

FCC Part 22/24 Compliance Test Report

Test Report no.:	FCC22&24_RM-510_02.doc	Date of Report:	05-Aug-2009
Number of pages:	11	Customer's Contact person:	Ralph Schwarz
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-510 / Battery BL-4S		
FCC ID:	PPIRM-510	IC:	661U-RM510
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Parts 22 and 24, TIA-603-C-2004 and IC standards RSS-GEN (Issue 2, June 2007), RSS-132 (Issue 2, September 2005) and 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 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:			

Jia Dongsheng, System Manager

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

Date of receipt	25-Jul-2009
Testing completed	05-Aug-2009
The customer's contact person	Ralph Schwarz
Test Plan referred to	T:\Projects\RM-510\TestPlan_RS\RS_testplan_RM-510.xls
Notes	-
Document name	FCC22&24_RM-510_02.doc

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/V(850)) mobile phone with GPRS, EGPRS and Bluetooth. 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-510	004401108171055	0520	-	ce3.10	51388
Battery	BL-4S	3820668346160918044;0670578	-	-	-	51379

1.2. Summary of Test Results

WCDMA 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

WCDMA 1900 (Band II):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	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 Beijing Laboratory.

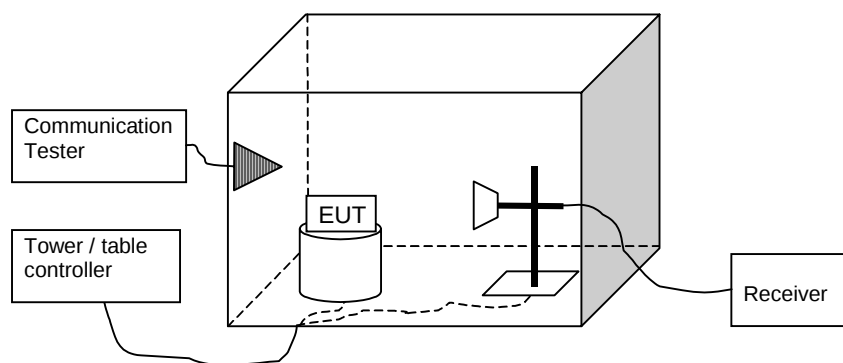
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2. Radiated RF output power (FCC §22.913(a), §24.232(b), RSS-132 4.4, RSS-133 6.4)

EUT with DUT number	RM-510, DUT51388
Accessories with DUT numbers	BL-4S, DUT51379
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 67 / 100.4
Date of measurements	04-Aug-2009
Measured by	Jia Dongsheng

2.1. Test setup



2.2. Test method and limit

The measurement is made according to TIA-603-C-2004 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.

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
1850 - 1910	2	33

2.3. WCDMA 850 Test results

Flip open

Channel / f_c [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
4132 / 826.4	19.10	0.081	-14.60	33.70	VERTICAL	PASSED
4175 / 835.0	18.80	0.076	-14.40	33.20	VERTICAL	PASSED
4233 / 846.6	18.90	0.078	-14.70	33.60	VERTICAL	PASSED

Flip closed

Channel / f_c [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
4132 / 826.4	15.80	0.038	-17.90	33.70	VERTICAL	PASSED
4175 / 835.0	15.40	0.035	-17.80	33.20	VERTICAL	PASSED
4233 / 846.6	15.60	0.036	-18.00	33.60	VERTICAL	PASSED

2.4. WCDMA 1900 Test results

Flip open

Channel / f_c [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
9262 / 1852.4	23.20	0.209	-22.30	45.50	VERTICAL	PASSED
9400 / 1880.0	22.50	0.178	-22.80	45.30	VERTICAL	PASSED
9538 / 1907.6	23.40	0.219	-22.40	45.80	VERTICAL	PASSED

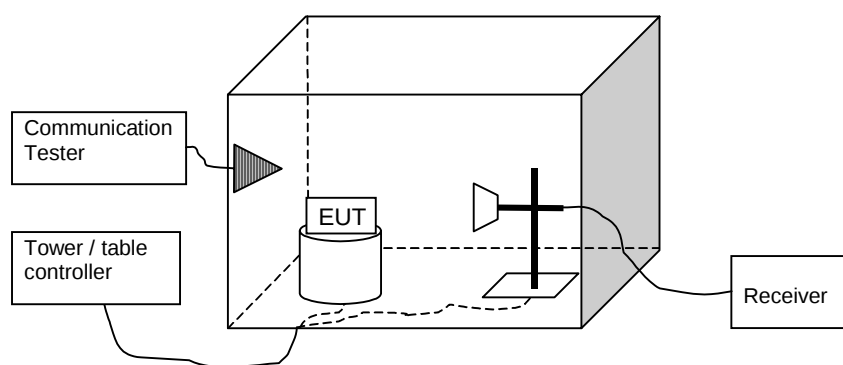
Flip closed

Channel / f_c [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
9262 / 1852.4	20.20	0.105	-25.20	45.40	HORIZONTAL	PASSED
9400 / 1880.0	19.90	0.098	-25.60	45.50	HORIZONTAL	PASSED
9538 / 1907.6	21.10	0.129	-25.00	46.10	HORIZONTAL	PASSED

3. Band edge compliance (FCC §22.917(a), 24.238(a), RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-510, DUT51388
Accessories with DUT numbers	BL-4S, DUT51379
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 67 / 100.4
Date of measurements	04-Aug-2009
Measured by	Jia Dongsheng

3.1. Test setup



3.2. Test method and limit

The measurement is made according to FCC rules parts 22 and 24 and IC standards RSS-132 and RSS-133.

Limits for band edge compliance measurements

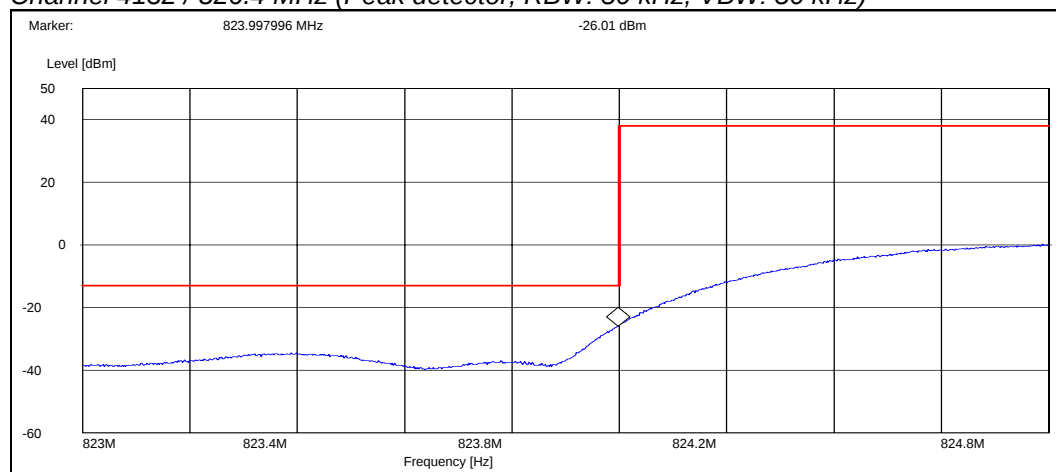
Operation band	Frequency range [MHz]	Limit [dBm]
WCDMA 850	Below 824 and above 849	-13
WCDMA 1900	Below 1850 and above 1910	-13

3.3. WCDMA 850 Test results

Flip open

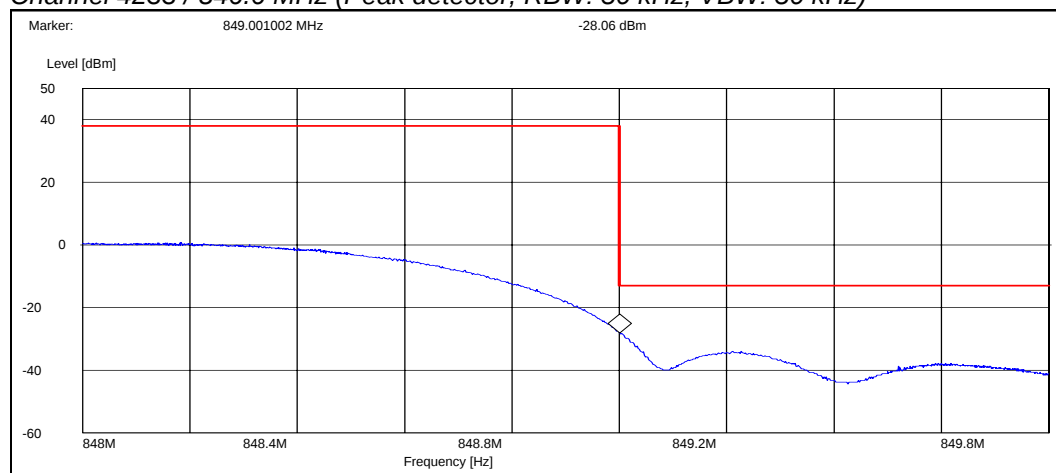
Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]
FDD	4132 / 826.4	-26.00
FDD	4233 / 846.6	-28.10

Channel 4132 / 826.4 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	4132 / 826.4	-26.00

Channel 4233 / 846.6 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)

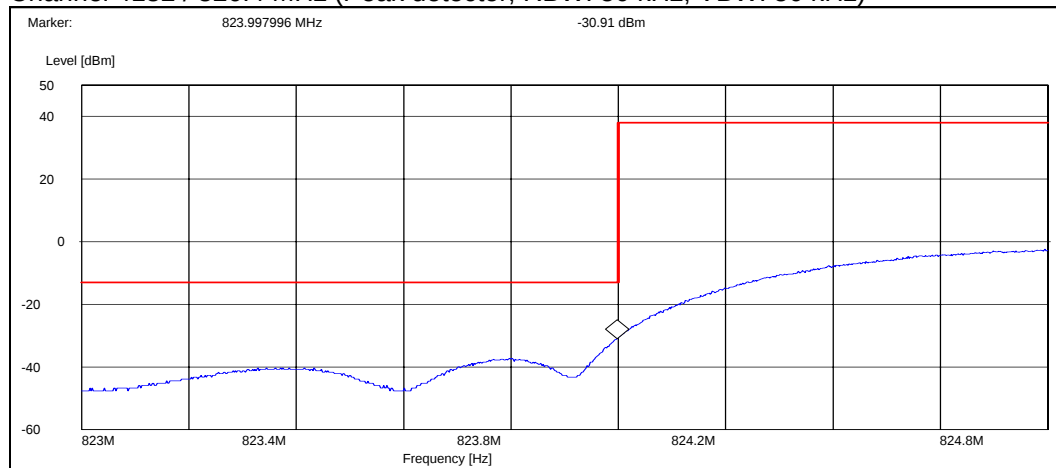


Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	4233 / 846.6	-28.10

Flip closed

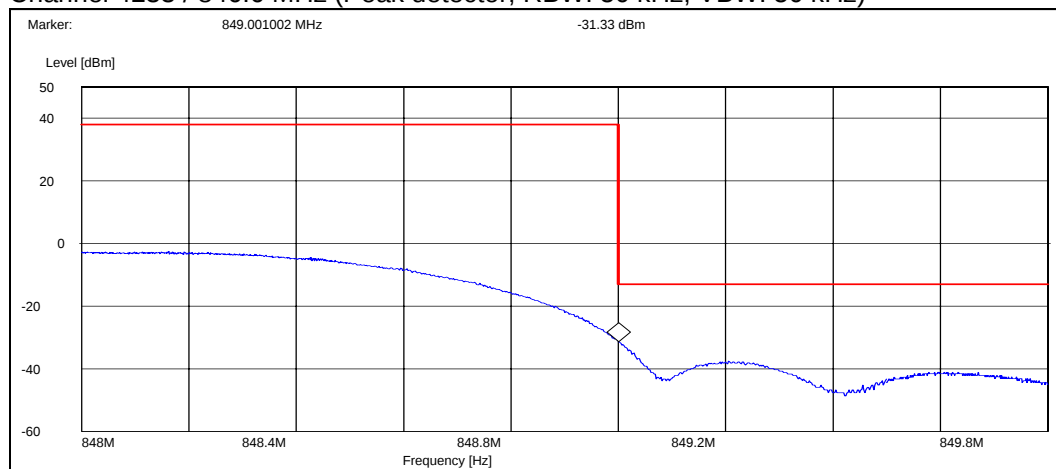
Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]
FDD	4132 / 826.4	-30.90
FDD	4233 / 846.6	-31.30

Channel 4132 / 826.4 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	4132 / 826.4	-30.90

Channel 4233 / 846.6 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



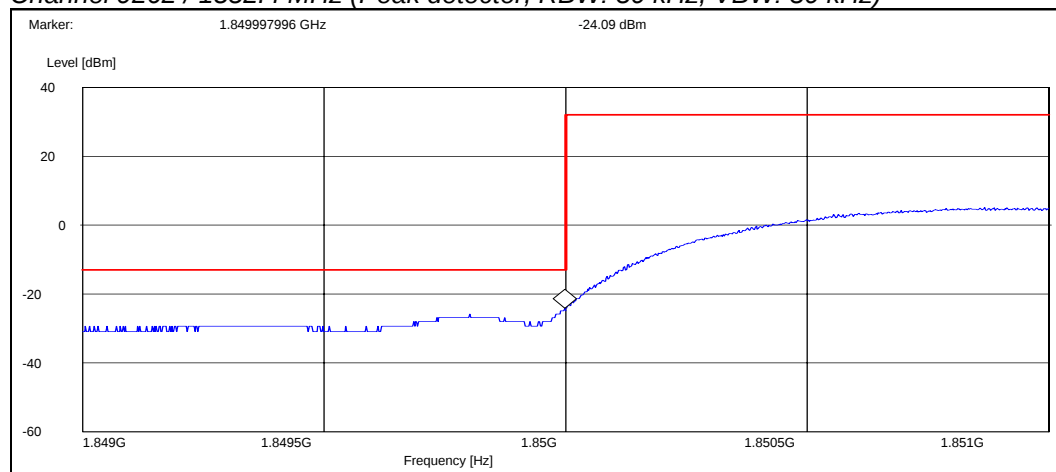
Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	4233 / 846.6	-31.30

3.4. WCDMA 1900 Test results

Flip open

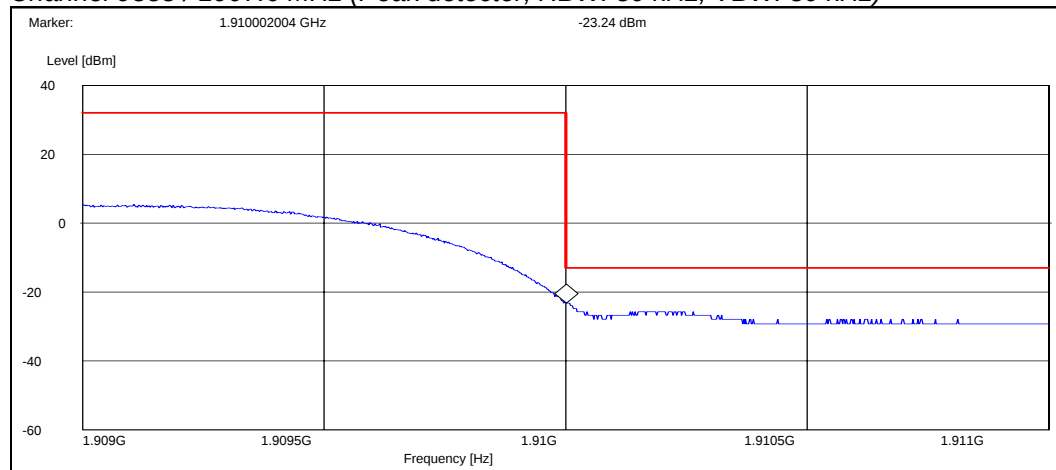
Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]
FDD	9262 / 1852.4	-24.10
FDD	9538 / 1907.6	-23.20

Channel 9262 / 1852.4 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	9262 / 1852.4	-24.10

Channel 9538 / 1907.6 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)

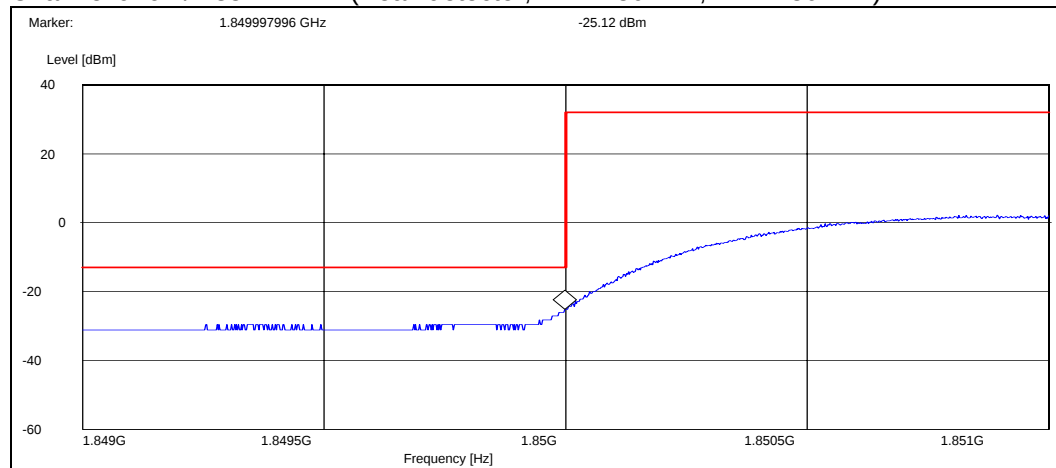


Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	9538 / 1907.6	-23.20

Flip closed

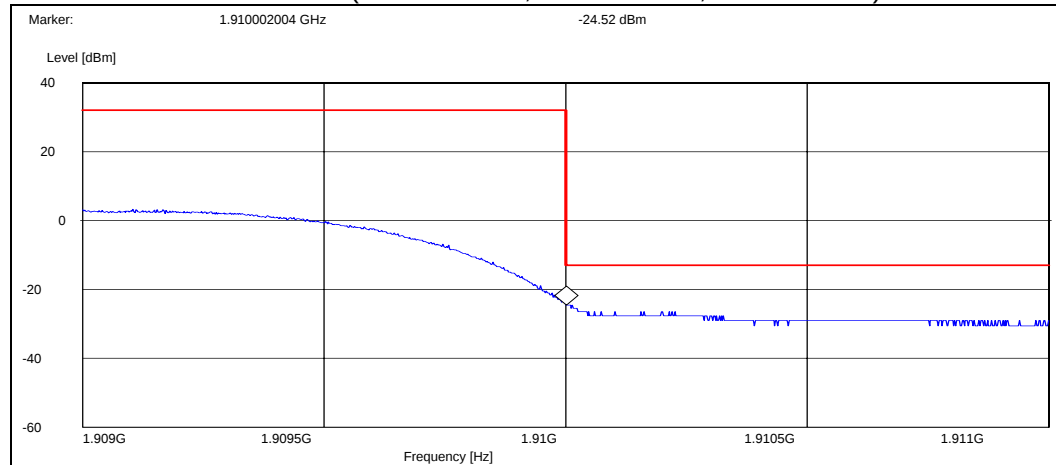
Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]
FDD	9262 / 1852.4	-25.10
FDD	9538 / 1907.6	-24.50

Channel 9262 / 1852.4 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	9262 / 1852.4	-25.10

Channel 9538 / 1907.6 MHz (Peak detector, RBW: 50 kHz, VBW: 50 kHz)



Operation mode (TX on)	Channel / f_c [MHz]	P [dBm]
FDD	9538 / 1907.6	-24.50

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0073	SIGNAL GENERATOR	SMR 20	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0055	RADIO COMMUNICATION TESTER	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0039	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0040	TEST RECEIVER	ESCS30	Rohde&Schwarz	15C, 15B
BJPCPT0069	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0079	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0191	PULSE LIMITER	ESH3-Z2	Rohde&Schwarz	15C, 15B
BJPCPT0131	RADIO COMMUNICATION TESTER	CMU200	ROHDE&SCHWARZ	15C, 15B
BJPCTC0089	Temperature Test chamber	VT4002	Vötsch Industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0067	BLUETOOTH TESTER	CBT	R&S	22/24/27, 15C
BJPCHW0020	Dc Power supply	Hp6632B	HP	22/24/27, 15C
BJPCTC0094	GPB-RS232 convertor	GPB-RS232	National Instruments	22/24/27, 15C

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0129	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0130	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0080	Device Controller	EMCO2090	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0048	RF Preamplifier 10MHz-3GHz (Metal chassis)	AFS4-00100300-10-10P-4	MITEQ	22/24/27, 15C, 15B
BJPCTC0007	Ultra Broadband Antenna 30MHz-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0162	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0029	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0049	RF preamplifier 3GHz-18GHz	BLMA-0118-1A-BT	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0072	3m anechoic chamber	-	ETS-Lindgren	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2088	ETS-EMCO	22/24/27, 15C, 15B
BJPCPT0072	EMI Test Receiver 20Hz-26.5GHz	ESIB26	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0150	High Pass filter	WHKS 1200-10SS	Wainwright instruments	22/24/27, 15C, 15B
BJPCTC0034	Notch Filter	WRCT800/880-0.2/40-5SSK	Wainwright instruments	22, 15B
BJPCPT0151	Notch Filter	WRCD1800/2000-0.2/40-5SSK	Wainwright instruments	24, 15B
BJPCTC0017	Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0154	Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright instruments	15C, 15B
BJPCTC0058	Bluetooth tester	CBT	Rohde&Schwarz	15C, 15B
BJPCTC0064	WCDMA II FILTER	WRCG1877/1883-1870/1890-40/6SS	Wainwright instruments	24, 15B
BJPCTC0065	WCDMA V FILTER	WRCG832/838-825/845-40/5SS	Wainwright instruments	22, 15B
BJPCTC0066	ANTENNA	SBA9113	SWARZBECK	22/24/27
BJPCTC0096	RF Preamplifier 100MHz-3GHz	AFS4-00100300-20-23P-6	MITEQ	22/24/27, 15C, 15B