

FCC RF Test Report

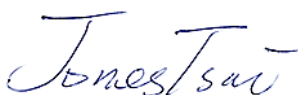
APPLICANT : TCT Mobile Limited
EQUIPMENT : Tablet PC
BRAND NAME : ALCATEL
MODEL NAME : ONE TOUCH P321
MARKETING NAME : ALCATEL ONE TOUCH POP8
FCC ID : RAD467
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jan. 06, 2014 and testing was completed on Apr. 23, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Product Specification of Equipment Under Test	5
1.5 Modification of EUT	6
1.6 Testing Site	6
1.7 Applied Standards	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Test Mode	7
2.2 Connection Diagram of Test System	8
2.3 Support Unit used in test configuration and system	8
2.4 EUT Operation Test Setup	8
3 TEST RESULT	9
3.1 Radiated Band Edges and Spurious Emission Measurement	9
3.2 Antenna Requirements	16
4 LIST OF MEASURING EQUIPMENT	17
5 UNCERTAINTY OF EVALUATION	18
APPENDIX A. SETUP PHOTOGRAPHS	
APPENDIX B. PRODUCT EQUALITY DECLARATION	

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR410304-01B	Rev. 01	This is report for ONE TOUCH P321. The product equality declaration could be referred to Appendix B. All test cases were performed on original report which can be referred to SPORTON Report Number FR410304B (FCC ID: RAD466). Based on the original test report, only the worst case of Radiated Spurious Emission was verified for the difference.	May 20, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 10.07 dB at 47.460 MHz
3.2	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

TCT Mobile Limited

5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203

1.2 Manufacturer

TCT Mobile Limited

5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	ALCATEL
Model Name	ONE TOUCH P321
Marketing Name	ALCATEL ONE TOUCH POP8
FCC ID	RAD467
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	V5.0
SW Version	BAQ
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel(37 hopping + 3 advertising channel)
Antenna Type	Monopole Antenna with gain 2.00 dBi
Type of Modulation	Bluetooth v4.0 LE : GFSK

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	FCC Registration No.
	03CH01-KS	149928

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ♦ ANSI C63.4-2003

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

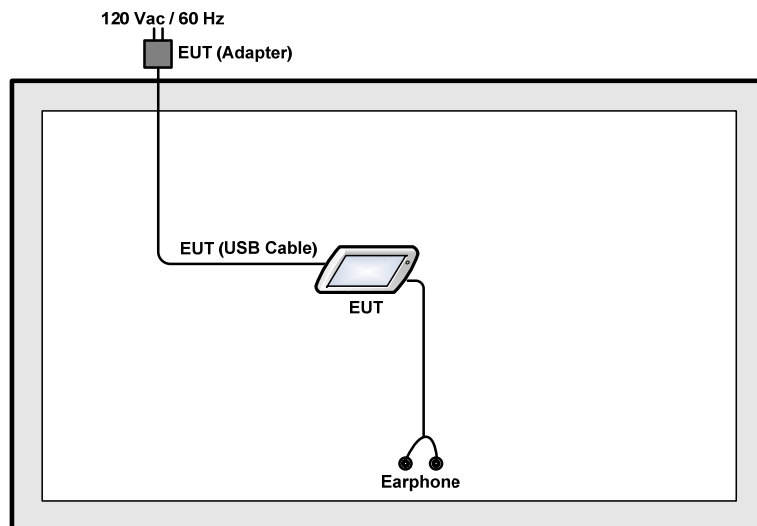
2.1 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth v4.0 LE / GFSK
Radiated TCs	Mode 1: Bluetooth Tx CH39_2480 MHz_1Mbps
Remark: All the radiated test cases were performance with Adapter, Earphone, USB cable and Battery 1.	

2.2 Connection Diagram of Test System

<Bluetooth v4.0 LE Tx Mode>



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Earphone	Lenovo	SH100	FCC DoC	Unshielded, 1.2 m	N/A

2.4 EUT Operation Test Setup

For Bluetooth v4.0 LE function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

3 Test Result

3.1 Radiated Band Edges and Spurious Emission Measurement

3.1.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

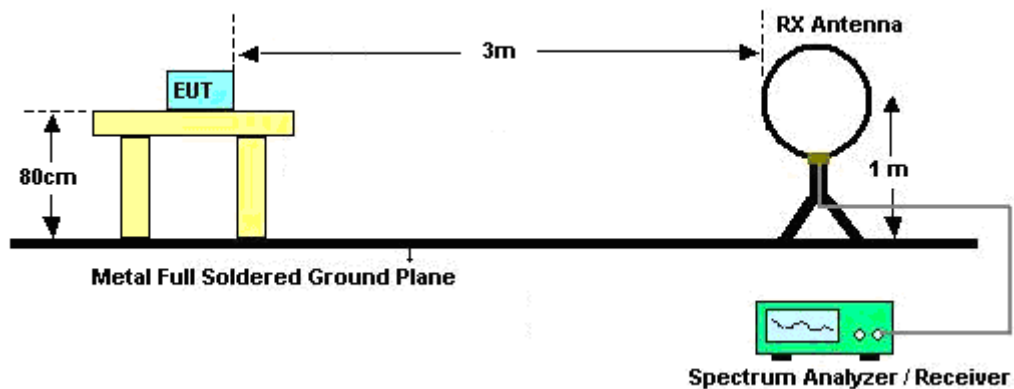
For average measurement:

 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

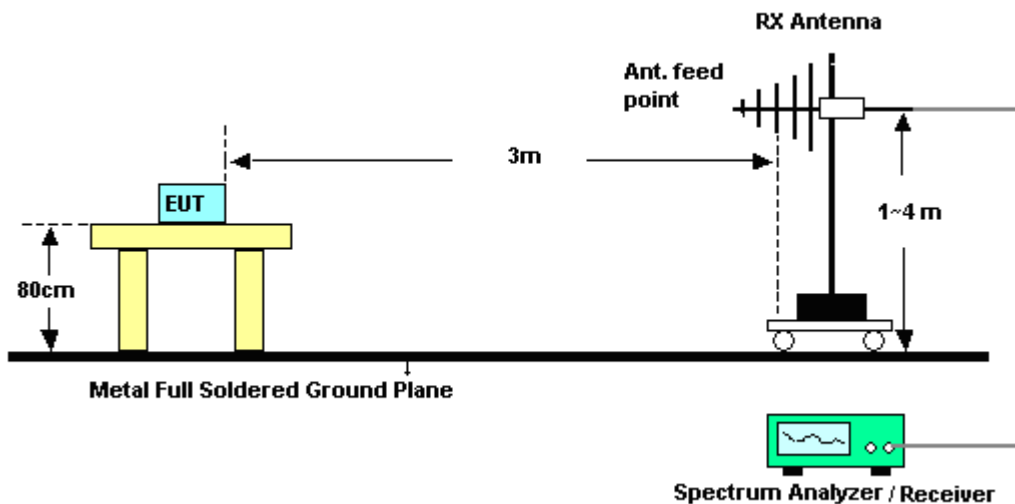
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth v4.0 LE	60.13	0.380	2.632	3kHz

3.1.4 Test Setup

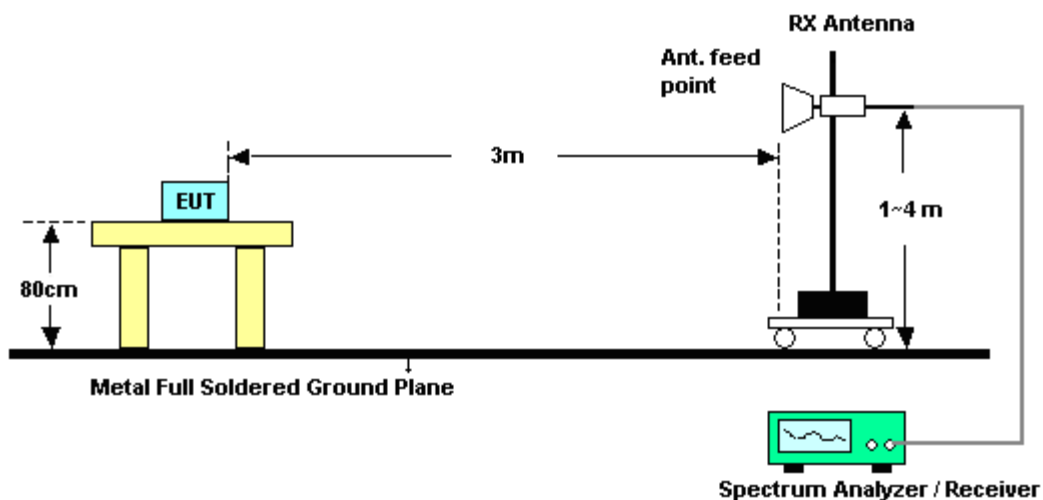
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.1.6 Test Result of Radiated Spurious at Band Edges

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
		Test Engineer :	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV /m)	Over Limit (dB)	Limit Line (dBμV /m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	58.32	-15.68	74	54.95	33.01	3.65	33.29	114	9	Peak
2483.5	39.53	-14.47	54	36.16	33.01	3.65	33.29	114	9	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV /m)	Over Limit (dB)	Limit Line (dBμV /m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	56.22	-17.78	74	52.85	33.01	3.65	33.29	175	82	Peak
2483.5	37.38	-16.62	54	34.01	33.01	3.65	33.29	175	82	Average

Note: In order to reduce the noise floor, 6dB EMI filter is used for the radiated band edge measurement.

3.1.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	21.67	-18.33	40	36.76	18	0.48	33.57	100	84	Peak
128.94	22.5	-21	43.5	43.34	11.71	1.04	33.59	-	-	Peak
160.95	22.35	-21.15	43.5	45.21	9.56	1.16	33.58	-	-	Peak
226.91	24.76	-21.24	46	46.19	10.67	1.39	33.49	-	-	Peak
243.4	23.61	-22.39	46	43.92	11.7	1.44	33.45	-	-	Peak
954.41	24.85	-21.15	46	33.71	20.76	2.82	32.44	-	-	Peak
2480	96.25	-	-	92.88	33.01	3.65	33.29	114	9	Peak
2480	95.56	-	-	92.19	33.01	3.65	33.29	114	9	Average
4960	47.55	-26.45	74	40.82	35.2	5.33	33.8	100	61	Peak
7440	49.29	-24.71	74	40.45	36.27	6.75	34.18	100	102	Peak

Note: Other harmonics are lower than background noise.

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
47.46	29.93	-10.07	40	54.39	8.5	0.64	33.6	100	118	Peak
169.68	27.68	-15.82	43.5	50.85	9.2	1.2	33.57	-	-	Peak
222.06	27.15	-18.85	46	49.04	10.25	1.37	33.51	-	-	Peak
366.59	19.65	-26.35	46	36.35	14.92	1.73	33.35	-	-	Peak
504.33	20.5	-25.5	46	34.33	17.27	2.02	33.12	-	-	Peak
951.5	25.47	-20.53	46	34.36	20.74	2.81	32.44	-	-	Peak
2480	93.68	-	-	90.31	33.01	3.65	33.29	175	82	Peak
2480	92.62	-	-	89.25	33.01	3.65	33.29	175	82	Average
4960	47.03	-26.97	74	40.3	35.2	5.33	33.8	100	52	Peak
7440	48.3	-25.7	74	39.46	36.27	6.75	34.18	100	195	Peak

Note: Other harmonics are lower than background noise.

3.2 Antenna Requirements

3.2.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.2.2 Antenna Connected Construction

Non-standard connector used.

3.2.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Apr. 23, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 23, 2013	Apr. 23, 2014	May 22, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Apr. 23, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Apr. 23, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Apr. 23, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Apr. 23, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Apr. 23, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Apr. 23, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Apr. 23, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 23, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Apr. 23, 2014	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Apr. 23, 2014	NCR	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54
--	------



Appendix B. Product Equality Declaration

TCT Mobile Limited

Date: May 7, 2014

Product Equality Declaration

We, TCT Mobile Limited, declare on our sole responsibility for the product of ONE TOUCH P321 as below:

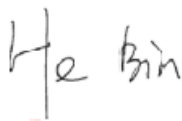
The differences between ONE TOUCH P321 and previous model, ONE TOUCH P320A are as below:

1. ONE TOUCH P320A has 2G/3G module on board, but ONE TOUCH P321 doesn't. All 2G/3G related components have removed from ONE TOUCH P321;
2. The CPU model number of ONE TOUCH P320A is MT8382V/W, and The CPU model number of ONE TOUCH P321 is MT8121V/B. The difference between these two CPUs is only that MT8382V/W has the modem, but MT8121V/B doesn't.
3. MCP has changed from KMK7X000VM-B314 to MT29PZZZ8D4WKFEW-18 W.
The only difference between these 2 MCPs : The eMMC flash in KMK7X000VM-B314 is 8GB and the other is 4GB.

Except listings above, the others are all the same as previous version.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,



Contact Person: He Bin

Company: TCT Mobile Limited

Tel: 0755-36635791

E-Mail: bin.he@tcl.com