RADIO TEST REPORT

For

MODEL NO. 1703
FCC ID: C3K1703
IC ID: 3048A-1703

Test Report No. R-TR190-FCCIC-DFS-2
Issue Date: September 29, 2015

FCC CFR47 Part 15 Subpart E
Industry Canada RSS-247 Issue 1

Prepared by
Microsoft EMC Laboratory
17760 NE 67th Ct,
Redmond WA, 98052, U.S.A.
425-421-9799
sajose@microsoft.com

ACCREDITED
TESTING CERT #3472.01

1 Record of Revisions

Revision	Date	Section	Page(s)	Summary of Changes	Author/Revised By:
1.0	09/15/2015	All	All	First Version	Daniel Salinas
2.0	09/29/2015	4, 6, 8.3, 8.4	7, 8, 16, 17	Include test sample serial number; Include FCC ID of Router; Remove 80 MHz data	Daniel Salinas

Microsoft

Table of Contents

Test Report Attestation

Microsoft Corporation
Model: 1703
FCC ID: C3K1703
IC ID: 3048A-1703

Applicable Standards

Specification	Test Result
FCC CFR47 Rule Parts 15.407- DFS	Pass
Industry Canada RSS-247 Issue 1- DFS	Pass

Microsoft EMC Laboratory attests that the product model identified in this report has been tested to and meets the requirements identified in the above standards. The test results in this report solely pertains to the specific sample tested, under the conditions and operating modes as provided by the customer.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government. Reproduction, duplication or publication of extracts from this test report is prohibited and requires prior written approval of Microsoft EMC Laboratory.

This test report replaces Microsoft test report R-TR190-FCCIC-DFS-1 issued on 09/15/2015.

Written By: Daniel Salinas
Radio Test Engineer

Reviewed/ Issued By: Sajay Jose
EMC/RF Compliance Lab Manager

2 Deviations from Standards

None.

3 Facilities and Accreditations

3.1 Test Facility

All test facilities used to collect the test data are located at
Microsoft EMC Laboratory,
17760 NE 67th Ct,
Redmond WA, 98052, USA

3.2 Accreditations

The lab is established and follows procedures as outlined in IEC/ISO 17025 and A2LA accreditation requirements.
A2LA Accredited Testing Certificate Number: 3472.01
FCC Registration Number: US1141
IC Site Registration Numbers: 3048A-1, 3048A-2, 3048A-3, 3048A-4

3.3 Test Equipment

The calibrations of the measuring instruments, including any accessories that may affect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the user manual for the measuring equipment.

4 Product Description

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Customer Contact:	Sahithi Kandula
Functional Description of the EUT:	Handheld computing device with 802.11 2x2 a/b/g/n/ac WLAN, Bluetooth Radios
Model:	1703
FCC ID:	C3K1703
IC ID:	3048A-1703
Radio Description:	WLAN 802.11a/n/ac with 20MHz, 40MHz and 80MHz Signal Bandwidths
Modulation:	OFDM – BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Antenna Type and Gain:	Internal 4dBi
EUT Classification:	UNII – Slave Device without radar detection
Equipment Design State:	EV3B
Equipment Condition:	Good
Test Sample Details:	S/N: 000112352157

4.1 Test Configurations

The device was setup in normal operation and connected wirelessly to an 802.11 access point on 20 MHz, 40 MHz and 80 MHz bandwidths. A host laptop was configured to transmit traffic by using video to the EUT. The Aeroflex PXI 3001C DFS test system was used to monitor traffic and generate radar pulses.

4.2 Environmental Conditions

Ambient air temperature of the test site was within the range of 10 ºC to 40 ºC (50 ºF to 104 ºF) unless the EUT specified testing over a different temperature range. Humidity levels were in the range of 10% to 90% relative humidity. Testing conditions were within tolerance and any deviations required from the EUT are reported.

4.3 Equipment Modifications

No modifications were made during testing.

4.4 Dates of Testing

Testing was performed from August 17th - 18th, 2015.

5 Test Results Summary

Test Description	FCC CFR 47/ IC Rule Part	Limit	Test Result
In-Service Monitoring	15.407(h)(2)(iv) RSS-247 [6.3]	Monitor co-channel radar	N/A*
Channel Availability Check	15.407 (h)(2)(ii) RSS-247 [6.3]	60s detection	N/A*
Channel Move Time	15.407 (h)(2)(iii) RSS-247 [6.3]	10s	Pass
Channel Closing Time	15.407 (h)(2)(iii) RSS-247 [6.3]	200ms	Pass
Non-occupancy Period	15.407 (h)(2)(iv) RSS-247 [6.3]	30 minutes	Pass

*Note: The EUT is a slave device with out radar detection.

6 Test Equipment List

Manufacturer	Description	Model #	Asset #	FCC ID	Calibration Due
Aeroflex	PXI Chassis	3001C	RF-132	N/A	3/9/2016
Cisco	Cisco Aironet ISO Access Point	AIR-AP1252AG-A-K9	RF-331	LDK 102061 LDK 102062	N/A
Agilent	Spectrum Analyzer	N9030A	RF-011	N/A	02/29/2016

7 Test Method

7.1 Antenna port conducted measurements

Antenna port conducted measurements were performed on a bench-top setup consisting of a spectrum analyzer, power meter (as necessary), splitters/combiners (as necessary), attenuators, and pre-characterized RF cables. The Aeroflex PXI 3001C DFS test system monitored traffic and generated radar bursts.

The correction factors between the EUT, support equipment, radar test generator and the spectrum analyzer is added internally in the Areoflex test system.

7.2 Test Setup Diagrams

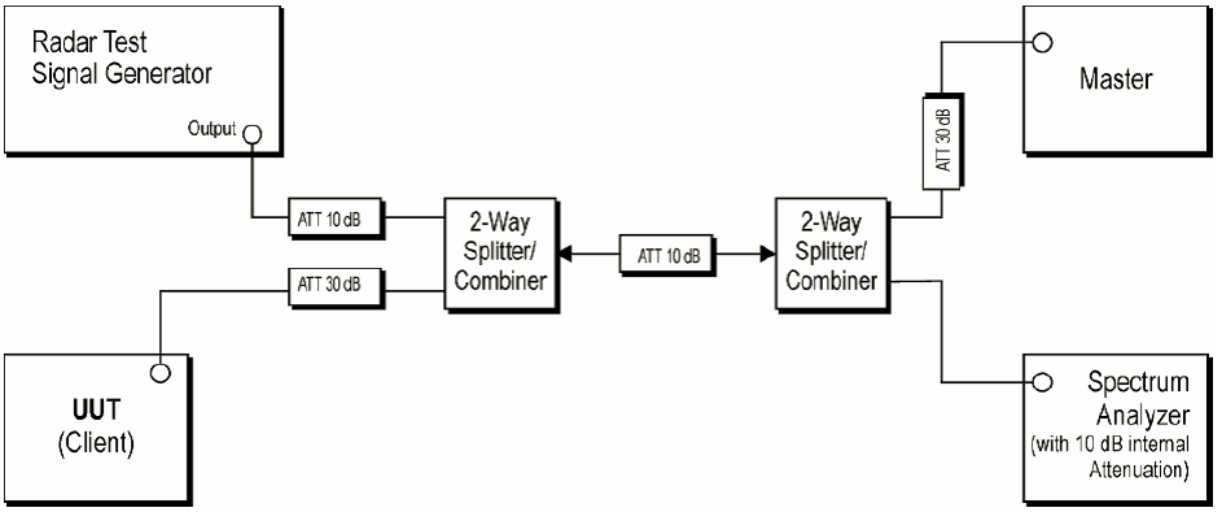

Fig.1. Test Setup for Antenna port conducted measurements

8 Test Results

8.1 In-service monitoring

8.1.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (h)(2)(iv)

Industry Canada RSS-247 [6.3]

8.1.2 Test Method:

Measurements were performed according to the procedures defined in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

8.1.3 Limits:

An LE-LAN device shall be able to monitor the operating channel to check that a co-channel radar has not moved or started operation within range of the LE-LAN device. During in-service monitoring, the LE-LAN radar detection function continuously searches for radar signals between normal LE-LAN transmissions.

8.1.4 Test Results:

Not Applicable. The EUT is a slave device without radar detection.

8.2 Channel Availability Check Time

8.2.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (h)(2)(iv)

Industry Canada RSS-247 [6.3]

8.2.2 Test Method:

Measurements were performed according to the procedures defined in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

8.2.3 Limits:

The EUT shall check whether there is a radar system already operating on the channel before it initiates a transmission on a channel and when it moves to a channel. The device may start using the channel if no radar signal with a power level greater than the interference threshold value specified in Section 6.3(1) above is detected within 60 seconds.

8.2.4 Test Results:

Not Applicable. The EUT is a slave device without radar detection.

8.3 Channel Move Time

8.3.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (h)(2)(iv)

Industry Canada RSS-247 [6.3]

8.3.2 Test Method:

Measurements were performed according to the procedures defined in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

8.3.3 Limits:

After a radar signal is detected, the device shall cease all transmissions on the operating channel within 10 seconds.

8.3.4 Test Results:

Pass.

The EUT ceased transmission on the channel within 10s.

8.3.5 Test Data

8.3.5.1 Radar Burst Level

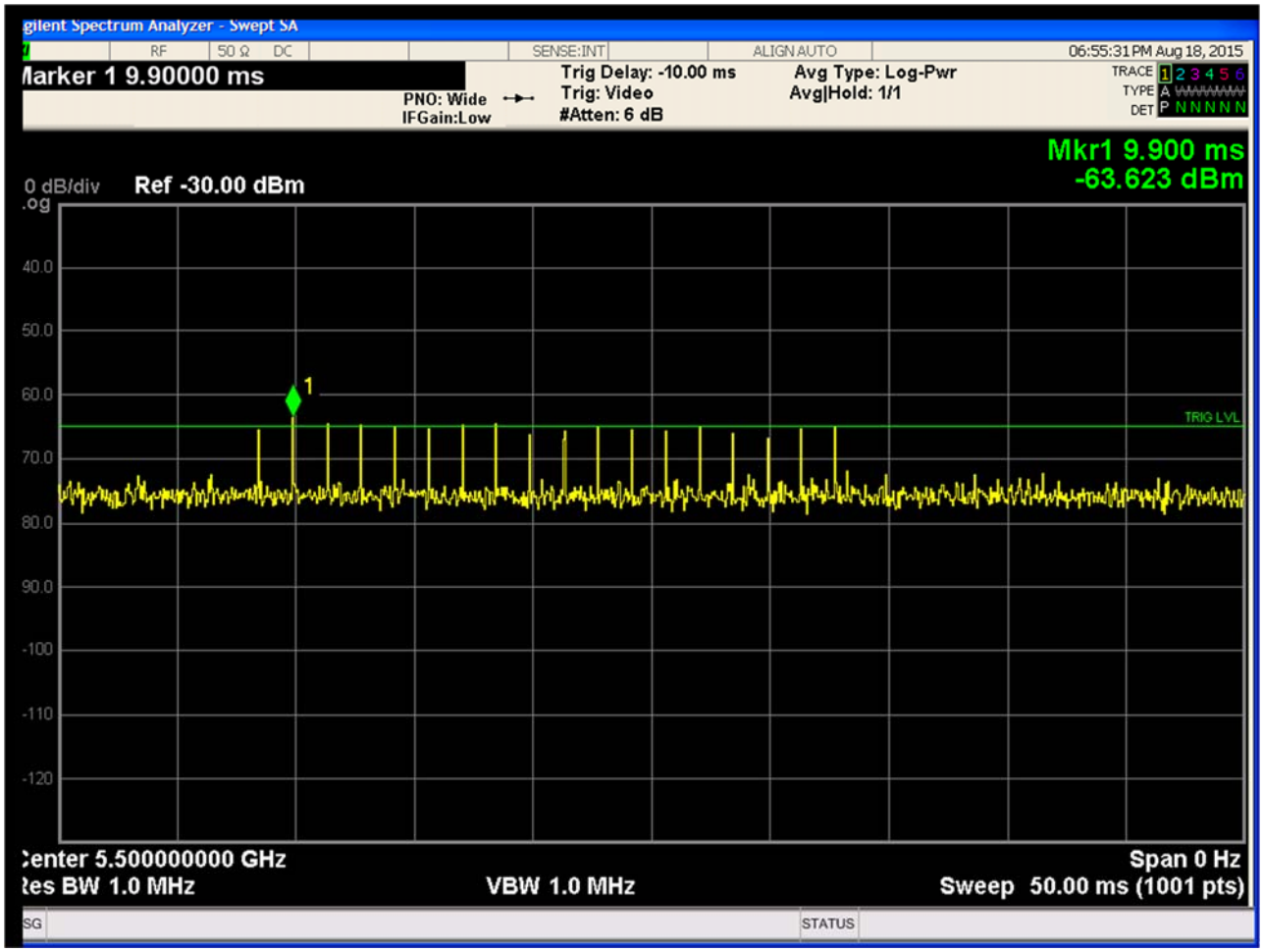

Figure 1. Radar Burst Level at -63dBm: Radar Type 0

8.3.5.2 Channel Loading

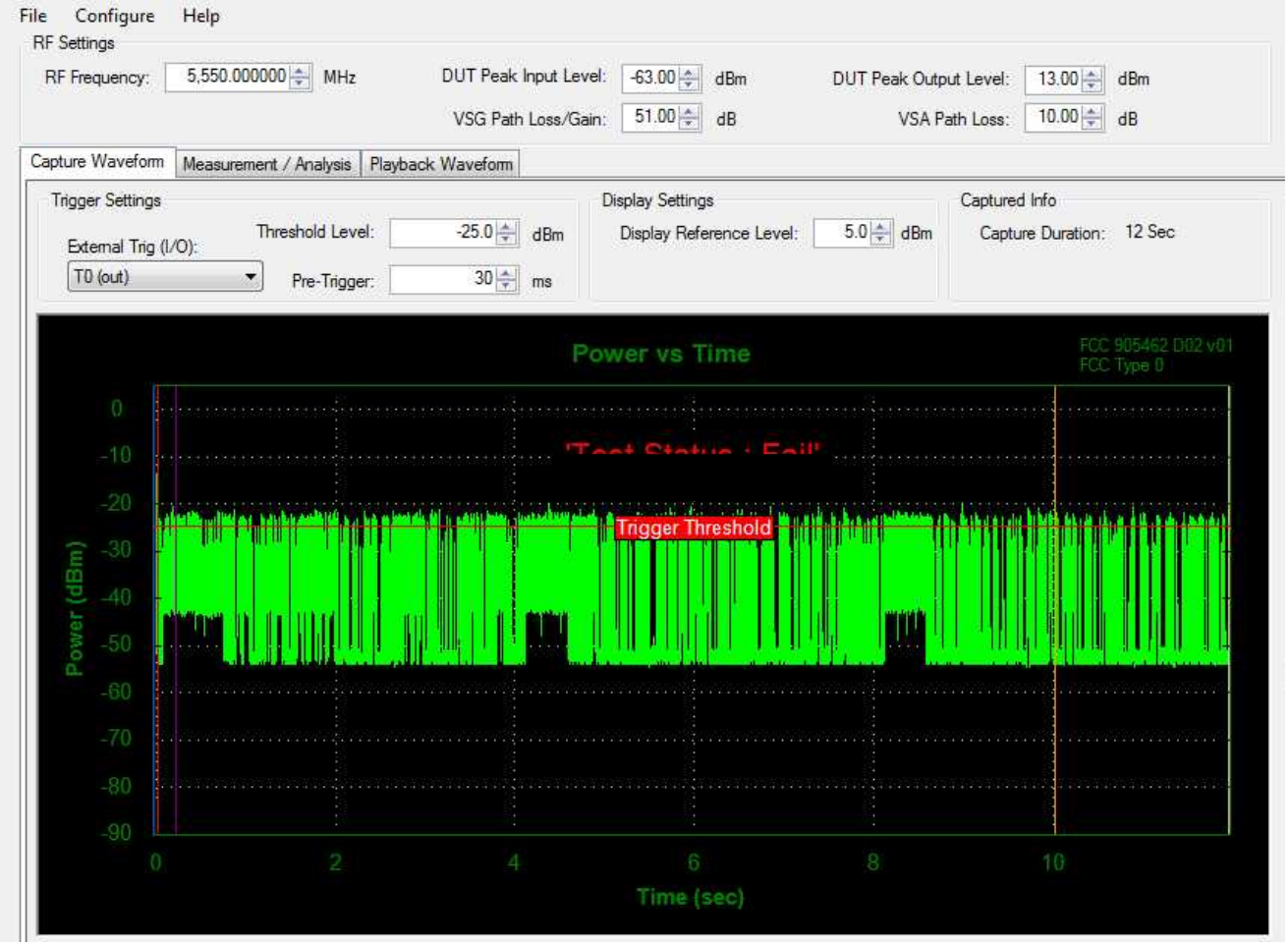

Figure 2. Channel Loading

8.3.5.3 Channel Move Time 20 MHz Bandwidth

Figure 3. Channel Move Time 20 MHz Bandwidth

8.3.5.4 Channel Move Time 40 MHz Bandwidth

Figure 4. Channel Move Time 40 MHz Bandwidth

8.4 Channel Closing Transmission Time

8.4.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (h)(2)(iii)

Industry Canada RSS-247 [6.3]

8.4.2 Test Method:

Measurements were performed according to the procedures defined in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

8.4.3 Limits:

After the radar burst has been applied, the EUT shall cease normal transmission on the channel within 200 ms starting at the beginning of the channel move time. Control signaling required to facilitate a channel move (an aggregate of 60 ms) over the remaining 10-second period of the channel move time is permissible.

8.4.4 Test Results:

Pass.

The EUT ceased transmission on the channel within the allotted time.

8.4.5 Test Data

Channel Bandwidth (MHz)	Channel Closing Transmission Time (ms)	Aggregate Control Signaling Time (ms)	Channel Closing Transmission Time Limit (ms)	Aggregate Control Signaling Time Limit (ms)	Result
20	25.706	0	200	60	Pass
40	97.821	0	200	60	Pass

8.5 Non-Occupancy Period

8.5.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (h)(2)(iv)

Industry Canada RSS-247 [6.3]

8.5.2 Test Method:

Measurements were performed according to the procedures defined in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

8.5.3 Limits:

A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

8.5.4 Test Results:

Pass.

The EUT ceased transmission on the channel within 10s.

8.5.5 Test Data:

Plot shown for 2000 secs sweep time.

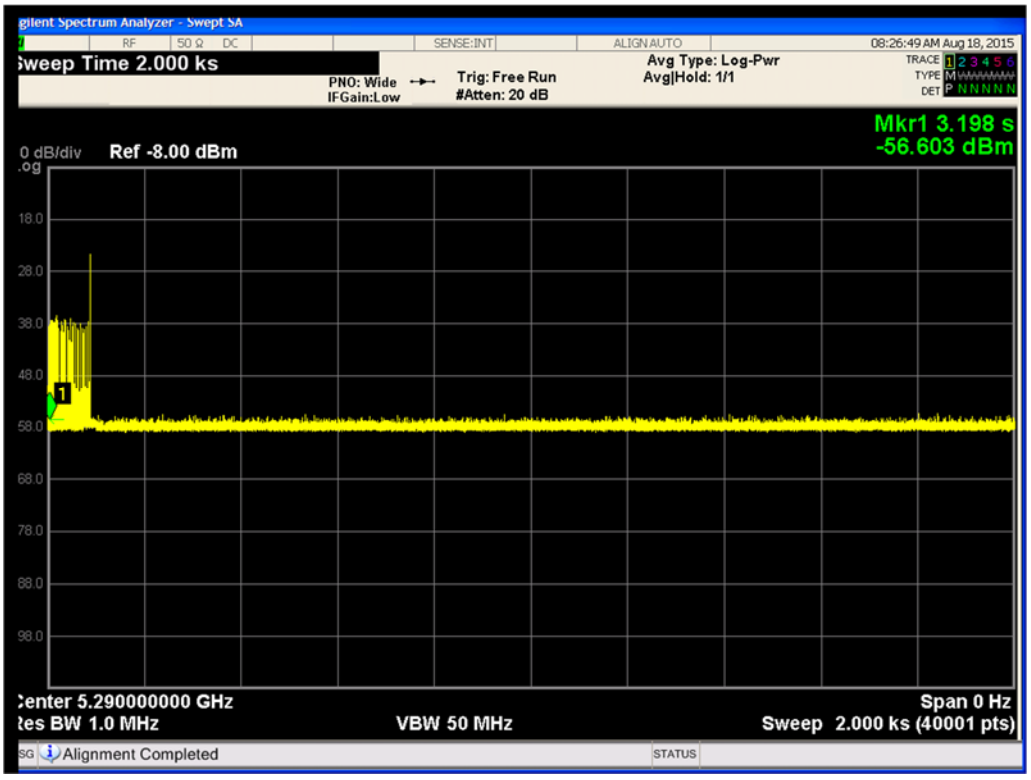

Figure 5. 30 Minute Non-Occupancy Period

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End of Report