

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-820_03	Date of Report:	11-Jul-2012
Number of pages:	19	Customer's Contact person:	Vaattovaara Lasse
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FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-820 / Data Cable CA-190CD / Headset WH-208 / Laptop T61p / AC-Charger AC-50U / Laptop 2373 / Printer HP		
FCC ID:	PYAA	IC:	661V-A
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22, RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-210 (Issue 8, December 2010). 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 Nokia.		
Date and signature for the contents:			
	Kalle Hannila, Engineer, EMC & SAR		

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	19-Jun-2012
Testing completed	04-Jul-2012
The customer's contact person	Vaattovaara Lasse
Test Plan referred to	T:\Projects\RM-820\TestPlan\RS_testplan_RM-820_EMC_FCC_SAR_HAC.xls
Notes	-
Document name	T:\Projects\RM-820\EMC\FCC15B_RM-820_03.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, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-820	004402138707215	2003		1123.0005.8325.9680.139	16361
Data Cable	CA-190CD	-	-	-	-	16343
Headset	WH-208	-	-	-	-	16345
Laptop	T61p	4FIL44044	-	-	-	16517
AC-Charger	AC-50U	4090432185270513678;0675620	-	-	-	16341
Phone	RM-820	004402138707256	2003	-	1121	16489
Headset	WH-208	-	-	-	-	16344
Laptop IBM T41	2373	99Y11G2	-	-	-	15031
Printer	HP					10854

1.2. Summary of Test Results

GSM850:

Section in CFR 47	Section in ICES-003 (RSS-132)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	PASSED
15.109, a	5.5 (4.6)	Radiated emissions	PASSED

LTE1700 (Band 4):

Section in CFR 47	Section in ICES-003 (RSS-132)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (4.6)	Radiated emissions	PASSED

GSM1900:

Section in CFR 47	Section in ICES-003 (RSS-133)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	PASSED

LTE700 Lower (Band 17):

Section in CFR 47	Section in ICES-003 (RSS-133)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	PASSED

Bluetooth:

Section in CFR 47	Section in ICES-003 (RSS-139)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	NP

WLAN:

Section in CFR 47	Section in ICES-003 (RSS-139)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	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 Nokia Laboratory.

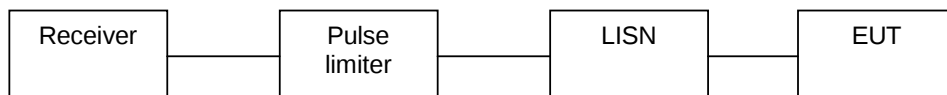
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-820, DUT 16489
Accessories with DUT numbers	WH-208, DUT 16344; AC-50U, DUT 16341; 2373, DUT 15031 ; HP, DUT 10854; CA-190CD, DUT 16343
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	*Continuous data transfer was active between the phone and the
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 101
Date of measurements	04-Jul-2012
Measured by	Tomi Lipponen

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:

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

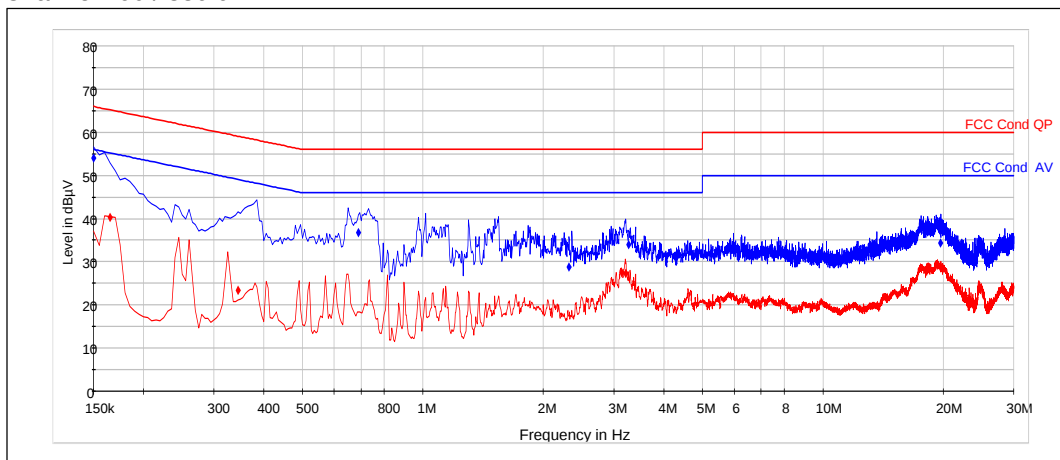
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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

2.3. GSM 850 Test results

Channel 190 / 836.6 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.15	54.03	L1	PASSED
0.69	36.78	N	PASSED
2.315	28.78	L1	PASSED
3.27	33.9	L1	PASSED
19.695	34.4	L1	PASSED

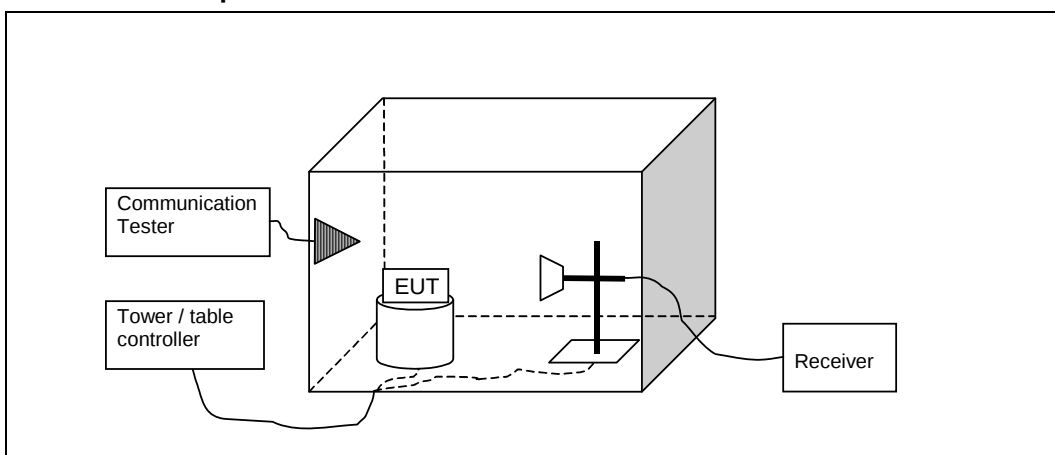
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.165	40.27	N	PASSED
0.345	23.4	L1	PASSED
3.14	27.39	L1	PASSED
3.215	27.33	L1	PASSED
19.285	29.08	L1	PASSED

3. Radiated emissions (FCC §15.109, ICES-003 section 5.5, RSS-132 4.6, RSS-133 6.6)

EUT with DUT number	RM-820, DUT 16361
Accessories with DUT numbers	CA-190CD, DUT 16343 ; T61p, DUT 16517
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	*Continuous data transfer was active between the phone and the computer during the test."
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 35 / 101.6
Date of measurements	19-Jun-2012
Measured by	Kalle Hannila / Jari Keto

3.1.1 Test Setup



3.2. 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:

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

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	-	-
Above 1000	-	54	74

3.3. GSM850 Test results Data peripherals

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]	Polarisation	Result
3478.6	37.28	73.089	45.25	-7.97	VERTICAL	PASSED
6954.6	44.83	174.281	44.99	-0.16	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3478.6	23.87	15.605	31.84	-7.97	VERTICAL	PASSED
6954.6	32.28	41.091	32.44	-0.16	VERTICAL	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
32.868	22.1	12.734	34.67	-12.57	VERTICAL	PASSED
167.388	26.4	20.883	50.35	-23.95	VERTICAL	PASSED
256.401	29.11	28.536	50.65	-21.54	VERTICAL	PASSED
304.728	29.73	30.665	50.07	-20.34	VERTICAL	PASSED
341.443	28.97	28.083	48.45	-19.48	VERTICAL	PASSED
350.729	15.59	6.017	34.18	-18.59	HORIZONTAL	PASSED
425.353	32.05	40.05	49.83	-17.78	VERTICAL	PASSED
699.309	24.41	16.609	37.69	-13.28	VERTICAL	PASSED
902.308	16.87	6.973	27.96	-11.09	VERTICAL	PASSED
948.998	20.39	10.462	30.41	-10.02	HORIZONTAL	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]	Polarisation	Result
3740.081	50.98	353.997	58.2	-7.22	VERTICAL	PASSED
3741.783	50.72	343.518	57.93	-7.21	VERTICAL	PASSED
7053.41	45.23	182.558	44.59	0.64	VERTICAL	PASSED
7843.391	45.16	181.051	42.9	2.26	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3740.081	24.65	17.075	31.87	-7.22	VERTICAL	PASSED
3741.783	24.65	17.077	31.86	-7.21	VERTICAL	PASSED

7053.41	32.24	40.926	31.6	0.64	VERTICAL	PASSED
7843.391	32.49	42.107	30.23	2.26	VERTICAL	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]	Polarisation	Result
3576.1	37.07	71.367	44.46	-7.39	VERTICAL	PASSED
7152.2	45.06	179.04	44.46	0.6	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3576.1	24.19	16.203	31.58	-7.39	VERTICAL	PASSED
7152.2	31.99	39.751	31.39	0.6	VERTICAL	PASSED

3.4. LTE1700 (Band 4) Test results

RX mode, channel 2175 / 2132.5 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.18	20.61	10.728	31.48	-10.87	VERTICAL	PASSED
201.613	28.24	25.808	51.56	-23.32	HORIZONTAL	PASSED
268.798	28.84	27.66	49.45	-20.61	HORIZONTAL	PASSED
297.596	29.41	29.546	49.19	-19.78	HORIZONTAL	PASSED
307.194	27.93	24.909	47.09	-19.16	HORIZONTAL	PASSED
310.401	28.37	26.209	47.55	-19.18	HORIZONTAL	PASSED
316.814	28.34	26.113	47.4	-19.06	HORIZONTAL	PASSED
320	27.97	25.044	46.87	-18.9	HORIZONTAL	PASSED
940.321	29.25	28.997	39.09	-9.84	HORIZONTAL	PASSED
949.018	25.32	18.452	35.34	-10.02	HORIZONTAL	PASSED

RX mode, channel 2175 / 2132.5 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7051.201	44.83	174.361	44.22	0.61	HORIZONTAL	PASSED
7819.234	45.99	199.274	43.83	2.16	VERTICAL	PASSED
7850.099	46.11	202.139	43.82	2.29	HORIZONTAL	PASSED
7854.411	45.63	191.139	43.3	2.33	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7051.201	31.99	39.751	31.38	0.61	HORIZONTAL	PASSED
7819.234	32.59	42.599	30.43	2.16	VERTICAL	PASSED
7850.099	32.34	41.39	30.05	2.29	HORIZONTAL	PASSED
7854.411	32.54	42.364	30.21	2.33	VERTICAL	PASSED

RX mode, channel 2175 / 2132.5 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2132.4	51.36	369.956	53.7	-2.34	VERTICAL	PASSED
3001.7	38.31	82.357	45.53	-7.22	HORIZONTAL	PASSED
4265.8	38.39	83.119	43.82	-5.43	VERTICAL	PASSED
6396.2	43.75	154.046	45.79	-2.04	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2132.4	31.12	35.963	33.46	-2.34	VERTICAL	PASSED
3001.7	24.53	16.85	31.75	-7.22	HORIZONTAL	PASSED
4265.8	25.57	18.982	31	-5.43	VERTICAL	PASSED
6396.2	31.09	35.843	33.13	-2.04	VERTICAL	PASSED

RX mode, channel 2375 / 2152.5 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4304.2	38.33	82.518	43.69	-5.36	VERTICAL	PASSED
6458.4	43.69	153.003	45.53	-1.84	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4304.2	25.12	18.034	30.48	-5.36	VERTICAL	PASSED
6458.4	30.58	33.806	32.42	-1.84	VERTICAL	PASSED

3.5. LTE700 Lower (Band 17) Test results

RX mode, channel 5755 / 736.5 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1474.6	37.72	76.878	42.91	-5.19	HORIZONTAL	PASSED
2210.4	43.01	141.482	42.9	0.11	HORIZONTAL	PASSED
3001.8	37.4	74.088	44.62	-7.22	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1474.6	24.9	17.573	30.09	-5.19	HORIZONTAL	PASSED
2210.4	30.27	32.61	30.16	0.11	HORIZONTAL	PASSED
3001.8	24.4	16.6	31.62	-7.22	HORIZONTAL	PASSED

RX mode, channel 5790 / 740.0 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.397	24.2	16.211	40.48	-16.28	VERTICAL	PASSED
41.805	19.37	9.305	37.91	-18.54	VERTICAL	PASSED
201.593	29.12	28.566	52.44	-23.32	HORIZONTAL	PASSED
204.799	27.23	22.991	50.29	-23.06	HORIZONTAL	PASSED
272.014	28.26	25.888	48.74	-20.48	HORIZONTAL	PASSED
297.596	29.05	28.35	48.83	-19.78	HORIZONTAL	PASSED
940.321	31.41	37.213	41.25	-9.84	HORIZONTAL	PASSED
949.018	26.86	22.027	36.88	-10.02	HORIZONTAL	PASSED

RX mode, channel 5790 / 740.0 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7818.634	44.95	176.726	42.79	2.16	HORIZONTAL	PASSED
7836.973	45.26	183.274	43.03	2.23	HORIZONTAL	PASSED
7849.699	45.32	184.459	43.03	2.29	VERTICAL	PASSED
7859.623	46.73	217.045	44.35	2.38	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7818.634	32.44	41.855	30.28	2.16	HORIZONTAL	PASSED
7836.973	32.38	41.581	30.15	2.23	HORIZONTAL	PASSED
7849.699	32.5	42.175	30.21	2.29	VERTICAL	PASSED

7859.623	32.5	42.175	30.12	2.38	HORIZONTAL	PASSED
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RX mode, channel 5790 / 740.0 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1479.5	38.4	83.148	43.83	-5.43	HORIZONTAL	PASSED
2218.4	43.69	152.915	43.69	0	HORIZONTAL	PASSED
3000.2	37.39	74.054	44.61	-7.22	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1479.5	24.71	17.191	30.14	-5.43	HORIZONTAL	PASSED
2218.4	30.24	32.52	30.24	0	HORIZONTAL	PASSED
3000.2	24.21	16.242	31.43	-7.22	HORIZONTAL	PASSED

RX mode, channel 5825 / 743.5 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1485.4	37.58	75.718	43.03	-5.45	HORIZONTAL	PASSED
2229.4	43.33	146.774	43.16	0.17	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1485.4	24.6	16.98	30.05	-5.45	HORIZONTAL	PASSED
2229.4	30.27	32.621	30.1	0.17	HORIZONTAL	PASSED

3.6. GSM1900 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]	Polarisation	Result
3861.7	37.67	76.436	44.09	-6.42	VERTICAL	PASSED
7719.7	44.47	167.321	42.78	1.69	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3861.7	24.37	16.529	30.79	-6.42	VERTICAL	PASSED
7719.7	31.69	38.397	30	1.69	VERTICAL	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.06	23.85	15.583	34.64	-10.79	VERTICAL	PASSED
36.706	12.7	4.317	26.23	-13.53	HORIZONTAL	PASSED
42.457	19.09	9.003	38.04	-18.95	VERTICAL	PASSED
198.397	21.94	12.5	45.53	-23.59	HORIZONTAL	PASSED
201.593	24.16	16.147	47.48	-23.32	HORIZONTAL	PASSED
291.192	24.66	17.102	44.64	-19.98	HORIZONTAL	PASSED
294.389	26.59	21.362	46.56	-19.97	HORIZONTAL	PASSED
300.812	26.84	21.989	46.37	-19.53	HORIZONTAL	PASSED
940.381	32.85	43.924	42.69	-9.84	HORIZONTAL	PASSED
948.928	30.76	34.495	40.78	-10.02	HORIZONTAL	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]	Polarisation	Result
7036.272	43.94	157.326	43.7	0.24	HORIZONTAL	PASSED
7044.69	44.84	174.622	44.35	0.49	VERTICAL	PASSED
7051.707	44.57	169.297	43.95	0.62	HORIZONTAL	PASSED
7848.9	45.45	187.197	43.17	2.28	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7036.272	31.6	38.01	31.36	0.24	HORIZONTAL	PASSED
7044.69	31.61	38.08	31.12	0.49	VERTICAL	PASSED
7051.707	31.68	38.384	31.06	0.62	HORIZONTAL	PASSED
7848.9	32.07	40.147	29.79	2.28	HORIZONTAL	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.12	28.14	25.512	32.97	-4.83	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3000.9	36.87	69.743	44.09	-7.22	HORIZONTAL	PASSED
3001.9	37.13	71.887	44.35	-7.22	HORIZONTAL	PASSED
3919.9	36.8	69.199	43.16	-6.36	VERTICAL	PASSED
7841.9	44.54	168.636	42.29	2.25	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3000.9	24.26	16.321	31.48	-7.22	HORIZONTAL	PASSED
3001.9	24.27	16.349	31.49	-7.22	HORIZONTAL	PASSED
3919.9	24.22	16.252	30.58	-6.36	VERTICAL	PASSED
7841.9	31.99	39.751	29.74	2.25	VERTICAL	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]	Polarisation	Result
3979.1	37.28	73.122	43.56	-6.28	VERTICAL	PASSED
7960.3	45.92	197.583	42.79	3.13	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3979.1	24.41	16.609	30.69	-6.28	VERTICAL	PASSED
7960.3	32.96	44.484	29.83	3.13	HORIZONTAL	PASSED

3.7. GSM850 Test results, FM Receiver active

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]	Polarisation	Result
3476.4	36.86	69.687	44.84	-7.98	HORIZONTAL	PASSED
6955.3	45.34	184.991	45.5	-0.16	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3476.4	23.76	15.408	31.74	-7.98	HORIZONTAL	PASSED
6955.3	32.42	41.764	32.58	-0.16	VERTICAL	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.39	33.57	47.703	44.57	-11	VERTICAL	PASSED
42.054	18.57	8.479	37.27	-18.7	VERTICAL	PASSED
839.145	16.78	6.902	27.72	-10.94	HORIZONTAL	PASSED
904.007	16.83	6.94	27.9	-11.07	VERTICAL	PASSED
940.351	37.02	70.99	46.86	-9.84	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2419.041	41.79	122.885	42.76	-0.97	VERTICAL	PASSED
2426.953	41.17	114.433	42.26	-1.09	VERTICAL	PASSED
2434.366	41.56	119.702	42.63	-1.07	VERTICAL	PASSED
2442.382	41.98	125.646	42.88	-0.9	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2419.041	28.68	27.174	29.65	-0.97	VERTICAL	PASSED
2426.953	28.69	27.202	29.78	-1.09	VERTICAL	PASSED
2434.366	28.68	27.155	29.75	-1.07	VERTICAL	PASSED
2442.382	28.8	27.545	29.7	-0.9	VERTICAL	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]	Polarisation	Result
7074.144	45.29	183.95	44.84	0.45	HORIZONTAL	PASSED
7822.843	46.36	207.946	44.19	2.17	VERTICAL	PASSED
7849.303	45.81	195.299	43.52	2.29	VERTICAL	PASSED
7857.815	46.29	206.229	43.92	2.37	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7074.144	32.39	41.629	31.94	0.45	HORIZONTAL	PASSED
7822.843	33.29	46.185	31.12	2.17	VERTICAL	PASSED
7849.303	33.29	46.196	31	2.29	VERTICAL	PASSED
7857.815	33.19	45.64	30.82	2.37	HORIZONTAL	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
32	35.83	61.88	41.85	-6.02	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3000.5	38.02	79.598	45.24	-7.22	HORIZONTAL	PASSED
3524.8	36.44	66.397	44.05	-7.61	VERTICAL	PASSED
7051	45.58	190.174	44.97	0.61	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3000.5	24.65	17.077	31.87	-7.22	HORIZONTAL	PASSED
3524.8	24.01	15.864	31.62	-7.61	VERTICAL	PASSED
7051	32.79	43.596	32.18	0.61	VERTICAL	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]	Polarisation	Result
3576.8	36.8	69.151	44.19	-7.39	VERTICAL	PASSED
7149.4	44.9	175.711	44.32	0.58	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3576.8	24.14	16.105	31.53	-7.39	VERTICAL	PASSED
7149.4	32.52	42.262	31.94	0.58	HORIZONTAL	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.39	33.57	47.703	44.57	-11	VERTICAL	PASSED
42.054	18.57	8.479	37.27	-18.7	VERTICAL	PASSED
839.145	16.78	6.902	27.72	-10.94	HORIZONTAL	PASSED
904.007	16.83	6.94	27.9	-11.07	VERTICAL	PASSED
940.351	37.02	70.99	46.86	-9.84	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2419.041	41.79	122.885	42.76	-0.97	VERTICAL	PASSED
2426.953	41.17	114.433	42.26	-1.09	VERTICAL	PASSED
2434.366	41.56	119.702	42.63	-1.07	VERTICAL	PASSED
2442.382	41.98	125.646	42.88	-0.9	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2419.041	28.68	27.174	29.65	-0.97	VERTICAL	PASSED
2426.953	28.69	27.202	29.78	-1.09	VERTICAL	PASSED
2434.366	28.68	27.155	29.75	-1.07	VERTICAL	PASSED
2442.382	28.8	27.545	29.7	-0.9	VERTICAL	PASSED

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6038	Data Logger	Testo 580	Testo	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
2389	Signal Generator	SMJ 100A	R&S	-
6009	GPS Antenna	SA-700	Chronos	-
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	-
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	-
6015	Receiver	ESI	R&S	-
2059	V-network	ESH3-Z6	R&S	-
6044	V-network	ESH3-Z6	R&S	-
1759	LISN 50 µH	ESH3-Z5	R&S	-
2390	Directional Coupler	DC2600	AR	-
1916	Communication Tester	CMTA84	R&S	-
6012	CDN	CDN USB/c	Teseq	-
2388	Bluetooth Tester	CBT	R&S	-
6046	Attenuator 10dB	8493C	Agilent	-
6047	Attenuator 20dB	8493C	Agilent	-
6036	Data Logger	175-H2	Testo	-
6045	Power Splitter	11667B	Agilent	-
6039	USB Interface	5541765	Testo	-
10479	Communication Tester	CMW500	R&S	-
6094	Communication Tester	CMW500	R&S	-
6096	EMC Analyzer	E7405A	HP	-
6098	Signal Generator	8648C	Agilent	-
6103	Bluetooth tester	CBT	R&S	-
6113	Signal Generator	SMF100A	R&S	-
6120	Thermal Chamber	WT 20/40	Weiss	-
6121	Power Splitter	HP11667B	Agilent	-
6122	Power Splitter	HP11667B	Agilent	-
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	-
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	-
2359	Temperature Test Chamber	VT4002	Vötsch	-
2347	Communication Tester	CMU200	R&S	-
2180	Communication Tester	CMU200	R&S	-
2156	Communication Tester	CMU200	R&S	-
1999	Receiver	ESIB26	R&S	-
2352	Spectrum Analyzer	FSP-30	R&S	-
2097	Pulse Limiter	ESH3-Z2	R&S	-
2039	Power Supply	PL330QMD	Thurlby	-
1992	Signal Generator	83630B	Agilent	-
2206	Signal Generator	SMX	R&S	-

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
6038	Data Logger	Testo 580	Testo	-
6014	Substitute Calibration Cable	Sucoflex 104PB	Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
2389	Signal Generator	SMJ 100A	R&S	-
6009	GPS Antenna	SA-700	Chronos	-
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	-
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	-
1988	Antenna	HL562	R&S	-
-	RF immunity / Emission Software	EMC32	R&S	-
1917	Communication Tester	CMTA84	R&S	-
2388	Bluetooth Tester	CBT	R&S	-
6037	Data Logger	175-H2	Testo	-
6039	USB Interface	5541765	Testo	-
6087	Antenna	BBHA 9120D	Scharzbeck	-
6088	Antenna	VUBA 9117	Scharzbeck	-
6089	Antenna	HFH2-Z2	R&S	-
10479	Communication Tester	CMW500	R&S	-
6094	Communication Tester	CMW500	R&S	-
6103	Bluetooth tester	CBT	R&S	-
6113	Signal Generator	SMF100A	R&S	-
6115	Open switch and control unit	OSP 130	R&S	-
6116	Open switch and control unit	OSP 150	R&S	-
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	-
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
6135	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	-
2140	Antenna	EMCO93110B	EMCO	-
2142	Antenna	3146	EMCO	-
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	-
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2043	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
2347	Communication Tester	CMU200	R&S	-
2180	Communication Tester	CMU200	R&S	-
2156	Communication Tester	CMU200	R&S	-
2176	CDN	CDN 801-M3	Lüthi	-
2027	CDN	M2 (modified) DC1	MEB	-
2028	CDN	M3 (modified) DC2	MEB	-
1984	Antenna	BBHA 9120 D	Schwarzbeck	-
6017	Antenna	SBA 9113	Schwarzbeck	-
2009	Signal Generator	SMP 22	R&S	-
2029	Power Supply	PL330	Thurlby	-
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	-
2353	Receiver	ESIB26	R&S	-
2135	CDN	CDN 801-M3	Lüthi	-