

FCC Part 15E Compliance Test Report

Test Report no.:	FCC15E_RM-983_99.docx	Date of Report:	15-Aug-2014
Number of pages:	8	Customer's Contact person:	Victoria Abadilla
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 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 385 1598
FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-983 / Battery BV-L4A / Headset WH-208 / AC charger AC-60E / Data Cable CA-190CD		
FCC ID:	QMNRM-983	IC:	-
Supplement reports:	FCC15E_RM-983_17		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart E, ANSI C63.4 (2003), DTS procedures KDB 789033 D01, IC standards. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
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 Microsoft.		
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:			

Kalle Hannila, System Manager, EMC

1. Summary for FCC Part 15E Compliance Test Report

Date of receipt	25-Jun-2014
Testing completed	14-Aug-2014
The customer's contact person	Victoria Abadilla
Test Plan referred to	T:\Projects\RM-983\TestPlan\RS_TestPlan_RM-983.xlsm
Notes	
Document name	T:\Projects\RM-983\EMC\FCC15E_RM-983_99.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/WCDMA/WLAN/Bluetooth
The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-983	3542500600002246059V766	0200	-	02028.00000.14224.06004	18569
Battery	BV-L4A	4181574243S1140002680670727	v3	-	-	18427
Headset	WH-208	3342R31	-	-	-	18428
AC-Charger	AC-60E	409049326161030412560675677	-	-	-	18217
USB-Cable	CA-190CD	07304562136C28	-	-	-	18219

1.2. Summary of Test Results

5 GHz RLAN:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.407(a)	A9.2	Conducted peak output power	NP
15.407(b)	A9.2	Band edge compliance of RF emissions	NP
15.407(a)(6)	A9.2	Peak excursion	NP
15.407(b)	A9.2	Spurious radiated emissions	PASSED
15.407(b)(6)	A9.2	AC powerline conducted emissions	NP
-	A9.2	26dB(bandwidth)	NP
15.407(a)	A9.2	Power spectral density	NP

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

The EUT does not comply with the essential requirements in the standard.

The test was not performed by the TCC Microsoft Laboratory.

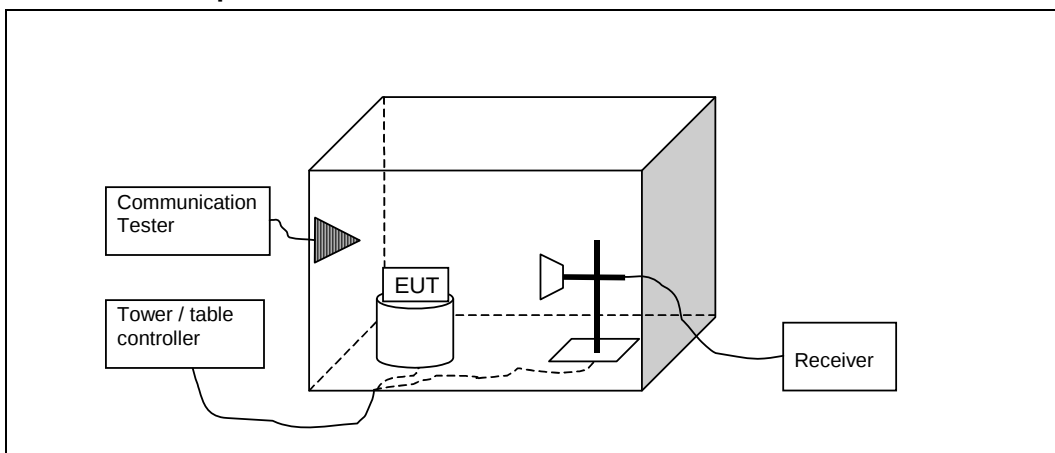
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2. Spurious radiated emissions (FCC 15.407(b), RSS-210 A9.2)

EUT with DUT number	RM-983, DUT 18569
Accessories with DUT numbers	BV-L4A, DUT 18427 ; WH-208, DUT 18428 ; AC-60E, DUT 18217 ; CA-190CD, DUT 18219
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Preliminary Measurement was measured with QPSK and BPSK modulations with relevant 15E and 15C WLAN channels. No suspected signals detected during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	17 / 60 / 101.4
Date of measurements	13-Aug-2014
Measured by	Kalle Hannila

2.1.1 Test setup



2.2. Test method and limit

The measurement is made the following way:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

Preliminary Measurement

The EUT is rotated 360 degrees horizontally and vertically orthogonally towards the measurement antenna keeping the 0.1m measurement distance. Max Hold function of the Receiver is used during the test to detect any unwanted signals in the spectrum.

100 KHz RBW setting is used to detect emission signals in Preliminary Measurement. Correct RBW setting (1 MHz) is used in Final Measurement.

Final Measurement

Suspected signals detected in Preliminary Measurement are measured with narrower span and rotating the EUT 360 degrees horizontally and vertically towards the measurement antenna to maximize test result.

The measurement results are obtained as described below:

$$E [dB\mu V/m] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is antenna factor ($A_{TOT} = A_F$).

Limits for spurious radiated emissions measurements (3 m measurement distance)
There are 2 sets of limit lines. Part 15.209 limits apply below 1 GHz and on restricted bands above 1GHz. The other limits are described in the table below.

Frequency range [MHz]	Limit [dBm / MHz]
5150 - 5250	1 GHz – 5.15 GHz, 5.35 GHz – 40 GHz: -27
5250 - 5350	1 GHz – 5.25 GHz, 5.35 GHz – 40 GHz: -27
5470 - 5725	1 GHz – 5.47 GHz, 5.725 GHz – 40 GHz: -27
5725 - 5825	1 GHz – 5.715 GHz, 5.835 GHz – 40 GHz: -27 5.715 GHz – 5.725 GHz, 5.825 GHz – 5.835 GHz: -17

Limits for spurious radiated emissions measurements for 0.1m measurement distance above 26.5 GHz.

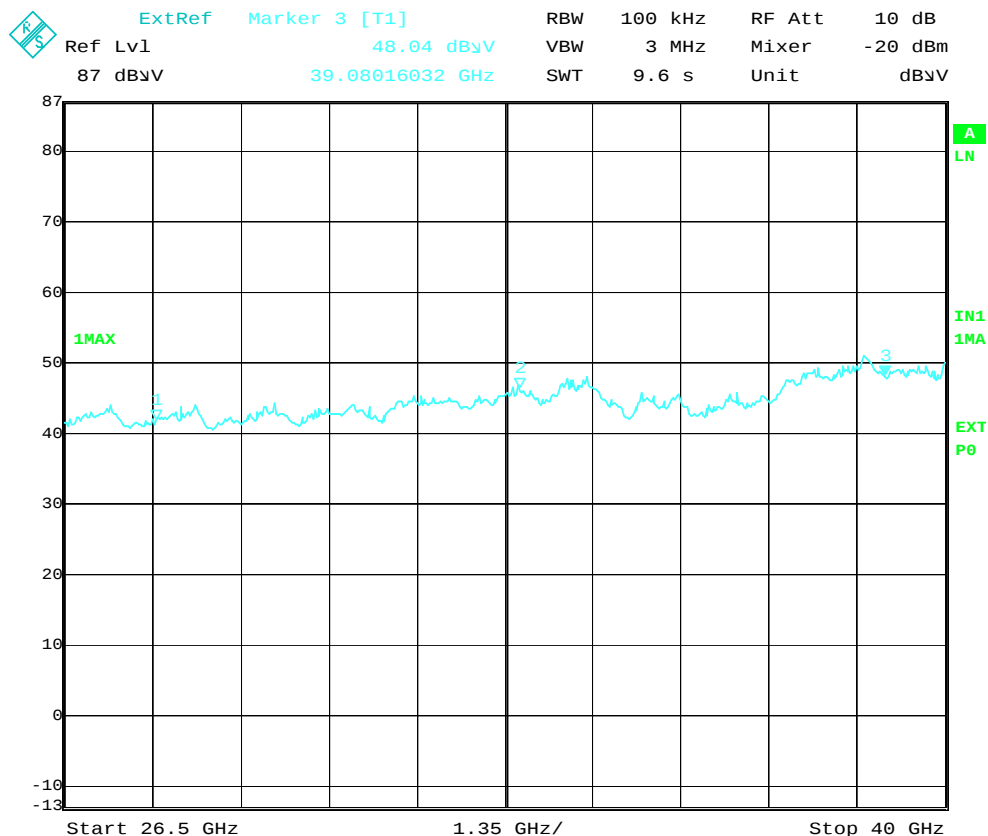
Frequency [MHz]	Limitline @ 0.1m dBuV/m	Detector
24000	97.54	Pk
31199.99	97.54	Pk
31200	103.5 / 83.5	Pk / Avg
31800	103.5 / 83.5	Pk / Avg
31800.1	97.54	Pk
36429.99	97.54	Pk
36430	103.5 / 83.5	Pk / Avg
36500	103.5 / 83.5	Pk / Avg
36500.1	97.54	Pk
40000	97.54	Pk

2.3. 5 GHz RLAN test results

2.4. Preliminary Measurement results:

Result table Peak (RBW:100 kHz VBW 3 MHz):

Frequency [MHz]	E [dB μ V/m]	URX [dB μ V]	ATOT [dB]	Limit @ 0.1m [dB μ V/m]	Result
27900	86.44	40.33	46.11	97.54	PASSED
33480	94.58	45.98	48.6	97.54	PASSED
39060	95.45	47.41	48.04	97.54	PASSED



Date: 15.AUG.2014 09:33:22

2.5. Radiated measurements above 26,5 GHz

Equipment	Type	Manufacturer	Used in
Antenna	3116	EMCO	15E, 15C
Receiver	ESIB 40	R&S	15E, 15C