No.2012TAR175 Page 1 of 24



TEST REPORT

No. 2012TAR175

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS tri bands/GSM quad bands mobile phone

Model Name: ONE TOUCH 991S

FCC ID: RAD256

with

Hardware Version: PIO02

Software Version: vF1J_AWS

Issued Date: 2012-04-16

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

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191

Tel:+86(0)10-62304633-2678 , Fax:+86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com



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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:	00861062304633
Fax:	00861062304633

1.2. Testing Environment

Normal Temperature:	15-35 ℃
Relative Humidity:	20-75%

1.3. Project data

Testing Start Date:	Mar. 30 th , 2012
Testing End Date:	Apr. 15 th , 2012

1.4. Signature



Qu Pengfei (Prepared this test report)



Sun Xiangqian (Reviewed this test report)

Pt who this

Lu Bingsong Deputy Director of the laboratory (Approved this test report)



2. Client Information

2.1. Applicant Information

Company Namo:	TCT Mobile Limited
Company Name.	

Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
	Pudong Area Shanghai, P.R. China.
City:	Shanghai
Postal Code:	201203
Country:	China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086 21 61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Dest	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,
Address /Post.	Pudong Area Shanghai, P.R. China.
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-61460890
Fax:	0086 21 61460602



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

3.1. About EUT

Description	HSUPA/HSDPA/UMTS tri bands/GSM quad bands mobile phone
Model Name	ONE TOUCH 991S
FCC ID	RAD256
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7VDC)

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 or IMEI	HW Version	SW Version
EUT1	013112000020618	PIO02	vF1J_AWS

*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
	AE1	Battery		/
	AE2	Battery		B36211043FA
	AE3	Battery		B36211042BA
	AE4	Travel charger		/
	AE5	Travel charger		/
	AE6	Travel charger		/
	AE7	USB cable		/
	AE8	USB cable		/
	AE9	USB cable		/
	AE10	USB cable		/
	AE11	Travel charger		/
A	E1			
	Model		CAB32A0000C2	
	Manufacturer		SCUD	
	Capacitance		1500mAh	
Nominal voltage		3.7V		
A	E2, AE3			
Model		CAB32A0000C1		
	Manufacturer		BYD	
	Capacitance		1500mAh	
	Nominal volta	age	3.7V	
AE4				
	Model		CBA3002AG0C1	
Manufacturer		BYD		
Length of cable		121.5cm		
A	AE5			
	Model		CBA3001AG0C1	



Manufacturer	BYD
Length of cable	10cm
AE6	
Model	CBA3001AG0C2
Manufacturer	Tenpao
Length of cable	10cm
Model	CDA3122002C1
Manufacturer	Juwei
Length of cable	100cm
AE8	
Model	CDA3122002C2
Manufacturer	Shenhua
Length of cable	100cm
AE9	
Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	100cm
AE10	
Model	CDA3122005C2
Manufacturer	Shenhua
Length of cable	100cm
AE11	
Model	CBA3000AG0C1
Manufacturer	Tenpao
Length of cable	100cm (length of USB cable)
*AE ID: is used to identify the test s	sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1/AE2/AE3+ AE4	Charging mode
Set.2	EUT1+ AE1/AE2/AE3+ AE5+ AE7/AE8/AE9/AE10	Charging mode
Set.3	EUT1+ AE1/AE2/AE3+ AE6+ AE7/AE8/AE9/AE10	Charging mode
Set.4	EUT1+ AE1/AE2/AE3+ AE7/AE8/AE9/AE10	USB mode
Set.10	EUT1+ AE1/AE2/AE3+ AE11+ AE7/AE8/AE9/AE10	Charging mode



4. <u>Reference Documents</u>

4.1. Reference Documents for testing

The following documents list	sted 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 × 17 meters × 10 meters) 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)	< \pm 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 for	llowing 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
Fully-anechoic chamber1 (6.8 meter	s×3.08 meters×3.53 meters) 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
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Fully-anechoic chamber2 (8.6 meters × 6.1 meters × 3.85 meters) 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	<1Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz



6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
Р	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	A.1	Р
2	Conducted Emission	15.107(a)	A.2	Р



7. Test Equipments Utilized

NO.	Description	ТҮРЕ	TYPE		CAL DUE
			NUMBER		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	VUL9163	302	Schwarzbeck	2014-02-10
5	LISN	ESH3-Z5	825562/028	R&S	2012-06-15
6	Universal Radio Communication Tester	E5515C	MY48363198	Agilent	2012-07-08
7	Universal Radio Communication Tester	CMU200	109914	R&S	2012-04-20
8	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-12-16
9	PC	OPTIPLEX 755	3908243625	DELL	N/A
10	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
11	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
12	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
13	Mouse	VR-301	692722550019 8	XINGYU	N/A



ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a)) Reference FCC: CFR Part 15.109(a)

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 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	Field strength limits*
(MHz)	(dBµV/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.

A.1.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
1000-4000	1MHz/1MHz	15

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A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

 $Result = P_{Mea} + A_{Rpl} = P_{Mea} + G_A + G_{PL}$

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Set.1 charging mode

3695.391

3545.090

39.20

39.15

	•				
Frequency(MHz)	Result(dBuV/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dBuV)	Polarity
3699.399	39.05	-19.5	33.4	25.15	HORIZONTAL
3701.403	39.04	-19.4	33.4	25.04	HORIZONTAL
3703.407	38.99	-19.4	33.4	24.99	HORIZONTAL
3697.395	38.97	-19.5	33.4	25.07	VERTICAL
3695.391	38.92	-19.5	33.4	25.02	VERTICAL
3707.415	38.91	-19.4	33.4	24.91	VERTICAL
Set.2 charging mod	e				
Frequency(MHz)	Result(dBuV/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dBuV)	Polarity
3699.399	39.02	-19.5	33.4	25.12	VERTICAL
3701.403	39.01	-19.4	33.4	25.01	VERTICAL
3703.407	38.99	-19.4	33.4	24.99	VERTICAL
3695.391	38.95	-19.5	33.4	25.05	VERTICAL
3693.387	38.94	-19.5	33.4	25.04	HORIZONTAL
3697.395	38.94	-19.5	33.4	25.04	VERTICAL
Set.3 charging mod	e				
Frequency(MHz)	Result(dBuV/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dBuV)	Polarity
3699.399	39.05	-19.5	33.4	25.15	HORIZONTAL
3701.403	39.01	-19.4	33.4	25.01	HORIZONTAL
3697.395	39.00	-19.5	33.4	25.10	VERTICAL
3703.407	38.99	-19.4	33.4	24.99	HORIZONTAL
3695.391	38.92	-19.5	33.4	25.02	VERTICAL
3705.411	38.90	-19.4	33.4	24.90	VERTICAL
Set.10 charging mode					
Frequency(MHz)	Result(dBuV/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dBuV)	Polarity
3699.399	39.27	-19.5	33.4	25.37	HORIZONTAL
3703.407	39.23	-19.4	33.4	25.23	VERTICAL
3697.395	39.22	-19.5	33.4	25.32	VERTICAL
3701.403	39.22	-19.4	33.4	25.22	VERTICAL

-19.5

-19.5

33.4

33.4

VERTICAL

VERTICAL

25.30

25.25



Set.4 USB mode

Frequency(MHz)	Result(dBuV/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dBuV)	Polarity
2991.984	41.62	-19.5	29.2	31.92	HORIZONTAL
2995.992	40.95	-19.5	29.2	31.25	HORIZONTAL
3699.399	39.05	-19.5	33.4	25.15	VERTICAL
3697.395	39.00	-19.5	33.4	25.10	HORIZONTAL
3701.403	38.98	-19.4	33.4	24.98	VERTICAL
3695.391	38.95	-19.5	33.4	25.05	VERTICAL





Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)



Figure A.2 Radiated Emission from 1GHz to 4GHz (Set.1, Charging mode)





Figure A.3 Radiated Emission from 30MHz to 1GHz (Set.2, Charging mode)



Figure A.4 Radiated Emission from 1GHz to 4GHz (Set.2, Charging mode)





Figure A.5 Radiated Emission from 30MHz to 1GHz (Set.3, Charging mode)



Figure A.6 Radiated Emission from 1GHz to 4GHz (Set.3, Charging mode)





Figure A.7 Radiated Emission from 30MHz to 1GHz (Set.10, Charging mode)



Figure A.8 Radiated Emission from 1GHz to 4GHz (Set.10, Charging mode)





Figure A.9 Radiated Emission from 30MHz to 1GHz (Set.4, USB mode)



Figure A.10 Radiated Emission from 1GHz to 4GHz (Set.4, USB mode)



A.2 Conducted Emission (§15.107(a))

Reference

FCC: CFR Part 15.107(a)

A.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 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

A.2.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBµV)			
	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				

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1



A.2.5 Measurement Results



Figure A.11 Conducted Emission (Set.1, Charging mode)

Final Result 1

Frequency	QuasiPeak	PF	Line	Corr.	Margin	Limit		
(MHz)	(dB µ V)	IL	Line	(dB)	(dB)	(dB µ V)		
2.941036	25.6	GND	L1	9.8	30.4	56.0		
2.988423	21.4	GND	L1	9.8	34.6	56.0		
3.091671	23.7	GND	L1	9.8	32.3	56.0		
3.204884	24.9	GND	L1	9.8	31.1	56.0		
3.250022	23.6	GND	L1	9.8	32.4	56.0		
3.620290	28.0	GND	L1	9.8	28.0	56.0		
Final Result	Final Result 2							
Frequency	Average	DE	Lina	Corr.	Margin	Limit		
(MHz)	(dB µ V)	PE	Line	(dB)	(dB)	(dB µ V)		
2.201307	22.0	GND	L1	9.8	24.0	46.0		
2.304827	16.5	GND	L1	9.8	29.5	46.0		
2.731458	8.7	GND	Ν	9.8	37.3	46.0		
2.988423	10.0	GND	Ν	9.8	36.0	46.0		
3.250022	7.3	GND	L1	9.8	38.7	46.0		
3.671279	12.9	GND	L1	9.8	33.1	46.0		





Figure A.12 Conducted Emission (Set.2, Charging mode)

Fillal Result	1					
Frequency	QuasiPeak	PE	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)			(dB)	(dB)	(dB µ V)
1.414500	21.4	GND	L1	9.8	34.6	56.0
1.459500	26.6	GND	L1	9.8	29.4	56.0
1.509000	26.1	GND	L1	9.8	29.9	56.0
1.554000	29.1	GND	L1	9.8	26.9	56.0
1.608000	19.6	GND	L1	9.8	36.4	56.0
1.653000	24.8	GND	L1	9.8	31.2	56.0
Final Result	2					
Frequency	Average	DE	Lina	Corr.	Margin	Limit
(MHz)	$(dB \ \mu V)$	PE	Line	(dB)	(dB)	(dB µ V)
1.414500	10.7	GND	L1	9.8	35.3	46.0
1.459500	6.0	GND	L1	9.8	40.0	46.0
1.509000	17.9	GND	L1	9.8	28.1	46.0
1.608000	4.7	GND	Ν	9.8	41.3	46.0
1.752000	24.7	GND	L1	9.8	21.3	46.0
2 511599	74	GND	Ν	9.8	38.6	46.0

Final Result 1





Figure A.13 Conducted Emission (Set.3, Charging mode)

Final Result	1					
Frequency	QuasiPeak	DE	Lina	Corr.	Margin	Limit
(MHz)	(dB µ V)	PE	Line	(dB)	(dB)	(dB µ V)
1.900500	31.3	GND	L1	9.8	24.7	56.0
2.227855	32.2	GND	L1	9.8	23.8	56.0
2.250223	31.3	GND	L1	9.8	24.7	56.0
2.272816	29.1	GND	L1	9.8	26.9	56.0
2.781020	30.1	GND	L1	9.8	25.9	56.0
2.837143	29.2	GND	L1	9.8	26.8	56.0
Final Result	2					
Frequency	Average	DE	Lino	Corr.	Margin	Limit
(MHz)	$(dB \ \mu V)$	FL	Line	(dB)	(dB)	(dB µ V)
2.227855	16.3	GND	L1	9.8	29.7	46.0
2.250223	26.1	GND	L1	9.8	19.9	46.0
2.272816	17.8	GND	L1	9.8	28.2	46.0
2.309436	17.3	GND	L1	9.8	28.7	46.0
2.379698	15.3	GND	L1	9.8	30.7	46.0
2.848503	17.3	GND	L1	9.8	28.7	46.0

Final Result 1





Figure A.14 Conducted Emission (Set.3, Charging mode)

i mai Kesuk	•					
Frequency	QuasiPeak	DE	PE Line	Corr.	Margin	Limit
(MHz)	(dB µ V)	PE		(dB)	(dB)	(dB µ V)
2.779650	40.3	GND	Ν	9.8	15.7	56.0
2.936411	39.7	GND	Ν	9.8	16.3	56.0
3.040739	26.7	GND	Ν	9.8	29.4	56.0
3.148775	40.9	GND	Ν	9.8	15.1	56.0
3.326353	41.9	GND	Ν	9.8	14.1	56.0
3.712117	41.6	GND	Ν	9.8	14.4	56.0
Final Result	2					
Frequency	Average	DE	Ling	Corr.	Margin	Limit
(MHz)	(dB µ V)	PE Line	(dB)	(dB)	(dB µ V)	
1.266000	8.2	GND	L1	9.8	37.8	46.0
1.968000	21.2	GND	Ν	9.8	24.8	46.0
2.936411	2.7	GND	L1	9.8	43.3	46.0
3.228286	36.4	GND	Ν	9.8	9.6	46.0

GND

GND

Ν

L1

9.8

9.8

39.7

23.4

46.0

46.0

Final Result 1

3.675273

3.712117

6.3

22.6





Figure A.15 Conducted Emission (Set.4, USB mode)

Frequency	QuasiPeak	DE	Lina	Corr.	Margin	Limit
(MHz)	(dB µ V)	PE	Line	(dB)	(dB)	(dB µ V)
2.356043	31.2	GND	L1	9.8	24.8	56.0
2.418040	27.2	GND	L1	9.8	28.8	56.0
2.476716	25.6	GND	L1	9.8	30.4	56.0
2.672081	27.3	GND	Ν	9.8	28.7	56.0
3.110258	27.0	GND	L1	9.8	29.0	56.0
3.836253	28.5	GND	L1	9.8	27.5	56.0

Final Result 2

Frequency	Average	DE	Lina	Corr.	Margin	Limit
(MHz)	(dB µ V)	FE	Line	(dB)	(dB)	(dB µ V)
2.351340	22.6	GND	L1	9.8	23.4	46.0
2.786582	24.4	GND	L1	9.8	21.6	46.0
3.024464	21.1	GND	L1	9.8	24.9	46.0
3.110258	23.6	GND	L1	9.8	22.4	46.0
3.836253	25.1	GND	Ν	9.8	20.9	46.0
4.807948	25.6	GND	L1	9.8	20.4	46.0

END OF REPORT