

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-1066_04	Date of Report:	21-Nov-2014
Number of pages:	11	Customer's Contact person:	Jari Rontu
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-1066 / Battery BV-T4B / Headset WH-108 / Ac-Charger AC-20		
FCC ID:	PYABBB	IC:	-
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), CISPR 22 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 3, January 2013), RSS-133 (Issue 6, January 2013). 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:			

Sami Lehtonen, Specialist, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	31-Oct-2014
Testing completed	04-Nov-2014
The customer's contact person	Jari Rontu
Test Plan referred to	T:\Projects\RM-1066\TestPlan\RS_testplan_RM-1066.xlsm
Notes	-
Document name	T:\Projects\RM-1066\EMC\FCC15B_RM-1066_04.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-1066	004402479216628	1150	-	02148.00000.14431.29000	18695
Battery	BV-T4B	4181574345C1010384600670764	-	-	-	18696
Headset	WH-108	4235VFA	-	-	-	18698
Ac-Charger	AC-20E	409049415667071145500675628	-	-	-	18697

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	NP
15.109, a	6.1	Radiated emissions	PASSED

GSM 1900:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	NP
15.109, a	6.1	Radiated emissions	PASSED

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.

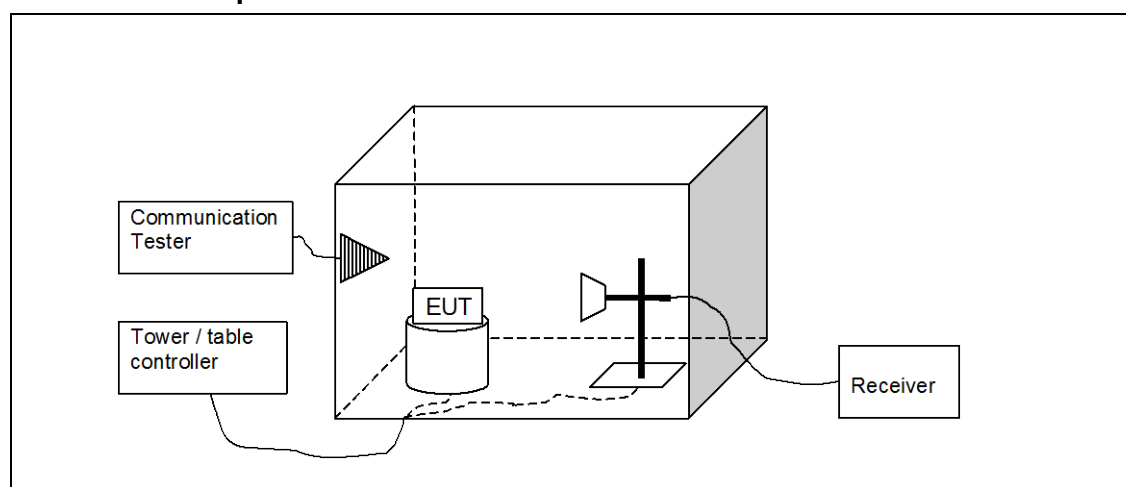
CONTENTS

1. Summary for FCC Part 15B Compliance Test Report.....	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Radiated emissions (FCC 15.109, a, RSS-132 6.1, RSS-133 6.1).....	4
2.2. Test method and limit	4
2.3. GSM 850 test results, FM Radio is on.....	6
2.4. GSM 1900 test results, FM Radio is on.....	7
3. Test Equipment.....	10
3.1. Conducted measurements	10
3.2. Radiated measurements	10

2. Radiated emissions (FCC 15.109, a, RSS-132 6.1, RSS-133 6.1)

EUT with DUT number	RM-1066, DUT 18695
Accessories with DUT numbers	BV-T4B, DUT 18696 ; WH-108, DUT 18698 ; AC-20E, DUT 18697
Operation Voltage [V] / [Hz]	115/60
Results	PASSED
Remarks	FM Radio is on the during test
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/ 43 / 99.5
Date of measurements	04-Nov-2014
Measured by	Sami Lehtonen

2.1.1 Test setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

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 total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

Frequency range [MHz]	Quasi peak limit [dBμV/m]	Average limit [dBμV/m]	Peak limit [dBμV/m]
30 - 230	40	-	-
230 – 1000	47	-	-
1000 - 3000	-	50	70
Above 3000	-	54	74

2.3. GSM 850 test results, FM Radio is on

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.5	36.8	69.183	42.6	-5.8	74	37.2	PASSED
6952.6	49.17	287.409	46.97	2.2	74	24.83	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.5	23.61	15.153	29.41	-5.8	54	30.39	PASSED
6952.6	36.26	65.013	34.06	2.2	54	17.74	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
40.653	28.98	28.119	43.88	-14.9	40	11.02	PASSED
40.701	28.21	25.734	43.11	-14.9	40	11.79	PASSED
97.986	57.33	735.36	79.23	-21.9	40	-17.33	*PASSED
300.791	35.88	62.23	56.18	-20.3	47	11.12	PASSED
307.204	35.38	58.749	55.38	-20	47	11.62	PASSED
319.99	33.99	50.061	53.79	-19.8	47	13.01	PASSED
323.206	35.85	62.015	55.55	-19.7	47	11.15	PASSED
326.403	36.4	66.069	56.1	-19.7	47	10.6	PASSED
329.609	35.8	61.66	55.4	-19.6	47	11.2	PASSED
332.795	35.43	59.088	54.93	-19.5	47	11.57	PASSED

*97.986 MHz frequency is FM-Radio signal and thus ignored."

RX mode, channel 190 / 881.6 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7816.832	46.86	220.293	41.56	5.3	74	27.14	PASSED
7850.204	46.41	209.17	40.91	5.5	74	27.59	PASSED
7857.812	47.11	226.725	41.61	5.5	74	26.89	PASSED
7865.03	46.94	222.331	41.34	5.6	74	27.06	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7816.832	33.78	48.865	28.48	5.3	54	20.22	PASSED
7850.204	33.83	49.147	28.33	5.5	54	20.17	PASSED
7857.812	33.82	49.091	28.32	5.5	54	20.18	PASSED
7865.03	33.82	49.091	28.22	5.6	54	20.18	PASSED

RX mode, channel 190 / 881.6 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3527	36.48	66.681	41.88	-5.4	74	37.52	PASSED
7051.5	45.48	187.932	42.48	3	74	28.52	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3527	23.92	15.704	29.32	-5.4	54	30.08	PASSED
7051.5	31.96	39.628	28.96	3	54	22.04	PASSED

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3573.4	37.37	73.875	42.37	-5	74	36.63	PASSED
7152.3	45.29	183.865	41.59	3.7	74	28.71	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3573.4	24.27	16.349	29.27	-5	54	29.73	PASSED
7152.3	32.54	42.364	28.84	3.7	54	21.46	PASSED

2.4. GSM 1900 test results, FM Radio is on

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3858.3	37.92	78.705	42.52	-4.6	74	36.08	PASSED
7719.2	46.48	210.863	41.58	4.9	74	27.52	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3858.3	24.94	17.66	29.54	-4.6	54	29.06	PASSED
7719.2	33.38	46.666	28.48	4.9	54	20.62	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
97.986	57.93	787.952	79.83	-21.9	40	-17.93	*PASSED
304.018	34.89	55.526	54.99	-20.1	47	12.11	PASSED
307.194	35.92	62.517	55.92	-20	47	11.08	PASSED
310.401	35.68	60.814	55.68	-20	47	11.32	PASSED
313.587	35.8	61.66	55.8	-20	47	11.2	PASSED
316.814	36.55	67.22	56.45	-19.9	47	10.45	PASSED
320	36.97	70.55	56.77	-19.8	47	10.03	PASSED
323.196	37.71	76.825	57.41	-19.7	47	9.29	PASSED
326.413	36.76	68.865	56.46	-19.7	47	10.24	PASSED
329.589	36.57	67.375	56.17	-19.6	47	10.43	PASSED

*97.986 MHz frequency is FM-Radio signal and thus ignored."

RX mode, channel 661 / 1960.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7818.841	47.68	242.103	42.38	5.3	74	26.32	PASSED
7822.546	46.92	221.82	41.62	5.3	74	27.08	PASSED
7840.381	47	223.872	41.6	5.4	74	27	PASSED
7862.022	46.39	208.689	40.89	5.5	74	27.61	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7818.841	33.77	48.809	28.47	5.3	54	20.23	PASSED
7822.546	33.76	48.753	28.46	5.3	54	20.24	PASSED
7840.381	33.79	48.922	28.39	5.4	54	20.21	PASSED
7862.022	33.8	48.978	28.3	5.5	54	20.2	PASSED

RX mode, channel 661 / 1960.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3921.5	37.66	76.384	41.86	-4.2	74	36.34	PASSED
7838.5	47	223.872	41.6	5.4	74	27	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3921.5	25	17.783	29.2	-4.2	54	29	PASSED
7838.5	33.82	49.091	28.42	5.4	54	20.18	PASSED

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Limit [dB μ V/m]	Margin	Results
3978.4	38.13	80.631	42.43	-4.3	74	35.87	PASSED
7958.2	47.97	250.323	41.87	6.1	74	26.03	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Limit [dB μ V/m]	Margin	Results
3978.4	25.05	17.885	29.35	-4.3	54	28.95	PASSED
7958.2	34.61	53.765	28.51	6.1	54	19.39	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
2059	V-network	ESH3-Z6	R&S	-
1759	LISN 50 μ H	ESH3-Z5	R&S	22/24/27, 15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	22/24/27, 15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2390	Directional Coupler	DC2600	AR	-
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
2060	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
1759	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
6109	Communication Tester	CMU200	R&S	22/24/27, 15C
6246	Power Supply	66332A	HP	22/24/27, 15C
1992	Signal Generator	83630B	Agilent	15C, 15B
6098	Signal Generator	8648C	Agilent	-
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6247	Communication Tester	CBT	R&S	22/24/27, 15C 15B
6052	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6248	Power Supply	6632B	-	22/24/27, 15C 15B
6106	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C 15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6202	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6122	Power Splitter	11667B	Agilent	22/24/27, 15C 15B
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C
6103	Bluetooth tester	CBT	R&S	22/24/27, 15C 15B
6250	Power Supply	6651A	Agilent	22/24/27, 15C 15B
6108	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6105	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C 15B
6251	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6243	Power Splitter	1167B	Agilent	22/24/27, 15C 15B
6245	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C 15B
6244	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2388	Bluetooth Tester	CBT	R&S	15B
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2348	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
2349	Computer Controller	g-1000DXC	Yaesu	22/24/27, 15C, 15B
2116	Controller	EMCO 2090	ETS	22/24/27, 15C, 15B
2109	Power Supply	PL330QMD	Thurlby	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
6115	Open switch and control unit	OSP 130	R&S	22/24/27, 15C 15B
6116	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B

Eq. No	Equipment	Type	Manufacturer	Used in
6117	Open switch and control unit	OSP 150	R&S	22/24/27, 15C, 15B
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6159	Band Reject Filter	WRCD1747.8-0.4/40-5SS	Wainwright	22/24/27, 15C, 15B
6158	Band Reject Filter	WRCT836.6-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6197	Band Reject Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27, 15C, 15B
2231	Band Reject Filter	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
2386	Band Reject Filter	WRCG1764.4/1770.4-1760.4/1774.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2385	Band Reject Filter	WRCG1744.4/1750.4-1740.4/1754.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2188	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
6195	High Pass Filter	-	Wainwright	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
6212	Antenna Array system	-	TCC	22/24/27, 15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
6089	Antenna	HFH2-Z2	R&S	15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B