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

FCC Part 22/24 Compliance Test Report

Test Report no.:	Cph_FCC_0514_08.doc	**Date of Report:**	05-04-2005
Number of pages:	13	**Customer's Contact person:**	Thomas Reitmayer
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	**Client:**	Nokia Corporation Lise Meitner Strasse 10 89081 ULM GERMANY Tel. +49 731 1754 0 Fax. +49 731 1754 6800
FCC listing no.: **IC recognition no.:**	99059 4820 and 4820-1		
Tested devices/ accessories:	**Phone; RM-76 (HW: 3851, V.4), Battery; BL-4C, Headset; HS-6, AC-Charger; AC-3**		
FCC ID:	PPIRM-76	**IC:**	661U-RM76
Supplement reports:			
Testing has been carried out in accordance with:	**CFR 47, FCC rules Parts 22 and 24, TIA-603-B-2002 and IC standards 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:	05-04-2005 Allan Frank Henriksen **Allan F. Henriksen** **Test Engineer**		

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

Date of receipt	March 29th 2005
Testing completed	April 5th 2005
The customer's contact person	Thomas Reitmayer
Test Plan referred to	\EMC\TESTPLAN\
Notes	None
Document name	\\satcc01nmp\tcc_salo\Projects\RM-76\results\emc\FCC\Cph_FCC_0514_08.doc

1.1. EUT and Accessory Information

The EUT is a triple band (GSM900/1800/1900) mobile phone with GPRS and EGPRS. 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-76	004400/63/177403/9	3851		3.03	28643
Battery	BL-4C	067038610717244111	-	-	-	28637
AC Charger	AC-3E	0675370409049MO26 01 0000220	1.1	0.3	-	28636
Headset	HS-6	9	2.1	2.1	2.1	28938

1.2. Summary of Test Results

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	NP
§2.1049(h)	5.6	99 % occupied bandwidth	Passed
§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	Passed
§2.1055(d)	7	Frequency stability, voltage variation	Passed

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 Copenhagen Laboratory.

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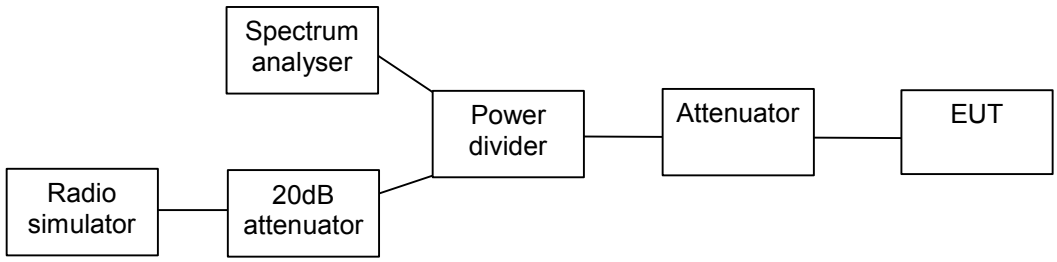
2. 99 % occupied bandwidth

(FCC §2.1049(h), RSS-132 4.2, RSS-133 5.6)

EUT with DUT number	RM-72 dut 28643
Accessories with DUT numbers	HS-6 dut 28938, AC-3 dut 28636, BL-4C dut 28637
Operation Voltage V / Hz	230 VAC / 50 Hz
Result	-
Remarks	None
Temp °C / Humidity RH % / Air Pressure kPa	23.6 / 35.0 1025.6
Date of measurements	04-04-2005
Measured by	Jan Engelbrechtsen

2.1. Test setup



2.2. Test method and limit

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

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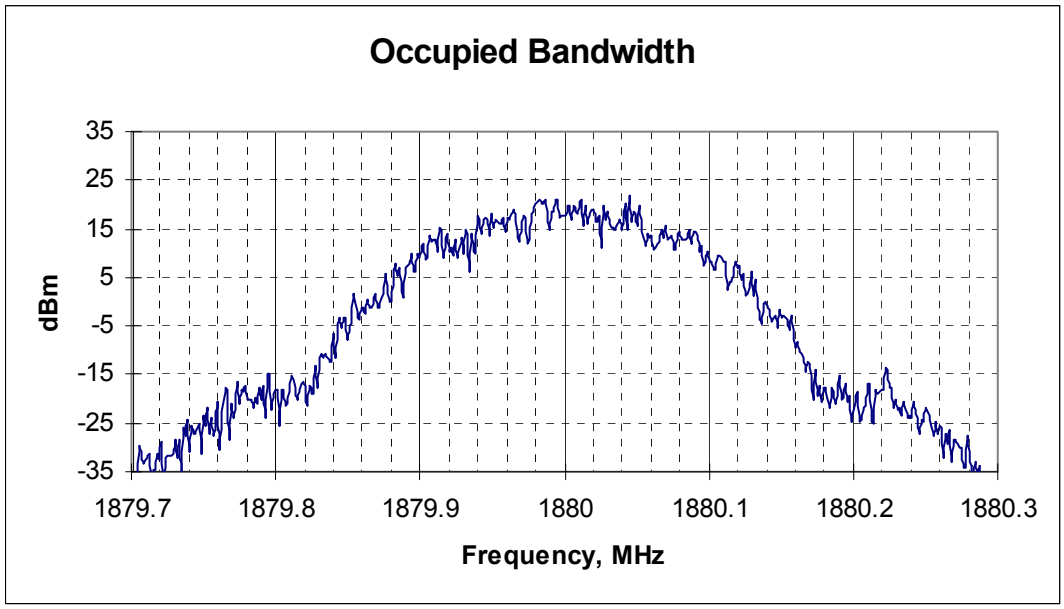
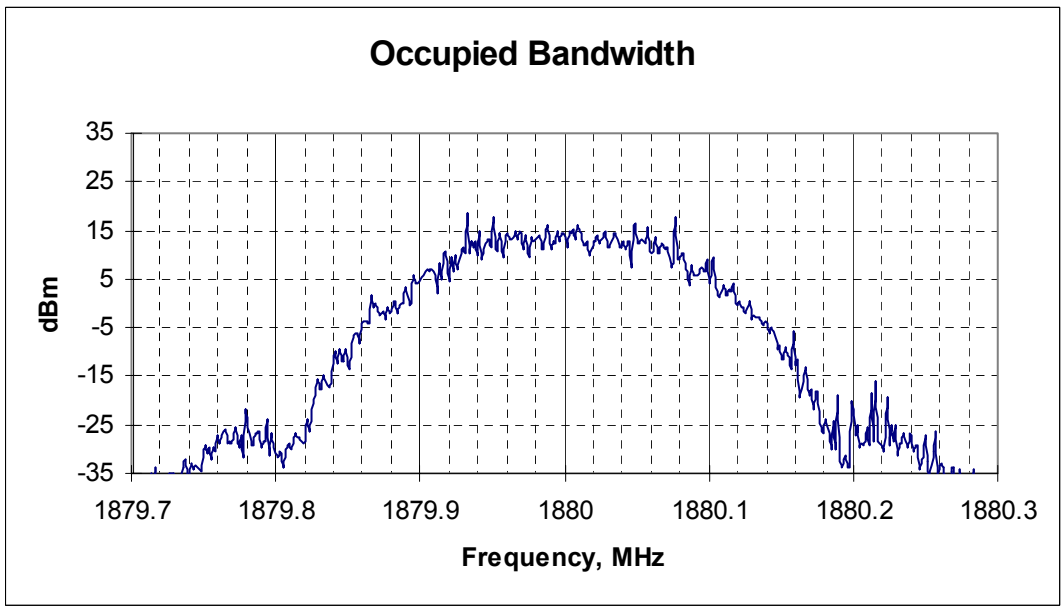
2.3. GSM 1900 Test results

Operation mode (TX on)	99% occupied bandwidth / kHz
GSM	237
EGPRS	238.5

GSM mode, channel 661 RBw = 3KHz, VBw = 30KHz



EGPRS mode, channel 661 RBw = 3KHz, VBw = 30KHz



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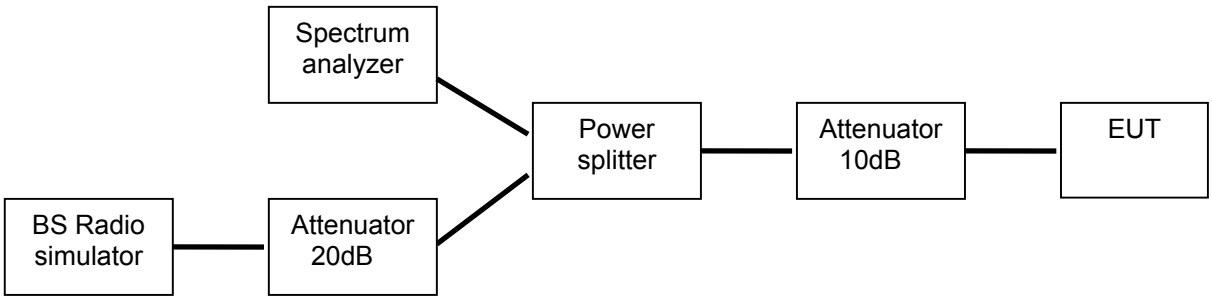
3. Band edge compliance

(FCC §22.917(a), 24.238(a), RSS-132 4.5, RSS-133 6.3)

EUT with DUT number	RM-72 dut 28643
Accessories with DUT numbers	HS-6 dut 28938, AC-3 dut 28636, BL-4C dut 28637
Operation Voltage V / Hz	220 VAC / 50 Hz
Result	Passed
Remarks	None
Temp °C / Humidity RH % / Air Pressure kPa	23.6 / 35.0 1025.6
Date of measurements	04-04-2005
Measured by	Jan Engelbrechtsen

3.1. Test setup



3.2. Test method and limit

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

Limits for band edge compliance measurements

Operation band	Frequency range / MHz	Limit / dBm
GSM 850	Below 824 and above 849	-13
GSM 1900	Below 1850 and above 1910	-13

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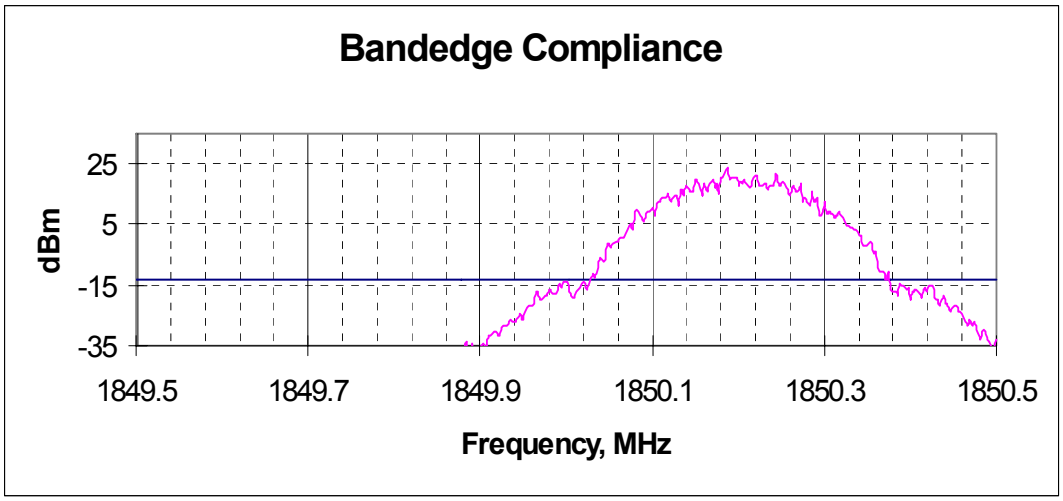
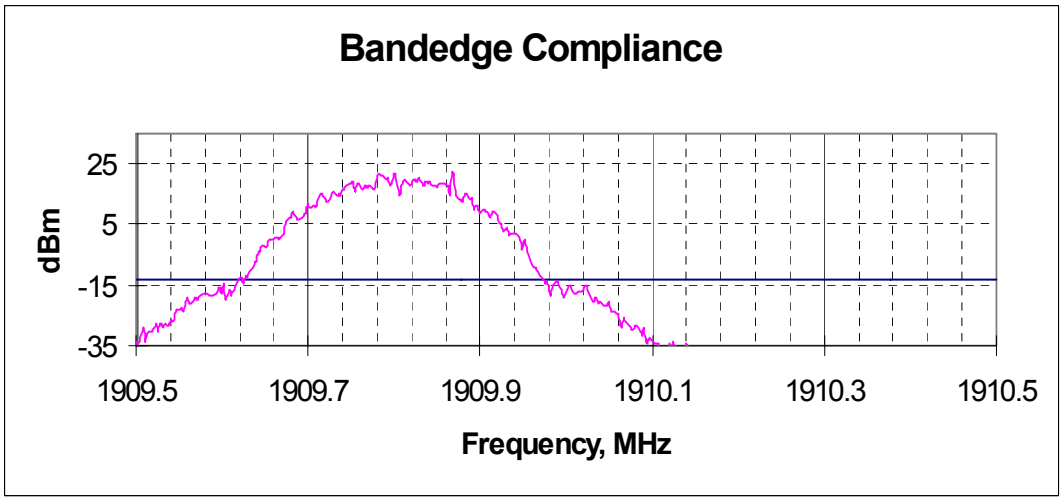
3.3. GSM 1900 Test results

Operation mode (TX on)	Channel	Level / dBm
GSM	512	-13.72
GSM	810	-15.06
EGPRS	512	-18.35
EGPRS	810	-25.3

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



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



EGPRS mode, channel 512 (Peak detector, RBW: 3 kHz)

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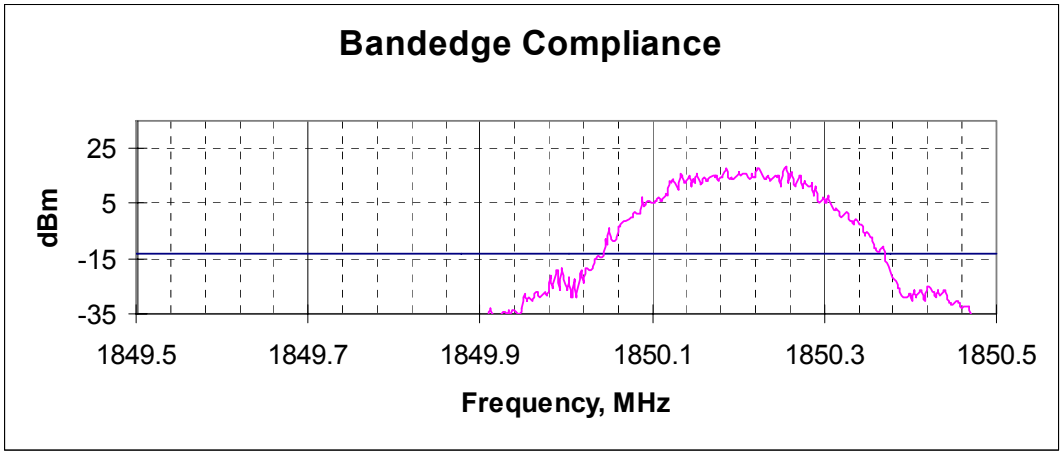
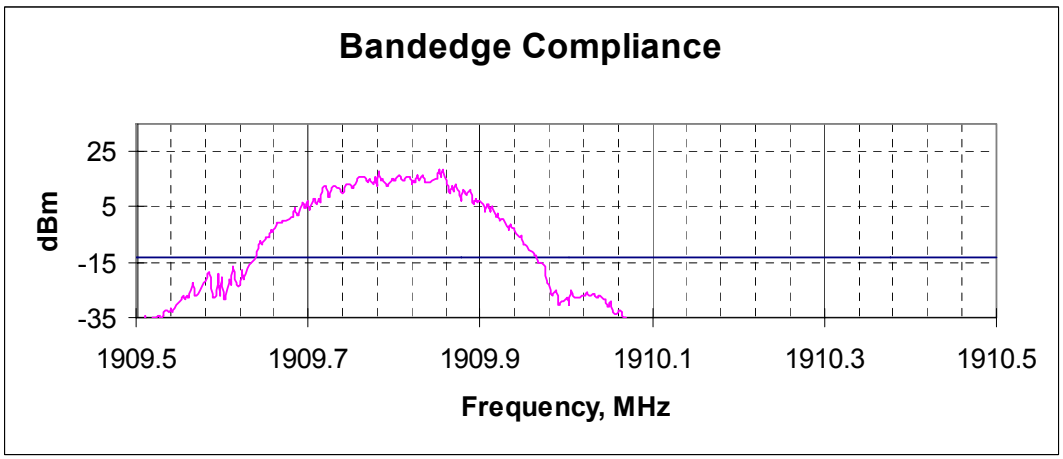


EGPRS mode, channel 819 (Peak detector, RBW: 3 kHz)



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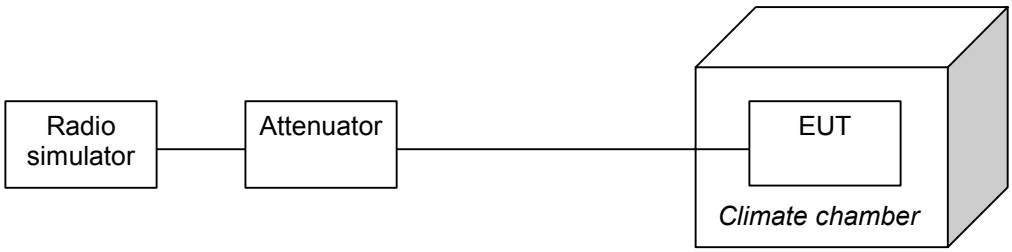
4. Frequency stability, temperature variation

(FCC §2.1055(a), §2.1055(a), RSS-132 4.3, 6.3, RSS-133 7)

EUT with DUT number	RM-72 dut 28643
Accessories with DUT numbers	HS-6 dut 28938, AC-3 dut 28636, BL-4C dut 28637
Operation Voltage V / Hz	220 VAC / 50 Hz
Result	Passed
Remarks	None
Temp °C / Humidity RH % / Air Pressure kPa	23.6 / 35.0 1025.6
Date of measurements	04-05-2005
Measured by	Jan Engelbrechtsen

4.1. Test setup



4.2. Test method and limit

The measurement is made according to FCC rules part 22 and 24 and IC standards RSS-132 and RSS-133 as follows:

a) The EUT is placed in the temperature chamber.
b) The climate chamber temperature is set to the maximum value
c) When set temperature is reached it is allowed to stabilize for 45 minutes
d) The EUT is set to transmit and transmit frequency error is measured immediately
e) EUT is set to idle mode and next chamber temperature is set
f) The steps c - e is repeated for each temperature.

Limits for frequency stability, temperature variation measurements

Frequency deviation / ppm
± 2.5

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4.3. GSM 1900 Test results

GSM mode, channel 661

Temperature / ºC	Deviation / Hz	Deviation / ppm
50	17.1	0.009
40	23.2	0.012
30	-14.3	-0.008
20	20.6	0.011
10	12.62	0.007
0	24.7	0.013
-10	41	0,022
-20	39.6	0.021
-30	74.5	0.040

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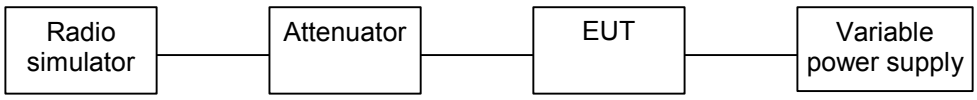
5. Frequency stability, voltage variation

(FCC §2.1055(d), RSS-132 4.3, 6.3, RSS-133 7)

EUT with DUT number	RM-72 dut 28643
Accessories with DUT numbers	HS-6 dut 28938, Dummy battery SD-4
Operation Voltage V / Hz	3.15 – 4 VDC /
Result	Passed
Remarks	None
Temp °C / Humidity RH % / Air Pressure kPa	23.6 / 35.0 1025.6
Date of measurements	04-04-2005
Measured by	Jan Engelbrechtsen

5.1. Test setup



5.2. Test method and limit

The measurement is made according to FCC rules part 22 and 24 and IC standards RSS-132 and RSS-133 as follows:

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.

Limits for frequency stability, voltage variation measurements

Frequency deviation / ppm
± 2.5

5.3. GSM 1900 Test results

GSM mode, channel 661

Voltage level / V	Deviation / Hz	Deviation / ppm
Nominal / 4.0	-18.91	-0.0101
Cut-off point +3% / 3.28	20.53	0.0109

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Test Equipment

5.4. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15B, 15C
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15B, 15C
13666	EMI Test Reciever 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15B, 15C
13935	Two Lines Artificial Mains Network	ESH3-Z5	Rohde&Schwarz	15B, 15C
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15B, 15C
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15B, 15C
19171	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15B, 15C
11386	System DC Power Supply	HP6632A	Hewlett Packard	22.24
11487	Network analyzer 300KHz-3,0GHz	HP8753A	Hewlett Packard	22.24
11584	Spectrum analyzer 50Hz-6,5GHz	HP8561B	Hewlett Packard	22.24
13134	Tracking generator	HP85645A	Hewlett Packard	22.24
13302	Spectrum Analyzer 9KHz-12.8GHz	HP8596E	Hewlett Packard	22.24
13371	Temperature Chamber	S-1,2C	Thermotron	22.24
13524	Digital Radiocomm. Tester	CMD55	Rohde&Schwarz	22.24
14807	S - Parameter Test Set 300KHz-6GHz	HP85047A	Hewlett Packard	22.24
15859	Digital Radio Communication Test Set	4201S	Wavetek	22.24
17277	Multimeter Digital 6 1/2 Digit	AT34401A	Agilent Technologies	22.24
17796	Radio Communication Test Set	4400M	Wavetek	22.24
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-	NMP Cph	22.24
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-	NMP Cph	22.24
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15B,15C

5.5. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
14020	Programmable Relay Switching System	-	Pickering	15B,15C,22,24
18792	Multi Device Controller	2090	ETS-EMCO	15B,15C,22,24
13829	Turntable Controller	4630-100	Comtest	15B,15C,22,24
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	15B,15C,22,24
13668	BiLog Antenna 30-2000MHz	BiLog-CBL6112A	Chase	15B,15C,22,24
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	15B,15C,22,24
12679	Dual Log Periodic Antenna 1-18	HL025	Rohde&Schwarz	15B,15C,22,24

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Eq. No	Equipment	Type	Manufacturer	Used in
	GHz			
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	15B,15C,22,24
18773	Shielded Chamber	RFD-100	ETS-Lindgren	15B,15C,22,24
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	15B,15C,22,24
18324	High Pass Filter 3GHz SMA f Conn	WHJS3000-10SS	Wainwright	15B,15C,22,24
14114	Highpass Filter 1000MHz-4500MHz	WHK1000-12SS	Wainwright	15B,15C,22,24
13918	Highpass Filter 2000-4000MHz 50OHM SMA Conn	WHKS2000-10SS	Wainwright Instruments	15B,15C,22,24
13937	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	15B,15C,22,24
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	15B,15C,22,24
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	15B,15C,22,24
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	15B,15C,22,24
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	15B,15C,22,24
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	15B,15C,22,24
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	15B,15C,22,24
15190	Infra Red Remote Control Unit	4630	Emco	22,24,15B,15C
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	Rohde&Schwarz	22,24,15B,15C
15191	Turntable Contoller Unit	G-800SDX	YAESU	22,24,15B,15C
14900	Antenna Controller	HD100	HD GmbH	22,24,15B,15C

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