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EMI CERTIFICATION REPORT

Applicant:

TCT MOBILE LIMITED

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Date of Issue: May 30, 2012

Test Report No.: HCTE1204FE24-2

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

RAD278

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN
Model(s) Name : ONE TOUCH 960C
Port / Connector(s) : USB Port / Headset Port

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT certifies that no party to application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

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REVISION HISTORY

Report NO.	Date	Description
HCTE1204FE24	April 18 2012	First approval report.
HCTE1204FE24-1	May 02, 2012	Change of Model name.
HCTE1204FE24-2	May 30, 2012	Change peripheral (Net HDD): Router has been changed to Net HDD.

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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is **Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN**, **Model: ONE TOUCH 960C** manufactured by **TCT MOBILE LIMITED**. Its basic purpose is used for communications.

Model	ONE TOUCH 960C
FCC ID	RAD278
E.U.T Type	Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 835) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900) 1 711.25 MHz to 1 753.75 MHz (AWS CDMA)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 835) 1 931.25 MHz to 1 988.75 MHz (CDMA 1 900) 2 111.25 MHz to 2 153.75 MHz (AWS CDMA)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Number	FCC ID / DoC	Connected To
E.U.T	TCT	ONE TOUCH 960C	RAD278	Notebook PC
Notebook PC	SAMSUNG	NT-R519	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	SADP-90FH BAD -9019S	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
Micro SD card (8 GB)	SanDisk	-	-	E.U.T
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Net HDD	LG	N1A1DD1	Doc	Notebook PC Net HDD adaptor
Net HDD adaptor	Yang Ming Industrial	DA-60M12	-	Net HDD
RJ45 cable	-	-	-	Router Notebook PC

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
E.U.T	Micro USB	Y	Y	(P,D)1.0
	Headset jack	-	N	(D)1.5
Notebook PC	RJ 45	-	N	(D)1.5
	USB (Mouse)	-	Y	(D)1.8

* The marked "(D)" means the data cable and "(P)" means the power cable.

1.5 Noise Suppression Parts on Cable. (I/O cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
E.U.T	Micro USB	N	-	Y	Both End
	Headset jack	N	-	Y	E.U.T End
Notebook PC	RJ 45	N	Notebook PC End	N	Both End
	USB (Mouse)	Y	Notebook PC End	Y	Notebook PC End

1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 3 m

1.7 Test Facility

The 3 m semi anechoic chamber used to collect the test data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Republic of Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4.

Detailed description of test facilities was submitted to the Commission and accepted dated Mar 02, 2011 (Registration Number: 90661)

1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

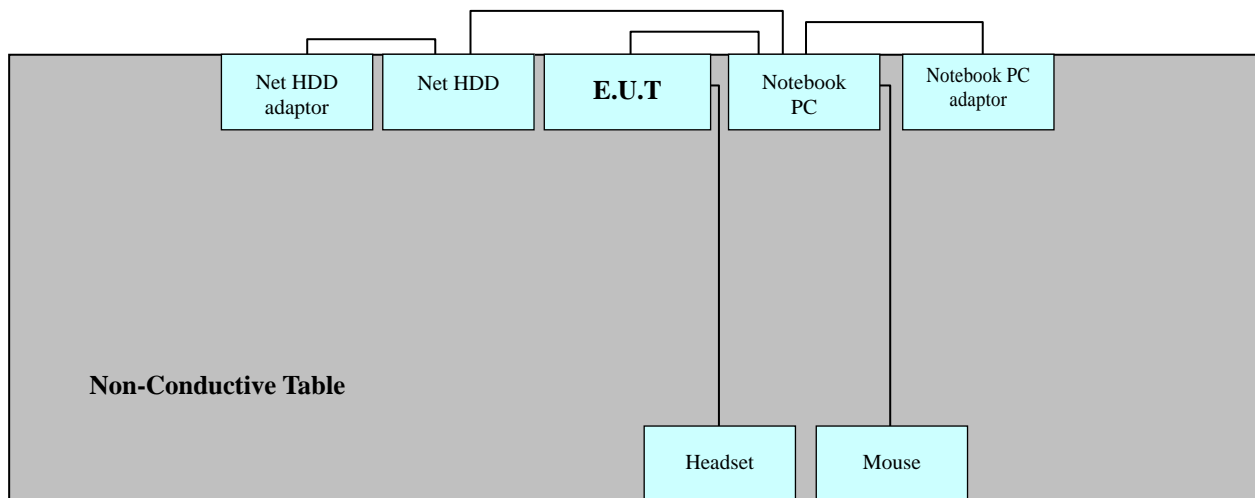
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor.
Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.

Radiated Emission test : Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 3 m semi-anechoic chamber.

[Configuration of Tested System]



Power Line: 110 VAC

3. PRELIMINARY TEST

3.1 Conducted Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode: Data Communication mode

3. 2 Radiated Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode: Data Communication mode

4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)

Operation Mode : Data Communication mode

Temperature : 25.1 °C

Humidity Level : 44.8 %

Test Date : May 29, 2012

Frequency (MHz)	Transd (dB)	Conductor (H/N)	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.150	10.00	N	66	45.5	55.5	56	20.90	30.90
0.151	10.00	H	66	41.6	51.6	56	26.40	36.40
0.154	10.00	H	66	41.0	51.0	56	-	-
0.162	10.00	H	65	39.5	49.5	55	-	-
4.172	10.40	N	56	30.6	41.0	46	-	-
5.000	10.50	N	60	29.9	40.4	50	19.80	30.30

※ **NOTE:** Refer to page 11 to page 14 for details.

1. The worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

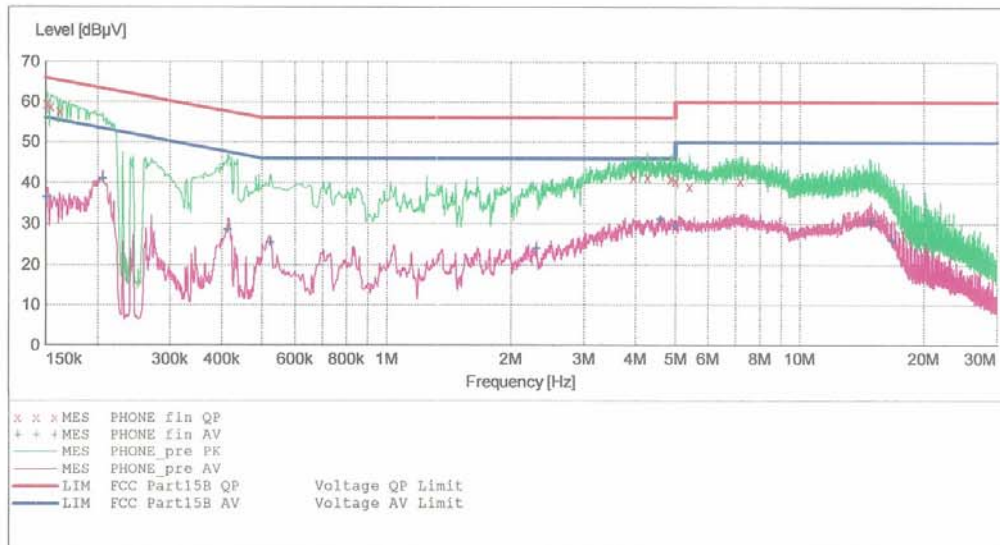
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EUT:
 Manufacturer: TCT MOBILE LIMITED
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: H

SCAN TABLE: "FCC PART 15 B(H)"

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	1.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.151010	59.40	10.0	66	6.6	---	---
0.154010	58.80	10.0	66	6.9	---	---
0.162010	57.70	10.0	65	7.6	---	---
3.968000	41.40	10.4	56	14.6	---	---
4.284000	41.40	10.4	56	14.6	---	---
4.888000	41.10	10.5	56	14.9	---	---
5.000000	40.40	10.5	56	15.6	---	---
5.416000	39.10	10.6	60	20.9	---	---
7.196000	40.50	10.8	60	19.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.151010	36.40	10.0	56	19.5	---	---
0.206010	41.00	10.1	53	12.3	---	---
0.413010	28.70	10.1	48	18.9	---	---
0.524000	25.50	10.1	46	20.5	---	---
2.308000	24.10	10.2	46	21.9	---	---
4.608000	31.10	10.4	46	14.9	---	---
5.000000	29.60	10.5	46	16.4	---	---
14.912000	30.40	11.2	50	19.6	---	---
16.708000	26.00	11.3	50	24.0	---	---

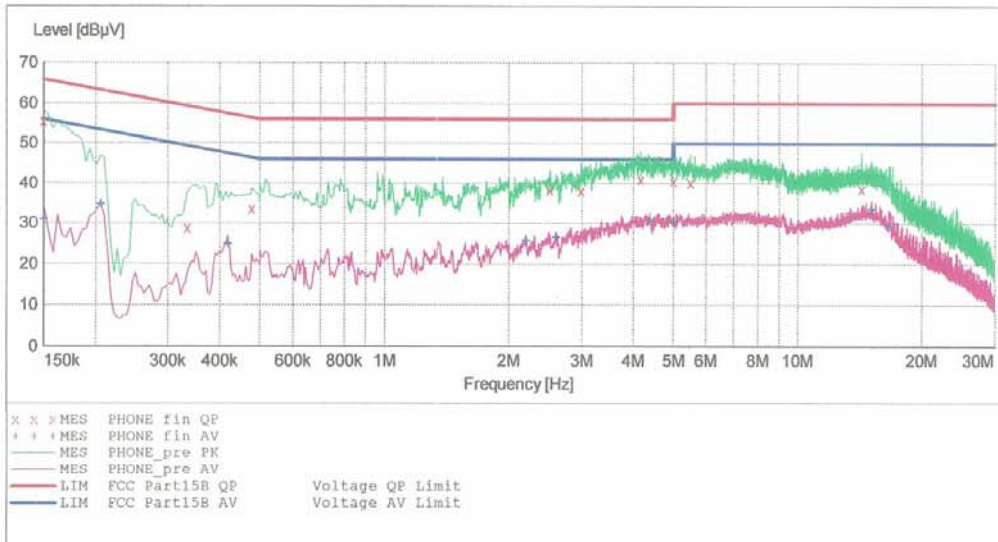
HCT

EMC

EUT:
 Manufacturer: TCT MOBILE LIMITED
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: N

SCAN TABLE: "FCC PART 15 B(N)"

Short Description:			FCC PART 15 CLASS B				Transducer
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.		
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.150010	55.50	10.0	66	10.5	---	---
0.334010	28.90	10.1	59	30.4	---	---
0.478010	33.60	10.0	56	22.8	---	---
2.520000	38.30	10.2	56	17.7	---	---
2.996000	38.10	10.3	56	17.9	---	---
4.172000	41.00	10.4	56	15.0	---	---
5.000000	40.40	10.5	56	15.6	---	---
5.508000	40.20	10.5	60	19.8	---	---
14.280000	38.50	11.1	60	21.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150010	30.90	10.0	56	25.1	---	---
0.206010	34.80	10.1	53	18.6	---	---
0.418010	24.90	10.1	48	22.6	---	---
2.204000	25.70	10.2	46	20.3	---	---
2.604000	26.50	10.2	46	19.5	---	---
4.396000	30.70	10.4	46	15.3	---	---
5.000000	30.30	10.5	46	15.7	---	---
15.088000	33.50	11.1	50	16.5	---	---
16.640000	29.10	11.2	50	20.9	---	---

4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

Limit Apply to : FCC PART 15 Subpart B Class B

-For measurement below 1 GHz

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data Communication mode

-For measurement above 1 GHz

Detector : Peak mode: Peak (RBW: 1 MHz / VBW: 1 MHz)

: Average mode: Peak (RBW: 1 MHz / VBW: 10 Hz)

Operation Mode : Data Communication mode

Temperature : 22.7 °C

Humidity Level : 46.2 %

Test Date : May 29, 2012

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
43.50	14.62	V	1.0	12.28	3.50	40.0	30.4	9.6
57.20	18.16	V	1.2	12.04	3.60	40.0	33.8	6.2
68.90	16.90	V	1.0	10.61	3.69	40.0	31.2	8.8
138.80	13.86	H	1.5	12.74	4.00	43.5	30.6	12.9
162.10	16.01	H	1.0	13.09	4.20	43.5	33.3	10.2
239.50	21.36	H	1.0	11.38	4.46	46.0	37.2	8.8

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th harmonic of highest fundamental frequency. The highest fundamental frequency is CDMA 1 900 center frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

5. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the antenna factor and cable factor.
The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dB μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$

[Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	μ V/m	dB μ V/m
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
<u>Conducted Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2013.05.02
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2013.02.03
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	100282	2013.05.02
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2013.02.09
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<u>Radiated Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2013.05.03
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	-
<input checked="" type="checkbox"/> Antenna master controller	HD GmbH	HD100	100/637BJ:00	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17

7. CONCLUSION

The data collected shows that the **Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN, Model: ONE TOUCH 960C, FCC ID: RAD278** complies with §15.107 and §15.109 of the FCC rules.