbitrary Waveform Generator. The Spectrum Analyser was set to zero Span and the RBW and VBW set to 3MHz. The sweep time was set to display the entire burst and triggered on the Radar Burst. The output level of the Radar Signal Generator was adjusted to give the correct level as defined in the table below with the 1dB correction accounted for. Trace data showing the used Radar Pulses was recorded.

DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 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.	

Test Equipment Setup

Setup for Client with injection at the Master





Product Service

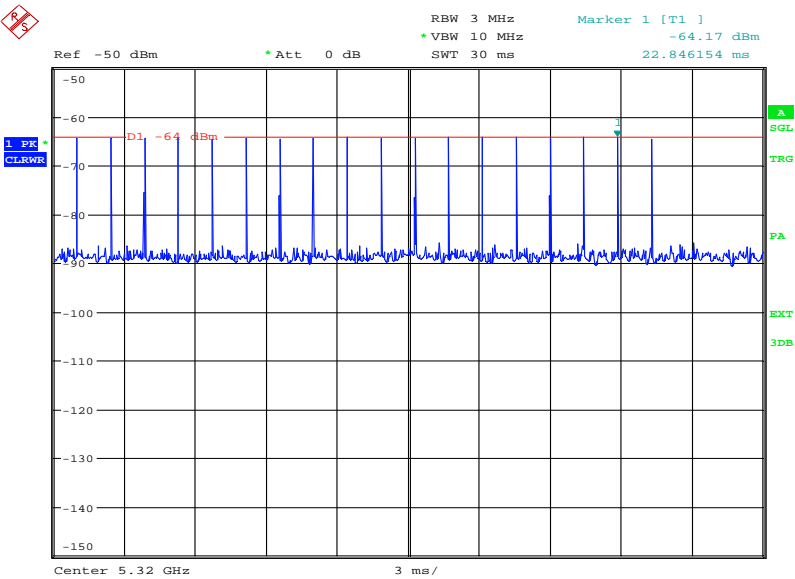
Radar Pulse Type 1

Short Radar Pulse Characteristics

Radar Type	Pulse Width (µs)	PRI (µs)	Number Of Pulses
1	1	1428	18

Client without Radar Detection

Radar Type 1 Plot

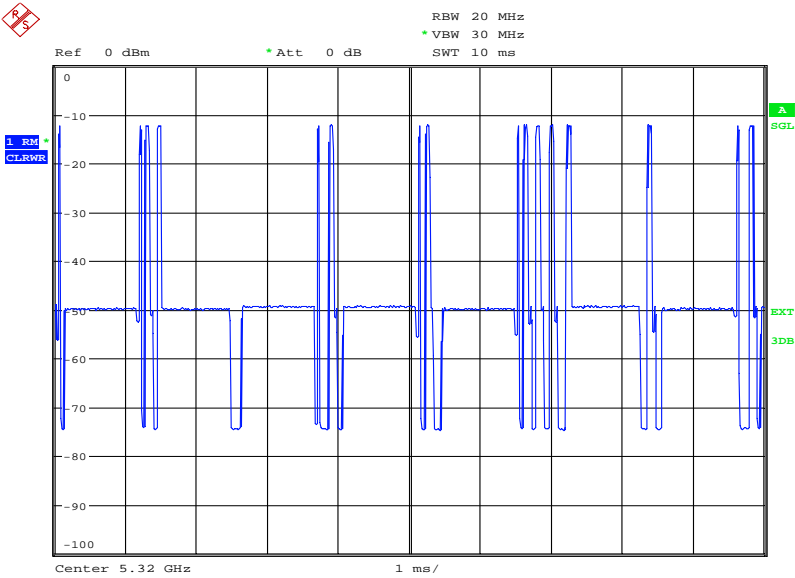


Date: 27.MAR.2014 17:12:27



Product Service

Channel Loading Plot



Date: 28.MAR.2014 16:30:42



802.11(n) 20 MHz BW

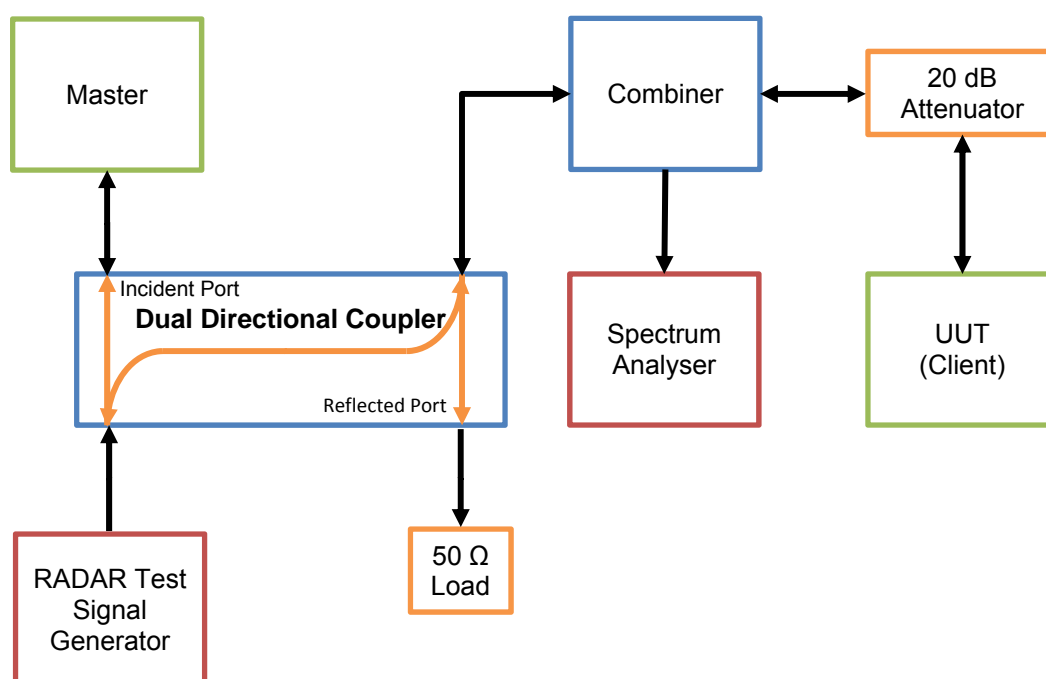
In this test equipment configuration, Radar signals are injected at the Master. The configuration ensures that the Radar pulses are received only by the Master device and not the Client. To calibrate the Radar pulses, the UUT was replaced by a Spectrum Analyser. The required Radar Waveform, (Type 1), was loaded into the Arbitrary Waveform Generator. The Spectrum Analyser was set to zero Span and the RBW and VBW set to 3MHz. The sweep time was set to display the entire burst and triggered on the Radar Burst. The output level of the Radar Signal Generator was adjusted to give the correct level as defined in the table below with the 1dB correction accounted for. Trace data showing the used Radar Pulses was recorded.

DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 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.	

Test Equipment Setup

Setup for Client with injection at the Master





Product Service

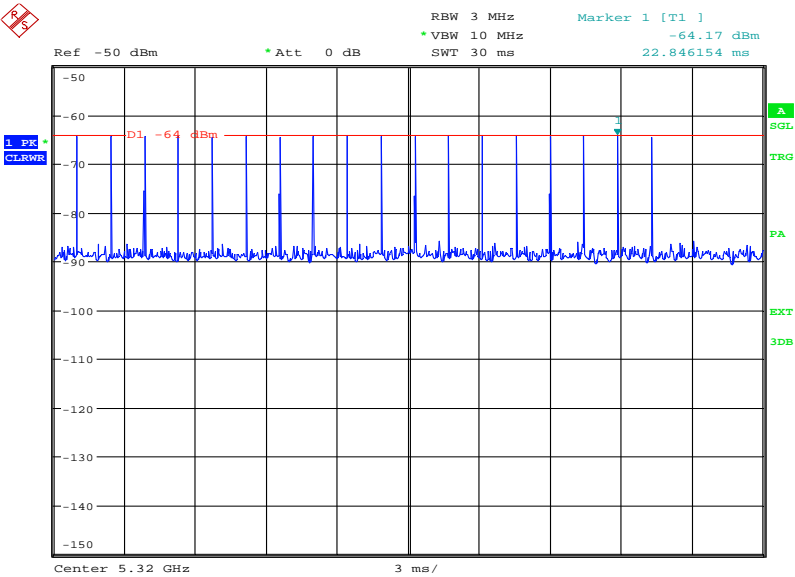
Radar Pulse Type 1

Short Radar Pulse Characteristics

Radar Type	Pulse Width (µs)	PRI (µs)	Number Of Pulses
1	1	1428	18

Client without Radar Detection

Radar Type 1 Plot

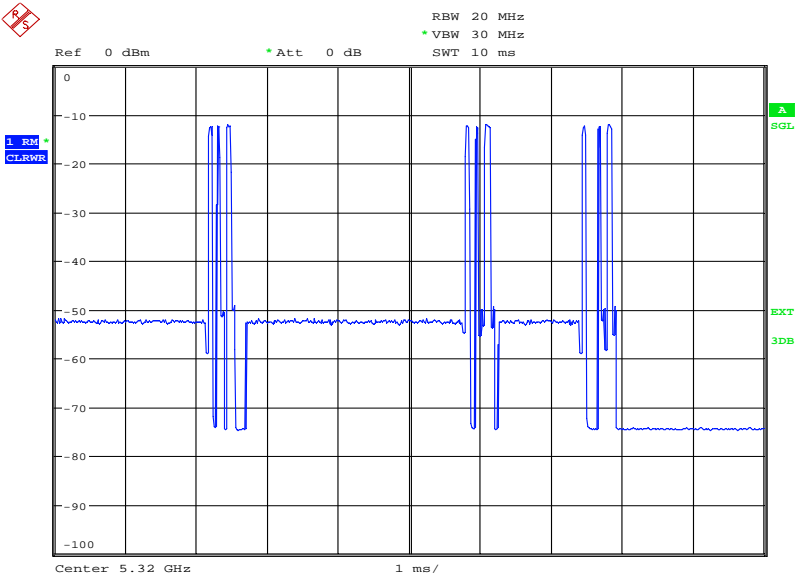


Date: 27.MAR.2014 17:12:27



Product Service

Channel Loading Plot



Date: 28.MAR.2014 16:31:48



802.11(n) 40 MHz BW

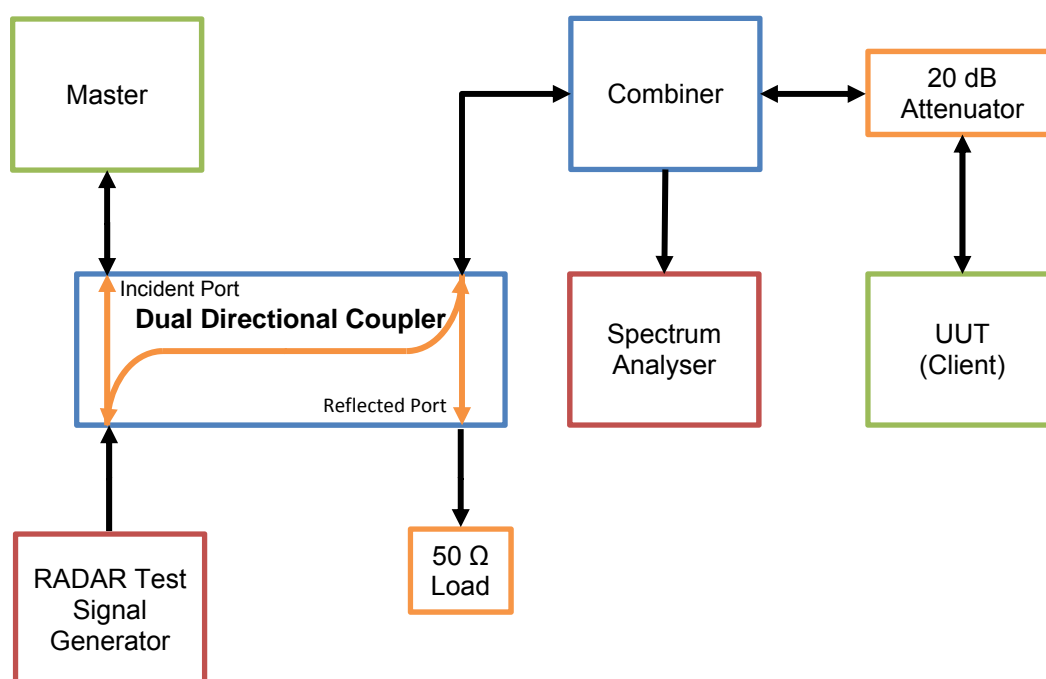
In this test equipment configuration, Radar signals are injected at the Master. The configuration ensures that the Radar pulses are received only by the Master device and not the Client. To calibrate the Radar pulses, the UUT was replaced by a Spectrum Analyser. The required Radar Waveform, (Type 1), was loaded into the Arbitrary Waveform Generator. The Spectrum Analyser was set to zero Span and the RBW and VBW set to 3MHz. The sweep time was set to display the entire burst and triggered on the Radar Burst. The output level of the Radar Signal Generator was adjusted to give the correct level as defined in the table below with the 1dB correction accounted for. Trace data showing the used Radar Pulses was recorded.

DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 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.	

Test Equipment Setup

Setup for Client with injection at the Master





Product Service

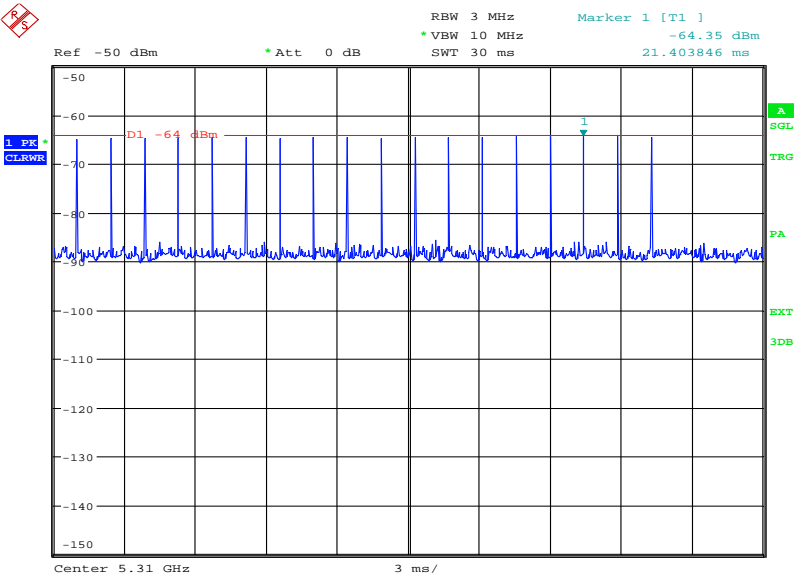
Radar Pulse Type 1

Short Radar Pulse Characteristics

Radar Type	Pulse Width (µs)	PRI (µs)	Number Of Pulses
1	1	1428	18

Client without Radar Detection

Radar Type 1 Plot

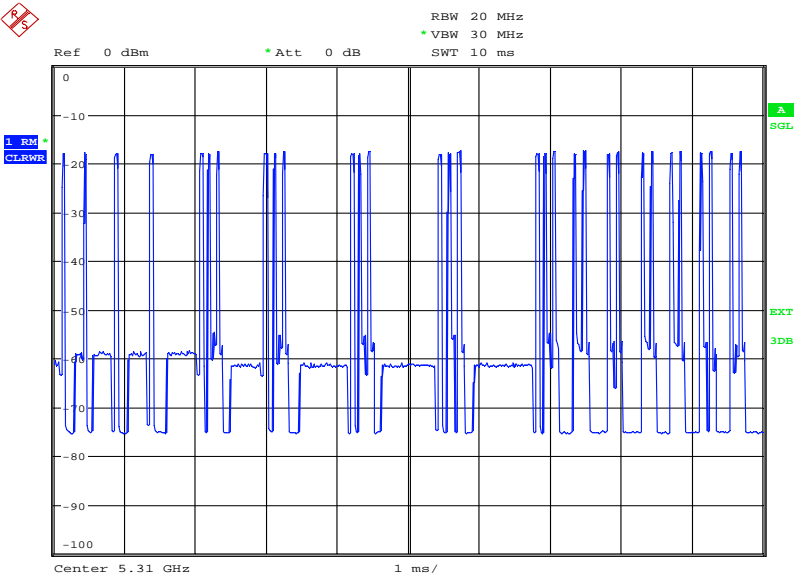


Date: 27.MAR.2014 17:13:19



Product Service

Channel Loading Plot



Date: 28.MAR.2014 16:37:44



Product Service

2.2 IN-SERVICE MONITORING

2.2.1 Specification Reference

FCC CFR 47 Part 15E and FCC 06-96, Clause 15.407 (h)(2)(iii)

2.2.2 Equipment Under Test and Modification State

Inari8-3GAN-C1 S/N: IMEI 866274011528092 - Modification State 0

2.2.3 Date of Test

27 March 2014

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The EUT was associated with the FCC Approved Master device FCC ID: UZ7MB82. A computer was connected via an Ethernet cable to the Master device and the FCC defined video file was streamed to the Client device using Windows Media Player.

Radar Pulse Type 1 was then transmitted and the Spectrum monitored. The transmissions from the UUT were observed for a period of 12 seconds after the final injected Radar Pulse. The Channel Move Time and the Channel Closing Time were measured and recorded.

The plot also shows 0.6 seconds prior to the radar pulses being applied to the UUT.

Initially, the UUT was removed from the test setup and replaced with a Spectrum Analyser. A Type 1 Radar burst was sent from the signal generator and its level adjusted until the a maximum level of -63dBm was achieved. The Spectrum Analyser was then replaced with the UUT.

The UUT was configured to stream the FCC designated video file using Windows Media Player version 12. Using the Aeroflex DFS Software, the Radar burst was injected to the Master. The test software triggered the capture mechanism of the PXI Digitiser and data was collected of the Radar burst, the Master and Client devices. The data was analysed with the Channel Move time being measured at the final point where transmissions ceased. It was checked that all transmissions stopped within the 10 second period defined from the point of the end of the final Radar pulse + 10 seconds. In addition, the aggregate on time during the first 200ms and the following 9.8 seconds of the Channel Move Time was computed by the Aeroflex DFS Software.

The markers on the trace data correspond to the following time periods:

Red	-	End Of Radar Burst, (T1)
Purple	-	End Of 200ms Period, (T1 + 200 ms)
Yellow	-	End Of Channel Move Time, (T1 + 10 seconds)



Product Service

2.2.6 Environmental Conditions

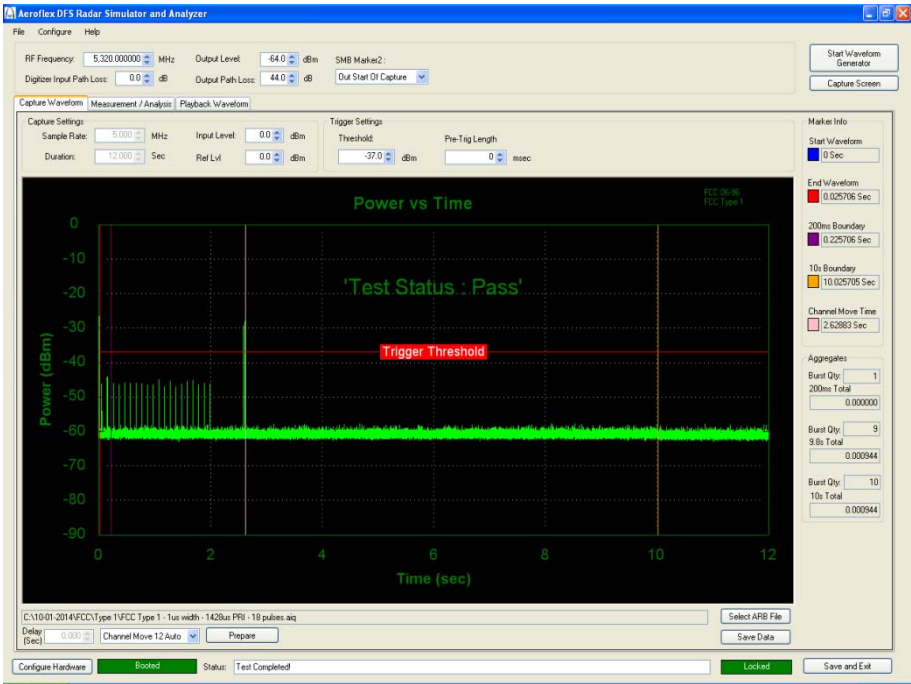
Ambient Temperature 21.5°C
Relative Humidity 29.4%

2.2.7 Test Results

802.11(a)

Channel Move Time	2.623 seconds
Channel Closing Time (Aggregate Time During 200ms)	0.000 ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	0.944 ms
Channel Closing Time (Aggregate Time During 10s)	0.944 ms

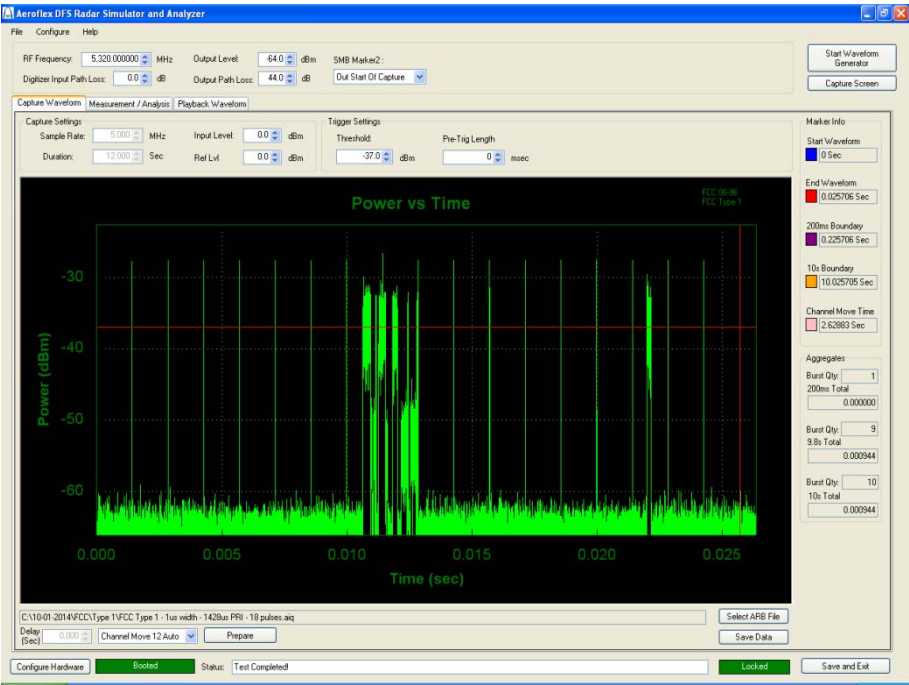
Overall Power vs Time Display, showing channel closing and move time





Product Service

Zoom of Radar Burst, Access Point and Client Signalling



Limit Clause 15.407 (h)(2)(iii) and FCC 06-96, Table 4

Channel Move Time	<10s
Channel Closing Time (Aggregate Time During 200ms)	<200ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	<60ms

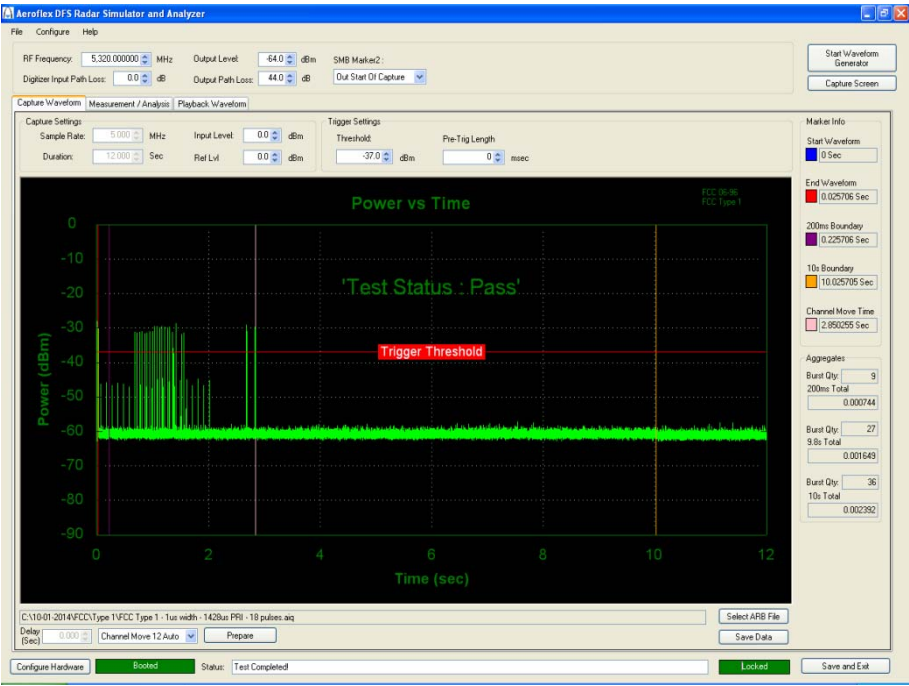


Product Service

802.11(n) 20 MHz BW

Channel Move Time	2.850 seconds
Channel Closing Time (Aggregate Time During 200ms)	0.744 ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	1.649 ms
Channel Closing Time (Aggregate Time During 10s)	2.392 ms

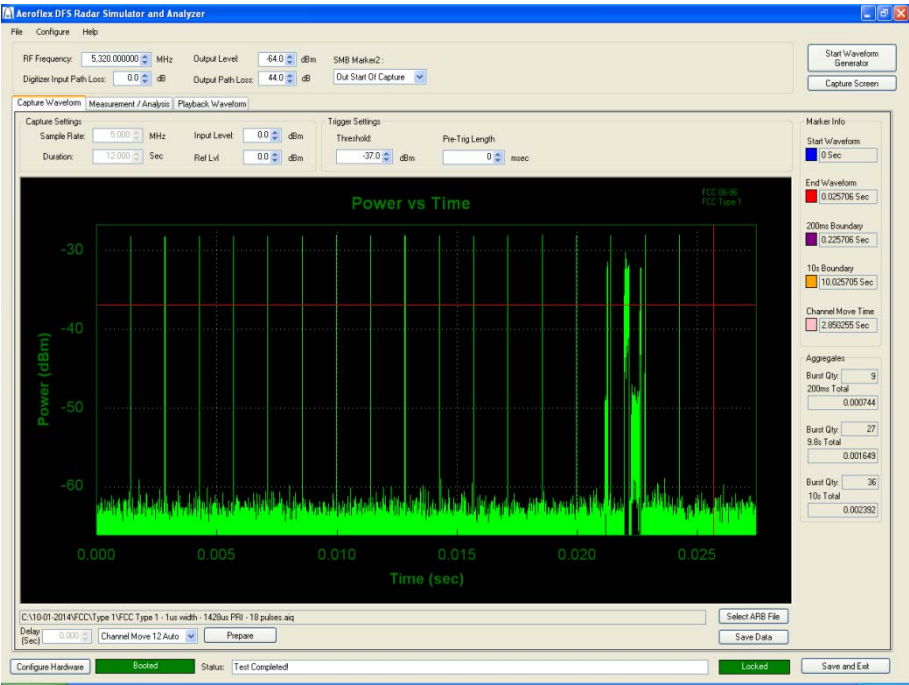
Overall Power vs Time Display, showing channel closing and move time





Product Service

Zoom of Radar Burst, Access Point and Client Signalling



Limit Clause 15.407 (h)(2)(iii) and FCC 06-96, Table 4

Channel Move Time	<10s
Channel Closing Time (Aggregate Time During 200ms)	<200ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	<60ms

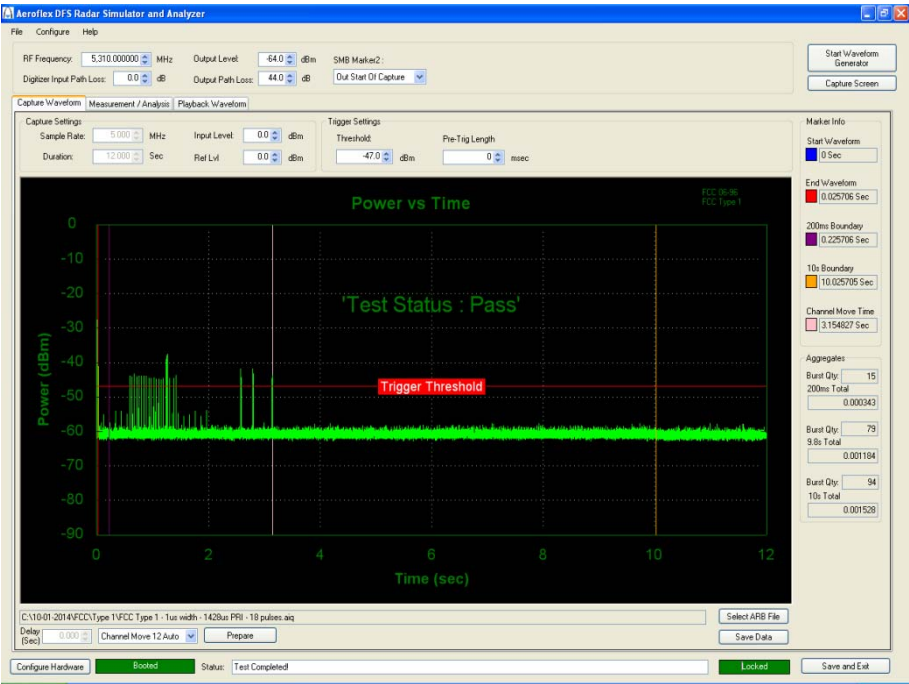


Product Service

802.11(n) 40 MHz BW

Channel Move Time	3.155 seconds
Channel Closing Time (Aggregate Time During 200ms)	0.343 ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	1.184 ms
Channel Closing Time (Aggregate Time During 10s)	1.528 ms

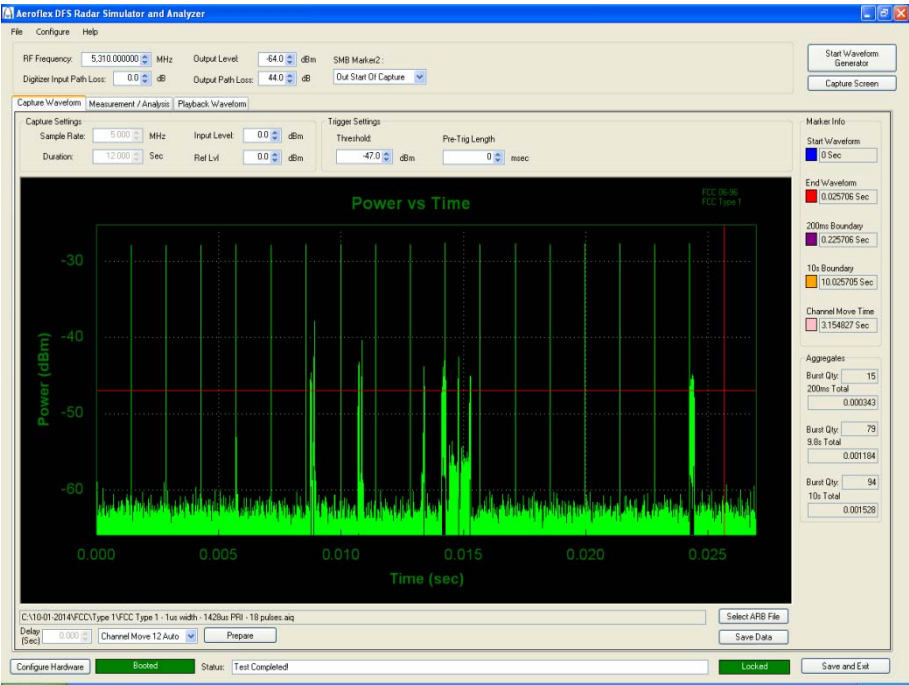
Overall Power vs Time Display, showing channel closing and move time





Product Service

Zoom of Radar Burst, Access Point and Client Signalling



Limit Clause 15.407 (h)(2)(iii) and FCC 06-96, Table 4

Channel Move Time	<10s
Channel Closing Time (Aggregate Time During 200ms)	<200ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	<60ms



Product Service

SECTION 3

TEST EQUIPMENT USED



Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.2 - In-Service Monitoring					
White Gold	Multimeter	WG022	190	12	28-Oct-2014
Directional Coupler	Hewlett Packard	11692D	451	12	2-Sep-2014
20dB/2W Attenuator	Narda	4772-20	461	-	TU
Power Passport: 50, 60 or 400Hz Power Supply	Behlman Hauppauge	P1350-CE	1434	-	TU
Mains Voltage Monitor	TUV SUD Product Service	MVM1	1378	12	6-Sep-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
PXI Digital RF Signal Generator	Aeroflex	3025	4015	24	3-Oct-2015
1800-6000 MHz Power Splitter	Mini-Circuits	ZN2PD-63-S+	4056	-	O/P Mon

TU – Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment



3.2 SUPPORT TEST EQUIPMENT

Instrument	Manufacturer	Type No.	Serial Number
DFS Radar Simulator Analyser Software	Aeroflex Ltd	Version 2.1.2	-
802.11 Access Point and Router	Edimax	BR-642n v2.0	BR6424N07CA01367
802.11a/n Access Point	Motorola	AP-650	10055522200026
Personal Computer	Dell Inc.	DCSM	36DJP2J



Product Service

3.3 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
In-Service Monitoring	Time: $\pm 0.47\%$ Power: $\pm 1.29\text{ dB}$



Product Service

SECTION 4

PHOTOGRAPHS

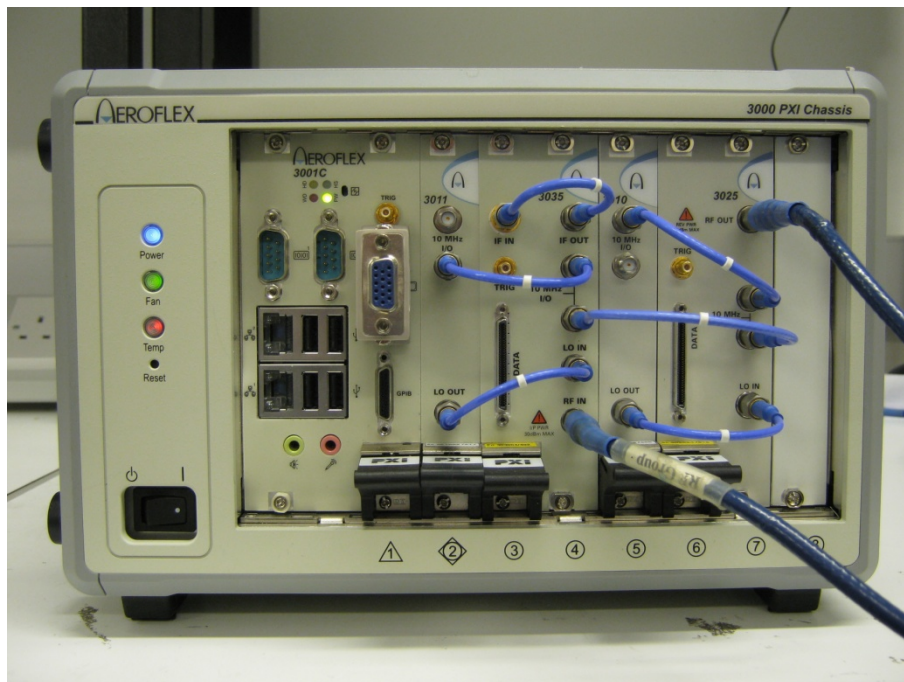


Product Service

4.1 TEST SET-UP PHOTOGRAPHS

See test set-up photographs exhibit “75926145 FCC Set Up Photos.pdf”.

4.2 DFS TEST EQUIPMENT



Test Set Up



Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
(Not UKAS Accredited).

This report must not be reproduced, except in its entirety, without the written permission of
TÜV SÜD Product Service

© 2014 TÜV SÜD Product Service