TCC Nokia

FINAS Finnish Accreditation Service T117 (EN ISO/IEC 17025)

FCC Part 22/24/27 Compliance Test Report

Test Report no.:	Bej_FCC_0717_01.doc	**Date of Report:**	23.04.2007
Number of pages:	12	**Customer's Contact person:**	Hu Helen
Testing laboratory:	TCC Nokia Beijing Laboratory Nokia Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District 100027 BEIJING, PRC Tel. +86 10 65392828 Fax. +86 10 65393838	**Customer:**	Nokia Corporation Nokia Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District 100027 BEIJING, PRC Tel. +86 10 65392828 Fax. +86 10 65393838
FCC listing no.: **IC recognition no.:**	884453 4917		
Tested devices/ accessories:	**Phone RM-259 / Battery BL-4B**		
FCC ID:	QTLRM-259	**IC:**	661AB-RM259
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Parts 22, 24 and 27, TIA-603-B-2002 and IC standards RSS-GEN, RSS-132 and RSS-133. 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.		
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:	 Digitally signed by Yin Hongpeng DN: CN = Yin Hongpeng, C = CN, O = Nokia, OU = CertT Date: 2007.04.24 11:01:10 +08'00'		

Yin Hongpeng, Engineer

1. Summary for FCC Part 22/24/27 Compliance Test Report

Date of receipt	13.04.2007
Testing completed	18.04.2007
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-259\TestPlan_RS\RS_Testplan_RM-259.xls
Notes	-
Document name	T:\Projects\RM-259\EMC\Results\FCC\Bej_FCC_0717_01.doc

1.1. EUT and Accessory Information

The EUT is a 2-band (GSM850/1900) mobile phone with GPRS. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-259	001004/00/243504/9	0302	-	pa3.02	50586
Battery	BL-4B	0670501382066N513A10100144	-	-	-	50576

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in *RSS-GEN* or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	*4.6*, 4.4	Conducted RF output power	NP
§22.913(a)	*4.6*, 4.4	Radiated RF output power	PASSED
§2.1049(h)	*4.4.1*	99 % occupied bandwidth	NP
§22.917(a)	*4.7*, 4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	*4.7*, 4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	*4.7*, 4.5	Spurious radiated emissions	NP
§2.1055(a)	*4.5*, 4.3	Frequency stability, temperature variation	NP
§2.1055(d)	*4.5*, 4.3	Frequency stability, voltage variation	NP

GSM 1900:

Section in CFR 47	Section in RSS-133	Name of the test	Result
§2.1046(a)	6.2	Conducted RF output power	NP
§24.232(b)	6.2	Radiated RF output power	PASSED
§2.1049(h)	5.6	99 % occupied bandwidth	NP
§24.238(a)	6.3	Band edge compliance	PASSED
§24.238(a), §2.1051	6.3	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.3	Spurious radiated emissions	NP
§2.1055(a)	7	Frequency stability, temperature variation	NP
§2.1055(d)	7	Frequency stability, voltage variation	NP

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 Beijing Laboratory.

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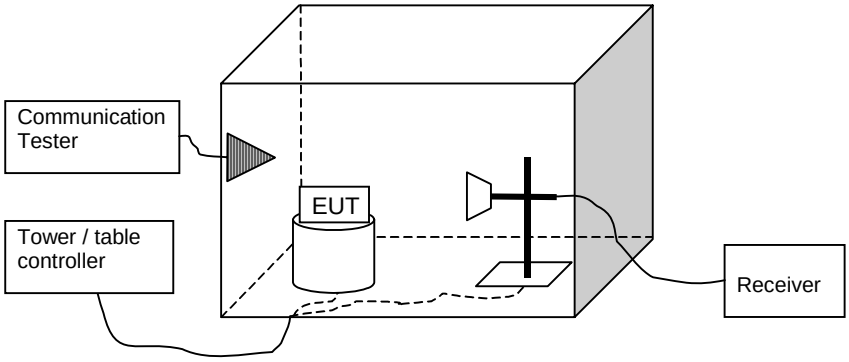
2. Radiated RF output power

(FCC §22.913(a), §24.232(b), §27.50(d)(2), RSS-GEN 4.6, RSS-132 4.4, RSS-133 6.2)

EUT with DUT number	RM-259, DUT 50586
Accessories with DUT numbers	BL-4B, DUT 50576
Operation Voltage [V] / [Hz]	220 / 50
Result	PASSED
Remarks	Phone was tested flip open and closed
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 25 / 99.7
Date of measurements	18.04.2007
Measured by	Yin Hongpeng

2.1. Test setup



2.2. Test method and limit

The measurement is made according to TIA-603-B-2002 as follows:

The measurement is performed in the Anechoic Chamber with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system. The turntable is rotated 360 degrees and this is repeated for both horizontal and vertical receive antenna polarizations.

The EUT is placed on a nonconductive plate at 170 cm height.

The substitution method is used. Substitution values at each frequencies are measured beforehand and saved to the test software.

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The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$$

Where A_{SUBST} is the final substitution correction including receive antenna gain. P_{SUBST_TX} is signal generator level, P_{SUBST_RX} is receiver level, L_{SUBST_CABLES} is cable losses including both TX and RX cables and $G_{SUBST\_TX\_ANT}$ is substitution antenna gain.

The measurement results are obtained as described below:

$$P\ [dBm] = P_{MEAS} + A_{TOT}$$

Where P_{MEAS} is receiver reading in dBm and A_{TOT} is total correction factor including cable loss and substitution correction ($A_{TOT} = L_{CABLES} + A_{SUBST}$).

Limits for radiated RF output power measurements

Frequency range [MHz]	Limit [W]	Limit [dBm]
824 - 849	7	38.5
1710 - 1755	1	30
1850 - 1910	2	33

2.3. GSM 850 Test results

Phone flip open:

GSM mode

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
128 / 824.2	29.10	0.813	-6.40	35.50	VERTICAL	PASSED
190 / 836.6	30.50	1.122	-4.70	35.20	VERTICAL	PASSED
251 / 848.8	29.90	0.977	-4.70	34.60	VERTICAL	PASSED

GPRS mode, 2 TX Slots

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
128 / 824.2	29.10	0.813	-6.40	35.50	VERTICAL	PASSED
190 / 836.6	30.30	1.072	-4.90	35.20	VERTICAL	PASSED
251 / 848.8	29.80	0.955	-4.80	34.60	VERTICAL	PASSED

Phone flip closed:

GSM mode

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
128 / 824.2	27.80	0.603	-7.70	35.50	VERTICAL	PASSED
190 / 836.6	28.10	0.646	-7.10	35.20	VERTICAL	PASSED
251 / 848.8	26.90	0.490	-7.70	34.60	VERTICAL	PASSED

GPRS mode, 2TX Slots

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
128 / 824.2	27.70	0.589	-7.80	35.50	VERTICAL	PASSED
190 / 836.6	27.90	0.617	-7.30	35.20	VERTICAL	PASSED
251 / 848.8	26.80	0.479	-7.80	34.60	VERTICAL	PASSED

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2.4. GSM 1900 Test results

Phone flip open:

GSM mode

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
512 / 1850.2	32.00	1.585	-16.90	48.90	HORIZONTAL	PASSED
661 / 1880.0	30.60	1.148	-16.90	47.50	HORIZONTAL	PASSED
810 / 1909.8	32.70	1.862	-15.60	48.30	HORIZONTAL	PASSED

GPRS mode, 2 TX Slots

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
512 / 1850.2	32.20	1.660	-16.70	48.90	HORIZONTAL	PASSED
661 / 1880.0	30.90	1.230	-16.60	47.50	HORIZONTAL	PASSED
810 / 1909.8	32.90	1.950	-15.40	48.30	HORIZONTAL	PASSED

Phone flip closed:

GSM mode

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
512 / 1850.2	30.10	1.023	-18.80	48.90	HORIZONTAL	PASSED
661 / 1880.0	30.20	1.047	-17.30	47.50	HORIZONTAL	PASSED
810 / 1909.8	31.00	1.259	-17.30	48.30	HORIZONTAL	PASSED

GPRS mode, 2 TX Slots

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
512 / 1850.2	30.10	1.023	-18.80	48.90	HORIZONTAL	PASSED
661 / 1880.0	30.10	1.023	-17.40	47.50	HORIZONTAL	PASSED
810 / 1909.8	30.60	1.148	-17.70	48.30	HORIZONTAL	PASSED

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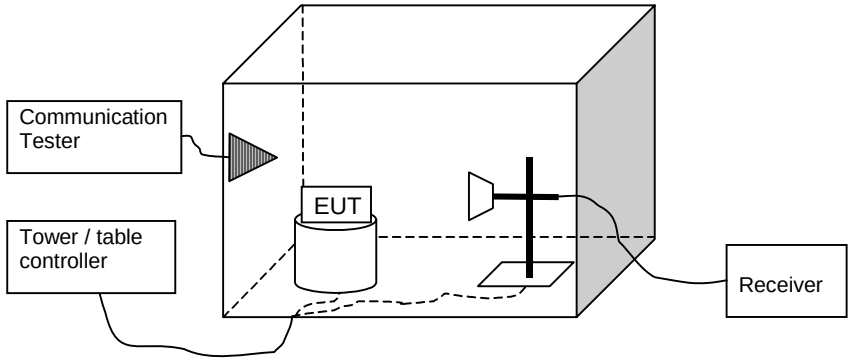
3. Band edge compliance

(FCC §22.917(a), 24.238(a), §27.53(g), RSS-GEN 4.7, RSS-132 4.5, RSS-133 6.3)

EUT with DUT number	RM-259, DUT 50586
Accessories with DUT numbers	BL-4B, DUT 50576
Operation Voltage [V] / [Hz]	220 / 50
Result	PASSED
Remarks	Phone was tested flip open and closed
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 25 / 99.7
Date of measurements	18.04.2007
Measured by	Yin Hongpeng

3.1. Test setup



3.2. Test method and limit

The measurement is made according to FCC rules part 22, 24 and 27 and IC standards RSS-GEN, RSS-132 and RSS-133.

Limits for band edge compliance measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM 850 / WCDMA 850	Below 824 and above 849	-13
WCDMA 1700	Below 1710 and above 1755	-13
GSM 1900 / WCDMA 1900	Below 1850 and above 1910	-13

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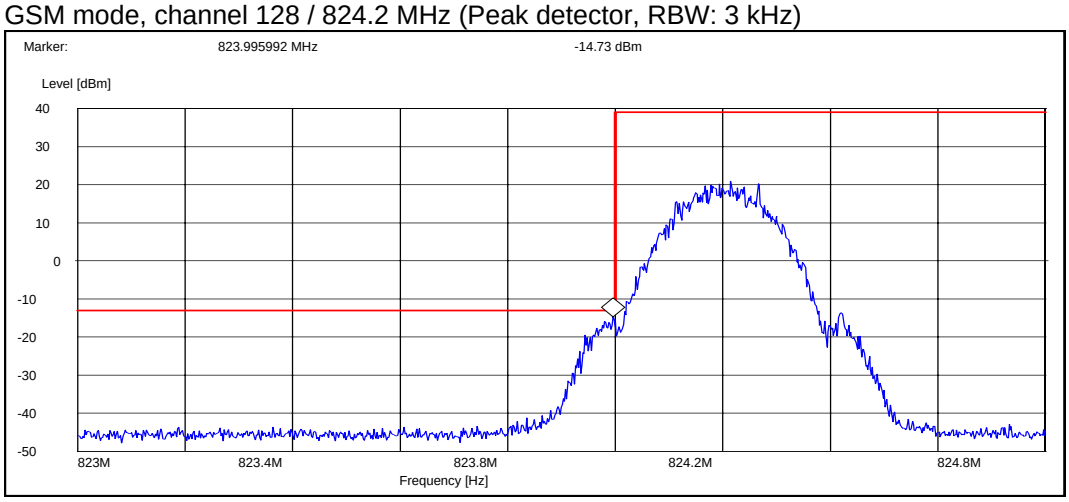
3.3. GSM 850 Test results

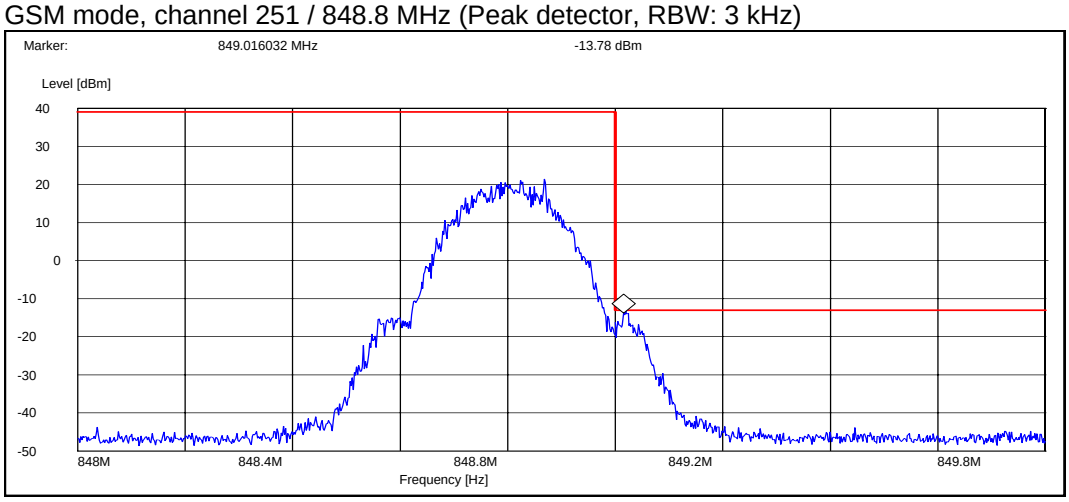
Phone flip open:

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]
GSM	128 / 824.2	-14.73
GSM	251 / 848.8	-13.78

GSM mode, channel 128 / 824.2 MHz (Peak detector, RBW: 3 kHz)



GSM mode, channel 251 / 848.8 MHz (Peak detector, RBW: 3 kHz)



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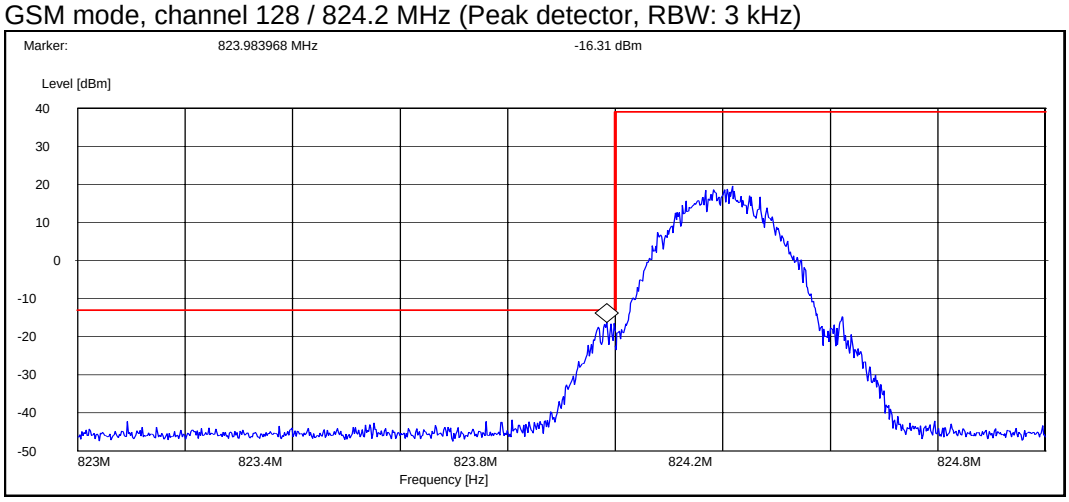
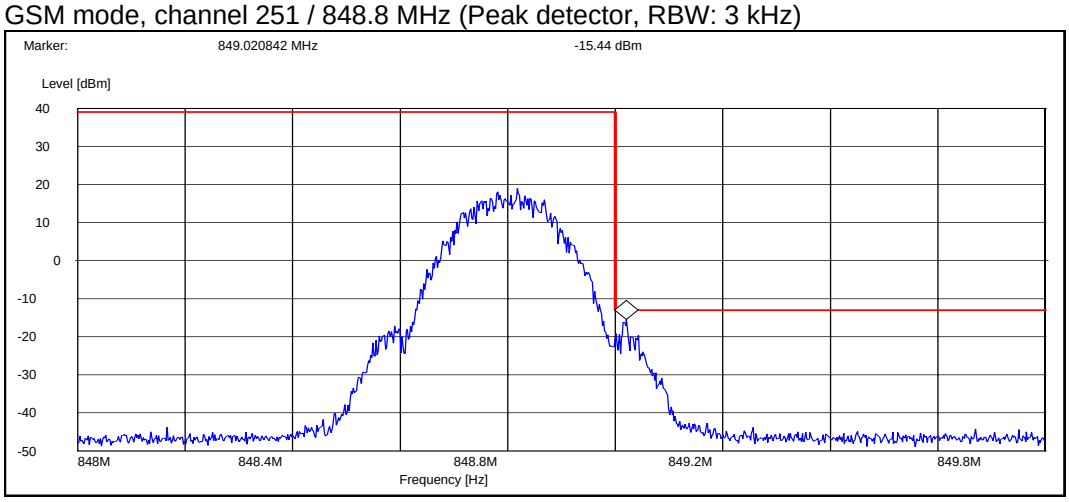
Phone flip closed:

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]
GSM	128 / 824.2	-16.31
GSM	251 / 848.8	-15.44

GSM mode, channel 128 / 824.2 MHz (Peak detector, RBW: 3 kHz)



GSM mode, channel 251 / 848.8 MHz (Peak detector, RBW: 3 kHz)



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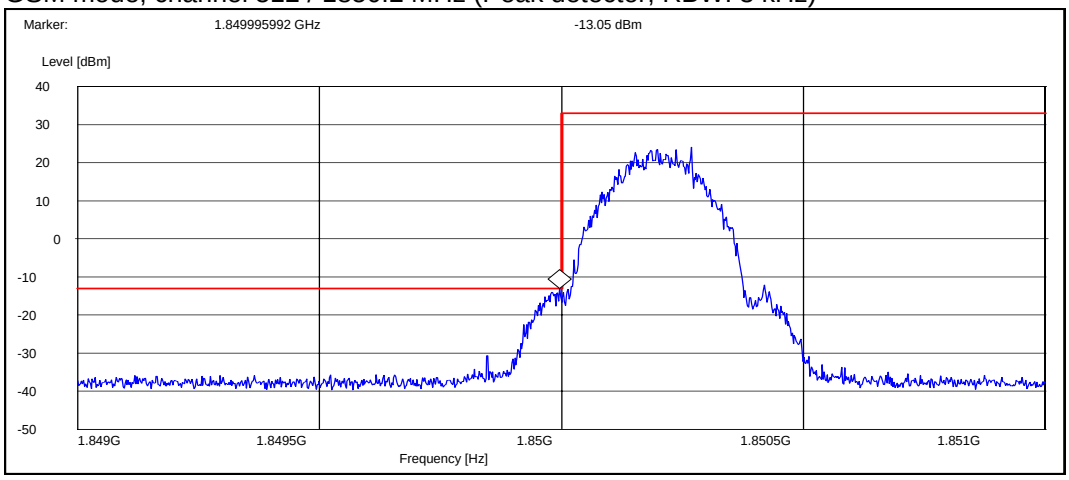
3.4. GSM 1900 Test results

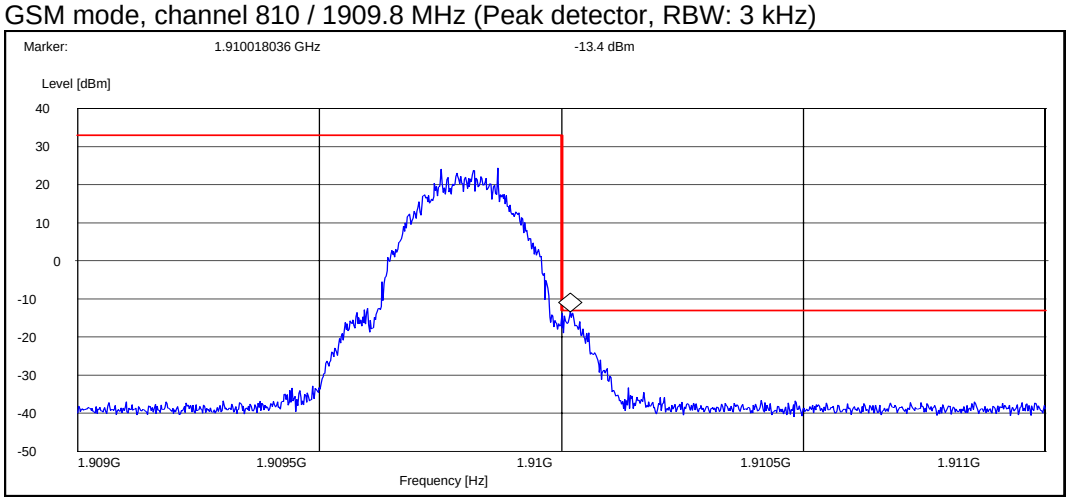
Phone flip open:

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]
GSM	512 / 1850.2	-13.05
GSM	810 / 1909.8	-13.40

GSM mode, channel 512 / 1850.2 MHz (Peak detector, RBW: 3 kHz)



GSM mode, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



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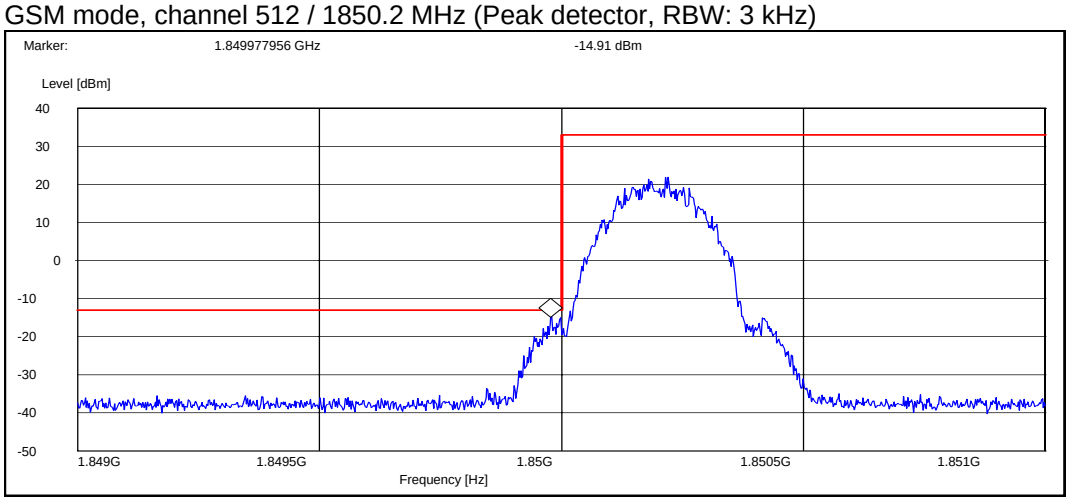
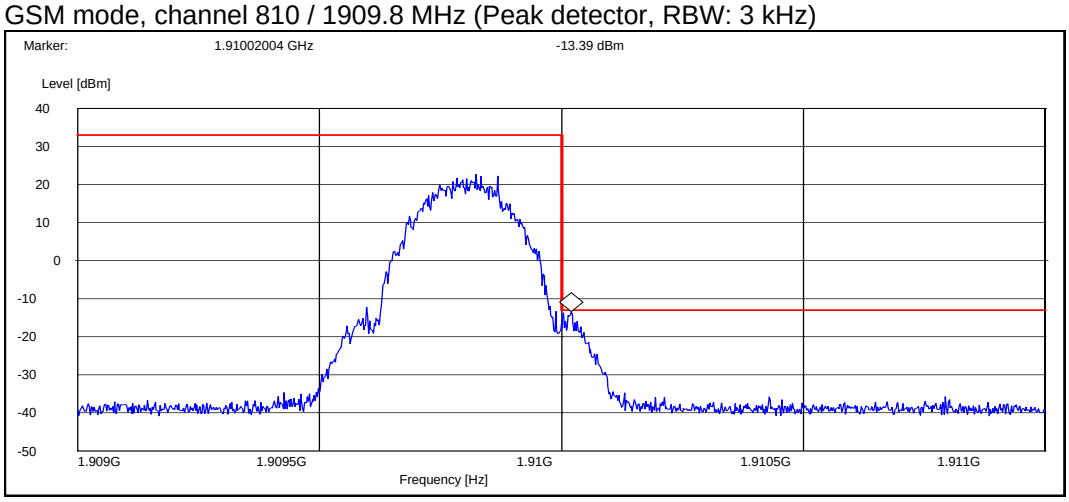
Phone flip closed:

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]
GSM	512 / 1850.2	-14.19
GSM	810 / 1909.8	-13.39

GSM mode, channel 512 / 1850.2 MHz (Peak detector, RBW: 3 kHz)



GSM mode, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



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4. Test Equipment

4.1. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0129	Relay Unit	TS-RSP	Rohde&Schwarz	22/24
BJPCPT0130	Relay Unit	TS-RSP	Rohde&Schwarz	22/24
BJPCPT0080	Device Controller	EMCO2090	ETS-EMCO	22/24
BJPCTC0048	RF Preamplifier 10MHz-3GHz (Metal chassis)	AFS4-00100300-10-10P-4	MITEQ	22/24
BJPCTC0007	Ultra Broadband Antenna 30MHz-3000MHz	HL562	Rohde&Schwarz	22/24
BJPCPT0162	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24
BJPCTC0029	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24
BJPCTC0049	RF preamplifier 3GHz-18GHz	BLMA-0118-1A-BT	Rohde&Schwarz	22/24
BJPCTC0046	Shielding Enclosure	3M Test Site	ETS-Lindgren	22/24
BJPCTC0047	Turntable	Model 2088-1.23	ETS-EMCO	22/24
BJPCPT0072	EMI Test Receiver 20Hz-26.5GHz	ESIB26	Rohde&Schwarz	22/24
BJPCPT0150	High Pass filter	WHKS 1200-10SS	Wainwright instruments	22/24
BJPCTC0034	Notch Filter	WRCT800/880-0.2/40-5SSK	Wainwright instruments	22/24
BJPCPT0151	Notch Filter	WRCD1800/2000-0.2/40-5SSK	Wainwright instruments	22/24
BJPCTC0017	Radio Communication Tester	CMU200	Rohde&Schwarz	22/24

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