

Test Report

Report Number:1417062SHJ-EMC-G01
Approved test plan number: N/A

Applicant Name: Texas Instruments Semiconductor Technologies (Shanghai) CO., Ltd
Report Date: 2014-04-09
Applicant Address: 3rd Floor, No. 72 Liangxiu Road, Pudong New Area Shanghai, 201203, China
Attn: Summer Su

Sample Description:

Product:	PCB
Samples Quantity:	1
Sample ID:	IAS1417062.001
Part/Model number:	TPS92630-Q1
Date Received:	2014-03-08
Date Test Conducted:	2014-03-08

Test address different from lab address (if existed) : N/A

Tests Conducted:

TL 82166 (2011); As per client's requirement TL 82166 (2011); As per client's requirement

Test sequence : RI->BCI

Test sequence : RI->BCI

Conclusion:

Conclusion:

Section No.	Test Name	Section No.	Evaluation	Test Name
6.1	BCI Test	6.1	Meet requirement	BCI Test
6.2	Antenna method	6.2	Meet requirement	Antenna method

Approved by:

Prepared by: Approved by:



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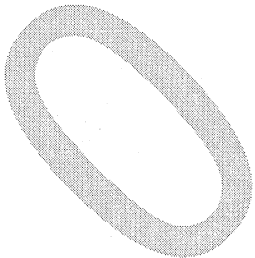


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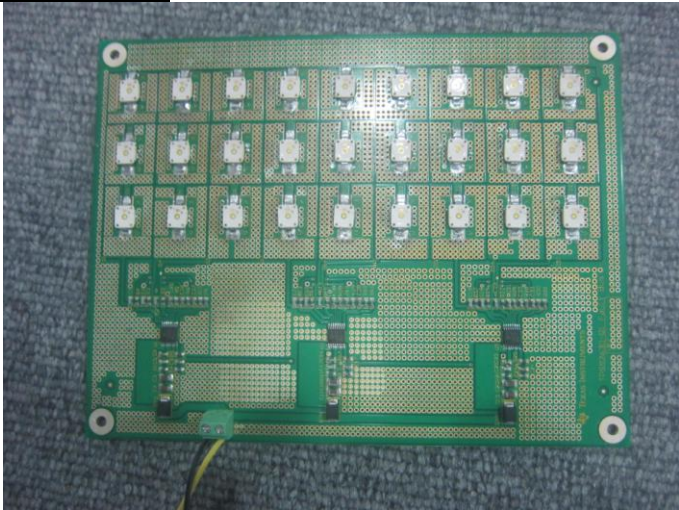
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ORIGINAL

DUT Photos:



IAS1417062.001



IAS1417062.001



IAS1417062.001

TEST RESULTS GENERAL SUMMARY:

1. Bulk Current Injection - BCI TL 82166 (2011)	
IAS1417062.001	Remarks
Mode 1	
Meet requirement	None
2. Radiated Immunity - RI TL 82166 (2011)	
IAS1417062.001	Remarks
Mode 1	
Meet requirement	None

Note 2: Operation mode:

Mode 1: The power line of PCB is connected to the battery.

1. Test Results and Photos

1.1 Bulk Current Injection – BCI

1.1.1 Test requirement

Step size	0.1MHz – 1MHz	0.03MHz
	1MHz – 200MHz	1MHz
	200MHz – 400MHz	2MHz
Test modulation	0.1MHz – 400MHz	CW, AM (1KHz, 80%, Peak Conservation)
Dwell time	2s	
Test method	Open loop method; CBCI	
Clamp position	150, 450, 750 to DUT	
Test level	Level 2; Category 2;	
Test mode	Mode 1	

1.1.2 Monitoring parameters and acceptance criteria

Working Mode	Monitoring Parameters	Acceptance	Test Level
Mode 1	LED light (visual inspection)	Class A	Level 2; Category 2;

Test ReportReport Number:1417062SHJ-EMC-G01
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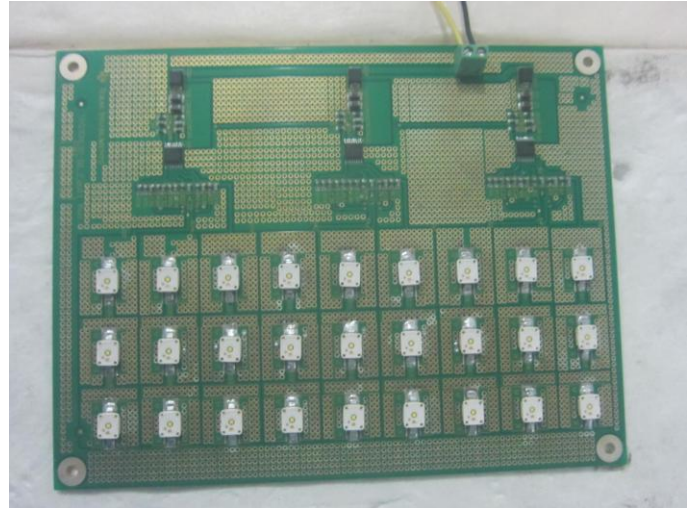
Product Name: PCB					Mode name: Mode 1	
Sample Number: IAS1417062.001					Testing Location: CHA 001	
Temperature: 21 degree C					Testing Start Date: 2014/03/10	
Humidity: 58 %					Testing End Date: 2014/03/10	
TL82166 (2011)						
Frequency (MHz)	Injection Mode	Position (mm)	Modulation	DUT Mode	Test Level	Test Results Description
0.1-400	CBCI	150	CW	Mode 1	Level 2	IAS1417062.001
0.1-400	CBCI	150	AM			No Deviation observed
0.1-400	CBCI	450	CW			No Deviation observed
0.1-400	CBCI	450	AM			No Deviation observed
0.1-400	CBCI	750	CW			No Deviation observed
0.1-400	CBCI	750	AM			No Deviation observed

Test Results Meet The Requirement

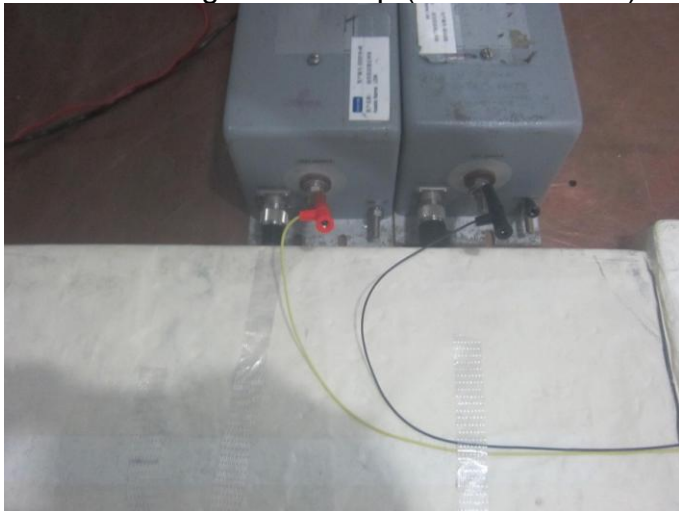
1.1.4 Test photographs



Picture for general setup (1MHz-400MHz)



Picture for DUT side



Picture for LISN side



Picture for battery side



Picture for injection probe side



Picture for general setup (0.1MHz-1MHz)

1.2 Radiated Immunity – ALSE Method**1.2.1 Test requirement**

Step size	200MHz – 400MHz	2MHz	
	400MHz – 1000MHz	5MHz	
	1000MHz – 3000MHz	10MHz	
Test modulation	200MHz – 3000MHz	CW, AM (1KHz, 80%, Peak Conservation) PM1 (217Hz, t=577 us); PM2 (300Hz, t=3 us);	
Dwell time	2s		
ALSE	Mode 1	Max. test level: 140V/m	Level 2

1.2.2 Monitoring parameters and acceptance criteria

Working Mode	Monitoring Parameters	Acceptance	Test Level
Mode 1	LED light (visual inspection)	Class A	Level 2; Max field strength: 140V/m

1.2.3 Test results**RI Test Results**

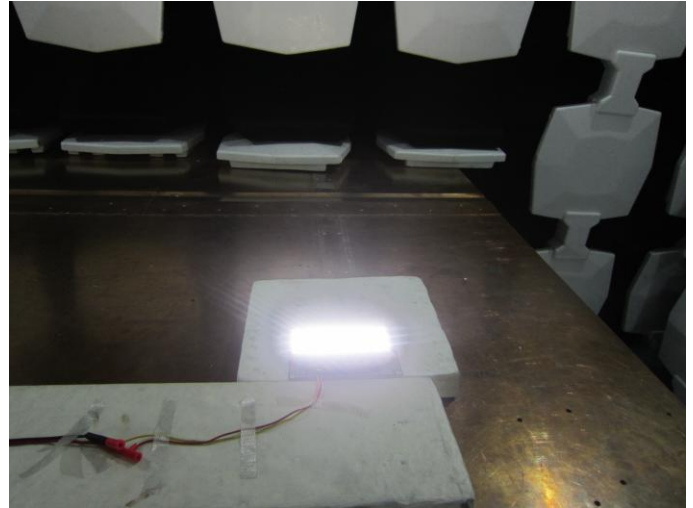
Product Name: PCB				Mode name: Mode 1
Sample Number: IAS1417062.001				Testing Location: CHA 010
Temperature: 23 degree C				Testing Start Date: 2014/03/08
Humidity: 52 %				Testing End Date: 2014/03/08
TL 82166 (2011)				
Frequency	Test Level	Modulation	DUT Mode	Test Results Description
				IAS1417062.001
400MHz -806GHz-HP	Level 2	CW/AM	Mode 1	No Deviation Observed
200MHz -806MHz-VP		CW/AM		No Deviation Observed
806MHz -915MHz-HP		CW/PM1		No Deviation Observed
806MHz -915MHz-VP		CW/PM1		No Deviation Observed
915MHz -1GHz-HP		CW		No Deviation Observed
915MHz -1GHz-VP		CW		No Deviation Observed
1GHz-1.2GHz-HP		CW		No Deviation Observed
1.2GHz-1.4GHz-HP		CW/PM2		No Deviation Observed
1.4GHz-1.71GHz-HP		CW		No Deviation Observed
1.71GHz-1.91GHz-HP		CW/PM1		No Deviation Observed
1.91GHz-2GHz-HP		CW		No Deviation Observed
1GHz-1.2GHz-VP		CW		No Deviation Observed
1.2GHz-1.4GHz-VP		CW/PM2		No Deviation Observed
1.4GHz-1.71GHz-VP		CW		No Deviation Observed
1.71GHz-1.91GHz-VP		CW/PM1		No Deviation Observed
1.91GHz-2GHz-VP		CW		No Deviation Observed
2GHz-2.7GHz-HP		CW		No Deviation Observed
2.7GHz-3.0GHz-HP		CW/PM2		No Deviation Observed
2GHz-2.7GHz-HP		CW		No Deviation Observed
2.7GHz-3.0GHz-HP		CW/PM2		No Deviation Observed

Test Results Meet The Requirement

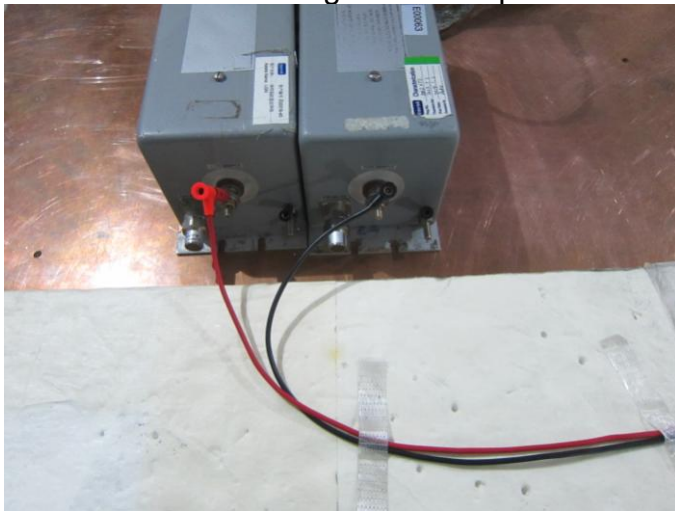
1.2.4 Test photographs



Picture for general setup



Picture for DUT side



Picture for LISN side



Picture for battery side



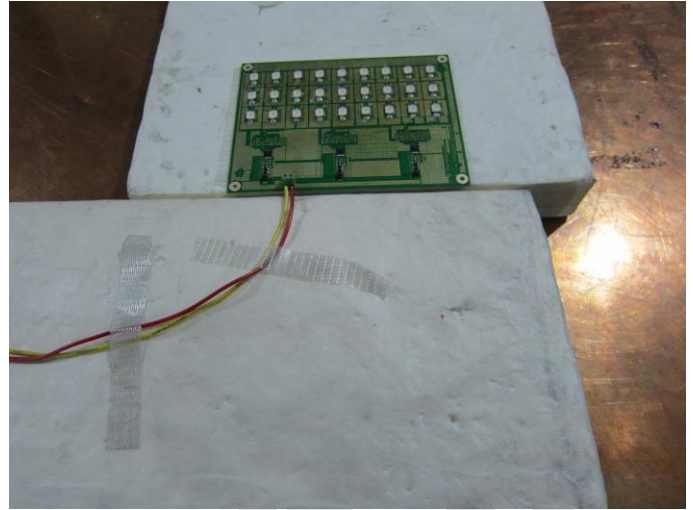
Picture for horn antenna (below 1GHz)



Picture for horn antenna (above 1GHz)



Picture for monitor interface



Picture for DUT side

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2. Test Equipment

2.1 Test Equipment for Radiated Immunity

Asset#	Description	Model or model number	Serial number	Calibration due date
SWT040-1	BAT EMC (Immunity)	Nexio BSR Immunity	3.6	Reference Only
EMS112	Signal Generator	Agilent N5181A	MY48180867	2014-12-09
EMS113-1	Power Sensor	Agilent E9321N	MY44420432	2014-04-21
EMS187	Amplifier	Milmega AS0104-100/100	1053823	2014-09-01
EMS192	DRG Horn	ETS-Lindgren3106B	00114562	Reference Only
EMS195	Horn Antenna	AR ATH800M5GA	0341743	Reference Only
EMS073	LISN	Solar	0785152	2014-07-02
EMS002	LISN	Solar	511102	2014-08-20
EMS018	Amplifier	Schaffner CBA9436	N/A	2014-04-14
ESD020-3	Temperature and Humidity Recorder	Shanghai ZHICHENG equipment Co.,Ltd 01050033	43	2014-09-27
CHA010	Chamber	ETS-Lindgren	N/A	Initial Calibration Only
EMS194	Field Probe	AR FL7006kit	0341498	2014-11-07
EMS162	PCAN-LWL Peak-system	N/A	N/A	Reference Only

2.2 Test Equipment for Bulk Current Injection

Asset#	Description	Model or model number	Serial number	Calibration due date
SWT001-2	EMC Compliance 3 Immunity	4.01.0	N/A	Reference Only
EMS001	Signal Generator	R&S SML01	104098	2015-01-11
EMS002	Amplifier	AR 100W1000B	313242	2014-04-14
EMS003	Amplifier	AR 100A250A	313252	2014-04-14
EMS013	Dual Directional Coupler	Werlatone C1795-13	25872	2014-09-14
EMS004	Power Meter	Boonton 4232A	153602	2014-07-11
EMS121	Power Sensor	Boonton 51011	34981	2014-11-07
EMS004-2	Power Sensor	Boonton 51011	33912	2014-07-11
EMS032	Spectrum Analyzer	Advantest R3361C	81720168	2014-10-14
EMS005	Injection Probe	FCC F140-A	544	Reference Only
EMS012	Calibration Fixture	FCC-BCICF-2	356	Reference Only
EMS105-1	Attenuator	Mini-Circuits BW-40N100W+	N/A	2014-07-07
EMS155	Termination	BNC,50Ω	N/A	Reference Only
EMI019	LISN	Solar 9117-5-TS-50-N	511103	2014-06-20
EMS029	LISN	Solar 9117-5-TS-50-N	0511152	2014-12-02
ESD020-2	Temperature and Humidity Recorder	Shanghai ZHICHENG equipment Co.,Ltd 01050033	42	2014-09-27
EMS156	Attenuator	20dB/50Ω,UNAT-20t	15542	2014-09-14
CHA001	Chamber	ETS-Lindgren	N/A	Initial Calibration Only
EMS158-3	RF-cable	EF-393U/2*11N-50-7-5/4m	N/A	2014-12-23
EMS158-2	RF-cable	EF-393U/2*11N-50-7-5/4m	N/A	2014-12-23
EMS158-4	RF-cable	EF-393U/2*11N-50-7-5/4m	N/A	2014-12-23
EMS105-4	Attenuator	Mini-Circuits BW-40N100W+	N/A	Reference Only
EMS014-1	RF Cable	N/A	N/A	Reference Only
EMS160-2	RF Cable	EF-393U/2*11N-50-7-5/4m	N/A	2014-12-23
EMS005-1	Matching Network	FCC-F-140A	544	Reference Only

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