

FCC Part 15B Compliance Test Report

Test Report no.:	Cph_FCC_0651_02.doc	Date of Report:	22-12-2006
Number of pages:	12	Customer's Contact person:	Daniela Stenhoff
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FCC listing no.:	99059		
IC recognition no.:	4820 and 4820-1		
Tested devices/ accessories:	Phone; RM-268 (HW: 9000), Battery; BP-6M, AC-Charger; AC-4E, Data Cable; CA-53		
FCC ID:	QTKRM-268	IC:	661AD-RM268
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 and IC standards RSS-132, RSS-133 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:			

Jia Dongsheng, Engineer

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	18-12-2006
Testing completed	22-12-2006
The customer's contact person	Daniela Stenhoff
Test Plan referred to	T:\Projects\RM-268\TestPlan_RS\RS_TestPlan_RM-268.xls
Notes	None
Document name	T:\Projects\RM-268\EMC\Results\FCC\Cph_FCC_0651_02.doc

1.1. EUT and Accessory Information

The EUT is a 3-band (GSM900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. GSM band is tested in idle mode. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-268	353936/01/00001	9000	-	3.00	27742
Battery	BP-6M	0670506393213M442110100083	-	-	-	27743
Data Cable	CA-53	108882605450	-	-	-	27738
AC-Charger	AC-4E	3943495502070122522;0675384	-	-	-	27840

1.2. Summary of Test Results

GSM 1900:

Section in CFR 47	Section in ICES-003 (RSS-133)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	Passed
15.109, a	5.5 (9)	Radiated emissions	Passed

Bluetooth:

Section in CFR 47	Section in ICES-003	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	Passed
15.109, a	5.5	Radiated emissions	Passed

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 Copenhagen Laboratory.

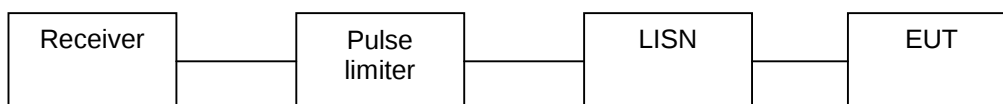
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-268 Dut # 27742
Accessories with DUT numbers	BP-6M Dut # 27743 + AC-4E Dut # 27839 + CA-53 Dut # 27738
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	Continuous data transfer was active between the phone and the computer during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	22.2 / 39.0 1042.2
Date of measurements	22-12-2006
Measured by	Allan F. Henriksen

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:

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

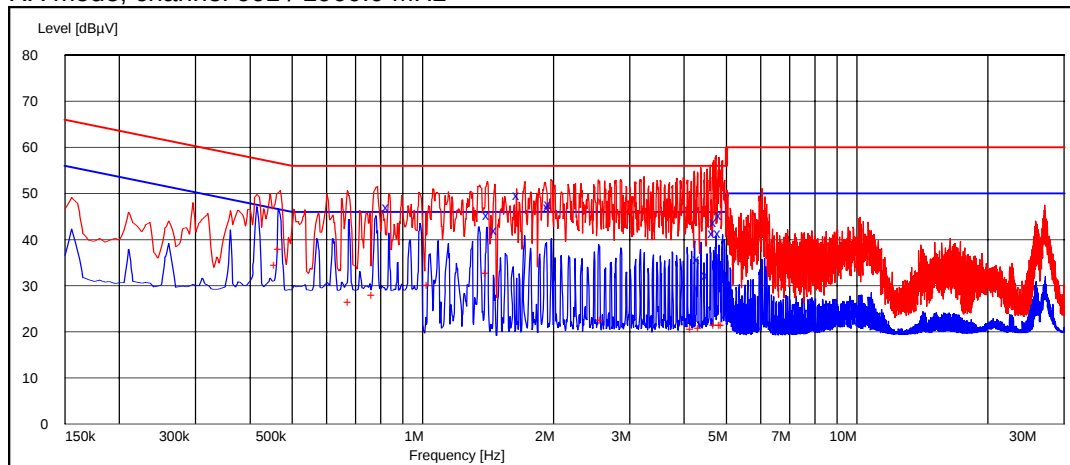
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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 1900 Test results

RX mode, channel 661 / 1960.0 MHz



Quasi peak (RBW: 9 kHz)

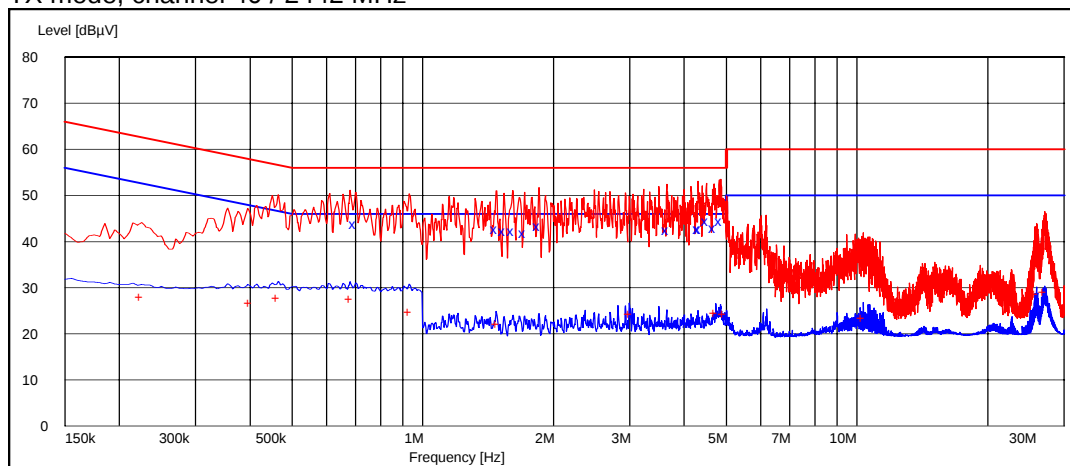
Frequency [MHz]	U [dBμV]	Line	Result
0.835000	47.00	N	Passed
1.420000	45.20	N	Passed
1.480000	42.10	N	Passed
1.670000	49.70	N	Passed
1.960000	47.00	N	Passed
1.970000	47.70	N	Passed
4.335000	35.90	N	Passed
4.545000	32.40	N	Passed
4.700000	41.40	N	Passed
4.745000	43.70	N	Passed
4.855000	41.50	N	Passed
4.885000	45.30	N	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.460000	34.40	N	Passed
0.470000	38.00	N	Passed
0.680000	26.50	N	Passed
0.770000	27.90	L1	Passed
1.035000	30.20	L1	Passed
1.410000	32.80	N	Passed
2.590000	22.50	N	Passed
4.185000	20.50	N	Passed
4.370000	20.70	N	Passed
4.725000	21.40	N	Passed
4.875000	21.40	N	Passed
4.915000	21.40	N	Passed

2.4. Bluetooth Test results

TX mode, channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.700000	43.70	N	Passed
1.480000	42.80	N	Passed
1.545000	42.40	N	Passed
1.615000	42.20	N	Passed
1.720000	41.90	N	Passed
1.860000	43.40	N	Passed
3.670000	42.50	N	Passed
4.335000	42.80	N	Passed
4.370000	42.70	N	Passed
4.535000	44.40	N	Passed
4.715000	42.90	N	Passed
4.885000	44.40	N	Passed

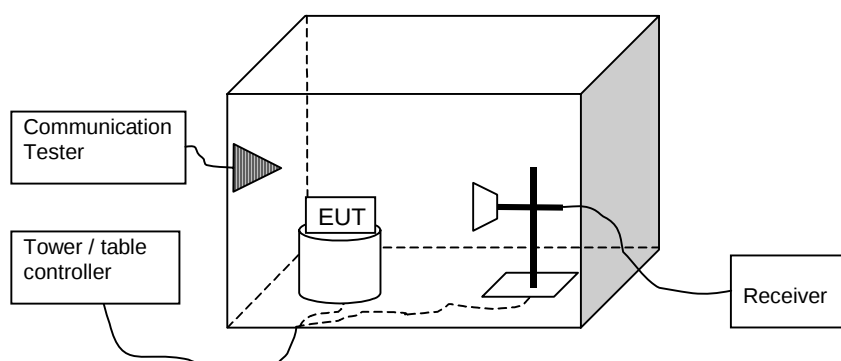
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.225000	28.00	N	Passed
0.400000	26.70	N	Passed
0.465000	27.70	N	Passed
0.685000	27.50	N	Passed
0.935000	24.80	N	Passed
1.490000	22.10	N	Passed
3.010000	24.30	N	Passed
4.730000	24.40	N	Passed
4.955000	24.30	N	Passed
10.350000	23.50	N	Passed
25.925000	28.60	N	Passed
27.060000	29.10	N	Passed

3. Radiated emissions (FCC §15.109, ICES-003 section 5.5, RSS-132 6.6, RSS-133 9)

EUT with DUT number	RM-268 Dut # 27742
Accessories with DUT numbers	BP-6M Dut # 27743 + AC-4E Dut # 27839 + CA-53 Dut # 27738
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	Continuous data transfer was active between the phone and the computer during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	21.7 / 40.5 / 1043.0
Date of measurements	22-12-2006
Measured by	Jia Dongsheng

3.1. 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:

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

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

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. GSM 1900 Test results

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3860.000000	41.80	123.03	44.50	-2.70	VERTICAL	PASSED
7720.000000	41.00	112.20	35.80	5.20	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3860.000000	27.60	23.99	30.30	-2.70	VERTICAL	PASSED
7720.000000	27.90	24.83	22.70	5.20	VERTICAL	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
36.452505	27.30	23.17	44.30	-17.00	VERTICAL	PASSED
54.510020	22.30	13.03	51.70	-29.40	VERTICAL	PASSED
798.997194	26.30	20.65	39.40	-13.10	HORIZONTAL	PASSED
820.039279	16.50	6.68	29.20	-12.70	HORIZONTAL	PASSED
836.173347	16.90	7.00	29.50	-12.60	HORIZONTAL	PASSED
900.499599	16.70	6.84	28.60	-11.90	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1959.919840	53.90	495.45	57.00	-3.10	VERTICAL	PASSED
1959.921844	54.30	518.80	57.40	-3.10	VERTICAL	PASSED
3919.839679	45.60	190.55	48.60	-3.00	VERTICAL	PASSED
7840.181363	43.60	151.36	37.60	6.00	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1618.732465	27.00	22.39	31.40	-4.40	VERTICAL	PASSED
1959.919840	51.60	380.19	54.70	-3.10	VERTICAL	PASSED
1959.921844	51.60	380.19	54.70	-3.10	VERTICAL	PASSED
2295.589178	34.40	52.48	35.40	-1.00	VERTICAL	PASSED
2903.809619	34.10	50.70	30.50	3.60	VERTICAL	PASSED
3919.839679	30.30	32.73	33.30	-3.00	VERTICAL	PASSED
7839.681363	30.10	31.99	24.10	6.00	VERTICAL	PASSED

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3980.000000	45.00	177.83	47.80	-2.80	VERTICAL	PASSED
7960.000000	41.50	118.85	36.20	5.30	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3980.000000	27.40	23.44	30.20	-2.80	VERTICAL	PASSED
7960.000000	28.10	25.41	22.80	5.30	VERTICAL	PASSED

3.4. Bluetooth Test results

TX mode, channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	45.10	179.89	47.10	-2.00	VERTICAL	PASSED
7206.000000	42.50	133.35	38.30	4.20	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	31.40	37.15	33.40	-2.00	VERTICAL	PASSED
7206.000000	30.40	33.11	26.20	4.20	VERTICAL	PASSED

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
31.342886	33.00	44.67	46.70	-13.70	VERTICAL	PASSED
54.888577	24.80	17.38	54.40	-29.60	VERTICAL	PASSED
149.700000	12.40	4.17	39.60	-27.20	HORIZONTAL	PASSED
800.201202	25.50	18.84	38.60	-13.10	HORIZONTAL	PASSED
833.167335	18.40	8.32	30.90	-12.50	HORIZONTAL	PASSED
840.081363	17.90	7.85	30.50	-12.60	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4859.713427	36.50	66.83	38.60	-2.10	VERTICAL	PASSED
4893.779559	47.50	237.14	49.40	-1.90	VERTICAL	PASSED
4897.287575	41.70	121.62	43.60	-1.90	VERTICAL	PASSED
4935.871743	48.50	266.07	50.10	-1.60	VERTICAL	PASSED
4954.917836	42.20	128.82	43.90	-1.70	VERTICAL	PASSED
7341.187375	41.70	121.62	37.00	4.70	VERTICAL	PASSED
7422.337675	44.10	160.32	39.20	4.90	VERTICAL	PASSED
17867.741483	57.90	785.24	32.60	25.30	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4853.213427	24.20	16.22	26.30	-2.10	VERTICAL	PASSED
4888.279559	24.50	16.79	26.40	-1.90	VERTICAL	PASSED
4896.287575	24.50	16.79	26.40	-1.90	VERTICAL	PASSED
4937.871743	25.00	17.78	26.60	-1.60	VERTICAL	PASSED
4957.917836	25.10	17.99	26.70	-1.60	VERTICAL	PASSED
7347.687375	27.90	24.83	23.00	4.90	VERTICAL	PASSED
7415.837675	29.00	28.18	24.00	5.00	VERTICAL	PASSED
17873.741483	44.90	175.79	19.50	25.40	VERTICAL	PASSED

TX mode, channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	43.40	147.91	45.00	-1.60	VERTICAL	PASSED
7440.000000	44.30	164.06	39.40	4.90	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	26.80	21.88	28.40	-1.60	VERTICAL	PASSED
7440.000000	32.50	42.17	27.60	4.90	VERTICAL	PASSED

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	EMI Test Reciever 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15C, 15B
13935	Two Lines Artificial Mains Network	ESH3-Z5	Rohde&Schwarz	15C, 15B
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
19171	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	System DC Power Supply	HP6632A	Hewlett Packard	22/24, 15C, 15B
19678	Spectrum Analyzer 26 GHz	FSP	Rohde&Schwarz	22/24, 15C, 15B
16601	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24, 15C, 15B
19625	Vötsch Climatic Chamber	VT4002EMC	Vötsch	22/24, 15C, 15B
13357	Rohde & Schwartz Signal Generator	SMP02	Rohde&Schwarz	22/24, 15C, 15B

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24, 15C, 15B
	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
18792	Multi Device Controller	2090	ETS-EMCO	22/24, 15C, 15B
14963	RF Preampifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
19830	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24, 15C, 15B
19151	High Pass Filter 3GHz WHK3.0/18G-10ss	WHJS3000-10SS	Wainwright	22/24, 15C, 15B
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright Instruments	22/24, 15C, 15B
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	22/24, 15C, 15B
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483- 2390/2493-35/10SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 4 filter	WRCG1737/1743- 1733/1747-40/6SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 5&6 filter	WRCG832/83/-825/845- 40/5SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 8 filter	WRCG894.6/900.6- 890.6/904.6-40/80SS	Wainwright	22/24, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953- 1940/1960-40/6SS	Wainwright	22/24, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24, 15C, 15B
15190	Infra Red Remote Control Unit	4630	Emco	22/24, 15C, 15B
14993	EMI Test Receiver 9KHz- 2750MHz	ESCS30	Rohde&Schwarz	22/24, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24, 15C, 15B
15105	Attenuator 30dB DC-1000MHz 50 Ohm Nf - Nm	NAT-30	Mini-Circuits	22/24, 15C, 15B
13302	Spectrum Analyzer 9KHz- 12.8GHz	HP8596E	Hewlett Packard	22/24, 15C, 15B
11584	Spectrum analyzer 50Hz- 6,5GHz	HP8561B	Hewlett Packard	22/24, 15C, 15B
13134	Tracking generator	HP85645A	Hewlett Packard	22/24, 15C, 15B
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
11487	Network analyzer 300KHz- 3,0GHz	HP8753A	Hewlett Packard	22/24, 15C, 15B
14807	S - Parameter Test Set 300KHz- 6GHz	HP85047A	Hewlett Packard	22/24, 15C, 15B
17277	Multimeter Digital 6 1/2 Digit	AT34401A	Agilent Technologies	22/24, 15C, 15B