

FCC Part 15C Compliance Test Report

Test Report no.:	Bej_FCC_0737_03.doc	Date of Report:	18.09.2007
Number of pages:	14	Customer's Contact person:	Binder Robert
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 Arco Tower Shimomeguro 1-8-1 Meguro-ku TOKYO 153-0064 JAPAN Tel. +81 3 5759 7001 Fax. +81 3 5740 6858
FCC listing no.:	884453		
IC recognition no.:	4917		
Tested devices/ accessories:	Phone RM-314 / Battery BP-6MT, AC-charger AC-6C, Headset HS-43, Charging data cable CA-100C		
FCC ID:	QVVRM-314	IC:	661AE-RM314
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN and RSS-210. 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:			

Yin Hongpeng, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	10.09.2007
Testing completed	12.09.2007
The customer's contact person	Binder Robert
Test Plan referred to	T:\Projects\RM-314\TestPlan_RS\RS_Testplan_RM-314.xls
Notes	-
Document name	T:\Projects\RM-314\EMC\Results\FCC\Bej_FCC_0737_03.doc

1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-314	004401/01/567038/9	3201	-	10.1.009	50677
Battery	BP-6MT	3932137214110100268;0670551	-	-	-	50678
AC-charger	AC-6C	3943497175200500795;0675594	-	-	-	50660
Headset	HS-43	0694540716602607947	-	-	-	50679
Charging data cable	CA-100C	0730339726511801314	-	-	-	50661

1.2. Summary of Test Results

Bluetooth:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (2)	Conducted peak output power	NP
15.247(c)	A8.5	Band edge compliance of RF emissions	PASSED
15.247(c)	A8.5	Spurious RF conducted emissions	NP
15.247(c), 15.209	A8.5	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	NP
15.247(a)(1)	A8.1 (1)	20 dB bandwidth	NP
15.247(a)(1)	A8.1 (2)	Carrier frequency separation	NP
15.247(a)(1)(iii)	A8.1 (4)	Number of hopping frequencies	NP
15.247(a)(1)(iii)	A8.1 (4)	Time of occupancy	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.

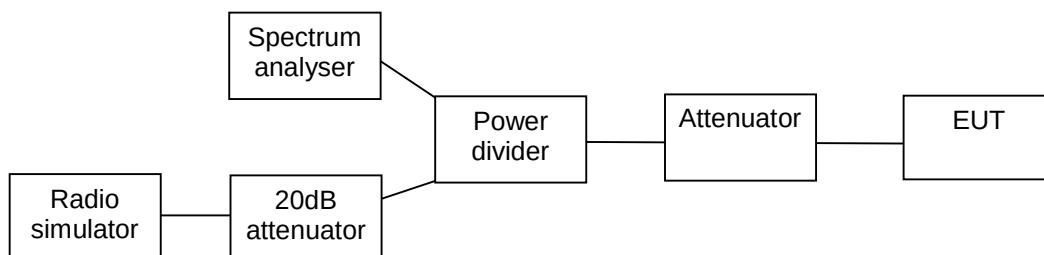
The test was not performed by the TCC Nokia Beijing Laboratory.

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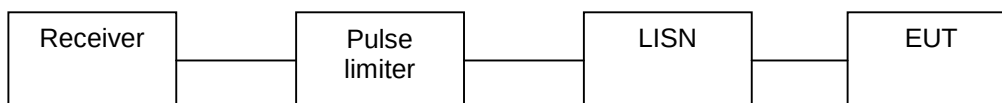
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2. Test setups

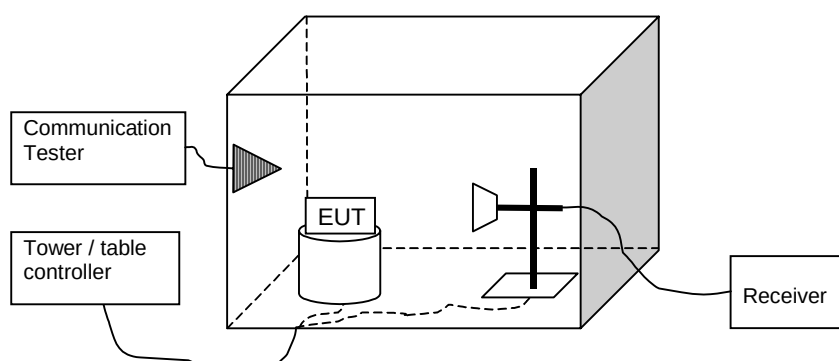
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Spurious radiated emissions test setup



3. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5)

EUT with DUT number	RM-314,DUT 50677
Accessories with DUT numbers	BP-6MT,DUT 50678;AC-6C,DUT 50660;CA-100C,DUT 50661;HS-43,DUT 50679
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	18 / 72 / 100.3
Date of measurements	12.09.2007
Measured by	Yin Hongpeng

3.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit Average [dBμV/m]	Limit Peak [dBμV/m]
Below 2390 and above 2483.5	≤ 54	≤ 74

3.2. Bluetooth Test results

3.2.1 GFSK modulation, PRBS packet type

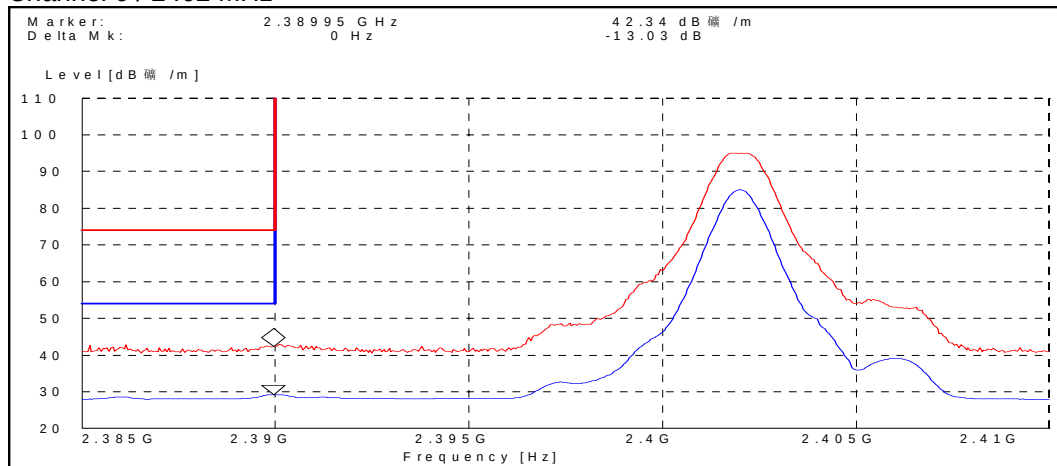
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	29.31	PASSED
78 / 2480	38.69	PASSED
Hopping on, low end	33.59	PASSED
Hopping on, high end	49.03	PASSED

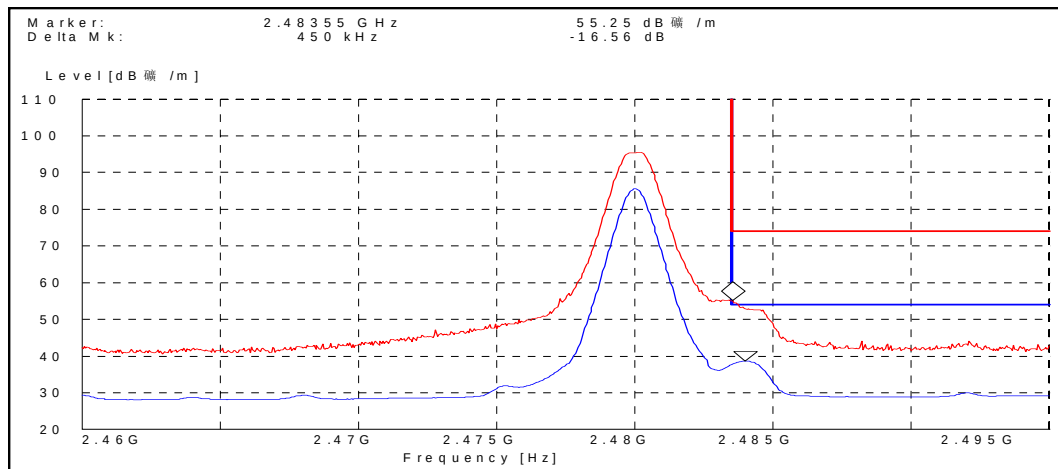
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	42.34	PASSED
78 / 2480	55.25	PASSED
Hopping on, low end	45.96	PASSED
Hopping on, high end	55.13	PASSED

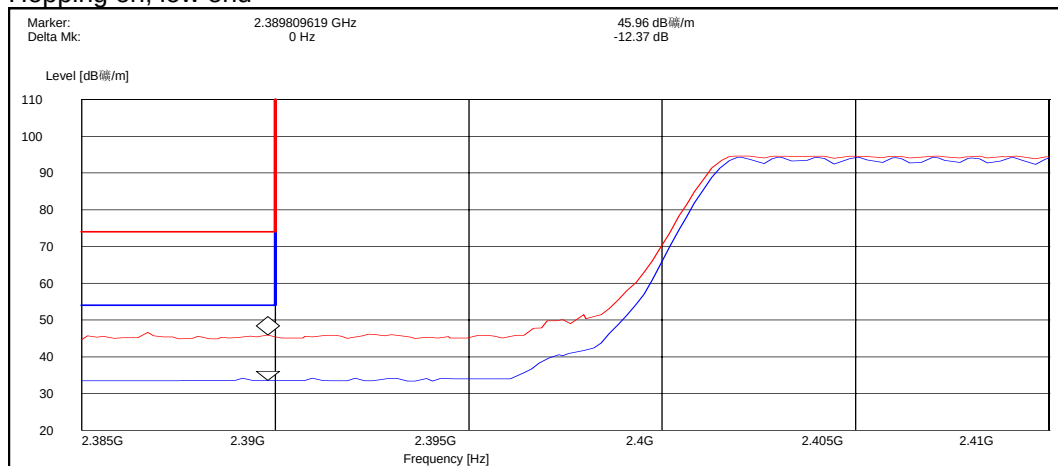
Channel 0 / 2402 MHz



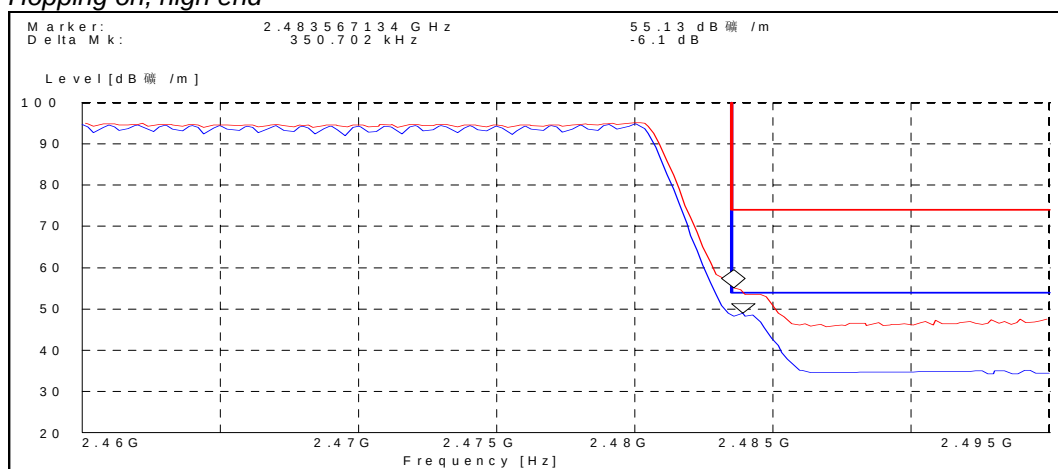
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



3.2.2 8DPSK modulation, PRBS packet type

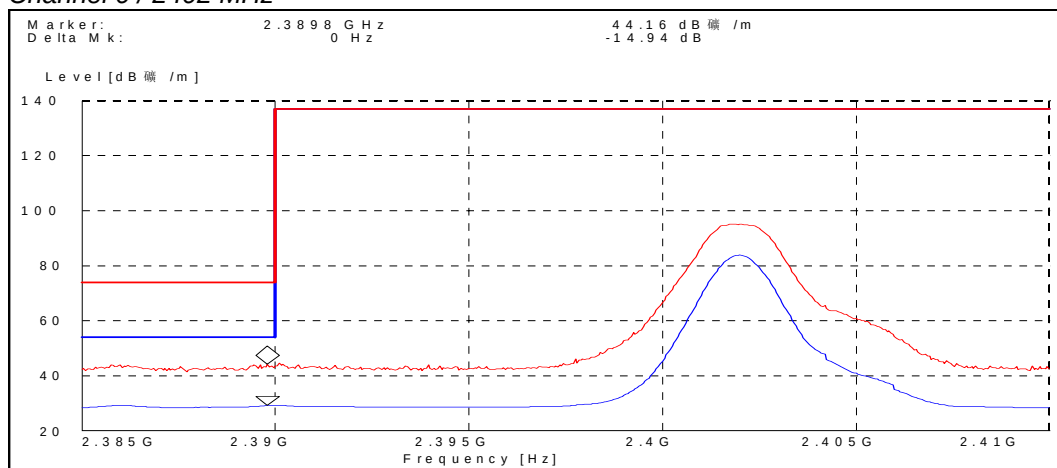
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	29.22	PASSED
78 / 2480	39.73	PASSED
Hopping on, low end	34.82	PASSED
Hopping on, high end	47.06	PASSED

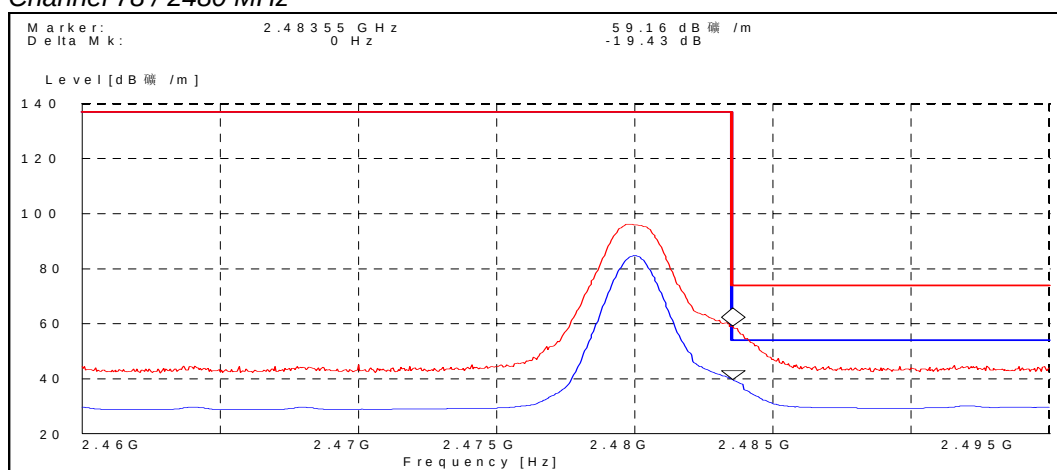
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	44.16	PASSED
78 / 2480	59.16	PASSED
Hopping on, low end	46.72	PASSED
Hopping on, high end	58.27	PASSED

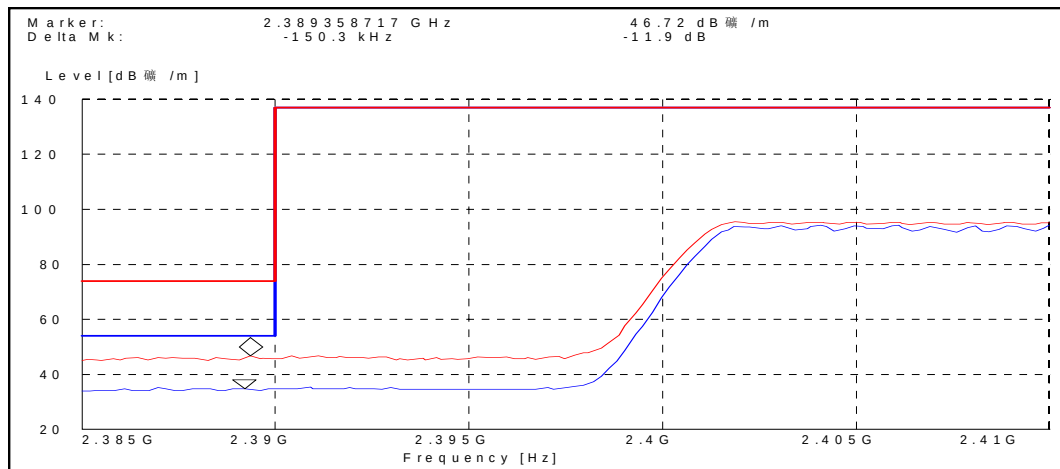
Channel 0 / 2402 MHz



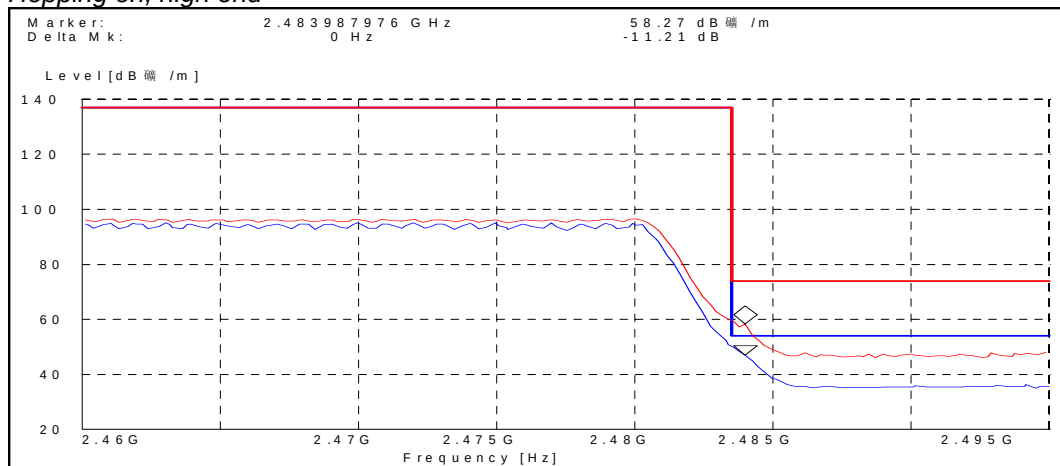
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5)

EUT with DUT number	RM-314,DUT 50677
Accessories with DUT numbers	BP-6MT,DUT 50678;AC-6C,DUT 50660;CA-100C,DUT 50661;HS-43,DUT 50679
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	18 / 72 / 100.3
Date of measurements	12.09.2007
Measured by	Yin Hongpeng

4.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

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:

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

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

Limits for spurious radiated emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit [$\mu\text{V/m}$]	Limit [dB $\mu\text{V/m}$]	Detector
30 – 88	100	40	Quasi peak
88 – 216	150	43.5	Quasi peak
216 – 960	200	46	Quasi peak
960 – 1000	500	54	Quasi peak
Above 1000	500	54	Average
Above 1000	5000	74	Peak

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	55.20	575.44	46.90	8.3	HORIZONTAL	PASSED
7206.000000	48.60	269.15	35.90	12.7	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	43.60	151.36	35.30	8.3	HORIZONTAL	PASSED
7206.000000	35.80	61.66	23.10	12.7	HORIZONTAL	PASSED

Channel 40 / 2442 MHz

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
37.576353	8.40	2.63	34.70	-26.3	VERTICAL	PASSED

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4883.767535	55.90	623.73	48.40	7.5	VERTICAL	PASSED
4883.769539	55.70	609.54	48.20	7.5	VERTICAL	PASSED
7326.151303	48.30	260.02	36.00	12.3	VERTICAL	PASSED
14498.993988	54.80	549.54	31.90	22.9	HORIZONTAL	PASSED
15388.283567	55.70	609.54	30.50	25.2	HORIZONTAL	PASSED
16004.000000	58.60	851.14	31.20	27.4	VERTICAL	PASSED
16198.894790	60.60	1,071.52	31.80	28.8	HORIZONTAL	PASSED
17925.843687	62.50	1,333.52	30.10	32.4	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4883.769539	43.60	151.36	36.10	7.5	VERTICAL	PASSED

4884.267535	43.20	144.54	35.70	7.5	VERTICAL	PASSED
7326.151303	35.40	58.88	23.10	12.3	VERTICAL	PASSED
14494.993988	41.70	121.62	18.80	22.9	HORIZONTAL	PASSED
15393.283567	42.80	138.04	17.60	25.2	HORIZONTAL	PASSED
16001.500000	45.80	194.98	18.40	27.4	VERTICAL	PASSED
16200.894790	47.50	237.14	18.70	28.8	HORIZONTAL	PASSED
17924.843687	49.00	281.84	16.60	32.4	HORIZONTAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	52.50	421.70	47.20	5.3	VERTICAL	PASSED
7440.000000	48.20	257.04	35.90	12.3	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
4960.000000	39.70	96.61	34.40	5.3	VERTICAL	PASSED
7440.000000	35.80	61.66	23.50	12.3	HORIZONTAL	PASSED

4.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	52.00	398.11	43.70	8.3	HORIZONTAL	PASSED
7206.000000	47.20	229.09	34.50	12.7	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
4804.000000	38.90	88.10	30.60	8.3	HORIZONTAL	PASSED
7206.000000	34.60	53.70	21.90	12.7	VERTICAL	PASSED

Channel 40 / 2442 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.535872	14.40	5.25	40.60	-26.2	VERTICAL	PASSED
74.367535	-2.10	0.79	34.70	-36.8	HORIZONTAL	PASSED
74.369940	17.70	7.67	54.50	-36.8	HORIZONTAL	PASSED
242.686974	31.10	35.89	65.00	-33.9	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
4883.769539	51.20	363.08	43.70	7.5	VERTICAL	PASSED
7274.547094	48.20	257.04	35.50	12.7	HORIZONTAL	PASSED

12412.331663	52.80	436.52	32.80	20.0	VERTICAL	PASSED
14496.993988	54.60	537.03	31.70	22.9	HORIZONTAL	PASSED
15450.399800	56.70	683.91	30.90	25.8	HORIZONTAL	PASSED
15983.465932	58.60	851.14	31.20	27.4	HORIZONTAL	PASSED
16195.884770	60.30	1,035.14	31.60	28.7	HORIZONTAL	PASSED
17897.793587	62.00	1,258.93	29.80	32.2	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
4883.769539	36.70	68.39	29.20	7.5	VERTICAL	PASSED
7273.047094	34.80	54.95	22.10	12.7	HORIZONTAL	PASSED
12411.831663	39.90	98.86	19.90	20.0	VERTICAL	PASSED
14498.993988	41.90	124.45	19.00	22.9	HORIZONTAL	PASSED
15452.899800	43.40	147.91	17.60	25.8	HORIZONTAL	PASSED
15980.465932	45.60	190.55	18.20	27.4	HORIZONTAL	PASSED
16196.384770	47.50	237.14	18.80	28.7	HORIZONTAL	PASSED
17896.293587	48.90	278.61	16.80	32.1	HORIZONTAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	48.40	263.03	43.10	5.3	VERTICAL	PASSED
7440.000000	48.50	266.07	36.20	12.3	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
4960.000000	32.00	39.81	26.70	5.3	VERTICAL	PASSED
7440.000000	35.30	58.21	23.00	12.3	VERTICAL	PASSED

5. Test Equipment

5.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0039	LISN	ESH3-Z5	BJPCPT0039	15C, 15B
BJPCPT0040	TEST RECEIVER	ESCS30	BJPCPT0040	15C, 15B
BJPCPT0069	LISN	ESH3-Z5	BJPCPT0069	15C, 15B
BJPCPT0079	LISN	ESH3-Z5	BJPCPT0079	15C, 15B
BJPCPT0191	PULSE LIMITER	ESH3-Z2	BJPCPT0191	15C, 15B

5.2. 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
BJPCTC0046	Shielding Enclosure	3M Test Site	ETS-Lindgren	22/24/27, 15C, 15B
BJPCTC0047	Turntable	Model 2088-1.23	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