

Variant FCC RF Test Report

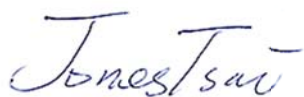
APPLICANT : DELL Inc.
EQUIPMENT : Tablet PC
BRAND NAME : Dell
MODEL NAME : T02D; T02D003
TYPE NAME : T02D003
FCC ID : E2K-T02D003
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

This is a variant report which is only valid together with the original test report. The product was received on Jul. 09, 2014 and testing was completed on Sep. 25, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and the testing has shown the tested sample to be in compliance 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.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR431806-02C	Rev. 01	This is a variant report for T02D; T02D003. The product equality declaration could be referred to Appendix B. Based on the similarity between two models, only WLAN 2.4GHz 802.11n HT20 has power reduced and the worst cases of radiated spurious emission for all bands from original test report (Sporton Report Number FR431806C) were verified for the differences.	Oct. 23, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.13 dB at 2483.560 MHz



1 General Description

1.1 Applicant

DELL Inc.

One Dell Way, Round Rock, Texas 78682, United States

1.2 Manufacturer

DELL Inc.

One Dell Way, Round Rock, Texas 78682, United States

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	Dell
Model Name	T02D; T02D003
Type Name	T02D003
FCC ID	E2K-T02D003
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	MP
SW Version	YTP802A110830
EUT Stage	Identical Prototype

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 Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5745~5825MHz.
Antenna Type	IFA Antenna
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

1.5 Modification of EUT

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

1.6 Testing Location

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/IC Registration No.
	TH01-KS	03CH01-KS	149928/4086E-1

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

1.7 Applicable 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 v03r02
- FCC KDB 644545 D01 Guidance for IEEE 802 11ac Old Rules v01r02
- 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 Pre-Scanned RF Power

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	9.65	9.59	9.60	9.36	9.46	9.53	9.34	9.33
CH 06	2437 MHz	9.77	9.62	9.60	9.39	9.47	9.70	9.54	9.51
CH 11	2462 MHz	10.25	10.03	10.13	10.18	10.16	10.00	9.95	10.08

2.2 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

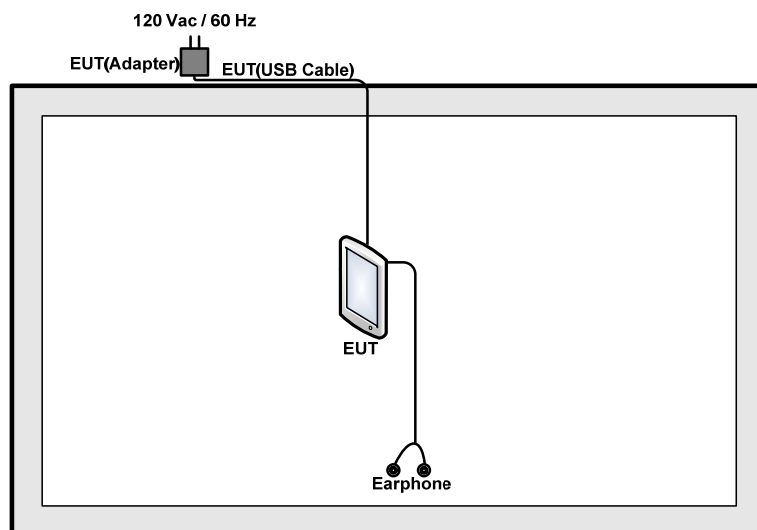
<2.4GHz>

Test Cases				
Conducted	Test Items	Mode	Data Rate	Test Channel
TCs	Output Power	802.11n HT20	MCS0	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	11
		802.11g	6 Mbps	11
		802.11n HT20	MCS0	1
		802.11n HT40	MCS0	3
	Radiated Spurious Emission	802.11b	1 Mbps	11
		802.11g	6 Mbps	11
		802.11n HT20	MCS0	1
		802.11n HT40	MCS0	3

<5GHz>

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Radiated TCs	Radiated Spurious Emission	802.11a	6 Mbps	165
		802.11n HT20	MCS0	149
		802.11n HT40	MCS0	151
		802.11ac VHT20	MCS0	149
		802.11ac VHT40	MCS0	151
		802.11ac VHT80	MCS0	155

2.3 Connection Diagram of Test System



2.4 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

2.5 EUT Operation Test Setup

For WLAN RF test items, an 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 edge and Spurious Emission Measurement

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 measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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.

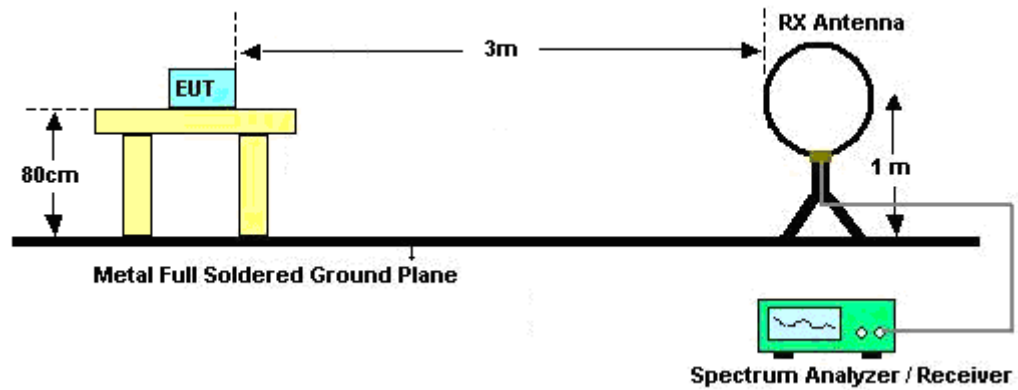
For average measurement:

 - 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.

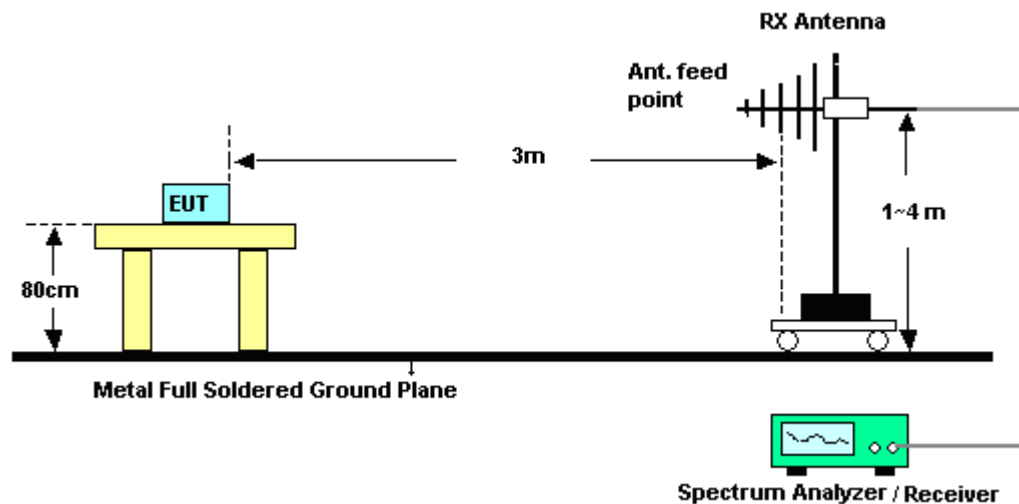
Band	Duty Cycle (%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	98.624	-	-	10Hz
802.11g	93.220	1.430	0.699	1kHz
2.4GHz 802.11n HT20	92.758	1.332	0.751	1kHz
2.4GHz 802.11n HT40	86.753	0.668	1.497	3kHz
802.11a	93.464	1.430	0.699	1kHz
5GHz 802.11n HT20	93.007	1.330	0.752	1kHz
5GHz 802.11n HT40	87.712	0.671	1.490	3kHz
5GHz 802.11ac VHT20	92.541	1.340	0.746	1kHz
5GHz 802.11ac VHT40	86.494	0.666	1.502	3kHz
5GHz 802.11ac VHT80	76.147	0.332	3.012	10kHz

3.1.4 Test Setup

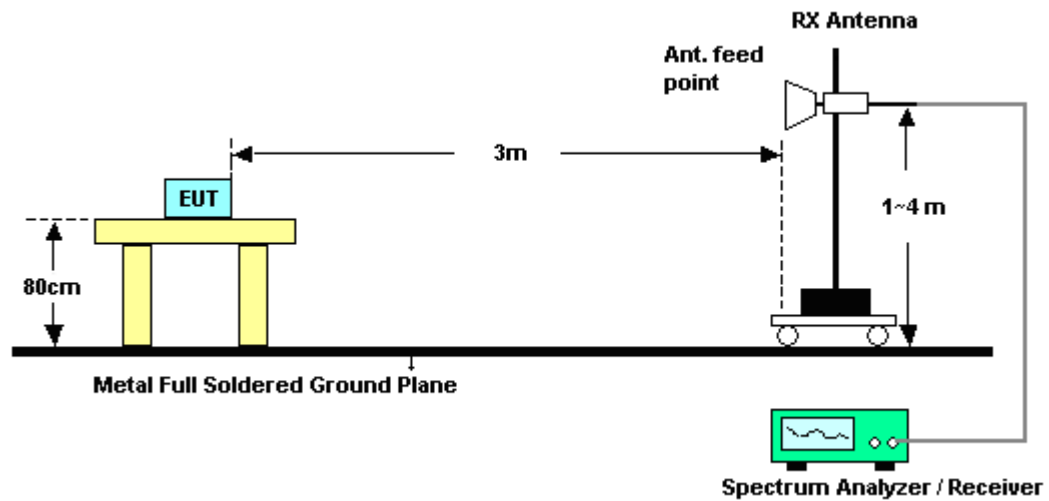
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 :	802.11b	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Jun Liu

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
2486.14	58.34	-15.66	74	54.97	33.01	3.65	33.29	139	138	Peak
2483.5	38.83	-15.17	54	35.46	33.01	3.65	33.29	139	138	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
2483.59	56.54	-17.46	74	53.17	33.01	3.65	33.29	100	275	Peak
2483.5	40.84	-13.16	54	37.47	33.01	3.65	33.29	100	275	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	40~41%
Test Channel :	11	Test Engineer :	Jun Liu

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
2483.56	71.87	-2.13	74	68.5	33.01	3.65	33.29	108	119	Peak
2483.53	46.4	-7.6	54	43.03	33.01	3.65	33.29	108	119	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	71.68	-2.32	74	68.31	33.01	3.65	33.29	100	112	Peak
2483.5	45.53	-8.47	54	42.16	33.01	3.65	33.29	100	112	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	01	Test Engineer :	Jun Liu

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
2389.92	69.19	-4.81	74	66	32.86	3.59	33.26	104	134	Peak
2390	48.35	-5.65	54	45.16	32.86	3.59	33.26	104	134	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
2389.83	69.54	-4.46	74	66.35	32.86	3.59	33.26	100	94	Peak
2390	48.86	-5.14	54	45.67	32.86	3.59	33.26	100	94	Average



Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	40~41%
Test Channel :	03	Test Engineer :	Jun Liu

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
2389.74	69.07	-4.93	74	65.88	32.86	3.59	33.26	108	119	Peak
2390	50.69	-3.31	54	47.5	32.86	3.59	33.26	108	119	Average
2493.13	58.01	-15.99	74	54.6	33.05	3.66	33.3	108	119	Peak
2489.74	44.24	-9.76	54	40.83	33.05	3.66	33.3	108	119	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
2387.13	67.1	-6.9	74	63.91	32.86	3.59	33.26	100	80	Peak
2389.92	51.78	-2.22	54	48.59	32.86	3.59	33.26	100	80	Average
2483.53	56.77	-17.23	74	53.4	33.01	3.65	33.29	100	80	Peak
2484.28	43.5	-10.5	54	40.13	33.01	3.65	33.29	100	80	Average

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 :	802.11b	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 2462 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
2462	103.99	-	-	100.66	32.98	3.64	33.29	139	138	Peak
2462	98.83	-	-	95.5	32.98	3.64	33.29	139	138	Average
4924	48.01	-25.99	74	41.31	35.19	5.31	33.8	100	165	Peak
7386	49.19	-24.81	74	40.41	36.24	6.7	34.16	100	88	Peak

Test Mode :	802.11b	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 2462 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
2462	106.42	-	-	103.09	32.98	3.64	33.29	100	275	Peak
2462	101.08	-	-	97.75	32.98	3.64	33.29	100	275	Average
4924	47.66	-26.34	74	40.96	35.19	5.31	33.8	100	61	Peak
7386	49.12	-24.88	74	40.34	36.24	6.7	34.16	100	114	Peak



Test Mode :	802.11g	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 2462 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
91.11	28.22	-15.28	43.5	51.84	9.12	0.88	33.62	100	69	Peak
137.67	25.43	-18.07	43.5	46.9	11.05	1.07	33.59	-	-	Peak
179.38	27	-16.5	43.5	50.88	8.47	1.22	33.57	-	-	Peak
291.9	19.49	-26.51	46	38.41	12.89	1.57	33.38	-	-	Peak
481.05	22.84	-23.16	46	37.11	16.89	2	33.16	-	-	Peak
694.45	22.2	-23.8	46	33.45	19.27	2.37	32.89	-	-	Peak
2462	108.49	-	-	105.16	32.98	3.64	33.29	108	119	Peak
2462	98.06	-	-	94.73	32.98	3.64	33.29	108	119	Average
4924	46.64	-27.36	74	39.94	35.19	5.31	33.8	100	156	Peak
7386	48.97	-25.03	74	40.19	36.24	6.7	34.16	100	105	Peak



Test Mode :	802.11g	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 2462 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
45.52	27.87	-12.13	40	51.6	9.25	0.63	33.61	100	144	Peak
148.34	26.75	-16.75	43.5	49.08	10.14	1.11	33.58	-	-	Peak
174.53	26.34	-17.16	43.5	49.83	8.87	1.21	33.57	-	-	Peak
235.64	25.48	-20.52	46	46.24	11.29	1.42	33.47	-	-	Peak
444.19	22.12	-23.88	46	37.1	16.27	1.96	33.21	-	-	Peak
580.96	22.51	-23.49	46	34.72	18.57	2.19	32.97	-	-	Peak
2462	109.04	-	-	105.71	32.98	3.64	33.29	100	112	Peak
2462	97.93	-	-	94.6	32.98	3.64	33.29	100	112	Average
4924	47.17	-26.83	74	40.47	35.19	5.31	33.8	100	51	Peak
7386	50.31	-23.69	74	41.53	36.24	6.7	34.16	100	216	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 2412 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
2412	105.86	-	-	102.63	32.89	3.61	33.27	104	134	Peak
2412	94.03	-	-	90.8	32.89	3.61	33.27	104	134	Average
4824	46.94	-27.06	74	40.32	35.17	5.25	33.8	100	165	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 2412 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
2412	107.8	-	-	104.57	32.89	3.61	33.27	100	94	Peak
2412	95.89	-	-	92.66	32.89	3.61	33.27	100	94	Average
4824	46.07	-27.93	74	39.45	35.17	5.25	33.8	100	151	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	22~23°C
Test Channel :	03	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 2422 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
2422	103.8	-	-	100.54	32.92	3.62	33.28	107	121	Peak
2422	93.07	-	-	89.81	32.92	3.62	33.28	107	121	Average
4844	46.57	-27.43	74	39.93	35.18	5.26	33.8	100	151	Peak
7266	48.63	-25.37	74	39.99	36.19	6.56	34.11	115	81	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	22~23°C
Test Channel :	03	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 2422 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
2422	103.09	-	-	99.83	32.92	3.62	33.28	100	80	Peak
2422	92.1	-	-	88.84	32.92	3.62	33.28	100	80	Average
4844	47.08	-26.92	74	40.44	35.18	5.26	33.8	100	261	Peak
7266	47.77	-26.23	74	39.13	36.19	6.56	34.11	100	151	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5825 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
5825	101.6	-	-	93.99	35.55	5.76	33.7	109	0	Peak
5825	90.62	-	-	83.01	35.55	5.76	33.7	109	0	Average
11649	36.29	-37.71	74	57.41	4.2	8.73	34.05	100	152	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5825 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
5825	104.25	-	-	96.64	35.55	5.76	33.7	127	181	Peak
5825	93.4	-	-	85.79	35.55	5.76	33.7	127	181	Average
11649	35.12	-38.88	74	56.24	4.2	8.73	34.05	145	121	Peak



Test Mode :	5GHz 802.11n HT20	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5745 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
5745	102.69	-	-	95.2	35.52	5.67	33.7	100	360	Peak
5745	91.01	-	-	83.52	35.52	5.67	33.7	100	360	Average
11490	35.37	-38.63	74	56.06	4.47	8.84	34	100	120	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5745 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
5745	104.25	-	-	96.76	35.52	5.67	33.7	200	168	Peak
5745	92.11	-	-	84.62	35.52	5.67	33.7	200	168	Average
11490	35.6	-38.4	74	56.29	4.47	8.84	34	100	154	Peak



Test Mode :	5GHz 802.11n HT40	Temperature :	22~23°C
Test Channel :	151	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5755 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
5755	103.52	-	-	96.01	35.53	5.68	33.7	100	267	Peak
5755	92.1	-	-	84.59	35.53	5.68	33.7	100	267	Average
11511	36.42	-37.58	74	57.03	4.53	8.86	34	132	226	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	22~23°C
Test Channel :	151	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5755 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
5755	103.04	-	-	95.53	35.53	5.68	33.7	119	285	Peak
5755	91.57	-	-	84.06	35.53	5.68	33.7	119	285	Average
11511	35.22	-38.78	74	55.83	4.53	8.86	34	145	210	Peak

Test Mode :	5GHz 802.11ac VHT20	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5745 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
5745	104.2	-	-	96.71	35.52	5.67	33.7	100	145	Peak
5745	94.15	-	-	86.66	35.52	5.67	33.7	100	145	Average
11490	35.95	-38.05	74	56.64	4.47	8.84	34	145	221	Peak

Test Mode :	5GHz 802.11ac VHT20	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5745 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
5745	105.2	-	-	97.71	35.52	5.67	33.7	100	184	Peak
5745	96.52	-	-	89.03	35.52	5.67	33.7	100	184	Average
11490	36.62	-37.38	74	57.31	4.47	8.84	34	200	10	Peak



Test Mode :	5GHz 802.11ac VHT40	Temperature :	22~23°C
Test Channel :	151	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5755 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
5755	102.36	-	-	94.85	35.53	5.68	33.7	100	267	Peak
5755	91.44	-	-	83.93	35.53	5.68	33.7	100	267	Average
11511	36.8	-37.2	74	57.41	4.53	8.86	34	100	120	Peak

Test Mode :	5GHz 802.11ac VHT40	Temperature :	22~23°C
Test Channel :	151	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5755 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
5755	97.66	-	-	90.15	35.53	5.68	33.7	100	265	Peak
5755	88.15	-	-	80.64	35.53	5.68	33.7	100	265	Average
11511	36.45	-37.55	74	57.06	4.53	8.86	34	100	32	Peak



Test Mode :	5GHz 802.11ac VHT80	Temperature :	22~23°C
Test Channel :	155	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5775 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
5775	100.29	-	-	92.76	35.53	5.7	33.7	100	280	Peak
5775	89.45	-	-	81.92	35.53	5.7	33.7	100	280	Average
11550	36.6	-37.4	74	57.39	4.42	8.81	34.02	100	14	Peak

Test Mode :	5GHz 802.11ac VHT80	Temperature :	22~23°C
Test Channel :	155	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5775 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
5775	100.67	-	-	93.14	35.53	5.7	33.7	145	265	Peak
5775	90.37	-	-	82.84	35.53	5.7	33.7	145	265	Average
11550	36.51	-37.49	74	57.3	4.42	8.81	34.02	145	21	Peak



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Sep. 25, 2014	Dec. 27, 2014	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Sep. 25, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Sep. 25, 2014	Feb. 26, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Sep. 12, 2014~ Sep. 14, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Sep. 12, 2014~ Sep. 14, 2014	Dec. 27, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Sep. 12, 2014~ Sep. 14, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Sep. 12, 2014~ Sep. 14, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Sep. 12, 2014~ Sep. 14, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Sep. 12, 2014~ Sep. 14, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Sep. 12, 2014~ Sep. 14, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Sep. 12, 2014~ Sep. 14, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Sep. 12, 2014~ Sep. 14, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Sep. 12, 2014~ Sep. 14, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Sep. 12, 2014~ Sep. 14, 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% ($U = 2U_c(y)$)	2.5
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Appendix B. Product Equality Declaration

Declaration

Model Information:	
Applicant's Name:	BYD Precision Manufacture Co., Ltd.
Applicant's Business Address:	No.3001, Baohe Road, Baolong Industrial, Longgang, Shenzhen, 518116, P.R.China
Model Name:	T02D
HW version:	MP
SW version:	YTP802A110830

Description:

We(BYD)declare,

The main differences conducted to 2nd source as below:

1. Add 2nd source adapter P/N LA10EUNM130(for EU) & LA10USNM130(for US);
2. Add 2nd source LCD P/N T09ADFC08002A;

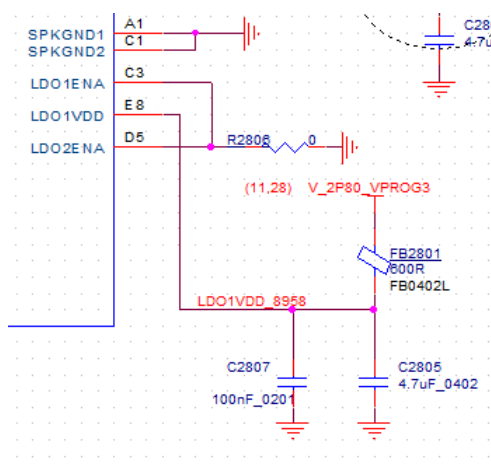
Hardware change history is list below

Date	Version	Hardware	Change Note
2014/3/31	01	DVT-B	Initial version
2014/6/15	02	MP	Refer to below part1

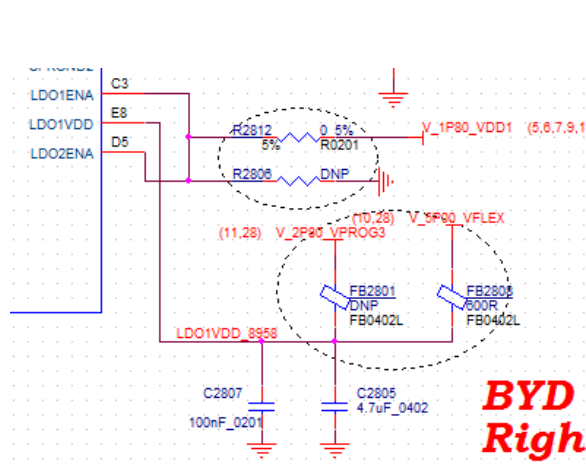
Part1

1、AVDD1&DCVDD Changed to internal LDO to improve power consumption and resolve earphone detect issue.

DVT-B



MP

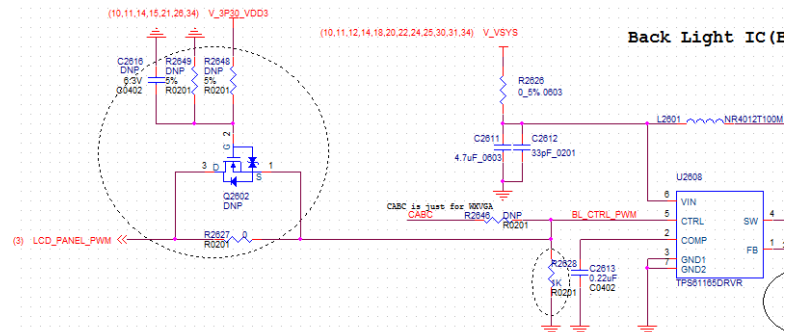
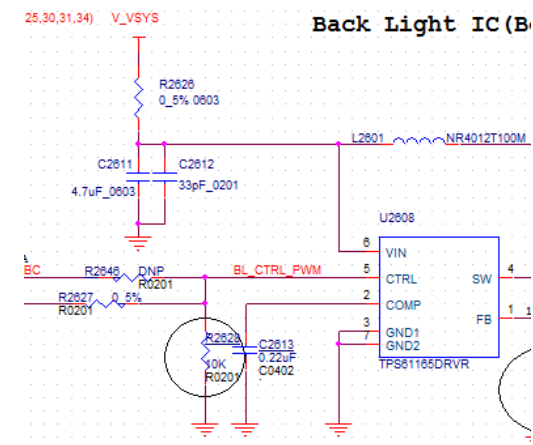


**BYD
Righ**

2、Change R2628 from 10K to 1K for LCD flicker while power on. And add reserve circuit to avoid LCD flick issue if the current solution is not OK.

DVT-B

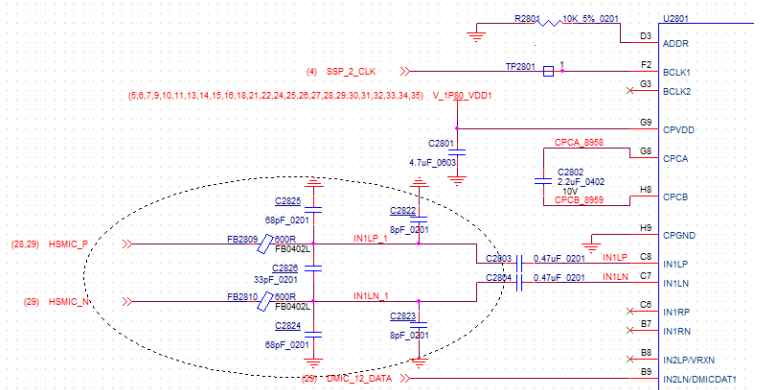
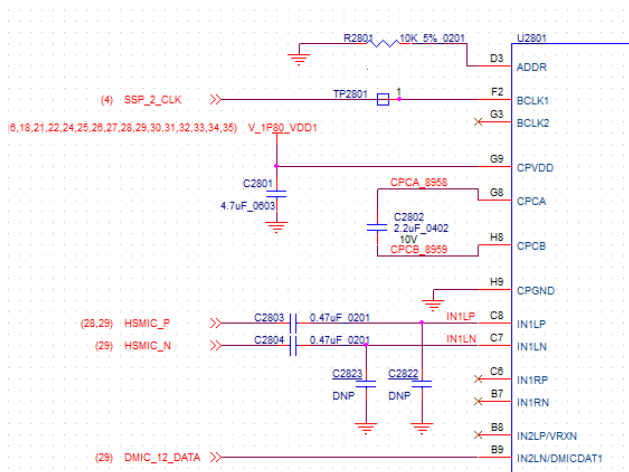
MP



3、ADD C2822,C2823,C2824,C2825,C2826,FB2809,FB2810 to filter TDMA Noise.

DVT-B

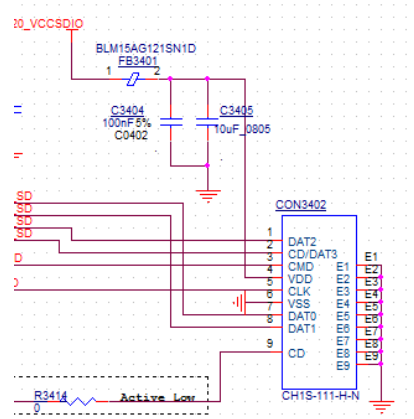
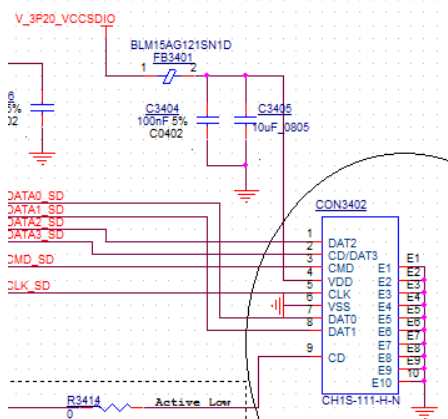
MP



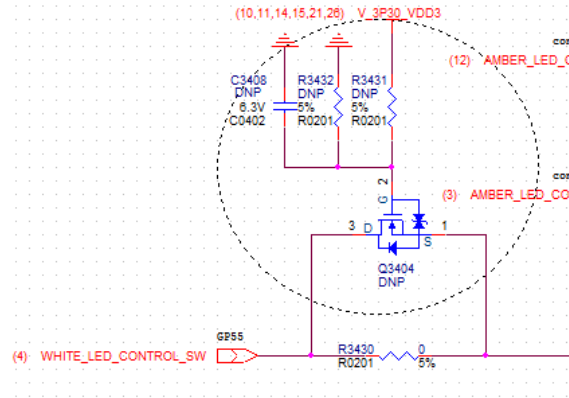
4、Delete pin E10,because this pin is easily short to SD card's frame GND and after del E10 pin it will not influence the reliability.

DVT-B

MP



MP



Issue Date: 2014/9/12