CONTRACT

Buyer ： **Academia Sinica**
128 Academia Road, Sec.2
Nankang, Taipei 115
Taiwan, R.O.C.

Vendor： **Q-CTRL INC**
1335 4th street
Santa Monica, CA
90401-1363
USA

Ship to： **Research Center for Critical Issues,**
Academia Sinica
No.100, Sec.1, Guiren 13th Rd., Guiren Dist.
Tainan City 711010, Taiwan, R.O.C.

ACADEMIA SINICA (hereinafter referred to as the Buyer), and Q-CTRL (hereinafter referred to as the Vendor), mutually agree to sign and follow this Contract. The terms and conditions are as follows:

In addition to this contract, the Quotation and the Proposal shall apply for the purchase. This contract therefore includes the following addenda:

1. The Quotation
2. The Proposal

The above addenda shall form part of this contract and shall have effect as if set out in full in the body of this contract.

1. **Products(履約標的)**
   This contract is for the purchase of **Boulder Opal License** as described in the attached Quotation (**December 13, 2024**, Quote Number: **BoulderQuotation_AS01OCT24**).
2. **Effective Date(契約生效日期)**
   This contract takes effect on the day when both the Buyer and the Vendor have signed.
3. **Price(契約價金)**
   The total price as described in the attached quotation is **USD110,000** (Details are provided in the attachment.) Duties and taxes are the responsibility of the Buyer.
4. **Payment (付款條件)**
   Payment shall be made via telegraphic transfer to Vendor. Payment terms are as follows (Payment in installments):
   4.1 First installment (50% of total contract price) shall be paid upon testing and acceptance of the Boulder Opal Performance Annual License provided by the vendor.
   4.2 Second installment (25% of total contract price) shall be paid upon testing and acceptance of the Boulder Opal Scale Up 5 Qubit License provided by the vendor.
   4.3 Third(Final) installment (25% of total contract price) shall be paid upon testing and acceptance of the Boulder Opal Scale Up 20 Qubit License provided by the vendor.

5. **Performance Period, Testing and Acceptance (履約期限,測試及驗收)**

   The delivery will be made in multiple installments. The performance period for the first installment is December 16, 2024, for the second installment is June 30, 2025, and for the Third installment is December 1, 2025. The acceptance criteria outlined in the attachment.

   Testing shall be completed by the Buyer within 2 weeks after delivery.

   The testing and acceptance by segment may be conducted in accordance with the progress of contract performance, and may be conducted by examining the documents prepared, depending on the situation of the procurement

6. **Force Majeure(免責條款)**

   Neither the Vendor, nor the Buyer shall be held responsible for any failures or delays due to causes beyond their control including, but not limited to, natural disasters, embargos, war, strikes, and riots.

7. **Penalty(遲延履約)**

   If the delivery of any items as described in the attached quotation could not be made by the date of completion, a penalty of 0.1% per day (up to 20%) for the values of the items not completed can be assessed. The penalty will be deducted from the total price.

8. **Penalty-free Extension (契約展期)**

   Due to following natural disasters or force majeure events or any other case that is not caused by the Vendor or Buyer, the Buyer can grant the Vendor penalty-free extensions for delivery, if the Buyer accepts the Vendor's written request for extension which the Vendor must justify with reasons, (1) War, blockade, revolution, rebellion, civil strife, riots or mobilization. (2) Landslides, earthquakes, tsunamis, volcanic eruptions, typhoons, hurricanes, heavy rain, hail, floods, mudslides, landslides, sliding formations, lightning, or other natural disasters. (3) The crash, wreck, road of traffic disruption, or port ice. (4) Strikes, labor disputes, or people assembling a crowd to protest the non-rational. (5) Gas, plague, fire, or explosion. (6) Goods subject to damage, theft, robbery, robbers, or pirates. (7) The Vendor's implementing member killed, injured, kidnapped, or unlawfully detained. (8) Nuclear reaction, nuclear radiation, or radioactive contamination. (9) Additions or changes to a Government Decree. (10) Acts of our country or foreign governments. (11) Any other force majeure or any other cases unexpected or unavoidable that are not caused by the Vendor or Buyer.

   If the delivery cannot be made within the stipulated performance period, both parties must submit a written request for an extension of the performance period at least 10 working days before the expiration of the original deadline.

9. **Termination or Rescission of Contract(契約終止)**

   In the event of any of the following circumstances for the Vendor's performance, the Buyer may notify the Vendor in writing to terminate or rescind a part or all of the contract, and no compensation shall be paid to the Vendor for losses thus incurred: (1) Where the Vendor refuses to execute the contract without due cause.

(2) Where the Vendor is seriously in breach of the laws, regulations or other provisions of the contract.

10. Governing Law(爭議處理)

This contract shall be executed according to the laws and regulations of arbitration according to the rules of Taiwan, as both parties agreed.

All amendments and addenda to this contract shall be valid only when made in writing and signed by both parties.

Academia Sinica	**Q-CTRL**
Legal representative: James C. Liao	By:
Title: President	Title:
Authorized Buyer: Research Center for Critical Issues Director: Chau-Hwang Lee	
Address:	Address:
128 Academia Road, Sec.2	1335 4th street
Nankang, Taipei 115	Santa Monica, CA
Taiwan, R.O.C.	90401-1363
	USA
Date: 13 December 2024	Date: 13 December 2024

Q-CTRL INC
1335 4th street
Santa Monica, CA
90401-1363
USA

Phone: +1 949 627 7524
Email: Dustin@q-ctrl.com

Quotation Number:
BoulderQuotation_AS01OCT24
Date:
01 October 2024
Quote Expiration Date:
30 December 2024

Academia Sinica
Research Center for Critical Issues
No. 100, Sec. 1, Guiren 13th Rd., Guiren Dist.,
Tainan City 711010, Taiwan

Dear Professor Chen,

Thank you for your interest in QCTRL. We value your organization and are committed to your success. We appreciate the opportunity to provide this quotation of Boulder Opal Scale up and look forward to working with Academia Sinica. This quote shall remain valid for 90 days from the date of this document.

Below you will find relevant quoted items:

1. Boulder Opal Scale up

Kind Regards,

Dustin Westerfeld
Director Technical Sales Q-CTRL
Dustin@q-ctrl.com
+1 949 627 7524

Quoted Products Single year

Item	Description Boulder Opal License 1 year	Quantity	Delivery Date	Cost[1]
1	**Boulder Opal Performance Annual License**	1	12/16/2024	$55,000
2	**Boulder Opal Scale Up 5 Qubit License**	1	6/30/2025	$27,500
3	**Boulder Opal Scale Up 20 Qubit License**	1	12/1/2025	$27,500
	TOTAL			$110,000

1 - All prices shown in USD

Delivery Timeline:
Boulder Opal Performance License Upon issue of purchase order or November 30, 2024..
Boulder Opal Scale Up 5 Qubit License - June 30, 2025.
Boulder Opal Scale Up 20 Qubit License - December 1, 2025.

Payment Terms:
All values in USD, applicable sales tax is not included.
Payment by credit card or bank transfer, Net 30
Payments:
3 Total Payments
Payment 1 50% of total
Payment 2 25% of total
Payment 3 25% of total

License Terms:
Available from the Boulder Opal terms of service

「多位元邏輯閘控制軟體之軟體建置及服務」規格需求

Boulder Opal and Scale Up Software Automation

Part 1: Delivery: Dec. 16, 2024

Onsite Software Installation:

○ Q-CTRL R&D team will conduct onsite installation of software at the Academia Sinica Lab.

- **Two-qubit gate and GHZ demonstration**

  Deliverable 1: Experiment initialization and technical handoff

  Description: Set up the prerequisite infrastructure and information handoff to complete the POC. This includes a technical briefing between Sinica and Q-CTRL to understand the current hardware states and formalize the official Target Values and setting up the necessary network access to Sinica HW.

  Success Criteria: Q-CTRL confirms all baseline metrics have been gathered, final target values set, and stable device access has been achieved.

  Deliverable 2: Experimentally tested two-qubit gate protocols.

  Description: Q-CTRL will create a process to design, calibrate, and optimize a two-qubit gate waveform with the goal to maximize gate fidelity on current 5-qubit devices.

  Success Criteria: Q-CTRL demonstrates performance at or above the target value in the above table. Or, demonstration of maximum possible performance given any hardware coherence limitations.

  Deliverable 3: GHZ state optimization through improved two-qubit waveform pulse protocols.

  Description: Using the novel two-qubit gate waveforms, Q-CTRL will test the fidelity of GHZ state preparation and identify residual errors likely arising from circuit-level sources, such as crosstalk. Only gate-level improvements will be used during these experiments on the current 5 qubit devices.

  Deliverable 4: Routine transfer to advanced devices

  Description: All work from Deliverables 1, 2, and 3 will be ported over to the new advanced device types.

  Success Criteria: N/A

License granted : Boulder Opal Performance Annual License

Part 2: Delivery: June 30, 2025

- **Scale up to 5-qubit**

  Deliverable: Integration of new two-qubit gate subroutines.

  Description: Upon completion of Part 1, Q-CTRL will provide an integrated version of those Part 1 routines for Sinica to use as needed. This includes native support for Quantum Machines controllers, and validation within their existing software infrastructure. This will only be done for the advanced devices.

  Success Criteria: Fully integrated solutions that provide the ability to invoke the new two-qubit gate optimization routine within the Sinica environment.

License granted : Boulder Opal Scale up 5 Qubit License

Part 3: Delivery: December 1, 2025

- **Scale up to 20-qubit**

  Deliverable: Collaborating on next steps

  Description: Based on the results and findings from Part 1 and 2, Q-CTRL will provide one or more options for continued performance improvements (unless none are evident). This may include:

  1. Further GHZ state optimizations based on circuit-level error suppression
  2. Automation and scope expansion of existing gate optimization protocols.
  3. A report of additional findings from Phase 1 and 2 of performance limiting factors not related to Q-CTRL scope (for example hardware related limitations)

  Success Criteria: Options delivered to Sinica and decisions made about next steps

License granted : Boulder Opal Scale up 20 Qubit License

中央研究院關鍵議題研究中心

~~開標/~~議價/決標~~/流標/廢標~~紀錄

時間：113 年 12 月 13 日 下午 5 時 39 分　　地點：中研院物理所/關鍵中心

案號	113002343		開標次別	第 1 次
標的名稱及數量摘要	多位元邏輯閘控制軟體之軟體建置及服務		招標方式	科研逕行採購
刊登日期	–			

投標廠商	標價	優先減價後之標價	第 1 次比減價格後之標價	第 2 次比減價格後之標價	第 3 次比減價格後之標價
Q-CTRL INC	美金 110,000 元				

審標結果/流標原因/廢標原因

一、本案投標廠商計 1 家，開標前合格投標廠商計 1 家，審標結果 1 家符合招標文件規定，其餘 0 家不合格。

二、 Q-CTRL INC (以電子郵件提供)報價 ~~(減價後)~~ 美金（下同）110,000 元整最低，且在底價 美金 110,500 元整以內，經主持人當場宣布決標。

三、☐無投標廠商投標，經主持人當場宣布流標。

四、☐開標後經審標結果，無得為決標對象之廠商，經主持人當場宣布廢標。

五、其他：

1. 廠商資格由承辦人員負責審查，審查人_____☑同記錄。
2. 標的規格由需求使用單位負責審查，審查人：_____ ☑同主持人。

決標原則、得標廠商及決標金額

☐得依關稅法、營業稅法及教育研究用品免稅辦法等規定申請進口免稅，得標價格應不含免徵之稅款。

☐標價含進口、運輸、保險、安裝測試等費用。

決標原則：小於或等於招標機關所訂之底價。

得標廠商：Q-CTRL INC

決標金額：美金 110,000 元整

其他：

得標廠商代表簽名(或蓋章)

決標過程

☐依招標文件規定辦理減價。

☐確無減價之可能，不通知投標廠商到場，逕行辦理議價及決標程序；如無法當面議價者，可採書面或電子資料傳輸方式議價。

（註明減價/比減價格/超底價決標/協商之過程）

異議或申訴事件

無

（註明尚未解決之異議或申訴事件之處理情形）

備註

記錄	關鍵議題研究中心 黃齡嫻 （簽章）	監辦人員	主計（簽章）	政風（簽章）
會辦人員	（簽章）	主持人	關鍵議題研究中心 量子電腦專題中心執行長 陳啓東	（簽章）