FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-1017_02	**Date of Report:**	11-Jun-2014
Number of pages:	17	**Customer's Contact person:**	Tero Huhtala
Testing laboratory:	TCC Microsoft Tampere Laboratory P.O. Box 403 Visiokatu 3 FIN-33101 TAMPERE, FINLAND Tel. +358 71 800 8000 Fax. +358 71 804 6880	**Customer:**	Microsoft Tampere P.O. Box 403 Visiokatu 4 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880
FCC listing no.: **IC recognition no.:**	94436 661AK-1		
Tested devices/ accessories:	**Phone RM-1017 / Battery BL-5J / AC Charger AC-18E / Headset WH-108 / Data cable CA-101, Laptop IBM Thinkpad T40, AC adapter 02K6543, Printer HP deskjet 1600CC3540A, Parallel cable for printer**		
FCC ID:	PDNRM-1017	**IC:**	661R-RM1017
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), CISPR 22, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009). 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:	Jari Jantunen cn=Jari Jantunen, o, ou, email=jari.a.jantunen@microsoft.com, c=FI 2014.06.11 16:00:58 +03'00'		

Jari Jantunen, System Manager, EMC

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	12-May-2012
Testing completed	02-Jun-2014
The customer's contact person	Tero Huhtala
Test Plan referred to	T:\Projects\accessor\MU-45 Toshiba\TestPlan\RS_testplan_MU-45 Toshiba.xlsm
Notes	-
Document name	T:\Projects\RM-1018\EMC\FCC15B_RM-1018_02.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-1018	004402478273679	1500	-	01068.00004.14182.20000	43170
Battery	BL-5J	4175354134B12504824;0670573	-	-	-	43174
AC Charger	AC-18E	4090493442750400944;0675695	-	-	-	43172
Headset	WH-108	2376171	-	-	-	43142
Data cable	CA-101	-	-	-	-	41683
Laptop	IBM Thinkpad T40	99ARTGD	-	-	-	41868
AC Adapter	02K6543	-	-	-		40202
Printer	HP deskjet 1600CC3540A	USB8302546	-	-	-	40077
Parallel cable for printer	-	-	-	-	-	40087

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	PASSED
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	PASSED
15.109, a	6.1	Radiated emissions	PASSED

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 Microsoft Laboratory.

The test results of PDNRM-1018 *are re-used for certification of the* PDNRM-1017*. The table above indicates the results, which will be re-used*

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

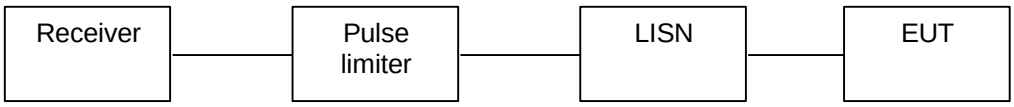
CONTENTS

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

2. AC powerline conducted emissions
(FCC §15.107, a, RSS-GEN, section 7.2.4)

EUT with DUT number	RM-1018, DUT 43171
Accessories with DUT numbers	BL-5J, DUT 43173 ; BL-5J, DUT 43174 ; AC-18E, DUT 43177, WH-108, DUT 43142
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 102
Date of measurements	27-touko-2014
Measured by	Hannu Söderholm

2.1. Test Setup



2.2. Test method and limit

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

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$U\ [dB\mu V] = U_{RX} + A_{TOT}$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

CISPR 22 Class B limits

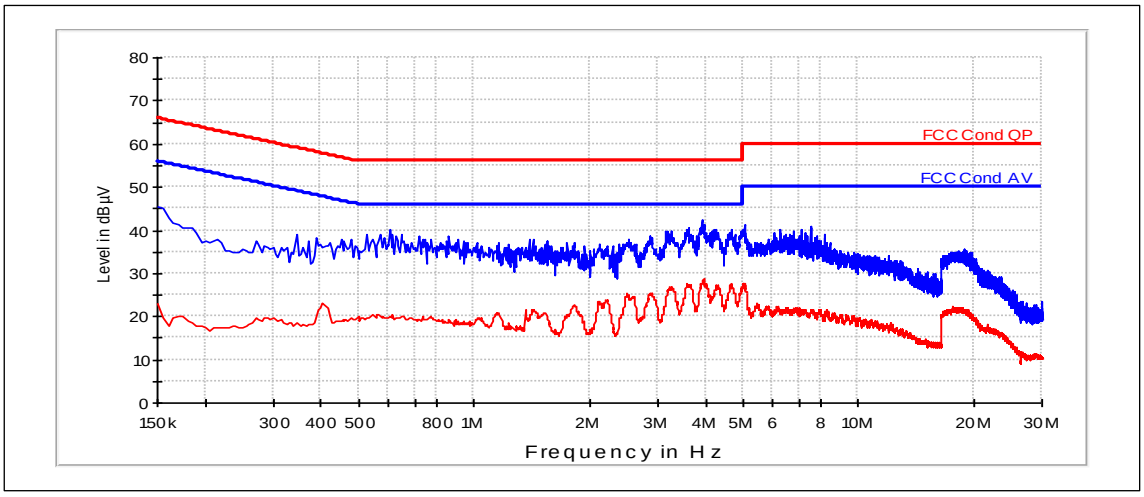
Frequency range [MHz]	Quasi peak limit [dBµV]	Average limit [dBµV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

2.3. Bluetooth Test results

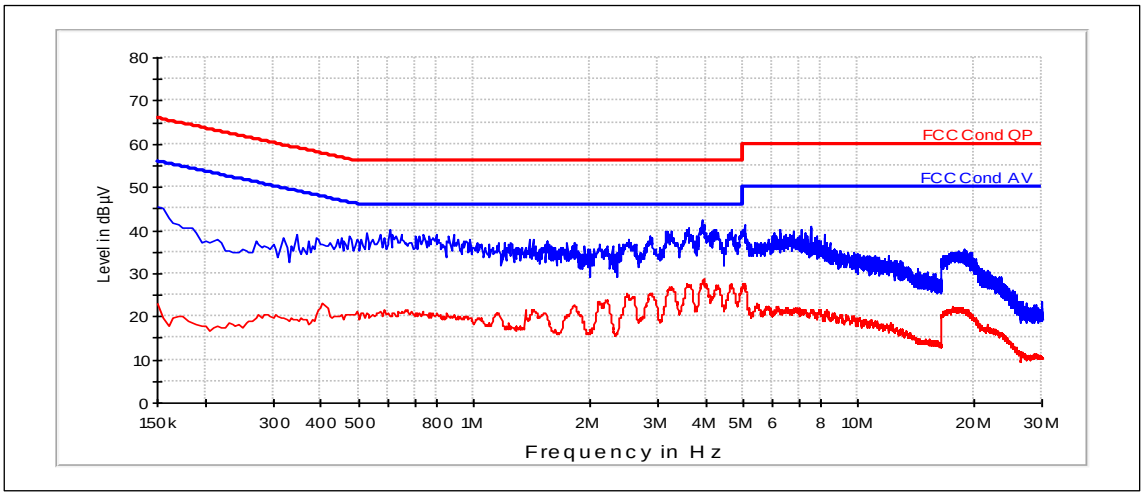
2.3.1 BTGFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



2.3.2 BTLE modulation, PRBS packet type

Channel 40 / 2442 MHz

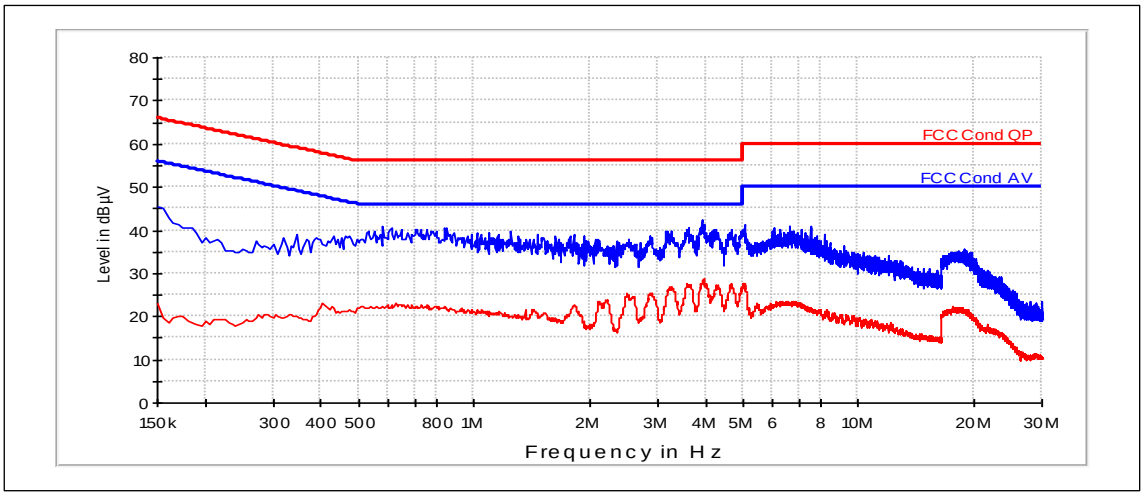


TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

2.4. WLAN Test results

2.4.1 MCS0, 20 MHz CBW mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel 6 / 2437 MHz

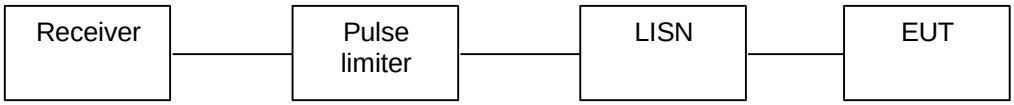


TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

3. AC powerline conducted emissions
(FCC §15.107, a, RSS-GEN, section 7.2.4)

EUT with DUT number	RM-1018, DUT 43170
Accessories with DUT numbers	BL-5J, DUT 43174 ; WH-108, DUT 43142 ; CA-101D, DUT 42391 ; IBM Thinkpad T40 DUT 41868, 02K6543 DUT 40202, HP deskjet 1600CC3540A DUT 40077, Parallel cable for printer DUT 40087
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 102
Date of measurements	02-kesä-2014
Measured by	Hannu Söderholm

3.1. Test Setup



3.2. Test method and limit

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

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$U\ [dB\mu V] = U_{RX} + A_{TOT}$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

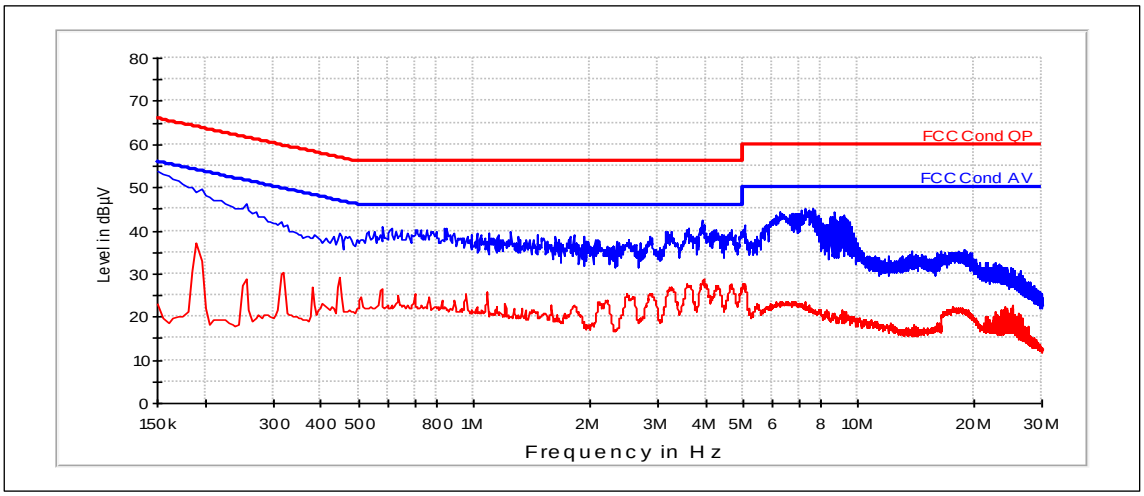
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBµV]	Average limit [dBµV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

3.3. GSM 1900 Test results

Channel 661 / 1880.0 MHz

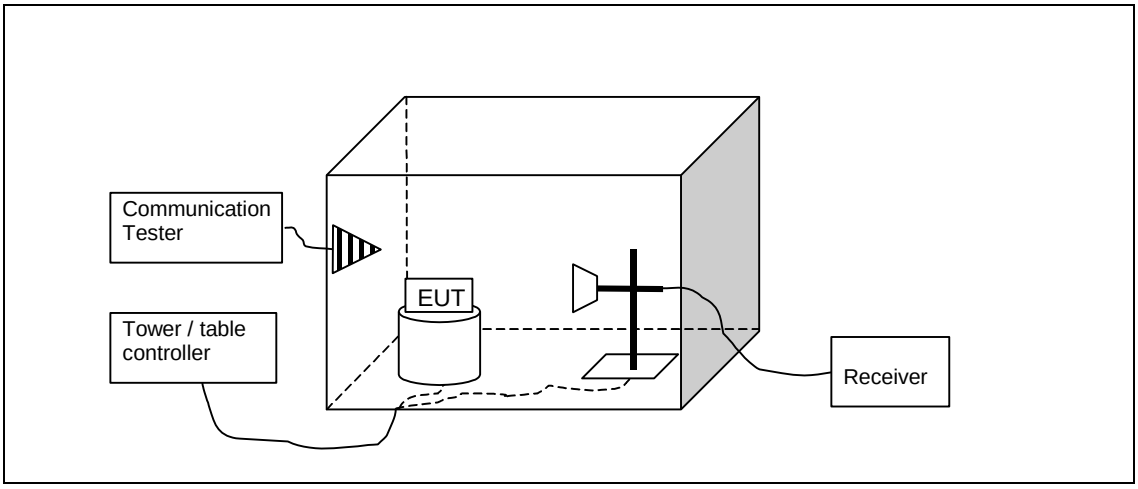


TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

4. Radiated emissions
(FCC 15.109, a)

EUT with DUT number	RM-1018, DUT 43170
Accessories with DUT numbers	BL-5J, DUT 43174 ; AC-18E, DUT 43172 ; WH-108, DUT 43142
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	GSM850 idle mode+FM radio, GSM1900 idle mode+GPS receiver
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 47 /98.9
Date of measurements	30-May-2014
Measured by	Jari Jantunen

4.1.1 Test setup



TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

4.2. 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

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

4.3. GSM 850 + FM radio test results

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
3478.7	36.98	70.632	45.38	-8.4	74	37.02	PASSED
6954.8	46.94	222.331	47.64	-0.7	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
3478.7	24.18	16.181	32.58	-8.4	54	29.82	PASSED
6954.8	33.97	49.946	34.67	-0.7	54	20.03	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
30.12	19.3	9.226	45.3	-26	40	20.7	PASSED
36.212	16.98	7.063	45.68	-28.7	40	23.02	PASSED
50.521	19.94	9.931	55.74	-35.8	40	20.06	PASSED
89.888	21.03	11.259	56.83	-35.8	40	18.97	PASSED
265.601	27.04	22.491	62.74	-35.7	47	19.96	PASSED
275.19	27.69	24.238	63.09	-35.4	47	19.31	PASSED
543.988	27.11	22.673	56.71	-29.6	47	19.89	PASSED

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
7823.149	46.13	202.535	43.33	2.8	74	27.87	PASSED
7837.775	46.33	207.253	43.53	2.8	74	27.67	PASSED
7858.516	46.65	215.03	43.75	2.9	74	27.35	PASSED
7863.227	46.29	206.3	43.39	2.9	74	27.71	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
7823.149	32.93	44.31	30.13	2.8	54	21.07	PASSED
7837.775	33	44.668	30.2	2.8	54	21	PASSED
7858.516	33.1	45.186	30.2	2.9	54	20.9	PASSED
7863.227	33.14	45.394	30.24	2.9	54	20.86	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
3574.7	36.74	68.707	45.24	-8.5	74	37.26	PASSED
7151	44.55	168.85	44.15	0.4	74	29.45	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
3574.7	24.17	16.162	32.67	-8.5	54	29.83	PASSED
7151	31.35	36.94	30.95	0.4	54	22.65	PASSED

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

4.4. GSM 1900 test results, GPS Active

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
3861.5	37.88	78.343	45.58	-7.7	74	36.12	PASSED
7719.3	45.24	182.81	43.04	2.2	74	28.76	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
3861.5	24.6	16.982	32.3	-7.7	54	29.4	PASSED
7719.3	32.29	41.162	30.09	2.2	54	21.71	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
30.09	16.8	6.918	42.8	-26	40	23.2	PASSED
90.01	18.45	8.366	54.25	-35.8	40	21.55	PASSED
262.395	27.3	23.174	63	-35.7	47	19.7	PASSED
275.22	26.44	20.989	61.84	-35.4	47	20.56	PASSED
351.994	24.9	17.579	58.2	-33.3	47	22.1	PASSED
553.627	15.68	6.081	45.18	-29.5	47	31.32	PASSED
556.813	26.85	22.004	56.35	-29.5	47	20.15	PASSED

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
1960.119	47.25	230.409	63.65	-16.4	70	22.75	PASSED
7821.941	45.74	193.642	42.94	2.8	74	28.26	PASSED
7846.495	45.94	198.153	43.14	2.8	74	28.06	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
1960.119	44.42	166.341	60.82	-16.4	50	5.58	PASSED
7821.941	32.89	44.106	30.09	2.8	54	21.11	PASSED
7846.495	33.04	44.875	30.24	2.8	54	20.96	PASSED

RX mode, channel 810 / 1989.8 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
3981	37.77	77.357	44.87	-7.1	74	36.23	PASSED
7958.3	46.28	206.063	43.08	3.2	74	27.72	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
3981	24.9	17.579	32	-7.1	54	29.1	PASSED
7958.3	33.33	46.398	30.13	3.2	54	20.67	PASSED

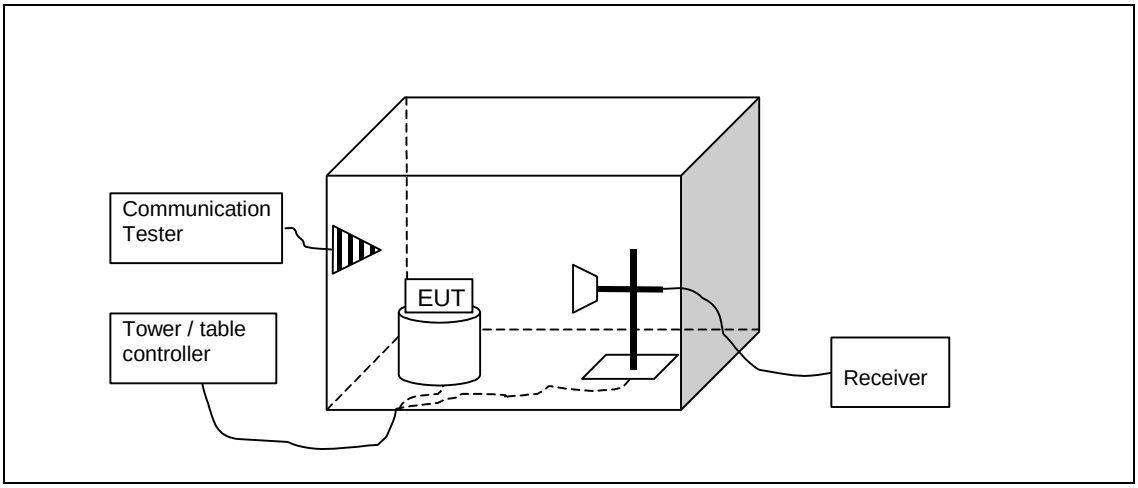
RX mode, channel 661 / 1960.0 MHz

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

5. Radiated emissions
(FCC 15.109, a)

EUT with DUT number	RM-1018, DUT 43170
Accessories with DUT numbers	BL-5J, DUT 43174 ; AC-18E, DUT 43172 ; WH-108, DUT 43142, IBM Thinkpad T40 DUT 41868, 02K6543 DUT 40202, HP deskjet 1600CC3540A DUT 40077, Parallel cable for printer DUT 40087
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	GSM850 idle mode+FM radio, GSM1900 idle mode+GPS receiver
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 47 /98.9
Date of measurements	30-May-2014
Measured by	Jari Jantunen

5.1.1 Test setup



TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

5.2. 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

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

5.3. GSM 1900 test results, Data Transmission

RX mode, channel 512 / 1930.2 MHz, Data Setup
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
3861.8	38.37	82.89	46.07	-7.7	74	35.63	PASSED
7721.7	45.39	185.994	43.19	2.2	74	28.61	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
3861.8	24.6	16.982	32.3	-7.7	54	29.4	PASSED
7721.7	32.17	40.598	29.97	2.2	54	21.83	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
30.78	27.61	24.016	53.91	-26.3	40	12.39	PASSED
56.753	26.86	22.029	65.86	-39	40	13.14	PASSED
88.701	25.74	19.364	61.54	-35.8	40	14.26	PASSED
121.644	31.45	37.368	65.75	-34.3	40	8.55	PASSED
133.076	29.92	31.333	64.62	-34.7	40	10.08	PASSED
152.275	32.39	41.639	67.89	-35.5	40	7.61	PASSED
171.383	32.49	42.121	68.89	-36.4	40	7.51	PASSED
200.16	37.36	73.79	74.96	-37.6	40	2.64	PASSED
231.029	30.32	32.81	66.82	-36.5	47	16.68	PASSED
797.408	28.6	26.915	54.5	-25.9	47	18.4	PASSED

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
7820.344	46.51	211.592	43.71	2.8	74	27.49	PASSED
7838.681	45.8	194.984	43	2.8	74	28.2	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
7820.344	32.86	43.954	30.06	2.8	54	21.14	PASSED
7838.681	32.96	44.463	30.16	2.8	54	21.04	PASSED

RX mode, channel 810 / 1989.8 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
3979	38.04	79.799	45.04	-7	74	35.96	PASSED
7961.4	46.29	206.3	43.09	3.2	74	27.71	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
3979	24.97	17.721	31.97	-7	54	29.03	PASSED
7961.4	33.29	46.185	30.09	3.2	54	20.71	PASSED

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

6. Test Equipment

6.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38112	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM38114	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM37773	Communication Tester	CMU200	R&S	22/24/27, 15B
TM30600	Impulse limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM26491	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM37610	Spectrum Analyzer	FSU26	R&S	22/24/27, 15C, 15E
TM23007	Oscilloscope	TDS684B	Tektronix	15E
TM22806	Battery	BAT 20/E	Fiskars	15C, 15B
TM22805	UPS	PS 20/1.2	Fiskars	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
-	Temperature test chamber	VT 4002	Vötsch	22/24/27
2001	Bluetooth tester	CBT	R&S	15C, 15B
2009	LISN 50 µH	ENV216	R&S	15C, 15B
2010	LISN 50 µH	ENV216	R&S	15C, 15B
2012	Power splitter	11667B	Agilent	22/24/27, 15C
2013	Attenuator	8493C	Agilent	22/24/27, 15C
2014	Attenuator	8493C	Agilent	22/24/27, 15C
2019	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2020	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2021	Communication Tester	CMW500	R&S	22/24/27
2022	Communication Tester	CMU200	R&S	22/24/27
2023	Spectrum Analyzer	ESMI-RF	R&S	15B/15C
2024	Analyzer display unit	ESAI-D	R&S	15B/15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880

6.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C
TM37678	Communication Tester	CMU200	R&S	22/24/27, 15B
TM38845	Receiver	ESIB 26	R&S	22/24/27, 15C, 15E, 15B
-	Antenna	HL562	R&S	22/24/27, 15C, 15E, 15B
-	Turntable	2188	EMCO	22/24/27, 15C, 15E, 15B
-	Turntable controller	2090	EMCO	22/24/27, 15C, 15E, 15B
-	RF system panel	OSP130	R&S	22/24/27, 15C, 15E, 15B
-	Mini mast	2075-2	ETS Lindgren	22/24/27, 15C, 15B
TM38843	Mini mast	2075	Emco	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
TM30644	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	Miteq	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	Miteq	22/24/27, 15C, 15B
TM30599	Semi anechoic chamber	UNKNOWN	TDK	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	-	22/24/27, 15C, 15E, 15B
TM38066	High pass filter	WHKX3.0/18G-12SS	Wainwright	22/24/27, 15C, 15E, 15B
2028	High pass filter	WHKX 1.0/15G-12SS	Wainwright	22/24/27, 15C,15E, 15B
TM37545	Tunable notch filter	800.0/960.0-0.2/40-8SSK	Wainwright	22
TM26512	Tunable notch filter	WRCD1850/1910-0.2/40-10SSK	Wainwright	24
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	24
-	Band reject filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
TM23892	Controller	G-1000SDX	Yaesu	22/24/27, 15C, 15E
2001	Bluetooth tester	CBT	R&S	15C, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27
2021	Communication Tester	CMW500	R&S	22/24/27
2025	Antenna	HFH2-Z2	R&S	15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
2052	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C, 15B, 15E
-	Antenna	QSH18S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E

TCC Microsoft Tampere Laboratory
P.O.Box 403
Visiokatu 3
FIN-33101 TAMPERE, FINLAND
Tel. +358 71 800 8000
Fax. +358 71 804 6880