DATA PACKAGE INFORMATION SHEET

Applicant Information	Name / Address:	TIP N/A

Product Information	Standard:	IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013
	CCNs:	
	Product:	Base transceiver station
	Models:	Open Cellular Connect-1 GSM BTS

Test Location Information	Tests Conducted By**:	Sign	Abraham Alganes
	** When all tests are conducted by one person, the printed name can be inserted here; otherwise, the name of the person conducting the test shall be entered on each page containing data (printed name only, signature not required).		
	Authorized Signatory or TCP Reviewer:	Sign	
		Print	
		Date	
	UL WTDP / WMT Witness:	Sign	
		Print	

Reviewed & Accepted By	Qualified Project Handler:	Sign	Paul Pham Paul Pham/ Handler

LIST OF TESTS

Test Name **Page**

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Special Instructions - Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

Standard	Ambient Temperature, °C	Relative Humidity, %	Barometric Pressure, mBar
	±	±	±
60065	25 ± 10	Max 75	Not specified
60601-1	+10 to +40	30 to 75	700 to 1060 hPA
60950	Not specified	Not specified	Not specified
60950-1	Not specified	Not specified	Not specified
61010-1	+15 to +35	Max 75	75 to 106 kPa
61215	Not specified	Not specified	Not specified
61646	Not specified	Not specified	Not specified
61730	Not specified	Not specified	Not specified

RISK ANALYSIS RELATED TO TESTING PERFORMANCE:

The following types of risks have been identified. Take necessary precautions. This list is not all inclusive.

[X] Electric shock	**[]** Radiation
[X] Energy related hazards	**[]** Chemical hazards
[X] Fire	**[]** Noise
[] Heat related hazards	**[]** Vibration
[] Mechanical	**[X]** Other (Specify) Explosion

Witness Test Data Program (WTDP) Information:

Environment:

Accommodations and Environmental conditions, including proper power source meet the requirements of the test standard or UL default criteria (ISO/IEC 17025 Clause 5.3.1, 5.3.2. 5.3.3, 5.3.4) **[ ]**Yes **[ ]**No **[ ]**N/A

Personnel:

Lab Management shall authorize personnel to operate particular types of equipment used in testing. (ISO/IEC 17025 5.2.5) **[ ]**Yes **[ ]**No

Equipment:

Testing is being conducted within the test equipment calibration dates. (See Test Instrument Information Page and ISO/IEC 17025 5.5.1, 5.5.2, 5.5.4, 5.5.5, 5.5.8) **[ ]**Yes **[ ]**No

Calibrations for testing equipment is traceable to SI Units. Refer to 00-OP-C0032 (Calibration Certificate Analysis. (ISO/IEC 17025 5.6.2.2) **[ ]**Yes **[ ]**No

Critical Consumables:

Critical consumables are compliant with test standard requirements. (ISO/IEC 17025 Clause 4.6) **[ ]**Yes **[ ]**No **[ ]**N/A

Sample Identification:

Identification of items to be tested has been made (e.g. model no., Serial No., etc.) (See Test Sample Identification page and ISO/IEC 17025 Clause 5.8.2) **[ ]**Yes **[ ]**No

Summary:

The test facility [was] [was not] deemed to have the environment and capabilities necessary to perform the tests included in this data package.

[ ] The CAS Staff as indicated below, (a competent L1, L2 or L3 in a similar CCN/Standard for a similar test method) was utilized to conduct the witnessing of tests on behalf of the project handler. (Please complete the table below to document the rationale and approval.)

Name of UL Staff conducting WTDP	CCN/Standard to be witnessed	Test(s) to be witnessed	L1, L2 or L3 Competency	Similar CCN/Standard Competency	L3 Reviewer Approval & Date (Similar CCN/Standard)

[ ] The Field Services Staff Member, as indicated below, (with a competent program competency as authorized by the FOM) was informed and utilized to conduct the witnessing of tests on behalf of the project handler. (Please complete the table below to document the information and approval.)

Name of UL Staff conducting WTDP	CCN/Standard to be witnessed	Test(s) to be witnessed	FOM Approver (name)	L3 Reviewer Approval & Date (Similar CCN/Standard)

TEST SAMPLE IDENTIFICATION

The table below is to provide correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Number	Sample Card Number	Date Received	Manufacturer, Product Identification and Ratings
1	1262358	2017-11-15	Facebook, Base transceiver station, model Connect-1 GSM BTS, 16-24 Vdc, 3A 48 Vdc PoE, 1.5A (provided from external power source)
Sampling Procedure (if used) :			

TO BE COMPLETED BY STAFF CONDUCTING THE TESTING:

TEST LOCATION:	
[X]UL or Affiliate	[]WTDP []CTDP []TPTDP []TCP []PPP []WMT []TMP []SMT
Company Name	UL LLC
Address	47173 Benicia St. Fremont, CA 94538-7366 USA

[ ] LINK(s) TO OTHER UL LOCATIONS WHERE ADDITIONAL TEST DATA/OBSERVATIONS ARE STORED:

Link to separate data files for a test can be inserted here. The link must be a server that is accessible to UL staff, that provides for backup, required retention periods and a path, including file name that does not change and result in a broken link. Not applicable to DAP.

Test Name	Full Link to Location

TEST INSTRUMENTS REFERENCE LIST

[X]UL test equipment information is recorded on Meter Use in UL's Laboratory Project Management (LPM) database.

Instr. Code	Instrument I.D.	Instrument Type	Range Used Or ***	Make and Model **	Calibration Date	
					Last	Due
	See Meter Use in Aurora					

"Chamber setting(s) [was] [were] monitored to ensure that the setting(s) [was] [were] stable throughout the test time frame. Any deviations from the setting(s) are noted below.

Date	Test	Instrument Code	Time period of deviation	Setting(s)

** Information to be recorded when tests are conducted at a non-UL facility.
*** Refer to specific data sheet for individual scale used.

Tested by: Abraham Alganes (signature) Tested by: _____ (print) Test date: 2017-11-16

Sample # : 1 Instrument Code / Range: _____

2.2.2, 2.2.3, 2.2.4, PART 22 6.1 - SELV RELIABILITY TEST INCLUDING HAZARDOUS VOLTAGE MEASUREMENTS

METHOD

This test was conducted after the Working Voltage Measurement Test - Hazardous Voltage. The unit was connected to _____ [V ac, _____ Hz] [48 V dc POE] and operated normally. After the introduction of a fault, as noted below, voltages between the following points were measured. If the fault condition resulted in a repetitive pulse i.e., "hiccup," the pulse with exceeding SELV limits (t_1) and the pulse width within SELV limits (t_2) were recorded.

RESULTS

~~_____ [V ac, _____ Hz~~] [48 V dc POE]

2.2	TABLE: evaluation of voltage limiting components in SELV circuits		
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	
PV18POE	20.8Vpk	19.3Vrms	T3 transformer

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
T3 (short pin 5 to pins 7, 8, 9)	19.13Vrms / 20.8Vpk
T3 (short pin 5 to pins 10, 11, 12)	19.11Vrms / 20.8Vpk
T3 (short pins 1, 2 to pins 7, 8, 9)	22.27Vrms / 36.0Vpk
T3 (short pins 1, 2 to pins 10, 11, 12)	21.63Vrms / 36.0Vpk
T3 (short pins 3, 4 to pins 7, 8, 9)	19.23Vrms / 20.8Vpk
T3 (short pins 3, 4 to pins 10, 11, 12)	21.75Vrms / 28.0Vpk
supplementary information:	

Tested by: _____ Tested by: _____ Test date: _____
signature print

Sample # : _____ Instrument Code / Range: _____

2.2.2, 2.2.3, 2.2.4, PART 22 6.1 - SELV RELIABILITY TEST INCLUDING HAZARDOUS VOLTAGE MEASUREMENTS

NOTE: Only record the time duration for voltages that exceed 42.4 V pk or 60 V dc for indoor equipment, or 15 V r.m.s., 21.2 V pk or 30 V dc for outdoor equipment, or for repetitive pulses.

[X] After the fault was introduced, the voltage [~~did~~] [did not] exceed:
[x] 71 Vpk or 120 Vpk and after 0.2 seconds the voltage did not exceed 42.4 Vpk or 60 Vdc.
[ ] For voltages having a repetitive nature after a fault (for example, from power supplies in "hiccup" mode), V1 (42.4 V peak or 60 Vdc) but not exceeding V2 (71 V peak or 120 V peak) were permitted under the following conditions:

a) if $t_1 \leq$ 20 ms, t_2 shall be greater than 1 s;

b) if $t_1 >$ 20 ms, t_2 shall be greater than 3 s; and
c) t_1 shall not exceed 200 ms.

[ ] Outdoor Equipment, after the fault was introduced the voltage [did] [did not] exceed:
[ ] 30 V r.m.s., 42.4 V pk or 60 V dc and after 0.2 seconds, the voltage did not exceed 15 V r.m.s., 21.2 V pk or 30 V dc.
[ ] For voltages having a repetitive nature after a fault (for example, from power supplies in "hiccup" mode), V1 (15 V r.m.s., 21.2 V pk or 30 V dc) but not exceeding V2 (30 V r.m.s., 42.4 V pk or 60 V dc) additional pulses exceeding were permitted under the following conditions:

a) if $t_1 \leq$ 20 ms, t_2 shall be greater than 1 s;

b) if $t_1 >$ 20 ms, t_2 shall be greater than 3 s; and
c) t_1 shall not exceed 200 ms.

Comments:

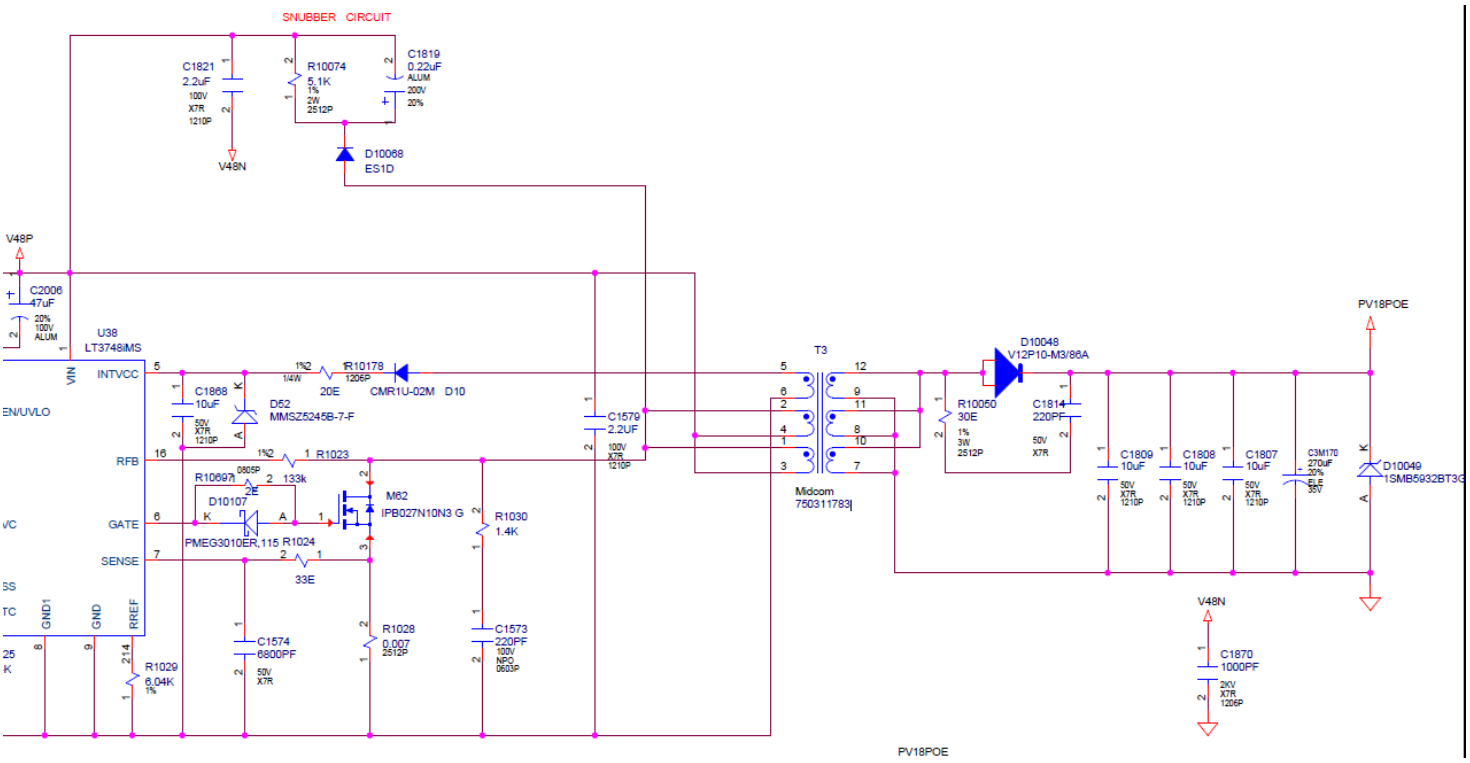
NOTES TO LAB:

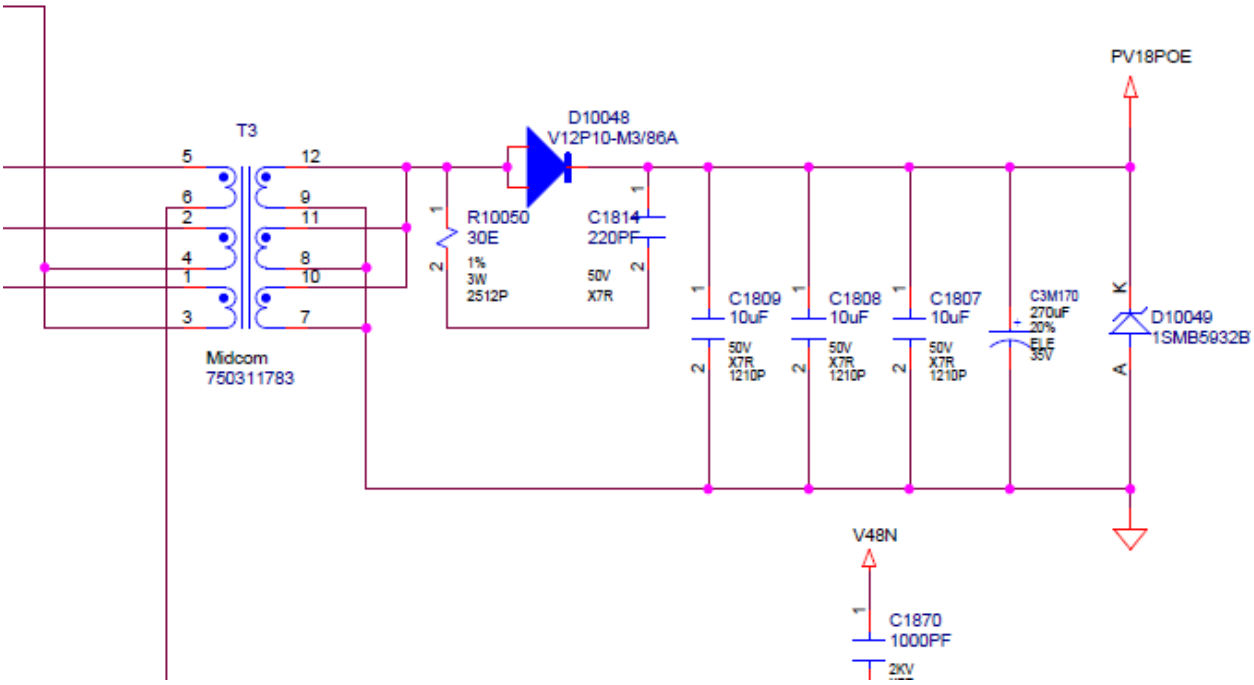
1. Conduct the Hazardous Voltage (Circuit) Measurement Test (2.10.2) first.

2. Since short term peak voltage is of interest during tests involving a fault, voltages should be monitored by using an oscilloscope for the first two seconds after any failure is introduced. If necessary, a photo of the waveform should be taken, marked with the settings, and attached to this sheet.

3. Contact engineer if:

   A. A limit of 71 V pk or 120 Vpk is exceeded for indoor equipment.
   B. A limit of 42.4 V pk or 60 V dc is exceeded for more than 0.2 seconds for indoor equipment.
   C. A limit of 30 V r.m.s., 42.4 V pk or 60 V dc is exceeded for outdoor equipment.
   D. A limit of 15 V r.m.s., 21.2 V pk or 30 V dc is exceeded for more than 0.2 seconds for outdoor equipment.
   E. Equipment enters "hiccup" mode as a result of an abnormal condition and more than one pulse per time period exceeds V1.





Tested by: _____ (signature) Tested by: _____ (print) Test date: _____

Sample # : _____ Instrument Code / Range: _____

4.3.8 - LITHIUM BATTERY REVERSE CURRENT MEASUREMENT TEST

TEST WAIVED PER PROJECT HANDLER [ADA 2017-11-22]

METHOD

With the lithium battery removed from the circuit, the sample was connected to _____ [Vac, _____ Hz] [48 Vdc POE]. A dc ammeter replaced the battery in the circuit and the normal reverse (charging) current was measured. The reverse current protection component was shorted and the abnormal reverse (charging) current was measured.

RESULTS

Test Voltage: ___48_ [~~Vac, ___ Hz~~] [Vdc ~~POE~~]

Battery Type	Normal Reverse Charging Current (mA)	Abnormal Condition	Abnormal Reverse Current (mA)
CR-1220/HFN	3 mA	IC U72B short pin 87 (VDDC) to pin 68 (VBAT)	
CR-1220/HFN	3 mA	R10285 short	

Comments:

The non-rechargeable coin battery BT2 does not have a suitable reverse charging current protection circuitry; this non-compliant issue shall be addressed in the end-use product.

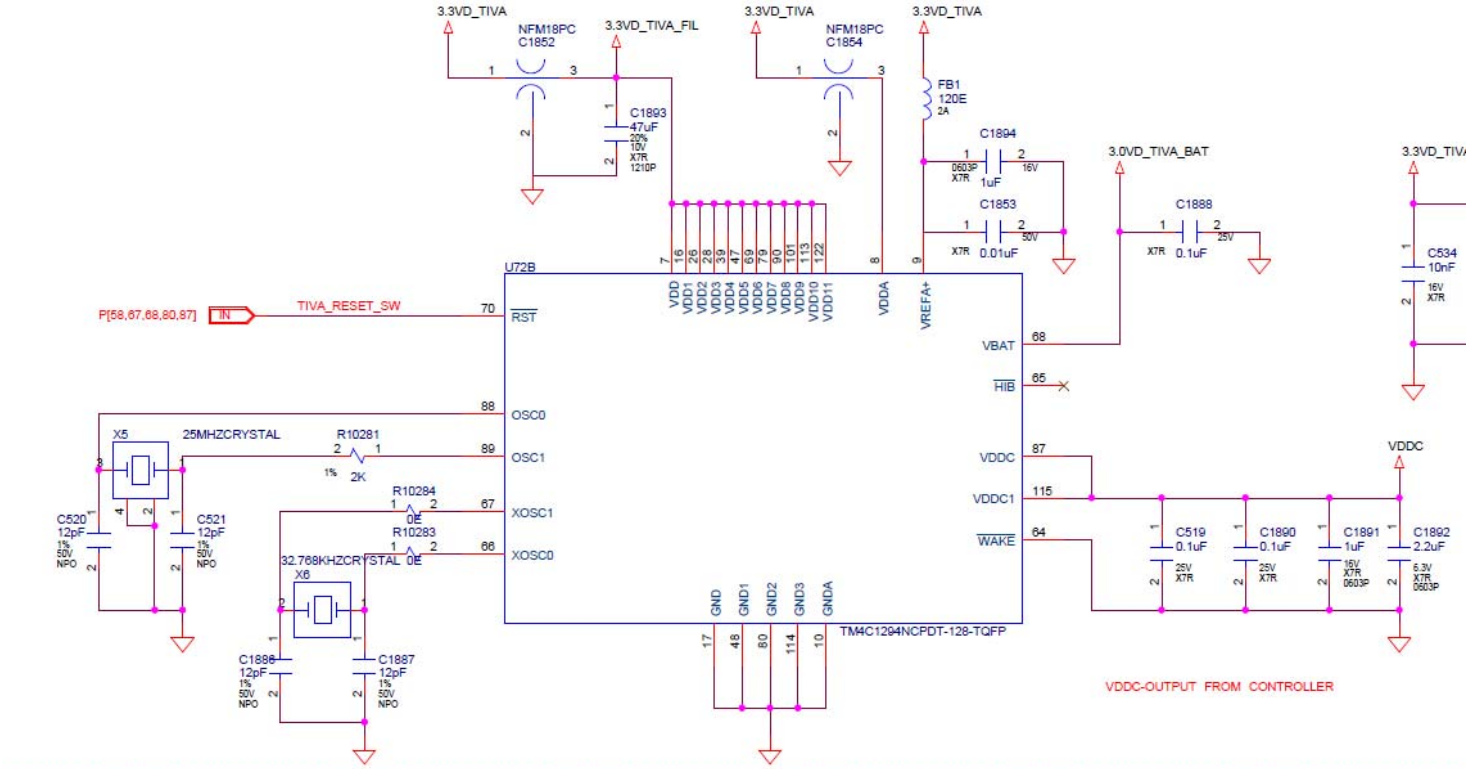
NOTES TO LAB:

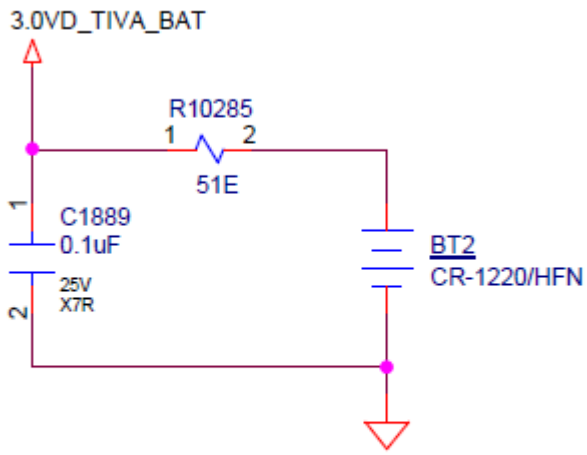
1. CAUTION: Risk of explosion. Remove battery before performing this test.

2. Notify engineer if maximum abnormal charging current exceeds ____ mA.

NOTES TO ENGINEER:

1. This test is conducted to confirm maximum abnormal current specified in Recognized Component Battery Report under “Conditions of Acceptability.”





TIVA RTC

Tested by: Abraham Alganes (signature) Tested by: (print) Test date: 2017-11-16

Sample # : 1 Instrument Code / Range:

5.2.2 - ELECTRIC STRENGTH TEST

METHOD

While the unit was in a well heated condition [ ] after the Heating Test [ ] other method, an ac or dc potential was gradually increased from zero to the test potential given below. The voltage was applied and maintained for a period of one minute between the points indicated.

RESULTS

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests		
Test voltage applied between: From/To	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:			
Basic/supplementary:			
T3 transformer (Pri/ Second windings)	AC	1000	No
Reinforced:			

Supplementary information:

[X] Method used to bring sample to "well heated" condition if test is not conducted after the Heating test: _____The unit was plugged in for 30 minutes with load._____

There [~~was~~] [was no] indication of breakdown as a result of applying the test voltage to the indicated locations for 60 seconds.

Comments: The test was conducted at 1414Vdc [ADA 2017-11-16]

NOTES TO LAB:

1. Record time recording instrument under “test equipment” in the main list of test equipment.
2. For Electric Strength Test, sub-clause 5.2 and 5.2.2, specify which test voltage “AC” or “DC” was applied to the insulation tested.
3. For specialized products which incorporate an AC switches, relays, triacs etc., contact engineer if question about status of component.