

Software Configuration Control Test Report: 2.4 GHz WLAN

Test Report no.:	FCCWLAN_RM-1116_26.docx	Date of Report:	21-Sep-2015
Number of pages:	11	Customer's Contact person:	Tia Melava
Testing laboratory:	TCC Microsoft Salo Laboratory P.O.Box(86) Joensuunkatu 7E FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 71 80 44122	Customer:	Microsoft P.O.Box(86) Joensuunkatu 7E FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 71 80 44122
FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-1116 / Dummy Battery SD-241R		
FCC ID:	PYARM-1116	IC:	661X-RM1116
Supplement reports:	-		
Testing has been carried out in accordance with:	KDB 594280 D01 v02: Guidance on Software or Network Configuration of Non-SDR Devices to Ensure Compliance.		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document		
Date and signature for the contents:			

Hannu Söderholm, Engineer, EMC

1. Summary

Date of receipt	15-Jun-2015
Testing completed	3-Jul-2015
The customer's contact person	Tia Melava
Jari Rontu Test Plan referred to	T:\Projects\RM-1085\TestPlan\RS_testplan_RM-1085.xlsm
Notes	-
Document name	T:\Projects\RM-1085\EMC\FCCWLAN_RM-1116_26.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with a 2.4 GHz WLAN transceiver. The WLAN operates on channels 1-11 in the USA and its territories and on channels 1-13 everywhere else. Channels 12-13 are activated only, when the phone detects a non-US cellular network. The detection is based on the network's MCC/MNC code.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-1085	004402742321478	2111	-	01066.00001.15273.52000	100014
Dummy Battery	SD-241R	-	V2	-	-	100017

1.2. Summary of Test Results

Name of the test	Result
First time power-up compliance	PASSED
New connection establishment	PASSED
Supplemental information control	PASSED
Geo-location information recheck	PASSED

The test results of RM-1085 are re-used for certification of the RM-1116. The table above indicates the results, which will be re-used

PASSED The EUT complies with the essential requirements in the standard.
 FAILED The EUT does not comply with the essential requirements in the standard.
 NP The test was not performed by the TCC Nokia Laboratory.

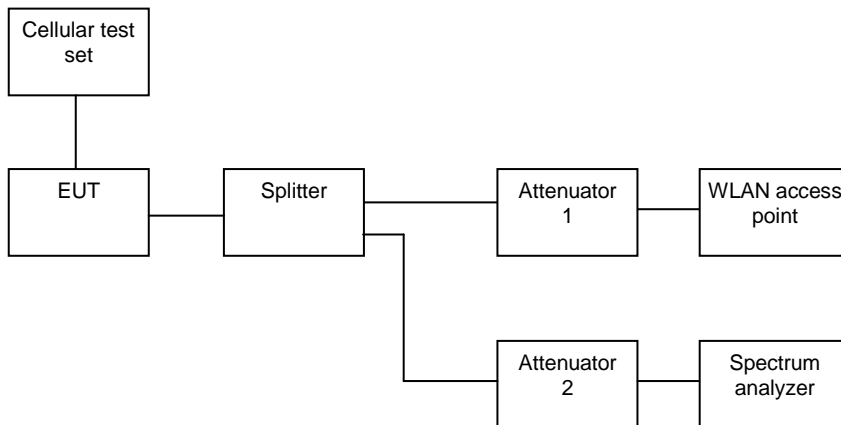
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2. First time power-up

EUT with DUT number	RM-1085, DUT 100014
Accessories with DUT numbers	SD-241R, DUT 100017
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Test system RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 60 / 102
Date of measurements	3-Jul-2015
Measured by	Tomi Lipponen

2.1. Test Setup



2.2. Test method

The equipment was set as follows:

The cellular test set was connected to the cellular antenna port of the EUT. The 2.4 GHz antenna port of the EUT was connected to a splitter.

The cellular test set was switched off to simulate situation, that there is no cellular network present.

The access point was switched off to simulate situation, that there is no access points present.

The spectrum analyzer was set to measure frequency range 2.4 – 2.5 GHz.

The EUT was switched on and the WLAN functionality activated.

It was verified, if the EUT transmitted on channels 12 or 13.

2.3. Compliance criteria

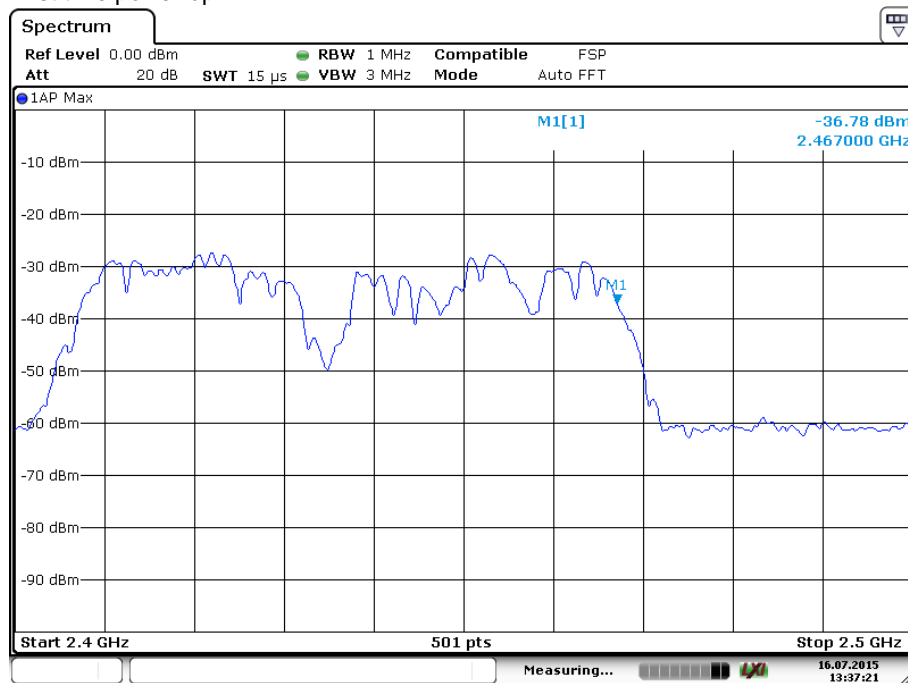
KDB 594280 D01 v02, section 4. b. i. states:

“Device must, by default, operate in a mode that is compliant with the U.S. requirements.”

Compliance criteria	Result
The EUT must not transmit on channels 12 and 13.	PASSED

2.4. Screenshots

First time power-up

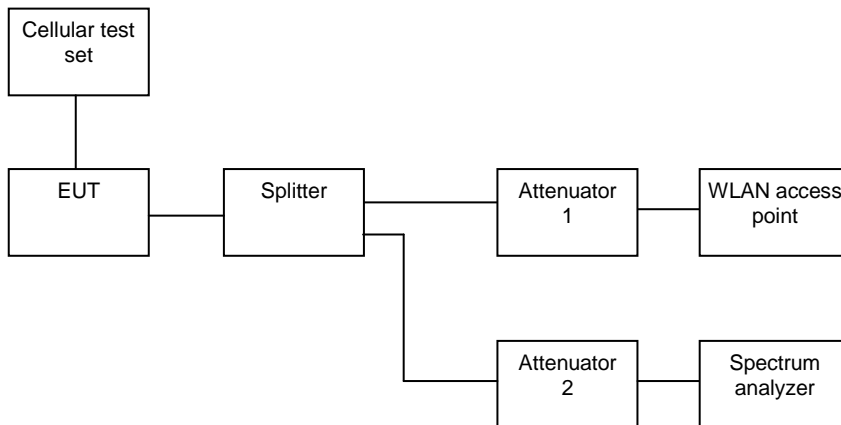


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3. New connection establishment

EUT with DUT number	RM-1085, DUT 100014
Accessories with DUT numbers	SD-241R, DUT 100017
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Test system RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 60 / 102
Date of measurements	3-Jul-2015
Measured by	Tomi Lipponen

3.1. Test Setup



3.2. Test method

The equipment was set as follows:

The cellular test set was connected to the cellular antenna port of the EUT. The 2.4 GHz antenna port of the EUT was connected to a splitter.

The access point was set on channel 13.

The spectrum analyzer was set to measure frequency range 2.4 – 2.5 GHz.

The cellular test set was switched off to simulate situation, that there is no cellular network present.

The EUT was switched on and the WLAN functionality activated.

The EUT was set to connect to the access point.

It was verified, if the EUT transmitted on channel 13.

The test was repeated with the access point set on channels 12 and 11.

3.3. Compliance criteria

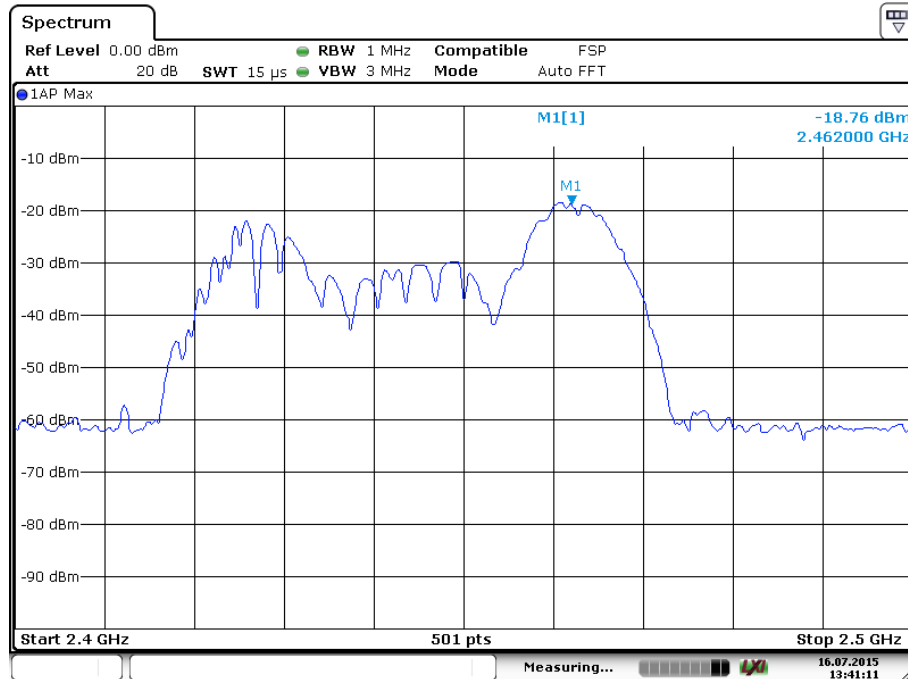
KDB 594280 D01 v02, section 4. b. i. states:

“Device must recheck the geo-location information... ..when connection are established.”

Compliance criteria	Result
The EUT must not transmit on channels 12 and 13 in presence of an US MCC/MNC.	PASSED

3.4. Screenshots

New connection establishment on ch 11. No connection on ch 12 and 13.

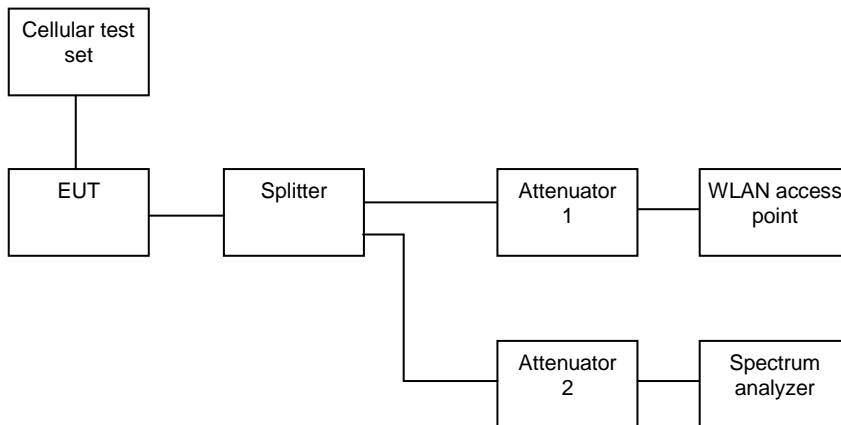


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4. Supplemental information control

EUT with DUT number	RM-1085, DUT 100014
Accessories with DUT numbers	SD-241R, DUT 100017
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Test system RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 60 / 102
Date of measurements	3-Jul-2015
Measured by	Tomi Lipponen

4.1. Test Setup



4.2. Test method

The equipment was set as follows:

The cellular test set was connected to the cellular antenna port of the EUT. The 2.4 GHz antenna port of the EUT was connected to a splitter.

The access point was set on channel 12.

The spectrum analyzer was set to measure frequency range 2.4 – 2.5 GHz.

The cellular test set was switched off to simulate situation, that there is no cellular network present.

The EUT was switched on and set to connect to the access point.

It was verified, if the EUT transmitted on channel 12 (blue curve).

The cellular test set was switched on GSM 1800 band, with Mobile Country Code set to Finland, and paired with the cellular transceiver of the EUT.

It was verified again, if the EUT transmitted on channel 12 (black curve).

4.3. Compliance criteria

KDB 594280 D01 v02, section 4. b. i. states:

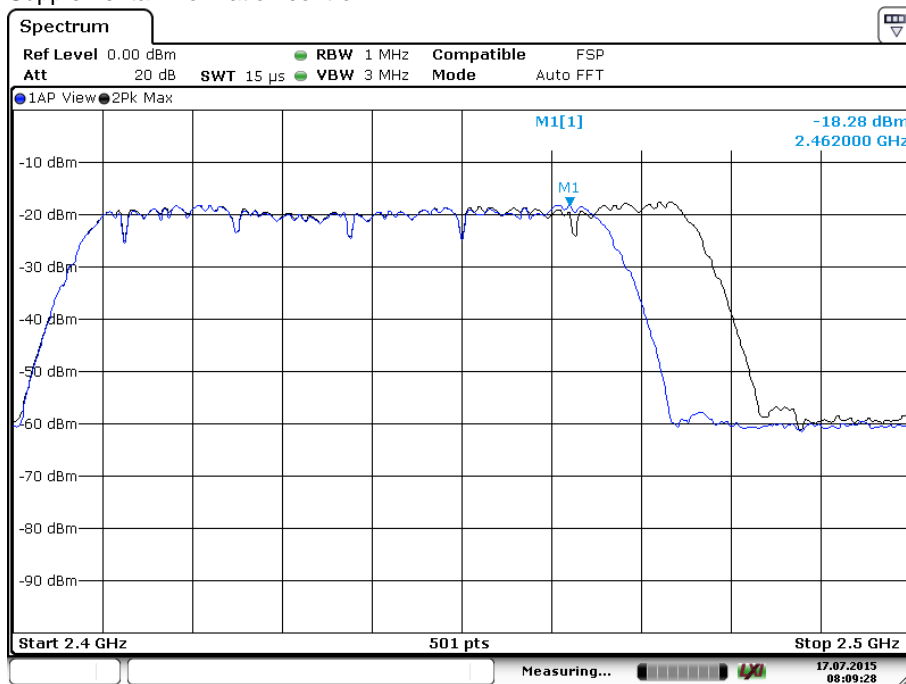
“Device must use supplemental information such as geo-location data to determine that it is operating outside the U.S., if necessary, to change its power. Such supplemental data must be derived from one or more of the following:

- *Global Navigation Satellite System (GNSS) sensors in the device, or*
- *Mobile Country Code (MCC) and Mobile Network code (MNC) received from a CMRS8 carrier and received directly by a receiver on the device, or*
- *Other suitable geo-location data based on IP addresses. “*

Compliance criteria	Result
The EUT shall not transmit on channels 12 and 13, when an US MCC/MNC is present.	PASSED

4.4. Screenshots

Supplemental information control

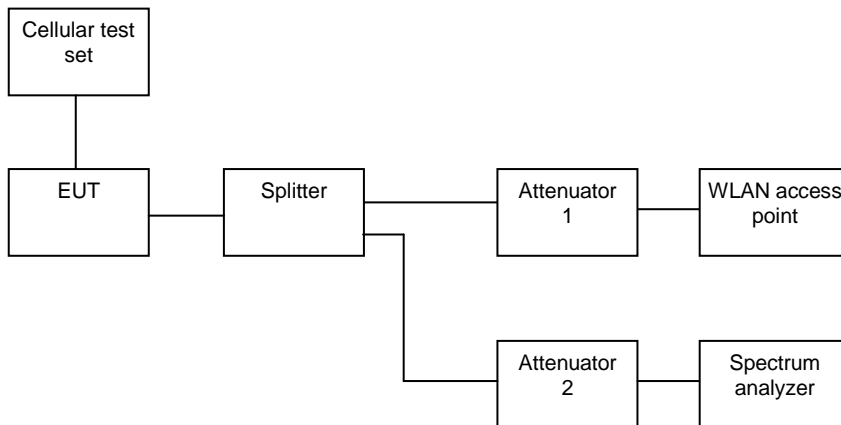


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5. Geo-location information recheck

EUT with DUT number	RM-1085, DUT 100014
Accessories with DUT numbers	SD-241R, DUT 100017
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Test system RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 60 / 102
Date of measurements	3-Jul-2015
Measured by	Tomi Lipponen

5.1. Test Setup



5.2. Test method

The equipment was set as follows:

The cellular test set was connected to the cellular antenna port of the EUT. The 2.4 GHz antenna port of the EUT was connected to a splitter.

The cellular test set was switched on GSM 1800 band, with Mobile Country Code set to Finland and paired with the cellular transceiver of the EUT.

The access point was set on channel 12.

The EUT was switched on and set to connect to the access point on channel 12.

The spectrum analyzer was set to measure frequency 2.467 GHz (channel 12) in zero-span mode.

It was verified, that EUT transmitted on channel 12.

The RF output of the cellular test set was switched off to simulate situation, that there is no cellular network present.

It was verified, if the EUT stopped transmitting on channel 12 in one hour.

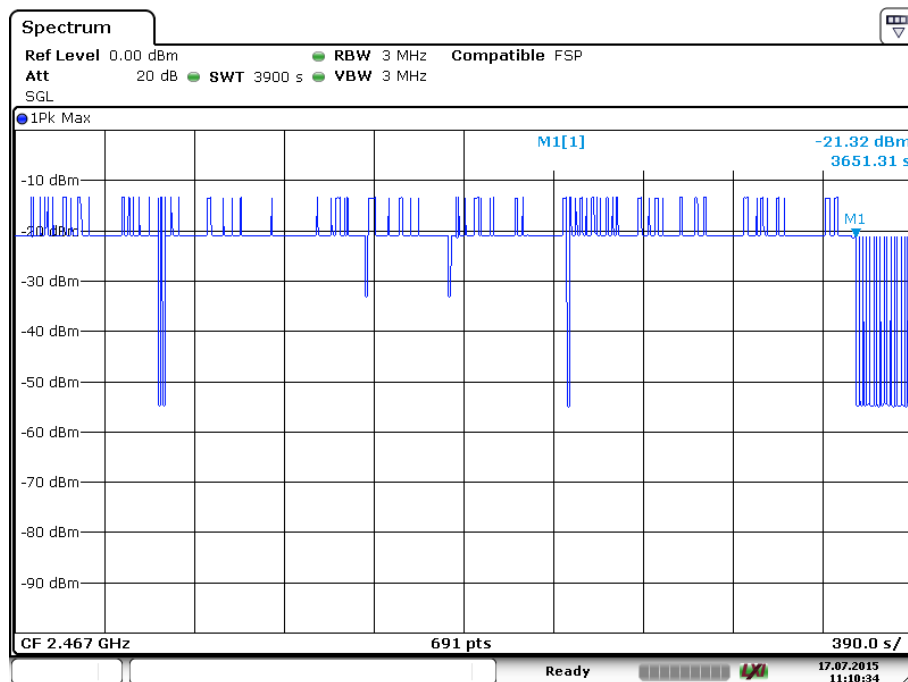
5.3. Compliance criteria

KDB 594280 D01 v02, section 4. b. i. states:

“Device must recheck the geo-location information at least once every hour, when the device is switched on and connection are established or changed.”

Compliance criteria	Result
The EUT shall stop transmitting on channels 12 and 13 in one hour after losing the MCC/MNC of a non-US network.	PASSED

5.4. Screenshots



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