LISUN GROUP

Bulk Current Injection Test System
(LSBCI-40)

Brochure

Global Office of Lisun Electronics Inc.

http://www.Lisungroup.com

Lisun Group (Hong Kong) Limited
Add: Room 803, Chevalier House, 45-51 Chatham Road South, Tsim Sha Tsui, KL, HK
Tel: 00852-68852050 Fax: 00852-30785638
Email: SalesHK@Lisungroup.com

Lisun Electronics (Shanghai) Co., Ltd
Add: 113-114, No. 1 Building, Nanxiang Zhidi Industry Park, No. 1101, Huyi Road, Jiading District, Shanghai, 201802, China
Tel: +86(21)5108 3341 Fax: +86(21)5108 3342
Email: SalesSH@Lisungroup.com

Lisun Electronics Inc. (USA)
Add: 445 S. Figueroa Street, Los Angeless, CA 90071, U.S.A.
Email: Sales@Lisungroup.com

Lisun China Factory
Add: NO. 37, Xiangyuan Road, Hangzhou City, Zhejiang Province, China
Tel: +86-189-1799-6096
Email: Engineering@Lisungroup.com

Leader in Lighting & Electrical Test Instruments

Rev. 6/9/2020

1. System Configuration

Quotation includes the following items:

A. **Bulk Current Injection Test System**
- Test current: ≥300mA
- Output impedance: 50Ω
- Voltage standing wave ratio: ≤1.2

B. **Signal Source**
Frequency: 9K~1GHz (Maximum can scalable up to 3GHz)

C. **Power Amplifier**
Maximum output power: 125W (Linear power)

D. **Power Meter**
- Input frequency: 9KHz~3GHz
- Input power: -40dBm~+30dBm

E. **DC3400A Directional Coupler:** Coupling 40dB

F. **F-120-6A Current Injection Probe:** Maximum input power 1000W

G. **F-55 Current Monitoring Probe:** Maximum input power 1000W

H. **FCC-BCICF-1 Calibration Fixture for Current Injection Probe**: Fixing fixture for flow injection probe

I. **Schwarzbeck Artificial Power Network:** Simulate actual line impedance

J. **Software:** Chinese and English software which support Win7, Win8 and Win10

K. **Magenetic Shielding Room:** SDR-4000B, inside size is 4000*1200*1800mm (optional, the size can be designed according to customer request)

2. Working Principle

LSBCI-40 Bulk Current Injection Test System（BCI）fully meet standard ISO11452-4、GB/T32960.2-2016,etc. Support open-loop test method and closed-loop test method (Add options according to customer requirement), 100KHz ultra-low starting frequency which is enough to meet the test requirements of global auto companies. Built-in 3-channel Power Meter which can use directional coupler to monitor forward and reverse power in real time, equipped with Chinese and English interface test software.

3. Specifications

A. Test System

• Standard: ISO11452-4、GB/T32960.2-2016
• Frequency range of the whole system: 100kHz~400MHz；
• Frequency range of built-in signal source: 9kHz~1GHz；
• Built-in power amplifier frequency range: 100kHz~400MHz，125W optional，both are linear power indicators
• Built-in Power Meter: 9kHz~3GHz；
• Test Current: ≥300mA
• Output Impedance: 50Ω
• Voltage Standing Wave Ratio: ≤1.2
• Fully automatic calibration, full-automatic testing and output power monitoring during testing.
• Externally expandable test, support open loop injection method and closed loop test method
• Host computer control, Chinese and English version professional testing software, complete function and with good scalability;

B. Signal Source (Built-in)

• Frequency
  Frequency range: 9k~1GHz (Maximum can scalable up to 3GHz)
  Resolution: 1kHz
• Output level
  Level range: -60dBm~+10dBm
  Resolution: 0.1dBm
  Setting time: 10ms
• Unmodulated signal: Continuous wave
• Modulation mode: Amplitude modulation
  Modulation frequency: 1Hz~10kHz
  Modulation depth: 1~99%
  Frequency resolution: 1Hz
• Pulse modulation
  Modulation frequency: 1Hz~1kHz
  Duty cycle: 1~100%
  Frequency resolution: 1Hz
• Connector: N socket 50Ω

C. Power amplifier (Built-in)

• Output frequency: 100kHz~400MHz
• Maximum output power: 125W

• Input resistance: 50Ω
• Output resistance: 50Ω
• Gain flatness: Maximum +/-3dB
• Harmonic:＜15dBc
• Second harmonic distortion: <-10dBc
• Test Software（RF IMMUNITY TEST）

D. Power Meter (Built-in)

• Input frequency range: 9kHz~3GHz
• Linear measuring range: -40dBm~+30dBm
• Noise floor: Greater than 6dB below the measurement range
• Input return loss: >20dB (below 500MHz); >17dB (500 MHz to 3GHz)
• Connector: BNC socket 50Ω
• Input power: -40dBm~+30dBm

E. Directional Coupler

• Coupling: 40dB
• Maximum input power: 250W
• Response frequency: 10kHz – 400MHz

F. Current Injection Probe

• Response frequency: 10kHz – 400MHz
• Maximum input power: 1000W

H. Calibration Fixture for Current Injection Probe

• Fixing fixture for Current Injection Probe
• It needs to be fixed in the self-calibration state and provide a short circuit state

I. Artificial power supply network for automotive electronics testing NNBM 8124

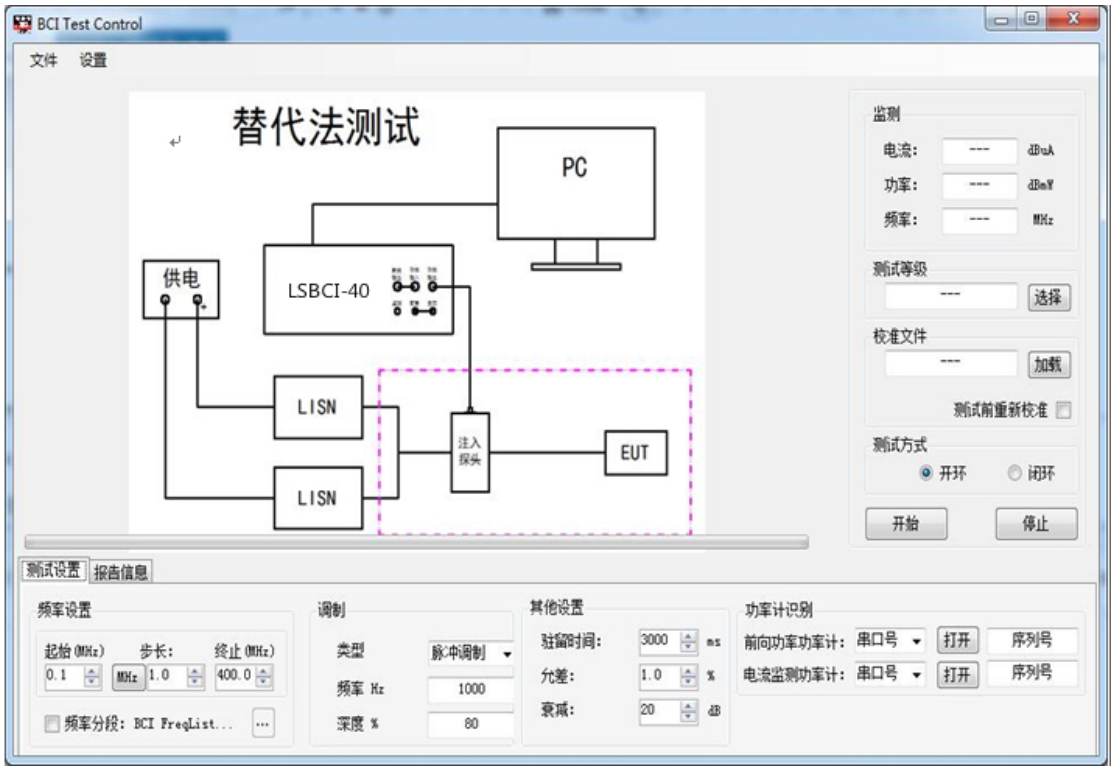
Asymmetric single path AMN (Artificial power network) NNBM 8124 mainly used to measure the interference voltage of vehicles, airplanes and ships in the frequency range of 0.1-150 MHz from high frequency to UHF band. NNBM 8124 can also be used for Bulk Current Injection (BCI) testing or transient testing according to ISO 7637-2. According to the CISPR 16/25 and MIL-STD-461F (5μH + 1 ohm) standards, the impedance characteristic is 50 ohms, the continuous current rating is 70 A, and may exceed 100 A in a short time. The test object is connected to the front panel wing terminal. The main power terminal is on the back of the device.

Specifications:
Frequency range: 0.1 – 150 MHz
Maximum continuous current: 70 A
Maximum time limit current: 100 A
Maximum DC voltage: 500V
Maximum AC voltage (50/60Hz): 250V

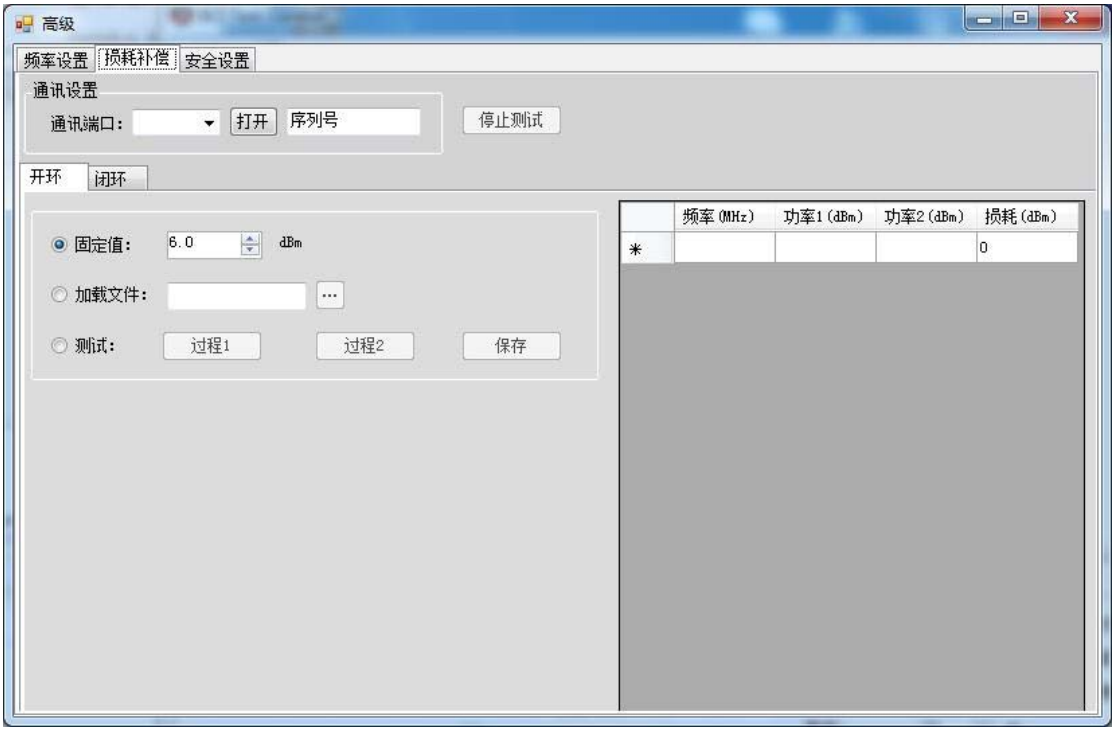
Maximum AC voltage (400Hz): 130V
Impedance: (5μH + 1 Ohm) || 50 Ohm (+/- 10 %)
DC resistance power supply-test object : < 5 mOhm
Impedance: (50Hz): 4.2 mOhm
Impedance: (400Hz): 13 mOhm
Connector under test: BNC (N-type optional), to wing terminal
Dimension (W x H x D): 160 x 210 x 165 mm
Weight: 1.9kg

J. Software

BCI Test Control software can adjust parameters according to demand, automatic calibration, automatic test, Chinese and English operation interface.




高级
频率设置
损耗补偿
安全设置
频率分段设置:
起始(MHz)
终止(MHz)
步长
步长类型
生成频率列表
保存频率列表
已加载
BCI FreqList0.1-120MHz.lst
序号
频率
1 1.000000
2 1.010000
3 1.020100
4 1.030301
5 1.040604
6 1.051010
7 1.061520
8 1.072135
9 1.082857
10 1.093685
11 1.104622
12 1.115668
13 1.126825
14 1.138093
15 1.149474
16 1.160969


高级
频率设置
损耗补偿
安全设置
通讯设置
通讯端口:
打开
序列号
停止测试
开环
闭环
固定值:
6.0
dBm
加载文件:
测试:
过程1
过程2
保存
频率(MHz)
功率1(dBm)
功率2(dBm)
损耗(dBm)
0

4. Operation Steps

ISO 11452-4 open loop method (also named alternative method) and closed-loop method, this project is mainly for open-loop method testing. The BCI test system itself is a closed test system, and all tests need to be performed after calibration on site. So no matter whose system, it has no major impact on the test result. So the requirements is basically all for the entire system, but fewer requirements for the seperate device in the system,

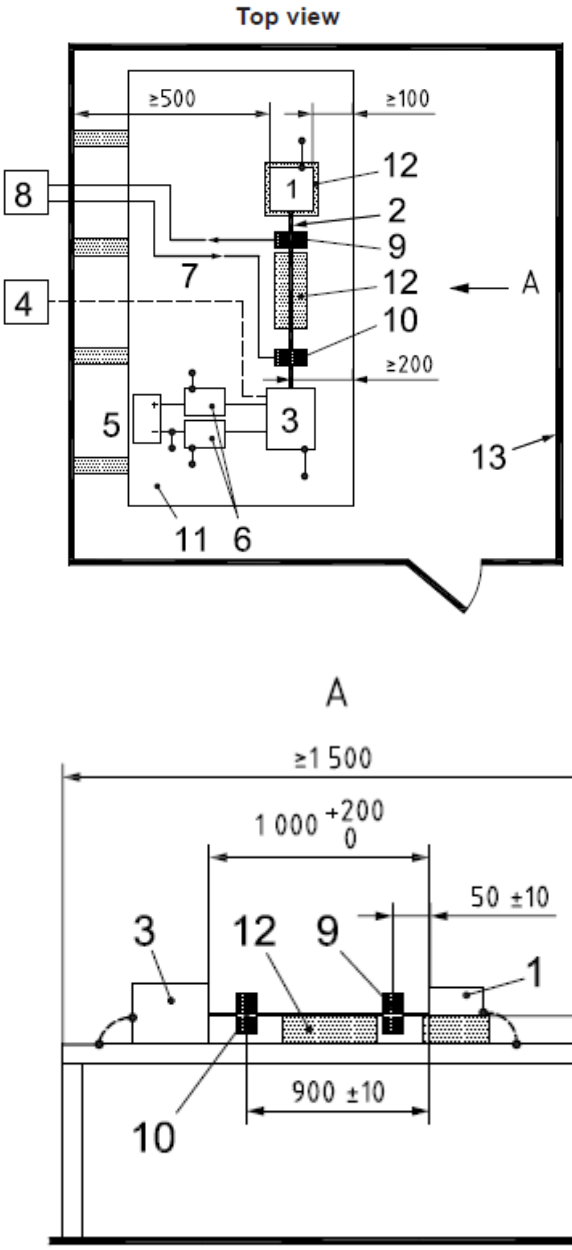
(1) Operation Step

a. Before testing, after the calibration fixture verifies that the disturbance current generated by the current injection probe meets the requirements, the current probe is clamped to the specified position of the harness to be tested.
b. Based on the calibrated forward power, disturb the wiring harness. The current intensity is not monitored during the measurement and the forward power is also no longer adjusted.
c. The length of the harness and the relative distance between the current injection probe and the tested harness both will affect the degree of coupling of the disturbing electromagnetic field on the tested harness.

(2) Layout:

a. Reference ground plane: Reference ground plane, uses a metal plate with a thickness greater than 0.5mm, preferably brass. The length and width of the test bench and the reference ground plane must be at least 1700mm×1000mm. The impedance of the grounding material is not greater than 2.5 milliohms, and the interval is not greater than 300mm.
b. Power supply and AN: Use 2 ANs for the far-end grounding and 1 AN for the near-end grounding. (Connected to the positive pole)
c. EUT placement: The product to be tested should be placed on an insulating material with a low dielectric constant (not greater than 1.4) and a thickness of 50 (±5) mm. The harness manufacturer for the test harness, EUT and simulated load should be: 1000 (±100) mm, the test harness should be placed on materials with insulation, dielectric constant (not greater than 1.4) and a thickness of 50 (±5) mm.
d. Bulk current injection probe: The distance d from the location of the injection probe to the EUT is as follows:
d=(150±10)mm
d=(450±10)mm
d=(750±10)mm

Dimensions in millimetres



Key

1 DUT (connected to ground if specified in the test plan)
2 wiring harness
3 load simulator (placement and ground connection according to 7.5)
4 stimulation and monitoring system
5 power supply
6 AN
7 optical fibres
8 high-frequency equipment
9 current measurement probe
10 injection probe
11 ground plane (connected to the shielded room)
12 low relative permittivity support ($\varepsilon_r \leq 1{,}4$)
13 shielded room

(3) Test result judgment:

The judgment of the open loop method is mainly divided into 5 levels, and each level represents a different test result.

a. The function or performance of the EUT has been normal without any abnormality.
b. When all functions or performances are in the interference state, one or more functions/performances are offset by the specified tolerance, but all functions or performances are restored to the specified tolerance limit after the interference is removed, and the stored data cannot be any abnormal phenomenon occurs.
c. One or more functions/performances are lost, but the EUT automatically returns to normal mode after interference is applied.
d. One or more functions/performances are lost, but it returns to the normal mode through human intervention after the interference is applied.
e. One or more functions/performances are lost, but they cannot return to normal mode after interference is applied.