

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CFMTX_RM-679_08.docx	Date of Report:	08-Apr-2011
Number of pages:	14	Customer's Contact person:	Li Hongwei-Henry
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FCC listing no.:			
IC recognition no.:			
Tested devices/ accessories:	Phone RM-679 / Battery BL-4D / AC-charger AC-10C / Charging data cable CA-100C		
FCC ID:	QTLRM-679	IC:	661AB-RM679
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-210 (Issue 8, December 2010). 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 15C Compliance Test Report

Date of receipt	07-Mar-2011
Testing completed	02-Apr-2011
The customer's contact person	Li Hongwei-Henry
Test Plan referred to	T:\Projects\RM-679\TestPlan\RS_testplan_RM-679.xls
Notes	-
Document name	FCC15CFMTX_RM-679_08.docx

1.1. EUT and Accessory Information

The EUT is a 5-band (GSM850/900/1800/1900) and TD-SCDMA Band I/II mobile phone with GPRS, EGPRS, HSDPA and WLAN and Bluetooth and FM transmitter. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-679	008600080055923	0301	-	021.002	52100
Battery	BL-4D	4620401012N10312266;0670605	-	-	-	52101
AC-charger	AC-10C	3997910096012001230;0675412	-	-	-	52108
Charging data cable	CA-100C	07303390131L2605514	-	-	-	52109

1.2. Summary of Test Results

FM TX:

Section in CFR 47	Section in RSS-210	Name of the test	Result
15.239(a)	A2(0.8)	Field strength of the fundamental signal	PASSED
15.239(c)	A2(0.8)	Spurious radiated emissions	PASSED
15.207	6.6	AC powerline conducted emissions	PASSED
15.239(a)	A2(0.8)	26dB(bandwidth)	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 Laboratory.

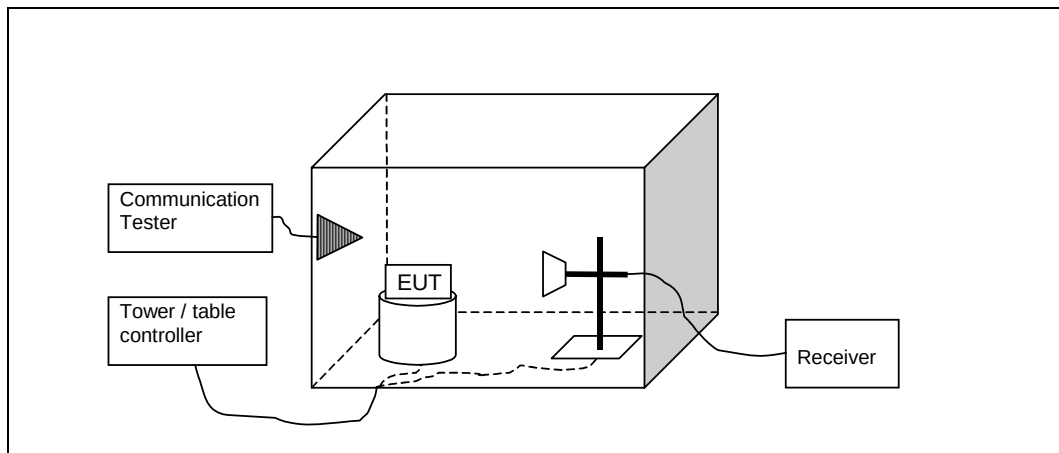
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2. Field strength of the fundamental signal (FCC §15.239(a), RSS-210 A2.8)

EUT with DUT number	RM-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 29 / 101.3
Date of measurements	31-Mar-2011
Measured by	Jia Dongsheng

2.1.1 Test Setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4 and IC standard RSS-210.

Limits for field strength of the fundamental signal measurements (3 m measurement distance)

Limit [$\mu\text{V/m}$]	Limit [$\text{dB}\mu\text{V/m}$]	Detector
250	48	Average
2500	68	Peak

2.3. FMTX Test results

Middle channel / 98.0 MHz

Peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
98.04	28.48	26.537	51.76	-23.28	VERTICAL	PASSED

Average (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
97.98	22.98	14.09	46.27	-23.29	VERTICAL	PASSED

High channel / 107.9 MHz

Peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
107.861	41.9	124.48	63.65	-21.75	VERTICAL	PASSED

Average (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
107.921	37.31	73.384	59.06	-21.75	VERTICAL	PASSED

Low channel / 88.1 MHz

Peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
88.08	27.38	23.396	51.2	-23.82	HORIZONTAL	PASSED

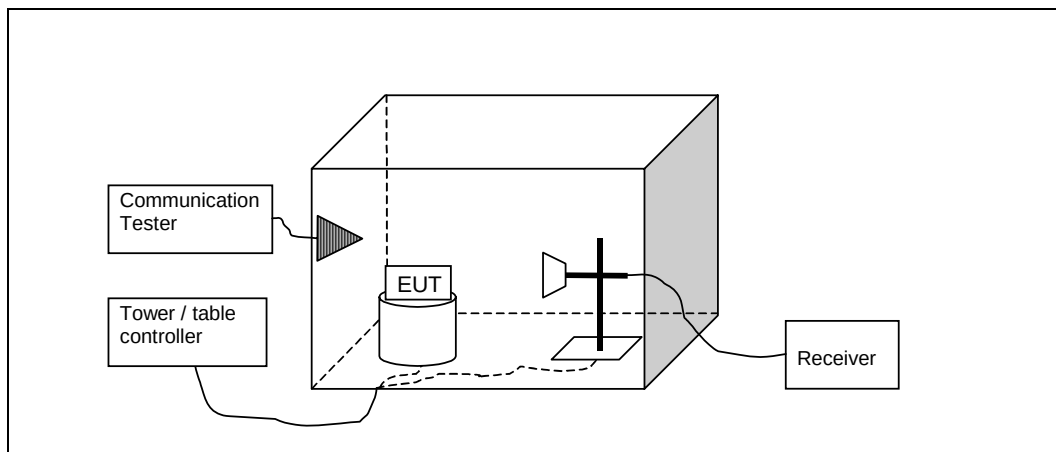
Average (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
88.08	22.89	13.949	46.71	-23.82	HORIZONTAL	PASSED

3. Spurious radiated emissions (FCC §15.239(c), RSS-210 A2.8)

EUT with DUT number	RM-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 29 / 101.3
Date of measurements	31-Mar-2011
Measured by	Jia Dongsheng

3.1.1 Test Setup



3.2. Test method and limit

The measurement is made according to ANSI C63.4 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 ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

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

Frequency range [MHz]	Limit [$\mu V/m$]	Limit [dB $\mu V/m$]	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
1000 - 1100	500	54	Average
1000 - 1100	5000	74	Peak

Spurious radiated emissions shall not exceed the field strength of the fundamental signal at any frequencies.

3.3. FMTX Test results

Middle channel / 98.0 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.473	21.27	11.568	24.09	-2.82	HORIZONTAL	PASSED
31.01	21.49	11.871	24.69	-3.2	VERTICAL	PASSED
31.16	21.55	11.952	24.86	-3.31	VERTICAL	PASSED
31.623	21.46	11.83	25.1	-3.64	HORIZONTAL	PASSED
31.64	21.53	11.923	25.19	-3.66	HORIZONTAL	PASSED
31.873	21.44	11.803	25.26	-3.82	VERTICAL	PASSED
32	21.43	11.784	25.34	-3.91	HORIZONTAL	PASSED
32.15	21.47	11.848	25.49	-4.02	VERTICAL	PASSED
63.746	12.82	4.373	32.84	-20.02	VERTICAL	PASSED
63.916	23.11	14.302	43.13	-20.02	VERTICAL	PASSED

Low channel / 88.1 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
176.2	11.38	3.705	29.4	-18.02	VERTICAL	PASSED
264.3	10.88	3.497	26.65	-15.77	HORIZONTAL	PASSED
352.4	13.48	4.722	26.44	-12.96	VERTICAL	PASSED

High channel / 107.9 MHz

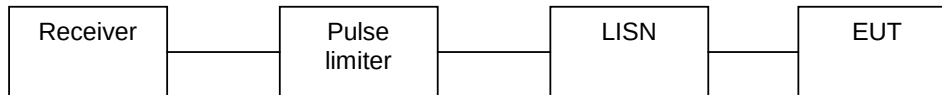
Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
215.8	10.95	3.527	28.41	-17.46	HORIZONTAL	PASSED
323.7	16.62	6.773	30.37	-13.75	VERTICAL	PASSED
431.6	15.3	5.824	26.44	-11.14	HORIZONTAL	PASSED

4. AC powerline conducted emissions (FCC §15.207, RSS-210 6.6)

EUT with DUT number	RM-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 25 / 101.4
Date of measurements	30-Mar-2011
Measured by	Jia Dongsheng

4.1. Test Setup



4.2. Test method and limit

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

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

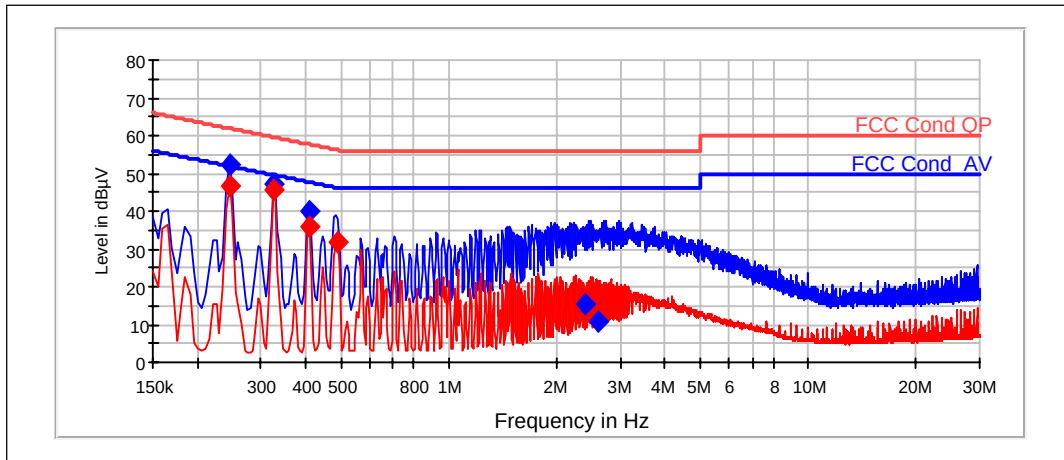
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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

4.3. FM TX Test results

Middle channel / 98.0 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	52.15	N	PASSED
0.325	47.28	N	PASSED
0.41	40.16	N	PASSED
2.405	15.17	N	PASSED
2.62	10.51	N	PASSED

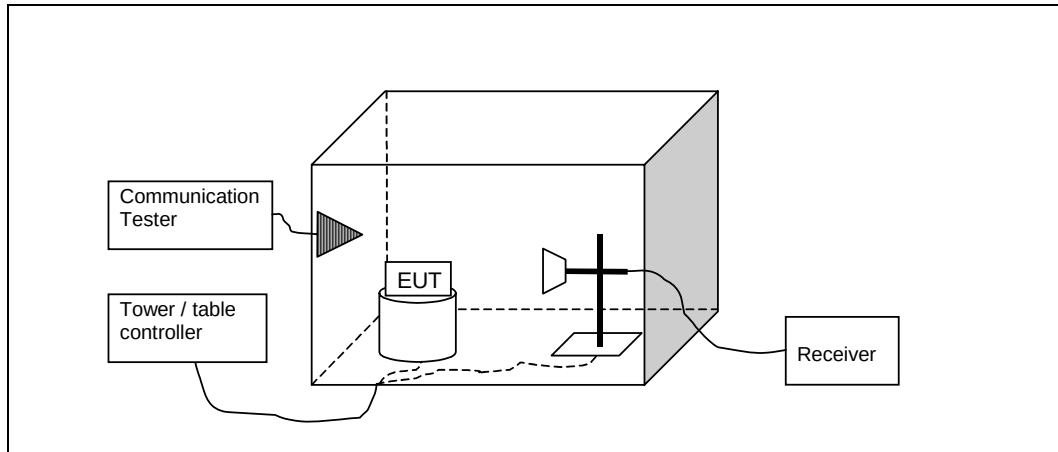
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	46.78	N	PASSED
0.325	45.39	N	PASSED
0.41	35.87	N	PASSED
0.49	31.92	N	PASSED

5. 26dB bandwidth (FCC §15.239(a), RSS-210 A2.8)

EUT with DUT number	RM-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 34 / 102.4
Date of measurements	02-Apr-2011
Measured by	Jia Dongsheng

5.1.1 Test Setup



5.2. Test method and limit

The measurement is made according to ANSI C63.4 and IC standard RSS-210.

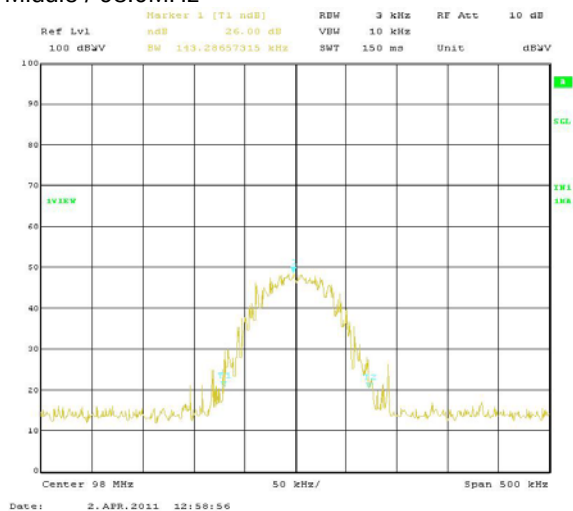
Limits for 26 dB bandwidth measurements

Limit [kHz]
<200

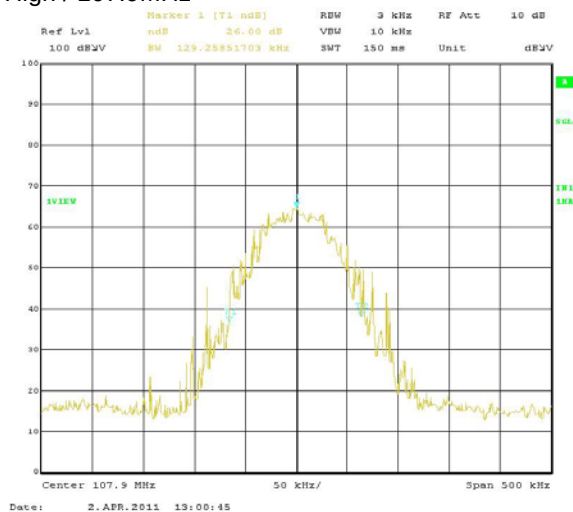
5.3. FMTX Test results

Channel / f _c [MHz]	26 dB bandwidth [kHz]	Result
Middle / 98.0	143.286	PASSED
High / 107.9	129.258	PASSED
Low / 88.1	134.268	PASSED

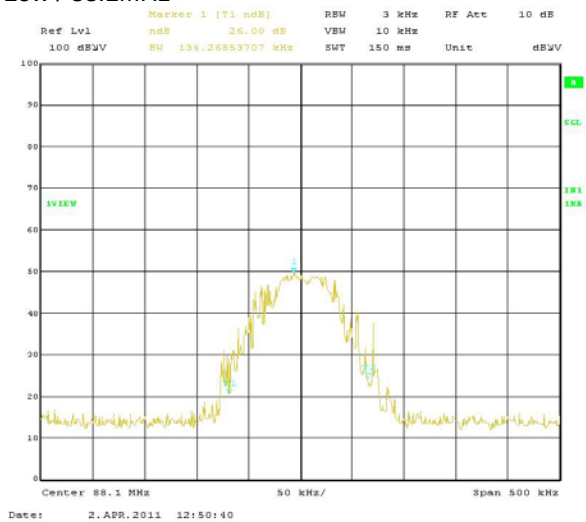
Middle / 98.0MHz



High / 107.9MHz



Low / 88.1MHz



6. Test Equipment

6.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C,15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0079	LISN 50 μ H	ESH3-Z5	R&S	15C,15B
BJPCPT0131	Communication Tester	CMU200	R&S	15C,15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C,15B
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0089	Temperature Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPIO-RS232 convertor	GPIO-RS232	NI	22/24/27, 15C
BJPCTC0112	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0114	Signal Generator	E8357C	Agilent	22/24/27, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C

6.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCPT0072	Receiver	ESI B26	R&S	22/24/27, 15C, 15B
BJPCPT0130	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
BJPCPT0150	High Pass Filter	WHKS1200-10SS	Wainwright	22/24/27, 15C, 15B
BJPCPT0151	Band Reject Filter	WRCD1880/2000-0.2/40-5SSK	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright	15C, 15B
BJPCPT0162	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0007	Antenna	HL562	R&S	22/24/27, 15C, 15B
BJPCTC0029	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0034	Band Reject Filter	WRCT 800/880-0.2/40-5SSK	Wainwright	22, 15B
BJPCTC0049	Preamplifier	Blma 0118-1A-Bt	Bonn	22/24/27, 15C, 15B
BJPCTC0055	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0058	Bluetooth Tester	CBT	R&S	15C, 15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 15B
BJPCTC0065	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS	22/24/27, 15C, 15B
BJPCTC0073	MAST	Model-TR/POL	ETS	22/24/27, 15C, 15B
BJPCTC0074	MAST	Model 2070-2	ETS	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2188	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0096	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
BJPCTC0113	Receiver	ESI B26	R&S	22/24/27, 15B, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C