

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-1014_13.docx	Date of Report:	19-Jun-2014
Number of pages:	11	Customer's Contact person:	Qiu Rain
Testing laboratory:	TCC Microsoft 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:	Microsoft Mobile Oy 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-1014 / Battery BV-5S / Charger AC-20E / Headset WH-108		
FCC ID:	QTLRM-1014	IC:	
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), CISPR 22, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009). 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 Microsoft.		
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, Manager

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	22-Apr-2014
Testing completed	15-May-2014
The customer's contact person	Qiu Rain
Test Plan referred to	T:\Projects\RM-1013\TestPlan\RS_testplan_RM-1013.xlsm
Notes	-
Document name	FCC15B_RM-1014_13.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.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-1013	SIM1:004402477644862;SIM2:004402477644870	0211	-	1.1415.103_ta	54314
Battery	BV-5S	4955404074040105278;0670718	-	-	-	54318
Charger	AC-20E	4868673306350600477;0675628	-	-	-	54320
Headset	WH-108	3395571	-	-	-	54323
Phone	RM-1013	SIM1:004402477644680; SIM2004402477644698	0211	-	1.1415.103_ta	54313
Battery	BV-5S	4955404074040105277;0670718	-	-	-	54317
Charger	AC-20E	4868673306310604923;0675628	-	-	-	54319
Headset	WH-108	3395571	-	-	-	54324

1.2. Summary of Test Results

GSM850:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	PASSED
15.109, a	6.1	Radiated emissions	PASSED

GSM1900:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	NP
15.109, a	6.1	Radiated emissions	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 Microsoft Laboratory.

The test results of RM-1013 are re-used for certification of the QTLRM-1014. The table above indicates the results, which will be re-used.

CONTENTS

1. Summary for FCC Part 15B Compliance Test Report.....	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. AC powerline conducted emissions (FCC §15.107, a, RSS-GEN, section 7.2.4).....	4
2.1. Test Setup	4
2.2. Test method and limit	4
2.3. GSM 850 Test results	5
3. Radiated emissions (FCC §15.109, RSS-GEN, section 6.1, RSS-132 4.6, RSS-133 6.6).....	6
3.2. Test method and limit	6
3.3. GSM 850 test results, FM radio active	8
4. Test Equipment.....	10
4.1. Conducted measurements	10
4.2. Radiated measurements	10

2. AC powerline conducted emissions (FCC §15.107, a, RSS-GEN, section 7.2.4)

EUT with DUT number	RM-1013, DUT 54313
Accessories with DUT numbers	BV-5S, DUT 54317 ; AC-20E, DUT 54319 ; WH-108, DUT 54324
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/32/101.6
Date of measurements	05-May-2014
Measured by	Mark Ma

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:

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

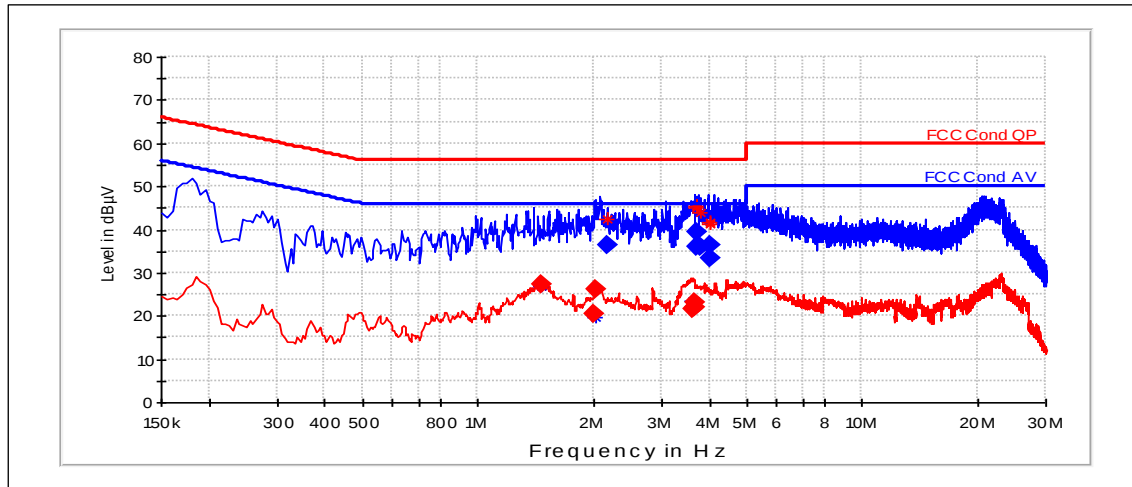
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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 850 Test results

Channel 190 / 836.6 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
2.17	36.29	L1	PASSED
3.685	39.48	L1	PASSED
3.725	36.08	L1	PASSED
3.8	36.09	L1	PASSED
4.035	36.27	L1	PASSED
4.04	33.39	N	PASSED

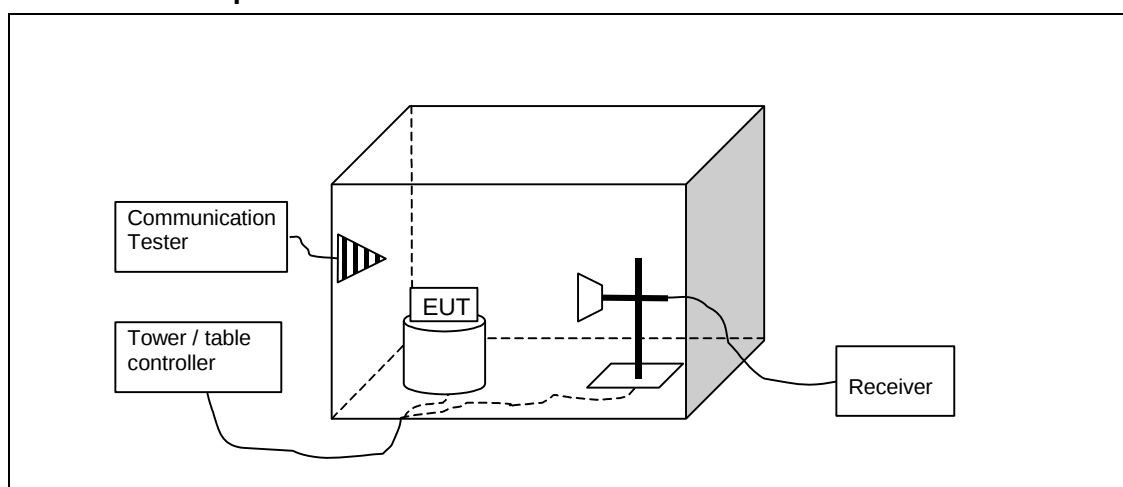
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
1.47	27.3	N	PASSED
2	20.6	N	PASSED
2.03	26.3	N	PASSED
3.625	21.47	L1	PASSED
3.67	23.26	L1	PASSED
3.675	21.88	L1	PASSED

3. Radiated emissions (FCC §15.109, RSS-GEN, section 6.1, RSS-132 4.6, RSS-133 6.6)

EUT with DUT number	RM-1013, DUT 54314
Accessories with DUT numbers	BV-5S, DUT 54318 ; AC-20E, DUT 54320 ; WH-108, DUT 54323
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/39/102.7
Date of measurements	14-May-2014
Measured by	Gao Sherina

3.1.1 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:

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

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

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	-	-
1000 - 3000	-	50	70
Above 3000	-	54	74

3.3. GSM 850 test results, FM radio active

RX mode, channel 128 / 869.2 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.8	40.7	108.393	41.9	-1.2	74	33.3	PASSED
6955	55.71	610.239	47.51	8.2	74	18.29	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.8	27.76	24.434	28.96	-1.2	54	26.24	PASSED
6955	42.73	136.93	34.53	8.2	54	11.27	PASSED

RX mode, channel 190 / 881.6 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
30	19.51	9.451	33.01	-13.5	40	20.49	PASSED
39.418	24.32	16.444	43.92	-19.6	40	15.68	PASSED
43.166	26.64	21.478	48.74	-22.1	40	13.36	PASSED
53.894	4.05	1.594	33.25	-29.2	40	35.95	PASSED
58.356	0.48	1.057	30.88	-30.4	40	39.52	PASSED
58.719	0.29	1.034	30.79	-30.5	40	39.71	PASSED
60.828	0.6	1.072	31.2	-30.6	40	39.4	PASSED
60.86	1.15	1.142	31.75	-30.6	40	38.85	PASSED
98.046	28.14	25.527	54.64	-26.5	40	11.86	PASSED
502.415	26.14	20.277	44.14	-18	47	20.86	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3525.3	41.04	112.72	41.74	-0.7	74	32.96	PASSED
7053.8	49.05	283.465	39.35	9.7	74	24.95	PASSED
7818.234	49.65	303.739	39.35	10.3	74	24.35	PASSED
7836.475	50.74	344.35	40.34	10.4	74	23.26	PASSED
7852.107	50.18	322.849	39.78	10.4	74	23.82	PASSED
7860.42	50.09	319.521	39.49	10.6	74	23.91	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3525.3	27.87	24.746	28.57	-0.7	54	26.13	PASSED
7053.8	35.65	60.604	25.95	9.7	54	18.35	PASSED
7818.234	36.32	65.464	26.02	10.3	54	17.68	PASSED
7836.475	36.59	67.531	26.19	10.4	54	17.41	PASSED
7852.107	36.7	68.391	26.3	10.4	54	17.3	PASSED
7860.42	36.87	69.743	26.27	10.6	54	17.13	PASSED

RX mode, channel 251 / 893.8 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3575	41.3	116.145	42.3	-1	74	32.7	PASSED
7152.4	49.05	283.465	39.05	10	74	24.95	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3575	27.72	24.322	28.72	-1	54	26.28	PASSED
7152.4	35.7	60.954	25.7	10	54	18.3	PASSED

4. Test Equipment

4.1. Conducted 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
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C, 15B
BJPCPT0069	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
BJPCTC0323	Signal Generator	SMR 27	R&S	22/24/27, 15C, 15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
BJPCPT0208	UPS	PULSAR RX10	Merlin gerin	15C, 15B
BJPCTC0001	DIGITAL CAMERA	PC1015	CANON	15C, 15R
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0062	AC Power source	6812B	Hp	15C, 15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0082	Humidity and Temperature Sensor	175-H2	Testo	15B, 15C
BJPCTC0088	Absolut pressure meter	testo 511	Testo	22/24/27, 15B, 15C
BJPCTC0089	Tempreture 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
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C
BJPCTC0127	AC Power source	SOYI-500VA	SOYI	15B, 15C
BJPCTC0128	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27, 15B, 15C
BJPCTC0129	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27, 15B, 15C
BJPCTC0131	Communication tester	CMW500	R&S	22/24/27, 15B, 15C
BJPCTC0136	Communication antenna	JXTXLB-880-NF	A-INFOMW	15B, 15C
BJPCTC0306	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0305	GPIO converter	GPIO-RS232	NI	22/24/27, 15C
BJPCTC0304	Spectrum Analyser	FSV30	R&S	22/24/27, 15C
BJPCTC0309	GPIO-RS232 convertor	RS232	NI	22/24/27, 15C
BJPCTC0307	Dual channel battery/charger simulator	2306	KEITHLEY	22/24/27, 15C
BJPCTC0308	Dual channel battery/charger simulator	2306	KEITHLEY	22/24/27, 15C
BJPCHW0571	Signal Generator 20GHz	MG3692B	Anritsu	22/24/27, 15C
BJBDATC0169	Tempreture Test chamber	VT4002	Votsch	22/24/27, 15C
BJPCTC0334	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0342	Communication Tester	CMU200	R&S	15B, 15C

4.2. 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
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
BJPCPT0166	Antenna	VUBA 9117	Swarzbeck	22/24/27
BJPCPT0208	UPS	PULSAR RX10	Merlin gerin	15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCTC0001	DIGITAL CAMERA	PC1015	CANON	15C,15R
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
BJPCTC0062	AC Power source	6812B	Hp	15C,15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 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
BJPCTC0081	Humidity and Temperature Sensor	175-H2	Testo	15B, 15C
BJPCTC0088	Absolut pressure meter	testo 511	Testo	22/24/27, 15B,15C
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	-
BJPCTC0125	Loop Antenna	HFH2-Z2	R&S	15C
BJPCTC0126	Tripod	FHU-Z	R&S	15C
BJPCTC0128	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0129	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0131	Communication tester	CMW500	R&S	22/24/27 15B 15C
BJPCTC0133	Open Switch and contril unit	OSP 150	R&S	15B,15C
BJPCTC0134	Open Switch and contril unit	OSP 150	R&S	15B,15C
BJPCTC0135	Open Switch and contril unit	OSP 130	R&S	15B,15C
BJPCTC0136	Communication antenna	JXTXLB-880-NF	A-INFOMW	15B 15C
BJPCTC0171	Broad-band Horn Antenna	BBHA9120 D	SCHWARZBECK MESS - ELEKTRONIK	22/24/27, 15C, 15B
BJPCTC0310	Horn Antenna	QSH20SMA	Q-par	22/24/27, 15C, 15B
BJPCTC0311	Horn Antenna	QSH18SMA	Q-par	22/24/27, 15C, 15B
BJPCTC0312	Relay Switch Unit	-	-	22/24/27, 15C, 15B
BJPCTC0313	High Pass Filter	WHKX1.0/15G-12SS	Wainwright	22/24/27, 15C, 15B
BJPCTC0314	High Pass Filter	WHKX8.0/18G-88SS	Wainwright	22/24/27, 15C, 15B
BJPCTC0315	High Pass Filter	WHKX3.0/18G-12SS	Wainwright	22/24/27, 15C, 15B
BJPCTC0316	Preamplifier	AMT-5F-18002550-25-108	-	22/24/27, 15C, 15B
BJPCTC0317	Preamplifier	AMF-6D-02001800-29-20P	-	22/24/27, 15C, 15B
BJPCTC0350	Preamplifier	AMF-4D-01000800-30-29P	Miteq	22/24/27, 15C, 15B
BJPCTC0324	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
BJPCTC0329	Relay Switch Unit	-	-	22/24/27, 15C, 15B
BJPCTC0334	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0342	Communication Tester	CMU200	R&S	15B, 15C
BJPCTC0349	Preamplifier	AMF-4D-01000800-30-79P	Miteq	22/24/27, 15C, 15B
BJPCTC0350	Preamplifier	AMF-4D-01000800-30-29P	Miteq	22/24/27, 15C, 15B
BJPCTC0351	Preamplifier	AFS4-00101800	-	22/24/27, 15C, 15B