



TEST REPORT

No. 2012TAR250

for

Sony Mobile Communications AB

**GSM 850/900/1800/1900 quad bands and UMTS FDD 1/8 mobile
phone**

Type: PM-0090-BV

FCC ID: PY7PM-0090

IC No.: 4170B-PM-0090

with

Hardware Version: A

Software Version: 6.0.B.1.428

Issued Date: May 07th, 2012

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan beilu, Haidian District, Beijing, P.R.China
Postal Code: 100191
Telephone: +86-10-62304633-2678
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1.2. Testing Environment

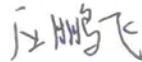
Normal Temperature: 15-35°C
Relative Humidity: 20-75%
Air pressure: 980 - 1040 hPa

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.3. Project data

Receipt of Sample: Apr. 01st, 2012
Testing Start Date: Apr. 20th, 2012
Testing End Date: Apr. 24th, 2012

1.4. Signature



Qu Pengfei
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Song Chongwen
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Sony Mobile Communications (China) Co. Ltd
Address /Post: Sony Mobile R&D Center, No. 16, Guangshun South Street,
Chaoyang District
City: Beijing
Postal Code: 100102
Country: China
Contact Person: Ma, Gang
Telephone: +86-10-58656312
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2.2. Manufacturer Information

Company Name: Sony Mobile Communications AB
Address /Post: Nya Vattentornet, 22188 Lund, Sweden
City: Lund
Postal Code: 22188
Country: Sweden
Contact Person: Nordlof, Anders
Telephone: +46-10-802 3919
Fax: +46-10-800 2441

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM 850/900/1800/1900, GPRS, EDGE, WCDMA FDD Band 1/8, BT EDR2.0, WLAN (802.11 b/g/n), FM, GPS receiver mobile phone
Type	PM-0090-BV
FCC ID	PY7PM-0090
IC No	4170B-PM-0090
Frequency range	GSM 850: 824.2 MHz - 848.8 MHz PCS 1900: 1850.2 MHz -1909.8 MHz
Antenna	Internal
Power supply	Battery or charger (travel adapter / vehicle adapter)
Output power	30.61 dBm maximum ERP measured for GSM850 31.21 dBm maximum EIRP measured for PCS1900
Extreme vol. Limits	3.5VDC to 4.1VDC (nominal: 3.7VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN	IMEI	HW Version	SW Version
#22007	CB5A1JZ6SP	004402144647355	A	6.0.B.1.428

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Revision
#21699	Vehicle Charger	108B11W01	1
#21699	Type	CAA-0002018	
	Manufacturer	Sony Mobile	
	Length of cable	226cm (stretched)	

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM 850/900/1800/1900 quad bands and UMTS FDD 1/8 mobile phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands and WCDMA FDD bands 1/8. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported.

It has MP3, Camera, FM radio, USB memory, GPS receiver, Bluetooth (EDR), WLAN (802.11 b/g/n) and Wi-Fi hotspot functions.

It consists of normal option: vehicle charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	10-1-10 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
ICES-003	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus	Issue 4

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:

P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC rules	Clause in IC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	Section 5.5	B.1	P
2	Conducted Emission	/	Section 5.3	B.2	P

6.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by TMC according to the standards or reference documents in section 4.1

The EUT met all applicable requirements of the standards or reference documents in section 4.1.

This report only deals with the GPS receiver function among the features described in section 3.

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESU26	100235	R&S	2013-01-05
2	Test Receiver	ESCI	100766	R&S	2013-04-09
3	Test Receiver	ESI40	831564/002	R&S	2013-02-12
4	BiLog Antenna	VULB 9163	302	Schwarzbeck	2014-02-10
5	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-12-16
6	LISN	ESH3-Z6	829997/012	R&S	2012-05-12
7	LISN	ESH3-Z6	100057	R&S	2012-05-12
8	Vector Signal Generator	SMU200A	102082	R&S	2012-11-14
9	Universal Radio Communication Tester	E5515C	MY48363198	Agilent	2012-07-09

ANNEX B: MEASUREMENT RESULTS

B.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a)

IC: ICES-003 Section 5.5.

B.1.1 Method of measurement

The field strength of radiated emissions from the GPS receiver of MS at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

B.1.2 EUT Operating Mode:

EUT Setup: #22007 + #21699

A vector signal generator is used to provide the simulated GPS signal, and the frequency is set to 1575.42 MHz. Before the test starts, the integrated GPS application in MS is started up and locked to the simulated GPS signal.

Meanwhile, the EUT is synchronized to CMU200, and able to respond to paging messages and incoming call. An established call has been released.

B.1.3 Test layout: see Pic.1 in ANNEX C.

B.1.4 Measurement Limit

Limit from CFR Part 15.109(a)

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

Limit from ICES-003 Section 5.5

Frequency range (MHz)	Field strength limits* (dB μ V/m)
30 to 230	40
230 to 1000	47

*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

B.1.5 Measurement Results
GPS Mode

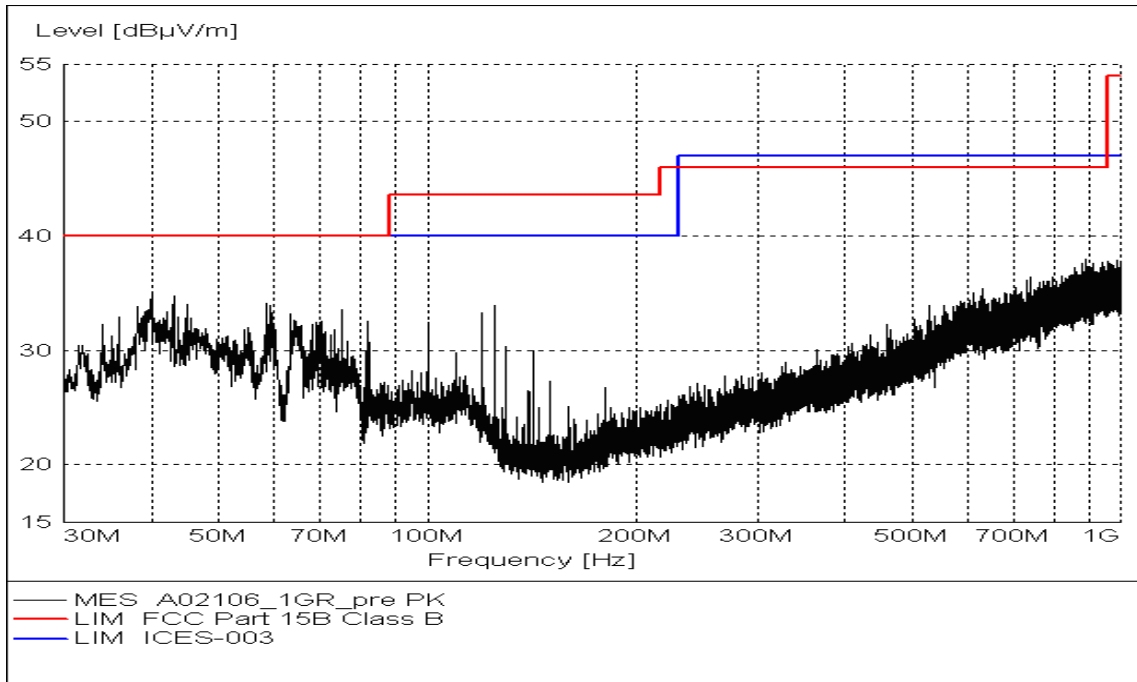


Figure B.1 Radiated Emission from 30MHz to 1GHz

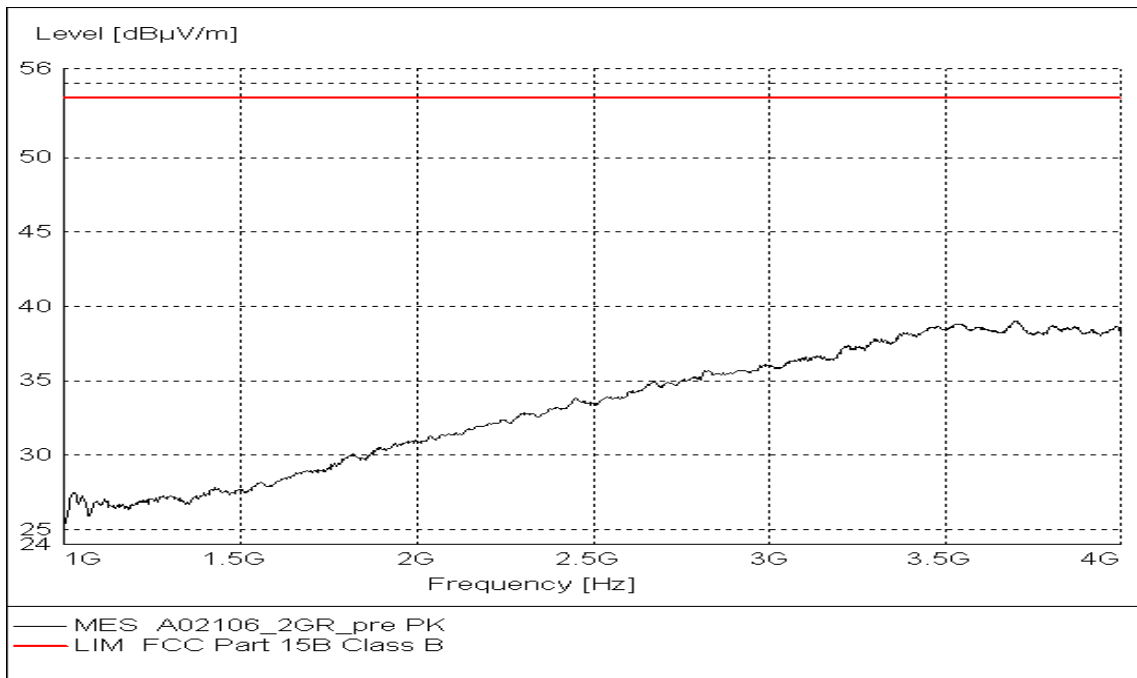


Figure B.2 Radiated Emission from 1GHz to 4GHz

FCC 4-18G

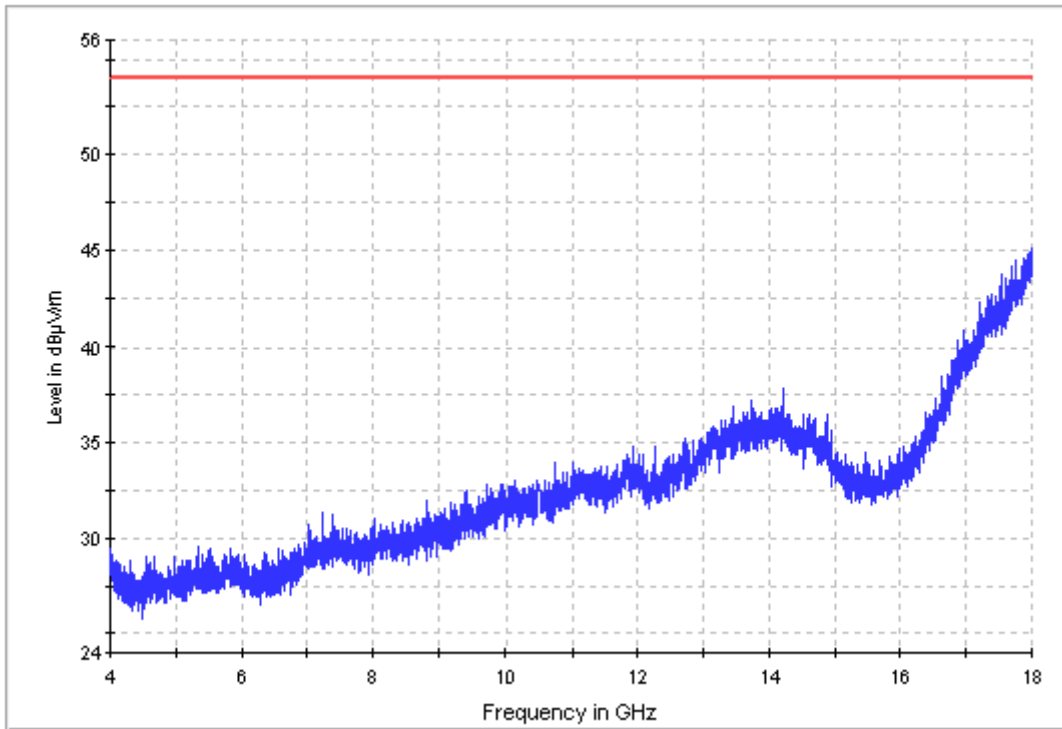


Figure B.3 Radiated Emission from 4GHz to 18GHz

B.2 Conducted Emission

Reference

IC: ICES-003 Section 5.3.

B.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30MHz shall not exceed the limits. Test is performed in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

B.2.2 EUT Operating Mode:

EUT Setup: #22007 + #21699

A vector signal generator is used to provide the simulated GPS signal, and the frequency is set to 1575.42 MHz. Before the test starts, the integrated GPS application in MS is started up and locked to the simulated GPS signal.

Meanwhile, the EUT is synchronized to CMU200, and able to respond to paging messages and incoming call. An established call has been released.

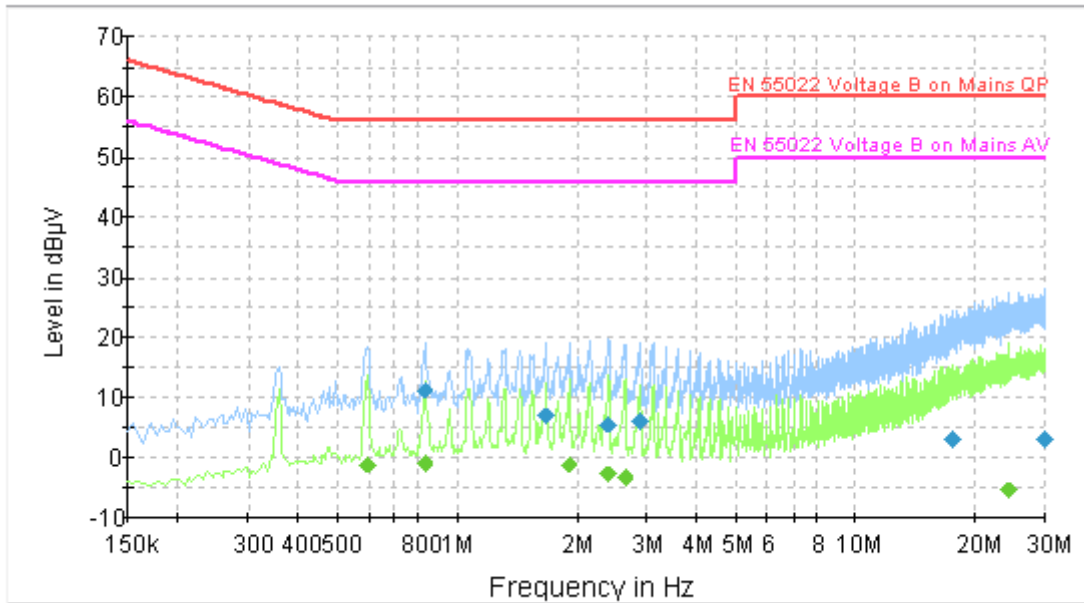
B.2.3 Test layout: see Pic.2 in ANNEX C.

B.2.4 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency

B.2.5 Measurement Results
GPS Mode



IF bandwidth 9 kHz

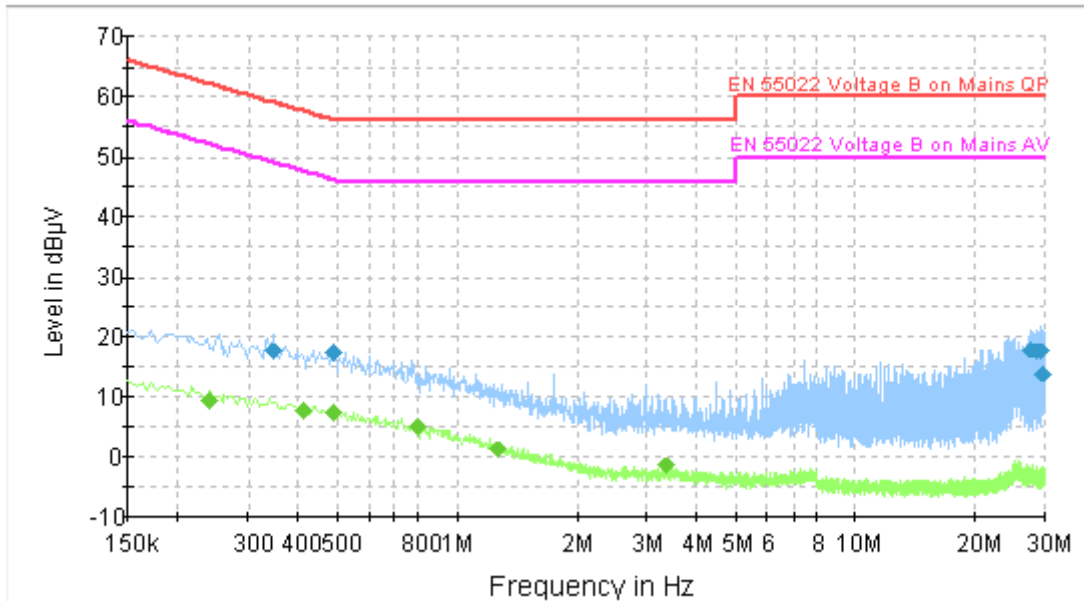
Fig B.4 Conducted Continuous Emission from 150 kHz to 30 MHz (Plus wire)

Final Result 1

Frequency (MHz)	MaxPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.829500	11.1	Line L	5.3	44.9	56.0	--
1.675500	6.8	Line L	9.6	49.2	56.0	--
2.400000	5.6	Line L	10.5	50.4	56.0	--
2.877000	6.1	Line L	10.5	49.9	56.0	--
17.542500	3.2	Line L	10.0	56.8	60.0	--
29.895000	3.1	Line L	9.8	56.9	60.0	--

Final Result 2

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.595500	-1.3	Line L	3.4	47.3	46.0	--
0.829500	-0.8	Line L	5.3	46.8	46.0	--
1.918500	-1.1	Line L	10.1	47.1	46.0	--
2.400000	-2.7	Line L	10.5	48.7	46.0	--
2.638500	-3.2	Line L	10.5	49.2	46.0	--
24.202500	-5.5	Line L	10.0	55.5	50.0	--



IF bandwidth 9 kHz

Fig B.5 Conducted Continuous Emission from 150 kHz to 30 MHz (Minus wire)

Final Result 1

Frequency (MHz)	MaxPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.348000	17.6	Line N	9.9	41.4	59.0	--
0.492000	17.2	Line N	9.9	38.9	56.1	--
27.721500	17.8	Line N	9.8	42.2	60.0	--
28.752000	17.6	Line N	9.7	42.4	60.0	--
29.260500	17.7	Line N	9.7	42.3	60.0	--
29.386500	13.9	Line N	9.7	46.1	60.0	--

Final Result 2

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)	Comment
0.240000	9.2	Line N	9.8	42.9	52.1	--
0.411000	7.5	Line N	9.9	40.1	47.6	--
0.492000	7.3	Line N	9.9	38.8	46.1	--
0.802500	4.9	Line N	9.9	41.1	46.0	--
1.270500	1.1	Line N	9.9	44.9	46.0	--
3.381000	-1.5	Line N	10.0	47.5	46.0	--