

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CNFC_RM-849_12.docx	Date of Report:	28-May-2012
Number of pages:	14	Customer's Contact person:	Hu Dongji
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	Customer:	Nokia Corporation Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550
FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-849 / Battery BP-3L		
FCC ID:	QTLRM-849	IC:	661AB-RM849
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:			

Gao Sherina,Engineer,EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	27-Apr-2012
Testing completed	25-May-2012
The customer's contact person	Hu Dongji
Test Plan referred to	T:\Projects\RM-849\TestPlan\RS_testplan_RM-849.xls
Notes	-
Document name	FCC15CNFC_RM-849_12.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/WCDMA/WLAN/Bluetooth

The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-849	004402138942945	2035	-	1100.0000.8773.12150	52703
Battery	BP-3L	3932131515450172308;0670635	-	-	-	52723
Phone	RM-849	004402138943786	2035	-	1100.0000.8773.12150	52709
Dummy battery	-	-	-	-	-	52716
Phone	RM-849	004402138942879;059P3M1	2035	-	1100.0000.8773.12150	52727
Battery	BP-3L	3932131515450172307;0670635	-	-	-	52710
AC Charger	AC-50E	4090492071260400827;0675619	-	-	-	52718
USB data cable	CA-190CD	07304571506G2F	-	-	-	52720

1.2. Summary of Test Results

NFC:

Section in CFR 47	Section in RSS-210	Name of the test	Result
15.209	2.7	Radiated Emission	PASSED
15.225(a)	A2.6	Radiated Emission	PASSED
		Occupied Bandwidth	PASSED
15.225(e)	A2.6	Frequency Stability	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.

CONTENTS

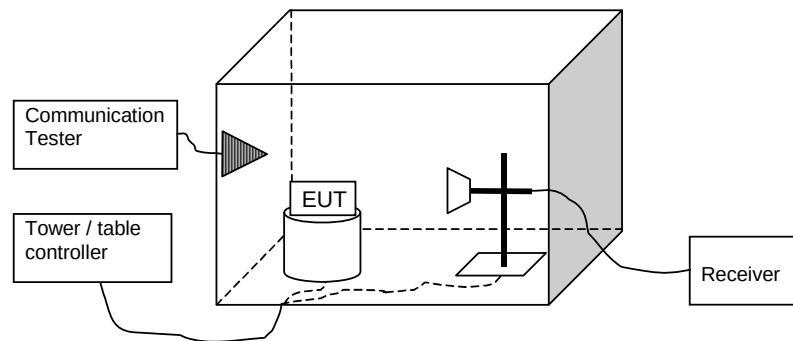
1. Summary for FCC Part 15C Compliance Test Report.....	2
1.1. EUT and Accessory Information.....	2
1.2. Summary of Test Results.....	2
1. Test setups.....	4
1.1. Frequency Stability test setup	4
1.2. Radiated Emission 30 to 1000 MHz	4
1.3. Radiated Emission 9 kHz to 30 MHz	4
1.4. AC power line conducted emissions test setup	5
2. Radiated Emissions 9 kHz – 30 MHz	6
2.1. Test Setup.....	6
2.2. Test method and limit.....	6
2.3. Spurious below 30MHz	7
2.4. Fundamental Power	8
3. Radiated Emissions 30 - 1000MHz.....	9
3.1. Test Setup.....	9
3.2. Test method and limit.....	9
3.3. Spurious above 30MHz.....	10
4. 26dB bandwidth	11
4.1. Test Setup.....	11
4.2. Test method and limit.....	11
4.3. NFC Test results	11
5. Frequency stability, temperature variation (FCC §15.225 (e) [2], RSS-210 A2.6.....	12
5.1. Test Setup.....	12
5.2. Test method and limit.....	12
5.3. NFC Test results	12
6. Frequency stability, voltage variation (FCC §15.225 (e) [2], RSS-210 A2.6.....	13
6.1. Test Setup.....	13
6.2. Test method and limit.....	13
6.3. NFC Test results	13
7. Test Equipment.....	14
7.1. Conducted measurements	14
7.2. Radiated measurements	14

1. Test setups

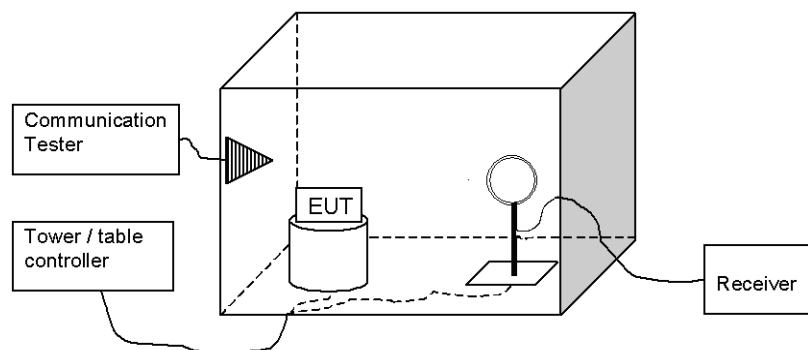
1.1. Frequency Stability test setup



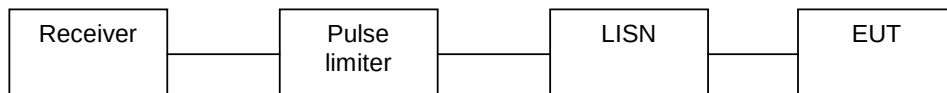
1.2. Radiated Emission 30 to 1000 MHz



1.3. Radiated Emission 9 kHz to 30 MHz



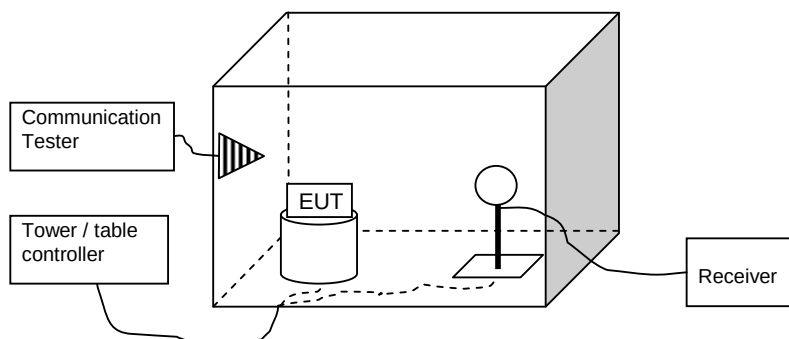
1.4. AC power line conducted emissions test setup



2. Radiated Emissions 9 kHz – 30 MHz

EUT with DUT number	RM-849, DUT 52727
Accessories with DUT numbers	BP-3L, DUT 52710 ; AC-50E, DUT 52718 ; CA-190CD, DUT 52720
Result	PASSED
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/100.7
Date of measurements	18-May-2012
Measured by	Zou Ming

2.1. Test Setup

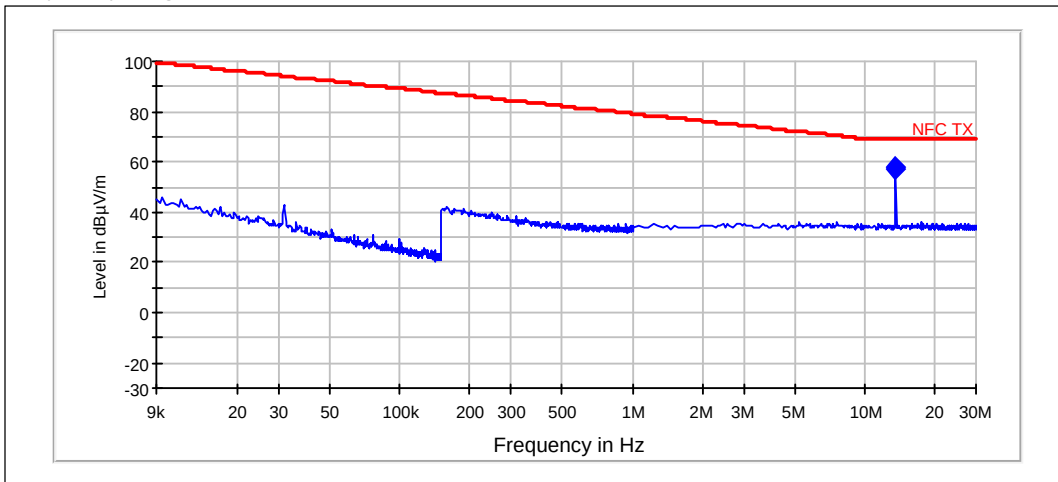


2.2. Test method and limit

The measurement is made according to FCC rules part 15.225 and IC standard RSS-210 Section 2.7

2.3. Spurious below 30MHz

Frequency range 9 kHz...30 MHz

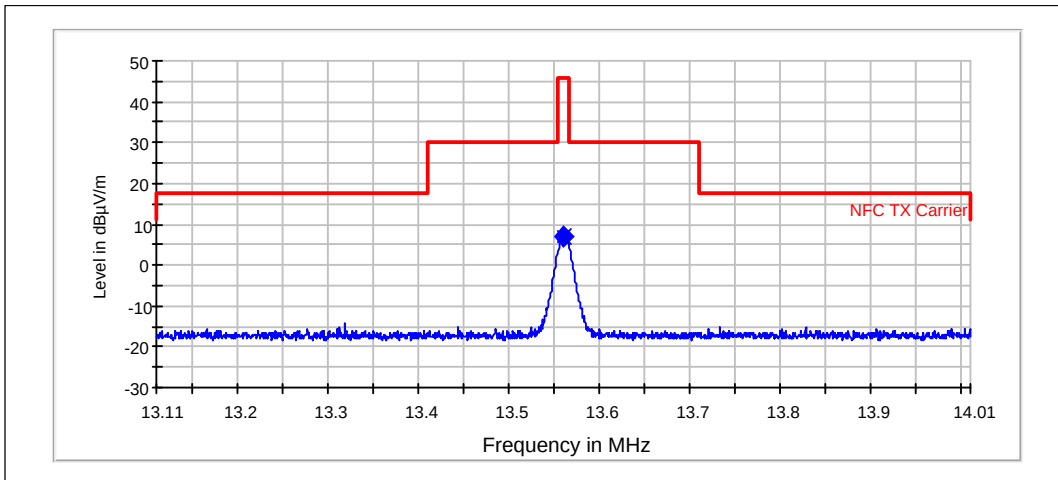


The highest values (QuasiPeak)

Frequency [MHz]	Level[dBm]	Margin[dB]	Azimuth[deg]	Elevation [deg]	Polarisation	Result
13.56	57.98	11	11	0	H	PASSED
13.563	56.91	12.1	10	0	H	PASSED

2.4. Fundamental Power

Radiated H-Field, 3 meter distance



*Picture correct Level is dBuA/m

QuasiPeak

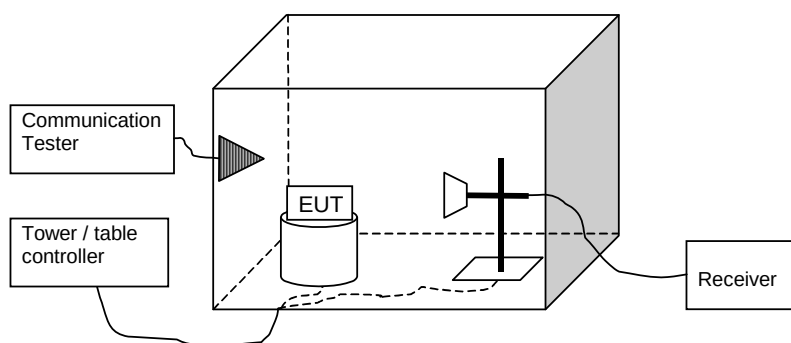
Frequency [MHz]	Reading [dBμV]	Correction [dB]	Result [dBμA/m]	Limit [dBμA/m]	Margin [dB]	Result
13.56	38.4	-31.5	6.9	46	-39.1	PASSED

*Correction = -51.5(Conversion dBμV -> dBμA) + 20dB (Antenna Gain)

3. Radiated Emissions 30 - 1000MHz

EUT with DUT number	RM-849, DUT 52727
Accessories with DUT numbers	BP-3L, DUT 52710 ; AC-50E, DUT 52718 ; CA-190CD, DUT 52720
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/100.7
Date of measurements	18-May-2012
Measured by	Zou Ming

3.1. Test Setup

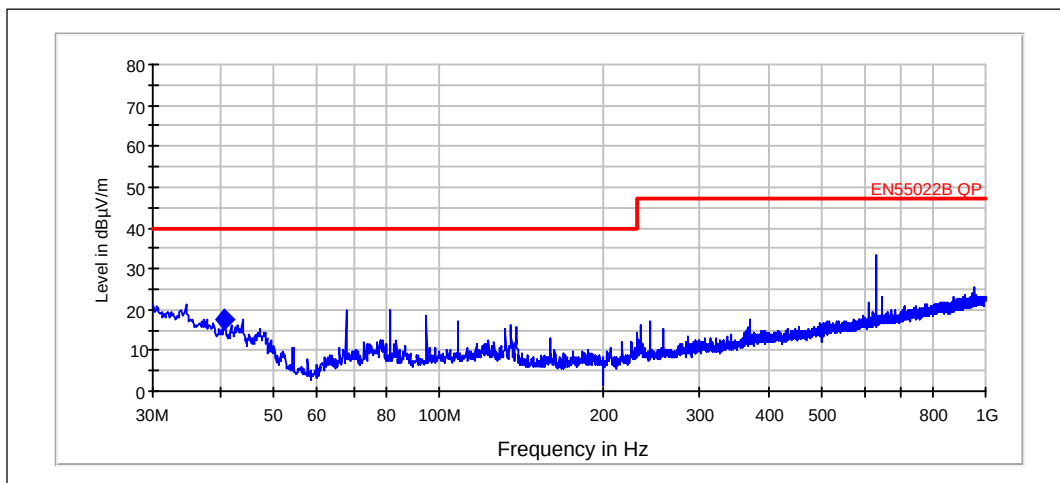


3.2. Test method and limit

The measurement is made according to FCC rules part 15.225 and IC standard RSS-210 Section 2.7

3.3. Spurious above 30MHz

Frequency range 30...1000 MHz



4. 26dB bandwidth

EUT with DUT number	RM-849, DUT 52703
Accessories with DUT numbers	BP-3L, DUT52723
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/35/100.6
Date of measurements	25-May-2012
Measured by	Gao Sherina

4.1. Test Setup

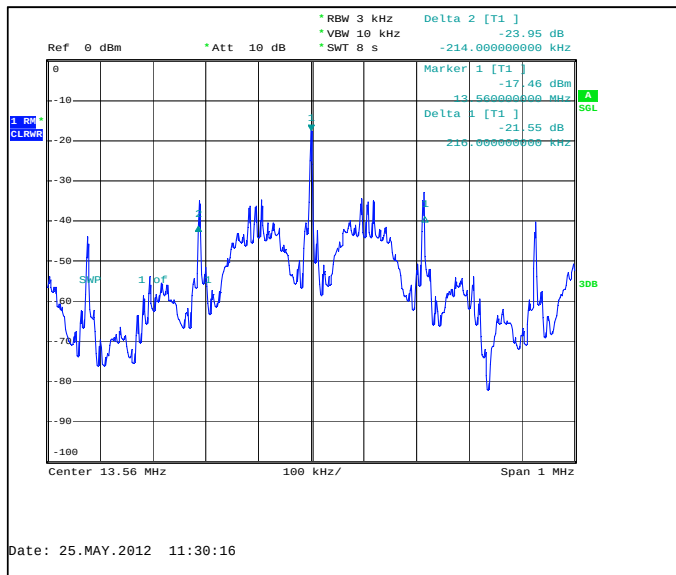
A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer.

4.2. Test method and limit

The Test was carried out with the EUT in Test mode with modulation on.

4.3. NFC Test results

NFC TX Frequency = 13.56 MHz



Operation mode (TX on)	Occupied bandwidth [kHz]
NFC, modulated	430

5. Frequency stability, temperature variation (FCC §15.225 (e) [2], RSS-210 A2.6)

EUT with DUT number	RM-849, DUT 52703
Accessories with DUT numbers	BP-3L, DUT 52723
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/40/101.1
Date of measurements	09-May-2012
Measured by	Gao Sherina

5.1. Test Setup

The EUT was placed in a Climatic Chamber. A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer. Measurement performed without modulation on TX.

5.2. Test method and limit

The measurement is made according to FCC rules FCC 47 CFR Part 15 section 15.225 (e) [2] and RSS-210 A2.6

- The EUT is placed in the chamber in transmit mode.
- The climate chamber temperature is set to the maximum value and allowed to stabilize.
- The transmit frequency is measured.
- Temperature is lowered to the next temperature value and allowed to stabilize.
- The steps c - d is repeated for each temperature.

Limits for frequency stability, temperature variation measurements

Frequency deviation [%]
+/- 0.01

5.3. NFC Test results

NFC TX Frequency = 13.56 MHz

Temperature [°C]	Frequency [MHz]	Deviation [kHz]	Deviation [%]	Result
50	13.560885	0.885	0.006527	PASSED
40	13.560888	0.888	0.006549	PASSED
30	13.560784	0.784	0.005782	PASSED
20	13.560646	0.646	0.004764	PASSED
10	13.560566	0.566	0.004174	PASSED
0	13.560399	0.399	0.002942	PASSED
-10	13.560617	0.617	0.004550	PASSED
-20	13.560522	0.522	0.003850	PASSED
-30	13.560106	0.106	0.000782	PASSED

6. Frequency stability, voltage variation (FCC §15.225 (e) [2], RSS-210 A2.6)

EUT with DUT number	RM-849, DUT 52709
Accessories with DUT numbers	DUT52716
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22/44/100
Date of measurements	15-May-2012
Measured by	Gao Sherina

6.1. Test Setup

A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer.

6.2. Test method and limit

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at +5% and -15%. Measurement performed without modulation on TX.

Limits for frequency stability, voltage variation measurements

Frequency deviation [%]
+/- 0.01

6.3. NFC Test results

NFC TX Frequency = 13.56 MHz

Voltage [V]	Frequency [MHz]	Deviation [kHz]	Deviation [%]	Result
4.2	13.560441	0.441	0.003252	PASSED
3.7	13.560616	0.616	0.004543	PASSED
3.4	13.559841	-0.159	-0.001173	PASSED

7. Test Equipment

7.1. 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	GPB-RS232 convertor	GPB-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

7.2. 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
BJPCTC0124	Attenuator	SA18N200W-40	Fairview Microwave	-